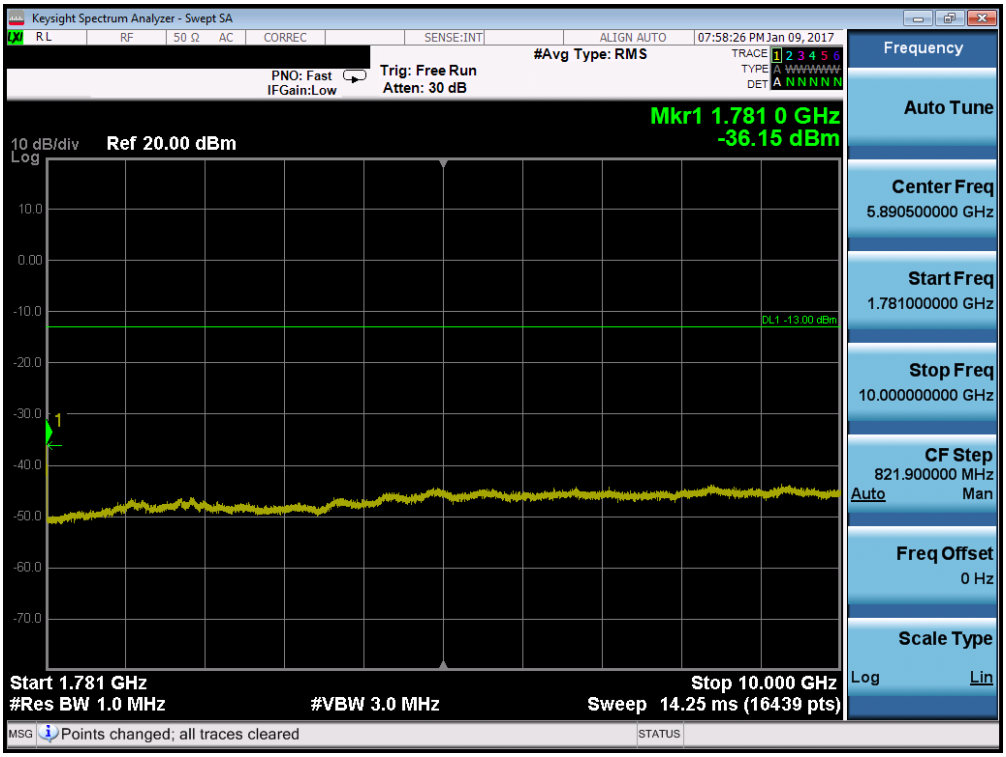
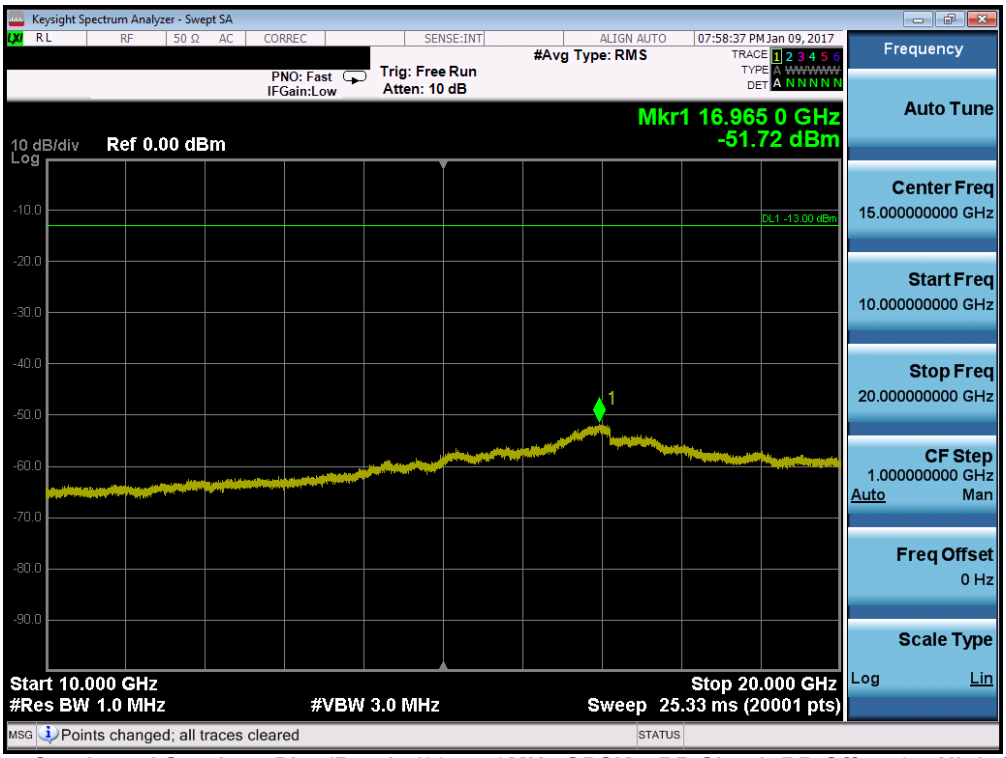


Plot 7-116. Conducted Spurious Plot (Band 4/66 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-117. Conducted Spurious Plot (Band 4/66 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

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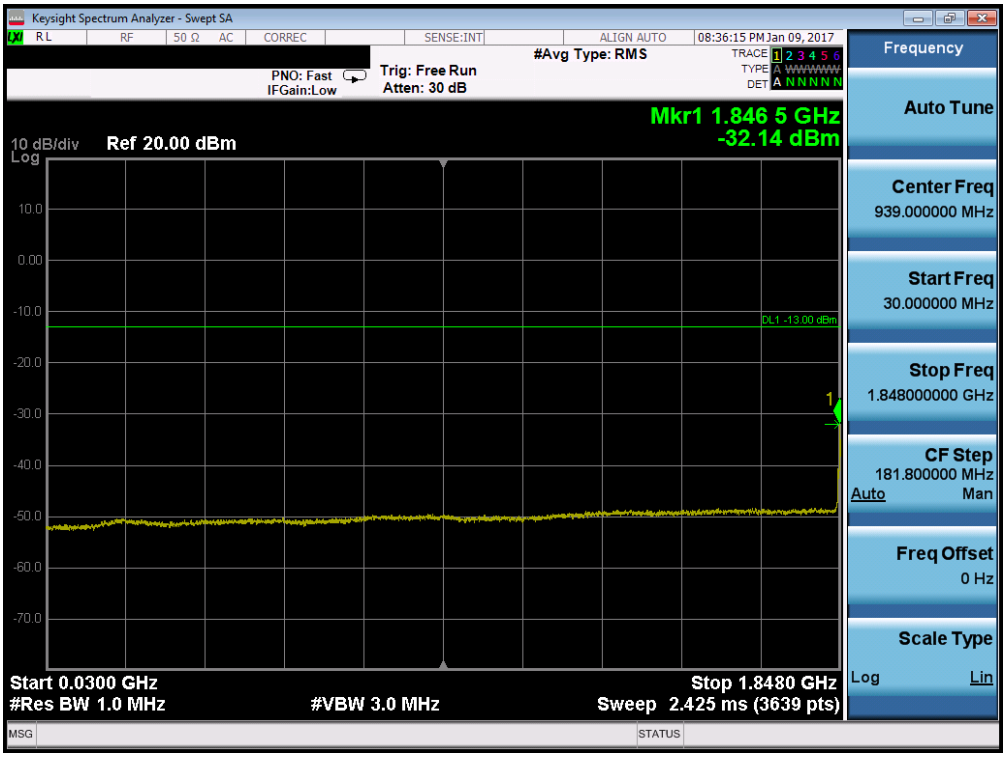
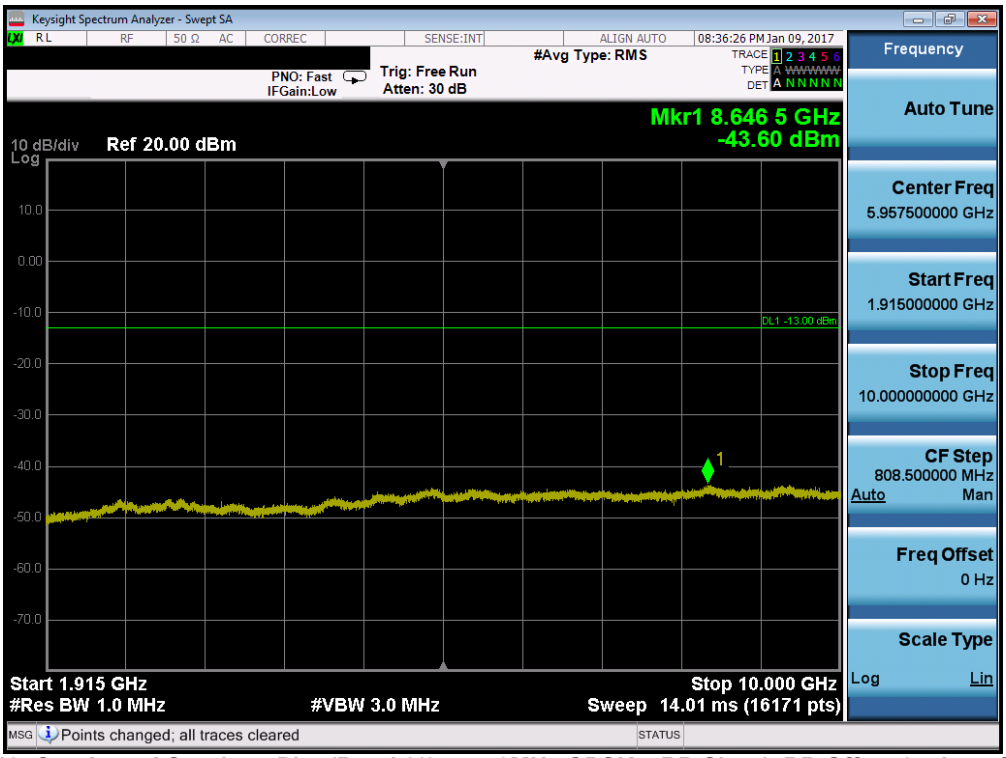


Plot 7-118. Conducted Spurious Plot (Band 2/25 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)



Plot 7-119. Conducted Spurious Plot (Band 2/25 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

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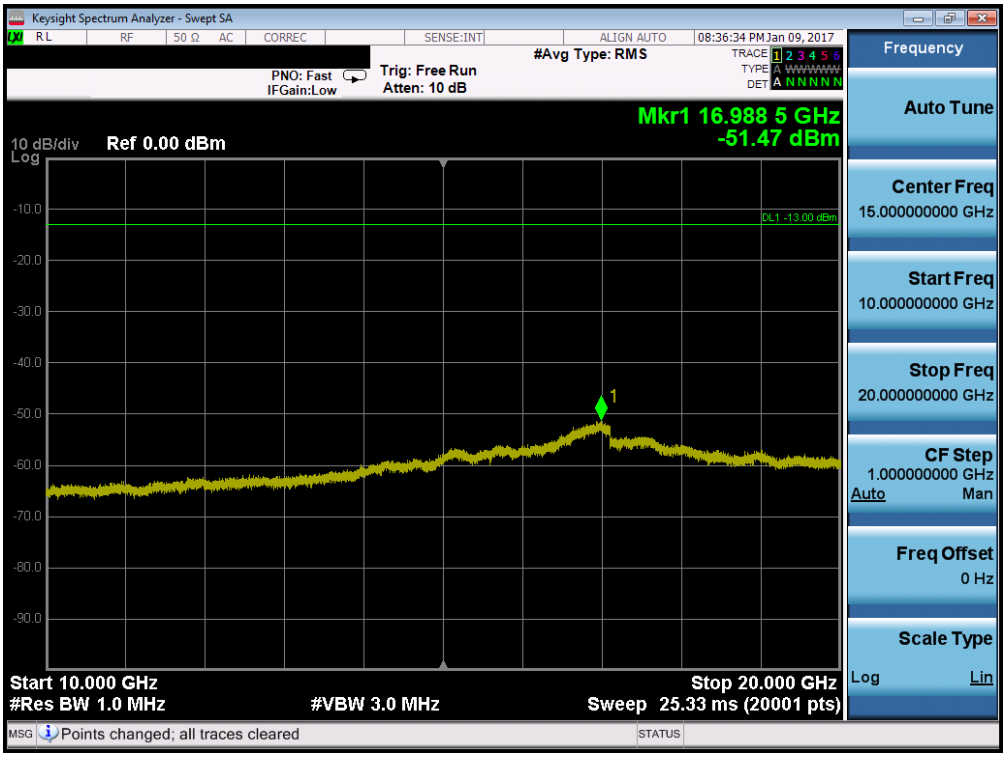
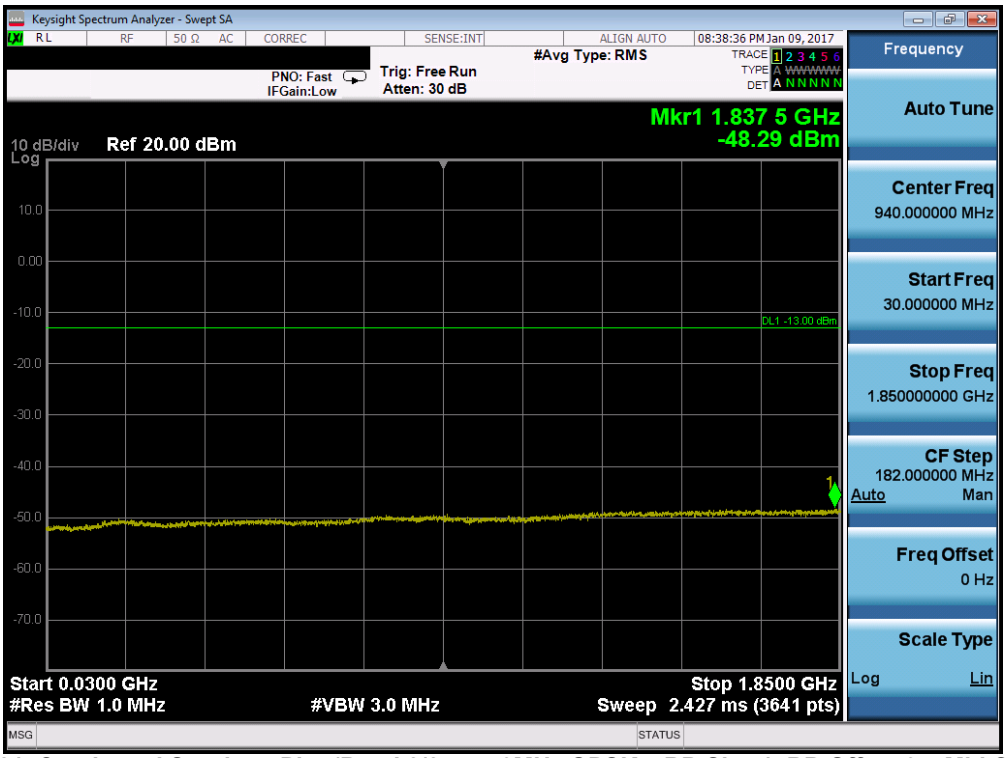


Plot 7-120. Conducted Spurious Plot (Band 2/25 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)



Plot 7-121. Conducted Spurious Plot (Band 2/25 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

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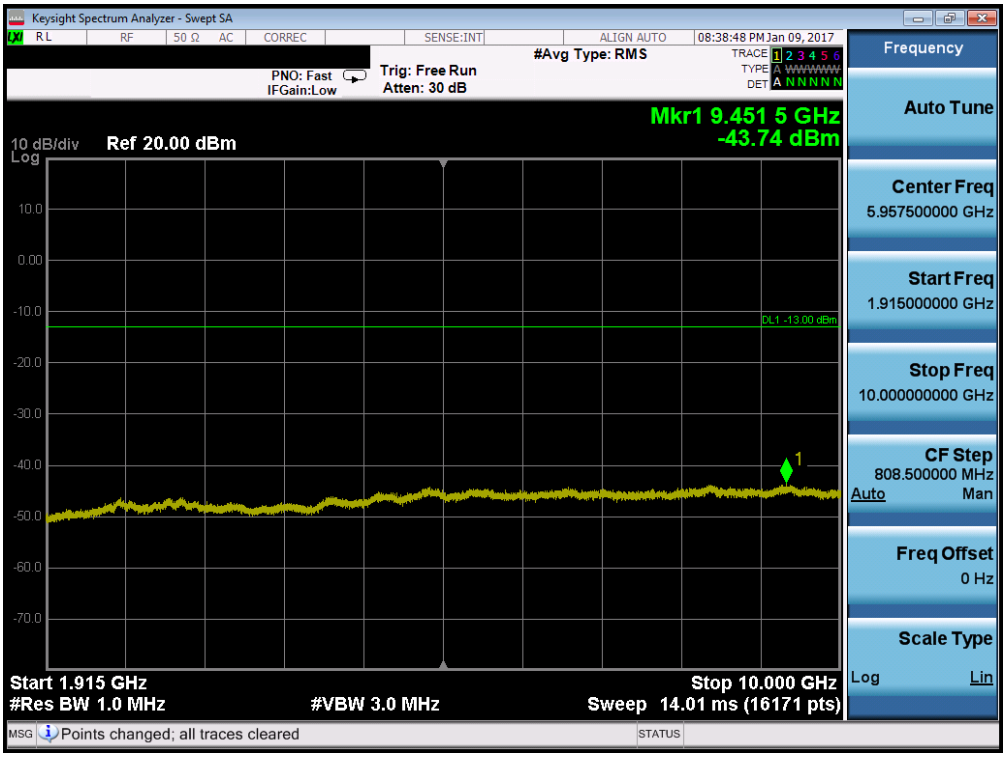
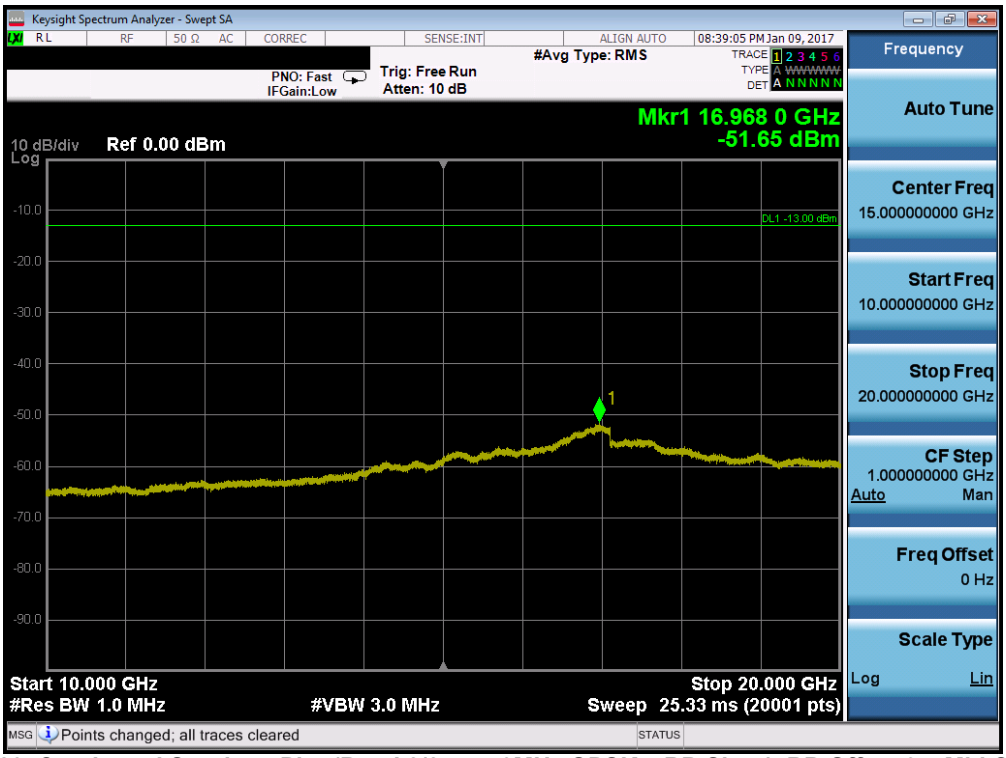


Plot 7-122. Conducted Spurious Plot (Band 2/25 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



Plot 7-123. Conducted Spurious Plot (Band 2/25 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

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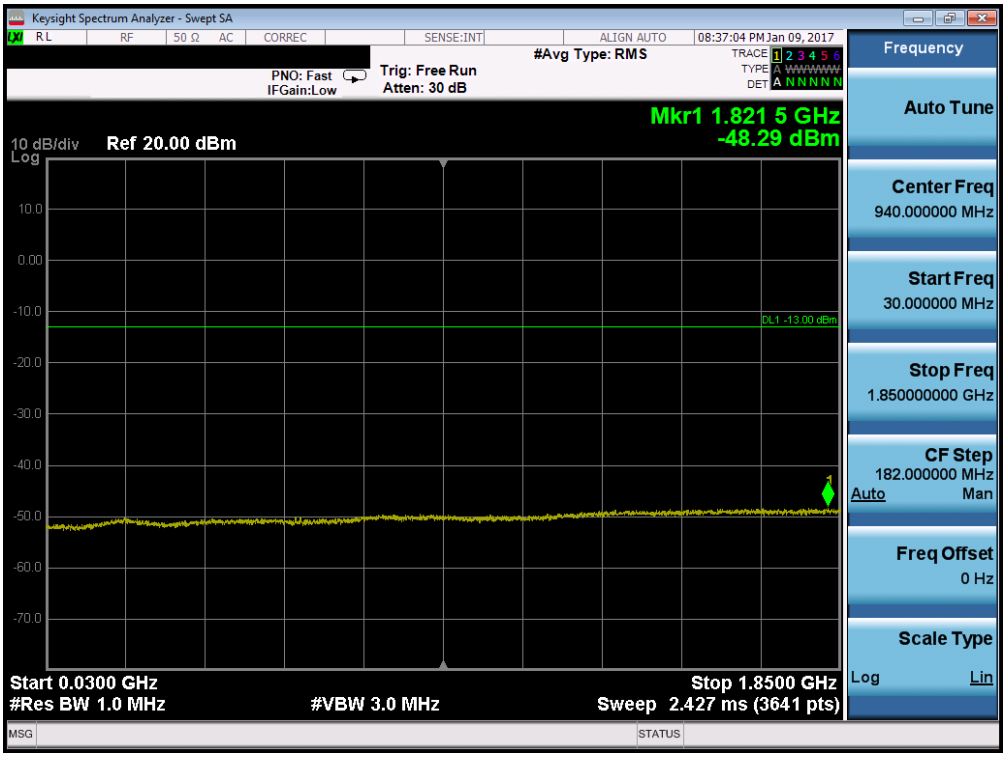
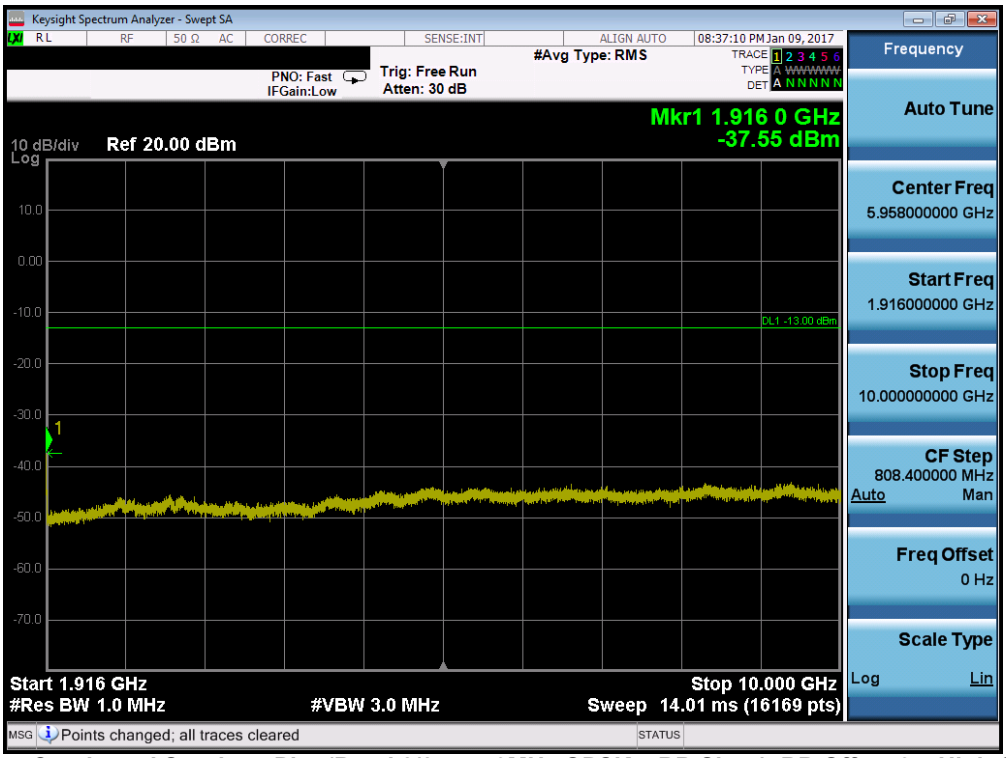


Plot 7-124. Conducted Spurious Plot (Band 2/25 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-125. Conducted Spurious Plot (Band 2/25 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

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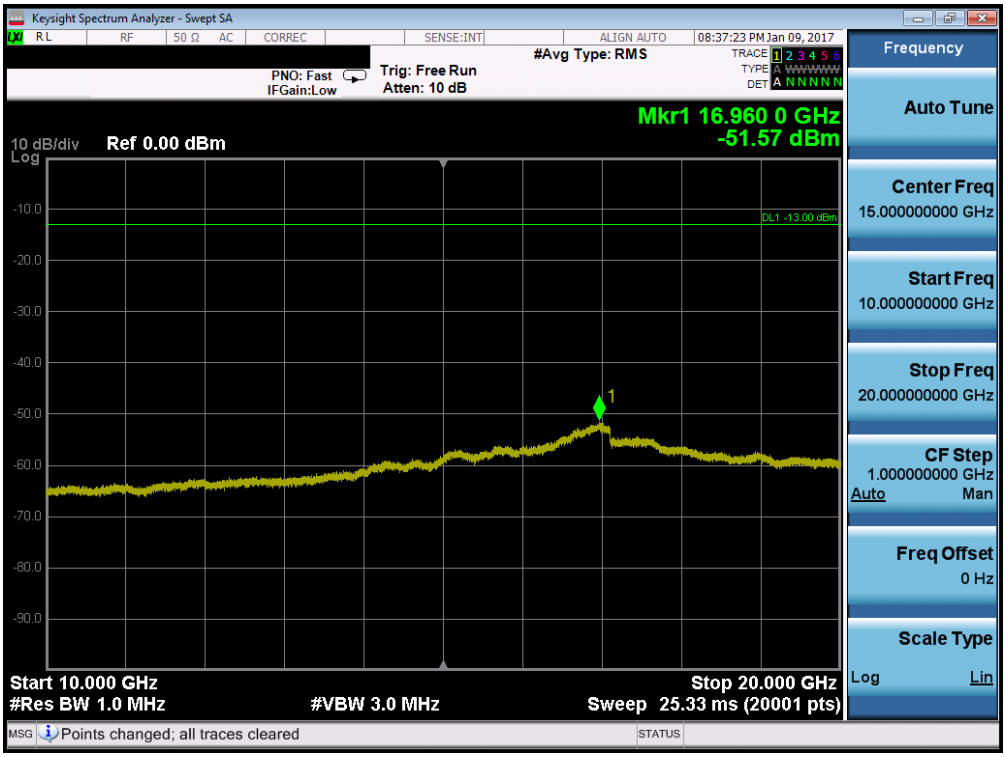
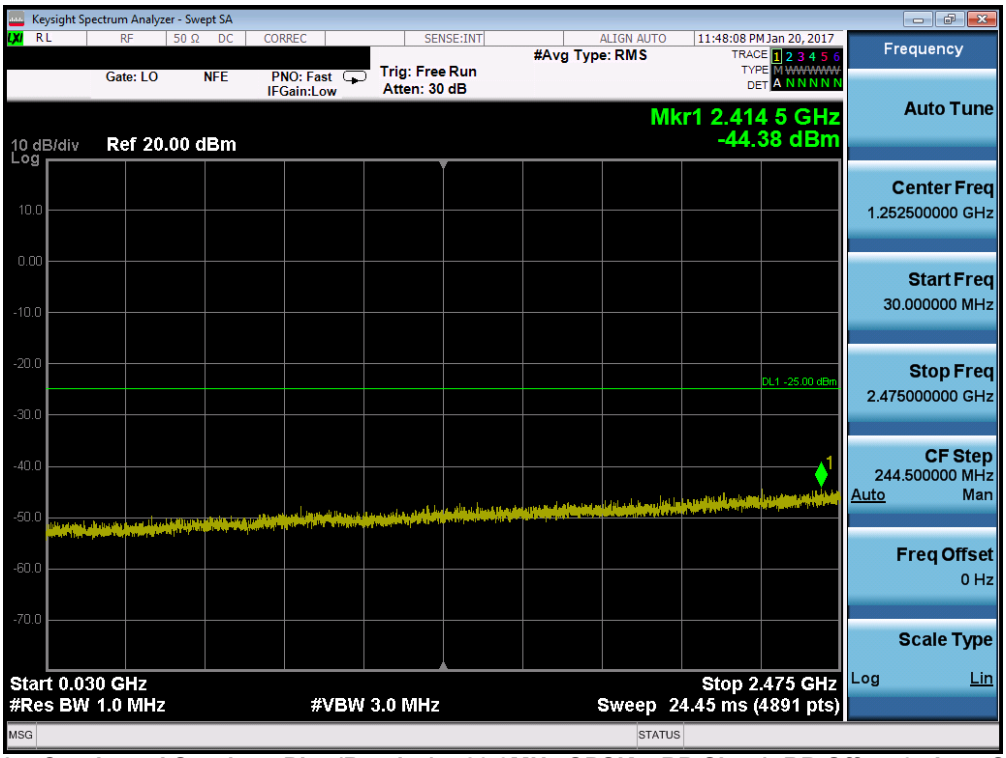


Plot 7-126. Conducted Spurious Plot (Band 2/25 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-127. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – RB Size 1, RB Offset 0– Low Channel)

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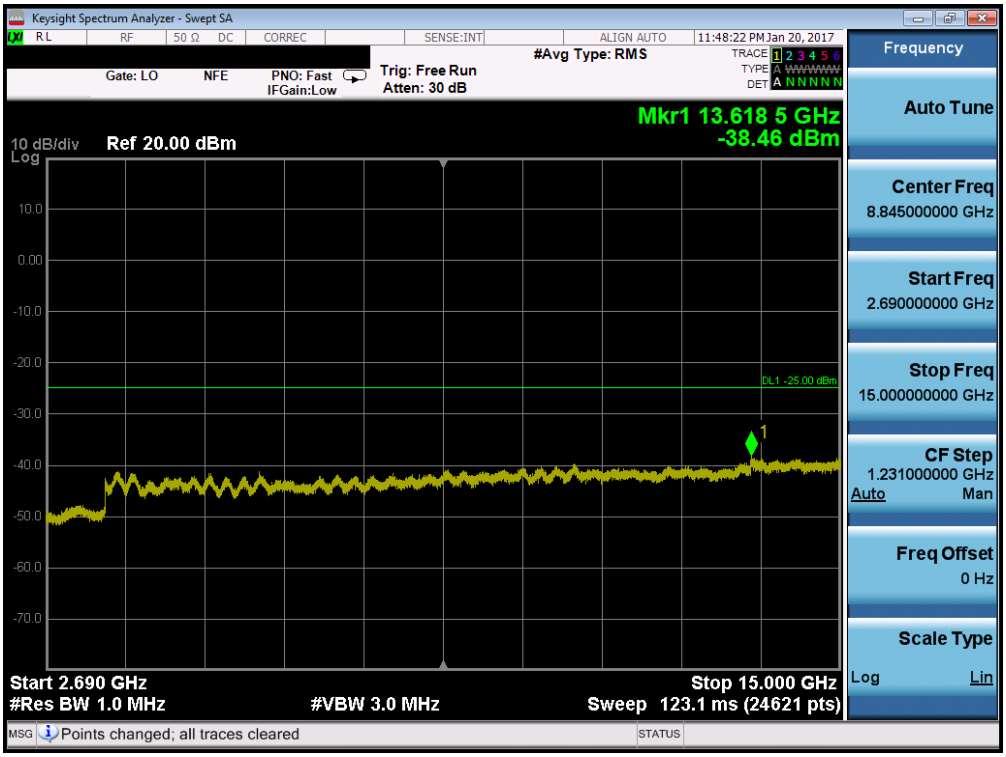
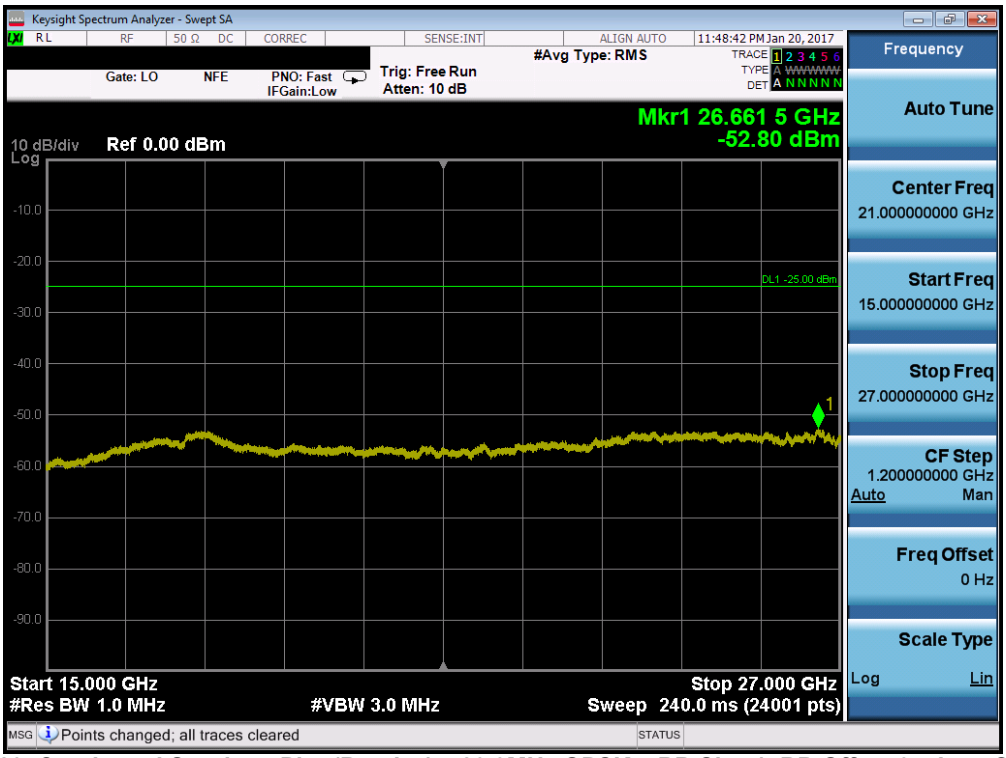


Plot 7-128. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)



Plot 7-129. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

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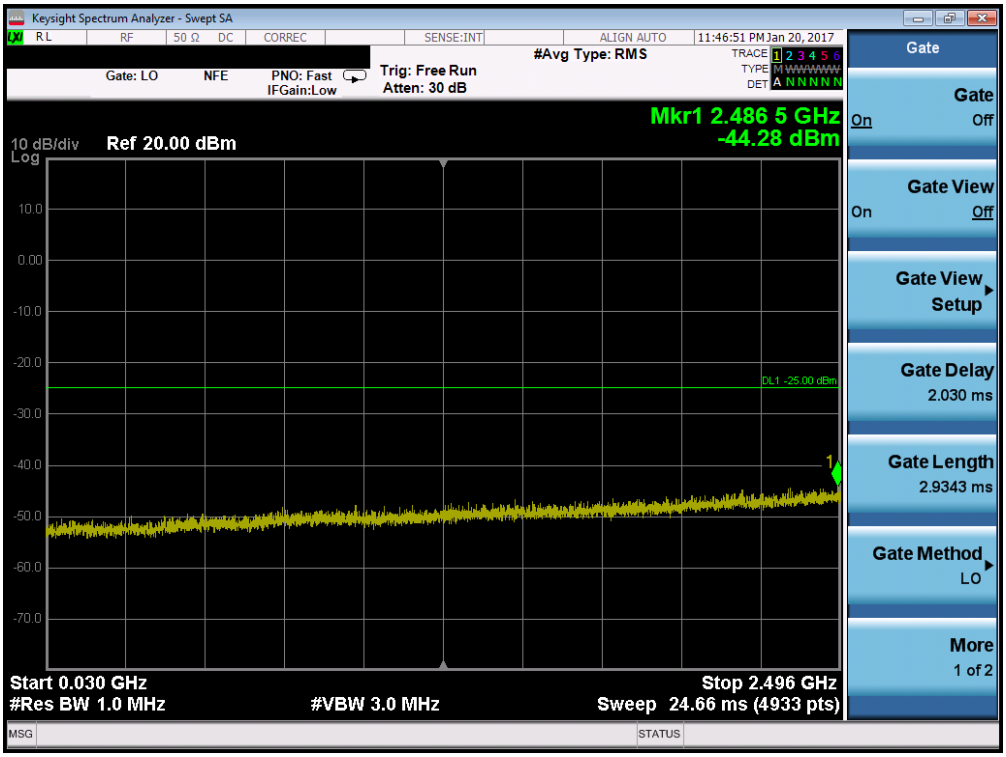
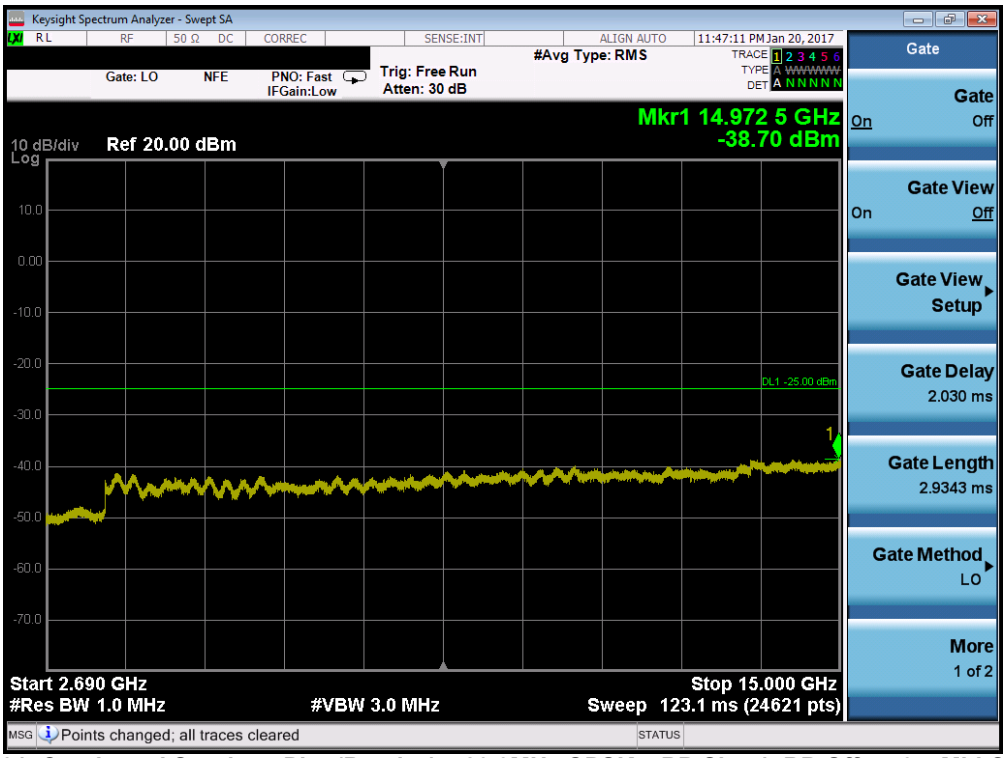


Plot 7-130. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



Plot 7-131. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

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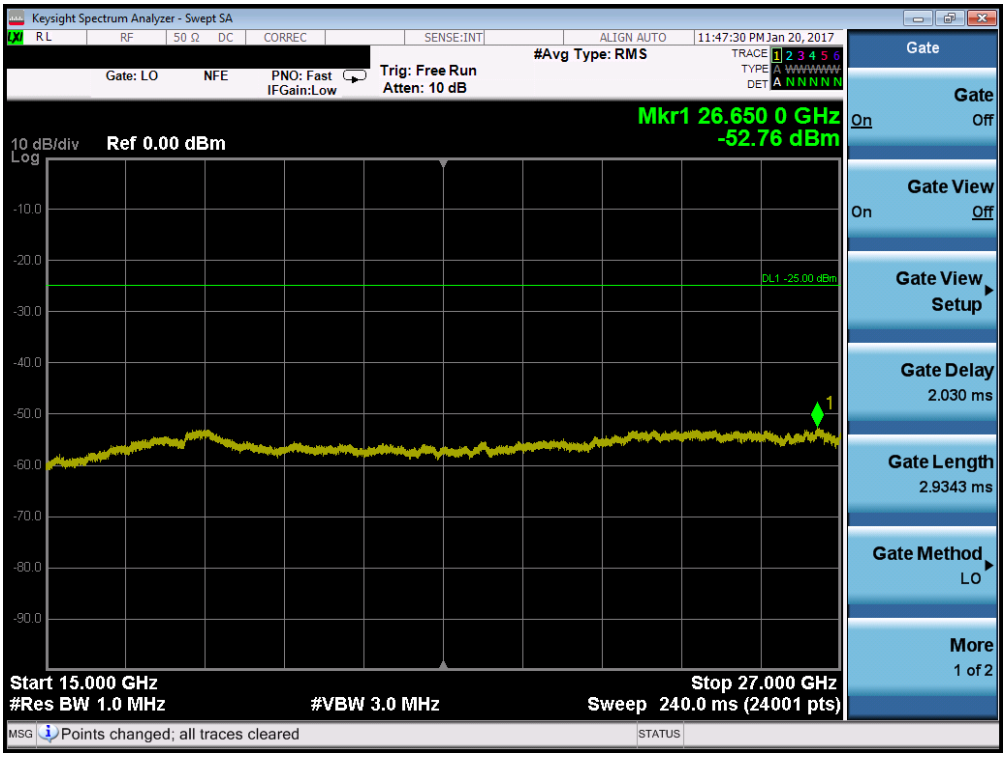
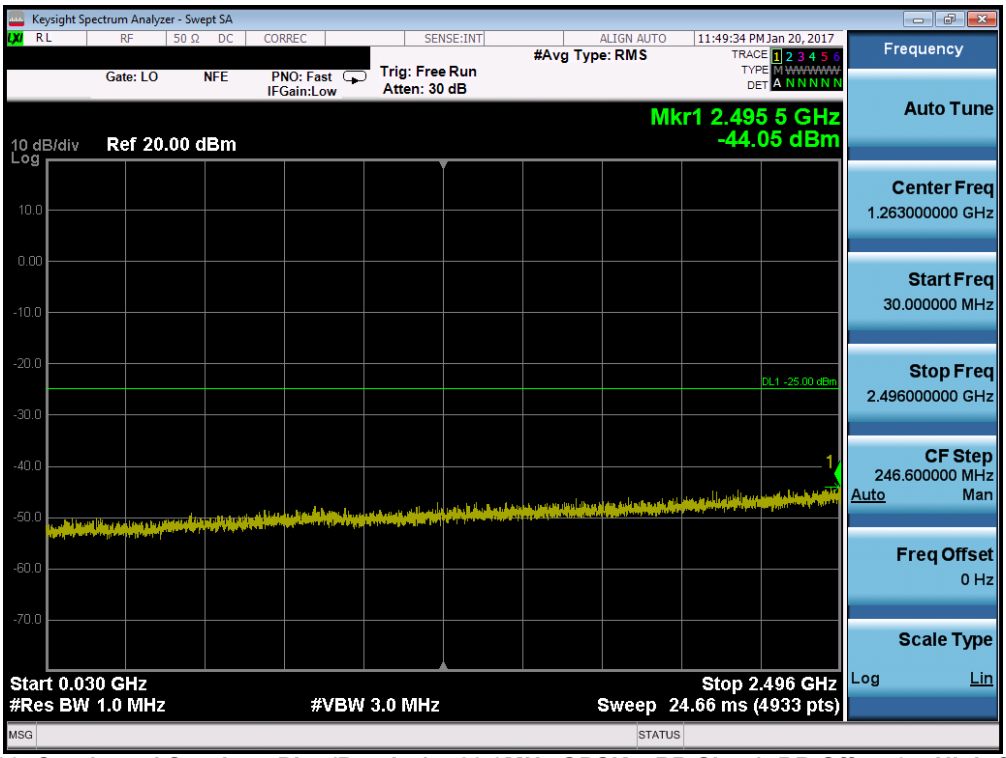


Plot 7-132. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



Plot 7-133. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

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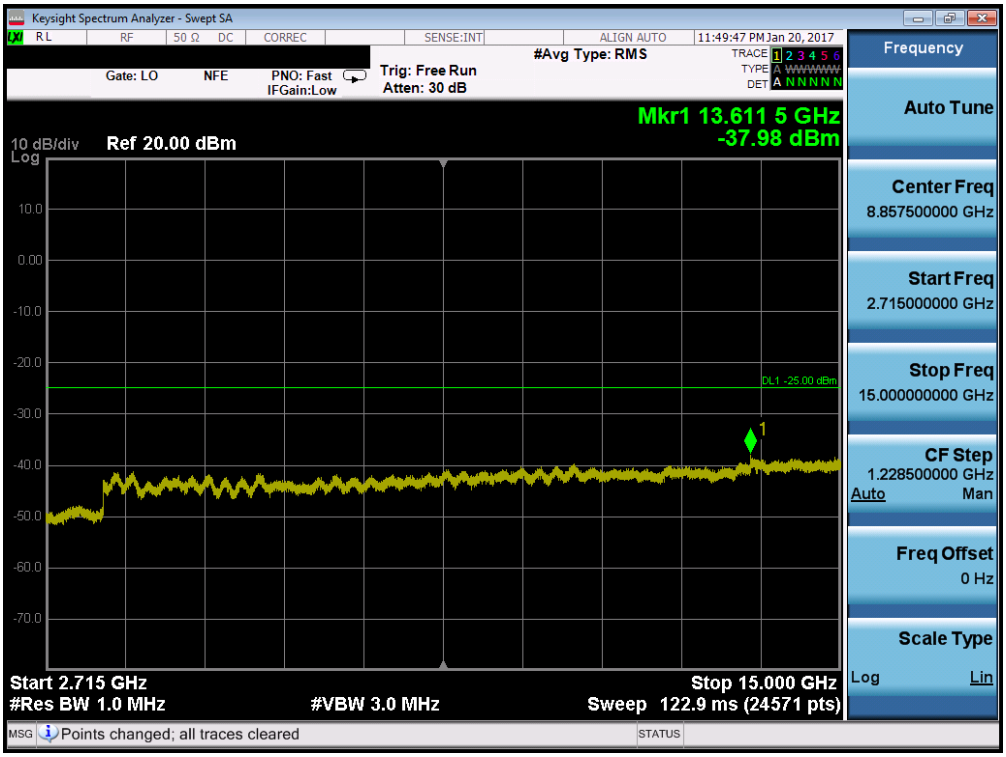
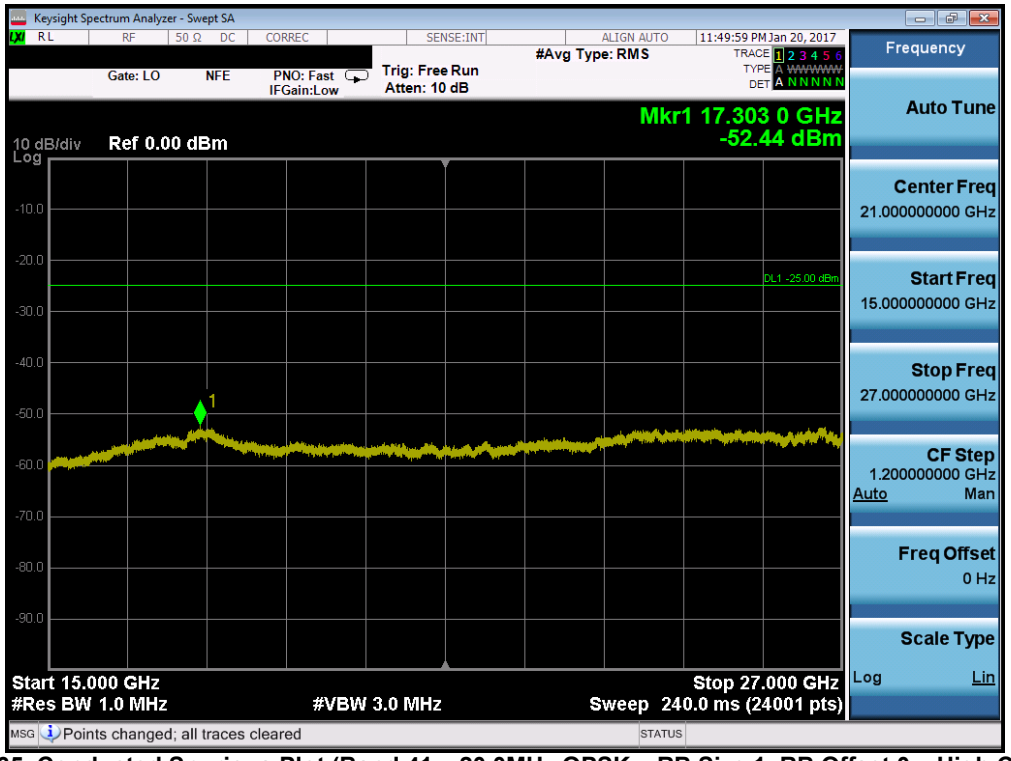


Plot 7-134. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-135. Conducted Spurious Plot (Band 41 – 20.0MHz 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(c) §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 7 and 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.

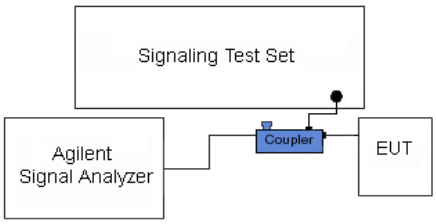

Figure 7-3. Test Instrument & Measurement Setup

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.

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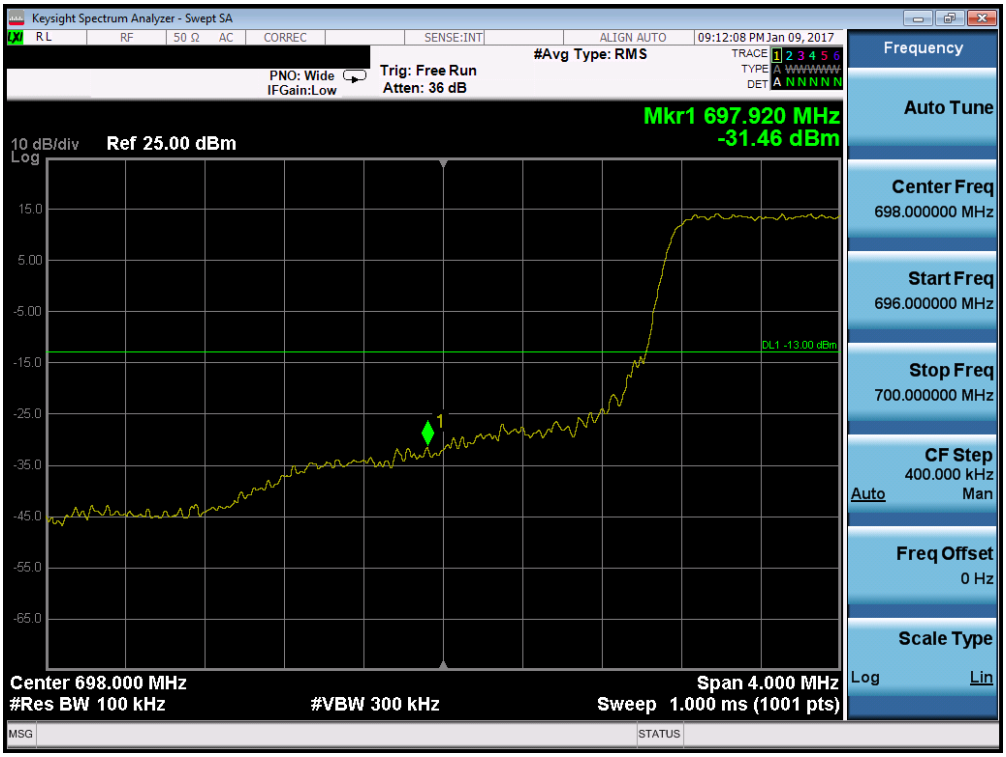
Per 27.53(g) for operations in the 698-746 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

Per 27.53(c.5) for operations in the 776-788 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.

For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c.4) is 65 + 10log$_{10}$(P) = -35dBm in a 6.25kHz bandwidth.

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 7-136. Lower Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)

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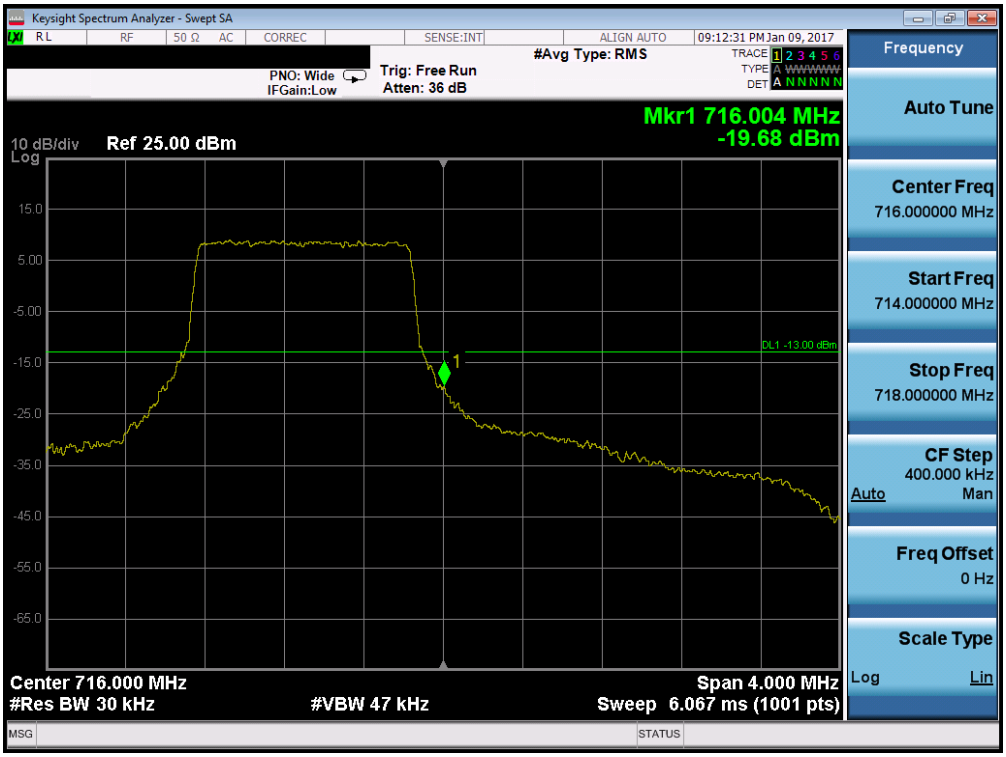

Plot 7-137. Upper Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)

Plot 7-138. Upper Extended Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)

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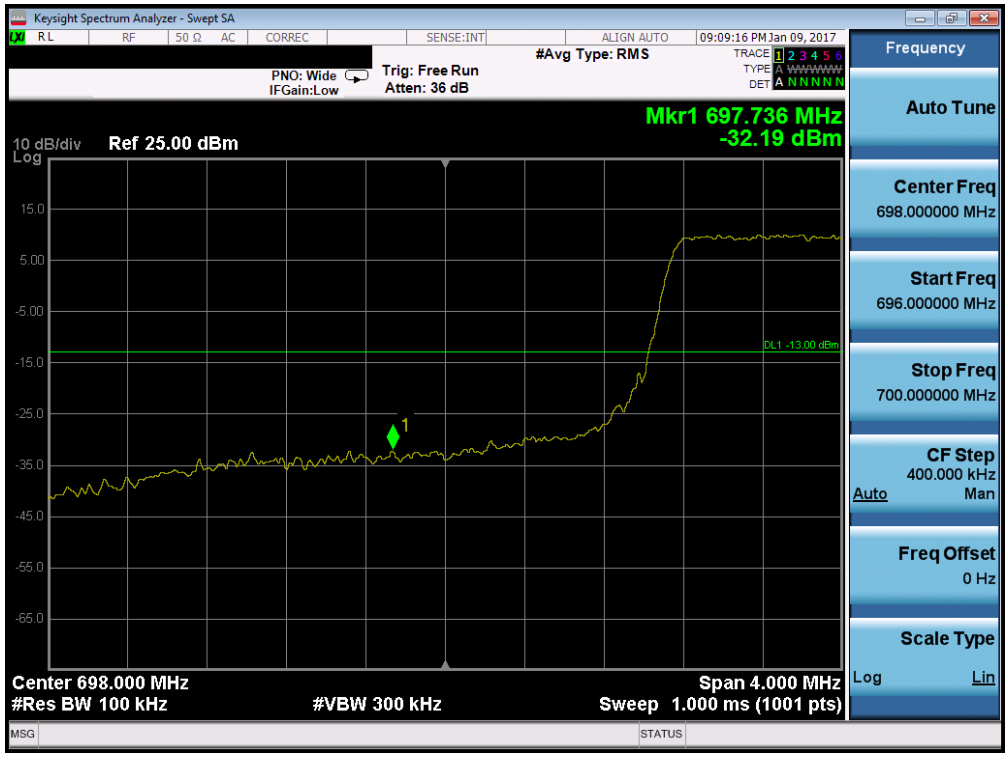

Plot 7-139. Lower Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)

Plot 7-140. Upper Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)

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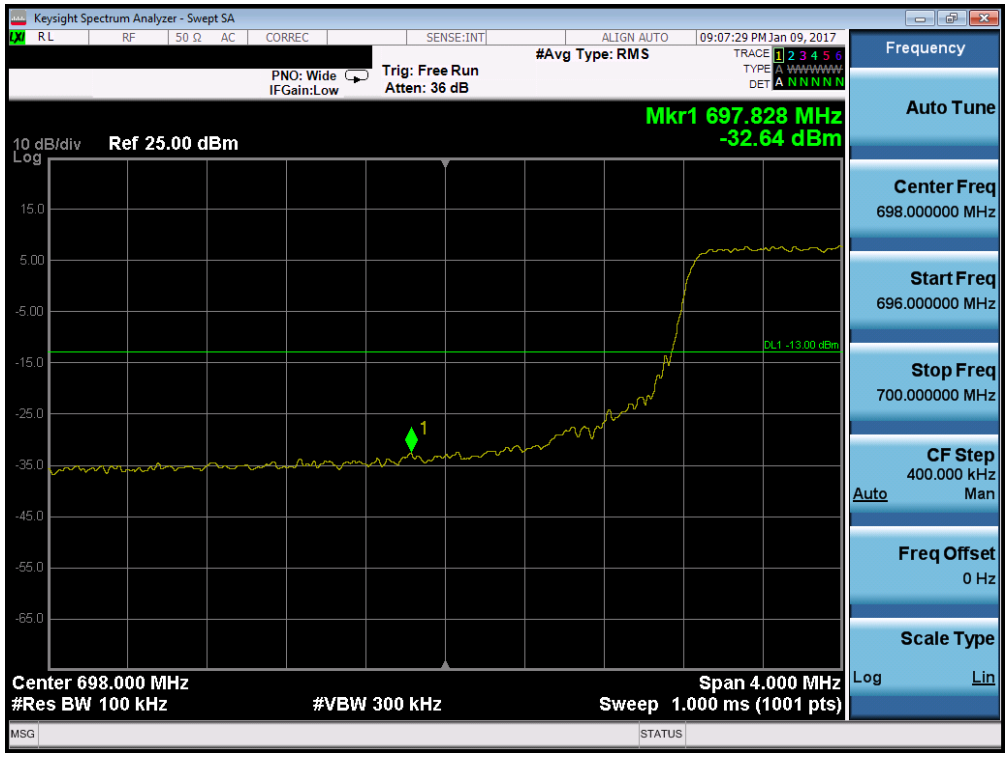

Plot 7-141. Lower Band Edge Plot (Band 12/17 – 5.0MHz QPSK – RB Size 25)

Plot 7-142. Upper Band Edge Plot (Band 12/17 – 5.0MHz QPSK – RB Size 25)

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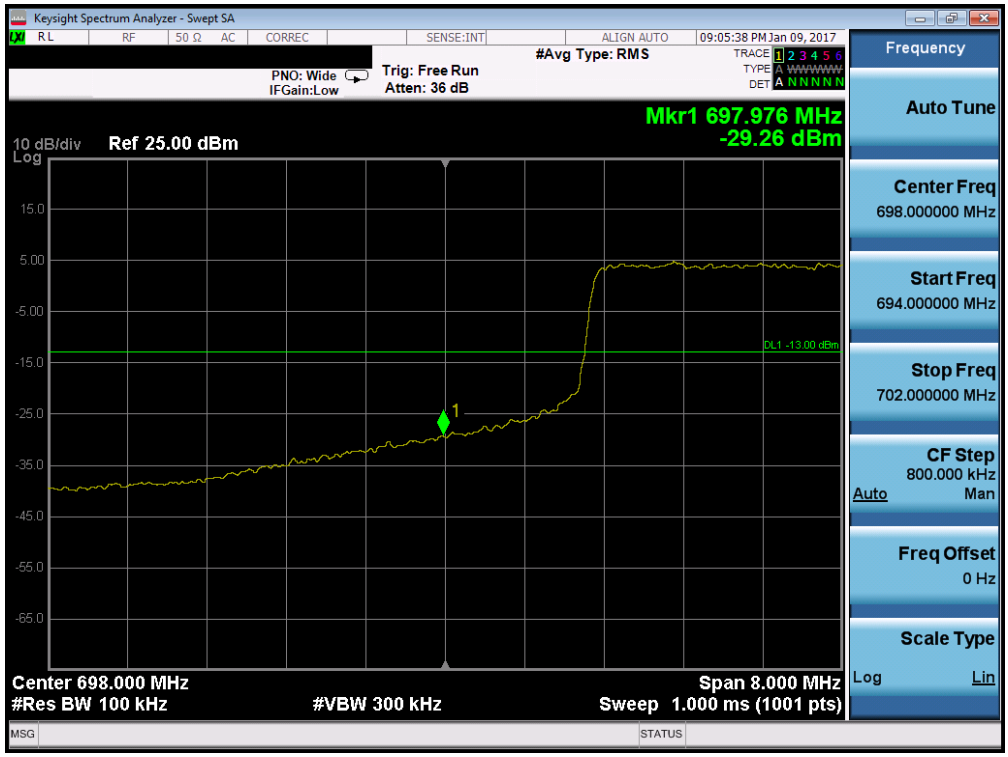

Plot 7-143. Lower Band Edge Plot (Band 12/17 – 10.0MHz QPSK – RB Size 50)

Plot 7-144. Upper Band Edge Plot (Band 12/17 – 10.0MHz QPSK – RB Size 50)

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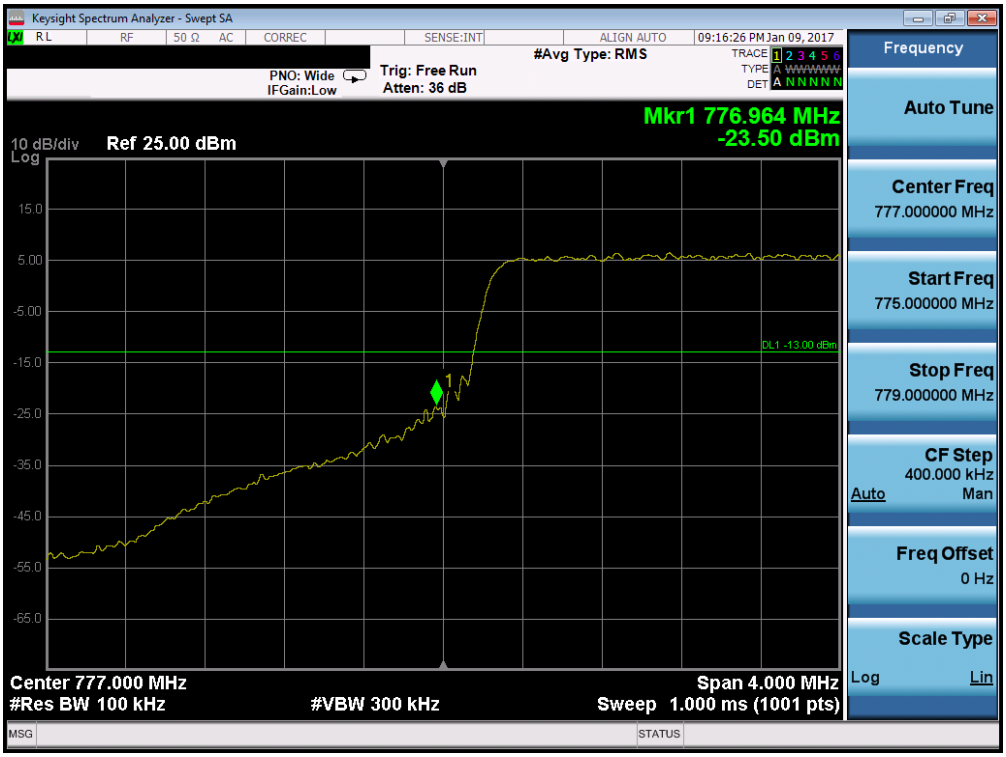
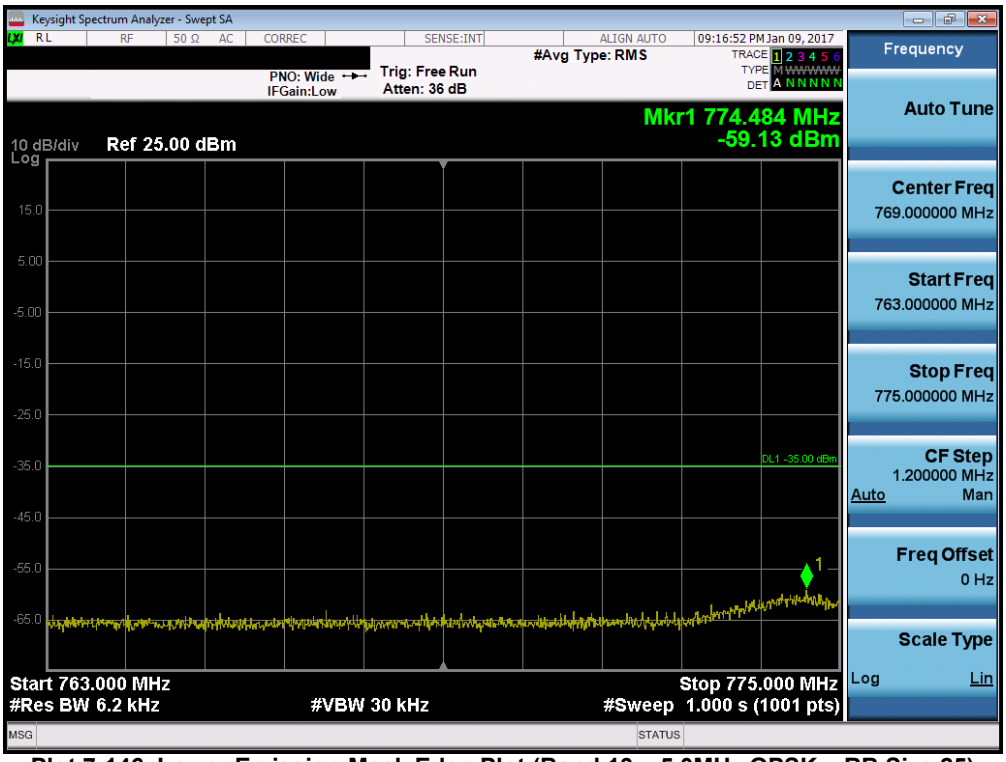


Plot 7-145. Lower Band Edge Plot (Band 13 – 5.0MHz QPSK – RB Size 25)



Plot 7-146. Lower Emission Mask Edge Plot (Band 13 – 5.0MHz QPSK – RB Size 25)

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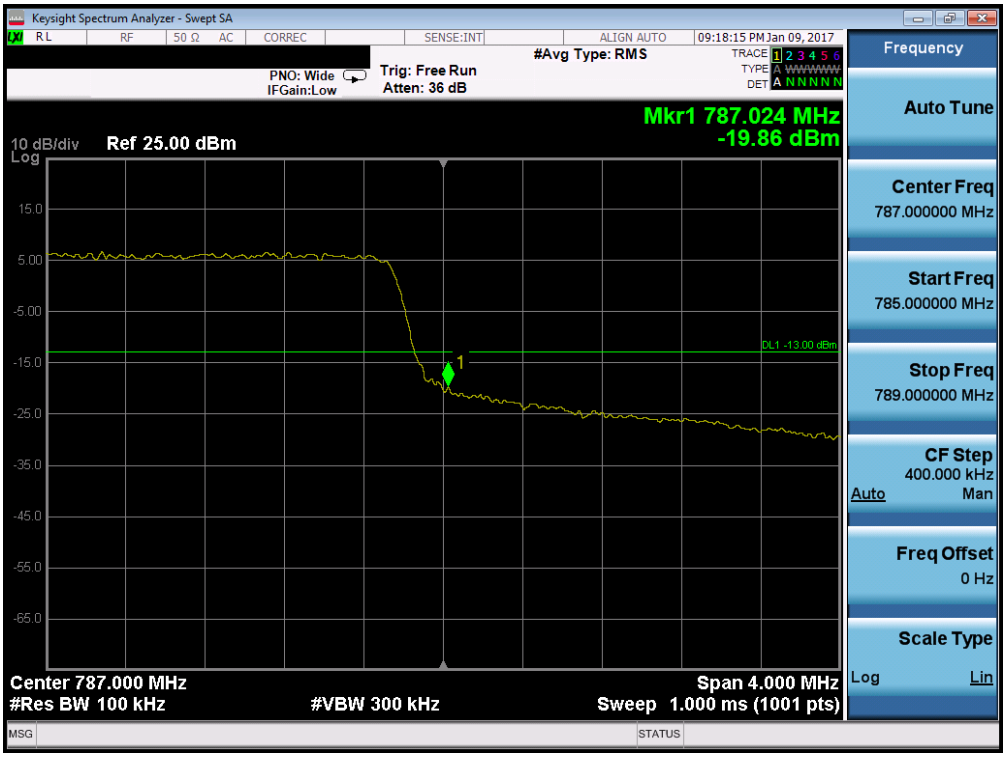
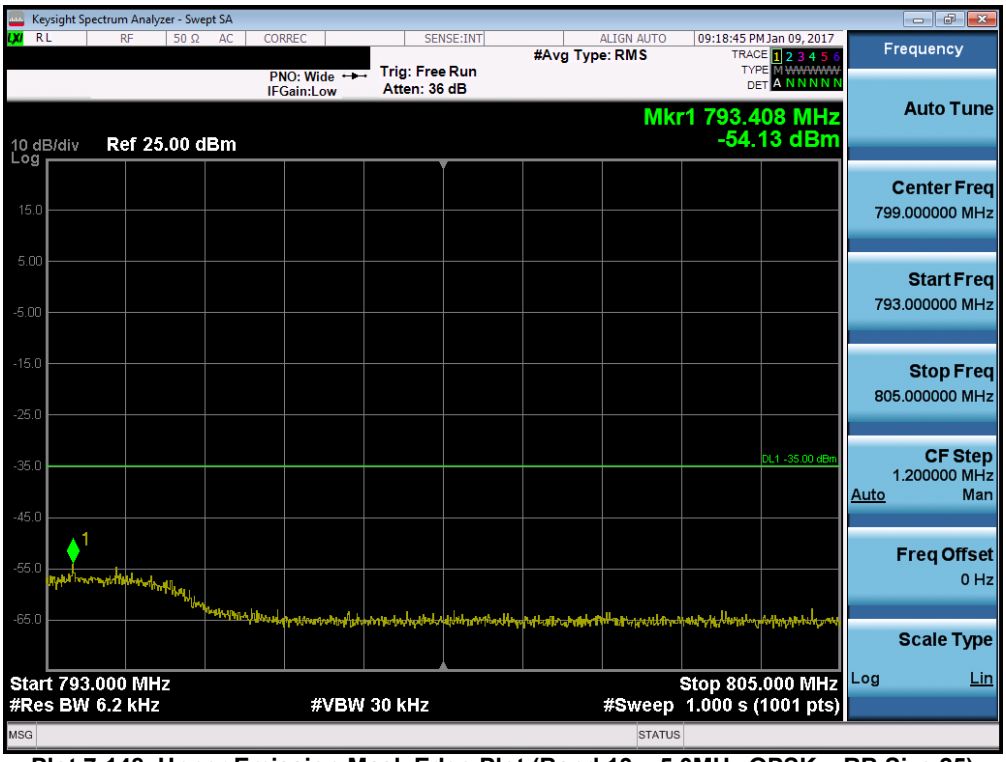


Plot 7-147. Upper Band Edge Plot (Band 13 – 5.0MHz QPSK – RB Size 25)



Plot 7-148. Upper Emission Mask Edge Plot (Band 13 – 5.0MHz QPSK – RB Size 25)

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Plot 7-149. Lower Band Edge Plot (Band 13 – 10.0MHz QPSK – RB Size 50)

Plot 7-150. Lower Emission Mask Edge Plot (Band 13 – 10.0MHz QPSK – RB Size 50)

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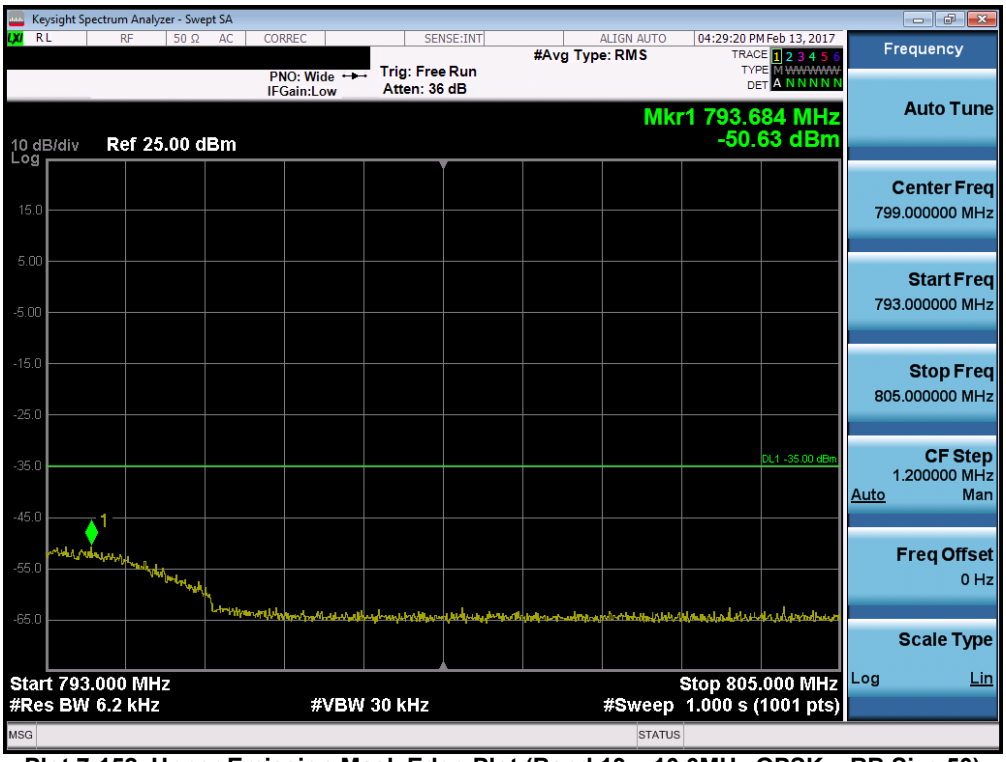
Plot 7-151. Upper Band Edge Plot (Band 13 – 10.0MHz QPSK – RB Size 50)



Plot 7-152. Upper Emission Mask Edge Plot (Band 13 – 10.0MHz QPSK – RB Size 50)

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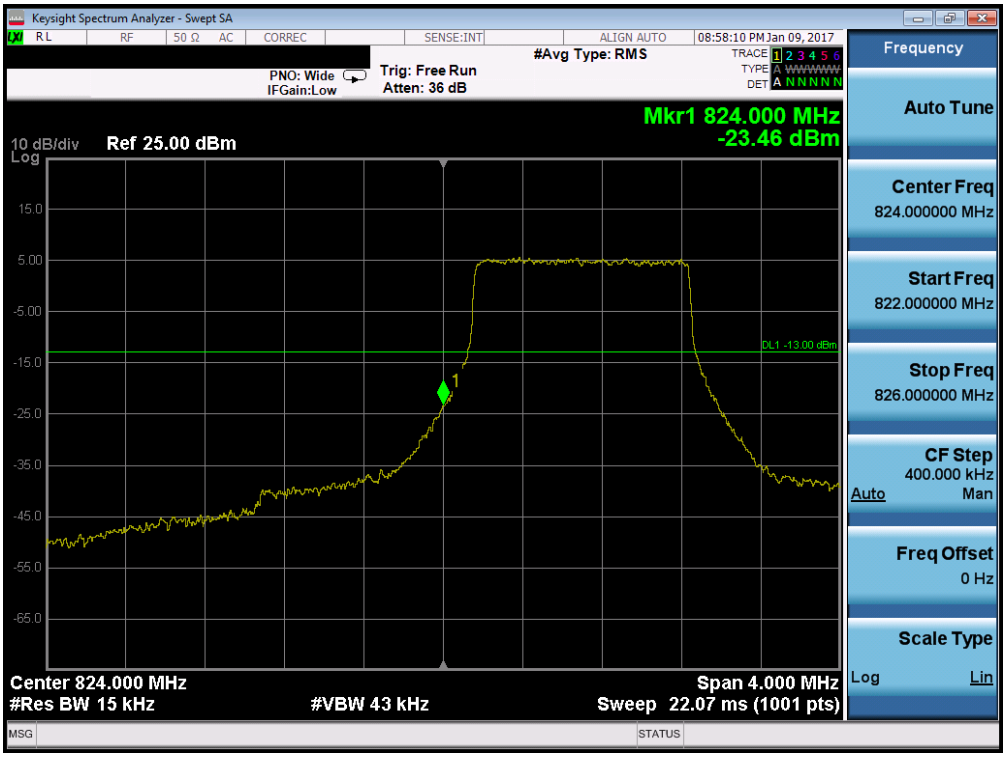

Plot 7-153. Lower Band Edge Plot (Band 5/26 – 1.4MHz QPSK – RB Size 6)

Plot 7-154. Lower Extended Band Edge Plot (Band 5/26 – 1.4MHz QPSK – RB Size 6)

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Plot 7-155. Upper Band Edge Plot (Band 5/26 – 1.4MHz QPSK – RB Size 6)

Plot 7-156. Upper Extended Band Edge Plot (Band 5/26 – 1.4MHz QPSK – RB Size 6)

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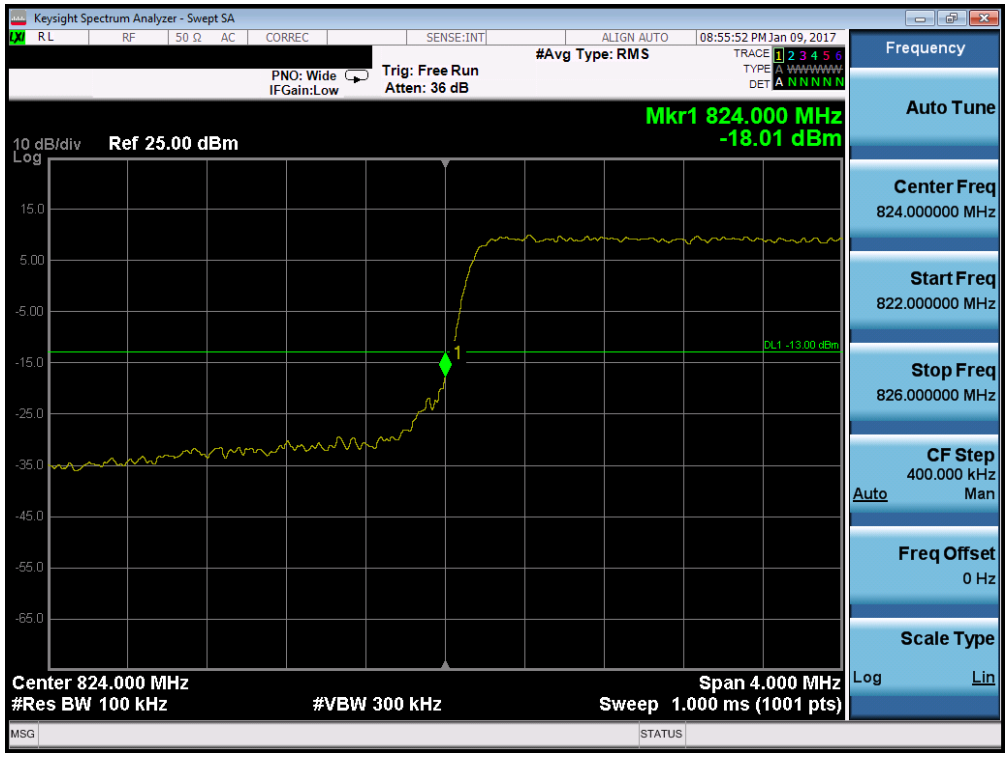
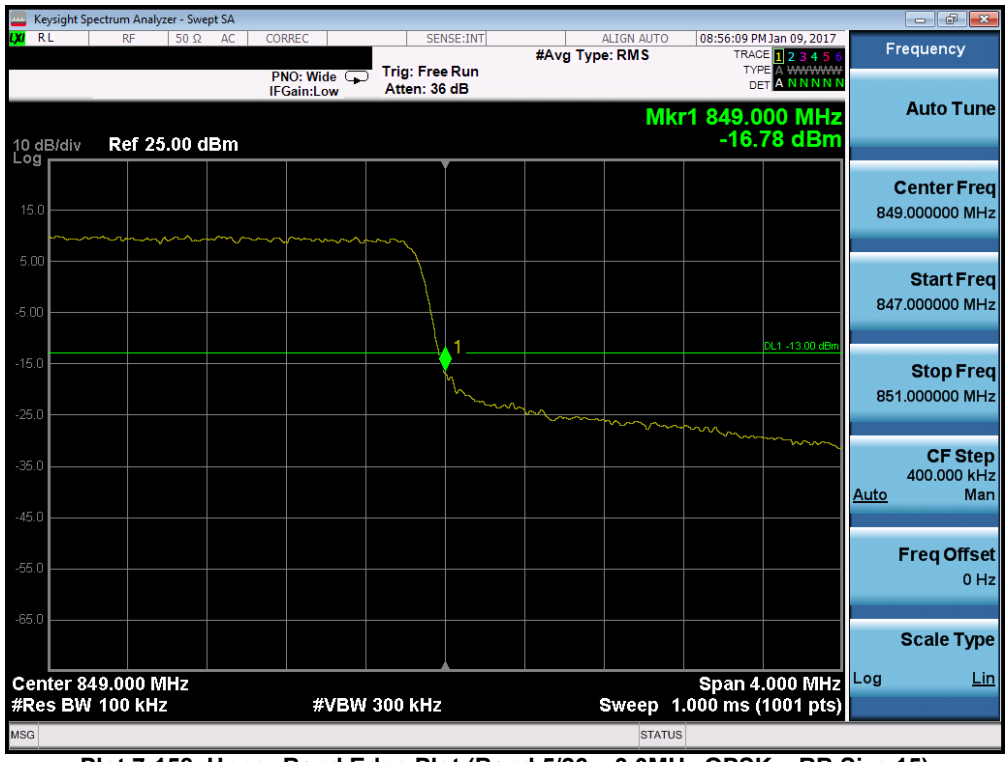


Plot 7-157. Lower Band Edge Plot (Band 5/26 – 3.0MHz QPSK – RB Size 15)



Plot 7-158. Upper Band Edge Plot (Band 5/26 – 3.0MHz QPSK – RB Size 15)

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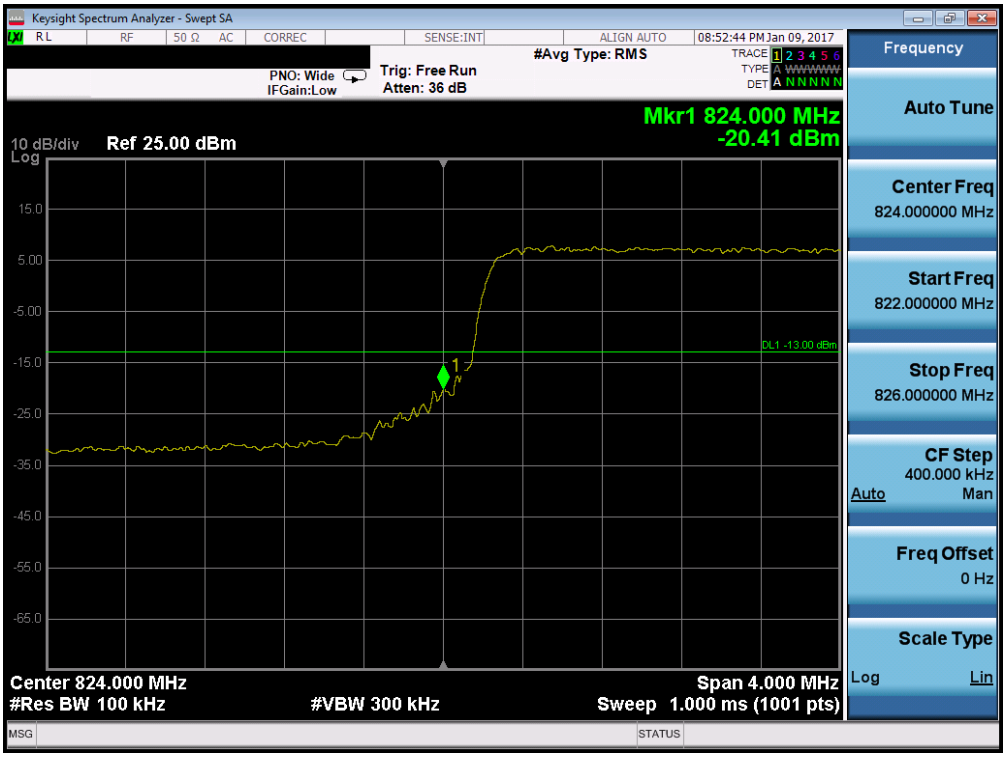

Plot 7-159. Lower Band Edge Plot (Band 5/526 – 5.0MHz QPSK – RB Size 25)

Plot 7-160. Upper Band Edge Plot (Band 5/26 – 5.0MHz QPSK – RB Size 25)

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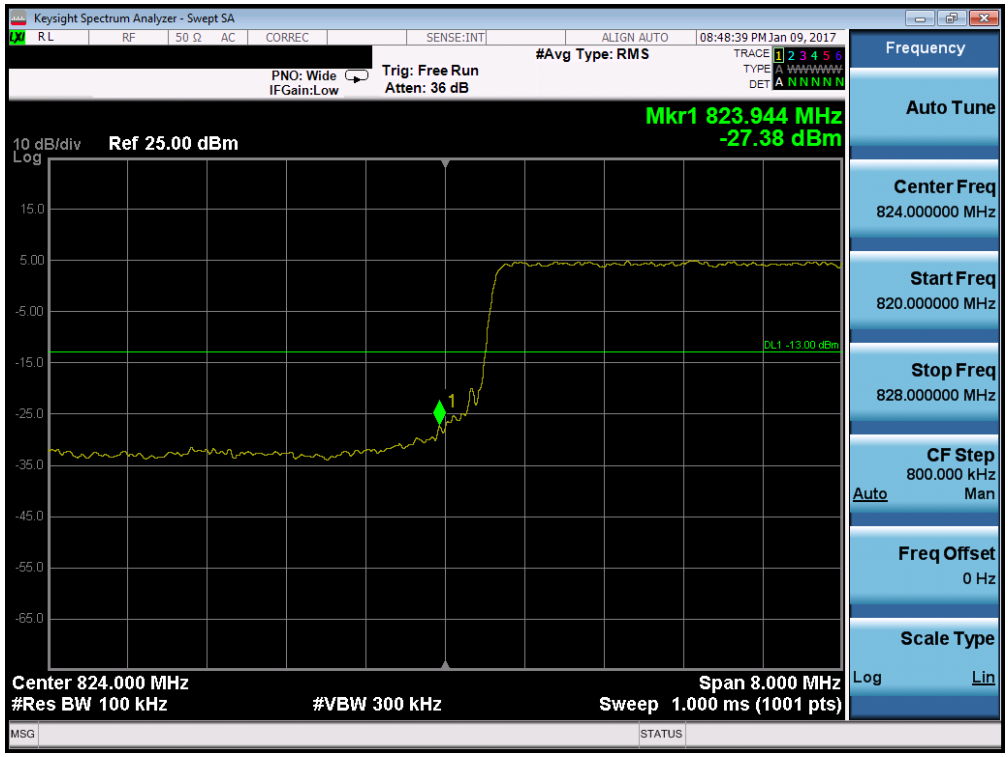

Plot 7-161. Lower Band Edge Plot (Band 5/26 – 10.0MHz QPSK – RB Size 50)

Plot 7-162. Upper Band Edge Plot (Band 5/26 – 10.0MHz QPSK – RB Size 50)

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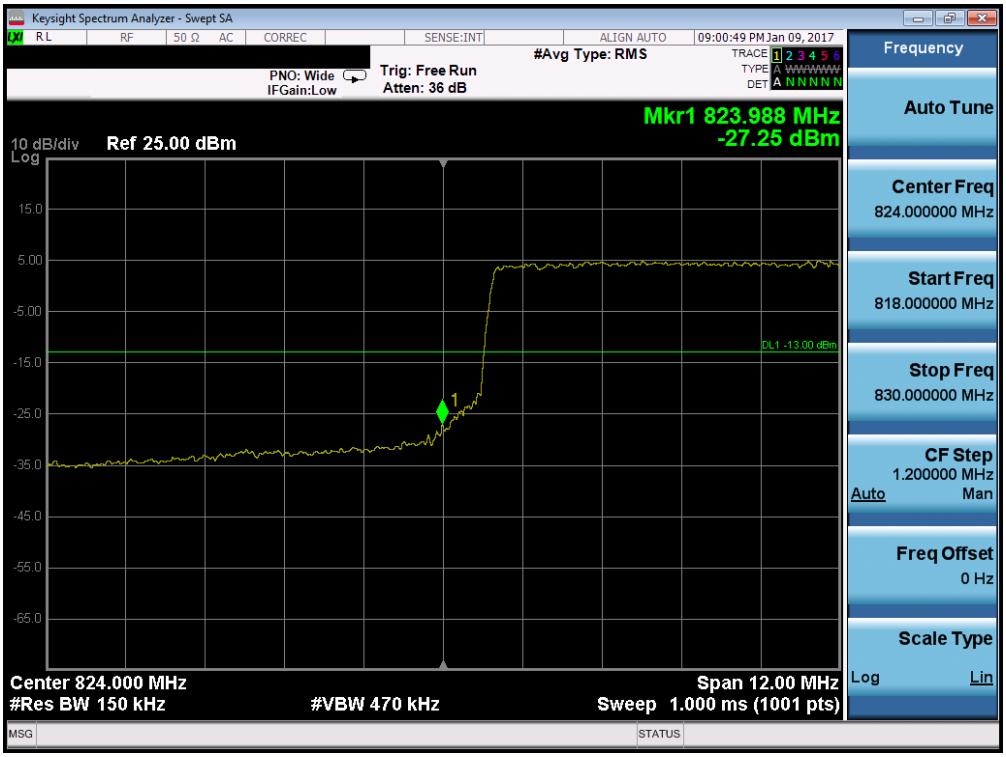

Plot 7-163. Lower Band Edge Plot (Band 26 – 15.0MHz QPSK – RB Size 75)

Plot 7-164. Upper Band Edge Plot (Band 26 – 15.0MHz QPSK – RB Size 75)

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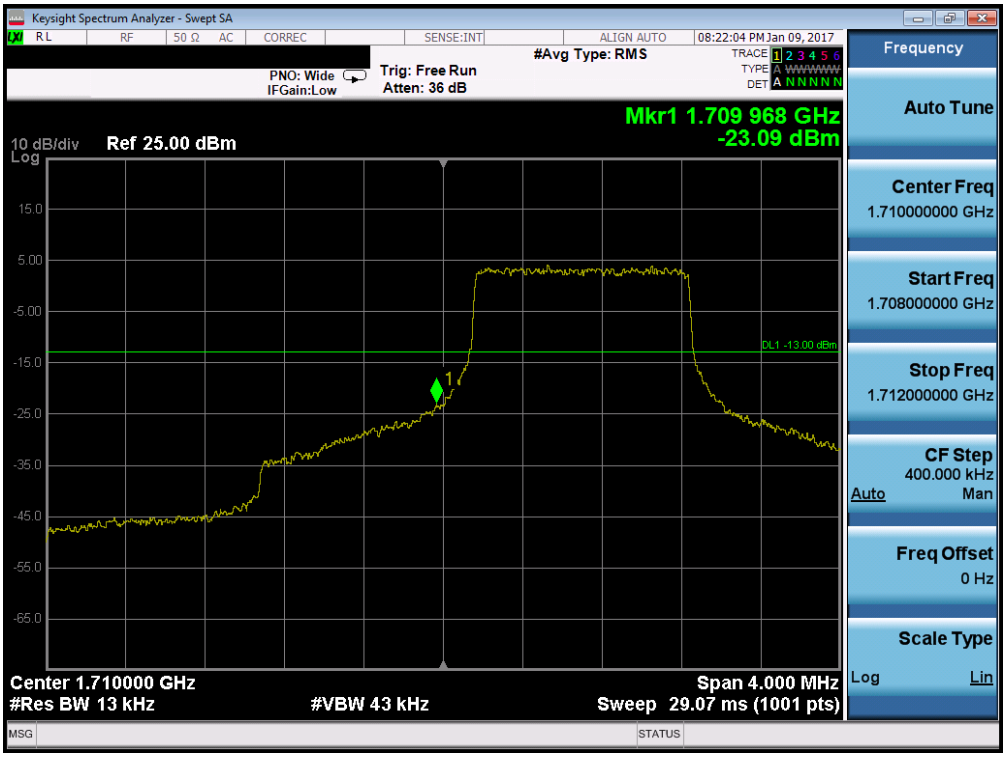
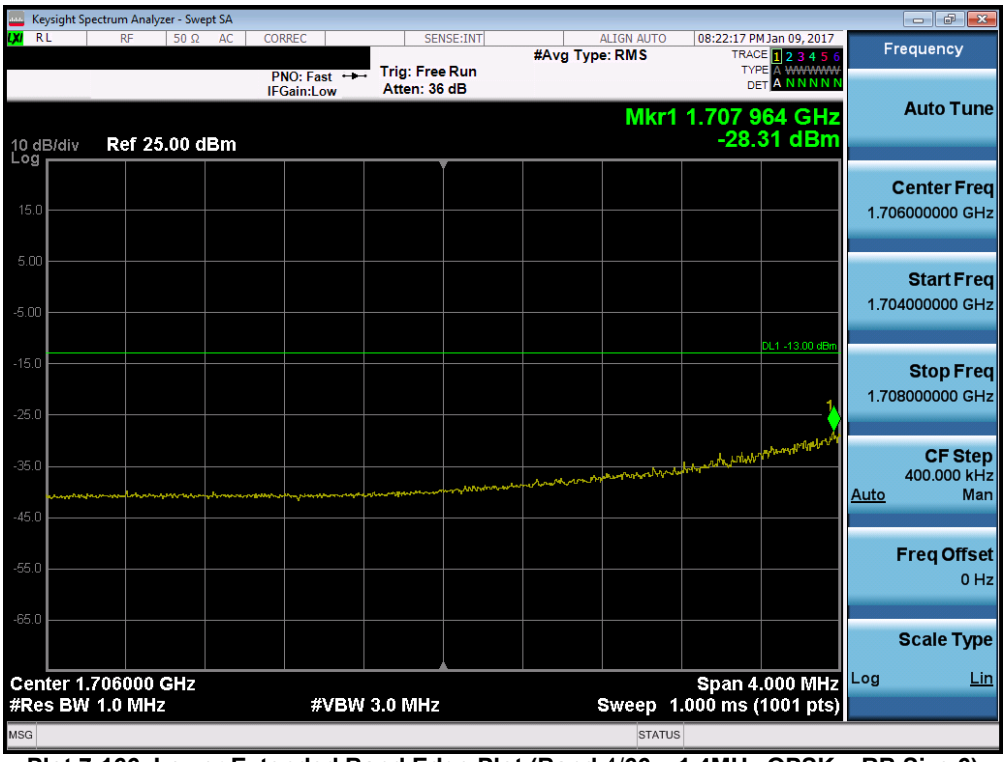


Plot 7-165. Lower Band Edge Plot (Band 4/66 – 1.4MHz QPSK – RB Size 6)



Plot 7-166. Lower Extended Band Edge Plot (Band 4/66 – 1.4MHz QPSK – RB Size 6)

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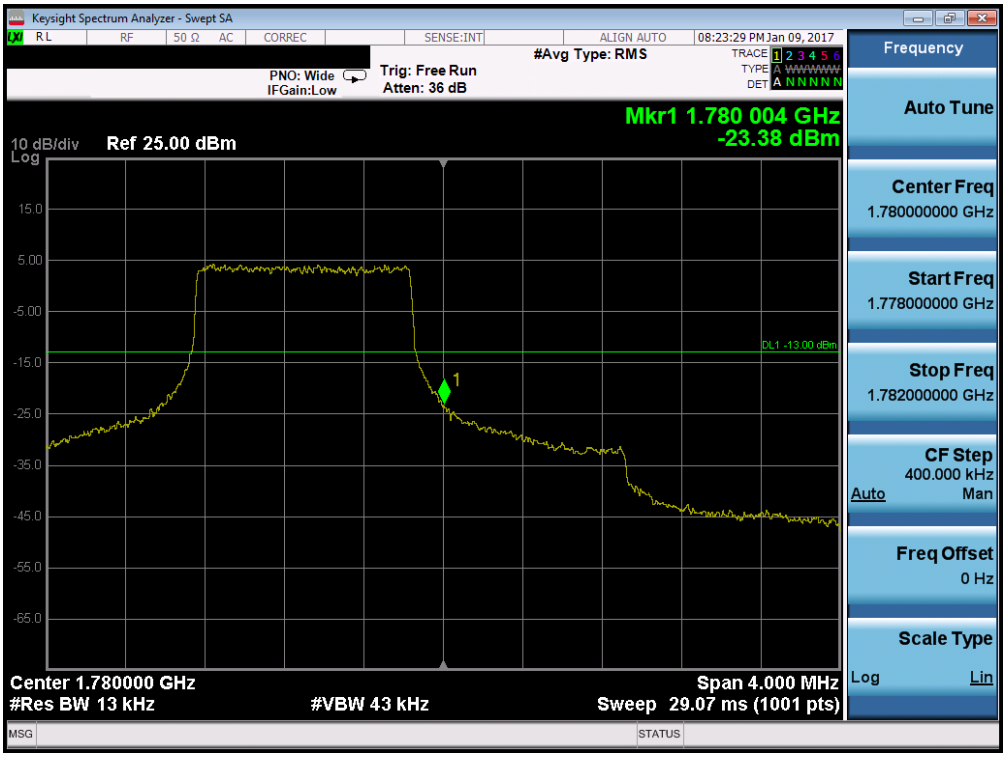
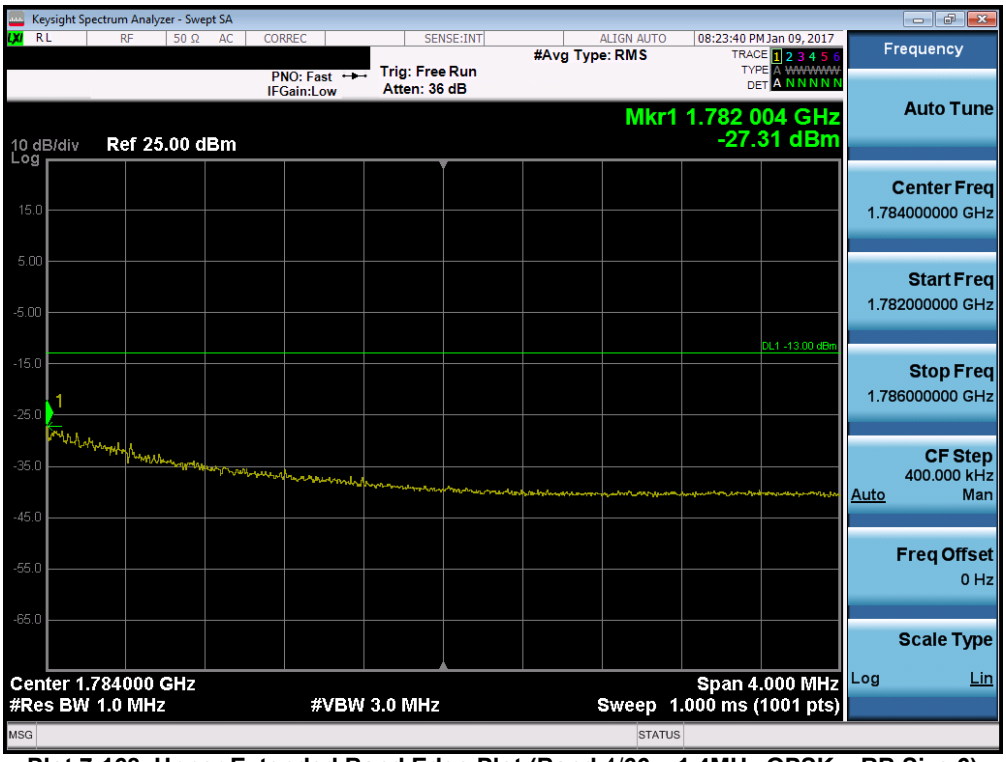


Plot 7-167. Upper Band Edge Plot (Band 4/66 – 1.4MHz QPSK – RB Size 6)



Plot 7-168. Upper Extended Band Edge Plot (Band 4/66 – 1.4MHz QPSK – RB Size 6)

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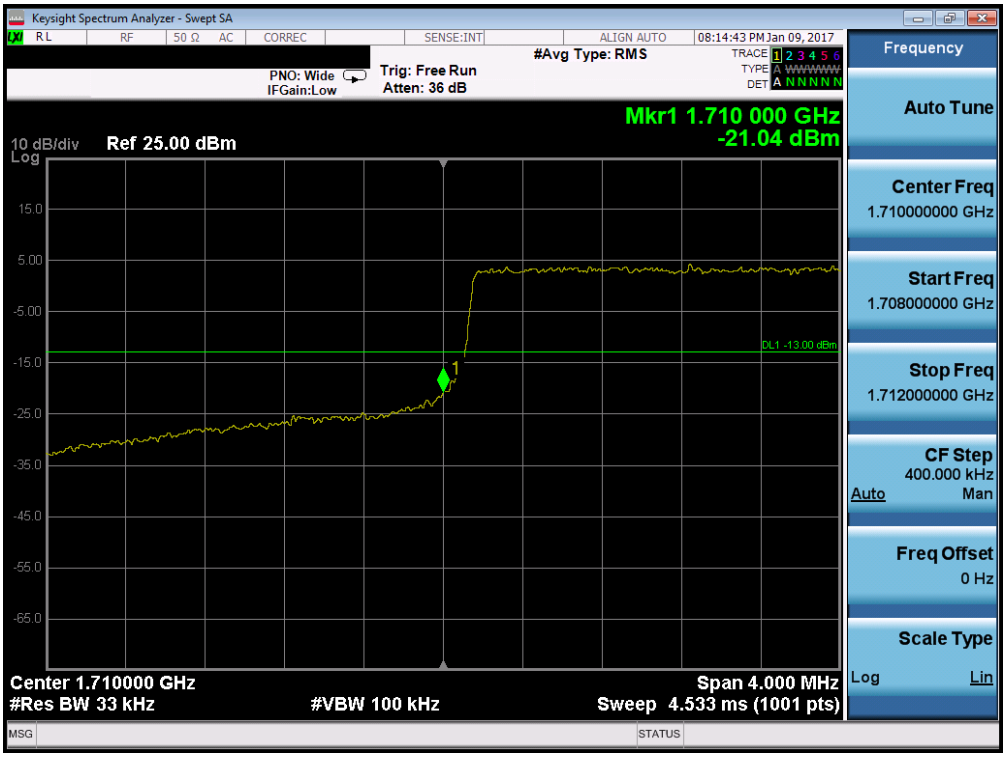
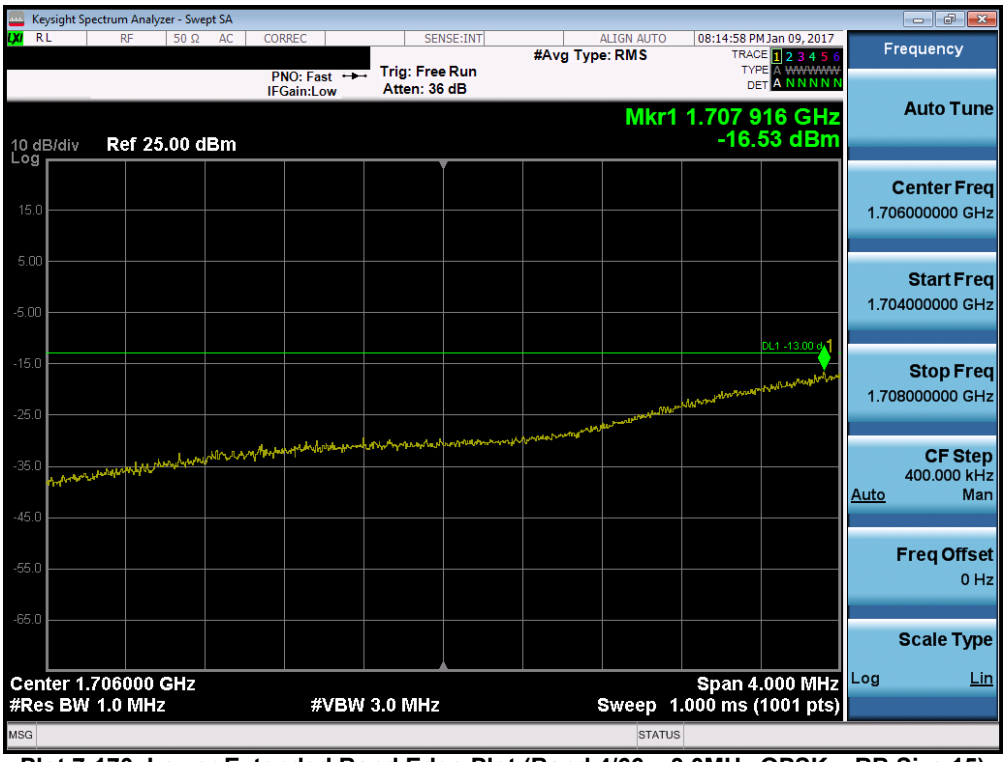


Plot 7-169. Lower Band Edge Plot (Band 4/66 – 3.0MHz QPSK – RB Size 15)



Plot 7-170. Lower Extended Band Edge Plot (Band 4/66 – 3.0MHz QPSK – RB Size 15)

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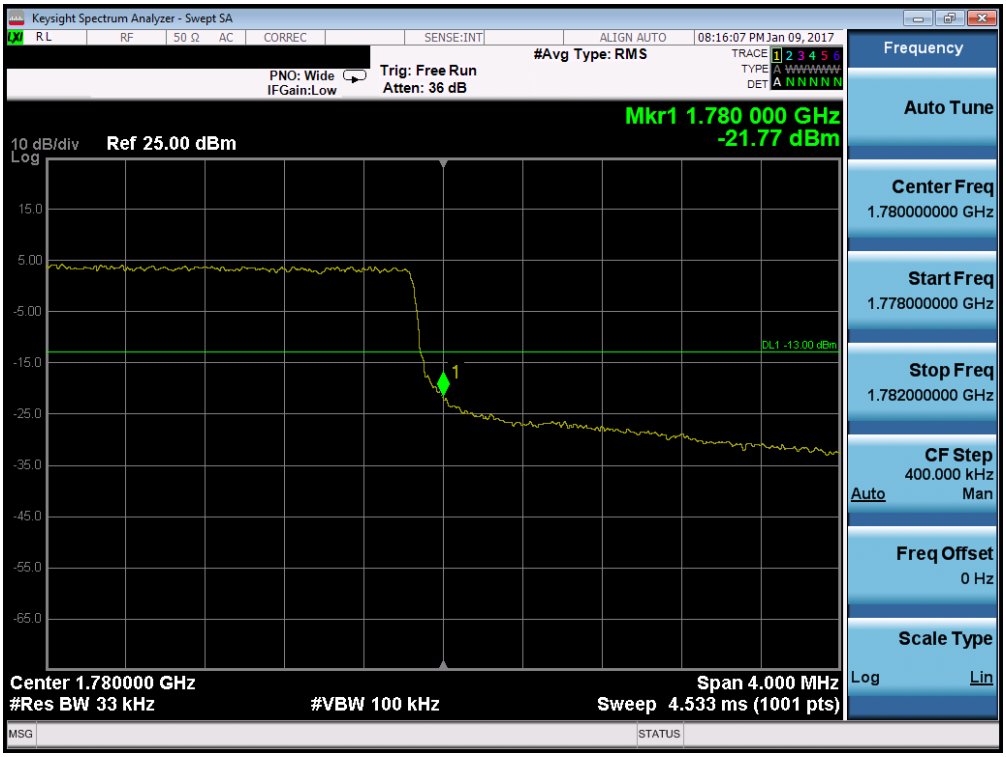

Plot 7-171. Upper Band Edge Plot (Band 4/66 – 3.0MHz QPSK – RB Size 15)

Plot 7-172. Upper Extended Band Edge Plot (Band 4/66 – 3.0MHz QPSK – RB Size 15)

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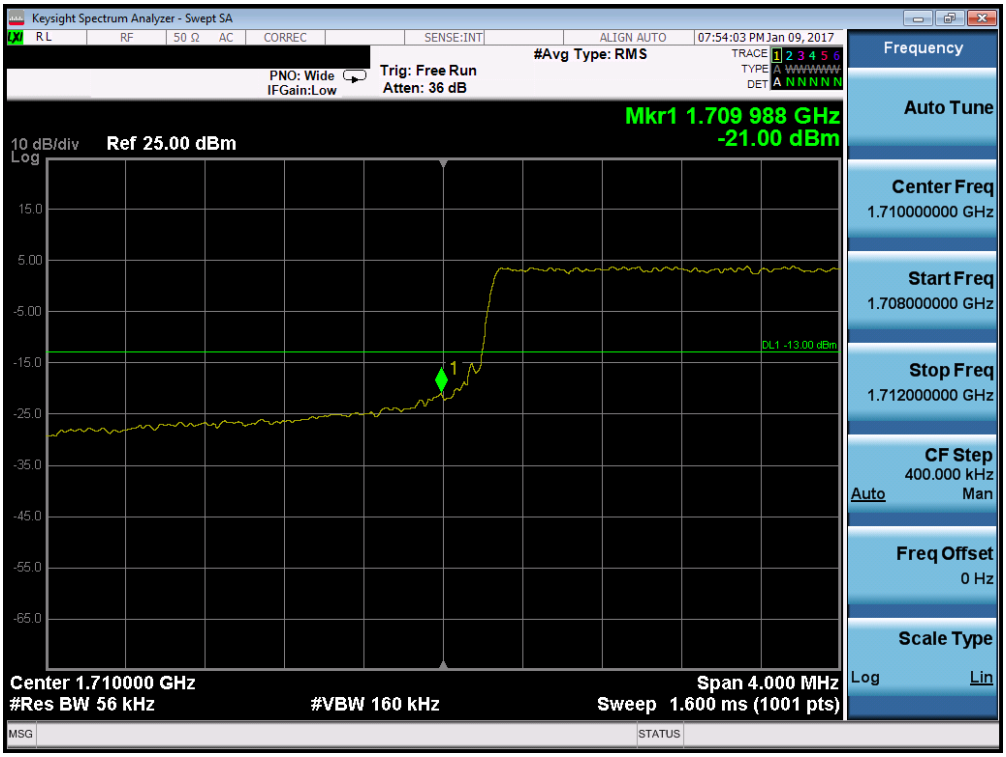

Plot 7-173. Lower Band Edge Plot (Band 4/66 – 5.0MHz QPSK – RB Size 25)

Plot 7-174. Lower Extended Band Edge Plot (Band 4/66 – 5.0MHz QPSK – RB Size 25)

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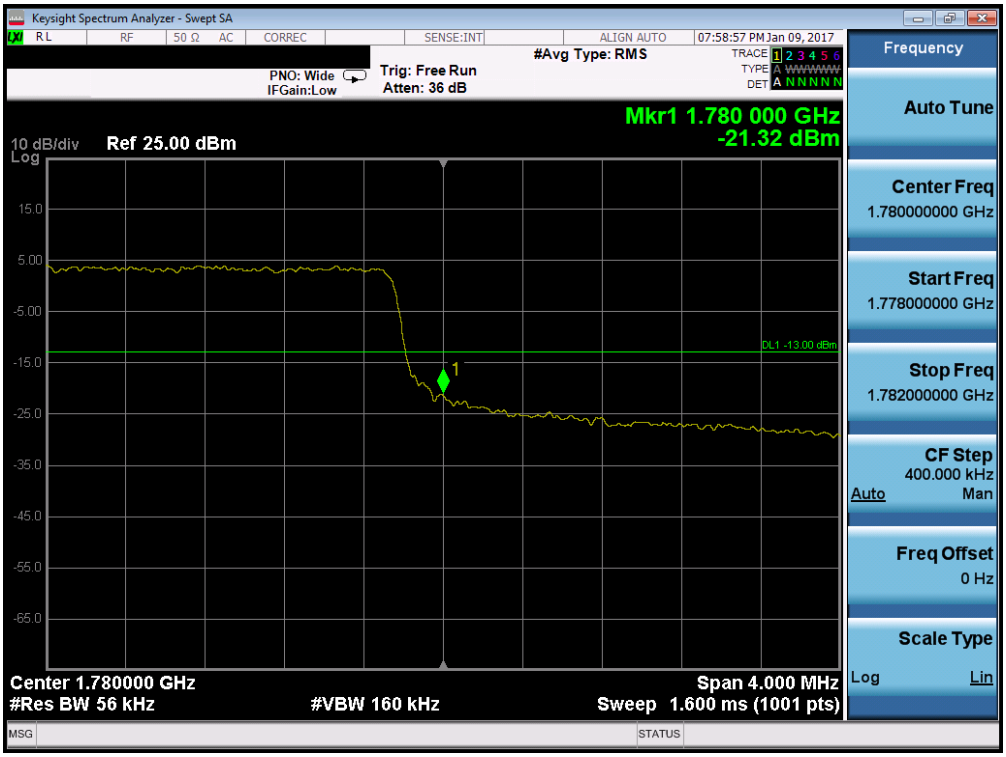

Plot 7-175. Upper Band Edge Plot (Band 4/66 – 5.0MHz QPSK – RB Size 25)

Plot 7-176. Upper Extended Band Edge Plot (Band 4/66 – 5.0MHz QPSK – RB Size 25)

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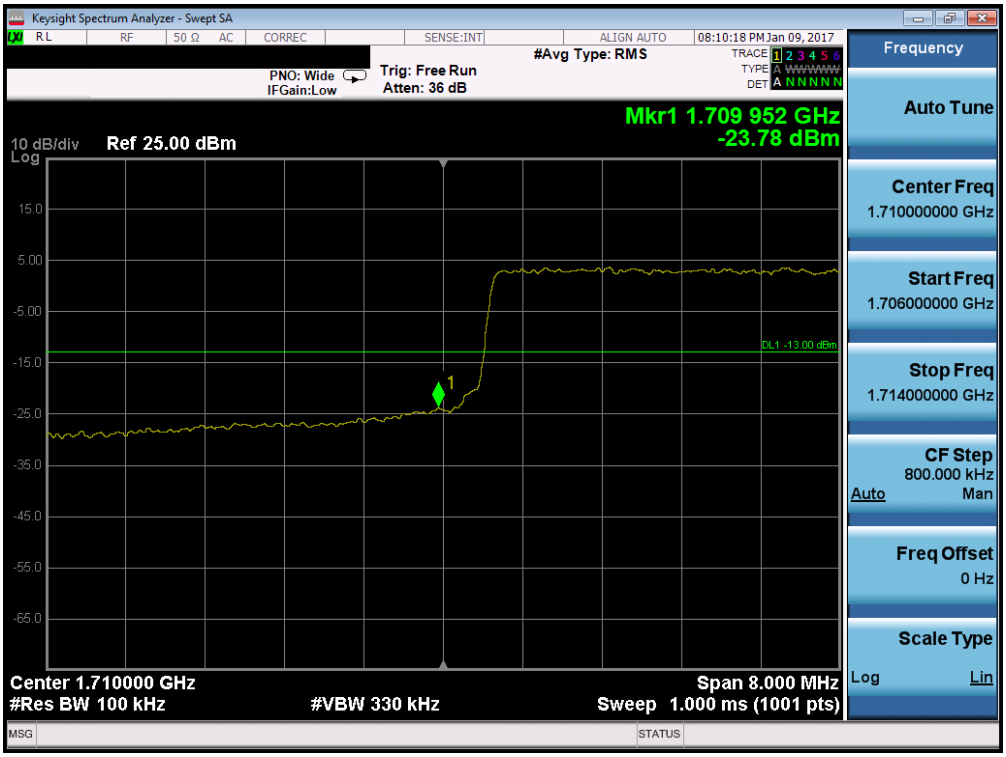
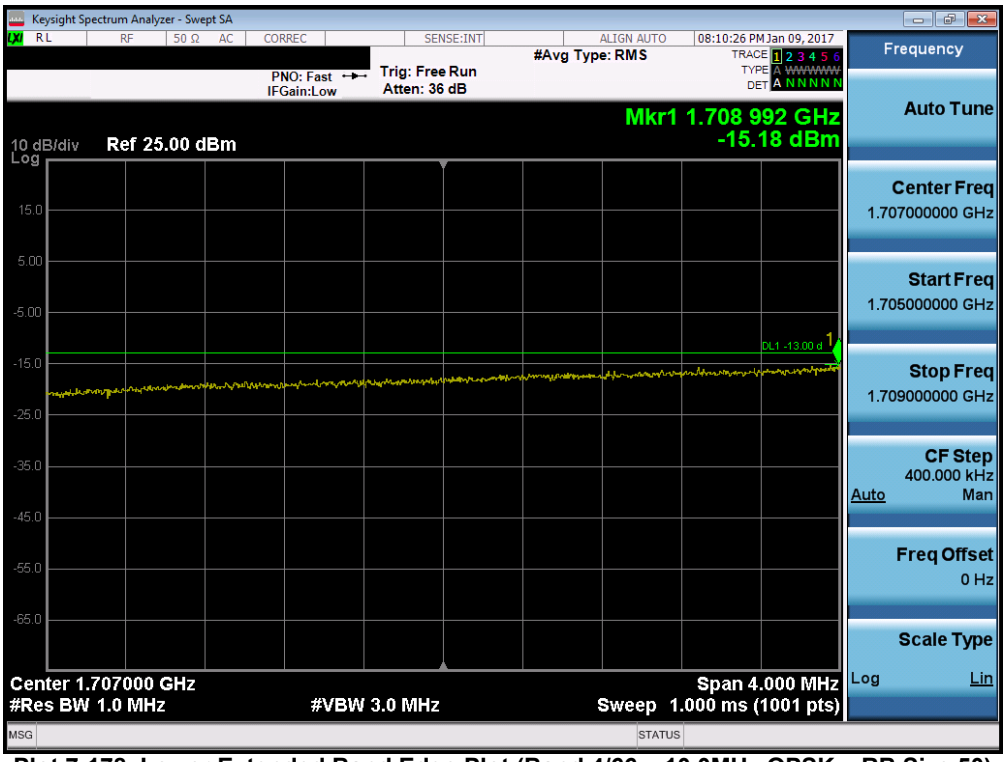


Plot 7-177. Lower Band Edge Plot (Band 4/66 – 10.0MHz QPSK – RB Size 50)



Plot 7-178. Lower Extended Band Edge Plot (Band 4/66 – 10.0MHz QPSK – RB Size 50)

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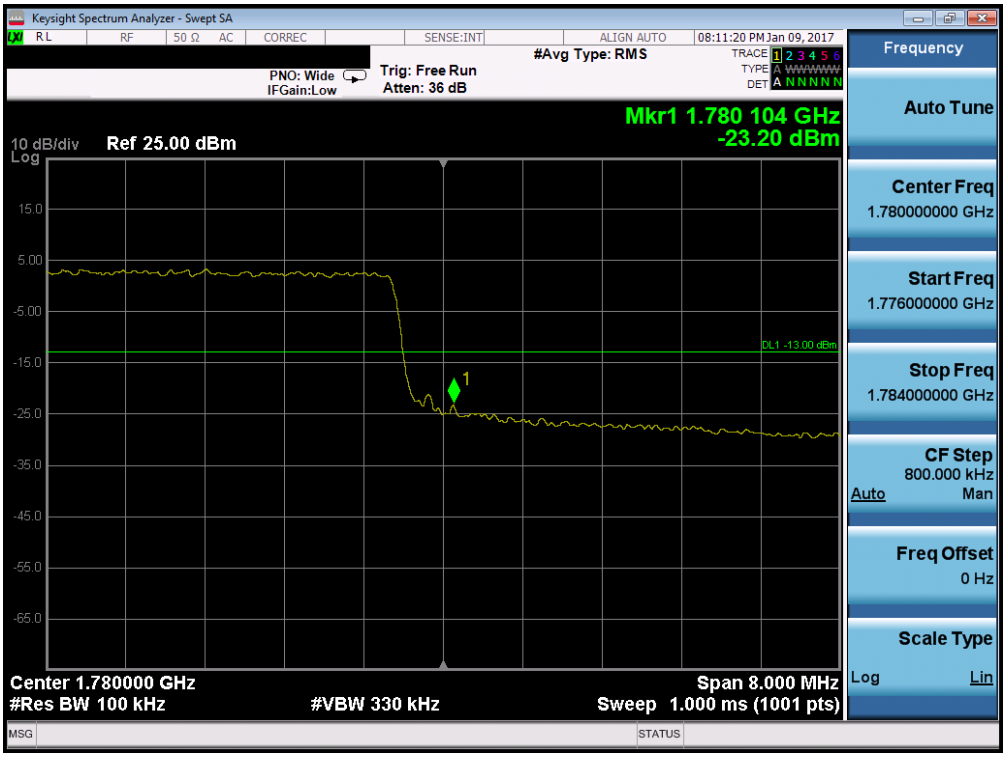
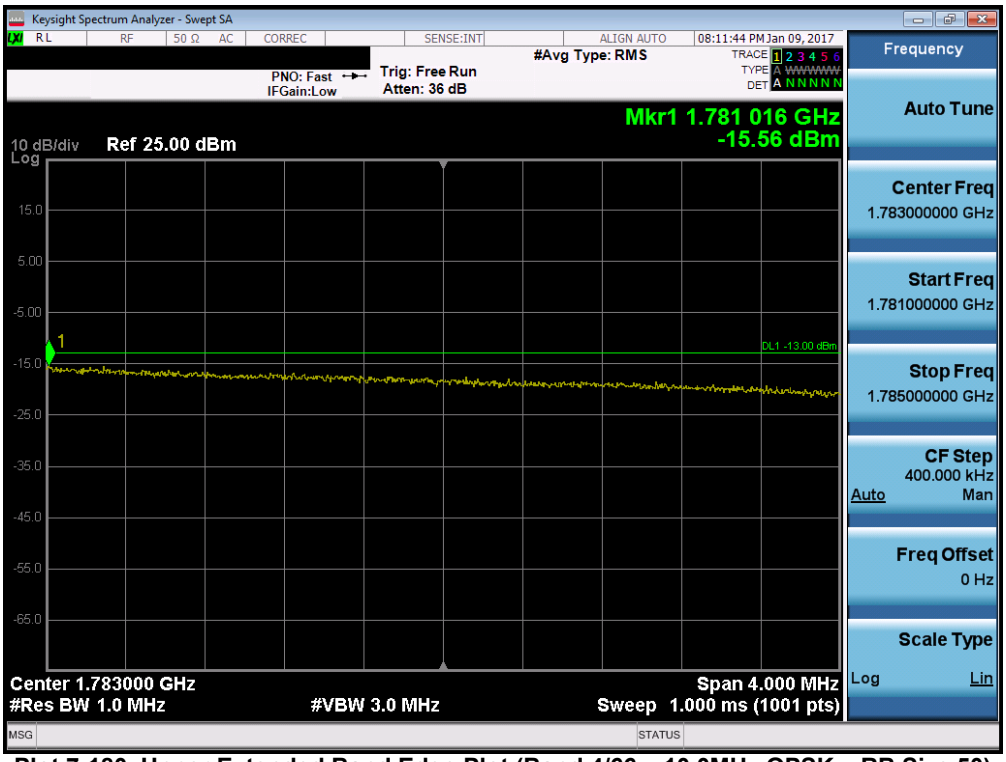


Plot 7-179. Upper Band Edge Plot (Band 4/66 – 10.0MHz QPSK – RB Size 50)



Plot 7-180. Upper Extended Band Edge Plot (Band 4/66 – 10.0MHz QPSK – RB Size 50)

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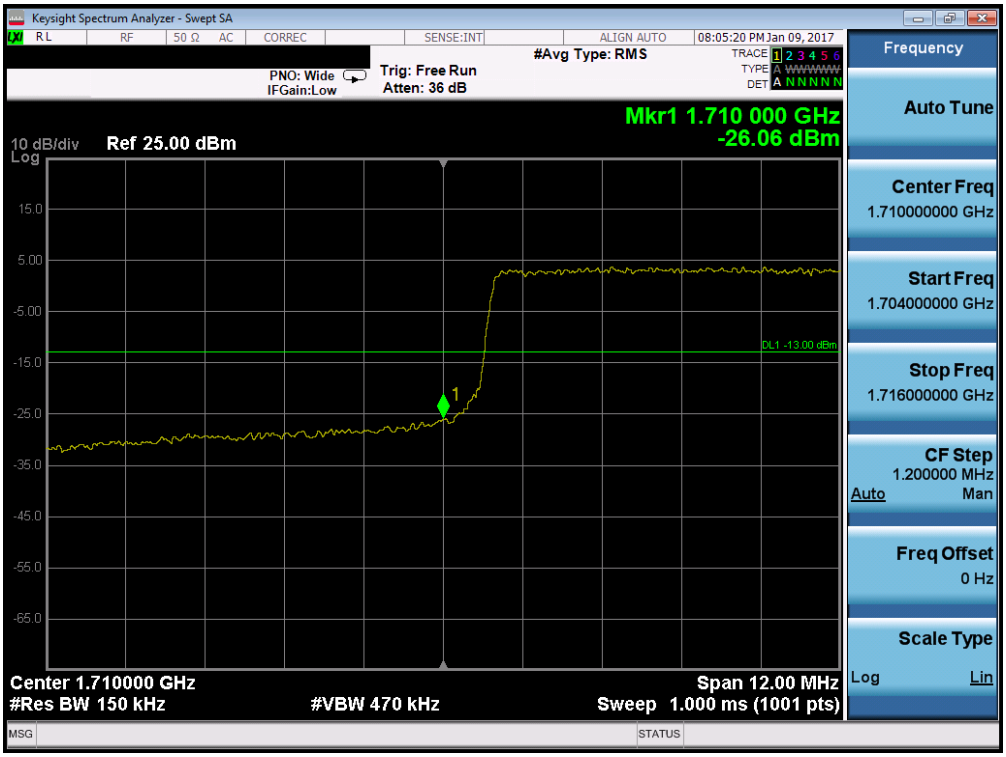

Plot 7-181. Lower Band Edge Plot (Band 4/66 – 15.0MHz QPSK – RB Size 75)

Plot 7-182. Lower Extended Band Edge Plot (Band 4/66 – 15.0MHz QPSK – RB Size 75)

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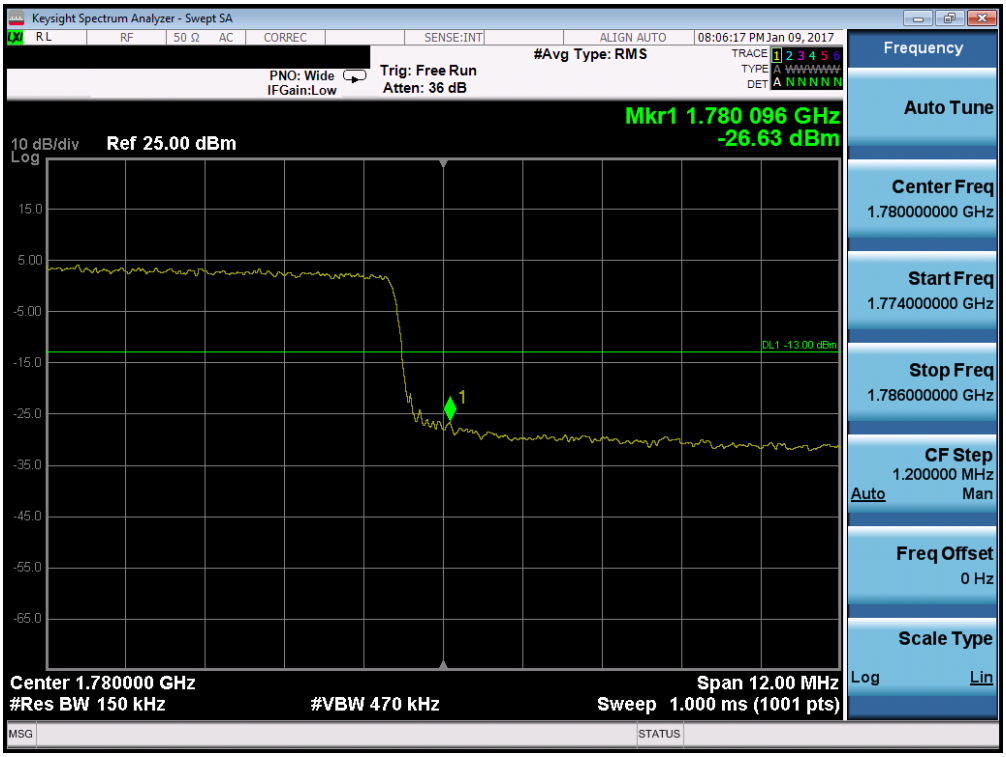
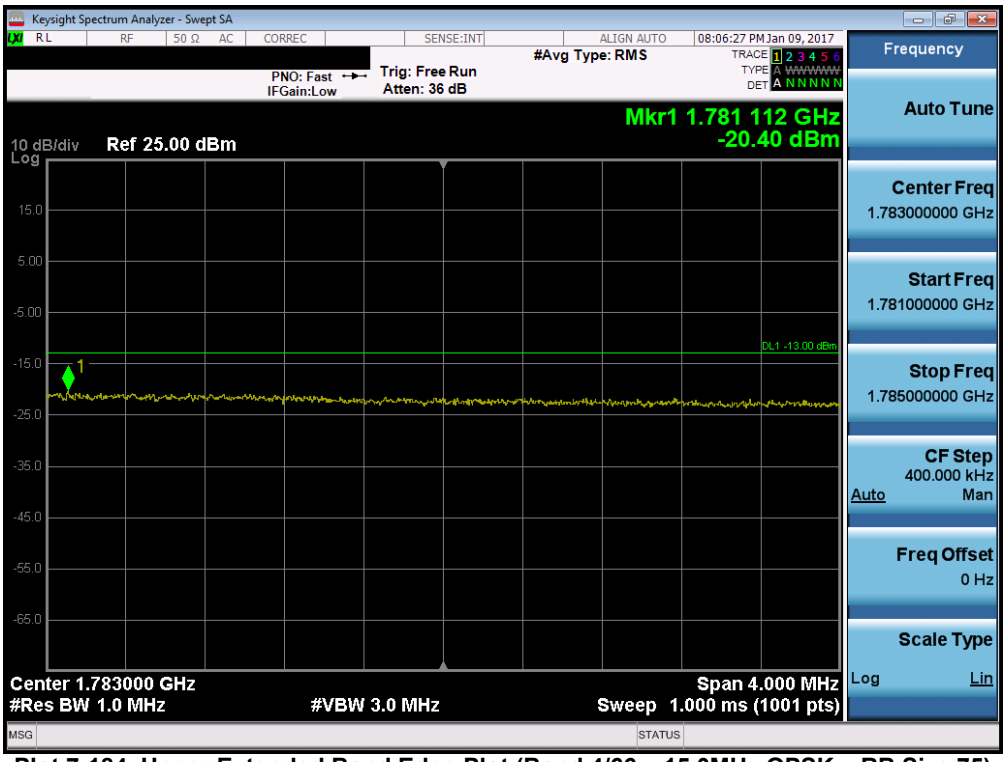


Plot 7-183. Upper Band Edge Plot (Band 4/66 – 15.0MHz QPSK – RB Size 75)



Plot 7-184. Upper Extended Band Edge Plot (Band 4/66 – 15.0MHz QPSK – RB Size 75)

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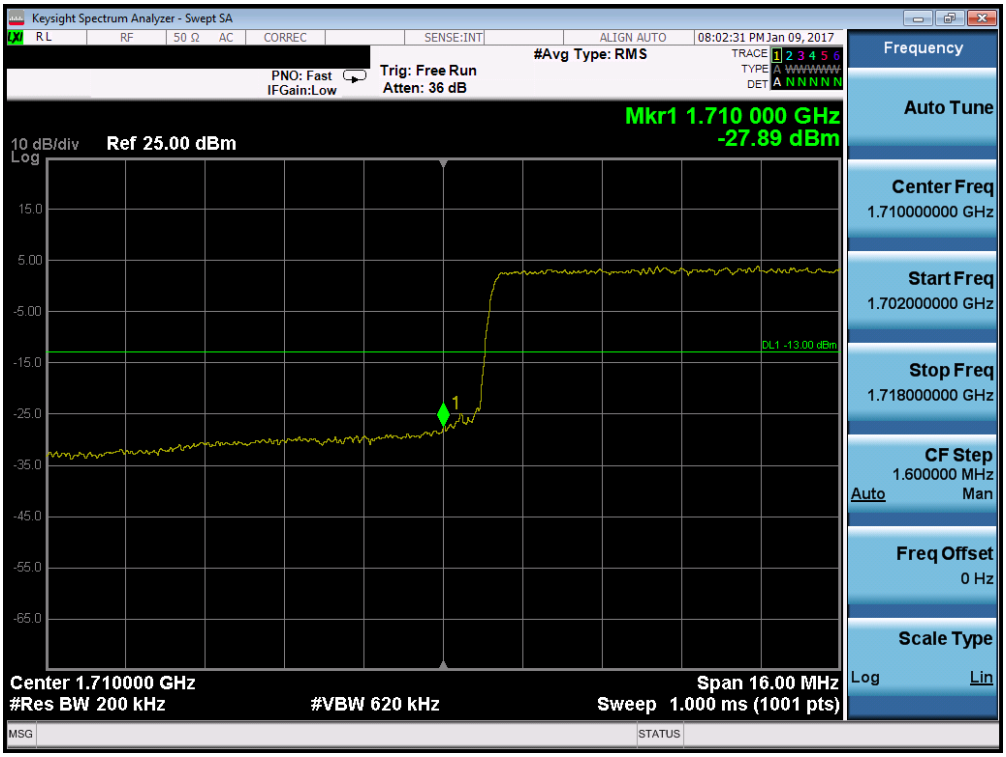
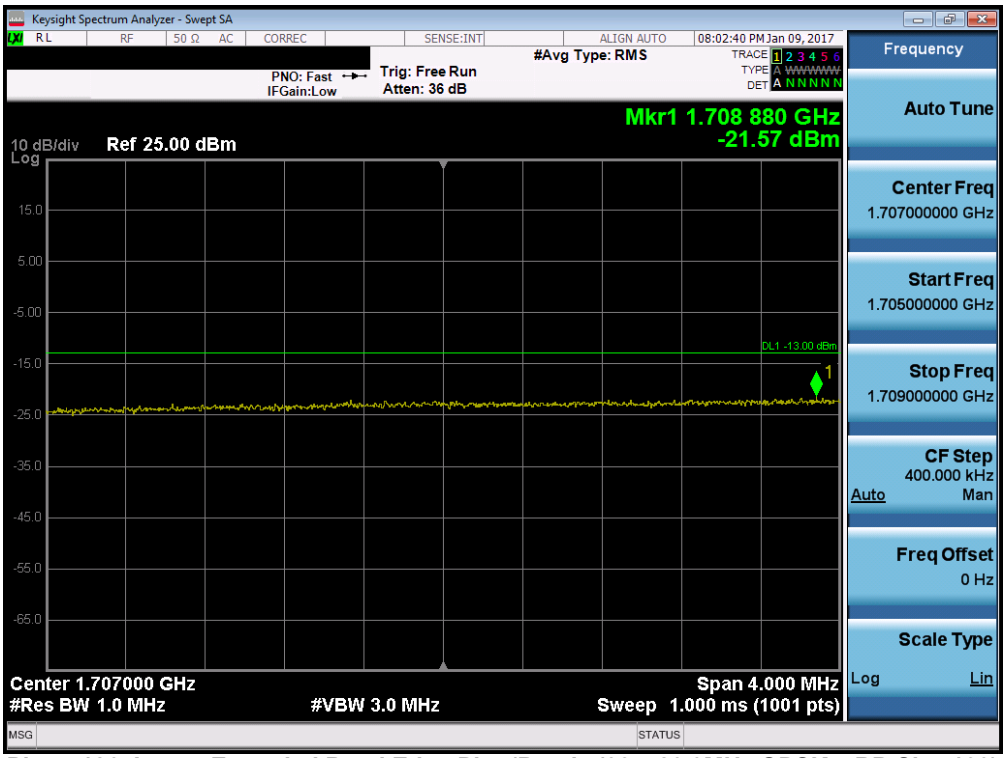


Plot 7-185. Lower Band Edge Plot (Band 4/66 – 20.0MHz QPSK – RB Size 100)



Plot 7-186. Lower Extended Band Edge Plot (Band 4/66 – 20.0MHz QPSK – RB Size 100)

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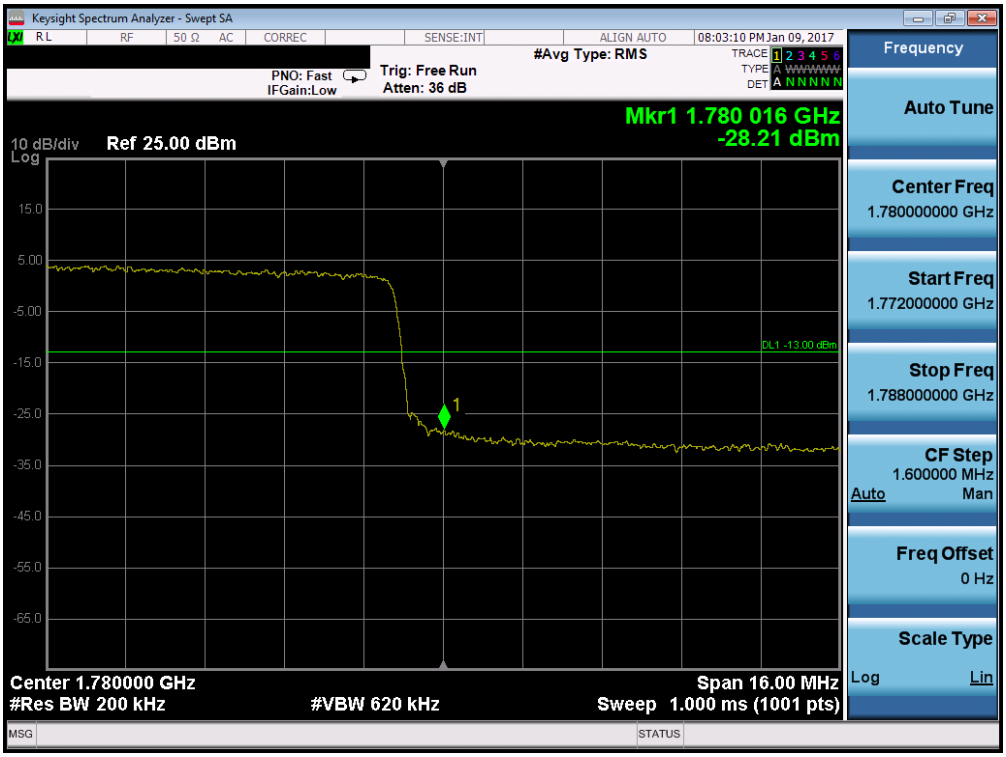
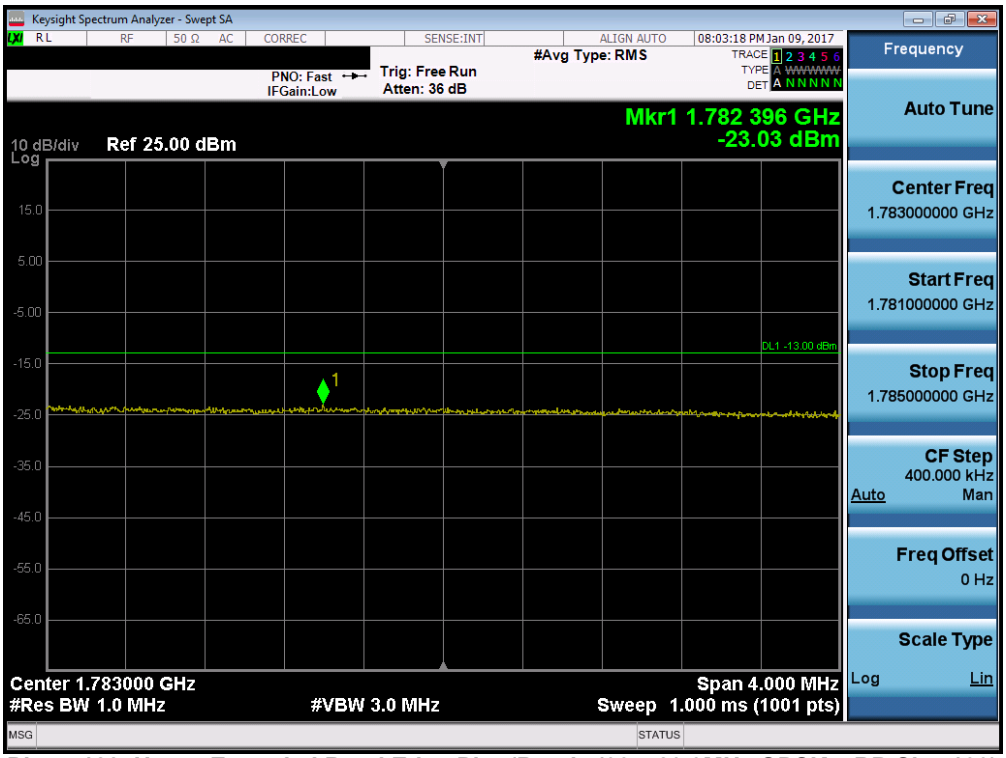


Plot 7-187. Upper Band Edge Plot (Band 4/66 – 20.0MHz QPSK – RB Size 100)



Plot 7-188. Upper Extended Band Edge Plot (Band 4/66 – 20.0MHz QPSK – RB Size 100)

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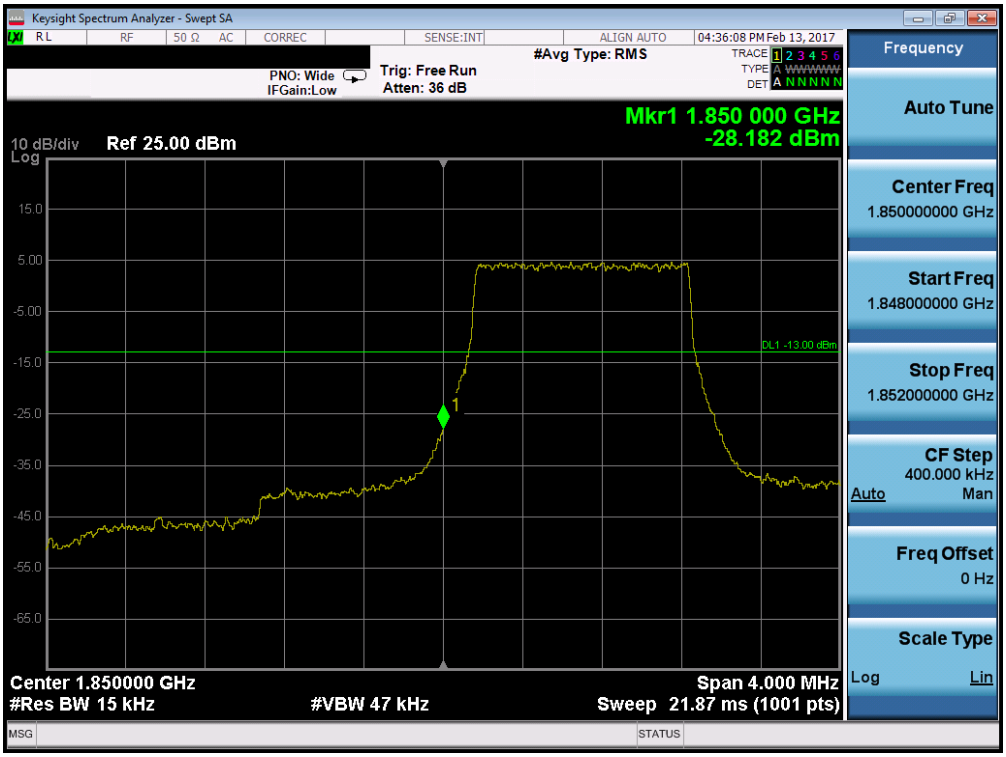
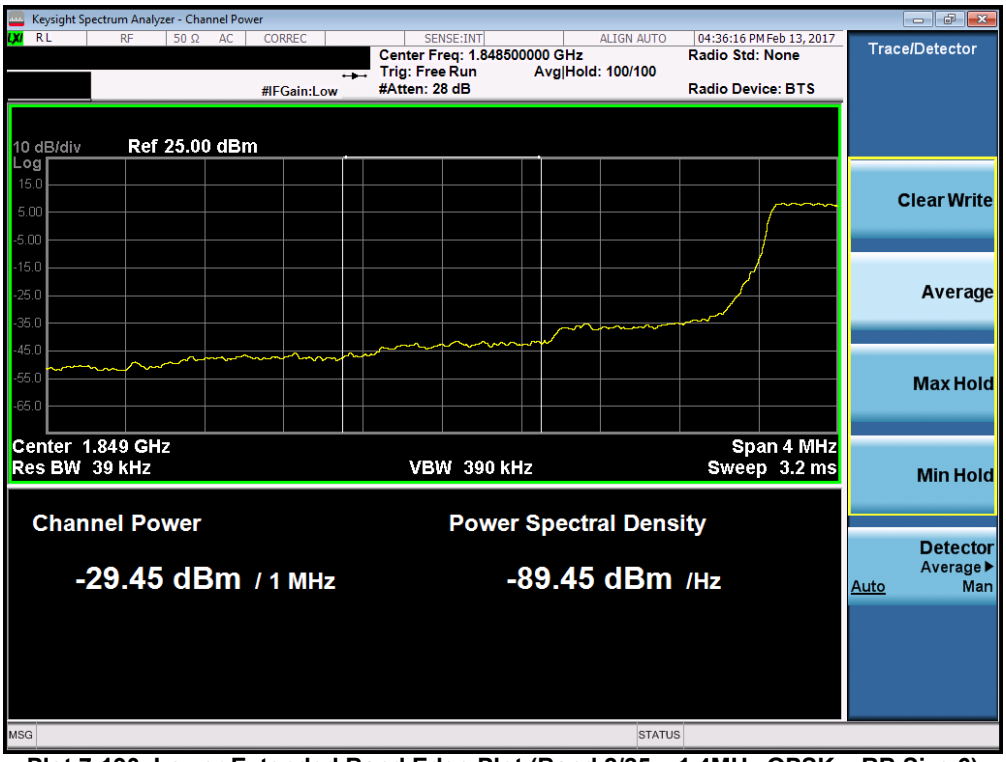


Plot 7-189. Lower Band Edge Plot (Band 2/25 – 1.4MHz QPSK – RB Size 6)



Plot 7-190. Lower Extended Band Edge Plot (Band 2/25 – 1.4MHz QPSK – RB Size 6)

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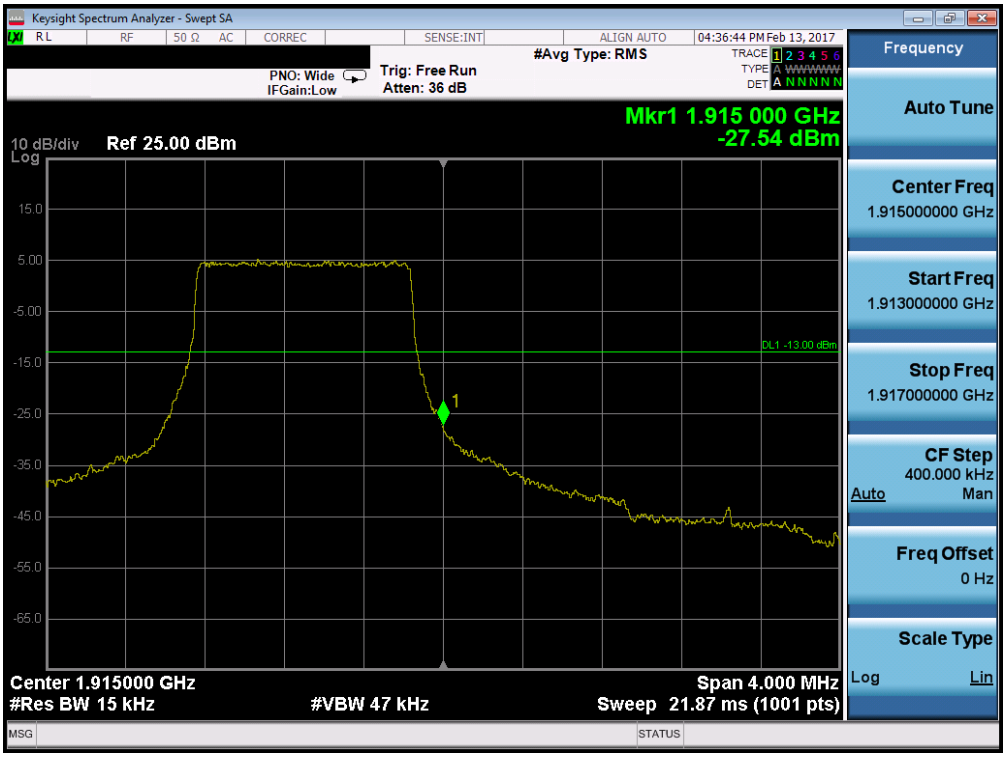
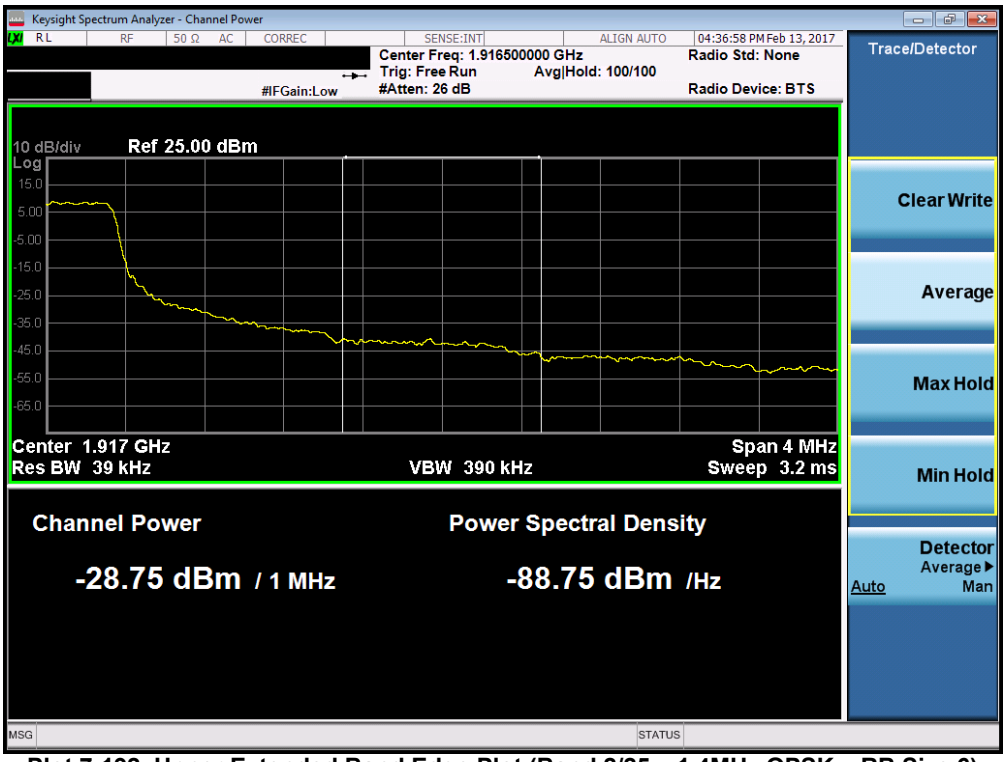


Plot 7-191. Upper Band Edge Plot (Band 2/25 – 1.4MHz QPSK – RB Size 6)



Plot 7-192. Upper Extended Band Edge Plot (Band 2/25 – 1.4MHz QPSK – RB Size 6)

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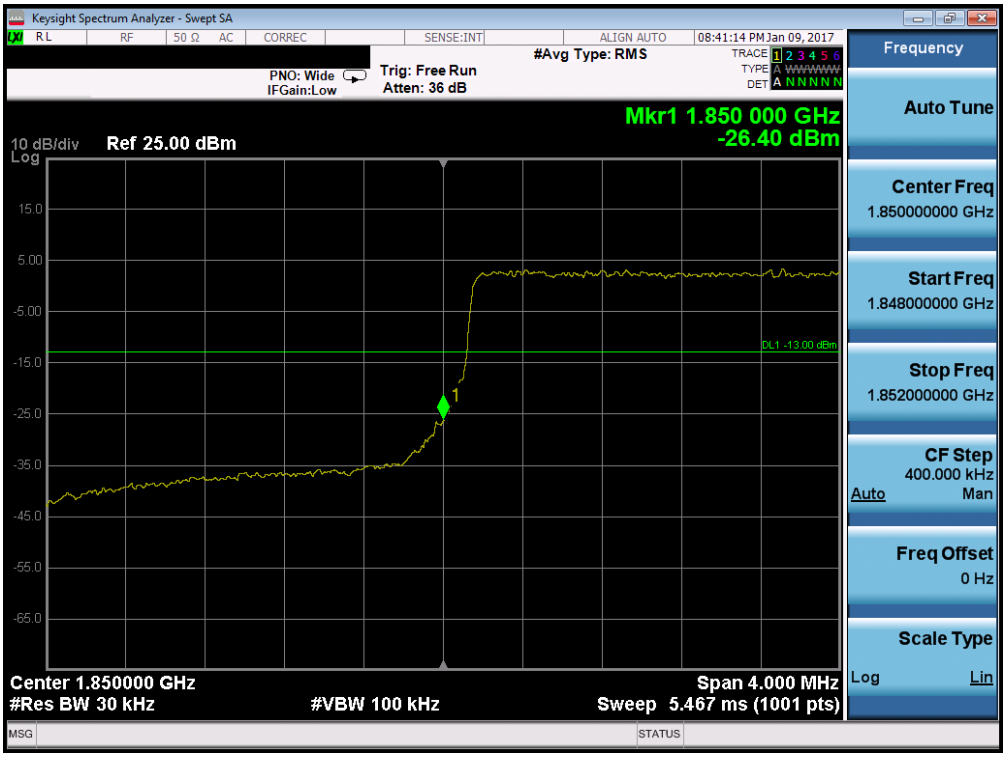
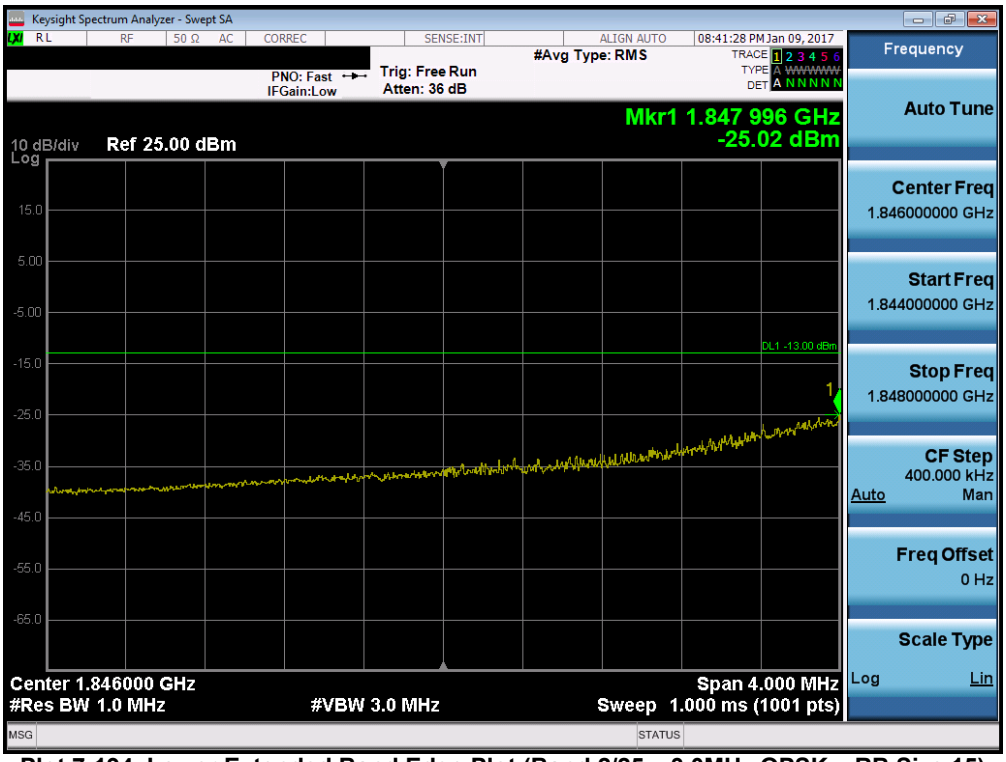


Plot 7-193. Lower Band Edge Plot (Band 2/25 – 3.0MHz QPSK – RB Size 15)



Plot 7-194. Lower Extended Band Edge Plot (Band 2/25 – 3.0MHz QPSK – RB Size 15)

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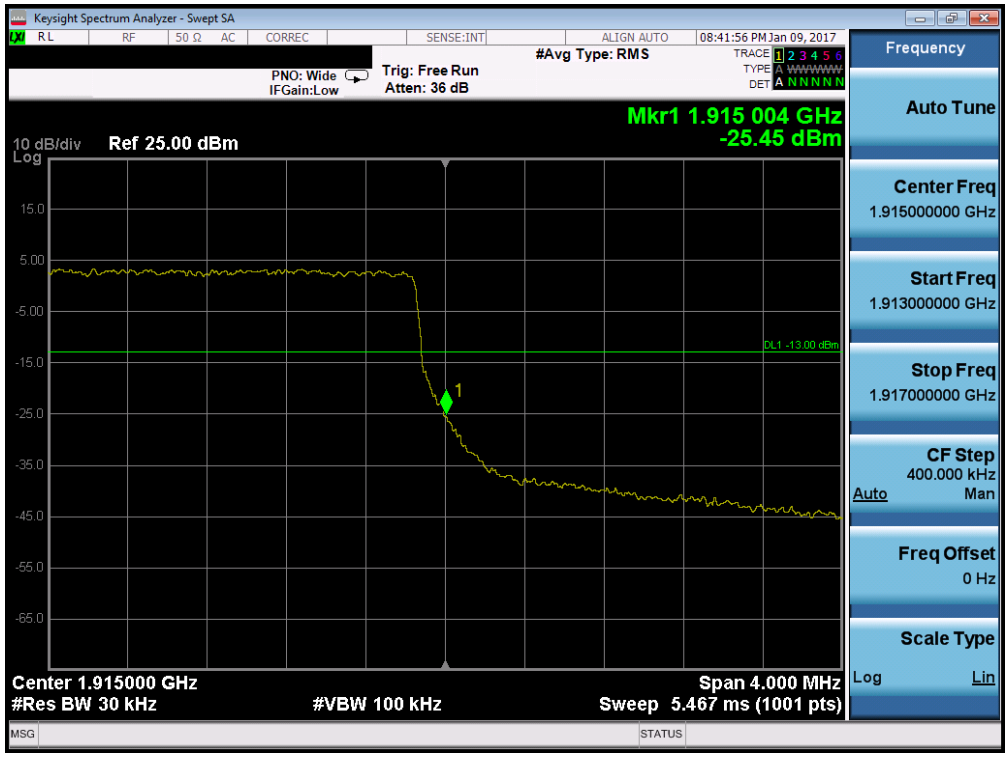
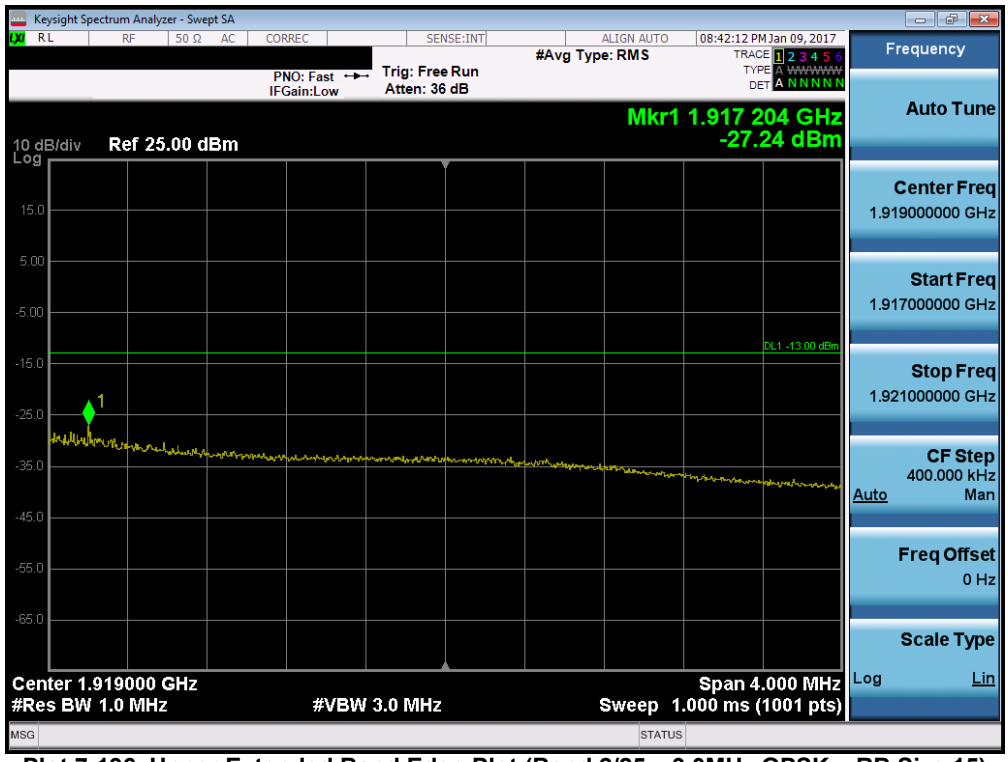


Plot 7-195. Upper Band Edge Plot (Band 2/25 – 3.0MHz QPSK – RB Size 15)



Plot 7-196. Upper Extended Band Edge Plot (Band 2/25 – 3.0MHz QPSK – RB Size 15)

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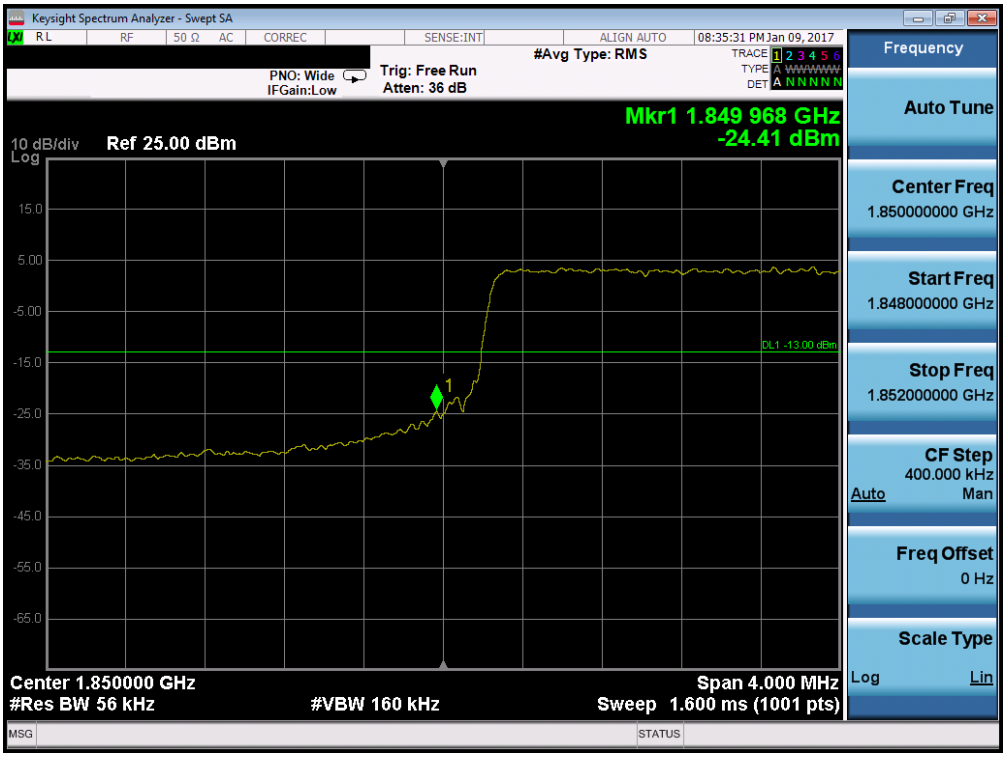
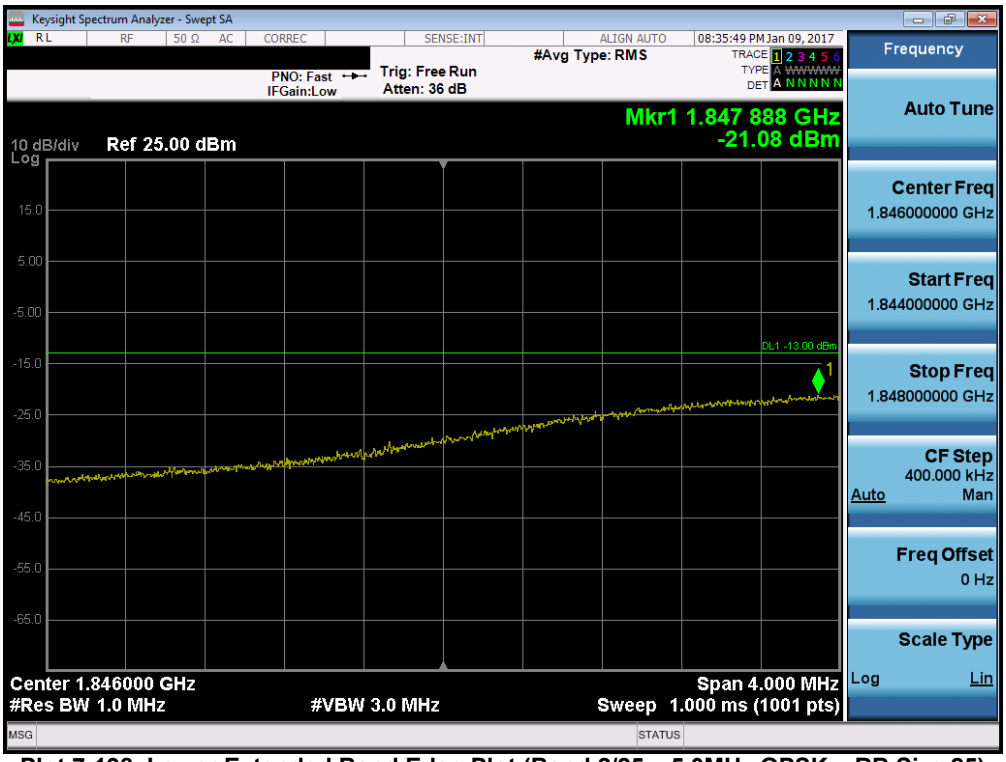


Plot 7-197. Lower Band Edge Plot (Band 2/25 – 5.0MHz QPSK – RB Size 25)



Plot 7-198. Lower Extended Band Edge Plot (Band 2/25 – 5.0MHz QPSK – RB Size 25)

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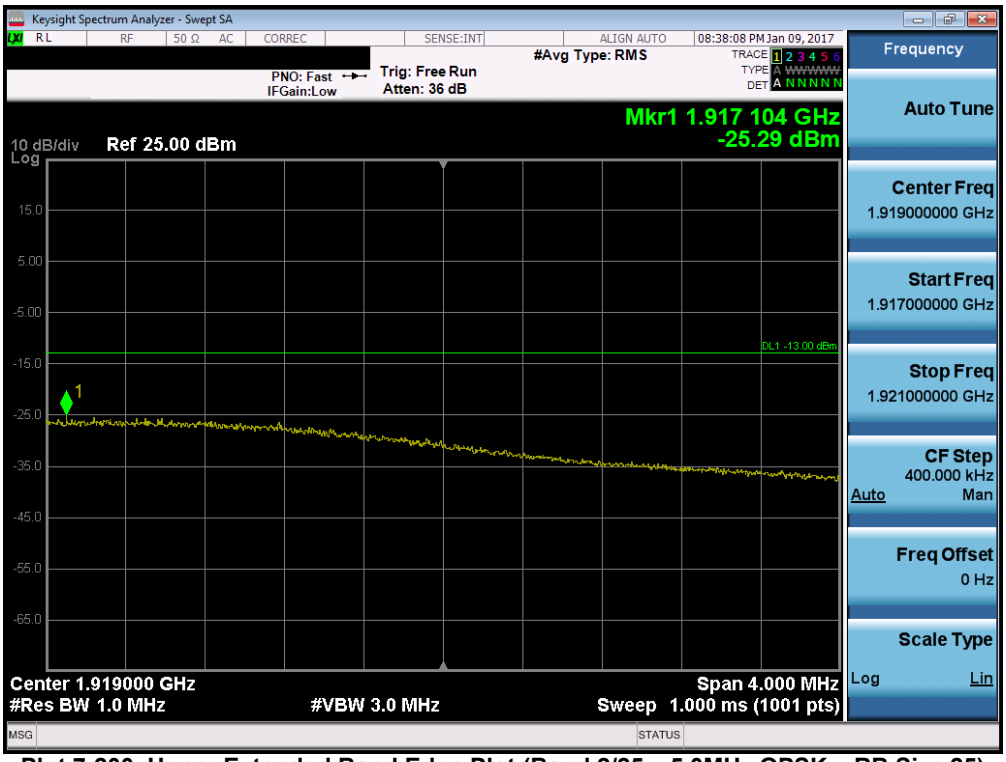
Plot 7-199. Upper Band Edge Plot (Band 2/25 – 5.0MHz QPSK – RB Size 25)



Plot 7-200. Upper Extended Band Edge Plot (Band 2/25 – 5.0MHz QPSK – RB Size 25)

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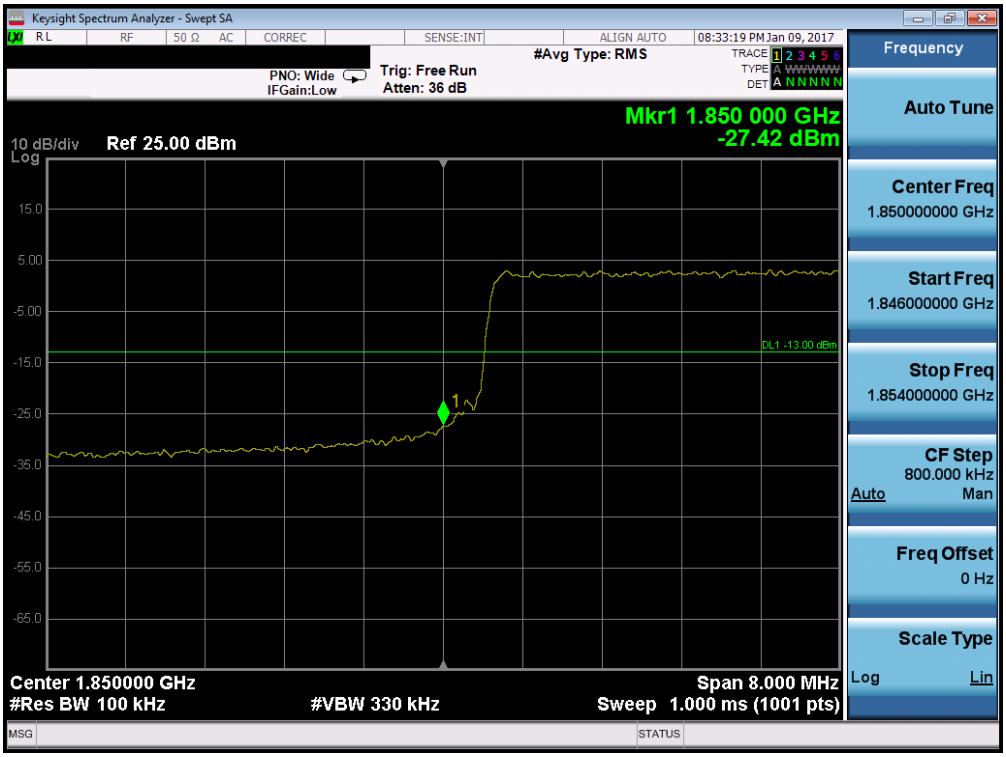

Plot 7-201. Lower Band Edge Plot (Band 2/25 – 10.0MHz QPSK – RB Size 50)

Plot 7-202. Lower Extended Band Edge Plot (Band 2/25 – 10.0MHz QPSK – RB Size 50)

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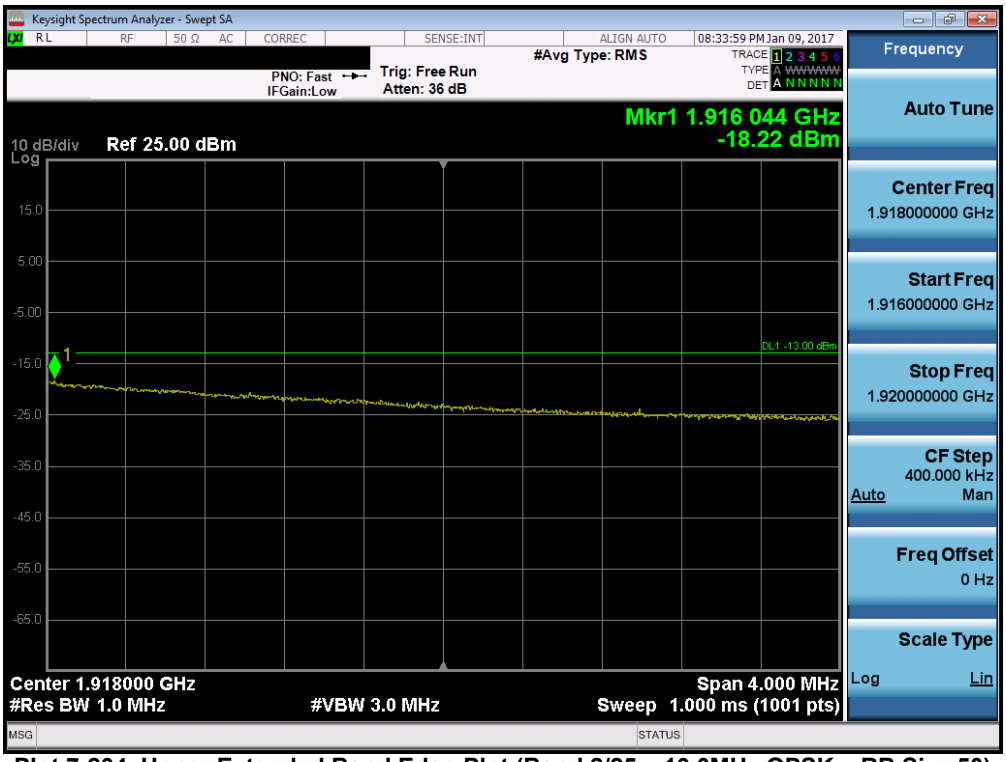
Plot 7-203. Upper Band Edge Plot (Band 2/25 – 10.0MHz QPSK – RB Size 50)



Plot 7-204. Upper Extended Band Edge Plot (Band 2/25 – 10.0MHz QPSK – RB Size 50)

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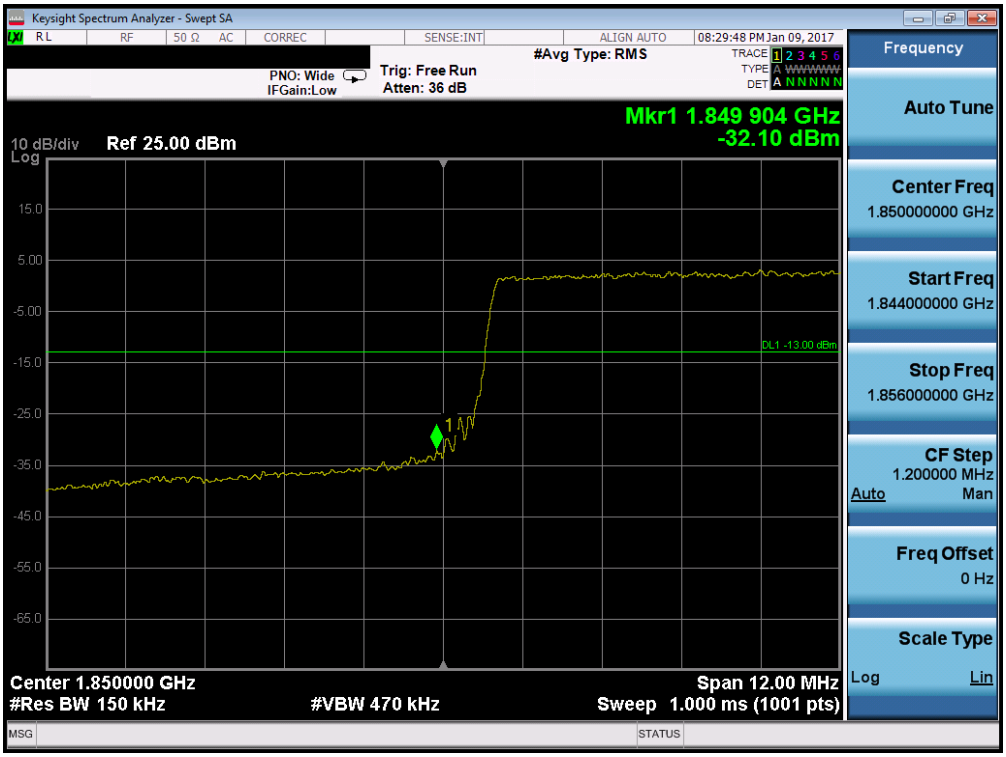

Plot 7-205. Lower Band Edge Plot (Band 2/25 – 15.0MHz QPSK – RB Size 75)

Plot 7-206. Lower Extended Band Edge Plot (Band 2/25 – 15.0MHz QPSK – RB Size 75)

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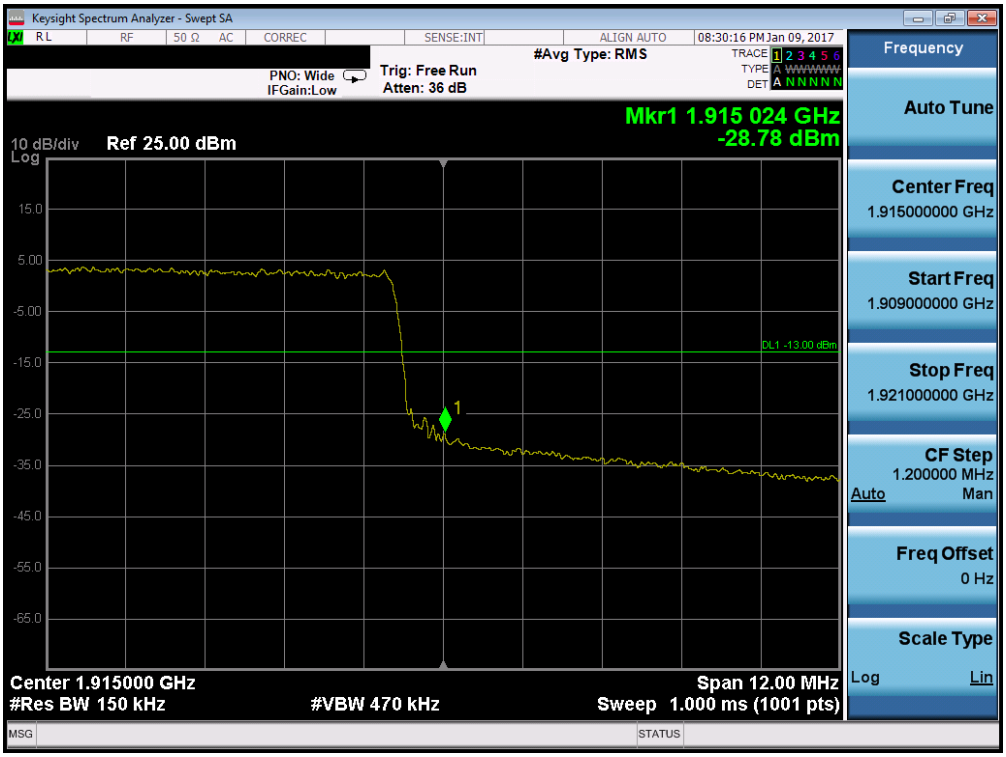

Plot 7-207. Upper Band Edge Plot (Band 2/25 – 15.0MHz QPSK – RB Size 75)

Plot 7-208. Upper Extended Band Edge Plot (Band 2/25 – 15.0MHz QPSK – RB Size 75)

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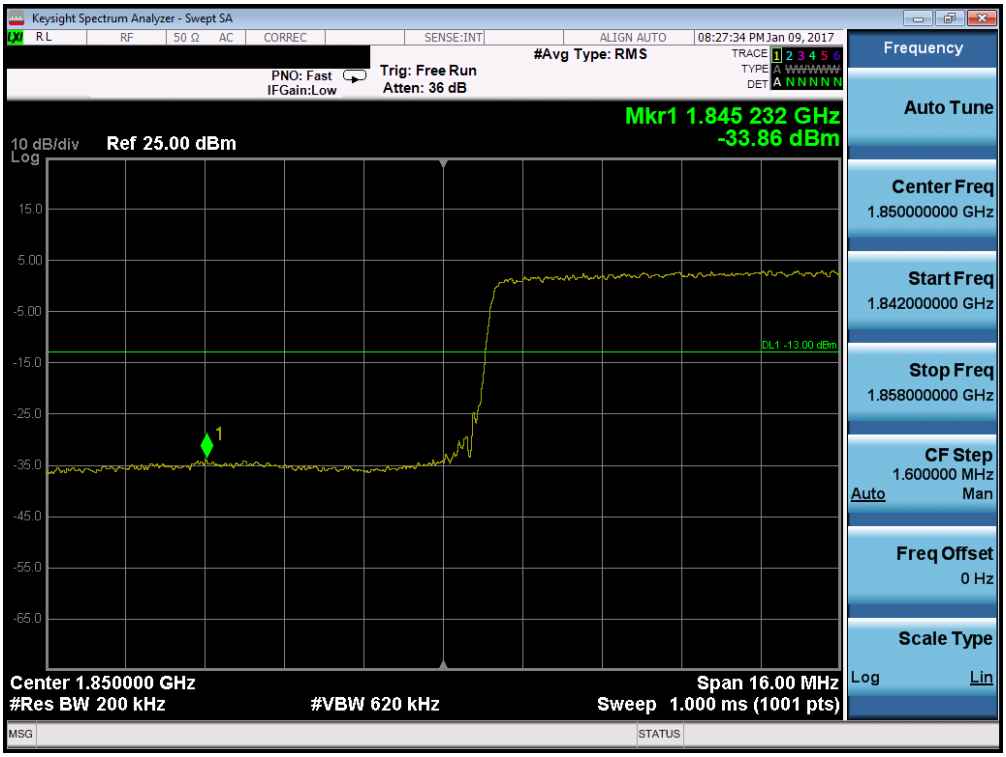
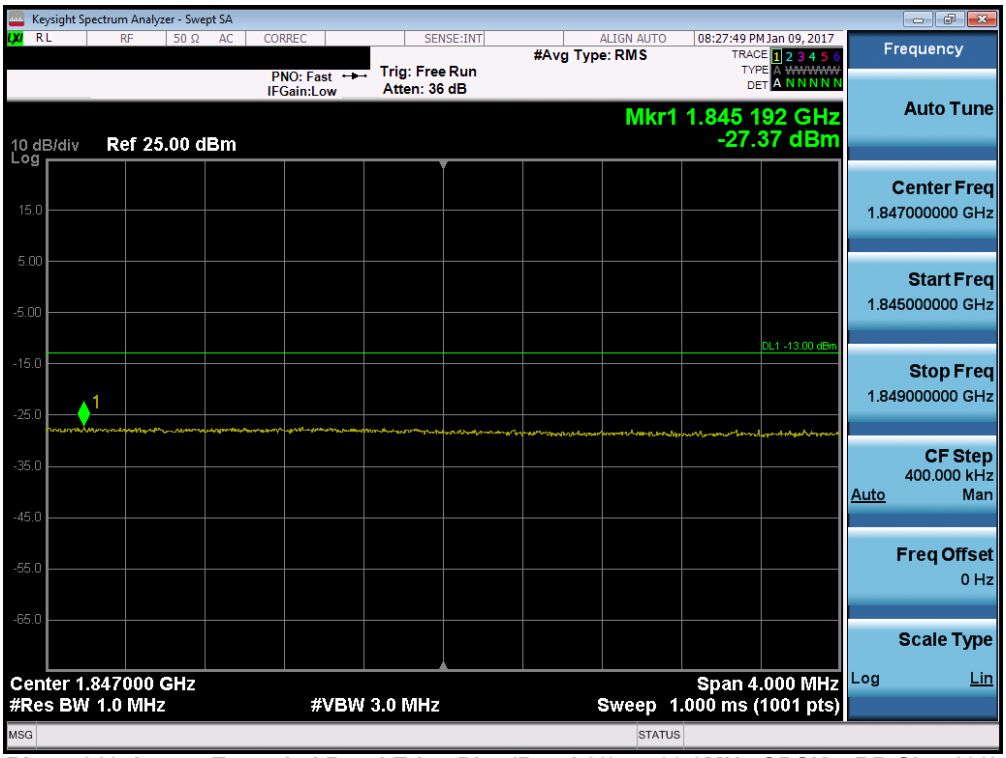


Plot 7-209. Lower Band Edge Plot (Band 2/25 – 20.0MHz QPSK – RB Size 100)



Plot 7-210. Lower Extended Band Edge Plot (Band 2/25 – 20.0MHz QPSK – RB Size 100)

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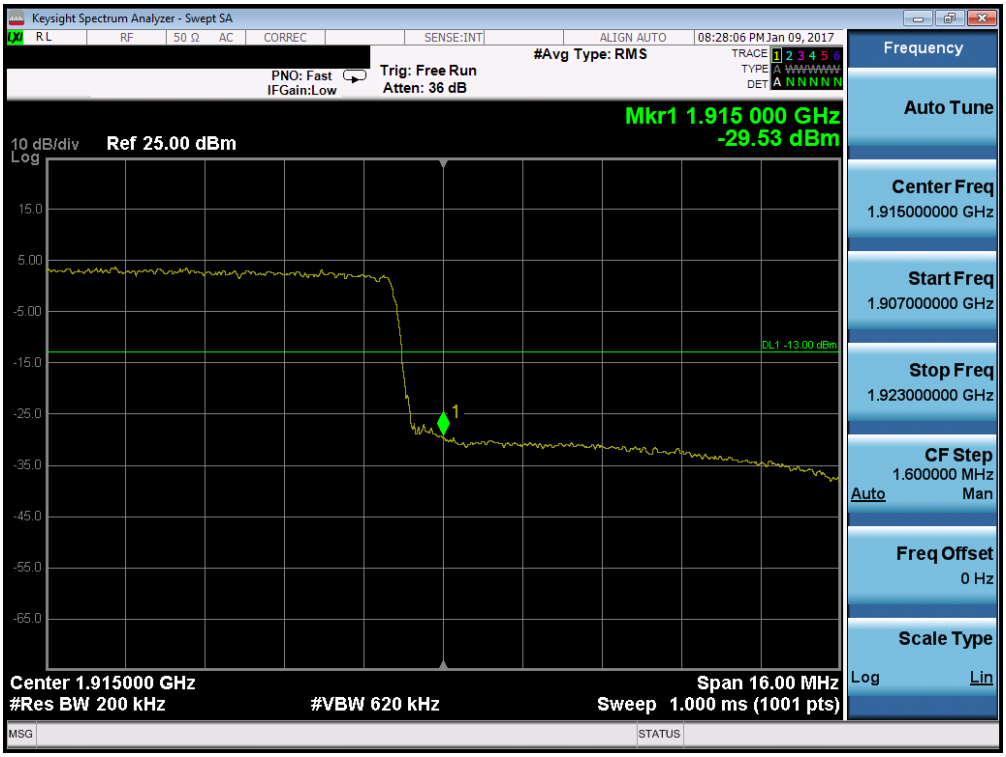
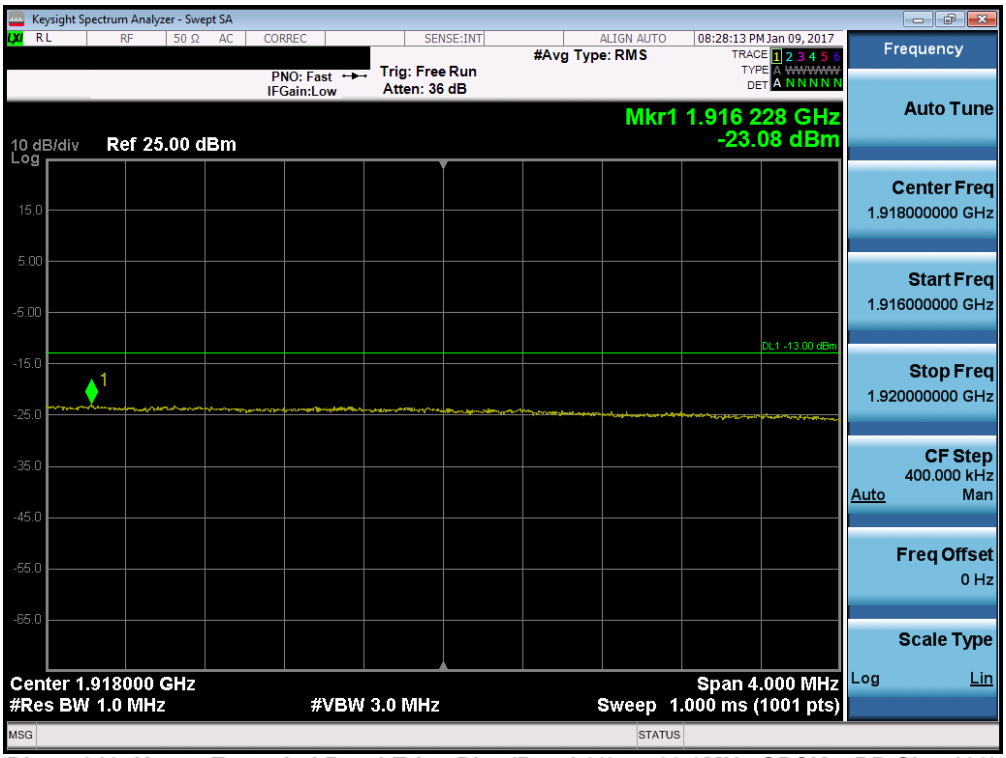


Plot 7-211. Upper Band Edge Plot (Band 2/25 – 20.0MHz QPSK – RB Size 100)



Plot 7-212. Upper Extended Band Edge Plot (Band 2/25 – 20.0MHz QPSK – RB Size 100)

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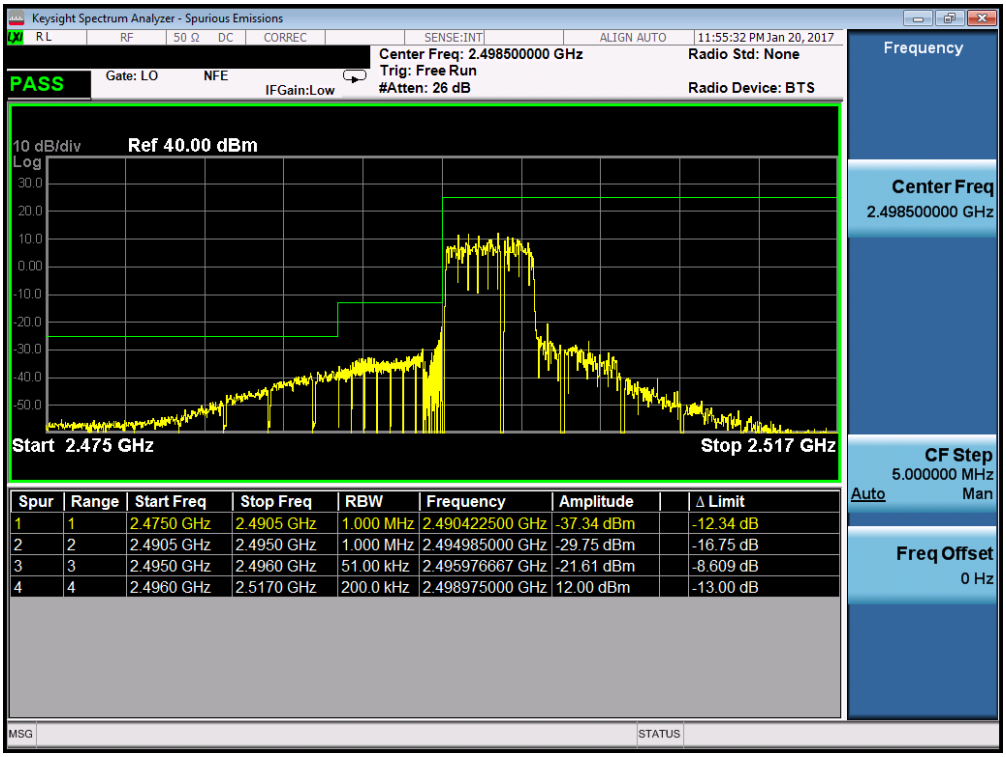
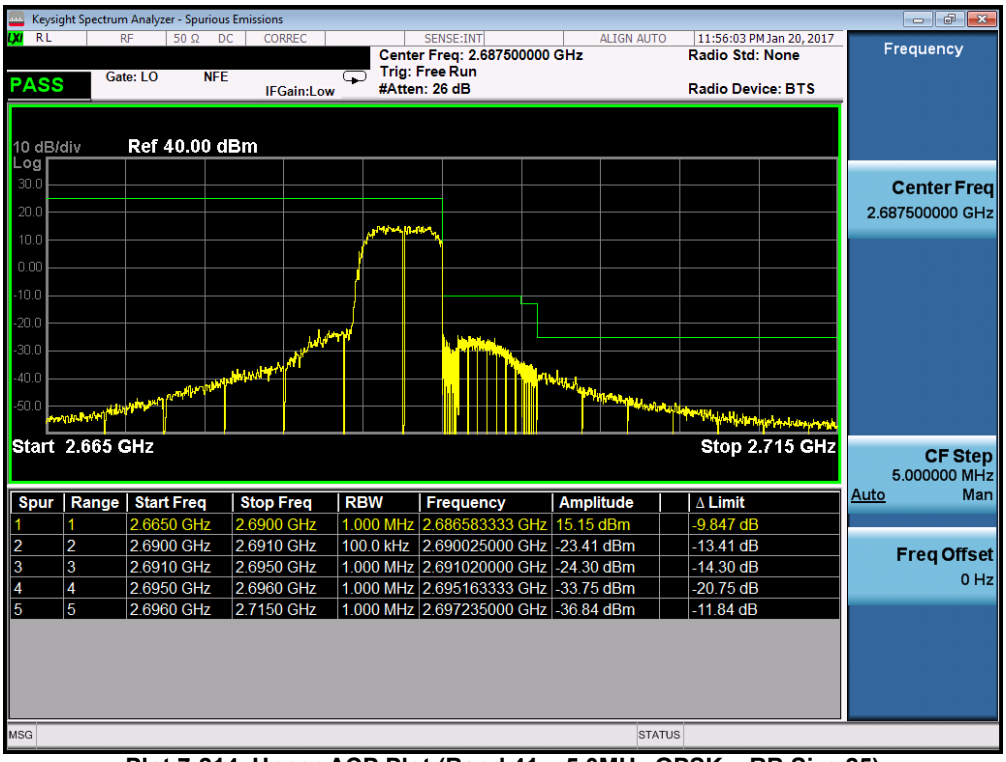


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.490422500 GHz	-37.34 dBm	-12.34 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494985000 GHz	-29.75 dBm	-16.75 dB
3	3	2.4950 GHz	2.4960 GHz	51.00 kHz	2.495976667 GHz	-21.61 dBm	-8.609 dB
4	4	2.4960 GHz	2.5170 GHz	200.0 kHz	2.498975000 GHz	12.00 dBm	-13.00 dB

Plot 7-213. Lower ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	1.000 MHz	2.686583333 GHz	15.15 dBm	-9.847 dB
2	2	2.6900 GHz	2.6910 GHz	100.0 kHz	2.690025000 GHz	-23.41 dBm	-13.41 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691020000 GHz	-24.30 dBm	-14.30 dB
4	4	2.6950 GHz	2.6960 GHz	1.000 MHz	2.695163333 GHz	-33.75 dBm	-20.75 dB
5	5	2.6960 GHz	2.7150 GHz	1.000 MHz	2.697235000 GHz	-36.84 dBm	-11.84 dB

Plot 7-214. Upper ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)

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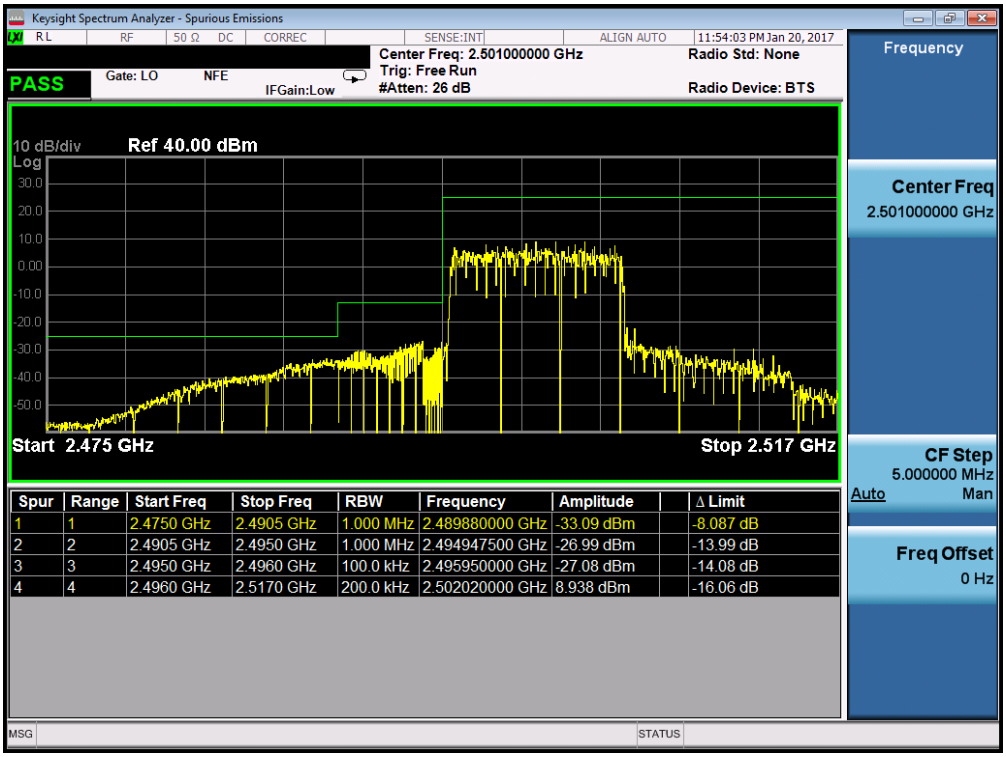
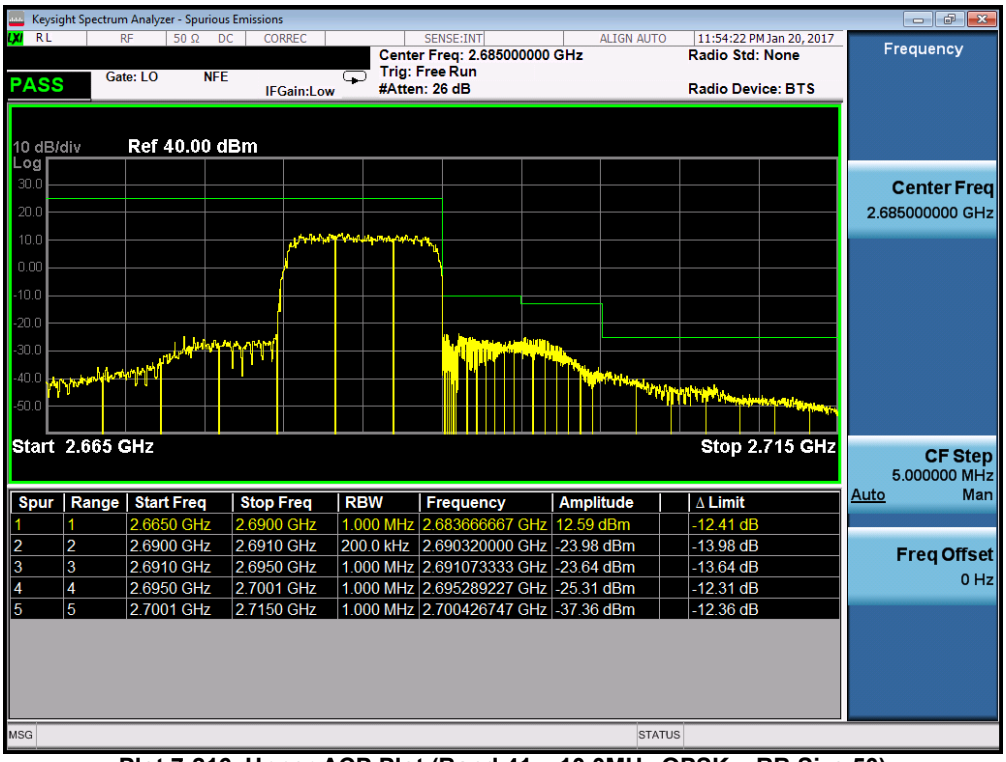


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.489880000 GHz	-33.09 dBm	-8.087 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.494947500 GHz	-26.99 dBm	-13.99 dB
3	3	2.4950 GHz	2.4960 GHz	100.0 kHz	2.495950000 GHz	-27.08 dBm	-14.08 dB
4	4	2.4960 GHz	2.5170 GHz	200.0 kHz	2.502020000 GHz	8.938 dBm	-16.06 dB

Plot 7-215. Lower 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	2.683666667 GHz	12.59 dBm	-12.41 dB
2	2	2.6900 GHz	2.6910 GHz	200.0 kHz	2.690320000 GHz	-23.98 dBm	-13.98 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.691073333 GHz	-23.64 dBm	-13.64 dB
4	4	2.6950 GHz	2.7001 GHz	1.000 MHz	2.695289227 GHz	-25.31 dBm	-12.31 dB
5	5	2.7001 GHz	2.7150 GHz	1.000 MHz	2.700426747 GHz	-37.36 dBm	-12.36 dB

Plot 7-216. Upper ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)

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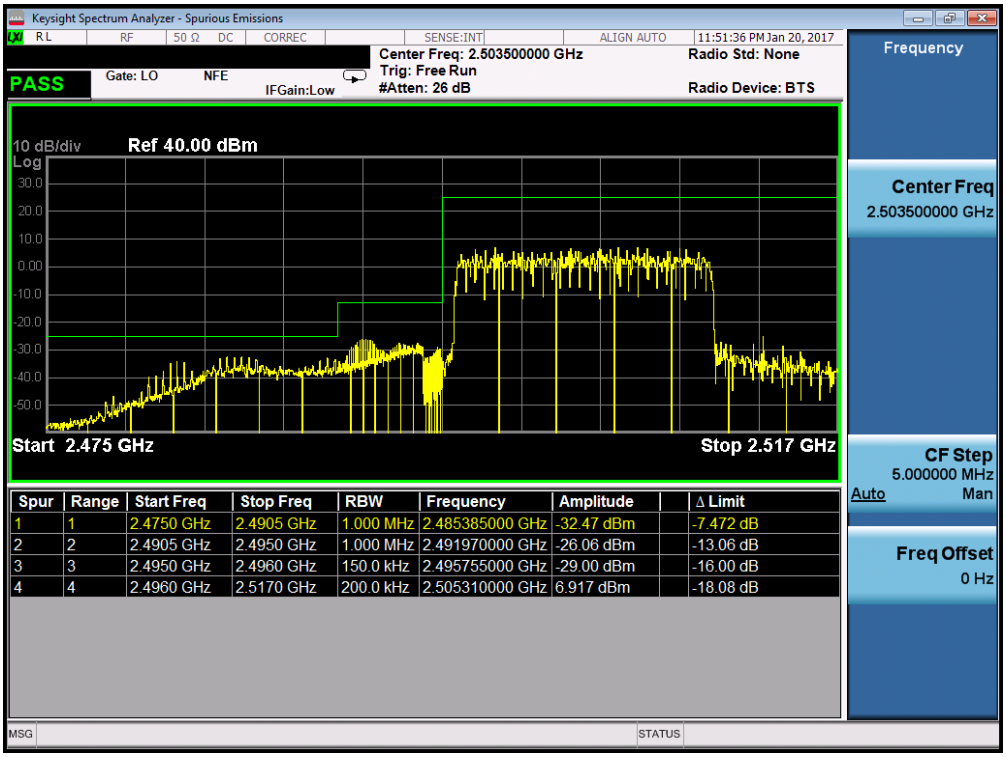
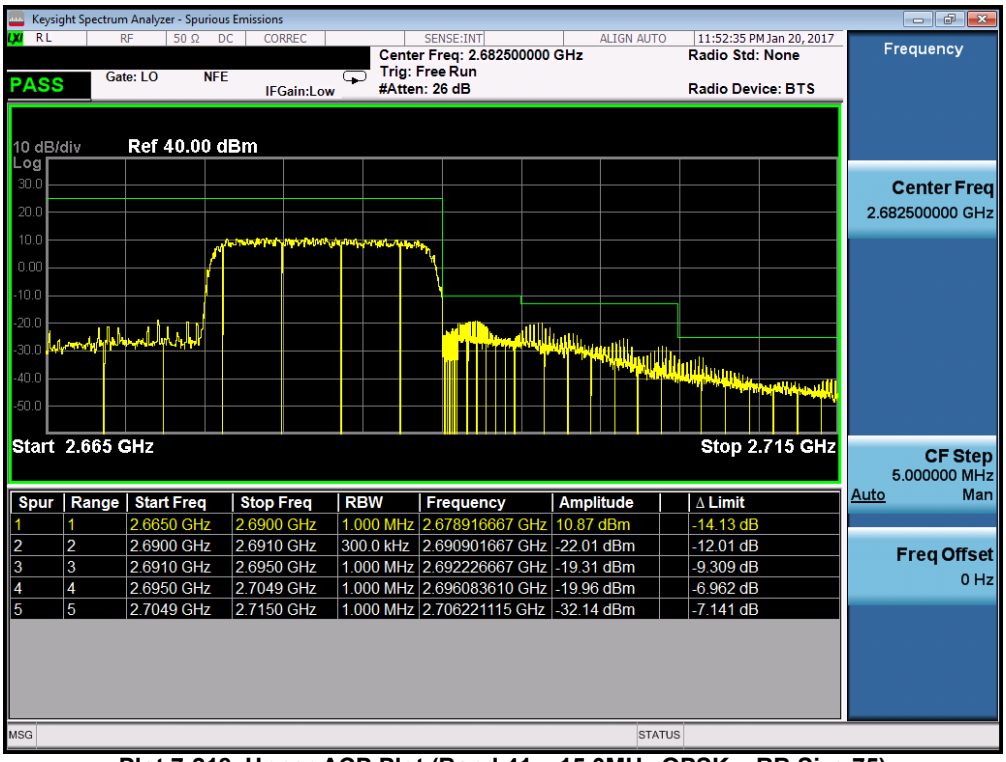


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4905 GHz	1.000 MHz	2.485385000 GHz	-32.47 dBm	-7.472 dB
2	2	2.4905 GHz	2.4950 GHz	1.000 MHz	2.491970000 GHz	-26.06 dBm	-13.06 dB
3	3	2.4950 GHz	2.4960 GHz	150.0 kHz	2.495755000 GHz	-29.00 dBm	-16.00 dB
4	4	2.4960 GHz	2.5170 GHz	200.0 kHz	2.505310000 GHz	6.917 dBm	-18.08 dB

Plot 7-217. Lower ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.6650 GHz	2.6900 GHz	1.000 MHz	2.678916667 GHz	10.87 dBm	-14.13 dB
2	2	2.6900 GHz	2.6910 GHz	300.0 kHz	2.690901667 GHz	-22.01 dBm	-12.01 dB
3	3	2.6910 GHz	2.6950 GHz	1.000 MHz	2.692226667 GHz	-19.31 dBm	-9.309 dB
4	4	2.6950 GHz	2.7049 GHz	1.000 MHz	2.696083610 GHz	-19.96 dBm	-6.962 dB
5	5	2.7049 GHz	2.7150 GHz	1.000 MHz	2.706221115 GHz	-32.14 dBm	-7.141 dB

Plot 7-218. Upper ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)

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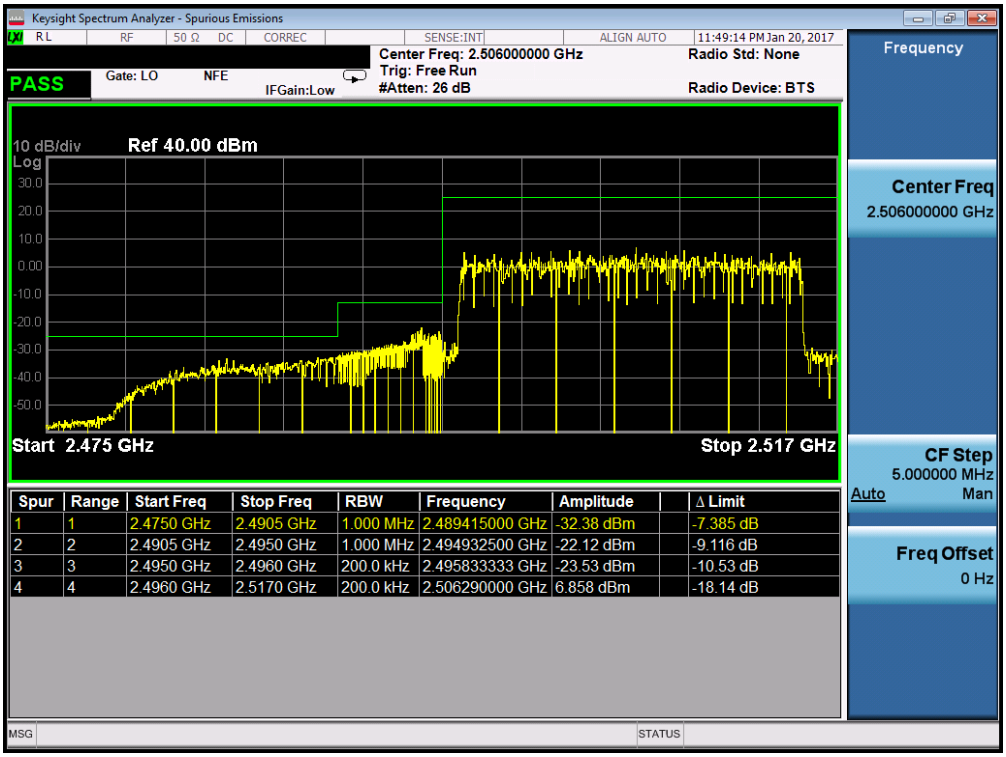
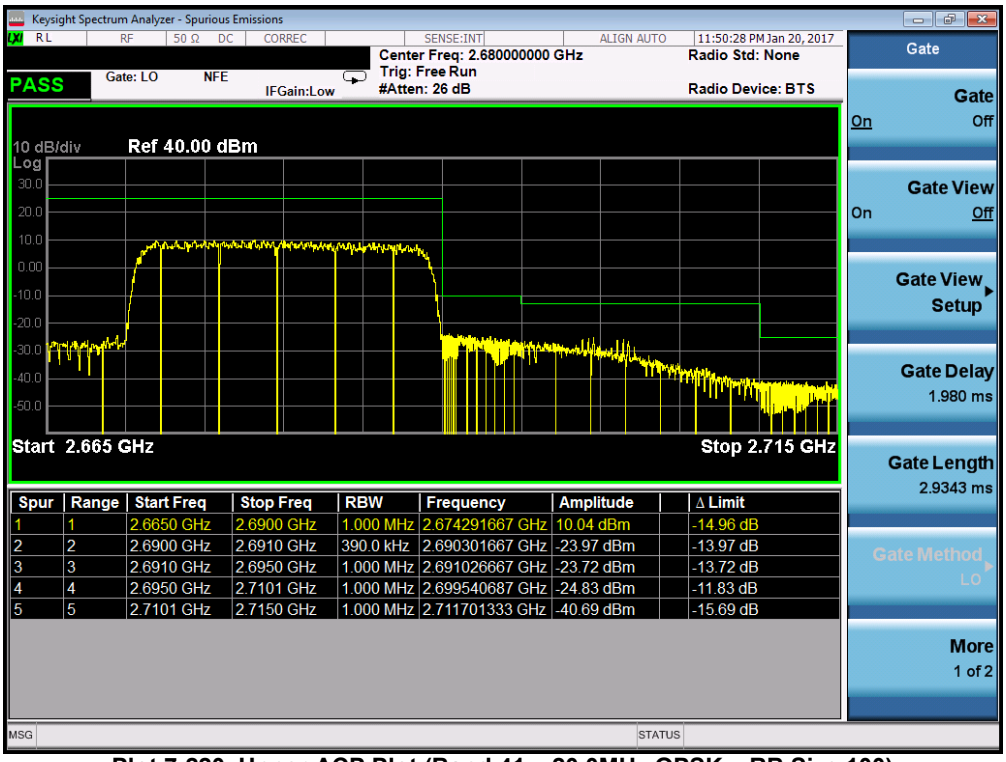


Plot 7-219. Lower ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)



Plot 7-220. Upper ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)

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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.

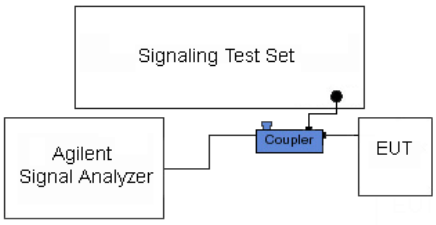

Figure 7-4. Test Instrument & Measurement Setup

Test Notes

None.

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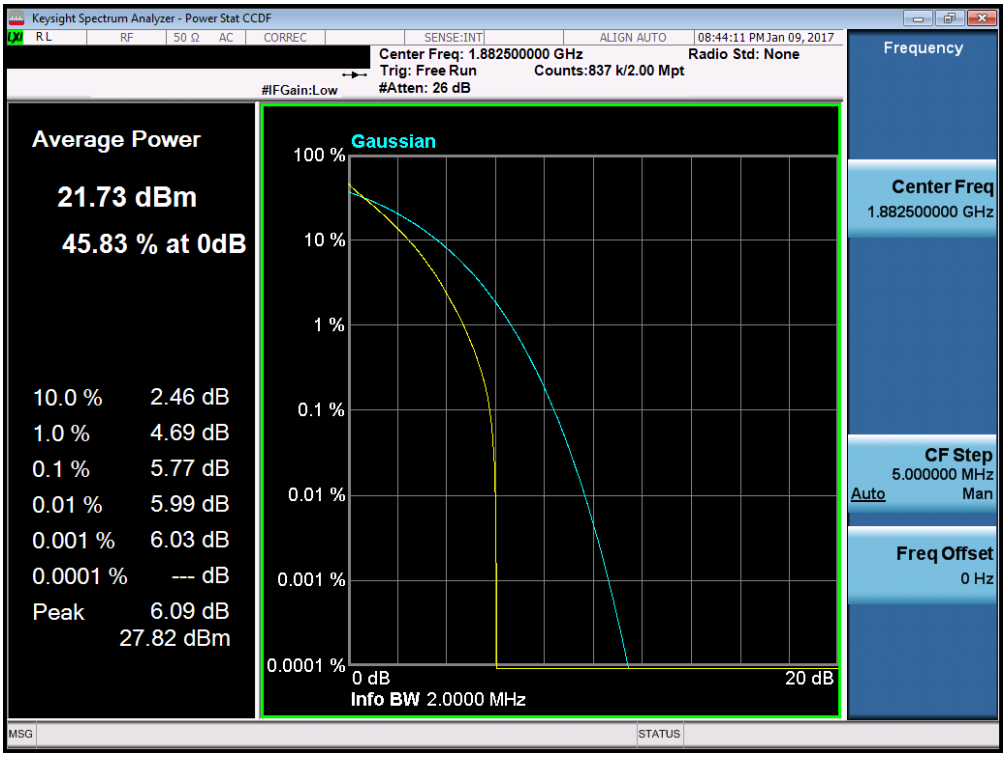
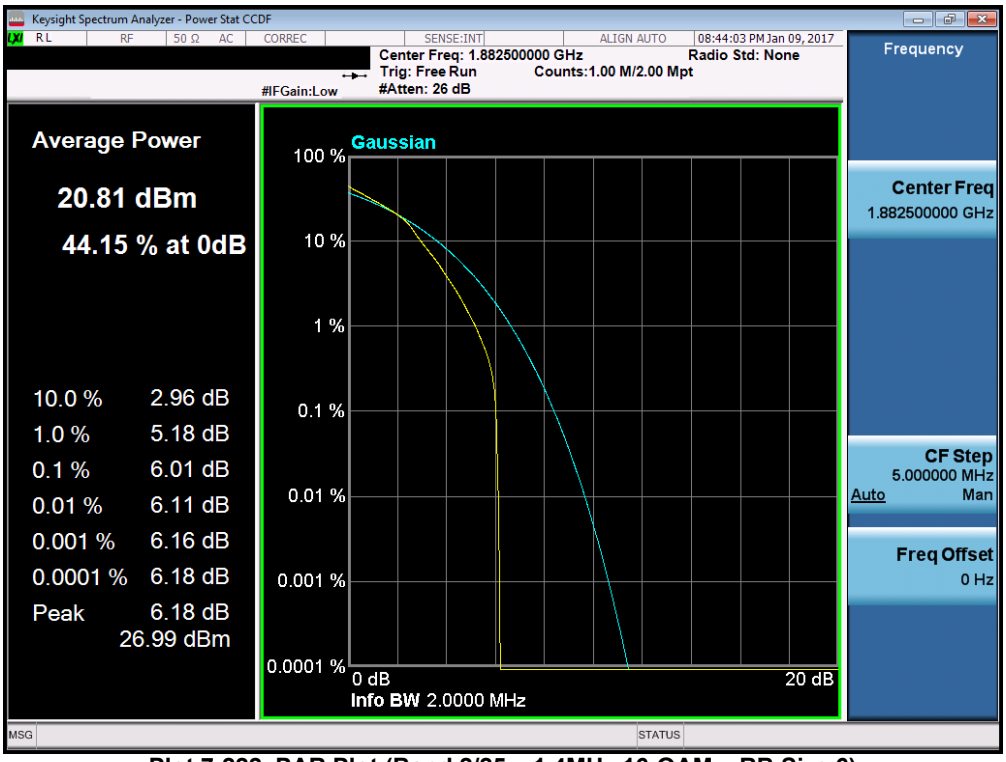


Plot 7-221. PAR Plot (Band 2/25 – 1.4MHz QPSK – RB Size 6)



Plot 7-222. PAR Plot (Band 2/25 – 1.4MHz 16-QAM – RB Size 6)

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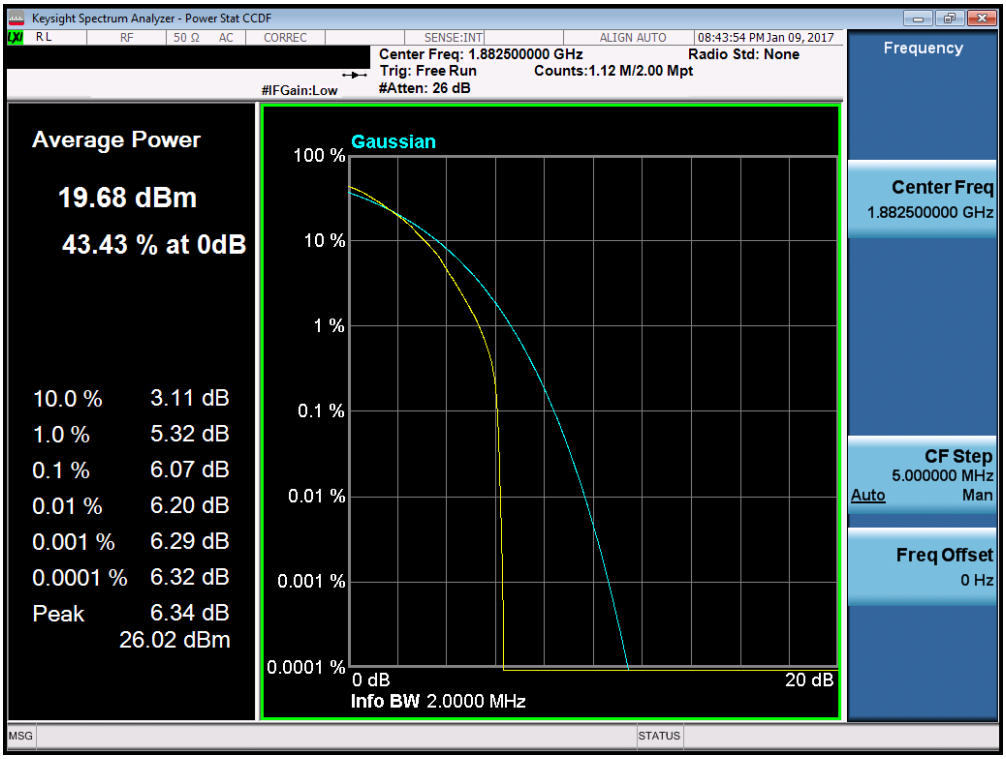
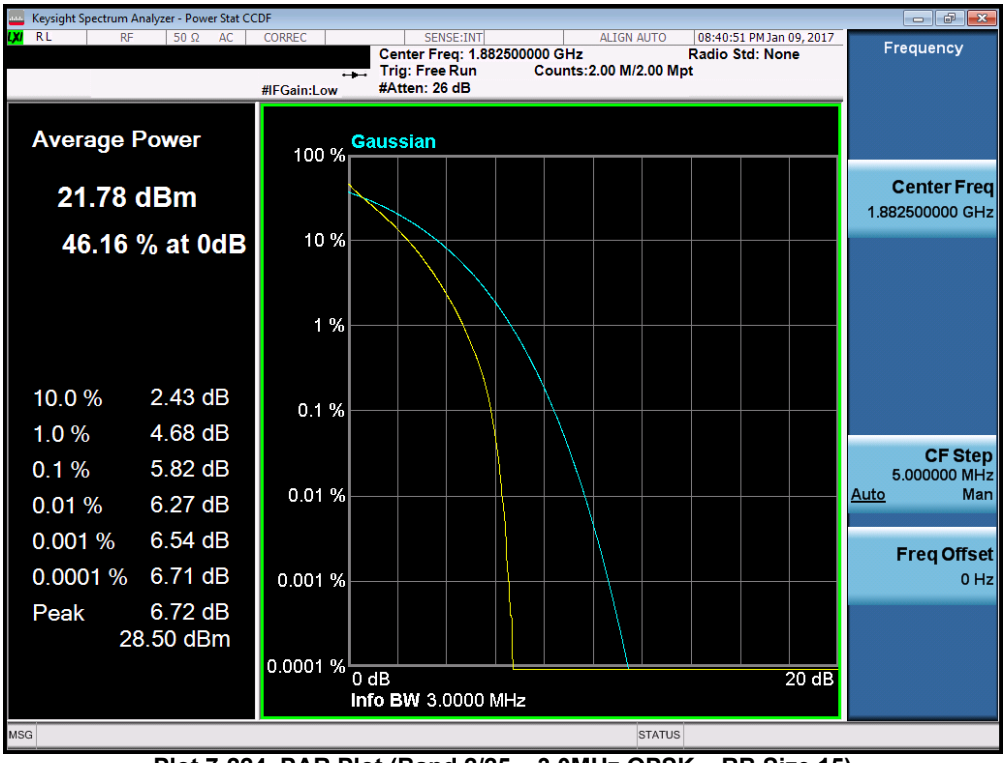


Plot 7-223. PAR Plot (Band 2/25 – 1.4MHz 64-QAM – RB Size 6)



Plot 7-224. PAR Plot (Band 2/25 – 3.0MHz QPSK – RB Size 15)

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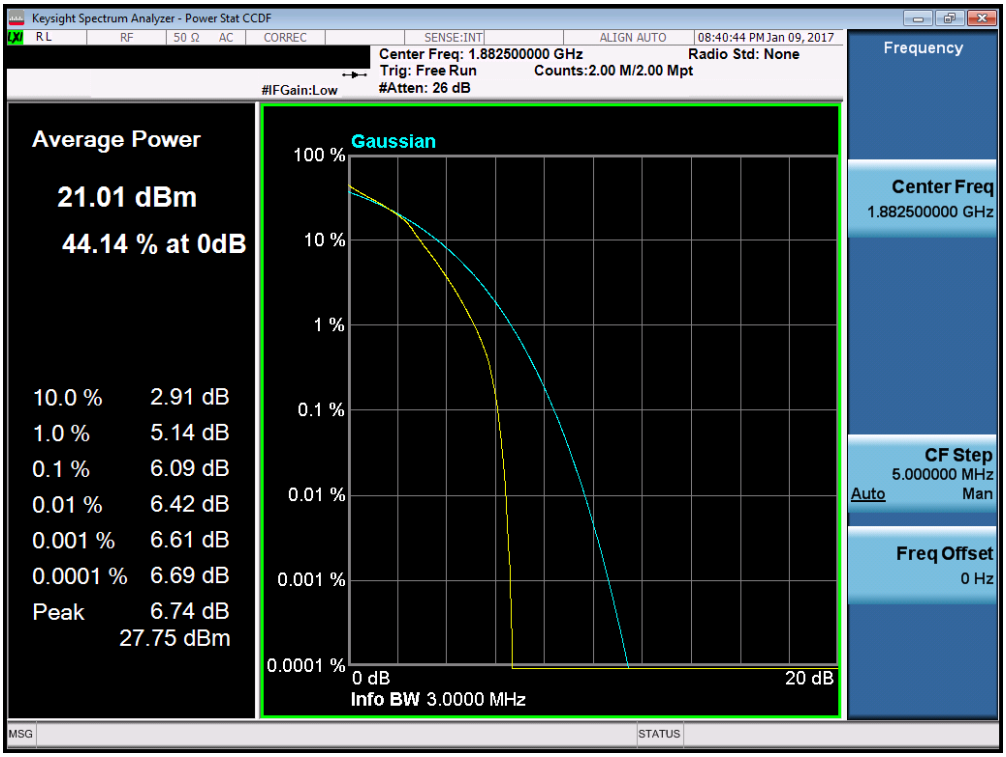
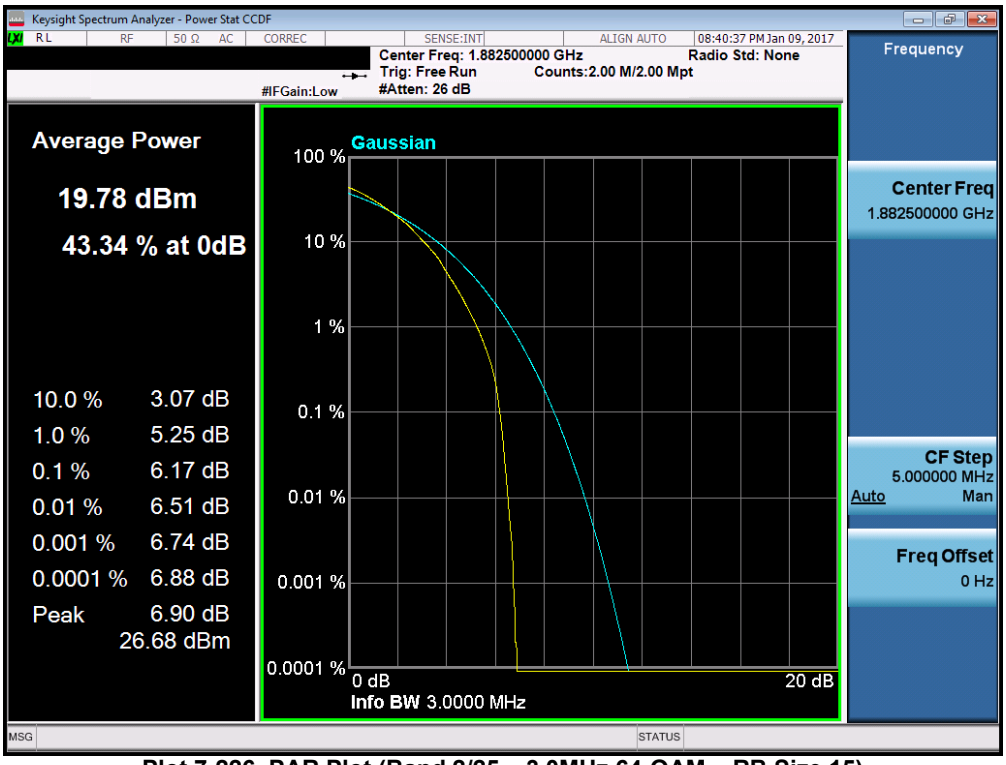


Plot 7-225. PAR Plot (Band 2/25 – 3.0MHz 16-QAM – RB Size 15)



Plot 7-226. PAR Plot (Band 2/25 – 3.0MHz 64-QAM – RB Size 15)

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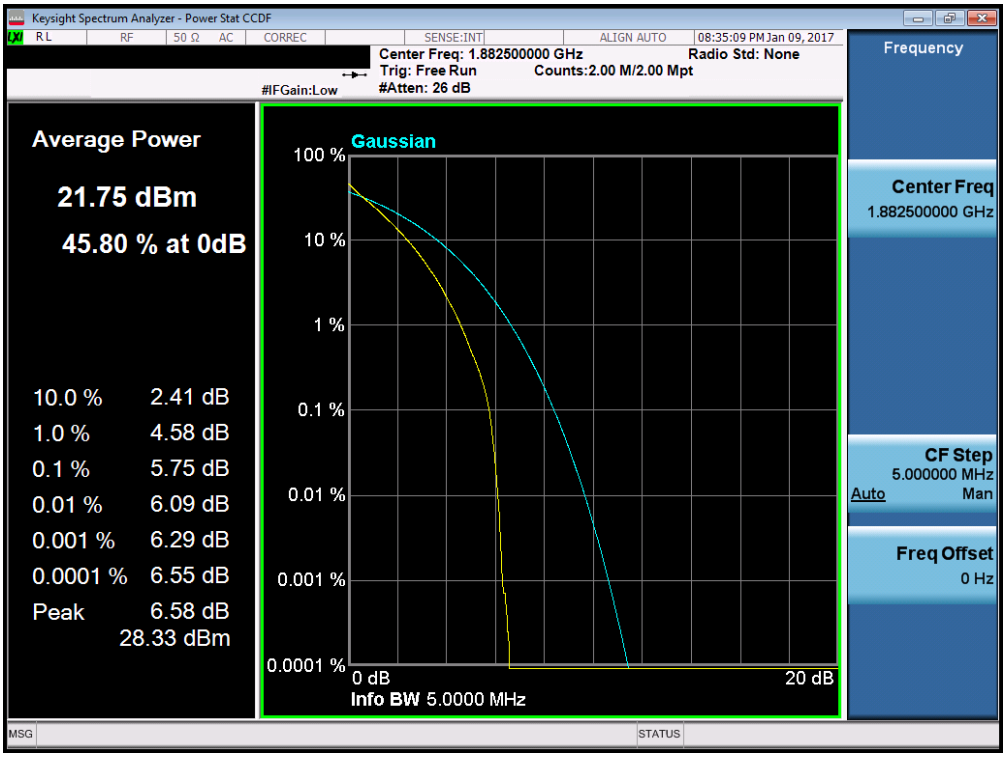
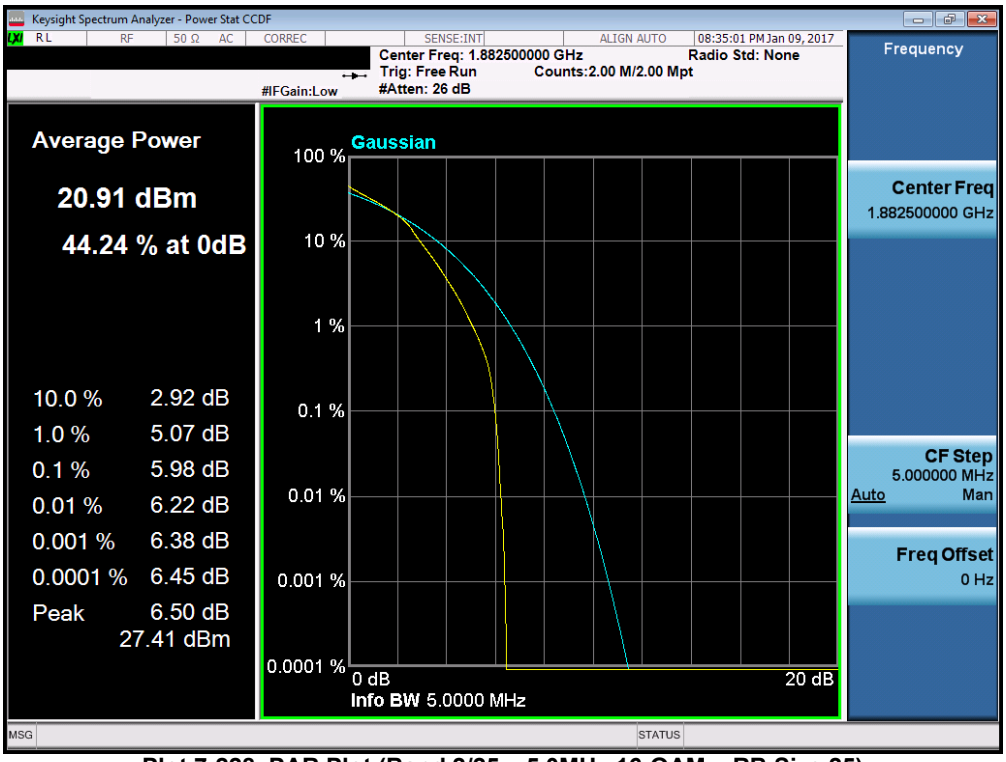


Plot 7-227. PAR Plot (Band 2/25 – 5.0MHz QPSK – RB Size 25)



Plot 7-228. PAR Plot (Band 2/25 – 5.0MHz 16-QAM – RB Size 25)

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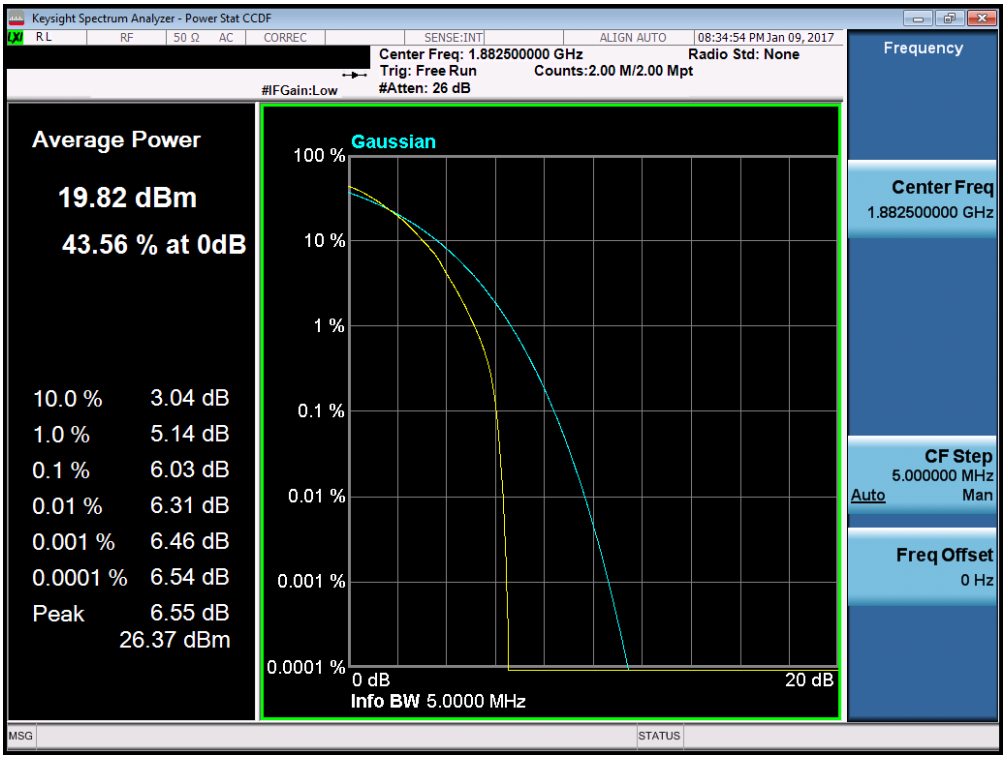
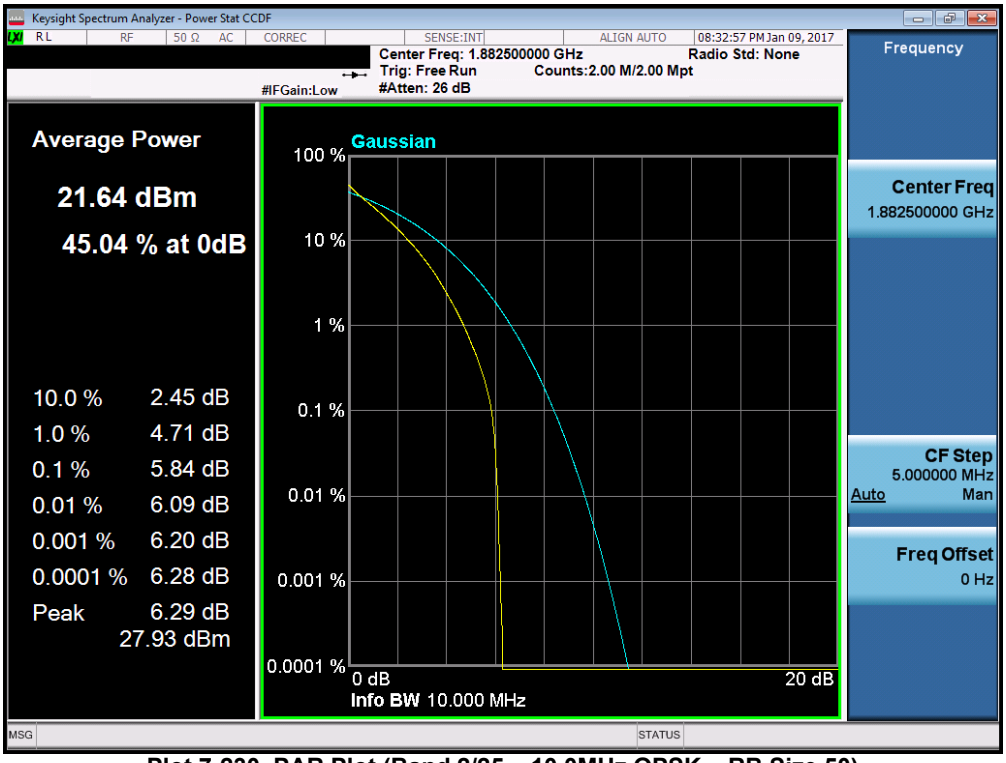


Plot 7-229. PAR Plot (Band 2/25 – 5.0MHz 64-QAM – RB Size 25)



Plot 7-230. PAR Plot (Band 2/25 – 10.0MHz QPSK – RB Size 50)

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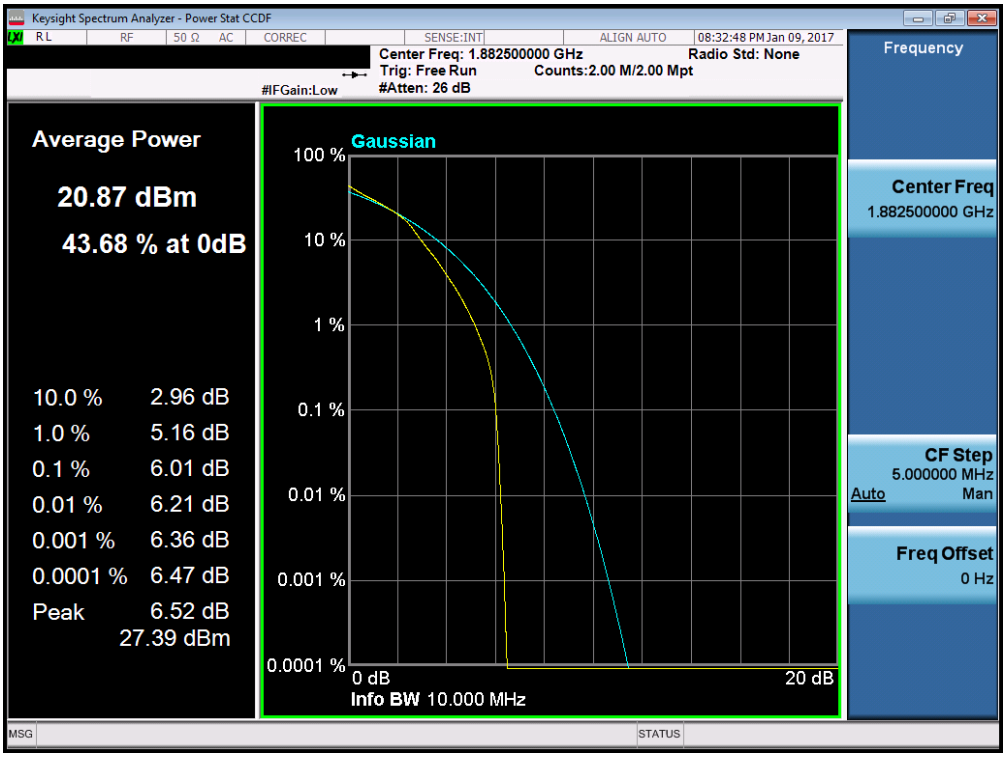
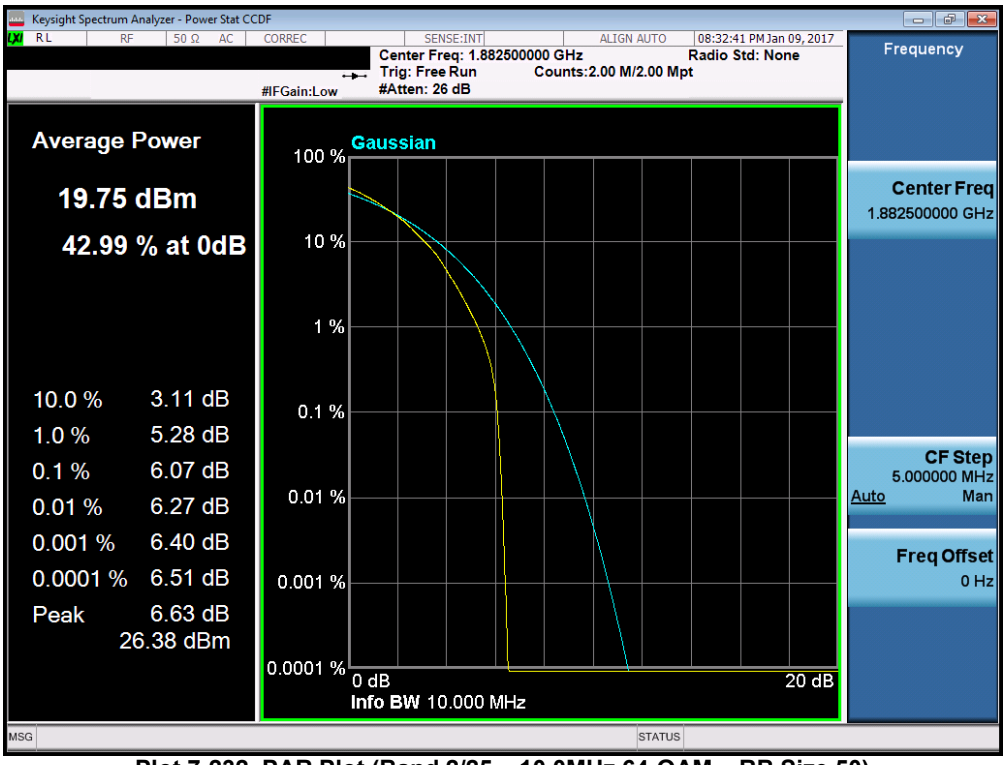


Plot 7-231. PAR Plot (Band 2/25 – 10.0MHz 16-QAM – RB Size 50)



Plot 7-232. PAR Plot (Band 2/25 – 10.0MHz 64-QAM – RB Size 50)

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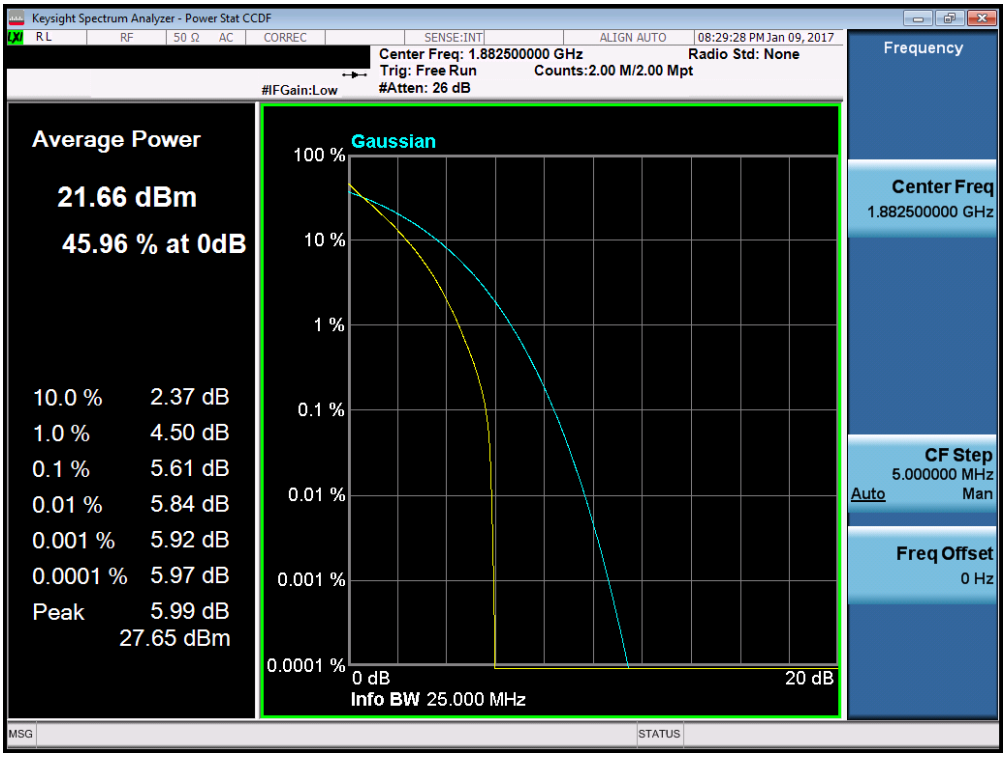
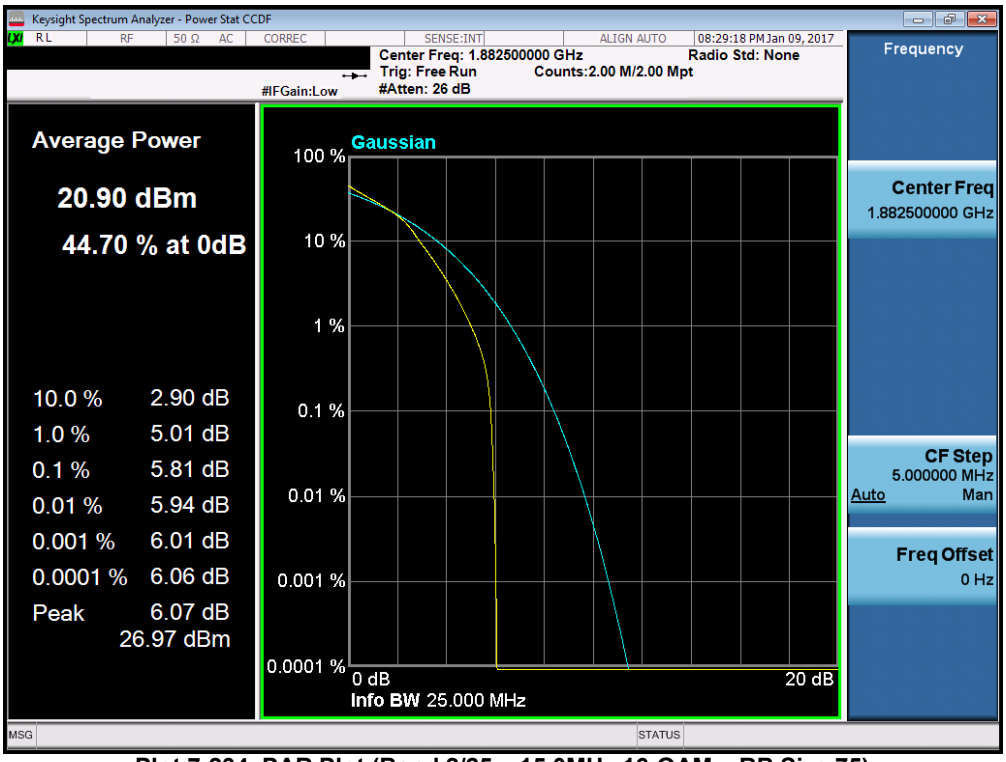


Plot 7-233. PAR Plot (Band 2/25 – 15.0MHz QPSK – RB Size 75)



Plot 7-234. PAR Plot (Band 2/25 – 15.0MHz 16-QAM – RB Size 75)

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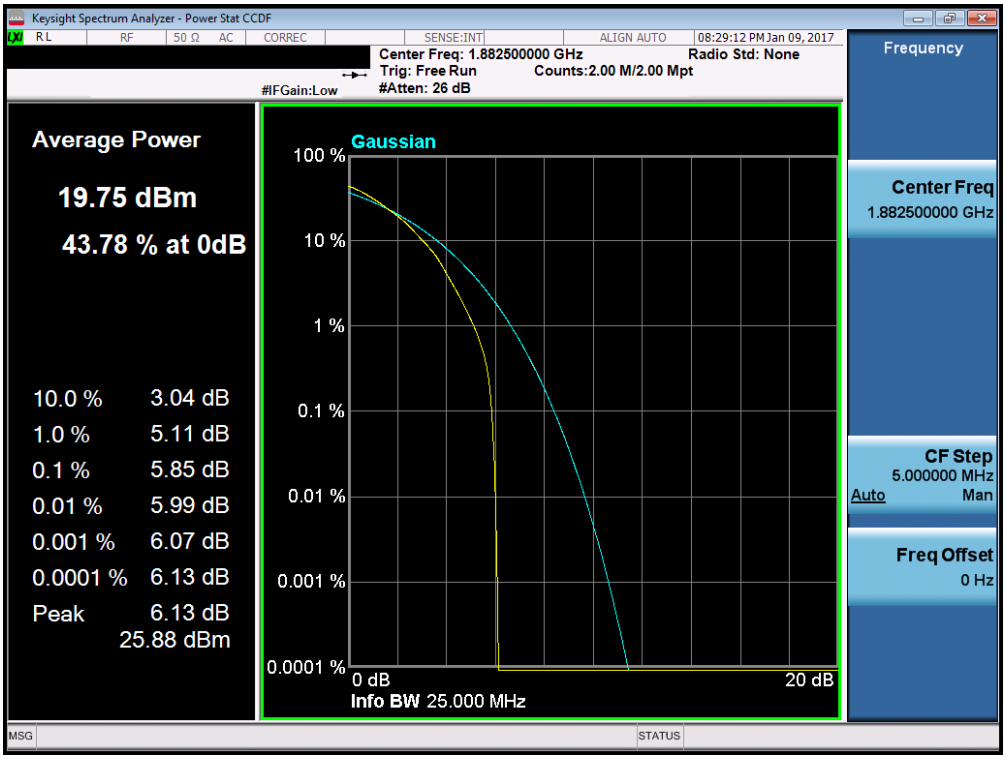
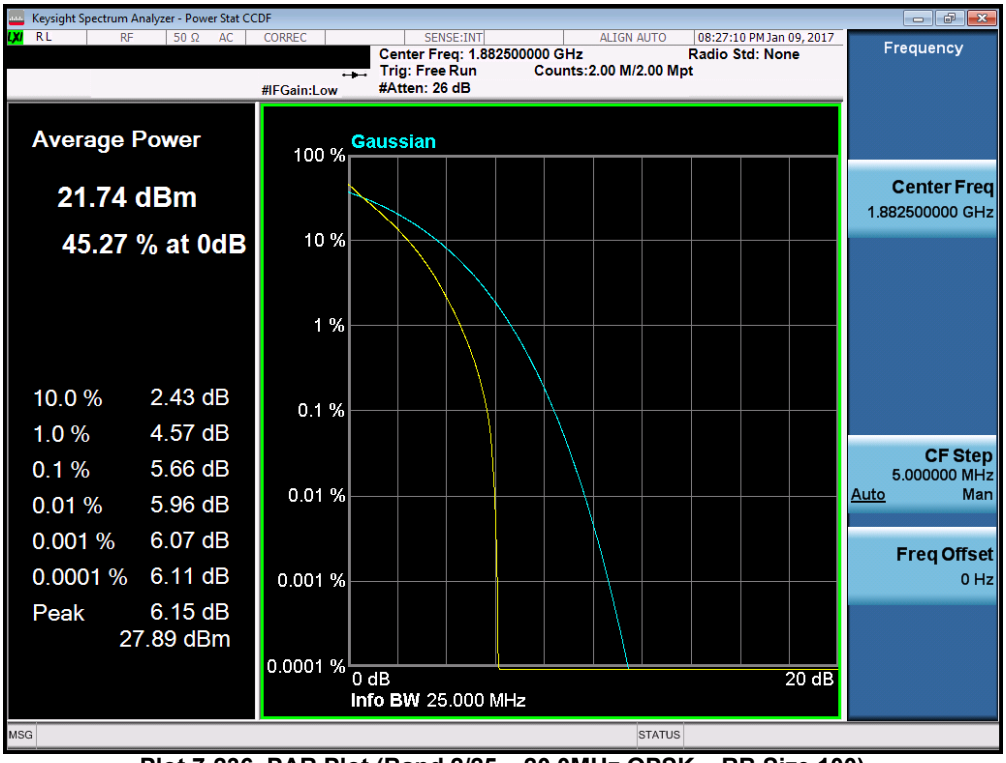


Plot 7-235. PAR Plot (Band 2/25 – 15.0MHz 64-QAM – RB Size 75)



Plot 7-236. PAR Plot (Band 2/25 – 20.0MHz QPSK – RB Size 100)

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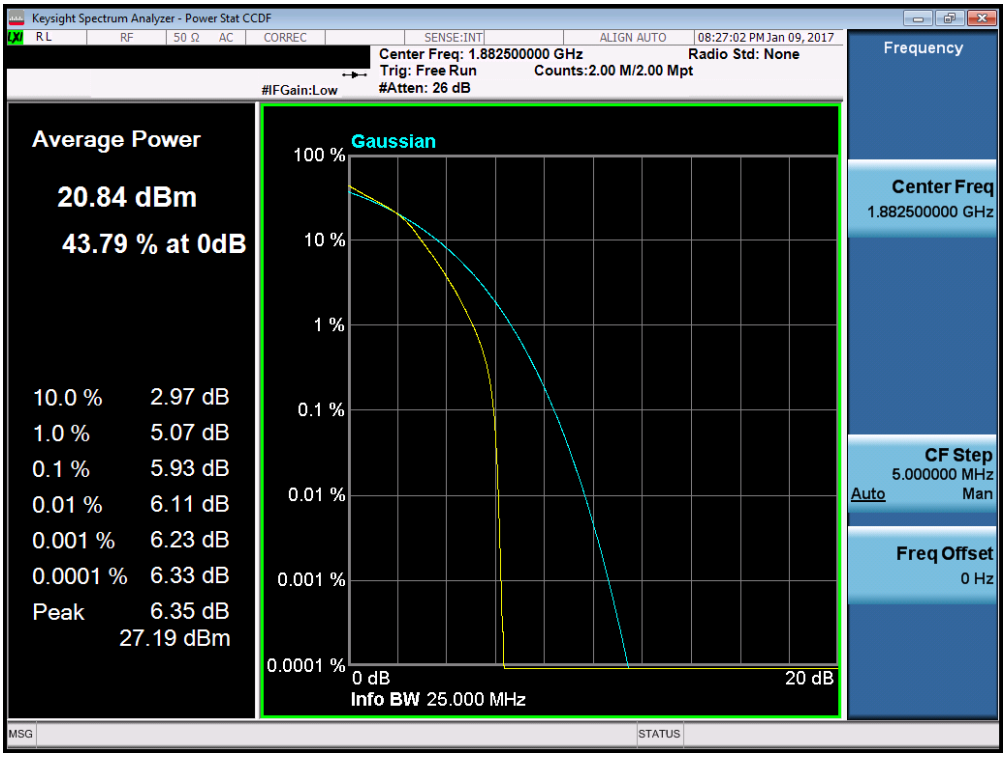
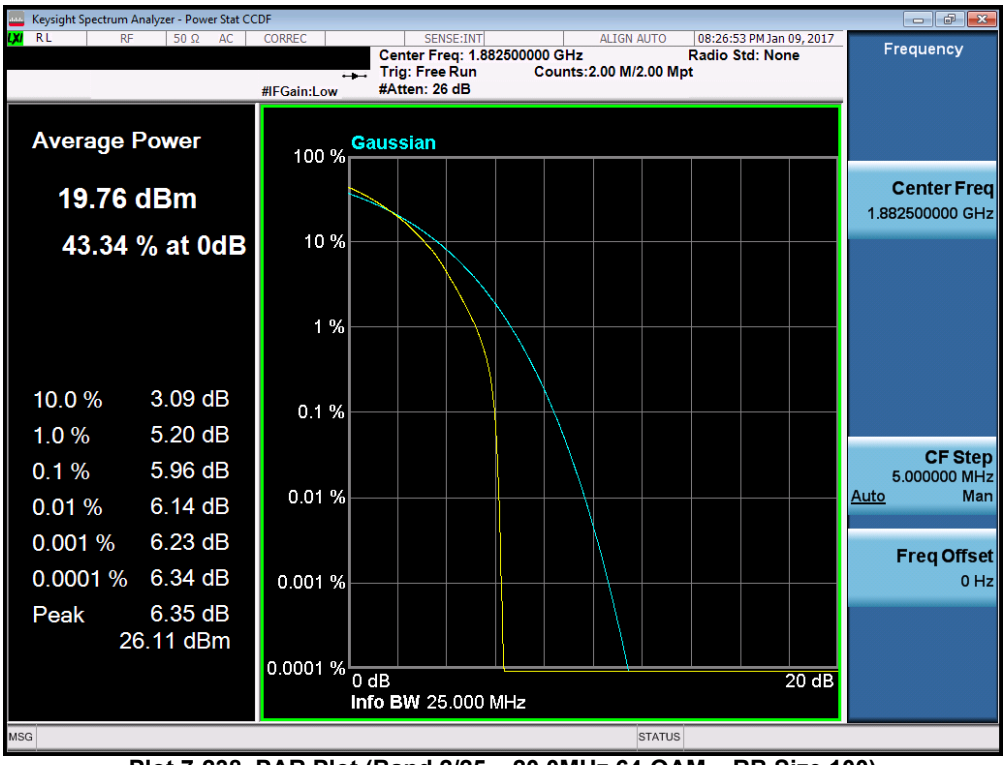


Plot 7-237. PAR Plot (Band 2/25 – 20.0MHz 16-QAM – RB Size 100)



Plot 7-238. PAR Plot (Band 2/25 – 20.0MHz 64-QAM – RB Size 100)

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7.6 Radiated Power (ERP/EIRP)

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

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Test Setup

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

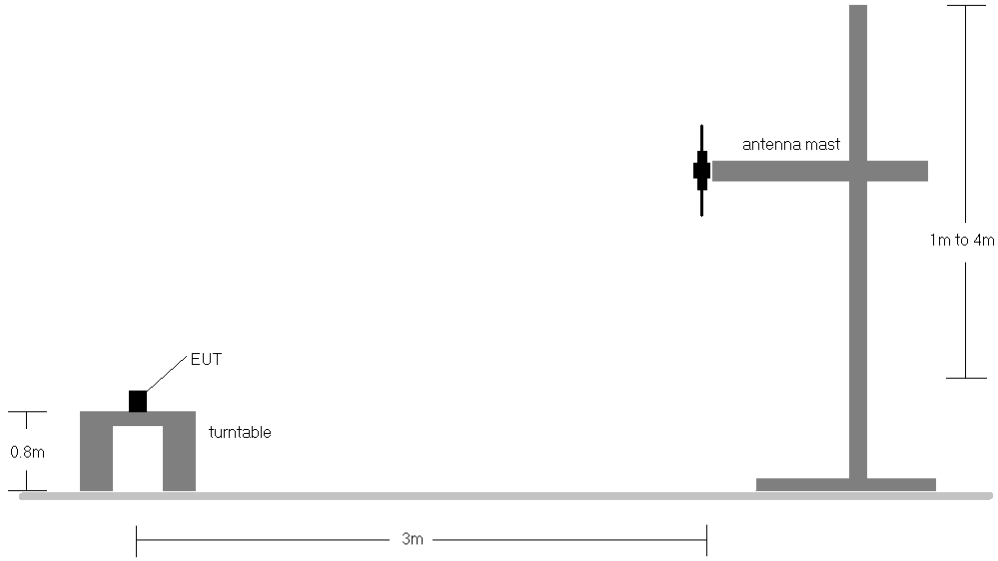

Figure 7-5. Radiated Test Setup <1GHz

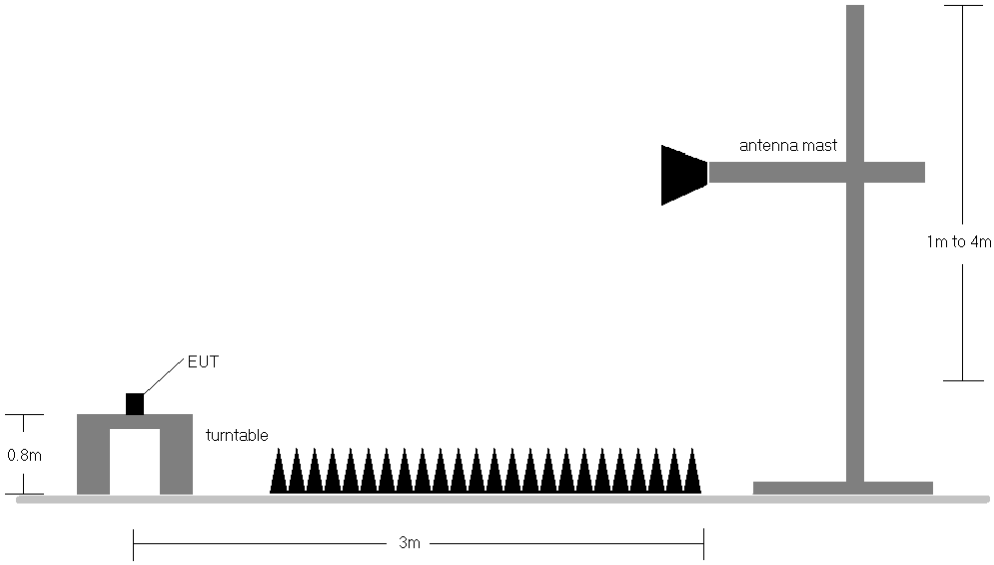

Figure 7-6. Radiated Test Setup >1GHz

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.

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7.6.1 Radiated Power (ERP/EIRP)

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	150	87	1 / 5	18.77	-1.05	17.72	34.77	-17.05
707.50	1.4	QPSK	V	150	87	1 / 5	19.04	-1.02	18.02	34.77	-16.75
715.30	1.4	QPSK	V	150	87	1 / 5	19.99	-0.99	19.00	34.77	-15.77
715.30	1.4	16-QAM	V	150	87	1 / 5	18.66	-0.99	17.67	34.77	-17.10
715.30	1.4	64-QAM	V	150	87	1 / 5	17.74	-0.99	16.75	34.77	-18.02
700.50	3	QPSK	V	150	87	1 / 14	18.95	-1.05	17.90	34.77	-16.87
707.50	3	QPSK	V	150	87	1 / 0	18.92	-1.02	17.90	34.77	-16.87
714.50	3	QPSK	V	150	87	1 / 14	19.87	-0.99	18.88	34.77	-15.89
714.50	3	16-QAM	V	150	87	1 / 14	18.64	-0.99	17.65	34.77	-17.12
714.50	3	64-QAM	V	150	87	1 / 14	17.63	-0.99	16.64	34.77	-18.13
715.30	1.4	QPSK	H	150	101	1 / 74	17.86	-0.99	16.87	34.77	-17.90
715.30	1.4 (WCP)	QPSK	H	150	215	1 / 74	17.54	-0.99	16.55	34.77	-18.22

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]
701.50	5	QPSK	V	150	87	1 / 24	19.05	-1.04	18.01	34.77	-16.76
707.50	5	QPSK	V	150	87	1 / 0	18.88	-1.02	17.86	34.77	-16.91
713.50	5	QPSK	V	150	87	1 / 24	19.87	-1.00	18.87	34.77	-15.90
713.50	5	16-QAM	V	150	87	1 / 24	18.71	-1.00	17.71	34.77	-17.06
713.50	5	64-QAM	V	150	87	1 / 24	17.64	-1.00	16.64	34.77	-18.13
704.00	10	QPSK	V	150	87	1 / 49	18.97	-1.03	17.94	34.77	-16.83
707.50	10	QPSK	V	150	87	1 / 49	18.95	-1.02	17.93	34.77	-16.84
711.00	10	QPSK	V	150	87	1 / 49	19.58	-1.01	18.57	34.77	-16.20
704.00	10	16-QAM	V	150	87	1 / 49	17.79	-1.03	16.76	34.77	-18.01
704.00	10	64-QAM	V	150	87	1 / 49	16.75	-1.03	15.72	34.77	-19.05

Table 7-3. ERP Data (Band 12/17)

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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]
779.50	5	QPSK	H	150	90	1 / 0	17.63	-0.83	16.80	34.77	-17.97
782.00	5	QPSK	H	150	90	1 / 0	18.32	-0.82	17.50	34.77	-17.27
784.50	5	QPSK	H	150	90	1 / 0	18.43	-0.81	17.62	34.77	-17.15
784.50	5	16-QAM	H	150	90	1 / 0	17.30	-0.81	16.49	34.77	-18.28
784.50	5	64-QAM	H	150	90	1 / 0	16.17	-0.81	15.36	34.77	-19.41
782.00	10	QPSK	H	150	90	1 / 0	18.30	-0.82	17.48	34.77	-17.29
782.00	10	16-QAM	H	150	90	1 / 0	17.23	-0.82	16.41	34.77	-18.36
782.00	10	64-QAM	H	150	90	1 / 0	15.38	-0.82	14.56	34.77	-20.21
784.50	5	QPSK	V	150	335	1 / 0	16.43	-0.81	15.62	34.77	-19.15
784.50	5 (WCP)	QPSK	H	150	91	1 / 0	17.52	-0.81	16.71	34.77	-18.06

Table 7-4. ERP Data (Band 13)

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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	150	0	1 / 5	19.82	-0.65	19.17	38.45	-19.28
836.50	1.4	QPSK	V	150	0	1 / 5	19.91	-0.65	19.26	38.45	-19.19
848.30	1.4	QPSK	V	150	0	1 / 5	20.55	-0.65	19.90	38.45	-18.55
848.30	1.4	16-QAM	V	150	0	1 / 5	19.47	-0.65	18.82	38.45	-19.63
848.30	1.4	64-QAM	V	150	0	1 / 5	18.38	-0.65	17.73	38.45	-20.72
825.50	3	QPSK	V	150	0	1 / 14	19.82	-0.65	19.17	38.45	-19.28
836.50	3	QPSK	V	150	0	1 / 14	19.85	-0.65	19.20	38.45	-19.25
847.50	3	QPSK	V	150	0	1 / 14	20.47	-0.65	19.82	38.45	-18.63
847.50	3	16-QAM	V	150	0	1 / 14	19.16	-0.65	18.51	38.45	-19.94
847.50	3	64-QAM	V	150	0	1 / 14	18.13	-0.65	17.48	38.45	-20.97
826.50	5	QPSK	V	150	0	1 / 24	19.66	-0.65	19.01	38.45	-19.44
836.50	5	QPSK	V	150	0	1 / 24	19.91	-0.65	19.26	38.45	-19.19
846.50	5	QPSK	V	150	0	1 / 24	20.21	-0.65	19.56	38.45	-18.89
846.50	5	16-QAM	V	150	0	1 / 24	18.89	-0.65	18.24	38.45	-20.21
846.50	5	64-QAM	V	150	0	1 / 24	17.82	-0.65	17.17	38.45	-21.28
829.00	10	QPSK	V	150	0	1 / 49	19.77	-0.65	19.12	38.45	-19.33
836.50	10	QPSK	V	150	0	1 / 49	19.89	-0.65	19.24	38.45	-19.21
844.00	10	QPSK	V	150	0	1 / 49	20.07	-0.65	19.42	38.45	-19.03
844.00	10	16-QAM	V	150	0	1 / 49	18.90	-0.65	18.25	38.45	-20.20
844.00	10	64-QAM	V	150	0	1 / 49	17.97	-0.65	17.32	38.45	-21.13
848.30	1.4	QPSK	H	150	86	1 / 74	19.58	-0.65	18.93	38.45	-19.52
848.30	1.4 (WCP)	QPSK	H	150	92	1 / 0	19.44	-0.65	18.79	38.45	-19.66

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

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
831.50	15	QPSK	V	150	0	1 / 0	19.88	-0.65	19.23	38.45	-19.22
836.50	15	QPSK	V	150	0	1 / 0	20.10	-0.65	19.45	38.45	-19.00
841.50	15	QPSK	V	150	0	1 / 74	20.39	-0.65	19.74	38.45	-18.71
841.50	15	16-QAM	V	150	0	1 / 74	19.21	-0.65	18.56	38.45	-19.89
841.50	15	64-QAM	V	150	0	1 / 74	18.16	-0.65	17.51	38.45	-20.94

Table 7-6. ERP Data (Band 26)

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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	H	150	81	1 / 0	18.93	5.65	24.58	30.00	-5.42
1745.00	1.4	QPSK	H	150	81	1 / 0	19.58	5.27	24.85	30.00	-5.15
1779.30	1.4	QPSK	H	150	81	1 / 0	18.30	4.90	23.20	30.00	-6.80
1745.00	1.4	16-QAM	H	150	81	1 / 0	18.50	5.27	23.77	30.00	-6.23
1745.00	1.4	64-QAM	H	150	81	1 / 0	17.41	5.27	22.68	30.00	-7.32
1711.50	3	QPSK	H	150	81	1 / 0	18.98	5.64	24.62	30.00	-5.38
1745.00	3	QPSK	H	150	81	1 / 0	19.59	5.27	24.86	30.00	-5.14
1778.50	3	QPSK	H	150	81	1 / 0	18.30	4.91	23.21	30.00	-6.79
1745.00	3	16-QAM	H	150	81	1 / 0	18.47	5.27	23.74	30.00	-6.26
1745.00	3	64-QAM	H	150	81	1 / 0	17.45	5.27	22.72	30.00	-7.28
1712.50	5	QPSK	H	150	81	1 / 0	18.92	5.63	24.55	30.00	-5.45
1745.00	5	QPSK	H	150	81	1 / 0	19.64	5.27	24.91	30.00	-5.09
1777.50	5	QPSK	H	150	81	1 / 0	18.42	4.92	23.34	30.00	-6.66
1745.00	5	16-QAM	H	150	81	1 / 0	18.36	5.27	23.63	30.00	-6.37
1745.00	5	64-QAM	H	150	81	1 / 0	17.29	5.27	22.56	30.00	-7.44
1715.00	10	QPSK	H	150	81	1 / 0	19.01	5.60	24.61	30.00	-5.39
1745.00	10	QPSK	H	150	81	1 / 0	19.68	5.27	24.95	30.00	-5.05
1775.00	10	QPSK	H	150	81	1 / 0	18.72	4.95	23.67	30.00	-6.33
1745.00	10	16-QAM	H	150	81	1 / 0	18.58	5.27	23.85	30.00	-6.15
1745.00	10	64-QAM	H	150	81	1 / 0	17.54	5.27	22.81	30.00	-7.19
1717.50	15	QPSK	H	150	81	1 / 0	19.09	5.57	24.66	30.00	-5.34
1745.00	15	QPSK	H	150	81	1 / 0	19.75	5.27	25.02	30.00	-4.98
1772.50	15	QPSK	H	150	81	1 / 0	19.14	4.97	24.11	30.00	-5.89
1745.00	15	16-QAM	H	150	81	1 / 0	18.56	5.27	23.83	30.00	-6.17
1745.00	15	64-QAM	H	150	81	1 / 0	17.53	5.27	22.80	30.00	-7.20
1720.00	20	QPSK	H	150	81	1 / 0	18.95	5.54	24.49	30.00	-5.51
1745.00	20	QPSK	H	150	81	1 / 0	19.98	5.27	25.25	30.00	-4.75
1770.00	20	QPSK	H	150	81	1 / 0	19.29	5.00	24.29	30.00	-5.71
1745.00	20	16-QAM	H	150	81	1 / 0	18.62	5.27	23.89	30.00	-6.11
1745.00	20	64-QAM	H	150	81	1 / 0	17.57	5.27	22.84	30.00	-7.16
1745.00	20	QPSK	V	150	0	1 / 0	17.46	5.27	22.73	30.00	-7.27
1745.00	20 (WCP)	QPSK	H	150	0	1 / 0	14.14	5.32	19.46	30.00	-10.54

Table 7-7. EIRP Data (Band 4/66)

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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	H	150	85	1 / 0	18.45	4.82	23.27	33.01	-9.74
1882.50	1.4	QPSK	H	150	85	1 / 5	19.00	4.73	23.73	33.01	-9.28
1914.30	1.4	QPSK	H	150	85	1 / 0	20.04	4.68	24.72	33.01	-8.29
1914.30	1.4	16-QAM	H	150	85	1 / 0	18.64	4.68	23.32	33.01	-9.69
1914.30	1.4	64-QAM	H	150	85	1 / 0	17.59	4.68	22.27	33.01	-10.74
1851.50	3	QPSK	H	150	85	1 / 0	18.54	4.82	23.36	33.01	-9.65
1882.50	3	QPSK	H	150	85	1 / 14	19.13	4.73	23.86	33.01	-9.15
1913.50	3	QPSK	H	150	85	1 / 0	19.97	4.68	24.65	33.01	-8.36
1913.50	3	16-QAM	H	150	85	1 / 0	18.59	4.68	23.27	33.01	-9.74
1913.50	3	64-QAM	H	150	85	1 / 0	17.52	4.68	22.20	33.01	-10.81
1852.50	5	QPSK	H	150	85	1 / 0	18.53	4.81	23.34	33.01	-9.67
1882.50	5	QPSK	H	150	85	1 / 0	19.15	4.73	23.88	33.01	-9.13
1912.50	5	QPSK	H	150	85	1 / 24	20.04	4.68	24.72	33.01	-8.29
1912.50	5	16-QAM	H	150	85	1 / 24	18.76	4.68	23.44	33.01	-9.57
1912.50	5	64-QAM	H	150	85	1 / 24	17.71	4.68	22.39	33.01	-10.62
1855.00	10	QPSK	H	150	85	1 / 49	18.45	4.81	23.26	33.01	-9.75
1882.50	10	QPSK	H	150	85	1 / 49	18.93	4.73	23.66	33.01	-9.35
1910.00	10	QPSK	H	150	85	1 / 49	20.00	4.68	24.68	33.01	-8.33
1910.00	10	16-QAM	H	150	85	1 / 49	18.70	4.68	23.38	33.01	-9.63
1910.00	10	64-QAM	H	150	85	1 / 49	17.63	4.68	22.31	33.01	-10.70
1857.50	15	QPSK	H	150	85	1 / 74	18.63	4.80	23.43	33.01	-9.58
1882.50	15	QPSK	H	150	85	1 / 74	19.01	4.73	23.74	33.01	-9.27
1907.50	15	QPSK	H	150	85	1 / 74	19.64	4.68	24.32	33.01	-8.69
1907.50	15	16-QAM	H	150	85	1 / 74	18.42	4.68	23.10	33.01	-9.91
1907.50	15	64-QAM	H	150	85	1 / 74	17.32	4.68	22.00	33.01	-11.01
1860.00	20	QPSK	H	150	85	1 / 99	18.78	4.79	23.57	33.01	-9.44
1882.50	20	QPSK	H	150	85	1 / 99	19.08	4.73	23.81	33.01	-9.20
1905.00	20	QPSK	H	150	85	1 / 99	19.78	4.68	24.46	33.01	-8.55
1905.00	20	16-QAM	H	150	85	1 / 99	18.55	4.68	23.23	33.01	-9.78
1905.00	20	64-QAM	H	150	85	1 / 99	17.53	4.68	22.21	33.01	-10.80
1914.30	1.4	QPSK	V	150	78	1 / 0	19.34	4.85	24.19	33.01	-8.82
1914.30	1.4 (WCP)	QPSK	H	150	18	1 / 0	15.82	4.68	20.50	33.01	-12.51

Table 7-8. EIRP Data (Band 2/25)

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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	150	104	1 / 0	14.84	5.73	20.57	33.01	-12.44
2593.00	5	QPSK	H	150	104	1 / 24	15.23	6.07	21.30	33.01	-11.71
2687.50	5	QPSK	H	150	104	1 / 0	13.28	6.48	19.76	33.01	-13.25
2593.00	5	16-QAM	H	150	104	1 / 24	14.07	6.07	20.14	33.01	-12.87
2593.00	5	64-QAM	H	150	104	1 / 24	13.01	6.07	19.08	33.01	-13.93
2501.00	10	QPSK	H	150	104	1 / 0	15.00	5.73	20.73	33.01	-12.28
2593.00	10	QPSK	H	150	104	1 / 49	15.03	6.07	21.10	33.01	-11.91
2685.00	10	QPSK	H	150	104	1 / 0	13.29	6.47	19.76	33.01	-13.25
2593.00	10	16-QAM	H	150	104	1 / 49	14.29	6.07	20.36	33.01	-12.65
2593.00	10	64-QAM	H	150	104	1 / 49	13.18	6.07	19.25	33.01	-13.76
2503.50	15	QPSK	H	150	104	1 / 0	15.21	5.74	20.95	33.01	-12.06
2593.00	15	QPSK	H	150	104	1 / 0	14.83	6.07	20.90	33.01	-12.11
2682.50	15	QPSK	H	150	104	1 / 0	13.28	6.46	19.74	33.01	-13.27
2503.50	15	16-QAM	H	150	104	1 / 0	13.99	5.74	19.73	33.01	-13.28
2503.50	15	64-QAM	H	150	104	1 / 0	12.87	5.74	18.61	33.01	-14.40
2506.00	20	QPSK	H	150	104	1 / 99	16.07	5.75	21.82	33.01	-11.19
2593.00	20	QPSK	H	150	104	1 / 0	15.56	6.07	21.63	33.01	-11.38
2680.00	20	QPSK	H	150	104	1 / 0	13.22	6.45	19.67	33.01	-13.34
2593.00	20	16-QAM	H	150	104	1 / 0	14.21	6.07	20.28	33.01	-12.73
2593.00	20	64-QAM	H	150	104	1 / 0	13.10	6.07	19.17	33.01	-13.84
2506.00	20	QPSK	V	150	353	1 / 99	14.50	5.75	20.25	33.01	-12.76
2506.00	20 (WCP)	QPSK	H	150	41	1 / 0	14.95	5.75	20.70	33.01	-12.31

Table 7-9. EIRP Data (Band 41)

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7.7 Radiated Spurious Emissions Measurements

§2.1053 §22.917(a) §24.238(a) §27.53(c) §27.53(f) §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

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Test Setup

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

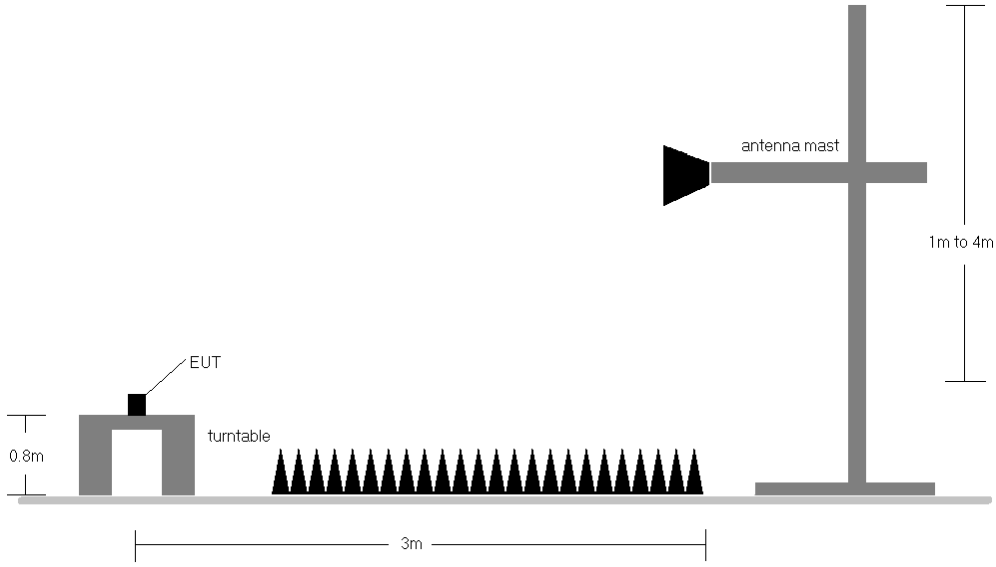

Figure 7-7. Test Instrument & Measurement Setup

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.

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7.7.1 Radiated Spurious Emissions Measurements

OPERATING FREQUENCY:	699.70	MHz		
CHANNEL:	23017			
MEASURED OUTPUT POWER:	17.72	dBm	=	0.059 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	1.4	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	30.72	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]
1399.40	H	158	125	-73.00	5.57	-67.42	85.1
2099.10	H	-	-	-75.10	6.65	-68.45	86.2

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

OPERATING FREQUENCY:	707.50	MHz		
CHANNEL:	23095			
MEASURED OUTPUT POWER:	18.02	dBm	=	0.063 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	1.4	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	31.02	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	H	197	111	-76.48	5.69	-70.78	88.8
2122.50	H	-	-	-75.39	6.75	-68.64	86.7

Table 7-11. Radiated Spurious Data (Band 12 – Mid Channel)

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OPERATING FREQUENCY:	715.30	MHz		
CHANNEL:	23173			
MEASURED OUTPUT POWER:	19.00	dBm	=	0.079 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	1.4	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	32.00	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]
1430.60	H	-	-	-76.32	5.82	-70.51	89.5

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

OPERATING FREQUENCY:	699.70	MHz		
CHANNEL:	23017			
MEASURED OUTPUT POWER:	16.55	dBm	=	0.045 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	1.4	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	29.55	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]
1399.40	H	110	197	-74.09	5.82	-68.28	84.8
2099.10	H	-	-	-76.68	6.84	-69.84	86.4

Table 7-13. Radiated Spurious Data with WCP (Band 12 – Low Channel)

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OPERATING FREQUENCY:	779.50	MHz		
CHANNEL:	23205			
MEASURED OUTPUT POWER:	16.80	dBm	=	0.048 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	29.80	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]
2338.50	H	-	-	-75.58	7.35	-68.23	85.0
3118.00	H	-	-	-72.11	7.19	-64.92	81.7

Table 7-14. Radiated Spurious Data (Band 13 – Low Channel)

OPERATING FREQUENCY:	782.00	MHz		
CHANNEL:	23230			
MEASURED OUTPUT POWER:	17.50	dBm	=	0.056 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	30.50	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]
2346.00	H	-	-	-73.33	7.33	-66.01	83.5
3128.00	H	-	-	-69.97	7.20	-62.77	80.3

Table 7-15. Radiated Spurious Data (Band 13 – Mid Channel)

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OPERATING FREQUENCY:	784.50	MHz		
CHANNEL:	23255			
MEASURED OUTPUT POWER:	17.62	dBm	=	0.058 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	30.62	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]
2353.50	H	-	-	-73.24	7.30	-65.94	83.6
3138.00	H	-	-	-69.87	7.21	-62.66	80.3

Table 7-16. Radiated Spurious Data (Band 13 – High Channel)

MODULATION SIGNAL:	QPSK	
BANDWIDTH:	5.00	MHz
DISTANCE:	3	meters
NARROWBAND EMISSION LIMIT:	-50	dBm

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]	Margin [dB]
1559.00	H	196	169	-77.32	6.55	-70.76	-30.8
1564.00	H	146	93	-76.63	6.57	-70.06	-30.1
1569.00	H	125	161	-77.68	6.59	-71.09	-31.1

Table 7-17. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

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OPERATING FREQUENCY:	784.50	MHz		
CHANNEL:	23255			
MEASURED OUTPUT POWER:	16.71	dBm	=	0.047 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	29.71	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]
2353.50	H	-	-	-73.22	7.30	-65.92	82.6
3138.00	H	-	-	-69.99	7.21	-62.78	79.5

Table 7-18. Radiated Spurious Data with WCP (Band 13 – High Channel)

MODULATION SIGNAL:	QPSK	
BANDWIDTH:	5.00	MHz
DISTANCE:	3	meters
NARROWBAND EMISSION LIMIT:	-50	dBm
WIDEBAND EMISSION LIMIT:	-40	dBm/MHz

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]	Margin [dB]
1564.00	H	130	132	-77.13	6.59	-70.54	-30.5

Table 7-19. Radiated Spurious Data with WCP (Band 13 – High Channel)

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OPERATING FREQUENCY:	824.70	MHz		
CHANNEL:	26797			
MEASURED OUTPUT POWER:	19.17	dBm	=	0.083 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	1.4	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	32.17	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]
1649.40	H	-	-	-78.99	6.70	-72.29	91.5
2474.10	H	-	-	-76.34	7.52	-68.83	88.0
3298.80	H	-	-	-72.99	7.36	-65.63	84.8

Table 7-20. Radiated Spurious Data (Band 5/26 – Low Channel)

OPERATING FREQUENCY:	836.50	MHz		
CHANNEL:	26915			
MEASURED OUTPUT POWER:	19.26	dBm	=	0.084 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	1.4	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	32.26	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	-	-	-79.34	6.70	-72.65	91.9
2509.50	H	251	343	-76.02	7.63	-68.39	87.7
3346.00	H	-	-	-73.27	7.51	-65.76	85.0

Table 7-21. Radiated Spurious Data (Band 5/26 – Mid Channel)

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OPERATING FREQUENCY:	848.30			MHz
CHANNEL:	27033			
MEASURED OUTPUT POWER:	19.90	dBm	=	0.098 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	1.4	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	32.90		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]
1696.60	H	100	310	-76.98	6.70	-70.28	90.2
2544.90	H	-	-	-76.70	7.60	-69.10	89.0
3393.20	H	-	-	-73.36	7.67	-65.69	85.6

Table 7-22. Radiated Spurious Data (Band 5/26 – High Channel)

OPERATING FREQUENCY:	848.30			MHz
CHANNEL:	27033			
MEASURED OUTPUT POWER:	18.79	dBm	=	0.076 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	1.4	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	31.79		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]
1696.60	H	-	-	-78.98	6.70	-72.28	91.1
2544.90	H	-	-	-76.75	7.60	-69.15	87.9
3393.20	H	-	-	-73.34	7.67	-65.67	84.5

Table 7-23. Radiated Spurious Data with WCP (Band 5/26 – High Channel)

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OPERATING FREQUENCY:	1720.00			MHz
CHANNEL:	132072			
MEASURED OUTPUT POWER:	24.49	dBm	= 0.281	W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	20.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	37.49		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]
3440.00	H	169	47	-68.12	9.88	-58.23	82.7
5160.00	H	-	-	-67.56	10.75	-56.81	81.3
6880.00	H	-	-	-61.38	11.71	-49.68	74.2

Table 7-24. Radiated Spurious Data (Band 4/66 – Low Channel)

OPERATING FREQUENCY:	1745.00			MHz
CHANNEL:	131322			
MEASURED OUTPUT POWER:	25.25	dBm	= 0.335	W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	20.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	38.25		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]
3490.00	H	110	193	-66.98	9.94	-57.04	82.3
5235.00	H	-	-	-67.22	10.72	-56.50	81.7
6980.00	H	-	-	-61.52	11.82	-49.71	75.0

Table 7-25. Radiated Spurious Data (Band 4/66 – Mid Channel)

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OPERATING FREQUENCY:	1770.00	MHz		
CHANNEL:	132572			
MEASURED OUTPUT POWER:	24.29	dBm	=	0.269 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	20.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	37.29	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]
3540.00	H	179	251	-66.32	9.96	-56.36	80.7
5310.00	H	-	-	-66.65	10.69	-55.96	80.3
7080.00	H	-	-	-60.93	11.78	-49.15	73.4

Table 7-26. Radiated Spurious Data (Band 4/66 – High Channel)

OPERATING FREQUENCY:	1770.00	MHz		
CHANNEL:	132572			
MEASURED OUTPUT POWER:	19.46	dBm	=	0.088 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	20.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	32.46	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]
3540.00	H	153	248	-66.49	9.94	-56.55	76.0
5310.00	H	-	-	-66.93	10.72	-56.21	75.7
7080.00	H	-	-	-61.46	11.82	-49.65	69.1

Table 7-27. Radiated Spurious Data with WCP (Band 4/66 – High Channel)

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OPERATING FREQUENCY:	1850.70	MHz		
CHANNEL:	26047			
MEASURED OUTPUT POWER:	23.27	dBm	=	0.212 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	1.4	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	36.27	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	-	-	-67.51	9.53	-57.98	81.2
5552.10	H	-	-	-67.09	11.01	-56.08	79.3
7402.80	H	-	-	-58.77	10.95	-47.82	71.1

Table 7-28. Radiated Spurious Data (Band 2/25 – Low Channel)

OPERATING FREQUENCY:	1882.50	MHz		
CHANNEL:	26365			
MEASURED OUTPUT POWER:	23.73	dBm	=	0.236 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	1.4	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	36.73	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	267	187	-64.66	9.37	-55.29	79.0
5647.50	H	-	-	-67.26	11.23	-56.03	79.8
7530.00	H	-	-	-59.14	11.13	-48.01	71.7

Table 7-29. Radiated Spurious Data (Band 2/25 – Mid Channel)

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OPERATING FREQUENCY:	1914.30	MHz		
CHANNEL:	26683			
MEASURED OUTPUT POWER:	24.72	dBm	=	0.296 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	1.4	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	37.72	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	18	261	-65.47	9.34	-56.13	80.8
5742.90	H	-	-	-67.23	11.40	-55.82	80.5
7657.20	H	-	-	-59.26	11.35	-47.91	72.6

Table 7-30. Radiated Spurious Data (Band 2/25 – High Channel)

OPERATING FREQUENCY:	1914.30	MHz		
CHANNEL:	26683			
MEASURED OUTPUT POWER:	20.50	dBm	=	0.112 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	1.4	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	33.50	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]
3828.60	H	179	225	-64.89	9.34	-55.55	76.0
5742.90	H	-	-	-67.21	11.40	-55.80	76.3
7657.20	H	-	-	-59.26	11.35	-47.91	68.4

Table 7-31. Radiated Spurious Data with WCP (Band 2/25 – High Channel)

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OPERATING FREQUENCY:	2506.00	MHz		
CHANNEL:	39750			
MEASURED OUTPUT POWER:	21.82	dBm	=	0.152 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	20.0	MHz		
DISTANCE:	3	meters		
LIMIT:	55 + 10 log10 (W)	46.82	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]
5012.00	H	187	41	-65.30	10.91	-54.38	76.2
7518.00	H	148	161	-57.26	11.10	-46.16	68.0
10024.00	H	-	-	-54.87	12.07	-42.80	64.6

Table 7-32. Radiated Spurious Data (Band 41 – Low Channel)

OPERATING FREQUENCY:	2593.00	MHz		
CHANNEL:	40620			
MEASURED OUTPUT POWER:	21.63	dBm	=	0.146 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	20.0	MHz		
DISTANCE:	3	meters		
LIMIT:	55 + 10 log10 (W)	46.63	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	175	167	-60.04	10.75	-49.29	70.9
7779.00	H	268	319	-57.72	11.40	-46.32	68.0
10372.00	H	-	-	-56.50	12.59	-43.91	65.5

Table 7-33. Radiated Spurious Data (Band 41 – Mid Channel)

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OPERATING FREQUENCY:	2680.00			MHz
CHANNEL:	41490			
MEASURED OUTPUT POWER:	19.67	dBm	=	0.093 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	20.0	MHz		
DISTANCE:	3	meters		
LIMIT:	55 + 10 log10 (W)	44.67		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]
5360.00	H	166	158	-60.36	10.74	-49.62	69.3
8040.00	H	156	230	-54.97	11.14	-43.83	63.5
10720.00	H	-	-	-56.34	12.77	-43.57	63.2

Table 7-34. Radiated Spurious Data (Band 41 – High Channel)

OPERATING FREQUENCY:	2506.00			MHz
CHANNEL:	39750			
MEASURED OUTPUT POWER:	20.70	dBm	=	0.118 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	20.0	MHz		
DISTANCE:	3	meters		
LIMIT:	55 + 10 log10 (W)	45.70		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]
5012.00	V	170	173	-62.44	10.91	-51.52	72.2
7518.00	V	159	209	-56.60	11.10	-45.50	66.2
10024.00	V	-	-	-54.91	12.07	-42.84	63.5

Table 7-35. Radiated Spurious Data with WCP (Band 41 – Low Channel)

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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

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Band 12/17 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)	707,499,993	-7	-0.0000010
100 %		- 30	707,500,047	47	0.0000066
100 %		- 20	707,499,905	-95	-0.0000134
100 %		- 10	707,499,881	-119	-0.0000168
100 %		0	707,500,004	4	0.0000006
100 %		+ 10	707,499,795	-205	-0.0000290
100 %		+ 20	707,500,018	18	0.0000025
100 %		+ 30	707,499,970	-30	-0.0000042
100 %		+ 40	707,500,433	433	0.0000612
100 %		+ 50	707,500,379	379	0.0000536
BATT. ENDPOINT	3.40	+ 20	707,499,991	-9	-0.0000013

Table 7-36. Frequency Stability Data (Band 12/17)

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Band 12/17 Frequency Stability Measurements

§2.1055 §27.54

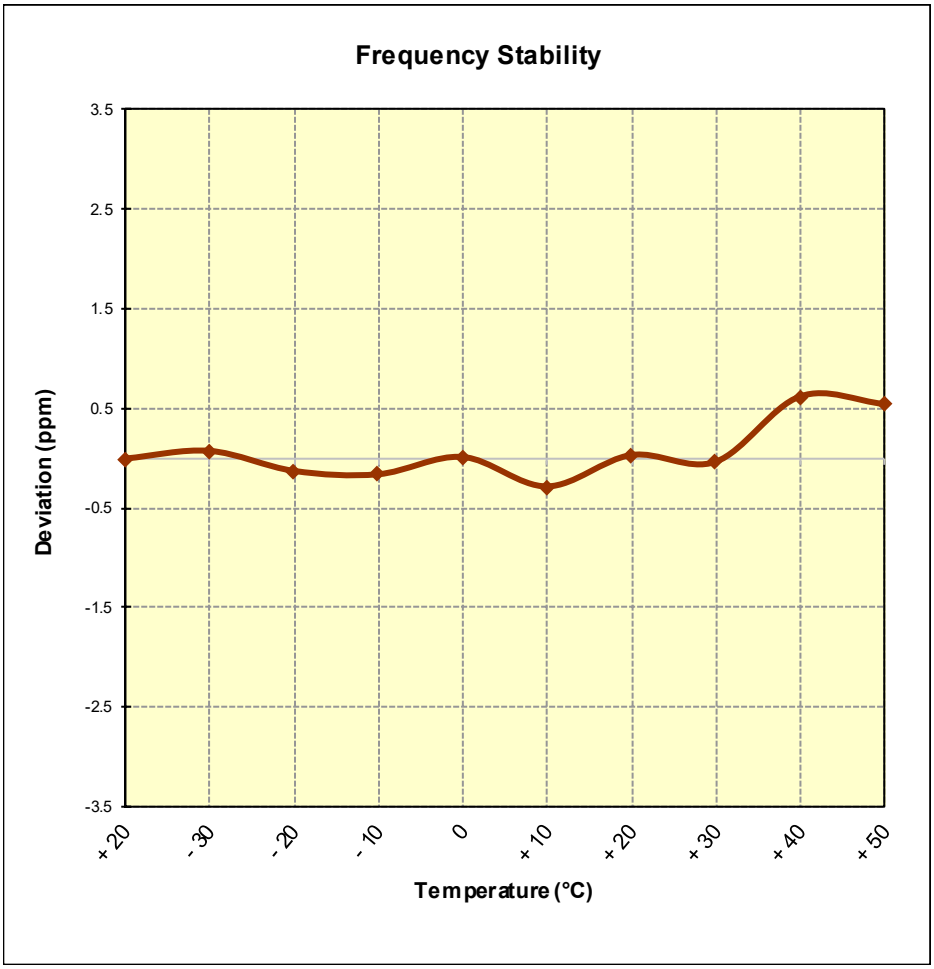

Figure 7-8. Frequency Stability Graph (Band 12/17)

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Band 13 Frequency Stability Measurements

§2.1055 §27.54

OPERATING FREQUENCY: 782,000,000 Hz

CHANNEL: 23230

REFERENCE VOLTAGE: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	781,999,921	-79	-0.0000101
100 %		- 30	781,999,932	-68	-0.0000087
100 %		- 20	781,999,955	-45	-0.0000058
100 %		- 10	781,999,995	-5	-0.0000006
100 %		0	781,999,612	-388	-0.0000496
100 %		+ 10	782,000,093	93	0.0000119
100 %		+ 20	782,000,301	301	0.0000385
100 %		+ 30	782,000,217	217	0.0000277
100 %		+ 40	782,000,314	314	0.0000402
100 %		+ 50	781,999,908	-92	-0.0000118
BATT. ENDPOINT	3.40	+ 20	782,000,226	226	0.0000289

Table 7-37. Frequency Stability Data (Band 13)

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Band 13 Frequency Stability Measurements

§2.1055 §27.54

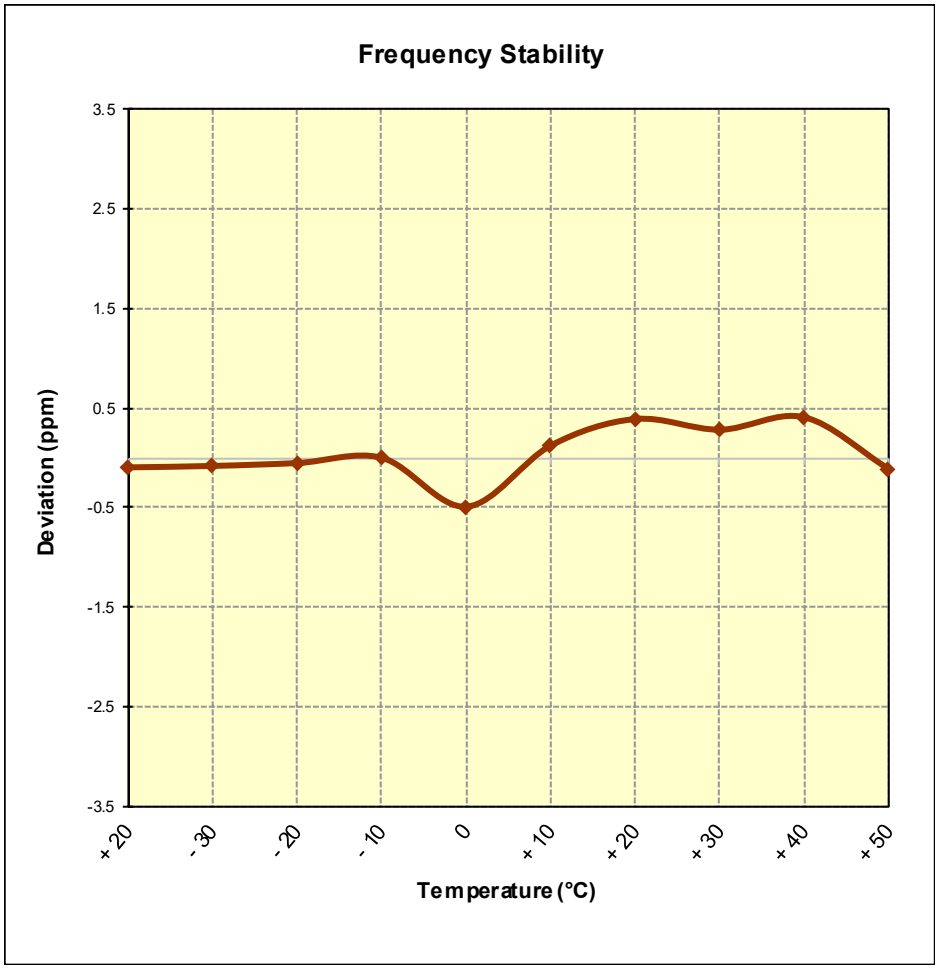

Figure 7-9. Frequency Stability Graph (Band 13)

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Band 26 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)	831,500,179	179	0.0000215
100 %		- 30	831,500,348	348	0.0000419
100 %		- 20	831,499,914	-86	-0.0000103
100 %		- 10	831,500,069	69	0.0000083
100 %		0	831,499,728	-272	-0.0000327
100 %		+ 10	831,500,355	355	0.0000427
100 %		+ 20	831,499,905	-95	-0.0000114
100 %		+ 30	831,500,029	29	0.0000035
100 %		+ 40	831,500,016	16	0.0000019
100 %		+ 50	831,499,783	-217	-0.0000261
BATT. ENDPOINT	3.40	+ 20	831,499,662	-338	-0.0000406

Table 7-38. Frequency Stability Data (Band 5/26)

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Band 26 Frequency Stability Measurements

§2.1055 §22.355

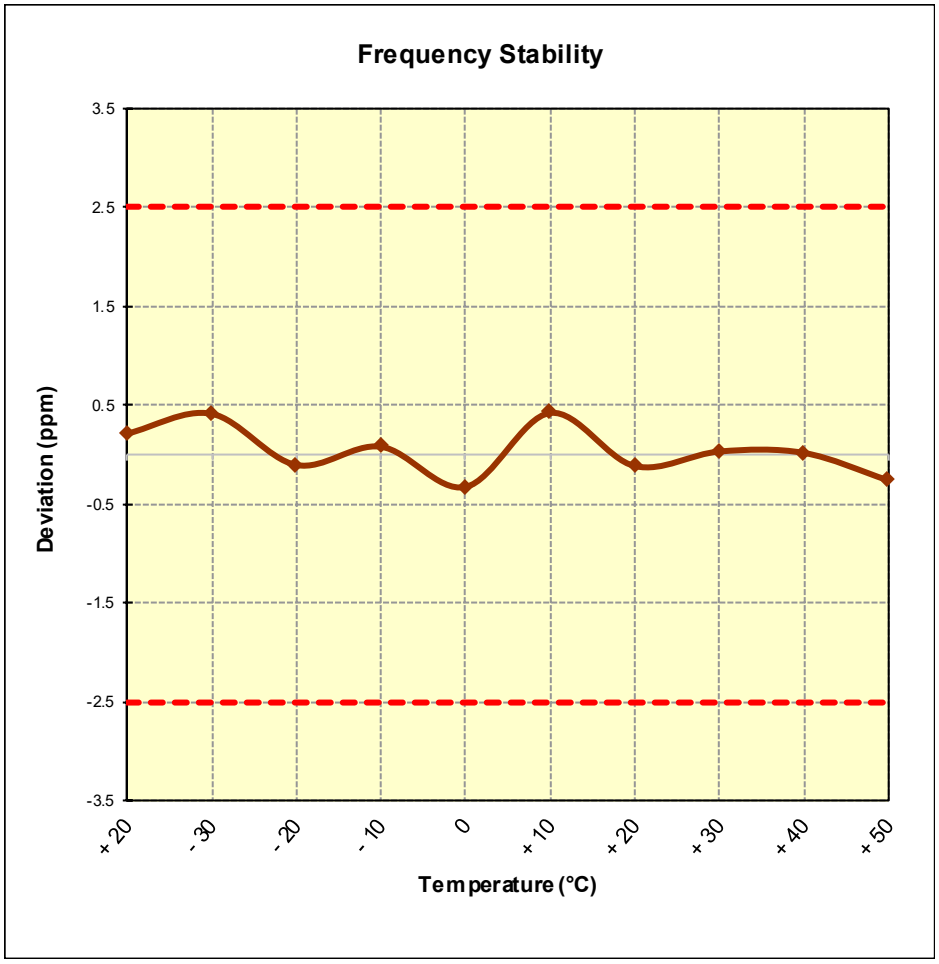

Figure 7-10. Frequency Stability Graph (Band 5/26)

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Band 66 Frequency Stability Measurements

§2.1055 §§27.54

OPERATING FREQUENCY:	1,745,000,000	Hz
CHANNEL:	132322	
REFERENCE VOLTAGE:	3.80	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,744,999,870	-130	-0.0000074
100 %		- 30	1,744,999,898	-102	-0.0000058
100 %		- 20	1,745,000,172	172	0.0000099
100 %		- 10	1,744,999,864	-136	-0.0000078
100 %		0	1,745,000,016	16	0.0000009
100 %		+ 10	1,745,000,184	184	0.0000105
100 %		+ 20	1,745,000,439	439	0.0000252
100 %		+ 30	1,744,999,913	-87	-0.0000050
100 %		+ 40	1,744,999,831	-169	-0.0000097
100 %		+ 50	1,744,999,910	-90	-0.0000052
BATT. ENDPOINT	3.40	+ 20	1,745,000,181	181	0.0000104

Table 7-39. Frequency Stability Data (Band 4/66)

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.

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Band 66 Frequency Stability Measurements

§2.1055 §§27.54

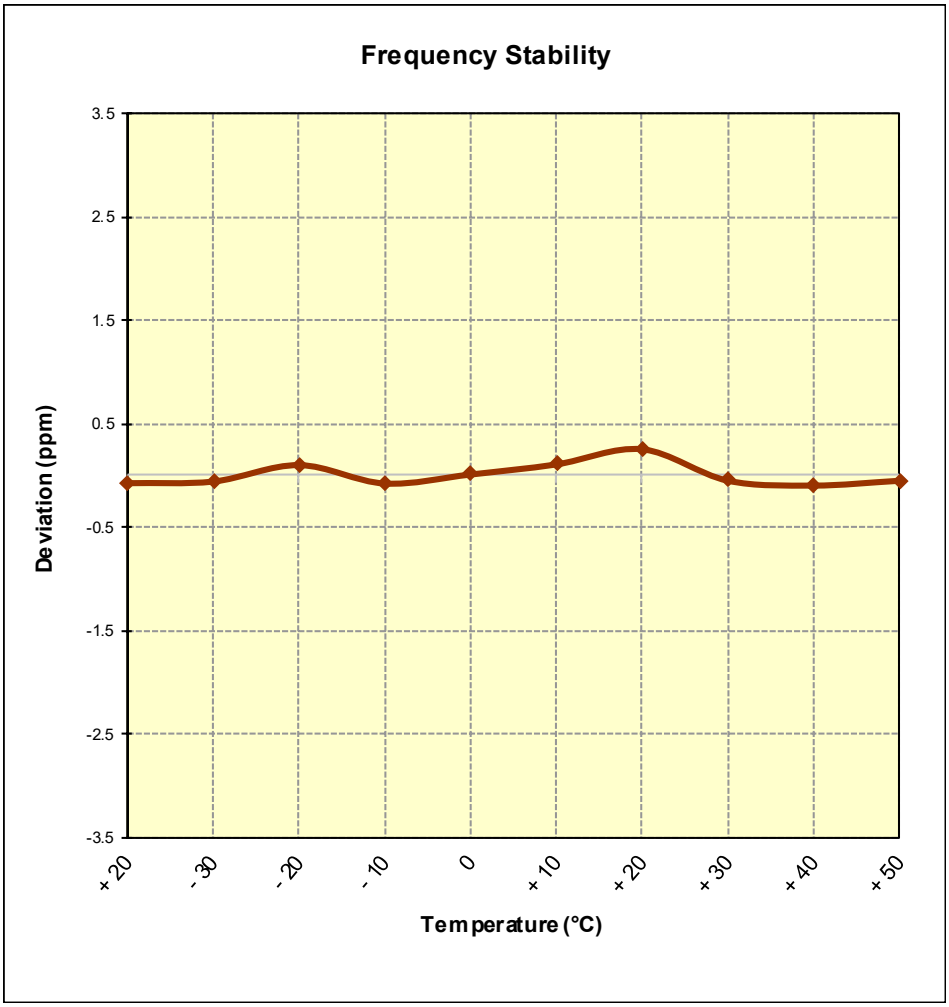

Figure 7-11. Frequency Stability Graph (Band 4/66)

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Band 25 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)	1,882,500,121	121	0.0000064
100 %		- 30	1,882,500,171	171	0.0000091
100 %		- 20	1,882,500,189	189	0.0000100
100 %		- 10	1,882,500,157	157	0.0000083
100 %		0	1,882,500,073	73	0.0000039
100 %		+ 10	1,882,500,353	353	0.0000188
100 %		+ 20	1,882,499,890	-110	-0.0000058
100 %		+ 30	1,882,499,790	-210	-0.0000112
100 %		+ 40	1,882,499,919	-81	-0.0000043
100 %		+ 50	1,882,499,950	-50	-0.0000027
BATT. ENDPOINT	3.40	+ 20	1,882,500,027	27	0.0000014

Table 7-40. Frequency Stability Data (Band 2/25)

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.

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Band 25 Frequency Stability Measurements

§2.1055 §24.235

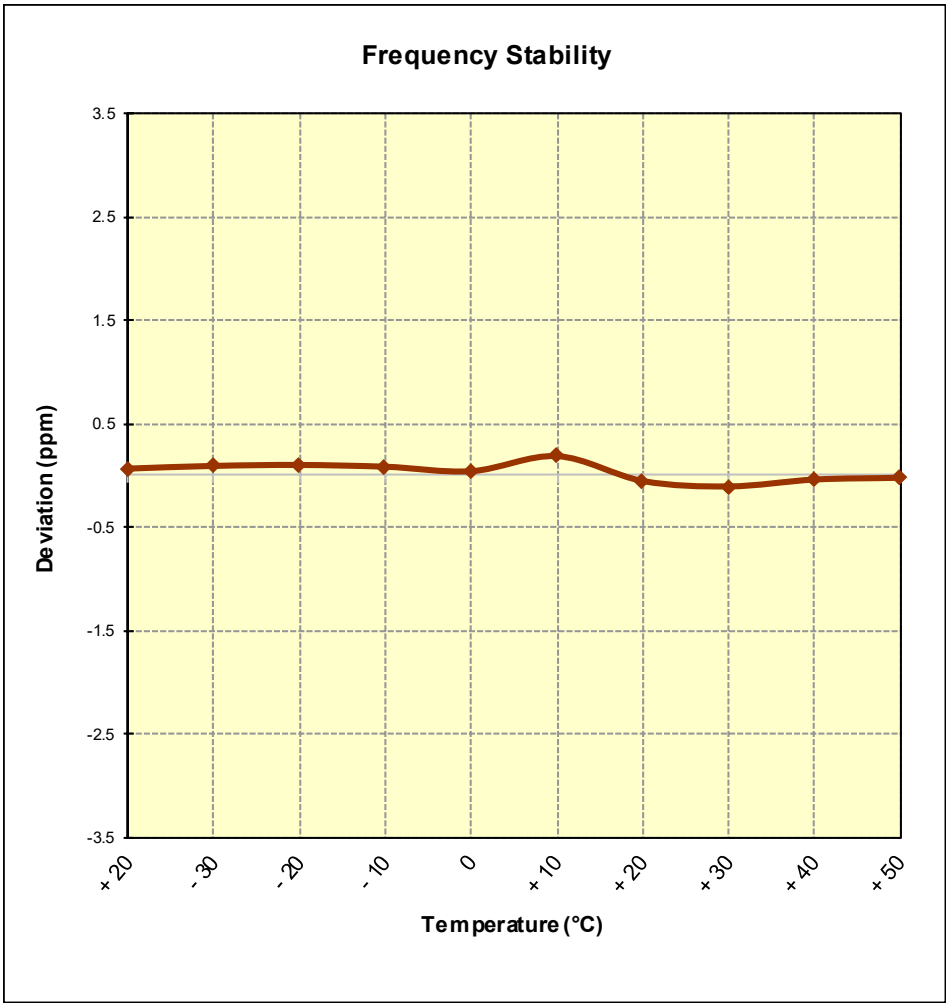

Figure 7-12. Frequency Stability Graph (Band 2/25)

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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)	2,593,000,126	126	0.0000049
100 %		- 30	2,593,000,070	70	0.0000027
100 %		- 20	2,593,000,188	188	0.0000073
100 %		- 10	2,593,000,058	58	0.0000022
100 %		0	2,593,000,097	97	0.0000037
100 %		+ 10	2,593,000,009	9	0.0000003
100 %		+ 20	2,592,999,813	-187	-0.0000072
100 %		+ 30	2,593,000,351	351	0.0000135
100 %		+ 40	2,593,000,335	335	0.0000129
100 %		+ 50	2,592,999,809	-191	-0.0000074
BATT. ENDPOINT	3.40	+ 20	2,592,999,970	-30	-0.0000012

Table 7-41. 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.

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Band 41 Frequency Stability Measurements

§2.1055 §27.54

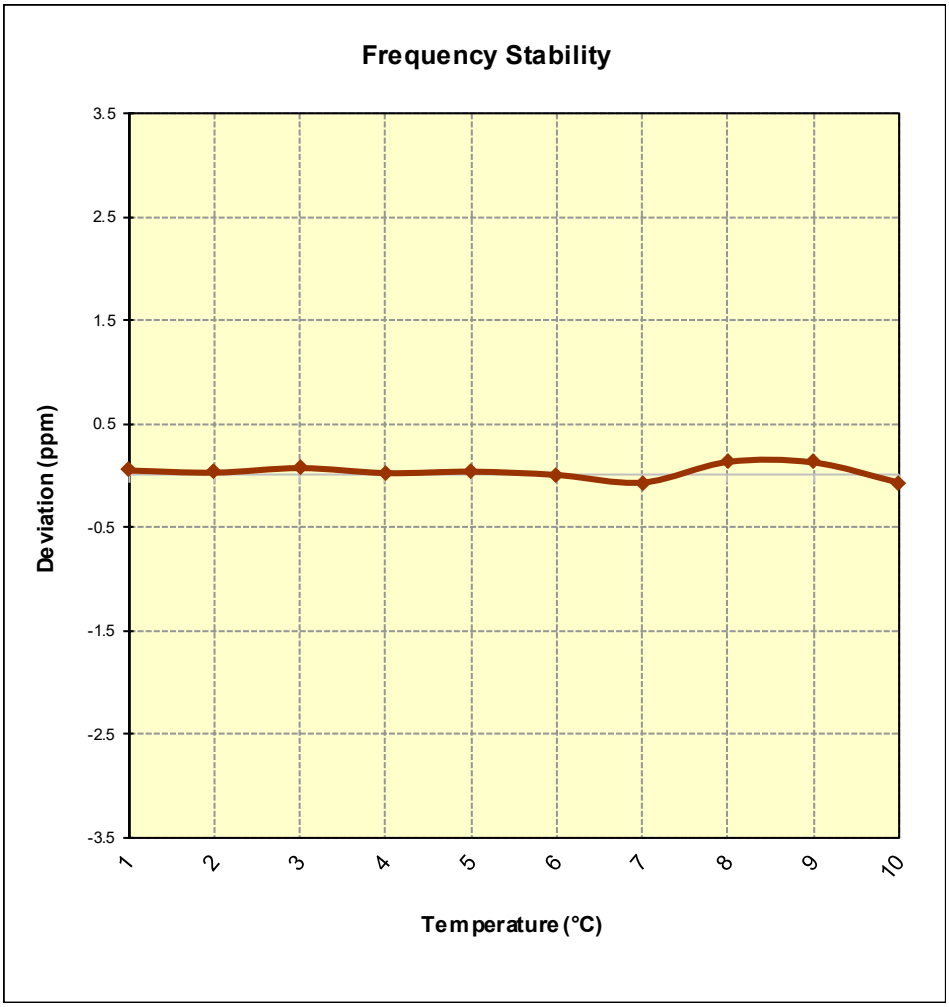

Figure 7-13. Frequency Stability Graph (Band 41)

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8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMG955F** complies with all the requirements of Parts 22, 24, & 27 of the FCC rules for LTE operation only.

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