Limited Test report

460990-7TRFWL

Date of issue: September 30, 2022

Applicant:
Cubic Transportation Systems

Product:
Bus Validator

Model:
Validator 3.0

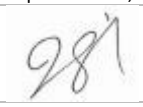
FCC ID: LVCVAL3 IC ID: 4387A-VAL3

Specifications:

- FCC 47 CFR Part 15, Subpart C – §15.407
  General technical requirements
- Industry Canada RSS-247, Issue 2
  Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

Lab and test locations

Company name	Nemko USA Inc.
Address	2210 Faraday Ave, Suite 150
City	Carlsbad
State	California
Postal code	92008
Country	USA
Telephone	+1 760 444 3500
Website	www.nemko.com
FCC Site Number	Test Firm Registration Number: 392943 Designation Number: US5058
ISED Test Site	2040B-3

Tested by	Lan Sayasane, EMC Test Engineer
Reviewed by	James Cunningham, EMC/MIL/WL Supervisor
Review date	September 30, 2022
Reviewer signature	

Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.
This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within Nemko USA's ISO/IEC 17025 accreditation.
This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

Copyright notification

Table of Contents

Section 1 Report summary

1.1 Applicant

Company name	Cubic Transportation Systems
Address	9233 Balboa Ave.
City	San Diego
State	CA
Postal/Zip code	92123
Country	USA

1.2 Manufacturer

Company name	Cubic Transportation Systems
Address	9233 Balboa Ave.
City	San Diego
State	CA
Postal/Zip code	92123
Country	USA

1.3 Test specifications

FCC 47 CFR Part 15, Subpart C – §15.407	General technical requirements
IC RSS-247 Issue 2	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

1.4 Test methods

ANSI C63.10-2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
558074 D01 DTS Measurement Guidance v03r02 (June 5, 2014)	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247

1.5 Exclusions

Testing includes limited transmitter power calculations, radiated spurious measurements, restricted band edge measurements, and undesirable emission measurements.

1.6 Statement of compliance

In the configuration tested, the EUT was found compliant.

Testing was performed against all relevant requirements of the test standard except as noted in section 1.5 above. Results obtained indicate that the product under test complies in full with the requirements tested. The test results relate only to the items tested.

See "Summary of test results" for full details.

1.7 Test report revision history

Table 1.7-1: *Test report revision history*

Revision #	Details of changes made to test report
460990-7TRFWL	Original report issued

Notes: None

Section 2 Summary of test results

2.1 FCC Part 15 Subpart C, general requirements

Part	Test description	Verdict
§15.207(a)	Conducted limits	Not tested
§15.31(e)	Variation of power source	Not tested
§15.203	Antenna requirement	Not tested

Notes: EUT is AC powered
The antenna is located within the protective cover of EUT on PCB

2.2 FCC Part 15.407

Part	Test description	Verdict
§15.407(a)	Power limits	Pass
§15.407(b)	Undesirable emission limits	Pass
§15.407(c)	Automatic transmission termination	Not tested
§15.407(d)	Operational restrictions for 6 GHz U-NII devices	Not applicable
§15.407(e)	Minimum 6 dB bandwidth	Not tested
§15.407(f)	Radio frequency radiation exposure requirements	Not tested
§15.407(g)	U-NII devices frequency stability	Not tested
§15.407(h)	Transmit Power Control (TPC) and Dynamic Frequency Selection (DFS)	Not tested
§15.407(i)	Operational Modes	Not tested
§15.407(j)	Operator Filing Requirement	Not tested
§15.407(k)	Automated frequency coordination (AFC) system	Not applicable
§15.407(l)	Incumbent Protection by AFC system: Fixed Microwave Services	Not applicable
§15.407(m)	Incumbent Protection by AFC system: Radio Astronomy Services	Not applicable
§15.407(n)	Incumbent Protection by AFC system: Fixed-Satellite Services	Not applicable

2.3 IC RSS-247, Issue 2

Part	Test description	Verdict
6.2	Power and unwanted emission limits	Pass
6.3	Dynamic frequency selection for devices operating in the bands 5250-5350 MHz, 5470-5600 MHz, and 5650-5725 MHz	Not tested
6.4	Additional requirements	Not tested

2.4 IC RSS-GEN, Issue 5

Part	Test description	Verdict
7.3	Receiver radiated emission limits	Not applicable
7.4	Receiver conducted emission limits	Not applicable
8.8	Power Line Conducted Emissions Limits for License-Exempt Radio Apparatus	Not tested

2.5 Scope of limited testing

The EUT supports the following wireless technologies:

- IEEE 802.11a: 20 MHz bandwidth
- IEEE 802.11n: 20 and 40 MHz bandwidths
- IEEE 802.11ac: 20, 40 and 80 MHz bandwidths

The EUT supports the following frequency bands:

- U-NII-1: 5150-5250 MHz
- U-NII-2A: 5250-5350 MHz
- U-NII-2C: 5470-5725 MHz
- U-NII-3: 5725-5850 MHz

The following table summarizes the scope of the limited testing performed:

Clause	Tests
§15.407(a) power limits	Calculation only
§15.407(b) restricted band edge emissions	IEEE 802.11a, U-NII-1, Low band edge IEEE 802.11a, U-NII-2A, High band edge IEEE 802.11a, U-NII-2C, Low band edge
§15.407(b) unwanted emissions, 30 – 1000 MHz	IEEE 802.11a, Channel 44 (5220 MHz) IEEE 802.11n 20 MHz bandwidth, Channel 44 (5220 MHz) IEEE 802.11n 40 MHz bandwidth, Channel 46 (5230 MHz) IEEE 802.11ac 20 MHz bandwidth Channel 44 (5220 MHz) IEEE 802.11ac 40 MHz bandwidth Channel 149 (5745 MHz) IEEE 802.11ac 80 MHz bandwidth Channel 144 (5720 MHz)
§15.407(b) unwanted emissions, 1 – 6 GHz	IEEE 802.11a, Channel 44 (5220 MHz) IEEE 802.11n 20 MHz bandwidth, Channel 44 (5220 MHz) IEEE 802.11n 40 MHz bandwidth, Channel 46 (5230 MHz) IEEE 802.11ac 20 MHz bandwidth Channel 44 (5220 MHz) IEEE 802.11ac 40 MHz bandwidth Channel 138 (5590 MHz) IEEE 802.11ac 80 MHz bandwidth Channel 58 (5290 MHz)
§15.407(b) unwanted emissions, 6 – 18 GHz	IEEE 802.11a, Channel 44 (5220 MHz) IEEE 802.11n 20 MHz bandwidth, Channel 44 (5220 MHz) IEEE 802.11n 40 MHz bandwidth, Channel 46 (5230 MHz) IEEE 802.11ac 20 MHz bandwidth Channel 44 (5220 MHz) IEEE 802.11ac 40 MHz bandwidth Channel 138 (5590 MHz) IEEE 802.11ac 80 MHz bandwidth Channel 58 (5290 MHz)
§15.407(b) unwanted emissions, 18 – 26 GHz	IEEE 802.11a, Channel 44 (5220 MHz) IEEE 802.11n 20 MHz bandwidth, Channel 44 (5220 MHz) IEEE 802.11n 40 MHz bandwidth, Channel 46 (5230 MHz) IEEE 802.11ac 20 MHz bandwidth Channel 44 (5220 MHz) IEEE 802.11ac 40 MHz bandwidth Channel 138 (5590 MHz) IEEE 802.11ac 80 MHz bandwidth Channel 58 (5290 MHz)
§15.407(b) unwanted emissions, 26 – 40 GHz	IEEE 802.11a, Channel 44 (5220 MHz) IEEE 802.11n 20 MHz bandwidth, Channel 44 (5220 MHz) IEEE 802.11n 40 MHz bandwidth, Channel 46 (5230 MHz) IEEE 802.11ac 20 MHz bandwidth Channel 44 (5220 MHz) IEEE 802.11ac 40 MHz bandwidth Channel 138 (5590 MHz) IEEE 802.11ac 80 MHz bandwidth Channel 58 (5290 MHz)

Section 3 Equipment under test (EUT) details

3.1 Sample information

Receipt date	May 2, 2022
Nemko sample ID number	NEx: 463869

3.2 EUT information

Product name	Radio Module
Model	JODY-W263
Serial number	N/A
Part number	N/A

3.3 Technical information

Frequency bands	U-NII-1: 5150 – 5250 MHz U-NII-2A: 5250 – 5350 MHz U-NII-2C: 5470 – 5725 MHz U-NII-3: 5725 – 5850 MHz
Type of modulation	IEEE 802.11a IEEE 802.11n (20 and 40 MHz bandwidths) IEEE 802.11ac (20, 40 and 80 MHz bandwidths)
Power requirements	24 V DC powered via AC/DC adaptor
Antenna information	4.5 dBi gain, Pulse Chip antenna PN: W3006

3.4 EUT exercise and monitoring details

The EUT was controlled by support laptop running scripts to configure the EUT to transmit 802.11a, 802.11n, and 802.11ax signals at max power while on the Low, Middle, and High channels—as applicable per test.

Table 3.4-1: *EUT sub assemblies*

Description	Brand name	Model/Part number	Serial number	Rev.
Bus Validator	Cubic Transportation Systems	Validator 3	n/a	n/a

Table 3.4-2: *EUT interface ports*

Description	Qty.
Serial cable	1
Ethernet cable	1
DC input	1

Table 3.4-3: *Support equipment*

Description	Brand name	Model/Part number	Serial number	Rev.
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	143306	n/a
AC/DC adaptor	XP Power	VER36US240-JA	n/a	n/a
PC	Dell	Latitude 7480	ID IT2381	n/a

Table 3.4-4: *Inter-connection cables*

Cable description	From	To	Length (m)
DC power	EUT (Equipment Under Test)	Power source	2.0 m
Serial cable	EUT (Equipment Under Test)	PC	1.5 m

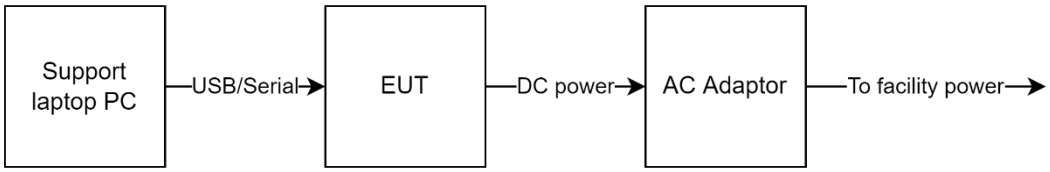


Figure 3.4-1: Test setup diagram

Section 4 Engineering considerations

4.1 Modifications incorporated in the EUT

There were no modifications performed to the EUT during this assessment.

4.2 Technical judgment

None

4.3 Deviations from laboratory tests procedures

No deviations were made from laboratory procedures.

Section 5 Test conditions

5.1 Atmospheric conditions

Temperature	15-30 °C
Relative humidity	20-75 %
Air pressure	86–106 kPa

When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.

5.2 Power supply range

The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages ±5 %, for which the equipment was designed.

Section 6 Measurement uncertainty

6.1 Uncertainty of measurement

Measurement uncertainty budgets for the tests are detailed below. Measurement uncertainty calculations assume a coverage factor of K = 2 with 95% certainty.

Test name	Measurement uncertainty, dB
Radiated spurious emissions	3.78
Powerline conducted emissions	1.38
All antenna port measurements	0.55
Conducted spurious emissions	1.13

Section 7 Test Equipment

7.1 Test equipment

Table 7.1-1: *Test Equipment List*

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
EMI Test Receiver	Rohde & Schwarz	ESU40	E1131	1 year	02-Mar-2023
System Controller	Sunol Sciences	SC 104V	E1191	NCR	NCR
Antenna, Bilog	Schaffner-Chase	CBL 6111D	1763	2 years	18-May-2022
Antenna, DRG Horn	ETS-Lindgren	3117-PA	E1139	2 years	19-Apr-2023
Filter, 2.4GHz	N/A	N/A	--	NCR	NCR
High pass filter	Wainwright Instruments	WHKX10-5850-6500	E1208	NCR	NCR
Horn Antenna (18-26 GHz)	Sage Millimeter, Inc.	SAR-2309-42-S2	E1143	2 yr	13 Nov 2022
Low Noise Amplifier (18-40 GHz)	Sage Millimeter, Inc.	SBL-1834034030-KFKF	E1228	1 yr	18 Feb 2022

Notes: NCR - no calibration required

Table 7.1-2: *Test Software*

Manufacturer of Software	Details
Rohde & Schwarz	EMC 32 V10.60.15 (radiated emissions)

Notes: None

Section 8 Testing data

8.1 FCC 15.407(a) and RSS-247 Power Limits

8.1.1 Definition and limits

Title 47 → Chapter I → Subchapter A → Part 15 → Subpart E → §15.407(a)

RSS-247 → §6.2

8.1.2 Test summary

Verdict	Pass

8.1.3 Notes

No testing was performed. The EIRP was calculated on the basis of test data from the original test report on the "Test-Report-NII-3863608". EIRP was re-calculated from the original test data using the new manufacturer declared antenna gain.

Manufacturer declared antenna gain: 4.5 dBi.

8.1.4 Test data

Table 8.1-1: *Output power*

Operating Mode	Test Frequency (MHz)	Maximum Conducted Power (dBm)	FCC Conducted Limit (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	IC EIRP Limit (dBm)
IEEE 802.11a, 6 Mbps	5180	12.09	23.98	4.5	16.59	22.51
	5220	14.82	23.98	4.5	19.32	22.51
	5240	14.62	23.98	4.5	19.12	22.51
	5260	14.72	23.26	4.5	19.22	29.26
	5300	12.09	23.26	4.5	16.59	29.26
	5320	12.25	23.26	4.5	16.75	29.26
	5500	11.77	23.26	4.5	16.27	29.26
	5580	14.44	23.26	4.5	18.94	29.26
	5600	14.70	23.26	4.5	19.20	29.26
	5700	11.88	23.26	4.5	16.38	29.26
	5720	11.94	23.26	4.5	16.44	29.26
	5745	11.47	30.00	4.5	15.97	---
	5785	13.47	30.00	4.5	17.97	---
	5825	11.57	30.00	4.5	16.07	---
IEEE 802.11n-HT20, MCS0	5180	11.68	23.98	4.5	11.28	22.51
	5220	14.26	23.98	4.5	13.86	22.51
	5240	14.18	23.98	4.5	13.78	22.51
	5260	14.20	23.52	4.5	13.80	29.26
	5300	11.65	23.52	4.5	11.25	29.26
	5320	11.85	23.52	4.5	11.45	29.26
	5500	11.34	23.52	4.5	10.94	29.26
	5580	14.10	23.52	4.5	13.70	29.26
	5600	14.21	23.52	4.5	13.81	29.26
	5700	11.56	23.52	4.5	11.16	29.26
	5720	11.54	23.52	4.5	11.14	29.26
	5745	10.96	30.00	4.5	10.56	---
	5785	13.55	30.00	4.5	13.15	---
	5825	11.33	30.00	4.5	10.93	---
IEEE 802.11n-HT40, MCS0	5190	9.34	23.98	4.5	13.84	23.01
	5230	13.65	23.98	4.5	18.15	23.01
	5270	13.62	23.98	4.5	18.12	30.00
	5310	9.68	23.96	4.5	14.18	30.00
	5510	9.36	23.96	4.5	13.86	30.00

Operating Mode	Test Frequency (MHz)	Maximum Conducted Power (dBm)	FCC Conducted Limit (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	IC EIRP Limit (dBm)
	5550	13.66	23.96	4.5	18.16	30.00
	5590	13.78	23.96	4.5	18.28	30.00
	5670	9.70	23.96	4.5	14.20	30.00
	5710	9.79	23.96	4.5	14.29	30.00
	5755	9.19	30.00	4.5	13.69	---
	5795	9.23	30.00	4.5	13.73	---
IEEE 802.11ac -VHT20, MCS0	5180	11.42	23.98	4.5	15.92	22.53
	5220	14.30	23.98	4.5	18.80	22.53
	5240	14.33	23.98	4.5	18.83	22.53
	5260	14.30	23.53	4.5	18.80	29.53
	5300	11.80	23.53	4.5	16.30	29.53
	5320	11.85	23.53	4.5	16.35	29.53
	5500	11.37	23.53	4.5	15.87	29.53
	5580	14.24	23.53	4.5	18.74	29.53
	5600	14.33	23.53	4.5	18.83	29.53
	5700	11.58	23.53	4.5	16.08	29.53
	5720	11.53	23.53	4.5	16.03	29.53
	5745	11.02	23.53	4.5	15.52	---
	5785	13.74	30.00	4.5	18.24	---
	5825	11.04	30.00	4.5	15.54	---
IEEE 802.11ac-VHT40, MCS0	5190	9.43	23.98	4.5	13.93	23.01
	5230	13.64	23.98	4.5	18.14	23.01
	5270	13.66	23.98	4.5	18.16	30.00
	5310	9.65	23.98	4.5	14.15	30.00
	5510	9.37	23.98	4.5	13.87	30.00
	5550	13.65	23.98	4.5	18.15	30.00
	5590	13.77	23.98	4.5	18.27	30.00
	5670	9.56	23.98	4.5	14.06	30.00
	5710	9.58	23.98	4.5	14.08	30.00
	5755	9.29	30.00	4.5	13.79	---
	5795	9.26	30.00	4.5	13.76	---
IEEE 802.11ac-VHT80, MCS0	5210	9.25	23.98	4.5	13.75	23.01
	5290	9.42	23.98	4.5	13.92	30.00
	5530	9.35	23.98	4.5	13.85	30.00
	5610	9.52	23.98	4.5	14.02	30.00
	5690	9.64	23.98	4.5	14.14	30.00
	5775	9.03	30.00	4.5	13.53	---

8.2 FCC 15.407(b) and RSS-247 5.5 Radiated restricted band-edges and spurious emission

8.2.1 Definition and limits

Title 47 → Chapter I → Subchapter A → Part 15 → Subpart E → §15.407(b)

RSS-247 → §5.5

Table 8.2-1: *FCC §15.209– Radiated emission limits*

Frequency, MHz	Field strength of emissions		Measurement distance, m
	µV/m	dBµV/m	
0.009–0.490	2400/F	$67.6 - 20 \times \log_{10}(F)$	300
0.490–1.705	24000/F	$87.6 - 20 \times \log_{10}(F)$	30
1.705–30.0	30	29.5	30
30–88	100	40.0	3
88–216	150	43.5	3
216–960	200	46.0	3
above 960	500	54.0	3

Notes: In the emission table above, the tighter limit applies at the band edges.
For frequencies above 1 GHz the limit on peak RF emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.

Table 8.2-2: *FCC restricted frequency bands*

MHz	MHz	MHz	GHz
0.090–0.110	16.42–16.423	399.9–410	4.5–5.15
0.495–0.505	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225	123–138	2200–2300	14.47–14.5
8.291–8.294	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675	156.7–156.9	2690–2900	22.01–23.12
8.41425–8.41475	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025	240–285	3345.8–3358	36.43–36.5
12.57675–12.57725	322–335.4	3600–4400	Above 38.6
13.36–13.41			

8.2.2 Test summary

Verdict	Pass		
Test date	May 3, 5, 6, 9, 11, 13, 17, 18 2022	Temperature	22 °C
Test engineer	Lan Sayasane, EMC Test Engineer	Air pressure	1008 mbar
Test location	3m semi-anechoic chamber (Radiated)	Relative humidity	54 %

8.2.3 Notes

The EUT was configured to transmit continuously on the lowest, middle and highest channels.

The spectrum was search from 30 MHz to 40 GHz.

Radiated measurements were performed at a 3 m measurement distance.

8.2.4 Setup details

EUT setup configuration	Tabletop
Test facility	Nemko San Diego
Measurement details	Radiated spurious emissions measurement performed as per C63.10 §12.7

Receiver settings for radiated measurements within restricted bands below 1 GHz:

Resolution bandwidth	120 kHz
Video bandwidth	300 kHz
Detector mode	Peak (preview measurements) Quasi-Peak (final measurements)
Trace mode	Max Hold
Measurement time	5 s (final measurements)

Receiver settings for radiated measurements within restricted bands above 1 GHz:

Resolution bandwidth	1 MHz
Video bandwidth	3 MHz
Detector mode	Average and peak (final measurements)
Trace mode	Max Hold
Measurement time	5 s (final measurements)

8.2.5 Test data

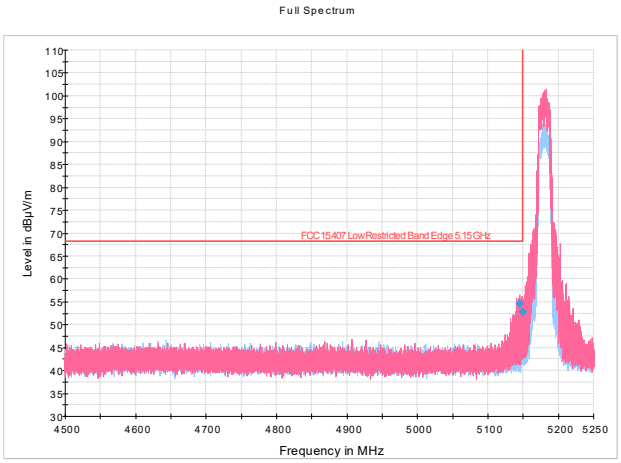


Figure 8.2-1: *Radiated emissions, restricted band edge, 802.11a, 6 Mbps, U-NII-1 band, low channel*

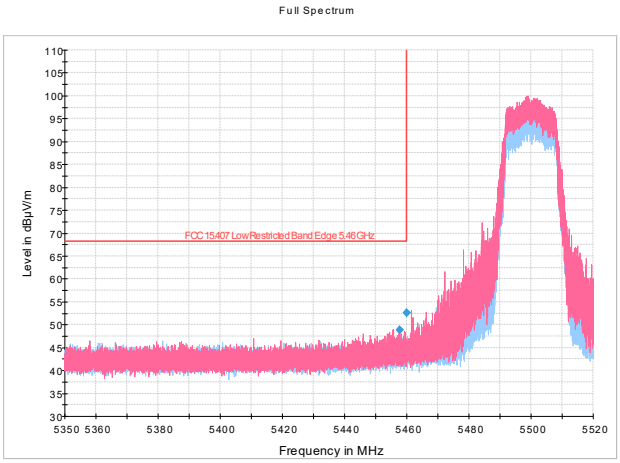


Figure 8.2-2: *Radiated emissions, restricted band edge, 802.11a, 6 Mbps, U-NII-2C band, low channel*

Table 8.2-2: *Radiated emissions, restricted band edge, 802.11a, 6 Mbps, U-NII-1 band, low channel*

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5145.050000	54.66	68.20	13.54	5000.0	1000.000	285.0	V	52.0	-2.4
5150.000000	52.69	68.20	15.51	5000.0	1000.000	111.0	H	0.0	-2.4

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)

Table 8.2-3: *Radiated emissions, restricted band edge, 802.11a, 6 Mbps, U-NII-2C band, low channel*

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5457.661000	48.79	68.20	19.41	5000.0	1000.000	134.0	V	78.0	-2.3
5460.000000	52.59	68.20	15.61	5000.0	1000.000	140.0	V	51.0	-2.3

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)

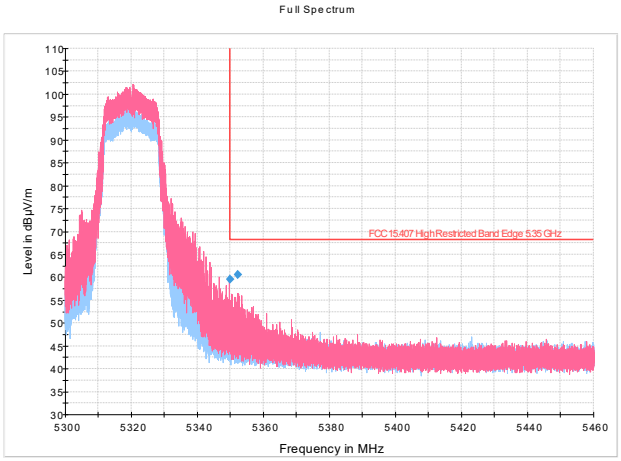
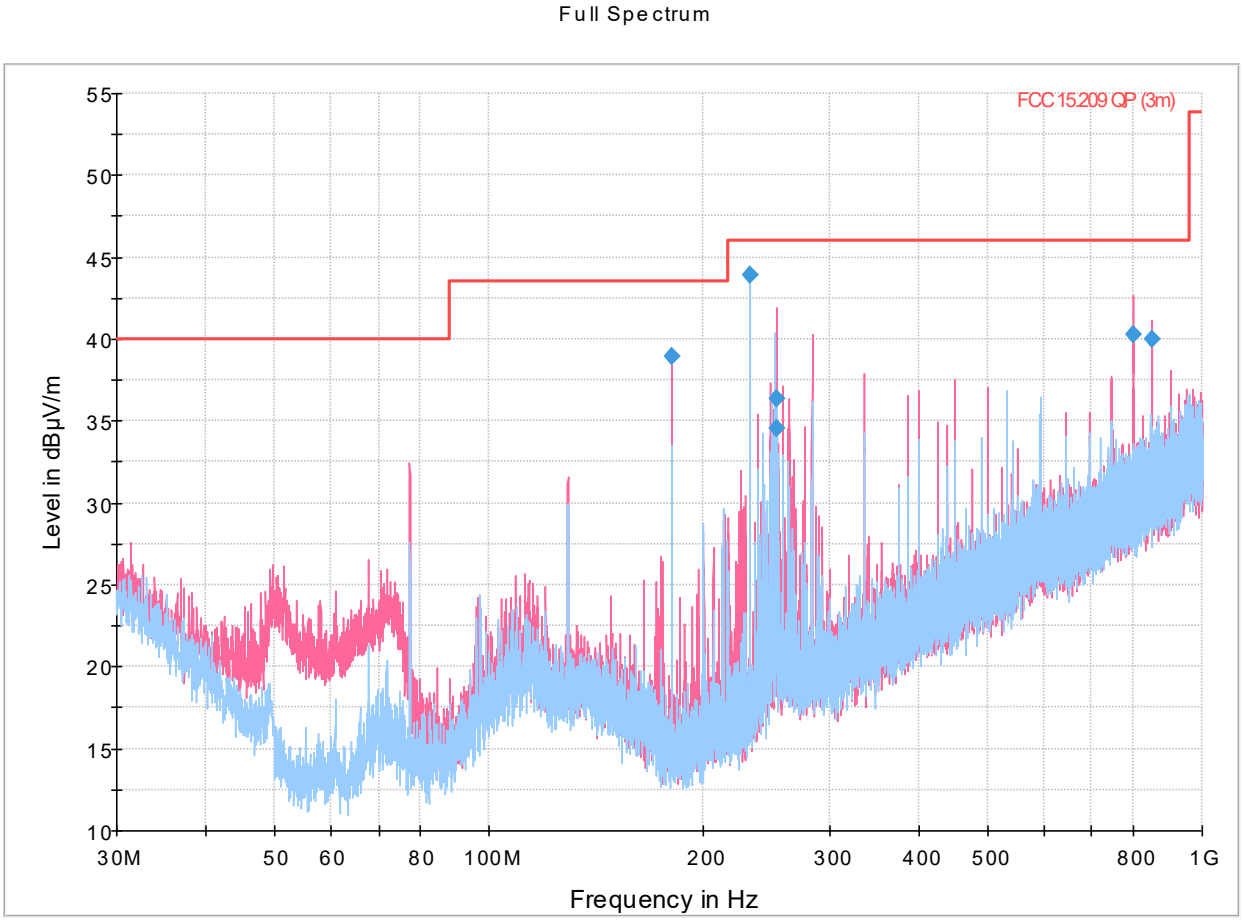


Figure 8.2-3: *Radiated emissions, restricted band edge, 802.11a, 6 Mbps, U-NII-2A band, high channel*

Table 8.2-4: *Radiated emissions, restricted band edge, 802.11a, 6 Mbps, U-NII-2A band, high channel*

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5350.000000	59.50	68.20	8.70	5000.0	1000.000	163.0	V	128.0	-2.1
5352.240000	60.63	68.20	7.57	5000.0	1000.000	235.0	V	98.0	-2.1

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)



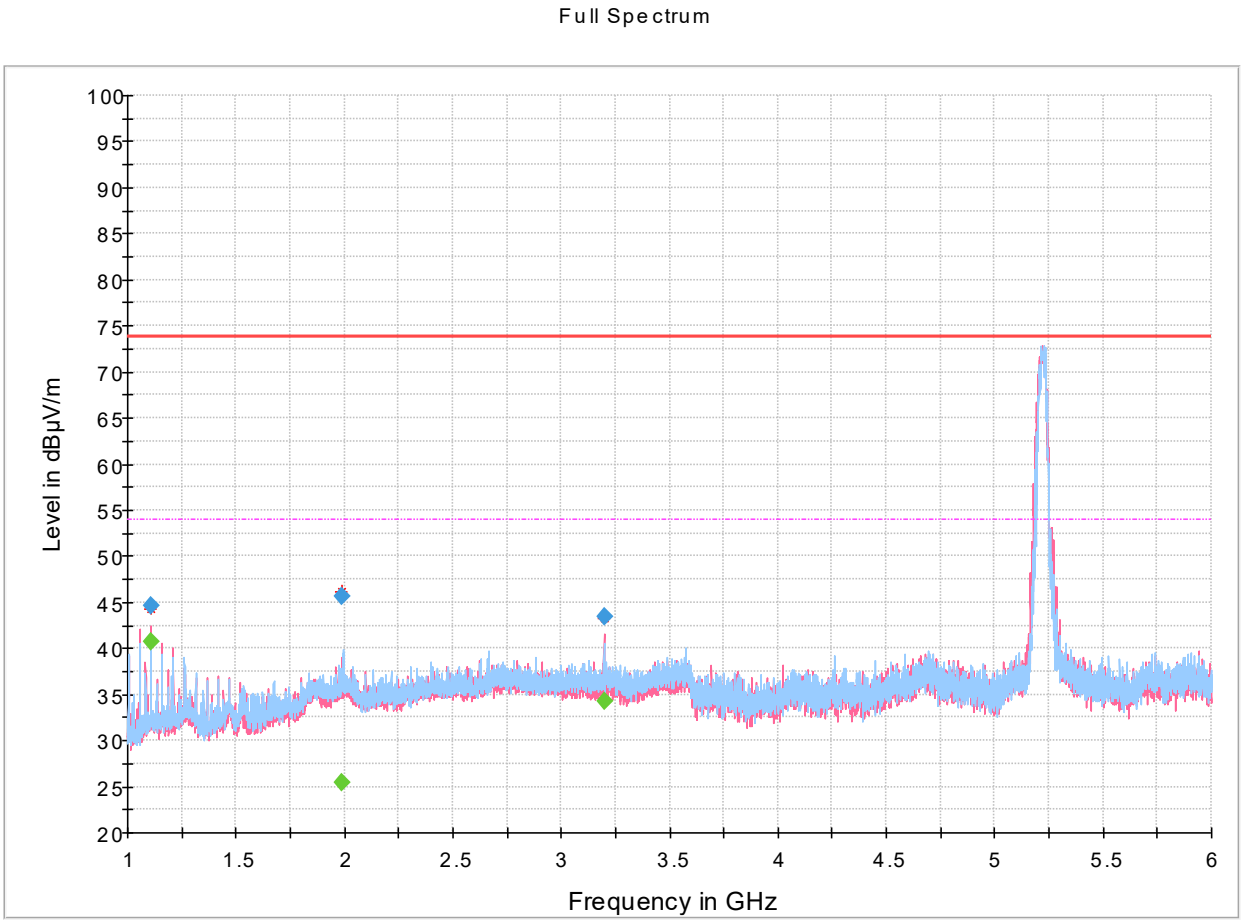
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

Figure 8.2-4: *Radiated spurious emissions, 802.11a, 6 Mbps, 30-1000 MHz spectral plot (5220 MHz)*

Table 8.2-5: *Radiated spurious emissions, 802.11a, 6 Mbps, 30-1000 MHz (Quasi-Peak) results (5220 MHz)*

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
180.467000	38.91	43.50	4.59	5000.0	120.000	100.0	V	11.0	17.1
231.998667	43.93	46.00	2.07	5000.0	120.000	100.0	H	100.0	19.0
252.737000	36.33	46.00	9.67	5000.0	120.000	166.0	V	116.0	21.2
253.178667	34.58	46.00	11.42	5000.0	120.000	170.0	V	10.0	21.3
799.270000	40.27	46.00	5.73	5000.0	120.000	100.0	V	0.0	31.8
850.729333	40.00	46.00	6.00	5000.0	120.000	100.0	V	0.0	32.8

Notes:
[1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factor = antenna factor ACF (dB) + cable loss (dB)
[3] The maximum measured value observed over a period of 5 seconds was recorded.
[4] Limits converted to dBµV/m and an inverse proportionality factor of 20 dB per decade has been used to normalize the specification limit to a measurement distance of 3 meters to determine compliance.



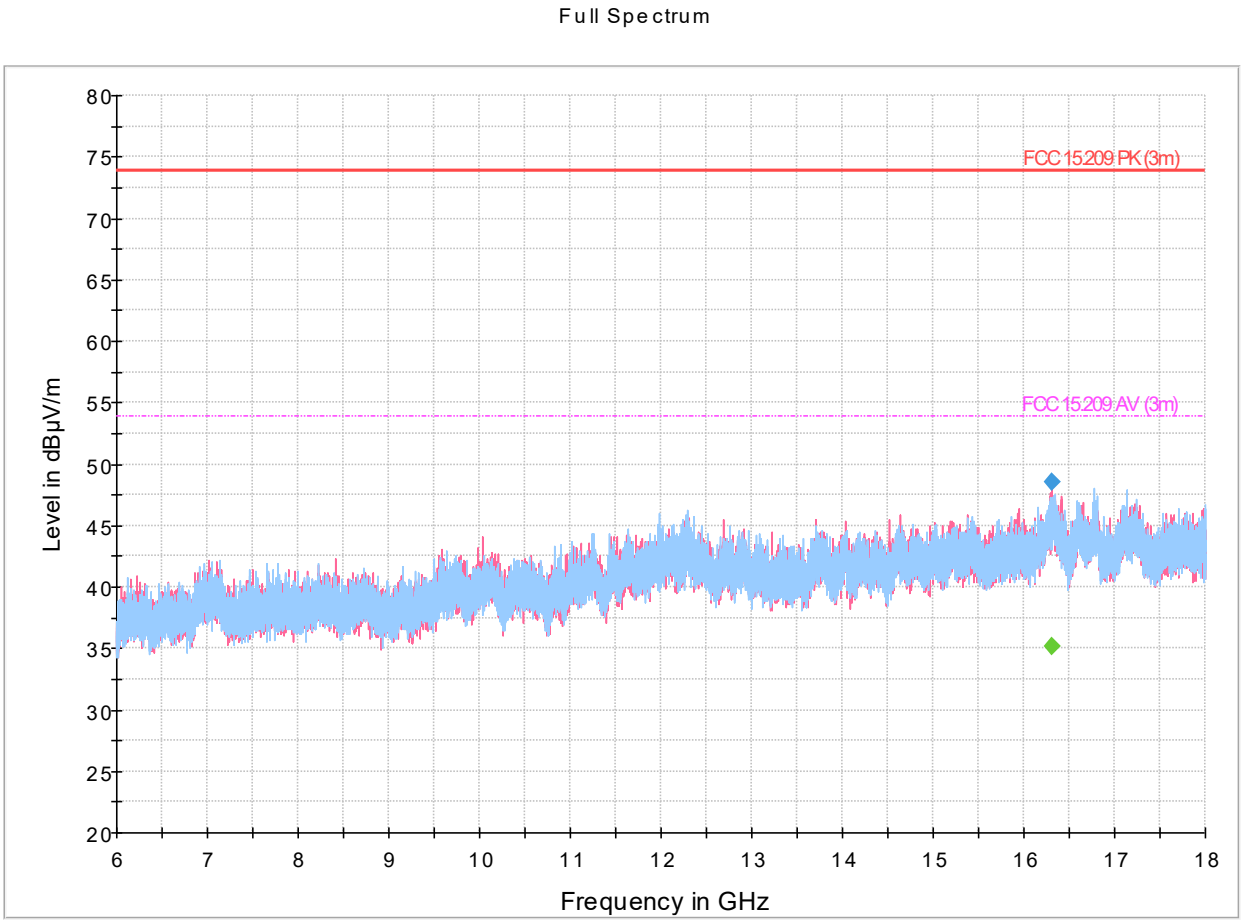
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-5**: Radiated spurious emissions, 802.11a, 6 Mbps, 1-6 GHz spectral plot (5220 MHz)*

***Table 8.2-6:** Radiated spurious emissions, 802.11a, 6 Mbps, 1-6 GHz results (5220 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1108.633333	---	40.78	53.90	13.12	5000.0	1000.000	199.0	V	20.0	-14.8
1108.633333	44.68	---	73.90	29.22	5000.0	1000.000	199.0	V	20.0	-14.8
1990.733333	---	25.44	53.90	28.46	5000.0	1000.000	271.0	H	65.0	-10.8
1990.733333	45.64	---	73.90	28.26	5000.0	1000.000	271.0	H	65.0	-10.8
3197.533333	---	34.27	53.90	19.63	5000.0	1000.000	199.0	V	242.0	-7.1
3197.533333	43.44	---	73.90	30.46	5000.0	1000.000	199.0	V	242.0	-7.1

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)
Peak at 5220 MHz is the fundamental emission and is excluded from evaluation against the limits



The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-6**: Radiated spurious emissions, 802.11a, 6 Mbps, 6-18 GHz spectral plot (5220 MHz)*

***Table 8.2-7:** Radiated spurious emissions, 802.11a, 6 Mbps, 6-18 GHz results (5220 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
16306.400000	---	35.20	53.90	18.70	5000.0	1000.000	248.0	V	10.0	13.4
16306.400000	48.57	---	73.90	25.33	5000.0	1000.000	248.0	V	10.0	13.4

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)

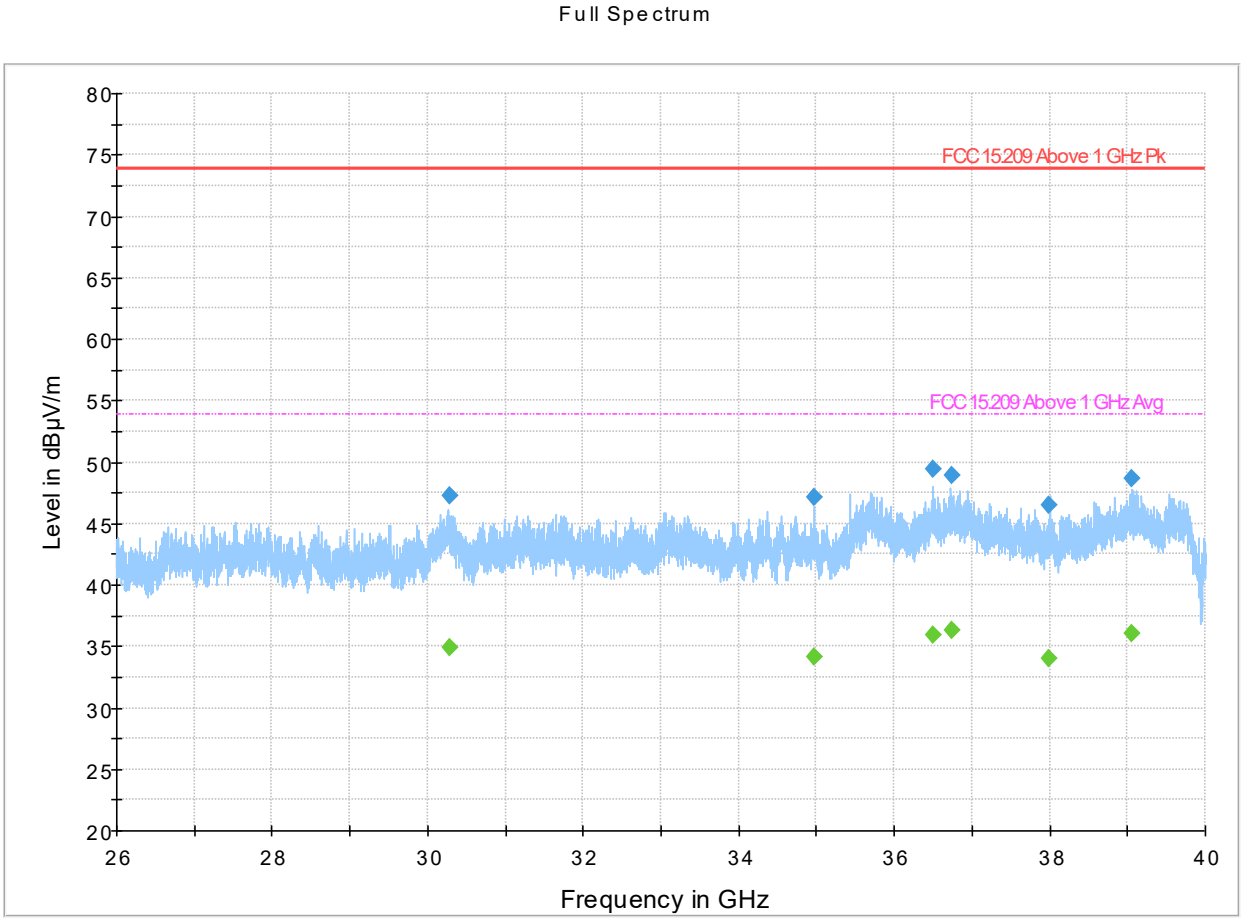
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-7**: Radiated spurious emissions, 802.11a, 6 Mbps, 18-26 GHz spectral plot (5220 MHz)*

***Table 8.2-8:** Radiated spurious emissions, 802.11a, 6 Mbps, 18-26 GHz results (5220 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
23933.900000	52.03	---	73.90	21.87	5000.0	1000.000	375.0	V	0.0	28.0
23933.900000	---	38.58	53.90	15.32	5000.0	1000.000	375.0	V	0.0	28.0
24029.300000	53.42	---	73.90	20.48	5000.0	1000.000	364.0	H	50.0	29.7
24029.300000	---	40.09	53.90	13.81	5000.0	1000.000	364.0	H	50.0	29.7
24111.500000	---	40.16	53.90	13.74	5000.0	1000.000	280.0	V	268.0	29.5
24111.500000	53.15	---	73.90	20.75	5000.0	1000.000	280.0	V	268.0	29.5
24190.900000	---	40.03	53.90	13.87	5000.0	1000.000	212.0	V	296.0	29.2
24190.900000	52.91	---	73.90	20.99	5000.0	1000.000	212.0	V	296.0	29.2
24236.900000	53.04	---	73.90	20.86	5000.0	1000.000	104.0	H	304.0	29.0
24236.900000	---	39.82	53.90	14.08	5000.0	1000.000	104.0	H	304.0	29.0
24382.900000	50.55	---	73.90	23.35	5000.0	1000.000	369.0	H	147.0	26.9
24382.900000	---	37.41	53.90	16.49	5000.0	1000.000	369.0	H	147.0	26.9

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)



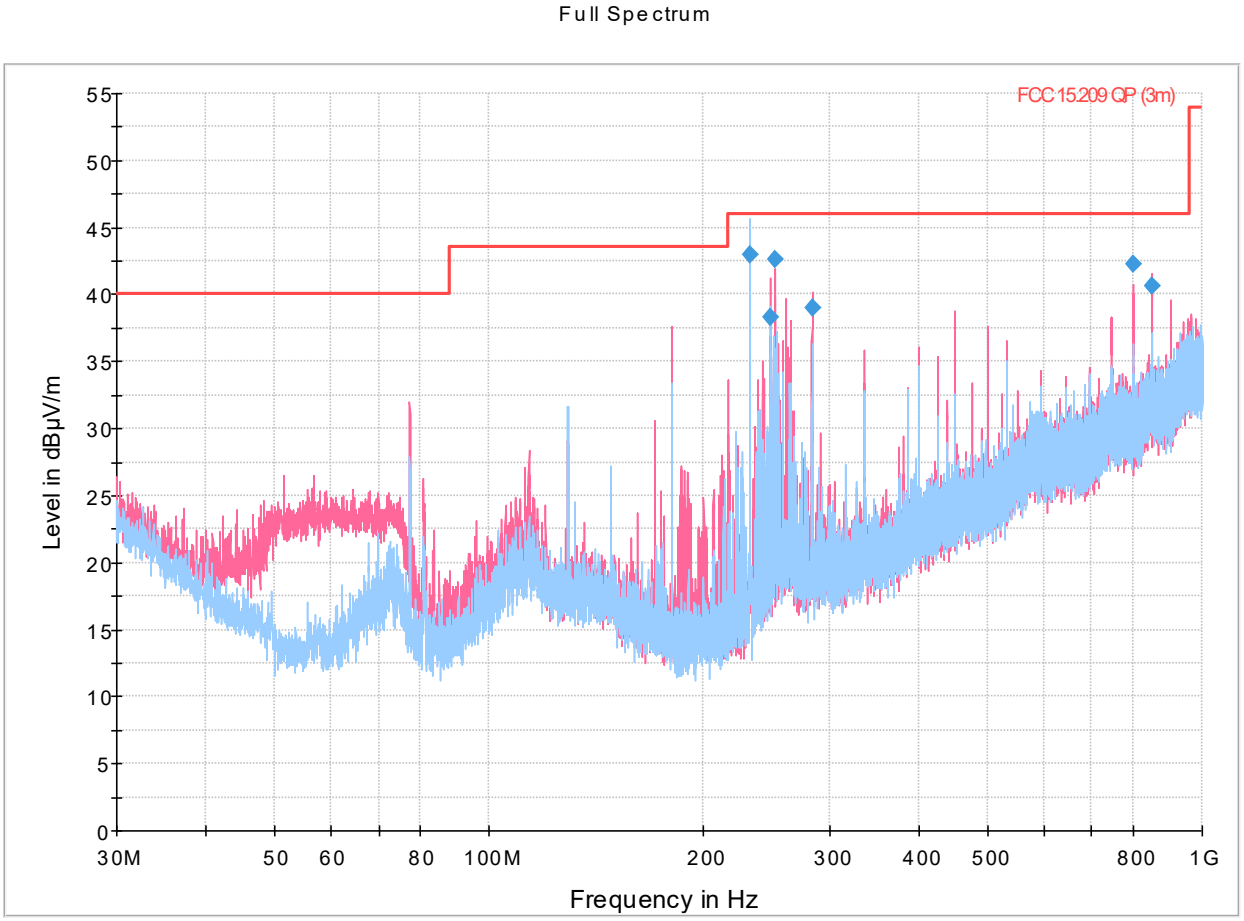
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-8**: Radiated spurious emissions, 802.11a, 6 Mbps, 26-40 GHz spectral plot (5220 MHz)*

***Table 8.2-9:** Radiated spurious emissions, 802.11a, 6 Mbps, 26-40 GHz results (5220 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
30277.650000	47.27	---	73.90	26.63	1000.0	1000.000	210.0	V	75.0	10.5
30277.650000	---	34.96	53.90	18.94	1000.0	1000.000	210.0	V	75.0	10.5
34971.275000	47.09	---	73.90	26.81	1000.0	1000.000	111.0	H	36.0	12.4
34971.275000	---	34.13	53.90	19.77	1000.0	1000.000	111.0	H	36.0	12.4
36498.175000	49.45	---	73.90	24.45	1000.0	1000.000	108.0	H	90.0	14.0
36498.175000	---	35.88	53.90	18.02	1000.0	1000.000	108.0	H	90.0	14.0
36743.600000	48.90	---	73.90	25.00	1000.0	1000.000	104.0	V	63.0	14.4
36743.600000	---	36.34	53.90	17.56	1000.0	1000.000	104.0	V	63.0	14.4
37995.075000	---	33.97	53.90	19.93	1000.0	1000.000	107.0	H	202.0	14.4
37995.075000	46.45	---	73.90	27.45	1000.0	1000.000	107.0	H	202.0	14.4
39056.325000	---	36.11	53.90	17.79	1000.0	1000.000	164.0	H	355.0	16.2
39056.325000	48.60	---	73.90	25.30	1000.0	1000.000	164.0	H	355.0	16.2

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)



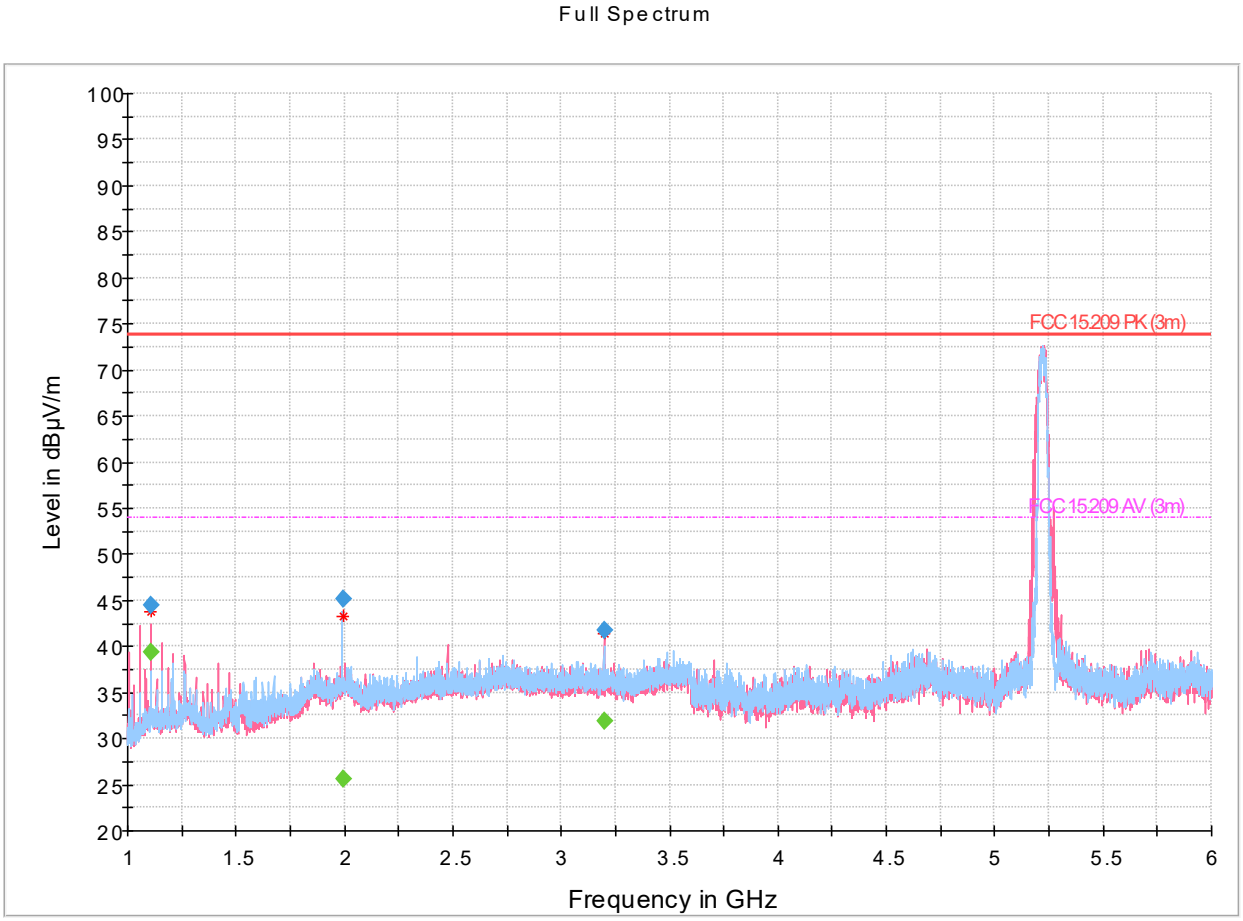
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

Figure 8.2-9: *Radiated spurious emissions, 802.11n-HT20, MCS0, 30-1000 MHz spectral plot (5220 MHz)*

Table 8.2-10: *Radiated spurious emissions, 802.11n-HT20, MCS0, 30-1000 MHz (Quasi-Peak) results (5220 MHz)*

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
232.038667	43.03	46.00	2.97	5000.0	120.000	100.0	H	115.0	17.9
248.140667	38.25	46.00	7.75	5000.0	120.000	184.0	V	102.0	19.9
251.341667	42.57	46.00	3.43	5000.0	120.000	164.0	V	102.0	20.4
283.570333	39.05	46.00	6.95	5000.0	120.000	155.0	V	117.0	20.9
799.190000	42.23	46.00	3.77	5000.0	120.000	109.0	V	0.0	31.8
850.786333	40.65	46.00	5.35	5000.0	120.000	100.0	V	353.0	33.4

Notes:
[1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factor = antenna factor ACF (dB) + cable loss (dB)
[3] The maximum measured value observed over a period of 5 seconds was recorded.
[4] Limits converted to dBµV/m and an inverse proportionality factor of 20 dB per decade has been used to normalize the specification limit to a measurement distance of 3 meters to determine compliance.



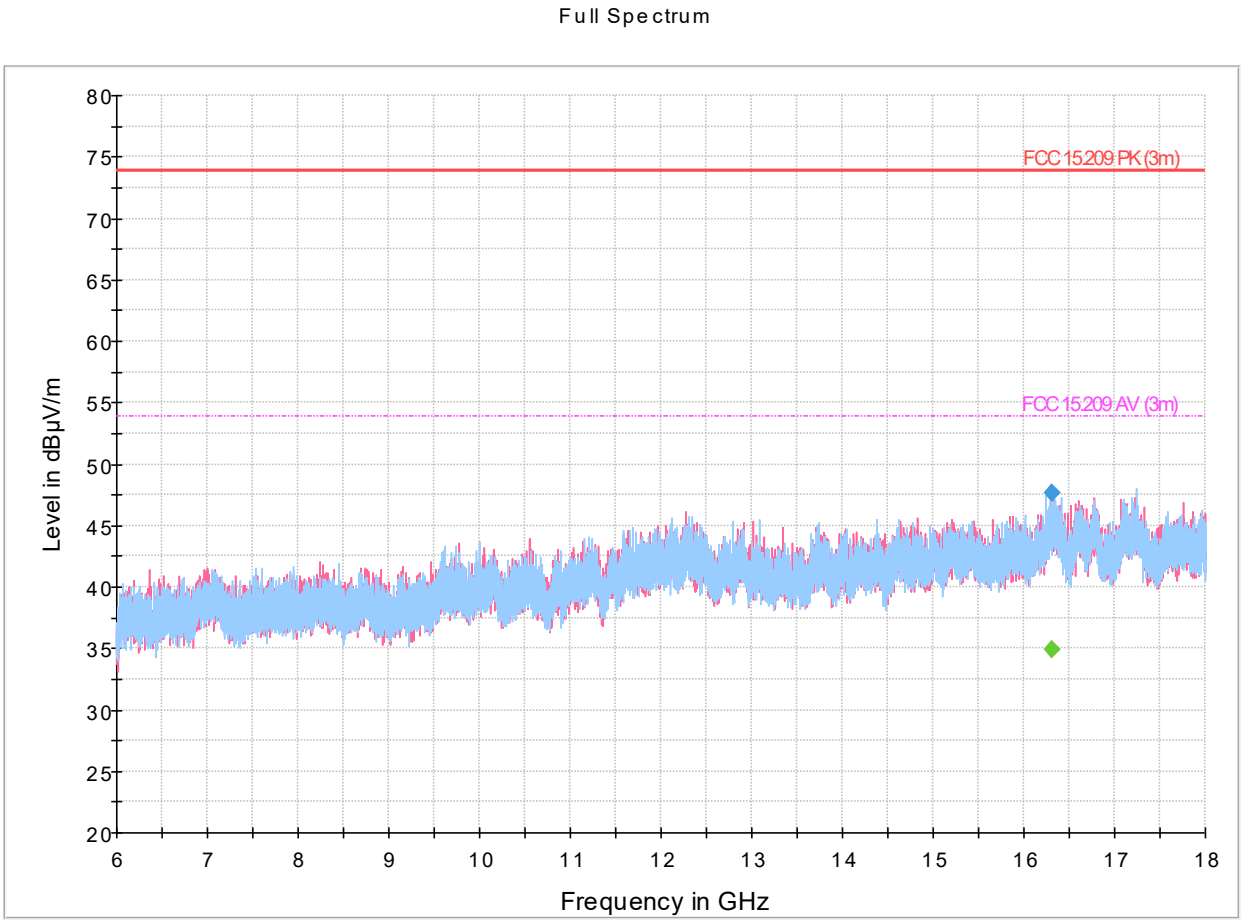
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-10**: Radiated spurious emissions, 802.11n-HT20, MCS0, 1-6 GHz spectral plot (5220 MHz)*

***Table 8.2-11:** Radiated spurious emissions, 802.11n-HT20, MCS0, 1-6 GHz results (5220 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1108.800000	---	39.33	53.90	14.57	5000.0	1000.000	200.0	V	10.0	-14.8
1108.800000	44.50	---	73.90	29.40	5000.0	1000.000	200.0	V	10.0	-14.8
1994.533333	---	25.62	53.90	28.28	5000.0	1000.000	274.0	H	246.0	-10.8
1994.533333	45.20	---	73.90	28.70	5000.0	1000.000	274.0	H	246.0	-10.8
3197.933333	41.68	---	73.90	32.22	5000.0	1000.000	311.0	V	184.0	-7.1
3197.933333	---	31.92	53.90	21.98	5000.0	1000.000	311.0	V	184.0	-7.1

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)
Peak at 5220 MHz is the fundamental emission and is excluded from evaluation against the limits.



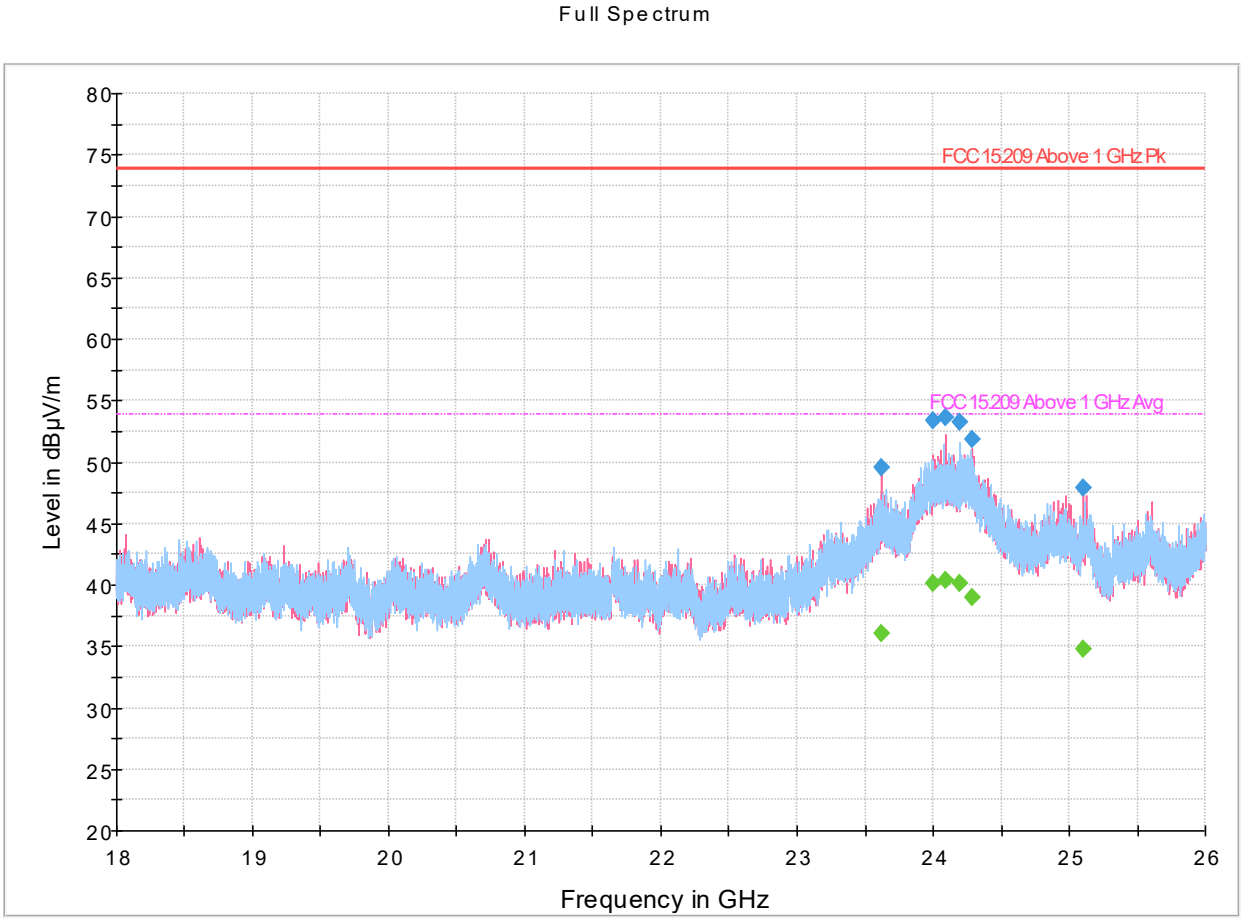
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-11**: Radiated spurious emissions, 802.11n-HT20, MCS0, 6-18 GHz spectral plot (5220 MHz)*

***Table 8.2-12:** Radiated spurious emissions, 802.11n-HT20, MCS0, 6-18 GHz results (5220 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
16308.000000	---	34.94	53.90	18.96	5000.0	1000.000	140.0	H	144.0	13.4
16308.000000	47.70	---	73.90	26.20	5000.0	1000.000	140.0	H	144.0	13.4

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)



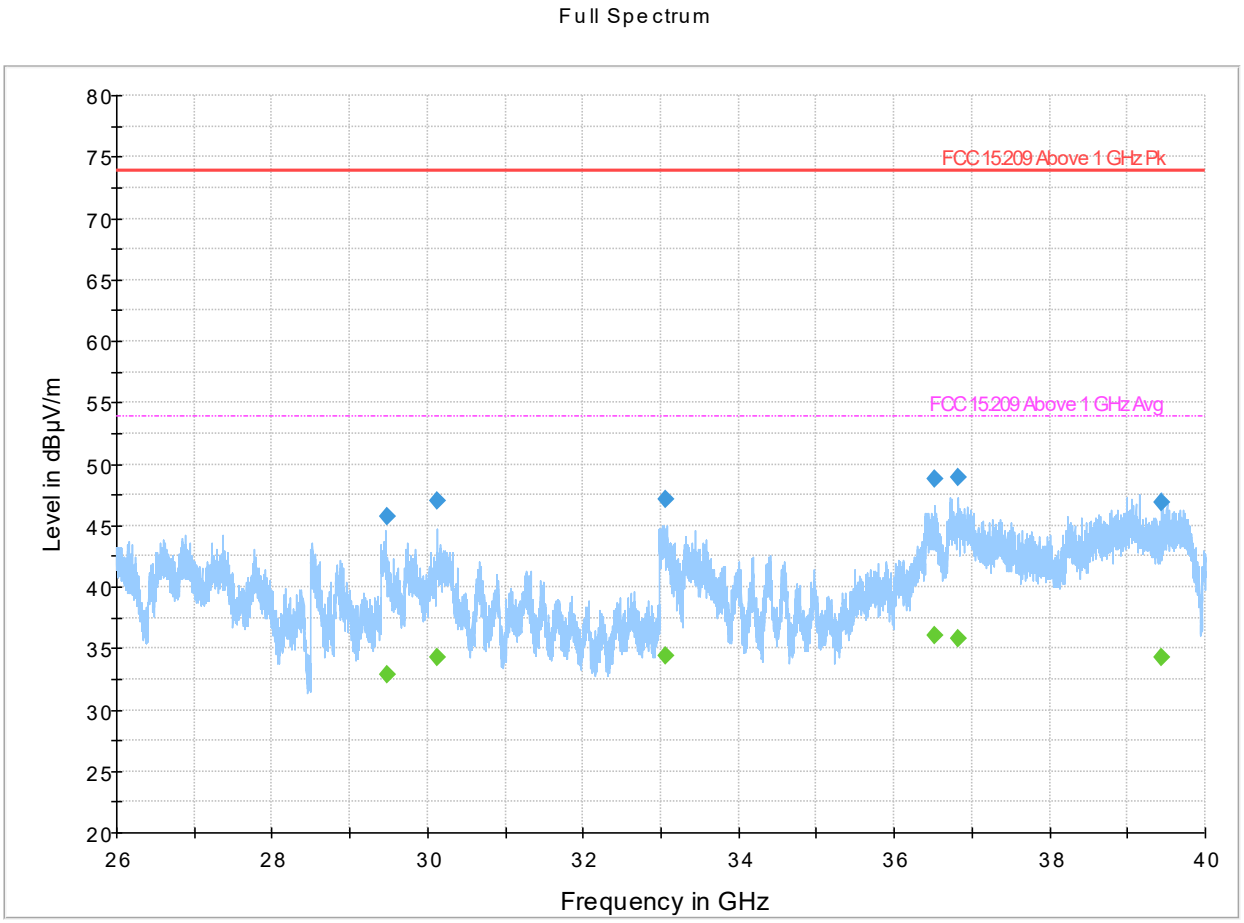
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-12**: Radiated spurious emissions, 802.11n-HT20, MCS0, 18-26 GHz spectral plot (5220 MHz)*

***Table 8.2-13:** Radiated spurious emissions, 802.11n-HT20, MCS0, 18-26 GHz results (5220 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
23624.100000	49.56	---	73.90	24.34	5000.0	1000.000	230.0	V	196.0	25.7
23624.100000	---	36.06	53.90	17.84	5000.0	1000.000	230.0	V	196.0	25.7
23995.700000	53.43	---	73.90	20.47	5000.0	1000.000	274.0	V	344.0	29.2
23995.700000	---	40.08	53.90	13.82	5000.0	1000.000	274.0	V	344.0	29.2
24089.700000	53.64	---	73.90	20.26	5000.0	1000.000	341.0	V	135.0	29.6
24089.700000	---	40.42	53.90	13.48	5000.0	1000.000	341.0	V	135.0	29.6
24191.700000	---	40.08	53.90	13.82	5000.0	1000.000	182.0	H	169.0	29.2
24191.700000	53.31	---	73.90	20.59	5000.0	1000.000	182.0	H	169.0	29.2
24287.300000	---	38.94	53.90	14.96	5000.0	1000.000	351.0	V	115.0	28.4
24287.300000	51.80	---	73.90	22.10	5000.0	1000.000	351.0	V	115.0	28.4
25103.500000	47.86	---	73.90	26.04	5000.0	1000.000	384.0	V	0.0	24.2
25103.500000	---	34.71	53.90	19.19	5000.0	1000.000	384.0	V	0.0	24.2

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)



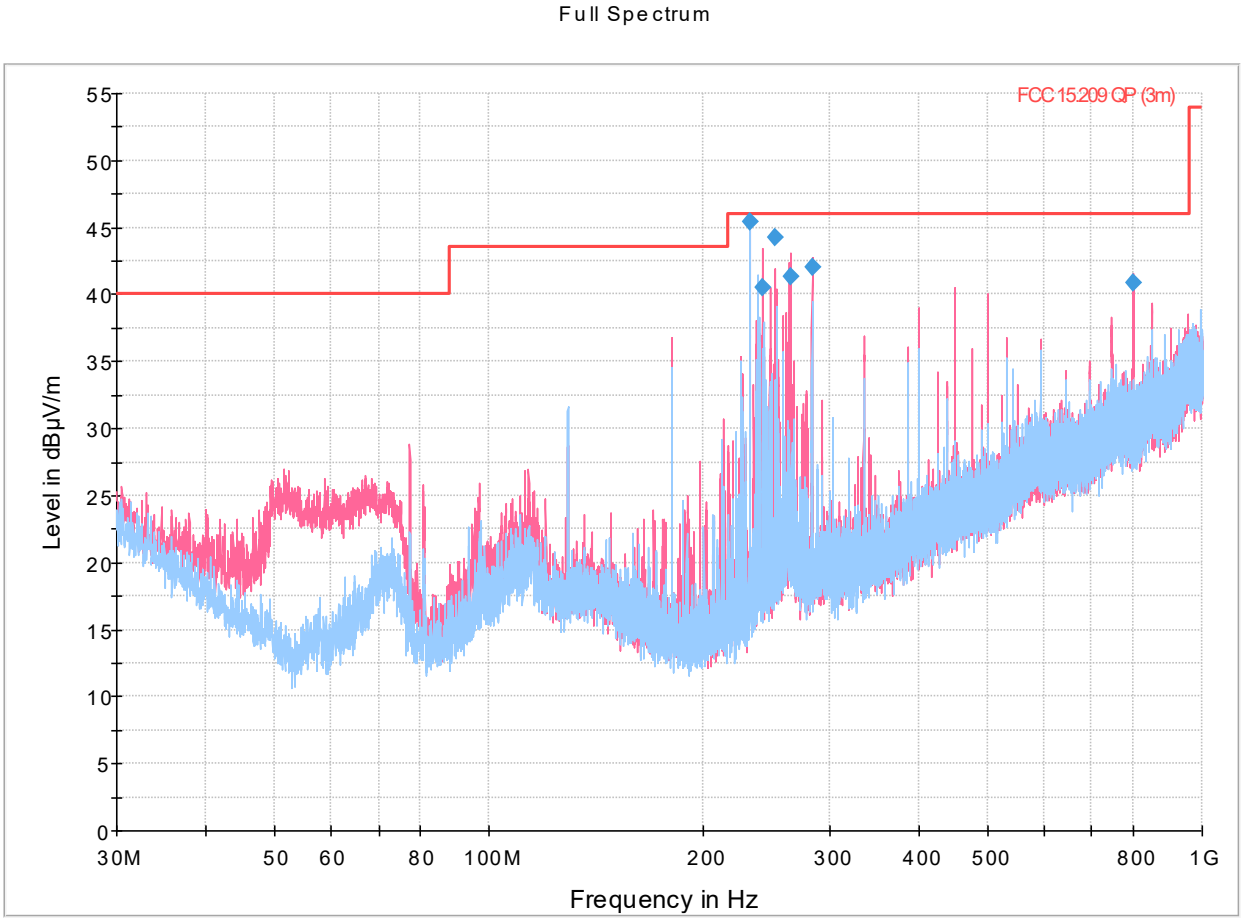
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-13**: Radiated spurious emissions, 802.11n-HT20, MCS0, 26-40 GHz spectral plot (5220 MHz)*

***Table 8.2-14:** Radiated spurious emissions, 802.11n-HT20, MCS0, 26-40 GHz results (5220 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
29470.475000	---	32.80	53.90	21.10	1000.0	1000.000	164.0	H	185.0	8.8
29470.475000	45.69	---	73.90	28.21	1000.0	1000.000	164.0	H	185.0	8.8
30125.775000	---	34.29	53.90	19.61	1000.0	1000.000	190.0	V	77.0	10.2
30125.775000	46.98	---	73.90	26.92	1000.0	1000.000	190.0	V	77.0	10.2
33064.400000	---	34.43	53.90	19.47	1000.0	1000.000	194.0	V	90.0	11.8
33064.400000	47.11	---	73.90	26.79	1000.0	1000.000	194.0	V	90.0	11.8
36512.675000	---	36.10	53.90	17.80	1000.0	1000.000	104.0	V	231.0	14.0
36512.675000	48.79	---	73.90	25.11	1000.0	1000.000	104.0	V	231.0	14.0
36829.250000	---	35.77	53.90	18.13	1000.0	1000.000	190.0	V	36.0	14.5
36829.250000	48.91	---	73.90	24.99	1000.0	1000.000	190.0	V	36.0	14.5
39433.975000	---	34.32	53.90	19.58	1000.0	1000.000	186.0	V	133.0	16.2
39433.975000	46.83	---	73.90	27.07	1000.0	1000.000	186.0	V	133.0	16.2

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)



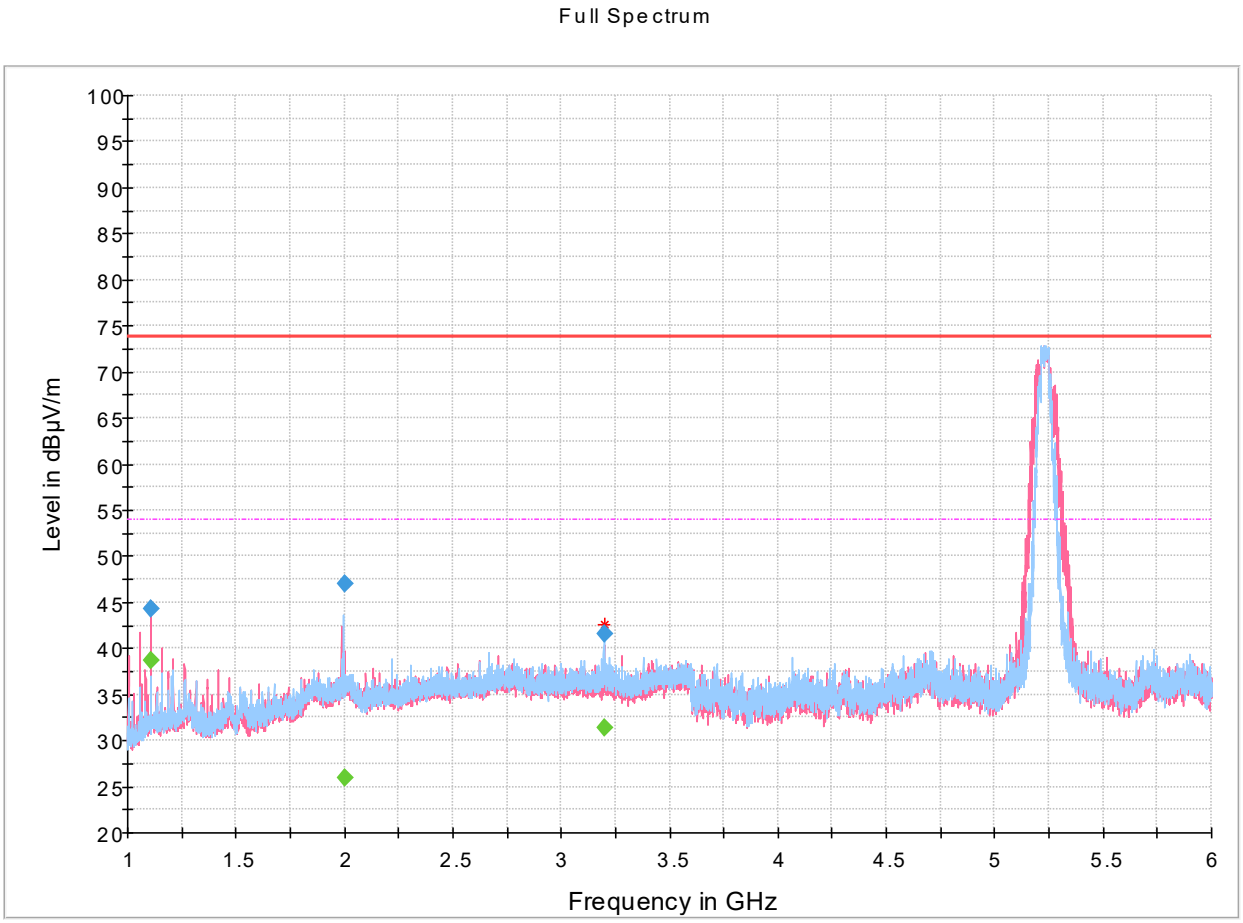
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

Figure 8.2-14: *Radiated spurious emissions, 802.11n, 40 MHz, MCS0, 30-1000 MHz spectral plot (5230 MHz)*

Table 8.2-15: *Radiated spurious emissions, 802.11n, 40 MHz, MCS0, 30-1000 MHz (Quasi-Peak) results (5230 MHz)*

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
232.038667	45.43	46.00	0.57	5000.0	120.000	158.0	V	70.0	17.9
241.681667	40.57	46.00	5.43	5000.0	120.000	176.0	V	300.0	19.1
251.349333	44.25	46.00	1.75	5000.0	120.000	166.0	V	335.0	20.4
264.227333	41.34	46.00	4.66	5000.0	120.000	154.0	V	86.0	22.0
283.578000	42.09	46.00	3.91	5000.0	120.000	145.0	V	54.0	20.9
799.213000	40.85	46.00	5.15	5000.0	120.000	109.0	V	318.0	31.8

Notes:
[1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factor = antenna factor ACF (dB) + cable loss (dB)
[3] The maximum measured value observed over a period of 5 seconds was recorded.
[4] Limits converted to dBµV/m and an inverse proportionality factor of 20 dB per decade has been used to normalize the specification limit to a measurement distance of 3 meters to determine compliance.



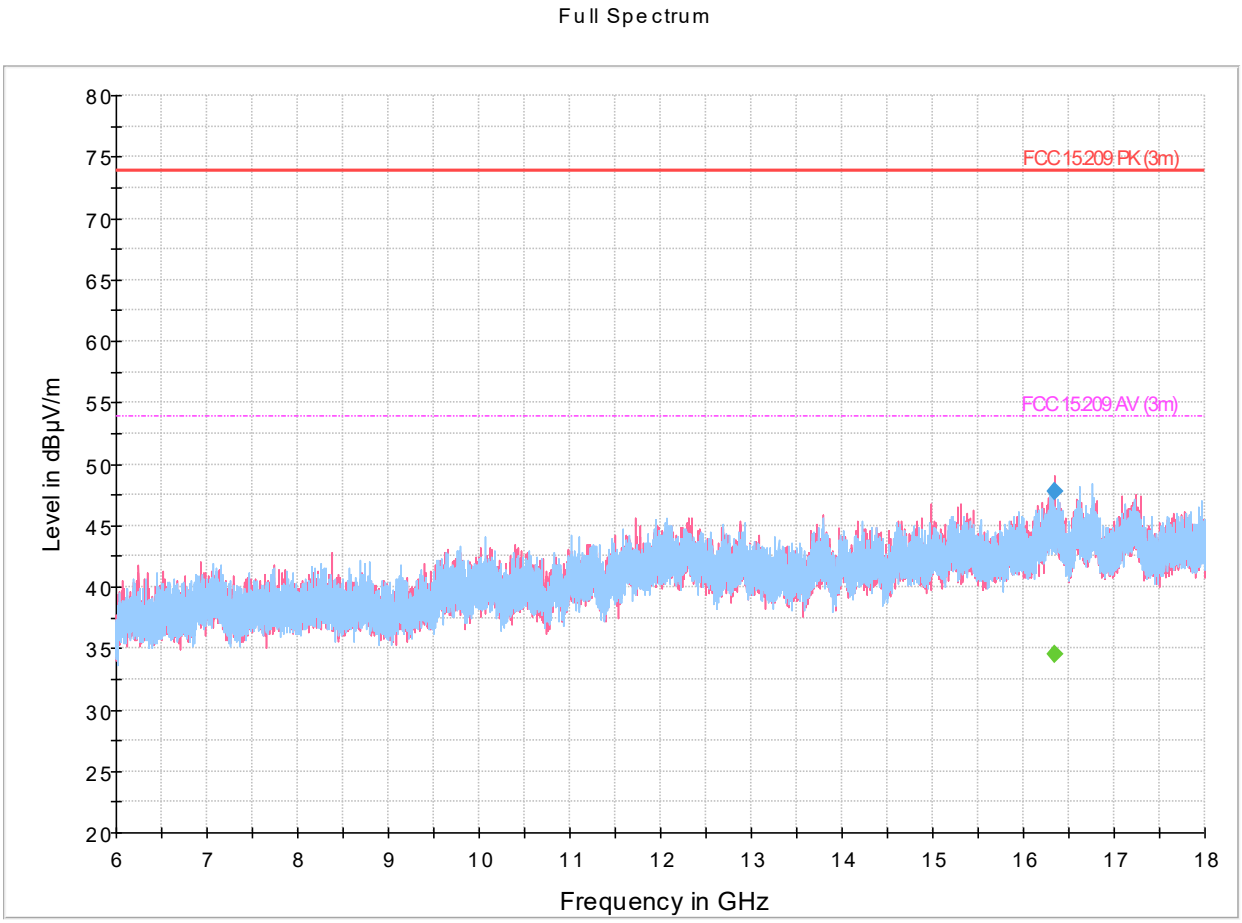
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-15**: Radiated spurious emissions, 802.11n, 40 MHz, MCS0, 1-6 GHz spectral plot (5230 MHz)*

***Table 8.2-16:** Radiated spurious emissions, 802.11n, 40 MHz, MCS0, 1-6 GHz results (5230 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1108.233333	---	38.72	53.90	15.18	5000.0	1000.000	195.0	V	20.0	-14.8
1108.233333	44.37	---	73.90	29.53	5000.0	1000.000	195.0	V	20.0	-14.8
2000.866667	---	25.94	53.90	27.96	5000.0	1000.000	206.0	H	157.0	-10.8
2000.866667	47.06	---	73.90	26.84	5000.0	1000.000	206.0	H	157.0	-10.8
3197.933333	41.61	---	73.90	32.29	5000.0	1000.000	324.0	H	258.0	-7.1
3197.933333	---	31.31	53.90	22.59	5000.0	1000.000	324.0	H	258.0	-7.1

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)
The emission at 5230 MHz is the fundamental emission and is excluded from evaluation against the limits



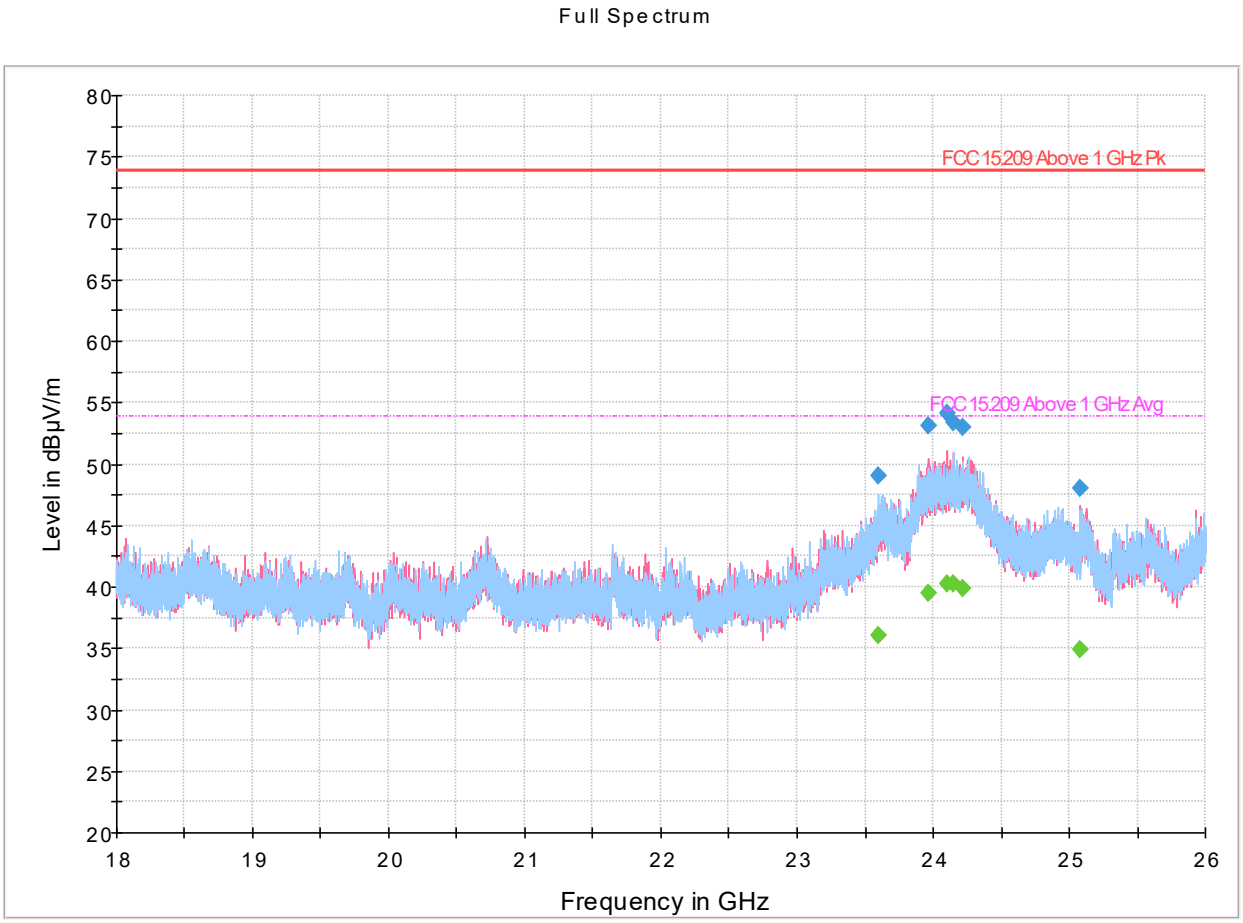
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-16**: Radiated spurious emissions, 802.11n, 40 MHz, MCS0, 6-18 GHz spectral plot (5230 MHz)*

***Table 8.2-17:** Radiated spurious emissions, 802.11n, 40 MHz, MCS0, 6-18 GHz results (5230 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
16352.000000	47.74	---	73.90	26.16	5000.0	1000.000	176.0	V	269.0	13.1
16352.000000	---	34.49	53.90	19.41	5000.0	1000.000	176.0	V	269.0	13.1

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)



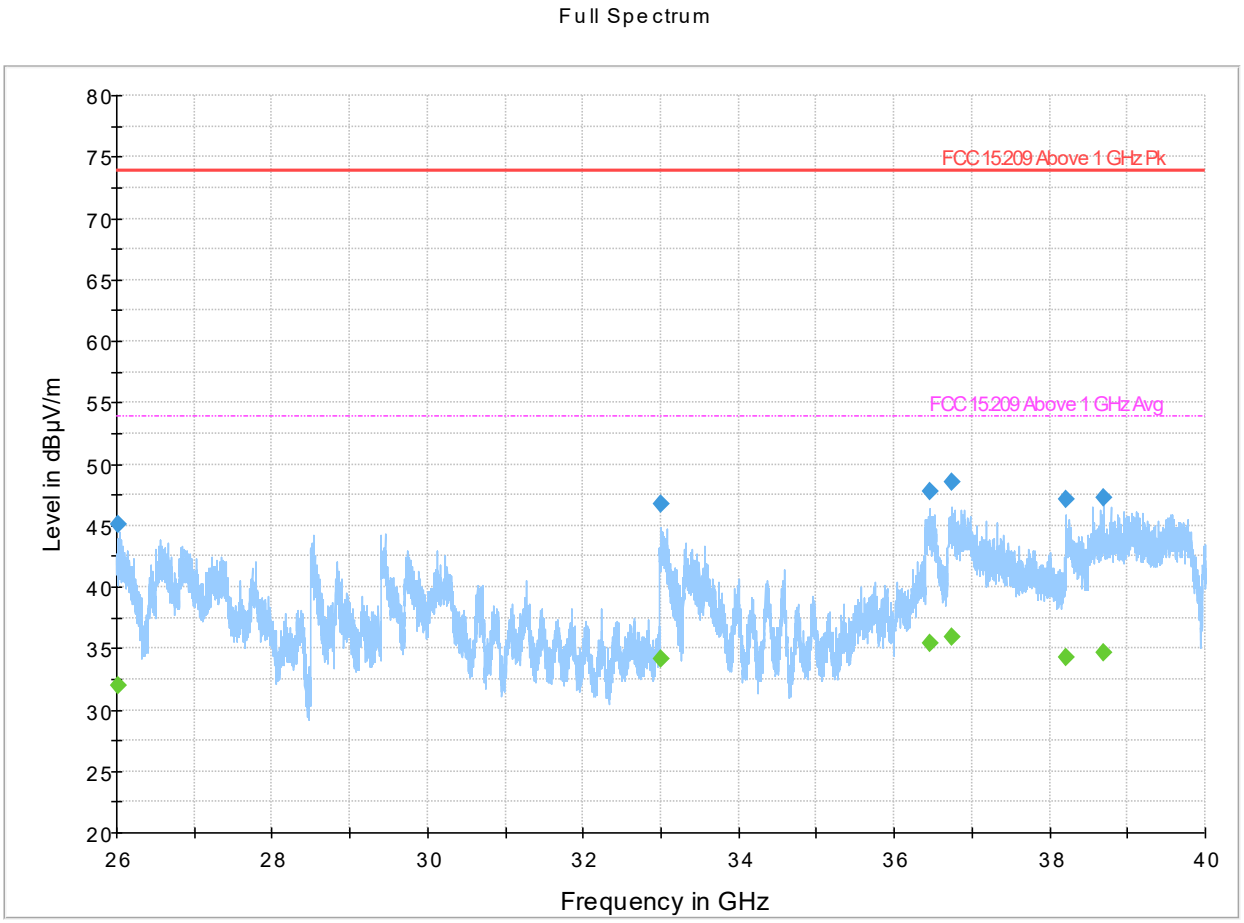
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-17**: Radiated spurious emissions, 802.11n, 40 MHz, MCS0, 18-26 GHz spectral plot (5230 MHz)*

***Table 8.2-18:** Radiated spurious emissions, 802.11n, 40 MHz, MCS0, 18-26 GHz results (5230 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
23602.900000	49.10	---	73.90	24.80	5000.0	1000.000	192.0	H	117.0	25.8
23602.900000	---	36.03	53.90	17.87	5000.0	1000.000	192.0	H	117.0	25.8
23966.500000	53.11	---	73.90	20.79	5000.0	1000.000	245.0	V	148.0	28.7
23966.500000	---	39.51	53.90	14.39	5000.0	1000.000	245.0	V	148.0	28.7
24106.500000	54.08	---	73.90	19.82	5000.0	1000.000	345.0	V	257.0	29.6
24106.500000	---	40.24	53.90	13.66	5000.0	1000.000	345.0	V	257.0	29.6
24151.700000	---	40.28	53.90	13.62	5000.0	1000.000	215.0	H	151.0	29.4
24151.700000	53.33	---	73.90	20.57	5000.0	1000.000	215.0	H	151.0	29.4
24215.300000	53.02	---	73.90	20.88	5000.0	1000.000	160.0	V	95.0	29.1
24215.300000	---	39.87	53.90	14.03	5000.0	1000.000	160.0	V	95.0	29.1
25084.100000	---	34.95	53.90	18.95	5000.0	1000.000	366.0	V	23.0	24.4
25084.100000	48.02	---	73.90	25.88	5000.0	1000.000	366.0	V	23.0	24.4

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)



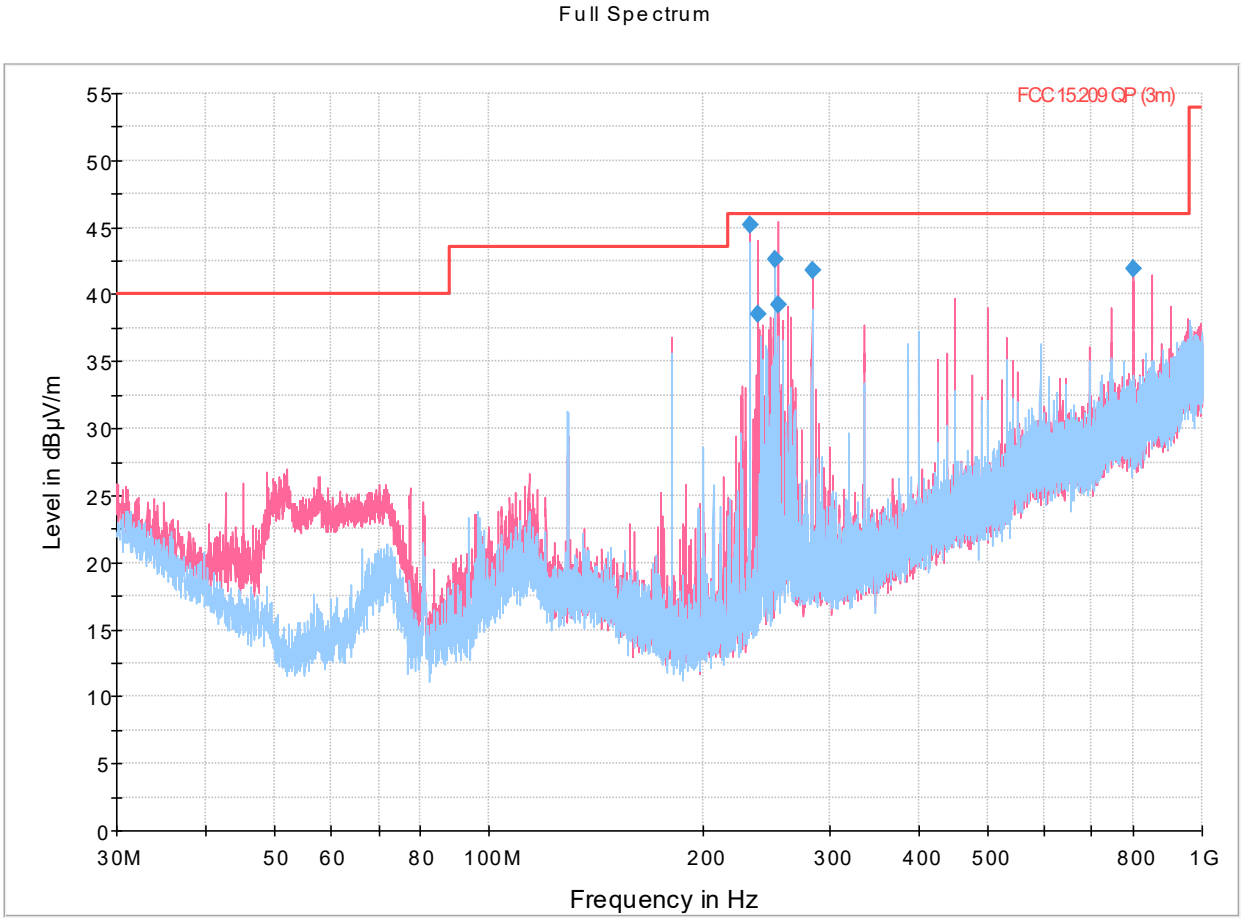
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-18**: Radiated spurious emissions, 802.11n, 40 MHz, MCS0, 26-40 GHz spectral plot (5230 MHz)*

***Table 8.2-19:** Radiated spurious emissions, 802.11n, 40 MHz, MCS0, 26-40 GHz results (5230 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
26028.475000	45.09	---	73.90	28.81	1000.0	1000.000	125.0	H	38.0	6.2
26028.475000	---	31.93	53.90	21.97	1000.0	1000.000	125.0	H	38.0	6.2
33007.325000	46.80	---	73.90	27.10	1000.0	1000.000	175.0	H	75.0	11.9
33007.325000	---	34.14	53.90	19.76	1000.0	1000.000	175.0	H	75.0	11.9
36460.000000	47.81	---	73.90	26.09	1000.0	1000.000	225.0	H	11.0	13.9
36460.000000	---	35.40	53.90	18.50	1000.0	1000.000	225.0	H	11.0	13.9
36745.125000	---	35.88	53.90	18.02	1000.0	1000.000	175.0	H	133.0	14.4
36745.125000	48.60	---	73.90	25.30	1000.0	1000.000	175.0	H	133.0	14.4
38212.000000	47.07	---	73.90	26.83	1000.0	1000.000	125.0	H	253.0	14.6
38212.000000	---	34.25	53.90	19.65	1000.0	1000.000	125.0	H	253.0	14.6
38692.350000	---	34.61	53.90	19.29	1000.0	1000.000	122.0	H	0.0	15.4
38692.350000	47.25	---	73.90	26.65	1000.0	1000.000	122.0	H	0.0	15.4

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)



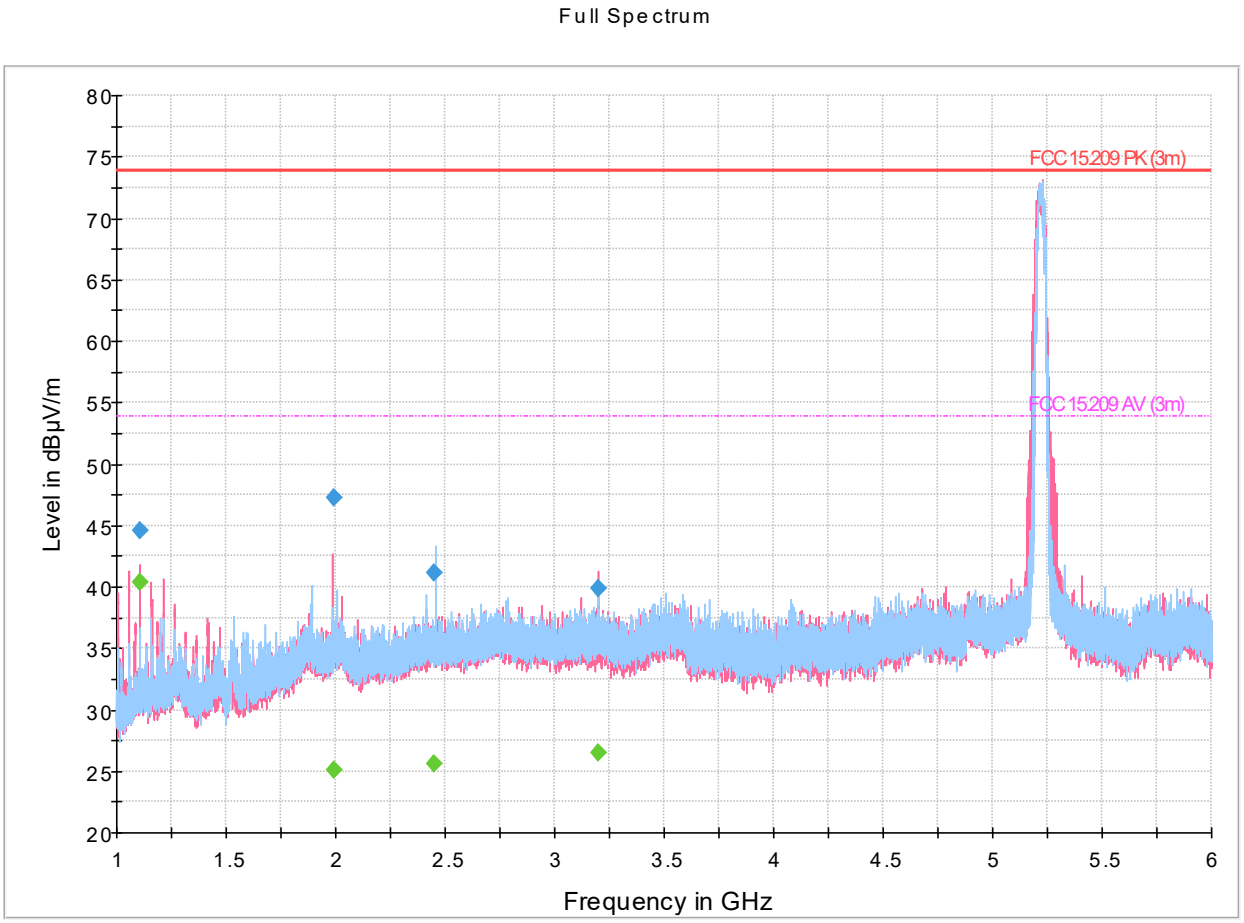
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

Figure 8.2-19: *Radiated spurious emissions, 802.11ac, 20 MHz, MCS0, 30-1000 MHz spectral plot (5220 MHz)*

Table 8.2-20: *Radiated spurious emissions, 802.11ac, 20 MHz, MCS0, 30-1000 MHz (Quasi-Peak) results (5220 MHz)*

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
232.006333	45.23	46.00	0.77	5000.0	120.000	100.0	V	68.0	17.9
238.425333	38.54	46.00	7.46	5000.0	120.000	155.0	V	317.0	18.7
251.341667	42.68	46.00	3.32	5000.0	120.000	109.0	H	53.0	20.4
254.607333	39.26	46.00	6.74	5000.0	120.000	183.0	V	23.0	20.9
283.585667	41.75	46.00	4.25	5000.0	120.000	145.0	V	286.0	20.9
799.167000	41.95	46.00	4.05	5000.0	120.000	112.0	V	351.0	31.8

Notes:
[1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factor = antenna factor ACF (dB) + cable loss (dB)
[3] The maximum measured value observed over a period of 5 seconds was recorded.
[4] Limits converted to dBµV/m and an inverse proportionality factor of 20 dB per decade has been used to normalize the specification limit to a measurement distance of 3 meters to determine compliance.



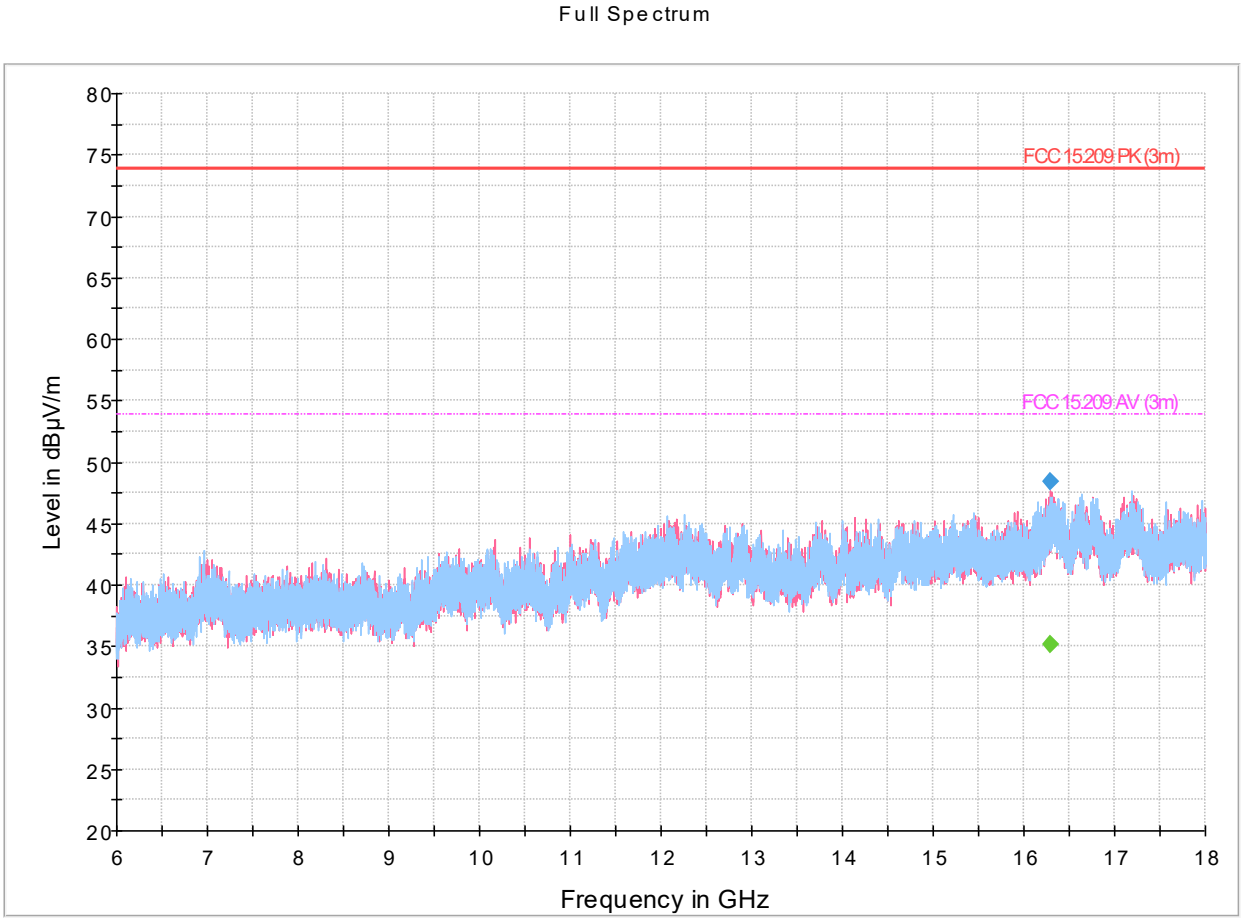
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-20**: Radiated spurious emissions, 802.11ac, 20 MHz, MCS0, 1-6 GHz spectral plot (5220 MHz)*

***Table 8.2-21:** Radiated spurious emissions, 802.11ac, 20 MHz, MCS0, 1-6 GHz results (5220 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1108.433333	44.53	---	73.90	29.37	5000.0	1000.000	226.0	V	20.0	-14.8
1108.433333	---	40.34	53.90	13.56	5000.0	1000.000	226.0	V	20.0	-14.8
1991.600000	47.24	---	73.90	26.66	5000.0	1000.000	116.0	V	206.0	-10.8
1991.600000	---	25.07	53.90	28.83	5000.0	1000.000	116.0	V	206.0	-10.8
2453.200000	---	25.58	53.90	28.32	5000.0	1000.000	344.0	H	0.0	-9.9
2453.200000	41.20	---	73.90	32.70	5000.0	1000.000	344.0	H	0.0	-9.9
3196.866667	---	26.47	53.90	27.43	5000.0	1000.000	330.0	V	0.0	-7.1
3196.866667	39.83	---	73.90	34.07	5000.0	1000.000	330.0	V	0.0	-7.1

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)
The emission at 5220 MHz is the fundamental emission and is excluded from evaluation against the limits.



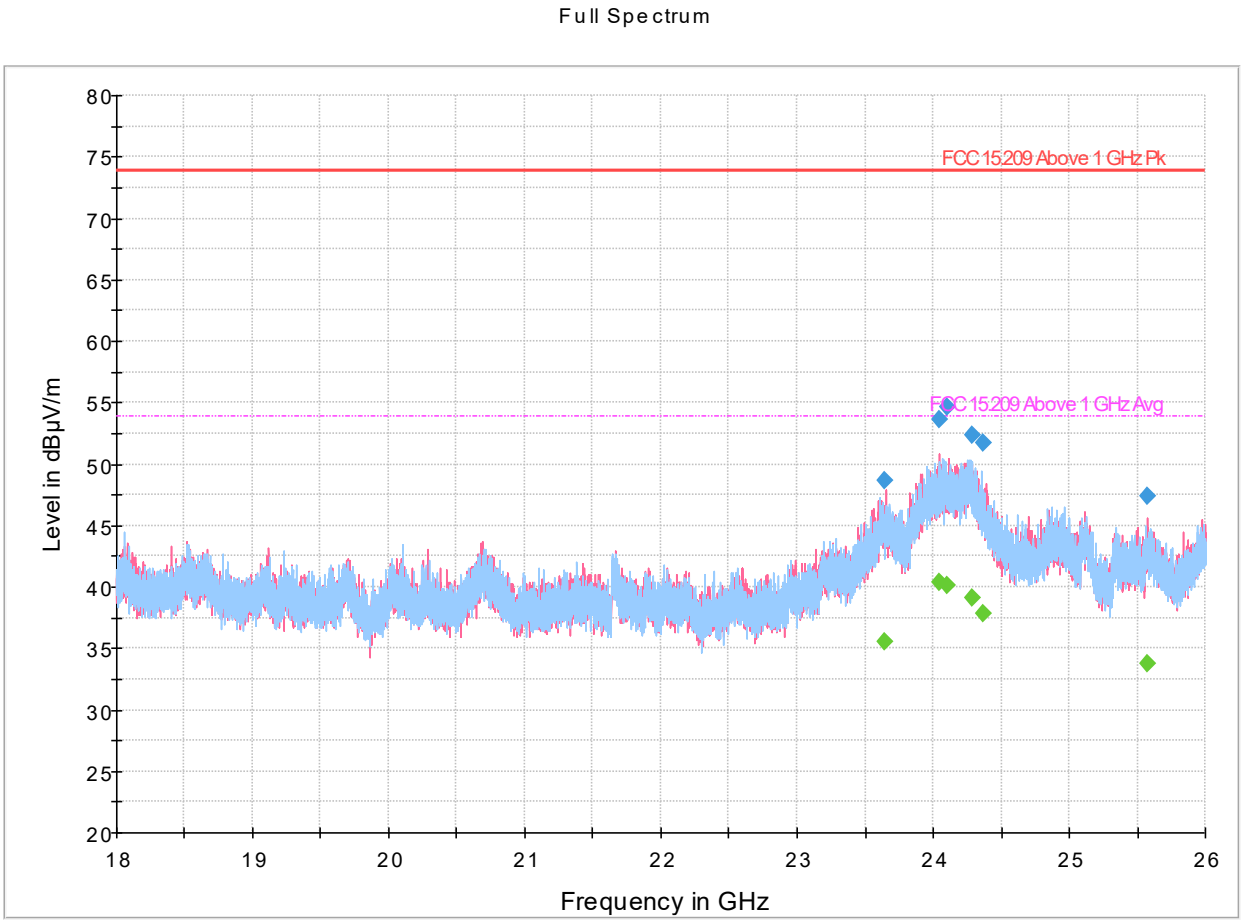
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-21**: Radiated spurious emissions, 802.11ac, 20 MHz, MCS0, 6-18 GHz spectral plot (5220 MHz)*

***Table 8.2-22:** Radiated spurious emissions, 802.11ac, 20 MHz, MCS0, 6-18 GHz results (5220 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
16300.000000	---	35.11	53.90	18.79	5000.0	1000.000	402.0	V	0.0	13.4
16300.000000	48.42	---	73.90	25.48	5000.0	1000.000	402.0	V	0.0	13.4

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)



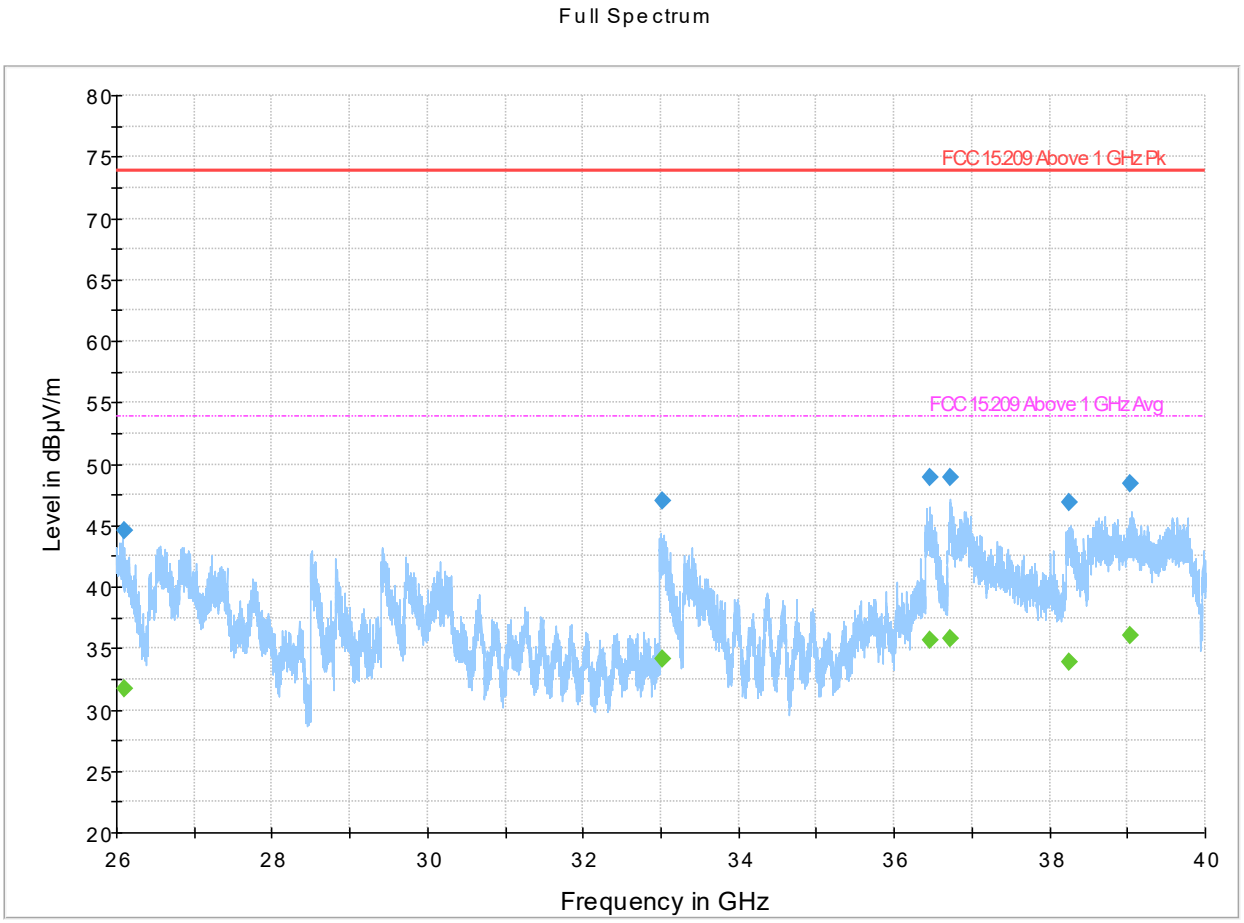
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-22**: Radiated spurious emissions, 802.11ac, 20 MHz, MCS0, 18-26 GHz spectral plot (5220 MHz)*

***Table 8.2-23:** Radiated spurious emissions, 802.11ac, 20 MHz, MCS0, 18-26 GHz results (5220 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
23647.500000	48.62	---	73.90	25.28	5000.0	1000.000	324.0	V	203.0	25.6
23647.500000	---	35.54	53.90	18.36	5000.0	1000.000	324.0	V	203.0	25.6
24051.300000	53.65	---	73.90	20.25	5000.0	1000.000	250.0	V	50.0	29.7
24051.300000	---	40.44	53.90	13.46	5000.0	1000.000	250.0	V	50.0	29.7
24107.100000	54.66	---	73.90	19.24	5000.0	1000.000	122.0	V	118.0	29.5
24107.100000	---	40.11	53.90	13.79	5000.0	1000.000	122.0	V	118.0	29.5
24282.100000	---	39.14	53.90	14.76	5000.0	1000.000	190.0	H	241.0	28.5
24282.100000	52.38	---	73.90	21.52	5000.0	1000.000	190.0	H	241.0	28.5
24366.300000	51.75	---	73.90	22.15	5000.0	1000.000	397.0	H	241.0	27.2
24366.300000	---	37.80	53.90	16.10	5000.0	1000.000	397.0	H	241.0	27.2
25577.300000	---	33.80	53.90	20.10	5000.0	1000.000	134.0	V	160.0	24.2
25577.300000	47.34	---	73.90	26.56	5000.0	1000.000	134.0	V	160.0	24.2

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)



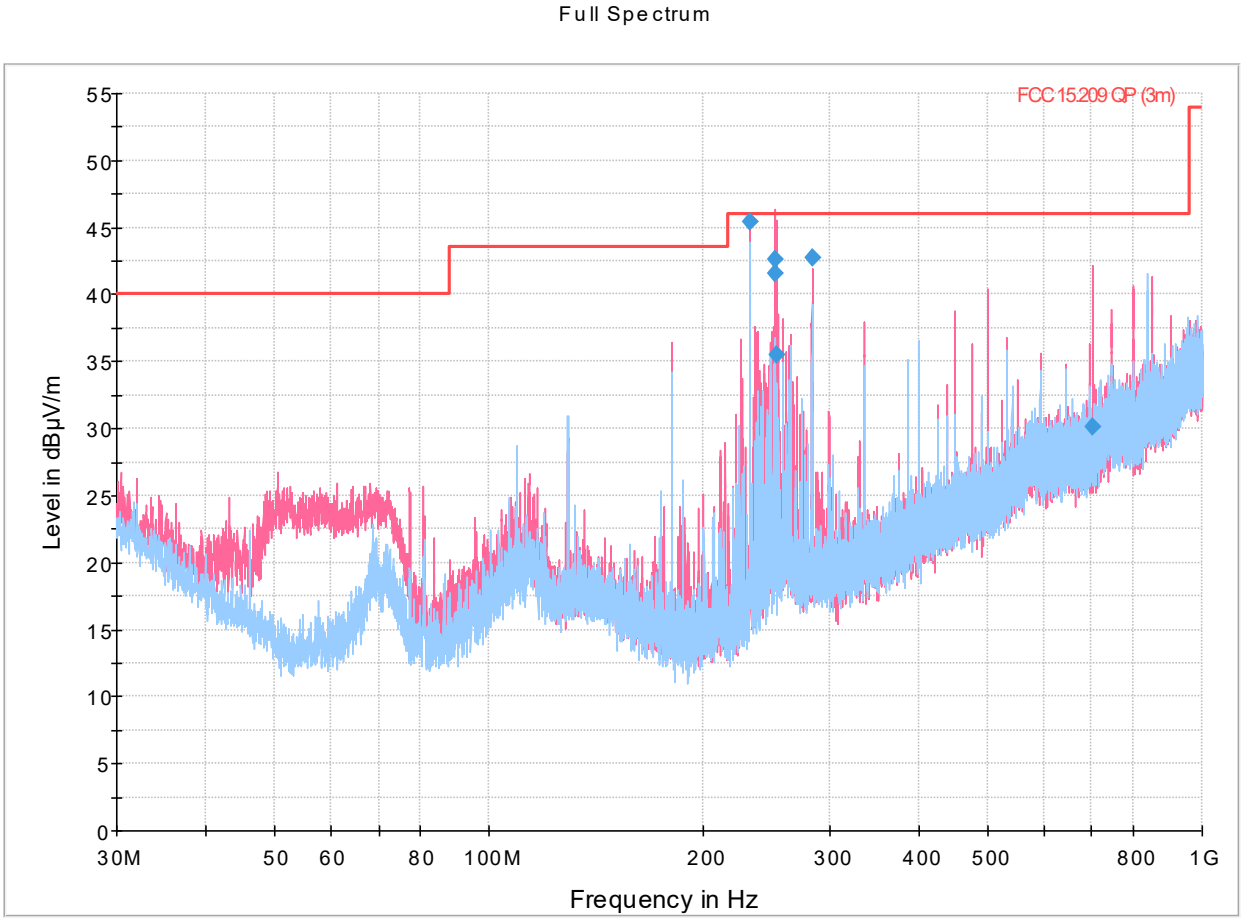
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-23**: Radiated spurious emissions, 802.11ac, 20 MHz, MCS0, 26-40 GHz spectral plot (5220 MHz)*

***Table 8.2-24:** Radiated spurious emissions, 802.11ac, 20 MHz, MCS0, 26-40 GHz results (5220 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
26092.125000	44.58	---	73.90	29.32	1000.0	1000.000	136.0	V	36.0	6.1
26092.125000	---	31.73	53.90	22.17	1000.0	1000.000	136.0	V	36.0	6.1
33011.675000	47.05	---	73.90	26.85	1000.0	1000.000	186.0	H	159.0	11.9
33011.675000	---	34.20	53.90	19.70	1000.0	1000.000	186.0	H	159.0	11.9
36463.975000	48.92	---	73.90	24.98	1000.0	1000.000	125.0	V	22.0	13.9
36463.975000	---	35.69	53.90	18.21	1000.0	1000.000	125.0	V	22.0	13.9
36717.525000	48.90	---	73.90	25.00	1000.0	1000.000	144.0	V	90.0	14.4
36717.525000	---	35.82	53.90	18.08	1000.0	1000.000	144.0	V	90.0	14.4
38259.975000	46.86	---	73.90	27.04	1000.0	1000.000	190.0	V	352.0	14.6
38259.975000	---	33.94	53.90	19.96	1000.0	1000.000	190.0	V	352.0	14.6
39037.075000	48.42	---	73.90	25.48	1000.0	1000.000	160.0	V	41.0	16.1
39037.075000	---	36.00	53.90	17.90	1000.0	1000.000	160.0	V	41.0	16.1

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)



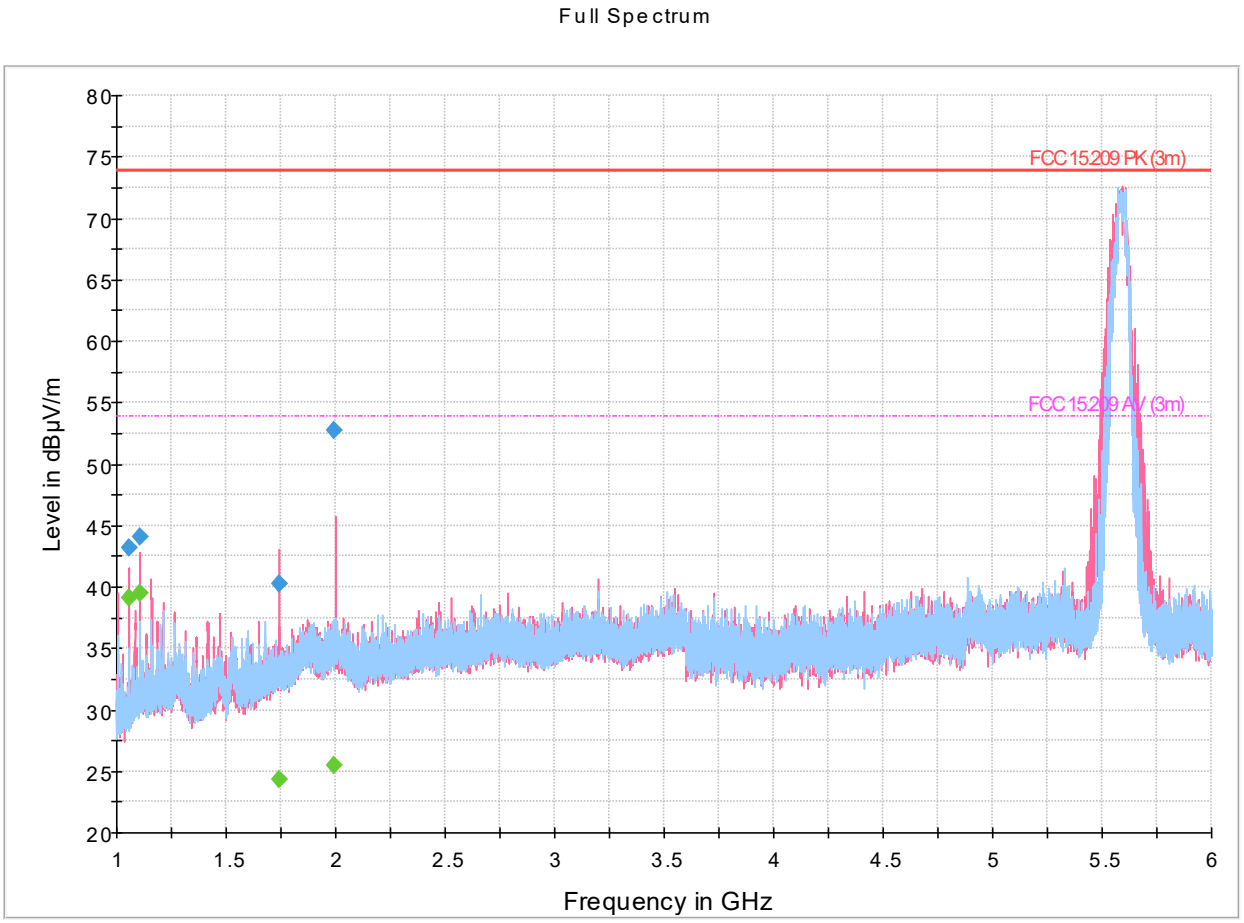
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

Figure 8.2-24: *Radiated spurious emissions, 802.11ac, 40 MHz, MCS0, 30-1000 MHz spectral plot (5590 MHz)*

Table 8.2-25: *Radiated spurious emissions, 802.11ac, 40 MHz, MCS0, 30-1000 MHz (Quasi-Peak) results (5590 MHz)*

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
232.031000	45.42	46.00	0.58	5000.0	120.000	100.0	V	55.0	17.9
251.294000	42.66	46.00	3.34	5000.0	120.000	194.0	V	11.0	20.4
251.451333	41.53	46.00	4.47	5000.0	120.000	176.0	V	0.0	20.4
253.107333	35.50	46.00	10.50	5000.0	120.000	145.0	V	0.0	20.6
283.570333	42.74	46.00	3.26	5000.0	120.000	156.0	V	38.0	20.9
702.395000	30.13	46.00	15.87	5000.0	120.000	158.0	V	0.0	30.5

Notes:
[1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factor = antenna factor ACF (dB) + cable loss (dB)
[3] The maximum measured value observed over a period of 5 seconds was recorded.
[4] Limits converted to dBµV/m and an inverse proportionality factor of 20 dB per decade has been used to normalize the specification limit to a measurement distance of 3 meters to determine compliance.



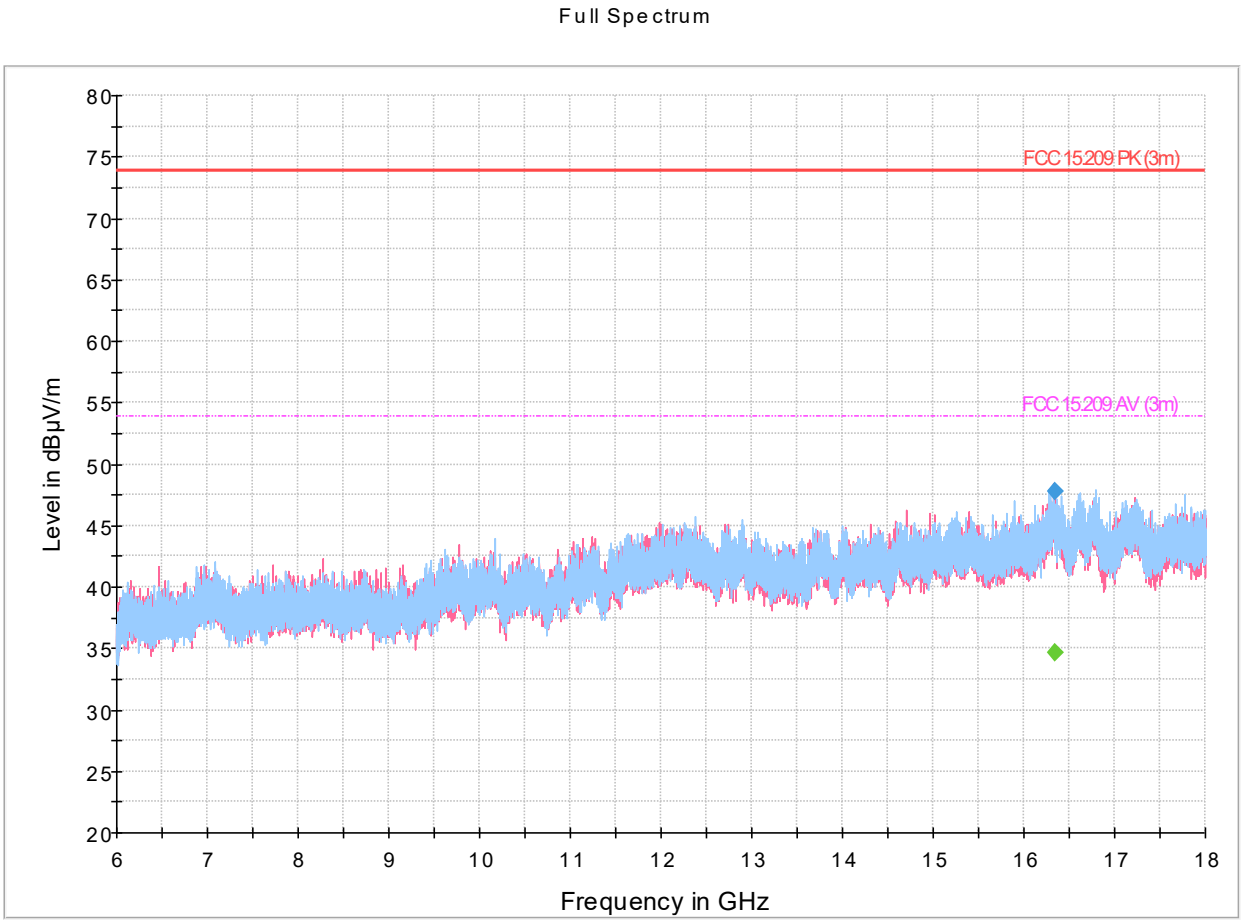
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-25**: Radiated spurious emissions, 802.11ac, 40 MHz, MCS0, 1-6 GHz spectral plot (5590 MHz)*

***Table 8.2-26:** Radiated spurious emissions, 802.11ac, 40 MHz, MCS0, 1-6 GHz results (5590 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1057.066667	---	39.08	53.90	14.82	5000.0	1000.000	144.0	V	357.0	-15.3
1057.066667	43.23	---	73.90	30.67	5000.0	1000.000	144.0	V	357.0	-15.3
1108.733333	44.05	---	73.90	29.85	5000.0	1000.000	142.0	V	20.0	-14.8
1108.733333	---	39.54	53.90	14.36	5000.0	1000.000	142.0	V	20.0	-14.8
1740.833333	40.24	---	73.90	33.66	5000.0	1000.000	347.0	V	166.0	-12.6
1740.833333	---	24.28	53.90	29.62	5000.0	1000.000	347.0	V	166.0	-12.6
1991.133333	---	25.50	53.90	28.40	5000.0	1000.000	135.0	V	201.0	-10.8
1991.133333	52.73	---	73.90	21.17	5000.0	1000.000	135.0	V	201.0	-10.8
1057.066667	---	39.08	53.90	14.82	5000.0	1000.000	144.0	V	357.0	-15.3
1057.066667	43.23	---	73.90	30.67	5000.0	1000.000	144.0	V	357.0	-15.3
1108.733333	44.05	---	73.90	29.85	5000.0	1000.000	142.0	V	20.0	-14.8
1108.733333	---	39.54	53.90	14.36	5000.0	1000.000	142.0	V	20.0	-14.8

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)
The emission at 5220 MHz is the fundamental emission and is excluded from evaluation against the limits



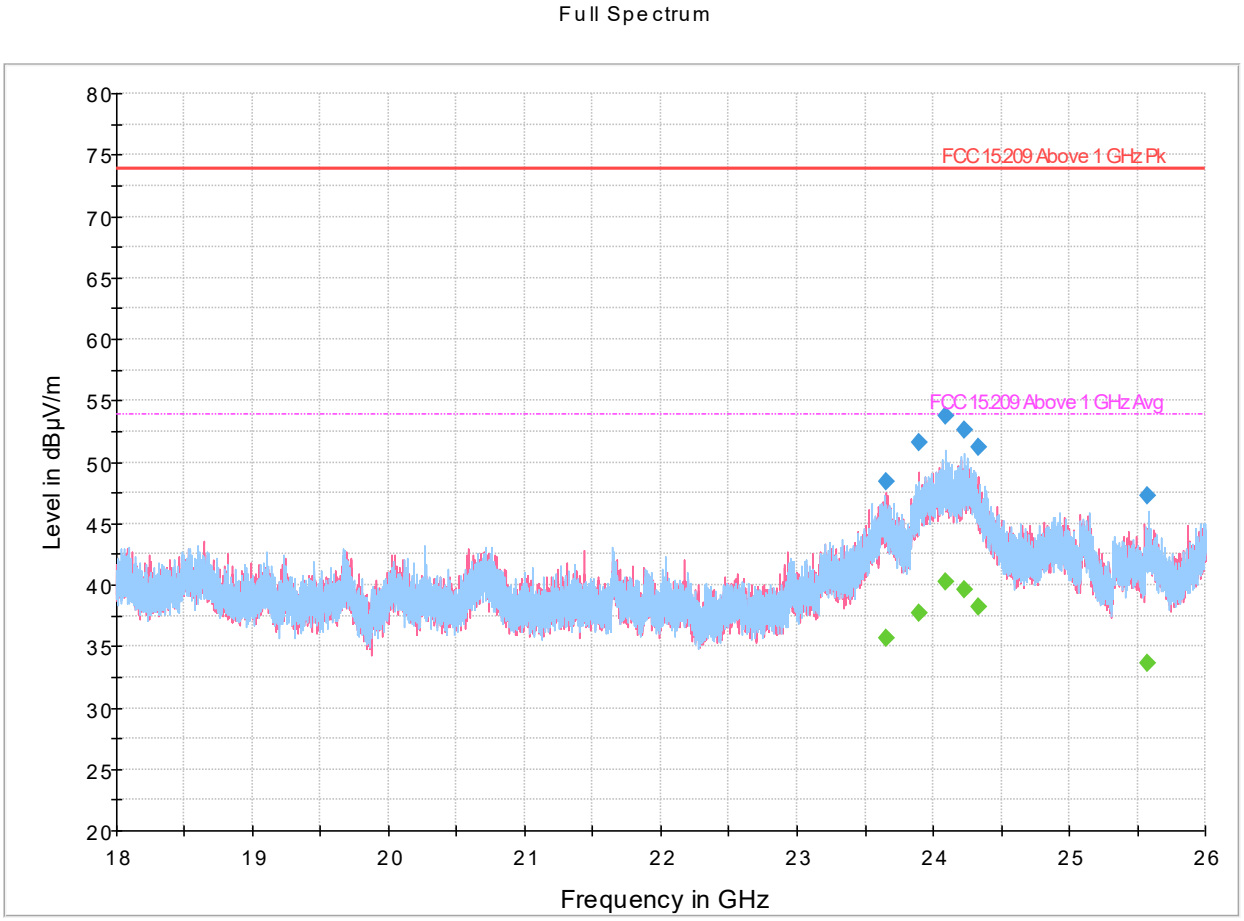
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-26**: Radiated spurious emissions, 802.11ac, 40 MHz, MCS0, 6-18 GHz spectral plot (5590 MHz)*

***Table 8.2-27:** Radiated spurious emissions, 802.11ac, 40 MHz, MCS0, 6-18 GHz results (5590 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
16343.600000	---	34.60	53.90	19.30	5000.0	1000.000	307.0	V	202.0	13.2
16343.600000	47.82	---	73.90	26.08	5000.0	1000.000	307.0	V	202.0	13.2

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)



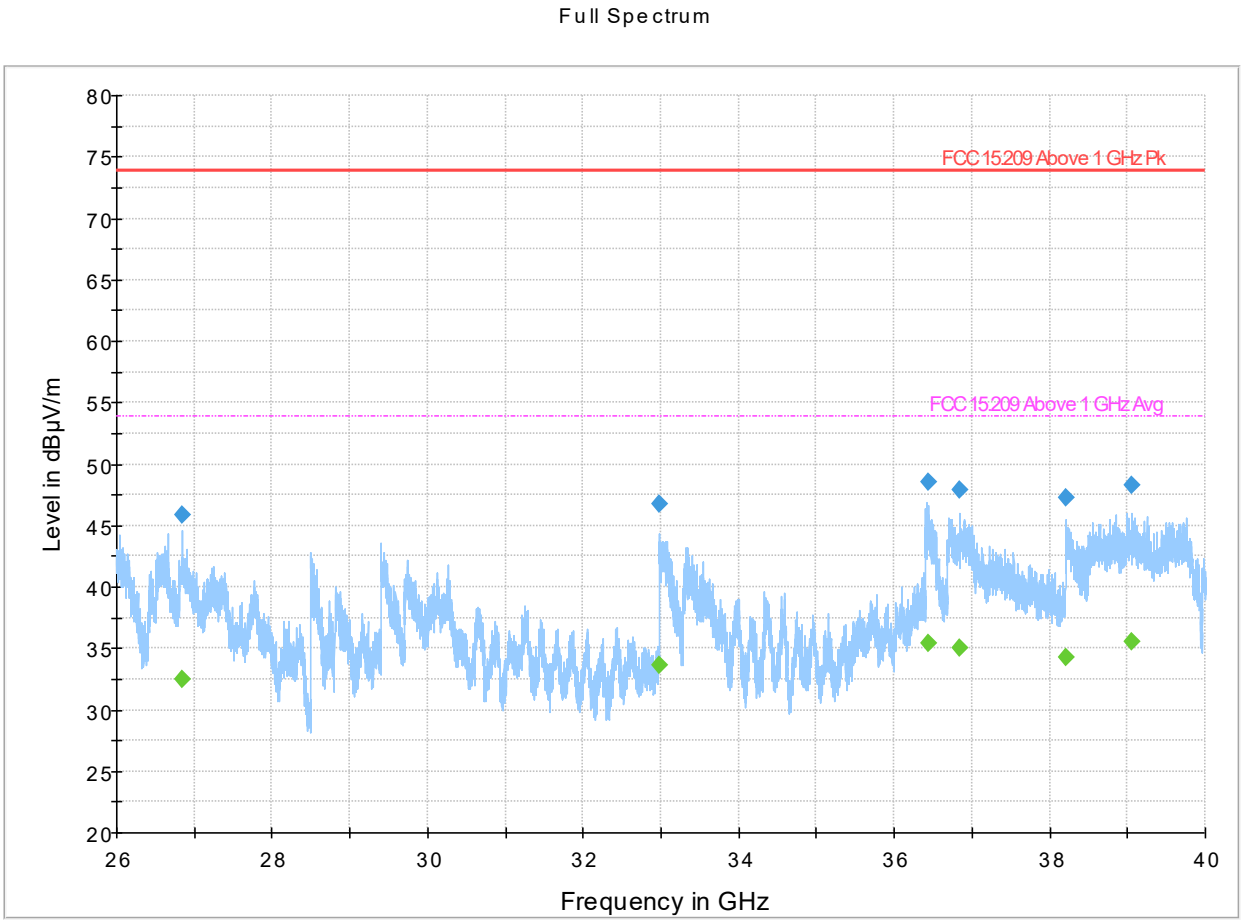
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-27**: Radiated spurious emissions, 802.11ac, 40 MHz, MCS0, 18-26 GHz spectral plot (5590 MHz)*

***Table 8.2-28:** Radiated spurious emissions, 802.11ac, 40 MHz, MCS0, 18-26 GHz results (5590 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
23655.500000	48.42	---	73.90	25.48	5000.0	1000.000	400.0	V	142.0	25.6
23655.500000	---	35.65	53.90	18.25	5000.0	1000.000	400.0	V	142.0	25.6
23897.700000	51.56	---	73.90	22.34	5000.0	1000.000	247.0	V	102.0	27.3
23897.700000	---	37.76	53.90	16.14	5000.0	1000.000	247.0	V	102.0	27.3
24092.500000	53.73	---	73.90	20.17	5000.0	1000.000	156.0	H	274.0	29.6
24092.500000	---	40.29	53.90	13.61	5000.0	1000.000	156.0	H	274.0	29.6
24228.500000	52.56	---	73.90	21.34	5000.0	1000.000	111.0	H	144.0	29.1
24228.500000	---	39.64	53.90	14.26	5000.0	1000.000	111.0	H	144.0	29.1
24330.900000	51.16	---	73.90	22.74	5000.0	1000.000	359.0	V	0.0	27.7
24330.900000	---	38.21	53.90	15.69	5000.0	1000.000	359.0	V	0.0	27.7
25577.700000	47.26	---	73.90	26.64	5000.0	1000.000	290.0	H	254.0	24.2
25577.700000	---	33.65	53.90	20.25	5000.0	1000.000	290.0	H	254.0	24.2

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)



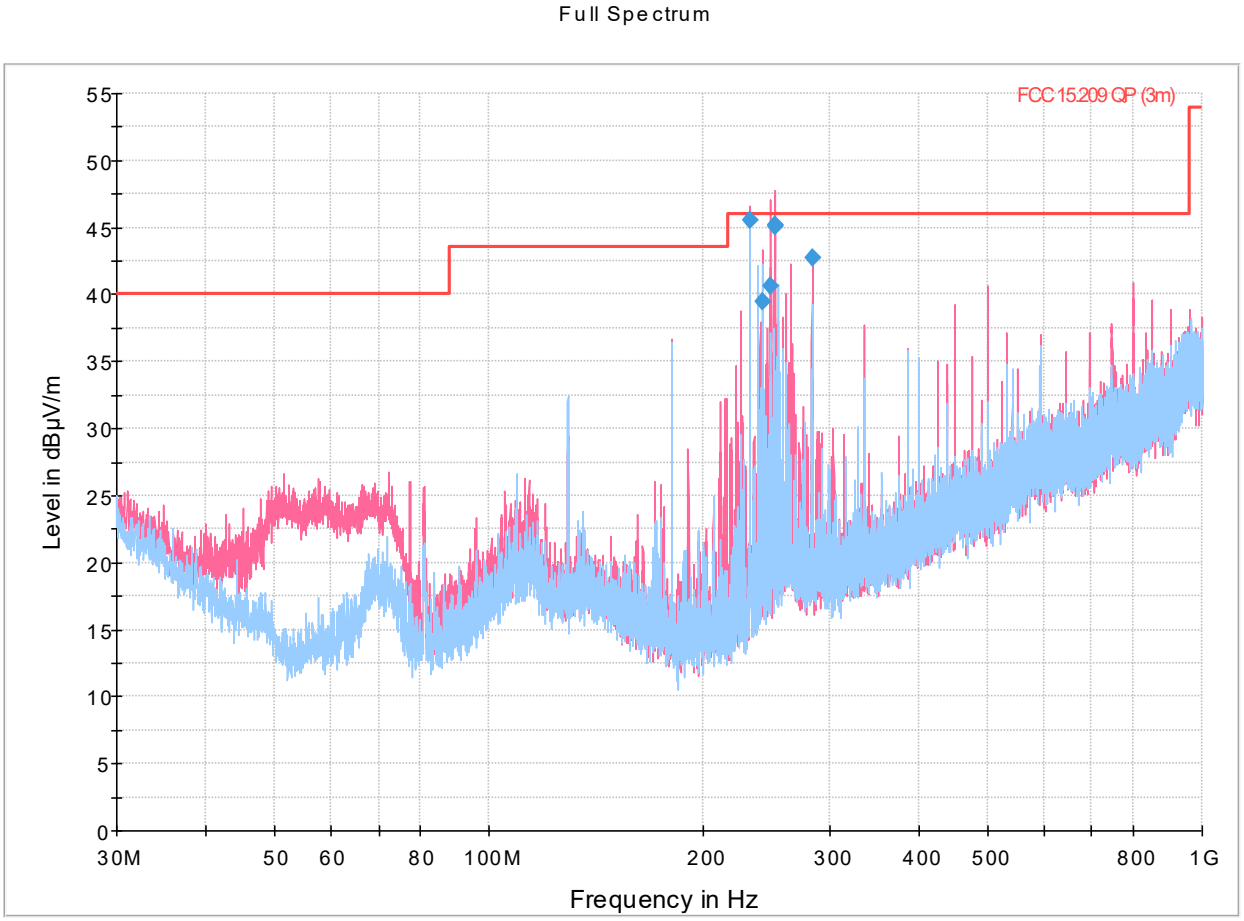
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-28**: Radiated spurious emissions, 802.11ac, 40 MHz, MCS0, 26-40 GHz spectral plot (5590 MHz)*

***Table 8.2-29:** Radiated spurious emissions, 802.11ac, 40 MHz, MCS0, 26-40 GHz results (5590 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
26846.875000	---	32.52	53.90	21.38	1000.0	1000.000	175.0	V	159.0	6.8
26846.875000	45.90	---	73.90	28.00	1000.0	1000.000	175.0	V	159.0	6.8
32977.725000	---	33.69	53.90	20.21	1000.0	1000.000	125.0	H	10.0	11.9
32977.725000	46.74	---	73.90	27.16	1000.0	1000.000	125.0	H	10.0	11.9
36434.525000	48.59	---	73.90	25.31	1000.0	1000.000	132.0	V	285.0	13.9
36434.525000	---	35.41	53.90	18.49	1000.0	1000.000	132.0	V	285.0	13.9
36849.725000	47.91	---	73.90	25.99	1000.0	1000.000	122.0	H	35.0	14.6
36849.725000	---	34.99	53.90	18.91	1000.0	1000.000	122.0	H	35.0	14.6
38202.550000	---	34.32	53.90	19.58	1000.0	1000.000	209.0	V	22.0	14.6
38202.550000	47.22	---	73.90	26.68	1000.0	1000.000	209.0	V	22.0	14.6
39054.950000	---	35.59	53.90	18.31	1000.0	1000.000	206.0	V	140.0	16.2
39054.950000	48.22	---	73.90	25.68	1000.0	1000.000	206.0	V	140.0	16.2

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)



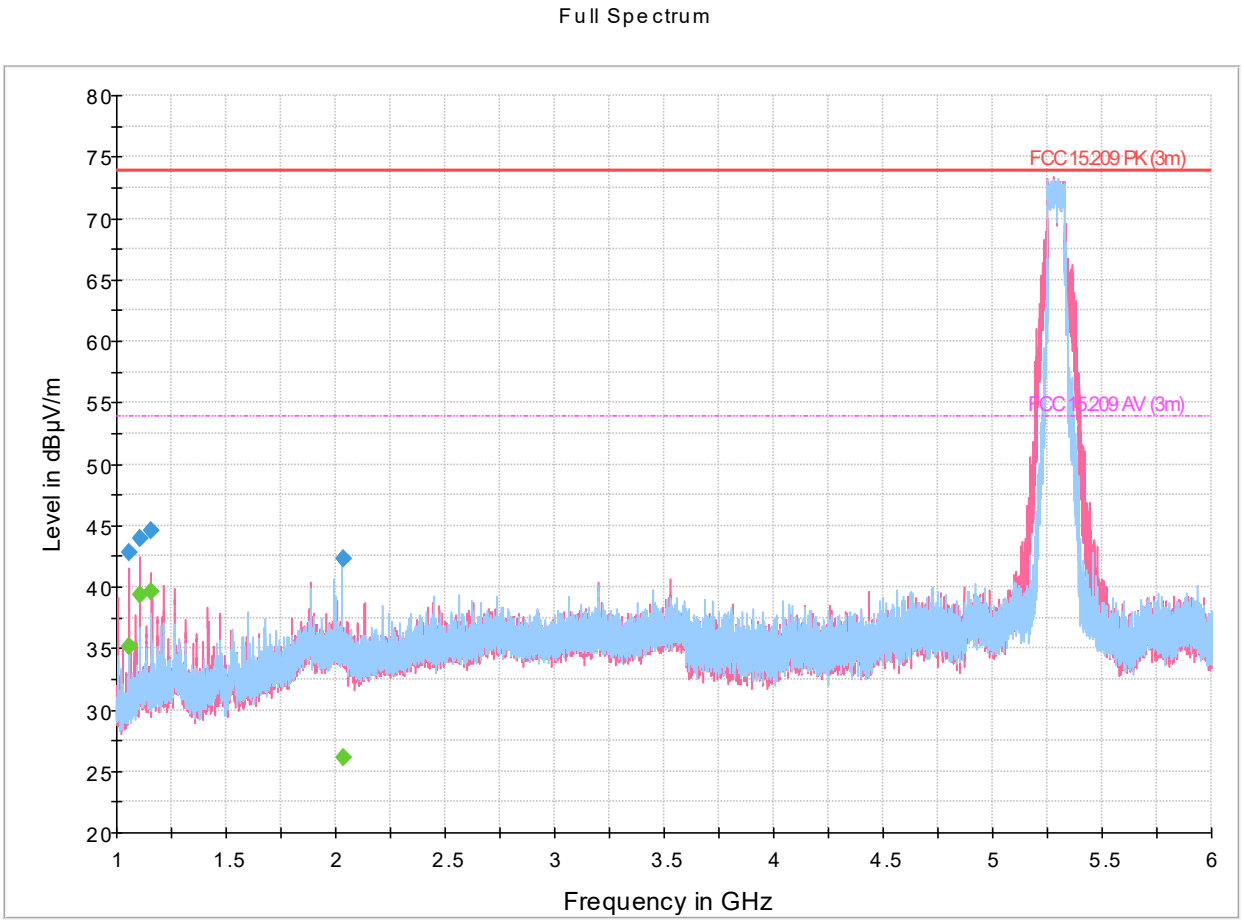
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

Figure 8.2-29: *Radiated spurious emissions, 802.11ac, 80 MHz, MCS0, 30-1000 MHz spectral plot (5290 MHz)*

Table 8.2-30: *Radiated spurious emissions, 802.11ac, 80 MHz, MCS0, 30-1000 MHz (Quasi-Peak) results (5920 MHz)*

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
232.038667	45.58	46.00	0.42	5000.0	120.000	138.0	V	69.0	17.9
241.683333	39.48	46.00	6.52	5000.0	120.000	185.0	V	0.0	19.1
248.100667	40.68	46.00	5.32	5000.0	120.000	205.0	V	0.0	19.9
251.351000	45.23	46.00	0.77	5000.0	120.000	176.0	V	357.0	20.4
251.374000	45.04	46.00	0.96	5000.0	120.000	186.0	V	0.0	20.4
283.610333	42.74	46.00	3.26	5000.0	120.000	165.0	V	38.0	20.9

Notes:
[1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factor = antenna factor ACF (dB) + cable loss (dB)
[3] The maximum measured value observed over a period of 5 seconds was recorded.
[4] Limits converted to dBµV/m and an inverse proportionality factor of 20 dB per decade has been used to normalize the specification limit to a measurement distance of 3 meters to determine compliance.



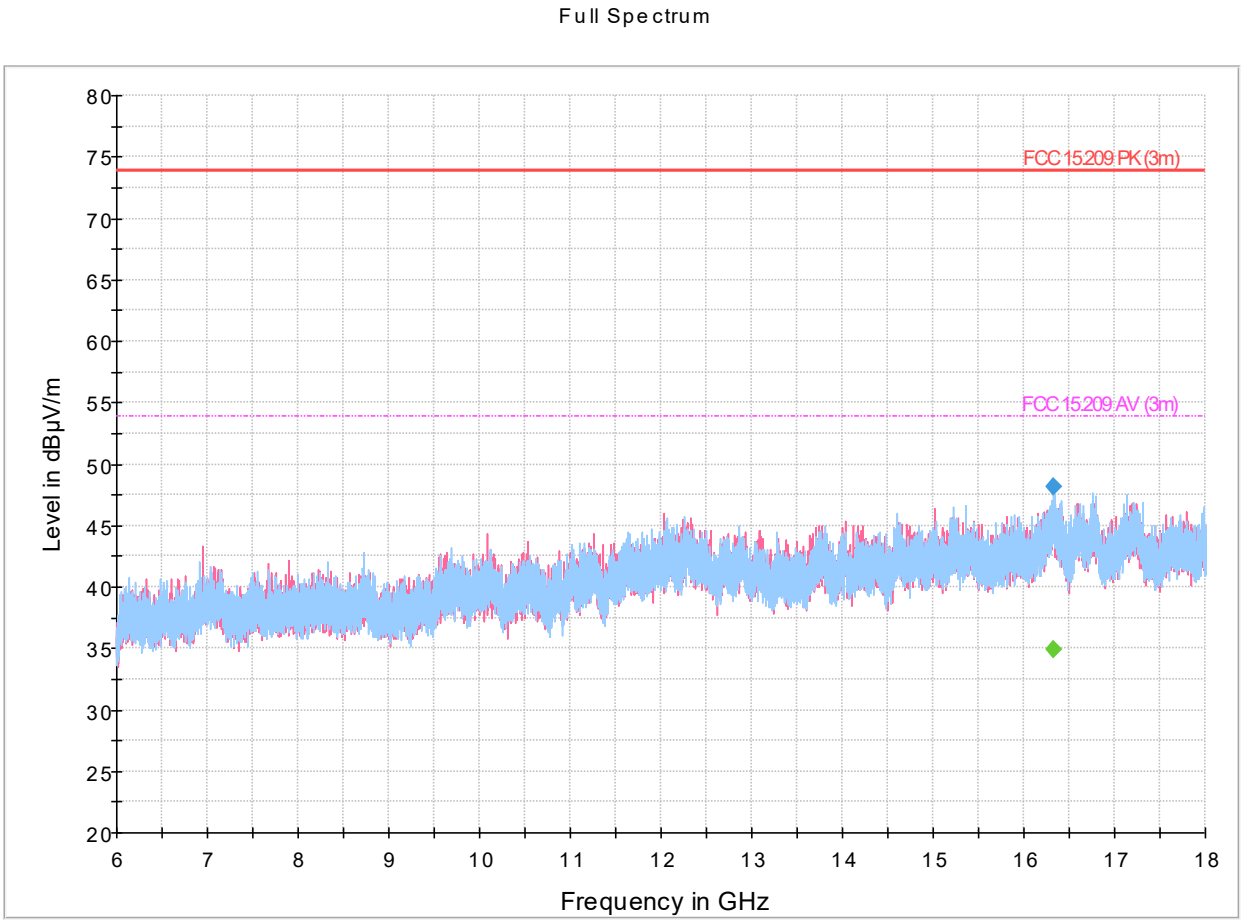
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-30**: Radiated spurious emissions, 802.11ac, 80 MHz, MCS0, 1-6 GHz spectral plot (5290 MHz)*

***Table 8.2-31:** Radiated spurious emissions, 802.11ac, 80 MHz, MCS0, 1-6 GHz results (5290 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1057.466667	---	35.12	53.90	18.78	5000.0	1000.000	149.0	V	0.0	-15.3
1057.466667	42.86	---	73.90	31.04	5000.0	1000.000	149.0	V	0.0	-15.3
1108.333333	---	39.30	53.90	14.60	5000.0	1000.000	153.0	V	20.0	-14.8
1108.333333	44.00	---	73.90	29.90	5000.0	1000.000	153.0	V	20.0	-14.8
1159.933333	44.54	---	73.90	29.36	5000.0	1000.000	121.0	V	43.0	-14.5
1159.933333	---	39.63	53.90	14.27	5000.0	1000.000	121.0	V	43.0	-14.5
2032.466667	42.24	---	73.90	31.66	5000.0	1000.000	148.0	H	266.0	-11.1
2032.466667	---	26.13	53.90	27.77	5000.0	1000.000	148.0	H	266.0	-11.1

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)
The marked emission at 5720 MHz is the fundamental emission and is excluded from evaluation against the limits.



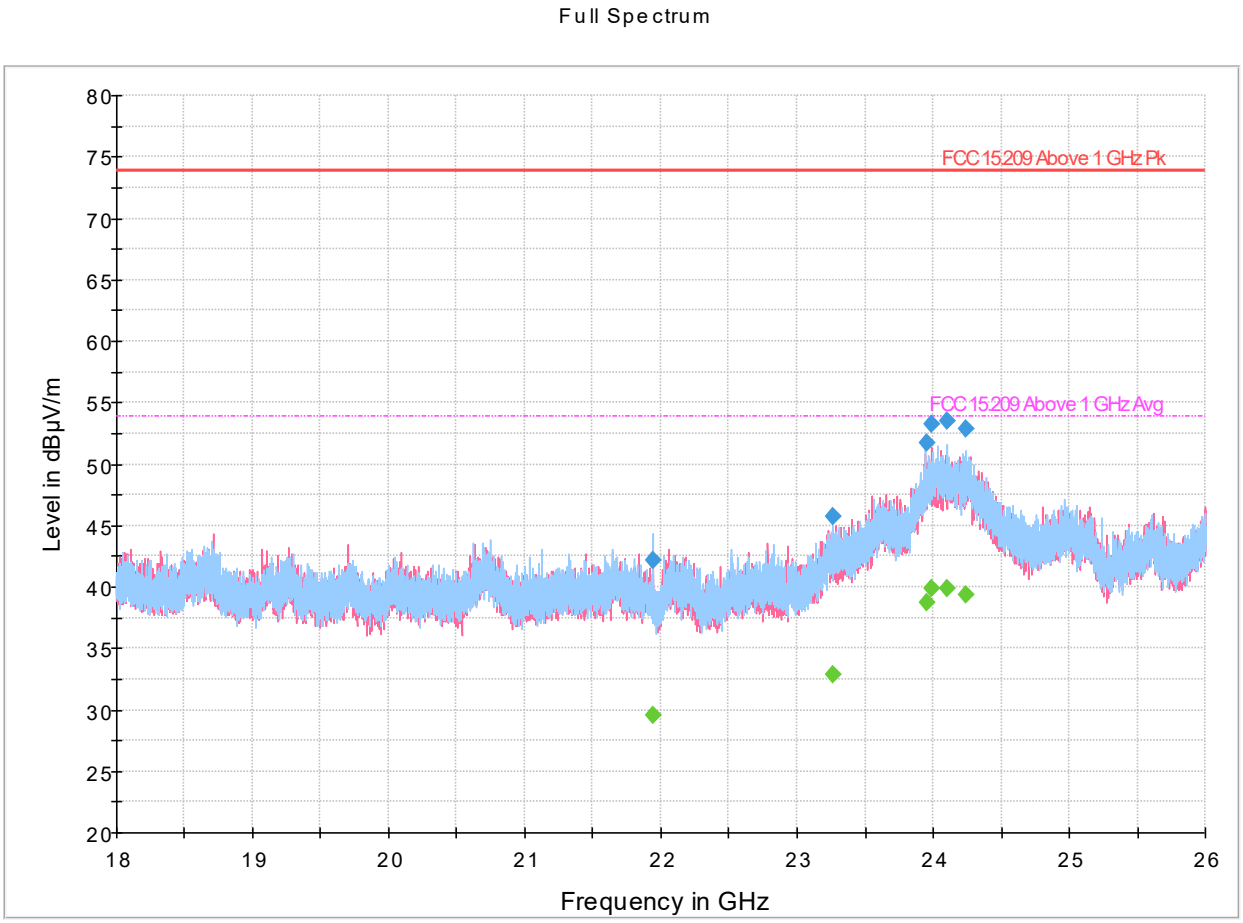
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-31**: Radiated spurious emissions, 802.11ac, 80 MHz, MCS0, 6-18 GHz spectral plot (5290 MHz)*

***Table 8.2-32:** Radiated spurious emissions, 802.11ac, 80 MHz, MCS0, 6-18 GHz results (5290 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
16324.400000	---	34.95	53.90	18.95	5000.0	1000.000	252.0	H	155.0	13.3
16324.400000	48.19	---	73.90	25.71	5000.0	1000.000	252.0	H	155.0	13.3

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)



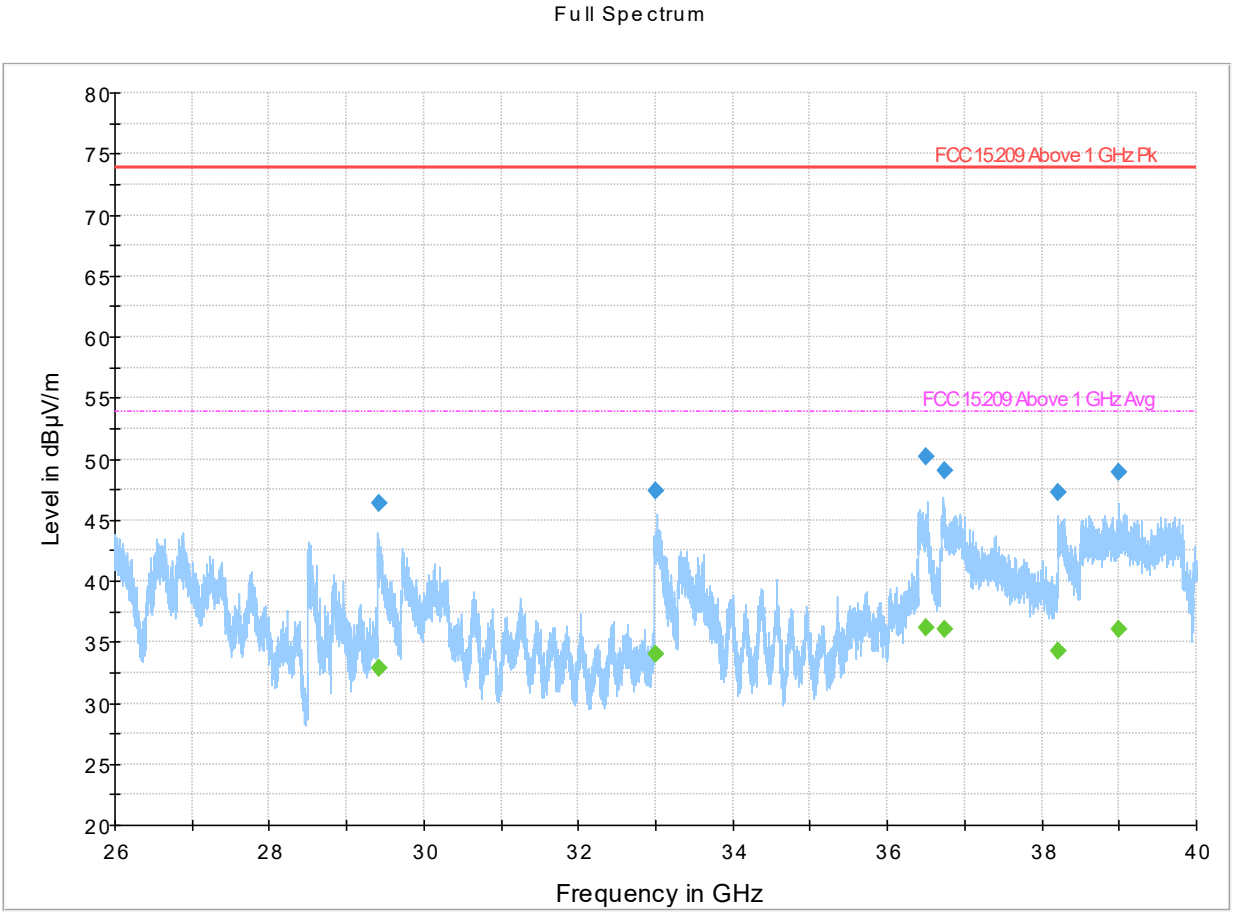
The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-32**: Radiated spurious emissions, 802.11ac, 80 MHz, MCS0, 18-26 GHz spectral plot (5290 MHz)*

***Table 8.2-33:** Radiated spurious emissions, 802.11ac, 80 MHz, MCS0, 18-26 GHz results (5290 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
21940.900000	42.19	---	73.90	31.71	5000.0	1000.000	314.0	H	279.0	19.1
21940.900000	---	29.55	53.90	24.35	5000.0	1000.000	314.0	H	279.0	19.1
23260.700000	---	32.85	53.90	21.05	5000.0	1000.000	242.0	H	173.0	22.5
23260.700000	45.72	---	73.90	28.18	5000.0	1000.000	242.0	H	173.0	22.5
23949.900000	51.74	---	73.90	22.16	5000.0	1000.000	119.0	H	200.0	28.4
23949.900000	---	38.76	53.90	15.14	5000.0	1000.000	119.0	H	200.0	28.4
23993.300000	53.20	---	73.90	20.70	5000.0	1000.000	266.0	V	76.0	29.2
23993.300000	---	39.84	53.90	14.06	5000.0	1000.000	266.0	V	76.0	29.2
24104.100000	---	39.83	53.90	14.07	5000.0	1000.000	178.0	H	339.0	29.6
24104.100000	53.46	---	73.90	20.44	5000.0	1000.000	178.0	H	339.0	29.6
24237.100000	52.85	---	73.90	21.05	5000.0	1000.000	143.0	H	0.0	29.0
24237.100000	---	39.42	53.90	14.48	5000.0	1000.000	143.0	H	0.0	29.0

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)



The spectral plot is a summation of a vertical and horizontal scan. The spectral scan has been corrected with the associated transducer factors (i.e. antenna factors, cable loss, amplifier gains, and attenuators).

***Figure 8.2-33**: Radiated spurious emissions, 802.11ac, 80 MHz, MCS0, 26-40 GHz spectral plot (5290 MHz)*

***Table 8.2-34:** Radiated spurious emissions, 802.11ac, 80 MHz, MCS0, 26-40 GHz results (5290 MHz)*

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
29410.975000	46.31	---	73.90	27.59	1000.0	1000.000	149.0	V	0.0	8.8
29410.975000	---	32.81	53.90	21.09	1000.0	1000.000	149.0	V	0.0	8.8
33006.025000	---	34.07	53.90	19.83	1000.0	1000.000	125.0	V	22.0	11.9
33006.025000	47.35	---	73.90	26.55	1000.0	1000.000	125.0	V	22.0	11.9
36509.250000	50.15	---	73.90	23.75	1000.0	1000.000	160.0	V	198.0	14.0
36509.250000	---	36.24	53.90	17.66	1000.0	1000.000	160.0	V	198.0	14.0
36732.800000	---	36.06	53.90	17.84	1000.0	1000.000	132.0	V	61.0	14.4
36732.800000	49.03	---	73.90	24.87	1000.0	1000.000	132.0	V	61.0	14.4
38203.350000	---	34.31	53.90	19.59	1000.0	1000.000	217.0	H	90.0	14.6
38203.350000	47.26	---	73.90	26.64	1000.0	1000.000	217.0	H	90.0	14.6
39003.575000	---	36.01	53.90	17.89	1000.0	1000.000	186.0	V	246.0	16.1
39003.575000	48.90	---	73.90	25.00	1000.0	1000.000	186.0	V	246.0	16.1

Notes: [1] Field strength (dBµV/m) = receiver/spectrum analyzer value (dBµV) + correction factor (dB)
[2] Correction factors = antenna factor ACF (dB) + cable loss (dB) – pre-amp (dB)

Section 9 Block diagrams of test set-ups

9.1 Radiated emissions set-up

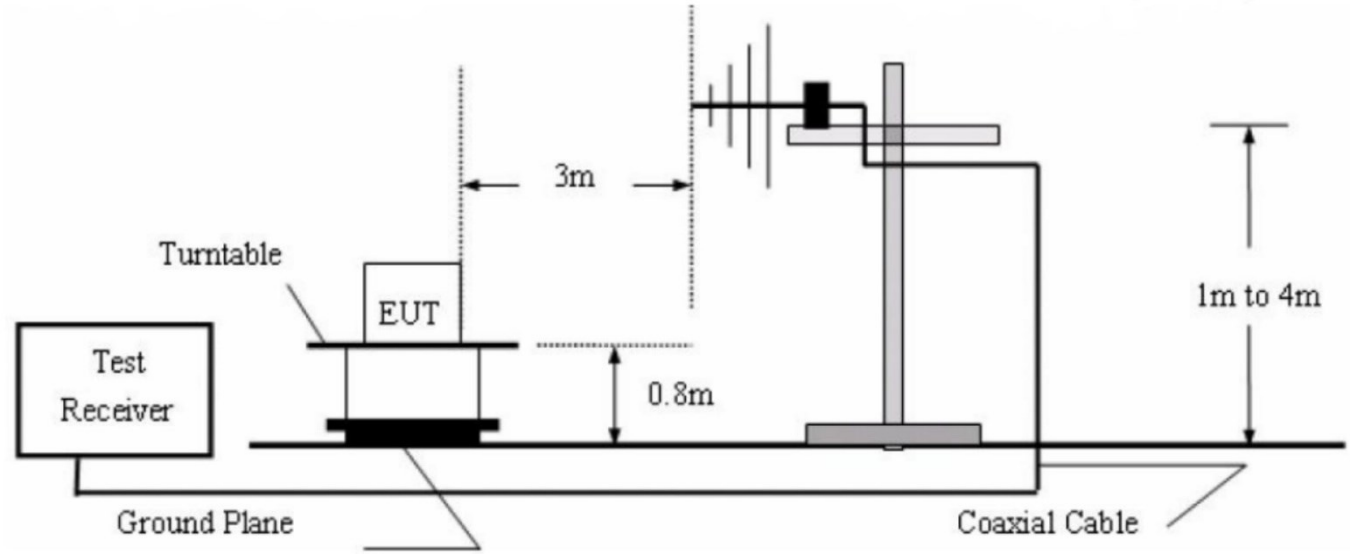


Figure 9.1-1: *30 MHz - 1000 MHz Setup*

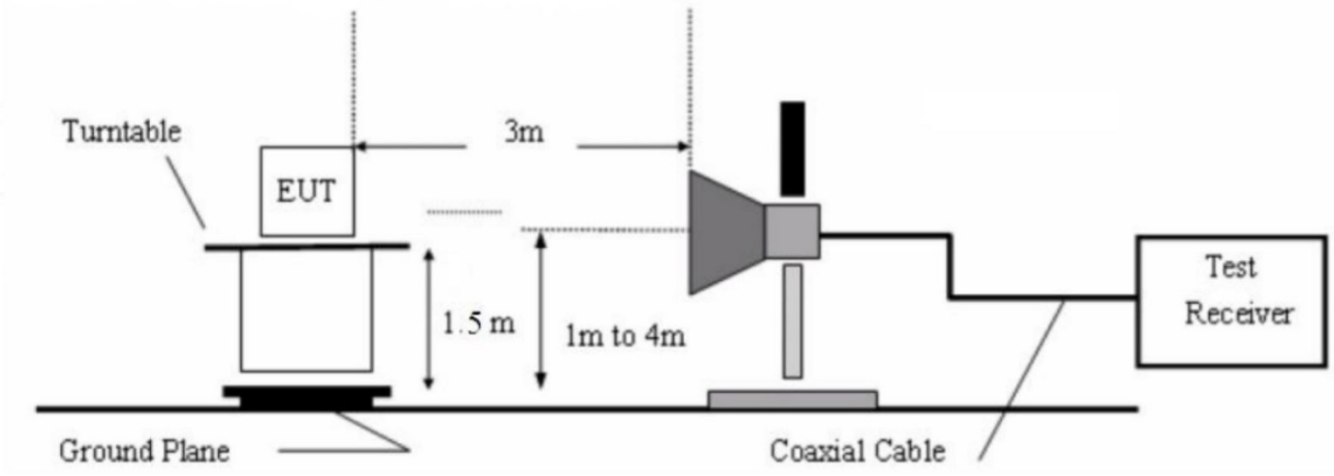


Figure 9.1-2: 1 GHz - 40 GHz Setup