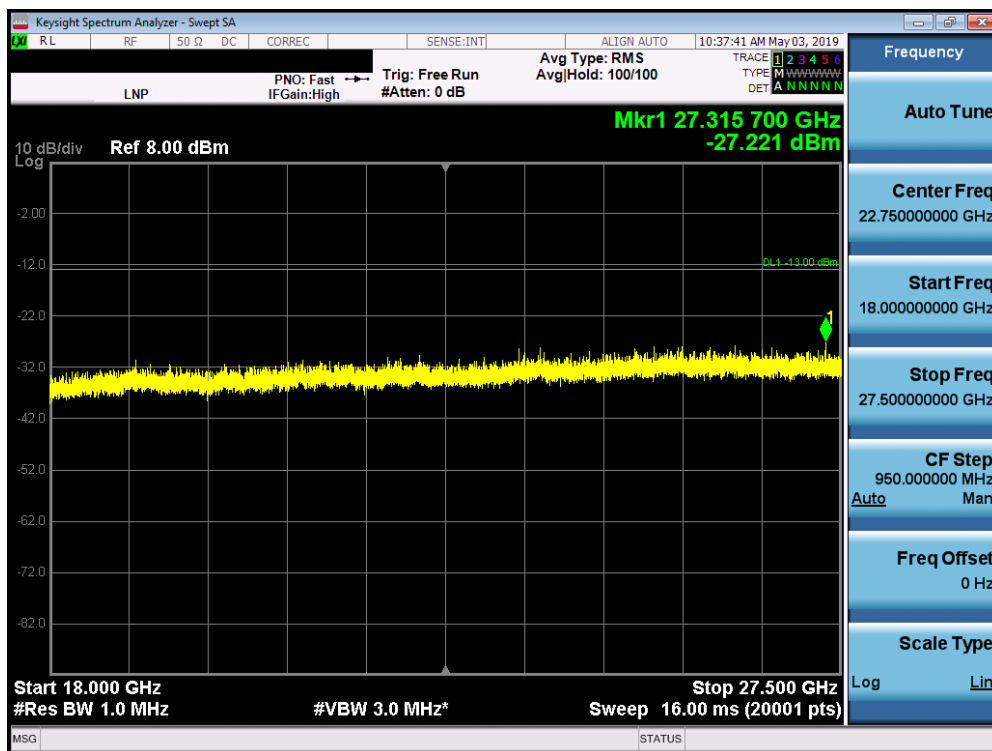
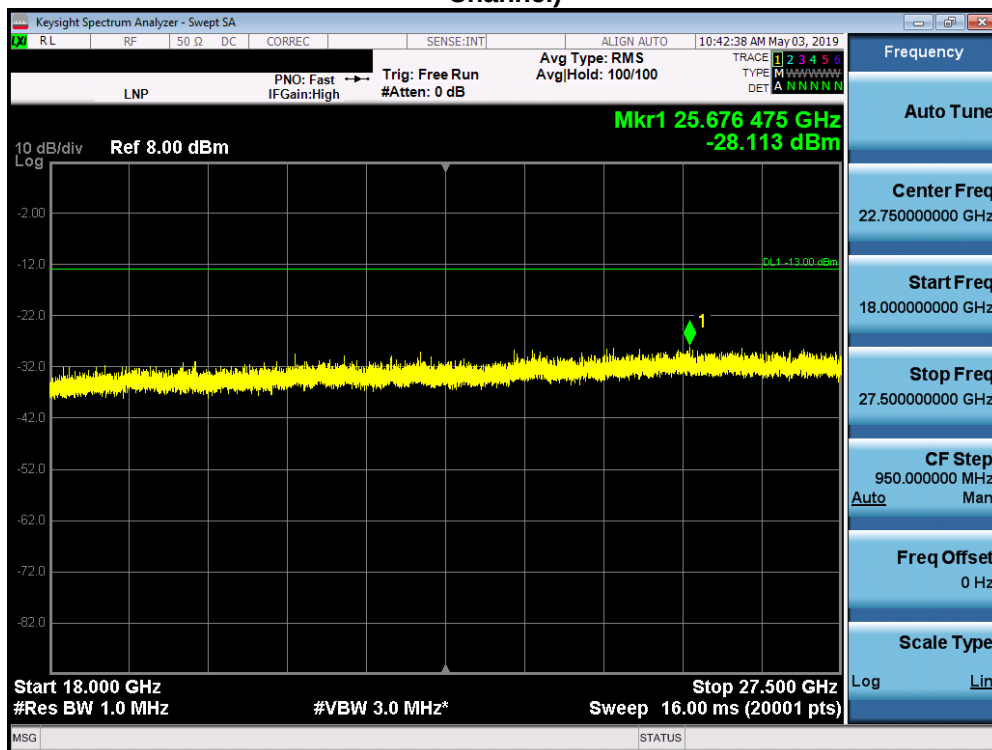


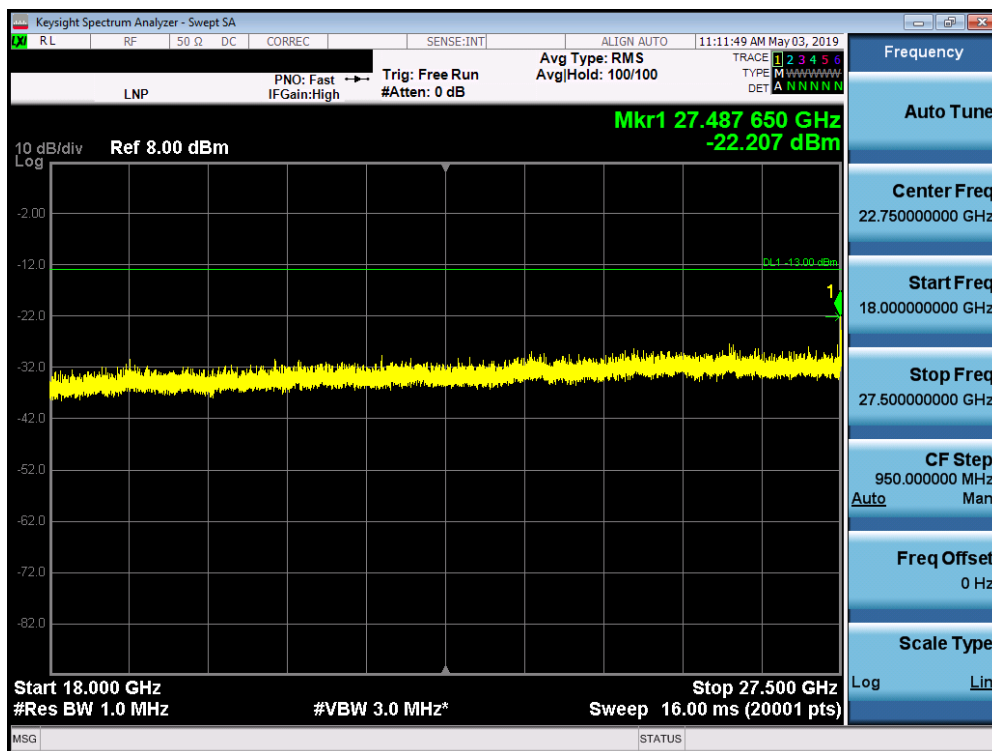


Plot 7-64. Horizontal Radiated Spurious Plot 18-27.5 GHz (QTM1 1CC-100MHz Bandwidth QPSK Mid Channel)

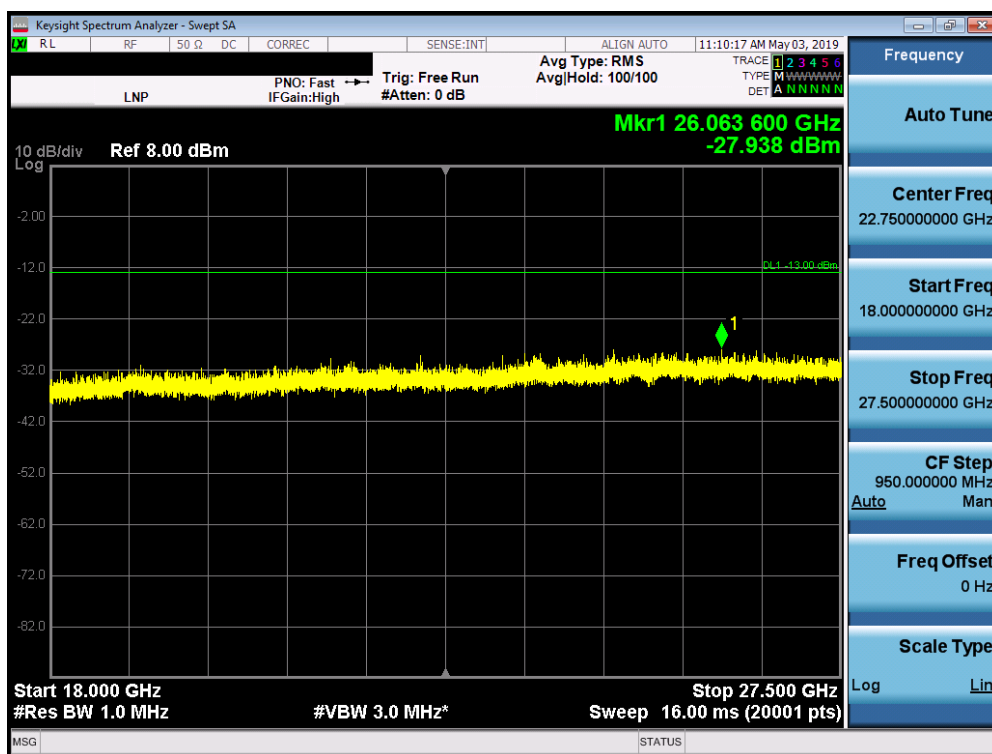


Plot 7-65. Horizontal Radiated Spurious Plot 18-27.5 GHz (QTM1 1CC-100MHz Bandwidth QPSK High Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 56 of 202

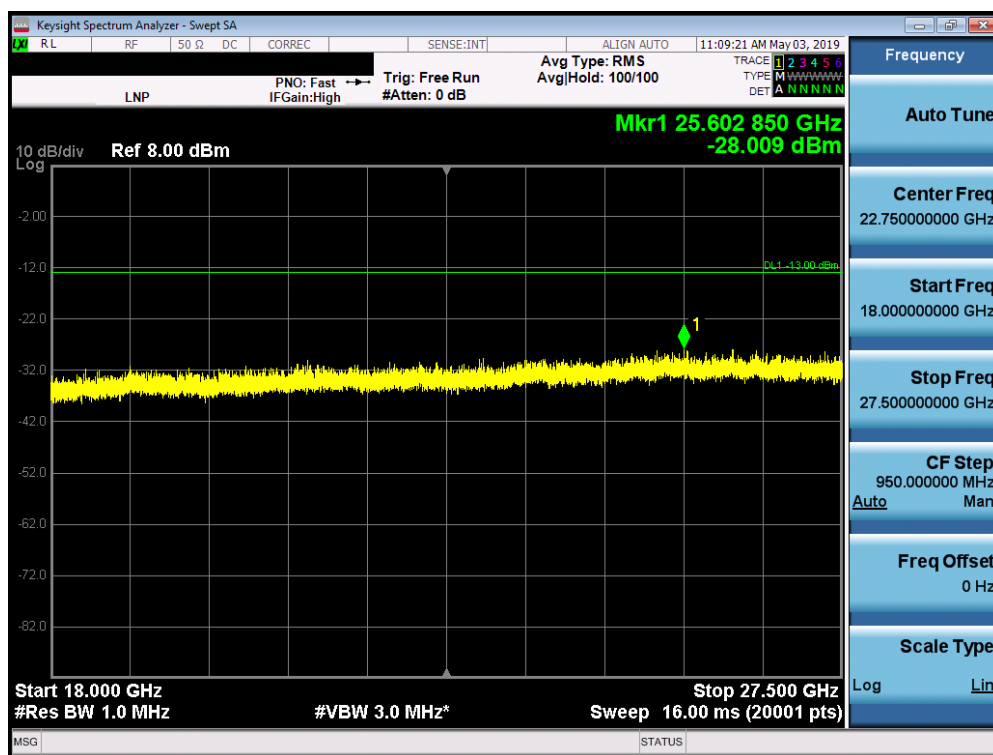


Plot 7-66. Vertical Radiated Spurious Plot 18-27.5 GHz (QTM1 1CC-100MHz Bandwidth QPSK Low Channel)



Plot 7-67. Vertical Radiated Spurious Plot 18-27.5 GHz (QTM1 1CC-100MHz Bandwidth QPSK Mid Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 57 of 202



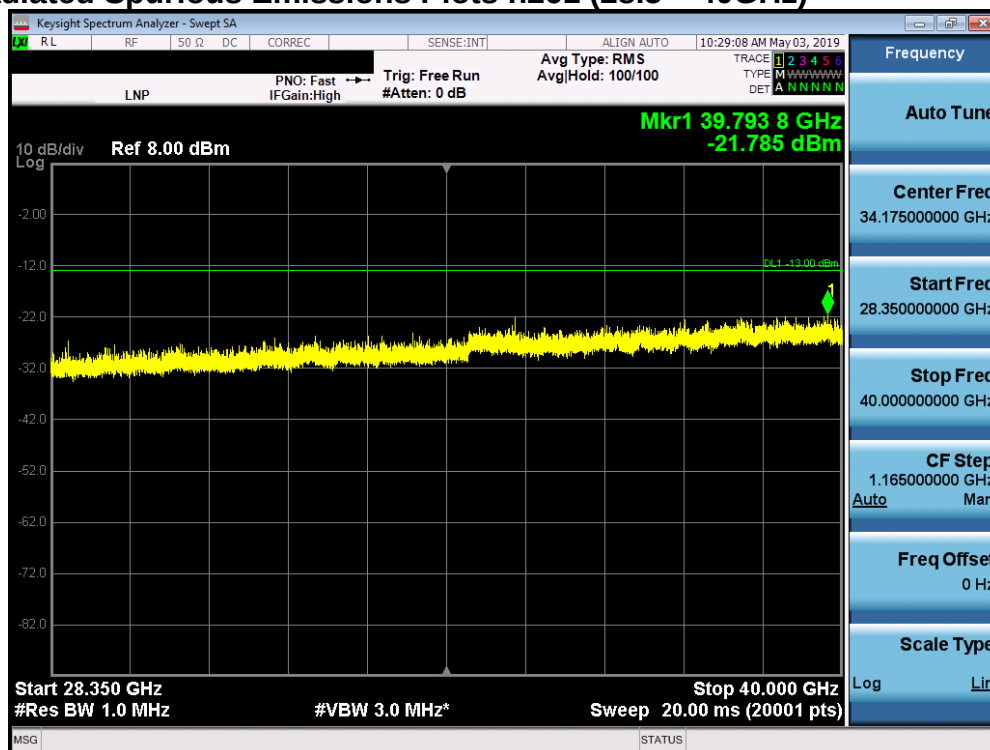
Plot 7-68. Vertical Radiated Spurious Plot 18-27.5 GHz (QTM1 1CC-100MHz Bandwidth QPSK High Channel)

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]
27490.50	Maxh/RMS	Low	100	QPSK	H + V	H	150	225	-24.65	-13.00	-11.65
27315.70	Maxh/RMS	Mid	100	QPSK	H + V	H	-	-	-27.22	-13.00	-14.22
25676.48	Maxh/RMS	High	100	QPSK	H + V	H	-	-	-28.11	-13.00	-15.11
27487.65	Maxh/RMS	Low	100	QPSK	H + V	V	-	-	-22.21	-13.00	-9.21
26063.60	Maxh/RMS	Mid	100	QPSK	H + V	V	-	-	-27.94	-13.00	-14.94
25602.85	Maxh/RMS	High	100	QPSK	H + V	V	-	-	-28.01	-13.00	-15.01

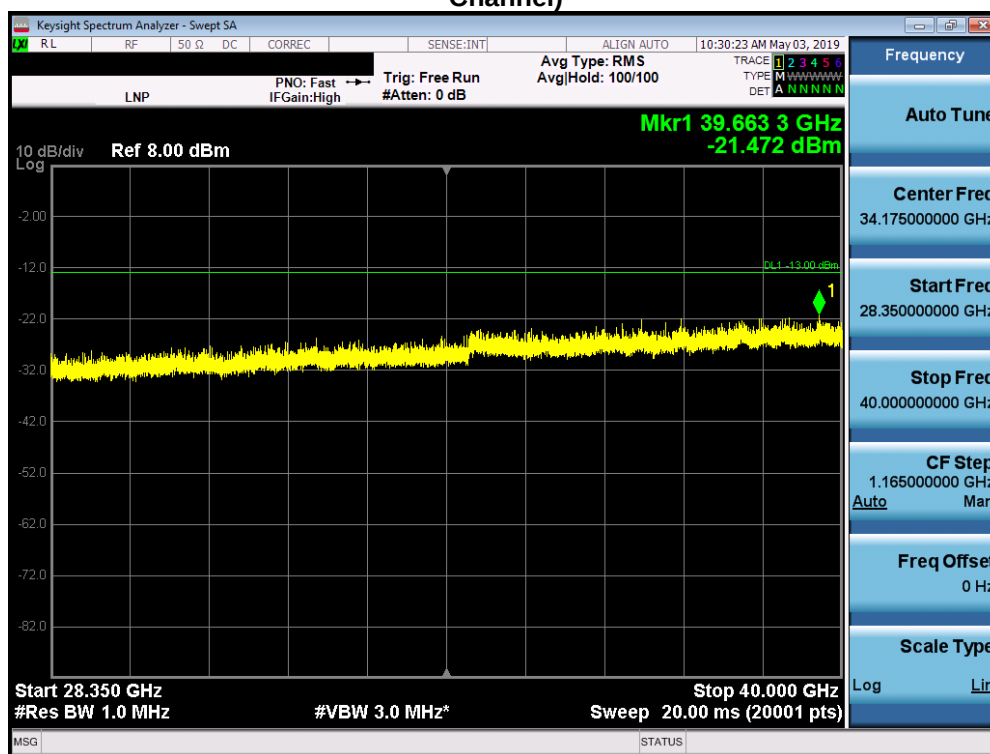
Table 7-12. Spurious Emissions QTM1 (18 – 27.5GHz)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)		LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset			Page 58 of 202

7.4.4 Radiated Spurious Emissions Plots n261 (28.5 – 40GHz)

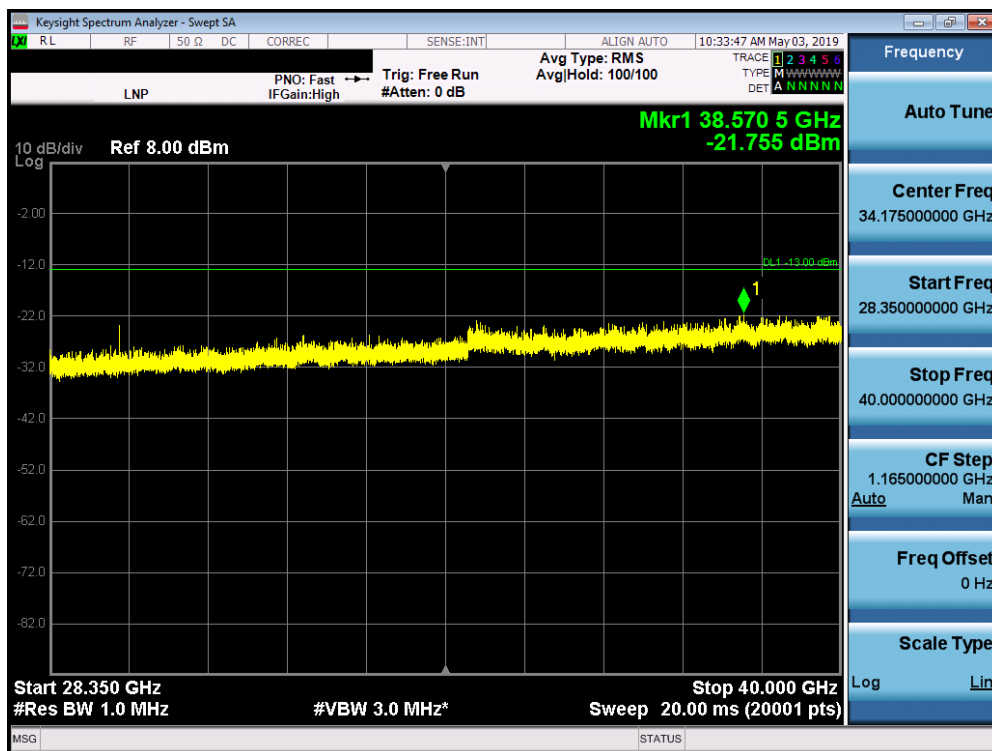


Plot 7-69. Horizontal Radiated Spurious Plot 28.5-40 GHz (QTM0 1CC-100MHz Bandwidth QPSK Low Channel)

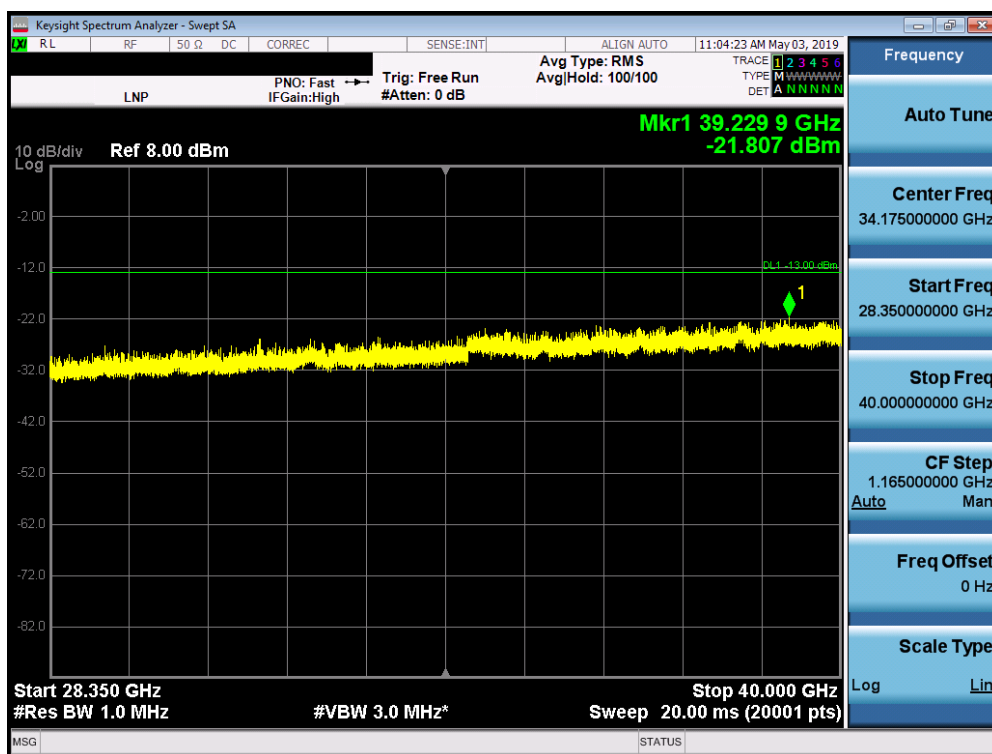


Plot 7-70. Horizontal Radiated Spurious Plot 28.5-40 GHz (QTM0 1CC-100MHz Bandwidth QPSK Mid Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 59 of 202

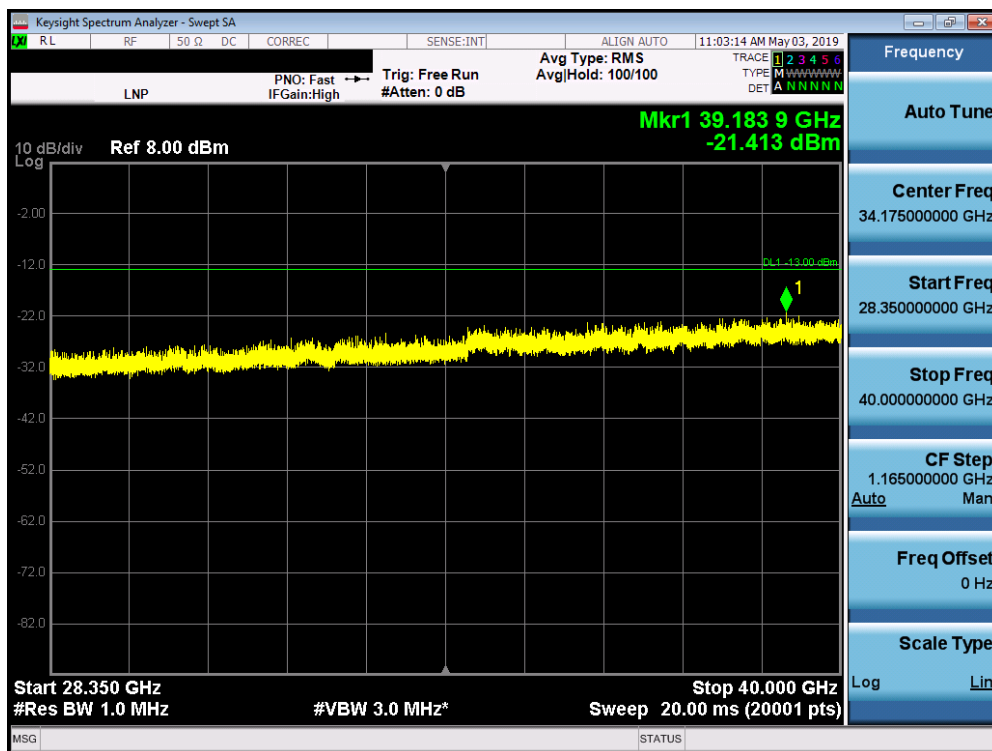


Plot 7-71. Horizontal Radiated Spurious Plot 28.5-40 GHz (QTM0 1CC-100MHz Bandwidth QPSK High Channel)

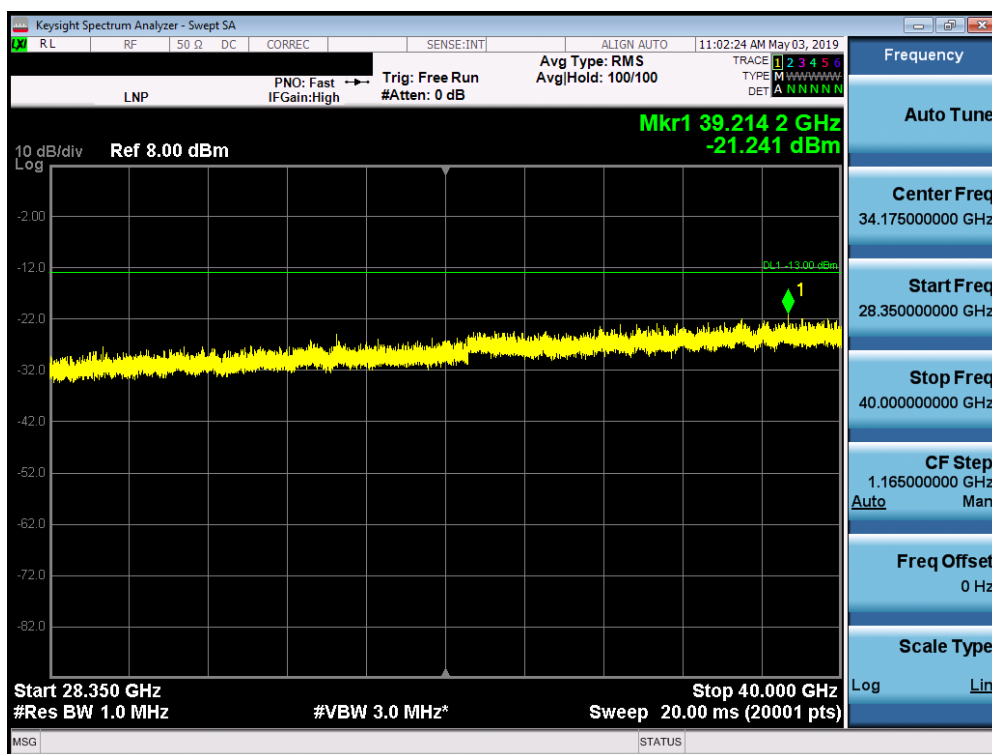


Plot 7-72. Vertical Radiated Spurious Plot 28.5-40 GHz (QTM0 1CC-100MHz Bandwidth QPSK Low Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 60 of 202



Plot 7-73. Vertical Radiated Spurious Plot 28.5-40 GHz (QTM0 1CC-100MHz Bandwidth QPSK Mid Channel)

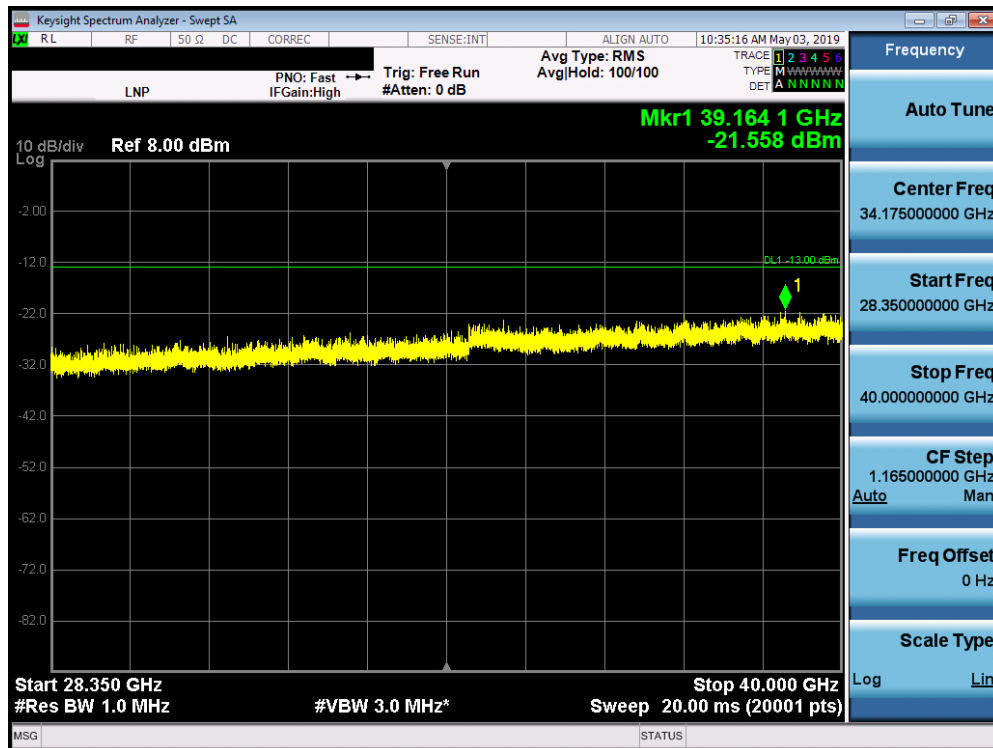


Plot 7-74. Vertical Radiated Spurious Plot 28.5-40 GHz (QTM0 1CC-100MHz Bandwidth QPSK High Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 61 of 202

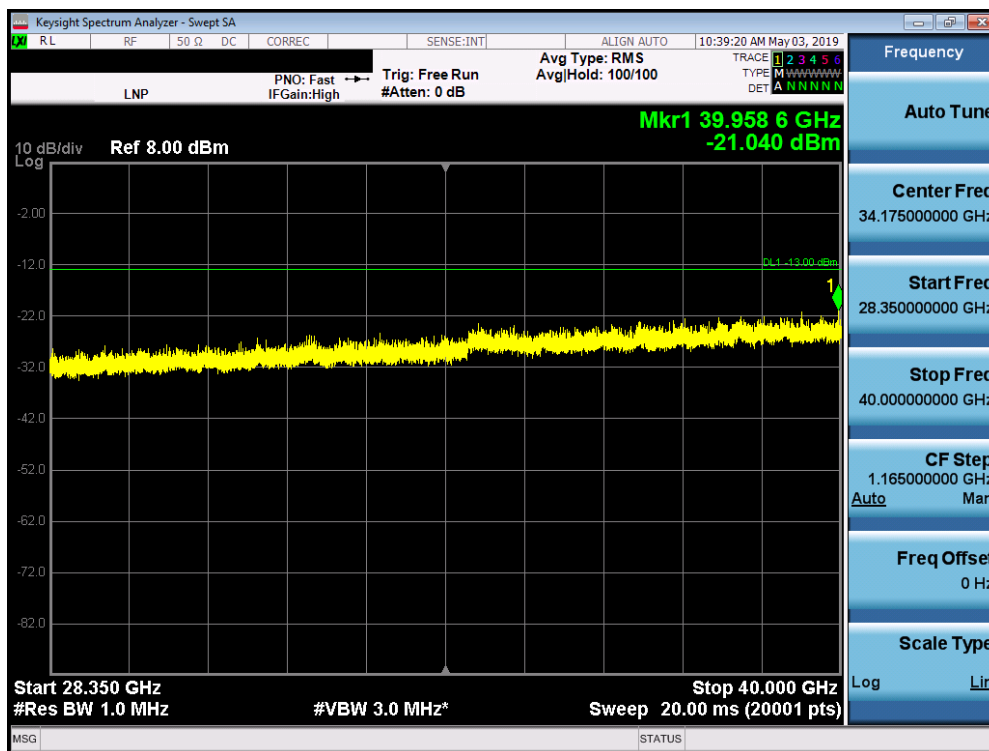
Frequency [MHz]	Detector /Trace	Chan.	Bandwidth (MHz)	Mod.	Beam Polarization	Ant. Pos [H/V]	Ant. Height [cm]	Turntable Azimuth [degree]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
39793.80	Maxh/RMS	Low	100	QPSK	H + V	H	-	-	-21.79	-13.00	-8.79
39663.30	Maxh/RMS	Mid	100	QPSK	H + V	H	-	-	-21.47	-13.00	-8.47
38570.50	Maxh/RMS	High	100	QPSK	H + V	H	-	-	-21.76	-13.00	-8.76
39229.90	Maxh/RMS	Low	100	QPSK	H + V	V	-	-	-21.81	-13.00	-8.81
39183.90	Maxh/RMS	Mid	100	QPSK	H + V	V	-	-	-21.41	-13.00	-8.41
39214.20	Maxh/RMS	High	100	QPSK	H + V	V	-	-	-21.24	-13.00	-8.24

Table 7-13. Spurious Emissions QTM0 (28.35 – 40GHz)

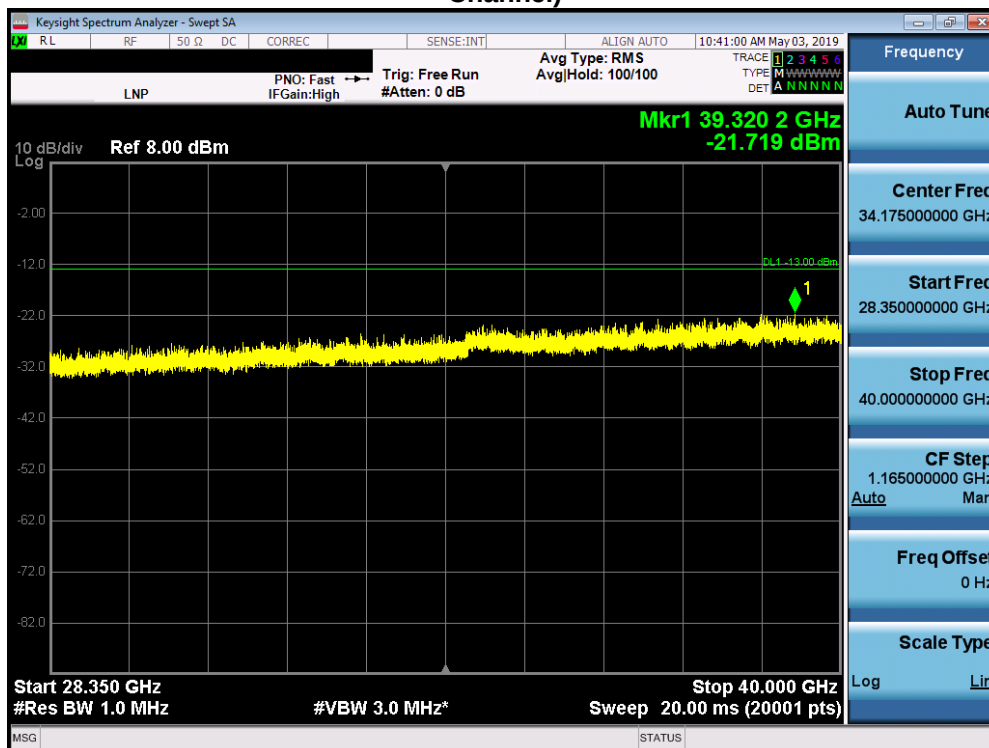


Plot 7-75. Horizontal Radiated Spurious Plot 28.5-40 GHz (QTM1 1CC-100MHz Bandwidth QPSK Low Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 62 of 202

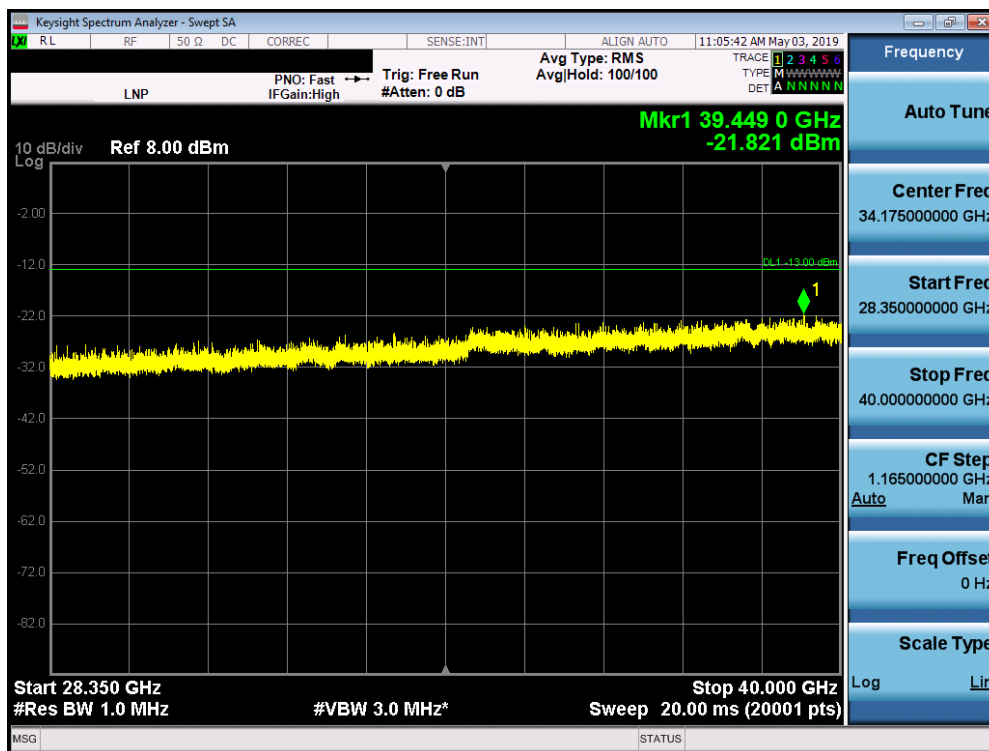


Plot 7-76. Horizontal Radiated Spurious Plot 28.5-40 GHz (QTM1 1CC-100MHz Bandwidth QPSK Mid Channel)

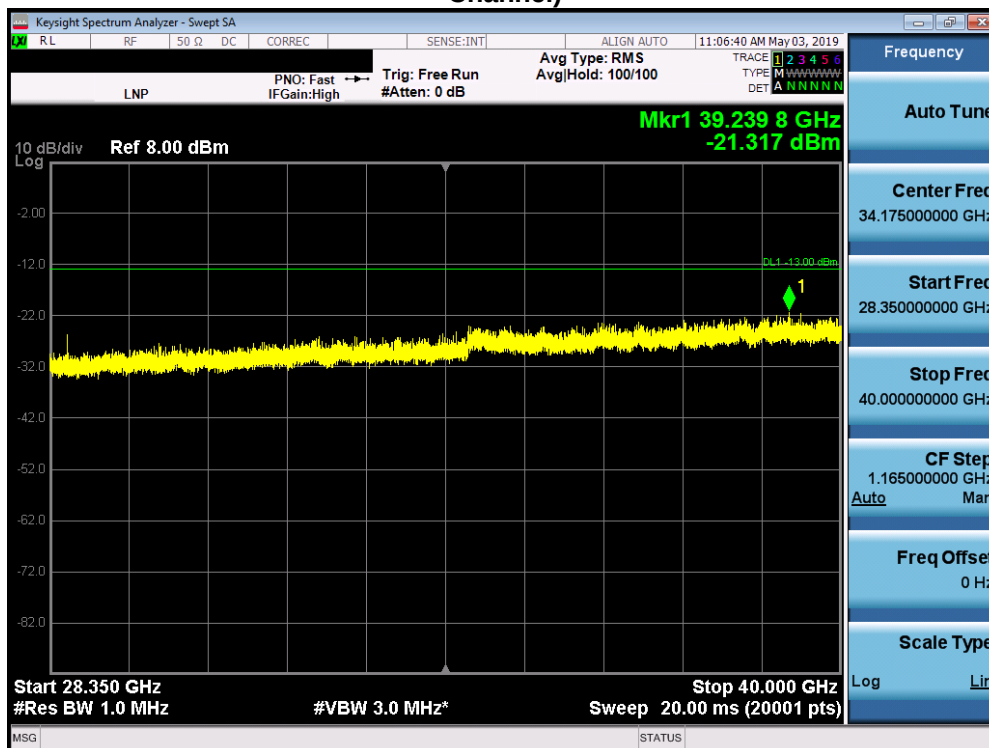


Plot 7-77. Horizontal Radiated Spurious Plot 28.5-40 GHz (QTM1 1CC-100MHz Bandwidth QPSK High Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 63 of 202

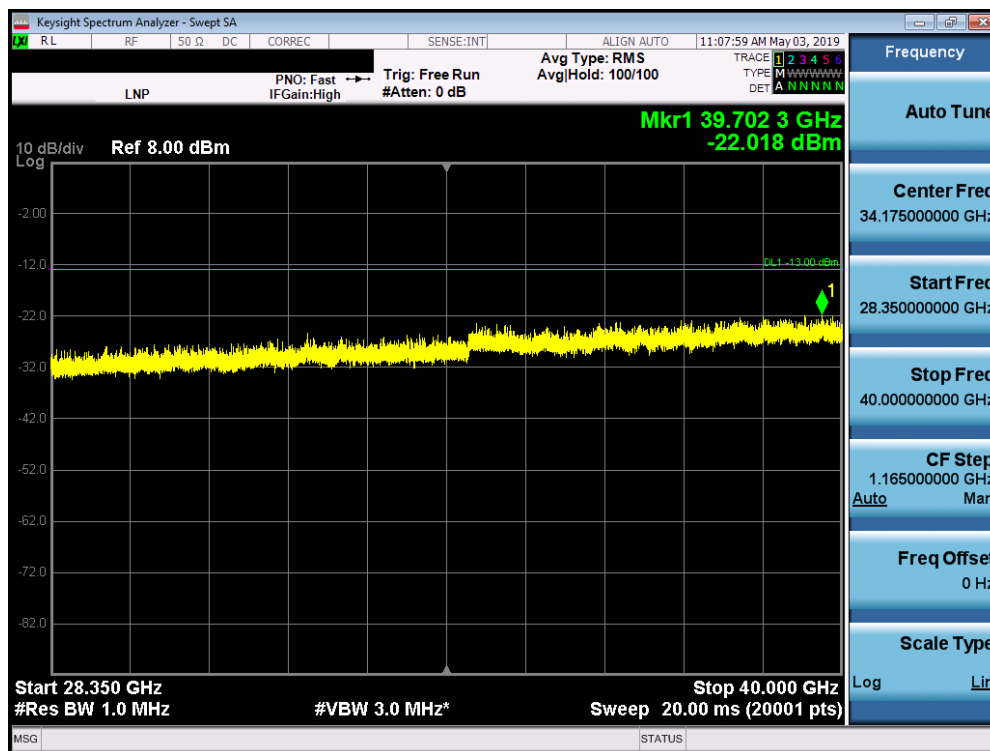


Plot 7-78. Vertical Radiated Spurious Plot 28.5-40 GHz (QTM1 1CC-100MHz Bandwidth QPSK Low Channel)



Plot 7-79. Vertical Radiated Spurious Plot 28.5-40 GHz (QTM1 1CC-100MHz Bandwidth QPSK Mid Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 64 of 202



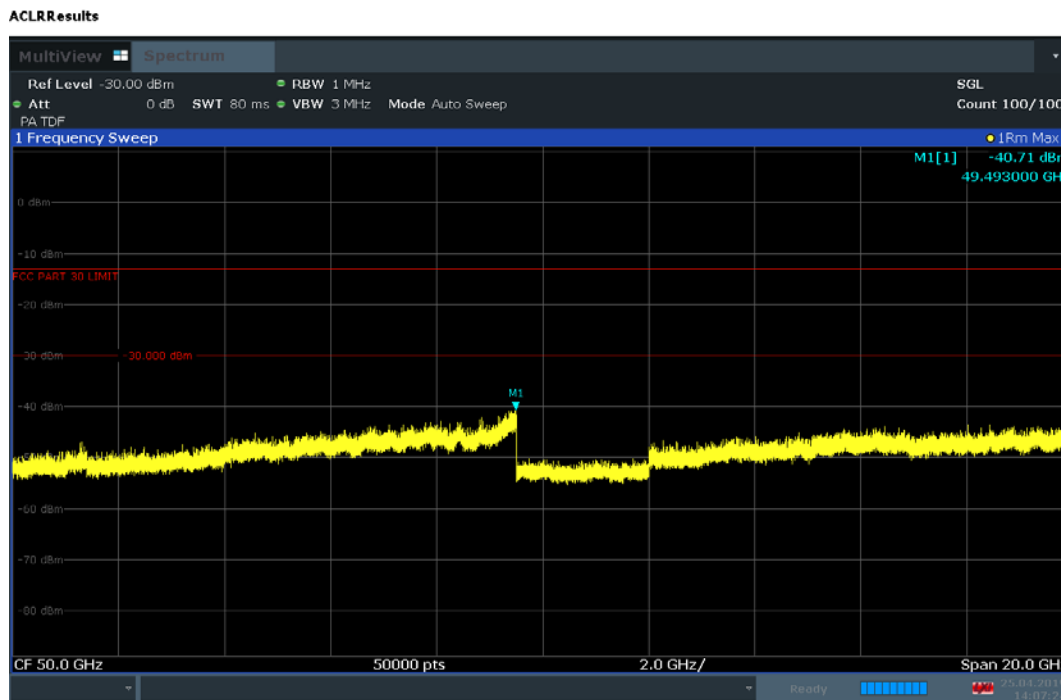
Plot 7-80. Vertical Radiated Spurious Plot 28.5-40 GHz (QTM1 1CC-100MHz Bandwidth QPSK High Channel)

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]
39164.10	Maxh/RMS	Low	100	QPSK	H + V	H	-	-	-21.56	-13.00	-8.56
39958.60	Maxh/RMS	Mid	100	QPSK	H + V	H	-	-	-21.04	-13.00	-8.04
39320.20	Maxh/RMS	High	100	QPSK	H + V	H	-	-	-21.72	-13.00	-8.72
39449.00	Maxh/RMS	Low	100	QPSK	H + V	V	-	-	-21.82	-13.00	-8.82
39239.80	Maxh/RMS	Mid	100	QPSK	H + V	V	-	-	-21.32	-13.00	-8.32
39702.30	Maxh/RMS	High	100	QPSK	H + V	V	-	-	-22.02	-13.00	-9.02

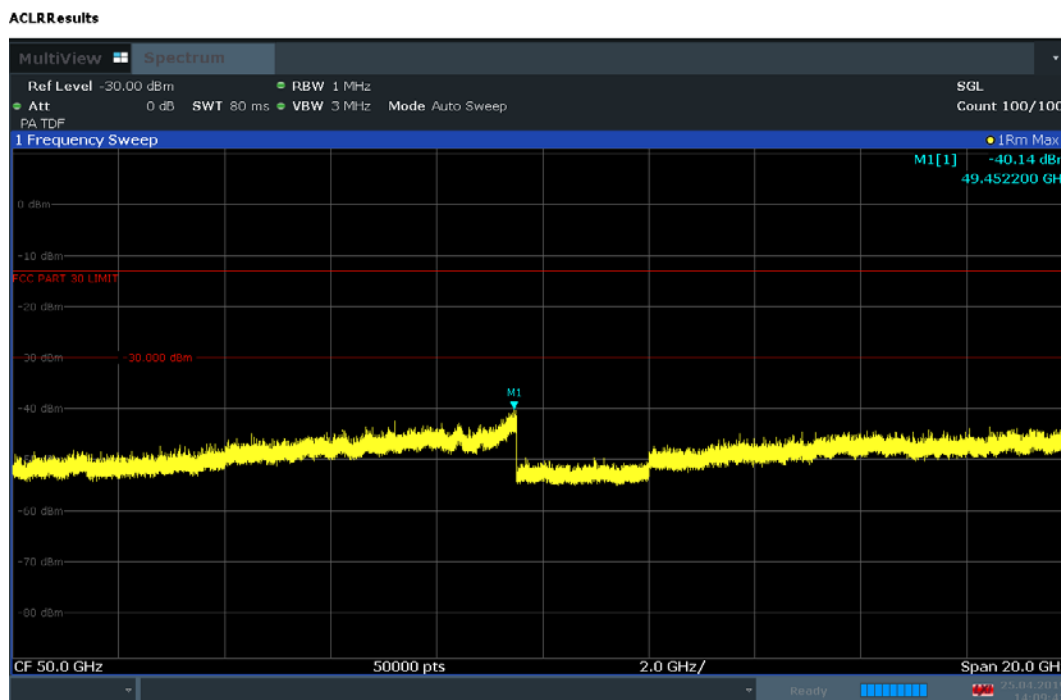
Table 7-14. Spurious Emissions QTM1 (28.35 – 40GHz)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)			Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset			Page 65 of 202

7.4.5 Radiated Spurious Emissions Plots n261 (40 – 60GHz)



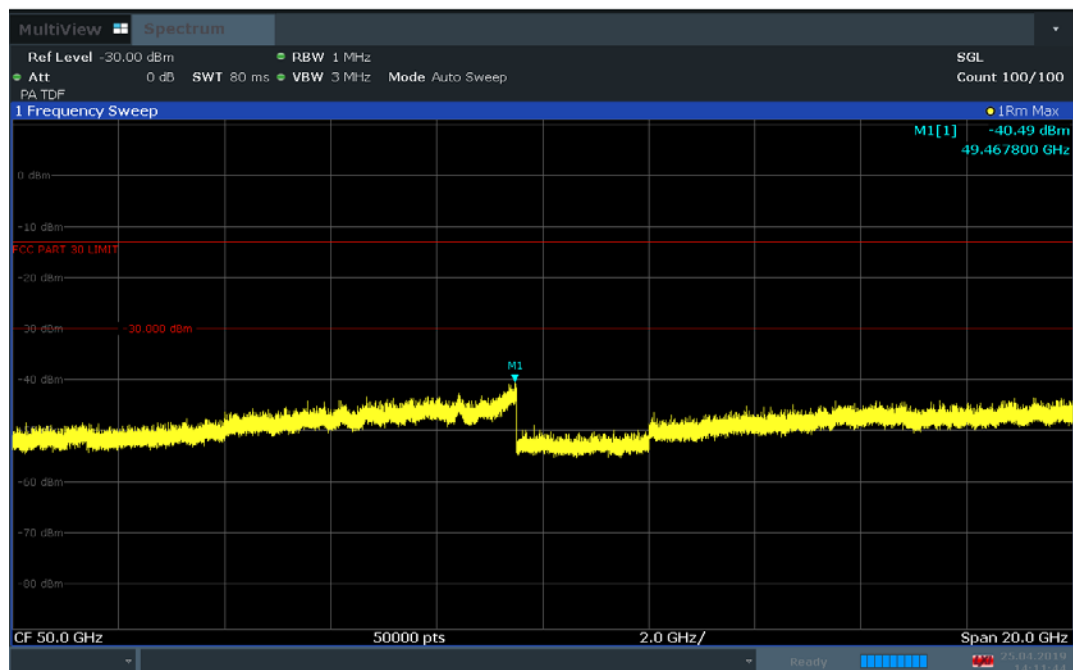
Plot 7-81. Horizontal Radiated Spurious Plot 40-60 GHz (QTM0 1CC-50MHz Bandwidth QPSK Low Channel)



Plot 7-82. Horizontal Radiated Spurious Plot 40-60 GHz (QTM0 1CC-50MHz Bandwidth QPSK Mid Channel)

FCC ID: ZNFV450VM		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 66 of 202

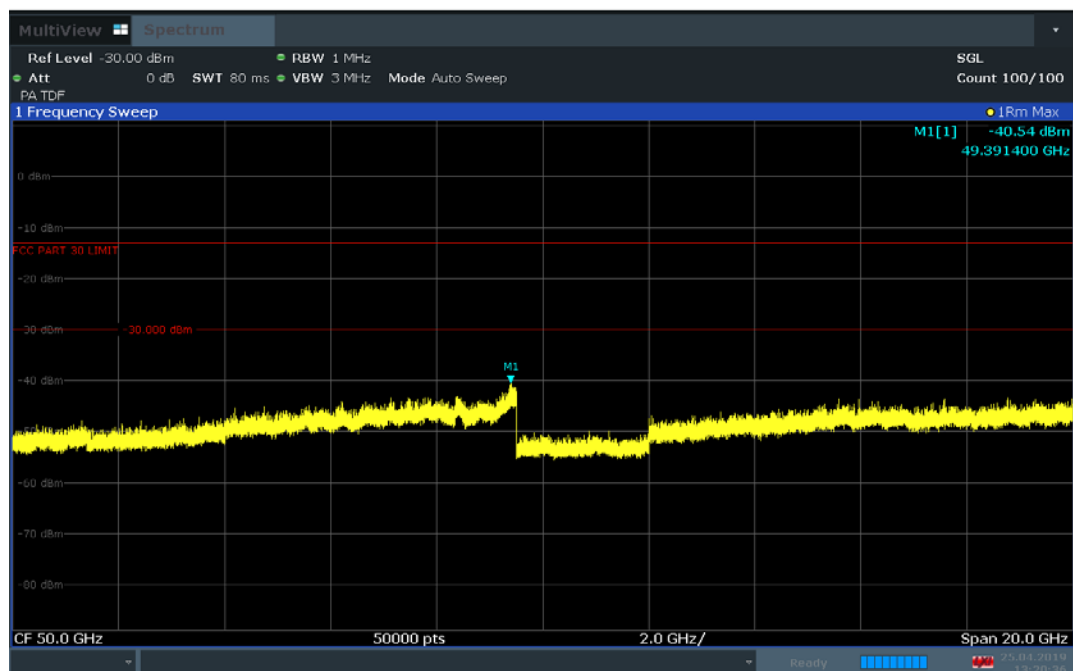
ACLRRResults



14:11:45 25.04.2019

Plot 7-83. Horizontal Radiated Spurious Plot 40-60 GHz (QTM0 1CC-50MHz Bandwidth QPSK High Channel)

ACLRRResults

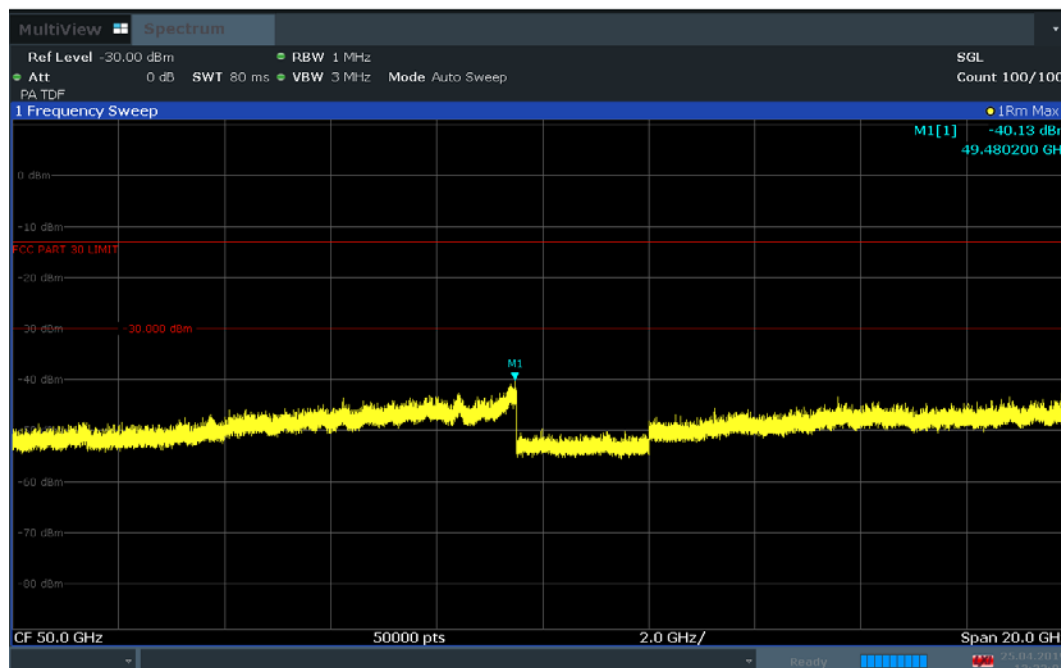


13:20:37 25.04.2019

Plot 7-84. Vertical Radiated Spurious Plot 40-60 GHz (QTM0 1CC-50MHz Bandwidth QPSK Low Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 67 of 202

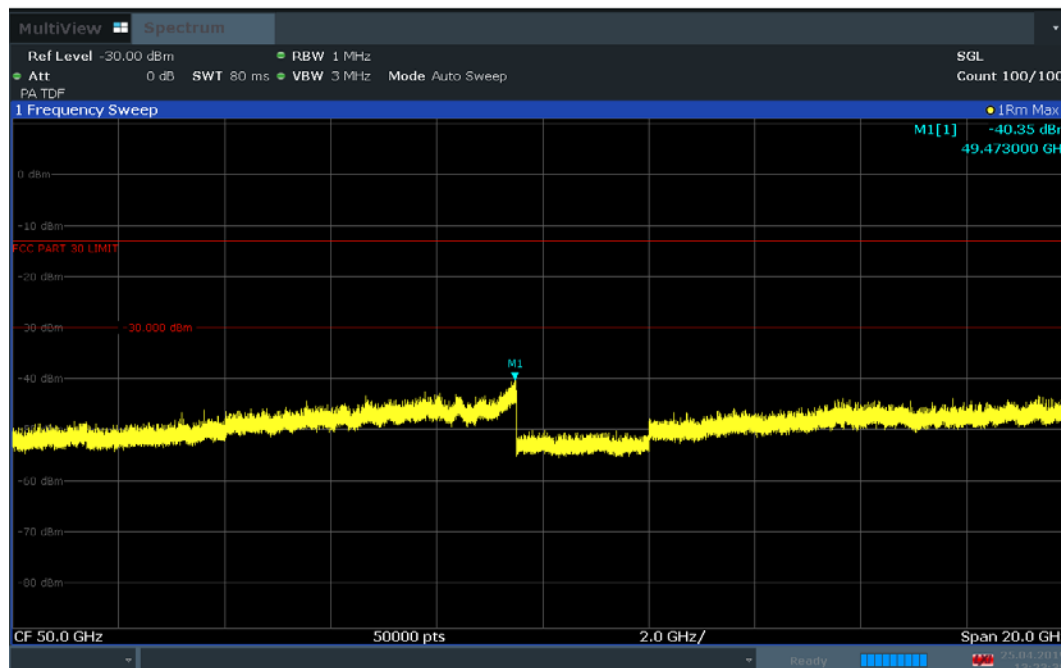
ACLRRResults



13:22:06 25.04.2019

Plot 7-85. Vertical Radiated Spurious Plot 40-60 GHz (QTM0 1CC-50MHz Bandwidth QPSK Mid Channel)

ACLRRResults



13:23:38 25.04.2019

Plot 7-86. Vertical Radiated Spurious Plot 40-60 GHz (QTM0 1CC-50MHz Bandwidth QPSK High Channel)

FCC ID: ZNFV450VM		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 68 of 202

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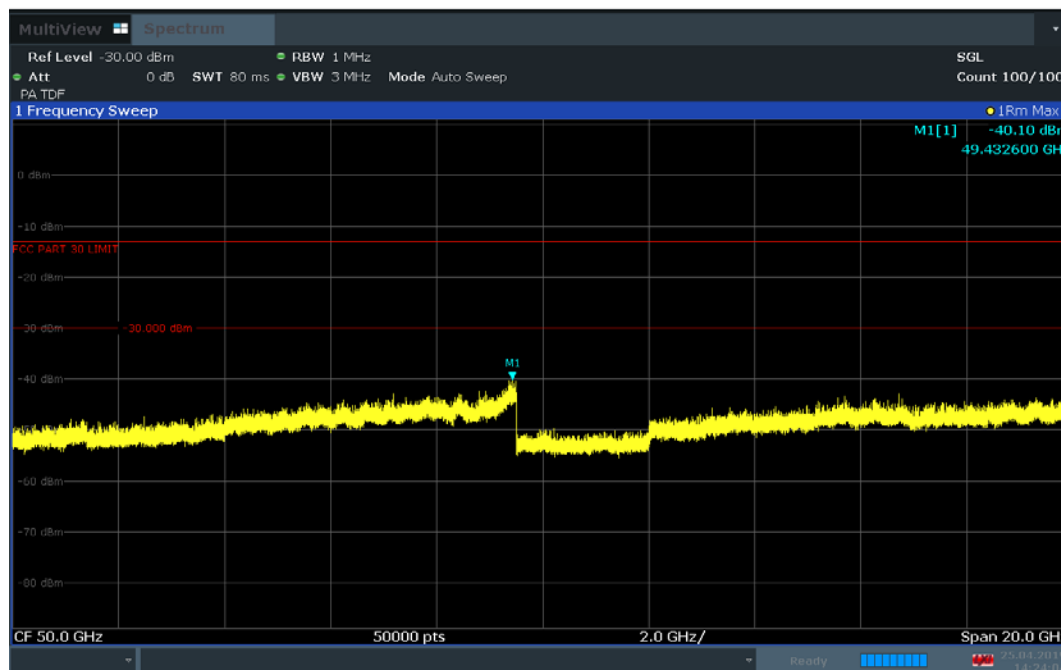
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Frequency [MHz]	Detector /Trace	Chan.	Bandwidth (MHz)	Mod.	Beam Polarization	Ant. Pos [H/V]	Ant. Height [cm]	Turn Table Azimuth [degree]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
49493.00	Maxh/RMS	Low	100	QPSK	H + V	H	-	-	-40.71	-13.00	-27.71
49452.20	Maxh/RMS	Mid	100	QPSK	H + V	H	-	-	-40.14	-13.00	-27.14
49467.80	Maxh/RMS	High	100	QPSK	H + V	H	-	-	-40.49	-13.00	-27.49
49391.40	Maxh/RMS	Low	100	QPSK	H + V	V	-	-	-40.54	-13.00	-27.54
49480.20	Maxh/RMS	Mid	100	QPSK	H + V	V	-	-	-40.13	-13.00	-27.13
49473.00	Maxh/RMS	High	100	QPSK	H + V	V	-	-	-40.35	-13.00	-27.35

Table 7-15. Spurious Emissions QTM0 (40 – 60GHz)

ACLRResults

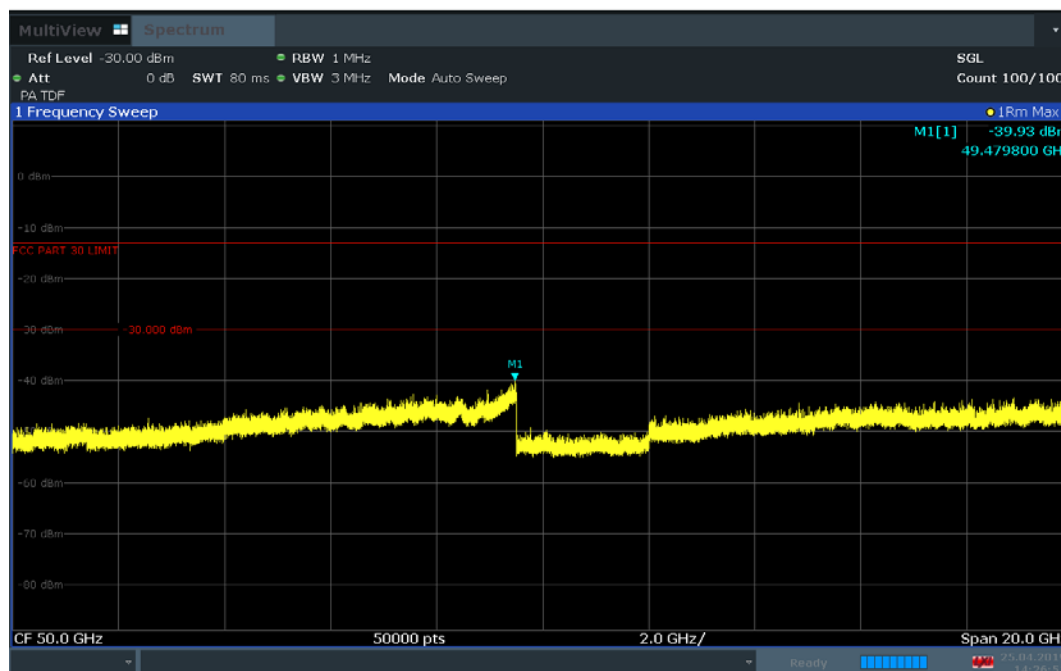


14:24:05 25.04.2019

Plot 7-87. Horizontal Radiated Spurious Plot 40-60 GHz (QTM1 1CC-100MHz Bandwidth QPSK Low Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 69 of 202

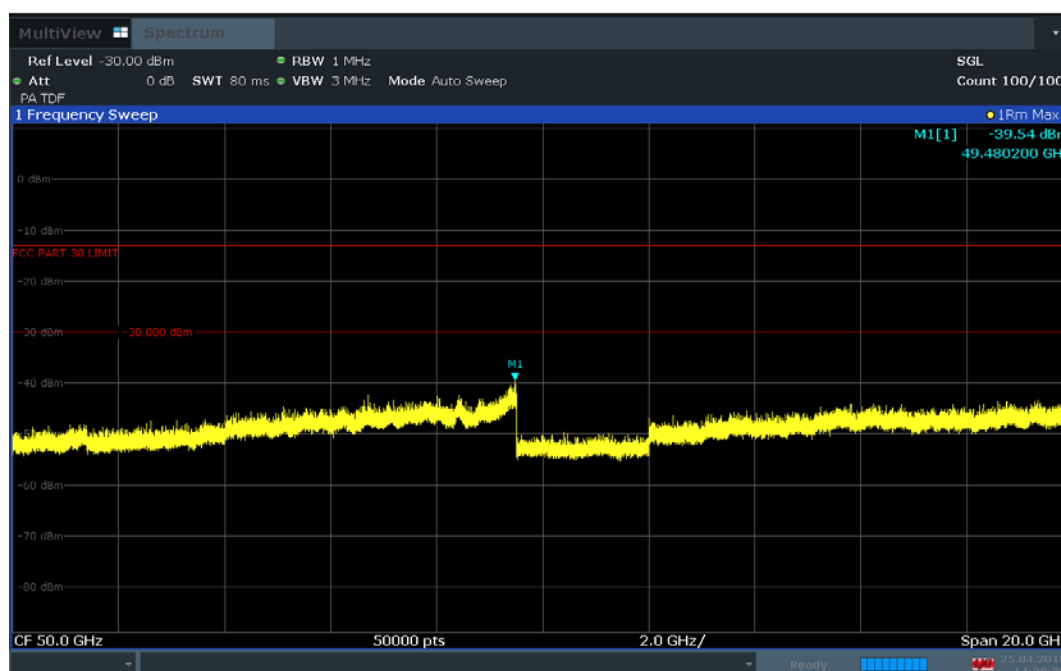
ACLRResults



14:26:51 25.04.2019

Plot 7-88. Horizontal Radiated Spurious Plot 40-60 GHz (QTM1 1CC-100MHz Bandwidth QPSK Mid Channel)

ACLRResults



14:29:20 25.04.2019

Plot 7-89. Horizontal Radiated Spurious Plot 40-60 GHz (QTM1 1CC-100MHz Bandwidth QPSK High Channel)

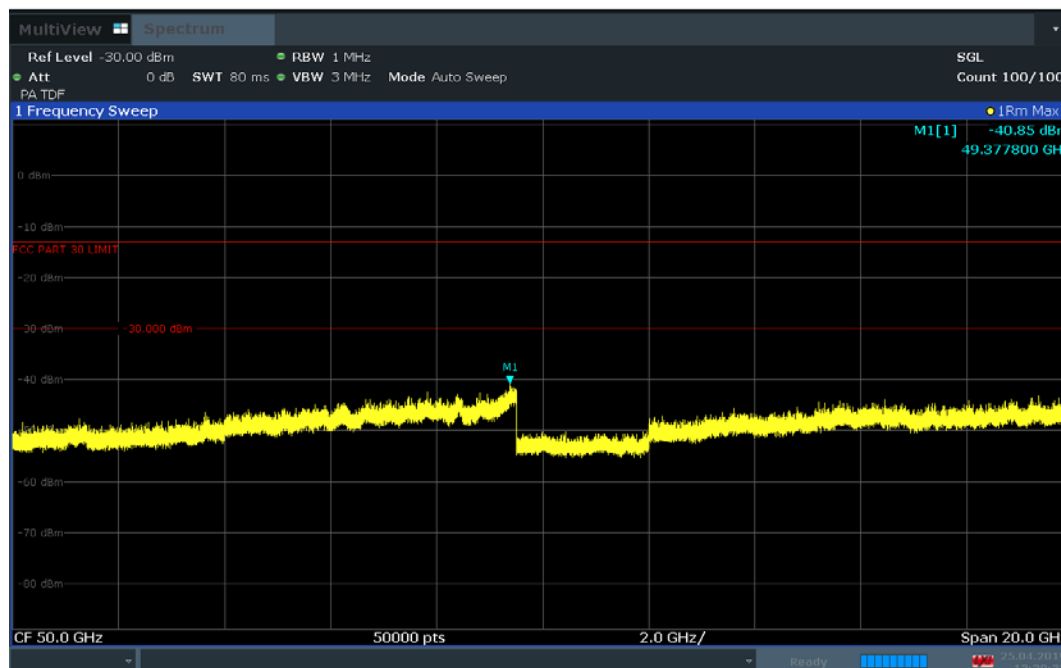
FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 70 of 202

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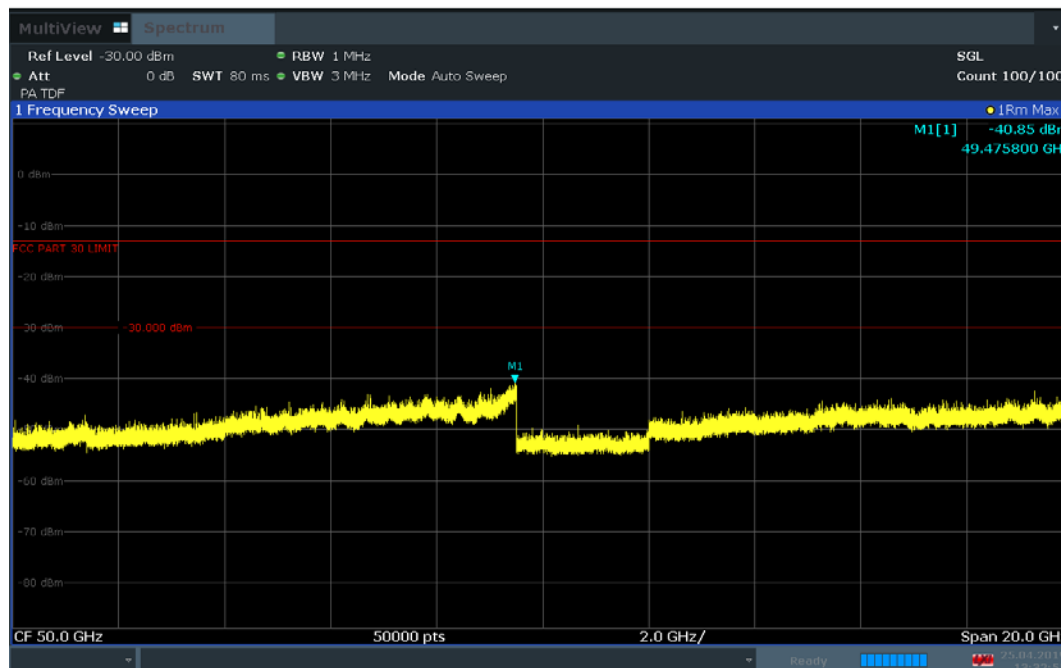
ACLRResults



13:29:33 25.04.2019

Plot 7-90. Vertical Radiated Spurious Plot 40-60 GHz (QTM1 1CC-100MHz Bandwidth QPSK Low Channel)

ACLRResults



13:32:55 25.04.2019

Plot 7-91. Vertical Radiated Spurious Plot 40-60 GHz (QTM1 1CC-100MHz Bandwidth QPSK Mid Channel)

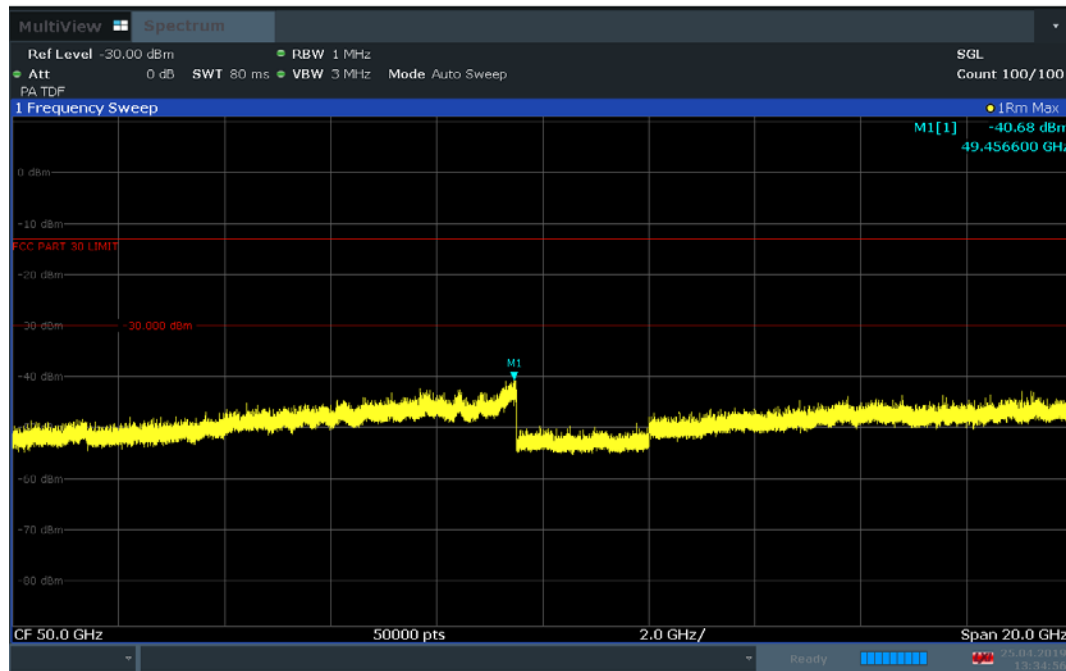
FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 71 of 202

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ACLRResults



13:34:56 25.04.2019

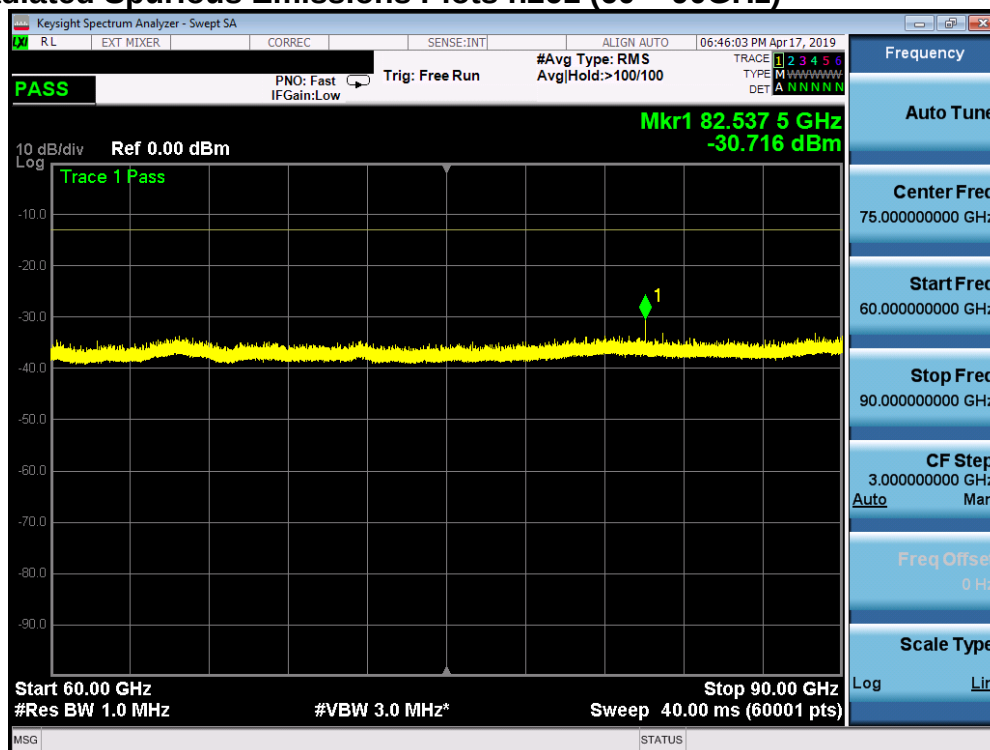
Plot 7-92. Vertical Radiated Spurious Plot 40-60 GHz (QTM1 1CC-100MHz Bandwidth QPSK High Channel)

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]
49432.60	Maxh/RMS	Low	100	QPSK	H + V	H	-	-	-40.10	-13.00	-27.10
49479.80	Maxh/RMS	Mid	100	QPSK	H + V	H	-	-	-39.93	-13.00	-26.93
49480.20	Maxh/RMS	High	100	QPSK	H + V	H	-	-	-39.54	-13.00	-26.54
49377.80	Maxh/RMS	Low	100	QPSK	H + V	V	-	-	-40.85	-13.00	-27.85
49475.80	Maxh/RMS	Mid	100	QPSK	H + V	V	-	-	-40.85	-13.00	-27.85
49456.60	Maxh/RMS	High	100	QPSK	H + V	V	-	-	-40.68	-13.00	-27.68

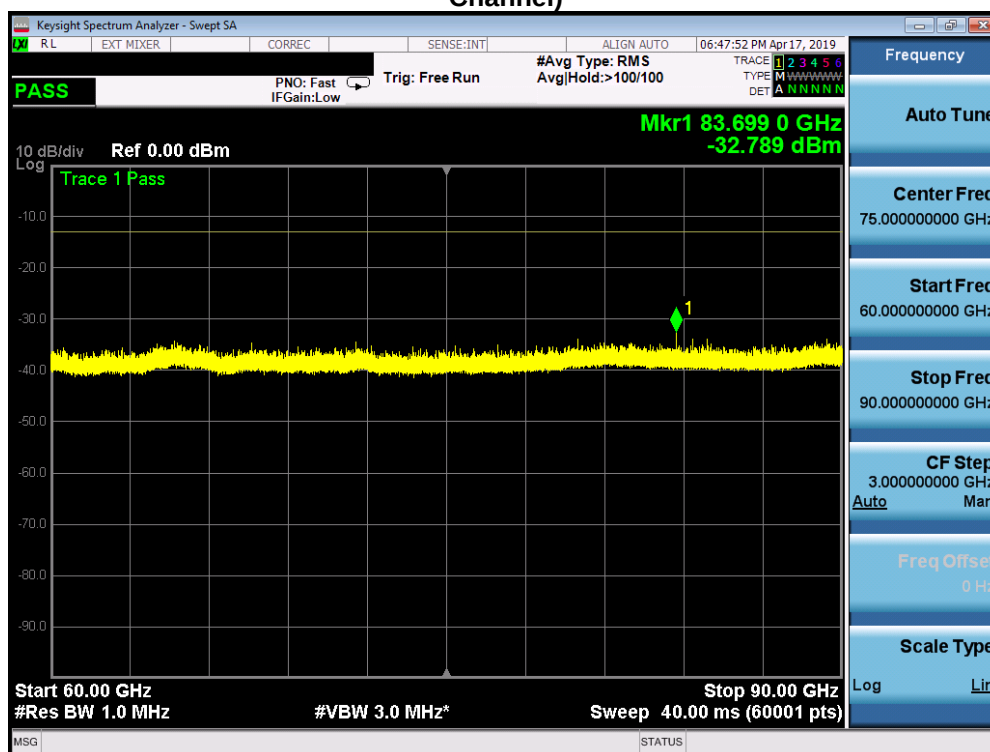
Table 7-16. Spurious Emissions QTM1 (40 – 60GHz)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)		LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset			Page 72 of 202

7.4.6 Radiated Spurious Emissions Plots n261 (60 – 90GHz)

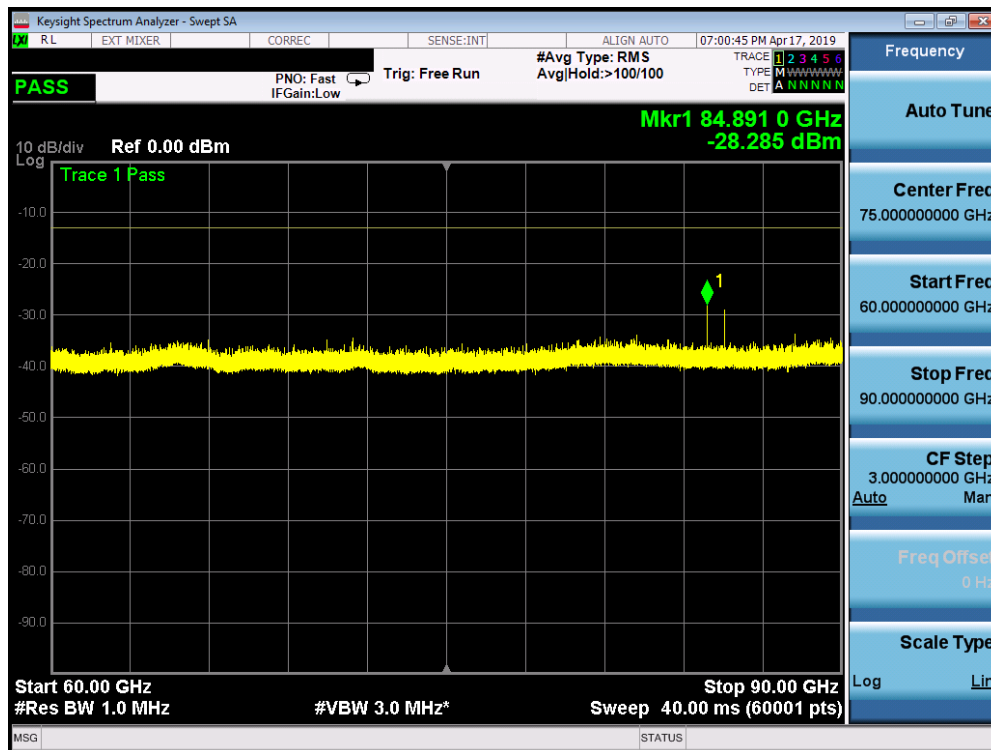


Plot 7-93. Horizontal Radiated Spurious Plot 60-90 GHz (QTM0 1CC-50MHz Bandwidth QPSK Low Channel)

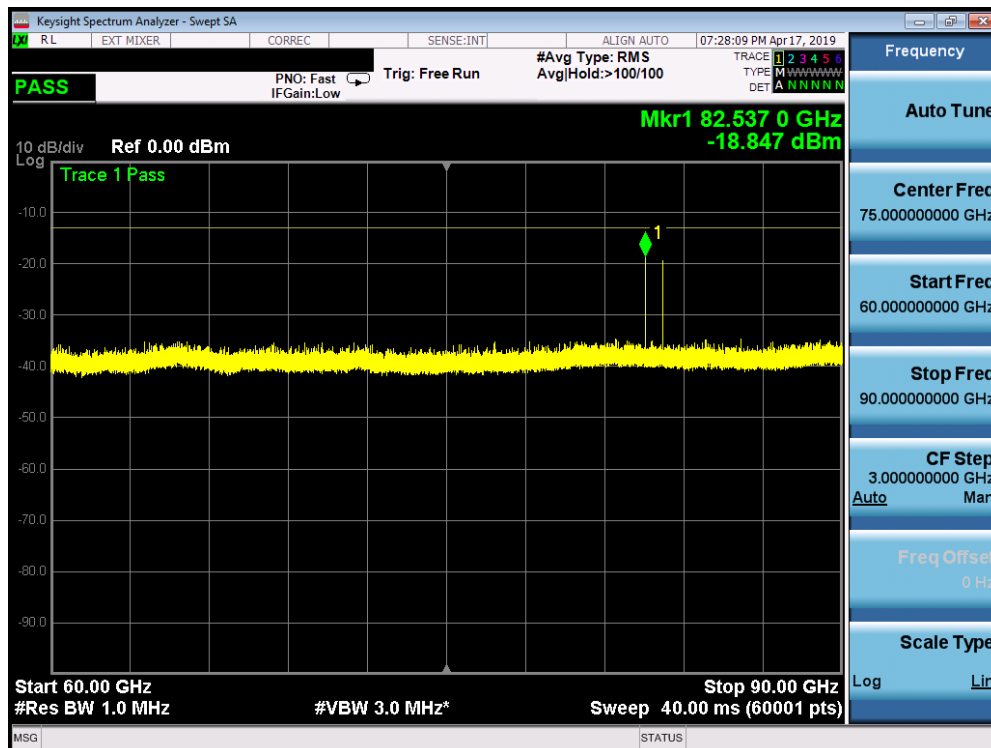


Plot 7-94. Horizontal Radiated Spurious Plot 60-90 GHz (QTM0 1CC-50MHz Bandwidth QPSK Mid Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 73 of 202

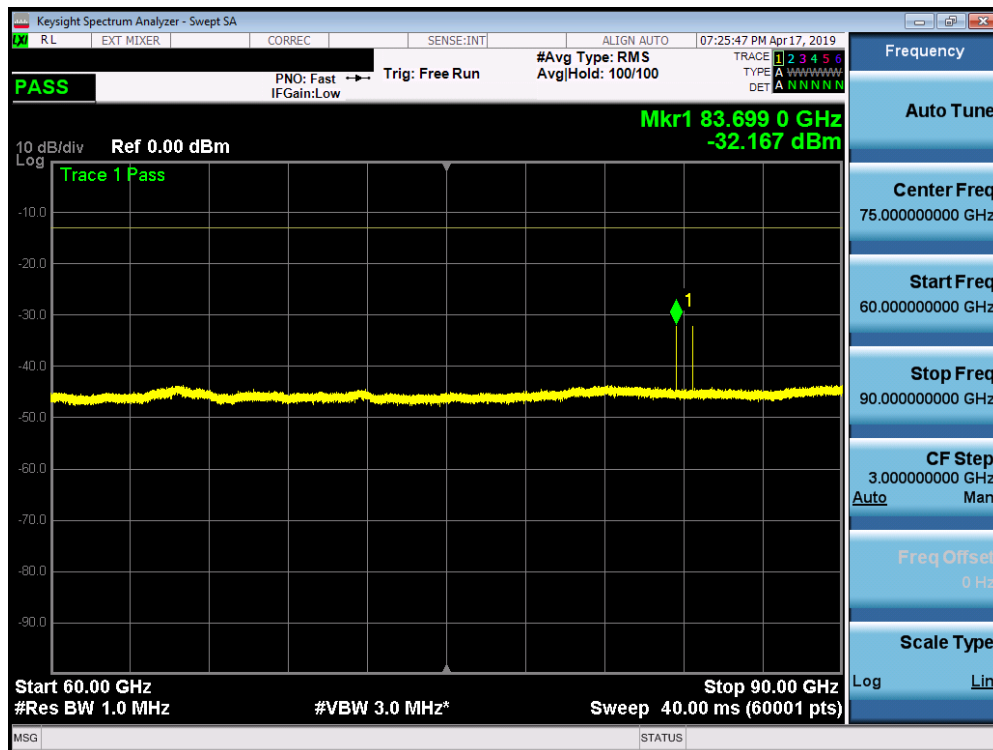


Plot 7-95. Horizontal Radiated Spurious Plot 60-90 GHz (QTM0 1CC-50MHz Bandwidth QPSK High Channel)

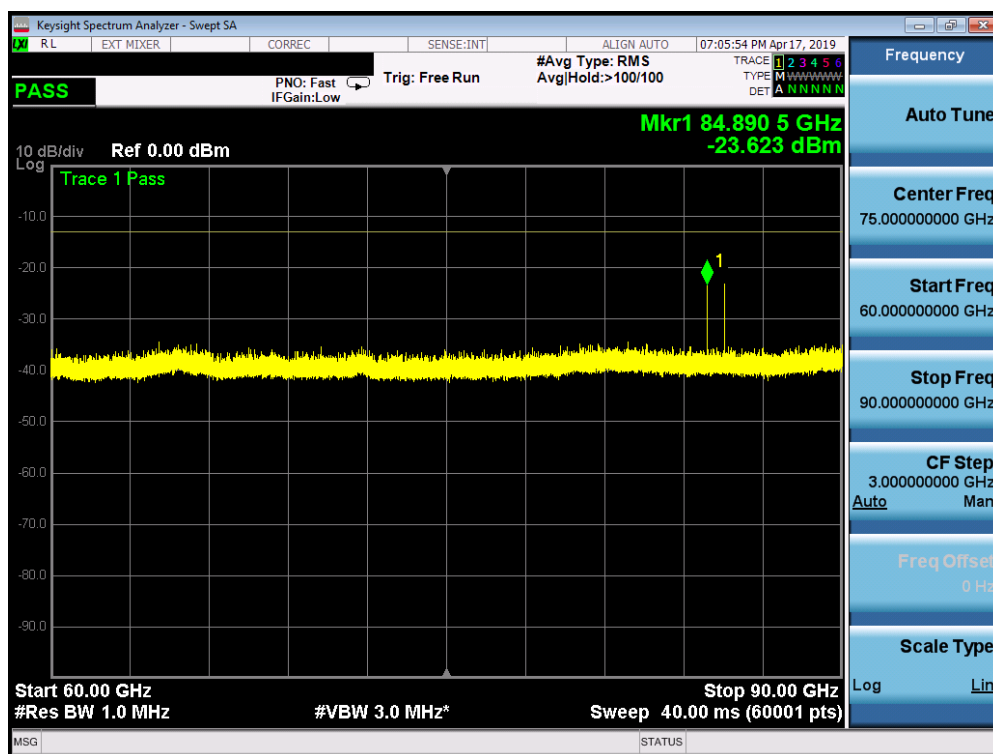


Plot 7-96. Vertical Radiated Spurious Plot 60-90 GHz (QTM0 1CC-50MHz Bandwidth QPSK Low Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 74 of 202



Plot 7-97. Vertical Radiated Spurious Plot 60-90 GHz (QTM0 1CC-50MHz Bandwidth QPSK Mid Channel)

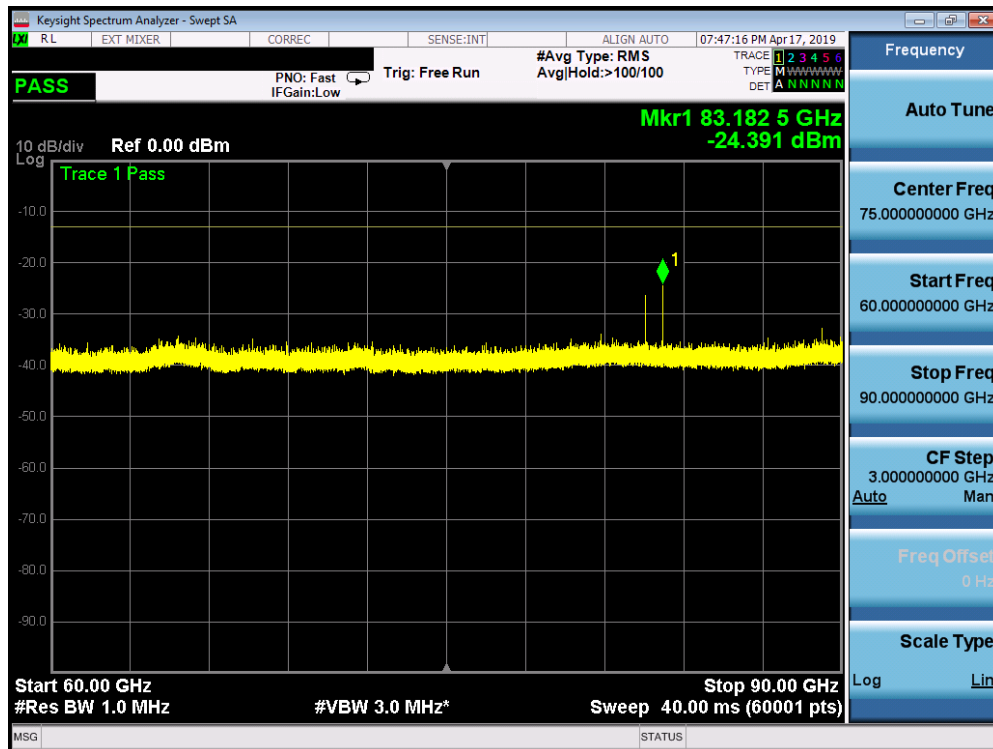


Plot 7-98. Vertical Radiated Spurious Plot 60-90 GHz (QTM0 1CC-50MHz Bandwidth QPSK High Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 75 of 202

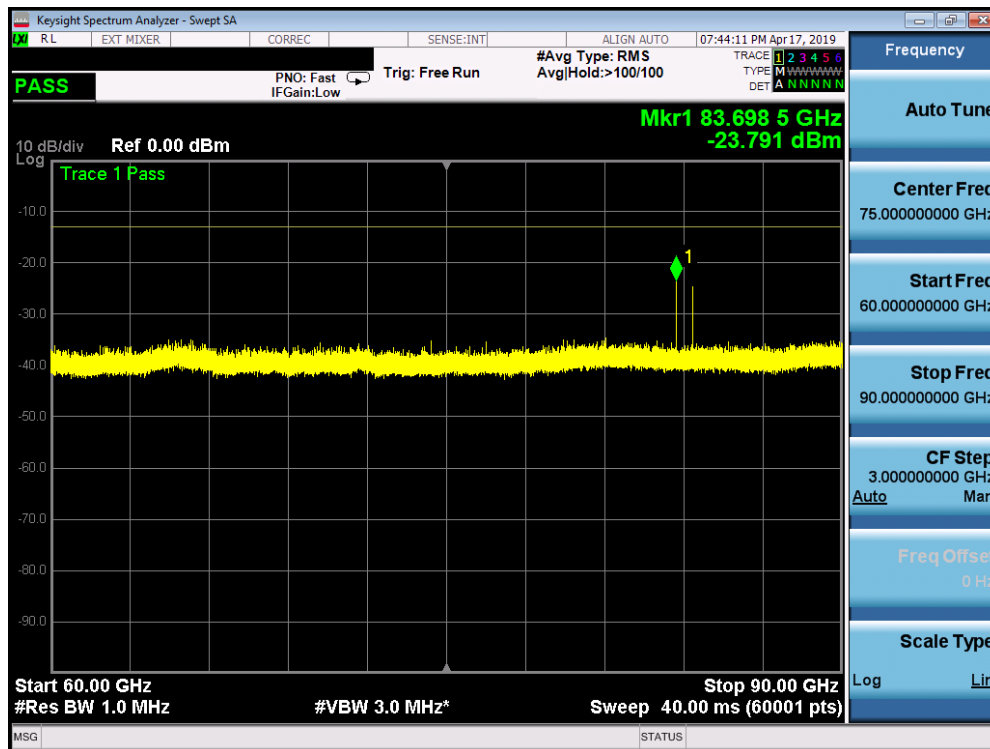
Frequency [MHz]	Detector /Trace	Chan.	Bandwidth (MHz)	Mod.	Beam Polarization	Ant. Pos [H/V]	Ant. Height [cm]	Turn Table Azimuth [degree]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
82537.50	Maxh/RMS	Low	100	QPSK	H + V	H	150	113	-30.72	-13.00	-17.72
83699.00	Maxh/RMS	Mid	100	QPSK	H + V	H	150	110	-32.79	-13.00	-19.79
84891.00	Maxh/RMS	High	100	QPSK	H + V	H	150	114	-28.29	-13.00	-15.29
82537.00	Maxh/RMS	Low	100	QPSK	H + V	V	150	116	-18.85	-13.00	-5.85
83699.00	Maxh/RMS	Mid	100	QPSK	H + V	V	150	110	-32.17	-13.00	-19.17
84890.50	Maxh/RMS	High	100	QPSK	H + V	V	150	117	-23.62	-13.00	-10.62

Table 7-17. Spurious Emissions QTM0 (60 – 90GHz)

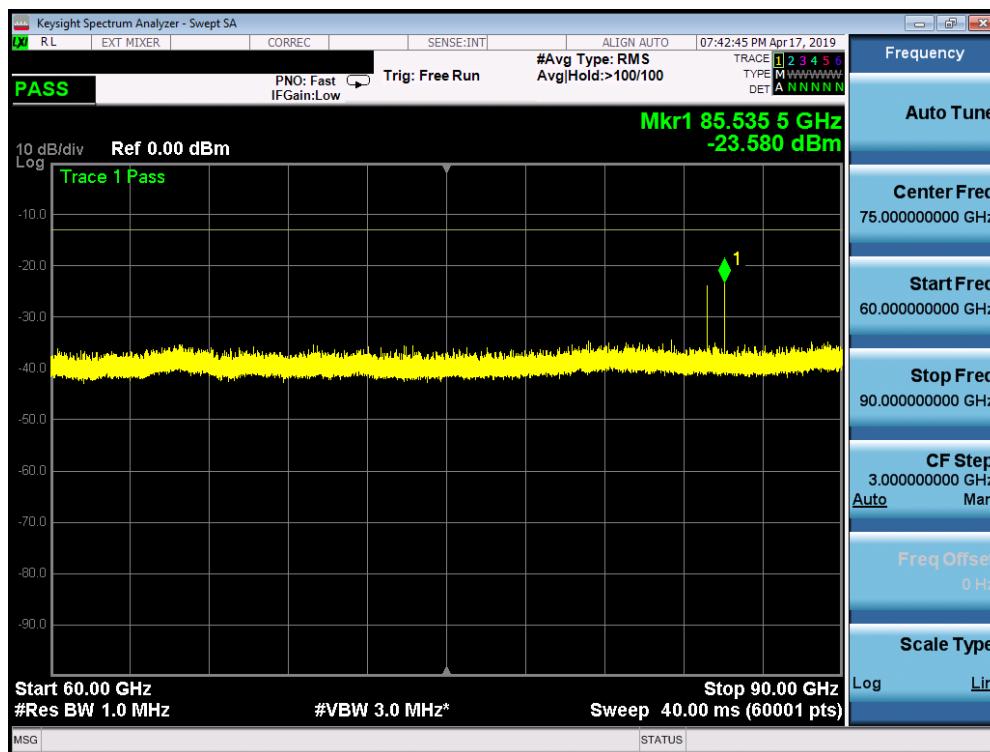


Plot 7-99. Horizontal Radiated Spurious Plot 60-90 GHz (QTM1 1CC-100MHz Bandwidth QPSK Low Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 76 of 202

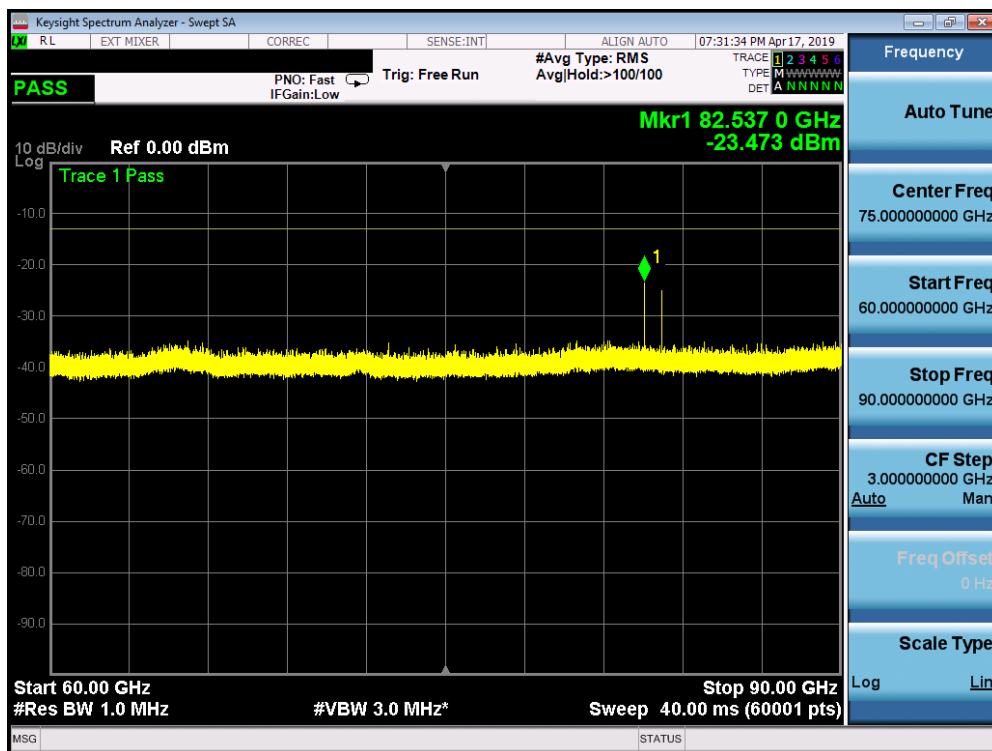


Plot 7-100. Horizontal Radiated Spurious Plot 60-90 GHz (QTM1 1CC-100MHz Bandwidth QPSK Mid Channel)

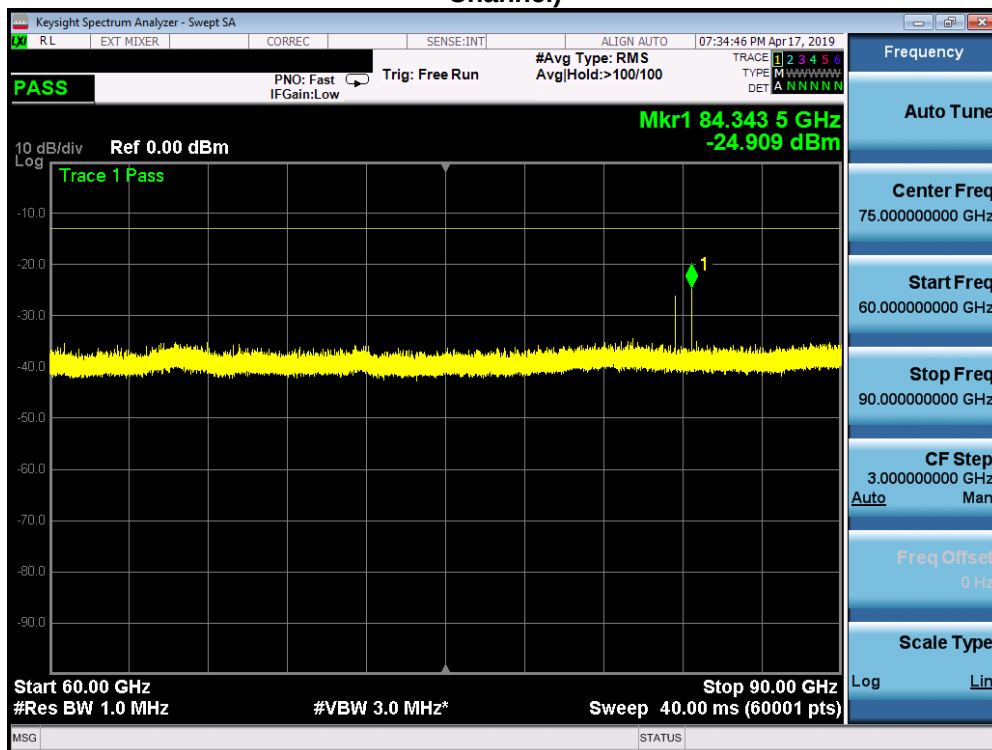


Plot 7-101. Horizontal Radiated Spurious Plot 60-90 GHz (QTM1 1CC-100MHz Bandwidth QPSK High Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 77 of 202

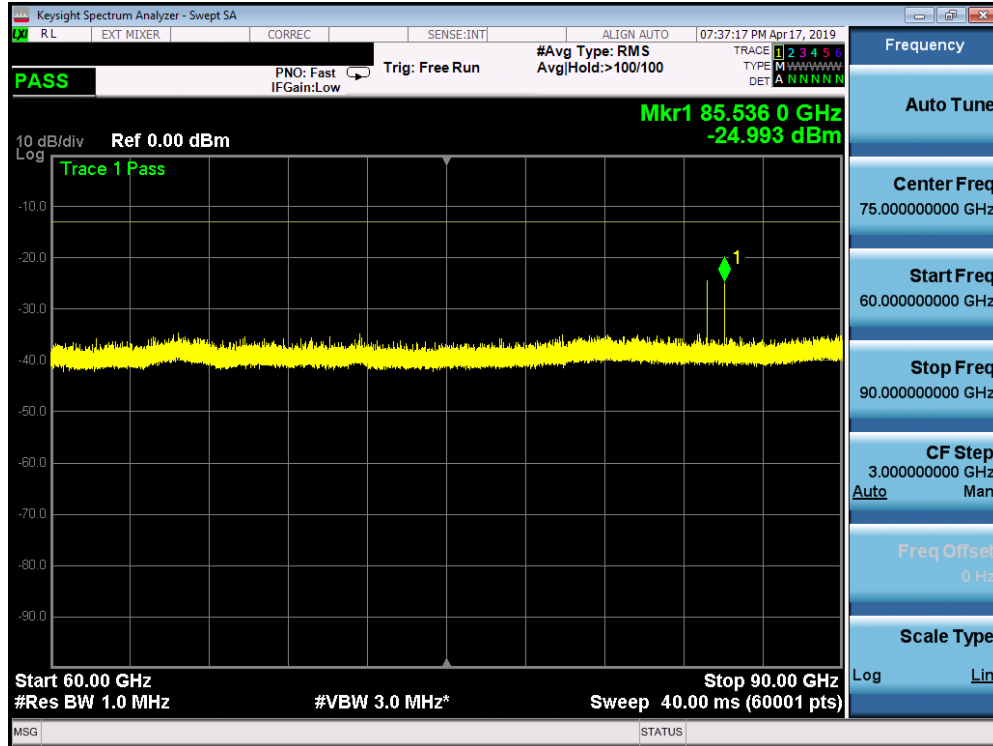


Plot 7-102. Vertical Radiated Spurious Plot 60-90 GHz (QTM1 1CC-100MHz Bandwidth QPSK Low Channel)



Plot 7-103. Vertical Radiated Spurious Plot 60-90 GHz (QTM1 1CC-100MHz Bandwidth QPSK Mid Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 78 of 202



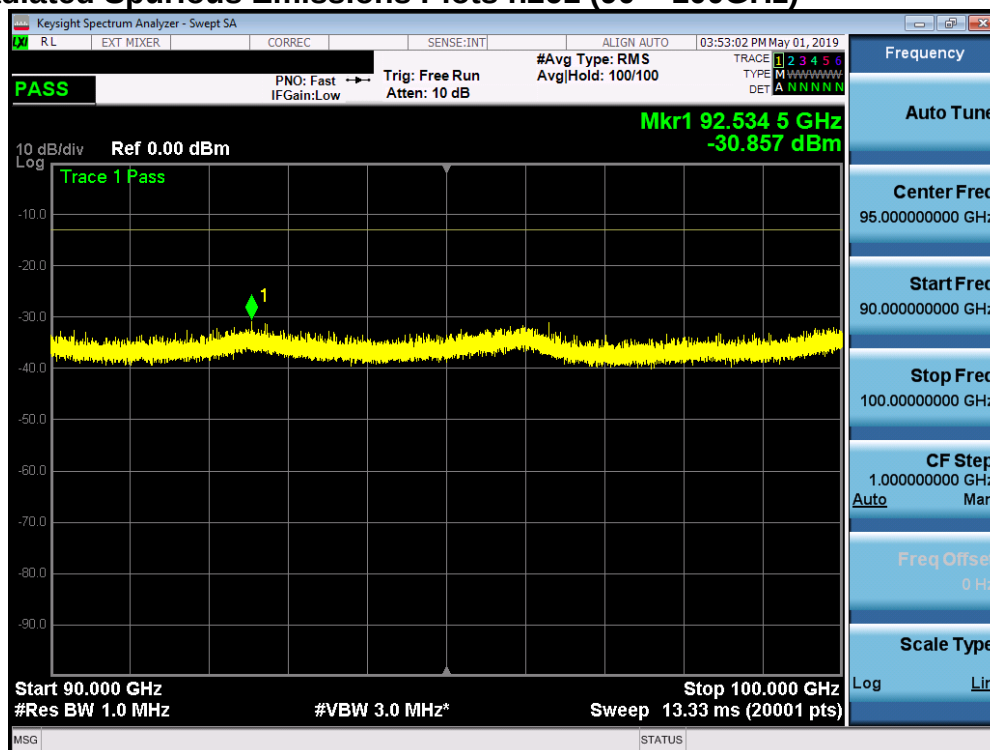
Plot 7-104. Vertical Radiated Spurious Plot 60-90 GHz (QTM1 1CC-100MHz Bandwidth QPSK High Channel)

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]
83182.50	Maxh/RMS	Low	100	QPSK	H + V	H	150	219	-24.39	-13.00	-11.39
83698.50	Maxh/RMS	Mid	100	QPSK	H + V	H	150	220	-23.79	-13.00	-10.79
85535.50	Maxh/RMS	High	100	QPSK	H + V	H	150	214	-23.58	-13.00	-10.58
82537.00	Maxh/RMS	Low	100	QPSK	H + V	V	150	213	-23.47	-13.00	-10.47
84343.50	Maxh/RMS	Mid	100	QPSK	H + V	V	150	210	-24.91	-13.00	-11.91
85536.00	Maxh/RMS	High	100	QPSK	H + V	V	150	218	-24.99	-13.00	-11.99

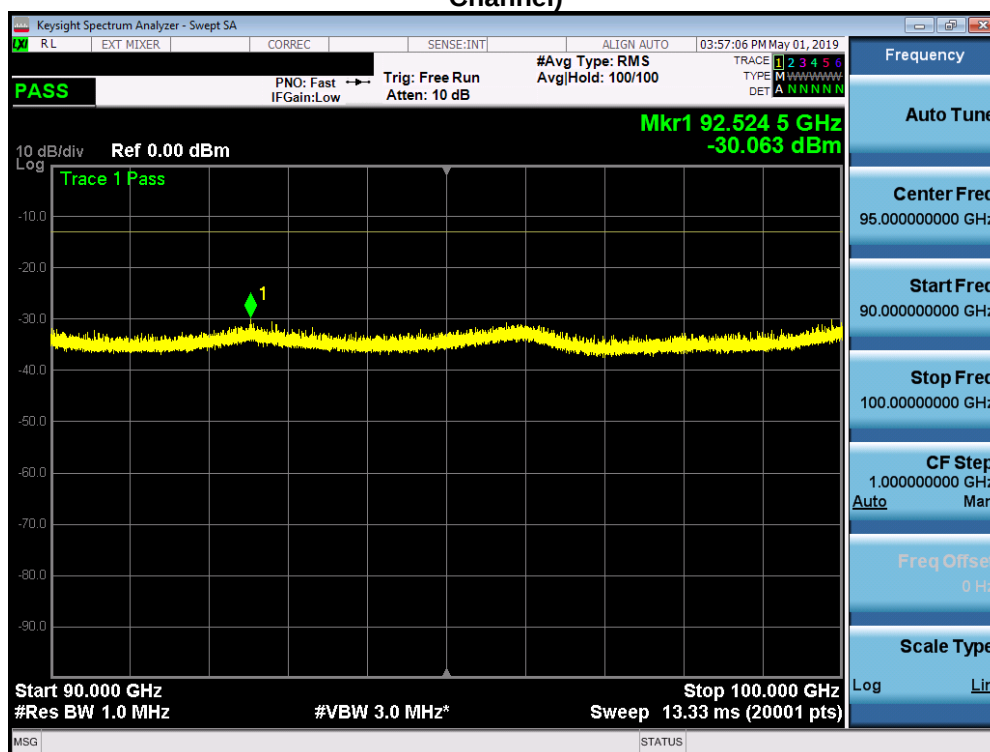
Table 7-18. Spurious Emissions QTM1 (60 – 90GHz)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)			Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset			Page 79 of 202

7.4.7 Radiated Spurious Emissions Plots n261 (90 – 100GHz)

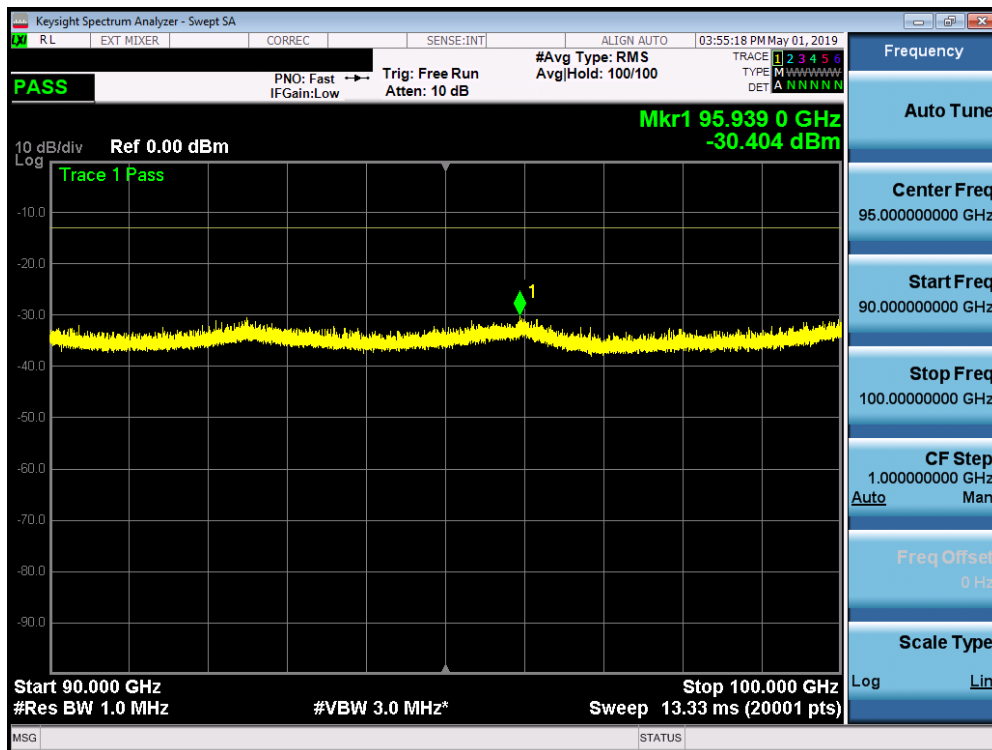


Plot 7-105. Horizontal Radiated Spurious Plot 90-100 GHz (QTM0 1CC-50MHz Bandwidth QPSK Low Channel)

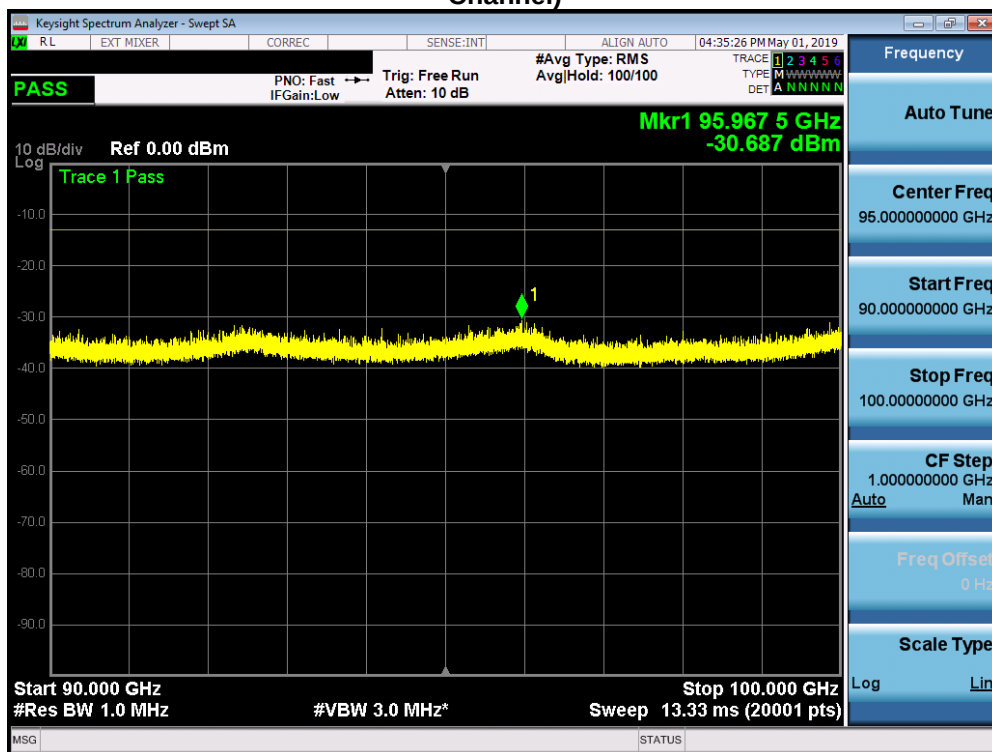


Plot 7-106. Horizontal Radiated Spurious Plot 90-100 GHz (QTM0 1CC-50MHz Bandwidth QPSK Mid Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 80 of 202

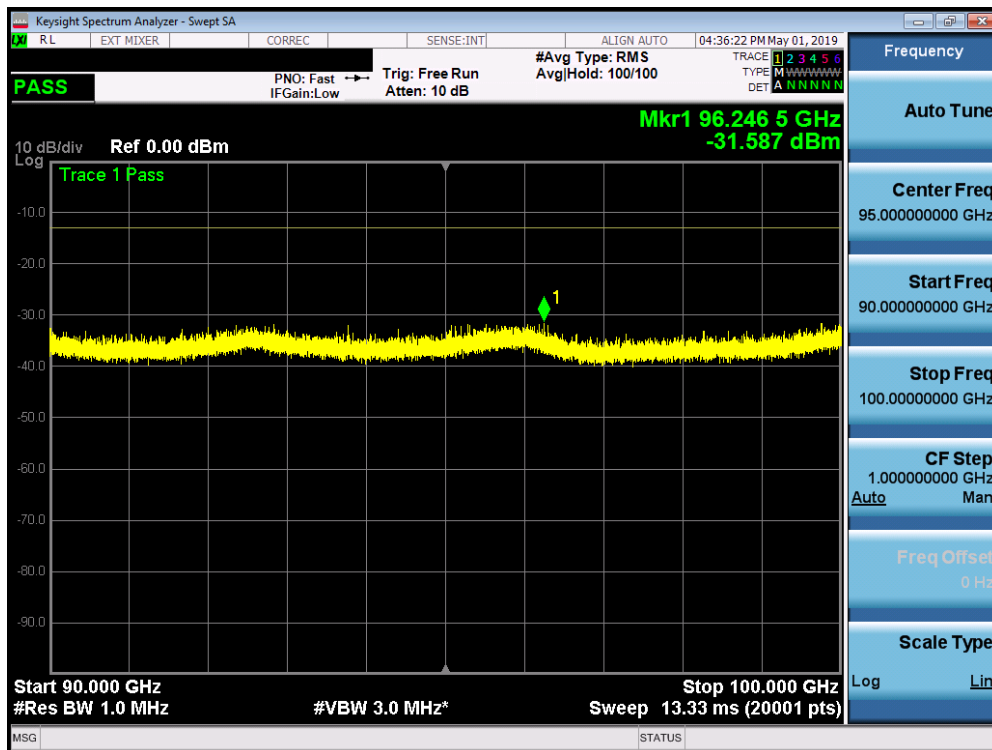


Plot 7-107. Horizontal Radiated Spurious Plot 90-100 GHz (QTM0 1CC-50MHz Bandwidth QPSK High Channel)

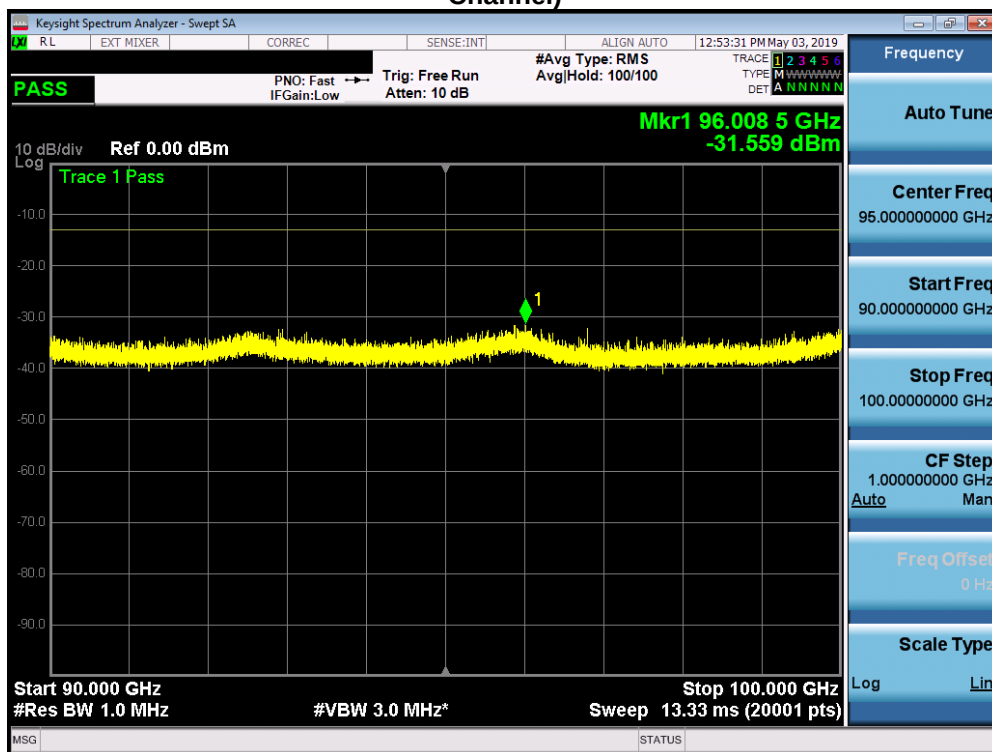


Plot 7-108. Vertical Radiated Spurious Plot 90-100 GHz (QTM0 1CC-50MHz Bandwidth QPSK Low Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 81 of 202



Plot 7-109. Vertical Radiated Spurious Plot 90-100 GHz (QTM0 1CC-50MHz Bandwidth QPSK Mid Channel)

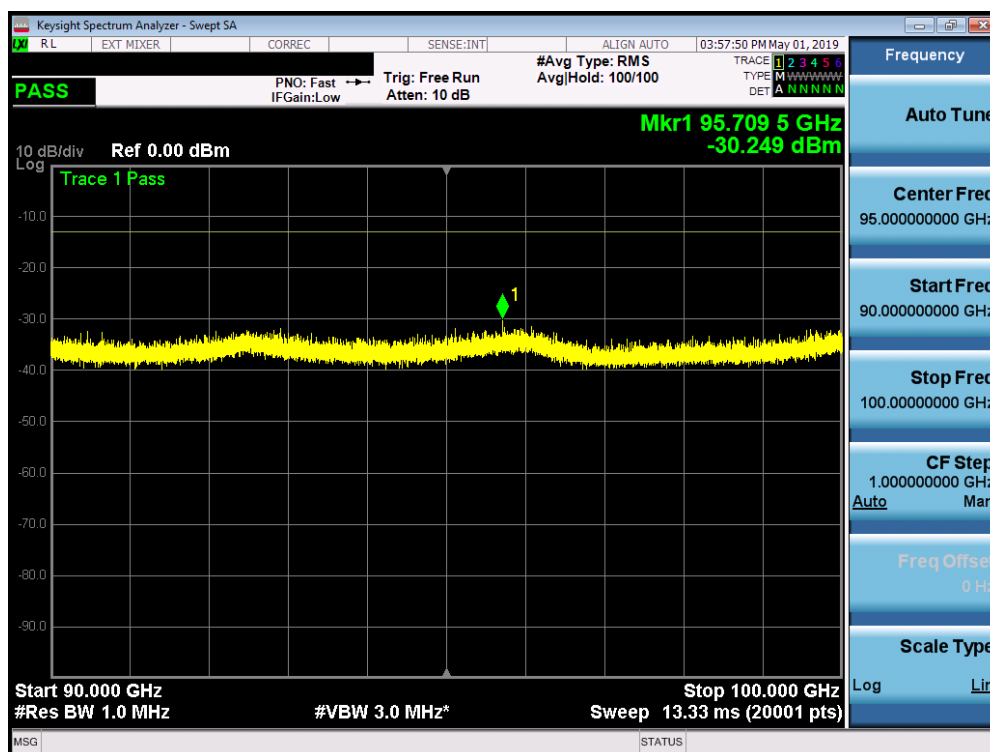


Plot 7-110. Vertical Radiated Spurious Plot 90-100 GHz (QTM0 1CC-50MHz Bandwidth QPSK High Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 82 of 202

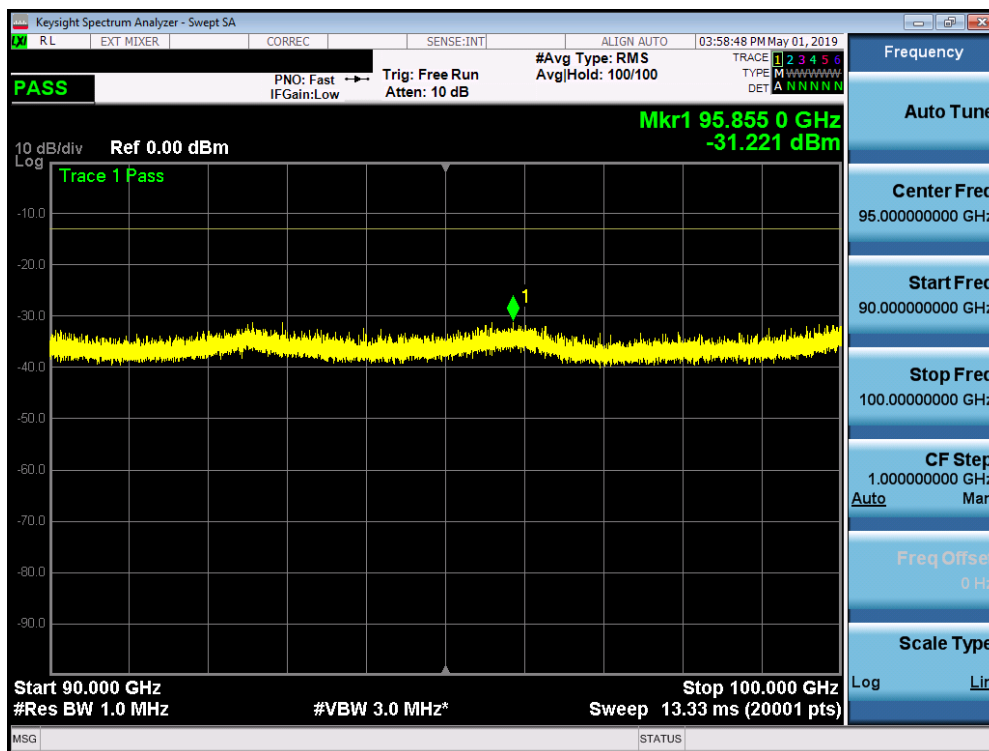
Frequency [MHz]	Detector/T race	Chan.	Bandwidth (MHz)	Mod.	Beam Polarization	Ant. Pos [H/V]	Ant. Height [cm]	Turn Table Azimuth [degree]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
92534.50	Maxh/RMS	Low	100	QPSK	H + V	H	-	-	-30.86	-13.00	-17.86
92524.50	Maxh/RMS	Mid	100	QPSK	H + V	H	-	-	-30.06	-13.00	-17.06
95939.00	Maxh/RMS	High	100	QPSK	H + V	H	-	-	-30.40	-13.00	-17.40
95967.50	Maxh/RMS	Low	100	QPSK	H + V	V	-	-	-30.69	-13.00	-17.69
96246.50	Maxh/RMS	Mid	100	QPSK	H + V	V	-	-	-31.59	-13.00	-18.59
96008.50	Maxh/RMS	High	100	QPSK	H + V	V	-	-	-31.56	-13.00	-18.56

Table 7-19. Spurious Emissions QTM0 (90-100 GHz)

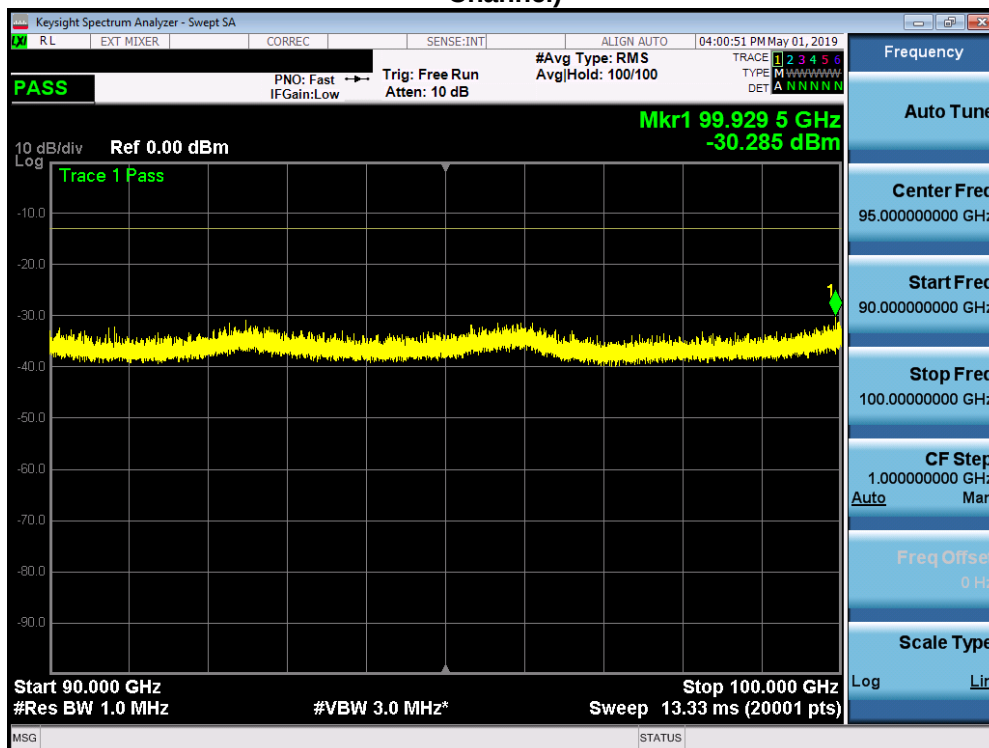


Plot 7-111. Horizontal Radiated Spurious Plot 90-100 GHz (QTM1 1CC-100MHz Bandwidth QPSK Low Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 83 of 202

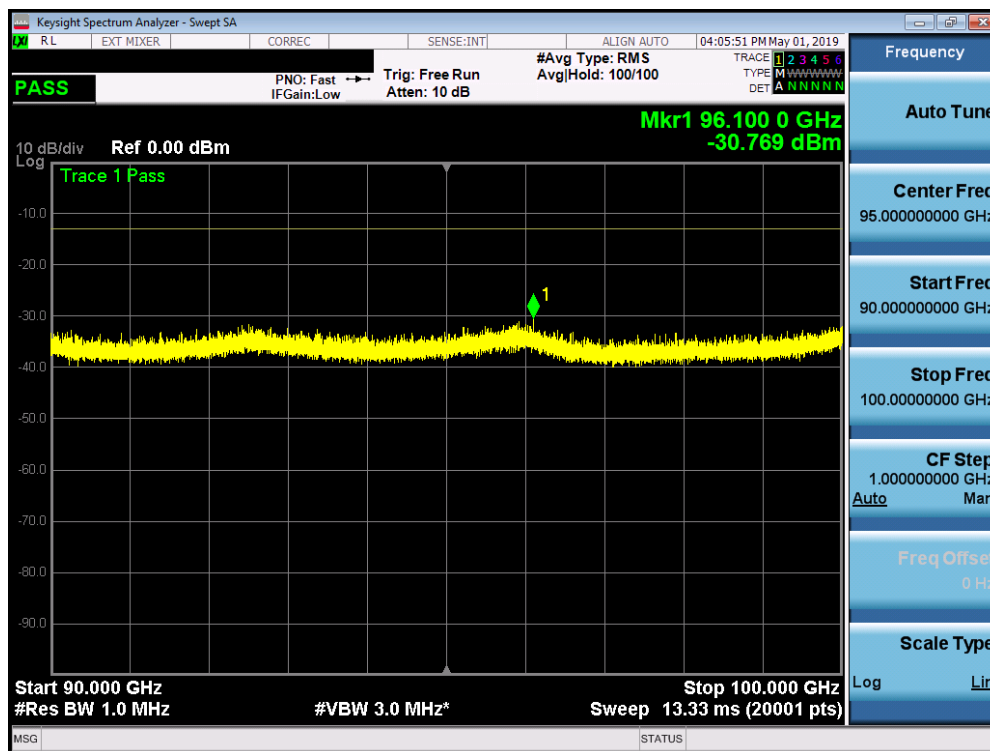


Plot 7-112. Horizontal Radiated Spurious Plot 90-100 GHz (QTM1 1CC-100MHz Bandwidth QPSK Mid Channel)

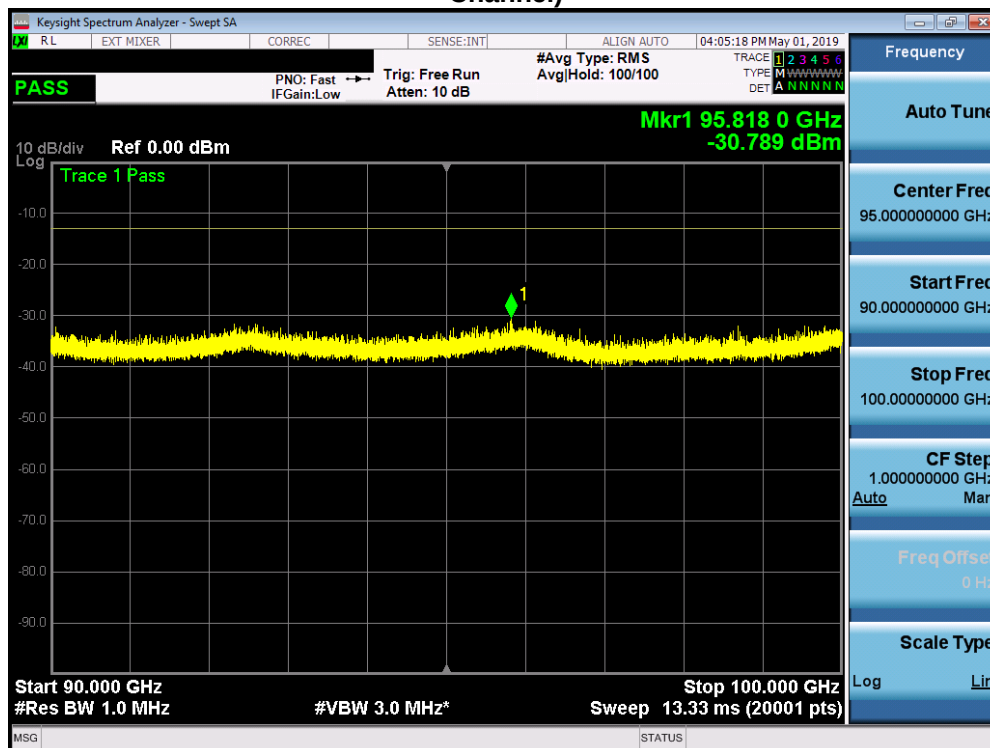


Plot 7-113. Horizontal Radiated Spurious Plot 90-100 GHz (QTM1 1CC-100MHz Bandwidth QPSK High Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 84 of 202

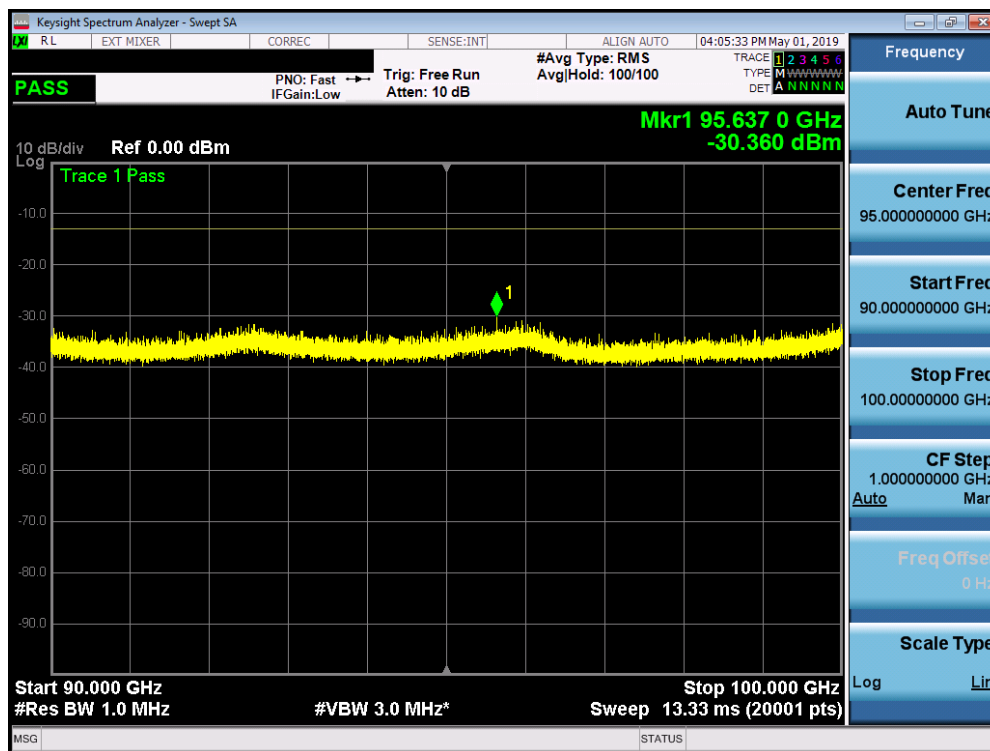


Plot 7-114. Vertical Radiated Spurious Plot 90-100 GHz (QTM1 1CC-100MHz Bandwidth QPSK Low Channel)



Plot 7-115. Vertical Radiated Spurious Plot 90-100 GHz (QTM1 1CC-100MHz Bandwidth QPSK Mid Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 85 of 202



Plot 7-116. Vertical Radiated Spurious Plot 90-100 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]
95709.50	Maxh/RMS	Low	100	QPSK	H + V	H	-	-	-30.25	-13.00	-17.25
95855.00	Maxh/RMS	Mid	100	QPSK	H + V	H	-	-	-31.22	-13.00	-18.22
99929.50	Maxh/RMS	High	100	QPSK	H + V	H	-	-	-30.29	-13.00	-17.29
96100.00	Maxh/RMS	Low	100	QPSK	H + V	V	-	-	-30.77	-13.00	-17.77
95818.00	Maxh/RMS	Mid	100	QPSK	H + V	V	-	-	-30.79	-13.00	-17.79
95637.00	Maxh/RMS	High	100	QPSK	H + V	V	-	-	-30.36	-13.00	-17.36

Table 7-20. Spurious Emissions QTM1 (90-100 GHz)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)		LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 86 of 202	

Spurious Emissions EIRP Sample Calculation

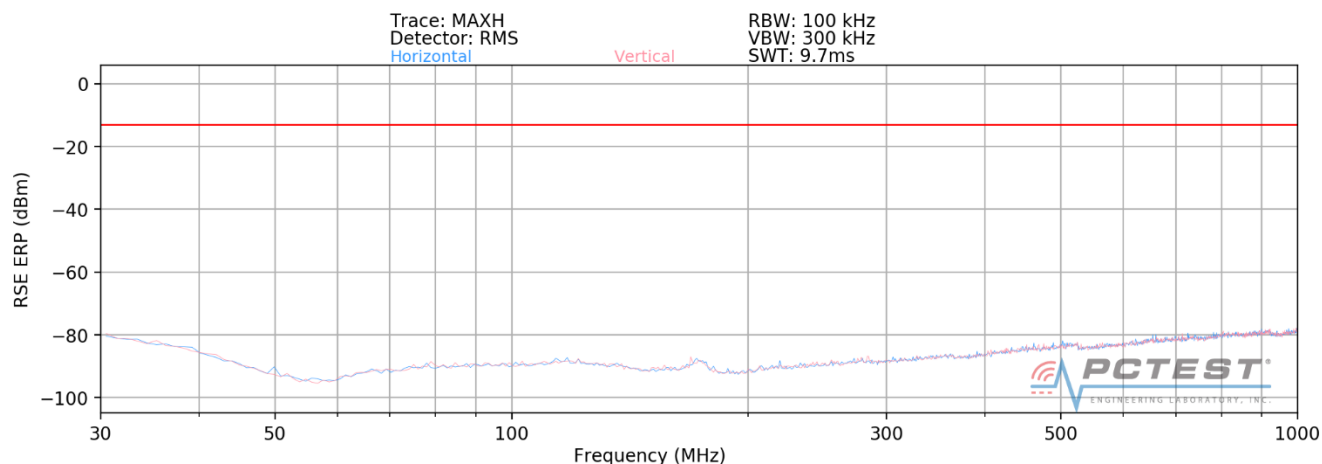
The raw radiated spurious level is converted to field strength in dB μ V/m. Then, the RSE EIRP level is calculated by applying the additional factors shown below for a test distance of 3 meters.

$$\begin{aligned}\text{Spurious Level [dB}\mu\text{V/m]} &= \text{Analyzer Level [dBm]} + \text{AFCL [dB/m]} + 107 \\ &= -56.01 \text{ dBm} - 22.64 \text{ dB/m} + 107 \\ &= 28.35 \text{ dB}\mu\text{V/m}\end{aligned}$$

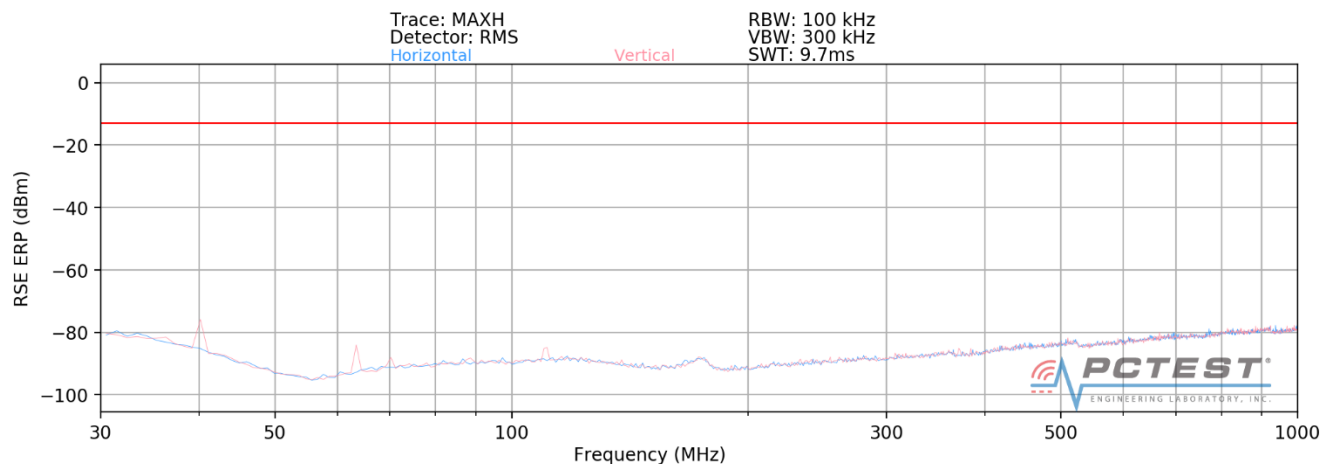
$$\begin{aligned}\text{RSE EIRP [dBm]} &= \text{Field Strength} + 20\text{Log}(D_m) - 104.8 \\ &= 28.35 \text{ dB}\mu\text{V/m} + 20\text{Log}(3) - 104.8 \\ &= -95.06 \text{ dBm}\end{aligned}$$

FCC ID: ZNFV450VM	 MEASUREMENT REPORT (Class II Permissive Change)			Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 87 of 202

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



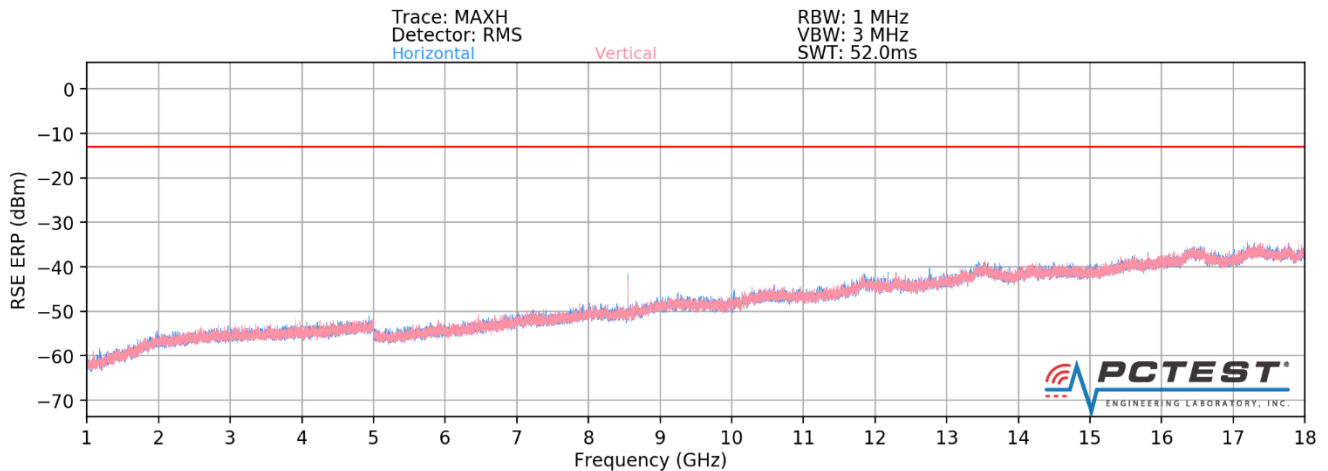
Plot 7-117. Radiated Spurious Plot 30 MHz - 1 GHz (QTM0 1CC-100MHz Bandwidth QPSK Mid Channel)



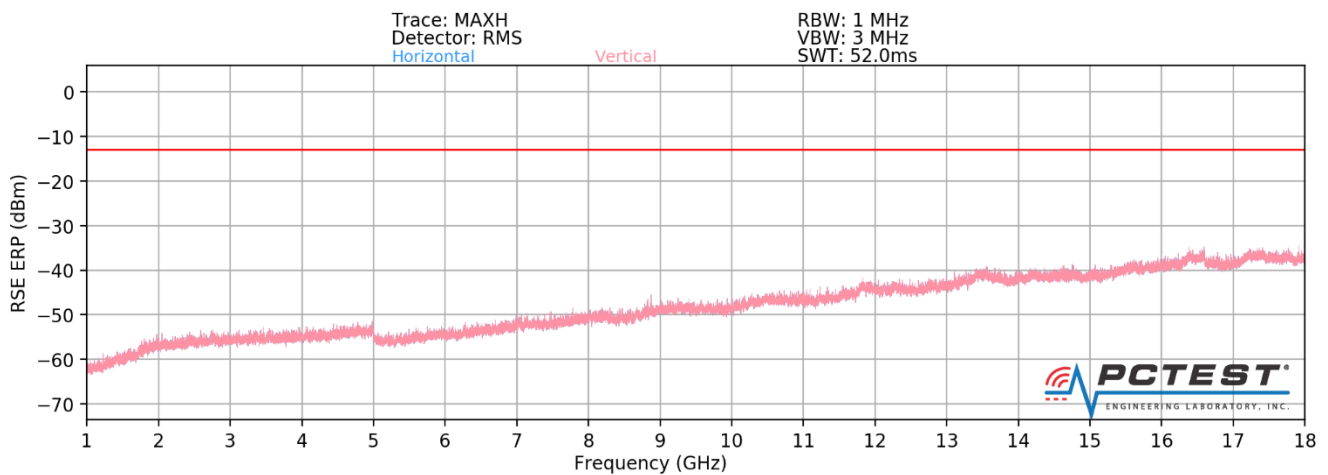
Plot 7-118. Radiated Spurious Plot 30 MHz - 1 GHz (QTM1 1CC100MHz Bandwidth QPSK Mid Channel)

FCC ID: ZNFV450VM		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 88 of 202

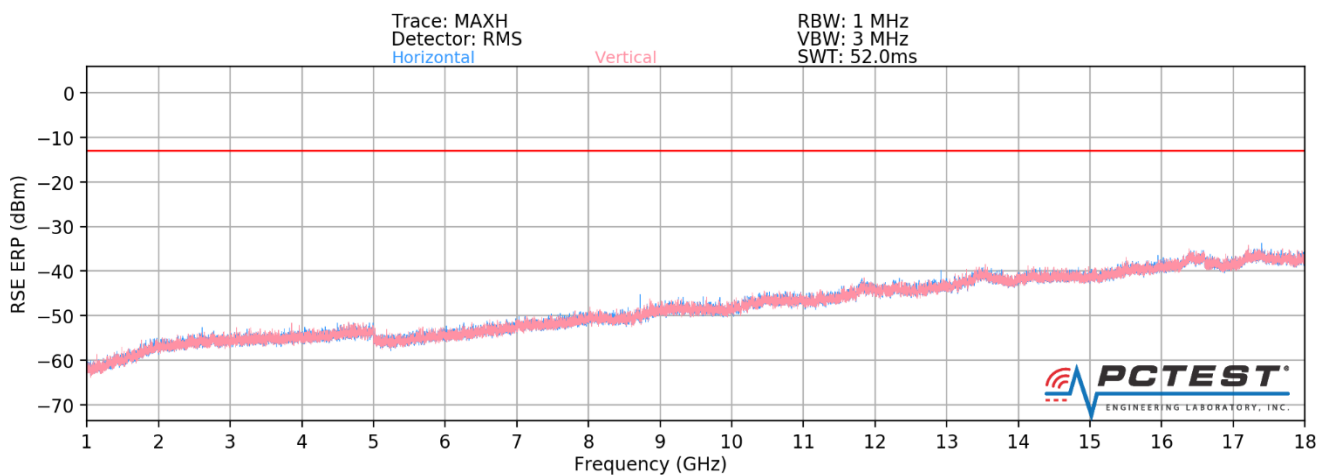
7.4.9 Radiated Spurious Emissions Plots n260 (1 – 18GHz)



Plot 7-119. Radiated Spurious Plot 1-18 GHz (QTM0 1CC-100MHz Bandwidth QPSK Low Channel)

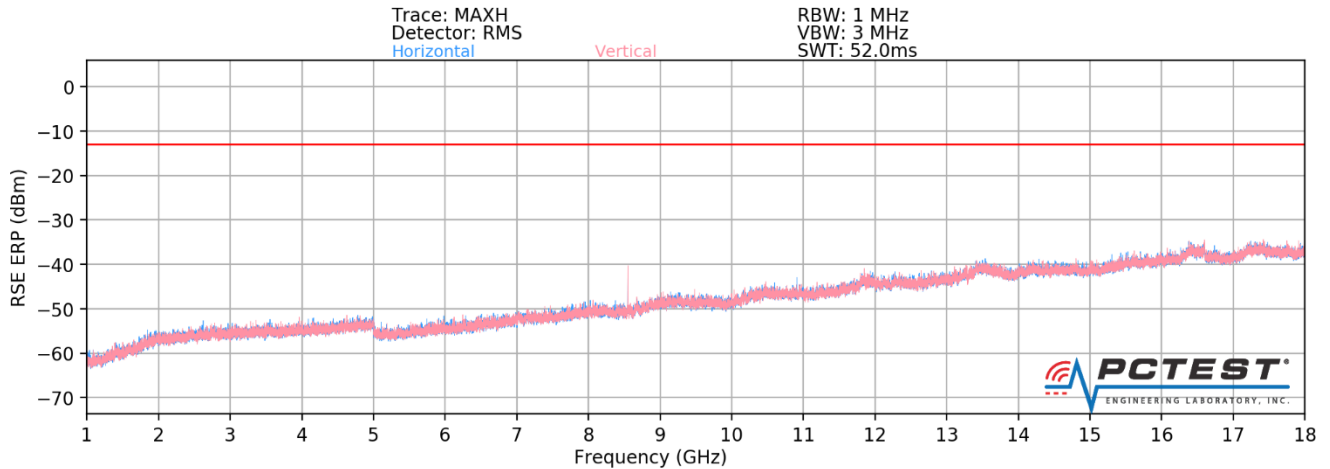


Plot 7-120. Radiated Spurious Plot 1-18 GHz (QTM0 1CC-100MHz Bandwidth QPSK Mid Channel)

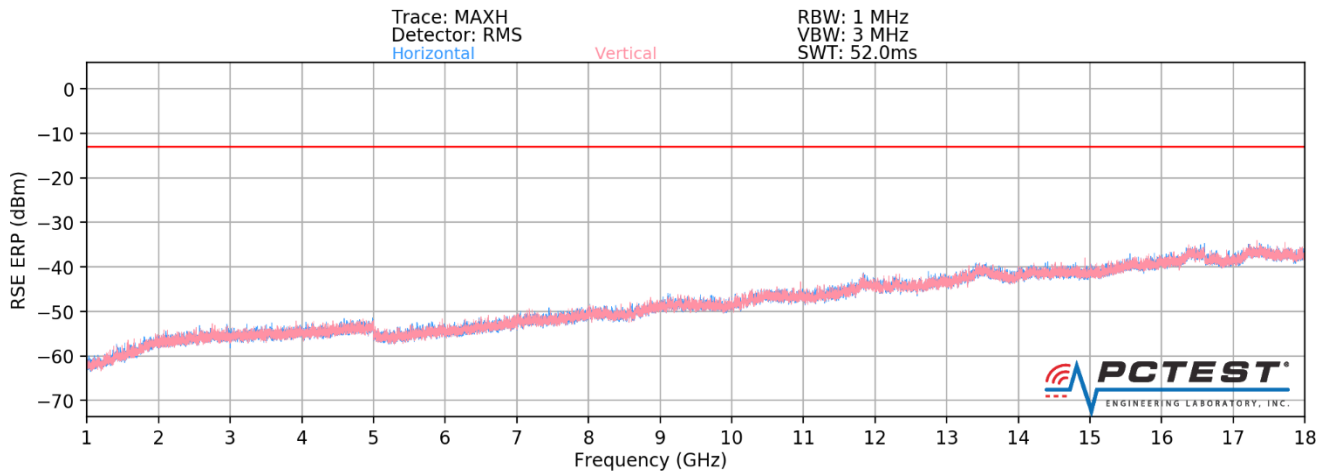


Plot 7-121. Radiated Spurious Plot 1-18 GHz (QTM0 1CC-100MHz Bandwidth QPSK High Channel)

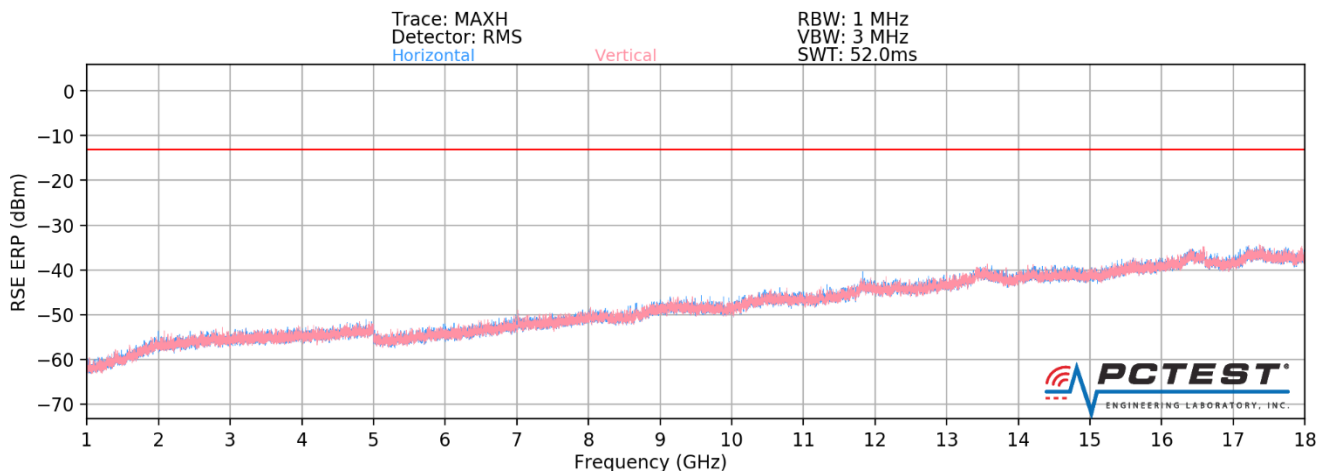
FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 89 of 202



Plot 7-122. Radiated Spurious Plot 1-18 GHz (QTM1 1CC-100MHz Bandwidth QPSK Low Channel)



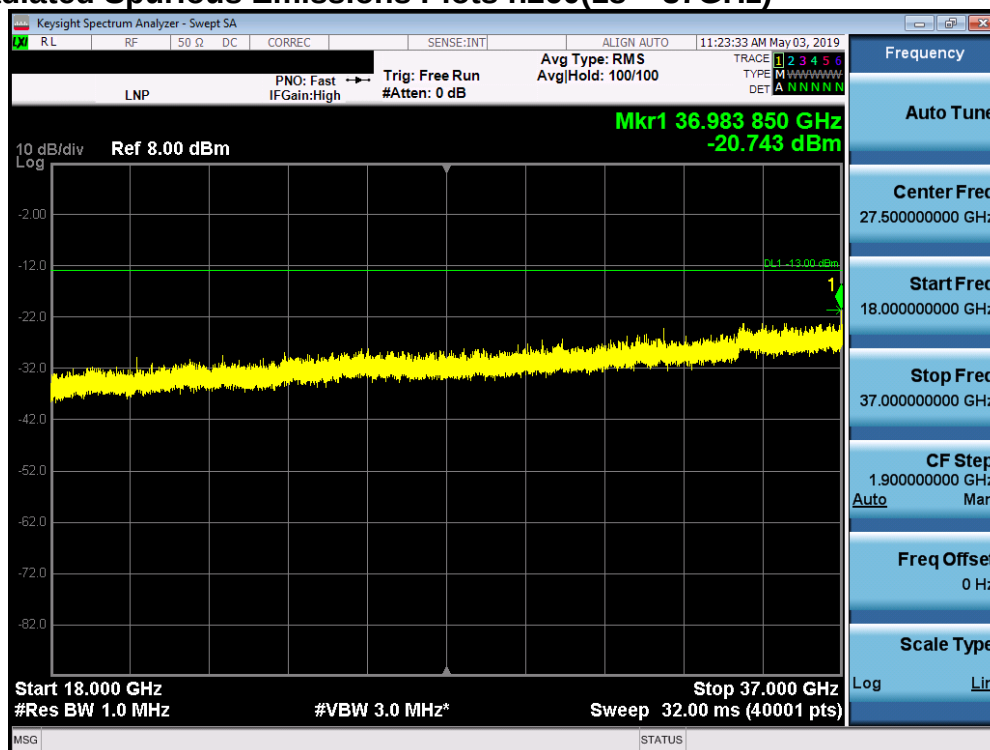
Plot 7-123. Radiated Spurious Plot 1-18 GHz (QTM1 1CC-100MHz Bandwidth QPSK Mid Channel)



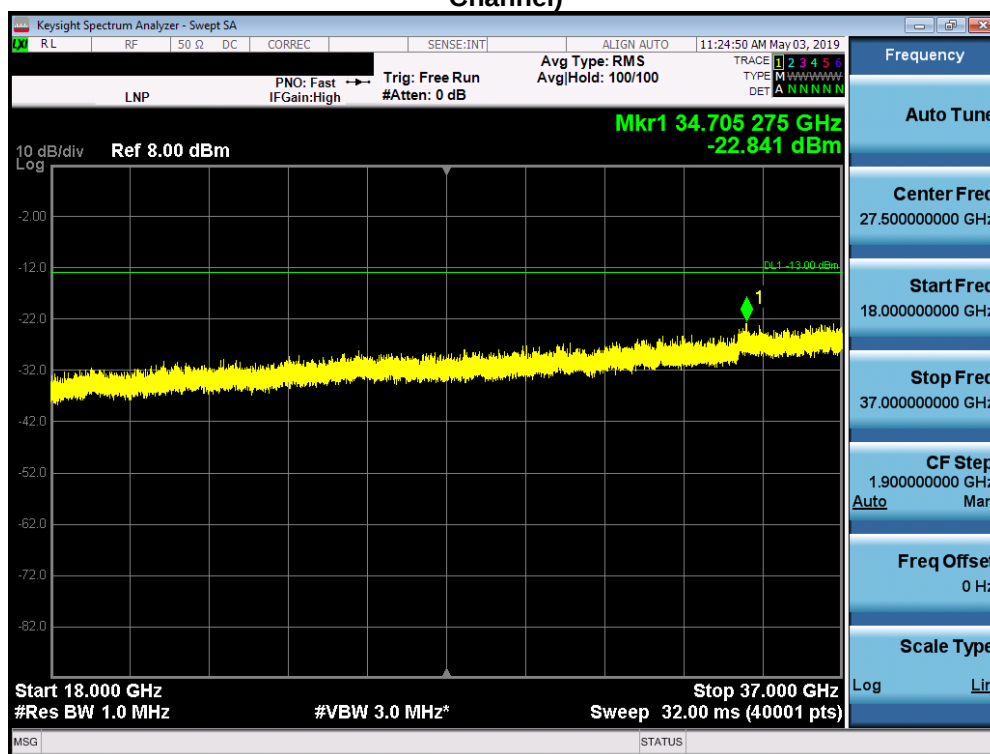
Plot 7-124. Radiated Spurious Plot 1-18 GHz (QTM1 1CC-100MHz Bandwidth QPSK High Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 90 of 202

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

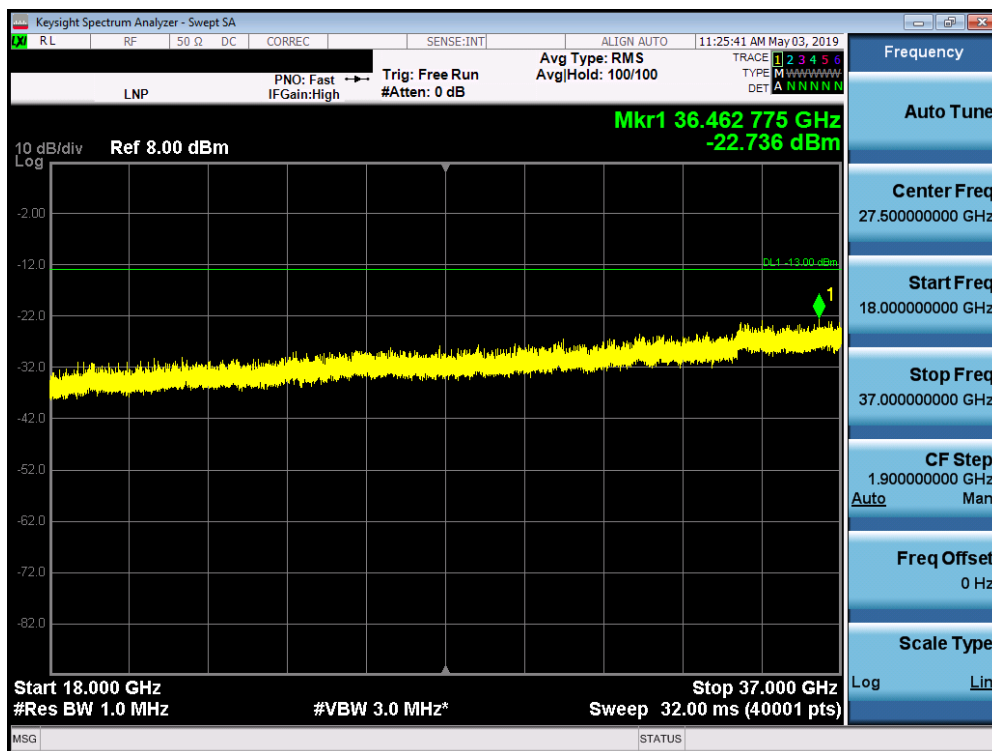


Plot 7-125. Horizontal Radiated Spurious Plot 18-38.5 GHz (QTM0 1CC-100MHz Bandwidth QPSK Low Channel)

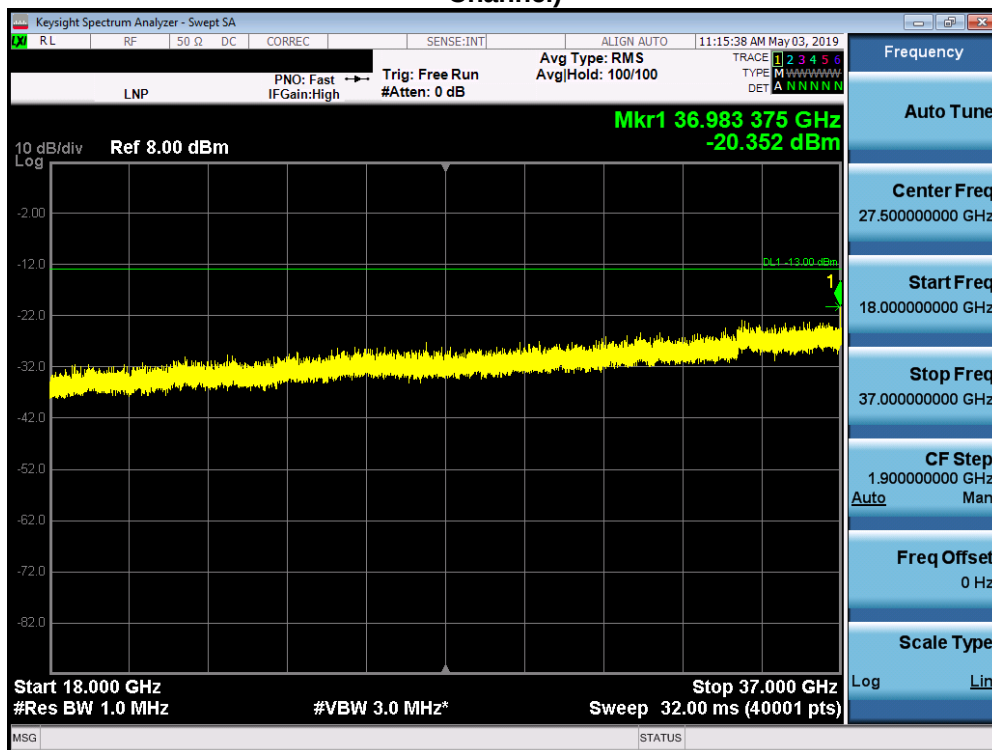


Plot 7-126. Horizontal Radiated Spurious Plot 18-38.5 GHz (QTM0 1CC-100MHz Bandwidth QPSK Mid Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 91 of 202



Plot 7-127. Horizontal Radiated Spurious Plot 18-38.5 GHz (QTM0 1CC-100MHz Bandwidth QPSK High Channel)



Plot 7-128. Vertical Radiated Spurious Plot 18-38.5 GHz (QTM0 1CC-100MHz Bandwidth QPSK Low Channel)

FCC ID: ZNFV450VM	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	LG	Approved by: Quality Manager
Test Report S/N: 1M1903070034-14-R2.ZNF	Test Dates: 3/21/2019-5/3/2019	EUT Type: Portable Handset		Page 92 of 202