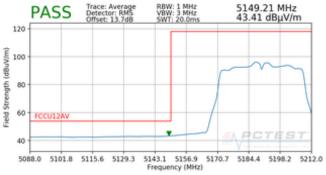
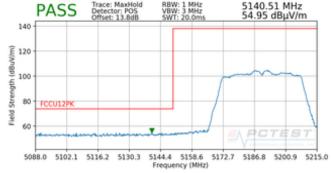


7.7.8 Antenna-2 Radiated Band Edge Measurements (40MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

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

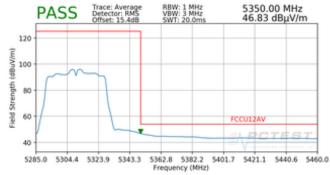


Plot 7-219. Radiated Lower Band Edge Plot (Average - UNII Band 1)

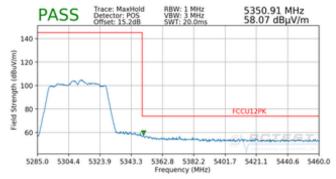


Plot 7-220. Radiated Lower Band Edge Plot (Peak - UNII Band 1)

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



Plot 7-221. Radiated Upper Band Edge Plot (Average - UNII Band 2A)



Plot 7-222. Radiated Upper Band Edge Plot (Peak - UNII Band 2A)

FCC ID: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	① LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 154 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset		Page 154 01 166



Worst Case Mode:

Worst Case Transfer Rate:

Distance of Measurements:
Operating Frequency:

Channel:

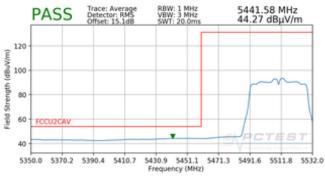
802.11n

MCS0

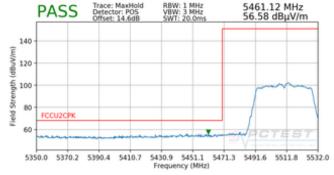
3 Meters

5510MHz

102



Plot 7-223. Radiated Lower Band Edge Plot (Average – UNII Band 2C)



Plot 7-224. Radiated Lower Band Edge Plot (Peak – UNII Band 2C)

Worst Case Mode:
Worst Case Transfer Rate:
Distance of Measurements:
Operating Frequency:
Channel:

802.11n

MCS0

3 Meters

5795MHz

159

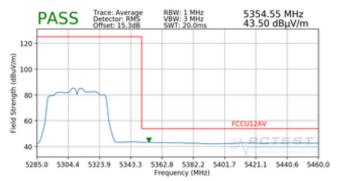


Plot 7-225. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

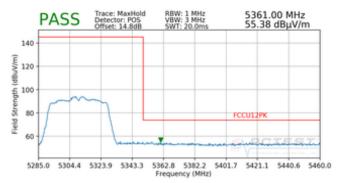
FCC ID: ZNFG710TM	PETEST (NEINTENNE TATORATORY, ORC.	MEASUREMENT REPORT (CERTIFICATION) LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 155 of 196
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset	Page 155 of 186



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



Plot 7-226. Radiated Band Edge Plot (Average - WCP)



Plot 7-227. Radiated Band Edge Plot (Peak - WCP)

FCC ID: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION) LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 156 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset	Fage 150 01 160

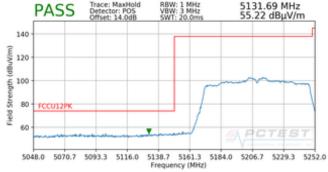


7.7.9 Antenna-2 Radiated Band Edge Measurements (80MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

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

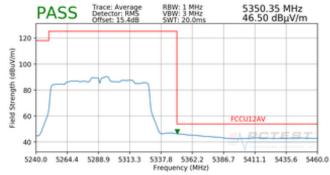


Plot 7-228. Radiated Lower Band Edge Plot (Average - UNII Band 1)

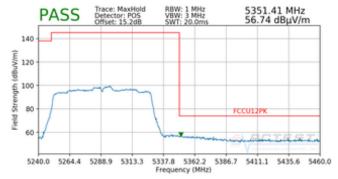


Plot 7-229. Radiated Lower Band Edge Plot (Peak - UNII Band 1)

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



Plot 7-230. Radiated Upper Band Edge Plot (Average - UNII Band 2A)



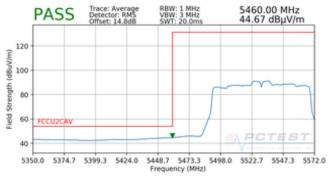
Plot 7-231. Radiated Upper Band Edge Plot (Peak - UNII Band 2A)

FCC ID: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	① LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 157 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset		Page 157 Of 166

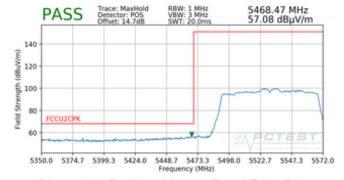


Worst Case Mode:
Worst Case Transfer Rate:
Distance of Measurements:
Operating Frequency:
Channel:

802.11ac
MCS0
3 Meters
5530MHz
106



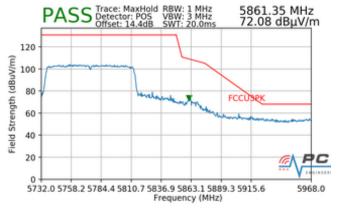
Plot 7-232. Radiated Lower Band Edge Plot (Average – UNII Band 2C)



Plot 7-233. Radiated Lower Band Edge Plot (Peak – UNII Band 2C)

Worst Case Mode:
Worst Case Transfer Rate:
Distance of Measurements:
Operating Frequency:
Channel:

802.11ac
MCS0
3 Meters
5775MHz
155

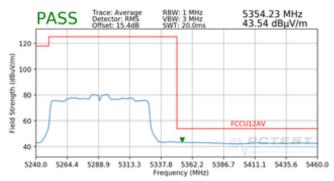


Plot 7-234. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

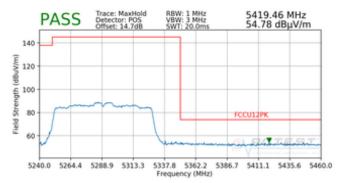
FCC ID: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 158 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset	Fage 136 01 160



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



Plot 7-235. Radiated Band Edge Plot (Average - WCP)



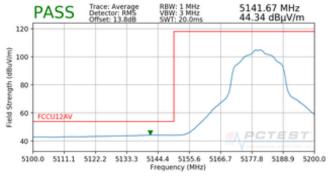
Plot 7-236. Radiated Band Edge Plot (Peak - WCP)

FCC ID: ZNFG710TM	PETEST - TABLESTON, INC.	MEASUREMENT REPORT (CERTIFICATION) LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 159 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset	Fage 159 01 160

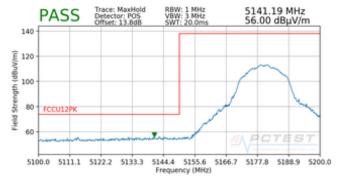


7.7.10 MIMO Radiated Band Edge Measurements (20MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

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

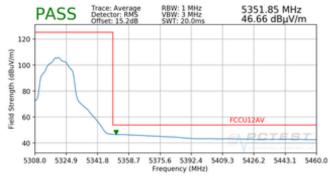


Plot 7-237. Radiated Lower Band Edge Plot (Average - UNII Band 1)

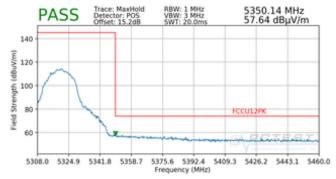


Plot 7-238. Radiated Lower Band Edge Plot (Peak - UNII Band 1)

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



Plot 7-239. Radiated Upper Band Edge Plot (Average - UNII Band 2A)



Plot 7-240. Radiated Upper Band Edge Plot (Peak - UNII Band 2A)

FCC ID: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	① LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 160 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset		Page 160 01 166



Worst Case Mode:

Worst Case Transfer Rate:

Distance of Measurements:
Operating Frequency:

Channel:

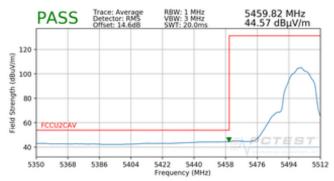
802.11n

MCS0

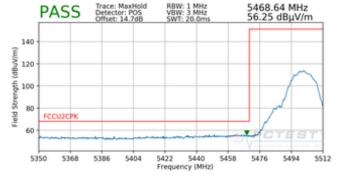
3 Meters

5500MHz

100



Plot 7-241. Radiated Upper Band Edge Plot (Average – UNII Band 2C)



Plot 7-242. Radiated Upper Band Edge Plot (Peak – UNII Band 2C)

Worst Case Mode:
Worst Case Transfer Rate:
Distance of Measurements:
Operating Frequency:
Channel:

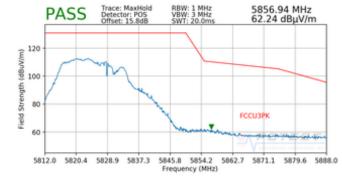
802.11n

MCS0

3 Meters

5825MHz

165



Plot 7-243. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

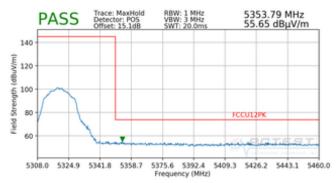
FCC ID: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION) LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 161 of 196
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset	Page 161 of 186



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



Plot 7-244. Radiated Band Edge Plot (Average - WCP)



Plot 7-245. Radiated Band Edge Plot (Peak – WCP)

FCC ID: ZNFG710TM	PETEST - TABLESTON, INC.	MEASUREMENT REPORT (CERTIFICATION) LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 162 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset	Fage 102 01 180

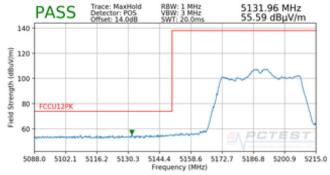


7.7.11 MIMO Radiated Band Edge Measurements (40MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

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



Plot 7-246. Radiated Lower Band Edge Plot (Average - UNII Band 1)

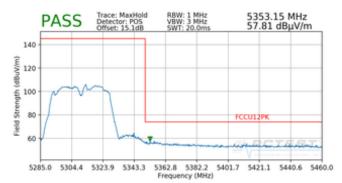


Plot 7-247. Radiated Lower Band Edge Plot (Peak - UNII Band 1)

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



Plot 7-248. Radiated Upper Band Edge Plot (Average - UNII Band 2A)



Plot 7-249. Radiated Upper Band Edge Plot (Peak - UNII Band 2A)

FCC ID: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 163 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset		Page 103 01 100



Worst Case Mode:
Worst Case Transfer Rate:
Distance of Measurements:
Operating Frequency:
Channel:

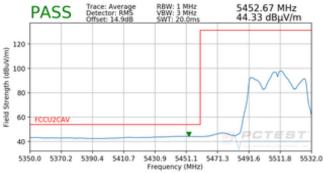
802.11n

MCS0

3 Meters

5510MHz

102



Plot 7-250. Radiated Lower Band Edge Plot (Average – UNII Band 2C)



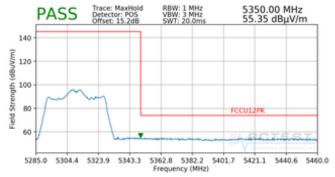
Worst Case Mode: 802.11n

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5795MHz

Channel: 159



Plot 7-252. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

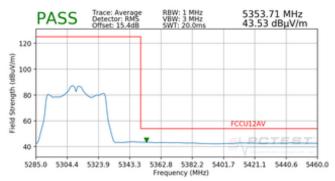
PASS	Trace: MaxHold Detector: POS Offset: 14.7dB	RBW: 1 MHz VBW: 3 MHz SWT: 20.0ms	5469.00 MHz 57.13 dBμV/m
140			
120			
100			m
80 FCCU2CPS			
60	*		PCTEST
5350.0 5370.	2 5390.4 5410.7	5430.9 5451.1 547 Frequency (MHz)	71.3 5491.6 5511.8 55

Plot 7-251. Radiated Lower Band Edge Plot (Peak – UNII Band 2C)

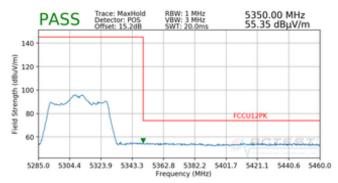
FCC ID: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION) LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 164 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset	Fage 104 01 160



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



Plot 7-253. Radiated Band Edge Plot (Average - WCP)



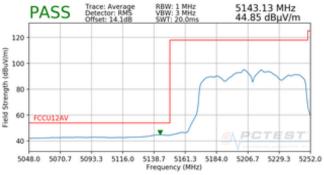
Plot 7-254. Radiated Band Edge Plot (Peak - WCP)

FCC ID: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION) LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 165 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset	Fage 103 01 180

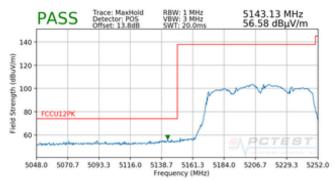


7.7.12 MIMO Radiated Band Edge Measurements (80MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

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

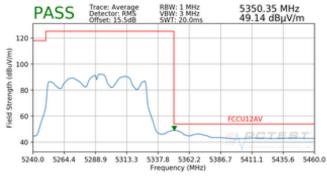


Plot 7-255. Radiated Lower Band Edge Plot (Average - UNII Band 1)

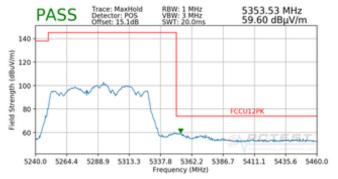


Plot 7-256. Radiated Lower Band Edge Plot (Peak -**UNII Band 1)**

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



Plot 7-257. Radiated Upper Band Edge Plot (Average - UNII Band 2A)



Plot 7-258. Radiated Upper Band Edge Plot (Peak -UNII Band 2A)

FCC ID: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 166 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset		Page 100 01 100

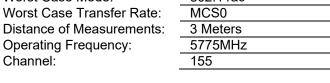


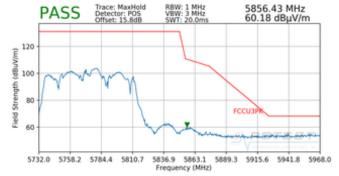
802.11ac Worst Case Mode: Worst Case Transfer Rate: MCS0 Distance of Measurements: 3 Meters Operating Frequency: 5530MHz Channel: 106



Plot 7-259. Radiated Lower Band Edge Plot (Average - UNII Band 2C)

Worst Case Mode: 802.11ac MCS0 3 Meters 5775MHz





Plot 7-261. Radiated Upper Band Edge Plot (Peak - UNII Band 3)

PASS	Trace: MaxHold Detector: POS Offset: 14.7dB	RBW: 1 MHz VBW: 3 MHz SWT: 20.0ms	5468.47 MHz 58.53 dBμV/m
140			
120			
100		1	WWWW
80 - FCCU2CPK			
60		كعسا	PCTEST
5350.0 5374.7		5448.7 5473.3 54 Frequency (MHz)	98.0 5522.7 5547.3 55

Plot 7-260. Radiated Lower Band Edge Plot (Peak - UNII Band 2C)

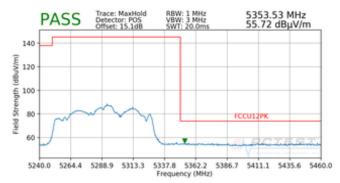
FCC ID: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION) LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 167 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset	Fage 107 01 180



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



Plot 7-262. Radiated Band Edge Plot (Average - WCP)



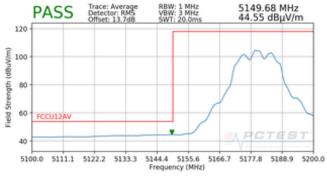
Plot 7-263. Radiated Band Edge Plot (Peak – WCP)

FCC ID: ZNFG710TM	PETEST - TABLESTON, INC.	MEASUREMENT REPORT (CERTIFICATION) LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 168 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset	rage 100 01 100

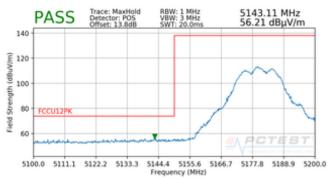


7.7.13 CDD Radiated Band Edge Measurements (20MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

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

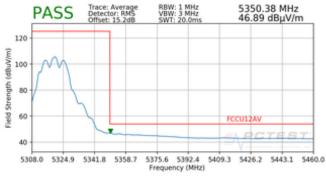


Plot 7-264. Radiated Lower Band Edge Plot (Average - UNII Band 1)

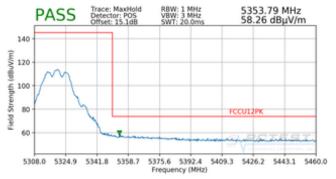


Plot 7-265. Radiated Lower Band Edge Plot (Peak -**UNII Band 1)**

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



Plot 7-266. Radiated Upper Band Edge Plot (Average - UNII Band 2A)



Plot 7-267. Radiated Upper Band Edge Plot (Peak -**UNII Band 2A)**

FCC ID: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 169 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset		Page 109 01 100



Worst Case Mode:
Worst Case Transfer Rate:
Distance of Measurements:
Operating Frequency:
Channel:

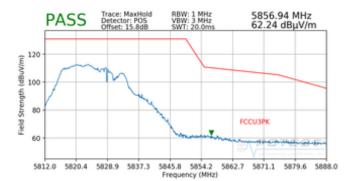
802.11a
6Mbps
3 Meters
5500MHz
100



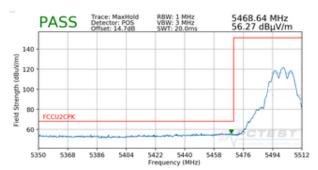
Plot 7-268. Radiated Upper Band Edge Plot (Average – UNII Band 2C)

Worst Case Mode:
Worst Case Transfer Rate:
Distance of Measurements:
Operating Frequency:
Channel:

802.11a
6Mbps
3 Meters
5825MHz
165



Plot 7-270. Radiated Upper Band Edge Plot (Peak – UNII Band 3)



Plot 7-269. Radiated Upper Band Edge Plot (Peak – UNII Band 2C)

FCC ID: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 170 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset	Fage 170 01 160



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 7-62 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 7-62. 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
- 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: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 171 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset		Page 1/1 01 100



Test Setup

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

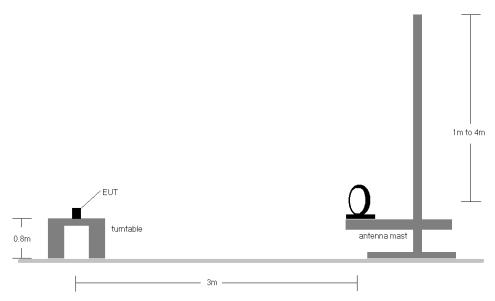


Figure 7-6. Radiated Test Setup < 30MHz

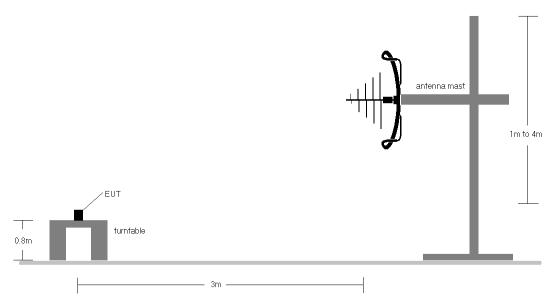


Figure 7-7. Radiated Test Setup < 1GHz

FCC ID: ZNFG710TM	PETEST	MEASUREMENT REPORT (CERTIFICATION)	.G	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Daga 170 of 106
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset		Page 172 of 186

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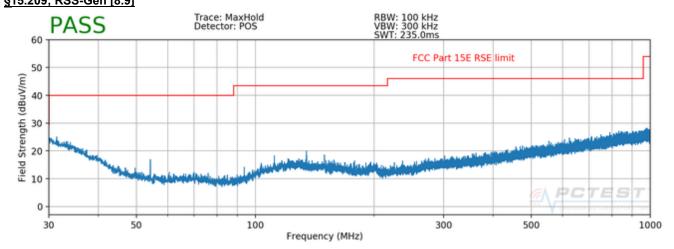


Test Notes

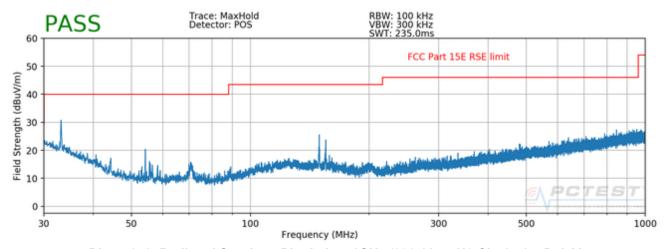
- 1. All emissions lying in restricted bands specified in §15.205 and RSS-Gen (8.10) are below the limit shown in Table 7-62.
- 2. The broadband receive antenna is manipulated through vertical and horizontal polarizations during the tests. The EUT is manipulated through three orthogonal planes.
- 3. 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.



Antenna-1 Radiated Spurious Emissions Measurements (Below 1GHz) §15.209; RSS-Gen [8.9]



Plot 7-271. Radiated Spurious Plot below 1GHz (802.11a - U3 Ch. 157) - Pol. H

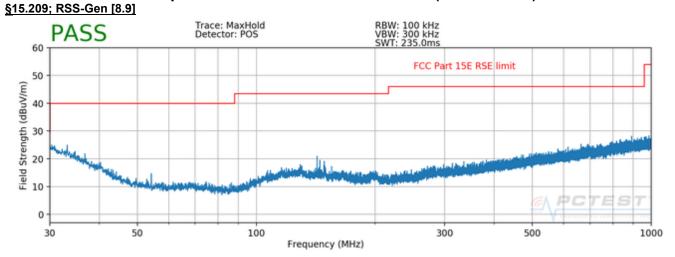


Plot 7-272. Radiated Spurious Plot below 1GHz (802.11a - U3 Ch. 157) - Pol. V

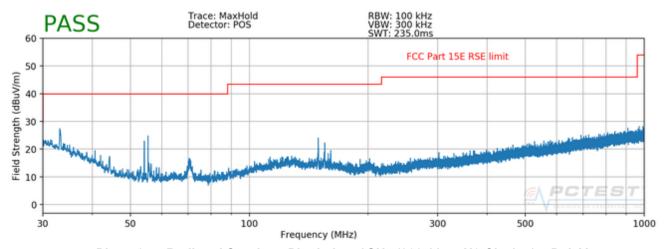
FCC ID: ZNFG710TM	PETEST - TABLESTON, INC.	MEASUREMENT REPORT (CERTIFICATION) LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 174 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset	raye 174 01 100



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



Plot 7-273. Radiated Spurious Plot below 1GHz (802.11a - U3 Ch. 157) - Po. H



Plot 7-274. Radiated Spurious Plot below 1GHz (802.11a - U3 Ch. 157) - Pol. V

FCC ID: ZNFG710TM	PETEST - TABLESTON, INC.	MEASUREMENT REPORT (CERTIFICATION) LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 175 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset	Fage 1/5 01 100



Line-Conducted Test Data 7.8

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

Table 7-63. Conducted Limits

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
- 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
- RBW = 9kHz (for emissions from 150kHz 30MHz)
- Detector = RMS
- 4. Sweep time = auto couple
- 5. Trace mode = max hold
- 6. Trace was allowed to stabilize

FCC ID: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Dogg 176 of 196
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset		Page 176 of 186

^{*}Decreases with the logarithm of the frequency.



Test Setup

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

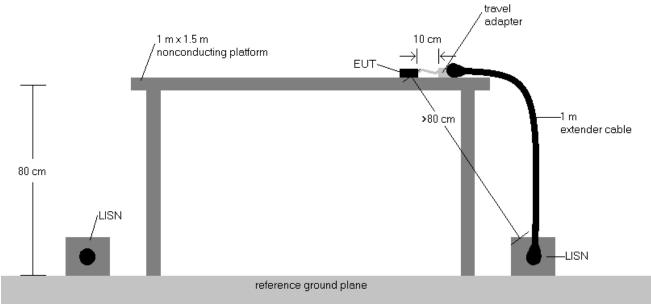


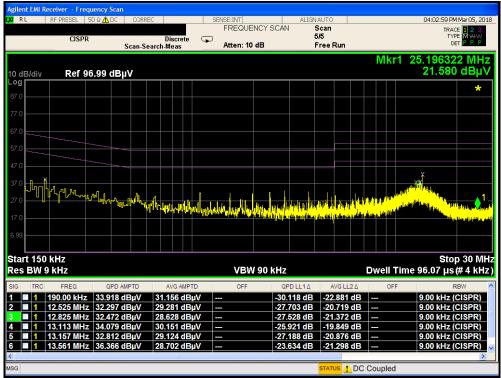
Figure 7-8. Test Instrument & Measurement Setup

Test Notes

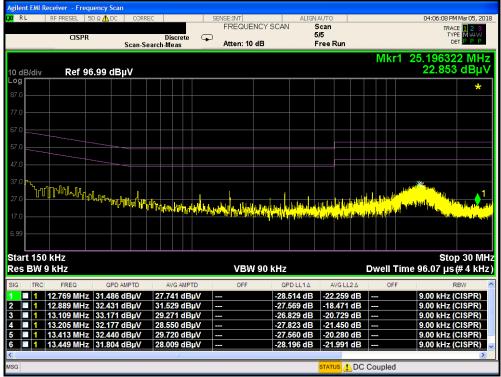
- 1. All modes of operation were investigated and the worst-case emissions are reported using mid channel. The emissions found were not affected by the choice of channel used during testing.
- 2. The limit for an intentional radiator from 150kHz to 30MHz are specified in 15.207 and RSS-Gen (8.8).
- 3.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

FCC ID: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	① LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 177 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset		Page 177 OF 100





Plot 7-275. Line Conducted Plot with 802.11a UNII Band 1 (L1)

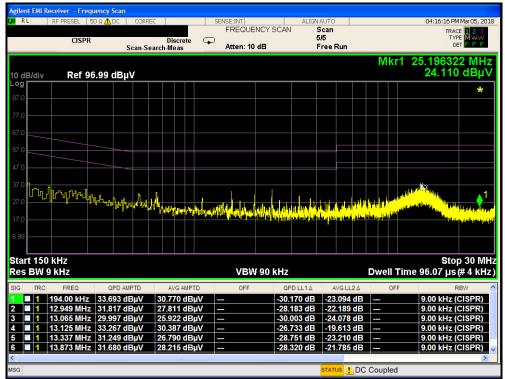


Plot 7-276. Line Conducted Plot with 802.11a UNII Band 1 (N)

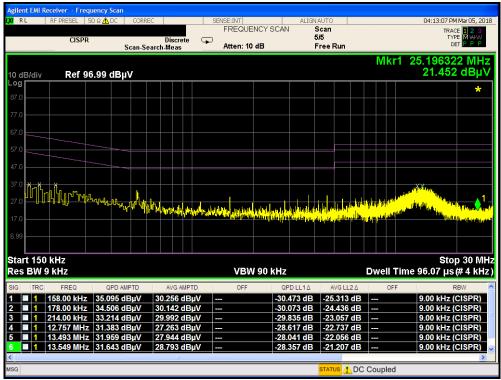
FCC ID: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION) LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 178 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset	rage 176 01 160

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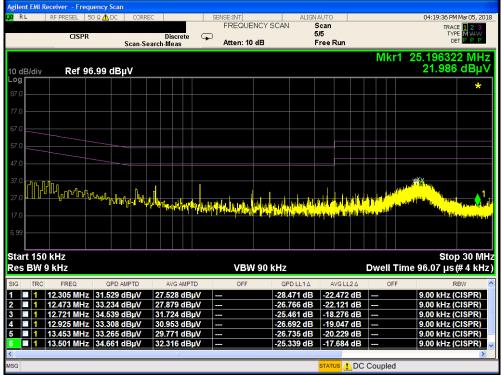
Plot 7-277. Line Conducted Plot with 802.11a UNII Band 2A (L1)



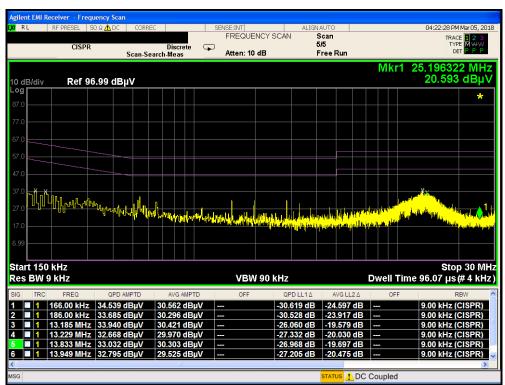
Plot 7-278. Line Conducted Plot with 802.11a UNII Band 2A (N)

FCC ID: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dago 170 of 196
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset	Page 179 of 186





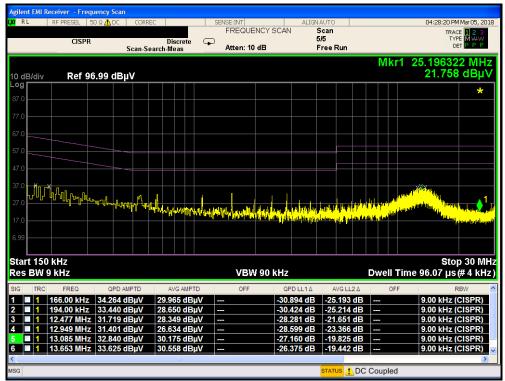
Plot 7-279. Line Conducted Plot with 802.11a UNII Band 2C (L1)



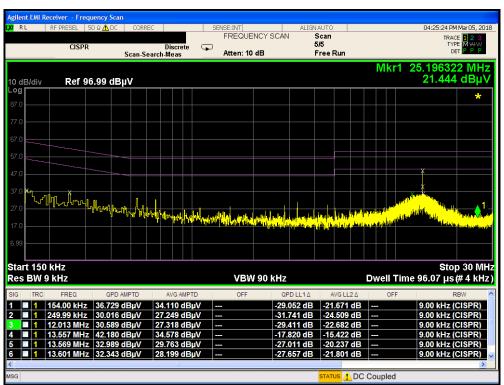
Plot 7-280. Line Conducted Plot with 802.11a UNII Band 2C (N)

FCC ID: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION) LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogg 190 of 196
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset	Page 180 of 186





Plot 7-281. Line Conducted Plot with 802.11a UNII Band 3 (L1)

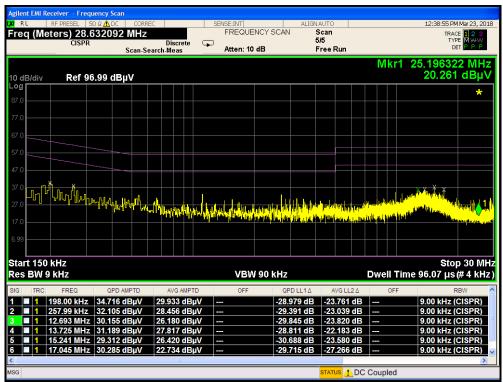


Plot 7-282. Line Conducted Plot with 802.11a UNII Band 3 (N)

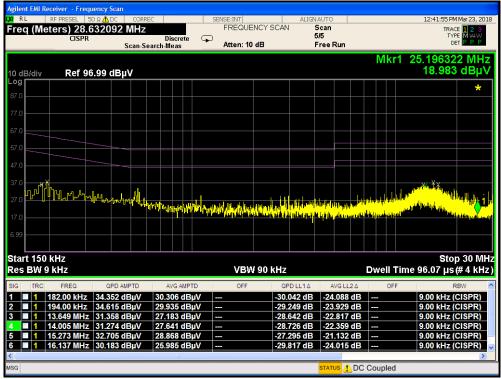
FCC ID: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dags 191 of 196
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset	Page 181 of 186

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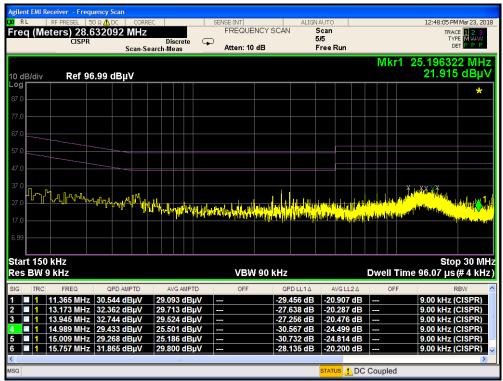
Plot 7-283. Line Conducted Plot with 802.11a UNII Band 1 (L1) with WCP



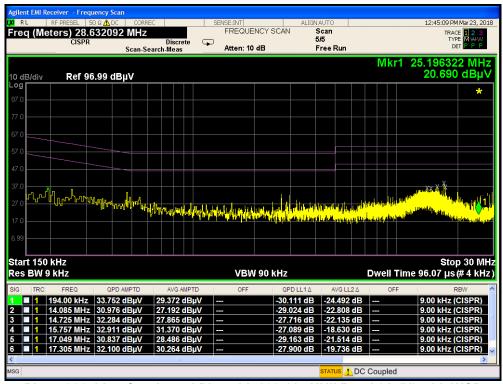
Plot 7-284. Line Conducted Plot with 802.11a UNII Band 1 (N) with WCP

FCC ID: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION) LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 182 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset	Fage 162 01 160





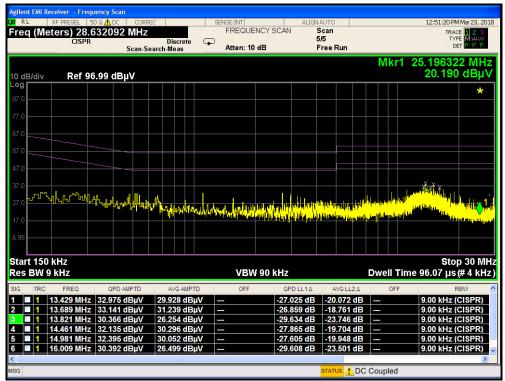
Plot 7-285. Line Conducted Plot with 802.11a UNII Band 2A (L1) with WCP



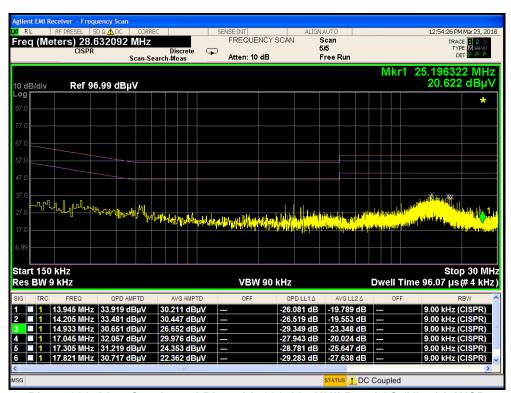
Plot 7-286. Line Conducted Plot with 802.11a UNII Band 2A (N) with WCP

FCC ID: ZNFG710TM	PCTEST*	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogg 192 of 196
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset	Page 183 of 186





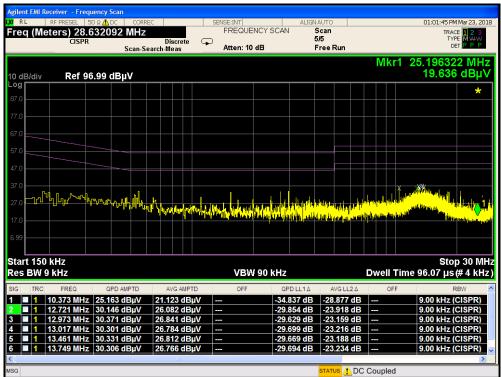
Plot 7-287. Line Conducted Plot with 802.11a UNII Band 2C (L1) with WCP



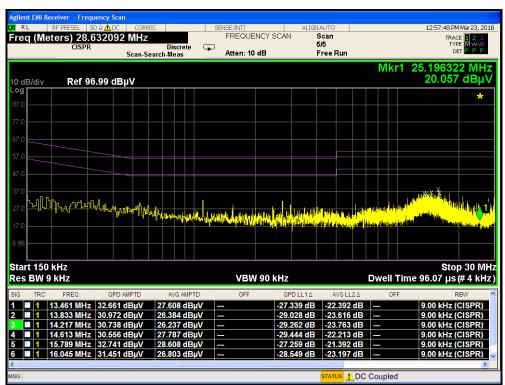
Plot 7-288. Line Conducted Plot with 802.11a UNII Band 2C (N) with WCP

FCC ID: ZNFG710TM	PETEST - TABLESTON, INC.	MEASUREMENT REPORT (CERTIFICATION) LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 184 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset	raye 104 01 100





Plot 7-289. Line Conducted Plot with 802.11a UNII Band 3 (L1) with WCP



Plot 7-290. Line Conducted Plot with 802.11a UNII Band 3 (N) with WCP

FCC ID: ZNFG710TM	PETEST - TABLESTON, INC.	MEASUREMENT REPORT (CERTIFICATION) LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 185 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset	Fage 105 01 100



CONCLUSION 8.0

The data collected relate only the item(s) tested and show that the LG Portable Handset FCC ID: ZNFG710TM is in compliance with Part 15 Subpart C (15.247) of the FCC Rules.

FCC ID: ZNFG710TM	PETEST	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:		Page 186 of 186
1M1802260030-06.ZNF	2/27-3/27/2018	Portable Handset		rage 100 of 100