

RF Test Report

Project Number: 4808444**Offer Number:** SUW-202107001262**Report Number:** 4808444EMC01**Revision Level:** 1**Client:** Persistent Systems LLC**Equipment Under Test:** Embedded Module (with RF-2150 Radio)**Model:** WR-5200**Contains FCC ID:** 2AG3J-RF2150**Applicable Standards:** FCC Part 15 Subpart C, § 15.247

RSS-247, Issue 2, February 2017

RSS-GEN, Issue 5, February 2021, Amendment 2

ANSI C63.10:2013

Report issued on: 02 March 2022**Test Result:** Compliant

FOR THE SCOPE OF ACCREDITATION UNDER CERTIFICATE NUMBER: 3212.01

This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, or any agency of the Federal Government.

Prepared by:

A handwritten signature in blue ink, appearing to read 'Martin Taylor'.

Martin Taylor, Project Engineer

Reviewed by:

A handwritten signature in blue ink, appearing to read 'Jeremy Pickens'.

Jeremy Pickens, RF Lab 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
Bandwidth	15.247(a)(2)	RSS-247 S5.2 (a) RSS-GEN S6.7	N/R ¹
Output Power	15.247(b)(3)	RSS-247 S5.4 (d)	N/R ¹
Power Spectral Density	15.247(e)	RSS-247 S5.2 (b)	N/R ¹
Emissions in Non-restricted Frequency Bands	15.247(d)	RSS-247 S5.5	N/R ¹
Emissions in Restricted Frequency Bands - Conducted	15.247(d) 15.205, 15.209	RSS-247 S5.5 RSS-GEN S8.9, S8.10	N/R ¹
Emissions in Restricted Frequency Bands – Cabinet Radiation	15.205, 15.209	RSS-GEN S8.9, S8.10	Compliant
Antenna Requirement	15.203	RSS-GEN S6.8	Compliant ²

(1) Not required since conducted data from SGS Test Report Number 4364134EMC05 is still valid.

(2) Device uses antennas with reverse-polarity TNC connectors.

1.1 Modifications Required for Compliance

None.

2 General Information

2.1 Client Information

Name: Persistent Systems LLC
Address: 601 West 26th St, Suite 905
City, State, Zip, Country: New York, NY 10001, USA

2.2 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
CAB Identifier: US0186

2.3 General Information of EUT

Equipment Under Test (PMN): Embedded Module (with RF-2150 Radio)
Model (HVIN): WR-5200
Serial Number: 58676
Contains FCC ID: 2AG3J-RF2150

Frequency Range: 2412 – 2462 MHz
Data Modes: WLAN IEEE 802.11b/g/n (DSSS, OFDM)
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

Rated Voltage: 12Vdc
Test Voltage: 12Vdc (supplied by AC adapter with 120Vac, 60Hz input)

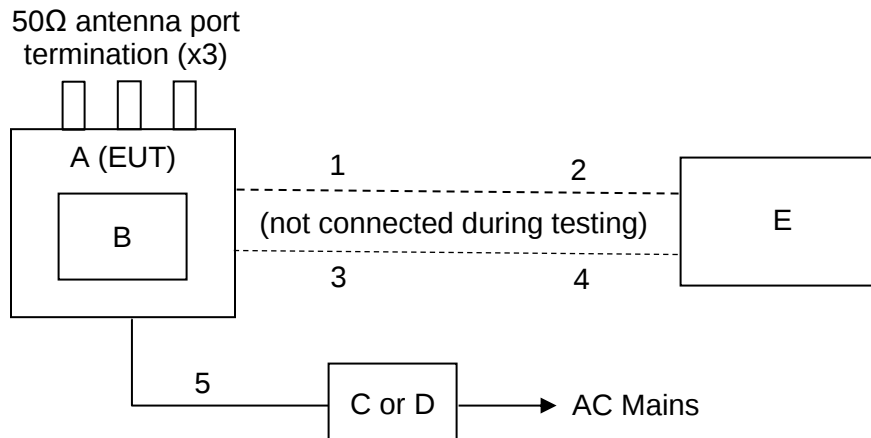
Sample Received Date: 04 January 2022
Dates of testing: 05-06 January 2022

2.4 Operating Modes and Conditions

The EUT was running test firmware (NART mode) that allowed control of the WLAN radio using an application called Atheros Radio Test 2 (ART2-GUI) running on a provided laptop. Low, middle and high WLAN channels were tested in all supported data modes (802.11b/g/n). Channel 7 was tested as the middle channel since that was the one with the highest power settings in the power tables. The worst-case data rate was tested for each data mode based on the original radio testing. Only one transmit chain was used for spurious emissions since that was the configuration with the highest power in the power tables.

Note that the path losses between the radio and the antennas in this product are greater than or equal to those in the MPU5 on which the original radio testing was performed.

2.5 EUT Connection Block Diagram



2.6 System Configurations

Device reference	Manufacturer	Description	Model Number	Serial Number
A (EUT)	Persistent Systems	Embedded Module	WR-5200	58676
B	Persistent Systems	Radio	RF-2150	B-79878
C	?	AC/DC Power Adapter	APL-LA-120500	Not labeled
D	Mean Well	AC/DC Power Adapter	GSM90B12	EB77B45607
E	Dell	Laptop PC	Latitude 3480	4909181294

2.7 Cable List

Cable reference	Port Name	Start	End	Cable Length (m)	Ferrite installed?	Shielded?
1	Ethernet	A (EUT)	2	0.35	No	No
2	Ethernet	1	E (Laptop)	1.80	No	No
3	USB	A (EUT)	4	0.32	No	No
4	USB	3	E (Laptop)	0.16	No	No
5	Power	A (EUT)	AC/DC Power Adapter	1.24 (C) 0.93 (D)	No (C) Yes (D)	No

3 Emissions in Restricted Frequency Bands – Cabinet Radiation

3.1 Test Result

Test Description	Test Specification		Test Result
Emissions in Restricted Frequency Bands – Cabinet Radiation	15.247(d) 15.205, 15.209	RSS-247 S5.5 RSS-GEN S8.9, S8.10	Compliant

3.2 Test Method

Cabinet radiated spurious emissions (RSE) in restricted frequency bands were measured according to ANSI C63.10 clause 11.12.2.7, which references the test methods defined in clauses 6.3, 6.5 and 6.6.

[Note: The antenna-port conducted RSE measurements defined in the rest of clause 11.12.2 were performed in the original RF-2150 radio testing and are still valid. Only the cabinet radiation portion of the RSE needed to be retested in this new product containing the RF-2150 radio.]

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

Test distances for radiated tests:

30 to 1000 MHz - The EUT to measurement antenna distance was 3 meters

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

18 to 26 GHz - The EUT to measurement antenna distance is 3 meters

Limits within restricted bands of operation:

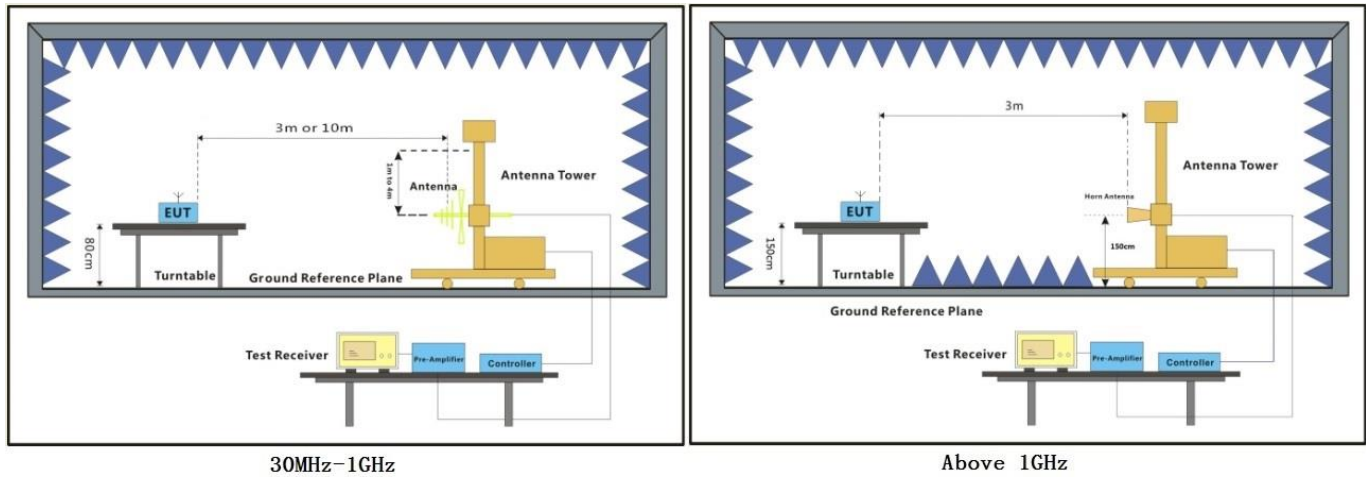
Frequency	Limits ⁽¹⁾		Peak Limits dBuV/m
	Microvolts/m	dBuV/m	
30 - 88 MHz	100	40 ⁽²⁾	--
88 - 216 MHz	150	43.5 ⁽²⁾	--
216 - 960 MHz	200	46 ⁽²⁾	--
960 - 1000 MHz	500	54 ⁽²⁾	--
1 - 40 GHz	500	54 ⁽³⁾	74

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

(2) Quasi-peak limit

(3) Average limit

3.3 Test Setup



3.4 Test Site

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

Environmental Conditions	30-1000MHz	1-18GHz	18 -26GHz
Temperature:	21.1°C	22.2 °C	21.6 °C
Relative Humidity:	38.0 %	31.0 %	35.3 %
Atmospheric Pressure:	97.4 kPa	98.1 kPa	97.2 kPa

3.5 Test Equipment

30-1000MHz

Test End Date: 6-Jan-2022

Tester: LM

Equipment	Model	Manufacturer	Asset Number	Cal Date	Cal Due Date
ANTENNA, BILOG	JB6	SUNOL	B079690	13-Jan-2021	13-Jan-2023
RF CABLE	SF106	HUBER & SUHNER	B085903	25-Aug-2021	25-Aug-2022
RF CABLE NM TO NM, 0.01-18GHZ	90-195-157	TELEDYNE STORM MICROWAVE	20121	17-Feb-2021	17-Feb-2022
EMI TEST RECEIVER	ESU40	ROHDE & SCHWARZ	B079629	21-Jun-2021	21-Jun-2022
RF CABLE	SUCOFLEX 100	HUBER & SUHNER	B108523	26-Aug-2021	26-Aug-2022
LOW NOISE AMPLIFIER	ZKL-2+	MINI-CIRCUITS	B079817	26-Aug-2021	26-Aug-2022
RF CABLE NM TO NM, 0.01-	90-195-354	TELEDYNE STORM MICROWAVE	20119	18-Feb-2021	18-Feb-2022

1-18GHz

Test End Date: 5-Jan-2022

Tester: LM, ZH

Equipment	Model	Manufacturer	Asset Number	Cal Date	Cal Due Date
ANTENNA, DRG HORN (MEDIUM)	3117	ETS LINDGREN	B079691	10-Aug-2020	10-Aug-2022
RF CABLE NM TO NF, 2-18GHZ	90-092-079	TELEDYNE STORM MICROWAVE	20137	22-Mar-2021	22-Mar-2022
RF CABLE NM TO NM, 0.01-18GHZ	90-195-079	TELEDYNE STORM MICROWAVE	20124	17-Feb-2021	17-Feb-2022
EMI TEST RECEIVER	ESU40	ROHDE & SCHWARZ	B079629	21-Jun-2021	21-Jun-2022
RF CABLE	SUCOFLEX 100	HUBER & SUHNER	B108523	26-Aug-2021	26-Aug-2022
LOW NOISE AMPLIFIER	TS-PR18	ROHDE & SCHWARZ	B094463	7-Jul-2021	7-Jul-2022

18-26GHz

Test End Date: 6-Jan-2022

Tester: EW

Equipment	Model	Manufacturer	Asset Number	Cal Date	Cal Due Date
EMI TEST RECEIVER	ESU40	ROHDE & SCHWARZ	B079629	21-Jun-2021	21-Jun-2022
LOW NOISE AMPLIFIER	NSP1840-HG	MITEQ	B087572	22-Oct-2021	22-Oct-2022
ANTENNA, HORN (SMALL)	LB-180400-20-C-KF	A-INFO	15007	6-Apr-2020	6-Apr-2022
RF CABLE SMA TO SMA, 0.01-40GHZ	084-0505-138	TELEDYNE STORM MICROWAVE	20111	16-Mar-2021	16-Mar-2022
RF CABLE SMA TO SMA, 0.01-	084-0505-020	TELEDYNE STORM MICROWAVE	20106	16-Mar-2021	16-Mar-2022

Software:

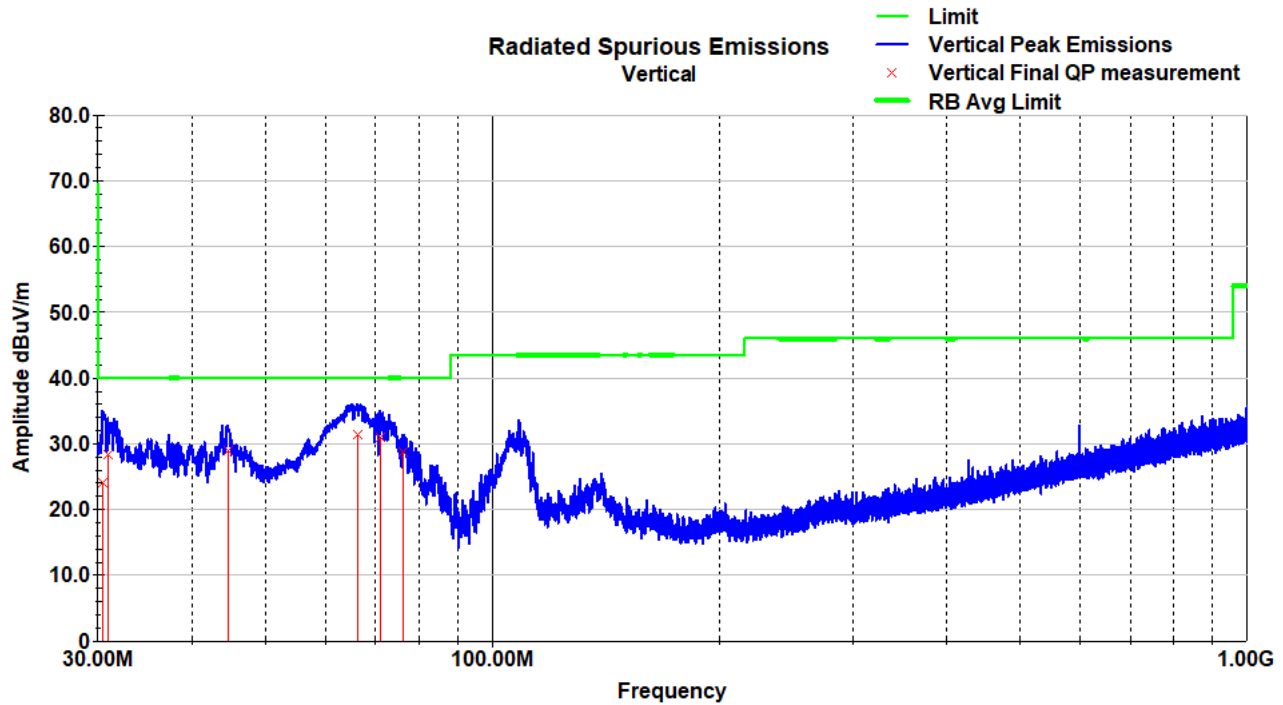
RSE 30-1000MHz T7 201007.TIL

RSE 1-18GHz t7 210212.TIL

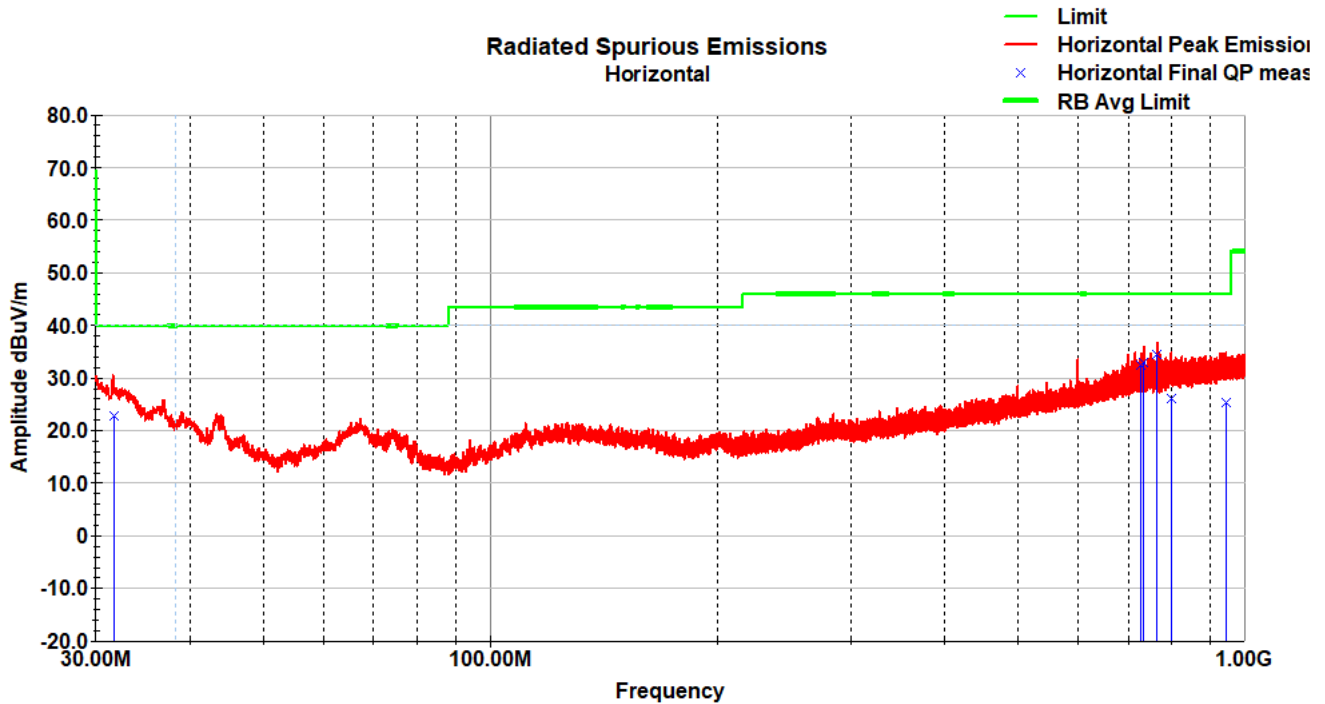
3.6 Test Data

Emissions in the 30-1000MHz range were very similar for the various channels and data rates.

WLAN 11b Channel 7 (30-1000MHz)

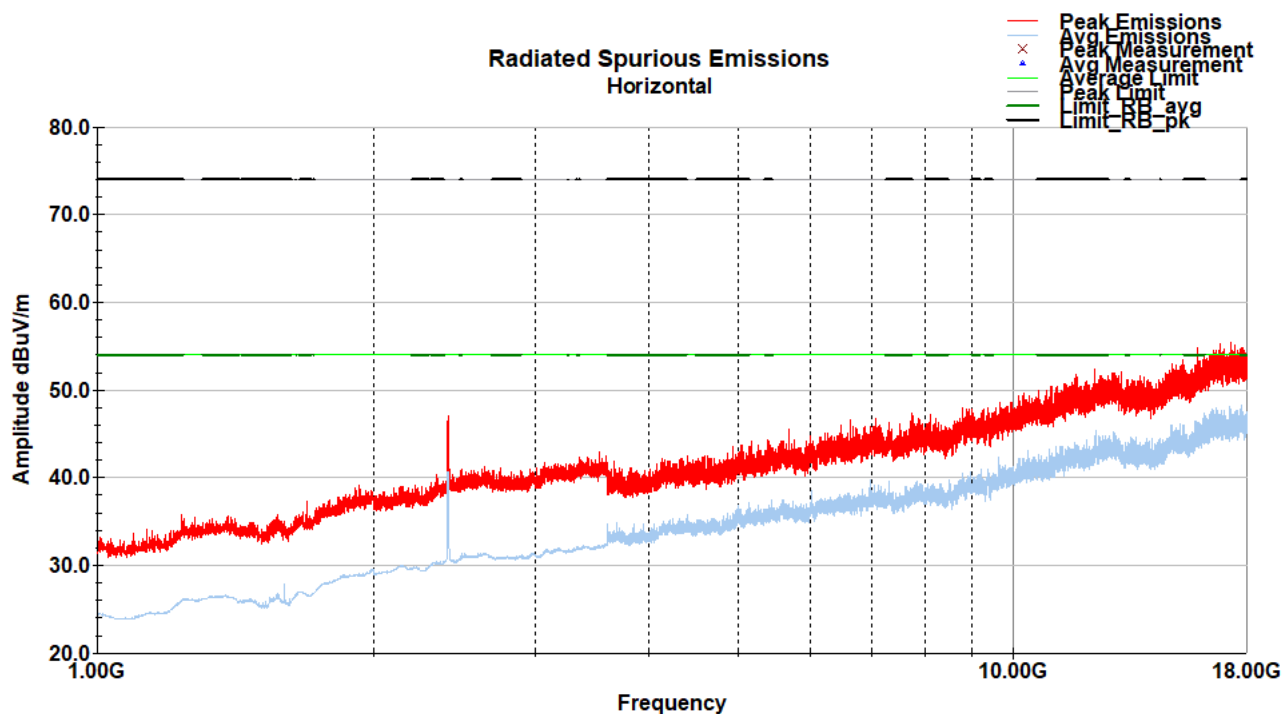
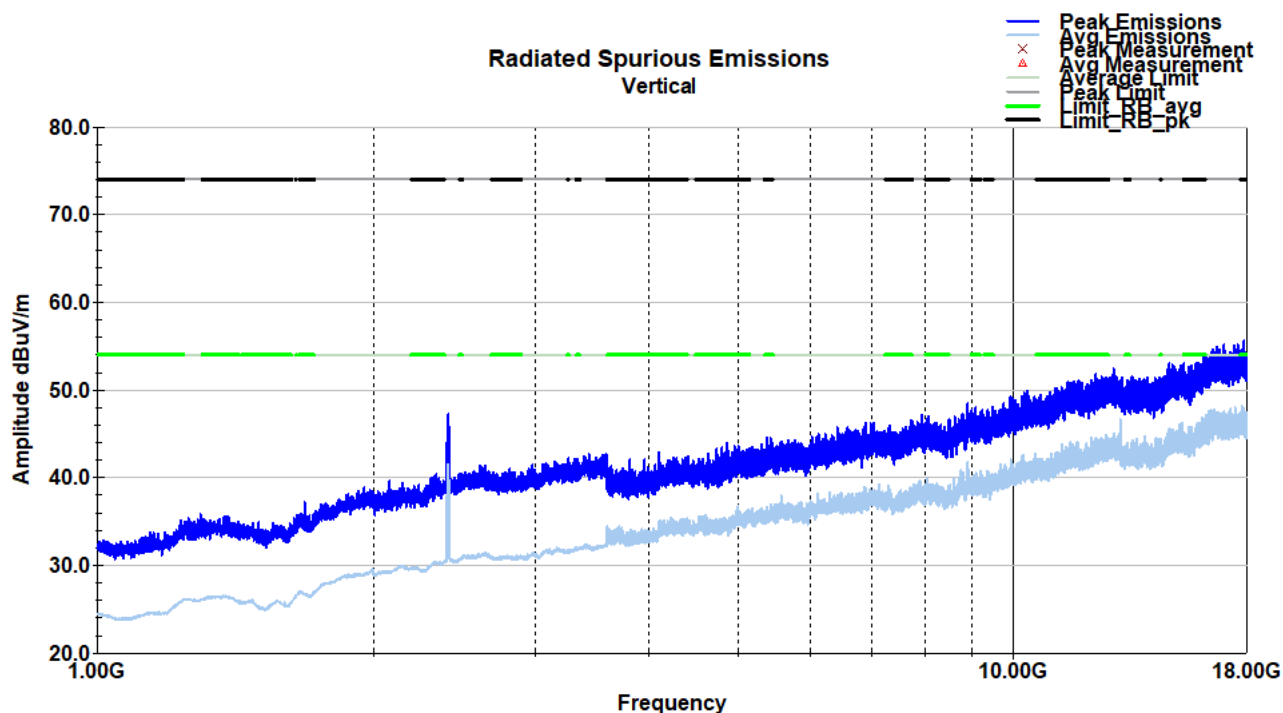


Frequency MHz	Raw QP (dBuV)	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	QP Value (dBuV/m)	Limit (dBuV/m)	Margin (dB)
30.47	32.4	V	337.0	154.0	21.8	0.9	31.1	24.0	40.0	-16.0
30.90	37.0	V	307.0	111.0	21.5	0.9	31.1	28.3	40.0	-11.7
44.68	47.6	V	319.0	100.0	11.3	1.1	31.1	28.9	40.0	-11.1
66.30	53.3	V	304.0	109.0	7.9	1.3	31.0	31.5	40.0	-8.5
70.92	52.6	V	307.0	100.0	8.1	1.4	31.0	31.0	40.0	-9.0
76.15	50.3	V	304.0	100.0	8.1	1.4	31.0	28.8	40.0	-11.2
QP Value = Level + AF + CL - Amp										
Margin = QP Value - Limit										

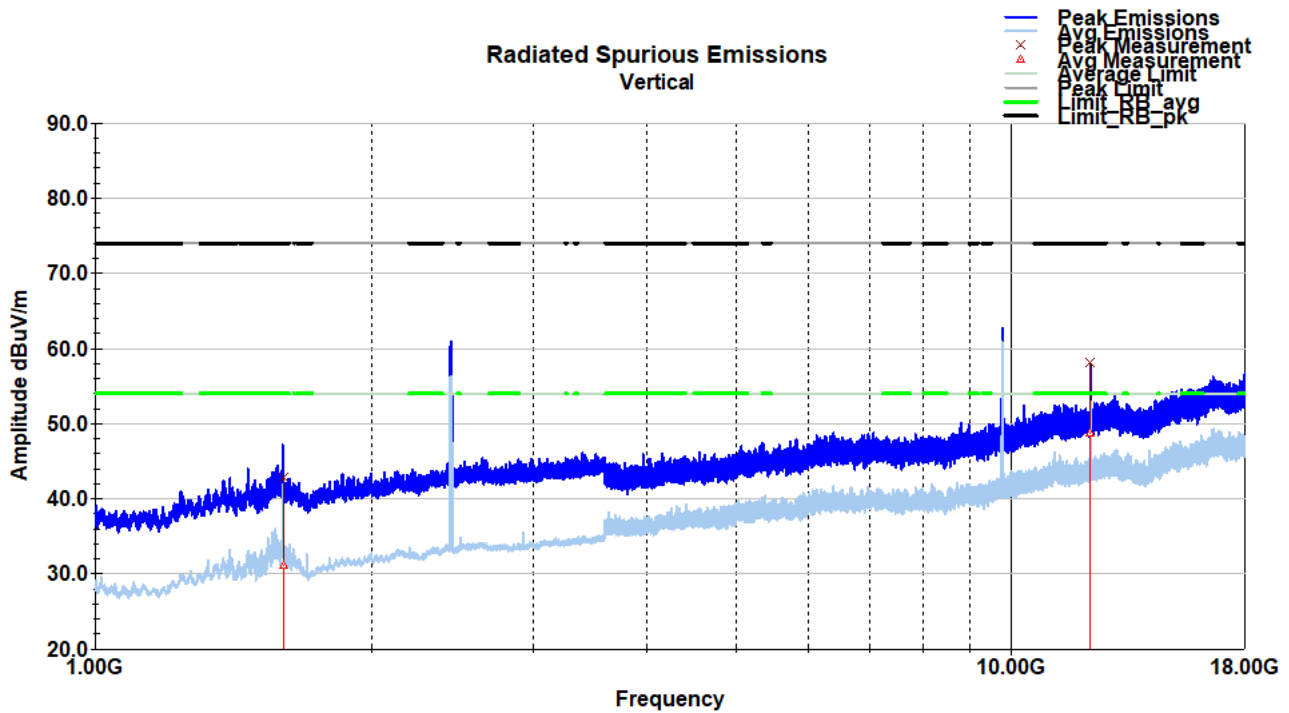


Frequency MHz	Raw QP (dBuV)	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	QP Value (dBuV/m)	Limit (dBuV/m)	Margin (dB)
31.66	32.1	H	248.0	381.0	20.9	0.9	31.1	22.9	40.0	-17.1
728.73	36.8	H	341.0	122.0	21.0	4.5	29.9	32.5	46.0	-13.5
735.00	37.2	H	328.0	101.0	21.1	4.5	29.9	32.9	46.0	-13.1
765.03	38.3	H	321.0	103.0	21.3	4.6	29.8	34.4	46.0	-11.6
798.94	29.2	H	333.0	130.0	22.0	4.7	29.7	26.2	46.0	-19.8
943.49	26.3	H	320.0	121.0	23.3	5.1	29.4	25.3	46.0	-20.7
QP Value = Level + AF + CL - Amp										
Margin = QP Value - Limit										

WLAN 11b Channel 1 (1-18GHz)



WLAN 11b Channel 7 (1-18GHz)



WLAN 11b Channel 7- (1-18GHz) Peak

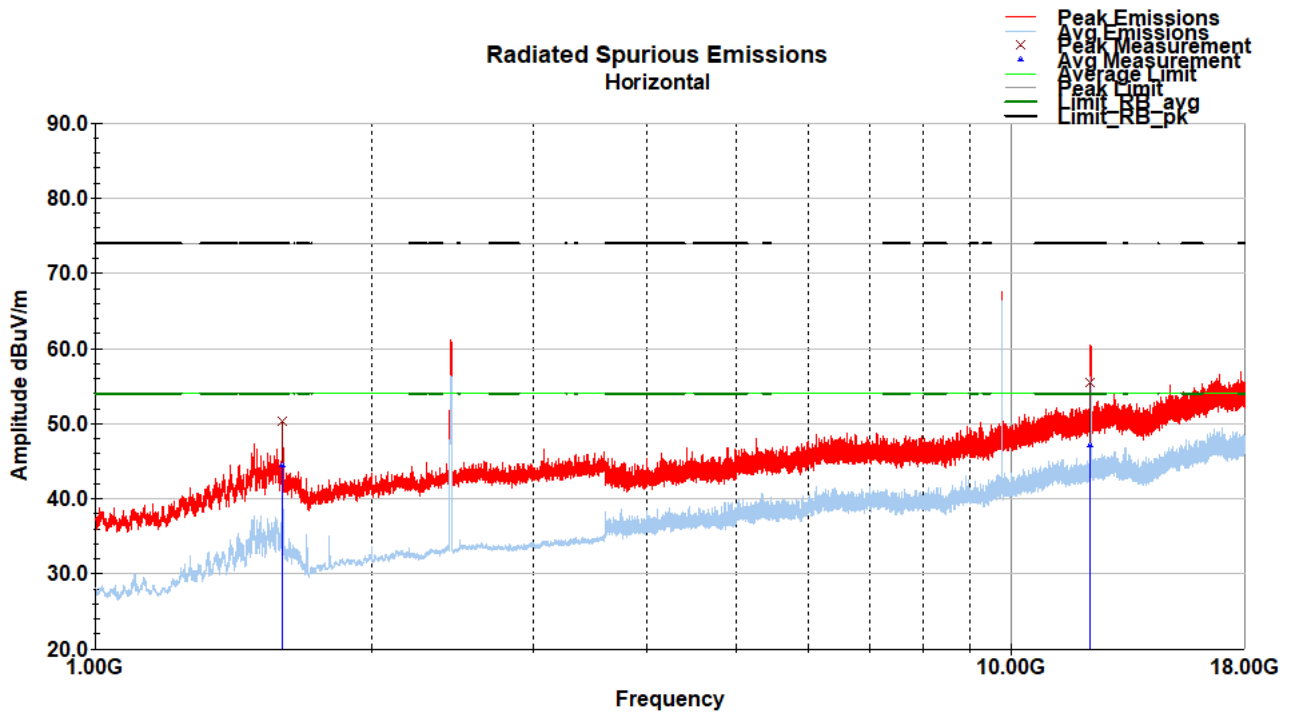
Frequency MHz	Raw Pk dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Pk dBuV/m	Limit dBuV/m	Margin dB
1602.20	48.3	V	189.0	203.0	28.1	1.6	35.1	42.9	74.0	-31.1
12204.60	50.3	V	148.0	201.0	39.0	4.7	35.8	58.1	74.0	-15.9

WLAN 11b Channel 7- (1-18GHz) Average

Frequency MHz	Raw Avg dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Avg dBuV/m	Limit dBuV/m	Margin dB
1602.20	36.6	V	189.0	203.0	28.1	1.6	35.1	31.2	54.0	-22.8
12204.60	40.9	V	148.0	201.0	39.0	4.7	35.8	48.8	54.0	-5.2

Note: Emission at 9478MHz was not in a restricted band of operation

WLAN 11b Channel 7 (1-18GHz)



WLAN 11b Channel 7- (1-18GHz) Peak

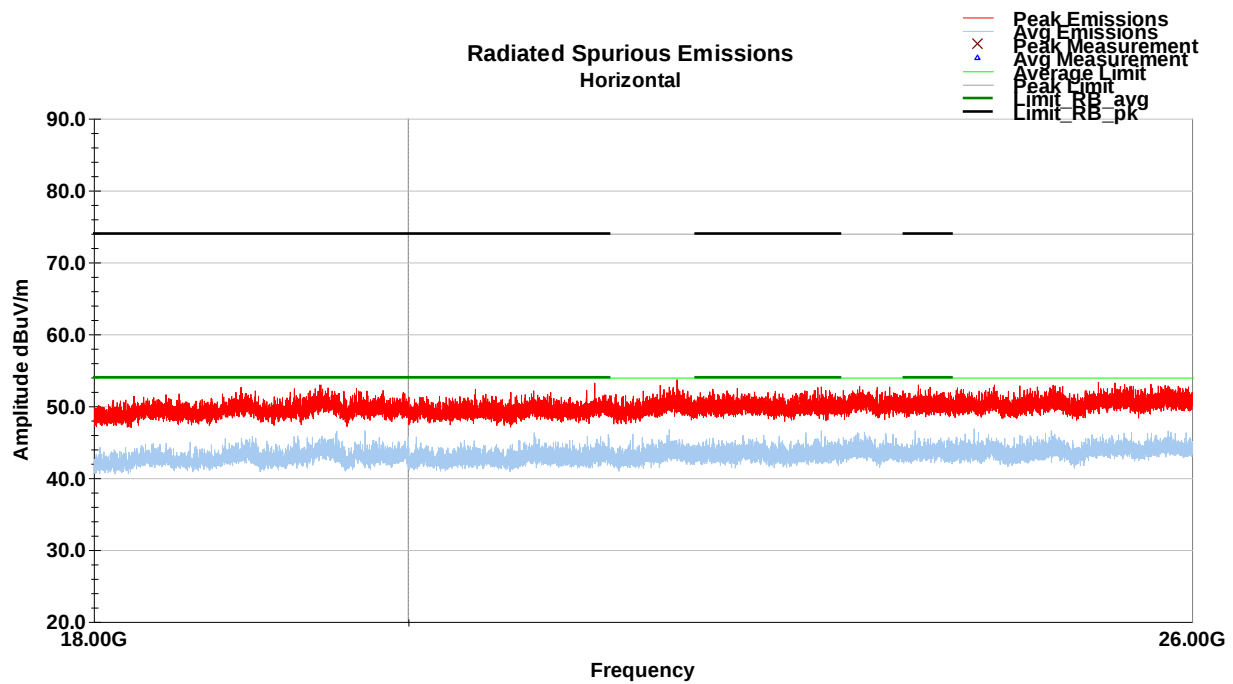
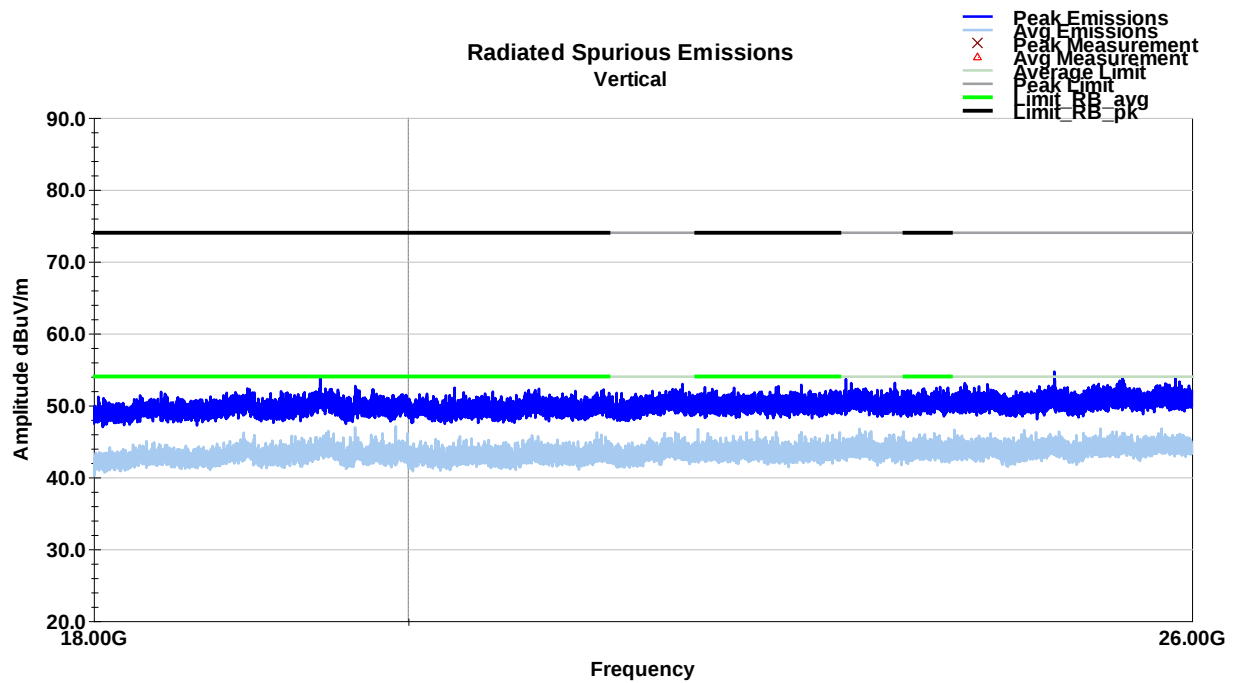
Frequency MHz	Raw Pk dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Pk dBuV/m	Limit dBuV/m	Margin dB
1599.92	55.8	H	25.0	193.0	28.0	1.6	35.1	50.4	74.0	-23.6
12204.96	47.7	H	157.0	144.0	39.0	4.7	35.8	55.6	74.0	-18.4

WLAN 11b Channel 7- (1-18GHz) Average

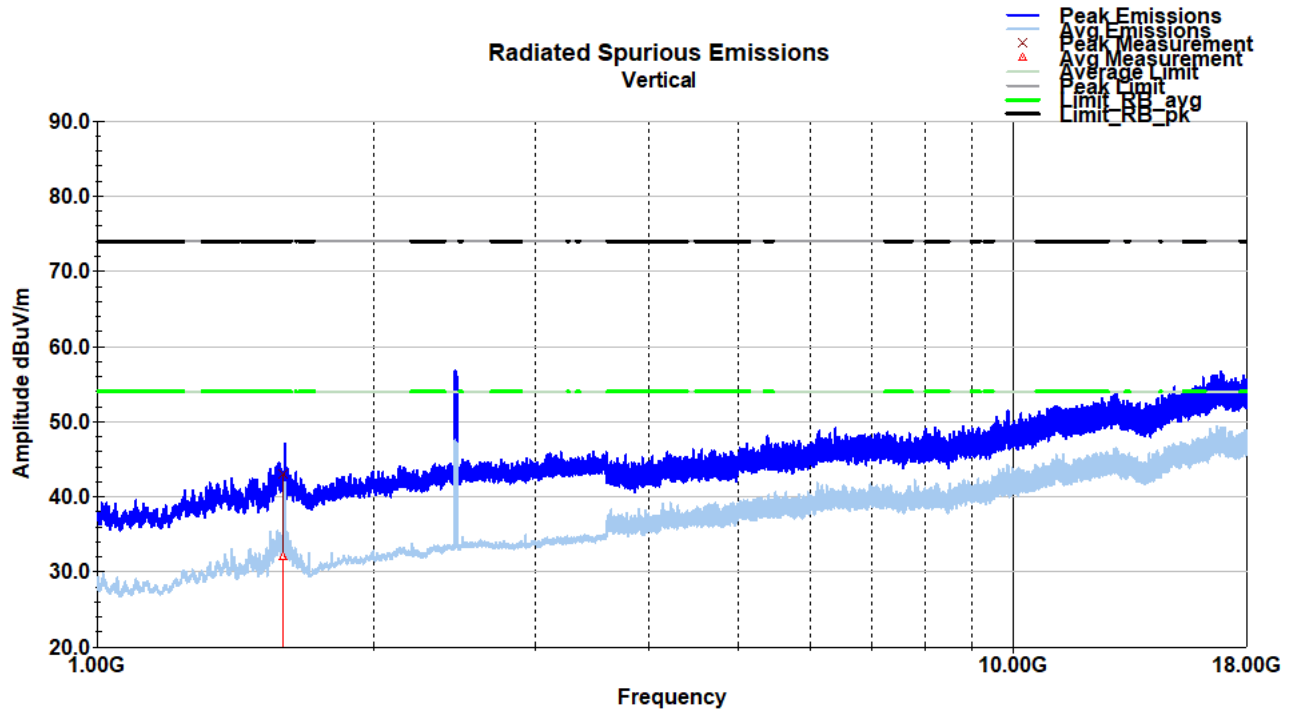
Frequency MHz	Raw Avg dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Avg Value dBuV/m	Limit dBuV/m	Margin (dB)
1599.92	49.9	H	25.0	193.0	28.0	1.6	35.1	44.5	54.0	-9.5
12204.96	39.3	H	157.0	144.0	39.0	4.7	35.8	47.2	54.0	-6.8

Note: Emission at 9478MHz was not in a restricted band of operation

WLAN 11b Channel 7 (18-26GHz)



WLAN 11b Channel 11 (1-18GHz)



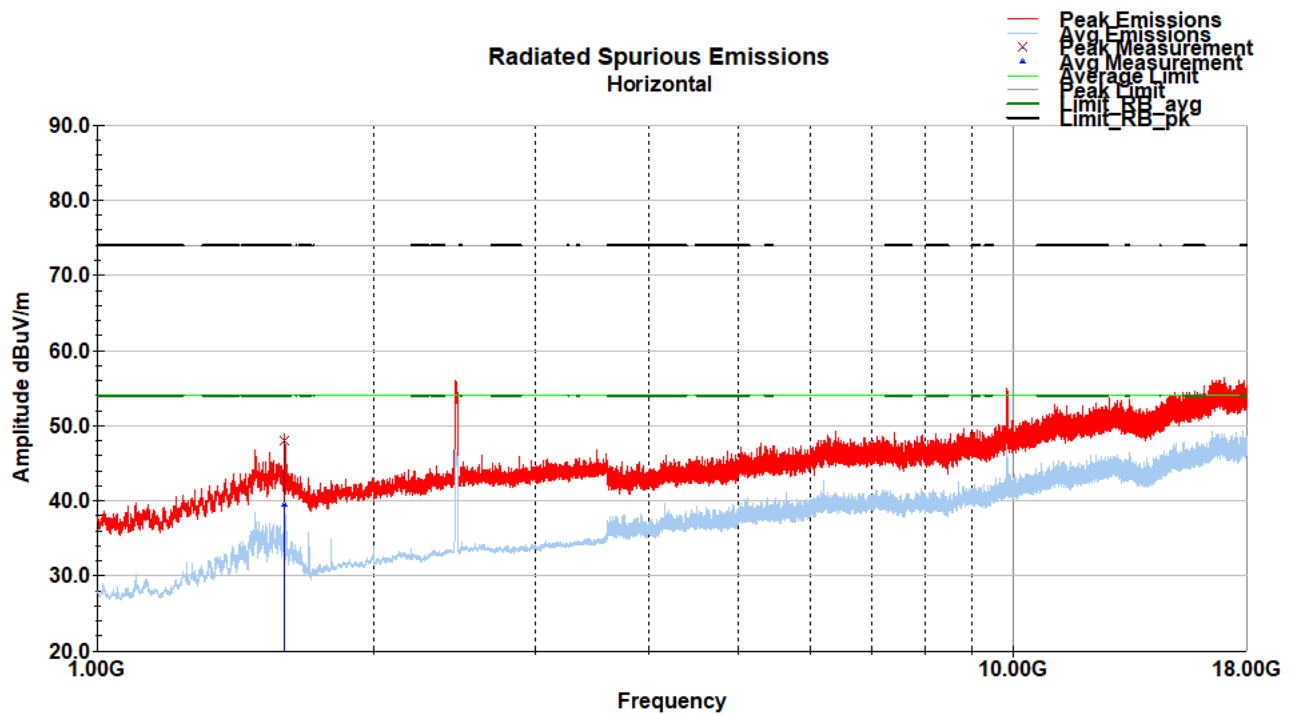
WLAN 11b Channel 11- (1-18GHz) Peak

Frequency MHz	Raw Pk dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Pk dBuV/m	Limit dBuV/m	Margin dB
1595.36	48.3	V	158.0	118.0	28.0	1.6	35.0	43.0	74.0	-31.0

WLAN 11b Channel 11- (1-18GHz) Average

Frequency MHz	Raw Avg dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Avg dBuV/m	Limit dBuV/m	Margin dB
1595.36	37.3	V	158.0	118.0	28.0	1.6	35.0	32.0	54.0	-22.0

WLAN 11b Channel 11 (1-18GHz)



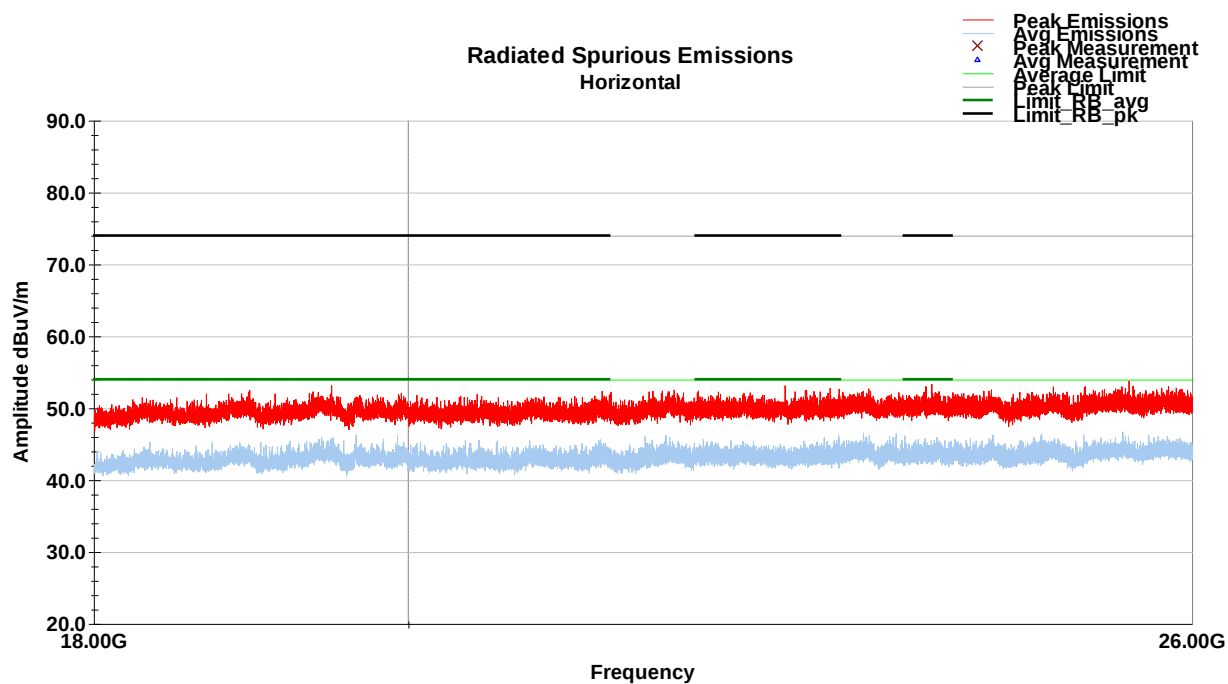
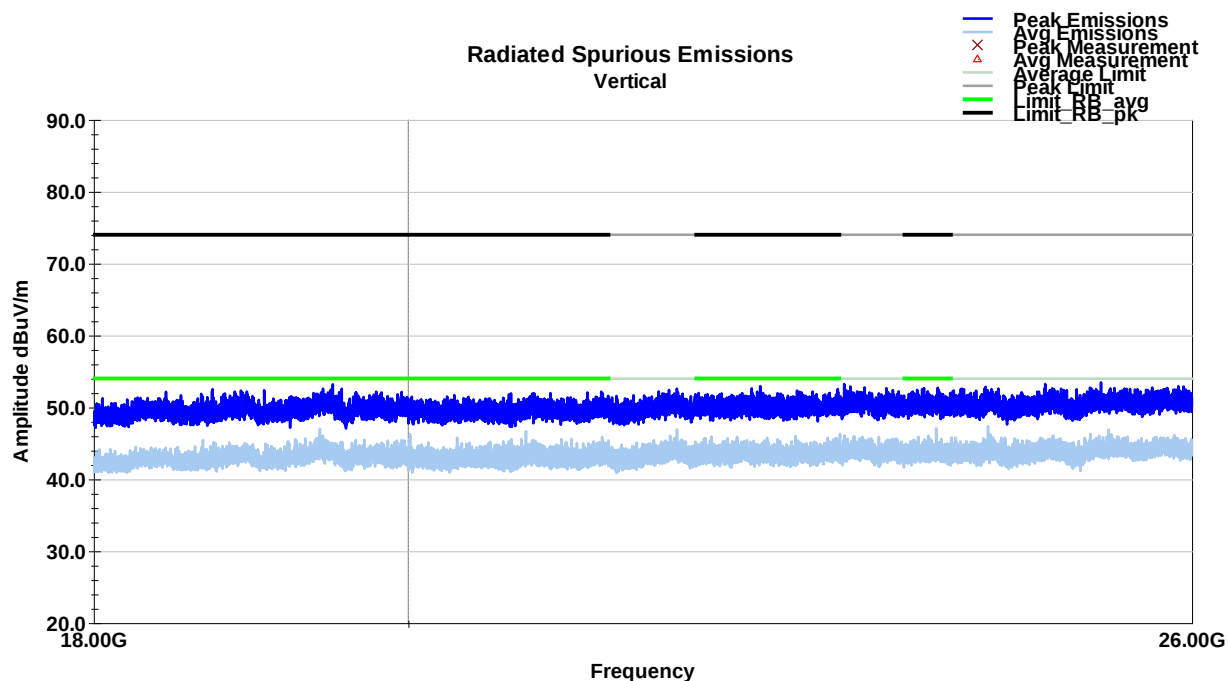
WLAN 11b Channel 11- (1-18GHz) Peak

Frequency MHz	Raw Pk dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Pk dBuV/m	Limit dBuV/m	Margin dB
1599.32	53.4	H	286.0	116.0	28.0	1.6	35.0	48.0	74.0	-26.0

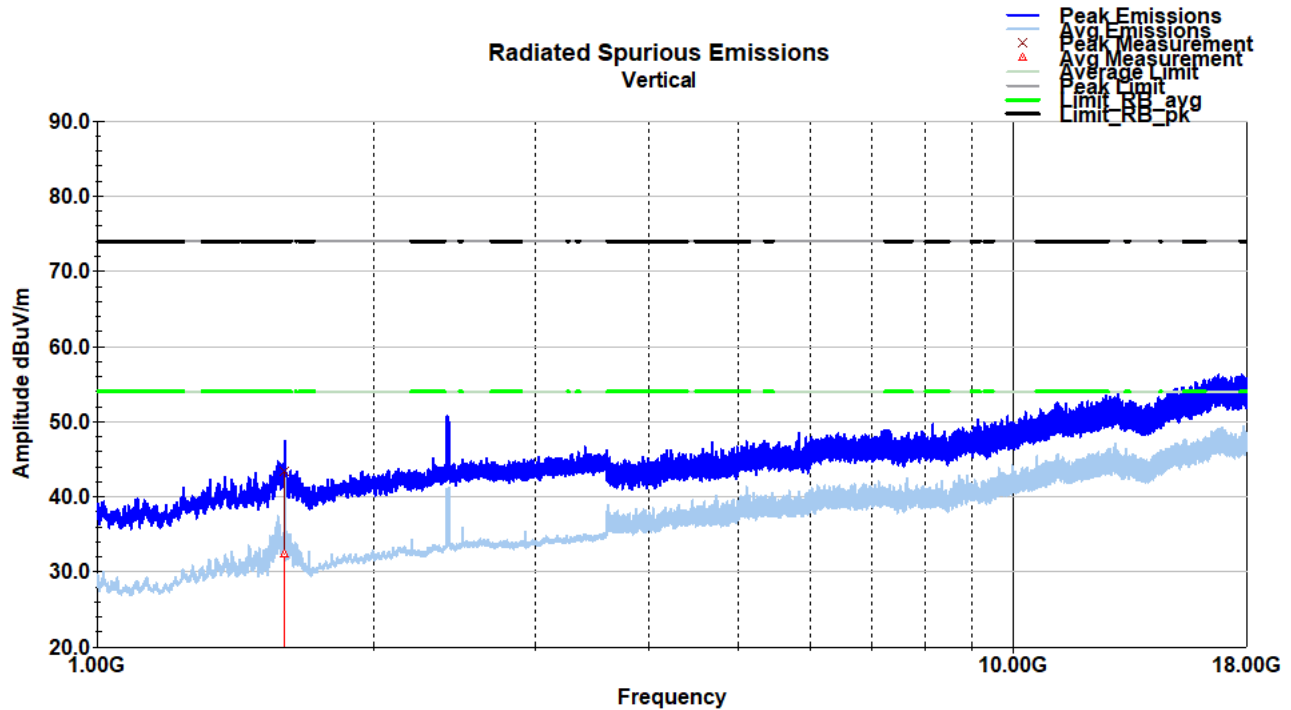
WLAN 11b Channel 11- (1-18GHz) Average

Frequency MHz	Raw Avg dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Avg Value dBuV/m	Limit dBuV/m	Margin dB
1599.32	44.9	H	286.0	116.0	28.0	1.6	35.0	39.5	54.0	-14.5

WLAN 11b Channel 11 (18-26GHz)



WLAN 11g Channel 1 (1-18GHz)



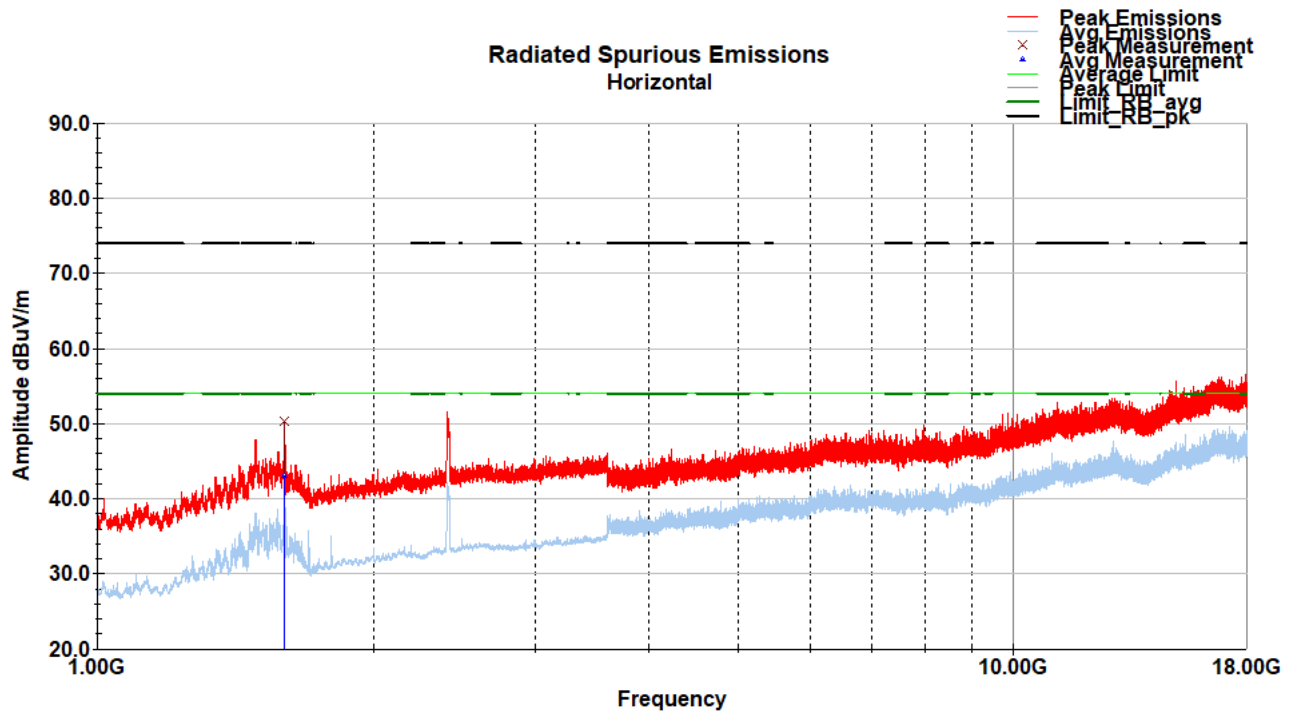
WLAN 11g Channel 1- (1-18GHz) Peak

Frequency MHz	Raw Pk dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Pk dBuV/m	Limit dBuV/m	Margin dB
1595.72	48.7	V	186.0	190.0	28.0	1.6	35.0	43.4	74.0	-30.6

WLAN 11g Channel 1- (1-18GHz) Average

Frequency MHz	Raw Avg dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Avg dBuV/m	Limit dBuV/m	Margin dB
1595.72	37.7	V	186.0	190.0	28.0	1.6	35.0	32.4	54.0	-21.6

WLAN 11g Channel 1 (1-18GHz)



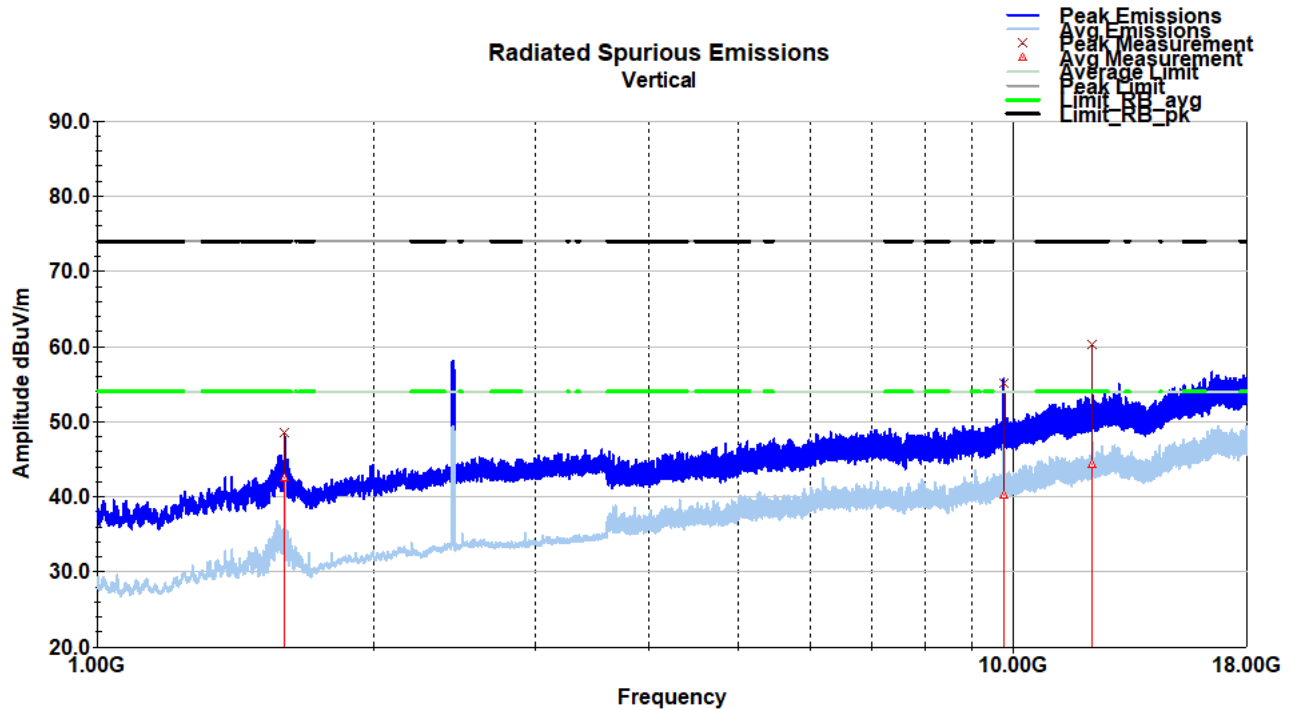
WLAN 11g Channel 1- (1-18GHz) Peak

Frequency MHz	Raw Pk dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Pk dBuV/m	Limit dBuV/m	Margin dB
1600.40	55.7	H	27.0	191.0	28.1	1.6	35.1	50.3	74.0	-23.7

WLAN 11g Channel 1- (1-18GHz) Average

Frequency MHz	Raw Avg dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Avg Value dBuV/m	Limit (dBuV/m)	Margin (dB)
1600.40	48.4	H	27.0	191.0	28.1	1.6	35.1	43.0	54.0	-10.9

WLAN 11g Channel 7 (1-18GHz)



WLAN 11g Channel 7- (1-18GHz) Peak

Frequency MHz	Raw Pk dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Pk dBuV/m	Limit dBuV/m	Margin dB
1600.04	53.9	V	169.0	170.0	28.1	1.6	35.1	48.5	74.0	-25.5
9759.68	49.5	V	206.0	159.0	36.9	3.9	35.2	55.1	Note 1	Note 1
12204.84	52.3	V	162.0	135.0	39.0	4.7	35.8	60.2	74.0	-13.8

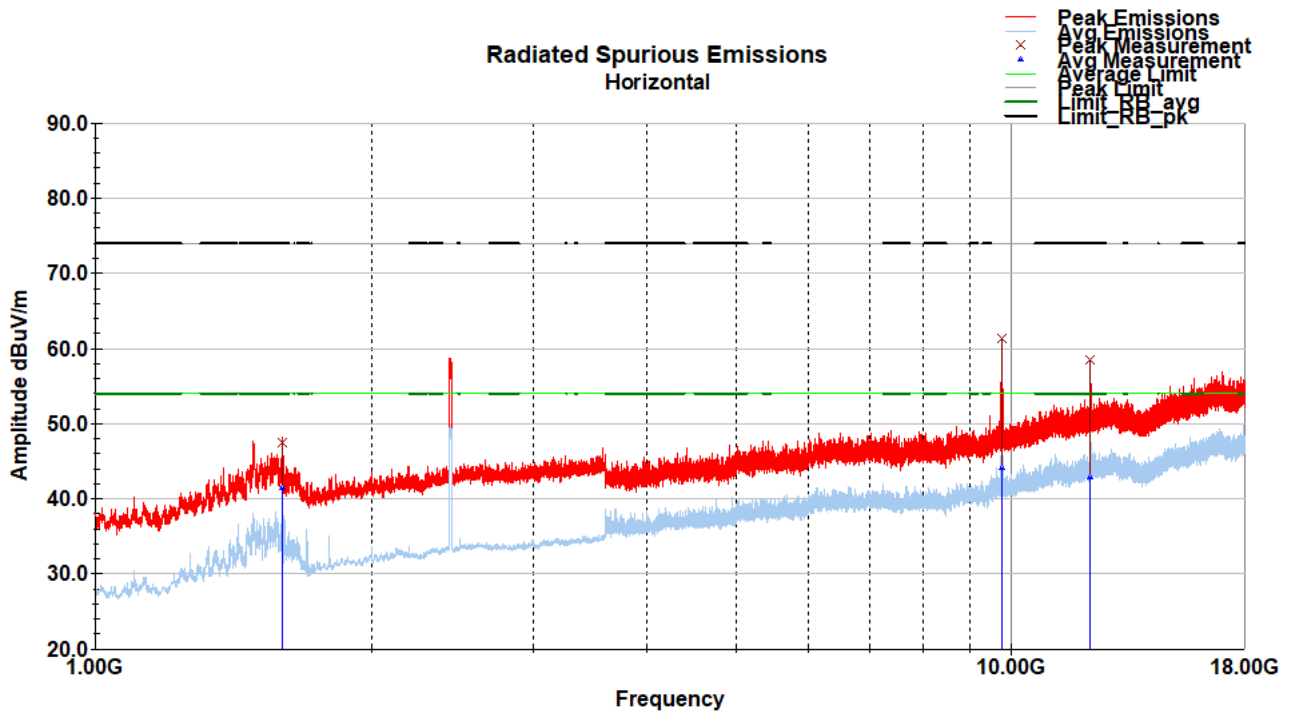
Note 1: This frequency is not in a restricted band and so is not required to meet the FCC 15.209 limits.

WLAN 11g Channel 7- (1-18GHz) Average

Frequency MHz	Raw Avg dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Avg dBuV/m	Limit dBuV/m	Margin (dB)
1600.04	48.0	V	169.0	170.0	28.1	1.6	35.1	42.6	54.0	-11.4
9759.68	34.5	V	206.0	159.0	36.9	3.9	35.2	40.2	Note 1	Note 1
12204.84	36.3	V	162.0	135.0	39.0	4.7	35.8	44.2	54.0	-9.8

Note 1: This frequency is not in a restricted band and so is not required to meet the FCC 15.209 limits.

WLAN 11g Channel 7 (1-18GHz)



WLAN 11g Channel 7- (1-18GHz) Peak

Frequency MHz	Raw Pk dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Pk dBuV/m	Limit dBuV/m	Margin dB
1600.04	52.9	H	26.0	111.0	28.1	1.6	35.1	47.5	74.0	-26.5
9762.92	55.6	H	177.0	100.0	36.9	3.9	35.2	61.3	Note 1	Note 1
12204.84	50.6	H	206.0	101.0	39.0	4.7	35.8	58.4	74.0	-15.6

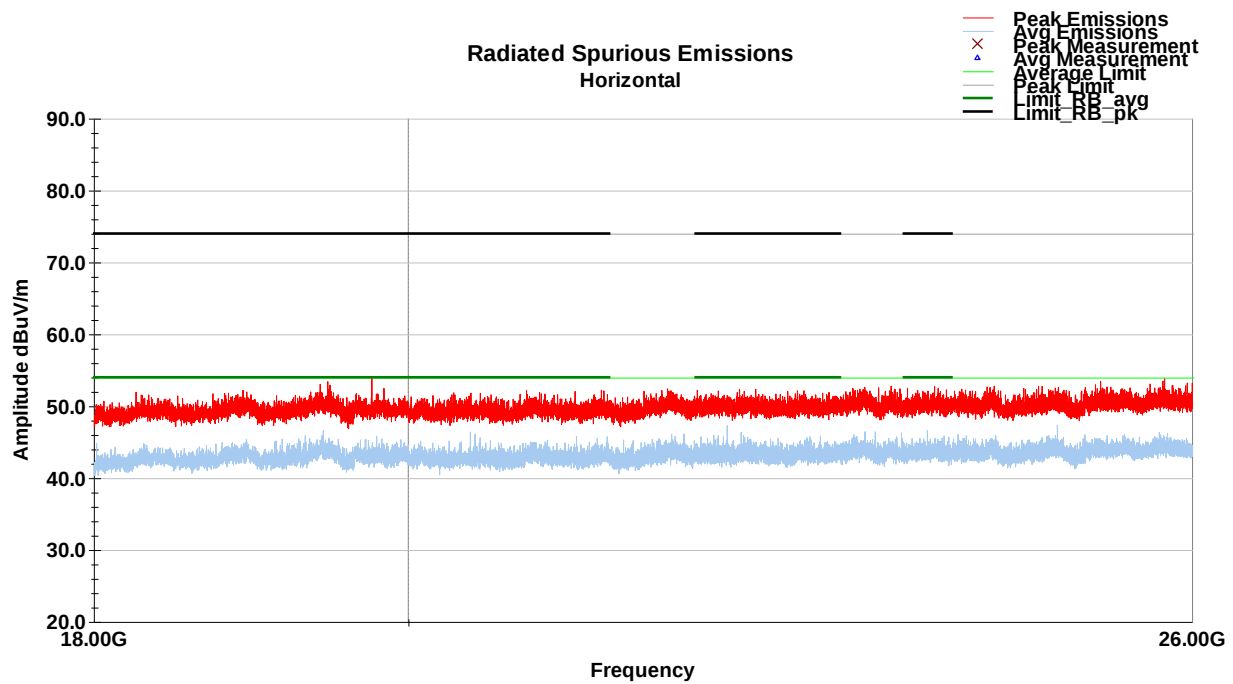
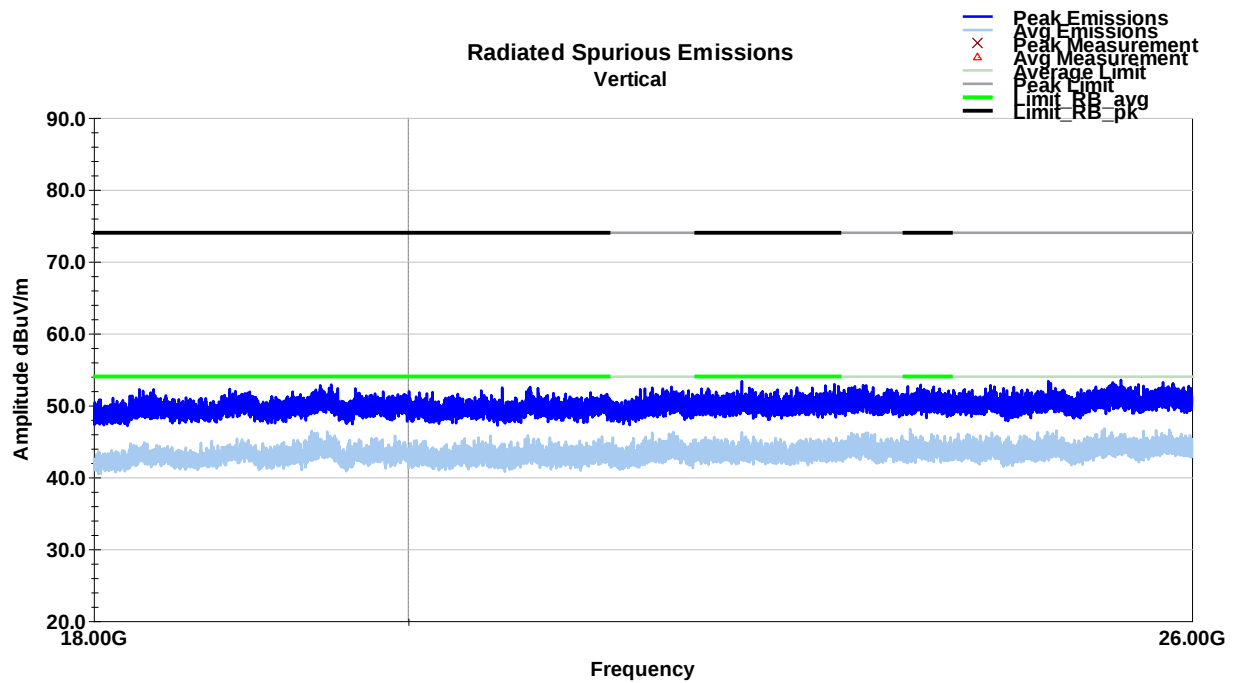
Note 1: This frequency is not in a restricted band and so is not required to meet the FCC 15.209 limits.

WLAN 11g Channel 7- (1-18GHz) Average

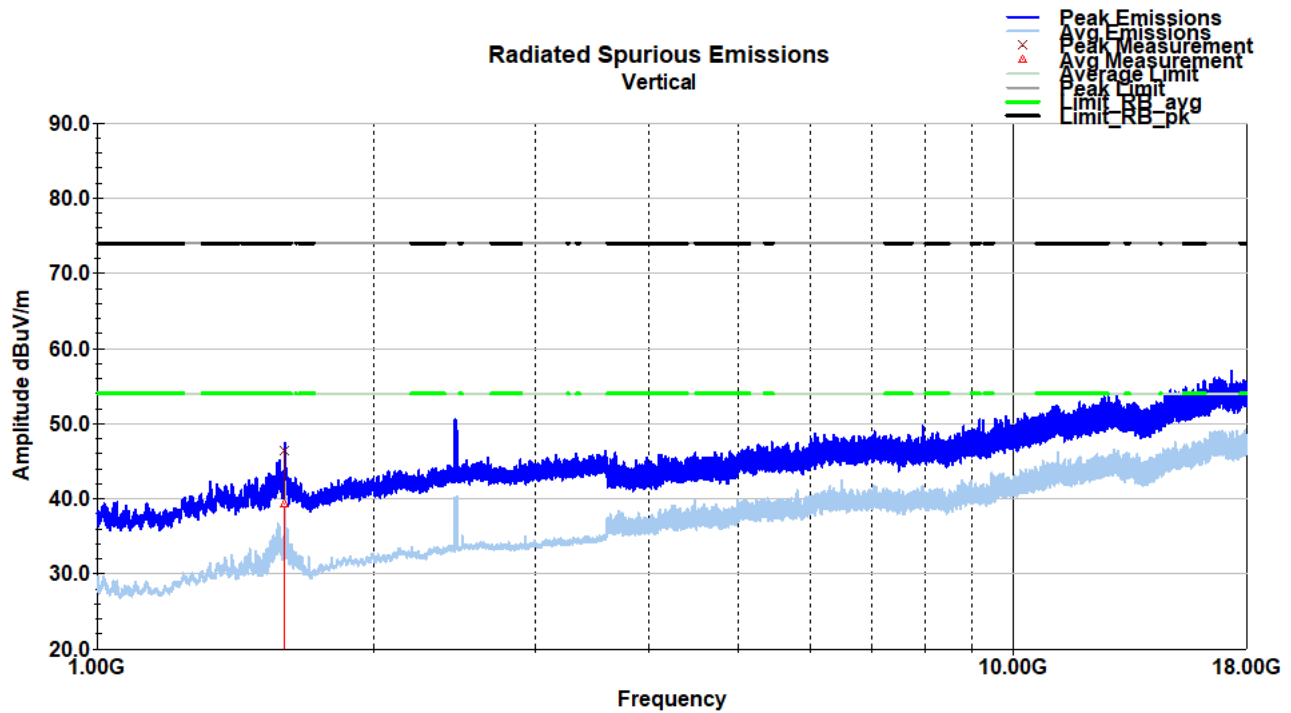
Frequency MHz	Raw Avg dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Avg Value dBuV/m	Limit dBuV/m	Margin dB
1600.04	46.8	H	26.0	111.0	28.1	1.6	35.1	41.4	54.0	-12.6
9762.92	38.5	H	177.0	100.0	36.9	3.9	35.2	44.2	Note 1	Note 1
12204.84	35.0	H	206.0	101.0	39.0	4.7	35.8	42.9	54.0	-11.1

Note 1: This frequency is not in a restricted band and so is not required to meet the FCC 15.209 limits.

WLAN 11g Channel 7 (18-26GHz)



WLAN 11g Channel 11 (1-18GHz)



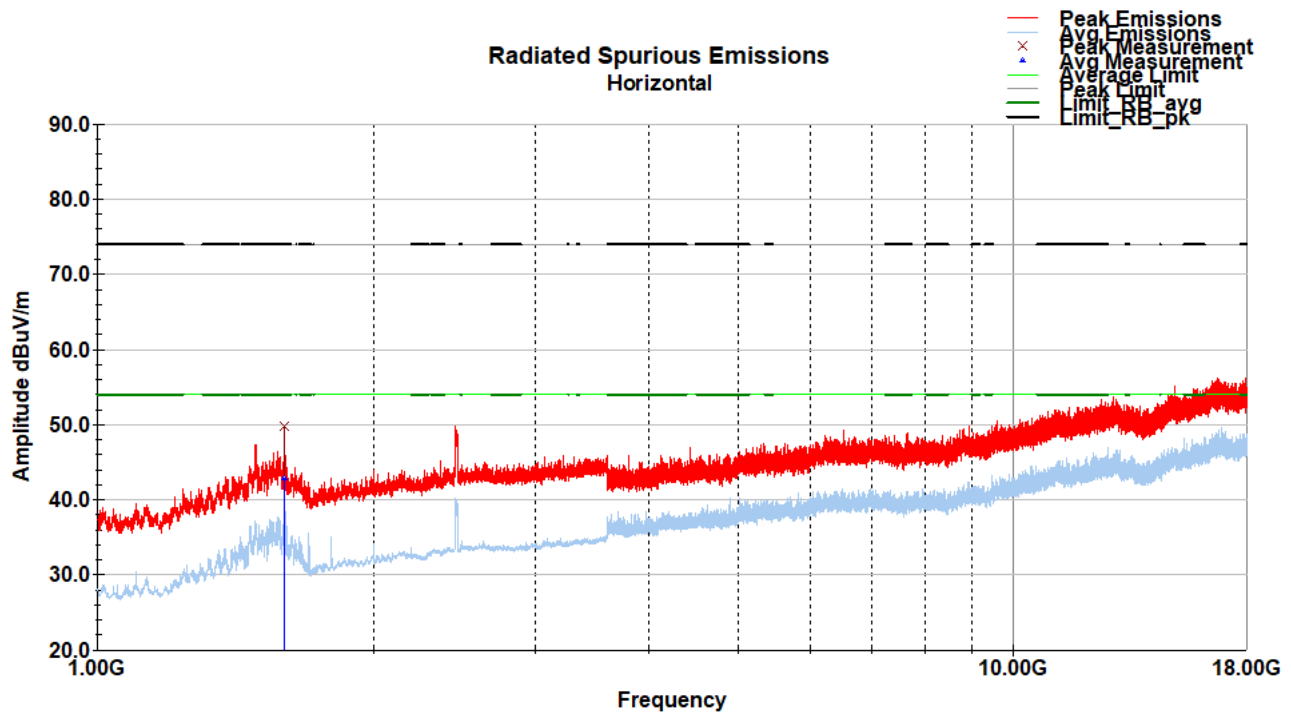
WLAN 11g Channel 11 (1-18GHz) Peak

Frequency MHz	Raw Pk dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Pk dBuV/m	Limit dBuV/m	Margin dB
1600.04	51.8	V	179.0	111.0	28.1	1.6	35.1	46.4	74.0	-27.6

WLAN 11g Channel 11- (1-18GHz) Average

Frequency MHz	Raw Avg dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Avg dBuV/m	Limit dBuV/m	Margin (dB)
1600.04	44.8	V	179.0	111.0	28.1	1.6	35.1	39.4	54.0	-14.6

WLAN 11g Channel 11 (1-18GHz)



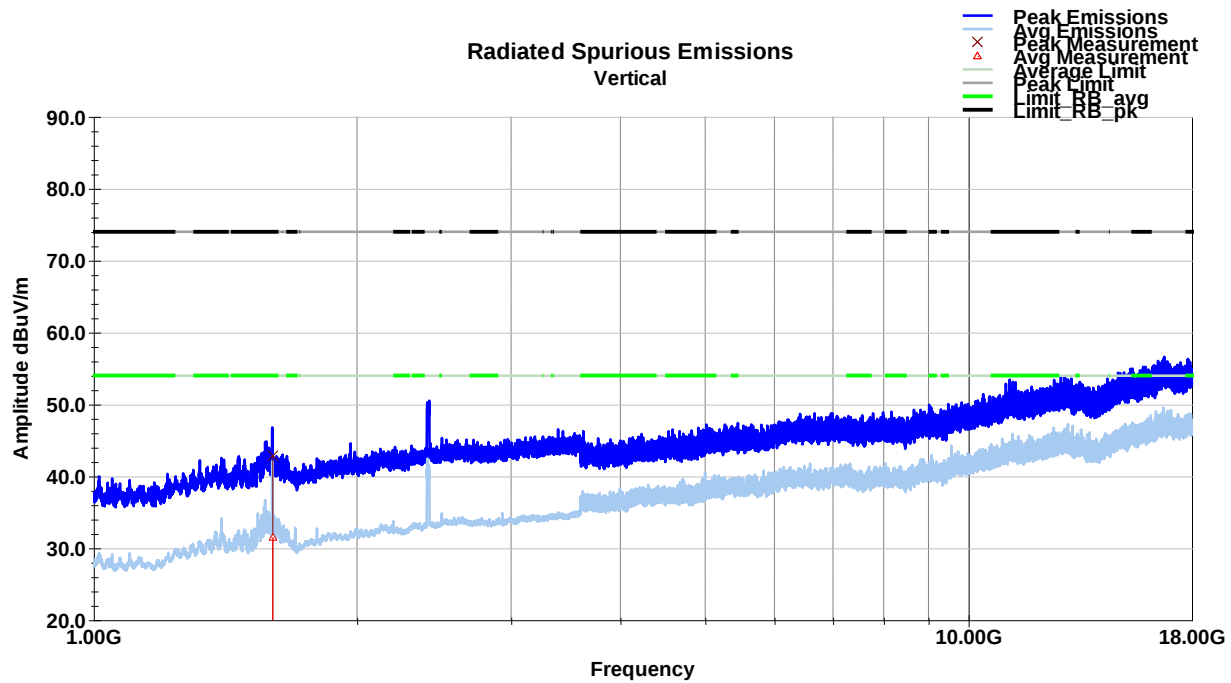
WLAN 11g Channel 11 (1-18GHz) Peak

Frequency MHz	Raw Pk dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Pk dBuV/m	Limit dBuV/m	Margin dB
1600.28	55.1	H	285.0	181.0	28.1	1.6	35.1	49.7	74.0	-24.3

WLAN 11g Channel 11- (1-18GHz) Average

Frequency MHz	Raw Avg dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Avg Value dBuV/m	Limit dBuV/m	Margin (dB)
1600.28	48.3	H	285.0	181.0	28.1	1.6	35.1	42.9	54.0	-11.0

WLAN 11n Channel 1 (1-18GHz)



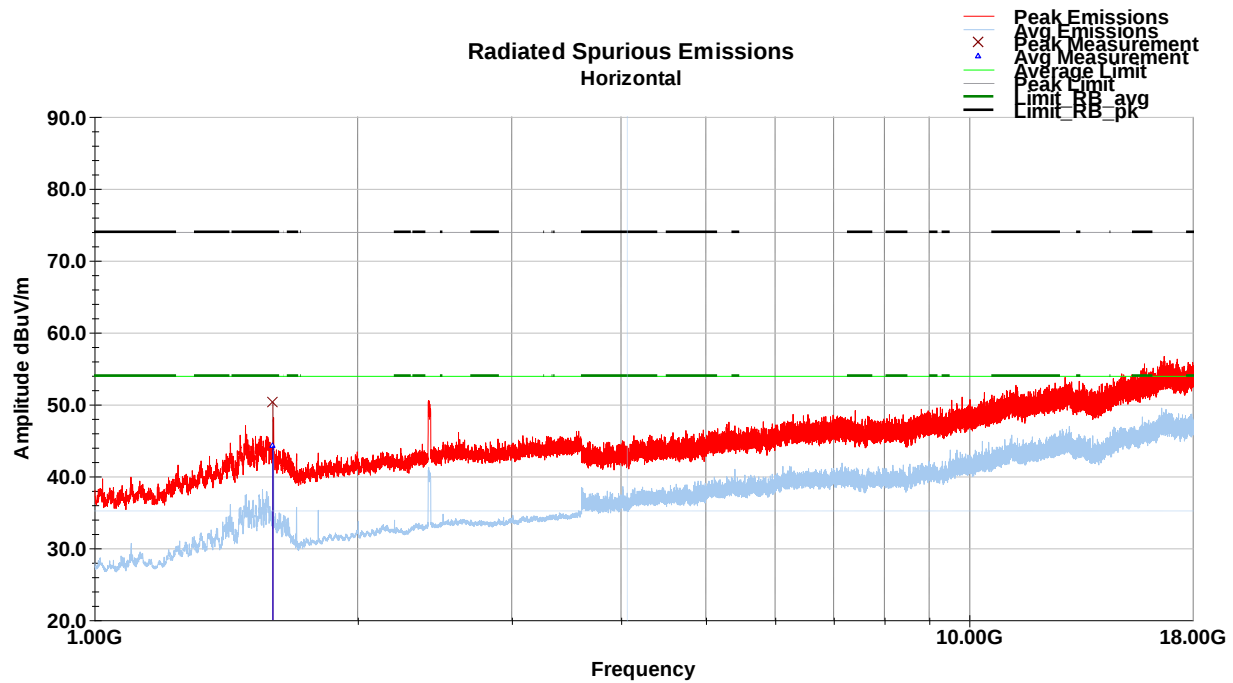
WLAN 11n Channel 1 (1-18GHz) Peak

Frequency MHz	Raw Pk dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Pk dBuV/m	Limit dBuV/m	Margin dB
1602.56	48.3	V	183.0	174.0	28.1	1.6	35.1	42.9	74.0	-31.1

WLAN 11n Channel 1- (1-18GHz) Average

Frequency MHz	Raw Avg dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Avg dBuV/m	Limit (dBuV/m)	Margin (dB)
1602.56	36.9	V	183.0	174.0	28.1	1.6	35.1	31.5	54.0	-22.5

WLAN 11n Channel 1 (1-18GHz)



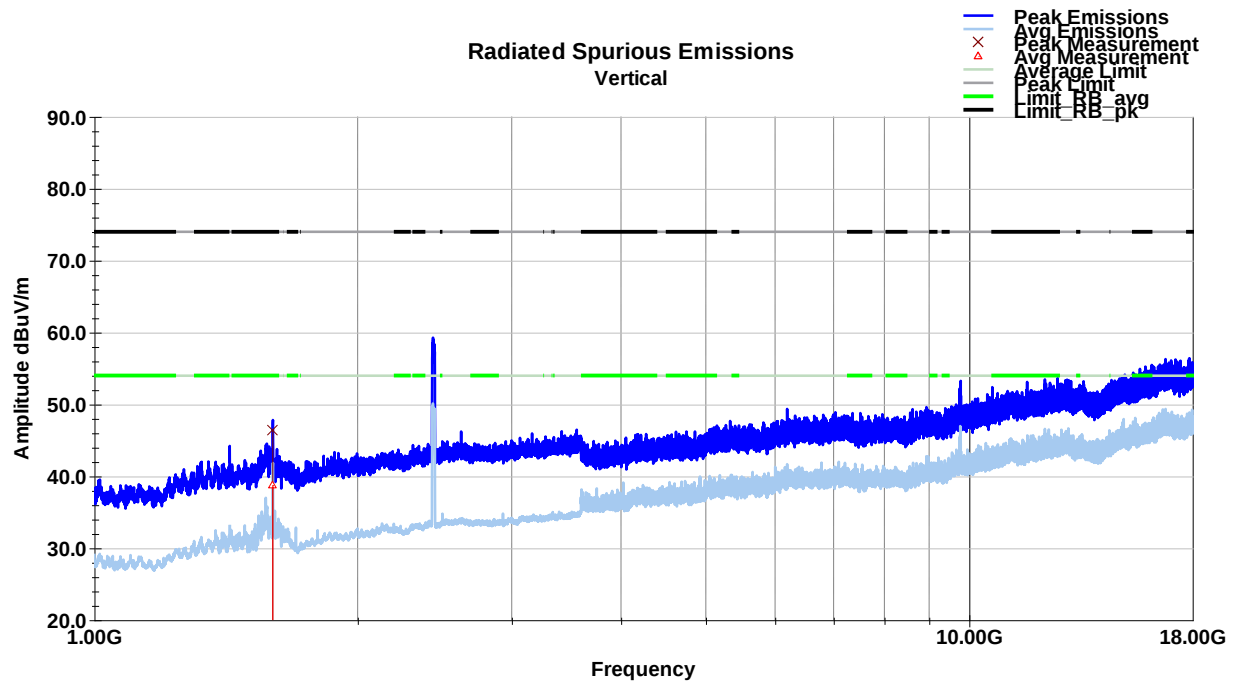
WLAN 11n Channel 1 (1-18GHz) Peak

Frequency MHz	Raw Pk dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Pk dBuV/m	Limit dBuV/m	Margin dB
1599.92	55.7	H	288.0	122.0	28.0	1.6	35.1	50.3	74.0	-23.7

WLAN 11n Channel 1- (1-18GHz) Average

Frequency MHz	Raw Avg dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Avg Value dBuV/m	Limit (dBuV/m)	Margin (dB)
1599.92	49.7	H	288.0	122.0	28.0	1.6	35.1	44.3	54.0	-9.7

WLAN 11n Channel 7 (1-18GHz)



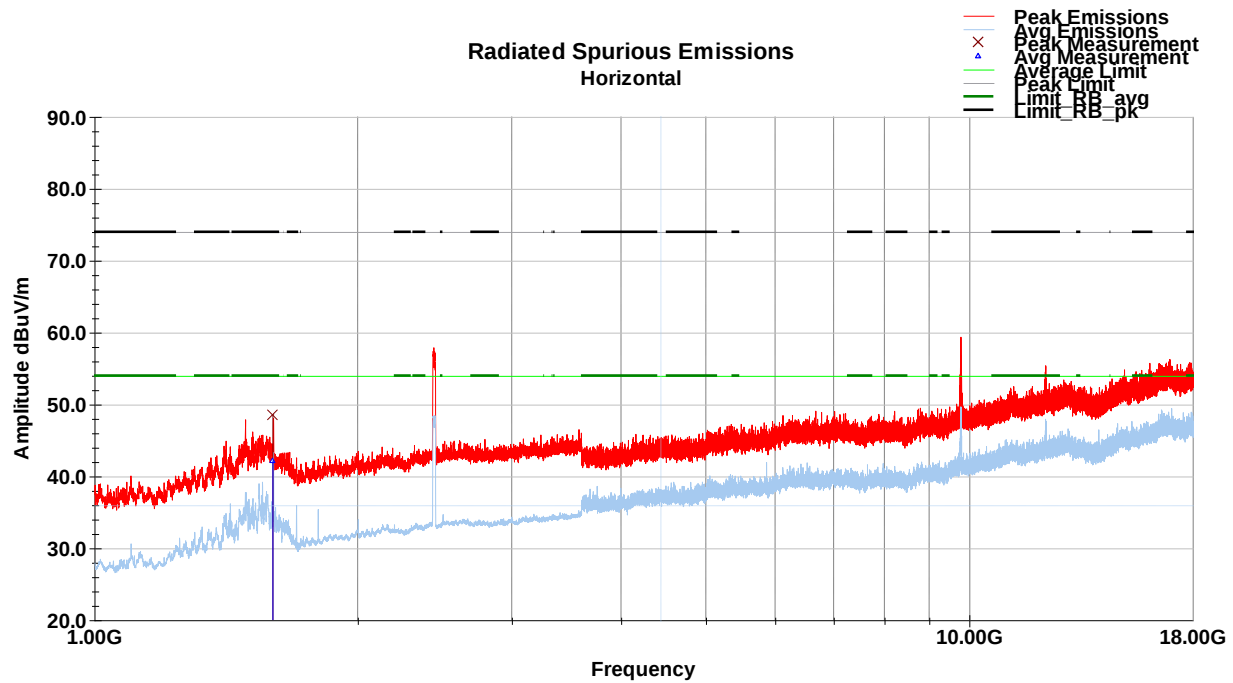
WLAN 11n Channel 7 (1-18GHz) Peak

Frequency MHz	Raw Pk dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Pk dBuV/m	Limit dBuV/m	Margin dB
1599.56	51.9	V	182.0	191.0	28.0	1.6	35.0	46.5	74.0	-27.5

WLAN 11n Channel 7- (1-18GHz) Average

Frequency MHz	Raw Avg dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Avg dBuV/m	Limit (dBuV/m)	Margin (dB)
1599.56	44.2	V	182.0	191.0	28.0	1.6	35.0	38.8	54.0	-15.2

WLAN 11n Channel 7 (1-18GHz)



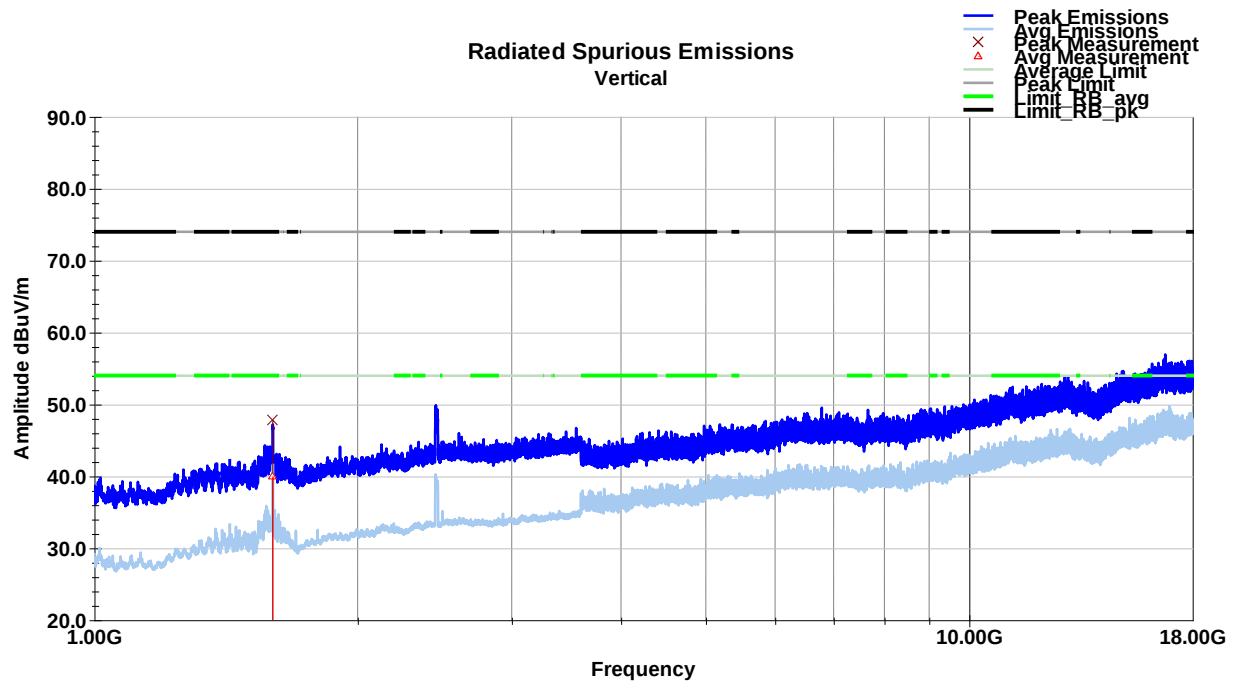
WLAN 11n Channel 7 (1-18GHz) Peak

Frequency MHz	Raw Pk dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Pk dBuV/m	Limit dBuV/m	Margin dB
1600.16	54.0	H	26.0	102.0	28.1	1.6	35.1	48.6	74.0	-25.4

WLAN 11n Channel 7- (1-18GHz) Average

Frequency MHz	Raw Avg dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Avg Value dBuV/m	Limit (dBuV/m)	Margin (dB)
1600.16	47.6	H	26.0	102.0	28.1	1.6	35.1	42.2	54.0	-11.8

WLAN 11n Channel 11 (1-18GHz)



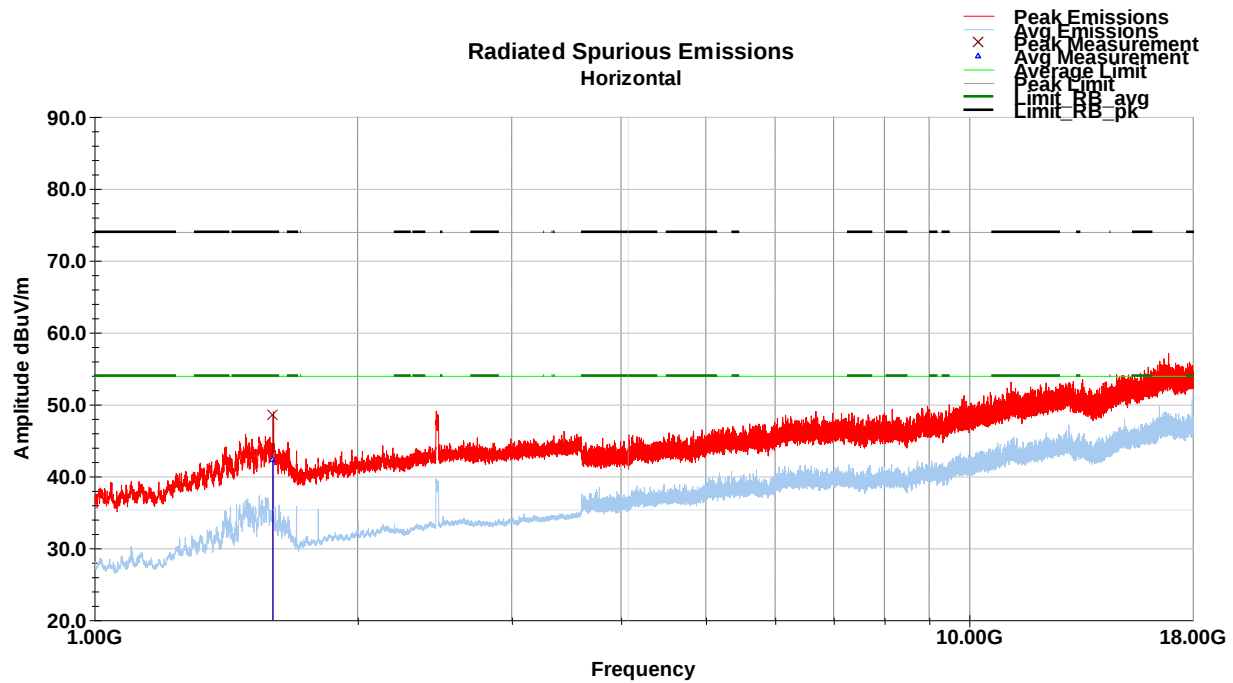
WLAN 11n Channel 11 (1-18GHz) Peak

Frequency MHz	Raw Pk dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Pk dBuV/m	Limit dBuV/m	Margin dB
1599.56	53.2	V	172.0	173.0	28.0	1.6	35.0	47.8	74.0	-26.2

WLAN 11n Channel 11- (1-18GHz) Average

Frequency MHz	Raw Avg dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Avg dBuV/m	Limit (dBuV/m)	Margin (dB)
1599.56	45.4	V	172.0	173.0	28.0	1.6	35.0	40.0	54.0	-14.0

WLAN 11n Channel 11 (1-18GHz)



WLAN 11n Channel 11 (1-18GHz) Peak

Frequency MHz	Raw Pk dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Final Pk dBuV/m	Limit dBuV/m	Margin dB
1599.92	54.0	H	299.0	111.0	28.0	1.6	35.1	48.6	74.0	-25.4

WLAN 11n Channel 11- (1-18GHz) Average

Frequency MHz	Raw Avg dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	Loss (dB)	Amp (dB)	Avg Value dBuV/m	Limit (dBuV/m)	Margin (dB)
1599.92	47.7	H	299.0	111.0	28.0	1.6	35.1	42.3	54.0	-11.6

4 Measurement Uncertainty

The measurement uncertainty figures are calculated in accordance with TR 100 028-1 [2] and correspond to an expansion factor (coverage factor) $k = 2$ (which provides confidence levels of 95.45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)).

Parameter	Expanded Uncertainty for Normal k factor equal to 2	
	Required	Laboratory Actual
Radio Frequency	$\pm 1 \times 10^{-5}$	$\pm 9.8 \times 10^{-8}$
total RF power, conducted	± 1.5 dB	± 1.2 dB
RF power density, conducted	± 3 dB	± 0.7 dB
spurious emissions, conducted	± 3 dB	± 2.1 dB
all emissions, radiated	± 6 dB	± 4.8 dB
temperature	$\pm 1^{\circ}\text{C}$	$\pm 0.5^{\circ}\text{C}$
humidity	± 5 %	± 3.5 %
DC and low frequency voltages	± 3 %	± 0.4 %
Conducted disturbance at mains port using AMN	± 3.4 dB	± 2.5 dB

5 Revision History

Revision Level	Description of changes	Revision Date
0	Initial release	14 February 2022
1	Corrected company address zip code from 10006 to 10001 in section 2.1	02 March 2022