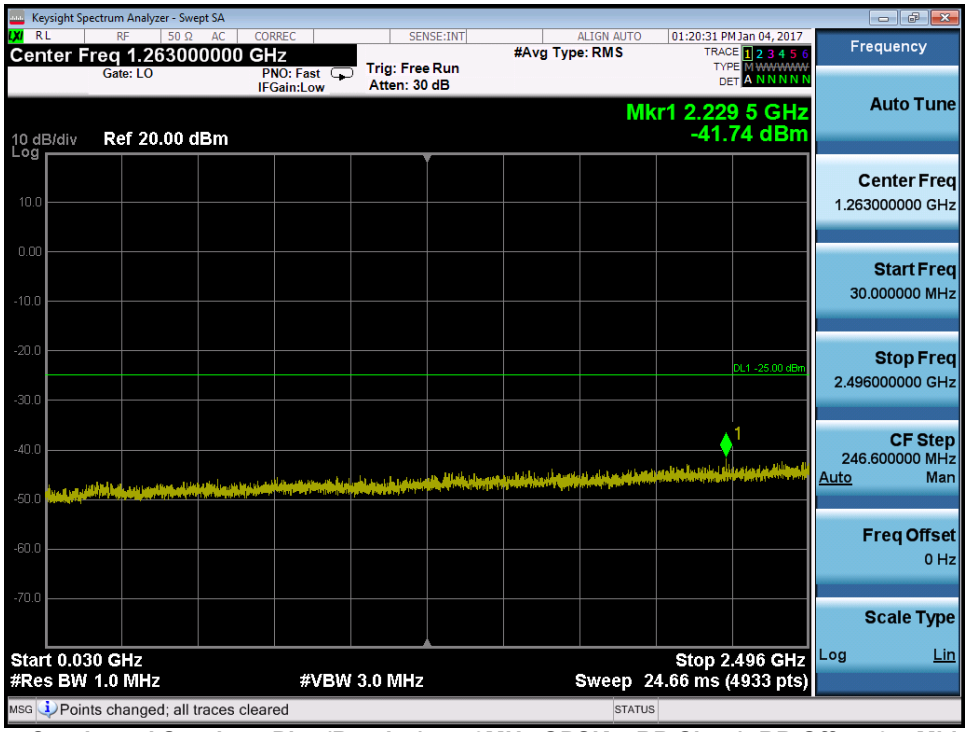
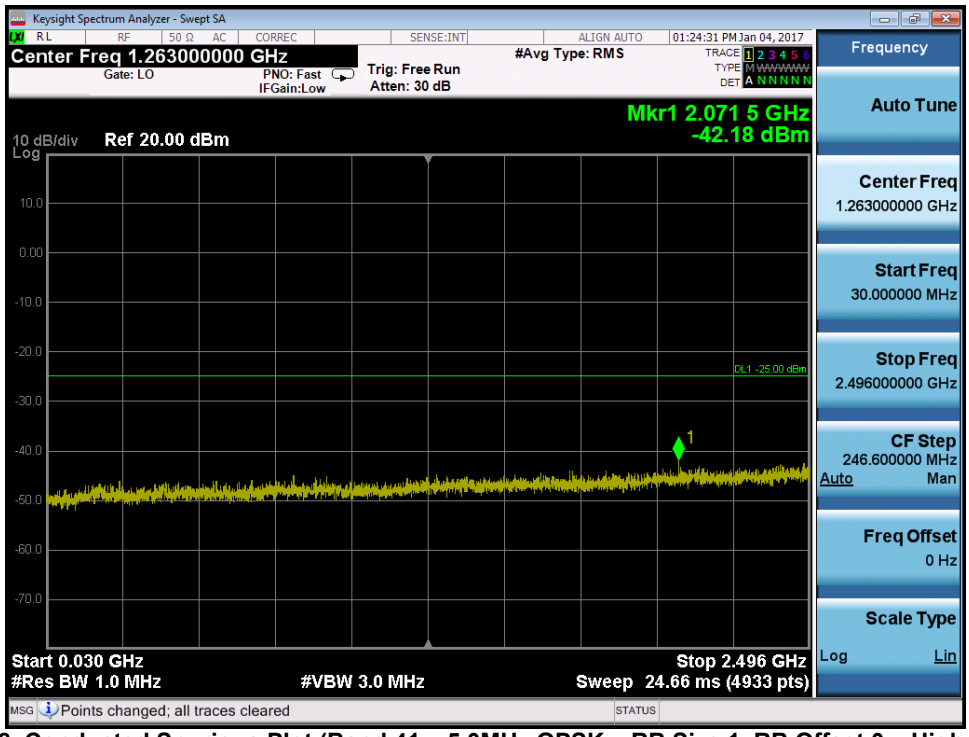
Plot 7-114. Conducted Spurious Plot (Band 41 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)



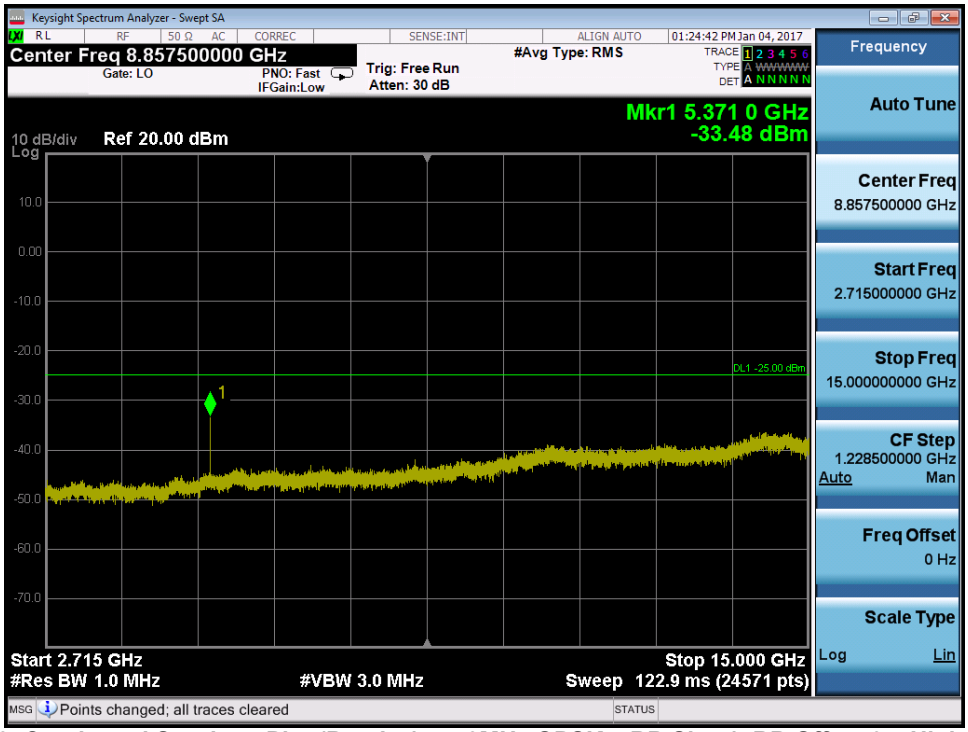
Plot 7-115. Conducted Spurious Plot (Band 41 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

Plot 7-116. Conducted Spurious Plot (Band 41 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

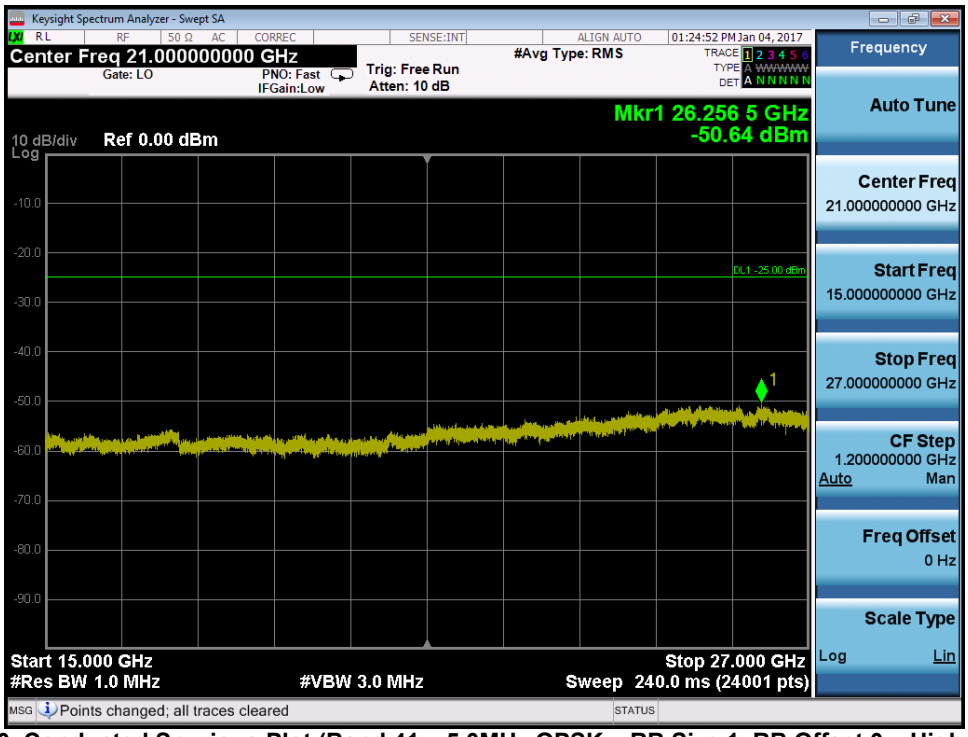
Plot 7-117. Conducted Spurious Plot (Band 41 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



Plot 7-118. Conducted Spurious Plot (Band 41 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-119. Conducted Spurious Plot (Band 41 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-120. Conducted Spurious Plot (Band 41 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

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7.4 Band Edge Emissions at Antenna Terminal

§2.1051 §22.917(a) §24.238(a) §27.53(g) §27.53(h) §27.53(m)

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 for Band 41 is as noted in the Test Notes on the following page.

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 v02r02 – 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 for continuous emissions, max hold for pulse emissions
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.

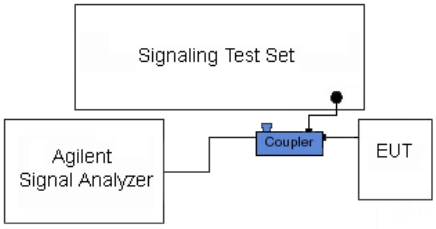

Figure 7-3. Test Instrument & Measurement Setup

Test Notes

Per 22.917(b), 24.238(a), 27.53(h) 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) 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.

Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz.

Plot 7-121. Lower Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)

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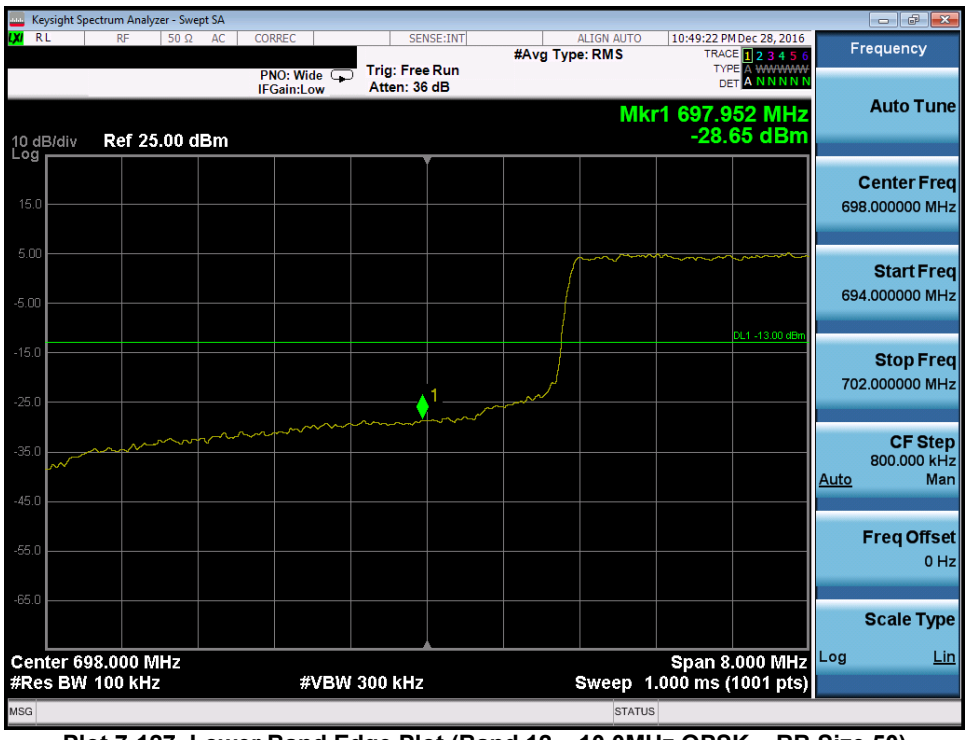
Plot 7-122. Upper Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)

Plot 7-123. Lower Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)

Plot 7-124. Upper Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)

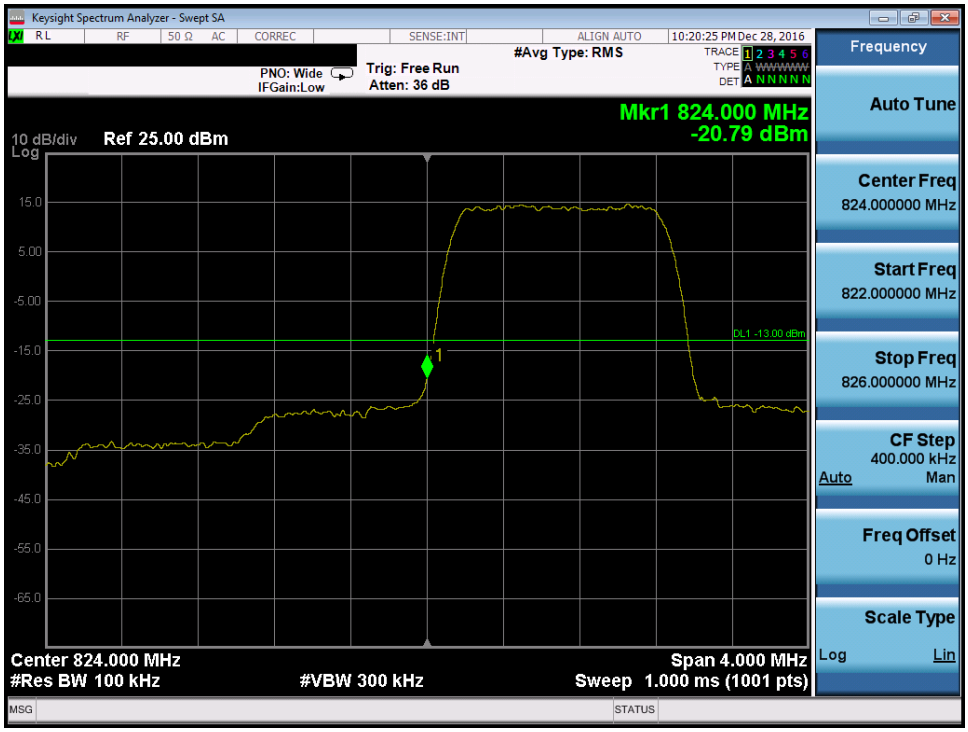
Plot 7-125. Lower Band Edge Plot (Band 12 – 5.0MHz QPSK – RB Size 25)

Plot 7-126. Upper Band Edge Plot (Band 12 – 5.0MHz QPSK – RB Size 25)

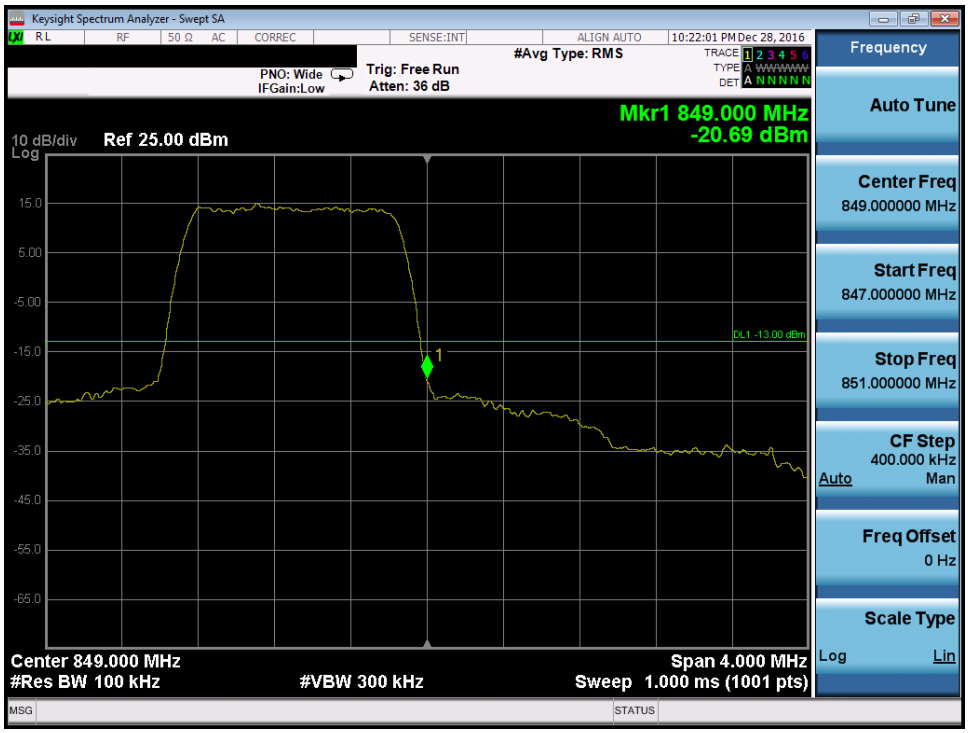


Plot 7-127. Lower Band Edge Plot (Band 12 – 10.0MHz QPSK – RB Size 50)

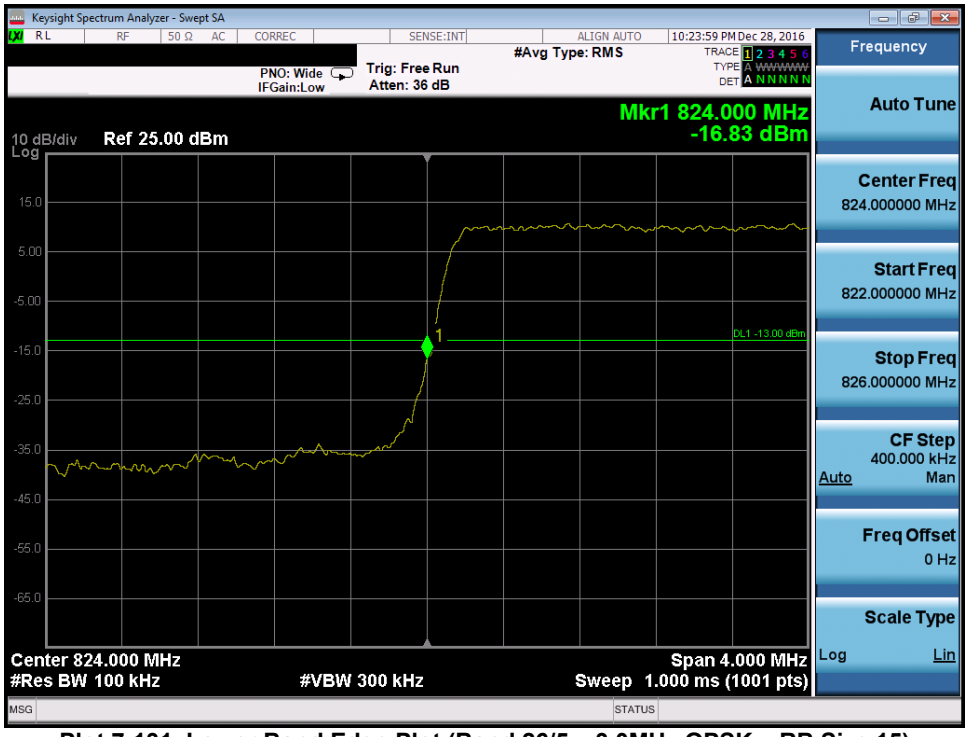
Plot 7-128. Upper Band Edge Plot (Band 12 – 10.0MHz QPSK – RB Size 50)



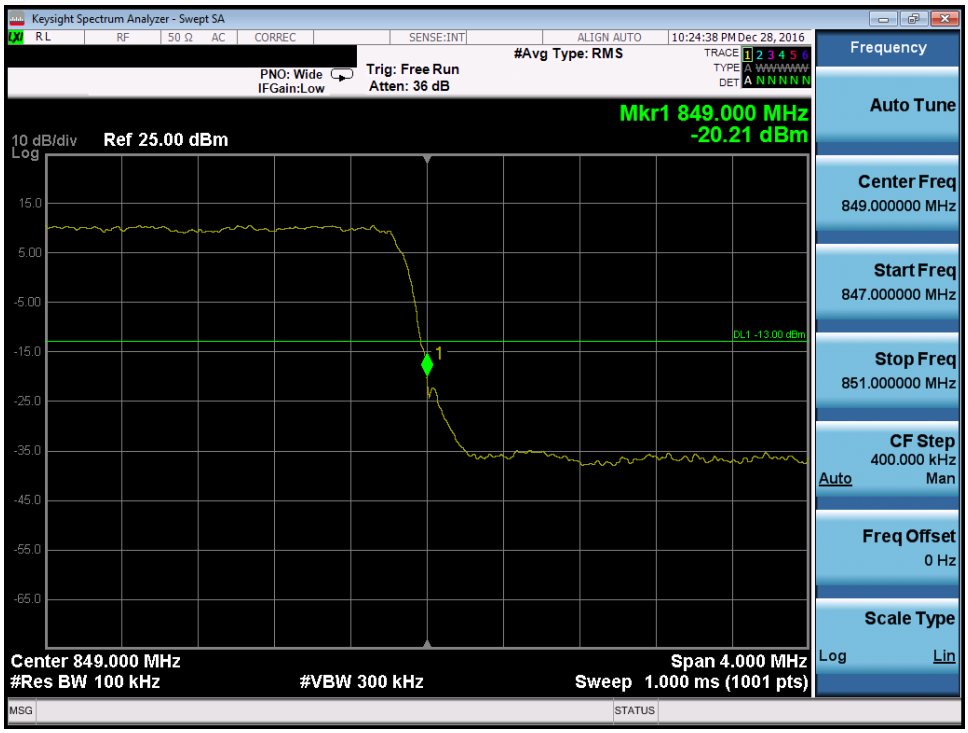
Plot 7-129. Lower Band Edge Plot (Band 26/5 – 1.4MHz QPSK – RB Size 6)



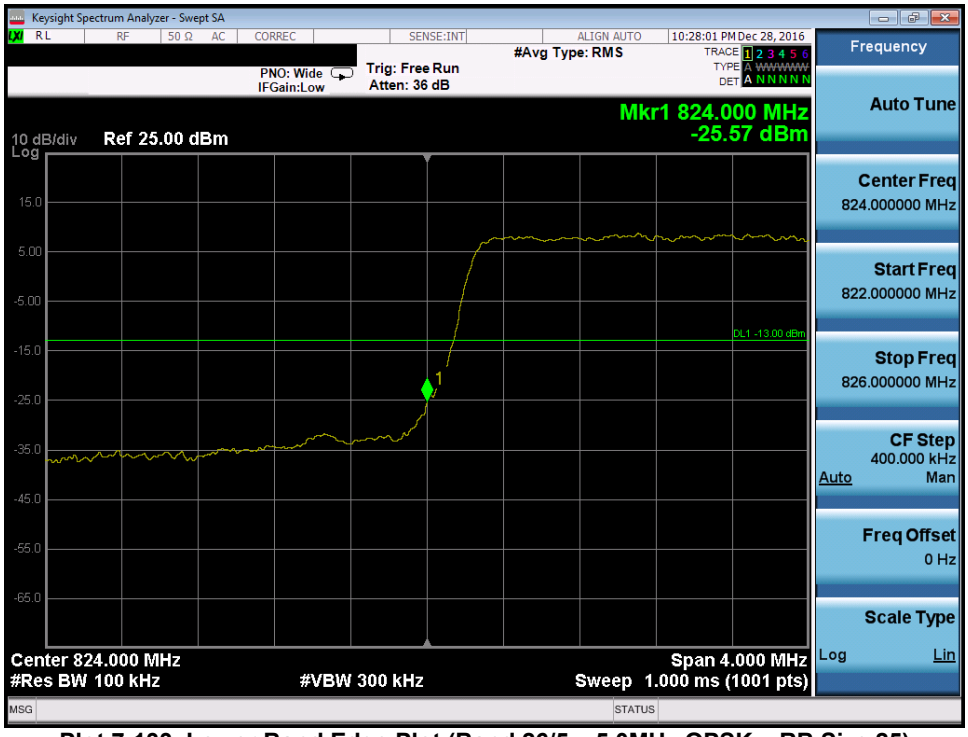
Plot 7-130. Upper Band Edge Plot (Band 26/5 – 1.4MHz QPSK – RB Size 6)



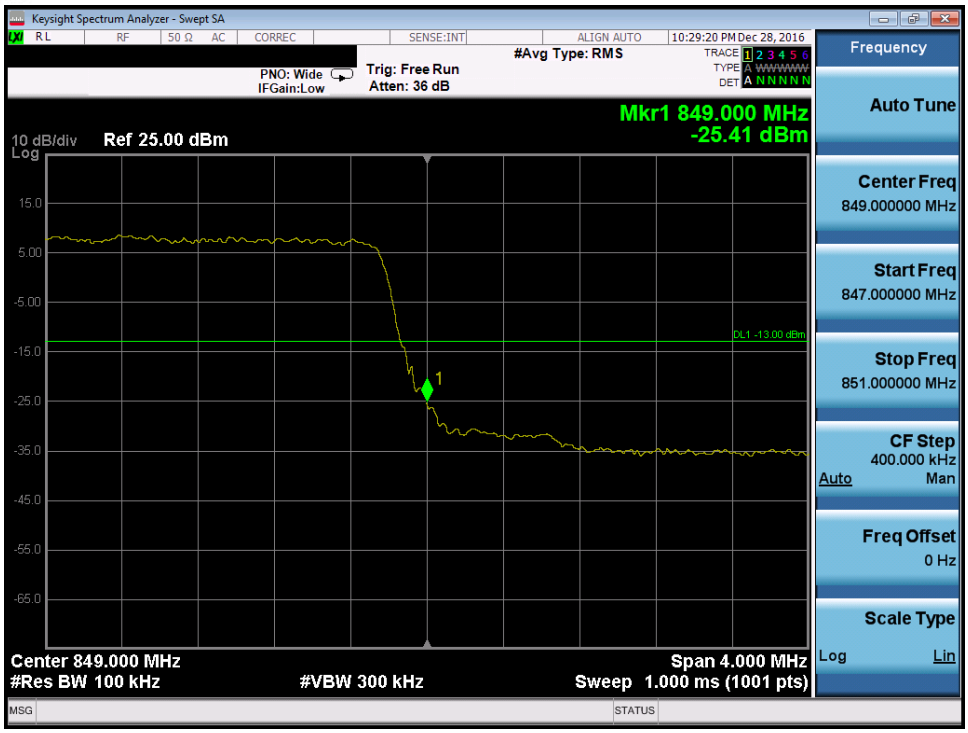
Plot 7-131. Lower Band Edge Plot (Band 26/5 – 3.0MHz QPSK – RB Size 15)



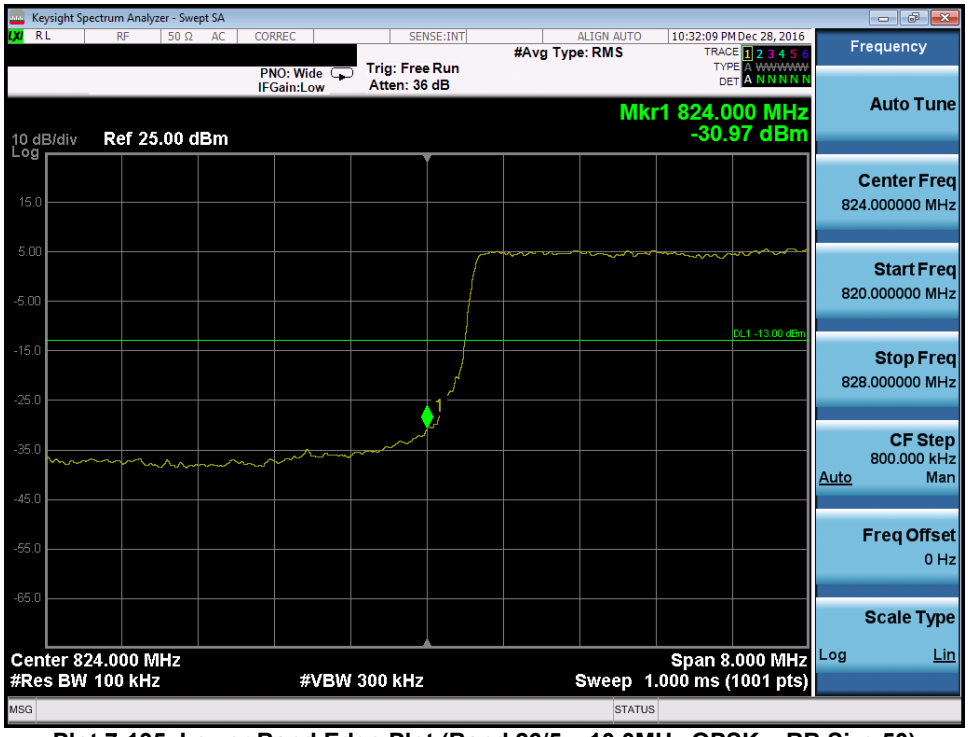
Plot 7-132. Upper Band Edge Plot (Band 26/5 – 3.0MHz QPSK – RB Size 15)



Plot 7-133. Lower Band Edge Plot (Band 26/5 – 5.0MHz QPSK – RB Size 25)

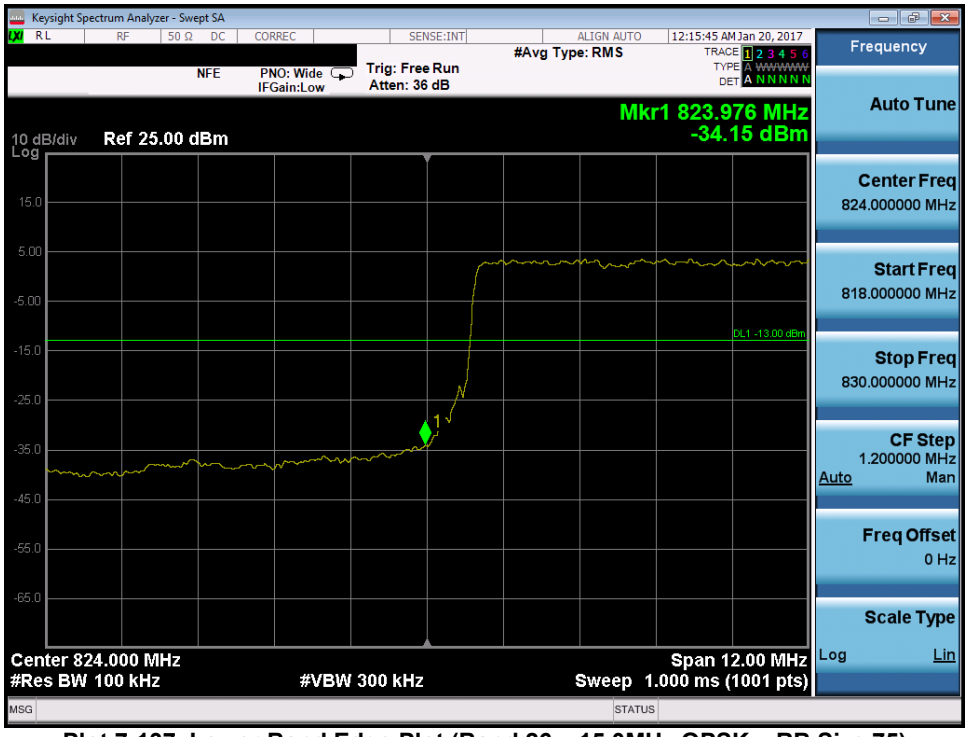


Plot 7-134. Upper Band Edge Plot (Band 26/5 – 5.0MHz QPSK – RB Size 25)



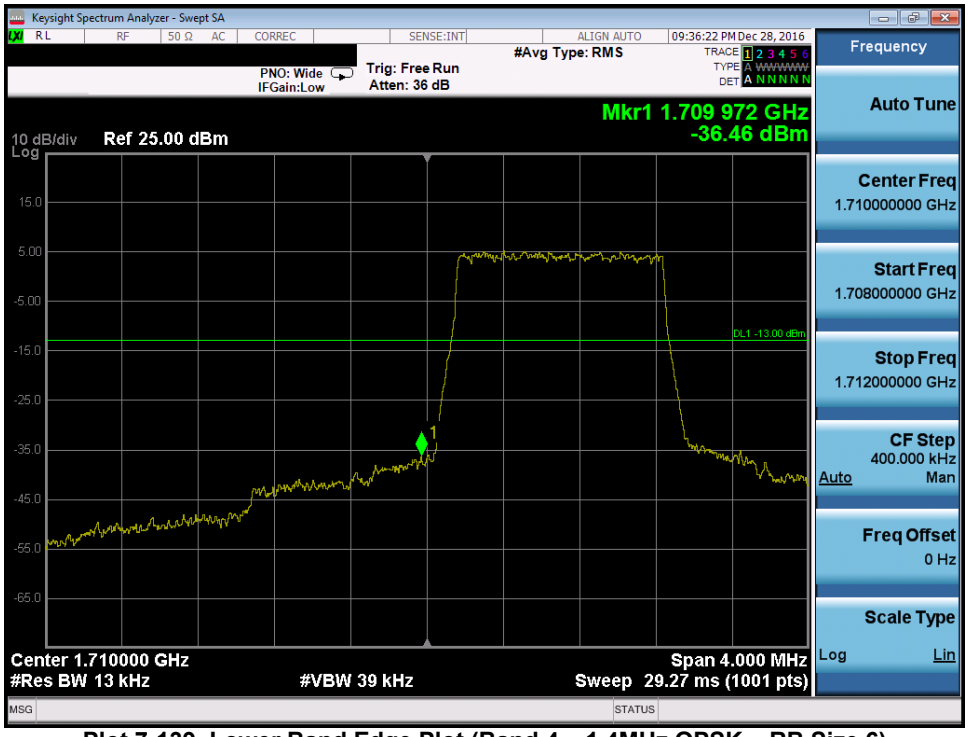
Plot 7-135. Lower Band Edge Plot (Band 26/5 – 10.0MHz QPSK – RB Size 50)

Plot 7-136. Upper Band Edge Plot (Band 26/5 – 10.0MHz QPSK – RB Size 50)

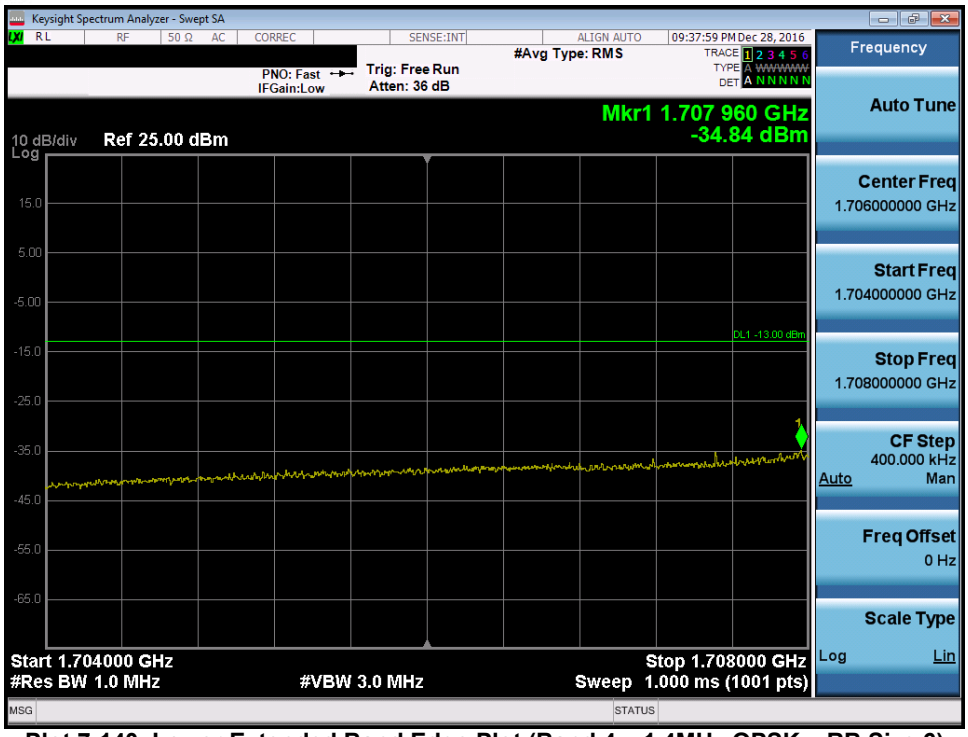


Plot 7-137. Lower Band Edge Plot (Band 26 – 15.0MHz QPSK – RB Size 75)

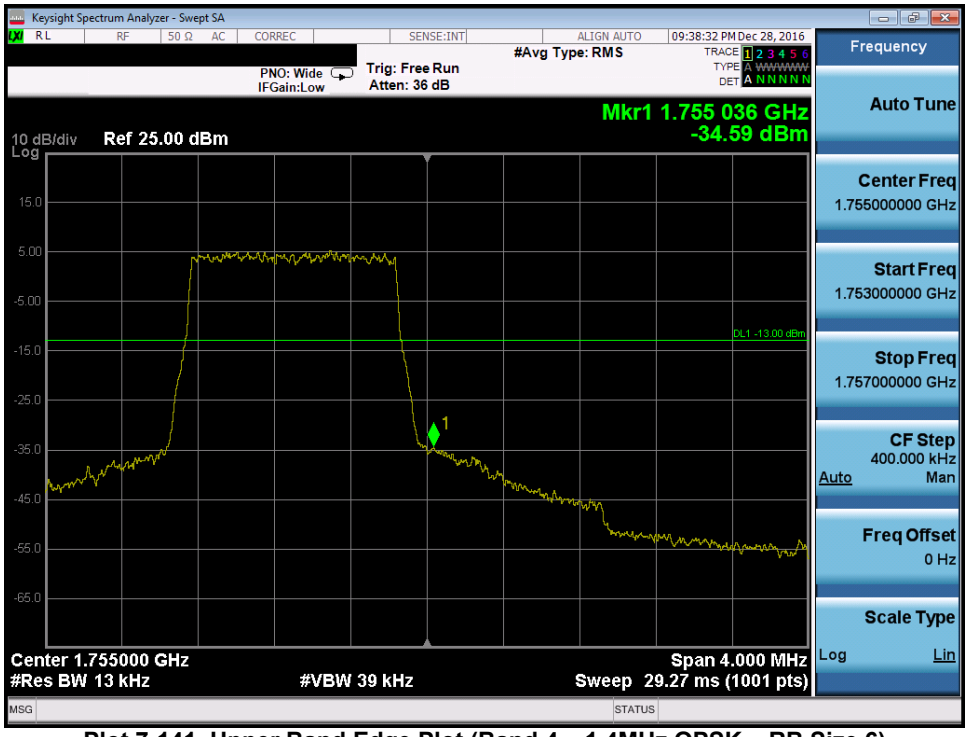
Plot 7-138. Upper Band Edge Plot (Band 26/5 – 15.0MHz QPSK – RB Size 75)



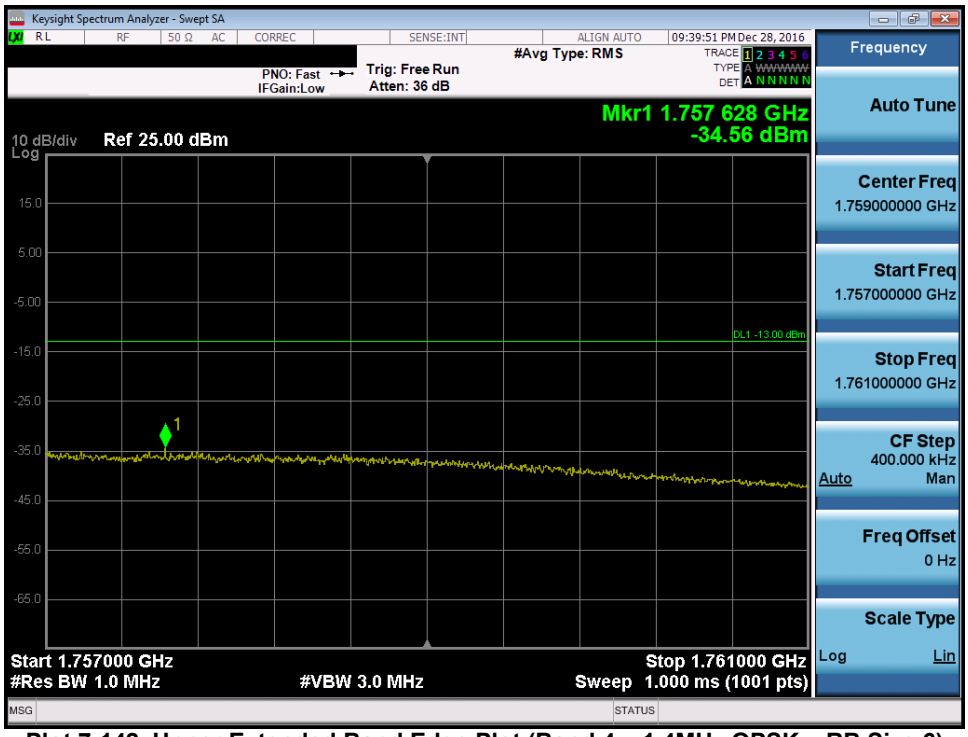
Plot 7-139. Lower Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)



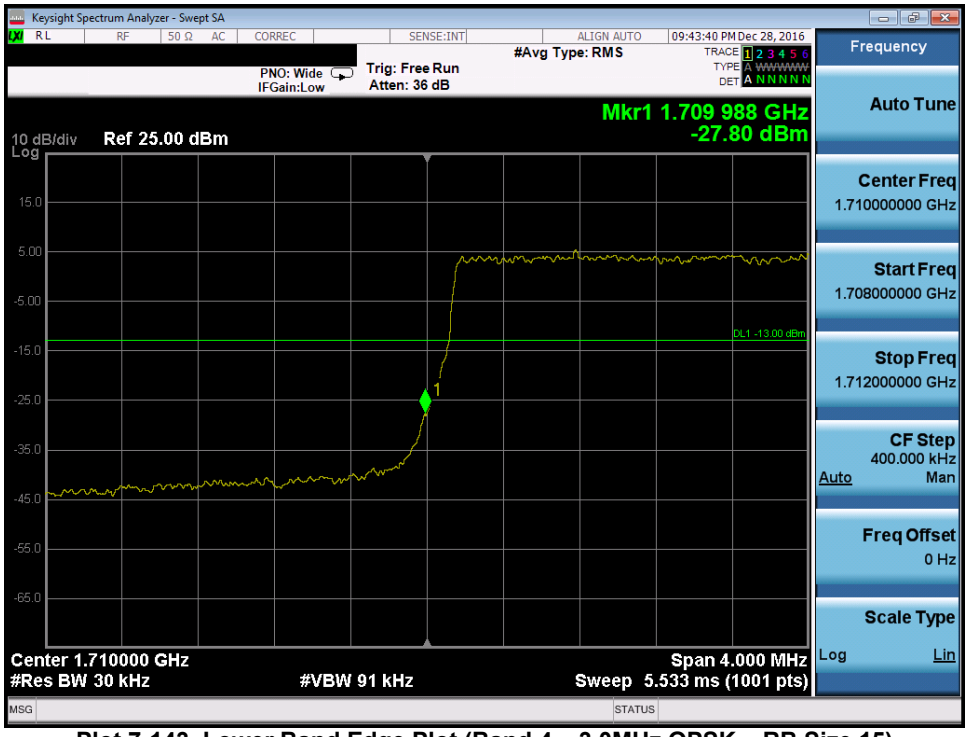
Plot 7-140. Lower Extended Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)



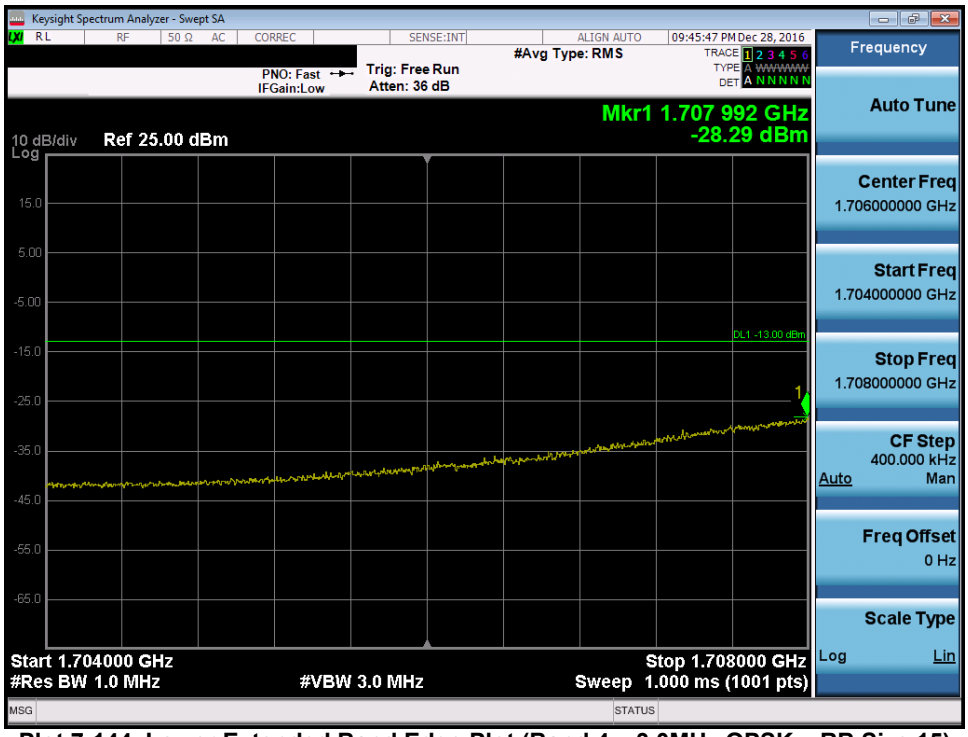
Plot 7-141. Upper Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)



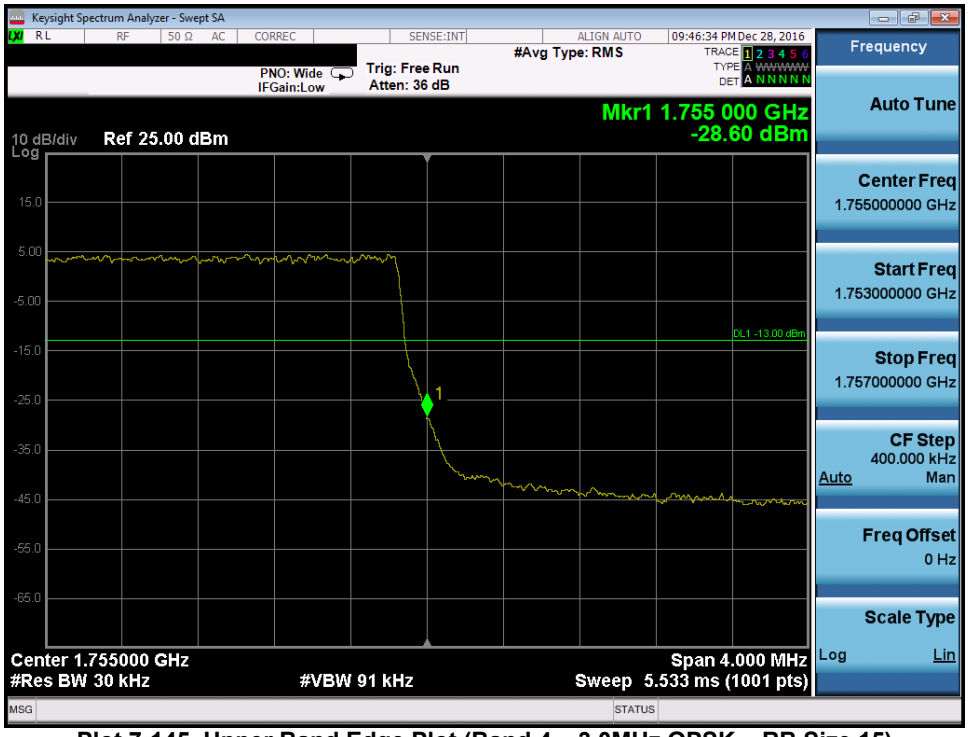
Plot 7-142. Upper Extended Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)



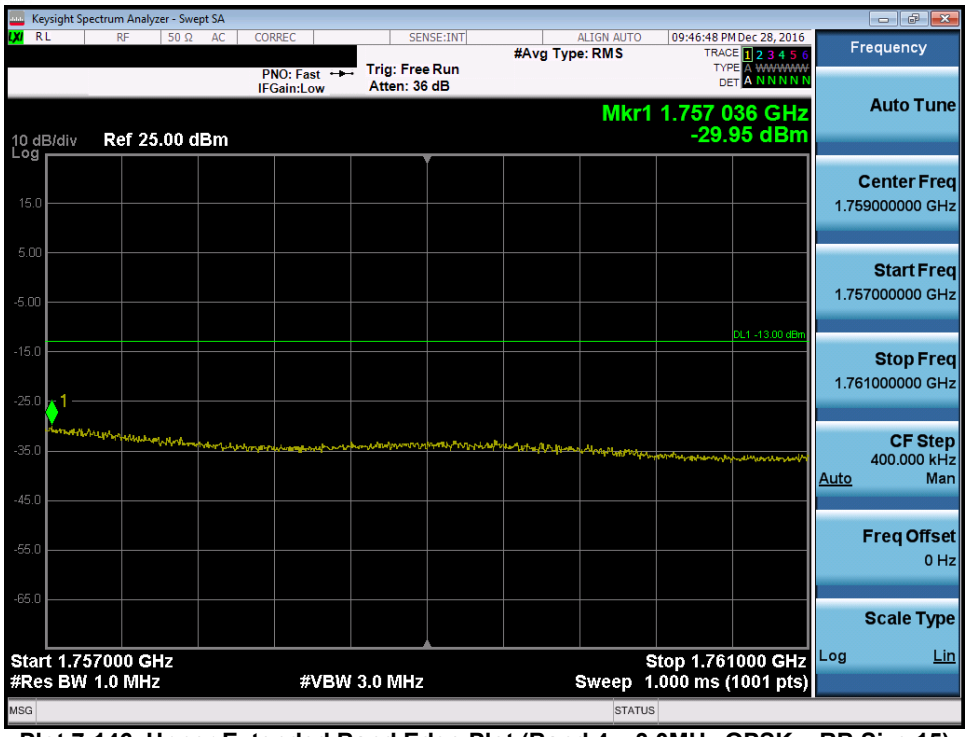
Plot 7-143. Lower Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)



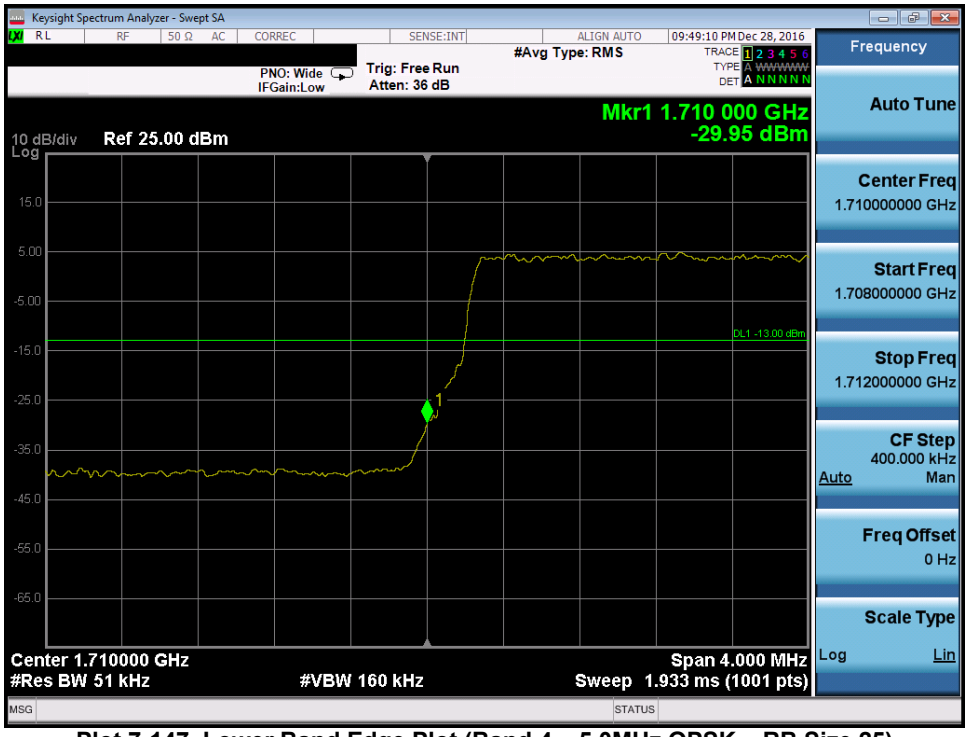
Plot 7-144. Lower Extended Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)



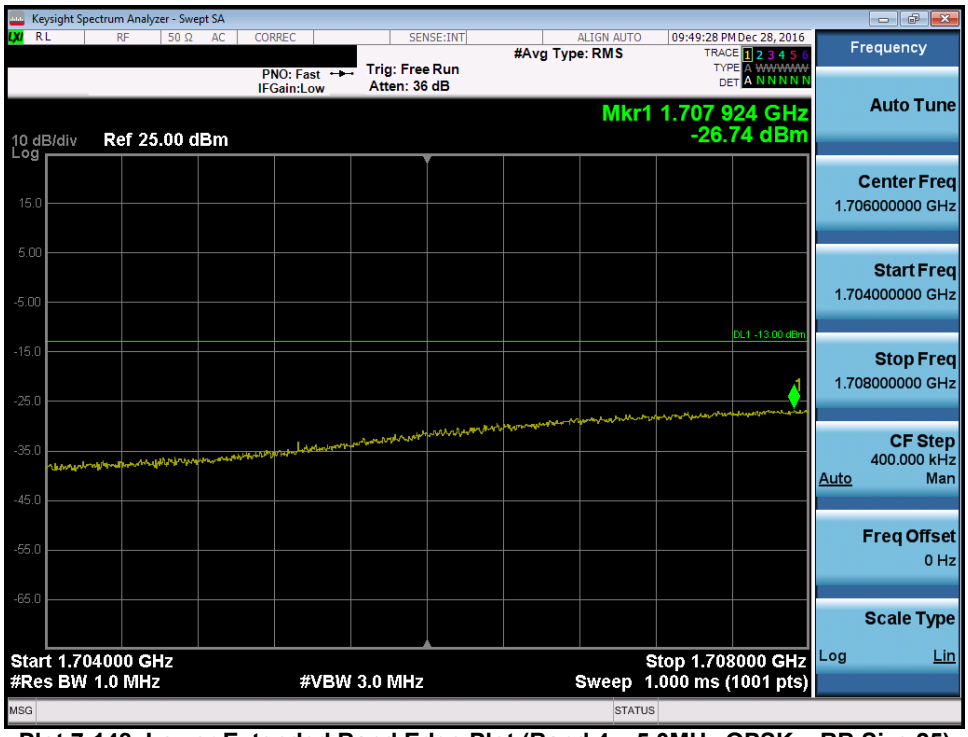
Plot 7-145. Upper Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)



Plot 7-146. Upper Extended Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

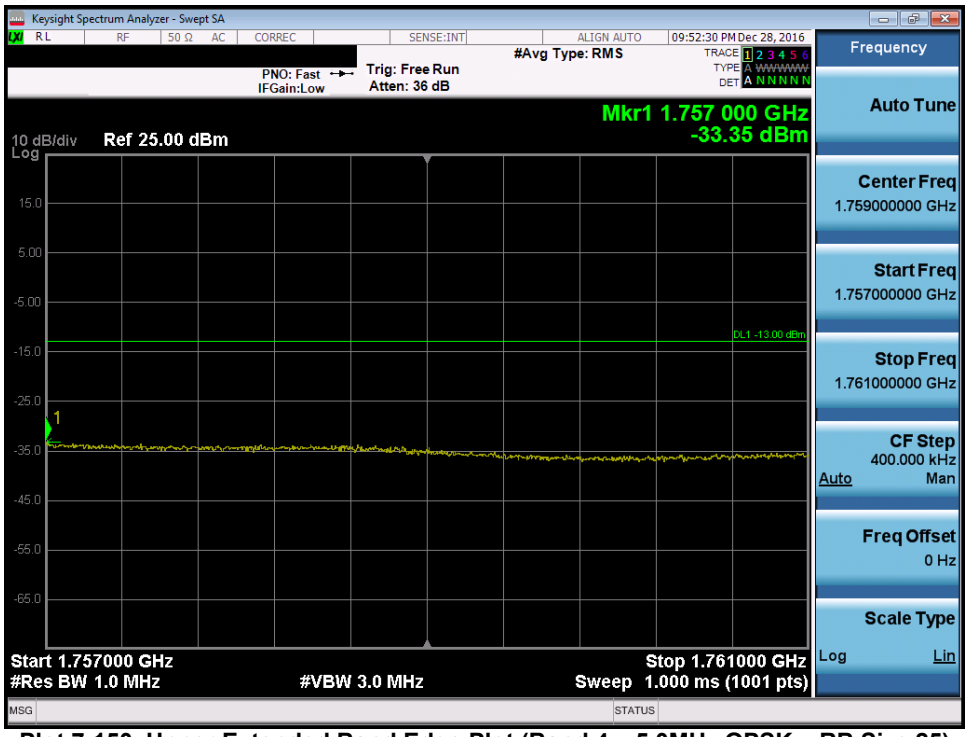


Plot 7-147. Lower Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

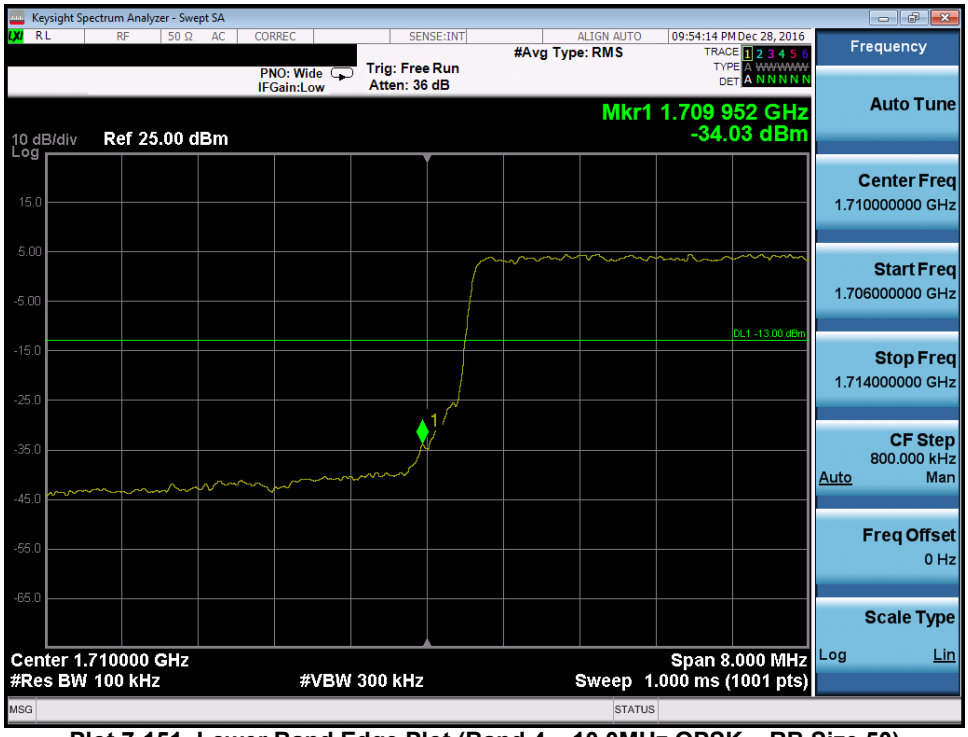


Plot 7-148. Lower Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

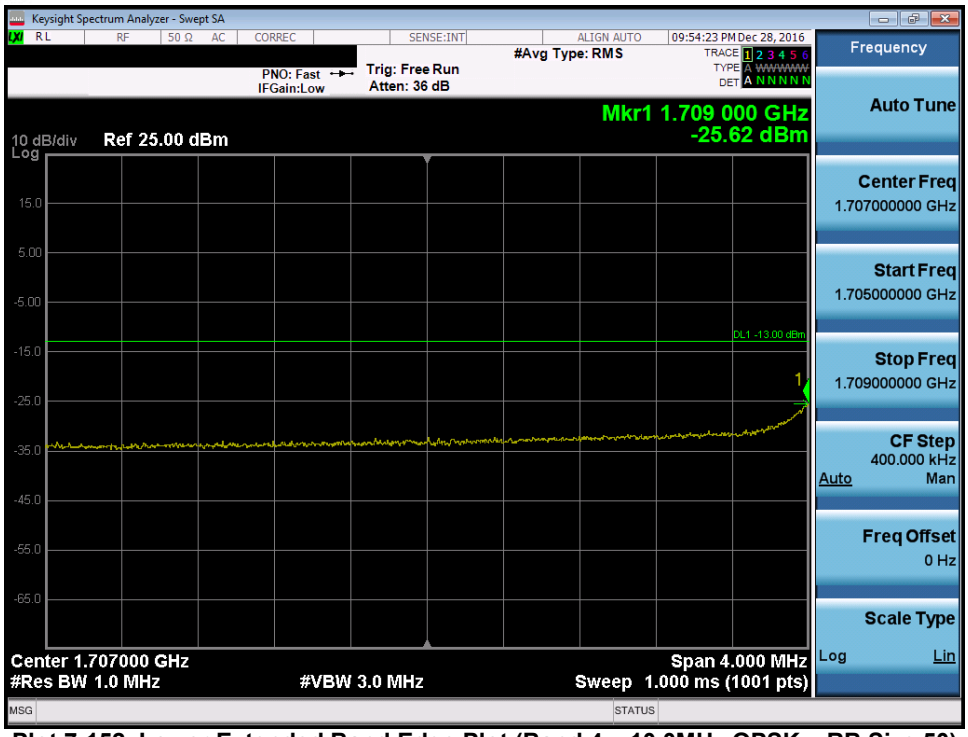
Plot 7-149. Upper Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)



Plot 7-150. Upper Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

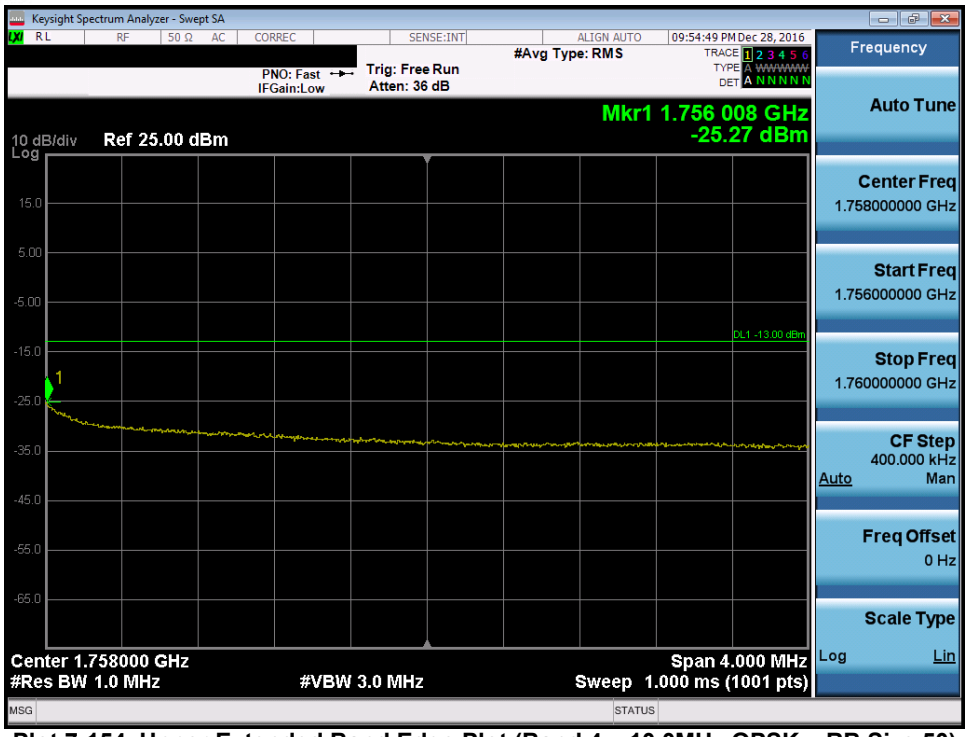


Plot 7-151. Lower Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

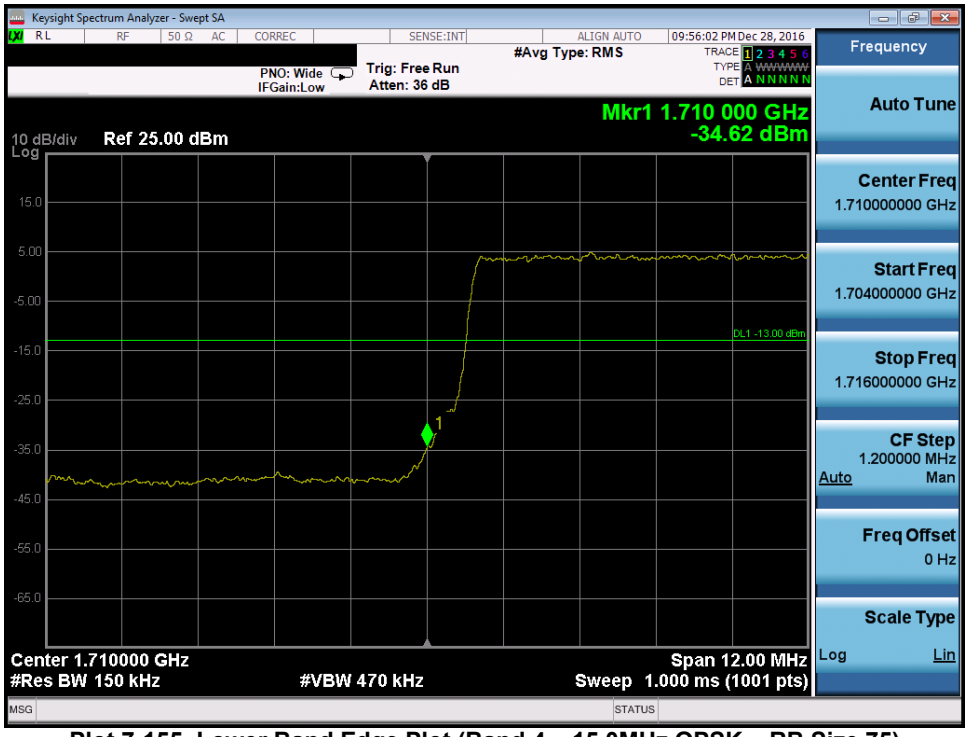


Plot 7-152. Lower Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

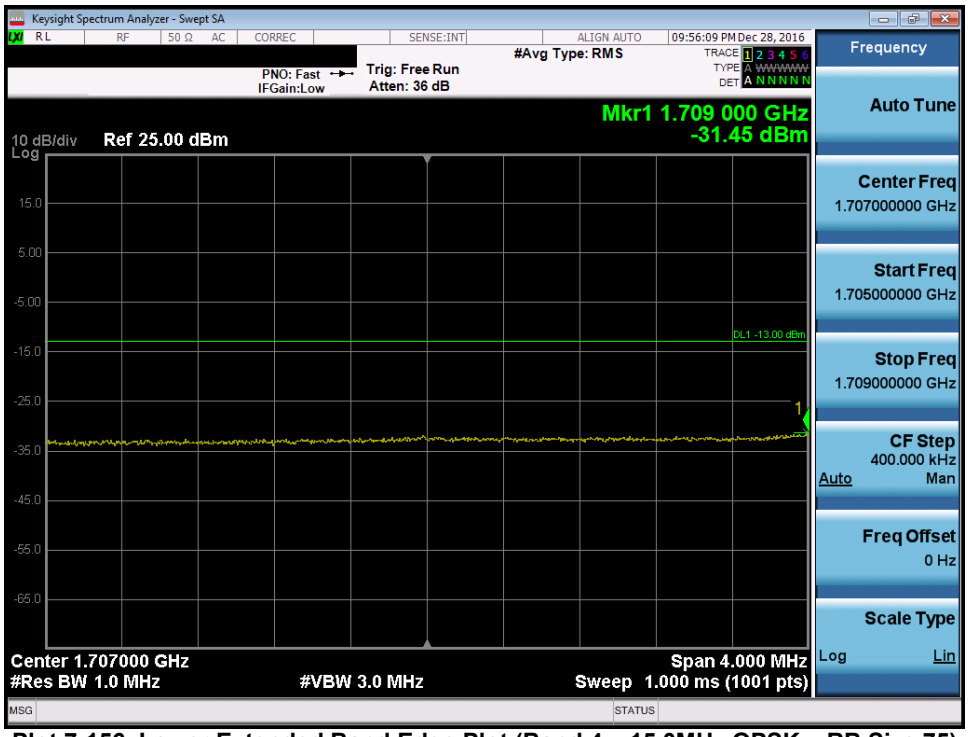
Plot 7-153. Upper Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)



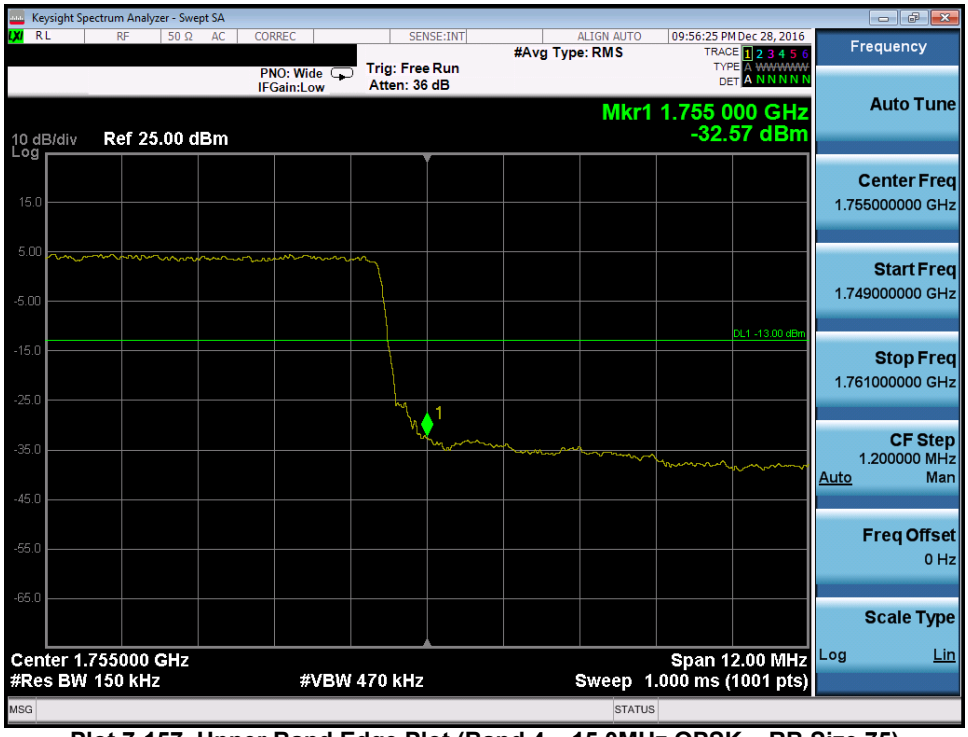
Plot 7-154. Upper Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)



Plot 7-155. Lower Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

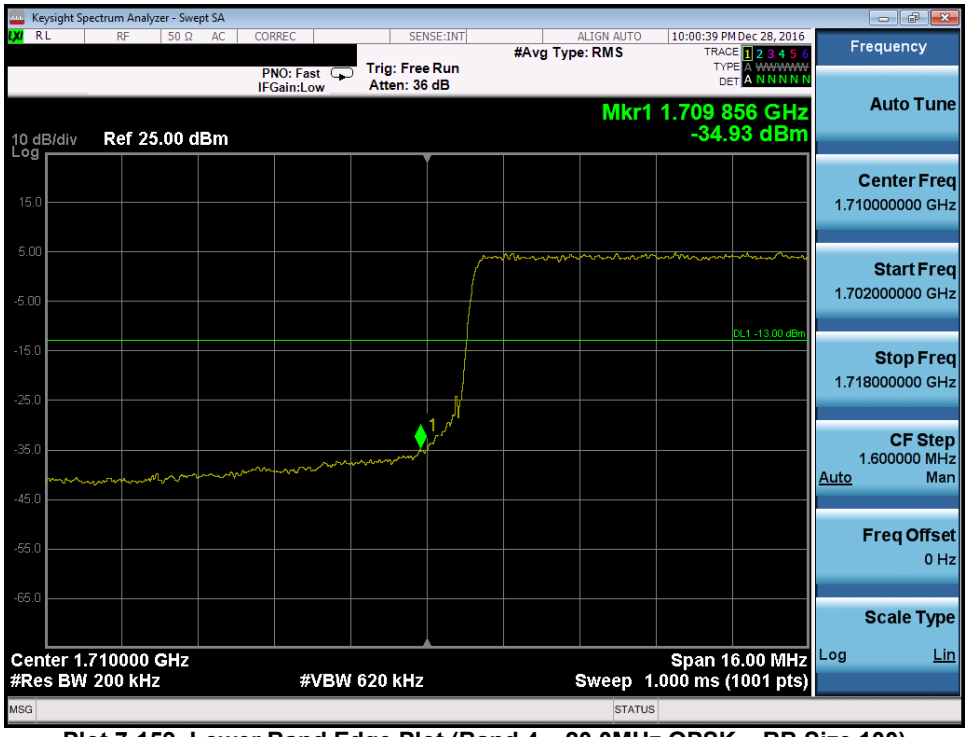


Plot 7-156. Lower Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

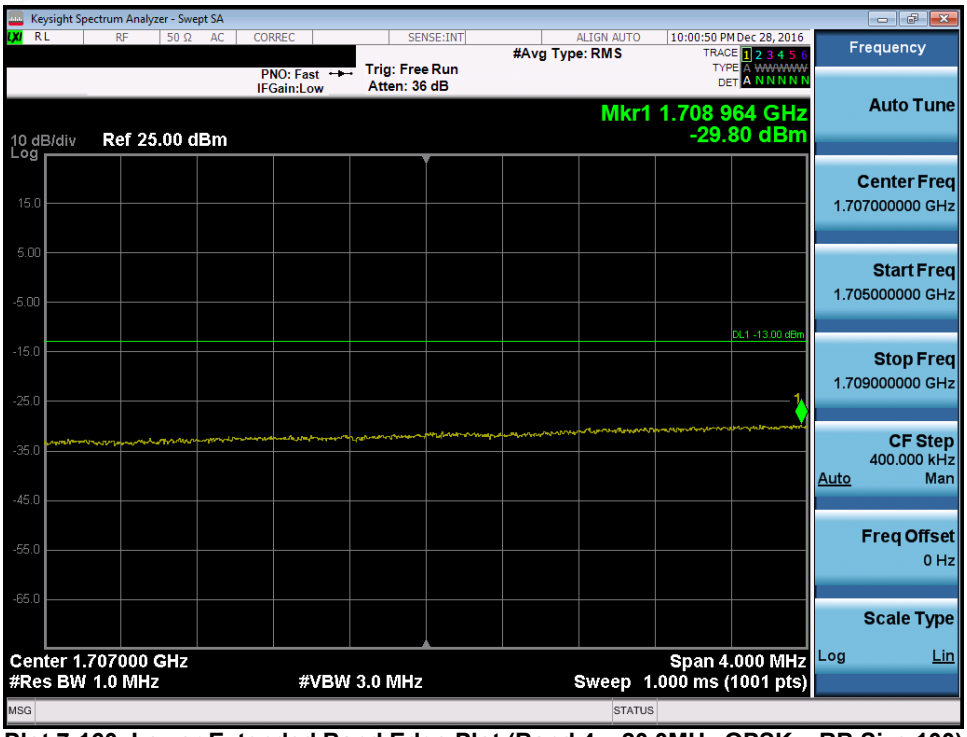


Plot 7-157. Upper Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

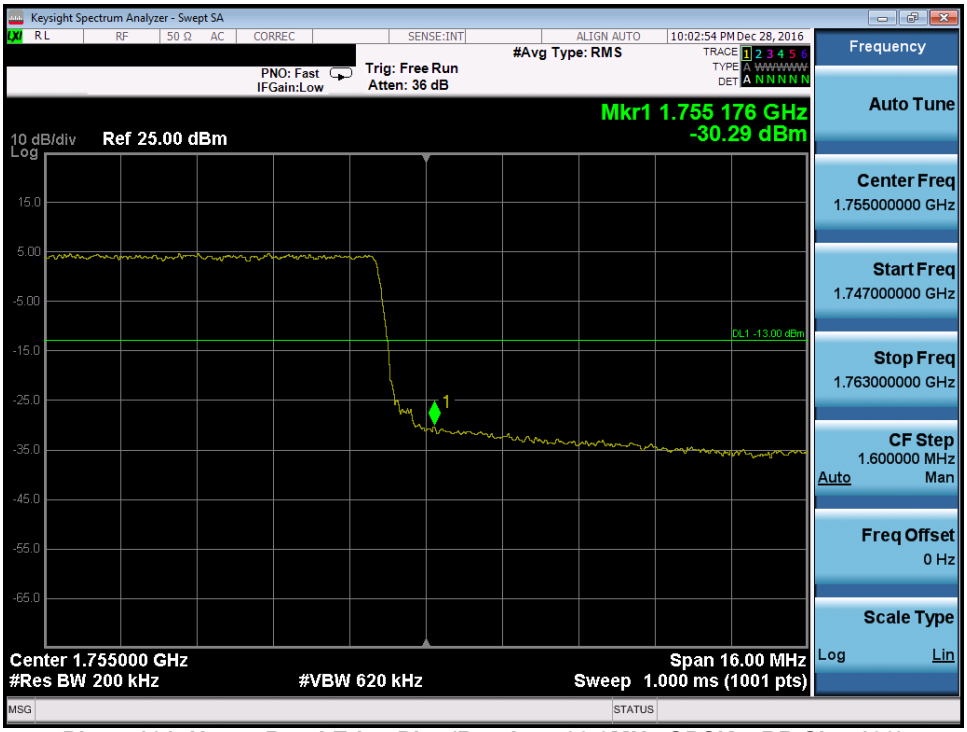
Plot 7-158. Upper Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)



Plot 7-159. Lower Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

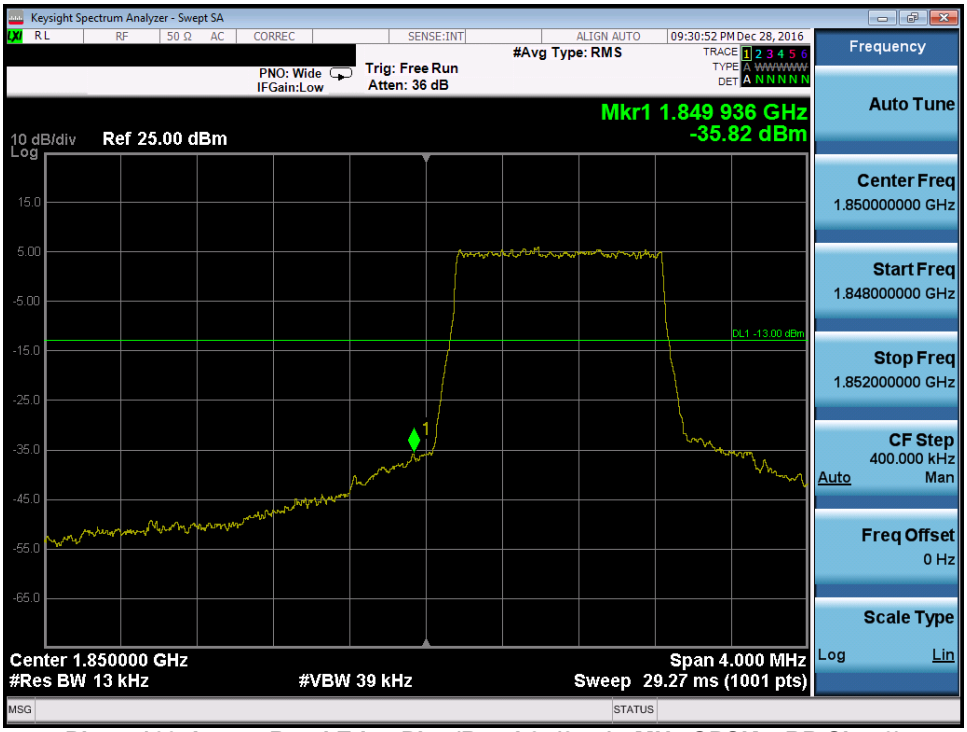


Plot 7-160. Lower Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

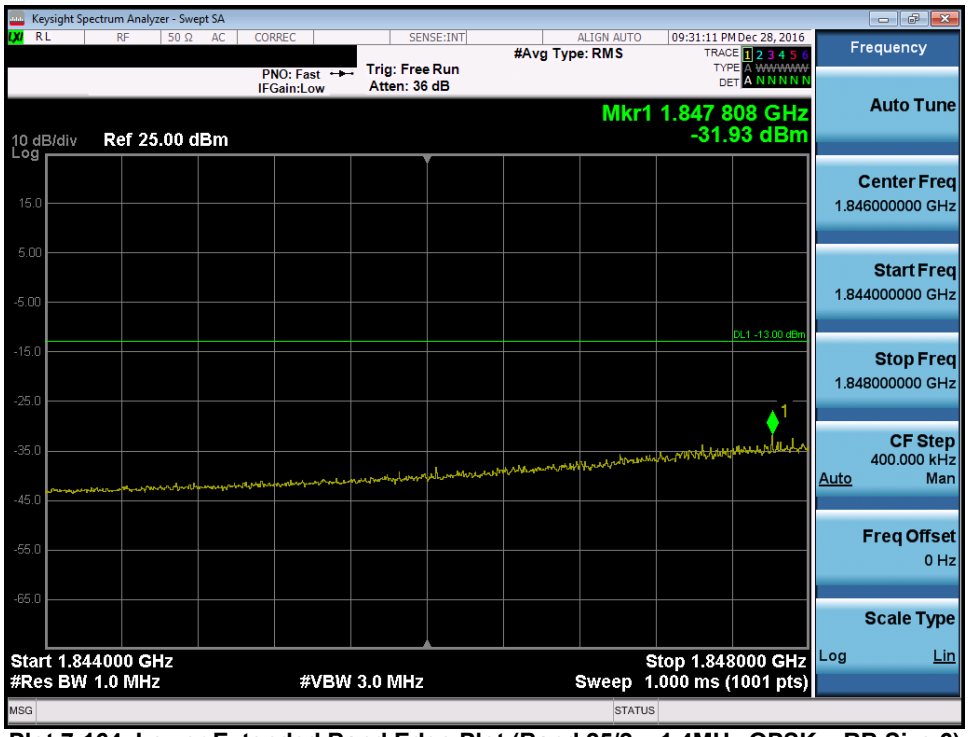


Plot 7-161. Upper Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

Plot 7-162. Upper Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

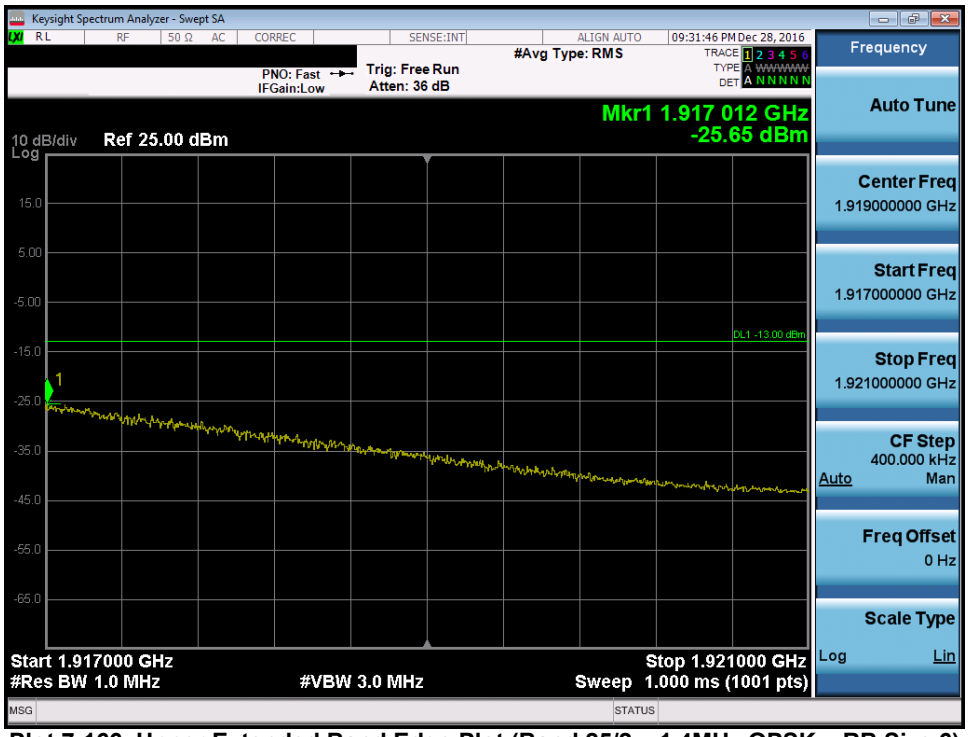


Plot 7-163. Lower Band Edge Plot (Band 25/2 – 1.4MHz QPSK – RB Size 6)

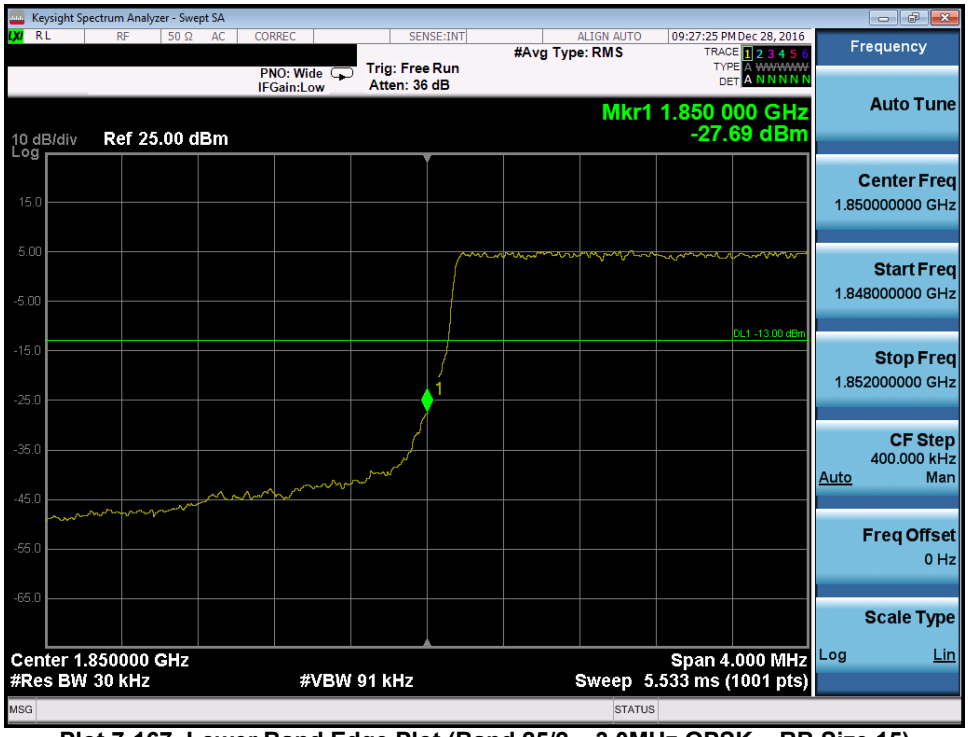


Plot 7-164. Lower Extended Band Edge Plot (Band 25/2 – 1.4MHz QPSK – RB Size 6)

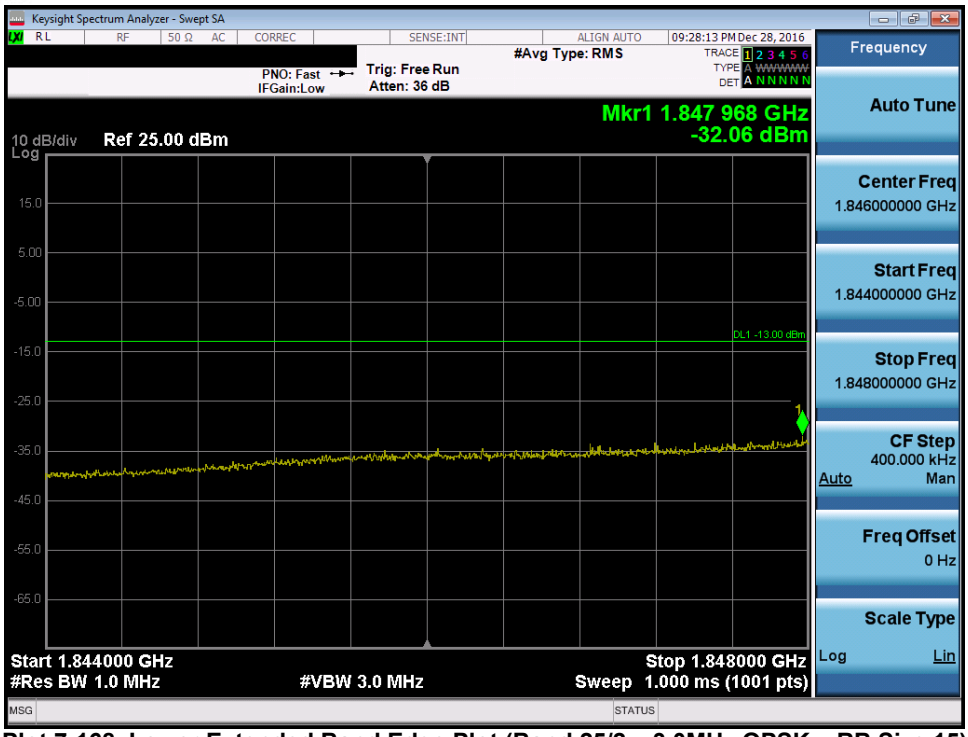
Plot 7-165. Upper Band Edge Plot (Band 25/2 – 1.4MHz QPSK – RB Size 6)



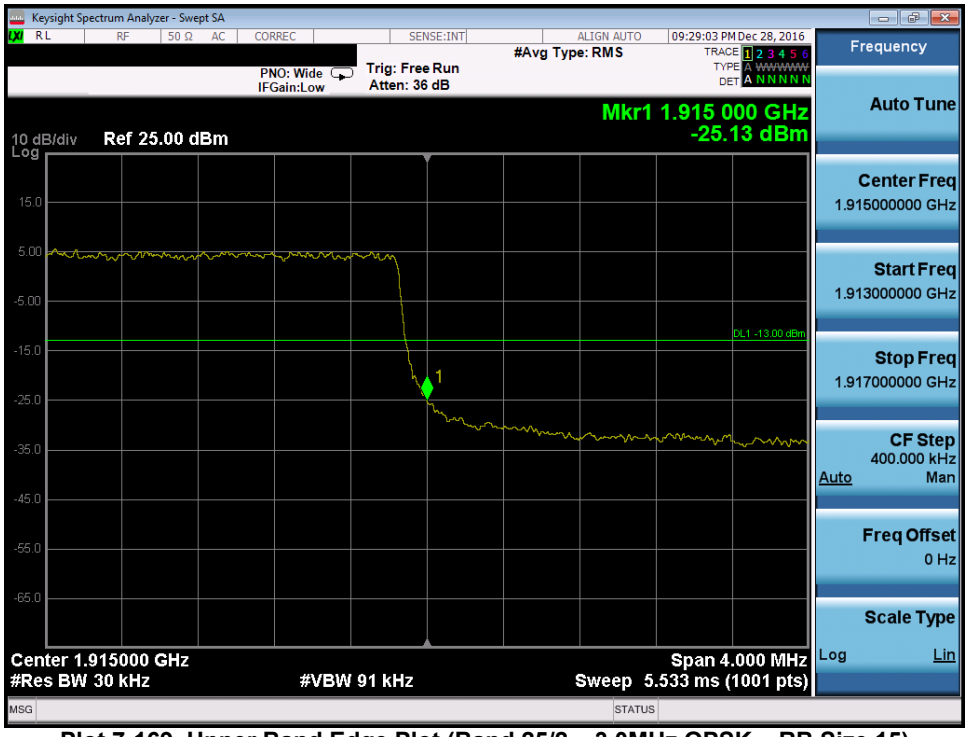
Plot 7-166. Upper Extended Band Edge Plot (Band 25/2 – 1.4MHz QPSK – RB Size 6)



Plot 7-167. Lower Band Edge Plot (Band 25/2 – 3.0MHz QPSK – RB Size 15)

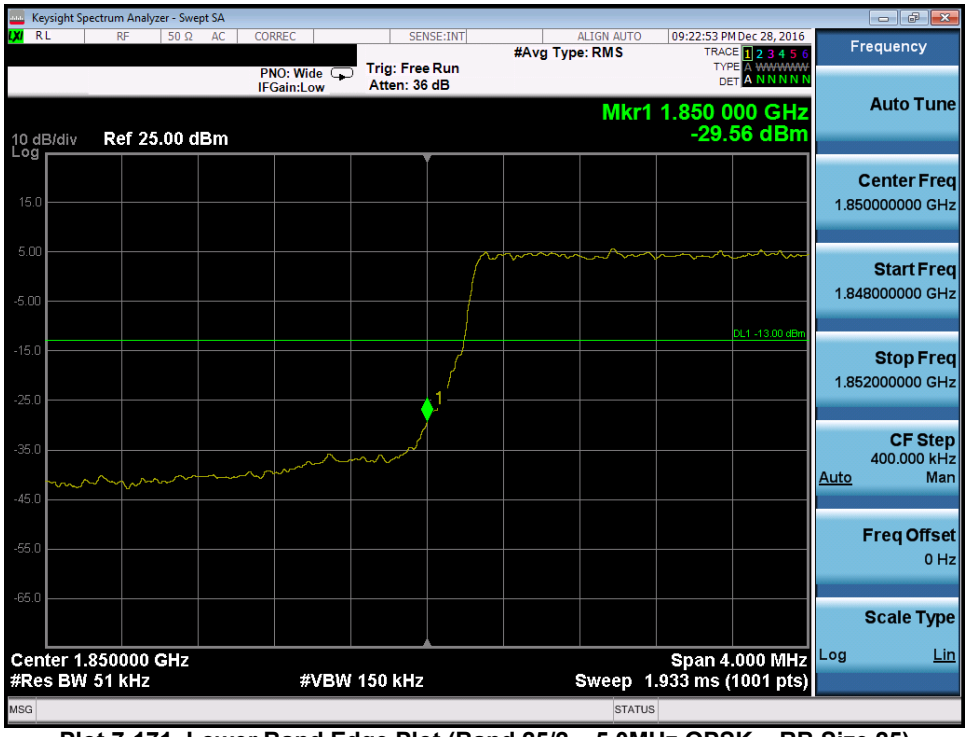


Plot 7-168. Lower Extended Band Edge Plot (Band 25/2 – 3.0MHz QPSK – RB Size 15)

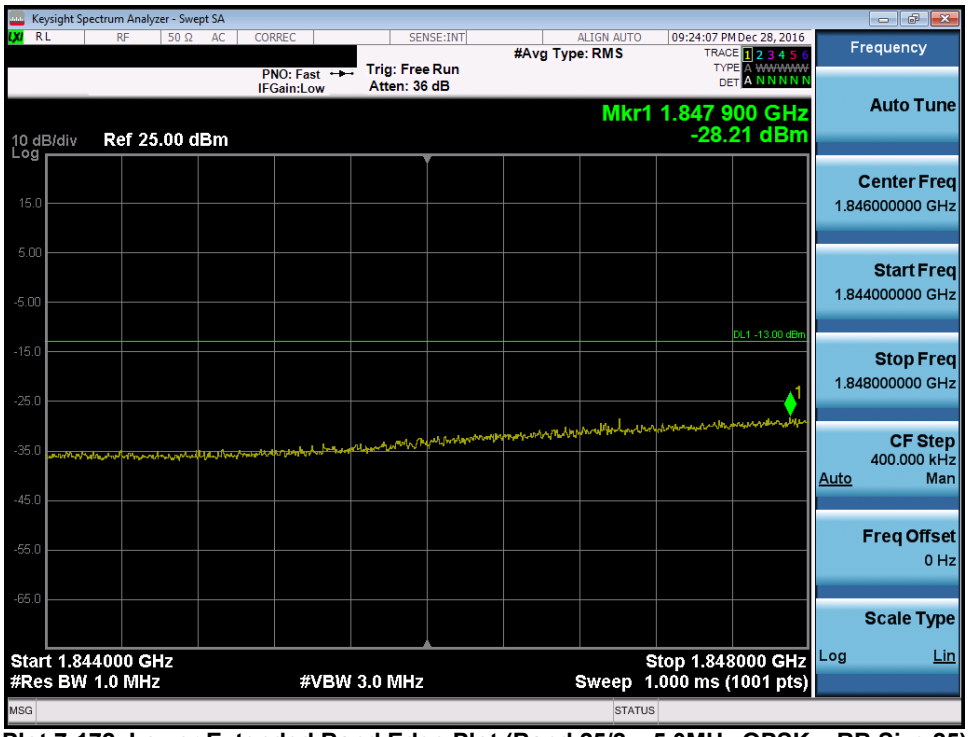


Plot 7-169. Upper Band Edge Plot (Band 25/2 – 3.0MHz QPSK – RB Size 15)

Plot 7-170. Upper Extended Band Edge Plot (Band 25/2 – 3.0MHz QPSK – RB Size 15)



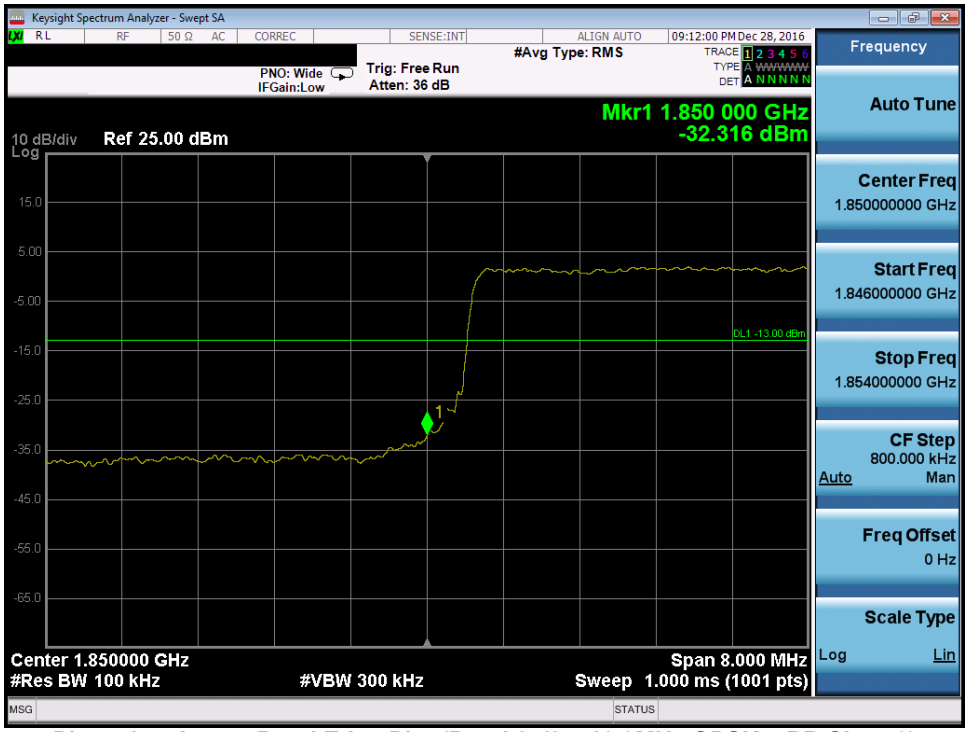
Plot 7-171. Lower Band Edge Plot (Band 25/2 – 5.0MHz QPSK – RB Size 25)



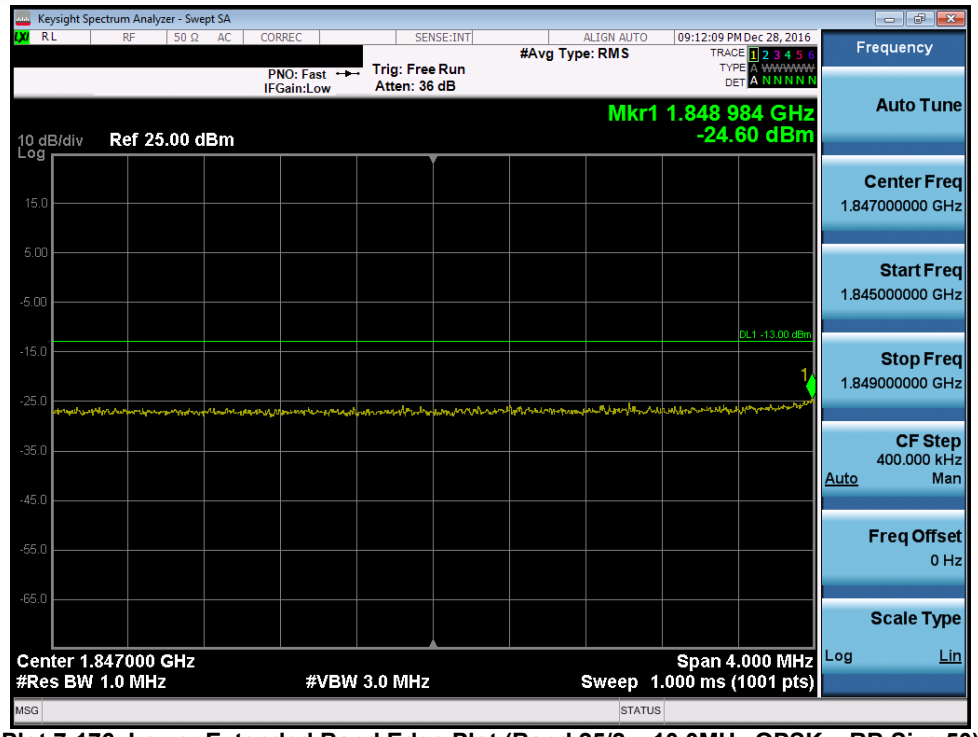
Plot 7-172. Lower Extended Band Edge Plot (Band 25/2 – 5.0MHz QPSK – RB Size 25)

Plot 7-173. Upper Band Edge Plot (Band 25/2 – 5.0MHz QPSK – RB Size 25)

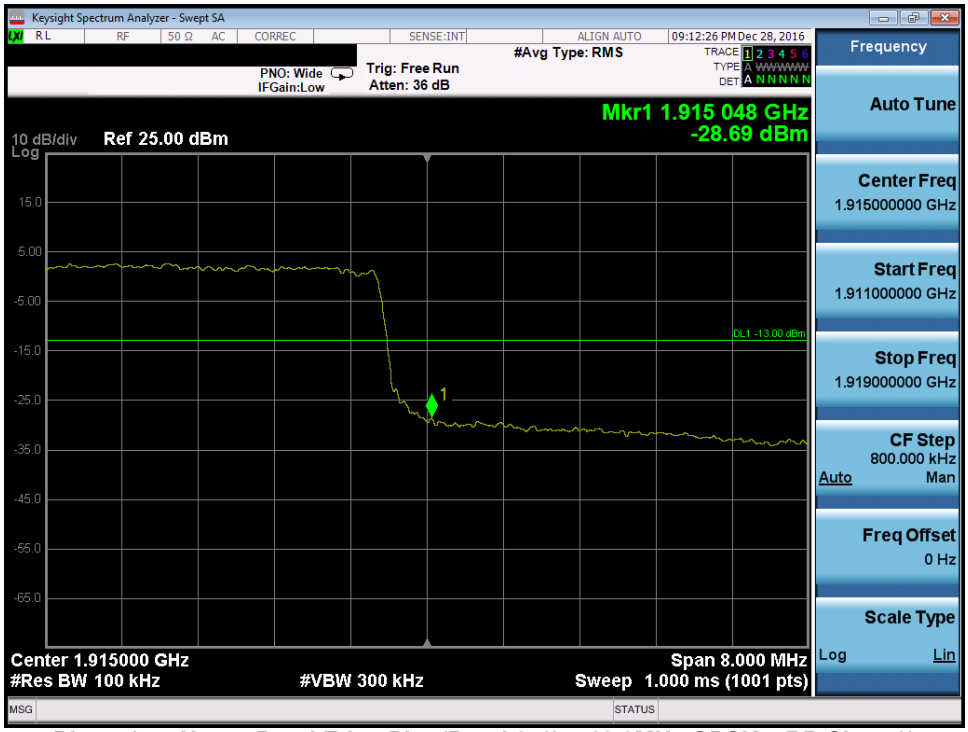
Plot 7-174. Upper Extended Band Edge Plot (Band 25/2 – 5.0MHz QPSK – RB Size 25)



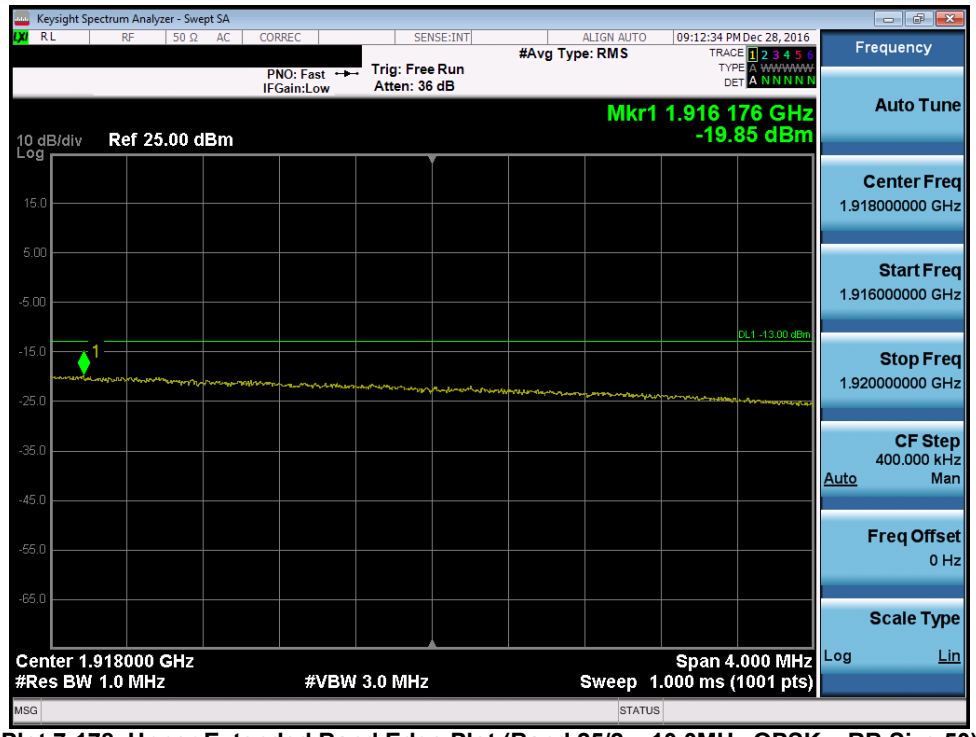
Plot 7-175. Lower Band Edge Plot (Band 25/2 – 10.0MHz QPSK – RB Size 50)



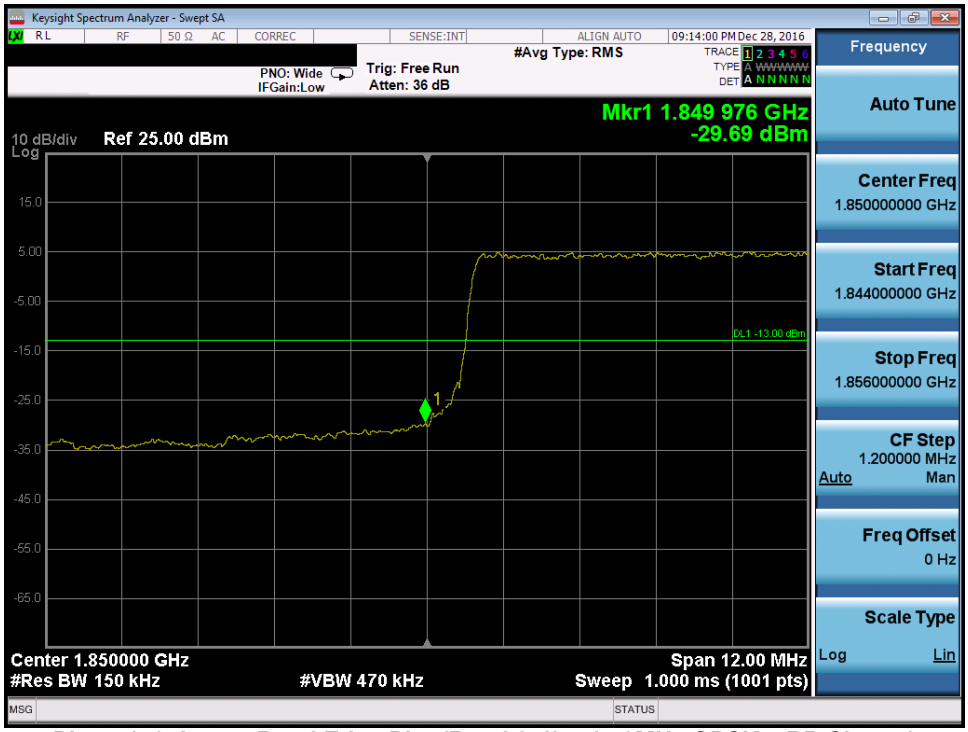
Plot 7-176. Lower Extended Band Edge Plot (Band 25/2 – 10.0MHz QPSK – RB Size 50)



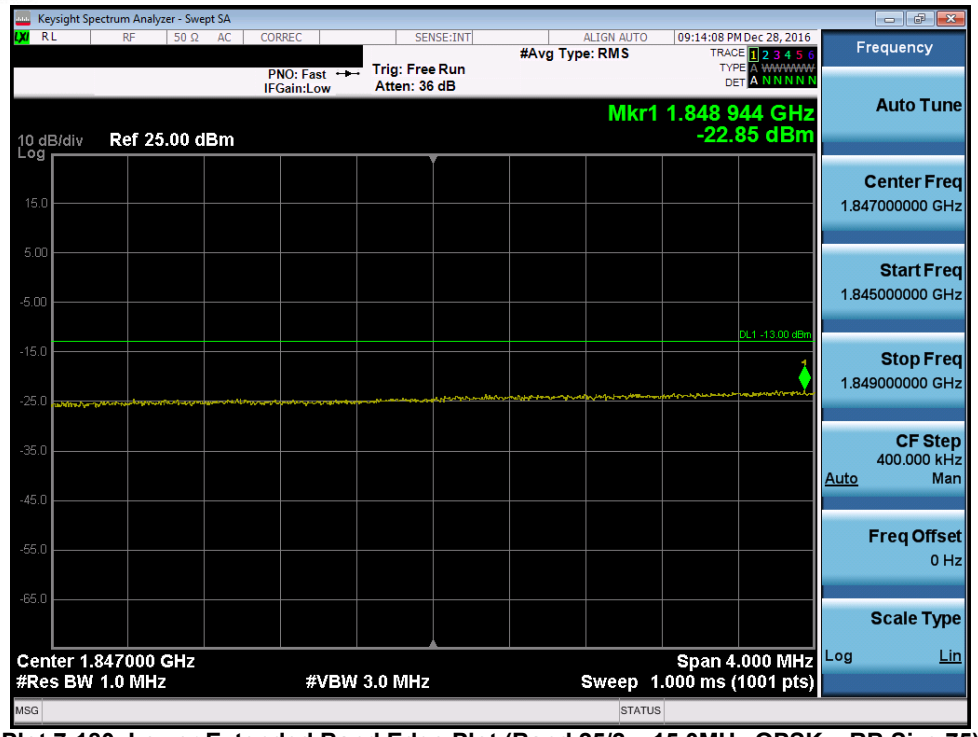
Plot 7-177. Upper Band Edge Plot (Band 25/2 – 10.0MHz QPSK – RB Size 50)



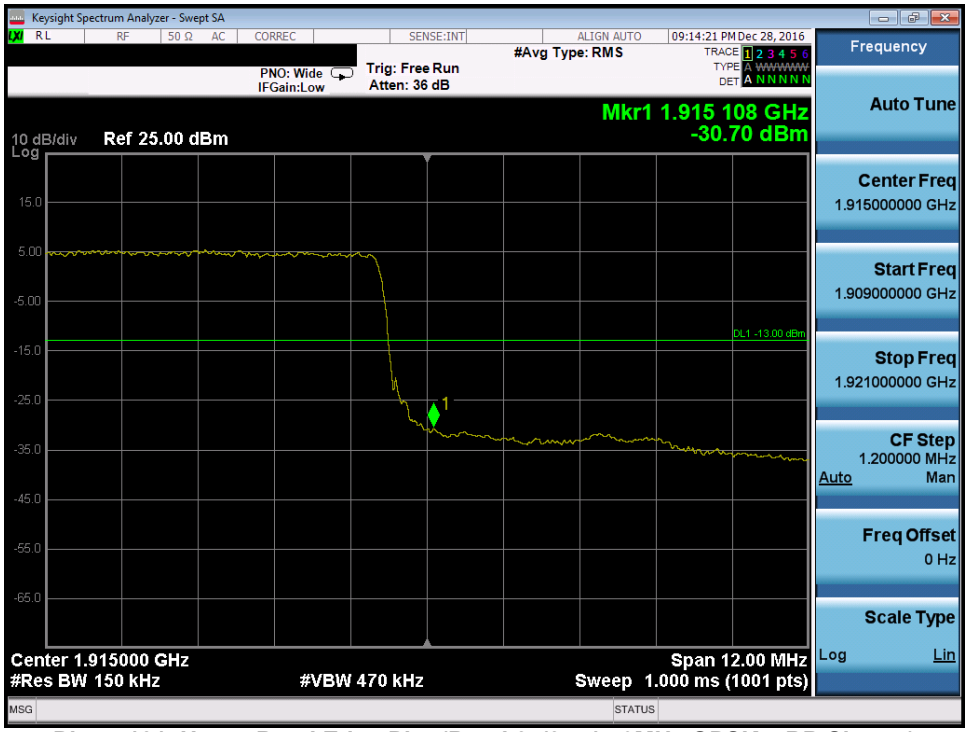
Plot 7-178. Upper Extended Band Edge Plot (Band 25/2 – 10.0MHz QPSK – RB Size 50)



Plot 7-179. Lower Band Edge Plot (Band 25/2 – 15.0MHz QPSK – RB Size 75)

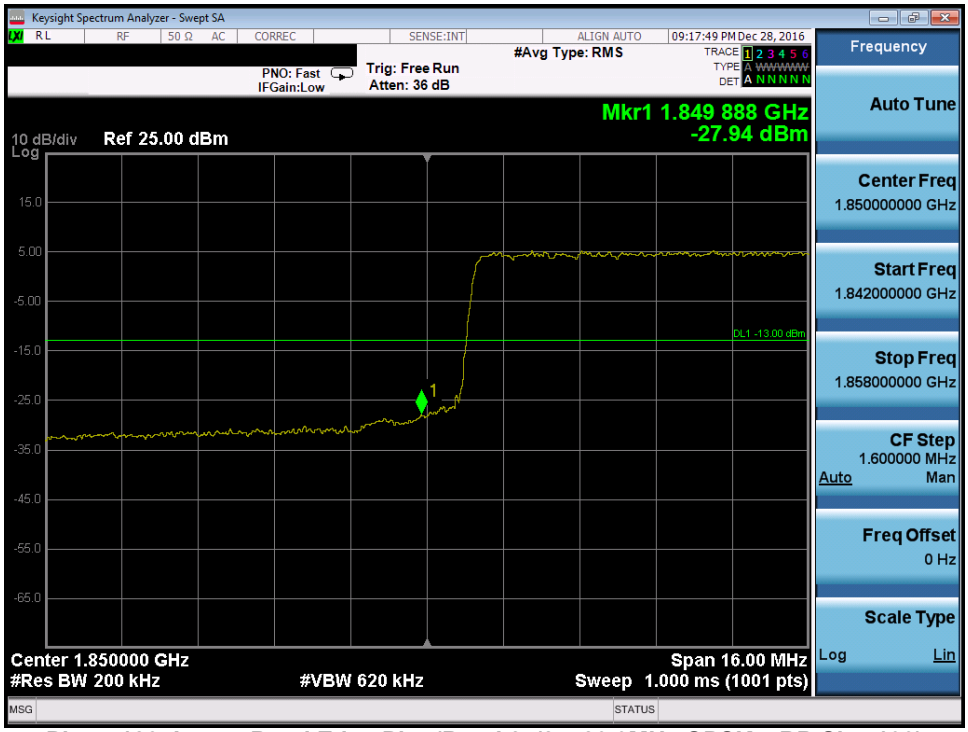


Plot 7-180. Lower Extended Band Edge Plot (Band 25/2 – 15.0MHz QPSK – RB Size 75)

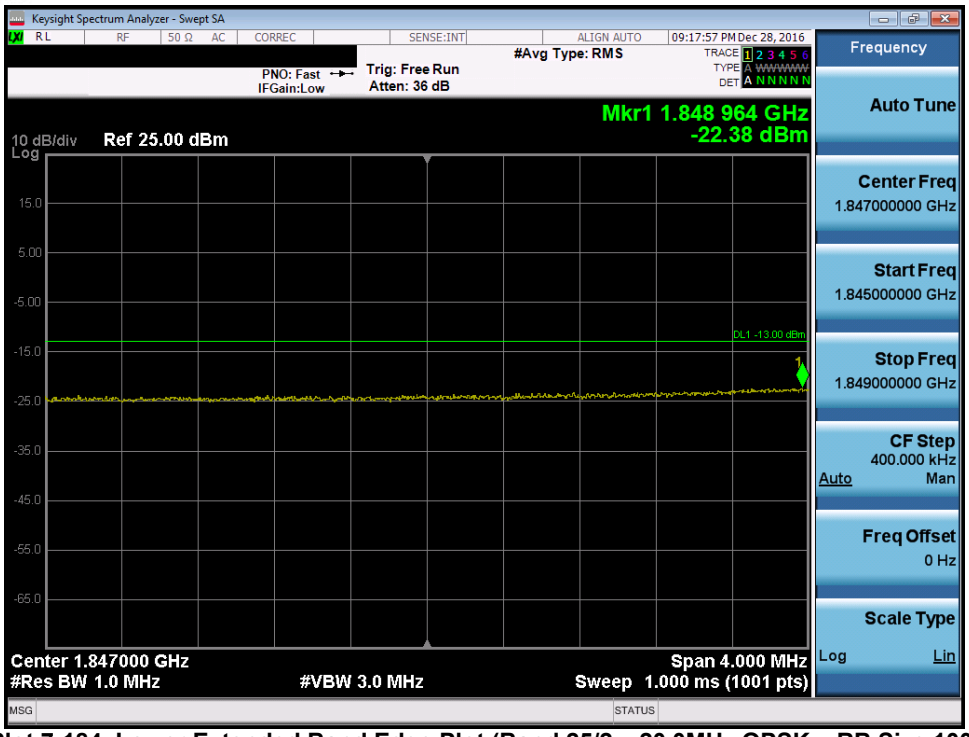


Plot 7-181. Upper Band Edge Plot (Band 25/2 – 15.0MHz QPSK – RB Size 75)

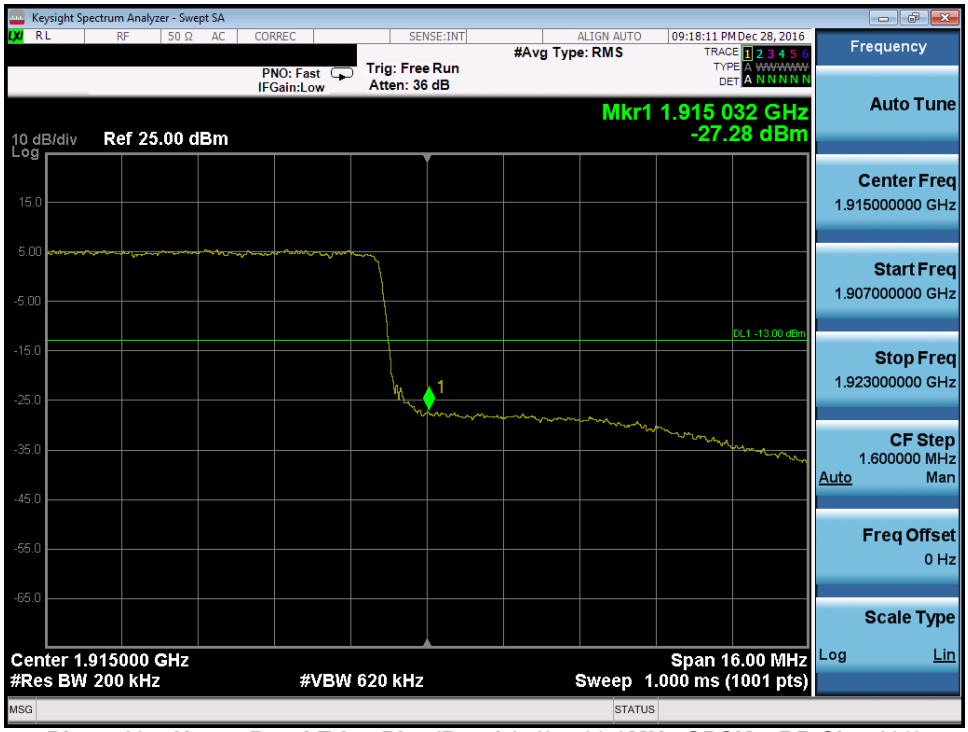
Plot 7-182. Upper Extended Band Edge Plot (Band 25/2 – 15.0MHz QPSK – RB Size 75)



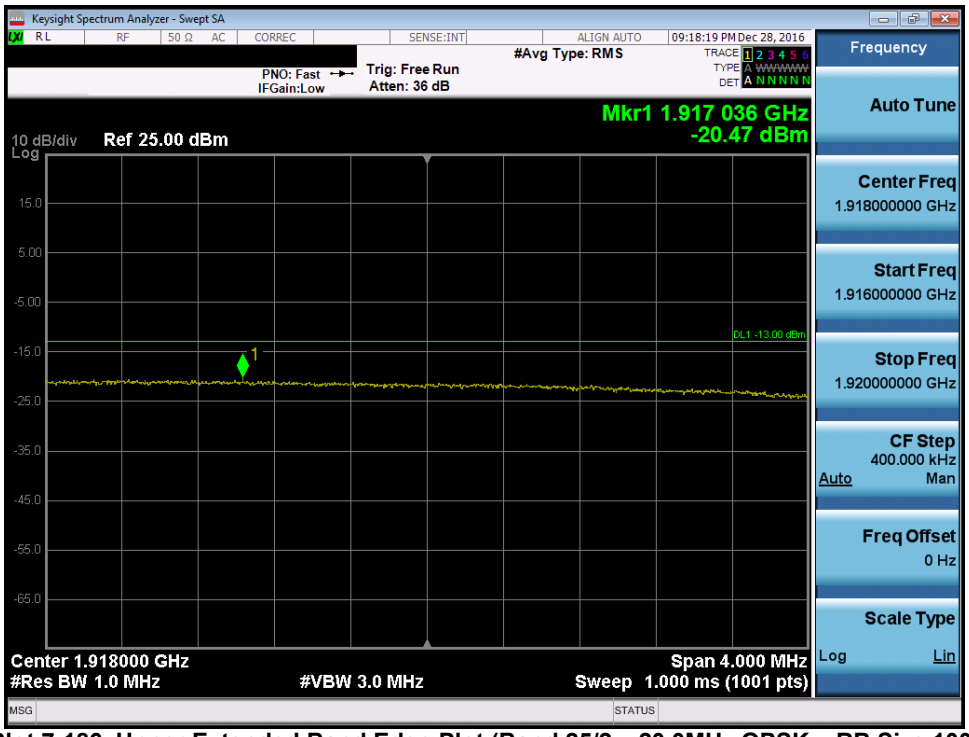
Plot 7-183. Lower Band Edge Plot (Band 25/2 – 20.0MHz QPSK – RB Size 100)



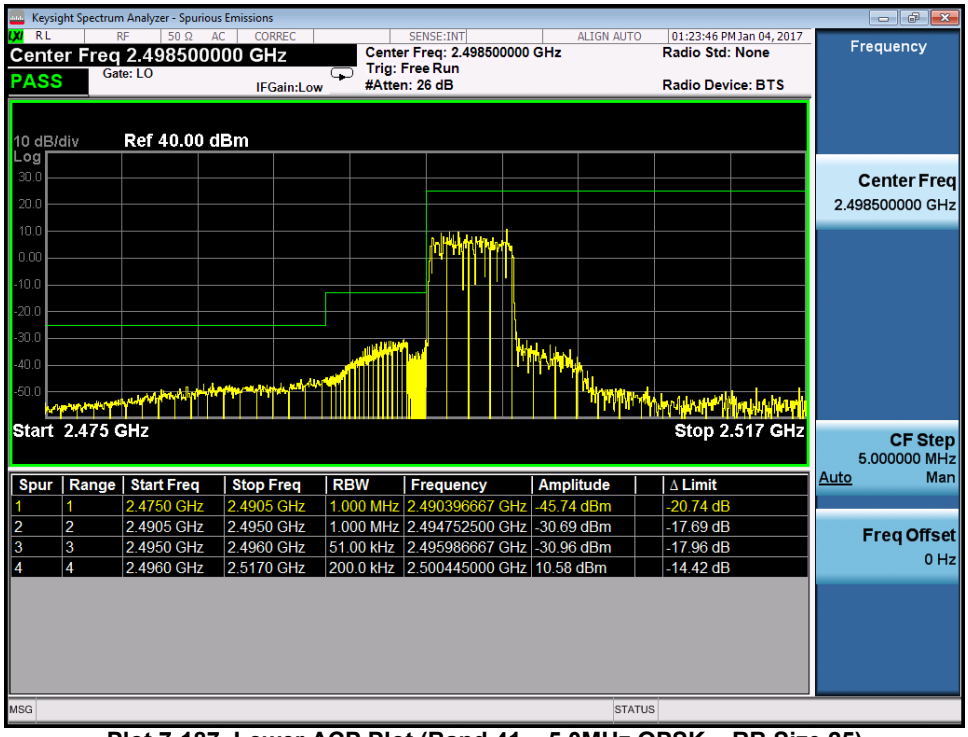
Plot 7-184. Lower Extended Band Edge Plot (Band 25/2 – 20.0MHz QPSK – RB Size 100)



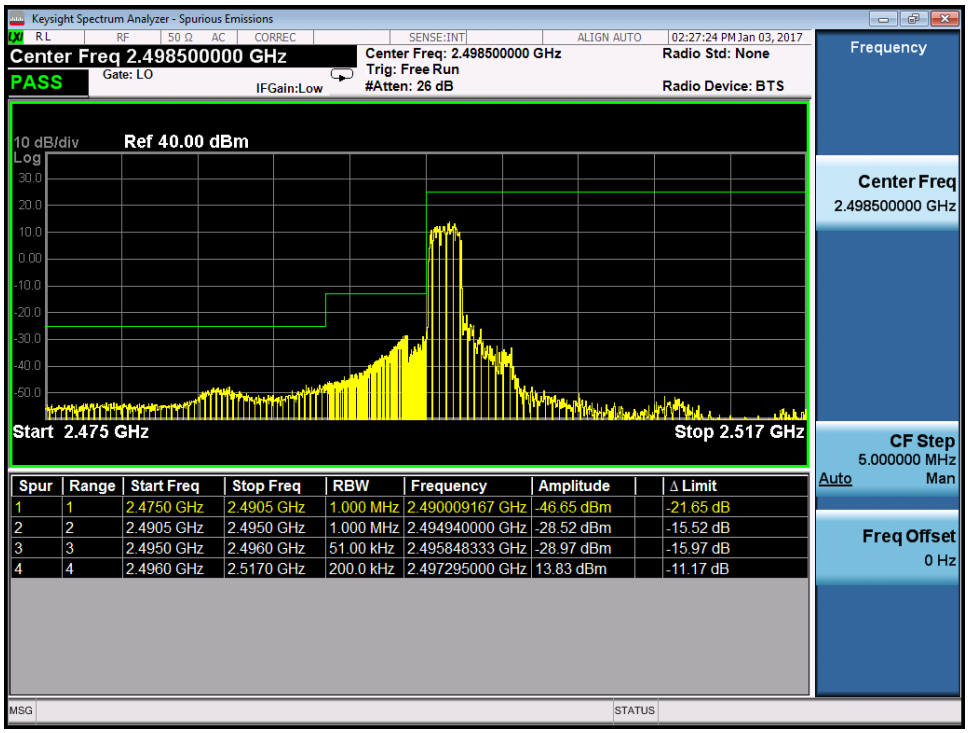
Plot 7-185. Upper Band Edge Plot (Band 25/2 – 20.0MHz QPSK – RB Size 100)



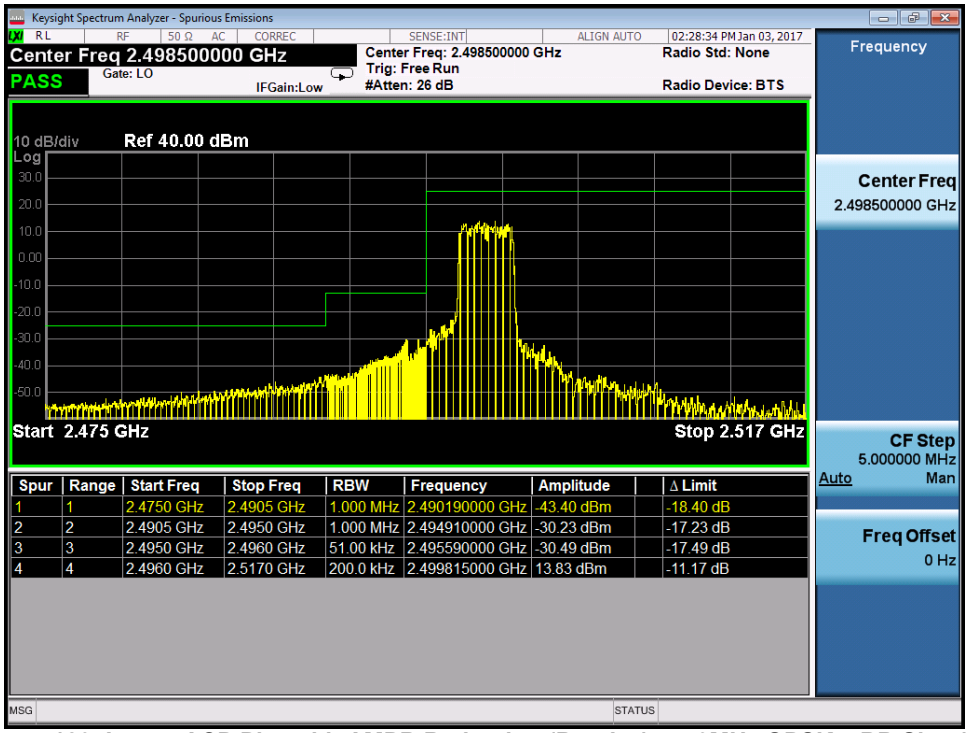
Plot 7-186. Upper Extended Band Edge Plot (Band 25/2 – 20.0MHz QPSK – RB Size 100)



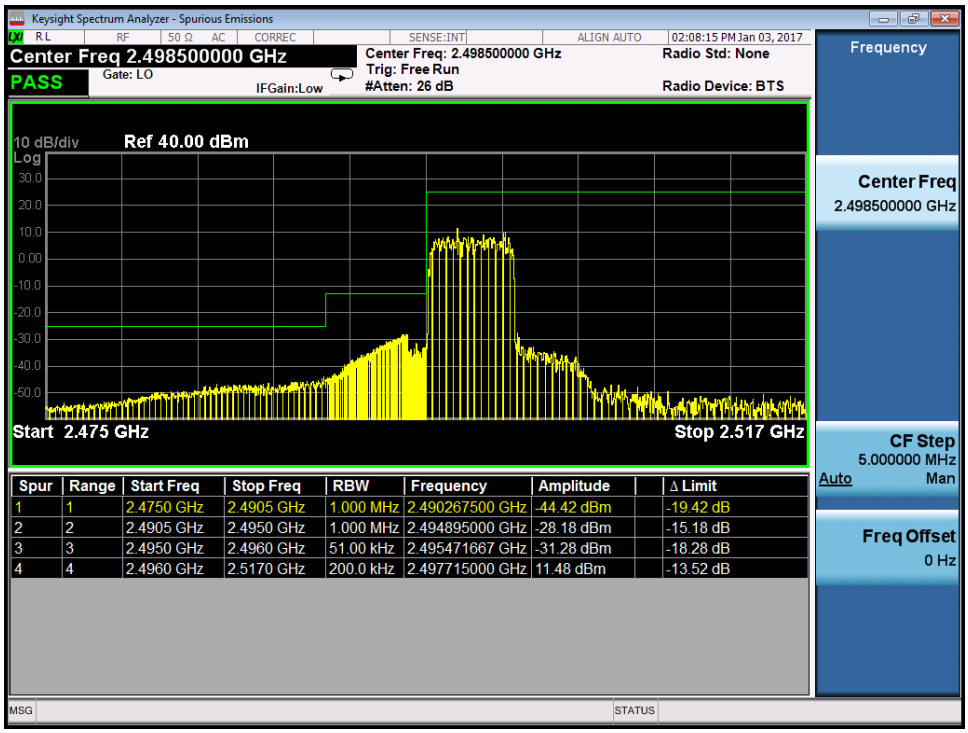
Plot 7-187. Lower ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)



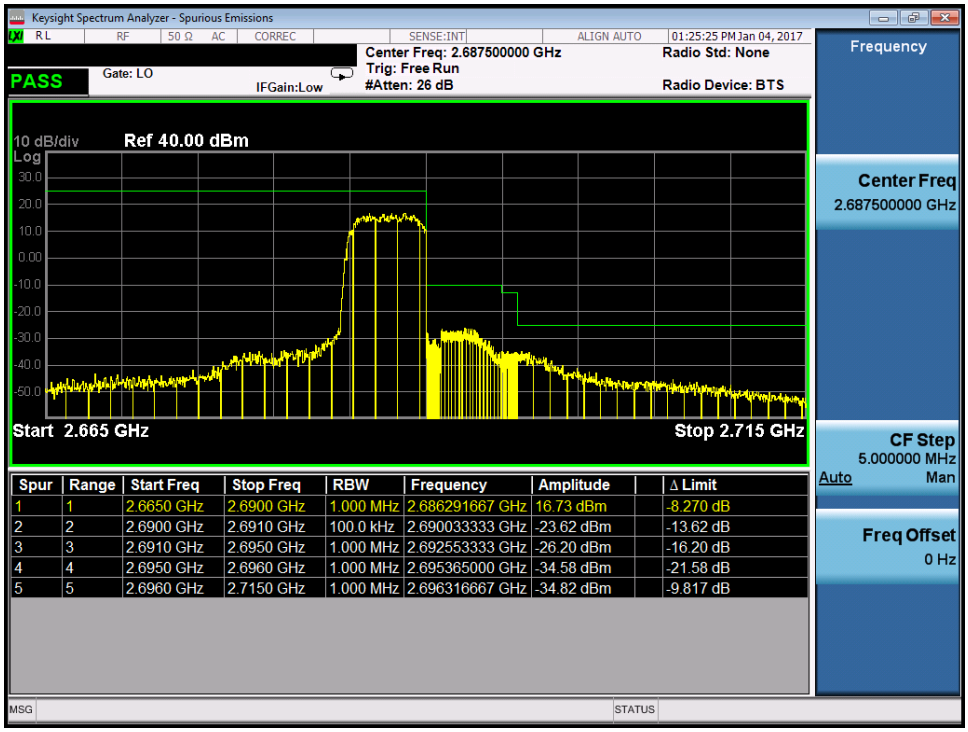
Plot 7-188. Lower ACP Plot with AMPR Reduction (Band 41 – 5.0MHz QPSK – RB Size 9)



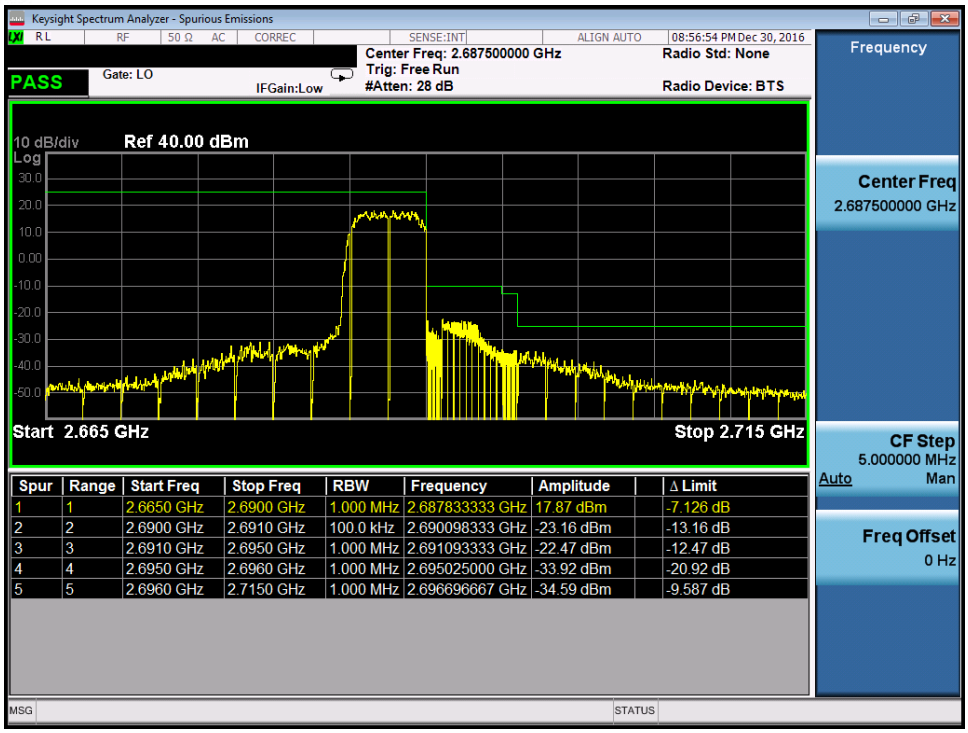
Plot 7-189. Lower ACP Plot with AMPR Reduction (Band 41 – 5.0MHz QPSK – RB Size 16)



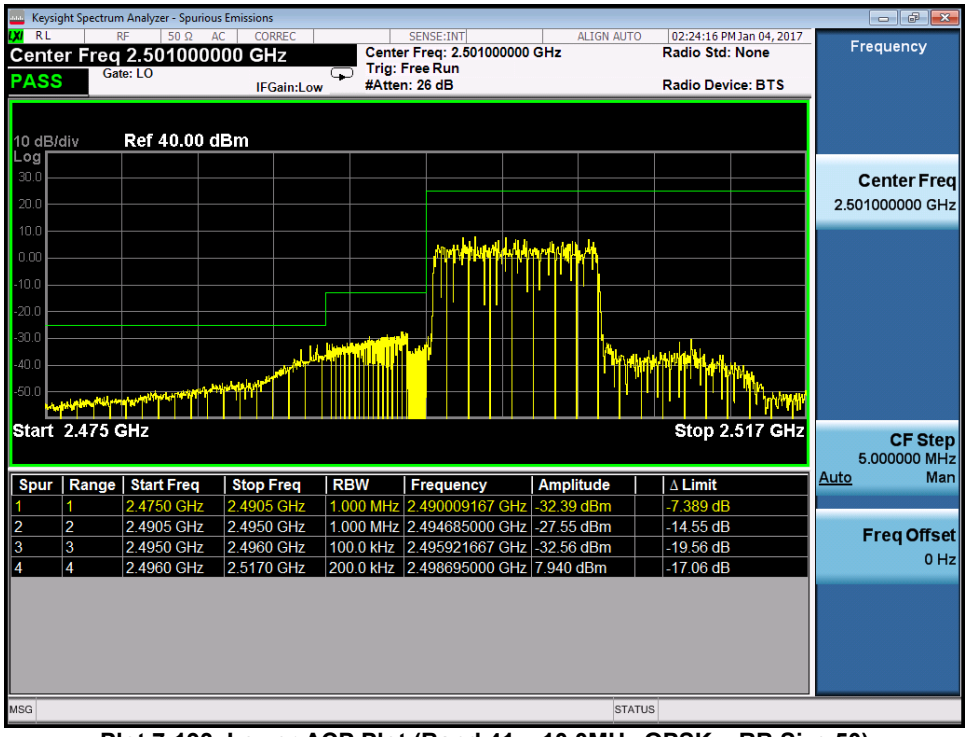
Plot 7-190. Lower ACP Plot with AMPR Reduction (Band 41 – 5.0MHz QPSK – RB Size 25)



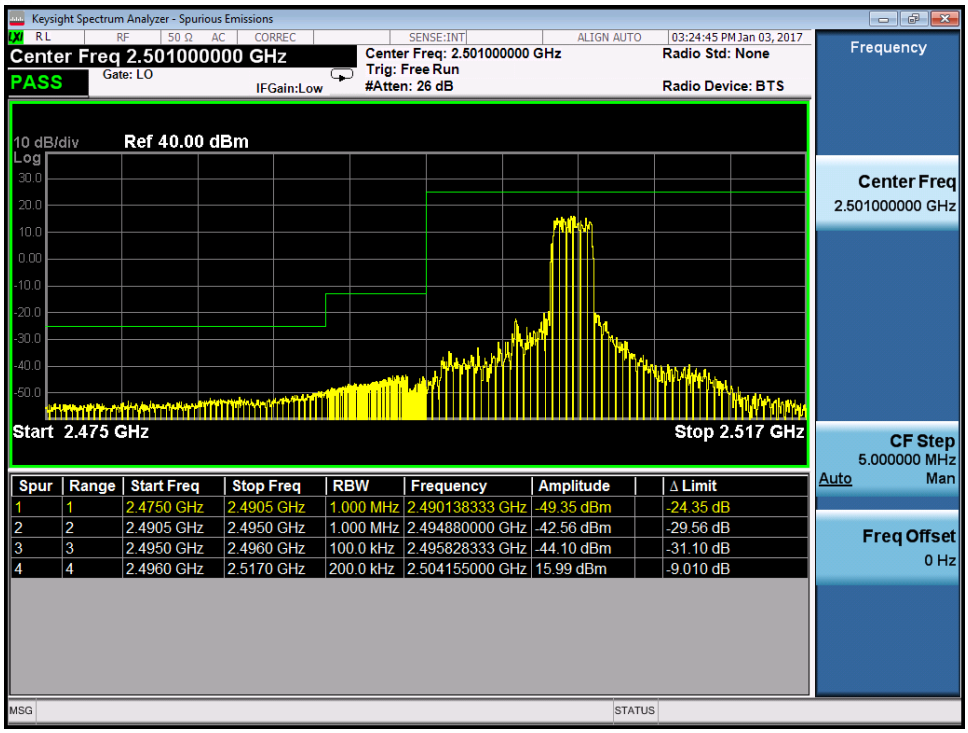
Plot 7-191. Upper ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)



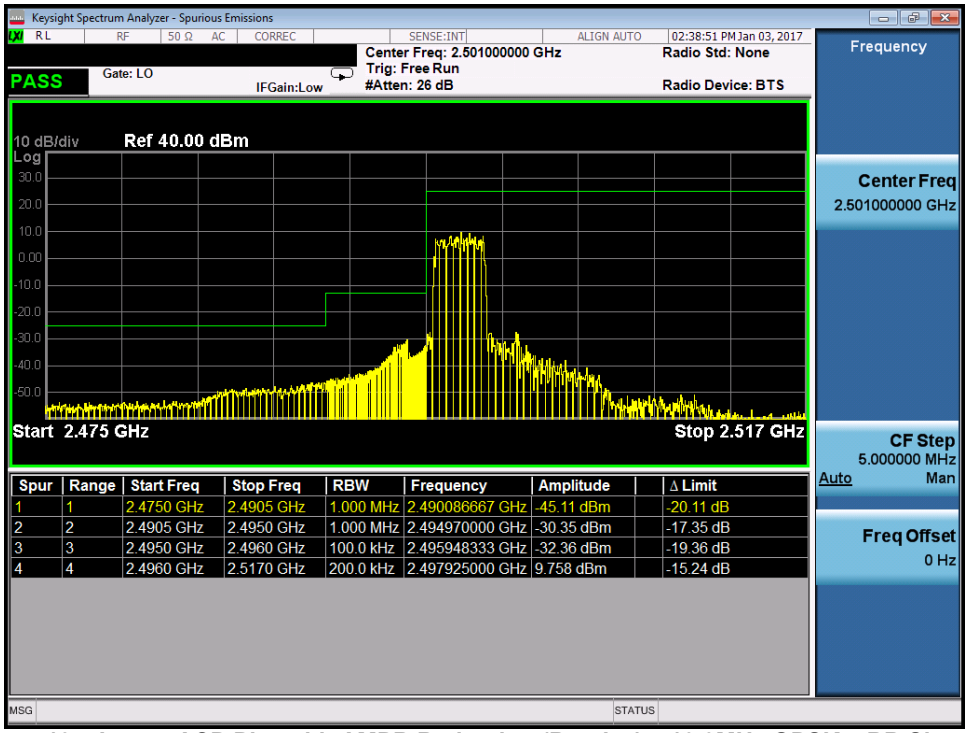
Plot 7-192. Upper ACP Plot with AMPR Reduction (Band 41 – 5.0MHz QPSK – RB Size 25)



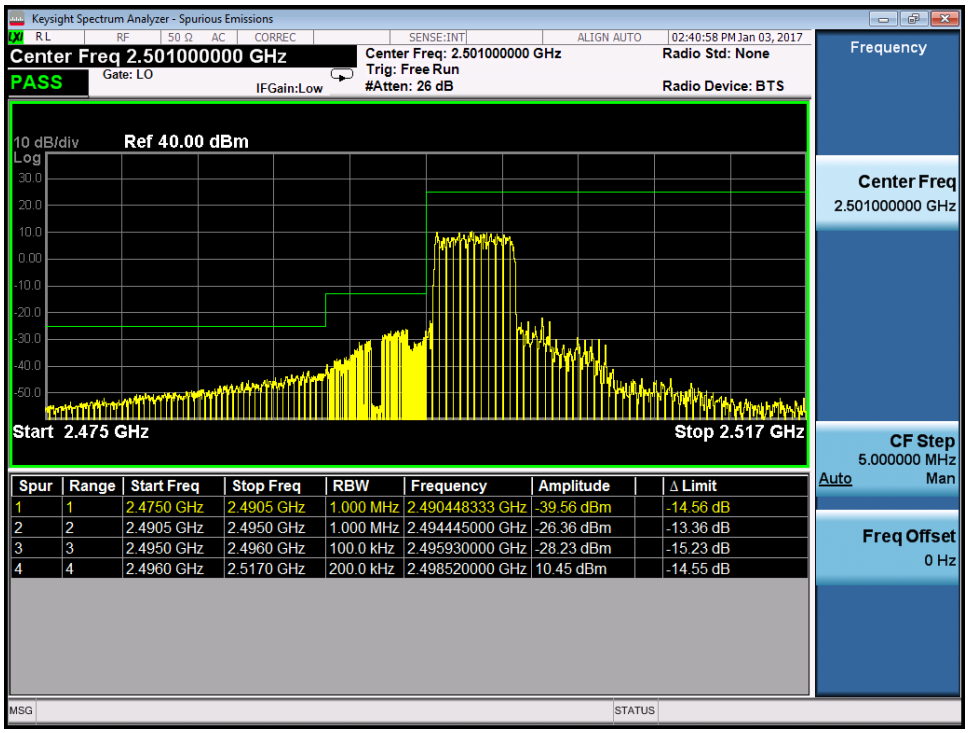
Plot 7-193. Lower ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)



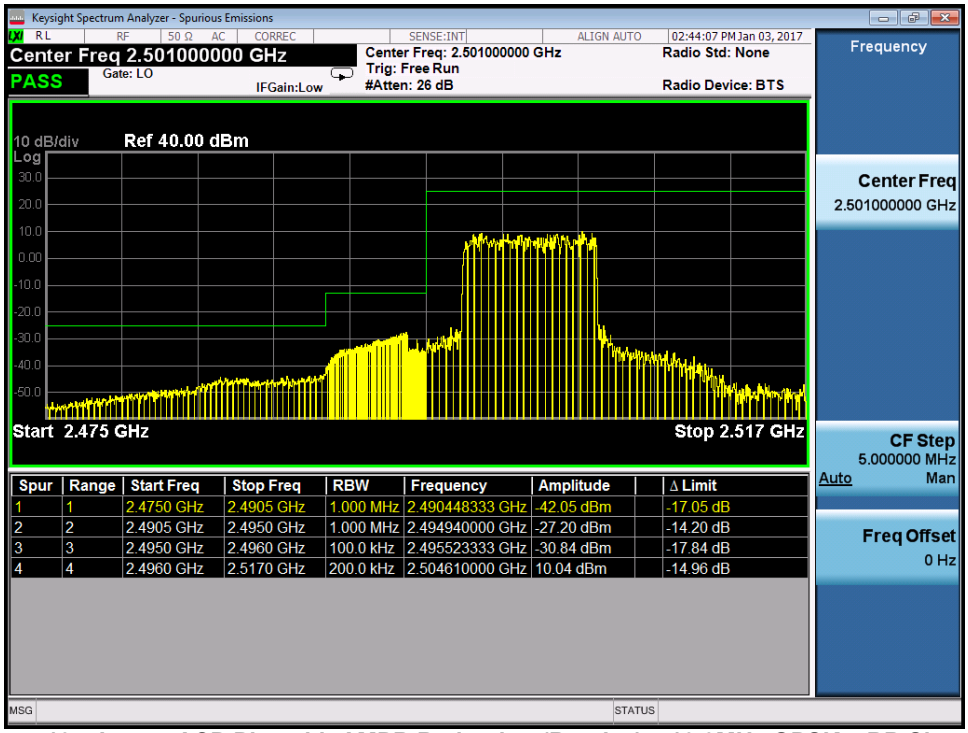
Plot 7-194. Lower ACP Plot with AMPR Reduction (Band 41 – 10.0MHz QPSK – RB Size 12)



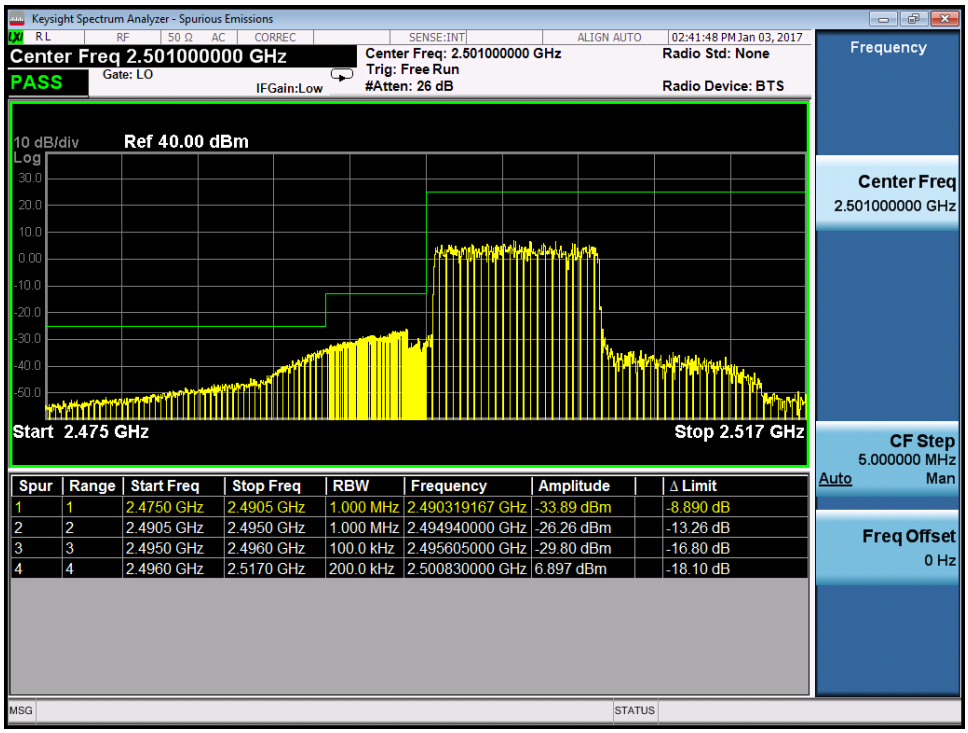
Plot 7-195. Lower ACP Plot with AMPR Reduction (Band 41 – 10.0MHz QPSK – RB Size 15)



Plot 7-196. Lower ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 24)

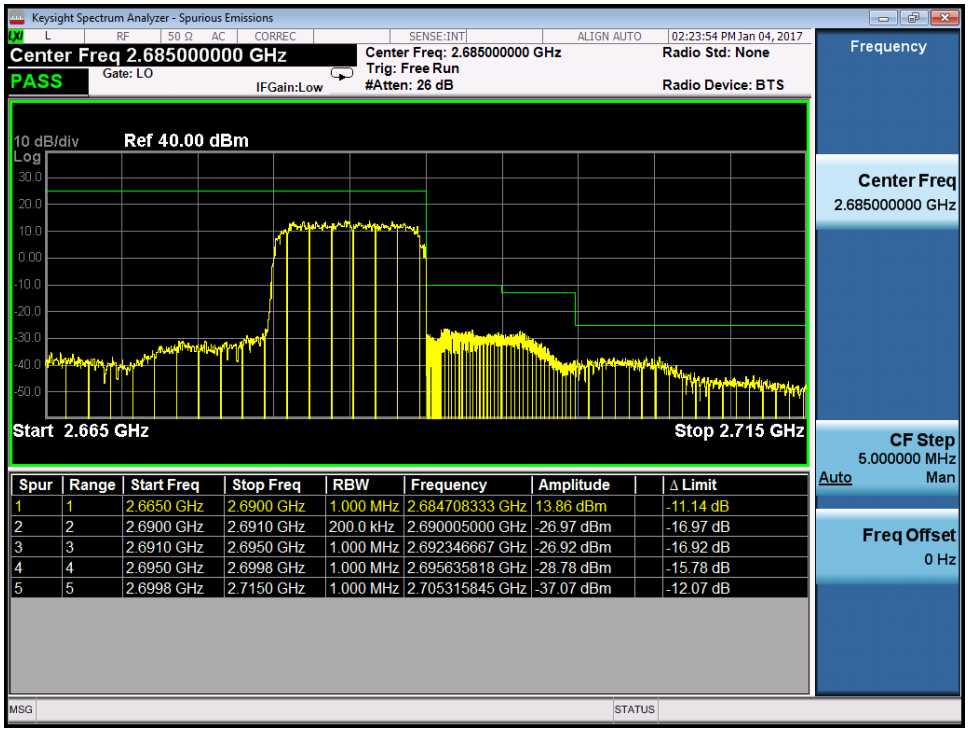


Plot 7-197. Lower ACP Plot with AMPR Reduction (Band 41 – 10.0MHz QPSK – RB Size 41)



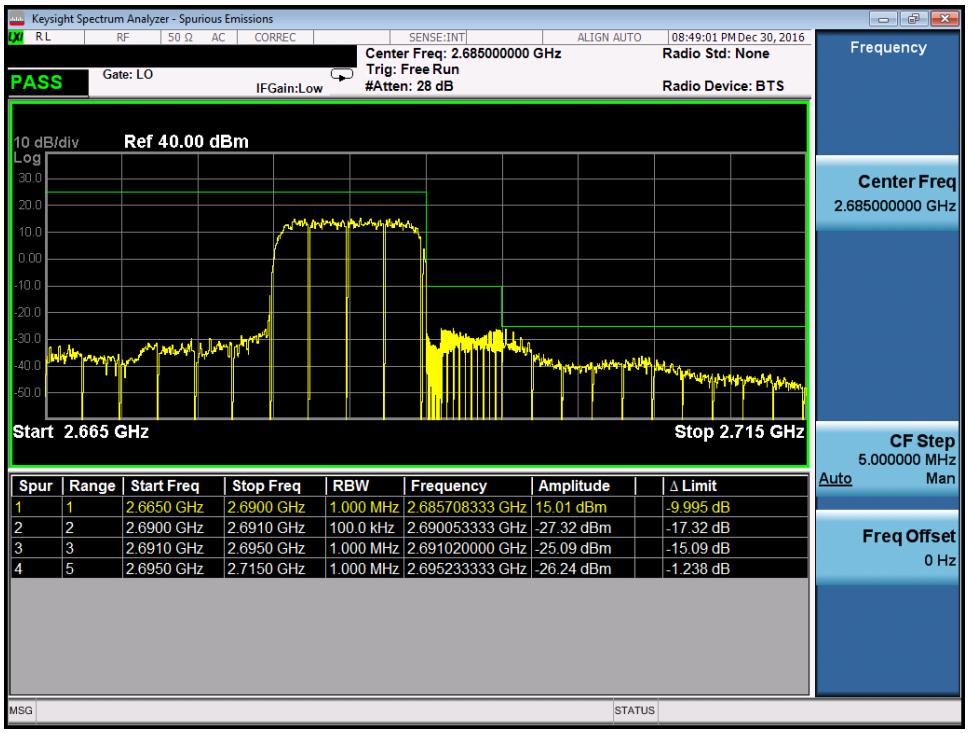
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.490319167 GHz	-33.89 dBm	-8.890 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494940000 GHz	-26.26 dBm	-13.26 dB
3	3	2.4950 GHz	2.4960 GHz	100.0 kHz	2.495605000 GHz	-29.80 dBm	-16.80 dB
4	4	2.4960 GHz	2.5170 GHz	200.0 kHz	2.500830000 GHz	6.897 dBm	-18.10 dB

Plot 7-198. Lower ACP Plot with AMPR Reduction (Band 41 – 10.0MHz QPSK – RB Size 50)



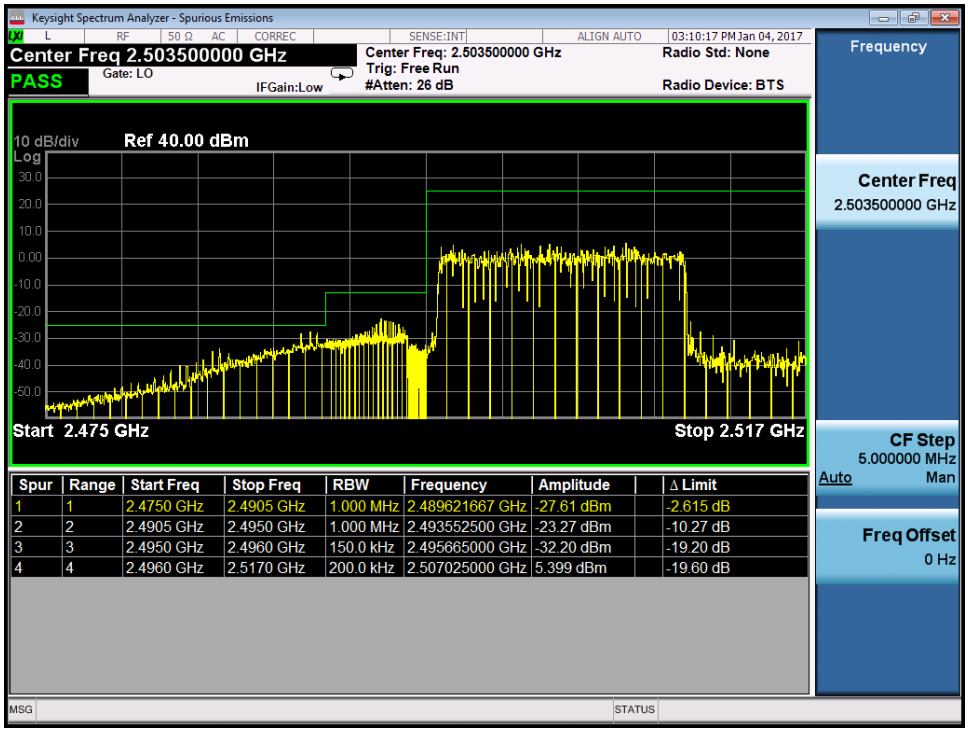
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	1.000 MHz	2.684708333 GHz	13.86 dBm	-11.14 dB
2	2	2.6900 GHz	2.6910 GHz	200.0 kHz	2.690005000 GHz	-26.97 dBm	-16.97 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.692346667 GHz	-26.92 dBm	-16.92 dB
4	4	2.6950 GHz	2.6998 GHz	1.000 MHz	2.695635818 GHz	-28.78 dBm	-15.78 dB
5	5	2.6998 GHz	2.7150 GHz	1.000 MHz	2.705315845 GHz	-37.07 dBm	-12.07 dB

Plot 7-199. Upper ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)



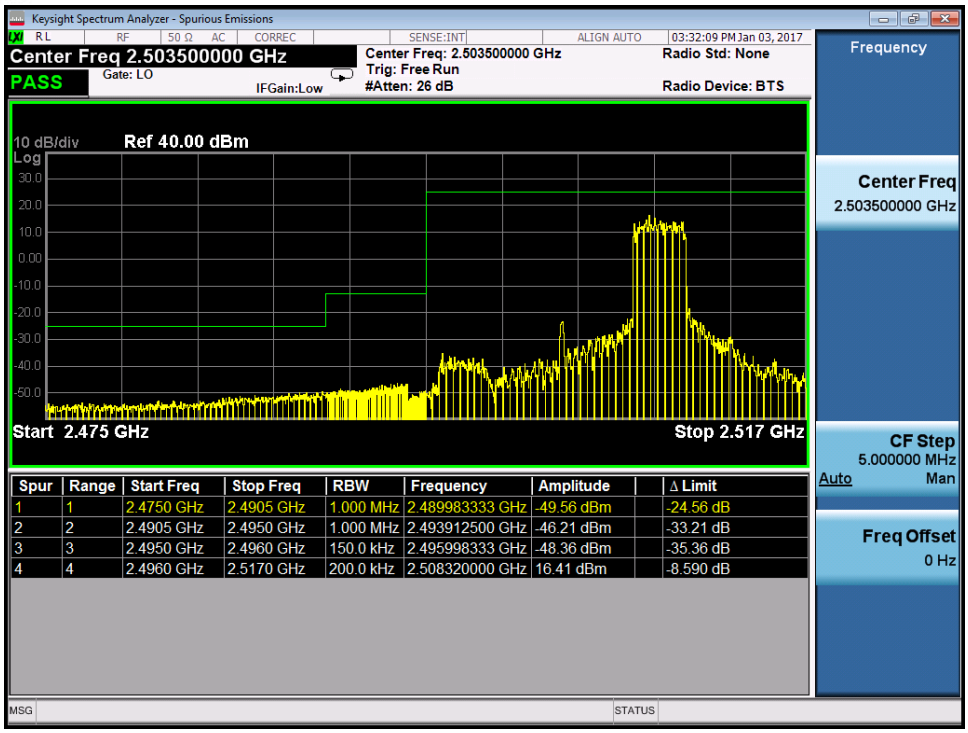
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	1.000 MHz	2.685708333 GHz	15.01 dBm	-9.995 dB
2	2	2.6900 GHz	2.6910 GHz	100.0 kHz	2.690053333 GHz	-27.32 dBm	-17.32 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691020000 GHz	-25.09 dBm	-15.09 dB
4	5	2.6950 GHz	2.7150 GHz	1.000 MHz	2.695233333 GHz	-26.24 dBm	-1.238 dB

Plot 7-200. Upper ACP Plot with AMPR Reduction (Band 41 – 10.0MHz QPSK – RB Size 50)



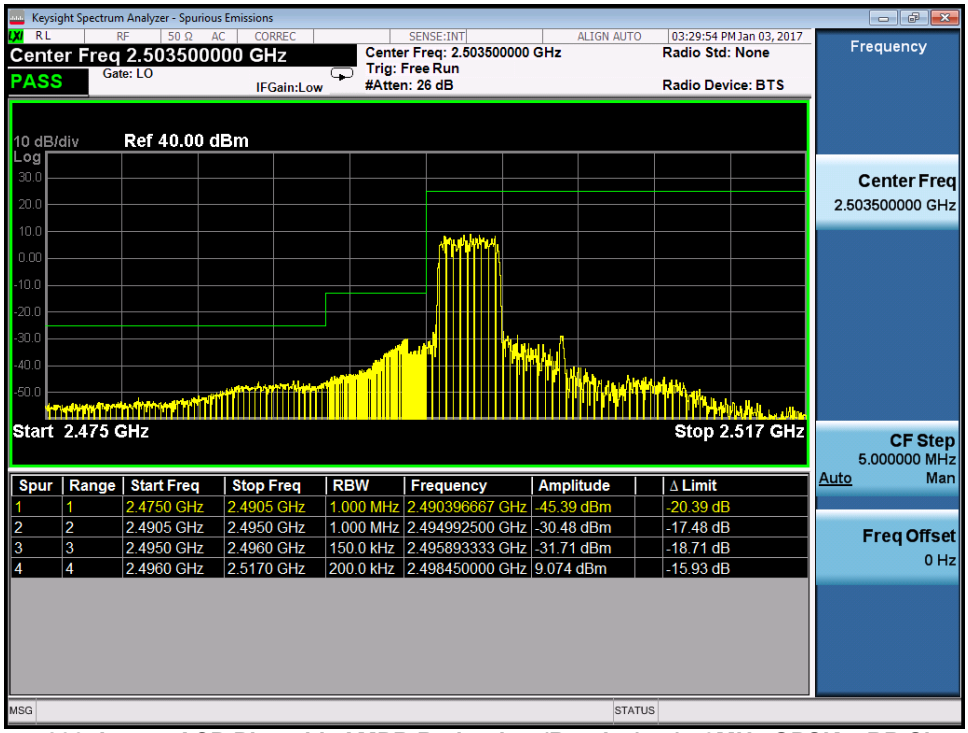
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.489621667 GHz	-27.61 dBm	-2.615 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.493552500 GHz	-23.27 dBm	-10.27 dB
3	3	2.4950 GHz	2.4960 GHz	150.0 kHz	2.495665000 GHz	-32.20 dBm	-19.20 dB
4	4	2.4960 GHz	2.5170 GHz	200.0 kHz	2.507025000 GHz	5.399 dBm	-19.60 dB

Plot 7-201. Lower ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)



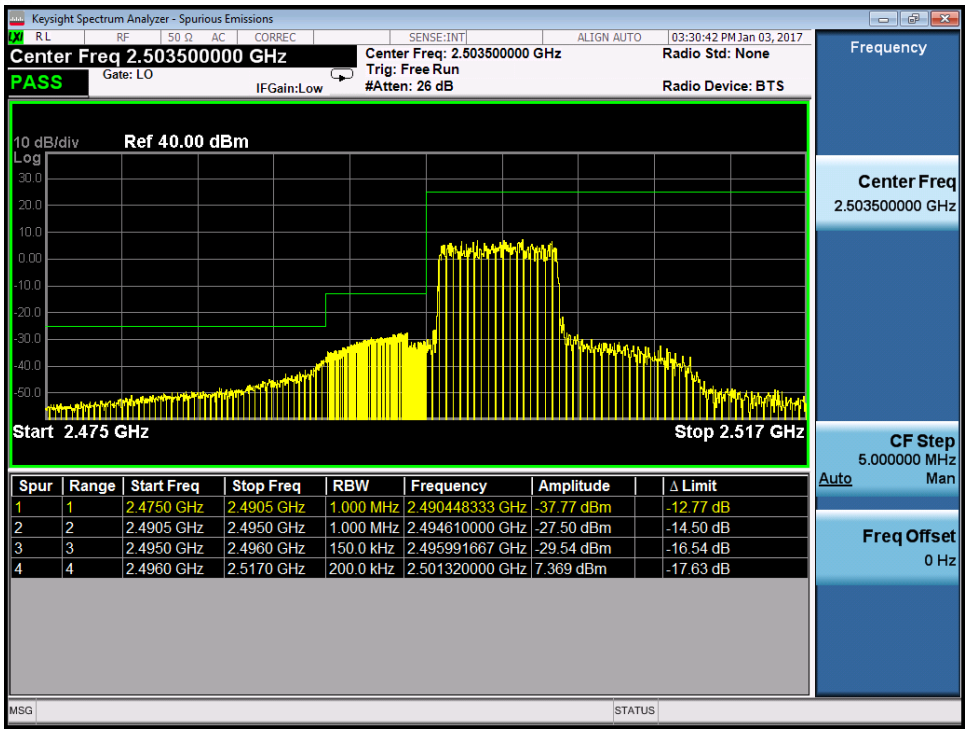
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.489983333 GHz	-49.56 dBm	-24.56 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.493912500 GHz	-46.21 dBm	-33.21 dB
3	3	2.4950 GHz	2.4960 GHz	150.0 kHz	2.495998333 GHz	-48.36 dBm	-35.36 dB
4	4	2.4960 GHz	2.5170 GHz	200.0 kHz	2.508320000 GHz	16.41 dBm	-8.590 dB

Plot 7-202. Lower ACP Plot with AMPR Reduction (Band 41 – 15.0MHz QPSK – RB Size 15)



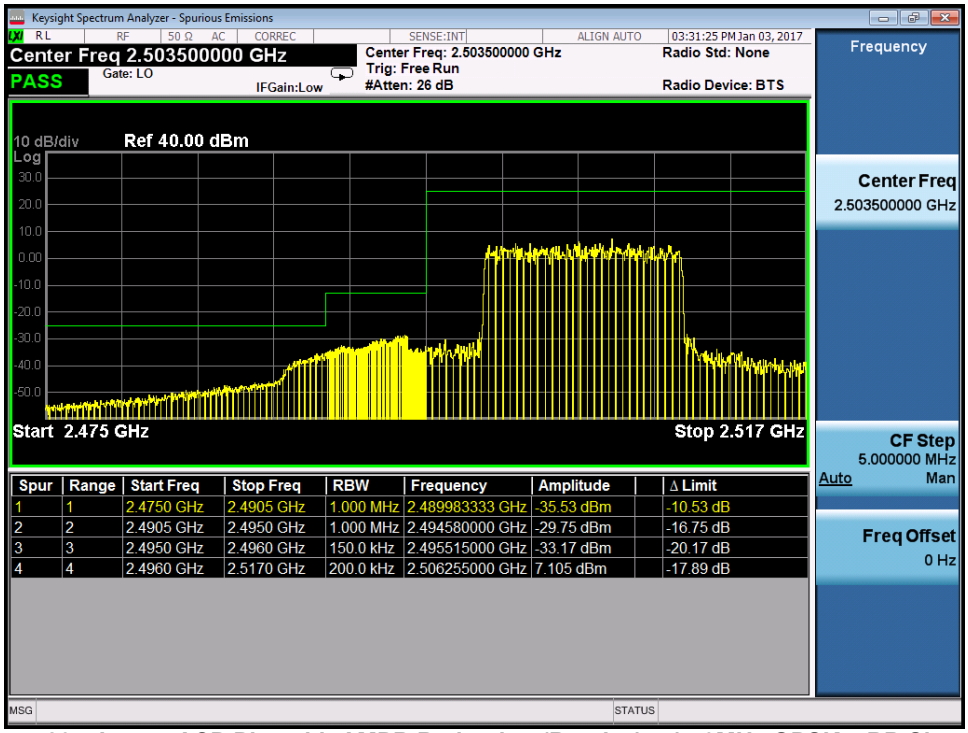
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.490396667 GHz	-45.39 dBm	-20.39 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494992500 GHz	-30.48 dBm	-17.48 dB
3	3	2.4950 GHz	2.4960 GHz	150.0 kHz	2.495893333 GHz	-31.71 dBm	-18.71 dB
4	4	2.4960 GHz	2.5170 GHz	200.0 kHz	2.498450000 GHz	9.074 dBm	-15.93 dB

Plot 7-203. Lower ACP Plot with AMPR Reduction (Band 41 – 15.0MHz QPSK – RB Size 18)



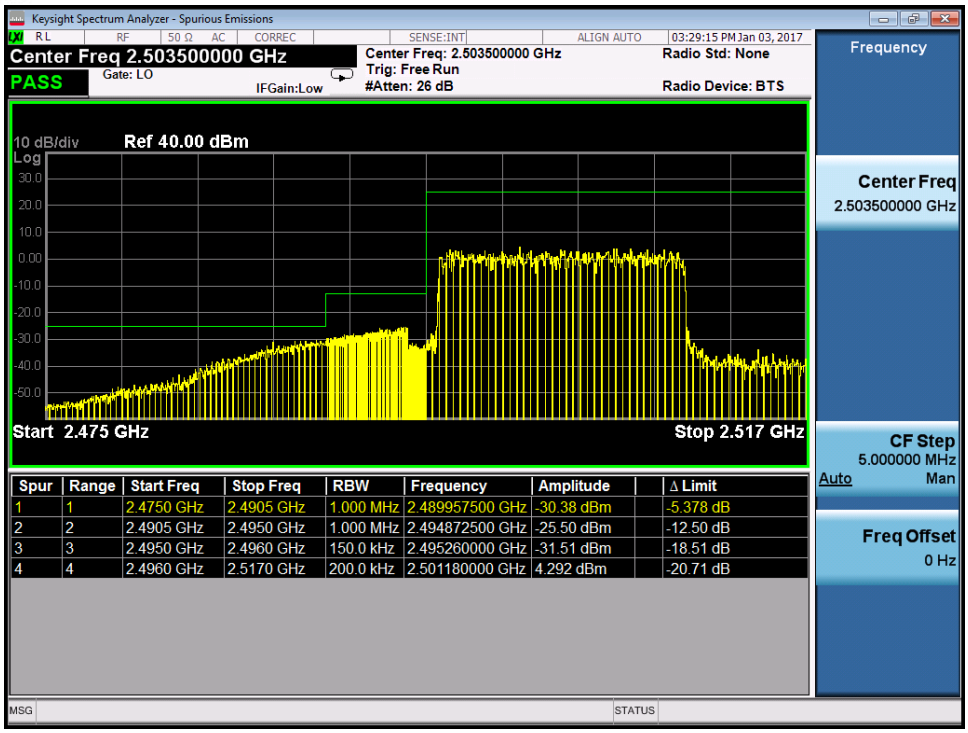
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.490448333 GHz	-37.77 dBm	-12.77 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494610000 GHz	-27.50 dBm	-14.50 dB
3	3	2.4950 GHz	2.4960 GHz	150.0 kHz	2.495991667 GHz	-29.54 dBm	-16.54 dB
4	4	2.4960 GHz	2.5170 GHz	200.0 kHz	2.501320000 GHz	7.369 dBm	-17.63 dB

Plot 7-204. Lower ACP Plot with AMPR Reduction (Band 41 – 15.0MHz QPSK – RB Size 36)



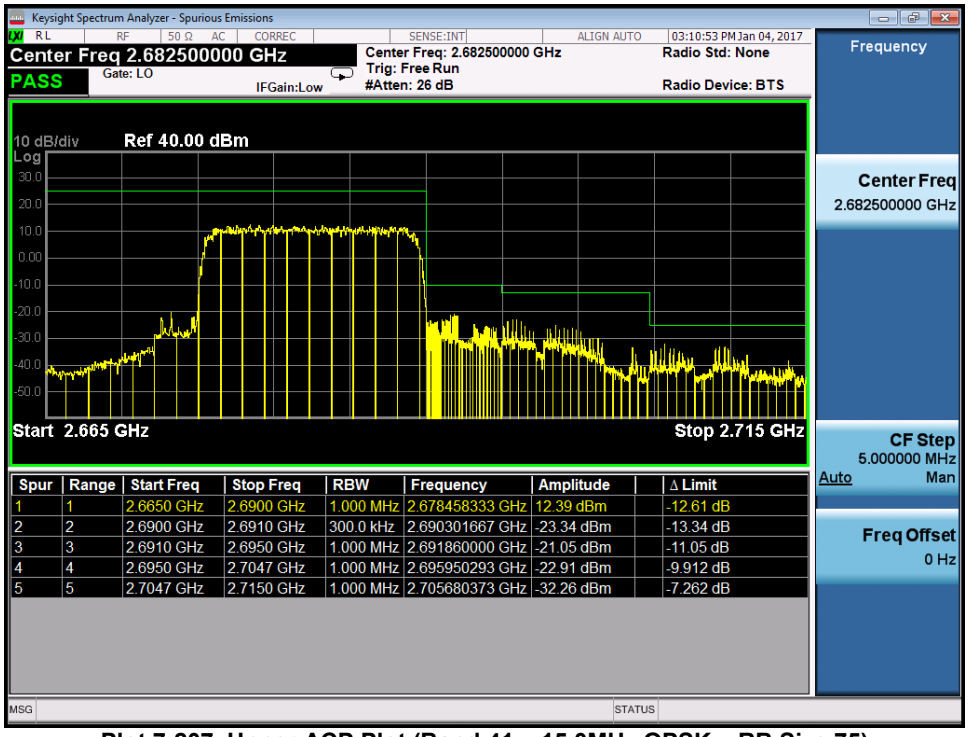
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.489983333 GHz	-35.53 dBm	-10.53 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494580000 GHz	-29.75 dBm	-16.75 dB
3	3	2.4950 GHz	2.4960 GHz	150.0 kHz	2.495515000 GHz	-33.17 dBm	-20.17 dB
4	4	2.4960 GHz	2.5170 GHz	200.0 kHz	2.506255000 GHz	7.105 dBm	-17.89 dB

Plot 7-205. Lower ACP Plot with AMPR Reduction (Band 41 – 15.0MHz QPSK – RB Size 60)



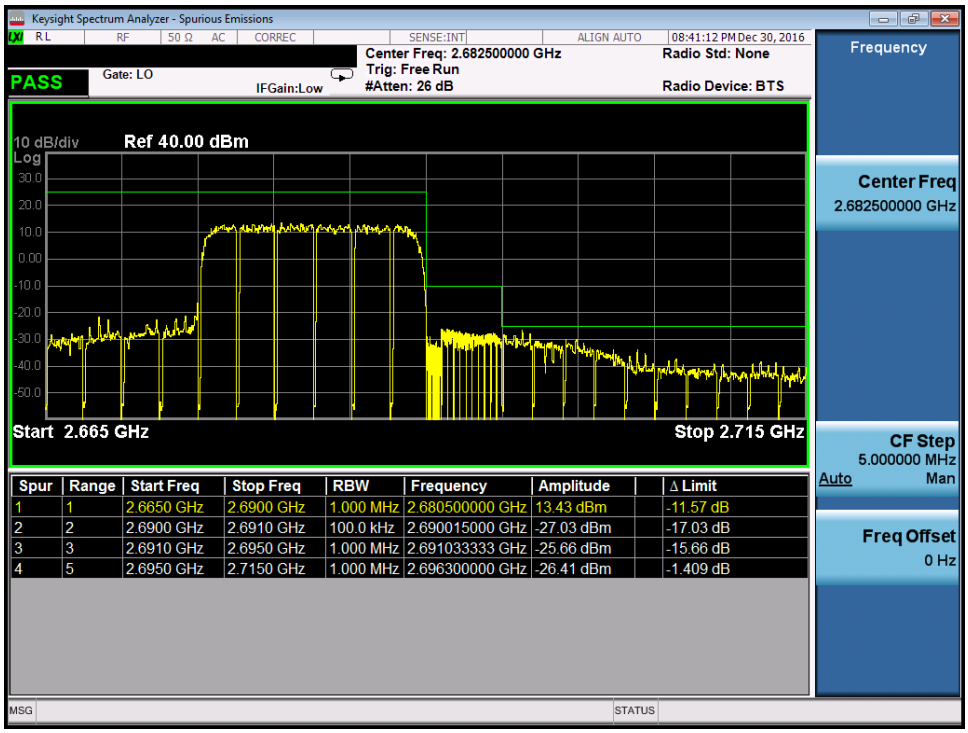
Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.489957500 GHz	-30.38 dBm	-5.378 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494872500 GHz	-25.50 dBm	-12.50 dB
3	3	2.4950 GHz	2.4960 GHz	150.0 kHz	2.495260000 GHz	-31.51 dBm	-18.51 dB
4	4	2.4960 GHz	2.5170 GHz	200.0 kHz	2.501180000 GHz	4.292 dBm	-20.71 dB

Plot 7-206. Lower ACP Plot with AMPR Reduction (Band 41 – 15.0MHz QPSK – RB Size 75)

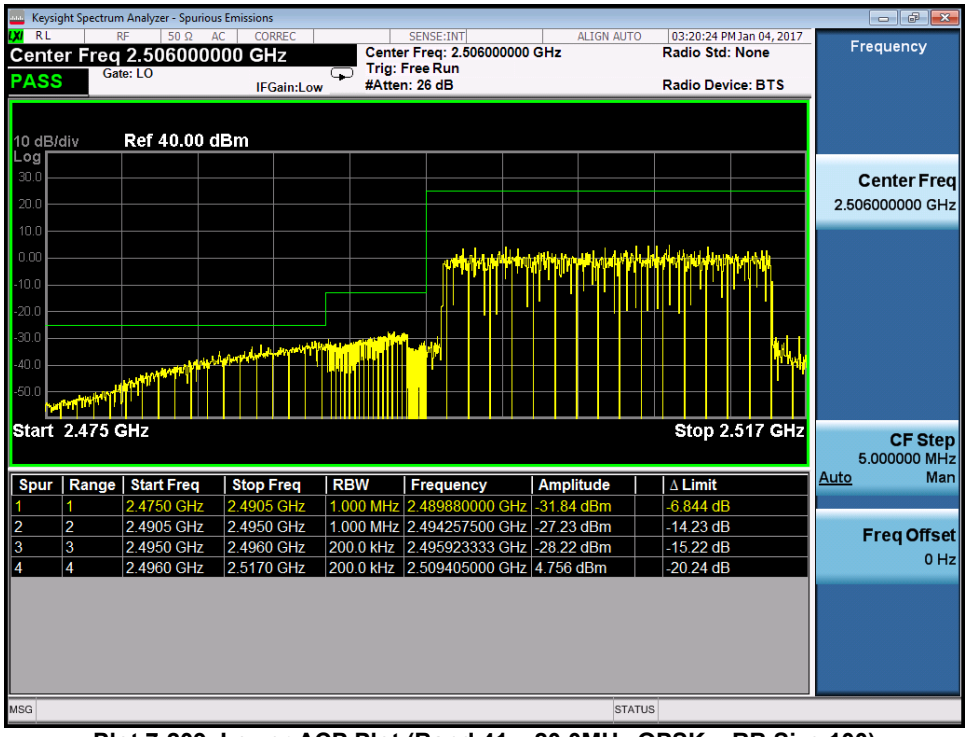


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	1.000 MHz	2.678458333 GHz	12.39 dBm	-12.61 dB
2	2	2.6900 GHz	2.6910 GHz	300.0 kHz	2.690301667 GHz	-23.34 dBm	-13.34 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691860000 GHz	-21.05 dBm	-11.05 dB
4	4	2.6950 GHz	2.7047 GHz	1.000 MHz	2.695950293 GHz	-22.91 dBm	-9.912 dB
5	5	2.7047 GHz	2.7150 GHz	1.000 MHz	2.705680373 GHz	-32.26 dBm	-7.262 dB

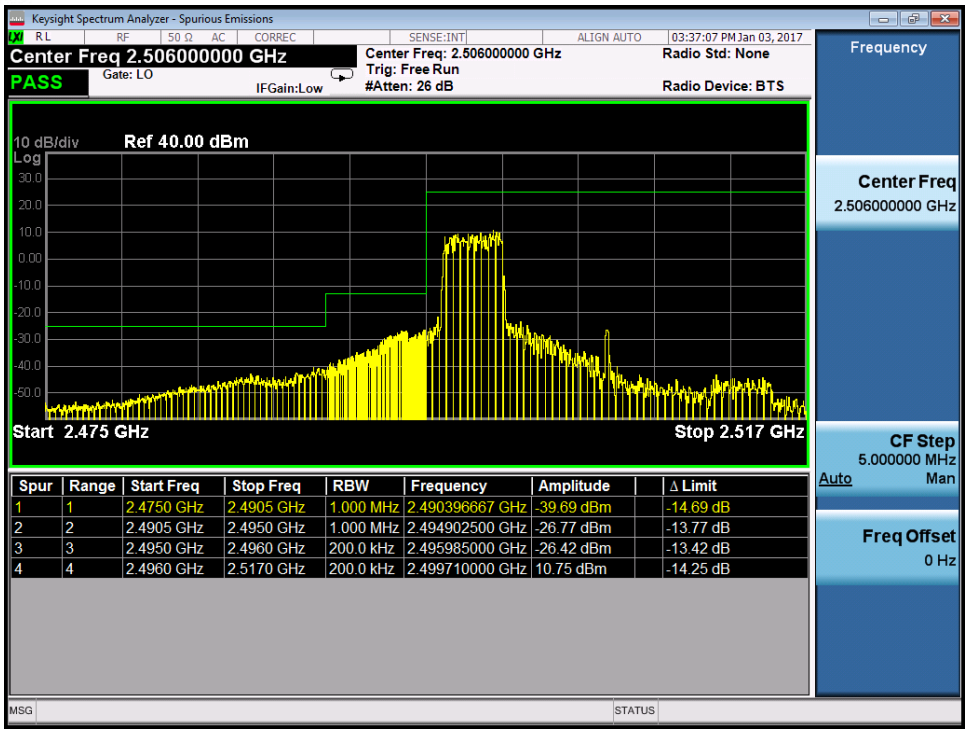
Plot 7-207. Upper ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)



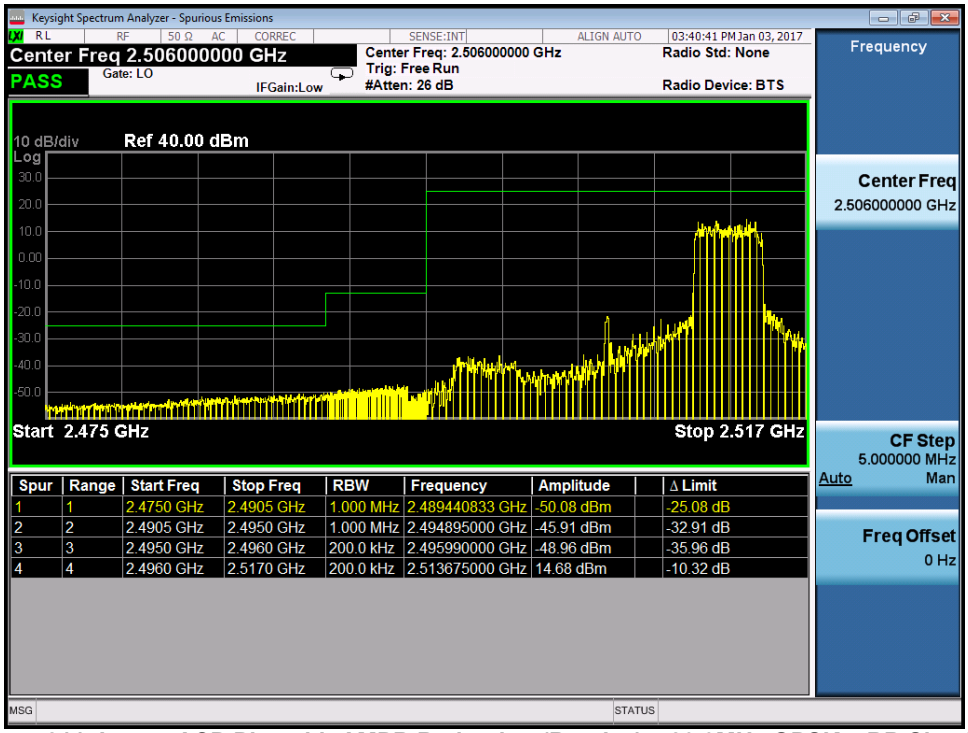
Plot 7-208. Upper ACP Plot with AMPR Reduction (Band 41 – 15.0MHz QPSK – RB Size 75)



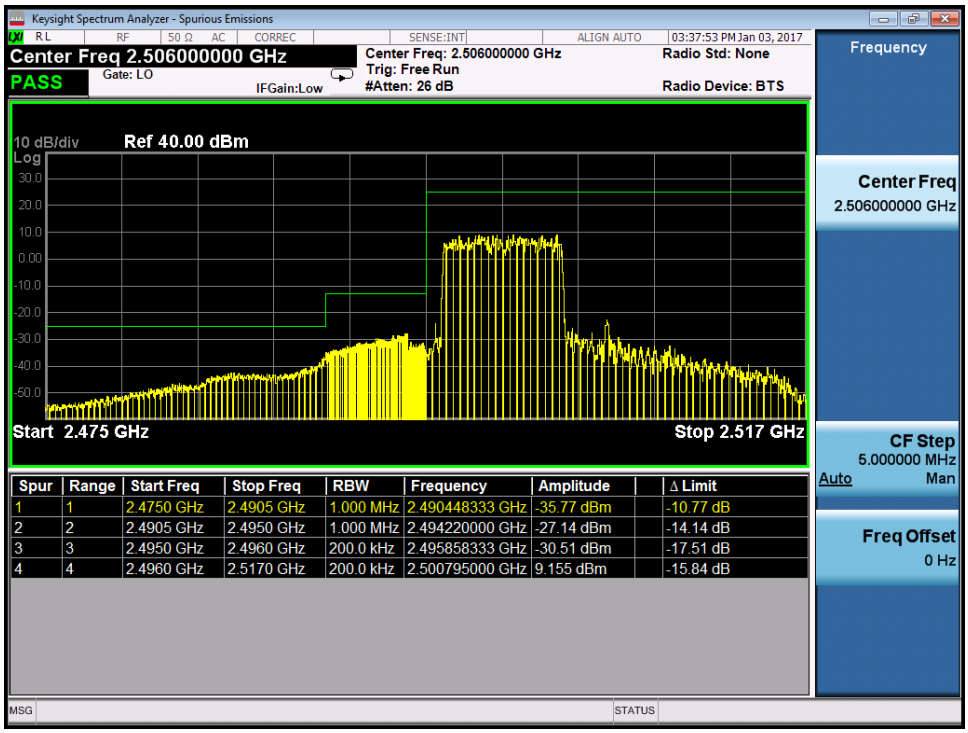
Plot 7-209. Lower ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)



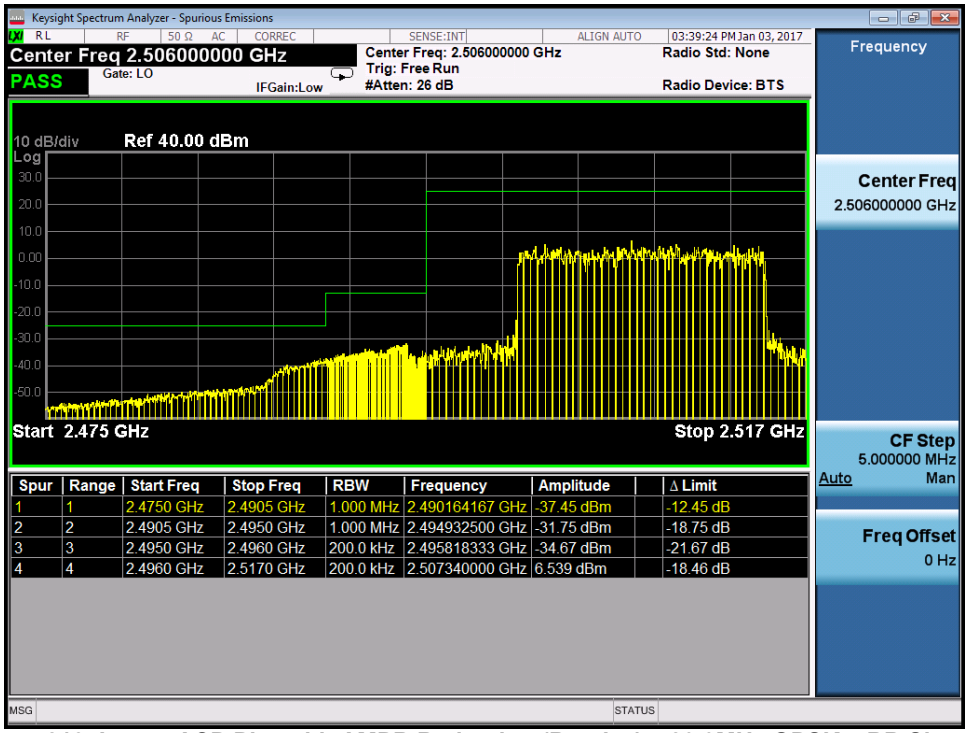
Plot 7-210. Lower ACP Plot with AMPR Reduction (Band 41 – 20.0MHz QPSK – RB Size 18)



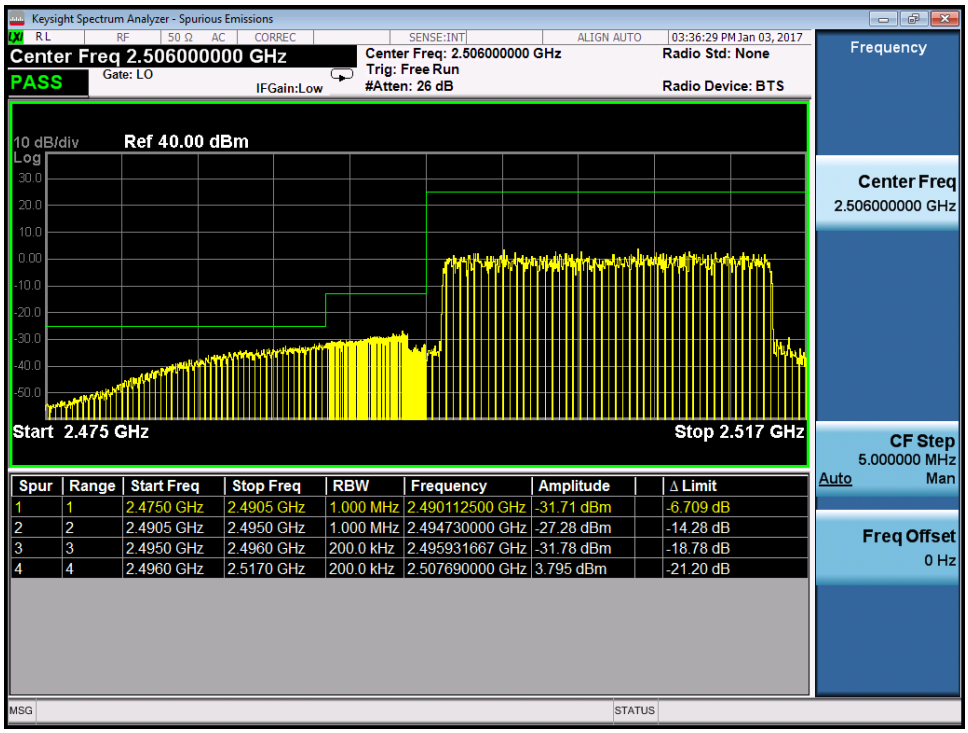
Plot 7-211. Lower ACP Plot with AMPR Reduction (Band 41 – 20.0MHz QPSK – RB Size 20)



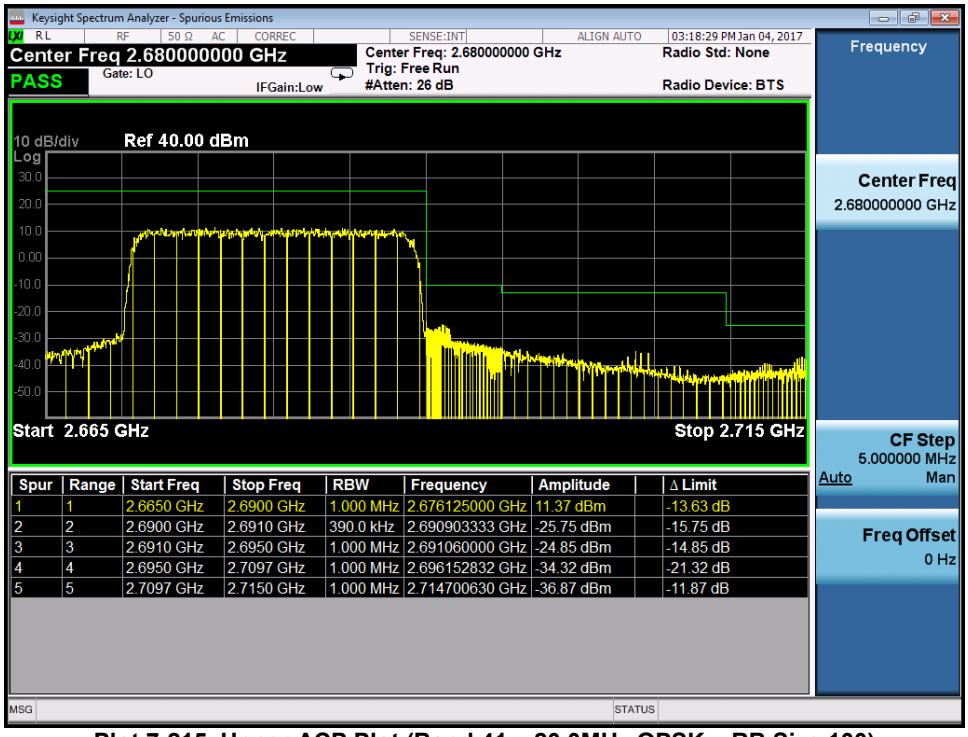
Plot 7-212. Lower ACP Plot with AMPR Reduction (Band 41 – 20.0MHz QPSK – RB Size 36)



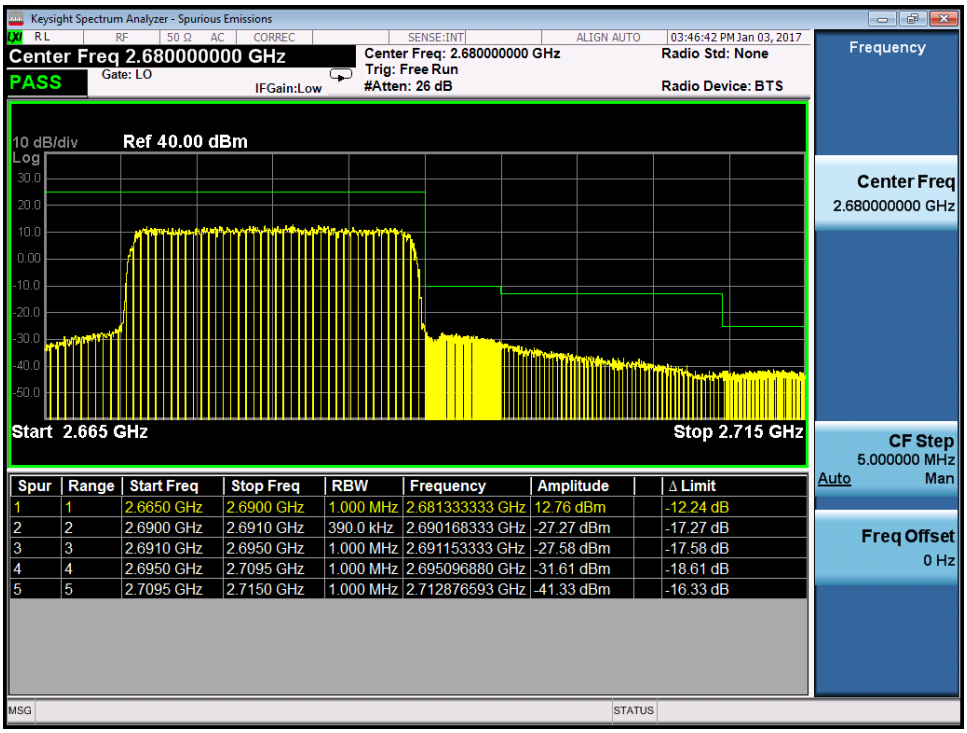
Plot 7-213. Lower ACP Plot with AMPR Reduction (Band 41 – 20.0MHz QPSK – RB Size 75)



Plot 7-214. Lower ACP Plot with AMPR Reduction (Band 41 – 20.0MHz QPSK – RB Size 100)



Plot 7-215. Upper ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	1.000 MHz	2.681333333 GHz	12.76 dBm	-12.24 dB
2	2	2.6900 GHz	2.6910 GHz	390.0 kHz	2.690168333 GHz	-27.27 dBm	-17.27 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691153333 GHz	-27.58 dBm	-17.58 dB
4	4	2.6950 GHz	2.7095 GHz	1.000 MHz	2.695096880 GHz	-31.61 dBm	-18.61 dB
5	5	2.7095 GHz	2.7150 GHz	1.000 MHz	2.712876593 GHz	-41.33 dBm	-16.33 dB

Plot 7-216. Upper ACP Plot with AMPR Reduction (Band 41 – 20.0MHz QPSK – RB Size 100)

7.5 Peak-Average Ratio

§24.232(d)

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 v02r02 – 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. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

Test Setup

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

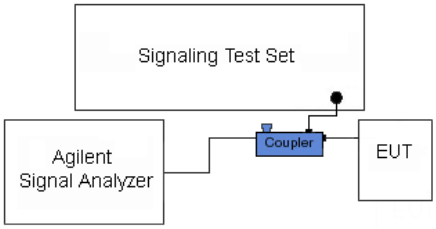


Figure 7-4. Test Instrument & Measurement Setup

Test Notes

None.

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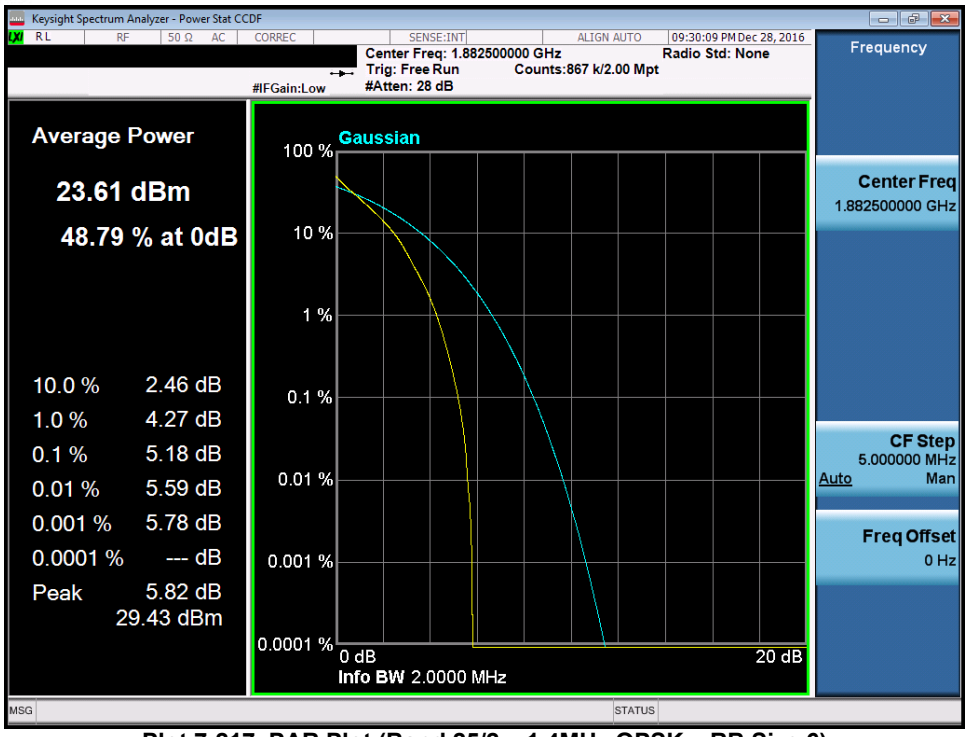
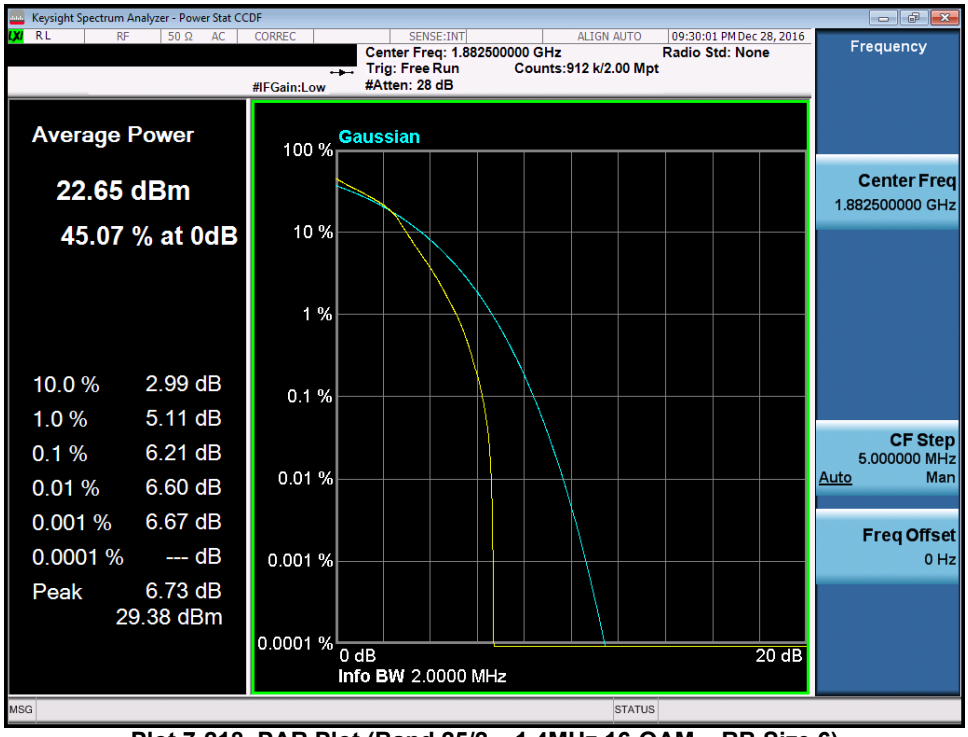
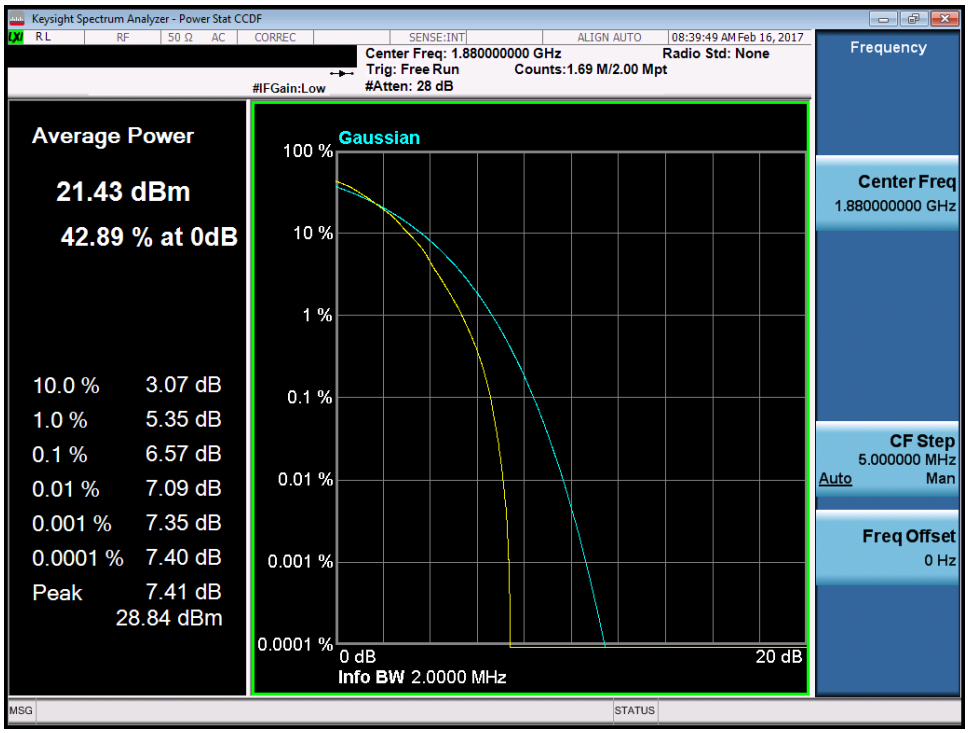


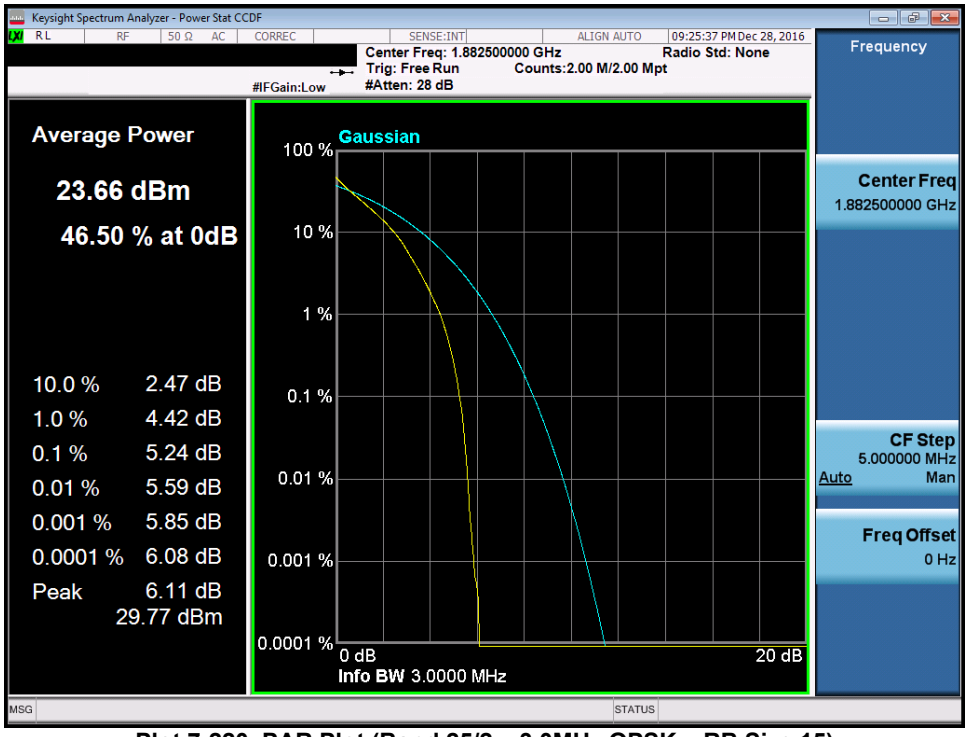
Plot 7-217. PAR Plot (Band 25/2 – 1.4MHz QPSK – RB Size 6)



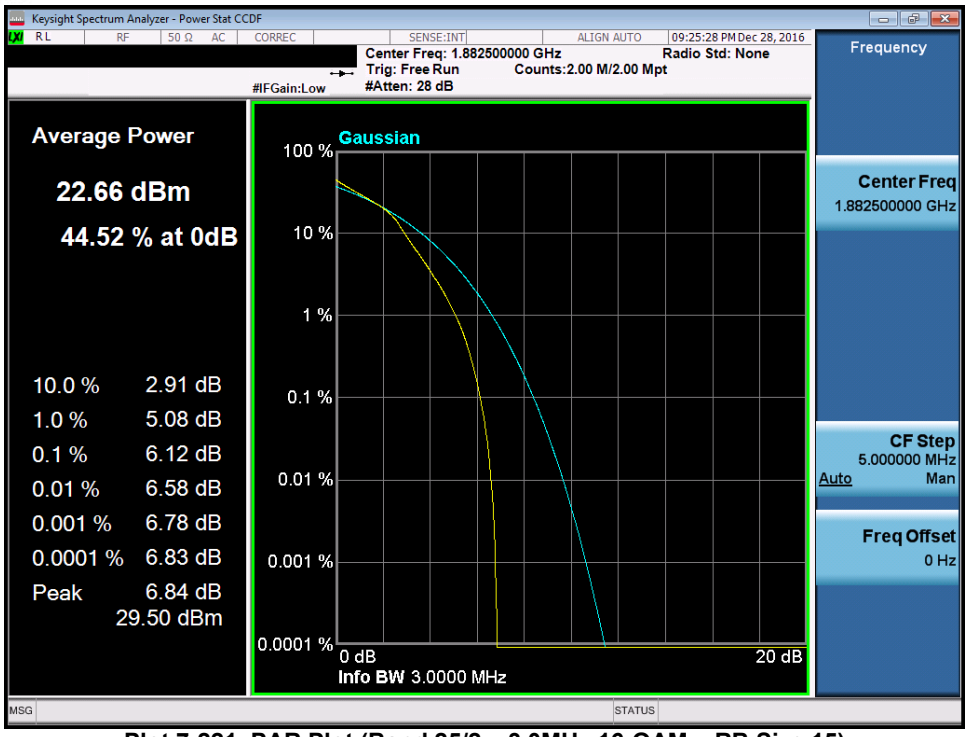
Plot 7-218. PAR Plot (Band 25/2 – 1.4MHz 16-QAM – RB Size 6)



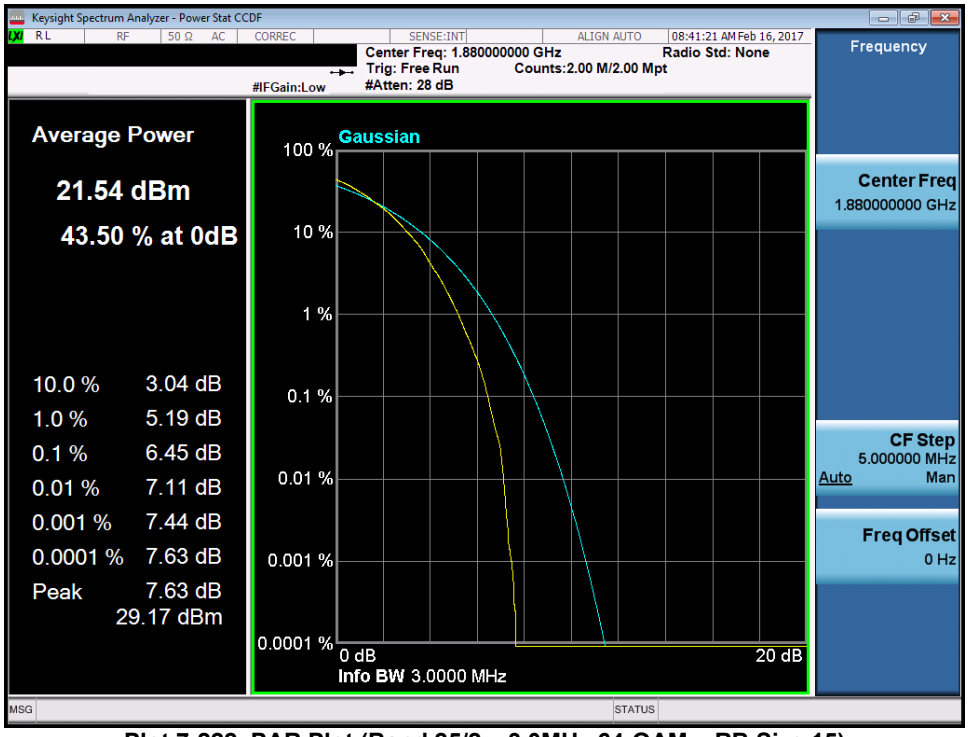
Plot 7-219. PAR Plot (Band 25/2 – 1.4MHz 64-QAM – RB Size 6)



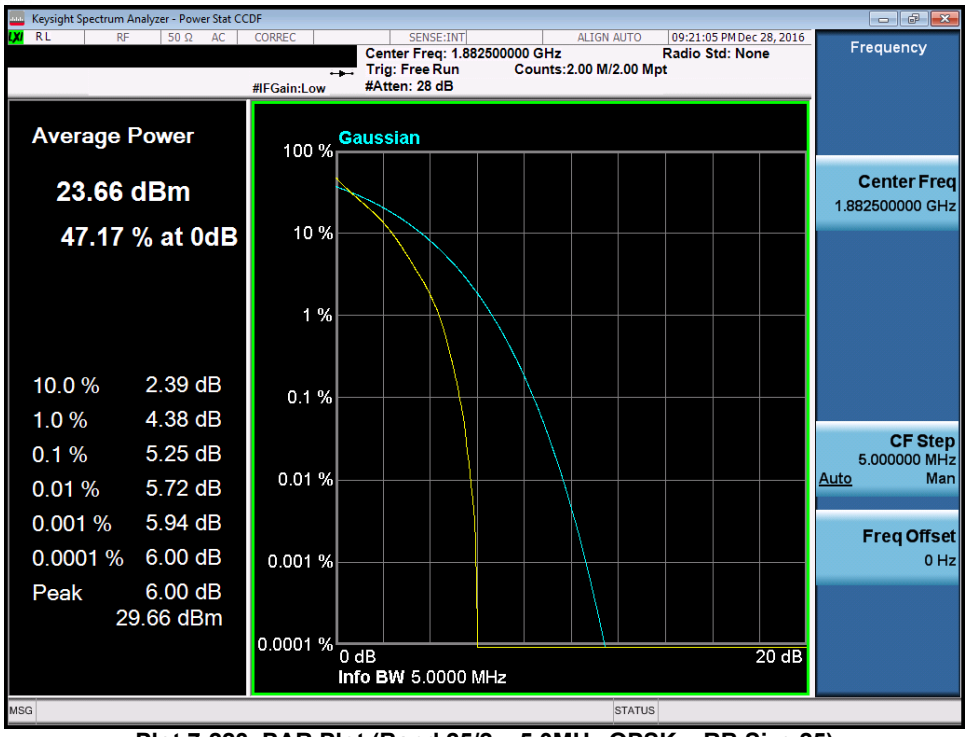
Plot 7-220. PAR Plot (Band 25/2 – 3.0MHz QPSK – RB Size 15)



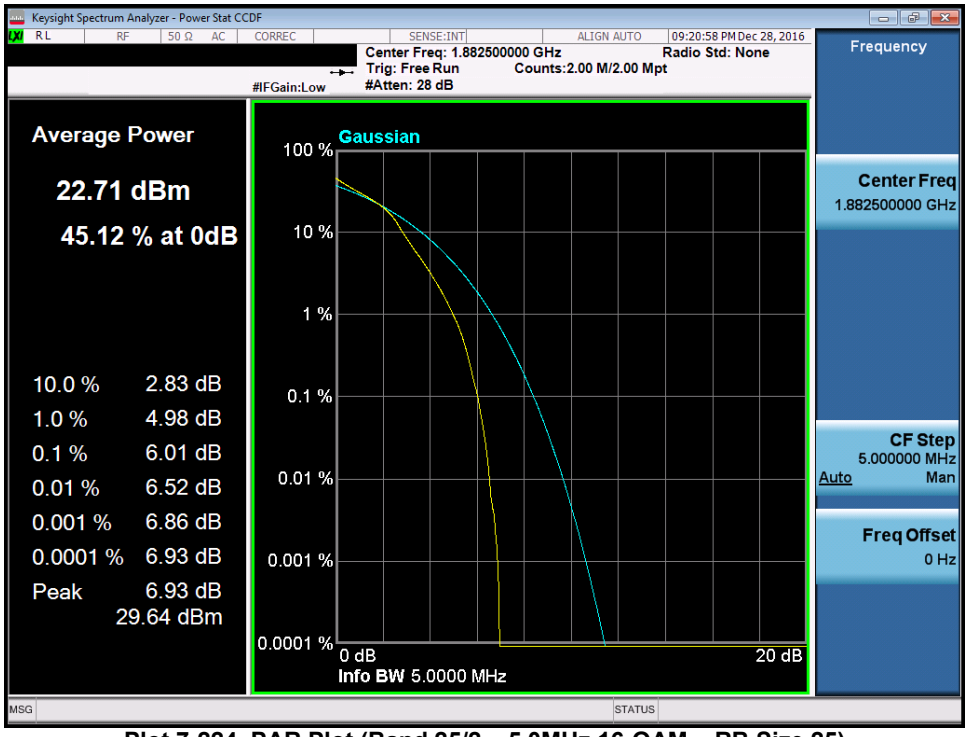
Plot 7-221. PAR Plot (Band 25/2 – 3.0MHz 16-QAM – RB Size 15)



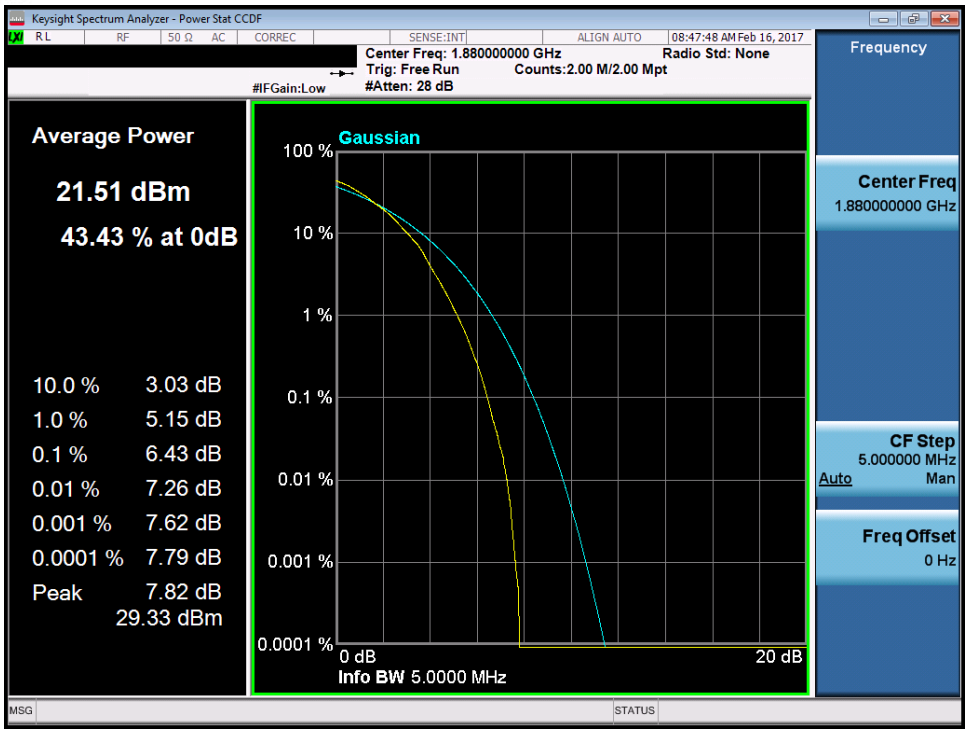
Plot 7-222. PAR Plot (Band 25/2 – 3.0MHz 64-QAM – RB Size 15)



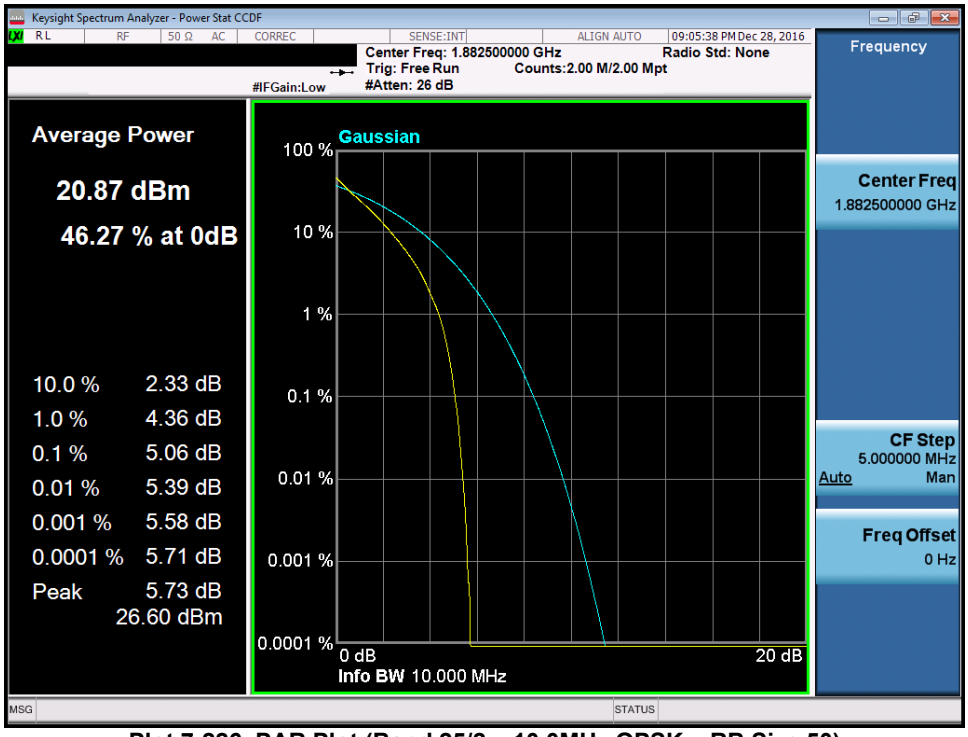
Plot 7-223. PAR Plot (Band 25/2 – 5.0MHz QPSK – RB Size 25)



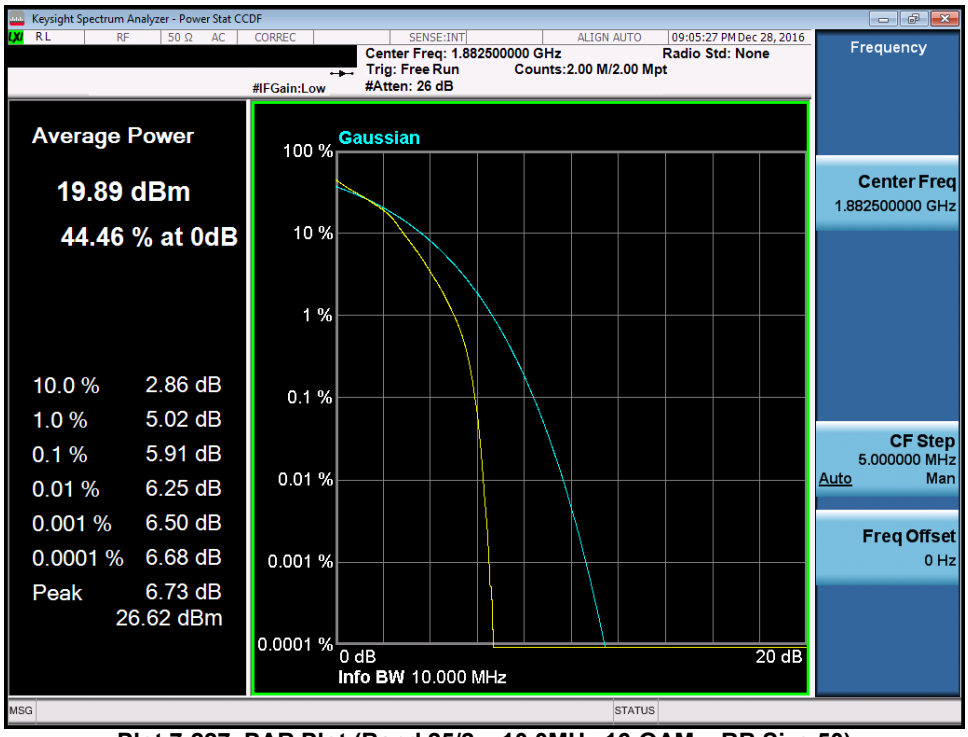
Plot 7-224. PAR Plot (Band 25/2 – 5.0MHz 16-QAM – RB Size 25)



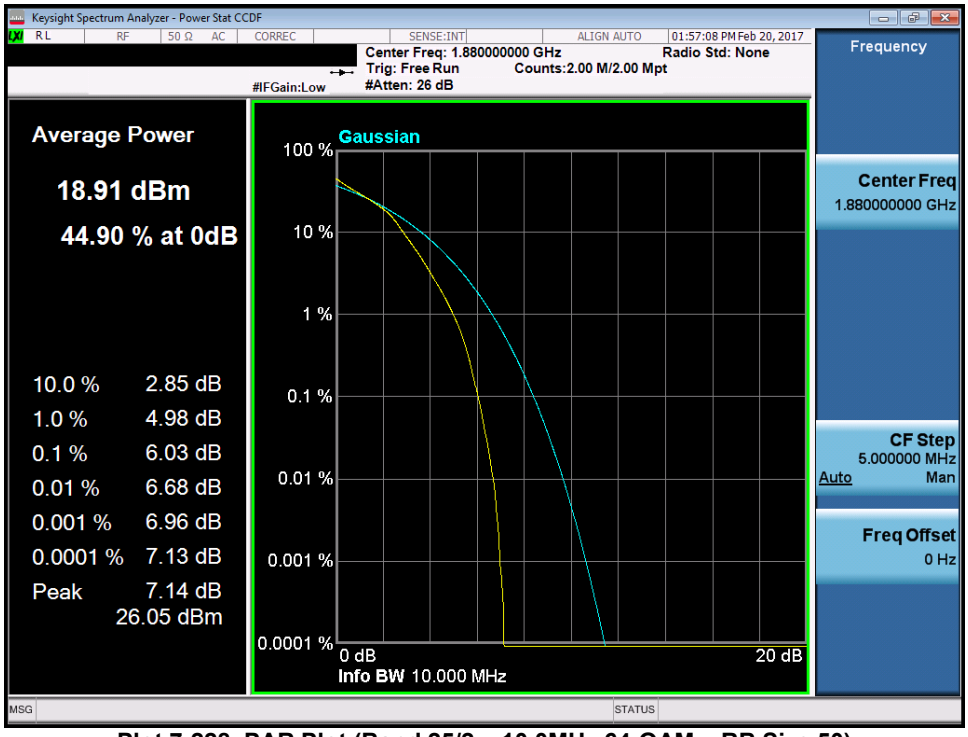
Plot 7-225. PAR Plot (Band 25/2 – 5.0MHz 64-QAM – RB Size 25)



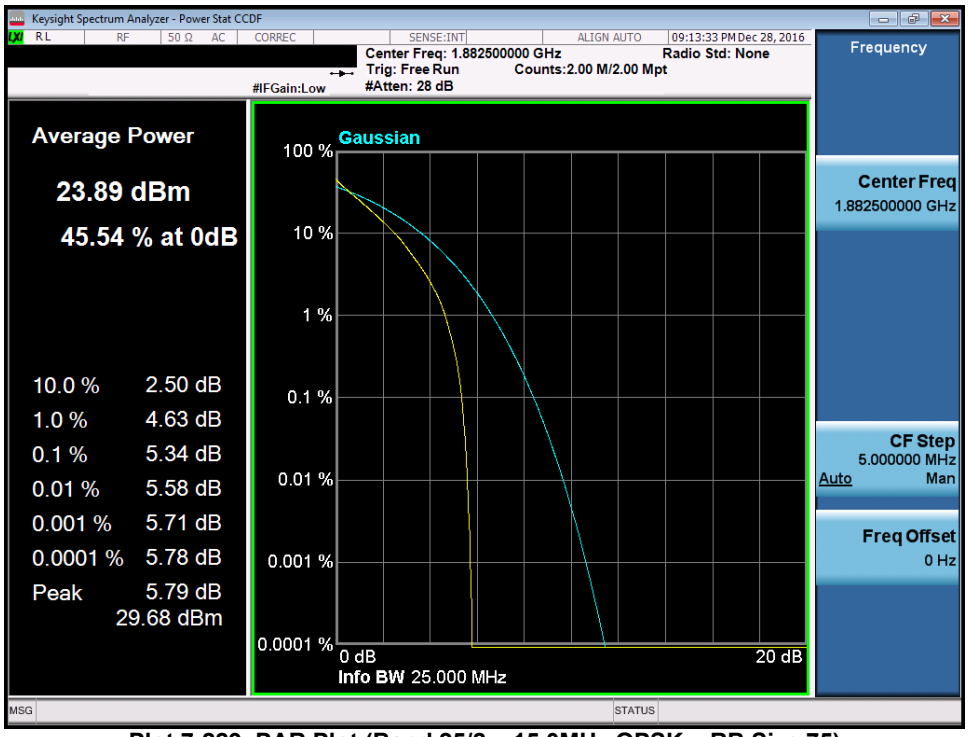
Plot 7-226. PAR Plot (Band 25/2 – 10.0MHz QPSK – RB Size 50)



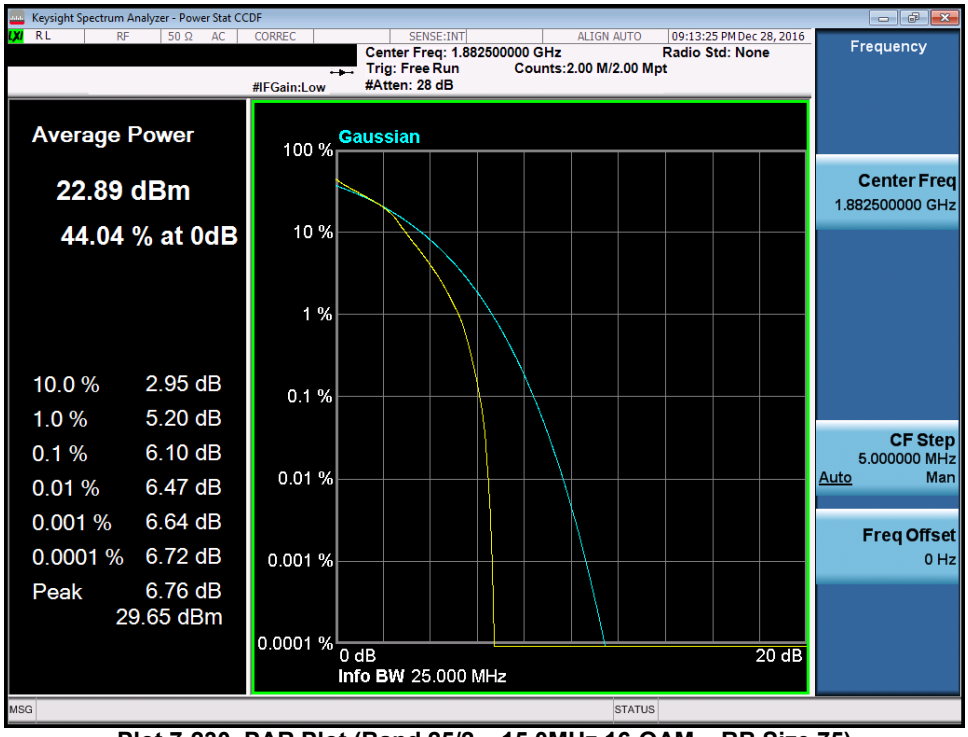
Plot 7-227. PAR Plot (Band 25/2 – 10.0MHz 16-QAM – RB Size 50)



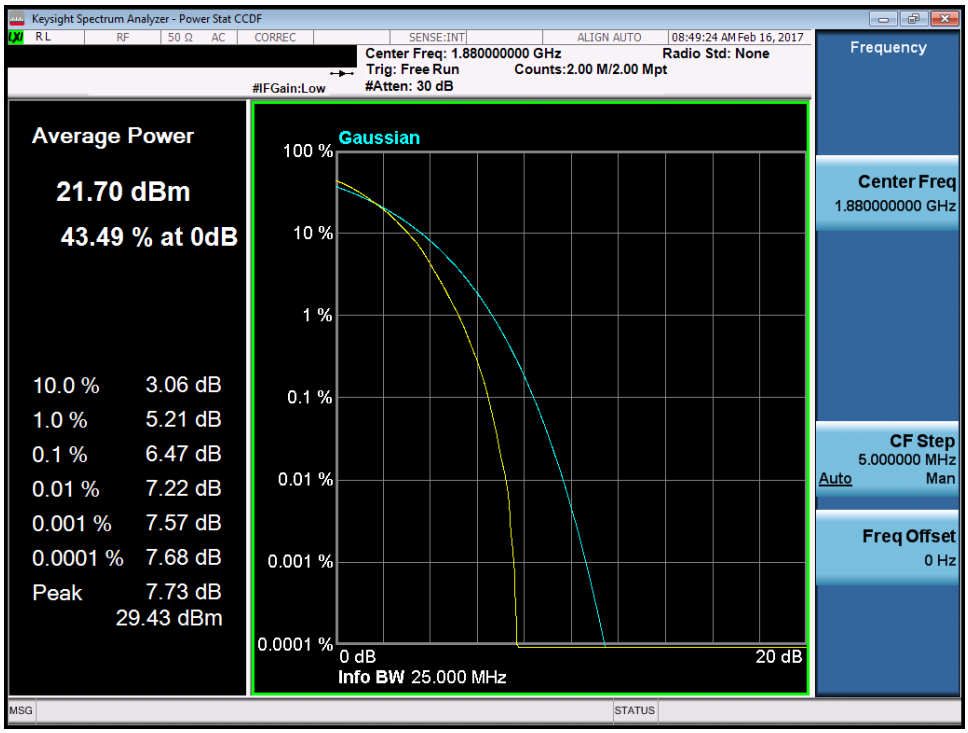
Plot 7-228. PAR Plot (Band 25/2 – 10.0MHz 64-QAM – RB Size 50)



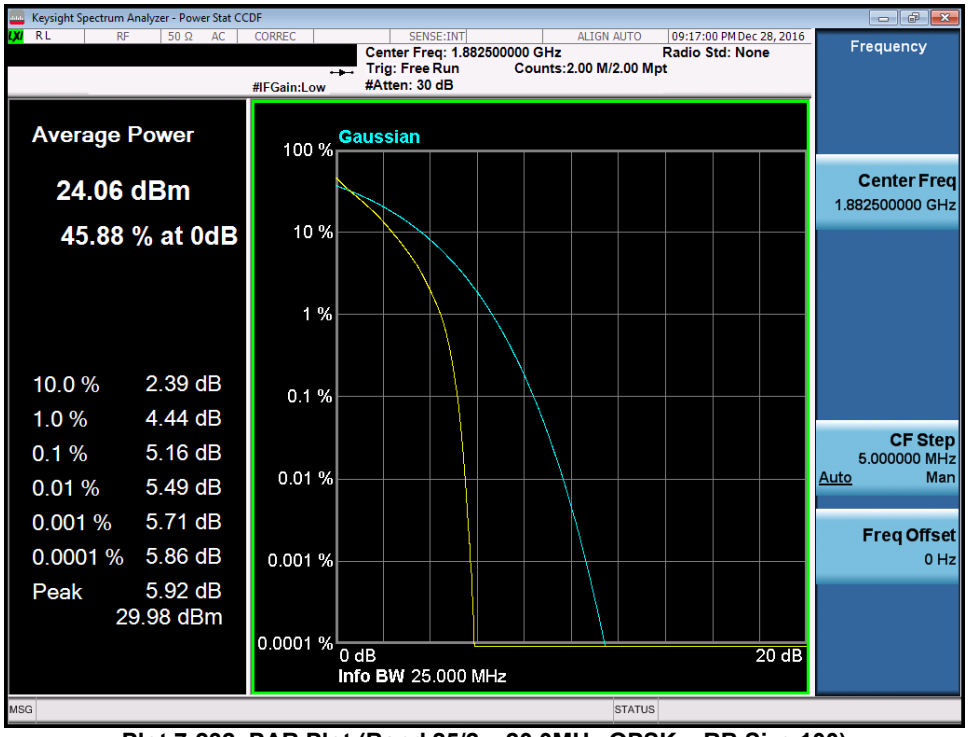
Plot 7-229. PAR Plot (Band 25/2 – 15.0MHz QPSK – RB Size 75)



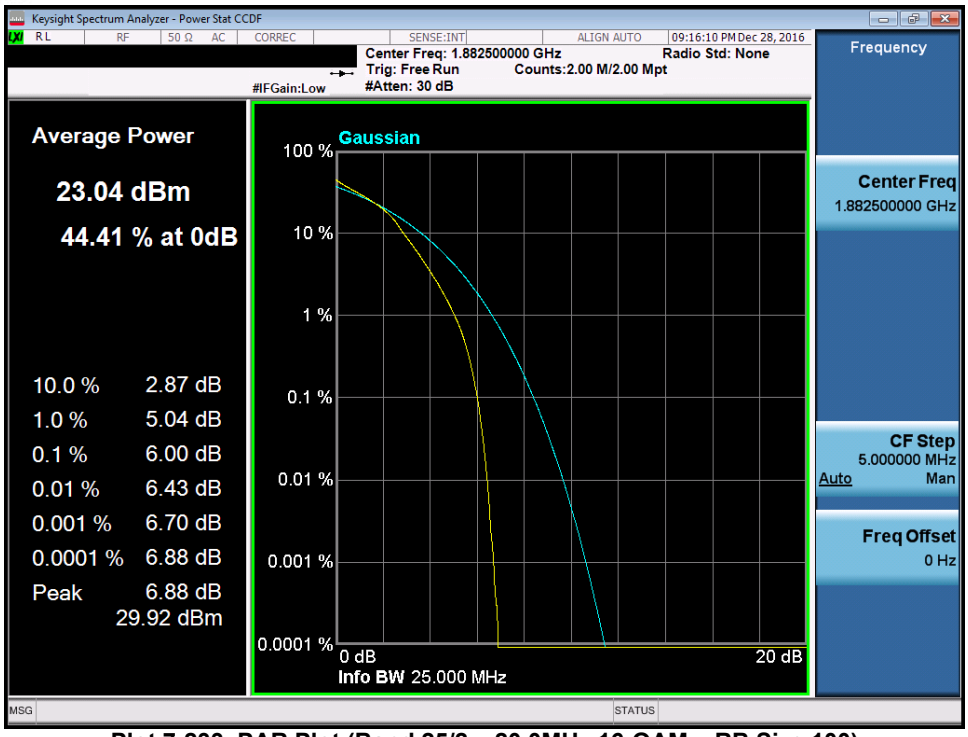
Plot 7-230. PAR Plot (Band 25/2 – 15.0MHz 16-QAM – RB Size 75)



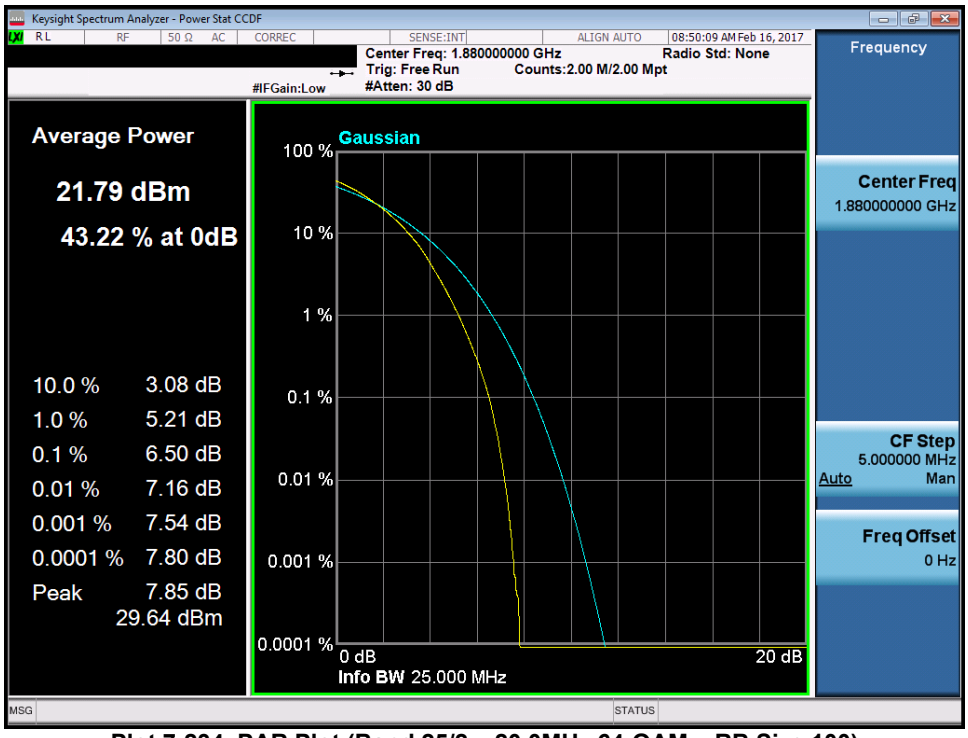
Plot 7-231. PAR Plot (Band 25/2 – 15.0MHz 64-QAM – RB Size 75)



Plot 7-232. PAR Plot (Band 25/2 – 20.0MHz QPSK – RB Size 100)



Plot 7-233. PAR Plot (Band 25/2 – 20.0MHz 16-QAM – RB Size 100)



Plot 7-234. PAR Plot (Band 25/2 – 20.0MHz 64-QAM – RB Size 100)

7.6 Radiated Power (ERP/EIRP)

§22.913(a.2) §24.232(c.2) §27.50(h.2) §27.50(c.10) §27.50(d.4)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 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 v02r02 – Section 5.2.1

ANSI/TIA-603-D-2010 – 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. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
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". Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
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.

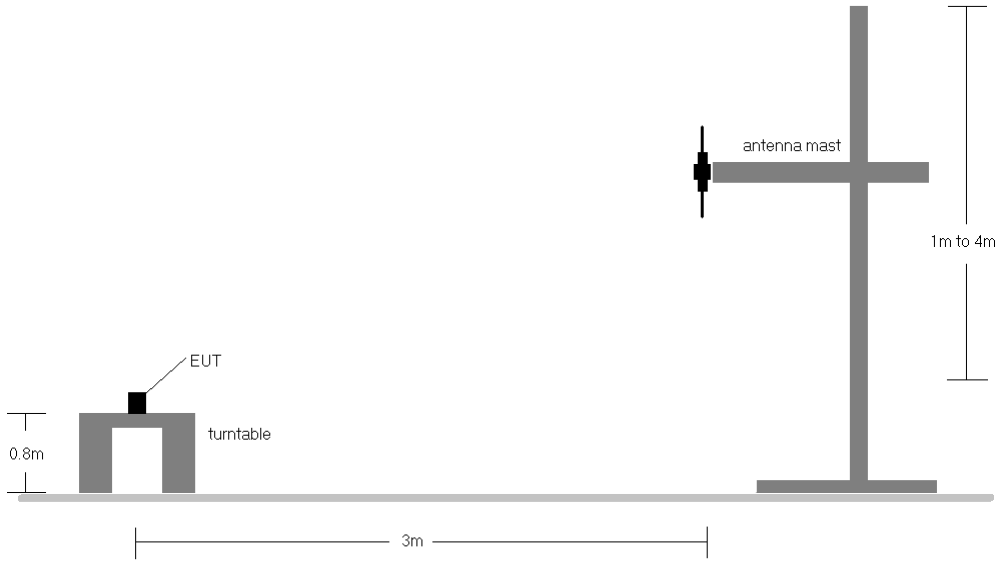


Figure 7-5. Radiated Test Setup <1GHz

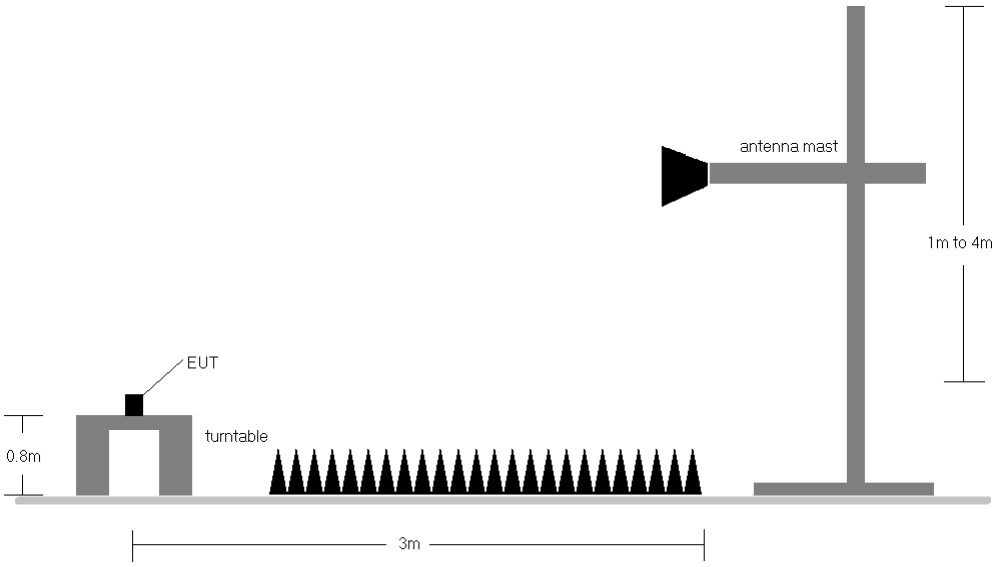


Figure 7-6. Radiated Test Setup >1GHz

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 [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	V	164	84	1 / 5	13.39	2.85	16.24	34.77	-18.53
707.50	1.4	QPSK	V	164	84	1 / 0	13.72	2.99	16.71	34.77	-18.06
715.30	1.4	QPSK	V	164	84	1 / 5	13.65	3.06	16.71	34.77	-18.06
707.50	1.4	16-QAM	V	164	84	1 / 5	13.56	2.99	16.55	34.77	-18.22
707.50	1.4	64-QAM	V	164	84	1 / 0	11.73	2.99	14.72	34.77	-20.05
700.50	3	QPSK	V	170	69	1 / 14	13.81	2.85	16.66	34.77	-18.11
707.50	3	QPSK	V	171	73	1 / 14	14.02	2.99	17.01	34.77	-17.76
714.50	3	QPSK	V	170	69	1 / 0	14.44	3.05	17.49	34.77	-17.28
714.50	3	16-QAM	V	170	69	1 / 0	13.63	3.05	16.68	34.77	-18.09
714.50	3	64-QAM	V	170	69	1 / 14	12.20	3.05	15.25	34.77	-19.52
701.50	5	QPSK	V	170	67	1 / 24	14.59	2.88	17.47	34.77	-17.31
707.50	5	QPSK	V	170	69	1 / 24	14.01	2.99	17.00	34.77	-17.77
713.50	5	QPSK	V	170	69	1 / 0	14.61	3.04	17.65	34.77	-17.12
713.50	5	16-QAM	V	170	69	1 / 0	13.83	3.04	16.87	34.77	-17.90
713.50	5	64-QAM	V	170	69	1 / 24	12.62	3.04	15.66	34.77	-19.11
704.00	10	QPSK	V	173	76	1 / 49	13.50	2.94	16.44	34.77	-18.34
707.50	10	QPSK	V	173	76	1 / 0	13.92	2.99	16.91	34.77	-17.86
711.00	10	QPSK	V	173	76	1 / 49	13.27	3.02	16.29	34.77	-18.48
707.50	10	16-QAM	V	173	76	1 / 49	13.76	2.99	16.75	34.77	-18.02
707.50	10	64-QAM	V	173	76	1 / 49	11.80	2.99	14.79	34.77	-19.98
713.50	5	QPSK	H	293	114	1 / 0	13.34	3.04	16.38	34.77	-18.39
713.50	5 (WCP)	QPSK	H	102	185	1 / 74	12.93	3.04	15.97	34.77	-18.80

Table 7-2. ERP 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 [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	V	143	236	1 / 5	12.88	5.36	18.24	38.45	-20.21
836.50	1.4	QPSK	V	143	236	3 / 2	14.60	5.15	19.75	38.45	-18.70
848.30	1.4	QPSK	V	150	245	1 / 0	13.47	5.16	18.63	38.45	-19.82
836.50	1.4	16-QAM	V	143	236	1 / 0	13.69	5.15	18.84	38.45	-19.61
836.50	1.4	64-QAM	V	143	236	1 / 0	11.50	5.15	16.65	38.45	-21.80
825.50	3	QPSK	V	140	237	1 / 14	13.42	5.35	18.77	38.45	-19.68
836.50	3	QPSK	V	140	236	1 / 0	14.62	5.15	19.77	38.45	-18.68
847.50	3	QPSK	V	140	237	1 / 0	13.48	5.14	18.62	38.45	-19.83
836.50	3	16-QAM	V	140	236	1 / 0	13.78	5.15	18.93	38.45	-19.52
836.50	3	64-QAM	V	140	236	1 / 0	12.64	5.15	17.79	38.45	-20.66
826.50	5	QPSK	V	140	237	1 / 24	13.87	5.34	19.21	38.45	-19.24
836.50	5	QPSK	V	140	237	1 / 0	14.59	5.15	19.74	38.45	-18.71
846.50	5	QPSK	V	140	237	1 / 0	13.91	5.13	19.04	38.45	-19.41
836.50	5	16-QAM	V	140	237	1 / 0	13.83	5.15	18.98	38.45	-19.47
836.50	5	64-QAM	V	140	237	1 / 0	12.63	5.15	17.78	38.45	-20.67
829.00	10	QPSK	V	145	247	1 / 49	14.24	5.30	19.54	38.45	-18.91
836.50	10	QPSK	V	145	247	1 / 49	14.45	5.15	19.60	38.45	-18.85
844.00	10	QPSK	V	145	247	1 / 0	14.32	5.11	19.43	38.45	-19.02
836.50	10	16-QAM	V	145	247	1 / 49	13.56	5.15	18.71	38.45	-19.74
836.50	10	64-QAM	V	145	247	1 / 0	12.06	5.15	17.21	38.45	-21.24
836.50	3	QPSK	H	100	284	1 / 0	13.25	5.15	18.40	38.45	-20.05
836.50	3 (WCP)	QPSK	H	100	287	1 / 0	12.53	5.15	17.68	38.45	-20.77

Table 7-3. ERP Data (Band 26/5)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
831.50	15	QPSK	V	144	241	1 / 74	14.18	5.25	19.43	38.45	-19.03
836.50	15	QPSK	V	137	244	1 / 74	14.46	5.15	19.61	38.45	-18.84
841.50	15	QPSK	V	137	244	1 / 0	14.30	5.11	19.41	38.45	-19.04
831.50	15	16-QAM	V	144	241	1 / 74	13.35	5.25	18.60	38.45	-19.86
836.50	15	16-QAM	V	137	244	1 / 74	13.53	5.15	18.68	38.45	-19.77
841.50	15	16-QAM	V	137	244	1 / 0	13.46	5.11	18.57	38.45	-19.88
836.50	15	64-QAM	V	137	244	1 / 74	12.44	5.15	17.59	38.45	-20.86

Table 7-4. ERP Data (Band 26)

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 Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	V	100	267	1 / 0	12.31	9.44	21.75	30.00	-8.25
1732.50	1.4	QPSK	V	149	267	1 / 0	12.46	9.32	21.78	30.00	-8.22
1754.30	1.4	QPSK	V	100	245	1 / 0	12.95	9.19	22.14	30.00	-7.86
1710.70	1.4	16-QAM	V	100	267	1 / 0	11.61	9.44	21.05	30.00	-8.95
1710.70	1.4	64-QAM	V	100	267	1 / 0	10.51	9.44	19.95	30.00	-10.05
1711.50	3	QPSK	V	100	269	1 / 0	12.32	9.44	21.76	30.00	-8.24
1732.50	3	QPSK	V	100	270	1 / 0	12.12	9.32	21.44	30.00	-8.56
1753.50	3	QPSK	V	100	269	1 / 14	11.92	9.20	21.12	30.00	-8.88
1711.50	3	16-QAM	V	100	269	1 / 0	11.41	9.44	20.85	30.00	-9.15
1711.50	3	64-QAM	V	100	269	1 / 0	10.36	9.44	19.80	30.00	-10.20
1712.50	5	QPSK	V	100	268	1 / 0	12.16	9.43	21.59	30.00	-8.41
1732.50	5	QPSK	V	100	268	1 / 0	12.02	9.32	21.34	30.00	-8.66
1752.50	5	QPSK	V	100	268	1 / 0	11.78	9.20	20.98	30.00	-9.02
1712.50	5	16-QAM	V	100	268	1 / 0	11.33	9.43	20.76	30.00	-9.24
1712.50	5	64-QAM	V	100	268	1 / 0	10.16	9.43	19.59	30.00	-10.41
1715.00	10	QPSK	V	100	265	1 / 49	12.76	9.42	22.18	30.00	-7.82
1732.50	10	QPSK	V	100	265	1 / 49	12.47	9.32	21.79	30.00	-8.21
1750.00	10	QPSK	V	100	265	1 / 0	11.82	9.22	21.04	30.00	-8.96
1715.00	10	16-QAM	V	100	265	1 / 49	11.79	9.42	21.21	30.00	-8.79
1715.00	10	64-QAM	V	100	265	1 / 49	10.72	9.42	20.14	30.00	-9.86
1717.50	15	QPSK	V	100	254	1 / 0	12.23	9.40	21.63	30.00	-8.37
1732.50	15	QPSK	V	100	267	1 / 0	11.78	9.32	21.10	30.00	-8.90
1747.50	15	QPSK	V	100	269	1 / 74	11.11	9.23	20.34	30.00	-9.66
1717.50	15	16-QAM	V	100	254	1 / 0	11.31	9.40	20.71	30.00	-9.29
1717.50	15	64-QAM	V	100	254	1 / 0	10.28	9.40	19.68	30.00	-10.32
1720.00	20	QPSK	V	100	267	1 / 0	12.30	9.39	21.69	30.00	-8.31
1732.50	20	QPSK	V	100	267	1 / 0	11.75	9.32	21.07	30.00	-8.93
1745.00	20	QPSK	V	100	267	1 / 0	12.01	9.25	21.26	30.00	-8.74
1720.00	20	16-QAM	V	100	267	1 / 0	11.36	9.39	20.75	30.00	-9.25
1720.00	20	64-QAM	V	100	267	1 / 0	10.31	9.39	19.70	30.00	-10.30
1715.00	10	QPSK	H	122	202	1 / 0	10.61	9.42	20.03	30.00	-9.97
1715.00	10 (WCP)	QPSK	H	105	215	1 / 0	10.16	9.42	19.58	30.00	-10.42

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 Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	V	100	328	1 / 0	13.09	8.97	22.06	33.01	-10.95
1882.50	1.4	QPSK	V	100	328	3 / 2	13.19	8.99	22.18	33.01	-10.83
1914.30	1.4	QPSK	V	105	34	1 / 0	12.15	8.97	21.12	33.01	-11.89
1882.50	1.4	16-QAM	V	100	328	1 / 0	12.22	8.99	21.21	33.01	-11.80
1882.50	1.4	64-QAM	V	100	328	1 / 0	11.04	8.99	20.03	33.01	-12.98
1851.50	3	QPSK	V	100	328	1 / 0	11.97	8.97	20.94	33.01	-12.07
1882.50	3	QPSK	V	100	328	1 / 0	11.66	8.99	20.65	33.01	-12.36
1913.50	3	QPSK	V	100	328	1 / 0	11.90	8.97	20.87	33.01	-12.14
1851.50	3	16-QAM	V	100	328	1 / 0	11.17	8.97	20.14	33.01	-12.87
1851.50	3	64-QAM	V	100	328	1 / 0	9.98	8.97	18.95	33.01	-14.06
1852.50	5	QPSK	V	107	187	1 / 0	11.93	8.97	20.90	33.01	-12.11
1882.50	5	QPSK	V	114	208	1 / 24	11.43	8.99	20.42	33.01	-12.59
1912.50	5	QPSK	V	107	187	1 / 0	11.24	8.98	20.22	33.01	-12.79
1852.50	5	16-QAM	V	107	187	1 / 0	11.17	8.97	20.14	33.01	-12.87
1852.50	5	64-QAM	V	107	187	1 / 0	9.94	8.97	18.91	33.01	-14.10
1855.00	10	QPSK	V	100	117	1 / 0	11.79	8.97	20.76	33.01	-12.25
1882.50	10	QPSK	V	114	210	1 / 0	11.88	8.99	20.87	33.01	-12.14
1910.00	10	QPSK	V	107	184	1 / 0	12.25	8.98	21.23	33.01	-11.78
1910.00	10	16-QAM	V	107	184	1 / 0	11.18	8.98	20.16	33.01	-12.85
1910.00	10	64-QAM	V	107	184	1 / 0	10.25	8.98	19.23	33.01	-13.78
1857.50	15	QPSK	V	117	207	1 / 0	12.21	8.97	21.18	33.01	-11.83
1882.50	15	QPSK	V	117	207	1 / 74	11.50	8.99	20.49	33.01	-12.52
1907.50	15	QPSK	V	111	184	1 / 0	11.73	8.99	20.72	33.01	-12.29
1857.50	15	16-QAM	V	117	207	1 / 0	11.12	8.97	20.09	33.01	-12.92
1857.50	15	64-QAM	V	117	207	1 / 0	10.22	8.97	19.19	33.01	-13.82
1860.00	20	QPSK	V	113	208	1 / 0	12.03	8.98	21.01	33.01	-12.00
1882.50	20	QPSK	V	113	208	1 / 0	11.60	8.99	20.59	33.01	-12.42
1905.00	20	QPSK	V	113	302	1 / 0	11.35	8.99	20.34	33.01	-12.67
1860.00	20	16-QAM	V	113	208	1 / 0	11.31	8.98	20.29	33.01	-12.72
1860.00	20	64-QAM	V	113	208	1 / 0	10.06	8.98	19.04	33.01	-13.97
1882.50	1.4	QPSK	H	100	237	1 / 0	12.39	8.99	21.38	33.01	-11.63
1882.50	1.4 (WCP)	QPSK	H	100	238	1 / 0	11.38	8.99	20.37	33.01	-12.64

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

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 Limit [dBm]	Margin [dB]
2498.50	5	QPSK	H	100	196	1 / 0	12.83	7.05	19.88	33.01	-13.13
2593.00	5	QPSK	H	100	252	1 / 0	13.09	8.18	21.27	33.01	-11.74
2687.50	5	QPSK	H	102	197	1 / 0	12.98	8.00	20.98	33.01	-12.03
2593.00	5	16-QAM	H	100	252	1 / 0	12.69	8.18	20.87	33.01	-12.14
2593.00	5	64-QAM	H	100	252	1 / 0	11.12	8.18	19.30	33.01	-13.71
2501.00	10	QPSK	H	100	22	1 / 0	9.72	8.11	17.83	33.01	-15.18
2593.00	10	QPSK	H	100	212	1 / 0	14.24	8.18	22.42	33.01	-10.59
2685.00	10	QPSK	H	101	37	1 / 0	14.50	8.01	22.51	33.01	-10.50
2685.00	10	16-QAM	H	101	37	1 / 0	13.88	8.01	21.89	33.01	-11.12
2685.00	10	64-QAM	H	101	37	1 / 0	12.54	8.01	20.55	33.01	-12.46
2503.50	15	QPSK	H	100	360	1 / 0	9.88	8.00	17.88	33.01	-15.13
2593.00	15	QPSK	H	100	28	1 / 0	14.83	8.18	23.01	33.01	-10.00
2682.50	15	QPSK	H	100	36	1 / 0	15.49	8.01	23.50	33.01	-9.51
2682.50	15	16-QAM	H	100	36	1 / 0	14.73	8.01	22.74	33.01	-10.27
2682.50	15	64-QAM	H	100	36	1 / 0	13.50	8.01	21.51	33.01	-11.50
2506.00	20	QPSK	H	100	214	1 / 99	14.18	8.74	22.92	33.01	-10.09
2593.00	20	QPSK	H	100	220	1 / 0	14.77	8.18	22.95	33.01	-10.06
2680.00	20	QPSK	H	100	207	1 / 99	14.00	8.02	22.02	33.01	-10.99
2593.00	20	16-QAM	H	100	220	1 / 0	14.04	8.18	22.22	33.01	-10.79
2593.00	20	64-QAM	H	100	220	1 / 0	12.77	8.18	20.95	33.01	-12.06
2682.50	15	QPSK	V	100	0	1 / 99	12.97	8.01	20.98	33.01	-12.03
2682.50	15 (WCP)	QPSK	H	100	218	1 / 99	13.06	8.01	21.07	33.01	-11.94
2682.5 (PC3)	15	QPSK	H	100	36	1 / 74	14.96	8.01	22.97	33.01	-10.04

Table 7-7. EIRP Data (Band 41)

7.7 Radiated Spurious Emissions Measurements

§2.1053 §22.917(a) §24.238(a) §27.53(g) §27.53(h) §27.53(m)

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-D-2010 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 peak 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 v02r02 – Section 5.8

ANSI/TIA-603-D-2010 – 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.

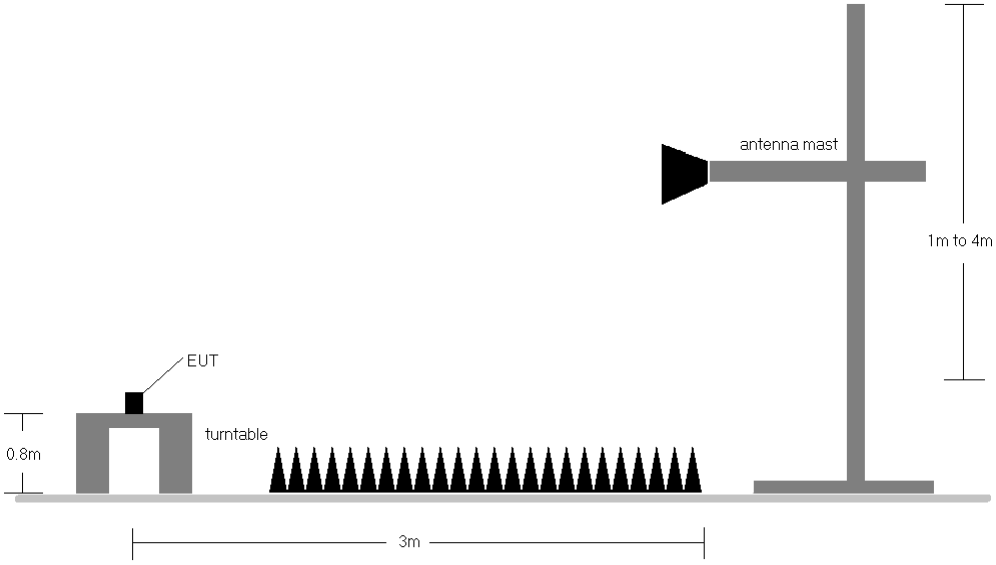


Figure 7-7. Test Instrument & Measurement Setup

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.

OPERATING FREQUENCY:	701.50	MHz		
CHANNEL:	23035			
MEASURED OUTPUT POWER:	17.47	dBm	=	0.056 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	30.47	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1403.00	V	202	45	-68.25	5.80	-62.44	79.9
2104.50	V	100	325	-63.69	6.71	-56.98	74.4

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

OPERATING FREQUENCY:	707.50	MHz		
CHANNEL:	23095			
MEASURED OUTPUT POWER:	17.00	dBm	=	0.050 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	30.00	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1415.00	V	118	73	-66.83	5.80	-61.03	78.0
2122.50	V	110	22	-60.25	6.71	-53.54	70.5

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

OPERATING FREQUENCY:	713.50	MHz		
CHANNEL:	23155			
MEASURED OUTPUT POWER:	17.65	dBm	=	0.058 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	30.65	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1427.00	V	125	62	-65.48	5.86	-59.62	77.3
2140.50	V	100	358	-61.99	6.81	-55.18	72.8

Table 7-10. Radiated Spurious Data (Band 12 – High Channel)

OPERATING FREQUENCY:	713.50	MHz		
CHANNEL:	23155			
MEASURED OUTPUT POWER:	15.97	dBm	=	0.040 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	28.97	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1427.00	H	207	345	-67.98	5.86	-62.12	78.1
2140.50	H	107	360	-66.55	6.81	-59.74	75.7

Table 7-11. Radiated Spurious Data with WCP (Band 12 – High Channel)

OPERATING FREQUENCY:	825.50	MHz		
CHANNEL:	26805			
MEASURED OUTPUT POWER:	18.77	dBm	=	0.075 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	3.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	31.77	dBc	

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]	[dBc]
1651.00	V	100	302	-56.01	6.74	-49.28	68.1
2476.50	V	115	16	-47.87	7.52	-40.35	59.1
3302.00	V	-	-	-67.08	7.50	-59.58	78.4

Table 7-12. Radiated Spurious Data (Band 26 – Low Channel)

OPERATING FREQUENCY:	836.50	MHz		
CHANNEL:	26915			
MEASURED OUTPUT POWER:	19.77	dBm	=	0.095 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	3.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	32.77	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1673.00	V	100	305	-58.20	6.77	-51.43	71.2
2509.50	V	100	350	-47.31	7.65	-39.66	59.4
3346.00	V	114	85	-63.45	7.53	-55.92	75.7
4182.50	V	-	-	-68.87	8.23	-60.64	80.4

Table 7-13. Radiated Spurious Data (Band 26 – Mid Channel)

OPERATING FREQUENCY:	847.50	MHz		
CHANNEL:	27025			
MEASURED OUTPUT POWER:	18.62	dBm	=	0.073 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	3.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	31.62	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1695.00	V	100	292	-54.13	6.80	-47.33	66.0
2542.50	V	103	4	-50.66	7.62	-43.04	61.7
3390.00	V	-	-	-67.44	7.56	-59.88	78.5

Table 7-14. Radiated Spurious Data (Band 26 – High Channel)

OPERATING FREQUENCY:	836.50	MHz		
CHANNEL:	26915			
MEASURED OUTPUT POWER:	17.68	dBm	=	0.059 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	3.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	30.68	dBc	

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1673.00	H	112	202	-53.17	-2.15	-55.32	73.0
2509.50	H	100	203	-48.25	-2.15	-50.40	68.1
3346.00	H	-	-	-67.27	-2.15	-69.42	87.1

Table 7-15. Radiated Spurious Data with WCP (Band 26 – Mid Channel)

OPERATING FREQUENCY:	1715.00	MHz		
CHANNEL:	20000			
MEASURED OUTPUT POWER:	22.18	dBm	=	0.165 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	35.18	dBc	

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]	[dBc]
3430.00	V	141	0	-60.42	9.76	-50.67	72.8
5145.00	V	164	341	-50.07	10.73	-39.34	61.5

Table 7-16. Radiated Spurious Data (Band 4 – Low Channel)

OPERATING FREQUENCY:	1732.50	MHz		
CHANNEL:	20175			
MEASURED OUTPUT POWER:	21.79	dBm	=	0.151 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	34.79	dBc	

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]	[dBc]
3465.00	V	121	22	-60.90	9.85	-51.05	72.8
5197.50	V	161	240	-49.77	10.59	-39.18	61.0

Table 7-17. Radiated Spurious Data (Band 4 – Mid Channel)

OPERATING FREQUENCY:	1750.00	MHz			
CHANNEL:	20350				
MEASURED OUTPUT POWER:	21.04	dBm	=	0.127	W
MODULATION SIGNAL:	QPSK				
BANDWIDTH:	10.0	MHz			
DISTANCE:	3	meters			
LIMIT:	43 + 10 $\log_{10}$ (W) =	34.04	dBc		

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]	[dBc]
3500.00	V	173	35	-62.00	9.92	-52.08	73.1
5250.00	V	177	342	-49.84	10.66	-39.18	60.2

Table 7-18. Radiated Spurious Data (Band 4 – High Channel)

OPERATING FREQUENCY:	1715.00	MHz			
CHANNEL:	20000				
MEASURED OUTPUT POWER:	19.58	dBm	=	0.091	W
MODULATION SIGNAL:	QPSK				
BANDWIDTH:	10.0	MHz			
DISTANCE:	3	meters			
LIMIT:	43 + 10 $\log_{10}$ (W) =	32.58	dBc		

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]	[dBc]
3430.00	H	100	187	-61.66	9.91	-51.75	71.3
5145.00	H	100	313	-61.33	10.75	-50.59	70.2

Table 7-19. Radiated Spurious Data with WCP (Band 4 – Low Channel)

OPERATING FREQUENCY:	1850.70	MHz		
CHANNEL:	26047			
MEASURED OUTPUT POWER:	22.06	dBm	=	0.161 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	1.4	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	35.06	dBc	

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]	[dBc]
3701.40	H	100	332	-60.23	9.53	-50.70	72.8
5552.10	H	100	98	-54.04	11.01	-43.03	65.1

Table 7-20. Radiated Spurious Data (Band 25/2 – Low Channel)

OPERATING FREQUENCY:	1882.50	MHz		
CHANNEL:	26365			
MEASURED OUTPUT POWER:	22.18	dBm	=	0.165 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	1.4	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	35.18	dBc	

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]	[dBc]
3765.00	H	100	208	-57.39	9.37	-48.02	70.2
5647.50	H	100	95	-55.50	11.23	-44.27	66.4

Table 7-21. Radiated Spurious Data (Band 25/2 – Mid Channel)

OPERATING FREQUENCY:	1914.30	MHz		
CHANNEL:	26683			
MEASURED OUTPUT POWER:	21.12	dBm	=	0.129 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	1.4	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	34.12	dBc	

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]	[dBc]
3828.60	H	170	6	-61.60	9.34	-52.26	73.4
5742.90	H	100	74	-58.32	11.40	-46.92	68.0

Table 7-22. Radiated Spurious Data (Band 25/2 – High Channel)

OPERATING FREQUENCY:	1882.50	MHz		
CHANNEL:	26365			
MEASURED OUTPUT POWER:	20.37	dBm	=	0.109 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	1.4	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	33.37	dBc	

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]	[dBc]
3765.00	H	197	185	-57.95	9.37	-48.58	69.0
5647.50	H	100	69	-52.49	11.23	-41.26	61.6

Table 7-23. Radiated Spurious Data with WCP (Band 25/2 – Mid Channel)

OPERATING FREQUENCY:	2503.50	MHz		
CHANNEL:	39725			
MEASURED OUTPUT POWER:	17.88	dBm	=	0.061 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	15.0	MHz		
DISTANCE:	3	meters		
LIMIT:	55 + 10 log10 (W)	42.88	dBc	

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]	[dBc]
5007.00	H	100	14	-61.98	11.17	-50.81	68.7
7510.50	H	100	231	-54.56	11.19	-43.37	61.2
10014.00	H	100	275	-48.81	12.56	-36.25	54.1

Table 7-24. Radiated Spurious Data (Band 41 – Low Channel)

OPERATING FREQUENCY:	2593.00	MHz		
CHANNEL:	40620			
MEASURED OUTPUT POWER:	23.01	dBm	=	0.200 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	15.0	MHz		
DISTANCE:	3	meters		
LIMIT:	55 + 10 log10 (W)	48.01	dBc	

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]	[dBc]
5186.00	H	100	199	-47.54	10.83	-36.71	59.7
7779.00	H	105	205	-46.28	11.60	-34.69	57.7
10372.00	H	100	215	-52.86	12.74	-40.12	63.1

Table 7-25. Radiated Spurious Data (Band 41 – Mid Channel)

OPERATING FREQUENCY:	2682.50	MHz		
CHANNEL:	41515			
MEASURED OUTPUT POWER:	23.50	dBm	=	0.224 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	15.0	MHz		
DISTANCE:	3	meters		
LIMIT:	55 + 10 log10 (W)	48.50	dBc	

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]	[dBc]
5365.00	H	100	347	-63.89	11.08	-52.80	76.3
8047.50	H	145	10	-53.04	11.55	-41.50	65.0
10730.00	H	-	-	-54.16	12.99	-41.18	64.7

Table 7-26. Radiated Spurious Data (Band 41 – High Channel)

OPERATING FREQUENCY:	2682.50	MHz		
CHANNEL:	41515			
MEASURED OUTPUT POWER:	21.07	dBm	=	0.128 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	15.0	MHz		
DISTANCE:	3	meters		
LIMIT:	55 + 10 log10 (W)	46.07	dBc	

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]	[dBc]
5365.00	H	100	12	-62.75	11.08	-51.66	72.7
8047.50	H	100	182	-50.93	11.55	-39.39	60.5
10730.00	H	-	-	-55.18	12.99	-42.20	63.3

Table 7-27. Radiated Spurious Data with WCP (Band 41 – High Channel)

OPERATING FREQUENCY:	2682.50	MHz		
CHANNEL:	41515			
MEASURED OUTPUT POWER:	22.97	dBm	=	0.198 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	15.0	MHz		
DISTANCE:	3	meters		
LIMIT:	55 + 10 log10 (W)	47.97	dBc	

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]	[dBc]
5365.00	H	100	24	-62.50	11.08	-51.41	72.5
8047.50	H	100	123	-55.07	11.55	-43.53	64.6
10730.00	H	100	0	-54.36	12.99	-41.38	62.5

Table 7-28. Radiated Spurious Data (PC3 Band 41 – High Channel)

7.8 Frequency Stability / Temperature Variation

§2.1055 §22.355 §24.235 §27.54

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-D-2010. 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, the frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5 ppm) of the center frequency. For Part 24 and Part 27, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Procedure Used

ANSI/TIA-603-D-2010

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 12 Frequency Stability Measurements

§2.1055 §27.54

OPERATING FREQUENCY:	707,500,000	Hz
CHANNEL:	23790	
REFERENCE VOLTAGE:	3.80	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	707,499,997	-3	-0.0000004
100 %		- 30	707,500,014	14	0.0000020
100 %		- 20	707,500,119	119	0.0000168
100 %		- 10	707,499,897	-103	-0.0000146
100 %		0	707,499,905	-95	-0.0000134
100 %		+ 10	707,499,964	-36	-0.0000051
100 %		+ 20	707,499,923	-77	-0.0000109
100 %		+ 30	707,499,923	-77	-0.0000109
100 %		+ 40	707,499,975	-25	-0.0000035
100 %		+ 50	707,499,930	-70	-0.0000099
BATT. ENDPOINT	3.40	+ 20	707,499,897	-103	-0.0000146

Table 7-29. Frequency Stability Data (Band 12)

Band 12 Frequency Stability Measurements

§2.1055 §27.54

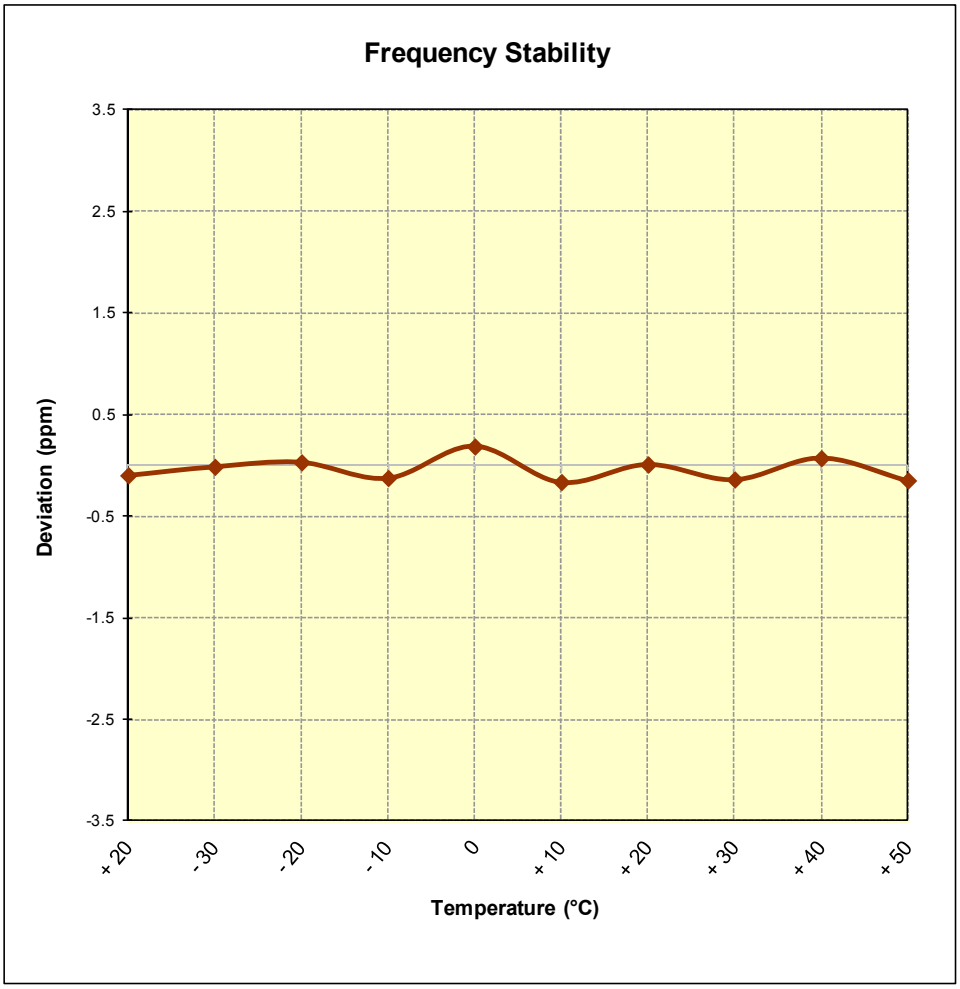


Figure 7-8. Frequency Stability Graph (Band 12)

Band 26/5 Frequency Stability Measurements

§2.1055 §22.355

OPERATING FREQUENCY:	831,500,000	Hz
CHANNEL:	26865	
REFERENCE VOLTAGE:	3.80	VDC
DEVIATION LIMIT:	± 0.00025 % or 2.5 ppm	

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	831,499,984	-16	-0.0000019
100 %		- 30	831,499,912	-88	-0.0000106
100 %		- 20	831,499,987	-13	-0.0000016
100 %		- 10	831,500,136	136	0.0000164
100 %		0	831,499,882	-118	-0.0000142
100 %		+ 10	831,499,936	-64	-0.0000077
100 %		+ 20	831,500,118	118	0.0000142
100 %		+ 30	831,499,929	-71	-0.0000085
100 %		+ 40	831,500,036	36	0.0000043
100 %		+ 50	831,499,999	-1	-0.0000001
BATT. ENDPOINT	3.40	+ 20	831,500,045	45	0.0000054

Table 7-30. Frequency Stability Data (Band 26/5)

Band 26/5 Frequency Stability Measurements

§2.1055 §22.355

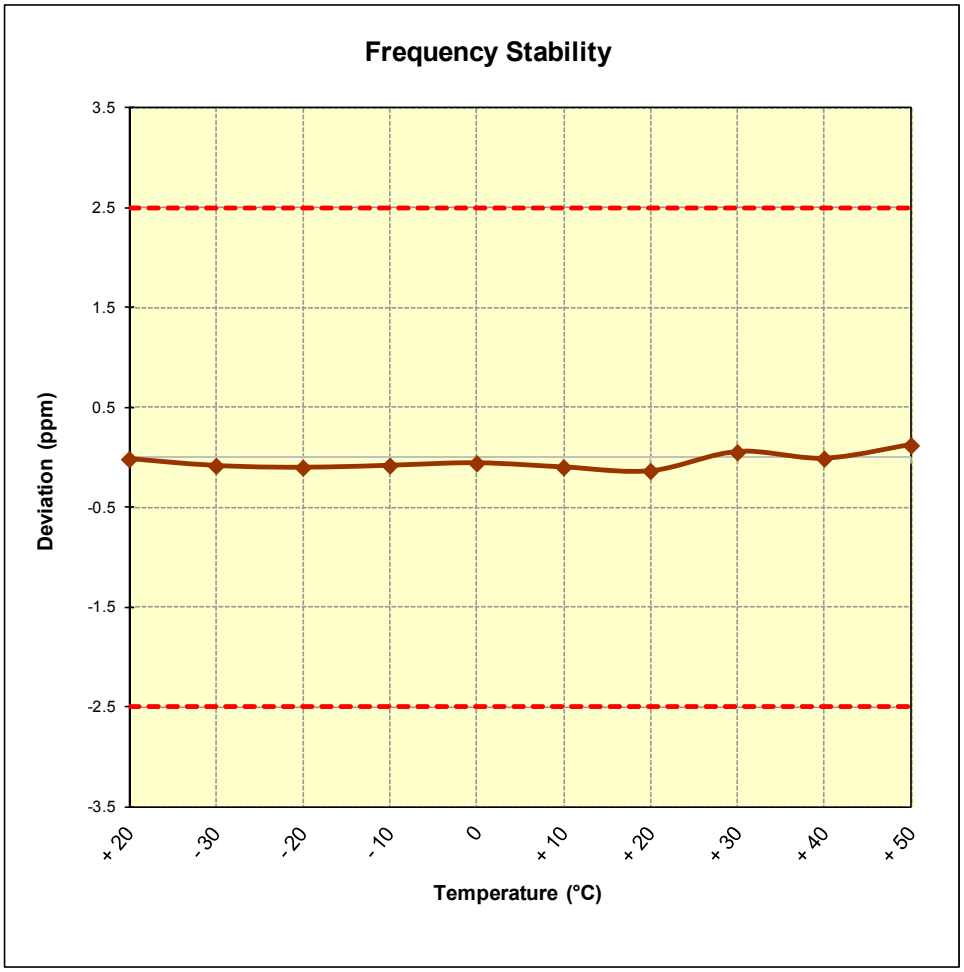


Figure 7-9. Frequency Stability Graph (Band 26/5)

Band 4 Frequency Stability Measurements

§2.1055 §§27.54

OPERATING FREQUENCY:	1,732,500,000	Hz
CHANNEL:	20175	
REFERENCE VOLTAGE:	3.80	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,732,500,106	106	0.0000061
100 %		- 30	1,732,499,946	-54	-0.0000031
100 %		- 20	1,732,500,096	96	0.0000055
100 %		- 10	1,732,499,859	-141	-0.0000081
100 %		0	1,732,499,908	-92	-0.0000053
100 %		+ 10	1,732,500,108	108	0.0000062
100 %		+ 20	1,732,499,986	-14	-0.0000008
100 %		+ 30	1,732,500,049	49	0.0000028
100 %		+ 40	1,732,500,134	134	0.0000077
100 %		+ 50	1,732,499,864	-136	-0.0000078
BATT. ENDPOINT	3.40	+ 20	1,732,500,126	126	0.0000073

Table 7-31. 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

§2.1055 §§27.54

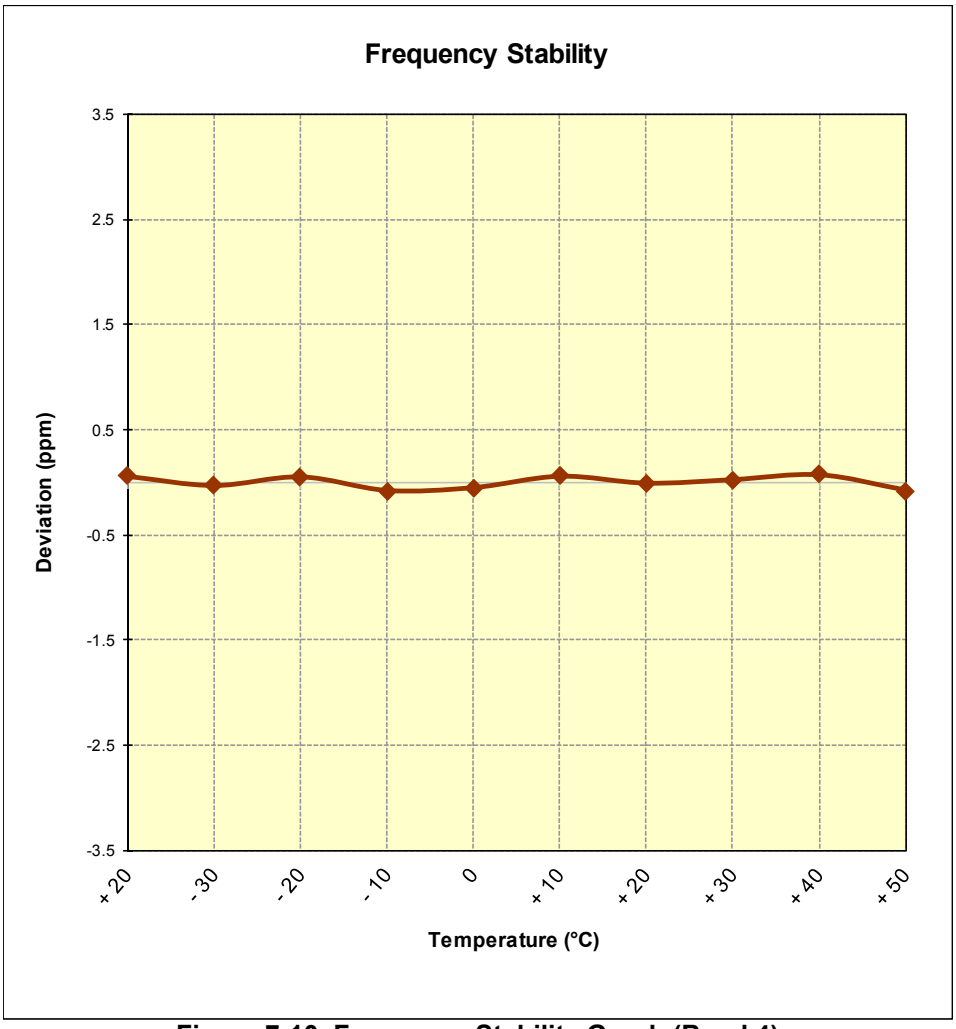


Figure 7-10. Frequency Stability Graph (Band 4)

Band 25/2 Frequency Stability Measurements

§2.1055 §24.235

OPERATING FREQUENCY:	1,882,500,000	Hz
CHANNEL:	26365	
REFERENCE VOLTAGE:	3.80	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,882,499,870	-130	-0.0000069
100 %		- 30	1,882,500,134	134	0.0000071
100 %		- 20	1,882,500,076	76	0.0000040
100 %		- 10	1,882,500,004	4	0.0000002
100 %		0	1,882,500,099	99	0.0000053
100 %		+ 10	1,882,499,965	-35	-0.0000019
100 %		+ 20	1,882,499,876	-124	-0.0000066
100 %		+ 30	1,882,500,081	81	0.0000043
100 %		+ 40	1,882,499,931	-69	-0.0000037
100 %		+ 50	1,882,500,149	149	0.0000079
BATT. ENDPOINT	3.40	+ 20	1,882,499,949	-51	-0.0000027

Table 7-32. Frequency Stability Data (Band 25/2)

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 25/2 Frequency Stability Measurements

§2.1055 §24.235

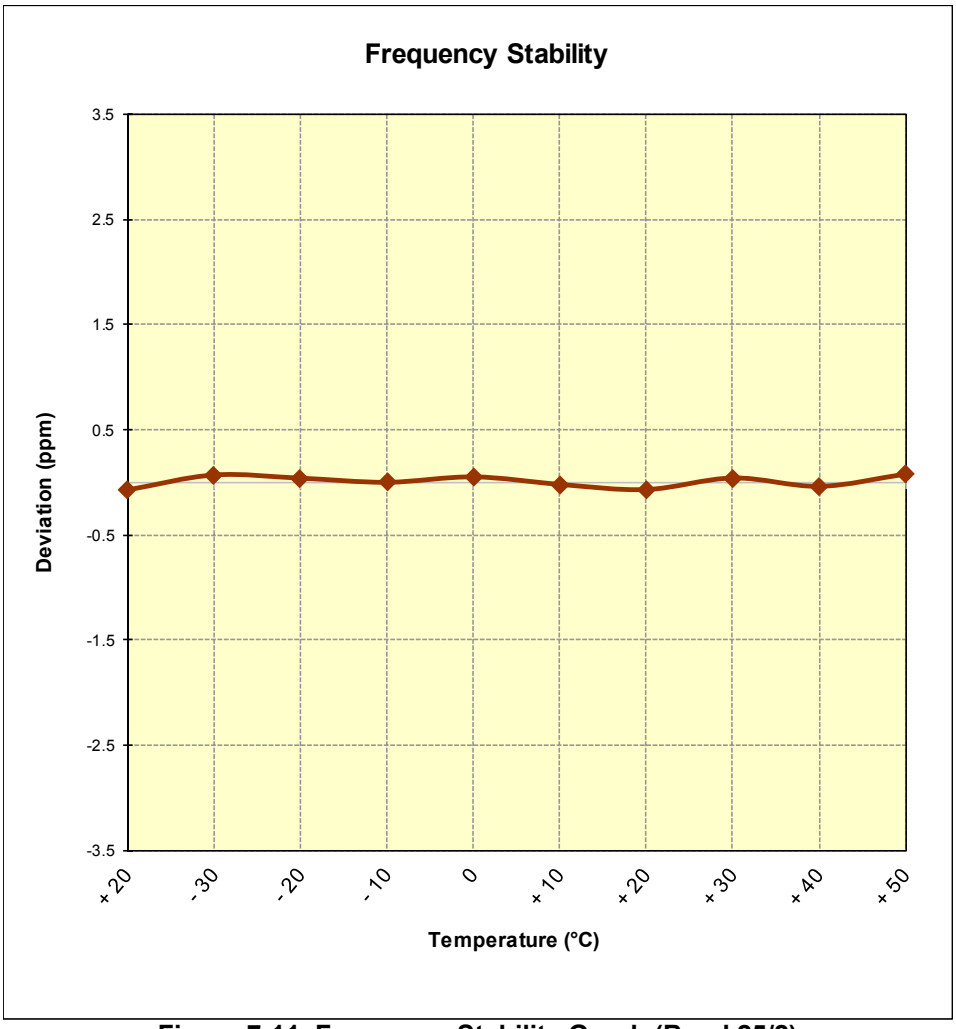


Figure 7-11. Frequency Stability Graph (Band 25/2)

Band 41 Frequency Stability Measurements

§2.1055 §27.54

OPERATING FREQUENCY:	2,593,000,000	Hz
CHANNEL:	40620	
REFERENCE VOLTAGE:	3.80	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	2,592,999,923	-77	-0.0000030
100 %		- 30	2,592,999,980	-20	-0.0000008
100 %		- 20	2,593,000,004	4	0.0000002
100 %		- 10	2,593,000,070	70	0.0000027
100 %		0	2,593,000,004	4	0.0000002
100 %		+ 10	2,593,000,136	136	0.0000052
100 %		+ 20	2,592,999,860	-140	-0.0000054
100 %		+ 30	2,593,000,002	2	0.0000001
100 %		+ 40	2,593,000,098	98	0.0000038
100 %		+ 50	2,593,000,004	4	0.0000002
BATT. ENDPOINT	3.40	+ 20	2,593,000,130	130	0.0000050

Table 7-33. Frequency Stability Data (Band 41)

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 41 Frequency Stability Measurements

§2.1055 §27.54

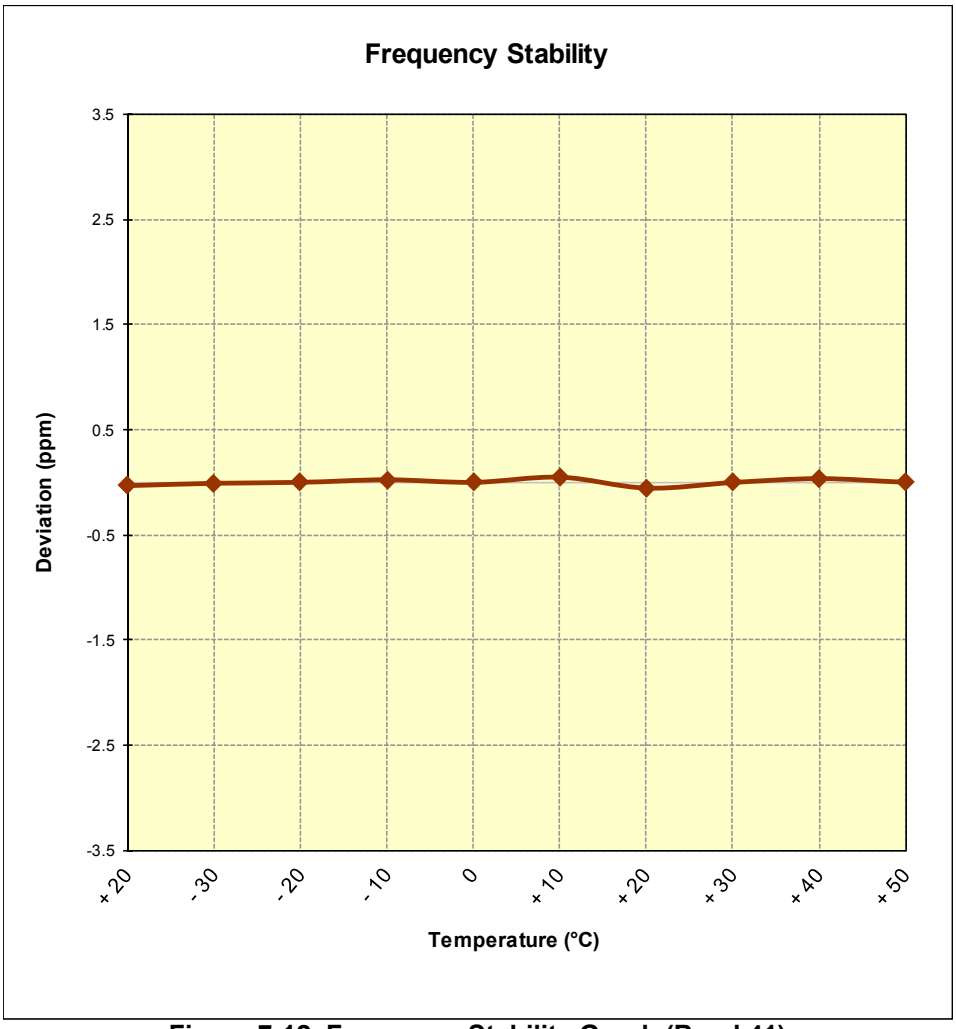


Figure 7-12. Frequency Stability Graph (Band 41)

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFLS993** complies with all the requirements of Parts 22, 24 & 27 of the FCC rules for LTE operation only.