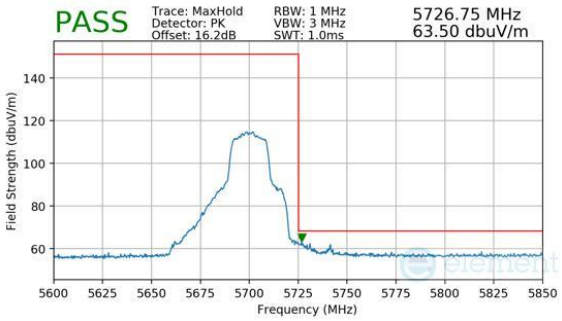
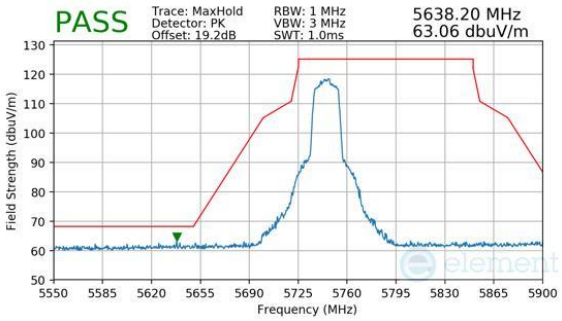
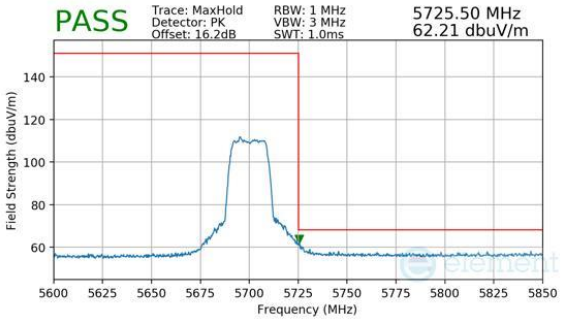


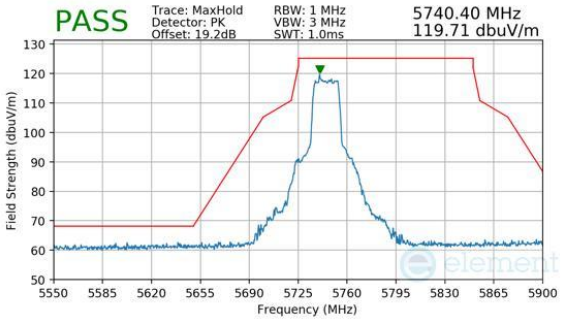
Plot 7-1066. SDM (Peak, Ch.140, 802.11n, MCS12)



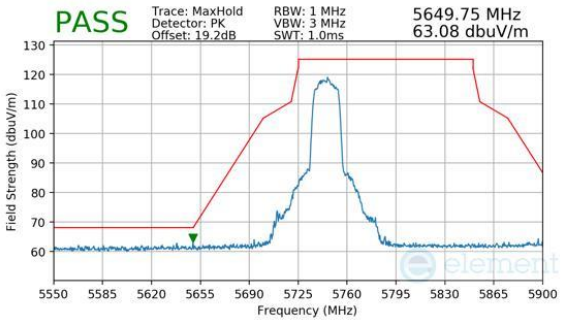
Plot 7-1069. CDD (Peak, Ch.149, 802.11n, MCS12)



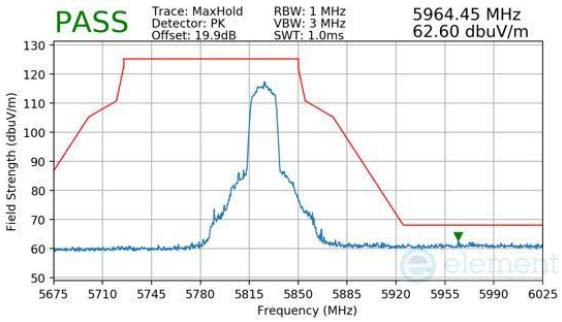
Plot 7-1067. CDD (Peak, Ch.140, 802.11n, MCS15)



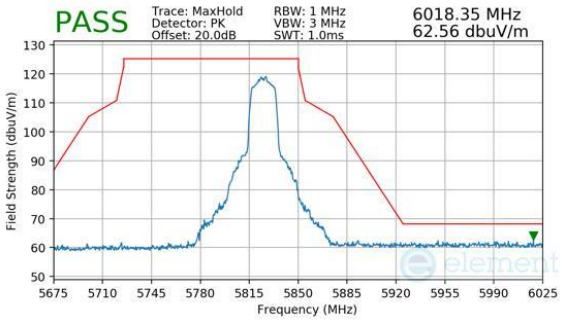
Plot 7-1070. CDD (Peak, Ch.149, 802.11n, MCS15)



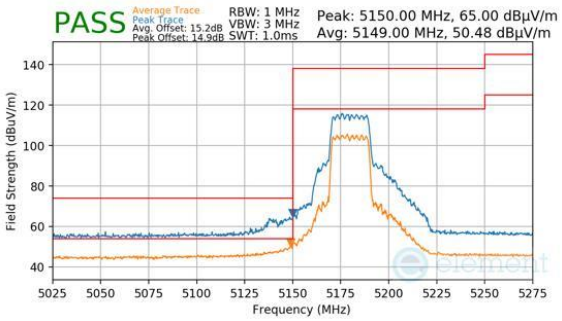
Plot 7-1068. CDD (Peak, Ch.149, 802.11n, MCS10)



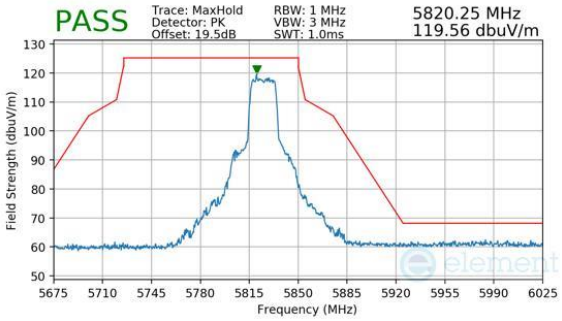
Plot 7-1071. CDD (Peak, Ch.165, 802.11n, MCS10)



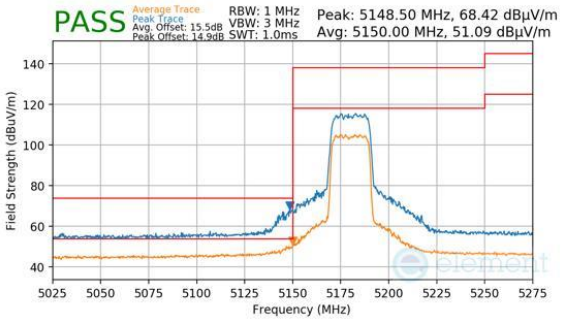
Plot 7-1072. CDD (Peak, Ch.165, 802.11n, MCS12)



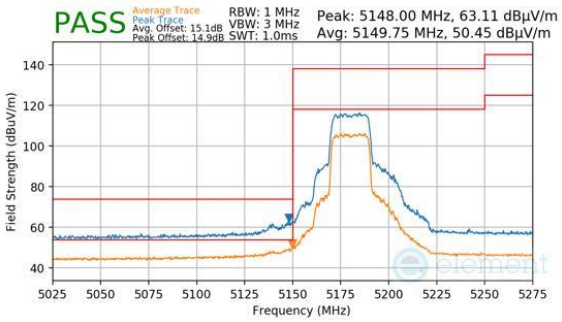
Plot 7-1075. CDD (Peak & Average, Ch.36, 802.11ax(SU), MCS4)



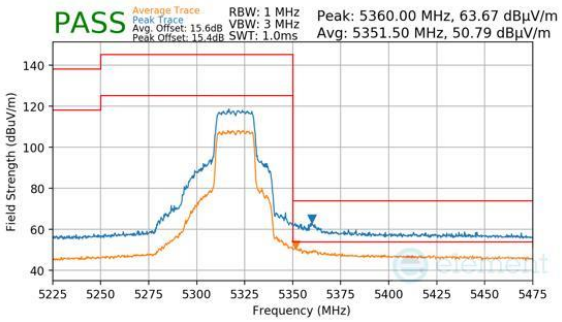
Plot 7-1073. CDD (Peak, Ch.165, 802.11n, MCS15)



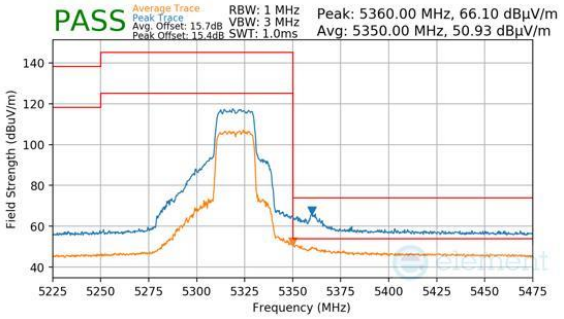
Plot 7-1076. CDD (Peak & Average, Ch.36, 802.11ax(SU), MCS11)



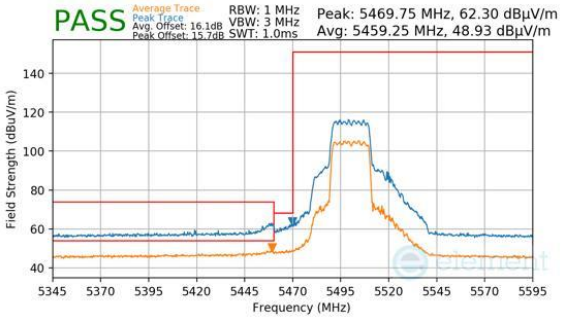
Plot 7-1074. CDD (Peak & Average, Ch.36, 802.11ax(SU), MCS2)



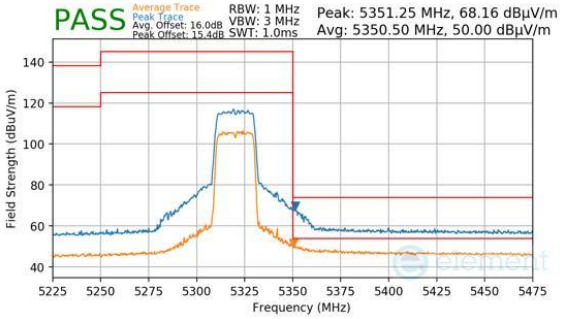
Plot 7-1077. SDM (Peak & Average, Ch.64, 802.11ax(SU), MCS2)



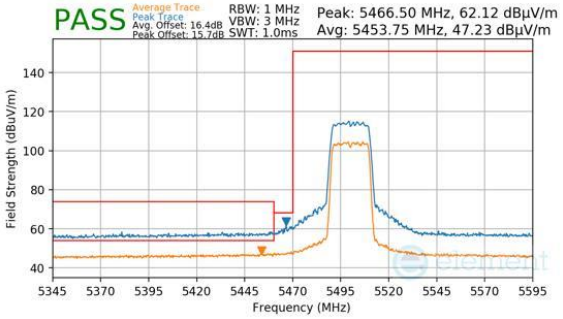
Plot 7-1078. CDD (Peak & Average, Ch.64, 802.11ax(SU), MCS4)



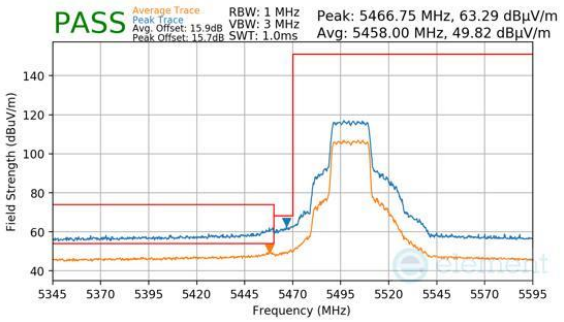
Plot 7-1081. CDD (Peak & Average, Ch.100, 802.11ax(SU), MCS4)



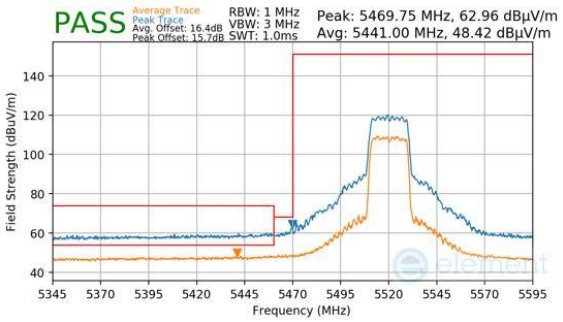
Plot 7-1079. CDD (Peak & Average, Ch.64, 802.11ax(SU), MCS11)



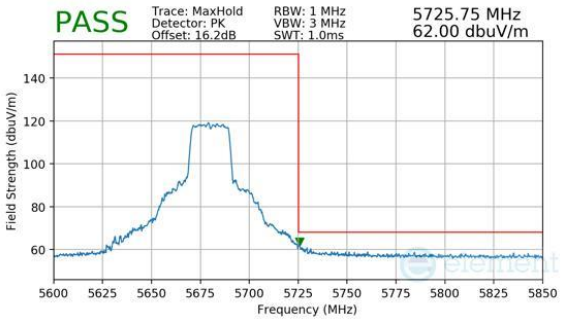
Plot 7-1082. CDD (Peak & Average, Ch.100, 802.11ax(SU), MCS11)



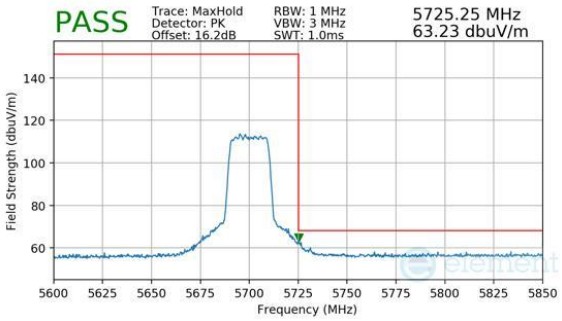
Plot 7-1080. SDM (Peak & Average, Ch.100, 802.11ax(SU), MCS2)



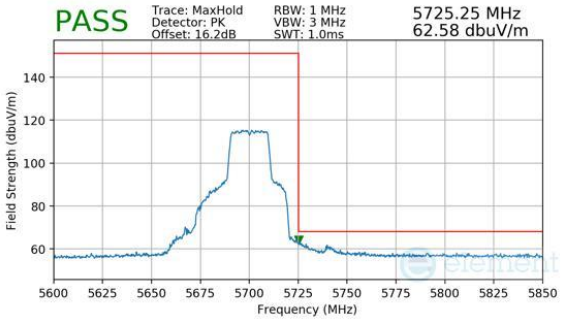
Plot 7-1083. SDM (Peak & Average, Ch.104, 802.11ax(SU), MCS11)



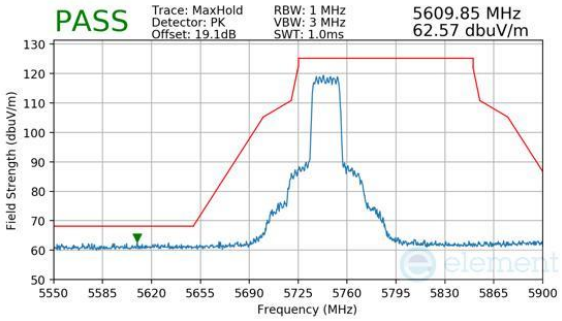
Plot 7-1084. SDM (Peak, Ch.136, 802.11ax(SU), MCS11)



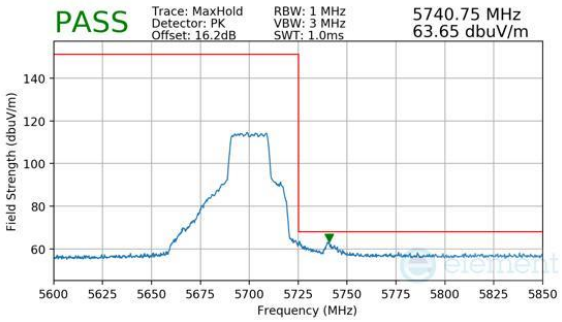
Plot 7-1087. CDD (Peak, Ch.140, 802.11ax(SU), MCS11)



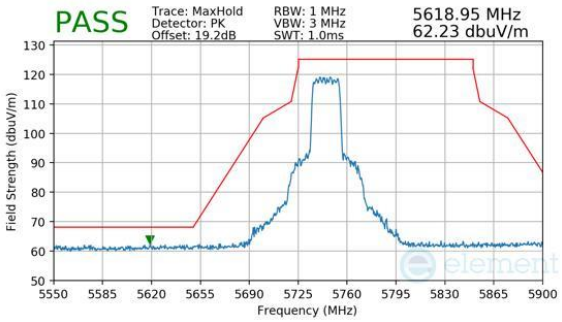
Plot 7-1085. SDM (Peak, Ch.140, 802.11ax(SU), MCS2)



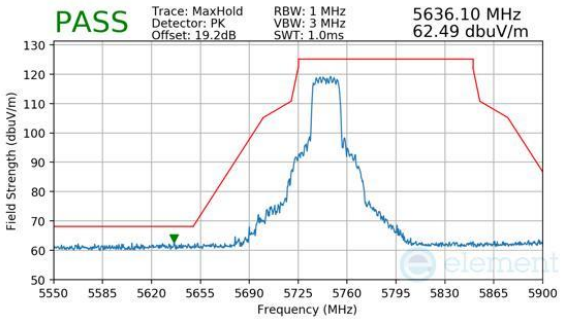
Plot 7-1088. CDD (Peak, Ch.149, 802.11ax(SU), MCS2)



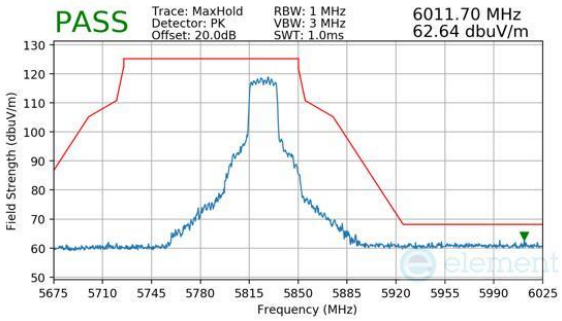
Plot 7-1086. CDD (Peak, Ch.140, 802.11ax(SU), MCS4)



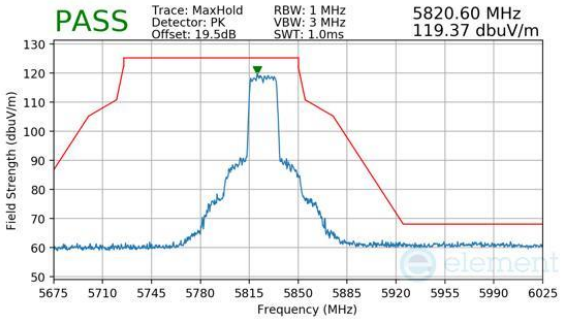
Plot 7-1089. CDD (Peak, Ch.149, 802.11ax(SU), MCS4)



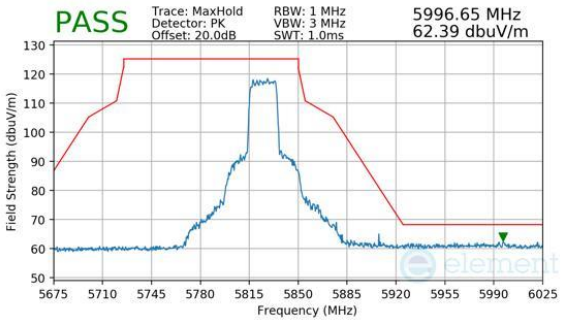
Plot 7-1090. CDD (Peak, Ch.149, 802.11ax(SU), MCS11)



Plot 7-1093. CDD (Peak, Ch.165, 802.11ax(SU), MCS11)



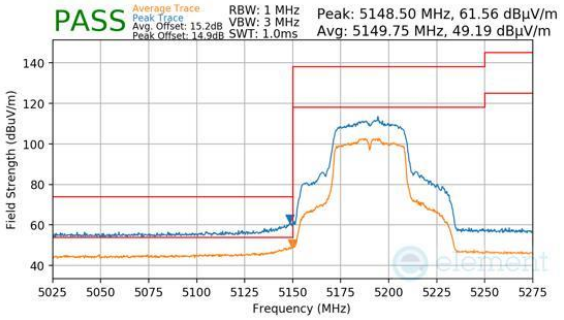
Plot 7-1091. CDD (Peak, Ch.165, 802.11ax(SU), MCS2)



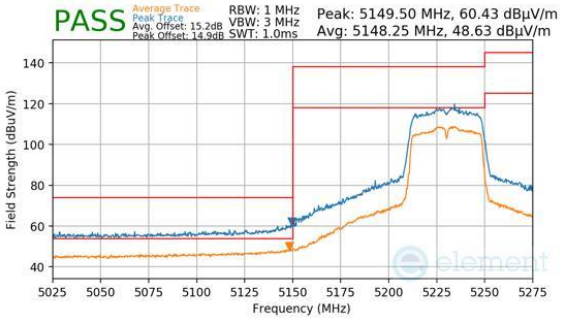
Plot 7-1092. CDD (Peak, Ch.165, 802.11ax(SU), MCS4)

7.6.14 CDD/SDM Radiated Band Edge Measurements (40MHz BW)

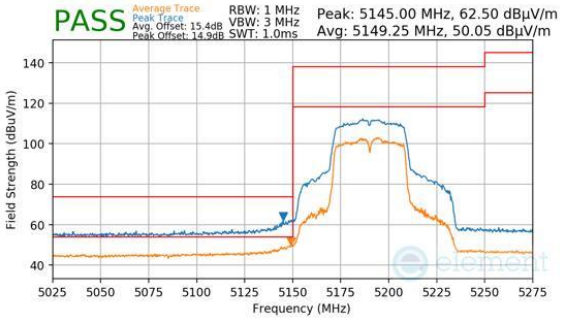
§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]



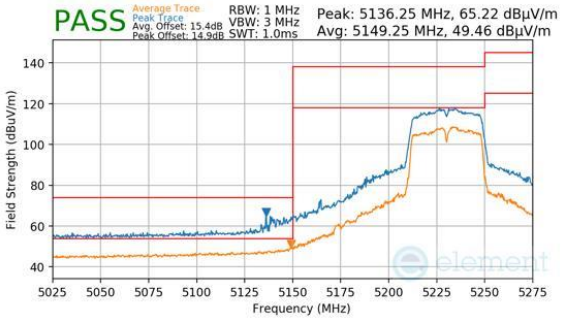
Plot 7-1094. CDD (Peak & Average, Ch.38, 802.11n, MCS10)



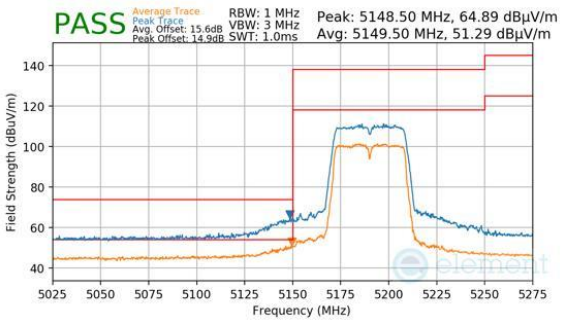
Plot 7-1097. CDD (Peak & Average, Ch.46, 802.11n, MCS10)



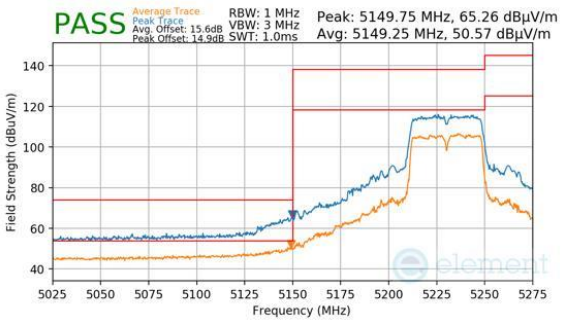
Plot 7-1095. CDD (Peak & Average, Ch.38, 802.11n, MCS12)



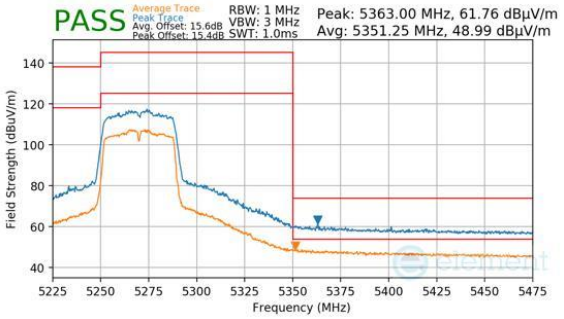
Plot 7-1098. CDD (Peak & Average, Ch.46, 802.11n, MCS12)



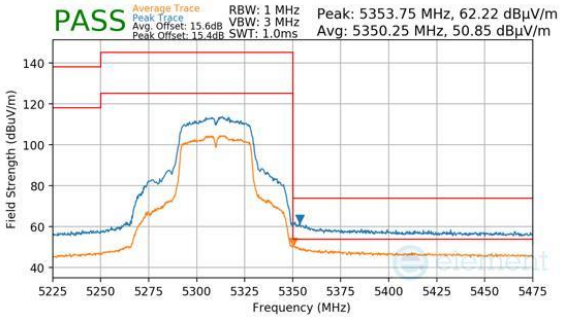
Plot 7-1096. CDD (Peak & Average, Ch.38, 802.11n, MCS15)



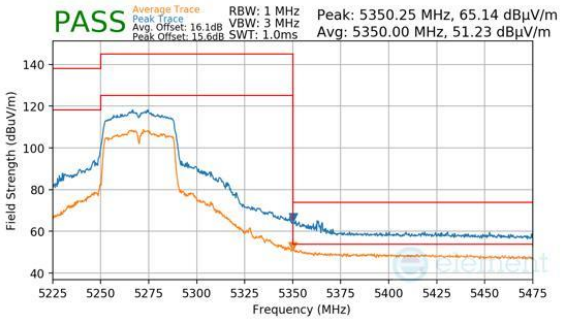
Plot 7-1099. CDD (Peak & Average, Ch.46, 802.11n, MCS15)



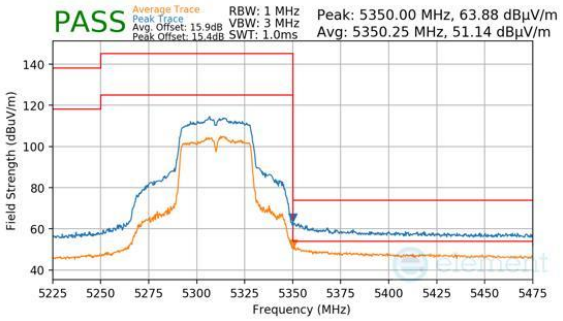
Plot 7-1100. SDM (Peak & Average, Ch.54, 802.11n, MCS10)



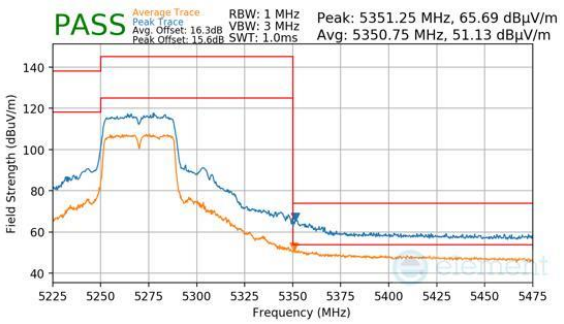
Plot 7-1103. CDD (Peak & Average, Ch.62, 802.11n, MCS10)



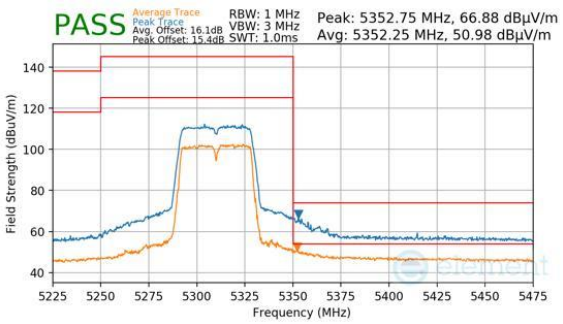
Plot 7-1101. SDM (Peak & Average, Ch.54, 802.11n, MCS12)



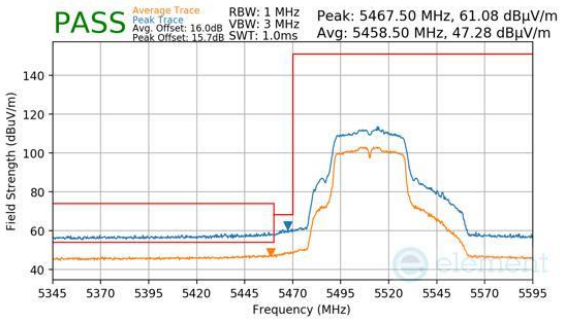
Plot 7-1104. CDD (Peak & Average, Ch.62, 802.11n, MCS12)



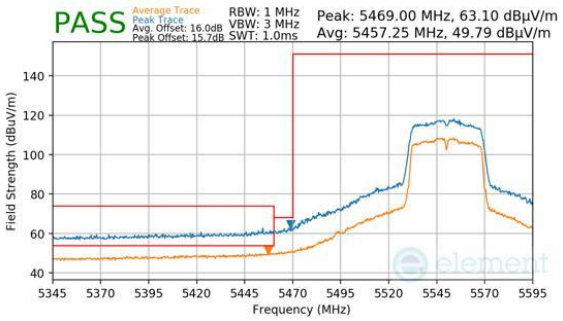
Plot 7-1102. SDM (Peak & Average, Ch.54, 802.11n, MCS15)



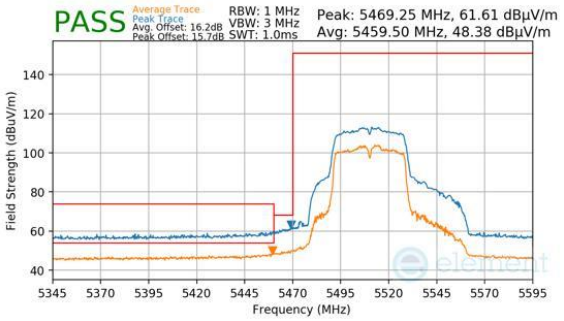
Plot 7-1105. CDD (Peak & Average, Ch.62, 802.11n, MCS15)



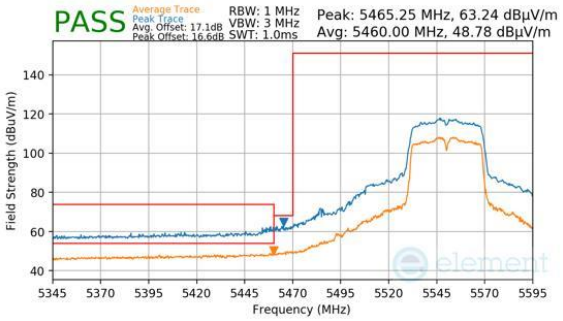
Plot 7-1106. CDD (Peak & Average, Ch.102, 802.11n, MCS10)



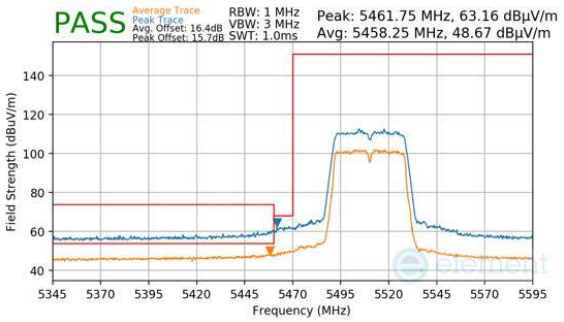
Plot 7-1109. SDM (Peak & Average, Ch.110, 802.11n, MCS10)



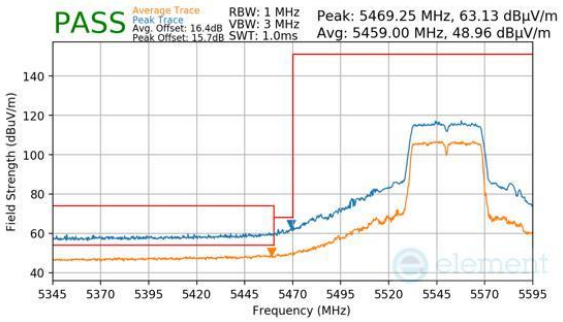
Plot 7-1107. CDD (Peak & Average, Ch.102, 802.11n, MCS12)



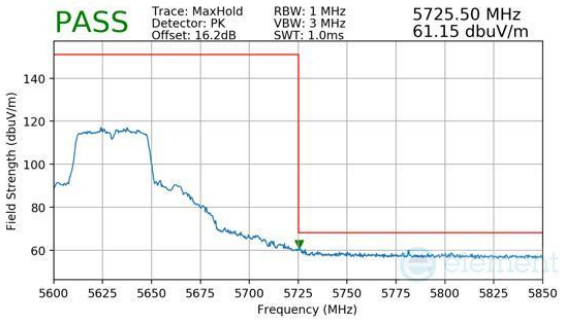
Plot 7-1110. SDM (Peak & Average, Ch.110, 802.11n, MCS12)



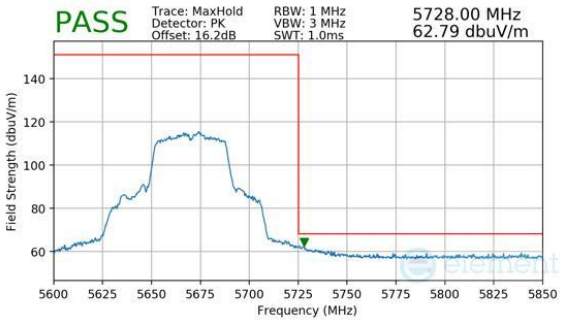
Plot 7-1108. CDD (Peak & Average, Ch.102, 802.11n, MCS15)



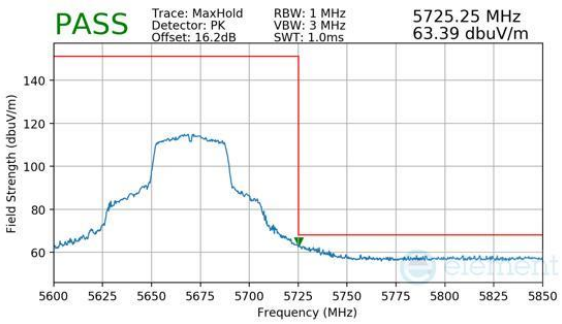
Plot 7-1111. CDD (Peak & Average, Ch.110, 802.11n, MCS15)



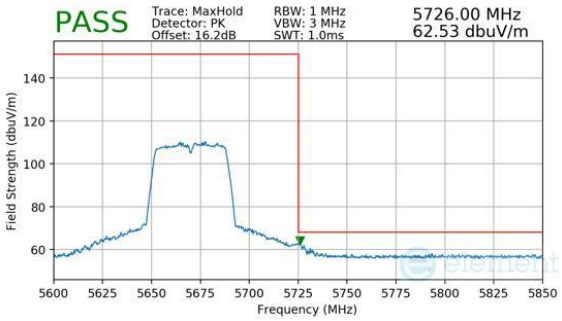
Plot 7-1112. SDM (Peak, Ch.126, 802.11n, MCS15) (FCC Only)



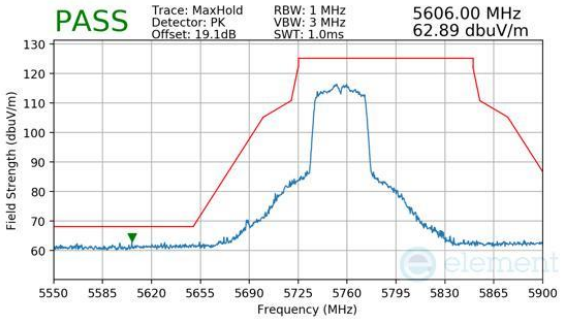
Plot 7-1113. SDM (Peak, Ch.134, 802.11n, MCS10)



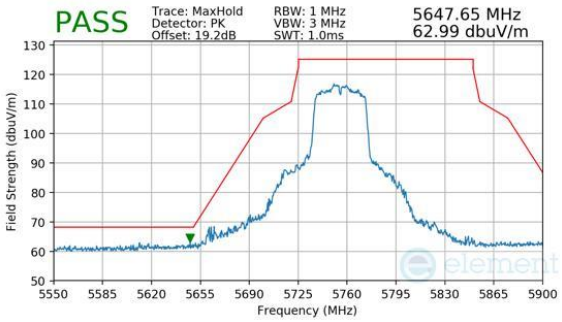
Plot 7-1114. CDD (Peak, Ch.134, 802.11n, MCS12)



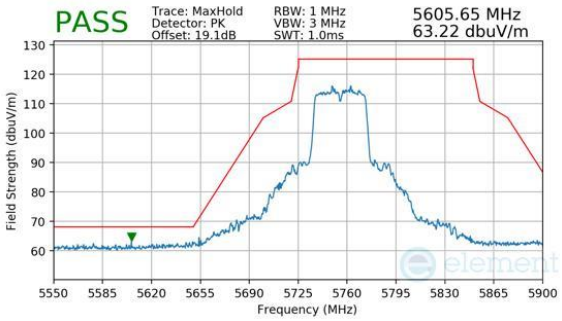
Plot 7-1115. CDD (Peak, Ch.134, 802.11n, MCS15)



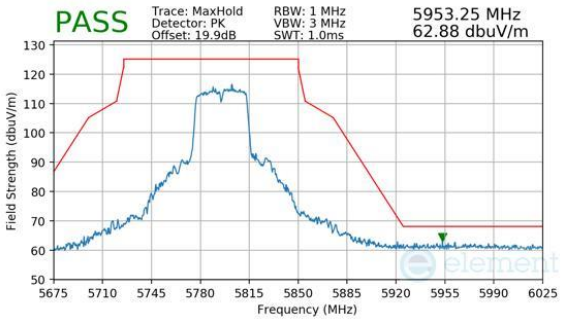
Plot 7-1116. CDD (Peak, Ch.151, 802.11n, MCS10)



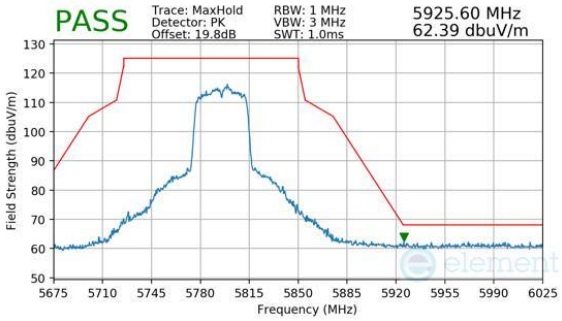
Plot 7-1117. CDD (Peak, Ch.151, 802.11n, MCS12)



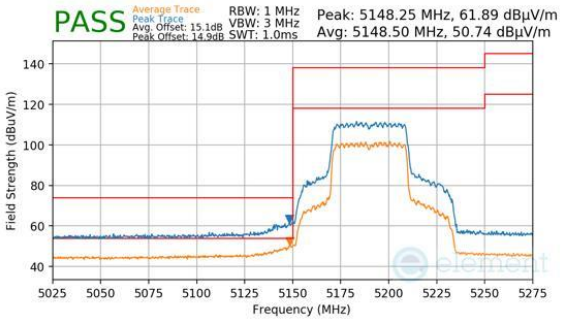
Plot 7-1118. CDD (Peak, Ch.151, 802.11n, MCS15)



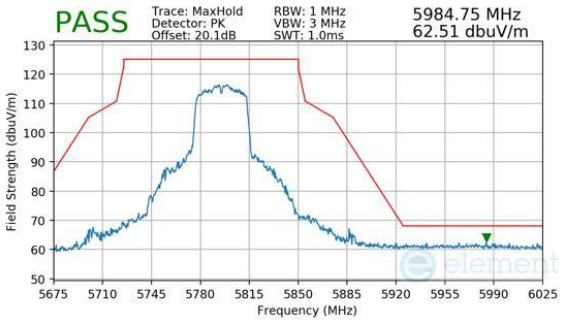
Plot 7-1121. CDD (Peak, Ch.159, 802.11n, MCS15)



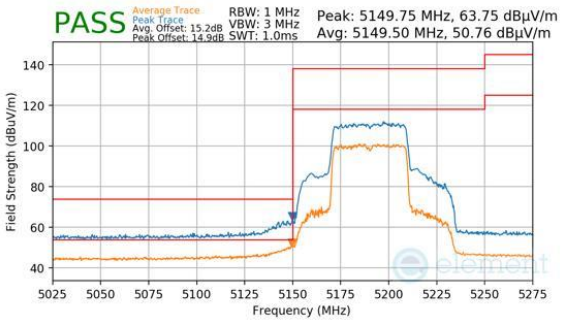
Plot 7-1119. CDD (Peak, Ch.159, 802.11n, MCS10)



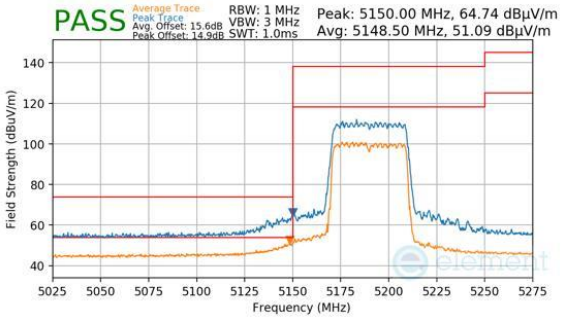
Plot 7-1122. CDD (Peak & Average, Ch.38, 802.11ax(SU), MCS2)



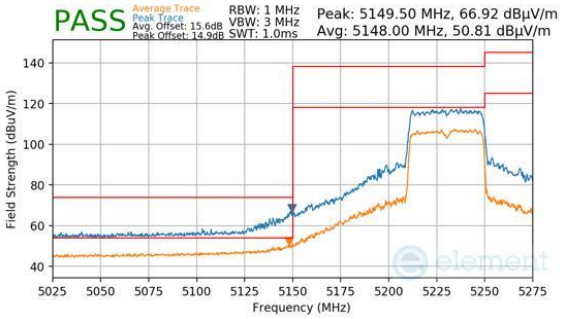
Plot 7-1120. CDD (Peak, Ch.159, 802.11n, MCS12)



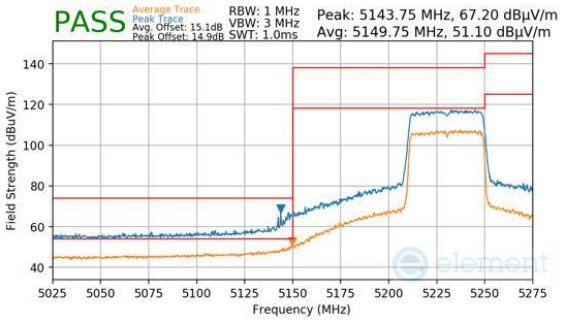
Plot 7-1123. CDD (Peak & Average, Ch.38, 802.11ax(SU), MCS4)



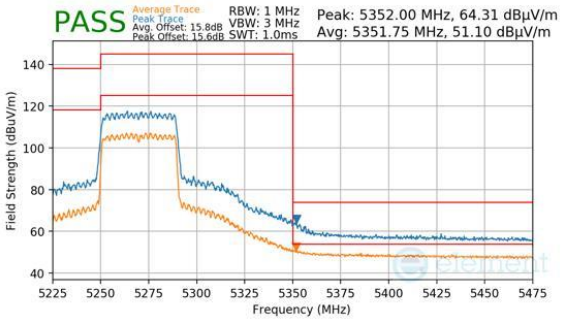
Plot 7-1124. CDD (Peak & Average, Ch.38, 802.11ax(SU), MCS11)



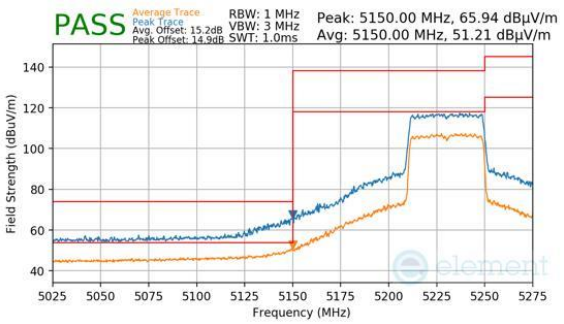
Plot 7-1127. CDD (Peak & Average, Ch.46, 802.11ax(SU), MCS11)



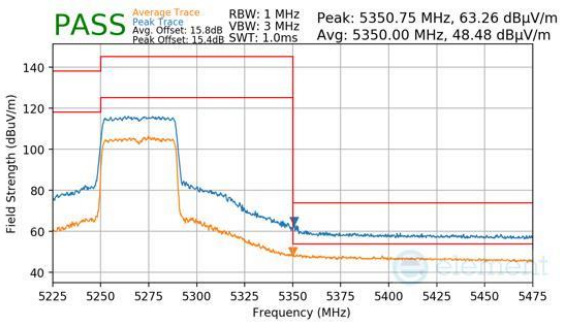
Plot 7-1125. CDD (Peak & Average, Ch.46, 802.11ax(SU), MCS2)



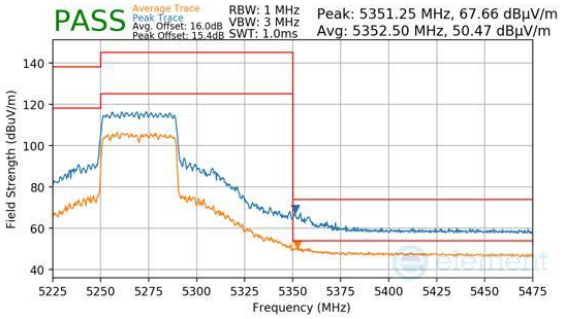
Plot 7-1128. SDM (Peak & Average, Ch.54, 802.11ax(SU), MCS2)



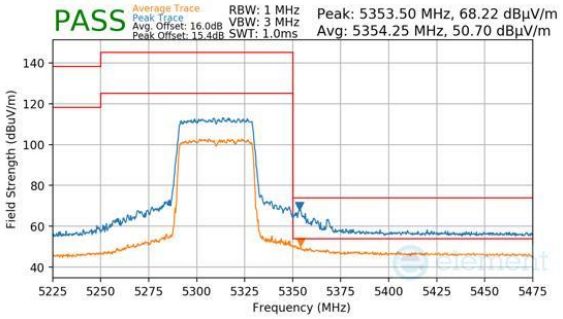
Plot 7-1126. CDD (Peak & Average, Ch.46, 802.11ax(SU), MCS4)



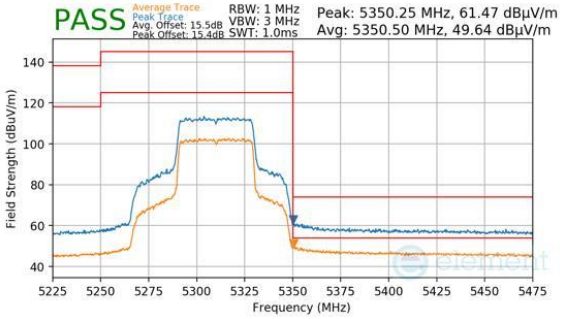
Plot 7-1129. SDM (Peak & Average, Ch.54, 802.11ax(SU), MCS4)



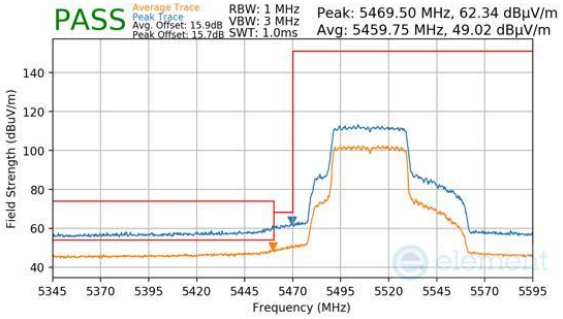
Plot 7-1130. SDM (Peak & Average, Ch.54, 802.11ax(SU), MCS11)



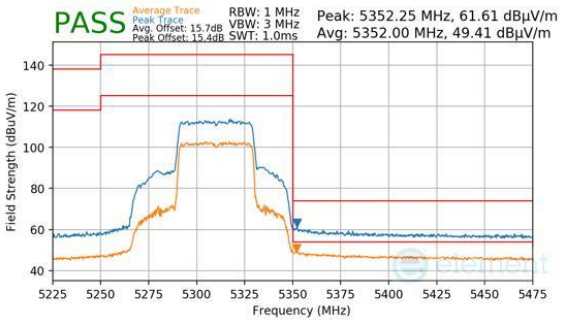
Plot 7-1133. CDD (Peak & Average, Ch.62, 802.11ax(SU), MCS11)



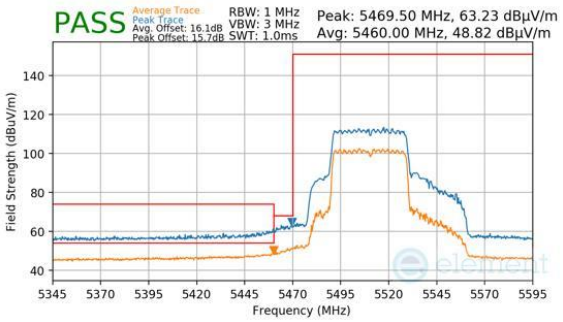
Plot 7-1131. CDD (Peak & Average, Ch.62, 802.11ax(SU), MCS2)



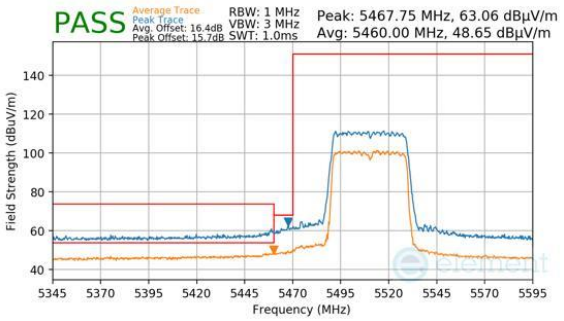
Plot 7-1134. CDD (Peak & Average, Ch.102, 802.11ax(SU), MCS2)



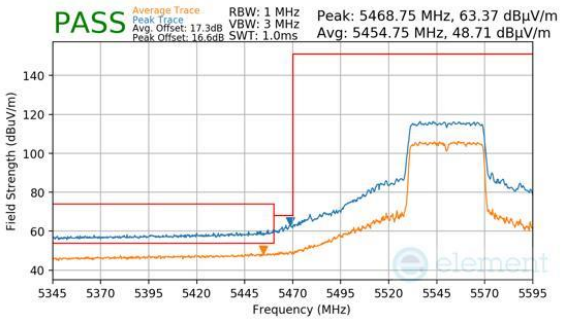
Plot 7-1132. CDD (Peak & Average, Ch.62, 802.11ax(SU), MCS4)



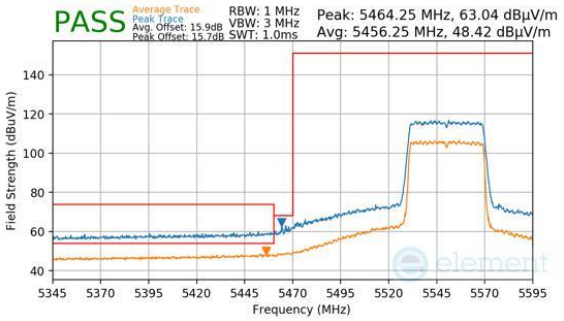
Plot 7-1135. CDD (Peak & Average, Ch.102, 802.11ax(SU), MCS4)



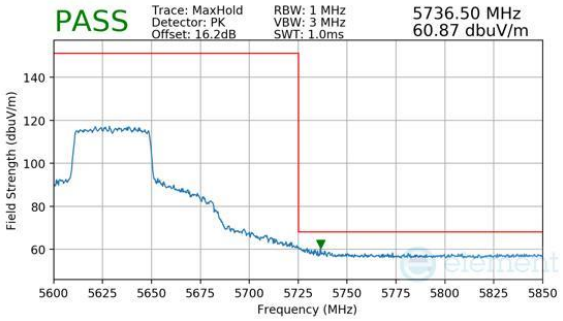
Plot 7-1136. CDD (Peak & Average, Ch.102, 802.11ax(SU), MCS11)



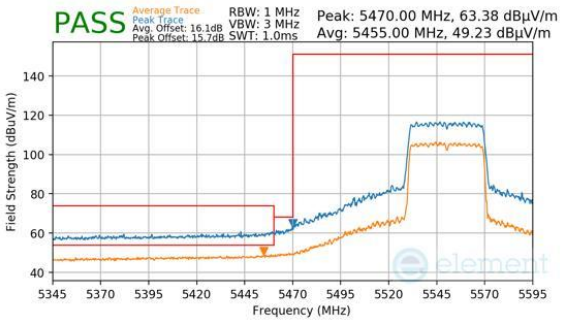
Plot 7-1139. CDD (Peak & Average, Ch.110, 802.11ax(SU), MCS11)



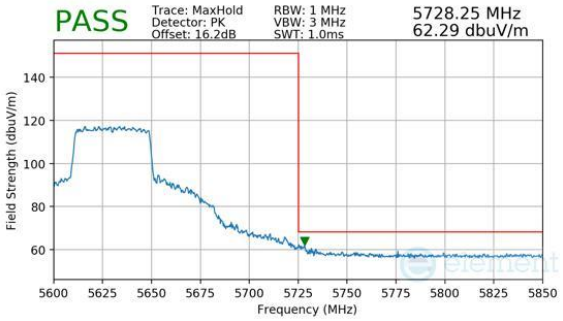
Plot 7-1137. SDM (Peak & Average, Ch.110, 802.11ax(SU), MCS2)



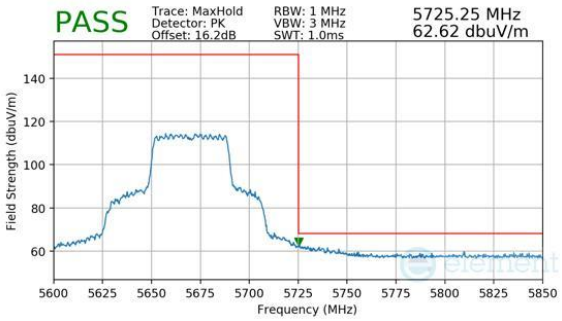
Plot 7-1140. SDM (Peak, Ch.126, 802.11ax(SU), MCS4) (FCC Only)



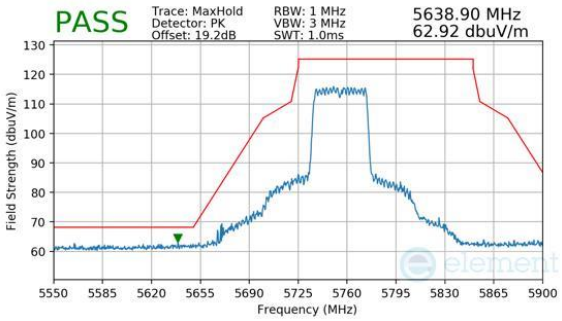
Plot 7-1138. CDD (Peak & Average, Ch.110, 802.11ax(SU), MCS4)



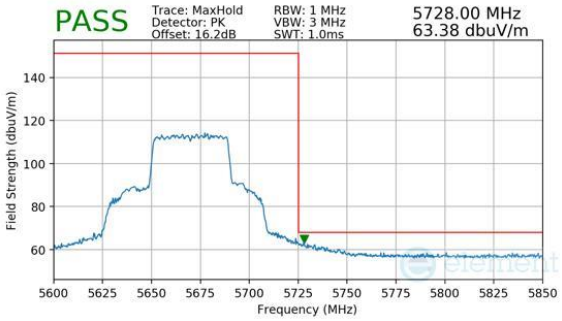
Plot 7-1141. SDM (Peak, Ch.126, 802.11ax(SU), MCS11) (FCC Only)



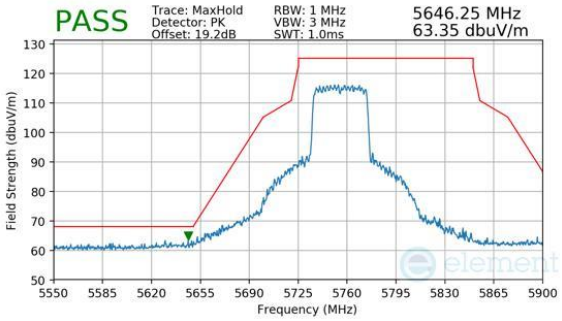
Plot 7-1142. SDM (Peak, Ch.134, 802.11ax(SU), MCS2)



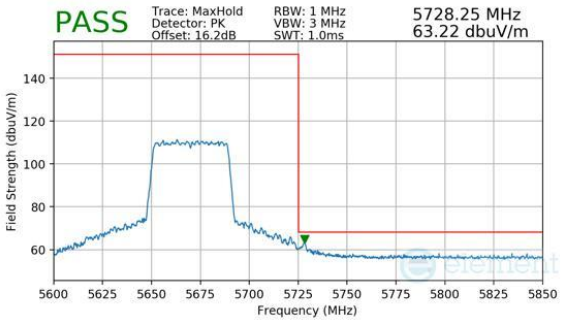
Plot 7-1145. CDD (Peak, Ch.151, 802.11ax(SU), MCS2)



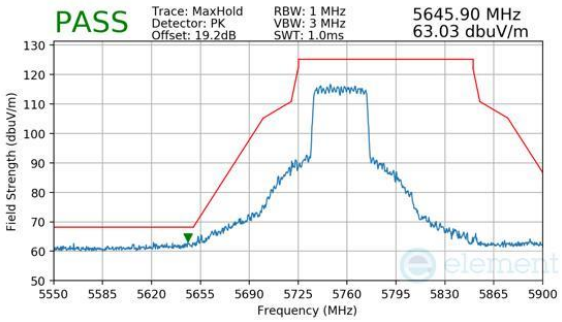
Plot 7-1143. CDD (Peak, Ch.134, 802.11ax(SU), MCS4)



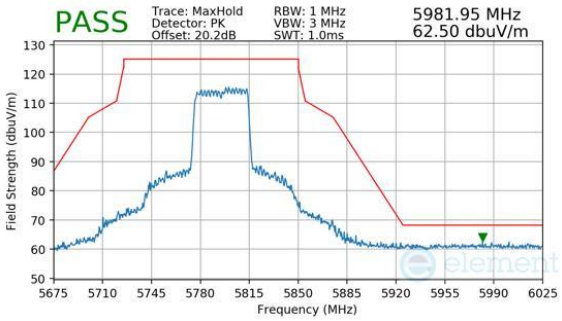
Plot 7-1146. CDD (Peak, Ch.151, 802.11ax(SU), MCS4)



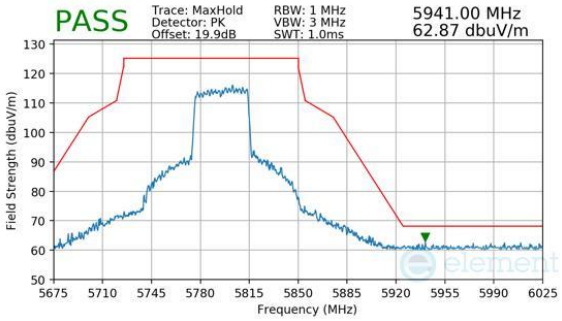
Plot 7-1144. CDD (Peak, Ch.134, 802.11ax(SU), MCS11)



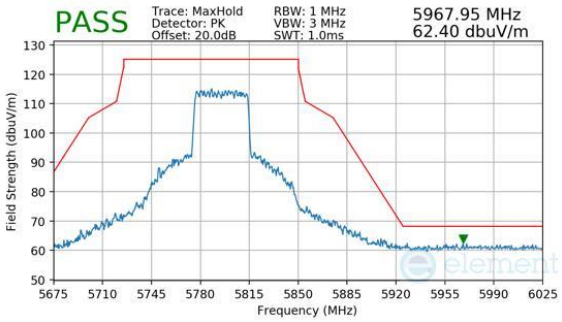
Plot 7-1147. CDD (Peak, Ch.151, 802.11ax(SU), MCS11)



Plot 7-1148. CDD (Peak, Ch.159, 802.11ax(SU), MCS2)



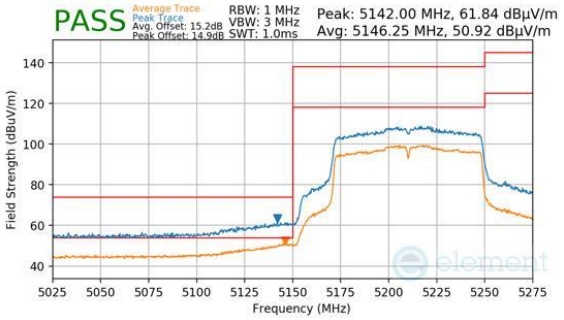
Plot 7-1149. CDD (Peak, Ch.159, 802.11ax(SU), MCS4)



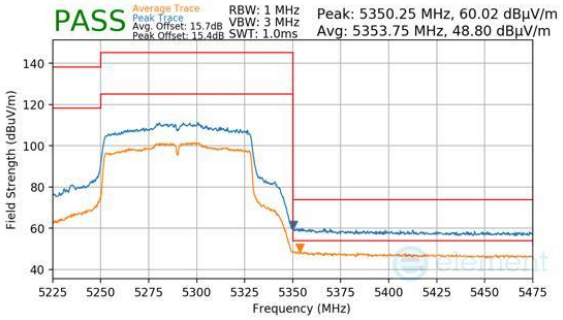
Plot 7-1150. CDD (Peak, Ch.159, 802.11ax(SU), MCS11)

7.6.15 CDD Radiated Band Edge Measurements (80MHz BW)

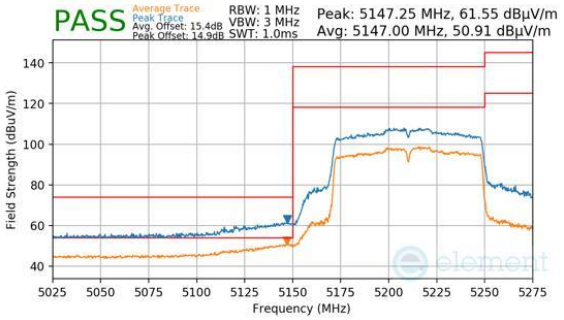
§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]



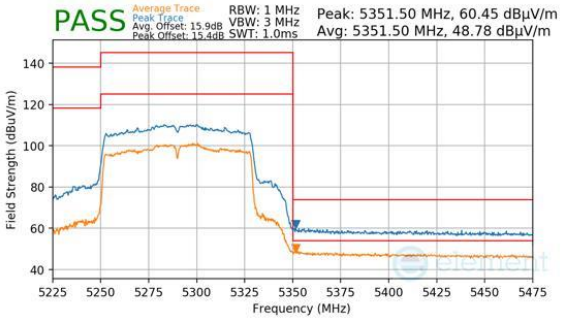
Plot 7-1151. CDD (Peak & Average, Ch.42, 802.11ac, MCS2)



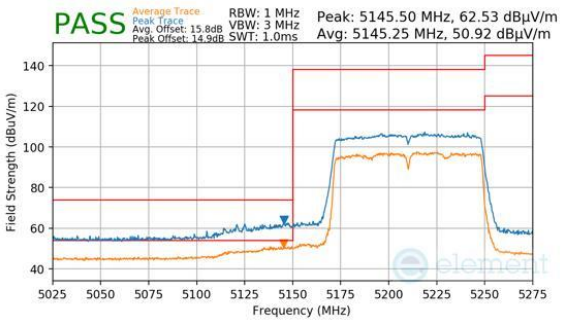
Plot 7-1154. CDD (Peak & Average, Ch.58, 802.11ac, MCS2)



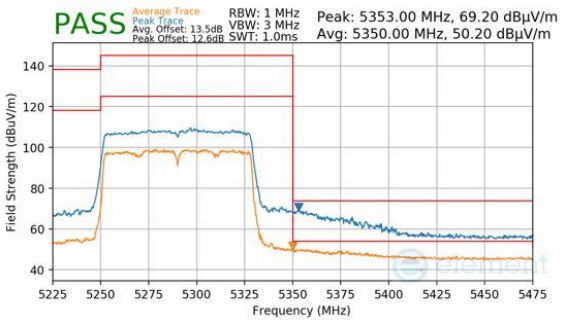
Plot 7-1152. CDD (Peak & Average, Ch.42, 802.11ac, MCS4)



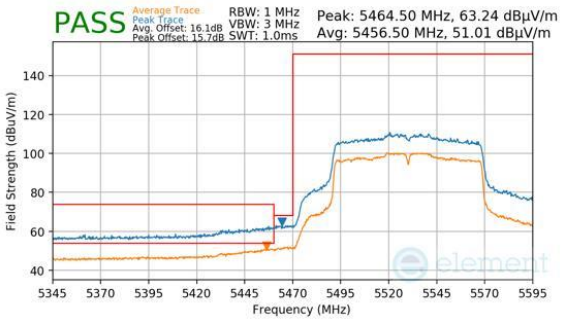
Plot 7-1155. CDD (Peak & Average, Ch.58, 802.11ac, MCS4)



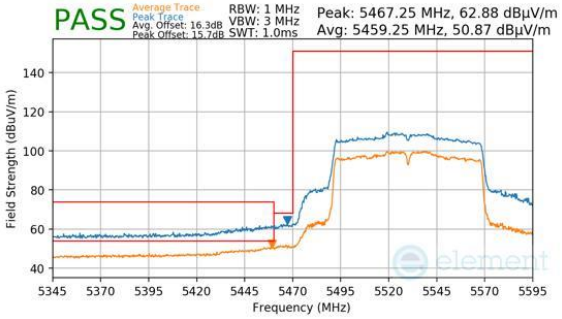
Plot 7-1153. CDD (Peak & Average, Ch.42, 802.11ac, MCS9)



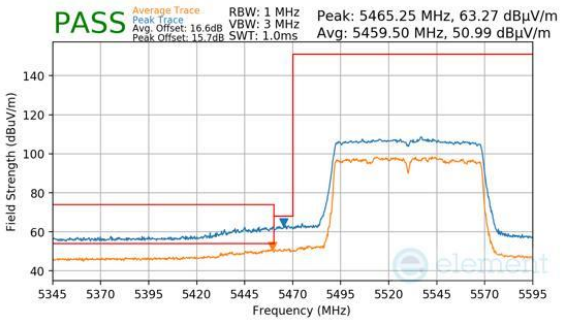
Plot 7-1156. CDD (Peak & Average, Ch.58, 802.11ac, MCS9)



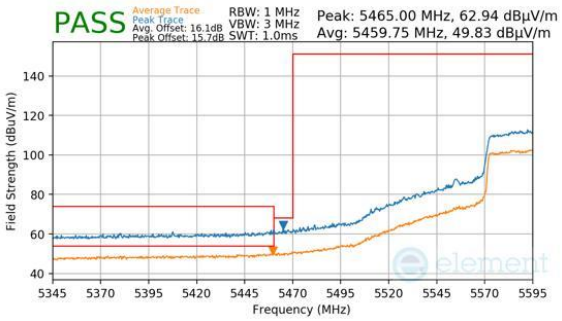
Plot 7-1157. CDD (Peak & Average, Ch.106, 802.11ac, MCS2)



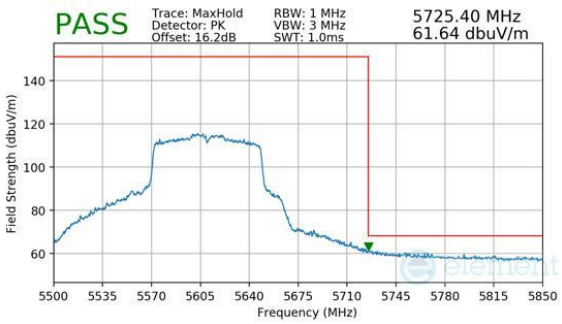
Plot 7-1158. CDD (Peak & Average, Ch.106, 802.11ac, MCS4)



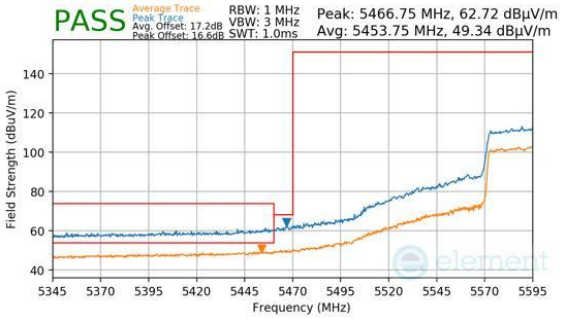
Plot 7-1159. CDD (Peak & Average, Ch.106, 802.11ac, MCS9)



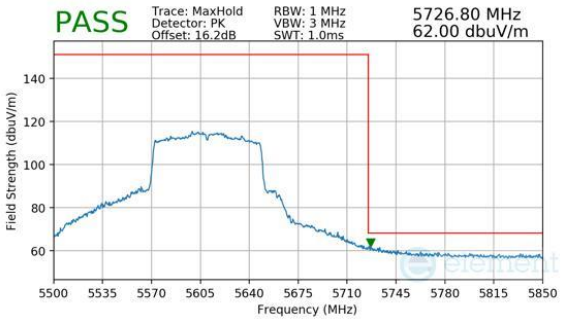
Plot 7-1160. CDD (Peak & Average, Ch.122, 802.11ac, MCS2) (FCC Only)



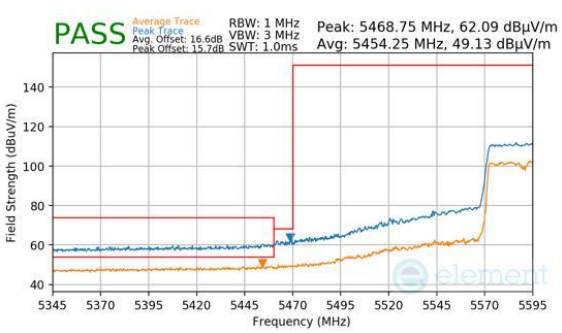
Plot 7-1161. CDD (Peak, Ch.122, 802.11ac, MCS2) (FCC Only)



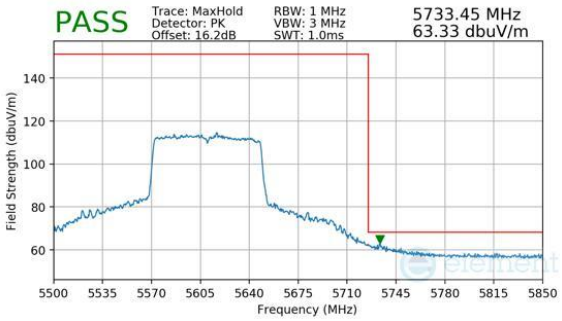
Plot 7-1162. CDD (Peak & Average, Ch.122, 802.11ac, MCS4) (FCC Only)



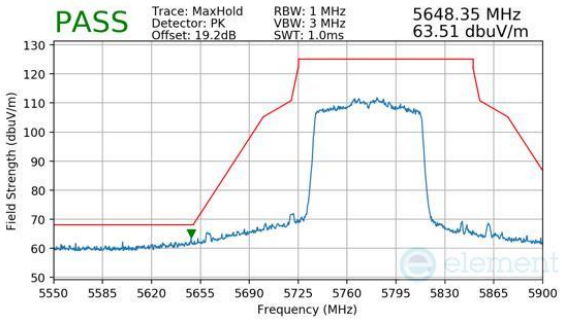
Plot 7-1163. CDD (Peak, Ch.122, 802.11ac, MCS4)
(FCC Only)



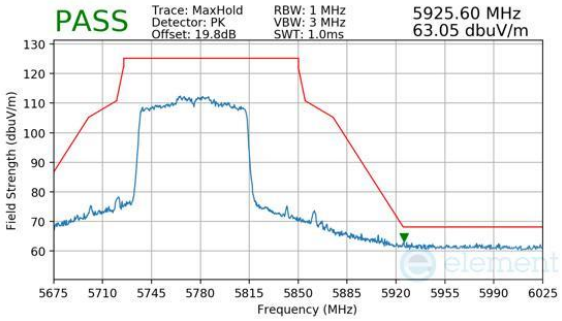
Plot 7-1164. CDD (Peak & Average, Ch.122, 802.11ac, MCS9)
(FCC Only)



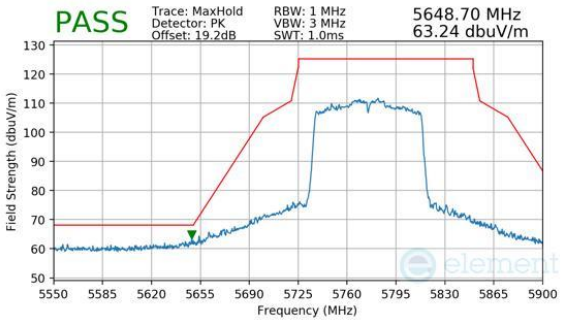
Plot 7-1165. CDD (Peak, Ch.122, 802.11ac, MCS9)
(FCC Only)



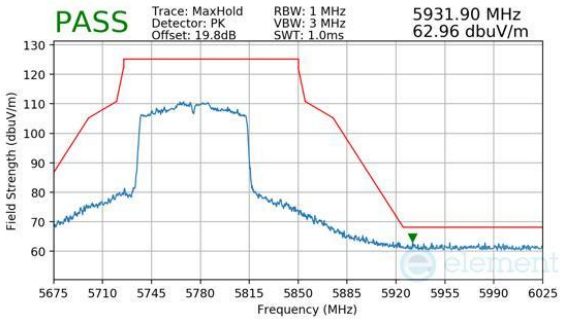
Plot 7-1166. CDD (Peak, Ch.155, 802.11ac, MCS2)



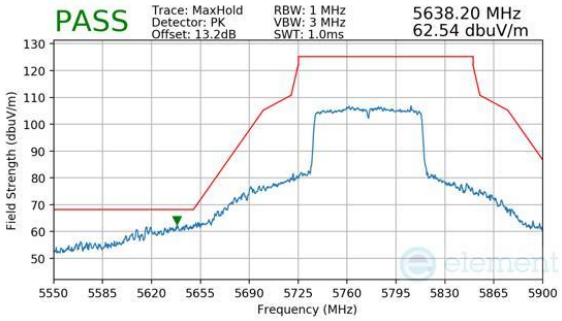
Plot 7-1167. CDD (Peak, Ch.155, 802.11ac, MCS2)



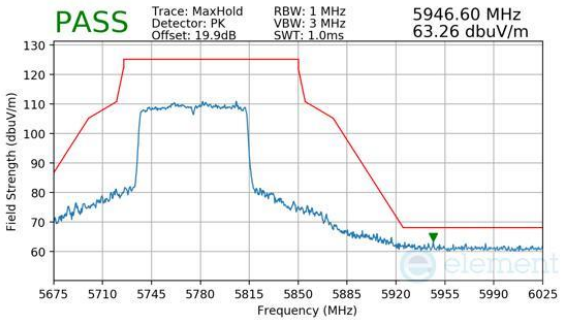
Plot 7-1168. CDD (Peak, Ch.155, 802.11ac, MCS4)



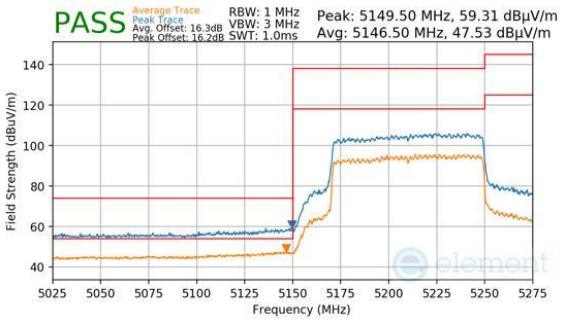
Plot 7-1169. CDD (Peak, Ch.155, 802.11ac, MCS4)



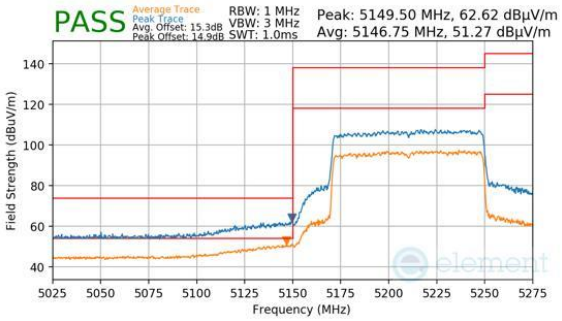
Plot 7-1170. CDD (Peak, Ch.155, 802.11ac, MCS9)



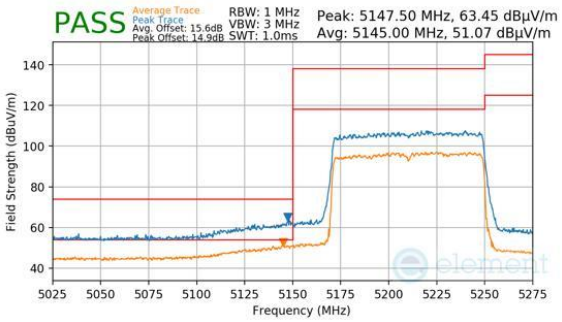
Plot 7-1171. CDD (Peak, Ch.155, 802.11ac, MCS9)



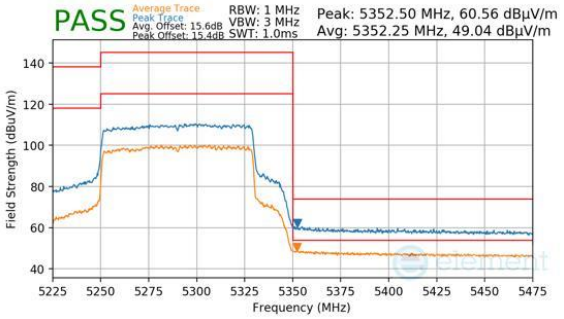
Plot 7-1172. CDD (Peak & Average, Ch.42, 802.11ax(SU), MCS2)



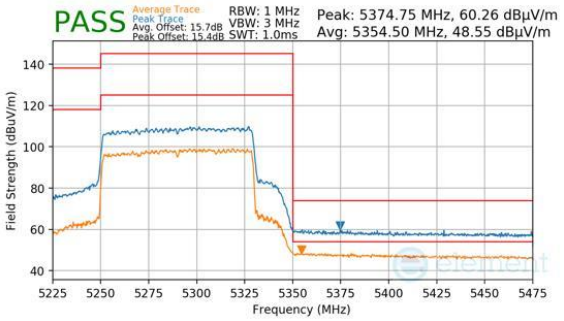
Plot 7-1173. CDD (Peak & Average, Ch.42, 802.11ax(SU), MCS4)



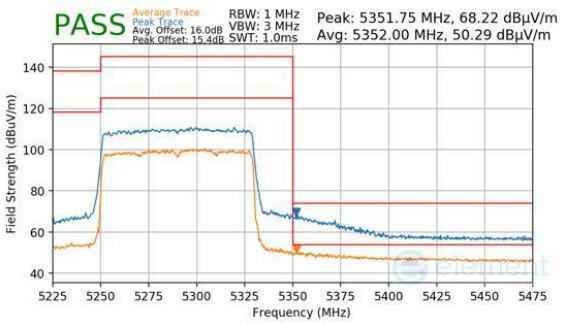
Plot 7-1174. CDD (Peak & Average, Ch.42, 802.11ax(SU), MCS11)



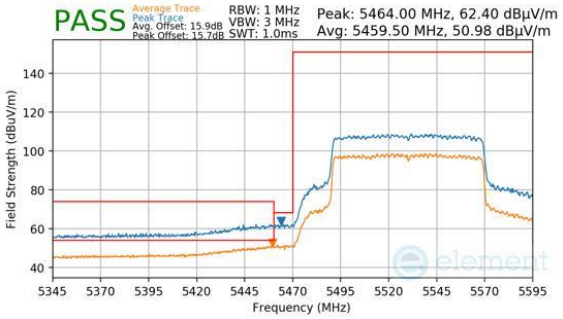
Plot 7-1175. CDD (Peak & Average, Ch.58, 802.11ax(SU), MCS2)



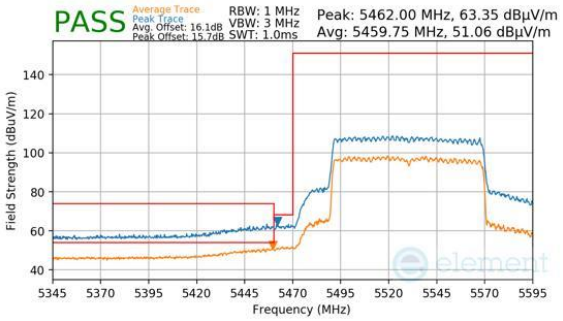
Plot 7-1176. CDD (Peak & Average, Ch.58, 802.11ax(SU), MCS4)



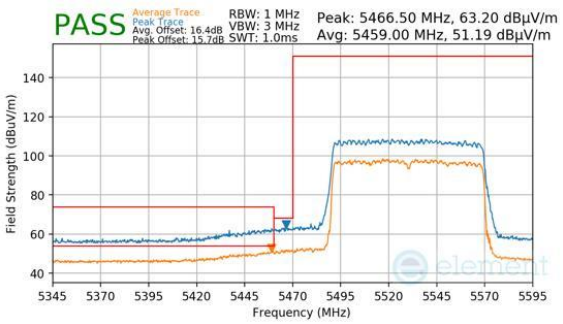
Plot 7-1177. CDD (Peak & Average, Ch.58, 802.11ax(SU), MCS11)



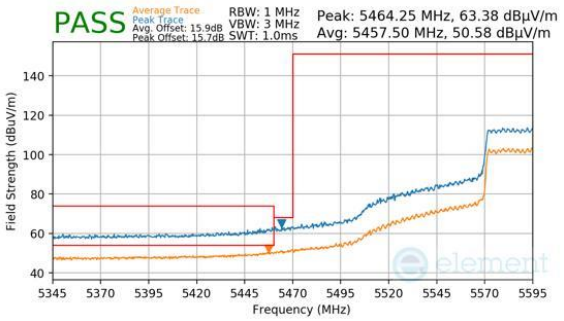
Plot 7-1178. CDD (Peak & Average, Ch.106, 802.11ax(SU), MCS2)



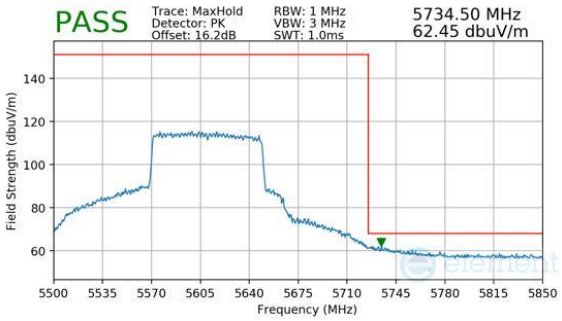
Plot 7-1179. CDD (Peak & Average, Ch.106, 802.11ax(SU), MCS4)



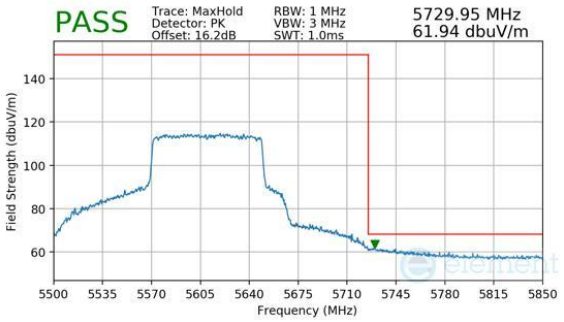
Plot 7-1180. CDD (Peak & Average, Ch.106, 802.11ax(SU), MCS11)



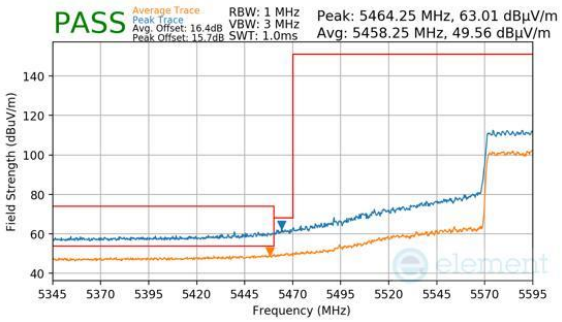
Plot 7-1181. CDD (Peak & Average, Ch.122, 802.11ax(SU), MCS2) (FCC Only)



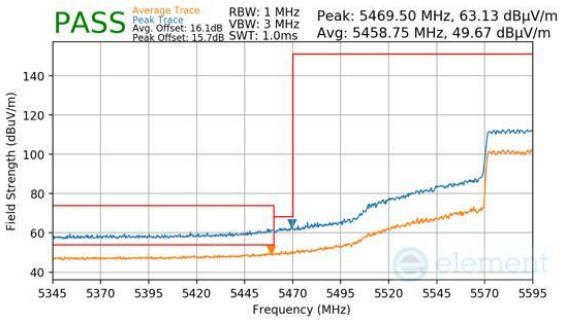
Plot 7-1184. CDD (Peak, Ch.122, 802.11ax(SU), MCS4) (FCC Only)



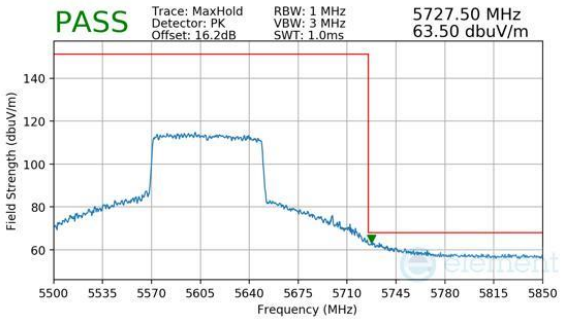
Plot 7-1182. CDD (Peak, Ch.122, 802.11ax(SU), MCS2) (FCC Only)



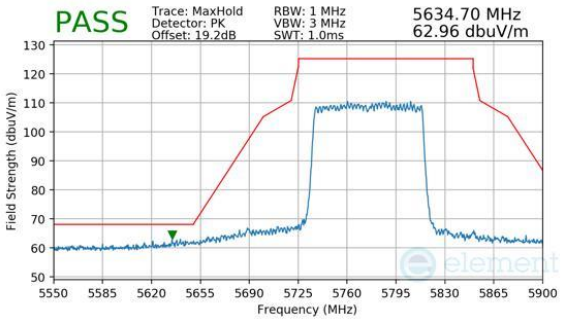
Plot 7-1185. CDD (Peak & Average, Ch.122, 802.11ax(SU), MCS11) (FCC Only)



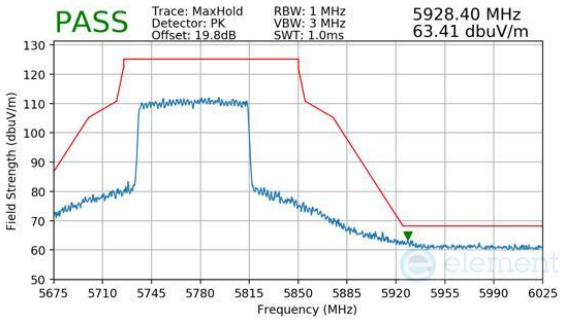
Plot 7-1183. CDD (Peak & Average, Ch.122, 802.11ax(SU), MCS4) (FCC Only)



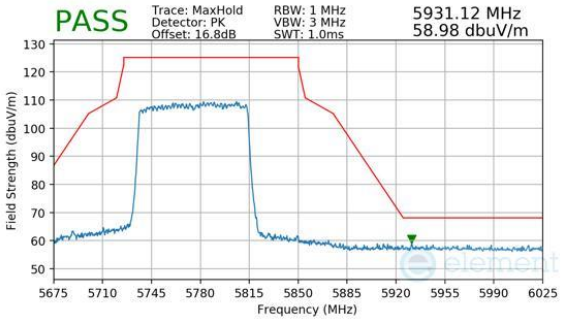
Plot 7-1186. CDD (Peak, Ch.122, 802.11ax(SU), MCS11) (FCC Only)



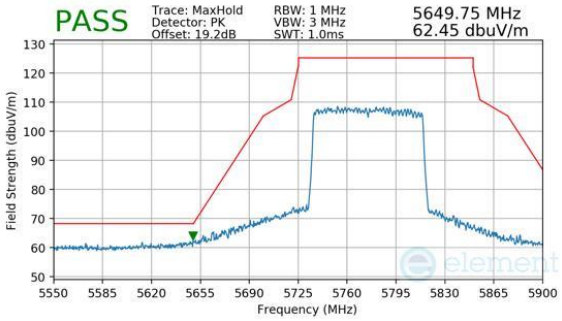
Plot 7-1187. CDD (Peak, Ch.155, 802.11ax(SU), MCS2)



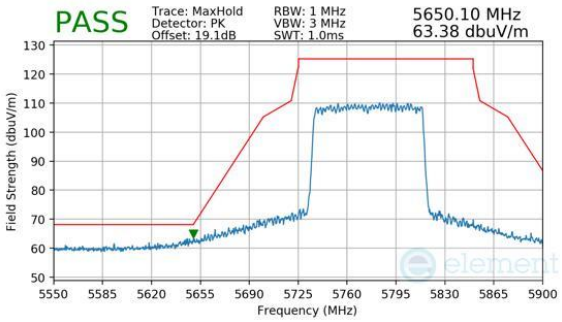
Plot 7-1190. CDD (Peak, Ch.155, 802.11ax(SU), MCS4)



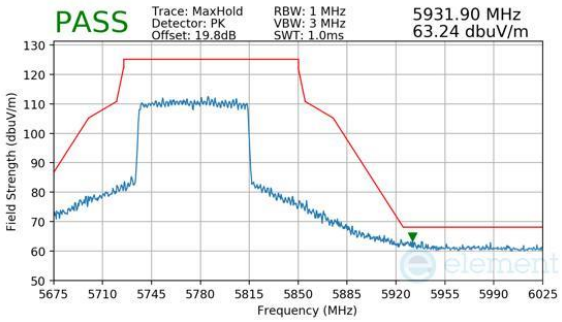
Plot 7-1188. CDD (Peak, Ch.155, 802.11ax(SU), MCS2)



Plot 7-1191. CDD (Peak, Ch.155, 802.11ax(SU), MCS11)



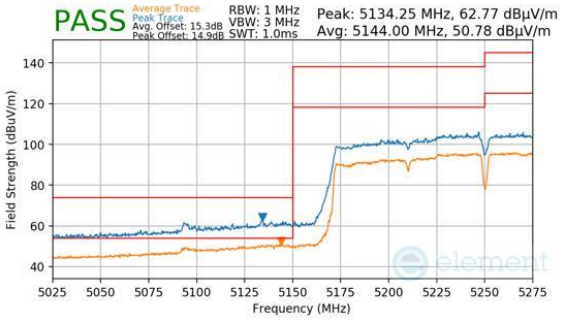
Plot 7-1189. CDD (Peak, Ch.155, 802.11ax(SU), MCS4)



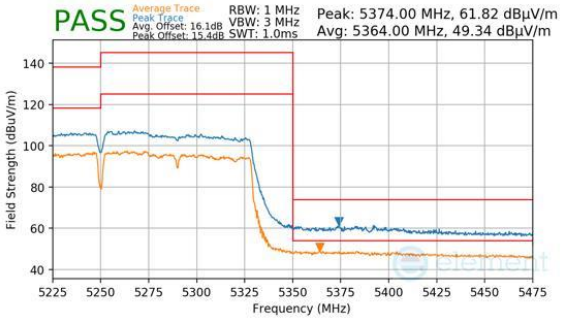
Plot 7-1192. CDD (Peak, Ch.155, 802.11ax(SU), MCS11)

7.6.16 CDD Radiated Band Edge Measurements (160MHz BW)

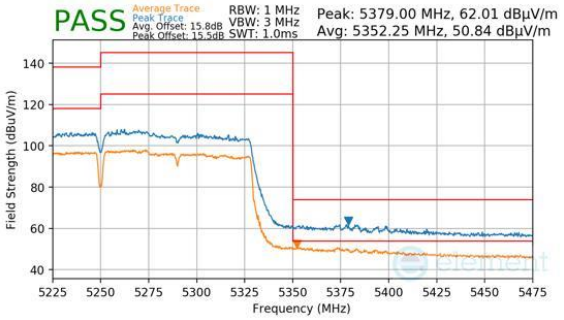
§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]



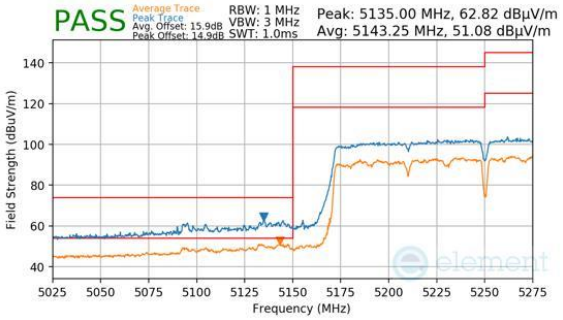
Plot 7-1193. CDD (Peak & Average, Ch.50, 802.11ac, MCS2)



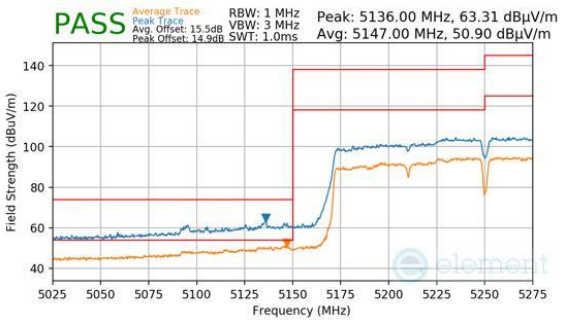
Plot 7-1196. CDD (Peak & Average, Ch.50, 802.11ac, MCS4)



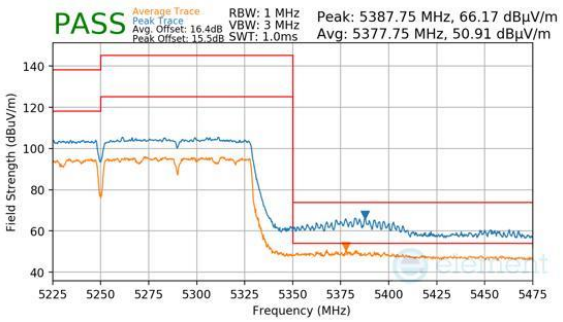
Plot 7-1194. CDD (Peak & Average, Ch.50, 802.11ac, MCS2)



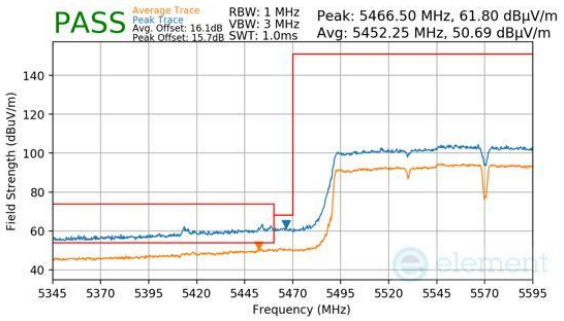
Plot 7-1197. CDD (Peak & Average, Ch.50, 802.11ac, MCS9)



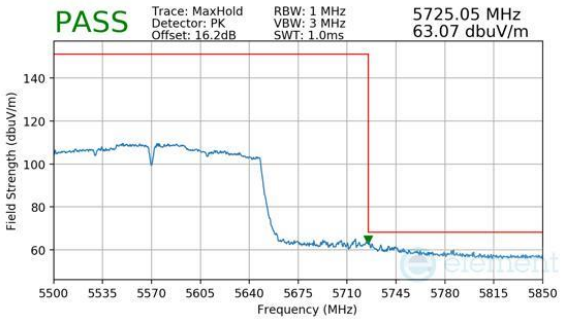
Plot 7-1195. CDD (Peak & Average, Ch.50, 802.11ac, MCS4)



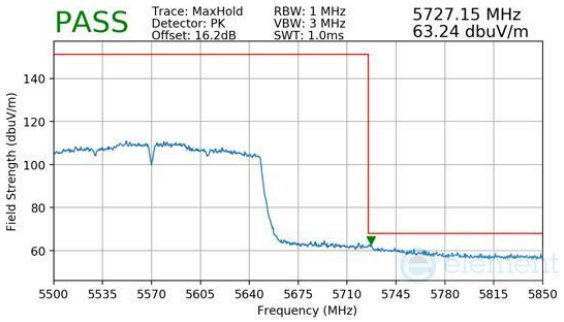
Plot 7-1198. CDD (Peak & Average, Ch.50, 802.11ac, MCS9)



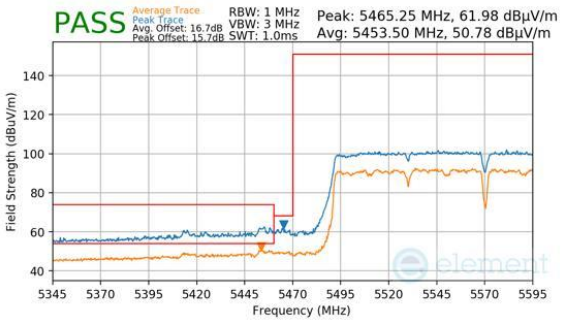
Plot 7-1199. CDD (Peak & Average, Ch.114, 802.11ac, MCS2) (FCC Only)



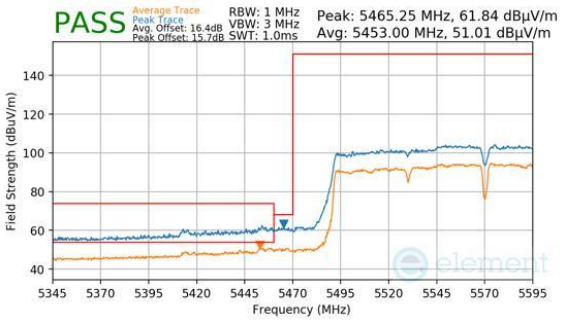
Plot 7-1202. CDD (Peak, Ch.114, 802.11ac, MCS4) (FCC Only)



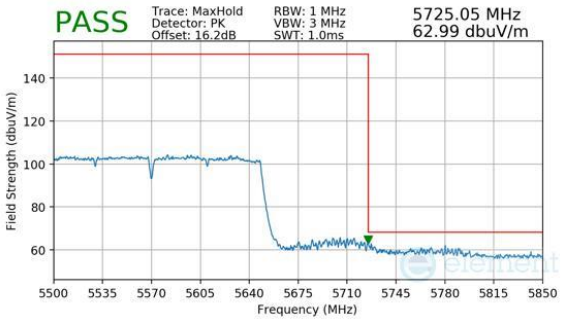
Plot 7-1200. CDD (Peak, Ch.114, 802.11ac, MCS2) (FCC Only)



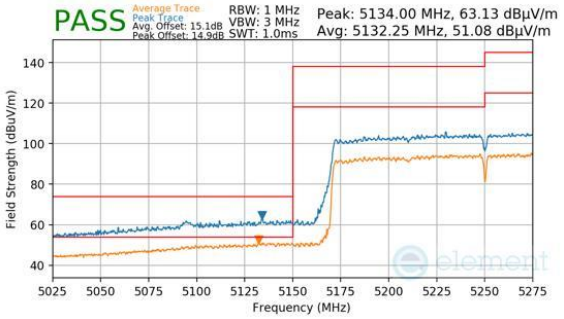
Plot 7-1203. CDD (Peak & Average, Ch.114, 802.11ac, MCS9) (FCC Only)



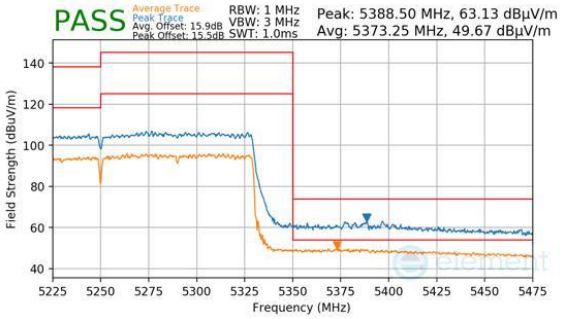
Plot 7-1201. CDD (Peak & Average, Ch.114, 802.11ac, MCS4) (FCC Only)



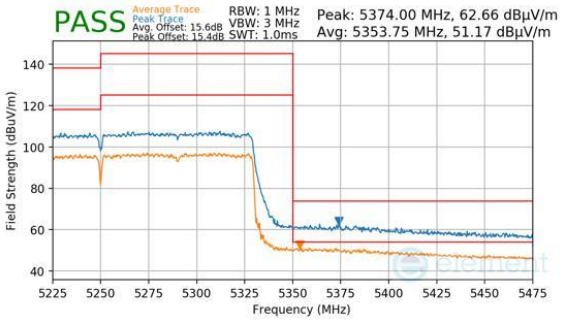
Plot 7-1204. CDD (Peak, Ch.114, 802.11ac, MCS9) (FCC Only)



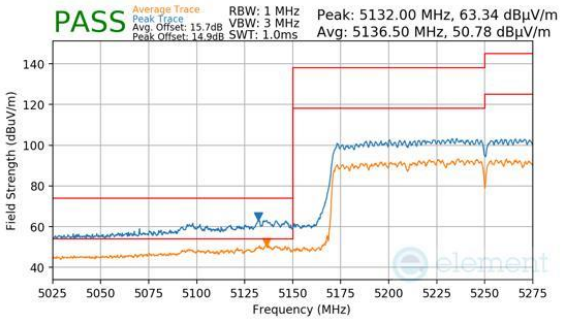
Plot 7-1205. CDD (Peak & Average, Ch.50, 802.11ax(SU), MCS2)



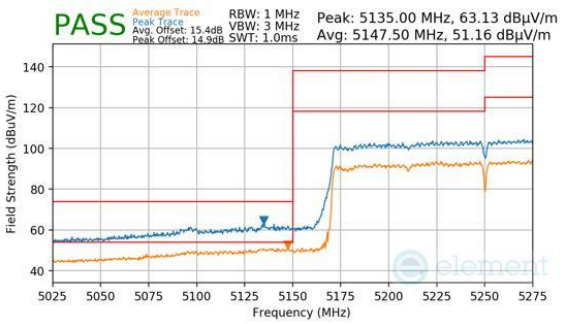
Plot 7-1208. CDD (Peak & Average, Ch.50, 802.11ax(SU), MCS4)



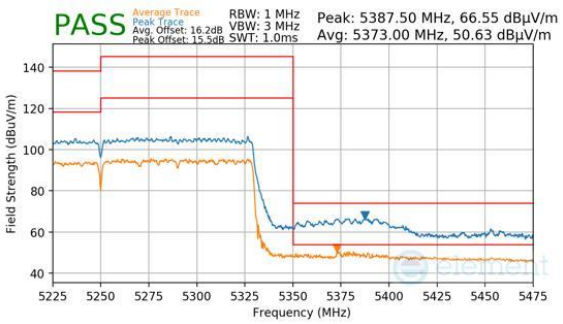
Plot 7-1206. CDD (Peak & Average, Ch.50, 802.11ax(SU), MCS2)



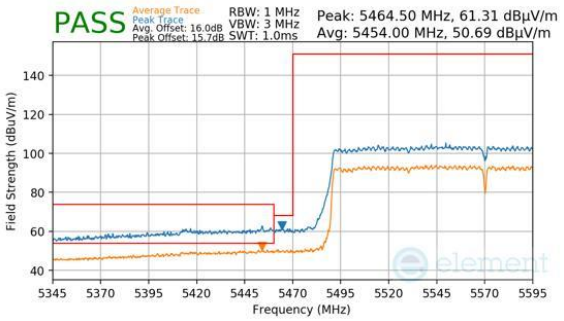
Plot 7-1209. CDD (Peak & Average, Ch.50, 802.11ax(SU), MCS11)



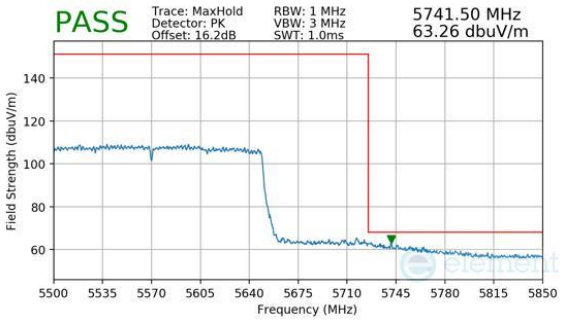
Plot 7-1207. CDD (Peak & Average, Ch.50, 802.11ax(SU), MCS4)



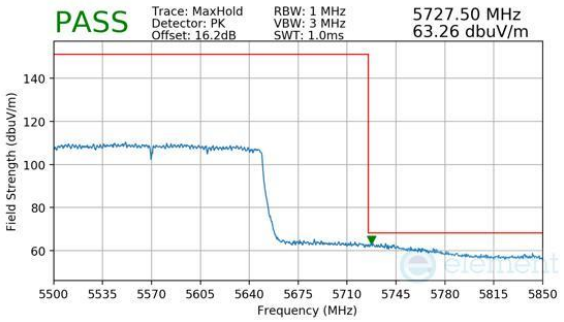
Plot 7-1210. CDD (Peak & Average, Ch.50, 802.11ax(SU), MCS11)



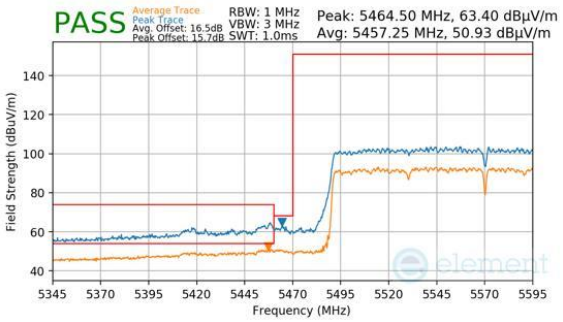
Plot 7-1211. CDD (Peak & Average, Ch.114, 802.11ax(SU), MCS2) (FCC Only)



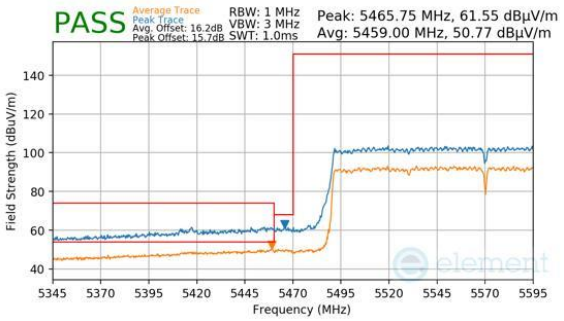
Plot 7-1214. CDD (Peak, Ch.114, 802.11ax(SU), MCS4) (FCC Only)



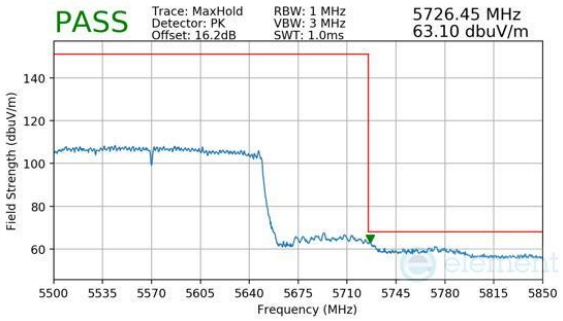
Plot 7-1212. CDD (Peak, Ch.114, 802.11ax(SU), MCS2) (FCC Only)



Plot 7-1215. CDD (Peak & Average, Ch.114, 802.11ax(SU), MCS11) (FCC Only)



Plot 7-1213. CDD (Peak & Average, Ch.114, 802.11ax(SU), MCS4) (FCC Only)



Plot 7-1216. CDD (Peak, Ch.114, 802.11ax(SU), MCS11) (FCC Only)

7.7 Radiated Spurious Emissions – Below 1GHz

§15.209; RSS-Gen [8.9]

Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for radiated spurious emissions. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR and Table 7 of RSS-Gen (8.10) must not exceed the limits shown in Table 7-219 per Section 15.209 and RSS-Gen (8.9).

Frequency	Field Strength [µV/m]	Measured Distance [Meters]
0.009 – 0.490 MHz	2400/F (kHz)	300
0.490 – 1.705 MHz	24000/F (kHz)	30
1.705 – 30.00 MHz	30	30
30.00 – 88.00 MHz	100	3
88.00 – 216.0 MHz	150	3
216.0 – 960.0 MHz	200	3
Above 960.0 MHz	500	3

Table 7-219. Radiated Limits

Test Procedures Used

ANSI C63.10-2020

Test Settings

Quasi-Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 120kHz (for emissions from 30MHz – 1GHz)
3. Detector = quasi-peak
4. Sweep time = auto couple
5. Trace mode = max hold
6. Trace was allowed to stabilize

Peak Field Strength Measurements

7. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
8. RBW = 120kHz (for emissions from 30MHz – 1GHz)
9. VBW = 300kHz
10. Detector = quasi-peak
11. Sweep time = auto couple
12. Trace mode = max hold
13. Trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagrams below.

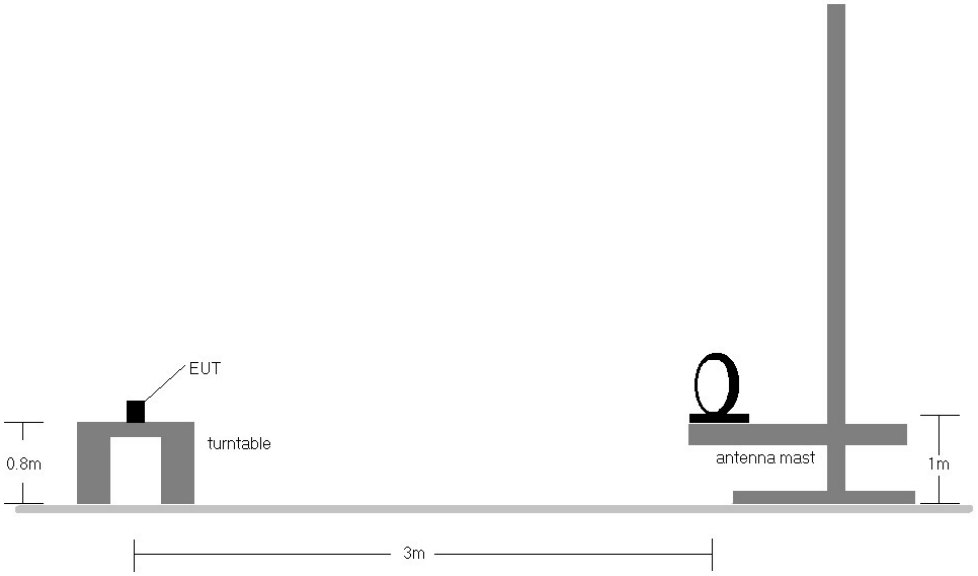


Figure 7-6. Radiated Test Setup < 30MHz

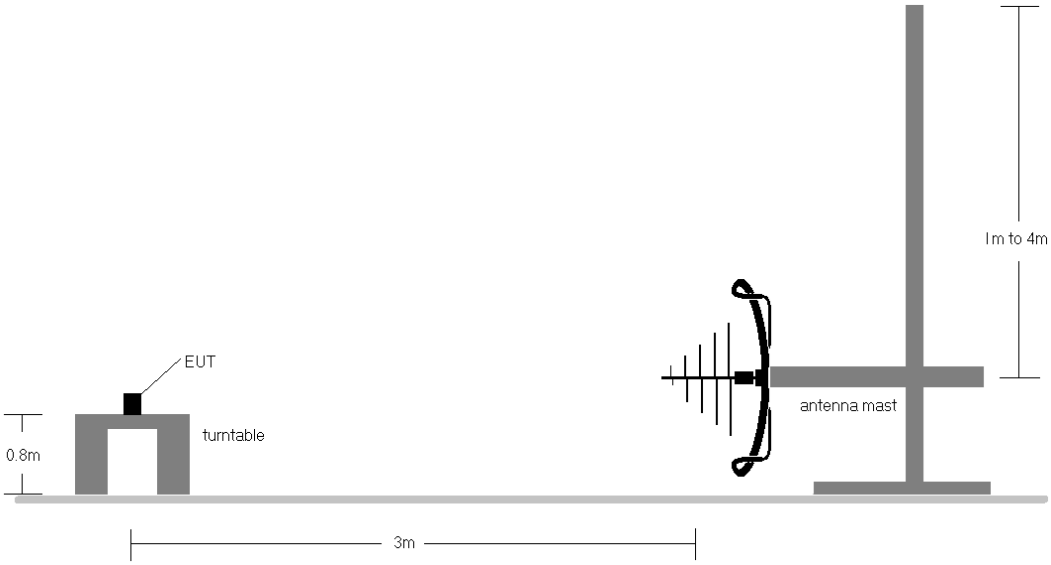


Figure 7-7. Radiated Test Setup < 1GHz

Test Notes

1. All emissions lying in restricted bands specified in §15.205 and RSS-Gen (8.10) are below the limit shown in Table 7-219.
2. The broadband receive antenna is manipulated through vertical and horizontal polarizations during the tests. The EUT is manipulated through three orthogonal planes. For below 30MHz the loop antenna was positioned in 3 orthogonal planes (X front, Y side, Z top) to determine the orientation resulting in the worst case emissions.
3. This unit was tested with its standard battery.
4. The spectrum is investigated using a peak detector and final measurements are recorded using CISPR quasi peak detector on emissions that were within 6dB of the limit.
5. Emissions were measured at a 3 meter test distance.
6. Emissions are investigated while operating on the center channel of the mode, band, and modulation that produced the worst case results during the transmitter spurious emissions testing.
7. No spurious emissions were detected within 20dB of the limit below 30MHz.
8. The results recorded using the broadband antenna is known to correlate with the results obtained by using a tuned dipole with an acceptable degree of accuracy. The VSWR for the measurement antenna was found to be less than 2:1.
9. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. There were no emissions detected in the 30MHz – 1GHz frequency range, as shown in the subsequent plots.
10. Both configurations below were investigated, and the worst case has been reported.
    a. EUT powered by AC/DC adaptor via USB-C cable with wire charger
    b. EUT powered by host PC via USB-C cable with wire charger
11. All antenna configurations were investigated and only the worst case is reported.
12. The unit was tested with all possible modes and only the highest emission is reported.

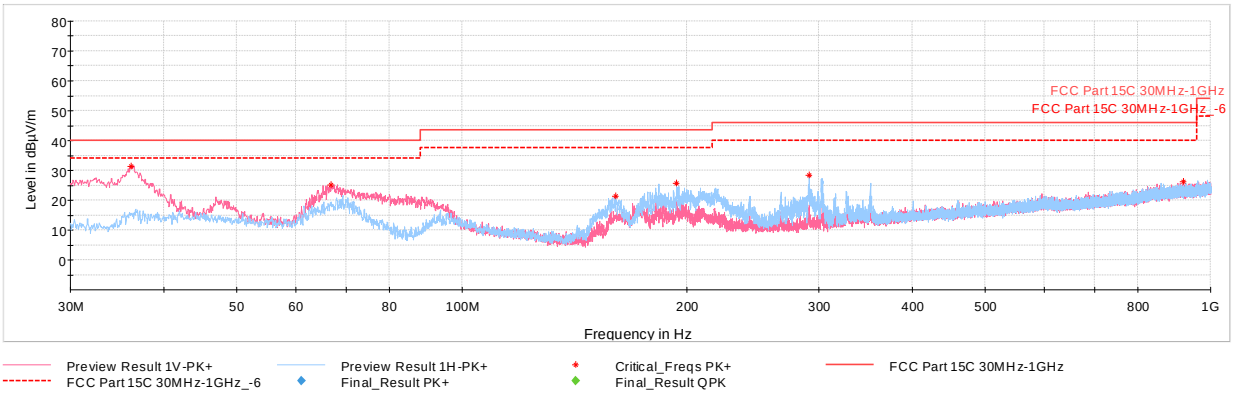
Sample Calculations

Determining Spurious Emissions Levels

- Field Strength Level $_{[dB\mu V/m]}$ = Analyzer Level $_{[dBm]}$ + 107 + AFCL $_{[dB/m]}$
- AFCL $_{[dB/m]}$ = Antenna Factor $_{[dB/m]}$ + Cable Loss $_{[dB]}$ - Preamp Gain $_{[dB]}$
- Margin $_{[dB]}$ = Field Strength Level $_{[dB\mu V/m]}$ – Limit $_{[dB\mu V/m]}$

7.7.1 CDD Radiated Spurious Emissions Measurements (Below 1GHz)

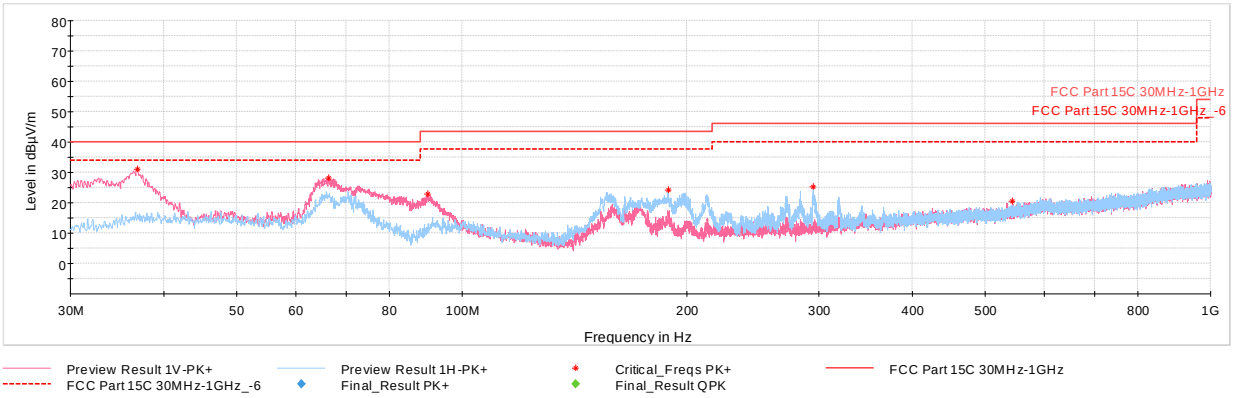
§15.209; RSS-Gen [8.9]



Plot 7-1217. Radiated Spurious Emissions below 1GHz CDD, 802.11n, Ch.40 with AC/DC adaptor via USB-C cable with wire charger

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
36.16	Max-Peak	V	100	322	-60.74	-14.85	31.41	40.00	-8.59
66.91	Max-Peak	V	100	225	-64.60	-17.18	25.22	40.00	-14.78
160.51	Max-Peak	H	100	173	-66.60	-19.01	21.39	43.52	-22.13
193.40	Max-Peak	H	100	179	-65.04	-16.42	25.54	43.52	-17.98
290.93	Max-Peak	H	100	252	-64.65	-14.10	28.25	46.02	-17.77
920.36	Max-Peak	H	300	173	-78.93	-1.89	26.18	46.02	-19.84

Table 7-220. Radiated Spurious Emissions below 1GHz, 802.11n, Ch.40 with AC/DC adaptor via USB-C cable with wire charger



Plot 7-1218. Radiated Spurious Emissions below 1GHz CDD, 802.11ax (SU), Ch.40 with AC/DC adaptor via USB-C cable with wire charger

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
36.89	Max-Peak	V	100	353	-61.45	-14.62	30.93	40.00	-9.07
66.33	Max-Peak	V	100	194	-61.93	-16.99	28.08	40.00	-11.92
90.14	Max-Peak	V	100	172	-66.11	-17.94	22.95	43.52	-20.57
188.69	Max-Peak	H	200	159	-65.62	-17.16	24.22	43.52	-19.30
294.91	Max-Peak	H	100	244	-67.57	-14.07	25.36	46.02	-20.66
544.00	Max-Peak	V	200	0	-78.31	-8.27	20.42	46.02	-25.60

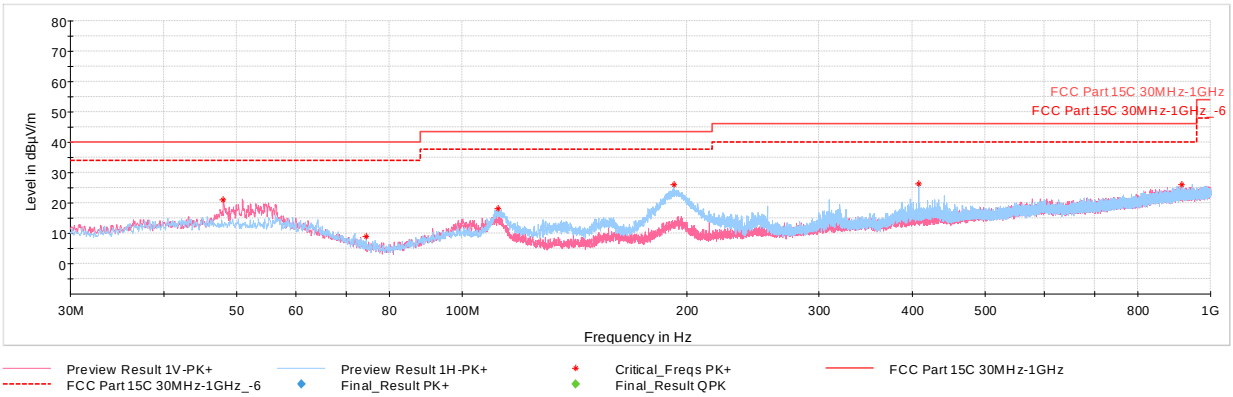
Table 7-221. Radiated Spurious Emissions below 1GHz, 802.11ax (SU), Ch.40 with AC/DC adaptor via USB-C cable with wire charger

7.7.2 Simultaneous TX Radiated Spurious Emissions Measurements (Below 1GHz)

§15.209; RSS-Gen [8.9]

Description	Bluetooth	802.11a/n/ac/ax 5GHz
Antenna	Antenna WF2	Antenna WF2
Channel	79	36
Operating Frequency (MHz)	2480	5180
Mode/Modulation	GFSK iPA	802.11n

Table 7-222. Worst Case Simultaneous Transmission Configuration



Plot 7-1219. Radiated Spurious Emissions – Simultaneous Transmission 30MHz – 1GHz, with AC/DC adaptor via USB-C cable with wire charger

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
48.04	Max-Peak	V	100	11	-73.13	-12.80	21.07	40.00	-18.93
74.52	Max-Peak	H	100	7	-77.92	-20.16	8.92	40.00	-31.08
111.67	Max-Peak	H	200	245	-72.19	-16.63	18.18	43.52	-25.34
191.84	Max-Peak	H	100	293	-64.41	-16.64	25.95	43.52	-17.57
407.82	Max-Peak	H	100	15	-70.07	-10.73	26.20	46.02	-19.82
916.24	Max-Peak	H	100	34	-79.05	-1.91	26.04	46.02	-19.98

Table 7-223. Radiated Spurious Emissions – Simultaneous Transmission 30MHz – 1GHz, with AC/DC adaptor via USB-C cable with wire charger

7.8 AC Line-Conducted Emissions Measurement

§15.407; RSS-Gen [8.8]

Test Overview and Limit

All AC line conducted spurious emissions are measured with a receiver connected to a grounded LISN while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for AC Line conducted spurious emissions. Only the conducted emissions of the configuration that produced the worst case emissions are reported in this section.

All conducted emissions must not exceed the limits shown in the table below, per Section 15.207 and RSS-Gen (8.8).

Frequency of emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50

Table 7-224. Conducted Limits

*Decreases with the logarithm of the frequency.

Test Procedures Used

ANSI C63.10-2020, Section 6.2

Test Settings

Quasi-Peak Measurements

1. Analyzer center frequency was set to the frequency of the spurious emission of interest
2. RBW = 9kHz (for emissions from 150kHz – 30MHz)
3. Detector = quasi-peak
4. Sweep time = auto couple
5. Trace mode = max hold
6. Trace was allowed to stabilize

Average Measurements

1. Analyzer center frequency was set to the frequency of the spurious emission of interest
2. RBW = 9kHz (for emissions from 150kHz – 30MHz)
3. Detector = RMS
4. Sweep time = auto couple
5. Trace mode = max hold
6. Trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

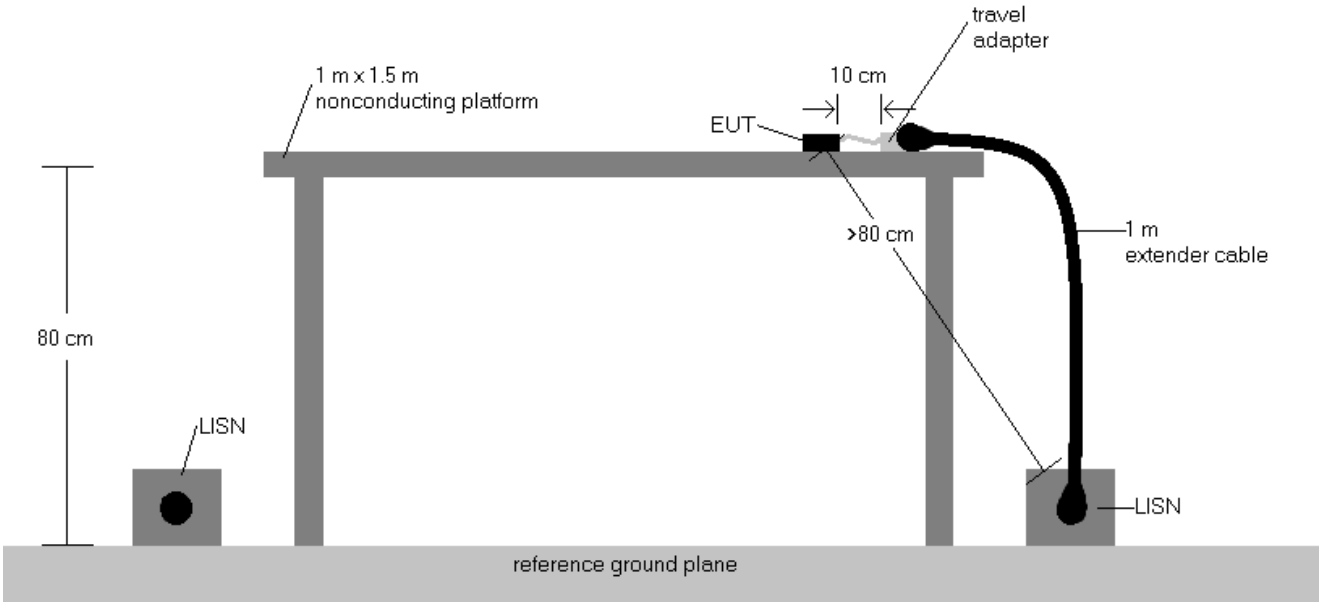
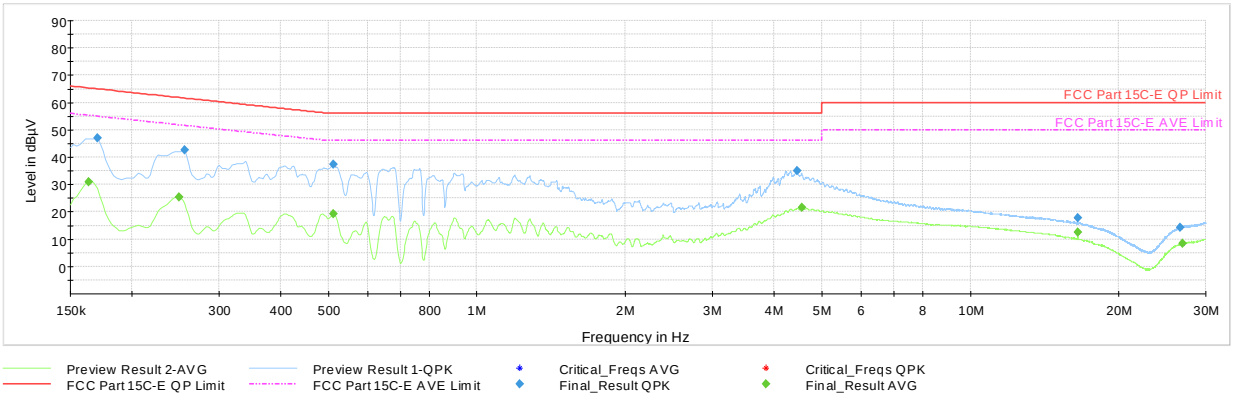


Figure 7-8. Test Instrument & Measurement Setup

Test Notes

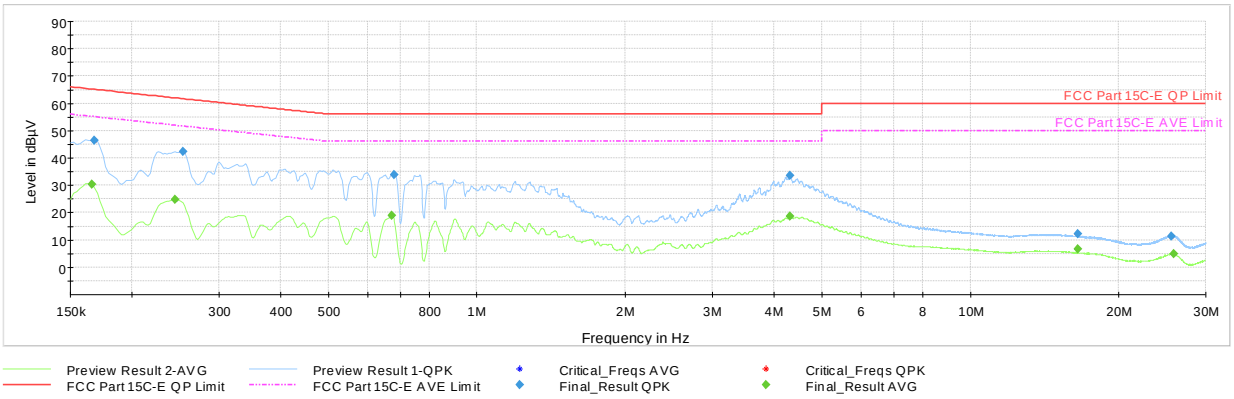
1. All modes of operation were investigated and the worst-case emissions are reported. The emissions found were not affected by the choice of channel used during testing.
2. Both configurations below were investigated, and the worst case has been reported.
    a. EUT powered by AC/DC adaptor via USB-C cable with wire charger
    b. EUT powered by host PC via USB-C cable with wire charger
3. The limit for an intentional radiator from 150kHz to 30MHz are specified in 15.207 and RSS-Gen (8.8).
4. Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
5. QP/AV Level (dBμV) = QP/AV Analyzer/Receiver Level (dBμV) + Correction Factor (dB)
6. Margin (dB) = QP/AV Level (dBμV) - QP/AV Limit (dBμV)
7. Traces shown in plots are made using quasi-peak and average detectors.
8. Deviations to the Specifications: None.
9. The unit was tested with all possible modes and only the highest emission is reported.



Plot 7-1220. AC Line Conducted Plot with 802.11n CDD– Ch.40 (L1), with AC/DC adaptor via USB-C cable with wire charger

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.164	FINAL	—	30.99	55.28	-24.30	L1	GND
0.170	FINAL	46.9	—	64.95	-18.03	L1	GND
0.249	FINAL	—	25.35	51.79	-26.44	L1	GND
0.256	FINAL	42.5	—	61.57	-19.08	L1	GND
0.512	FINAL	—	19.12	46.00	-26.88	L1	GND
0.512	FINAL	37.4	—	56.00	-18.65	L1	GND
4.466	FINAL	34.9	—	56.00	-21.08	L1	GND
4.565	FINAL	—	21.46	46.00	-24.54	L1	GND
16.512	FINAL	17.8	—	60.00	-42.21	L1	GND
16.512	FINAL	—	12.40	50.00	-37.60	L1	GND
26.664	FINAL	14.3	—	60.00	-45.72	L1	GND
26.876	FINAL	—	8.37	50.00	-41.63	L1	GND

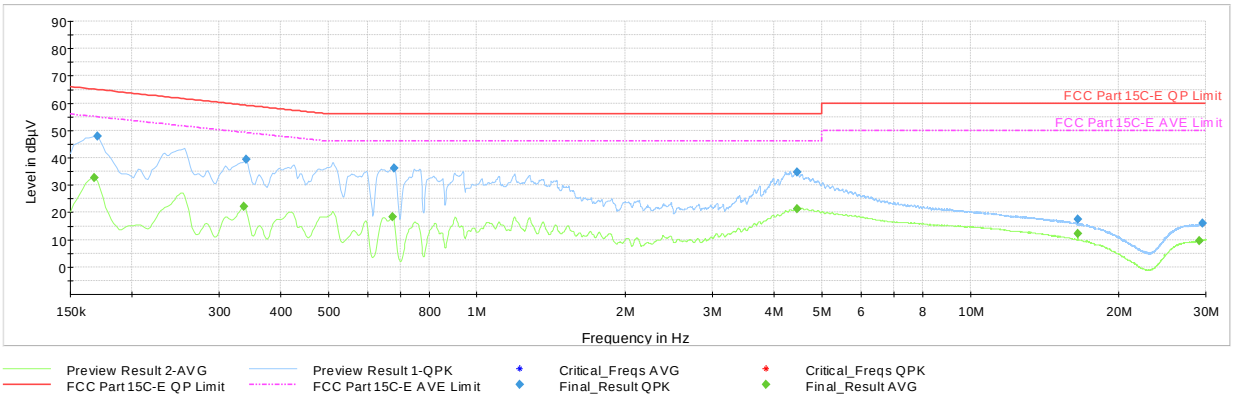
Table 7-225. AC Line Conducted Data with 802.11n CDD– Ch.40 (L1) with AC/DC adaptor via USB-C cable with wire charger



Plot 7-1221. AC Line Conducted Plot with 802.11n CDD– Ch.40 (N), with AC/DC adaptor via USB-C cable with wire charger

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.166	FINAL	—	30.24	55.17	-24.93	N	GND
0.168	FINAL	46.5	—	65.06	-18.59	N	GND
0.245	FINAL	—	24.83	51.94	-27.11	N	GND
0.254	FINAL	42.3	—	61.64	-19.38	N	GND
0.672	FINAL	—	18.85	46.00	-27.15	N	GND
0.679	FINAL	34.0	—	56.00	-22.03	N	GND
4.304	FINAL	—	18.51	46.00	-27.49	N	GND
4.317	FINAL	33.6	—	56.00	-22.41	N	GND
16.508	FINAL	12.3	—	60.00	-47.66	N	GND
16.508	FINAL	—	6.57	50.00	-43.43	N	GND
25.519	FINAL	11.4	—	60.00	-48.61	N	GND
25.865	FINAL	—	4.83	50.00	-45.17	N	GND

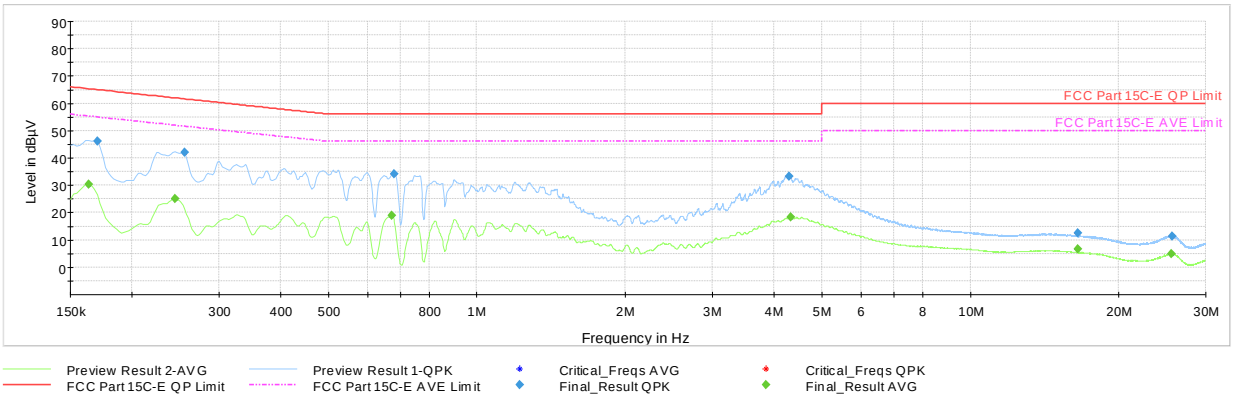
Table 7-226. AC Line Conducted Data with 802.11n CDD– Ch.40 (N), with AC/DC adaptor via USB-C cable with wire charger



Plot 7-1222. AC Line Conducted Plot with 802.11ax(SU) CDD– Ch.40 (L1), with AC/DC adaptor via USB-C cable with wire charger

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.168	FINAL	—	32.82	55.06	-22.24	L1	GND
0.170	FINAL	47.9	—	64.95	-17.02	L1	GND
0.337	FINAL	—	22.10	49.28	-27.19	L1	GND
0.341	FINAL	39.4	—	59.17	-19.80	L1	GND
0.674	FINAL	—	18.24	46.00	-27.76	L1	GND
0.679	FINAL	36.3	—	56.00	-19.75	L1	GND
4.450	FINAL	34.8	—	56.00	-21.18	L1	GND
4.466	FINAL	—	21.31	46.00	-24.69	L1	GND
16.492	FINAL	17.6	—	60.00	-42.39	L1	GND
16.492	FINAL	—	12.18	50.00	-37.82	L1	GND
29.171	FINAL	—	9.57	50.00	-40.43	L1	GND
29.555	FINAL	16.0	—	60.00	-43.96	L1	GND

Table 7-227. AC Line Conducted Data with 802.11ax(SU) CDD– Ch.40 (L1) with AC/DC adaptor via USB-C cable with wire charger



Plot 7-1223. AC Line Conducted Plot with 802.11ax(SU) CDD– Ch.40 (N), with AC/DC adaptor via USB-C cable with wire charger

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.164	FINAL	—	30.30	55.28	-24.98	N	GND
0.170	FINAL	46.3	—	64.95	-18.69	N	GND
0.245	FINAL	—	25.09	51.94	-26.85	N	GND
0.256	FINAL	41.9	—	61.57	-19.63	N	GND
0.672	FINAL	—	18.82	46.00	-27.18	N	GND
0.681	FINAL	34.1	—	56.00	-21.94	N	GND
4.295	FINAL	33.3	—	56.00	-22.67	N	GND
4.333	FINAL	—	18.40	46.00	-27.60	N	GND
16.492	FINAL	12.5	—	60.00	-47.48	N	GND
16.492	FINAL	—	6.67	50.00	-43.33	N	GND
25.519	FINAL	—	4.86	50.00	-45.14	N	GND
25.629	FINAL	11.4	—	60.00	-48.65	N	GND

Table 7-228. AC Line Conducted Data with 802.11ax(SU) CDD– Ch.40 (N), with AC/DC adaptor via USB-C cable with wire charger

8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Apple Tablet Device FCC ID: BCGA2993** and **IC: 579C-A2993** is in compliance with Part 15 Subpart E (15.407) of the FCC Rules and RSS-247 of the Innovation, Science and Economic Development Canada Rules.