7.4 Band Edge Emissions at Antenna Terminal

§2.1051 §22.917(a) §24.238(a) §27.53(g) §27.53(h) RSS-130(4.6) RSS-132(5.5) RSS-133(6.5) RSS-139(6.6)

Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates 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 43 + $log_{10}(P_{[Watts]})$, where P is the transmitter power in Watts.

Test Procedure Used

KDB 971168 D01 v03 – Section 6.0

Test Settings

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW ≥ 1% of the emission bandwidth
4. VBW ≥ 3 x RBW
5. Detector = RMS
6. Number of sweep points ≥ 2 x Span/RBW
7. Trace mode = trace average
8. Sweep time = auto couple
9. The trace was allowed to stabilize

Test Setup

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

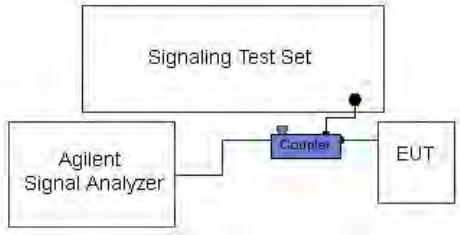


Figure 7-3. Test Instrument & Measurement Setup

Test Notes

Per 22.917(b), 24.238(a), 27.53(h), and RSS-130(4.6), RSS-132(5.5), RSS-133(6.5), RSS-139(6.5) in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions limit. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

Per 27.53(g) RSS-130(4.6) for operations in the 698-746 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

Band 12

Plot 7-77. Lower Band Edge Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)

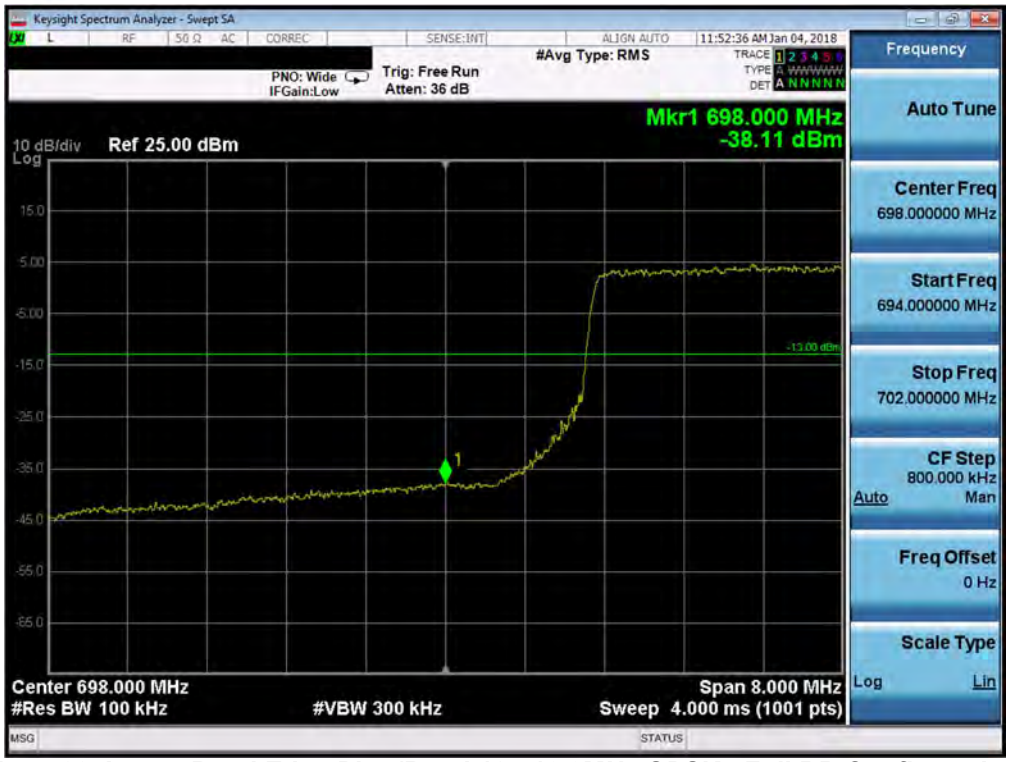
Plot 7-78. Upper Band Edge Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)

Plot 7-79. Lower Band Edge Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)

Plot 7-80. Upper Band Edge Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)

Plot 7-81. Lower Band Edge Plot (Band 12 - 5.0MHz QPSK - Full RB Configuration)

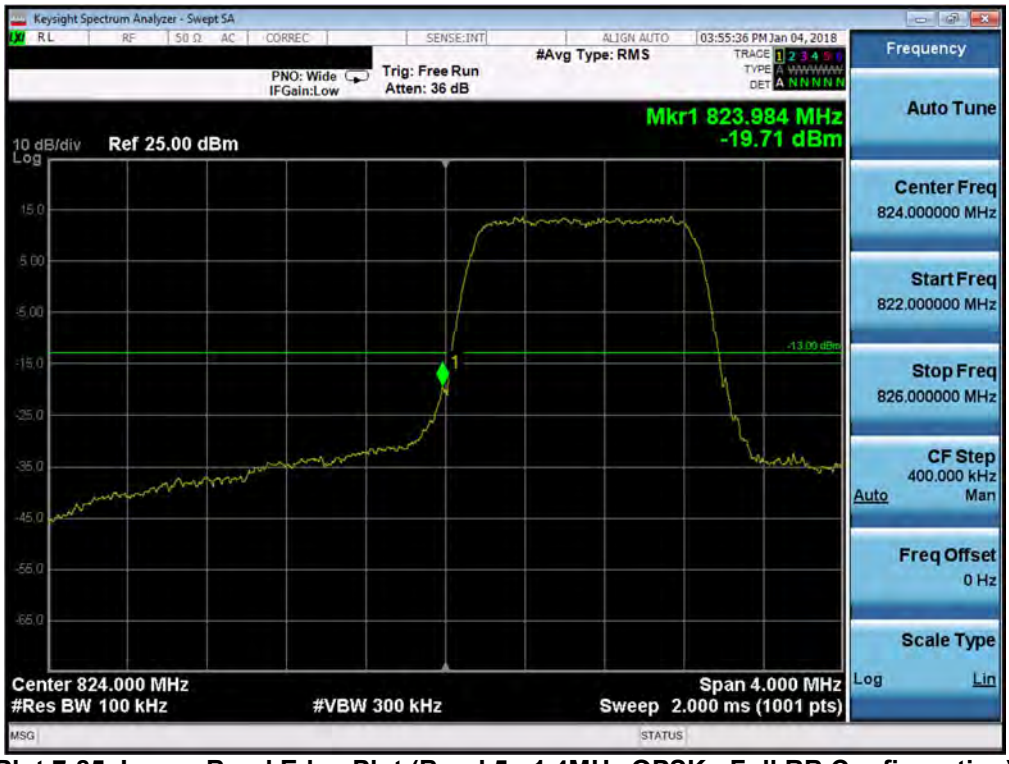
Plot 7-82. Upper Band Edge Plot (Band 12 - 5.0MHz QPSK - Full RB Configuration)



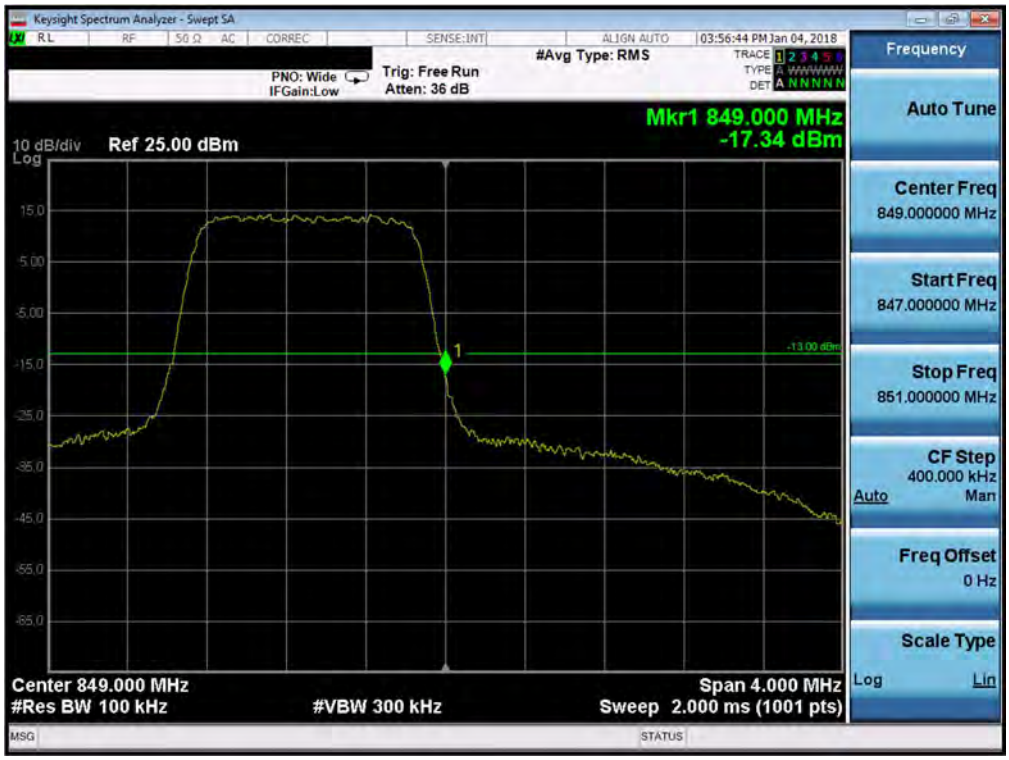
Plot 7-83. Lower Band Edge Plot (Band 12 - 10.0MHz QPSK - Full RB Configuration)

Plot 7-84. Upper Band Edge Plot (Band 12 - 10.0MHz QPSK - Full RB Configuration)

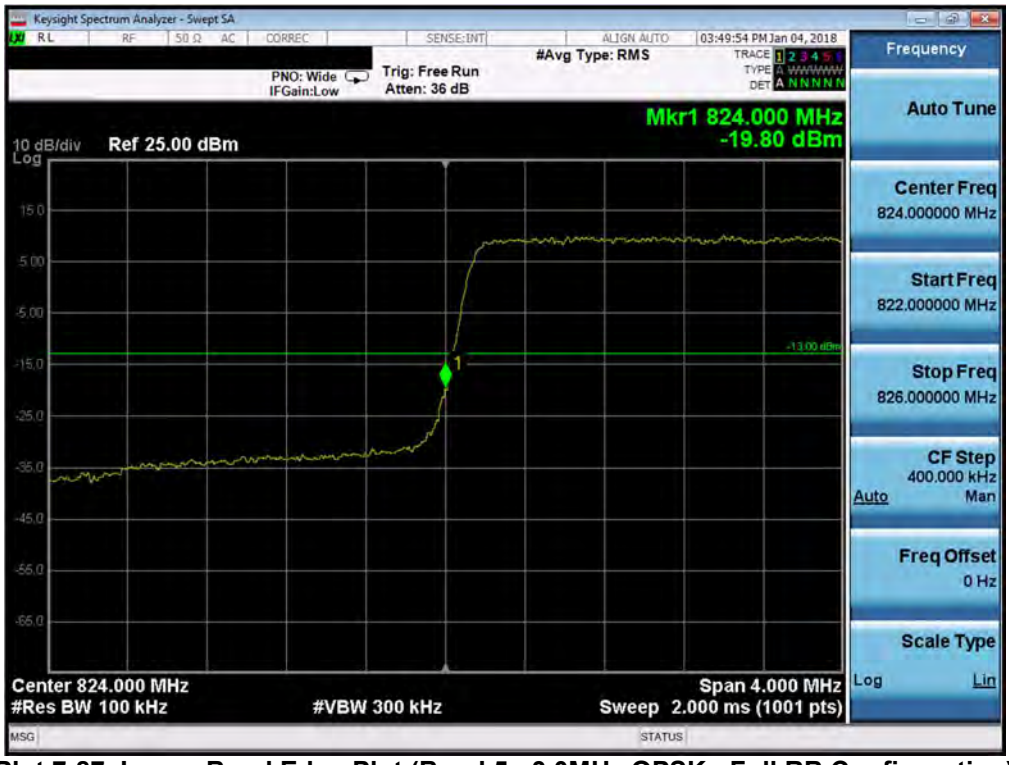
Band 5



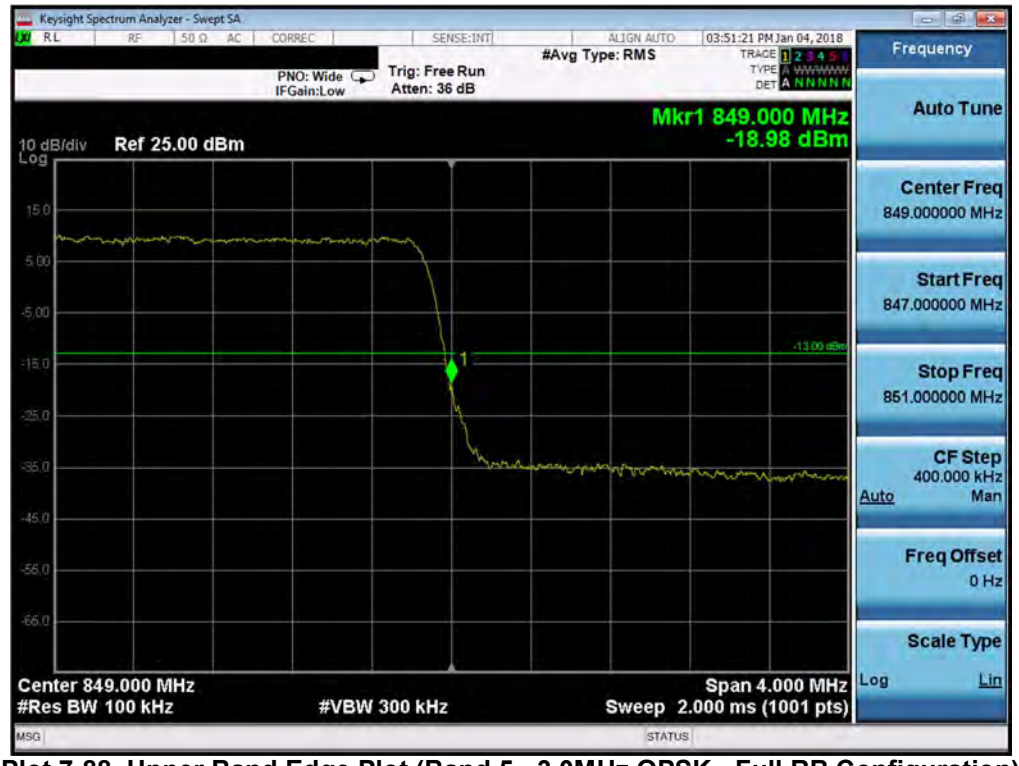
Plot 7-85. Lower Band Edge Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-86. Upper Band Edge Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)

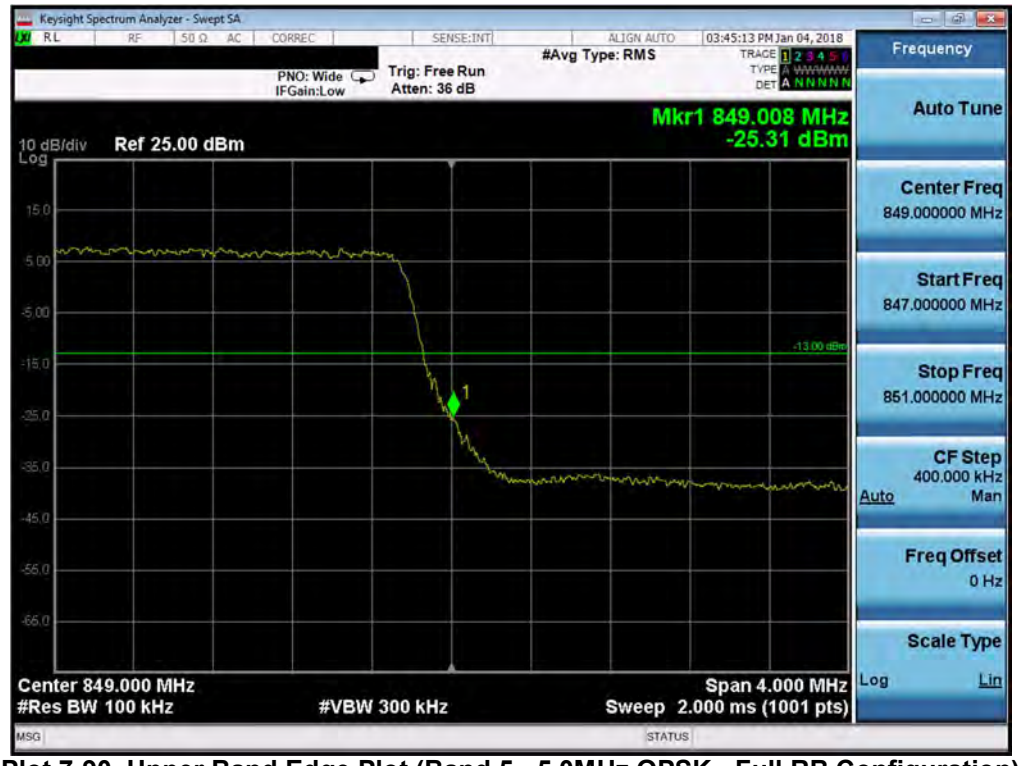


Plot 7-87. Lower Band Edge Plot (Band 5 - 3.0MHz QPSK - Full RB Configuration)

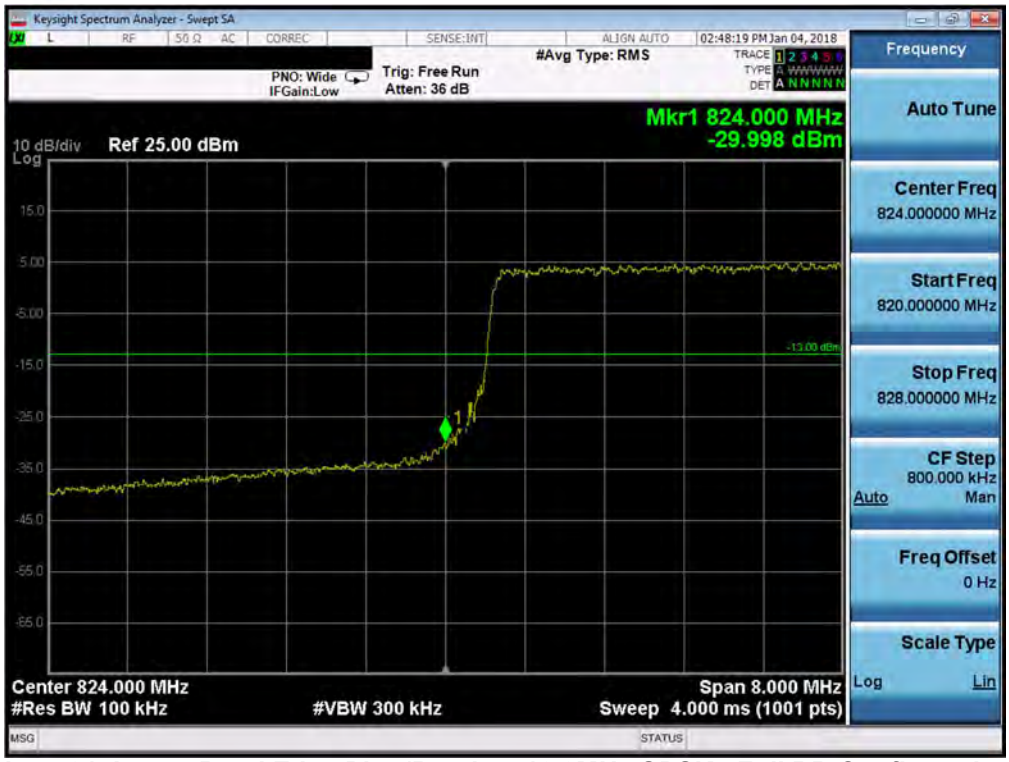


Plot 7-88. Upper Band Edge Plot (Band 5 - 3.0MHz QPSK - Full RB Configuration)

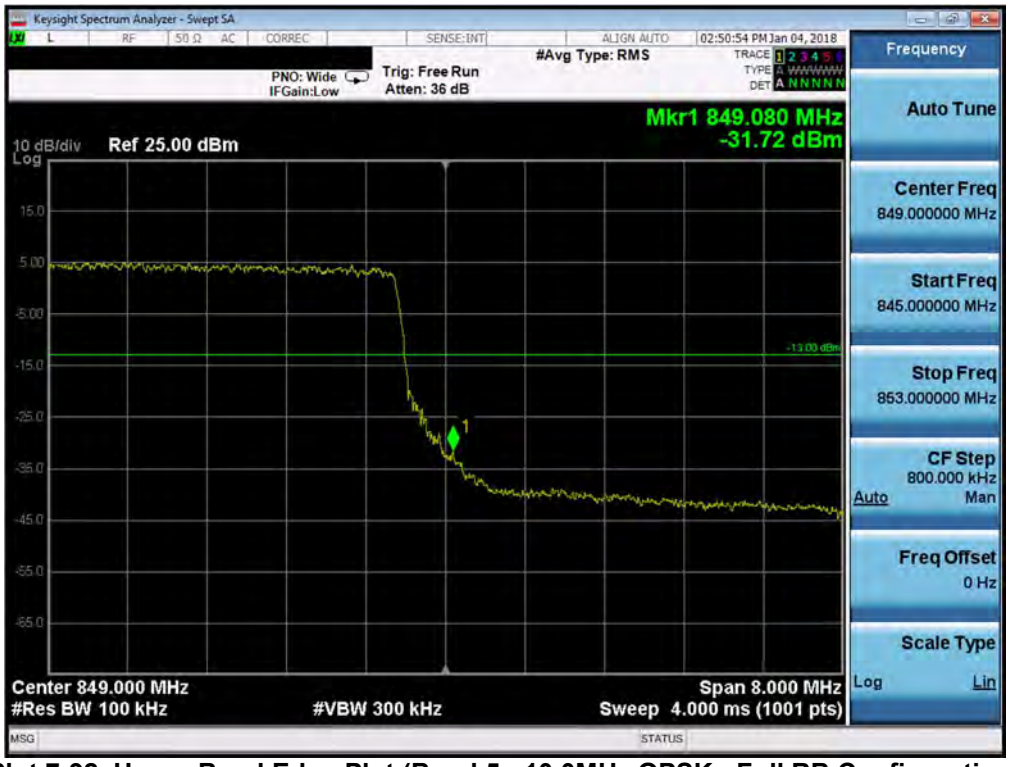
Plot 7-89. Lower Band Edge Plot (Band 5 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-90. Upper Band Edge Plot (Band 5 - 5.0MHz QPSK - Full RB Configuration)

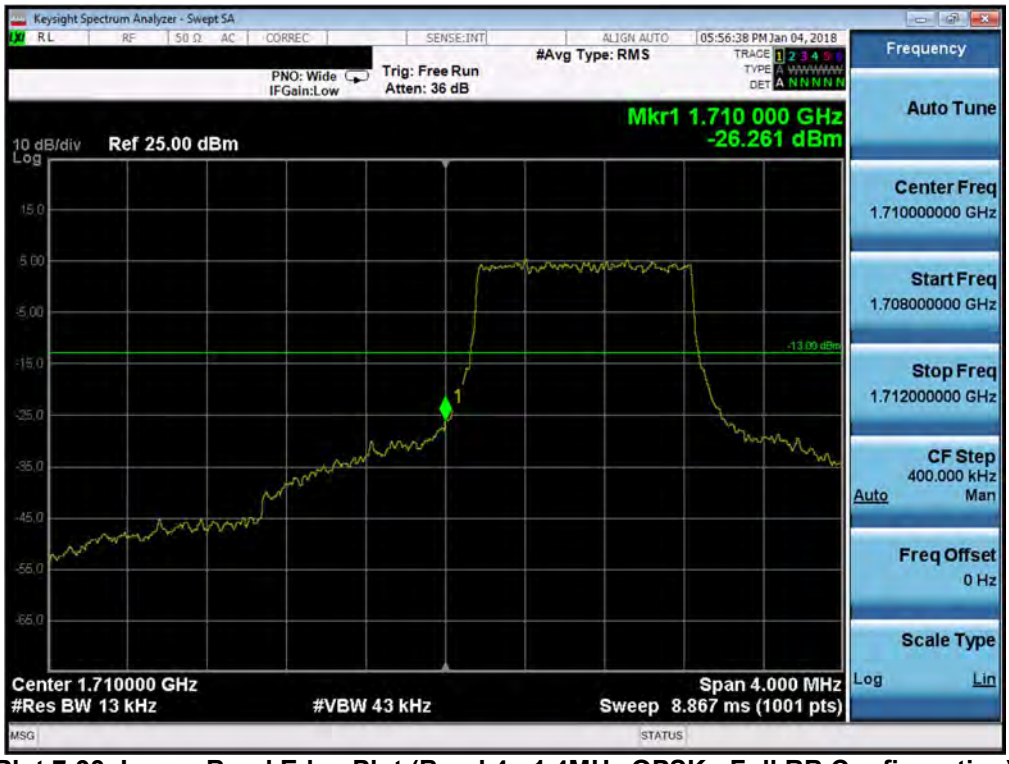


Plot 7-91. Lower Band Edge Plot (Band 5 - 10.0MHz QPSK - Full RB Configuration)

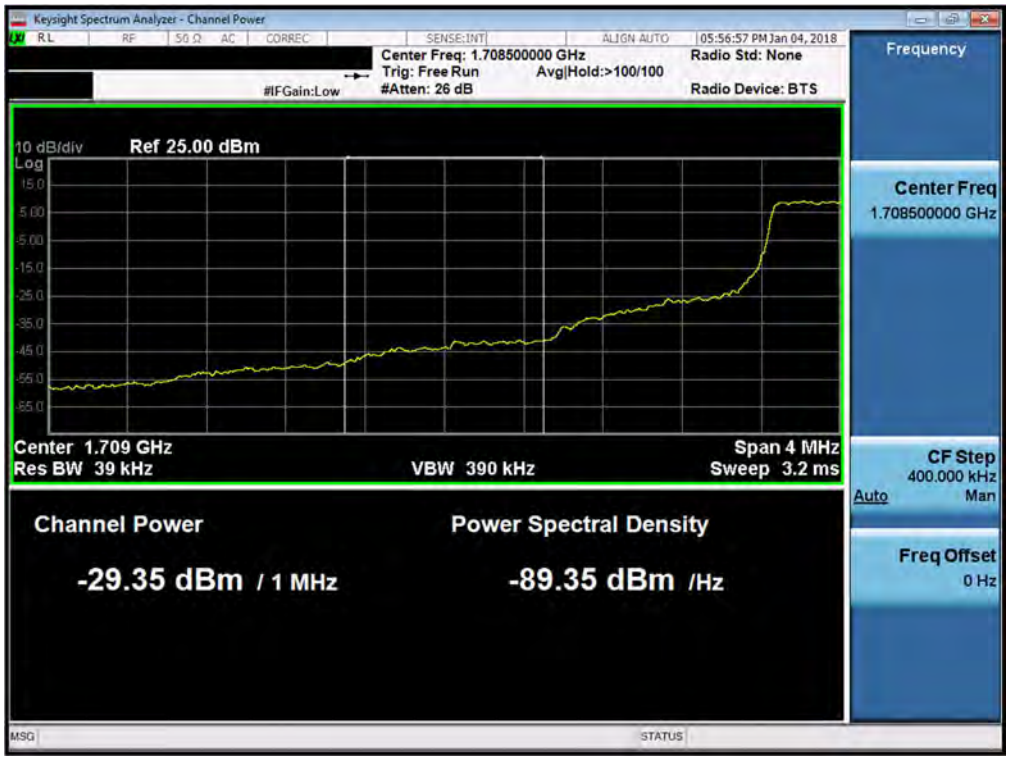


Plot 7-92. Upper Band Edge Plot (Band 5 - 10.0MHz QPSK - Full RB Configuration)

Band 4

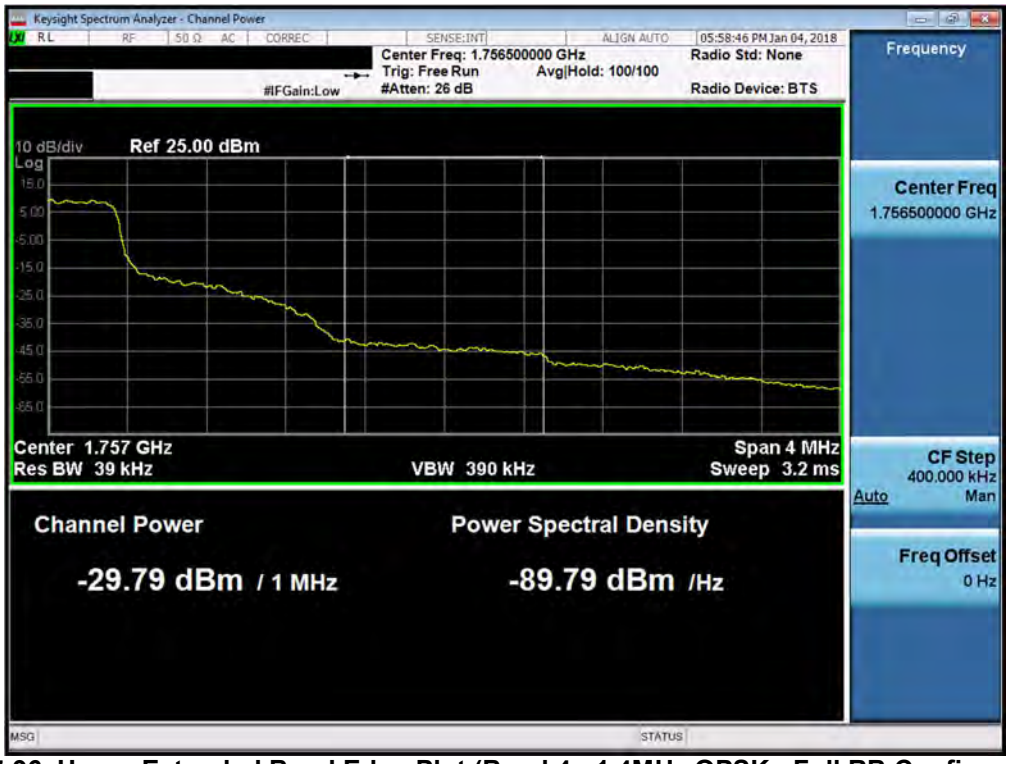


Plot 7-93. Lower Band Edge Plot (Band 4 - 1.4MHz QPSK - Full RB Configuration)

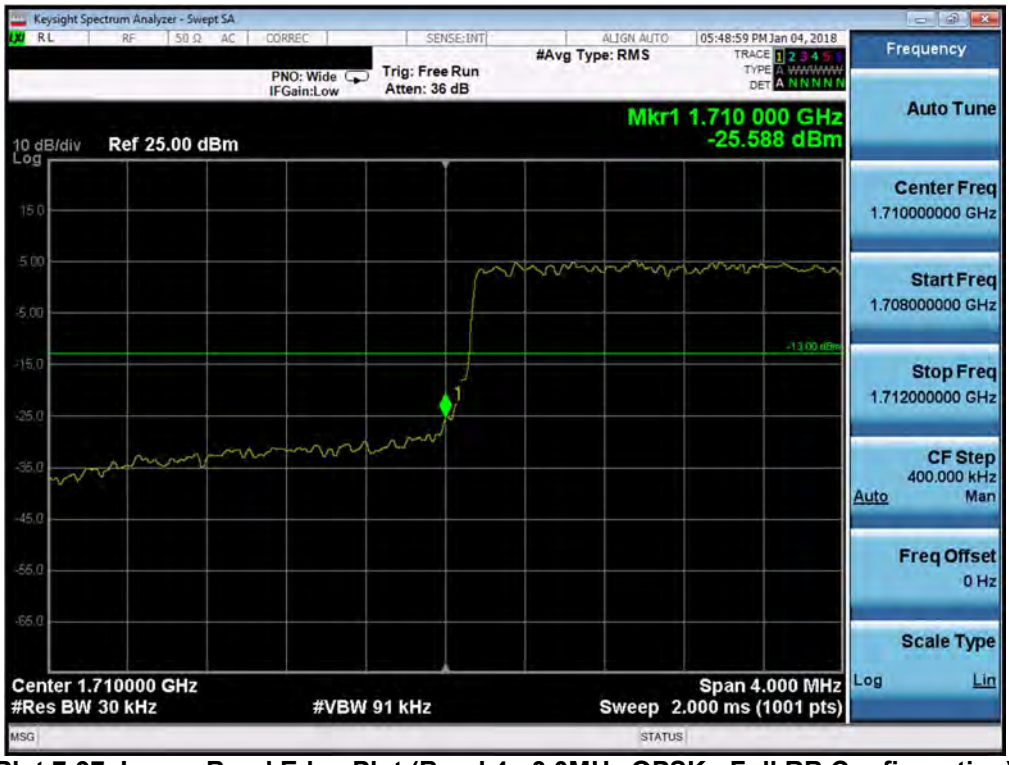


Plot 7-94. Lower Extended Band Edge Plot (Band 4 - 1.4MHz QPSK - Full RB Configuration)

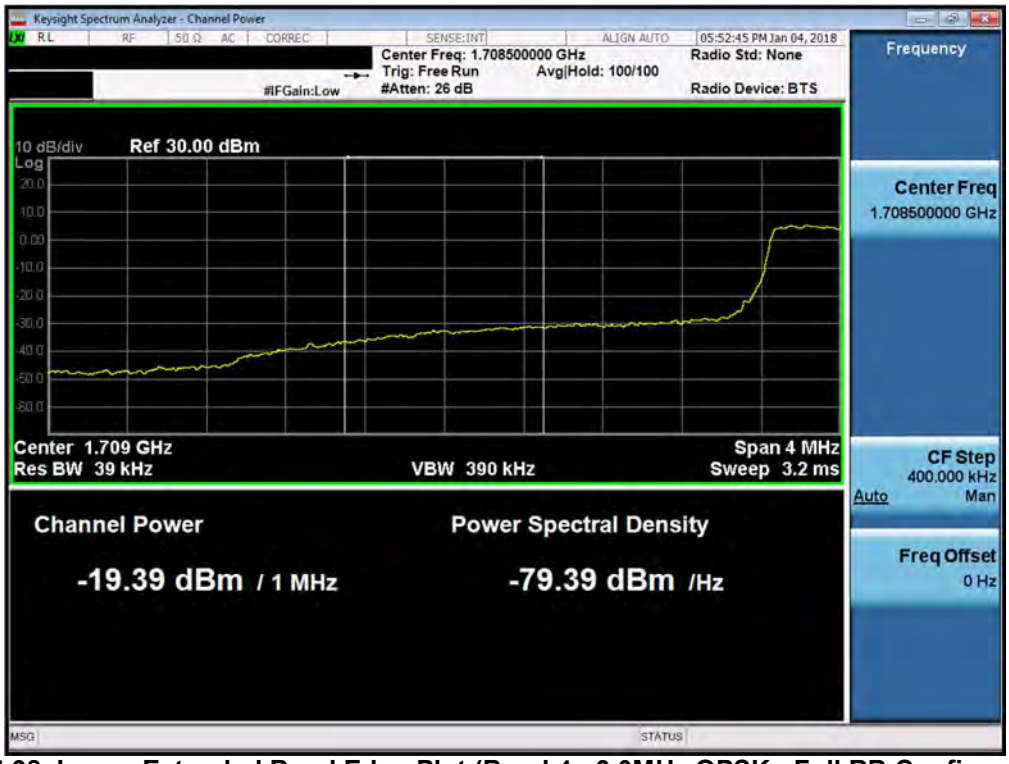
Plot 7-95. Upper Band Edge Plot (Band 4 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-96. Upper Extended Band Edge Plot (Band 4 - 1.4MHz QPSK - Full RB Configuration)

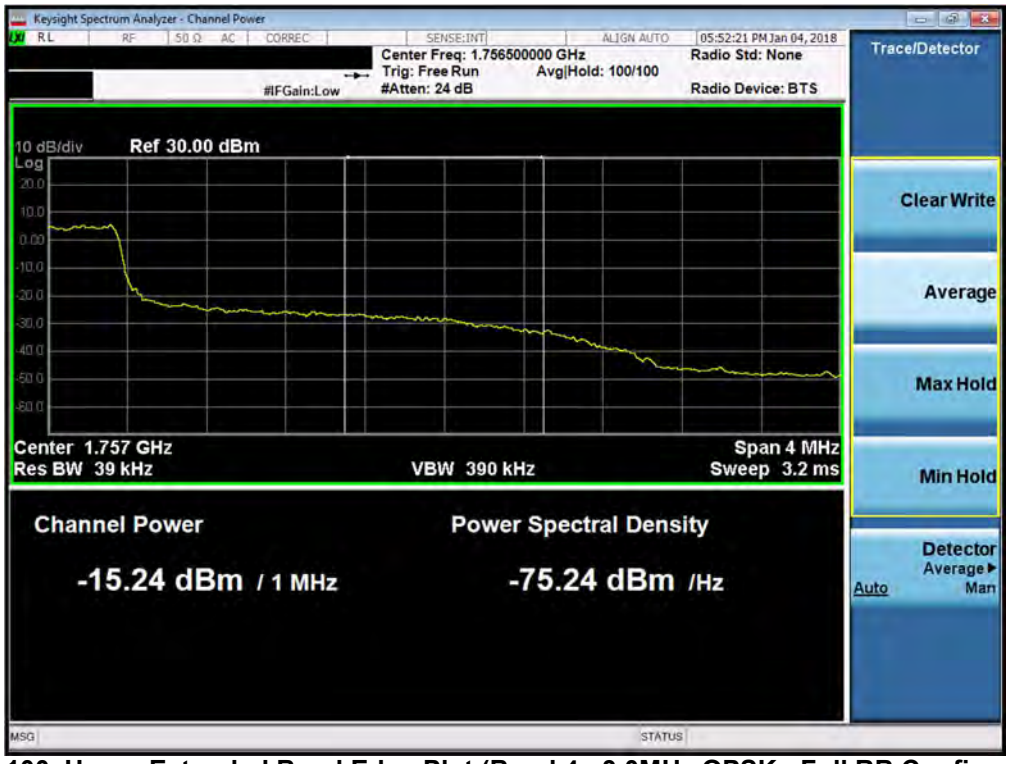


Plot 7-97. Lower Band Edge Plot (Band 4 - 3.0MHz QPSK - Full RB Configuration)

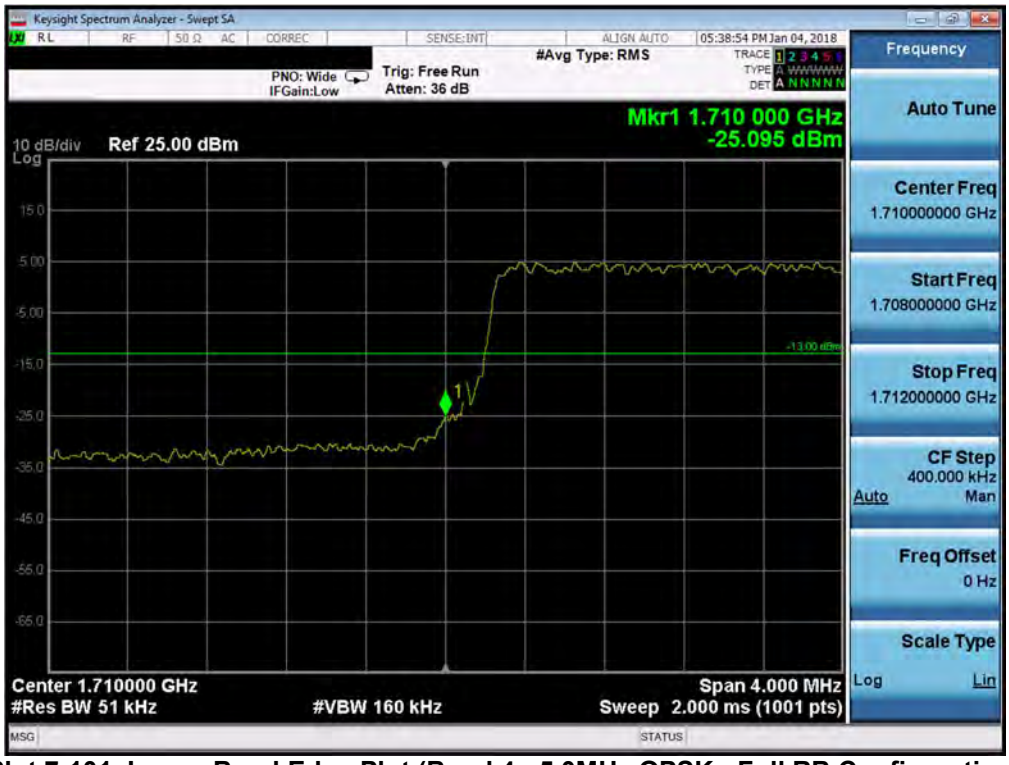


Plot 7-98. Lower Extended Band Edge Plot (Band 4 - 3.0MHz QPSK - Full RB Configuration)

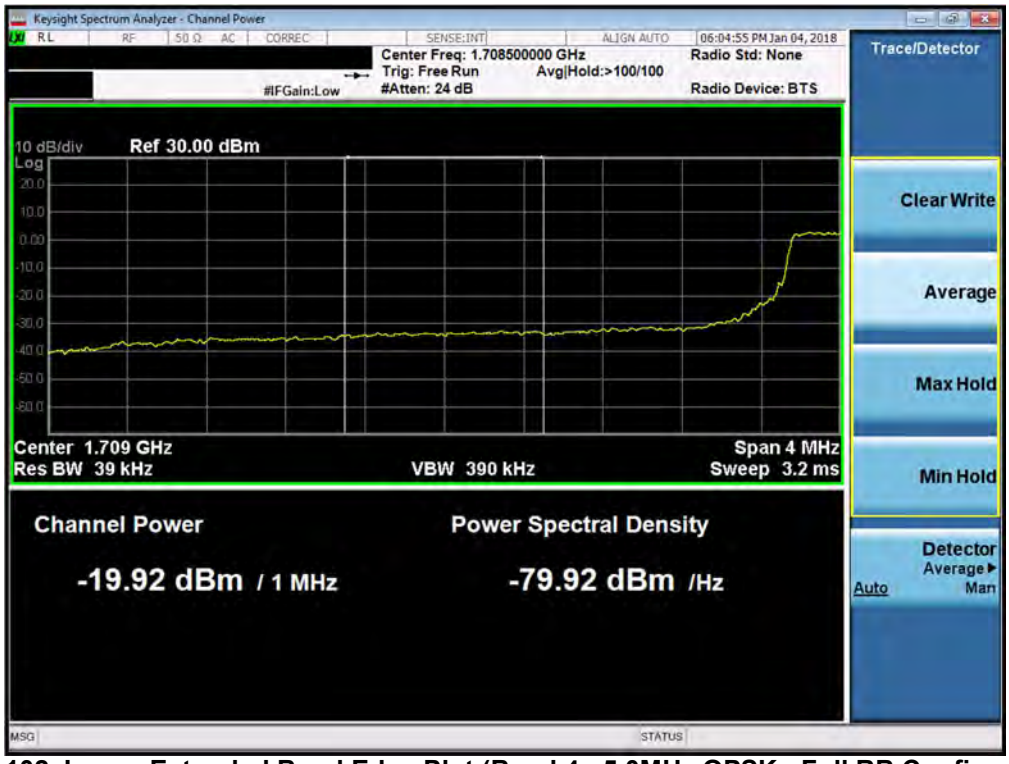
Plot 7-99. Upper Band Edge Plot (Band 4 - 3.0MHz QPSK - Full RB Configuration)



Plot 7-100. Upper Extended Band Edge Plot (Band 4 - 3.0MHz QPSK - Full RB Configuration)

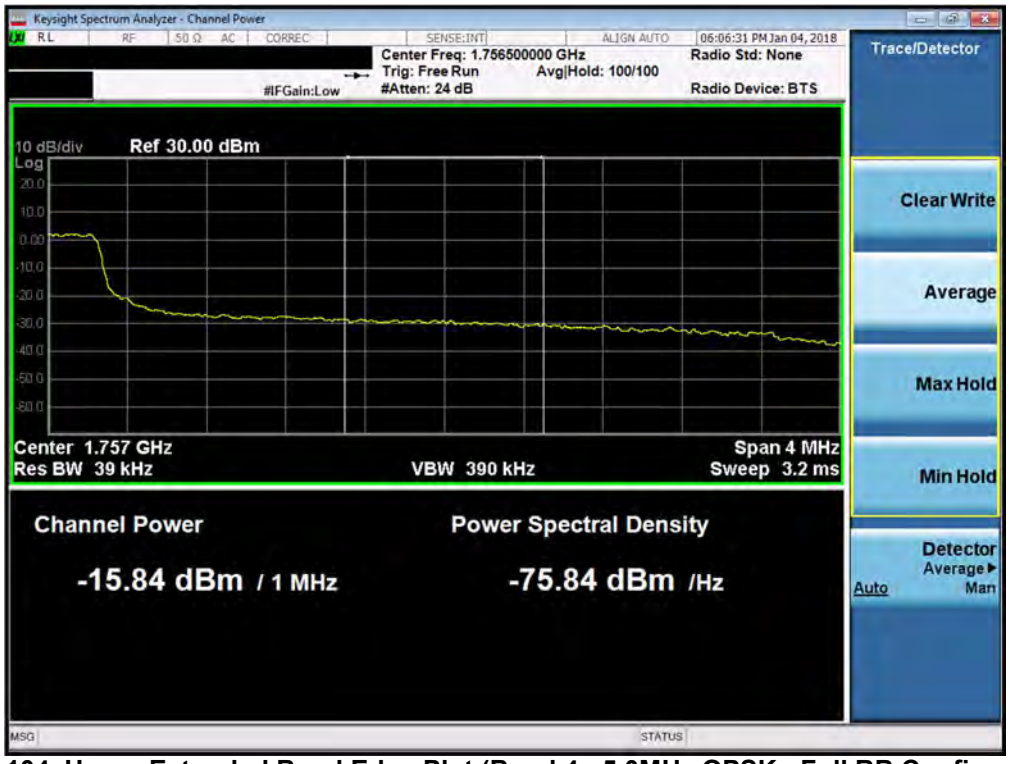


Plot 7-101. Lower Band Edge Plot (Band 4 - 5.0MHz QPSK - Full RB Configuration)

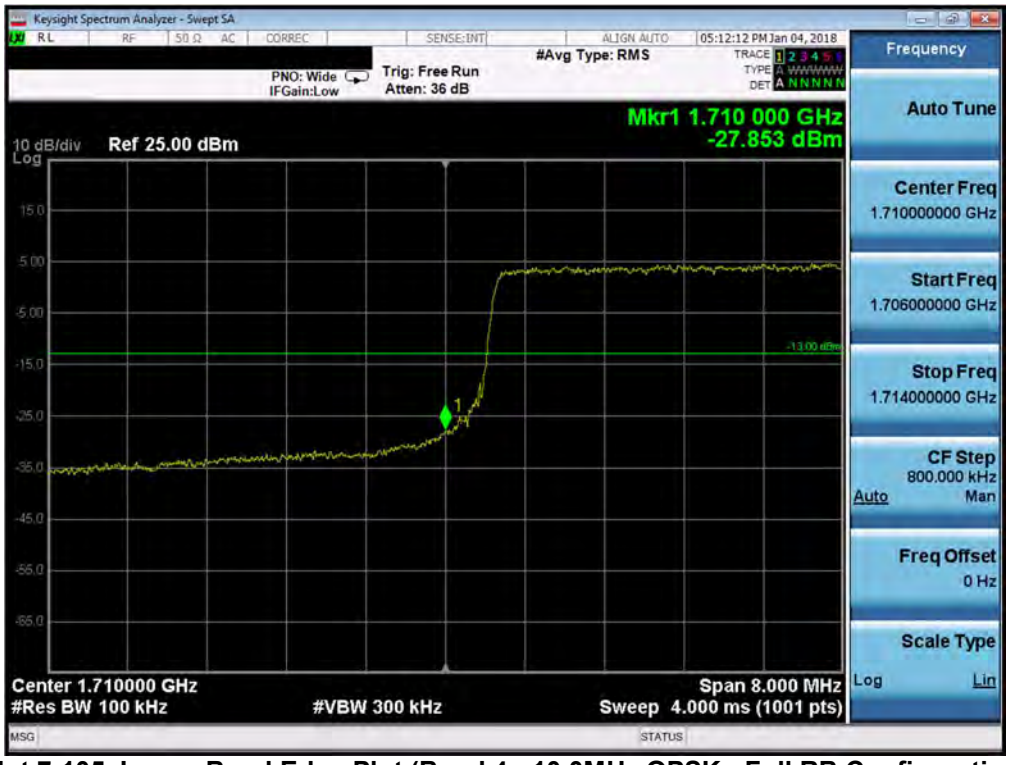


Plot 7-102. Lower Extended Band Edge Plot (Band 4 - 5.0MHz QPSK - Full RB Configuration)

Plot 7-103. Upper Band Edge Plot (Band 4 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-104. Upper Extended Band Edge Plot (Band 4 - 5.0MHz QPSK - Full RB Configuration)

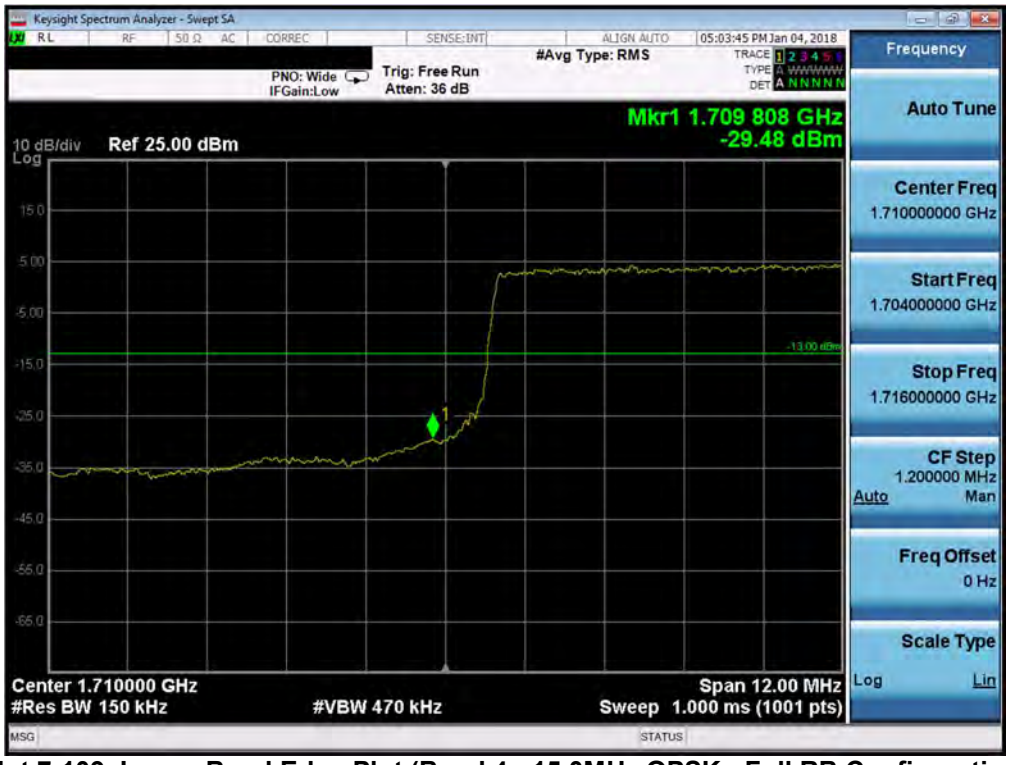


Plot 7-105. Lower Band Edge Plot (Band 4 - 10.0MHz QPSK - Full RB Configuration)

Plot 7-106. Lower Extended Band Edge Plot (Band 4 - 10.0MHz QPSK - Full RB Configuration)

Plot 7-107. Lower Extended Band Edge Plot (Band 4 - 10.0MHz QPSK - Full RB Configuration)

Plot 7-108. Upper Extended Band Edge Plot (Band 4 - 10.0MHz QPSK - Full RB Configuration)

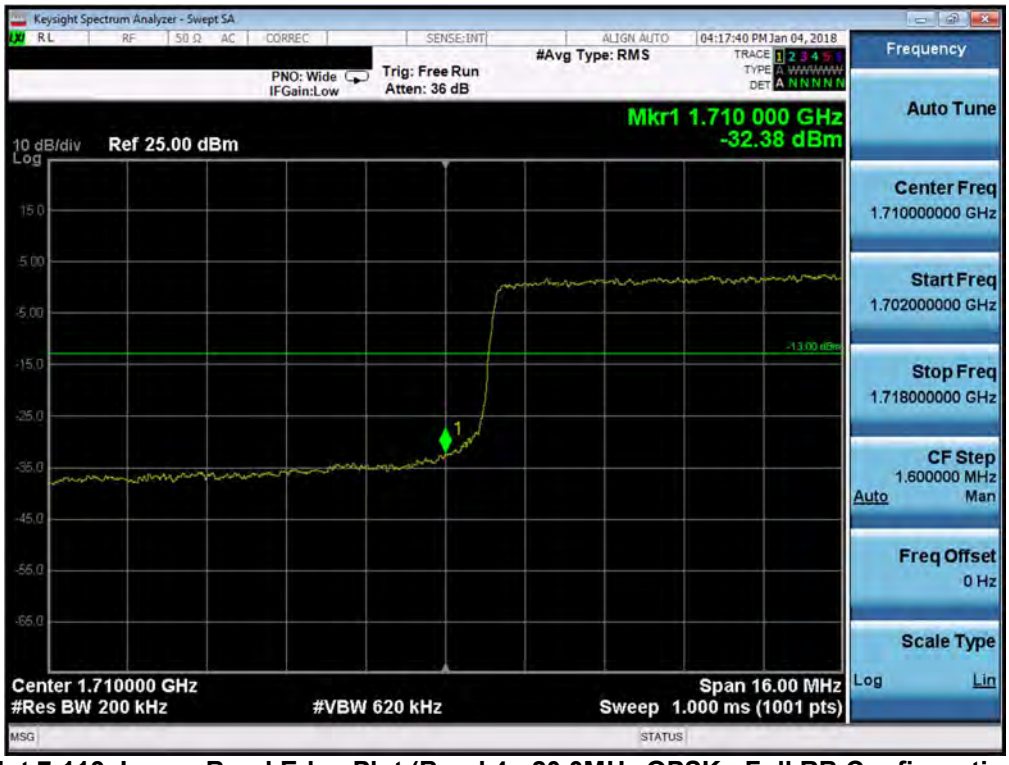


Plot 7-109. Lower Band Edge Plot (Band 4 - 15.0MHz QPSK - Full RB Configuration)

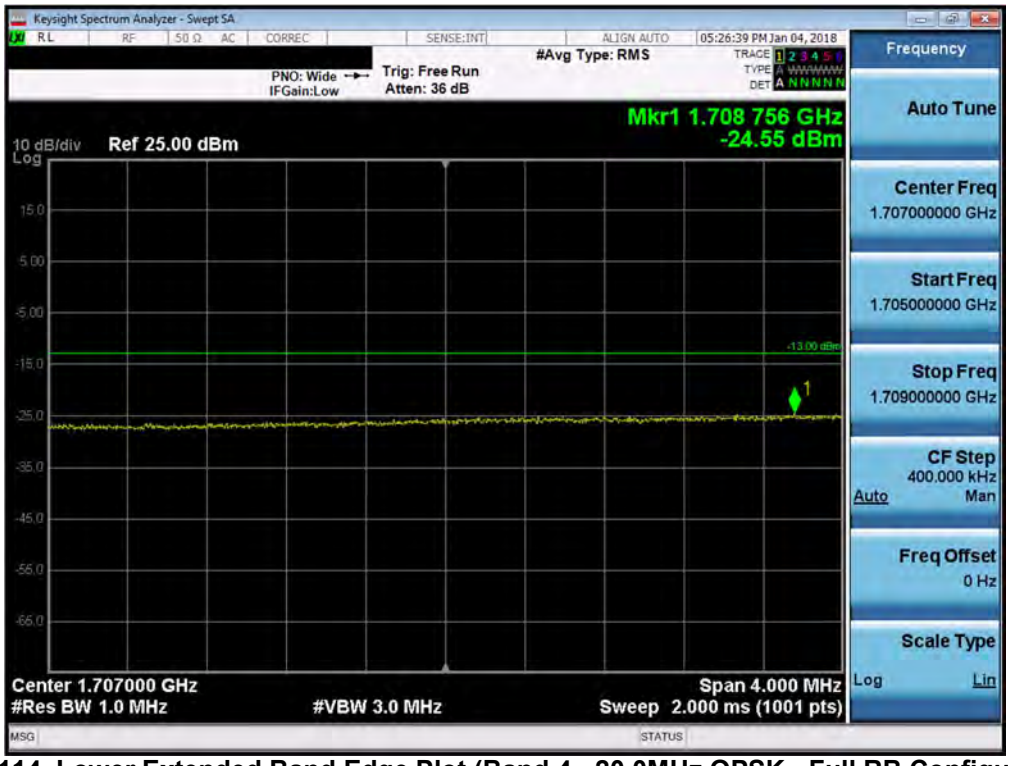
Plot 7-110. Lower Extended Band Edge Plot (Band 4 - 15.0MHz QPSK - Full RB Configuration)

Plot 7-111. Upper Band Edge Plot (Band 4 - 15.0MHz QPSK - Full RB Configuration)

Plot 7-112. Upper Extended Band Edge Plot (Band 4 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-113. Lower Band Edge Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)



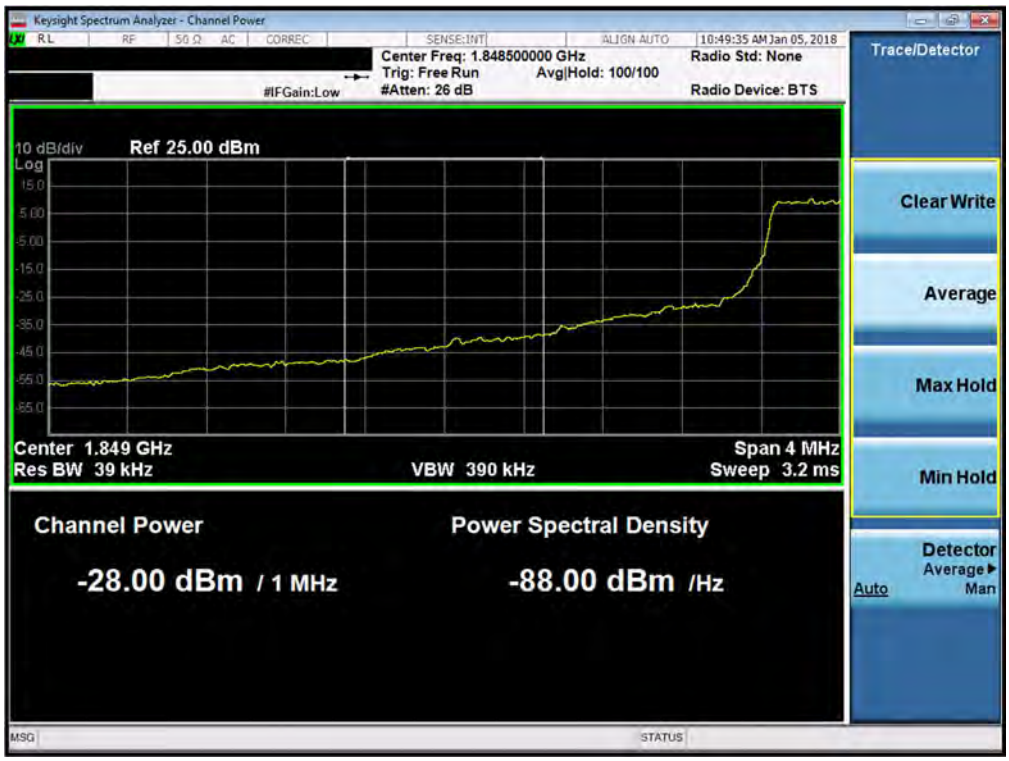
Plot 7-114. Lower Extended Band Edge Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)

Plot 7-115. Upper Band Edge Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)

Plot 7-116. Upper Extended Band Edge Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)

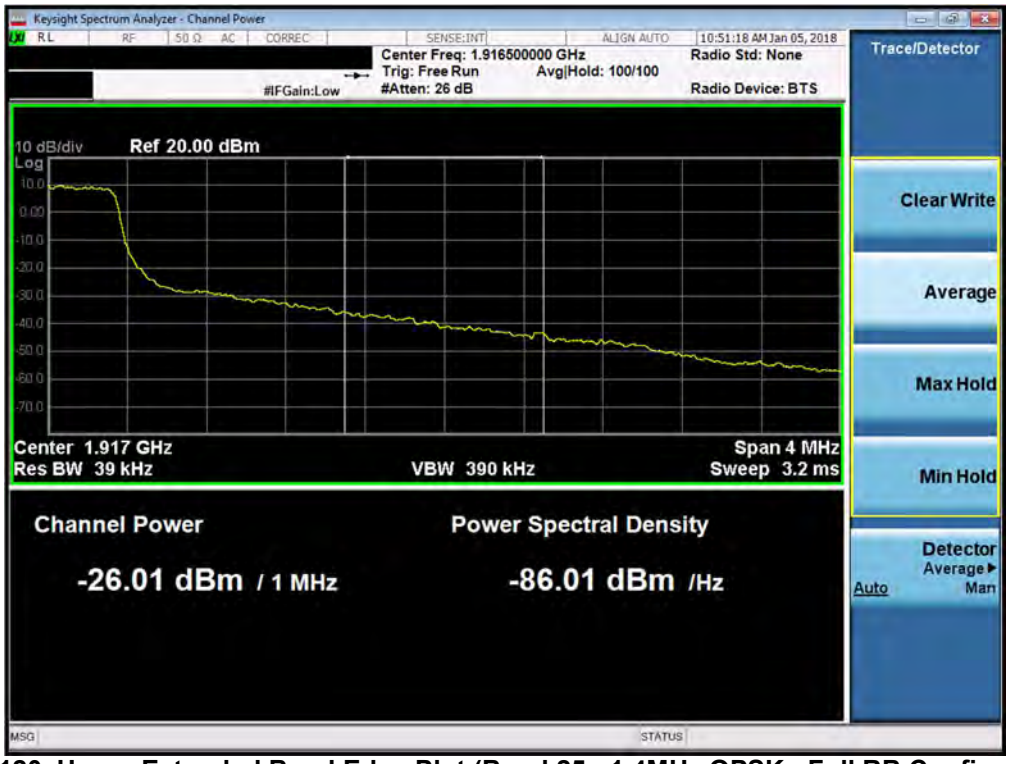
Band 2/25

Plot 7-117. Lower Band Edge Plot (Band 2/25 - 1.4MHz QPSK - Full RB Configuration)

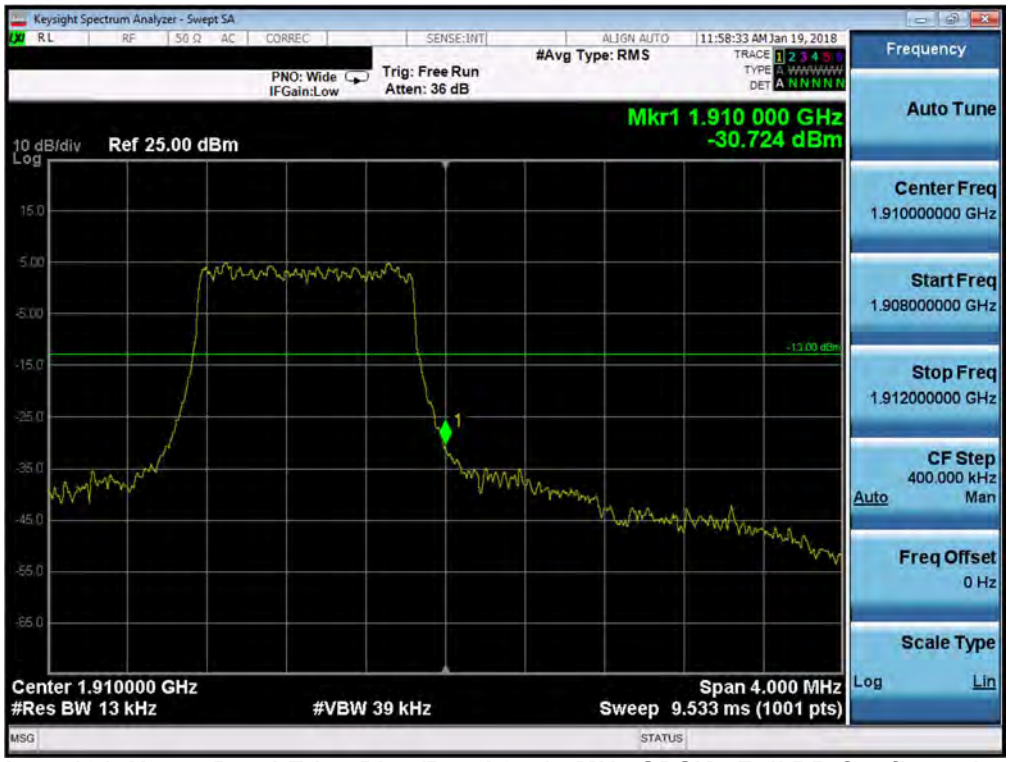


Plot 7-118. Lower Extended Band Edge Plot (Band 2/25 - 1.4MHz QPSK - Full RB Configuration)

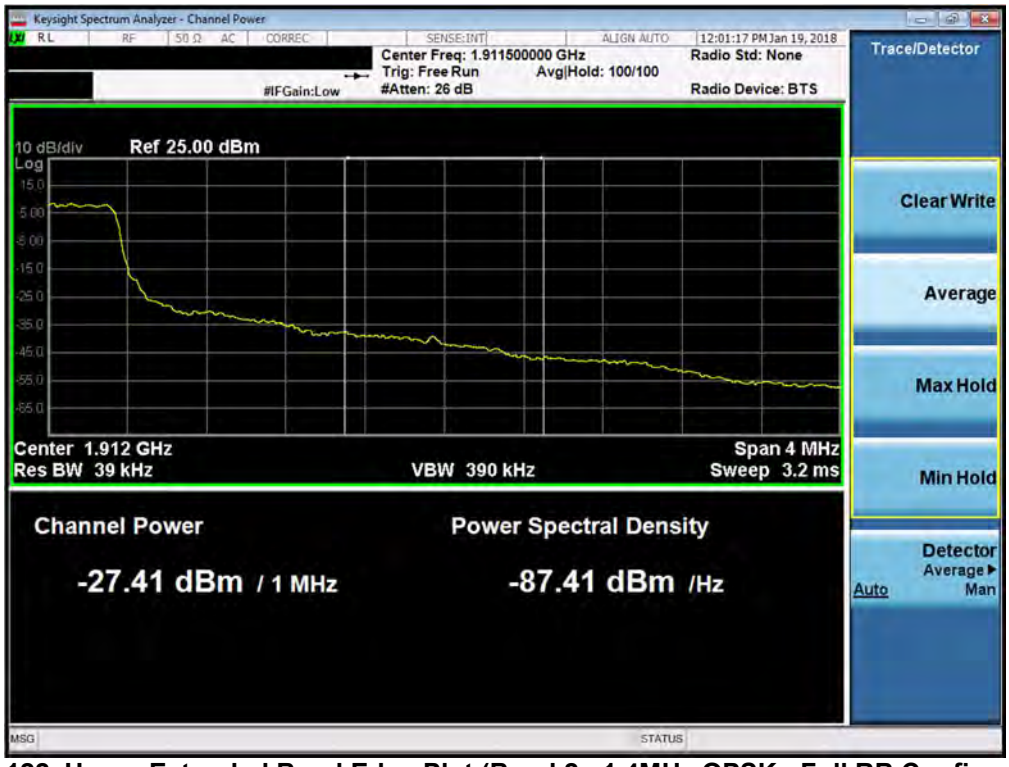
Plot 7-119. Upper Band Edge Plot (Band 25 - 1.4MHz QPSK - Full RB Configuration)



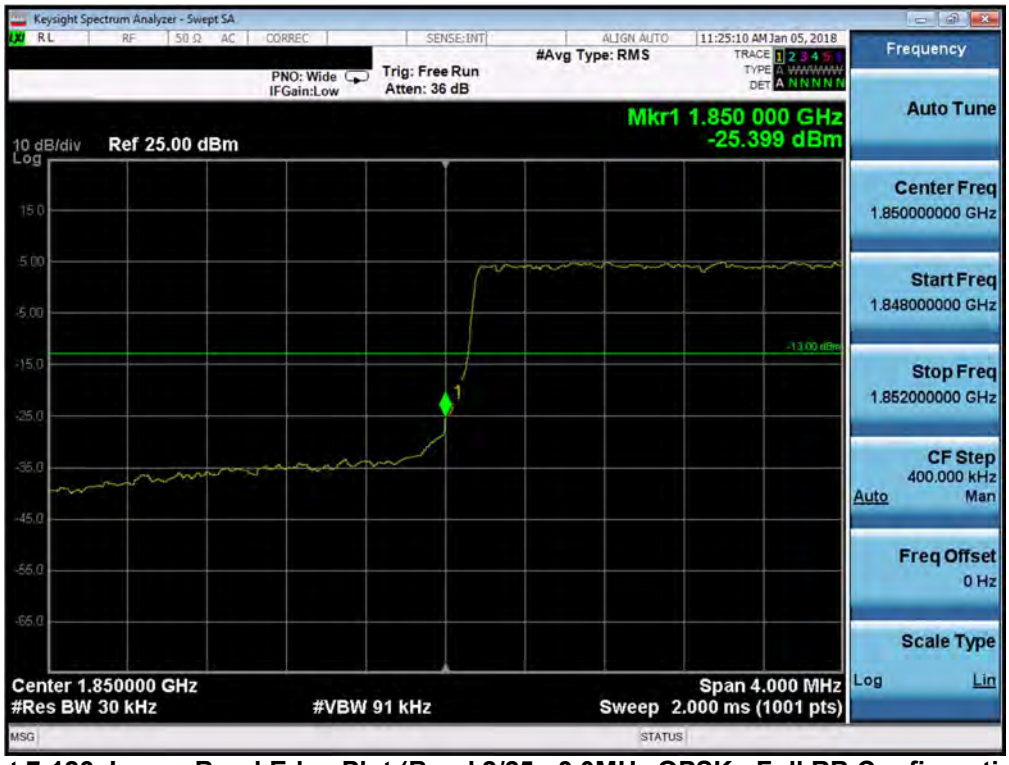
Plot 7-120. Upper Extended Band Edge Plot (Band 25 - 1.4MHz QPSK - Full RB Configuration)



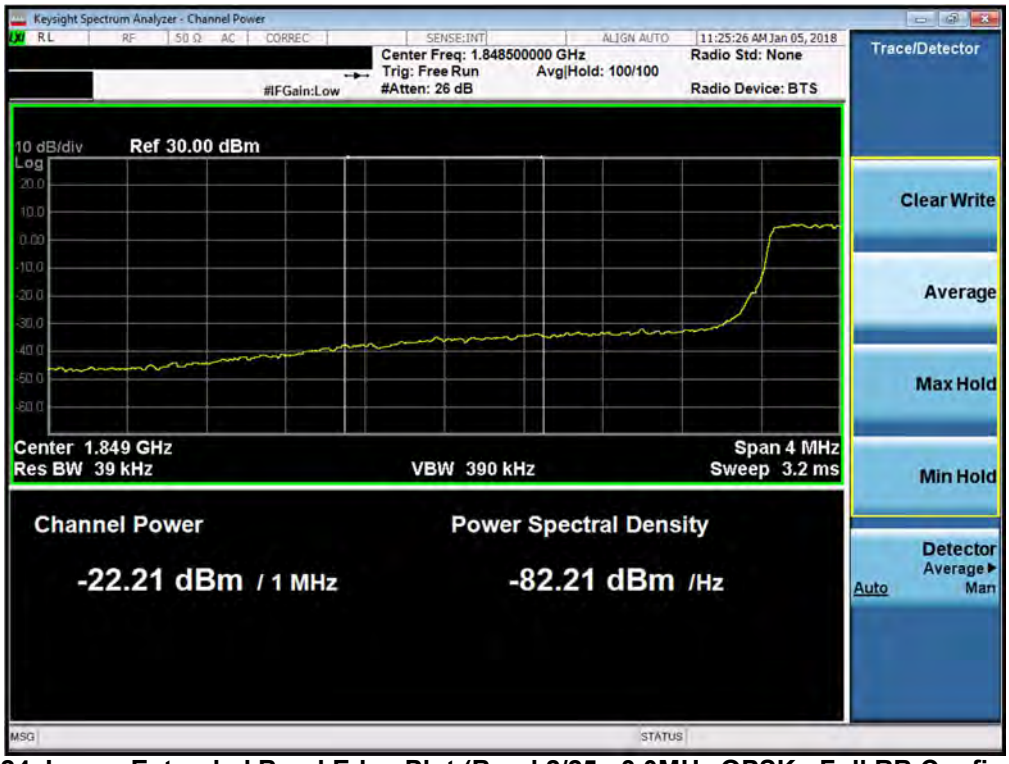
Plot 7-121. Upper Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)



Plot 7-122. Upper Extended Band Edge Plot (Band 2 - 1.4MHz QPSK - Full RB Configuration)

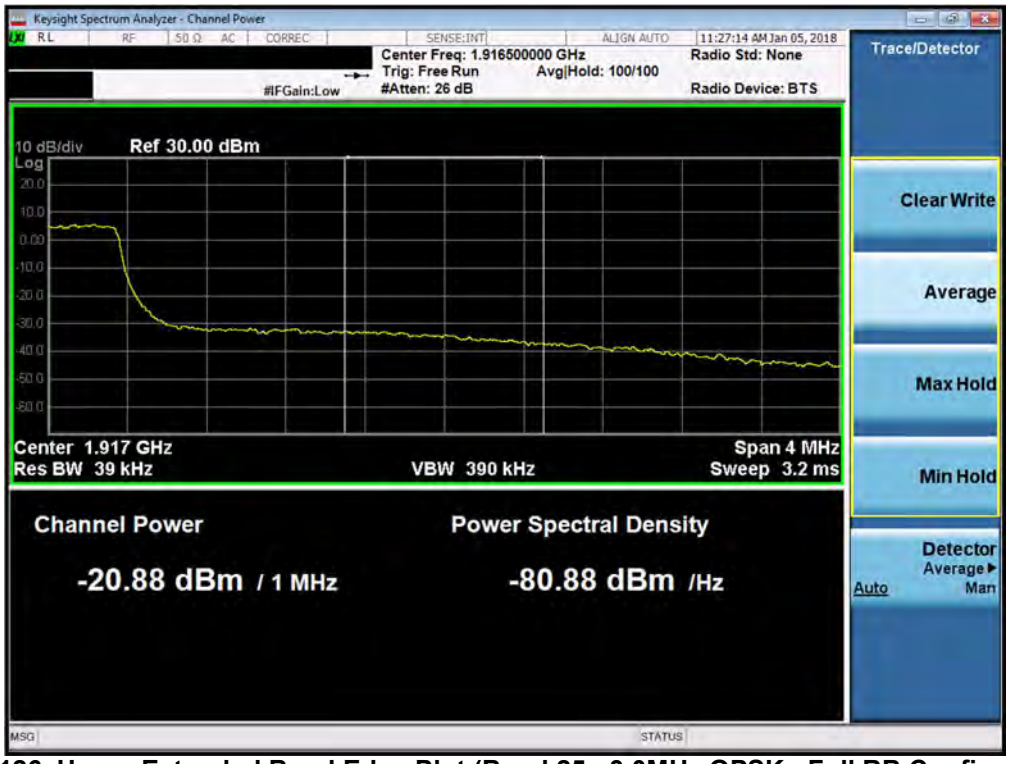


Plot 7-123. Lower Band Edge Plot (Band 2/25 - 3.0MHz QPSK - Full RB Configuration)

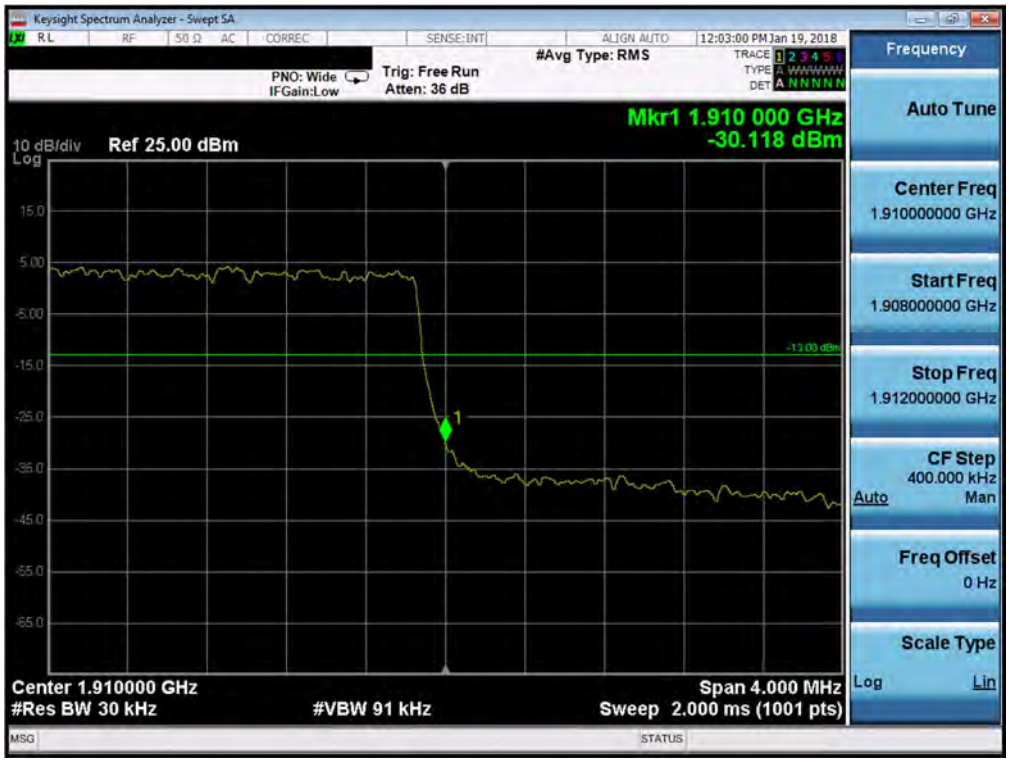


Plot 7-124. Lower Extended Band Edge Plot (Band 2/25 - 3.0MHz QPSK - Full RB Configuration)

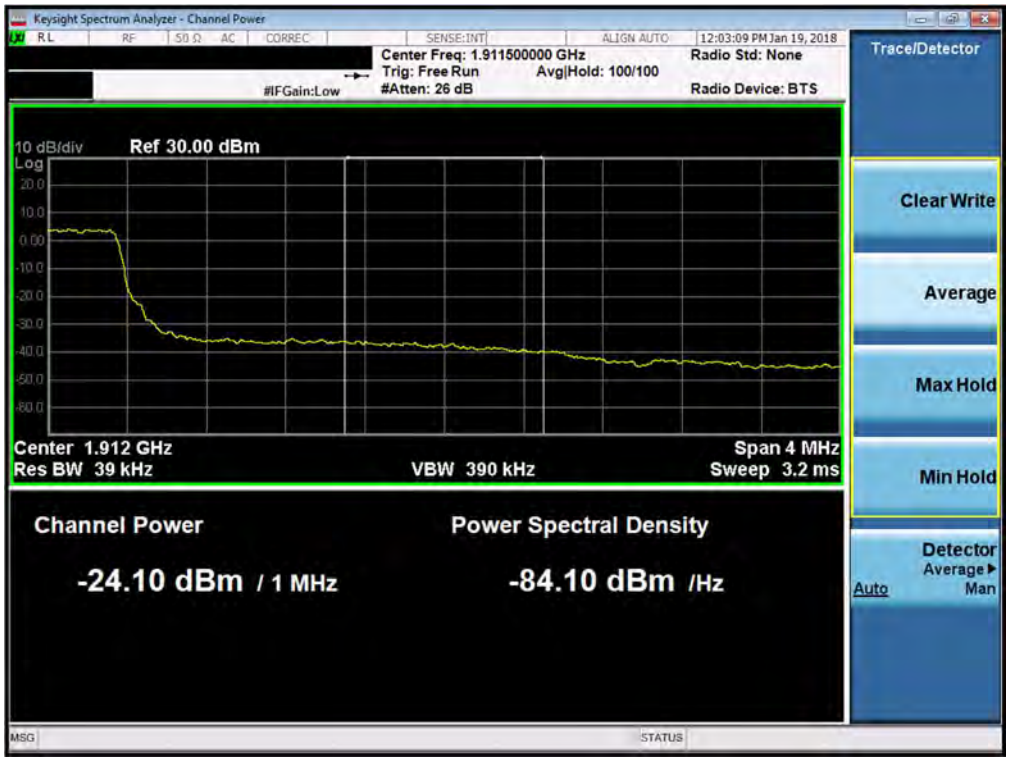
Plot 7-125. Upper Band Edge Plot (Band 25 - 3.0MHz QPSK - Full RB Configuration)



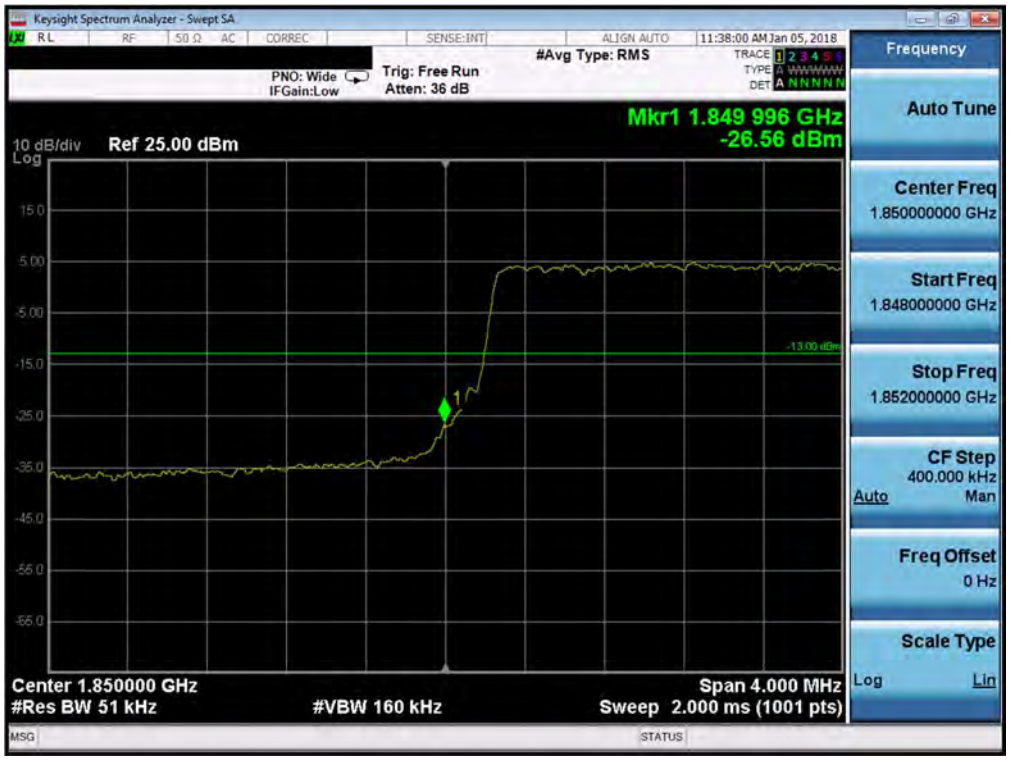
Plot 7-126. Upper Extended Band Edge Plot (Band 25 - 3.0MHz QPSK - Full RB Configuration)



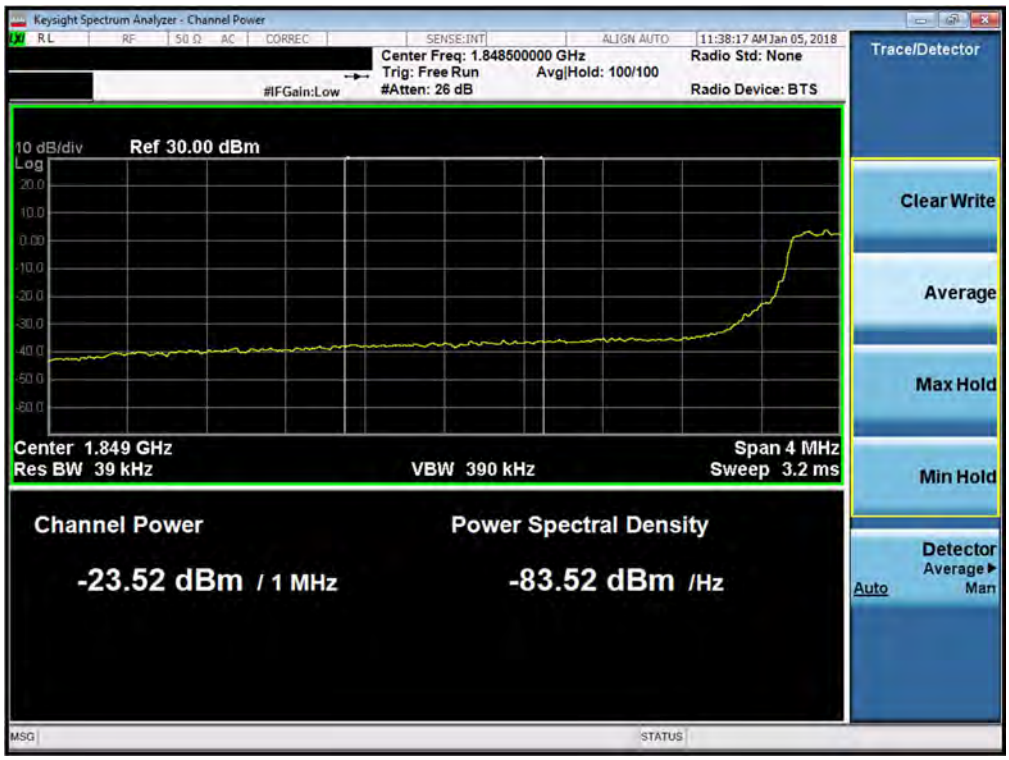
Plot 7-127. Upper Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



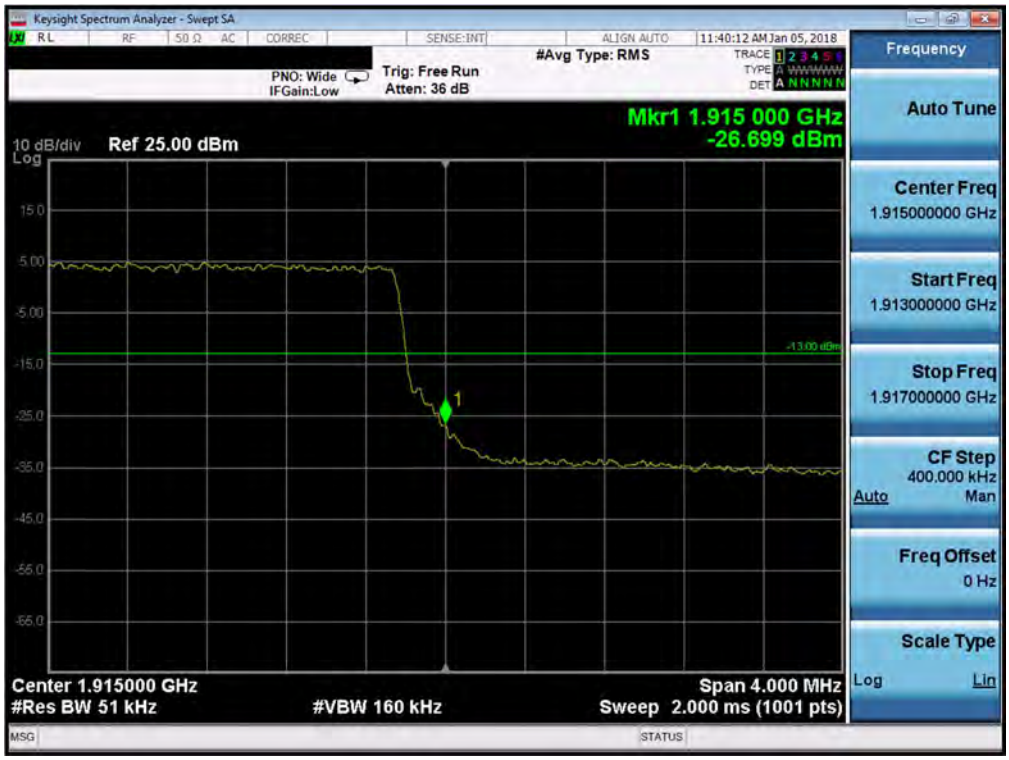
Plot 7-128. Upper Extended Band Edge Plot (Band 2 - 3.0MHz QPSK - Full RB Configuration)



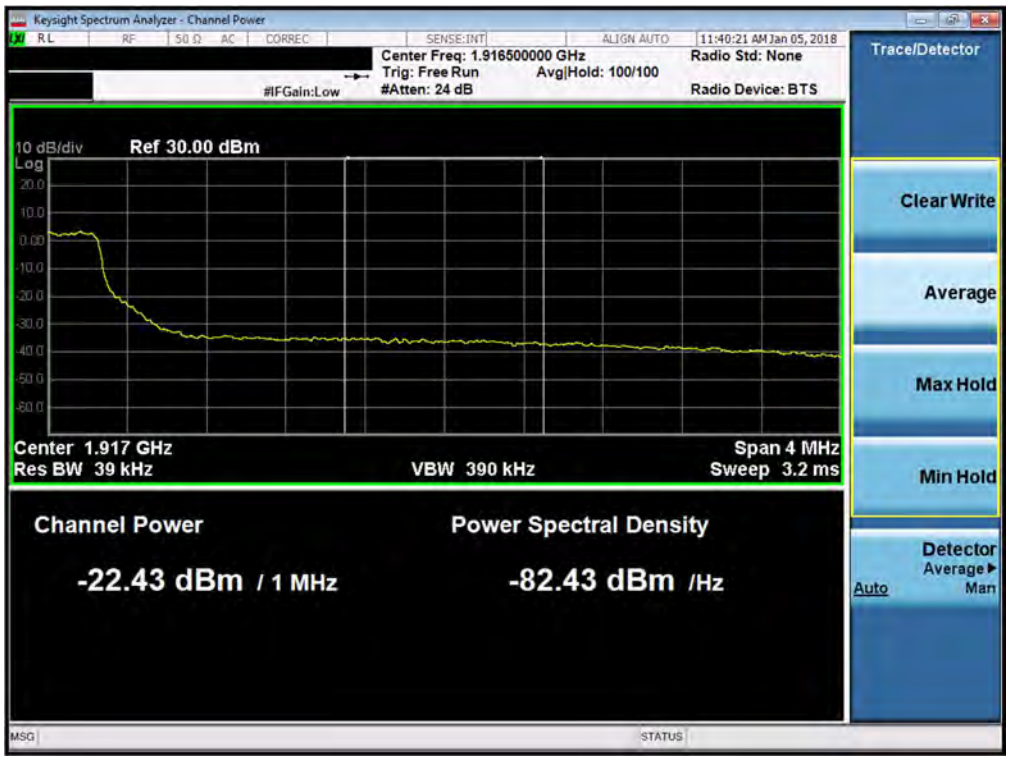
Plot 7-129. Lower Band Edge Plot (Band 25 - 5.0MHz QPSK - Full RB Configuration)



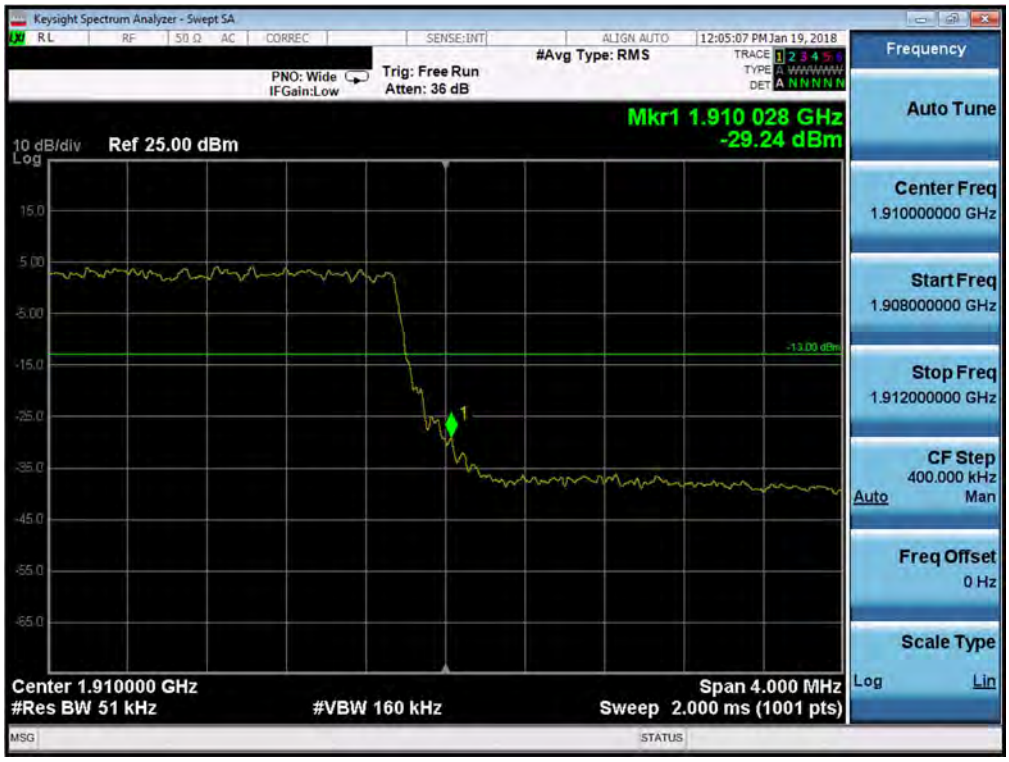
Plot 7-130. Lower Extended Band Edge Plot (Band 25 - 5.0MHz QPSK - Full RB Configuration)



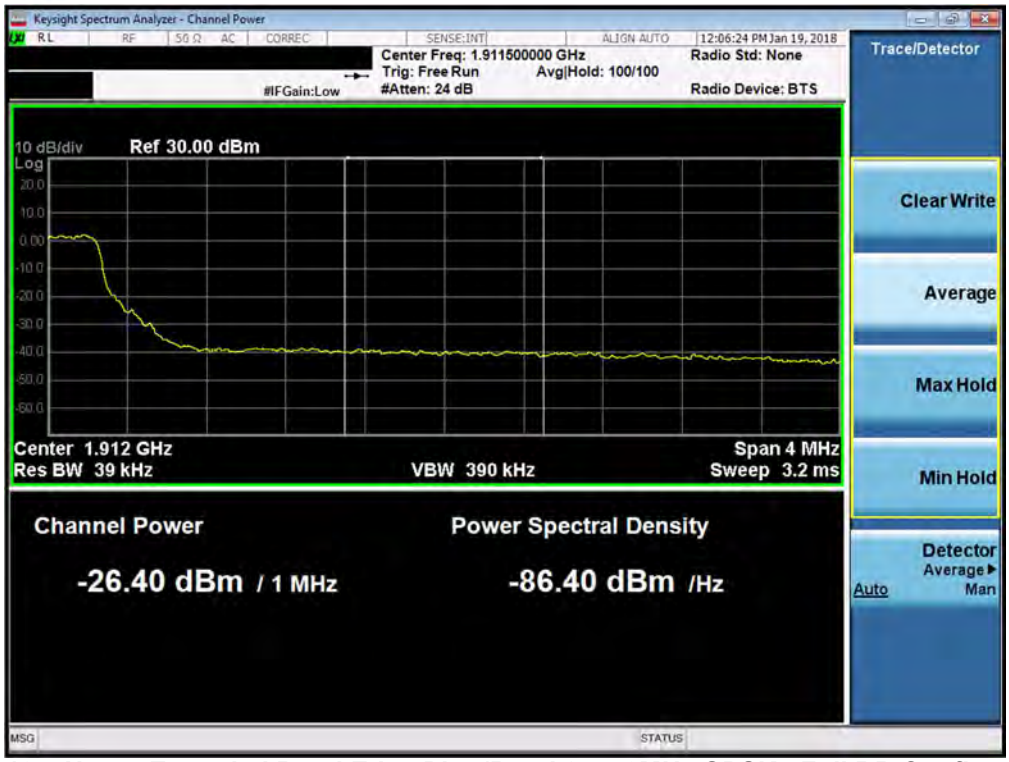
Plot 7-131. Upper Band Edge Plot (Band 25 - 5.0MHz QPSK - Full RB Configuration)



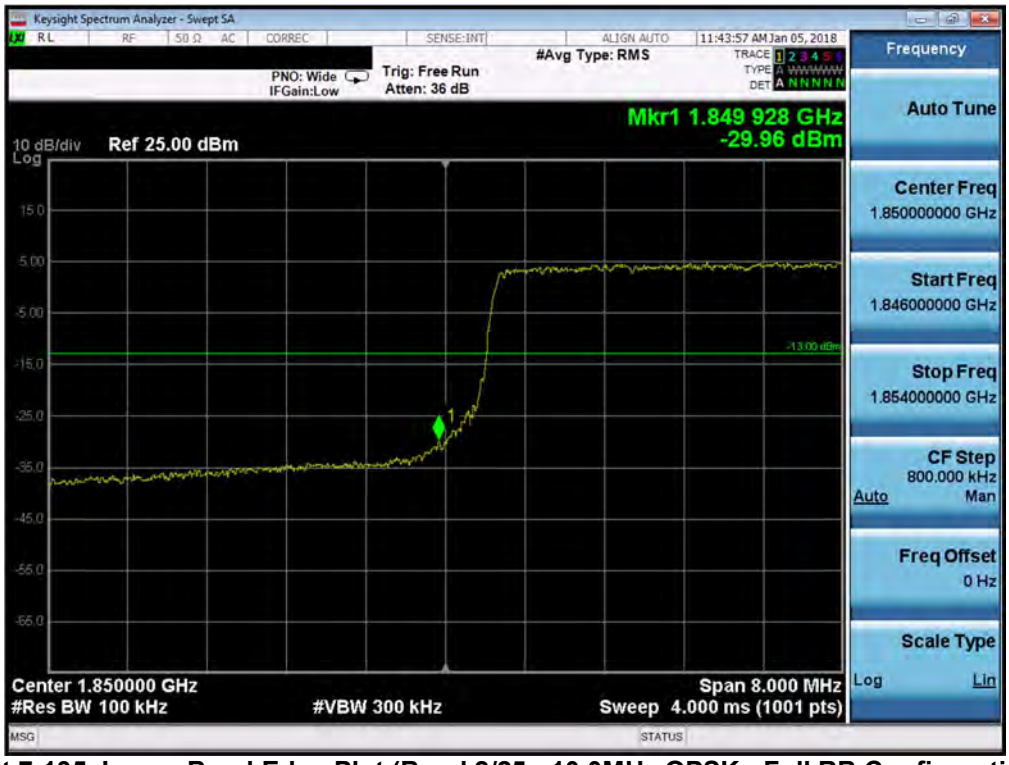
Plot 7-132. Upper Extended Band Edge Plot (Band 25 - 5.0MHz QPSK - Full RB Configuration)



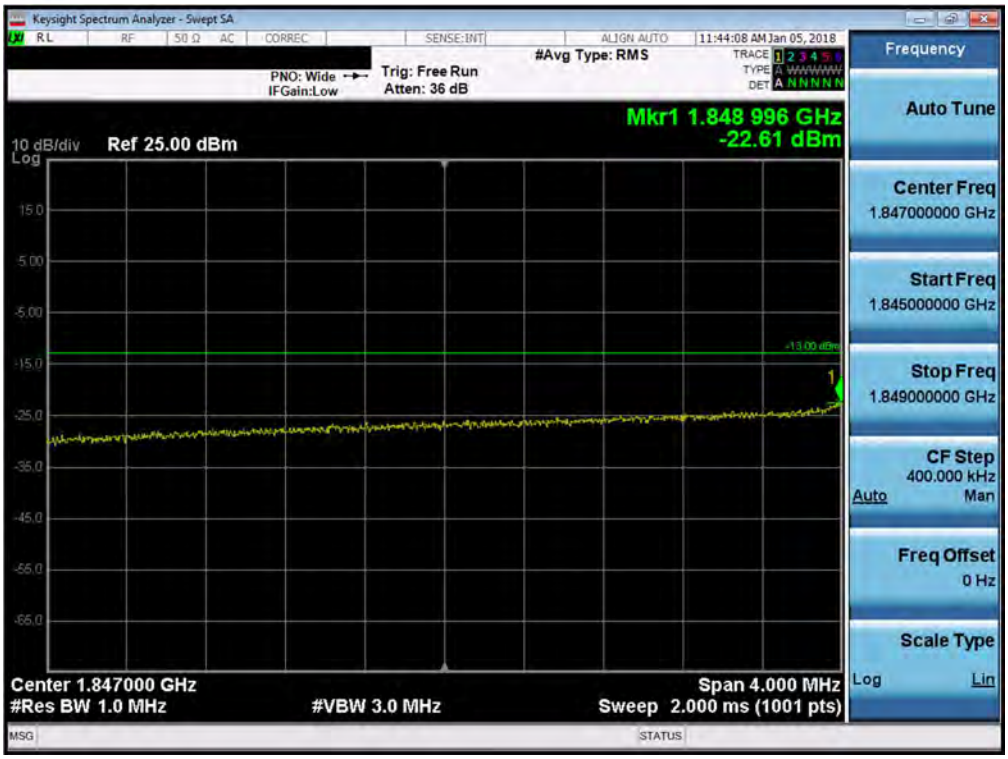
Plot 7-133. Upper Band Edge Plot (Band 2- 5.0MHz QPSK - Full RB Configuration)



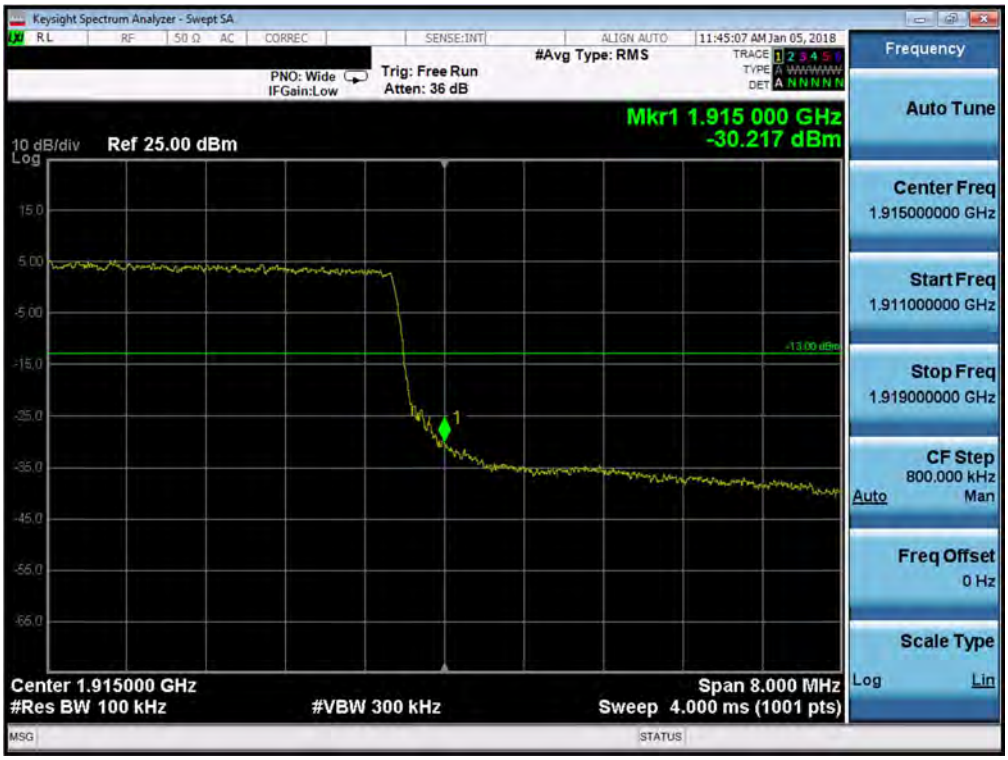
Plot 7-134. Upper Extended Band Edge Plot (Band 2 - 5.0MHz QPSK - Full RB Configuration)



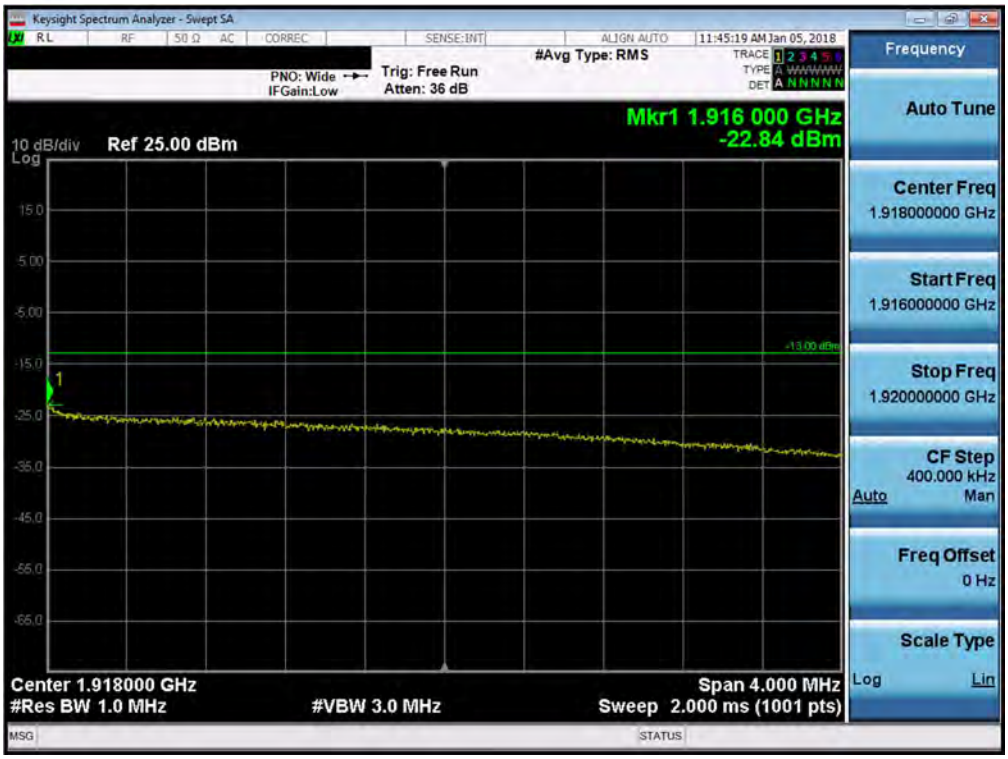
Plot 7-135. Lower Band Edge Plot (Band 2/25 - 10.0MHz QPSK - Full RB Configuration)



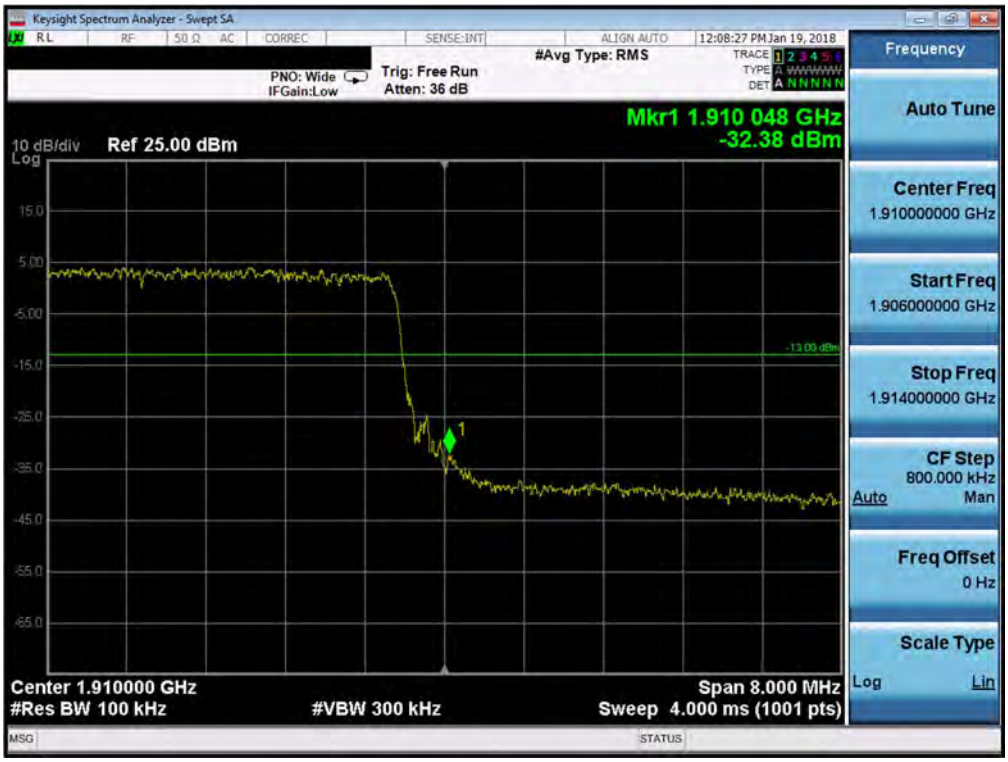
Plot 7-136. Lower Extended Band Edge Plot (Band 2/25 - 10.0MHz QPSK - Full RB Configuration)



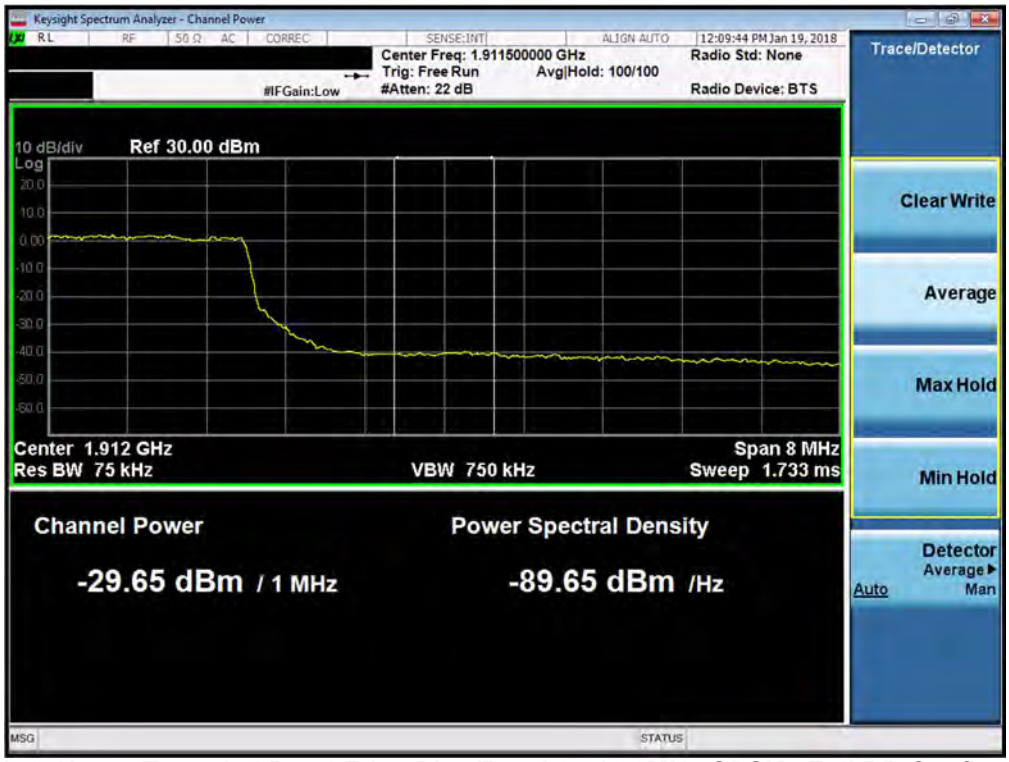
Plot 7-137. Upper Band Edge Plot (Band 25 - 10.0MHz QPSK - Full RB Configuration)



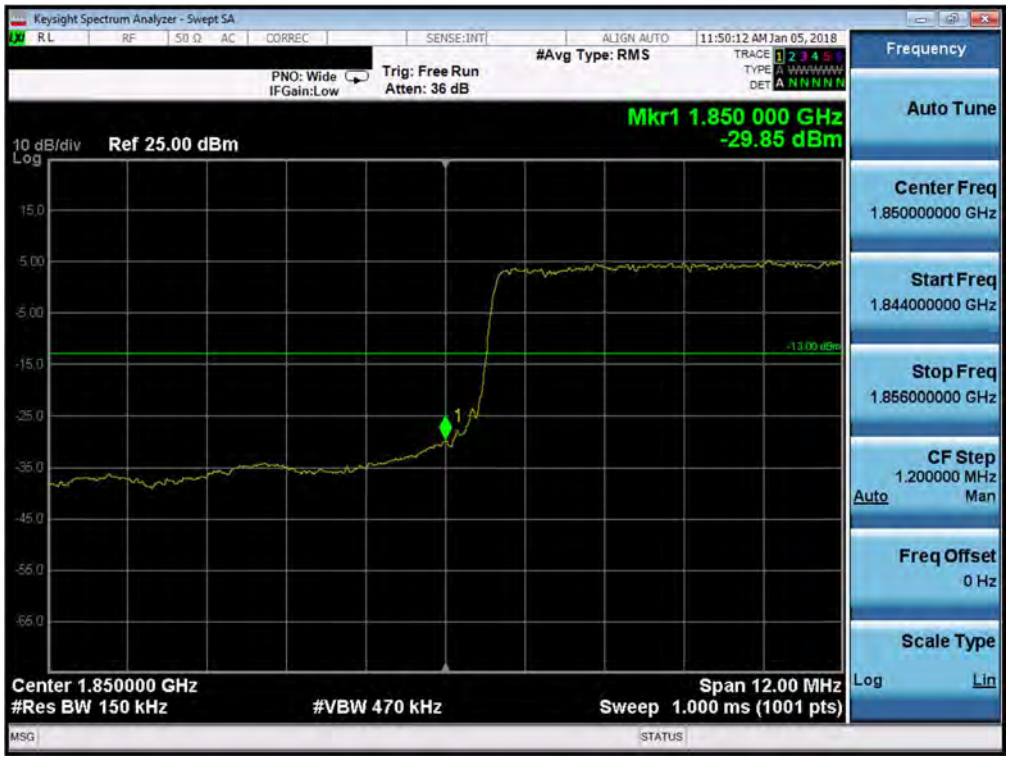
Plot 7-138. Upper Extended Band Edge Plot (Band 25 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-139. Upper Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



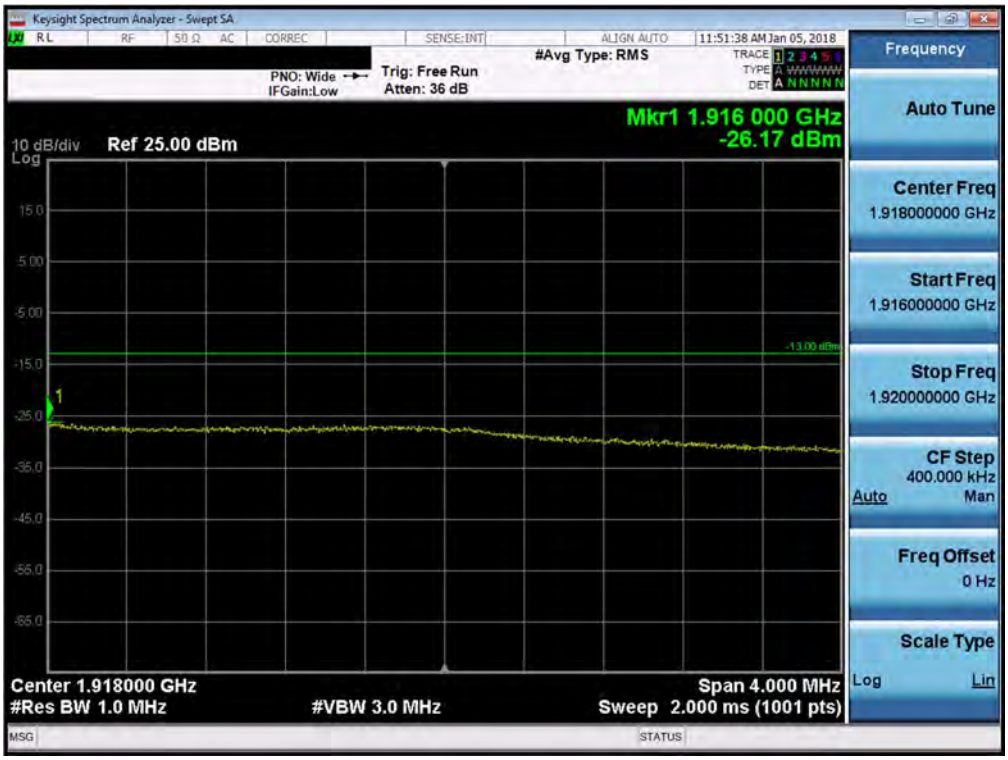
Plot 7-140. Upper Extended Band Edge Plot (Band 2 - 10.0MHz QPSK - Full RB Configuration)



Plot 7-141. Lower Band Edge Plot (Band 2/25 - 15.0MHz QPSK - Full RB Configuration)

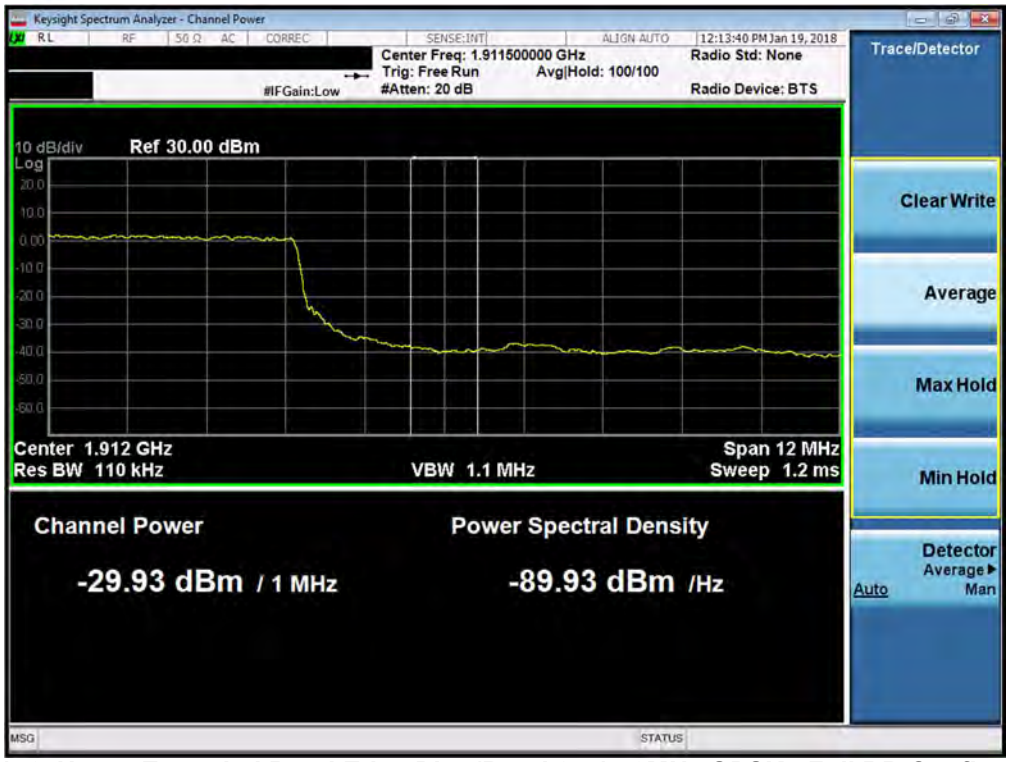
Plot 7-142. Lower Extended Band Edge Plot (Band 2/25 - 15.0MHz QPSK - Full RB Configuration)

Plot 7-143. Upper Band Edge Plot (Band 25 - 15.0MHz QPSK - Full RB Configuration)

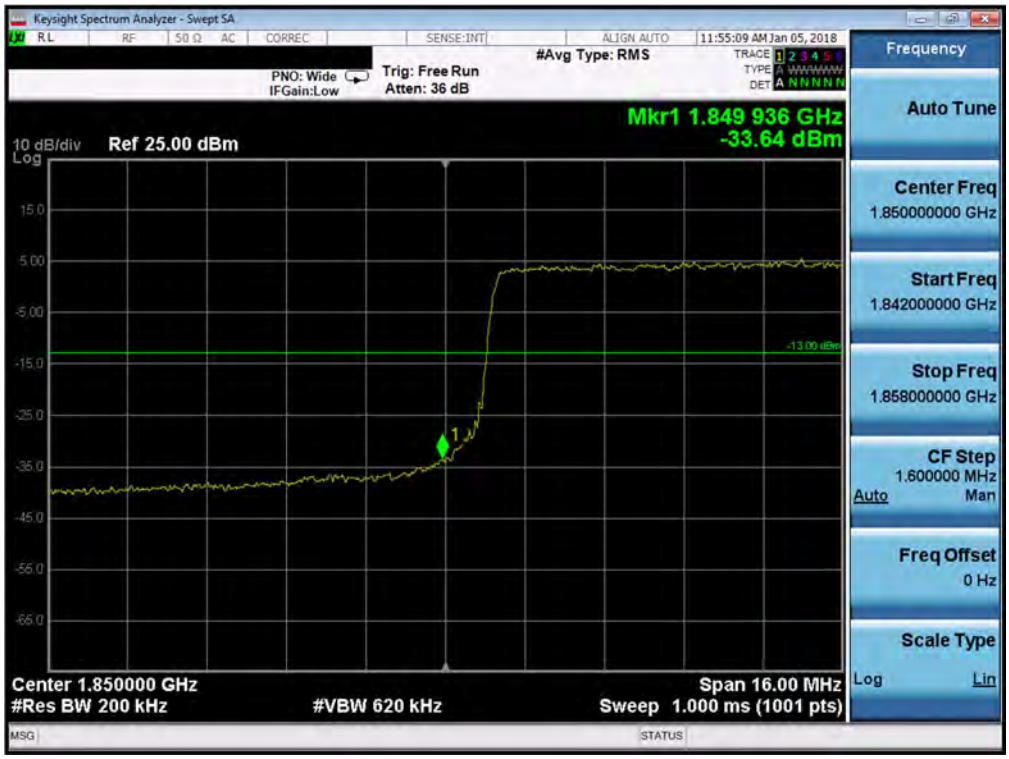


Plot 7-144. Upper Extended Band Edge Plot (Band 25 - 15.0MHz QPSK - Full RB Configuration)

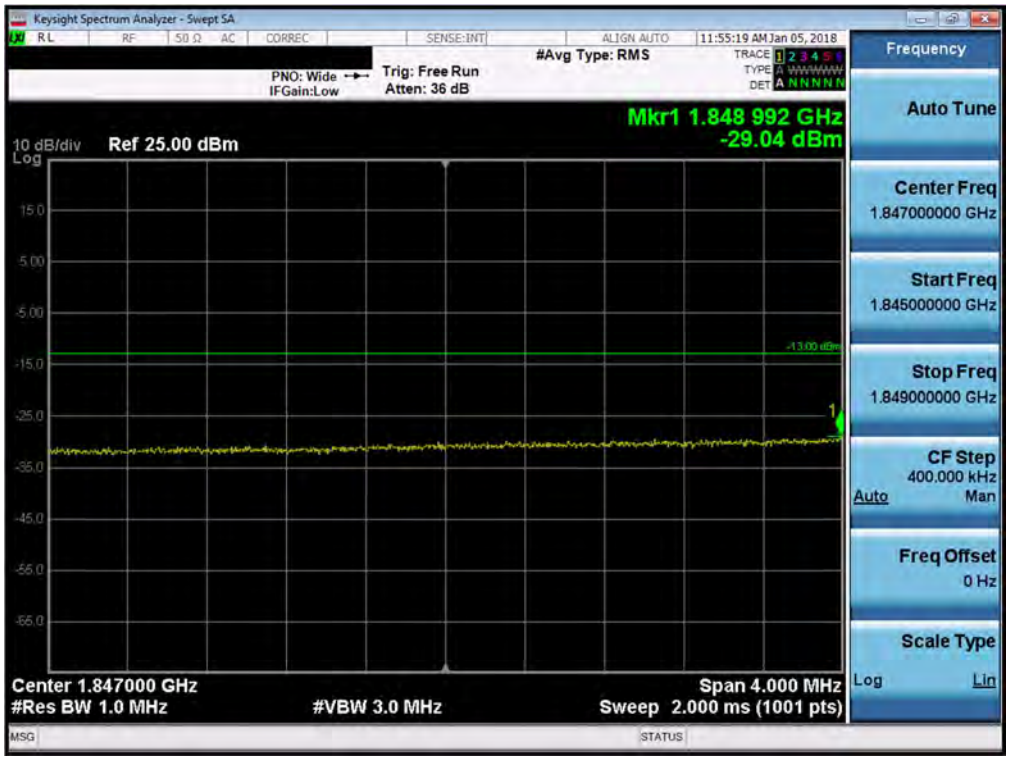
Plot 7-145. Upper Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



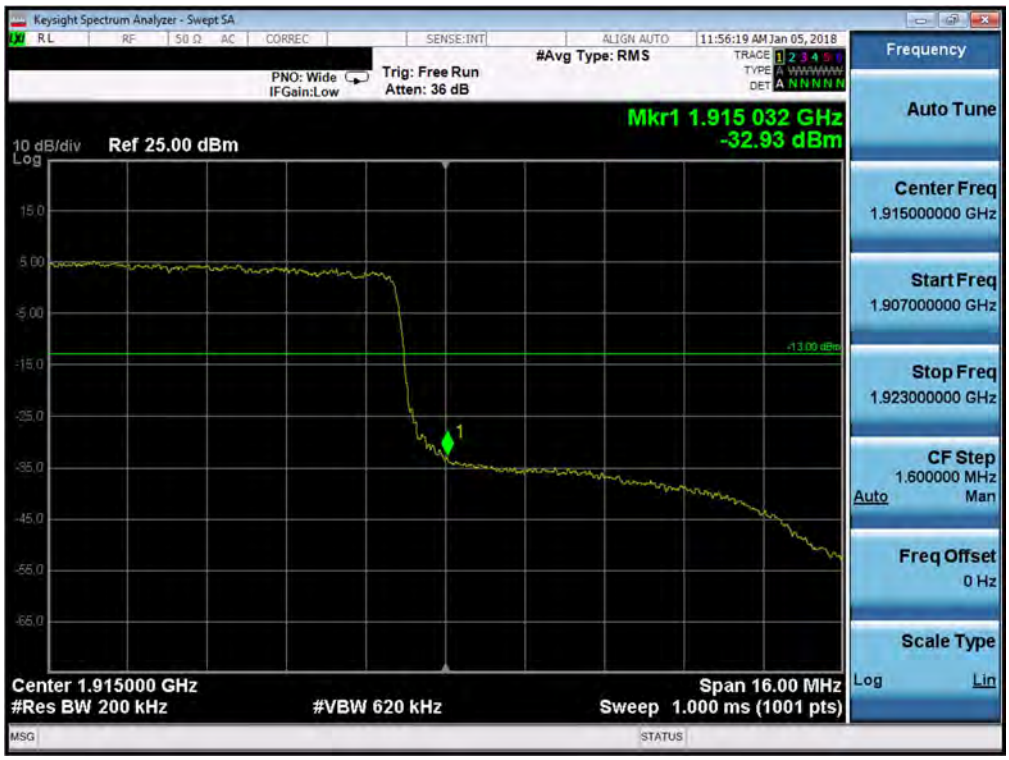
Plot 7-146. Upper Extended Band Edge Plot (Band 2 - 15.0MHz QPSK - Full RB Configuration)



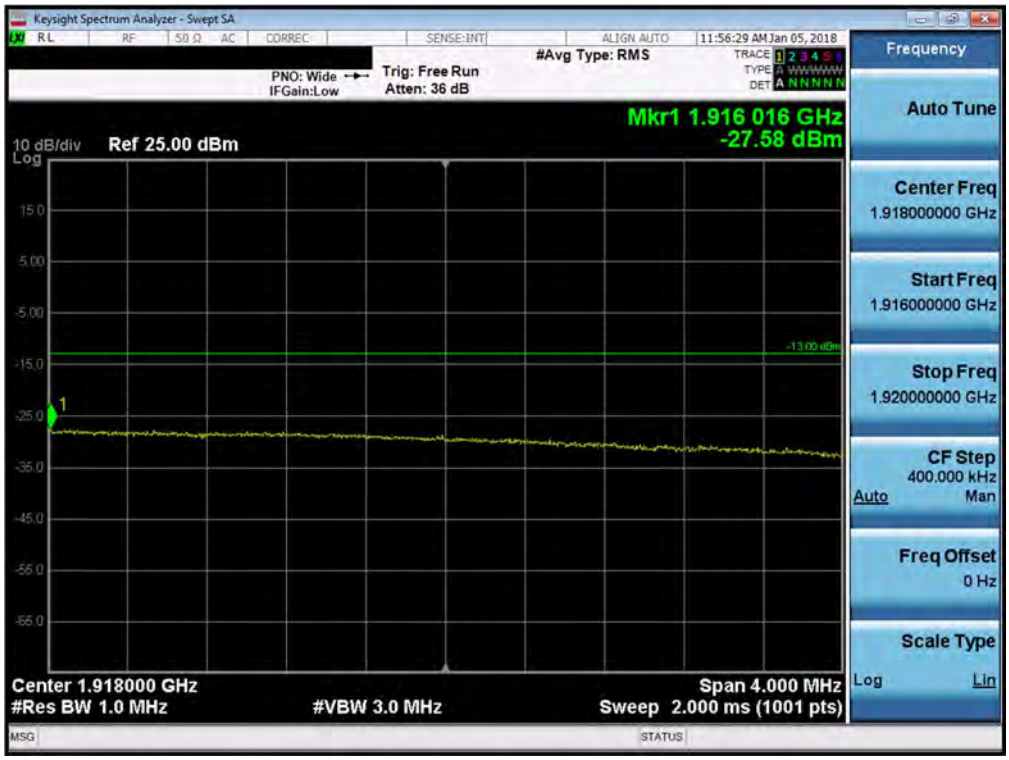
Plot 7-147. Lower Band Edge Plot (Band 2/25 - 20.0MHz QPSK - Full RB Configuration)



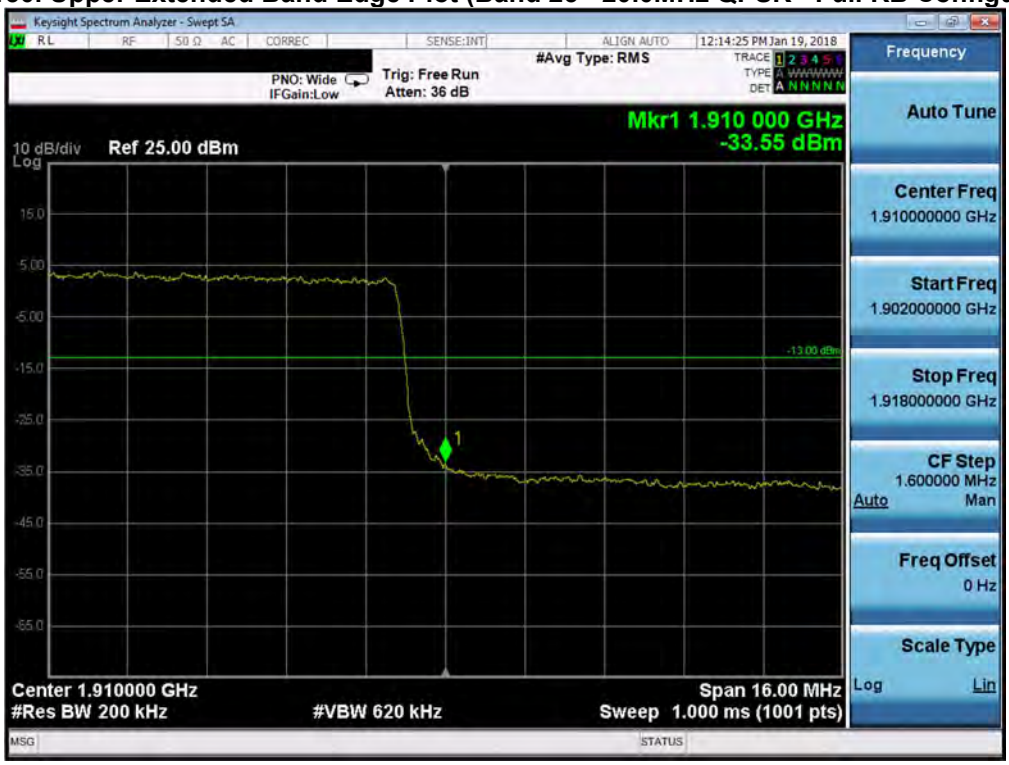
Plot 7-148. Lower Extended Band Edge Plot (Band 2/25 - 20.0MHz QPSK - Full RB Configuration)



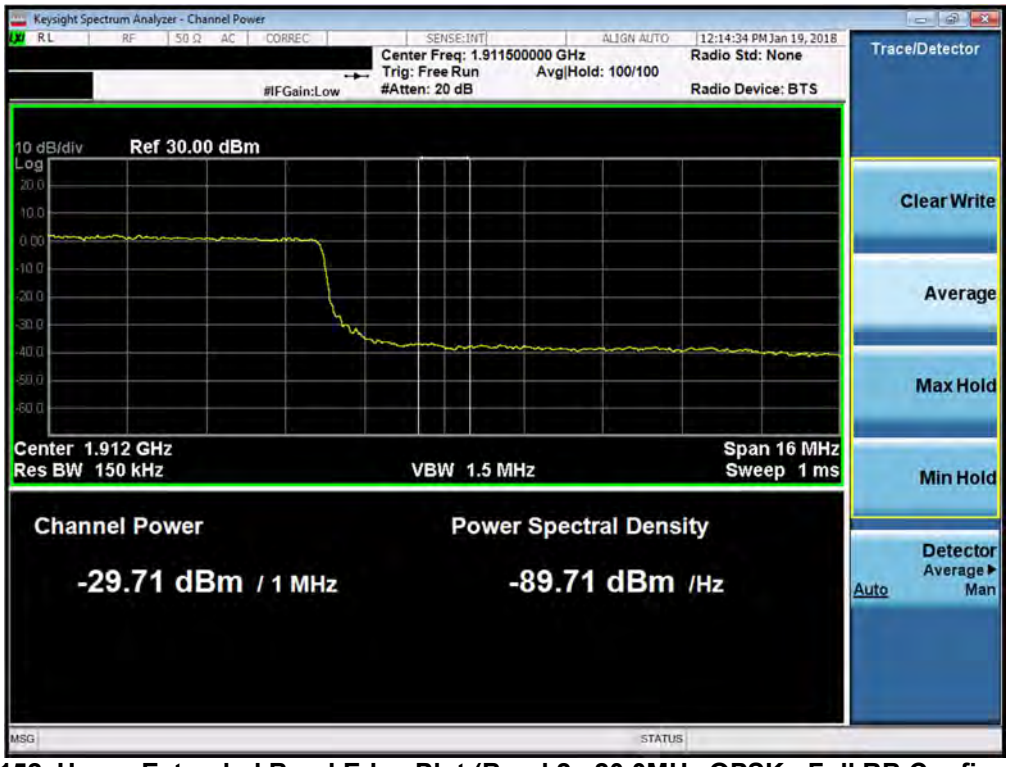
Plot 7-149. Upper Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-150. Upper Extended Band Edge Plot (Band 25 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-151. Upper Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-152. Upper Extended Band Edge Plot (Band 2 - 20.0MHz QPSK - Full RB Configuration)

7.5 Peak-Average Ratio

§24.232(d) RSS-130(4.4) RSS-132(5.4) RSS-133(6.4) RSS-139(6.5)

Test Overview

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

Test Procedure Used

KDB 971168 D01 v03 – Section 5.7.1

Test Settings

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW > Emission bandwidth of signal
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms.

Test Setup

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

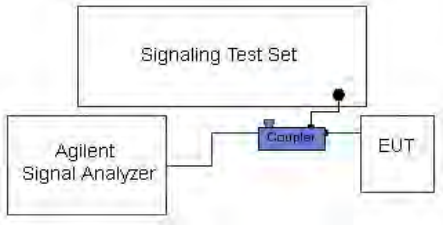
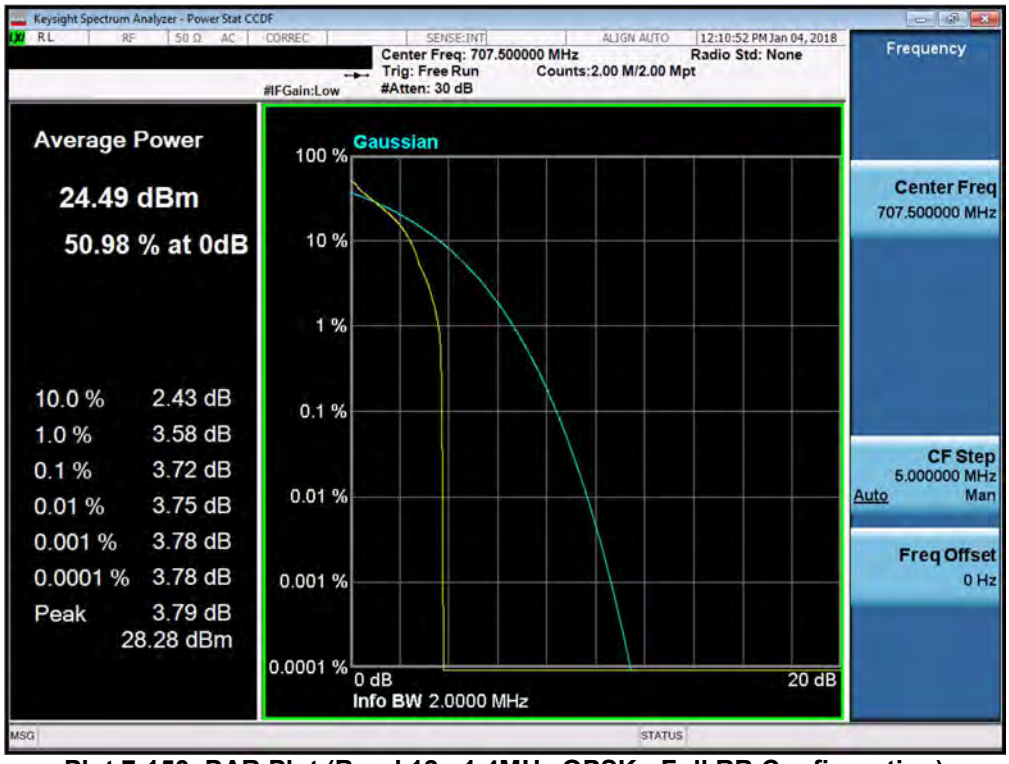


Figure 7-4. Test Instrument & Measurement Setup

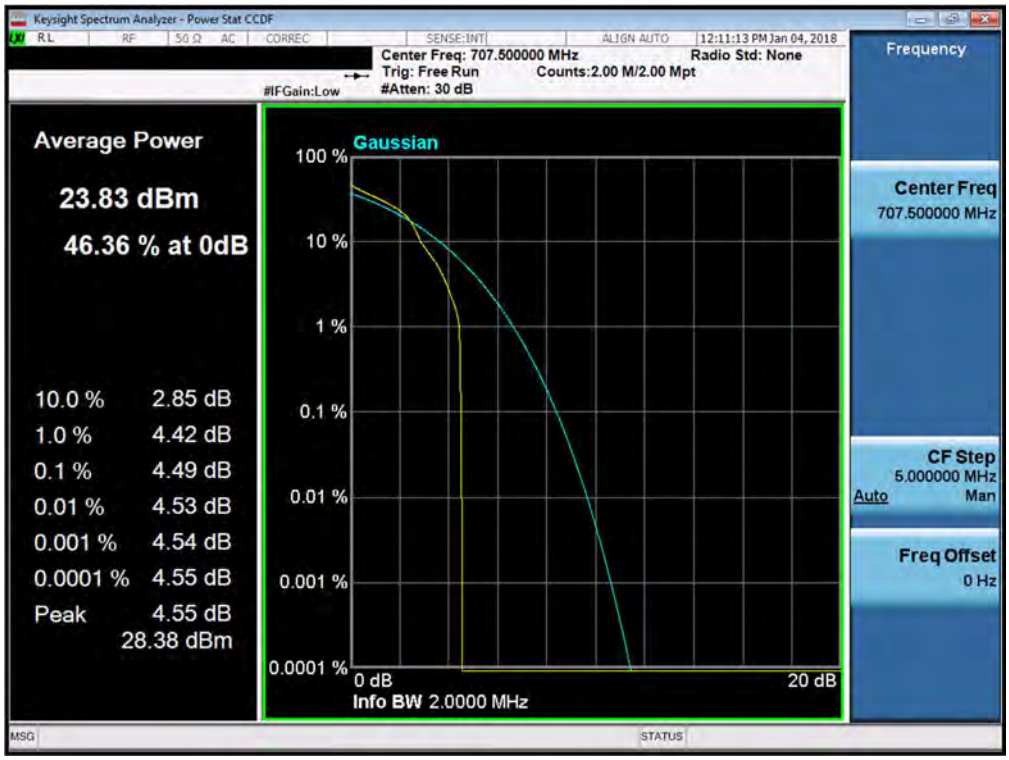
Test Notes

None.

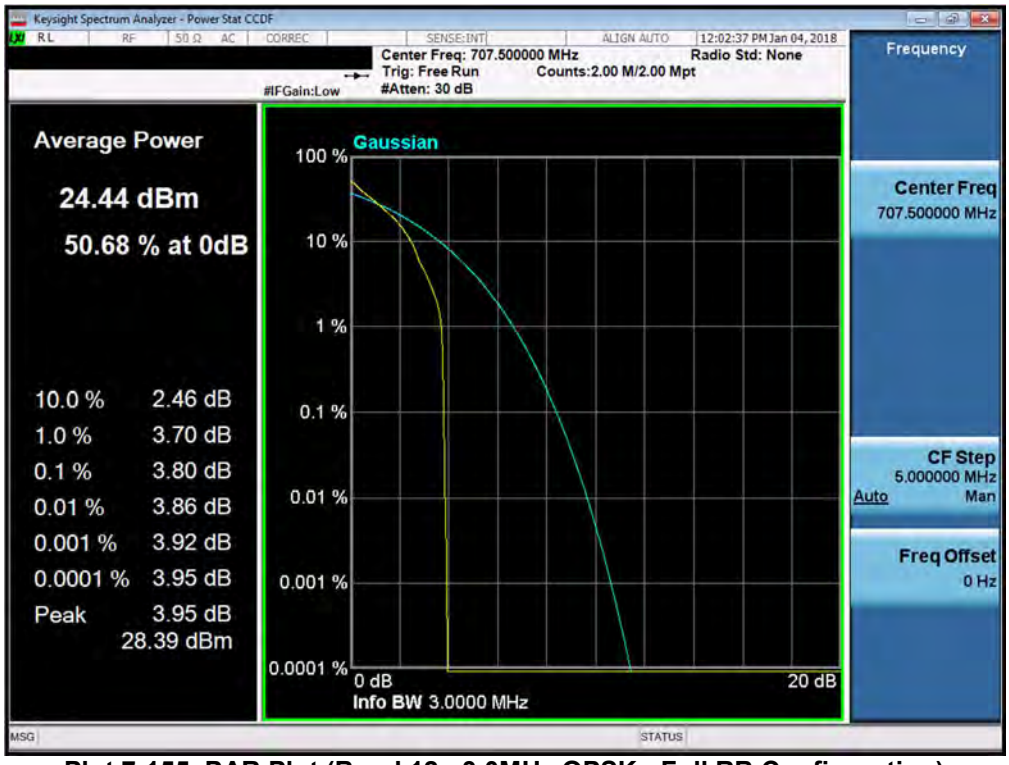
Band 12



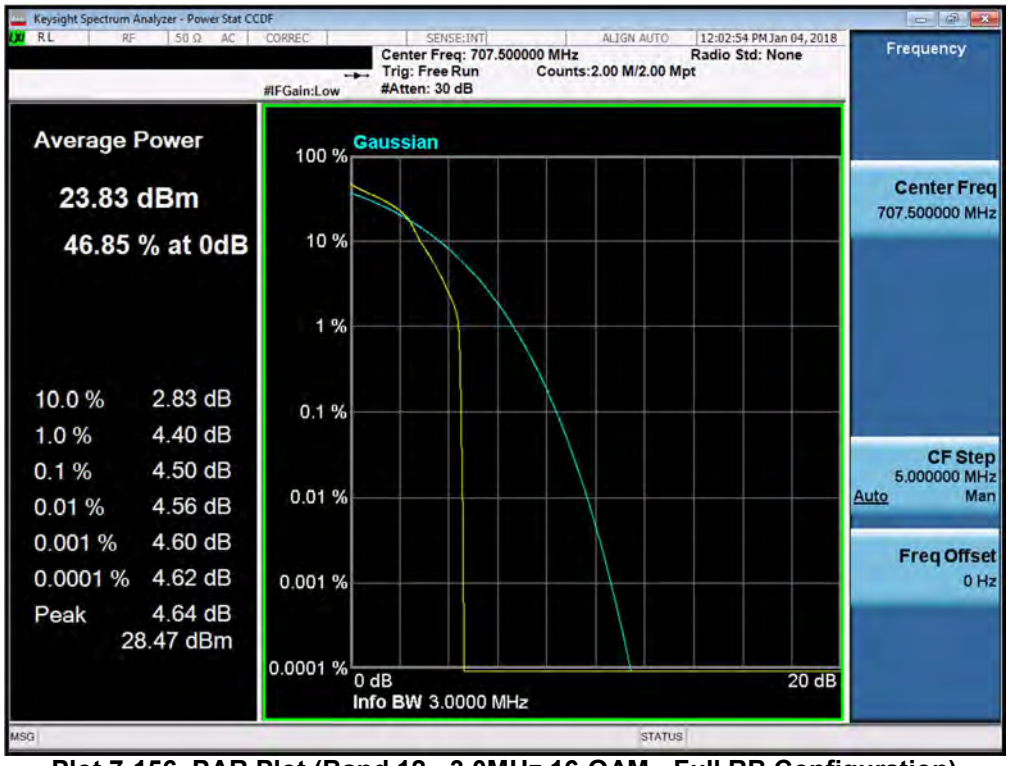
Plot 7-153. PAR Plot (Band 12 - 1.4MHz QPSK - Full RB Configuration)



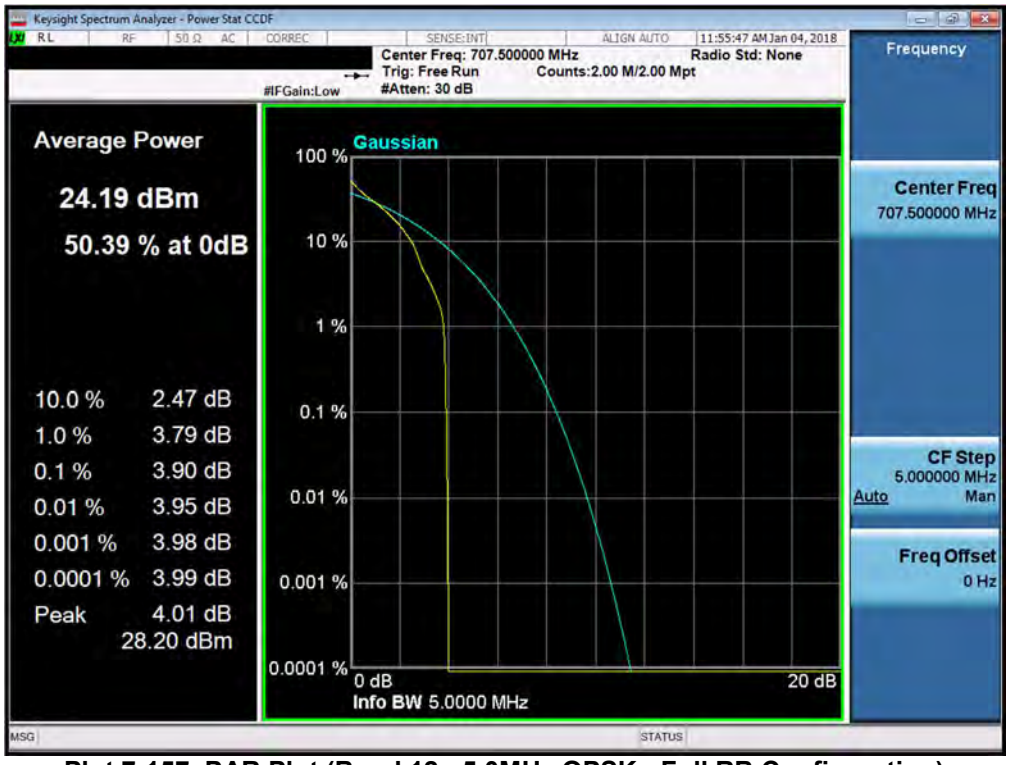
Plot 7-154. PAR Plot (Band 12 - 1.4MHz 16-QAM - Full RB Configuration)



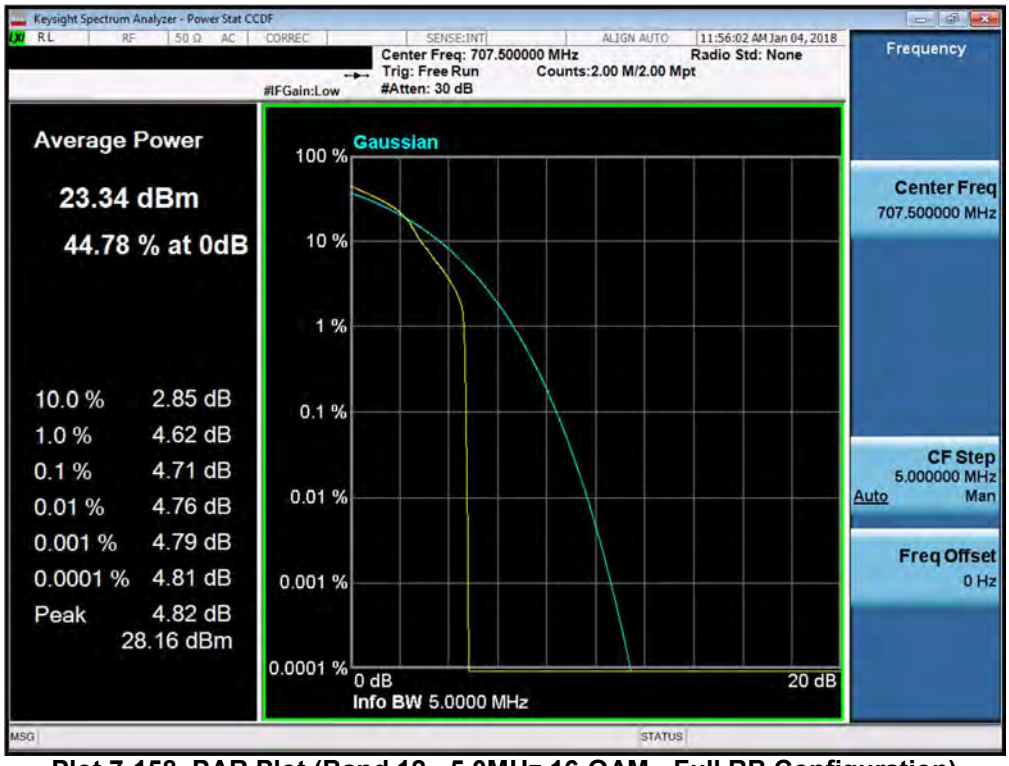
Plot 7-155. PAR Plot (Band 12 - 3.0MHz QPSK - Full RB Configuration)



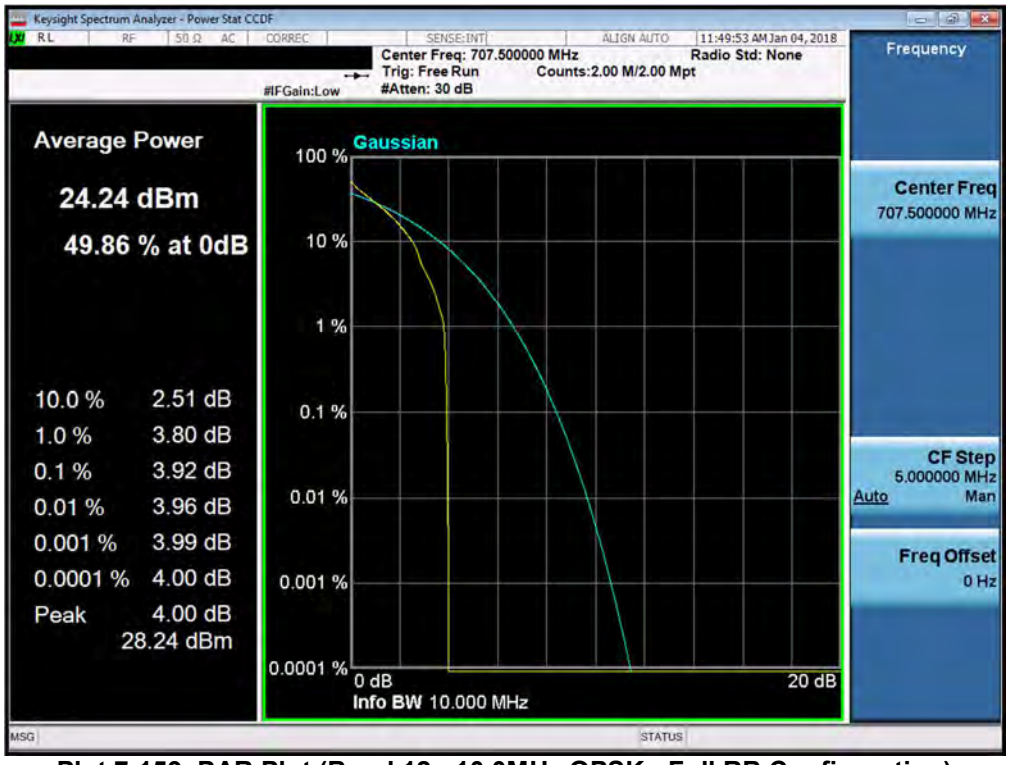
Plot 7-156. PAR Plot (Band 12 - 3.0MHz 16-QAM - Full RB Configuration)



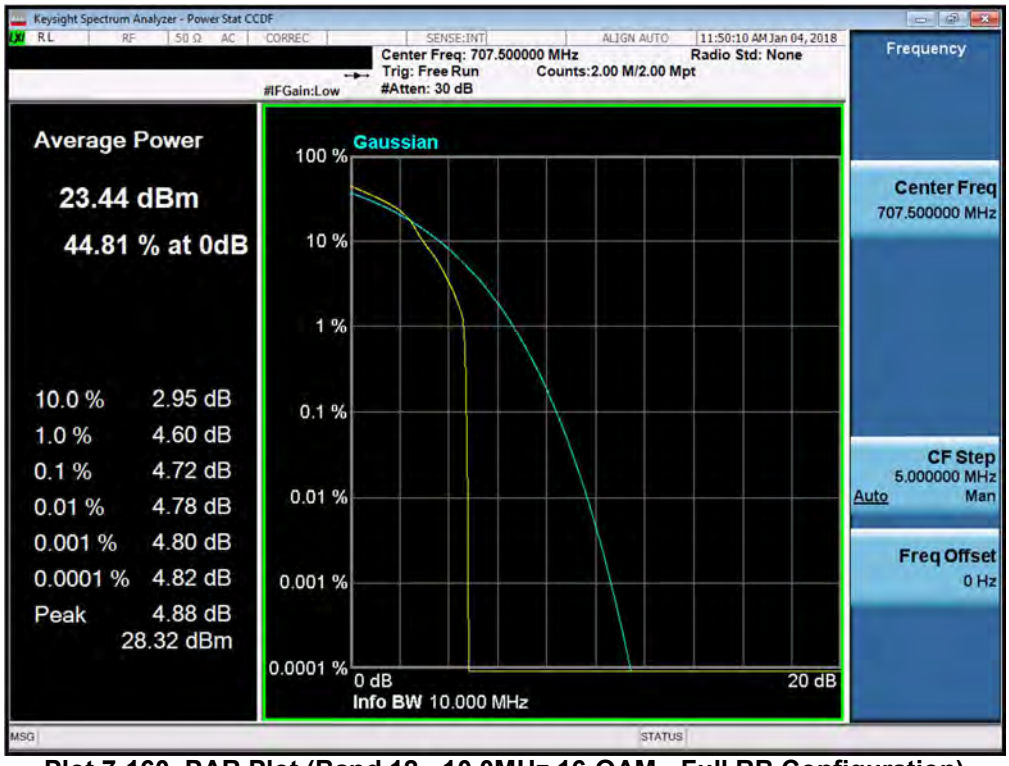
Plot 7-157. PAR Plot (Band 12 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-158. PAR Plot (Band 12 - 5.0MHz 16-QAM - Full RB Configuration)

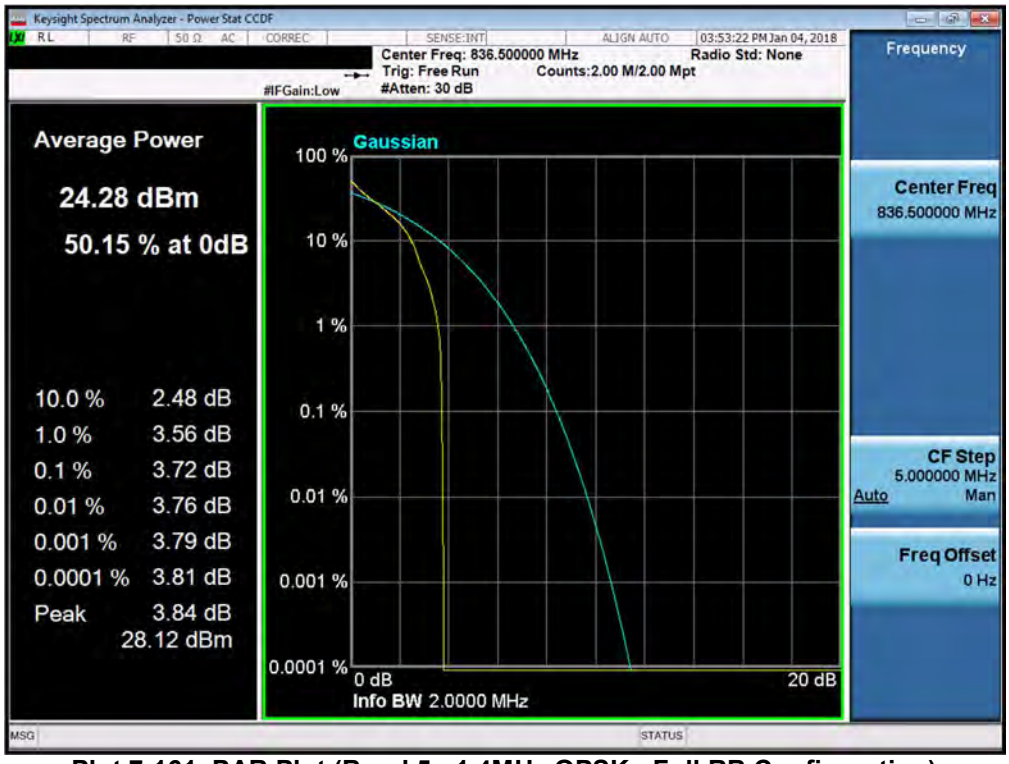


Plot 7-159. PAR Plot (Band 12 - 10.0MHz QPSK - Full RB Configuration)

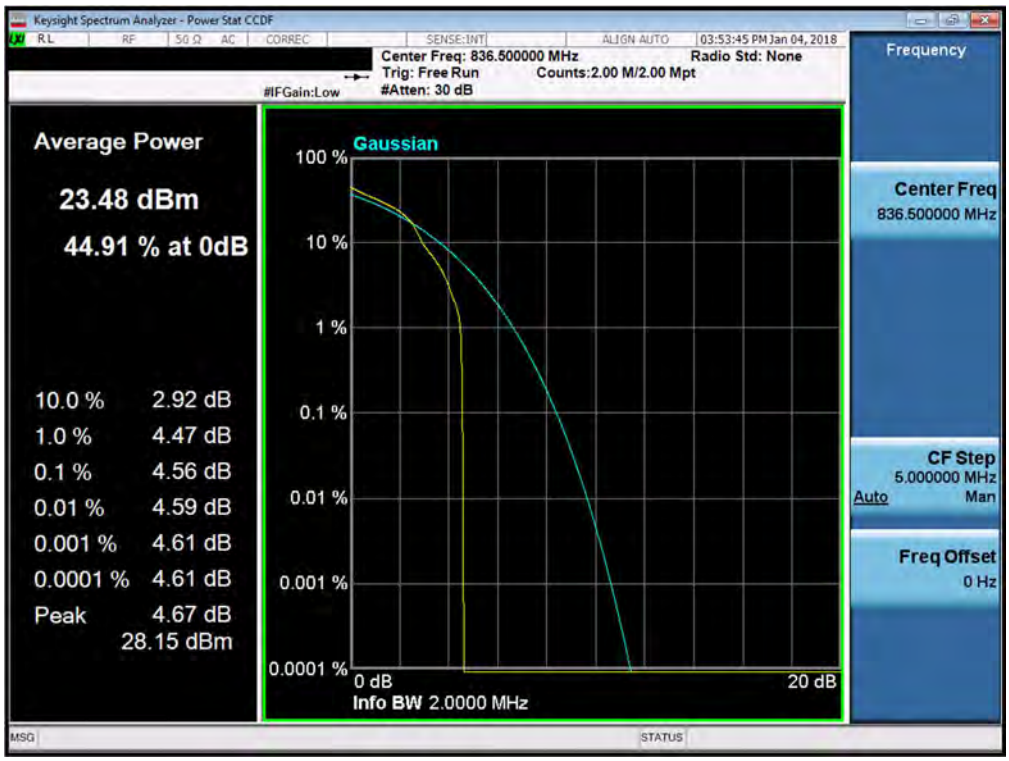


Plot 7-160. PAR Plot (Band 12 - 10.0MHz 16-QAM - Full RB Configuration)

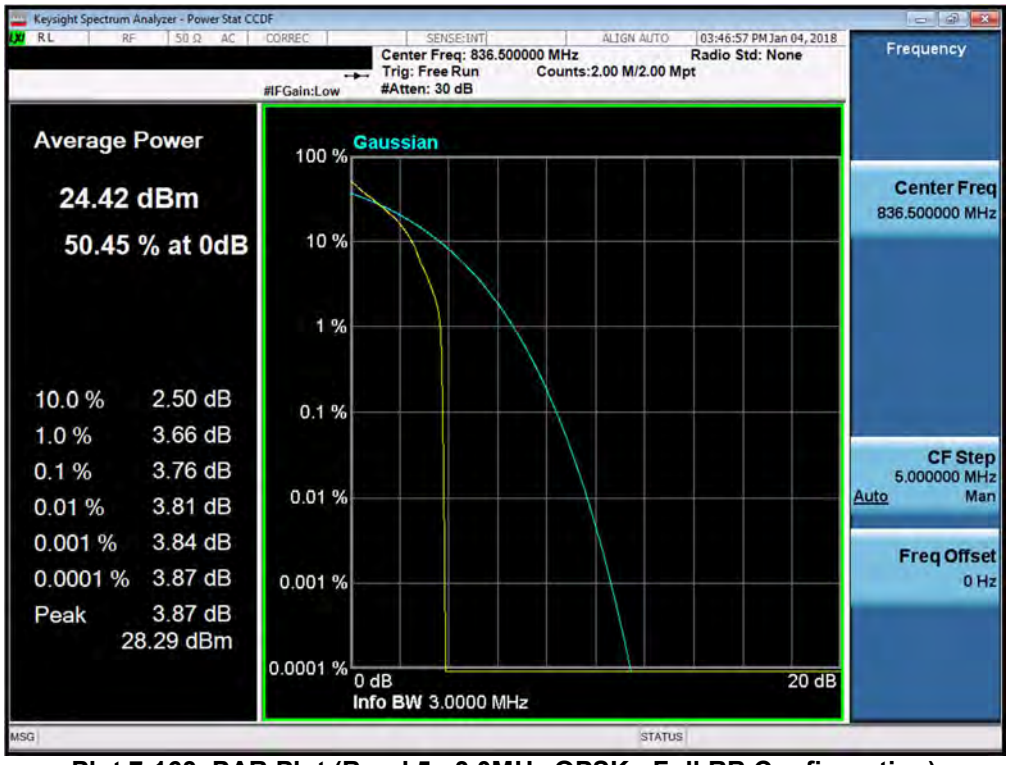
Band 5



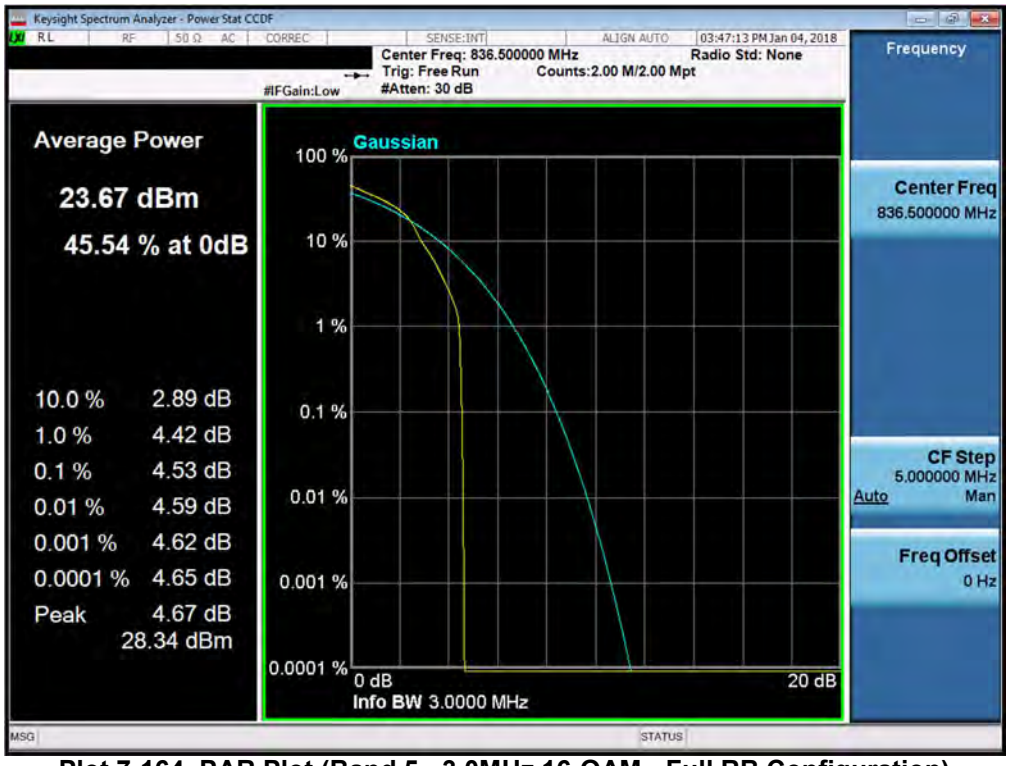
Plot 7-161. PAR Plot (Band 5 - 1.4MHz QPSK - Full RB Configuration)



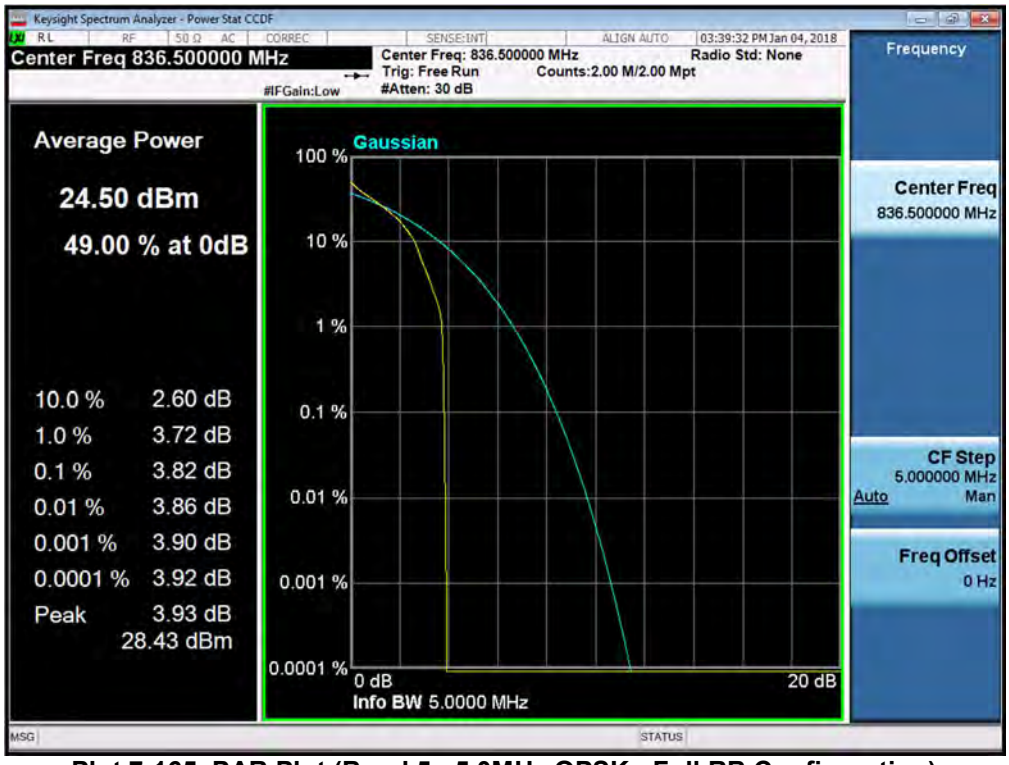
Plot 7-162. PAR Plot (Band 5 - 1.4MHz 16-QAM - Full RB Configuration)



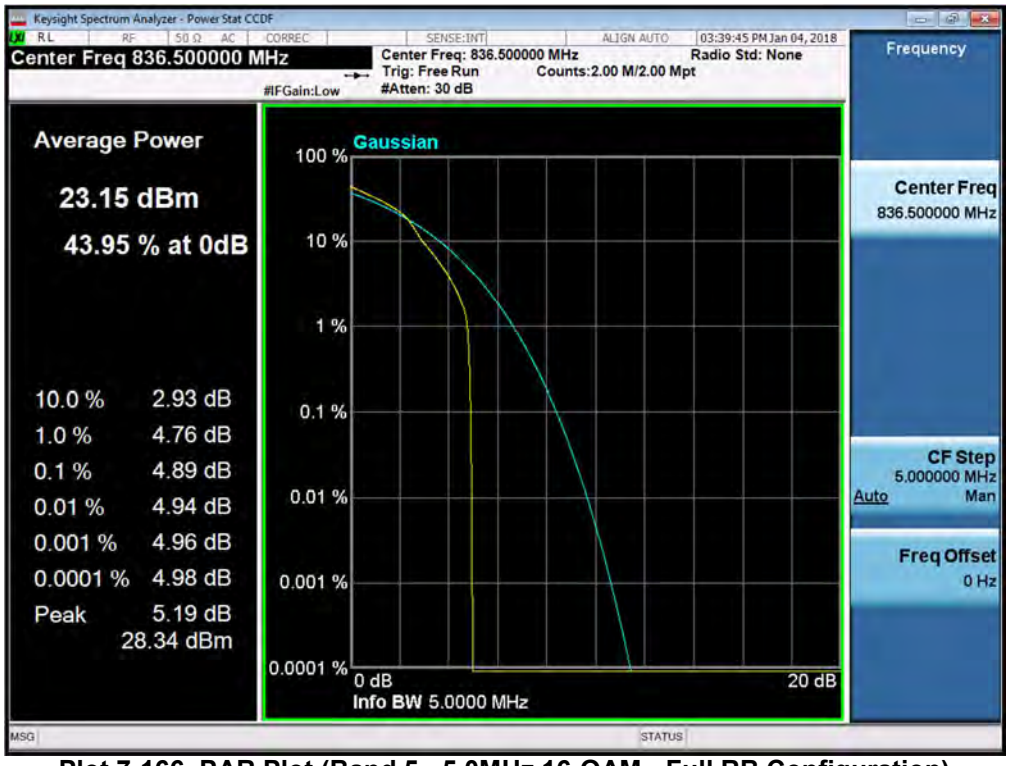
Plot 7-163. PAR Plot (Band 5 - 3.0MHz QPSK - Full RB Configuration)



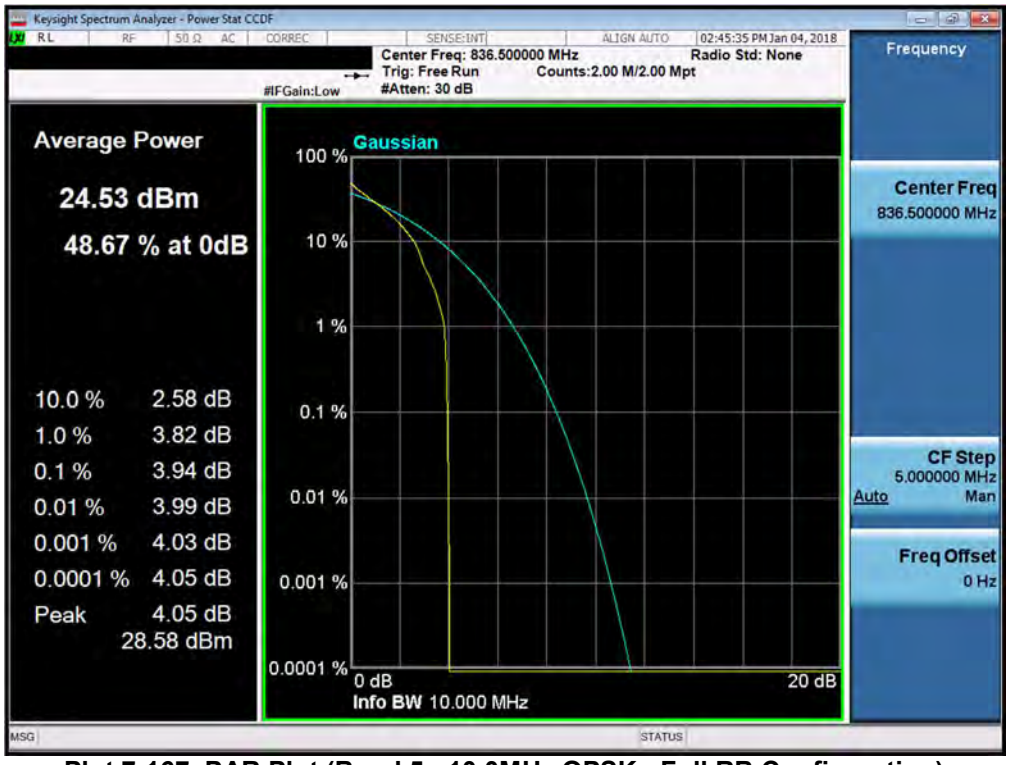
Plot 7-164. PAR Plot (Band 5 - 3.0MHz 16-QAM - Full RB Configuration)



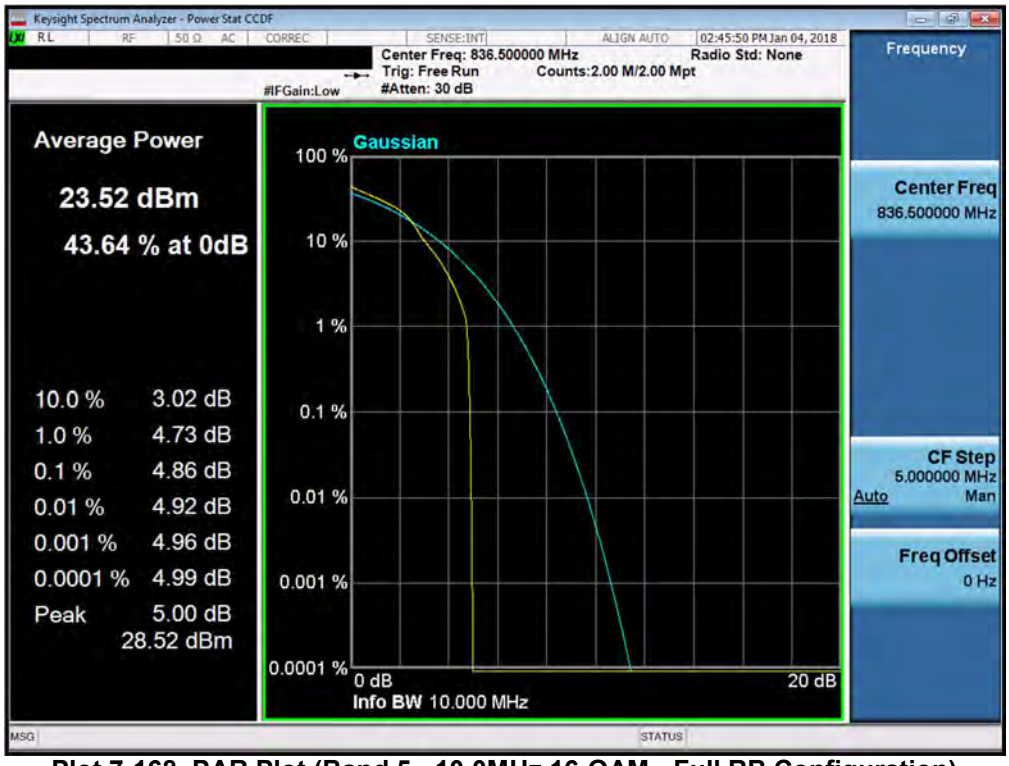
Plot 7-165. PAR Plot (Band 5 - 5.0MHz QPSK - Full RB Configuration)



Plot 7-166. PAR Plot (Band 5 - 5.0MHz 16-QAM - Full RB Configuration)

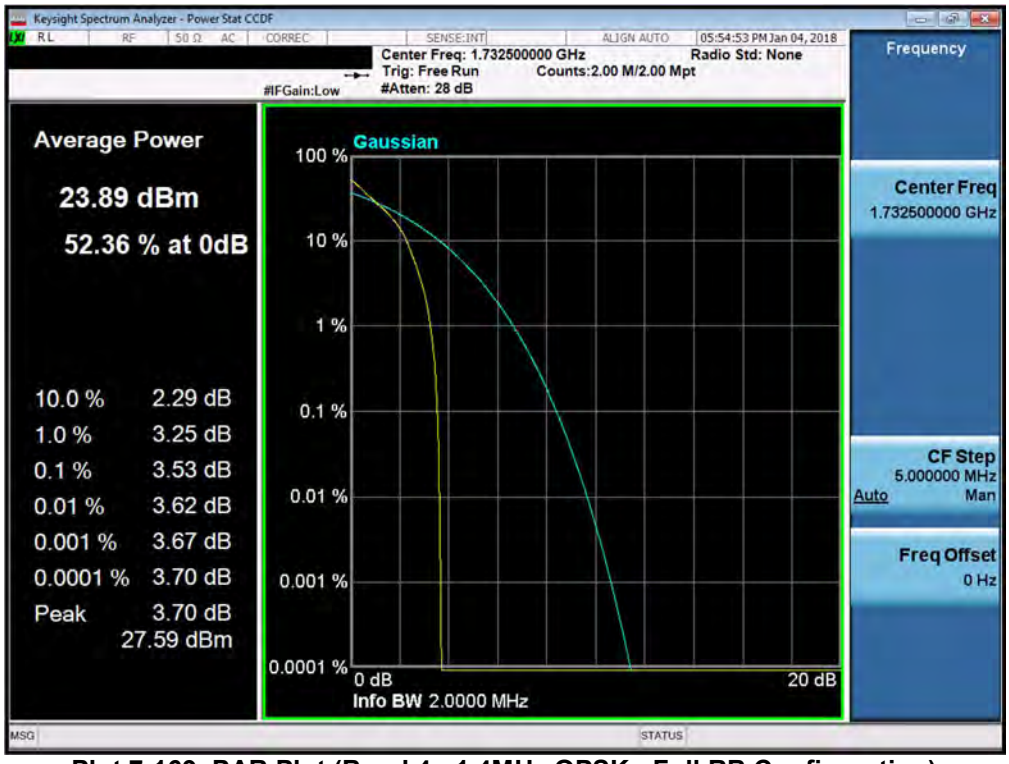


Plot 7-167. PAR Plot (Band 5 - 10.0MHz QPSK - Full RB Configuration)

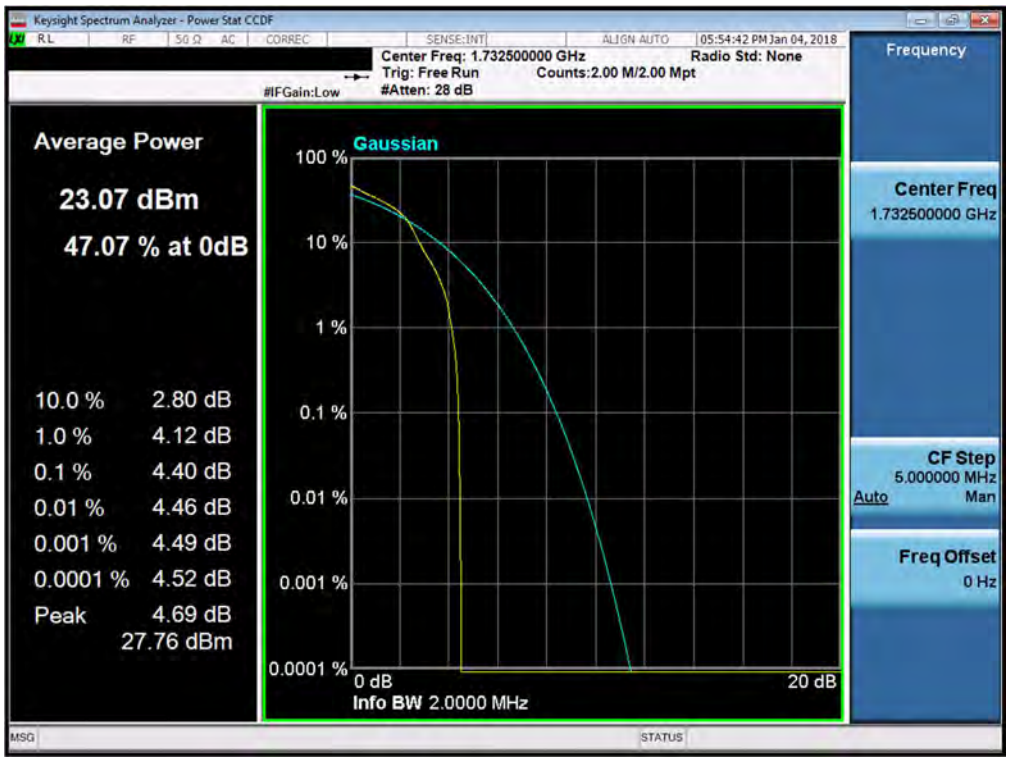


Plot 7-168. PAR Plot (Band 5 - 10.0MHz 16-QAM - Full RB Configuration)

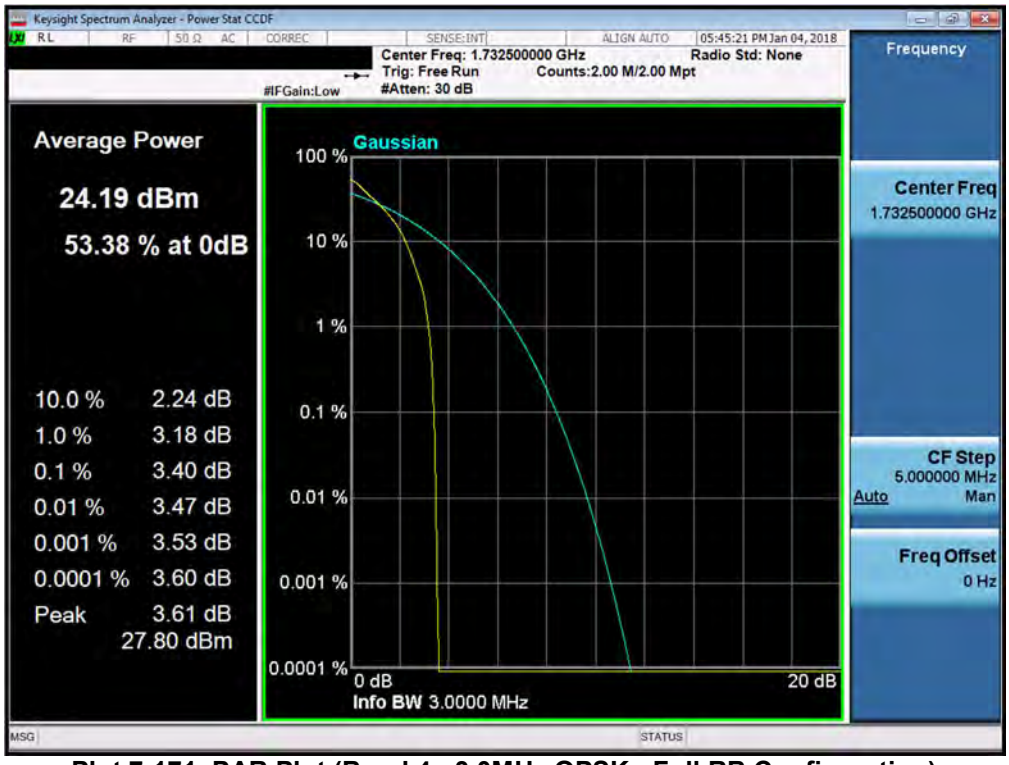
Band 4



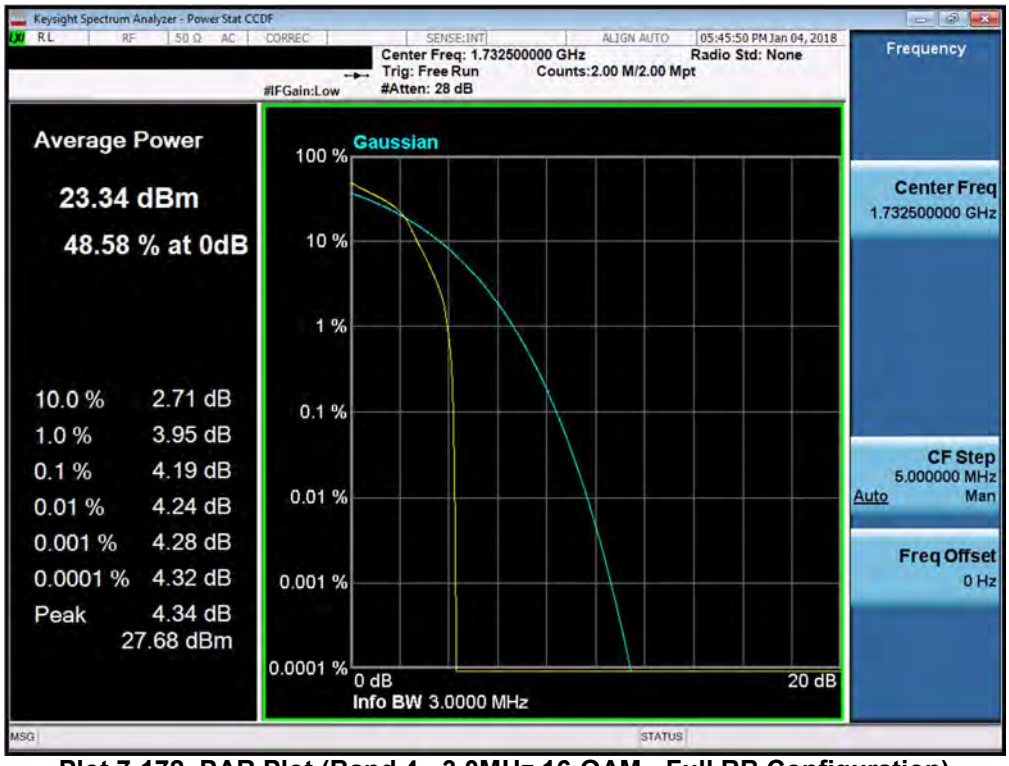
Plot 7-169. PAR Plot (Band 4 - 1.4MHz QPSK - Full RB Configuration)



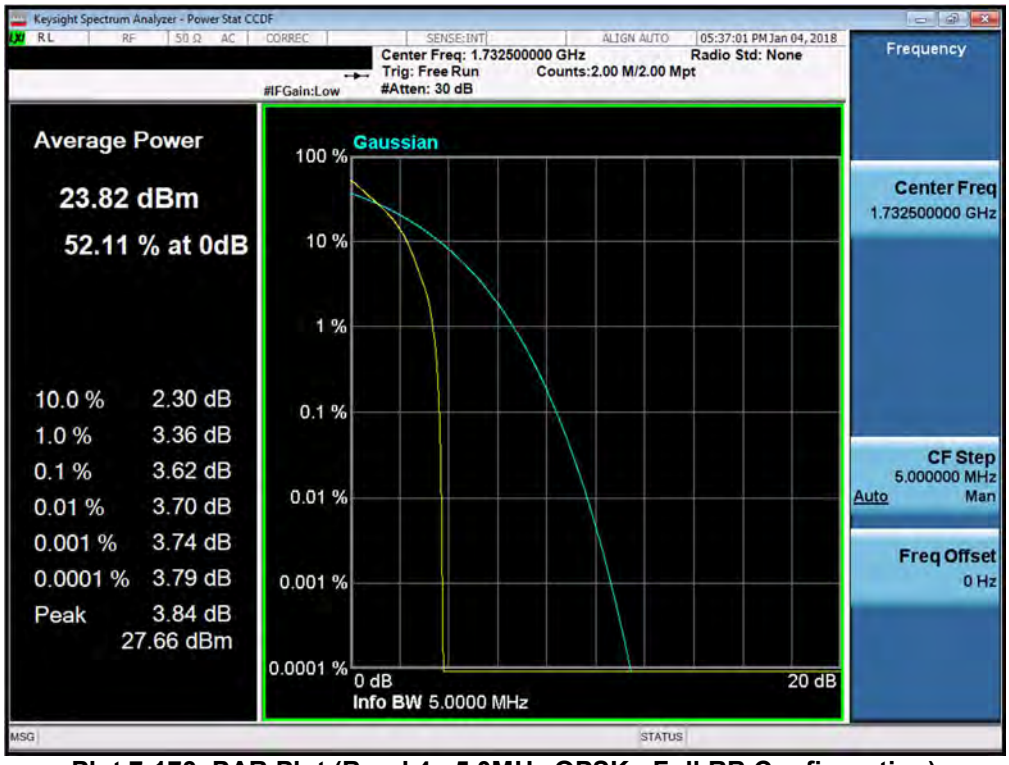
Plot 7-170. PAR Plot (Band 4 - 1.4MHz 16-QAM - Full RB Configuration)



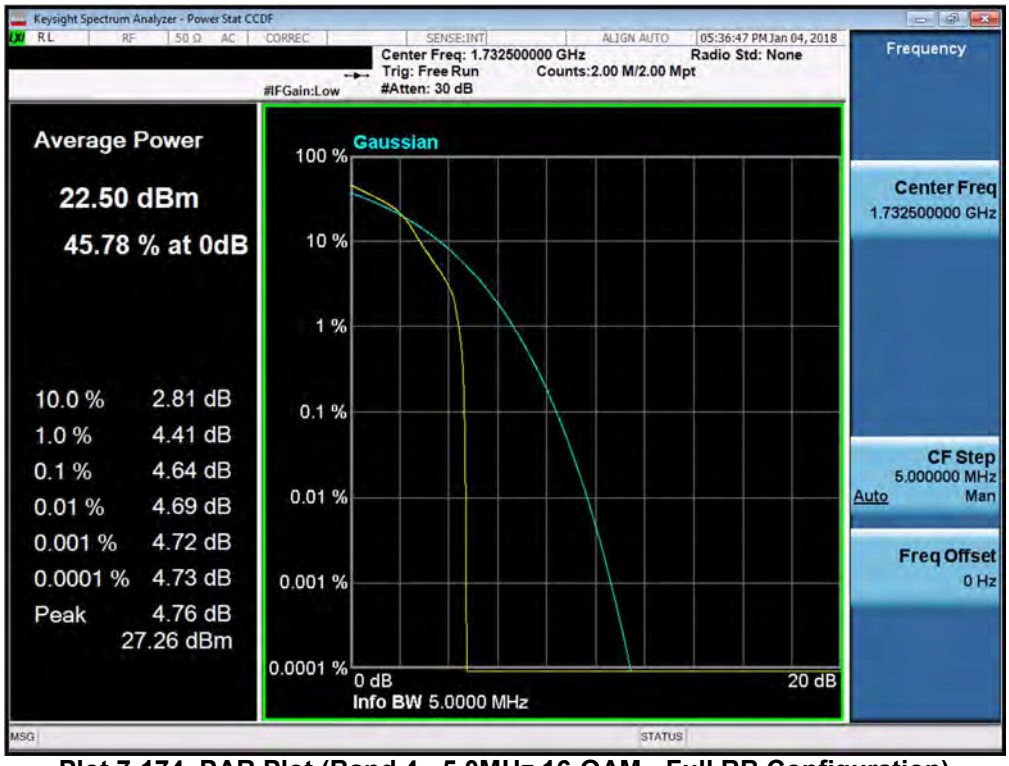
Plot 7-171. PAR Plot (Band 4 - 3.0MHz QPSK - Full RB Configuration)



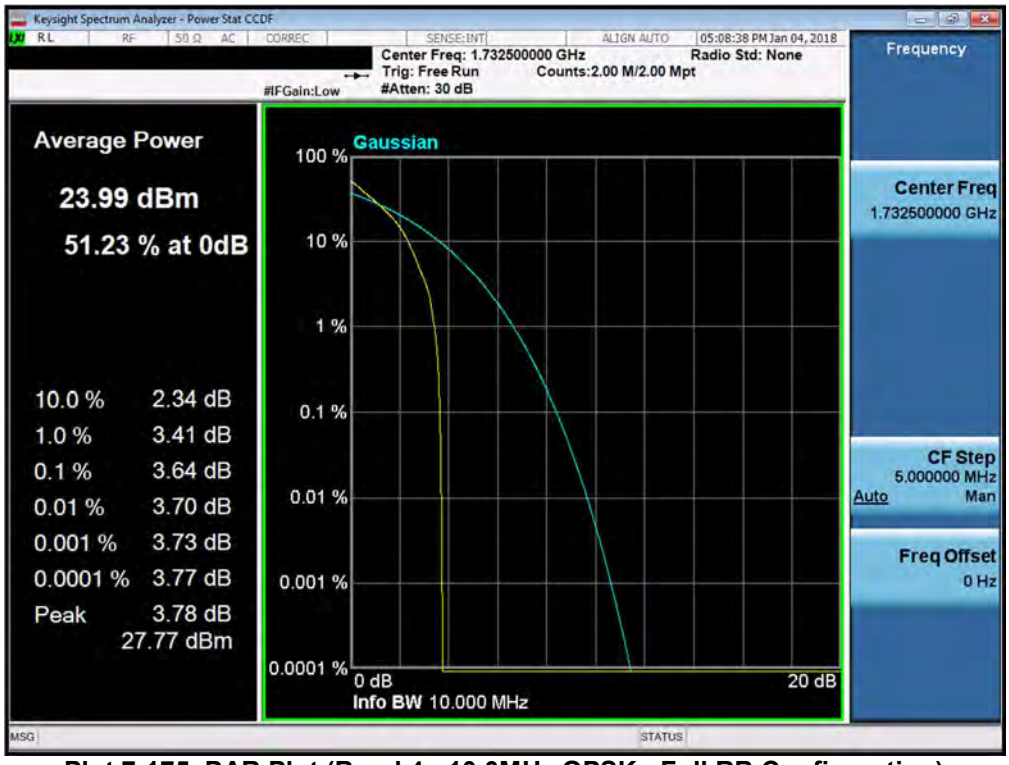
Plot 7-172. PAR Plot (Band 4 - 3.0MHz 16-QAM - Full RB Configuration)



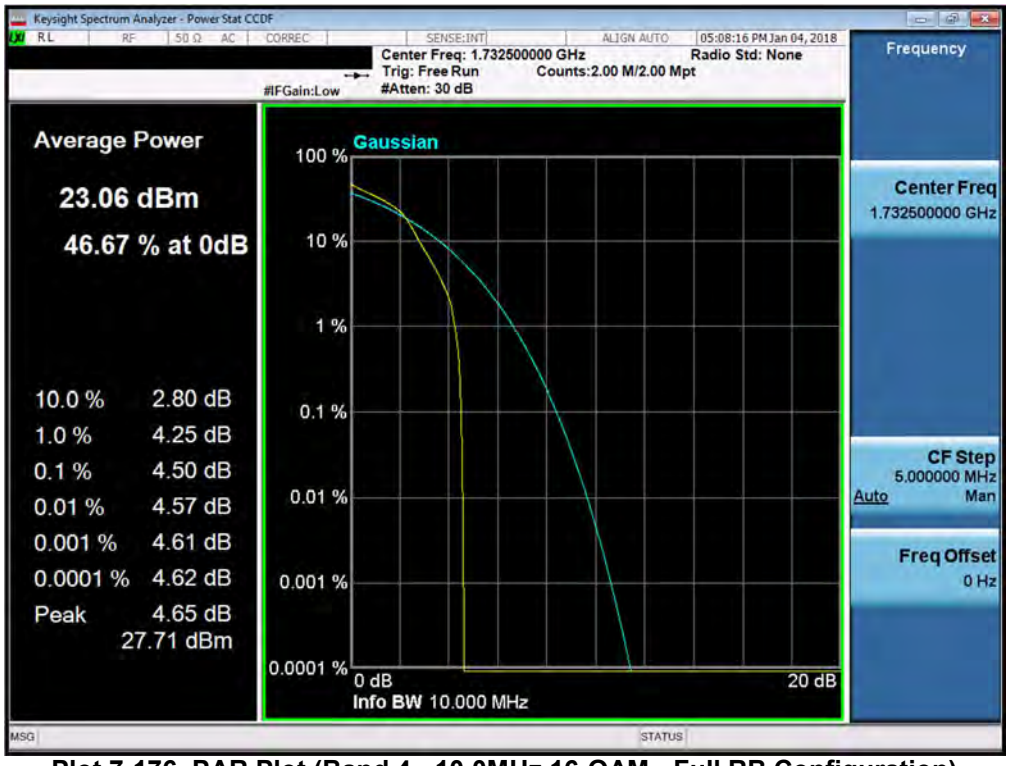
Plot 7-173. PAR Plot (Band 4 - 5.0MHz QPSK - Full RB Configuration)



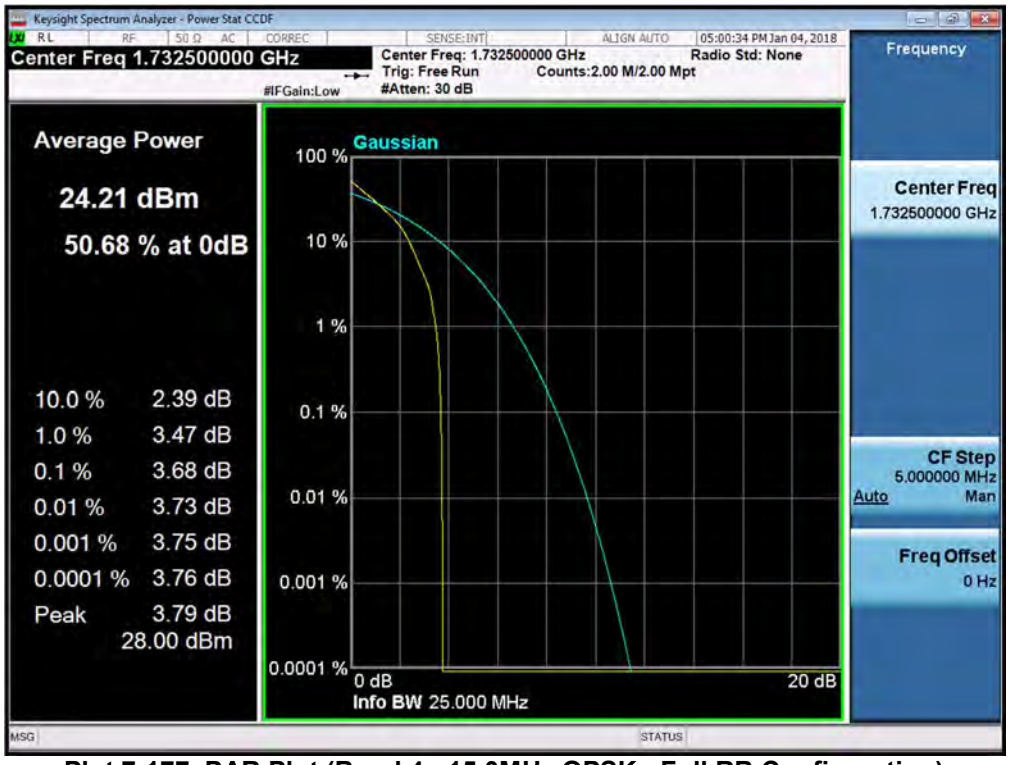
Plot 7-174. PAR Plot (Band 4 - 5.0MHz 16-QAM - Full RB Configuration)



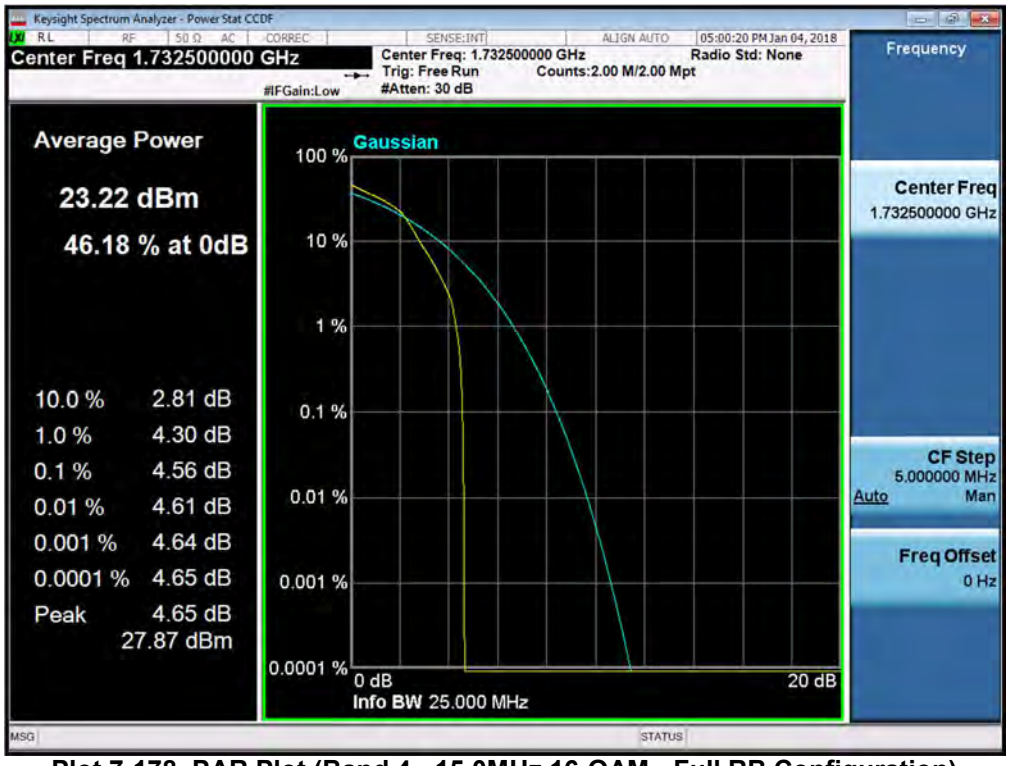
Plot 7-175. PAR Plot (Band 4 - 10.0MHz QPSK - Full RB Configuration)



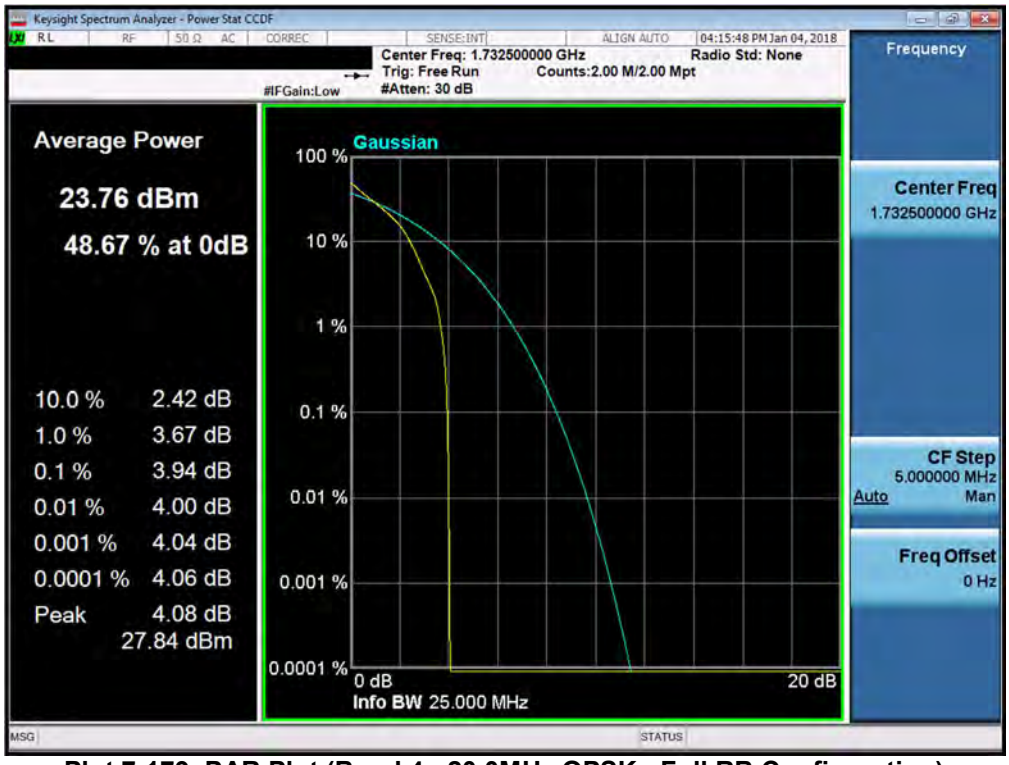
Plot 7-176. PAR Plot (Band 4 - 10.0MHz 16-QAM - Full RB Configuration)



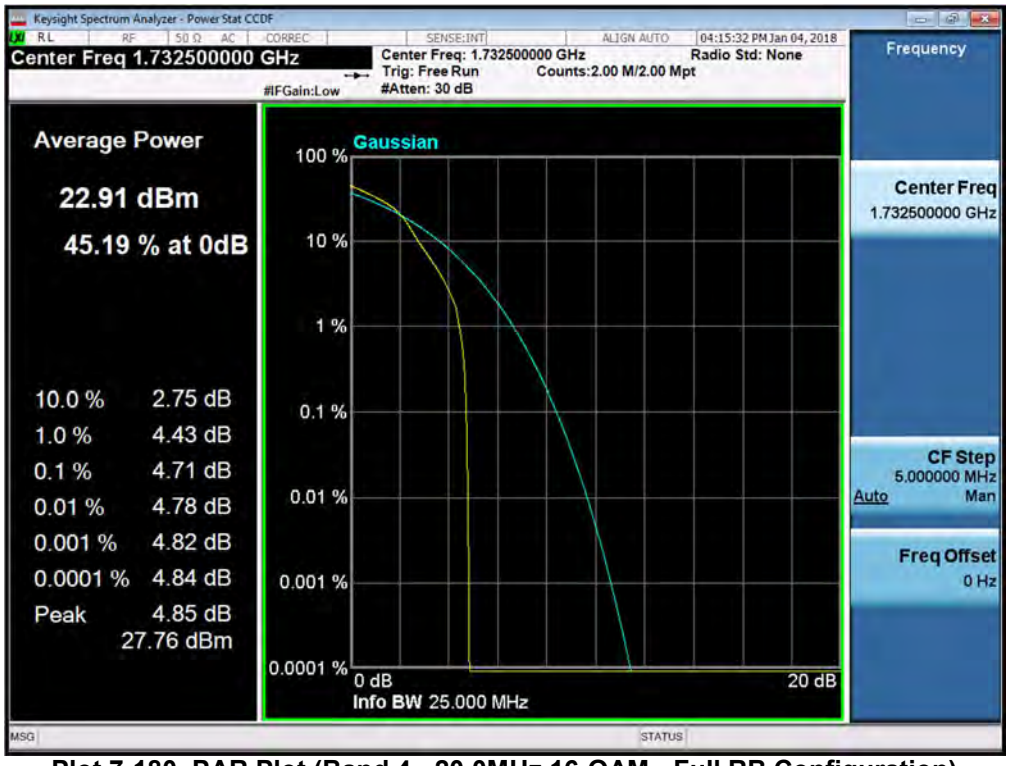
Plot 7-177. PAR Plot (Band 4 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-178. PAR Plot (Band 4 - 15.0MHz 16-QAM - Full RB Configuration)

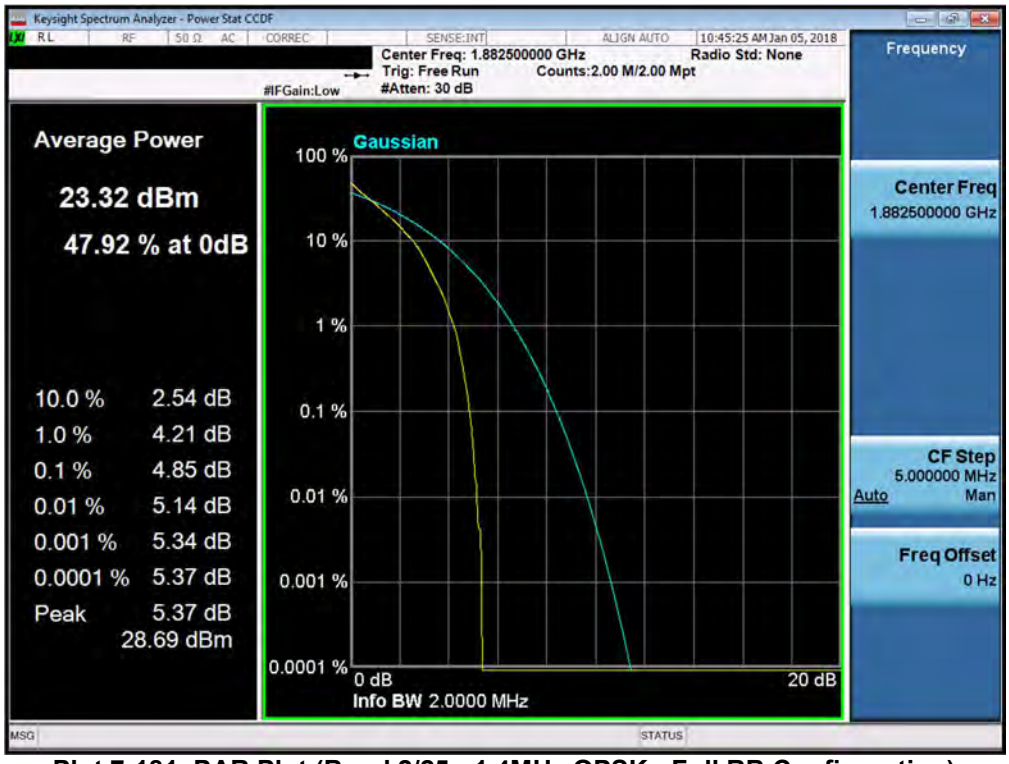


Plot 7-179. PAR Plot (Band 4 - 20.0MHz QPSK - Full RB Configuration)

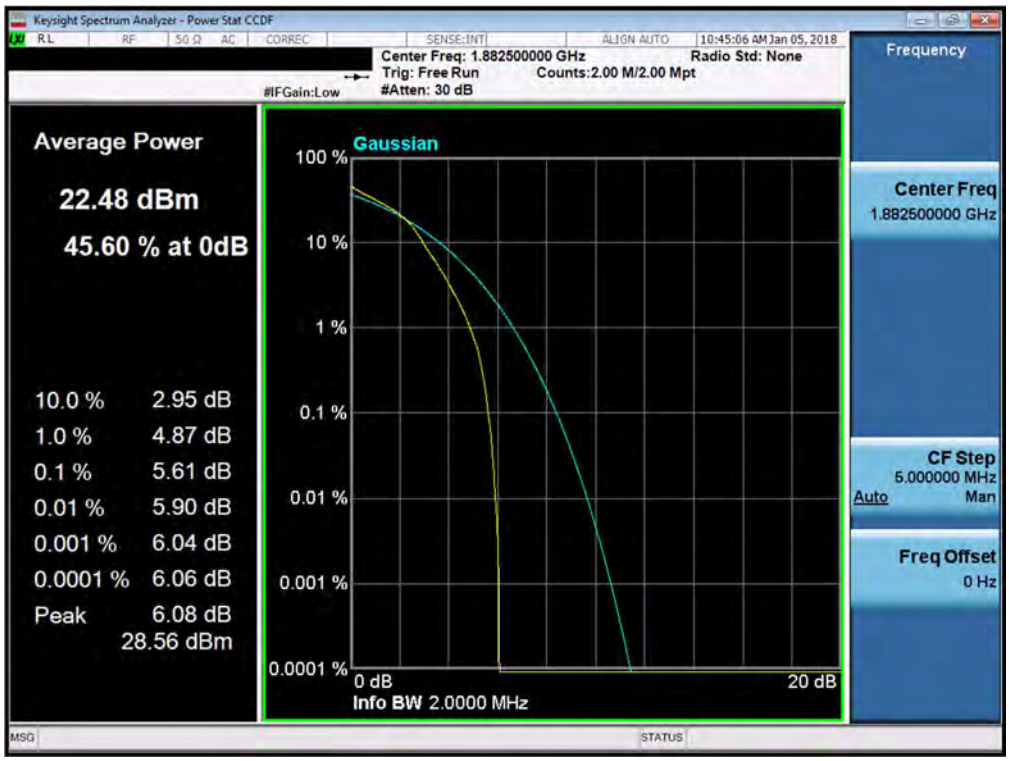


Plot 7-180. PAR Plot (Band 4 - 20.0MHz 16-QAM - Full RB Configuration)

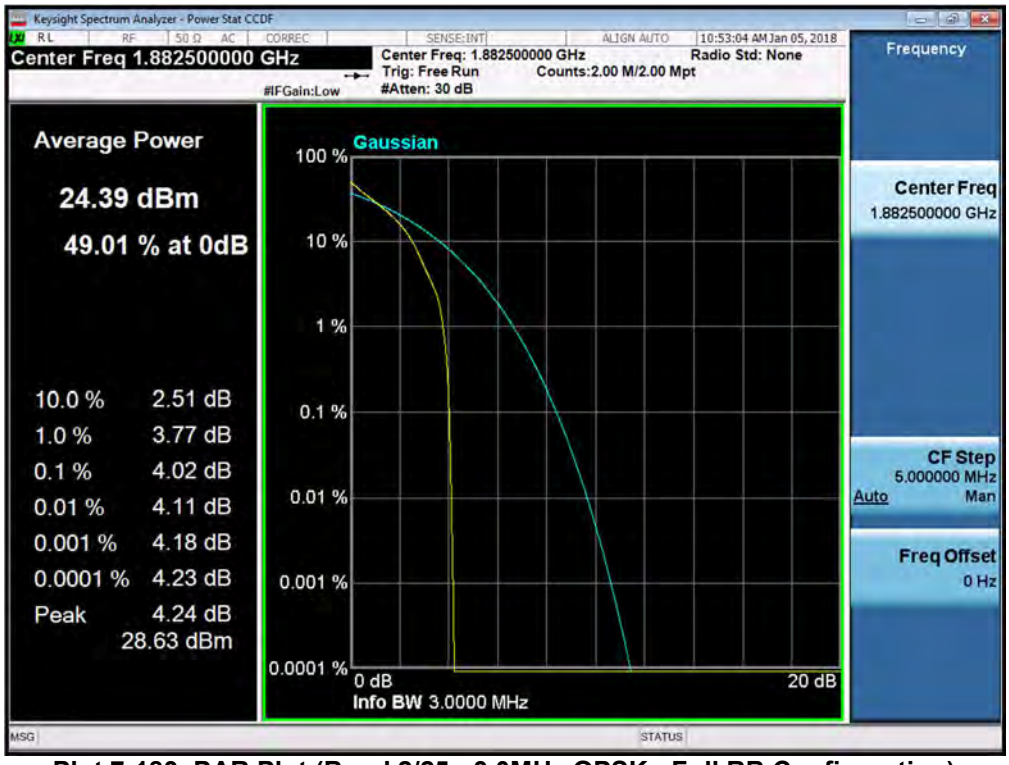
Band 2/25



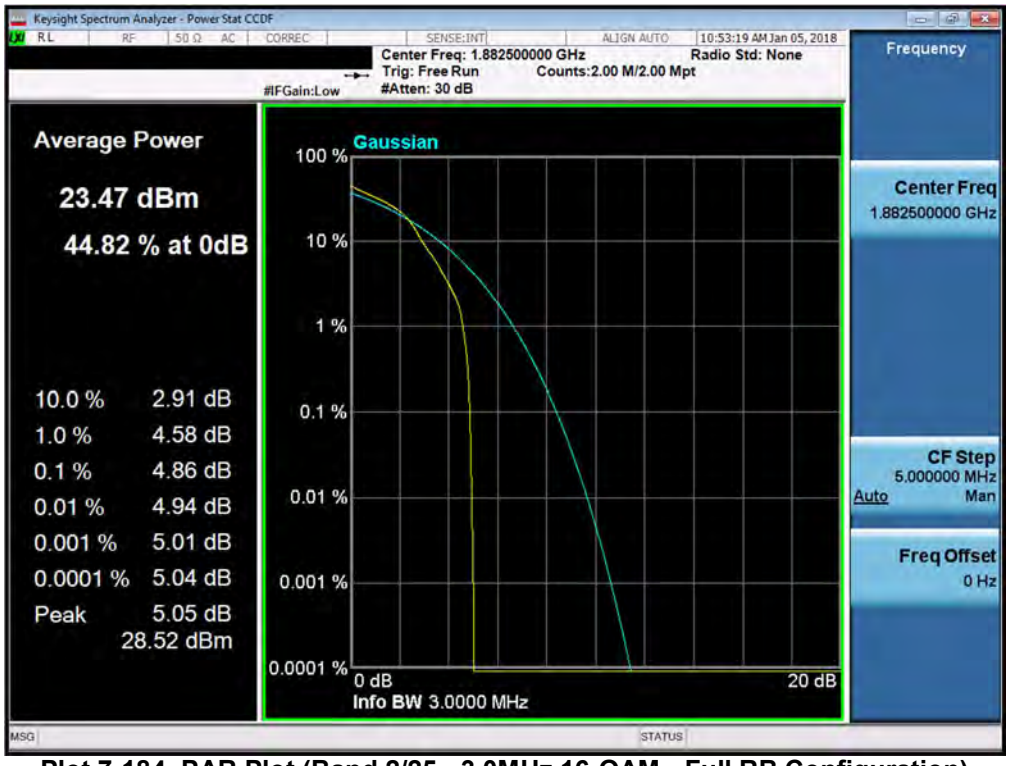
Plot 7-181. PAR Plot (Band 2/25 - 1.4MHz QPSK - Full RB Configuration)



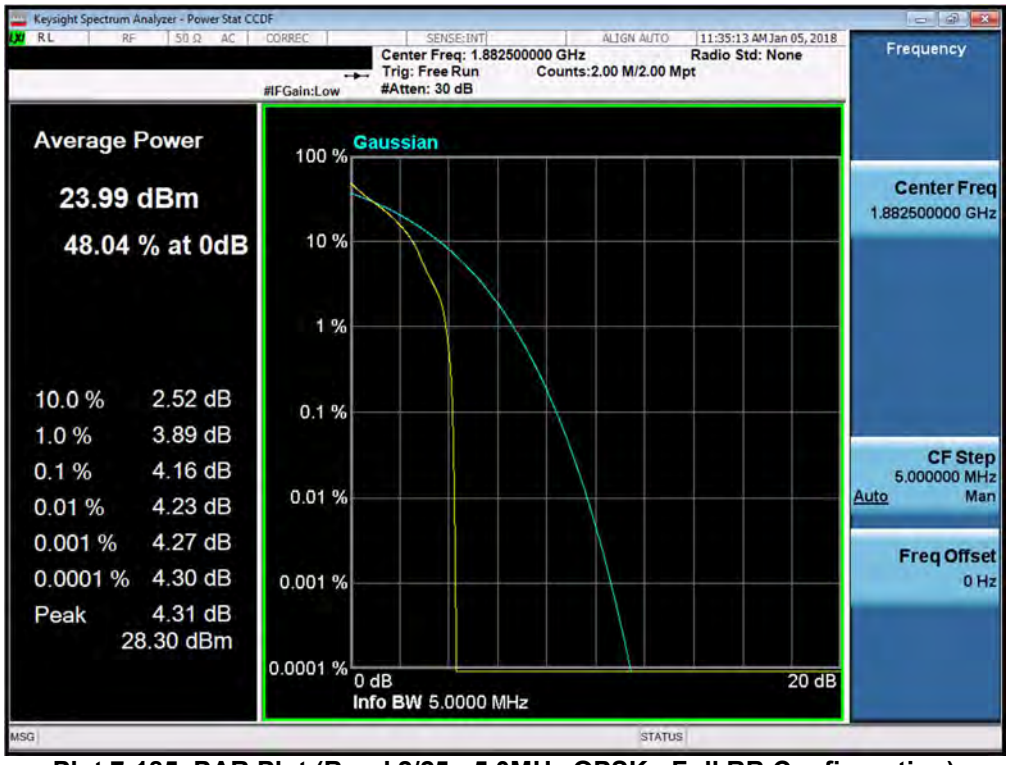
Plot 7-182. PAR Plot (Band 2/25 - 1.4MHz 16-QAM - Full RB Configuration)



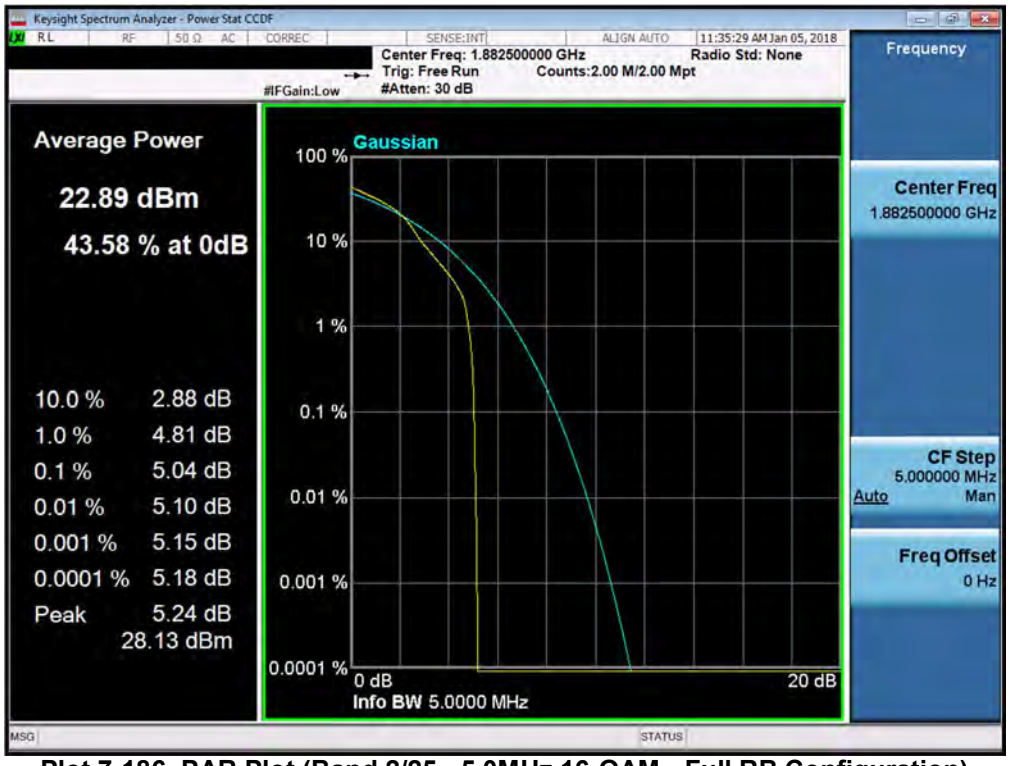
Plot 7-183. PAR Plot (Band 2/25 - 3.0MHz QPSK - Full RB Configuration)



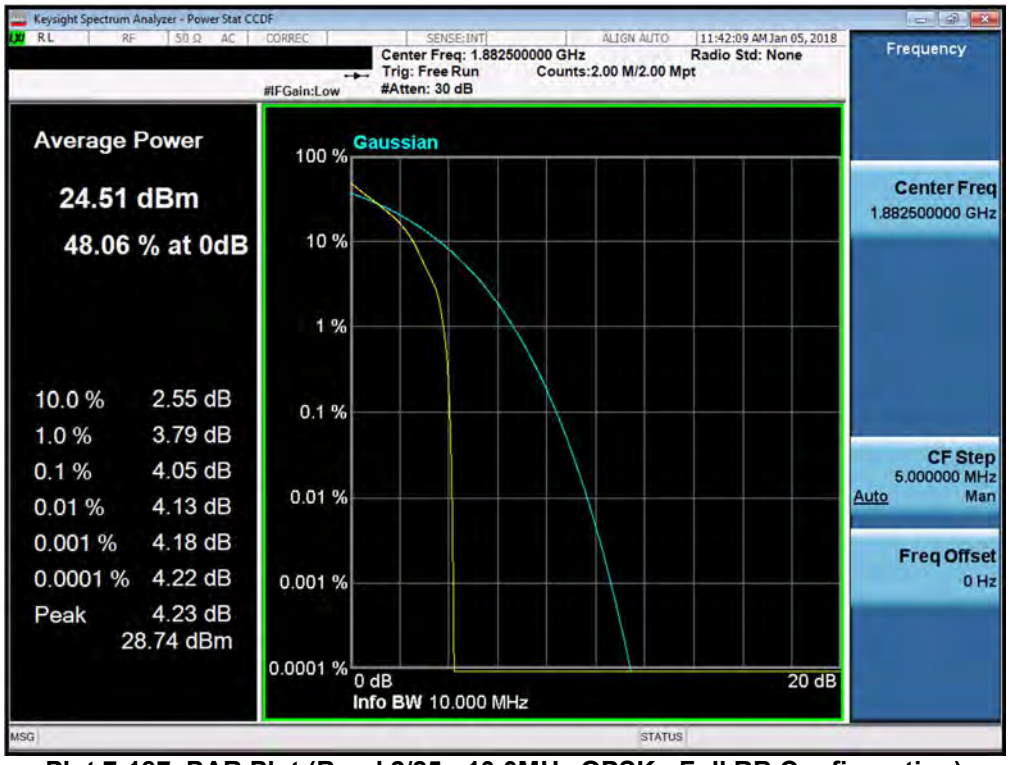
Plot 7-184. PAR Plot (Band 2/25 - 3.0MHz 16-QAM - Full RB Configuration)



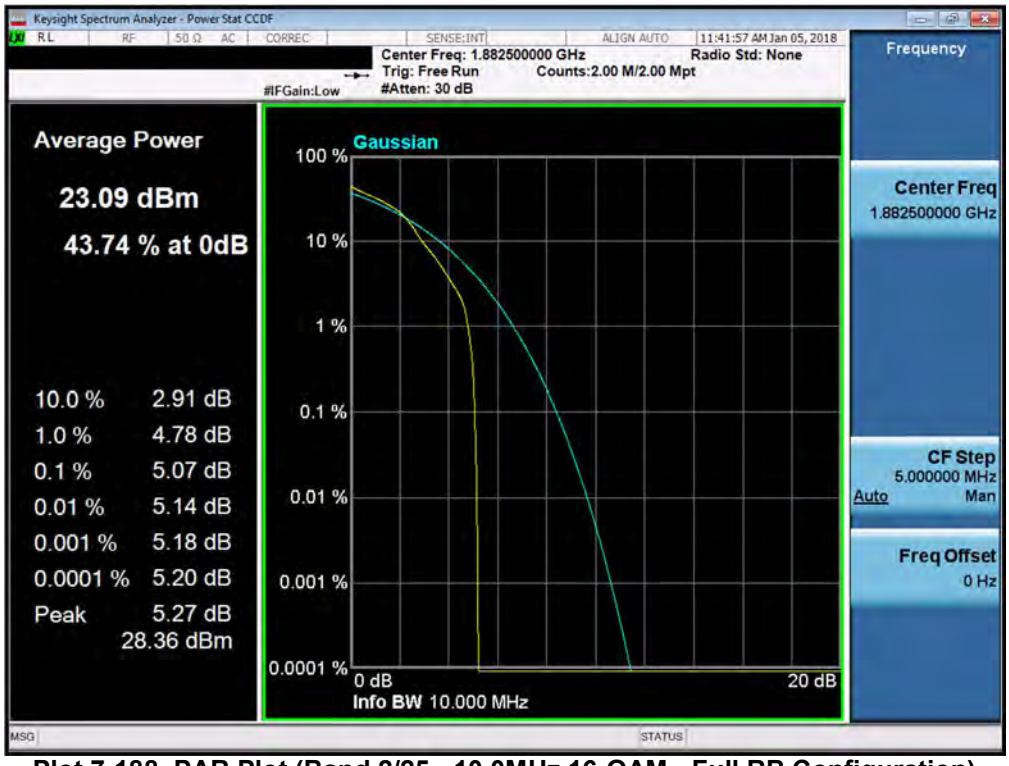
Plot 7-185. PAR Plot (Band 2/25 - 5.0MHz QPSK - Full RB Configuration)



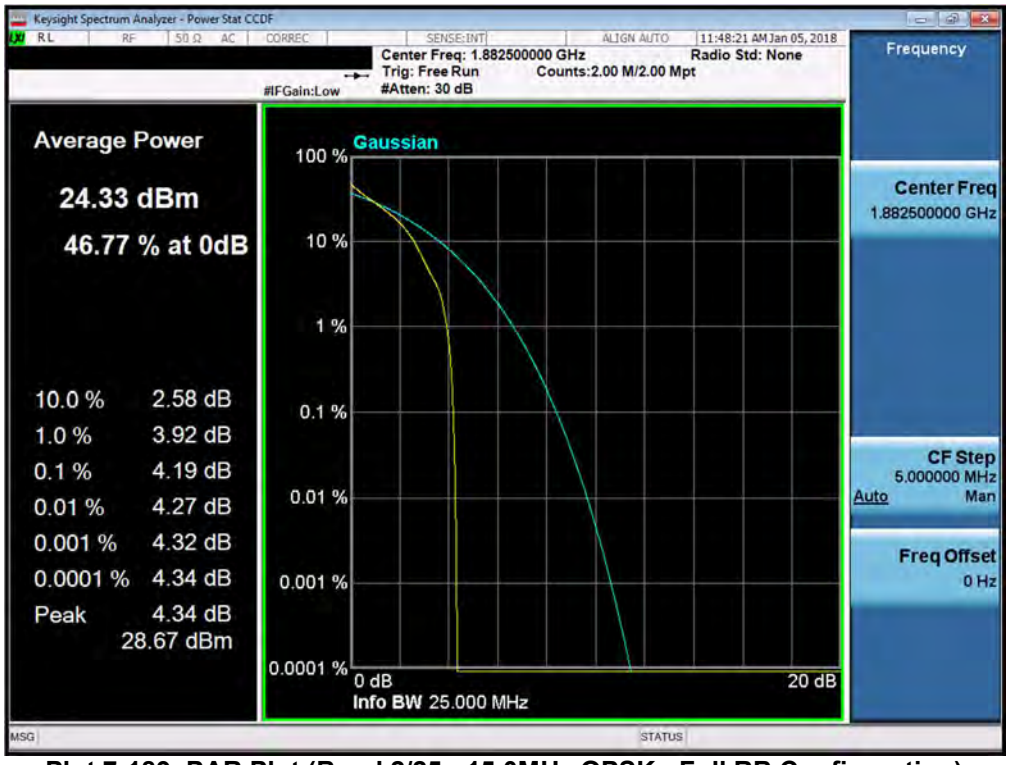
Plot 7-186. PAR Plot (Band 2/25 - 5.0MHz 16-QAM - Full RB Configuration)



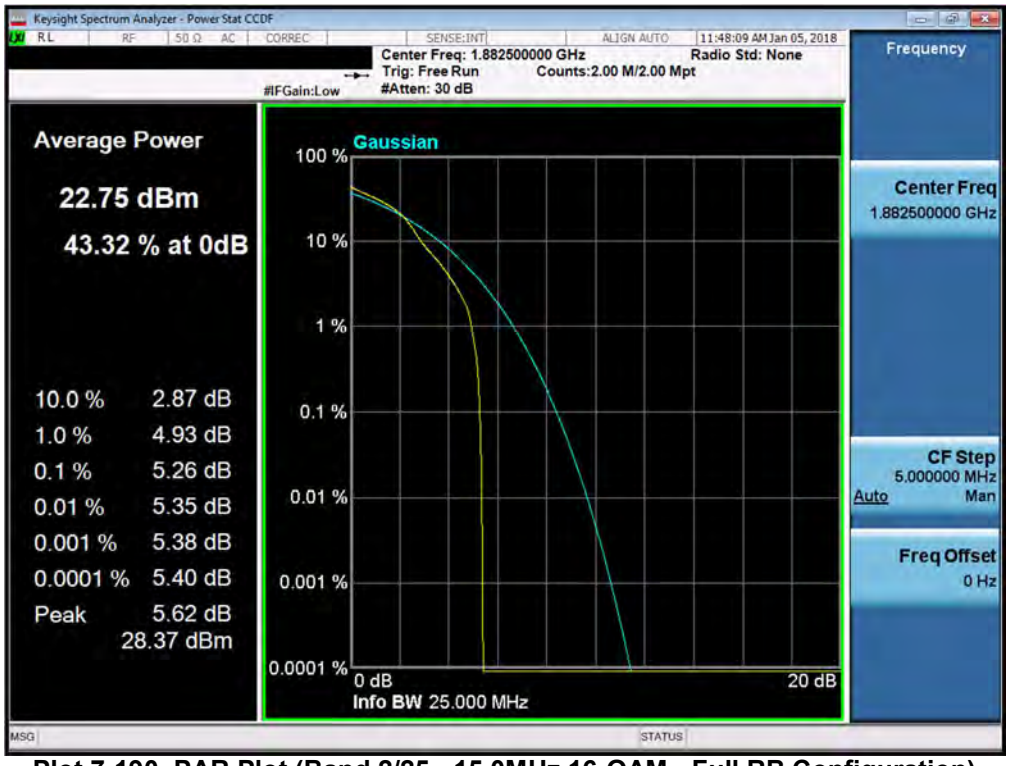
Plot 7-187. PAR Plot (Band 2/25 - 10.0MHz QPSK - Full RB Configuration)



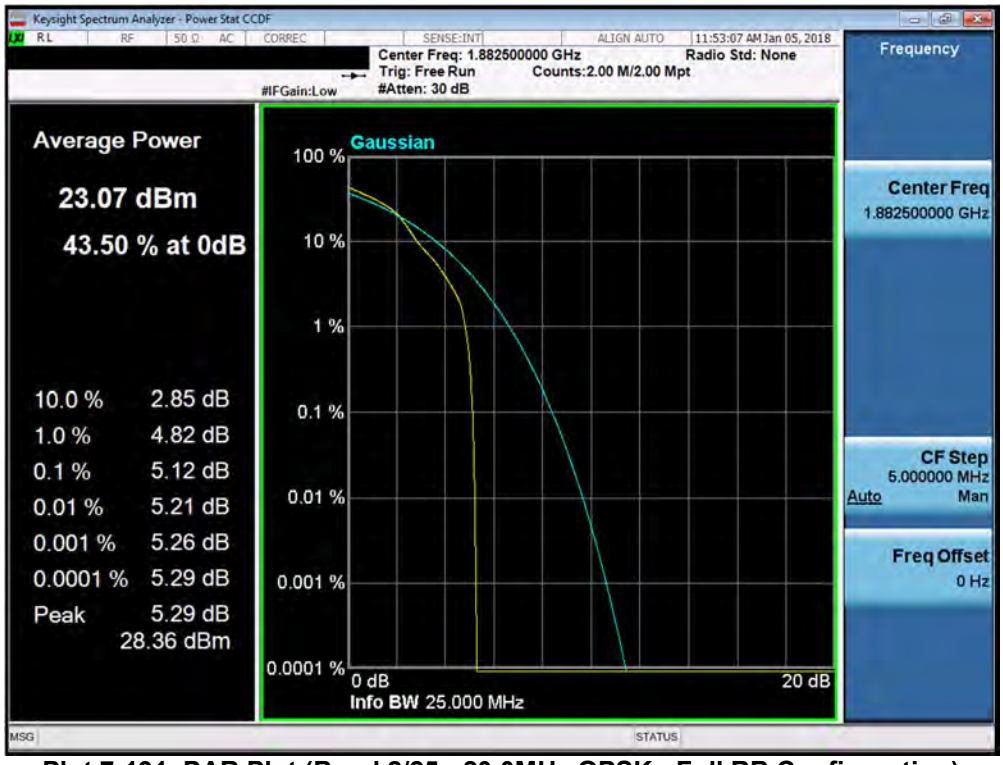
Plot 7-188. PAR Plot (Band 2/25 - 10.0MHz 16-QAM - Full RB Configuration)



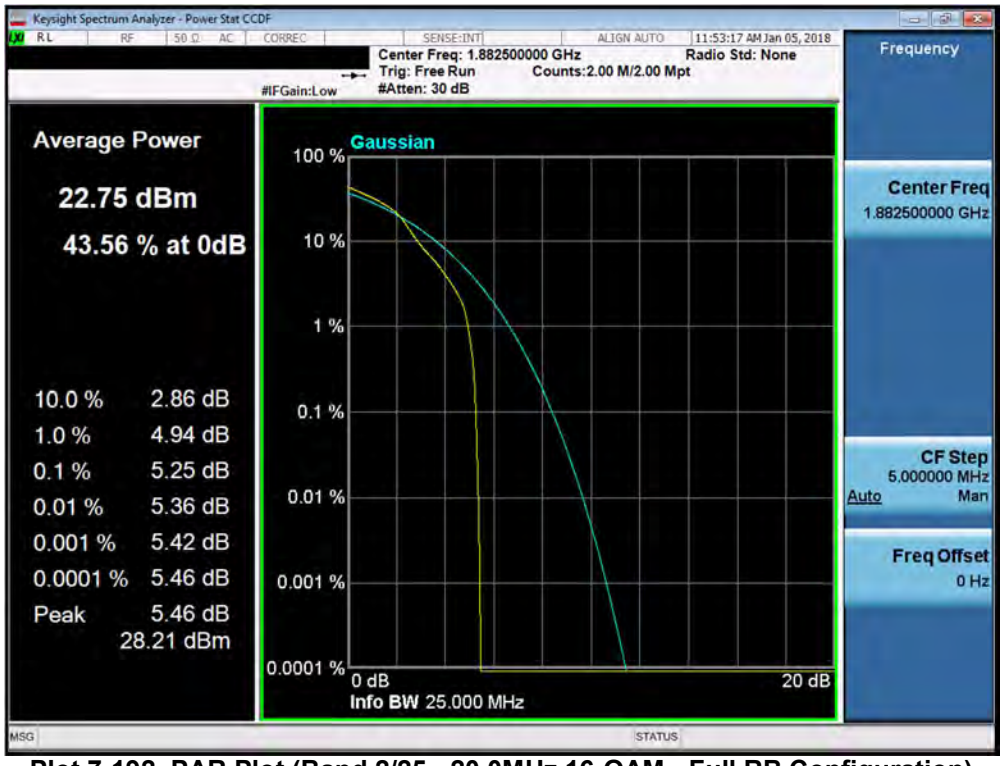
Plot 7-189. PAR Plot (Band 2/25 - 15.0MHz QPSK - Full RB Configuration)



Plot 7-190. PAR Plot (Band 2/25 - 15.0MHz 16-QAM - Full RB Configuration)



Plot 7-191. PAR Plot (Band 2/25 - 20.0MHz QPSK - Full RB Configuration)



Plot 7-192. PAR Plot (Band 2/25 - 20.0MHz 16-QAM - Full RB Configuration)

7.6 Radiated Power (ERP/EIRP)

§22.913(a)(2) §24.232(c.2) §27.50(c)(10) §27.50(d)(4) RSS-130(4.4) RSS-132(5.4) RSS-133(6.4) RSS-139(6.5)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v03 – Section 5.2.1

ANSI/TIA-603-E-2016 – Section 2.2.17

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW ≥ 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points ≥ 2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

Test Setup

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

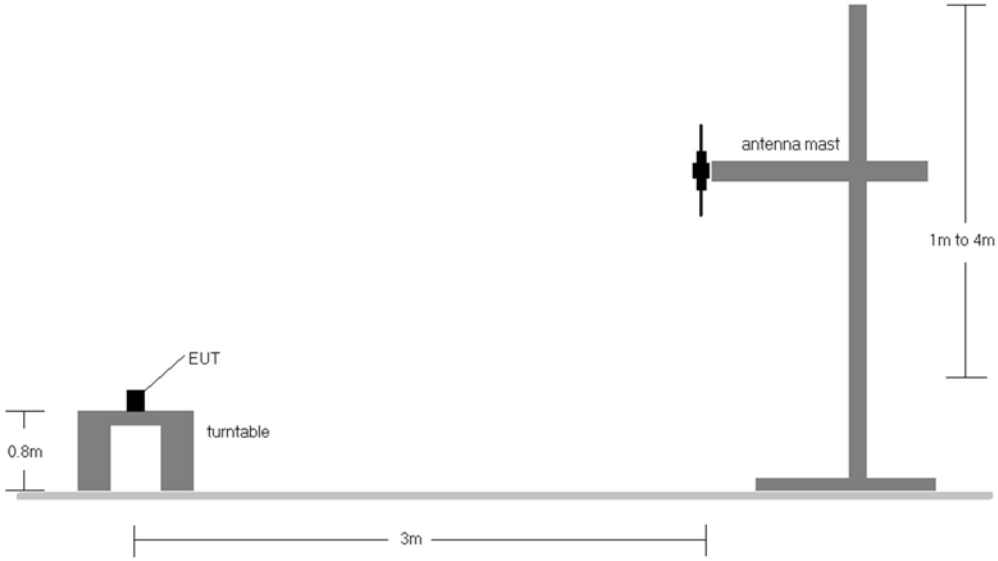


Figure 7-5. Radiated Test Setup <1GHz

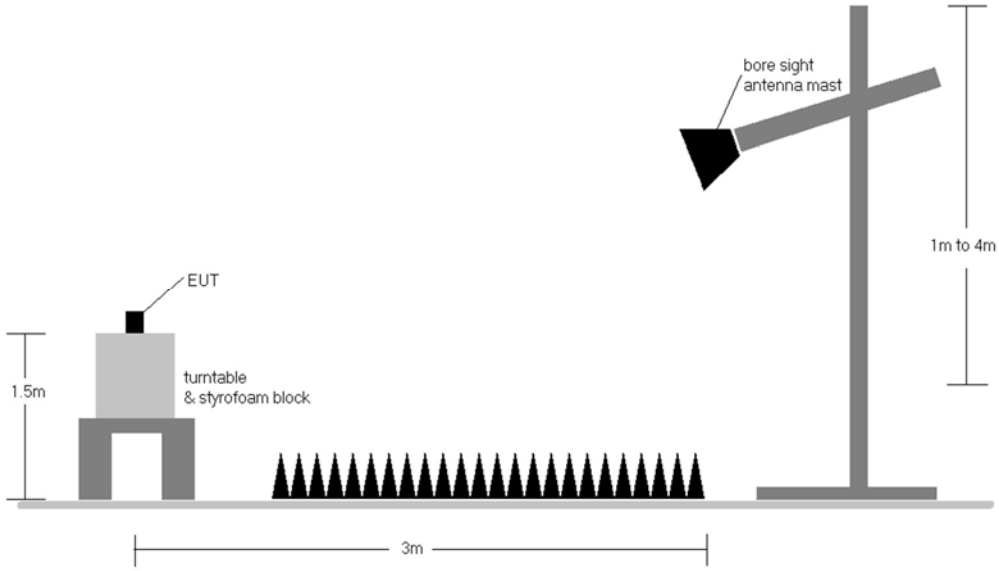


Figure 7-6. Radiated Test Setup >1GHz

Test Notes

1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.

2) This unit was tested with its standard battery.

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	V	150	262	1 / 0	18.70	1.10	17.65	0.058	34.77	-17.12	19.80	0.095	36.99	-17.19
707.50	1.4	QPSK	V	150	262	3 / 2	19.15	1.13	18.13	0.065	34.77	-16.64	20.28	0.107	36.99	-16.71
715.30	1.4	QPSK	V	150	262	1 / 0	19.39	1.16	**18.40**	**0.069**	34.77	-16.37	**20.55**	**0.114**	36.99	-16.44
715.30	1.4	16-QAM	V	150	262	1 / 0	18.34	1.16	**17.35**	**0.054**	34.77	-17.42	**19.50**	**0.089**	36.99	-17.49
700.50	3	QPSK	V	150	269	1 / 14	18.64	1.10	17.59	0.057	34.77	-17.18	19.74	0.094	36.99	-17.25
707.50	3	QPSK	V	150	269	1 / 14	18.80	1.13	17.78	0.060	34.77	-16.99	19.93	0.098	36.99	-17.06
714.50	3	QPSK	V	150	269	1 / 0	19.18	1.16	**18.19**	**0.066**	34.77	-16.58	**20.34**	**0.108**	36.99	-16.65
714.50	3	16-QAM	V	150	269	1 / 0	18.09	1.16	**17.10**	**0.051**	34.77	-17.67	**19.25**	**0.084**	36.99	-17.74
701.50	5	QPSK	V	150	279	1 / 24	19.26	1.11	18.22	0.066	34.77	-16.56	20.37	0.109	36.99	-16.62
707.50	5	QPSK	V	150	279	1 / 0	19.49	1.13	18.47	0.070	34.77	-16.30	20.62	0.115	36.99	-16.37
713.50	5	QPSK	V	150	279	1 / 24	19.65	1.15	**18.65**	**0.073**	34.77	-16.12	**20.80**	**0.120**	36.99	-16.19
713.50	5	16-QAM	V	150	279	1 / 24	18.78	1.15	**17.78**	**0.060**	34.77	-16.99	**19.93**	**0.099**	36.99	-17.06
704.00	10	QPSK	V	150	287	1 / 49	19.57	1.12	18.54	0.071	34.77	-16.23	20.69	0.117	36.99	-16.30
707.50	10	QPSK	V	150	287	1 / 49	19.66	1.13	18.64	0.073	34.77	-16.13	20.79	0.120	36.99	-16.20
711.00	10	QPSK	V	150	287	1 / 49	19.67	1.14	**18.66**	**0.074**	34.77	-16.11	**20.81**	**0.121**	36.99	-16.18
707.50	10	16-QAM	V	150	287	1 / 49	18.71	1.13	**17.69**	**0.059**	34.77	-17.08	**19.84**	**0.096**	36.99	-17.15
711.00	10	QPSK	H	150	358	1 / 74	20.93	1.14	19.92	0.098	34.77	-14.85	22.07	0.161	36.99	-14.92

Table 7-3. ERP/EIRP Data (Band 12)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	V	150	269	1 / 5	22.27	1.50	21.62	0.145	38.45	-16.83	23.77	0.238	40.61	-16.84
836.50	1.4	QPSK	V	150	269	1 / 0	22.35	1.50	21.70	0.148	38.45	-16.75	23.85	0.243	40.61	-16.76
848.30	1.4	QPSK	V	150	269	1 / 5	22.59	1.50	**21.94**	**0.156**	38.45	-16.51	**24.09**	**0.256**	40.61	-16.52
836.50	1.4	16-QAM	V	150	269	1 / 0	21.57	1.50	**20.92**	**0.124**	38.45	-17.53	**23.07**	**0.203**	40.61	-17.54
825.50	3	QPSK	V	150	267	1 / 0	22.22	1.50	21.57	0.144	38.45	-16.88	23.72	0.236	40.61	-16.89
836.50	3	QPSK	V	150	267	1 / 0	22.45	1.50	21.80	0.151	38.45	-16.65	23.95	0.248	40.61	-16.66
847.50	3	QPSK	V	150	267	1 / 14	22.59	1.50	**21.94**	**0.156**	38.45	-16.51	**24.09**	**0.256**	40.61	-16.52
847.50	3	16-QAM	V	150	267	1 / 14	21.47	1.50	**20.82**	**0.121**	38.45	-17.63	**22.97**	**0.198**	40.61	-17.64
826.50	5	QPSK	V	150	274	1 / 24	21.44	1.50	20.79	0.120	38.45	-17.66	22.94	0.197	40.61	-17.67
836.50	5	QPSK	V	150	274	1 / 0	22.43	1.50	**21.78**	**0.151**	38.45	-16.67	**23.93**	**0.247**	40.61	-16.68
846.50	5	QPSK	V	150	274	1 / 24	21.73	1.50	21.08	0.128	38.45	-17.37	23.23	0.210	40.61	-17.38
836.50	5	16-QAM	V	150	274	1 / 0	21.05	1.50	**20.40**	**0.110**	38.45	-18.05	**22.55**	**0.180**	40.61	-18.06
829.00	10	QPSK	V	150	261	1 / 49	21.71	1.50	21.06	0.128	38.45	-17.39	23.21	0.209	40.61	-17.40
836.50	10	QPSK	V	150	261	1 / 49	21.97	1.50	**21.32**	**0.136**	38.45	-17.13	**23.47**	**0.222**	40.61	-17.14
844.00	10	QPSK	V	150	261	1 / 49	21.83	1.50	21.18	0.131	38.45	-17.27	23.33	0.215	40.61	-17.28
836.50	10	16-QAM	V	150	261	1 / 49	20.85	1.50	**20.20**	**0.105**	38.45	-18.25	**22.35**	**0.172**	40.61	-18.26
848.30	1	QPSK	H	150	8	36 / 18	19.05	1.50	18.40	0.069	38.45	-20.05	20.55	0.114	40.61	-20.06

Table 7-4. ERP/EIRP Data (Band 5)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	V	150	182	3 / 2	19.38	5.65	25.03	0.318	30.00	-4.97
1732.50	1.4	QPSK	V	150	182	3 / 2	19.75	5.41	**25.16**	**0.328**	30.00	-4.84
1754.30	1.4	QPSK	V	150	182	3 / 2	19.69	5.17	24.86	0.306	30.00	-5.14
1732.50	1.4	16-QAM	V	150	182	3 / 2	18.66	5.41	**24.07**	**0.255**	30.00	-5.93
1711.50	3	QPSK	V	150	183	1 / 0	19.02	5.64	24.66	0.292	30.00	-5.34
1732.50	3	QPSK	V	150	183	1 / 14	19.37	5.41	**24.78**	**0.300**	30.00	-5.22
1753.50	3	QPSK	V	150	183	1 / 14	19.30	5.18	24.48	0.280	30.00	-5.52
1732.50	3	16-QAM	V	150	183	1 / 14	18.44	5.41	**23.85**	**0.242**	30.00	-6.15
1712.50	5	QPSK	V	150	200	1 / 0	19.05	5.63	24.68	0.293	30.00	-5.32
1732.50	5	QPSK	V	150	200	1 / 24	19.57	5.41	**24.98**	**0.314**	30.00	-5.02
1752.50	5	QPSK	V	150	200	1 / 0	19.55	5.19	24.74	0.298	30.00	-5.26
1732.50	5	16-QAM	V	150	200	12 / 6	18.64	5.41	**24.05**	**0.254**	30.00	-5.95
1715.00	10	QPSK	V	150	8	1 / 0	19.76	5.60	**25.36**	**0.343**	30.00	-4.64
1732.50	10	QPSK	V	150	8	1 / 0	19.19	5.41	24.60	0.288	30.00	-5.40
1750.00	10	QPSK	V	150	8	1 / 49	19.14	5.22	24.36	0.273	30.00	-5.64
1715.00	10	16-QAM	V	150	8	1 / 0	18.40	5.60	**24.00**	**0.251**	30.00	-6.00
1717.50	15	QPSK	V	150	175	1 / 0	16.99	5.57	22.56	0.180	30.00	-7.44
1732.50	15	QPSK	V	150	175	1 / 74	19.25	5.41	**24.66**	**0.292**	30.00	-5.34
1747.50	15	QPSK	V	150	175	1 / 74	17.69	5.24	22.93	0.196	30.00	-7.07
1732.50	15	16-QAM	V	150	175	1 / 74	18.31	5.41	**23.72**	**0.235**	30.00	-6.28
1720.00	20	QPSK	V	150	346	1 / 99	18.62	5.54	24.16	0.261	30.00	-5.84
1732.50	20	QPSK	V	150	346	1 / 99	18.54	5.41	23.95	0.248	30.00	-6.05
1745.00	20	QPSK	V	150	346	1 / 99	18.94	5.27	**24.21**	**0.264**	30.00	-5.79
1720.00	20	16-QAM	V	150	346	1 / 99	17.56	5.54	**23.10**	**0.204**	30.00	-6.90
1715.00	10	QPSK	H	150	297	1 / 0	17.35	5.60	22.95	0.197	30.00	-7.05

Table 7-5. EIRP Data (Band 4)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	H	150	258	1 / 0	21.50	4.82	26.32	0.428	33.01	-6.69
1882.50	1.4	QPSK	H	150	258	1 / 0	22.06	4.73	**26.79**	**0.478**	33.01	-6.22
1914.30	1.4	QPSK	H	150	258	1 / 0	19.61	4.68	24.29	0.268	33.01	-8.72
1850.70	1.4	16-QAM	H	150	258	1 / 0	21.04	4.82	**25.86**	**0.385**	33.01	-7.15
1851.50	3	QPSK	H	150	257	1 / 0	21.88	4.82	26.70	0.467	33.01	-6.31
1882.50	3	QPSK	H	150	257	1 / 0	22.04	4.73	**26.77**	**0.476**	33.01	-6.24
1913.50	3	QPSK	H	150	257	1 / 0	21.15	4.68	25.83	0.383	33.01	-7.18
1882.50	3	16-QAM	H	150	257	1 / 0	20.85	4.73	**25.58**	**0.362**	33.01	-7.43
1852.50	5	QPSK	H	150	92	1 / 24	21.73	4.81	**26.54**	**0.451**	33.01	-6.47
1882.50	5	QPSK	H	150	92	1 / 24	21.21	4.73	25.94	0.393	33.01	-7.07
1912.50	5	QPSK	H	150	92	1 / 0	20.26	4.68	24.94	0.312	33.01	-8.07
1852.50	5	16-QAM	H	150	92	1 / 24	20.59	4.81	**25.40**	**0.347**	33.01	-7.61
1855.00	10	QPSK	H	150	105	1 / 0	21.88	4.81	**26.69**	**0.466**	33.01	-6.32
1882.50	10	QPSK	H	150	105	1 / 0	21.50	4.73	26.23	0.420	33.01	-6.78
1910.00	10	QPSK	H	150	105	1 / 0	21.60	4.68	26.28	0.425	33.01	-6.73
1855.00	10	16-QAM	H	150	105	1 / 0	20.54	4.81	**25.35**	**0.342**	33.01	-7.66
1857.50	15	QPSK	H	150	271	1 / 74	22.72	4.80	**27.52**	**0.565**	33.01	-5.49
1882.50	15	QPSK	H	150	271	1 / 0	21.89	4.73	26.62	0.460	33.01	-6.39
1907.50	15	QPSK	H	150	271	1 / 74	21.86	4.68	26.54	0.451	33.01	-6.47
1857.50	15	16-QAM	H	150	271	1 / 74	21.49	4.80	**26.29**	**0.426**	33.01	-6.72
1860.00	20	QPSK	H	150	277	1 / 0	22.60	4.79	**27.39**	**0.549**	33.01	-5.62
1882.50	20	QPSK	H	150	277	1 / 0	21.72	4.73	26.45	0.442	33.01	-6.56
1905.00	20	QPSK	H	150	277	1 / 99	21.67	4.68	26.35	0.432	33.01	-6.66
1860.00	20	16-QAM	H	150	277	1 / 99	21.38	4.79	**26.17**	**0.414**	33.01	-6.84
1857.50	15	QPSK	V	150	23	1 / 99	20.57	4.80	25.37	0.344	33.01	-7.64

Table 7-6. EIRP Data (Band 2/25)

7.7 Radiated Spurious Emissions Measurements

§2.1053 §22.917(a) §24.238(a) §27.53(g) §27.53(h) RSS-130(4.6) RSS-132(5.5) RSS-133(6.5) RSS-139(6.6)

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-E-2016 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas.

Test Procedures Used

KDB 971168 D01 v03 – Section 5.8

ANSI/TIA-603-E-2016 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW ≥ 3 x RBW
3. Span = 1.5 times the OBW
4. No. of sweep points ≥ 2 x span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

Test Setup

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

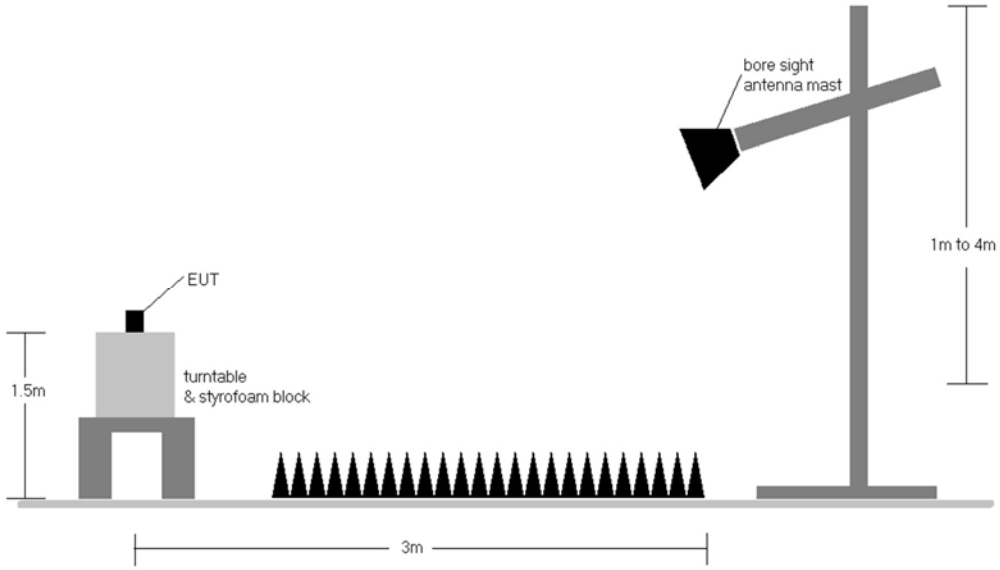


Figure 7-7. Test Instrument & Measurement Setup

Test Notes

1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.

2) This unit was tested with its standard battery.

3) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.

4) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.

5) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

Band 12

OPERATING FREQUENCY:	704.00	MHz
CHANNEL:	23060	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1408.00	V	150	35	-55.80	3.84	-51.96	-39.0
2112.00	V	-	-	-52.07	4.79	-47.28	-34.3

Table 7-7. Radiated Spurious Data (Band 12 – Low Channel)

OPERATING FREQUENCY:	707.50	MHz
CHANNEL:	23095	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1415.00	V	150	147	-61.89	3.90	-57.98	-45.0
2122.50	V	-	-	-60.71	4.78	-55.92	-42.9

Table 7-8. Radiated Spurious Data (Band 12 – Mid Channel)

OPERATING FREQUENCY:	711.00	MHz
CHANNEL:	23130	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1422.00	V	-	-	-64.21	3.97	-60.25	-47.2
2133.00	V	-	-	-60.37	4.78	-55.59	-42.6

Table 7-9. Radiated Spurious Data (Band 12 – High Channel)

Band 5

OPERATING FREQUENCY:	824.70	MHz
CHANNEL:	20407	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	1.4	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1649.40	H	-	-	-61.68	4.81	-56.87	-43.9
2474.10	H	-	-	-58.39	4.99	-53.40	-40.4

Table 7-10. Radiated Spurious Data (Band 5 – Low Channel)

OPERATING FREQUENCY:	836.50	MHz
CHANNEL:	20525	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	1.4	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1673.00	H	-	-	-58.91	4.86	-54.05	-41.0
2509.50	H	-	-	-58.31	5.10	-53.21	-40.2

Table 7-11. Radiated Spurious Data (Band 5 – Mid Channel)

OPERATING FREQUENCY:	848.30	MHz
CHANNEL:	20643	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	1.4	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
1696.60	H	150	351	-59.78	4.91	-54.87	-41.9
2544.90	H	-	-	-59.05	5.27	-53.78	-40.8

Table 7-12. Radiated Spurious Data (Band 5 – High Channel)

Band 4

OPERATING FREQUENCY:	1715.00	MHz
CHANNEL:	20000	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3430.00	H	-	-	-63.10	6.49	-56.61	-43.6
5145.00	H	-	-	-61.89	8.43	-53.46	-40.5

Table 7-13. Radiated Spurious Data (Band 4 – Low Channel)

OPERATING FREQUENCY:	1732.50	MHz
CHANNEL:	20175	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3465.00	H	-	-	-63.70	6.56	-57.15	-44.1
5197.50	H	-	-	-61.44	8.45	-52.99	-40.0

Table 7-14. Radiated Spurious Data (Band 4 – Mid Channel)

OPERATING FREQUENCY:	1750.00	MHz
CHANNEL:	20350	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3500.00	H	-	-	-63.67	6.60	-57.07	-44.1
5250.00	H	-	-	-61.18	8.41	-52.77	-39.8

Table 7-15. Radiated Spurious Data (Band 4 – High Channel)

Band 2/25

OPERATING FREQUENCY:	1857.50	MHz
CHANNEL:	26115	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3715.00	H	-	-	-54.68	6.78	-47.90	-34.9
5572.50	H	-	-	-53.25	8.44	-44.81	-31.8

Table 7-16. Radiated Spurious Data (Band 2/25 – Low Channel)

OPERATING FREQUENCY:	1882.50	MHz
CHANNEL:	26365	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3765.00	H	-	-	-53.24	6.85	-46.39	-33.4
5647.50	H	-	-	-54.40	8.53	-45.87	-32.9

Table 7-17. Radiated Spurious Data (Band 2/25 – Mid Channel)

OPERATING FREQUENCY:	1907.50	MHz
CHANNEL:	26615	
MODULATION SIGNAL:	QPSK	
BANDWIDTH:	15.0	MHz
DISTANCE:	3	meters
LIMIT:	-13	dBm

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Margin [dB]
3815.00	H	-	-	-53.41	6.98	-46.43	-33.4
5722.50	H	-	-	-53.50	8.58	-44.93	-31.9

Table 7-18. Radiated Spurious Data (Band 2/25 – High Channel)

7.8 Frequency Stability / Temperature Variation

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-E-2016. The frequency stability of the transmitter is measured by:

a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.

b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

For Part 22, RSS-132, RSS-133, the frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5 ppm) of the center frequency. For Part 24, Part 27, RSS-130, RSS-139, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Procedure Used

ANSI/TIA-603-E-2016

Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Test Setup

The EUT was connected via an RF cable to a spectrum analyzer with the EUT placed inside an environmental chamber.

Test Notes

None

Band 5 Frequency Stability Measurements

OPERATING FREQUENCY:	836,500,000	Hz
CHANNEL:	20525	
REFERENCE VOLTAGE:	3.85	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	836,499,911	-89	-0.0000106
100 %		- 30	836,499,855	-145	-0.0000173
100 %		- 20	836,499,869	-131	-0.0000157
100 %		- 10	836,499,906	-94	-0.0000112
100 %		0	836,500,146	146	0.0000175
100 %		+ 10	836,499,876	-124	-0.0000148
100 %		+ 20	836,499,954	-46	-0.0000055
100 %		+ 30	836,500,078	78	0.0000093
100 %		+ 40	836,499,895	-105	-0.0000126
100 %		+ 50	836,499,969	-31	-0.0000037
BATT. ENDPOINT	3.45	+ 20	836,500,011	11	0.0000013

Table 7-19. Frequency Stability Data (Band 5)

Band 5 Frequency Stability Measurements

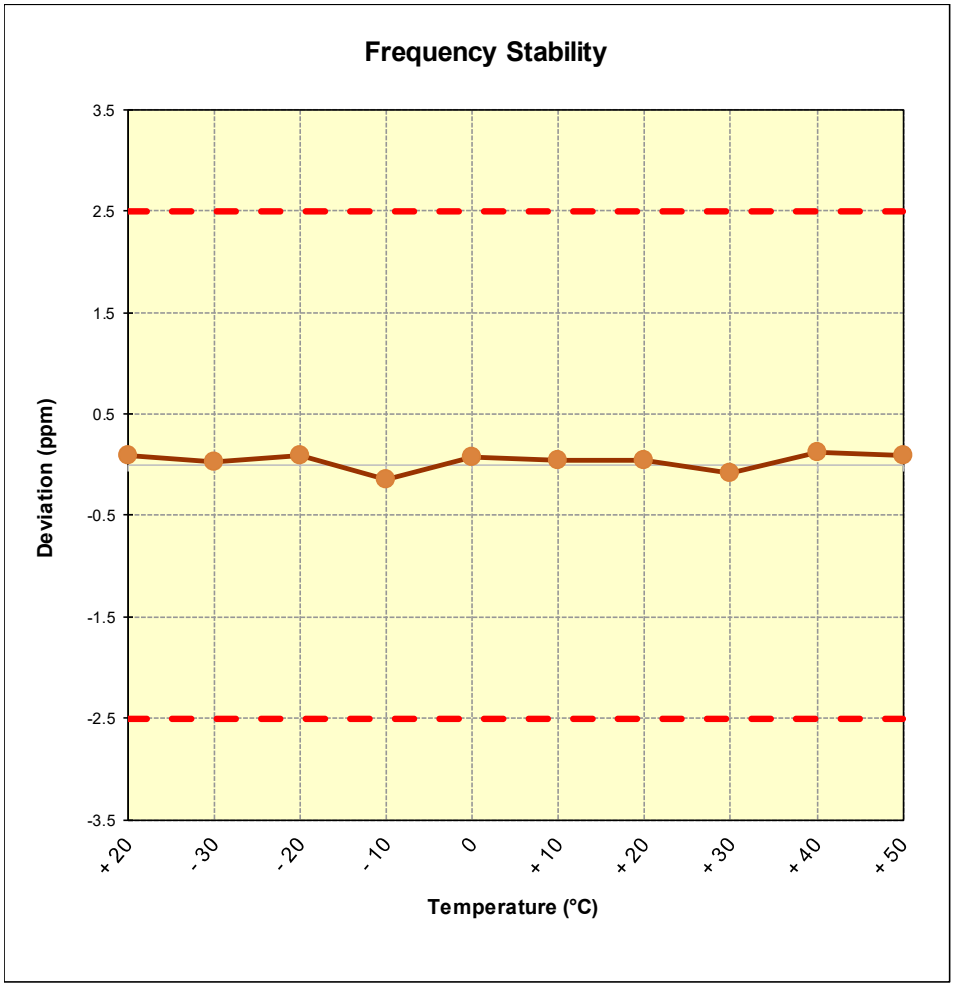


Figure 7-8. Frequency Stability Graph (Band 5)

Band 4 Frequency Stability Measurements

OPERATING FREQUENCY:	1,732,500,000	Hz
CHANNEL:	20175	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,732,499,884	-116	-0.0000067
100 %		- 30	1,732,499,997	-3	-0.0000002
100 %		- 20	1,732,500,042	42	0.0000024
100 %		- 10	1,732,499,854	-146	-0.0000084
100 %		0	1,732,500,032	32	0.0000018
100 %		+ 10	1,732,499,920	-80	-0.0000046
100 %		+ 20	1,732,499,890	-110	-0.0000063
100 %		+ 30	1,732,500,048	48	0.0000028
100 %		+ 40	1,732,500,085	85	0.0000049
100 %		+ 50	1,732,499,941	-59	-0.0000034
BATT. ENDPOINT	3.45	+ 20	1,732,500,026	26	0.0000015

Table 7-20. Frequency Stability Data (Band 4)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

Band 4 Frequency Stability Measurements

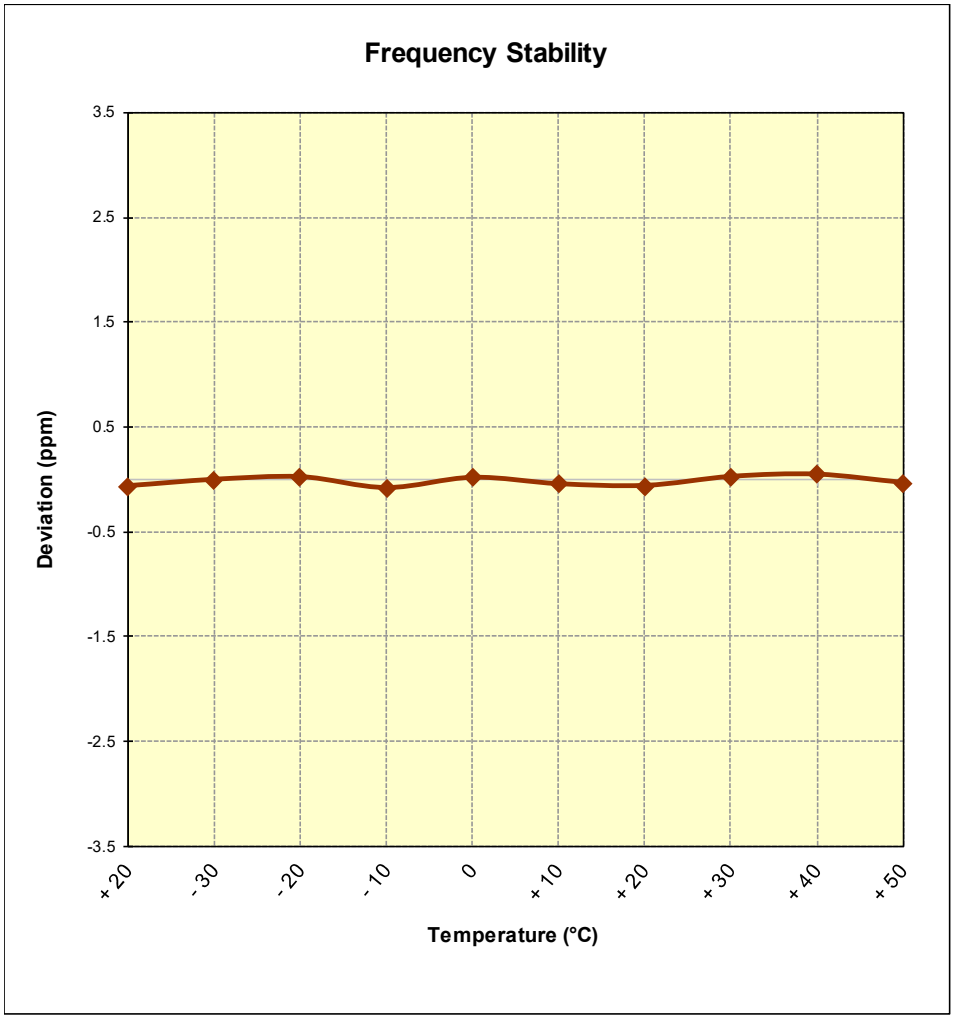


Figure 7-9. Frequency Stability Graph (Band 4)

Band 2/25 Frequency Stability Measurements

OPERATING FREQUENCY:	1,882,500,000	Hz
CHANNEL:	26365	
REFERENCE VOLTAGE:	3.85	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,882,500,002	2	0.0000001
100 %		- 30	1,882,500,051	51	0.0000027
100 %		- 20	1,882,500,103	103	0.0000055
100 %		- 10	1,882,499,990	-10	-0.0000005
100 %		0	1,882,499,851	-149	-0.0000079
100 %		+ 10	1,882,500,120	120	0.0000064
100 %		+ 20	1,882,500,005	5	0.0000003
100 %		+ 30	1,882,500,133	133	0.0000071
100 %		+ 40	1,882,499,991	-9	-0.0000005
100 %		+ 50	1,882,500,116	116	0.0000062
BATT. ENDPOINT	3.45	+ 20	1,882,500,052	52	0.0000028

Table 7-21. Frequency Stability Data (Band 2/25)

Band 2/25 Frequency Stability Measurements

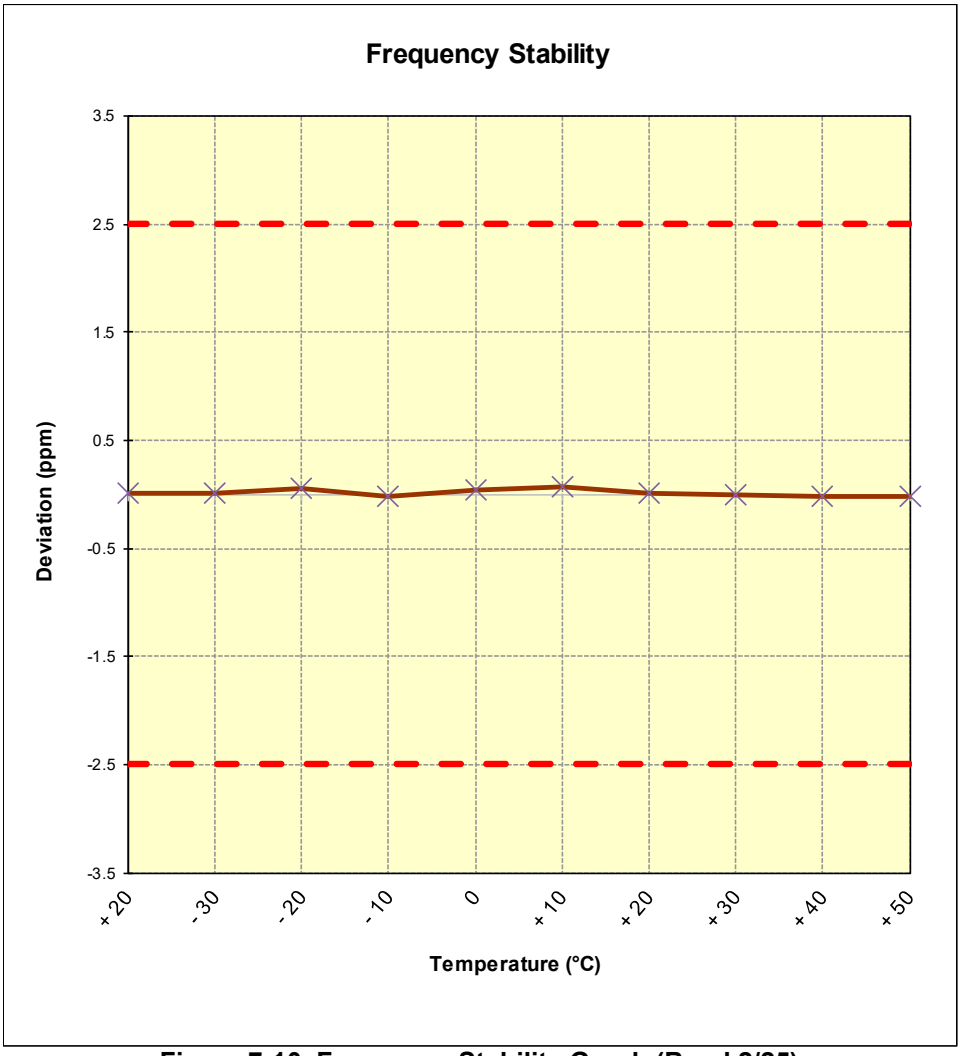


Figure 7-10. Frequency Stability Graph (Band 2/25)

Band 12 Frequency Stability Measurements

OPERATING FREQUENCY:	707,500,000	Hz
CHANNEL:	23790	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	707,499,961	-39	-0.0000055
100 %		- 30	707,500,127	127	0.0000180
100 %		- 20	707,499,909	-91	-0.0000129
100 %		- 10	707,499,882	-118	-0.0000167
100 %		0	707,499,943	-57	-0.0000081
100 %		+ 10	707,500,050	50	0.0000071
100 %		+ 20	707,499,960	-40	-0.0000057
100 %		+ 30	707,499,900	-100	-0.0000141
100 %		+ 40	707,499,901	-99	-0.0000140
100 %		+ 50	707,499,993	-7	-0.0000010
BATT. ENDPOINT	3.45	+ 20	707,500,034	34	0.0000048

Table 7-22. Frequency Stability Data (Band 12)

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

Band 12 Frequency Stability Measurements

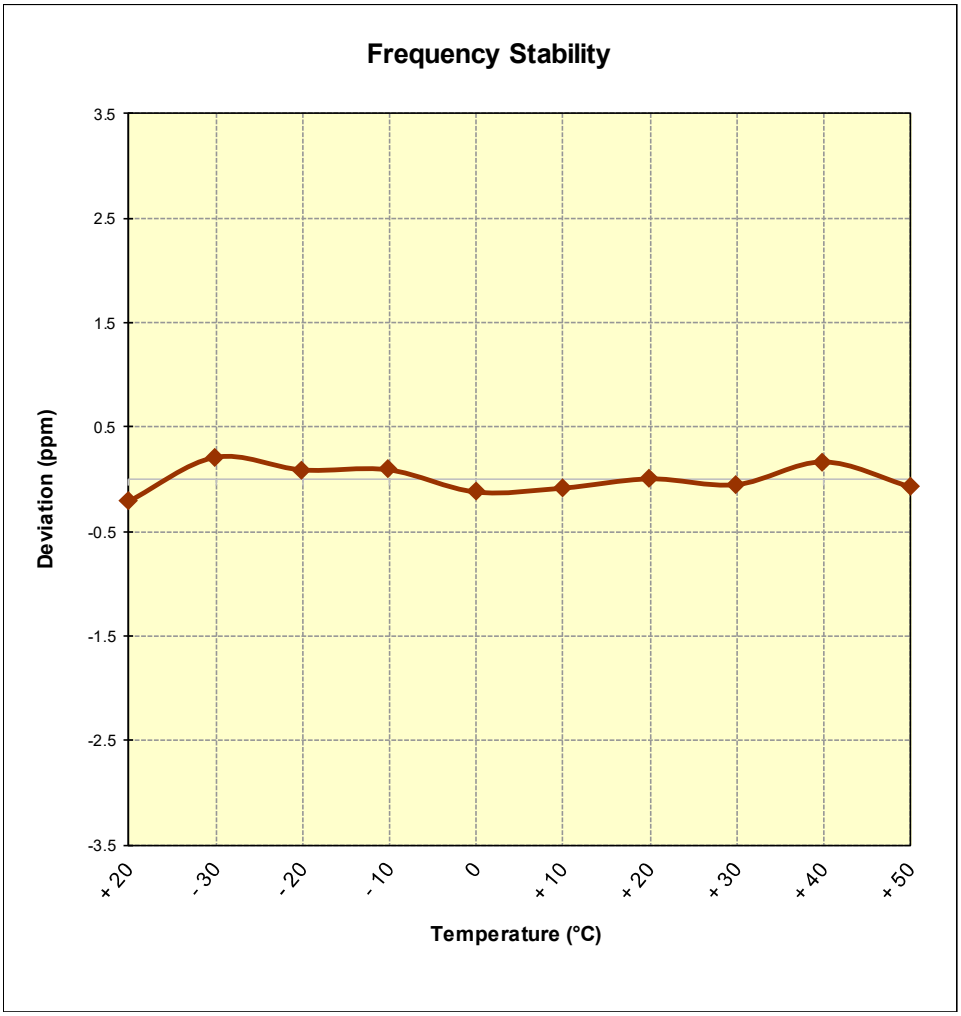


Figure 7-11. Frequency Stability Graph (Band 12)

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFX210ULM** complies with all the requirements of Part 22, 24, & 27 of the FCC Rules for LTE operation only.