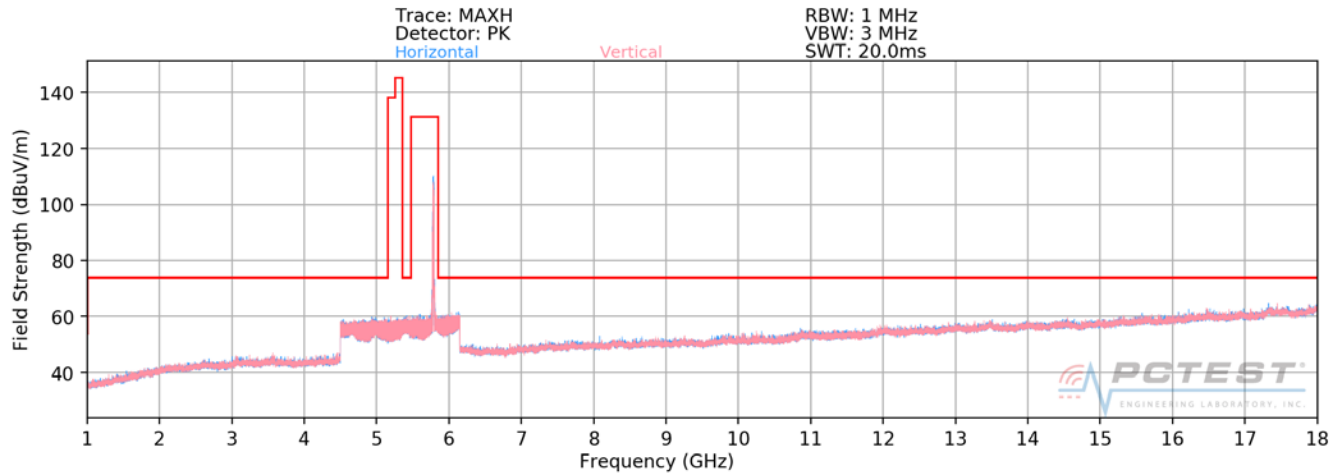
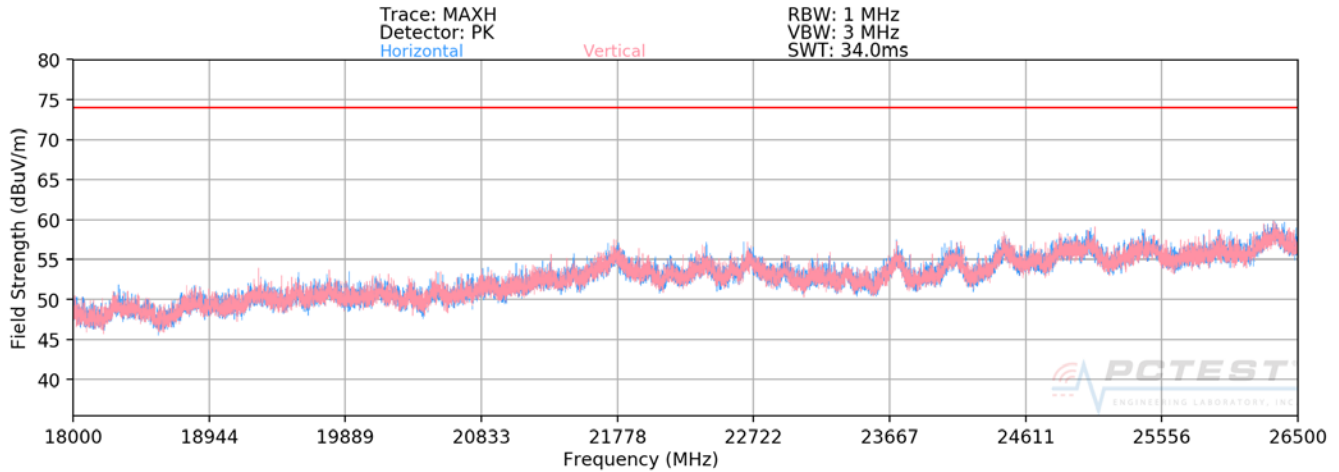




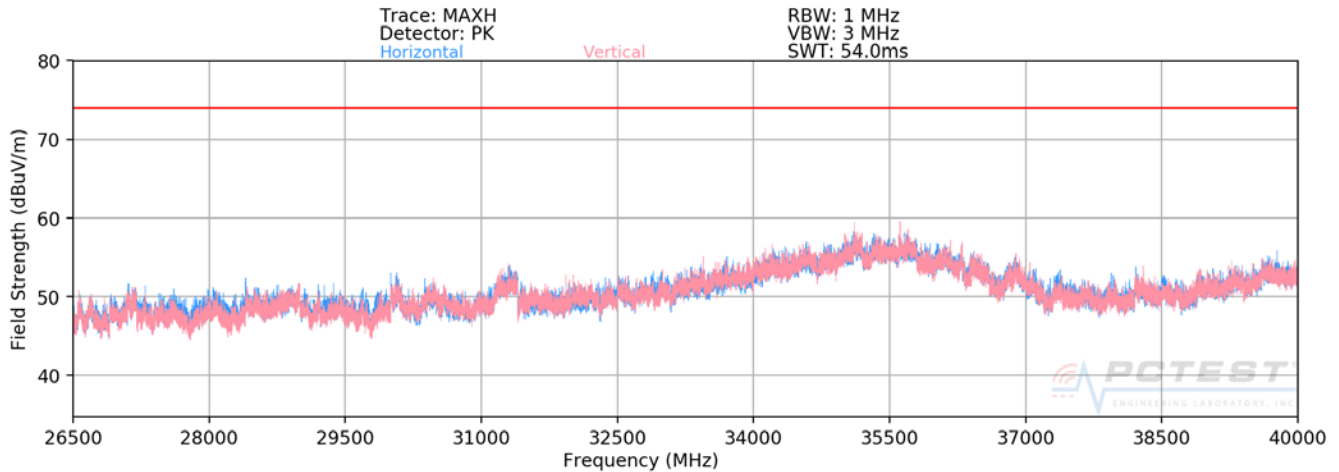
Plot 7-82. Radiated Spurious Plot above 1GHz (802.11a – U3 Ch. 157)

FCC ID: ZNFQ620WA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07- R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset	Page 66 of 90

Radiated Spurious Emissions Measurements (Above 18GHz)



Plot 7-83. Radiated Spurious Plot 18GHz - 26.5GHz (802.11a)



Plot 7-84. Radiated Spurious Plot 26.5GHz - 40GHz (802.11a)

FCC ID: ZNFQ620WA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07- R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset	Page 67 of 90

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	-	-	-69.15	11.80	0.00	49.65	68.20	-18.55
* 15540.00	Average	V	-	-	-82.54	13.52	0.00	37.98	53.98	-16.00
* 15540.00	Peak	V	-	-	-69.25	13.52	0.00	51.27	73.98	-22.71
* 20720.00	Average	V	-	-	-70.76	16.59	-9.54	43.29	53.98	-10.69
* 20720.00	Peak	V	-	-	-59.51	16.59	-9.54	54.54	73.98	-19.44
25900.00	Peak	V	-	-	-57.89	19.49	-9.54	59.05	68.20	-9.15

Table 7-10. Radiated Measurements

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	-	-	-68.53	11.76	0.00	50.23	68.20	-17.97
* 15600.00	Average	V	-	-	-82.77	13.65	0.00	37.88	53.98	-16.10
* 15600.00	Peak	V	-	-	-68.97	13.65	0.00	51.68	73.98	-22.30
* 20800.00	Average	V	-	-	-70.70	17.21	-9.54	43.96	53.98	-10.02
* 20800.00	Peak	V	-	-	-63.30	17.21	-9.54	51.36	73.98	-22.62
26000.00	Peak	V	-	-	-59.67	19.93	-9.54	57.72	68.20	-10.48

Table 7-11. Radiated Measurements

FCC ID: ZNFQ620WA	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07-R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset	
			Page 68 of 90

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	-	-	-69.05	11.84	0.00	49.79	68.20	-18.41
* 15720.00	Average	V	-	-	-83.21	14.87	0.00	38.66	53.98	-15.32
* 15720.00	Peak	V	-	-	-70.09	14.87	0.00	51.78	73.98	-22.20
* 20960.00	Average	V	-	-	-71.02	17.50	-9.54	43.94	53.98	-10.04
* 20960.00	Peak	V	-	-	-64.32	17.50	-9.54	50.64	73.98	-23.34
26200.00	Peak	V	-	-	-61.21	20.16	-9.54	56.41	68.20	-11.79

Table 7-12. Radiated Measurements

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	-	-	-68.56	12.60	0.00	51.04	68.20	-17.16
* 15780.00	Average	V	-	-	-83.81	14.57	0.00	37.76	53.98	-16.22
* 15780.00	Peak	V	-	-	-70.06	14.57	0.00	51.51	73.98	-22.47
* 21040.00	Average	V	-	-	-70.55	17.50	-9.54	44.41	53.98	-9.57
* 21040.00	Peak	V	-	-	-64.62	17.50	-9.54	50.34	73.98	-23.64
26300.00	Peak	V	-	-	-60.64	20.28	-9.54	57.10	68.20	-11.10

Table 7-13. Radiated Measurements

FCC ID: ZNFQ620WA	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07-R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset	Page 69 of 90

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	-	-	-69.08	12.85	0.00	50.77	68.20	-17.43
* 15840.00	Average	V	-	-	-82.93	14.01	0.00	38.08	53.98	-15.90
* 15840.00	Peak	V	-	-	-69.98	14.01	0.00	51.03	73.98	-22.95
* 21120.00	Average	V	-	-	-70.52	17.55	-9.54	44.48	53.98	-9.49
* 21120.00	Peak	V	-	-	-63.96	17.55	-9.54	51.04	73.98	-22.93
26400.00	Peak	V	-	-	-61.72	20.52	-9.54	56.26	68.20	-11.94

Table 7-14. Radiated Measurements

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	-	-	-82.53	13.35	0.00	37.82	53.98	-16.16
* 10640.00	Peak	V	-	-	-69.90	13.35	0.00	50.45	73.98	-23.53
* 15960.00	Average	V	-	-	-82.78	13.60	0.00	37.82	53.98	-16.16
* 15960.00	Peak	V	-	-	-69.45	13.60	0.00	51.15	73.98	-22.83
* 21280.00	Average	V	-	-	-70.15	17.78	-9.54	45.09	53.98	-8.89
* 21280.00	Peak	V	-	-	-63.76	17.78	-9.54	51.48	73.98	-22.50
26600.00	Peak	V	-	-	-56.59	5.35	-9.54	46.22	68.20	-21.98

Table 7-15. Radiated Measurements

FCC ID: ZNFQ620WA		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07-R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset		Page 70 of 90

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	-	-	-82.38	12.67	0.00	37.29	53.98	-16.69
* 11000.00	Peak	V	-	-	-69.22	12.67	0.00	50.45	73.98	-23.53
16500.00	Peak	V	-	-	-70.34	15.10	0.00	51.76	68.20	-16.44
22000.00	Peak	V	-	-	-62.05	18.88	-9.54	54.29	68.20	-13.91
27500.00	Peak	V	-	-	-53.07	3.82	-9.54	48.21	68.20	-19.99

Table 7-16. Radiated Measurements

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]
* 11160.00	Average	V	-	-	-82.28	12.91	0.00	37.63	53.98	-16.35
* 11160.00	Peak	V	-	-	-69.11	12.91	0.00	50.80	73.98	-23.18
16740.00	Peak	V	-	-	-69.96	15.99	0.00	53.03	68.20	-15.17
* 22320.00	Average	V	-	-	-70.16	19.68	-9.54	46.98	53.98	-7.00
* 22320.00	Peak	V	-	-	-63.46	19.68	-9.54	53.68	73.98	-20.30
27900.00	Peak	V	-	-	-55.74	4.99	-9.54	46.71	68.20	-21.49

Table 7-17. Radiated Measurements

FCC ID: ZNFQ620WA	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07-R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset	Page 71 of 90

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	-	-	-82.62	13.48	0.00	37.86	53.98	-16.12
* 11440.00	Peak	V	-	-	-69.14	13.48	0.00	51.34	73.98	-22.64
17160.00	Peak	V	-	-	-70.06	17.73	0.00	54.67	68.20	-13.53
* 22880.00	Average	V	-	-	-71.16	19.78	-9.54	46.08	53.98	-7.90
* 22880.00	Peak	V	-	-	-64.66	19.78	-9.54	52.58	73.98	-21.40
28600.00	Peak	V	-	-	-52.57	4.43	-9.54	49.32	68.20	-18.88

Table 7-18. Radiated Measurements

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	-	-	-82.63	13.46	0.00	37.83	53.98	-16.15
* 11490.00	Peak	V	-	-	-66.57	13.46	0.00	53.89	73.98	-20.09
17235.00	Peak	V	-	-	-66.12	18.18	0.00	59.06	68.20	-9.14
* 22980.00	Average	V	-	-	-71.12	18.96	-9.54	45.30	53.98	-8.68
* 22980.00	Peak	V	-	-	-63.87	18.96	-9.54	52.55	73.98	-21.43
28725.00	Peak	V	-	-	-55.05	4.27	-9.54	46.68	68.20	-21.52

Table 7-19. Radiated Measurements

FCC ID: ZNFQ620WA	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07-R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset	Page 72 of 90

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	-	-	-81.95	13.44	0.00	38.49	53.98	-15.49
* 11570.00	Peak	V	-	-	-65.38	13.44	0.00	55.06	73.98	-18.92
17355.00	Peak	V	-	-	-67.17	19.58	0.00	59.41	68.20	-8.79
23140.00	Peak	V	-	-	-63.24	19.12	-9.54	53.34	68.20	-14.86
28925.00	Peak	V	-	-	-54.03	4.82	-9.54	48.25	68.20	-19.95

Table 7-20. Radiated Measurements

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	-	-	-82.31	14.00	0.00	38.69	53.98	-15.29
* 11650.00	Peak	V	-	-	-65.63	14.00	0.00	55.37	73.98	-18.61
17475.00	Peak	V	-	-	-66.23	19.54	0.00	60.31	68.20	-7.89
23300.00	Peak	V	-	-	-63.73	18.21	-9.54	51.94	68.20	-16.26
29125.00	Peak	V	-	-	-52.50	2.68	-9.54	47.64	68.20	-20.56

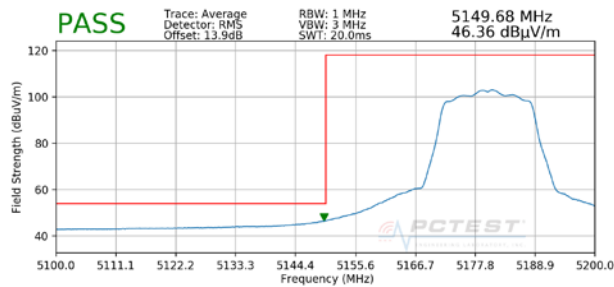
Table 7-21. Radiated Measurements

FCC ID: ZNFQ620WA		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07-R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset		Page 73 of 90

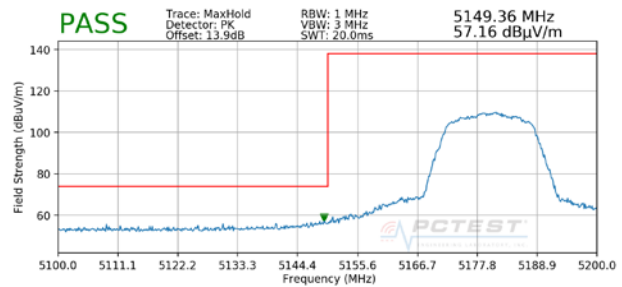
7.6.2 Radiated Band Edge Measurements (20MHz BW)

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

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

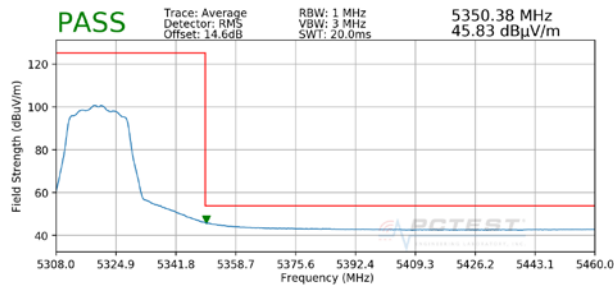


Plot 7-85. Radiated Lower Band Edge Plot (Average – UNII Band 1)

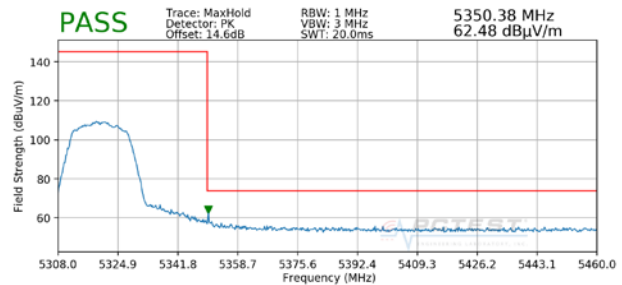


Plot 7-86. Radiated Lower Band Edge Plot (Peak – UNII Band 1)

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



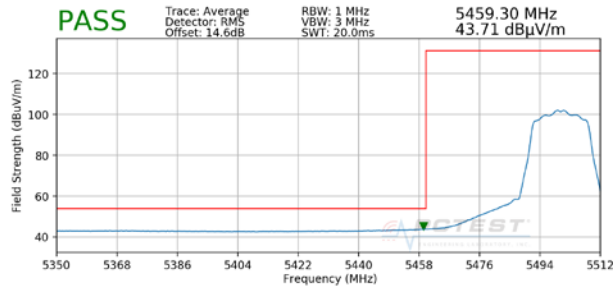
Plot 7-87. Radiated Upper Band Edge Plot (Average – UNII Band 2A)



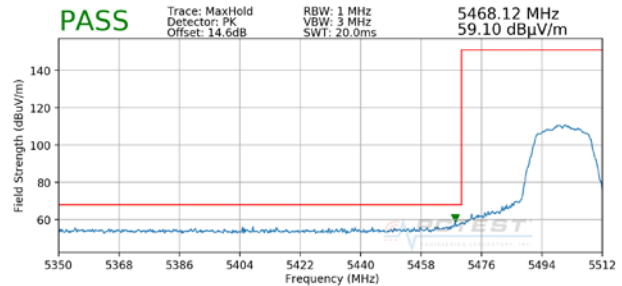
Plot 7-88. Radiated Upper Band Edge Plot (Peak – UNII Band 2A)

FCC ID: ZNFQ620WA	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07-R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset	Page 74 of 90

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

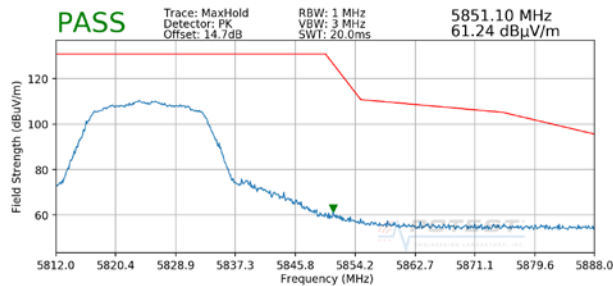


Plot 7-89. Radiated Lower Band Edge Plot (Average - UNII Band 2C)



Plot 7-90. Radiated Lower Band Edge Plot (Peak - UNII Band 2C)

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



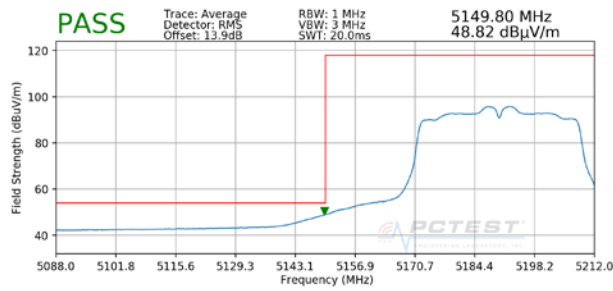
Plot 7-91. Radiated Upper Band Edge Plot (Peak - UNII Band 3)

FCC ID: ZNFQ620WA	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07-R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset	Page 75 of 90

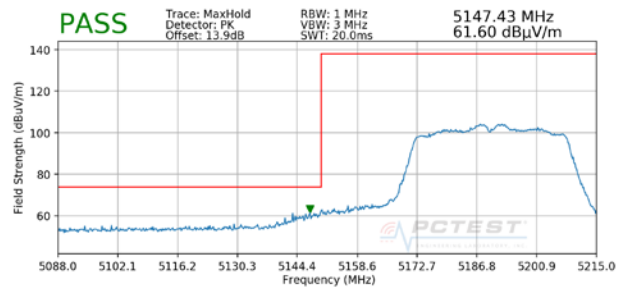
7.6.3 Radiated Band Edge Measurements (40MHz BW)

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

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

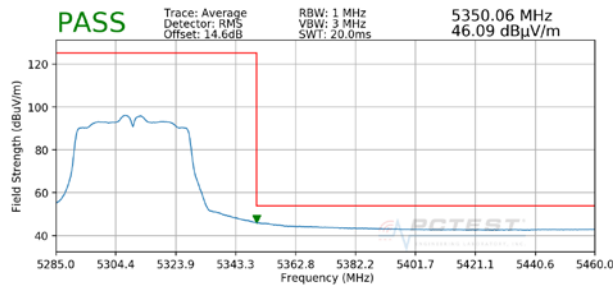


Plot 7-92. Radiated Lower Band Edge Plot (Average – UNII Band 1)

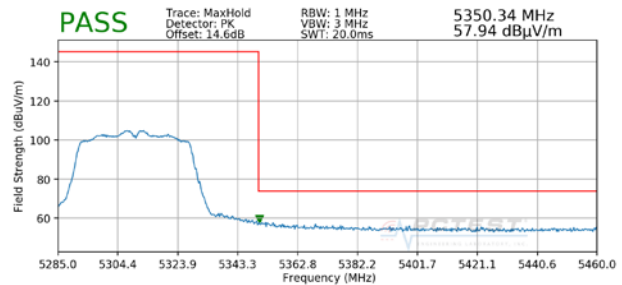


Plot 7-93. Radiated Lower Band Edge Plot (Peak – UNII Band 1)

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



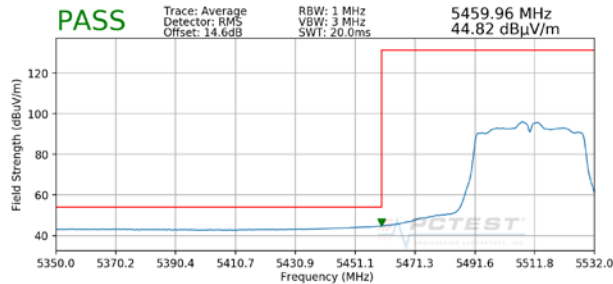
Plot 7-94. Radiated Upper Band Edge Plot (Average – UNII Band 2A)



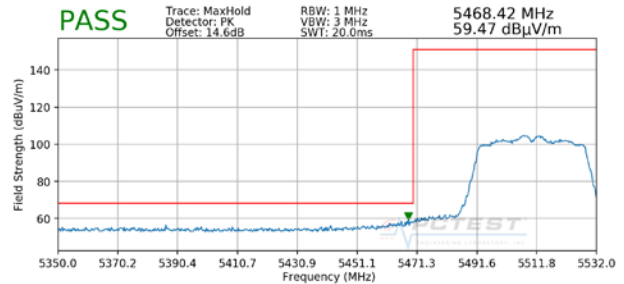
Plot 7-95. Radiated Upper Band Edge Plot (Peak – UNII Band 2A)

FCC ID: ZNFQ620WA	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07-R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset	Page 76 of 90

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

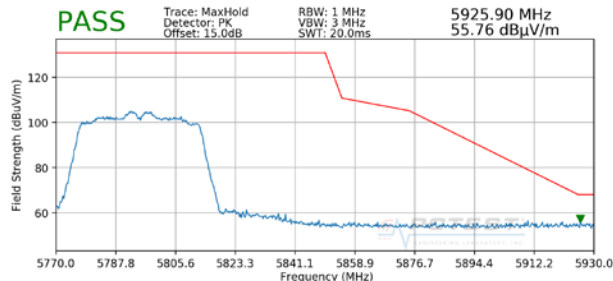


Plot 7-96. Radiated Lower Band Edge Plot (Average - UNII Band 2C)



Plot 7-97. 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: 5795MHz
Channel: 159



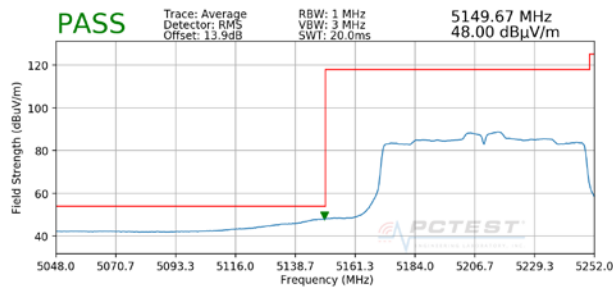
Plot 7-98. Radiated Upper Band Edge Plot (Peak - UNII Band 3)

FCC ID: ZNFQ620WA	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07-R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset	Page 77 of 90

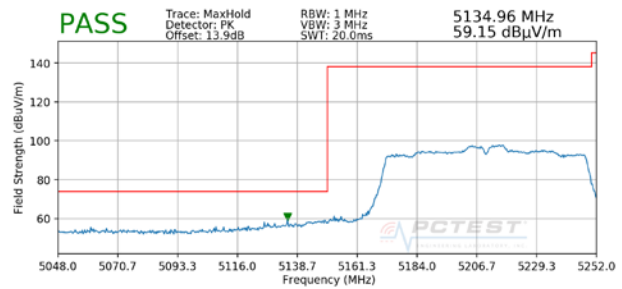
7.6.4 Radiated Band Edge Measurements (80MHz BW)

§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

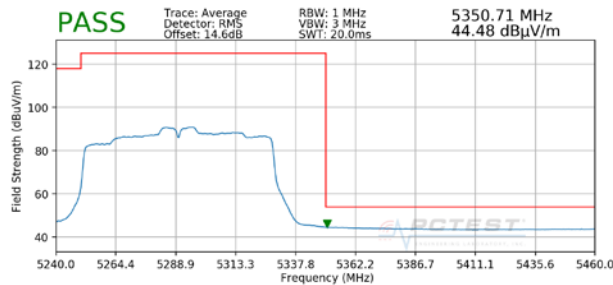


Plot 7-99. Radiated Lower Band Edge Plot (Average – UNII Band 1)

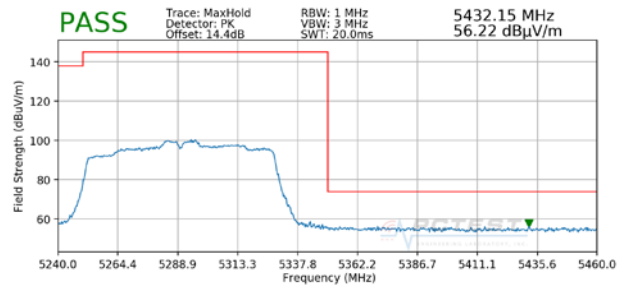


Plot 7-100. Radiated Lower Band Edge Plot (Peak – UNII Band 1)

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



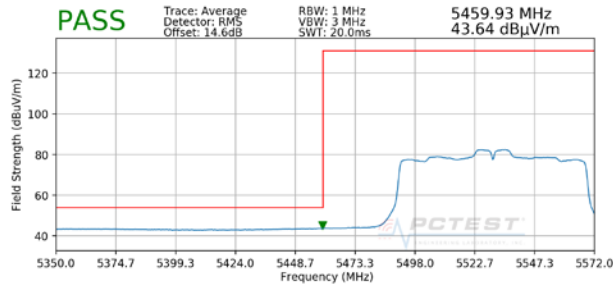
Plot 7-101. Radiated Upper Band Edge Plot (Average – UNII Band 2A)



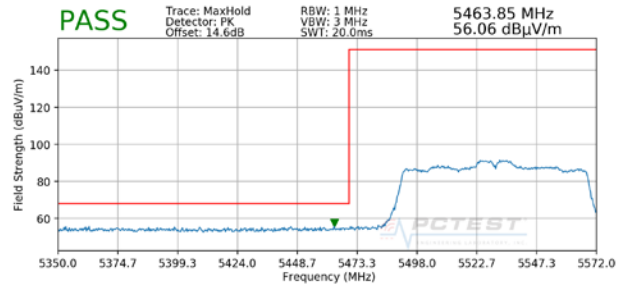
Plot 7-102. Radiated Upper Band Edge Plot (Peak – UNII Band 2A)

FCC ID: ZNFQ620WA	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07-R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset	Page 78 of 90

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

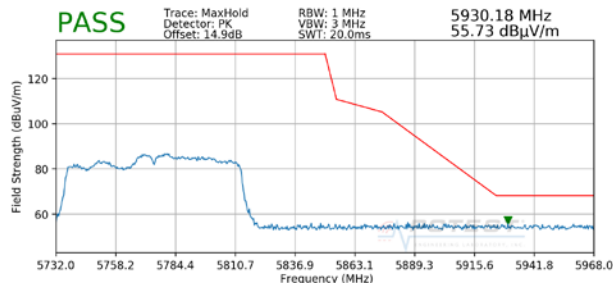


Plot 7-103. Radiated Lower Band Edge Plot (Average – UNII Band 2C)



Plot 7-104. 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 7-105. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFQ620WA	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07-R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset		Page 79 of 90

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 7-22 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 7-22. 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: ZNFQ620WA		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07- R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset		Page 80 of 90

Test Setup

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

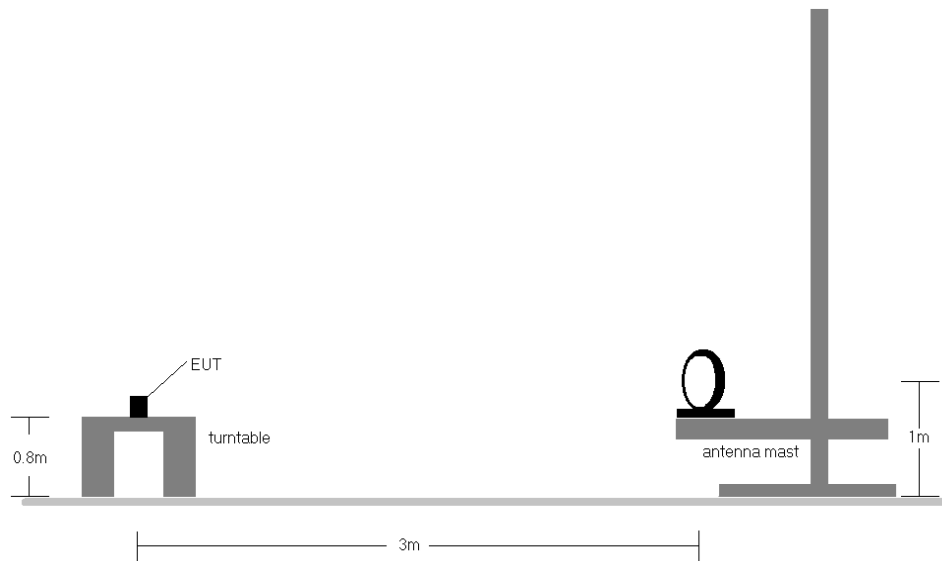


Figure 7-6. Radiated Test Setup < 30MHz

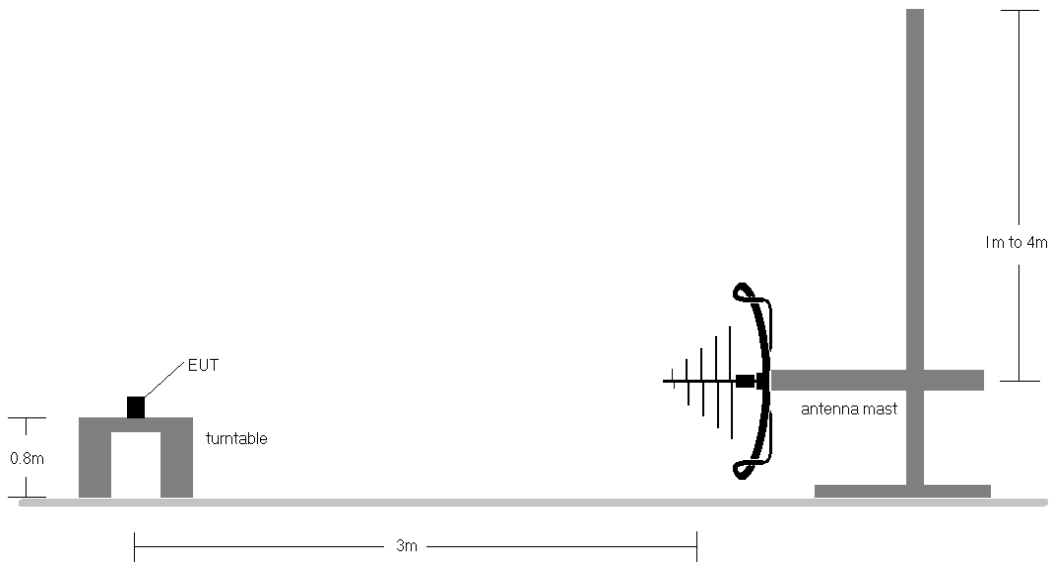


Figure 7-7. Radiated Test Setup < 1GHz

FCC ID: ZNFQ620WA	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07-R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset	Page 81 of 90

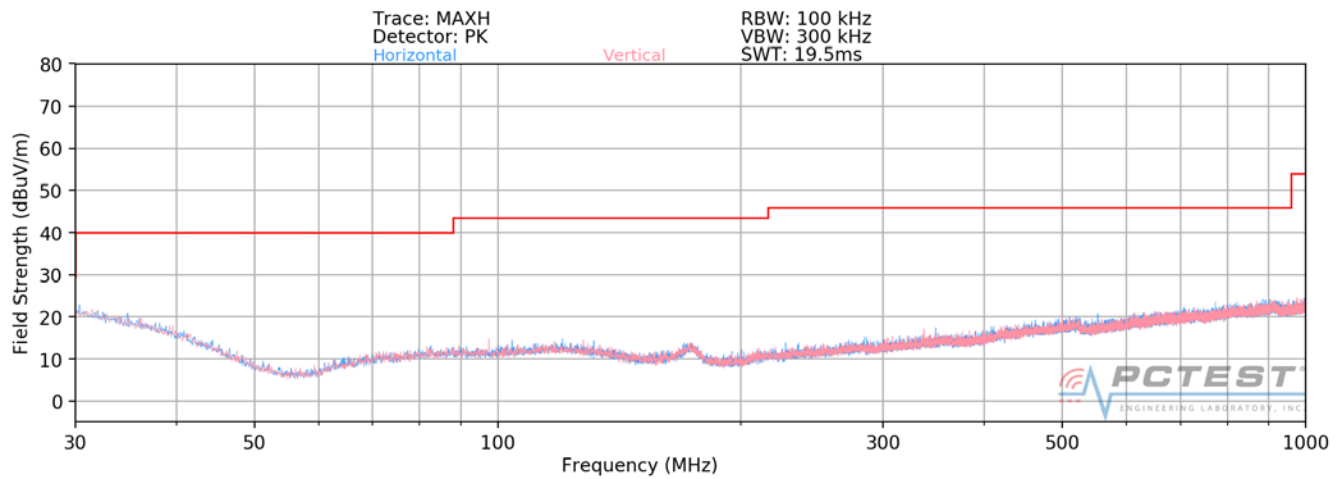
Test Notes

1. All emissions lying in restricted bands specified in §15.205 and RSS-Gen (8.10) are below the limit shown in Table 7-22.
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.

FCC ID: ZNFQ620WA		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07- R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset		Page 82 of 90

Radiated Spurious Emissions Measurements (Below 1GHz)

§15.209; RSS-Gen [8.9]



Plot 7-106. Radiated Spurious Plot below 1GHz (802.11a – U3 Ch. 157)

FCC ID: ZNFQ620WA	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1909120153-07- R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset		Page 83 of 90

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 7-23. 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: ZNFQ620WA	 MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07-R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset	Page 84 of 90

Test Setup

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

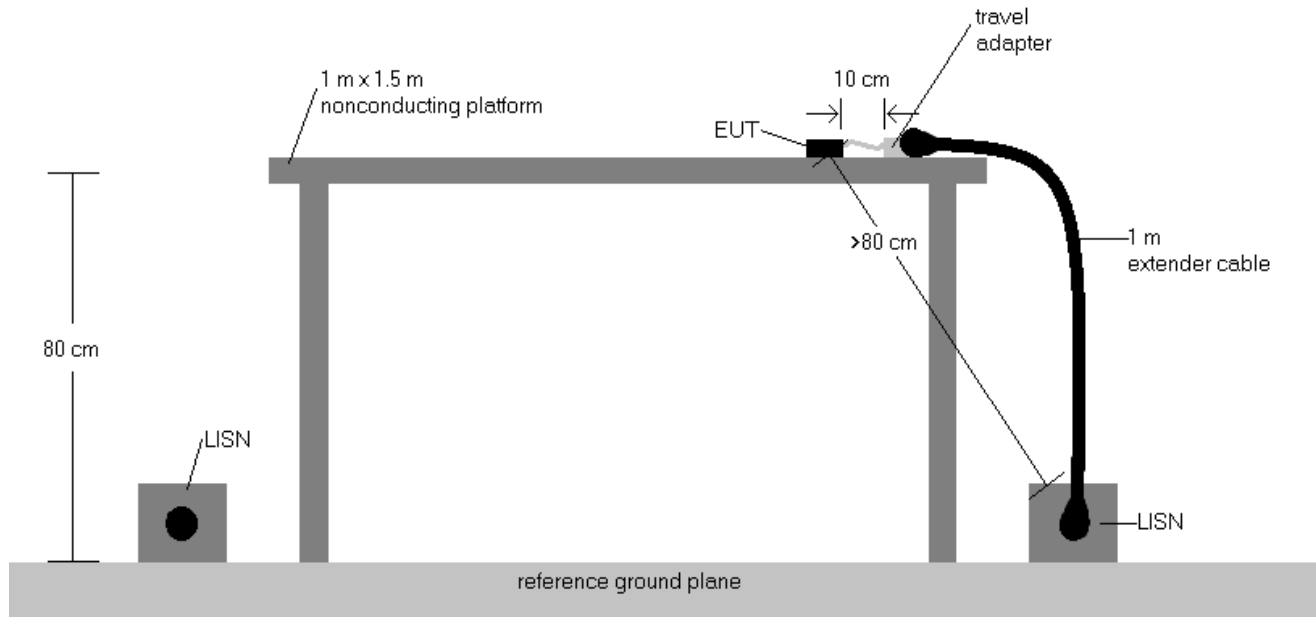
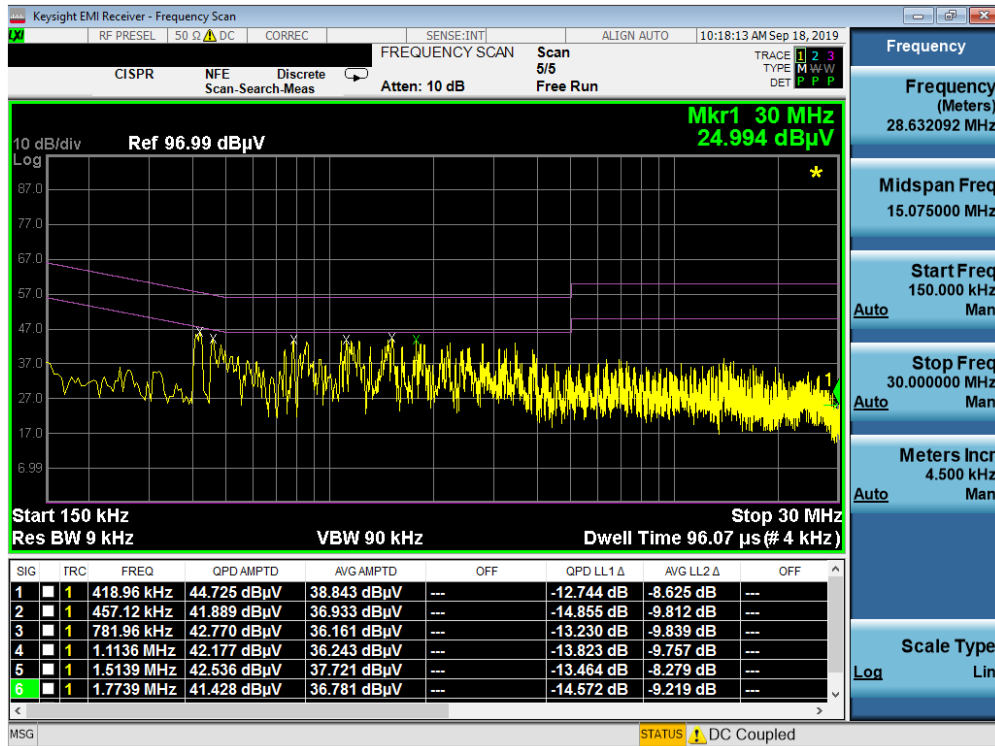


Figure 7-8. Test Instrument & Measurement Setup

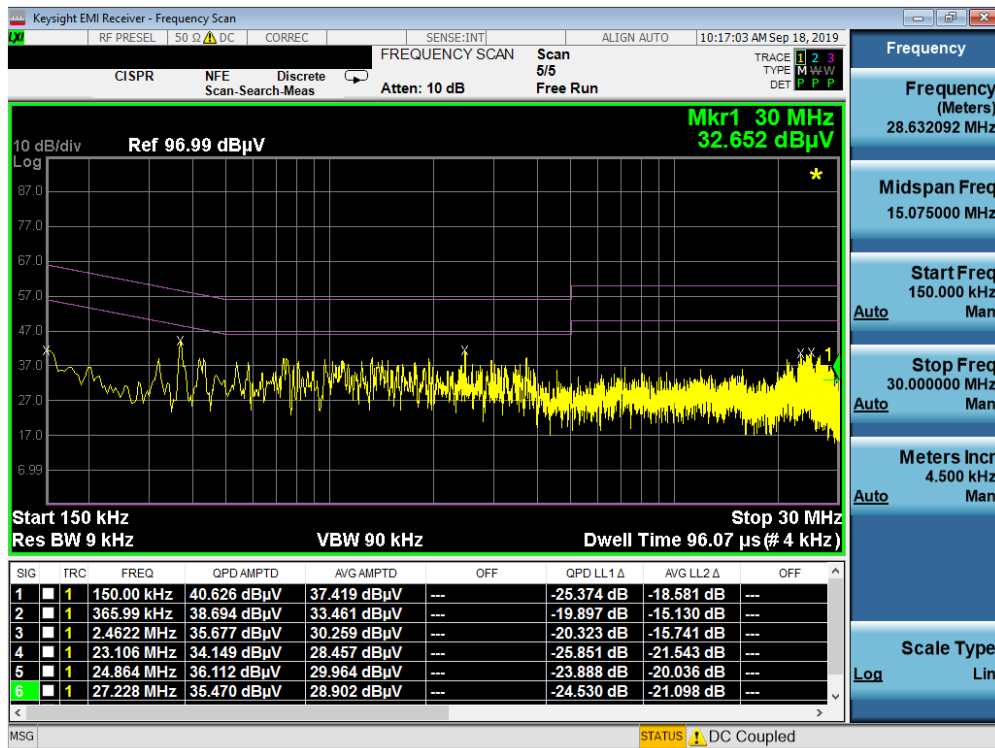
Test Notes

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.

FCC ID: ZNFQ620WA	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07- R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset		Page 85 of 90

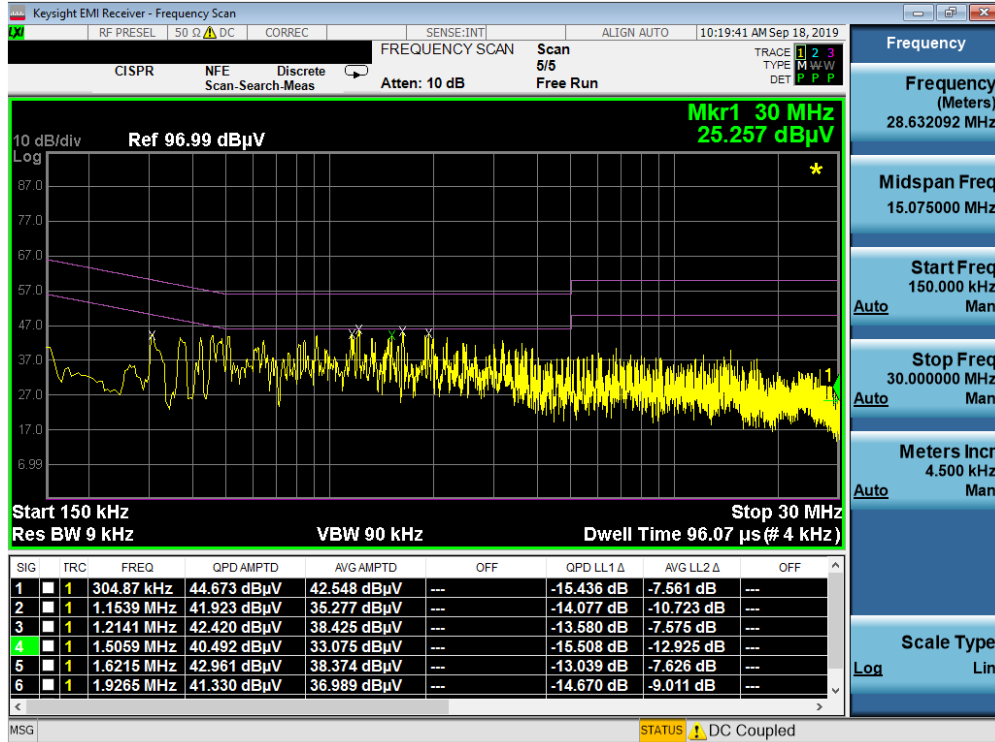


Plot 7-107. Line Conducted Plot with 802.11a UNII Band 1 (L1)

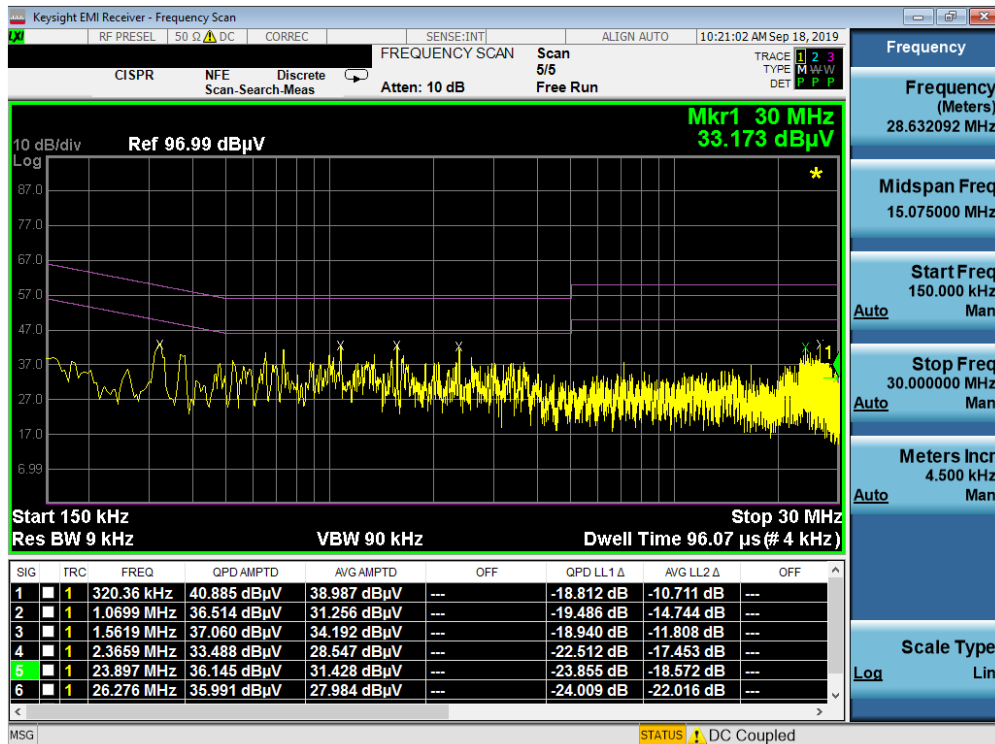


Plot 7-108. Line Conducted Plot with 802.11a UNII Band 1 (N)

FCC ID: ZNFQ620WA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07-R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset	
			Page 86 of 90

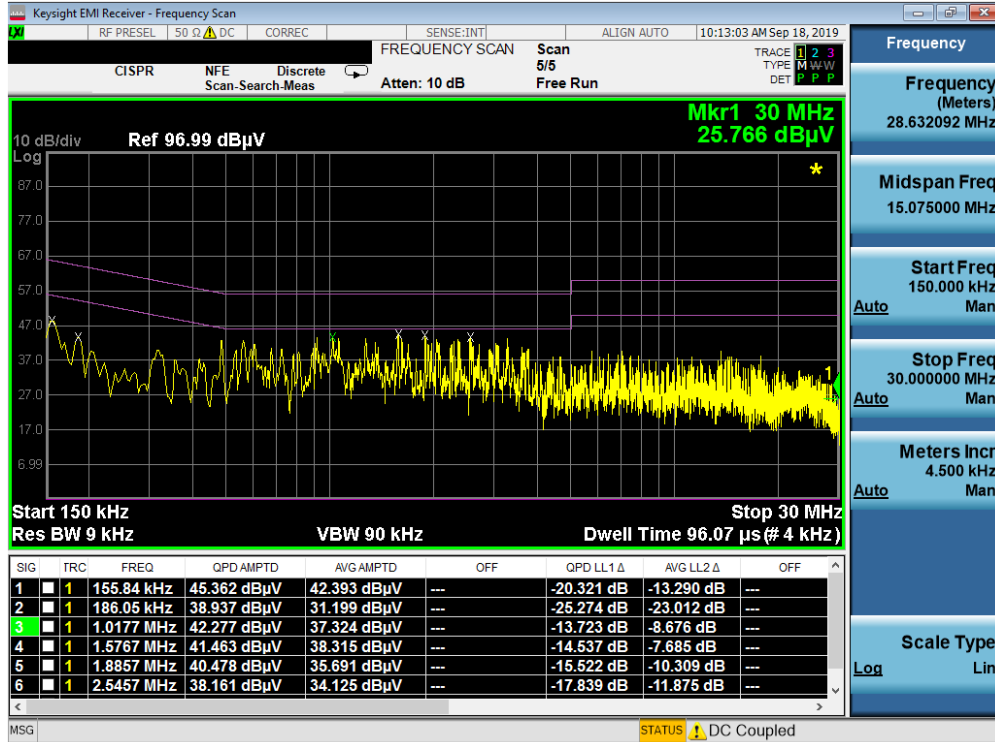


Plot 7-109. Line Conducted Plot with 802.11a UNII Band 2A (L1)

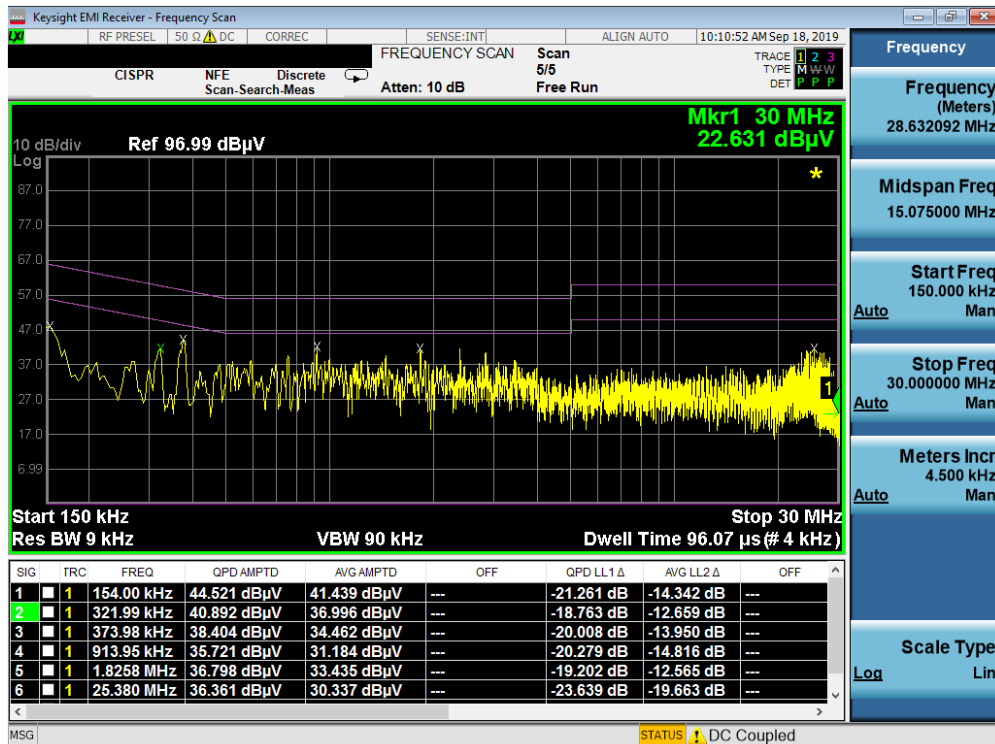


Plot 7-110. Line Conducted Plot with 802.11a UNII Band 2A (N)

FCC ID: ZNFQ620WA	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07-R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset	
			Page 87 of 90

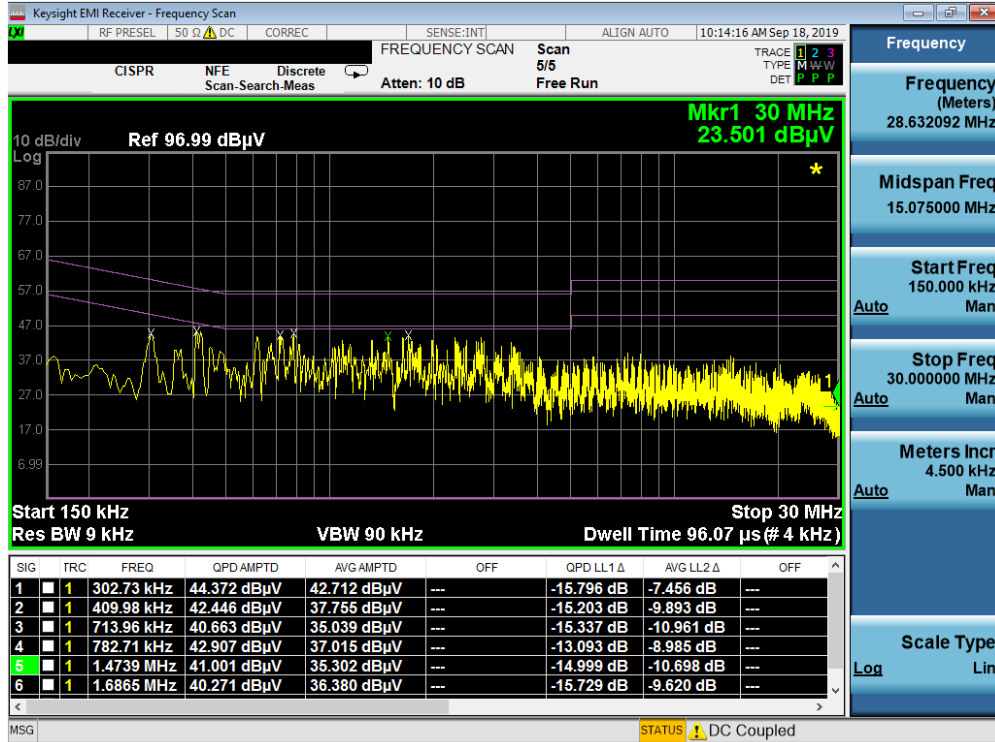


Plot 7-111. Line Conducted Plot with 802.11a UNII Band 2C (L1)

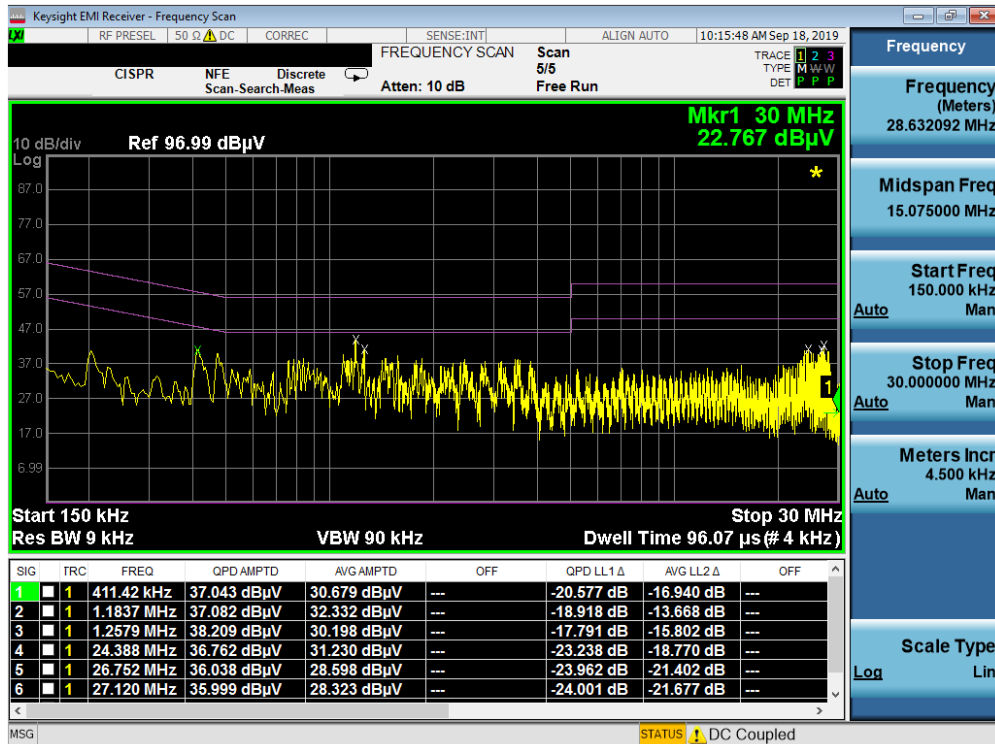


Plot 7-112. Line Conducted Plot with 802.11a UNII Band 2C (N)

FCC ID: ZNFQ620WA	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1909120153-07-R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset		Page 88 of 90



Plot 7-113. Line Conducted Plot with 802.11a UNII Band 3 (L1)



Plot 7-114. Line Conducted Plot with 802.11a UNII Band 3 (N)

FCC ID: ZNFQ620WA	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1909120153-07-R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset		Page 89 of 90

8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFQ620WA** 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.

FCC ID: ZNFQ620WA		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1909120153-07- R1.ZNF	Test Dates: 9/12 - 10/2/2019	EUT Type: Portable Handset		Page 90 of 90