

8 Undesirable Emissions (Transmitter)

8.1 FCC Unwanted Emission Limits:

§ 15.407(b): 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) 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.

(6) 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.

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

(8) 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.

Part 15.205(a): Restricted Bands of Operations

MHz	MHz	MHz	GHz
0.090–0.110	16.42–16.423	399.9–410	4.5–5.15
¹ 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	2655–2900	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	(²)
13.36–13.41.			

¹ Until February 1, 1999, this restricted band shall be 0.490–0.510 MHz.

² Above 38.6

Part 15.209(a): Field Strength Limits for Restricted Bands of Operation

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 - 0.490	2,400 / F (kHz)	300
0.490 - 1.705	24,000 / F (kHz)	30
1.705 - 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 – 960	200	3
Above 960	500	3

8.2 ISED Unwanted Emission Limits:

Unwanted emission limits (5150 – 5250MHz Band)

For transmitters with operating frequencies in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. Any unwanted emissions that fall into the band 5250-5350 MHz shall be attenuated below the channel power by at least 26 dB, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth (i.e. 99% bandwidth), above 5250 MHz. The 26 dB bandwidth may fall into the 5250-5350 MHz band; however, if the occupied bandwidth also falls within the 5250-5350 MHz band, the transmission is considered as intentional and the devices shall comply with all requirements in the band 5250-5350 MHz including implementing dynamic frequency selection (DFS) and TPC, on the portion of the emission that resides in the 5250-5350 MHz band.

Unwanted emission limits (5250 – 5350MHz Band)

Devices shall comply with the following:

a) All emissions outside the band 5250-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p.; or

b) All emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p. and its power shall comply with the spectral power density for operation within the band 5150-5250 MHz. The device, except devices installed in vehicles, shall be labelled or include in the user manual the following text “for indoor use only.”

Unwanted emission limits (5470 – 5725MHz Band)

Emissions outside the band 5470-5725 MHz shall not exceed -27 dBm/MHz e.i.r.p. However, devices with bandwidth overlapping the band edge of 5725 MHz can meet the emission limit of -27 dBm/MHz e.i.r.p. at 5850 MHz instead of 5725 MHz.

Unwanted emission limits (5725 – 5850MHz Band)

Devices operating in the band 5725-5850 MHz with antenna gain greater than 10 dBi can have unwanted emissions that comply with either the limits in this section or in section 5.5 until six (6) months after the publication date of this standard for certification. Certified devices that do not comply with emission limits in this section shall not be manufactured, imported, distributed, leased, offered for sale or sold after April 1, 2018.

Devices operating in the band 5725-5850 MHz with antenna gain of 10 dBi or less can have unwanted emissions that comply with either the limits in this section or in section 5.5 until April 1, 2018 for certification. Certified devices that do not comply with emission limits in this section shall not be manufactured, imported, distributed, leased, offered for sale or sold after April 1, 2020.

Devices operating in the band 5725-5850 MHz shall have e.i.r.p. of unwanted emissions comply with the following:

a) 27 dBm/MHz at frequencies from the band edges decreasing linearly to 15.6 dBm/MHz at 5 MHz above or below the band edges;

b) 15.6 dBm/MHz at 5 MHz above or below the band edges decreasing linearly to 10 dBm/MHz at 25 MHz above or below the band edges;

c) 10 dBm/MHz at 25 MHz above or below the band edges decreasing linearly to -27 dBm/MHz at 75 MHz above or below the band edges; and

d) -27 dBm/MHz at frequencies more than 75 MHz above or below the band edges.

8.3 Test Procedure:

ANSI C63.10: 2013

8.4 Example of Field Strength Calculation Method:

The measured field strength was calculated by summing the readings taken from the spectrum analyzer with the appropriate correction factors associated with the antenna losses and cable losses. The calculation formula and sample calculations are listed below:

Formula:

$$FS = RA + AF + CF$$

FS = Field Strength in dB μ V/m

RA = Receiver Amplitude in dB μ V

AF = Antenna Factor in dB

CF = Cable Attenuation Factor in dB (Including preamplifier and filter attenuation)

Example Calculation:

$$RA = 19.48 \text{ dB}\mu\text{V}$$

$$AF = 18.52 \text{ dB}$$

$$CF = 0.78 \text{ dB}$$

$$FS = 19.48 + 18.52 + 0.78 = 38.78 \text{ dB}\mu\text{V/m}$$

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm} [(38.78 \text{ dB}\mu\text{V/m})/20] = 86.89 \mu\text{V/m}$$

Conversion of Field Strength to EIRP at 3m is done by applying equation 39 from ANSIC63.10-2013.

$$\text{EIRP[dBm]} = E[\text{dB}\mu\text{V/m}] - 95.2$$

Or by re-arranging this equation, the limit in dB μ V/m at 3m can be computed from the -27dBm/MHz EIRP limit as follows

$$\text{Limit}[\text{dB}\mu\text{V/m}] = -27\text{dBm/MHz} + 95.2 = 68.2\text{dB}\mu\text{V/m}$$

8.5 Test Equipment Used:

Description	Serial Number	Manufacturer	Model	Cal. Date	Cal. Due
EMI Test Receiver	1302.6005.40	Rohde & Schwarz	ESU40	10/12/2017	10/12/2018
Preamplifier	122005	Rohde & Schwarz	TS-PR18	11/17/2016	11/17/2017
Biconnilog Antenna	00051864	ETS	3142C	4/6/2017	4/6/2018
Horn Antenna	154521	ETS	3117	11/14/2016	11/14/2017
System Controller	121701-1	Sunol Sciences	SC99V	Verify at Time of Use	Verify at Time of Use
Horn Antenna (18 - 40GHz)	117798	ETS	3116c	6/5/2017	6/5/2018
40GHz Preamplifier	3921	Rohde & Schwarz	TS-PR40	11/17/2016	11/17/2017
Highpass Filter	SN6	Wainwright	WHKX12-5400-6000-18000-40ss	Verify at Time of Use	Verify at Time of Use
3m Cable Antenna→Preamp	3074			11/17/2016	11/17/2017
3m Cable Preamp→Chamber	2588			11/17/2016	11/17/2017
3m Cable Chamber→Control Room	2593			11/17/2016	11/17/2017
3m Cable Control Room→Receiver	2592			11/17/2016	11/17/2017
10m Cable Antenna→Preamp	3339			11/17/2016	11/17/2017
10m Cable Preamp→Chamber	3172			11/17/2016	11/17/2017
10m Cable Chamber→Control Room	2590			11/17/2016	11/17/2017
10m Cable Control Room→Receiver	2589			11/17/2016	11/17/2017

8.6 Test Conditions:

Test Personnel: Bryan Taylor
Supervising/Reviewing
Engineer:
(Where Applicable) NA
Input Voltage: 5VDC via USB

Test Date: 10/9/2017 – 11/14/2017

Ambient Temperature: 22.4C
Relative Humidity: 44.9%
Atmospheric Pressure: 995.6mbar

8.7 Test Results:

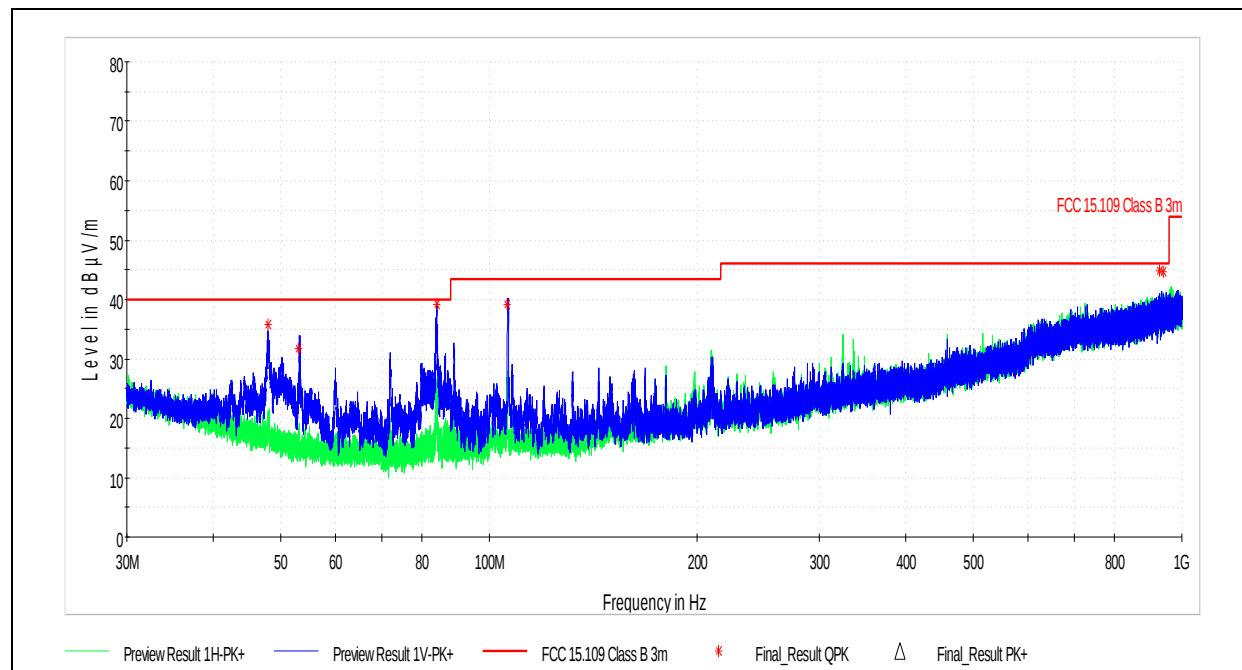
The device was found to be **compliant**. All spurious emissions were below the -27dBm/MHz limit from FCC 15.407 and RSS-247 (68.2dBuV/m at 3m). Additionally, all emissions falling within restricted bands of operation and at the band edges were found to be below the limit specified in Part 15.209(a). The spurious emissions listed in the following tables are the worst case emissions. Emissions were investigated with the test sample positioned in 3 orthogonal axis and the worst case reported.

30MHz – 1GHz Radiated Emission Results

(Representative for all TX Modes)

EUT Information

EUT Name: LEX-M07-001
 Manufacturer: Lexmark
 Test Engineer: Carmen Davis
 Date: 10/25/2017
 Temp/Humidity/Pressure: 22.1C/42.1%/983.4mbar
 Comment: 802.11a, U-NII-2C, Ch 116



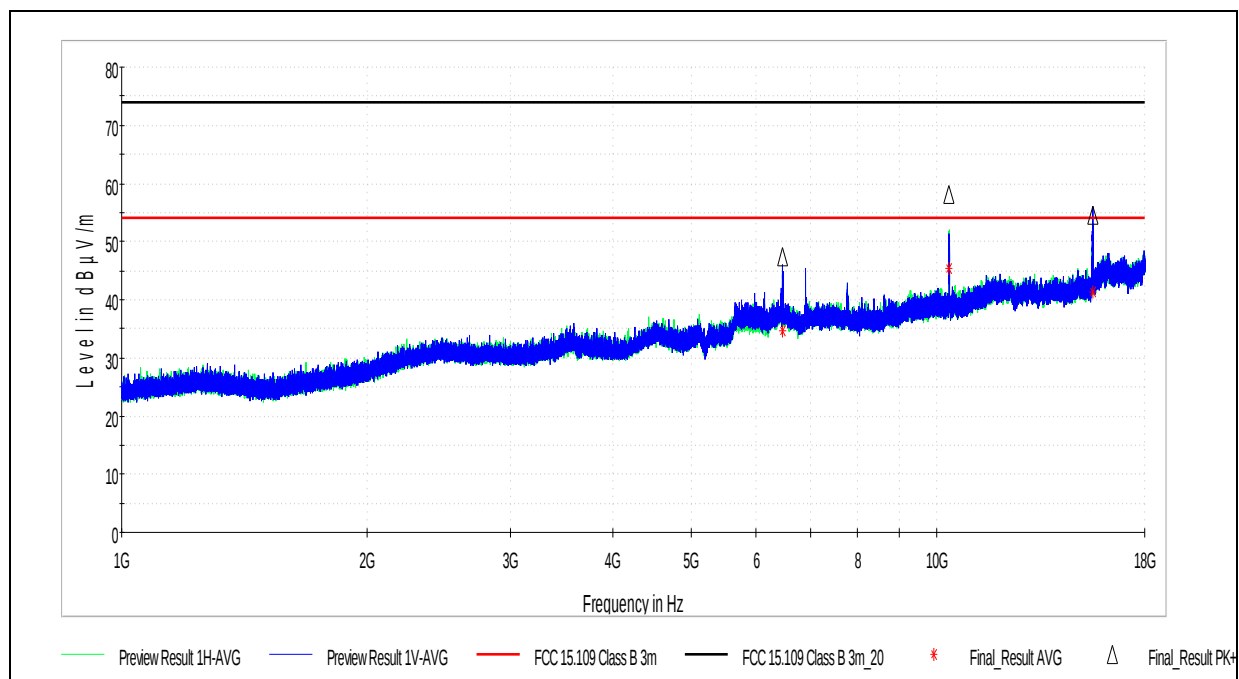
Final_Result

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
48.004000	35.66	40.00	4.34	120.000	100.1	V	322.0	17.1
53.136000	31.79	40.00	8.21	120.000	105.1	V	313.0	15.8
83.984000	39.22	40.00	0.78	120.000	105.0	V	0.0	16.2
106.180000	39.25	43.52	4.27	120.000	105.5	V	0.0	16.8
928.040000	44.75	46.02	1.27	120.000	291.1	H	0.0	36.1
939.520000	44.71	46.02	1.31	120.000	105.0	V	19.0	36.0

U-NII-1 Radiated Emission Results

EUT Information

EUT Name: Lexmark WiFi Module
 Manufacturer: Lexmark
 Test Engineer: Bryan Taylor
 Date: 10/9/2017
 Temp/Humidity/Pressure: 22.4C/44.9%/995.6mbar
 Comment: 802.11a, U-NII-1, Ch36, 5180MHz



Final_Result_PK+

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
6473.088500	47.42	74.00	26.58	1000.000	200.0	V	25.0	10.5
10361.641000	58.08	74.00	15.92	1000.000	135.0	V	-10.0	14.5
15540.597500	54.53	74.00	19.47	1000.000	133.0	V	50.0	18.3

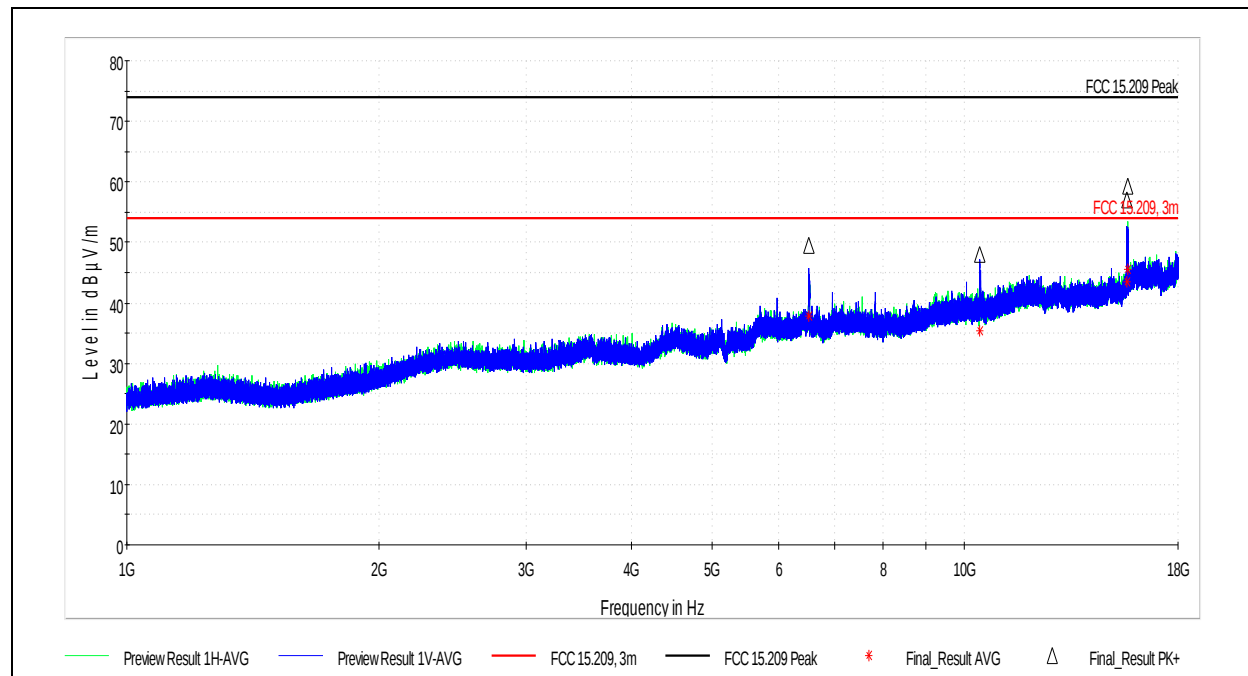
Final_Result_AVG

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
6473.088500	34.71	54.00	19.29	1000.000	200.0	V	25.0	10.5
10361.641000	45.35	54.00	8.65	1000.000	135.0	V	-10.0	14.5
15540.597500	41.44	54.00	12.56	1000.000	133.0	V	50.0	18.3

U-NII-1 Radiated Emission Results

EUT Information

EUT Name: Lexmark WiFi Module
 Manufacturer: Lexmark
 Test Engineer: Bryan Taylor
 Date: 10/9/2017
 Temp/Humidity/Pressure: 22.4C/44.9%/995.6mbar
 Comment: 802.11a, U-NII-1, Ch44, 5220MHz



Final_Result_PK+

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
6523.623500	49.60	74.00	24.40	1000.000	162.0	V	0.0	10.5
10442.499000	48.02	74.00	25.98	1000.000	134.0	H	22.0	14.7
15647.718000	57.10	74.00	16.90	1000.000	166.0	H	50.0	18.9
15667.348500	59.32	74.00	14.68	1000.000	160.0	H	50.0	19.0

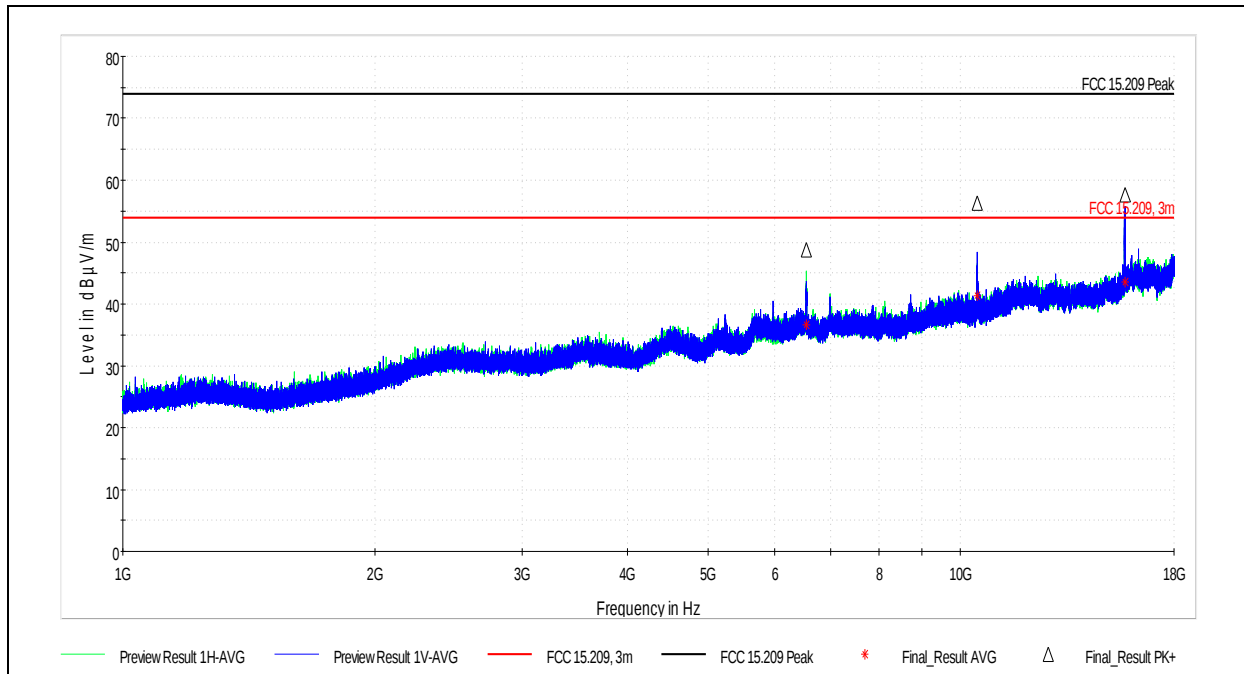
Final_Result_AVG

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
6523.623500	37.82	54.00	16.18	1000.000	162.0	V	0.0	10.5
10442.499000	35.31	54.00	18.69	1000.000	134.0	H	22.0	14.7
15647.718000	43.40	54.00	10.60	1000.000	166.0	H	50.0	18.9
15667.348500	45.57	54.00	8.43	1000.000	160.0	H	50.0	19.0

U-NII-1 Radiated Emission Results

EUT Information

EUT Name: Lexmark WiFi Module
 Manufacturer: Lexmark
 Test Engineer: Bryan Taylor
 Date: 10/9/2017
 Temp/Humidity/Pressure: 22.4C/44.9%/995.6mbar
 Comment: 802.11a, U-NII-1, Ch48, 5240MHz



Final_Result_PK+

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
6553.743500	48.73	74.00	25.27	1000.000	134.0	V	22.0	10.5
10481.472500	56.36	74.00	17.64	1000.000	130.0	V	-10.0	14.7
15725.359500	57.73	74.00	16.27	1000.000	200.0	V	-10.0	19.2

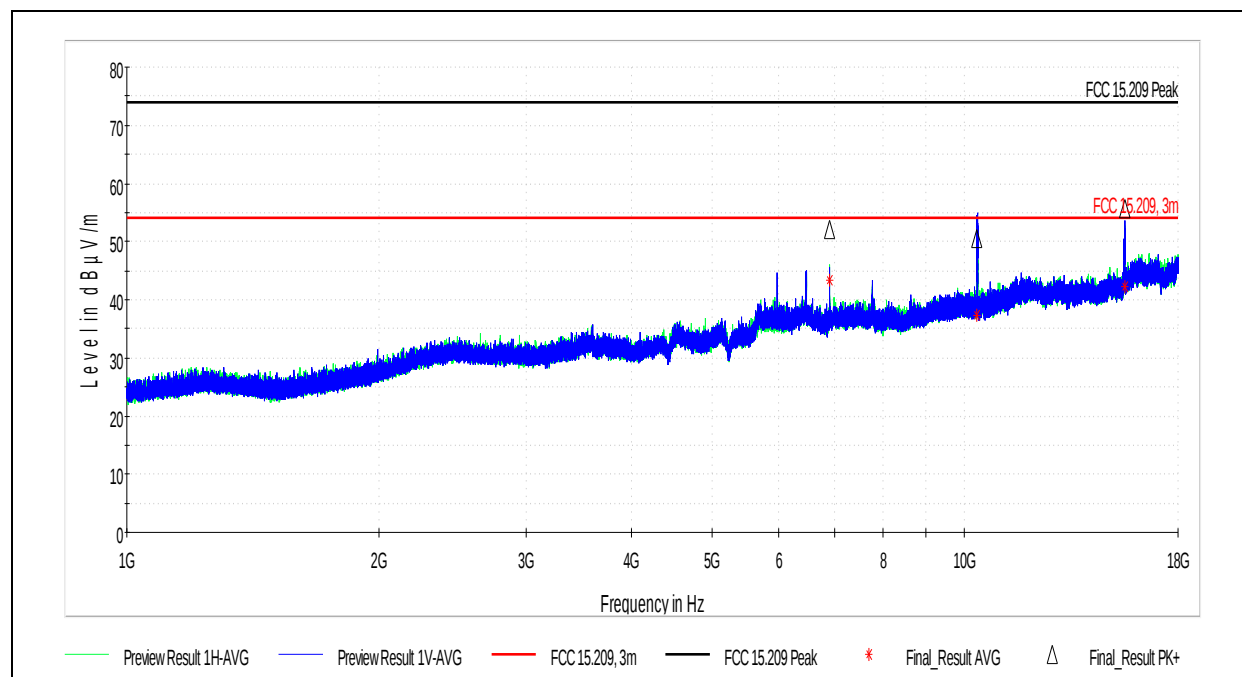
Final_Result_AVG

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
6553.743500	36.69	54.00	17.31	1000.000	134.0	V	22.0	10.5
10481.472500	41.41	54.00	12.59	1000.000	130.0	V	-10.0	14.7
15725.359500	43.58	54.00	10.42	1000.000	200.0	V	-10.0	19.2

U-NII-1 Radiated Emission Results

EUT Information

EUT Name: Lexmark WiFi Module
 Manufacturer: Lexmark
 Test Engineer: Bryan Taylor
 Date: 10/10/2017
 Temp/Humidity/Pressure: 22.4C/44.5%/988.8mbar
 Comment: 802.11n(HT20), U-NII-1, Ch36, 5180MHz



Final_Result_PK+

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
6906.648000	52.17	74.00	21.83	1000.000	127.0	V	0.0	10.0
10359.385500	50.52	74.00	23.48	1000.000	134.0	V	38.0	14.5
15543.182500	55.68	74.00	18.32	1000.000	175.0	V	40.0	18.3

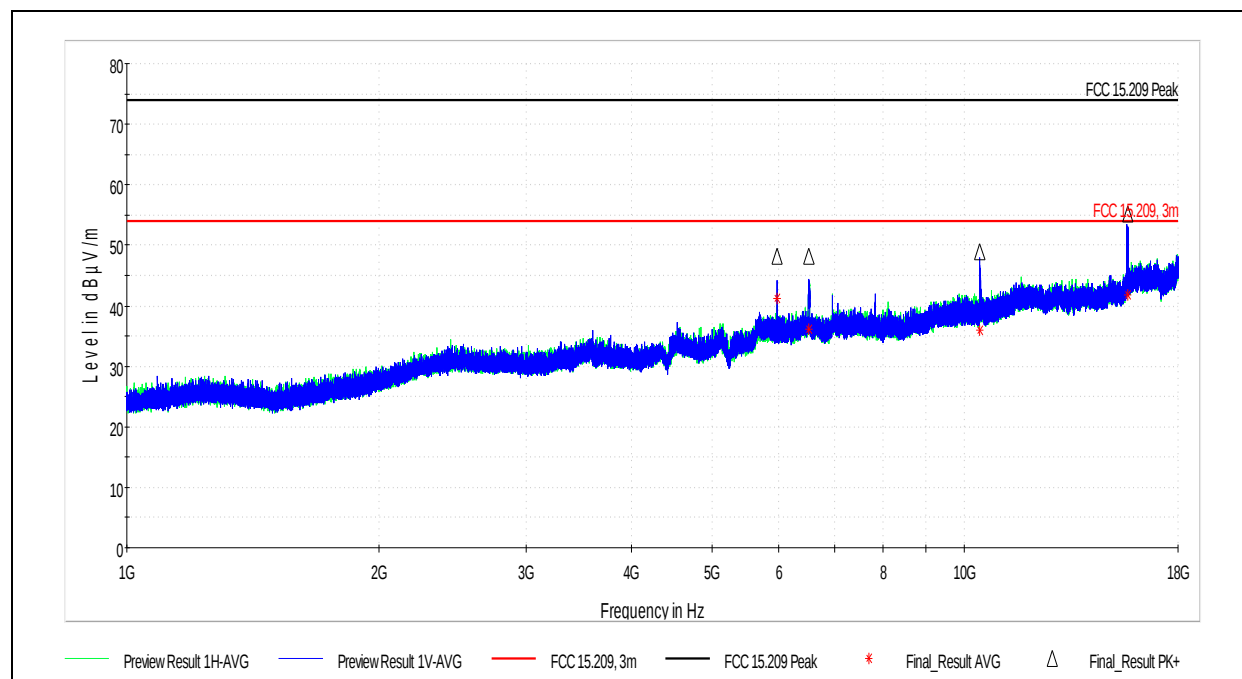
Final_Result_AVG

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
6906.648000	43.27	54.00	10.73	1000.000	127.0	V	0.0	10.0
10359.385500	37.27	54.00	16.73	1000.000	134.0	V	38.0	14.5
15543.182500	42.29	54.00	11.71	1000.000	175.0	V	40.0	18.3

U-NII-1 Radiated Emission Results

EUT Information

EUT Name: Lexmark WiFi Module
 Manufacturer: Lexmark
 Test Engineer: Bryan Taylor
 Date: 10/10/2017
 Temp/Humidity/Pressure: 22.4C/44.5%/988.8mbar
 Comment: 802.11n(HT20), U-NII-1, Ch44, 5220MHz



Final_Result_PK+

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
5974.092500	48.21	74.00	25.79	1000.000	126.0	V	0.0	9.4
6523.486500	48.26	74.00	25.74	1000.000	168.0	V	0.0	10.5
10434.945000	48.96	74.00	25.04	1000.000	132.0	V	33.0	14.7
15664.373000	55.06	74.00	18.94	1000.000	177.0	H	34.0	19.0

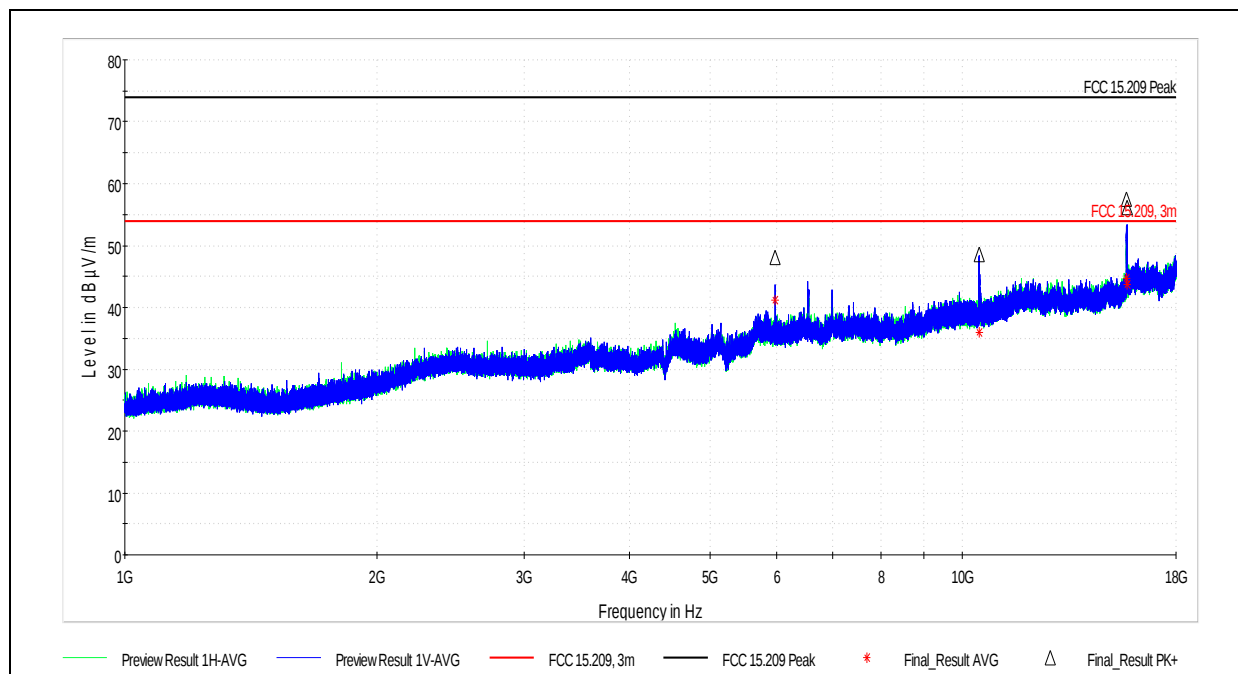
Final_Result_AVG

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
5974.092500	41.28	54.00	12.72	1000.000	126.0	V	0.0	9.4
6523.486500	36.07	54.00	17.93	1000.000	168.0	V	0.0	10.5
10434.945000	36.03	54.00	17.97	1000.000	132.0	V	33.0	14.7
15664.373000	41.79	54.00	12.21	1000.000	177.0	H	34.0	19.0

U-NII-1 Radiated Emission Results

EUT Information

EUT Name: Lexmark WiFi Module
 Manufacturer: Lexmark
 Test Engineer: Bryan Taylor
 Date: 10/10/2017
 Temp/Humidity/Pressure: 22.4C/44.5%/988.8mbar
 Comment: 802.11n(HT20), U-NII-1, Ch48, 5240MHz



Final_Result_PK+

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
5974.157500	48.06	74.00	25.94	1000.000	136.0	V	0.0	9.4
10486.206500	48.51	74.00	25.49	1000.000	159.0	V	0.0	14.7
15717.410000	57.49	74.00	16.51	1000.000	133.0	H	31.0	19.2
15728.959000	56.21	74.00	17.79	1000.000	166.0	H	32.0	19.2

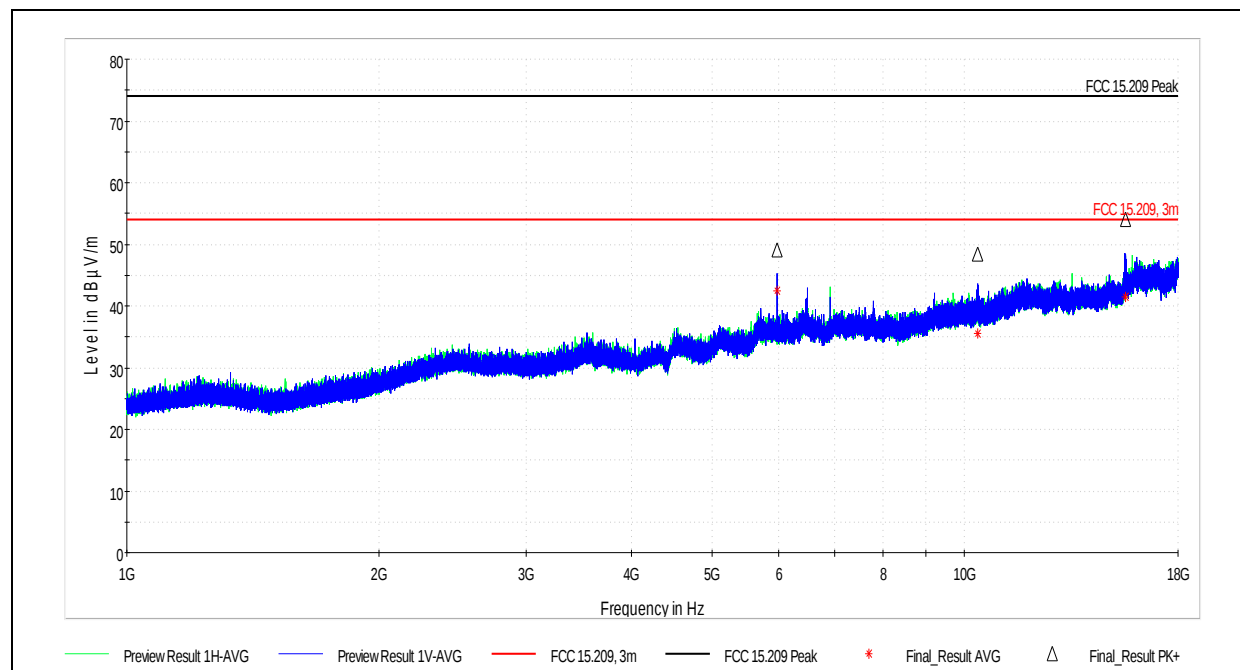
Final_Result_AVG

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
5974.157500	41.26	54.00	12.74	1000.000	136.0	V	0.0	9.4
10486.206500	35.89	54.00	18.11	1000.000	159.0	V	0.0	14.7
15717.410000	44.70	54.00	9.30	1000.000	133.0	H	31.0	19.2
15728.959000	43.64	54.00	10.36	1000.000	166.0	H	32.0	19.2

U-NII-1 Radiated Emission Results

EUT Information

EUT Name: Lexmark WiFi Module
Manufacturer: Lexmark
Test Engineer: Bryan Taylor
Date: 10/10/2017
Temp/Humidity/Pressure: 22.4C/44.5%/988.8mbar
Comment: 802.11n(HT40), U-NII-1, Ch38, 5190MHz



Final Result PK+

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
5973.922500	49.07	74.00	24.93	1000.000	135.0	V	0.0	9.4
10377.725000	48.36	74.00	25.64	1000.000	173.0	H	50.0	14.5
15578.567500	54.11	74.00	19.89	1000.000	175.0	H	37.0	18.5

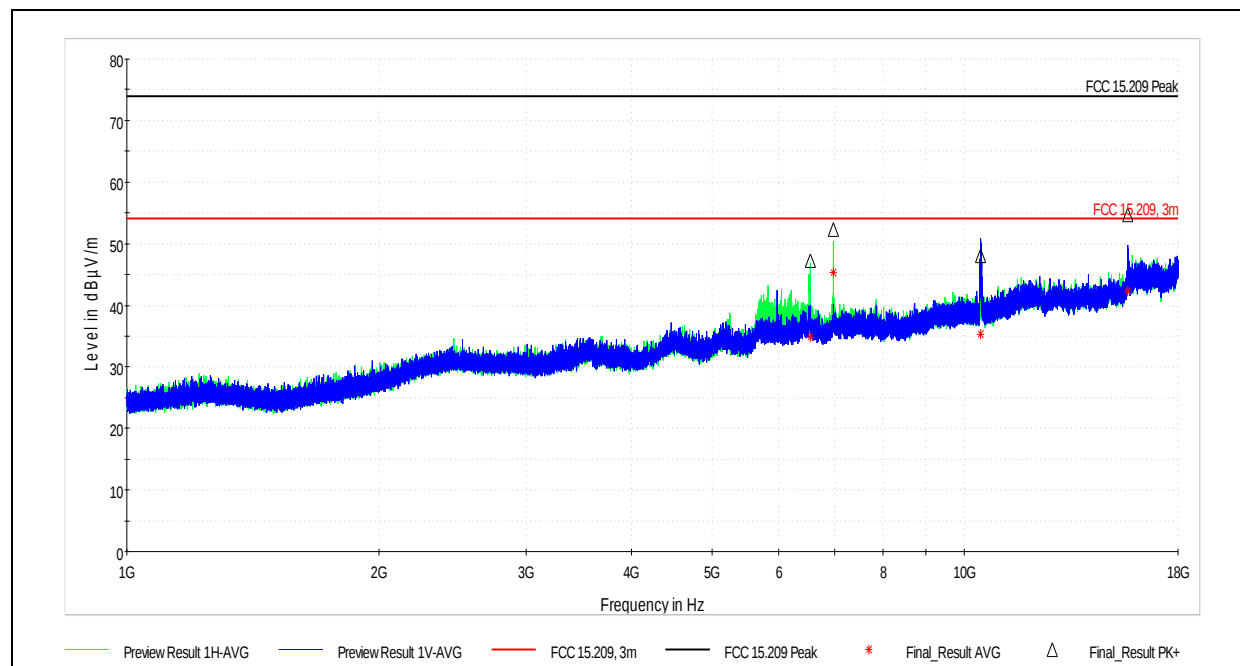
Final Result AVG

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
5973.922500	42.51	54.00	11.49	1000.000	135.0	V	0.0	9.4
10377.725000	35.57	54.00	18.43	1000.000	173.0	H	50.0	14.5
15578.567500	41.41	54.00	12.59	1000.000	175.0	H	37.0	18.5

U-NII-1 Radiated Emission Results

EUT Information

EUT Name: Lexmark WiFi Module
 Manufacturer: Lexmark
 Test Engineer: Bryan Taylor
 Date: 10/11/2017
 Temp/Humidity/Pressure: 22.6C/54.8%/982.0mbar
 Comment: 802.11n(HT40), U-NII-1, Ch46, 5230MHz



Final_Result_PK+

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
6550.424500	47.26	74.00	26.74	1000.000	127.0	H	28.0	10.5
6973.416500	52.26	74.00	21.74	1000.000	100.0	H	0.0	10.1
10467.743000	48.09	74.00	25.91	1000.000	134.0	V	38.0	14.7
15679.047500	54.69	74.00	19.31	1000.000	200.0	V	0.0	19.0

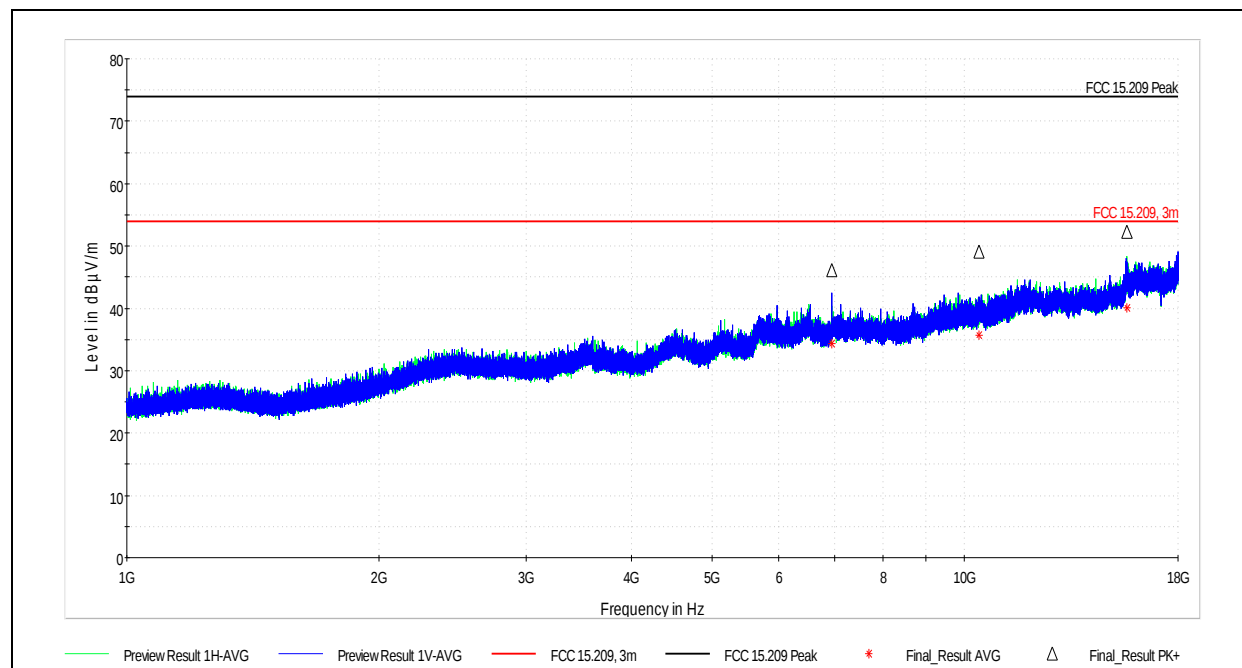
Final_Result_AVG

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
6550.424500	34.81	54.00	19.19	1000.000	127.0	H	28.0	10.5
6973.416500	45.32	54.00	8.68	1000.000	100.0	H	0.0	10.1
10467.743000	35.35	54.00	18.65	1000.000	134.0	V	38.0	14.7
15679.047500	42.28	54.00	11.72	1000.000	200.0	V	0.0	19.0

U-NII-1 Radiated Emission Results

EUT Information

EUT Name: Lexmark WiFi Module
 Manufacturer: Lexmark
 Test Engineer: Bryan Taylor
 Date: 10/11/2017
 Temp/Humidity/Pressure: 22.6C/54.8%/982.0mbar
 Comment: 802.11n(VHT40), U-NII-1, Ch42, 5210MHz



Final Result PK+

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
6946.773500	46.06	74.00	27.94	1000.000	145.0	H	21.0	10.1
10424.337500	49.05	74.00	24.95	1000.000	200.0	V	0.0	14.7
15643.958000	52.31	74.00	21.69	1000.000	200.0	H	50.0	18.9

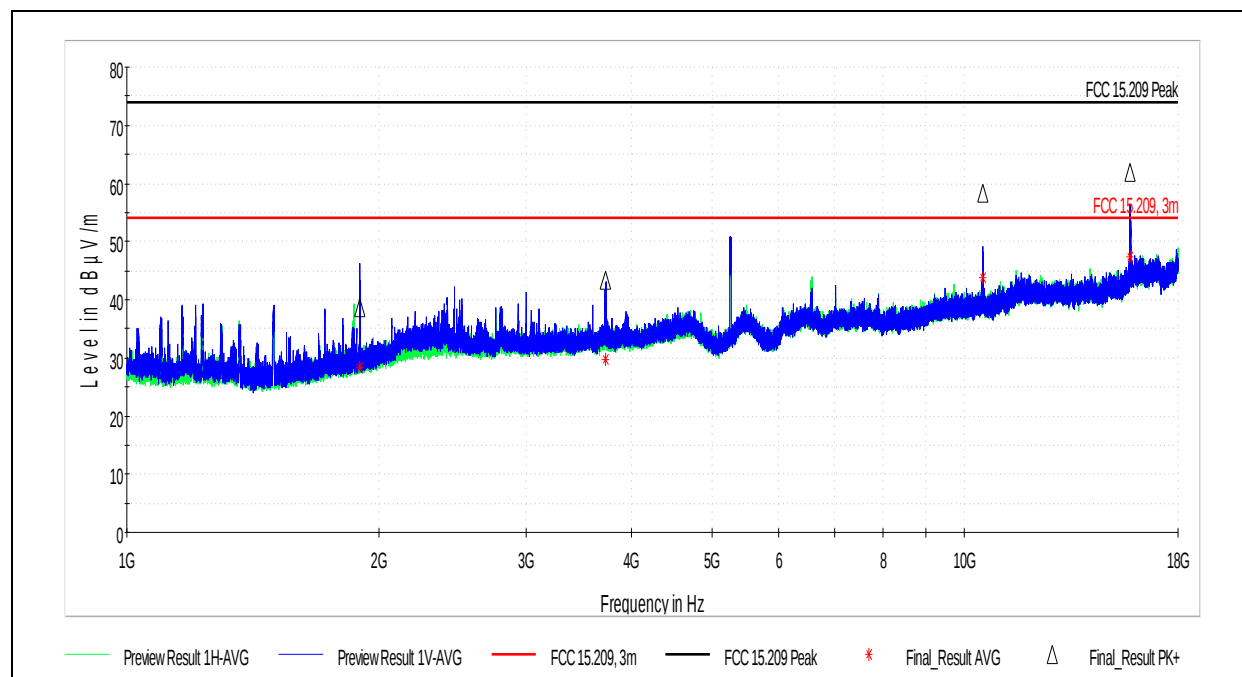
Final Result AVG

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
6946.773500	34.33	54.00	19.67	1000.000	145.0	H	21.0	10.1
10424.337500	35.73	54.00	18.27	1000.000	200.0	V	0.0	14.7
15643.958000	40.06	54.00	13.94	1000.000	200.0	H	50.0	18.9

U-NII-2A Radiated Emission Results

EUT Information

EUT Name: Lexmark WiFi Module
 Manufacturer: Lexmark
 Test Engineer: Bryan Taylor
 Date: 10/12/2017
 Temp/Humidity/Pressure: 22.4C/44.9%/995.6mbar
 Comment: 802.11a, U-NII-2, Ch52, 5260MHz



Final Result PK+

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1897.334000	38.70	74.00	35.30	1000.000	200.0	V	22.0	1.1
3729.739000	43.38	74.00	30.62	1000.000	179.0	V	50.0	5.8
10521.529500	58.25	74.00	15.75	1000.000	134.0	V	-10.0	14.8
15785.566000	61.81	74.00	12.19	1000.000	200.0	V	-10.0	19.4

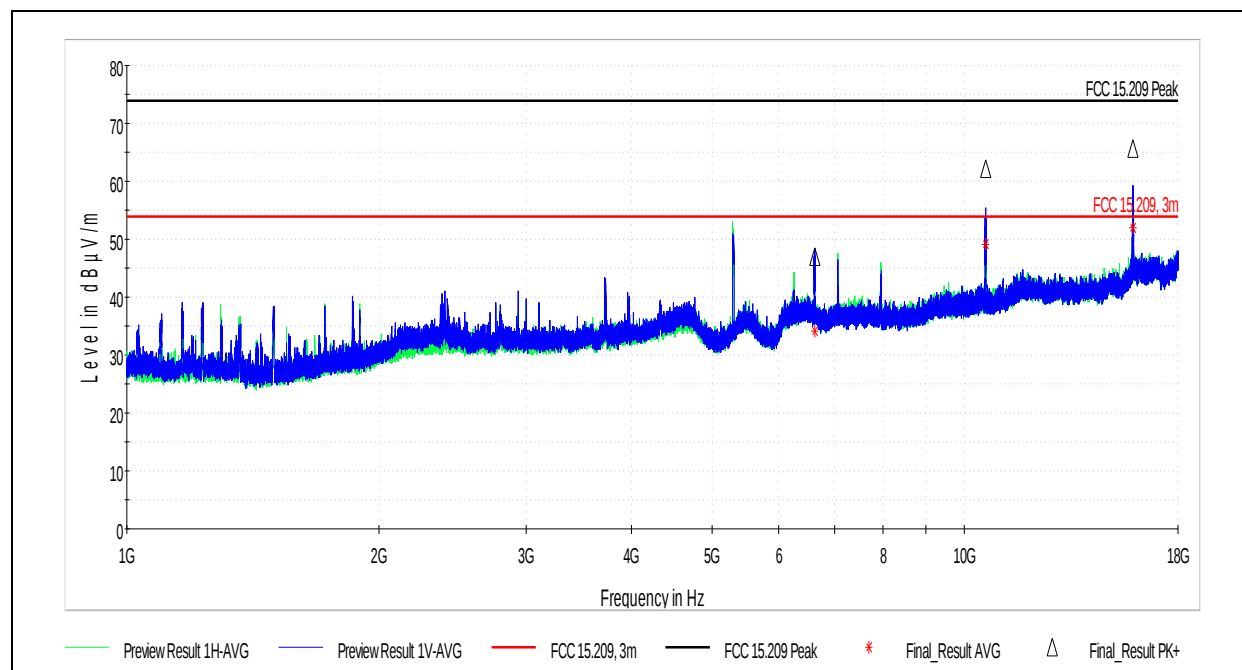
Final Result AVG

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1897.334000	28.34	54.00	25.66	1000.000	200.0	V	22.0	1.1
3729.739000	29.81	54.00	24.19	1000.000	179.0	V	50.0	5.8
10521.529500	43.80	54.00	10.20	1000.000	134.0	V	-10.0	14.8
15785.566000	47.32	54.00	6.68	1000.000	200.0	V	-10.0	19.4

U-NII-2A Radiated Emission Results

EUT Information

EUT Name: Lexmark WiFi Module
 Manufacturer: Lexmark
 Test Engineer: Bryan Taylor
 Date: 10/12/2017
 Temp/Humidity/Pressure: 22.4C/44.9%/995.6mbar
 Comment: 802.11a, U-NII-2, Ch60, 5300MHz



Final_Result_PK+

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
6632.407500	46.94	74.00	27.06	1000.000	200.0	V	50.0	10.5
10601.655000	62.07	74.00	11.93	1000.000	100.0	V	0.0	14.6
15907.447500	65.73	74.00	8.27	1000.000	200.0	V	0.0	20.2

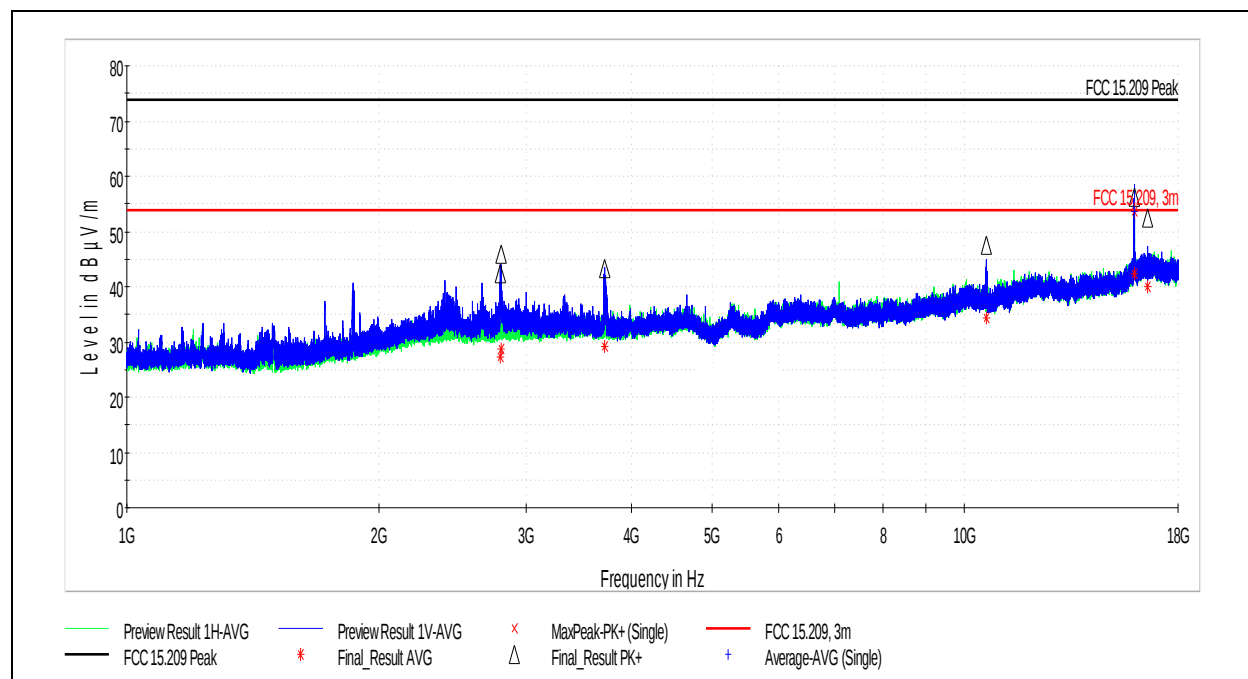
Final_Result_AVG

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
6632.407500	34.18	54.00	19.82	1000.000	200.0	V	50.0	10.5
10601.655000	49.22	54.00	4.78	1000.000	100.0	V	0.0	14.6
15907.447500	52.00	54.00	2.00	1000.000	200.0	V	0.0	20.2

U-NII-2A Radiated Emission Results

EUT Information

EUT Name: Lexmark WiFi Module
 Manufacturer: Lexmark
 Test Engineer: Bryan Taylor
 Date: 10/12/2017
 Temp/Humidity/Pressure: 22.4C/44.9%/995.6mbar
 Comment: 802.11a, U-NII-2, Ch64, 5320MHz



Final Result PK+

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2791.935000	42.36	74.00	31.64	1000.000	159.0	H	36.0	4.3
2799.698500	45.83	74.00	28.17	1000.000	200.0	H	0.0	4.4
3723.080500	43.18	74.00	30.82	1000.000	130.0	H	28.0	6.0
10634.253000	47.57	74.00	26.43	1000.000	167.0	H	39.0	14.6
15951.323500	56.14	74.00	17.86	1000.000	129.0	V	50.0	20.8
16554.411000	52.54	74.00	21.46	1000.000	100.0	H	50.0	21.2

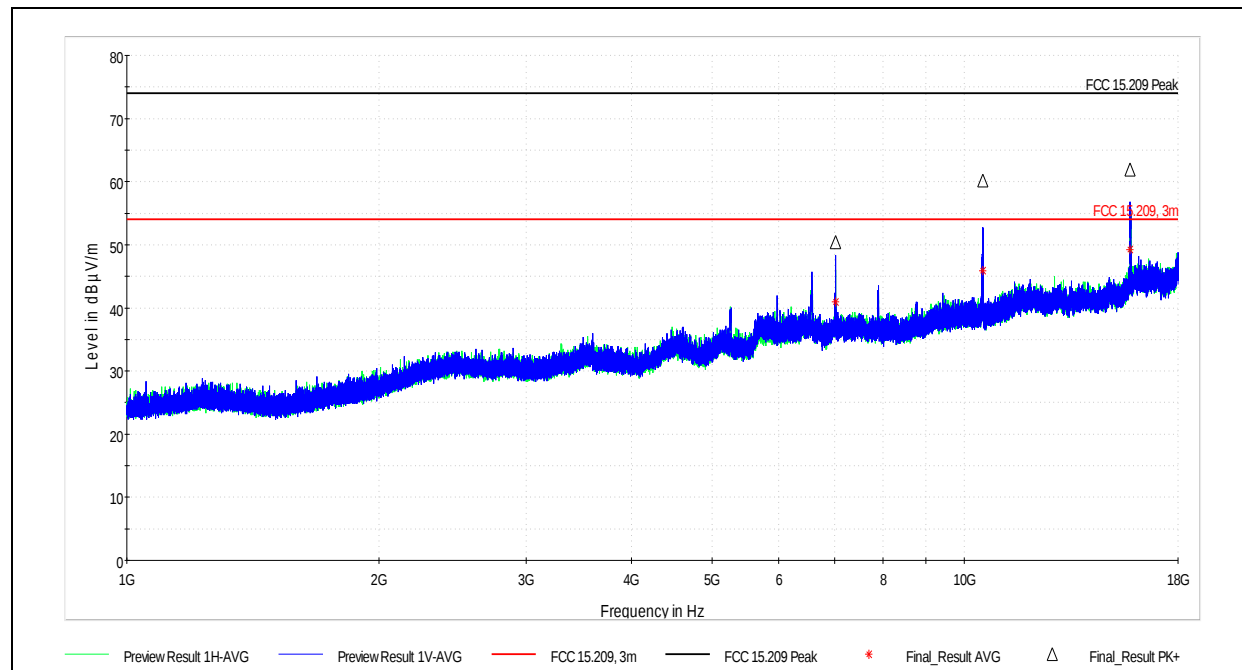
Final Result AVG

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2791.935000	27.35	54.00	26.65	1000.000	159.0	H	36.0	4.3
2799.698500	28.68	54.00	25.32	1000.000	200.0	H	0.0	4.4
3723.080500	29.23	54.00	24.77	1000.000	130.0	H	28.0	6.0
10634.253000	34.38	54.00	19.62	1000.000	167.0	H	39.0	14.6
15951.323500	53.60	54.00	0.40	1000.000	246.0	V	232.0	20.8
16554.411000	39.97	54.00	14.03	1000.000	100.0	H	50.0	21.2

U-NII-2A Radiated Emission Results

EUT Information

EUT Name: Lexmark WiFi Module
 Manufacturer: Lexmark
 Test Engineer: Bryan Taylor
 Date: 10/11/2017
 Temp/Humidity/Pressure: 22.6C/54.8%/982.0mbar
 Comment: 802.11n(HT20), U-NII-2, Ch52, 5260MHz



Final_Result_PK+

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
7013.256000	50.37	74.00	23.63	1000.000	147.0	H	0.0	10.1
10520.581500	60.16	74.00	13.84	1000.000	128.0	V	-10.0	14.8
15780.120000	61.86	74.00	12.14	1000.000	200.0	V	-10.0	19.4

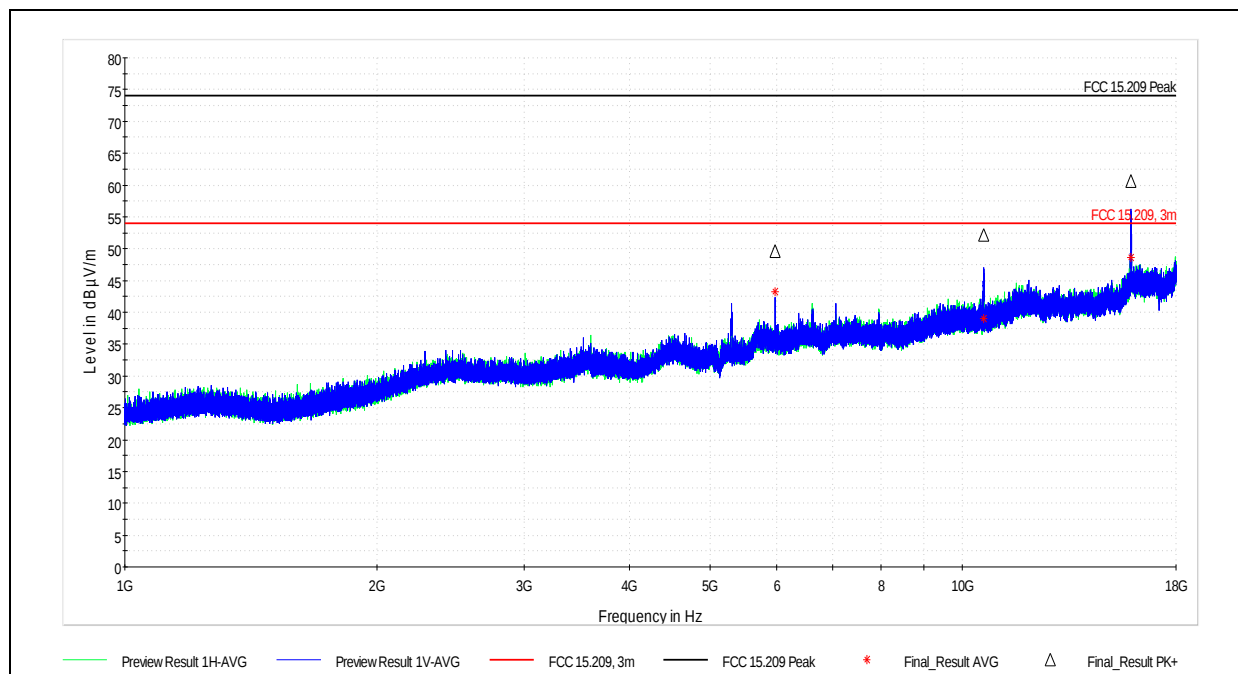
Final_Result_AVG

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
7013.256000	40.95	54.00	13.05	1000.000	147.0	H	0.0	10.1
10520.581500	45.92	54.00	8.08	1000.000	128.0	V	-10.0	14.8
15780.120000	49.28	54.00	4.72	1000.000	200.0	V	-10.0	19.4

U-NII-2A Radiated Emission Results

EUT Information

EUT Name: Lexmark WiFi Module
Manufacturer: Lexmark
Test Engineer: Bryan Taylor
Date: 10/11/2017
Temp/Humidity/Pressure: 22.6C/54.8%/982.0mbar
Comment: 802.11n(HT20), U-NII-2, Ch60, 5300MHz



Final Result PK+

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
5973.890500	49.57	74.00	24.43	1000.000	100.0	V	21.0	9.4
10599.875500	52.11	74.00	21.89	1000.000	153.0	V	-10.0	14.6
15898.760500	60.65	74.00	13.35	1000.000	200.0	V	-10.0	20.1

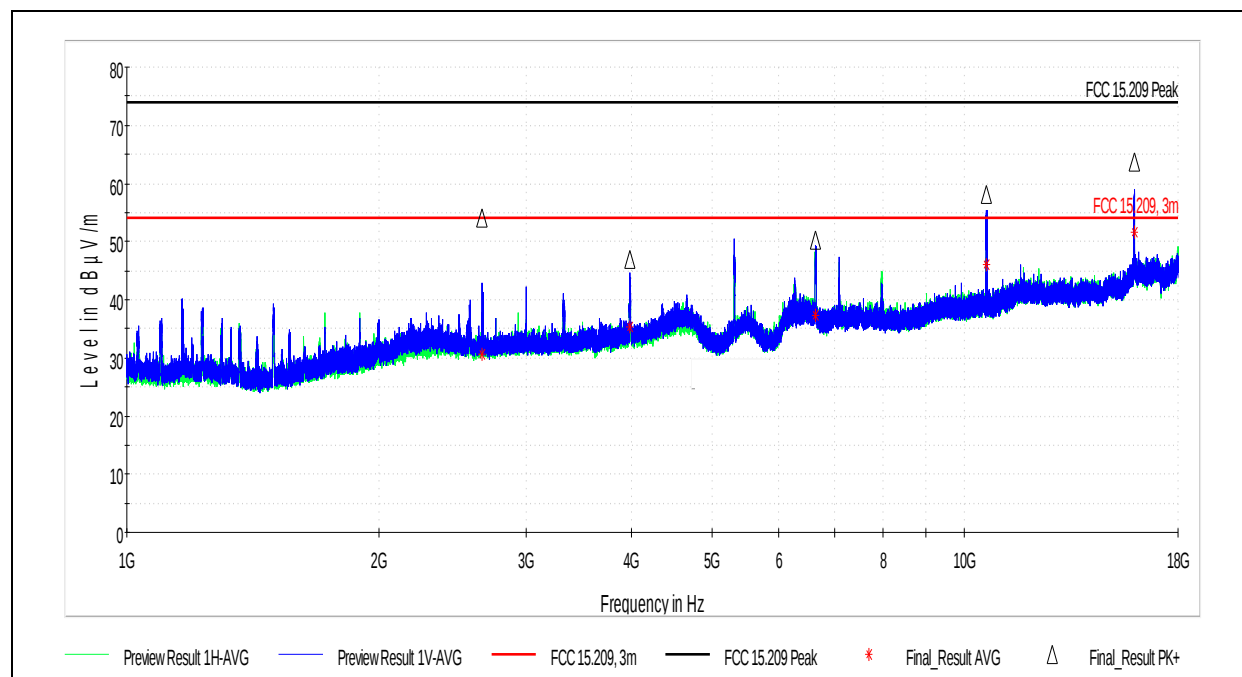
Final Result AVG

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
5973.890500	43.30	54.00	10.70	1000.000	100.0	V	21.0	9.4
10599.875500	39.06	54.00	14.94	1000.000	153.0	V	-10.0	14.6
15898.760500	48.65	54.00	5.35	1000.000	200.0	V	-10.0	20.1

U-NII-2A Radiated Emission Results

EUT Information

EUT Name: Lexmark WiFi Module
 Manufacturer: Lexmark
 Test Engineer: Bryan Taylor
 Date: 10/12/2017
 Temp/Humidity/Pressure: 22.4C/44.9%/995.6mbar
 Comment: 802.11n(HT20), U-NII-2, Ch64, 5320MHz



Final_Result_PK+

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2656.904000	54.17	74.00	19.83	1000.000	100.0	V	50.0	4.0
3989.246500	46.91	74.00	27.09	1000.000	146.0	V	16.0	6.1
6640.917000	50.18	74.00	23.82	1000.000	136.0	V	50.0	10.4
10630.121000	58.07	74.00	15.93	1000.000	135.0	V	0.0	14.6
15952.045500	63.76	74.00	10.24	1000.000	200.0	V	0.0	20.5

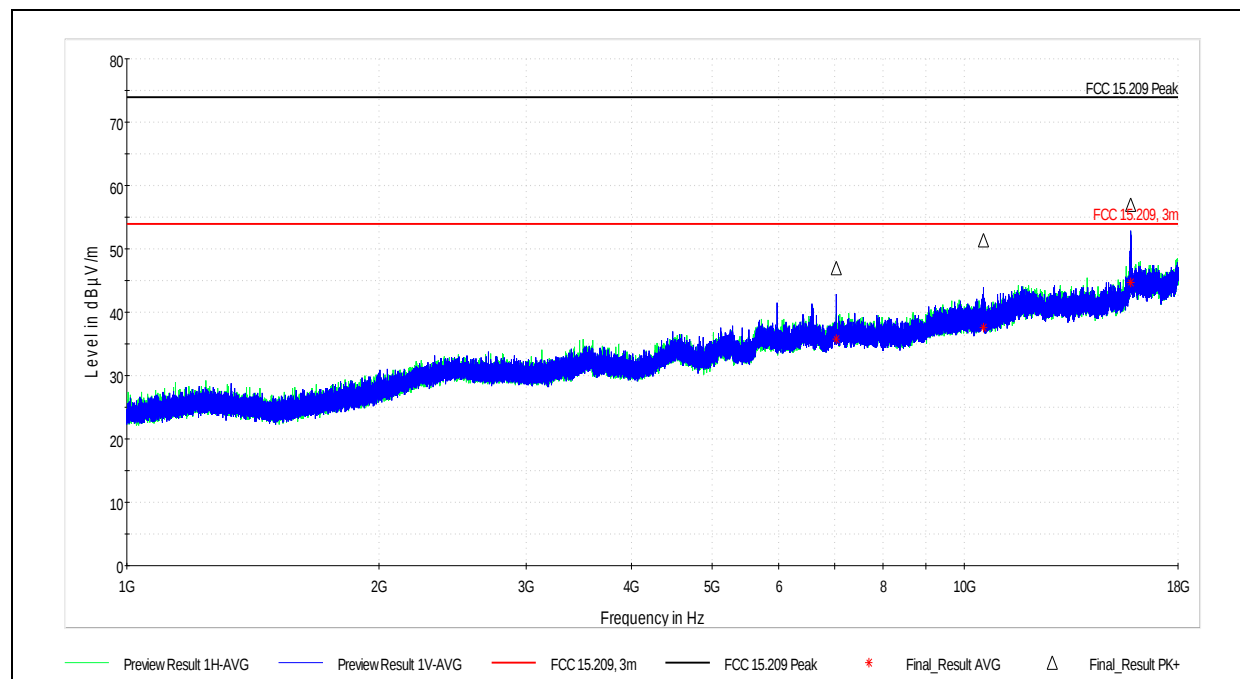
Final_Result_AVG

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2656.904000	30.63	54.00	23.37	1000.000	100.0	V	50.0	4.0
3989.246500	35.26	54.00	18.74	1000.000	146.0	V	16.0	6.1
6640.917000	37.31	54.00	16.69	1000.000	136.0	V	50.0	10.4
10630.121000	46.06	54.00	7.94	1000.000	135.0	V	0.0	14.6
15952.045500	51.55	54.00	2.45	1000.000	200.0	V	0.0	20.5

U-NII-2A Radiated Emission Results

EUT Information

EUT Name: Lexmark WiFi Module
 Manufacturer: Lexmark
 Test Engineer: Bryan Taylor
 Date: 10/11/2017
 Temp/Humidity/Pressure: 22.6C/54.8%/982.0mbar
 Comment: 802.11n(HT40), U-NII-2, Ch54, 5270MHz



Final_Result_PK+

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
7026.666000	46.90	74.00	27.10	1000.000	153.0	H	0.0	10.1
10540.040500	51.37	74.00	22.63	1000.000	128.0	V	-10.0	14.7
15805.305000	56.92	74.00	17.08	1000.000	200.0	V	-10.0	19.5

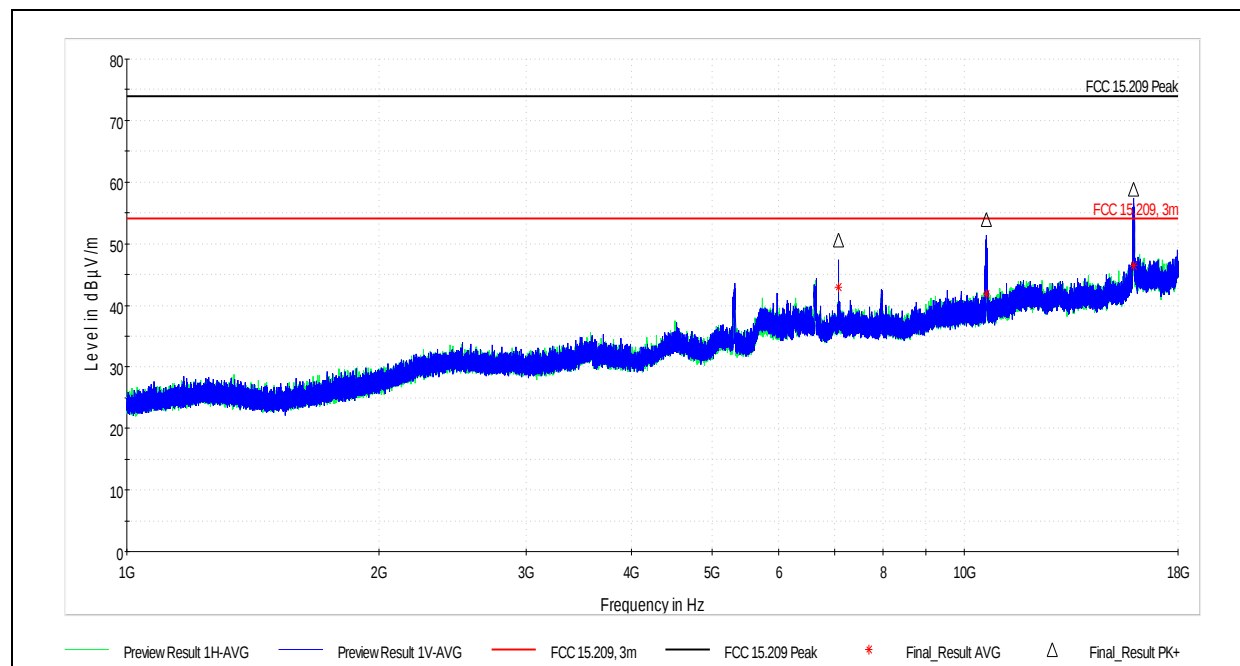
Final_Result_AVG

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
7026.666000	35.78	54.00	18.22	1000.000	153.0	H	0.0	10.1
10540.040500	37.52	54.00	16.48	1000.000	128.0	V	-10.0	14.7
15805.305000	44.71	54.00	9.29	1000.000	200.0	V	-10.0	19.5

U-NII-2A Radiated Emission Results

EUT Information

EUT Name: Lexmark WiFi Module
 Manufacturer: Lexmark
 Test Engineer: Bryan Taylor
 Date: 10/11/2017
 Temp/Humidity/Pressure: 22.6C/54.8%/982.0mbar
 Comment: 802.11n(HT40), U-NII-2, Ch62, 5310MHz



Final_Result_PK+

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
7080.102500	50.58	74.00	23.42	1000.000	135.0	H	0.0	10.2
10619.603000	53.95	74.00	20.05	1000.000	158.0	V	-10.0	14.6
15937.089000	58.90	74.00	15.10	1000.000	200.0	V	12.0	20.4

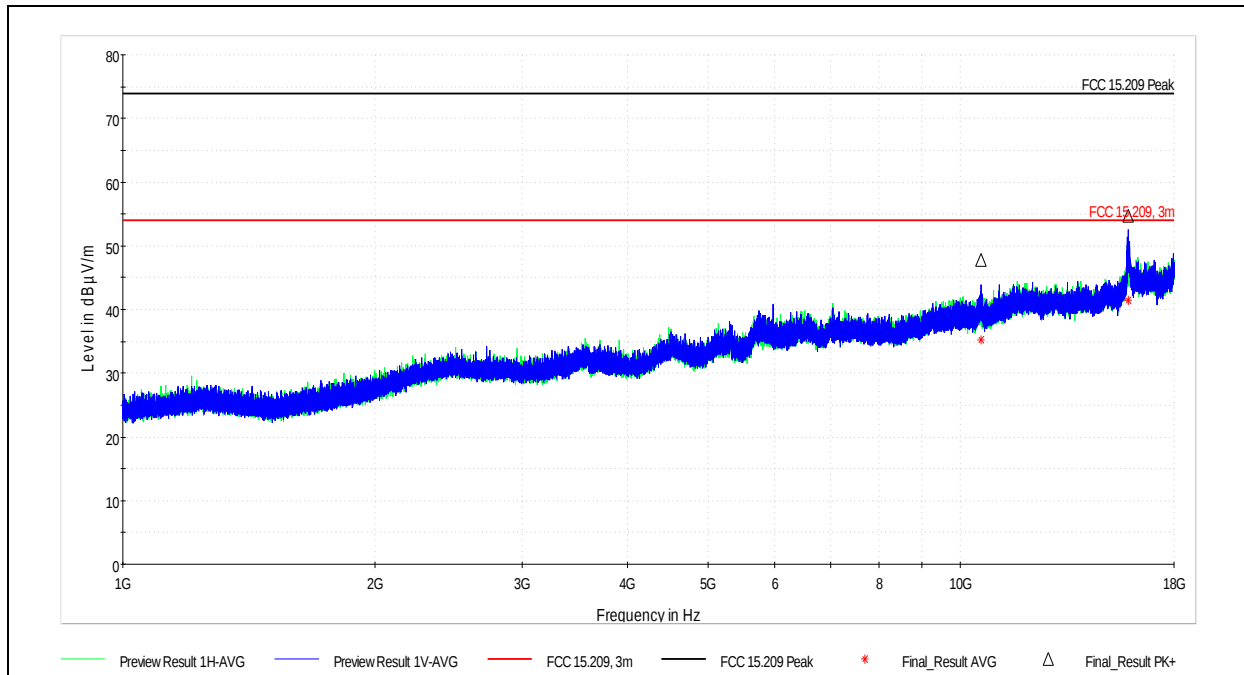
Final_Result_AVG

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
7080.102500	42.95	54.00	11.05	1000.000	135.0	H	0.0	10.2
10619.603000	41.76	54.00	12.24	1000.000	158.0	V	-10.0	14.6
15937.089000	46.41	54.00	7.59	1000.000	200.0	V	12.0	20.4

U-NII-2A Radiated Emission Results

EUT Information

EUT Name: Lexmark WiFi Module
 Manufacturer: Lexmark
 Test Engineer: Bryan Taylor
 Date: 10/11/2017
 Temp/Humidity/Pressure: 22.6C/54.8%/982.0mbar
 Comment: 802.11ac(VHT80), U-NII-2, Ch58, 5290MHz



Final Result PK+

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
10580.756000	47.75	74.00	26.25	1000.000	140.0	V	22.0	14.7
15877.425000	54.68	74.00	19.32	1000.000	188.0	V	11.0	19.9

Final Result AVG

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
10580.756000	35.29	54.00	18.71	1000.000	140.0	V	22.0	14.7
15877.425000	41.39	54.00	12.61	1000.000	188.0	V	11.0	19.9