



MET Laboratories, Inc. *Safety Certification - EMI - Telecom Environmental Simulation*

914 WEST PATAPSCO AVENUE • BALTIMORE, MARYLAND 21230-3432 • PHONE (410) 354-3300 • FAX (410) 354-3313
33439 WESTERN AVENUE • UNION CITY, CALIFORNIA 94587 • PHONE (510) 489-6300 • FAX (510) 489-6372
3162 BELICK STREET • SANTA CLARA, CALIFORNIA 95054 • PHONE (408) 748-3585 • FAX (510) 489-6372
13301 MCCALLEN PASS • AUSTIN, TX 78753 • PHONE (512) 287-2500 • FAX (512) 287-2513

January 27, 2015

Meru Networks, Inc.
894 Ross Dr.
Sunnyvale, CA 94089

Dear Rajendran Chary,

Enclosed is the EMC Wireless test report for compliance testing of the Meru Networks, Inc., Mission Peak (AP822iV2) as tested to the requirements of Title 47 of the CFR, Ch. 1 (10-1-06 ed.), Title 47 of the CFR, Part 15, Subpart B for Unintentional Radiators and Part 15.407 for Intentional Radiators.

Thank you for using the services of MET Laboratories, Inc. If you have any questions regarding these results or if MET can be of further service to you, please feel free to contact me.

Sincerely yours,
MET LABORATORIES, INC.

Jennifer Warnell
Documentation Department

Reference: (\\Meru Networks, Inc.\EMCS42577H-FCC407 Rev. 1 (UNII 2))

Certificates and reports shall not be reproduced except in full, without the written permission of MET Laboratories, Inc.



MET Laboratories, Inc. *Safety Certification - EMI - Telecom Environmental Simulation*

914 WEST PATAPSCO AVENUE • BALTIMORE, MARYLAND 21230-3432 • PHONE (410) 354-3300 • FAX (410) 354-3313

33439 WESTERN AVENUE • UNION CITY, CALIFORNIA 94587 • PHONE (510) 489-6300 • FAX (510) 489-6372

3162 BELICK STREET • SANTA CLARA, CALIFORNIA 95054 • PHONE (408) 748-3585 • FAX (510) 489-6372

13301 MCCALLEN PASS • AUSTIN, TX 78753 • PHONE (512) 287-2500 • FAX (512) 287-2513

Electromagnetic Compatibility Criteria Test Report

for the

**Meru Networks, Inc.
Model Mission Peak (AP822iV2)**

Tested under
the FCC Certification Rules
contained in
Title 47 of the CFR, Parts 15 Subpart B
for Class B Digital Devices
&
FCC Part 15.407 for Intentional Radiators

MET Report: EMCS42577H-FCC407 Rev. 1 (UNII 2)

January 27, 2015

Prepared For:

**Meru Networks, Inc.
894 Ross Dr.
Sunnyvale, CA 94089**

Prepared By:
MET Laboratories, Inc.
914 W. Patapsco Ave.
Baltimore, MD 21230

Electromagnetic Compatibility Criteria Test Report

for the

Meru Networks, Inc.
Model Mission Peak (AP822iV2)

Tested under
the FCC Certification Rules
contained in
Title 47 of the CFR, Parts 15 Subpart B
for Class B Digital Devices
&
FCC Part 15.407 for Intentional Radiators



Andy Shen, Project Engineer
Electromagnetic Compatibility Lab



Jennifer Warnell
Documentation Department

Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of Parts 15B, 15.407, of the FCC Rules under normal use and maintenance.



Asad Bajwa,
Director, Electromagnetic Compatibility Lab

Report Status Sheet

Revision	Report Date	Reason for Revision
∅	January 21, 2015	Initial Issue.
1	January 27, 2015	Revised to reflect engineer corrections.

Table of Contents

I.	Executive Summary	1
	A. Purpose of Test	2
	B. Executive Summary	2
II.	Equipment Configuration	3
	A. Overview.....	4
	B. References.....	5
	C. Test Site	5
	D. Description of Test Sample.....	5
	E. Equipment Configuration.....	7
	F. Support Equipment	7
	G. Ports and Cabling Information.....	7
	H. Mode of Operation.....	8
	I. Method of Monitoring EUT Operation	8
	J. Modifications	8
	a) Modifications to EUT.....	8
	b) Modifications to Test Standard.....	8
	K. Disposition of EUT	8
III.	Electromagnetic Compatibility Criteria for Unintentional Radiators	9
	§ 15.107(a) Conducted Emissions Limits.....	10
	§ 15.109(a) Radiated Emissions Limits.....	16
IV.	Electromagnetic Compatibility Criteria for Intentional Radiators	22
	§ 15.203 Antenna Requirement	23
	§ 15.207 Conducted Emissions Limits	24
	§ 15.403(c) 26dB Bandwidth.....	29
	§ 15.407(a)(3) RF Power Output	50
	§ 15.407(a)(3) Peak Power Spectral Density	52
	§ 15.407(b) Undesirable Emissions	54
	Co-location	89
	§ 15.407(f) RF Exposure	129
	§ 15.407(g) Frequency Stability	130
V.	DFS Requirements and Radar Waveform Description & Calibration	139
	A. DFS Requirements	140
	B. Radar Test Waveforms	142
	C. Radar Waveform Calibration	147
VI.	DFS Test Procedure and Test Results	157
	A. DFS Test Setup	158
	B. Description of Master Device	159
	C. UNII Detection Bandwidth	161
	D. Initial Channel Availability Check Time	167
	E. Radar Burst at the Beginning of Channel Availability Check Time	169
	F. Radar Burst at the End of Channel Availability Check Time	171
	G. In-Service Monitoring for Channel Move Time, Channel Closing Time, and Non-Occupancy.....	173
	H. Statistical Performance Check	176
VII.	Test Equipment	198
VIII.	Certification & User’s Manual Information	200
	A. Certification Information	201
	B. Label and User’s Manual Information	205

List of Tables

Table 1. Executive Summary of EMC Part 15.407 Compliance Testing	2
Table 2. EUT Summary.....	4
Table 3. References	5
Table 4. Equipment Configuration	7
Table 5. Support Equipment.....	7
Table 6. Antenna List.....	7
Table 7. Ports and Cabling Information	7
Table 8. Conducted Limits for Radio Frequency Devices calculated from FCC Part 15 Subsections 15.107(a) (b).....	10
Table 9. Conducted Emissions - Voltage, AC Power, Phase Line (120 VAC, 60 Hz), PoE	11
Table 10. Conducted Emissions - Voltage, AC Power, Neutral Line (120 VAC, 60 Hz), PoE	12
Table 11. Conducted Emissions - Voltage, AC Power, Phase Line (120 VAC, 60 Hz), AC/DC.....	13
Table 12. Conducted Emissions - Voltage, AC Power, Neutral Line (120 VAC, 60 Hz), AC/DC	14
Table 13. Radiated Emissions Limits calculated from FCC Part 15, §15.109 (a) (b)	16
Table 14. Radiated Emissions Limits, Test Results, 30 MHz – 1 GHz, PoE	17
Table 15. Radiated Emissions Limits, Test Results, 1 GHz – 2 GHz, PoE.....	18
Table 16. Radiated Emissions Limits, Test Results, 30 MHz – 1 GHz, AC/DC.....	19
Table 17. Radiated Emissions Limits, Test Results, 1 GHz – 2 GHz, AC/DC	20
Table 18. Conducted Limits for Intentional Radiators from FCC Part 15 § 15.207(a)	24
Table 19. Conducted Emissions - Voltage, AC Power, 15.207(a), Phase Line (120 VAC, 60 Hz), PoE.....	25
Table 20. Conducted Emissions - Voltage, AC Power, 15.207(a), Neutral Line (120 VAC, 60 Hz), PoE	26
Table 21. Conducted Emissions - Voltage, AC Power, 15.207(a), Phase Line (120 VAC, 60 Hz), AC/DC	27
Table 22. Conducted Emissions - Voltage, AC Power, 15.207(a), Neutral Line (120 VAC, 60 Hz), AC/DC.....	28
Table 23. RF Output Power, Test Results, Lower	50
Table 24. RF Output Power, Test Results, Upper	51
Table 25. Peak Spectral Density, Test Results, Lower	52
Table 26. Peak Spectral Density, Test Results, Upper	53
Table 27. Applicability of DFS Requirements Prior to Use of a Channel.....	140
Table 28. Applicability of DFS Requirements During Normal Operation.....	140
Table 29. DFS Detection Thresholds for Master or Client Devices Incorporating DFS	141
Table 30. DFS Response Requirement Values.....	141
Table 31. Pulse Repetition Intervals Values for Test A	143
Table 32. UNII Detection Bandwidth, Test Results, 5300 MHz 20 MHz.....	162
Table 33. UNII Detection Bandwidth, Test Results, 5510 MHz 40 MHz.....	163
Table 34. UNII Detection Bandwidth, Test Results, 5290 MHz 80 MHz.....	165
Table 35. Statistical Performance Check – Radar Type 0, 20 MHz	177
Table 36. Statistical Performance Check – Radar Type 1, 20 MHz	178
Table 37. Statistical Performance Check – Radar Type 2, 20 MHz	179
Table 38. Statistical Performance Check – Radar Type 3, 20 MHz	180
Table 39. Statistical Performance Check – Radar Type 4, 20 MHz	181
Table 40. Statistical Performance Check – Radar Type 5, 20 MHz	182
Table 41. Statistical Performance Check – Radar Type 6, 20 MHz	183
Table 42. Statistical Performance Check – Radar Type 0, 40 MHz	184
Table 43. Statistical Performance Check – Radar Type 1, 40 MHz	185
Table 44. Statistical Performance Check – Radar Type 2, 40 MHz	186
Table 45. Statistical Performance Check – Radar Type 3, 40 MHz	187
Table 46. Statistical Performance Check – Radar Type 4, 40 MHz	188
Table 47. Statistical Performance Check – Radar Type 5, 40 MHz	189
Table 48. Statistical Performance Check – Radar Type 6, 40 MHz	190
Table 49. Statistical Performance Check – Radar Type 0, 80 MHz	191
Table 50. Statistical Performance Check – Radar Type 1, 80 MHz	192
Table 51. Statistical Performance Check – Radar Type 2, 80 MHz	193
Table 52. Statistical Performance Check – Radar Type 3, 80 MHz	194
Table 53. Statistical Performance Check – Radar Type 4, 80 MHz	195

Table 54. Statistical Performance Check – Radar Type 5, 80 MHz	196
Table 55. Statistical Performance Check – Radar Type 6, 80 MHz	197
Table 56. Test Equipment List	199
Table 57. DFS Test Equipment List	199

List of Figures

Figure 1. Block Diagram of Test Configuration	6
Figure 2. Occupied Bandwidth, Test Setup	29
Figure 3. Power Output Test Setup	50
Figure 4. Power Spectral Density Test Setup	52
Figure 5. Long Pulse Radar Test Signal Waveform	146
Figure 6. Calibration Test setup	147
Figure 7. Test Setup Diagram	158

List of Photographs

Photograph 1. Meru Networks, Inc. Mission Peak (AP822iV2)	6
Photograph 2. Conducted Emissions, Test Setup, PoE	15
Photograph 3. Conducted Emissions, Test Setup, AC/DC	15
Photograph 4. Radiated Emissions, Test Setup, 30 MHz – 1 GHz	21
Photograph 5. Radiated Emissions, Test Setup, 1 GHz – 2 GHz	21
Photograph 6. DFS Radar Test Signal Generator	147

List of Plots

Plot 1. Conducted Emissions, Phase Line, PoE.....	11
Plot 2. Conducted Emissions, Neutral Line, PoE.....	12
Plot 3. Conducted Emissions, Phase Line, AC/DC.....	13
Plot 4. Conducted Emissions, Neutral Line, AC/DC.....	14
Plot 5. Radiated Emissions, 30 MHz – 1 GHz, PoE.....	17
Plot 6. Radiated Emissions, 1 GHz – 2 GHz, PoE.....	18
Plot 7. Radiated Emissions, 30 MHz – 1 GHz, AC/DC.....	19
Plot 8. Radiated Emissions, 1 GHz – 2 GHz, AC/DC.....	20
Plot 9. Conducted Emissions, 15.207(a), Phase Line, PoE.....	25
Plot 10. Conducted Emissions, 15.207(a), Neutral Line, PoE.....	26
Plot 11. Conducted Emissions, 15.207(a), Phase Line, AC/DC.....	27
Plot 12. Conducted Emissions, 15.207(a), Neutral Line, AC/DC.....	28
Plot 13. 26 dB Occupied Bandwidth, 802.11a, 5260 MHz.....	30
Plot 14. 26 dB Occupied Bandwidth, 802.11a, 5270 MHz.....	30
Plot 15. 26 dB Occupied Bandwidth, 802.11a, 5280 MHz.....	30
Plot 16. 26 dB Occupied Bandwidth, 802.11a, 5300 MHz.....	31
Plot 17. 26 dB Occupied Bandwidth, 802.11a, 5310 MHz.....	31
Plot 18. 26 dB Occupied Bandwidth, 802.11a, 5320 MHz.....	31
Plot 19. 26 dB Occupied Bandwidth, 802.11a, 5500 MHz.....	32
Plot 20. 26 dB Occupied Bandwidth, 802.11a, 5510 MHz.....	32
Plot 21. 26 dB Occupied Bandwidth, 802.11a, 5540 MHz.....	32
Plot 22. 26 dB Occupied Bandwidth, 802.11a, 5550 MHz.....	33
Plot 23. 26 dB Occupied Bandwidth, 802.11a, 5580 MHz.....	33
Plot 24. 26 dB Occupied Bandwidth, 802.11a, 5600 MHz.....	33
Plot 25. 26 dB Occupied Bandwidth, 802.11a, 5640 MHz.....	34
Plot 26. 26 dB Occupied Bandwidth, 802.11a, 5660 MHz.....	34
Plot 27. 26 dB Occupied Bandwidth, 802.11a, 5670 MHz.....	34
Plot 28. 26 dB Occupied Bandwidth, 802.11a, 5700 MHz.....	35
Plot 29. 26 dB Occupied Bandwidth, 802.11n, 5260 MHz, Port 1.....	36
Plot 30. 26 dB Occupied Bandwidth, 802.11n, 5270 MHz, Port 1.....	36
Plot 31. 26 dB Occupied Bandwidth, 802.11n, 5280 MHz, Port 1.....	36
Plot 32. 26 dB Occupied Bandwidth, 802.11n, 5300 MHz, Port 1.....	37
Plot 33. 26 dB Occupied Bandwidth, 802.11n, 5310 MHz, Port 1.....	37
Plot 34. 26 dB Occupied Bandwidth, 802.11n, 5320 MHz, Port 1.....	37
Plot 35. 26 dB Occupied Bandwidth, 802.11n, 5500 MHz, Port 1.....	38
Plot 36. 26 dB Occupied Bandwidth, 802.11n, 5510 MHz, Port 1.....	38
Plot 37. 26 dB Occupied Bandwidth, 802.11n, 5540 MHz, Port 1.....	38
Plot 38. 26 dB Occupied Bandwidth, 802.11n, 5550 MHz, Port 1.....	39
Plot 39. 26 dB Occupied Bandwidth, 802.11n, 5580 MHz, Port 1.....	39
Plot 40. 26 dB Occupied Bandwidth, 802.11n, 5600 MHz, Port 1.....	39
Plot 41. 26 dB Occupied Bandwidth, 802.11n, 5640 MHz, Port 1.....	40
Plot 42. 26 dB Occupied Bandwidth, 802.11n, 5660 MHz, Port 1.....	40
Plot 43. 26 dB Occupied Bandwidth, 802.11n, 5670 MHz, Port 1.....	40
Plot 44. 26 dB Occupied Bandwidth, 802.11n, 5700 MHz, Port 1.....	41
Plot 45. 26 dB Occupied Bandwidth, 802.11n, 5260 MHz, Port 2.....	42
Plot 46. 26 dB Occupied Bandwidth, 802.11n, 5270 MHz, Port 2.....	42
Plot 47. 26 dB Occupied Bandwidth, 802.11n, 5280 MHz, Port 2.....	42
Plot 48. 26 dB Occupied Bandwidth, 802.11n, 5300 MHz, Port 2.....	43
Plot 49. 26 dB Occupied Bandwidth, 802.11n, 5310 MHz, Port 2.....	43
Plot 50. 26 dB Occupied Bandwidth, 802.11n, 5320 MHz, Port 2.....	43
Plot 51. 26 dB Occupied Bandwidth, 802.11n, 5500 MHz, Port 2.....	44
Plot 52. 26 dB Occupied Bandwidth, 802.11n, 5510 MHz, Port 2.....	44

Plot 53. 26 dB Occupied Bandwidth, 802.11n, 5540 MHz, Port 2.....	44
Plot 54. 26 dB Occupied Bandwidth, 802.11n, 5550 MHz, Port 2.....	45
Plot 55. 26 dB Occupied Bandwidth, 802.11n, 5580 MHz, Port 2.....	45
Plot 56. 26 dB Occupied Bandwidth, 802.11n, 5600 MHz, Port 2.....	45
Plot 57. 26 dB Occupied Bandwidth, 802.11n, 5640 MHz, Port 2.....	46
Plot 58. 26 dB Occupied Bandwidth, 802.11n, 5660 MHz, Port 2.....	46
Plot 59. 26 dB Occupied Bandwidth, 802.11n, 5670 MHz, Port 2.....	46
Plot 60. 26 dB Occupied Bandwidth, 802.11n, 5700 MHz, Port 2.....	47
Plot 61. 26 dB Occupied Bandwidth, 802.11ac, 5290 MHz, Port 1	48
Plot 62. 26 dB Occupied Bandwidth, 802.11ac, 5530 MHz, Port 1	48
Plot 63. 26 dB Occupied Bandwidth, 802.11ac, 5610 MHz, Port 1	48
Plot 64. 26 dB Occupied Bandwidth, 802.11ac, 5290 MHz, Port 2	49
Plot 65. 26 dB Occupied Bandwidth, 802.11ac, 5530 MHz, Port 2	49
Plot 66. 26 dB Occupied Bandwidth, 802.11ac, 5610 MHz, Port 2	49
Plot 67. Radiated Spurious Emissions, 802.11a 20 MHz, Low Channel, 30 MHz – 1 GHz.....	55
Plot 68. Radiated Spurious Emissions, 802.11a 20 MHz, Low Channel, 1 GHz – 7 GHz, Average	55
Plot 69. Radiated Spurious Emissions, 802.11a 20 MHz, Low Channel, 1 GHz – 7 GHz, Peak	55
Plot 70. Radiated Spurious Emissions, 802.11a 20 MHz, Low Channel, 7 GHz – 18 GHz.....	56
Plot 71. Radiated Spurious Emissions, 802.11a 40 MHz, Low Channel, 30 MHz – 1 GHz.....	56
Plot 72. Radiated Spurious Emissions, 802.11a 40 MHz, Low Channel, 1 GHz – 7 GHz, Average	56
Plot 73. Radiated Spurious Emissions, 802.11a 40 MHz, Low Channel, 1 GHz – 7 GHz, Peak	57
Plot 74. Radiated Spurious Emissions, 802.11a 40 MHz, Low Channel, 7 GHz – 18 GHz.....	57
Plot 75. Radiated Spurious Emissions, 802.11a 20 MHz, Mid Channel, 30 MHz – 1 GHz.....	57
Plot 76. Radiated Spurious Emissions, 802.11a 20 MHz, Mid Channel, 1 GHz – 7 GHz, Average.....	58
Plot 77. Radiated Spurious Emissions, 802.11a 20 MHz, Mid Channel, 1 GHz – 7 GHz, Peak.....	58
Plot 78. Radiated Spurious Emissions, 802.11a 20 MHz, Mid Channel, 7 GHz – 18 GHz	58
Plot 79. Radiated Spurious Emissions, 802.11a 20 MHz, High Channel, 30 MHz – 1 GHz, Average.....	59
Plot 80. Radiated Spurious Emissions, 802.11a 20 MHz, High Channel, 1 GHz – 7 GHz, Average.....	59
Plot 81. Radiated Spurious Emissions, 802.11a 20 MHz, High Channel, 1 GHz – 7 GHz, Peak	59
Plot 82. Radiated Spurious Emissions, 802.11a 20 MHz, High Channel, 7 GHz – 18 GHz.....	60
Plot 83. Radiated Spurious Emissions, 802.11a 40 MHz, High Channel, 30 MHz – 1 GHz	60
Plot 84. Radiated Spurious Emissions, 802.11a 40 MHz, High Channel, 1 GHz – 7 GHz, Average.....	60
Plot 85. Radiated Spurious Emissions, 802.11a 40 MHz, High Channel, 1 GHz – 7 GHz, Peak	61
Plot 86. Radiated Spurious Emissions, 802.11a 40 MHz, High Channel, 7 GHz – 18 GHz, Peak	61
Plot 87. Radiated Spurious Emissions, 802.11n 20 MHz, Low Channel, 30 MHz – 1 GHz.....	62
Plot 88. Radiated Spurious Emissions, 802.11n 20 MHz, Low Channel, 1 GHz – 7 GHz, Average	62
Plot 89. Radiated Spurious Emissions, 802.11n 20 MHz, Low Channel, 1 GHz – 7 GHz, Peak.....	62
Plot 90. Radiated Spurious Emissions, 802.11n 20 MHz, Low Channel, 7 GHz – 18 GHz	63
Plot 91. Radiated Spurious Emissions, 802.11n 40 MHz, Low Channel, 30 MHz – 1 GHz.....	63
Plot 92. Radiated Spurious Emissions, 802.11n 40 MHz, Low Channel, 1 GHz – 7 GHz, Average	63
Plot 93. Radiated Spurious Emissions, 802.11n 40 MHz, Low Channel, 1 GHz – 7 GHz, Peak.....	64
Plot 94. Radiated Spurious Emissions, 802.11n 40 MHz, Low Channel, 7 GHz – 18 GHz	64
Plot 95. Radiated Spurious Emissions, 802.11n 20 MHz, Mid Channel, 30 MHz – 1 GHz	64
Plot 96. Radiated Spurious Emissions, 802.11n 20 MHz, Mid Channel, 1 GHz – 7 GHz, Average.....	65
Plot 97. Radiated Spurious Emissions, 802.11n 20 MHz, Mid Channel, 1 GHz – 7 GHz, Peak	65
Plot 98. Radiated Spurious Emissions, 802.11n 20 MHz, Mid Channel, 7 GHz – 18 GHz	65
Plot 99. Radiated Spurious Emissions, 802.11n 20 MHz, High Channel, 30 MHz – 1 GHz	66
Plot 100. Radiated Spurious Emissions, 802.11n 20 MHz, High Channel, 1 GHz – 7 GHz, Average	66
Plot 101. Radiated Spurious Emissions, 802.11n 20 MHz, High Channel, 1 GHz – 7 GHz, Peak	66
Plot 102. Radiated Spurious Emissions, 802.11n 20 MHz, High Channel, 7 GHz – 18 GHz.....	67
Plot 103. Radiated Spurious Emissions, 802.11n 40 MHz, High Channel, 30 MHz – 1 GHz.....	67
Plot 104. Radiated Spurious Emissions, 802.11n 40 MHz, High Channel, 1 GHz – 7 GHz, Average	67
Plot 105. Radiated Spurious Emissions, 802.11n 40 MHz, High Channel, 1 GHz – 7 GHz, Peak	68
Plot 106. Radiated Spurious Emissions, 802.11n 40 MHz, High Channel, 7 GHz – 18 GHz, Peak	68
Plot 107. Radiated Spurious Emissions, 802.11ac 80 MHz, 30 MHz – 1 GHz.....	69
Plot 108. Radiated Spurious Emissions, 802.11ac 80 MHz, 1 GHz – 7 GHz, Average.....	69

Plot 109. Radiated Spurious Emissions, 802.11ac 80 MHz, 1 GHz – 7 GHz, Peak.....	69
Plot 110. Radiated Spurious Emissions, 802.11ac 80 MHz, 7 GHz – 18 GHz	70
Plot 111. Radiated Spurious Emissions, 802.11a 20 MHz, Low Channel, 30 MHz – 1 GHz	71
Plot 112. Radiated Spurious Emissions, 802.11a 20 MHz, Low Channel, 1 GHz – 7 GHz, Average	71
Plot 113. Radiated Spurious Emissions, 802.11a 20 MHz, Low Channel, 1 GHz – 7 GHz, Peak.....	71
Plot 114. Radiated Spurious Emissions, 802.11a 20 MHz, Low Channel, 7 GHz – 18 GHz.....	72
Plot 115. Radiated Spurious Emissions, 802.11a 40 MHz, Low Channel, 30 MHz – 1 GHz	72
Plot 116. Radiated Spurious Emissions, 802.11a 40 MHz, Low Channel, 1 GHz – 7 GHz, Average	72
Plot 117. Radiated Spurious Emissions, 802.11a 40 MHz, Low Channel, 1 GHz – 7 GHz, Peak	73
Plot 118. Radiated Spurious Emissions, 802.11a 40 MHz, Low Channel, 7 GHz – 18 GHz.....	73
Plot 119. Radiated Spurious Emissions, 802.11a 20 MHz, Mid Channel, 30 MHz – 1 GHz.....	73
Plot 120. Radiated Spurious Emissions, 802.11a 20 MHz, Mid Channel, 1 GHz – 7 GHz, Average	74
Plot 121. Radiated Spurious Emissions, 802.11a 20 MHz, Mid Channel, 1 GHz – 7 GHz, Peak.....	74
Plot 122. Radiated Spurious Emissions, 802.11a 20 MHz, Mid Channel, 7 GHz – 18 GHz	74
Plot 123. Radiated Spurious Emissions, 802.11a 20 MHz, High Channel, 30 MHz – 1 GHz, Average	75
Plot 124. Radiated Spurious Emissions, 802.11a 20 MHz, High Channel, 1 GHz – 7 GHz, Average.....	75
Plot 125. Radiated Spurious Emissions, 802.11a 20 MHz, High Channel, 1 GHz – 7 GHz, Peak	75
Plot 126. Radiated Spurious Emissions, 802.11a 20 MHz, High Channel, 7 GHz – 18 GHz	76
Plot 127. Radiated Spurious Emissions, 802.11a 40 MHz, High Channel, 30 MHz – 1 GHz	76
Plot 128. Radiated Spurious Emissions, 802.11a 40 MHz, High Channel, 1 GHz – 7 GHz, Average.....	76
Plot 129. Radiated Spurious Emissions, 802.11a 40 MHz, High Channel, 1 GHz – 7 GHz, Peak	77
Plot 130. Radiated Spurious Emissions, 802.11a 40 MHz, High Channel, 7 GHz – 18 GHz, Peak	77
Plot 131. Radiated Spurious Emissions, 802.11n 20 MHz, Low Channel, 30 MHz – 1 GHz.....	78
Plot 132. Radiated Spurious Emissions, 802.11n 20 MHz, Low Channel, 1 GHz – 7 GHz, Average	78
Plot 133. Radiated Spurious Emissions, 802.11n 20 MHz, Low Channel, 7 GHz – 7 GHz, Peak.....	78
Plot 134. Radiated Spurious Emissions, 802.11n 20 MHz, Low Channel, 7 GHz – 18 GHz	79
Plot 135. Radiated Spurious Emissions, 802.11n 40 MHz, Low Channel, 30 MHz – 1 GHz	79
Plot 136. Radiated Spurious Emissions, 802.11n 40 MHz, Low Channel, 1 GHz – 7 GHz, Average	79
Plot 137. Radiated Spurious Emissions, 802.11n 40 MHz, Low Channel, 1 GHz – 7 GHz, Peak.....	80
Plot 138. Radiated Spurious Emissions, 802.11n 40 MHz, Low Channel, 7 GHz – 18 GHz	80
Plot 139. Radiated Spurious Emissions, 802.11n 20 MHz, Mid Channel, 30 MHz – 1 GHz	80
Plot 140. Radiated Spurious Emissions, 802.11n 20 MHz, Mid Channel, 1 GHz – 7 GHz, Average.....	81
Plot 141. Radiated Spurious Emissions, 802.11n 20 MHz, Mid Channel, 1 GHz – 7 GHz, Peak	81
Plot 142. Radiated Spurious Emissions, 802.11n 20 MHz, Mid Channel, 7 GHz – 18 GHz	81
Plot 143. Radiated Spurious Emissions, 802.11n 20 MHz, High Channel, 30 MHz – 1 GHz	82
Plot 144. Radiated Spurious Emissions, 802.11n 20 MHz, High Channel, 1 GHz – 7 GHz, Average	82
Plot 145. Radiated Spurious Emissions, 802.11n 20 MHz, High Channel, 1 GHz – 7 GHz, Peak	82
Plot 146. Radiated Spurious Emissions, 802.11n 20 MHz, High Channel, 7 GHz – 18 GHz.....	83
Plot 147. Radiated Spurious Emissions, 802.11n 40 MHz, High Channel, 30 MHz – 1 GHz	83
Plot 148. Radiated Spurious Emissions, 802.11n 40 MHz, High Channel, 1 GHz – 7 GHz, Average	83
Plot 149. Radiated Spurious Emissions, 802.11n 40 MHz, High Channel, 1 GHz – 7 GHz, Peak	84
Plot 150. Radiated Spurious Emissions, 802.11n 40 MHz, High Channel, 7 GHz – 18 GHz, Peak	84
Plot 151. Radiated Band Edge, 802.11a, High Channel (5350 MHz), Average	85
Plot 152. Radiated Band Edge, 802.11a, High Channel (5350 MHz), Peak	85
Plot 153. Radiated Band Edge, 802.11n 20 MHz, High Channel (5350 MHz), Average	86
Plot 154. Radiated Band Edge, 802.11n 20 MHz, High Channel (5350 MHz), Peak	86
Plot 155. Radiated Band Edge, 802.11n 40 MHz, High Channel (5350 MHz), Average	87
Plot 156. Radiated Band Edge, 802.11n 40 MHz, High Channel (5350 MHz), Peak	87
Plot 157. Radiated Band Edge, 802.11ac 80 MHz (5350 MHz), Average	88
Plot 158. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2412 MHz, 30 MHz – 1 GHz, Peak.....	90
Plot 159. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2412 MHz, 1 GHz – 7 GHz, Avg	90
Plot 160. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2412 MHz, 1 GHz – 7 GHz, Peak	90
Plot 161. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2412 MHz, 7 GHz – 18 GHz, Peak	91
Plot 162. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2437 MHz, 30 MHz – 1 GHz, Peak.....	91
Plot 163. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2437 MHz, 1 GHz – 7 GHz, Avg	91
Plot 164. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2437 MHz, 1 GHz – 7 GHz, Peak	92

Plot 165. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2437 MHz, 7 GHz – 18 GHz, Peak	92
Plot 166. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2462 MHz, 30 MHz – 1 GHz, Peak.....	92
Plot 167. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2462 MHz, 1 GHz – 7 GHz, Avg	93
Plot 168. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2462 MHz, 1 GHz – 7 GHz, Peak	93
Plot 169. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2462 MHz, 7 GHz – 18 GHz, Peak	93
Plot 170. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 2437 MHz, 30 MHz – 1 GHz, Peak.....	94
Plot 171. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 2437 MHz, 1 GHz – 7 GHz, Avg	94
Plot 172. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 2437 MHz, 1 GHz – 7 GHz, Peak	94
Plot 173. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 2437 MHz, 7 GHz – 18 GHz, Peak	95
Plot 174. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 2462 MHz, 30 MHz – 1 GHz, Peak.....	95
Plot 175. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 2462 MHz, 1 GHz – 7 GHz, Avg	95
Plot 176. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 2462 MHz, 1 GHz – 7 GHz, Peak	96
Plot 177. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 2462 MHz, 7 GHz – 18 GHz, Peak	96
Plot 178. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2462 MHz & 2462 MHz, 30 MHz – 1 GHz, Peak.....	96
Plot 179. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2462 MHz & 2462 MHz, 1 GHz – 7 GHz, Avg	97
Plot 180. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2462 MHz & 2462 MHz, 1 GHz – 7 GHz, Peak	97
Plot 181. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2462 MHz & 2462 MHz, 7 GHz – 18 GHz, Peak	97
Plot 182. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 5200 MHz, 30 MHz – 1 GHz, Peak.....	98
Plot 183. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 5200 MHz, 1 GHz – 7 GHz, Avg	98
Plot 184. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 5200 MHz, 1 GHz – 7 GHz, Peak	98
Plot 185. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 5200 MHz, 7 GHz – 18 GHz, Peak	99
Plot 186. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 5300 MHz, 30 MHz – 1 GHz, Peak.....	99
Plot 187. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 5300 MHz, 1 GHz – 7 GHz, Avg	99
Plot 188. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 5300 MHz, 1 GHz – 7 GHz, Peak	100
Plot 189. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 5300 MHz, 7 GHz – 18 GHz, Peak	100
Plot 190. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 5580 MHz, 30 MHz – 1 GHz, Peak.....	100
Plot 191. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 5580 MHz, 1 GHz – 7 GHz, Avg	101
Plot 192. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 5580 MHz, 1 GHz – 7 GHz, Peak	101
Plot 193. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 5580 MHz, 7 GHz – 18 GHz, Peak	101
Plot 194. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 5785 MHz, 30 MHz – 1 GHz, Peak.....	102
Plot 195. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 5785 MHz, 1 GHz – 7 GHz, Avg	102
Plot 196. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 5785 MHz, 1 GHz – 7 GHz, Peak	102
Plot 197. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 5785 MHz, 7 GHz – 18 GHz, Peak	103
Plot 198. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 5200 MHz, 30 MHz – 1 GHz, Peak.....	103
Plot 199. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 5200 MHz, 1 GHz – 7 GHz, Avg	103
Plot 200. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 5200 MHz, 1 GHz – 7 GHz, Peak	104
Plot 201. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 5200 MHz, 7 GHz – 18 GHz, Peak	104
Plot 202. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 5300 MHz, 30 MHz – 1 GHz, Peak.....	104
Plot 203. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 5300 MHz, 1 GHz – 7 GHz, Avg	105
Plot 204. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 5300 MHz, 1 GHz – 7 GHz, Peak	105
Plot 205. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 5300 MHz, 7 GHz – 18 GHz, Peak	105
Plot 206. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 5580 MHz, 30 MHz – 1 GHz, Peak.....	106
Plot 207. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 5580 MHz, 1 GHz – 7 GHz, Avg	106
Plot 208. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 5580 MHz, 1 GHz – 7 GHz, Peak	106
Plot 209. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 5580 MHz, 7 GHz – 18 GHz, Peak	107
Plot 210. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 5785 MHz, 30 MHz – 1 GHz, Peak.....	107
Plot 211. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 5785 MHz, 1 GHz – 7 GHz, Avg	107
Plot 212. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 5785 MHz, 1 GHz – 7 GHz, Peak	108
Plot 213. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 5785 MHz, 7 GHz – 18 GHz, Peak	108
Plot 214. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2462 MHz & 5200 MHz, 30 MHz – 1 GHz, Peak.....	108
Plot 215. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2462 MHz & 5200 MHz, 1 GHz – 7 GHz, Avg	109
Plot 216. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2462 MHz & 5200 MHz, 1 GHz – 7 GHz, Peak	109
Plot 217. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2462 MHz & 5200 MHz, 7 GHz – 18 GHz, Peak	109
Plot 218. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2462 MHz & 5300 MHz, 30 MHz – 1 GHz, Peak.....	110
Plot 219. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2462 MHz & 5300 MHz, 1 GHz – 7 GHz, Avg	110
Plot 220. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2462 MHz & 5300 MHz, 1 GHz – 7 GHz, Peak	110

Plot 221. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2462 MHz & 5300 MHz, 7 GHz – 18 GHz, Peak	111
Plot 222. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2462 MHz & 5580 MHz, 30 MHz – 1 GHz, Peak.....	111
Plot 223. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2462 MHz & 5580 MHz, 1 GHz – 7 GHz, Avg	111
Plot 224. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2462 MHz & 5580 MHz, 1 GHz – 7 GHz, Peak	112
Plot 225. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2462 MHz & 5580 MHz, 7 GHz – 18 GHz, Peak	112
Plot 226. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2462 MHz & 5785 MHz, 30 MHz – 1 GHz, Peak.....	112
Plot 227. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2462 MHz & 5785 MHz, 1 GHz – 7 GHz, Avg	113
Plot 228. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2462 MHz & 5785 MHz, 1 GHz – 7 GHz, Peak	113
Plot 229. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2462 MHz & 5785 MHz, 7 GHz – 18 GHz, Peak	113
Plot 230. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5200 MHz & 5200 MHz, 30 MHz – 1 GHz, Peak.....	114
Plot 231. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5200 MHz & 5200 MHz, 1 GHz – 7 GHz, Avg	114
Plot 232. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5200 MHz & 5200 MHz, 1 GHz – 7 GHz, Peak	114
Plot 233. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5200 MHz & 5200 MHz, 7 GHz – 18 GHz, Peak	115
Plot 234. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5200 MHz & 5300 MHz, 30 MHz – 1 GHz, Peak.....	115
Plot 235. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5200 MHz & 5300 MHz, 1 GHz – 7 GHz, Avg	115
Plot 236. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5200 MHz & 5300 MHz, 1 GHz – 7 GHz, Peak	116
Plot 237. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5200 MHz & 5300 MHz, 7 GHz – 18 GHz, Peak	116
Plot 238. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5200 MHz & 5580 MHz, 30 MHz – 1 GHz, Peak.....	116
Plot 239. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5200 MHz & 5580 MHz, 1 GHz – 7 GHz, Avg	117
Plot 240. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5200 MHz & 5580 MHz, 1 GHz – 7 GHz, Peak	117
Plot 241. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5200 MHz & 5580 MHz, 7 GHz – 18 GHz, Peak	117
Plot 242. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5200 MHz & 5785 MHz, 30 MHz – 1 GHz, Peak.....	118
Plot 243. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5200 MHz & 5785 MHz, 1 GHz – 7 GHz, Avg	118
Plot 244. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5200 MHz & 5785 MHz, 1 GHz – 7 GHz, Peak	118
Plot 245. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5200 MHz & 5785 MHz, 7 GHz – 18 GHz, Peak	119
Plot 246. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5300 MHz & 5300 MHz, 30 MHz – 1 GHz, Peak.....	119
Plot 247. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5300 MHz & 5300 MHz, 1 GHz – 7 GHz, Avg	119
Plot 248. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5300 MHz & 5300 MHz, 1 GHz – 7 GHz, Peak	120
Plot 249. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5300 MHz & 5300 MHz, 7 GHz – 18 GHz, Peak	120
Plot 250. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5300 MHz & 5580 MHz, 30 MHz – 1 GHz, Peak.....	120
Plot 251. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5300 MHz & 5580 MHz, 1 GHz – 7 GHz, Avg	121
Plot 252. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5300 MHz & 5580 MHz, 1 GHz – 7 GHz, Peak	121
Plot 253. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5300 MHz & 5580 MHz, 7 GHz – 18 GHz, Peak	121
Plot 254. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5300 MHz & 5785 MHz, 30 MHz – 1 GHz, Peak.....	122
Plot 255. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5300 MHz & 5785 MHz, 1 GHz – 7 GHz, Avg	122
Plot 256. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5300 MHz & 5785 MHz, 1 GHz – 7 GHz, Peak	122
Plot 257. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5300 MHz & 5785 MHz, 7 GHz – 18 GHz, Peak	123
Plot 258. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5580 MHz & 5580 MHz, 30 MHz – 1 GHz, Peak.....	123
Plot 259. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5580 MHz & 5580 MHz, 1 GHz – 7 GHz, Avg	123
Plot 260. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5580 MHz & 5580 MHz, 1 GHz – 7 GHz, Peak	124
Plot 261. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5580 MHz & 5580 MHz, 7 GHz – 18 GHz, Peak	124
Plot 262. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5580 MHz & 5785 MHz, 30 MHz – 1 GHz, Peak.....	124
Plot 263. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5580 MHz & 5785 MHz, 1 GHz – 7 GHz, Avg	125
Plot 264. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5580 MHz & 5785 MHz, 1 GHz – 7 GHz, Peak	125
Plot 265. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5580 MHz & 5785 MHz, 7 GHz – 18 GHz, Peak	125
Plot 266. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5785 MHz & 5785 MHz, 30 MHz – 1 GHz, Peak.....	126
Plot 267. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5785 MHz & 5785 MHz, 1 GHz – 7 GHz, Avg	126
Plot 268. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5785 MHz & 5785 MHz, 1 GHz – 7 GHz, Peak	126
Plot 269. Radiated Spurs, Co-Location, 802.11n 20 MHz, 5785 MHz & 5785 MHz, 7 GHz – 18 GHz, Peak	127
Plot 270. Frequency Stability, 5250 – 5350 MHz, -40°C, 120 V	131
Plot 271. Frequency Stability, 5250 – 5350 MHz, -30°C, 120 V	131
Plot 272. Frequency Stability, 5250 – 5350 MHz, -20°C, 120 V	131
Plot 273. Frequency Stability, 5250 – 5350 MHz, -10°C, 120 V	132
Plot 274. Frequency Stability, 5250 – 5350 MHz, 0°C, 120 V	132
Plot 275. Frequency Stability, 5250 – 5350 MHz, 10°C, 120 V	132
Plot 276. Frequency Stability, 5250 – 5350 MHz, 20°C, 120 V	133

Plot 277. Frequency Stability, 5250 – 5350 MHz, 30°C, 120 V	133
Plot 278. Frequency Stability, 5250 – 5350 MHz, 40°C, 120 V	133
Plot 279. Frequency Stability, 5250 – 5350 MHz, 50°C, 120 V	134
Plot 280. Frequency Stability, 5250 – 5350 MHz, 55°C, 120 V	134
Plot 281. Frequency Stability, 5470 – 5725 MHz, -40°C, 120 V	135
Plot 282. Frequency Stability, 5470 – 5725 MHz, -30°C, 120 V	135
Plot 283. Frequency Stability, 5470 – 5725 MHz, -20°C, 120 V	135
Plot 284. Frequency Stability, 5470 – 5725 MHz, -10°C, 120 V	136
Plot 285. Frequency Stability, 5470 – 5725 MHz, 0°C, 120 V	136
Plot 286. Frequency Stability, 5470 – 5725 MHz, 10°C, 120 V	136
Plot 287. Frequency Stability, 5470 – 5725 MHz, 20°C, 120 V	137
Plot 288. Frequency Stability, 5470 – 5725 MHz, 30°C, 120 V	137
Plot 289. Frequency Stability, 5470 – 5725 MHz, 40°C, 120 V	137
Plot 290. Frequency Stability, 5470 – 5725 MHz, 50°C, 120 V	138
Plot 291. Frequency Stability, 5470 – 5725 MHz, 55°C, 120 V	138
Plot 292. Radar Type 0 Calibration, 5290 MHz	148
Plot 293. Radar Type 1 Calibration, 5290 MHz	148
Plot 294. Radar Type 2 Calibration, 5290 MHz	148
Plot 295. Radar Type 3 Calibration, 5290 MHz	149
Plot 296. Radar Type 4 Calibration, 5290 MHz	149
Plot 297. Radar Type 5 Calibration, 5290 MHz	149
Plot 298. Radar Type 6 Calibration, 5290 MHz	150
Plot 299. Radar Type 0 Calibration, 5300 MHz	151
Plot 300. Radar Type 1 Calibration, 5300 MHz	151
Plot 301. Radar Type 2 Calibration, 5300 MHz	151
Plot 302. Radar Type 3 Calibration, 5300 MHz	152
Plot 303. Radar Type 4 Calibration, 5300 MHz	152
Plot 304. Radar Type 5 Calibration, 5300 MHz	152
Plot 305. Radar Type 6 Calibration, 5300 MHz	153
Plot 306. Radar Type 0 Calibration, 5510 MHz	154
Plot 307. Radar Type 1 Calibration, 5510 MHz	154
Plot 308. Radar Type 2 Calibration, 5510 MHz	154
Plot 309. Radar Type 3 Calibration, 5510 MHz	155
Plot 310. Radar Type 4 Calibration, 5510 MHz	155
Plot 311. Radar Type 5 Calibration, 5510 MHz	155
Plot 312. Radar Type 6 Calibration, 5510 MHz	156
Plot 313. Occupied Bandwidth, 802.11a, 5300 MHz	166
Plot 314. Occupied Bandwidth, 802.11n, 5510 MHz, Port 2	166
Plot 315. Occupied Bandwidth, 802.11ac, 5290 MHz, Port 1	166
Plot 316. Initial Channel Availability Check Time, 5300 MHz	168
Plot 317. Radar Burst at the Beginning of CACT, 5300 MHz	170
Plot 318. Radar Burst at the End of CACT, 5300 MHz	172
Plot 319. Channel Move Time, 1s Sweep, 97.5ms	174
Plot 320. Channel Move Time, 10s Sweep, 255ms	174
Plot 321. Channel Closing Transmission Time, 1s Sweep, 55ms	174
Plot 322. Non-Occupancy Period	175

List of Terms and Abbreviations

AC	Alternating Current
ACF	Antenna Correction Factor
Cal	Calibration
<i>d</i>	Measurement Distance
dB	Decibels
dB μ A	Decibels above one microamp
dB μ V	Decibels above one microvolt
dB μ A/m	Decibels above one microamp per meter
dB μ V/m	Decibels above one microvolt per meter
DC	Direct Current
E	Electric Field
DSL	Digital Subscriber Line
ESD	Electrostatic Discharge
EUT	Equipment Under Test
<i>f</i>	Frequency
FCC	Federal Communications Commission
GRP	Ground Reference Plane
H	Magnetic Field
HCP	Horizontal Coupling Plane
Hz	Hertz
IEC	International Electrotechnical Commission
kHz	kilohertz
kPa	kilopascal
kV	kilovolt
LISN	Line Impedance Stabilization Network
MHz	Megahertz
μ H	microhenry
μ	microfarad
μ s	microseconds
PRF	Pulse Repetition Frequency
RF	Radio Frequency
RMS	Root-Mean-Square
TWT	Traveling Wave Tube
V/m	Volts per meter
VCP	Vertical Coupling Plane

I. Executive Summary

A. Purpose of Test

An EMC evaluation was performed to determine compliance of the Meru Networks, Inc. Mission Peak (AP822iV2), with the requirements of Part 15, §15.407. All references are to the most current version of Title 47 of the Code of Federal Regulations in effect. In accordance with §2.1033, the following data is presented in support of the Certification of the Mission Peak (AP822iV2). Meru Networks, Inc. should retain a copy of this document which should be kept on file for at least two years after the manufacturing of the Mission Peak (AP822iV2), has been **permanently** discontinued.

B. Executive Summary

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, §15.407, in accordance with Meru Networks, Inc., purchase order number 107001. All tests were conducted using measurement procedure ANSI C63.4-2003.

FCC Reference	Description	Results
§15.107	Conducted Emissions	Compliant
§15.109	Radiated Emissions	Compliant
§15.203	Antenna Requirements	Compliant
§15.207	AC Conducted Emissions 150KHz – 30MHz	Compliant
§15.403 (i)	26dB Occupied Bandwidth	Compliant
§15.407 (a)(2)	Conducted Transmitter Output Power	Compliant
§15.407 (a)(2)	Power Spectral Density	Compliant
§15.407 (b)(2), (3), (5), (6)	Undesirable Emissions (15.205/15.209 - General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Compliant
§15.407(f)	RF Exposure	Compliant
§15.407(g)	Frequency Stability	Compliant
15.407 (h)(2)(ii)	Initial Channel Availability Check Time	Compliant
15.407 (h)	DFS Bandwidth	Compliant
15.407 (h)(2)(ii)	Radar Burst at the Beginning of Channel Availability Check Time	Compliant
15.407 (h)(2)(ii)	Radar Burst at the End of Channel Availability Check Time	Compliant
15.407 (h)(2)(iii)	Channel Move Time and Channel Closing Time	Compliant
15.407 (h)(2)(iv)	Non-Occupancy Period	Compliant
15.407 (h)(2)	Statistical Performance Check	Compliant

Table 1. Executive Summary of EMC Part 15.407 Compliance Testing

II. Equipment Configuration

A. Overview

MET Laboratories, Inc. was contracted by Meru Networks, Inc. to perform testing on the Mission Peak (AP822iV2), under Meru Networks, Inc.'s purchase order number 107001.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of the Meru Networks, Inc. Mission Peak (AP822iV2).

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

Model(s) Tested:	Mission Peak (AP822iV2)	
Model(s) Covered:	Mission Peak (AP822iV2)	
EUT Specifications:	Primary Power: 120 VAC, 60 Hz	
	FCC ID: RE7-AP822IV2 IC: 6749A-AP822IV2	
	Type of Modulations:	OFDM, BPSK, QPSK, QAM16, QAM64
	Equipment Code:	NII
	Peak RF Output Power:	21.84 dBm
	EUT Frequency Ranges:	5260 MHz – 5320 MHz 5500 MHz – 5700 MHz
Analysis:	The results obtained relate only to the item(s) tested.	
Environmental Test Conditions:	Temperature: 15-35° C	
	Relative Humidity: 30-60%	
	Barometric Pressure: 860-1060 mbar	
Evaluated by:	Andy Shen	
Report Date(s):	January 27, 2015	

Table 2. EUT Summary

B. References

CFR 47, Part 15, Subpart B	Electromagnetic Compatibility: Criteria for Radio Frequency Devices
CFR 47, Part 15, Subpart E	Unlicensed National Information Infrastructure Devices (UNII)
RSS-210, Issue 8, Dec. 2010	Low-power Licence-exempt Radiocommunications Devices (All Frequency Bands): Category I Equipment
RSS-GEN, Issue 3, Dec. 2010	General Requirements and Information for the Certification of Radio Apparatus
ICES-003, Issue 5 August 2012	Electromagnetic Compatibility: Criteria for Radio Frequency Devices
ANSI C63.4:2003	Methods and Measurements of Radio-Noise Emissions from Low-Voltage Electrical And Electronic Equipment in the Range of 9 kHz to 40 GHz
ISO/IEC 17025:2005	General Requirements for the Competence of Testing and Calibration Laboratories
ANSI C63.10-2009	American National Standard for Testing Unlicensed Wireless Devices

Table 3. References

C. Test Site

All testing was performed at MET Laboratories, Inc., 3162 Belick Street, Santa Clara, CA 95054. All equipment used in making physical determinations is accurate and bears recent traceability to the National Institute of Standards and Technology.

Radiated Emissions measurements were performed in a 3 meter semi-anechoic chamber (equivalent to an Open Area Test Site). In accordance with §2.948(a)(3), a complete site description is contained at MET Laboratories.

D. Description of Test Sample

The Meru Networks, Inc. Mission Peak (AP822iV2), Equipment Under Test (EUT), is an 802.11AC wireless access point (WAP) that allows wireless devices to connect to a wired network using Wi-Fi, standard. The WAP usually connects to a router (via a wired network), and can relay data between the wireless devices (such as computers or printers) and wired devices on the network. The EUT supports 2.4 GHz and 5 GHz operation.



Photograph 1. Meru Networks, Inc. Mission Peak (AP822iV2)

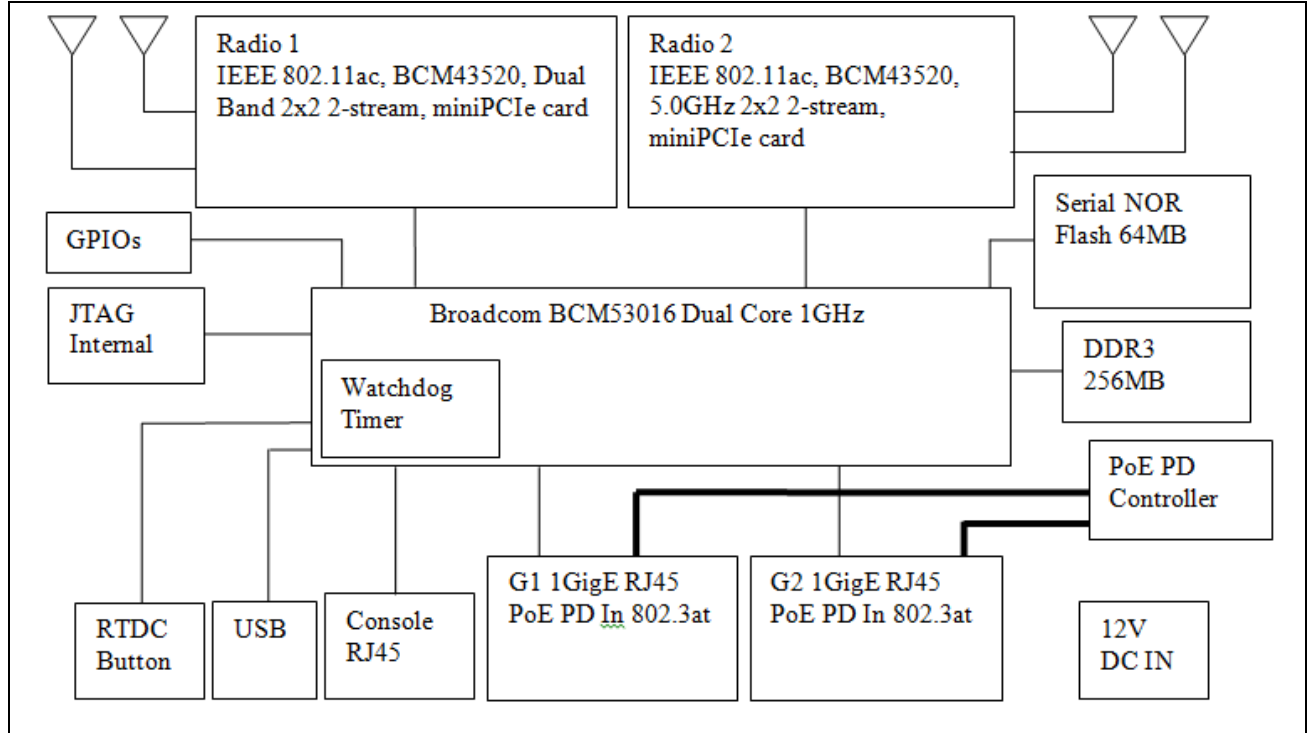


Figure 1. Block Diagram of Test Configuration

E. Equipment Configuration

The EUT was set up as outlined in Figure 1, Block Diagram of Test Setup. All cards, racks, etc., incorporated as part of the EUT is included in the following list.

Ref. ID	Name / Description	Model Number	Serial Number	Rev. #
1	Dual Radio Access Point	AP822iV2	2614B822I16DBBE	Rev 1
2	Dual Radio Access Point	AP822iV2	2614B822i16DBC4	Rev 1

Table 4. Equipment Configuration

F. Support Equipment

Support equipment necessary for the operation and testing of the EUT is included in the following list.

Ref. ID	Name / Description	Manufacturer	Model Number
1	PoE	Power Design	PD-9001GR/AC
2	Labtop	IBM	IBM Thinkpad

Table 5. Support Equipment

Meru Part Number	Description	Gain
MERU-ANT-P1446	Internal PCB antenna	3 dBi at 2.4 GHz and 4 dBi at 5 GHz

Table 6. Antenna List

G. Ports and Cabling Information

Ref. ID	Port name on EUT	Cable Description or reason for no cable	Qty	Length as tested (m)	Max Length (m)	Shielded? (Y/N)	Termination Box ID & Port Name
1	Reset Console	dB9 Serial cable	1	1	--	Yes	To computer serial port or USB to Serial adapter
2	G1PoE	Data and Power Ethernet port	1	2	10	YES	To PoE injector or Ethernet switch
3	G2PoE	Data and Power Ethernet port	1	2	10	Yes	To PoE injector or Ethernet switch
4	12 DC	12 DV Audio jack	1	1	10	Yes	To DC adapter
5	A1, A3, A4 and A6	RPSMA to SMA co-axial cable	4	0.5	1	Yes	To power meter or spectrum Analyzer

Table 7. Ports and Cabling Information

H. Mode of Operation

During the normal operation the configuration is controlled by the Meru controller which sets the country code, ESSID, Operating frequency band and Channel etc.

I. Method of Monitoring EUT Operation

During the normal operation with controller Green or Blue LED indication on the Access point indicate the normal operation of the Access point. A Red LED indicates a failure of hardware or software settings.

J. Modifications

a) Modifications to EUT

No modifications were made to the EUT.

b) Modifications to Test Standard

No modifications were made to the test standard.

K. Disposition of EUT

The test sample including all support equipment submitted to the Electro-Magnetic Compatibility Lab for testing was returned to Meru Networks, Inc. upon completion of testing.

III. Electromagnetic Compatibility Criteria for Unintentional Radiators

Electromagnetic Compatibility Criteria

§ 15.107 Conducted Emissions Limits

Test Requirement(s): **15.107 (a)** Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in Table 8. Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals.

15.107 (b) For a Class A digital device that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in Table 8. Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals. The lower limit applies at the band edges.

Frequency range (MHz)	Class A Conducted Limits (dB μ V)		*Class B Conducted Limits (dB μ V)	
	Quasi-Peak	Average	Quasi-Peak	Average
* 0.15- 0.45	79	66	66 - 56	56 - 46
0.45 - 0.5	79	66	56	46
0.5 - 30	73	60	60	50

Note 1 — The lower limit shall apply at the transition frequencies.
Note 2 — The limit decreases linearly with the logarithm if the frequency in the range 0.15 MHz to 0.5 MHz.

Table 8. Conducted Limits for Radio Frequency Devices calculated from FCC Part 15 Subsections 15.107(a) (b)

Test Procedures: The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. The method of testing, test conditions, and test procedures of ANSI C63.4 were used. The EUT was powered through a 50 Ω /50 μ H LISN. An EMI receiver, connected to the measurement port of the LISN, scanned the frequency range from 150 kHz to 30 MHz in order to find the peak conducted emissions. All peak emissions within 6 dB of the limit were re-measured using a quasi-peak and/or average detector as appropriate.

Test Results: The EUT was compliant with the Class B requirement(s) of this section. Measured emissions were below applicable limits.

Test Engineer(s): Danny Alvendia

Test Date(s): 07/28/14

Conducted Emissions - Voltage, AC Power, Phase Line (120 VAC, 60 Hz), PoE

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
42577 Meru PoE Rad_Off 120V L	0.16	46.7	65.465	-18.765	Pass	35.04	55.465	-20.425	Pass
42577 Meru PoE Rad_Off 120V L	0.2	46.06	63.617	-17.557	Pass	28	53.617	-25.617	Pass
42577 Meru PoE Rad_Off 120V L	0.43	45.58	57.277	-11.697	Pass	36.36	47.277	-10.917	Pass
42577 Meru PoE Rad_Off 120V L	0.45	45.59	56.9	-11.31	Pass	37.01	46.9	-9.89	Pass
42577 Meru PoE Rad_Off 120V L	23.83	46.66	60	-13.34	Pass	30.59	50	-19.41	Pass
42577 Meru PoE Rad_Off 120V L	29.93	48.46	60	-11.54	Pass	32.52	50	-17.48	Pass

Table 9. Conducted Emissions - Voltage, AC Power, Phase Line (120 VAC, 60 Hz), PoE



Plot 1. Conducted Emissions, Phase Line, PoE

Conducted Emissions - Voltage, AC Power, Neutral Line (120 VAC, 60 Hz), PoE

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
42577 Meru PoE Rad_Off 120V N	0.17	45.12	64.963	-19.843	Pass	29.37	54.963	-25.593	Pass
42577 Meru PoE Rad_Off 120V N	0.44	44.77	57.086	-12.316	Pass	32.92	47.086	-14.166	Pass
42577 Meru PoE Rad_Off 120V N	16.32	46.51	60	-13.49	Pass	29.57	50	-20.43	Pass
42577 Meru PoE Rad_Off 120V N	22.04	46.42	60	-13.58	Pass	27.54	50	-22.46	Pass
42577 Meru PoE Rad_Off 120V N	23.08	45.81	60	-14.19	Pass	29.23	50	-20.77	Pass
42577 Meru PoE Rad_Off 120V N	29.885	47.63	60	-12.37	Pass	32.59	50	-17.41	Pass

Table 10. Conducted Emissions - Voltage, AC Power, Neutral Line (120 VAC, 60 Hz), PoE

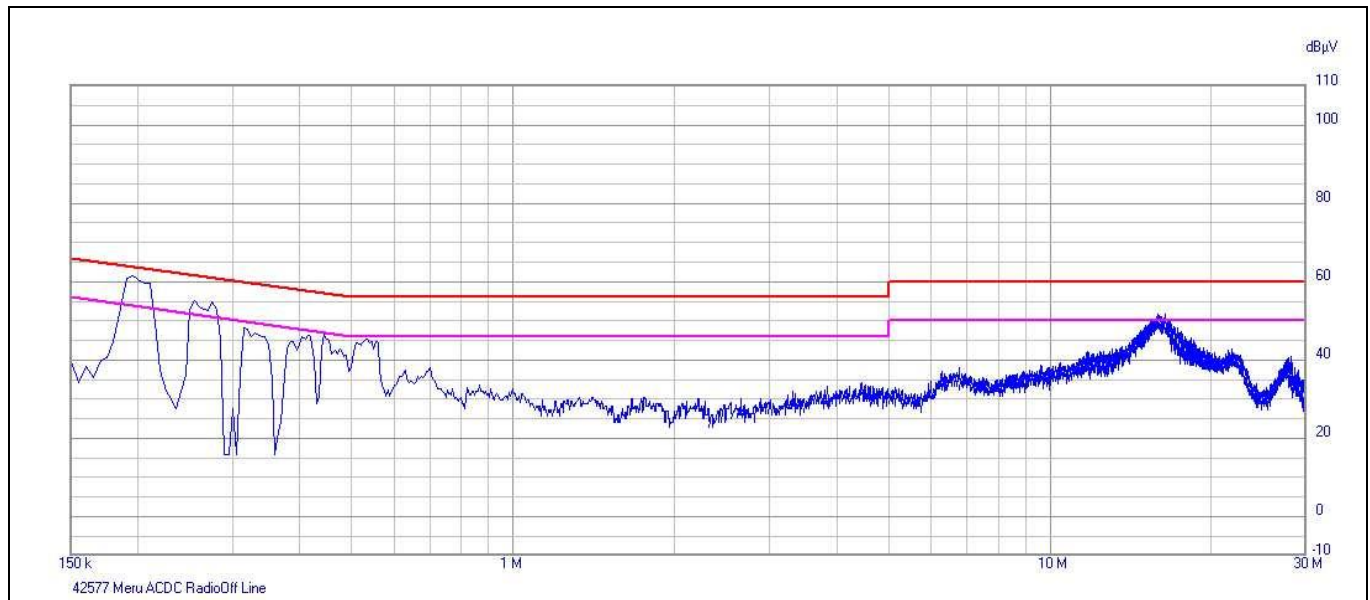


Plot 2. Conducted Emissions, Neutral Line, PoE

Conducted Emissions - Voltage, AC Power, Phase Line (120 VAC, 60 Hz), AC/DC

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
42577 CEV ACDC RadOff L	0.195	57.81	63.827	-6.017	Pass	40.17	53.827	-13.657	Pass
42577 CEV ACDC RadOff L	0.255	51.09	61.605	-10.515	Pass	33.29	51.605	-18.315	Pass
42577 CEV ACDC RadOff L	0.315	42.22	59.854	-17.634	Pass	20.77	49.854	-29.084	Pass
42577 CEV ACDC RadOff L	0.445	40.87	56.993	-16.123	Pass	22.88	46.993	-24.113	Pass
42577 CEV ACDC RadOff L	14.47	46.73	60	-13.27	Pass	37.42	50	-12.58	Pass
42577 CEV ACDC RadOff L	15.785	46.88	60	-13.12	Pass	39.03	50	-10.97	Pass

Table 11. Conducted Emissions - Voltage, AC Power, Phase Line (120 VAC, 60 Hz), AC/DC



Plot 3. Conducted Emissions, Phase Line, AC/DC

Conducted Emissions - Voltage, AC Power, Neutral Line (120 VAC, 60 Hz), AC/DC

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
42577 CEV ACDC RadOff N	0.205	56.12	63.413	-7.293	Pass	33.83	53.413	-19.583	Pass
42577 CEV ACDC RadOff N	0.26	50	61.444	-11.444	Pass	23.09	51.444	-28.354	Pass
42577 CEV ACDC RadOff N	0.27	49.45	61.131	-11.681	Pass	23.09	51.131	-28.041	Pass
42577 CEV ACDC RadOff N	0.32	40.09	59.724	-19.634	Pass	23.6	49.724	-26.124	Pass
42577 CEV ACDC RadOff N	0.46	35.09	56.712	-21.622	Pass	25.81	46.712	-20.902	Pass
42577 CEV ACDC RadOff N	16.07	38.45	60	-21.55	Pass	24.43	50	-25.57	Pass

Table 12. Conducted Emissions - Voltage, AC Power, Neutral Line (120 VAC, 60 Hz), AC/DC



Plot 4. Conducted Emissions, Neutral Line, AC/DC

Conducted Emission Limits Test Setup



Photograph 2. Conducted Emissions, Test Setup, PoE



Photograph 3. Conducted Emissions, Test Setup, AC/DC

Radiated Emission Limits

§ 15.109 Radiated Emissions Limits

Test Requirement(s): **15.109 (a)** Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the Class B limits expressed in Table 13.

15.109 (b) The field strength of radiated emissions from a Class A digital device, as determined at a distance of 10 meters, shall not exceed the Class A limits expressed in Table 13.

Frequency (MHz)	Field Strength (dB μ V/m)	
	§15.109 (b), Class A Limit (dB μ V) @ 10m	§15.109 (a), Class B Limit (dB μ V) @ 3m
30 - 88	39.00	40.00
88 - 216	43.50	43.50
216 - 960	46.40	46.00
Above 960	49.50	54.00

Table 13. Radiated Emissions Limits calculated from FCC Part 15, §15.109 (a) (b)

Test Procedures: The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. The method of testing and test conditions of ANSI C63.4 were used. An antenna was located 3 m from the EUT on an adjustable mast. A pre-scan was first performed in order to find prominent radiated emissions. For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1 m and 4 m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. Unless otherwise specified, measurements were made using a quasi-peak detector with a 120 kHz bandwidth.

Test Results: The EUT was compliant with the Class B requirement(s) of this section. Measured emissions were below applicable limits.

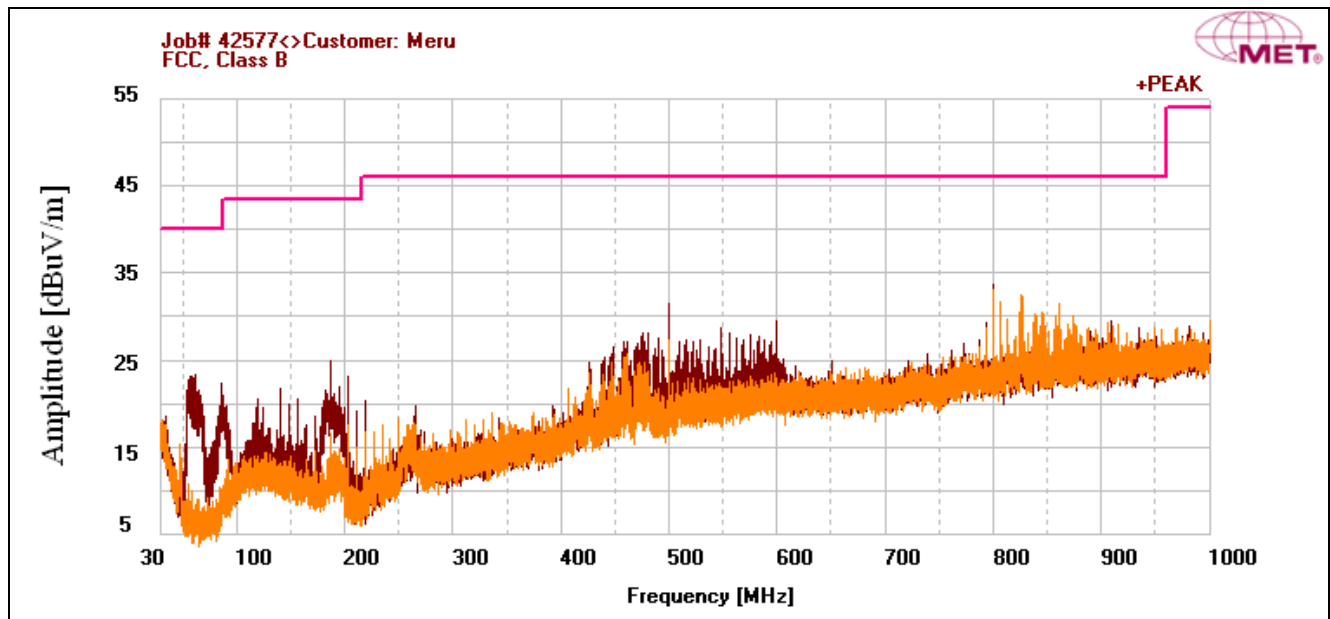
Test Engineer(s): Andy Shen

Test Date(s): 07/24/14

Radiated Emissions Limits Test Results, Class B, PoE

Frequency (MHz)	Antenna Polarity	EUT Azimuth (Degrees)	Antenna Height (cm)	Uncorrected Amplitude (dB μ V)	ACF (dB/m)	Pre Amp Gain (dB)	CBL (dB)	DCF (dB)	Corrected Amplitude (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
187	H	79	130.11	9.1	9.52	0	2.43	0	21.05	43.5	-22.45
495.84	V	173	100	5.63	16.935	0	3.999	0	26.564	46	-19.436
500.02	H	267	181.41	5.66	17.01	0	4.017	0	26.687	46	-19.313
800	H	169	115.8	8.67	19.67	0	5.182	0	33.522	46	-12.478
806.78	V	46	100	5.63	19.758	0	5.204	0	30.592	46	-15.408
825.94	V	20	100	1.78	20.177	0	5.267	0	27.224	46	-18.776

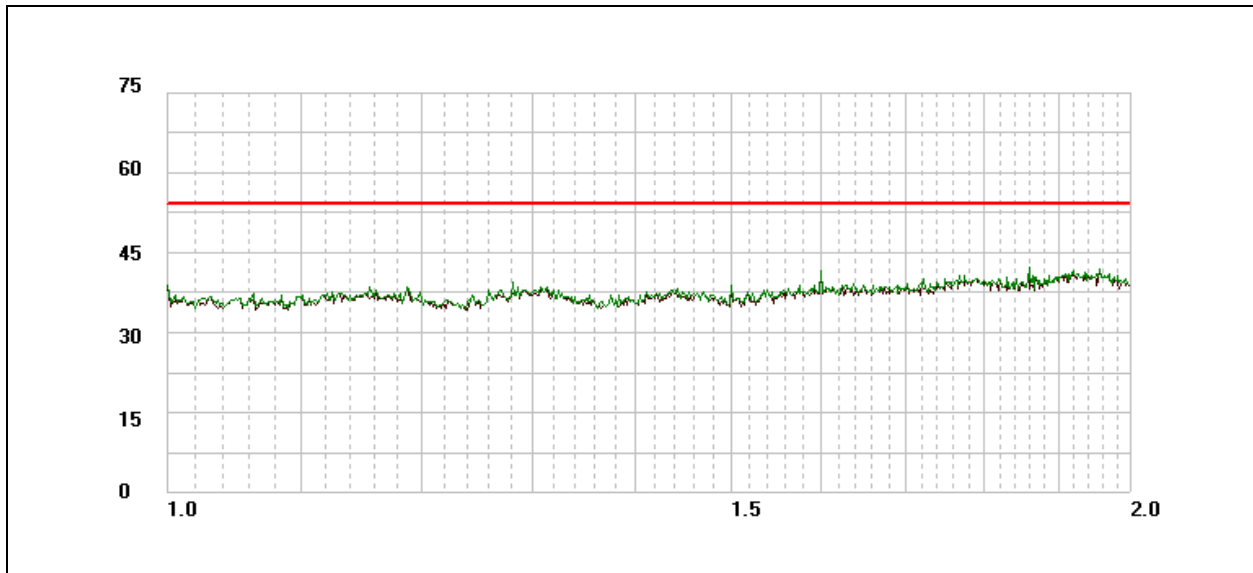
Table 14. Radiated Emissions Limits, Test Results, 30 MHz – 1 GHz, PoE



Plot 5. Radiated Emissions, 30 MHz – 1 GHz, PoE

Frequency (MHz)	Antenna Polarity	EUT Azimuth (Degrees)	Antenna Height (cm)	Uncorrected Amplitude (dB μ V)	ACF (dB/m)	Pre Amp Gain (dB)	CBL (dB)	DCF (dB)	Corrected Amplitude (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1189	H	104	160.23	29.03	28.507	33.471	0	0	24.066	54	-29.934
1282.5	V	133	215.88	29.61	28.722	33.431	0	0	24.901	54	-29.099
1594.367	V	120	114.94	30.2	28.955	33.3	0	0	25.855	54	-28.145
1860	H	17	100	29.14	30.816	33.189	0	0	26.767	54	-27.233
1924	V	73	100	30.44	31.174	33.162	0	0	28.452	54	-25.548
1956	H	0	100	29.79	31.354	33.148	0	0	27.996	54	-26.004

Table 15. Radiated Emissions Limits, Test Results, 1 GHz – 2 GHz, PoE

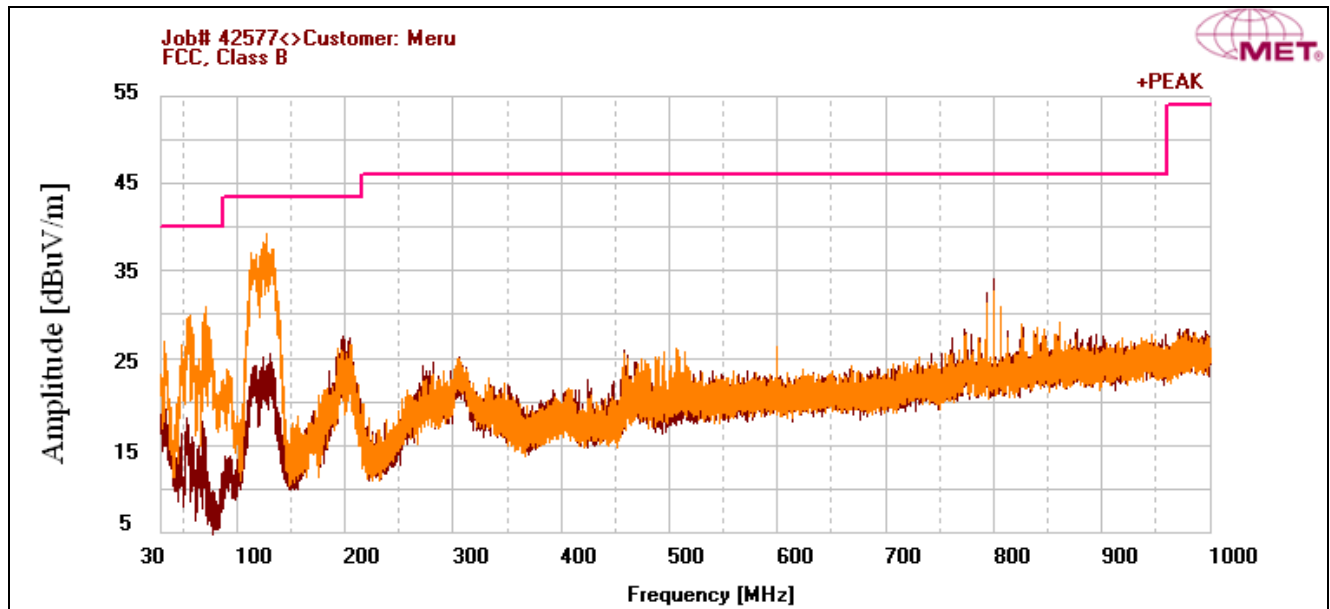


Plot 6. Radiated Emissions, 1 GHz – 2 GHz, PoE

Radiated Emissions Limits Test Results, Class B, AC/DC

Frequency (MHz)	Antenna Polarity	EUT Azimuth (Degrees)	Antenna Height (cm)	Uncorrected Amplitude (dB μ V)	ACF (dB/m)	Pre Amp Gain (dB)	CBL (dB)	DCF (dB)	Corrected Amplitude (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
71.385	V	151	169.7	13.92	6.801	0	1.477	0	22.198	40	-17.802
131.229	V	283	125.7	13.92	12.479	0	2.021	0	28.42	43.5	-15.08
600.018	V	191	100	1.56	18.82	0	4.486	0	24.866	46	-21.134
793.23	H	269	100.11	5.61	19.792	0	5.156	0	30.558	46	-15.442
800.01	H	264	103.88	9.16	19.67	0	5.182	0	34.012	46	-11.988
806.74	H	270	100.11	3.77	19.758	0	5.204	0	28.732	46	-17.268

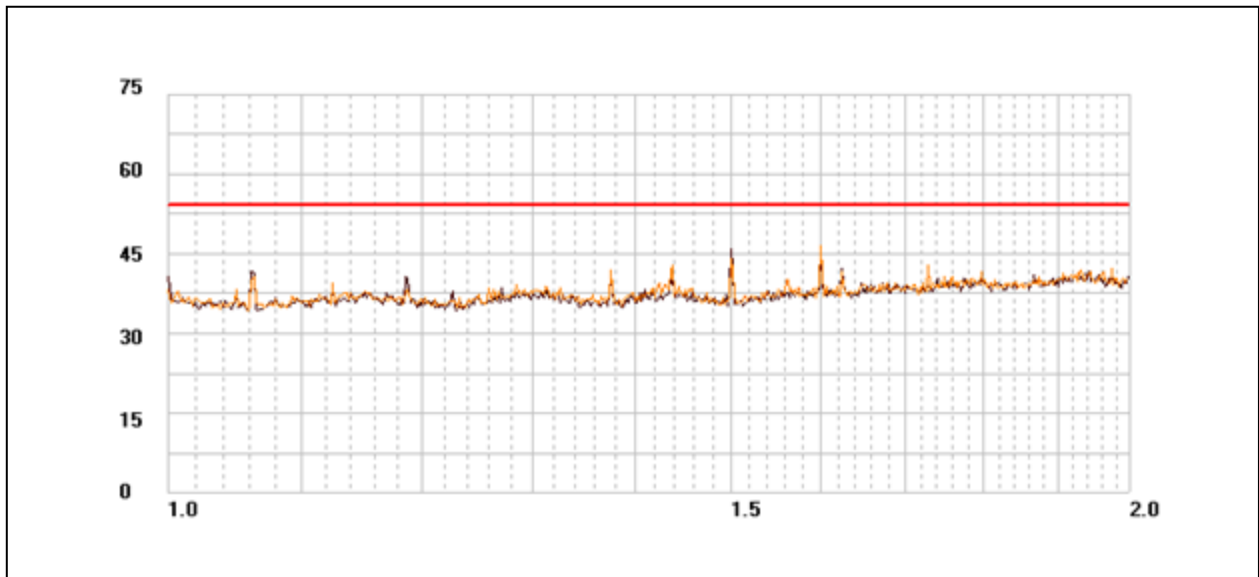
Table 16. Radiated Emissions Limits, Test Results, 30 MHz – 1 GHz, AC/DC



Plot 7. Radiated Emissions, 30 MHz – 1 GHz, AC/DC

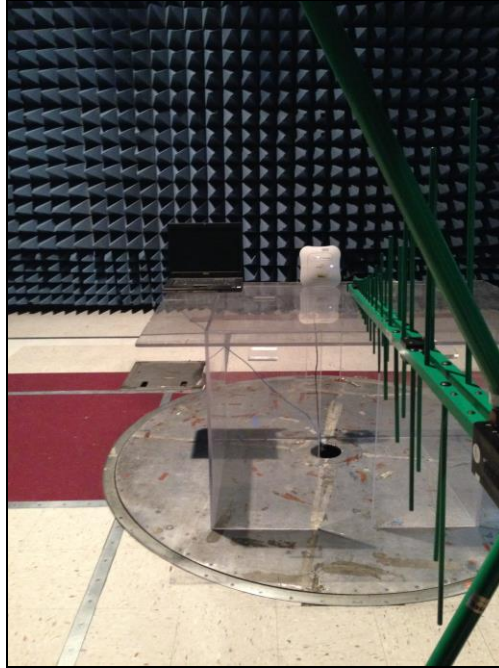
Frequency (MHz)	Antenna Polarity	EUT Azimuth (Degrees)	Antenna Height (cm)	Uncorrected Amplitude (dB μ V)	ACF (dB/m)	Pre Amp Gain (dB)	CBL (dB)	DCF (dB)	Corrected Amplitude (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1062.667	H	0	167.17	45.04	27.901	33.524	0	0	39.417	54	-14.583
1375.133	H	37	130.05	38.25	28.5	33.392	0	0	33.358	54	-20.642
1500.267	H	99	137.52	47.17	28.202	33.34	0	0	42.032	54	-11.968
1625.333	V	154	198.29	46.69	29.203	33.287	0	0	42.606	54	-11.394
1625.333	H	169	128.58	43.51	29.203	33.287	0	0	39.426	54	-14.574
1750.5	V	0	128.11	43.42	30.203	33.235	0	0	40.388	54	-13.612

Table 17. Radiated Emissions Limits, Test Results, 1 GHz – 2 GHz, AC/DC

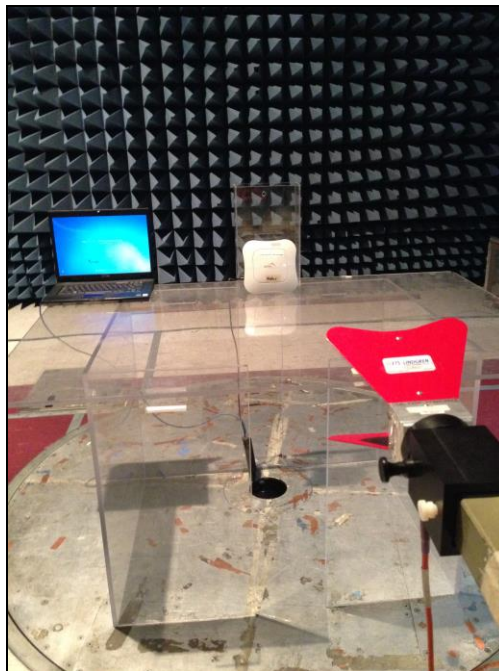


Plot 8. Radiated Emissions, 1 GHz – 2 GHz, AC/DC

Radiated Emissions Limits Test Setup



Photograph 4. Radiated Emissions, Test Setup, 30 MHz – 1 GHz



Photograph 5. Radiated Emissions, Test Setup, 1 GHz – 2 GHz

IV. Electromagnetic Compatibility Criteria for Intentional Radiators

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.203 Antenna Requirement

Test Requirement: § 15.203: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

The structure and application of the EUT were analyzed to determine compliance with Section 15.203 of the Rules. Section 15.203 states that the subject device must meet at least one of the following criteria:

- a.) Antenna must be permanently attached to the unit.
- b.) Antenna must use a unique type of connector to attach to the EUT.
- c.) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

Results: The EUT as tested is compliant the criteria of §15.203 because the EUT has internal antennas.

Test Engineer(s): Andy Shen

Test Date(s): 07/26/14

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.207 Conducted Emissions Limits

Test Requirement(s): § 15.207 (a): For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 Σ line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency range (MHz)	§ 15.207(a), Conducted Limit (dB μ V)	
	Quasi-Peak	Average
* 0.15- 0.45	66 - 56	56 - 46
0.45 - 0.5	56	46
0.5 - 30	60	50

Table 18. Conducted Limits for Intentional Radiators from FCC Part 15 § 15.207(a)

Test Procedure: The EUT was placed on a 0.8 m-high wooden table inside a screen room. The EUT was situated such that the back of the EUT was 0.4 m from one wall of the vertical ground plane, and the remaining sides of the EUT were no closer than 0.8 m from any other conductive surface. The EUT was powered from a 50 Ω /50 μ H Line Impedance Stabilization Network (LISN). The EMC receiver scanned the frequency range from 150 kHz to 30 MHz. Conducted Emissions measurements were made in accordance with *ANSI C63.4-2003 "Methods and Measurements of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40 GHz"*. The measurements were performed over the frequency range of 0.15 MHz to 30 MHz using a 50 Ω /50 μ H LISN as the input transducer to an EMC/field intensity meter. For the purpose of this testing, the transmitter was turned on. Scans were performed with the transmitter on.

Test Results: The EUT was compliant with this requirement.

Test Engineer(s): Danny Alvendia

Test Date(s): 07/28/14

Conducted Emissions 15.207(a) - Voltage, AC Power, Phase Line (120 VAC, 60 Hz), PoE

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
42577 Meru PoE Rad_Off 120V L	0.16	46.7	65.465	-18.765	Pass	35.04	55.465	-20.425	Pass
42577 Meru PoE Rad_Off 120V L	0.2	46.06	63.617	-17.557	Pass	28	53.617	-25.617	Pass
42577 Meru PoE Rad_Off 120V L	0.43	45.58	57.277	-11.697	Pass	36.36	47.277	-10.917	Pass
42577 Meru PoE Rad_Off 120V L	0.45	45.59	56.9	-11.31	Pass	37.01	46.9	-9.89	Pass
42577 Meru PoE Rad_Off 120V L	23.83	46.66	60	-13.34	Pass	30.59	50	-19.41	Pass
42577 Meru PoE Rad_Off 120V L	29.93	48.46	60	-11.54	Pass	32.52	50	-17.48	Pass

Table 19. Conducted Emissions - Voltage, AC Power, 15.207(a), Phase Line (120 VAC, 60 Hz), PoE



Plot 9. Conducted Emissions, 15.207(a), Phase Line, PoE

Conducted Emissions 15.207(a) - Voltage, AC Power, Neutral Line (120 VAC, 60 Hz), PoE

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
42577 Meru PoE Rad_Off 120V N	0.17	45.12	64.963	-19.843	Pass	29.37	54.963	-25.593	Pass
42577 Meru PoE Rad_Off 120V N	0.44	44.77	57.086	-12.316	Pass	32.92	47.086	-14.166	Pass
42577 Meru PoE Rad_Off 120V N	16.32	46.51	60	-13.49	Pass	29.57	50	-20.43	Pass
42577 Meru PoE Rad_Off 120V N	22.04	46.42	60	-13.58	Pass	27.54	50	-22.46	Pass
42577 Meru PoE Rad_Off 120V N	23.08	45.81	60	-14.19	Pass	29.23	50	-20.77	Pass
42577 Meru PoE Rad_Off 120V N	29.885	47.63	60	-12.37	Pass	32.59	50	-17.41	Pass

Table 20. Conducted Emissions - Voltage, AC Power, 15.207(a), Neutral Line (120 VAC, 60 Hz), PoE

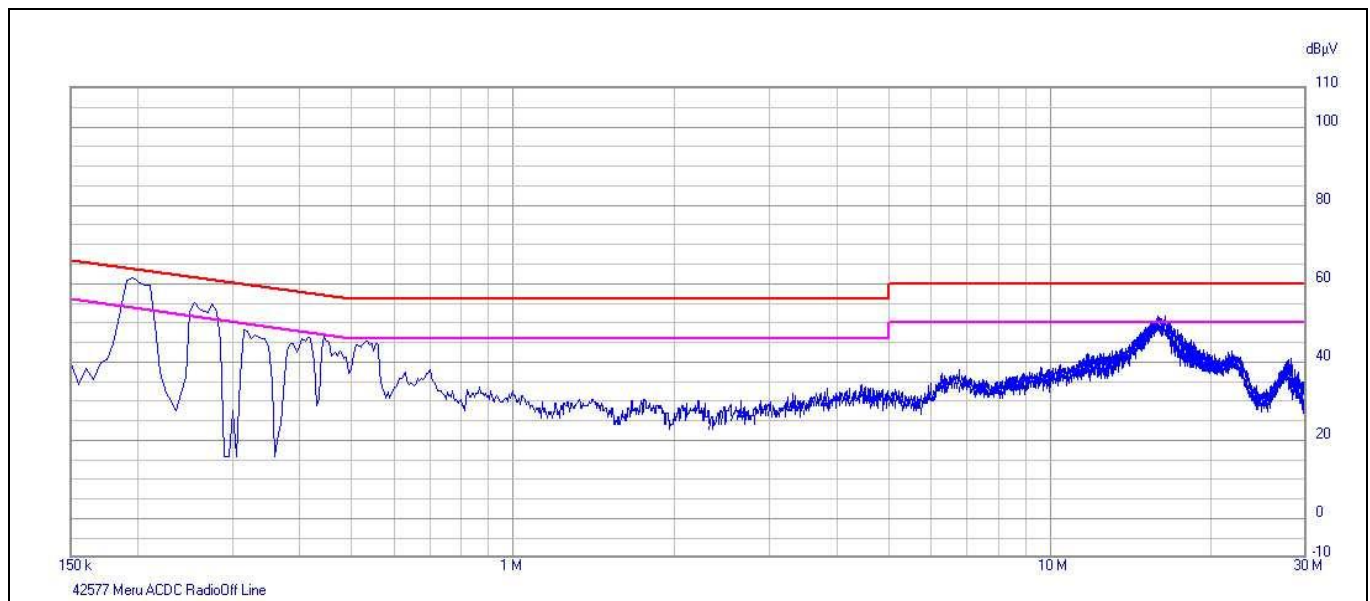


Plot 10. Conducted Emissions, 15.207(a), Neutral Line, PoE

Conducted Emissions 15.207(a) - Voltage, AC Power, Phase Line (120 VAC, 60 Hz), AC/DC

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
42577 CEV ACDC RadOff L	0.195	57.81	63.827	-6.017	Pass	40.17	53.827	-13.657	Pass
42577 CEV ACDC RadOff L	0.255	51.09	61.605	-10.515	Pass	33.29	51.605	-18.315	Pass
42577 CEV ACDC RadOff L	0.315	42.22	59.854	-17.634	Pass	20.77	49.854	-29.084	Pass
42577 CEV ACDC RadOff L	0.445	40.87	56.993	-16.123	Pass	22.88	46.993	-24.113	Pass
42577 CEV ACDC RadOff L	14.47	46.73	60	-13.27	Pass	37.42	50	-12.58	Pass
42577 CEV ACDC RadOff L	15.785	46.88	60	-13.12	Pass	39.03	50	-10.97	Pass

Table 21. Conducted Emissions - Voltage, AC Power, 15.207(a), Phase Line (120 VAC, 60 Hz), AC/DC



Plot 11. Conducted Emissions, 15.207(a), Phase Line, AC/DC

Conducted Emissions 15.207(a) - Voltage, AC Power, Neutral Line (120 VAC, 60 Hz), AC/DC

Line	Freq. (MHz)	QP Amplitude	QP Limit	Delta	Pass	Average Amplitude	Average Limit	Delta	Pass
42577 CEV ACDC RadOff N	0.205	56.12	63.413	-7.293	Pass	33.83	53.413	-19.583	Pass
42577 CEV ACDC RadOff N	0.26	50	61.444	-11.444	Pass	23.09	51.444	-28.354	Pass
42577 CEV ACDC RadOff N	0.27	49.45	61.131	-11.681	Pass	23.09	51.131	-28.041	Pass
42577 CEV ACDC RadOff N	0.32	40.09	59.724	-19.634	Pass	23.6	49.724	-26.124	Pass
42577 CEV ACDC RadOff N	0.46	35.09	56.712	-21.622	Pass	25.81	46.712	-20.902	Pass
42577 CEV ACDC RadOff N	16.07	38.45	60	-21.55	Pass	24.43	50	-25.57	Pass

Table 22. Conducted Emissions - Voltage, AC Power, 15.207(a), Neutral Line (120 VAC, 60 Hz), AC/DC



Plot 12. Conducted Emissions, 15.207(a), Neutral Line, AC/DC

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.403(i) 26dB Bandwidth

Test Requirements: § 15.403 (i): For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Determination of the emissions bandwidth is based on the use of measurement instrumentation employing a peak detector function with an instrument resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

Test Procedure: The transmitter was set to low, mid and high channels at the highest output power and connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured with the spectrum analyzer using a RBW approximately equal to 1% of the total emission bandwidth, VBW > RBW. The 26 dB Bandwidth was measured and recorded.

Test Results The 26 dB Bandwidth was compliant with the requirements of this section and was determined from the plots on the following pages.

Test Engineer(s): Benjamin Taylor

Test Date(s): 09/05/14

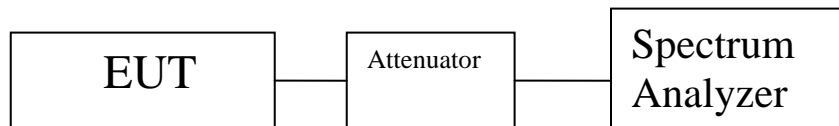
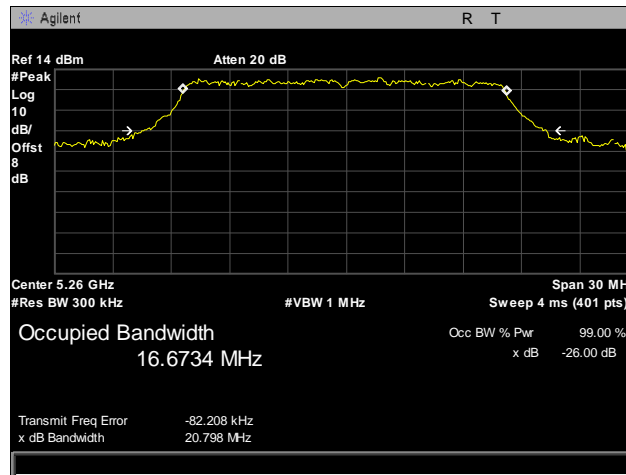
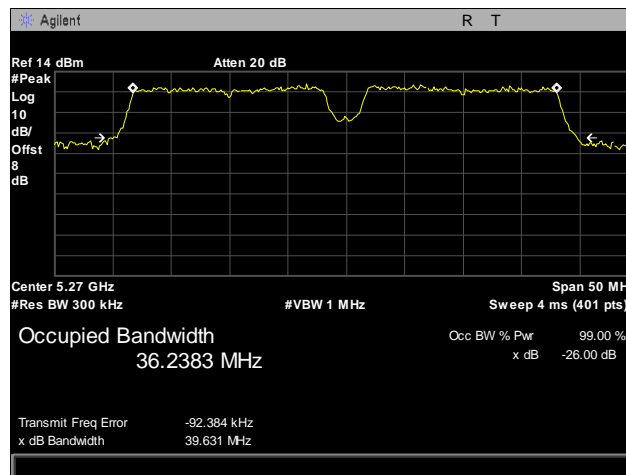


Figure 2. Occupied Bandwidth, Test Setup

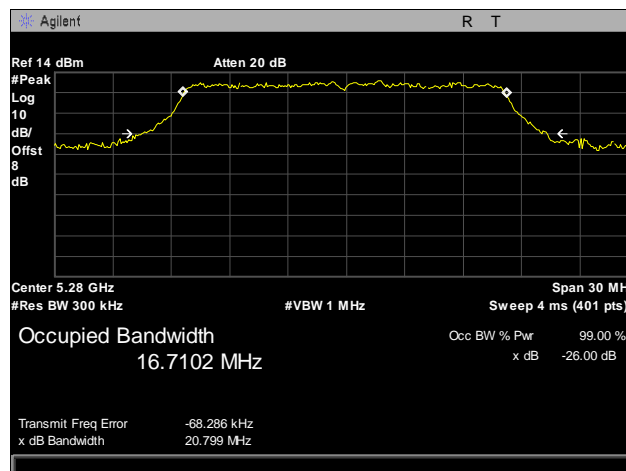
26 dB Occupied Bandwidth, 802.11a



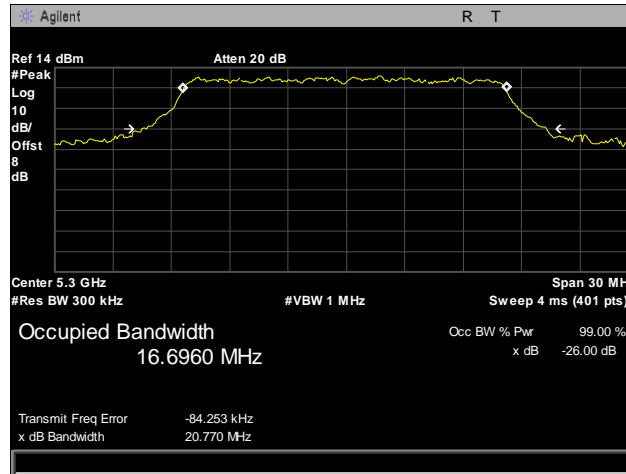
Plot 13. 26 dB Occupied Bandwidth, 802.11a, 5260 MHz



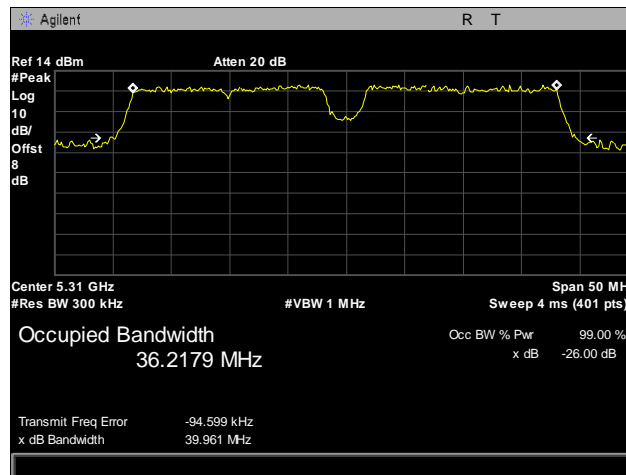
Plot 14. 26 dB Occupied Bandwidth, 802.11a, 5270 MHz



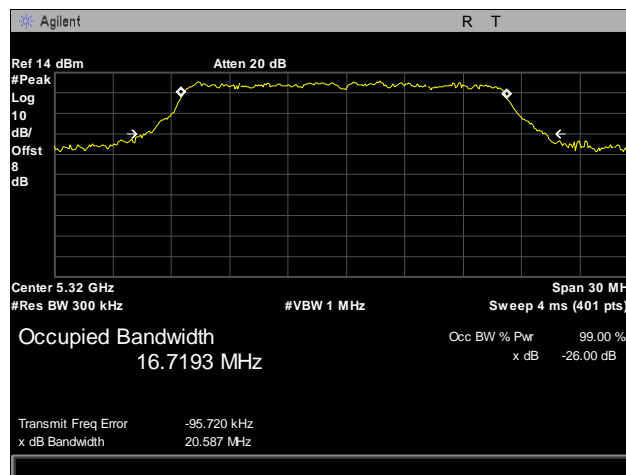
Plot 15. 26 dB Occupied Bandwidth, 802.11a, 5280 MHz



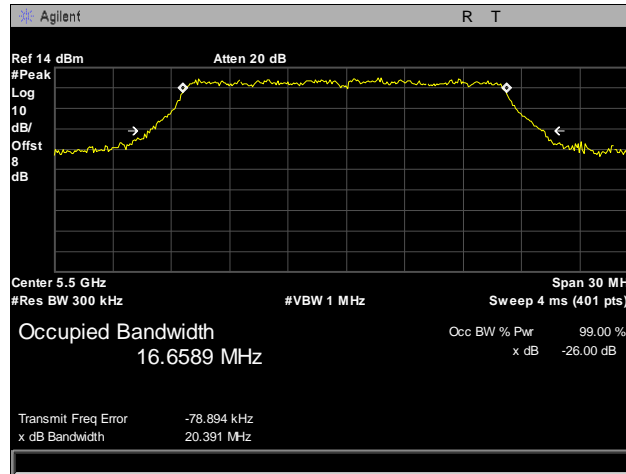
Plot 16. 26 dB Occupied Bandwidth, 802.11a, 5300 MHz



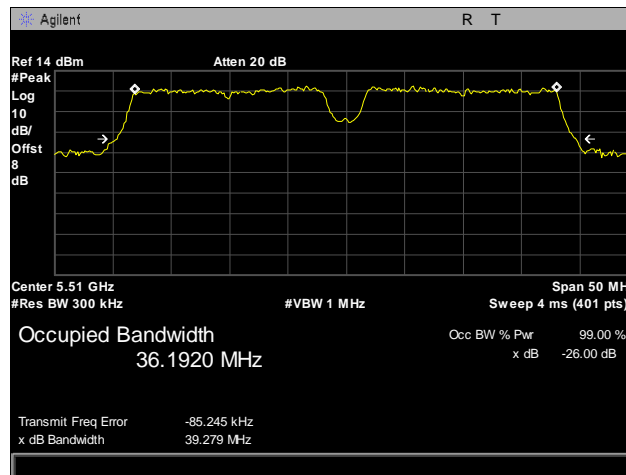
Plot 17. 26 dB Occupied Bandwidth, 802.11a, 5310 MHz



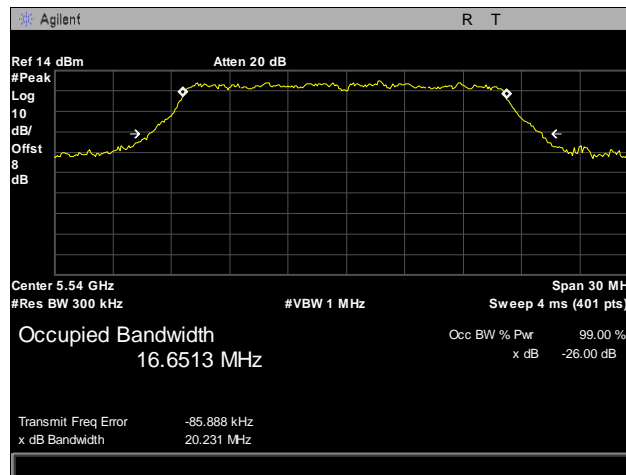
Plot 18. 26 dB Occupied Bandwidth, 802.11a, 5320 MHz



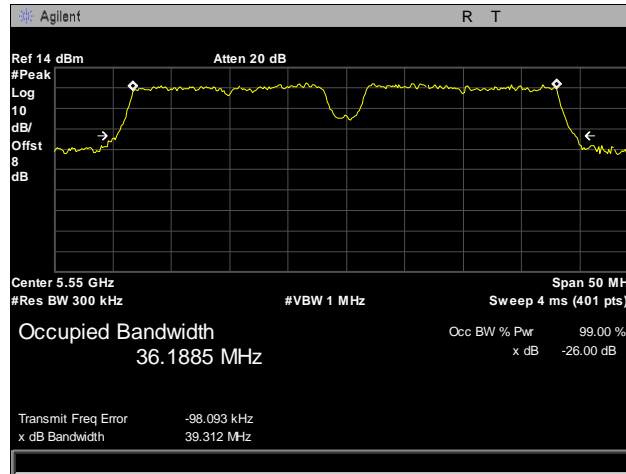
Plot 19. 26 dB Occupied Bandwidth, 802.11a, 5500 MHz



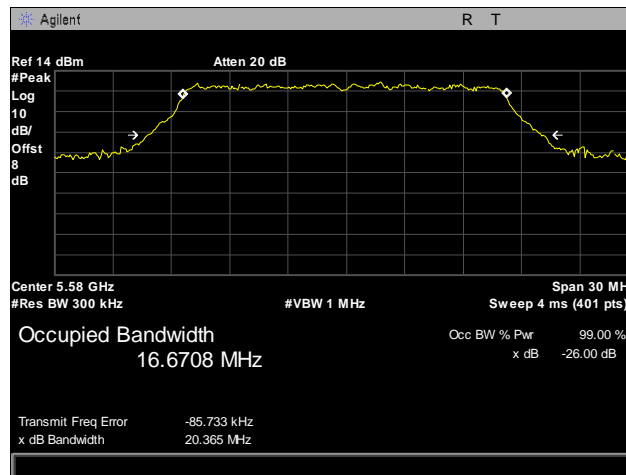
Plot 20. 26 dB Occupied Bandwidth, 802.11a, 5510 MHz



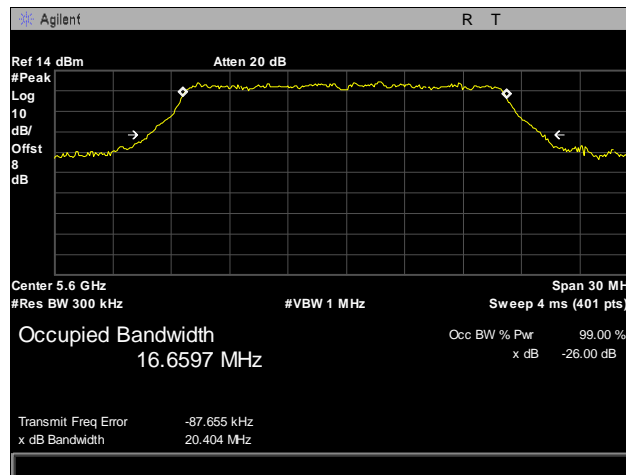
Plot 21. 26 dB Occupied Bandwidth, 802.11a, 5540 MHz



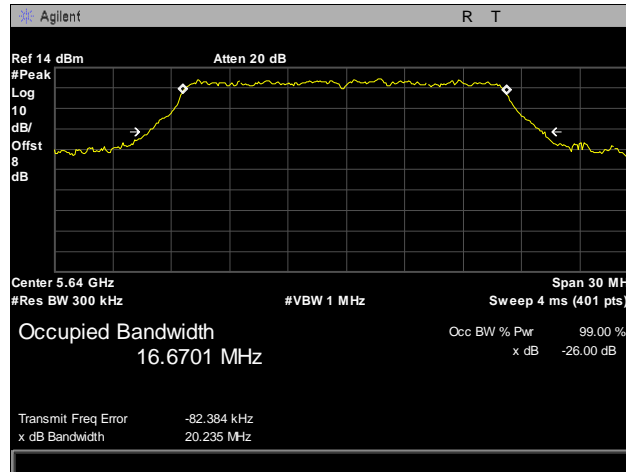
Plot 22. 26 dB Occupied Bandwidth, 802.11a, 5550 MHz



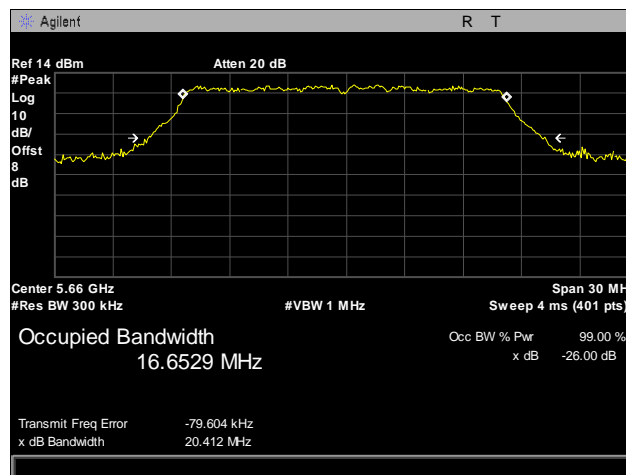
Plot 23. 26 dB Occupied Bandwidth, 802.11a, 5580 MHz



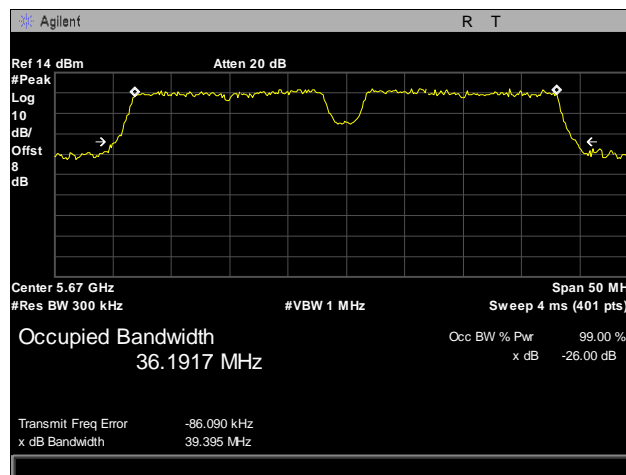
Plot 24. 26 dB Occupied Bandwidth, 802.11a, 5600 MHz



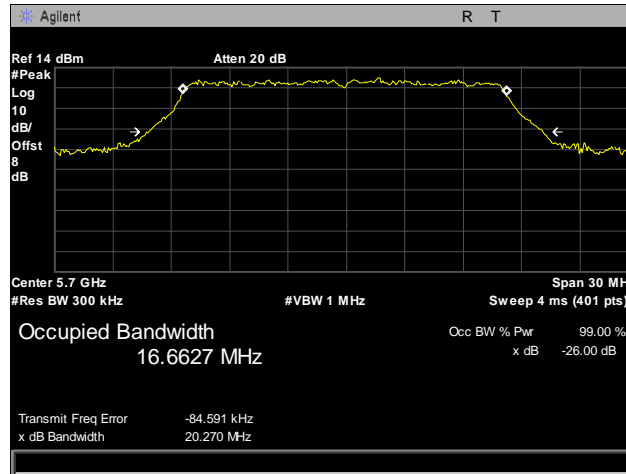
Plot 25. 26 dB Occupied Bandwidth, 802.11a, 5640 MHz



Plot 26. 26 dB Occupied Bandwidth, 802.11a, 5660 MHz

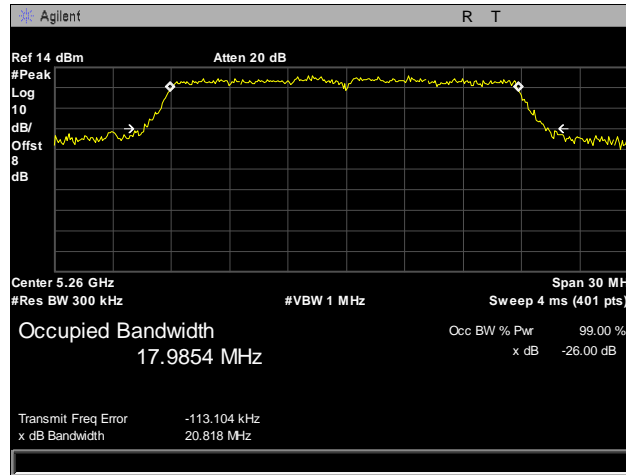


Plot 27. 26 dB Occupied Bandwidth, 802.11a, 5670 MHz

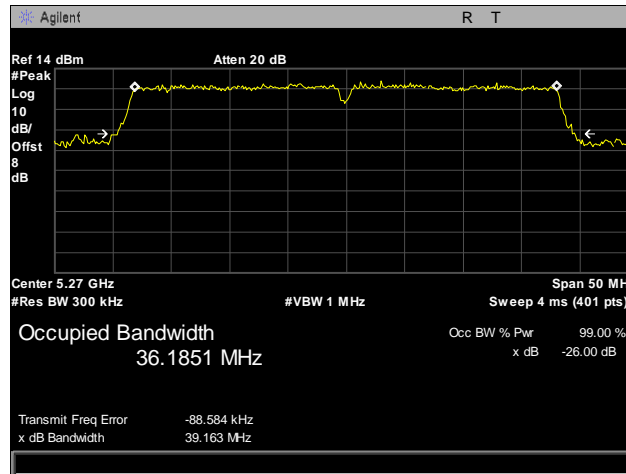


Plot 28. 26 dB Occupied Bandwidth, 802.11a, 5700 MHz

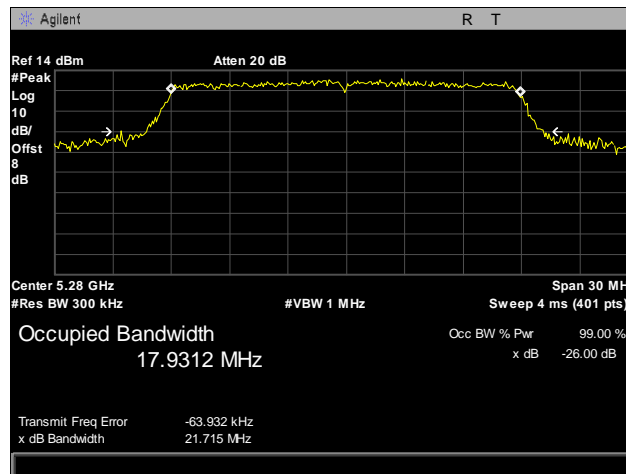
26 dB Occupied Bandwidth, 802.11n, Port 1



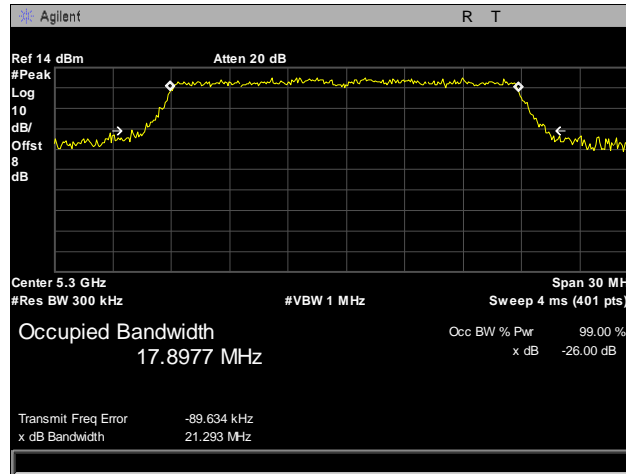
Plot 29. 26 dB Occupied Bandwidth, 802.11n, 5260 MHz, Port 1



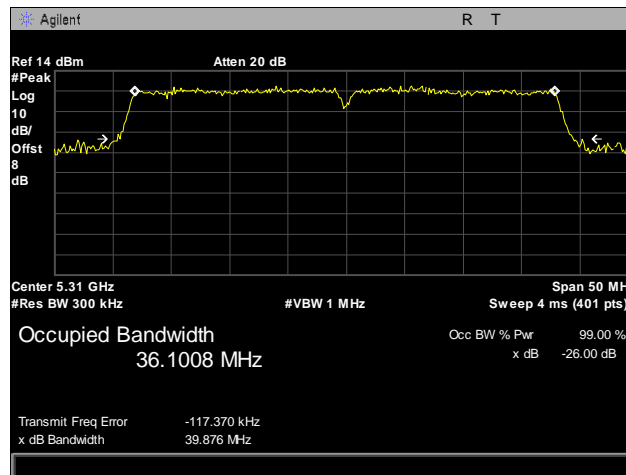
Plot 30. 26 dB Occupied Bandwidth, 802.11n, 5270 MHz, Port 1



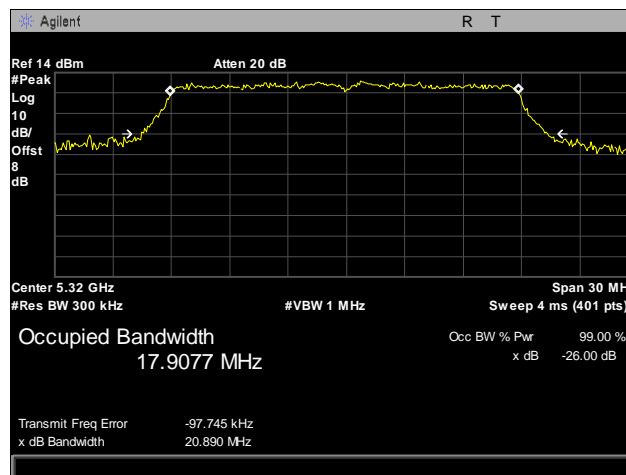
Plot 31. 26 dB Occupied Bandwidth, 802.11n, 5280 MHz, Port 1



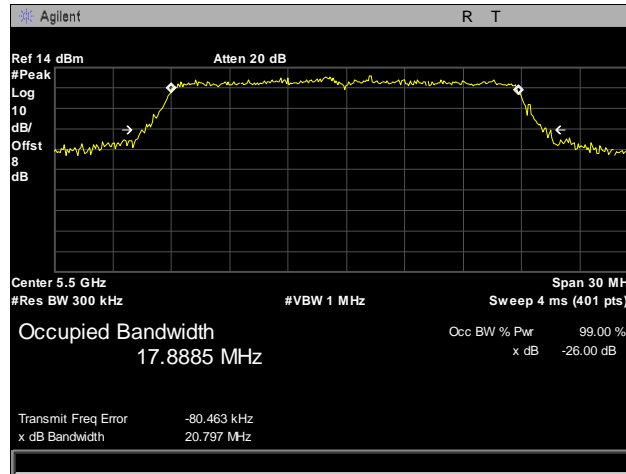
Plot 32. 26 dB Occupied Bandwidth, 802.11n, 5300 MHz, Port 1



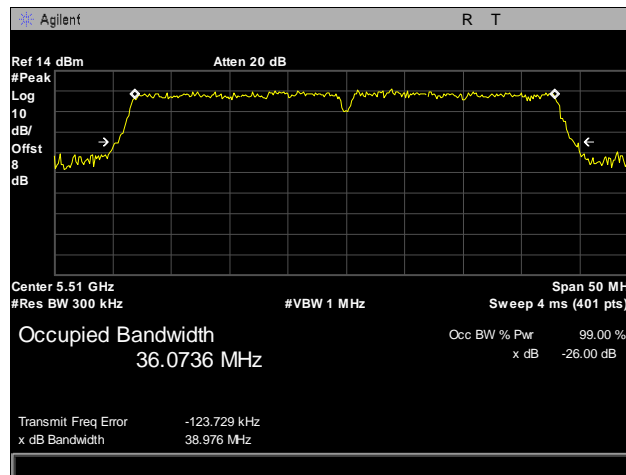
Plot 33. 26 dB Occupied Bandwidth, 802.11n, 5310 MHz, Port 1



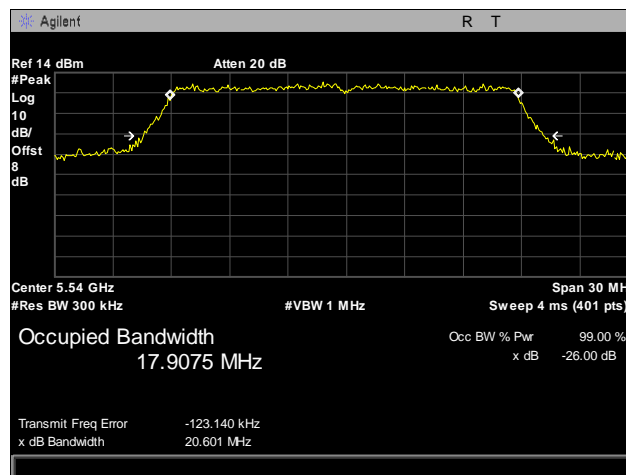
Plot 34. 26 dB Occupied Bandwidth, 802.11n, 5320 MHz, Port 1



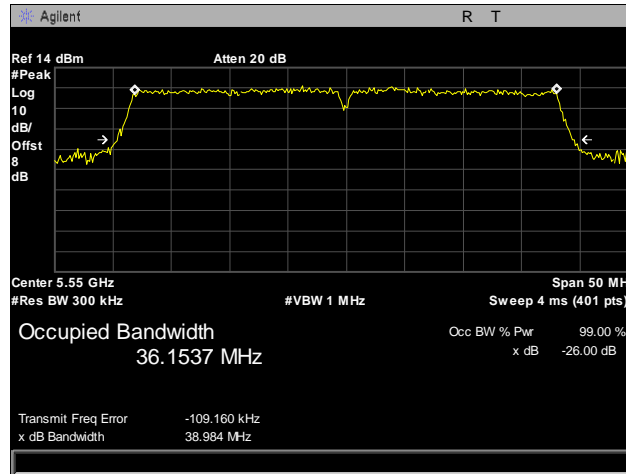
Plot 35. 26 dB Occupied Bandwidth, 802.11n, 5500 MHz, Port 1



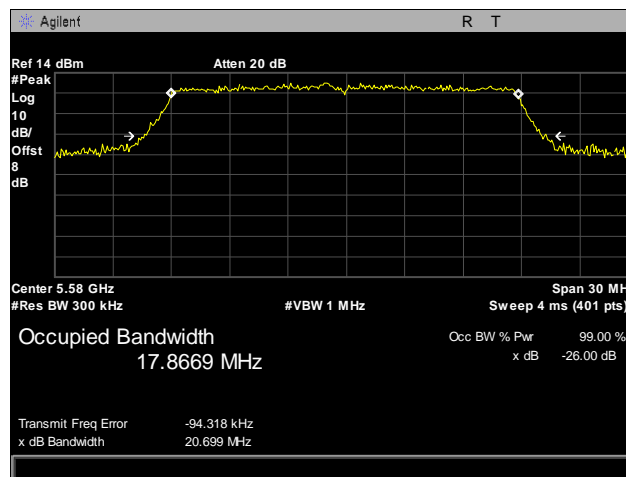
Plot 36. 26 dB Occupied Bandwidth, 802.11n, 5510 MHz, Port 1



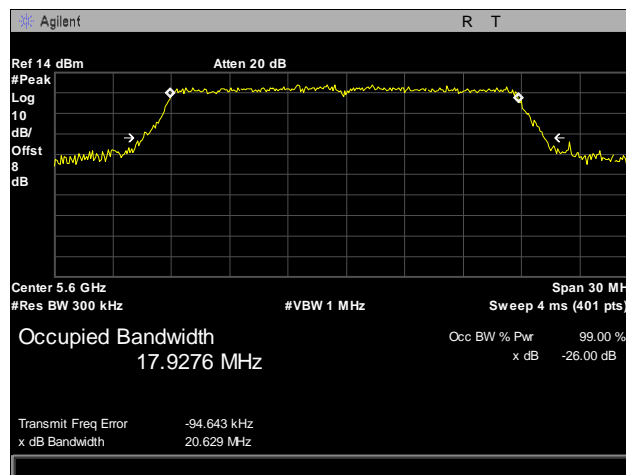
Plot 37. 26 dB Occupied Bandwidth, 802.11n, 5540 MHz, Port 1



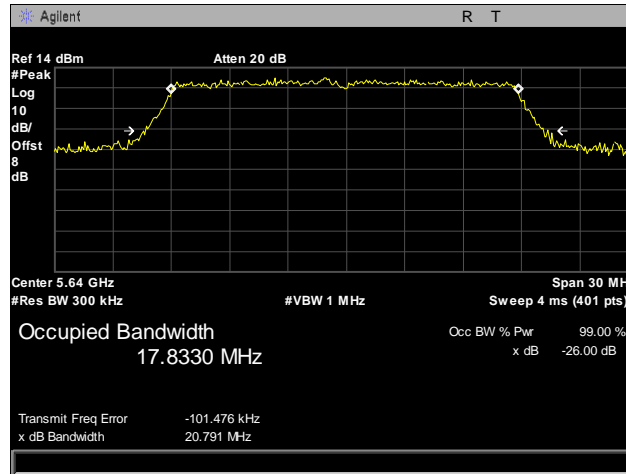
Plot 38. 26 dB Occupied Bandwidth, 802.11n, 5550 MHz, Port 1



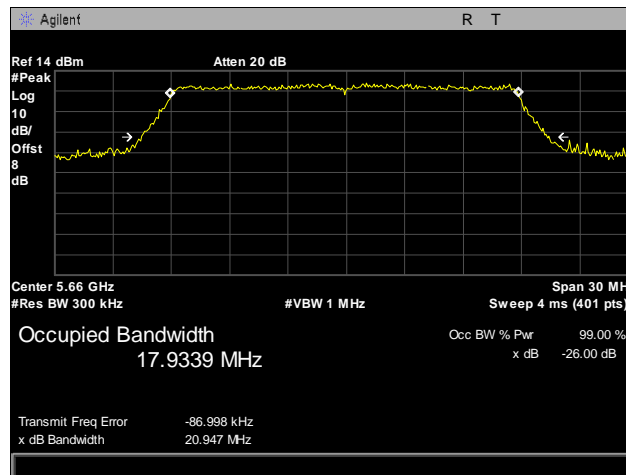
Plot 39. 26 dB Occupied Bandwidth, 802.11n, 5580 MHz, Port 1



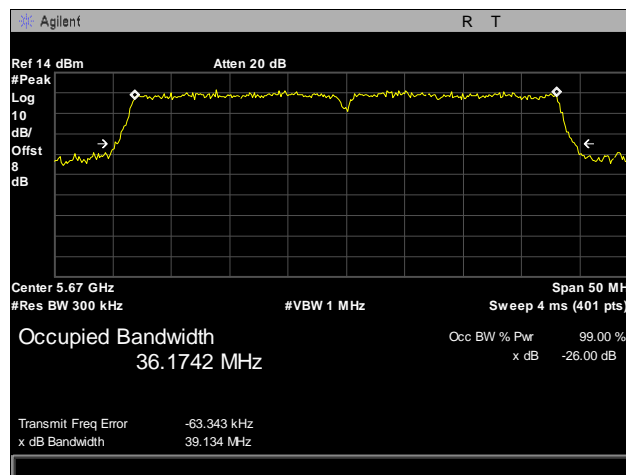
Plot 40. 26 dB Occupied Bandwidth, 802.11n, 5600 MHz, Port 1



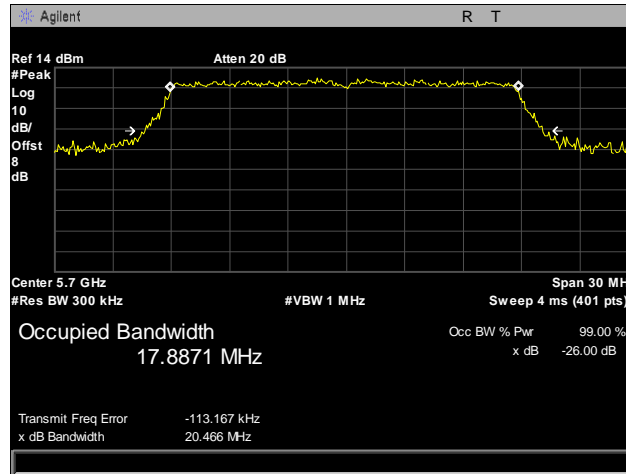
Plot 41. 26 dB Occupied Bandwidth, 802.11n, 5640 MHz, Port 1



Plot 42. 26 dB Occupied Bandwidth, 802.11n, 5660 MHz, Port 1

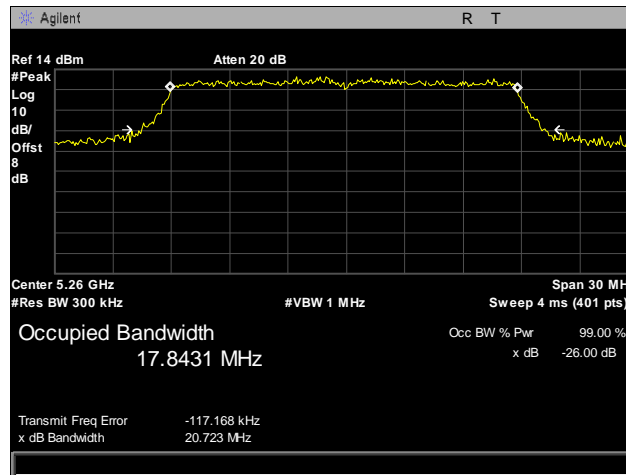


Plot 43. 26 dB Occupied Bandwidth, 802.11n, 5670 MHz, Port 1

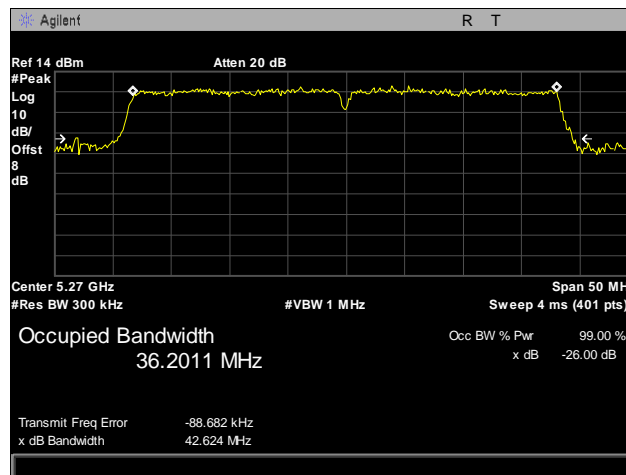


Plot 44. 26 dB Occupied Bandwidth, 802.11n, 5700 MHz, Port 1

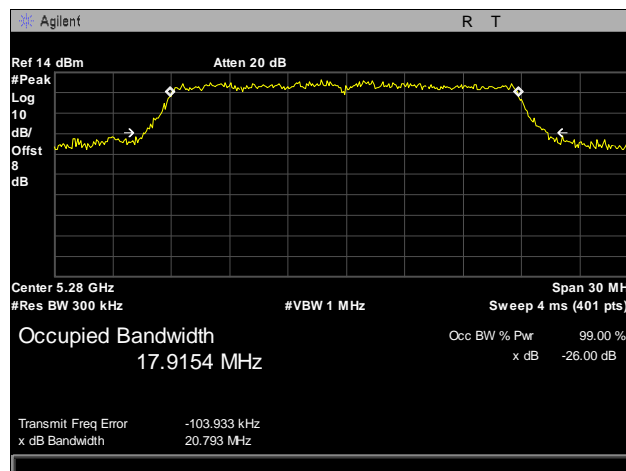
26 dB Occupied Bandwidth, 802.11n, Port 2



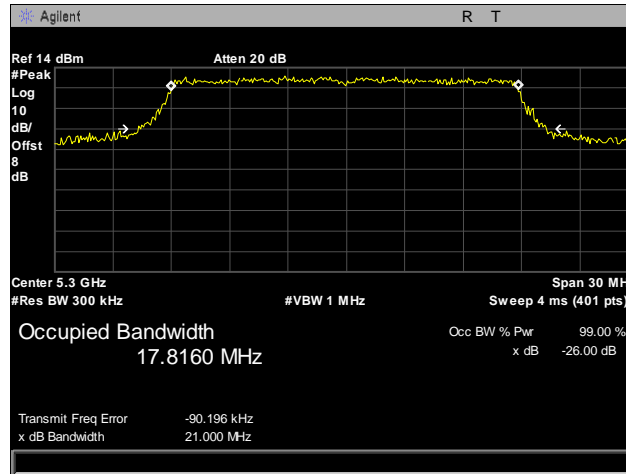
Plot 45. 26 dB Occupied Bandwidth, 802.11n, 5260 MHz, Port 2



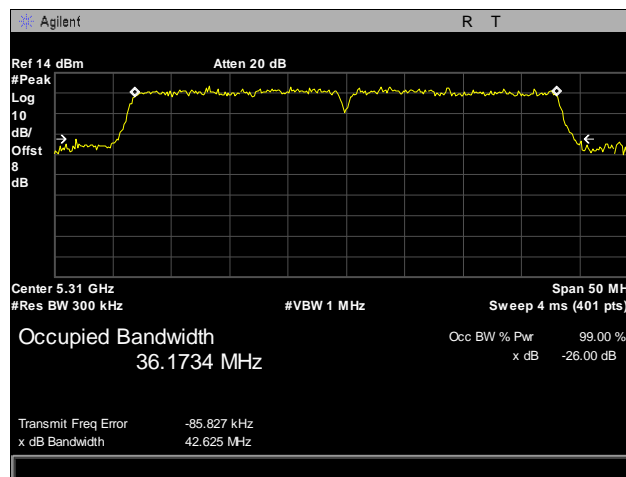
Plot 46. 26 dB Occupied Bandwidth, 802.11n, 5270 MHz, Port 2



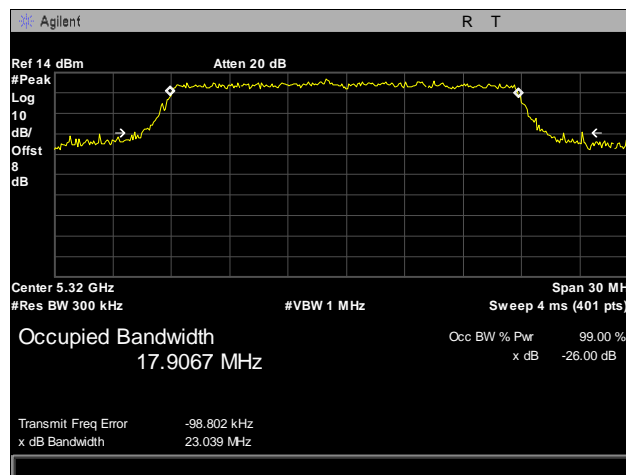
Plot 47. 26 dB Occupied Bandwidth, 802.11n, 5280 MHz, Port 2



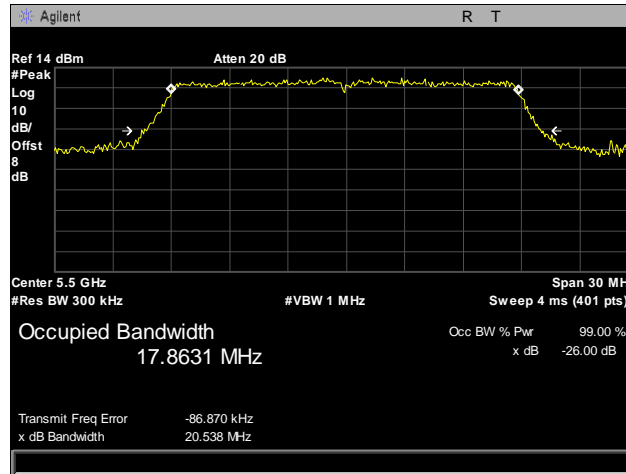
Plot 48. 26 dB Occupied Bandwidth, 802.11n, 5300 MHz, Port 2



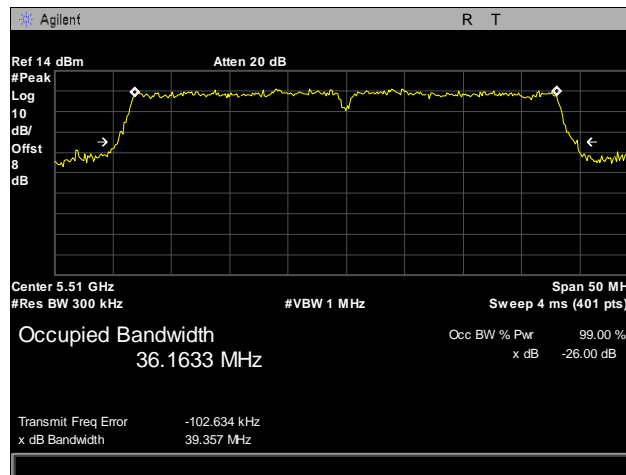
Plot 49. 26 dB Occupied Bandwidth, 802.11n, 5310 MHz, Port 2



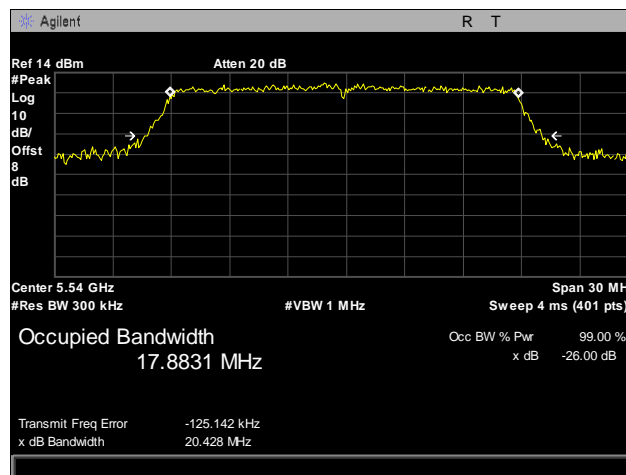
Plot 50. 26 dB Occupied Bandwidth, 802.11n, 5320 MHz, Port 2



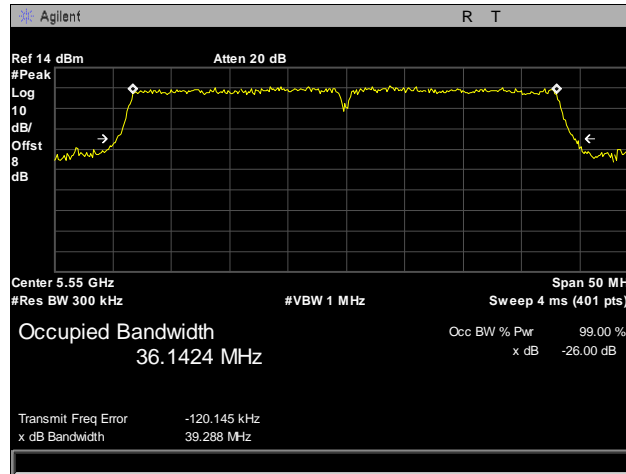
Plot 51. 26 dB Occupied Bandwidth, 802.11n, 5500 MHz, Port 2



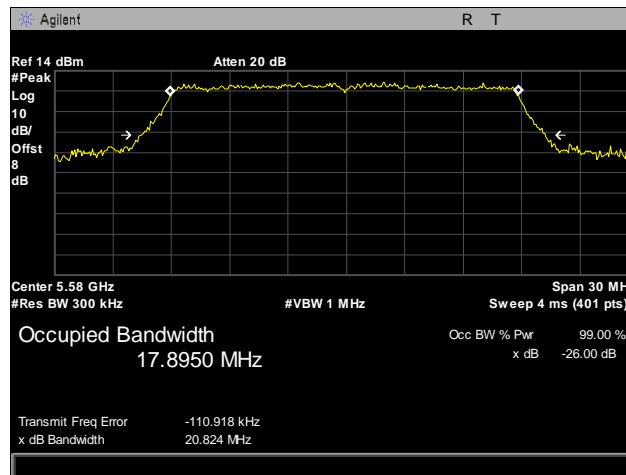
Plot 52. 26 dB Occupied Bandwidth, 802.11n, 5510 MHz, Port 2



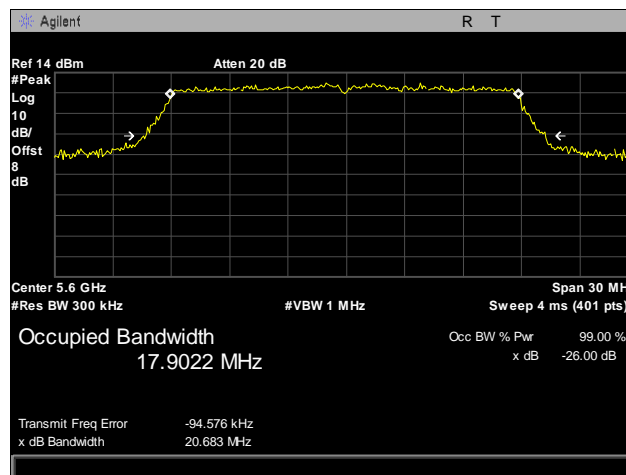
Plot 53. 26 dB Occupied Bandwidth, 802.11n, 5540 MHz, Port 2



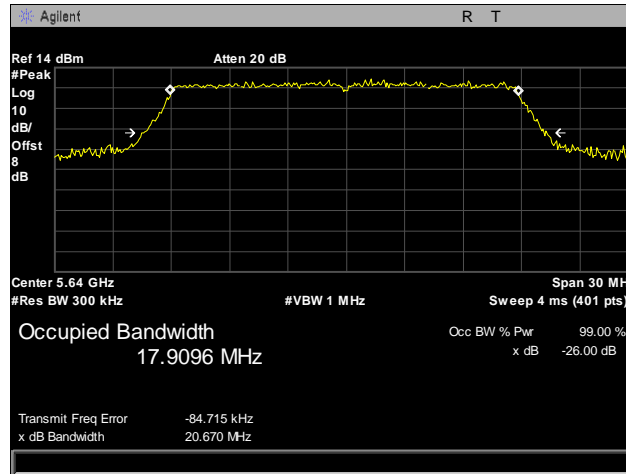
Plot 54. 26 dB Occupied Bandwidth, 802.11n, 5550 MHz, Port 2



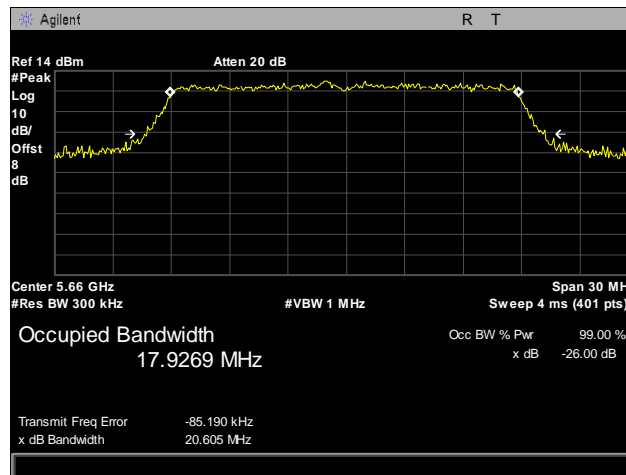
Plot 55. 26 dB Occupied Bandwidth, 802.11n, 5580 MHz, Port 2



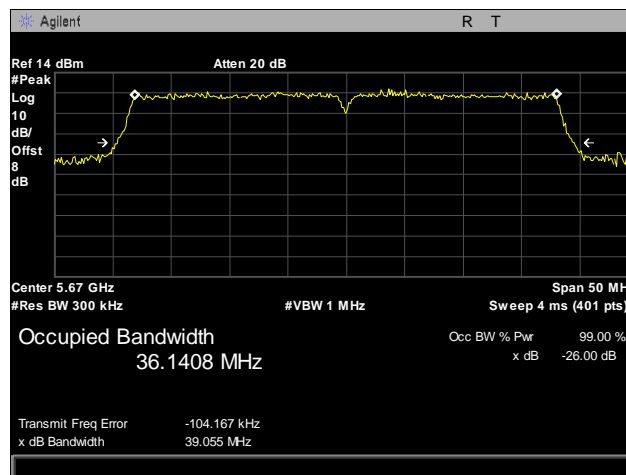
Plot 56. 26 dB Occupied Bandwidth, 802.11n, 5600 MHz, Port 2



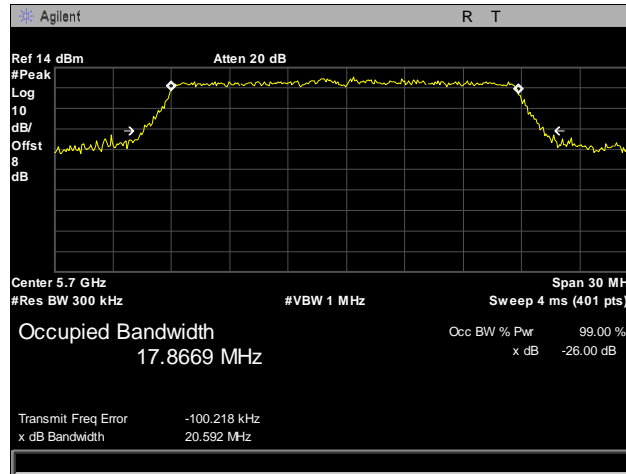
Plot 57. 26 dB Occupied Bandwidth, 802.11n, 5640 MHz, Port 2



Plot 58. 26 dB Occupied Bandwidth, 802.11n, 5660 MHz, Port 2

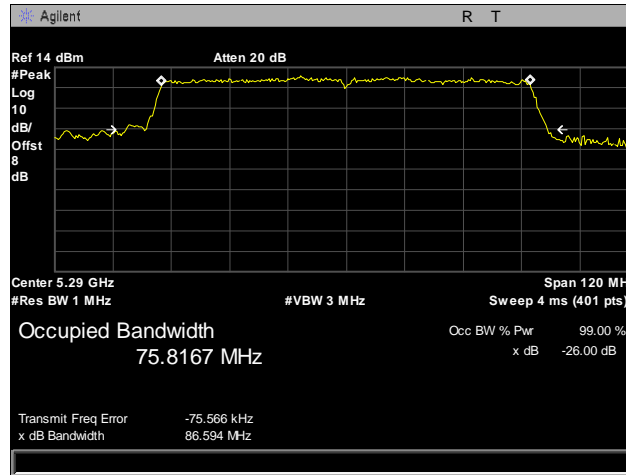


Plot 59. 26 dB Occupied Bandwidth, 802.11n, 5670 MHz, Port 2

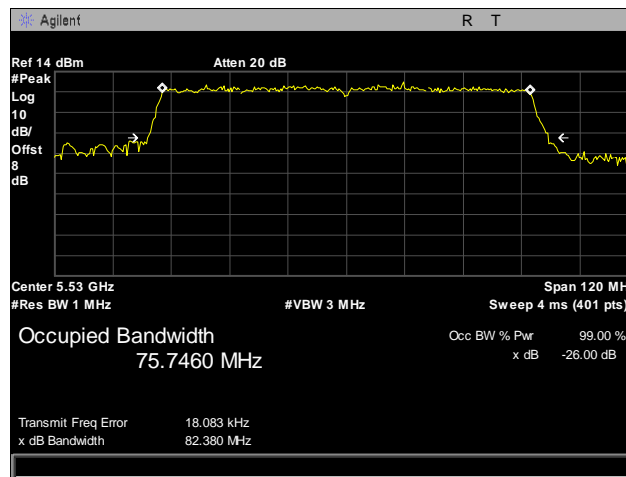


Plot 60. 26 dB Occupied Bandwidth, 802.11n, 5700 MHz, Port 2

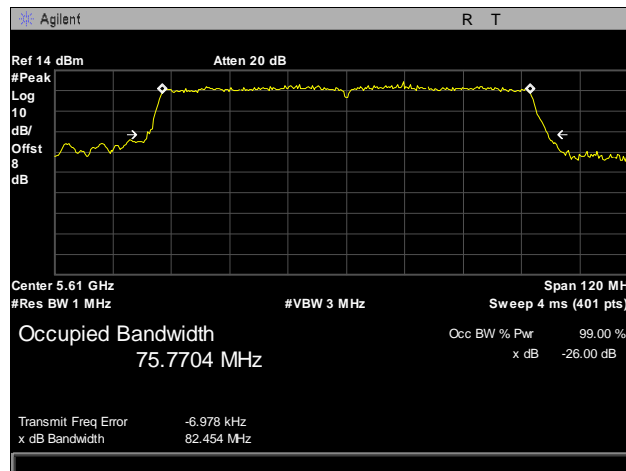
26 dB Occupied Bandwidth, 802.11ac, Port 1



Plot 61. 26 dB Occupied Bandwidth, 802.11ac, 5290 MHz, Port 1

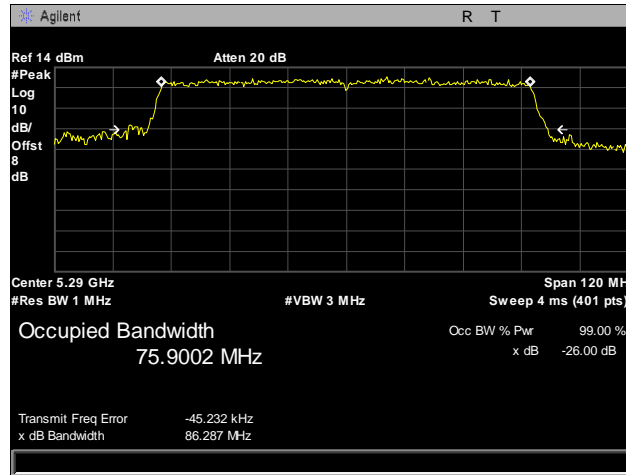


Plot 62. 26 dB Occupied Bandwidth, 802.11ac, 5530 MHz, Port 1

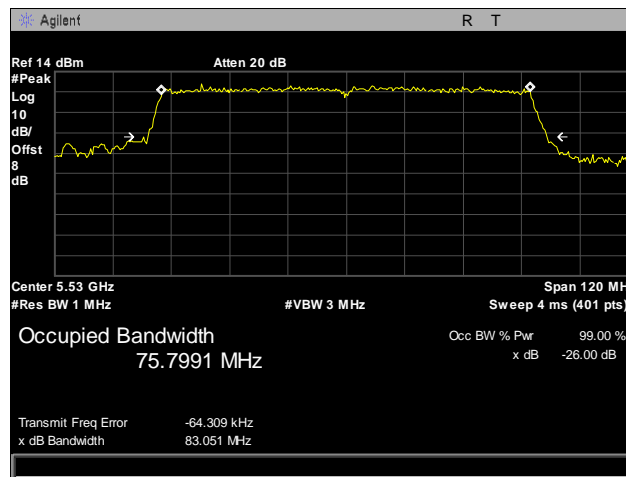


Plot 63. 26 dB Occupied Bandwidth, 802.11ac, 5610 MHz, Port 1

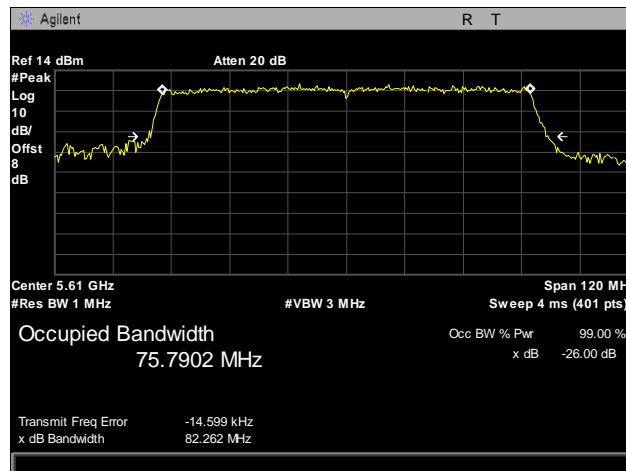
26 dB Occupied Bandwidth, 802.11ac, Port 2



Plot 64. 26 dB Occupied Bandwidth, 802.11ac, 5290 MHz, Port 2



Plot 65. 26 dB Occupied Bandwidth, 802.11ac, 5530 MHz, Port 2



Plot 66. 26 dB Occupied Bandwidth, 802.11ac, 5610 MHz, Port 2

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.407(a)(2) RF Power Output

Test Requirements: §15.407(a)(2): For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.

Test Procedure: The EUT was connected to a spectrum analyzer through an attenuator and set to transmit continuously on the low, mid, and high channels. Its power was measured according to measurement method SA-1, as described in 789033 D02 General UNII Test Procedures New Rule v01. Plots were corrected for attenuator and cable loss. EUT will be professionally installed and Meru Networks will lower power accordingly when both radios are operating simultaneously and in the same band.

Test Results: Equipment was compliant with the Peak Power Output limits of § 15.407(a)(2).

Test Engineer(s): Benjamin Taylor

Test Date(s): 09/10/14

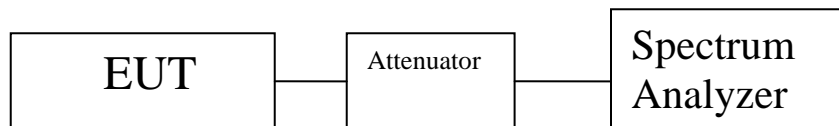


Figure 3. Power Output Test Setup

Frequency (MHz)	Mode	Port R1-A Power (dBm)	Port R1-B Power (dBm)	Summed Power (dBm)	Antenna Gain (dBi)	Limit (dBm)	Margin (dB)
5260	802.11a	20.79		20.79	7.70	22.30	-1.51
5300	802.11a	20.01		20.01	7.70	22.30	-2.29
5320	802.11a	19.39		19.39	7.70	22.30	-2.91
5270	802.11a	19.46		19.46	7.70	22.30	-2.84
5310	802.11a	19.22		19.22	7.70	22.30	-3.08
5260	802.11n	16.91	17.21	20.07	7.70	22.30	-2.23
5300	802.11n	17.05	17.07	20.07	7.70	22.30	-2.23
5320	802.11n	16.97	16.77	19.88	7.70	22.30	-2.42
5270	802.11n	17.71	19.19	21.52	7.70	22.30	-0.78
5310	802.11n	18.27	18.67	21.48	7.70	22.30	-0.82
5290	802.11ac	18.11	18.73	21.44	7.70	22.30	-0.86

Table 23. RF Output Power, Test Results, Lower

Frequency (MHz)	Mode	Port R1-A Power (dBm)	Port R1-B Power (dBm)	Summed Power (dBm)	Antenna Gain (dBi)	Limit (dBm)	Margin (dB)
5500	802.11a	19.27		19.27	7.70	22.30	-3.03
5600	802.11a	18.49		18.49	7.70	22.30	-3.81
5700	802.11a	18.73		18.73	7.70	22.30	-3.57
5510	802.11a	18.97		18.97	7.70	22.30	-3.33
5670	802.11a	19.00		19.00	7.70	22.30	-3.30
5500	802.11n	16.88	17.23	20.07	7.70	22.30	-2.23
5600	802.11n	15.76	16.73	19.28	7.70	22.30	-3.02
5700	802.11n	16.01	16.56	19.30	7.70	22.30	-3.00
5510	802.11n	19.22	18.40	21.84	7.70	22.30	-0.46
5670	802.11n	18.29	18.83	21.58	7.70	22.30	-0.72

Table 24. RF Output Power, Test Results, Upper

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.407(a)(2) Peak Power Spectral Density

Test Requirements: § 15.407(a)(2): In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Test Procedure: The transmitter was connected directly to a Spectrum Analyzer through an attenuator. The power level was set to the maximum level on the EUT. The RBW was set to 1MHz and the VBW was set to 3MHz. The method of measurement used was method SA-1 from 789033 D02 General UNII Test Procedures New Rule v01. Plots are correct for attenuators and cable loss.

Test Results: Equipment was compliant with the peak power spectral density limits of § 15.407 (a)(2). The peak power spectral density was determined from plots on the following page(s).

Test Engineer(s): Benjamin Taylor

Test Date(s): 09/10/14

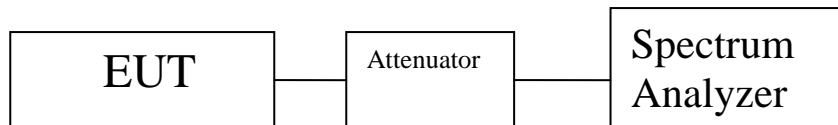


Figure 4. Power Spectral Density Test Setup

Frequency (MHz)	Mode	Port R1-A PSD (dBm)	Port R1-B PSD (dBm)	Summed PSD (dBm)	Antenna Gain (dBi)	Limit (dBm)	Margin (dB)
5260	802.11a	8.71		8.71	7.70	9.30	-0.59
5300	802.11a	8.42		8.42	7.70	9.30	-0.88
5320	802.11a	8.47		8.47	7.70	9.30	-0.83
5270	802.11a	5.46		5.46	7.70	9.30	-3.84
5310	802.11a	5.80		5.80	7.70	9.30	-3.50
5260	802.11n	5.95	6.16	9.07	7.70	9.30	-0.23
5300	802.11n	5.78	6.00	8.90	7.70	9.30	-0.40
5320	802.11n	6.12	6.30	9.22	7.70	9.30	-0.08
5270	802.11n	4.83	5.25	8.06	7.70	9.30	-1.24
5310	802.11n	4.79	5.75	8.31	7.70	9.30	-0.99
5290	802.11ac	1.509	1.725	4.63	7.70	9.30	-4.67

Table 25. Peak Spectral Density, Test Results, Lower

Frequency (MHz)	Mode	Port R1-A PSD (dBm)	Port R1-B PSD (dBm)	Summed PSD (dBm)	Antenna Gain (dBi)	Limit (dBm)	Margin (dB)
5500	802.11a	8.75		8.75	7.70	9.30	-0.56
5600	802.11a	8.08		8.08	7.70	9.30	-1.22
5700	802.11a	8.43		8.43	7.70	9.30	-0.87
5510	802.11a	5.55		5.55	7.70	9.30	-3.75
5670	802.11a	5.58		5.58	7.70	9.30	-3.72
5500	802.11n	5.92	6.22	9.08	7.70	9.30	-0.22
5600	802.11n	5.53	5.67	8.61	7.70	9.30	-0.69
5700	802.11n	5.70	6.14	8.93	7.70	9.30	-0.37
5510	802.11n	4.79	5.59	8.22	7.70	9.30	-1.08
5670	802.11n	4.68	5.07	7.89	7.70	9.30	-1.41

Table 26. Peak Spectral Density, Test Results, Upper

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.407(b)(4), (6), (7) Undesirable Emissions

Test Requirements: § 15.407(b)(4), (6), (7); §15.205: Emissions outside the frequency band.

§ 15.407(b)(2)(3):

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.

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.

§ 15.407(b)(6): Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in Section 15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in Section 15.207.

§ 15.407(b)(7): The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.

Test Procedure:

The transmitter was placed on an 80cm non-metallic table inside in a semi-anechoic chamber. Measurements were performed with the EUT rotated 360 degrees and varying the adjustable antenna mast height to determine worst case orientation for maximum emissions. A preamp was used in the range from 7-18GHz to improve noise floor. Plots were corrected for cable loss, antenna, and preamp gain.

For frequencies from 30 MHz to 1 GHz, measurements were made using a quasi-peak detector with a 120 kHz bandwidth.

For measurements above 1 GHz, measurements were made with a Peak detector with 1 MHz resolution bandwidth. A notch filter was used to filter the transmitting signal. Where the spurious emissions fell into a restricted band, measurements were also made with an average detector to make sure they complied with 15.209 limits. Only noise floor was observed above 18 GHz.

Test Results:

The EUT was compliant with the Radiated Emission limits for Intentional Radiators. See following pages for detailed test results. All emissions above 18 GHz were at the noise floor of the receiver.

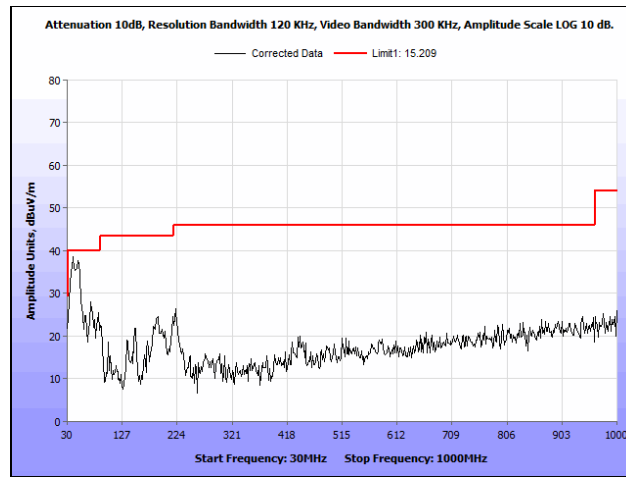
Test Engineer(s):

Andy Shen and Ajaz Khan

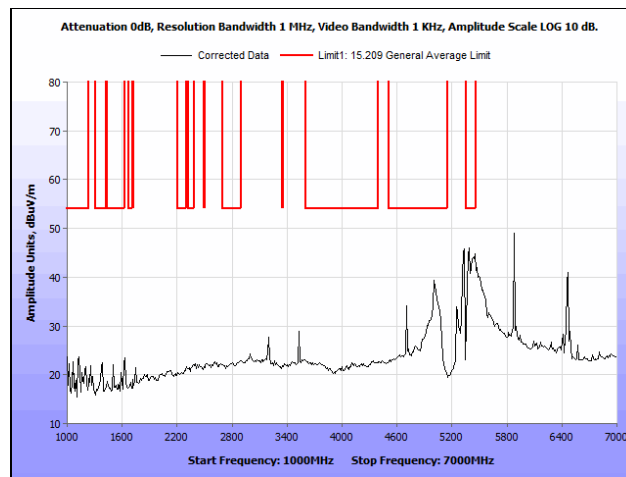
Test Date(s):

09/05/14

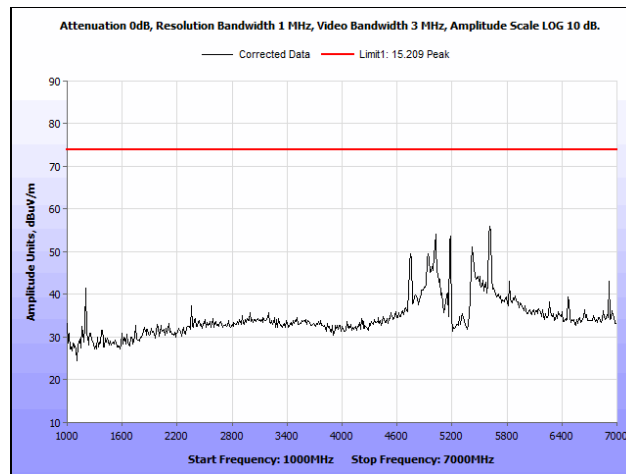
Radiated Spurious Emissions, 802.11a, Lower Band



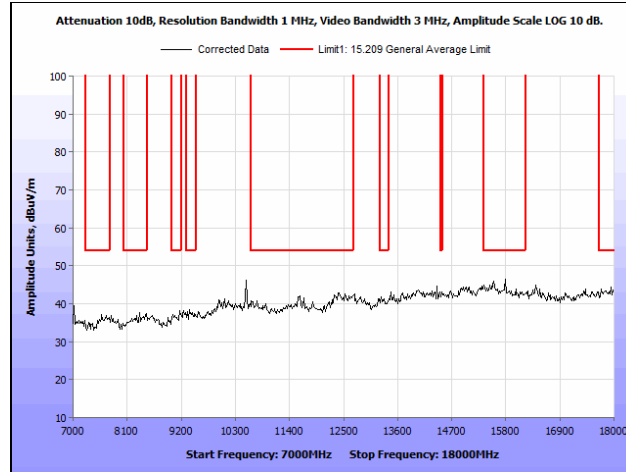
Plot 67. Radiated Spurious Emissions, 802.11a 20 MHz, Low Channel, 30 MHz – 1 GHz



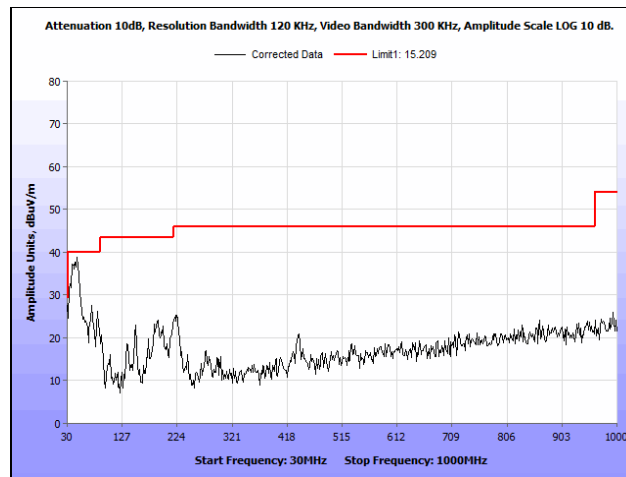
Plot 68. Radiated Spurious Emissions, 802.11a 20 MHz, Low Channel, 1 GHz – 7 GHz, Average



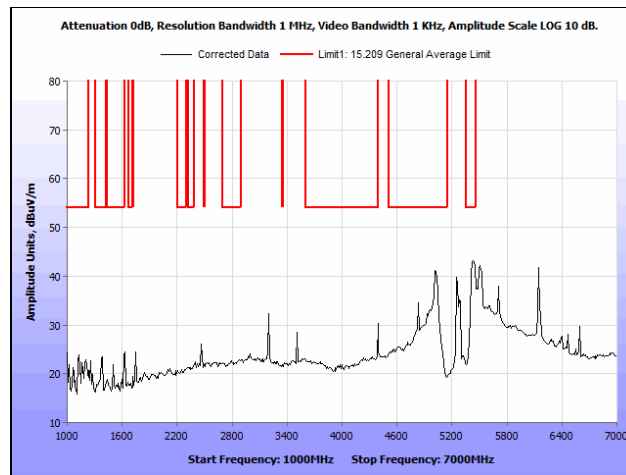
Plot 69. Radiated Spurious Emissions, 802.11a 20 MHz, Low Channel, 1 GHz – 7 GHz, Peak



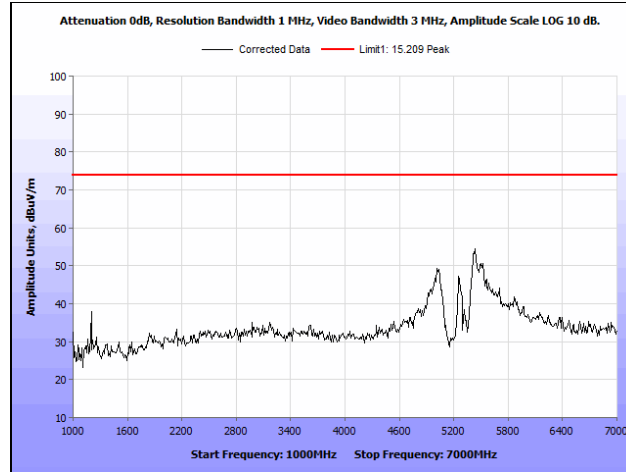
Plot 70. Radiated Spurious Emissions, 802.11a 20 MHz, Low Channel, 7 GHz – 18 GHz



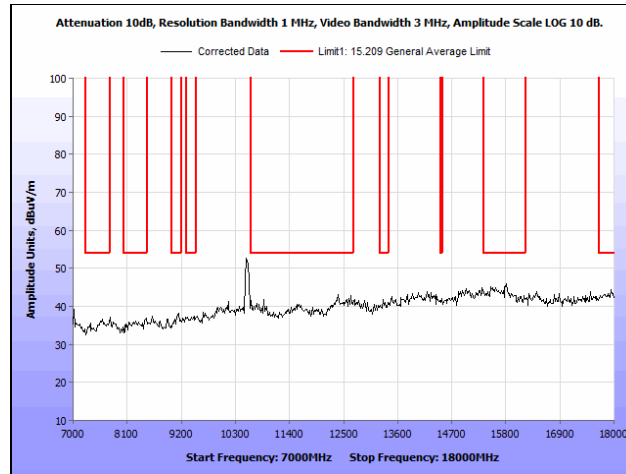
Plot 71. Radiated Spurious Emissions, 802.11a 40 MHz, Low Channel, 30 MHz – 1 GHz



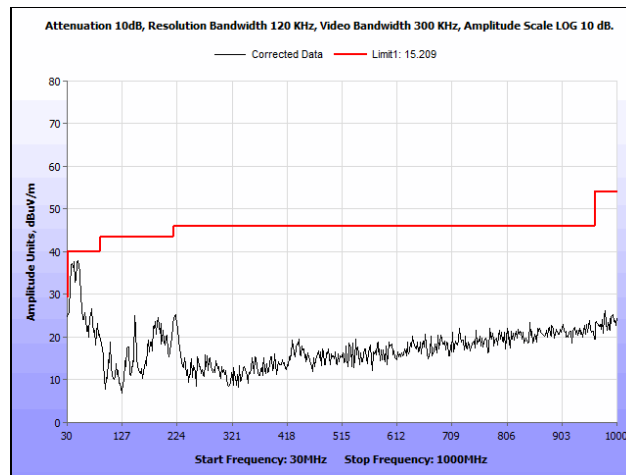
Plot 72. Radiated Spurious Emissions, 802.11a 40 MHz, Low Channel, 1 GHz – 7 GHz, Average



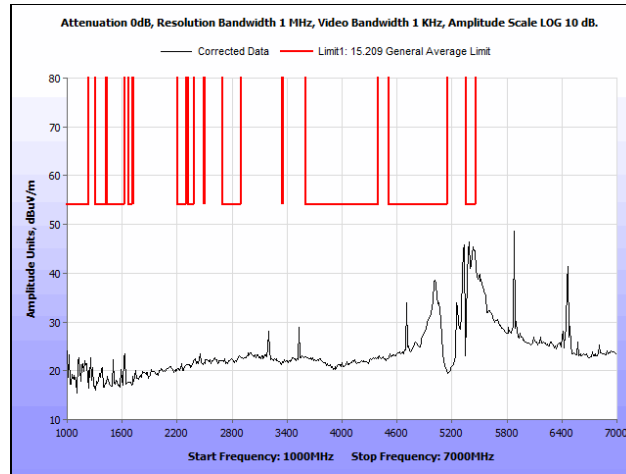
Plot 73. Radiated Spurious Emissions, 802.11a 40 MHz, Low Channel, 1 GHz – 7 GHz, Peak



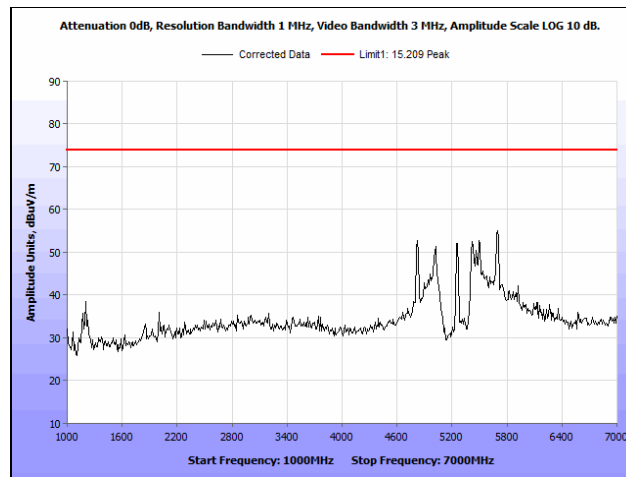
Plot 74. Radiated Spurious Emissions, 802.11a 40 MHz, Low Channel, 7 GHz – 18 GHz



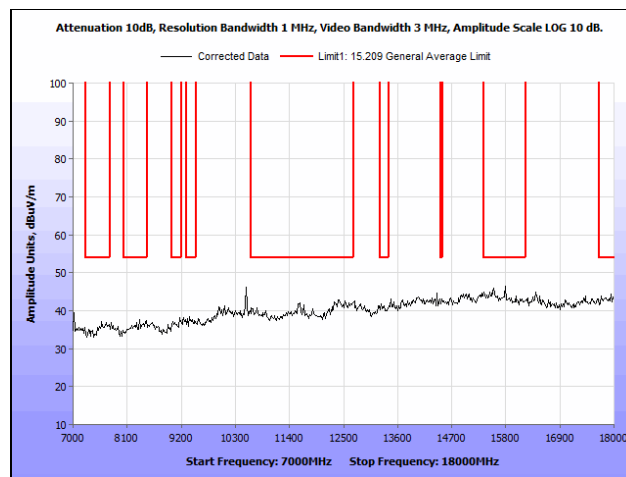
Plot 75. Radiated Spurious Emissions, 802.11a 20 MHz, Mid Channel, 30 MHz – 1 GHz



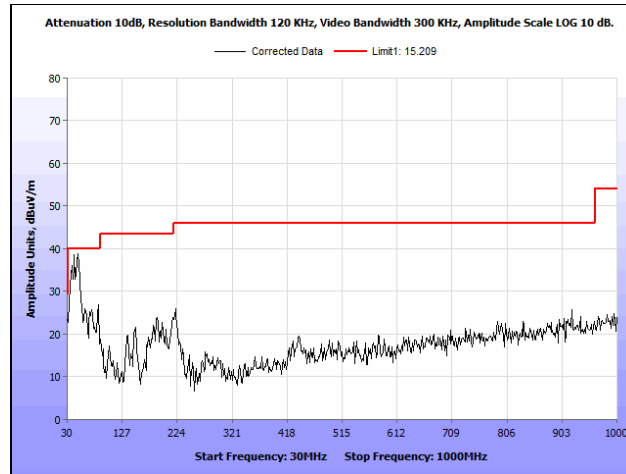
Plot 76. Radiated Spurious Emissions, 802.11a 20 MHz, Mid Channel, 1 GHz – 7 GHz, Average



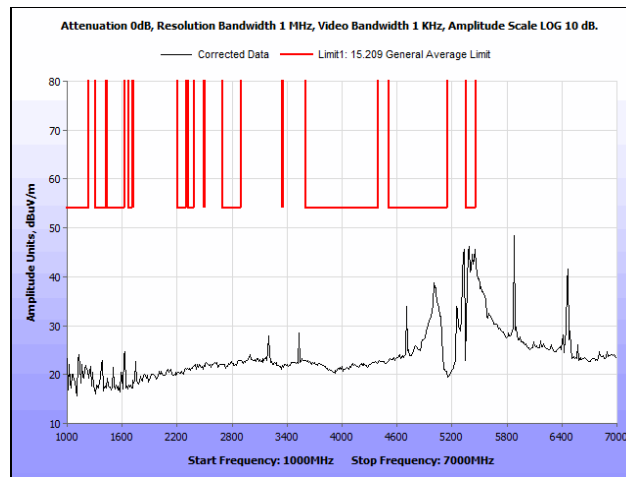
Plot 77. Radiated Spurious Emissions, 802.11a 20 MHz, Mid Channel, 1 GHz – 7 GHz, Peak



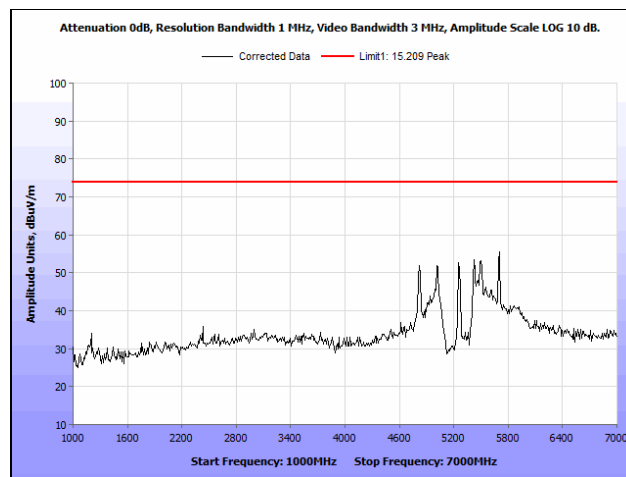
Plot 78. Radiated Spurious Emissions, 802.11a 20 MHz, Mid Channel, 7 GHz – 18 GHz



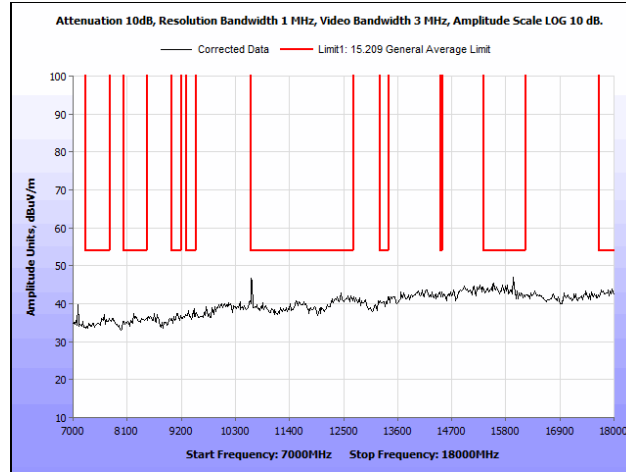
Plot 79. Radiated Spurious Emissions, 802.11a 20 MHz, High Channel, 30 MHz – 1 GHz, Average



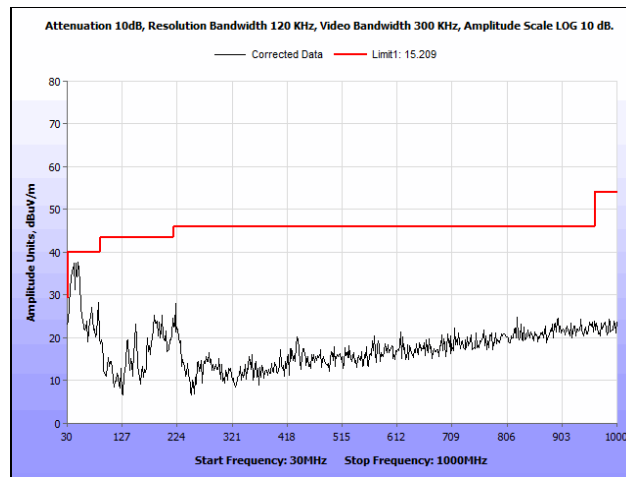
Plot 80. Radiated Spurious Emissions, 802.11a 20 MHz, High Channel, 1 GHz – 7 GHz, Average



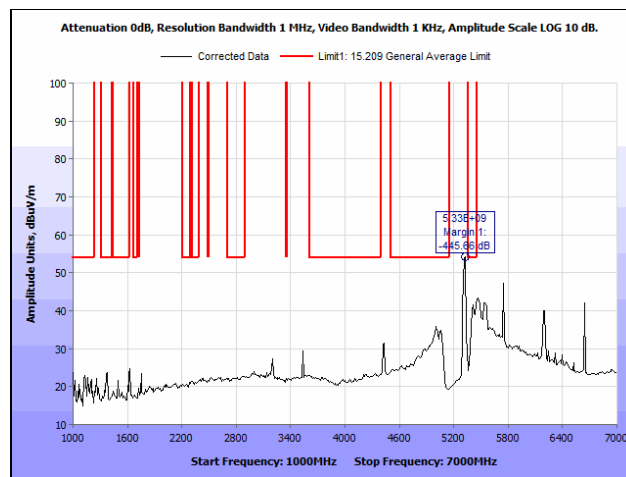
Plot 81. Radiated Spurious Emissions, 802.11a 20 MHz, High Channel, 1 GHz – 7 GHz, Peak



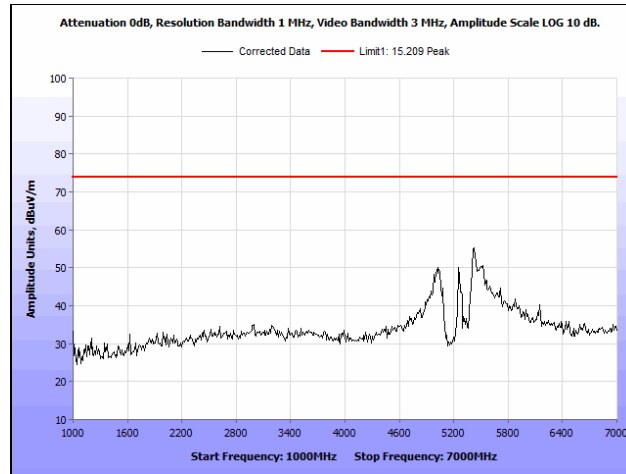
Plot 82. Radiated Spurious Emissions, 802.11a 20 MHz, High Channel, 7 GHz – 18 GHz



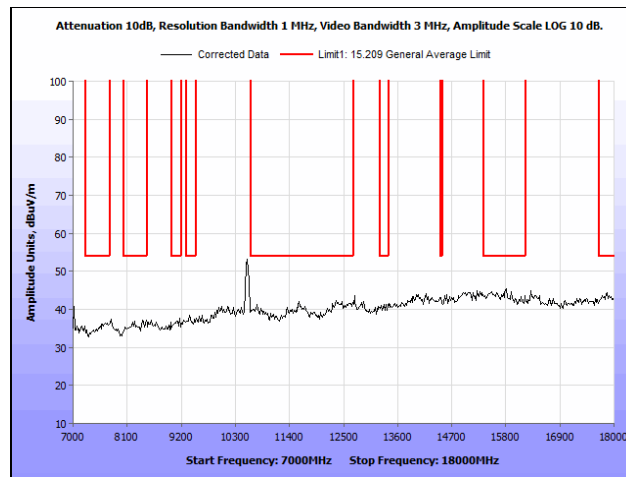
Plot 83. Radiated Spurious Emissions, 802.11a 40 MHz, High Channel, 30 MHz – 1 GHz



Plot 84. Radiated Spurious Emissions, 802.11a 40 MHz, High Channel, 1 GHz – 7 GHz, Average

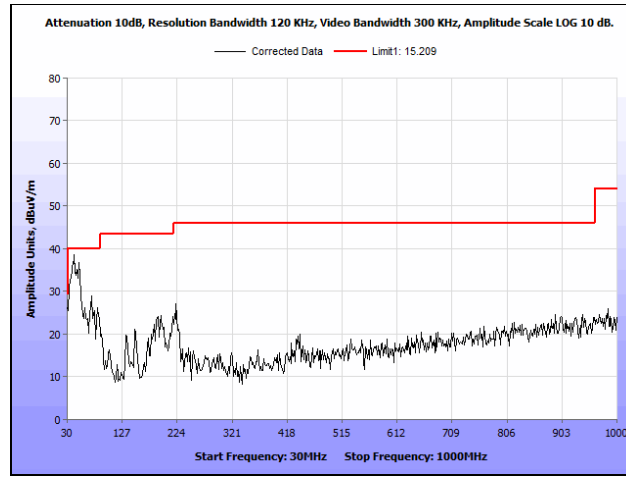


Plot 85. Radiated Spurious Emissions, 802.11a 40 MHz, High Channel, 1 GHz – 7 GHz, Peak

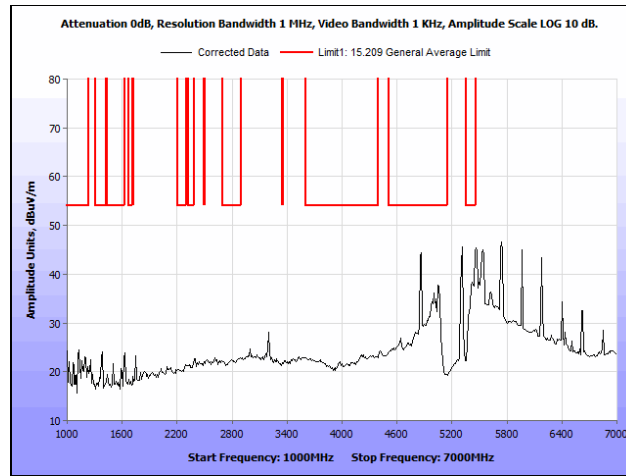


Plot 86. Radiated Spurious Emissions, 802.11a 40 MHz, High Channel, 7 GHz – 18 GHz, Peak

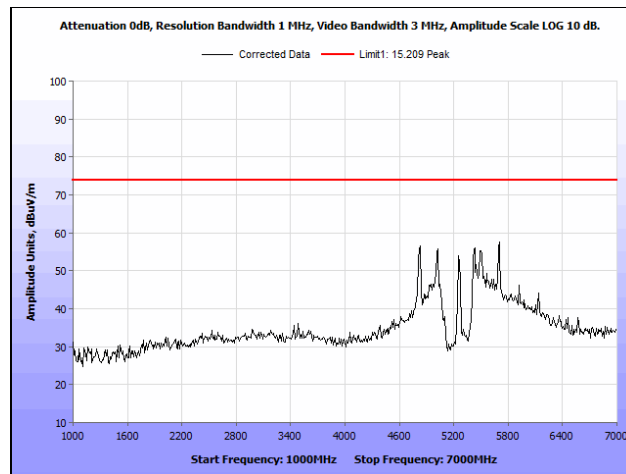
Radiated Spurious Emissions, 802.11n, Omni Antenna, Lower Band



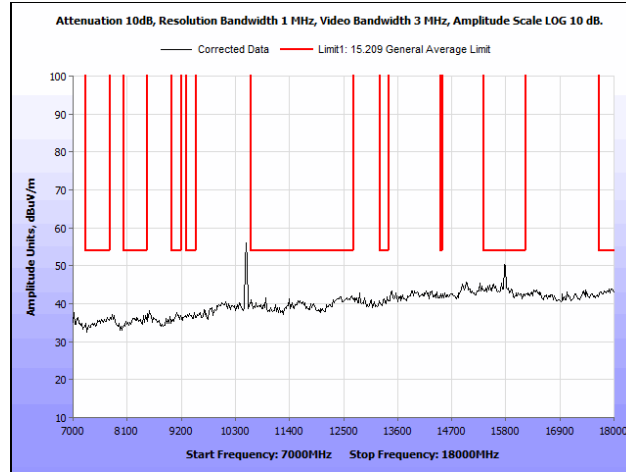
Plot 87. Radiated Spurious Emissions, 802.11n 20 MHz, Low Channel, 30 MHz – 1 GHz



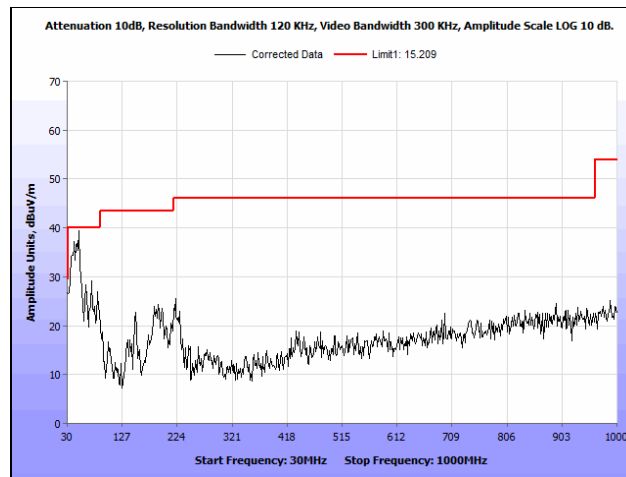
Plot 88. Radiated Spurious Emissions, 802.11n 20 MHz, Low Channel, 1 GHz – 7 GHz, Average



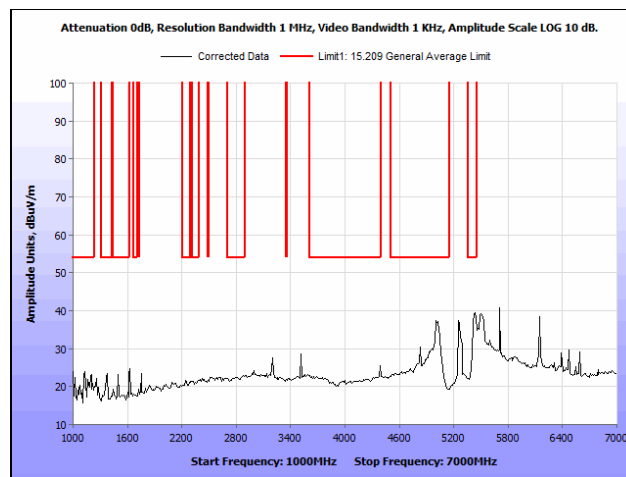
Plot 89. Radiated Spurious Emissions, 802.11n 20 MHz, Low Channel, 1 GHz – 7 GHz, Peak



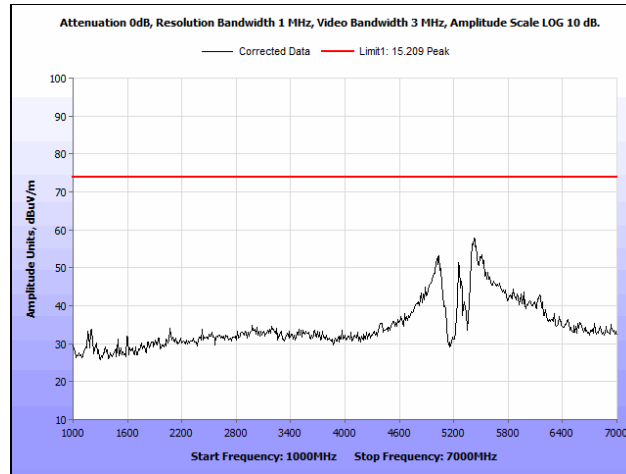
Plot 90. Radiated Spurious Emissions, 802.11n 20 MHz, Low Channel, 7 GHz – 18 GHz



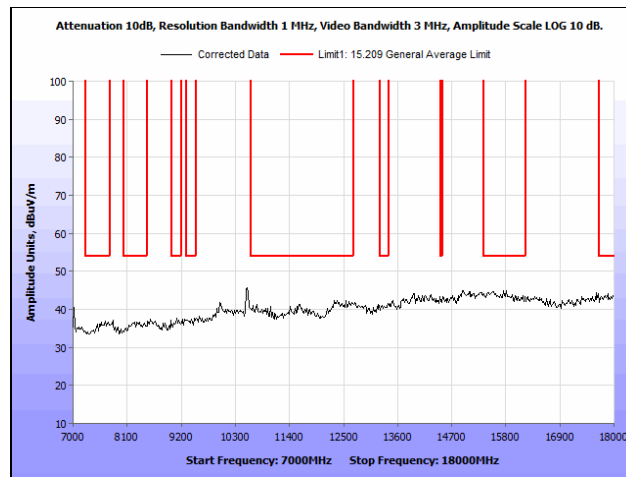
Plot 91. Radiated Spurious Emissions, 802.11n 40 MHz, Low Channel, 30 MHz – 1 GHz



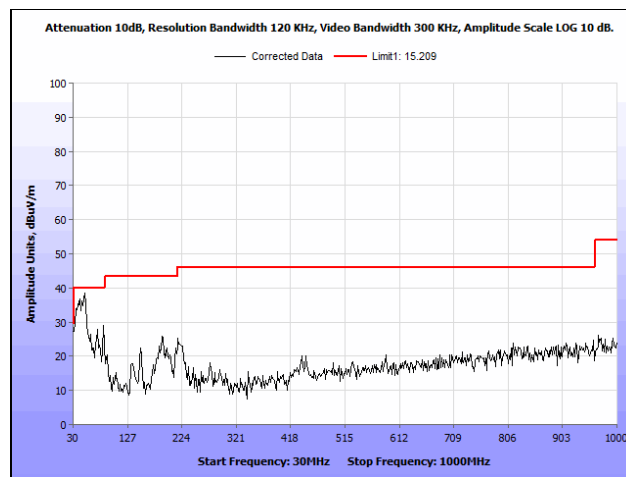
Plot 92. Radiated Spurious Emissions, 802.11n 40 MHz, Low Channel, 1 GHz – 7 GHz, Average



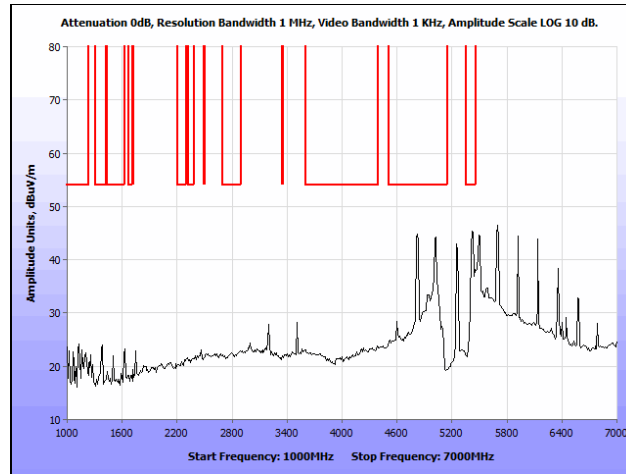
Plot 93. Radiated Spurious Emissions, 802.11n 40 MHz, Low Channel, 1 GHz – 7 GHz, Peak



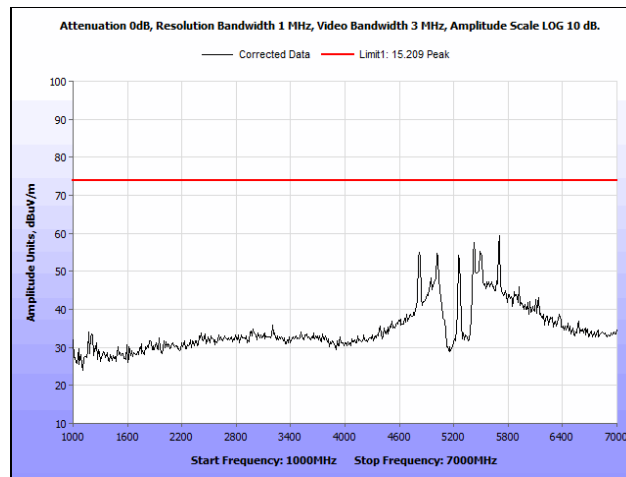
Plot 94. Radiated Spurious Emissions, 802.11n 40 MHz, Low Channel, 7 GHz – 18 GHz



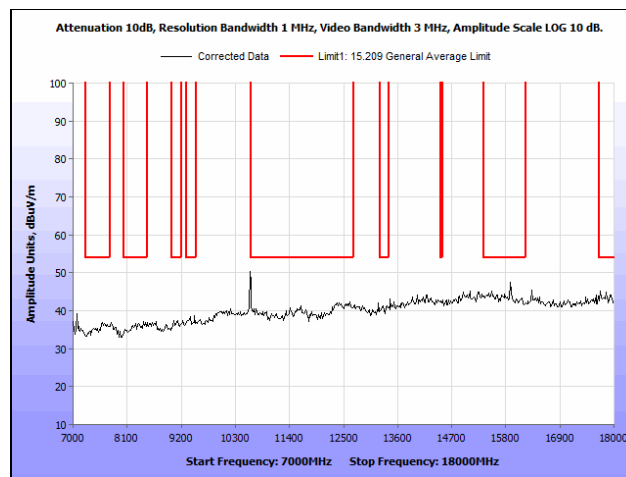
Plot 95. Radiated Spurious Emissions, 802.11n 20 MHz, Mid Channel, 30 MHz – 1 GHz



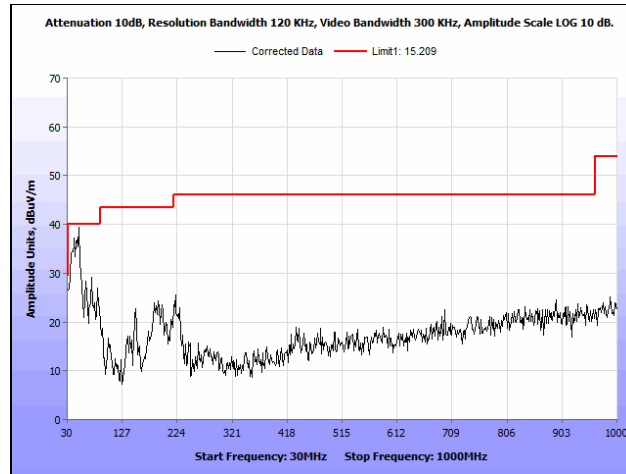
Plot 96. Radiated Spurious Emissions, 802.11n 20 MHz, Mid Channel, 1 GHz – 7 GHz, Average



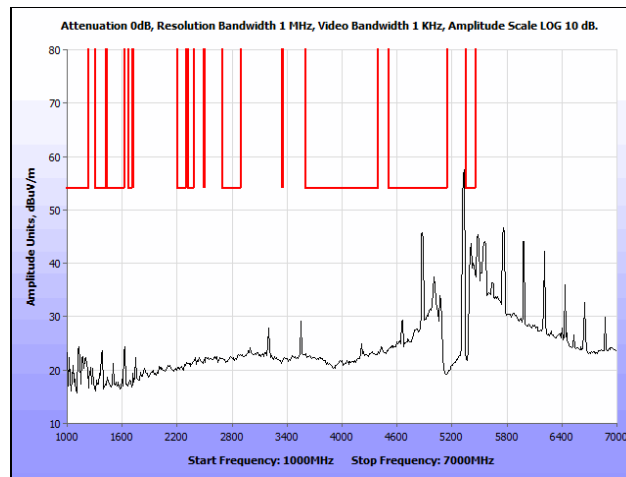
Plot 97. Radiated Spurious Emissions, 802.11n 20 MHz, Mid Channel, 1 GHz – 7 GHz, Peak



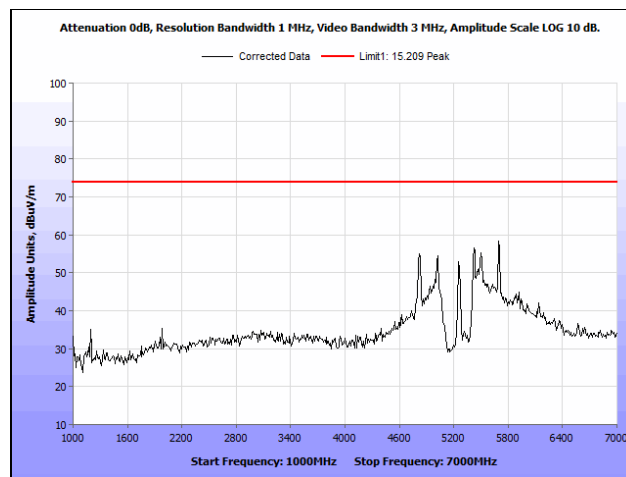
Plot 98. Radiated Spurious Emissions, 802.11n 20 MHz, Mid Channel, 7 GHz – 18 GHz



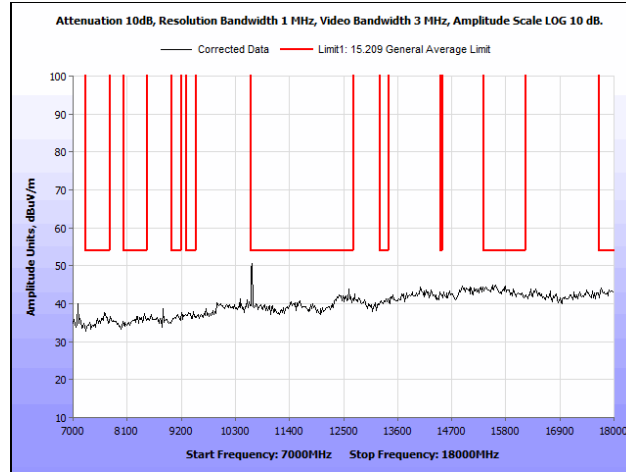
Plot 99. Radiated Spurious Emissions, 802.11n 20 MHz, High Channel, 30 MHz – 1 GHz



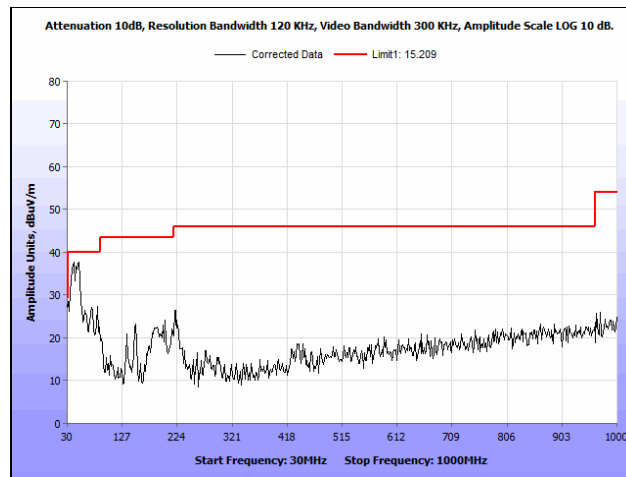
Plot 100. Radiated Spurious Emissions, 802.11n 20 MHz, High Channel, 1 GHz – 7 GHz, Average



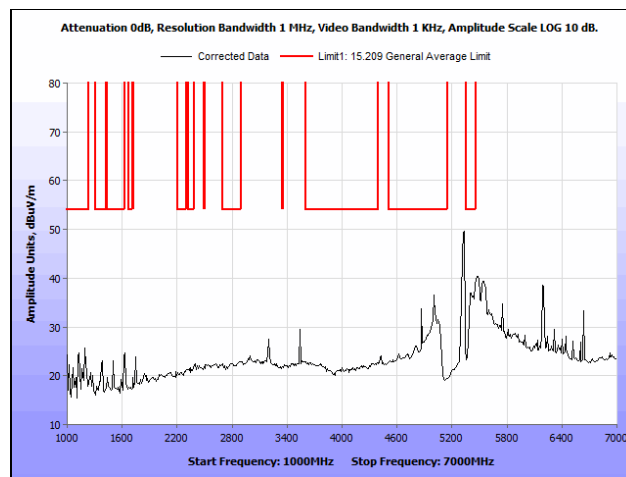
Plot 101. Radiated Spurious Emissions, 802.11n 20 MHz, High Channel, 1 GHz – 7 GHz, Peak



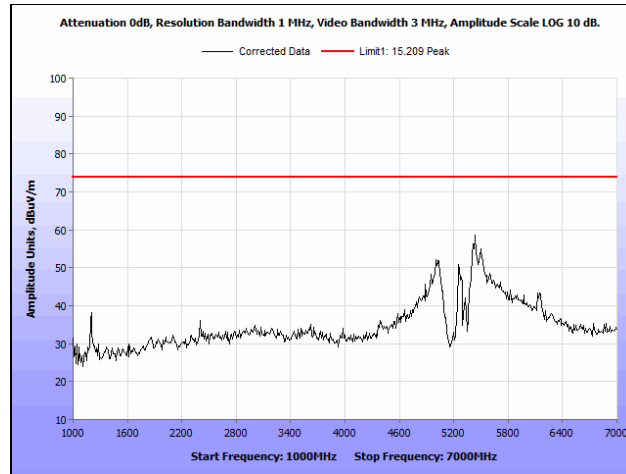
Plot 102. Radiated Spurious Emissions, 802.11n 20 MHz, High Channel, 7 GHz – 18 GHz



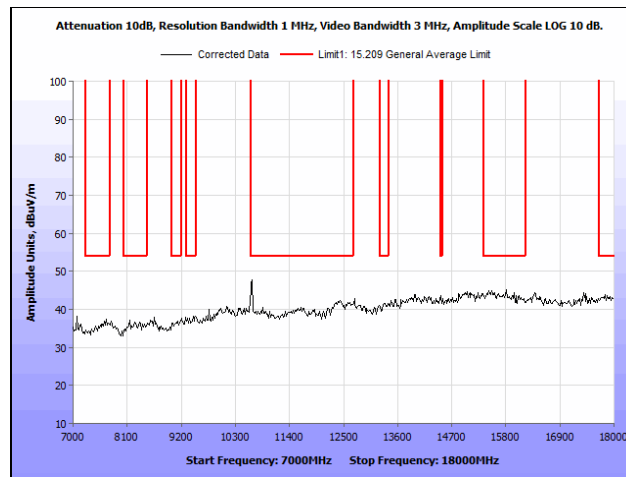
Plot 103. Radiated Spurious Emissions, 802.11n 40 MHz, High Channel, 30 MHz – 1 GHz



Plot 104. Radiated Spurious Emissions, 802.11n 40 MHz, High Channel, 1 GHz – 7 GHz, Average

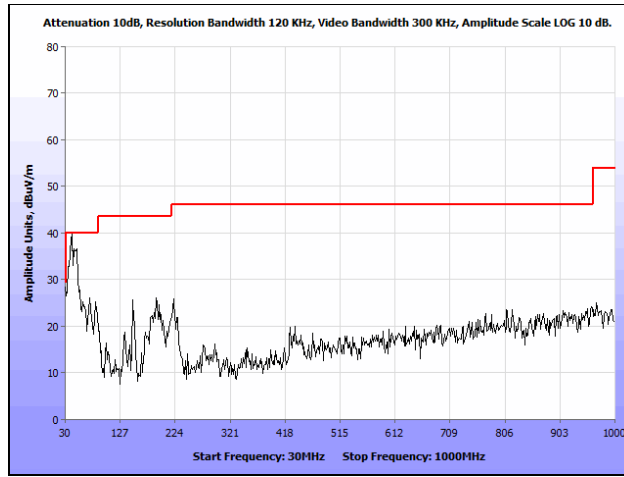


Plot 105. Radiated Spurious Emissions, 802.11n 40 MHz, High Channel, 1 GHz – 7 GHz, Peak

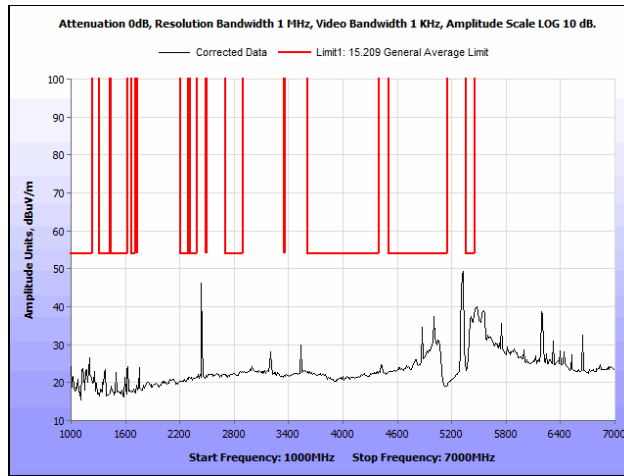


Plot 106. Radiated Spurious Emissions, 802.11n 40 MHz, High Channel, 7 GHz – 18 GHz, Peak

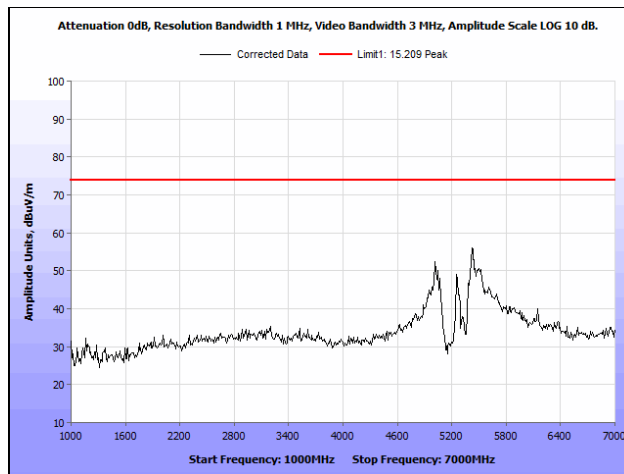
Radiated Spurious Emissions, 802.11ac, Lower Band



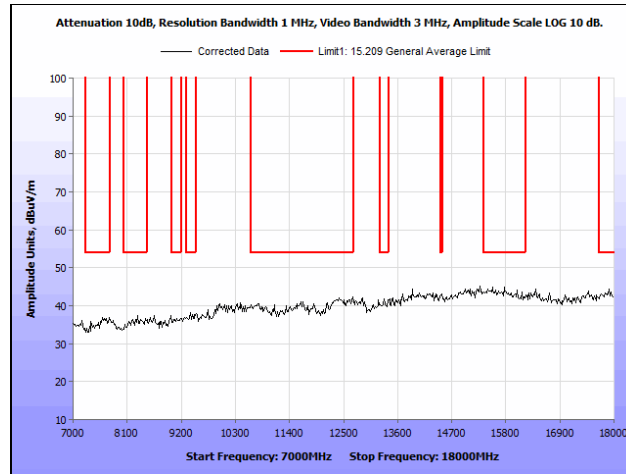
Plot 107. Radiated Spurious Emissions, 802.11ac 80 MHz, 30 MHz – 1 GHz



Plot 108. Radiated Spurious Emissions, 802.11ac 80 MHz, 1 GHz – 7 GHz, Average

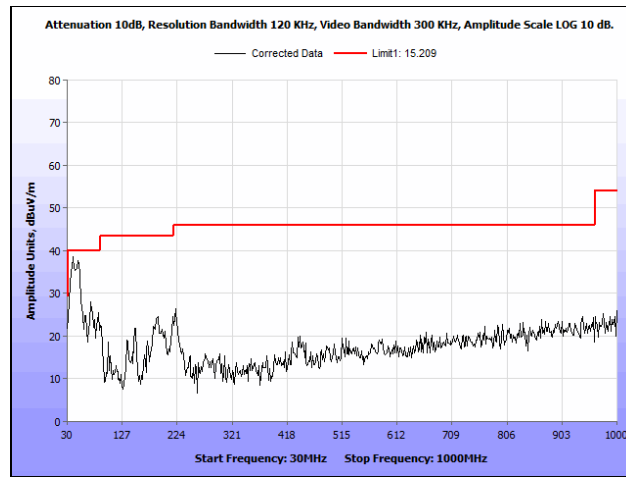


Plot 109. Radiated Spurious Emissions, 802.11ac 80 MHz, 1 GHz – 7 GHz, Peak

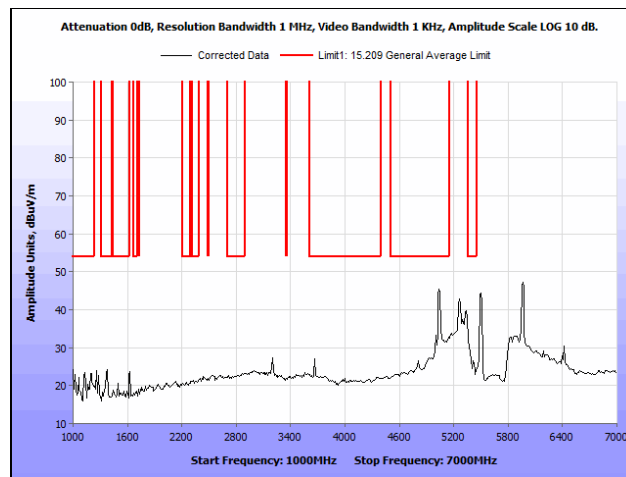


Plot 110. Radiated Spurious Emissions, 802.11ac 80 MHz, 7 GHz – 18 GHz

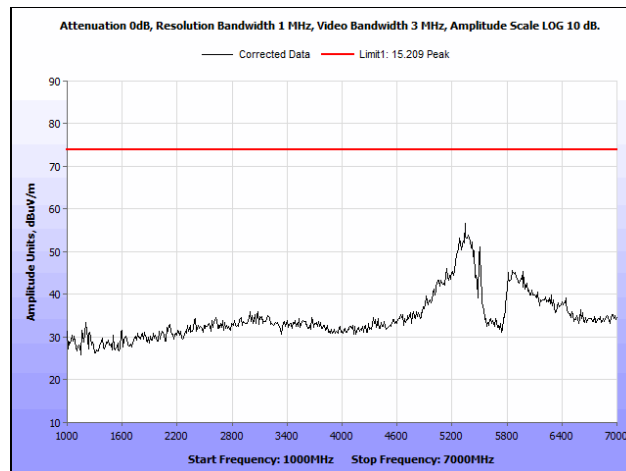
Radiated Spurious Emissions, 802.11a, Upper Band



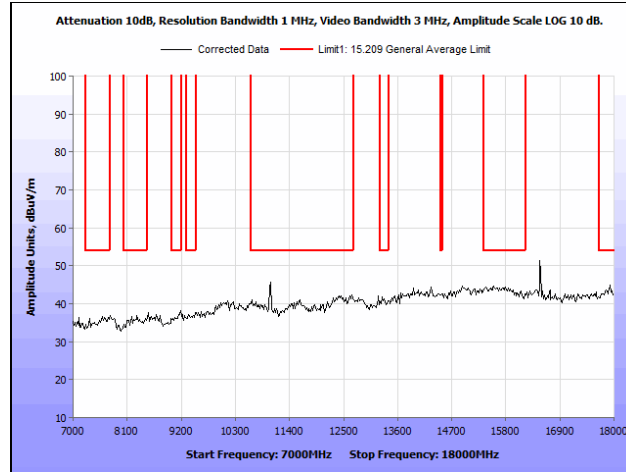
Plot 111. Radiated Spurious Emissions, 802.11a 20 MHz, Low Channel, 30 MHz – 1 GHz



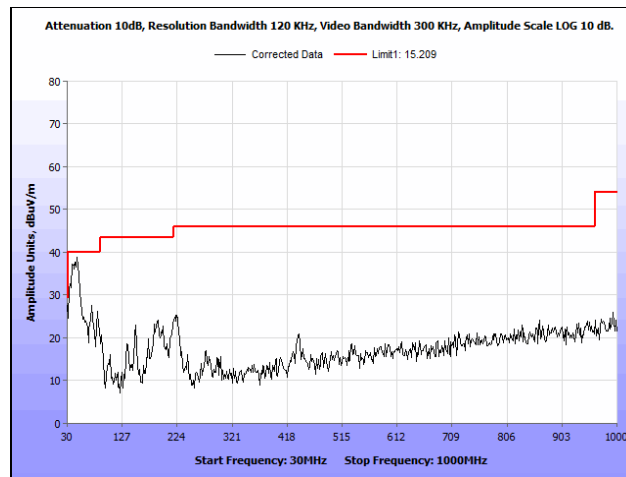
Plot 112. Radiated Spurious Emissions, 802.11a 20 MHz, Low Channel, 1 GHz – 7 GHz, Average



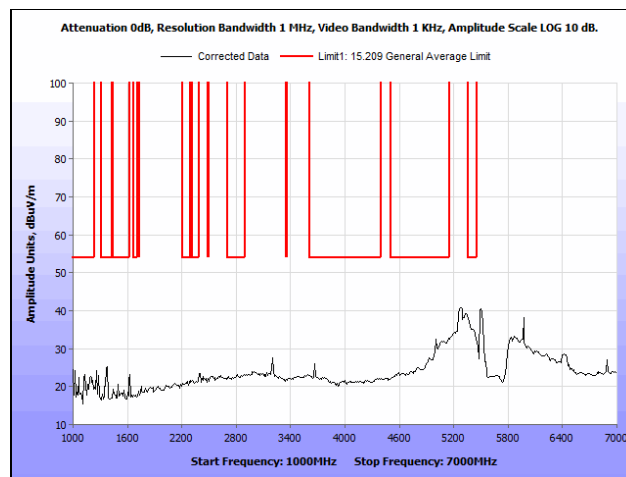
Plot 113. Radiated Spurious Emissions, 802.11a 20 MHz, Low Channel, 1 GHz – 7 GHz, Peak



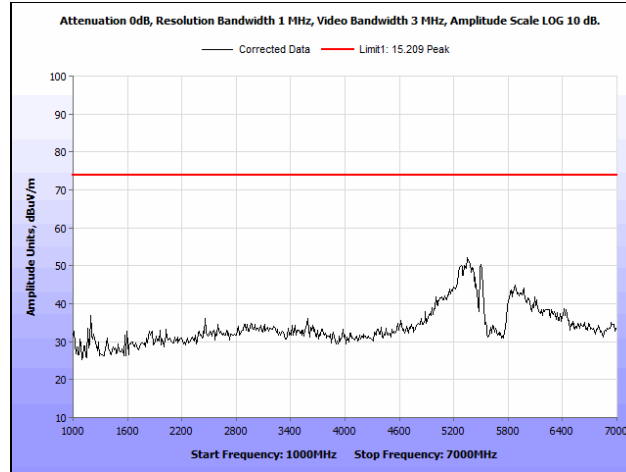
Plot 114. Radiated Spurious Emissions, 802.11a 20 MHz, Low Channel, 7 GHz – 18 GHz



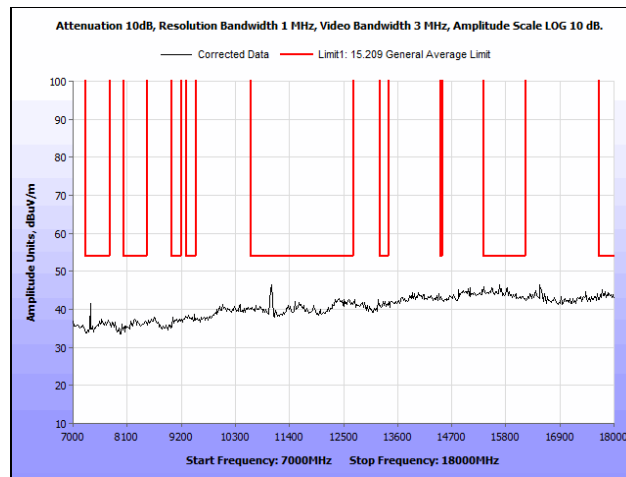
Plot 115. Radiated Spurious Emissions, 802.11a 40 MHz, Low Channel, 30 MHz – 1 GHz



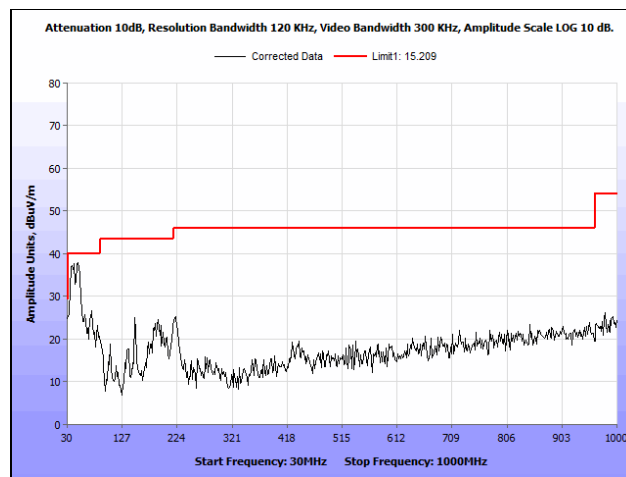
Plot 116. Radiated Spurious Emissions, 802.11a 40 MHz, Low Channel, 1 GHz – 7 GHz, Average



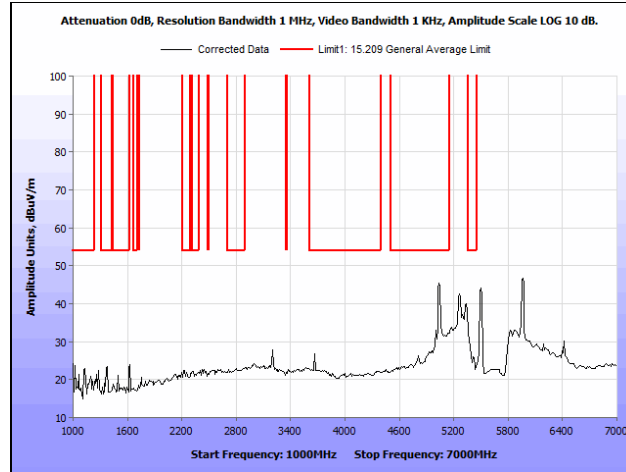
Plot 117. Radiated Spurious Emissions, 802.11a 40 MHz, Low Channel, 1 GHz – 7 GHz, Peak



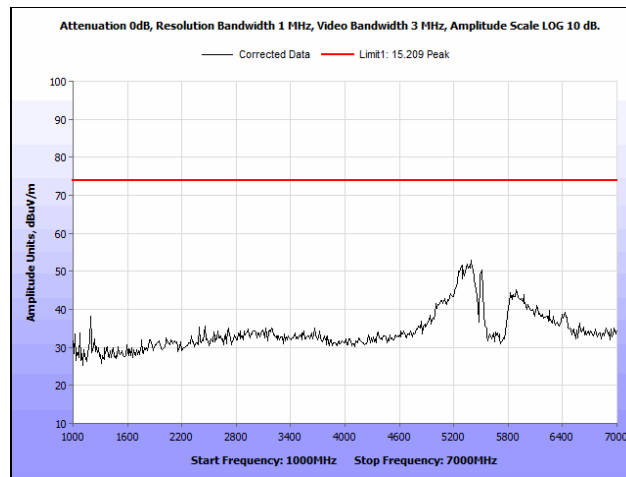
Plot 118. Radiated Spurious Emissions, 802.11a 40 MHz, Low Channel, 7 GHz – 18 GHz



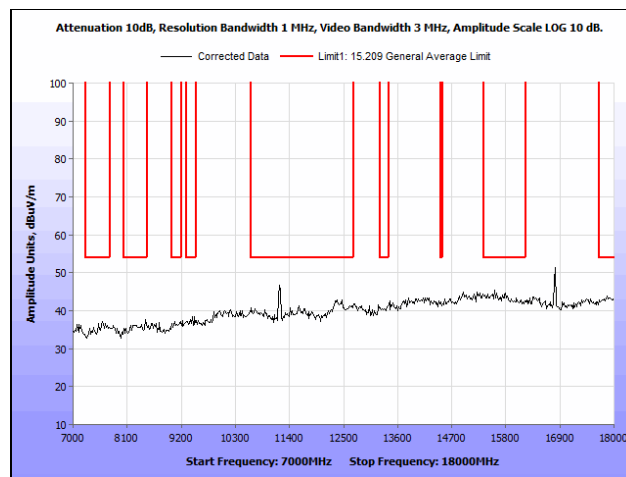
Plot 119. Radiated Spurious Emissions, 802.11a 20 MHz, Mid Channel, 30 MHz – 1 GHz



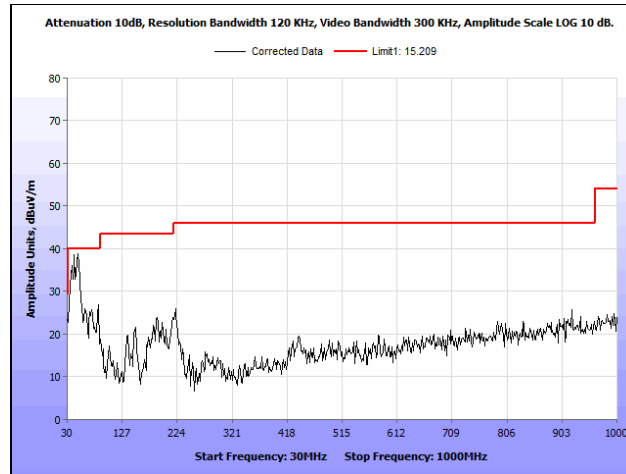
Plot 120. Radiated Spurious Emissions, 802.11a 20 MHz, Mid Channel, 1 GHz – 7 GHz, Average



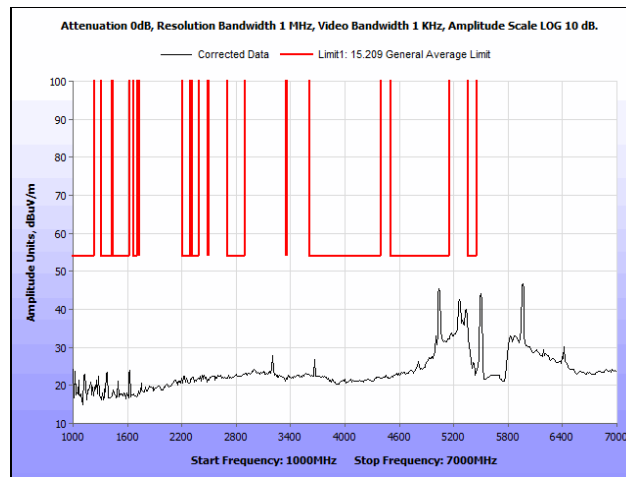
Plot 121. Radiated Spurious Emissions, 802.11a 20 MHz, Mid Channel, 1 GHz – 7 GHz, Peak



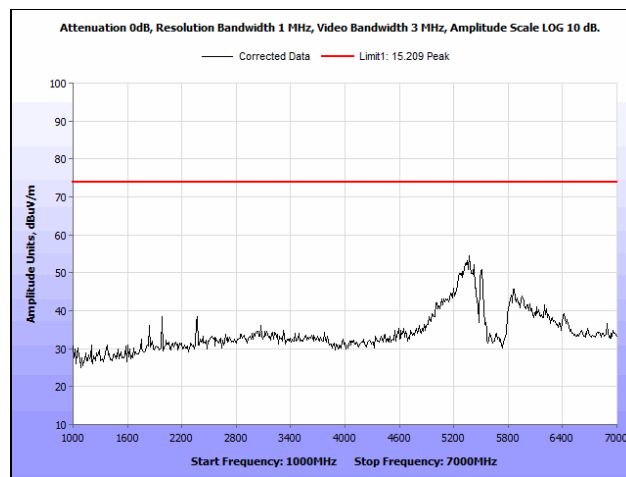
Plot 122. Radiated Spurious Emissions, 802.11a 20 MHz, Mid Channel, 7 GHz – 18 GHz



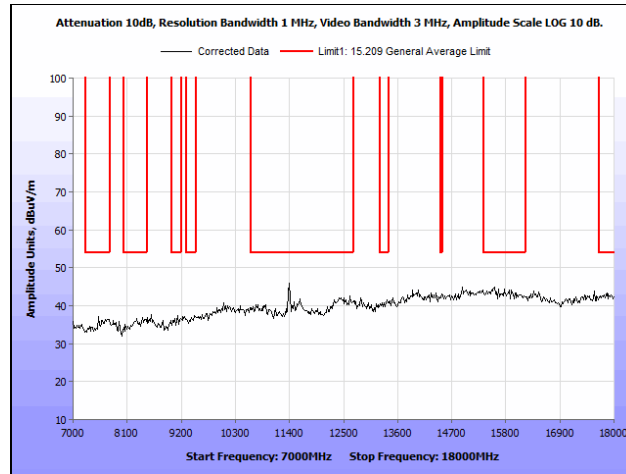
Plot 123. Radiated Spurious Emissions, 802.11a 20 MHz, High Channel, 30 MHz – 1 GHz, Average



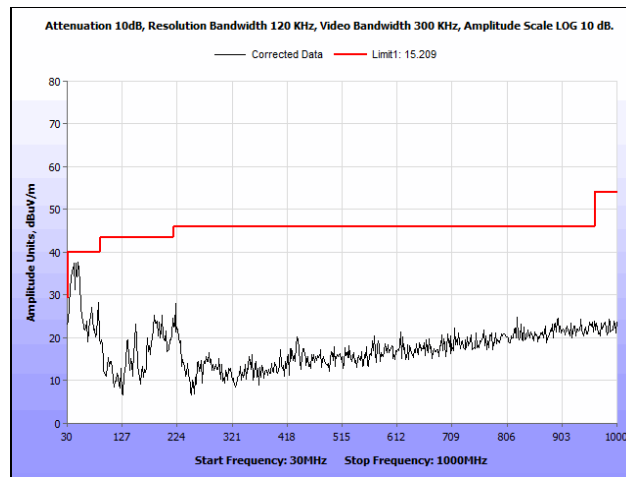
Plot 124. Radiated Spurious Emissions, 802.11a 20 MHz, High Channel, 1 GHz – 7 GHz, Average



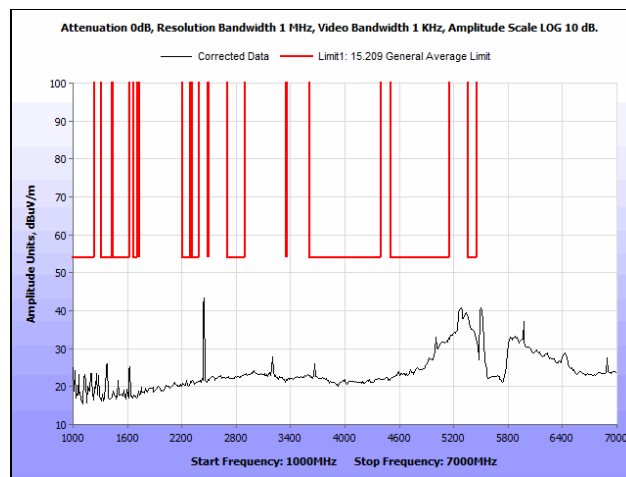
Plot 125. Radiated Spurious Emissions, 802.11a 20 MHz, High Channel, 1 GHz – 7 GHz, Peak



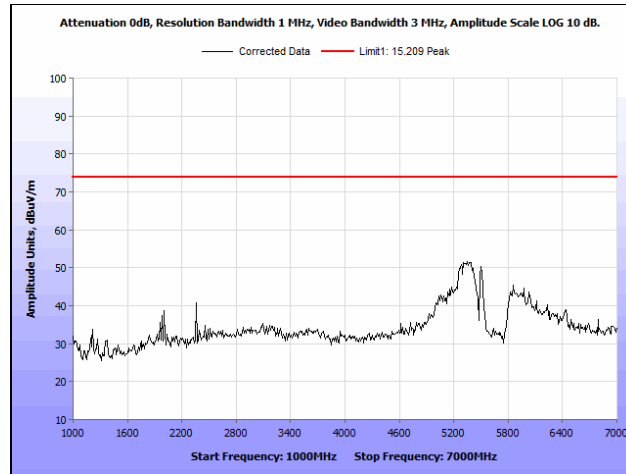
Plot 126. Radiated Spurious Emissions, 802.11a 20 MHz, High Channel, 7 GHz – 18 GHz



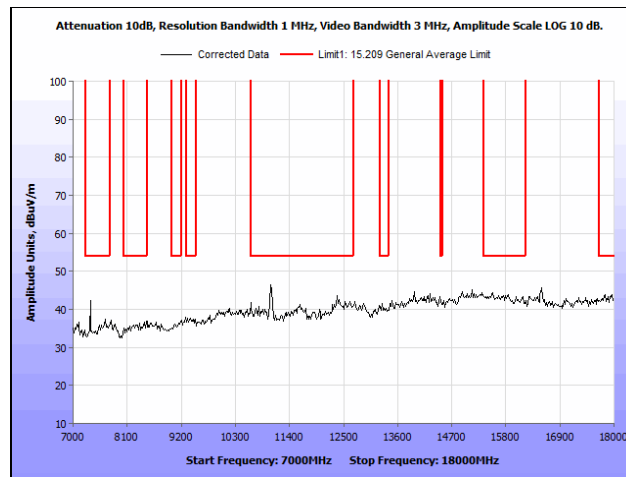
Plot 127. Radiated Spurious Emissions, 802.11a 40 MHz, High Channel, 30 MHz – 1 GHz



Plot 128. Radiated Spurious Emissions, 802.11a 40 MHz, High Channel, 1 GHz – 7 GHz, Average

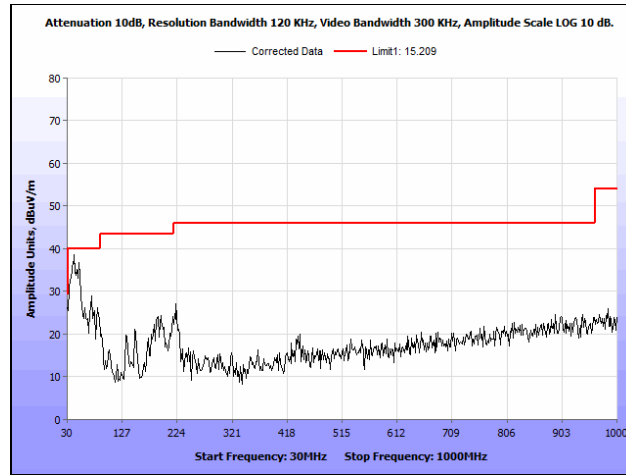


Plot 129. Radiated Spurious Emissions, 802.11a 40 MHz, High Channel, 1 GHz – 7 GHz, Peak

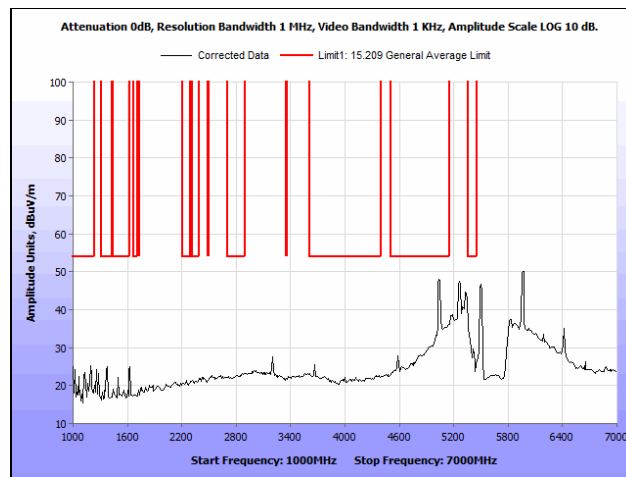


Plot 130. Radiated Spurious Emissions, 802.11a 40 MHz, High Channel, 7 GHz – 18 GHz, Peak

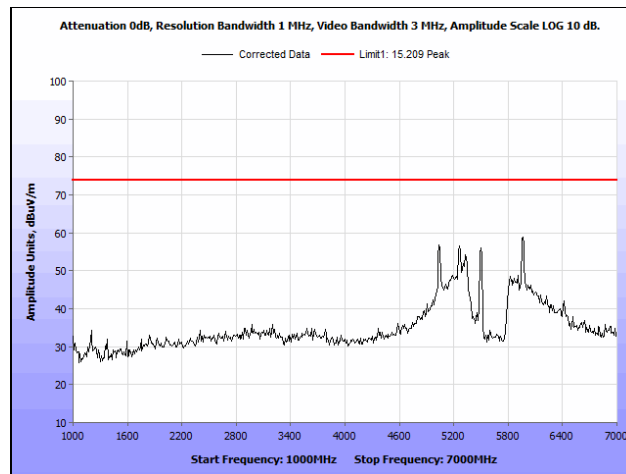
Radiated Spurious Emissions, 802.11n, Upper Band



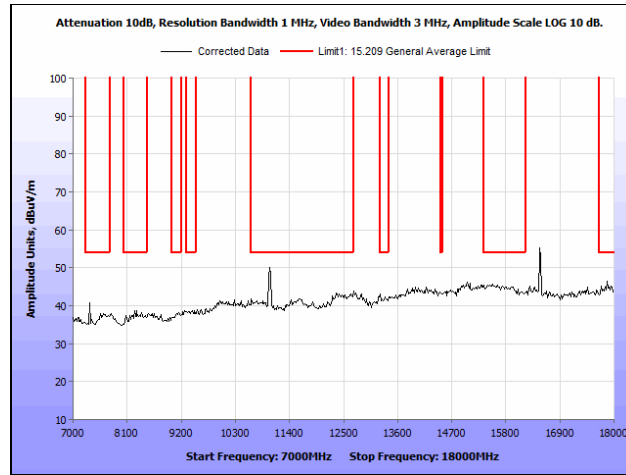
Plot 131. Radiated Spurious Emissions, 802.11n 20 MHz, Low Channel, 30 MHz – 1 GHz



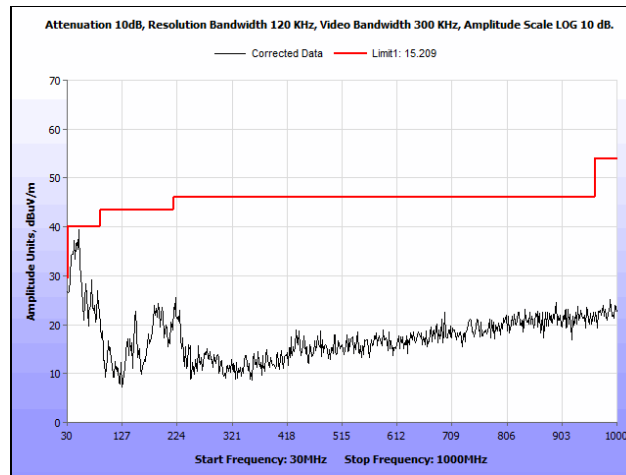
Plot 132. Radiated Spurious Emissions, 802.11n 20 MHz, Low Channel, 1 GHz – 7 GHz, Average



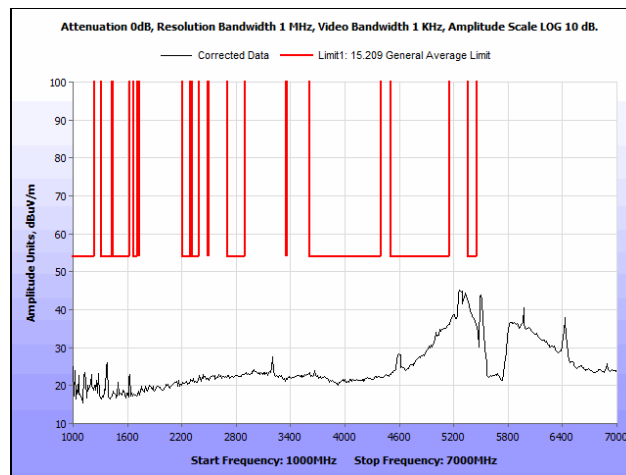
Plot 133. Radiated Spurious Emissions, 802.11n 20 MHz, Low Channel, 1 GHz – 7 GHz, Peak



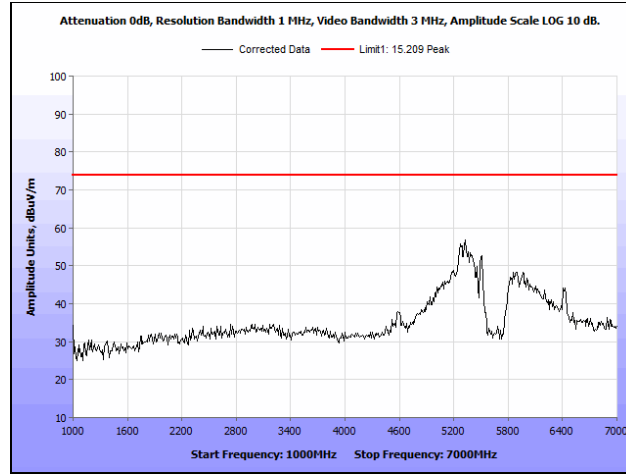
Plot 134. Radiated Spurious Emissions, 802.11n 20 MHz, Low Channel, 7 GHz – 18 GHz



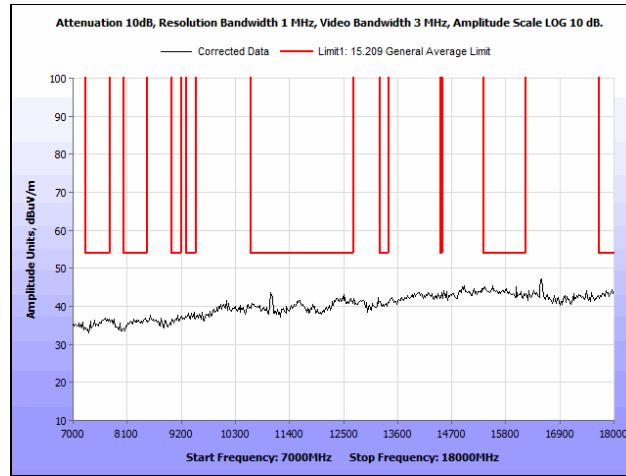
Plot 135. Radiated Spurious Emissions, 802.11n 40 MHz, Low Channel, 30 MHz – 1 GHz



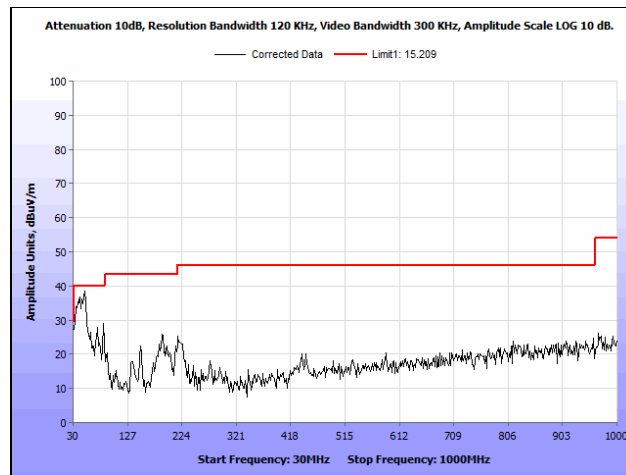
Plot 136. Radiated Spurious Emissions, 802.11n 40 MHz, Low Channel, 1 GHz – 7 GHz, Average



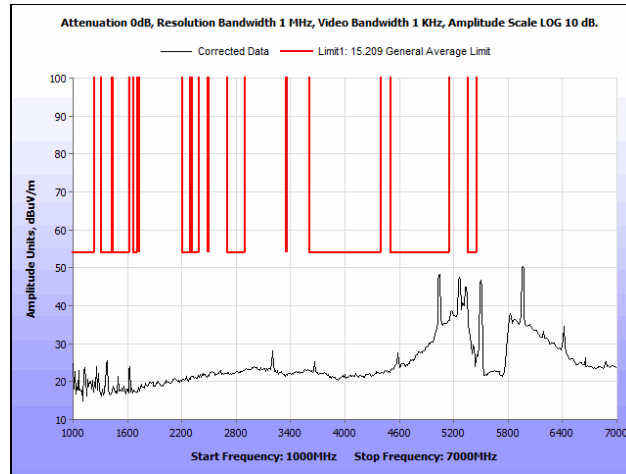
Plot 137. Radiated Spurious Emissions, 802.11n 40 MHz, Low Channel, 1 GHz – 7 GHz, Peak



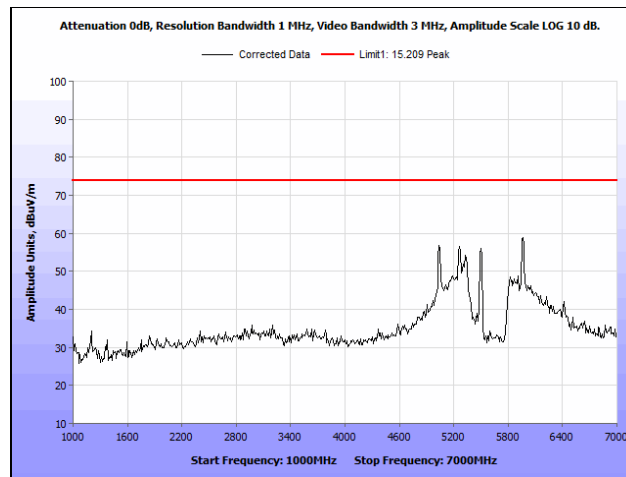
Plot 138. Radiated Spurious Emissions, 802.11n 40 MHz, Low Channel, 7 GHz – 18 GHz



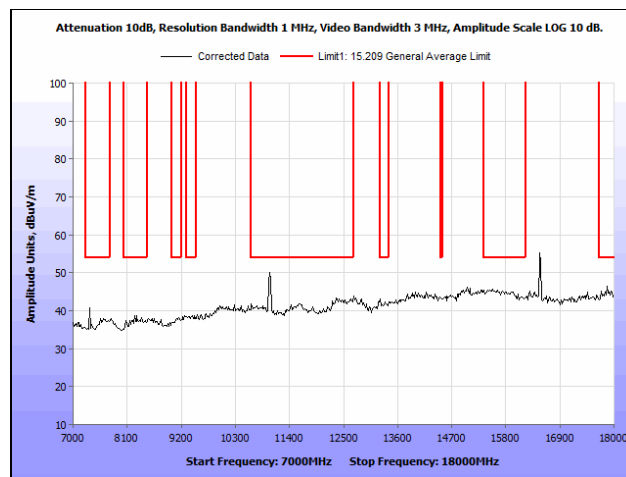
Plot 139. Radiated Spurious Emissions, 802.11n 20 MHz, Mid Channel, 30 MHz – 1 GHz



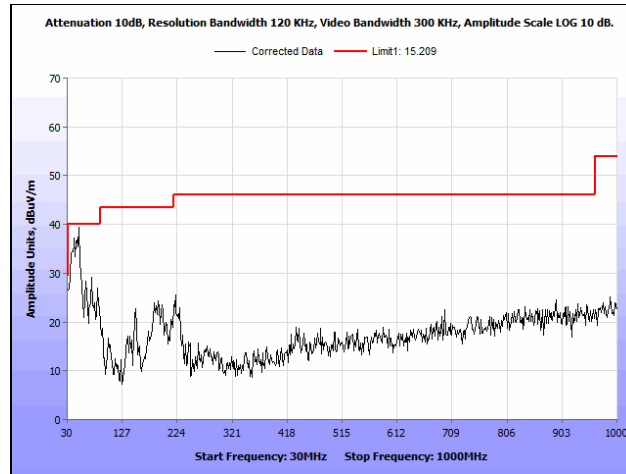
Plot 140. Radiated Spurious Emissions, 802.11n 20 MHz, Mid Channel, 1 GHz – 7 GHz, Average



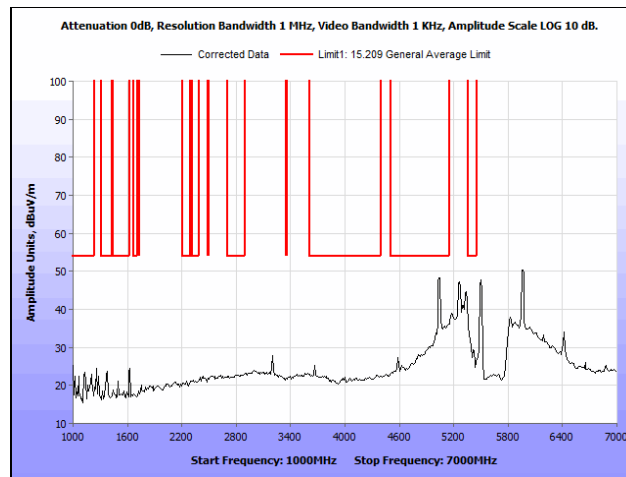
Plot 141. Radiated Spurious Emissions, 802.11n 20 MHz, Mid Channel, 1 GHz – 7 GHz, Peak



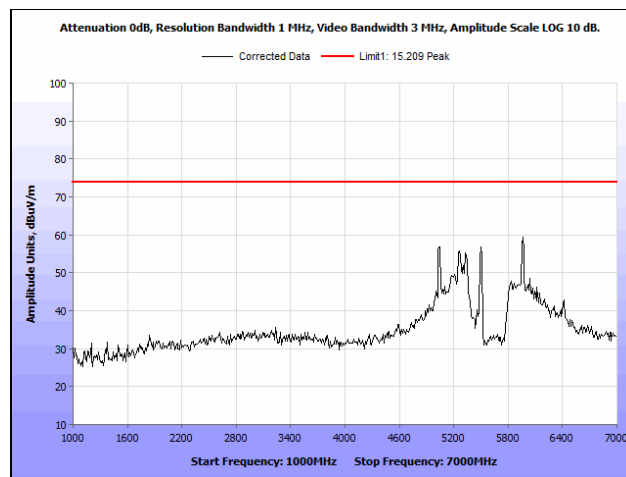
Plot 142. Radiated Spurious Emissions, 802.11n 20 MHz, Mid Channel, 7 GHz – 18 GHz



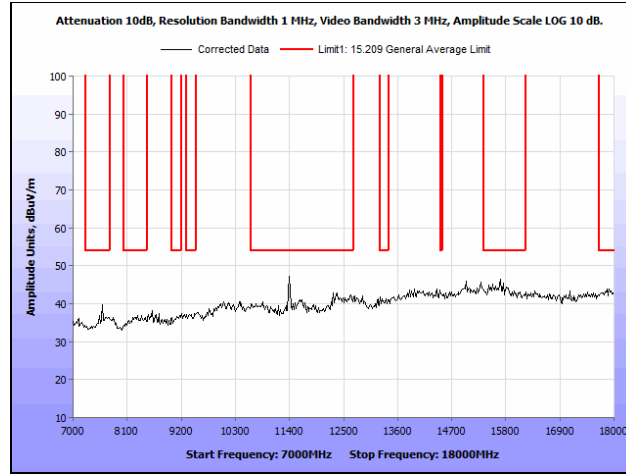
Plot 143. Radiated Spurious Emissions, 802.11n 20 MHz, High Channel, 30 MHz – 1 GHz



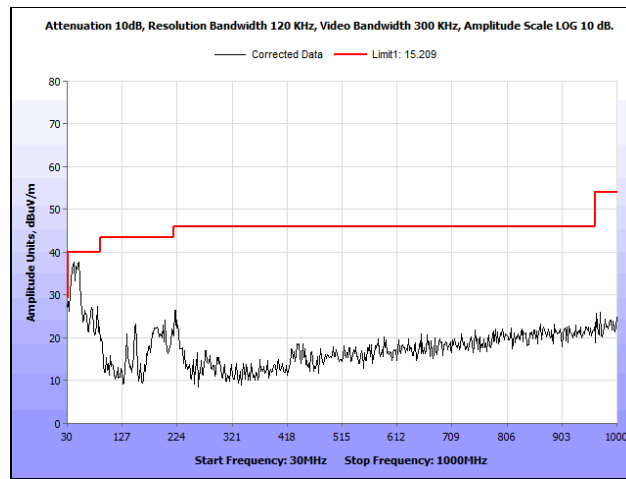
Plot 144. Radiated Spurious Emissions, 802.11n 20 MHz, High Channel, 1 GHz – 7 GHz, Average



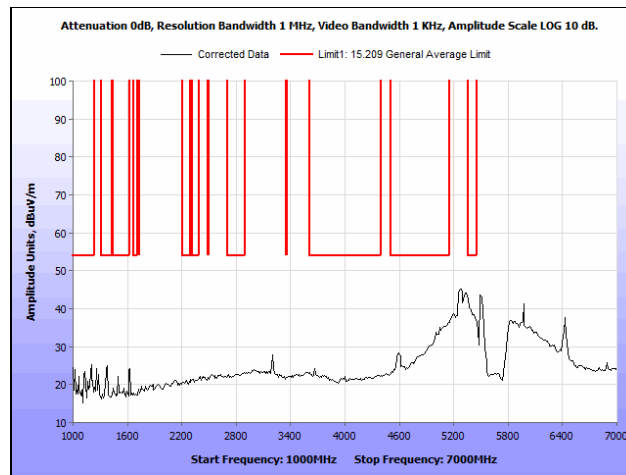
Plot 145. Radiated Spurious Emissions, 802.11n 20 MHz, High Channel, 1 GHz – 7 GHz, Peak



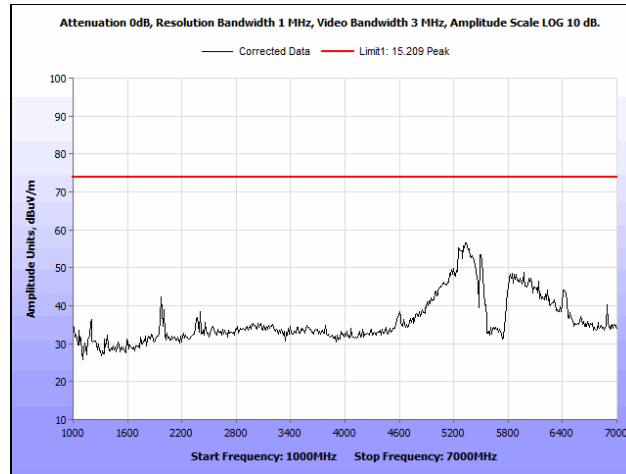
Plot 146. Radiated Spurious Emissions, 802.11n 20 MHz, High Channel, 7 GHz – 18 GHz



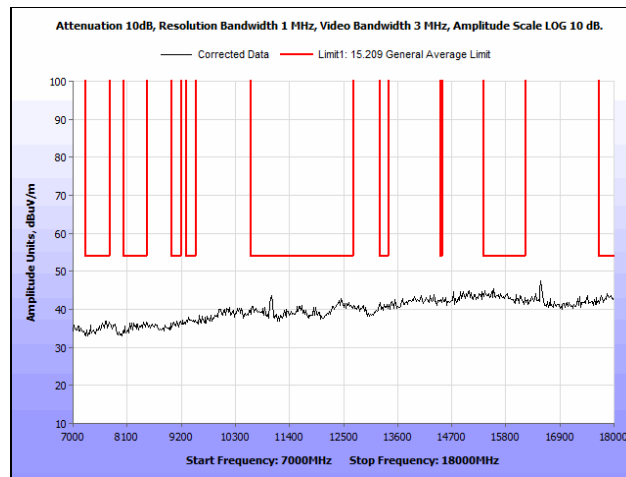
Plot 147. Radiated Spurious Emissions, 802.11n 40 MHz, High Channel, 30 MHz – 1 GHz



Plot 148. Radiated Spurious Emissions, 802.11n 40 MHz, High Channel, 1 GHz – 7 GHz, Average

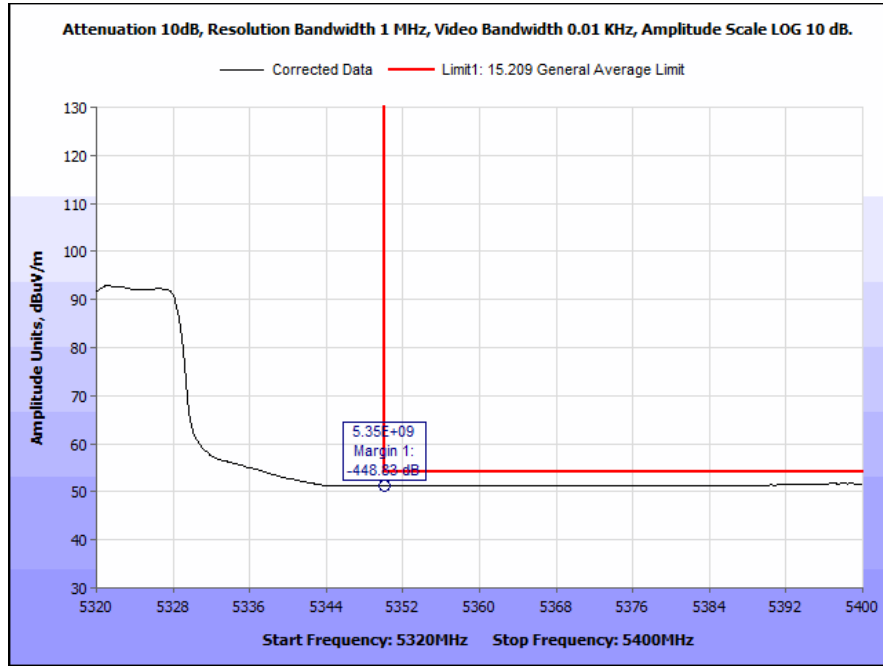


Plot 149. Radiated Spurious Emissions, 802.11n 40 MHz, High Channel, 1 GHz – 7 GHz, Peak

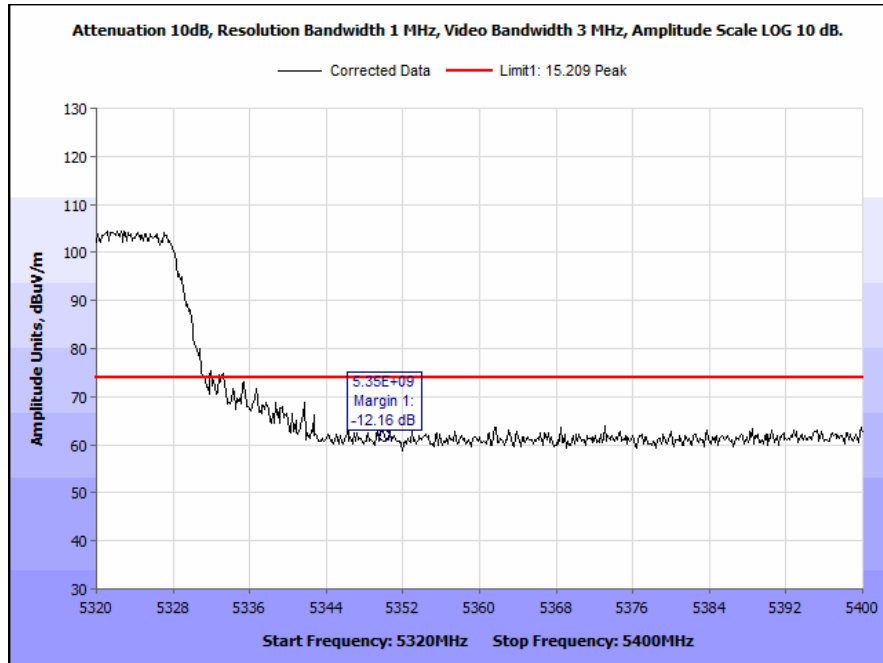


Plot 150. Radiated Spurious Emissions, 802.11n 40 MHz, High Channel, 7 GHz – 18 GHz, Peak

Band Edge, 802.11a, Lower Band

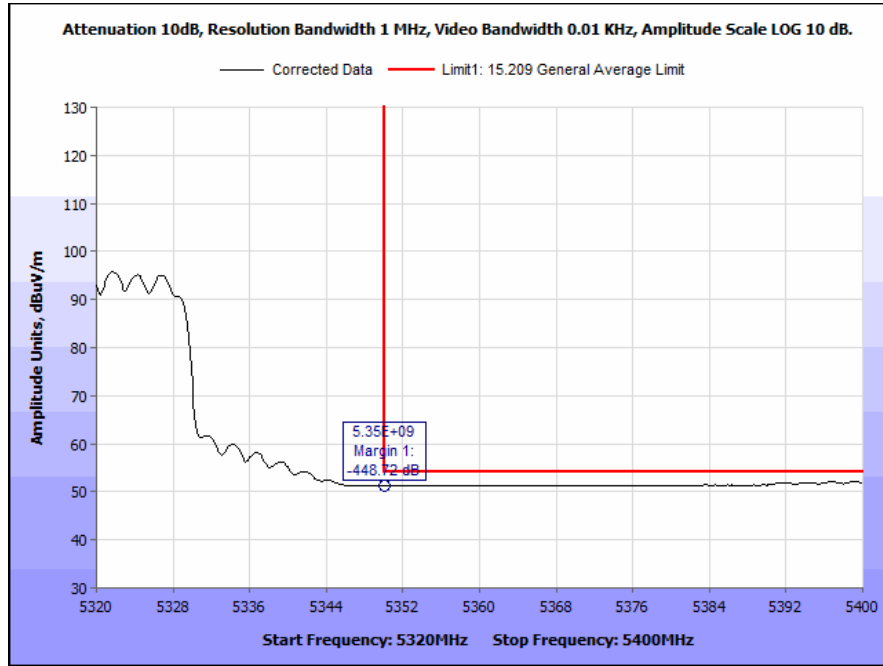


Plot 151. Radiated Band Edge, 802.11a, High Channel (5350 MHz), Average

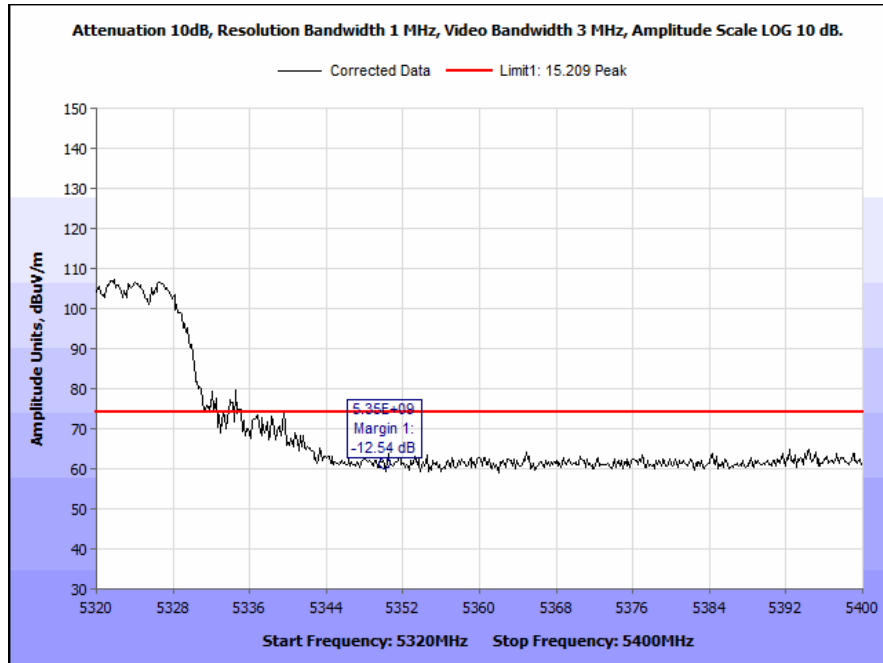


Plot 152. Radiated Band Edge, 802.11a, High Channel (5350 MHz), Peak

Band Edge, 802.11n 20 MHz, Lower Band

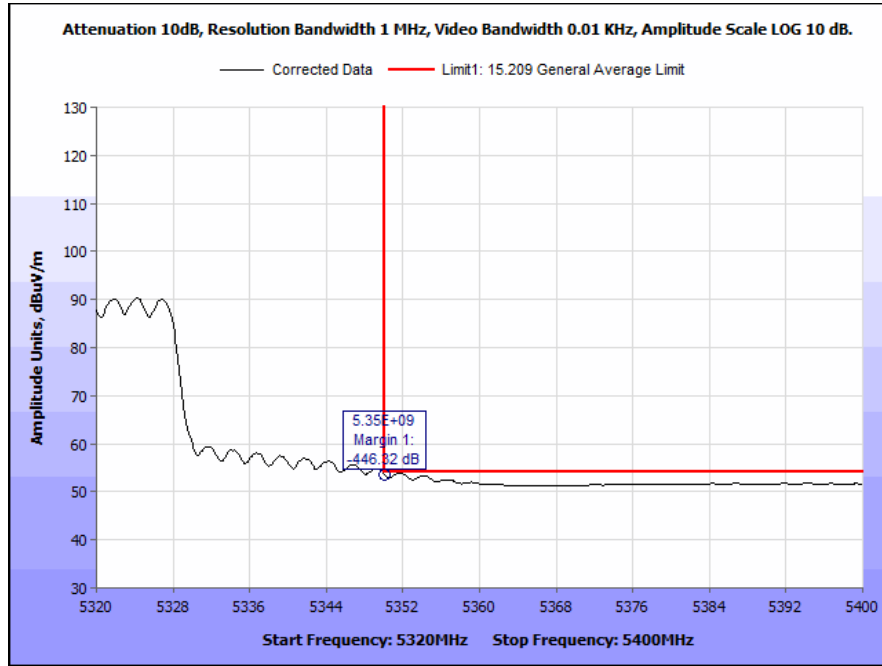


Plot 153. Radiated Band Edge, 802.11n 20 MHz, High Channel (5350 MHz), Average

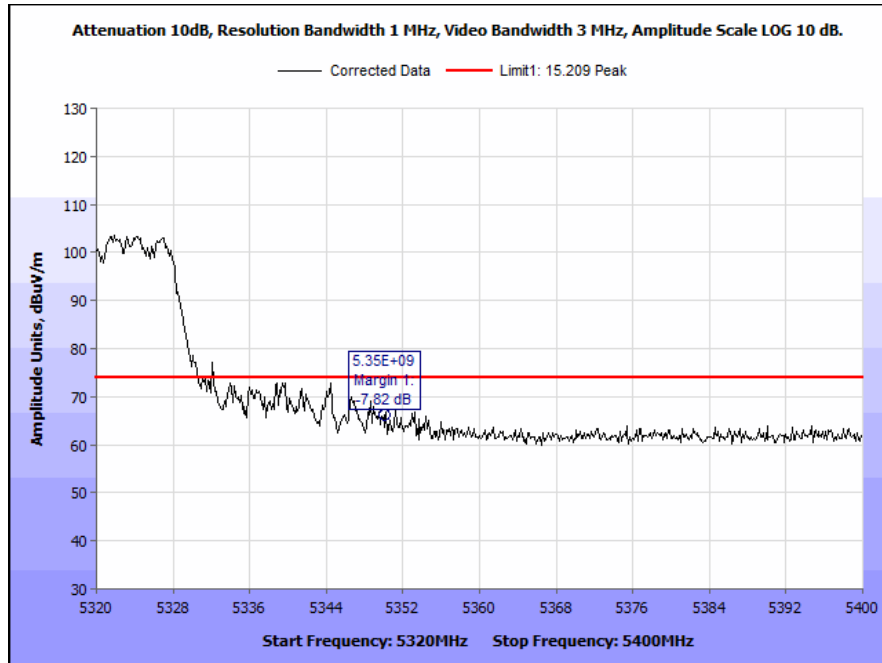


Plot 154. Radiated Band Edge, 802.11n 20 MHz, High Channel (5350 MHz), Peak

Band Edge, 802.11n 40 MHz, Lower Band

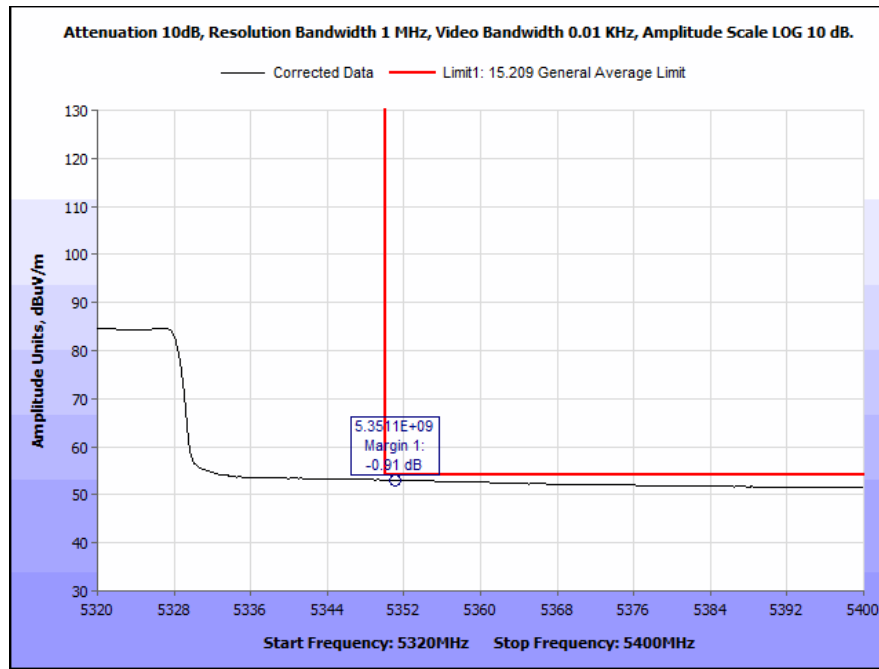


Plot 155. Radiated Band Edge, 802.11n 40 MHz, High Channel (5350 MHz), Average



Plot 156. Radiated Band Edge, 802.11n 40 MHz, High Channel (5350 MHz), Peak

Band Edge, 802.11ac 80 MHz, Lower Band



Plot 157. Radiated Band Edge, 802.11ac 80 MHz (5350 MHz), Average

Electromagnetic Compatibility Criteria for Intentional Radiators

Co-location

Test Requirements: Devices designed to transmit simultaneously in multiple channels in single or multiple frequency bands or those using new “carrier aggregation techniques”, excluding cellular base stations or where specific guidance has been provided.

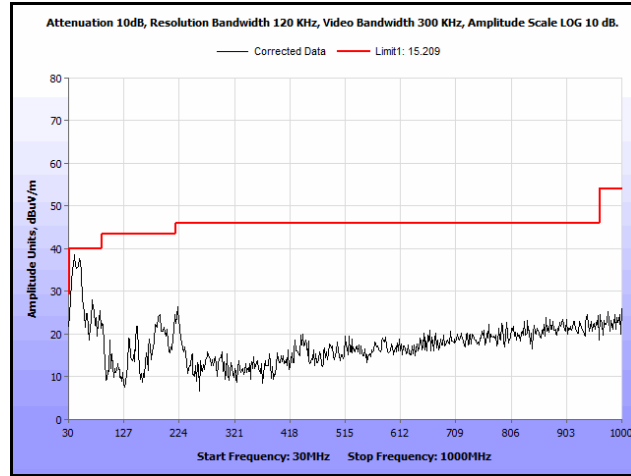
All devices that are capable of transmitting simultaneously in more than one Part-15 band between 5 and 6 GHz (*i.e.*, in two or more of the four U-NII bands or in the 5.8 GHz 15.247 band and at least one U-NII band) are subject to Permit But Ask provisions. This includes devices marketed as IEEE Std 802.11ac or “pre-standard” IEEE Std 802.11ac.

Test Procedure: The transmitter was placed on an 80cm wooden table inside in a semi-anechoic chamber. Measurements were performed with the EUT rotated 360 degrees and varying the adjustable antenna mast height to determine worst case orientation for maximum emissions. A preamp was used in the range from 7-18GHz to improve noise floor. Plots were corrected for cable loss, antenna, and preamp gain.

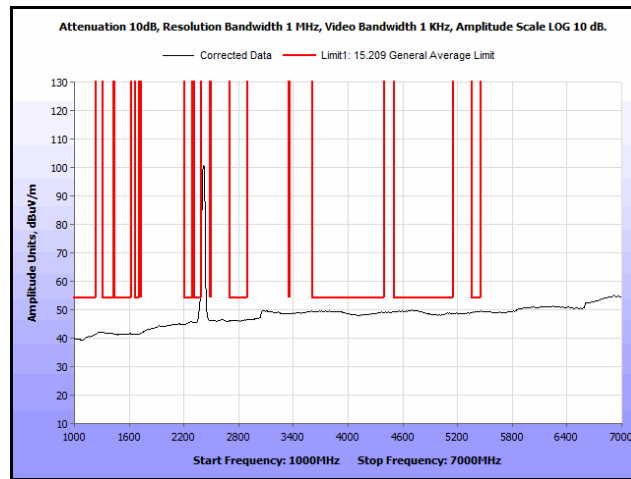
For frequencies from 30 MHz to 1 GHz, measurements were made using a quasi-peak detector with a 120 kHz bandwidth.

For measurements above 1 GHz, measurements were made with a Peak detector with 1 MHz resolution bandwidth. Where the spurious emissions fell into a restricted band, measurements were also made with an average detector to make sure they complied with 15.209 limits. Only noise floor was seen above 18 GHz.

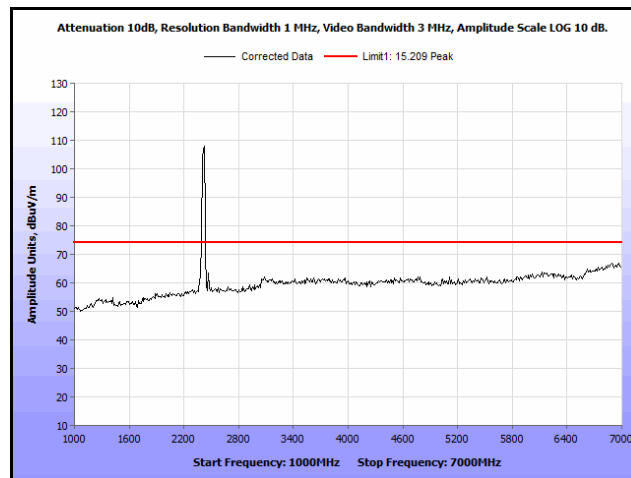
The EUT uses 2 radios that are co-located. The EUT was set to transmit on both radios using the following matrix below.



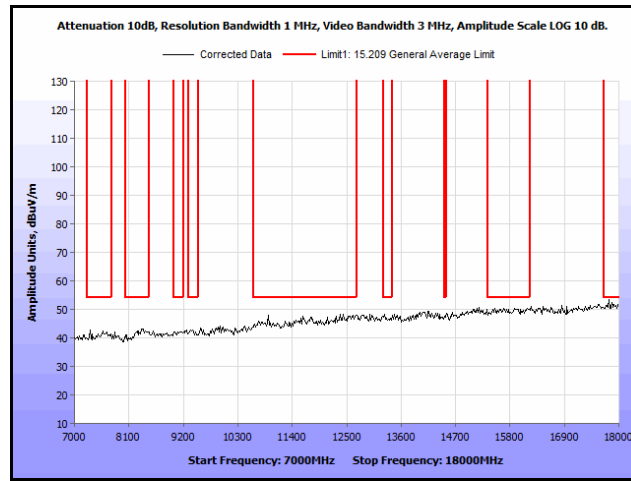
Plot 158. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2412 MHz, 30 MHz – 1 GHz, Peak



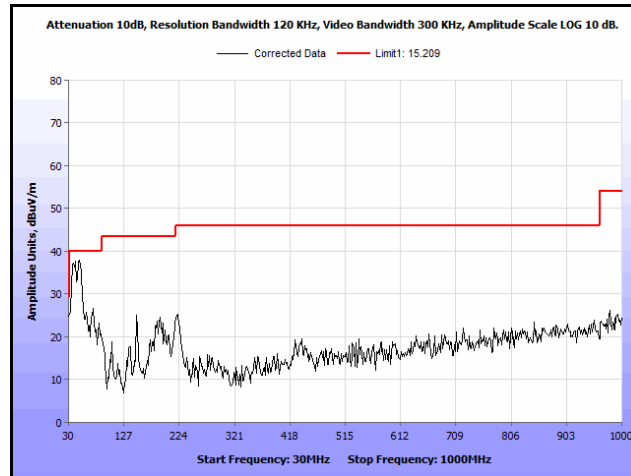
Plot 159. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2412 MHz, 1 GHz – 7 GHz, Avg



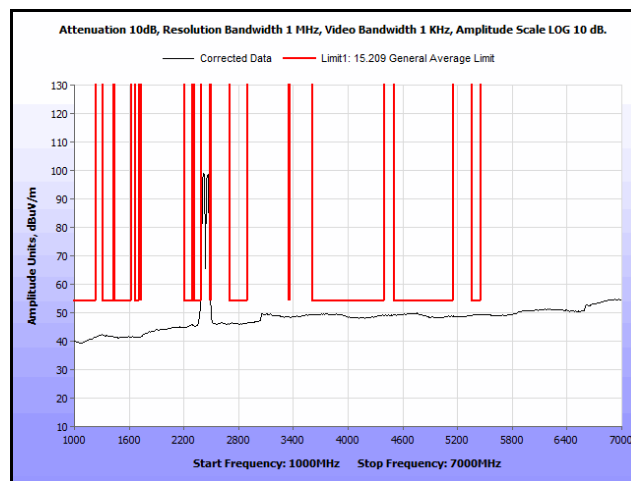
Plot 160. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2412 MHz, 1 GHz – 7 GHz, Peak



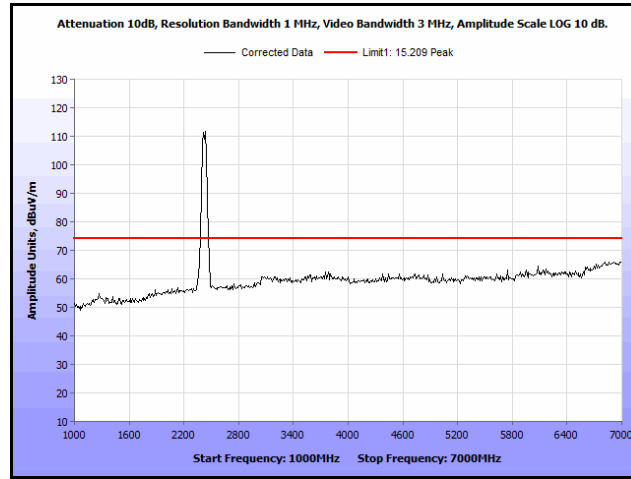
Plot 161. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2412 MHz, 7 GHz – 18 GHz, Peak



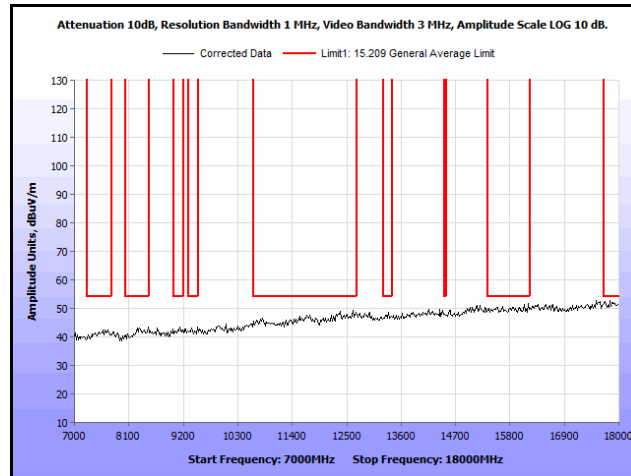
Plot 162. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2437 MHz, 30 MHz – 1 GHz, Peak



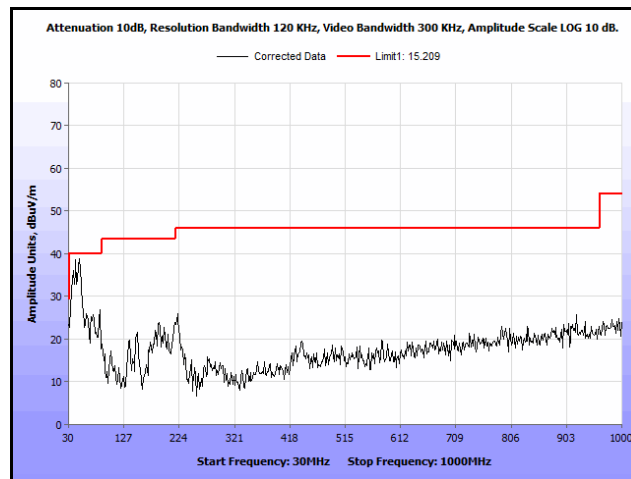
Plot 163. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2437 MHz, 1 GHz – 7 GHz, Avg



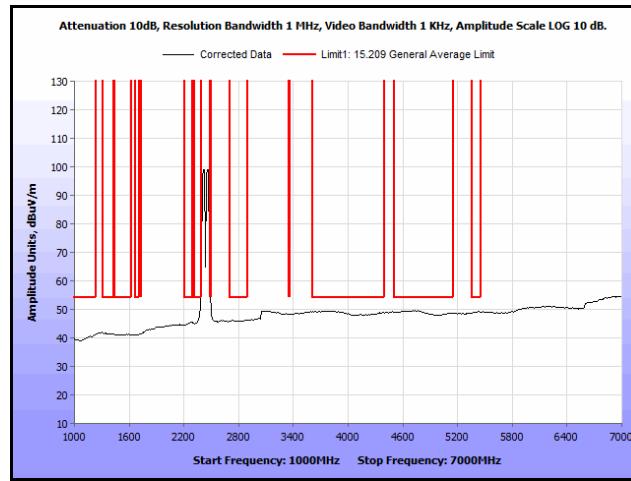
Plot 164. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2437 MHz, 1 GHz – 7 GHz, Peak



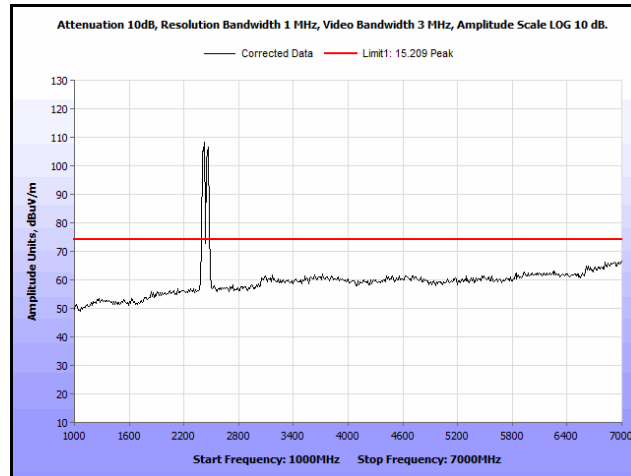
Plot 165. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2437 MHz, 7 GHz – 18 GHz, Peak



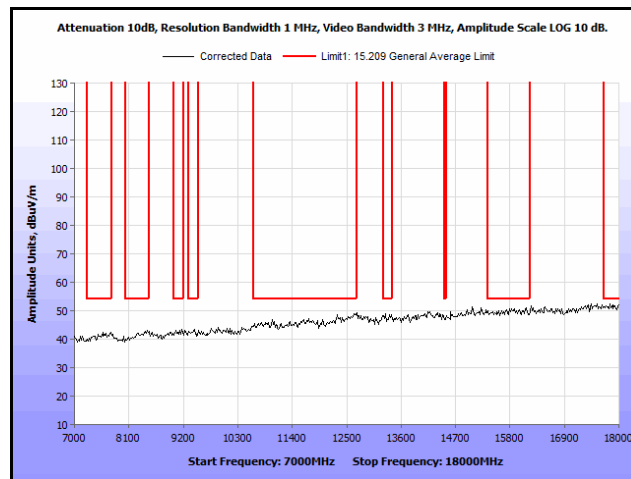
Plot 166. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2462 MHz, 30 MHz – 1 GHz, Peak



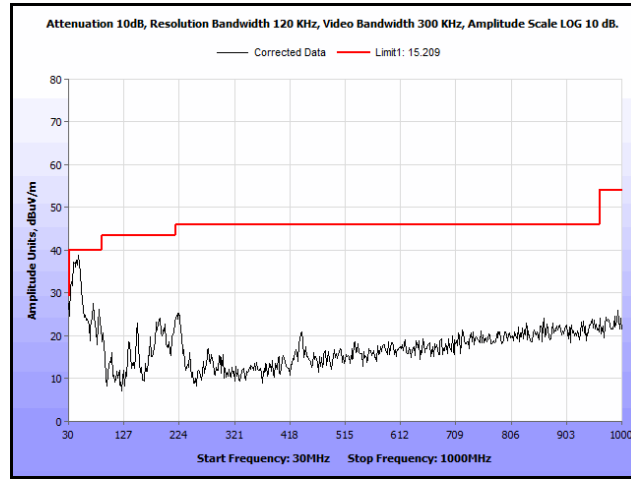
Plot 167. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2462 MHz, 1 GHz – 7 GHz, Avg



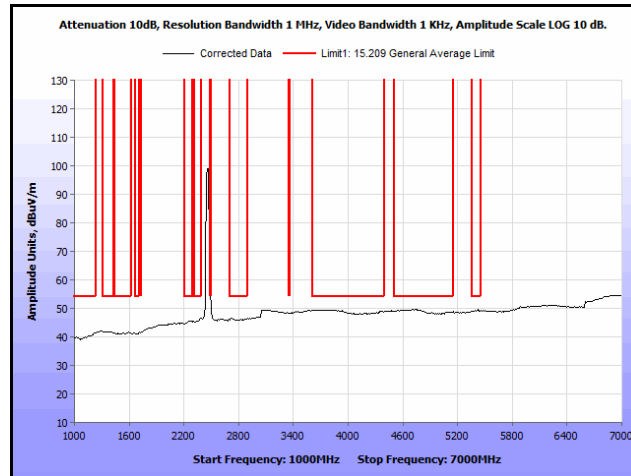
Plot 168. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2462 MHz, 1 GHz – 7 GHz, Peak



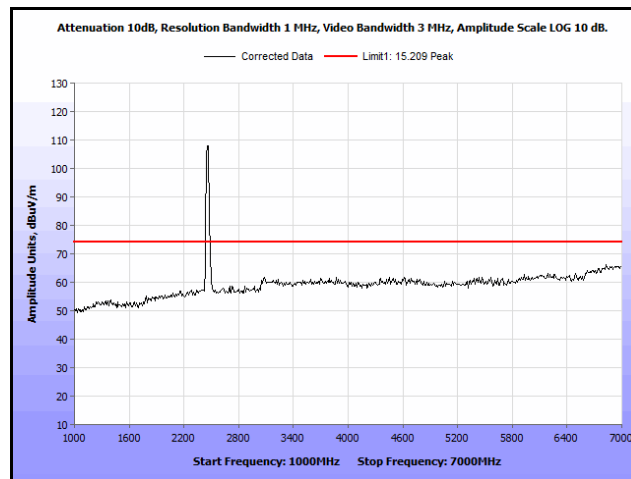
Plot 169. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2412 MHz & 2462 MHz, 7 GHz – 18 GHz, Peak



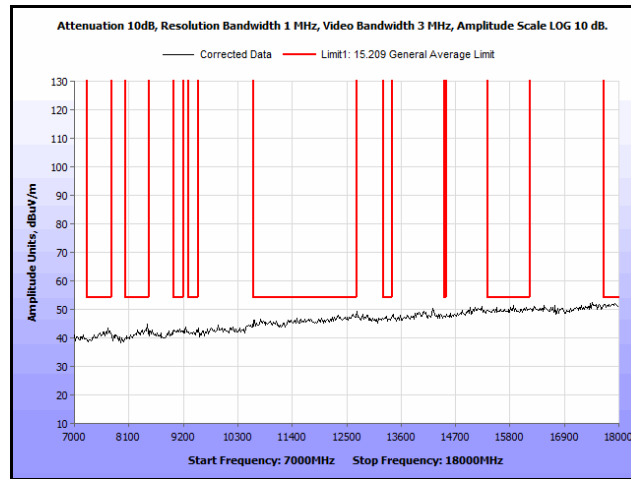
Plot 170. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 2437 MHz, 30 MHz – 1 GHz, Peak



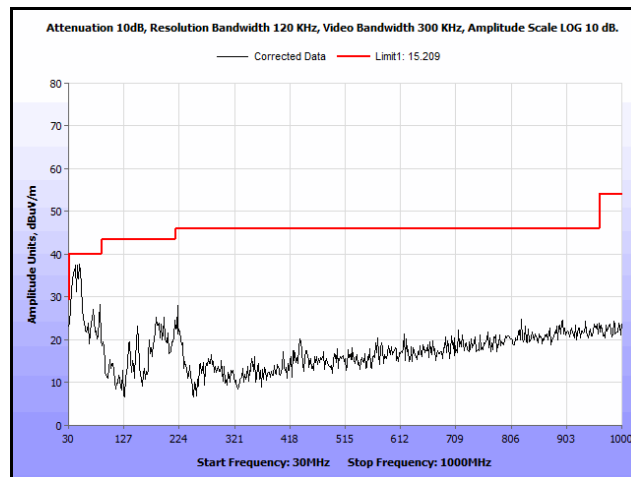
Plot 171. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 2437 MHz, 1 GHz – 7 GHz, Avg



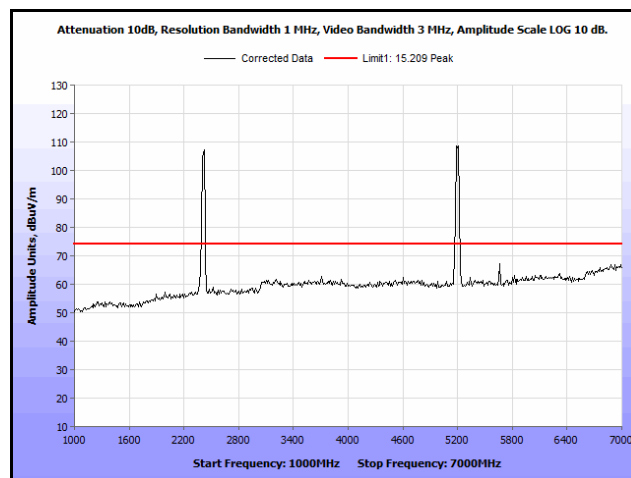
Plot 172. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 2437 MHz, 1 GHz – 7 GHz, Peak



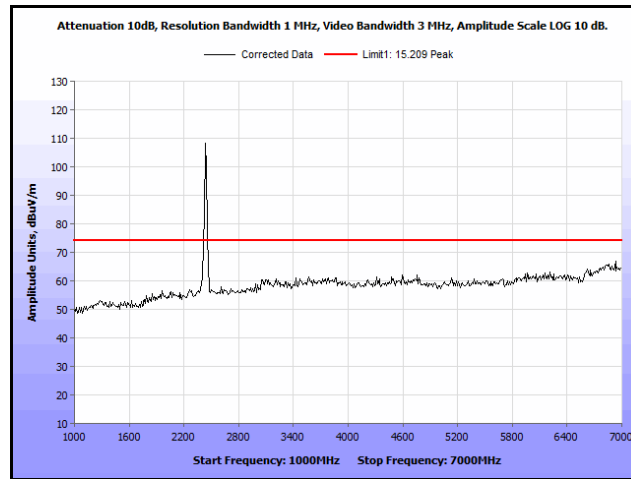
Plot 173. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 2437 MHz, 7 GHz – 18 GHz, Peak



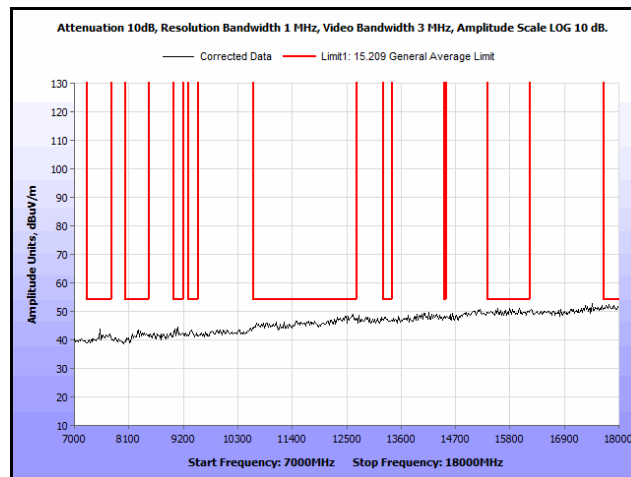
Plot 174. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 2462 MHz, 30 MHz – 1 GHz, Peak



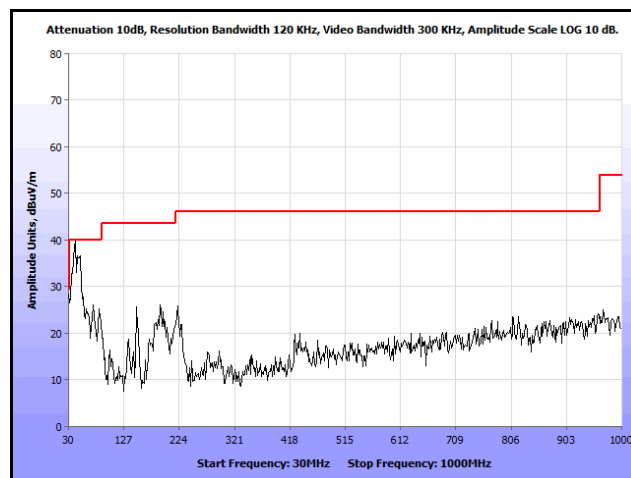
Plot 175. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 2462 MHz, 1 GHz – 7 GHz, Avg



Plot 176. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 2462 MHz, 1 GHz – 7 GHz, Peak



Plot 177. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2437 MHz & 2462 MHz, 7 GHz – 18 GHz, Peak



Plot 178. Radiated Spurs, Co-Location, 802.11n 20 MHz, 2462 MHz & 2462 MHz, 30 MHz – 1 GHz, Peak