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Limited Test report

410508-3TRFWL

Date of issue: April 27, 2021

Applicant:

SYNG, Inc.

Product:

Cell Alpha - Main Logic Board

Model:

SC21001

FCC ID: 2AYDT-SC21001 IC: 26794-SC21001

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

Nemko USA Inc., a testing laboratory, is accredited by NVLAP. The tests included in this report are within the scope of this accreditation.

NVLAP TESTING NVLAP LAB CODE 200116-0

ilac-MRA

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FCC Site Number	Test Firm Registration Number: 392943 Designation Number: US5058
ISED Test Site	2040B-3

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Reviewed by	James Cunningham, EMC/MIL/WL Supervisor
Review date	April 27, 2021
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.
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Section 1 Report summary

1.1 Applicant

Company name	SYNG, Inc.
Address	120 Mildred Ave.
City	Venice
State	CA
Postal/Zip code	90291
Country	USA

1.2 Manufacturer

Company name	SYNG, Inc.
Address	120 Mildred Ave.
City	Venice
State	CA
Postal/Zip code	90291
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 measurements, 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
410508-3TRFWL	Original report issued

Notes:

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 (SISO and MIMO): 20 and 40 MHz bandwidths
- IEEE 802.11ac (SISO and MIMO): 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	IEEE 802.11ac, 20 MHz bandwidth (MIMO), Channel 64 (5320 MHz) IEEE 802.11n, 20 MHz bandwidth (MIMO), Channel 64 (5320 MHz) IEEE 802.11n 40 MHz bandwidth (MIMO), Channel 62 (5310 MHz)
§15.407(b) restricted band edge emissions	IEEE 802.11a, U-NII-1, Low band edge IEEE 802.11a, U-NII-2C, Low band edge IEEE 802.11n 20 MHz bandwidth (SISO), U-NII-1, Low band edge IEEE 802.11n 40 MHz bandwidth (SISO), U-NII-1, Low band edge IEEE 802.11n 20 MHz bandwidth (MIMO), U-NII-1, Low band edge IEEE 802.11n 40 MHz bandwidth (MIMO), U-NII-1, Low band edge IEEE 802.11ac 20 MHz bandwidth (SISO), U-NII-1, Low band edge IEEE 802.11ac 40 MHz bandwidth (SISO), U-NII-1, Low band edge IEEE 802.11ac 80 MHz bandwidth (SISO), U-NII-1, Low band edge IEEE 802.11ac 20 MHz bandwidth (MIMO), U-NII-1, Low band edge IEEE 802.11ac 40 MHz bandwidth (MIMO), U-NII-1, Low band edge IEEE 802.11ac 80 MHz bandwidth (MIMO), U-NII-1, Low band edge IEEE 802.11a, U-NII-2A, High band edge IEEE 802.11n 20 MHz bandwidth (SISO), U-NII-2A, High band edge IEEE 802.11n 40 MHz bandwidth (SISO), U-NII-2A, High band edge IEEE 802.11ac 20 MHz bandwidth (SISO), U-NII-2A, High band edge IEEE 802.11ac 40 MHz bandwidth (SISO), U-NII-2A, High band edge IEEE 802.11ac 80 MHz bandwidth (SISO), U-NII-2A, High band edge IEEE 802.11ac 40 MHz bandwidth (MIMO), U-NII-2A, High band edge IEEE 802.11ac 80 MHz bandwidth (MIMO), U-NII-2A, High band edge IEEE 802.11a, U-NII-2C, Low band edge IEEE 802.11n 20 MHz bandwidth (SISO), U-NII-2C, Low band edge IEEE 802.11n 40 MHz bandwidth (SISO), U-NII-2C, Low band edge IEEE 802.11n 20 MHz bandwidth (MIMO), U-NII-2C, Low band edge IEEE 802.11n 40 MHz bandwidth (MIMO), U-NII-2C, Low band edge IEEE 802.11ac 20 MHz bandwidth (SISO), U-NII-2C, Low band edge IEEE 802.11ac 40 MHz bandwidth (SISO), U-NII-2C, Low band edge IEEE 802.11ac 80 MHz bandwidth (SISO), U-NII-2C, Low band edge IEEE 802.11ac 20 MHz bandwidth (MIMO), U-NII-2C, Low band edge IEEE 802.11ac 40 MHz bandwidth (MIMO), U-NII-2C, Low band edge IEEE 802.11ac 80 MHz bandwidth (MIMO), U-NII-2C, Low band edge IEEE 802.11n 20 MHz bandwidth (MIMO), U-NII-2A, High band edge IEEE 802.11n 40 MHz bandwidth (MIMO), U-NII-2A, High band edge IEEE 802.11ac 20 MHz bandwidth (MIMO), U-NII-2A, High band edge
§15.407(b) unwanted emissions, 30 – 1000 MHz	IEEE 802.11a, Channel 116 (5580 MHz) IEEE 802.11ac 20 MHz bandwidth (MIMO) Channel 100 (5500 MHz) IEEE 802.11ac 40 MHz bandwidth (MIMO) Channel 102 (5510 MHz) IEEE 802.11ac 80 MHz bandwidth (MIMO) Channel 106 (5530 MHz)
§15.407(b) unwanted emissions, 1 – 18 GHz	IEEE 802.11a, U-NII-1 band, low channel IEEE 802.11a, U-NII-1 band, mid channel IEEE 802.11a, U-NII-1 band, high channel IEEE 802.11a, U-NII-2A band, low channel IEEE 802.11a, U-NII-2A band, mid channel IEEE 802.11a, U-NII-2A band, high channel IEEE 802.11a, U-NII-2C band, low channel IEEE 802.11a, U-NII-2C band, mid channel IEEE 802.11a, U-NII-2C band, high channel

	IEEE 802.11a, U-NII-3 band, low channel IEEE 802.11a, U-NII-3 band, mid channel IEEE 802.11a, U-NII-3 band, high channel IEEE 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-1 band, low channel IEEE 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-1 band, mid channel IEEE 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-1 band, high channel IEEE 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2A band, low channel IEEE 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2A band, mid channel IEEE 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2A band, high channel IEEE 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, low channel IEEE 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, mid channel IEEE 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, high channel IEEE 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-3 band, low channel IEEE 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-3 band, mid channel IEEE 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-3 band, high channel IEEE 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-1 band, low channel IEEE 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-1 band, high channel IEEE 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2A band, low channel IEEE 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2C band, low channel IEEE 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2C band, mid channel IEEE 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2C band, high channel IEEE 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-3 band, low channel IEEE 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-3 band, high channel IEEE 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-1 band, mid channel IEEE 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2A band, mid channel IEEE 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2C band, low channel IEEE 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2C band, high channel IEEE 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-3 band, mid channel
§15.407(b) unwanted emissions, 18 – 26 GHz	IEEE 802.11a, U-NII-3 band, mid channel IEEE 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2A band, high channel IEEE 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, low channel IEEE 802.11n, MIMO antenna configuration, 40MHz BW, U-NII-2C band, low channel IEEE 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2C band, low channel
§15.407(b) unwanted emissions, 26 – 40 GHz	IEEE 802.11a, U-NII-2C band, mid channel 26-40 IEEE 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, low channel IEEE 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2C band, low channel IEEE 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2C band, low channel
§15.407(b) Undesirable emission limits	IEEE 802.11a, U-NII-2C band, low channel, band edge IEEE 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, low channel, band edge IEEE 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2C band, low channel, band edge IEEE 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2C band, low channel, band edge IEEE 802.11a, U-NII-2C band, high channel, band edge IEEE 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, high channel, band edge IEEE 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2C band, high channel, band edge IEEE 802.11a, U-NII-3 band, low channel, band edge IEEE 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-3 band, low channel, band edge IEEE 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-3 band, low channel, band edge IEEE 802.11a, U-NII-3 band, high channel, band edge IEEE 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-3 band, high channel, band edge IEEE 802.11a, U-NII-3 band, high channel, band edge IEEE 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-3 band, high channel, band edge IEEE 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-3 band, high channel, band edge IEEE 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-3 band, mid channel, band edge IEEE 802.11a, U-NII-2A band, mid channel, 18 – 26 GHz IEEE 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, low channel, 18 – 26 GHz IEEE 802.11n, MIMO antenna configuration, 40MHz BW, U-NII-2C band, low channel, 18 – 26 GHz IEEE 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2C band, low channel, 18 – 26 GHZ

Section 3 Equipment under test (EUT) details

3.1 Sample information

Receipt date	March 9, 2021
Nemko sample ID number	NEx: 410508

3.2 EUT information

Product name	Cell Alpha - Main Logic Board
Model	SC21001
Serial number	306390016
Part number	830-00012-09

3.3 Technical information

Used IC test site(s) reg. number	2040A
RSS number and issue	RSS-247 issue 2 (February 2017)
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
Minimum frequency (MHz)	5150 MHz
Maximum frequency (MHz)	5850 MHz
Type of modulation	802.11a, 802.11n, 802.11ac
Power requirements	16-24 V_{DC}; 1 A
Antenna information	5.1 dBi gain, PCB SMT Antenna

3.4 EUT exercise and monitoring details

EUT was tested in 802.11a/.11n/.11ac wireless network specifications, using SISO and MIMO antenna configurations as applicable, with both 20 MHz and 40 MHz channel bandwidths as applicable, on the low, mid, and high channels.

Table 3.4-1: *EUT sub assemblies*

Description	Brand name	Model/Part number	Serial number	Rev.

Table 3.4-2: *EUT interface ports*

Description	Qty.

Table 3.4-3: *Support equipment*

Description	Brand name	Model/Part number	Serial number	Rev.
Laptop	Dell	E7470	12258194222	--

Table 3.4-4: *Inter-connection cables*

Cable description	From	To	Length (m)

3.5 EUT setup diagram

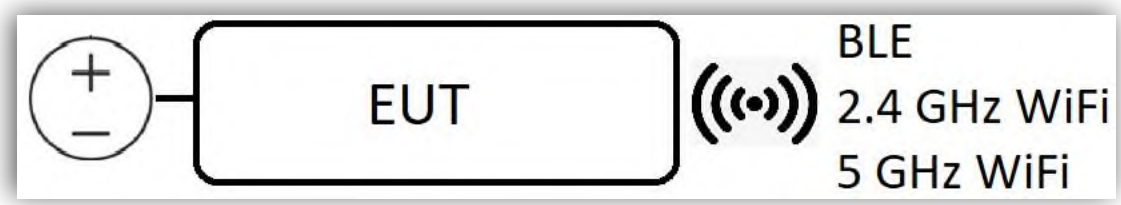

Figure 3.5-1: *Setup diagram*

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

Table 6.1-1: *Test Equipment List*

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
EMI Test Receiver	Rohde & Schwarz	ESU40	E1121	1 yr.	1 Dec 2021
System Controller	Sunol Sciences	SC104V	E1191	NCR	NCR
Bilog Antenna (30-1000 MHz)	Schaffner	CBL 6111D	1763	2 yr.	18 Feb 2022
DRG Horn (1-18 GHz)	ETS-Lindgren	3117-PA	E1139	2 yr.	21 Mar 2021
Horn antenna (18-26 GHz)	Sage Millimeter, Inc.	SAR-2309-42-S2	E1143	2 yr.	13 Nov 2022
Horn antenna (26-40 GHz)	Sage Millimeter, Inc.	SAR-2309-28-S2	E1148	2 yr.	5 Nov 2022
Low Noise Pre Amp	Sage Millimeter, Inc.	SBL-1834034030-KFKF	E1228	NCR	NCR
Notch Filter (2.4 GHz)	Micro-Tonics	HPM50110-01	E1142	NCR	NCR
Notch Filter (5.15 GHz)	Micro-Tonics	BRM50716-01	E1140	NCR	NCR

Notes: NCR - no calibration required

Table 6.1-2: *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		
Test date	March 24, 2021	Temperature	21 °C
Test engineer	James Cunningham, EMC/MIL/WL Supervisor	Air pressure	1015 mbar
Test location	Wireless bench	Relative humidity	45 %

8.1.3 Notes

Testing was performed in Tx mode and the EUT transmitting on a fixed channel at full power.

The attenuation of the interconnecting cable was included in the power meter software as a correction factor.

The antenna gain is 5.1 dBi per client declaration.

EIRP = Conducted Power + Declared Antenna Gain

8.1.4 Setup details

EUT setup configuration	Tabletop
Test facility	Nemko San Diego
Measurement method	ANSI C63.10 §12.3.3.1 Method PM For MIMO, combined powers calculated using measure-and-sum approach of ANSI C63.10 §14.2

8.1.5 Test data

Table 8.1-1: *Output power*

Operating Mode	Test Frequency (MHz)	Maximum Conducted Power (dBm/mW)	Combined Conducted Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm/mW)	Combined EIRP (dBm)
IEEE 802.11ac 20 MHz bandwidth (MIMO), Channel 64 – Antenna 1	5320	12.98/19.86		5.1	18.08/64.27	
IEEE 802.11ac 20 MHz bandwidth (MIMO), Channel 64 – Antenna 2	5320	14.08/25.59		5.1	19.18/87.79	
IEEE 802.11ac 20 MHz bandwidth (MIMO), Channel 64 – Combined	5320		16.58			21.68
IEEE 802.11n 20 MHz bandwidth (MIMO), Channel 64 – Antenna 1	5320	12.93/19.63		5.1	18.03/63.53	
IEEE 802.11n 20 MHz bandwidth (MIMO), Channel 64 – Antenna 2	5320	12.86/19.32		5.1	17.96/65.52	
IEEE 802.11n 20 MHz bandwidth (MIMO), Channel 64 – Combined	5320		15.91			21.00
IEEE 802.11n 40 MHz bandwidth (MIMO), Channel 62 – Antenna 1	5310	9.07/8.07		5.1	14.17/26.12	
IEEE 802.11n 40 MHz bandwidth (MIMO), Channel 62 – Antenna 2	5310	9.38/8.67		5.1	14.48/28.05	
IEEE 802.11n 40 MHz bandwidth (MIMO), Channel 62 – Combined	5310		12.24			17.34

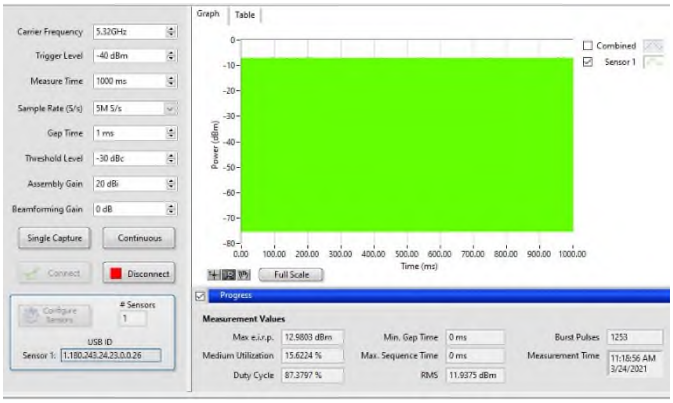

Figure 8.1-1: IEEE 802.11ac 20 MHz bandwidth (MIMO), Channel 64 – Antenna 1

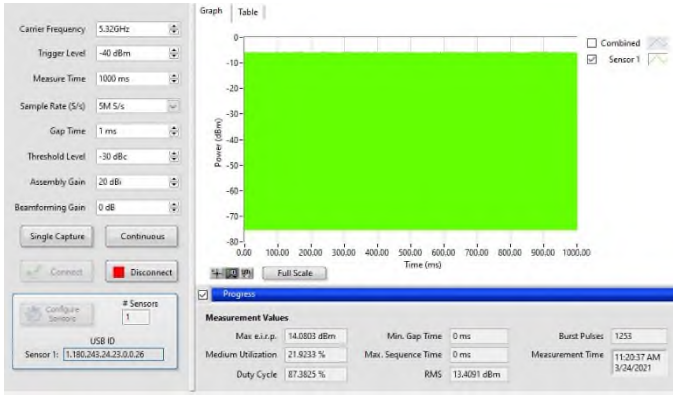

Figure 8.1-2: IEEE 802.11ac 20 MHz bandwidth (MIMO), Channel 64 – Antenna 2

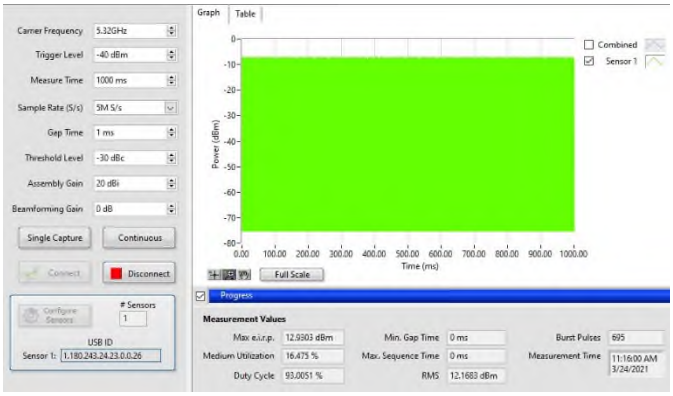

Figure 8.1-3: IEEE 802.11n 20 MHz bandwidth (MIMO), Channel 64 – Antenna 1

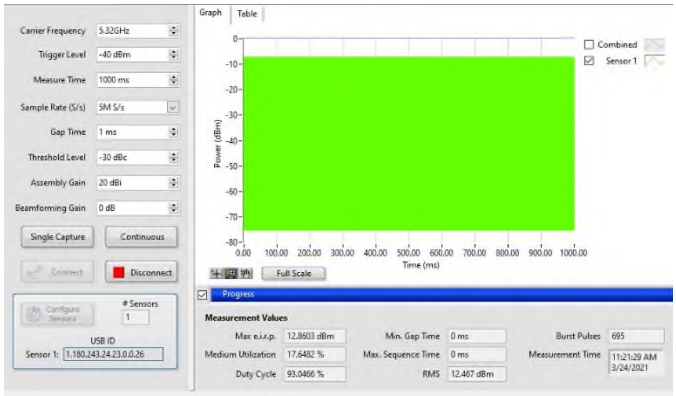

Figure 8.1-4: IEEE 802.11n 20 MHz bandwidth (MIMO), Channel 64 – Antenna 2

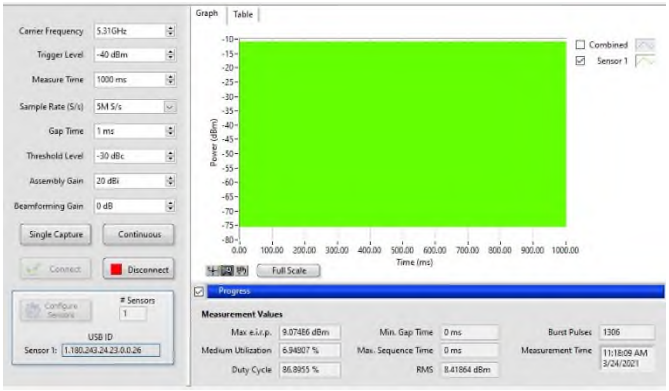

Figure 8.1-5: IEEE 802.11n 40 MHz bandwidth (MIMO), Channel 62 – Antenna 1

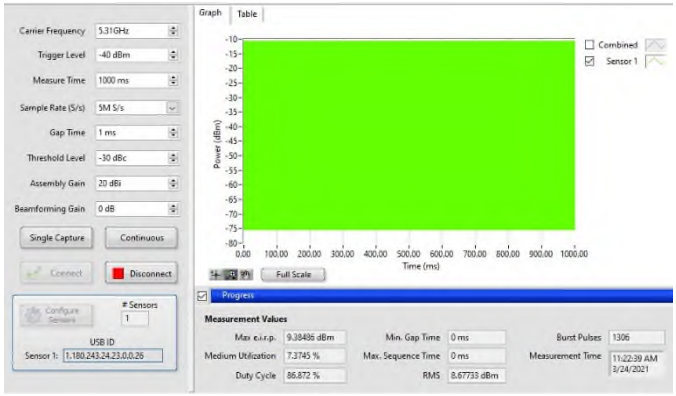

Figure 8.1-6: IEEE 802.11n 40 MHz bandwidth (MIMO), Channel 62 – Antenna 2

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 µV/m	dBµV/m	Measurement distance, m
0.009–0.490	2400/F	67.6 – 20 × $\log_{10}$(F)	300
0.490–1.705	24000/F	87.6 – 20 × $\log_{10}$(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	March 10, 2021	Temperature	20 °C
Test engineer	David Hewitt, EMC Specialist	Air pressure	1011 mbar
Test location	3m semi-anechoic chamber (Radiated)	Relative humidity	48 %
Test date	March 11, 2021	Temperature	20 °C
Test engineer	David Hewitt, EMC Specialist	Air pressure	1010 mbar
Test location	3m semi-anechoic chamber (Radiated)	Relative humidity	43 %
Test date	March 15, 2021	Temperature	20 °C
Test engineer	David Hewitt, EMC Specialist	Air pressure	1008 mbar
Test location	3m semi-anechoic chamber (Radiated)	Relative humidity	52 %
Test date	March 16, 2021	Temperature	18 °C
Test engineer	David Hewitt, EMC Specialist	Air pressure	1010 mbar
Test location	3m semi-anechoic chamber (Radiated)	Relative humidity	39 %
Test date	March 22, 2021	Temperature	20 °C
Test engineer	James Cunningham, EMC/Mil/WL Lab Supervisor	Air pressure	1011 mbar
Test location	3m semi-anechoic chamber (Radiated)	Relative humidity	36 %
Test date	March 22, 2021	Temperature	23 °C
Test engineer	Mark Phillips, Sr. EMC Test Engineer	Air pressure	1007 mbar
Test location	3m semi-anechoic chamber (Radiated)	Relative humidity	41 %
Test date	March 23, 2021	Temperature	23 °C
Test engineer	Mark Phillips, Sr. EMC Test Engineer	Air pressure	1003 mbar
Test location	3m semi-anechoic chamber (Radiated)	Relative humidity	40 %
Test date	March 24, 2021	Temperature	22 °C
Test engineer	James Cunningham, EMC/Mil/WL Lab Supervisor	Air pressure	1006 mbar
Test location	3m semi-anechoic chamber (Radiated)	Relative humidity	39 %

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 26 GHz (above the 10th harmonic of the highest transmit frequency of 2480 MHz).

Radiated measurements were performed at a 3 m measurement distance.

For conducted measurements, the loss of the connected cable and attenuator was input into the spectrum analyzer as a transducer factor.

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

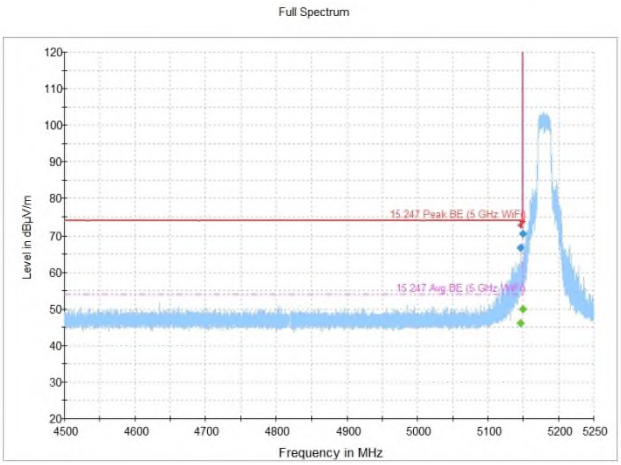

Figure 8.2-1: Radiated emissions, restricted band edge, 802.11a, U-NII-1 band

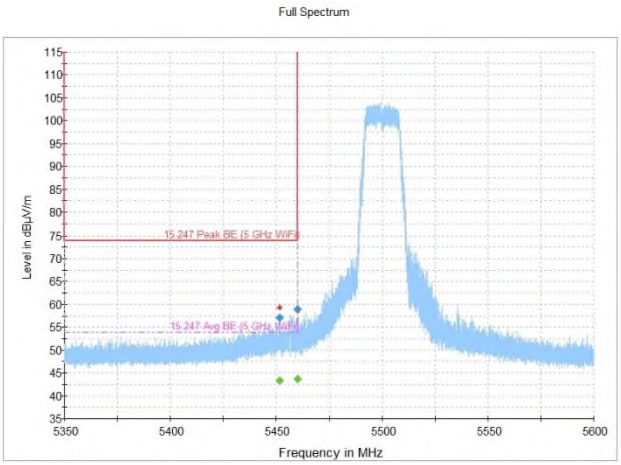

Figure 8.2-2: Radiated emissions, restricted band edge, 802.11a, U-NII-2C band, low channel

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

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)
5146.275000	---	46.14	53.90	7.76	5000.0	1000.000	111.0	V	209.0	-1.9
5146.275000	66.69	---	73.90	7.21	5000.0	1000.000	111.0	V	209.0	-1.9
5150.000000	---	50.01	53.90	3.89	5000.0	1000.000	109.0	V	310.0	-1.9
5150.000000	70.59	---	73.90	3.31	5000.0	1000.000	109.0	V	310.0	-1.9

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)

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

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)
5451.958333	---	43.27	53.90	10.63	5000.0	1000.000	115.0	V	270.0	8.0
5451.958333	57.16	---	73.90	16.74	5000.0	1000.000	115.0	V	270.0	8.0
5460.000000	---	43.64	53.90	10.26	5000.0	1000.000	102.0	V	274.0	8.0
5460.000000	58.92	---	73.90	14.98	5000.0	1000.000	102.0	V	274.0	8.0

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)

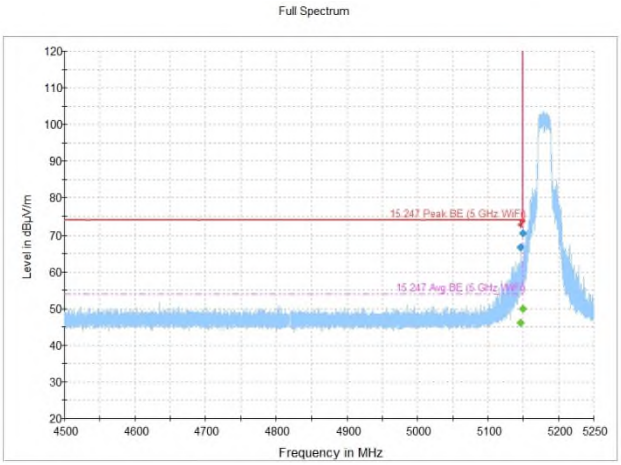

Figure 8.2-3: Radiated emissions, restricted band edge, 802.11n, SISO antenna configuration, 20 MHz BW, U-NII-1 band, low channel

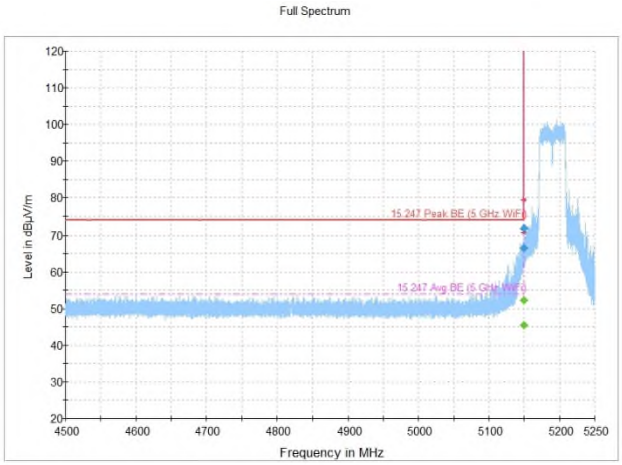

Figure 8.2-4: Radiated emissions, restricted band edge, 802.11n, SISO antenna configuration, 40 MHz BW, U-NII-1 band, low channel

Table 8.2-4: *Radiated emissions, restricted band edge, 802.11n, SISO antenna configuration, 20 MHz BW, U-NII-1 band, low channel*

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)
5146.275000	---	46.14	53.90	7.76	5000.0	1000.000	111.0	V	209.0	-1.9
5146.275000	66.69	---	73.90	7.21	5000.0	1000.000	111.0	V	209.0	-1.9
5150.000000	---	50.01	53.90	3.89	5000.0	1000.000	109.0	V	310.0	-1.9
5150.000000	70.59	---	73.90	3.31	5000.0	1000.000	109.0	V	310.0	-1.9

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)

Table 8.2-5: *Radiated emissions, restricted band edge, 802.11n, SISO antenna configuration, 40 MHz BW, U-NII-1 band, low channel*

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)
5149.675000	---	45.44	53.90	8.46	5000.0	1000.000	155.0	H	310.0	1.1
5149.675000	66.46	---	73.90	7.44	5000.0	1000.000	155.0	H	310.0	1.1
5150.000000	---	52.17	53.90	1.73	5000.0	1000.000	120.0	V	306.0	1.1
5150.000000	71.82	---	73.90	2.08	5000.0	1000.000	120.0	V	306.0	1.1

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)

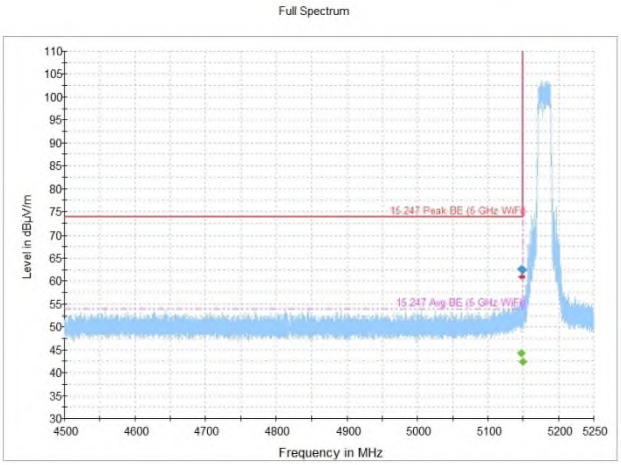

Figure 8.2-5: Radiated emissions, restricted band edge, 802.11n, MIMO antenna configuration, 20 MHz BW, U-NII-1 band, low channel

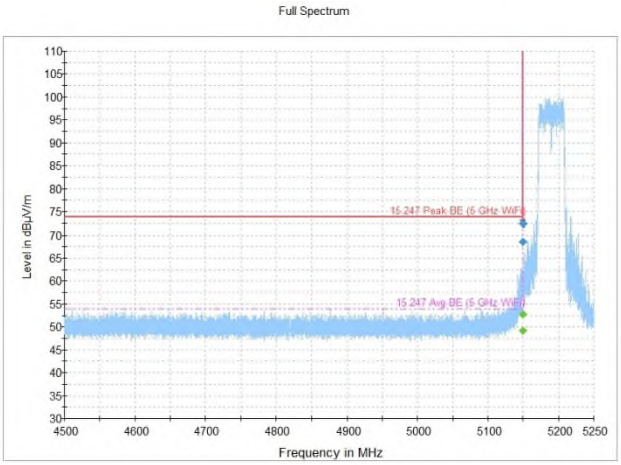

Figure 8.2-6: Radiated emissions, restricted band edge, 802.11n, MIMO antenna configuration, 40 MHz BW, U-NII-1 band, low channel

Table 8.2-6: *Radiated emissions, restricted band edge, 802.11n, MIMO antenna configuration, 20 MHz BW, U-NII-1 band, low channel*

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)
5147.825000	---	44.30	53.90	9.60	5000.0	1000.000	129.0	V	312.0	1.1
5147.825000	62.53	---	73.90	11.37	5000.0	1000.000	129.0	V	312.0	1.1
5150.000000	---	42.41	53.90	11.49	5000.0	1000.000	135.0	V	290.0	1.1
5150.000000	62.40	---	73.90	11.50	5000.0	1000.000	135.0	V	290.0	1.1

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)

Table 8.2-7: *Radiated emissions, restricted band edge, 802.11n, MIMO antenna configuration, 40 MHz BW, U-NII-1 band, low channel*

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)
5149.650000	---	52.75	53.90	1.15	5000.0	1000.000	115.0	V	312.0	1.1
5149.650000	72.46	---	73.90	1.44	5000.0	1000.000	115.0	V	312.0	1.1
5150.000000	---	49.13	53.90	4.77	5000.0	1000.000	109.0	V	302.0	1.1
5150.000000	68.59	---	73.90	5.31	5000.0	1000.000	109.0	V	302.0	1.1

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)

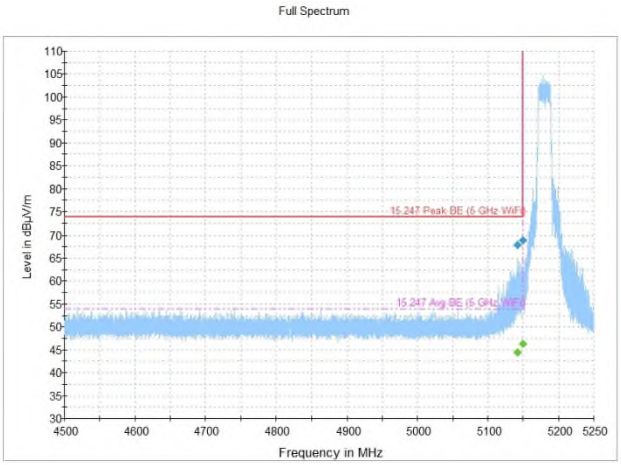

Figure 8.2-7: Radiated emissions, restricted band edge, 802.11ac, SISO antenna configuration, 20 MHz BW, U-NII-1 band, low channel

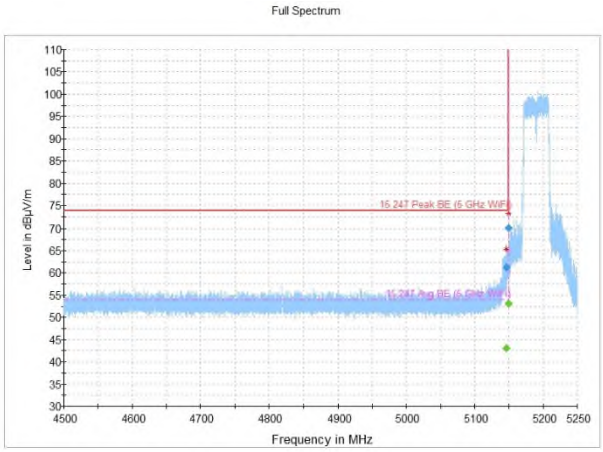

Figure 8.2-8: Radiated emissions, restricted band edge, 802.11ac, SISO antenna configuration, 40 MHz BW, U-NII-1 band, low channel

Table 8.2-8: *Radiated emissions, restricted band edge, 802.11ac, SISO antenna configuration, 20 MHz BW, U-NII-1 band, low channel*

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)
5141.875000	---	44.38	53.90	9.52	5000.0	1000.000	111.0	V	296.0	1.1
5141.875000	67.86	---	73.90	6.04	5000.0	1000.000	111.0	V	296.0	1.1
5150.000000	---	46.24	53.90	7.66	5000.0	1000.000	124.0	V	305.0	1.1
5150.000000	68.83	---	73.90	5.07	5000.0	1000.000	124.0	V	305.0	1.1

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)

Table 8.2-9: *Radiated emissions, restricted band edge, 802.11ac, SISO antenna configuration, 40 MHz BW, U-NII-1 band, low channel*

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)
5146.875000	---	43.08	53.90	10.82	5000.0	1000.000	157.0	H	312.0	4.1
5146.875000	61.19	---	73.90	12.71	5000.0	1000.000	157.0	H	312.0	4.1
5150.000000	---	53.16	53.90	0.74	5000.0	1000.000	109.0	V	309.0	4.1
5150.000000	70.16	---	73.90	3.74	5000.0	1000.000	109.0	V	309.0	4.1

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)

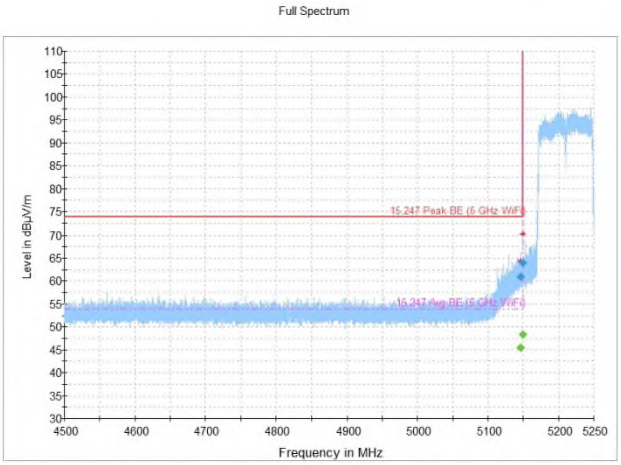

Figure 8.2-9: Radiated emissions, restricted band edge, 802.11ac, SISO antenna configuration, 80 MHz BW, U-NII-1 band, low channel

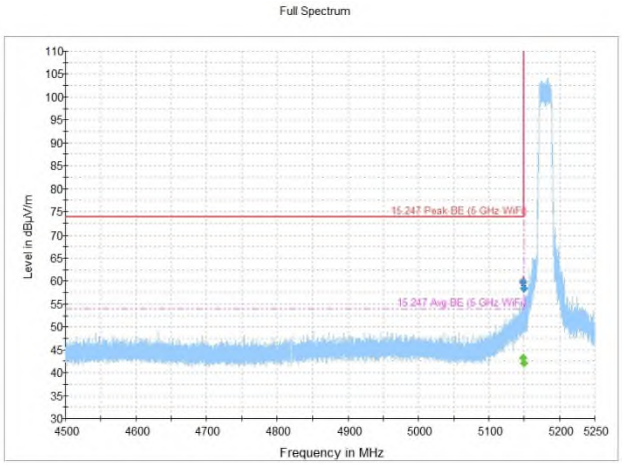

Figure 8.2-10: Radiated emissions, restricted band edge, 802.11ac, MIMO antenna configuration, 20 MHz BW, U-NII-1 band, low channel

Table 8.2-10: *Radiated emissions, restricted band edge, 802.11ac, SISO antenna configuration, 80 MHz BW, U-NII-1 band, low channel*

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)
5146.725000	---	45.47	53.90	8.43	5000.0	1000.000	156.0	H	308.0	4.1
5146.725000	60.83	---	73.90	13.07	5000.0	1000.000	156.0	H	308.0	4.1
5150.000000	---	48.32	53.90	5.58	5000.0	1000.000	109.0	V	203.0	4.1
5150.000000	63.94	---	73.90	9.96	5000.0	1000.000	109.0	V	203.0	4.1

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)

Table 8.2-11: *Radiated emissions, restricted band edge, 802.11ac, MIMO antenna configuration, 20 MHz BW, U-NII-1 band, low channel*

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)
5148.250000	---	43.21	53.90	10.69	5000.0	1000.000	100.0	V	312.0	4.1
5148.250000	59.76	---	73.90	14.14	5000.0	1000.000	100.0	V	312.0	4.1
5150.000000	---	42.09	53.90	11.81	5000.0	1000.000	145.0	V	306.0	4.1
5150.000000	58.29	---	73.90	15.61	5000.0	1000.000	145.0	V	306.0	4.1

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)

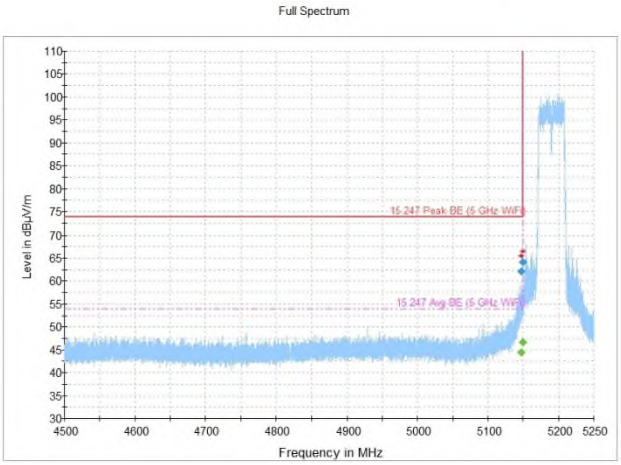

Figure 8.2-11: Radiated emissions, restricted band edge, 802.11ac, MIMO antenna configuration, 40 MHz BW, U-NII-1 band, low channel

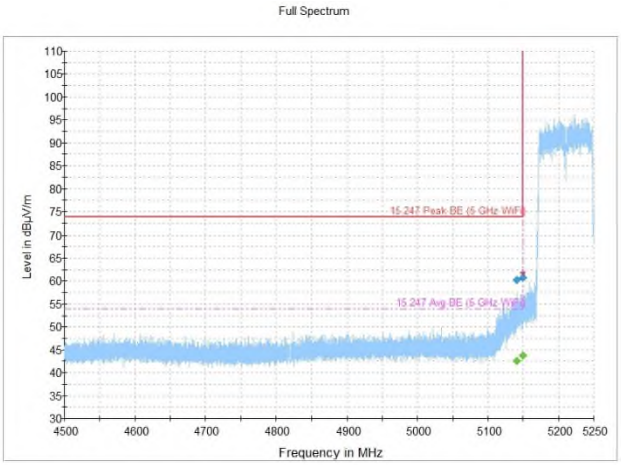

Figure 8.2-12: Radiated emissions, restricted band edge, 802.11ac, MIMO antenna configuration, 80 MHz BW, U-NII-1 band, low channel

Table 8.2-12: *Radiated emissions, restricted band edge, 802.11ac, MIMO antenna configuration, 40 MHz BW, U-NII-1 band, low channel*

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)
5147.250000	---	44.41	53.90	9.49	5000.0	1000.000	100.0	V	303.0	4.1
5147.250000	62.12	---	73.90	11.78	5000.0	1000.000	100.0	V	303.0	4.1
5150.000000	---	46.67	53.90	7.23	5000.0	1000.000	122.0	V	302.0	4.1
5150.000000	64.17	---	73.90	9.73	5000.0	1000.000	122.0	V	302.0	4.1

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)

Table 8.2-13: *Radiated emissions, restricted band edge, 802.11ac, MIMO antenna configuration, 80 MHz BW, U-NII-1 band, low channel*

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)
5141.000000	---	42.56	53.90	11.34	5000.0	1000.000	115.0	V	306.0	4.1
5141.000000	60.25	---	73.90	13.65	5000.0	1000.000	115.0	V	306.0	4.1
5150.000000	---	43.75	53.90	10.15	5000.0	1000.000	125.0	V	299.0	4.1
5150.000000	60.79	---	73.90	13.11	5000.0	1000.000	125.0	V	299.0	4.1

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)

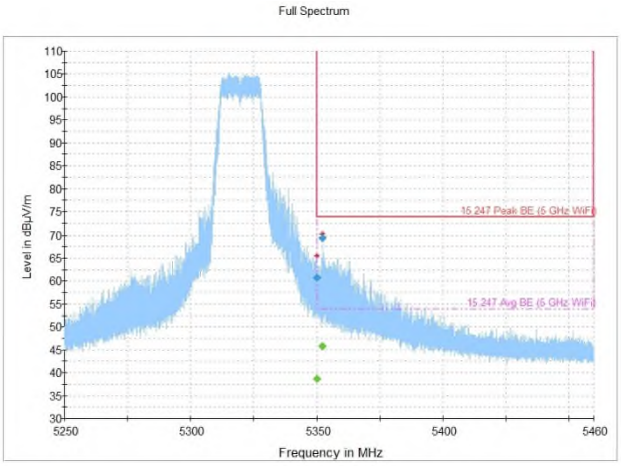

Figure 8.2-13: Radiated emissions, restricted band edge, 802.11a, U-NII-2A band, high channel

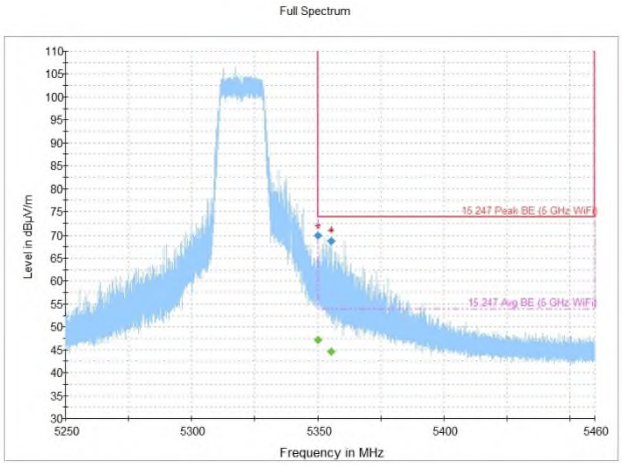

Figure 8.2-14: Radiated emissions, restricted band edge, 802.11n, SISO antenna configuration, 20 MHz BW, U-NII-2A band, high channel

Table 8.2-14: *Radiated emissions, restricted band edge, 802.11a, U-NII-2A band, high channel*

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)
5350.000000	---	38.69	53.90	15.21	5000.0	1000.000	162.0	H	335.0	4.2
5350.000000	60.79	---	73.90	13.11	5000.0	1000.000	162.0	H	335.0	4.2
5352.277000	---	45.85	53.90	8.05	5000.0	1000.000	109.0	V	314.0	4.2
5352.277000	69.49	---	73.90	4.41	5000.0	1000.000	109.0	V	314.0	4.2

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)

Table 8.2-15: *Radiated emissions, restricted band edge, 802.11n, SISO antenna configuration, 20 MHz BW, U-NII-2A band, high channel*

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)
5350.000000	---	47.18	53.90	6.72	5000.0	1000.000	108.0	V	232.0	4.2
5350.000000	69.99	---	73.90	3.91	5000.0	1000.000	108.0	V	232.0	4.2
5355.385000	---	44.56	53.90	9.34	5000.0	1000.000	121.0	V	35.0	4.2
5355.385000	68.77	---	73.90	5.13	5000.0	1000.000	121.0	V	35.0	4.2

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)

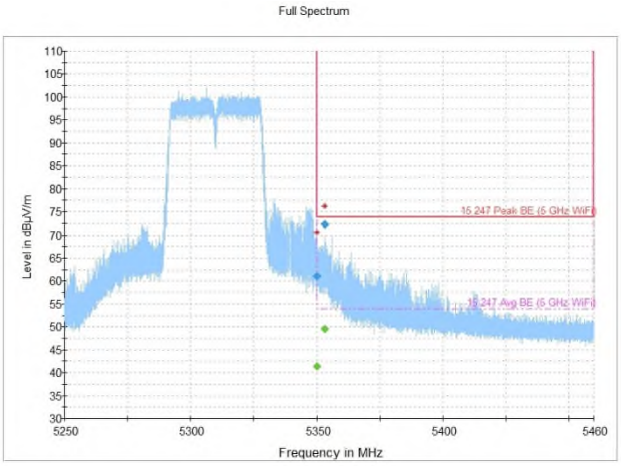

Figure 8.2-15: Radiated emissions, restricted band edge, 802.11n, SISO antenna configuration, 40 MHz BW, U-NII-2A band, high channel

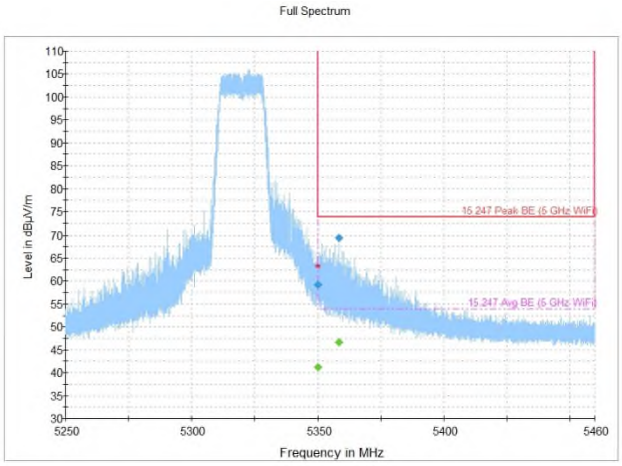

Figure 8.2-16: Radiated emissions, restricted band edge, 802.11ac, SISO antenna configuration, 20 MHz BW, U-NII-2A band, high channel

Table 8.2-16: *Radiated emissions, restricted band edge, 802.11n, SISO antenna configuration, 40 MHz BW, U-NII-2A band, high channel*

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)
5350.000000	---	41.36	53.90	12.54	5000.0	1000.000	170.0	H	311.0	8.2
5350.000000	61.13	---	73.90	12.77	5000.0	1000.000	170.0	H	311.0	8.2
5353.019000	---	49.48	53.90	4.42	5000.0	1000.000	105.0	V	34.0	8.2
5353.019000	72.29	---	73.90	1.61	5000.0	1000.000	105.0	V	34.0	8.2

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)

Table 8.2-17: *Radiated emissions, restricted band edge, 802.11ac, SISO antenna configuration, 20 MHz BW, U-NII-2A band, high channel*

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)
5350.000000	---	41.24	53.90	12.66	5000.0	1000.000	203.0	H	307.0	8.2
5350.000000	59.14	---	73.90	14.76	5000.0	1000.000	203.0	H	307.0	8.2
5358.360000	---	46.66	53.90	7.24	5000.0	1000.000	98.0	V	311.0	8.2
5358.360000	69.36	---	73.90	4.54	5000.0	1000.000	98.0	V	311.0	8.2

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)

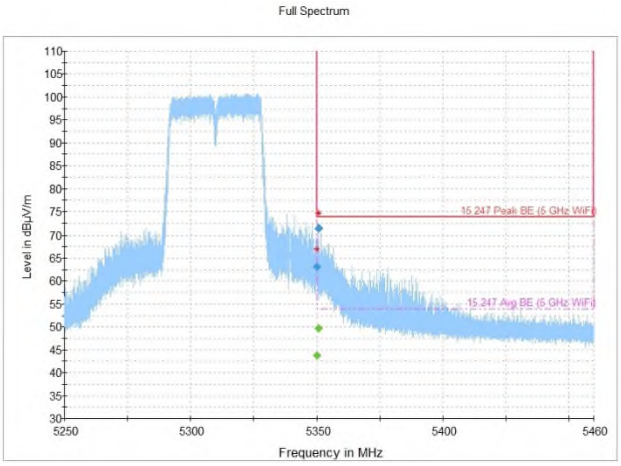

Figure 8.2-17: Radiated emissions, restricted band edge, 802.11ac, SISO antenna configuration, 40 MHz BW, U-NII-2A band, high channel

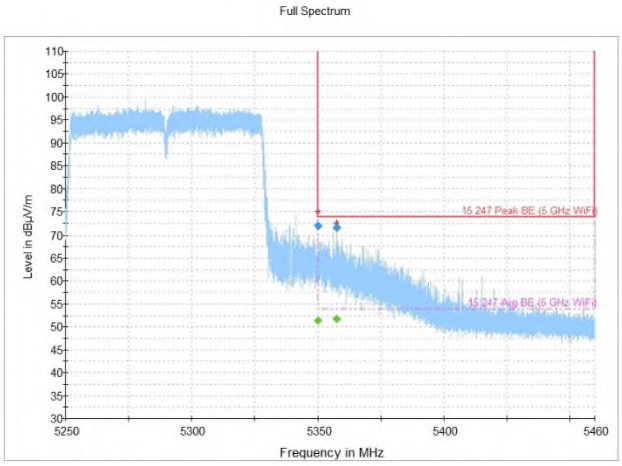

Figure 8.2-18: Radiated emissions, restricted band edge, 802.11ac, SISO antenna configuration, 80 MHz BW, U-NII-2A band, high channel

Table 8.2-18: *Radiated emissions, restricted band edge, 802.11ac, SISO antenna configuration, 40 MHz BW, U-NII-2A band, high channel*

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)
5350.000000	---	43.72	53.90	10.18	5000.0	1000.000	175.0	H	336.0	8.2
5350.000000	63.05	---	73.90	10.85	5000.0	1000.000	175.0	H	336.0	8.2
5350.828000	---	49.72	53.90	4.18	5000.0	1000.000	105.0	V	230.0	8.2
5350.828000	71.47	---	73.90	2.43	5000.0	1000.000	105.0	V	230.0	8.2

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)

Table 8.2-19: *Radiated emissions, restricted band edge, 802.11ac, SISO antenna configuration, 80 MHz BW, U-NII-2A band, high channel*

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)
5350.000000	---	51.37	53.90	2.53	5000.0	1000.000	123.0	V	231.0	8.2
5350.000000	71.99	---	73.90	1.91	5000.0	1000.000	123.0	V	231.0	8.2
5357.450000	---	51.82	53.90	2.08	5000.0	1000.000	109.0	V	315.0	8.2
5357.450000	71.57	---	73.90	2.33	5000.0	1000.000	109.0	V	315.0	8.2

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)

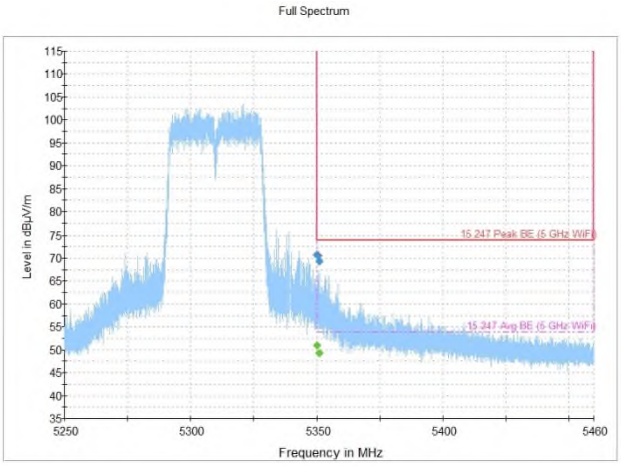

Figure 8.2-19: Radiated emissions, restricted band edge, 802.11ac, MIMO antenna configuration, 40 MHz BW, U-NII-2A band, high channel

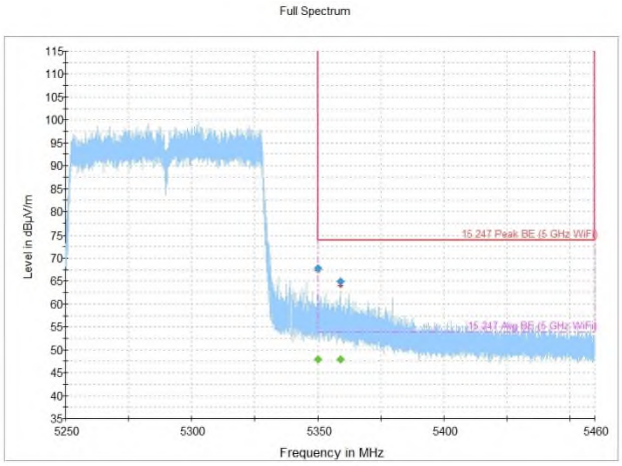

Figure 8.2-20: Radiated emissions, restricted band edge, 802.11ac, MIMO antenna configuration, 80 MHz BW, U-NII-2A band, high channel

Table 8.2-20: *Radiated emissions, restricted band edge, 802.11ac, SISO antenna configuration, 40 MHz BW, U-NII-2A band, high channel*

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)
5350.000000	---	50.95	53.90	2.95	5000.0	1000.000	121.0	V	311.0	8.2
5350.000000	70.73	---	73.90	3.17	5000.0	1000.000	121.0	V	311.0	8.2
5350.877000	---	49.29	53.90	4.61	5000.0	1000.000	122.0	V	306.0	8.2
5350.877000	69.32	---	73.90	4.58	5000.0	1000.000	122.0	V	306.0	8.2

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)

Table 8.2-21: *Radiated emissions, restricted band edge, 802.11ac, MIMO antenna configuration, 80 MHz BW, U-NII-2A band, high channel*

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)
5350.000000	---	47.93	53.90	5.97	5000.0	1000.000	107.0	V	312.0	8.2
5350.000000	67.80	---	73.90	6.10	5000.0	1000.000	107.0	V	312.0	8.2
5359.095000	---	47.83	53.90	6.07	5000.0	1000.000	109.0	V	312.0	8.2
5359.095000	64.96	---	73.90	8.94	5000.0	1000.000	109.0	V	312.0	8.2

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)

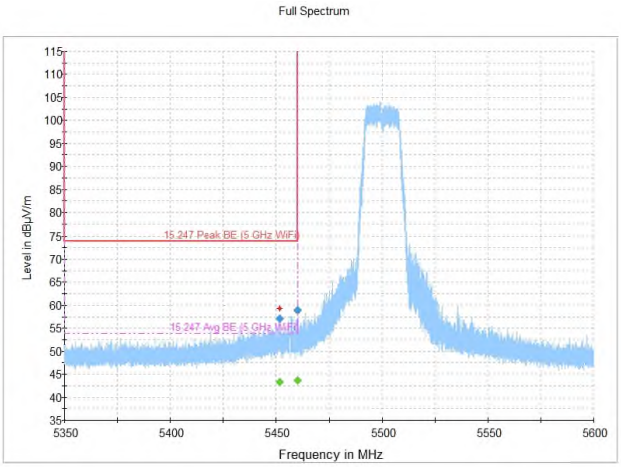

Figure 8.2-21: Radiated emissions, restricted band edge, 802.11a, U-NII-2C band, low channel

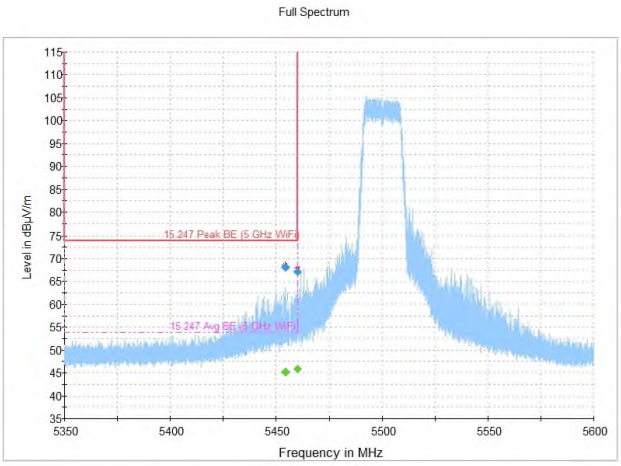

Figure 8.2-22: Radiated emissions, restricted band edge, 802.11n, SISO antenna configuration, 20 MHz BW, U-NII-2C band, low channel

Table 8.2-22: *Radiated emissions, restricted band edge, 802.11a, U-NII-2C band, low channel*

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)
5451.958333	---	43.27	53.90	10.63	5000.0	1000.000	115.0	V	270.0	8.0
5451.958333	57.16	---	73.90	16.74	5000.0	1000.000	115.0	V	270.0	8.0
5460.000000	---	43.64	53.90	10.26	5000.0	1000.000	102.0	V	274.0	8.0
5460.000000	58.92	---	73.90	14.98	5000.0	1000.000	102.0	V	274.0	8.0

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)

Table 8.2-23: *Radiated emissions, restricted band edge, 802.11n, SISO antenna configuration, 20 MHz BW, U-NII-2C band, low channel*

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)
5454.391667	---	45.20	53.90	8.70	5000.0	1000.000	105.0	V	296.0	8.0
5454.391667	68.17	---	73.90	5.73	5000.0	1000.000	105.0	V	296.0	8.0
5460.000000	---	45.85	53.90	8.05	5000.0	1000.000	105.0	V	305.0	8.0
5460.000000	67.06	---	73.90	6.84	5000.0	1000.000	105.0	V	305.0	8.0

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)

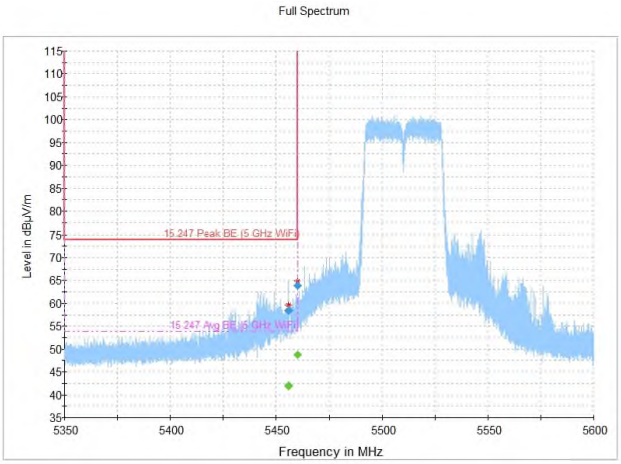

Figure 8.2-23: Radiated emissions, restricted band edge, 802.11n, SISO antenna configuration, 40MHz BW, U-NII-2C band, low channel

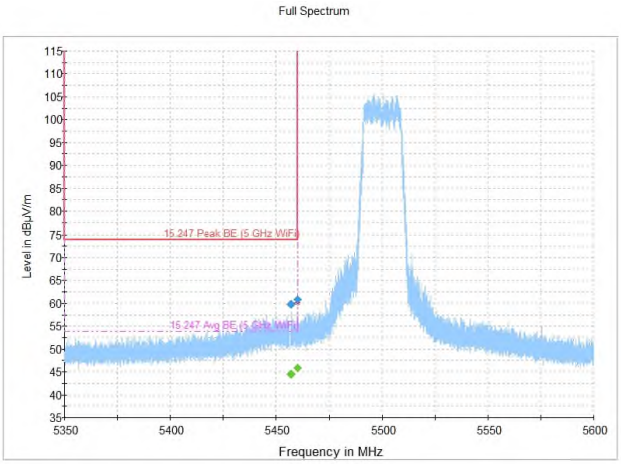

Figure 8.2-24: Radiated emissions, restricted band edge, 802.11n, MIMO antenna configuration, 20 MHz BW, U-NII-2C band, low channel

Table 8.2-24: *Radiated emissions, restricted band edge, 802.11n, SISO antenna configuration, 40MHz BW, U-NII-2C band, low channel*

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)
5455.841667	---	42.00	53.90	11.90	5000.0	1000.000	174.0	H	350.0	8.0
5455.841667	58.36	---	73.90	15.54	5000.0	1000.000	174.0	H	350.0	8.0
5460.000000	---	48.72	53.90	5.18	5000.0	1000.000	105.0	V	312.0	8.0
5460.000000	63.85	---	73.90	10.05	5000.0	1000.000	105.0	V	312.0	8.0

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)

Table 8.2-25: *Radiated emissions, restricted band edge, 802.11n, MIMO antenna configuration, 20 MHz BW, U-NII-2C band, low channel*

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)
5456.900000	---	44.45	53.90	9.45	5000.0	1000.000	126.0	V	302.0	8.0
5456.900000	59.79	---	73.90	14.11	5000.0	1000.000	126.0	V	302.0	8.0
5460.000000	---	45.80	53.90	8.10	5000.0	1000.000	102.0	V	310.0	8.0
5460.000000	60.82	---	73.90	13.08	5000.0	1000.000	102.0	V	310.0	8.0

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)

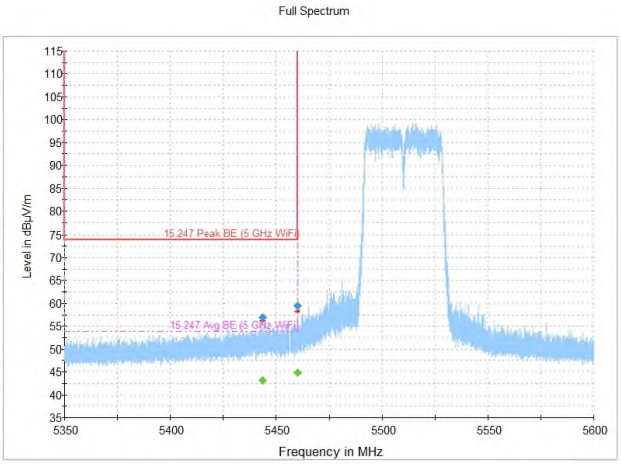

Figure 8.2-25: Radiated emissions, restricted band edge, 802.11n, MIMO antenna configuration, 40MHz BW, U-NII-2C band, low channel

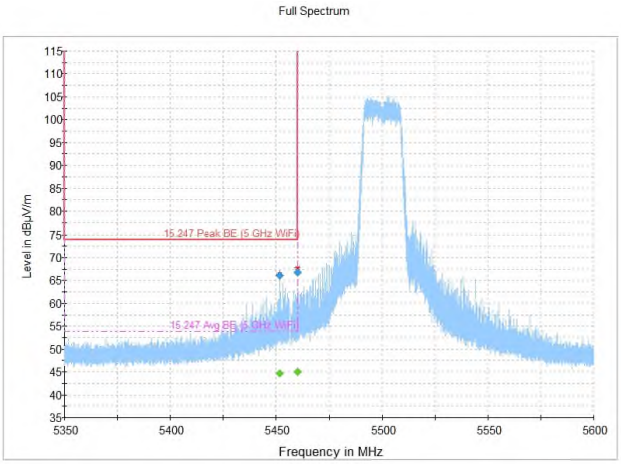

Figure 8.2-26: Radiated emissions, restricted band edge, 802.11ac, SISO antenna configuration, 20 MHz BW, U-NII-2C band, low channel

Table 8.2-26: *Radiated emissions, restricted band edge, 802.11n, MIMO antenna configuration, 40MHz BW, U-NII-2C band, low channel*

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)
5443.575000	---	43.23	53.90	10.67	5000.0	1000.000	102.0	V	312.0	8.0
5443.575000	56.92	---	73.90	16.98	5000.0	1000.000	102.0	V	312.0	8.0
5460.000000	---	44.79	53.90	9.11	5000.0	1000.000	101.0	V	320.0	8.0
5460.000000	59.47	---	73.90	14.43	5000.0	1000.000	101.0	V	320.0	8.0

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)

Table 8.2-27: *Radiated emissions, restricted band edge, 802.11ac, SISO antenna configuration, 20 MHz BW, U-NII-2C band, low channel*

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)
5451.908333	---	44.73	53.90	9.17	5000.0	1000.000	101.0	V	313.0	8.0
5451.908333	66.07	---	73.90	7.83	5000.0	1000.000	101.0	V	313.0	8.0
5460.000000	---	44.95	53.90	8.95	5000.0	1000.000	105.0	V	36.0	8.0
5460.000000	66.71	---	73.90	7.19	5000.0	1000.000	105.0	V	36.0	8.0

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)

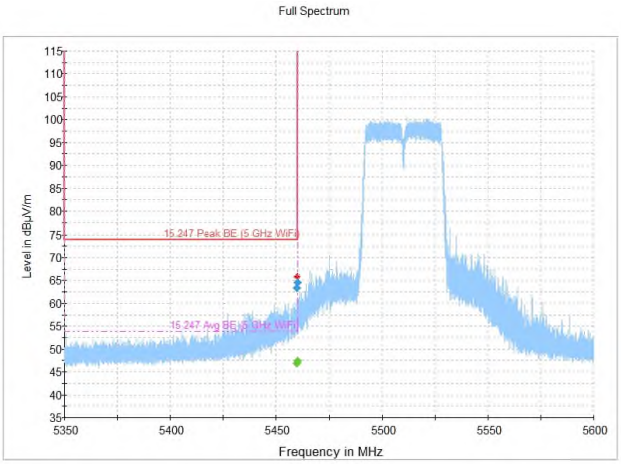

Figure 8.2-27: Radiated emissions, restricted band edge, 802.11ac, SISO antenna configuration, 40MHz BW, U-NII-2C band, low channel

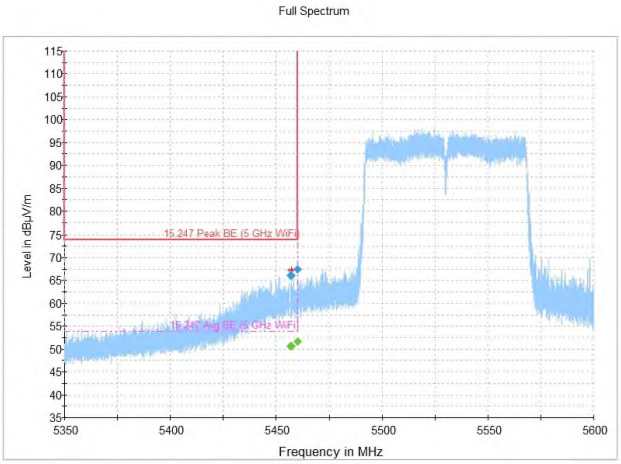

Figure 8.2-28: Radiated emissions, restricted band edge, 802.11ac, SISO antenna configuration, 80 MHz BW, U-NII-2C band, low channel

Table 8.2-28: *Radiated emissions, restricted band edge, 802.11ac, SISO antenna configuration, 40MHz BW, U-NII-2C band, low channel*

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)
5459.375000	63.37	---	73.90	10.53	5000.0	1000.000	139.0	V	34.0	8.0
5459.375000	---	46.91	53.90	6.99	5000.0	1000.000	139.0	V	34.0	8.0
5460.000000	64.55	---	73.90	9.35	5000.0	1000.000	128.0	V	304.0	8.0
5460.000000	---	47.37	53.90	6.53	5000.0	1000.000	128.0	V	304.0	8.0

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)

Table 8.2-29: *Radiated emissions, restricted band edge, 802.11ac, SISO antenna configuration, 80 MHz BW, U-NII-2C band, low channel*

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)
5456.916667	---	50.66	53.90	3.24	5000.0	1000.000	104.0	V	310.0	8.0
5456.916667	66.04	---	73.90	7.86	5000.0	1000.000	104.0	V	310.0	8.0
5460.000000	---	51.63	53.90	2.27	5000.0	1000.000	105.0	V	244.0	8.0
5460.000000	67.52	---	73.90	6.38	5000.0	1000.000	105.0	V	244.0	8.0

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)

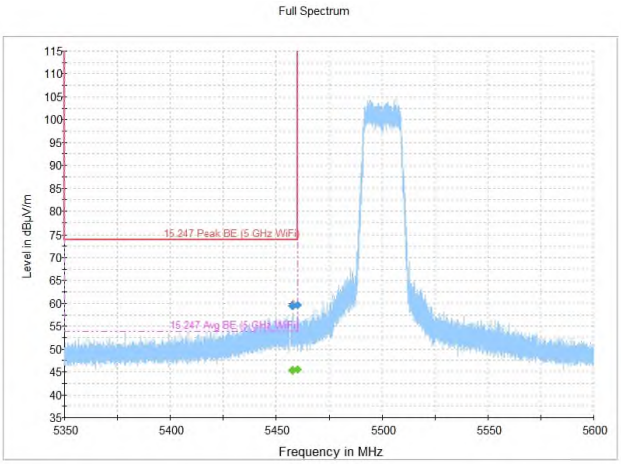

Figure 8.2-29: Radiated emissions, restricted band edge, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, low channel

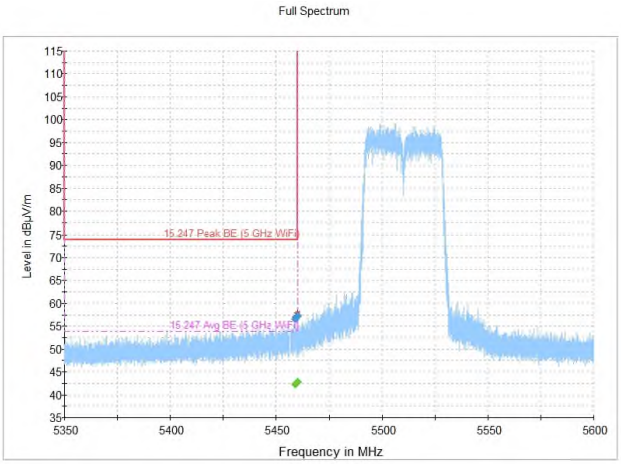

Figure 8.2-30: Radiated emissions, restricted band edge, 802.11ac, MIMO antenna configuration, 40 MHz BW, U-NII-2C band, low channel

Table 8.2-30: *Radiated emissions, restricted band edge, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, low channel*

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)
5457.616667	---	45.42	53.90	8.48	5000.0	1000.000	126.0	V	308.0	8.0
5457.616667	59.52	---	73.90	14.38	5000.0	1000.000	126.0	V	308.0	8.0
5460.000000	---	45.50	53.90	8.40	5000.0	1000.000	144.0	V	310.0	8.0
5460.000000	59.55	---	73.90	14.35	5000.0	1000.000	144.0	V	310.0	8.0

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)

Table 8.2-31: *Radiated emissions, restricted band edge, 802.11ac, MIMO antenna configuration, 40 MHz BW, U-NII-2C band, low channel*

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)
5458.808333	56.64	---	73.90	17.26	5000.0	1000.000	102.0	V	0.0	8.0
5458.808333	---	42.33	53.90	11.57	5000.0	1000.000	102.0	V	0.0	8.0
5460.000000	57.22	---	73.90	16.68	5000.0	1000.000	125.0	V	296.0	8.0
5460.000000	---	42.80	53.90	11.10	5000.0	1000.000	125.0	V	296.0	8.0

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)

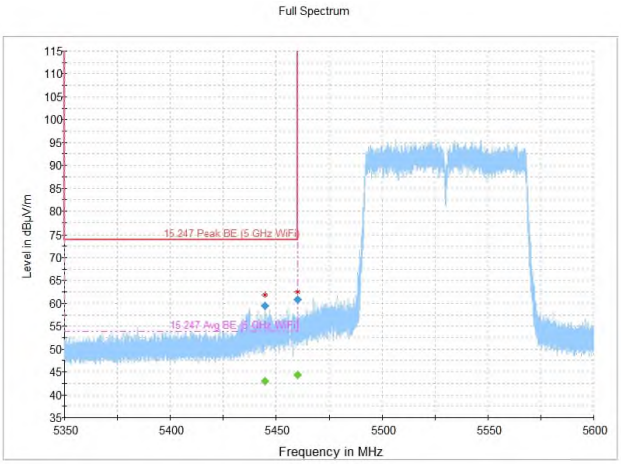

Figure 8.2-31: Radiated emissions, restricted band edge, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2C band, low channel

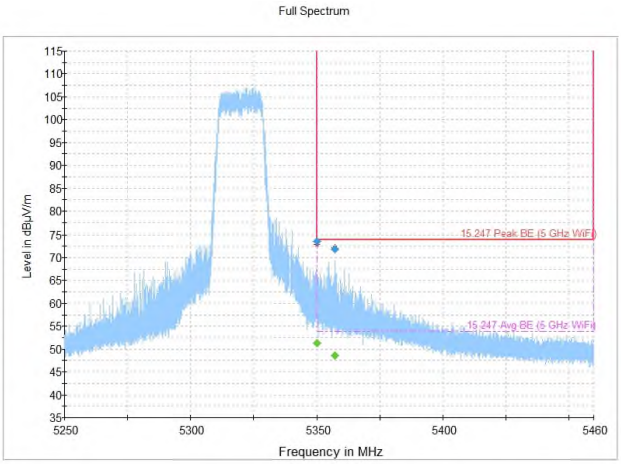

Figure 8.2-32: Radiated emissions, restricted band edge, 802.11n, MIMO antenna configuration, 20 MHz BW, U-NII-2A band, high channel

Table 8.2-32: *Radiated emissions, restricted band edge, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2C band, low channel*

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)
5445.008333	---	42.94	53.90	10.96	5000.0	1000.000	101.0	V	306.0	8.0
5445.008333	59.41	---	73.90	14.49	5000.0	1000.000	101.0	V	306.0	8.0
5460.000000	---	44.30	53.90	9.60	5000.0	1000.000	127.0	V	35.0	8.0
5460.000000	60.87	---	73.90	13.03	5000.0	1000.000	127.0	V	35.0	8.0

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)

Table 8.2-33: *Radiated emissions, restricted band edge, 802.11n, MIMO antenna configuration, 20 MHz BW, U-NII-2A band, high channel*

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)
5350.000000	---	51.26	53.90	2.64	5000.0	1000.000	122.0	V	313.0	8.2
5350.000000	73.63	---	73.90	0.27	5000.0	1000.000	122.0	V	313.0	8.2
5357.009000	---	48.63	53.90	5.27	5000.0	1000.000	133.0	V	300.0	8.2
5357.009000	71.84	---	73.90	2.06	5000.0	1000.000	133.0	V	300.0	8.2

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)

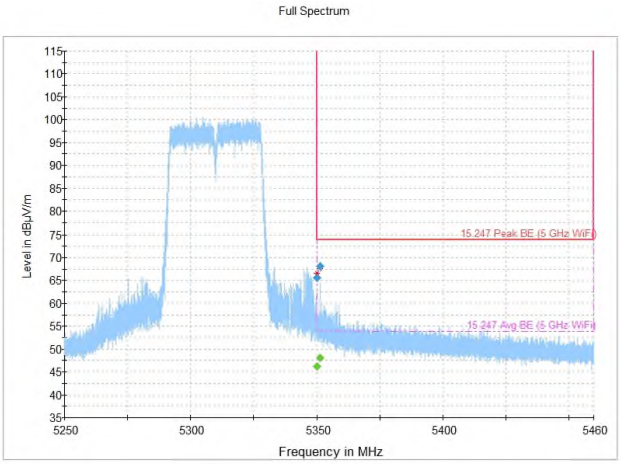

Figure 8.2-33: Radiated emissions, restricted band edge, 802.11n, MIMO antenna configuration, 40MHz BW, U-NII-2A band, high channel

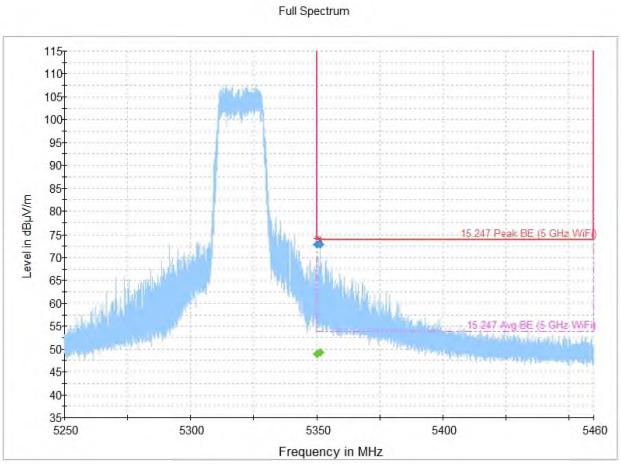

Figure 8.2-34: Radiated emissions, restricted band edge, 802.11ac, MIMO antenna configuration, 20 MHz BW, U-NII-2A band, high channel

Table 8.2-34: *Radiated emissions, restricted band edge, 802.11n, MIMO antenna configuration, 40MHz BW, U-NII-2A band, high channel*

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)
5350.000000	65.64	---	73.90	8.26	5000.0	1000.000	141.0	V	302.0	8.2
5350.000000	---	46.17	53.90	7.73	5000.0	1000.000	141.0	V	302.0	8.2
5351.276000	68.09	---	73.90	5.81	5000.0	1000.000	105.0	V	312.0	8.2
5351.276000	---	48.01	53.90	5.89	5000.0	1000.000	105.0	V	312.0	8.2

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)

Table 8.2-35: *Radiated emissions, restricted band edge, 802.11ac, MIMO antenna configuration, 20 MHz BW, U-NII-2A band, high channel*

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)
5350.000000	---	48.94	53.90	4.96	5000.0	1000.000	133.0	V	302.0	8.2
5350.000000	72.93	---	73.90	0.97	5000.0	1000.000	133.0	V	302.0	8.2
5351.283000	---	49.19	53.90	4.71	5000.0	1000.000	112.0	V	298.0	8.2
5351.283000	72.92	---	73.90	0.98	5000.0	1000.000	112.0	V	298.0	8.2

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)

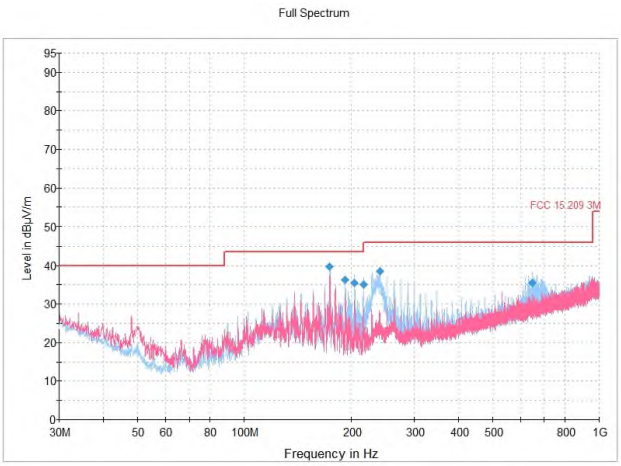

Figure 8.2-35: Radiated spurious emissions, IEEE 802.11a, Channel 116

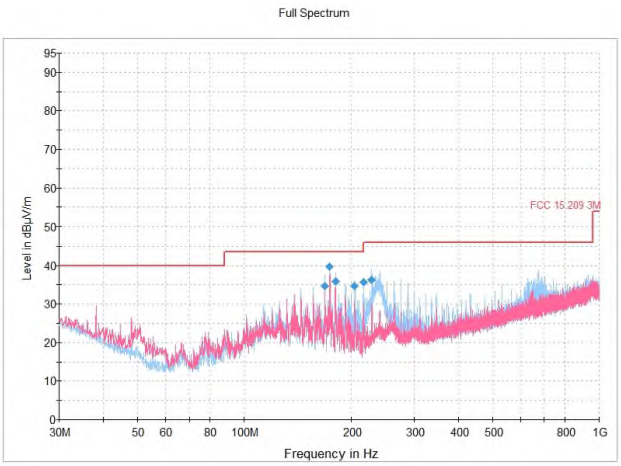

Figure 8.2-36: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, low channel

Table 8.2-36: *Radiated spurious emissions, IEEE 802.11a, Channel 116 (5580 MHz), 30-1000 MHz*

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
173.600833	39.77	43.50	3.73	1000.0	120.000	193.0	H	102.0	17.5
191.950000	36.40	43.50	7.10	1000.0	120.000	174.0	H	265.0	17.3
203.914167	35.54	43.50	7.96	1000.0	120.000	164.0	H	286.0	18.0
216.076667	35.13	46.00	10.87	1000.0	120.000	110.0	H	98.0	17.9
240.003333	38.54	46.00	7.46	1000.0	120.000	118.0	H	99.0	19.9
648.699167	35.57	46.00	10.43	1000.0	120.000	126.0	H	160.0	29.7

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 8.2-37: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, low channel, 30-1000 MHz*

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
168.023333	34.78	43.50	8.72	1000.0	120.000	175.0	H	295.0	18.1
173.560000	39.74	43.50	3.76	1000.0	120.000	196.0	H	99.0	17.5
180.026667	35.85	43.50	7.65	1000.0	120.000	126.0	H	272.0	17.1
203.914167	34.66	43.50	8.84	1000.0	120.000	128.0	H	254.0	18.0
216.077500	35.63	46.00	10.37	1000.0	120.000	156.0	H	260.0	17.9
228.080000	36.37	46.00	9.63	1000.0	120.000	116.0	H	242.0	18.7

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)

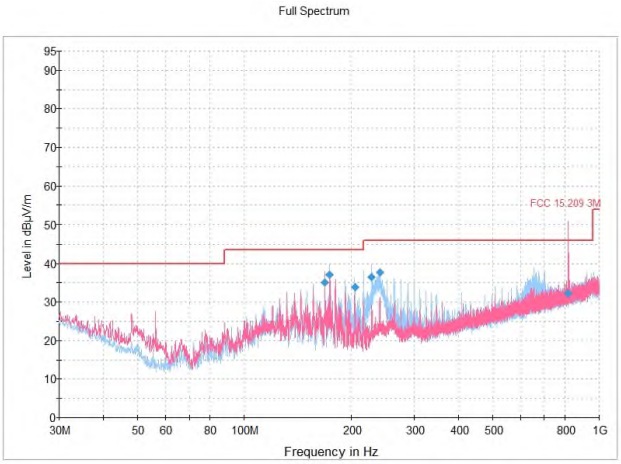

Figure 8.2-37: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2C band, low channel

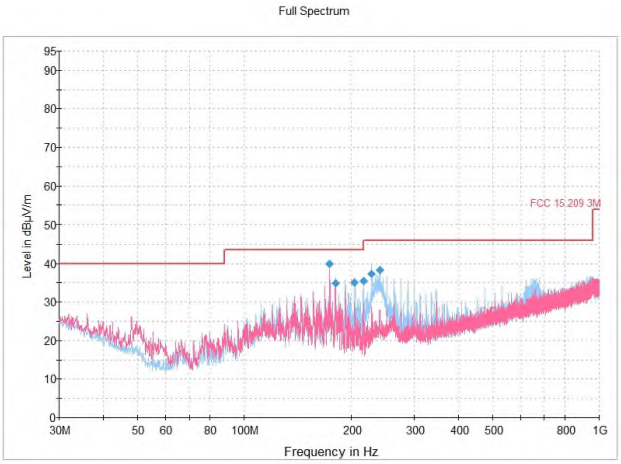

Figure 8.2-38: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2C band, low channel

Table 8.2-38: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2C band, low channel, 30-1000 MHz*

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
168.063333	35.05	43.50	8.45	1000.0	120.000	145.0	H	296.0	18.1
173.279167	37.21	43.50	6.29	1000.0	120.000	167.0	H	293.0	17.6
204.154167	33.89	43.50	9.61	1000.0	120.000	126.0	H	251.0	18.0
228.040833	36.60	46.00	9.40	1000.0	120.000	146.0	H	87.0	18.7
239.965000	37.78	46.00	8.22	1000.0	120.000	108.0	H	257.0	19.9
818.849167	32.24	46.00	13.76	1000.0	120.000	264.0	V	279.0	32.2

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)

Table 8.2-39: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2C band, low channel, 30-1000 MHz*

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
173.519167	39.86	43.50	3.64	1000.0	120.000	194.0	H	99.0	17.5
179.986667	34.82	43.50	8.68	1000.0	120.000	136.0	H	252.0	17.1
203.914167	35.04	43.50	8.46	1000.0	120.000	110.0	H	264.0	18.0
216.117500	35.49	46.00	10.51	1000.0	120.000	118.0	H	112.0	17.9
228.041667	37.33	46.00	8.67	1000.0	120.000	108.0	H	249.0	18.7
240.005000	38.31	46.00	7.69	1000.0	120.000	116.0	H	98.0	19.9

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)

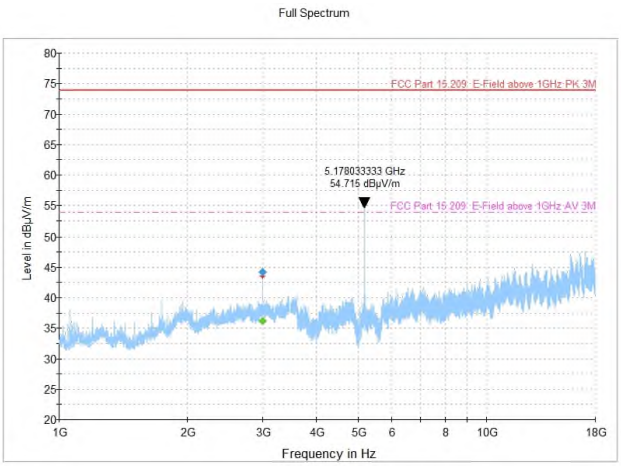

Figure 8.2-39: Radiated spurious emissions, 802.11a, U-NII-1 band, low channel

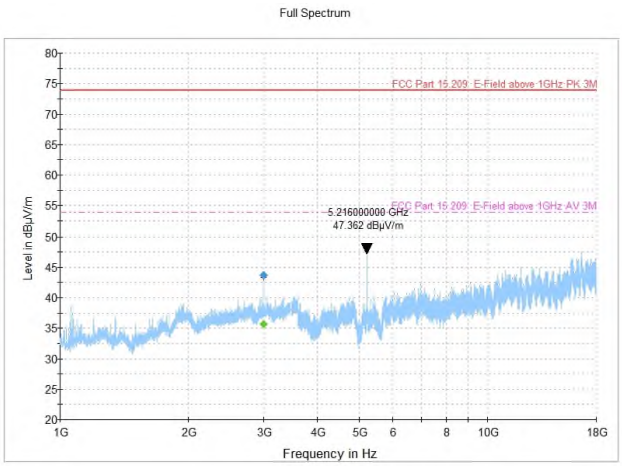

Figure 8.2-40: Radiated spurious emissions, 802.11a, U-NII-1 band, mid channel

Table 8.2-40: *Radiated spurious emissions, 802.11a, U-NII-1 band, low channel, 1-18 GHz*

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)
2999.766667	---	36.20	53.90	17.70	5000.0	1000.000	100.0	V	188.0	-7.9
2999.766667	44.25	---	73.90	29.65	5000.0	1000.000	100.0	V	188.0	-7.9

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)

Table 8.2-41: *Radiated spurious emissions, 802.11a, U-NII-1 band, mid channel, 1-18 GHz*

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)
2999.766667	---	35.67	53.90	18.23	5000.0	1000.000	117.0	H	292.0	-7.9
2999.766667	43.76	---	73.90	30.14	5000.0	1000.000	117.0	H	292.0	-7.9

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)

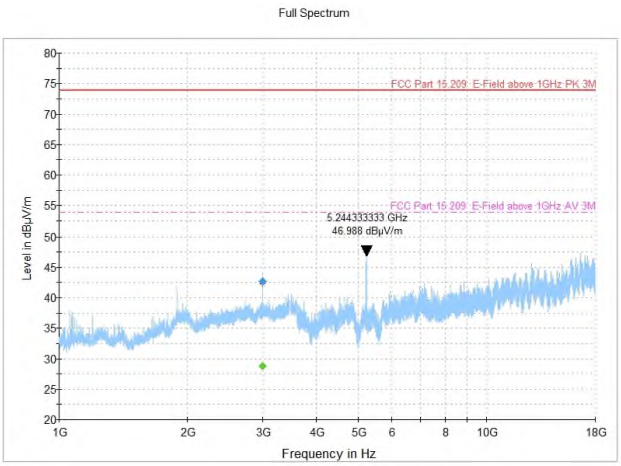

Figure 8.2-41: Radiated spurious emissions, 802.11a, U-NII-1 band, high channel

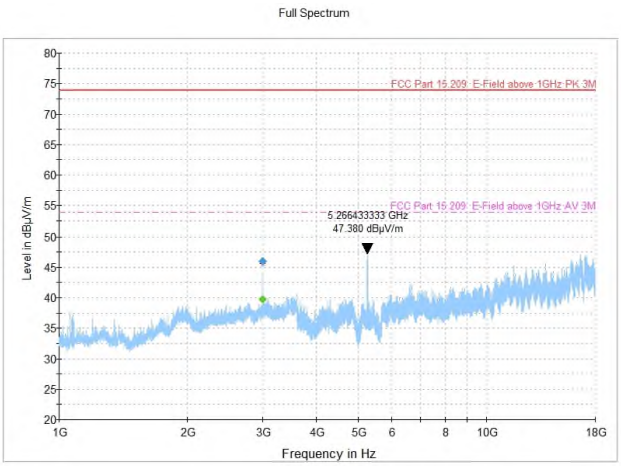

Figure 8.2-42: Radiated spurious emissions, 802.11a, U-NII-2A band, low channel

Table 8.2-42: *Radiated spurious emissions, 802.11a, U-NII-1 band, high channel, 1-18 GHz*

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)
3000.566667	---	28.76	53.90	25.14	5000.0	1000.000	137.0	H	106.0	-7.9
3000.566667	42.71	---	73.90	31.19	5000.0	1000.000	137.0	H	106.0	-7.9

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)

Table 8.2-43: *Radiated spurious emissions, 802.11a, U-NII-2A band, low channel, 1-18 GHz*

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)
2999.766667	---	39.69	53.90	14.21	5000.0	1000.000	100.0	V	221.0	-7.9
2999.766667	46.00	---	73.90	27.90	5000.0	1000.000	100.0	V	221.0	-7.9

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)

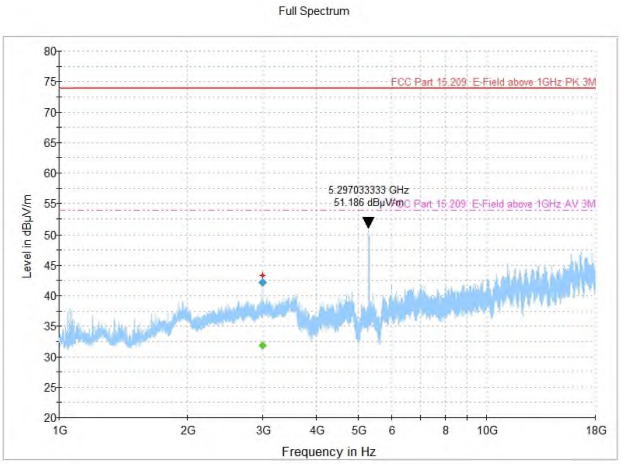

Figure 8.2-43: Radiated spurious emissions, 802.11a, U-NII-2A band, mid channel

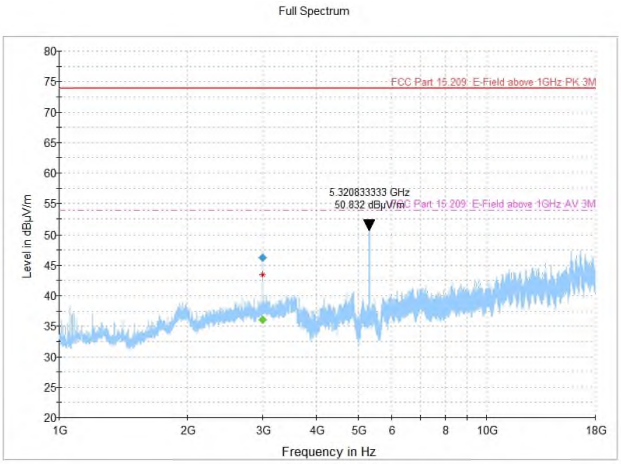

Figure 8.2-44: Radiated spurious emissions, 802.11a, U-NII-2A band, high channel

Table 8.2-44: *Radiated spurious emissions, 802.11a, U-NII-2A band, mid channel, 1-18 GHz*

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)
2999.766667	---	31.91	53.90	21.99	5000.0	1000.000	148.0	H	203.0	-7.9
2999.766667	42.17	---	73.90	31.73	5000.0	1000.000	148.0	H	203.0	-7.9

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)

Table 8.2-45: *Radiated spurious emissions, 802.a, U-NII-2A band, high channel, 1-18 GHz*

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)
2999.766667	---	36.09	53.90	17.81	5000.0	1000.000	116.0	H	302.0	-7.9
2999.766667	46.25	---	73.90	27.65	5000.0	1000.000	116.0	H	302.0	-7.9

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)

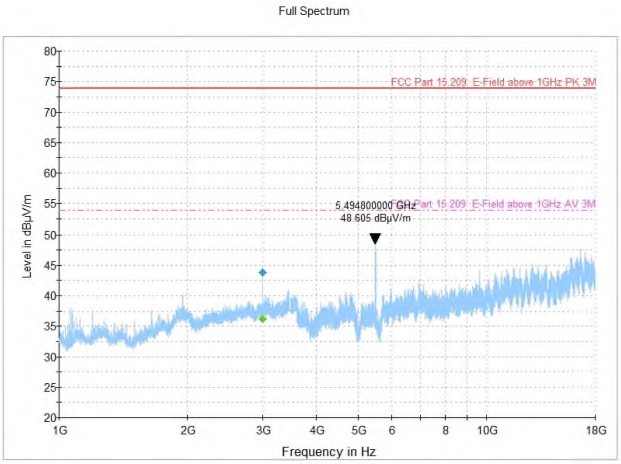

Figure 8.2-45: Radiated spurious emissions, 802.11a, U-NII-2C band, low channel

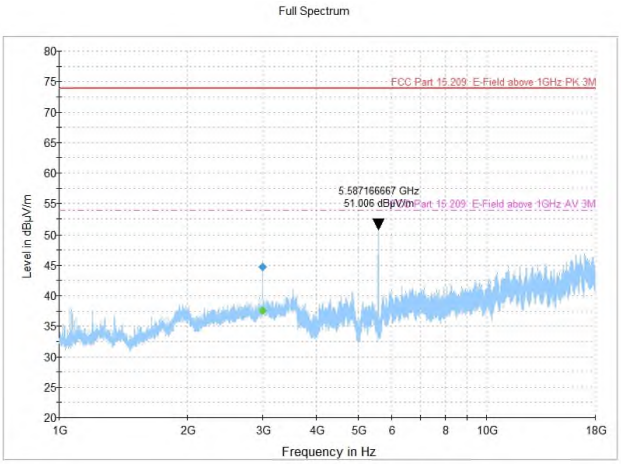

Figure 8.2-46: Radiated spurious emissions, 802.11a, U-NII-2C band, mid channel

Table 8.2-46: *Radiated spurious emissions, 802.11a, U-NII-2C band, low channel, 1-18 GHz*

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)
2999.766667	---	36.17	53.90	17.73	5000.0	1000.000	110.0	V	190.0	-7.9
2999.766667	43.79	---	73.90	30.11	5000.0	1000.000	110.0	V	190.0	-7.9

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)

Table 8.2-47: *Radiated spurious emissions, 802.11a, U-NII-2C band, mid channel, 1-18 GHz*

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)
2999.766667	---	37.63	53.90	16.27	5000.0	1000.000	143.0	V	211.0	-7.9
2999.766667	44.73	---	73.90	29.17	5000.0	1000.000	143.0	V	211.0	-7.9

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)

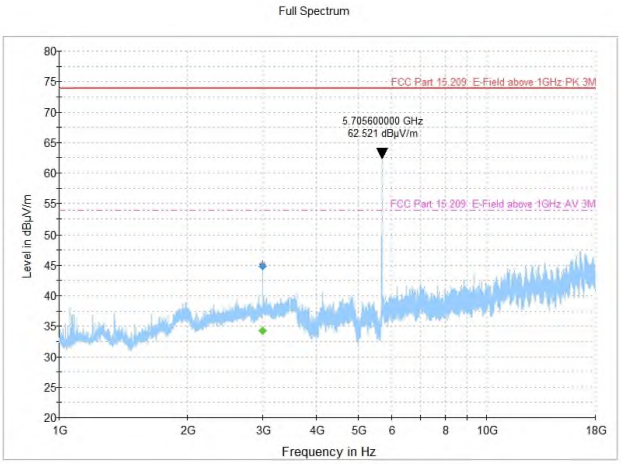

Figure 8.2-47: Radiated spurious emissions, 802.11a, U-NII-2C band, high channel

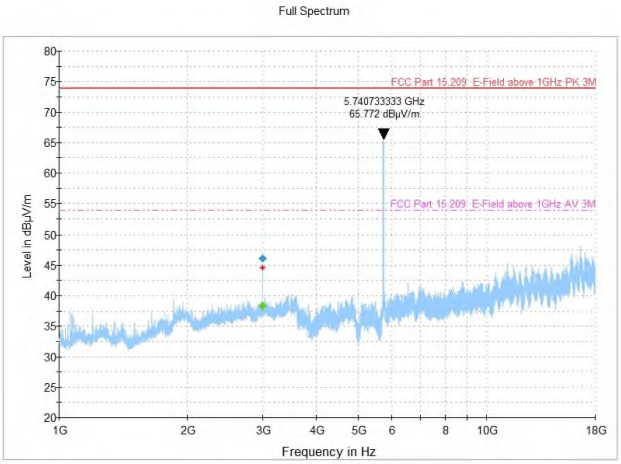

Figure 8.2-48: Radiated spurious emissions, 802.11a, U-NII-3 band, low channel

Table 8.2-48: *Radiated spurious emissions, 802.11a, U-NII-2C band, low channel, 1-18 GHz*

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)
3000.166667	---	34.23	53.90	19.67	5000.0	1000.000	98.0	H	296.0	-7.9
3000.166667	44.83	---	73.90	29.07	5000.0	1000.000	98.0	H	296.0	-7.9

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)

Table 8.2-49: *Radiated spurious emissions, 802.11a, U-NII-3 band, low channel, 1-18 GHz*

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)
2999.766667	---	38.29	53.90	15.62	5000.0	1000.000	148.0	V	244.0	-7.9
2999.766667	46.08	---	73.90	27.82	5000.0	1000.000	148.0	V	244.0	-7.9

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)

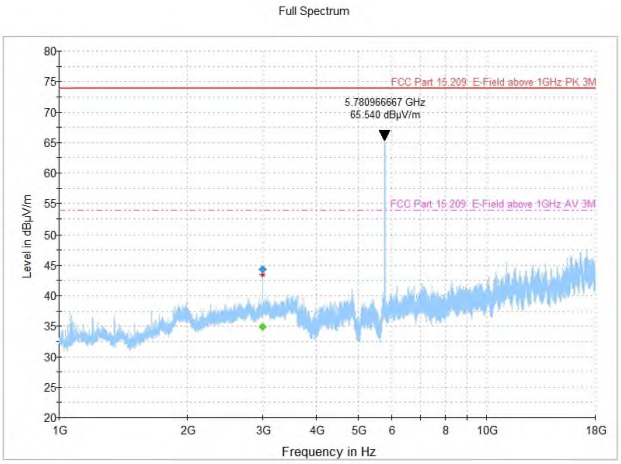

Figure 8.2-49: Radiated spurious emissions, 802.11a, U-NII-3 band, mid channel

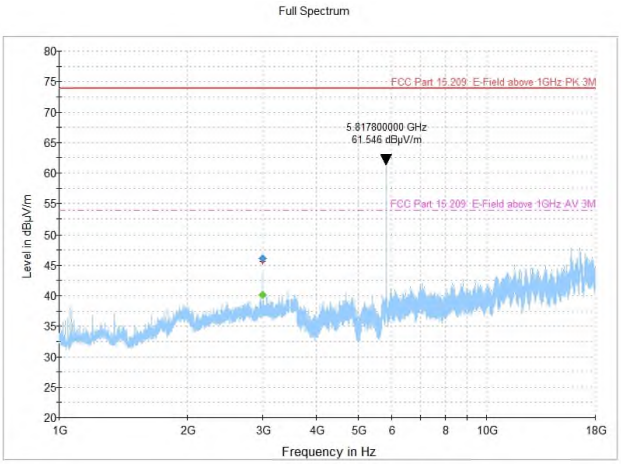

Figure 8.2-50: Radiated spurious emissions, 802.11a, U-NII-3 band, high channel

Table 8.2-50: *Radiated spurious emissions, 802.11a, U-NII-3 band, mid channel, 1-18 GHz*

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)
3000.166667	---	34.97	53.90	18.93	5000.0	1000.000	128.0	H	207.0	-7.9
3000.166667	44.31	---	73.90	29.59	5000.0	1000.000	128.0	H	207.0	-7.9

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)

Table 8.2-51: *Radiated spurious emissions, 802.11a, U-NII-3 band, high channel, 1-18 GHz*

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)
2999.766667	---	40.18	53.90	13.72	5000.0	1000.000	118.0	V	219.0	-7.9
2999.766667	46.07	---	73.90	27.83	5000.0	1000.000	118.0	V	219.0	-7.9

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)

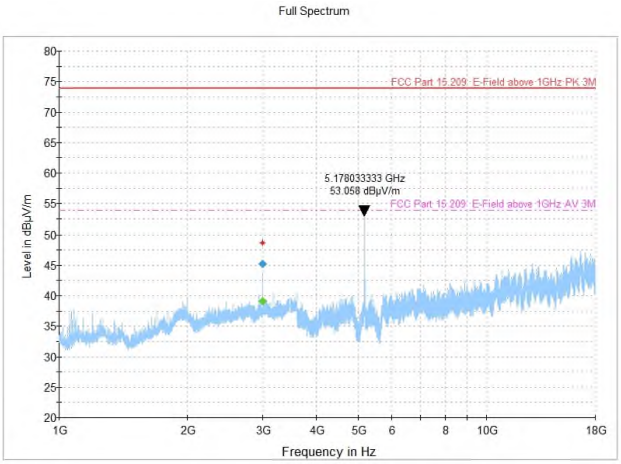

Figure 8.2-51: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-1 band, low channel

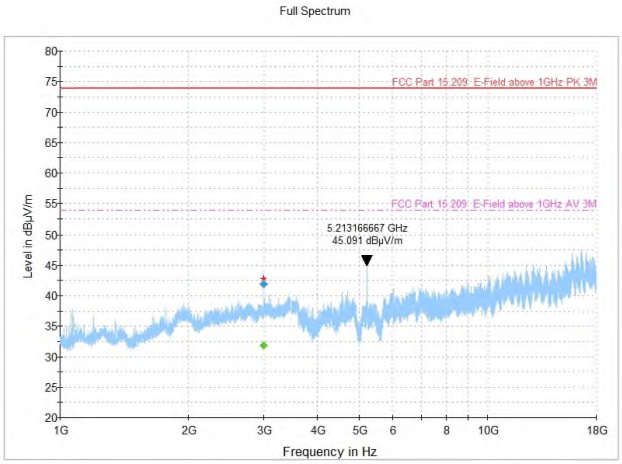

Figure 8.2-52: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-1 band, mid channel

Table 8.2-52: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-1 band, low channel, 1-18 GHz*

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)
3000.000000	---	39.08	53.90	14.82	5000.0	1000.000	147.0	V	225.0	-7.9
3000.000000	45.24	---	73.90	28.66	5000.0	1000.000	147.0	V	225.0	-7.9

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)

Table 8.2-53: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-1 band, mid channel, 1-18 GHz*

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)
2999.766667	---	31.84	53.90	22.06	5000.0	1000.000	148.0	H	205.0	-7.9
2999.766667	41.93	---	73.90	31.97	5000.0	1000.000	148.0	H	205.0	-7.9

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)

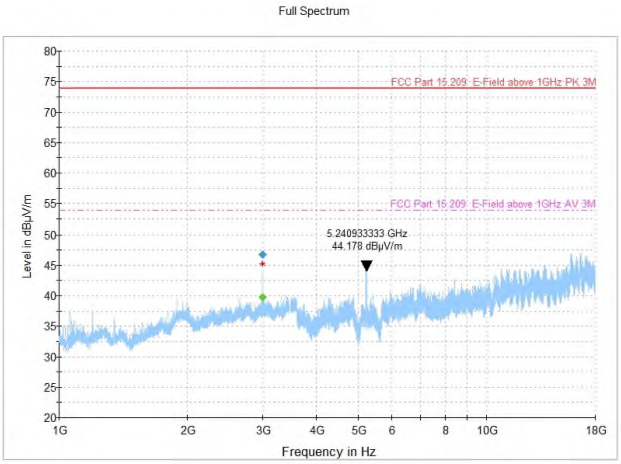

Figure 8.2-53: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-1 band, high channel

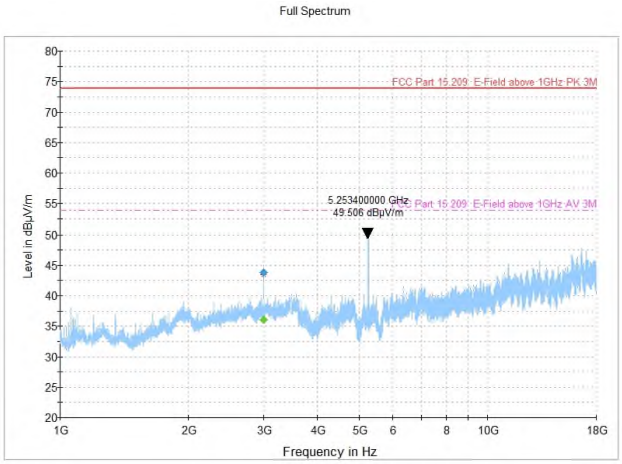

Figure 8.2-54: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2A band, low channel

Table 8.2-54: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-1 band, high channel, 1-18 GHz*

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)
2999.933333	---	39.71	53.90	14.19	5000.0	1000.000	119.0	V	222.0	-7.9
2999.933333	46.72	---	73.90	27.18	5000.0	1000.000	119.0	V	222.0	-7.9

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)

Table 8.2-55: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2A band, low channel, 1-18 GHz*

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)
2999.766667	---	36.07	53.90	17.83	5000.0	1000.000	110.0	V	190.0	-7.9
2999.766667	43.88	---	73.90	30.02	5000.0	1000.000	110.0	V	190.0	-7.9

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)

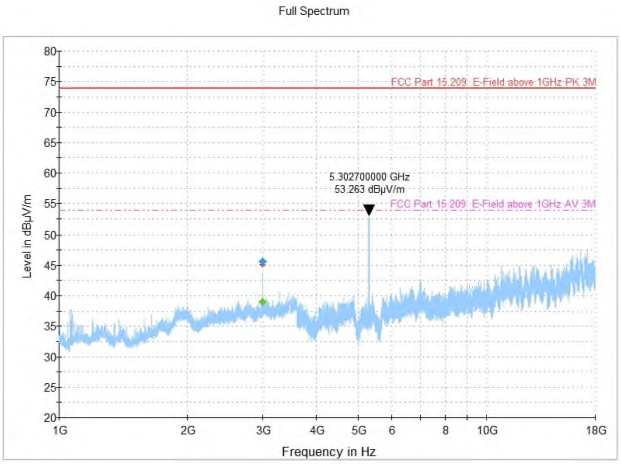

Figure 8.2-55: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2A band, mid channel

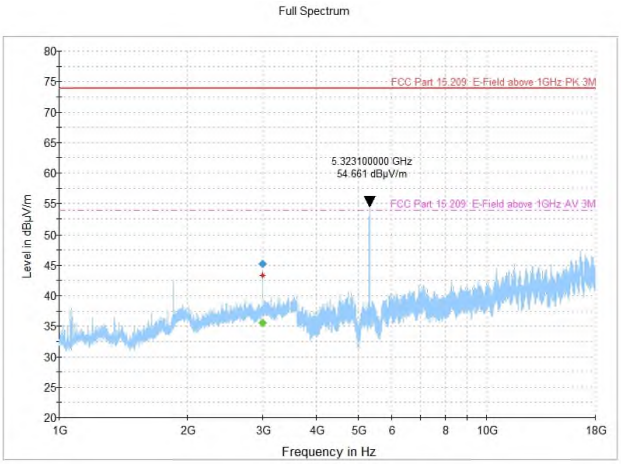

Figure 8.2-56: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2A band, high channel

Table 8.2-56: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2A band, mid channel, 1-18 GHz*

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)
3000.166667	---	38.92	53.90	14.98	5000.0	1000.000	109.0	V	204.0	-7.9
3000.166667	45.59	---	73.90	28.31	5000.0	1000.000	109.0	V	204.0	-7.9

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)

Table 8.2-57: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2A band, high channel, 1-18 GHz*

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)
2999.766667	---	35.60	53.90	18.30	5000.0	1000.000	116.0	H	293.0	-7.9
2999.766667	45.20	---	73.90	28.70	5000.0	1000.000	116.0	H	293.0	-7.9

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)

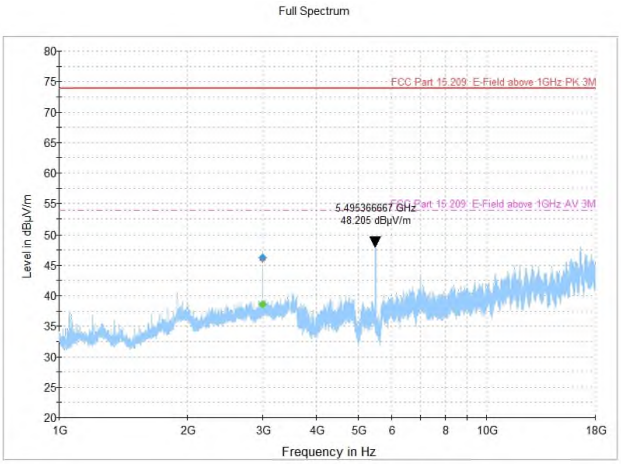

Figure 8.2-57: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, low channel

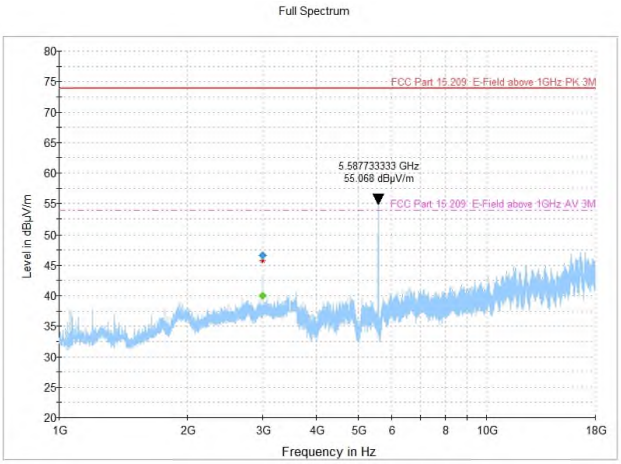

Figure 8.2-58: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, mid channel

Table 8.2-58: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, low channel, 1-18 GHz*

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)
3000.166667	---	38.60	53.90	15.30	5000.0	1000.000	118.0	V	222.0	-7.9
3000.166667	46.23	---	73.90	27.67	5000.0	1000.000	118.0	V	222.0	-7.9

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)

Table 8.2-59: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, mid channel, 1-18 GHz*

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)
2999.766667	---	40.01	53.90	13.89	5000.0	1000.000	119.0	V	217.0	-7.9
2999.766667	46.64	---	73.90	27.26	5000.0	1000.000	119.0	V	217.0	-7.9

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)

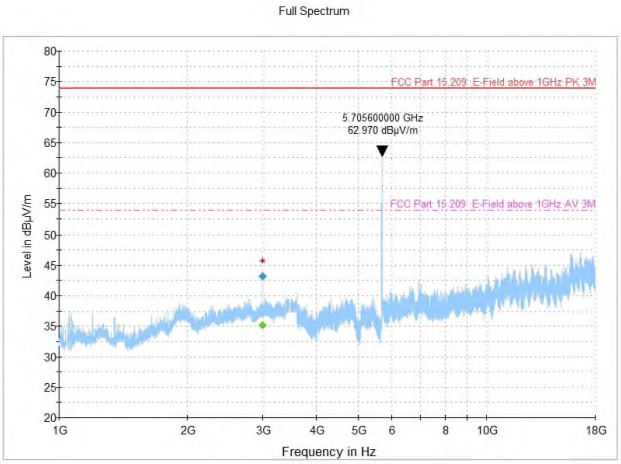

Figure 8.2-59: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, high channel

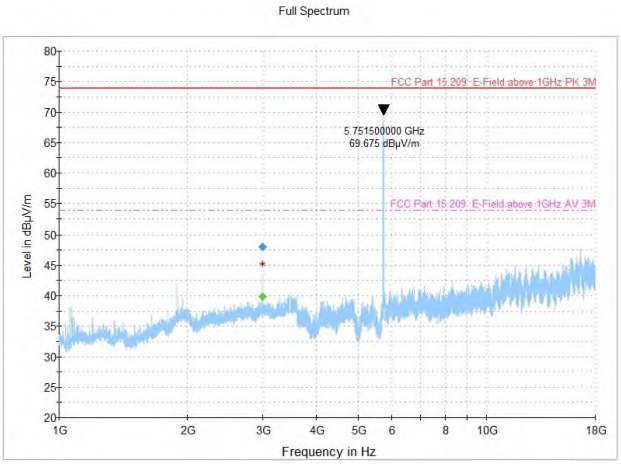

Figure 8.2-60: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-3 band, low channel

Table 8.2-60: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, high channel, 1-18 GHz*

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)
2999.766667	---	35.15	53.90	18.75	5000.0	1000.000	117.0	H	203.0	-7.9
2999.766667	43.25	---	73.90	30.65	5000.0	1000.000	117.0	H	203.0	-7.9

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)

Table 8.2-61: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-3 band, low channel, 1-18 GHz*

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)
3000.000000	---	39.90	53.90	14.00	5000.0	1000.000	100.0	V	226.0	-7.9
3000.000000	47.98	---	73.90	25.92	5000.0	1000.000	100.0	V	226.0	-7.9

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)

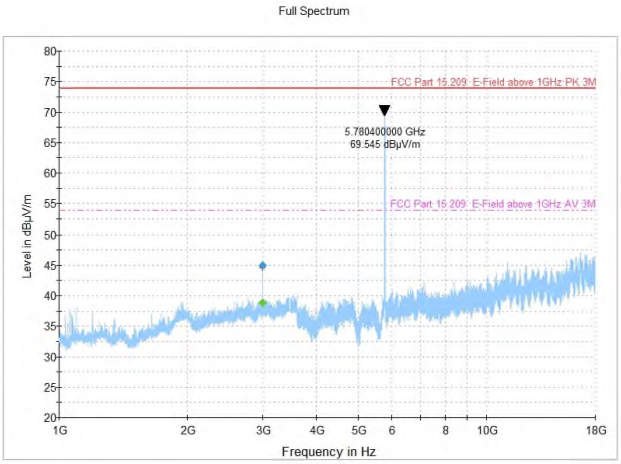

Figure 8.2-61: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-3 band, mid channel

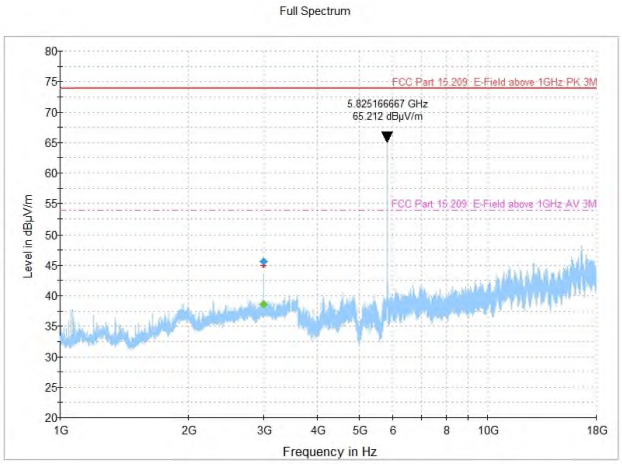

Figure 8.2-62: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-3 band, high channel

Table 8.2-62: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-3 band, mid channel, 1-18 GHz*

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)
3000.000000	---	38.87	53.90	15.03	5000.0	1000.000	100.0	V	211.0	-7.9
3000.000000	44.94	---	73.90	28.96	5000.0	1000.000	100.0	V	211.0	-7.9

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)

Table 8.2-63: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-3 band, high channel, 1-18 GHz*

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)
3000.166667	---	38.62	53.90	15.28	5000.0	1000.000	119.0	V	207.0	-7.9
3000.166667	45.60	---	73.90	28.30	5000.0	1000.000	119.0	V	207.0	-7.9

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)

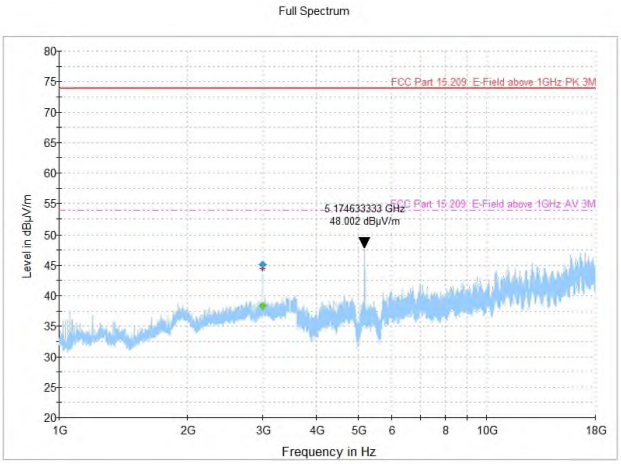

Figure 8.2-63: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-1 band, low channel

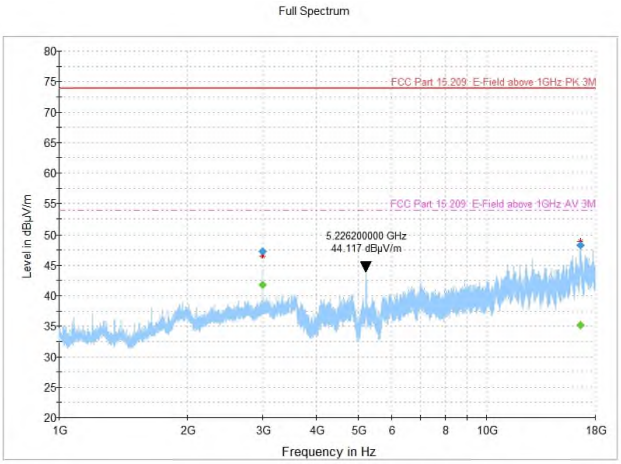

Figure 8.2-64: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-1 band, high channel

Table 8.2-64: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-1 band, low channel, 1-18 GHz*

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)
2999.766667	---	38.36	53.90	15.54	5000.0	1000.000	100.0	V	193.0	-7.9
2999.766667	45.14	---	73.90	28.76	5000.0	1000.000	100.0	V	193.0	-7.9

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)

Table 8.2-65: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-1 band, high channel, 1-18 GHz*

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)
2999.766667	47.29	---	73.90	26.61	5000.0	1000.000	110.0	V	223.0	-7.9
2999.766667	---	41.75	53.90	12.15	5000.0	1000.000	110.0	V	223.0	-7.9
16605.900000	48.26	---	73.90	25.64	5000.0	1000.000	394.0	H	94.0	13.1
16605.900000	---	35.16	53.90	18.74	5000.0	1000.000	394.0	H	94.0	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)

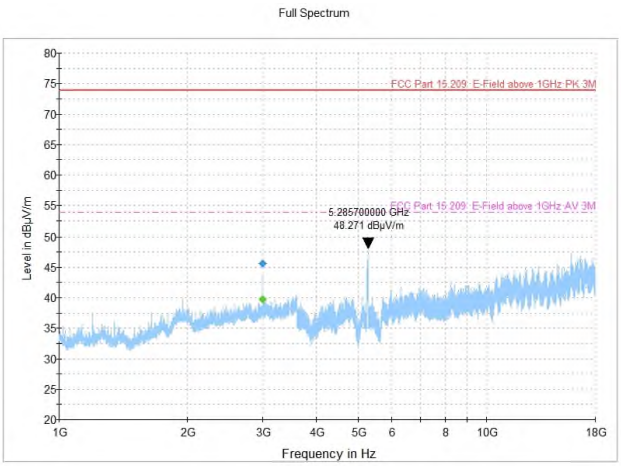

Figure 8.2-65: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2A band, low channel

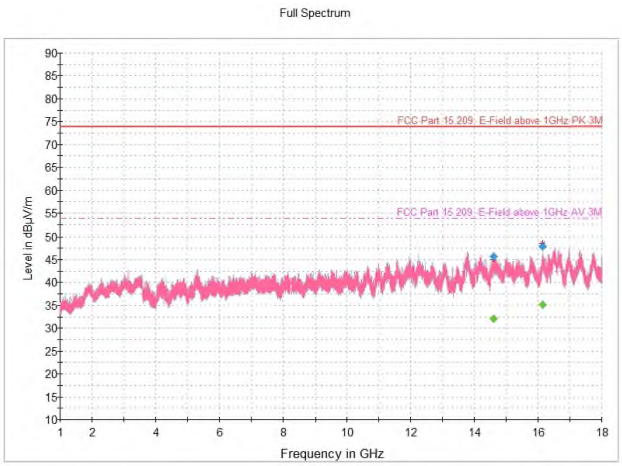

Figure 8.2-66: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2C band, low channel

Table 8.2-66: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2A band, low channel, 1-18 GHz*

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)
2999.766667	---	39.69	53.90	14.21	5000.0	1000.000	108.0	V	210.0	-7.9
2999.766667	45.65	---	73.90	28.25	5000.0	1000.000	108.0	V	210.0	-7.9

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)

Table 8.2-67: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2C band, low channel, 1-18 GHz*

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)
14598.000000	45.68	---	73.90	28.22	5000.0	1000.000	344.0	V	82.0	12.2
14598.000000	---	32.00	53.90	21.90	5000.0	1000.000	344.0	V	82.0	12.2
16154.533333	47.96	---	73.90	25.94	5000.0	1000.000	312.0	H	270.0	17.0
16154.533333	---	35.10	53.90	18.80	5000.0	1000.000	312.0	H	270.0	17.0

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)

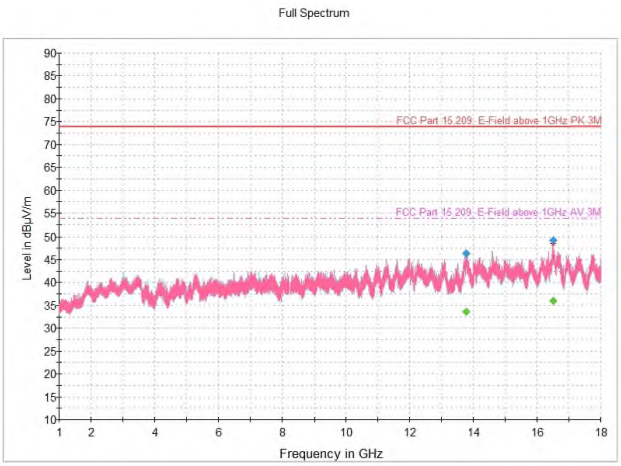

Figure 8.2-67: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2C band, mid channel

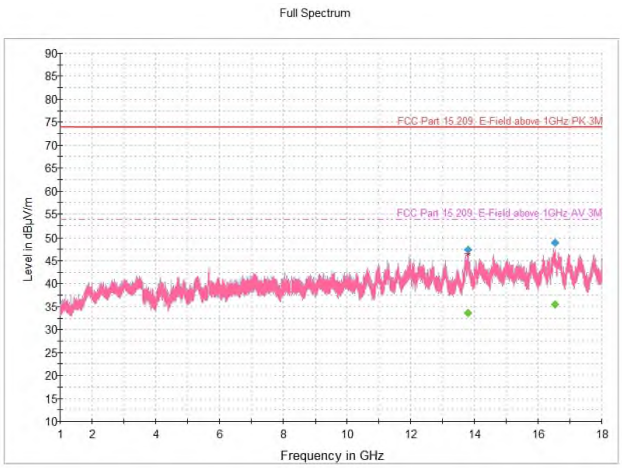

Figure 8.2-68: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2C band, high channel

Table 8.2-68: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2C band, mid channel, 1-18 GHz*

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)
13774.366667	---	33.60	53.90	20.30	5000.0	1000.000	362.0	H	311.0	12.9
13774.366667	46.41	---	73.90	27.49	5000.0	1000.000	362.0	H	311.0	12.9
16500.066667	---	35.90	53.90	18.00	5000.0	1000.000	162.0	V	66.0	16.8
16500.066667	49.16	---	73.90	24.74	5000.0	1000.000	162.0	V	66.0	16.8

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)

Table 8.2-69: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2C band, high channel, 1-18 GHz*

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)
13794.800000	---	33.55	53.90	20.35	5000.0	1000.000	192.0	H	10.0	13.0
13794.800000	47.31	---	73.90	26.59	5000.0	1000.000	192.0	H	10.0	13.0
16530.333333	---	35.55	53.90	18.35	5000.0	1000.000	250.0	V	286.0	16.8
16530.333333	48.94	---	73.90	24.96	5000.0	1000.000	250.0	V	286.0	16.8

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)

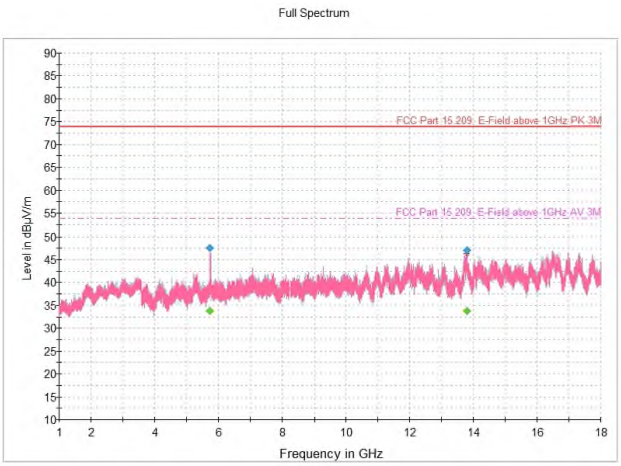

Figure 8.2-69: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-3 band, low channel

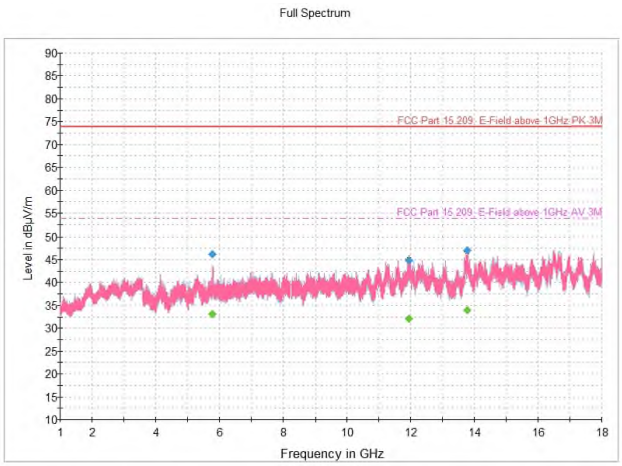

Figure 8.2-70: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-3 band, high channel

Table 8.2-70: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-3 band, low channel, 1-18 GHz*

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)
5739.866667	---	33.84	53.90	20.06	5000.0	1000.000	131.0	V	339.0	0.4
5739.866667	47.55	---	73.90	26.35	5000.0	1000.000	131.0	V	339.0	0.4
13787.200000	---	33.80	53.90	20.10	5000.0	1000.000	221.0	V	0.0	12.9
13787.200000	47.03	---	73.90	26.87	5000.0	1000.000	221.0	V	0.0	12.9

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)

Table 8.2-71: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-3 band, high channel, 1-18 GHz*

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)
5779.700000	46.23	---	73.90	27.67	5000.0	1000.000	98.0	V	357.0	0.5
5779.700000	---	33.05	53.90	20.85	5000.0	1000.000	98.0	V	357.0	0.5
11935.966667	44.85	---	73.90	29.05	5000.0	1000.000	136.0	H	0.0	10.4
11935.966667	---	32.00	53.90	21.90	5000.0	1000.000	136.0	H	0.0	10.4
13779.866667	---	33.87	53.90	20.03	5000.0	1000.000	365.0	V	0.0	12.9
13779.866667	47.02	---	73.90	26.88	5000.0	1000.000	365.0	V	0.0	12.9

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)

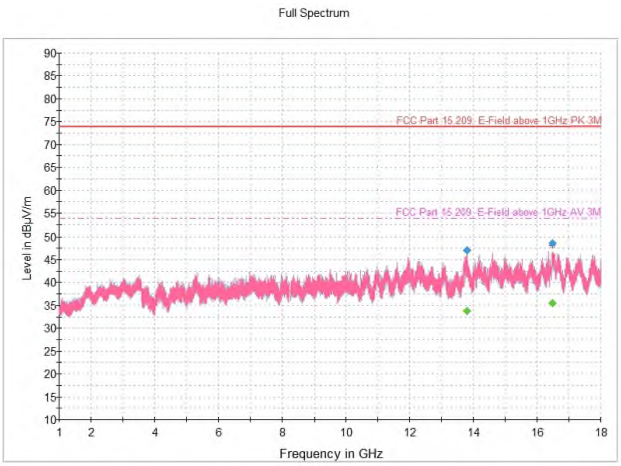

Figure 8.2-71: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-1 band, mid channel

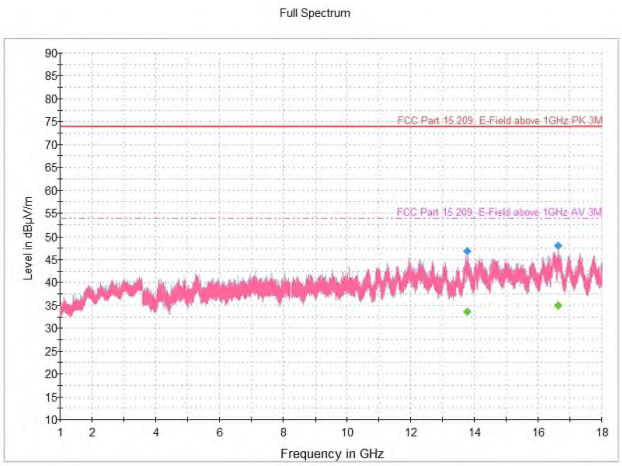

Figure 8.2-72: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2A band, mid channel

Table 8.2-72: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-1 band, mid channel, 1-18 GHz*

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)
13789.400000	46.96	---	73.90	26.94	5000.0	1000.000	205.0	V	80.0	13.0
13789.400000	---	33.78	53.90	20.12	5000.0	1000.000	205.0	V	80.0	13.0
16489.633333	48.51	---	73.90	25.39	5000.0	1000.000	172.0	H	341.0	16.6
16489.633333	---	35.48	53.90	18.42	5000.0	1000.000	172.0	H	341.0	16.6

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 8.2-73: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2A band, mid channel, 1-18 GHz*

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)
13768.800000	46.91	---	73.90	26.99	5000.0	1000.000	166.0	V	173.0	12.9
13768.800000	---	33.67	53.90	20.23	5000.0	1000.000	166.0	V	173.0	12.9
16634.600000	48.11	---	73.90	25.79	5000.0	1000.000	236.0	V	217.0	17.2
16634.600000	---	34.94	53.90	18.96	5000.0	1000.000	236.0	V	217.0	17.2

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)

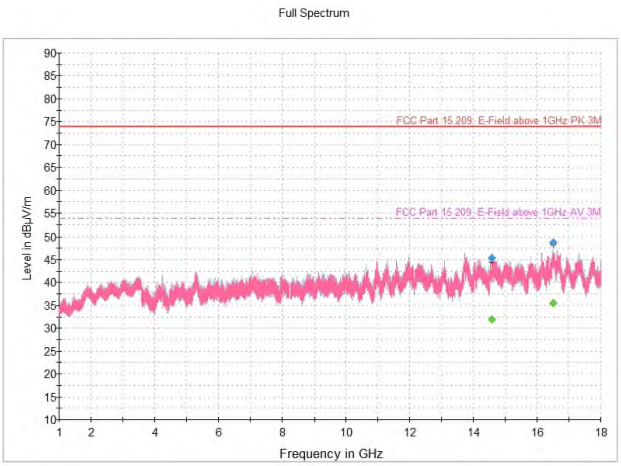

Figure 8.2-73: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2C band, low channel

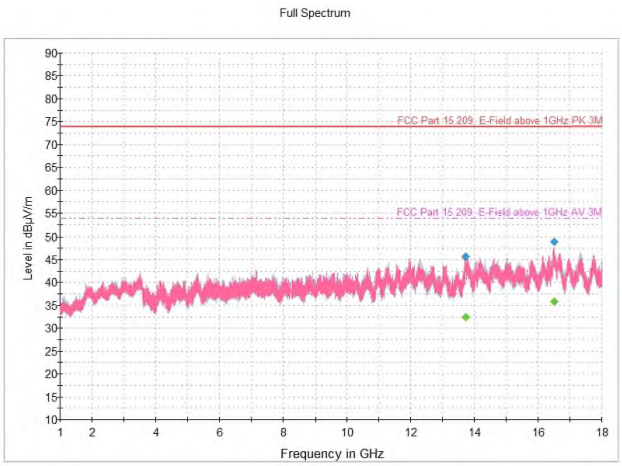

Figure 8.2-74: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2C band, high channel

Table 8.2-74: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2C band, low channel, 1-18 GHz*

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)
14592.233333	45.27	---	73.90	28.63	5000.0	1000.000	361.0	V	11.0	12.1
14592.233333	---	31.87	53.90	22.03	5000.0	1000.000	361.0	V	11.0	12.1
16518.533333	48.65	---	73.90	25.25	5000.0	1000.000	324.0	H	204.0	16.8
16518.533333	---	35.50	53.90	18.40	5000.0	1000.000	324.0	H	204.0	16.8

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)

Table 8.2-75: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2C band, high channel, 1-18 GHz*

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)
13731.433333	---	32.39	53.90	21.51	5000.0	1000.000	408.0	H	234.0	12.7
13731.433333	45.69	---	73.90	28.21	5000.0	1000.000	408.0	H	234.0	12.7
16512.966667	---	35.79	53.90	18.11	5000.0	1000.000	374.0	V	357.0	16.8
16512.966667	48.90	---	73.90	25.00	5000.0	1000.000	374.0	V	357.0	16.8

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)

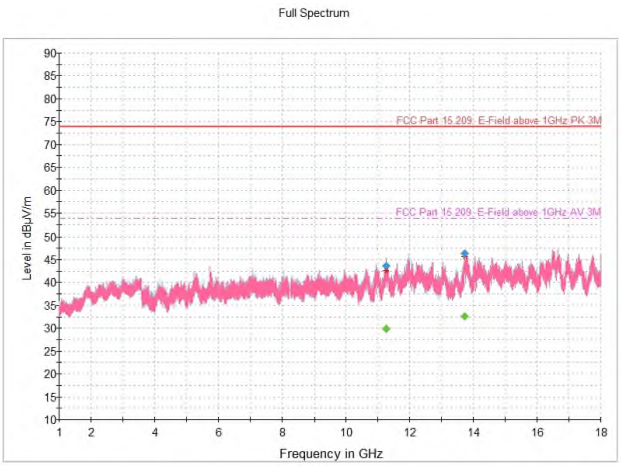

Figure 8.2-75: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-3 band, mid channel

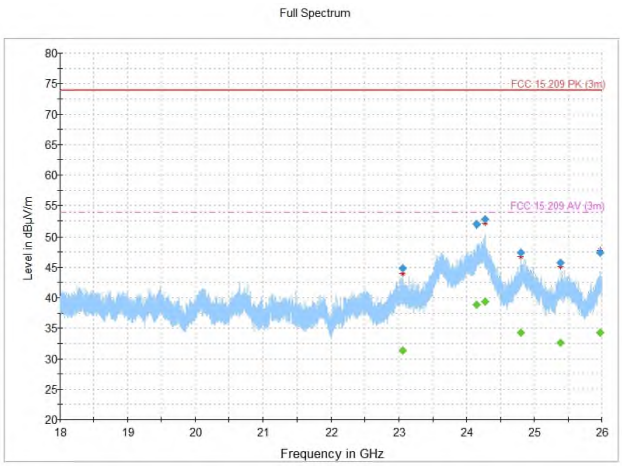

Figure 8.2-76: Radiated spurious emissions, 802.11a, U-NII-2A band, mid channel

Table 8.2-76: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-3 band, mid channel, 1-18 GHz*

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)
11260.733333	---	29.79	53.90	24.11	5000.0	1000.000	139.0	V	75.0	6.7
11260.733333	43.62	---	73.90	30.28	5000.0	1000.000	139.0	V	75.0	6.7
13728.300000	---	32.55	53.90	21.35	5000.0	1000.000	115.0	V	0.0	12.7
13728.300000	46.42	---	73.90	27.48	5000.0	1000.000	115.0	V	0.0	12.7

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 8.2-77: *Radiated spurious emissions, 802.11a, U-NII-2A band, mid channel, 18-26 GHz*

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)
23057.833333	---	31.33	53.90	22.57	5000.0	1000.000	316.0	H	349.0	20.8
23057.833333	44.84	---	73.90	29.06	5000.0	1000.000	316.0	H	349.0	20.8
24155.166667	---	38.83	53.90	15.07	5000.0	1000.000	150.0	H	310.0	29.4
24155.166667	51.98	---	73.90	21.92	5000.0	1000.000	150.0	H	310.0	29.4
24277.900000	---	39.34	53.90	14.56	5000.0	1000.000	115.0	V	0.0	28.6
24277.900000	52.75	---	73.90	21.15	5000.0	1000.000	115.0	V	0.0	28.6
24802.766667	47.35	---	73.90	26.55	5000.0	1000.000	324.0	H	191.0	24.6
24802.766667	---	34.28	53.90	19.62	5000.0	1000.000	324.0	H	191.0	24.6
25395.966667	45.78	---	73.90	28.12	5000.0	1000.000	309.0	H	269.0	23.7
25395.966667	---	32.58	53.90	21.32	5000.0	1000.000	309.0	H	269.0	23.7
25974.366667	---	34.33	53.90	19.57	5000.0	1000.000	351.0	V	0.0	25.3
25974.366667	47.39	---	73.90	26.51	5000.0	1000.000	351.0	V	0.0	25.3

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)

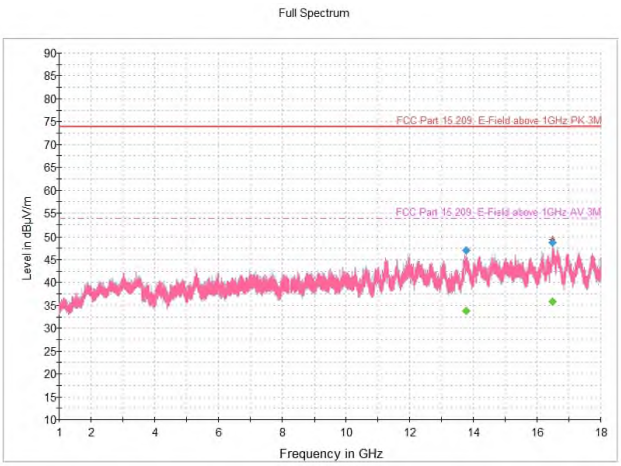

Figure 8.2-77: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2A band, high channel

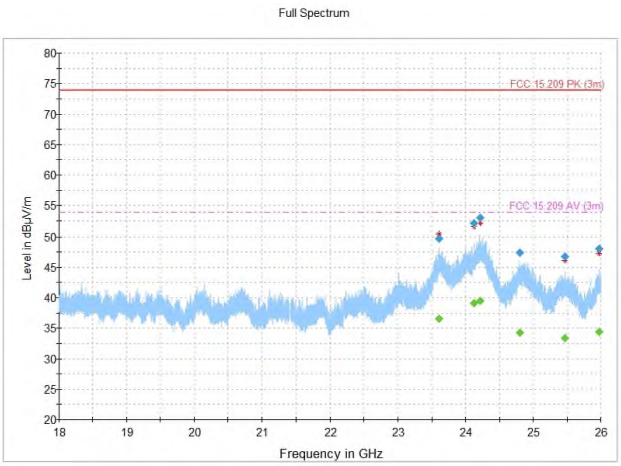

Figure 8.2-78: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, low channel

Table 8.2-78: *Radiated spurious emissions, 802.11a, U-NII-2C band, mid channel, 1-18 GHz*

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)
13778.466667	---	33.76	53.90	20.14	5000.0	1000.000	273.0	H	272.0	12.9
13778.466667	46.98	---	73.90	26.92	5000.0	1000.000	273.0	H	272.0	12.9
16492.700000	---	35.84	53.90	18.06	5000.0	1000.000	199.0	V	54.0	16.7
16492.700000	48.79	---	73.90	25.11	5000.0	1000.000	199.0	V	54.0	16.7

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 8.2-79: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, low channel, 18-26 GHz*

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)
23607.766667	---	36.58	53.90	17.32	5000.0	1000.000	220.0	V	11.0	25.8
23607.766667	49.74	---	73.90	24.16	5000.0	1000.000	220.0	V	11.0	25.8
24124.300000	---	39.08	53.90	14.82	5000.0	1000.000	309.0	V	185.0	29.5
24124.300000	52.15	---	73.90	21.75	5000.0	1000.000	309.0	V	185.0	29.5
24213.566667	---	39.50	53.90	14.40	5000.0	1000.000	367.0	H	314.0	29.1
24213.566667	53.01	---	73.90	20.89	5000.0	1000.000	367.0	H	314.0	29.1
24799.300000	47.44	---	73.90	26.46	5000.0	1000.000	275.0	H	11.0	24.6
24799.300000	---	34.31	53.90	19.59	5000.0	1000.000	275.0	H	11.0	24.6
25468.500000	46.76	---	73.90	27.14	5000.0	1000.000	401.0	H	44.0	24.0
25468.500000	---	33.33	53.90	20.57	5000.0	1000.000	401.0	H	44.0	24.0
25978.100000	---	34.37	53.90	19.53	5000.0	1000.000	248.0	V	32.0	25.3
25978.100000	47.98	---	73.90	25.92	5000.0	1000.000	248.0	V	32.0	25.3

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)

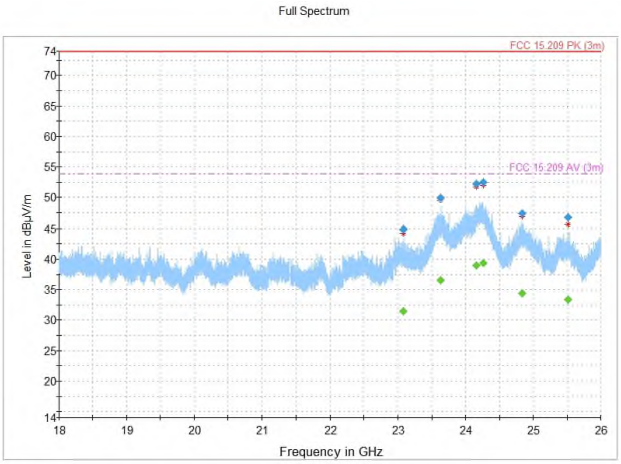

Figure 8.2-79: Radiated spurious emissions, 802.11n, MIMO antenna configuration, 40MHz BW, U-NII-2C band, low channel

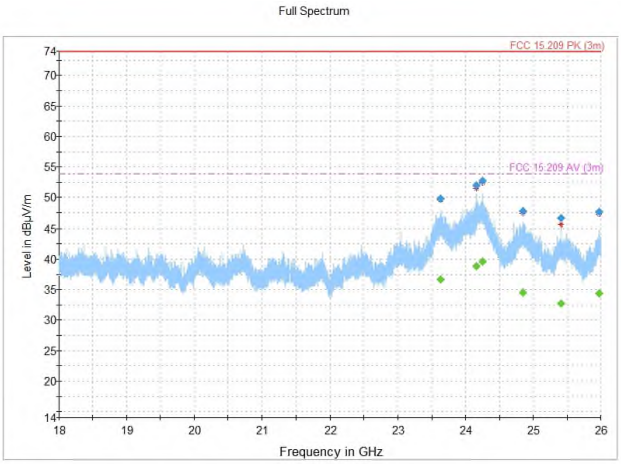

Figure 8.2-80: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2C band, low channel

Table 8.2-80: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2C band, low channel, 18-26 GHz*

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)
23636.366667	---	36.62	53.90	17.28	5000.0	1000.000	342.0	H	342.0	25.7
23636.366667	49.79	---	73.90	24.11	5000.0	1000.000	342.0	H	342.0	25.7
24159.233333	52.01	---	73.90	21.89	5000.0	1000.000	112.0	V	124.0	29.3
24159.233333	---	38.85	53.90	15.05	5000.0	1000.000	112.0	V	124.0	29.3
24247.300000	---	39.64	53.90	14.26	5000.0	1000.000	222.0	H	21.0	29.0
24247.300000	52.77	---	73.90	21.13	5000.0	1000.000	222.0	H	21.0	29.0
24848.366667	---	34.55	53.90	19.35	5000.0	1000.000	402.0	V	317.0	24.7
24848.366667	47.82	---	73.90	26.08	5000.0	1000.000	402.0	V	317.0	24.7
25413.500000	---	32.77	53.90	21.13	5000.0	1000.000	262.0	V	310.0	23.8
25413.500000	46.59	---	73.90	27.31	5000.0	1000.000	262.0	V	310.0	23.8
25979.033333	47.61	---	73.90	26.29	5000.0	1000.000	216.0	V	355.0	25.3
25979.033333	---	34.42	53.90	19.48	5000.0	1000.000	216.0	V	355.0	25.3

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)

Table 8.2-81: *Radiated spurious emissions, 802.11n, MIMO antenna configuration, 40MHz BW, U-NII-2C band, low channel, 18-26 GHz*

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)
23081.300000	---	31.43	53.90	22.47	5000.0	1000.000	351.0	V	316.0	20.8
23081.300000	44.84	---	73.90	29.06	5000.0	1000.000	351.0	V	316.0	20.8
23637.433333	49.88	---	73.90	24.02	5000.0	1000.000	207.0	H	188.0	25.7
23637.433333	---	36.49	53.90	17.41	5000.0	1000.000	207.0	H	188.0	25.7
24156.566667	52.19	---	73.90	21.71	5000.0	1000.000	392.0	V	248.0	29.4
24156.566667	---	38.92	53.90	14.98	5000.0	1000.000	392.0	V	248.0	29.4
24263.033333	---	39.34	53.90	14.56	5000.0	1000.000	309.0	V	318.0	28.9
24263.033333	52.52	---	73.90	21.38	5000.0	1000.000	309.0	V	318.0	28.9
24843.166667	---	34.40	53.90	19.50	5000.0	1000.000	272.0	H	103.0	24.7
24843.166667	47.41	---	73.90	26.49	5000.0	1000.000	272.0	H	103.0	24.7
25517.966667	---	33.33	53.90	20.57	5000.0	1000.000	351.0	V	79.0	24.3
25517.966667	46.69	---	73.90	27.21	5000.0	1000.000	351.0	V	79.0	24.3

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)

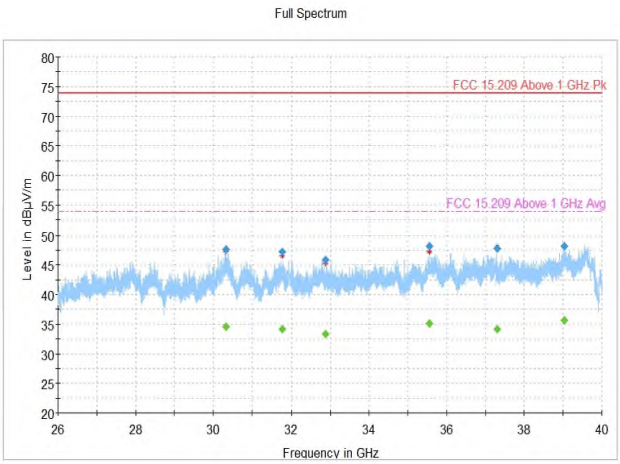

Figure 8.2-81: Radiated spurious emissions, 802.11a, U-NII-2C band, mid channel

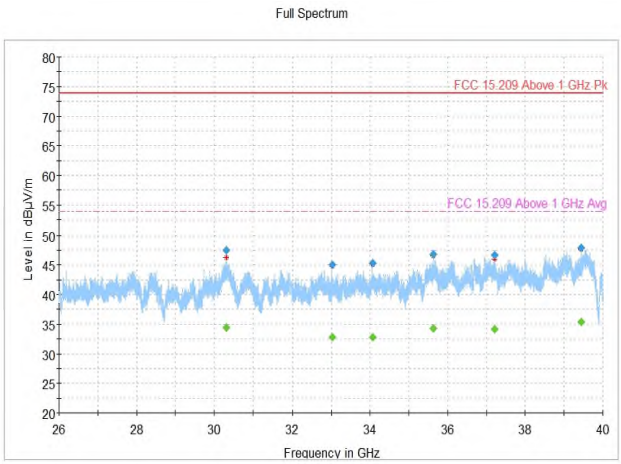

Figure 8.2-82: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, low channel

Table 8.2-82: *Radiated spurious emissions, 802.11a, U-NII-2C band, mid channel, 26-40 GHz*

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)
30341.200000	---	34.57	53.90	19.33	1000.0	1000.000	100.0	H	266.0	10.7
30341.200000	47.57	---	73.90	26.33	1000.0	1000.000	100.0	H	266.0	10.7
31774.225000	---	34.17	53.90	19.73	1000.0	1000.000	110.0	H	20.0	11.4
31774.225000	47.20	---	73.90	26.70	1000.0	1000.000	110.0	H	20.0	11.4
32886.775000	45.82	---	73.90	28.08	1000.0	1000.000	106.0	H	-10.0	11.8
32886.775000	---	33.38	53.90	20.52	1000.0	1000.000	106.0	H	-10.0	11.8
35554.825000	48.15	---	73.90	25.75	1000.0	1000.000	125.0	H	10.0	13.4
35554.825000	---	35.11	53.90	18.79	1000.0	1000.000	125.0	H	10.0	13.4
37300.000000	47.73	---	73.90	26.17	1000.0	1000.000	125.0	H	187.0	14.3
37300.000000	---	34.15	53.90	19.75	1000.0	1000.000	125.0	H	187.0	14.3
39031.125000	48.20	---	73.90	25.70	1000.0	1000.000	225.0	H	0.0	16.1
39031.125000	---	35.60	53.90	18.30	1000.0	1000.000	225.0	H	0.0	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)

Table 8.2-83: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, low channel, 26-40 GHz*

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)
30306.050000	---	34.44	53.90	19.46	1000.0	1000.000	125.0	H	75.0	10.6
30306.050000	47.50	---	73.90	26.40	1000.0	1000.000	125.0	H	75.0	10.6
33020.750000	---	32.84	53.90	21.06	1000.0	1000.000	148.0	V	53.0	11.9
33020.750000	45.02	---	73.90	28.88	1000.0	1000.000	148.0	V	53.0	11.9
34064.675000	45.37	---	73.90	28.53	1000.0	1000.000	158.0	H	101.0	11.7
34064.675000	---	32.79	53.90	21.11	1000.0	1000.000	158.0	H	101.0	11.7
35634.400000	46.81	---	73.90	27.09	1000.0	1000.000	218.0	H	173.0	13.5
35634.400000	---	34.29	53.90	19.61	1000.0	1000.000	218.0	H	173.0	13.5
37202.250000	46.61	---	73.90	27.29	1000.0	1000.000	110.0	V	281.0	14.3
37202.250000	---	34.17	53.90	19.73	1000.0	1000.000	110.0	V	281.0	14.3
39436.500000	47.88	---	73.90	26.02	1000.0	1000.000	117.0	V	154.0	16.2
39436.500000	---	35.32	53.90	18.58	1000.0	1000.000	117.0	V	154.0	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)

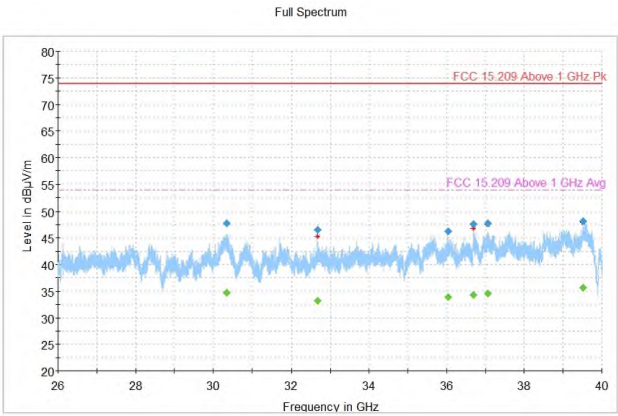

Figure 8.2-83: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2C band, low channel

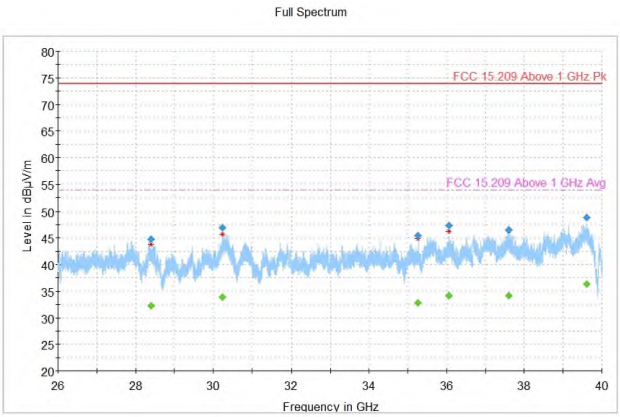

Figure 8.2-84: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2C band, low channel

Table 8.2-84: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2C band, low channel, 26-40 GHz*

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)
30349.200000	47.81	---	73.90	26.09	1000.0	1000.000	110.0	V	222.0	10.7
30349.200000	---	34.69	53.90	19.21	1000.0	1000.000	110.0	V	222.0	10.7
32667.500000	46.52	---	73.90	27.38	1000.0	1000.000	175.0	V	53.0	11.6
32667.500000	---	33.25	53.90	20.65	1000.0	1000.000	175.0	V	53.0	11.6
36034.900000	46.30	---	73.90	27.60	1000.0	1000.000	166.0	H	52.0	13.5
36034.900000	---	33.84	53.90	20.06	1000.0	1000.000	166.0	H	52.0	13.5
36684.850000	---	34.33	53.90	19.57	1000.0	1000.000	175.0	H	252.0	14.3
36684.850000	47.67	---	73.90	26.23	1000.0	1000.000	175.0	H	252.0	14.3
37066.950000	---	34.59	53.90	19.31	1000.0	1000.000	159.0	V	171.0	14.4
37066.950000	47.75	---	73.90	26.15	1000.0	1000.000	159.0	V	171.0	14.4
39519.425000	48.20	---	73.90	25.70	1000.0	1000.000	179.0	H	321.0	16.1
39519.425000	---	35.68	53.90	18.22	1000.0	1000.000	179.0	H	321.0	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)

Table 8.2-85: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2C band, low channel, 26-40 GHz*

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)
28403.525000	44.78	---	73.90	29.12	1000.0	1000.000	123.0	V	50.0	8.8
28403.525000	---	32.23	53.90	21.67	1000.0	1000.000	123.0	V	50.0	8.8
30241.700000	---	33.85	53.90	20.05	1000.0	1000.000	107.0	V	21.0	10.5
30241.700000	46.97	---	73.90	26.93	1000.0	1000.000	107.0	V	21.0	10.5
35266.350000	---	32.84	53.90	21.06	1000.0	1000.000	138.0	V	-10.0	12.7
35266.350000	45.39	---	73.90	28.51	1000.0	1000.000	138.0	V	-10.0	12.7
36053.825000	47.36	---	73.90	26.54	1000.0	1000.000	125.0	V	66.0	13.5
36053.825000	---	34.15	53.90	19.75	1000.0	1000.000	125.0	V	66.0	13.5
37597.425000	46.57	---	73.90	27.33	1000.0	1000.000	224.0	H	63.0	14.3
37597.425000	---	34.11	53.90	19.79	1000.0	1000.000	224.0	H	63.0	14.3
39615.625000	48.80	---	73.90	25.10	1000.0	1000.000	172.0	V	20.0	16.1
39615.625000	---	36.37	53.90	17.53	1000.0	1000.000	172.0	V	20.0	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)

8.3 FCC 15.407(b) Undesirable emission limits

8.3.1 Definition and limits

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

(d) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in § 15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in § 15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.

(5) For transmitters operating within the 5.925-7.125 GHz band: Any emissions outside of the 5.925-7.125 GHz band must not exceed an e.i.r.p. of −27 dBm/MHz.

(6) For transmitters operating within the 5.925-7.125 GHz bands: Power spectral density must be suppressed by 20 dB at 1 MHz outside of channel edge, by 28 dB at one channel bandwidth from the channel center, and by 40 dB at one- and one-half times the channel bandwidth away from channel center. At frequencies between one megahertz outside an unlicensed device's channel edge and one channel bandwidth from the center of the channel, the limits must be linearly interpolated between 20 dB and 28 dB suppression, and at frequencies between one and one- and one-half times an unlicensed device's channel bandwidth, the limits must be linearly interpolated between 28 dB and 40 dB suppression. Emissions removed from the channel center by more than one- and one-half times the channel bandwidth must be suppressed by at least 40 dB.

(7) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(8) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in § 15.207.

(9) The provisions of § 15.205 apply to intentional radiators operating under this section.

(10) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.

8.3.1 Test summary

Verdict	Pass		
Test date	March 16, 2021	Temperature	18 °C
Test engineer	David Hewitt, EMC Specialist	Air pressure	1010 mbar
Test location	3m semi-anechoic chamber (Radiated)	Relative humidity	39 %
Test date	March 22, 2021	Temperature	20 °C
Test engineer	David Hewitt, EMC Specialist	Air pressure	1011 mbar
Test location	3m semi-anechoic chamber (Radiated)	Relative humidity	36 %
Test date	March 22, 2021	Temperature	23 °C
Test engineer	Mark Phillips, Sr. EMC Test Engineer	Air pressure	1007 mbar
Test location	3m semi-anechoic chamber (Radiated)	Relative humidity	41 %

8.3.2 Notes

None

8.3.3 Setup details

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)

GOT-TO-HERE

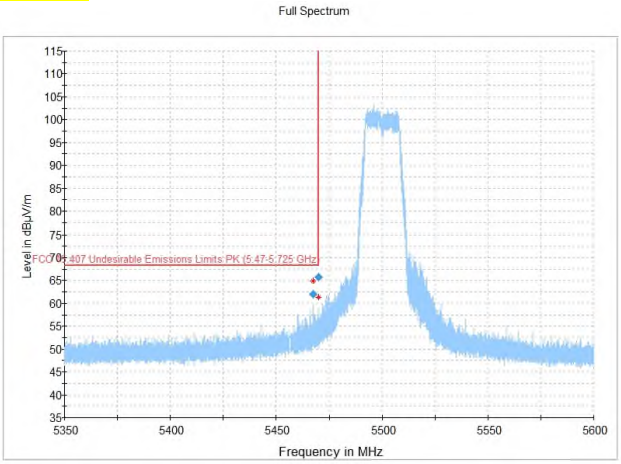

Figure 8.3-1: Undesirable radiated emissions, 802.11a, U-NII-2C band, low channel

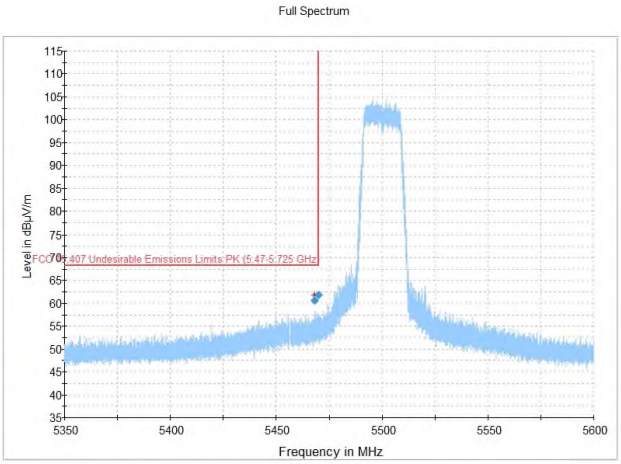

Figure 8.3-2: Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, low channel

Table 8.3-1: *Undesirable radiated emissions, 802.11a, 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)
5467.350000	61.94	68.23	6.29	5000.0	1000.000	129.0	V	308.0	8.0
5470.000000	65.80	68.23	2.43	5000.0	1000.000	128.0	V	310.0	8.0

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)

Table 8.3-2: *Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, 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)
5468.191667	60.68	68.23	7.55	5000.0	1000.000	114.0	V	304.0	8.0
5470.000000	61.80	68.23	6.43	5000.0	1000.000	130.0	V	314.0	8.0

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)

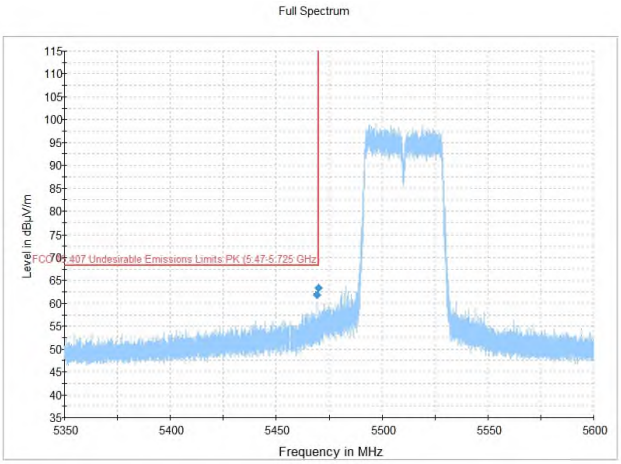

Figure 8.3-3: Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2C band, low channel

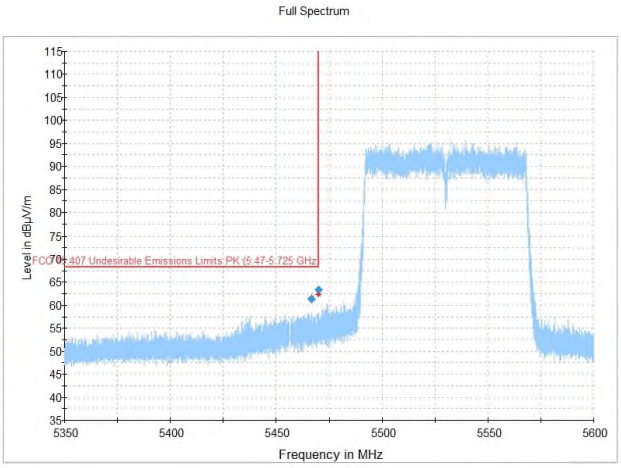

Figure 8.3-4: Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2C band, low channel

Table 8.3-3: *Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, 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)
5469.225000	61.80	68.23	6.43	5000.0	1000.000	143.0	V	310.0	8.0
5470.000000	63.39	68.23	4.84	5000.0	1000.000	130.0	V	315.0	8.0

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)

Table 8.3-4: *Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, 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)
5466.541667	61.40	68.23	6.83	5000.0	1000.000	118.0	V	304.0	8.0
5470.000000	63.35	68.23	4.88	5000.0	1000.000	116.0	V	316.0	8.0

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)

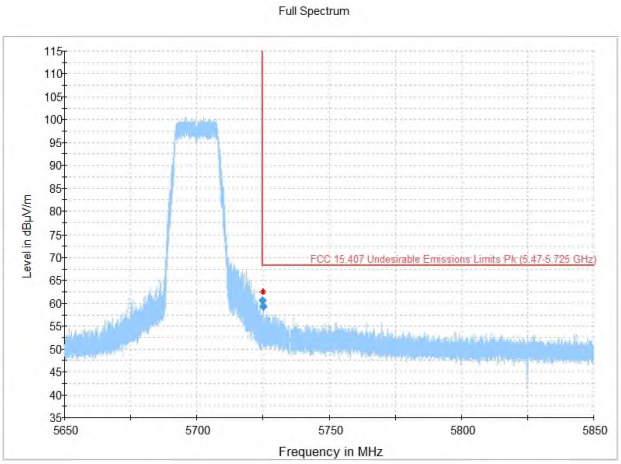

Figure 8.3-5: Undesirable radiated emissions, 802.11a, U-NII-2C band, high channel

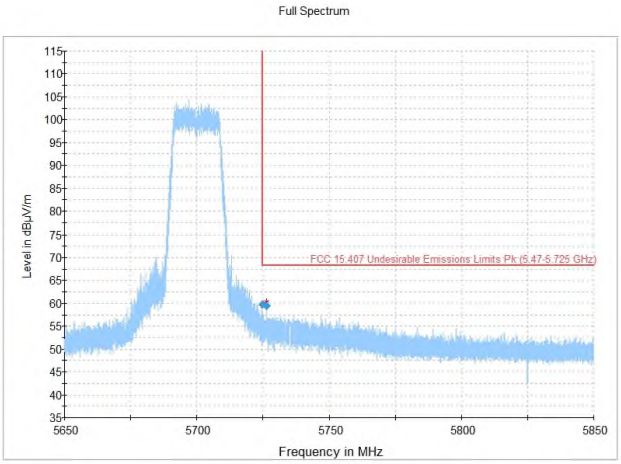

Figure 8.3-6: Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, high channel

Table 8.3-5: *Undesirable radiated emissions, 802.11a, U-NII-2C 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)
5725.000000	60.72	68.23	7.51	5000.0	1000.000	139.0	V	22.0	9.1
5725.286667	59.37	68.23	8.86	5000.0	1000.000	120.0	V	237.0	9.1

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)

Table 8.3-6: *Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C 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)
5725.000000	59.78	68.23	8.45	5000.0	1000.000	129.0	V	0.0	9.1
5726.366667	59.52	68.23	8.71	5000.0	1000.000	102.0	V	33.0	9.2

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)

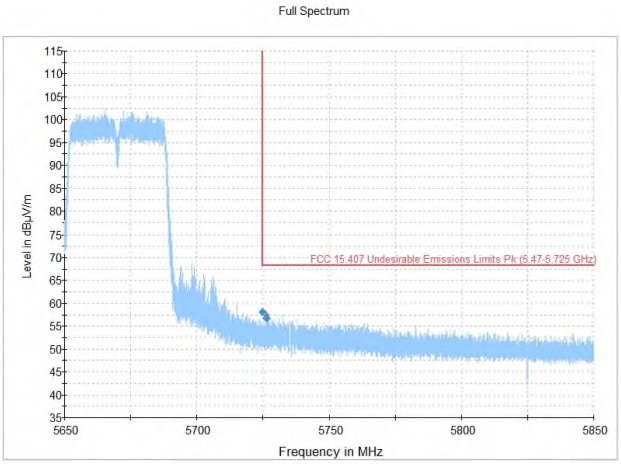

Figure 8.3-7: Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2C band, high channel

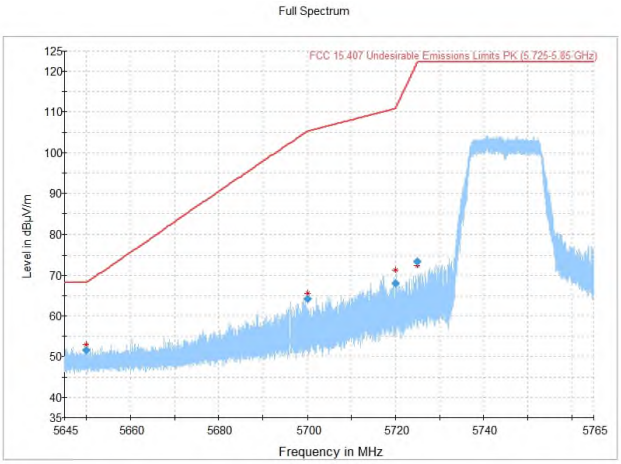

Figure 8.3-8: Undesirable radiated emissions, 802.11a, U-NII-3 band, low channel

Table 8.3-7: *Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-2C 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)
5725.000000	58.08	68.23	10.15	5000.0	1000.000	111.0	V	0.0	9.1
5726.413333	56.79	68.23	11.44	5000.0	1000.000	117.0	V	248.0	9.2

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)

Table 8.3-8: *Undesirable radiated emissions, 802.11a, U-NII-3 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)
5650.000000	51.70	68.23	16.53	5000.0	1000.000	111.0	V	356.0	8.2
5700.000000	64.25	105.23	40.98	5000.0	1000.000	127.0	V	244.0	8.8
5720.000000	68.00	110.83	42.83	5000.0	1000.000	109.0	V	236.0	9.1
5725.000000	73.39	122.23	48.84	5000.0	1000.000	138.0	V	338.0	9.1

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)

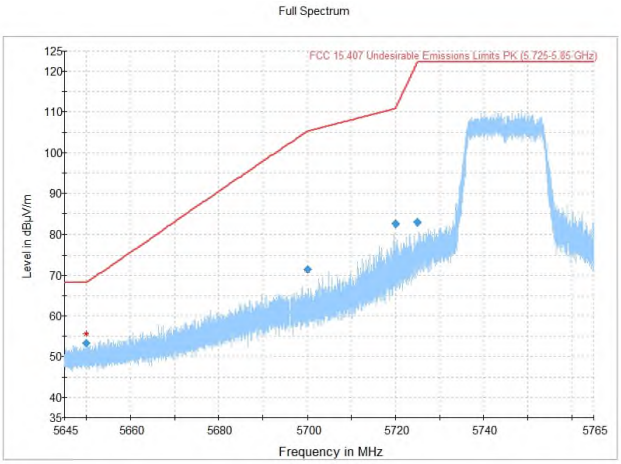

Figure 8.3-9: Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-3 band, low channel

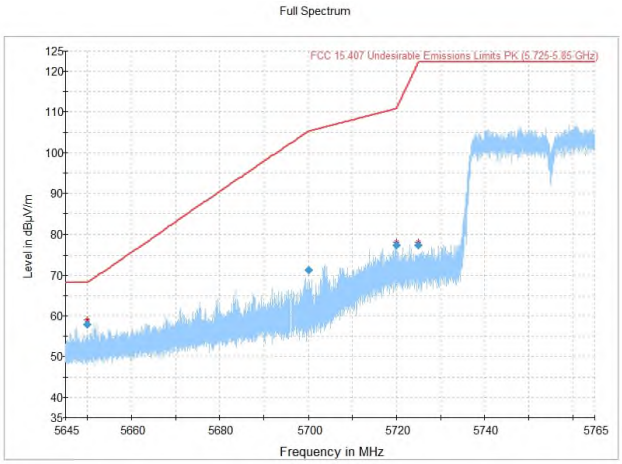

Figure 8.3-10: Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-3 band, low channel

Table 8.3-9: *Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-3 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)
5650.000000	53.35	68.23	14.88	5000.0	1000.000	125.0	V	310.0	8.2
5700.000000	71.57	105.23	33.66	5000.0	1000.000	127.0	V	0.0	8.8
5720.000000	82.62	110.83	28.21	5000.0	1000.000	98.0	V	357.0	9.1
5725.000000	83.02	122.23	39.21	5000.0	1000.000	112.0	V	0.0	9.1

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)

Table 8.3-10: *Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-3 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)
5650.000000	57.85	68.23	10.38	5000.0	1000.000	122.0	V	312.0	8.2
5700.000000	71.29	105.23	33.94	5000.0	1000.000	127.0	V	0.0	8.8
5720.000000	77.47	110.83	33.36	5000.0	1000.000	113.0	V	34.0	9.1
5725.000000	77.37	122.23	44.86	5000.0	1000.000	113.0	V	34.0	9.1

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)

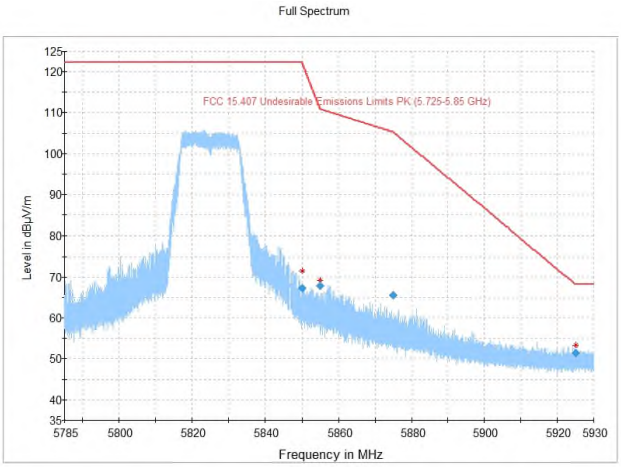

Figure 8.3-11: Undesirable radiated emissions, 802.11a, U-NII-3 band, high channel

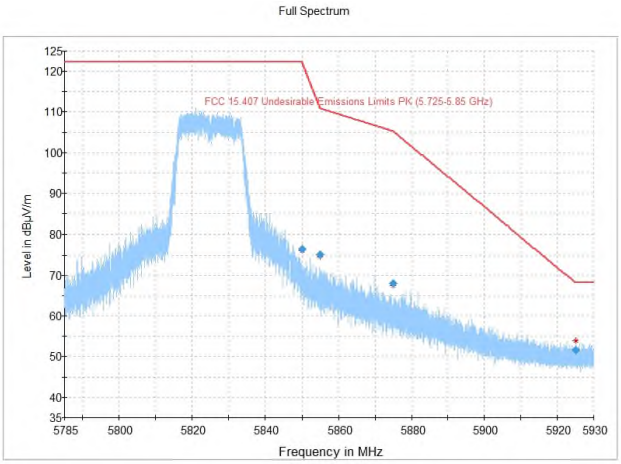

Figure 8.3-12: Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-3 band, high channel

Table 8.3-11: *Undesirable radiated emissions, 802.11a, U-NII-3 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)
5850.000000	67.26	122.23	54.97	5000.0	1000.000	111.0	V	236.0	9.9
5855.000000	67.90	110.83	42.93	5000.0	1000.000	120.0	V	34.0	9.9
5875.000000	65.50	105.23	39.73	5000.0	1000.000	123.0	V	254.0	9.8
5925.000000	51.39	68.23	16.84	5000.0	1000.000	116.0	V	310.0	9.7

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 8.3-12: *Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-3 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)
5850.000000	76.49	122.23	45.74	5000.0	1000.000	104.0	V	0.0	9.9
5855.000000	75.14	110.83	35.69	5000.0	1000.000	116.0	V	0.0	9.9
5875.000000	67.98	105.23	37.25	5000.0	1000.000	102.0	V	0.0	9.8
5925.000000	51.71	68.23	16.52	5000.0	1000.000	119.0	V	354.0	9.7

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)

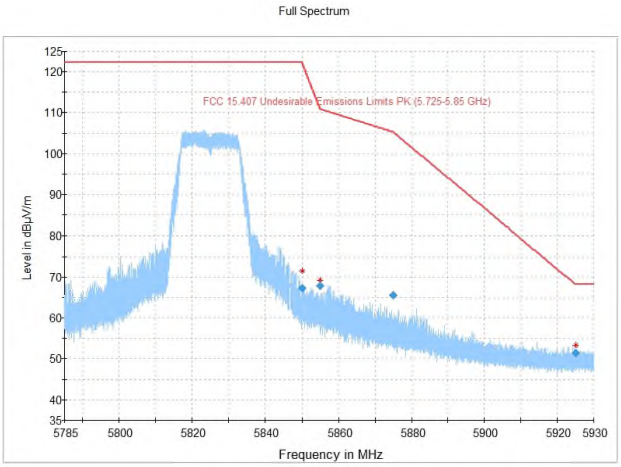

Figure 8.3-13: Undesirable radiated emissions, 802.11a, U-NII-3 band, high channel

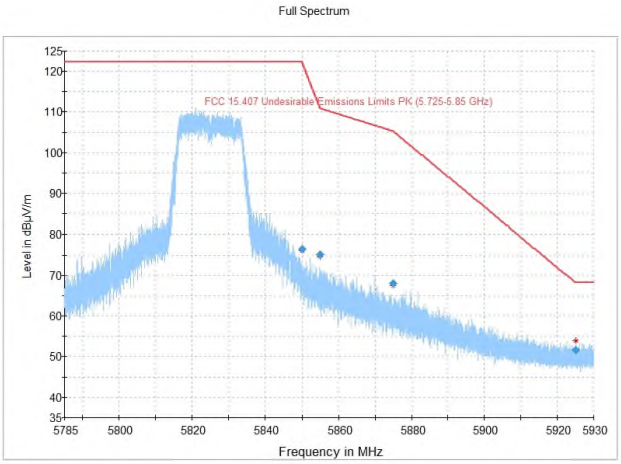

Figure 8.3-14: Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-3 band, high channel

Table 8.3-13: *Undesirable radiated emissions, 802.11a, U-NII-3 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)
5850.000000	67.26	122.23	54.97	5000.0	1000.000	111.0	V	236.0	9.9
5855.000000	67.90	110.83	42.93	5000.0	1000.000	120.0	V	34.0	9.9
5875.000000	65.50	105.23	39.73	5000.0	1000.000	123.0	V	254.0	9.8
5925.000000	51.39	68.23	16.84	5000.0	1000.000	116.0	V	310.0	9.7

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 8.3-14: *Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-3 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)
5850.000000	76.49	122.23	45.74	5000.0	1000.000	104.0	V	0.0	9.9
5855.000000	75.14	110.83	35.69	5000.0	1000.000	116.0	V	0.0	9.9
5875.000000	67.98	105.23	37.25	5000.0	1000.000	102.0	V	0.0	9.8
5925.000000	51.71	68.23	16.52	5000.0	1000.000	119.0	V	354.0	9.7

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)

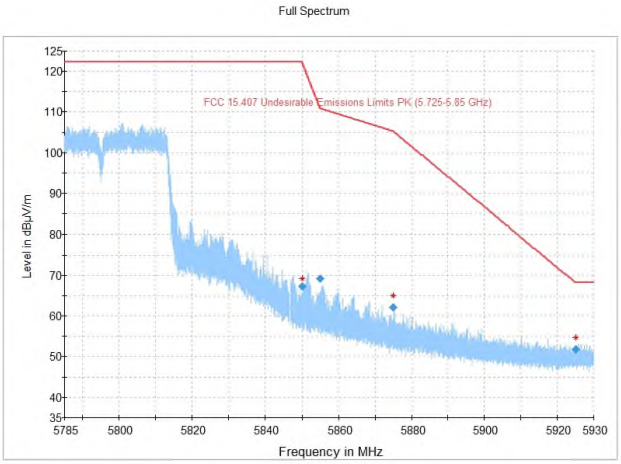

Figure 8.3-15: Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-3 band, high channel

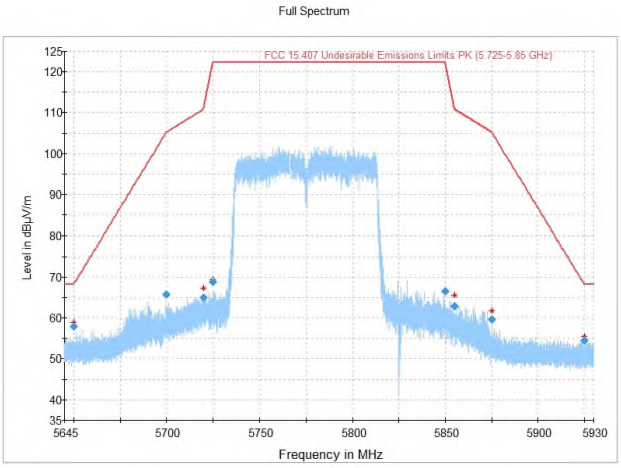

Figure 8.3-16: Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-3 band, mid channel

Table 8.3-15: *Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 40MHz BW, U-NII-3 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)
5850.000000	67.23	122.23	55.00	5000.0	1000.000	115.0	V	344.0	9.9
5855.000000	69.29	110.83	41.54	5000.0	1000.000	105.0	V	0.0	9.9
5875.000000	62.22	105.23	43.01	5000.0	1000.000	113.0	V	0.0	9.8
5925.000000	51.90	68.23	16.33	5000.0	1000.000	109.0	V	350.0	9.7

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 8.3-16: *Undesirable radiated emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-3 band, mid channel*

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
5650.000000	58.01	68.23	10.22	5000.0	1000.000	126.0	V	307.0	8.2
5700.000000	65.75	105.23	39.48	5000.0	1000.000	120.0	V	353.0	8.8
5720.000000	64.91	110.83	45.92	5000.0	1000.000	113.0	V	22.0	9.1
5725.000000	68.90	122.23	53.33	5000.0	1000.000	116.0	V	34.0	9.1
5850.000000	66.61	122.23	55.62	5000.0	1000.000	105.0	V	0.0	9.9
5855.000000	62.86	110.83	47.97	5000.0	1000.000	113.0	V	239.0	9.9
5875.000000	59.68	105.23	45.55	5000.0	1000.000	135.0	V	310.0	9.8
5925.000000	54.50	68.23	13.73	5000.0	1000.000	124.0	V	332.0	9.7

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)

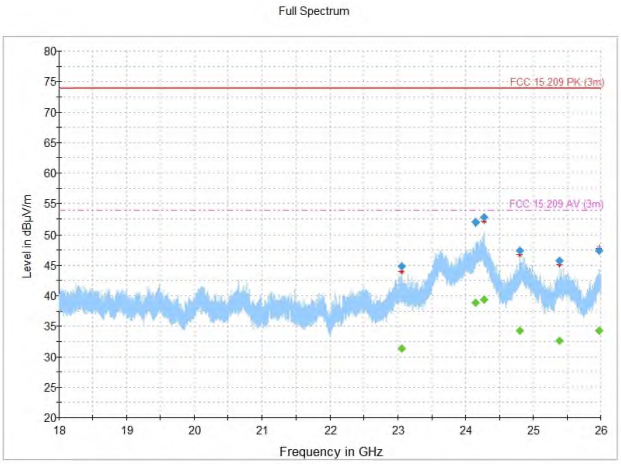

Figure 8.3-17: Radiated spurious emissions, 802.11a, U-NII-2A band, mid channel

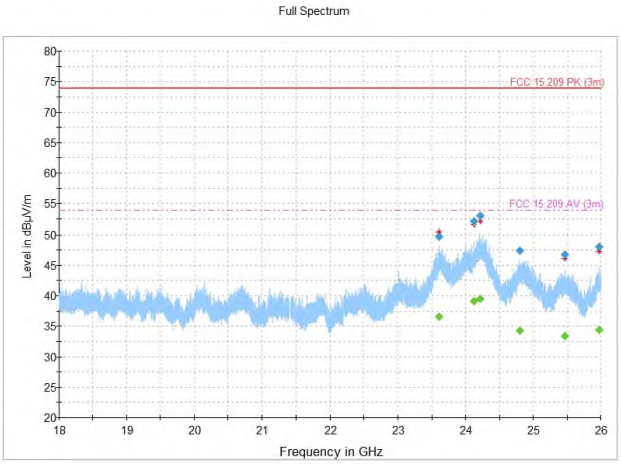

Figure 8.3-18: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, low channel

Table 8.3-17: *Radiated spurious emissions, 802.11a, U-NII-2A band, mid channel, 18-26 GHz*

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)
23057.833333	---	31.33	53.90	22.57	5000.0	1000.000	316.0	H	349.0	20.8
23057.833333	44.84	---	73.90	29.06	5000.0	1000.000	316.0	H	349.0	20.8
24155.166667	---	38.83	53.90	15.07	5000.0	1000.000	150.0	H	310.0	29.4
24155.166667	51.98	---	73.90	21.92	5000.0	1000.000	150.0	H	310.0	29.4
24277.900000	---	39.34	53.90	14.56	5000.0	1000.000	115.0	V	0.0	28.6
24277.900000	52.75	---	73.90	21.15	5000.0	1000.000	115.0	V	0.0	28.6
24802.766667	47.35	---	73.90	26.55	5000.0	1000.000	324.0	H	191.0	24.6
24802.766667	---	34.28	53.90	19.62	5000.0	1000.000	324.0	H	191.0	24.6
25395.966667	45.78	---	73.90	28.12	5000.0	1000.000	309.0	H	269.0	23.7
25395.966667	---	32.58	53.90	21.32	5000.0	1000.000	309.0	H	269.0	23.7
25974.366667	---	34.33	53.90	19.57	5000.0	1000.000	351.0	V	0.0	25.3
25974.366667	47.39	---	73.90	26.51	5000.0	1000.000	351.0	V	0.0	25.3

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)

Table 8.3-18: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 20MHz BW, U-NII-2C band, low channel, 18-26 GHz*

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)
23607.766667	---	36.58	53.90	17.32	5000.0	1000.000	220.0	V	11.0	25.8
23607.766667	49.74	---	73.90	24.16	5000.0	1000.000	220.0	V	11.0	25.8
24124.300000	---	39.08	53.90	14.82	5000.0	1000.000	309.0	V	185.0	29.5
24124.300000	52.15	---	73.90	21.75	5000.0	1000.000	309.0	V	185.0	29.5
24213.566667	---	39.50	53.90	14.40	5000.0	1000.000	367.0	H	314.0	29.1
24213.566667	53.01	---	73.90	20.89	5000.0	1000.000	367.0	H	314.0	29.1
24799.300000	47.44	---	73.90	26.46	5000.0	1000.000	275.0	H	11.0	24.6
24799.300000	---	34.31	53.90	19.59	5000.0	1000.000	275.0	H	11.0	24.6
25468.500000	46.76	---	73.90	27.14	5000.0	1000.000	401.0	H	44.0	24.0
25468.500000	---	33.33	53.90	20.57	5000.0	1000.000	401.0	H	44.0	24.0
25978.100000	---	34.37	53.90	19.53	5000.0	1000.000	248.0	V	32.0	25.3
25978.100000	47.98	---	73.90	25.92	5000.0	1000.000	248.0	V	32.0	25.3

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)

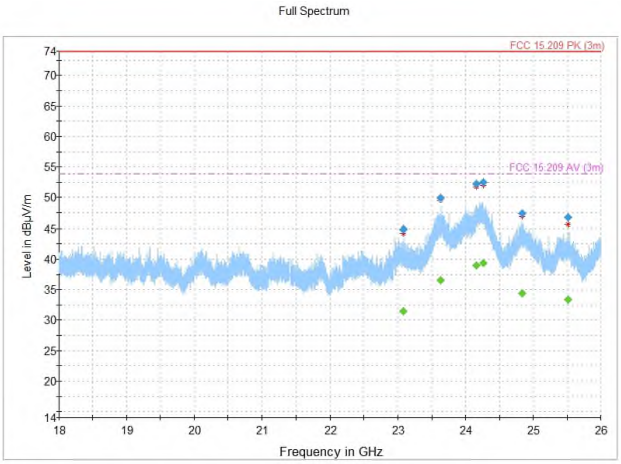

Figure 8.3-19: Radiated spurious emissions, 802.11n, MIMO antenna configuration, 40MHz BW, U-NII-2C band, low channel

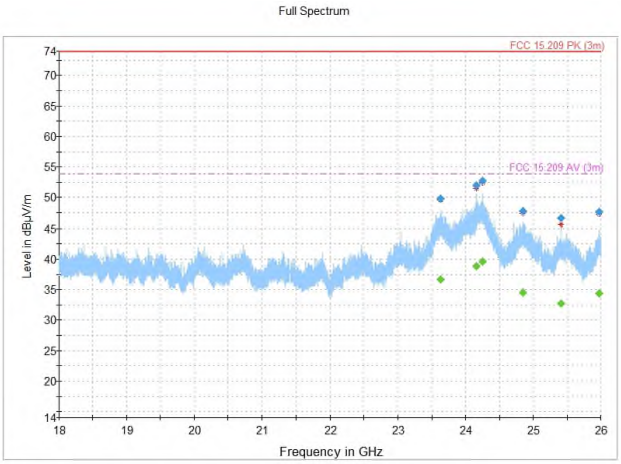

Figure 8.3-20: Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2C band, low channel

Table 8.3-19: *Radiated spurious emissions, 802.11n, MIMO antenna configuration, 40MHz BW, U-NII-2C band, low channel, 18-26 GHz*

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)
23081.300000	---	31.43	53.90	22.47	5000.0	1000.000	351.0	V	316.0	20.8
23081.300000	44.84	---	73.90	29.06	5000.0	1000.000	351.0	V	316.0	20.8
23637.433333	49.88	---	73.90	24.02	5000.0	1000.000	207.0	H	188.0	25.7
23637.433333	---	36.49	53.90	17.41	5000.0	1000.000	207.0	H	188.0	25.7
24156.566667	52.19	---	73.90	21.71	5000.0	1000.000	392.0	V	248.0	29.4
24156.566667	---	38.92	53.90	14.98	5000.0	1000.000	392.0	V	248.0	29.4
24263.033333	---	39.34	53.90	14.56	5000.0	1000.000	309.0	V	318.0	28.9
24263.033333	52.52	---	73.90	21.38	5000.0	1000.000	309.0	V	318.0	28.9
24843.166667	---	34.40	53.90	19.50	5000.0	1000.000	272.0	H	103.0	24.7
24843.166667	47.41	---	73.90	26.49	5000.0	1000.000	272.0	H	103.0	24.7
25517.966667	---	33.33	53.90	20.57	5000.0	1000.000	351.0	V	79.0	24.3
25517.966667	46.69	---	73.90	27.21	5000.0	1000.000	351.0	V	79.0	24.3

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)

Table 8.3-20: *Radiated spurious emissions, 802.11ac, MIMO antenna configuration, 80MHz BW, U-NII-2C band, low channel, 18-26 GHz*

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)
23636.366667	---	36.62	53.90	17.28	5000.0	1000.000	342.0	H	342.0	25.7
23636.366667	49.79	---	73.90	24.11	5000.0	1000.000	342.0	H	342.0	25.7
24159.233333	52.01	---	73.90	21.89	5000.0	1000.000	112.0	V	124.0	29.3
24159.233333	---	38.85	53.90	15.05	5000.0	1000.000	112.0	V	124.0	29.3
24247.300000	---	39.64	53.90	14.26	5000.0	1000.000	222.0	H	21.0	29.0
24247.300000	52.77	---	73.90	21.13	5000.0	1000.000	222.0	H	21.0	29.0
24848.366667	---	34.55	53.90	19.35	5000.0	1000.000	402.0	V	317.0	24.7
24848.366667	47.82	---	73.90	26.08	5000.0	1000.000	402.0	V	317.0	24.7
25413.500000	---	32.77	53.90	21.13	5000.0	1000.000	262.0	V	310.0	23.8
25413.500000	46.59	---	73.90	27.31	5000.0	1000.000	262.0	V	310.0	23.8
25979.033333	47.61	---	73.90	26.29	5000.0	1000.000	216.0	V	355.0	25.3
25979.033333	---	34.42	53.90	19.48	5000.0	1000.000	216.0	V	355.0	25.3

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)

Section 9 Block diagrams of test set-ups

9.1 Radiated emissions set-up

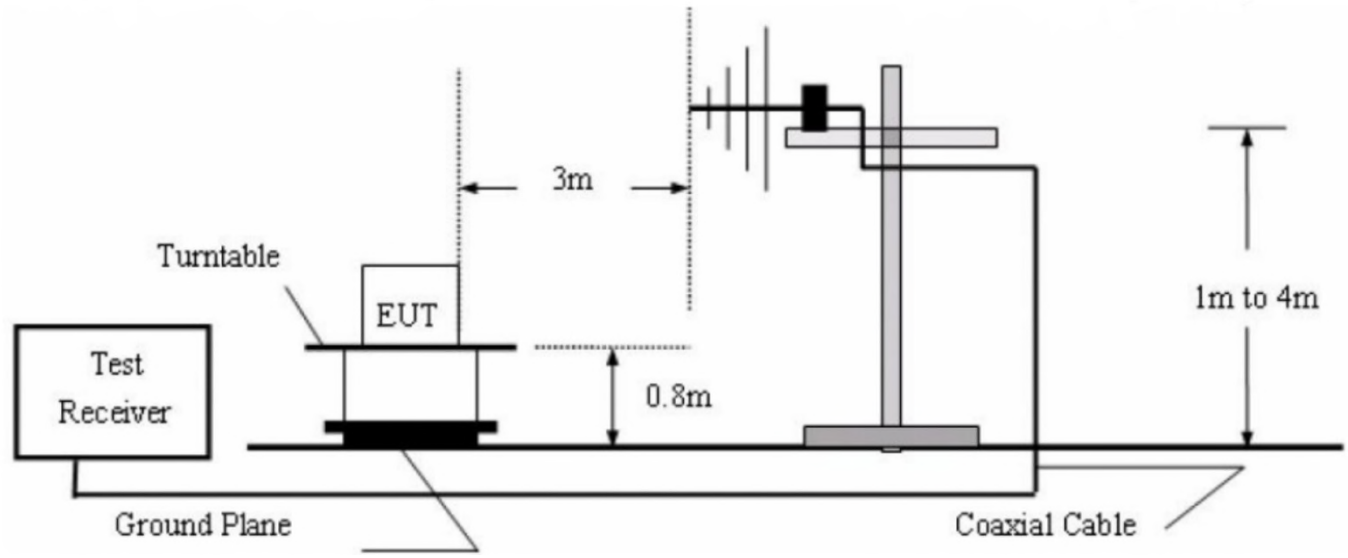

Figure 9.1-1: *30 MHz - 1000 MHz Setup*

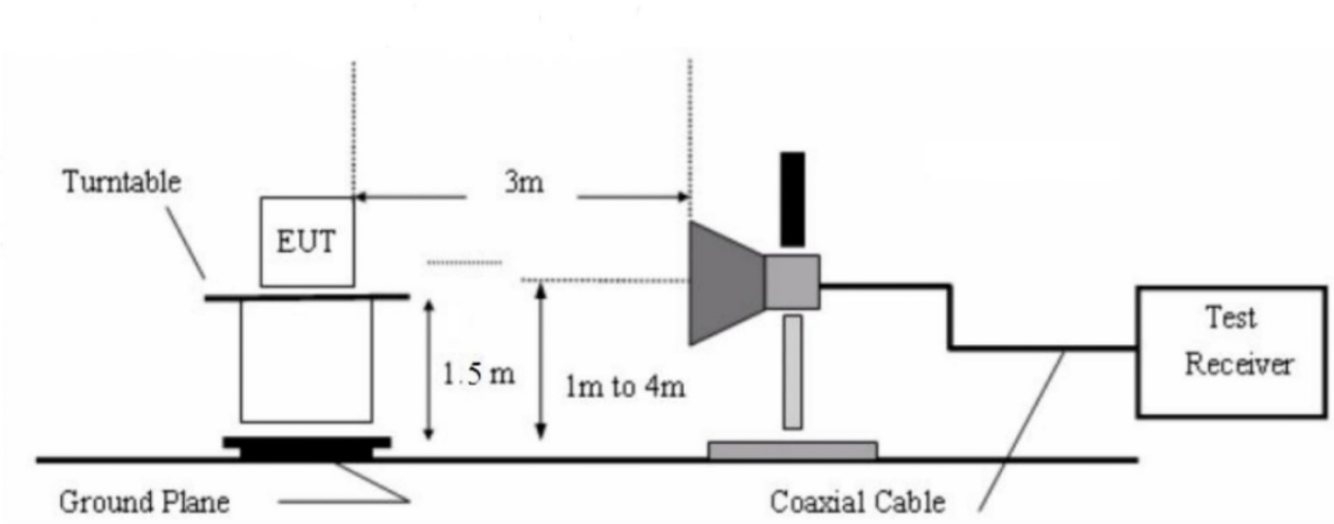

Figure 9.1-2: 1 GHz - 40 GHz Setup