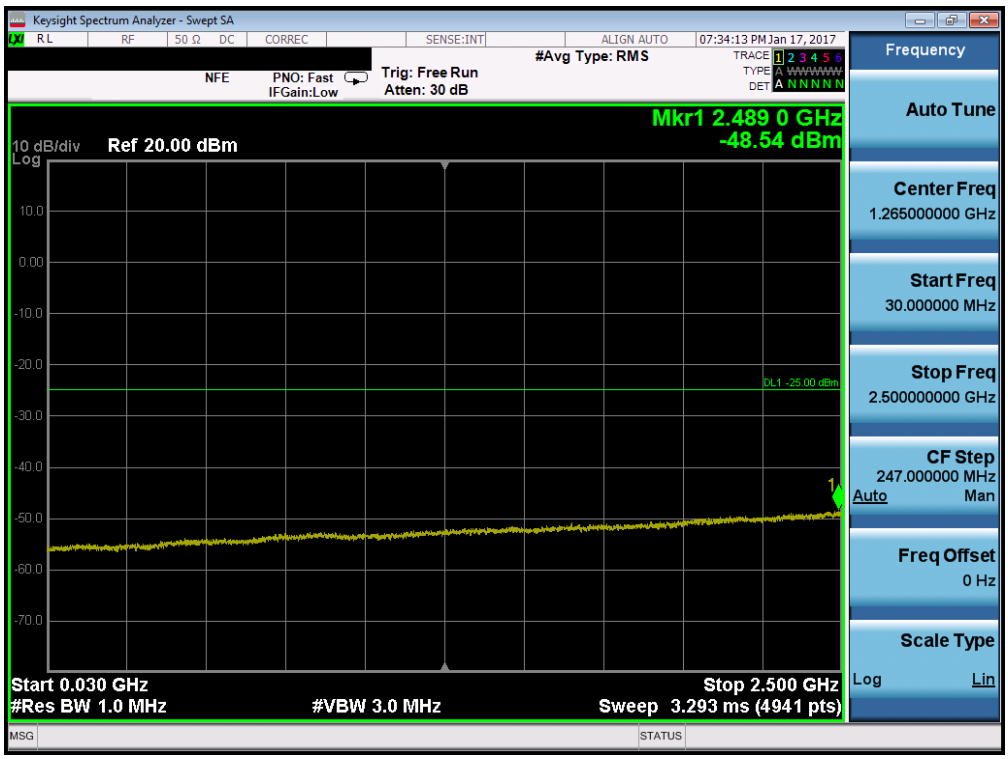
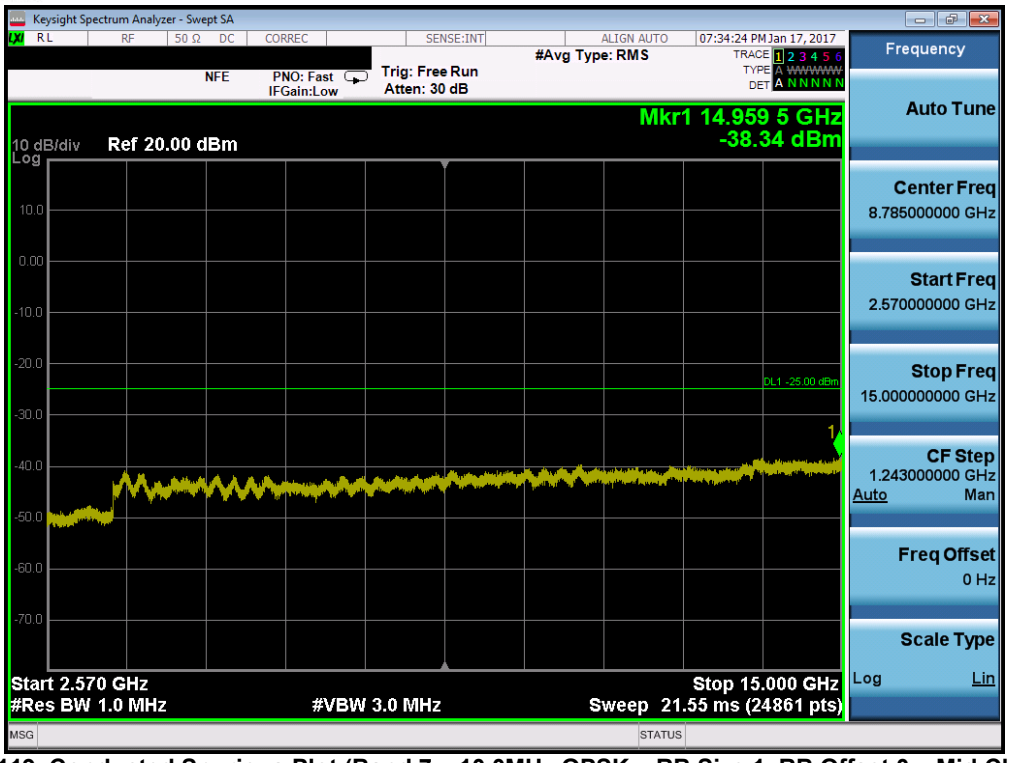
Plot 7-115. Conducted Spurious Plot (Band 7 – 10.0MHz QPSK – RB Size 1, RB Offset 0– Low Channel)

Plot 7-116. Conducted Spurious Plot (Band 7 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

Plot 7-117. Conducted Spurious Plot (Band 7 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)



Plot 7-118. Conducted Spurious Plot (Band 7 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



Plot 7-119. Conducted Spurious Plot (Band 7 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

Plot 7-120. Conducted Spurious Plot (Band 7 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

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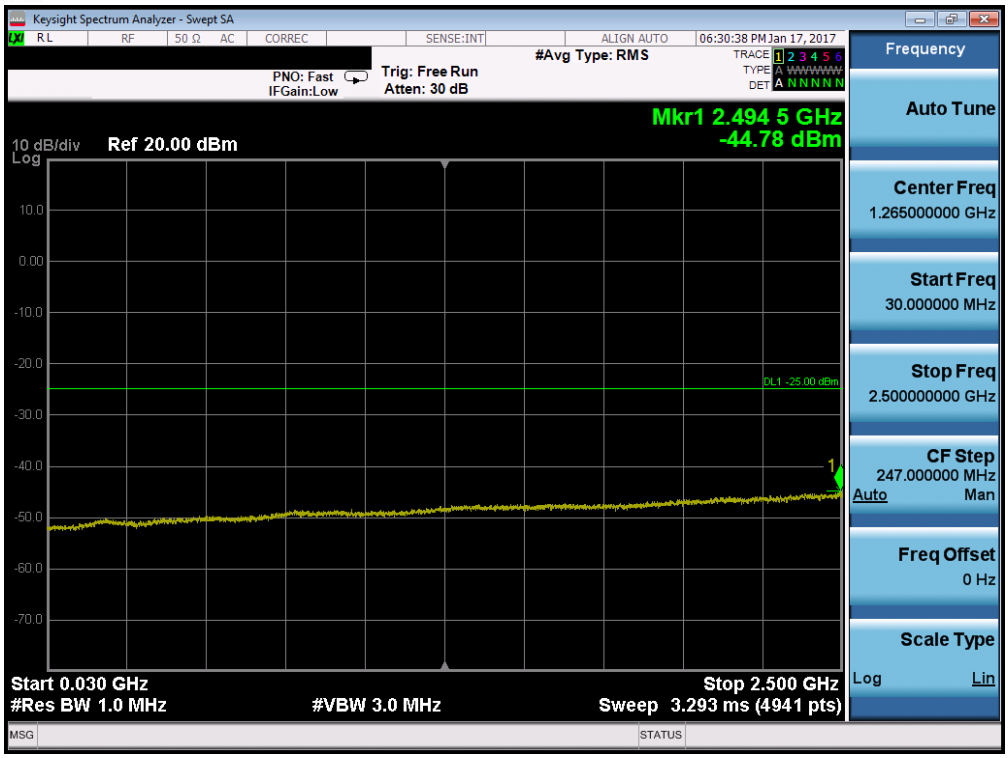
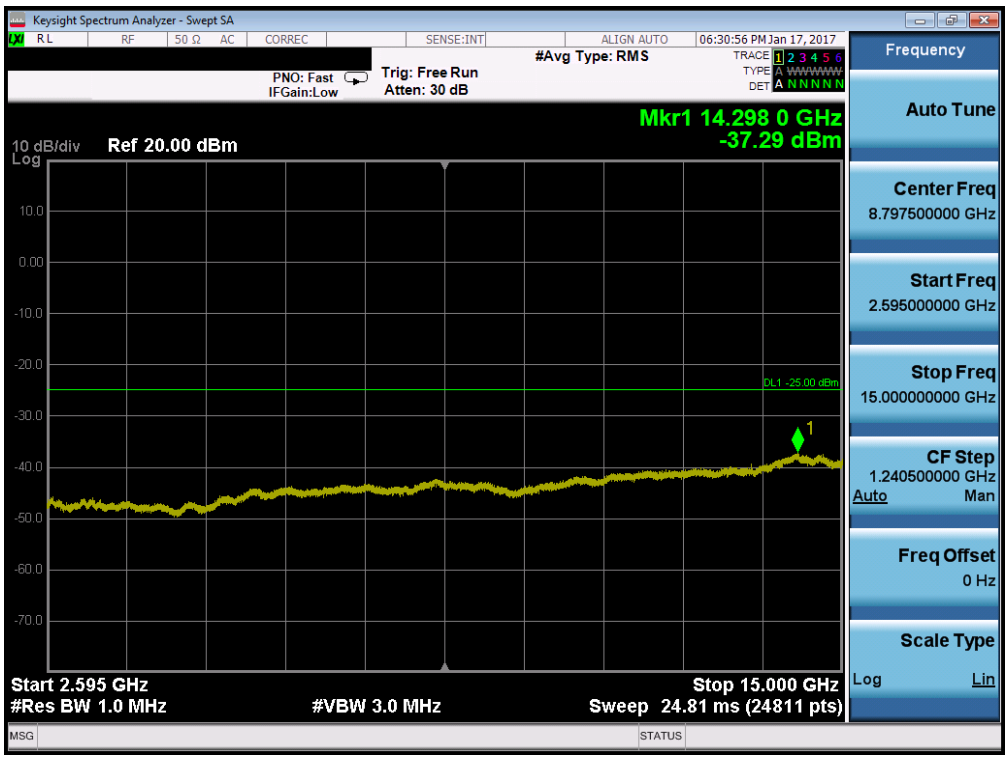


Plot 7-121. Conducted Spurious Plot (Band 7 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-122. Conducted Spurious Plot (Band 7 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

Plot 7-123. Conducted Spurious Plot (Band 7 – 10.0MHz 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) §27.53(a.4)

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 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

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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.

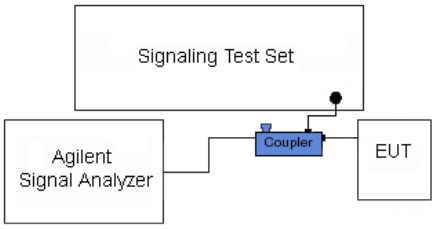


Figure 7-3. Test Instrument & Measurement Setup

Test Notes

1. 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.

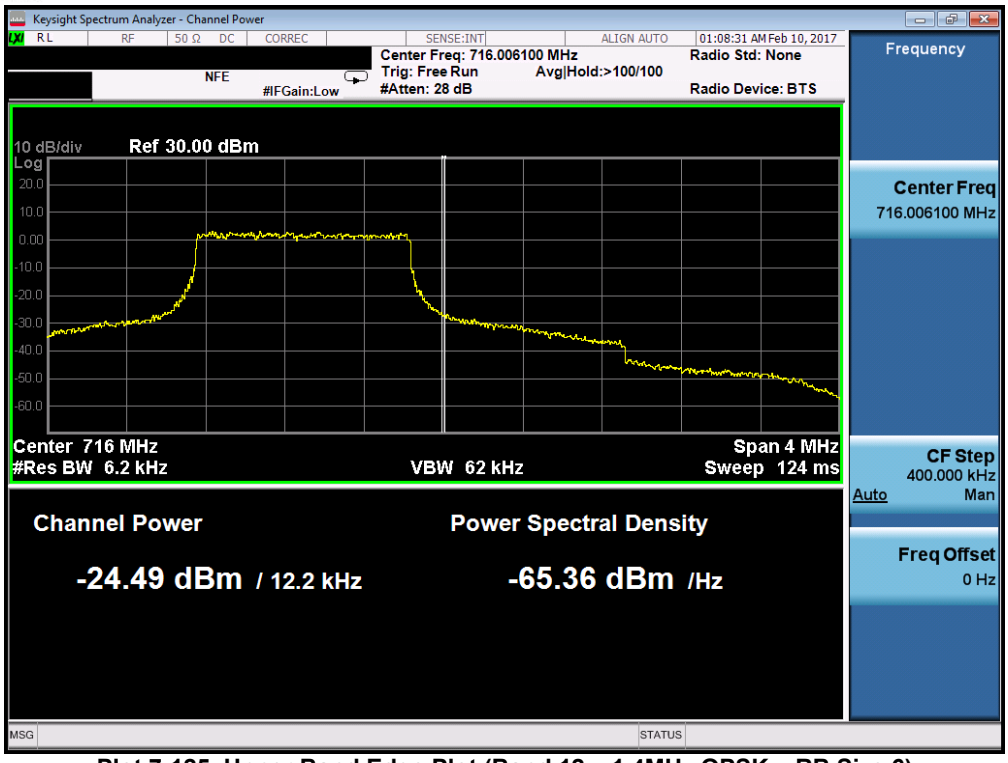
Per 27.53(c.5) for operations in the 776-788 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

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

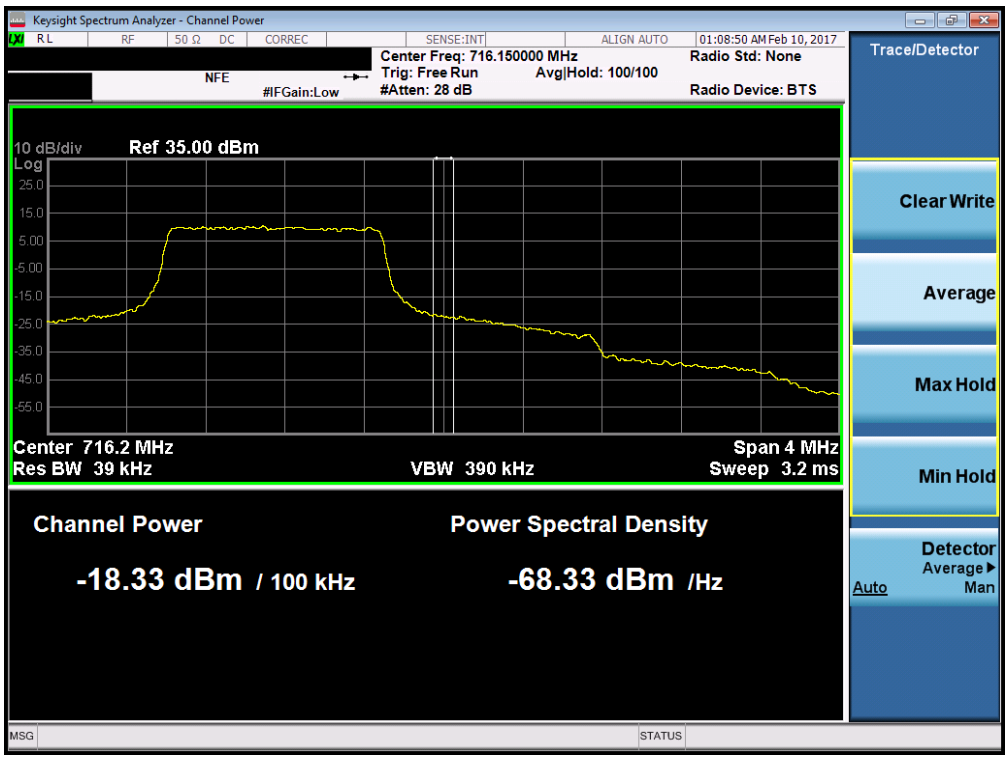
Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 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.

2. For some of the extended band edge plots, the VBW is slightly lesser than what should have been used. However, this deviation does not create any noticeable difference to the data provided.

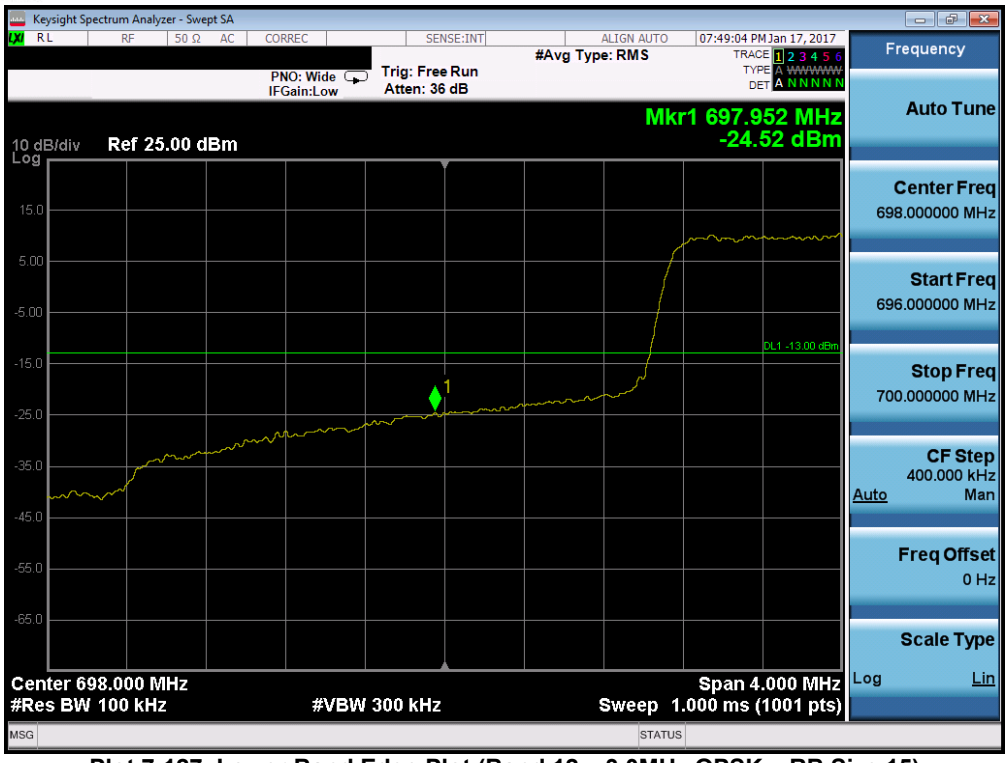
Plot 7-124. Lower Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)



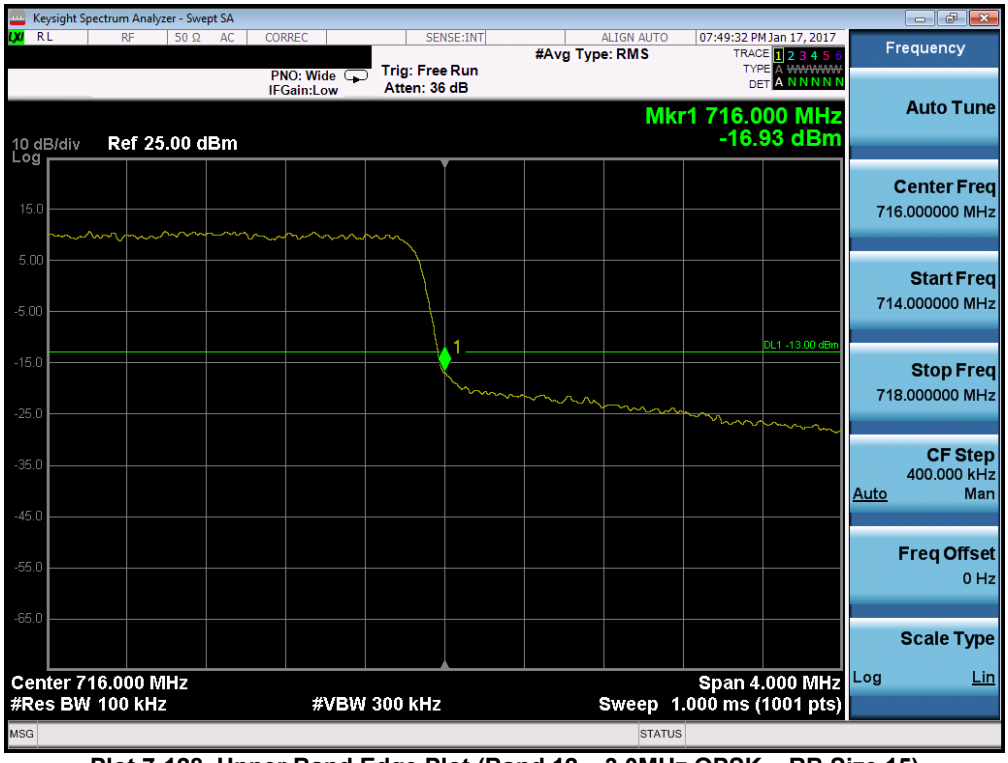
Plot 7-125. Upper Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)



Plot 7-126. Upper Extended Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)



Plot 7-127. Lower Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)



Plot 7-128. Upper Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)

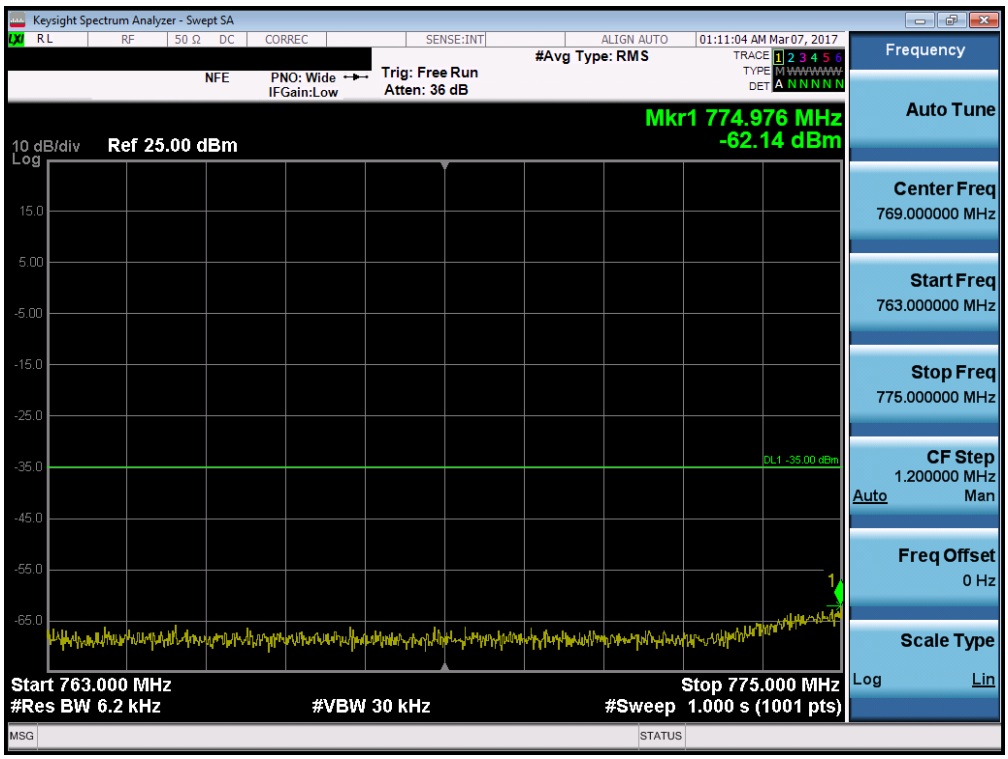
Plot 7-129. Lower Band Edge Plot (Band 12 – 5.0MHz QPSK – RB Size 25)

Plot 7-130. Upper Band Edge Plot (Band 12 – 5.0MHz QPSK – RB Size 25)

Plot 7-131. Lower Band Edge Plot (Band 12 – 10.0MHz QPSK – RB Size 50)

Plot 7-132. Upper Band Edge Plot (Band 12 – 10.0MHz QPSK – RB Size 50)

Plot 7-133. Lower Band Edge Plot (Band 13 – 5.0MHz QPSK – RB Size 25)



Plot 7-134. Lower Emission Mask Edge Plot (Band 13 – 5.0MHz QPSK – RB Size 25)

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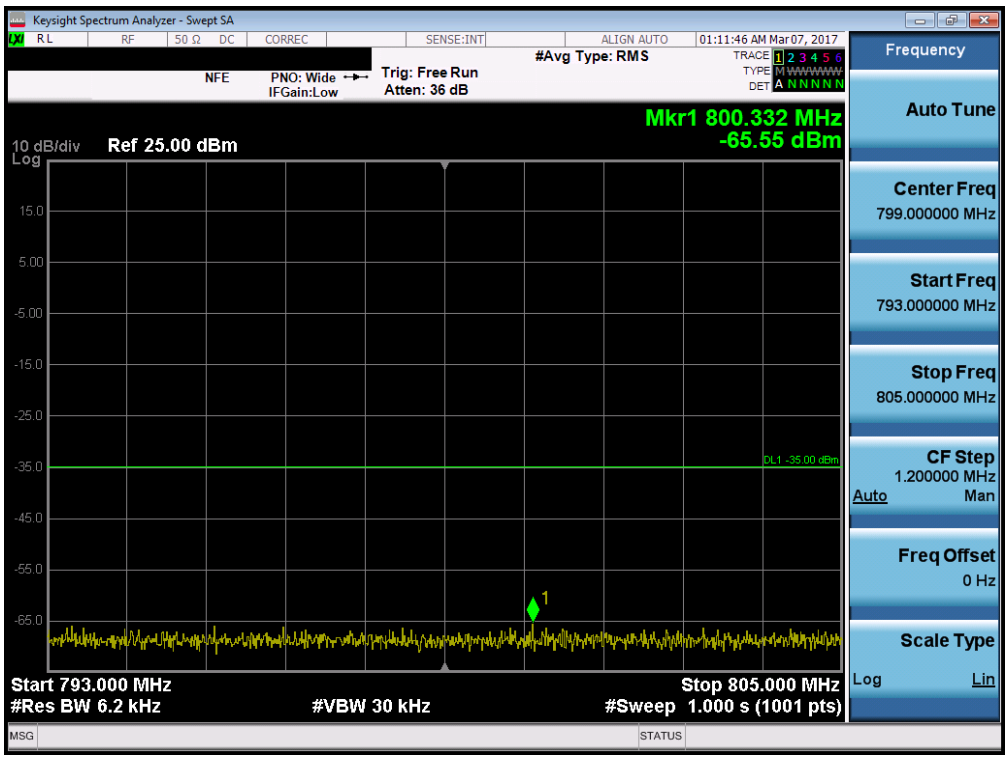
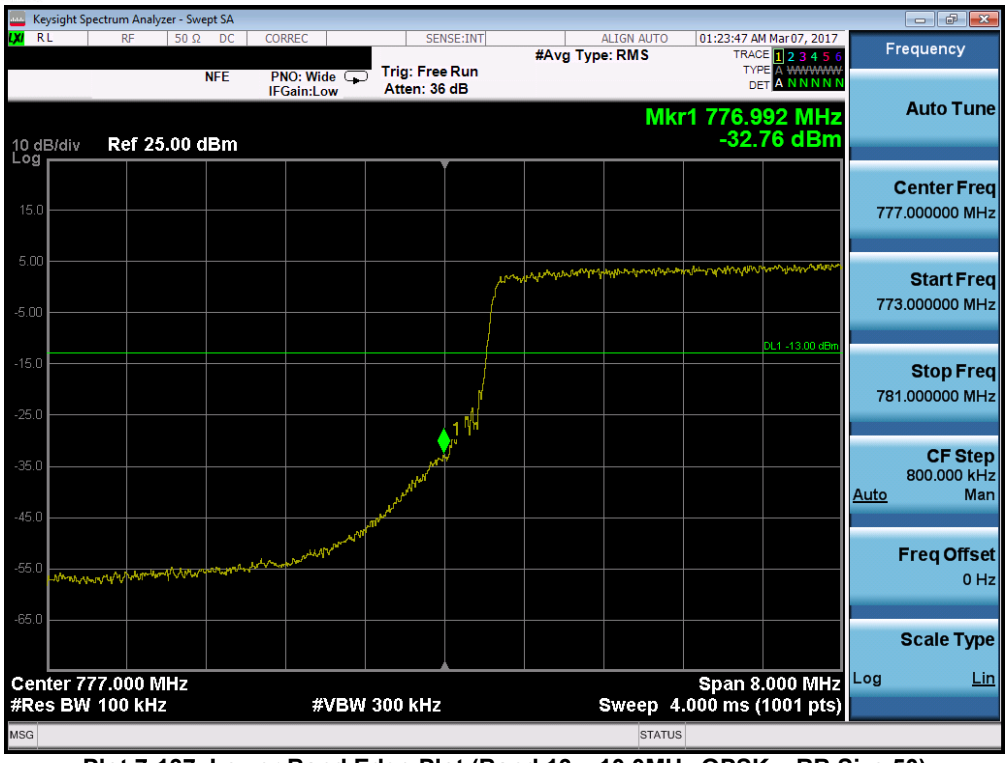
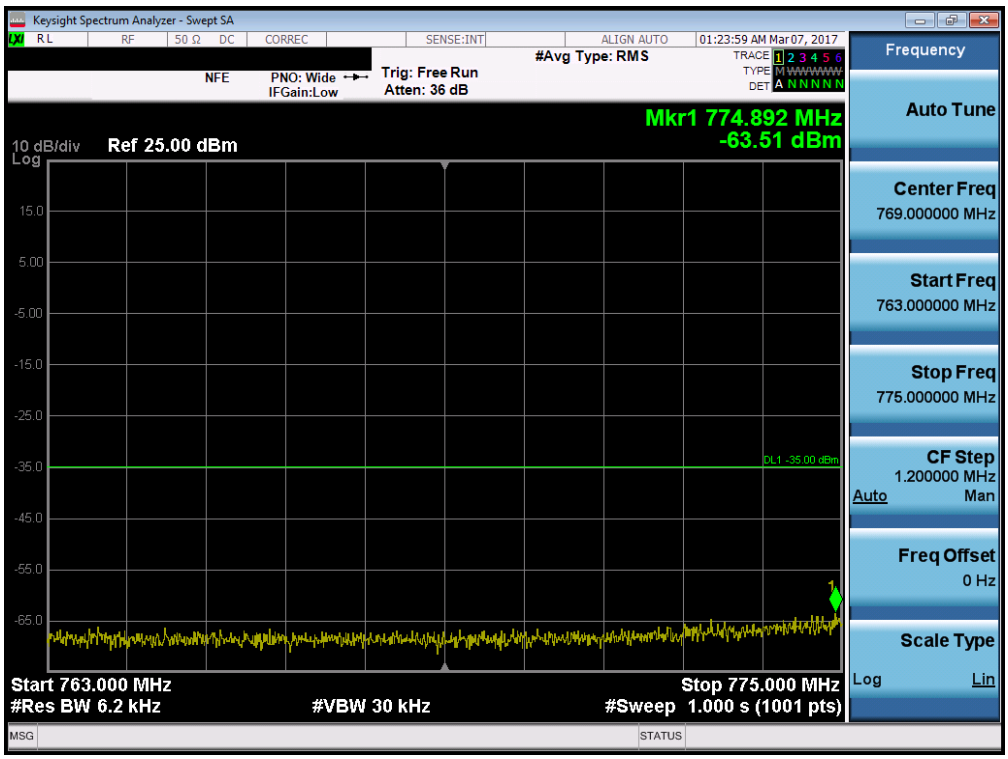
Plot 7-135. Upper Band Edge Plot (Band 13 – 5.0MHz QPSK – RB Size 25)



Plot 7-136. Upper Emission Mask Edge Plot (Band 13 – 5.0MHz QPSK – RB Size 25)



Plot 7-137. Lower Band Edge Plot (Band 13 – 10.0MHz QPSK – RB Size 50)



Plot 7-138. Lower Emission Mask Edge Plot (Band 13 – 10.0MHz QPSK – RB Size 50)

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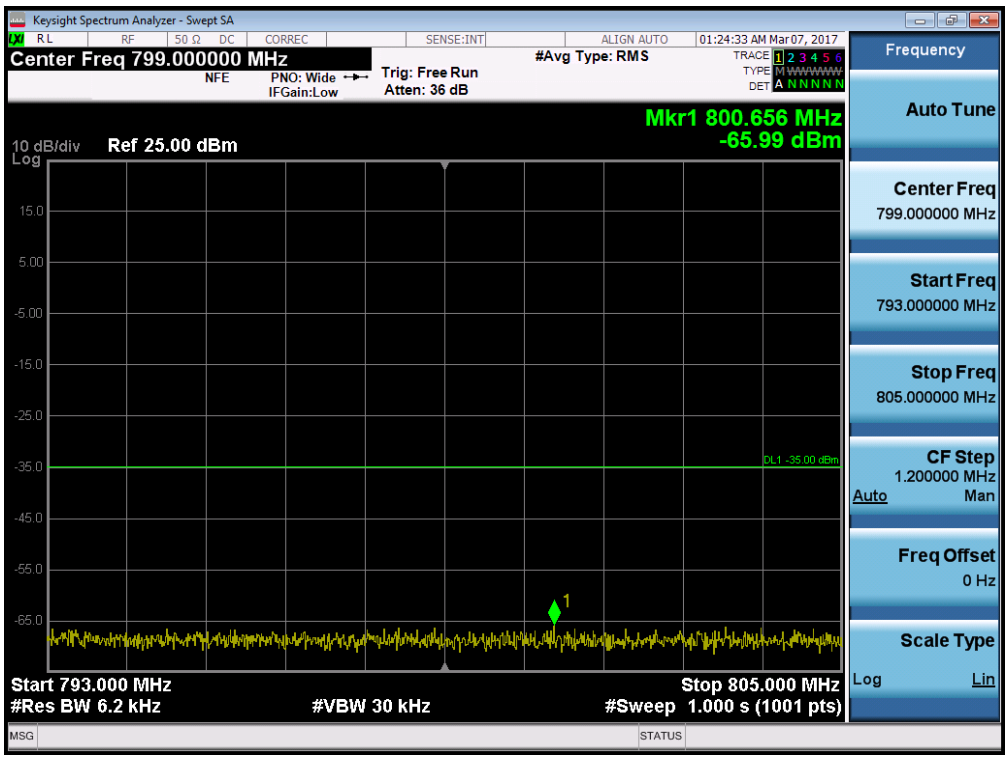
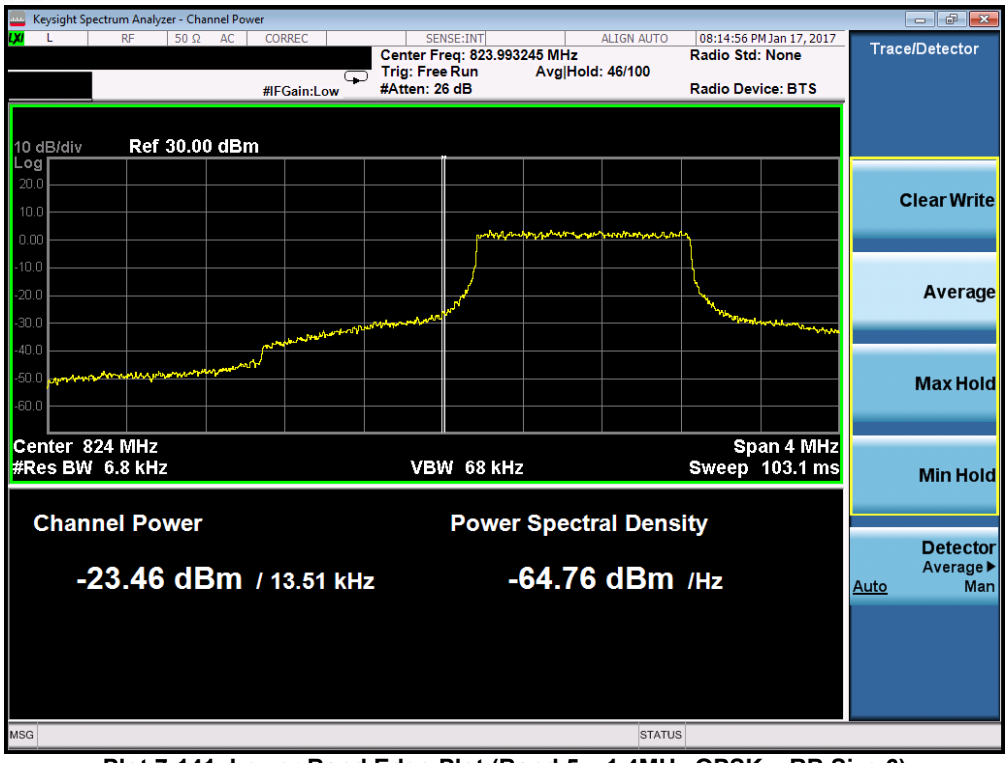
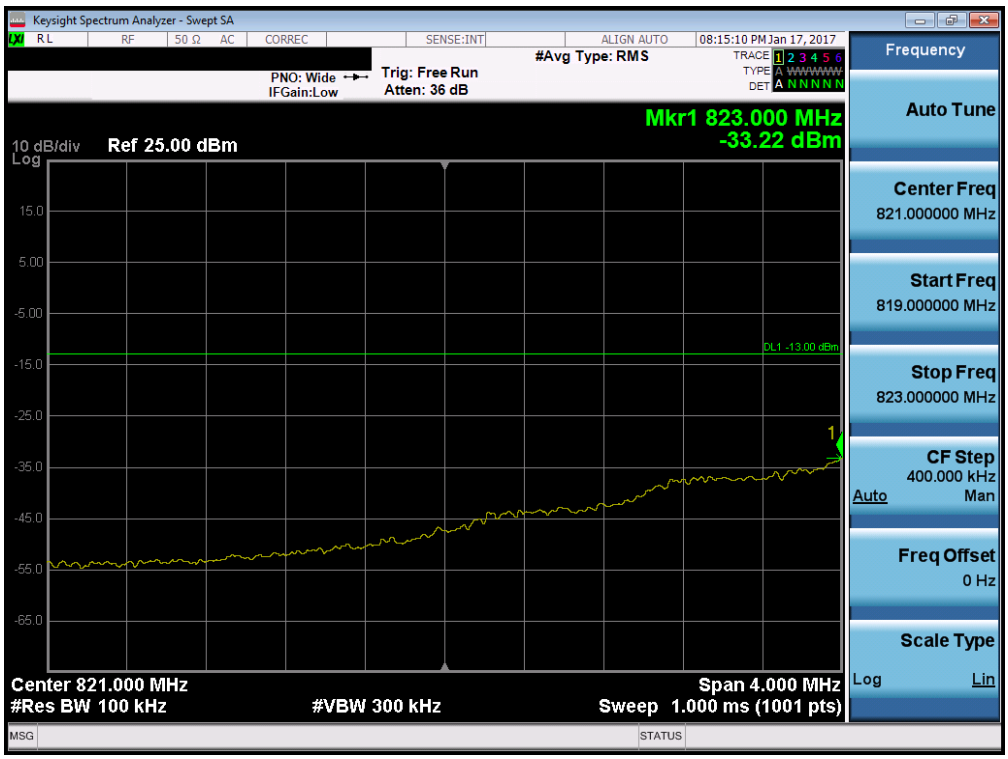
Plot 7-139. Upper Band Edge Plot (Band 13 – 10.0MHz QPSK – RB Size 50)



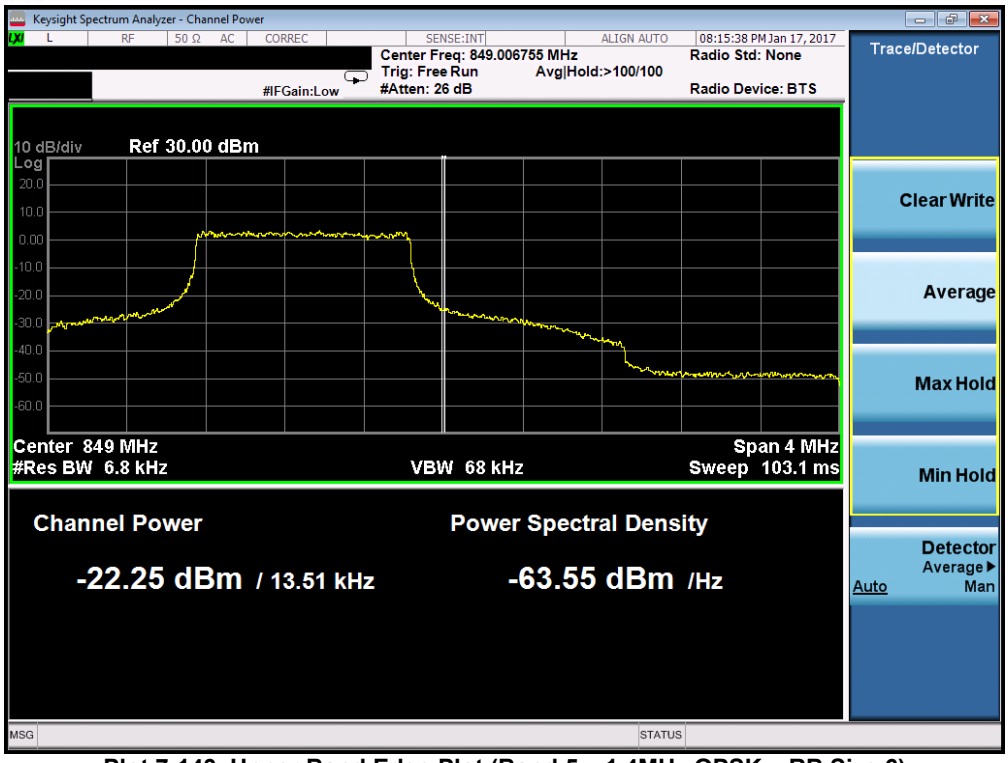
Plot 7-140. Upper Emission Mask Edge Plot (Band 13 – 10.0MHz QPSK – RB Size 50)



Plot 7-141. Lower Band Edge Plot (Band 5 – 1.4MHz QPSK – RB Size 6)

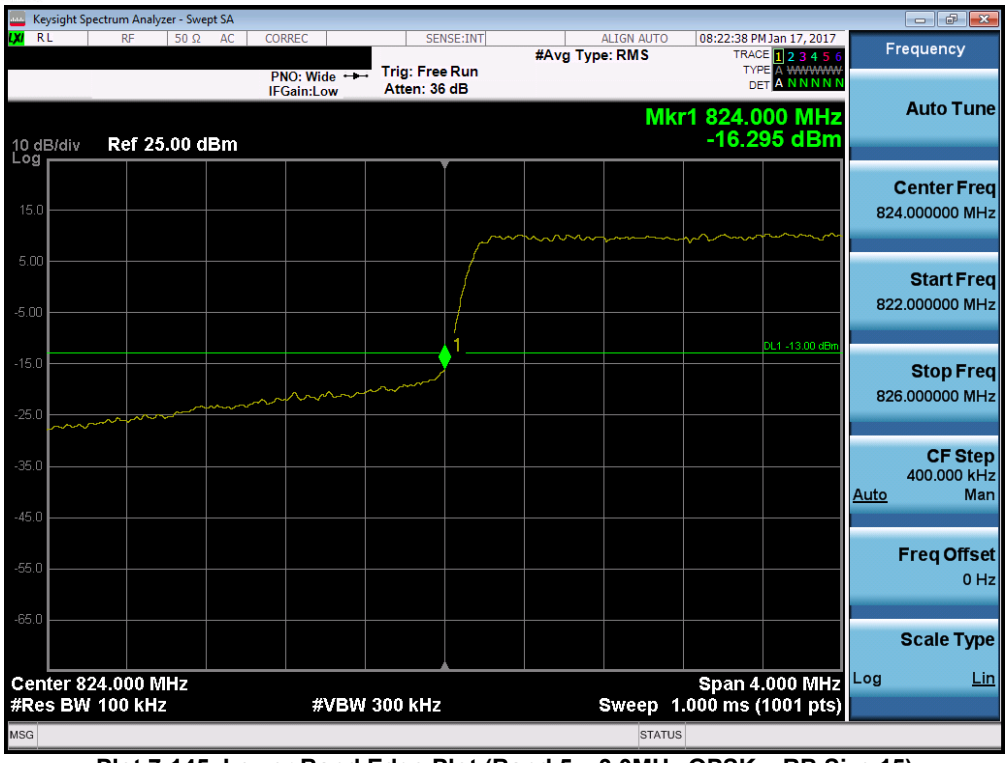


Plot 7-142. Lower Extended Band Edge Plot (Band 5 – 1.4MHz QPSK – RB Size 6)



Plot 7-143. Upper Band Edge Plot (Band 5 – 1.4MHz QPSK – RB Size 6)

Plot 7-144. Upper Extended Band Edge Plot (Band 5 – 1.4MHz QPSK – RB Size 6)



Plot 7-145. Lower Band Edge Plot (Band 5 – 3.0MHz QPSK – RB Size 15)

Plot 7-146. Upper Band Edge Plot (Band 5 – 3.0MHz QPSK – RB Size 15)

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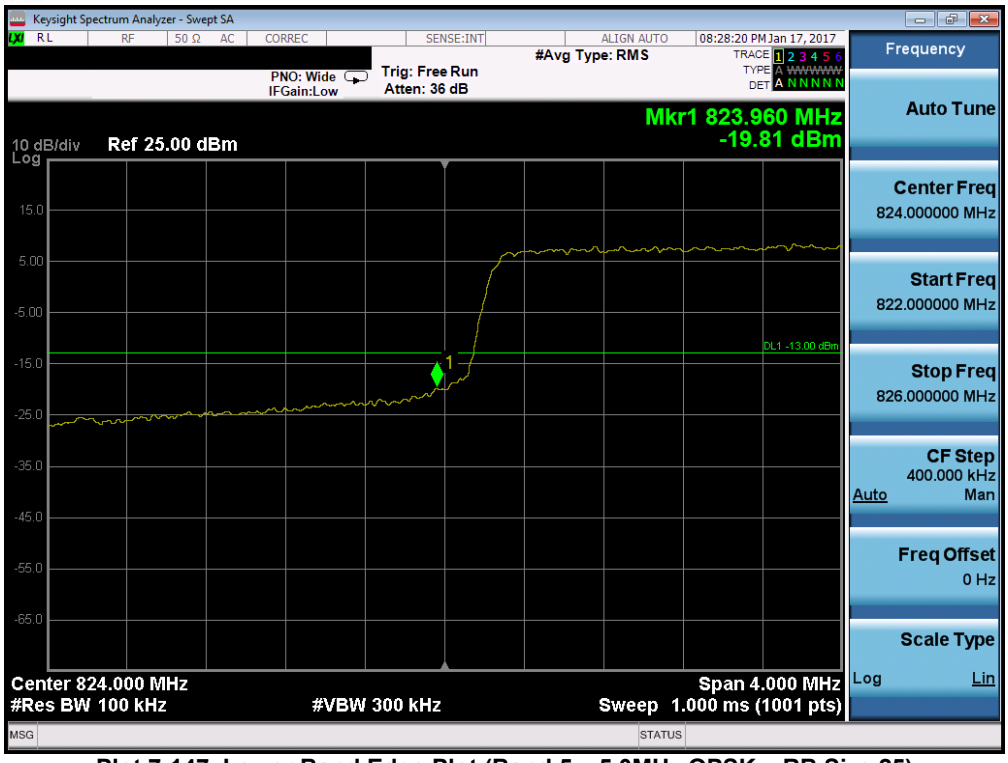

Plot 7-147. Lower Band Edge Plot (Band 5 – 5.0MHz QPSK – RB Size 25)

Plot 7-148. Upper Band Edge Plot (Band 5 – 5.0MHz QPSK – RB Size 25)

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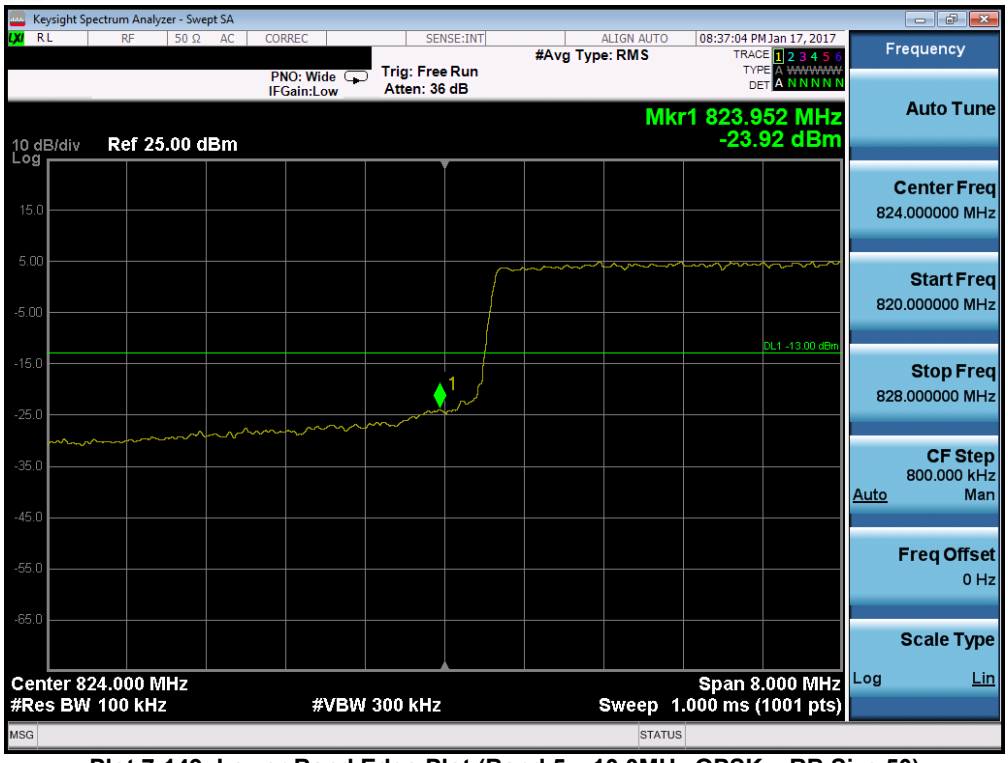
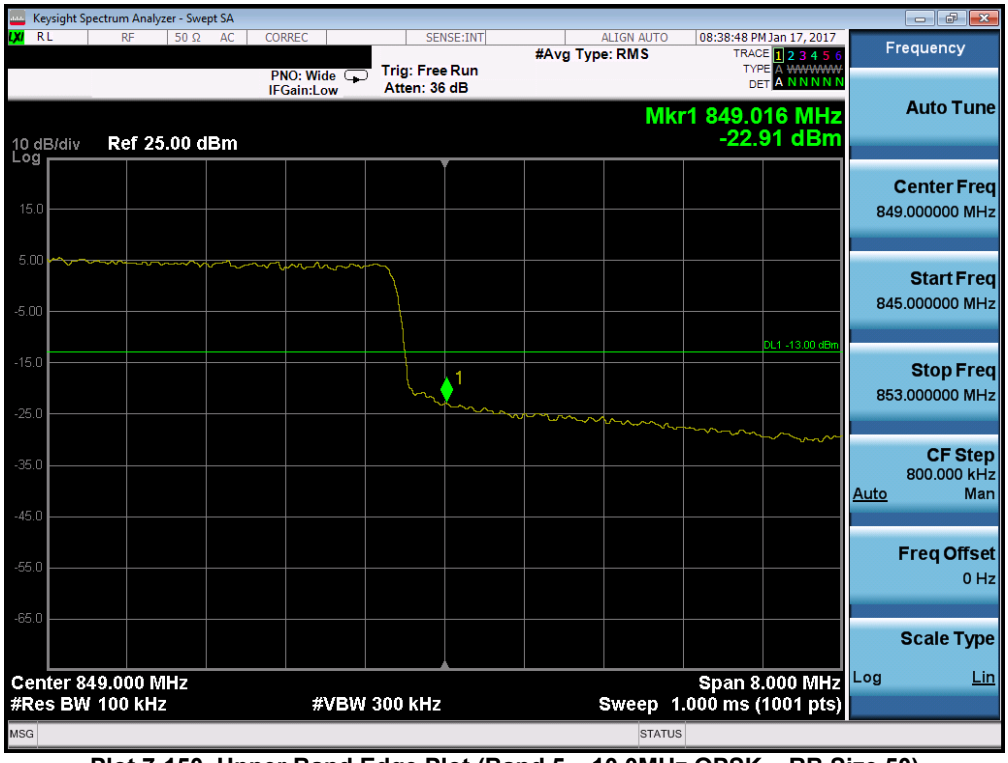


Plot 7-149. Lower Band Edge Plot (Band 5 – 10.0MHz QPSK – RB Size 50)



Plot 7-150. Upper Band Edge Plot (Band 5 – 10.0MHz QPSK – RB Size 50)

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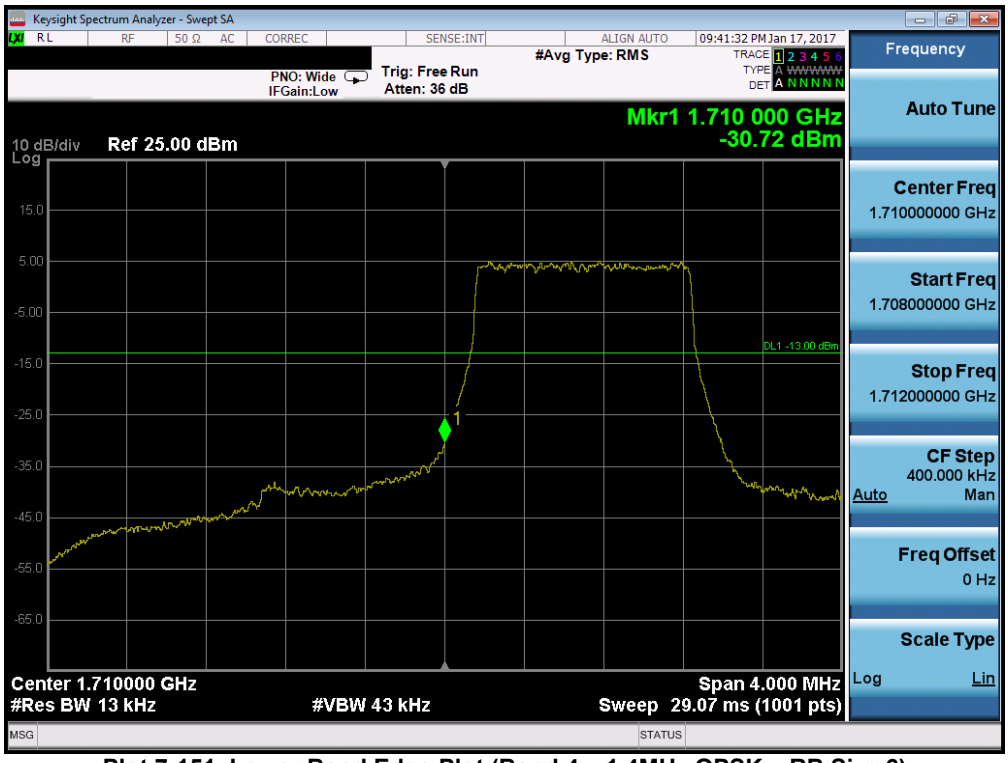
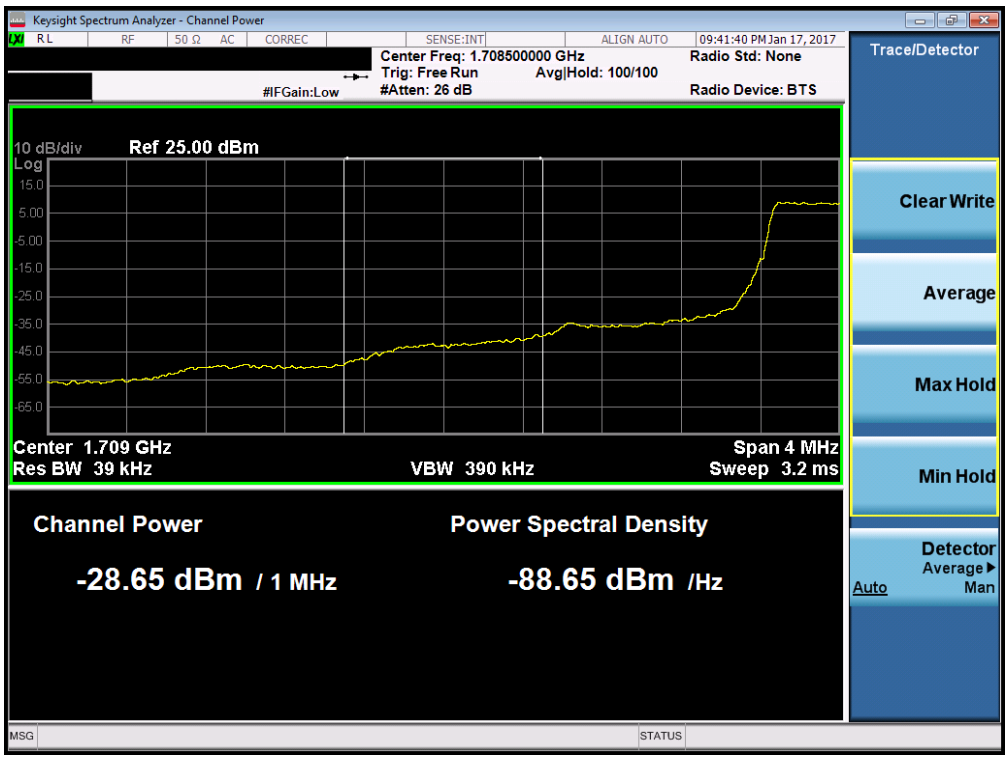
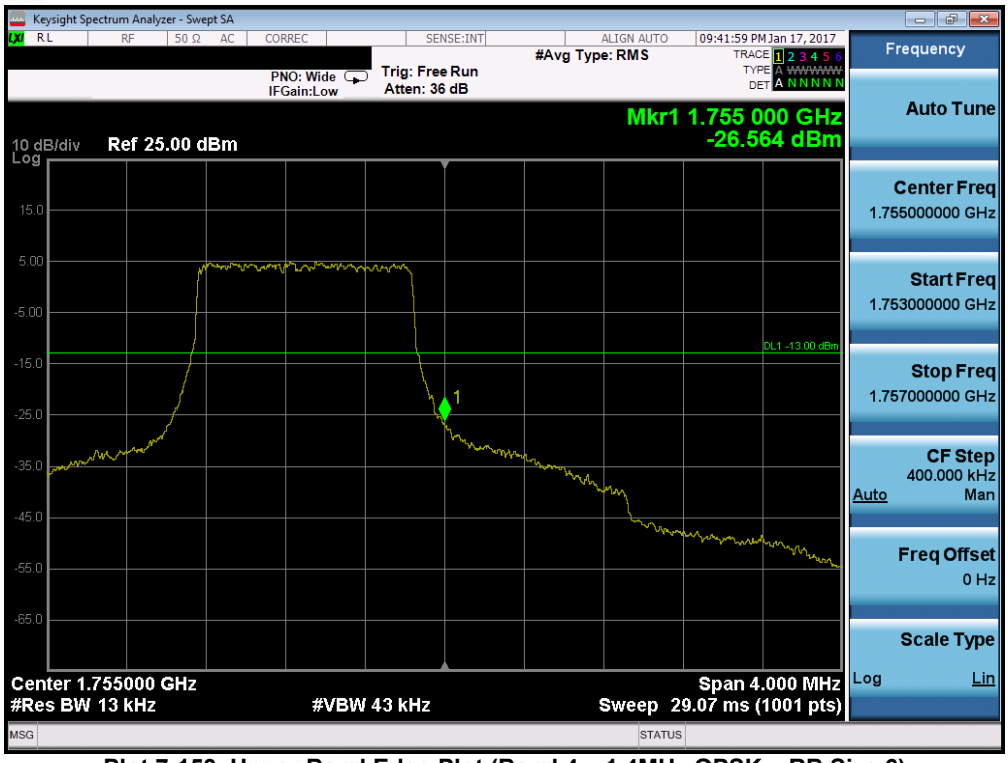


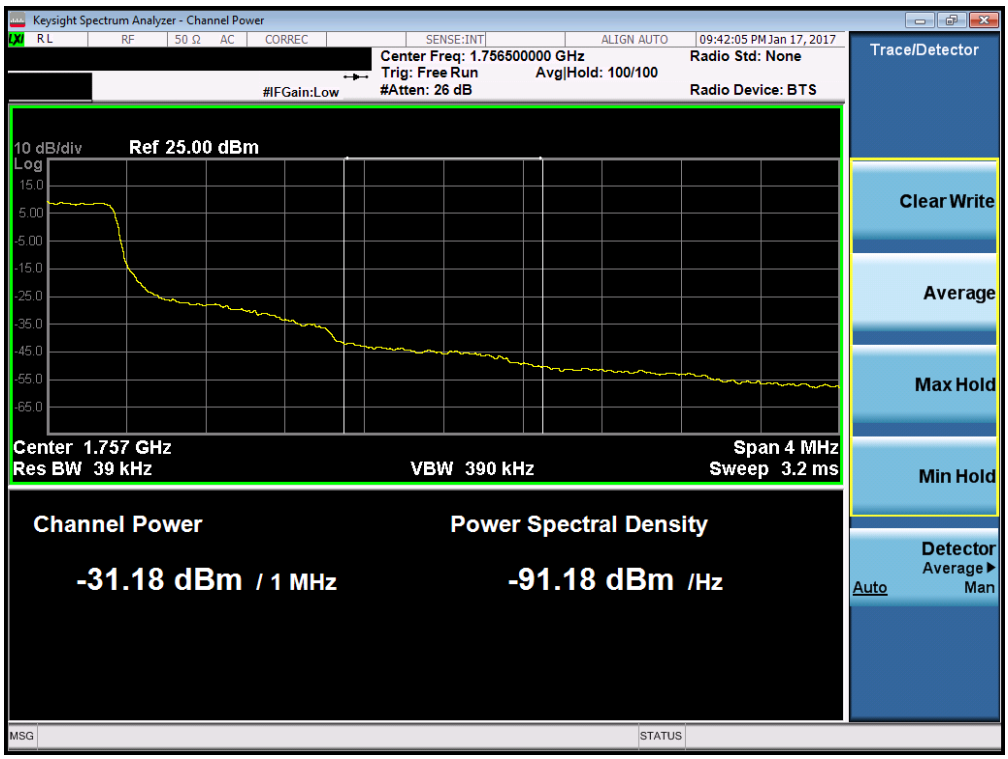
Plot 7-151. Lower Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)



Plot 7-152. Lower Extended Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)



Plot 7-153. Upper Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)



Plot 7-154. Upper Extended Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

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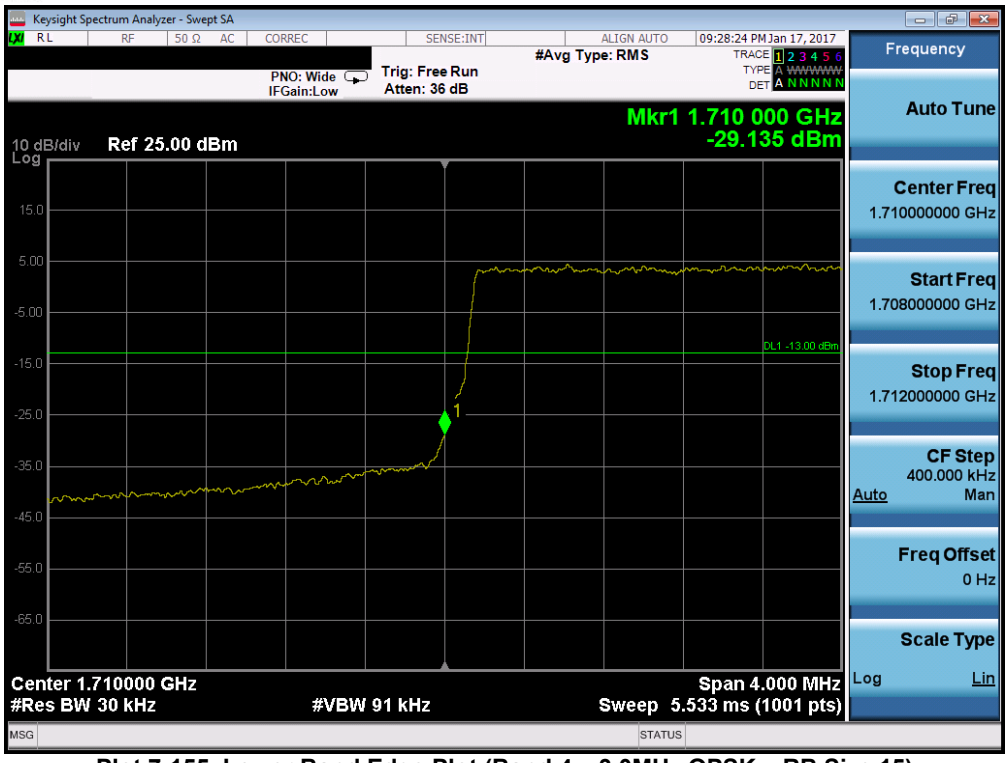
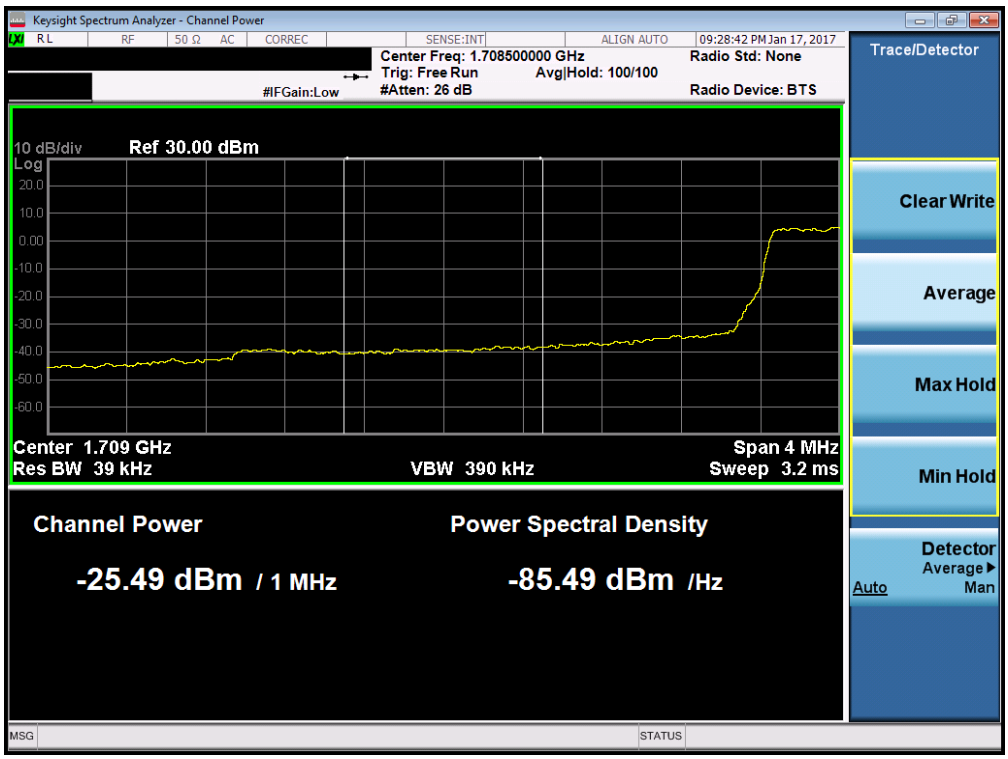
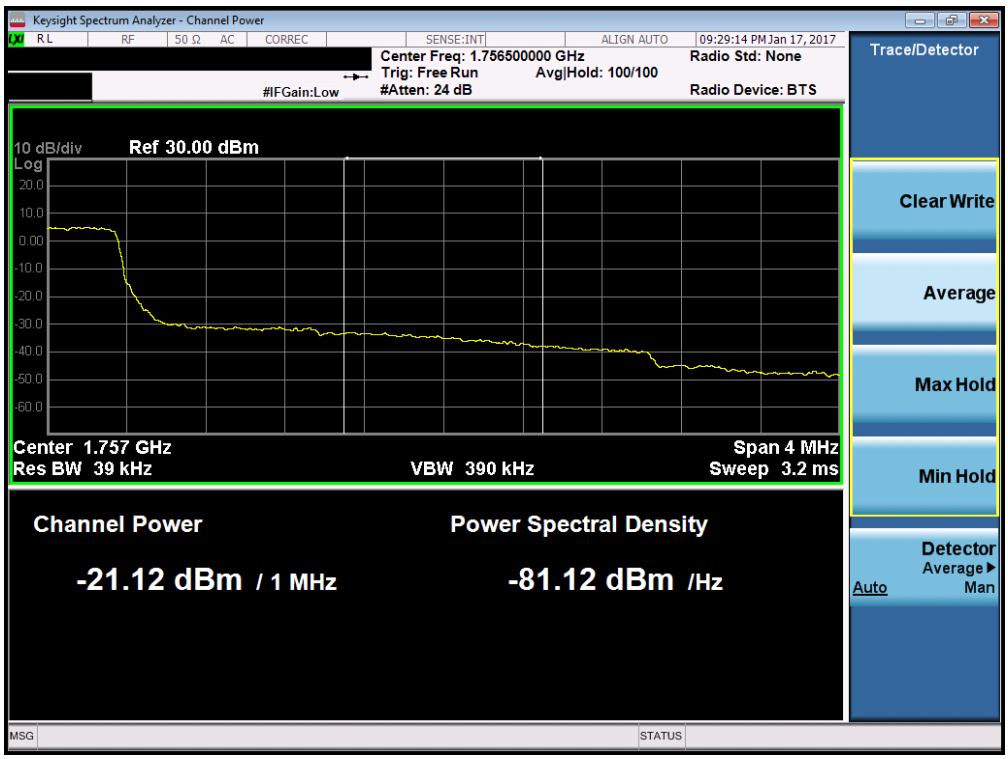


Plot 7-155. Lower Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

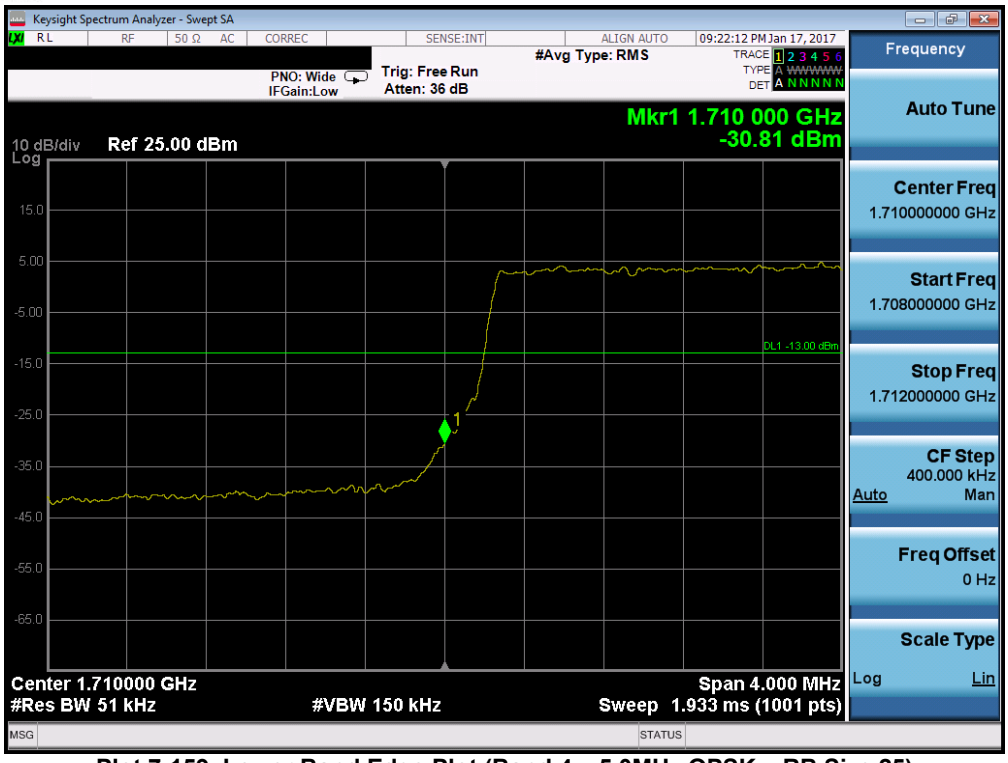


Plot 7-156. Lower Extended Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

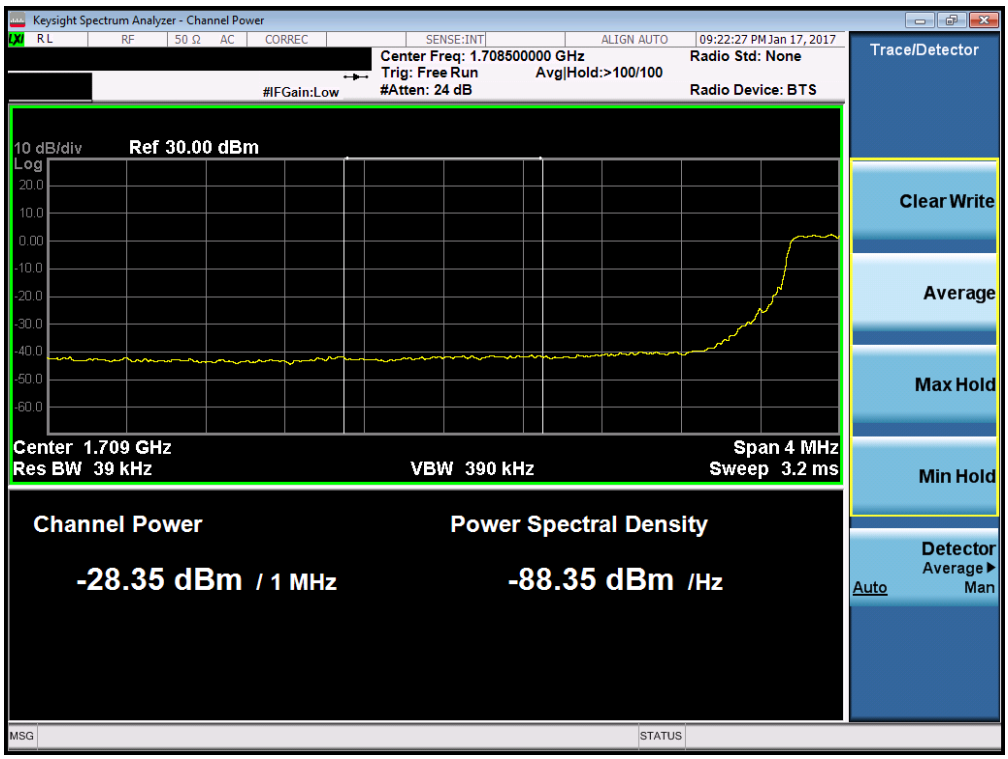
Plot 7-157. Upper Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)



Plot 7-158. Upper Extended Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)



Plot 7-159. Lower Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)



Plot 7-160. Lower Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

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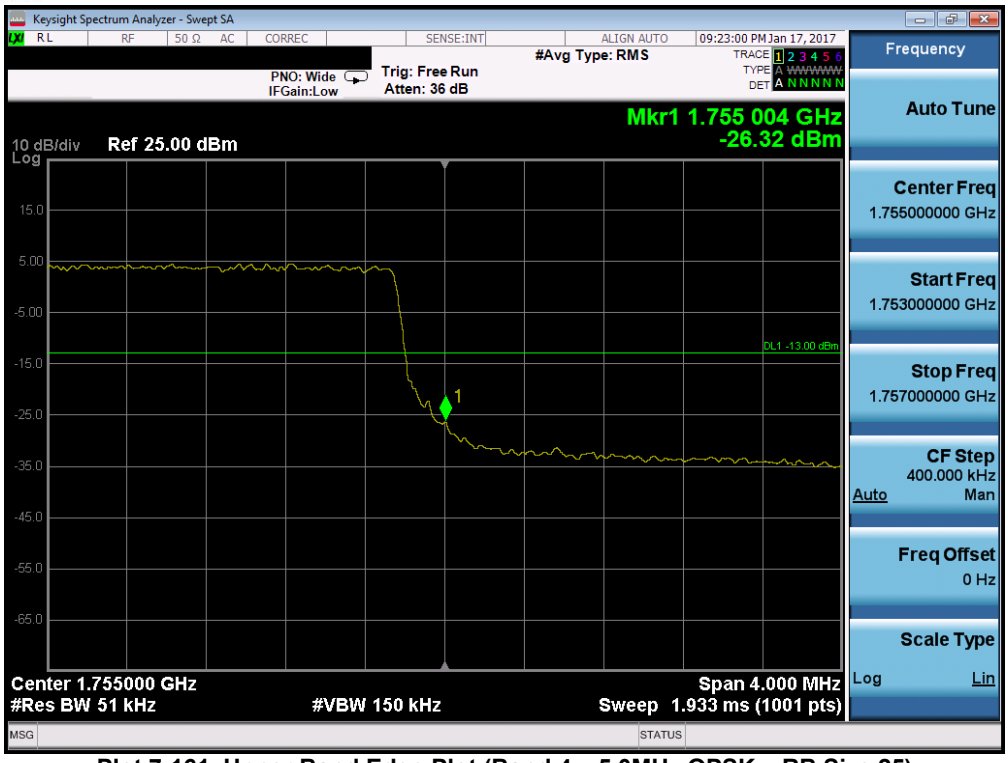
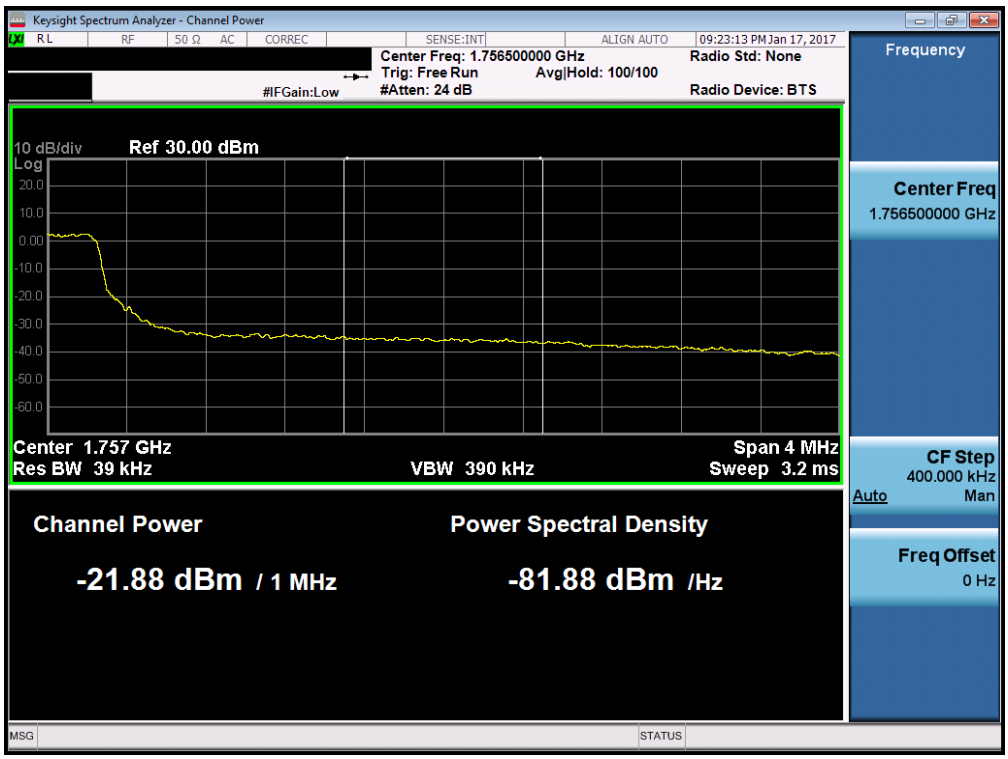
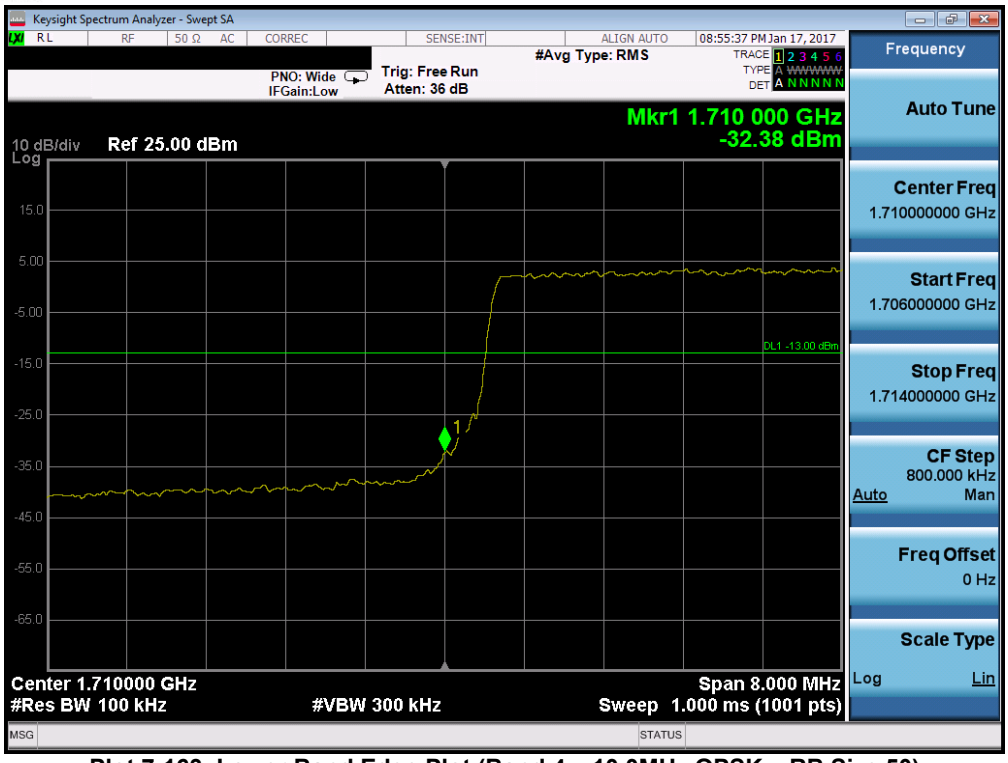


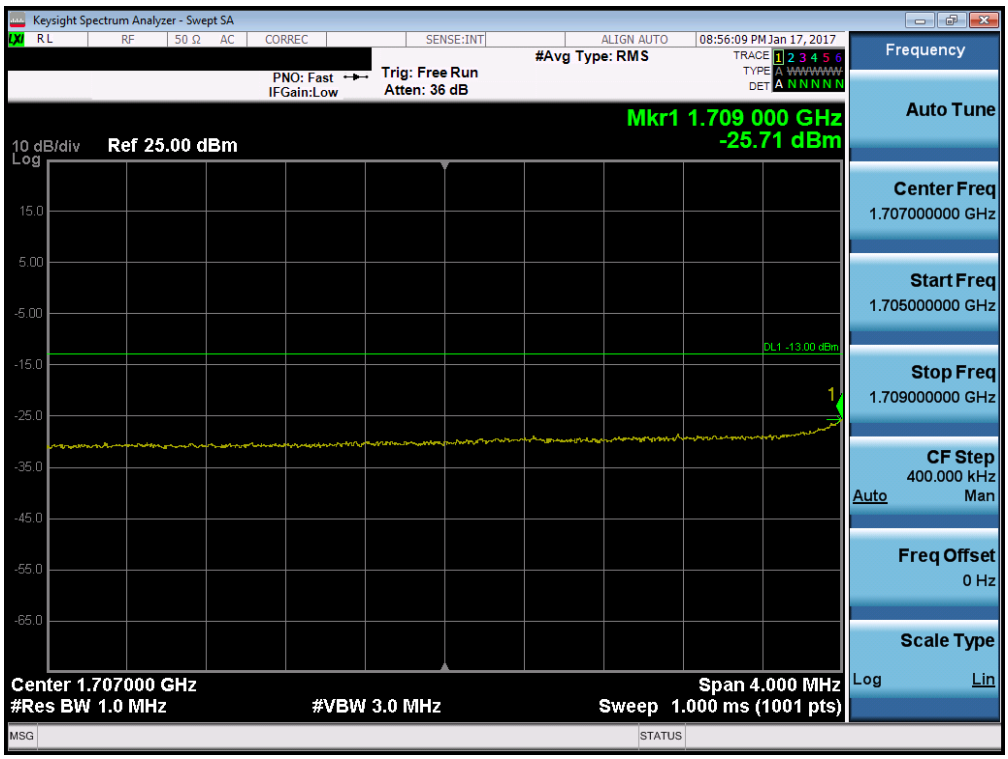
Plot 7-161. Upper Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)



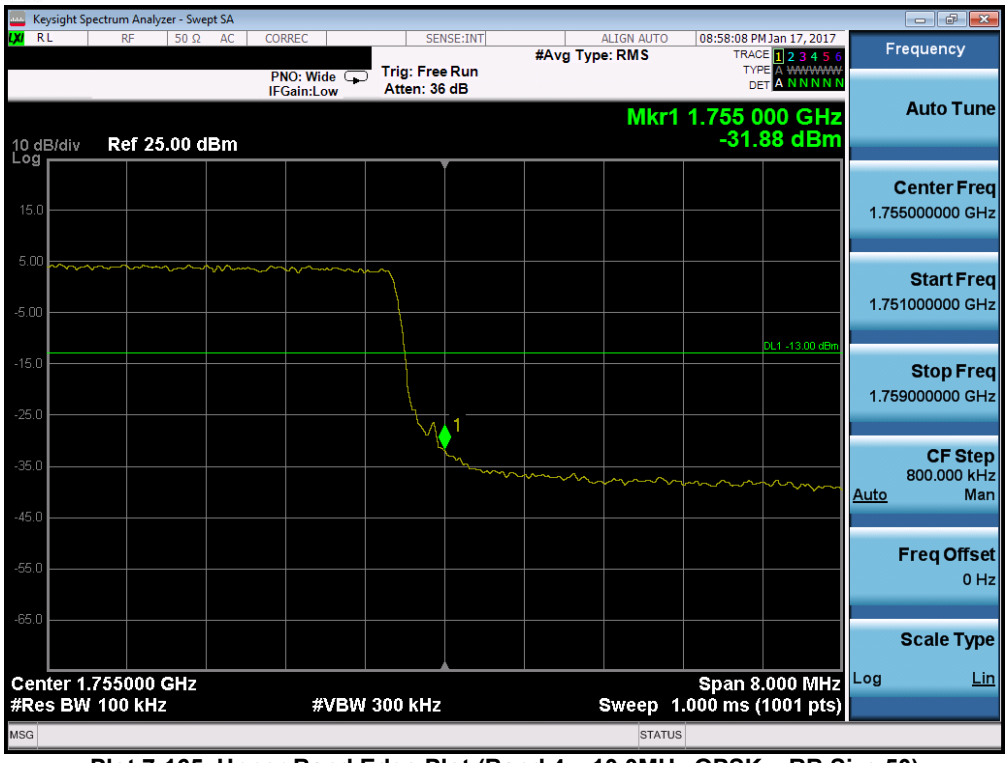
Plot 7-162. Upper Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)



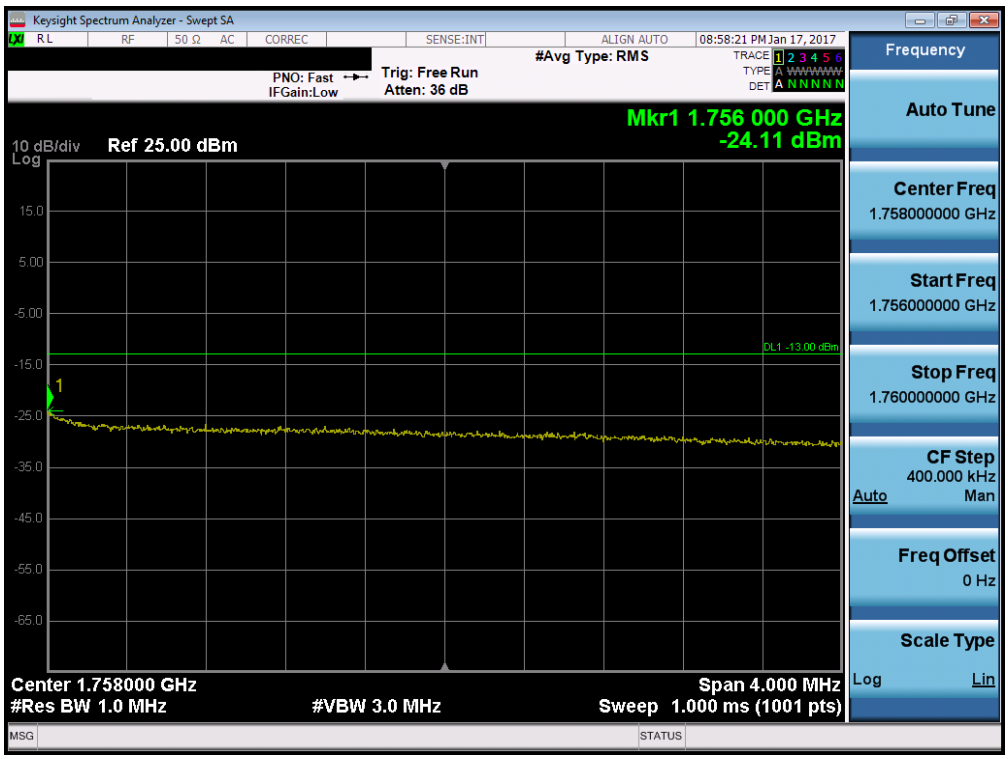
Plot 7-163. Lower Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)



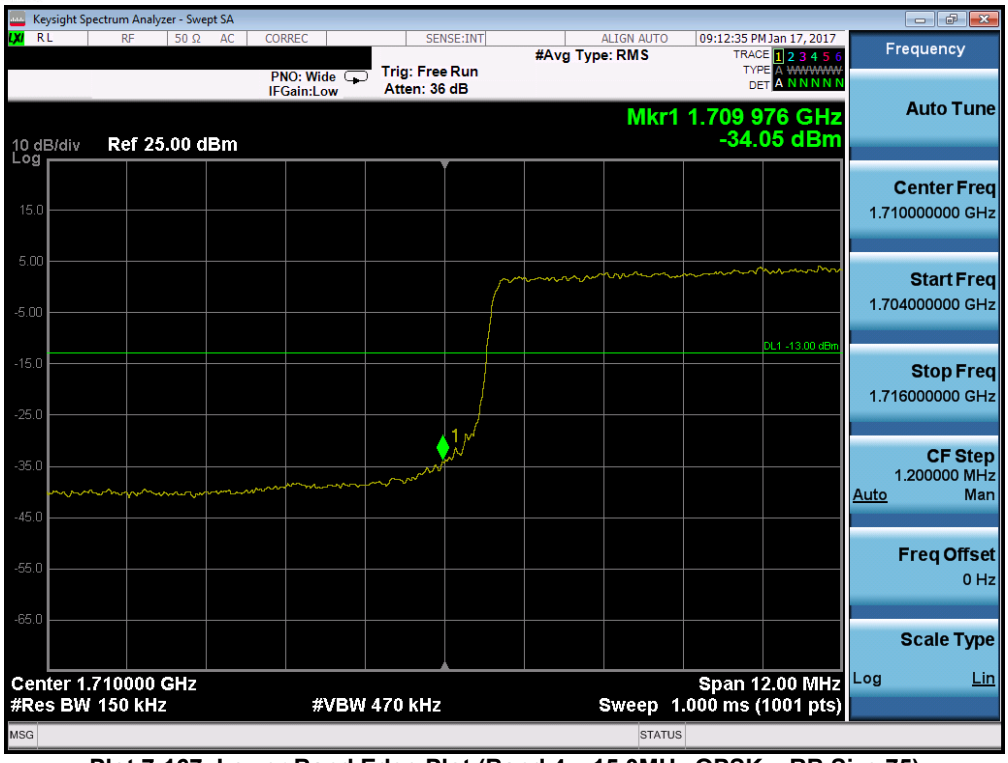
Plot 7-164. Lower Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)



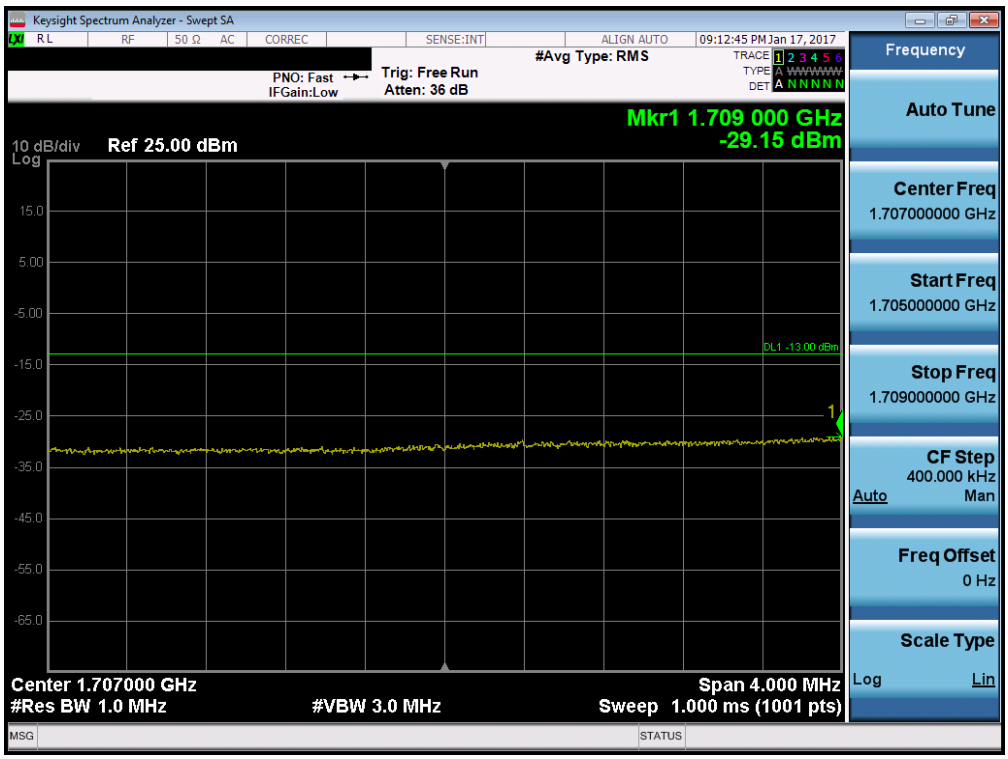
Plot 7-165. Upper Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)



Plot 7-166. Upper Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)



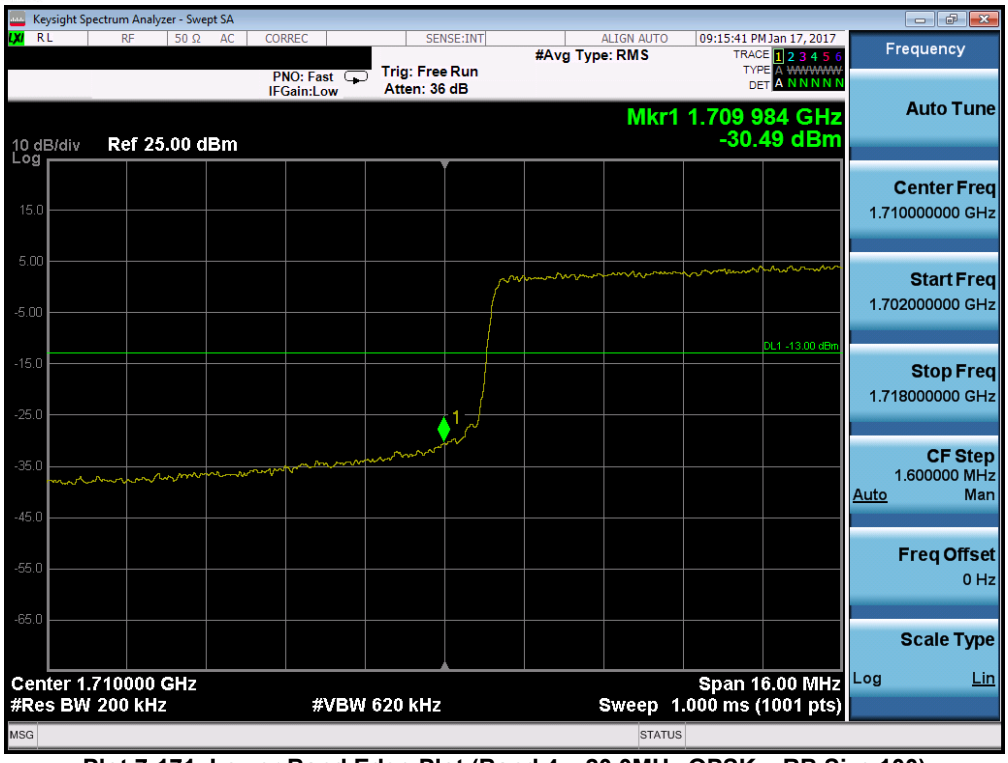
Plot 7-167. Lower Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)



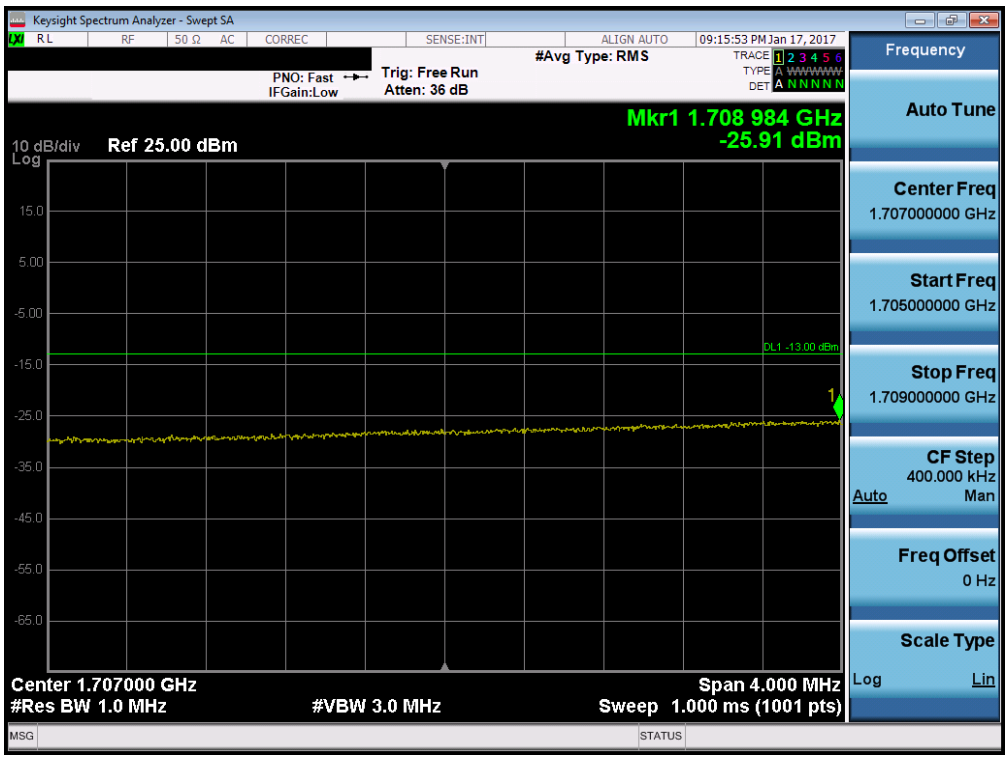
Plot 7-168. Lower Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

Plot 7-169. Upper Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

Plot 7-170. Upper Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)



Plot 7-171. Lower Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)



Plot 7-172. Lower Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

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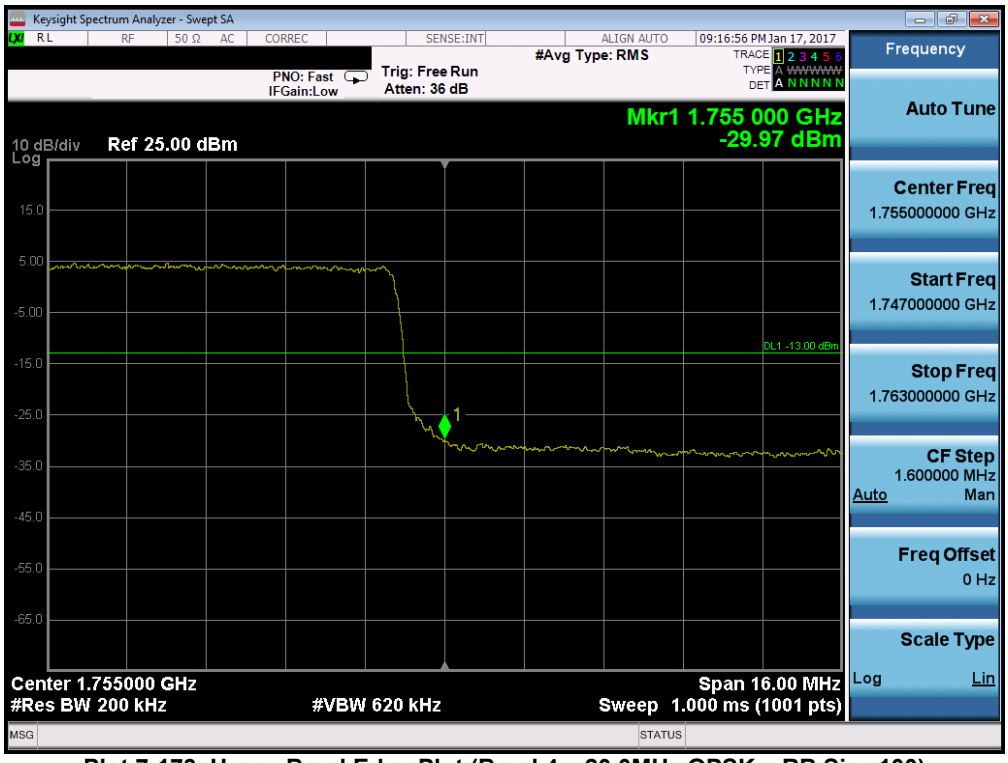
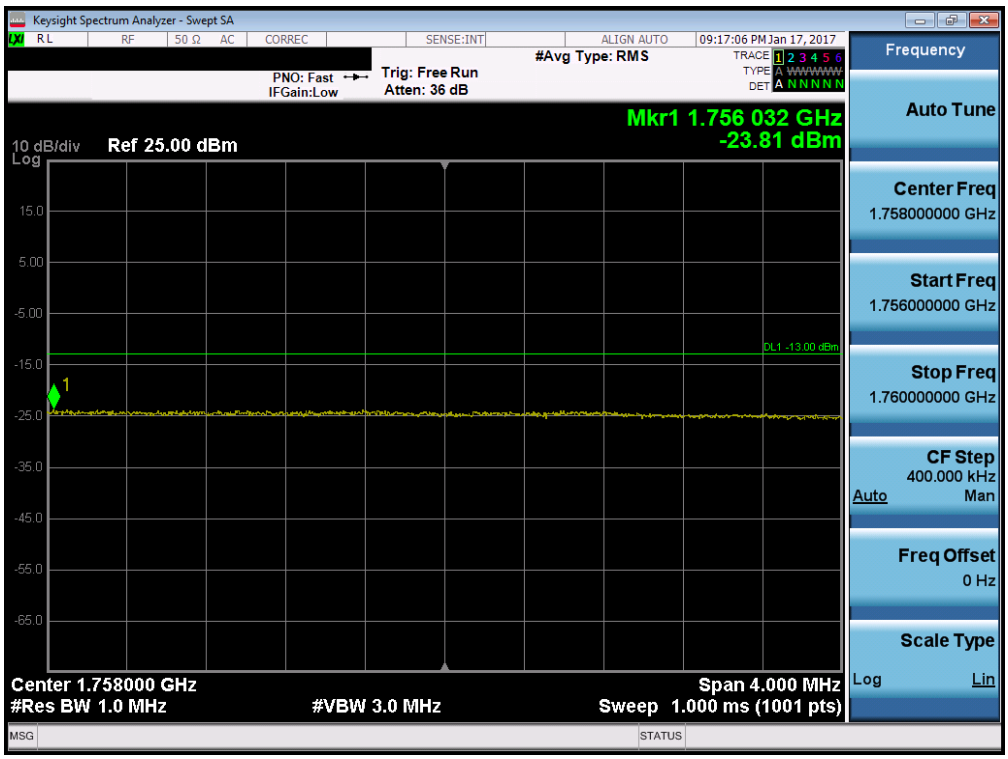
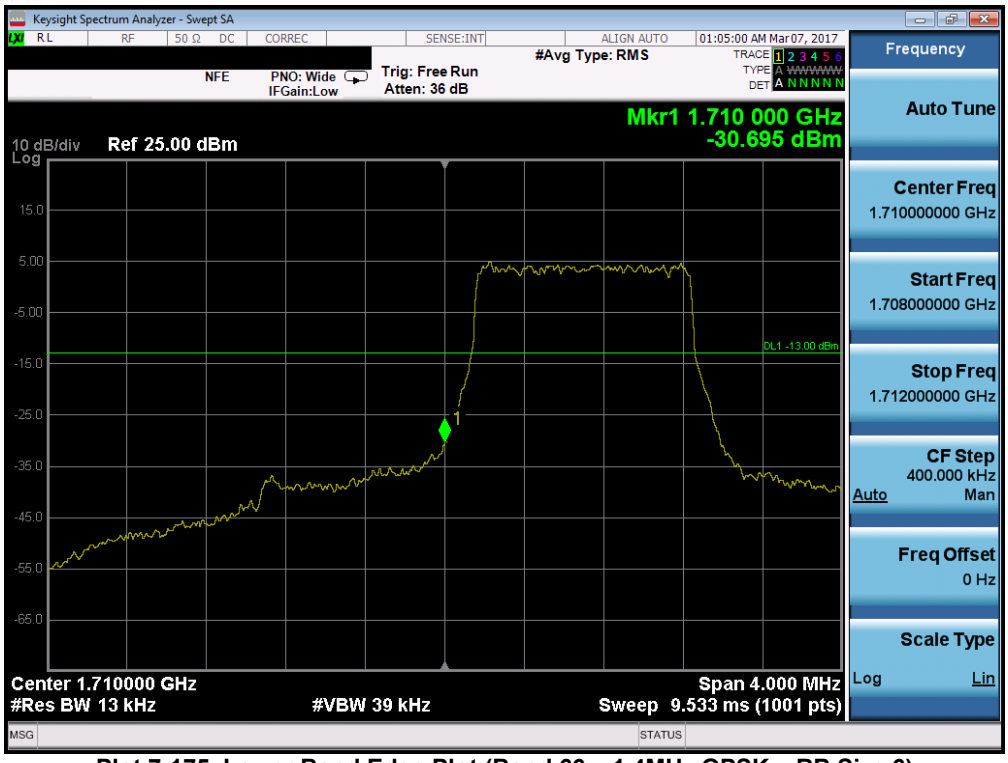


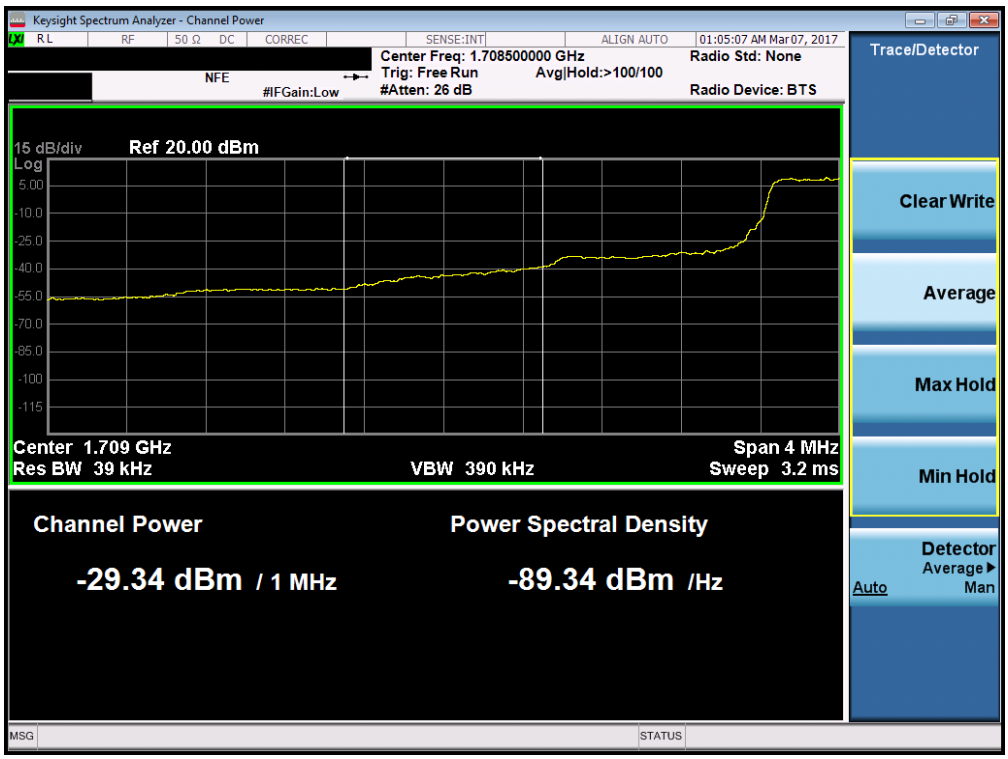
Plot 7-173. Upper Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)



Plot 7-174. Upper Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

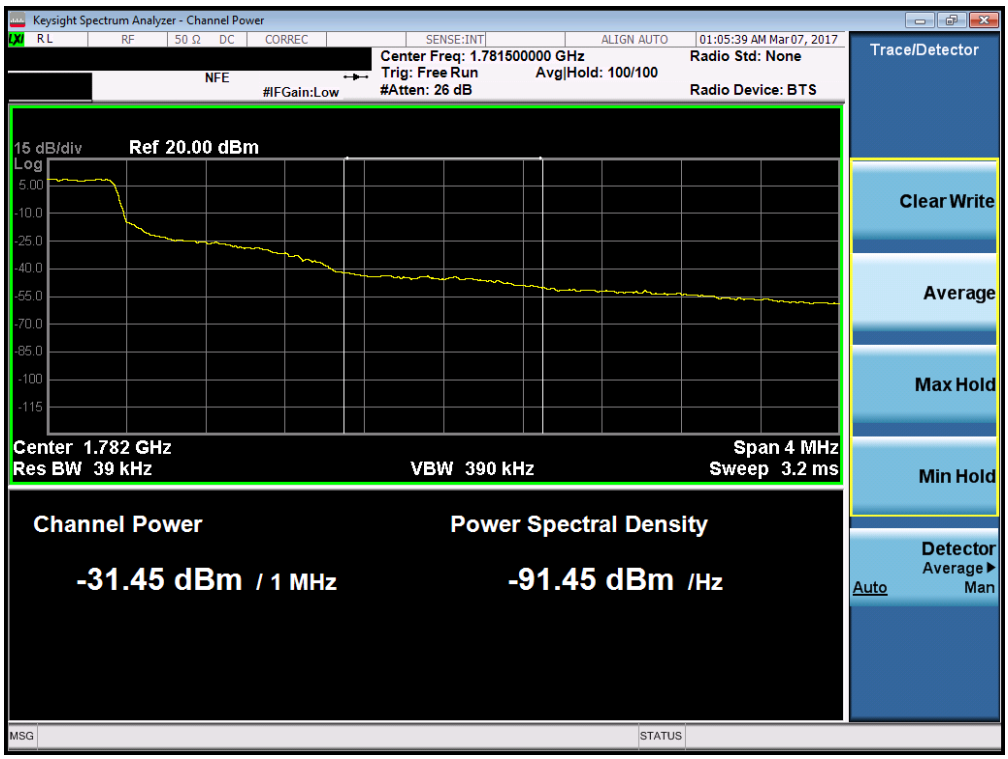


Plot 7-175. Lower Band Edge Plot (Band 66 – 1.4MHz QPSK – RB Size 6)

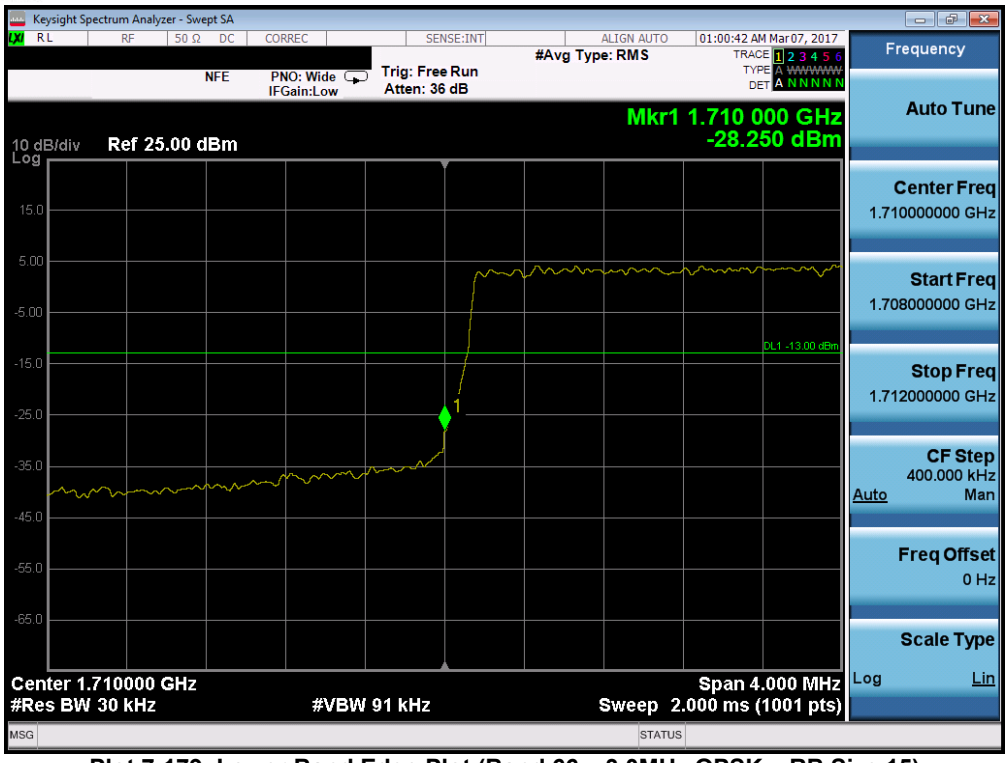


Plot 7-176. Lower Extended Band Edge Plot (Band 66 – 1.4MHz QPSK – RB Size 6)

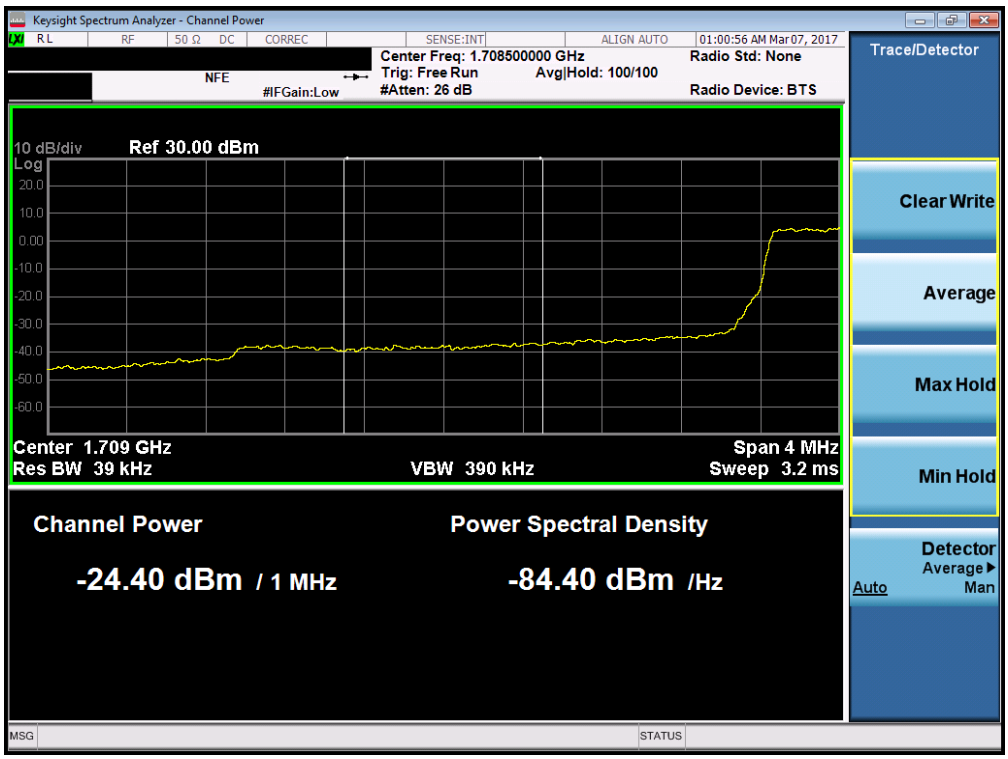
Plot 7-177. Upper Band Edge Plot (Band 66 – 1.4MHz QPSK – RB Size 6)



Plot 7-178. Upper Extended Band Edge Plot (Band 66 – 1.4MHz QPSK – RB Size 6)



Plot 7-179. Lower Band Edge Plot (Band 66 – 3.0MHz QPSK – RB Size 15)



Plot 7-180. Lower Extended Band Edge Plot (Band 66 – 3.0MHz QPSK – RB Size 15)

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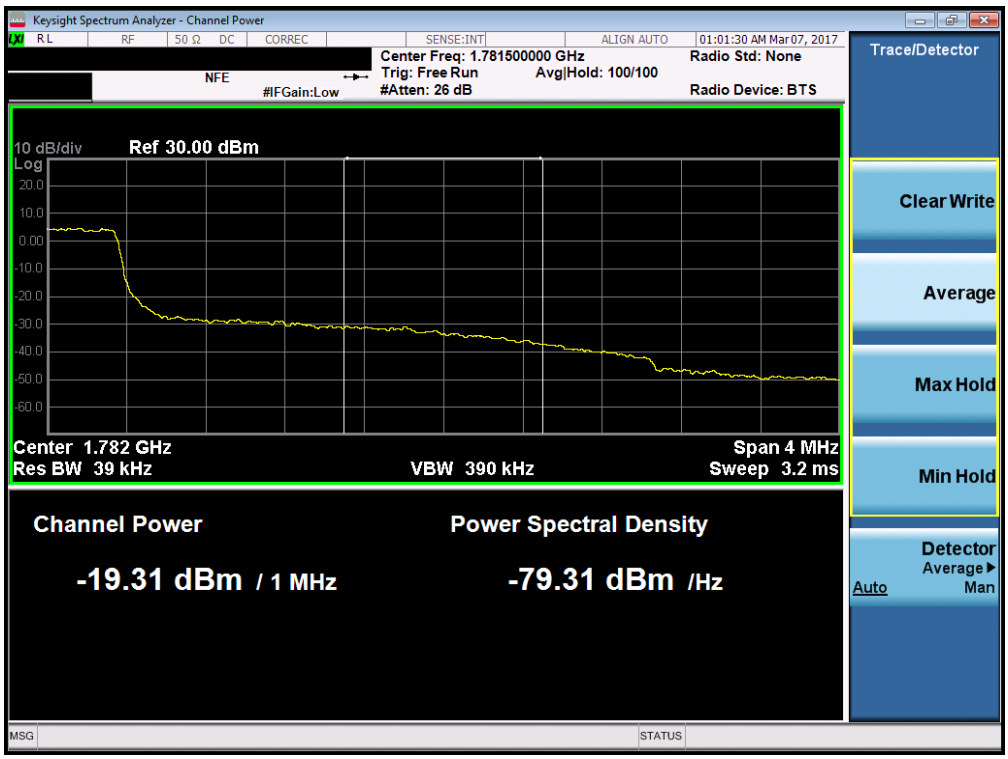
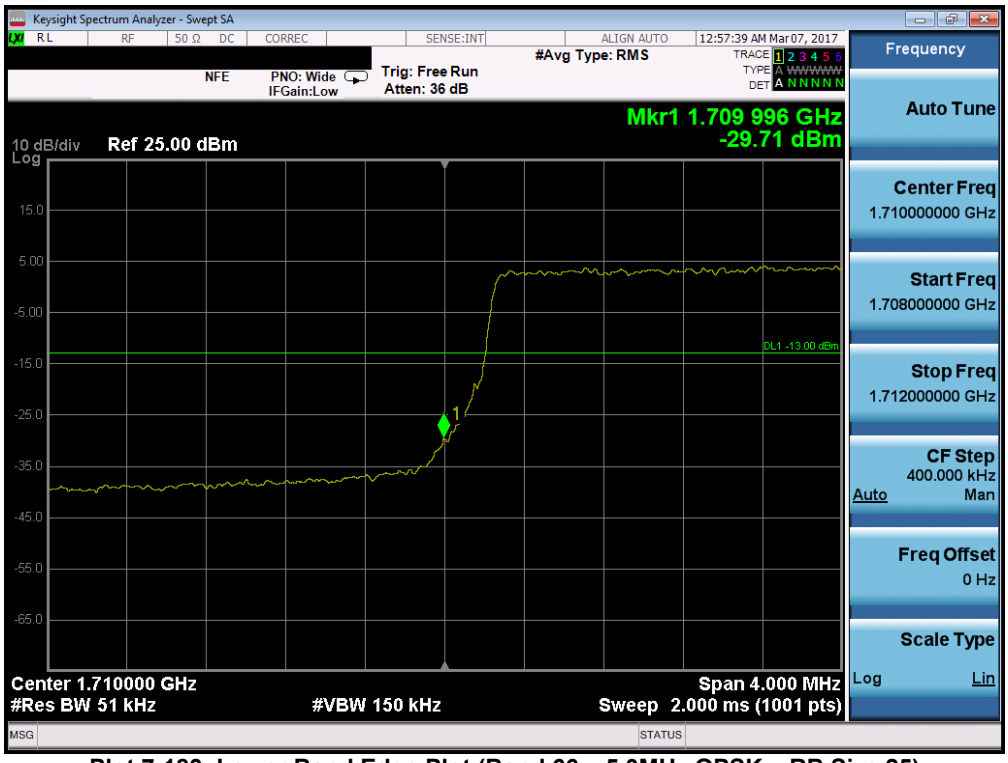
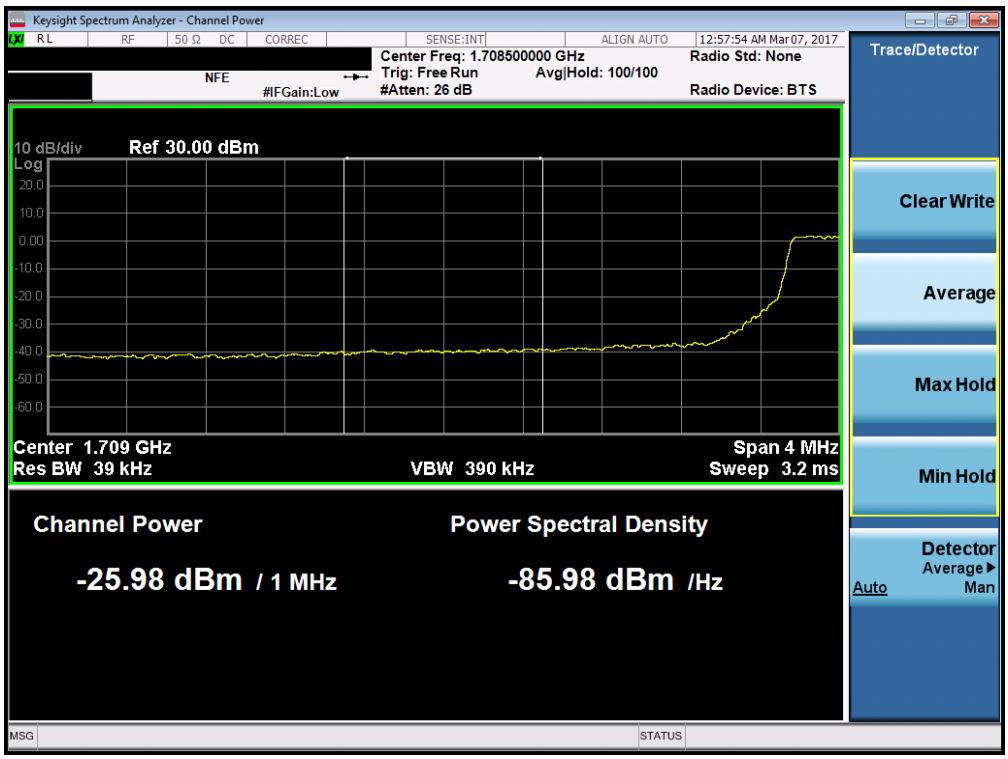
Plot 7-181. Upper Band Edge Plot (Band 66 – 3.0MHz QPSK – RB Size 15)



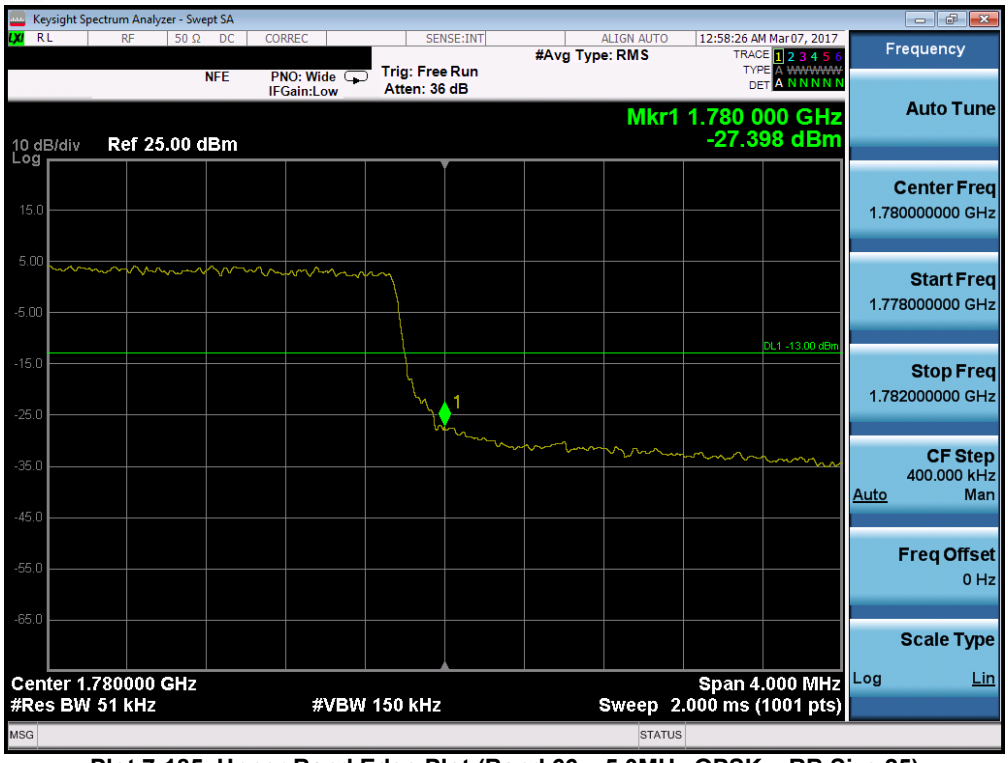
Plot 7-182. Upper Extended Band Edge Plot (Band 66 – 3.0MHz QPSK – RB Size 15)



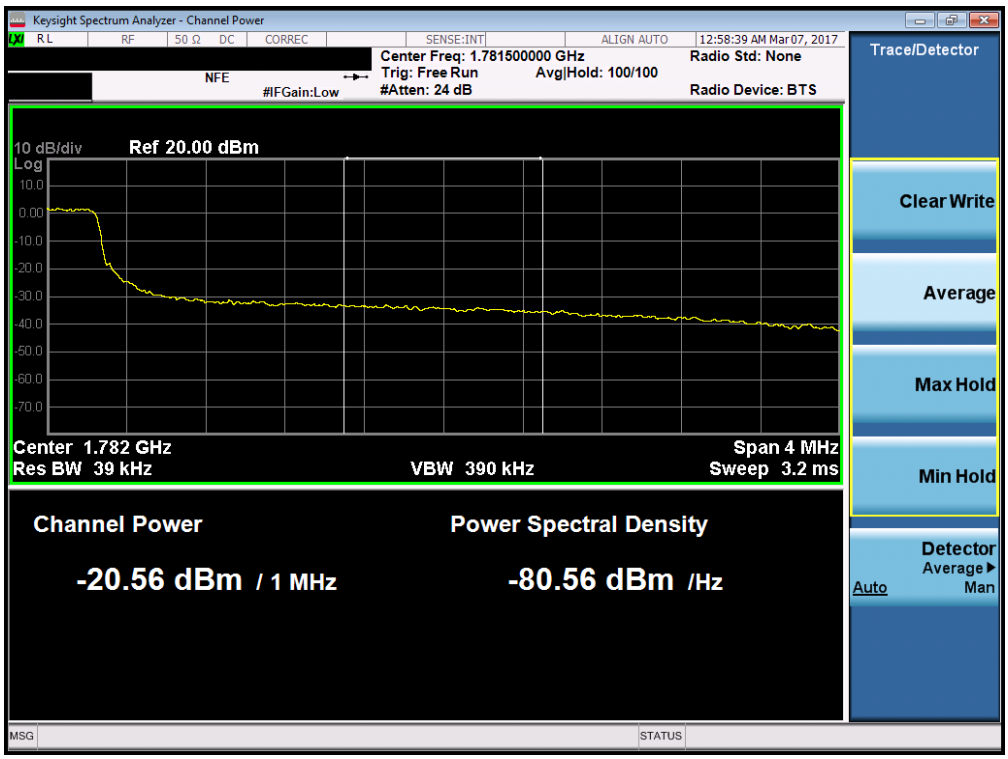
Plot 7-183. Lower Band Edge Plot (Band 66 – 5.0MHz QPSK – RB Size 25)



Plot 7-184. Lower Extended Band Edge Plot (Band 66 – 5.0MHz QPSK – RB Size 25)



Plot 7-185. Upper Band Edge Plot (Band 66 – 5.0MHz QPSK – RB Size 25)



Plot 7-186. Upper Extended Band Edge Plot (Band 66 – 5.0MHz QPSK – RB Size 25)

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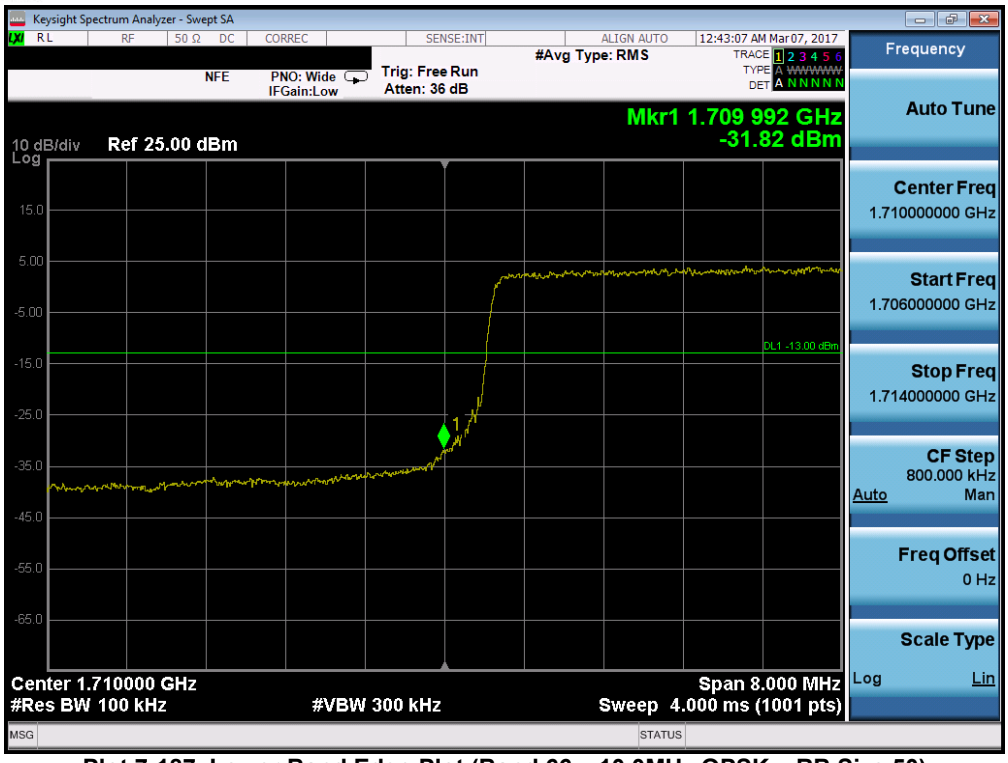
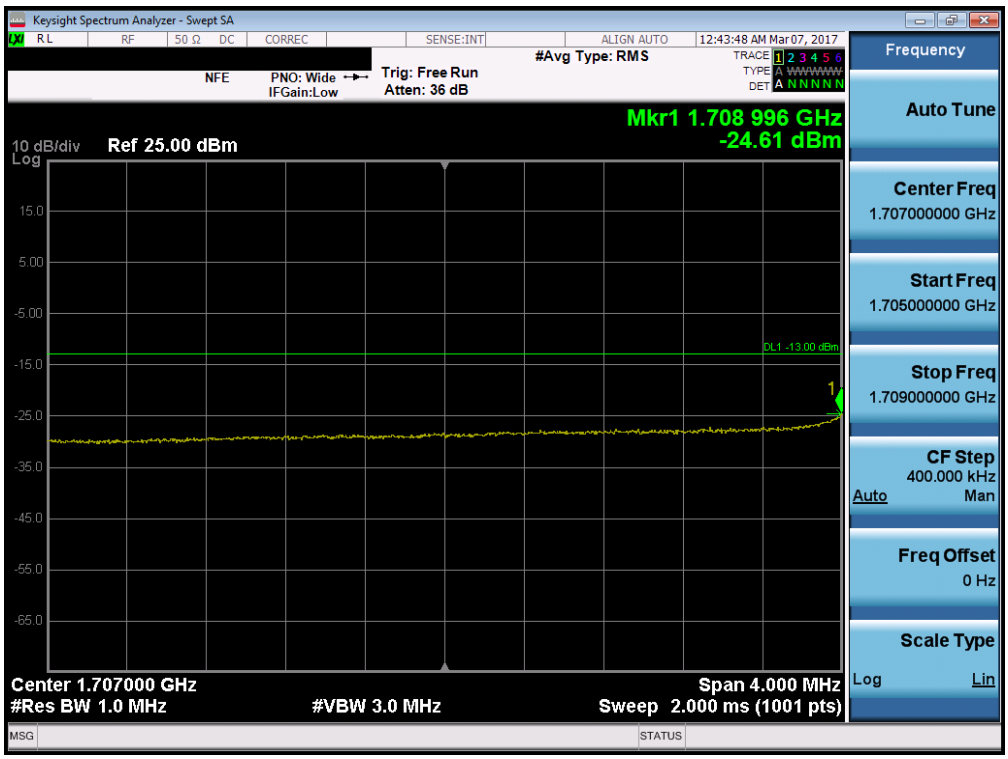


Plot 7-187. Lower Band Edge Plot (Band 66 – 10.0MHz QPSK – RB Size 50)



Plot 7-188. Lower Extended Band Edge Plot (Band 66 – 10.0MHz QPSK – RB Size 50)

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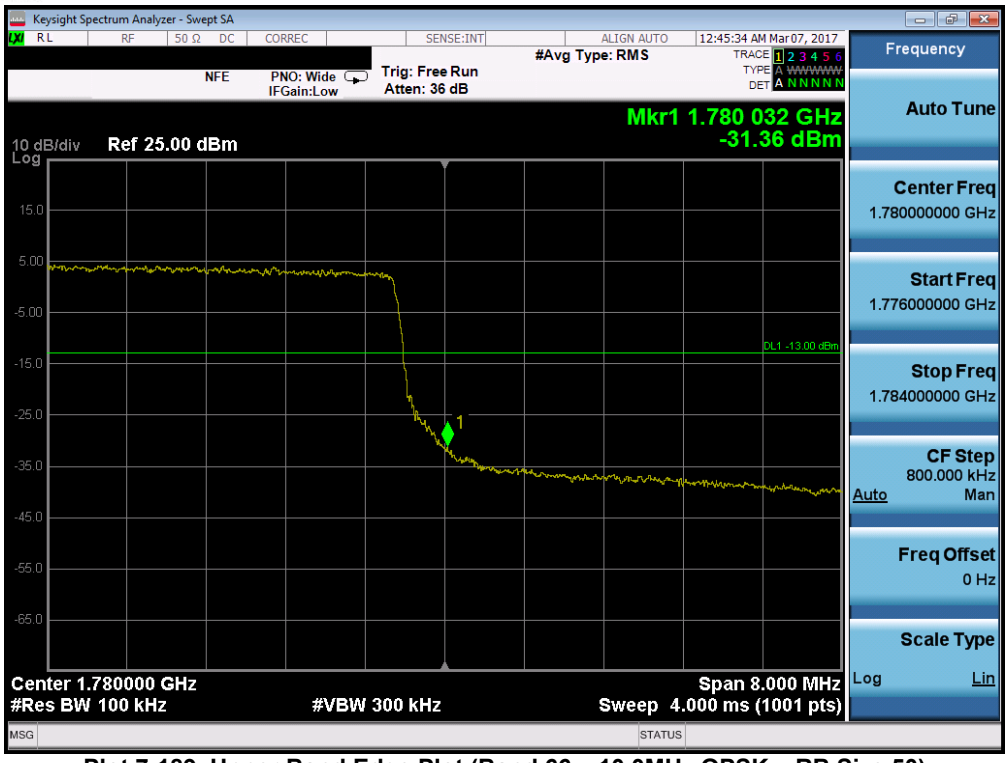
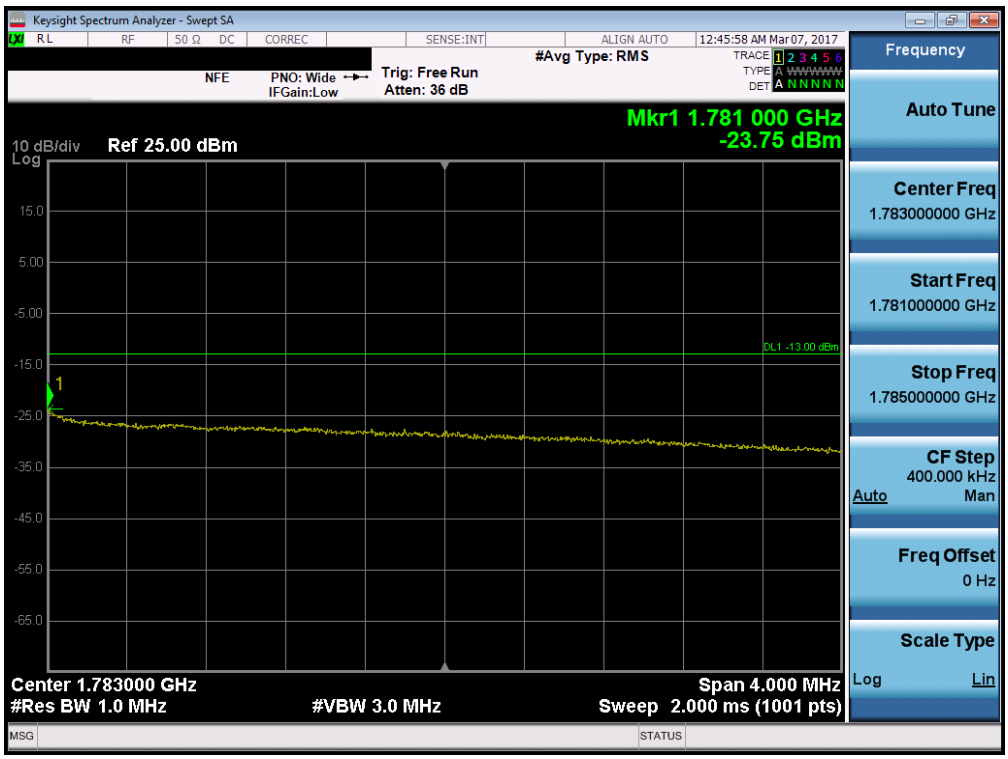
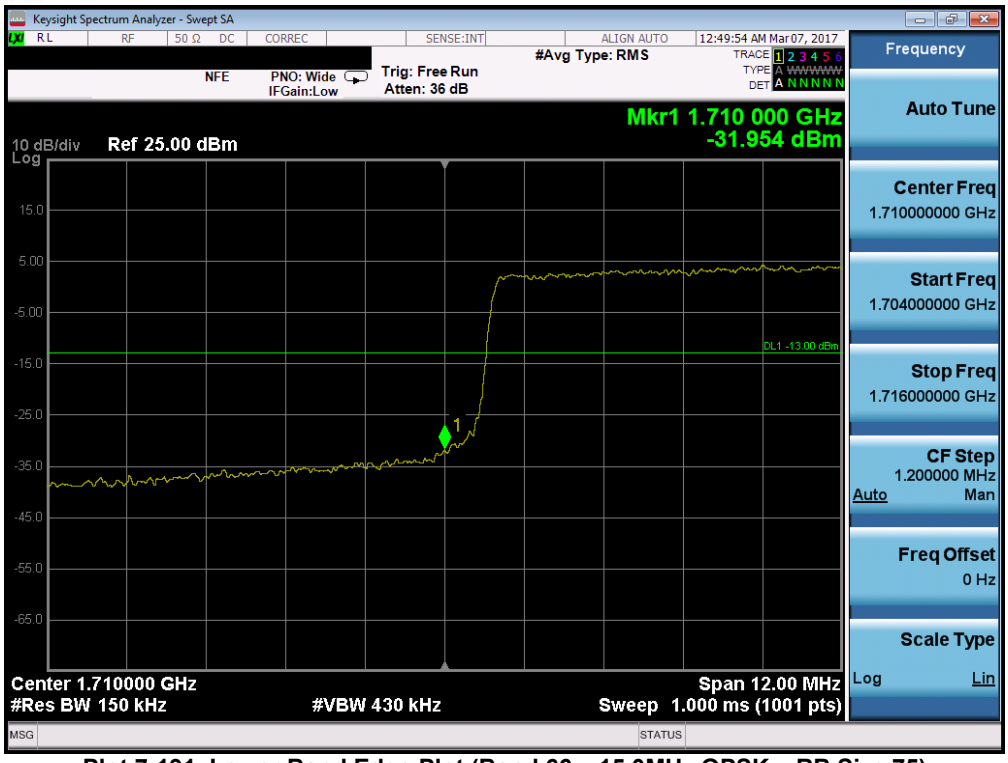


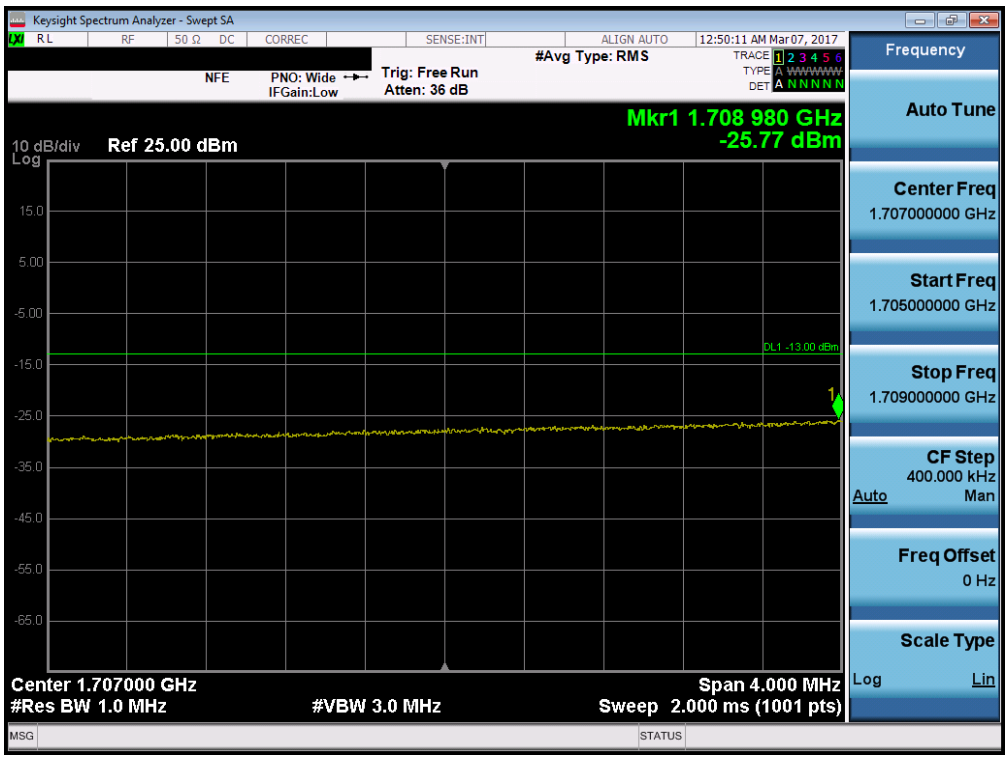
Plot 7-189. Upper Band Edge Plot (Band 66 – 10.0MHz QPSK – RB Size 50)



Plot 7-190. Upper Extended Band Edge Plot (Band 66 – 10.0MHz QPSK – RB Size 50)

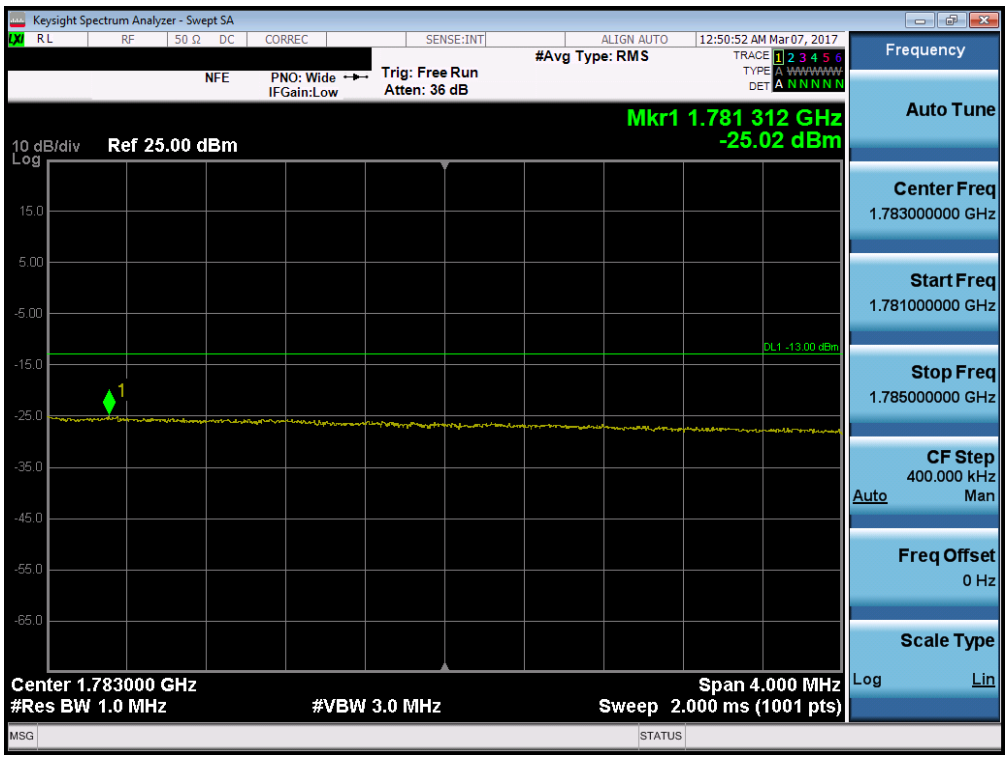


Plot 7-191. Lower Band Edge Plot (Band 66 – 15.0MHz QPSK – RB Size 75)



Plot 7-192. Lower Extended Band Edge Plot (Band 66 – 15.0MHz QPSK – RB Size 75)

Plot 7-193. Upper Band Edge Plot (Band 66 – 15.0MHz QPSK – RB Size 75)



Plot 7-194. Upper Extended Band Edge Plot (Band 66 – 15.0MHz QPSK – RB Size 75)

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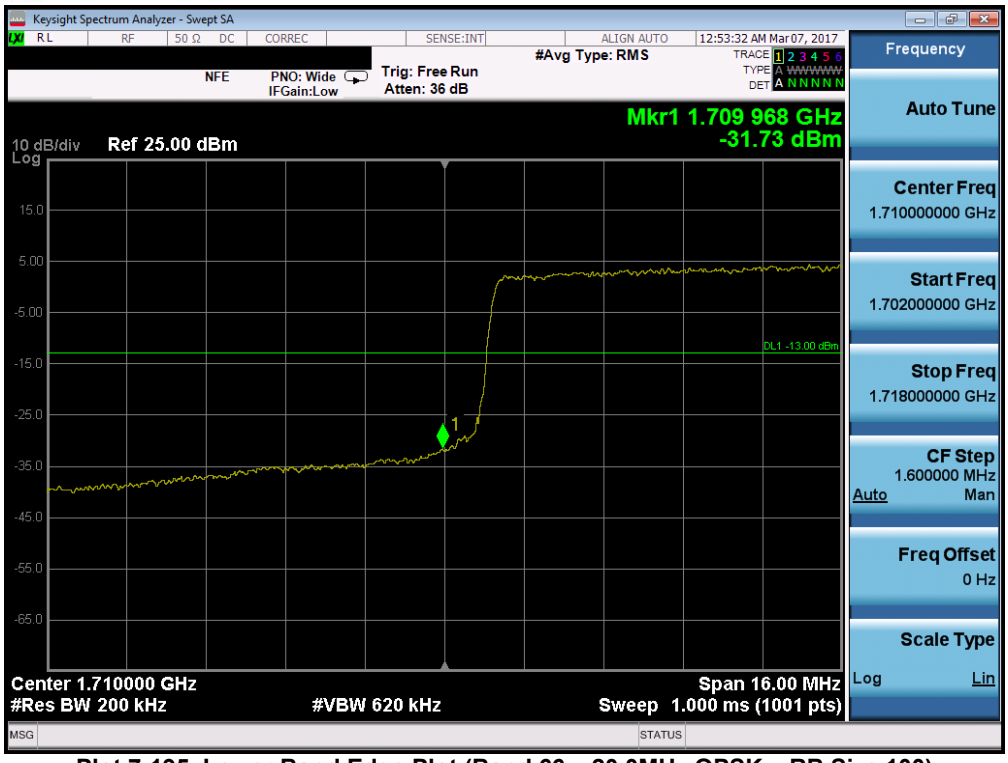
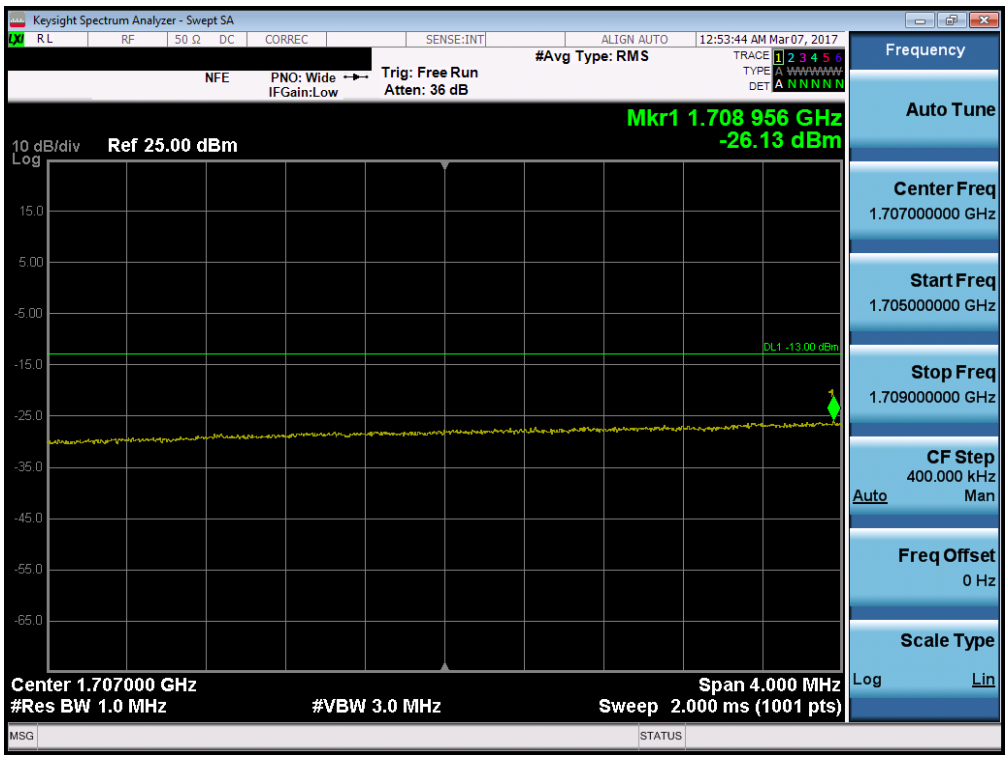
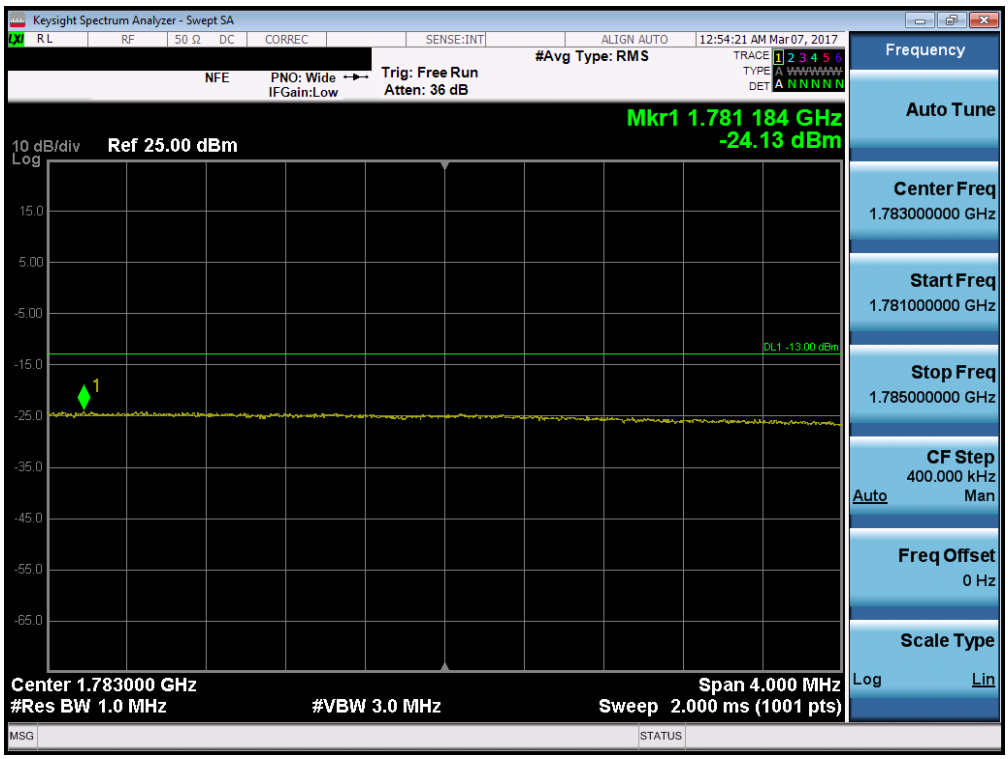


Plot 7-195. Lower Band Edge Plot (Band 66 – 20.0MHz QPSK – RB Size 100)



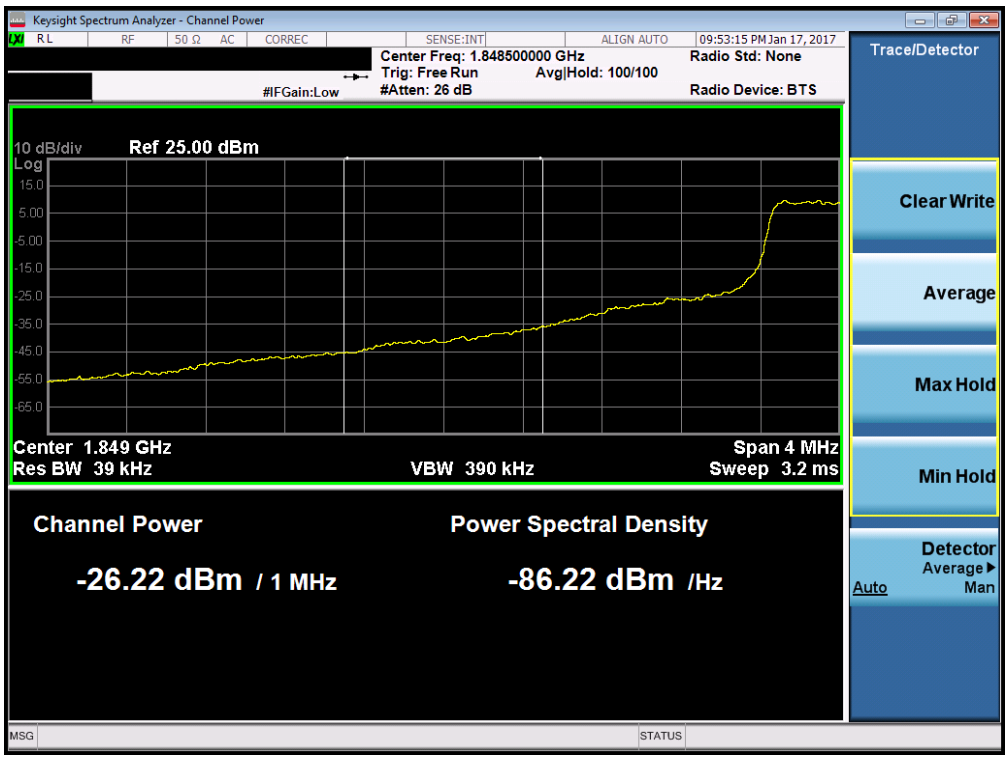
Plot 7-196. Lower Extended Band Edge Plot (Band 66 – 20.0MHz QPSK – RB Size 100)

Plot 7-197. Upper Band Edge Plot (Band 66 – 20.0MHz QPSK – RB Size 100)



Plot 7-198. Upper Extended Band Edge Plot (Band 66 – 20.0MHz QPSK – RB Size 100)

Plot 7-199. Lower Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)



Plot 7-200. Lower Extended Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)

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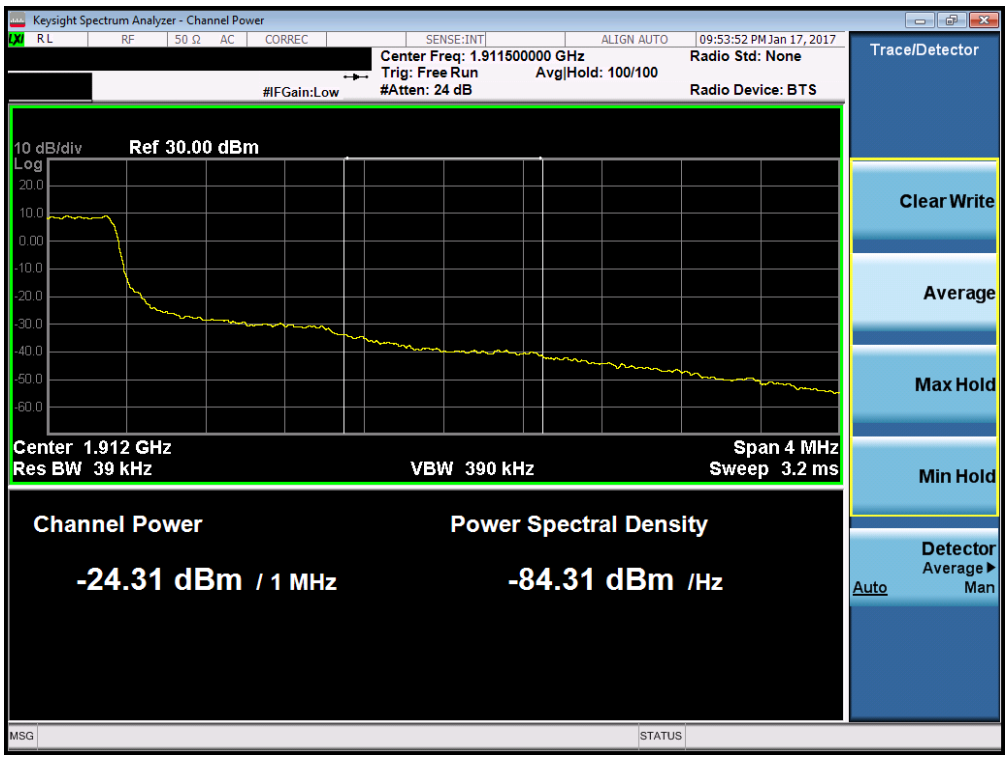
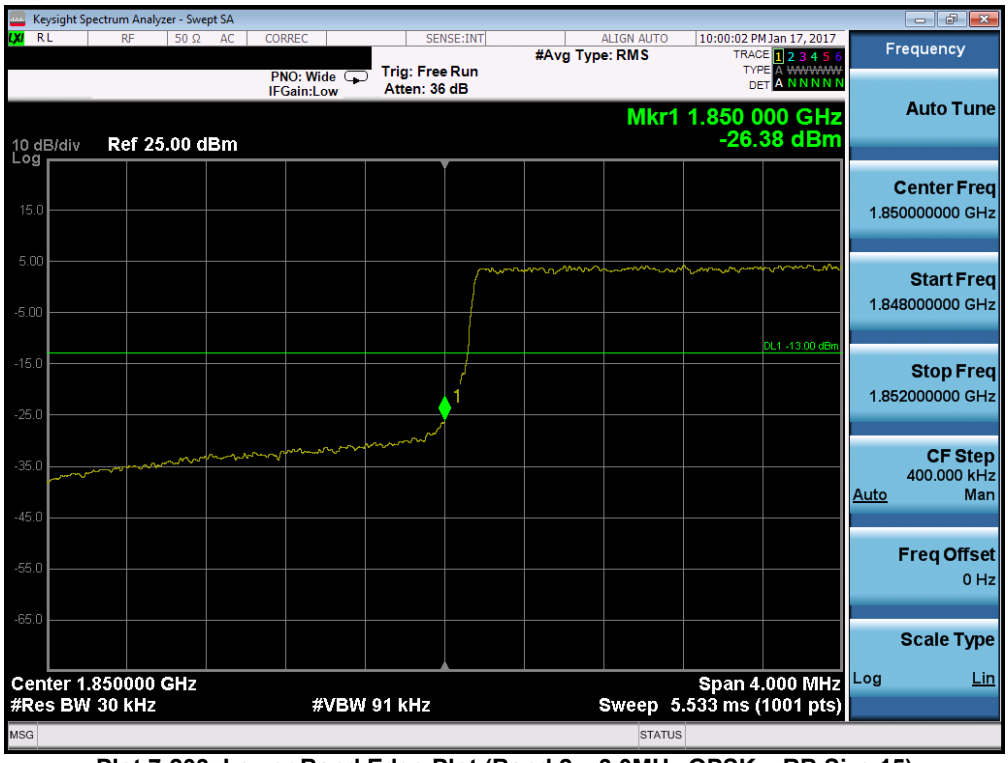
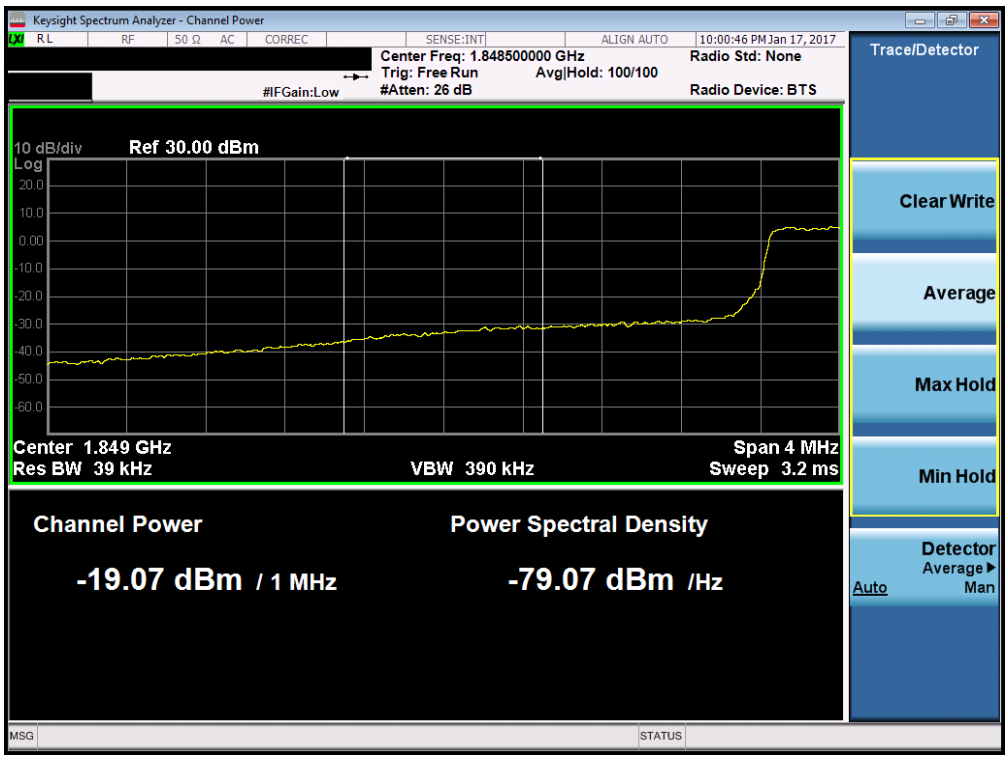
Plot 7-201. Upper Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)



Plot 7-202. Upper Extended Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)



Plot 7-203. Lower Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)



Plot 7-204. Lower Extended Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)

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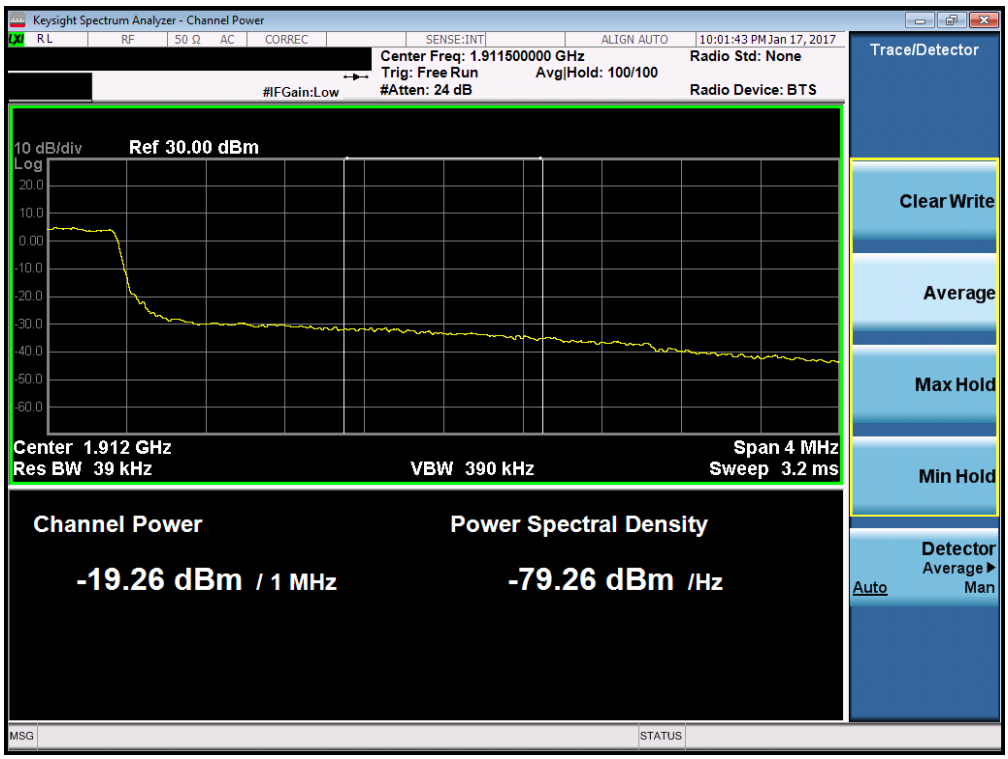
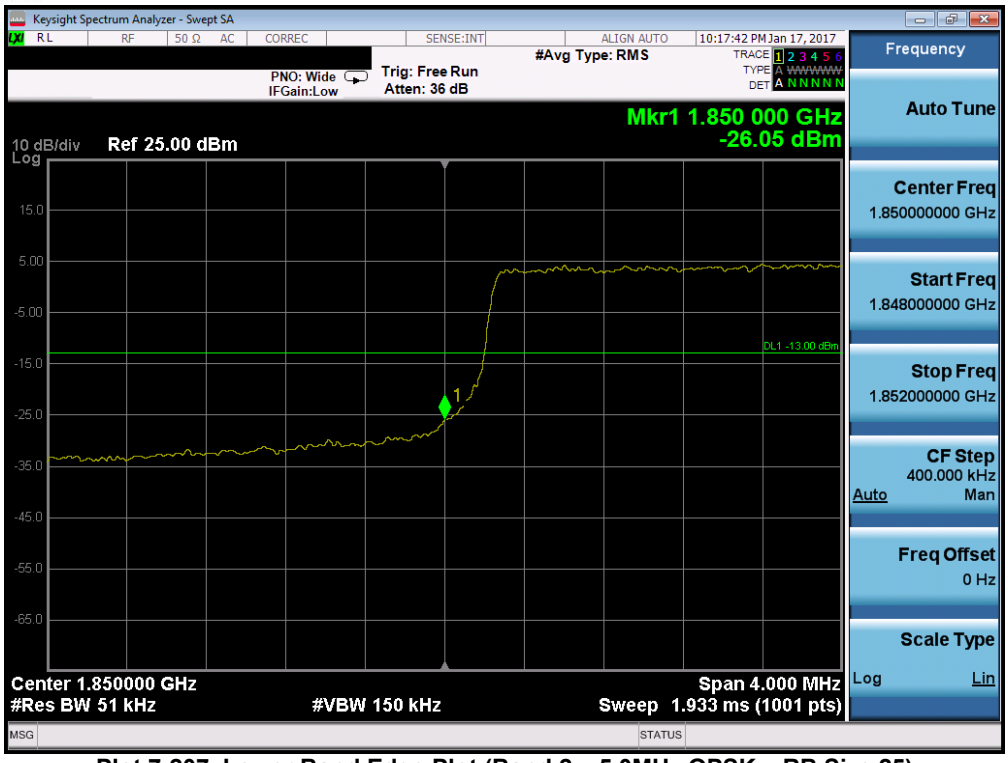
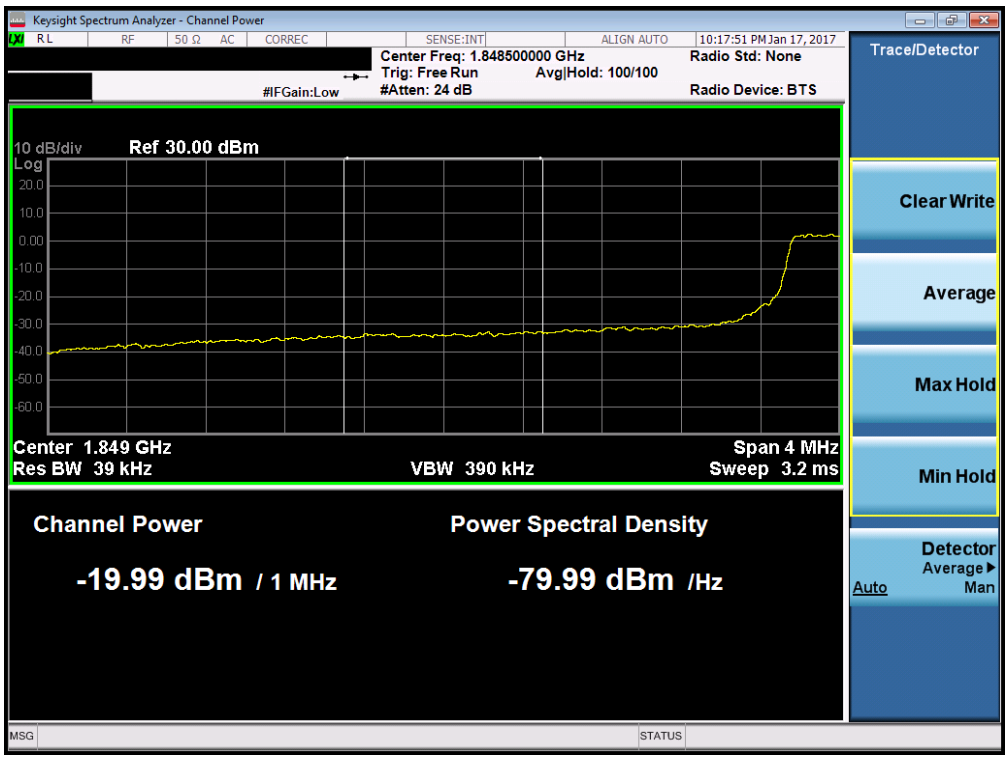
Plot 7-205. Upper Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)



Plot 7-206. Upper Extended Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)



Plot 7-207. Lower Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)



Plot 7-208. Lower Extended Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

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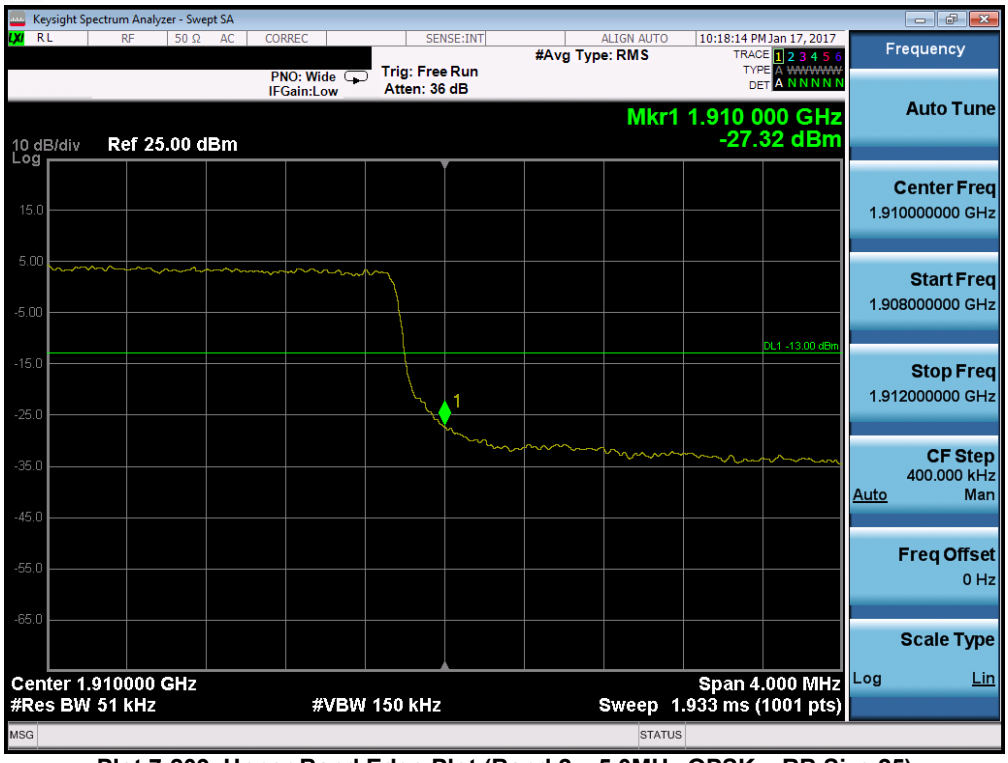
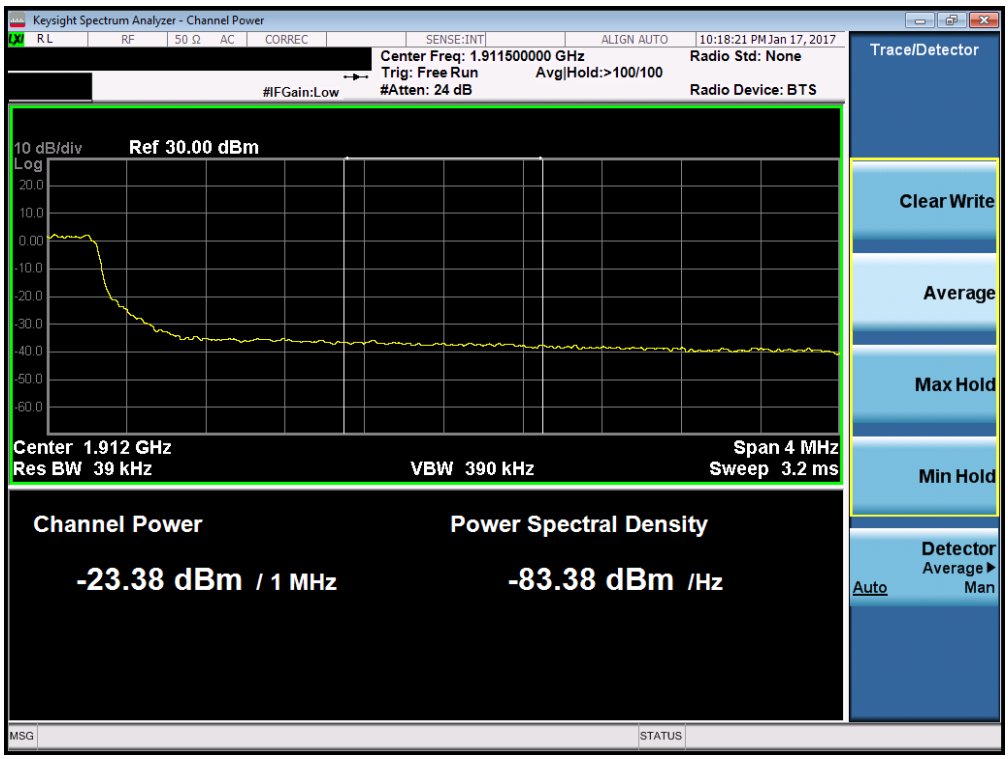
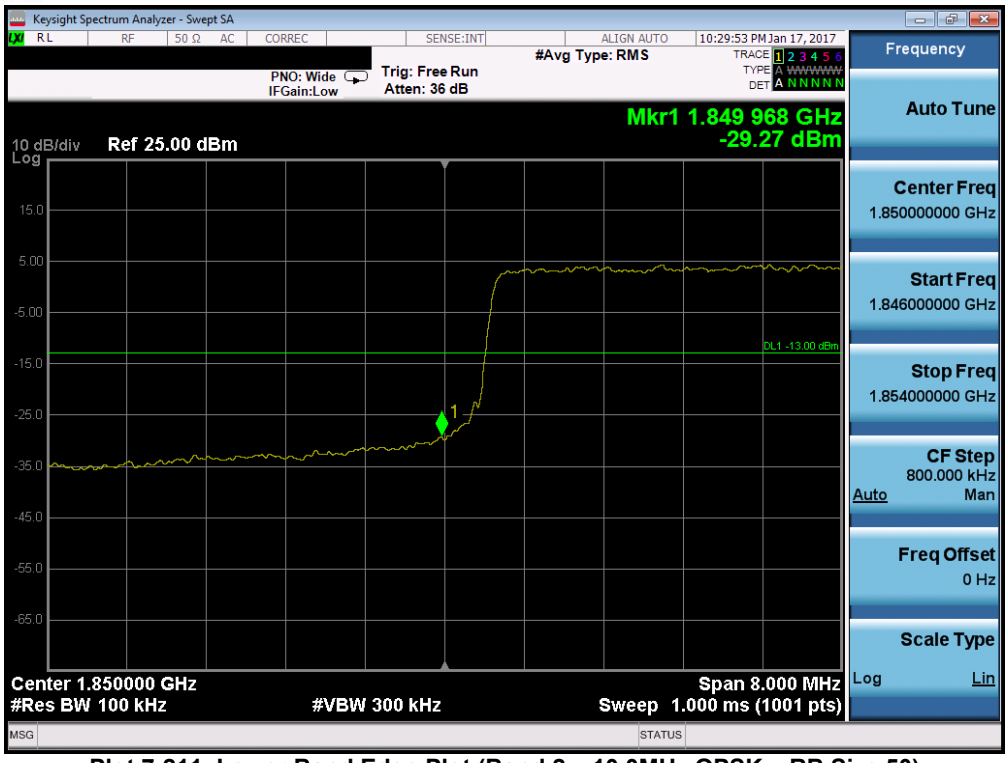


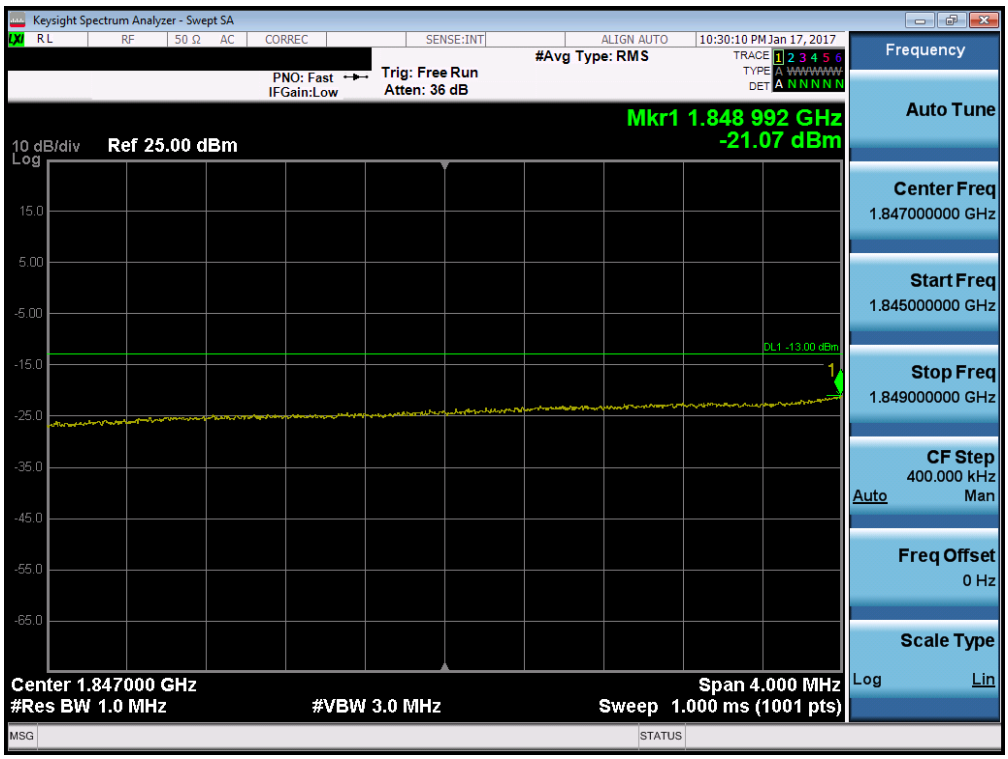
Plot 7-209. Upper Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)



Plot 7-210. Upper Extended Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

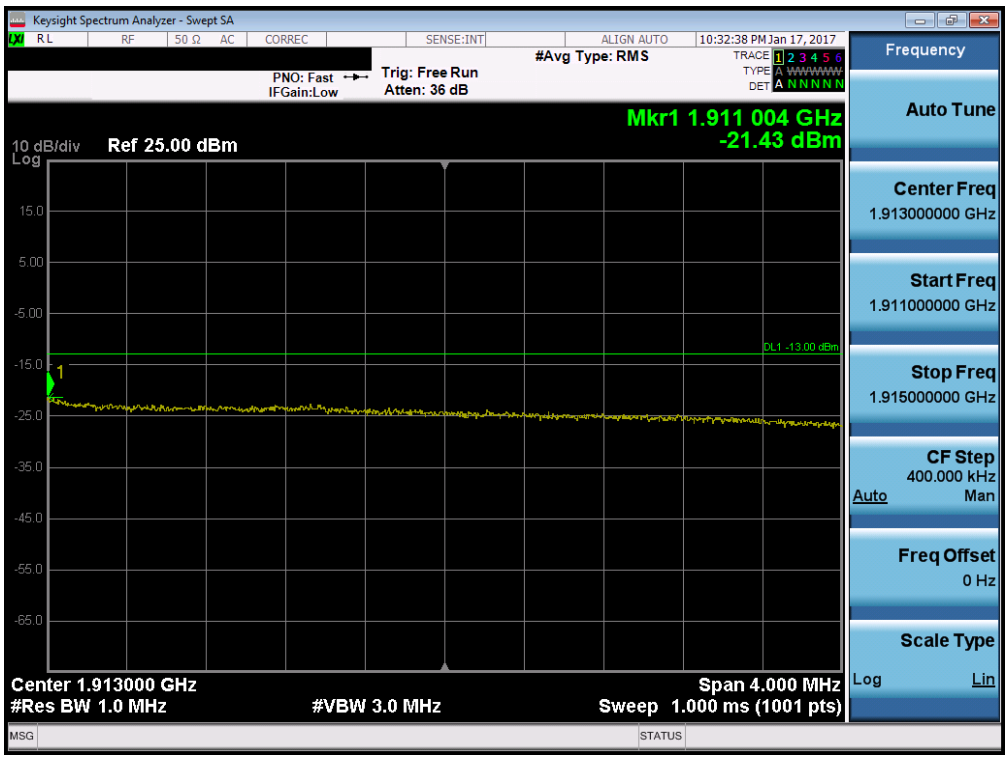


Plot 7-211. Lower Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

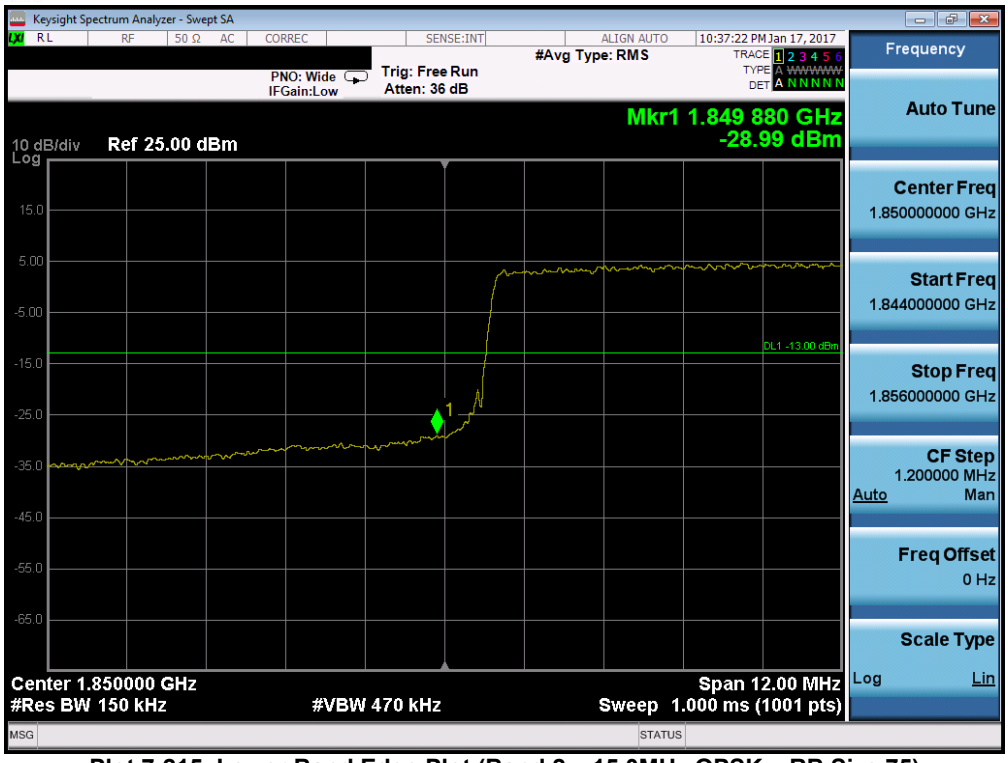


Plot 7-212. Lower Extended Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

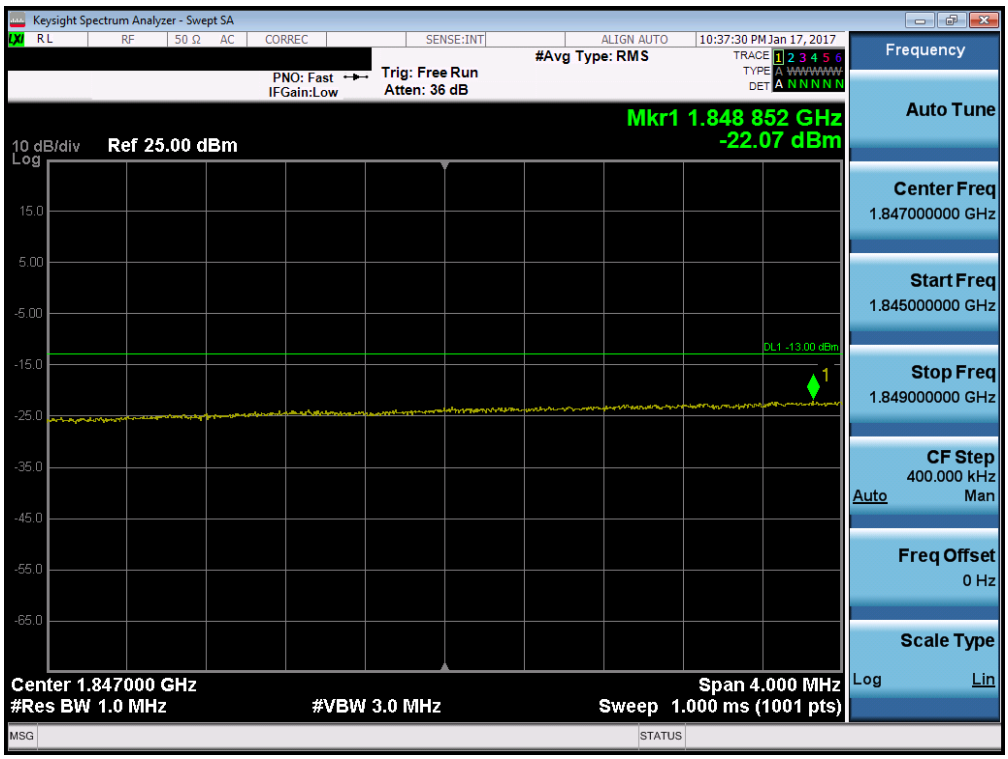
Plot 7-213. Upper Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)



Plot 7-214. Upper Extended Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

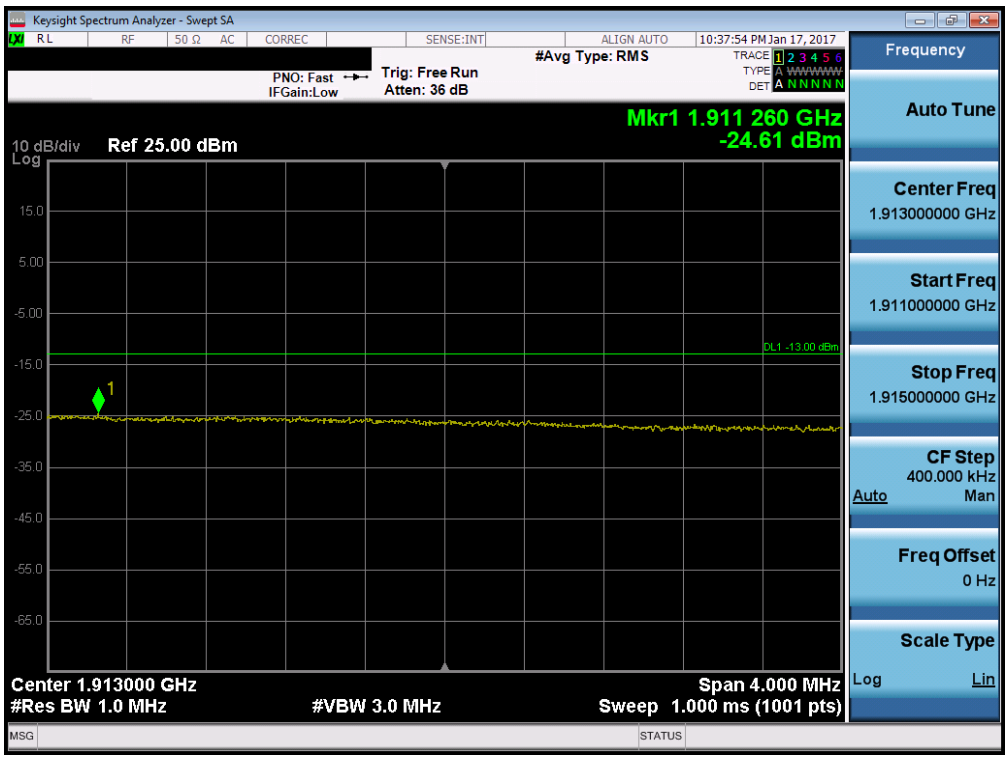


Plot 7-215. Lower Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)



Plot 7-216. Lower Extended Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)

Plot 7-217. Upper Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)



Plot 7-218. Upper Extended Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)

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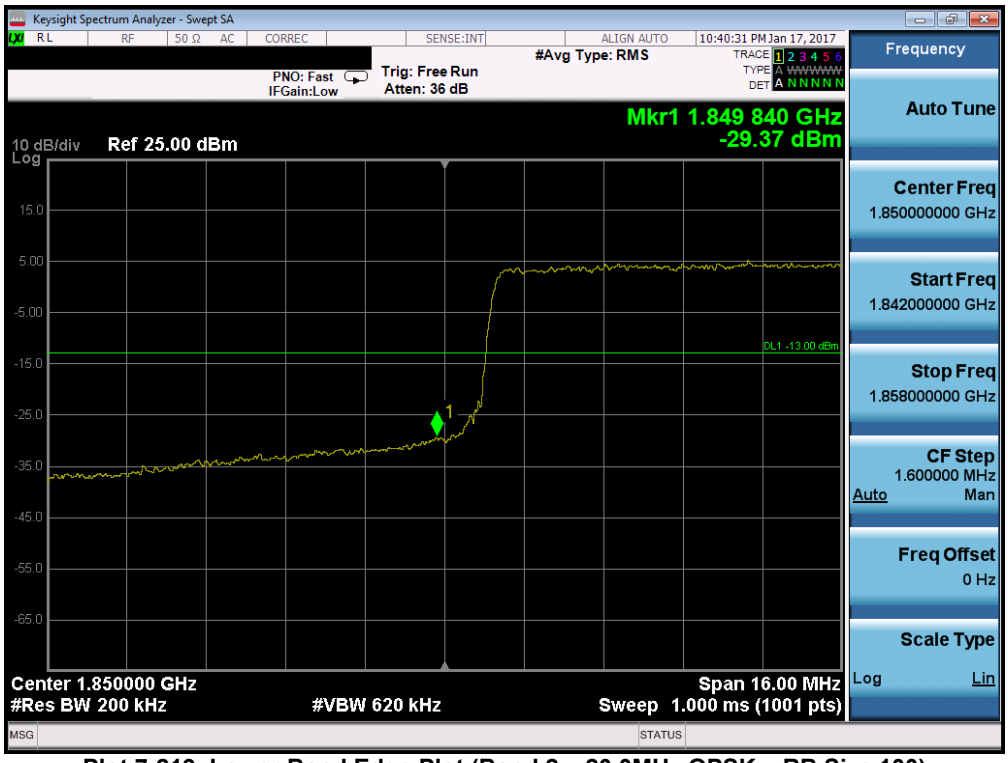
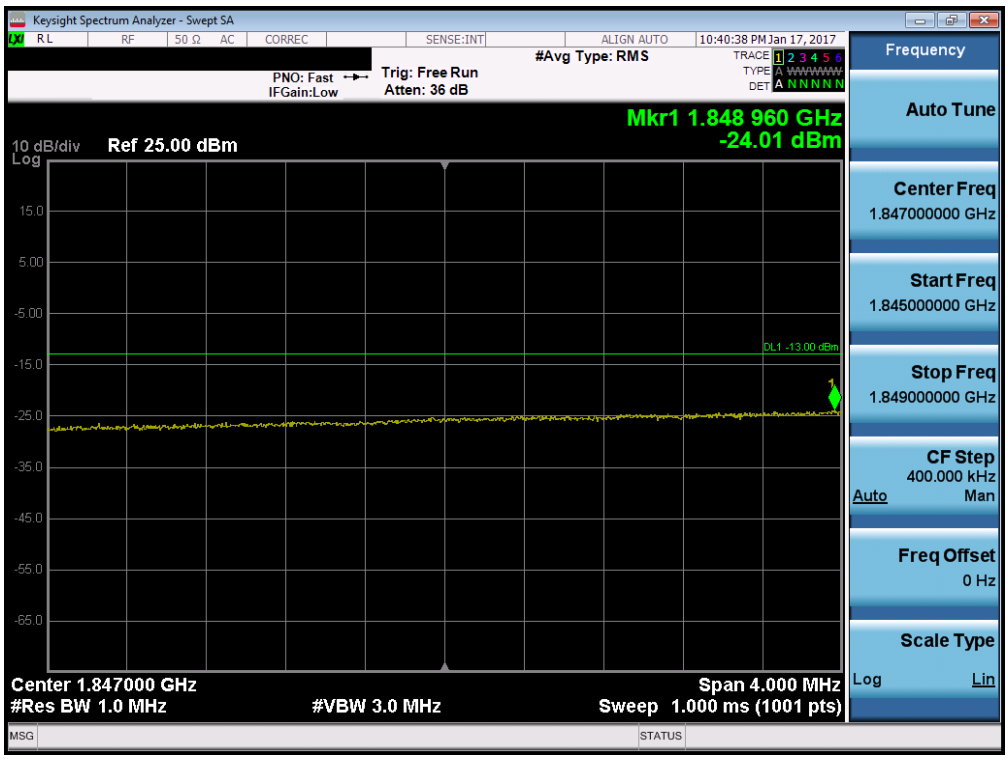
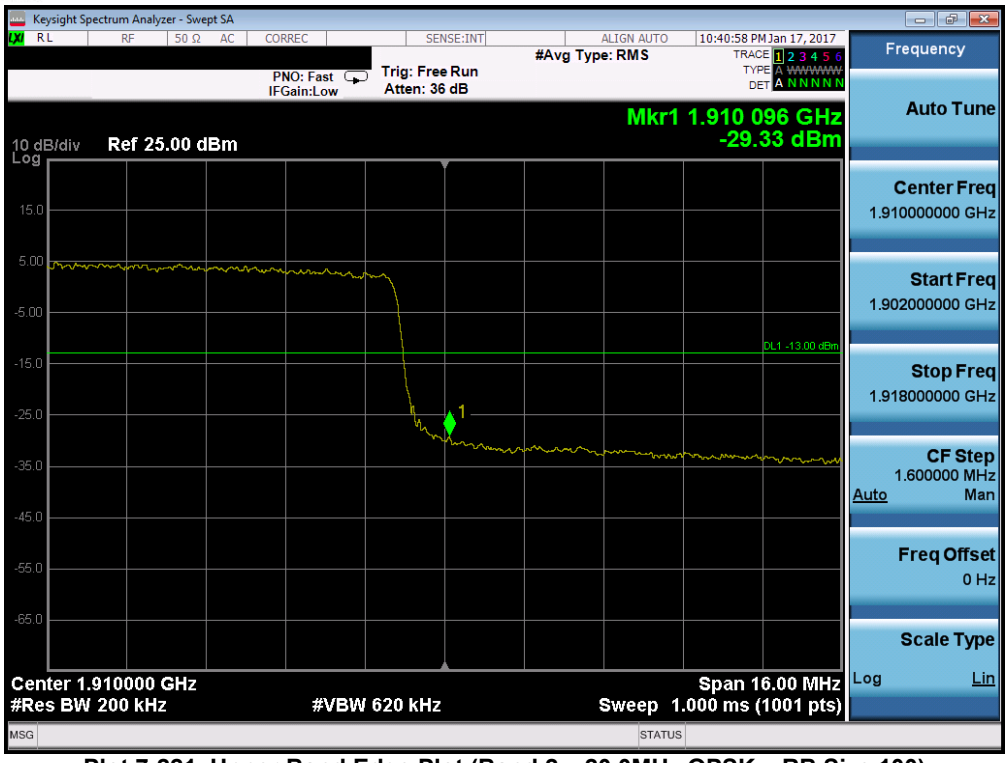


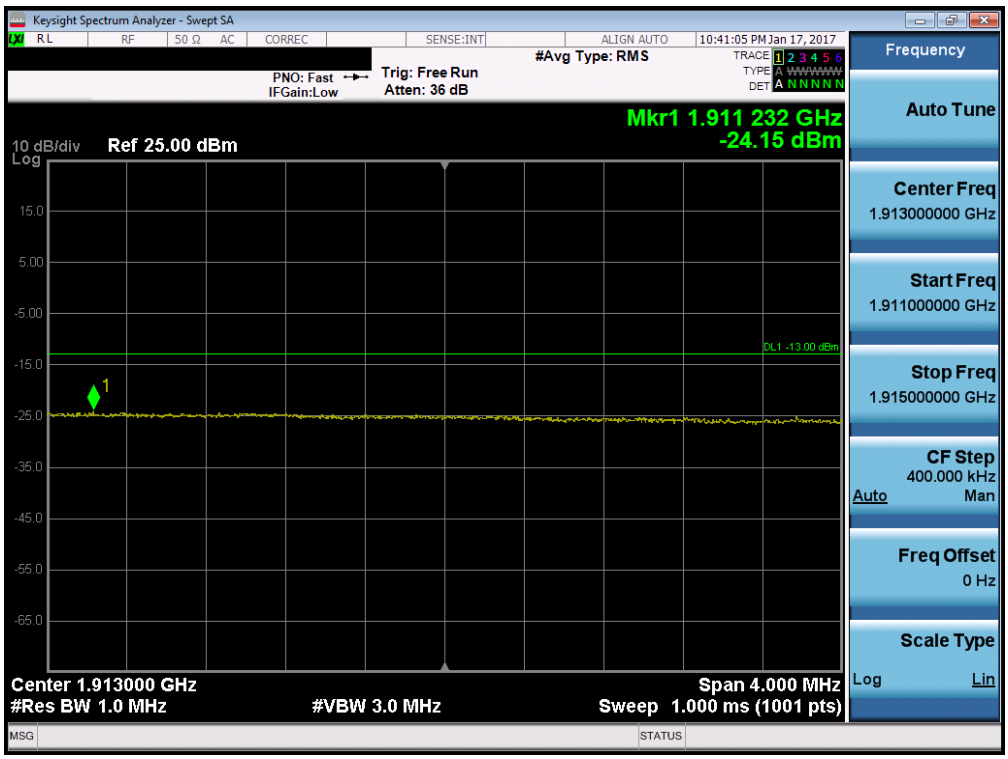
Plot 7-219. Lower Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)



Plot 7-220. Lower Extended Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)



Plot 7-221. Upper Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)



Plot 7-222. Upper Extended Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)

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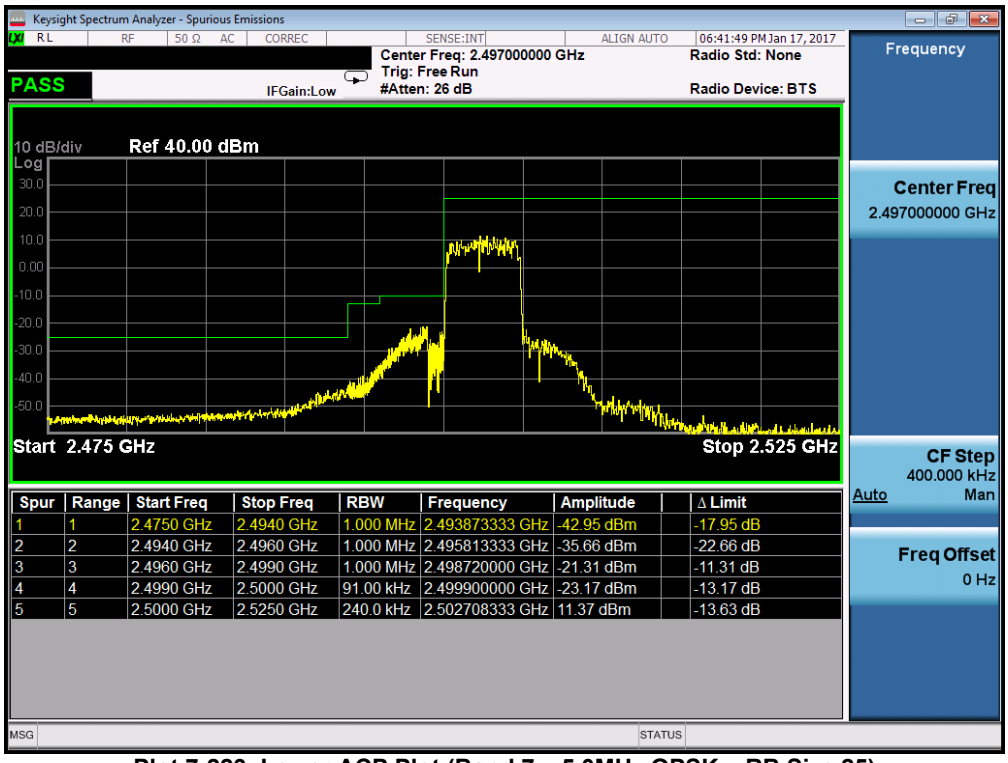
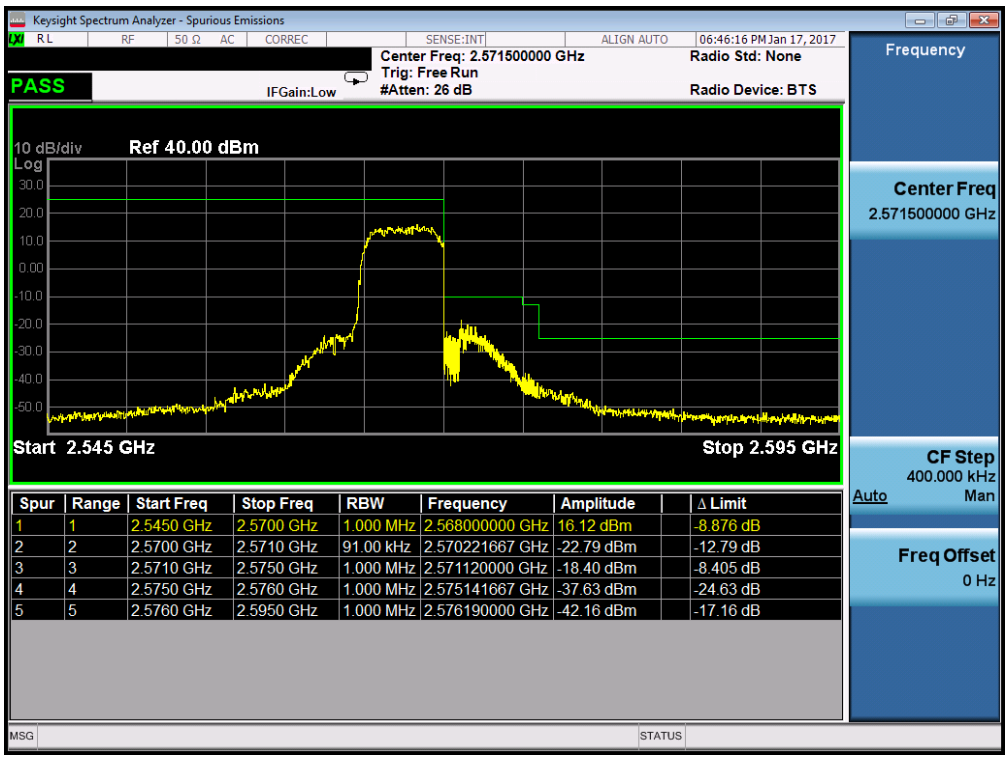


Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.4750 GHz	2.4940 GHz	1.000 MHz	2.493873333 GHz	-42.95 dBm	-17.95 dB
2	2	2.4940 GHz	2.4960 GHz	1.000 MHz	2.495813333 GHz	-35.66 dBm	-22.66 dB
3	3	2.4960 GHz	2.4990 GHz	1.000 MHz	2.498720000 GHz	-21.31 dBm	-11.31 dB
4	4	2.4990 GHz	2.5000 GHz	91.00 kHz	2.499900000 GHz	-23.17 dBm	-13.17 dB
5	5	2.5000 GHz	2.5250 GHz	240.0 kHz	2.502708333 GHz	11.37 dBm	-13.63 dB

Plot 7-223. Lower ACP Plot (Band 7 – 5.0MHz QPSK – RB Size 25)



Spur	Range	Start Freq	Stop Freq	RBW	Frequency	Amplitude	Δ Limit
1	1	2.5450 GHz	2.5700 GHz	1.000 MHz	2.568000000 GHz	16.12 dBm	-8.876 dB
2	2	2.5700 GHz	2.5710 GHz	91.00 kHz	2.570221667 GHz	-22.79 dBm	-12.79 dB
3	3	2.5710 GHz	2.5750 GHz	1.000 MHz	2.571120000 GHz	-18.40 dBm	-8.405 dB
4	4	2.5750 GHz	2.5760 GHz	1.000 MHz	2.575141667 GHz	-37.63 dBm	-24.63 dB
5	5	2.5760 GHz	2.5950 GHz	1.000 MHz	2.576190000 GHz	-42.16 dBm	-17.16 dB

Plot 7-224. Upper ACP Plot (Band 7 – 5.0MHz QPSK – RB Size 25)

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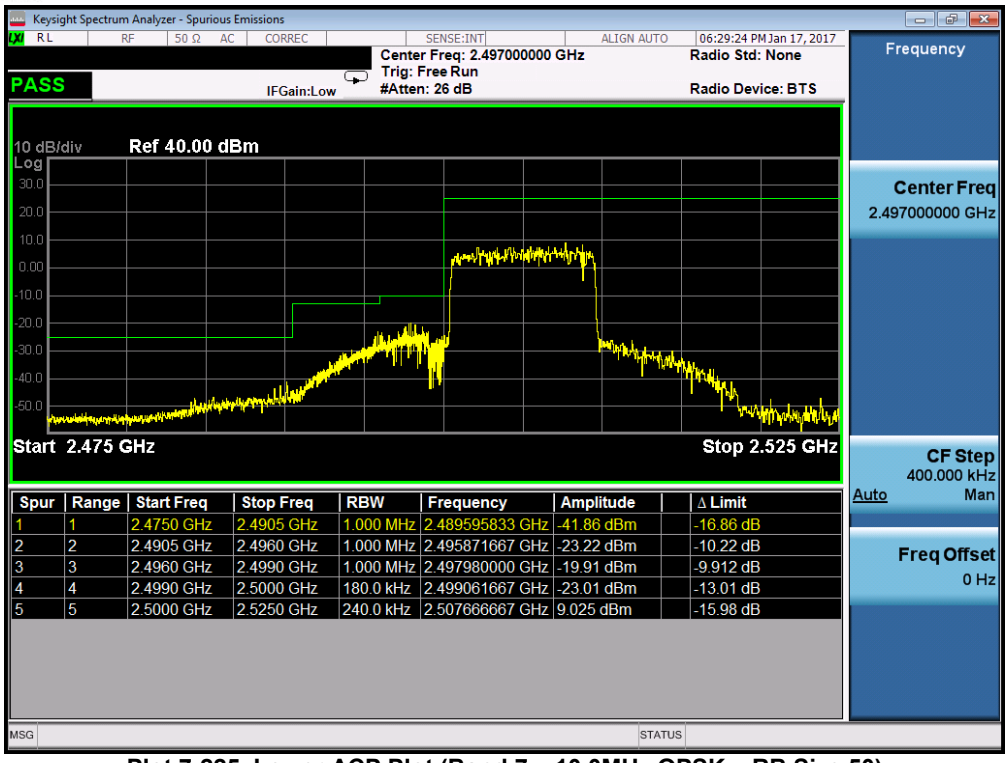
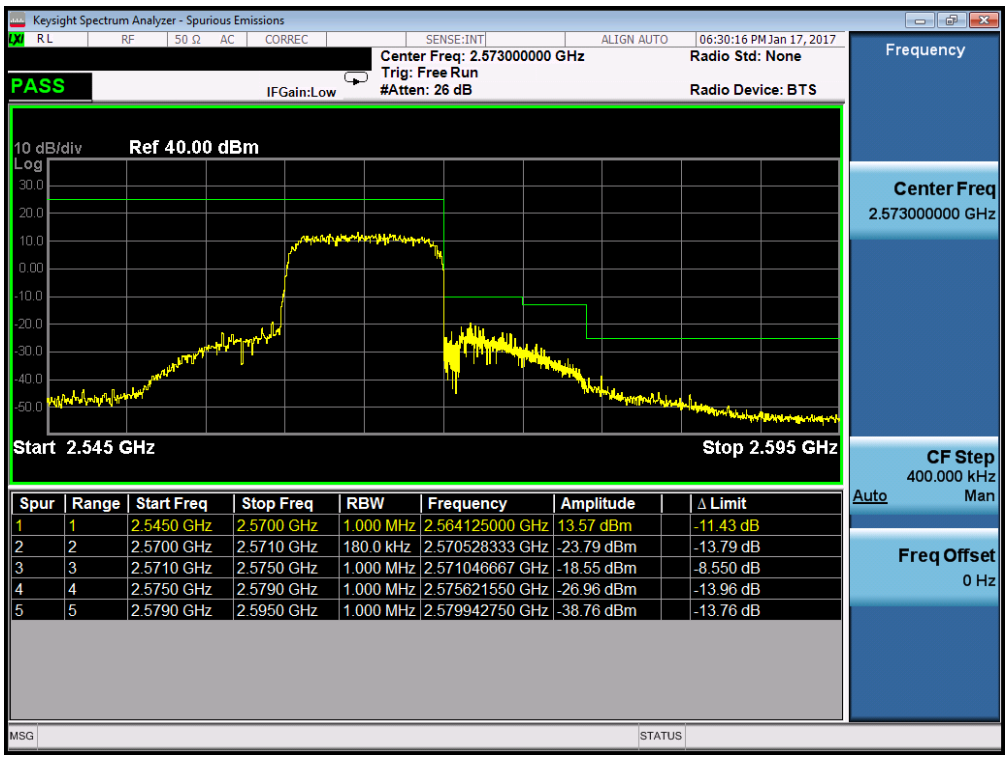
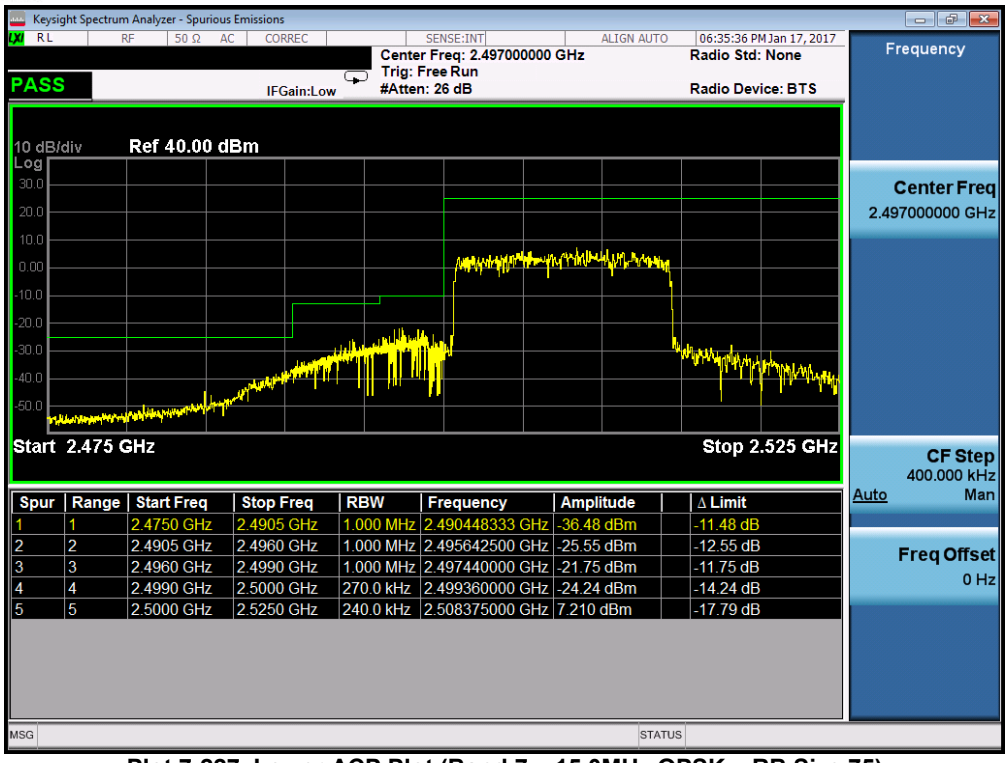


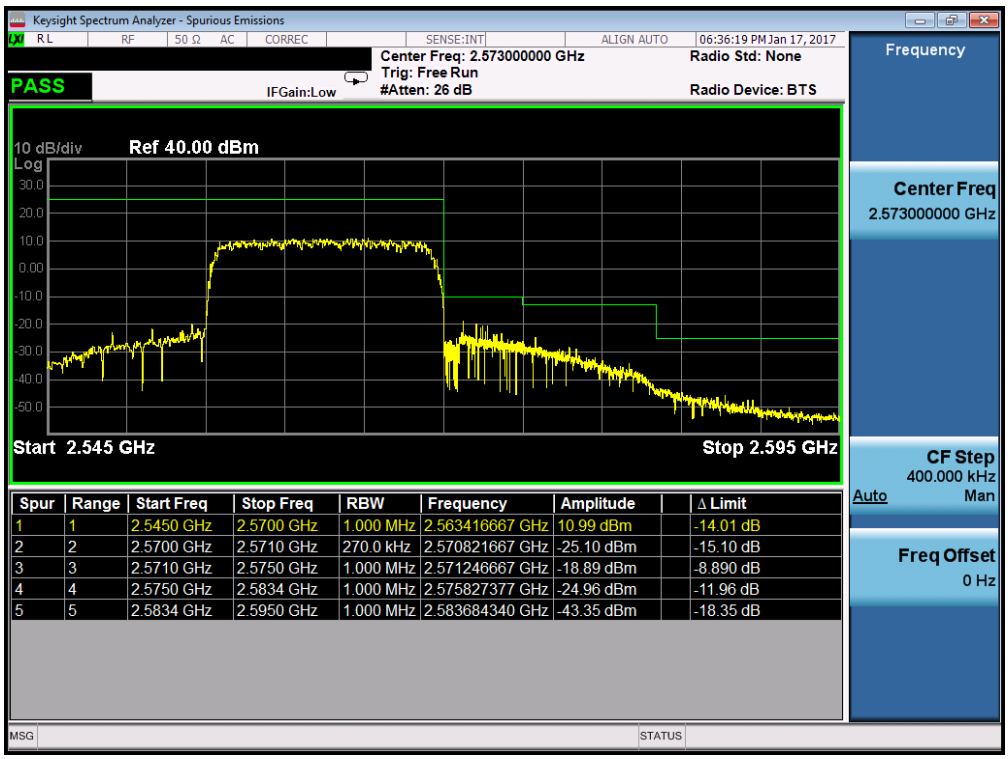
Plot 7-225. Lower ACP Plot (Band 7 – 10.0MHz QPSK – RB Size 50)



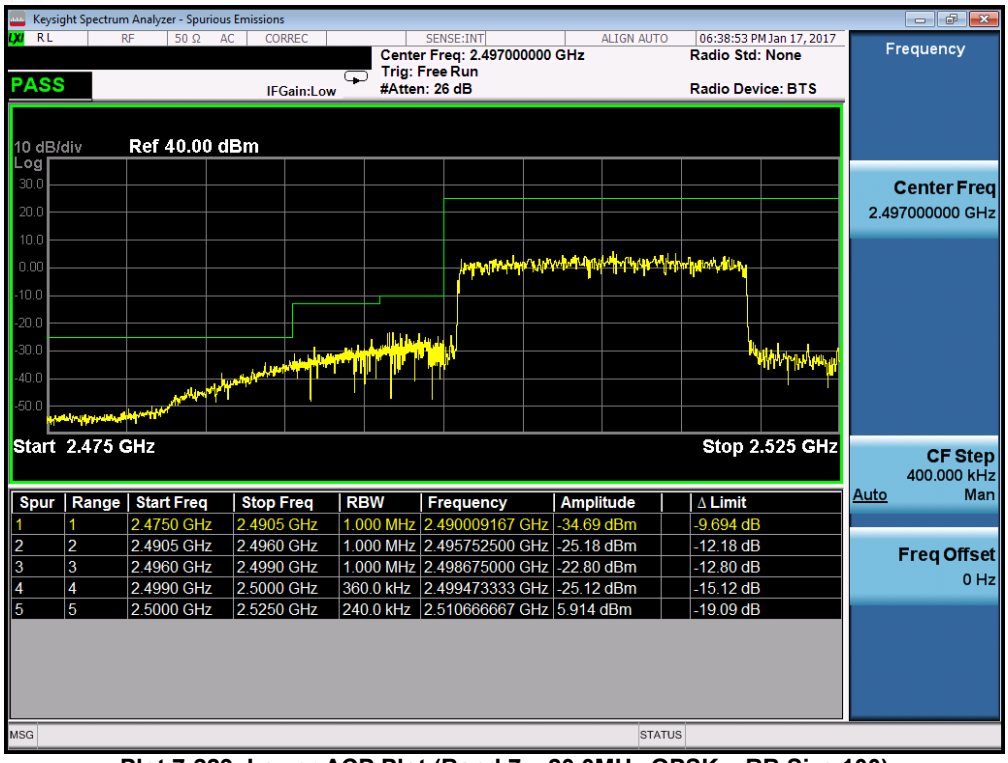
Plot 7-226. Upper ACP Plot (Band 7 – 10.0MHz QPSK – RB Size 50)



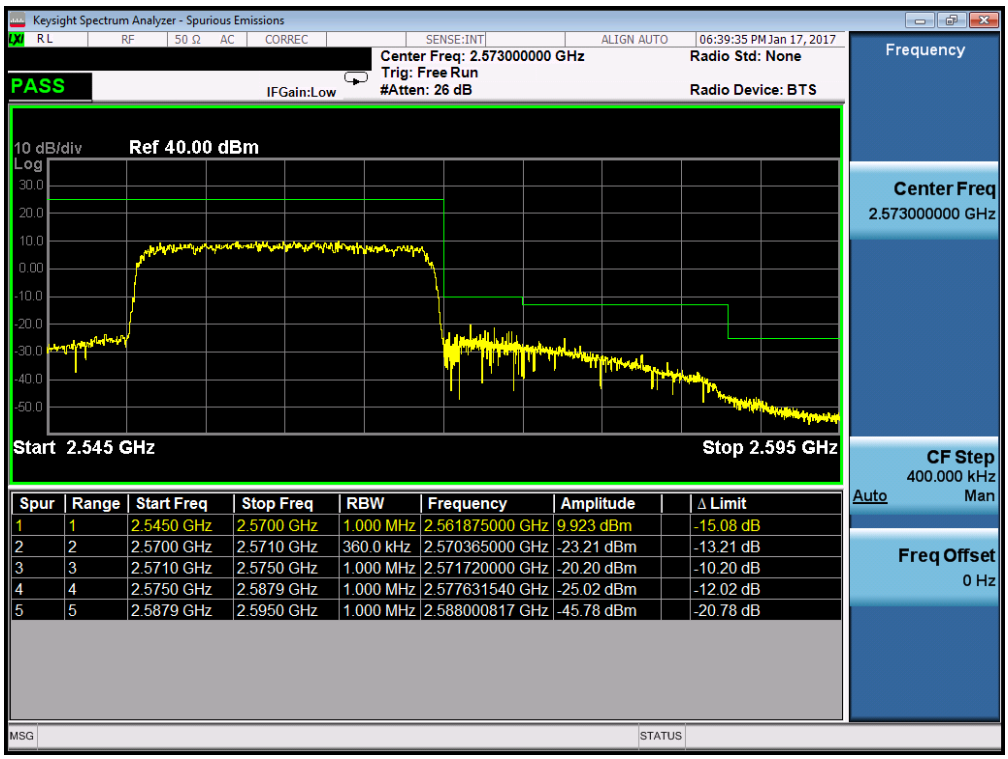
Plot 7-227. Lower ACP Plot (Band 7 – 15.0MHz QPSK – RB Size 75)



Plot 7-228. Upper ACP Plot (Band 7 – 15.0MHz QPSK – RB Size 75)



Plot 7-229. Lower ACP Plot (Band 7 – 20.0MHz QPSK – RB Size 100)



Plot 7-230. Upper ACP Plot (Band 7 – 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.

Test Setup

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

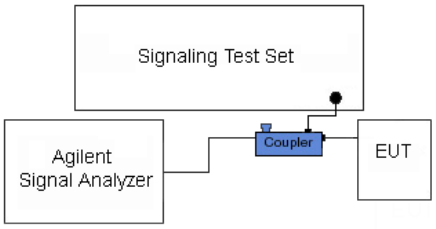
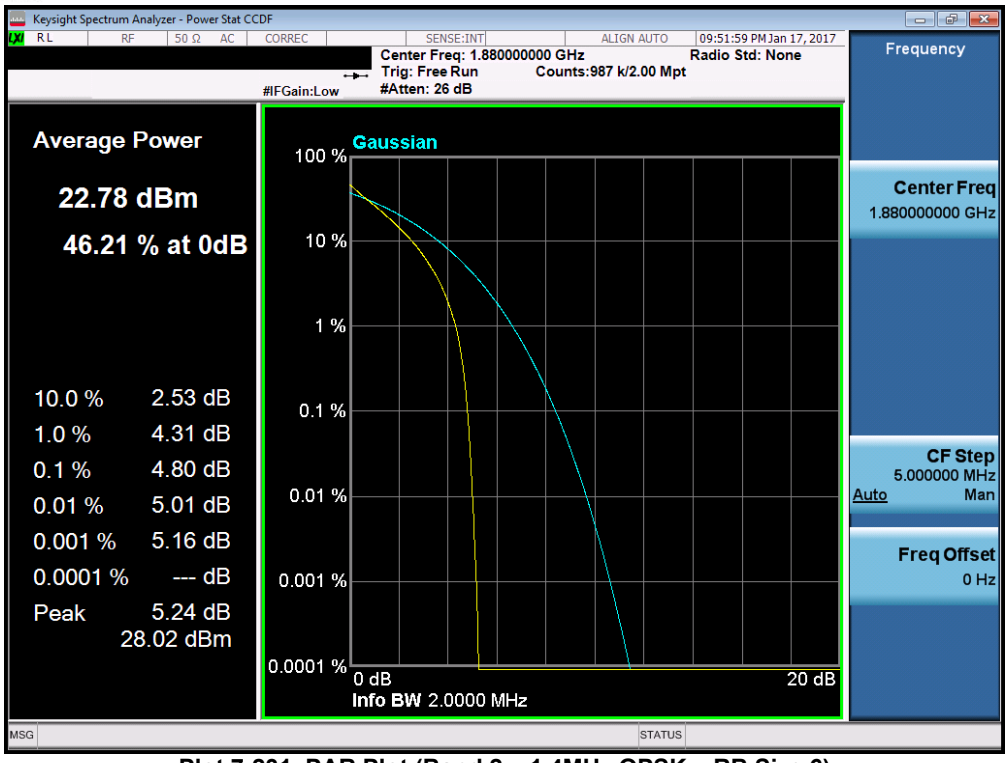


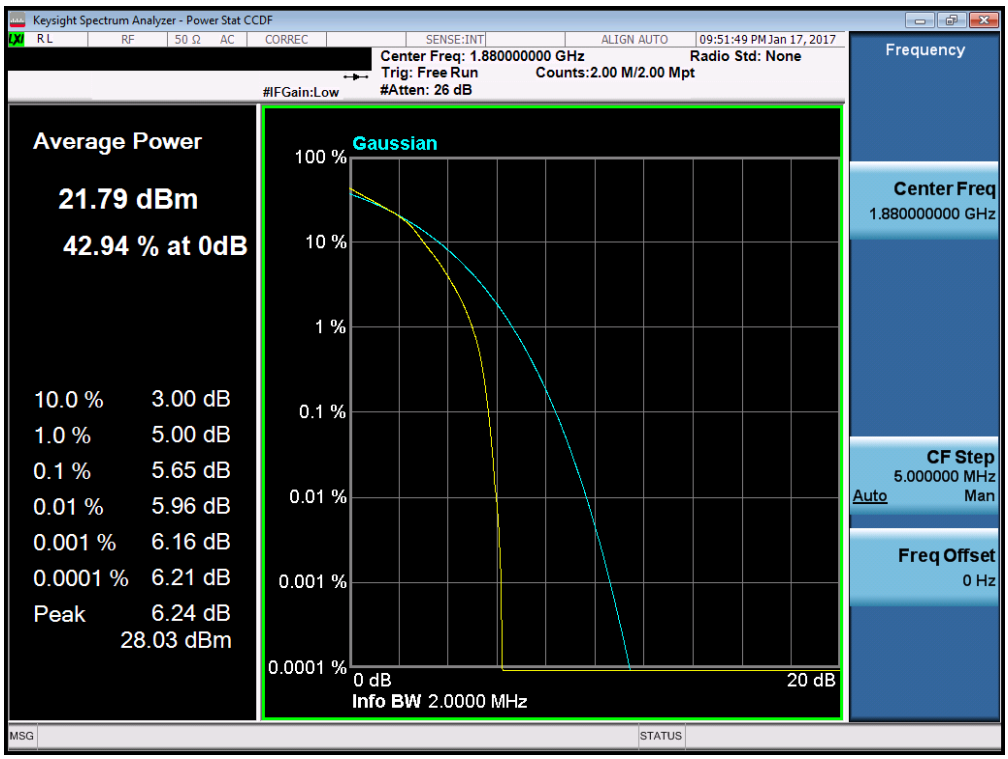
Figure 7-4. Test Instrument & Measurement Setup

Test Notes

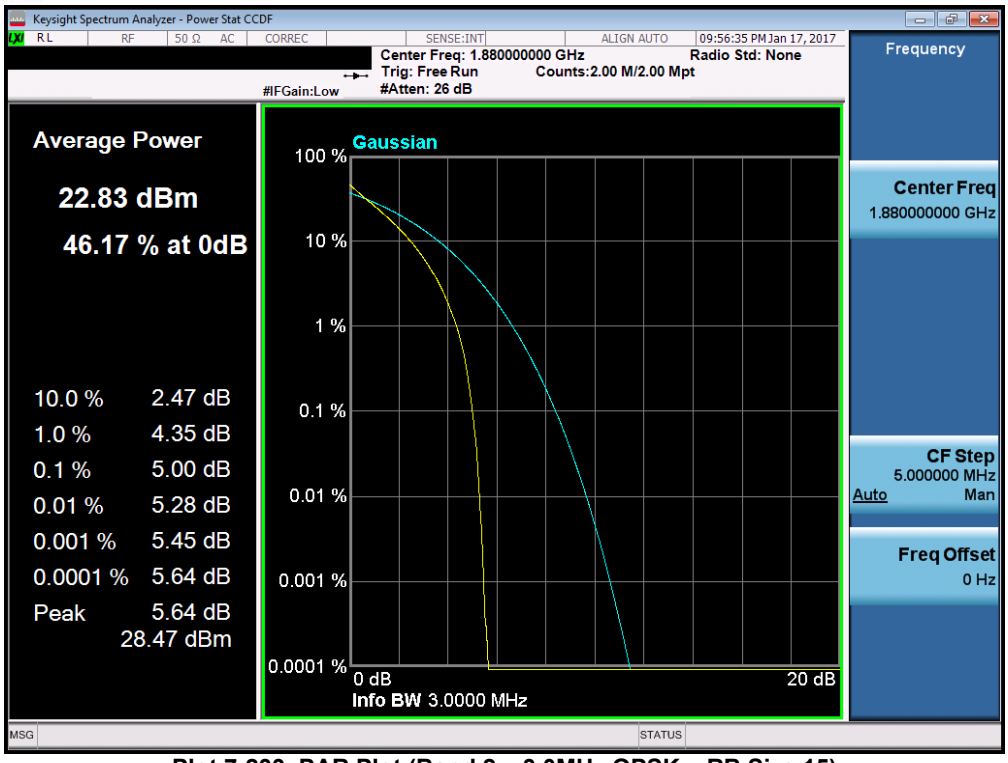
None.



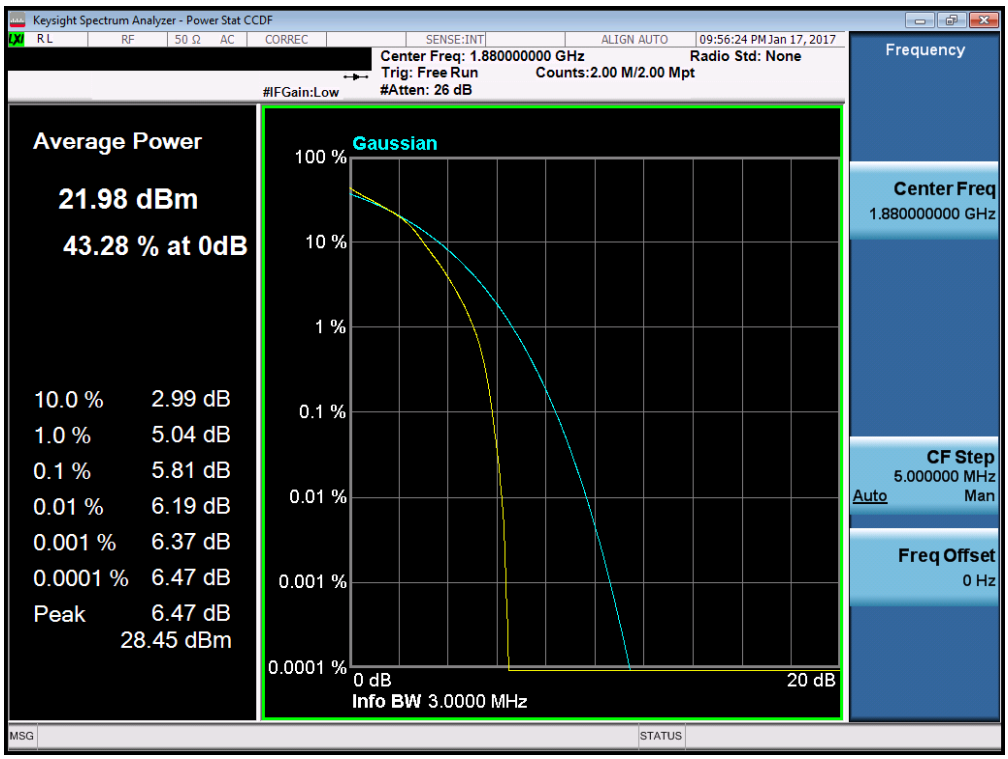
Plot 7-231. PAR Plot (Band 2 – 1.4MHz QPSK – RB Size 6)



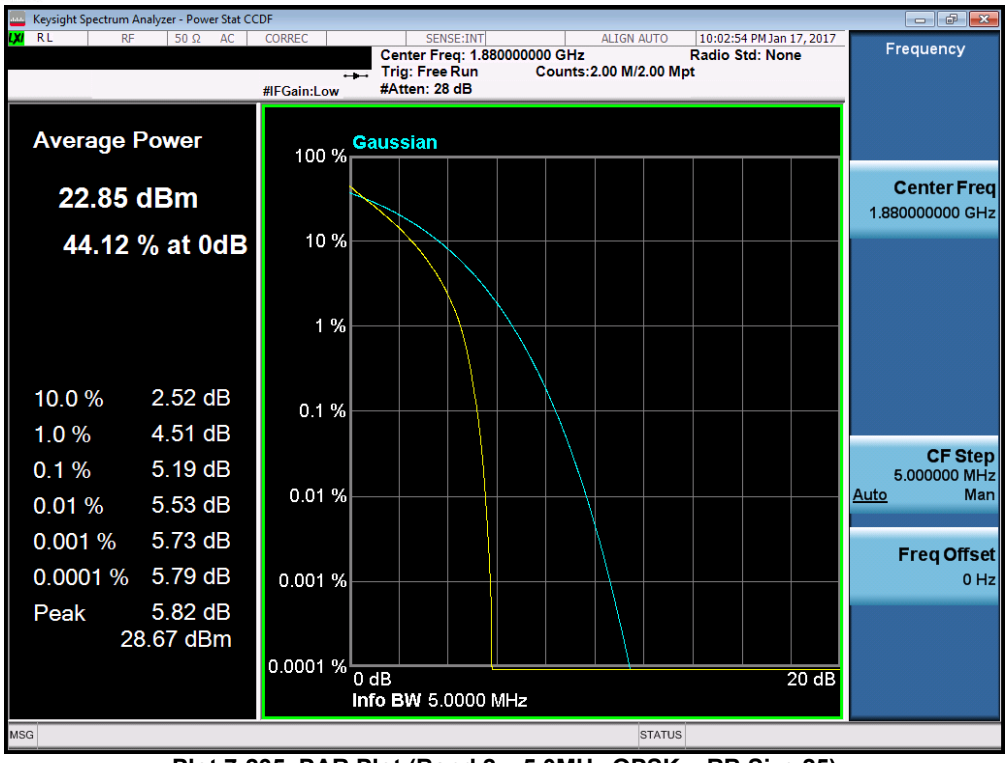
Plot 7-232. PAR Plot (Band 2 – 1.4MHz 16-QAM – RB Size 6)



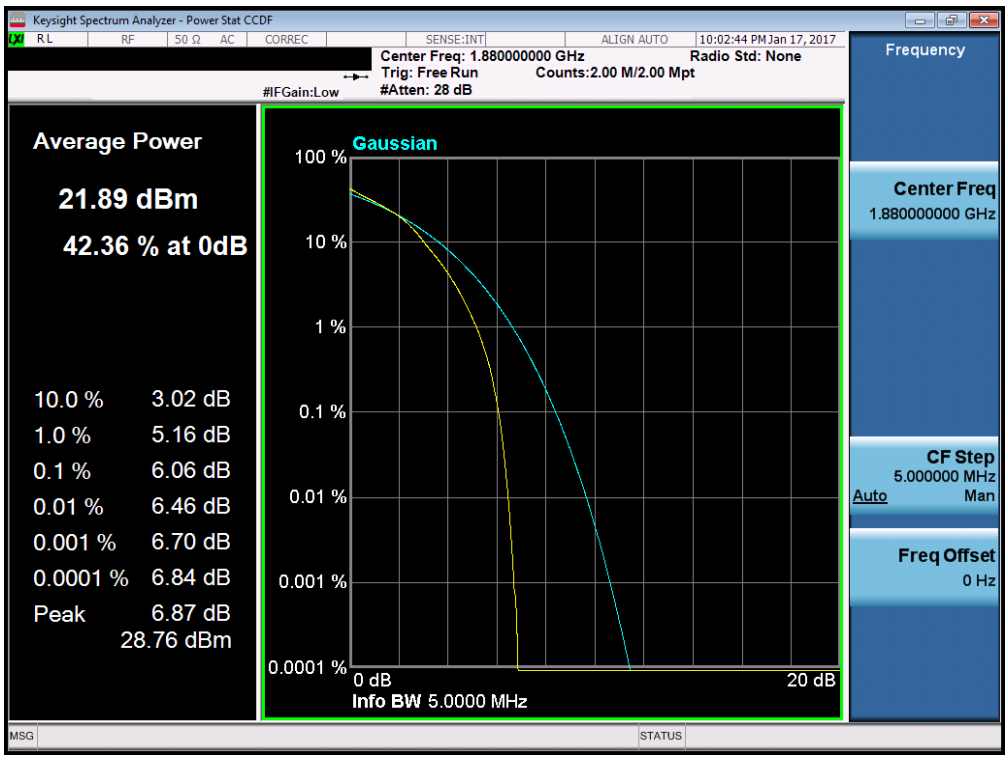
Plot 7-233. PAR Plot (Band 2 – 3.0MHz QPSK – RB Size 15)



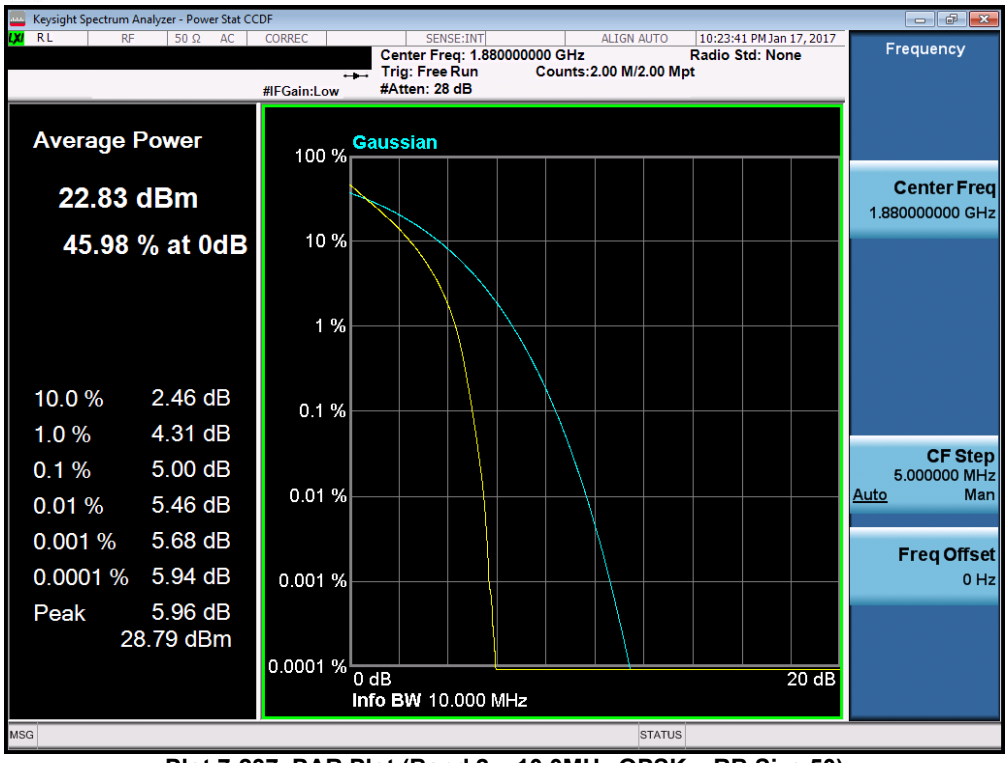
Plot 7-234. PAR Plot (Band 2 – 3.0MHz 16-QAM – RB Size 15)



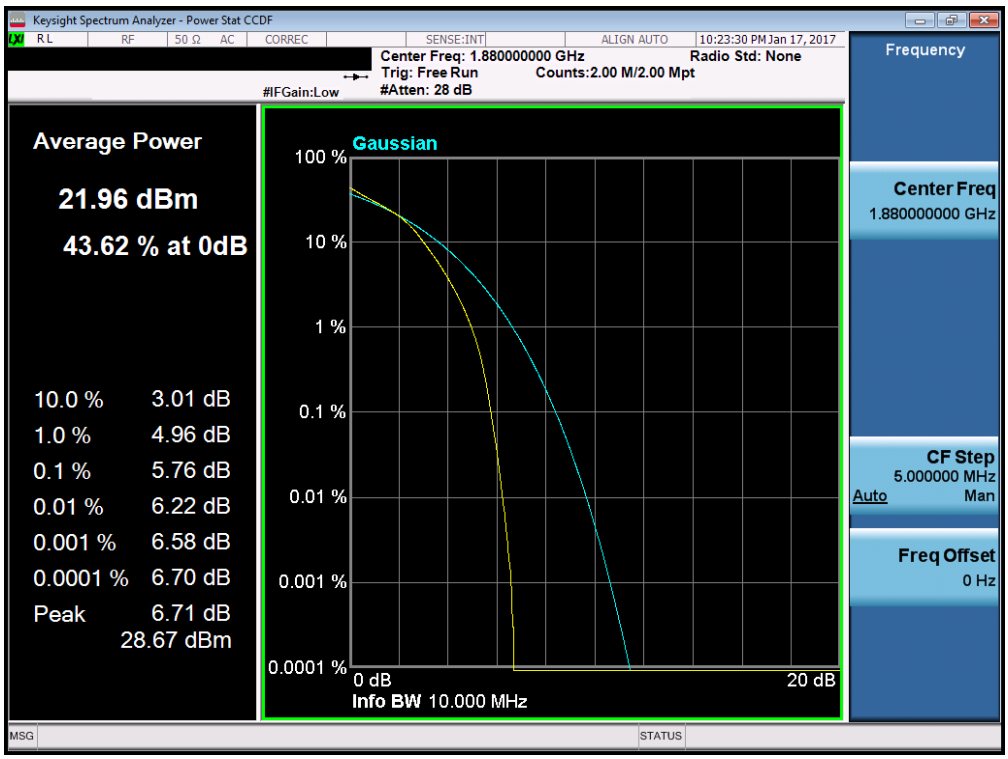
Plot 7-235. PAR Plot (Band 2 – 5.0MHz QPSK – RB Size 25)



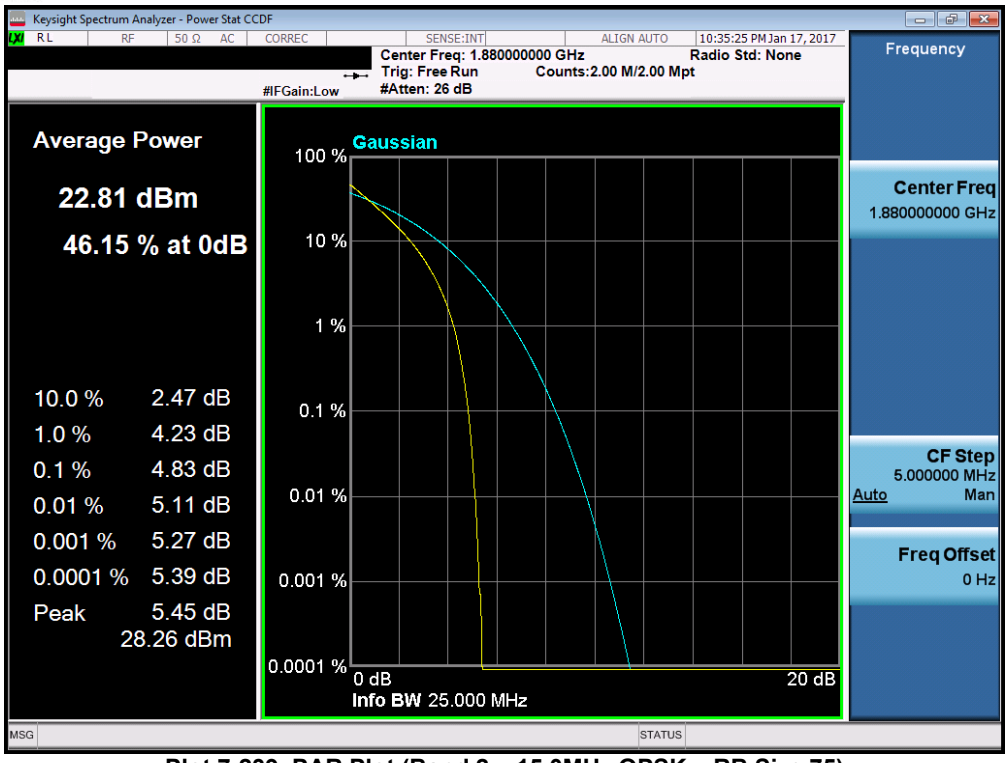
Plot 7-236. PAR Plot (Band 2 – 5.0MHz 16-QAM – RB Size 25)



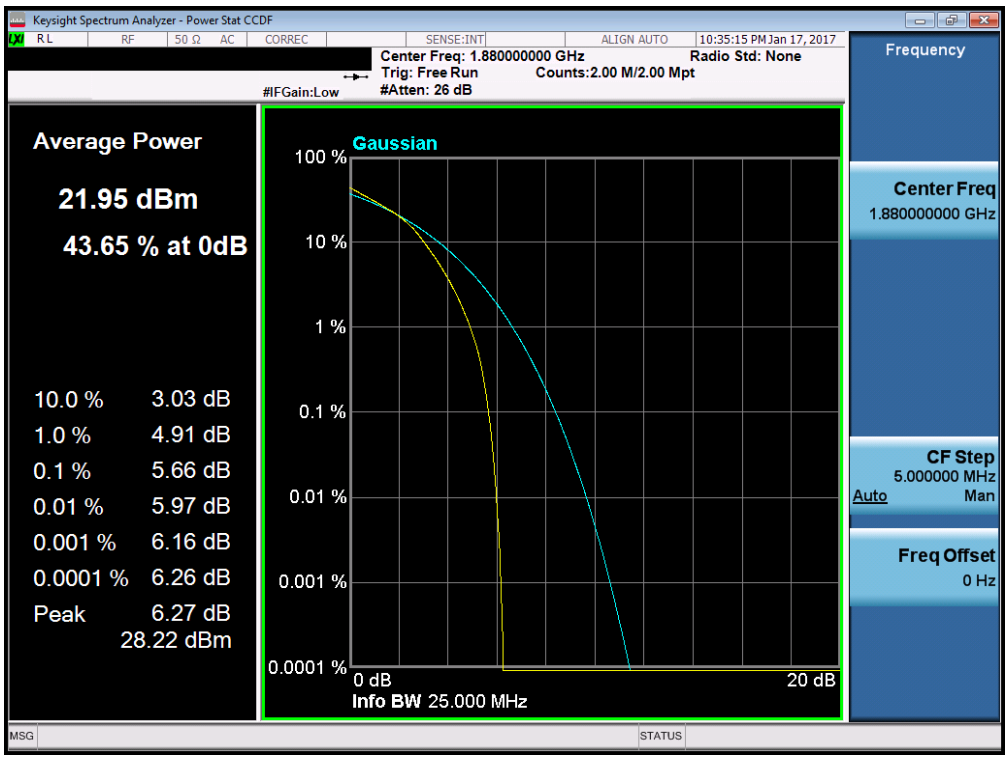
Plot 7-237. PAR Plot (Band 2 – 10.0MHz QPSK – RB Size 50)



Plot 7-238. PAR Plot (Band 2 – 10.0MHz 16-QAM – RB Size 50)



Plot 7-239. PAR Plot (Band 2 – 15.0MHz QPSK – RB Size 75)



Plot 7-240. PAR Plot (Band 2 – 15.0MHz 16-QAM – RB Size 75)

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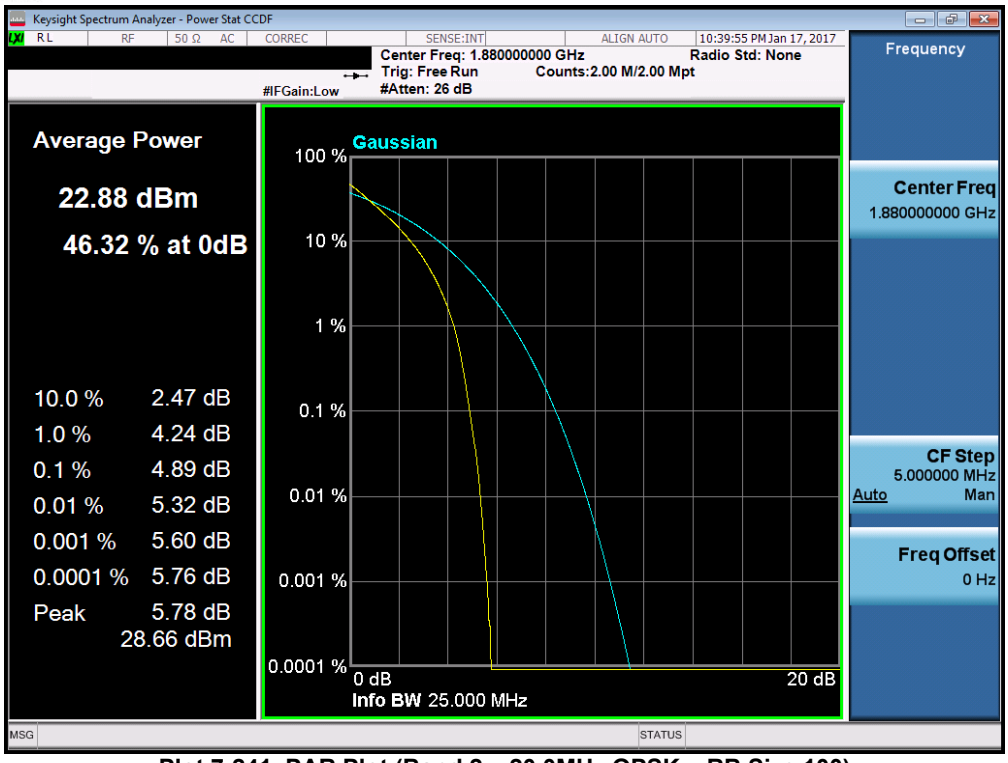
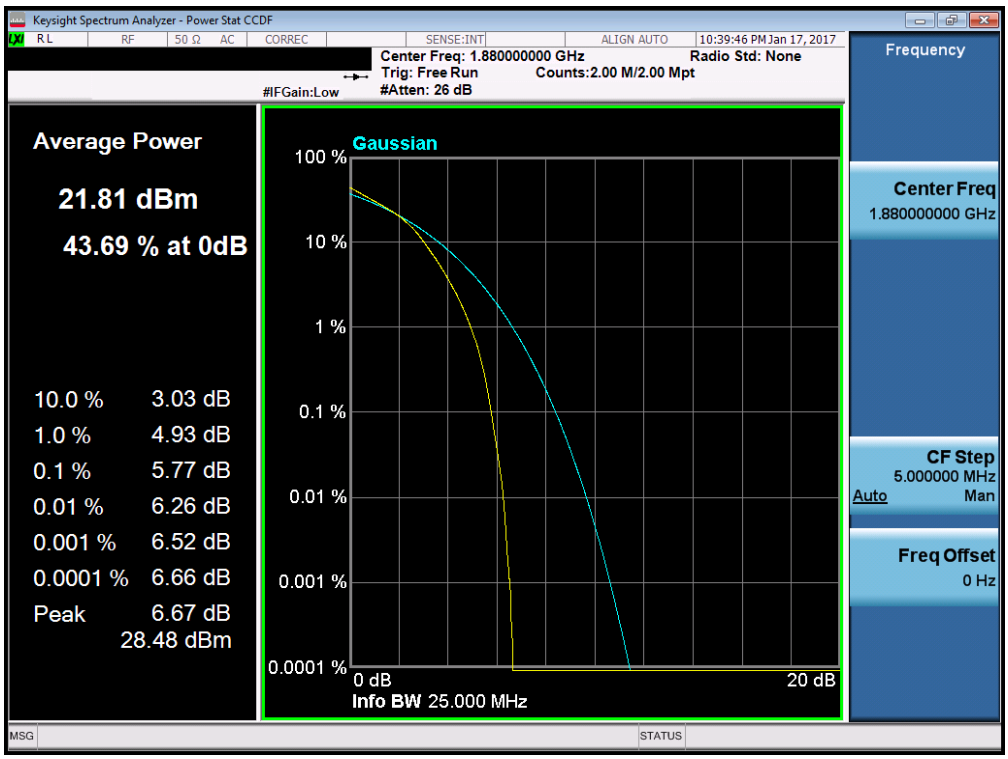


Plot 7-241. PAR Plot (Band 2 – 20.0MHz QPSK – RB Size 100)



Plot 7-242. PAR Plot (Band 2 – 20.0MHz 16-QAM – RB Size 100)

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

Test Setup

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

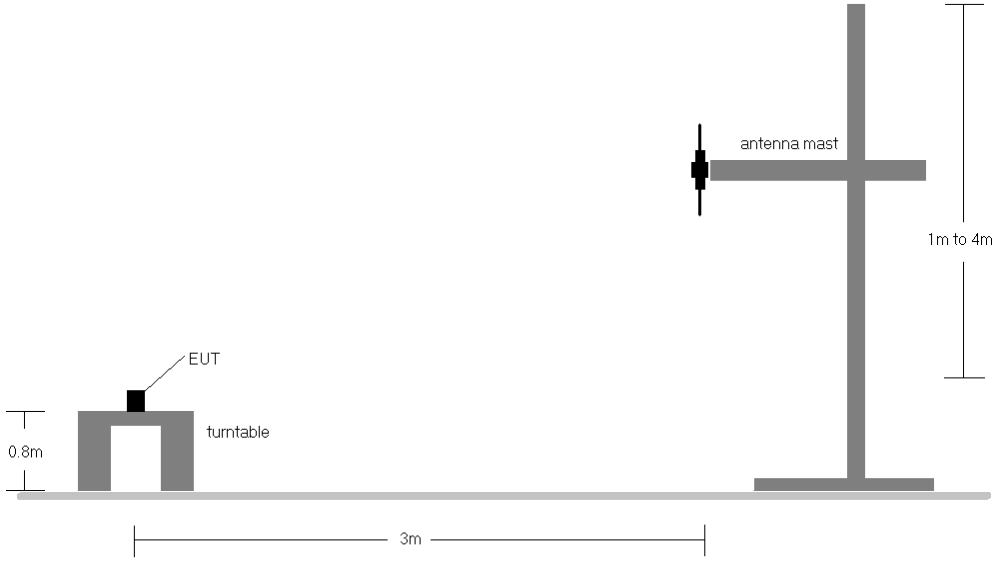


Figure 7-5. Radiated Test Setup <1GHz

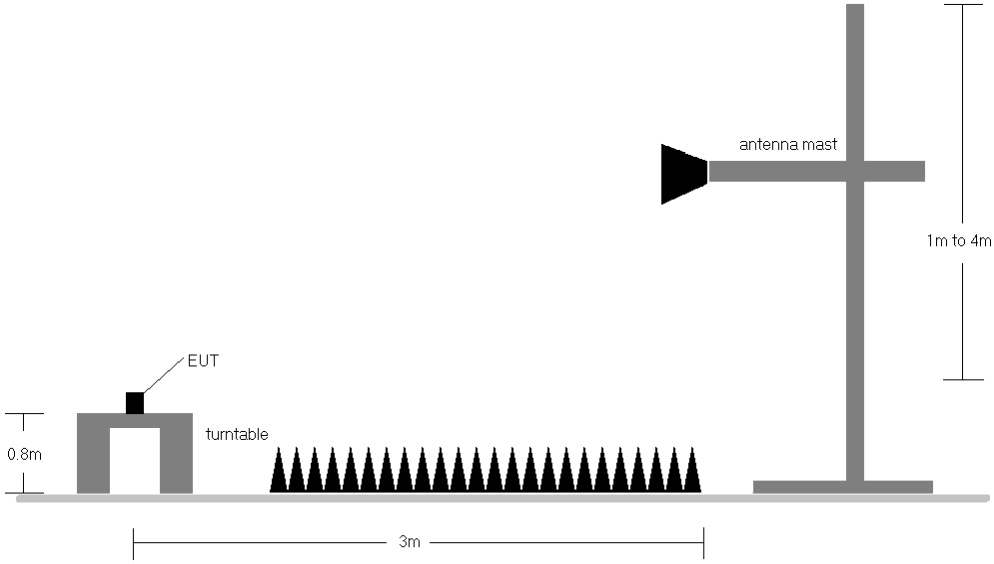


Figure 7-6. Radiated Test Setup >1GHz

Test Notes

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

2) This unit was tested with its standard battery.

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
699.70	1.4	QPSK	H	360	105	1 / 5	17.10	-1.05	16.05	34.77	-18.72
707.50	1.4	QPSK	H	360	108	1 / 0	17.39	-1.02	16.37	34.77	-18.40
715.30	1.4	QPSK	H	360	104	1 / 5	17.42	-0.99	16.43	34.77	-18.34
699.70	1.4	16-QAM	H	360	105	1 / 5	15.82	-1.05	14.77	34.77	-20.00
707.50	1.4	16-QAM	H	360	108	1 / 0	16.35	-1.02	15.33	34.77	-19.44
715.30	1.4	16-QAM	H	360	104	1 / 5	16.55	-0.99	15.56	34.77	-19.21
700.50	3	QPSK	H	360	99	1 / 14	17.02	-1.05	15.97	34.77	-18.80
707.50	3	QPSK	H	360	102	1 / 0	17.60	-1.02	16.58	34.77	-18.19
714.50	3	QPSK	H	360	100	1 / 14	17.75	-0.99	16.76	34.77	-18.01
700.50	3	16-QAM	H	360	99	1 / 14	15.85	-1.05	14.80	34.77	-19.97
707.50	3	16-QAM	H	360	102	1 / 0	16.45	-1.02	15.43	34.77	-19.34
714.50	3	16-QAM	H	360	100	1 / 0	16.45	-0.99	15.46	34.77	-19.31
701.50	5	QPSK	H	360	100	1 / 24	17.89	-1.04	16.85	34.77	-17.93
707.50	5	QPSK	H	360	106	1 / 0	18.40	-1.02	17.38	34.77	-17.39
713.50	5	QPSK	H	347	107	1 / 0	18.30	-1.00	17.30	34.77	-17.47
701.50	5	16-QAM	H	360	100	1 / 24	16.75	-1.04	15.71	34.77	-19.07
707.50	5	16-QAM	H	360	106	1 / 0	16.92	-1.02	15.90	34.77	-18.87
713.50	5	16-QAM	H	347	107	1 / 0	17.05	-1.00	16.05	34.77	-18.72
704.00	10	QPSK	H	360	105	1 / 49	18.55	-1.03	17.52	34.77	-17.25
707.50	10	QPSK	H	360	102	1 / 49	18.45	-1.02	17.43	34.77	-17.34
711.00	10	QPSK	H	360	104	1 / 49	18.30	-1.01	17.29	34.77	-17.48
704.00	10	16-QAM	H	360	105	1 / 49	16.95	-1.03	15.92	34.77	-18.85
707.50	10	16-QAM	H	360	102	1 / 49	16.96	-1.02	15.94	34.77	-18.83
711.00	10	16-QAM	H	360	104	1 / 49	16.85	-1.01	15.84	34.77	-18.93
704.00	10	QPSK	V	360	105	1 / 74	18.46	-1.03	17.43	34.77	-17.34

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]
779.50	5	QPSK	H	150	81	1 / 0	20.32	-0.83	19.49	34.77	-15.28
782.00	5	QPSK	H	150	79	1 / 0	20.30	-0.82	19.48	34.77	-15.29
784.50	5	QPSK	H	150	83	1 / 0	20.20	-0.81	19.39	34.77	-15.38
779.50	5	16-QAM	H	150	81	1 / 0	20.15	-0.83	19.32	34.77	-15.45
782.00	5	16-QAM	H	150	79	1 / 0	19.38	-0.82	18.56	34.77	-16.21
784.50	5	16-QAM	H	150	83	1 / 0	19.18	-0.81	18.37	34.77	-16.40
782.00	10	QPSK	H	150	82	1 / 0	20.44	-0.82	19.62	34.77	-15.15
782.00	10	16-QAM	H	150	82	1 / 0	19.64	-0.82	18.82	34.77	-15.95
782.00	10	QPSK	V	150	71	1 / 0	19.19	-0.82	18.37	34.77	-16.40

Table 7-3. ERP Data (Band 13)

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	H	150	92	1 / 5	20.46	-0.65	19.81	38.45	-18.64
836.50	1.4	QPSK	H	150	99	1 / 5	20.51	-0.65	19.86	38.45	-18.59
848.30	1.4	QPSK	H	150	97	1 / 5	20.30	-0.65	19.65	38.45	-18.80
824.70	1.4	16-QAM	H	150	92	1 / 5	19.30	-0.65	18.65	38.45	-19.80
836.50	1.4	16-QAM	H	150	99	1 / 5	19.23	-0.65	18.58	38.45	-19.87
848.30	1.4	16-QAM	H	150	97	1 / 5	18.75	-0.65	18.10	38.45	-20.35
825.50	3	QPSK	H	150	90	1 / 0	20.90	-0.65	20.25	38.45	-18.20
836.50	3	QPSK	H	150	84	1 / 0	21.05	-0.65	20.40	38.45	-18.05
847.50	3	QPSK	H	150	95	1 / 0	20.66	-0.65	20.01	38.45	-18.44
825.50	3	16-QAM	H	150	90	1 / 0	19.30	-0.65	18.65	38.45	-19.80
836.50	3	16-QAM	H	150	84	1 / 0	19.60	-0.65	18.95	38.45	-19.50
847.50	3	16-QAM	H	150	95	1 / 0	19.47	-0.65	18.82	38.45	-19.63
826.50	5	QPSK	H	150	88	1 / 0	21.59	-0.65	20.94	38.45	-17.51
836.50	5	QPSK	H	150	93	1 / 0	21.83	-0.65	21.18	38.45	-17.27
846.50	5	QPSK	H	150	92	1 / 0	21.54	-0.65	20.89	38.45	-17.56
826.50	5	16-QAM	H	150	88	1 / 0	20.05	-0.65	19.40	38.45	-19.05
836.50	5	16-QAM	H	150	93	1 / 0	20.40	-0.65	19.75	38.45	-18.70
846.50	5	16-QAM	H	150	92	1 / 0	19.95	-0.65	19.30	38.45	-19.15
829.00	10	QPSK	H	150	88	1 / 49	21.76	-0.65	21.11	38.45	-17.34
836.50	10	QPSK	H	150	92	1 / 49	21.80	-0.65	21.15	38.45	-17.30
844.00	10	QPSK	H	150	91	1 / 49	21.35	-0.65	20.70	38.45	-17.75
829.00	10	16-QAM	H	150	88	1 / 49	20.13	-0.65	19.48	38.45	-18.97
836.50	10	16-QAM	H	150	92	1 / 49	20.10	-0.65	19.45	38.45	-19.00
844.00	10	16-QAM	H	150	91	1 / 49	19.74	-0.65	19.09	38.45	-19.36
836.50	5	QPSK	V	150	337	1 / 0	18.86	-0.65	18.21	38.45	-20.24

Table 7-4. ERP Data (Band 5)

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	H	150	46	1 / 0	17.43	5.56	22.99	30.00	-7.01
1732.50	1.4	QPSK	H	150	43	1 / 0	17.12	5.41	22.53	30.00	-7.47
1754.30	1.4	QPSK	H	150	43	1 / 0	16.77	5.26	22.03	30.00	-7.97
1710.70	1.4	16-QAM	H	150	46	1 / 0	15.88	5.56	21.44	30.00	-8.56
1732.50	1.4	16-QAM	H	150	43	1 / 0	15.75	5.41	21.16	30.00	-8.84
1754.30	1.4	16-QAM	H	150	43	1 / 0	15.52	5.26	20.78	30.00	-9.22
1711.50	3	QPSK	H	150	96	1 / 0	17.47	5.55	23.02	30.00	-6.98
1732.50	3	QPSK	H	150	46	1 / 0	17.73	5.41	23.14	30.00	-6.86
1753.50	3	QPSK	H	150	94	1 / 14	17.15	5.26	22.41	30.00	-7.59
1711.50	3	16-QAM	H	150	96	1 / 0	15.58	5.55	21.13	30.00	-8.87
1732.50	3	16-QAM	H	150	46	1 / 0	16.18	5.41	21.59	30.00	-8.41
1753.50	3	16-QAM	H	150	94	1 / 14	15.80	5.26	21.06	30.00	-8.94
1712.50	5	QPSK	H	150	44	1 / 24	18.36	5.55	23.91	30.00	-6.09
1732.50	5	QPSK	H	150	44	1 / 24	18.45	5.41	23.86	30.00	-6.14
1752.50	5	QPSK	H	150	91	1 / 24	17.80	5.27	23.07	30.00	-6.93
1712.50	5	16-QAM	H	150	44	1 / 24	16.56	5.55	22.11	30.00	-7.89
1732.50	5	16-QAM	H	150	44	1 / 24	16.52	5.41	21.93	30.00	-8.07
1752.50	5	16-QAM	H	150	91	1 / 24	16.28	5.27	21.55	30.00	-8.45
1715.00	10	QPSK	H	150	95	1 / 49	18.08	5.53	23.61	30.00	-6.39
1732.50	10	QPSK	H	150	47	1 / 49	18.76	5.41	24.17	30.00	-5.83
1750.00	10	QPSK	H	150	96	1 / 49	18.40	5.29	23.69	30.00	-6.31
1715.00	10	16-QAM	H	150	95	1 / 49	16.38	5.53	21.91	30.00	-8.09
1732.50	10	16-QAM	H	150	47	1 / 49	16.65	5.41	22.06	30.00	-7.94
1750.00	10	16-QAM	H	150	96	1 / 49	17.08	5.29	22.37	30.00	-7.63
1717.50	15	QPSK	H	150	97	1 / 74	18.14	5.51	23.65	30.00	-6.35
1732.50	15	QPSK	H	150	96	1 / 0	17.96	5.41	23.37	30.00	-6.63
1747.50	15	QPSK	H	150	98	1 / 0	18.11	5.31	23.42	30.00	-6.58
1717.50	15	16-QAM	H	150	97	1 / 74	16.68	5.51	22.19	30.00	-7.81
1732.50	15	16-QAM	H	150	96	1 / 0	16.56	5.41	21.97	30.00	-8.03
1747.50	15	16-QAM	H	150	98	1 / 0	18.20	5.31	23.51	30.00	-6.49
1720.00	20	QPSK	H	150	96	1 / 0	18.07	5.49	23.56	30.00	-6.44
1732.50	20	QPSK	H	150	98	1 / 99	18.10	5.41	23.51	30.00	-6.49
1745.00	20	QPSK	H	150	93	1 / 0	18.07	5.32	23.39	30.00	-6.61
1720.00	20	16-QAM	H	150	96	1 / 99	16.48	5.49	21.97	30.00	-8.03
1732.50	20	16-QAM	H	150	98	1 / 99	16.42	5.41	21.83	30.00	-8.17
1745.00	20	16-QAM	H	150	93	1 / 0	16.64	5.32	21.96	30.00	-8.04
1732.50	10	QPSK	V	150	310	1 / 0	16.26	5.41	21.67	30.00	-8.33

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]
1710.70	1.4	QPSK	H	150	14	1 / 0	17.45	5.56	23.01	30.00	-6.99
1745.00	1.4	QPSK	H	150	20	1 / 0	16.78	5.32	22.10	30.00	-7.90
1779.30	1.4	QPSK	H	150	18	1 / 5	16.94	5.09	22.03	30.00	-7.97
1710.70	1.4	16-QAM	H	150	14	1 / 0	16.38	5.56	21.94	30.00	-8.06
1745.00	1.4	16-QAM	H	150	20	1 / 0	16.06	5.32	21.38	30.00	-8.62
1779.30	1.4	16-QAM	H	150	18	1 / 5	16.38	5.09	21.47	30.00	-8.53
1711.50	3	QPSK	H	150	8	1 / 14	17.13	5.55	22.68	30.00	-7.32
1745.00	3	QPSK	H	150	19	1 / 14	17.28	5.32	22.60	30.00	-7.40
1778.50	3	QPSK	H	150	16	1 / 0	17.28	5.10	22.38	30.00	-7.62
1711.50	3	16-QAM	H	150	8	1 / 14	16.08	5.55	21.63	30.00	-8.37
1745.00	3	16-QAM	H	150	19	1 / 14	16.33	5.32	21.65	30.00	-8.35
1778.50	3	16-QAM	H	150	16	1 / 0	16.76	5.10	21.86	30.00	-8.14
1712.50	5	QPSK	H	150	20	1 / 24	18.81	5.55	24.36	30.00	-5.64
1745.00	5	QPSK	H	150	18	1 / 0	18.76	5.32	24.08	30.00	-5.92
1777.50	5	QPSK	H	150	38	1 / 24	17.93	5.10	23.03	30.00	-6.97
1712.50	5	16-QAM	H	150	20	1 / 24	17.68	5.55	23.23	30.00	-6.77
1745.00	5	16-QAM	H	150	18	1 / 0	17.43	5.32	22.75	30.00	-7.25
1777.50	5	16-QAM	H	150	38	1 / 24	16.98	5.10	22.08	30.00	-7.92
1715.00	10	QPSK	H	150	9	1 / 0	19.02	5.53	24.55	30.00	-5.45
1745.00	10	QPSK	H	150	21	1 / 0	18.68	5.32	24.00	30.00	-6.00
1775.00	10	QPSK	H	150	25	1 / 49	18.18	5.12	23.30	30.00	-6.70
1715.00	10	16-QAM	H	150	9	1 / 0	17.68	5.53	23.21	30.00	-6.79
1745.00	10	16-QAM	H	150	21	1 / 0	16.38	5.32	21.70	30.00	-8.30
1775.00	10	16-QAM	H	150	25	1 / 49	17.38	5.12	22.50	30.00	-7.50
1717.50	15	QPSK	H	150	25	1 / 0	18.46	5.51	23.97	30.00	-6.03
1745.00	15	QPSK	H	150	23	1 / 0	18.10	5.32	23.42	30.00	-6.58
1772.50	15	QPSK	H	150	29	1 / 74	17.93	5.14	23.07	30.00	-6.93
1717.50	15	16-QAM	H	150	25	1 / 0	17.68	5.51	23.19	30.00	-6.81
1745.00	15	16-QAM	H	150	23	1 / 0	17.18	5.32	22.50	30.00	-7.50
1772.50	15	16-QAM	H	150	29	1 / 74	17.28	5.14	22.42	30.00	-7.58
1720.00	20	QPSK	H	160	16	1 / 0	18.91	5.49	24.40	30.00	-5.60
1745.00	20	QPSK	H	150	22	1 / 0	18.16	5.32	23.48	30.00	-6.52
1770.00	20	QPSK	H	150	27	1 / 99	18.18	5.15	23.33	30.00	-6.67
1720.00	20	16-QAM	H	160	16	1 / 0	18.08	5.49	23.57	30.00	-6.43
1745.00	20	16-QAM	H	150	22	1 / 0	17.38	5.32	22.70	30.00	-7.30
1770.00	20	16-QAM	H	150	27	1 / 99	17.38	5.15	22.53	30.00	-7.47
1715.00	10	QPSK	V	150	341	1 / 0	16.58	5.53	22.11	30.00	-7.89

Table 7-6. EIRP Data (Band 66)

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	93	1 / 0	16.68	4.82	21.50	33.01	-11.51
1880.00	1.4	QPSK	H	150	93	1 / 5	16.77	4.74	21.51	33.01	-11.50
1909.30	1.4	QPSK	H	150	97	1 / 5	17.19	4.68	21.87	33.01	-11.14
1850.70	1.4	16-QAM	H	150	93	1 / 0	16.07	4.82	20.89	33.01	-12.12
1880.00	1.4	16-QAM	H	150	93	1 / 5	16.27	4.74	21.01	33.01	-12.00
1909.30	1.4	16-QAM	H	150	97	1 / 5	16.70	4.68	21.38	33.01	-11.63
1851.50	3	QPSK	H	150	93	1 / 14	16.68	4.82	21.50	33.01	-11.51
1880.00	3	QPSK	H	150	95	1 / 0	16.97	4.74	21.71	33.01	-11.30
1908.50	3	QPSK	H	150	50	1 / 14	17.24	4.68	21.92	33.01	-11.09
1851.50	3	16-QAM	H	150	93	1 / 14	16.12	4.82	20.94	33.01	-12.07
1880.00	3	16-QAM	H	150	95	1 / 0	16.22	4.74	20.96	33.01	-12.05
1908.50	3	16-QAM	H	150	50	1 / 14	16.65	4.68	21.33	33.01	-11.68
1852.50	5	QPSK	H	150	95	1 / 0	17.42	4.81	22.23	33.01	-10.78
1880.00	5	QPSK	H	150	94	12 / 6	17.57	4.74	22.31	33.01	-10.70
1907.50	5	QPSK	H	150	98	1 / 24	17.57	4.68	22.25	33.01	-10.76
1852.50	5	16-QAM	H	150	95	1 / 24	16.57	4.81	21.38	33.01	-11.63
1880.00	5	16-QAM	H	150	94	1 / 0	16.87	4.74	21.61	33.01	-11.40
1907.50	5	16-QAM	H	150	98	1 / 24	16.67	4.68	21.35	33.01	-11.66
1855.00	10	QPSK	H	100	308	1 / 0	16.85	4.81	21.66	33.01	-11.35
1880.00	10	QPSK	H	100	340	50 / 0	17.35	4.74	22.09	33.01	-10.92
1905.00	10	QPSK	H	103	343	1 / 0	17.45	4.68	22.13	33.01	-10.88
1855.00	10	16-QAM	H	100	308	1 / 0	16.05	4.81	20.86	33.01	-12.15
1880.00	10	16-QAM	H	100	340	1 / 49	16.75	4.74	21.49	33.01	-11.52
1905.00	10	16-QAM	H	103	343	1 / 0	16.65	4.68	21.33	33.01	-11.68
1857.50	15	QPSK	H	150	91	75 / 0	17.25	4.80	22.05	33.01	-10.96
1880.00	15	QPSK	H	150	95	1 / 74	17.72	4.74	22.46	33.01	-10.55
1902.50	15	QPSK	H	150	93	1 / 0	17.38	4.69	22.07	33.01	-10.94
1857.50	15	16-QAM	H	150	91	75 / 0	16.33	4.80	21.13	33.01	-11.88
1880.00	15	16-QAM	H	150	95	1 / 74	16.91	4.74	21.65	33.01	-11.36
1902.50	15	16-QAM	H	150	93	1 / 0	16.70	4.69	21.39	33.01	-11.62
1860.00	20	QPSK	H	150	93	100 / 0	17.57	4.79	22.36	33.01	-10.65
1880.00	20	QPSK	H	150	93	50 / 25	17.69	4.74	22.43	33.01	-10.58
1900.00	20	QPSK	H	150	93	50 / 25	17.45	4.69	22.14	33.01	-10.87
1860.00	20	16-QAM	H	150	93	100 / 0	16.49	4.79	21.28	33.01	-11.73
1880.00	20	16-QAM	H	150	93	50 / 25	17.70	4.74	22.44	33.01	-10.57
1900.00	20	16-QAM	H	150	93	1 / 0	16.79	4.69	21.48	33.01	-11.53
1880.00	15	QPSK	V	150	41	1 / 0	13.65	4.74	18.39	33.01	-14.62

Table 7-7. EIRP Data (Band 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]
2502.50	5	QPSK	H	150	105	1 / 24	14.77	5.74	20.51	33.01	-12.50
2535.00	5	QPSK	H	150	38	1 / 24	14.72	5.86	20.58	33.01	-12.43
2567.50	5	QPSK	H	150	42	1 / 24	15.36	5.98	21.34	33.01	-11.67
2502.50	5	16-QAM	H	150	105	1 / 24	13.67	5.74	19.41	33.01	-13.60
2535.00	5	16-QAM	H	150	38	1 / 24	13.69	5.86	19.55	33.01	-13.46
2567.50	5	16-QAM	H	150	42	1 / 24	14.47	5.98	20.45	33.01	-12.56
2505.00	10	QPSK	H	150	106	1 / 49	15.72	5.75	21.47	33.01	-11.54
2535.00	10	QPSK	H	150	102	1 / 49	14.85	5.86	20.71	33.01	-12.30
2565.00	10	QPSK	H	150	102	1 / 49	14.78	5.97	20.75	33.01	-12.26
2505.00	10	16-QAM	H	150	106	1 / 49	14.00	5.75	19.75	33.01	-13.26
2535.00	10	16-QAM	H	150	102	1 / 49	13.75	5.86	19.61	33.01	-13.40
2565.00	10	16-QAM	H	150	102	1 / 49	13.75	5.97	19.72	33.01	-13.29
2507.50	15	QPSK	H	150	103	1 / 74	15.65	5.76	21.41	33.01	-11.60
2535.00	15	QPSK	H	150	102	1 / 74	14.70	5.86	20.56	33.01	-12.45
2562.50	15	QPSK	H	150	106	1 / 74	14.02	5.96	19.98	33.01	-13.03
2507.50	15	16-QAM	H	150	103	1 / 74	14.10	5.76	19.86	33.01	-13.15
2535.00	15	16-QAM	H	150	102	1 / 74	13.66	5.86	19.52	33.01	-13.49
2562.50	15	16-QAM	H	150	106	1 / 74	13.12	5.96	19.08	33.01	-13.93
2510.00	20	QPSK	H	150	105	1 / 99	15.39	5.77	21.16	33.01	-11.85
2535.00	20	QPSK	H	150	105	100 / 0	14.62	5.86	20.48	33.01	-12.53
2560.00	20	QPSK	H	150	105	1 / 0	14.87	5.95	20.82	33.01	-12.19
2510.00	20	16-QAM	H	150	105	1 / 99	14.50	5.77	20.27	33.01	-12.74
2535.00	20	16-QAM	H	150	105	100 / 0	13.64	5.86	19.50	33.01	-13.51
2560.00	20	16-QAM	H	150	105	1 / 0	13.67	5.95	19.62	33.01	-13.39
2505.00	10	QPSK	V	150	323	1 / 0	12.79	5.75	18.54	33.01	-14.47

Table 7-8. EIRP Data (Band 7)

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) §27.53(a.4)

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.

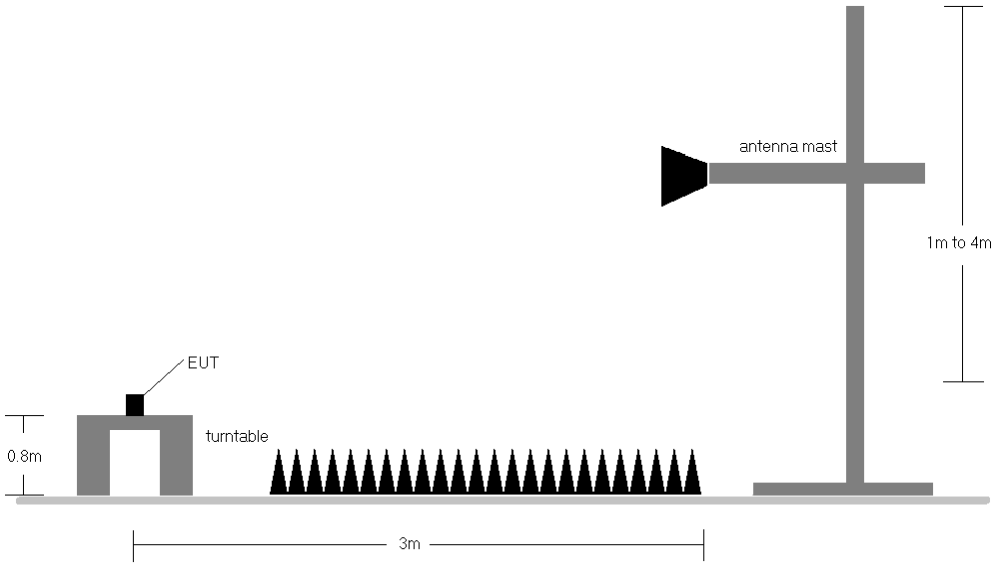


Figure 7-7. Test Instrument & Measurement Setup

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:	700.50	MHz		
CHANNEL:	23025			
MEASURED OUTPUT POWER:	16.47	dBm	=	0.044 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	3.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	29.47	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]
1401.00	H	100	270	-63.96	5.91	-58.05	74.5
2101.50	H	120	189	-68.75	6.79	-61.96	78.4
2802.00	H	-	-	-72.37	8.12	-64.25	80.7

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

OPERATING FREQUENCY:	707.50	MHz		
CHANNEL:	23095			
MEASURED OUTPUT POWER:	17.20	dBm	=	0.052 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	3.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	30.20	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	120	200	-64.16	5.96	-58.19	75.4
2122.50	H	180	150	-70.12	6.84	-63.27	80.5
2830.00	H	-	-	-72.19	8.13	-64.06	81.3

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

OPERATING FREQUENCY:	714.50	MHz		
CHANNEL:	23165			
MEASURED OUTPUT POWER:	17.56	dBm	=	0.057 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	3.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	30.56	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]
1429.00	H	112	110	-64.92	6.02	-58.90	76.5
2143.50	H	200	150	-71.21	6.90	-64.32	81.9
2858.00	H	-	-	-72.10	8.15	-63.95	81.5

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

OPERATING FREQUENCY:	782.00	MHz		
CHANNEL:	23230			
MEASURED OUTPUT POWER:	19.62	dBm	=	0.092 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	32.62	dBc	

Frequency [MHz]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
2346.00	101	37	-61.16	7.00	-54.16	73.8

Table 7-12. Radiated Spurious Data (Band 13 – Mid Channel)

MODULATION SIGNAL:	QPSK	
BANDWIDTH:	10.00	MHz
DISTANCE:	3	meters
NARROWBAND EMISSION LIMIT:	-50	dBm
WIDEBAND EMISSION LIMIT:	-40	dBm/MHz

Frequency [MHz]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	Margin [dB]
1564.00	116	62	-73.19	6.41	-66.78	-26.8

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

OPERATING FREQUENCY:	826.50	MHz		
CHANNEL:	20425			
MEASURED OUTPUT POWER:	20.94	dBm	=	0.124 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	5.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	33.94	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]
1653.00	H	122	230	-74.47	6.28	-68.19	89.1
2479.50	H	100	221	-68.38	6.84	-61.53	82.5
3306.00	H	-	-	-68.74	7.14	-61.59	82.5

Table 7-14. Radiated Spurious Data (Band 5 – Low Channel)

OPERATING FREQUENCY:	836.50	MHz			
CHANNEL:	20525				
MEASURED OUTPUT POWER:	21.18	dBm	=	0.131	W
MODULATION SIGNAL:	QPSK				
BANDWIDTH:	5.0	MHz			
DISTANCE:	3	meters			
LIMIT:	43 + 10 $\log_{10}$ (W) =	34.18	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	134	69	-73.00	6.21	-66.79	88.0
2509.50	H	100	124	-50.18	6.86	-43.32	64.5
3346.00	H	-	-	-68.80	7.26	-61.53	82.7

Table 7-15. Radiated Spurious Data (Band 5 – Mid Channel)

OPERATING FREQUENCY:	846.50	MHz			
CHANNEL:	20625				
MEASURED OUTPUT POWER:	20.89	dBm	=	0.123	W
MODULATION SIGNAL:	QPSK				
BANDWIDTH:	5.0	MHz			
DISTANCE:	3	meters			
LIMIT:	43 + 10 $\log_{10}$ (W) =	33.89	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]
1693.00	H	112	150	-73.61	6.14	-67.47	88.4
2539.50	H	200	100	-46.82	6.95	-39.87	60.8
3386.00	H	-	-	-68.96	7.38	-61.58	82.5

Table 7-16. Radiated Spurious Data (Band 5 – High Channel)

OPERATING FREQUENCY:	1715.00	MHz		
CHANNEL:	20000			
MEASURED OUTPUT POWER:	23.61	dBm	=	0.230 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	36.61	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	101	171	-67.17	9.67	-57.50	81.1
5145.00	H	108	167	-64.03	10.90	-53.13	76.7

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

OPERATING FREQUENCY:	1732.50	MHz		
CHANNEL:	20175			
MEASURED OUTPUT POWER:	24.17	dBm	=	0.261 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	37.17	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]
3465.00	H	101	340	-66.98	9.77	-57.20	81.4
5197.50	H	-	-	-66.99	10.81	-56.18	80.3

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

OPERATING FREQUENCY:	1750.00	MHz		
CHANNEL:	20350			
MEASURED OUTPUT POWER:	23.69	dBm	=	0.234 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	36.69	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	H	-	-	-69.04	9.88	-59.16	82.8

Table 7-19. Radiated Spurious Data (Band 4 – High Channel)

OPERATING FREQUENCY:	1715.00	MHz		
CHANNEL:	132022			
MEASURED OUTPUT POWER:	24.55	dBm	=	0.285 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	37.55	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	-	-	-68.92	9.67	-59.25	83.8

Table 7-20. Radiated Spurious Data (Band 66 – Low Channel)

OPERATING FREQUENCY:	1745.00	MHz		
CHANNEL:	132322			
MEASURED OUTPUT POWER:	24.00	dBm	=	0.251 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	37.00	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	100	158	-68.49	9.85	-58.64	82.6
5235.00	H	-	-	-66.72	10.88	-55.84	79.8

Table 7-21. Radiated Spurious Data (Band 66 – Mid Channel)

OPERATING FREQUENCY:	1775.00	MHz		
CHANNEL:	132622			
MEASURED OUTPUT POWER:	23.30	dBm	=	0.214 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	36.30	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]
3550.00	H	-	-	-68.85	9.96	-58.89	82.2

Table 7-22. Radiated Spurious Data (Band 66 – High Channel)

OPERATING FREQUENCY:	1857.50	MHz		
CHANNEL:	18675			
MEASURED OUTPUT POWER:	22.05	dBm	=	0.160 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	15.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	35.05	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]
3715.00	H	112	270	-69.56	9.97	-59.59	81.6
5572.50	H	-	-	-67.43	11.23	-56.20	78.2

Table 7-23. Radiated Spurious Data (Band 2 – Low Channel)

OPERATING FREQUENCY:	1880.00	MHz		
CHANNEL:	18900			
MEASURED OUTPUT POWER:	22.46	dBm	=	0.176 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	15.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	35.46	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]
3760.00	H	110	215	-68.67	9.79	-58.88	81.3
5640.00	H	-	-	-67.56	11.35	-56.21	78.7

Table 7-24. Radiated Spurious Data (Band 2 – Mid Channel)

OPERATING FREQUENCY:	1902.50	MHz		
CHANNEL:	19125			
MEASURED OUTPUT POWER:	22.07	dBm	=	0.161 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	15.0	MHz		
DISTANCE:	3	meters		
LIMIT:	43 + 10 $\log_{10}$ (W) =	35.07	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]
3805.00	H	114	210	-67.42	9.61	-57.82	79.9
5707.50	H	-	-	-67.61	11.43	-56.18	78.2

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

OPERATING FREQUENCY:	2505.00	MHz		
CHANNEL:	20800			
MEASURED OUTPUT POWER:	21.47	dBm	=	0.140 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	55 + 10 log10 (W)	46.47	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]
5010.00	H	-	-	-69.27	11.17	-58.10	79.6

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

OPERATING FREQUENCY:	2535.00	MHz		
CHANNEL:	21100			
MEASURED OUTPUT POWER:	20.71	dBm	=	0.118 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	55 + 10 log10 (W)	45.71	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]
5070.00	H	100	127	-65.22	11.04	-54.18	74.9
7605.00	H	-	-	-62.48	11.47	-51.01	71.7

Table 7-27. Radiated Spurious Data (Band 7 – Mid Channel)

OPERATING FREQUENCY:	2565.00	MHz		
CHANNEL:	21400			
MEASURED OUTPUT POWER:	20.75	dBm	=	0.119 W
MODULATION SIGNAL:	QPSK			
BANDWIDTH:	10.0	MHz		
DISTANCE:	3	meters		
LIMIT:	55 + 10 log10 (W)	45.75	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]
5130.00	H	115	200	-65.72	10.92	-54.79	75.5
7695.00	H	-	-	-61.63	11.55	-50.08	70.8

Table 7-28. Radiated Spurious Data (Band 7 – 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:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	707,499,930	-70	-0.0000099
100 %		- 30	707,499,860	-140	-0.0000198
100 %		- 20	707,499,867	-133	-0.0000188
100 %		- 10	707,499,828	-172	-0.0000242
100 %		0	707,499,815	-185	-0.0000261
100 %		+ 10	707,499,999	-1	-0.0000001
100 %		+ 20	707,499,847	-153	-0.0000217
100 %		+ 30	707,499,901	-99	-0.0000140
100 %		+ 40	707,499,823	-177	-0.0000251
100 %		+ 50	707,499,920	-80	-0.0000113
BATT. ENDPOINT	3.45	+ 20	707,499,829	-171	-0.0000242

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

Band 12 Frequency Stability Measurements

§2.1055 §27.54

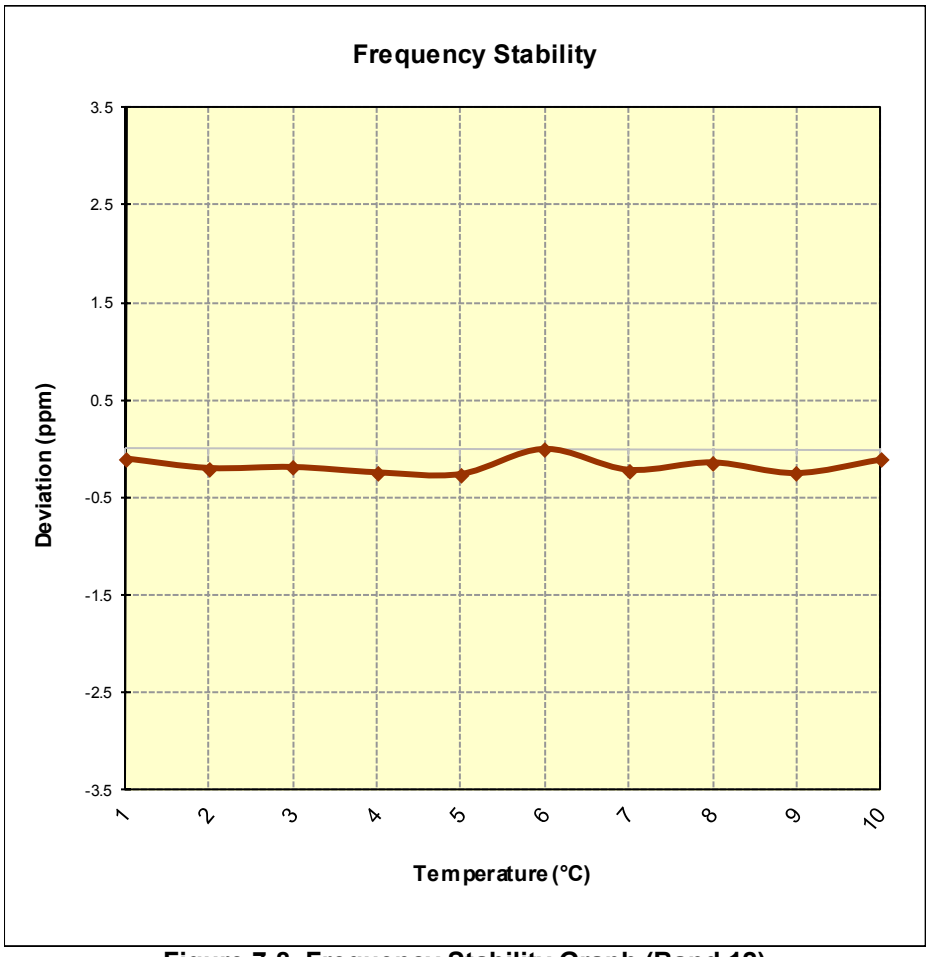


Figure 7-8. Frequency Stability Graph (Band 12)

Band 13 Frequency Stability Measurements

§2.1055 §27.54

OPERATING FREQUENCY:	782,000,000	Hz
CHANNEL:	23230	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	781,999,919	-81	-0.0000104
100 %		- 30	781,999,977	-23	-0.0000029
100 %		- 20	781,999,862	-138	-0.0000176
100 %		- 10	781,999,842	-158	-0.0000202
100 %		0	781,999,820	-180	-0.0000230
100 %		+ 10	781,999,973	-27	-0.0000034
100 %		+ 20	781,999,929	-71	-0.0000090
100 %		+ 30	781,999,983	-17	-0.0000022
100 %		+ 40	781,999,846	-154	-0.0000196
100 %		+ 50	781,999,849	-151	-0.0000193
BATT. ENDPOINT	3.45	+ 20	781,999,911	-89	-0.0000114

Table 7-30. Frequency Stability Data (Band 13)

Band 13 Frequency Stability Measurements

§2.1055 §27.54

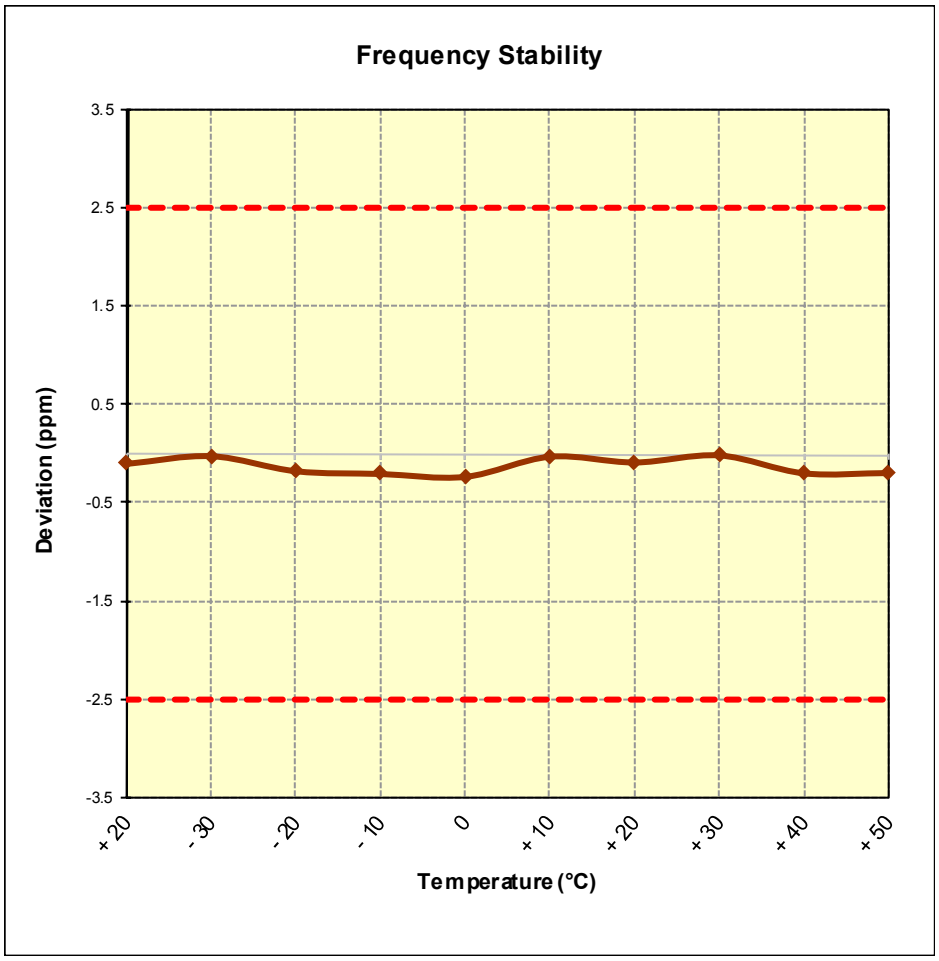


Figure 7-9. Frequency Stability Graph (Band 13)

Band 5 Frequency Stability Measurements

§2.1055 §22.355

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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	836,499,815	-185	-0.0000221
100 %		- 30	836,499,964	-36	-0.0000043
100 %		- 20	836,499,844	-156	-0.0000187
100 %		- 10	836,499,820	-180	-0.0000216
100 %		0	836,499,984	-16	-0.0000020
100 %		+ 10	836,499,971	-29	-0.0000035
100 %		+ 20	836,499,820	-180	-0.0000215
100 %		+ 30	836,499,827	-173	-0.0000207
100 %		+ 40	836,499,810	-190	-0.0000227
100 %		+ 50	836,499,972	-28	-0.0000034
BATT. ENDPOINT	3.45	+ 20	836,499,911	-89	-0.0000107

Table 7-31. Frequency Stability Data (Band 5)

Band 5 Frequency Stability Measurements

§2.1055 §22.355

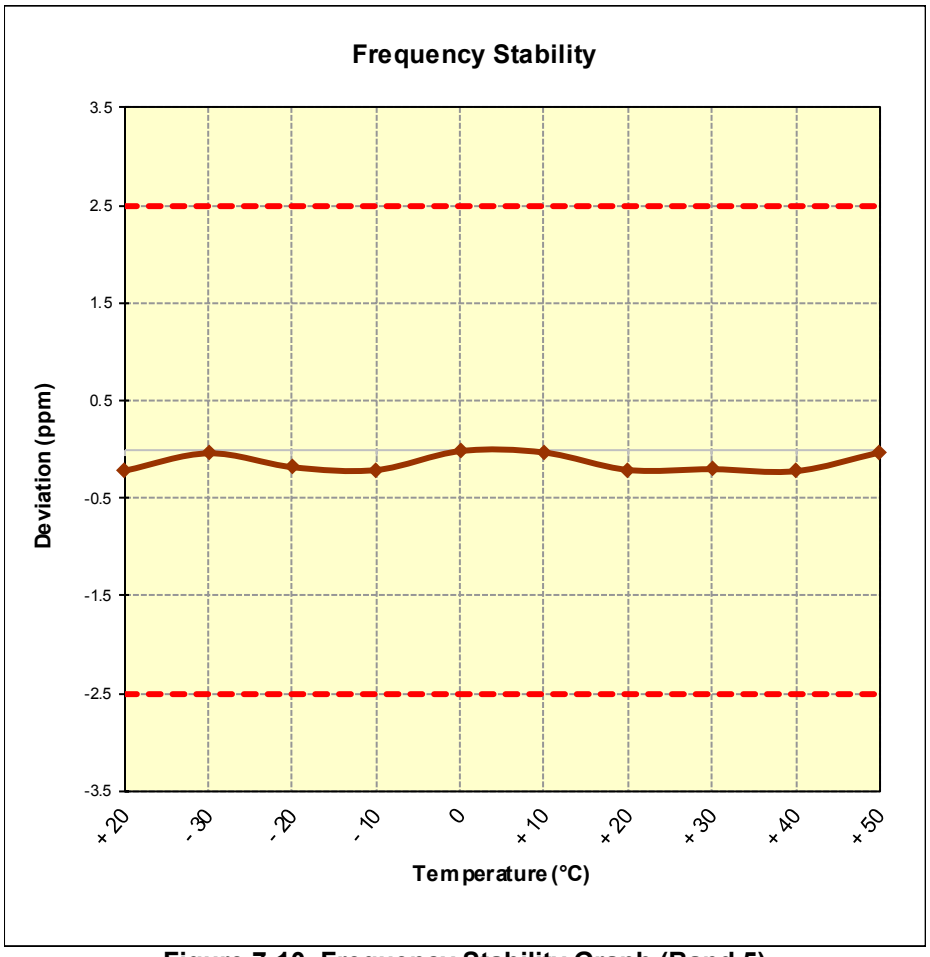


Figure 7-10. Frequency Stability Graph (Band 5)

Band 4 Frequency Stability Measurements

§2.1055 §§27.54

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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,732,499,807	-193	-0.0000111
100 %		- 30	1,732,499,939	-61	-0.0000035
100 %		- 20	1,732,499,962	-38	-0.0000022
100 %		- 10	1,732,499,812	-188	-0.0000108
100 %		0	1,732,499,858	-142	-0.0000082
100 %		+ 10	1,732,499,843	-157	-0.0000091
100 %		+ 20	1,732,499,944	-56	-0.0000032
100 %		+ 30	1,732,499,988	-12	-0.0000007
100 %		+ 40	1,732,499,809	-191	-0.0000110
100 %		+ 50	1,732,499,904	-96	-0.0000056
BATT. ENDPOINT	3.45	+ 20	1,732,499,977	-23	-0.0000013

Table 7-32. 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

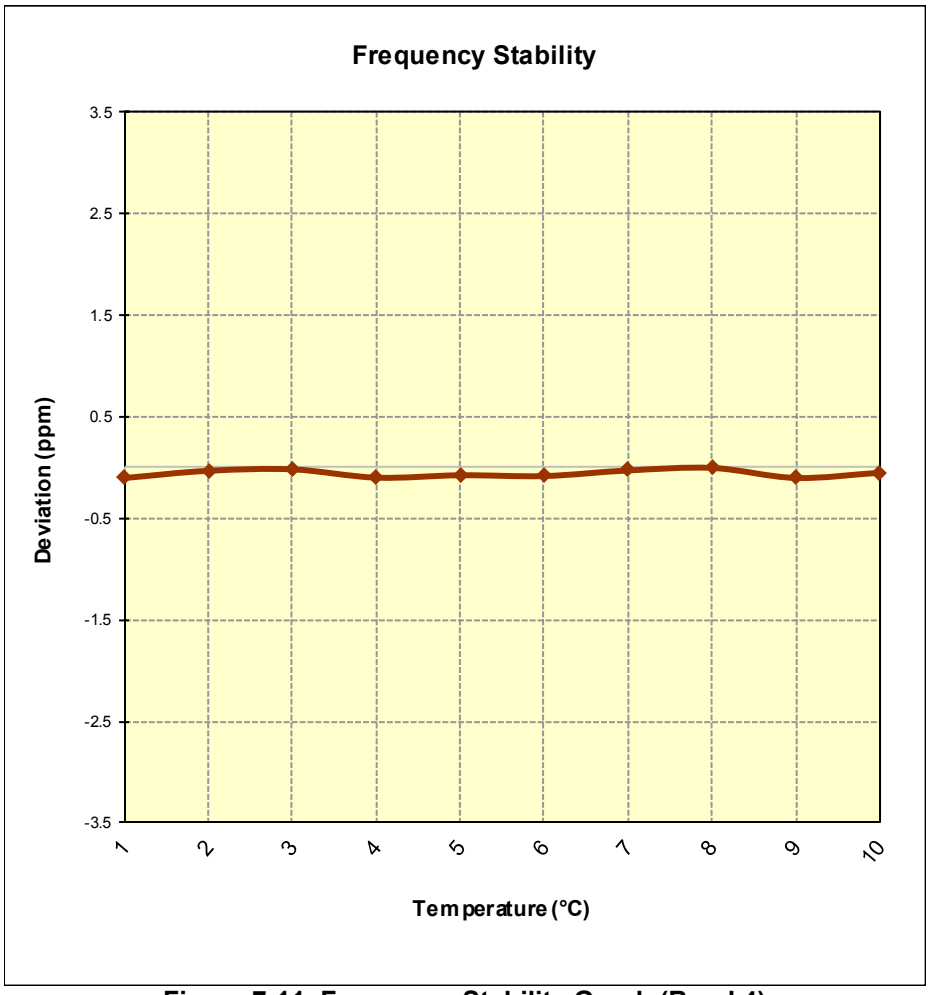


Figure 7-11. Frequency Stability Graph (Band 4)

Band 66 Frequency Stability Measurements

§2.1055 §§27.54

OPERATING FREQUENCY:	1,745,000,000	Hz
CHANNEL:	132322	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,744,999,939	-61	-0.0000035
100 %		- 30	1,744,999,816	-184	-0.0000106
100 %		- 20	1,744,999,957	-43	-0.0000025
100 %		- 10	1,744,999,974	-26	-0.0000015
100 %		0	1,744,999,808	-192	-0.0000110
100 %		+ 10	1,744,999,980	-20	-0.0000011
100 %		+ 20	1,744,999,979	-21	-0.0000012
100 %		+ 30	1,744,999,836	-164	-0.0000094
100 %		+ 40	1,744,999,836	-164	-0.0000094
100 %		+ 50	1,744,999,954	-46	-0.0000027
BATT. ENDPOINT	3.45	+ 20	1,744,999,976	-24	-0.0000014

Table 7-33. Frequency Stability Data (Band 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.

Band 66 Frequency Stability Measurements

§2.1055 §§27.54

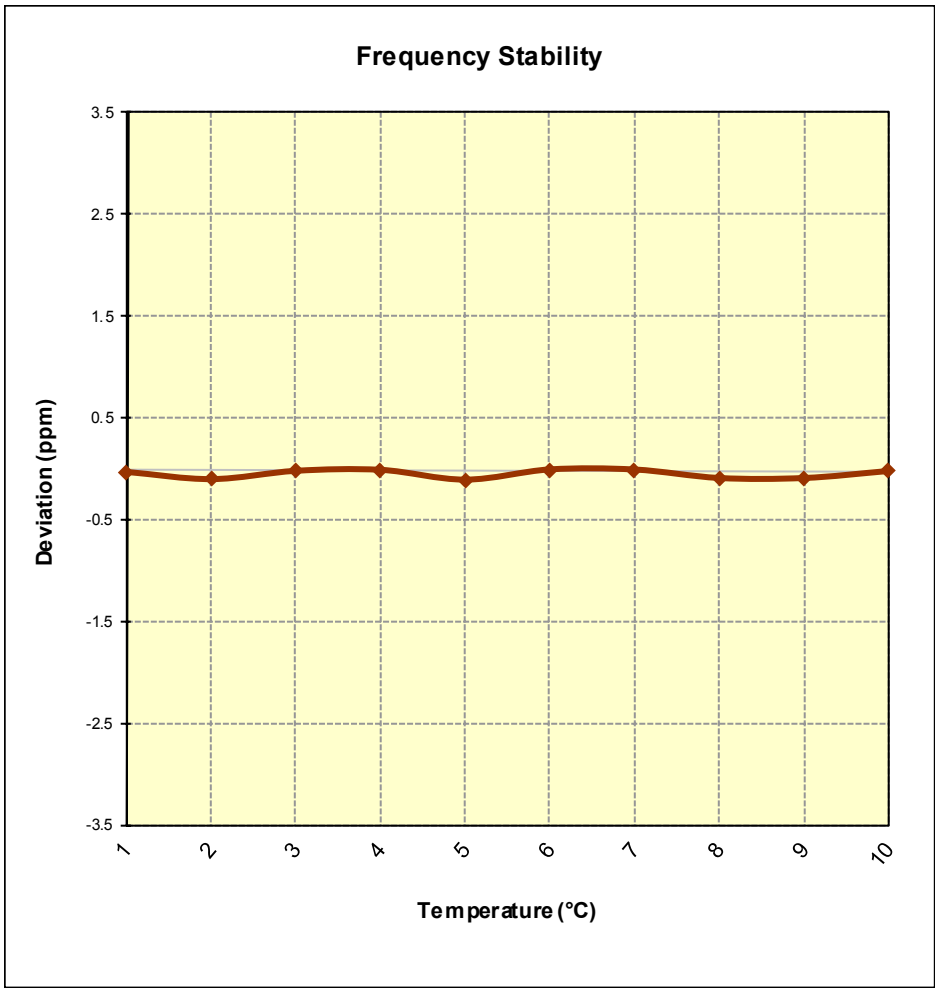


Figure 7-12. Frequency Stability Graph (Band 66)

Band 2 Frequency Stability Measurements

§2.1055 §24.235

OPERATING FREQUENCY:	1,880,000,000	Hz
CHANNEL:	18900	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,879,999,890	-110	-0.0000059
100 %		- 30	1,879,999,898	-102	-0.0000054
100 %		- 20	1,879,999,907	-93	-0.0000049
100 %		- 10	1,879,999,970	-30	-0.0000016
100 %		0	1,879,999,871	-129	-0.0000069
100 %		+ 10	1,879,999,872	-128	-0.0000068
100 %		+ 20	1,879,999,810	-190	-0.0000101
100 %		+ 30	1,879,999,978	-22	-0.0000012
100 %		+ 40	1,879,999,830	-170	-0.0000090
100 %		+ 50	1,879,999,877	-123	-0.0000065
BATT. ENDPOINT	3.45	+ 20	1,879,999,879	-121	-0.0000064

Table 7-34. Frequency Stability Data (Band 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 2 Frequency Stability Measurements

§2.1055 §24.235

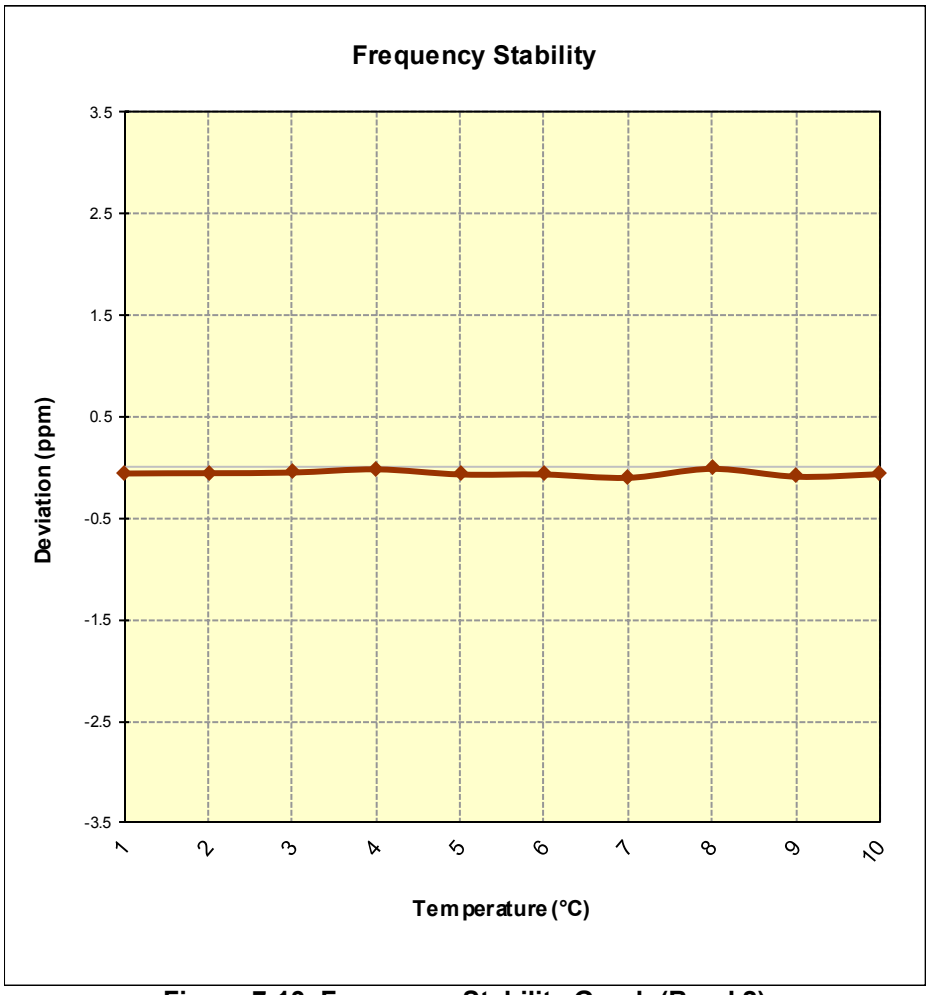


Figure 7-13. Frequency Stability Graph (Band 2)

Band 7 Frequency Stability Measurements

§2.1055 §27.54

OPERATING FREQUENCY:	2,535,000,000	Hz
CHANNEL:	21100	
REFERENCE VOLTAGE:	3.85	VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	2,534,999,883	-117	-0.0000046
100 %		- 30	2,534,999,991	-9	-0.0000004
100 %		- 20	2,534,999,853	-147	-0.0000058
100 %		- 10	2,534,999,932	-68	-0.0000027
100 %		0	2,534,999,839	-161	-0.0000064
100 %		+ 10	2,534,999,841	-159	-0.0000063
100 %		+ 20	2,534,999,988	-12	-0.0000005
100 %		+ 30	2,534,999,808	-192	-0.0000076
100 %		+ 40	2,534,999,914	-86	-0.0000034
100 %		+ 50	2,534,999,901	-99	-0.0000039
BATT. ENDPOINT	3.45	+ 20	2,534,999,803	-197	-0.0000078

Table 7-35. Frequency Stability Data (Band 7)

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 7 Frequency Stability Measurements

§2.1055 §27.54

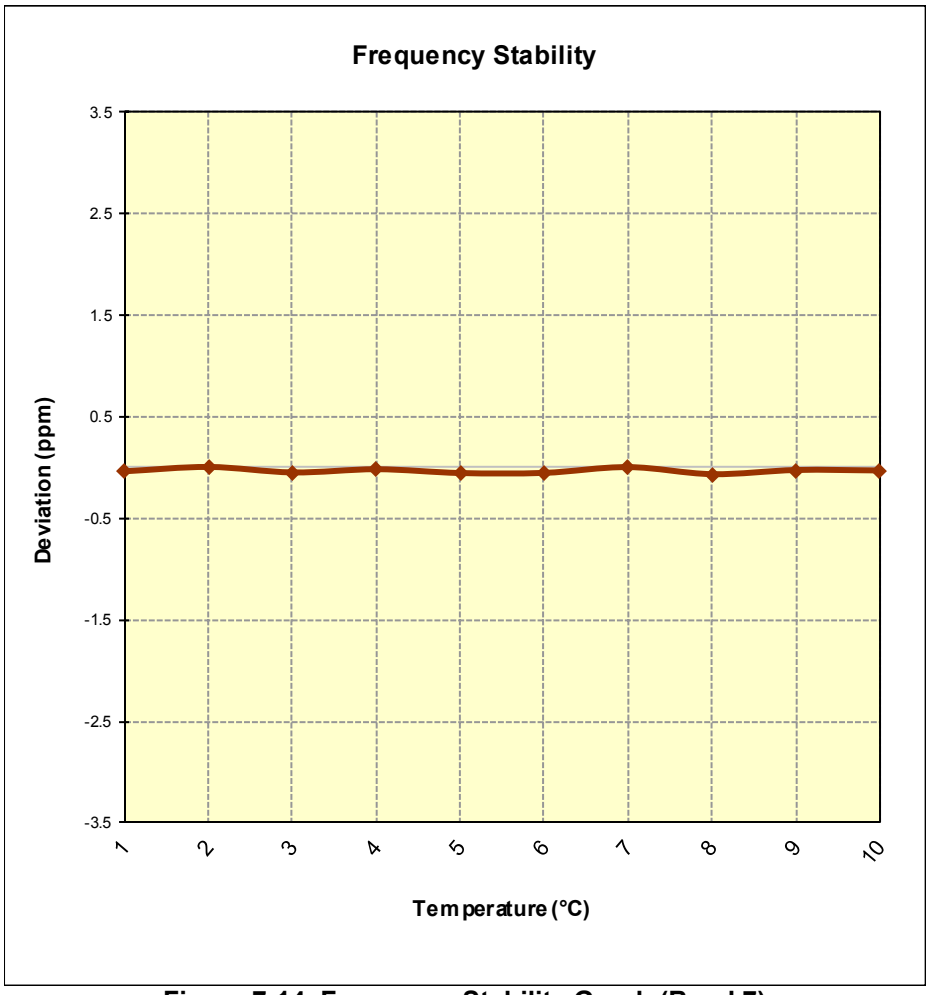


Figure 7-14. Frequency Stability Graph (Band 7)

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LGE Portable Handset FCC ID: ZNFM710H** complies with all the requirements of Parts 22, 24, & 27 of the FCC rules for LTE operation only.