



Test report

478363-4R1TRFWL

Date of issue: October 17, 2022

Applicant:

Trellisware Technologies, Inc.

Product:

Dual Band Wi-Fi Dongle

Model:

TW-1760

Variant(s):

N/A


FCC ID: 2A6X2-1760

IC ID: 28565-1760

Specifications:

- ◆ **FCC 47 CFR Part 15, Subpart C – §15.247**
Operation within the bands 902 – 928 MHz, 2400 – 2483.5 MHz, 5725 – 5850 MHz
- ◆ **Industry Canada RSS-247, Issue 2, February 2017**
Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

Lab and test locations

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Country	USA
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Website	www.nemko.com
FCC Site Number	Test Firm Registration Number: 392943; Designation Number: US5058
ISED Test Site	2040B-3
Tested by	James Cunningham, EMC/MIL/WL Supervisor
Reviewed by	Chip Fleury, Certification Supervisor
Review date	October 17, 2022
Reviewer signature	

Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within Nemko USA's ISO/IEC 17025 accreditation.

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Section 1 Report summary

1.1 Test specifications

FCC 47 CFR Part 15, Subpart C – §15.247	Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz
IC RSS-247 Issue 2	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

1.2 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

1.3 Exclusions

Testing was limited to transmitter output power, antenna-port conducted and radiated spurious emissions and band edge tests only.

1.4 Statement of compliance

Testing was performed against all relevant requirements of the test standard(s).

Results obtained indicate that the product under test complies in full with the tested requirements.

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

See “Section 2 Summary of test results” for full details.

1.5 Test report revision history

Table 1.5-1: Test report revision history

Revision #	Issue Date	Details of changes made to test report
478363-4TRFEMC		Original report issued
478363-4R1TRFEMC	October 17, 2022	Corrected model name

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 applicable ¹
§15.31(e)	Variation of power source	Pass
§15.203	Antenna requirement	Pass ²
§15.215(c)	20 dB bandwidth	Not tested

Note 1: The EUT is battery powered

Note 2: The antenna is connected to the EU using a non-standard connector

2.2 FCC Part 15.247

Part	Test description	Verdict
§15.247(a)(1)(i)	Frequency hopping systems operating in the 902 – 928 MHz band	Not applicable
§15.247(a)(1)(ii)	Frequency hopping systems operating in the 5725 – 5850 MHz band	Not applicable
§15.247(a)(1)(iii)	Frequency hopping systems operating in the 2400 – 2483.5 MHz band	Not applicable
§15.247(a)(2)	Minimum 6 dB bandwidth for systems using digital modulation techniques	Not tested
§15.247(b)(1)	Maximum peak output power of frequency hopping systems operating in the 2400 – 2483.5 MHz band and 5725 – 5850 MHz band	Not applicable
§15.247(b)(2)	Maximum peak output power of frequency hopping systems operating in the 902 – 928 MHz band	Not applicable
§15.247(b)(3)	Maximum peak output power of systems using digital modulation in the 902 – 928 MHz, 2400 – 2483.5 MHz and 5275 – 5850 MHz bands	Pass
§15.247(b)(4)	Transmitting antennas of directional gain greater than 6 dBi	Not applicable
§15.247(c)(1)	Fixed point-to-point operation with directional antenna gains greater than 6 dBi	Not applicable
§15.247(c)(2)	Transmitters operating in the 2400 – 2483.5 MHz band that emit multiple directional beams	Not applicable
§15.247(d)	Spurious emissions	Pass
§15.247(e)	Power spectral density for digitally modulated devices	Not tested
§15.247(f)	Time of occupancy for hybrid systems	Not applicable

2.3 IC RSS-247, Issue 2

Part	Test description	Verdict
5.1 (a)	Bandwidth of a frequency hopping channel	Not applicable
5.1 (b)	Minimum channel spacing for frequency hopping systems	Not applicable
5.1 (c)	Frequency hopping systems operating in the 902–928 MHz band	Not applicable
5.1 (d)	Frequency hopping systems operating in the 2400–2483.5 MHz band	Not applicable
5.1 (e)	Frequency hopping systems operating in the 5725–5850 MHz band	Not applicable
5.2 (a)	Minimum 6 dB bandwidth	Not tested
5.2 (b)	Maximum power spectral density	Not tested
5.3 (a)	Digital modulation turned off	Not applicable
5.3 (b)	Frequency hopping turned off	Not applicable
5.4 (a)	Frequency hopping systems operating in the 902–928 MHz band	Not applicable
5.4 (b)	Frequency hopping systems operating in the 2400–2483.5 MHz band	Not applicable
5.4 (c)	Frequency hopping systems operating in the 5725–5850 MHz	Not applicable
5.4 (d)	Systems employing digital modulation techniques	Pass
5.4 (e)	Point-to-point systems in 2400–2483.5 MHz and 5725–5850 MHz band	Not applicable
5.4 (f)	Transmitters which operate in the 2400–2483.5 MHz band with multiple directional beams	Not applicable
5.5	Out-of-band emissions	Pass

2.4 IC RSS-GEN, Issue 5

Part	Test description	Verdict
6.7	99% Occupied bandwidth	Not tested
7.3	Receiver radiated emission limits	Not applicable ¹
7.4	Receiver conducted emission limits	Not applicable ²
8.8	Power Line Conducted Emissions Limits for License-Exempt Radio Apparatus	Not applicable ³

Note 1: EUT is neither a stand-alone receiver nor a scanning receiver.

Note 2: The EUT is battery powered

Section 3 Equipment under test (EUT) details

3.1 Disclaimer

This section contains information provided by the applicant and has been utilized to support the test plan. Inaccurate information provided by the applicant can affect the validity of the results within this test report. Nemko accepts no responsibility for the information contained within this section and the impact it may have on the test plan and resulting measurements.

3.2 Sample information

Receipt date	15-Sep-22
Nemko sample ID number	478363

3.3 Testing period

Test start date	15-Sep-22
Test end date	15-Sep-22

3.4 Applicant

Company name	Trellisware Technologies, Inc.
Address	10641 Scripps Summit Court, Suite 100
City	San Diego
State	CA
Postal/Zip code	92131
Country	USA

3.5 Manufacturer

Company name	Trellisware Technologies, Inc.
Address	10641 Scripps Summit Court, Suite 100
City	San Diego
State	CA
Postal/Zip code	92131
Country	USA

3.6 EUT information

Product name	Dual Band Wi-Fi Dongle																													
Model	TW-1760																													
Variant(s)	N/A																													
Serial number	N/A																													
Part number	N/A																													
Power requirements	Battery powered																													
Description/theory of operation	Dual band Wi-fi dongle. Supports IEEE 802.11 b/g/n operation with 20 MHz bandwidth.																													
Operational frequencies	2412-2462 MHz, 5150-5250 MHz, 5250-5350 MHz, 5470-5725 MHz, 5725-5850 MHz																													
Software details	N/A																													
Operating band	2400 – 2483.5 MHz																													
Test frequencies	2412 MHz, 2437 MHz, 2462 MHz																													
Modulation type(s)	802.11b:	<table border="1"> <thead> <tr> <th>Data Rate</th> <th>Bandwidth (MHz)</th> <th>Modulation</th> </tr> </thead> <tbody> <tr> <td>1 Mbps</td> <td>20</td> <td>DBPSK</td> </tr> <tr> <td>2 Mbps</td> <td>20</td> <td>DQPSK</td> </tr> <tr> <td>5.5 Mbps</td> <td>20</td> <td>CCK - DQPSK</td> </tr> <tr> <td>11 Mbps</td> <td>20</td> <td>CCK - DQPSK</td> </tr> <tr> <td>5.5 Mbps</td> <td>20</td> <td>PBCC - BPSK</td> </tr> <tr> <td>11 Mbps</td> <td>20</td> <td>PBCC - QPSK</td> </tr> </tbody> </table>	Data Rate	Bandwidth (MHz)	Modulation	1 Mbps	20	DBPSK	2 Mbps	20	DQPSK	5.5 Mbps	20	CCK - DQPSK	11 Mbps	20	CCK - DQPSK	5.5 Mbps	20	PBCC - BPSK	11 Mbps	20	PBCC - QPSK							
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	802.11g:	<table border="1"> <thead> <tr> <th>Data Rate</th> <th>Bandwidth (MHz)</th> <th>Modulation</th> </tr> </thead> <tbody> <tr> <td>6 Mbps</td> <td>20</td> <td>BPSK</td> </tr> <tr> <td>9 Mbps</td> <td>20</td> <td>BPSK</td> </tr> <tr> <td>12 Mbps</td> <td>20</td> <td>QPSK</td> </tr> <tr> <td>18 Mbps</td> <td>20</td> <td>QPSK</td> </tr> <tr> <td>24 Mbps</td> <td>20</td> <td>16 QAM</td> </tr> <tr> <td>36 Mbps</td> <td>20</td> <td>16 QAM</td> </tr> <tr> <td>48 Mbps</td> <td>20</td> <td>64 QAM</td> </tr> <tr> <td>54 Mbps</td> <td>20</td> <td>64 QAM</td> </tr> </tbody> </table>	Data Rate	Bandwidth (MHz)	Modulation	6 Mbps	20	BPSK	9 Mbps	20	BPSK	12 Mbps	20	QPSK	18 Mbps	20	QPSK	24 Mbps	20	16 QAM	36 Mbps	20	16 QAM	48 Mbps	20	64 QAM	54 Mbps	20	64 QAM	
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	802.11n:	<table border="1"> <thead> <tr> <th>Data Rate</th> <th>Bandwidth (MHz)</th> <th>Modulation</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>20</td> <td>BPSK</td> </tr> <tr> <td>1</td> <td>20</td> <td>QPSK</td> </tr> <tr> <td>2</td> <td>20</td> <td>QPSK</td> </tr> <tr> <td>3</td> <td>20</td> <td>16 QAM</td> </tr> <tr> <td>4</td> <td>20</td> <td>16 QAM</td> </tr> <tr> <td>5</td> <td>20</td> <td>64 QAM</td> </tr> <tr> <td>6</td> <td>20</td> <td>64 QAM</td> </tr> <tr> <td>7</td> <td>20</td> <td>64 QAM</td> </tr> </tbody> </table>	Data Rate	Bandwidth (MHz)	Modulation	0	20	BPSK	1	20	QPSK	2	20	QPSK	3	20	16 QAM	4	20	16 QAM	5	20	64 QAM	6	20	64 QAM	7	20	64 QAM	
Data Rate	Bandwidth (MHz)	Modulation																												
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4	20	16 QAM																												
5	20	64 QAM																												
6	20	64 QAM																												
7	20	64 QAM																												
Antenna type	Laird Mini-Nanoblade PCB Dipole 2.5 dBi @ 2.4GHz /4.8 dBi @5 GHz. Connected via TNC connector.																													
Antenna gain (declared)	2.5 dBi																													

3.7 EUT exercise and monitoring details

EUT description of the methods used to exercise the EUT and all relevant ports:

- EUT was controlled via support PC to operate on low, mid and high channels with desired modulation and at maximum transmitter output power.

EUT setup/configuration rationale:

- The EUT setup in a configuration that was expected to produce the highest amplitude emissions relative to the limit and that satisfy normal operation/installation practice by the end user.
- The type and construction of cables used in the measurement set-up were consistent with normal or typical use. Cables with mitigation features (for example, screening, tighter/more twists per length, ferrite beads) have been noted below:
 - None
- The EUT was setup in a manner that was consistent with its typical arrangement and use. The measurement arrangement of the EUT, local ancillary equipment and associated cabling was representative of normal practice. Any deviations from typical arrangements have been noted below:
 - None

3.8 EUT setup details

Table 3.8-1: EUT sub assemblies

Description	Brand name	Model/Part number	Serial number	Rev.
Tactical radio	Trellisware	TW-950	188934	---

Table 3.8-2: EUT interface ports

Description	Qty.

Table 3.8-3: Support equipment

Description	Brand name	Model/Part number	Serial number	Rev.

Table 3.8-4: Inter-connection cables

Cable description	From	To	Length (m)

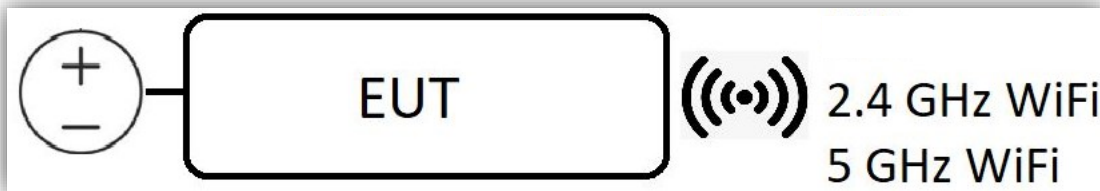


Figure 3.8-1: Test setup diagram

Section 4 Engineering considerations

4.1 Modifications incorporated in the EUT

None.

4.2 Technical judgement

None.

4.3 Deviations from laboratory test procedures

None.

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 $\pm 5\%$, for which the equipment was designed.

Section 6 Measurement uncertainty

6.1 Uncertainty of measurement

Nemko USA Inc. has calculated measurement uncertainty and is documented in EMC/MUC/001 "Uncertainty in EMC measurements." Measurement uncertainty was calculated using the methods described in CISPR 16-4-2 Specification for radio disturbance and immunity measuring apparatus and methods – Part 4-2: Uncertainties, statistics, and limit modelling – Measurement instrumentation uncertainty. The expression of Uncertainty in EMC testing. Measurement uncertainty calculations assume a coverage factor of K=2 with 95% certainty.

Table 6.1-1: Measurement uncertainty calculations

Measurement		U_{cispr} dB	U_{lab} dB
Conducted disturbance at AC mains and other port power using a V-AMN	9 kHz to 150 kHz	3.8	2.9
	150 kHz to 30 MHz	3.4	2.3
Conducted disturbance at telecommunication port using AAN	150 kHz to 30 MHz	5.0	4.3
Conducted disturbance at telecommunication port using CVP	150 kHz to 30 MHz	3.9	2.9
Conducted disturbance at telecommunication port using CP	150 kHz to 30 MHz	2.9	1.4
Conducted disturbance at telecommunication port using CP and CVP	150 kHz to 30 MHz	4.0	3.1
Radiated disturbance (electric field strength in a SAC)	30 MHz to 1 GHz	6.3	5.5
Radiated disturbance (electric field strength in a FAR)	1 GHz to 6 GHz	5.2	4.7
Radiated disturbance (electric field strength in a FAR)	6 GHz to 18 GHz	5.5	5.0

- Notes: Compliance assessment:
- If U_{lab} is less than or equal to U_{cispr} then:
- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
 - non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit
- If U_{lab} is greater than U_{cispr} then:
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{\text{lab}} - U_{\text{cispr}})$, exceeds the disturbance limit;
 - non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{\text{lab}} - U_{\text{cispr}})$, exceeds the disturbance limit

V-AMN: V type artificial mains network
 AAN: Asymmetric artificial network
 CP: Current probe
 CVP: Capacitive voltage probe
 SAC: Semi-anechoic chamber
 FAR: Fully anechoic room

Section 7 Test equipment

7.1 Test equipment

Table 7.1-1: Test equipment list

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
Antenna, Bilog	Schaffner-Chase	CBL6111C	1480	2 years	28-Oct-2022
Power Sensor	ETS-Lindgren	7002-006	E1062	1 year	01-Nov-2022
System Controller	Sunol Sciences	SC104V	E1129	NCR	NCR
EMC Test Receiver 20Hz-40GHz	Rohde & Schwarz	ESU40	E1131	1 year	02-Mar-2023
WR-42 Rectangular Gain Horn	Sage Millimeter, Inc.	SAR-2309-42-S2	E1143	2 years	13-Nov-2022
Low Noise Amplifier	Sage Millimeter, Inc.	SBL-1834034030-KFKF	E1228	VOU	VOU
Wireless Temperature and Humidity Data Logger	OMEGA	RF2000A Series	S1371	1 year	03-May-2023
DRG Horn (medium)	ETS-Lindgren	3117-PA	E1160	2 years	26-Jan-2023

Notes: N/A – not applicable
NCR – no calibration required
VOU – verify on use

Table 7.1-2: Test software details

Manufacturer of Software	Details
Rohde & Schwarz	EMC 32 V10.60.15

Notes: None

Section 8 Testing data

8.1 Transmitter output power and EIRP requirements

8.1.1 References and limits

- FCC 47 CFR Part 15, Subpart B: §15.247(b)(3)
- RSS-247: §5.4(d)

§15.247:

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

RSS-247:

5.4 Devices shall comply with the following requirements, where applicable:

- (d) For DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1 W. The EIRP shall not exceed 4 W, except as provided in RSS 247 section 5.4(e).

As an alternative to a peak power measurement, compliance can be based on a measurement of the maximum conducted output power. The maximum conducted output power is the total transmit power delivered to all antennas and antenna elements, averaged across all symbols in the signalling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or transmitting at a reduced power level. If multiple modes of operation are implemented, the maximum conducted output power is the highest total transmit power occurring in any mode.

8.1.2 Test summary

Verdict	Pass		
Test date	September 15, 2022	Temperature	21 °C
Test engineer	James Cunningham, EMC/MIL/WL Supervisor	Air pressure	1004 mbar
Test location	<input checked="" type="checkbox"/> Wireless bench <input type="checkbox"/> Other:	Relative humidity	55 %

8.1.3 Notes

Testing was performed with the transmitter operating on a fixed channel at full power. Low, middle, and high channels were tested. EIRP = conducted power + declared antenna gain.

A survey was performed measuring the output power on the middle channel in all supported modulation and coding schemes (as described in Section 3.6) to identify the worst case operating modes. From this survey, the following modes were identified for full testing:

- 802.11b: 1 Mbps operation
- 802.11g: 6 Mbps operation
- 802.11n: MCS0 operation

Testing was performed according to the procedure described in ANSI C63.10 Section 11.9.1.3 (PKPM1 Peak power meter method).

8.1.4 Setup details

EUT power input during test	Battery powered
EUT setup configuration	<input checked="" type="checkbox"/> Table-top <input type="checkbox"/> Floor standing <input type="checkbox"/> Other:

8.1.5 Test data

Table 8.1-1: Transmitter output power and EIRP test data

Operating Mode	Test frequency (MHz)	Peak conducted output power (dBm)	Conducted limit (dBm)	Antenna Gain (declared) (dBi)	EIRP (dBm)	EIRP limit (dBm)
802.11b 1 Mbps	2412	12.07	30.0	2.5	14.57	36.0
	2437	12.09	30.0	2.5	14.59	36.0
	2462	12.08	30.0	2.5	14.58	36.0
802.11g 6 Mbps	2412	10.83	30.0	2.5	13.33	36.0
	2437	11.90	30.0	2.5	14.40	36.0
	2462	10.35	30.0	2.5	12.85	36.0
802.11n MCS0	2412	10.39	30.0	2.5	12.89	36.0
	2436	11.97	30.0	2.5	15.47	36.0
	2464	9.02	30.0	2.5	11.52	36.0

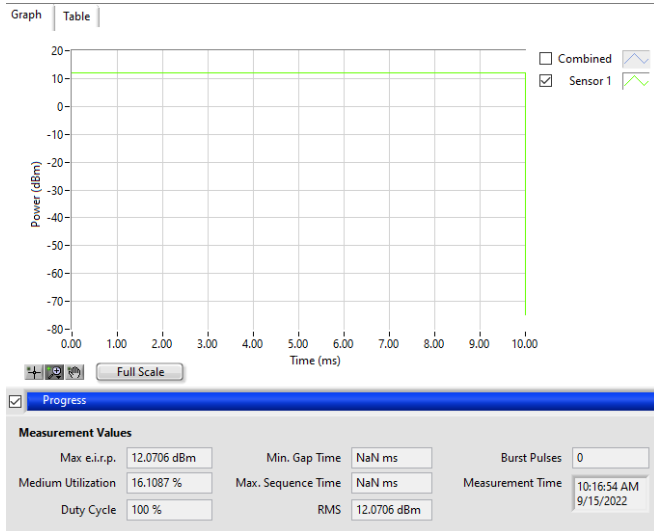


Figure 8.1-1: Conducted output power, 802.11b, 1 Mbps, 2402 MHz

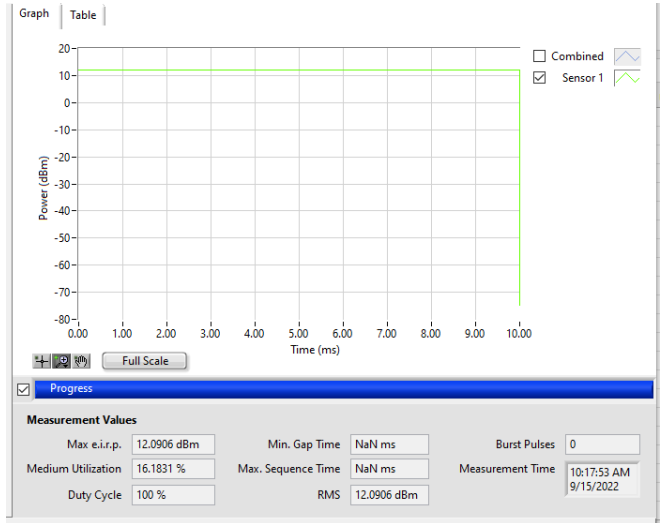


Figure 8.1-2: Conducted output power, 802.11b, 1 Mbps, 2440 MHz

Section 8
Test name
Specification(s)

Testing data
 Transmitter output power and EIRP requirements
 FCC Part 15 Subpart B and ICES-003 Issue 7

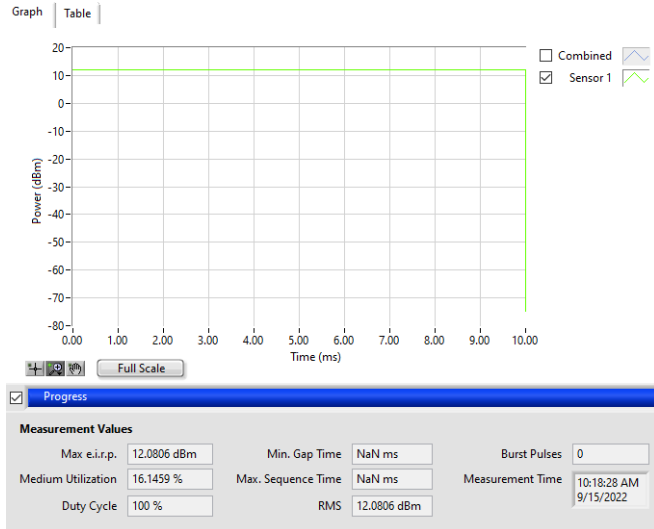


Figure 8.1-3: Conducted output power, 802.11b, 1 Mbps, 2462 MHz

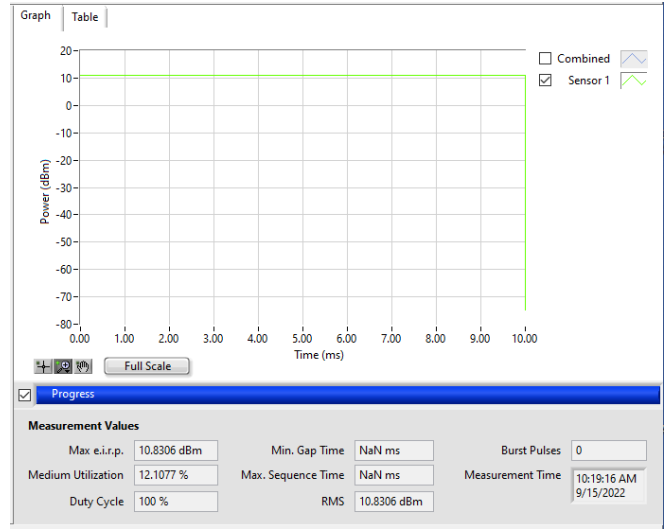


Figure 8.1-4: Conducted output power, 802.11g, 6 Mbps, 2412 MHz

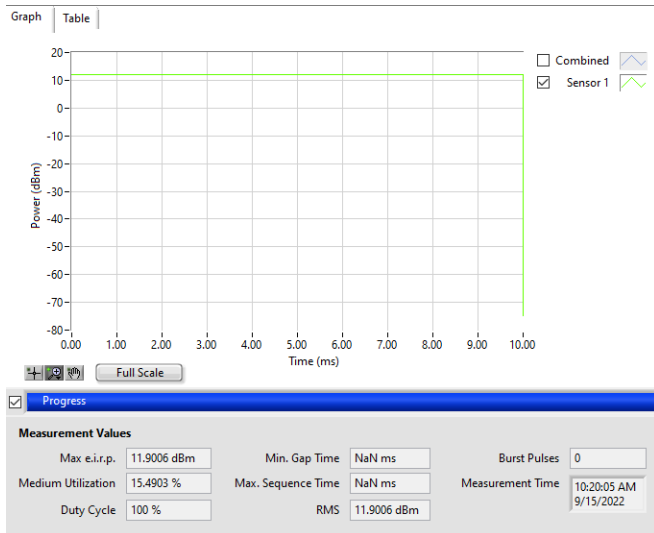


Figure 8.1-5: Conducted output power, 802.11g, 6 Mbps, 2436 MHz

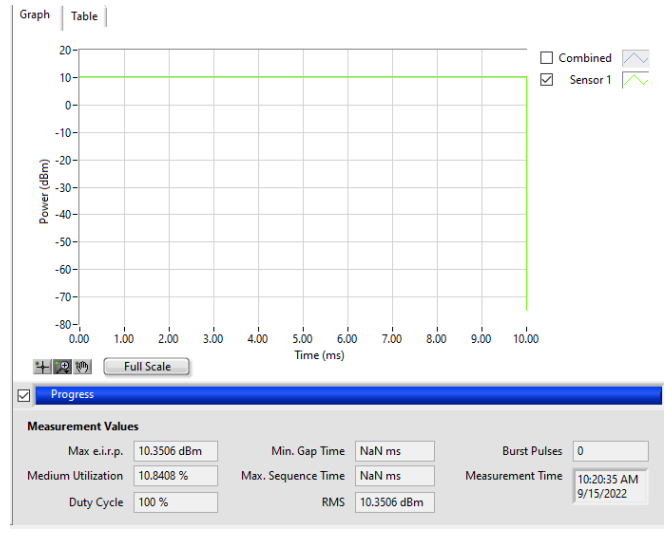


Figure 8.1-6: Conducted output power, 802.11g, 6 Mbps, 2462 MHz

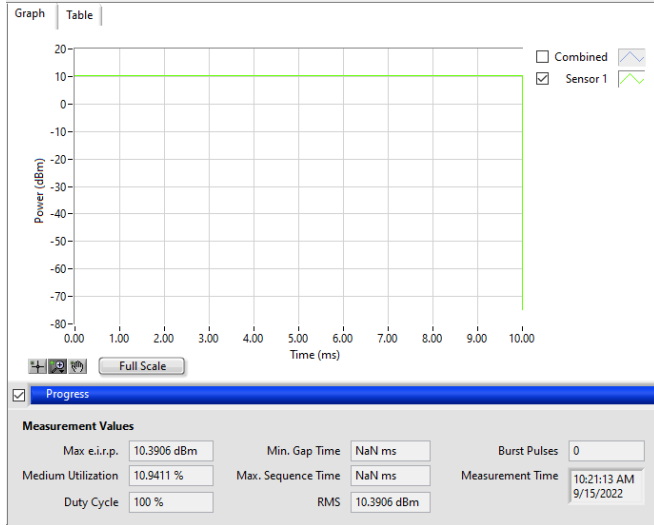


Figure 8.1-7: Conducted output power, 802.11n, MCS0, 2412 MHz

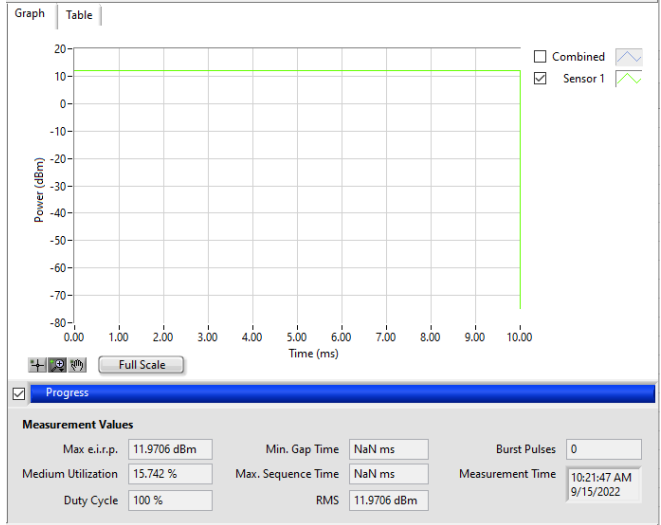


Figure 8.1-8: Conducted output power, 802.11n, MCS0, 2436 MHz

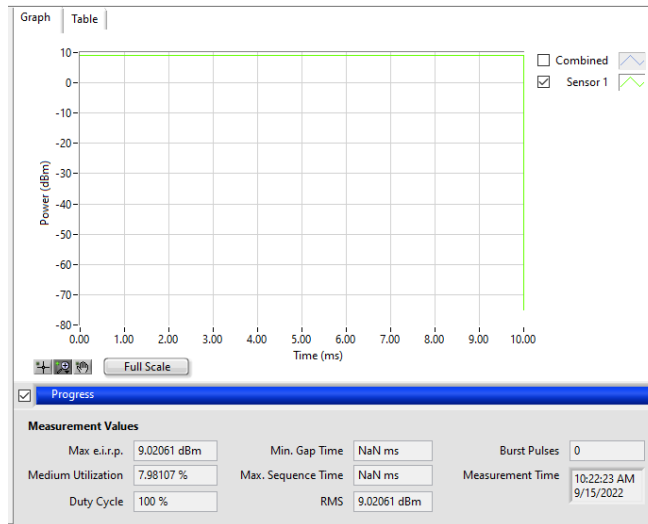


Figure 8.1-9: Conducted output power, 802.11n, MCS0, 2462 MHz

8.2 Spurious emissions

8.2.1 References and limits

- FCC 47 CFR Part 15, Subpart B: §15.247(d)
- RSS-247: §5.5

§15.247:

- (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

RSS-247:

- 5.4 In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

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

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

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

Table 8.2-2: FCC restricted frequency bands

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

8.2.2 Test summary

Verdict	Pass		
Test date	September 15, 2022	Temperature	21 °C
Test engineer	James Cunningham, EMC/MIL/WL Supervisor	Air pressure	1004 mbar
Test location	<input checked="" type="checkbox"/> Wireless bench <input checked="" type="checkbox"/> 10 m semi-anechoic chamber <input type="checkbox"/> 3 m semi-anechoic chamber <input type="checkbox"/> Other:	Relative humidity	55 %

8.2.3 Notes

Testing was performed with the transmitter operating on a fixed channel at full power. Low, middle and high channels were tested. The spectrum was searched from 30 MHz to 26 GHz (above the 10th harmonic of the highest transmit frequency).

For radiated measurements, the EUT was investigated to identify the worst case orientation with respect to the fundamental transmitter power. All measurements were performed with the EUT in that worst-case orientation.

Conducted spurious emissions (antenna port) were performed for all 3 worst case modes identified in Section 8.1 (low, middle, and high channels):

- 802.11b: 1 Mbps operation
- 802.11g: 6 Mbps operation
- 802.11n: MCS0 operation

Radiated spurious emissions were performed on 802.11n MCS0 mode (low, middle, and high channels)

Testing was performed according to the procedure described in:

- Test method: ANSI C63.10-2014 §6.10.4 (authorized band edge)
- Test method: ANSI C63.10-2014 §6.7 (antenna port conducted spurious emissions)
- Test method: ANSI C63.10-2014 §11.13 (radiated restricted band edge)
- Test method: ANSI C63.10-2014 §6.5, 6.6 (radiated emissions in restricted bands)

8.2.4 Setup details

EUT power input during test	Battery powered
EUT setup configuration	<input checked="" type="checkbox"/> Table-top <input type="checkbox"/> Floor standing <input type="checkbox"/> Other:

Spectrum analyzer settings (conducted emissions):

Resolution bandwidth	100 kHz
Video bandwidth	300 kHz
Detector mode	Peak
Trace mode	Max Hold
Measurement time	Long enough for trace to stabilize

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)

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

Resolution bandwidth	1 MHz
Video bandwidth	3 MHz
Detector mode	Peak (preview measurements) Peak and average (final measurements)

8.2.5 Test data

Authorized band edge conducted emissions

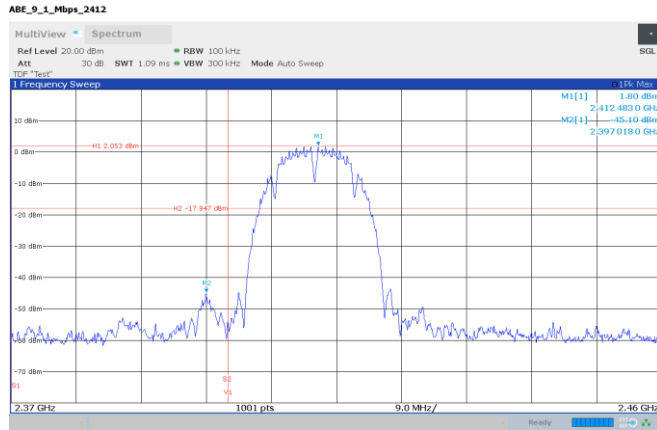


Figure 8.2-1: Authorized band edge emissions, 802.11b, 1 Mbps, 2412 MHz

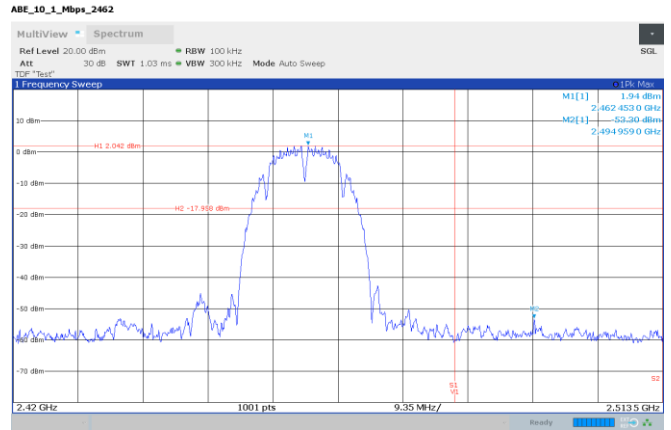


Figure 8.2-2: Authorized band edge emissions, 802.11b, 1 Mbps, 2462 MHz

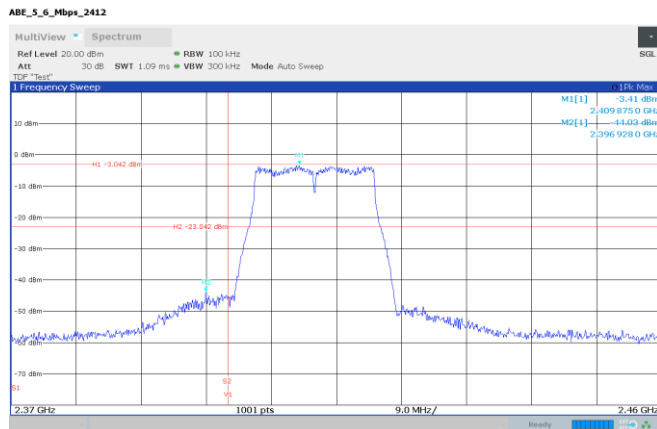


Figure 8.2-3: Authorized band edge emissions, 802.11g, 6 Mbps, 2412 MHz

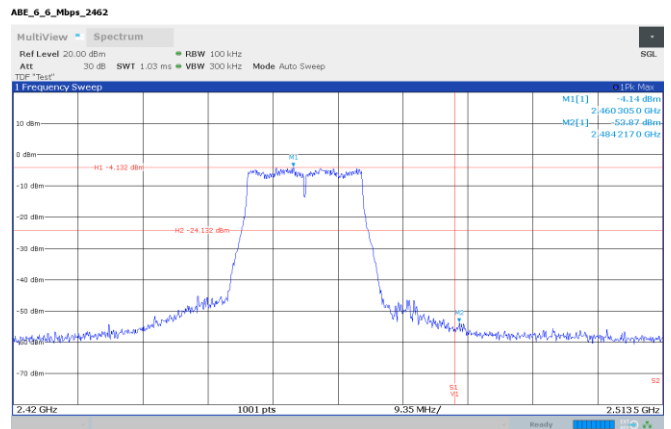


Figure 8.2-4: Authorized band edge emissions, 802.11g, 6 Mbps, 2462 MHz

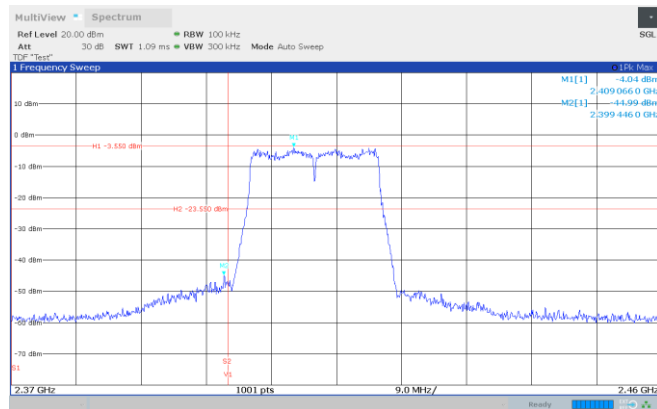


Figure 8.2-5: Authorized band edge emissions, 802.11n, MCS0, 2412 MHz

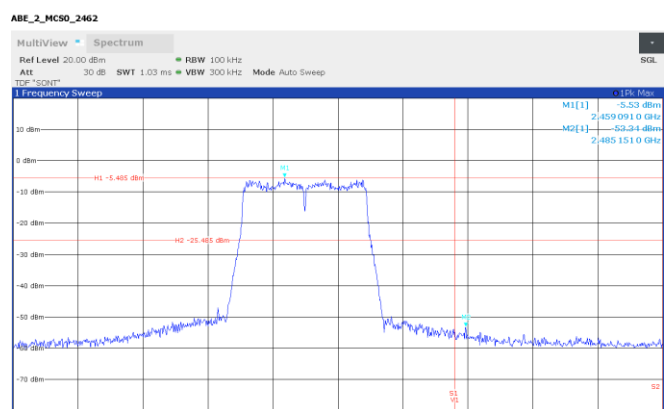


Figure 8.2-6: Authorized band edge emissions, 802.11n, MCS0, 2462 MHz

Antenna port conducted spurious emissions

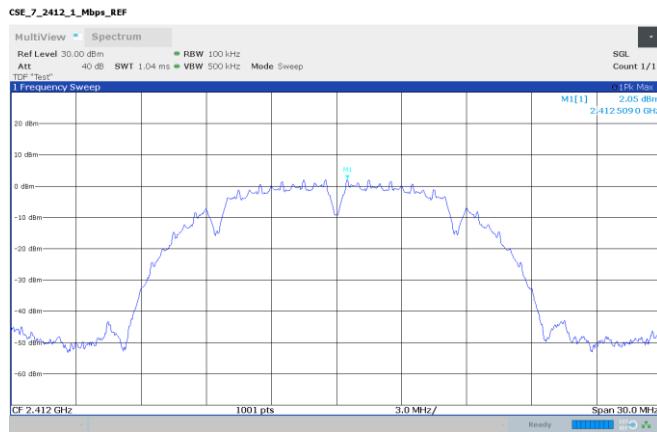


Figure 8.2-7: Conducted power spectral density reference level, 802.11b, 1 Mbps, 2412 MHz

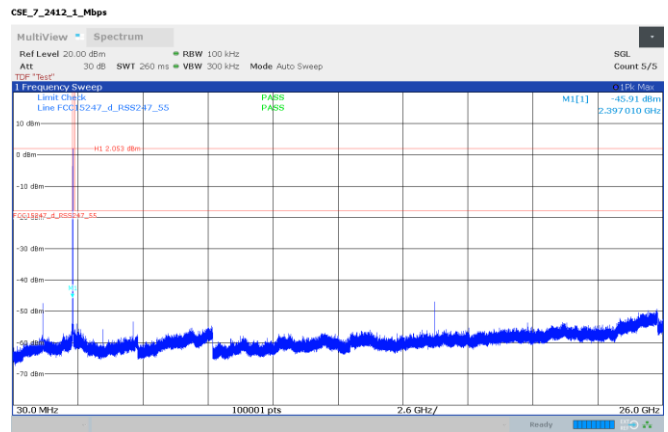


Figure 8.2-8: Antenna port conducted spurious emissions, 802.11b, 1 Mbps, 2412 MHz

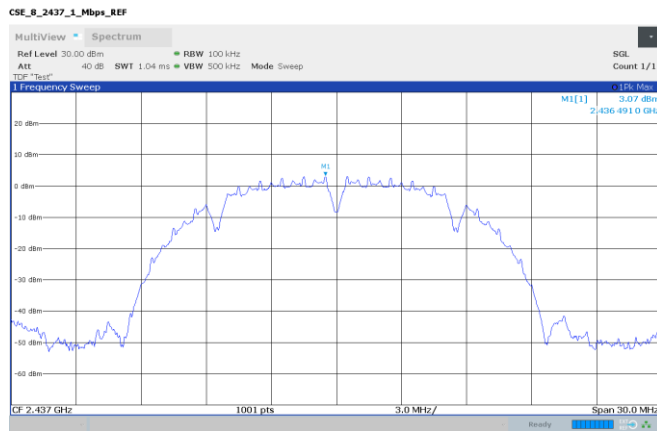


Figure 8.2-9: Conducted power spectral density reference level, 802.11b, 1 Mbps, 2436 MHz

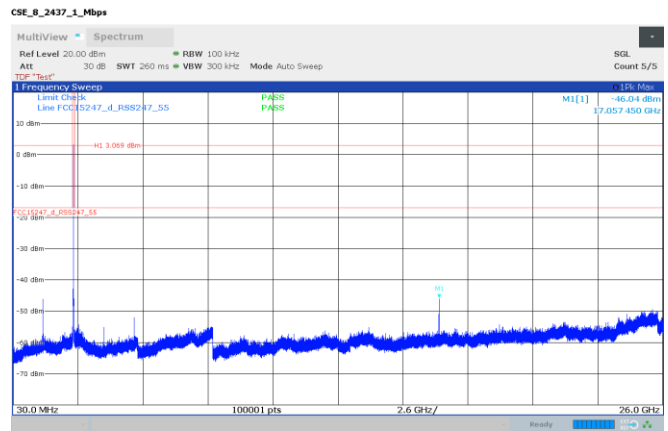


Figure 8.2-10: Antenna port conducted spurious emissions, 802.11b, 1 Mbps, 2436 MHz



Figure 8.2-11: Conducted power spectral density reference level, 802.11b, 1 Mbps, 2480 MHz

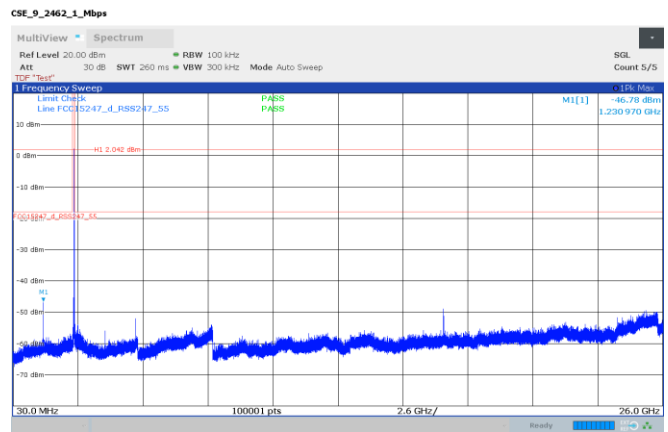


Figure 8.2-12: Antenna port conducted spurious emissions, 802.11b, 1 Mbps, 2480 MHz

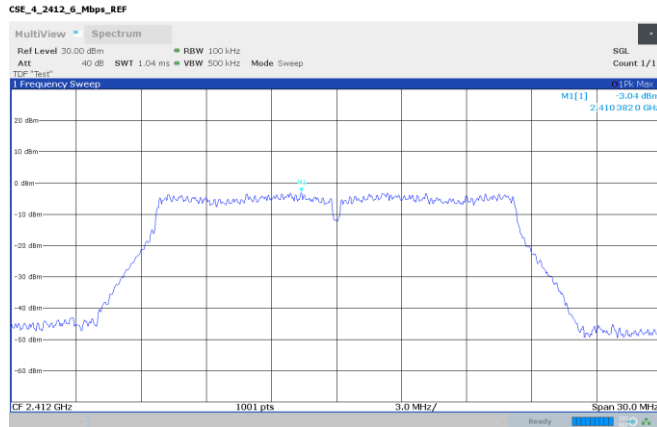


Figure 8.2-13: Conducted power spectral density reference level, 802.11g, 6 Mbps, 2412 MHz

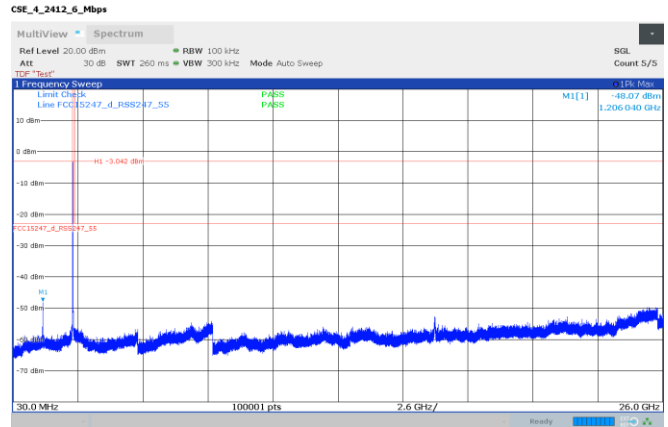


Figure 8.2-14: Antenna port conducted spurious emissions, 802.11g, 6 Mbps, 2412 MHz

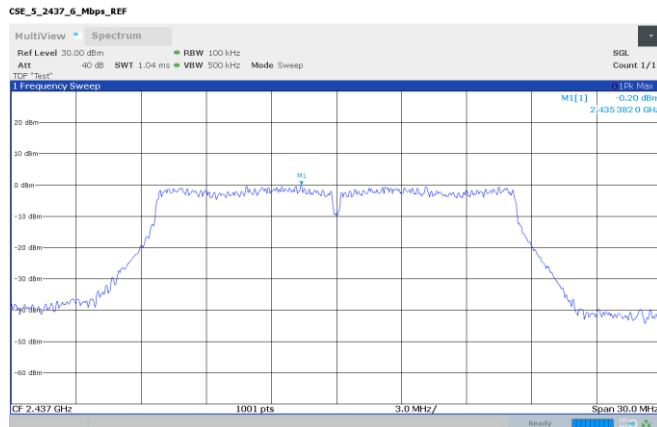


Figure 8.2-15: Conducted power spectral density reference level, 802.11g, 6 Mbps, 2437 MHz

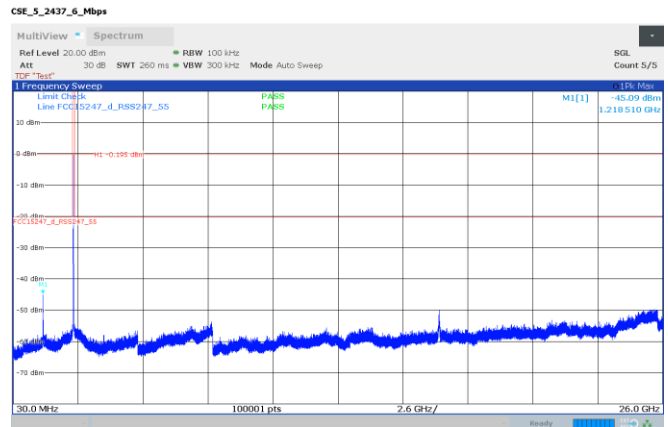


Figure 8.2-16: Antenna port conducted spurious emissions, 802.11g, 6 Mbps, 2437 MHz

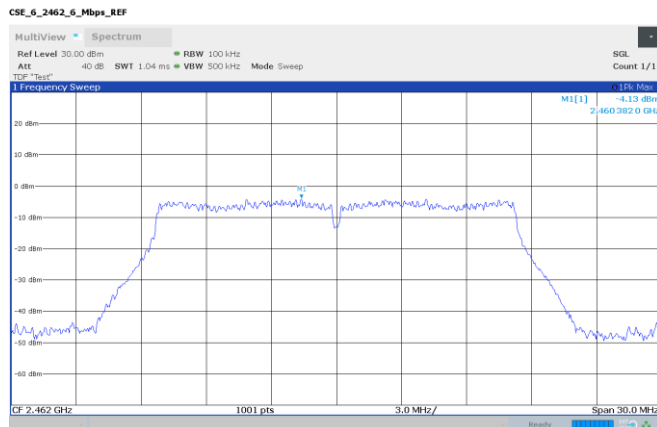


Figure 8.2-17: Conducted power spectral density reference level, 802.11g, 6 Mbps, 2462 MHz

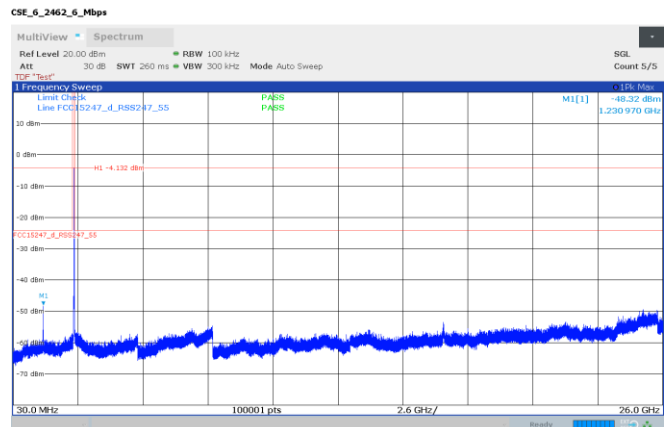


Figure 8.2-18: Antenna port conducted spurious emissions, 802.11g, 6 Mbps, 2462 MHz

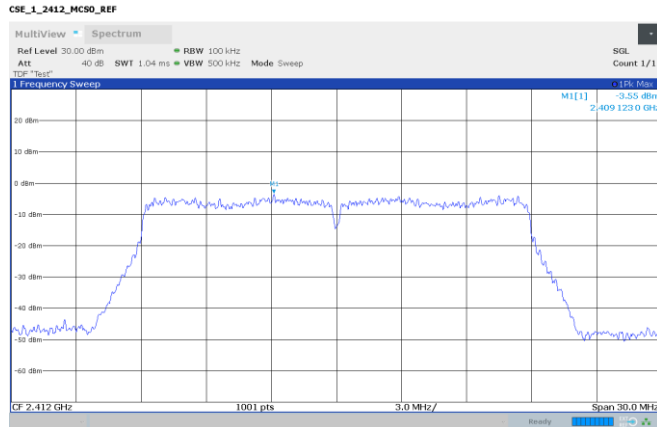


Figure 8.2-19: Conducted power spectral density reference level, 802.11n, MCS0, 2412 MHz

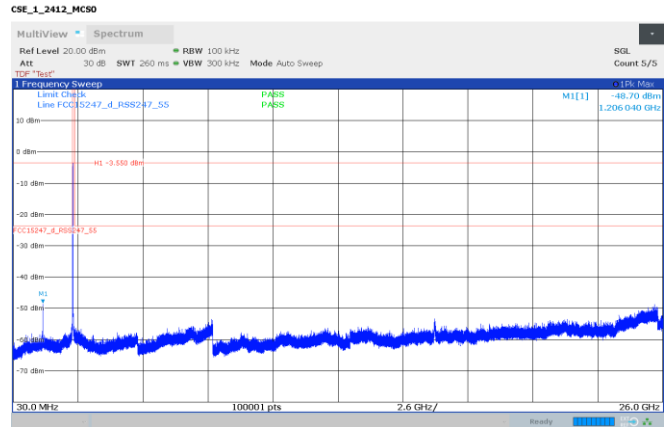


Figure 8.2-20: Antenna port conducted spurious emissions, 802.11n, MCS0, 2412 MHz

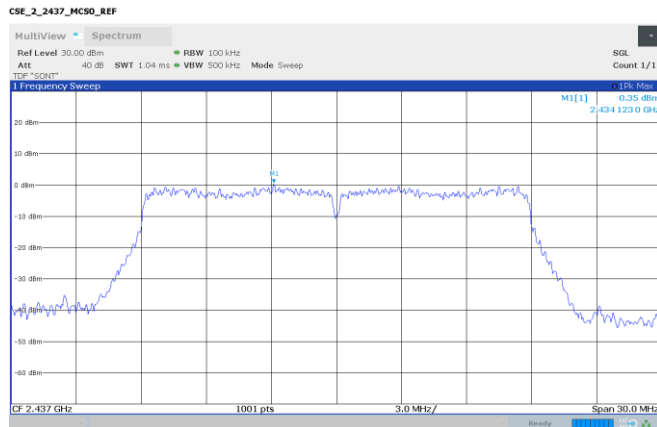


Figure 8.2-21: Conducted power spectral density reference level, 802.11n, MCS0, 2437 MHz

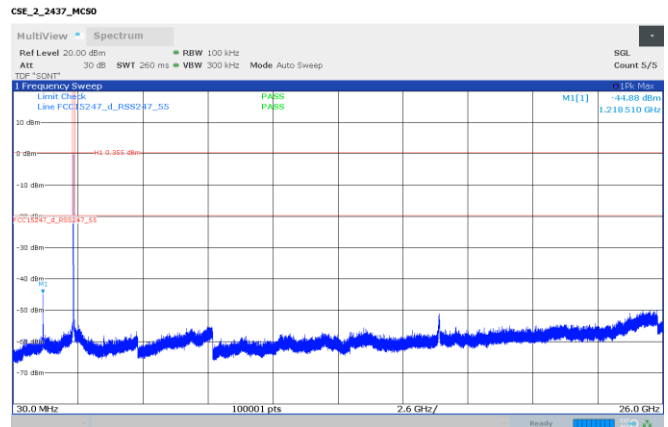


Figure 8.2-22: Antenna port conducted spurious emissions, 802.11n, MCS0, 2437 MHz

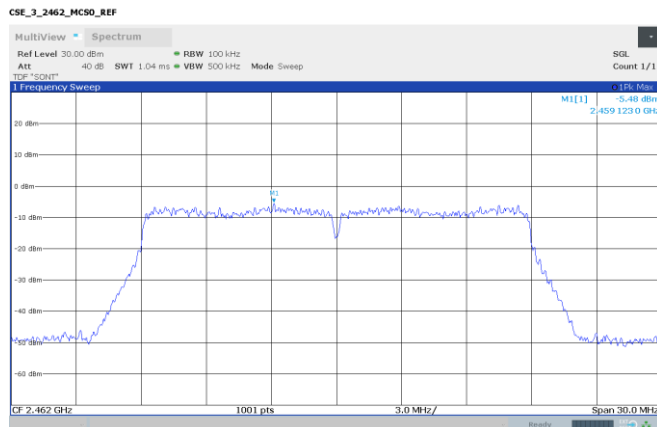


Figure 8.2-23: Conducted power spectral density reference level, 802.11n, MCS0, 2462 MHz

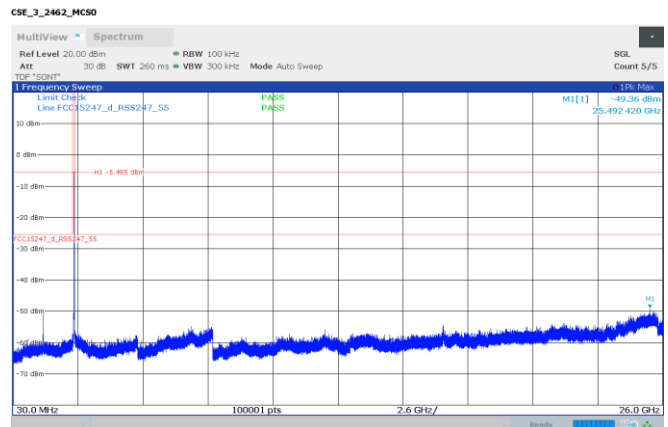


Figure 8.2-24: Antenna port conducted spurious emissions, 802.11n, MCS0, 2462 MHz

Radiated restricted band edge emissions

Full Spectrum



Figure 8.2-25: Radiated emissions spectral plot (2.31 GHz - 2.415 GHz), 802.11n, MCS0

Table 8.2-2: Radiated emissions results

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)
2364.316500	43.77	---	73.90	30.13	5000.0	1000.000	98.0	V	22.0	-6.7
2364.316500	---	29.41	53.90	24.49	5000.0	1000.000	98.0	V	22.0	-6.7
2373.399000	---	30.91	53.90	22.99	5000.0	1000.000	98.0	V	21.0	-6.6
2373.399000	44.38	---	73.90	29.52	5000.0	1000.000	98.0	V	21.0	-6.6
2382.612750	---	34.99	53.90	18.91	5000.0	1000.000	204.0	V	74.0	-6.6
2382.612750	53.21	---	73.90	20.69	5000.0	1000.000	204.0	V	74.0	-6.6
2387.726250	---	45.52	53.90	8.38	5000.0	1000.000	200.0	V	74.0	-6.6
2387.726250	63.56	---	73.90	10.34	5000.0	1000.000	200.0	V	74.0	-6.6
2390.000000	---	52.79	53.90	1.11	5000.0	1000.000	204.0	V	80.0	-6.6
2390.000000	71.71	---	73.90	2.19	5000.0	1000.000	204.0	V	80.0	-6.6

Notes: ¹ Field strength (dB V/m) = receiver/spectrum analyzer value (dB V) + correction factor (dB)
² Correction factors = antenna factor ACF (dB) + cable loss (dB)
³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

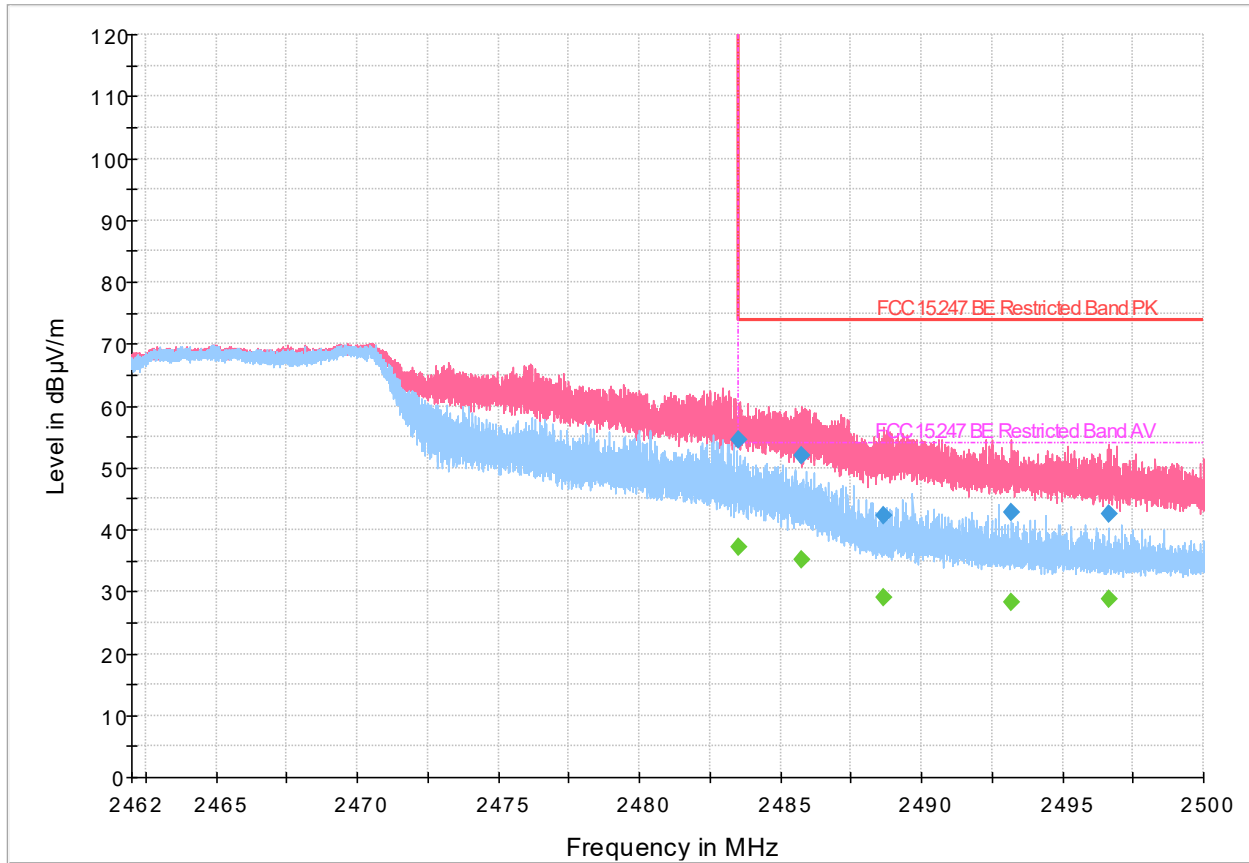


Figure 8.2-26: Radiated emissions spectral plot (2.462 GHz - 2.5 GHz), 802.11n, MCS0

Table 8.2-3: Radiated emissions results

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)
2483.500000	---	37.11	53.90	16.79	5000.0	1000.000	98.0	V	79.0	-6.4
2483.500000	54.40	---	73.90	19.50	5000.0	1000.000	98.0	V	79.0	-6.4
2485.774700	---	35.13	53.90	18.77	5000.0	1000.000	136.0	V	115.0	-6.3
2485.774700	52.07	---	73.90	21.83	5000.0	1000.000	136.0	V	115.0	-6.3
2488.651300	---	28.96	53.90	24.94	5000.0	1000.000	193.0	V	84.0	-6.3
2488.651300	42.27	---	73.90	31.63	5000.0	1000.000	193.0	V	84.0	-6.3
2493.177100	---	28.19	53.90	25.71	5000.0	1000.000	210.0	V	113.0	-6.3
2493.177100	42.72	---	73.90	31.18	5000.0	1000.000	210.0	V	113.0	-6.3
2496.669300	---	28.78	53.90	25.12	5000.0	1000.000	98.0	V	102.0	-6.3
2496.669300	42.43	---	73.90	31.47	5000.0	1000.000	98.0	V	102.0	-6.3

Notes: ¹ Field strength (dB V/m) = receiver/spectrum analyzer value (dB V) + correction factor (dB)

² Correction factors = antenna factor ACF (dB) + cable loss (dB)

³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Radiated emissions in restricted bands

Full Spectrum

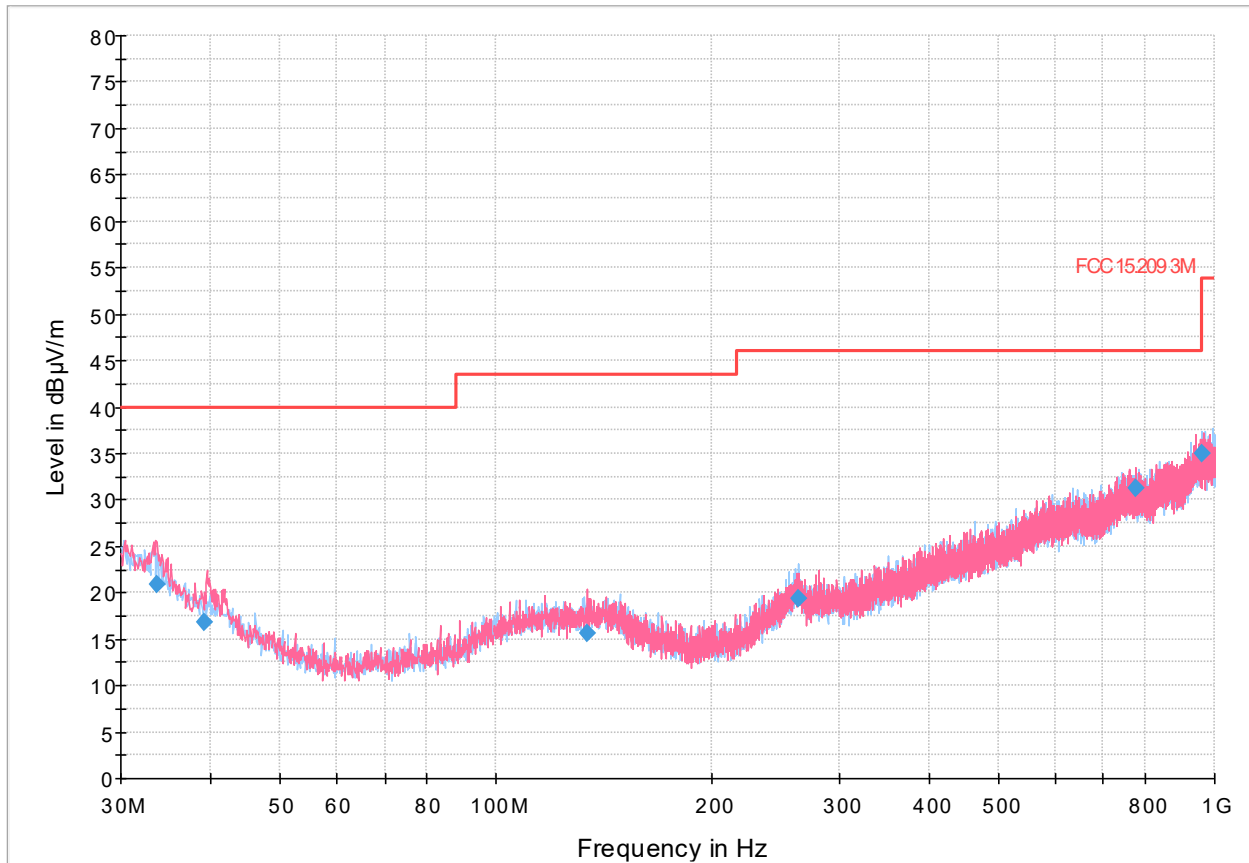


Figure 8.2-27: Radiated emissions spectral plot (30 MHz - 1 GHz), 802.11n, MCS0, 2412 MHz

Table 8.2-4: Radiated emissions results

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
33.666000	20.94	40.00	19.06	5000.0	120.000	167.0	V	239.0	22.8
39.143000	16.86	40.00	23.14	5000.0	120.000	279.0	V	344.0	19.5
134.164000	15.55	43.50	27.95	5000.0	120.000	114.0	V	337.0	18.4
263.556000	19.37	46.00	26.63	5000.0	120.000	332.0	H	269.0	21.7
775.597000	31.23	46.00	14.77	5000.0	120.000	140.0	V	354.0	31.6
959.680000	35.03	46.00	10.97	5000.0	120.000	228.0	H	294.0	35.4

Notes: ¹ Field strength (dB V/m) = receiver/spectrum analyzer value (dB V) + correction factor (dB)
² Correction factors = antenna factor ACF (dB) + cable loss (dB)
³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

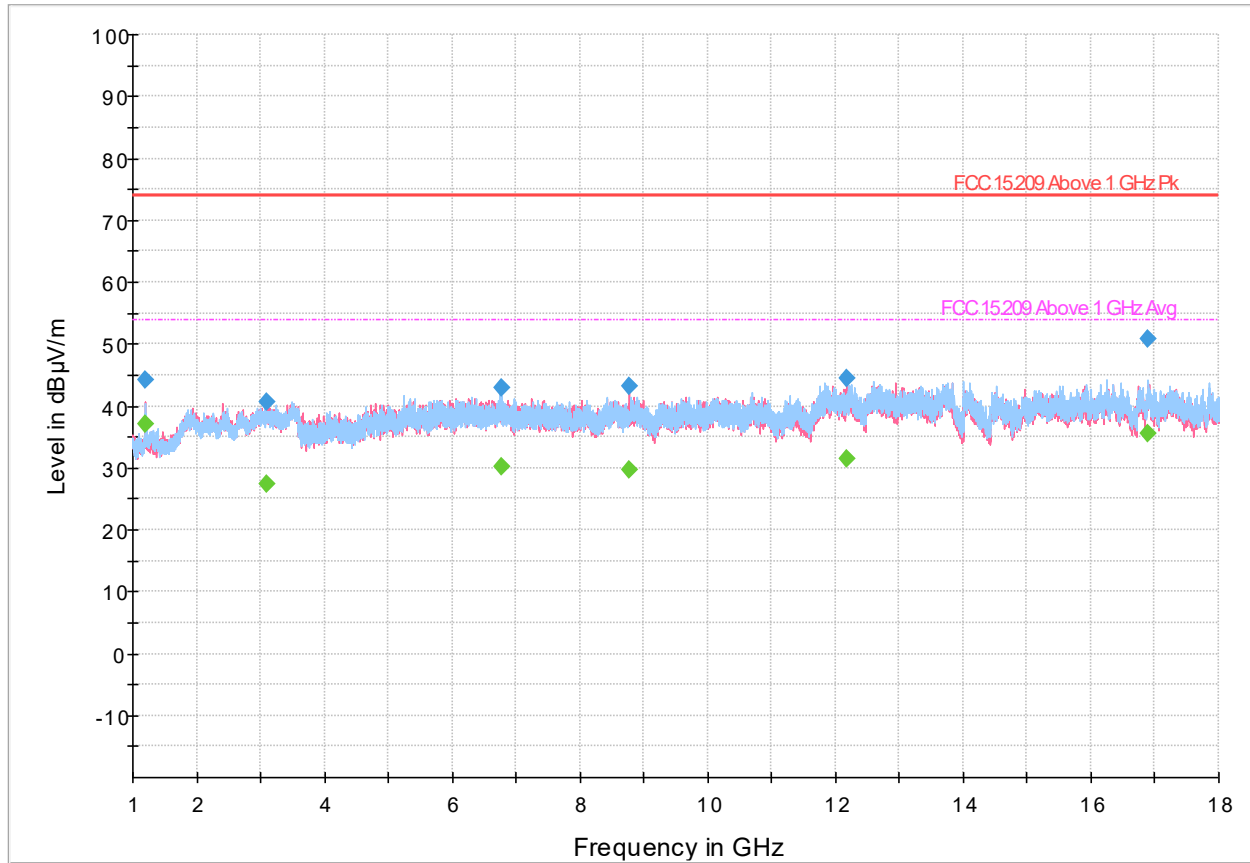


Figure 8.2-28: Radiated emissions spectral plot (1 GHz - 18 GHz), 802.11n, MCS0, 2142 MHz

Table 8.2-5: Radiated emissions results

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)
1205.900000	44.27	---	73.90	29.63	5000.0	1000.000	401.0	H	188.0	-13.1
1205.900000	---	37.09	53.90	16.81	5000.0	1000.000	401.0	H	188.0	-13.1
3093.000000	---	27.30	53.90	26.60	5000.0	1000.000	268.0	V	179.0	-4.2
3093.000000	40.60	---	73.90	33.30	5000.0	1000.000	268.0	V	179.0	-4.2
6761.500000	---	30.09	53.90	23.81	5000.0	1000.000	236.0	H	149.0	2.4
6761.500000	42.94	---	73.90	30.96	5000.0	1000.000	236.0	H	149.0	2.4
8783.550000	43.11	---	73.90	30.79	5000.0	1000.000	176.0	V	231.0	4.0
8783.550000	---	29.76	53.90	24.14	5000.0	1000.000	176.0	V	231.0	4.0
12173.400000	44.55	---	73.90	29.35	5000.0	1000.000	401.0	V	86.0	10.7
12173.400000	---	31.40	53.90	22.50	5000.0	1000.000	401.0	V	86.0	10.7
16893.450000	50.86	---	73.90	23.04	5000.0	1000.000	189.0	V	126.0	14.5
16893.450000	---	35.58	53.90	18.32	5000.0	1000.000	189.0	V	126.0	14.5

Notes: ¹ Field strength (dB V/m) = receiver/spectrum analyzer value (dB V) + correction factor (dB)
² Correction factors = antenna factor ACF (dB) + cable loss (dB)
³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

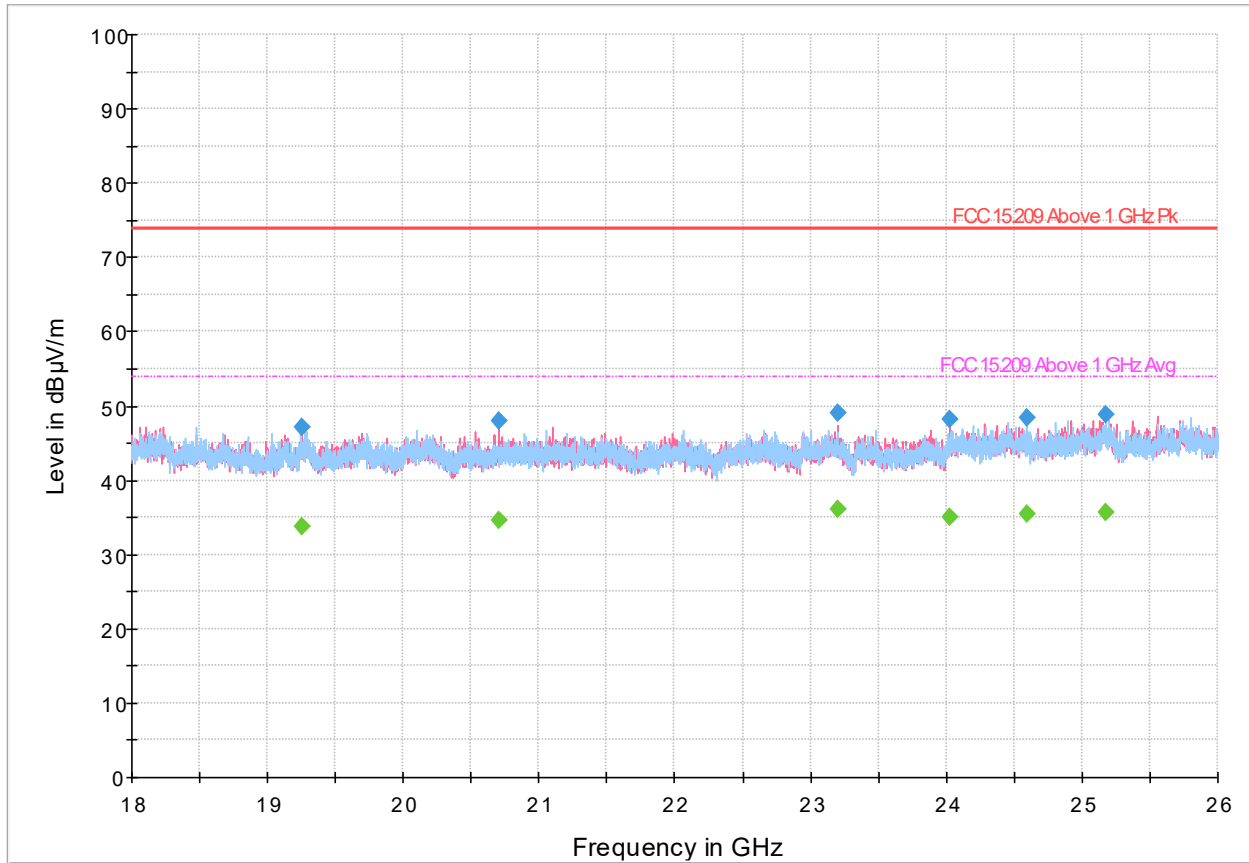


Figure 8.2-29: Radiated emissions spectral plot (18 GHz - 26 GHz), 802.11n, MCS0, 2142 MHz

Table 8.2-6: Radiated emissions results

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)
19249.704878	47.21	---	73.90	26.69	5000.0	1000.000	171.0	H	-20.0	9.9
19249.704878	---	33.77	53.90	20.13	5000.0	1000.000	171.0	H	-20.0	9.9
20707.792683	---	34.62	53.90	19.28	5000.0	1000.000	125.0	V	0.0	9.5
20707.792683	48.07	---	73.90	25.83	5000.0	1000.000	125.0	V	0.0	9.5
23203.802439	49.02	---	73.90	24.88	5000.0	1000.000	145.0	V	242.0	9.9
23203.802439	---	36.06	53.90	17.84	5000.0	1000.000	145.0	V	242.0	9.9
24029.392683	---	35.13	53.90	18.77	5000.0	1000.000	225.0	V	180.0	9.9
24029.392683	48.23	---	73.90	25.67	5000.0	1000.000	225.0	V	180.0	9.9
24591.568293	48.37	---	73.90	25.53	5000.0	1000.000	208.0	H	50.0	9.9
24591.568293	---	35.41	53.90	18.49	5000.0	1000.000	208.0	H	50.0	9.9
25174.758537	48.73	---	73.90	25.17	5000.0	1000.000	175.0	H	64.0	10.3
25174.758537	---	35.67	53.90	18.23	5000.0	1000.000	175.0	H	64.0	10.3

Notes: ¹ Field strength (dB V/m) = receiver/spectrum analyzer value (dB V) + correction factor (dB)
² Correction factors = antenna factor ACF (dB) + cable loss (dB)
³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

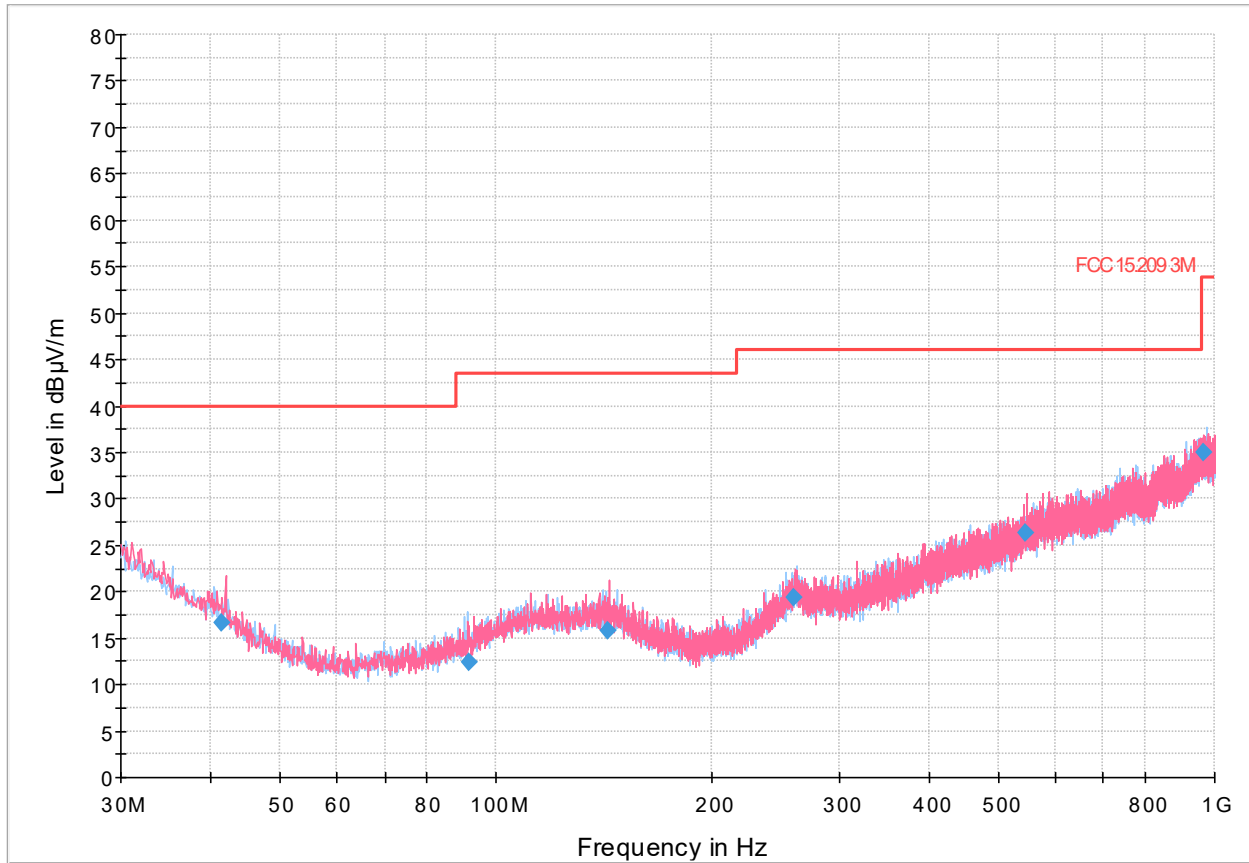


Figure 8.2-30: Radiated emissions spectral plot (30 MHz - 1 GHz), 802.11n, MCS0, 2437 MHz

Table 8.2-7: Radiated emissions results

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
41.368000	16.59	40.00	23.41	5000.0	120.000	181.0	V	357.0	18.3
91.741000	12.48	43.50	31.02	5000.0	120.000	352.0	V	141.0	15.2
143.121000	15.76	43.50	27.74	5000.0	120.000	312.0	V	154.0	18.5
260.058000	19.34	46.00	26.66	5000.0	120.000	263.0	V	178.0	21.5
546.470000	26.31	46.00	19.69	5000.0	120.000	258.0	V	20.0	28.1
966.578000	34.93	53.90	18.97	5000.0	120.000	288.0	V	175.0	35.3

Notes: ¹ Field strength (dB V/m) = receiver/spectrum analyzer value (dB V) + correction factor (dB)
² Correction factors = antenna factor ACF (dB) + cable loss (dB)
³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

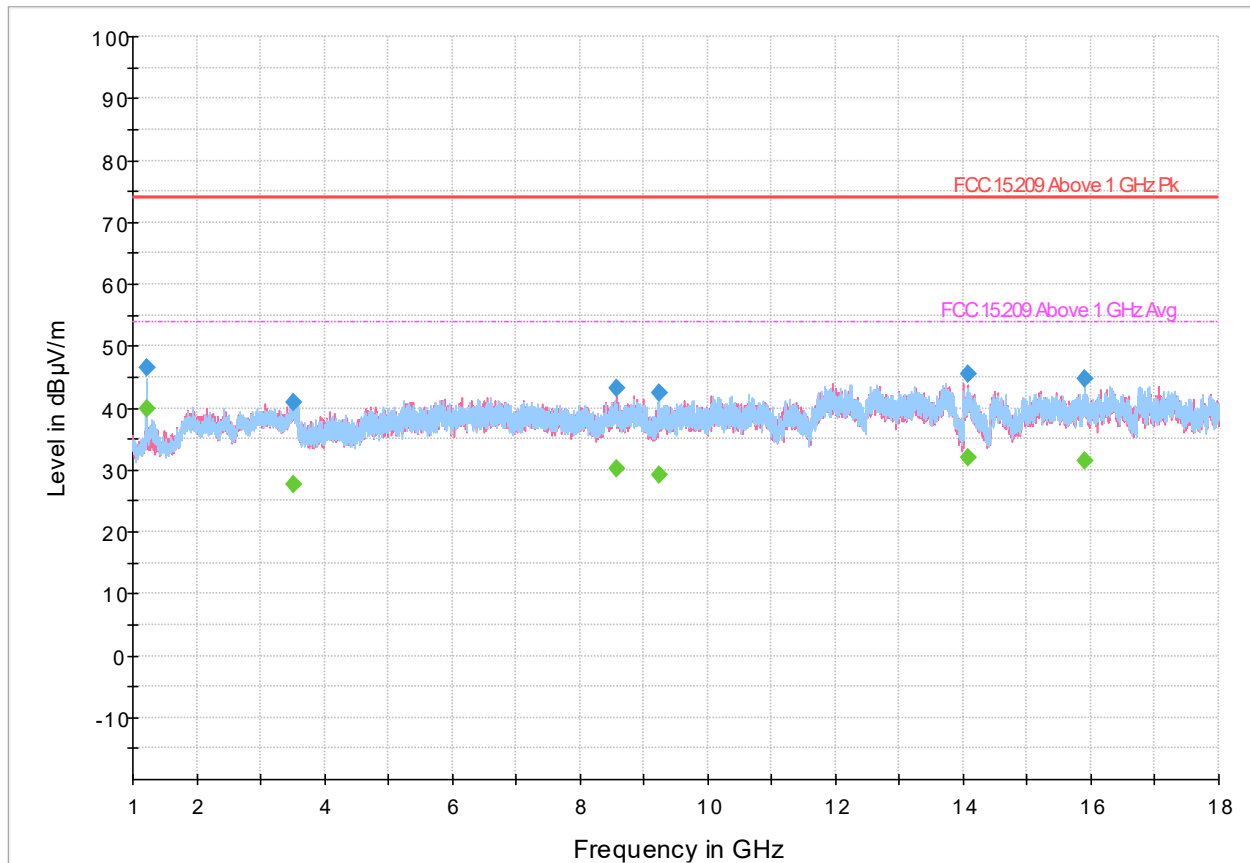


Figure 8.2-31: Radiated emissions spectral plot (1 GHz - 18 GHz), 802.11n, MCS0, 2437 MHz

Table 8.2-8: Radiated emissions results

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)
1218.650000	---	39.96	53.90	13.94	5000.0	1000.000	314.0	H	194.0	-13.1
1218.650000	46.59	---	73.90	27.31	5000.0	1000.000	314.0	H	194.0	-13.1
3510.100000	---	27.74	53.90	26.16	5000.0	1000.000	238.0	V	9.0	-3.5
3510.100000	41.00	---	73.90	32.90	5000.0	1000.000	238.0	V	9.0	-3.5
8566.650000	43.29	---	73.90	30.61	5000.0	1000.000	385.0	V	0.0	3.8
8566.650000	---	30.17	53.90	23.73	5000.0	1000.000	385.0	V	0.0	3.8
9237.100000	42.34	---	73.90	31.56	5000.0	1000.000	224.0	H	62.0	5.1
9237.100000	---	29.10	53.90	24.80	5000.0	1000.000	224.0	H	62.0	5.1
14075.850000	---	31.91	53.90	21.99	5000.0	1000.000	254.0	V	10.0	12.4
14075.850000	45.55	---	73.90	28.35	5000.0	1000.000	254.0	V	10.0	12.4
15894.750000	---	31.56	53.90	22.34	5000.0	1000.000	315.0	V	325.0	16.0
15894.750000	44.60	---	73.90	29.30	5000.0	1000.000	315.0	V	325.0	16.0

Notes: ¹ Field strength (dB V/m) = receiver/spectrum analyzer value (dB V) + correction factor (dB)
² Correction factors = antenna factor ACF (dB) + cable loss (dB)
³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

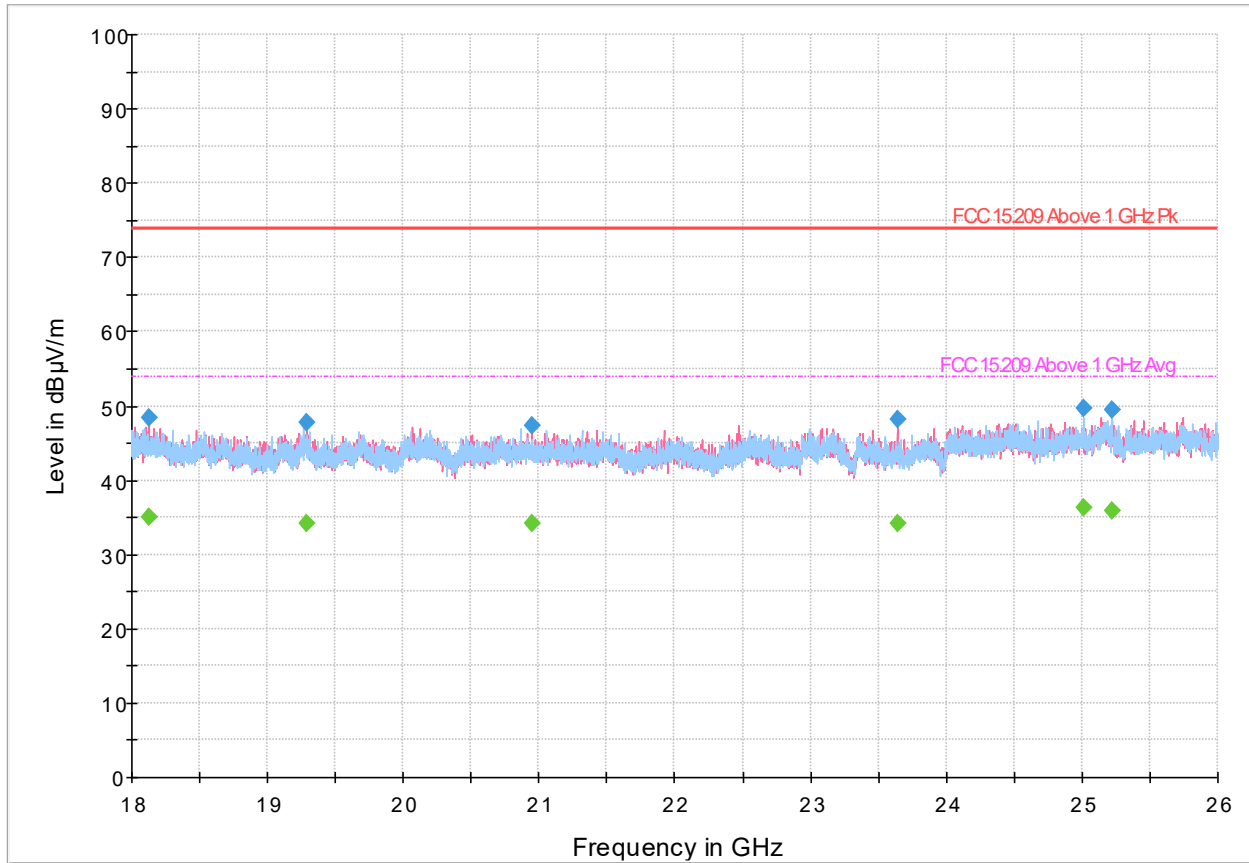


Figure 8.2-32: Radiated emissions spectral plot (18 GHz - 26 GHz), 802.11n, MCS0, 2437 MHz

Table 8.2-9: Radiated emissions results

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)
18127.256098	---	34.93	53.90	18.97	5000.0	1000.000	200.0	V	303.0	10.6
18127.256098	48.36	---	73.90	25.54	5000.0	1000.000	200.0	V	303.0	10.6
19289.656098	---	34.21	53.90	19.69	5000.0	1000.000	157.0	V	88.0	10.2
19289.656098	47.78	---	73.90	26.12	5000.0	1000.000	157.0	V	88.0	10.2
20949.168293	47.30	---	73.90	26.60	5000.0	1000.000	175.0	V	200.0	9.6
20949.168293	---	34.23	53.90	19.67	5000.0	1000.000	175.0	V	200.0	9.6
23640.348780	48.10	---	73.90	25.80	5000.0	1000.000	189.0	V	276.0	8.9
23640.348780	---	34.21	53.90	19.69	5000.0	1000.000	189.0	V	276.0	8.9
25011.782927	49.59	---	73.90	24.31	5000.0	1000.000	195.0	H	36.0	10.4
25011.782927	---	36.34	53.90	17.56	5000.0	1000.000	195.0	H	36.0	10.4
25224.914634	---	35.88	53.90	18.02	5000.0	1000.000	133.0	H	20.0	10.3
25224.914634	49.52	---	73.90	24.38	5000.0	1000.000	133.0	H	20.0	10.3

Notes: ¹ Field strength (dB V/m) = receiver/spectrum analyzer value (dB V) + correction factor (dB)
² Correction factors = antenna factor ACF (dB) + cable loss (dB)
³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

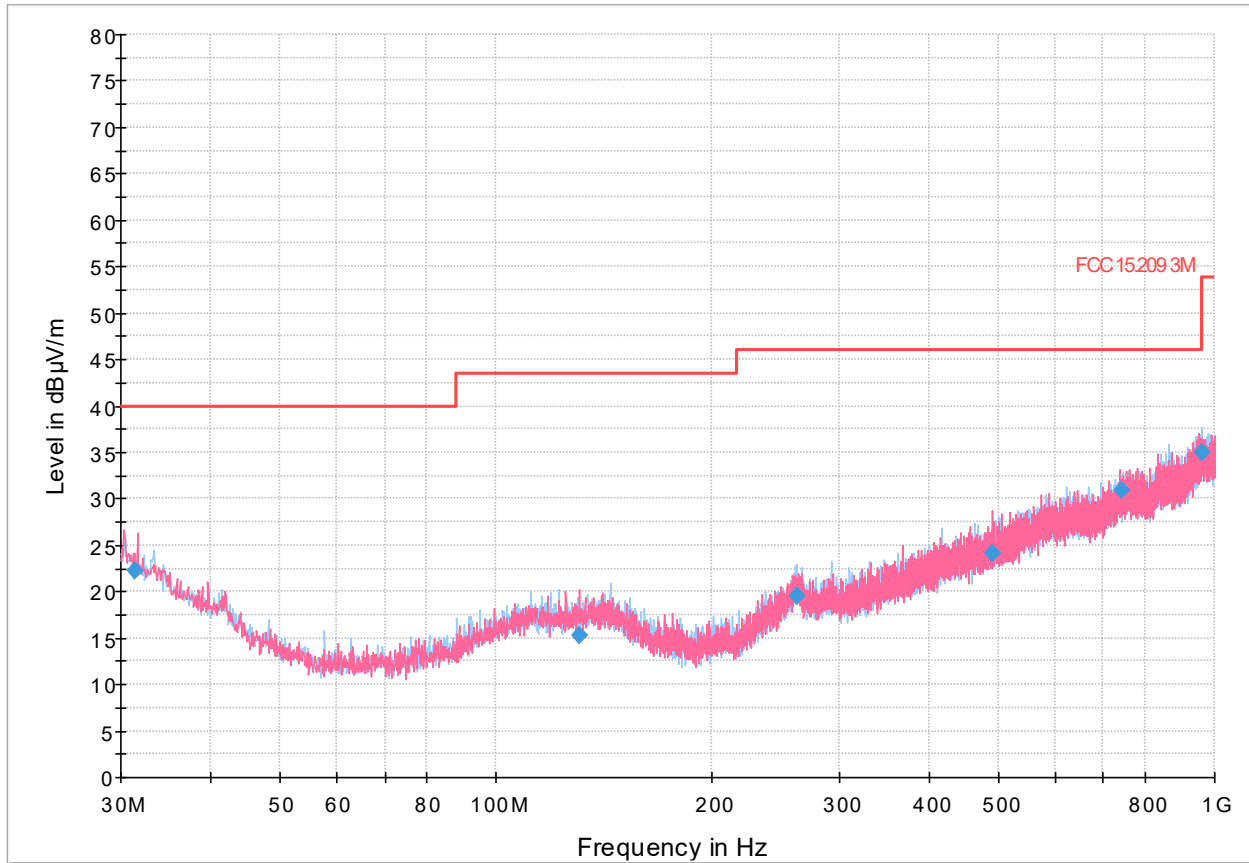


Figure 8.2-33: Radiated emissions spectral plot (30 MHz - 1 GHz), 802.11n, MCS0, 2462 MHz

Table 8.2-10: Radiated emissions results

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
31.349000	22.22	40.00	17.78	5000.0	120.000	226.0	V	152.0	24.1
130.290000	15.31	43.50	28.19	5000.0	120.000	279.0	H	333.0	18.2
262.666000	19.50	46.00	26.50	5000.0	120.000	135.0	H	298.0	21.7
490.662000	24.05	46.00	21.95	5000.0	120.000	353.0	V	116.0	26.0
742.302000	30.99	46.00	15.01	5000.0	120.000	122.0	H	357.0	31.4
959.114000	35.05	46.00	10.95	5000.0	120.000	343.0	H	355.0	35.5

Notes: ¹ Field strength (dB V/m) = receiver/spectrum analyzer value (dB V) + correction factor (dB)
² Correction factors = antenna factor ACF (dB) + cable loss (dB)
³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

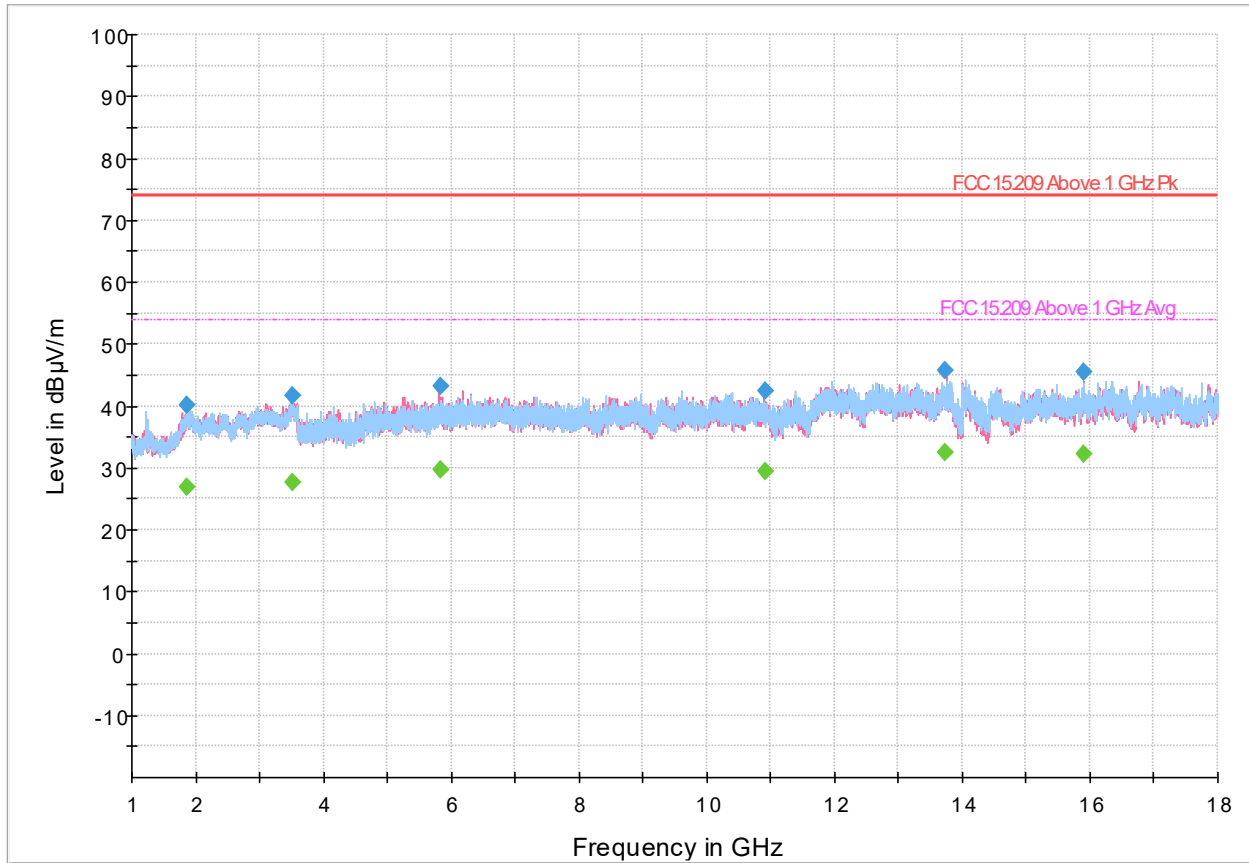


Figure 8.2-34: Radiated emissions spectral plot (1 GHz - 18 GHz), 802.11n, MCS0, 2462 MHz

Table 8.2-11: Radiated emissions results

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)
1864.400000	40.12	---	73.90	33.78	5000.0	1000.000	259.0	V	352.0	-7.6
1864.400000	---	26.92	53.90	26.98	5000.0	1000.000	259.0	V	352.0	-7.6
3519.750000	---	27.77	53.90	26.13	5000.0	1000.000	106.0	V	287.0	-3.4
3519.750000	41.78	---	73.90	32.12	5000.0	1000.000	106.0	V	287.0	-3.4
5834.100000	43.12	---	73.90	30.78	5000.0	1000.000	311.0	V	74.0	1.9
5834.100000	---	29.80	53.90	24.10	5000.0	1000.000	311.0	V	74.0	1.9
10909.150000	---	29.51	53.90	24.39	5000.0	1000.000	304.0	V	181.0	6.4
10909.150000	42.48	---	73.90	31.42	5000.0	1000.000	304.0	V	181.0	6.4
13740.550000	45.75	---	73.90	28.15	5000.0	1000.000	361.0	H	60.0	12.3
13740.550000	---	32.48	53.90	21.43	5000.0	1000.000	361.0	H	60.0	12.3
15898.850000	45.56	---	73.90	28.34	5000.0	1000.000	154.0	V	156.0	16.2
15898.850000	---	32.17	53.90	21.73	5000.0	1000.000	154.0	V	156.0	16.2

Notes: ¹ Field strength (dB V/m) = receiver/spectrum analyzer value (dB V) + correction factor (dB)
² Correction factors = antenna factor ACF (dB) + cable loss (dB)
³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

Full Spectrum

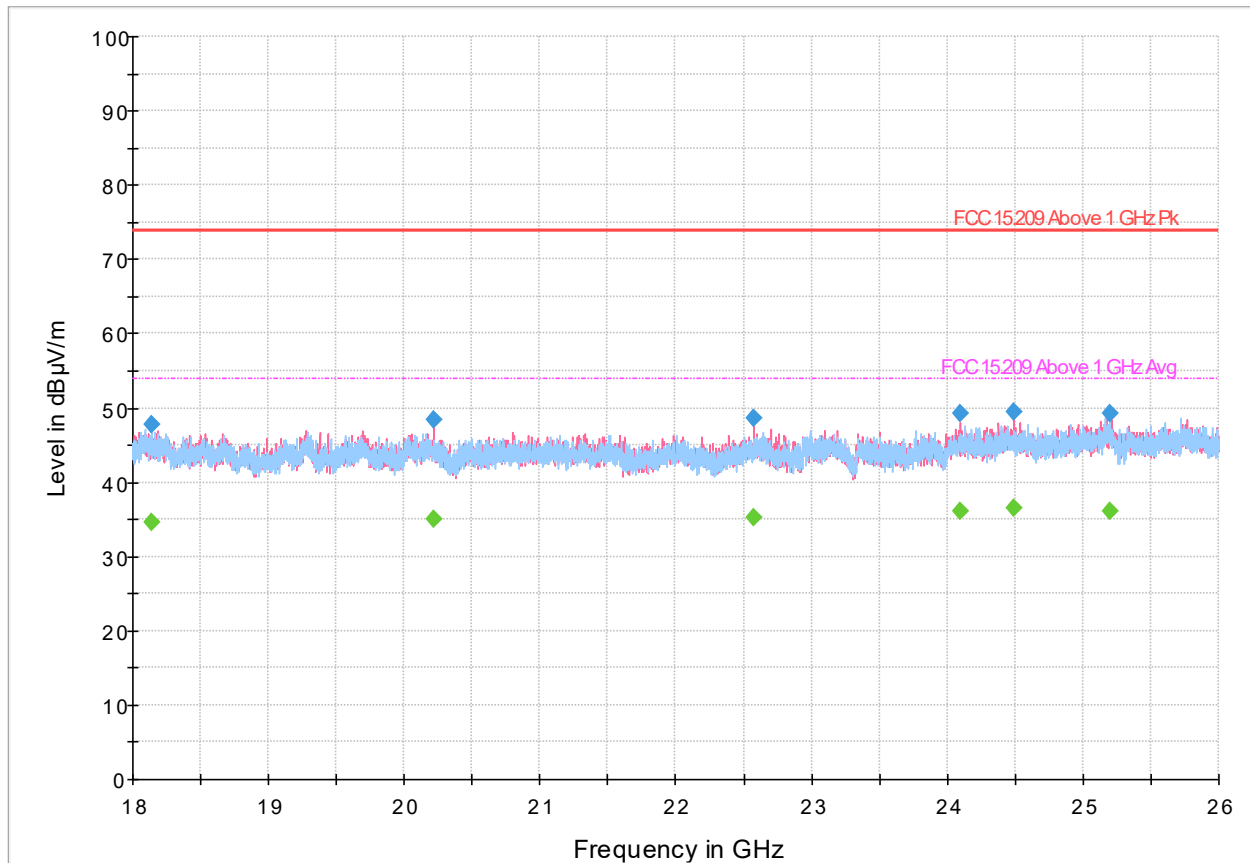


Figure 8.2-35: Radiated emissions spectral plot (18 GHz - 26 GHz), 802.11n, MCS0, 2462 MHz

Table 8.2-12: Radiated emissions results

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)
18139.012195	---	34.64	53.90	19.26	5000.0	1000.000	225.0	H	173.0	10.6
18139.012195	47.73	---	73.90	26.17	5000.0	1000.000	225.0	H	173.0	10.6
20218.963415	48.51	---	73.90	25.39	5000.0	1000.000	106.0	V	-20.0	9.8
20218.963415	---	35.01	53.90	18.89	5000.0	1000.000	106.0	V	-20.0	9.8
22575.109756	48.71	---	73.90	25.19	5000.0	1000.000	133.0	V	114.0	9.9
22575.109756	---	35.32	53.90	18.58	5000.0	1000.000	133.0	V	114.0	9.9
24099.587805	49.18	---	73.90	24.72	5000.0	1000.000	175.0	V	180.0	9.8
24099.587805	---	36.07	53.90	17.83	5000.0	1000.000	175.0	V	180.0	9.8
24487.704878	49.55	---	73.90	24.35	5000.0	1000.000	106.0	V	150.0	9.9
24487.704878	---	36.42	53.90	17.48	5000.0	1000.000	106.0	V	150.0	9.9
25199.548780	---	36.00	53.90	17.90	5000.0	1000.000	119.0	H	0.0	10.2
25199.548780	49.34	---	73.90	24.56	5000.0	1000.000	119.0	H	0.0	10.2

Notes: ¹ Field strength (dB V/m) = receiver/spectrum analyzer value (dB V) + correction factor (dB)
² Correction factors = antenna factor ACF (dB) + cable loss (dB)
³ Emissions that were continuously present for a minimum of 1 second and occurred more than once for every 15 seconds observation period were considered valid emissions. The maximum value of valid emissions has been recorded.

End of test report