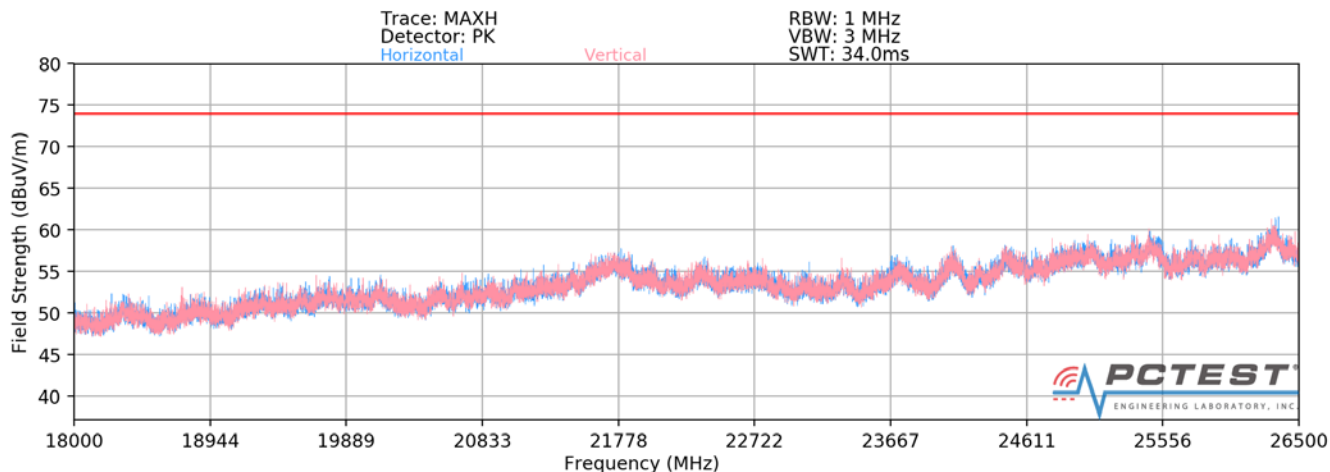
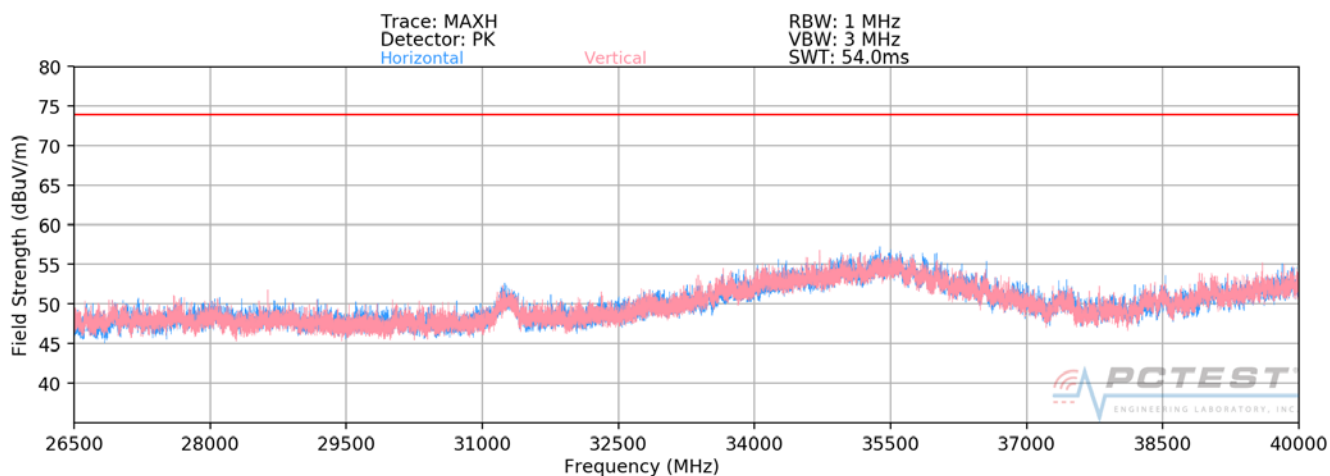


Radiated Spurious Emissions Measurements (Above 18GHz)



Plot 7-167. Radiated Spurious Plot 18GHz - 26.5GHz (802.11a)



Plot 7-168. Radiated Spurious Plot 26.5GHz - 40GHz (802.11a)

FCC ID: ZNFG820UM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 125 of 188

Radiated Spurious Emission Measurements

§15.407(b) §15.205 & §15.209; RSS-Gen [8.9]

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5180MHz
Channel: 36

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10360.00	Peak	V	234	310	-58.93	12.97	0.00	61.04	68.20	-7.16
* 15540.00	Average	V	-	-	-82.40	15.88	0.00	40.48	53.98	-13.50
* 15540.00	Peak	V	-	-	-70.51	15.88	0.00	52.37	73.98	-21.61
* 20720.00	Average	V	-	-	-77.66	7.38	-9.54	27.18	53.98	-26.80
* 20720.00	Peak	V	-	-	-66.38	7.38	-9.54	38.46	73.98	-35.52
25900.00	Peak	V	-	-	-65.41	9.85	-9.54	41.90	68.20	-26.30

Table 7-41. Radiated Measurements ANT2

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5200MHz
Channel: 40

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10400.00	Peak	V	254	305	-58.45	12.44	0.00	60.99	68.20	-7.21
* 15600.00	Average	V	-	-	-82.40	15.60	0.00	40.20	53.98	-13.78
* 15600.00	Peak	V	-	-	-70.27	15.60	0.00	52.33	73.98	-21.65
* 20800.00	Average	V	-	-	-77.56	7.85	-9.54	27.74	53.98	-26.23
* 20800.00	Peak	V	-	-	-66.63	7.85	-9.54	38.67	73.98	-35.30
26000.00	Peak	V	-	-	-64.62	10.44	-9.54	43.27	68.20	-24.93

Table 7-42. Radiated Measurements ANT2

FCC ID: ZNFG820UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 126 of 188

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5240MHz
Channel: 48

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10480.00	Peak	V	231	305	-61.80	12.95	0.00	58.15	68.20	-10.05
* 15720.00	Average	V	-	-	-82.46	16.00	0.00	40.54	53.98	-13.44
* 15720.00	Peak	V	-	-	-70.61	16.00	0.00	52.39	73.98	-21.59
* 20960.00	Average	V	-	-	-77.60	7.75	-9.54	27.61	53.98	-26.37
* 20960.00	Peak	V	-	-	-66.62	7.75	-9.54	38.59	73.98	-35.39
26200.00	Peak	V	-	-	-64.94	10.26	-9.54	42.78	68.20	-25.42

Table 7-43. Radiated Measurements ANT2

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5240MHz
Channel: 48

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10400.00	Peak	V	166	167	-62.26	12.44	0.00	57.18	68.20	-11.02
* 15600.00	Average	V	-	-	-81.76	15.60	0.00	40.84	53.98	-13.14
* 15600.00	Peak	V	-	-	-69.60	15.60	0.00	53.00	73.98	-20.98
* 20800.00	Average	V	-	-	-77.94	7.85	-9.54	27.36	53.98	-26.61
* 20800.00	Peak	V	-	-	-66.76	7.85	-9.54	38.54	73.98	-35.43
26000.00	Peak	V	-	-	-65.75	10.44	-9.54	42.14	68.20	-26.06

Table 7-44. Radiated Measurements with WCP

FCC ID: ZNFG820UM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 127 of 188

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5260MHz
Channel: 52

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10520.00	Peak	V	321	308	-63.33	13.43	0.00	57.10	68.20	-11.10
* 15780.00	Average	V	-	-	-82.53	15.72	0.00	40.19	53.98	-13.79
* 15780.00	Peak	V	-	-	-71.07	15.72	0.00	51.65	73.98	-22.33
* 21040.00	Average	V	-	-	-77.41	7.78	-9.54	27.83	53.98	-26.15
* 21040.00	Peak	V	-	-	-65.52	7.78	-9.54	39.72	73.98	-34.26
26300.00	Peak	V	-	-	-64.51	10.58	-9.54	43.53	68.20	-24.67

Table 7-45. Radiated Measurements ANT2

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5280MHz
Channel: 56

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10560.00	Peak	V	226	303	-61.82	13.44	0.00	58.62	68.20	-9.58
* 15840.00	Average	V	-	-	-82.13	15.30	0.00	40.17	53.98	-13.81
* 15840.00	Peak	V	-	-	-70.85	15.30	0.00	51.45	73.98	-22.53
* 21120.00	Average	V	-	-	-77.16	7.72	-9.54	28.02	53.98	-25.96
* 21120.00	Peak	V	-	-	-66.20	7.72	-9.54	38.98	73.98	-35.00
26400.00	Peak	V	-	-	-64.48	10.13	-9.54	43.11	68.20	-25.09

Table 7-46. Radiated Measurements ANT2

FCC ID: ZNFG820UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 128 of 188

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5320MHz
Channel: 64

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 10640.00	Average	V	246	304	-76.04	13.14	0.00	44.10	53.98	-9.88
* 10640.00	Peak	V	246	304	-63.91	13.14	0.00	56.23	73.98	-17.75
* 15960.00	Average	V	-	-	-82.52	16.05	0.00	40.53	53.98	-13.45
* 15960.00	Peak	V	-	-	-70.21	16.05	0.00	52.84	73.98	-21.14
* 21280.00	Average	V	-	-	-77.20	7.97	-9.54	28.23	53.98	-25.75
* 21280.00	Peak	V	-	-	-66.02	7.97	-9.54	39.41	73.98	-34.57
26600.00	Peak	V	-	-	-58.04	-8.10	-9.54	31.32	68.20	-36.88

Table 7-47. Radiated Measurements ANT2

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5260MHz
Channel: 52

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10520.00	Peak	V	154	175	-60.14	13.43	0.00	60.29	68.20	-7.91
* 15780.00	Average	V	157	178	-80.72	15.72	0.00	42.00	53.98	-11.98
* 15780.00	Peak	V	157	178	-68.29	15.72	0.00	54.43	73.98	-19.55
* 21040.00	Average	V	-	-	-77.90	7.78	-9.54	27.34	53.98	-26.64
* 21040.00	Peak	V	-	-	-66.91	7.78	-9.54	38.33	73.98	-35.65
26300.00	Peak	V	-	-	-65.38	10.58	-9.54	42.66	68.20	-25.54

Table 7-48. Radiated Measurements with WCP

FCC ID: ZNFG820UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 129 of 188

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5500MHz
Channel: 100

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11000.00	Average	V	246	302	-73.89	13.50	0.00	46.61	53.98	-7.37
* 11000.00	Peak	V	246	302	-60.31	13.50	0.00	60.19	73.98	-13.79
16500.00	Peak	V	-	-	-70.33	16.35	0.00	53.02	68.20	-15.18
22000.00	Peak	V	-	-	-66.84	8.71	-9.54	39.33	68.20	-28.87
27500.00	Peak	V	-	-	-48.10	-9.42	-9.54	39.94	68.20	-28.26

Table 7-49. Radiated Measurements ANT2

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5600MHz
Channel: 120

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11200.00	Average	V	221	303	-77.29	13.26	0.00	42.97	53.98	-11.01
* 11200.00	Peak	V	221	303	-64.36	13.26	0.00	55.90	73.98	-18.08
16800.00	Peak	V	-	-	-70.47	17.87	0.00	54.40	68.20	-13.80
* 22400.00	Average	V	-	-	-77.60	9.46	-9.54	29.32	53.98	-24.66
* 22400.00	Peak	V	-	-	-66.64	9.46	-9.54	40.28	73.98	-33.70
28000.00	Peak	V	-	-	-48.08	-8.80	-9.54	40.57	68.20	-27.63

Table 7-50. Radiated Measurements ANT2

FCC ID: ZNFG820UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 130 of 188

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5720MHz
Channel: 144

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11440.00	Average	V	-	-	-81.62	15.19	0.00	40.57	53.98	-13.41
* 11440.00	Peak	V	-	-	-69.85	15.19	0.00	52.34	73.98	-21.64
17160.00	Peak	V	-	-	-69.58	19.08	0.00	56.50	68.20	-11.70
* 22880.00	Average	V	-	-	-77.60	9.46	-9.54	29.32	53.98	-24.66
* 22880.00	Peak	V	-	-	-66.64	9.46	-9.54	40.28	73.98	-33.70
28600.00	Peak	V	-	-	-48.08	-8.80	-9.54	40.57	68.20	-27.63

Table 7-51. Radiated Measurements ANT2

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5600MHz
Channel: 120

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11200.00	Average	V	150	188	-79.20	13.26	0.00	41.06	53.98	-12.92
* 11200.00	Peak	V	150	188	-66.37	13.26	0.00	53.89	73.98	-20.09
16800.00	Peak	V	-	-	-69.15	17.87	0.00	55.72	68.20	-12.48
22400.00	Average	V	-	-	-78.12	9.46	-9.54	28.80	53.98	-25.18
22400.00	Peak	V	-	-	-66.43	9.46	-9.54	40.49	73.98	-33.49
28000.00	Peak	V	-	-	-48.69	-8.80	-9.54	39.96	68.20	-28.24

Table 7-52. Radiated Measurements with WCP

FCC ID: ZNFG820UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 131 of 188

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5745MHz
Channel: 149

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11490.00	Average	H	-	-	-81.49	15.31	0.00	40.82	53.98	-13.16
* 11490.00	Peak	H	-	-	-69.89	15.31	0.00	52.42	73.98	-21.56
17235.00	Peak	H	-	-	-70.14	19.82	0.00	56.68	68.20	-11.52
* 22980.00	Average	V	-	-	-77.76	8.38	-9.54	28.08	53.98	-25.90
* 22980.00	Peak	V	-	-	-66.05	8.38	-9.54	39.79	73.98	-34.19
28725.00	Peak	V	-	-	-49.31	-8.87	-9.54	39.28	68.20	-28.92

Table 7-53. Radiated Measurements ANT2

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5785MHz
Channel: 157

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11570.00	Average	V	-	-	-81.14	15.04	0.00	40.90	53.98	-13.08
* 11570.00	Peak	V	-	-	-68.66	15.04	0.00	53.38	73.98	-20.60
17355.00	Peak	V	-	-	-72.10	23.45	0.00	58.35	68.20	-9.85
23140.00	Peak	V	-	-	-67.16	8.78	-9.54	39.08	68.20	-29.12
28925.00	Peak	V	-	-	-49.31	-8.79	-9.54	39.36	68.20	-28.84

Table 7-54. Radiated Measurements ANT2

FCC ID: ZNFG820UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 132 of 188

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5825MHz
Channel: 165

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11650.00	Average	H	-	-	-81.56	15.42	0.00	40.86	53.98	-13.12
* 11650.00	Peak	H	-	-	-69.97	15.42	0.00	52.45	73.98	-21.53
17475.00	Peak	H	-	-	-70.52	21.84	0.00	58.32	68.20	-9.88
23300.00	Peak	H	-	-	-66.28	9.23	-9.54	40.41	68.20	-27.79
29125.00	Peak	H	-	-	-48.56	-9.66	-9.54	39.24	68.20	-28.96

Table 7-55. Radiated Measurements ANT2

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5745MHz
Channel: 149

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11490.00	Average	H	-	-	-81.44	15.31	0.00	40.87	53.98	-13.11
* 11490.00	Peak	H	-	-	-69.36	15.31	0.00	52.95	73.98	-21.03
17235.00	Peak	H	-	-	-71.91	19.82	0.00	54.91	68.20	-13.29
22980.00	Average	V	-	-	-77.93	8.38	-9.54	27.91	53.98	-26.07
22980.00	Peak	V	-	-	-65.44	8.38	-9.54	40.40	73.98	-33.58
28725.00	Peak	V	-	-	-49.44	-8.87	-9.54	39.15	68.20	-29.05

Table 7-56. Radiated Measurements with WCP

FCC ID: ZNFG820UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 133 of 188

7.6.3 MIMO/CDD Radiated Spurious Emission Measurements

§15.407(b) §15.205 & §15.209; RSS-Gen [8.9]

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5180MHz
Channel: 36

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10360.00	Peak	V	322	307	-55.12	12.97	0.00	64.85	68.20	-3.35
* 15540.00	Average	V	-	-	-82.37	15.88	0.00	40.51	53.98	-13.47
* 15540.00	Peak	V	-	-	-70.85	15.88	0.00	52.03	73.98	-21.95
* 20720.00	Average	V	-	-	-77.82	7.38	-9.54	27.02	53.98	-26.96
* 20720.00	Peak	V	-	-	-66.78	7.38	-9.54	38.06	73.98	-35.92
25900.00	Peak	V	-	-	-65.53	9.85	-9.54	41.78	68.20	-26.42

Table 7-57. Radiated Measurements MIMO/CDD

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5200MHz
Channel: 40

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10400.00	Peak	V	283	305	-25.58	12.44	0.00	64.06	68.20	-4.14
* 15600.00	Average	V	-	-	-21.97	15.60	0.00	40.19	53.98	-13.79
* 15600.00	Peak	V	-	-	-21.97	15.60	0.00	51.45	73.98	-22.53
* 20800.00	Average	V	-	-	-77.62	17.65	-9.54	37.49	53.98	-16.49
* 20800.00	Peak	V	-	-	-66.56	17.65	-9.54	48.55	73.98	-25.43
26000.00	Peak	V	-	-	-65.49	20.68	-9.54	52.65	68.20	-15.55

Table 7-58. Radiated Measurements MIMO/CDD

FCC ID: ZNFG820UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 134 of 188

Worst Case Mode: 802.11a
 Worst Case Transfer Rate: 6Mbps
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5240MHz
 Channel: 48

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10480.00	Peak	V	288	296	-58.88	12.95	0.00	61.07	68.20	-7.13
* 15720.00	Average	V	-	-	-82.37	16.00	0.00	40.63	53.98	-13.35
* 15720.00	Peak	V	-	-	-70.94	16.00	0.00	52.06	73.98	-21.92
* 20960.00	Average	V	-	-	-77.55	17.53	-9.54	37.44	53.98	-16.54
* 20960.00	Peak	V	-	-	-66.81	17.53	-9.54	48.18	73.98	-25.80
26200.00	Peak	V	-	-	-65.41	20.23	-9.54	52.28	68.20	-15.92

Table 7-59. Radiated Measurements MIMO/CDD

Worst Case Mode: 802.11a
 Worst Case Transfer Rate: 6Mbps
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5240MHz
 Channel: 40

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10400.00	Peak	V	152	319	-66.21	12.44	0.00	53.23	68.20	-14.97
* 15600.00	Average	V	-	-	-78.95	15.60	0.00	43.65	53.98	-10.33
* 15600.00	Peak	V	-	-	-67.77	15.60	0.00	54.83	73.98	-19.15
* 20800.00	Average	V	-	-	-77.98	7.85	-9.54	27.32	53.98	-26.65
* 20800.00	Peak	V	-	-	-66.95	7.85	-9.54	38.35	73.98	-35.62
26000.00	Peak	V	-	-	-64.77	10.44	-9.54	43.12	68.20	-25.08

Table 7-60. Radiated Measurements with WCP

FCC ID: ZNFG820UM	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 135 of 188

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5260MHz
Channel: 52

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10520.00	Peak	V	275	297	-59.89	12.53	0.00	59.64	68.20	-8.56
* 15780.00	Average	V	-	-	-82.61	15.64	0.00	40.03	53.98	-13.95
* 15780.00	Peak	V	-	-	-70.24	15.64	0.00	52.40	73.98	-21.58
* 21040.00	Average	V	-	-	-78.22	17.48	-9.54	36.71	53.98	-17.27
* 21040.00	Peak	V	-	-	-67.11	17.48	-9.54	47.82	73.98	-26.16
26300.00	Peak	V	-	-	-64.83	20.33	-9.54	52.96	68.20	-15.24

Table 7-61. Radiated Measurements MIMO/CDD

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5280MHz
Channel: 56

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10560.00	Peak	V	276	303	-60.54	12.98	0.00	59.44	68.20	-8.76
* 15840.00	Average	V	-	-	-82.23	15.62	0.00	40.39	53.98	-13.59
* 15840.00	Peak	V	-	-	-70.70	15.62	0.00	51.92	73.98	-22.06
* 21120.00	Average	V	-	-	-77.79	17.27	-9.54	36.93	53.98	-17.04
* 21120.00	Peak	V	-	-	-66.66	17.27	-9.54	48.06	73.98	-25.91
26400.00	Peak	V	-	-	-65.14	20.27	-9.54	52.59	68.20	-15.61

Table 7-62. Radiated Measurements MIMO/CDD

FCC ID: ZNFG820UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 136 of 188

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5320MHz
Channel: 64

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 10640.00	Average	V	271	296	-75.53	14.05	0.00	45.52	53.98	-8.46
* 10640.00	Peak	V	271	296	-63.05	14.05	0.00	58.00	73.98	-15.98
* 15960.00	Average	V	-	-	-82.60	15.36	0.00	39.76	53.98	-14.22
* 15960.00	Peak	V	-	-	-70.88	15.36	0.00	51.48	73.98	-22.50
* 21280.00	Average	V	-	-	-77.72	17.58	-9.54	37.32	53.98	-16.66
* 21280.00	Peak	V	-	-	-66.62	17.58	-9.54	48.42	73.98	-25.56
26600.00	Peak	V	-	-	-51.18	3.11	-9.54	49.39	68.20	-18.81

Table 7-63. Radiated Measurements MIMO/CDD

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5320MHz
Channel: 64

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10640.00	Average	V	-	-	-80.39	14.05	0.00	40.66	53.98	-13.32
* 10640.00	Peak	V	-	-	-68.61	14.05	0.00	52.44	73.98	-21.54
15960.00	Average	V	-	-	-81.35	15.36	0.00	41.01	53.98	-12.97
* 15960.00	Peak	V	-	-	-69.90	15.36	0.00	52.46	73.98	-21.52
* 21040.00	Average	V	-	-	-78.49	17.48	-9.54	36.44	53.98	-17.54
* 21040.00	Peak	V	-	-	-67.14	17.48	-9.54	47.79	73.98	-26.19
26300.00	Peak	V	-	-	-65.28	20.33	-9.54	52.51	68.20	-15.69

Table 7-64. Radiated Measurements with WCP

FCC ID: ZNFG820UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 137 of 188

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5500MHz
Channel: 100

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11000.00	Average	V	236	291	-75.24	13.50	0.00	45.26	53.98	-8.72
* 11000.00	Peak	V	236	291	-62.83	13.50	0.00	57.67	73.98	-16.31
16500.00	Peak	V	-	-	-70.83	16.35	0.00	52.52	68.20	-15.68
22000.00	Peak	V	-	-	-66.84	8.71	-9.54	39.33	68.20	-28.87
27500.00	Peak	V	-	-	-48.10	-9.42	-9.54	39.94	68.20	-28.26

Table 7-65. Radiated Measurements MIMO/CDD

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5600MHz
Channel: 120

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11200.00	Average	V	115	341	-81.73	13.26	0.00	38.53	53.98	-15.45
* 11200.00	Peak	V	115	341	-69.77	13.26	0.00	50.49	73.98	-23.49
16800.00	Peak	V	-	-	-69.82	17.87	0.00	55.05	68.20	-13.15
* 22400.00	Average	V	-	-	-77.60	9.46	-9.54	29.32	53.98	-24.66
* 22400.00	Peak	V	-	-	-66.64	9.46	-9.54	40.28	73.98	-33.70
28000.00	Peak	V	-	-	-48.08	-8.80	-9.54	40.57	68.20	-27.63

Table 7-66. Radiated Measurements MIMO/CDD

FCC ID: ZNFG820UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 138 of 188

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5720MHz
Channel: 144

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11440.00	Average	V	-	-	-81.26	15.19	0.00	40.93	53.98	-13.05
* 11440.00	Peak	V	-	-	-68.92	15.19	0.00	53.27	73.98	-20.71
17160.00	Peak	V	-	-	-70.76	19.08	0.00	55.32	68.20	-12.88
* 22880.00	Average	V	-	-	-77.93	8.86	-9.54	28.39	53.98	-25.59
* 22880.00	Peak	V	-	-	-66.35	8.86	-9.54	39.97	73.98	-34.01
28600.00	Peak	V	-	-	-48.61	-9.13	-9.54	39.72	68.20	-28.48

Table 7-67. Radiated Measurements MIMO/CDD

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5600MHz
Channel: 120

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11200.00	Average	V	-	-	-79.36	13.26	0.00	40.90	53.98	-13.08
* 11200.00	Peak	V	-	-	-68.04	13.26	0.00	52.22	73.98	-21.76
16800.00	Peak	V	-	-	-65.91	17.87	0.00	58.96	68.20	-9.24
22400.00	Average	V	-	-	-78.12	9.46	-9.54	28.80	53.98	-25.18
22400.00	Peak	V	-	-	-66.43	9.46	-9.54	40.49	73.98	-33.49
28000.00	Peak	V	-	-	-48.69	-8.80	-9.54	39.96	68.20	-28.24

Table 7-68. Radiated Measurements with WCP

FCC ID: ZNFG820UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 139 of 188

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5745MHz
Channel: 149

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11490.00	Average	V	-	-	-81.43	15.31	0.00	40.88	53.98	-13.10
* 11490.00	Peak	V	-	-	-69.97	15.31	0.00	52.34	73.98	-21.64
17235.00	Peak	V	-	-	-70.74	19.82	0.00	56.08	68.20	-12.12
* 22980.00	Average	V	-	-	-77.37	8.38	-9.54	28.47	53.98	-25.51
* 22980.00	Peak	V	-	-	-65.96	8.38	-9.54	39.88	73.98	-34.10
28725.00	Peak	V	-	-	-49.42	-8.87	-9.54	39.17	69.20	-30.03

Table 7-69. Radiated Measurements MIMO/CDD

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5785MHz
Channel: 157

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11570.00	Average	V	119	359	-79.39	15.04	0.00	42.65	53.98	-11.33
* 11570.00	Peak	V	119	359	-66.87	15.04	0.00	55.17	73.98	-18.81
17355.00	Peak	V	-	-	-72.19	23.45	0.00	58.26	68.20	-9.94
23140.00	Peak	V	-	-	-66.26	8.78	-9.54	39.98	68.20	-28.22
28925.00	Peak	V	-	-	-49.61	-8.79	-9.54	39.06	68.20	-29.14

Table 7-70. Radiated Measurements MIMO/CDD

FCC ID: ZNFG820UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 140 of 188

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5825MHz
Channel: 165

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11650.00	Average	V	131	357	-81.43	15.42	0.00	40.99	53.98	-12.99
* 11650.00	Peak	V	131	357	-69.51	15.42	0.00	52.91	73.98	-21.07
17475.00	Peak	V	-	-	-70.83	21.84	0.00	58.01	68.20	-10.19
23300.00	Peak	V	-	-	-66.88	9.23	-9.54	39.81	68.20	-28.39
29125.00	Peak	V	-	-	-48.71	-9.66	-9.54	39.09	68.20	-29.11

Table 7-71. Radiated Measurements MIMO/CDD

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5745MHz
Channel: 149

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11490.00	Average	V	-	-	-78.66	15.31	0.00	43.65	53.98	-10.33
* 11490.00	Peak	V	-	-	-66.97	15.31	0.00	55.34	73.98	-18.64
17235.00	Peak	V	-	-	-66.46	19.82	0.00	60.36	68.20	-7.84
22980.00	Average	V	-	-	-77.99	8.38	-9.54	27.85	53.98	-26.13
22980.00	Peak	V	-	-	-66.95	8.38	-9.54	38.89	73.98	-35.09
28725.00	Peak	V	-	-	-49.44	-8.87	-9.54	39.15	69.20	-30.05

Table 7-72. Radiated Measurements with WCP

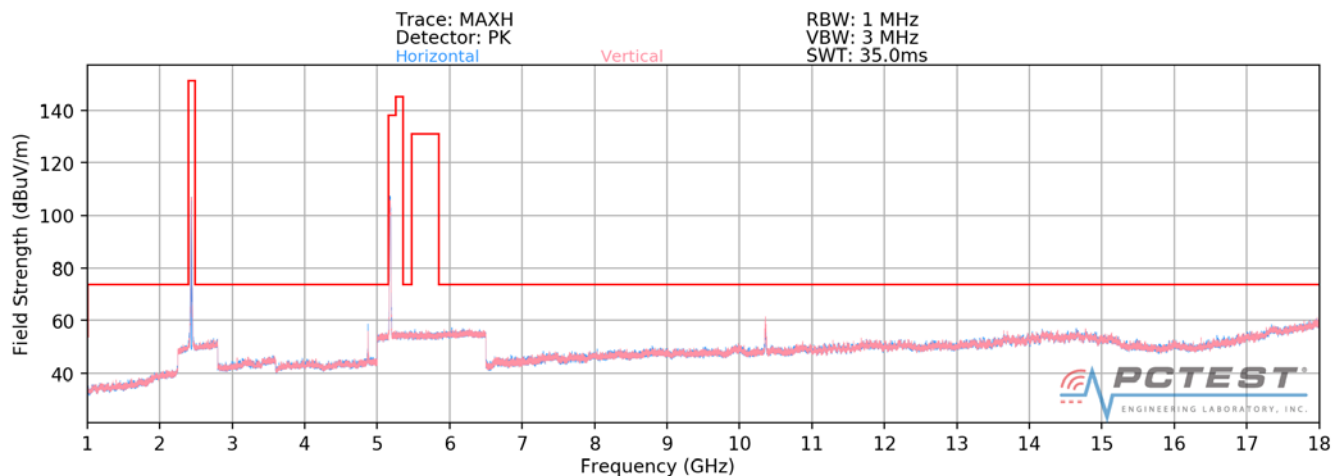
FCC ID: ZNFG820UM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 141 of 188

7.6.4 Simultaneous Tx Radiated Spurious Emissions Measurements

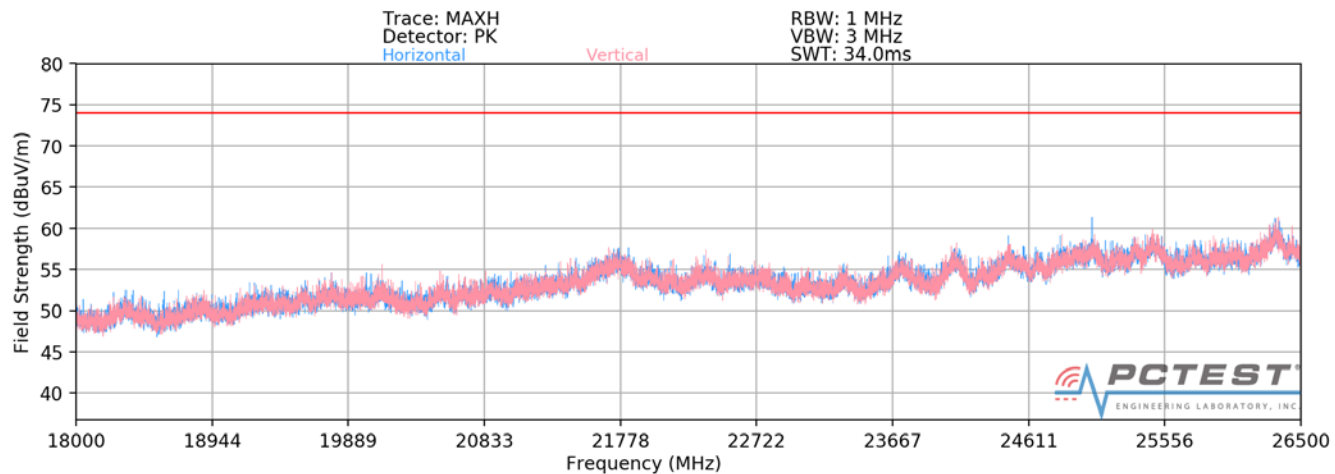
§15.407(b) §15.205 & §15.209; RSS-Gen [8.9]

Description	2.4 GHz Emission	5 GHz Emission
Antenna	1	2
Channel	3	36
Operating Frequency (MHz)	2437	5180
Data Rate (Mbps)	1Mbps	6Mbps
Mode	b	a

Table 7-73. Simultaneous Transmission Config-1

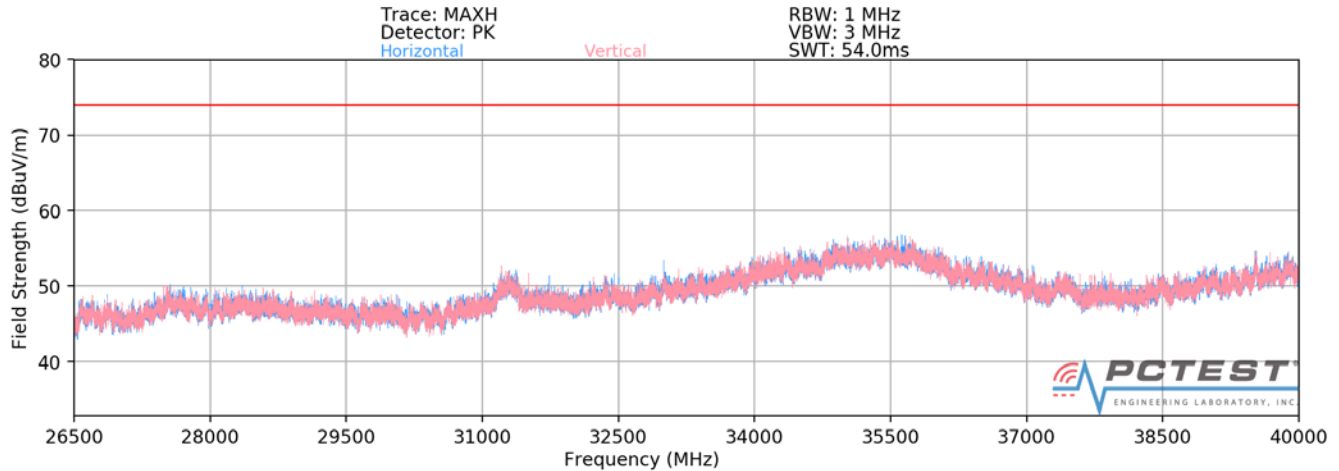


Plot 7-169. Radiated Spurious Plot above 1GHz (2.4GHz – 5GHz)



Plot 7-170. Radiated Spurious Plot 18GHz – 26.5GHz (2.4GHz – 5GHz)

FCC ID: ZNFG820UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
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Plot 7-171. Radiated Spurious Plot above 26.5GHz (2.4GHz – 5GHz)

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]
306.00	Peak	V	-	-	-73.74	-13.83	19.43	73.98	-54.55
7923.00	Peak	V	-	-	-72.15	16.64	51.49	73.98	-22.49
3049.00	Peak	V	-	-	-68.07	6.51	45.44	73.98	-28.54
* 10666.00	Average	V	-	-	-83.63	20.00	43.37	53.98	-10.61
* 10666.00	Peak	V	-	-	-72.29	20.00	54.71	73.98	-19.27
5792.00	Peak	V	-	-	-72.20	10.45	45.25	73.98	-28.73
13409.00	Peak	V	-	-	-72.79	25.65	59.86	73.98	-14.12

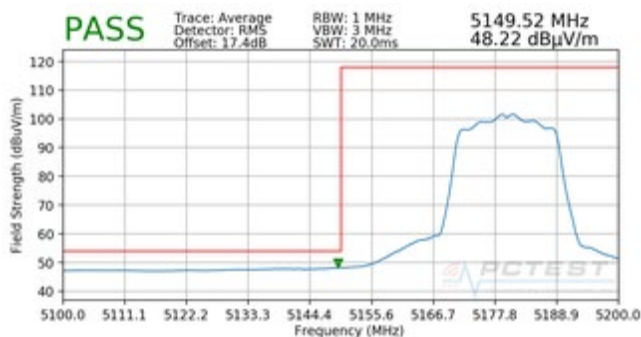
Table 7-74. Radiated Measurements (2.4GHz – 5GHz)

FCC ID: ZNFG820UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 143 of 188

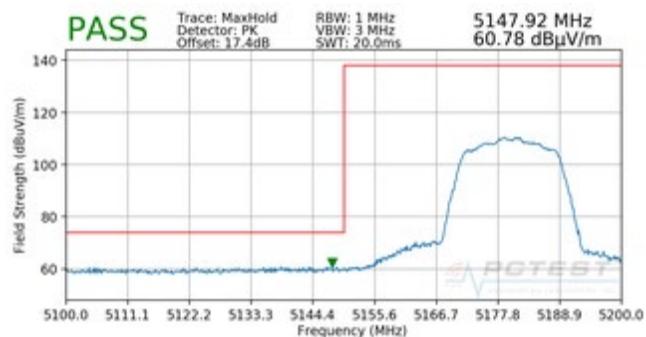
7.6.5 SISO Antenna-1 Radiated Band Edge Measurements (20MHz BW)

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

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5180MHz
Channel:	36

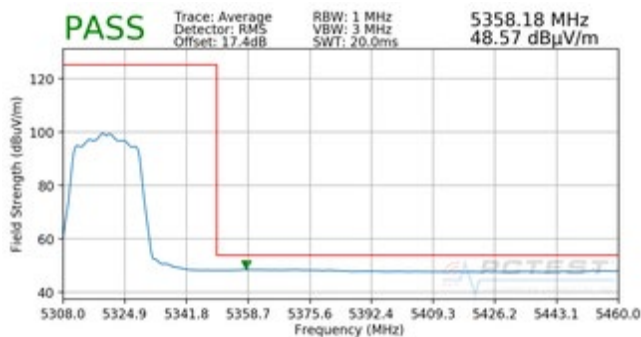


Plot 7-172. Radiated Lower Band Edge Plot (Average - UNII Band 1)

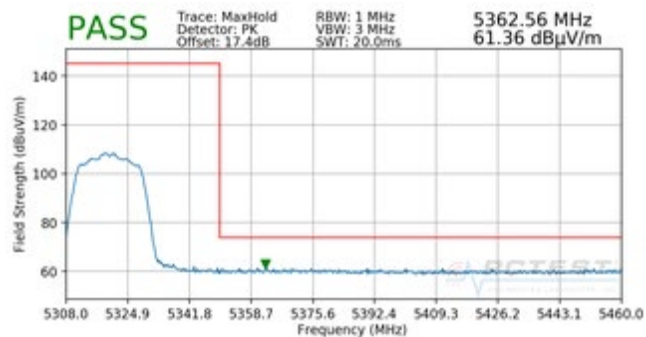


Plot 7-173. Radiated Lower Band Edge Plot (Peak - UNII Band 1)

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5320MHz
Channel:	64



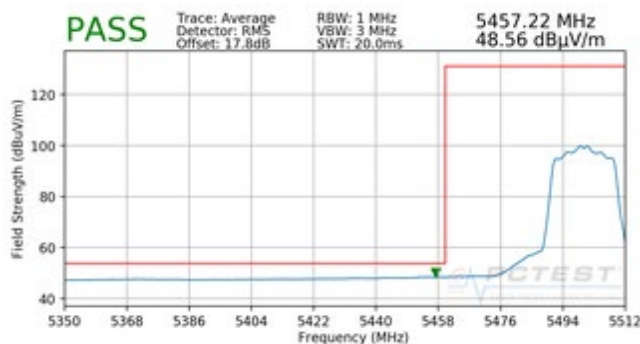
Plot 7-174. Radiated Upper Band Edge Plot (Average - UNII Band 2A)



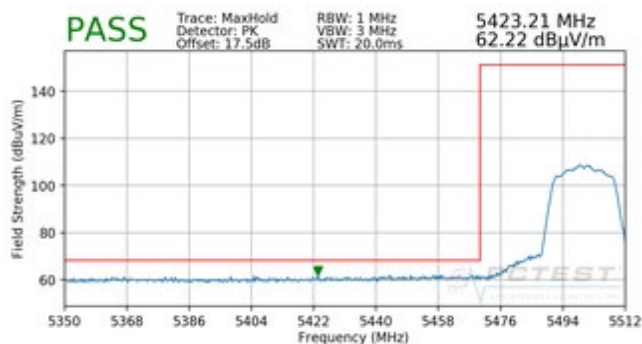
Plot 7-175. Radiated Upper Band Edge Plot (Peak - UNII Band 2A)

FCC ID: ZNFG820UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 144 of 188

Worst Case Mode: 802.11ac
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5500MHz
Channel: 100

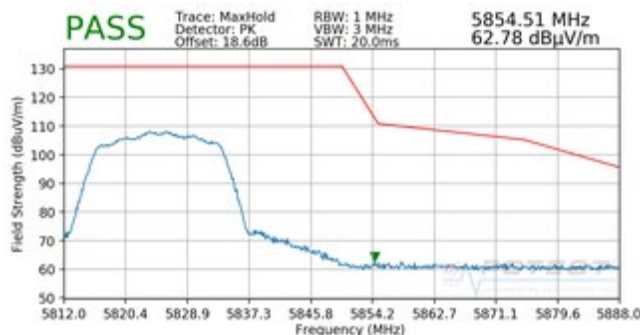


Plot 7-176. Radiated Lower Band Edge Plot (Average – UNII Band 2C)



Plot 7-177. Radiated Lower Band Edge Plot (Peak – UNII Band 2C)

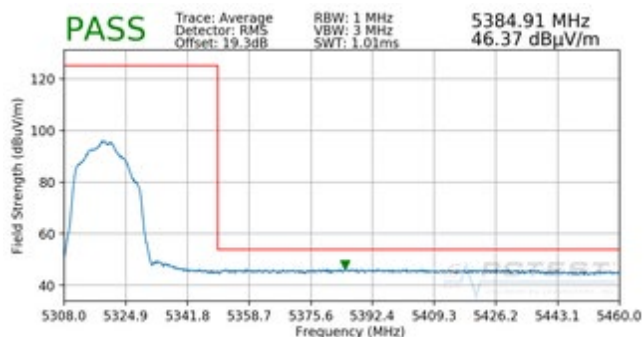
Worst Case Mode: 802.11ac
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5825MHz
Channel: 165



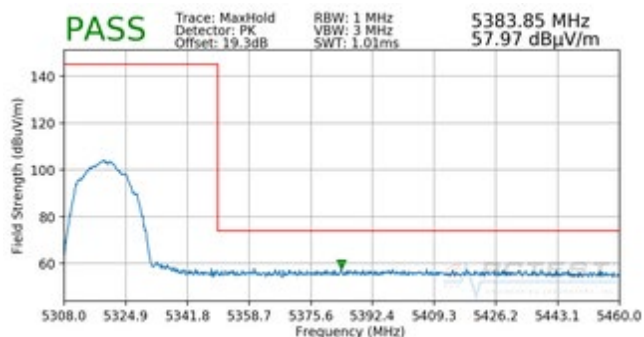
Plot 7-178. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFG820UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 145 of 188

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5320MHz
Channel:	64



Plot 7-179. Radiated Band Edge Plot (Average – WCP)



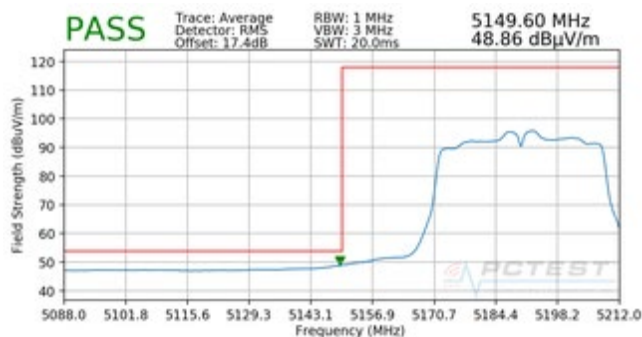
Plot 7-180. Radiated Band Edge Plot (Peak – WCP)

FCC ID: ZNFG820UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 146 of 188

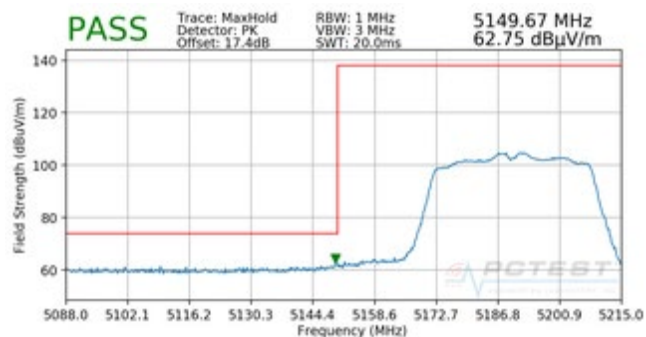
7.6.6 Radiated Band Edge Measurements (40MHz BW)

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

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5190MHz
Channel:	38

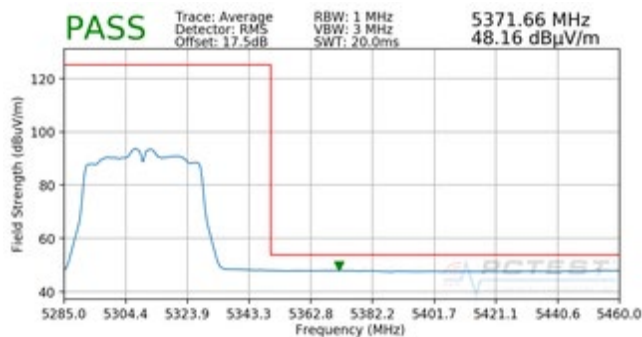


Plot 7-181. Radiated Lower Band Edge Plot (Average - UNII Band 1)

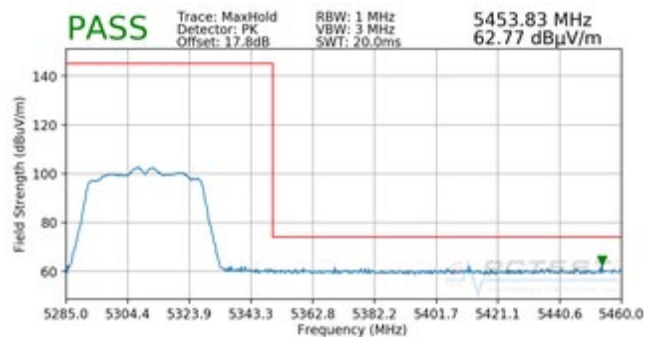


Plot 7-182. Radiated Lower Band Edge Plot (Peak - UNII Band 1)

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5310MHz
Channel:	62



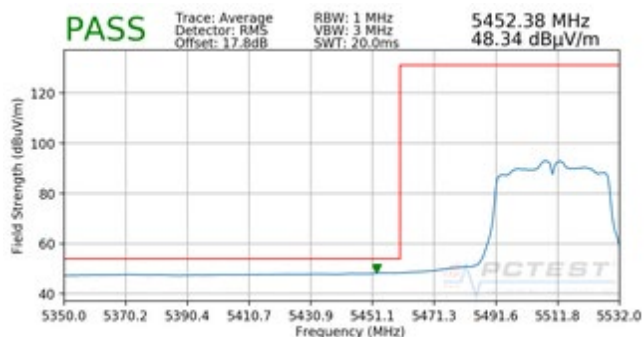
Plot 7-183. Radiated Upper Band Edge Plot (Average - UNII Band 2A)



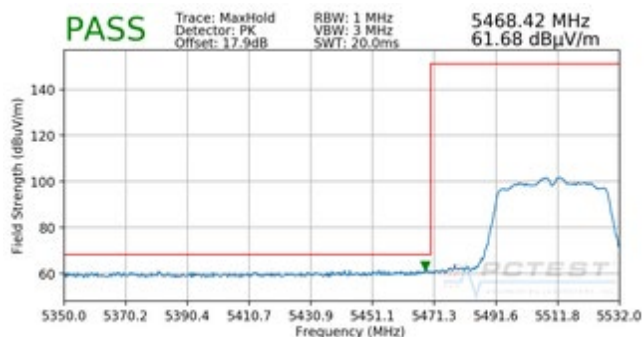
Plot 7-184. Radiated Upper Band Edge Plot (Peak - UNII Band 2A)

FCC ID: ZNFG820UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 147 of 188

Worst Case Mode: 802.11ac
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5510MHz
Channel: 102

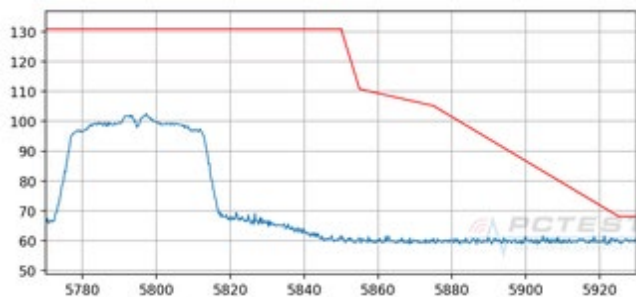


Plot 7-185. Radiated Lower Band Edge Plot (Average – UNII Band 2C)



Plot 7-186. Radiated Lower Band Edge Plot (Peak – UNII Band 2C)

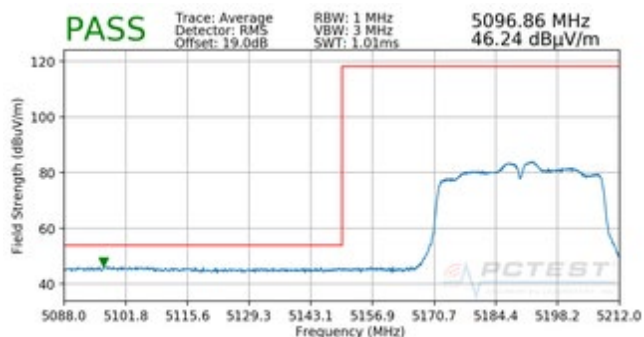
Worst Case Mode: 802.11ac
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5795MHz
Channel: 159



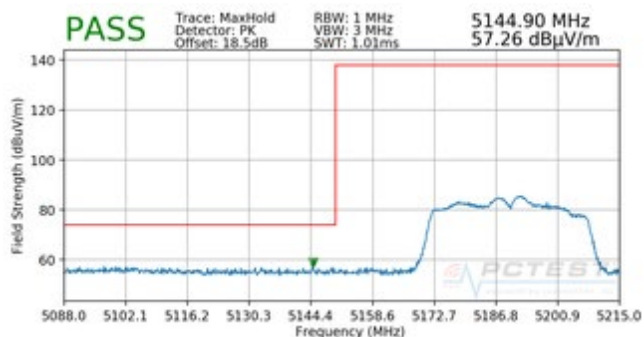
Plot 7-187. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFG820UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 148 of 188

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5190MHz
Channel:	38



Plot 7-188. Radiated Band Edge Plot (Average – WCP)



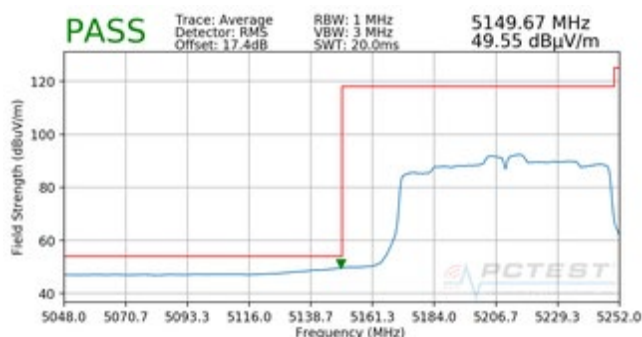
Plot 7-189. Radiated Band Edge Plot (Peak – WCP)

FCC ID: ZNFG820UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 149 of 188

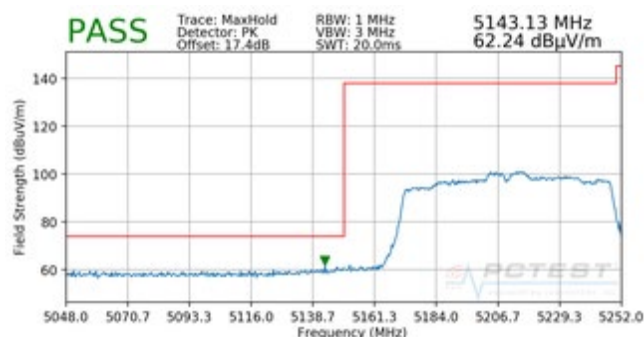
7.6.7 Radiated Band Edge Measurements (80MHz BW)

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

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5210MHz
Channel:	42

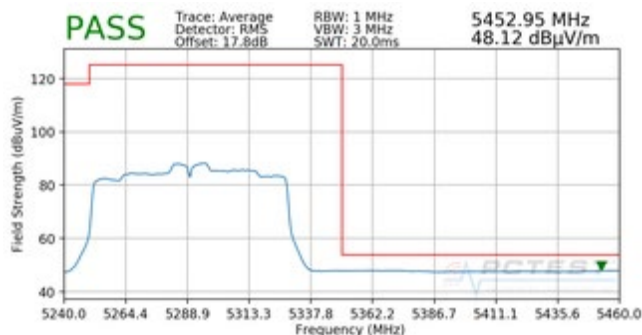


Plot 7-190. Radiated Lower Band Edge Plot (Average - UNII Band 1)

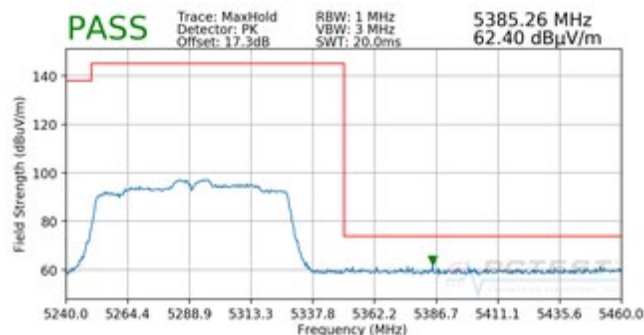


Plot 7-191. Radiated Lower Band Edge Plot (Peak - UNII Band 1)

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5290MHz
Channel:	58



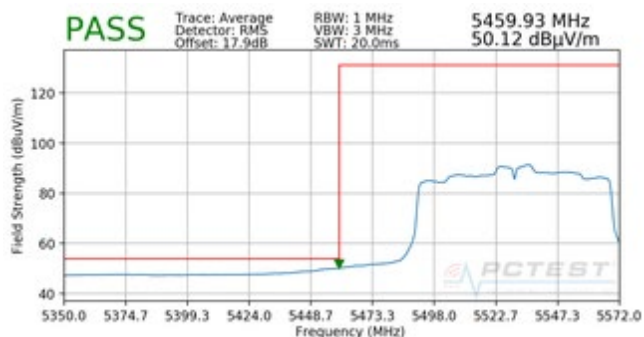
Plot 7-192. Radiated Upper Band Edge Plot (Average - UNII Band 2A)



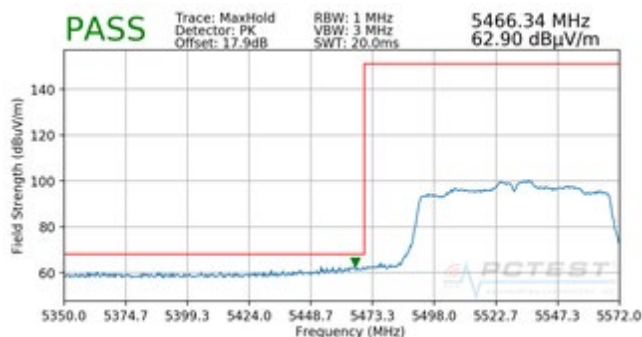
Plot 7-193. Radiated Upper Band Edge Plot (Peak - UNII Band 2A)

FCC ID: ZNFG820UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 150 of 188

Worst Case Mode: 802.11ac
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5530MHz
Channel: 106

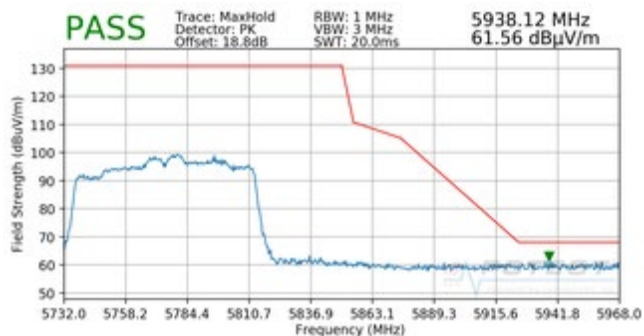


Plot 7-194. Radiated Lower Band Edge Plot (Average – UNII Band 2C)



Plot 7-195. Radiated Lower Band Edge Plot (Peak – UNII Band 2C)

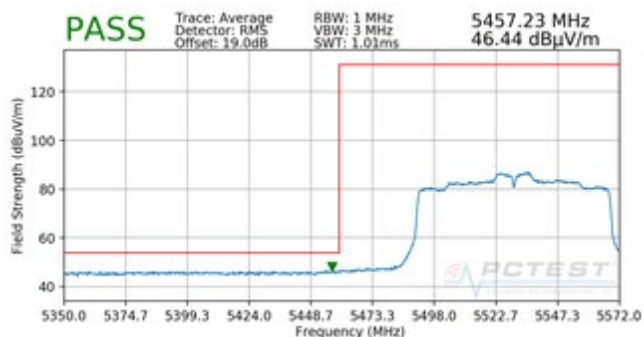
Worst Case Mode: 802.11ac
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5775MHz
Channel: 155



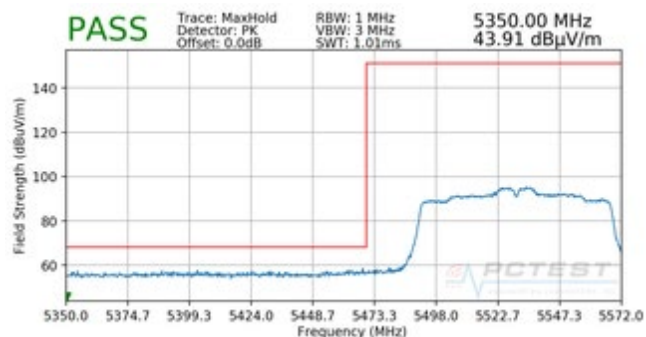
Plot 7-196. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFG820UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1811300215-06-ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 151 of 188

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5530MHz
Channel:	106



Plot 7-197. Radiated Band Edge Plot (Average – WCP)



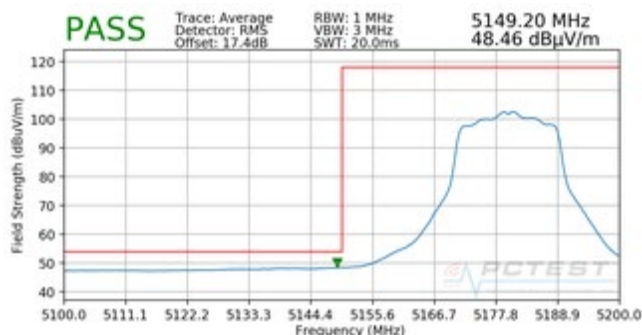
Plot 7-198. Radiated Band Edge Plot (Peak – WCP)

FCC ID: ZNFG820UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 152 of 188

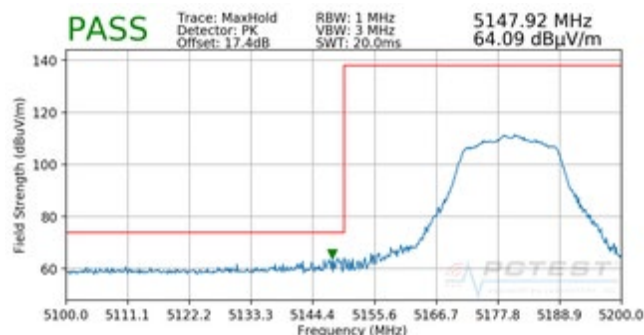
7.6.8 SISO Antenna-2 Radiated Band Edge Measurements (20MHz BW)

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

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5180MHz
Channel:	36

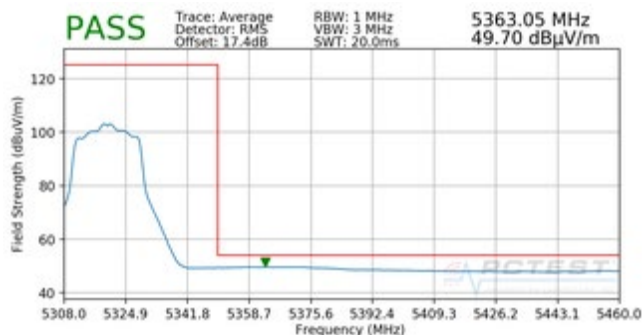


Plot 7-199. Radiated Lower Band Edge Plot (Average - UNII Band 1)

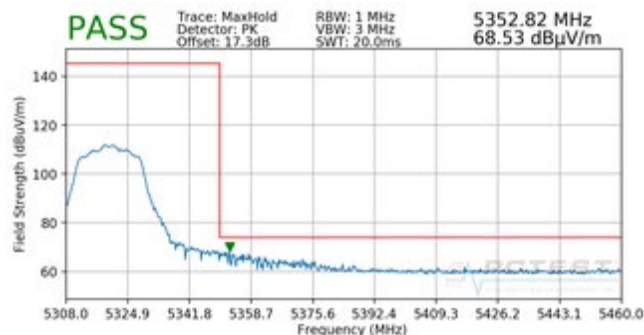


Plot 7-200. Radiated Lower Band Edge Plot (Peak - UNII Band 1)

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5320MHz
Channel:	64



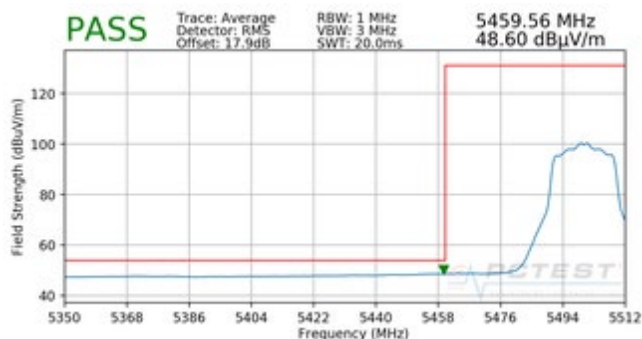
Plot 7-201. Radiated Upper Band Edge Plot (Average - UNII Band 2A)



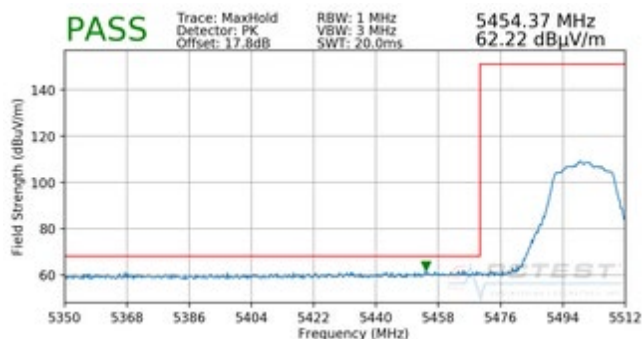
Plot 7-202. Radiated Upper Band Edge Plot (Peak - UNII Band 2A)

FCC ID: ZNFG820UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 153 of 188

Worst Case Mode: 802.11ac
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5500MHz
Channel: 100

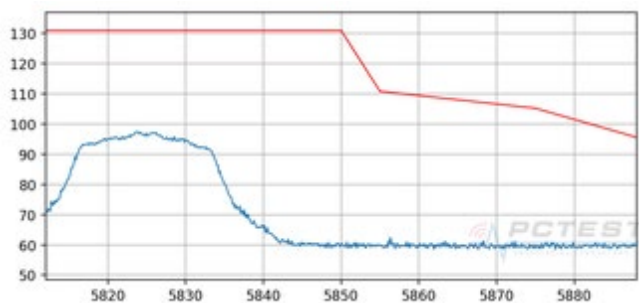


Plot 7-203. Radiated Lower Band Edge Plot (Average – UNII Band 2C)



Plot 7-204. Radiated Lower Band Edge Plot (Peak – UNII Band 2C)

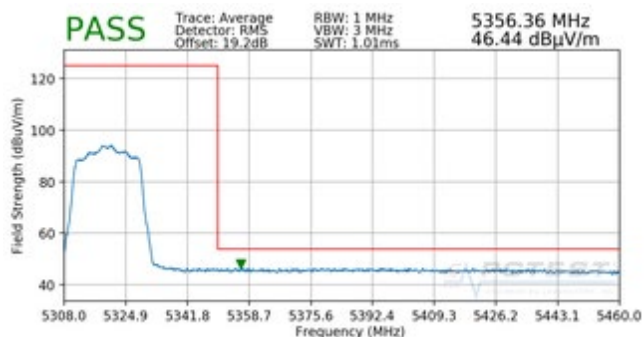
Worst Case Mode: 802.11ac
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5825MHz
Channel: 165



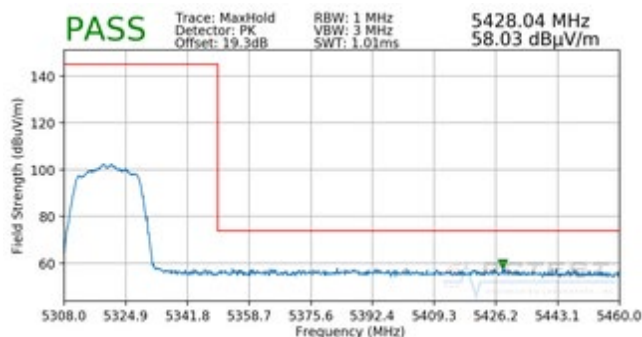
Plot 7-205. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFG820UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 154 of 188

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5320MHz
Channel:	64



Plot 7-206. Radiated Band Edge Plot (Average – WCP)



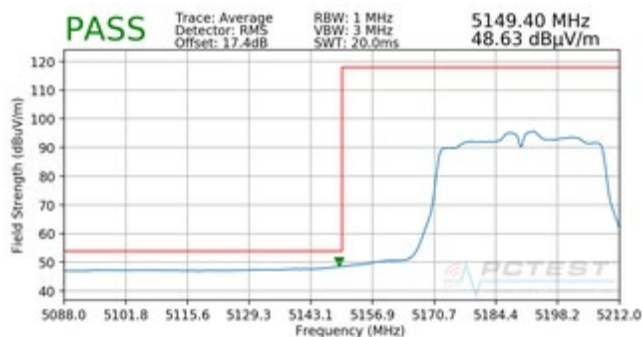
Plot 7-207. Radiated Band Edge Plot (Peak – WCP)

FCC ID: ZNFG820UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 155 of 188

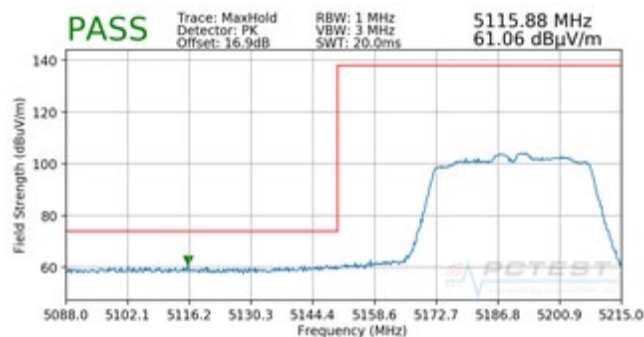
7.6.9 SISO Antenna-2 Radiated Band Edge Measurements (40MHz BW)

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

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5190MHz
Channel:	38

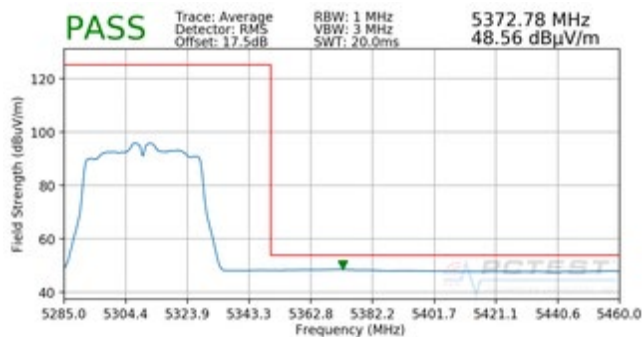


Plot 7-208. Radiated Lower Band Edge Plot (Average - UNII Band 1)

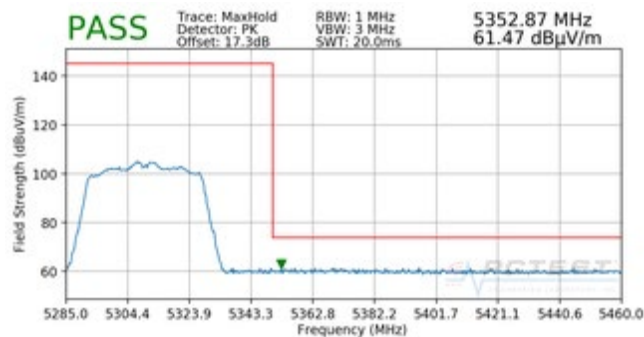


Plot 7-209. Radiated Lower Band Edge Plot (Peak - UNII Band 1)

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5310MHz
Channel:	62



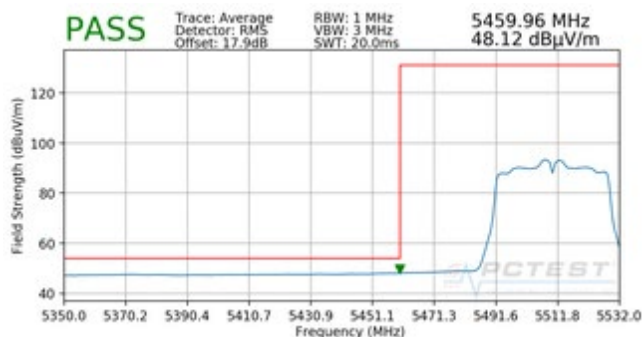
Plot 7-210. Radiated Upper Band Edge Plot (Average - UNII Band 2A)



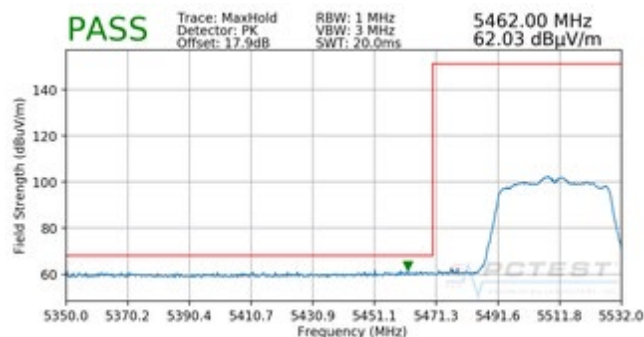
Plot 7-211. Radiated Upper Band Edge Plot (Peak - UNII Band 2A)

FCC ID: ZNFG820UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 156 of 188

Worst Case Mode: 802.11ac
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5510MHz
Channel: 102

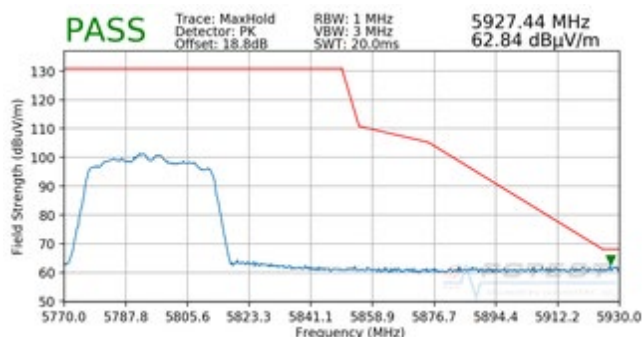


Plot 7-212. Radiated Lower Band Edge Plot (Average – UNII Band 2C)



Plot 7-213. Radiated Lower Band Edge Plot (Peak – UNII Band 2C)

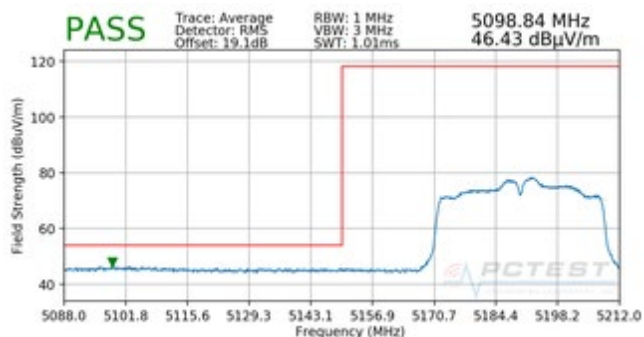
Worst Case Mode: 802.11ac
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5795MHz
Channel: 159



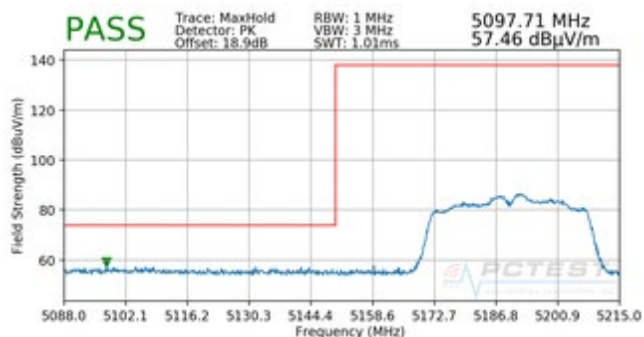
Plot 7-214. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFG820UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 157 of 188

Worst Case Mode: 802.11ac
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5190MHz
Channel: 38



Plot 7-215. Radiated Band Edge Plot (Average – WCP)



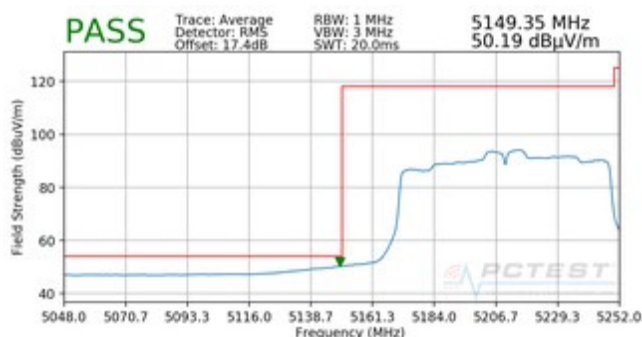
Plot 7-216. Radiated Band Edge Plot (Peak – WCP)

FCC ID: ZNFG820UM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 158 of 188

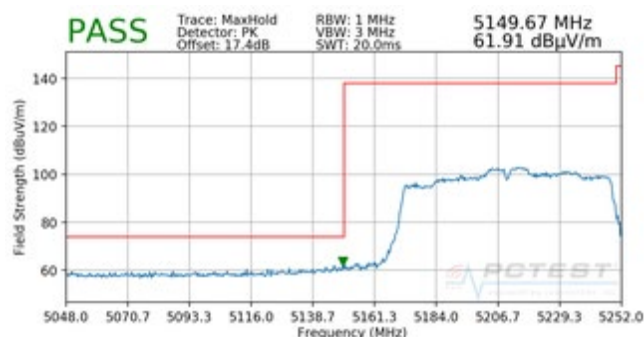
7.6.10 SISO Antenna-2 Radiated Band Edge Measurements (80MHz BW)

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

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5210MHz
Channel:	42

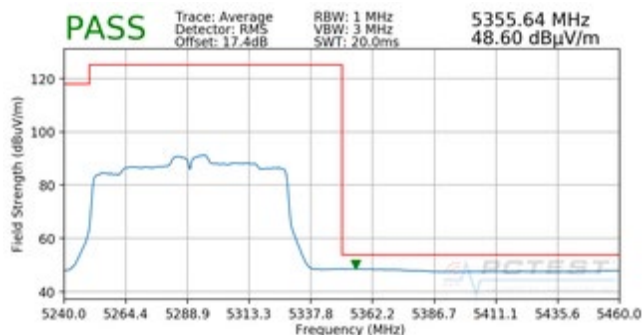


Plot 7-217. Radiated Lower Band Edge Plot (Average - UNII Band 1)

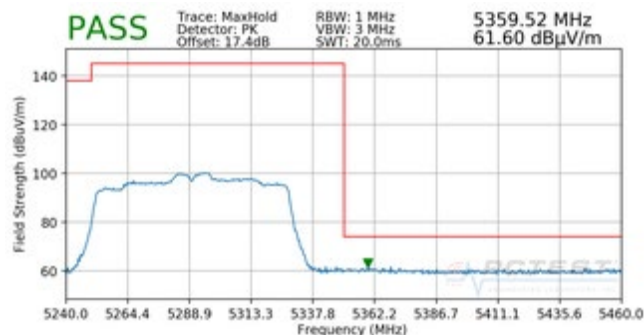


Plot 7-218. Radiated Lower Band Edge Plot (Peak - UNII Band 1)

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5290MHz
Channel:	58



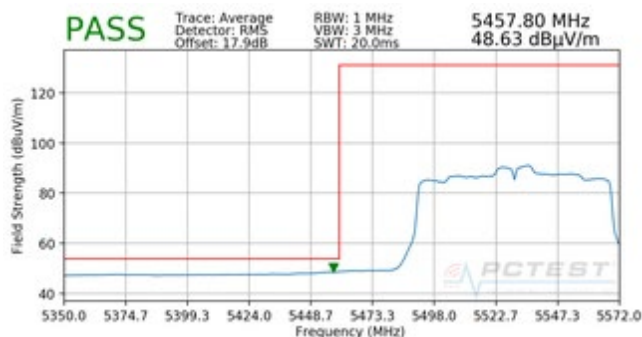
Plot 7-219. Radiated Upper Band Edge Plot (Average - UNII Band 2A)



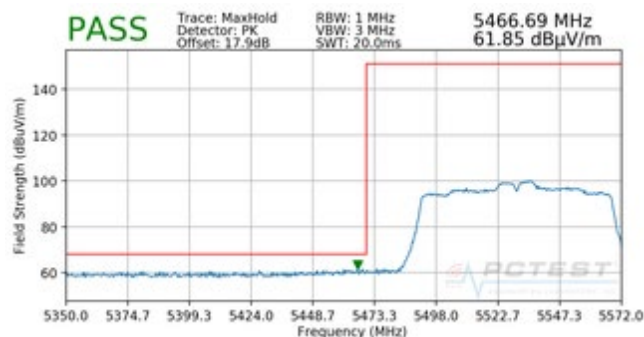
Plot 7-220. Radiated Upper Band Edge Plot (Peak - UNII Band 2A)

FCC ID: ZNFG820UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 159 of 188

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5530MHz
Channel:	106

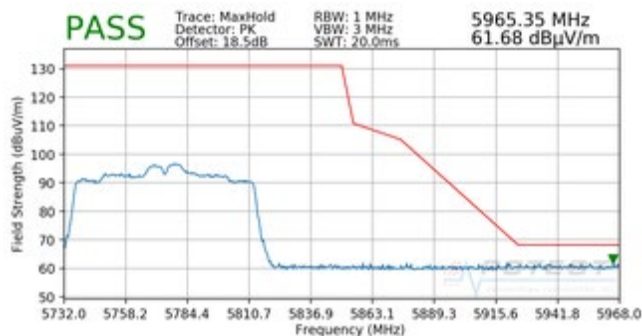


Plot 7-221. Radiated Lower Band Edge Plot (Average – UNII Band 2C)



Plot 7-222. Radiated Lower Band Edge Plot (Peak – UNII Band 2C)

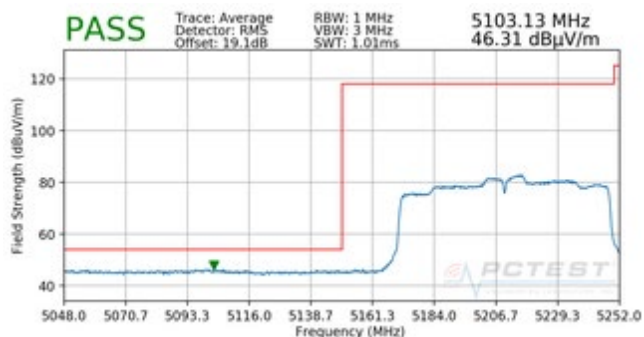
Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5775MHz
Channel:	155



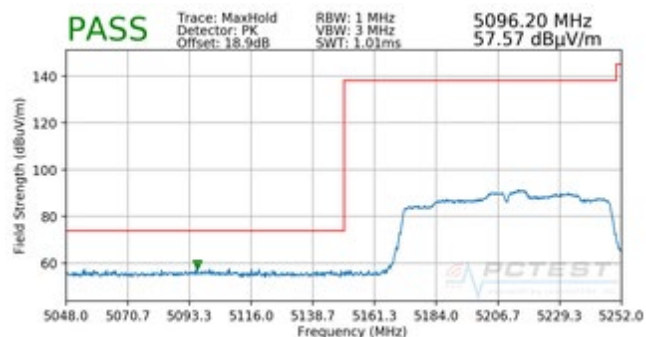
Plot 7-223. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFG820UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06-ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 160 of 188

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5530MHz
Channel:	42



Plot 7-224. Radiated Band Edge Plot (Average – WCP)



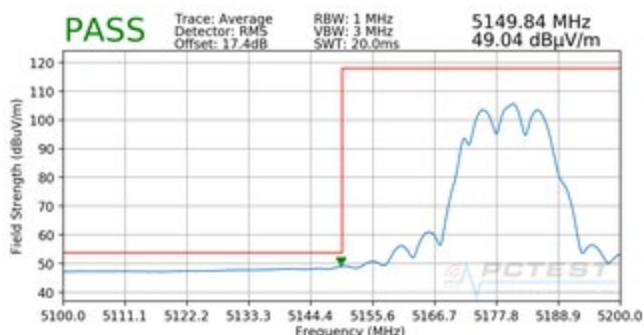
Plot 7-225. Radiated Band Edge Plot (Peak – WCP)

FCC ID: ZNFG820UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 161 of 188

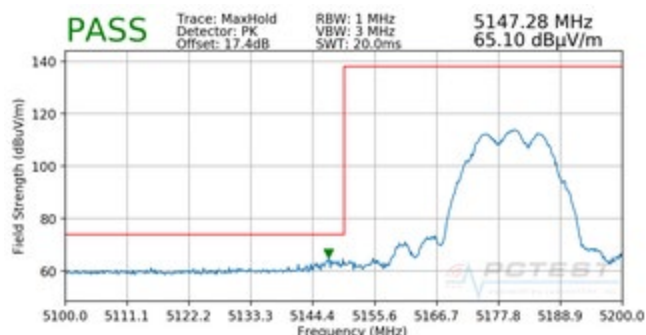
7.6.11 CDD/MIMO Radiated Band Edge Measurements (20MHz BW)

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

Worst Case Mode:	802.11a
Worst Case Transfer Rate:	6Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	5180MHz
Channel:	36

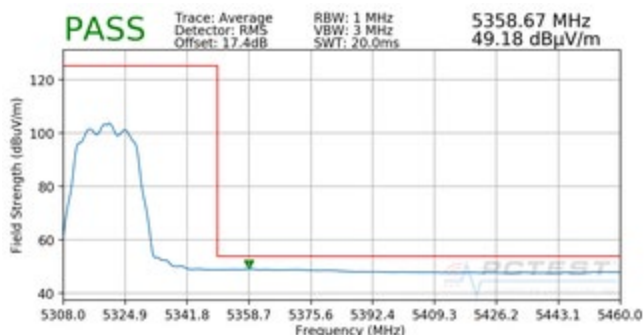


Plot 7-226. Radiated Lower Band Edge Plot (Average - UNII Band 1)

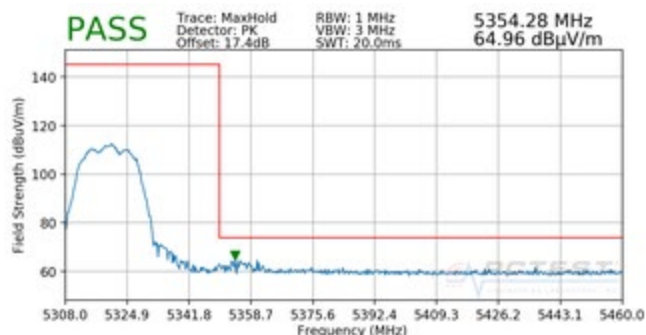


Plot 7-227. Radiated Lower Band Edge Plot (Peak - UNII Band 1)

Worst Case Mode:	802.11n
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5320MHz
Channel:	64



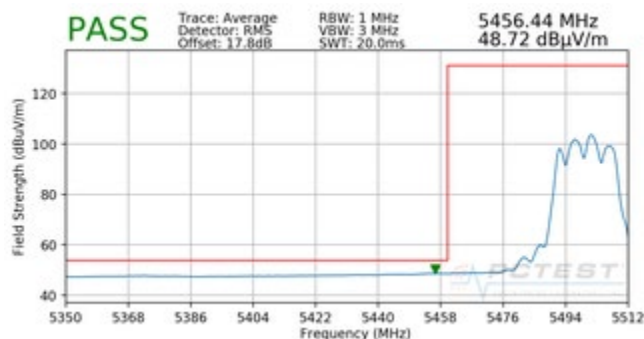
Plot 7-228. Radiated Upper Band Edge Plot (Average - UNII Band 2A)



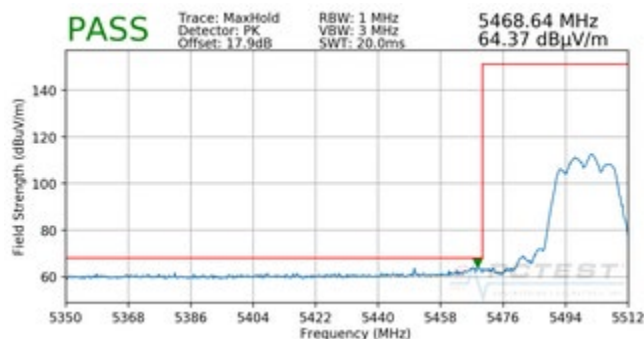
Plot 7-229. Radiated Upper Band Edge Plot (Peak - UNII Band 2A)

FCC ID: ZNFG820UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 162 of 188

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6Mbps
Distance of Measurements: 3 Meters
Operating Frequency: 5500MHz
Channel: 100

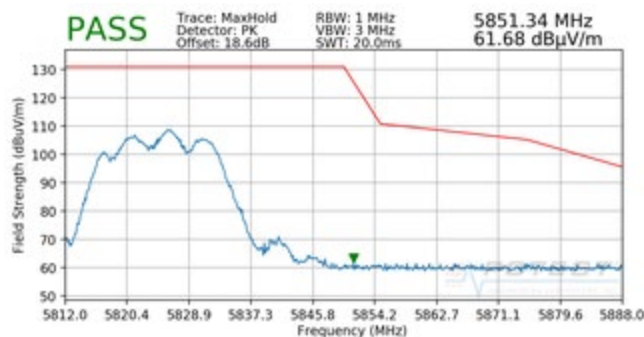


Plot 7-230. Radiated Lower Band Edge Plot (Average – UNII Band 2C)



Plot 7-231. Radiated Lower Band Edge Plot (Peak – UNII Band 2C)

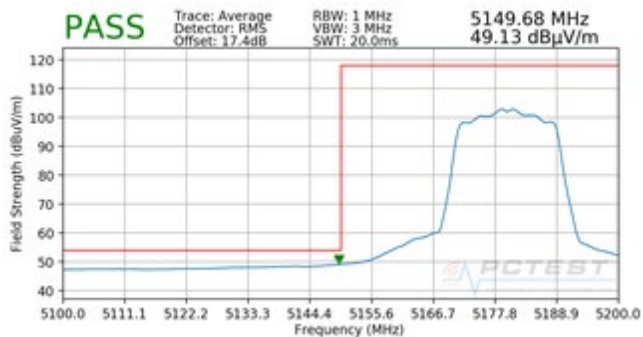
Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5825MHz
Channel: 165



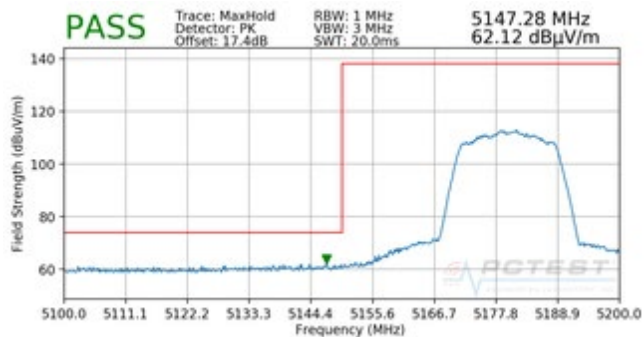
Plot 7-232. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFG820UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 163 of 188

Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5180MHz
Channel: 36

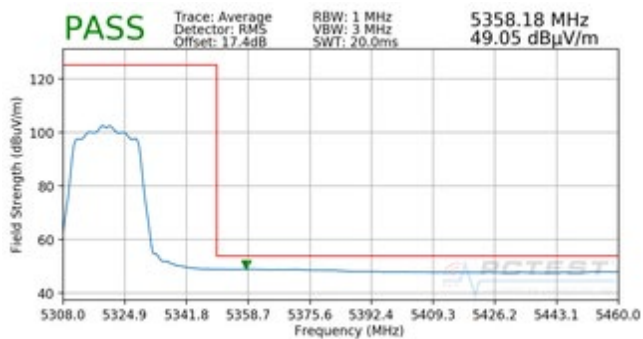


Plot 7-233. Radiated Lower Band Edge Plot (Average - UNII Band 1)

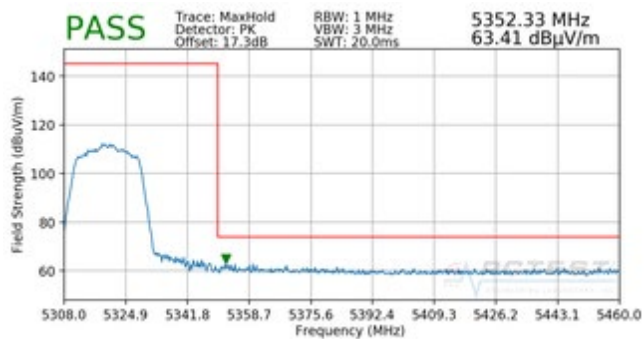


Plot 7-234. Radiated Lower Band Edge Plot (Peak - UNII Band 1)

Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5320MHz
Channel: 64



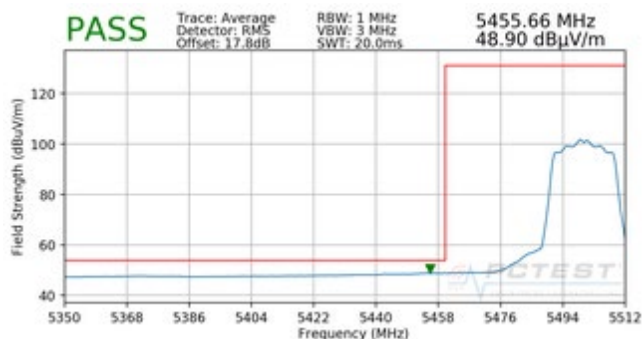
Plot 7-235. Radiated Upper Band Edge Plot (Average - UNII Band 2A)



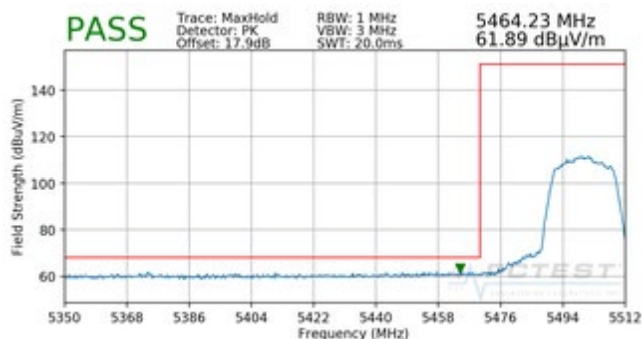
Plot 7-236. Radiated Upper Band Edge Plot (Peak - UNII Band 2A)

FCC ID: ZNFG820UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 164 of 188

Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5500MHz
Channel: 100

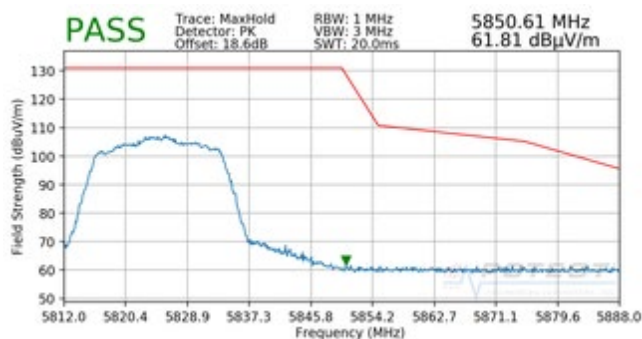


Plot 7-237. Radiated Lower Band Edge Plot (Average – UNII Band 2C)



Plot 7-238. Radiated Lower Band Edge Plot (Peak – UNII Band 2C)

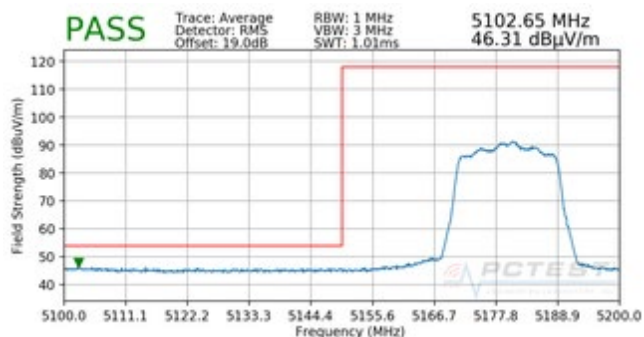
Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5825MHz
Channel: 165



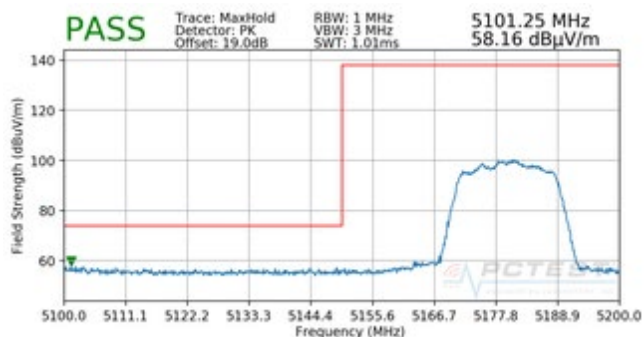
Plot 7-239. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFG820UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1M1811300215-06-ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 165 of 188

Worst Case Mode:	802.11n
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5320MHz
Channel:	36



Plot 7-240. Radiated Band Edge Plot (Average – WCP)



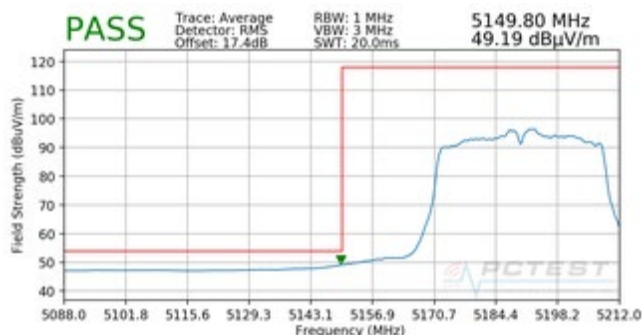
Plot 7-241. Radiated Band Edge Plot (Peak – WCP)

FCC ID: ZNFG820UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 166 of 188

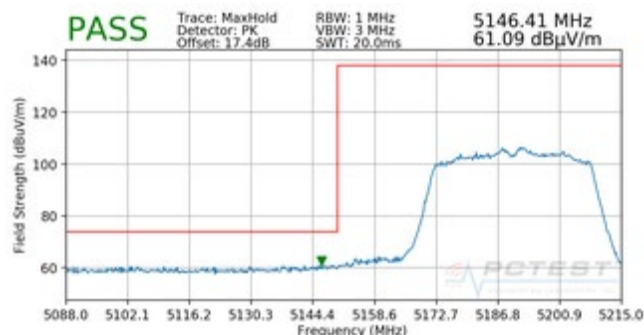
7.6.12 MIMO Radiated Band Edge Measurements (40MHz BW)

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

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5190MHz
Channel:	38

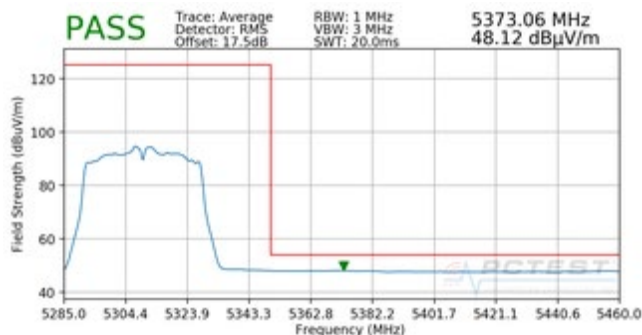


Plot 7-242. Radiated Lower Band Edge Plot (Average - UNII Band 1)

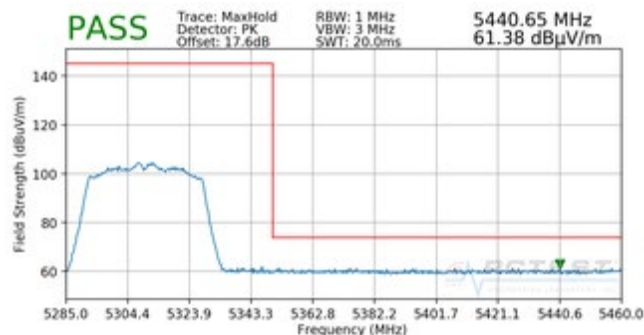


Plot 7-243. Radiated Lower Band Edge Plot (Peak - UNII Band 1)

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5310MHz
Channel:	62



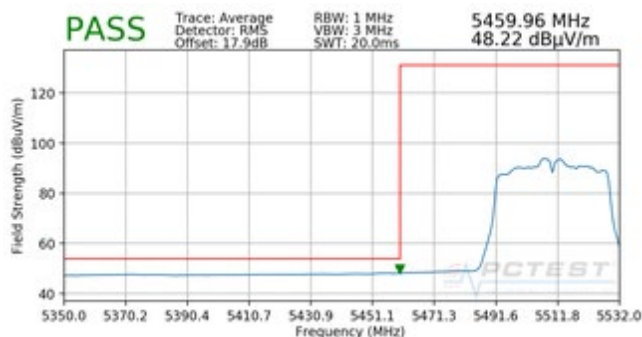
Plot 7-244. Radiated Upper Band Edge Plot (Average - UNII Band 2A)



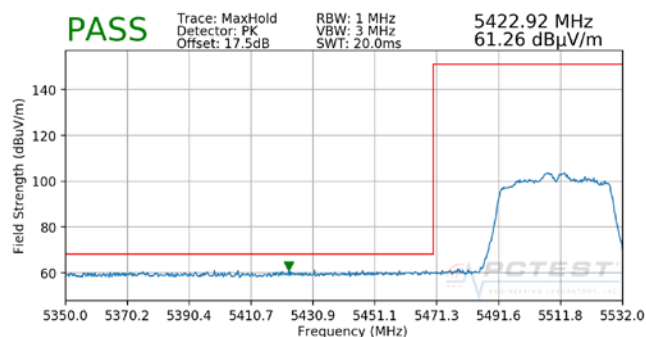
Plot 7-245. Radiated Upper Band Edge Plot (Peak - UNII Band 2A)

FCC ID: ZNFG820UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 167 of 188

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5510MHz
Channel:	102

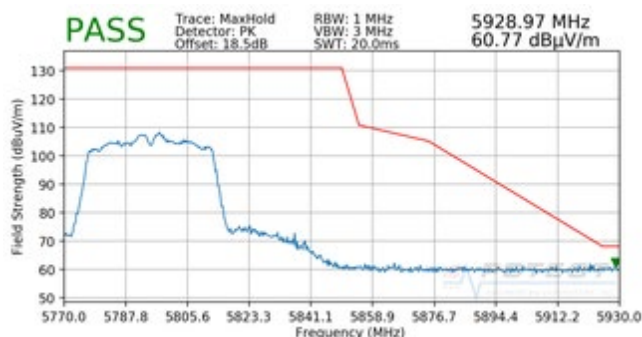


**Plot 7-246. Radiated Lower Band Edge Plot
(Average – UNII Band 2C)**



**Plot 7-247. Radiated Lower Band Edge Plot (Peak –
UNII Band 2C)**

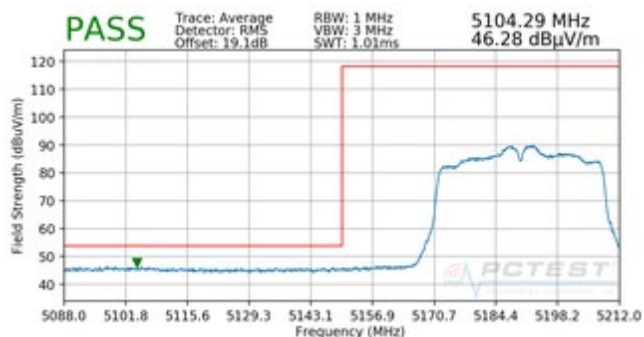
Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5795MHz
Channel:	159



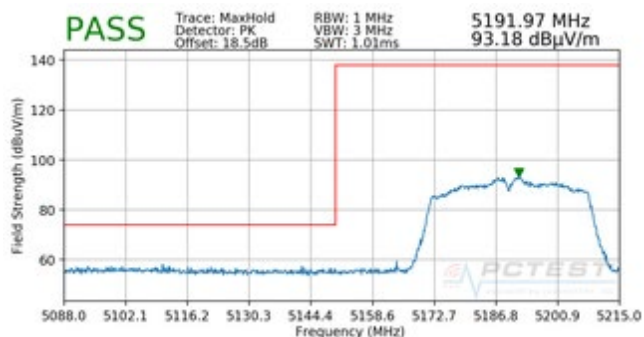
**Plot 7-248. Radiated Upper Band Edge Plot (Peak –
UNII Band 3)**

FCC ID: ZNFG820UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 168 of 188

Worst Case Mode: 802.11ac
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 5190MHz
Channel: 38



Plot 7-249. Radiated Band Edge Plot (Average – WCP)



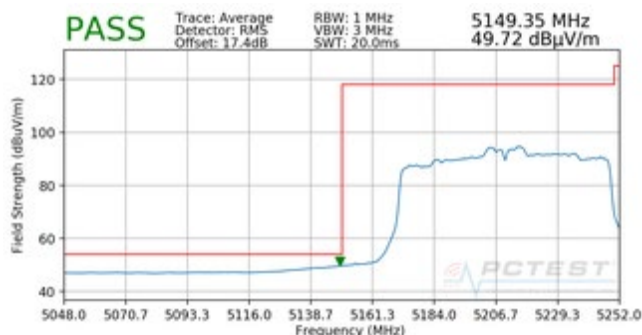
Plot 7-250. Radiated Band Edge Plot (Peak – WCP)

FCC ID: ZNFG820UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 169 of 188

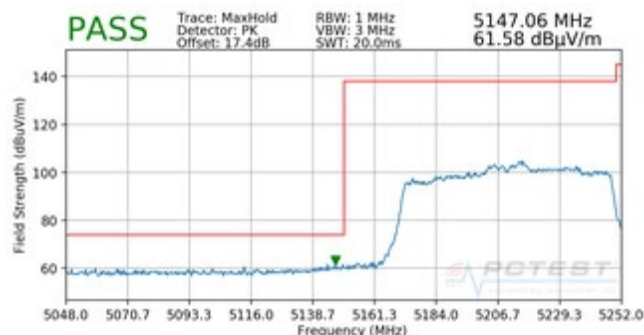
7.6.13 MIMO Radiated Band Edge Measurements (80MHz BW)

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

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5210MHz
Channel:	42

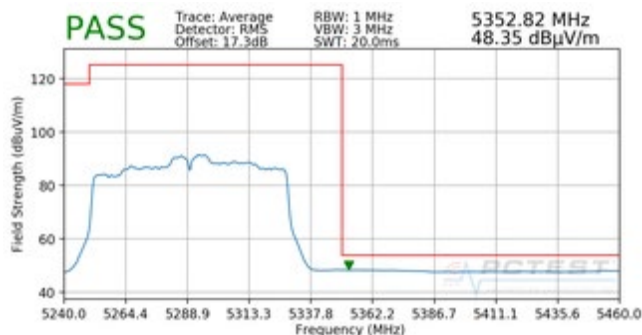


Plot 7-251. Radiated Lower Band Edge Plot (Average - UNII Band 1)

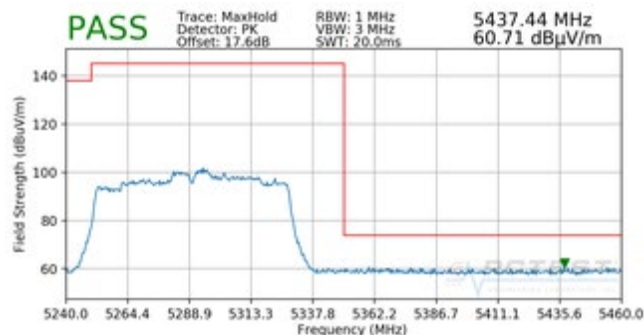


Plot 7-252. Radiated Lower Band Edge Plot (Peak - UNII Band 1)

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5290MHz
Channel:	58



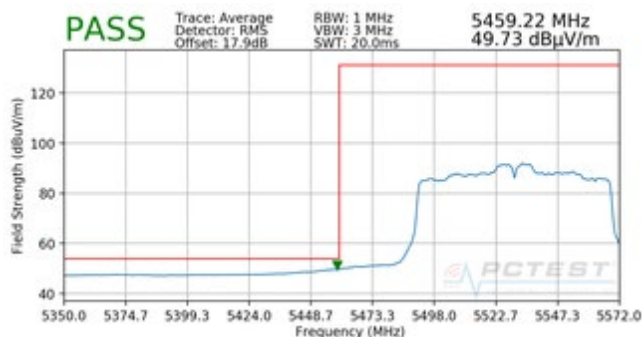
Plot 7-253. Radiated Upper Band Edge Plot (Average - UNII Band 2A)



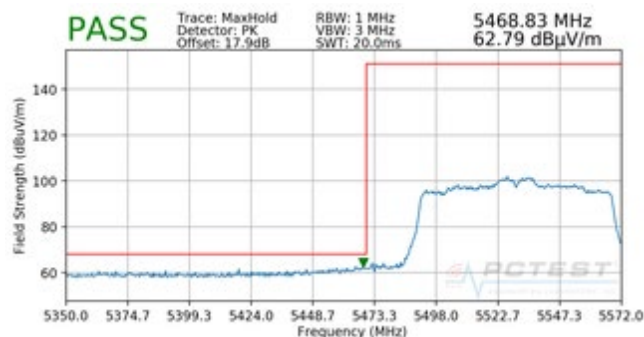
Plot 7-254. Radiated Upper Band Edge Plot (Peak - UNII Band 2A)

FCC ID: ZNFG820UM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5530MHz
Channel:	106

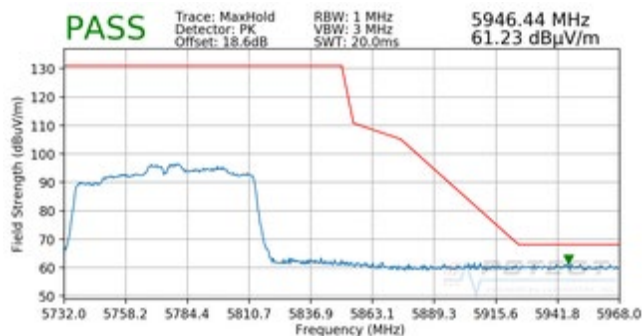


Plot 7-255. Radiated Lower Band Edge Plot (Average – UNII Band 2C)



Plot 7-256. Radiated Lower Band Edge Plot (Peak – UNII Band 2C)

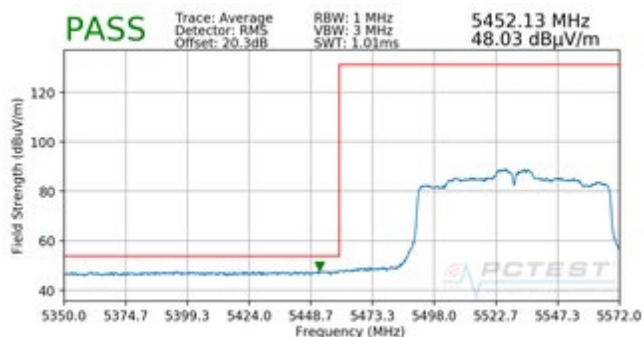
Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5775MHz
Channel:	155



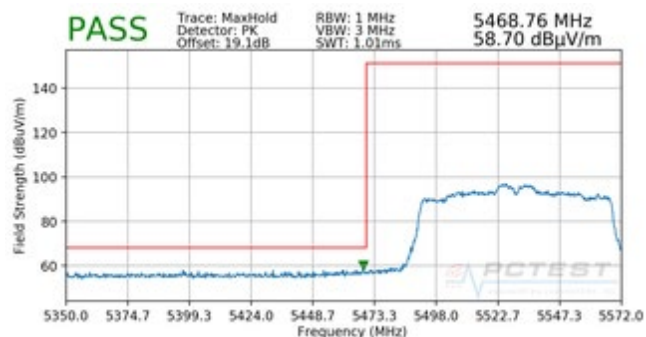
Plot 7-257. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFG820UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1811300215-06-ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset	Page 171 of 188

Worst Case Mode:	802.11ac
Worst Case Transfer Rate:	MCS0
Distance of Measurements:	3 Meters
Operating Frequency:	5530MHz
Channel:	106



Plot 7-258. Radiated Band Edge Plot (Average – WCP)



Plot 7-259. Radiated Band Edge Plot (Peak – WCP)

FCC ID: ZNFG820UM	PCTEST ENGINEERING LABORATORY, INC.		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1M1811300215-06.ZNF	Test Dates: 12/3/2018 -1/4/2019	EUT Type: Portable Handset		Page 172 of 188

7.7 Radiated Spurious Emissions Measurements – 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 6 of RSS-Gen (8.10) must not exceed the limits shown in Table 7-65 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 7-75. Radiated Limits

Test Procedures Used

ANSI C63.10-2013

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

FCC ID: ZNFG820UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Test Setup

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

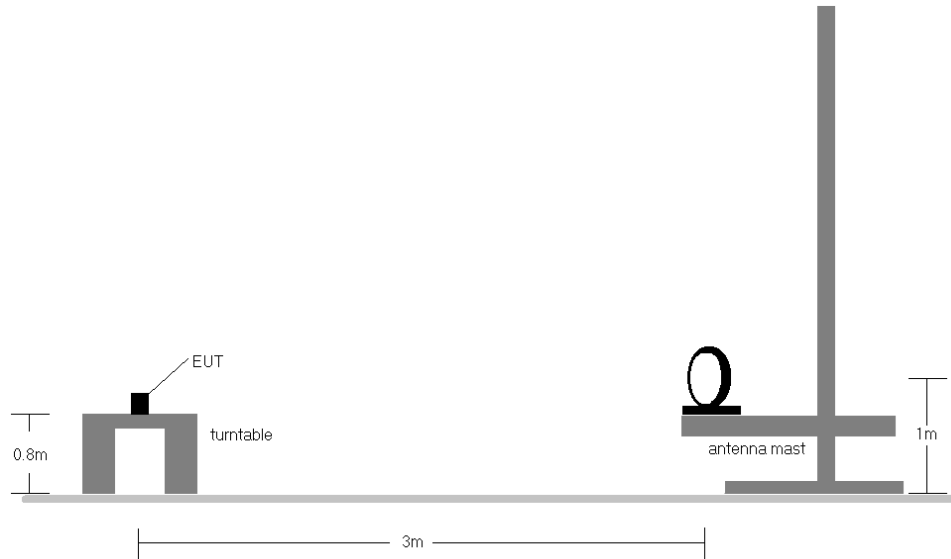


Figure 7-6. Radiated Test Setup < 30MHz

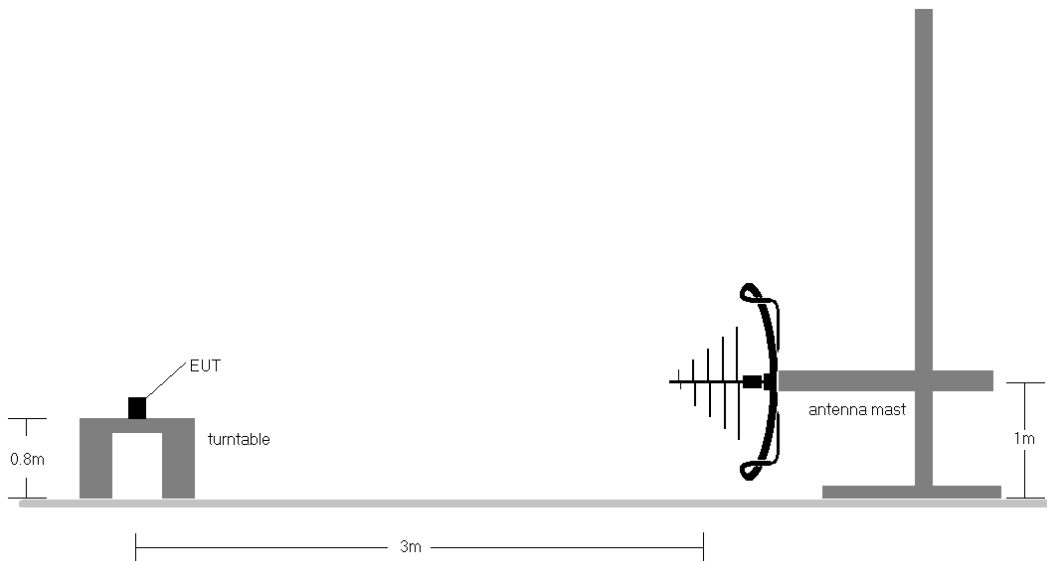


Figure 7-7. Radiated Test Setup < 1GHz

FCC ID: ZNFG820UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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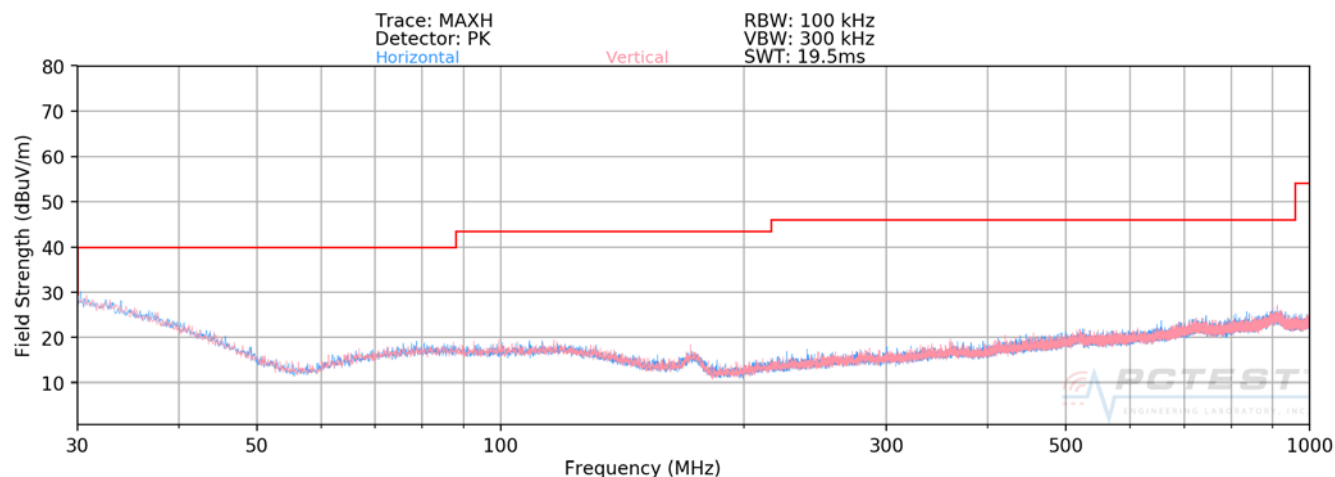
Test Notes

1. All emissions lying in restricted bands specified in §15.205 and RSS-Gen (8.10) are below the limit shown in Table 7-65.
2. The broadband receive antenna is manipulated through vertical and horizontal polarizations during the tests. The EUT is manipulated through three orthogonal planes.
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. The worst-case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
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.

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SISO Antenna-1 Radiated Spurious Emissions Measurements (Below 1GHz)

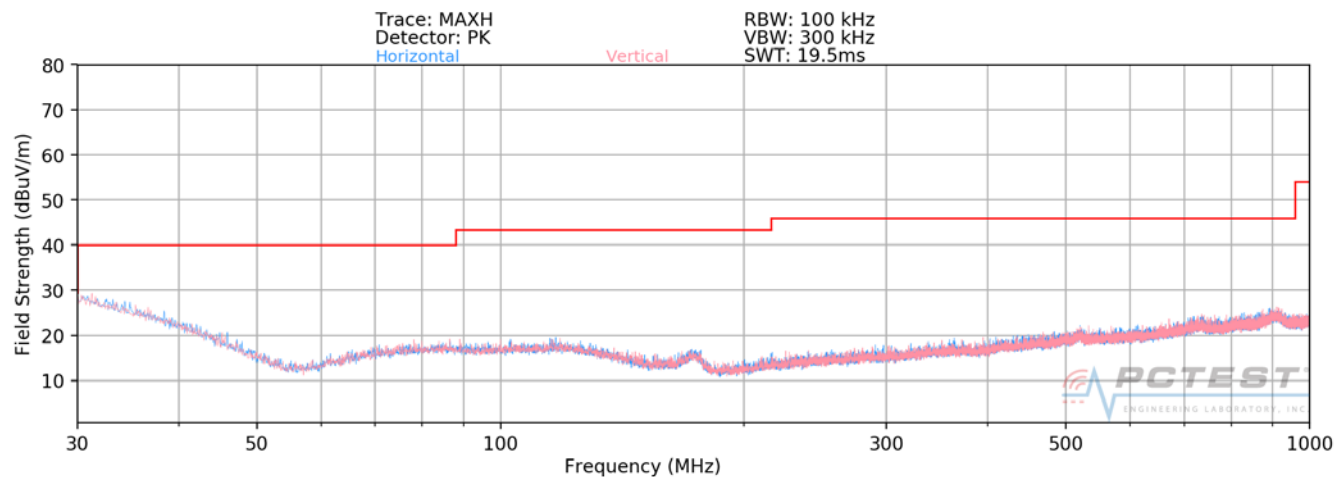
§15.209; RSS-Gen [8.9]



Plot 7-260. Radiated Spurious Plot below 1GHz

SISO Antenna-2 Radiated Spurious Emissions Measurements (Below 1GHz)

§15.209; RSS-Gen [8.9]

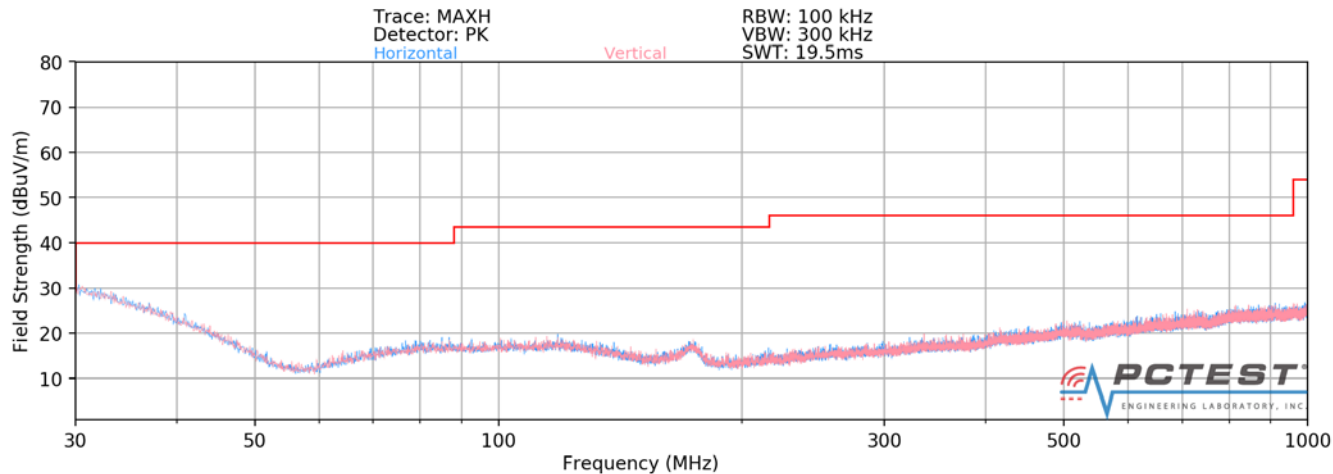


Plot 7-261. Radiated Spurious Plot below 1GHz

FCC ID: ZNFG820UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Simultaneous Tx Radiated Spurious Emissions Measurements (Below 1GHz)

§15.209; RSS-Gen [8.9]



Plot 7-262. Radiated Spurious Plot below 1GHz (2.4GHz – 5GHz)

FCC ID: ZNFG820UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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7.8 Line-Conducted Test Data

§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 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 7-76. Conducted Limits

*Decreases with the logarithm of the frequency.

Test Procedures Used

ANSI C63.10-2013, Section 6.2

Test Settings

Quasi-Peak Field Strength 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 Field Strength 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

FCC ID: ZNFG820UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Test Setup

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

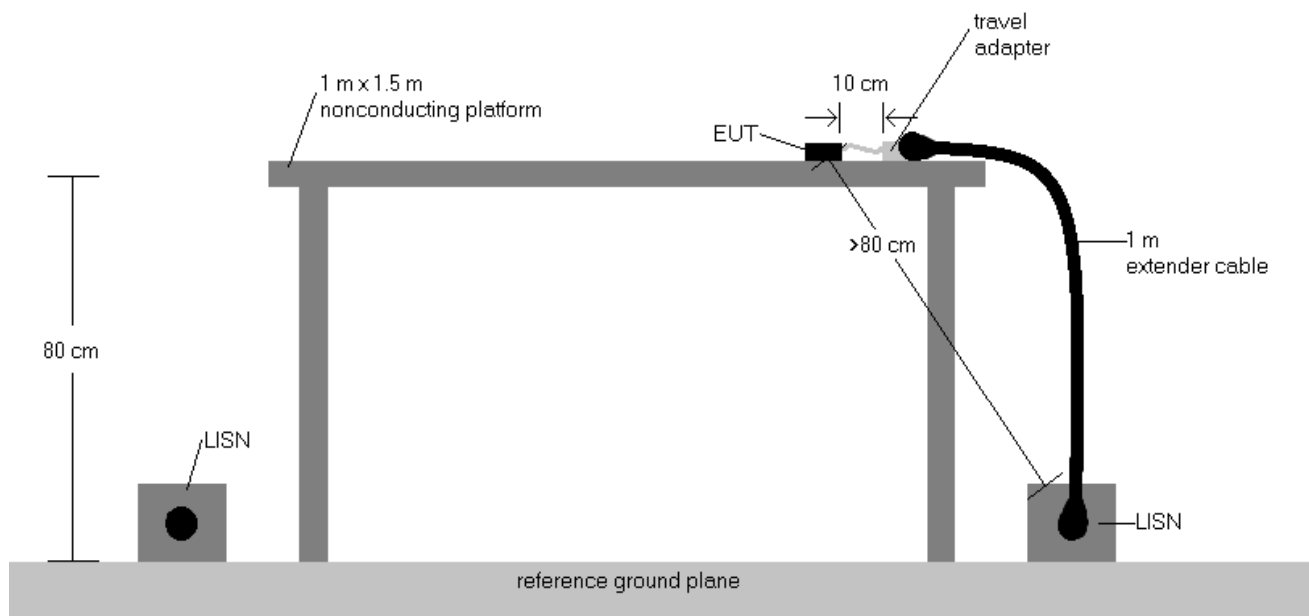
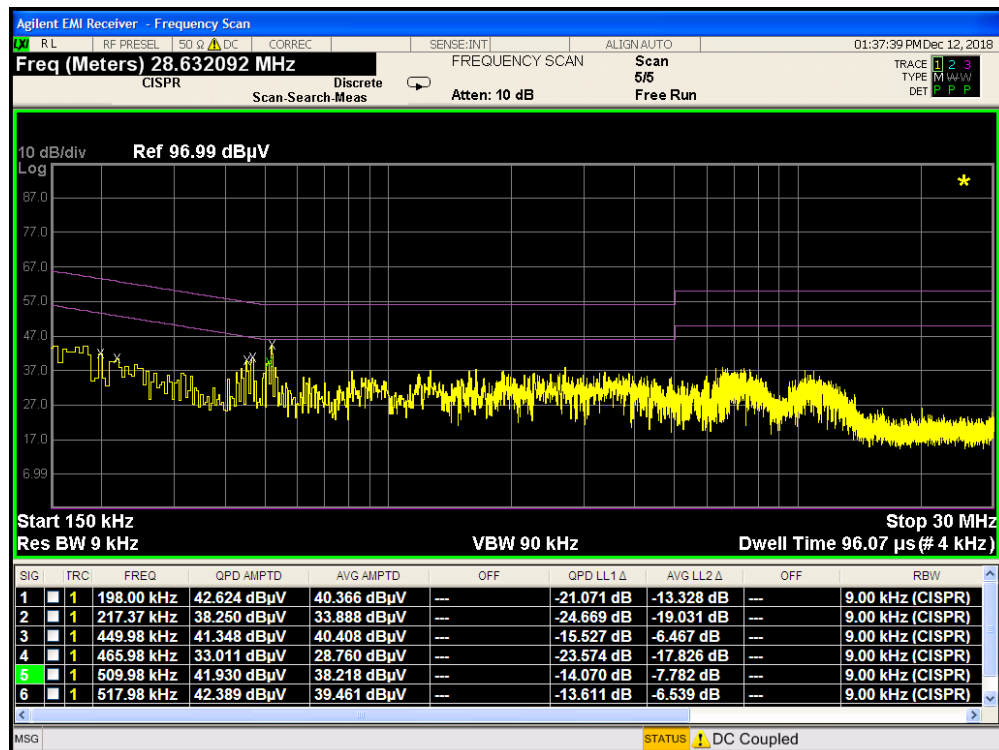


Figure 7-8. Test Instrument & Measurement Setup

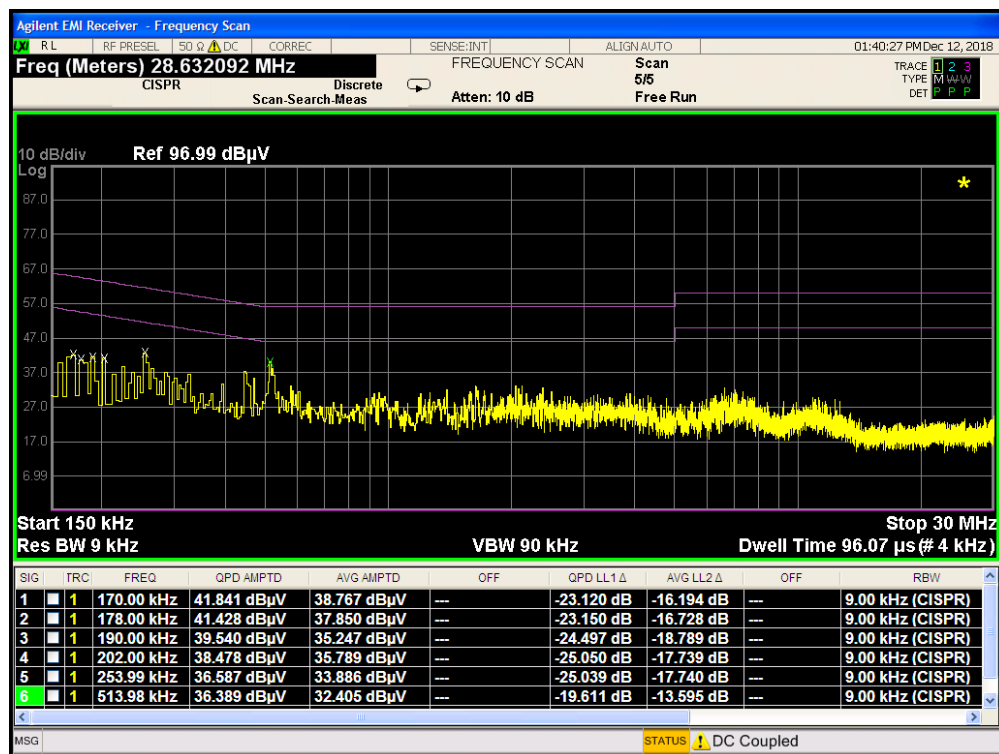
Test Notes

1. All modes of operation were investigated and the worst-case emissions are reported using mid channel. The emissions found were not affected by the choice of channel used during testing.
2. The limit for an intentional radiator from 150kHz to 30MHz are specified in 15.207 and RSS-Gen (8.8).
3. $\text{Corr. (dB)} = \text{Cable loss (dB)} + \text{LISN insertion factor (dB)}$
4. $\text{QP/AV Level (dB}\mu\text{V)} = \text{QP/AV Analyzer/Receiver Level (dB}\mu\text{V)} + \text{Corr. (dB)}$
5. $\text{Margin (dB)} = \text{QP/AV Limit (dB}\mu\text{V)} - \text{QP/AV Level (dB}\mu\text{V)}$
6. Traces shown in plot are made using a peak detector.
7. Deviations to the Specifications: None.

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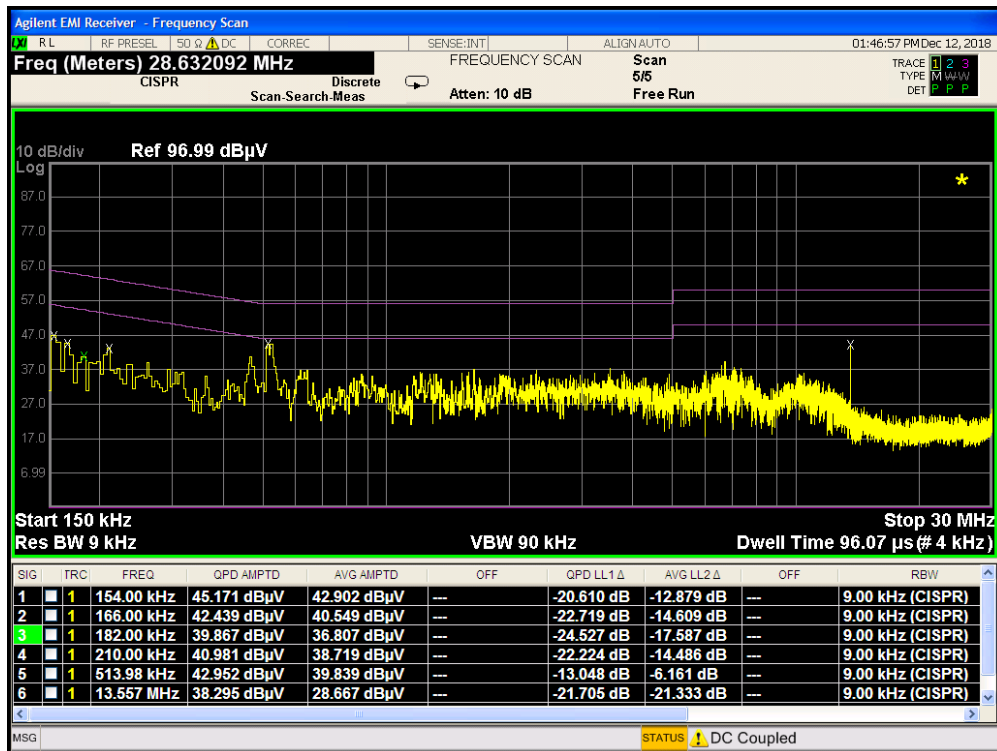


Plot 7-263. Line Conducted Plot with 802.11a UNII Band 1 (L1)

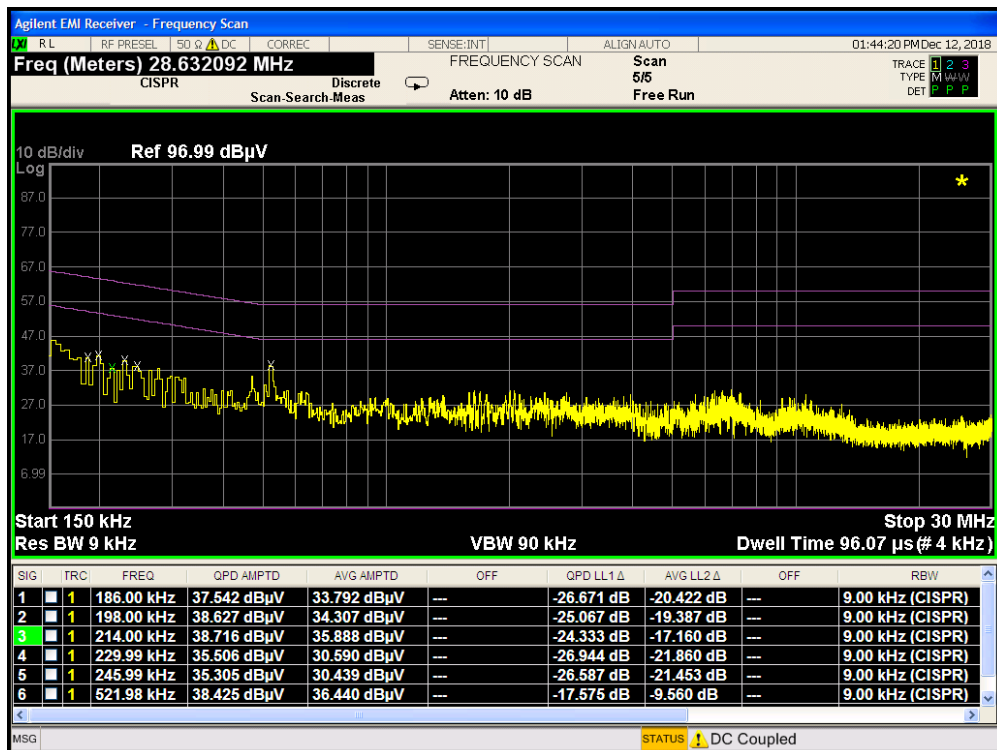


Plot 7-264. Line Conducted Plot with 802.11a UNII Band 1 (N)

FCC ID: ZNFG820UM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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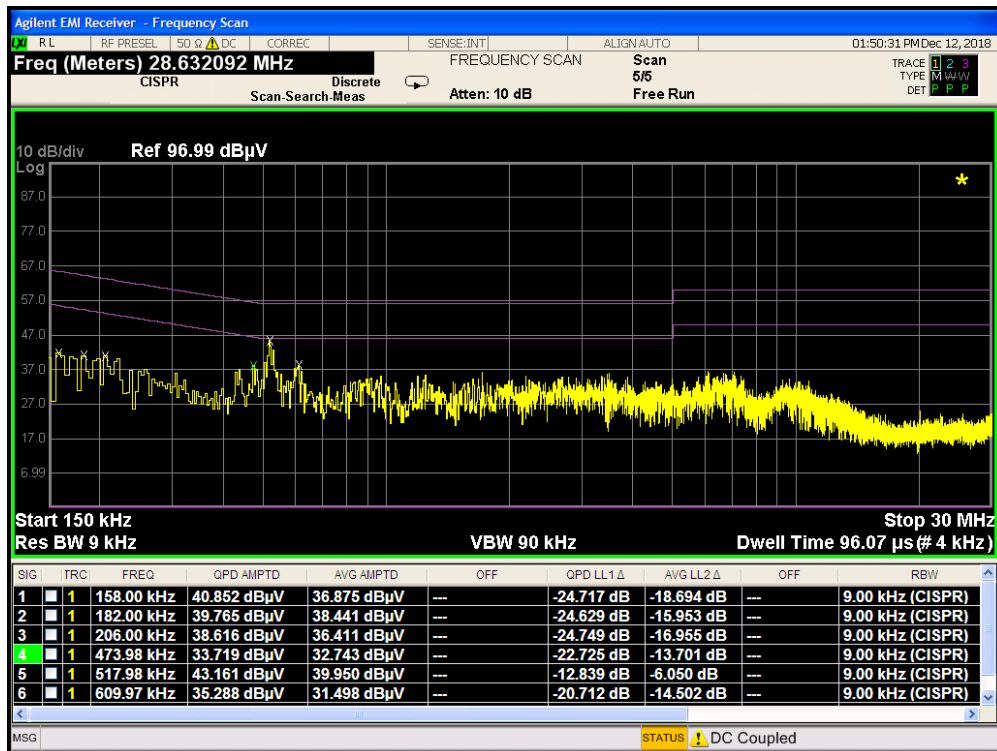


Plot 7-265. Line Conducted Plot with 802.11a UNII Band 2A (L1)

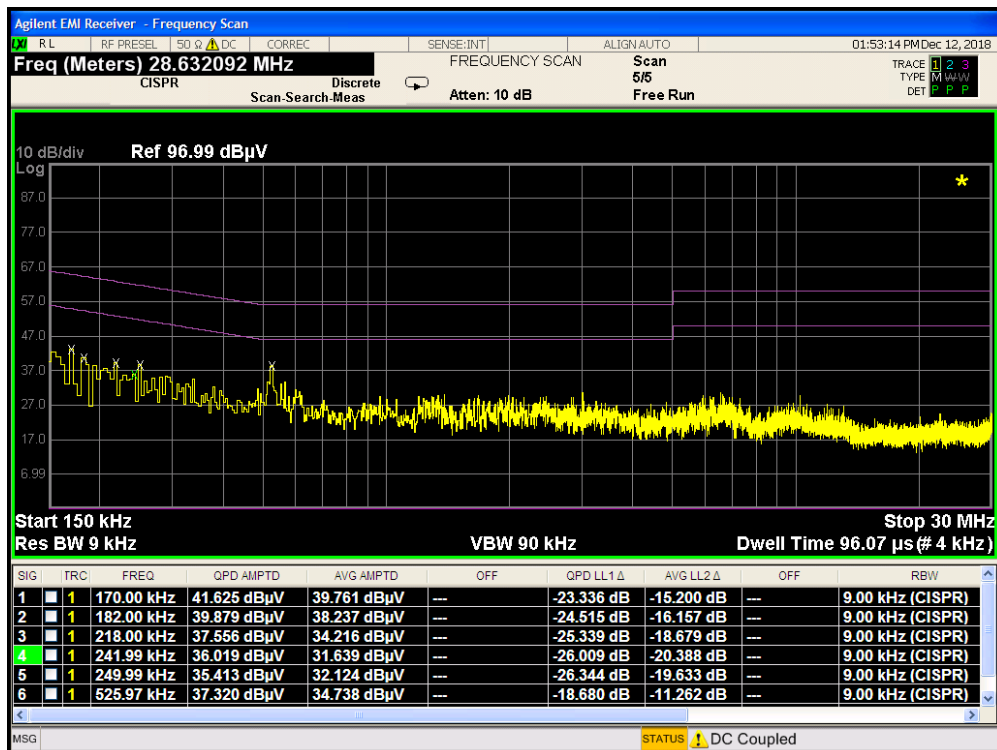


Plot 7-266. Line Conducted Plot with 802.11a UNII Band 2A (N)

FCC ID: ZNFG820UM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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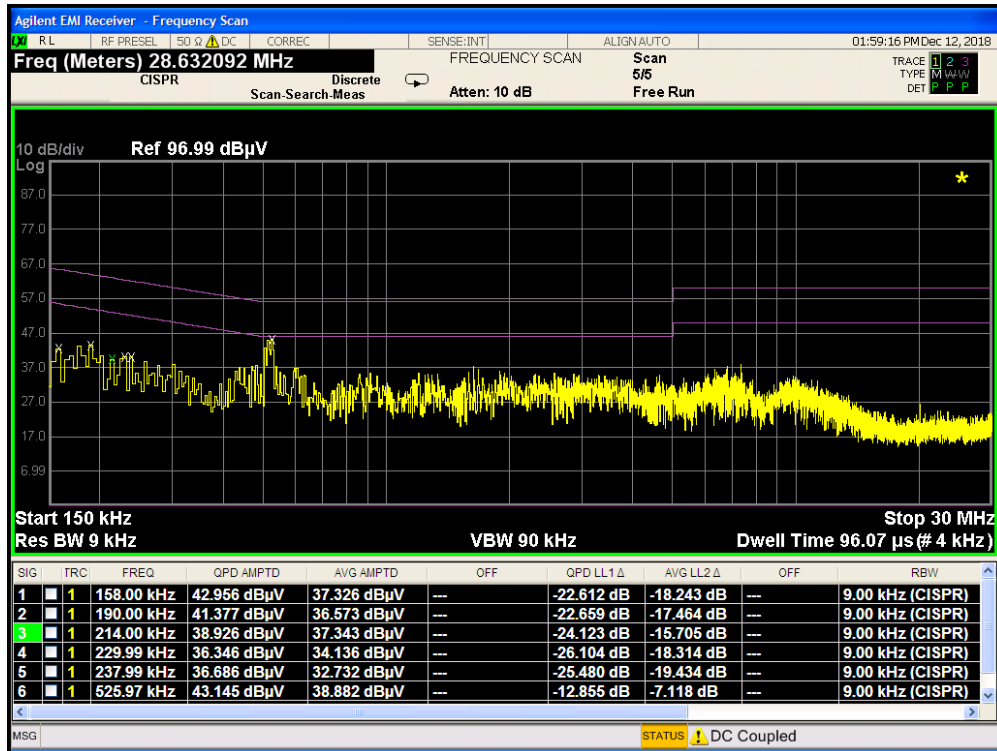


Plot 7-267. Line Conducted Plot with 802.11a UNII Band 2C (L1)

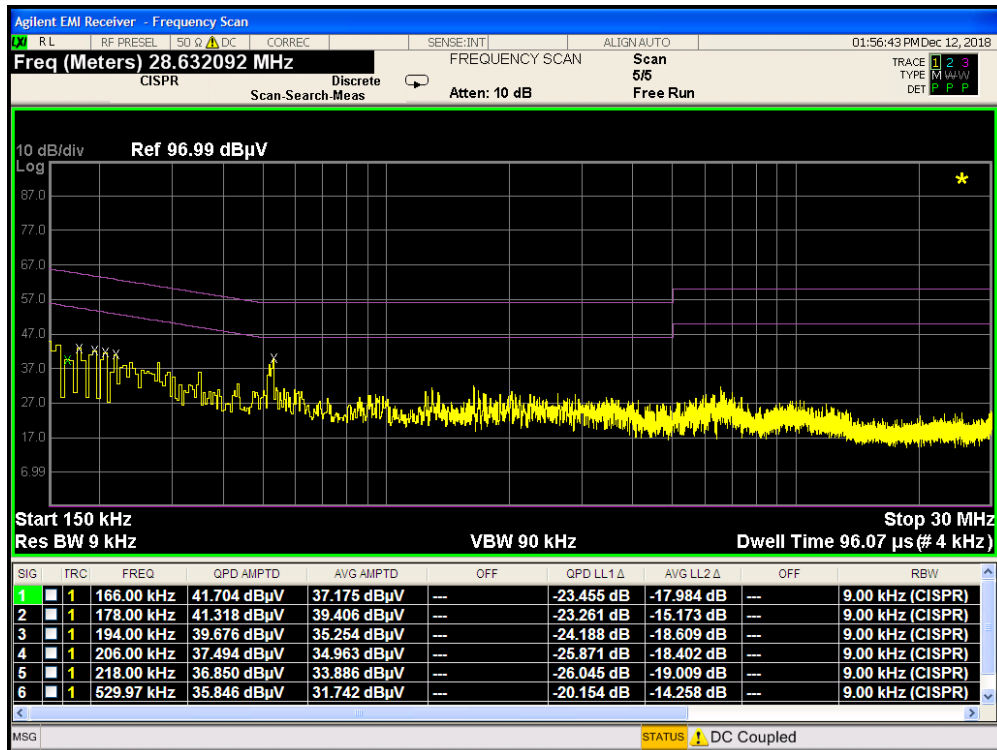


Plot 7-268. Line Conducted Plot with 802.11a UNII Band 2C (N)

FCC ID: ZNFG820UM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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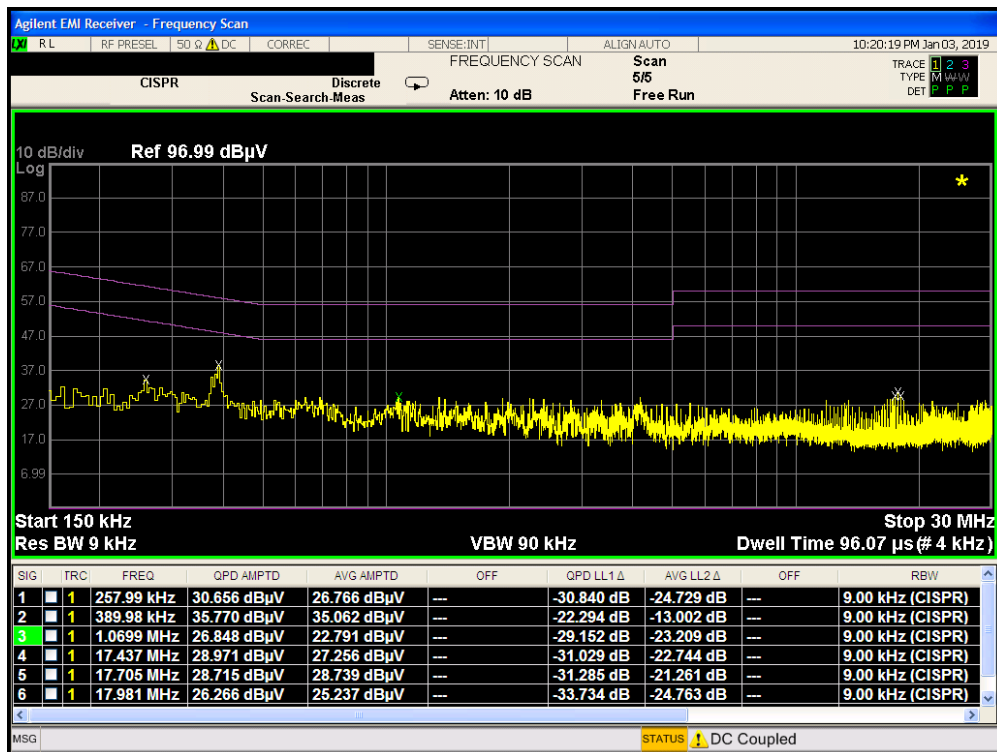


Plot 7-269. Line Conducted Plot with 802.11a UNII Band 3 (L1)

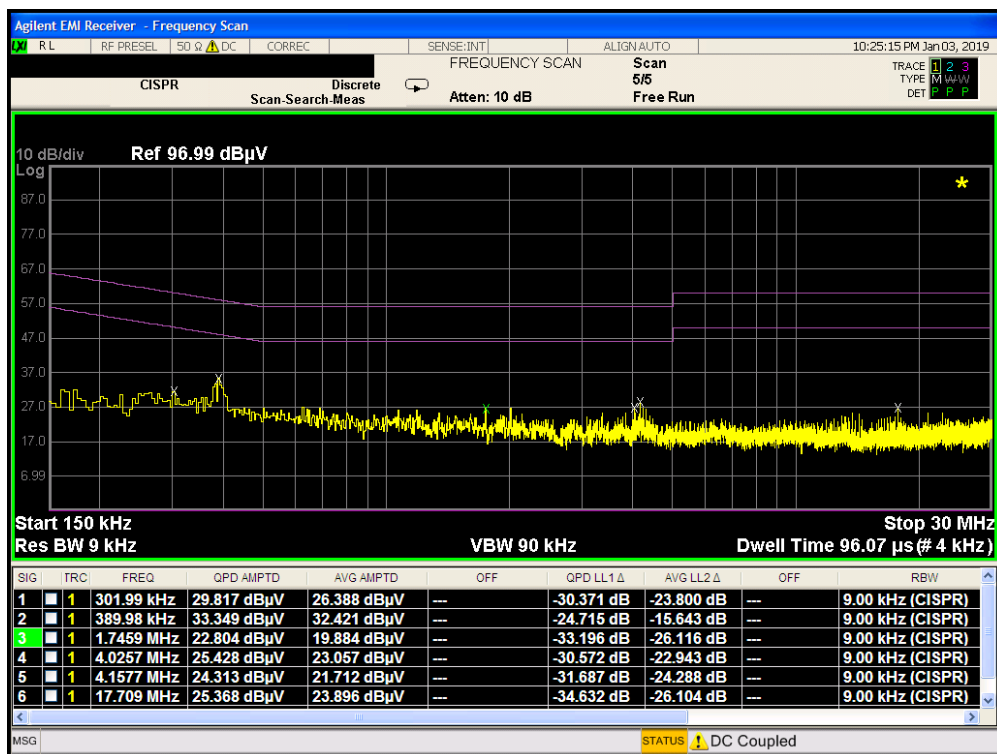


Plot 7-270. Line Conducted Plot with 802.11a UNII Band 3 (N)

FCC ID: ZNFG820UM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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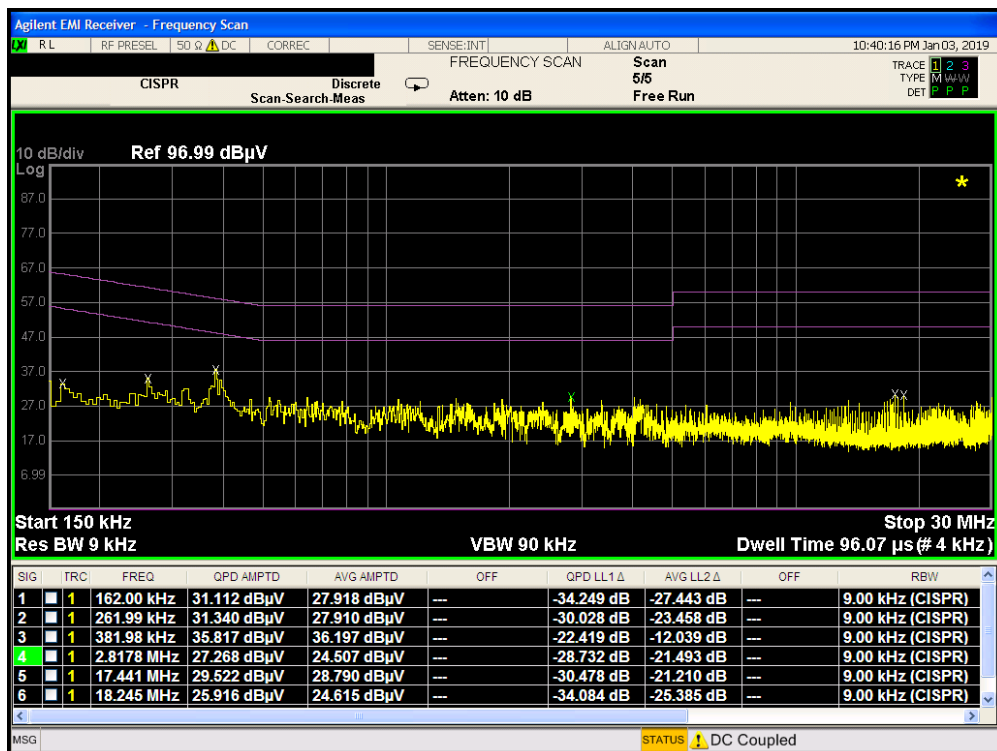


Plot 7-271. Line Conducted Plot with 802.11a UNII Band 1 (L1) on WCP

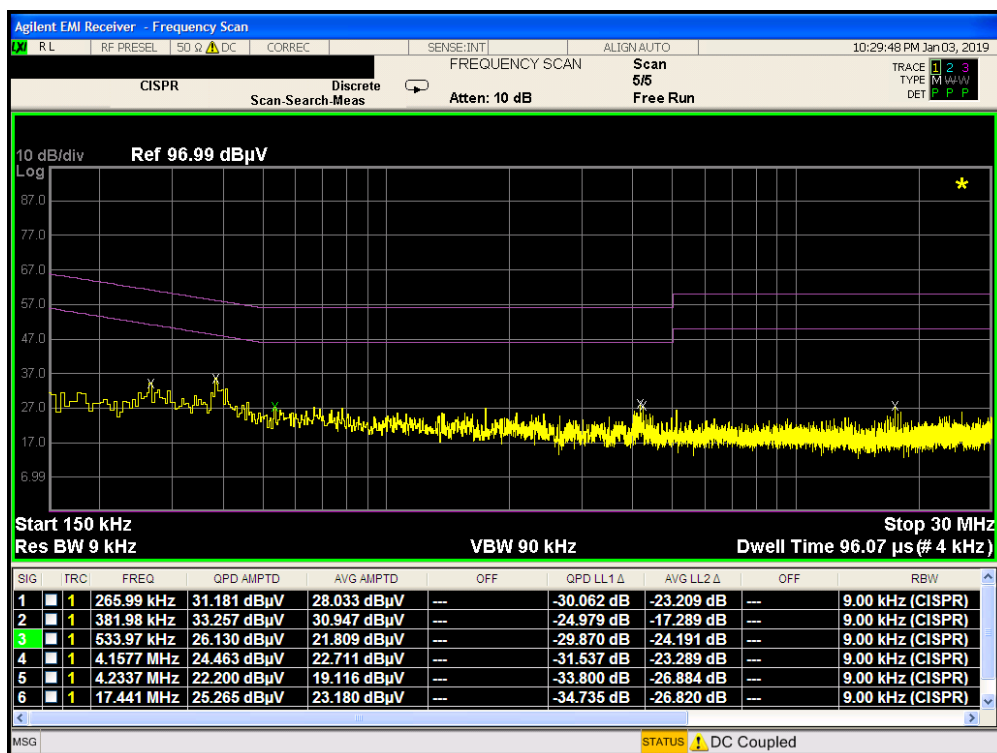


Plot 7-272. Line Conducted Plot with 802.11a UNII Band 1 (N) on WCP

FCC ID: ZNFG820UM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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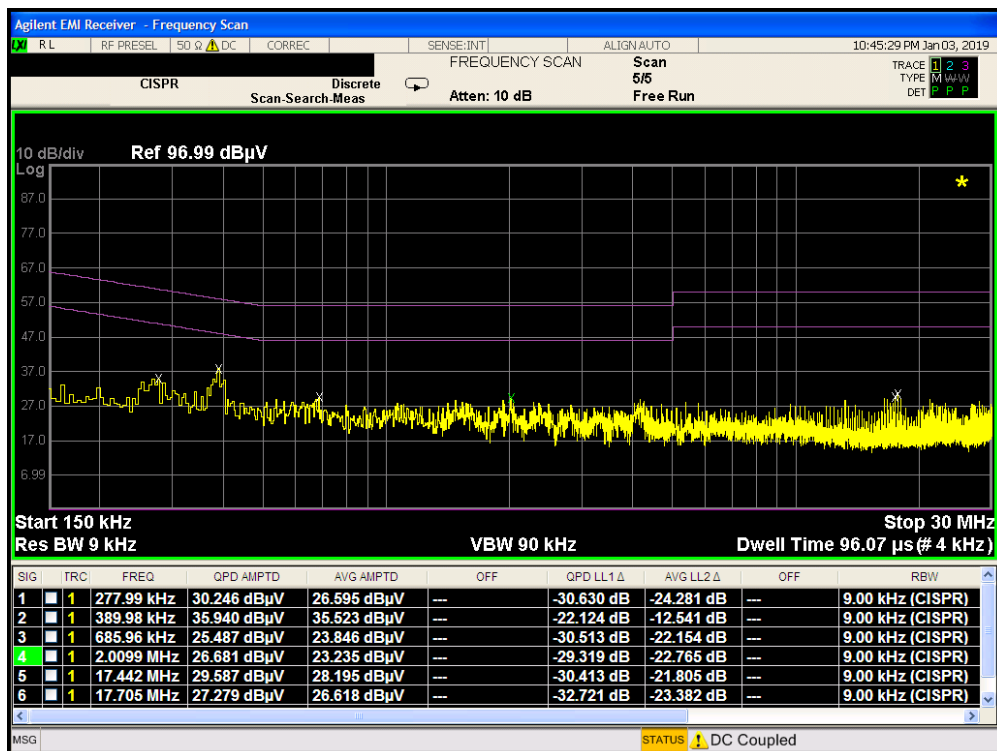


Plot 7-273. Line Conducted Plot with 802.11a UNII Band 2A (L1) on WCP

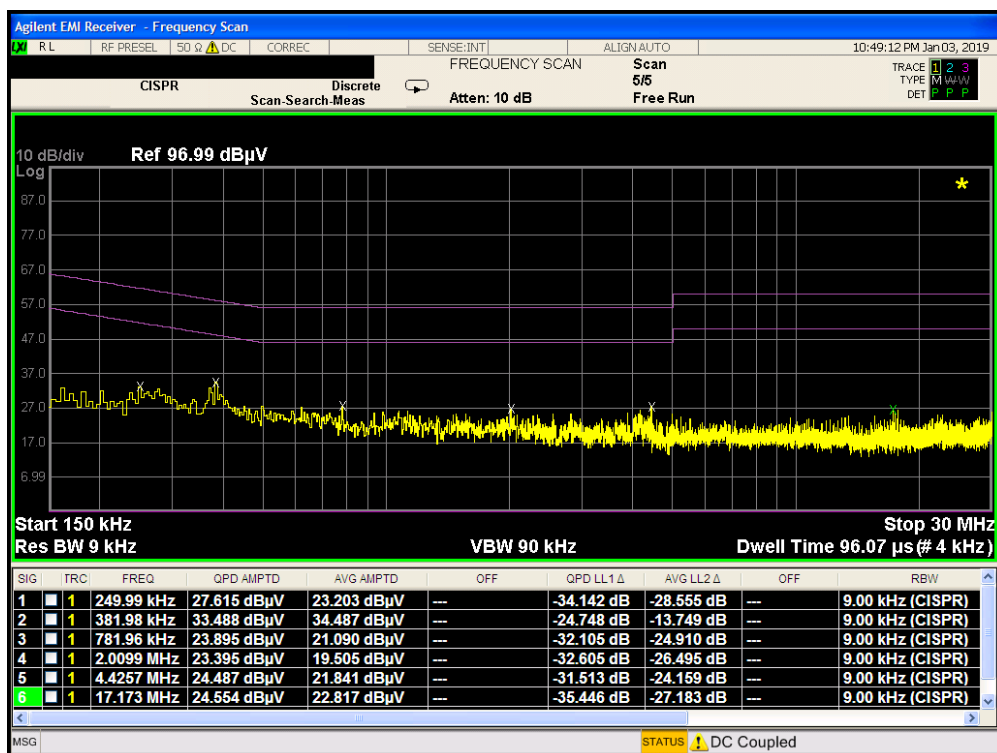


Plot 7-274. Line Conducted Plot with 802.11a UNII Band 2A (N) on WCP

FCC ID: ZNFG820UM	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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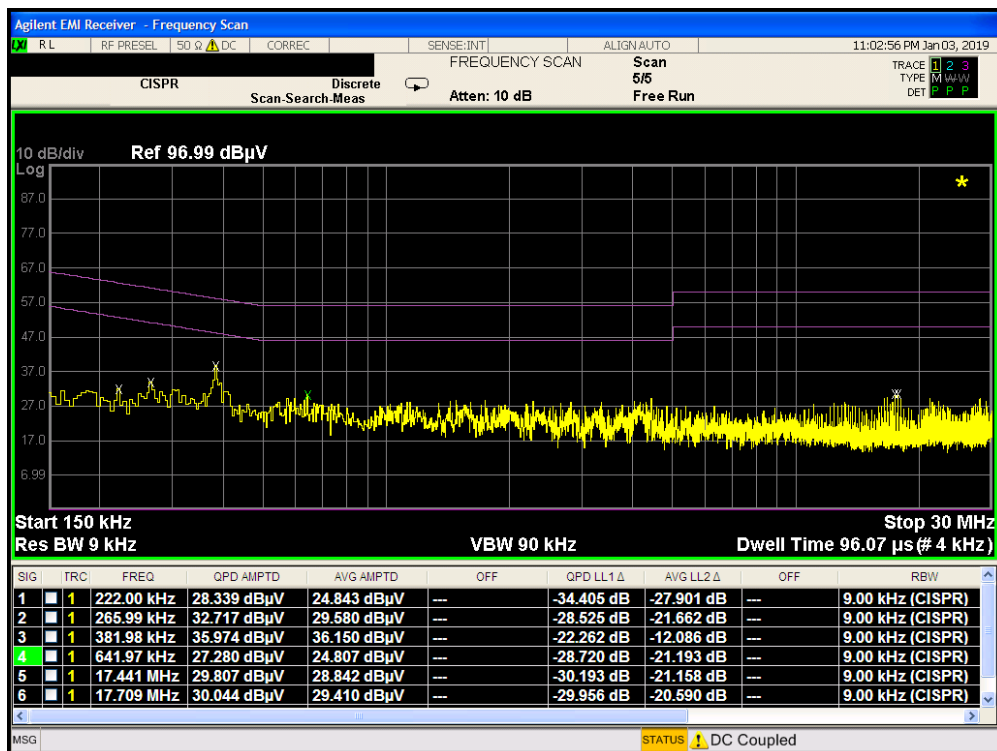


Plot 7-275. Line Conducted Plot with 802.11a UNII Band 2C (L1) on WCP

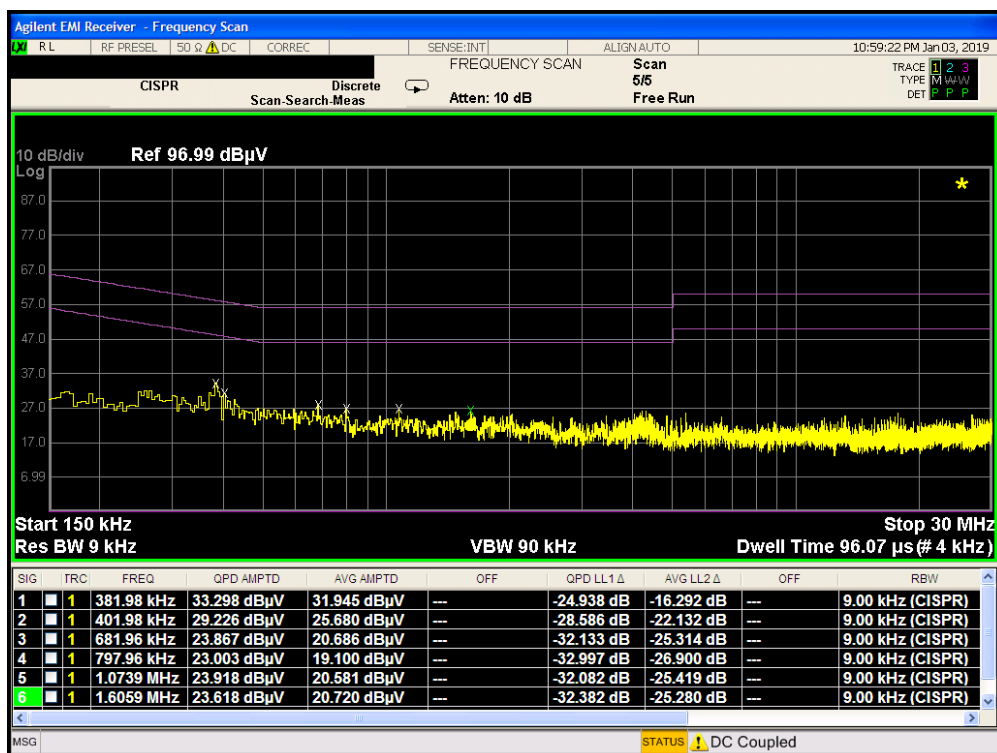


Plot 7-276. Line Conducted Plot with 802.11a UNII Band 2C (N) on WCP

FCC ID: ZNFG820UM	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Plot 7-277. Line Conducted Plot with 802.11a UNII Band 3 (L1) on WCP



Plot 7-278. Line Conducted Plot with 802.11a UNII Band 3 (N) on WCP

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8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFG820UM** 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.

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