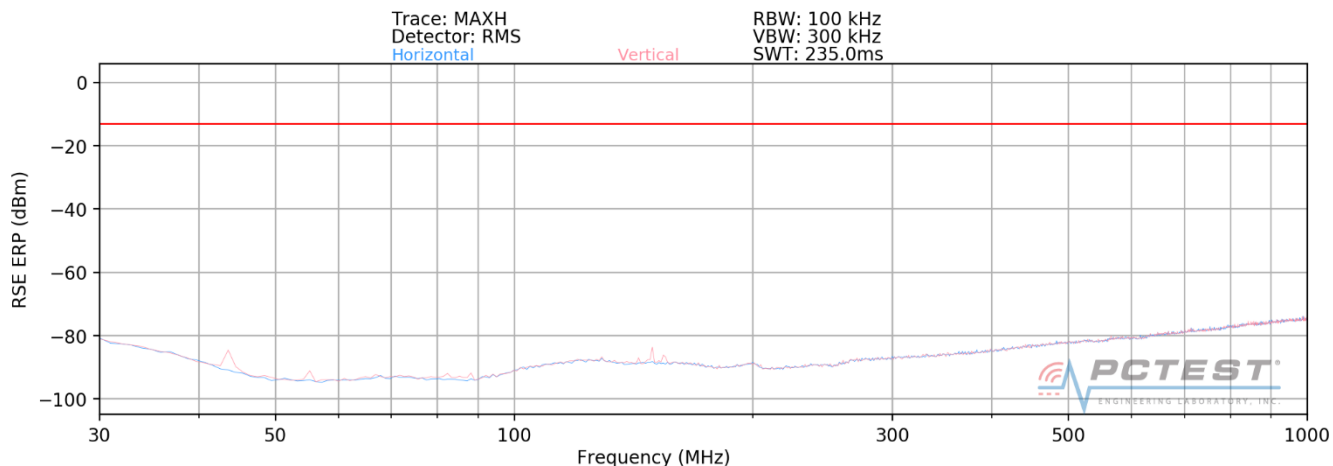
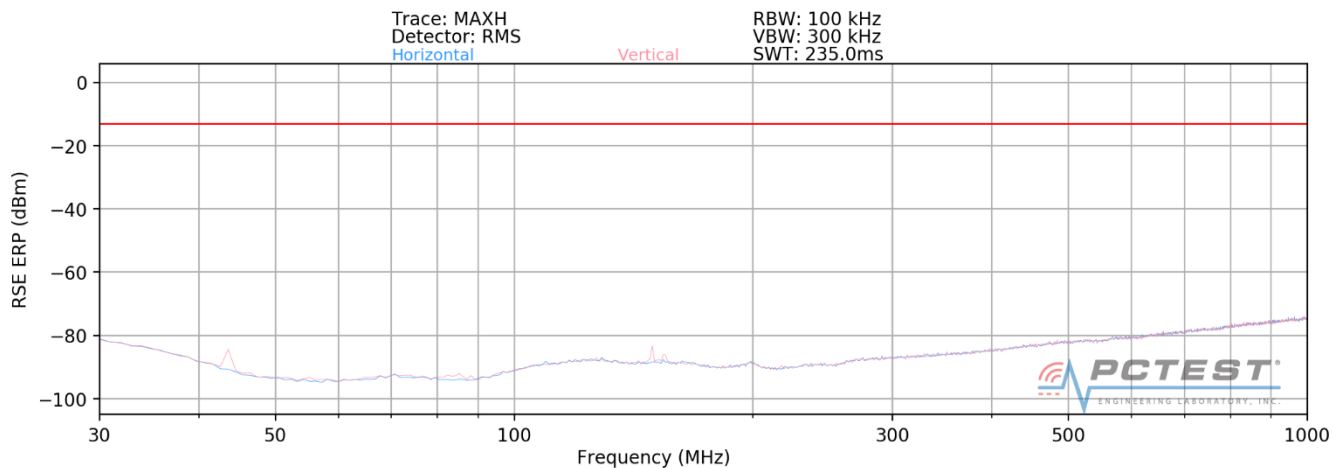


## 7.4.8 Radiated Spurious Emissions Plots n260 (30MHz – 1GHz)



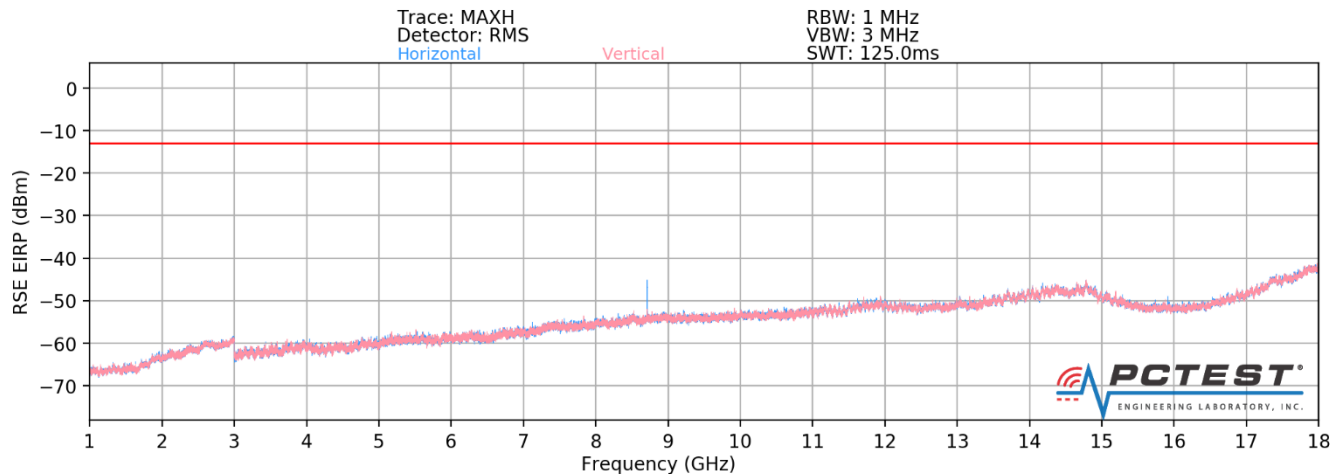
**Plot 7-87. Radiated Spurious Plot 30 MHz - 1 GHz (QTM0 1CC-100MHz Bandwidth QPSK Mid Channel)**



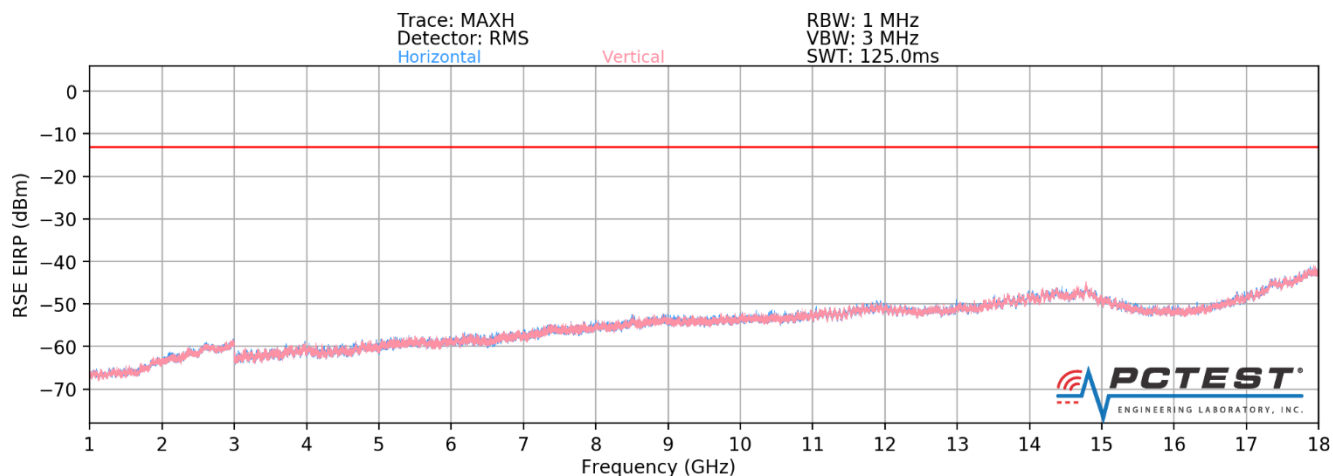
**Plot 7-88. Radiated Spurious Plot 30 MHz - 1 GHz ( QTM1 1CC100MHz Bandwidth QPSK Mid Channel)**

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 74 of 304

## 7.4.9 Radiated Spurious Emissions Plots n260 (1 – 18GHz)

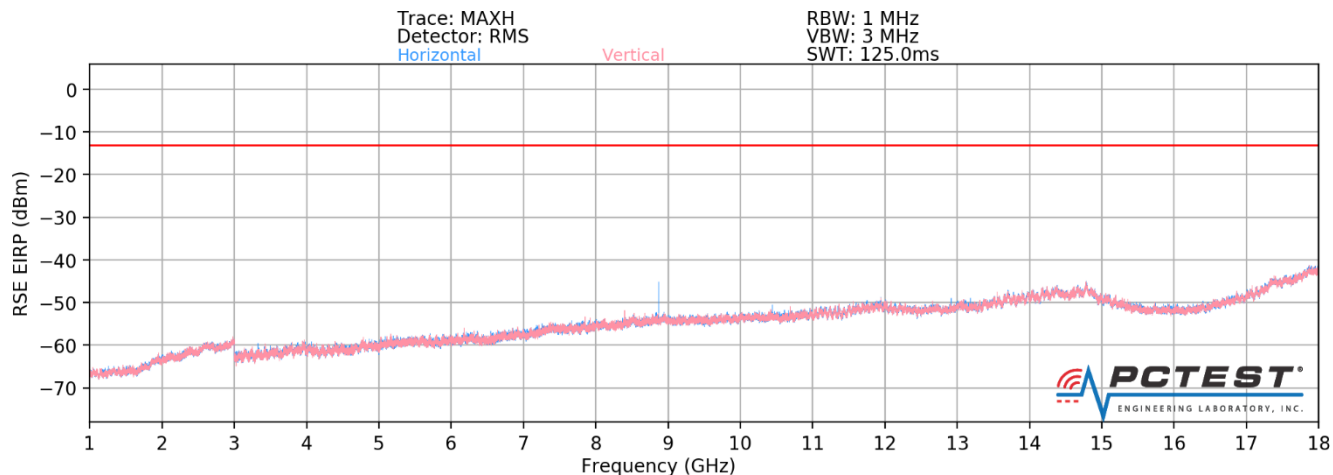


**Plot 7-89. Radiated Spurious Plot 1-18 GHz ( QTM0 1CC-100MHz Bandwidth QPSK Low Channel)**

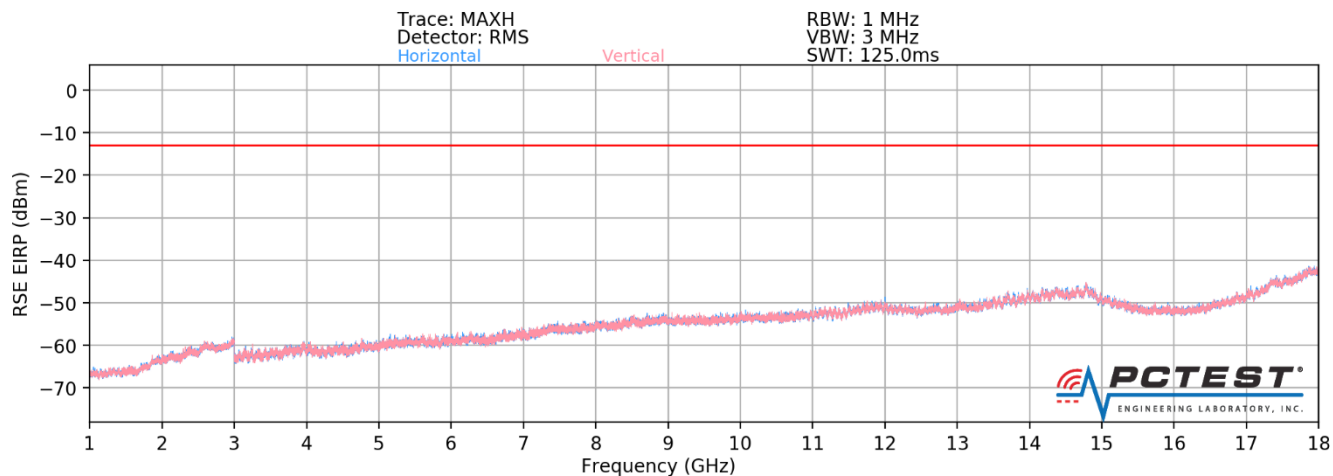


**Plot 7-90. Radiated Spurious Plot 1-18 GHz ( QTM0 1CC-100MHz Bandwidth QPSK Mid Channel)**

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 75 of 304

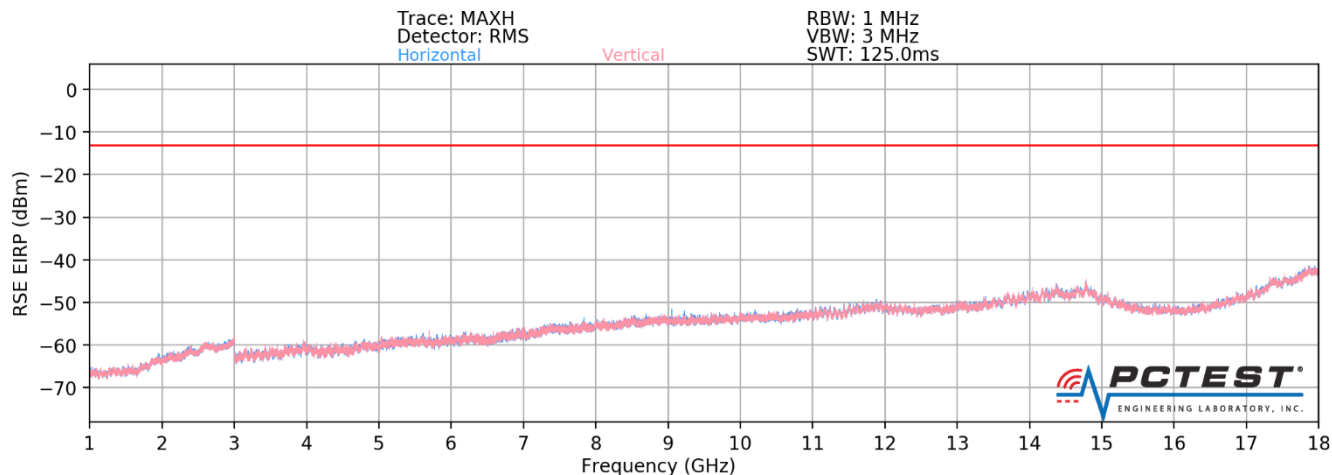


**Plot 7-91. Radiated Spurious Plot 1-18 GHz (QTM0 1CC-100MHz Bandwidth QPSK High Channel)**

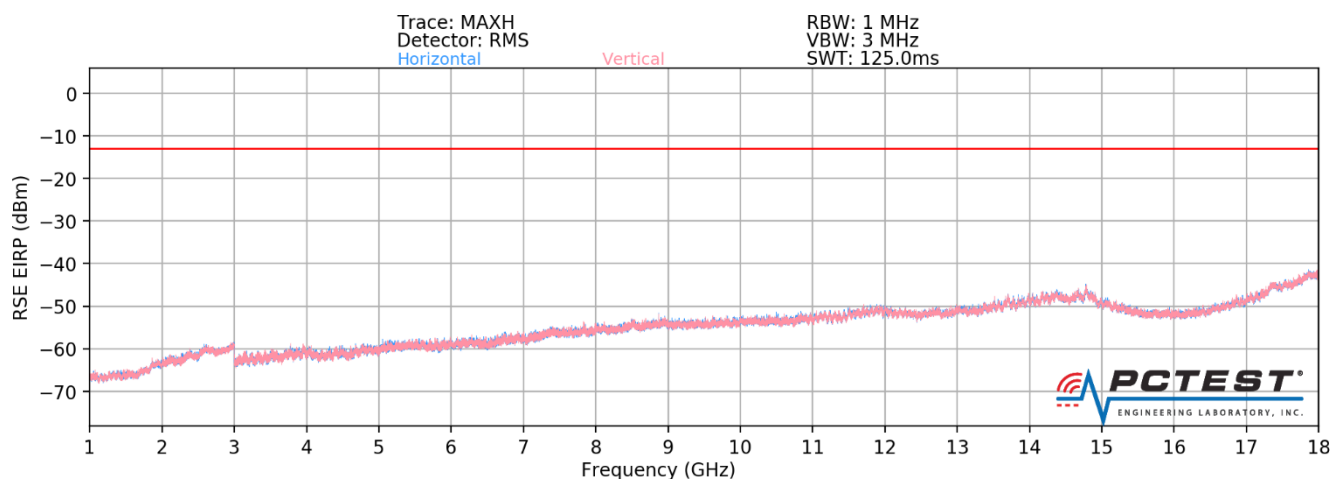


**Plot 7-92. Radiated Spurious Plot 1-18 GHz ( QTM1 1CC-100MHz Bandwidth QPSK Low Channel)**

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 76 of 304



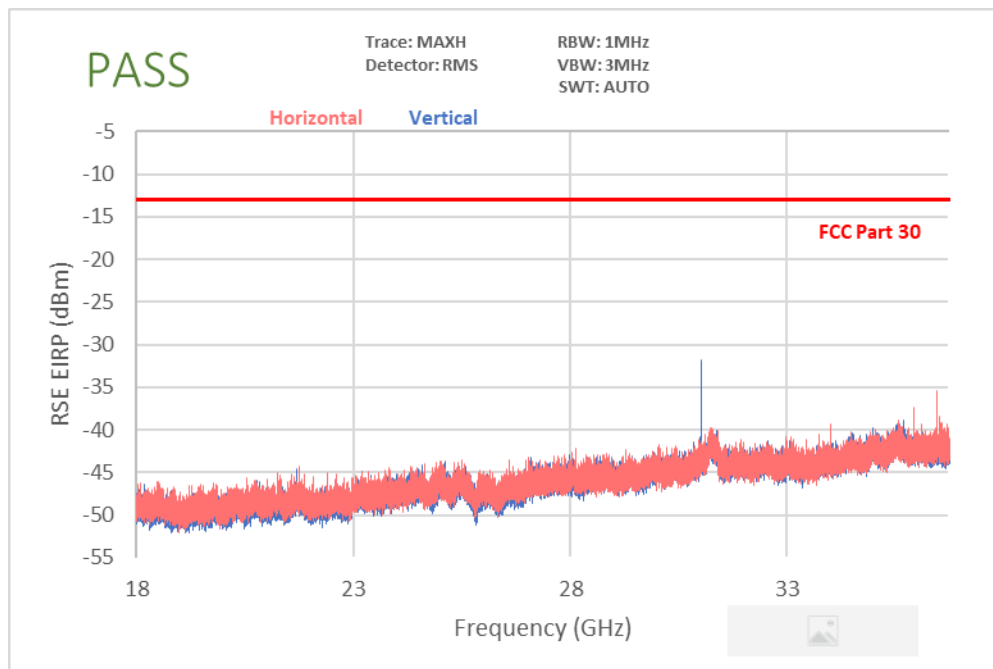
**Plot 7-93. Radiated Spurious Plot 1-18 GHz ( QTM1 1CC-100MHz Bandwidth QPSK Mid Channel)**



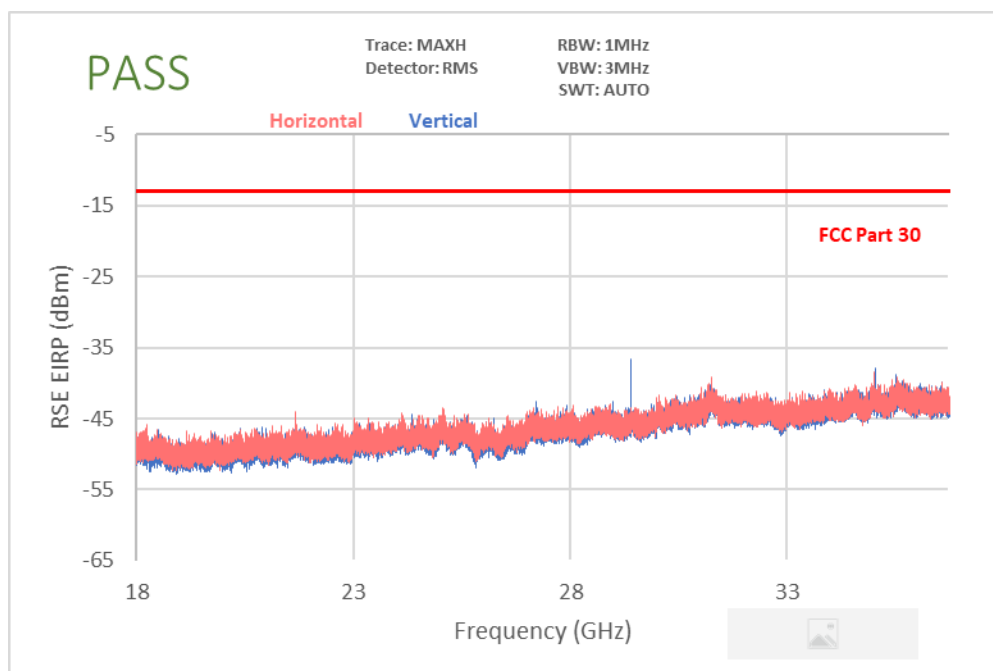
**Plot 7-94. Radiated Spurious Plot 1-18 GHz (QTM1 1CC-100MHz Bandwidth QPSK High Channel)**

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 77 of 304

## 7.4.10 Radiated Spurious Emissions Plots n260(18 – 37GHz)

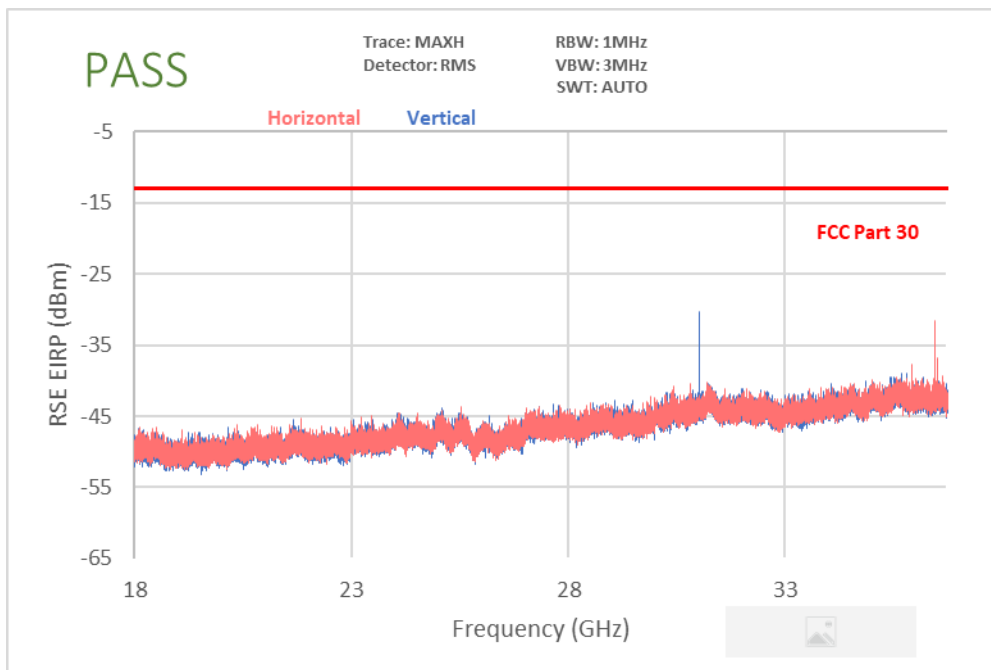


Plot 7-95. Radiated Spurious Plot 18-38.5 GHz (QTM0 1CC-100MHz Bandwidth QPSK Low Channel)



Plot 7-96. Radiated Spurious Plot 18-38.5 GHz (QTM0 1CC-100MHz Bandwidth QPSK Mid Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 78 of 304

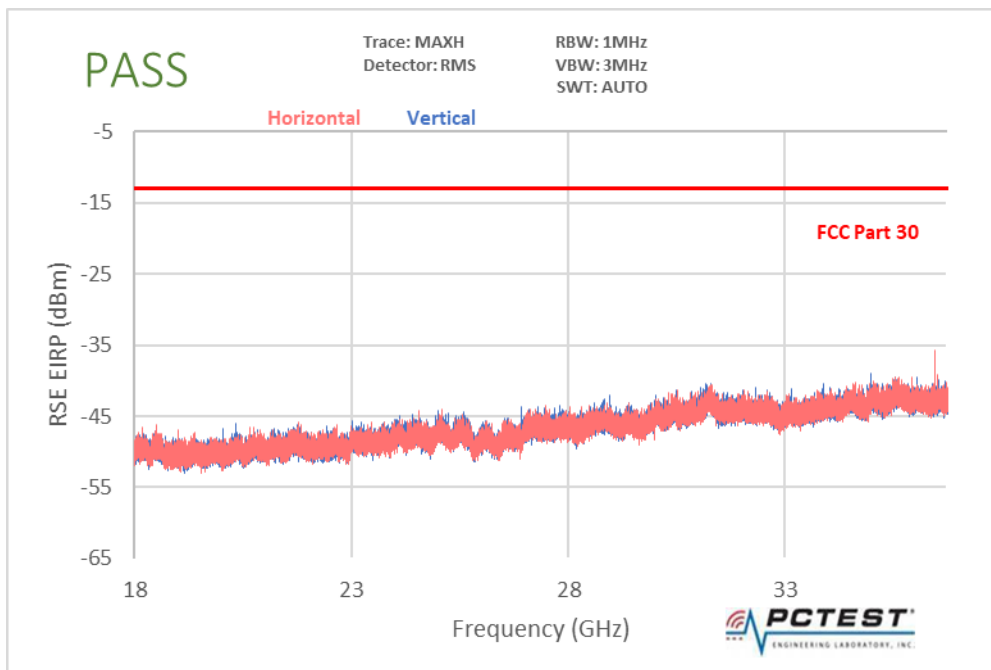


**Plot 7-97. Radiated Spurious Plot 18-38.5 GHz (QTM0 1CC-100MHz Bandwidth QPSK High Channel)**

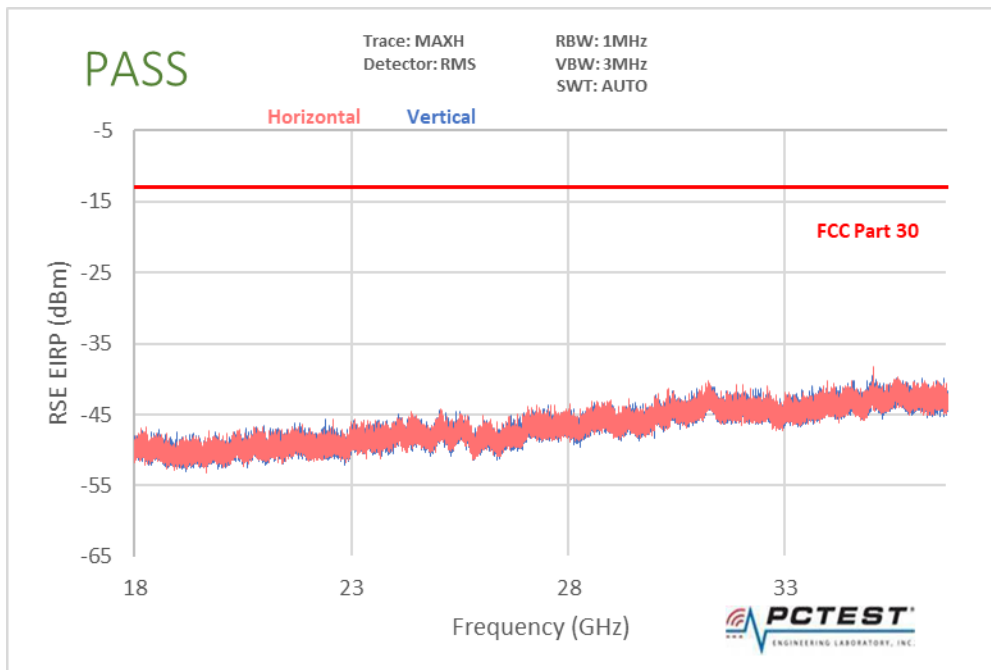
Frequency [MHz]	Detector /Trace	Chan.	Bandwidth (MHz)	Mod.	Beam Polarization	Ant. Pos [H/V]	Ant. Height [cm]	Turntable Azimuth [degree]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
31033.03	Maxh/RMS	Low	100	QPSK	H + V	V	150	195	-31.72	-13.00	-18.72
29401.82	Maxh/RMS	Mid	100	QPSK	H + V	V	150	189	-36.62	-13.00	-23.62
31033.03	Maxh/RMS	High	100	QPSK	H + V	V	150	199	-30.29	-13.00	-17.29
38374.28	Maxh/RMS	Low	100	QPSK	H + V	V	150	192	-37.64	-13.00	-24.64
37687.28	Maxh/RMS	Mid	100	QPSK	H + V	V	150	189	-38.17	-13.00	-25.17
36461.02	Maxh/RMS	High	100	QPSK	H + V	V	150	193	-31.56	-13.00	-18.56

**Table 7-21. Spurious Emissions QTM0 (18-38.5 GHz)**

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	<b>MEASUREMENT REPORT (CERTIFICATION)</b>			Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset			Page 79 of 304

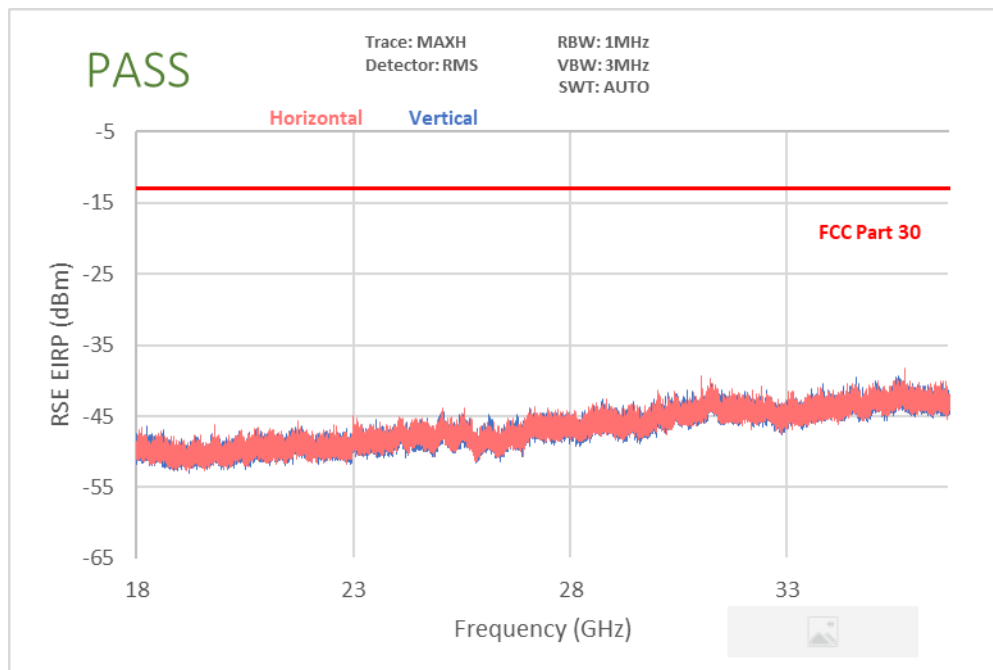


**Plot 7-98. Radiated Spurious Plot 18-38.5 GHz (QT10 1CC-100MHz Bandwidth QPSK Low Channel)**



**Plot 7-99. Radiated Spurious Plot 18-38.5 GHz (QTM1 1CC-100MHz Bandwidth QPSK Mid Channel)**

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 80 of 304



**Plot 7-100. Radiated Spurious Plot 18-38.5 GHz (QTM1 1CC-100MHz Bandwidth QPSK High Channel)**

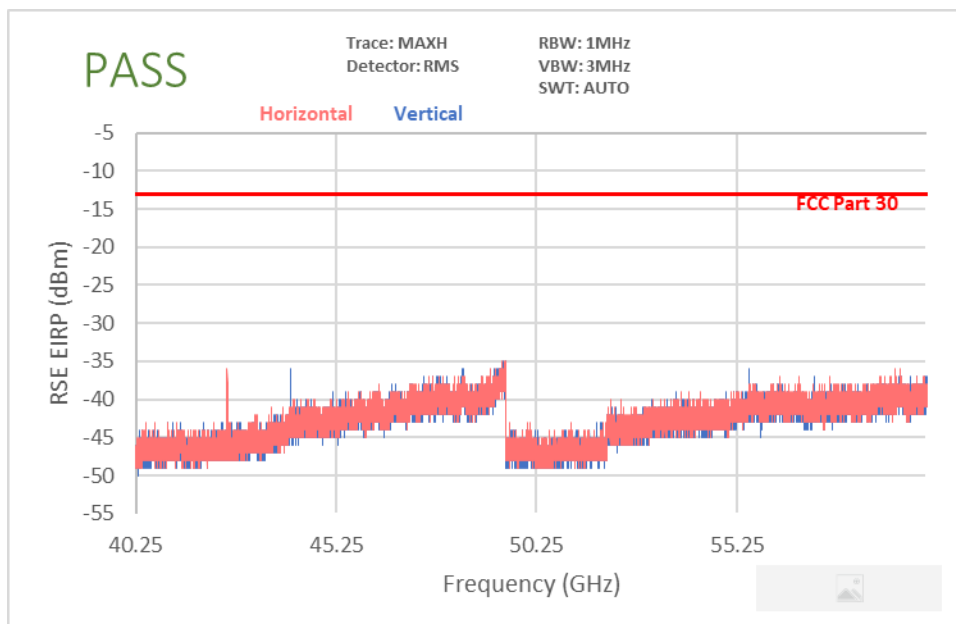
Frequency [MHz]	Detector /Trace	Chan.	Bandwidth (MHz)	Mod.	Beam Polarization	Ant. Pos [H/V]	Ant. Height [cm]	Turntable Azimuth [degree]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
36514.57	Maxh/RMS	Low	100	QPSK	H + V	V	150	26	-37.65	-13.00	-24.65
36367.28	Maxh/RMS	Mid	100	QPSK	H + V	V	150	27	-38.74	-13.00	-25.74
36461.02	Maxh/RMS	High	100	QPSK	H + V	V	150	21	-38.35	-13.00	-25.35
36461.02	Maxh/RMS	Low	100	QPSK	H + V	H	150	25	-35.68	-13.00	-22.68
36541.70	Maxh/RMS	Mid	100	QPSK	H + V	H	150	23	-37.18	-13.00	-24.18
36462.94	Maxh/RMS	High	100	QPSK	H + V	H	150	20	-38.68	-13.00	-25.68

**Table 7-22. Spurious Emissions QTM1 (18-38.5 GHz)**

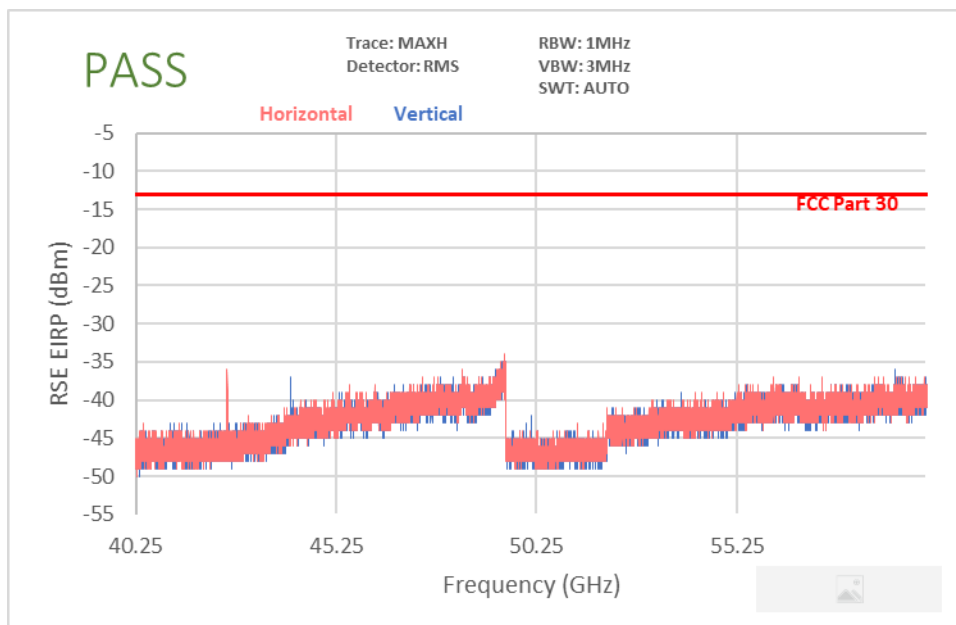
FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	<b>MEASUREMENT REPORT (CERTIFICATION)</b>			Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset			Page 81 of 304



## 7.4.11 Radiated Spurious Emissions Plots n260 (40 – 60GHz)

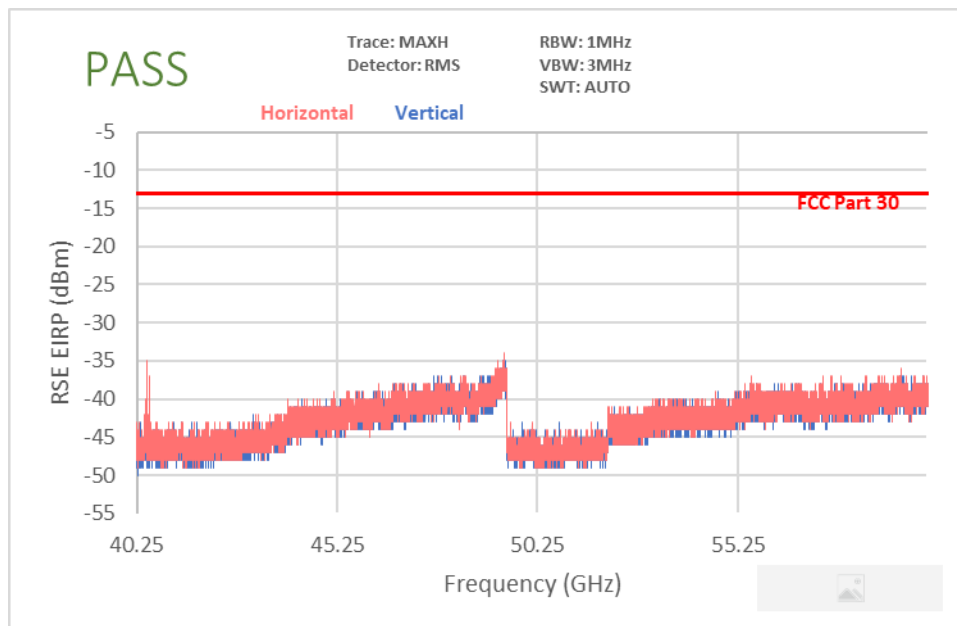


Plot 7-101. Radiated Spurious Plot 40-60 GHz (QTM0 1CC-100MHz Bandwidth QPSK Low Channel)



Plot 7-102. Radiated Spurious Plot 40-60 GHz (QTM0 1CC-100MHz Bandwidth QPSK Mid Channel)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 82 of 304

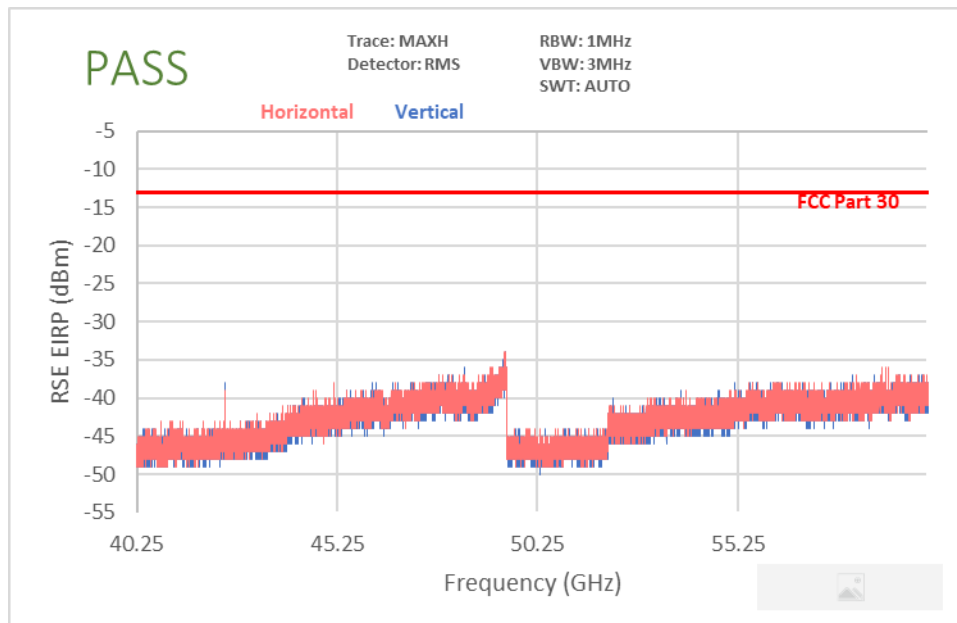


**Plot 7-103. Radiated Spurious Plot 40-60 GHz (QTM0 1CC-100MHz Bandwidth QPSK High Channel)**

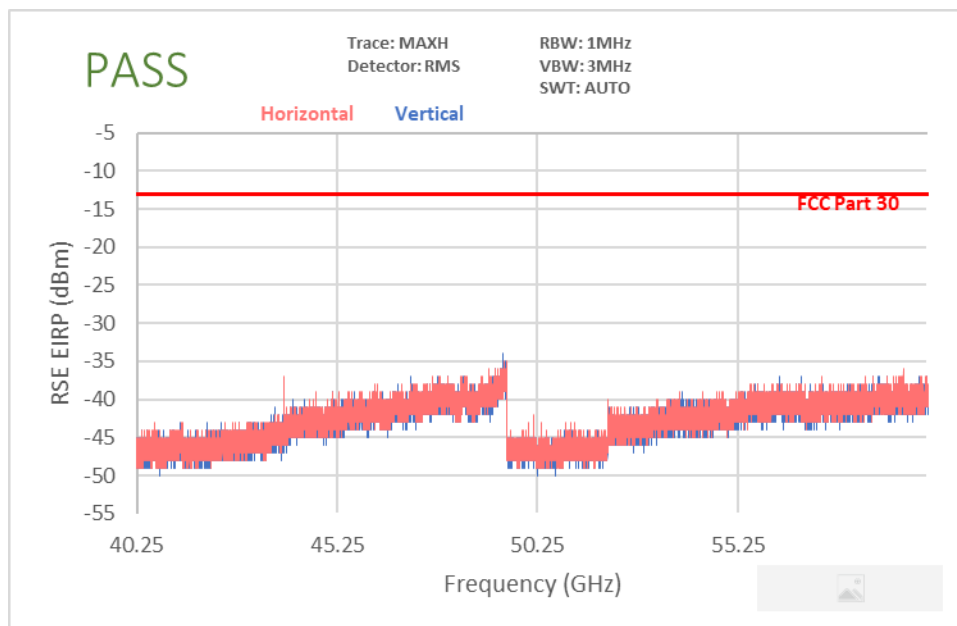
Frequency [MHz]	Detector /Trace	Chan.	Bandwidth (MHz)	Mod.	Beam Polarization	Ant. Pos [H/V]	Ant. Height [cm]	Turn Table Azimuth [degree]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
49469.89	Maxh/RMS	Low	100	QPSK	H + V	V	150	179	-35.12	-13.00	-22.12
49446.59	Maxh/RMS	Mid	100	QPSK	H + V	V	150	176	-35.32	-13.00	-22.32
49458.44	Maxh/RMS	High	100	QPSK	H + V	V	150	174	-35.40	-13.00	-22.40
42530.14	Maxh/RMS	Low	100	QPSK	H + V	H	150	180	-36.40	-13.00	-23.40
42530.14	Maxh/RMS	Mid	100	QPSK	H + V	H	150	176	-36.28	-13.00	-23.28
49427.63	Maxh/RMS	High	100	QPSK	H + V	H	150	179	-34.68	-13.00	-21.68

**Table 7-23. Spurious Emissions QTM0 (40 – 60GHz)**

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	<b>MEASUREMENT REPORT (CERTIFICATION)</b>			Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset			Page 83 of 304

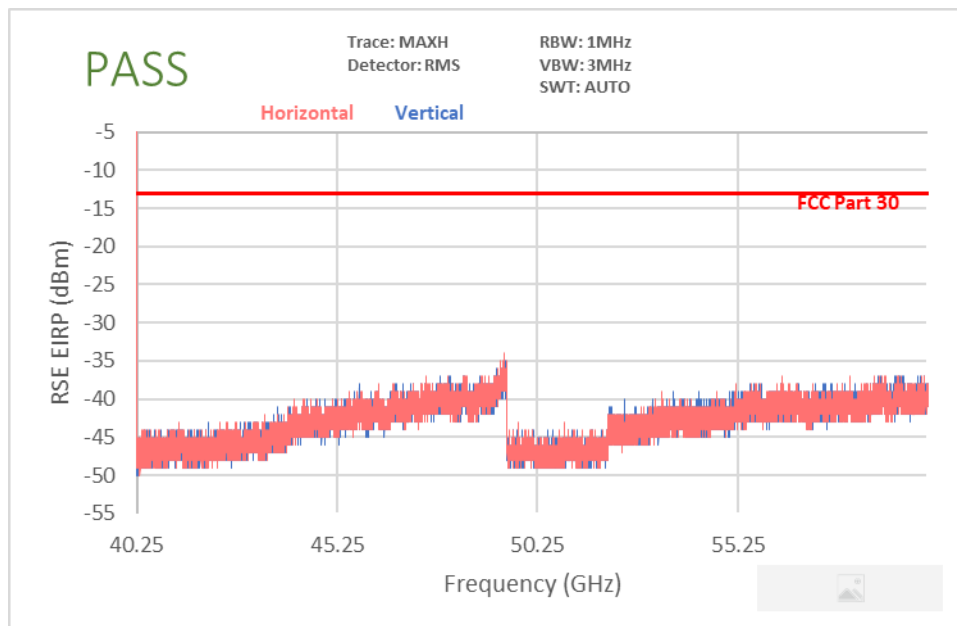


**Plot 7-104. Radiated Spurious Plot 40-60 GHz (QTM1 1CC-100MHz Bandwidth QPSK Low Channel)**



**Plot 7-105. Radiated Spurious Plot 40-60 GHz (QTM1 1CC-100MHz Bandwidth QPSK Mid Channel)**

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 84 of 304



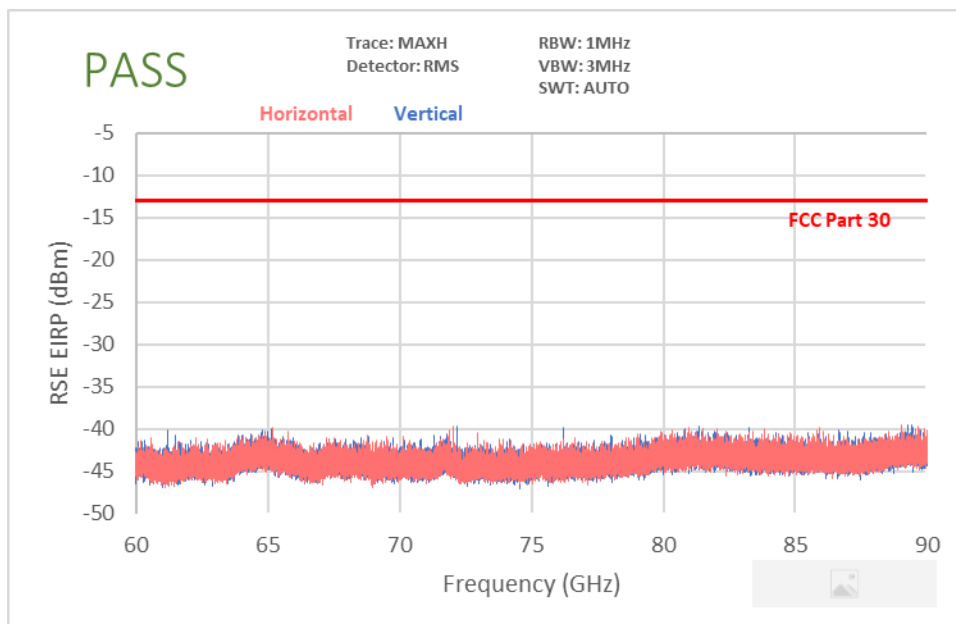
**Plot 7-106. Radiated Spurious Plot 40-60 GHz (QTM1 1CC-100MHz Bandwidth QPSK High Channel)**

Frequency [MHz]	Detector /Trace	Chan.	Bandwidth (MHz)	Mod.	Beam Polarization	Ant. Pos [H/V]	Ant. Height [cm]	Turn Table Azimuth [degree]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
42442.84	Maxh/RMS	Low	100	QPSK	H + V	V	150	29	-38.56	-13.00	-25.56
49420.49	Maxh/RMS	Mid	100	QPSK	H + V	V	150	31	-35.21	-13.00	-22.21
49428.42	Maxh/RMS	High	100	QPSK	H + V	V	150	35	-36.58	-13.00	-23.58
49426.05	Maxh/RMS	Low	100	QPSK	H + V	H	150	36	-34.63	-13.00	-21.63
49499.12	Maxh/RMS	Mid	100	QPSK	H + V	H	150	40	-35.29	-13.00	-22.29
49428.42	Maxh/RMS	High	100	QPSK	H + V	H	150	36	-34.43	-13.00	-21.43

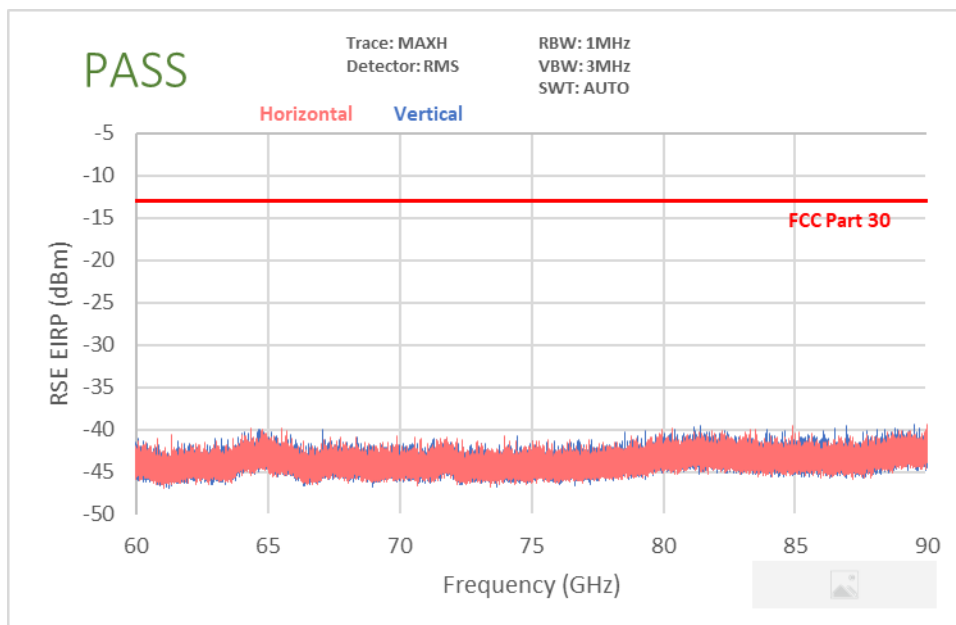
**Table 7-24. Spurious Emissions QTM1 (40 – 60GHz)**

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	<b>MEASUREMENT REPORT (CERTIFICATION)</b>			Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset			Page 85 of 304

## 7.4.12 Radiated Spurious Emissions Plots n260 (60 – 90GHz)

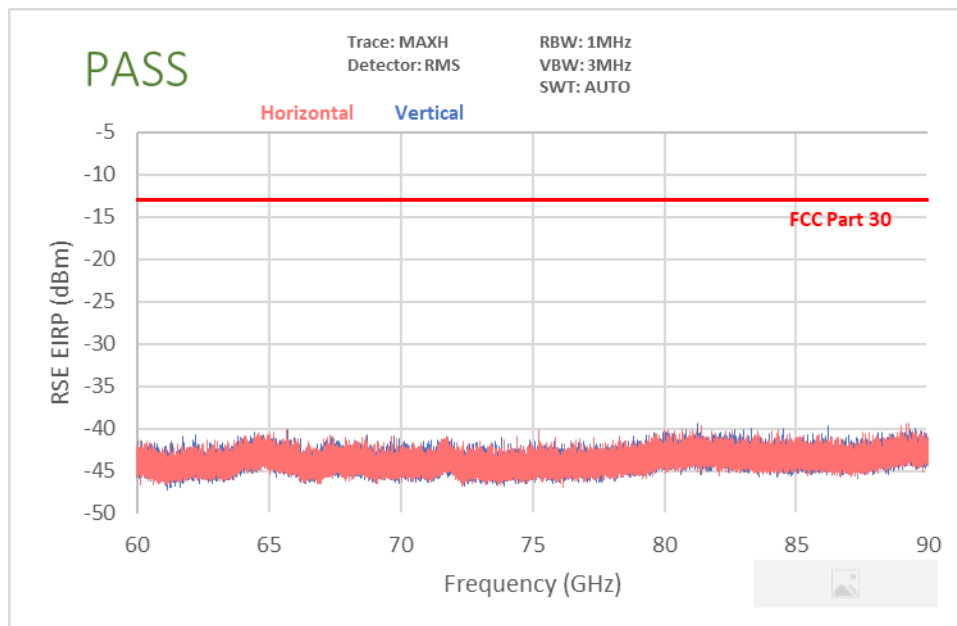


Plot 7-107. Radiated Spurious Plot 60-90 GHz (QTM0 1CC-100MHz Bandwidth QPSK Low Channel)



Plot 7-108. Radiated Spurious Plot 60-90 GHz (QTM0 1CC-100MHz Bandwidth QPSK Mid Channel)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 86 of 304

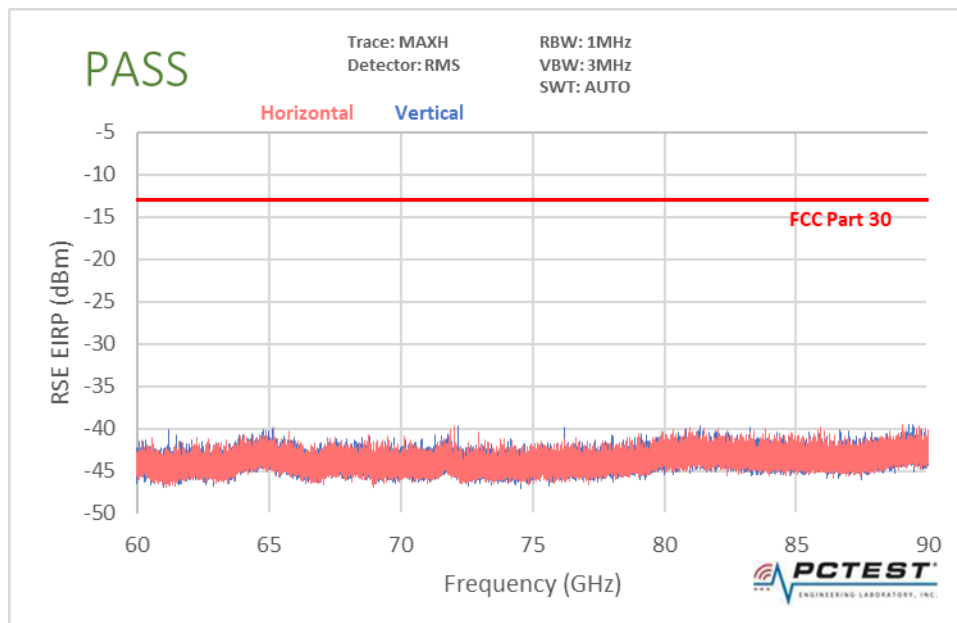


**Plot 7-109. Radiated Spurious Plot 60-90 GHz (QTM0 1CC-100MHz Bandwidth QPSK High Channel)**

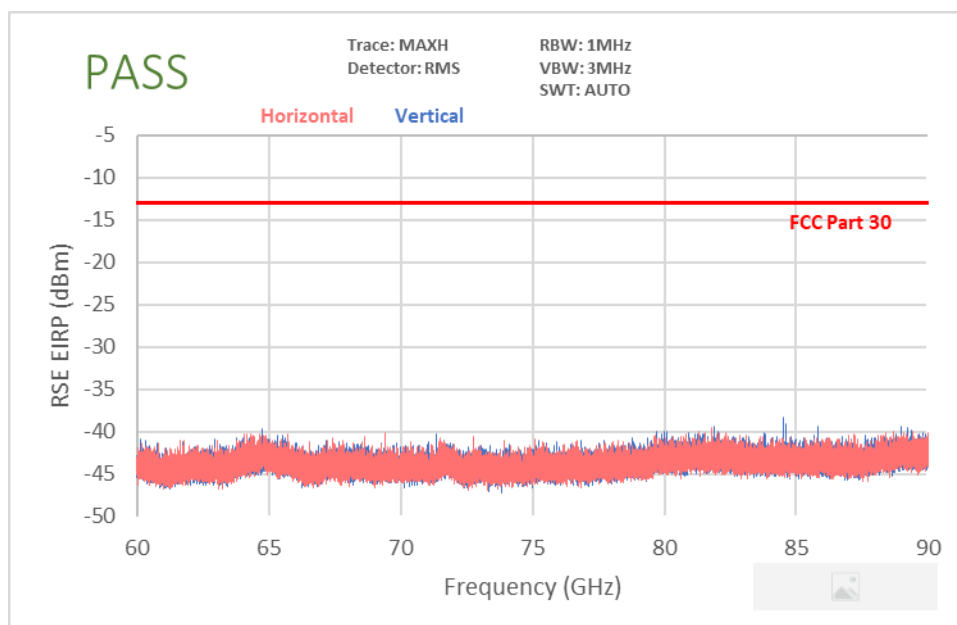
Frequency [MHz]	Detector /Trace	Chan.	Bandwidth (MHz)	Mod.	Beam Polarization	Ant. Pos [H/V]	Ant. Height [cm]	Turn Table Azimuth [degree]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
74103.60	Maxh/RMS	Low	100	QPSK	H + V	V	-	-	-42.38	-13.00	-29.38
76997.76	Maxh/RMS	Mid	100	QPSK	H + V	V	-	-	-43.67	-13.00	-30.67
79899.84	Maxh/RMS	High	100	QPSK	H + V	V	-	-	-44.08	-13.00	-31.08
74103.60	Maxh/RMS	Low	100	QPSK	H + V	H	-	-	-44.22	-13.00	-31.22
76997.76	Maxh/RMS	Mid	100	QPSK	H + V	H	-	-	-43.31	-13.00	-30.31
79899.84	Maxh/RMS	High	100	QPSK	H + V	H	-	-	-43.85	-13.00	-30.85

**Table 7-25. Spurious Emissions QTM0 (60 – 90GHz)**

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	<b>MEASUREMENT REPORT (CERTIFICATION)</b>							Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset							Page 87 of 304

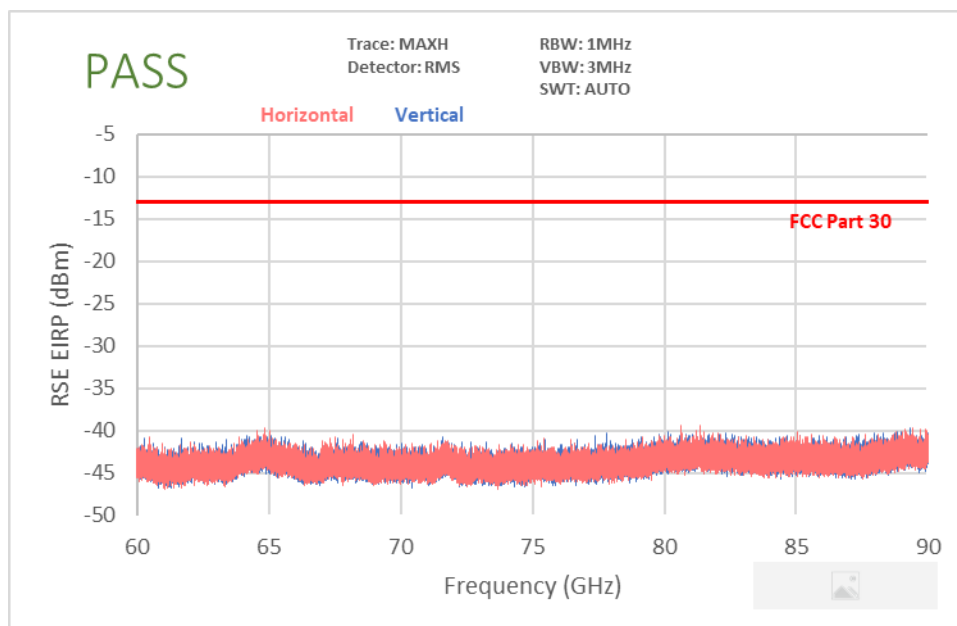


**Plot 7-110. Radiated Spurious Plot 60-90 GHz (QTM1 1CC-100MHz Bandwidth QPSK Low Channel)**



**Plot 7-111. Radiated Spurious Plot 60-90 GHz (QTM1 1CC-100MHz Bandwidth QPSK Mid Channel)**

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 88 of 304



**Plot 7-112. Radiated Spurious Plot 60-90 GHz (QTM1 1CC-100MHz Bandwidth QPSK High Channel)**

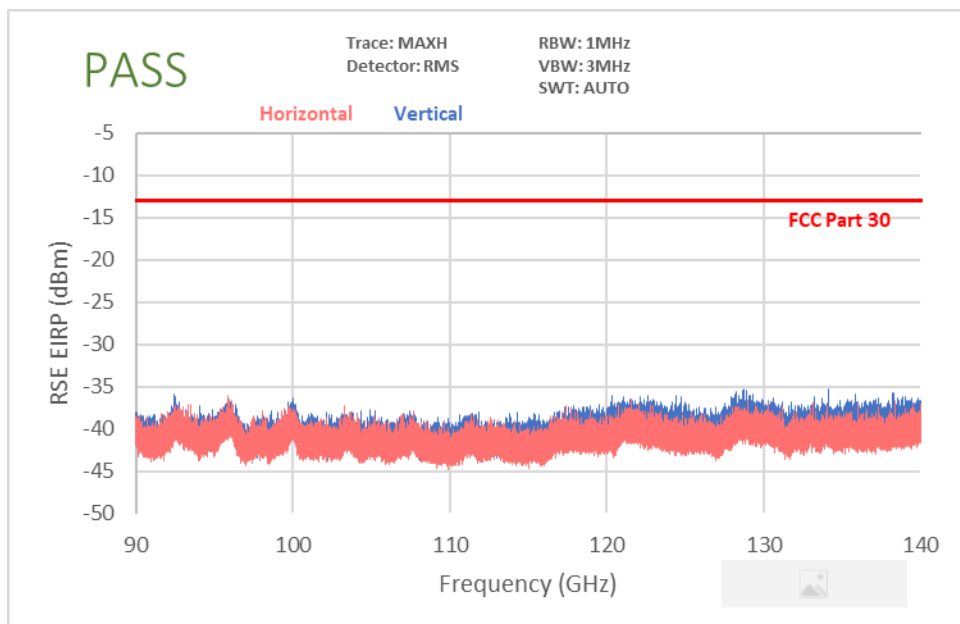
Frequency [MHz]	Detector /Trace	Chan.	Bandwidth (MHz)	Mod.	Beam Polarization	Ant. Pos [H/V]	Ant. Height [cm]	Turn Table Azimuth [degree]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
74103.60	Maxh/RMS	Low	100	QPSK	H + V	V	-	-	-43.84	-13.00	-30.84
76997.76	Maxh/RMS	Mid	100	QPSK	H + V	V	-	-	-42.30	-13.00	-29.30
79899.84	Maxh/RMS	High	100	QPSK	H + V	V	-	-	-44.39	-13.00	-31.39
74103.60	Maxh/RMS	Low	100	QPSK	H + V	H	-	-	-44.56	-13.00	-31.56
76997.76	Maxh/RMS	Mid	100	QPSK	H + V	H	-	-	-43.86	-13.00	-30.86
79899.84	Maxh/RMS	High	100	QPSK	H + V	H	-	-	-44.71	-13.00	-31.71

**Table 7-26. Spurious Emissions QTM1 (60 – 90GHz)**

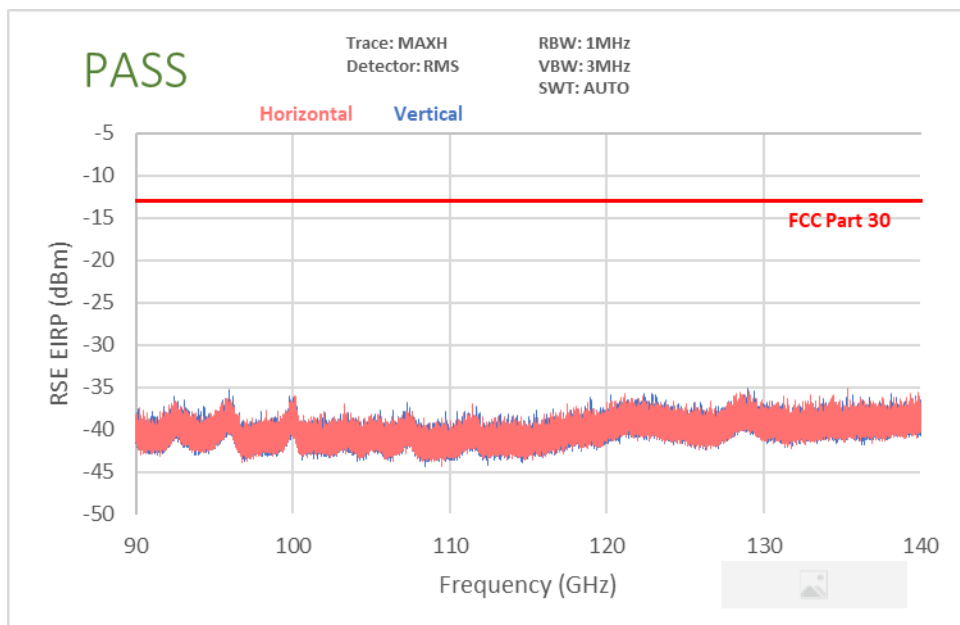
FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	<b>MEASUREMENT REPORT (CERTIFICATION)</b>			Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset			Page 89 of 304



## 7.4.13 Radiated Spurious Emissions Plots n260(90 – 140GHz)

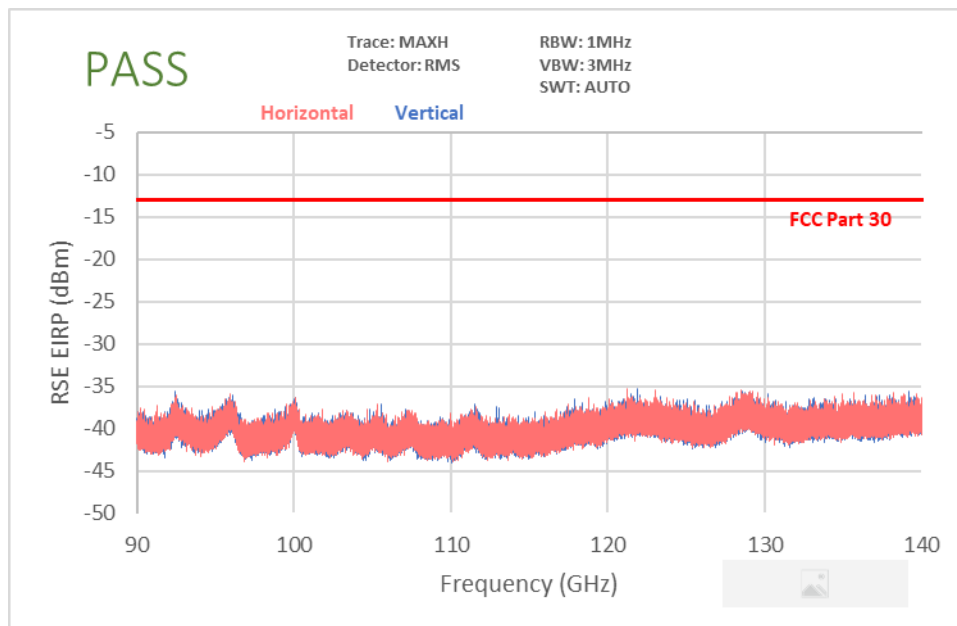


Plot 7-113. Radiated Spurious Plot 90-140 GHz (QTM0 1CC-100MHz Bandwidth QPSK Low Channel)



Plot 7-114. Radiated Spurious Plot 90-140 GHz (QTM0 1CC-100MHz Bandwidth QPSK Mid Channel)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 90 of 304

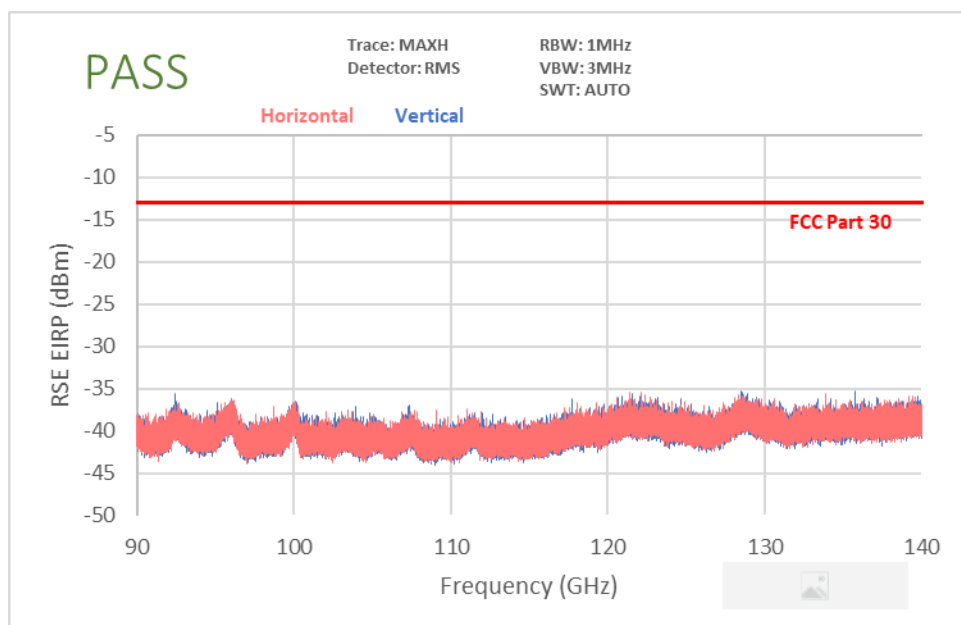


**Plot 7-115. Radiated Spurious Plot 90-140 GHz (QTM0 1CC-100MHz Bandwidth QPSK High Channel)**

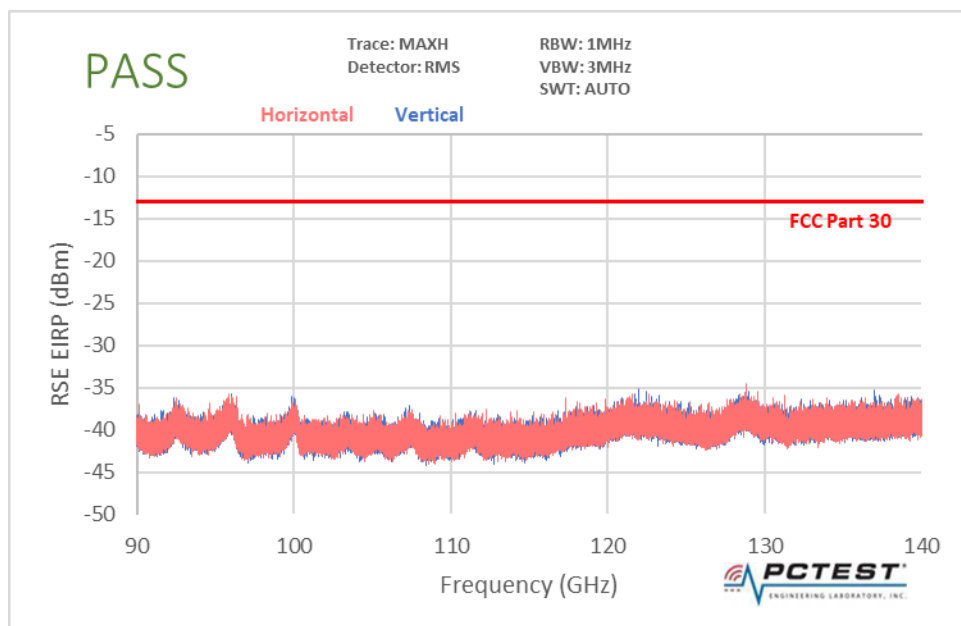
Frequency [MHz]	Detector /Trace	Chan.	Bandwidth (MHz)	Mod.	Beam Polarization	Ant. Pos [H/V]	Ant. Height [cm]	Turn Table Azimuth [degree]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
111155.40	Maxh/RMS	Low	100	QPSK	H + V	V	-	-	-35.64	-13.00	-22.64
115496.64	Maxh/RMS	Mid	100	QPSK	H + V	V	-	-	-36.18	-13.00	-23.18
119849.76	Maxh/RMS	High	100	QPSK	H + V	V	-	-	-37.97	-13.00	-24.97
111155.40	Maxh/RMS	Low	100	QPSK	H + V	H	-	-	-35.08	-13.00	-22.08
115496.64	Maxh/RMS	Mid	100	QPSK	H + V	H	-	-	-36.79	-13.00	-23.79
119849.76	Maxh/RMS	High	100	QPSK	H + V	H	-	-	-37.21	-13.00	-24.21

**Table 7-27. Spurious Emissions QTM0 (90-140GHz)**

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	<b>MEASUREMENT REPORT (CERTIFICATION)</b>			Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset			Page 91 of 304

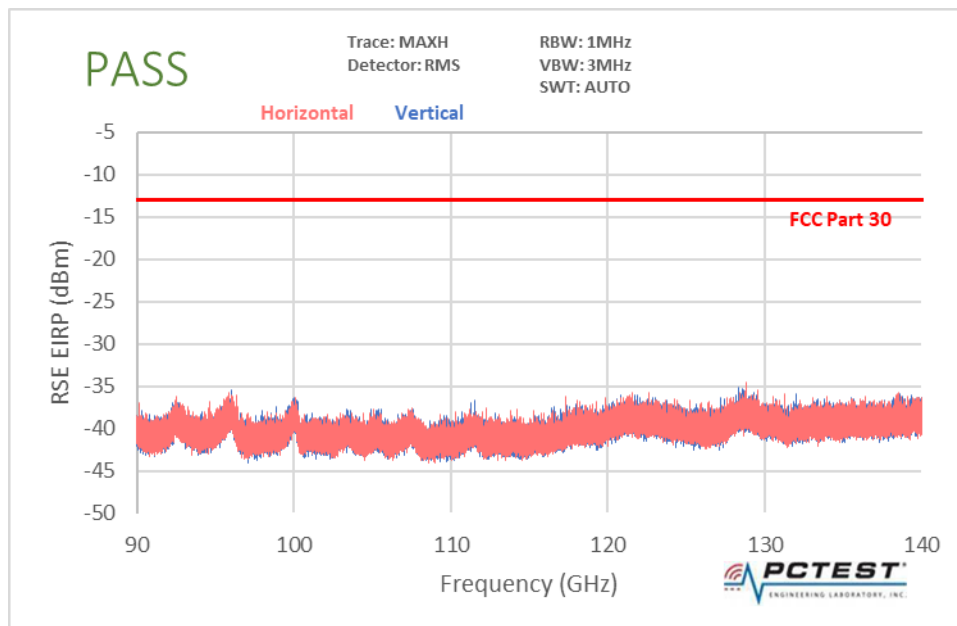


Plot 7-116. Radiated Spurious Plot 90-140 GHz (QTM1 1CC-100MHz Bandwidth QPSK Low Channel)



Plot 7-117. Radiated Spurious Plot 90-140 GHz (QTM1 1CC-100MHz Bandwidth QPSK Mid Channel)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 92 of 304



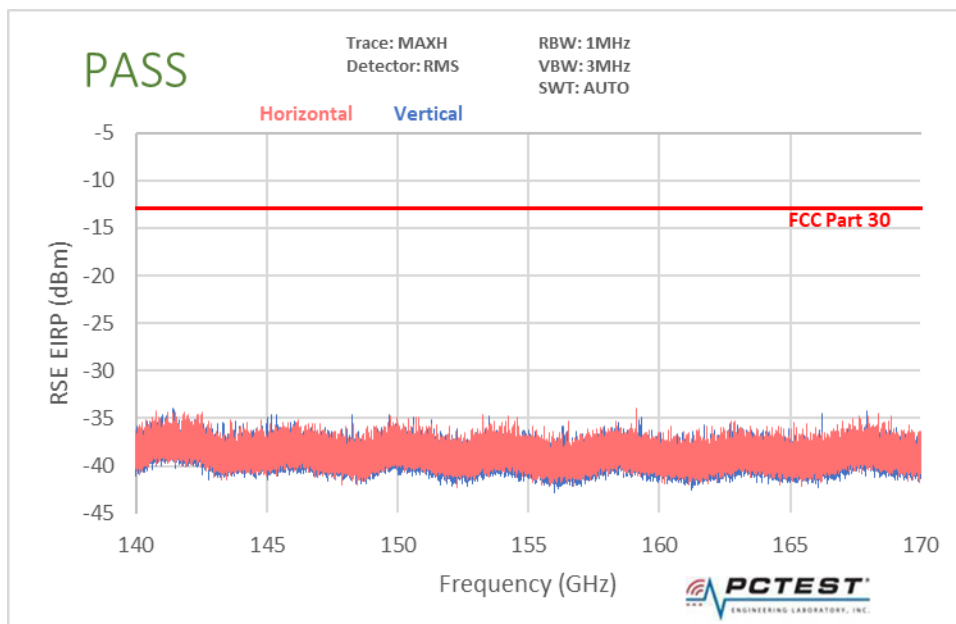
**Plot 7-118. Radiated Spurious Plot 90-140 GHz (QTM1 1CC-100MHz Bandwidth QPSK High Channel)**

Frequency [MHz]	Detector /Trace	Chan.	Bandwidth (MHz)	Mod.	Beam Polarization	Ant. Pos [H/V]	Ant. Height [cm]	Turn Table Azimuth [degree]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
111155.40	Maxh/RMS	Low	100	QPSK	H + V	V	-	-	-34.97	-13.00	-21.97
115496.64	Maxh/RMS	Mid	100	QPSK	H + V	V	-	-	-35.18	-13.00	-22.18
119849.76	Maxh/RMS	High	100	QPSK	H + V	V	-	-	-37.31	-13.00	-24.31
111155.40	Maxh/RMS	Low	100	QPSK	H + V	H	-	-	-36.99	-13.00	-23.99
115496.64	Maxh/RMS	Mid	100	QPSK	H + V	H	-	-	-35.20	-13.00	-22.20
119849.76	Maxh/RMS	High	100	QPSK	H + V	H	-	-	-34.67	-13.00	-21.67

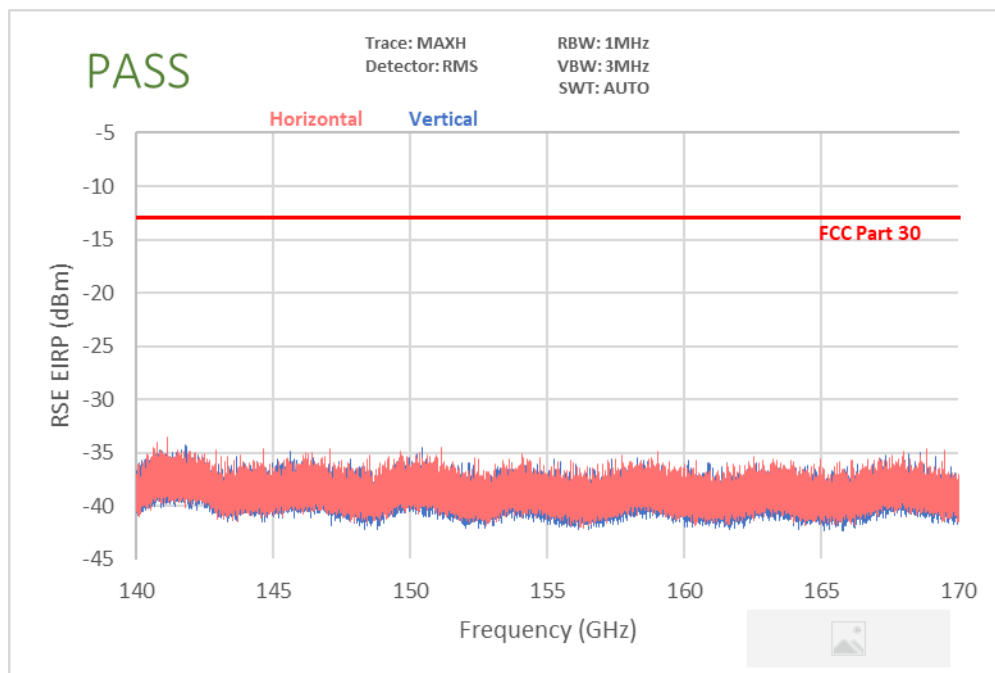
**Table 7-28. Spurious Emissions QTM1 (90-140GHz)**

<b>FCC ID:</b> ZNFV450VM		<b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1M1901150005-14-R2.ZNF	<b>Test Dates:</b> 1/21 -4/26/2019	<b>EUT Type:</b> Portable Handset		Page 93 of 304

## 7.4.14 Radiated Spurious Emissions Plots n260 (140 – 170GHz)

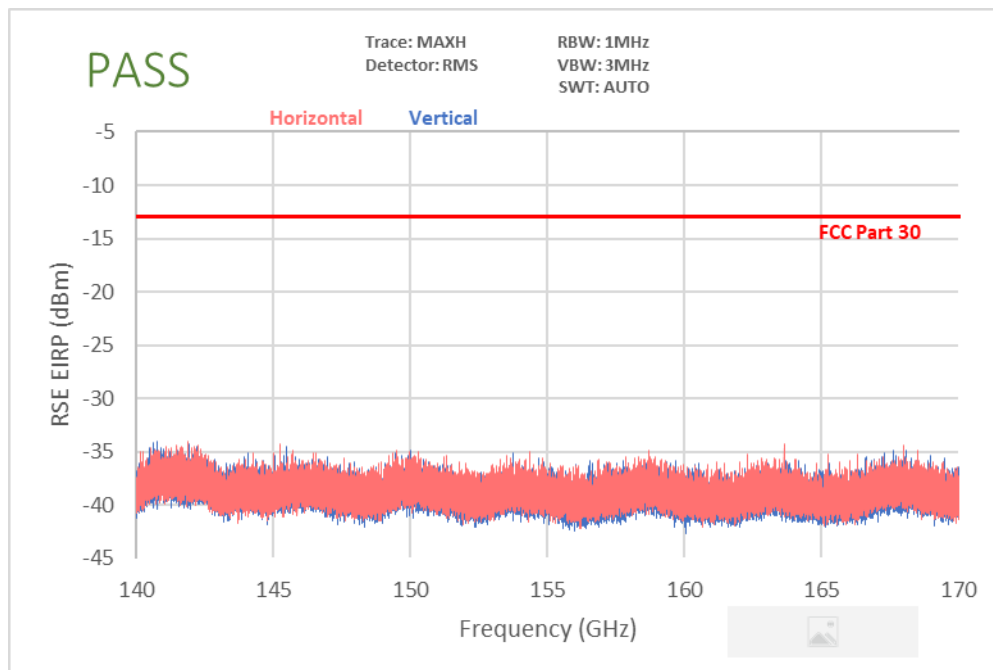


Plot 7-119. Radiated Spurious Plot 140-170 GHz (QTM0 1CC-100MHz Bandwidth QPSK Low Channel)



Plot 7-120. Radiated Spurious Plot 140-170 GHz (QTM0 1CC-100MHz Bandwidth QPSK Mid Channel)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 94 of 304

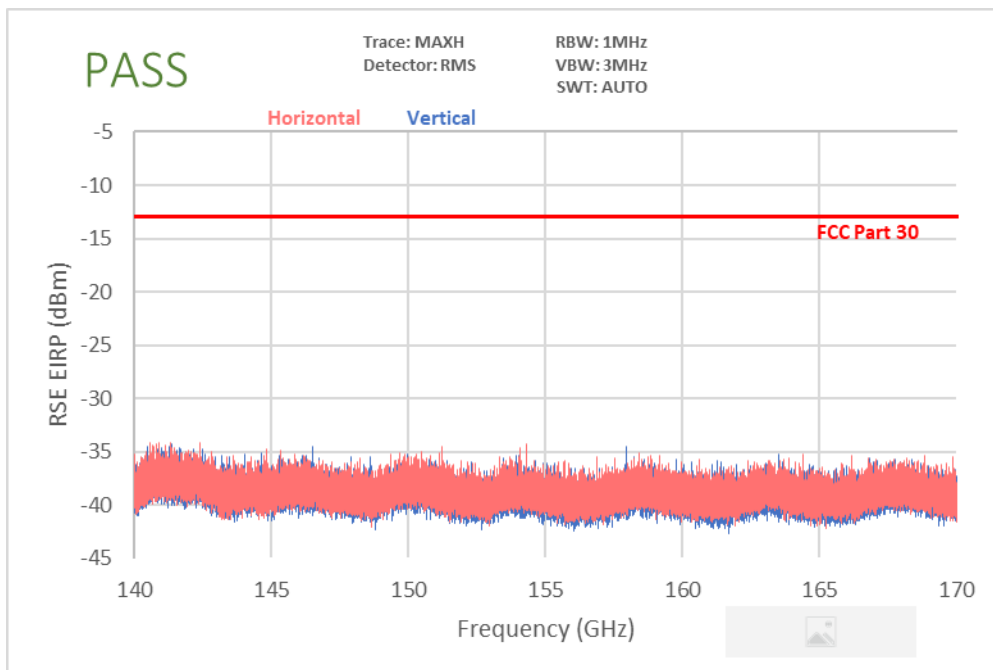


**Plot 7-121. Radiated Spurious Plot 140-170 GHz (QTM0 1CC-100MHz Bandwidth QPSK High Channel)**

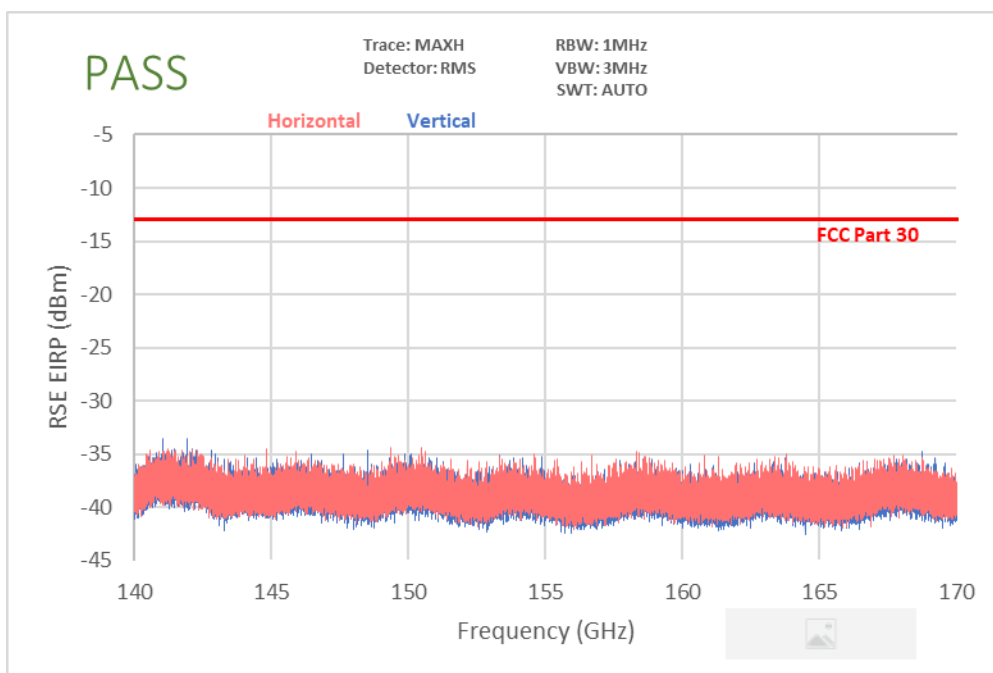
Frequency [MHz]	Detector /Trace	Chan.	Bandwidth (MHz)	Mod.	Beam Polarization	Ant. Pos [H/V]	Ant. Height [cm]	Turn Table Azimuth [degree]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
148207.20	Maxh/RMS	Low	100	QPSK	H + V	V	-	-	-36.18	-13.00	-23.18
153995.52	Maxh/RMS	Mid	100	QPSK	H + V	V	-	-	-35.34	-13.00	-22.34
159799.68	Maxh/RMS	High	100	QPSK	H + V	V	-	-	-35.98	-13.00	-22.98
148207.20	Maxh/RMS	Low	100	QPSK	H + V	H	-	-	-34.36	-13.00	-21.36
153995.52	Maxh/RMS	Mid	100	QPSK	H + V	H	-	-	-35.67	-13.00	-22.67
159799.68	Maxh/RMS	High	100	QPSK	H + V	H	-	-	-36.08	-13.00	-23.08

**Table 7-29. Spurious Emissions QTM0 (140-170GHz)**

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset			Page 95 of 304

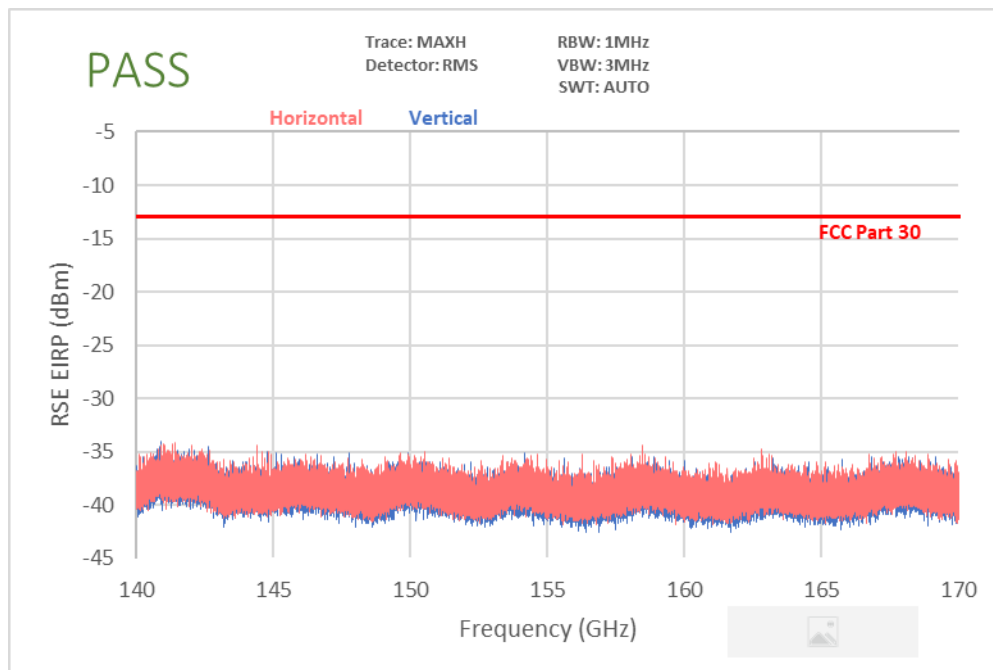


**Plot 7-122. Radiated Spurious Plot 140-170 GHz (QTM1 1CC-100MHz Bandwidth QPSK Low Channel)**



**Plot 7-123. Radiated Spurious Plot 140-170 GHz (QTM1 1CC-100MHz Bandwidth QPSK Mid Channel)**

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 96 of 304



**Plot 7-124. Radiated Spurious Plot 140-170 GHz (QTM1 1CC-100MHz Bandwidth QPSK High Channel)**

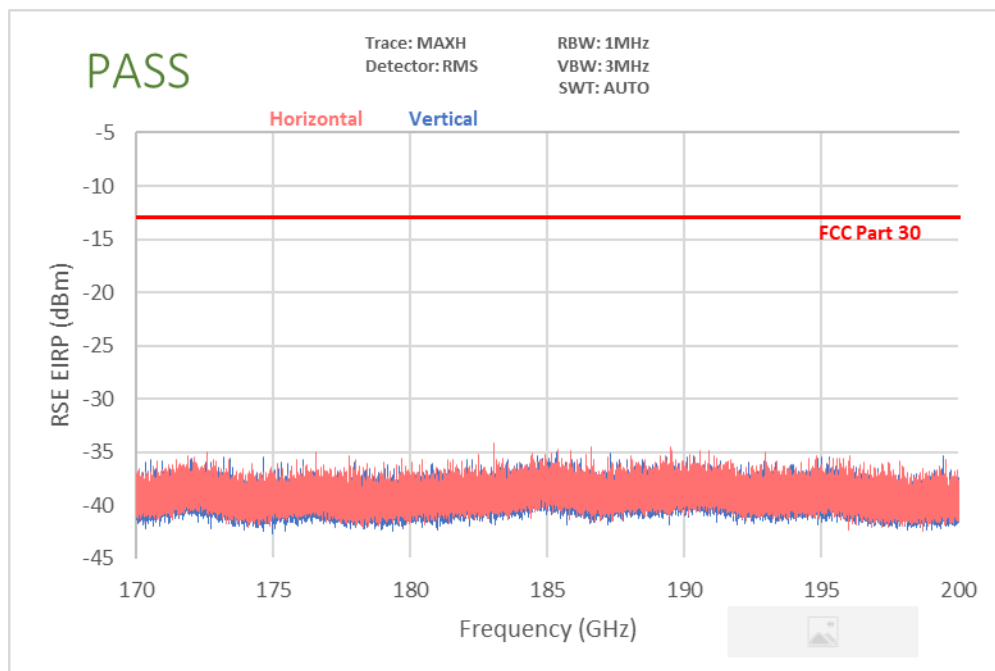
Frequency [MHz]	Detector /Trace	Chan.	Bandwidth (MHz)	Mod.	Beam Polarization	Ant. Pos [H/V]	Ant. Height [cm]	Turn Table Azimuth [degree]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
148207.20	Maxh/RMS	Low	100	QPSK	H + V	V	-	-	-37.37	-13.00	-24.37
153995.52	Maxh/RMS	Mid	100	QPSK	H + V	V	-	-	-35.95	-13.00	-22.95
159799.68	Maxh/RMS	High	100	QPSK	H + V	V	-	-	-36.34	-13.00	-23.34
148207.20	Maxh/RMS	Low	100	QPSK	H + V	H	-	-	-36.02	-13.00	-23.02
153995.52	Maxh/RMS	Mid	100	QPSK	H + V	H	-	-	-35.87	-13.00	-22.87
159799.68	Maxh/RMS	High	100	QPSK	H + V	H	-	-	-36.48	-13.00	-23.48

**Table 7-30. Spurious Emissions QTM1 (140-170GHz)**

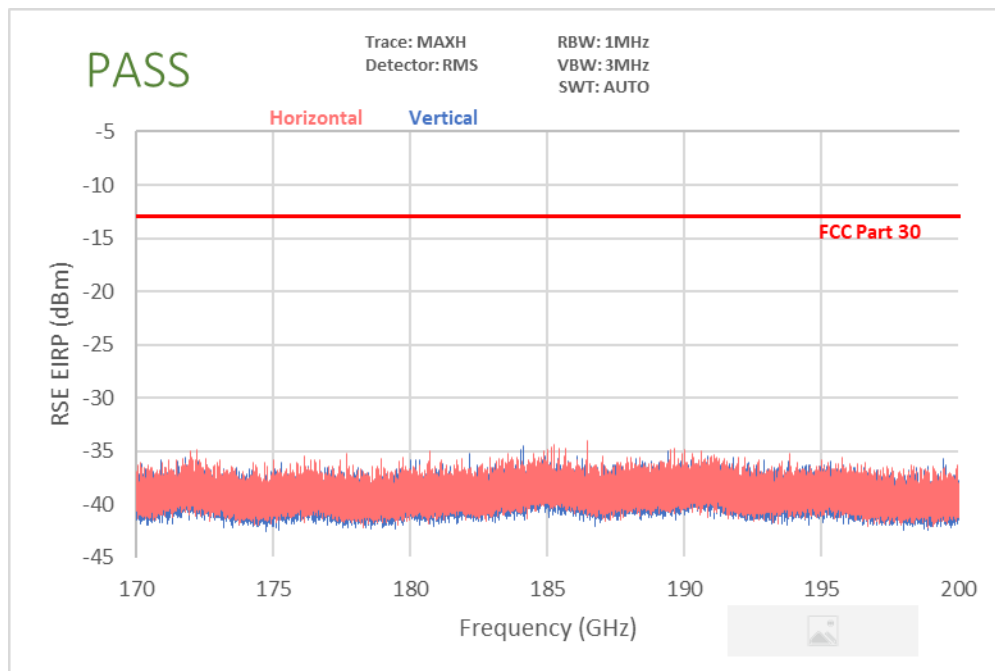
FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	<b>MEASUREMENT REPORT (CERTIFICATION)</b>			Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset			Page 97 of 304



## 7.4.15 Radiated Spurious Emissions Plots n260(170 – 200GHz)

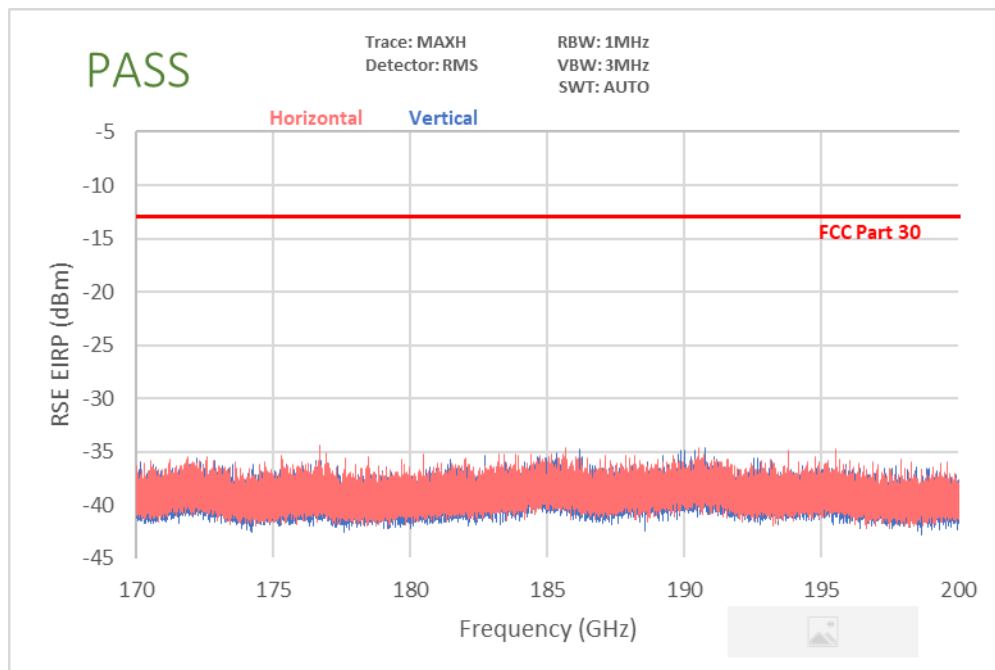


**Plot 7-125. Radiated Spurious Plot 170-200 GHz (QTM0 1CC-100MHz Bandwidth QPSK Low Channel)**



**Plot 7-126. Radiated Spurious Plot 170-200 GHz (QTM0 1CC-100MHz Bandwidth QPSK Mid Channel)**

FCC ID: ZNFV450VM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 98 of 304

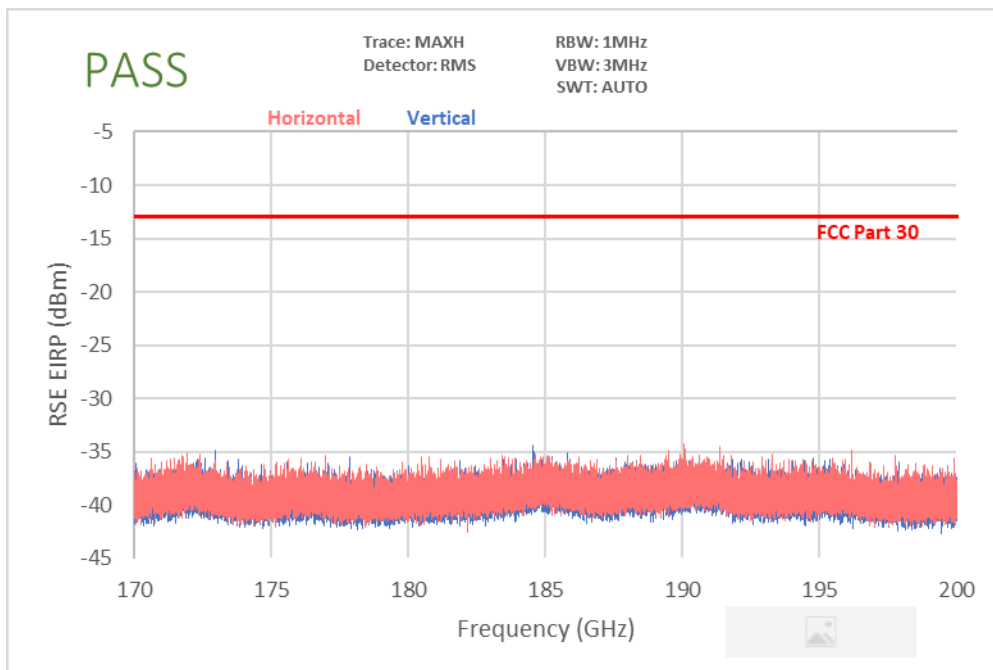


**Plot 7-127. Radiated Spurious Plot 170-200 GHz (QTM0 1CC-100MHz Bandwidth QPSK High Channel)**

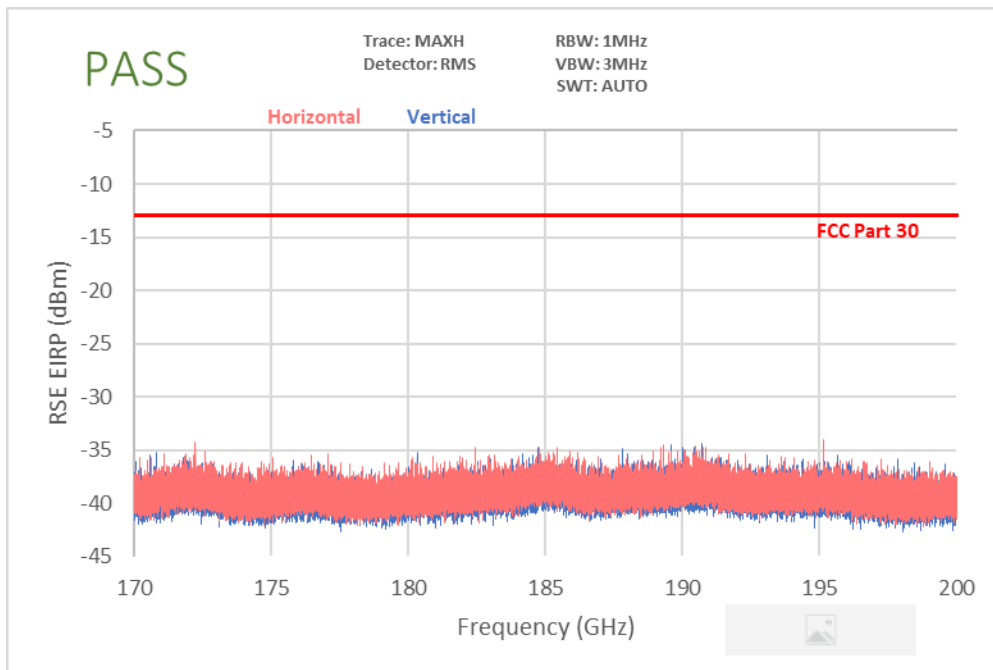
Frequency [MHz]	Detector /Trace	Chan.	Bandwidth (MHz)	Mod.	Beam Polarization	Ant. Pos [H/V]	Ant. Height [cm]	Turn Table Azimuth [degree]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
185259.00	Maxh/RMS	Low	100	QPSK	H + V	V	-	-	-35.21	-13.00	-22.21
192494.40	Maxh/RMS	Mid	100	QPSK	H + V	V	-	-	-37.28	-13.00	-24.28
199749.60	Maxh/RMS	High	100	QPSK	H + V	V	-	-	-36.93	-13.00	-23.93
185259.00	Maxh/RMS	Low	100	QPSK	H + V	H	-	-	-35.09	-13.00	-22.09
192494.40	Maxh/RMS	Mid	100	QPSK	H + V	H	-	-	-36.17	-13.00	-23.17
199749.60	Maxh/RMS	High	100	QPSK	H + V	H	-	-	-38.57	-13.00	-25.57

**Table 7-31. Spurious Emissions QTM0 (170-200GHz)**

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)		LG	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset			Page 99 of 304

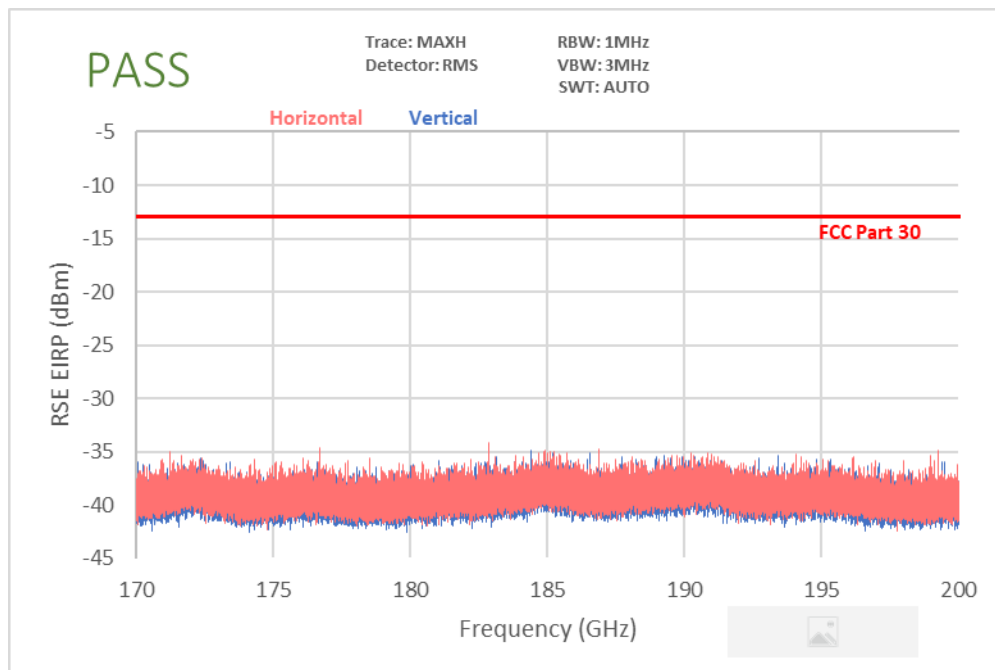


**Plot 7-128. Radiated Spurious Plot 170-200 GHz (QTM1 1CC-100MHz Bandwidth QPSK Low Channel)**



**Plot 7-129. Radiated Spurious Plot 170-200 GHz (QTM1 1CC-100MHz Bandwidth QPSK Mid Channel)**

FCC ID: ZNFV450VM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 100 of 304



**Plot 7-130. Radiated Spurious Plot 170-200 GHz (QTM1 1CC-100MHz Bandwidth QPSK High Channel)**

Frequency [MHz]	Detector /Trace	Chan.	Bandwidth (MHz)	Mod.	Beam Polarization	Ant. Pos [H/V]	Ant. Height [cm]	Turn Table Azimuth [degree]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
185259.00	Maxh/RMS	Low	100	QPSK	H + V	V	-	-	-36.87	-13.00	-23.87
192494.40	Maxh/RMS	Mid	100	QPSK	H + V	V	-	-	-35.27	-13.00	-22.27
199749.60	Maxh/RMS	High	100	QPSK	H + V	V	-	-	-37.34	-13.00	-24.34
185259.00	Maxh/RMS	Low	100	QPSK	H + V	H	-	-	-35.95	-13.00	-22.95
192494.40	Maxh/RMS	Mid	100	QPSK	H + V	H	-	-	-34.67	-13.00	-21.67
199749.60	Maxh/RMS	High	100	QPSK	H + V	H	-	-	-36.80	-13.00	-23.80

**Table 7-32. Spurious Emissions QTM1 (170-200GHz)**

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset			Page 101 of 304

## 7.5 Band Edge Emissions

**§2.1051, §30.203**

### Test Overview

All out of band emissions are measured in a radiated setup while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All modulations were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

***The minimum permissible attenuation level of any spurious emission is -13dbm/1MHz. However, in the bands immediately outside and adjacent to the licensee's frequency block, having a bandwidth equal to 10 percent of the channel bandwidth, the conductive power or the total radiated power of any emission shall be -5 dBm/MHz or lower.***

### Test Procedure Used

ANSI C63.26-2015 Section 5 and ANSI C63.26-2015 Section 6.4

### Test Settings

1. Start and stop frequency were set such that both upper and lower band edges are measured.
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW = 1MHz
4. VBW  $\geq 3 \times$  RBW
5. Detector = RMS
6. Number of sweep points  $\geq 2 \times$  Span/RBW
7. Trace mode = trace average
8. Sweep time = auto couple
9. The trace was allowed to stabilize

### Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning.
- 2) Band Edge measurements in this section are shown as equivalent conductive powers for direct comparison to the 30.203 limit. The conductive power at the band edge is calculated by subtracting the gain of the EUT's antenna from the measured EIRP level. Antenna Gain information is shown on the following page.
- 3) Band Edge emissions were measured at a 1 meter distance.
- 4) The spectrum analyzer for each measurement shows an offset value that was determined using the measurement antenna factor, cable loss, far field measurement distance, and EUT antenna gain. A sample calculation is shown on the following page.
- 5) MIMO Band Edge plots shown below are mathematically summed conductive powers between spectrum analyzer measurements on H Beam and V Beam. This MIMO bandedge plot was produced by summing the following two spectrum analyzer traces: (1) the first trace is maximized while the EUT is transmitting in H-beam and (2) the second trace is maximized while the EUT is transmitting in V-beam.
- 6) The MIMO Band Edges were calculated by using the "measure and sum the spectra across the outputs" technique specified in Section 6.4.3.2.2 of ANSI C63.26-2015. The spectra were summed linearly and converted to dBm for comparison with the limit.

FCC ID: ZNFV450VM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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## 7.5.1 Antenna Gain Information at the Band Edge

The following antenna gain information is provided to demonstrate the antenna performance of the 27.5 – 28.35GHz band. These antenna gains were subtracted from the measured EIRP levels at the lower and upper band edge frequencies to determine an equivalent conductive power that was compared directly with the §30.203 limits.

Band	Antenna Gain (dBi)
n261	9
n260	8

**Table 7-33. Antenna Gains at the Band Edges**

### Sample Analyzer Offset Calculation (at 27.5GHz)

Measurement Antenna Factor = 40.70dB/m

Cable Loss = 8.44dB

EUT Antenna Gain = 7.53dBi

Analyzer Offset (dB) = AF (dB/m) + CL (dB) + 107 + 20log<sub>10</sub>(D) – 104.8dB – Gain (dBi), where D = 1m

$$= 40.70\text{dB/m} + 8.44\text{dB} + 107 + 20\log_{10}(1\text{m}) - 104.8\text{dB} - 7.53\text{dBi}$$

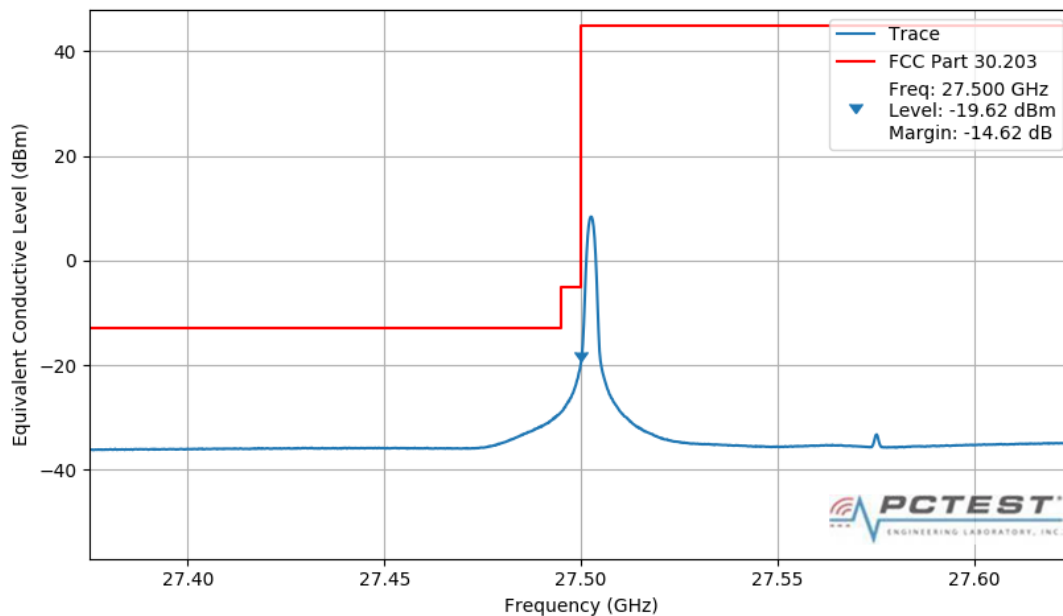
$$= 43.81\text{dB}$$

FCC ID: ZNFV450VM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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## 7.5.2 N261 1CC 50MHz Bandwidth Band Edges QTM 0 - H

**PASS**

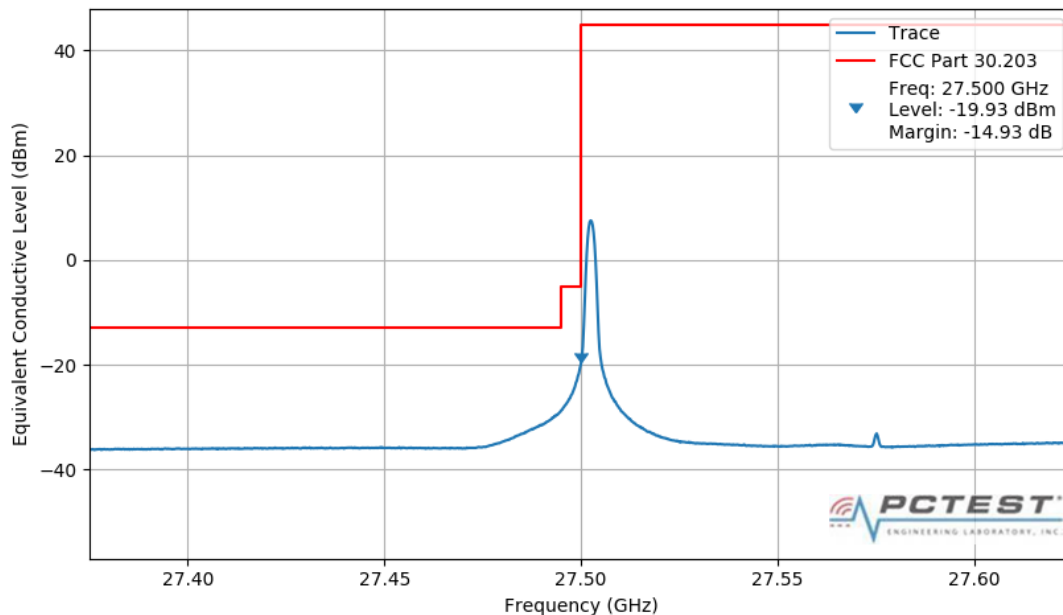
Center Freq: 27.50 GHz Trace: AVERAGE RBW: 1 MHz SWP points: 1001  
Span: 250 MHz Detector: RMS VBW: 3 MHz  
Ref Level: 43.53 dBm Offset: 43.53 dB SWP Count: 100



**Plot 7-131. Band Edge Plot (1CC 50M QPSK Low Channel – 1 RB, 0 offset)**

**PASS**

Center Freq: 27.50 GHz Trace: AVERAGE RBW: 1 MHz SWP points: 1001  
Span: 250 MHz Detector: RMS VBW: 3 MHz  
Ref Level: 43.53 dBm Offset: 43.53 dB SWP Count: 100



**Plot 7-132. Band Edge Plot (1CC 50M 16QAM Low Channel – 1 RB, 0 offset)**

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 104 of 304

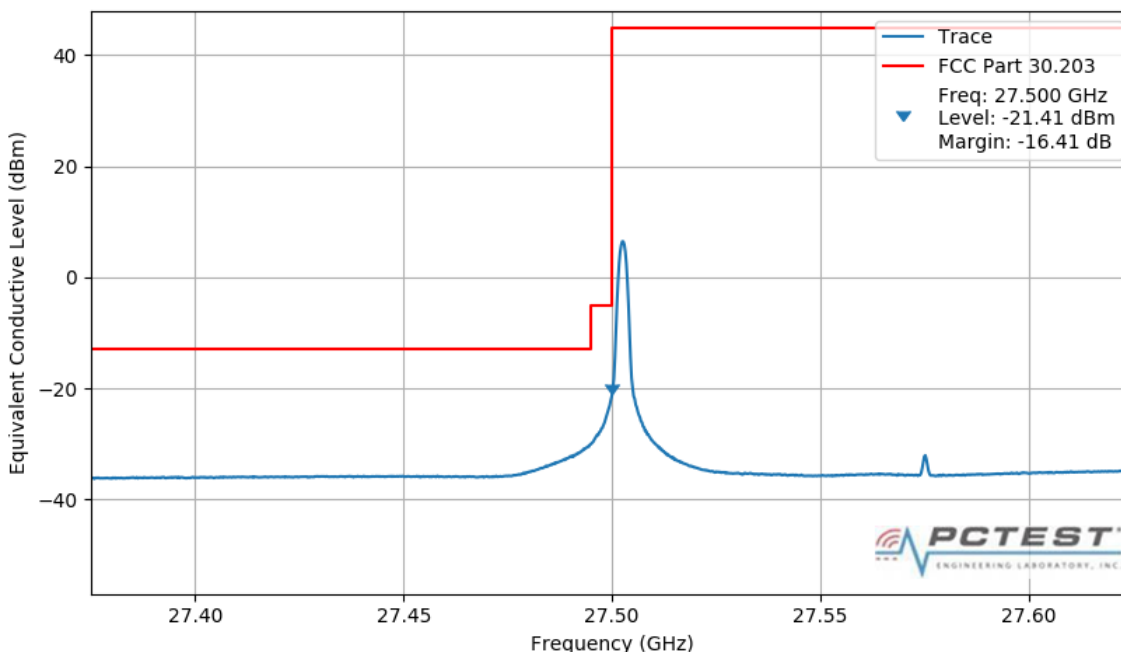
PASS

Center Freq: 27.50 GHz  
Span: 250 MHz  
Ref Level: 43.53 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.53 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-133. Band Edge Plot (1CC 50M 64QAM Low Channel – 1 RB, 0 offset)

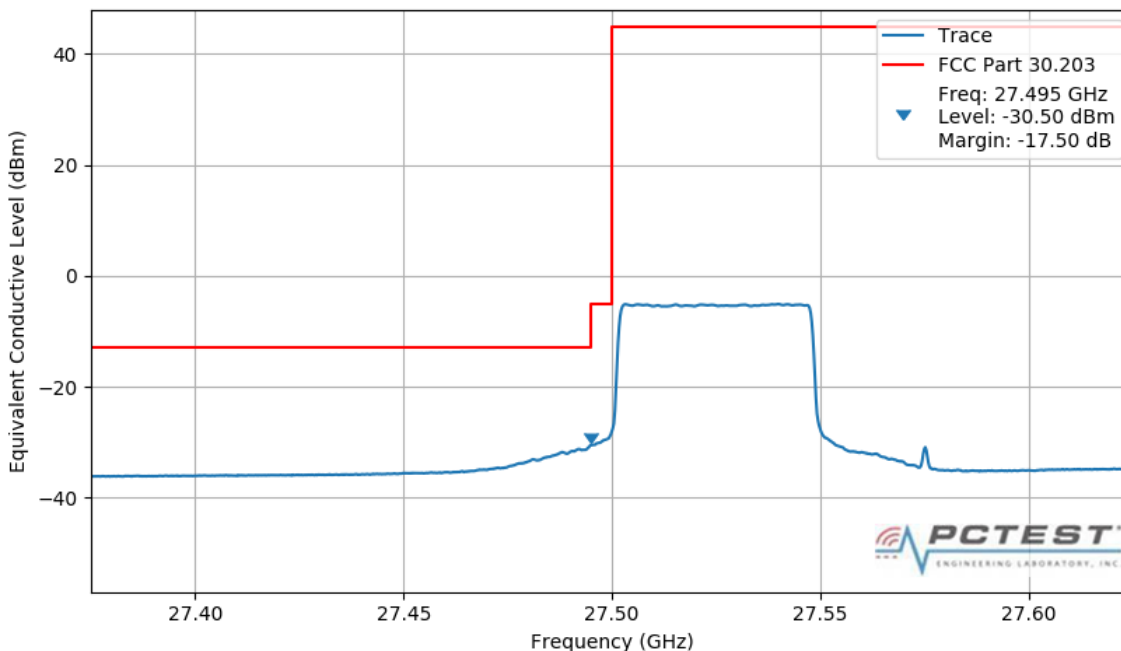
PASS

Center Freq: 27.50 GHz  
Span: 250 MHz  
Ref Level: 43.53 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.53 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-134. Band Edge Plot (1CC 50M QPSK Low Channel – 32 RB, 0 offset)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 105 of 304



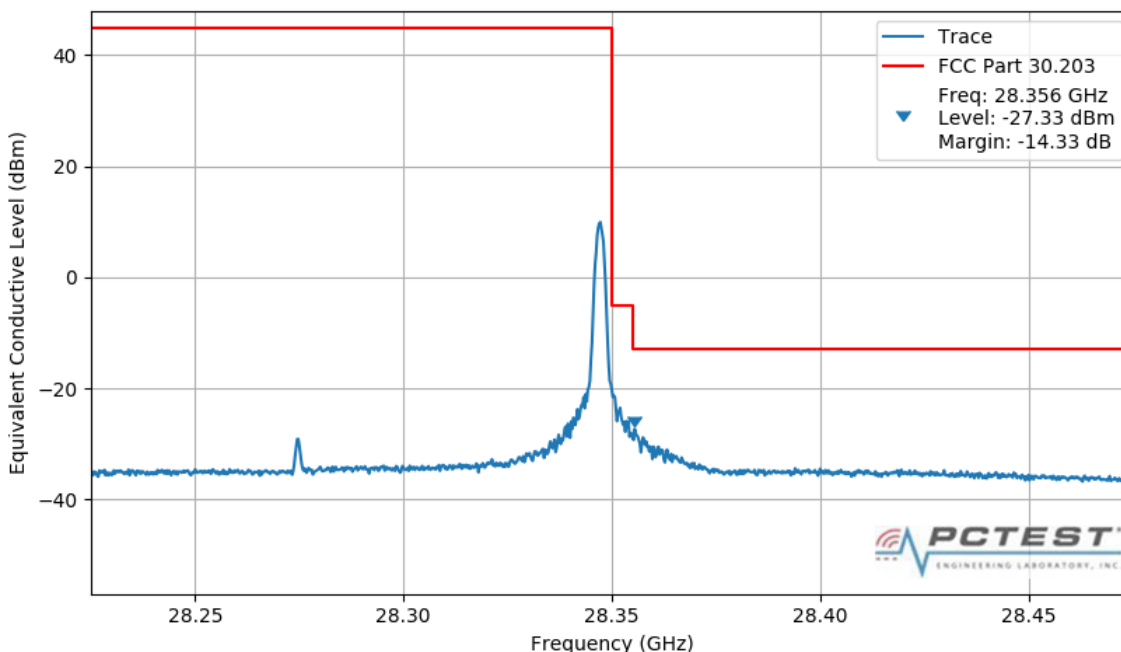
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-135. Band Edge Plot (1CC 50M QPSK High Channel – 1 RB, 31 offset)

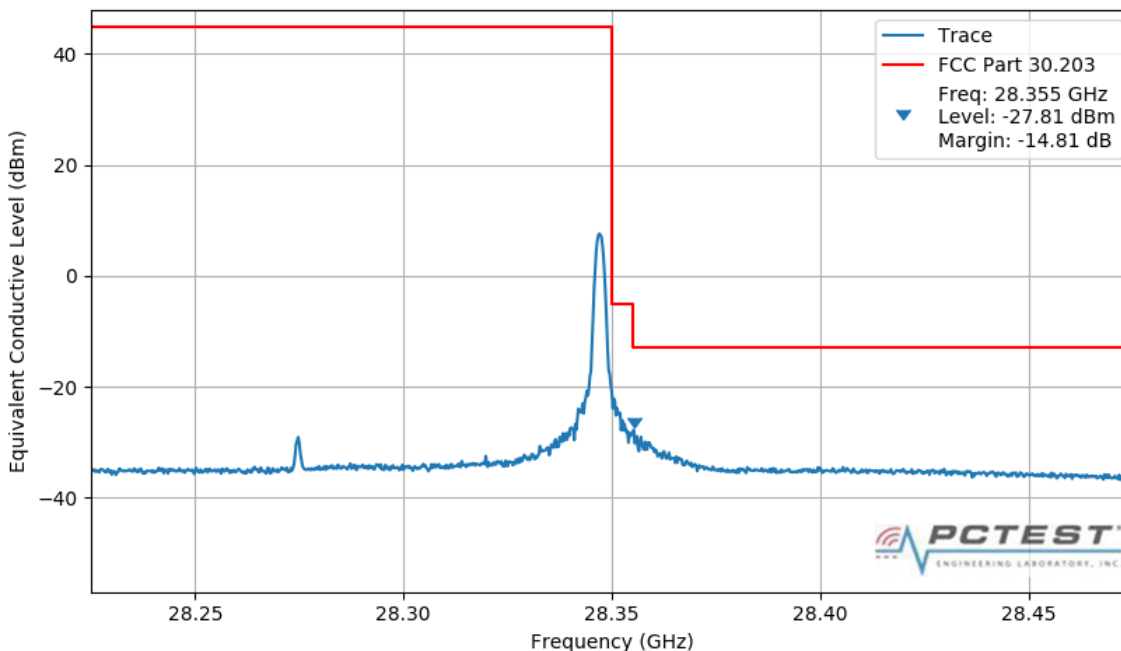
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-136. Band Edge Plot (1CC 50M 16QAM High Channel – 1 RB, 31 offset)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 106 of 304

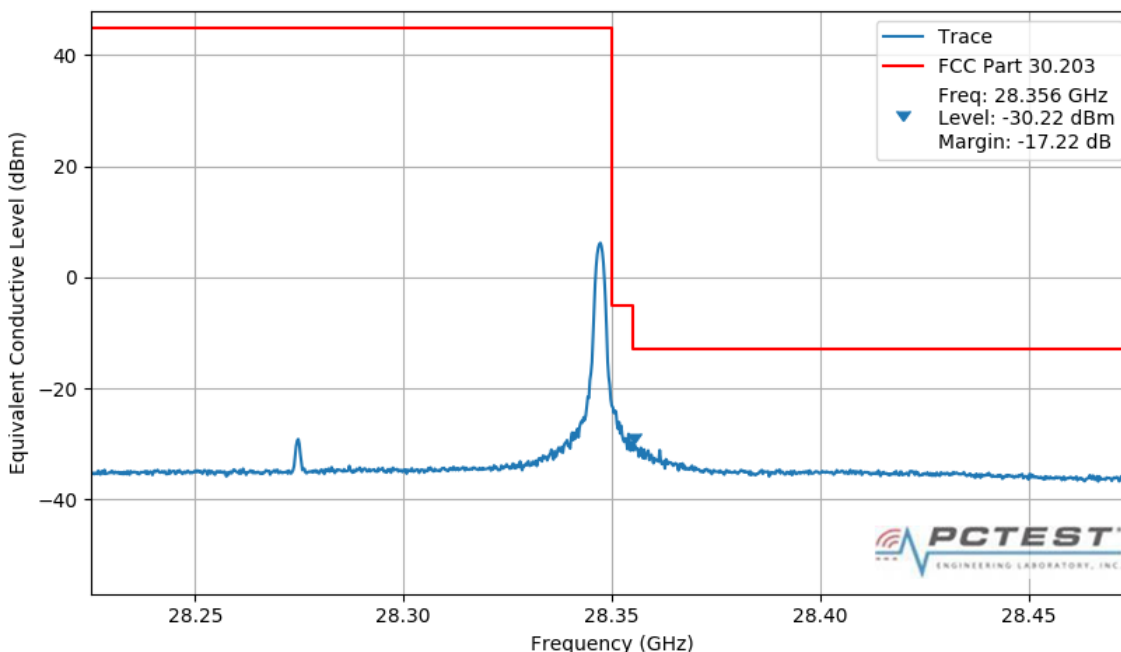
**PASS**

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



**Plot 7-137. Band Edge Plot (1CC 50M 64QAM High Channel – 1 RB, 31 offset)**

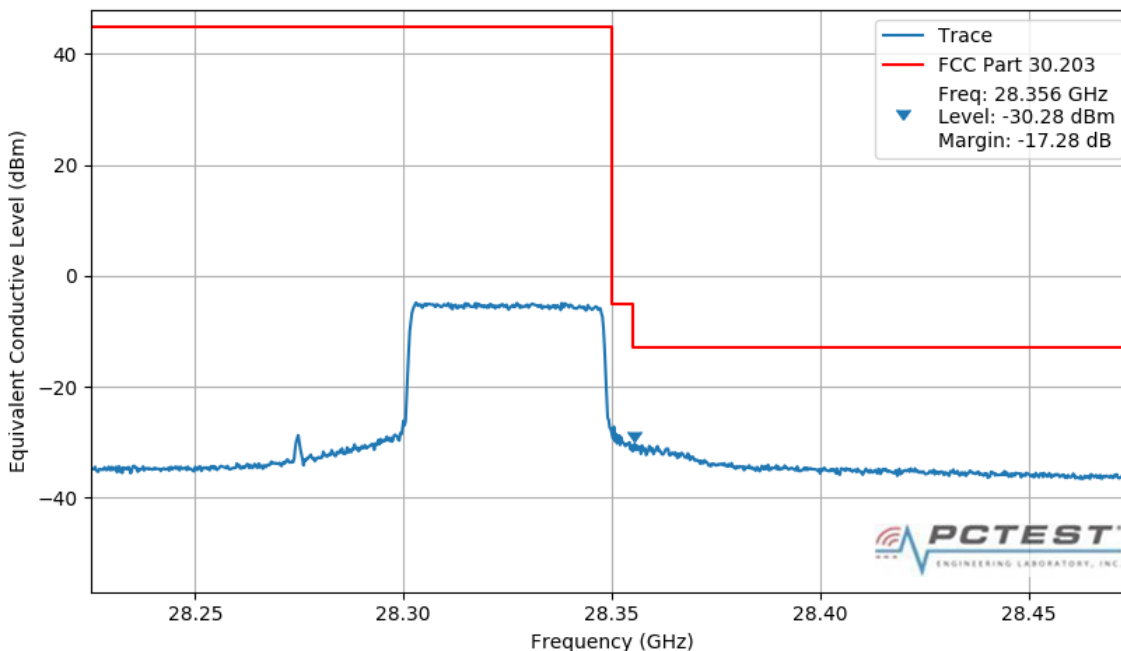
**PASS**

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



**Plot 7-138. Band Edge Plot (1CC 50M QPSK High Channel – 32 RB, 0 offset)**

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 107 of 304

# QTM 0 - V

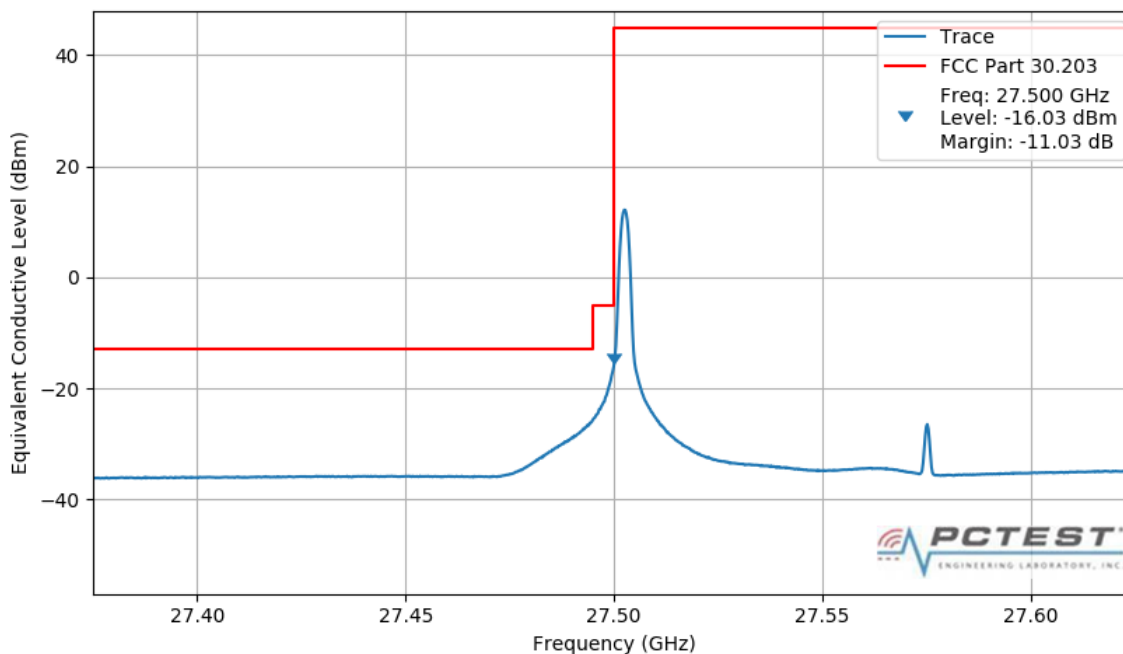
**PASS**

Center Freq: 27.50 GHz  
Span: 250 MHz  
Ref Level: 43.53 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.53 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



**Plot 7-139. Band Edge Plot (1CC 50M QPSK Low Channel – 1 RB, 0 offset)**

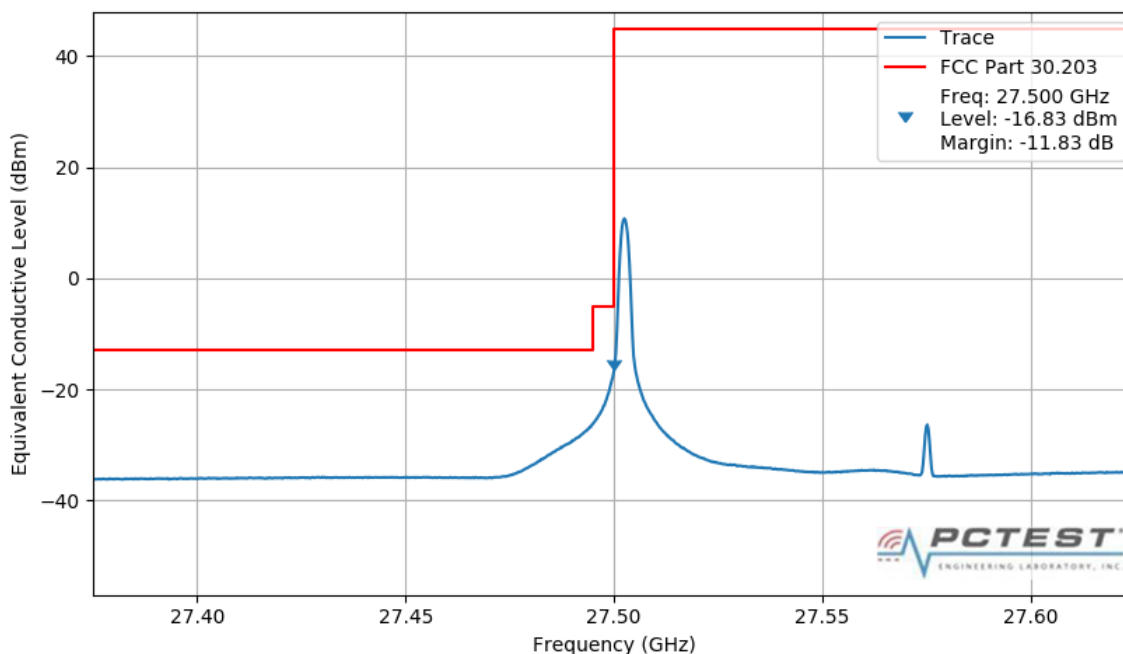
**PASS**

Center Freq: 27.50 GHz  
Span: 250 MHz  
Ref Level: 43.53 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.53 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



**Plot 7-140. Band Edge Plot (1CC 50M 16QAM Low Channel – 1 RB, 0 offset)**

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 108 of 304

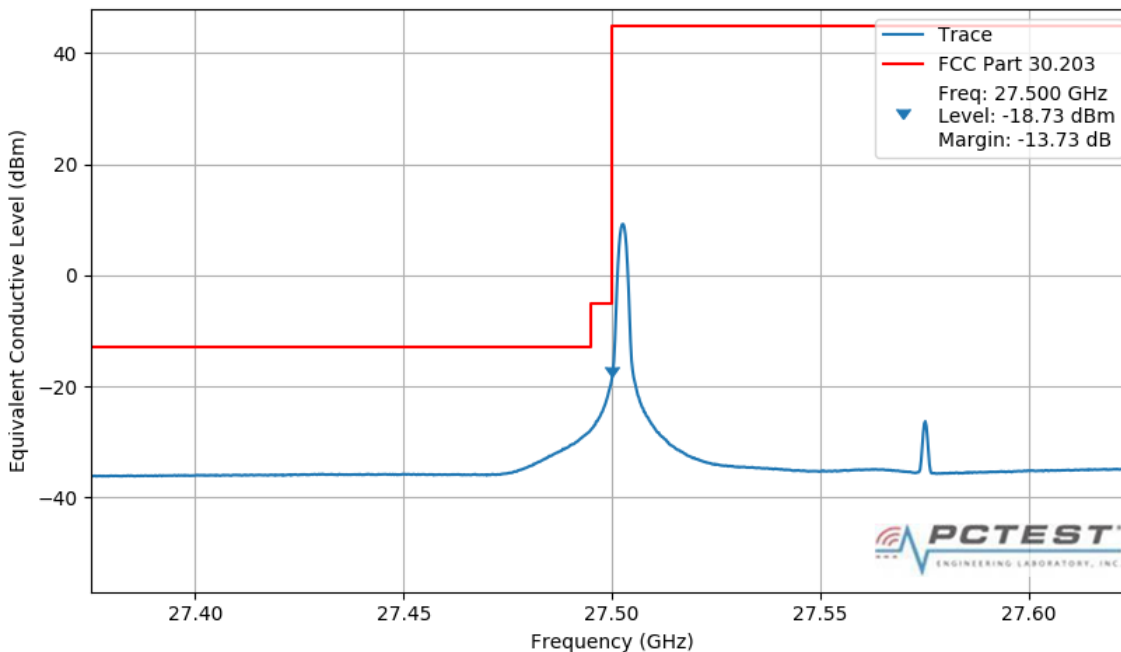
PASS

Center Freq: 27.50 GHz  
Span: 250 MHz  
Ref Level: 43.53 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.53 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-141. Band Edge Plot (1CC 50M 64QAM Low Channel – 1 RB, 0 offset)

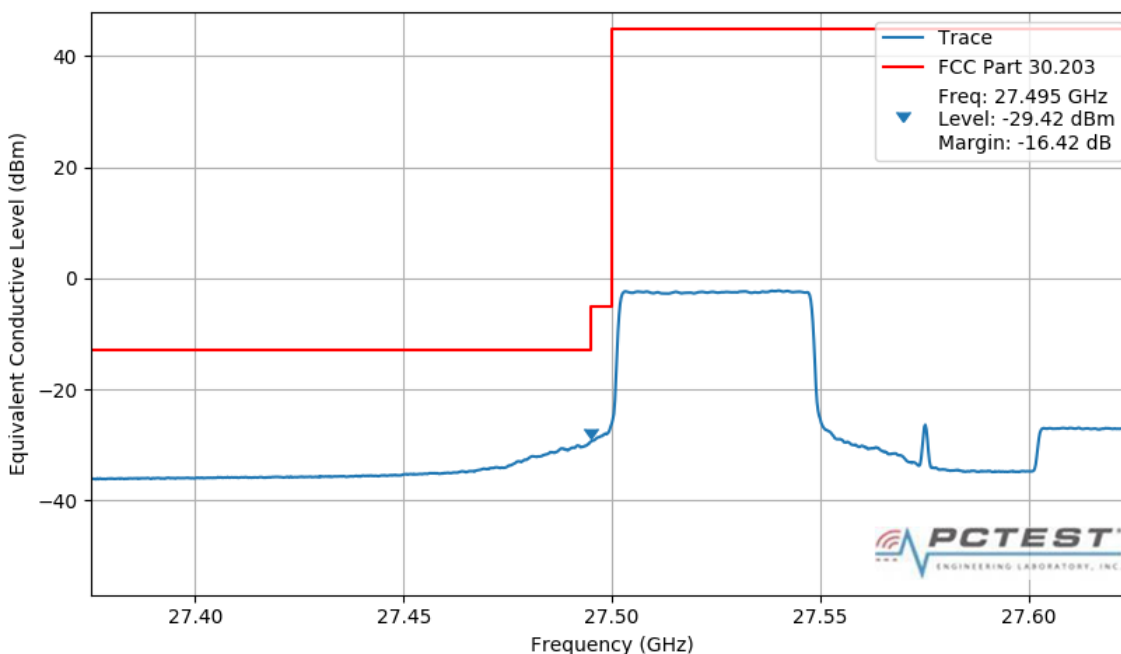
PASS

Center Freq: 27.50 GHz  
Span: 250 MHz  
Ref Level: 43.53 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.53 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-142. Band Edge Plot (1CC 50M QPSK Low Channel – 32 RB, 0 offset)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 109 of 304

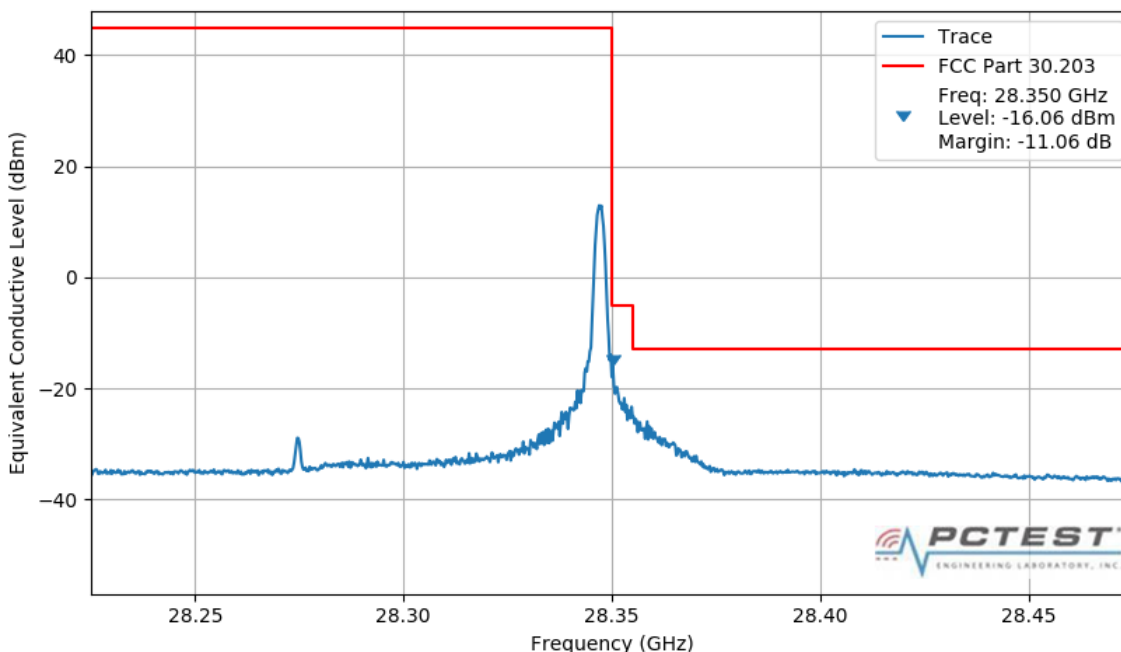
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-143. Band Edge Plot (1CC 50M QPSK High Channel – 1 RB, 31 offset)

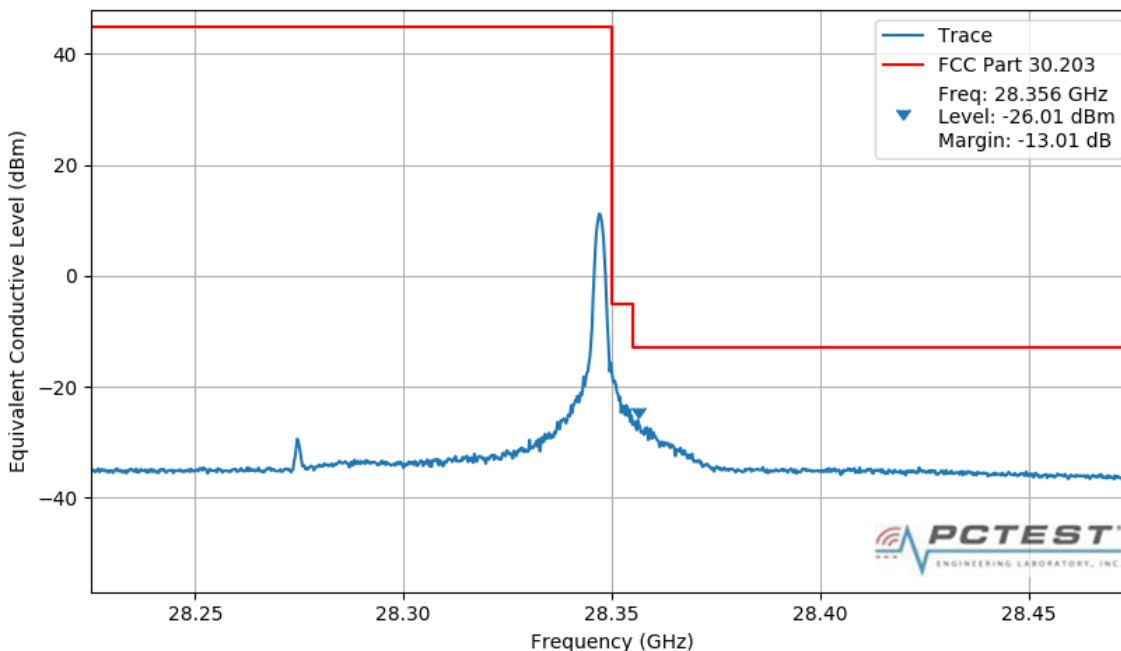
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-144. Band Edge Plot (1CC 50M 16QAM High Channel – 1 RB, 31 offset)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 110 of 304

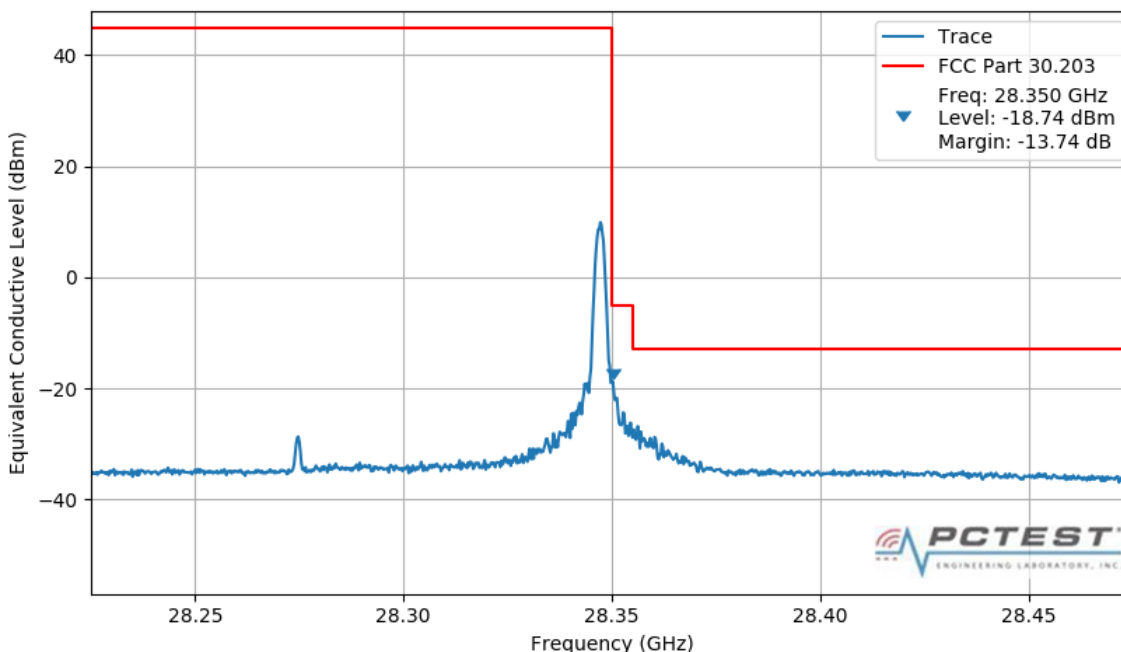
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-145. Band Edge Plot (1CC 50M 64QAM High Channel – 1 RB, 31 offset)

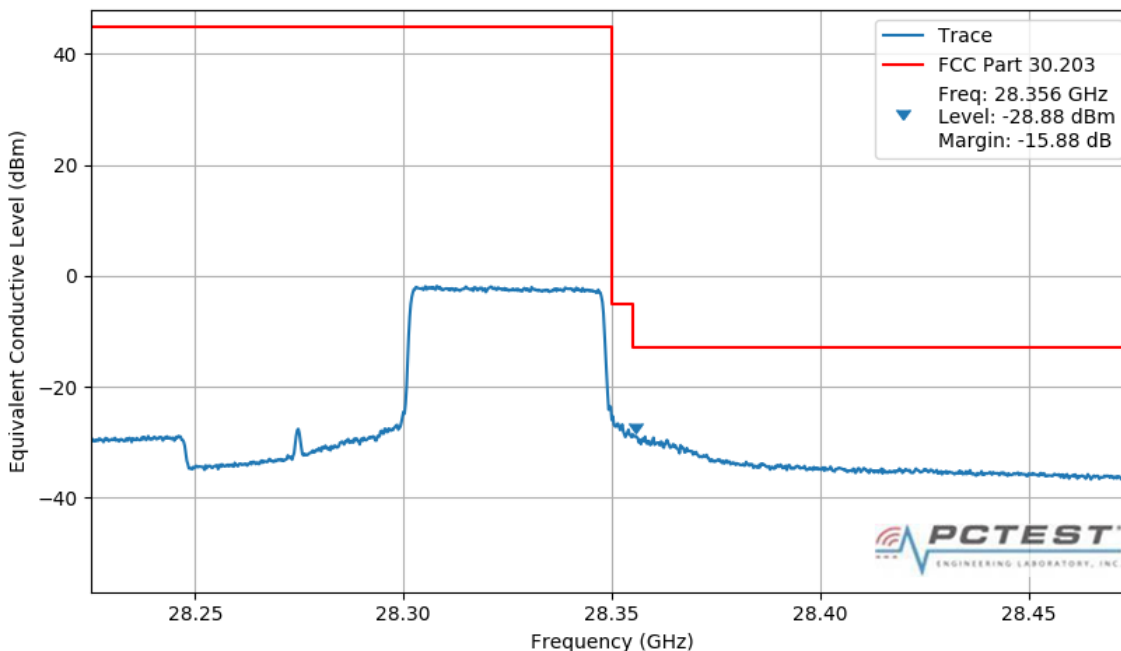
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



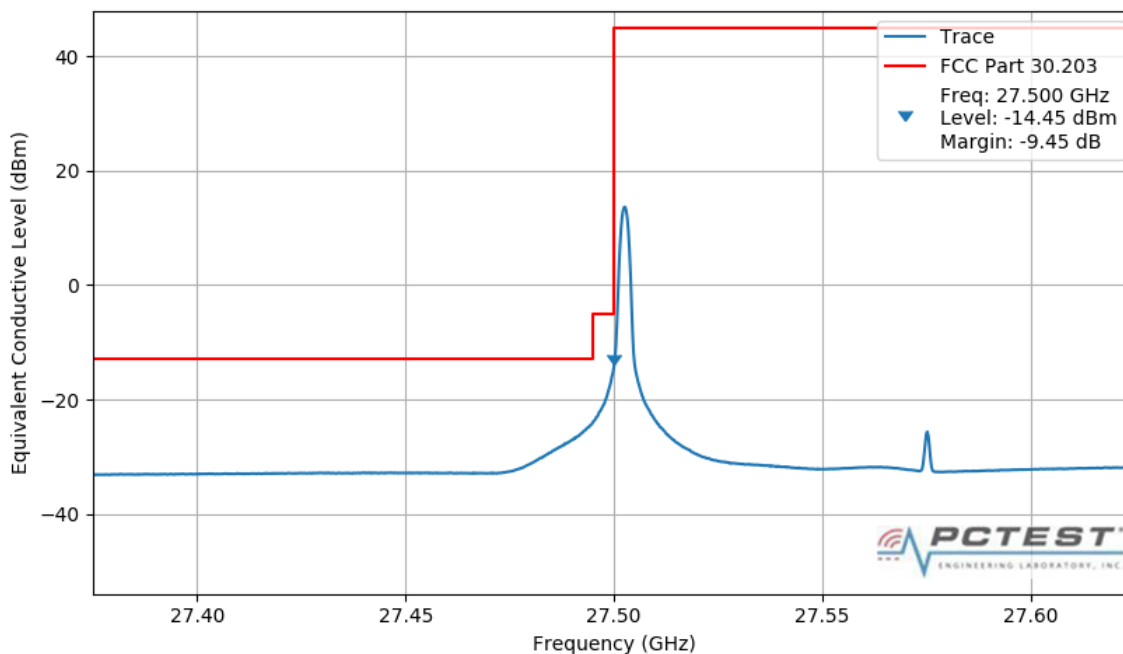
Plot 7-146. Band Edge Plot (1CC 50M QPSK High Channel – 32 RB, 0 offset)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 111 of 304

# QTM 0 - H + V

**PASS**

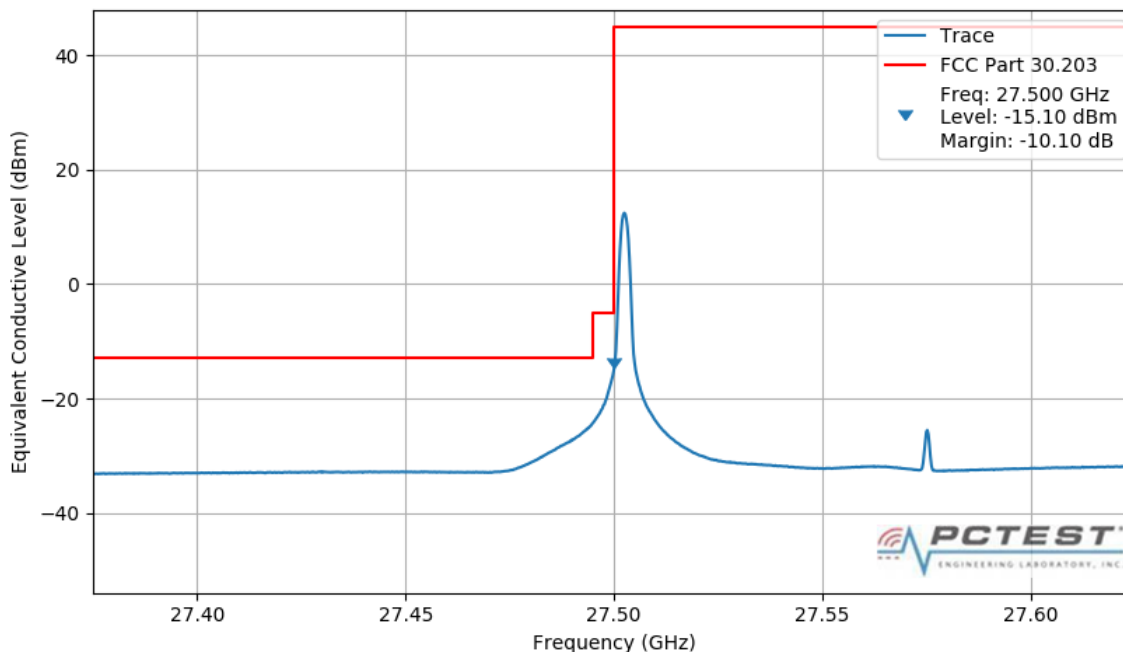
Center Freq: 27.50 GHz Trace: AVERAGE RBW: 1 MHz SWP points: 1001  
Span: 250 MHz Detector: RMS VBW: 3 MHz  
Ref Level: 43.53 dBm Offset: 43.53 dB SWP Count: 100



**Plot 7-147. Band Edge Plot (1CC 50M QPSK Low Channel – 1 RB, 0 offset)**

**PASS**

Center Freq: 27.50 GHz Trace: AVERAGE RBW: 1 MHz SWP points: 1001  
Span: 250 MHz Detector: RMS VBW: 3 MHz  
Ref Level: 43.53 dBm Offset: 43.53 dB SWP Count: 100



**Plot 7-148. Band Edge Plot (1CC 50M 16QAM Low Channel – 1 RB, 0 offset)**

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 112 of 304

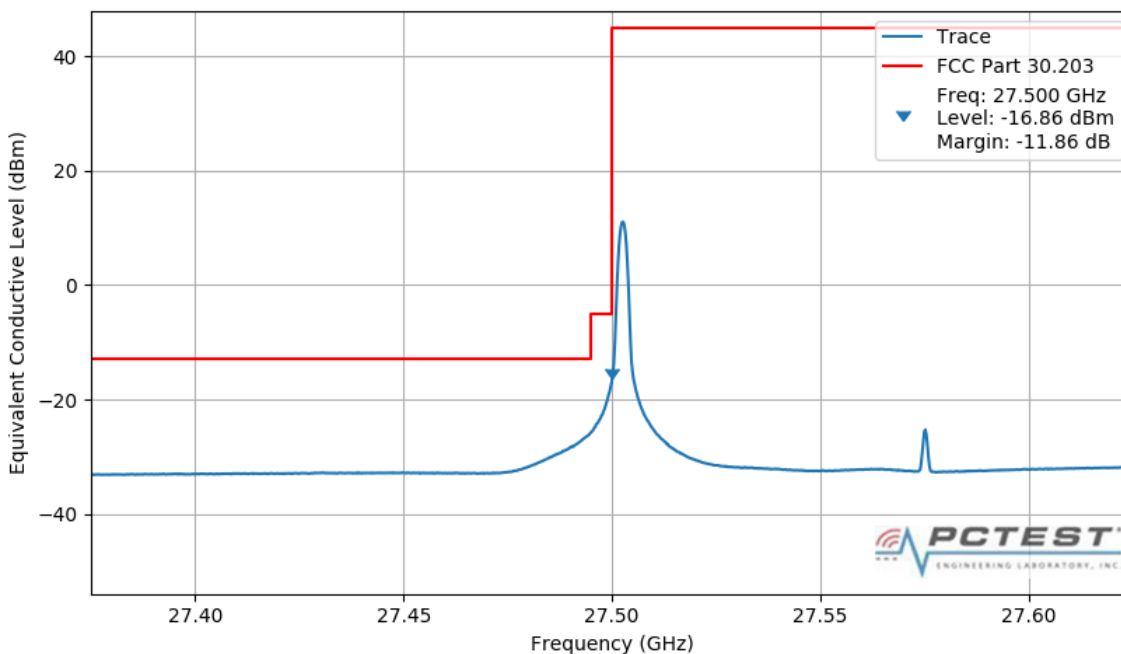
PASS

Center Freq: 27.50 GHz  
Span: 250 MHz  
Ref Level: 43.53 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.53 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-149. Band Edge Plot (1CC 50M 64QAM Low Channel – 1 RB, 0 offset)

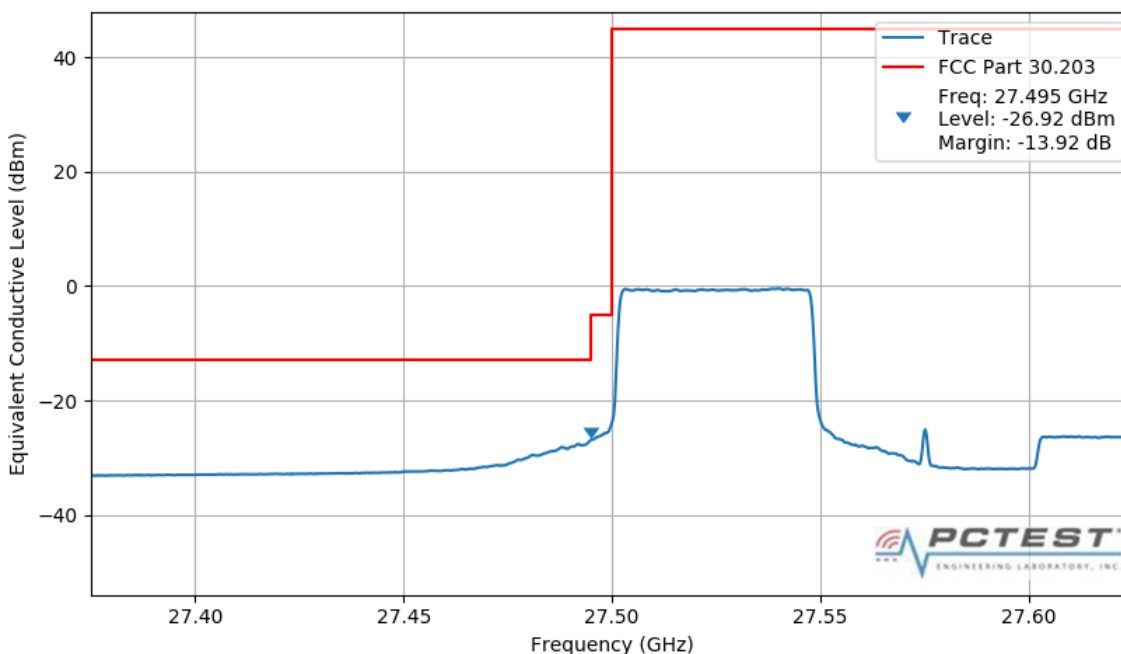
PASS

Center Freq: 27.50 GHz  
Span: 250 MHz  
Ref Level: 43.53 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.53 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-150. Band Edge Plot (1CC 50M QPSK Low Channel – 32 RB, 0 offset)

FCC ID: ZNFV450VM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 113 of 304



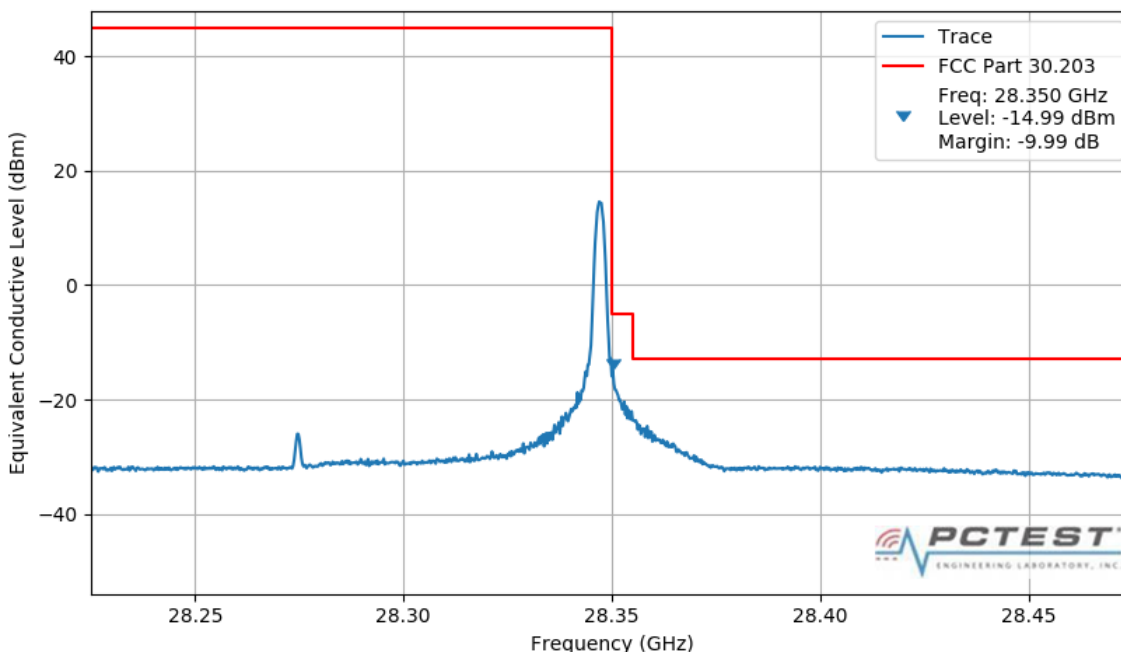
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-151. Band Edge Plot (1CC 50M QPSK High Channel – 1 RB, 31 offset)

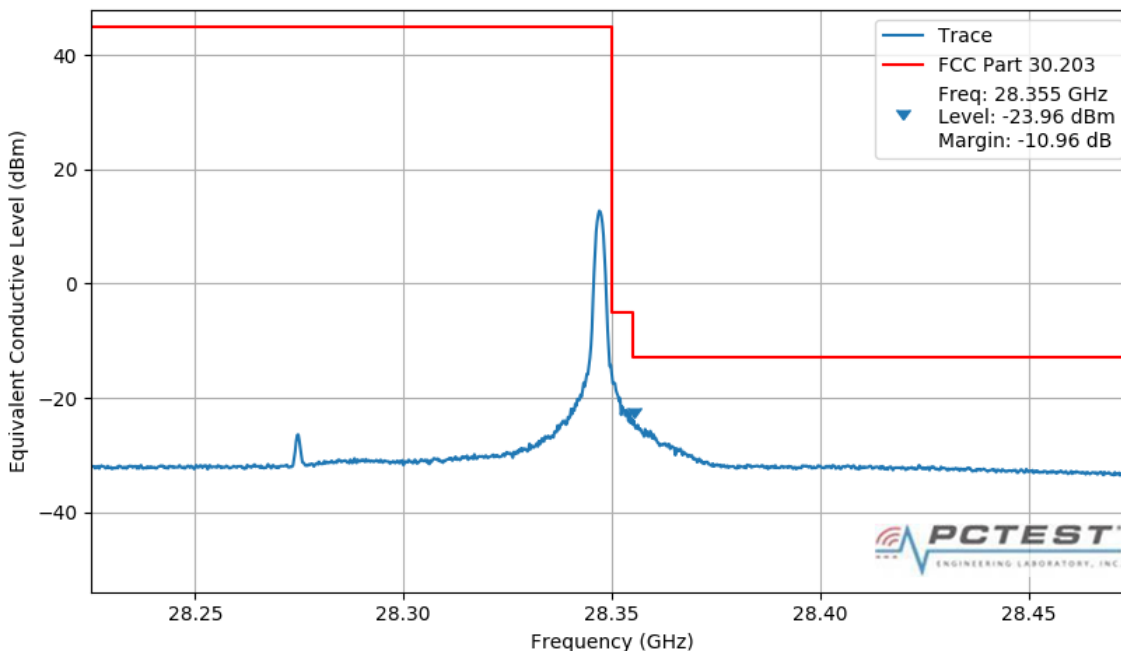
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-152. Band Edge Plot (1CC 50M 16QAM High Channel – 1 RB, 31 offset)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 114 of 304

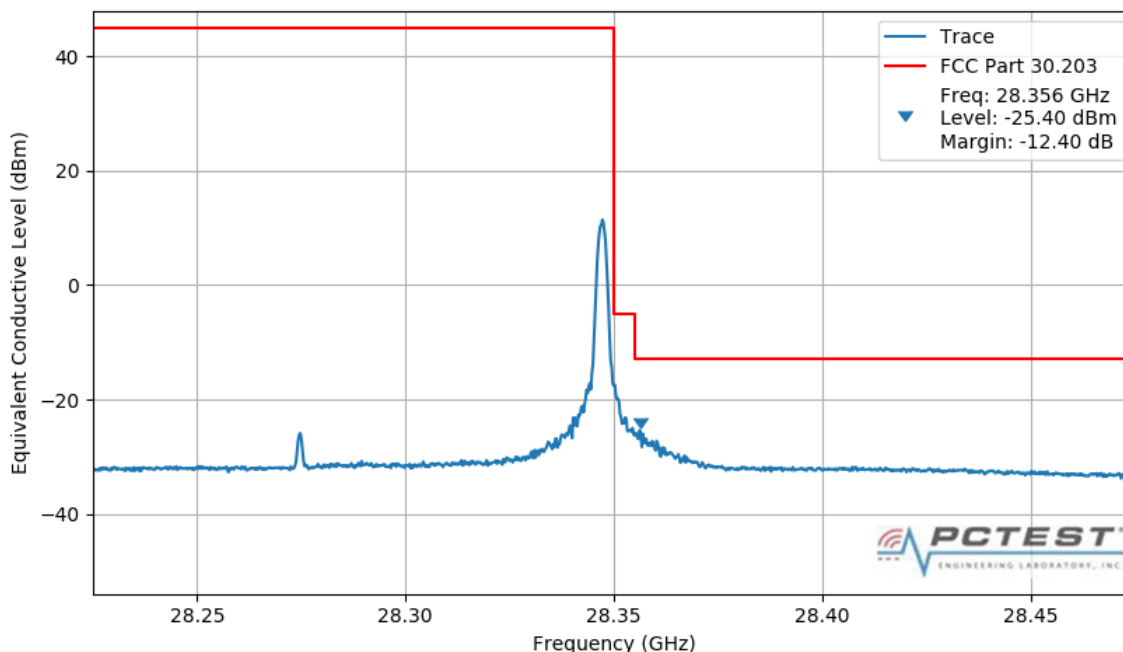
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-153. Band Edge Plot (1CC 50M 64QAM High Channel – 1 RB, 31 offset)

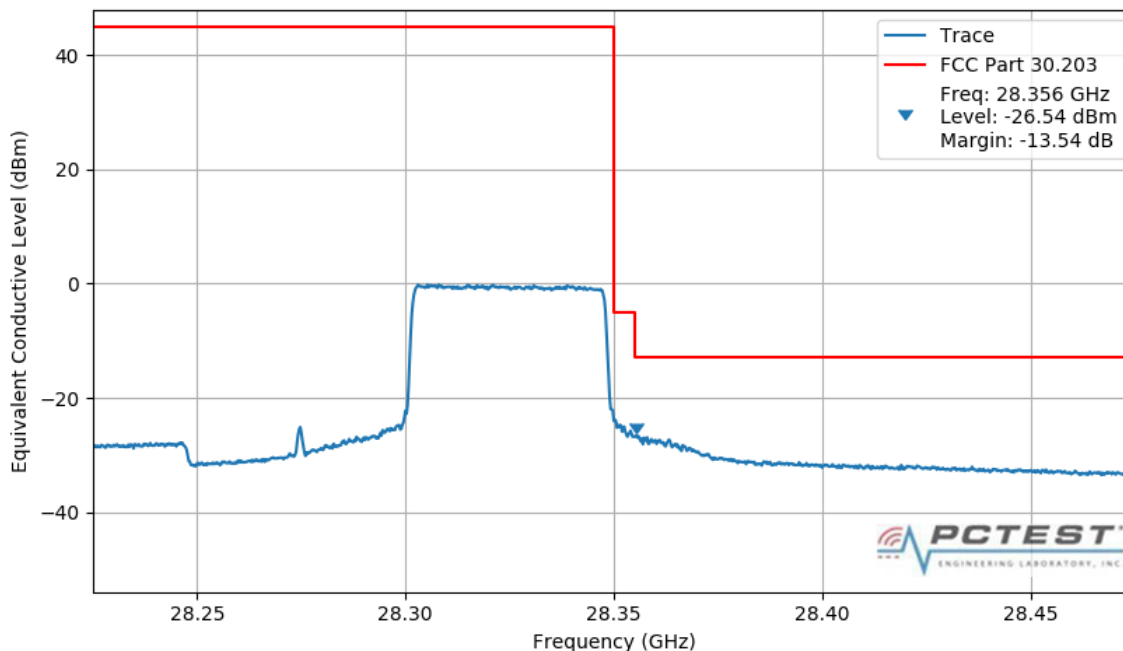
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



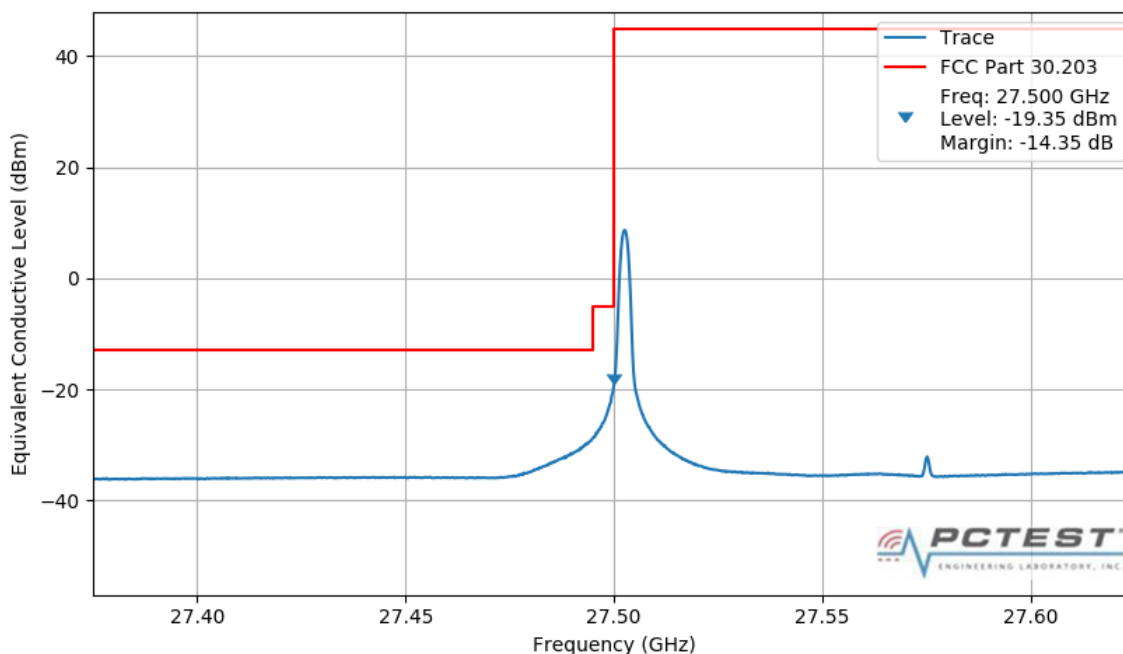
Plot 7-154. Band Edge Plot (1CC 50M QPSK High Channel – 32 RB, 0 offset)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 115 of 304

# QTM 1 - H

**PASS**

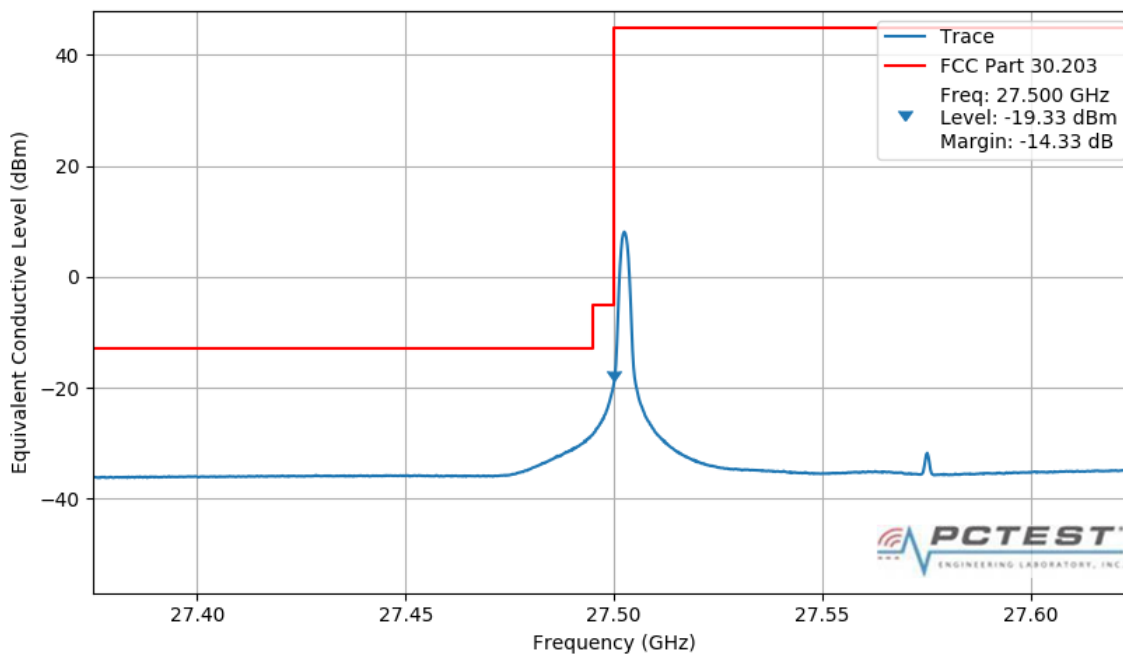
Center Freq: 27.50 GHz Trace: AVERAGE RBW: 1 MHz SWP points: 1001  
Span: 250 MHz Detector: RMS VBW: 3 MHz  
Ref Level: 43.53 dBm Offset: 43.53 dB SWP Count: 100



**Plot 7-155. Band Edge Plot (1CC 50M QPSK Low Channel – 1 RB, 0 offset)**

**PASS**

Center Freq: 27.50 GHz Trace: AVERAGE RBW: 1 MHz SWP points: 1001  
Span: 250 MHz Detector: RMS VBW: 3 MHz  
Ref Level: 43.53 dBm Offset: 43.53 dB SWP Count: 100



**Plot 7-156. Band Edge Plot (1CC 50M 16QAM Low Channel – 1 RB, 0 offset)**

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 116 of 304

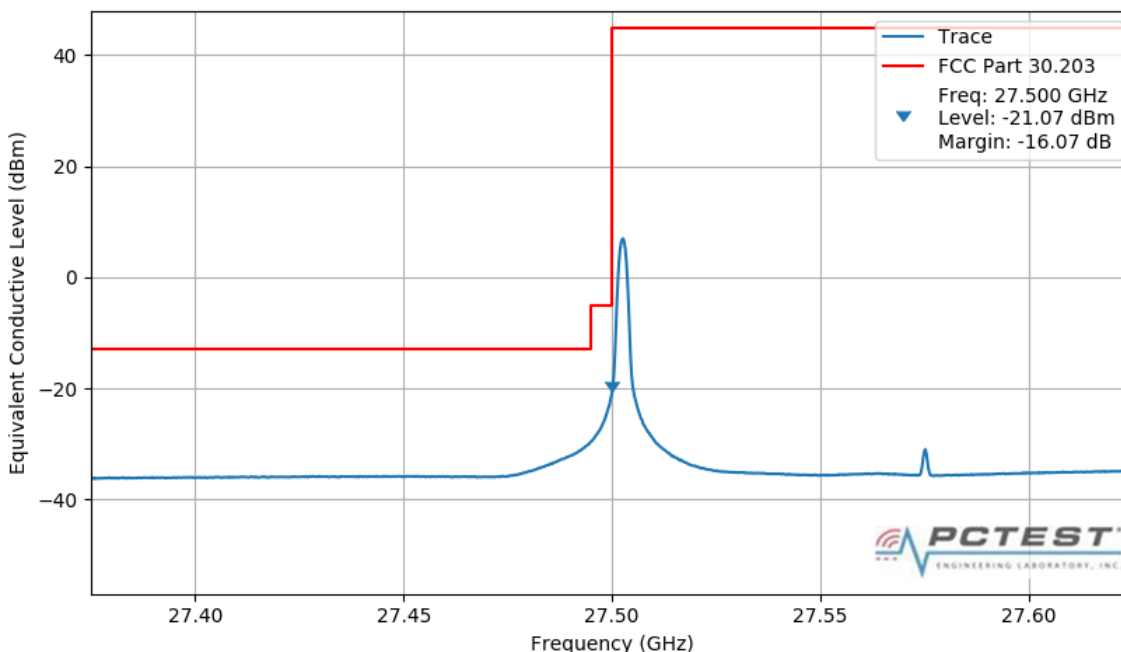
PASS

Center Freq: 27.50 GHz  
Span: 250 MHz  
Ref Level: 43.53 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.53 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-157. Band Edge Plot (1CC 50M 64QAM Low Channel – 1 RB, 0 offset)

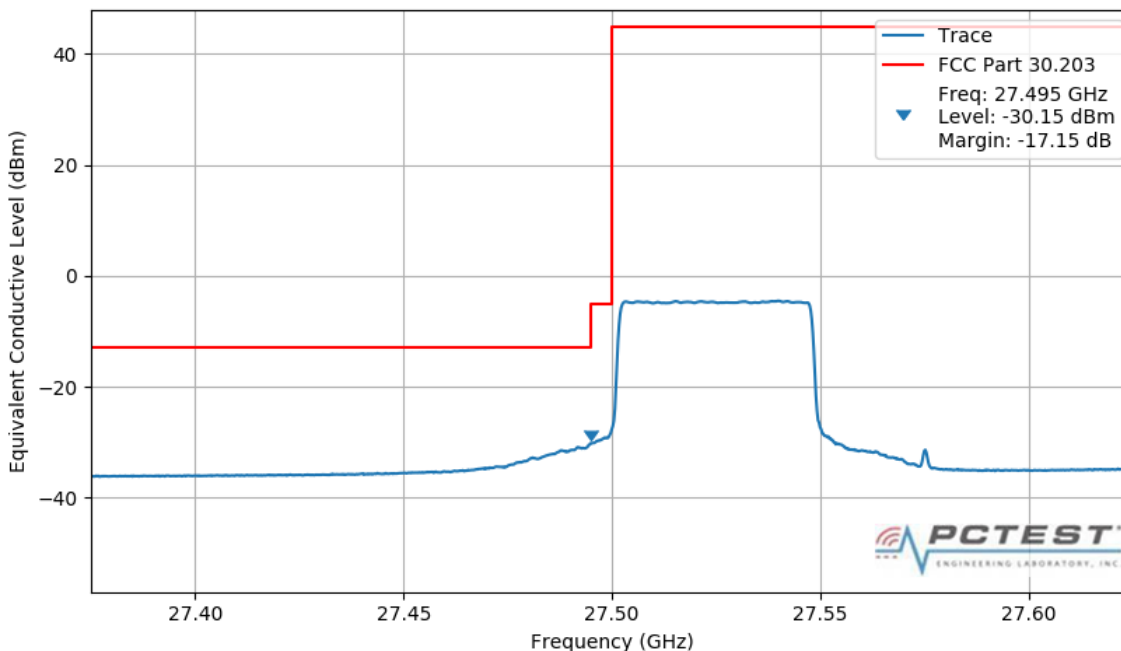
PASS

Center Freq: 27.50 GHz  
Span: 250 MHz  
Ref Level: 43.53 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.53 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-158. Band Edge Plot (1CC 50M QPSK Low Channel – 32 RB, 0 offset)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 117 of 304

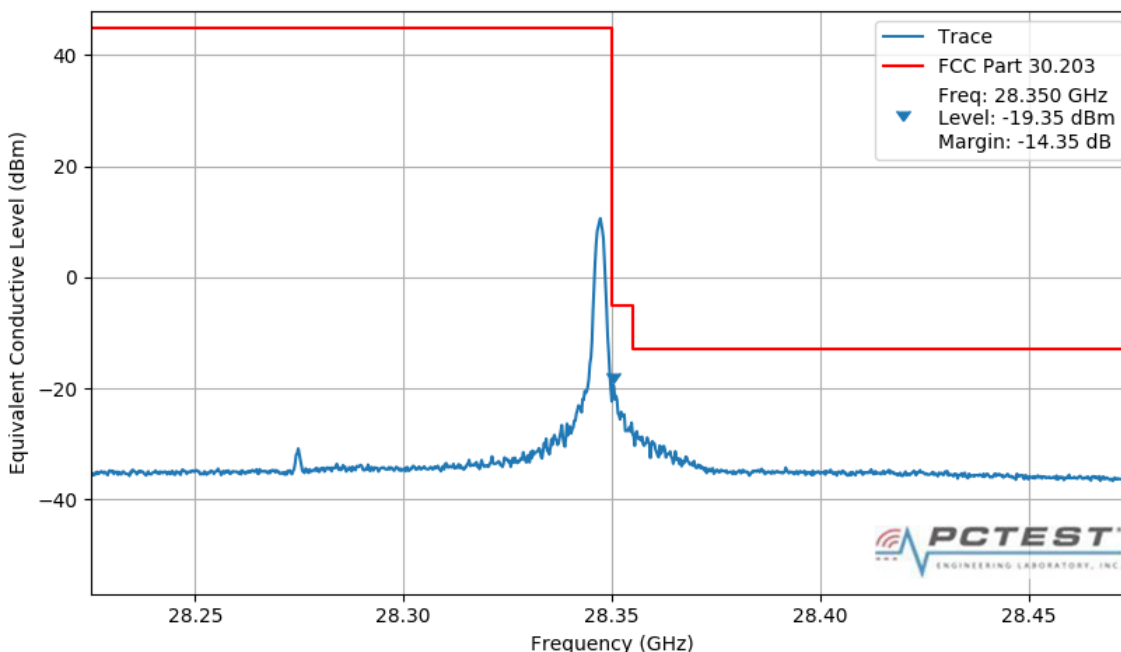
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-159. Band Edge Plot (1CC 50M QPSK High Channel – 1 RB, 31 offset)

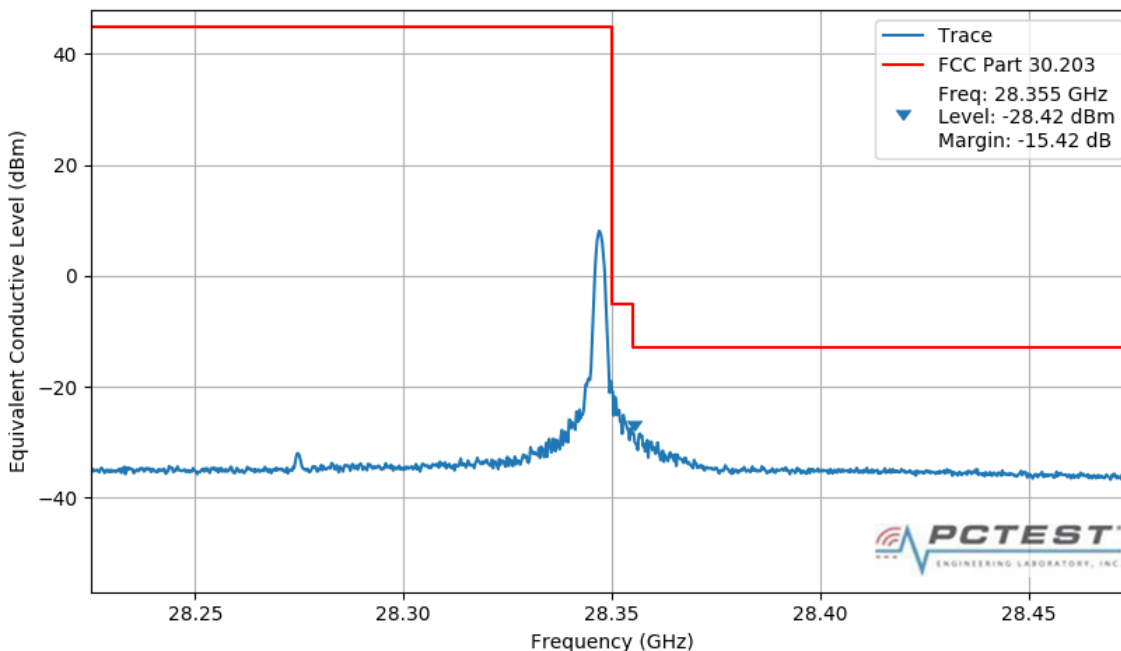
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-160. Band Edge Plot (1CC 50M 16QAM High Channel – 1 RB, 31 offset)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 118 of 304

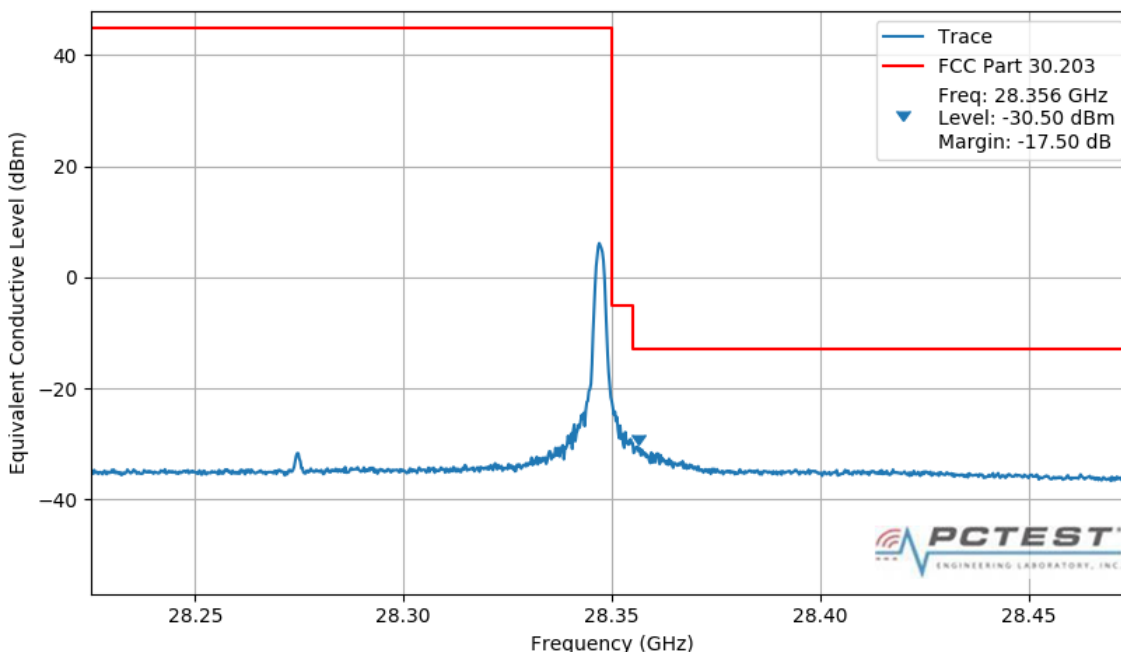
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-161. Band Edge Plot (1CC 50M 64QAM High Channel – 1 RB, 31 offset)

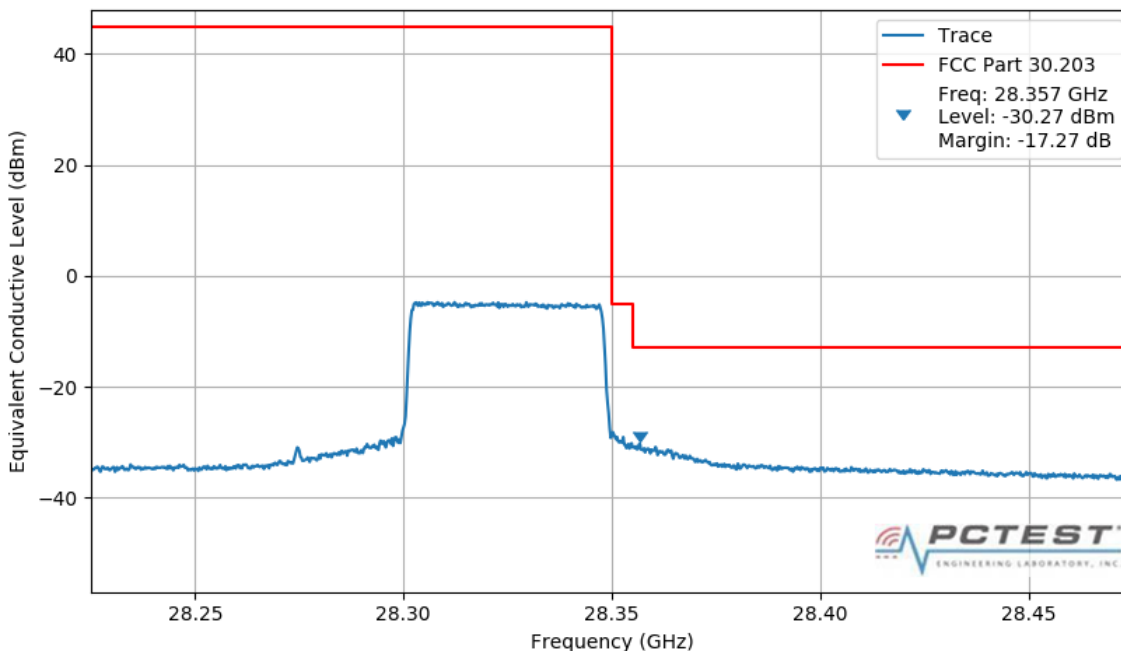
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-162. Band Edge Plot (1CC 50M QPSK High Channel – 32 RB, 0 offset)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 119 of 304

# QTM 1 - V

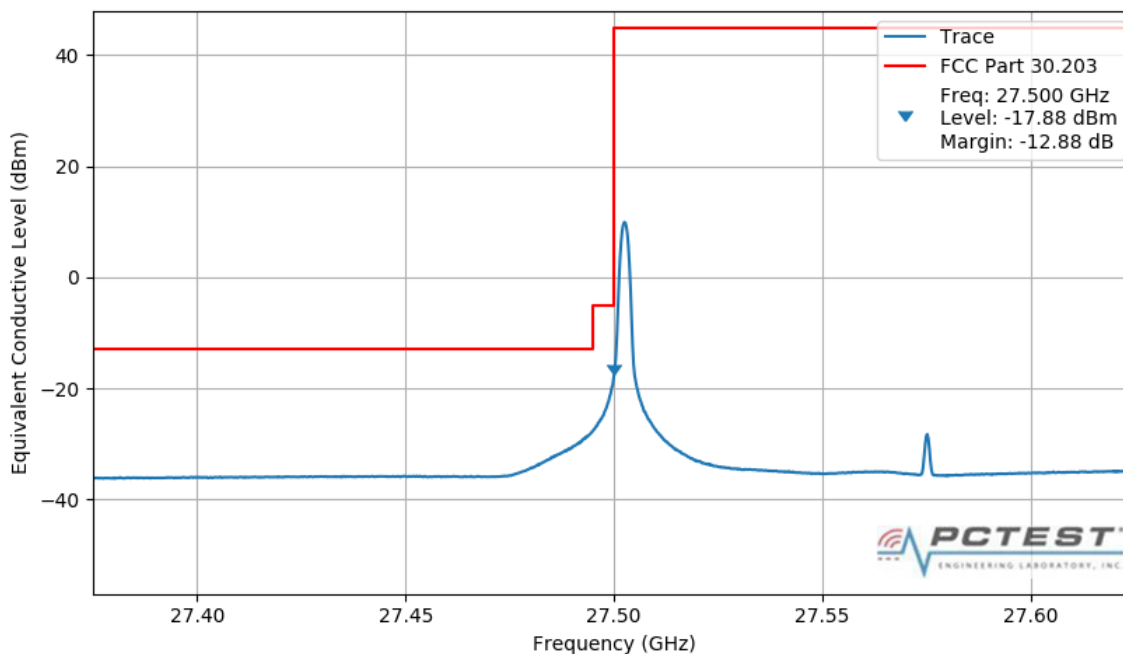
**PASS**

Center Freq: 27.50 GHz  
Span: 250 MHz  
Ref Level: 43.53 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.53 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



**Plot 7-163. Band Edge Plot (1CC 50M QPSK Low Channel – 1 RB, 0 offset)**

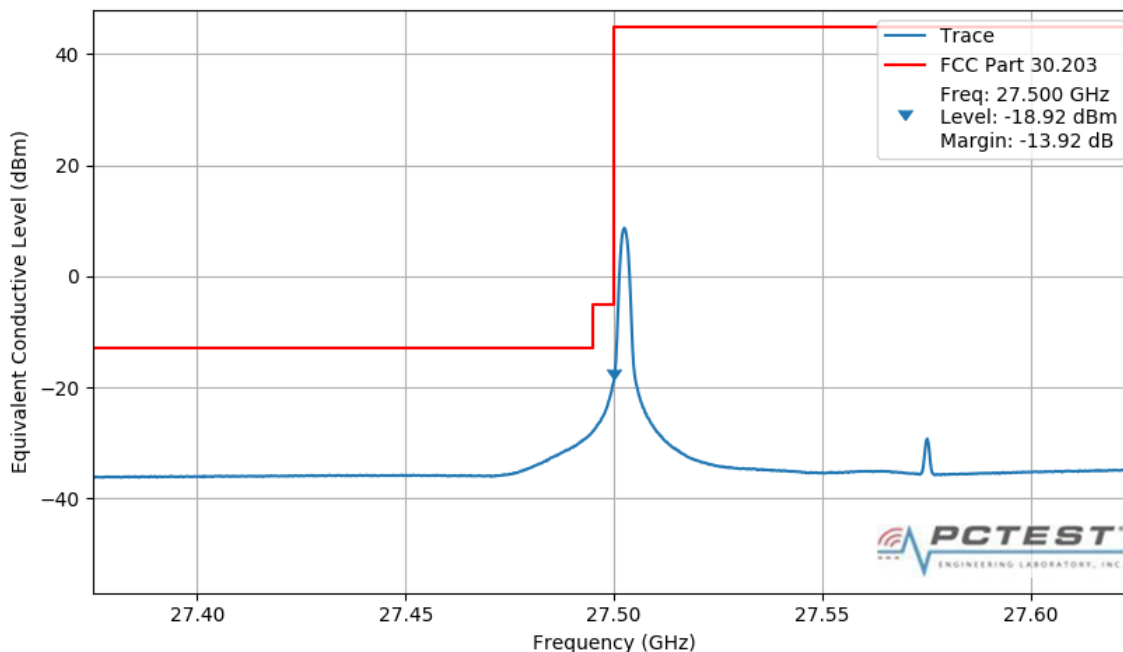
**PASS**

Center Freq: 27.50 GHz  
Span: 250 MHz  
Ref Level: 43.53 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.53 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



**Plot 7-164. Band Edge Plot (1CC 50M 16QAM Low Channel – 1 RB, 0 offset)**

FCC ID: ZNFV450VM		MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 120 of 304

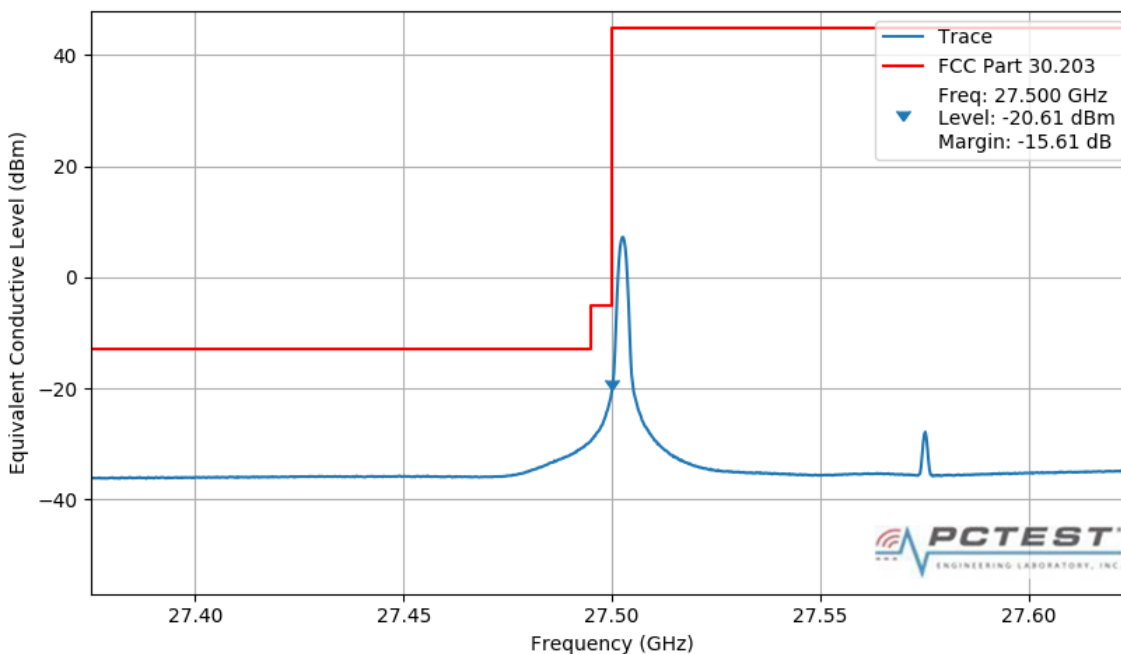
PASS

Center Freq: 27.50 GHz  
Span: 250 MHz  
Ref Level: 43.53 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.53 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-165. Band Edge Plot (1CC 50M 64QAM Low Channel – 1 RB, 0 offset)

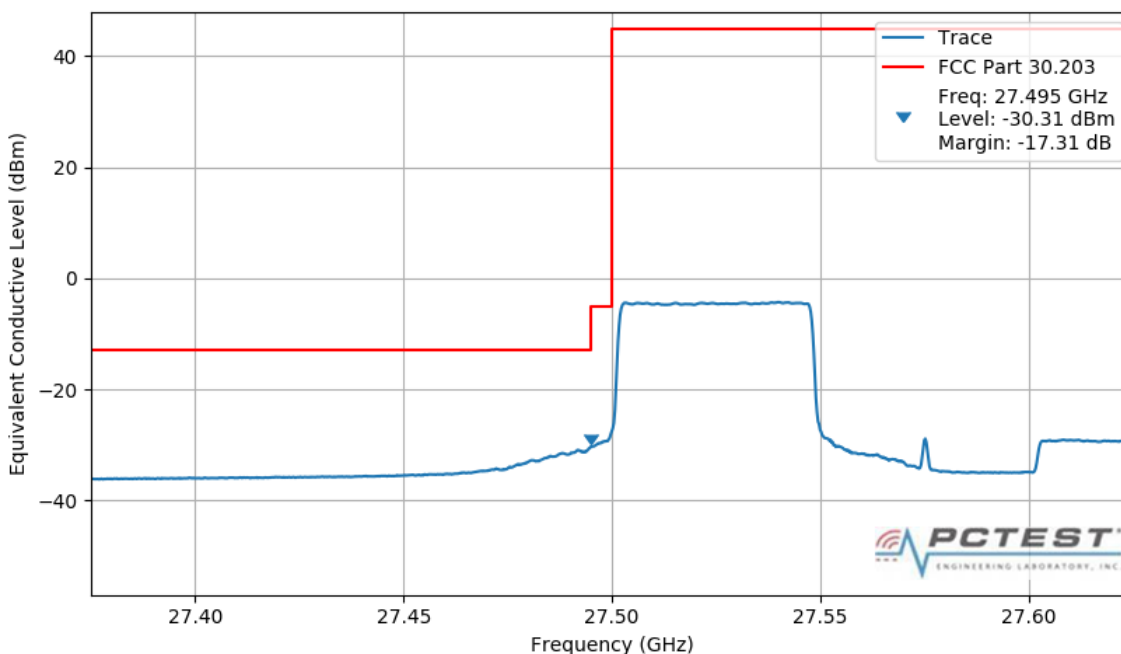
PASS

Center Freq: 27.50 GHz  
Span: 250 MHz  
Ref Level: 43.53 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.53 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-166. Band Edge Plot (1CC 50M QPSK Low Channel – 32 RB, 0 offset)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 121 of 304



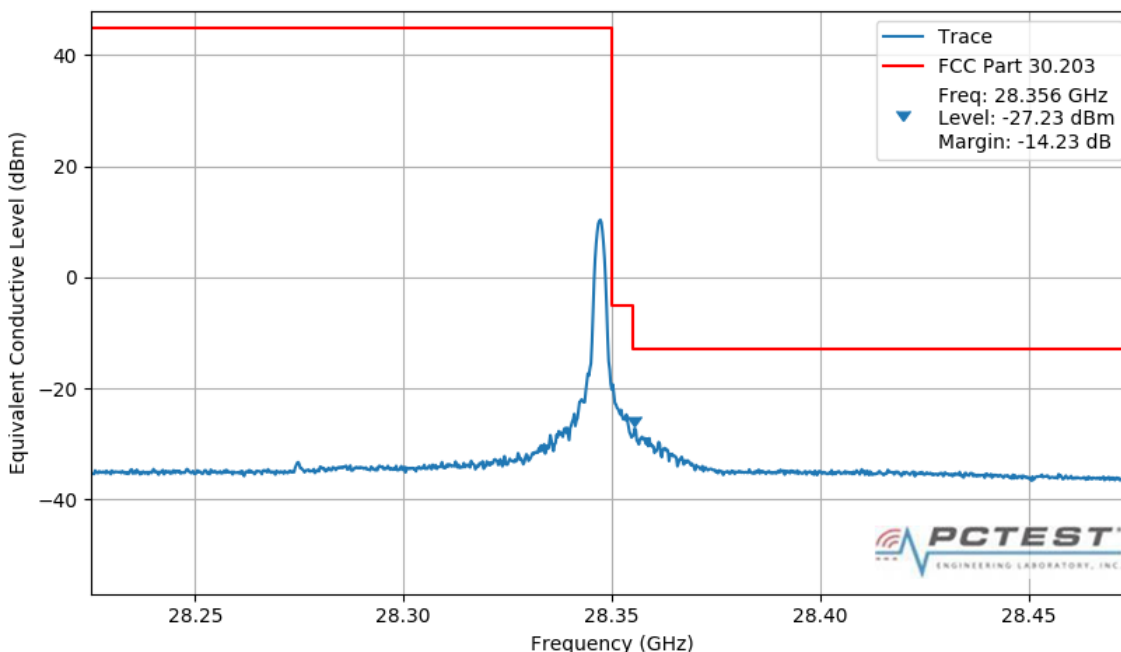
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-167. Band Edge Plot (1CC 50M QPSK High Channel – 1 RB, 31 offset)

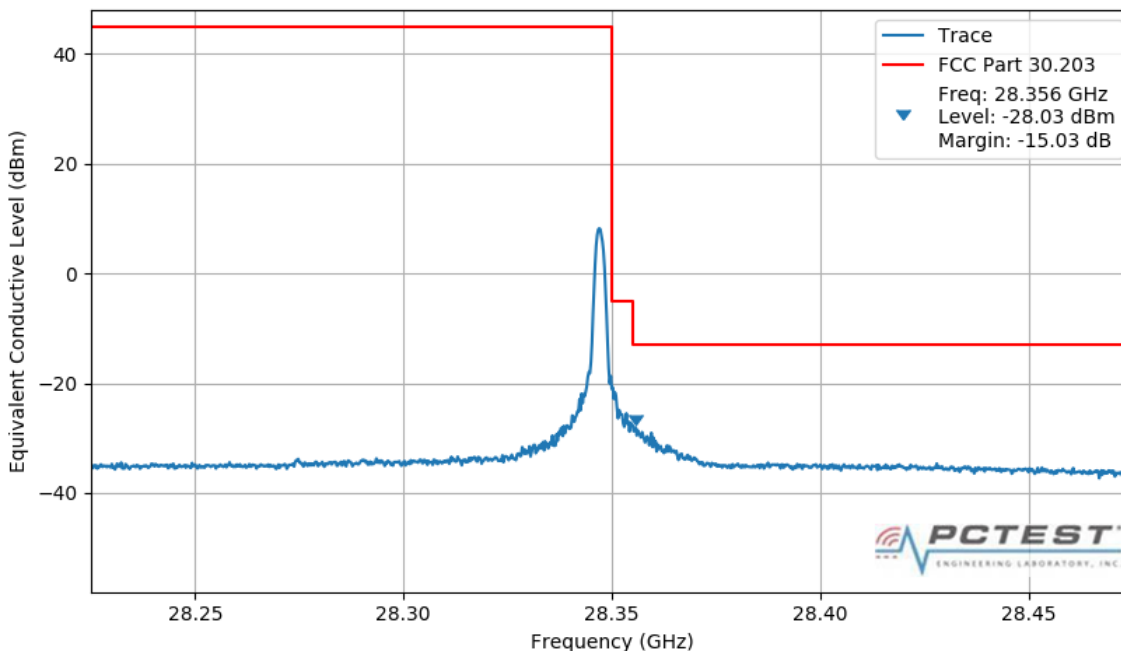
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-168. Band Edge Plot (1CC 50M 16QAM High Channel – 1 RB, 31 offset)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 122 of 304

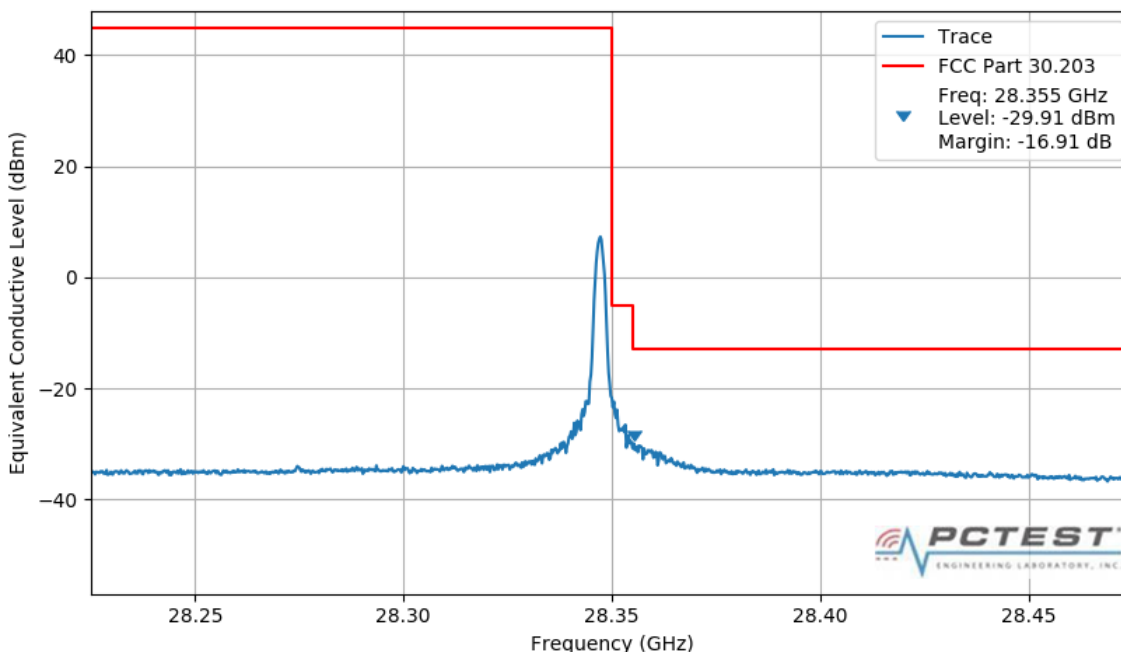
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-169. Band Edge Plot (1CC 50M 64QAM High Channel – 1 RB, 31 offset)

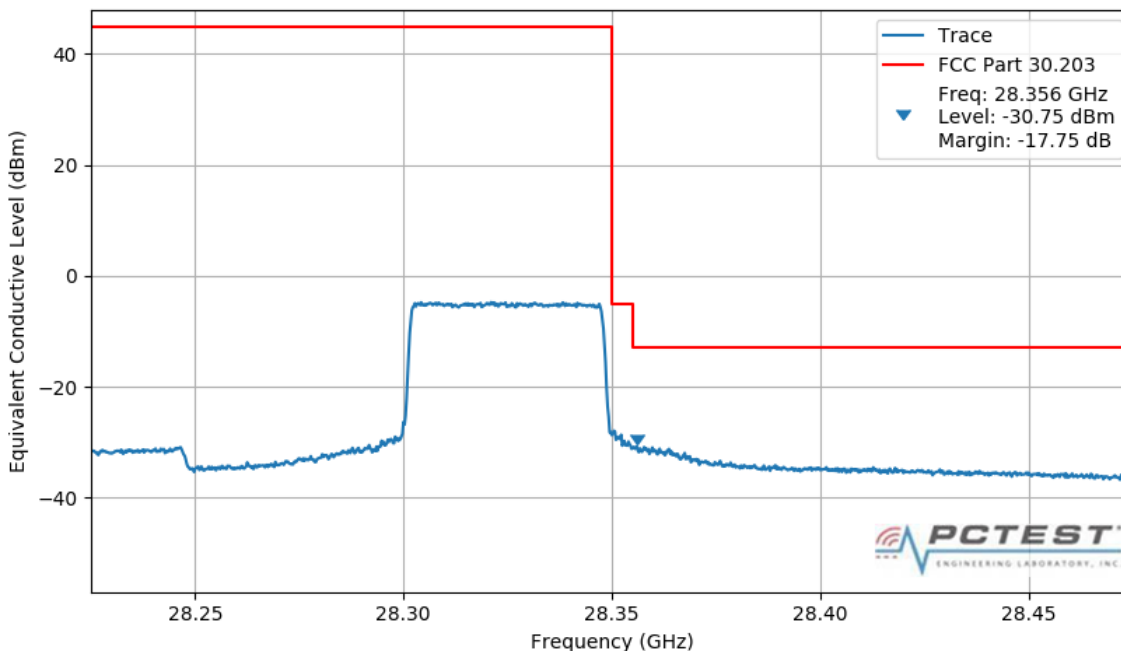
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



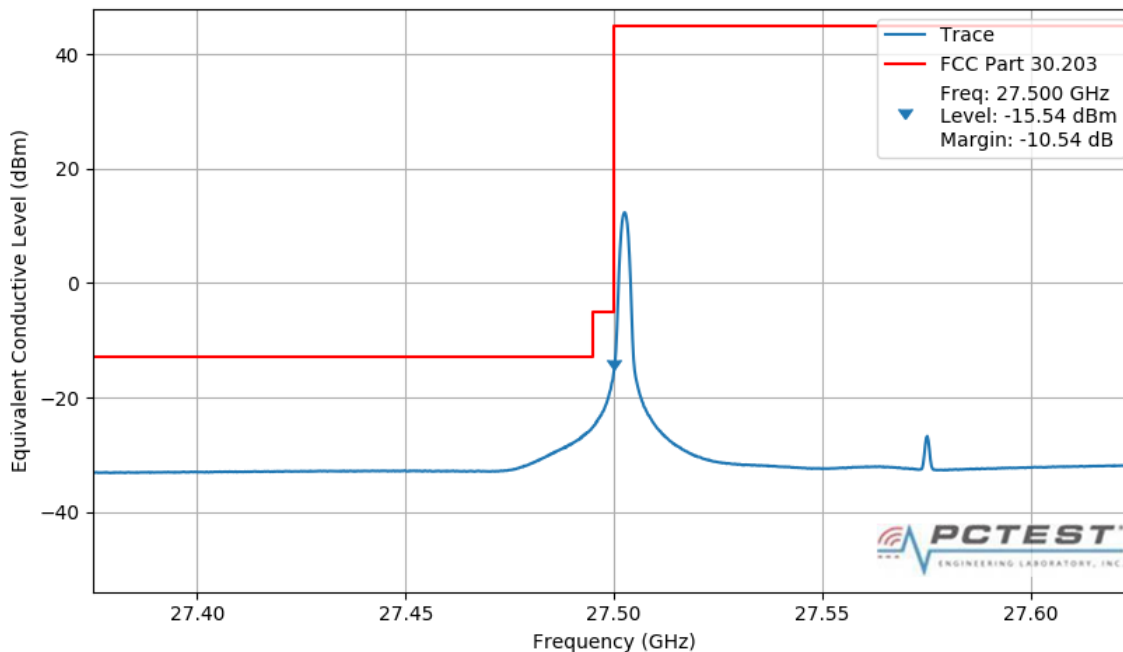
Plot 7-170. Band Edge Plot (1CC 50M QPSK High Channel – 32 RB, 0 offset)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 123 of 304

# QTM 1 - H + V

**PASS**

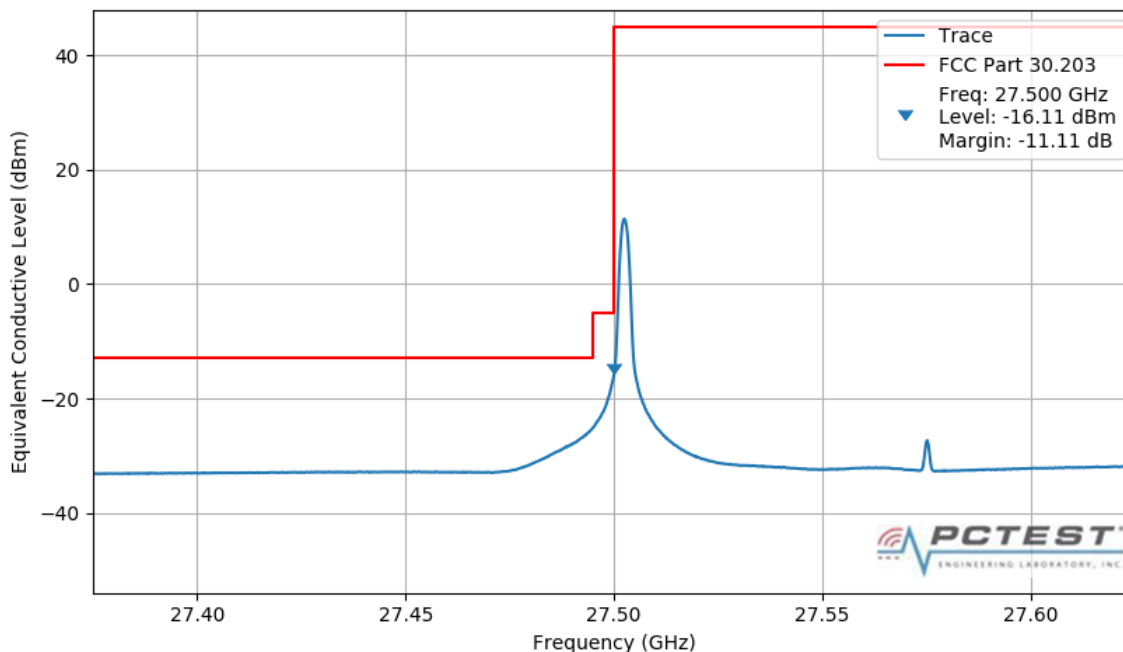
Center Freq: 27.50 GHz Trace: AVERAGE RBW: 1 MHz SWP points: 1001  
Span: 250 MHz Detector: RMS VBW: 3 MHz  
Ref Level: 43.53 dBm Offset: 43.53 dB SWP Count: 100



**Plot 7-171. Band Edge Plot (1CC 50M QPSK Low Channel – 1 RB, 0 offset)**

**PASS**

Center Freq: 27.50 GHz Trace: AVERAGE RBW: 1 MHz SWP points: 1001  
Span: 250 MHz Detector: RMS VBW: 3 MHz  
Ref Level: 43.53 dBm Offset: 43.53 dB SWP Count: 100



**Plot 7-172. Band Edge Plot (1CC 50M 16QAM Low Channel – 1 RB, 0 offset)**

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 124 of 304

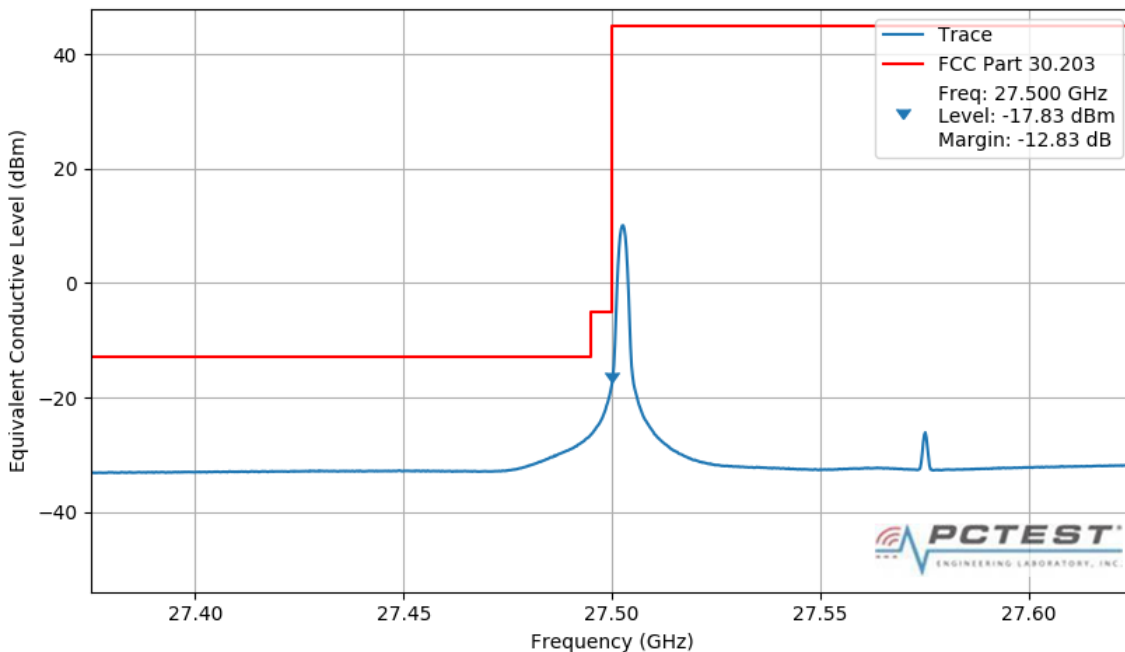
PASS

Center Freq: 27.50 GHz  
Span: 250 MHz  
Ref Level: 43.53 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.53 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-173. Band Edge Plot (1CC 50M 64QAM Low Channel – 1 RB, 0 offset)

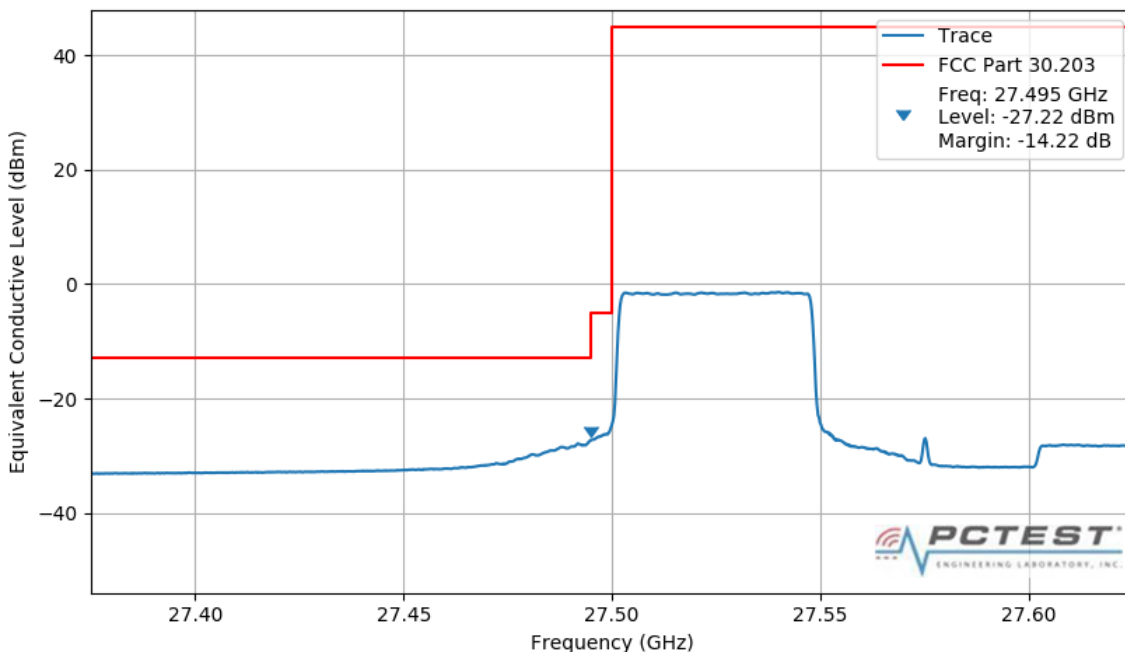
PASS

Center Freq: 27.50 GHz  
Span: 250 MHz  
Ref Level: 43.53 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.53 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-174. Band Edge Plot (1CC 50M QPSK Low Channel – 32 RB, 0 offset)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 125 of 304

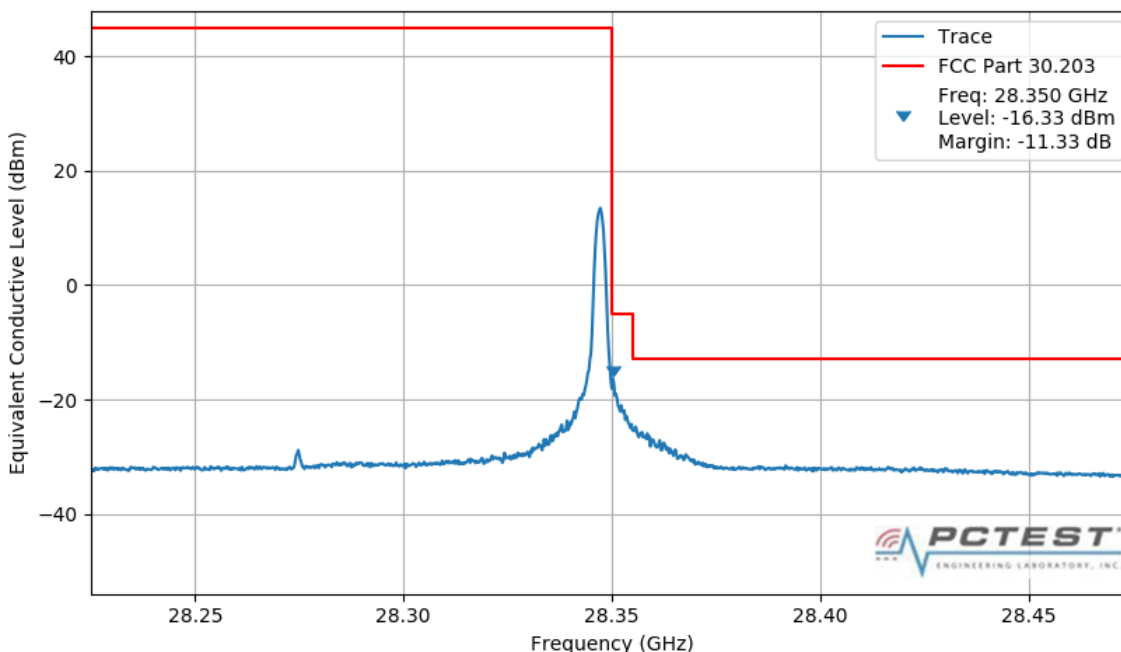
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-175. Band Edge Plot (1CC 50M QPSK High Channel – 1 RB, 31 offset)

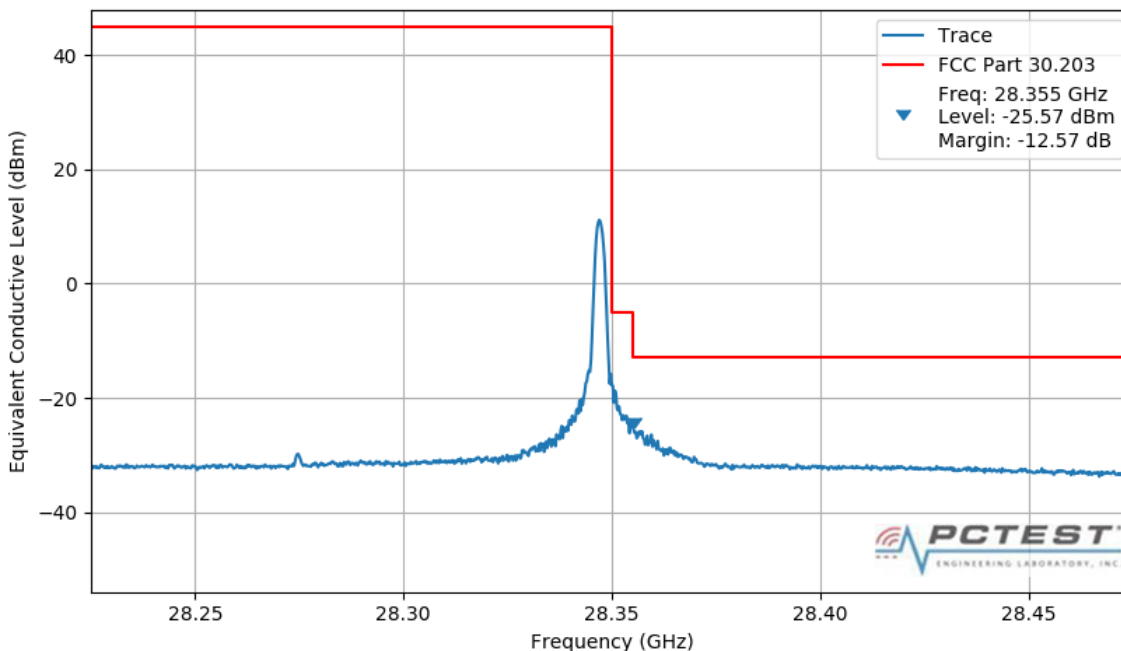
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-176. Band Edge Plot (1CC 50M 16QAM High Channel – 1 RB, 31 offset)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	LG	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 126 of 304

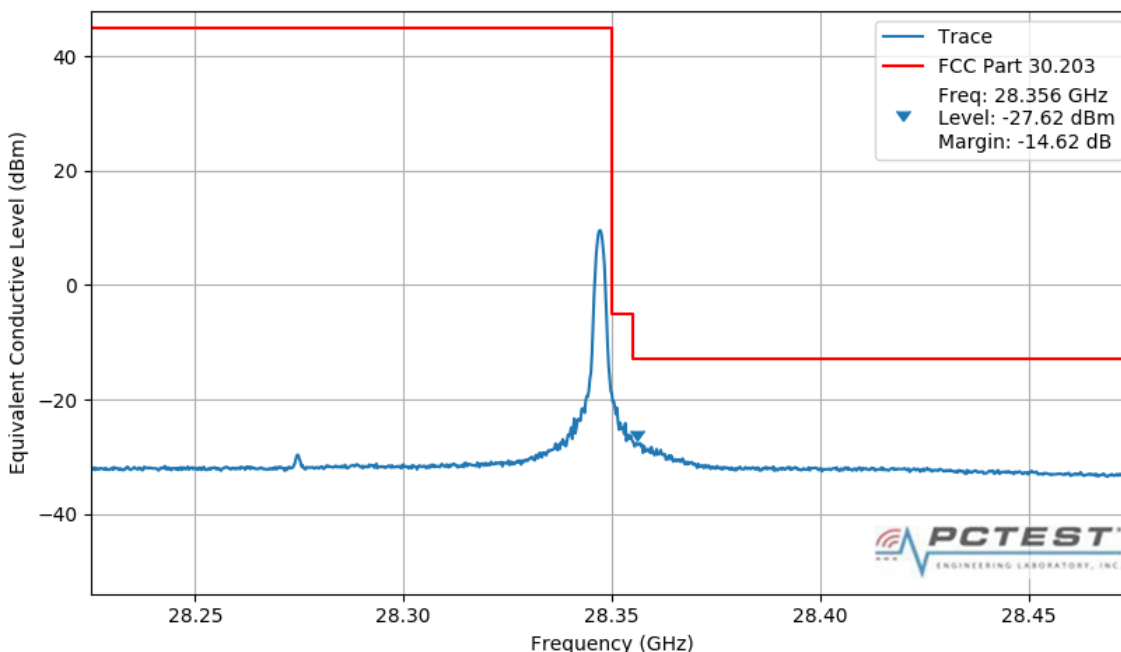
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-177. Band Edge Plot (1CC 50M 64QAM High Channel – 1 RB, 31 offset)

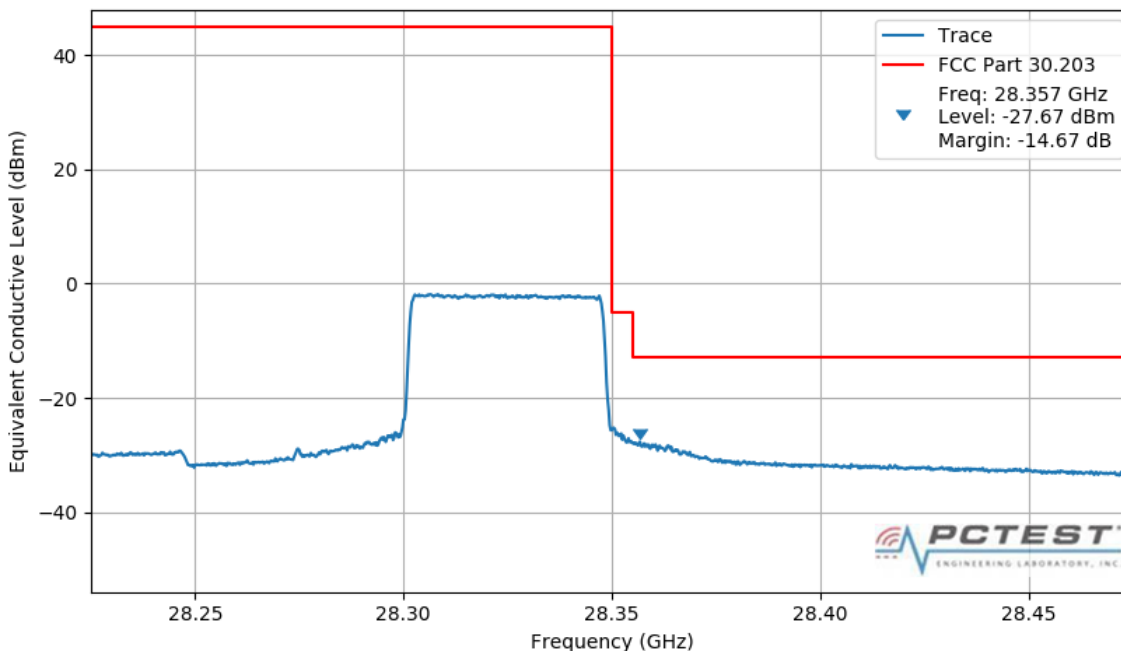
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



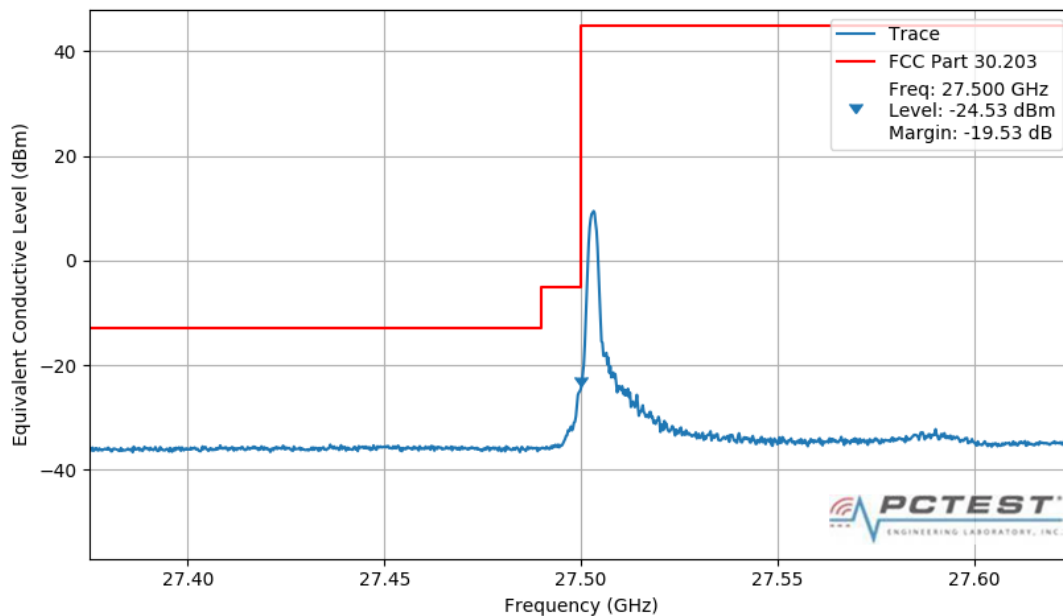
Plot 7-178. Band Edge Plot (1CC 50M QPSK High Channel – 32 RB, 0 offset)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 127 of 304

### 7.5.3 N261 1CC 100MHz Bandwidth Band Edges QTM 0 - H

**PASS**

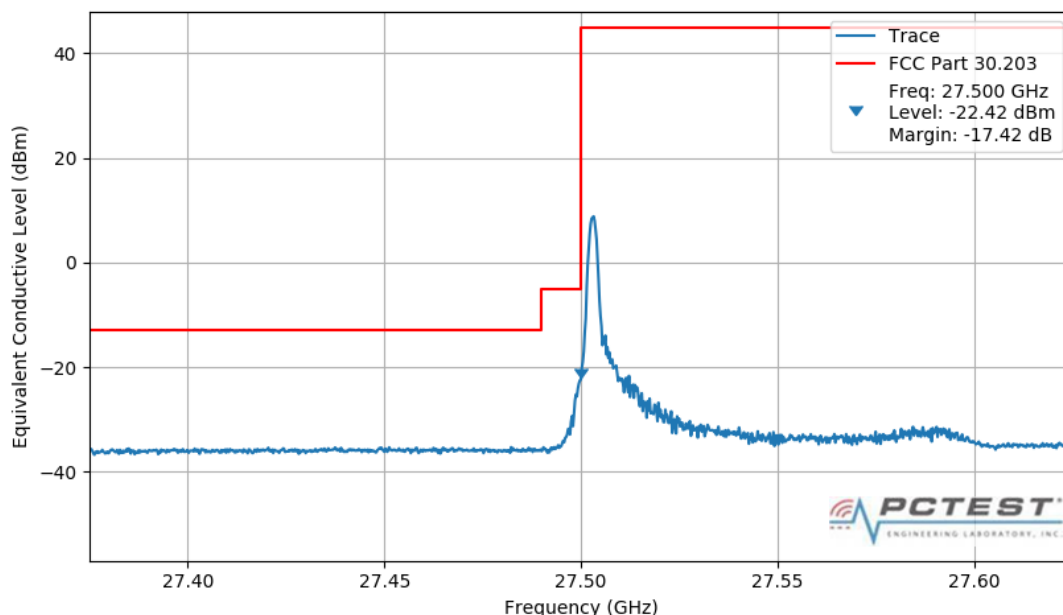
Center Freq: 27.50 GHz Trace: AVERAGE RBW: 1 MHz SWP points: 1001  
Span: 250 MHz Detector: RMS VBW: 3 MHz  
Ref Level: 43.53 dBm Offset: 43.53 dB SWP Count: 100



**Plot 7-179. Band Edge Plot (1CC 100M QPSK Low Channel – 1 RB, 0 offset)**

**PASS**

Center Freq: 27.50 GHz Trace: AVERAGE RBW: 1 MHz SWP points: 1001  
Span: 250 MHz Detector: RMS VBW: 3 MHz  
Ref Level: 43.53 dBm Offset: 43.53 dB SWP Count: 100



**Plot 7-180. Band Edge Plot (1CC 100M 16QAM Low Channel – 1 RB, 0 offset)**

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 128 of 304

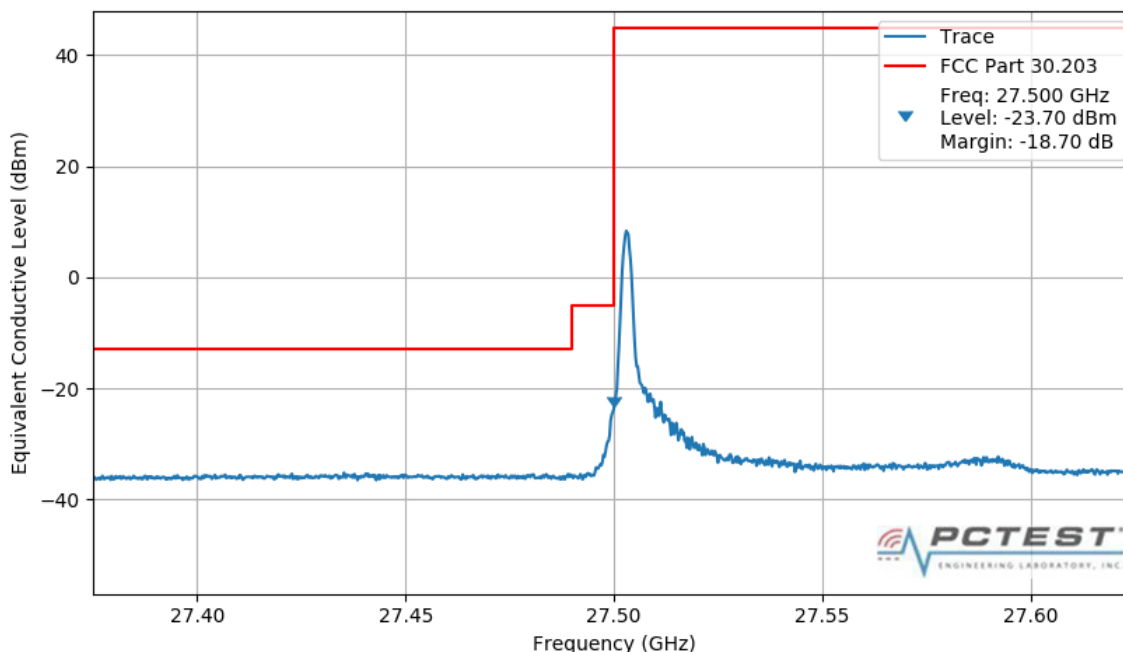
PASS

Center Freq: 27.50 GHz  
Span: 250 MHz  
Ref Level: 43.53 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.53 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-181. Band Edge Plot (1CC 100M 64QAM Low Channel – 1 RB, 0 offset)

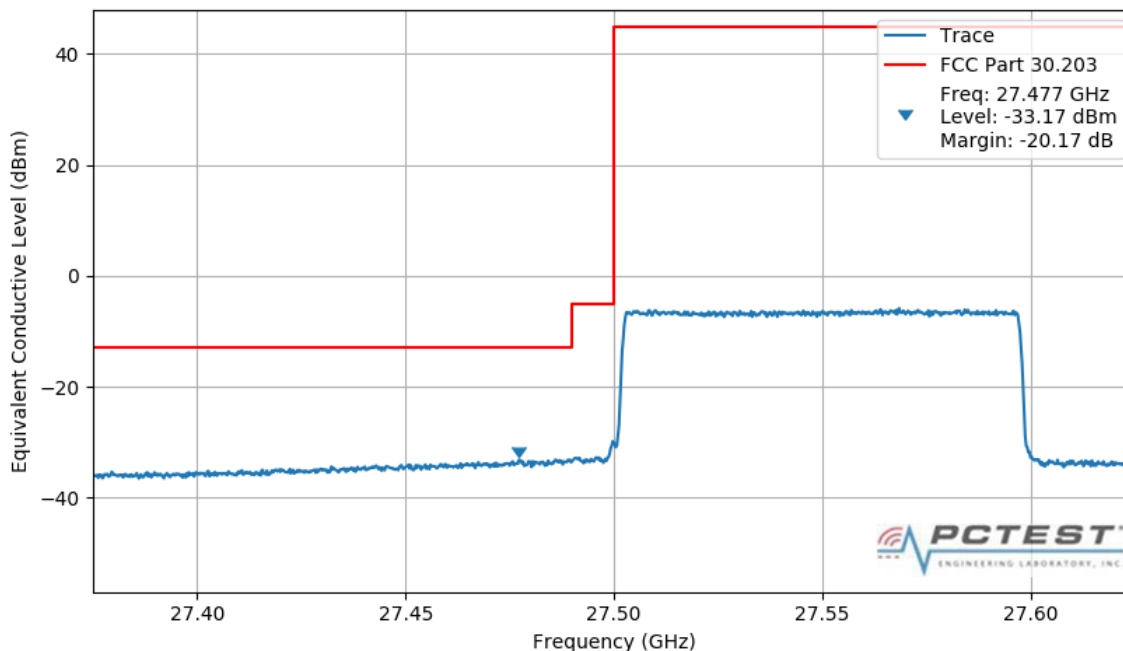
PASS

Center Freq: 27.50 GHz  
Span: 250 MHz  
Ref Level: 43.53 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.53 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-182. Band Edge Plot (1CC 100M QPSK Low Channel – 66 RB, 0 offset)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 129 of 304



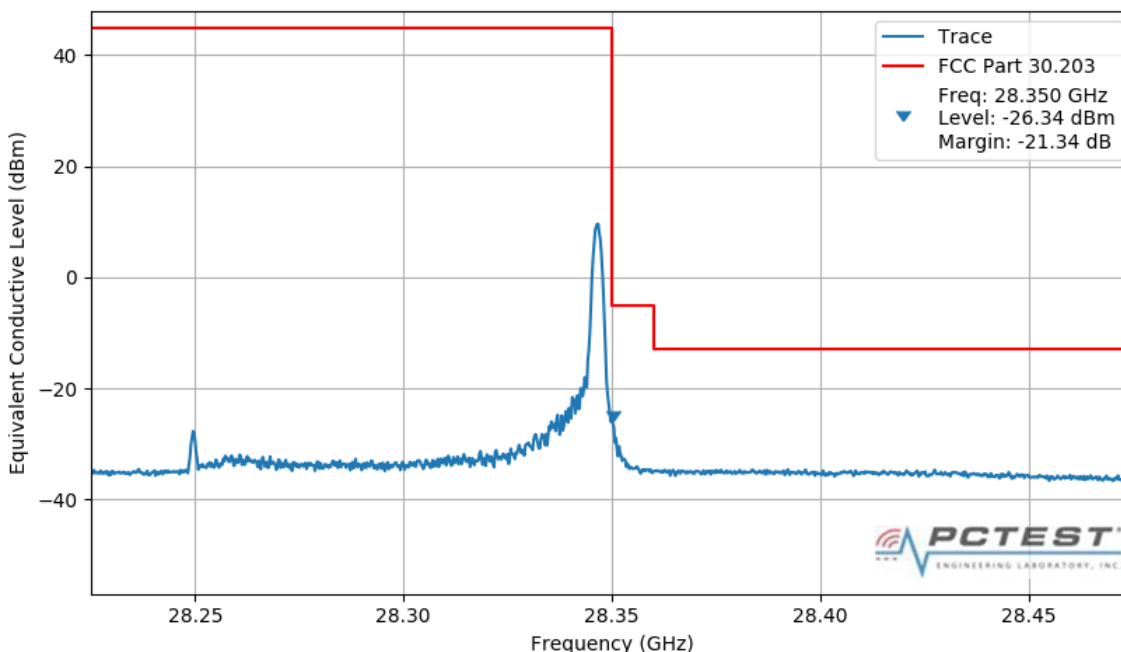
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-183. Band Edge Plot (1CC 100M QPSK High Channel – 1 RB, 65 offset)

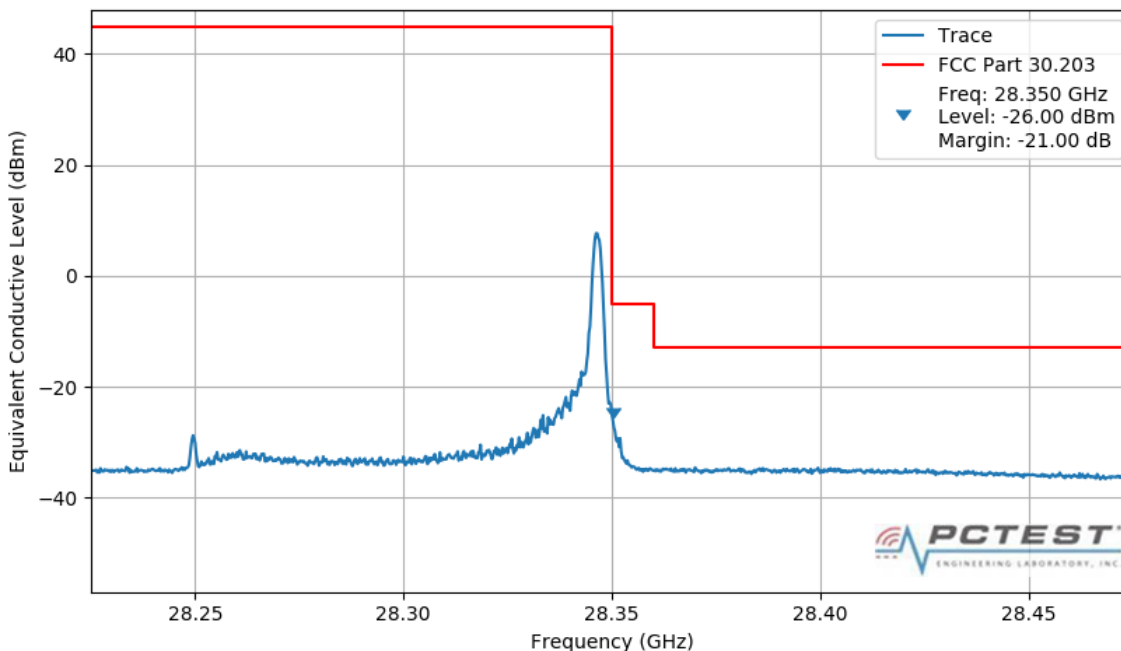
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-184. Band Edge Plot (1CC 100M 16QAM High Channel – 1 RB, 65 offset)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 130 of 304

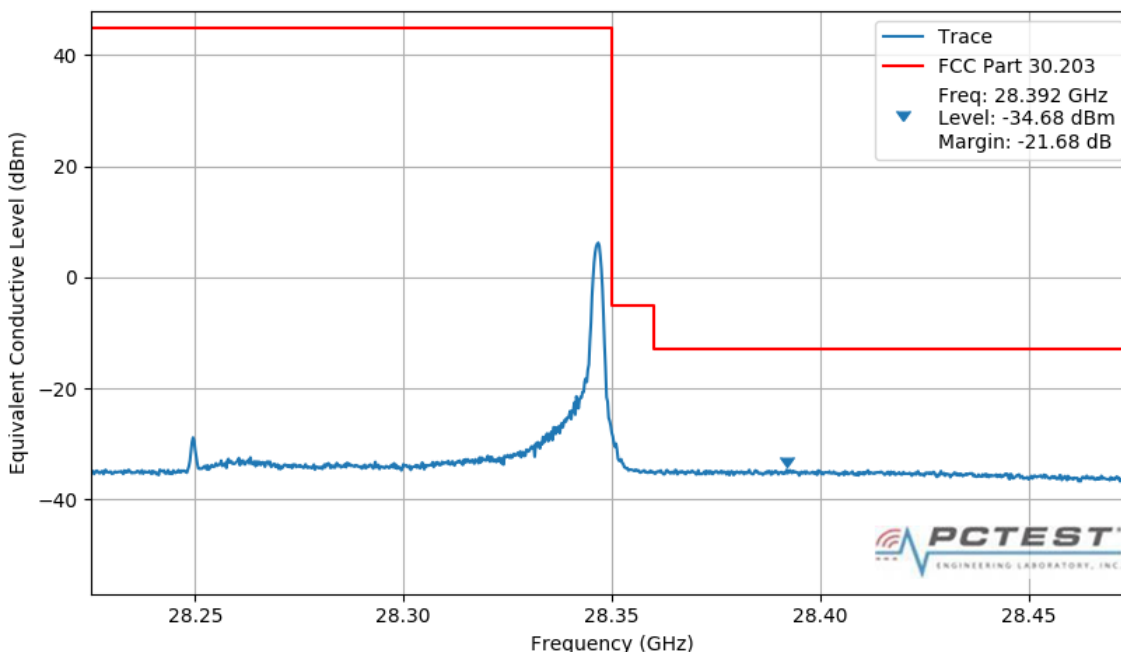
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



Plot 7-185. Band Edge Plot (1CC 100M 64QAM High Channel – 1 RB, 65 offset)

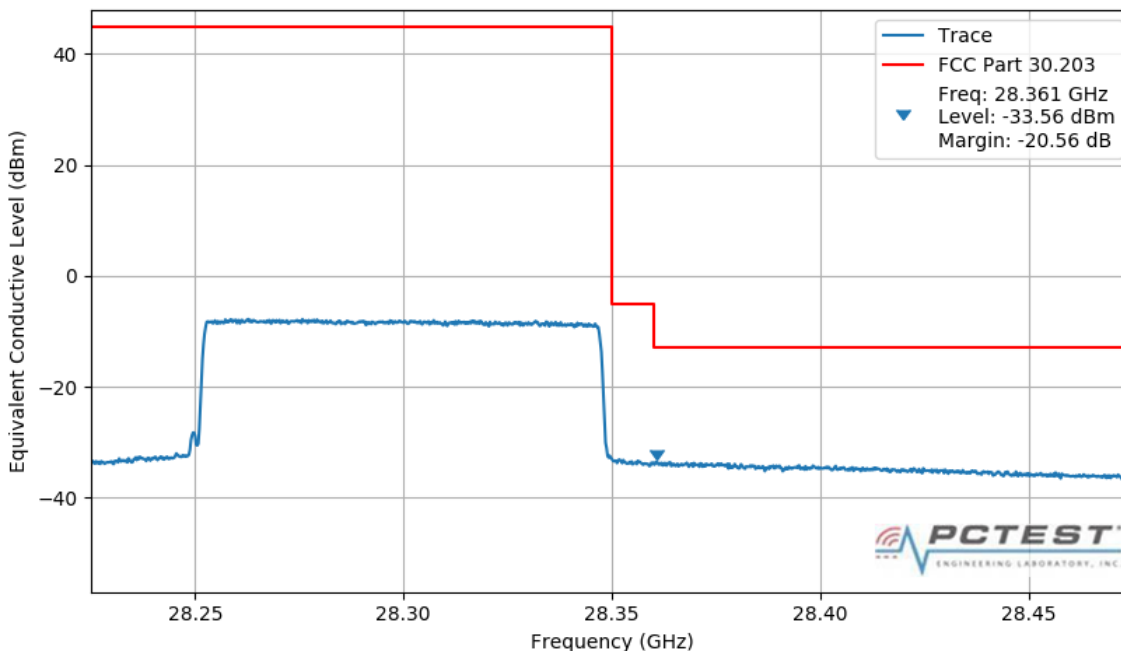
PASS

Center Freq: 28.35 GHz  
Span: 250 MHz  
Ref Level: 43.60 dBm

Trace: AVERAGE  
Detector: RMS  
Offset: 43.60 dB

RBW: 1 MHz  
VBW: 3 MHz  
SWP Count: 100

SWP points: 1001



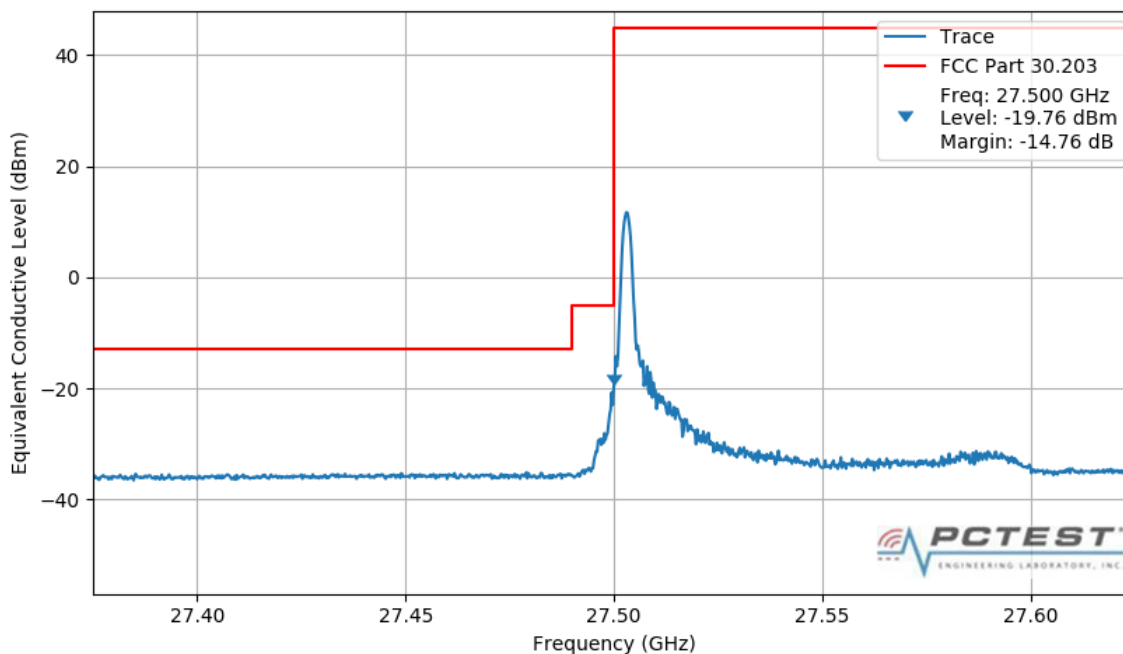
Plot 7-186. Band Edge Plot (1CC 100M QPSK High Channel – 66 RB, 0 offset)

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 131 of 304

# QTM 0 - V

**PASS**

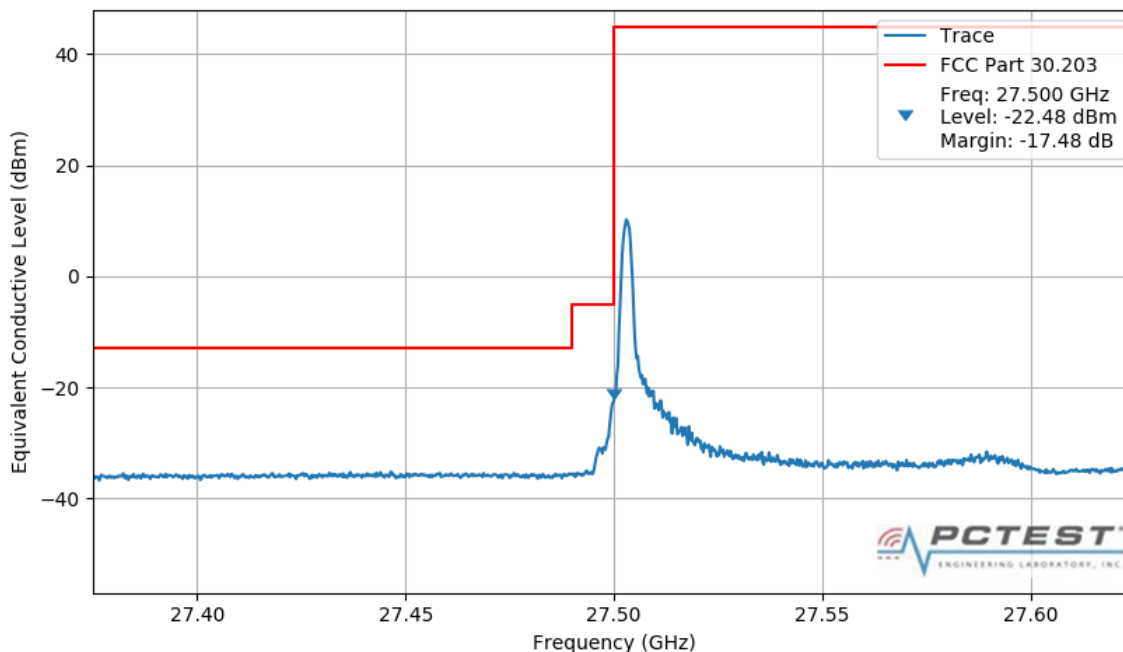
Center Freq: 27.50 GHz Trace: AVERAGE RBW: 1 MHz SWP points: 1001  
Span: 250 MHz Detector: RMS VBW: 3 MHz  
Ref Level: 43.53 dBm Offset: 43.53 dB SWP Count: 100



**Plot 7-187. Band Edge Plot (1CC 100M QPSK Low Channel – 1 RB, 0 offset)**

**PASS**

Center Freq: 27.50 GHz Trace: AVERAGE RBW: 1 MHz SWP points: 1001  
Span: 250 MHz Detector: RMS VBW: 3 MHz  
Ref Level: 43.53 dBm Offset: 43.53 dB SWP Count: 100



**Plot 7-188. Band Edge Plot (1CC 100M 16QAM Low Channel – 1 RB, 0 offset)**

FCC ID: ZNFV450VM	<b>PCTEST</b> ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (CERTIFICATION)	<b>LG</b>	Approved by: Quality Manager
Test Report S/N: 1M1901150005-14-R2.ZNF	Test Dates: 1/21 -4/26/2019	EUT Type: Portable Handset		Page 132 of 304