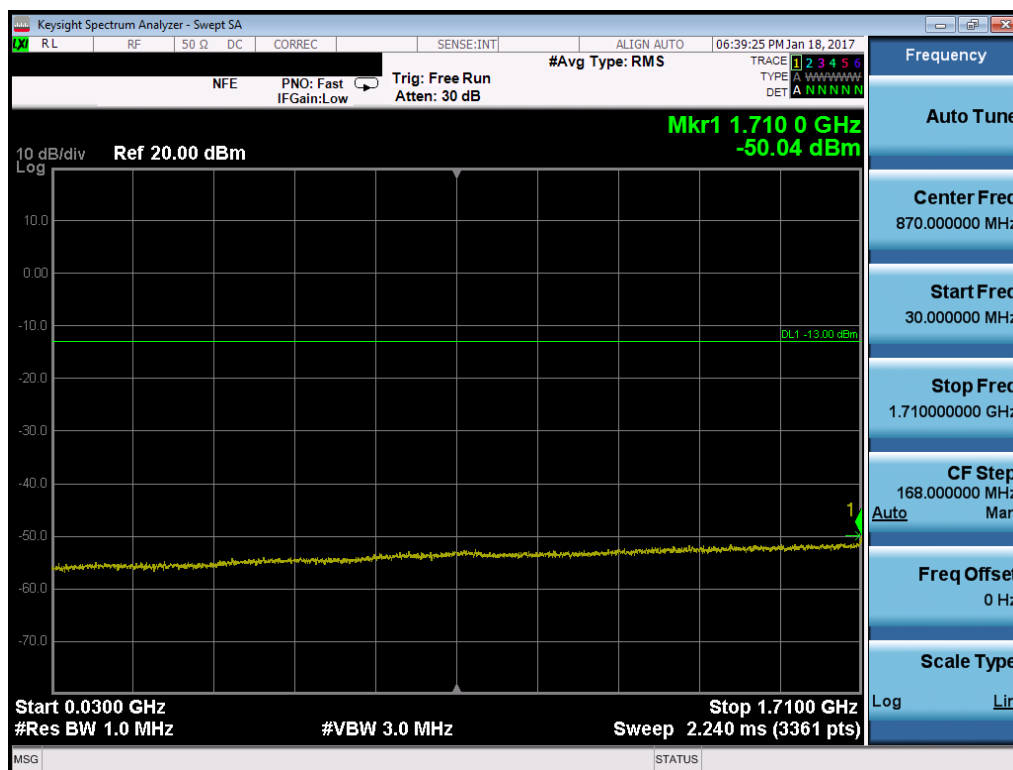
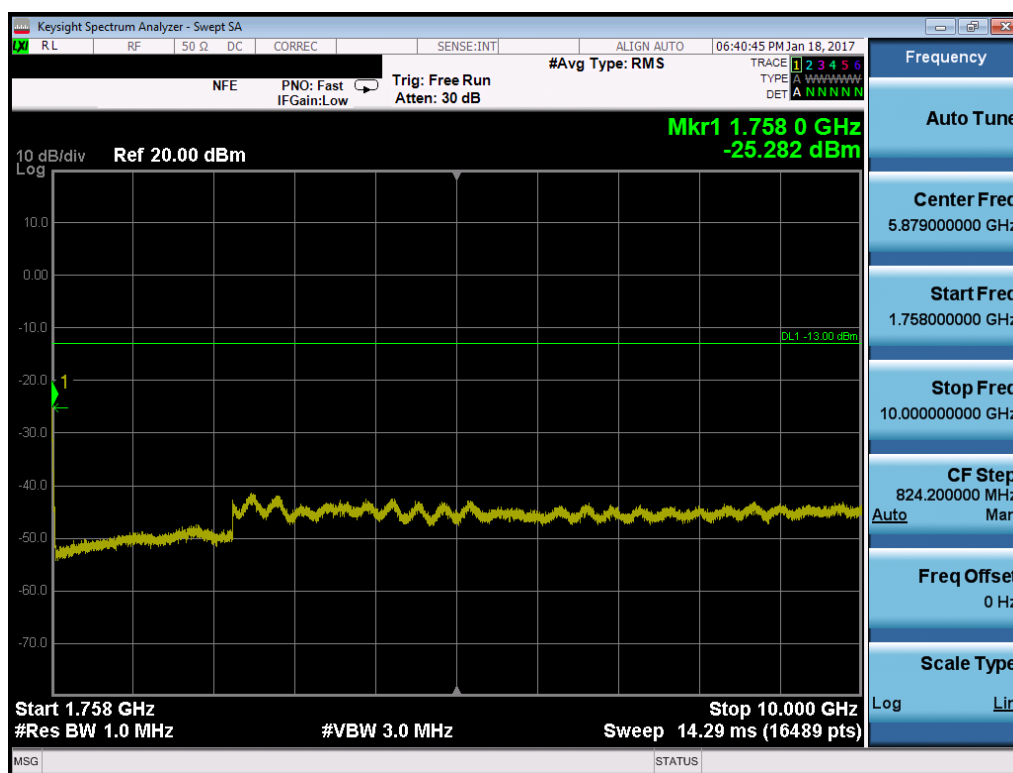


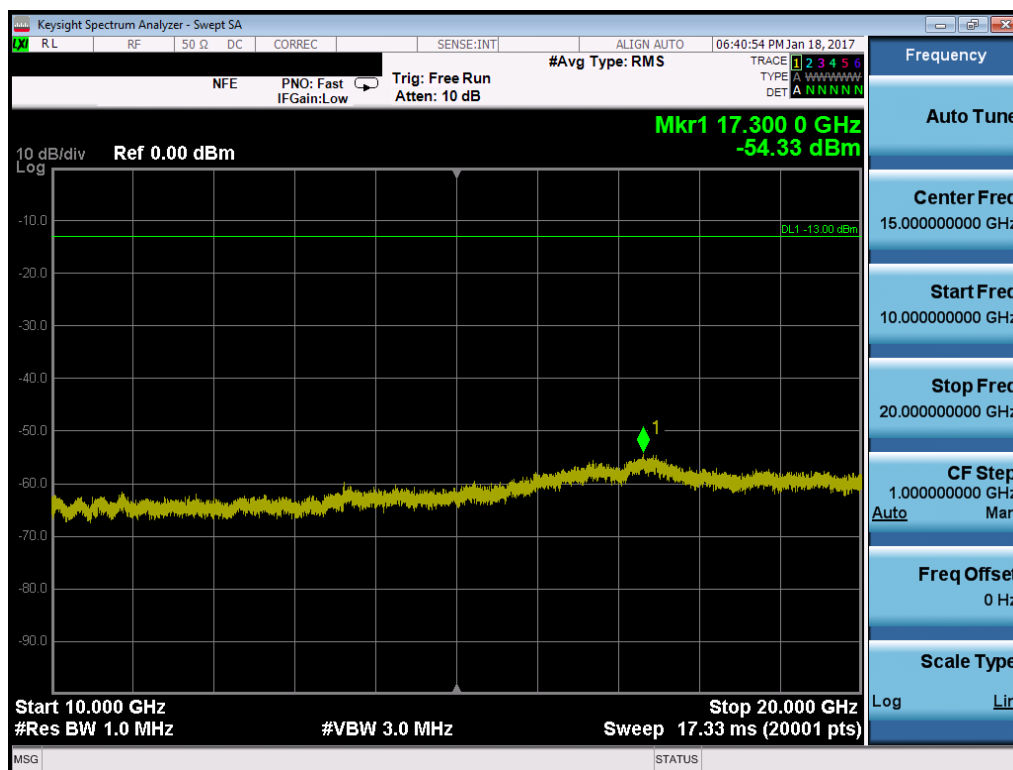


Plot 7-115. Conducted Spurious Plot (Band 4 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

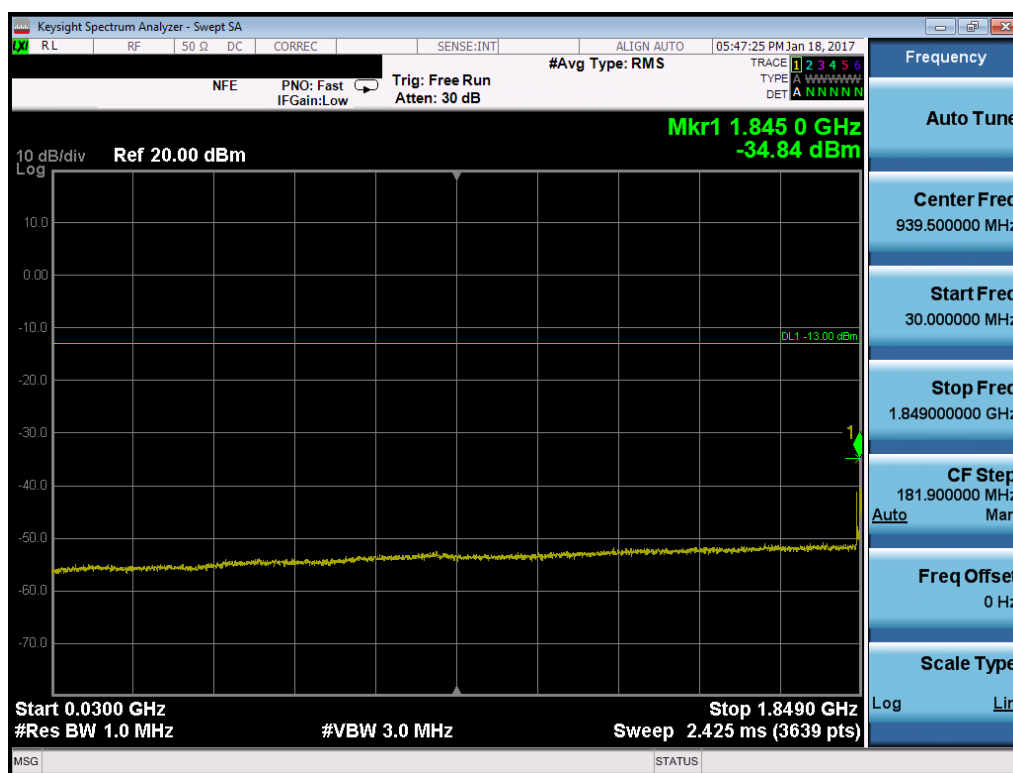


Plot 7-116. Conducted Spurious Plot (Band 4 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 76 of 176

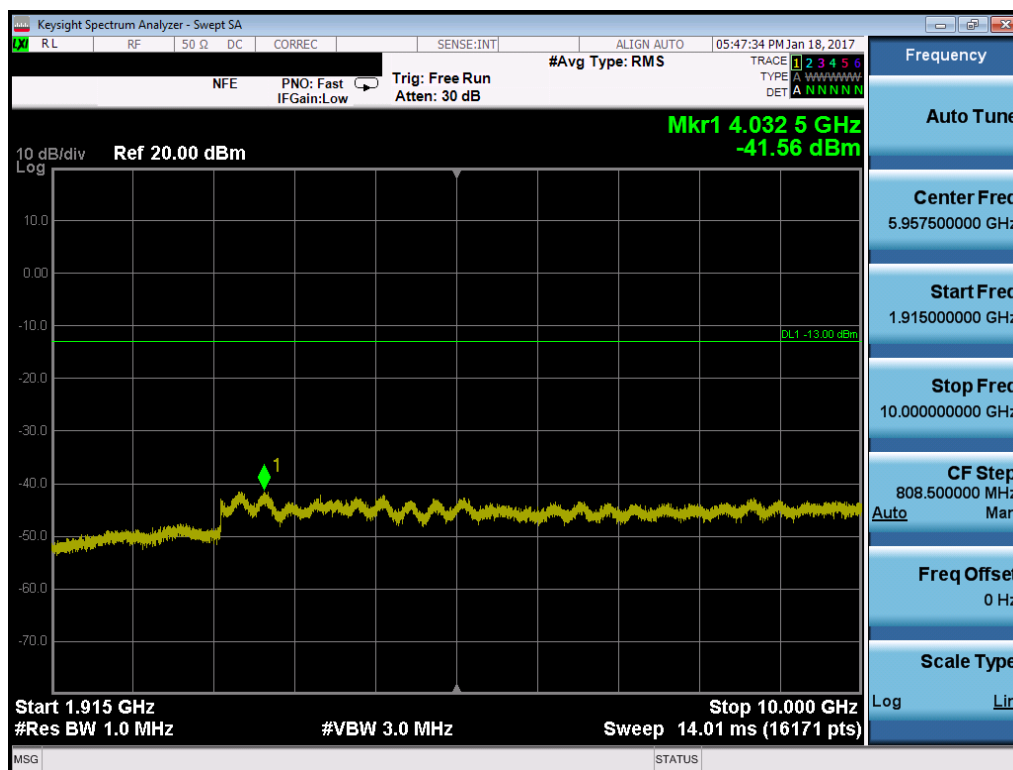


Plot 7-117. Conducted Spurious Plot (Band 4 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

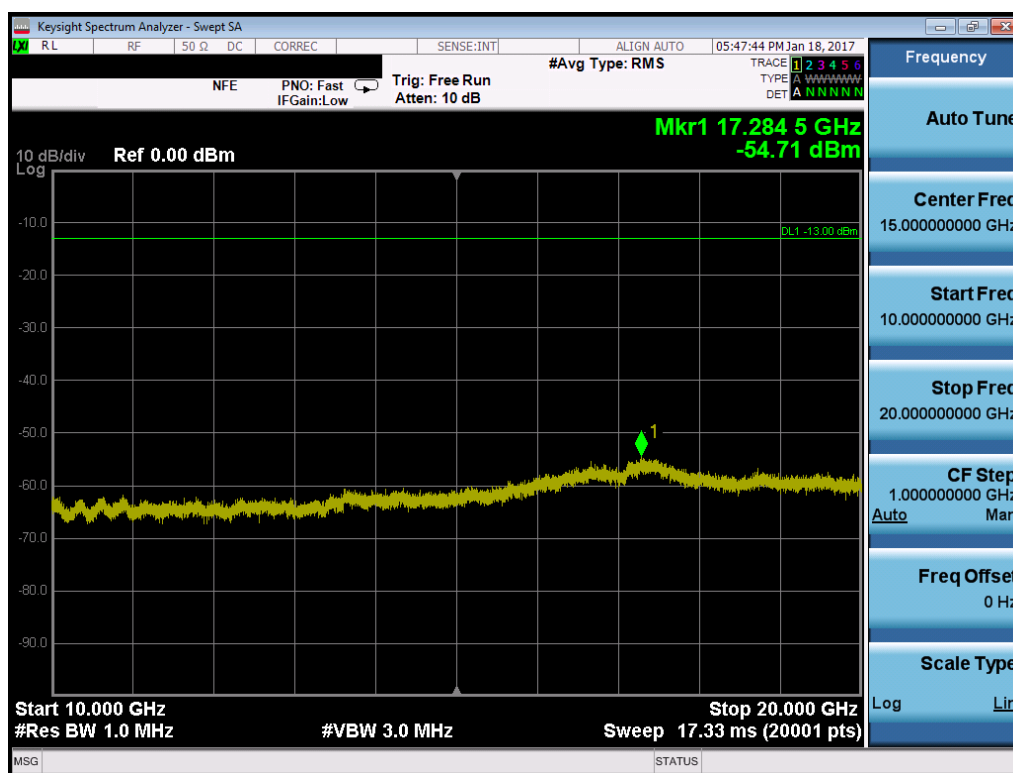


Plot 7-118. Conducted Spurious Plot (Band 2/25 – 15.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 77 of 176	

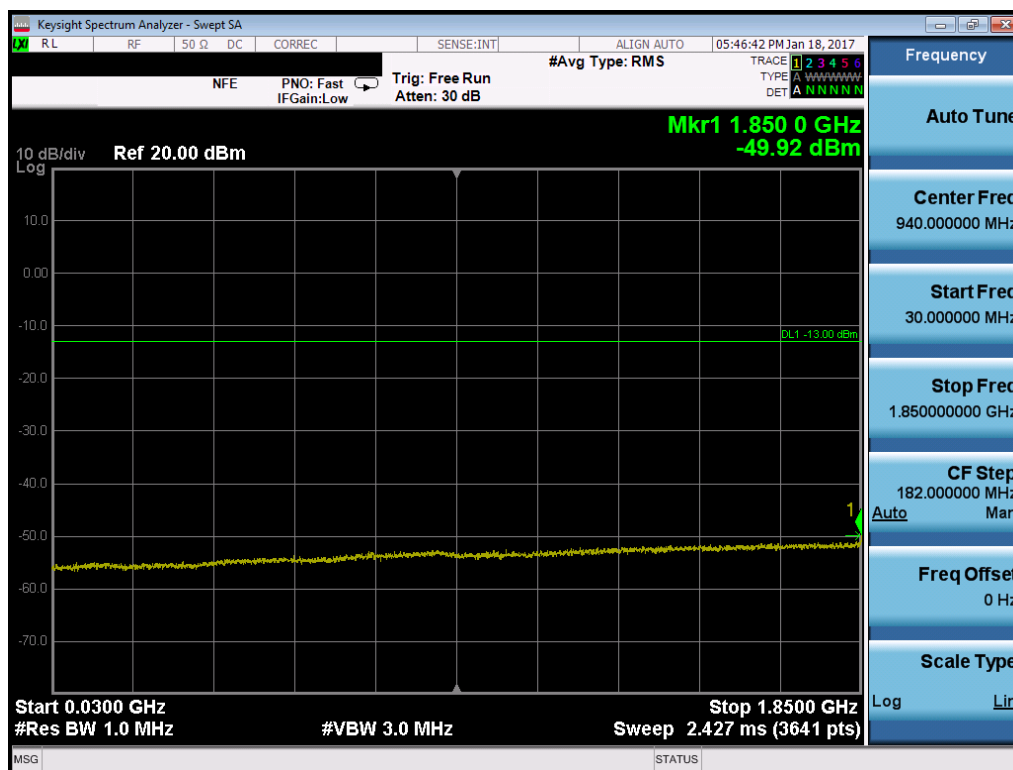


Plot 7-119. Conducted Spurious Plot (Band 2/25 – 15.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

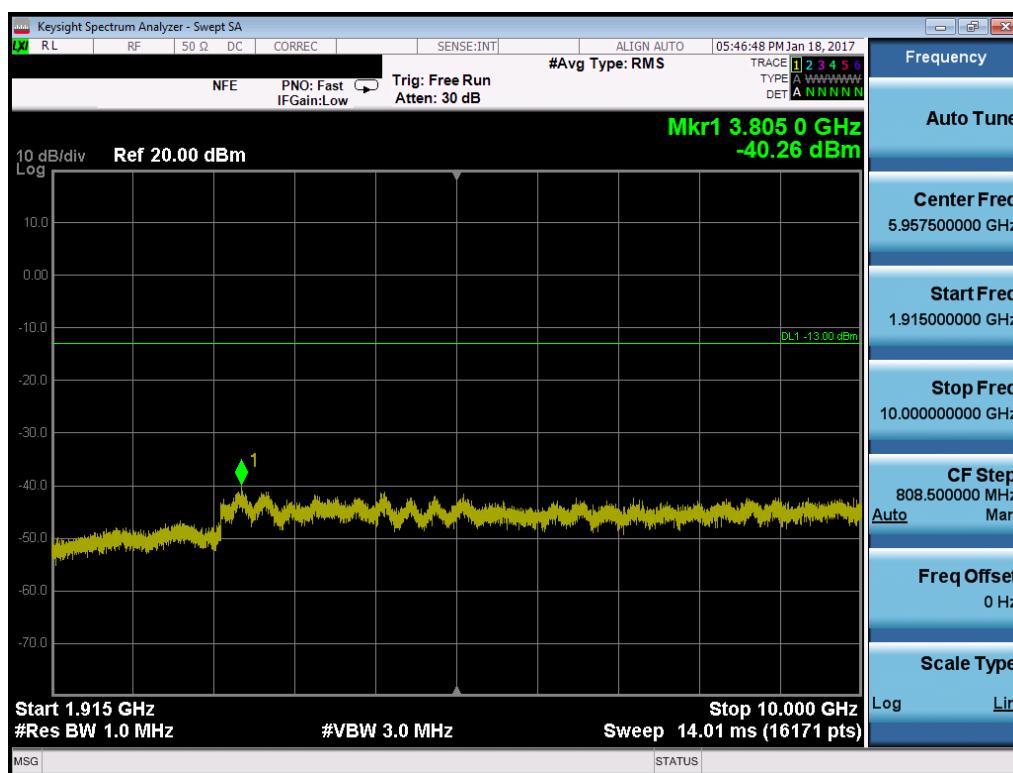


Plot 7-120. Conducted Spurious Plot (Band 2/25 – 15.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 78 of 176

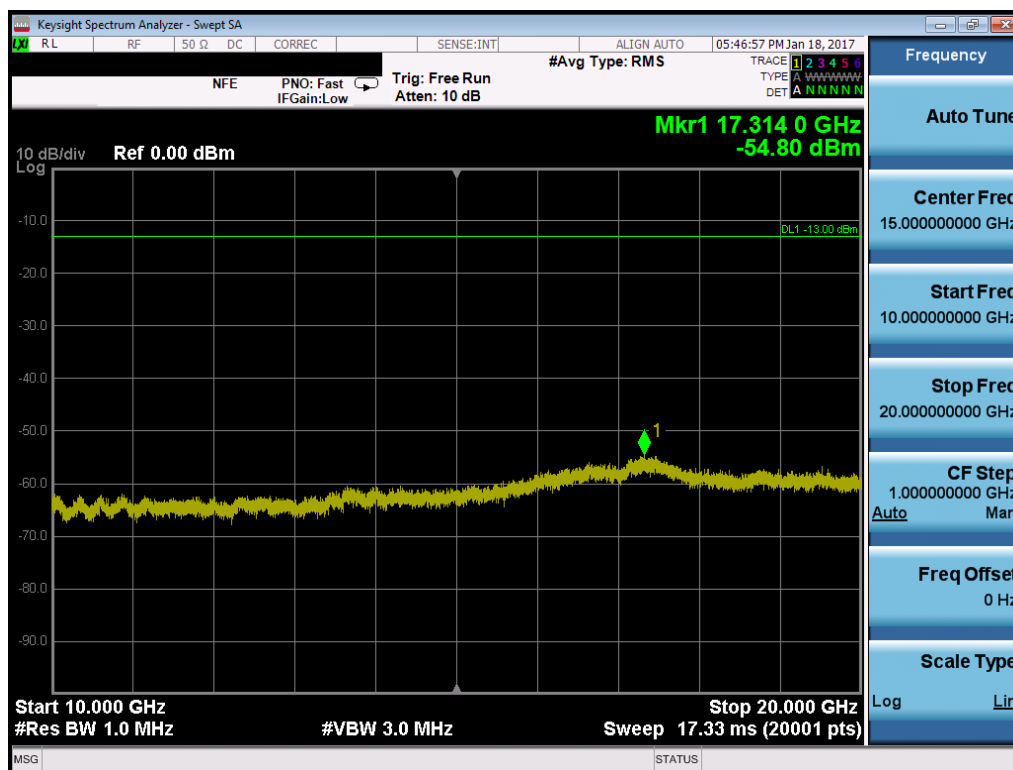


Plot 7-121. Conducted Spurious Plot (Band 2/25 – 15.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

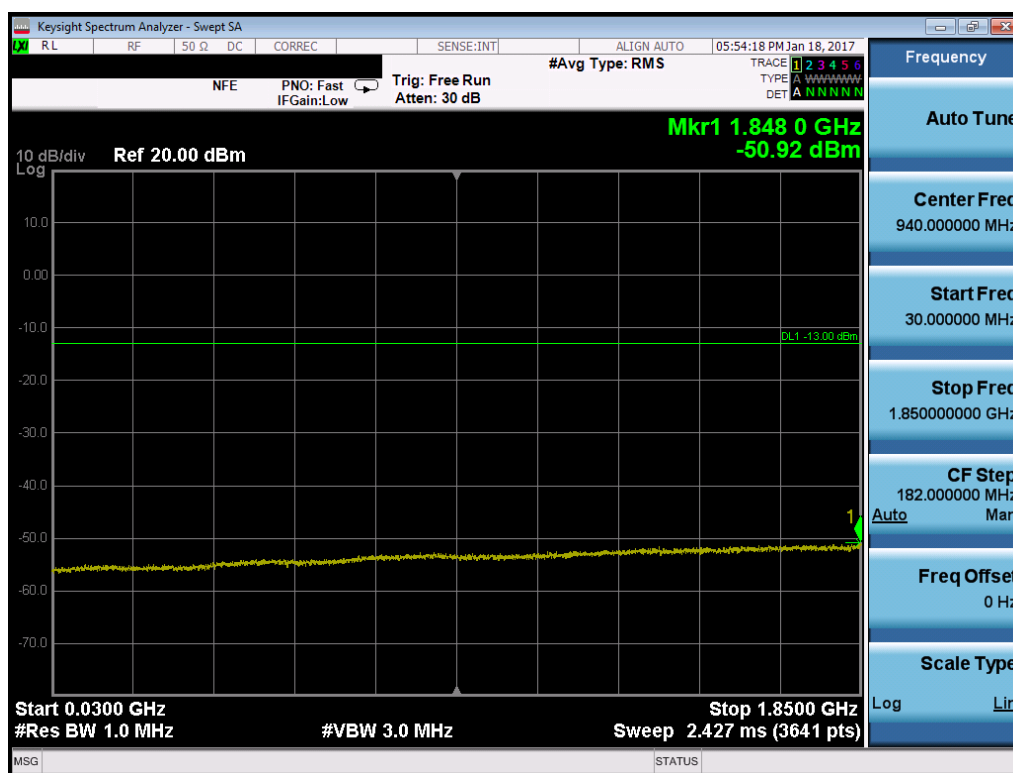


Plot 7-122. Conducted Spurious Plot (Band 2/25 – 15.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 79 of 176

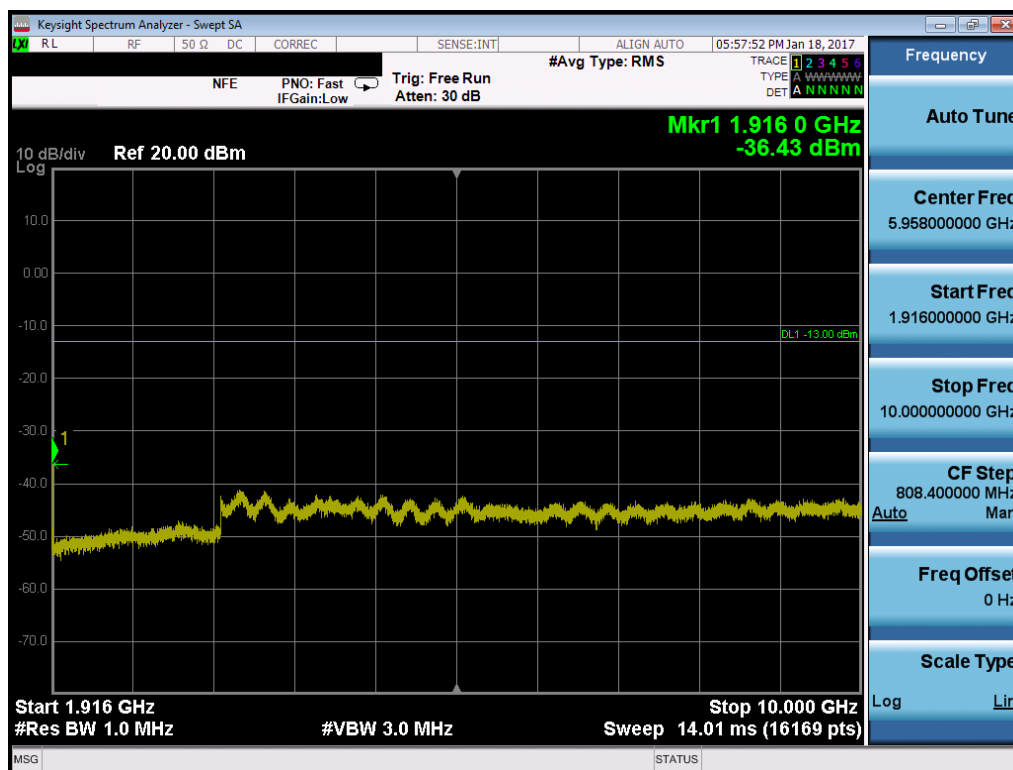


Plot 7-123. Conducted Spurious Plot (Band 2/25 – 15.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

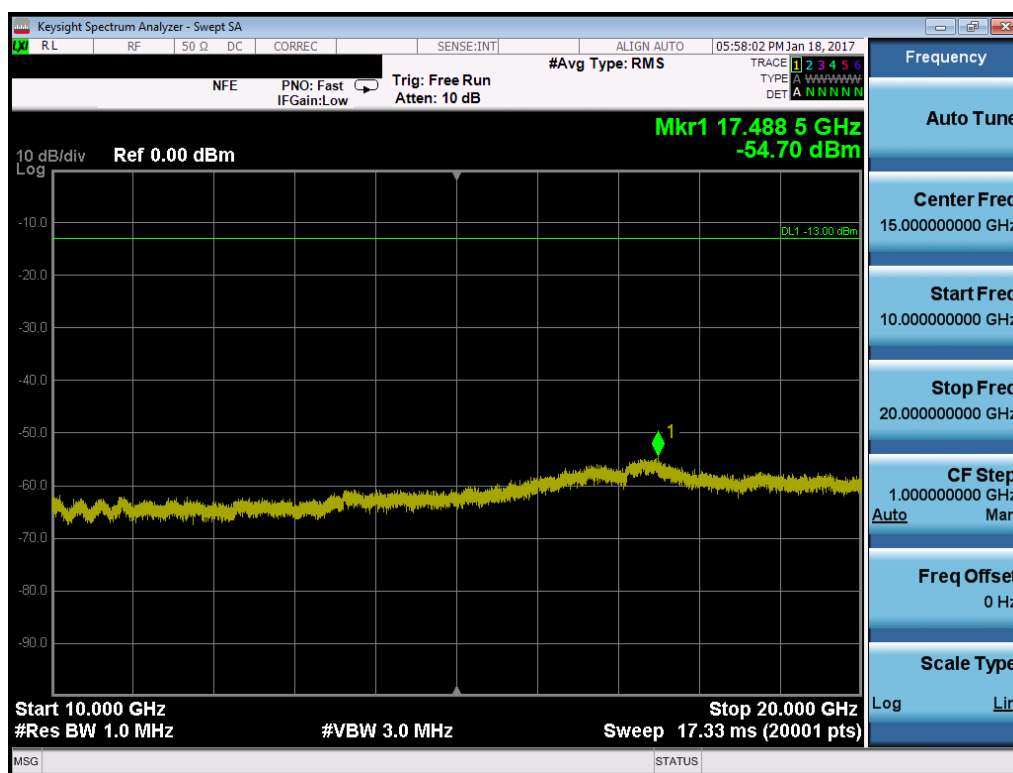


Plot 7-124. Conducted Spurious Plot (Band 2/25 – 15.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 80 of 176

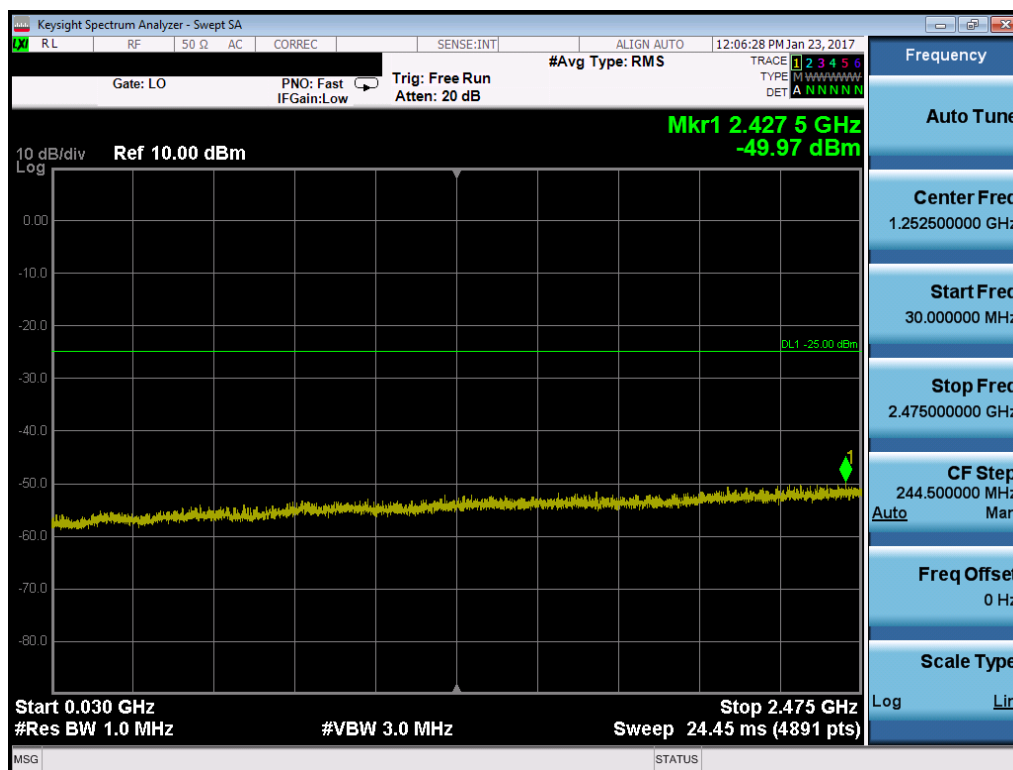


Plot 7-125. Conducted Spurious Plot (Band 2/25 – 15.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

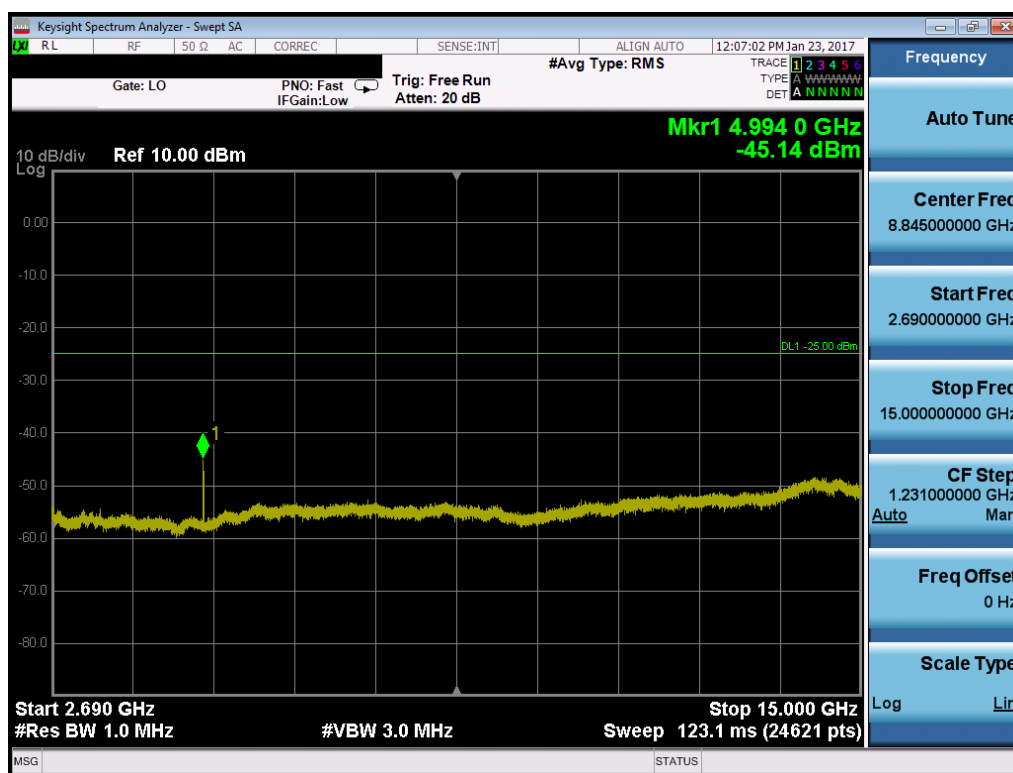


Plot 7-126. Conducted Spurious Plot (Band 2/25 – 15.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 81 of 176

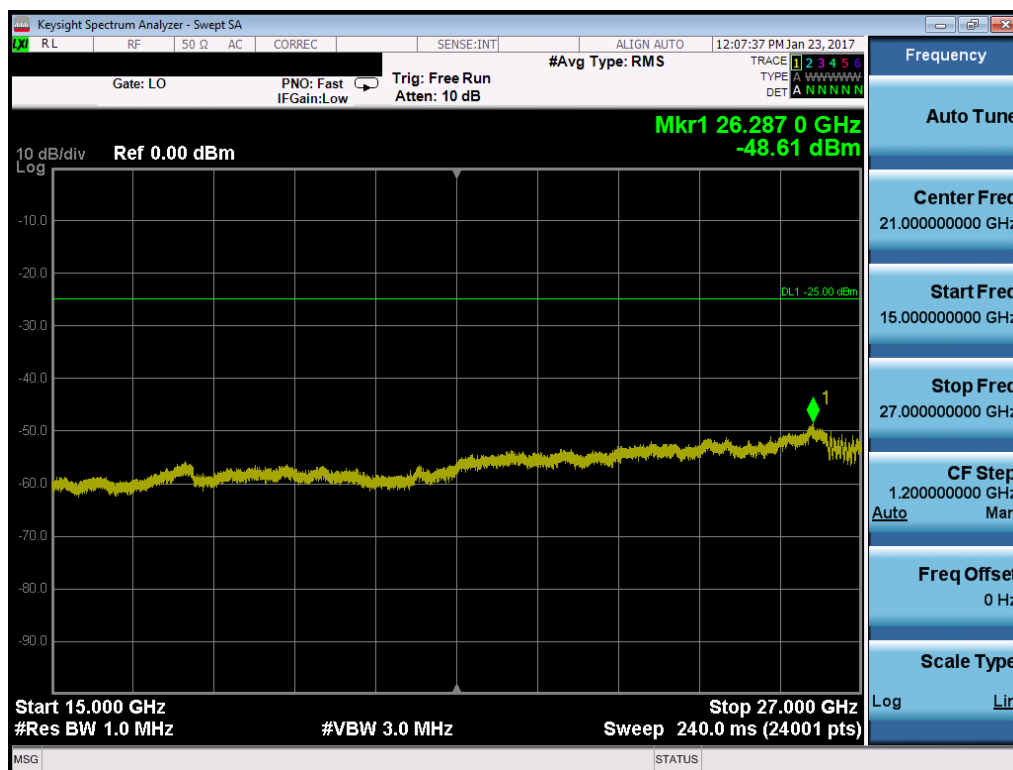


Plot 7-127. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – RB Size 1, RB Offset 0– Low Channel)

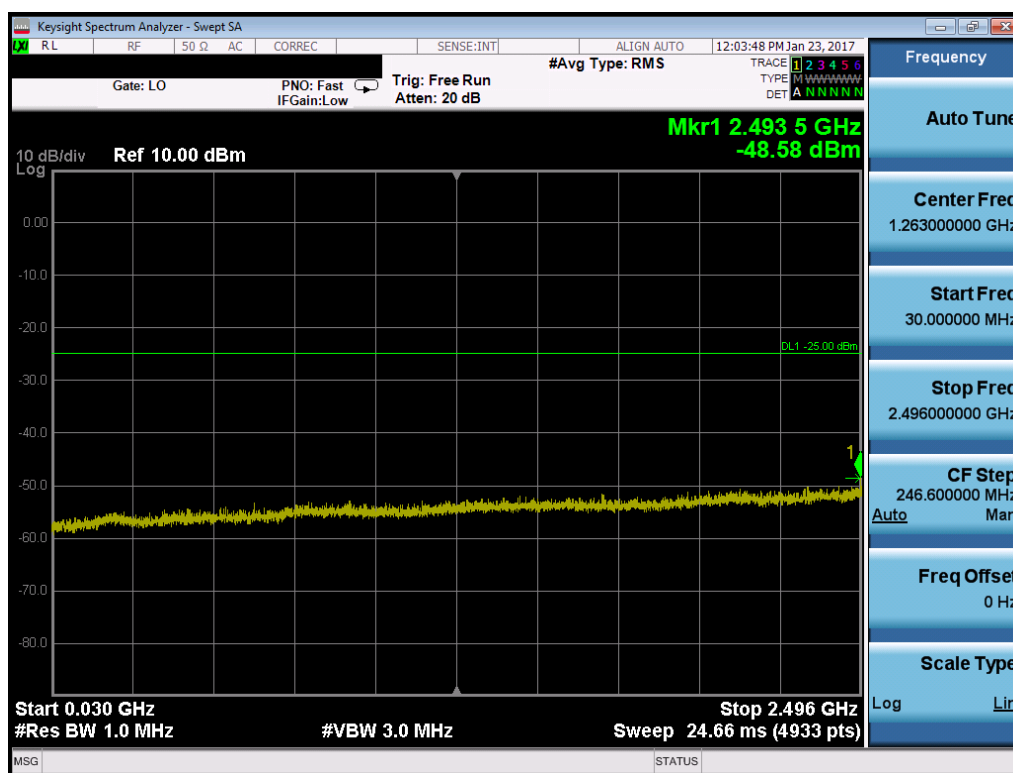


Plot 7-128. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 82 of 176

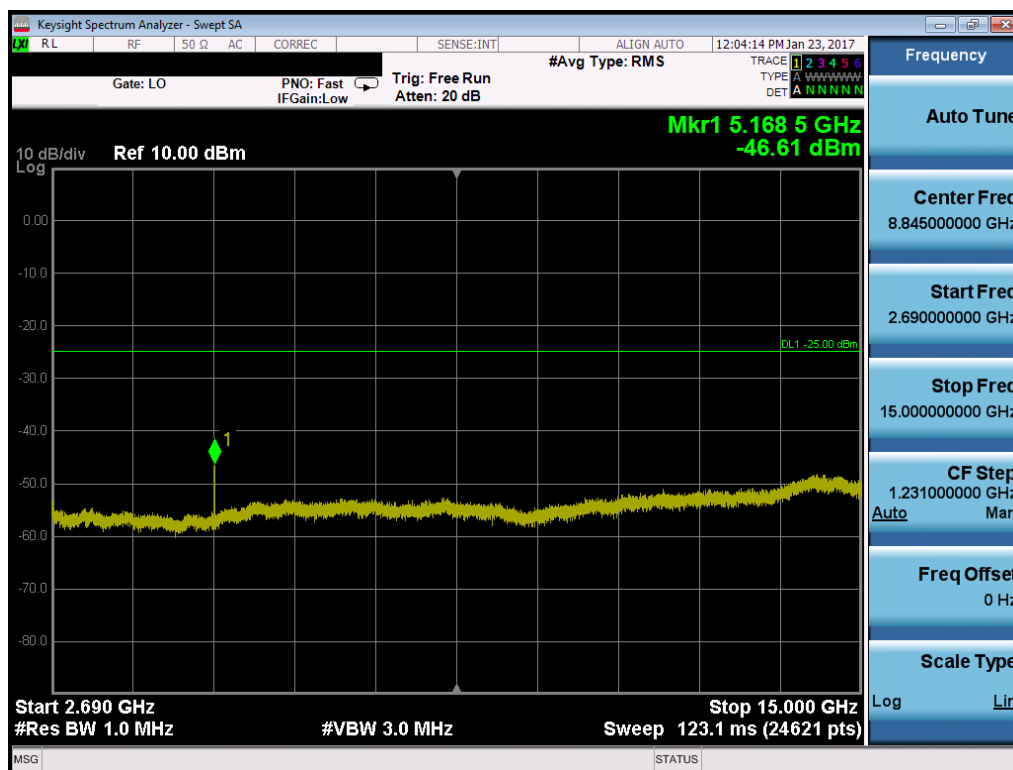


Plot 7-129. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

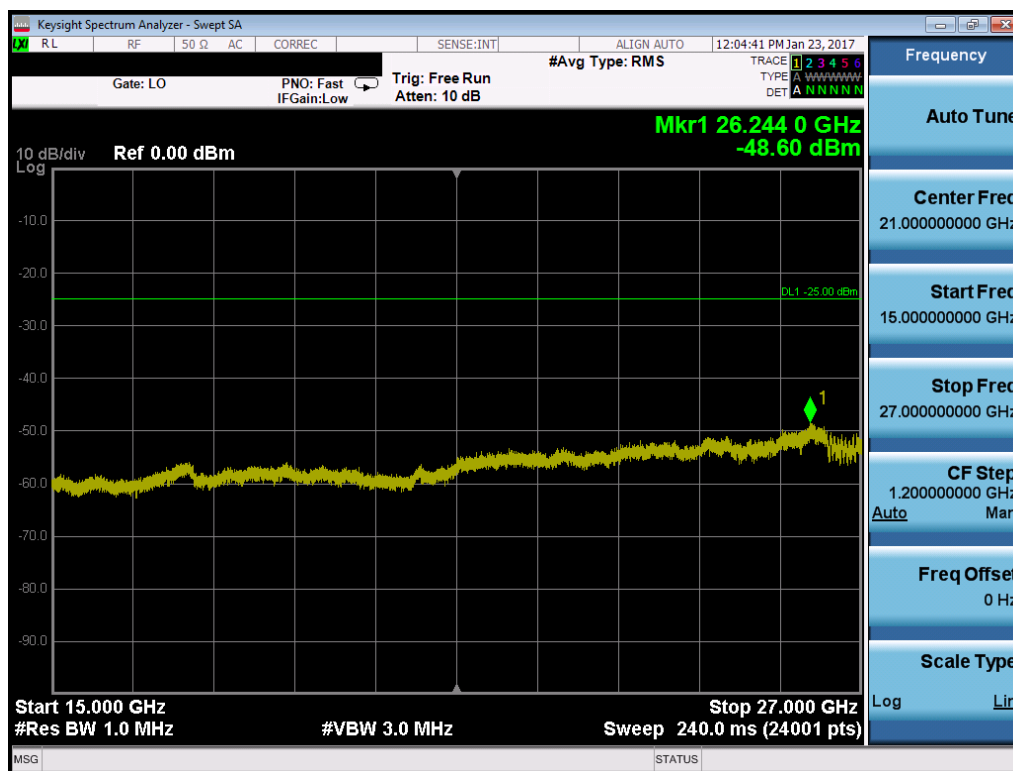


Plot 7-130. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 83 of 176

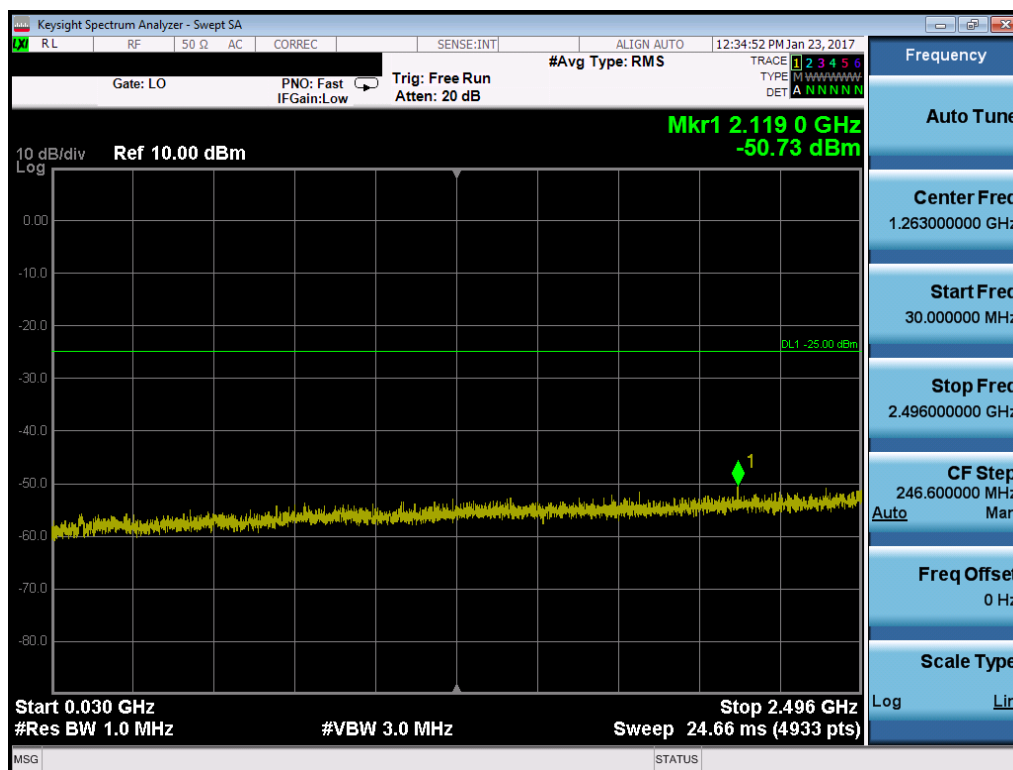


Plot 7-131. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

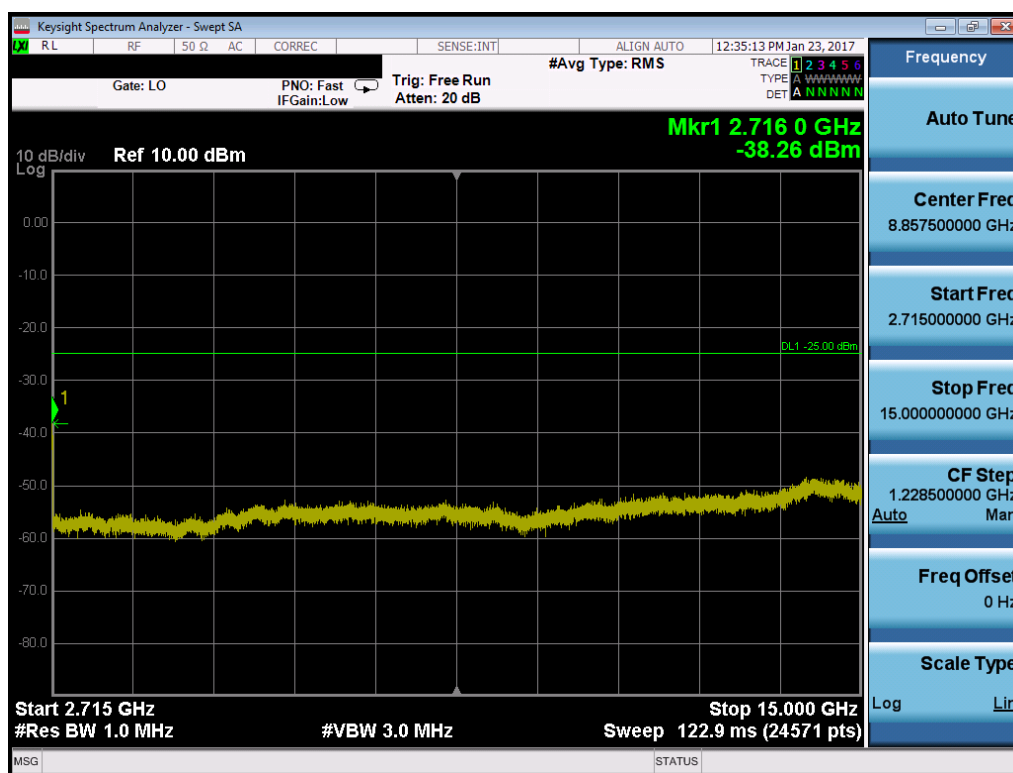


Plot 7-132. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 84 of 176

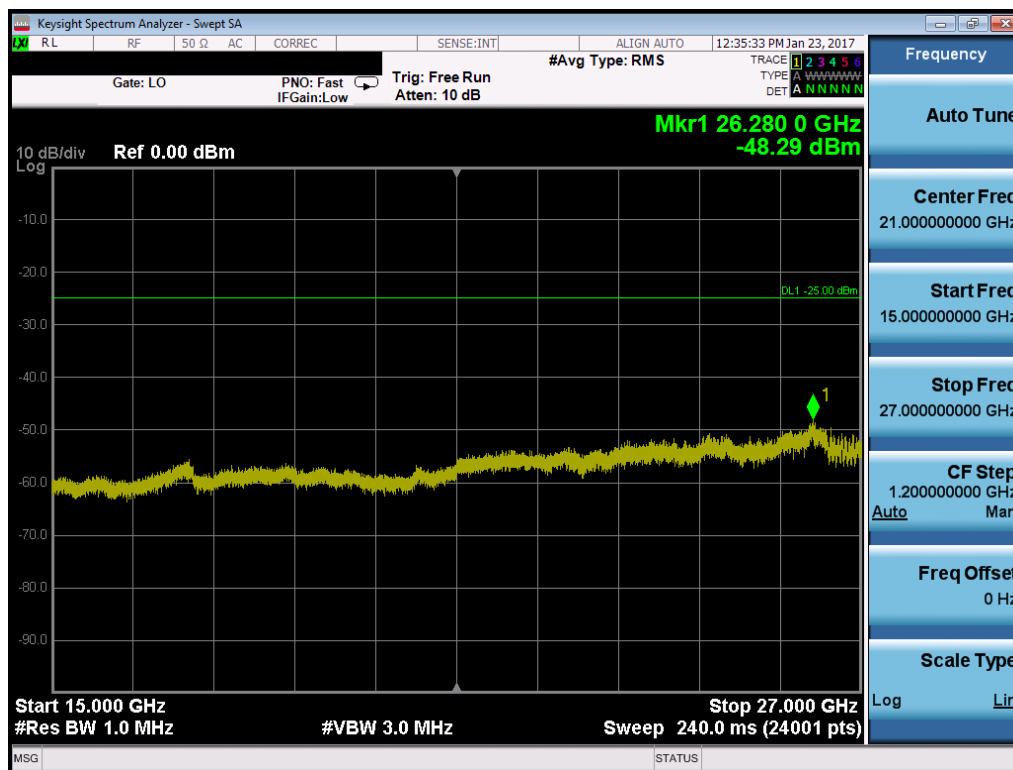


Plot 7-133. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



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

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 85 of 176



Plot 7-135. Conducted Spurious Plot (Band 41 – 20.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 86 of 176

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

The minimum permissible attenuation level of any spurious emission is $43 + \log_{10}(P_{\text{Watts}})$, 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 $\geq 1\%$ of the emission bandwidth
4. VBW $\geq 3 \times$ RBW
5. Detector = RMS
6. Number of sweep points $\geq 2 \times$ 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.

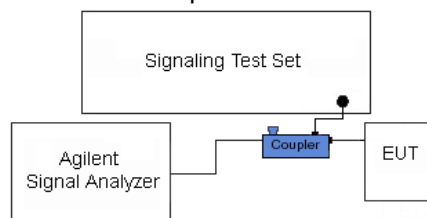


Figure 7-3. Test Instrument & Measurement Setup

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.

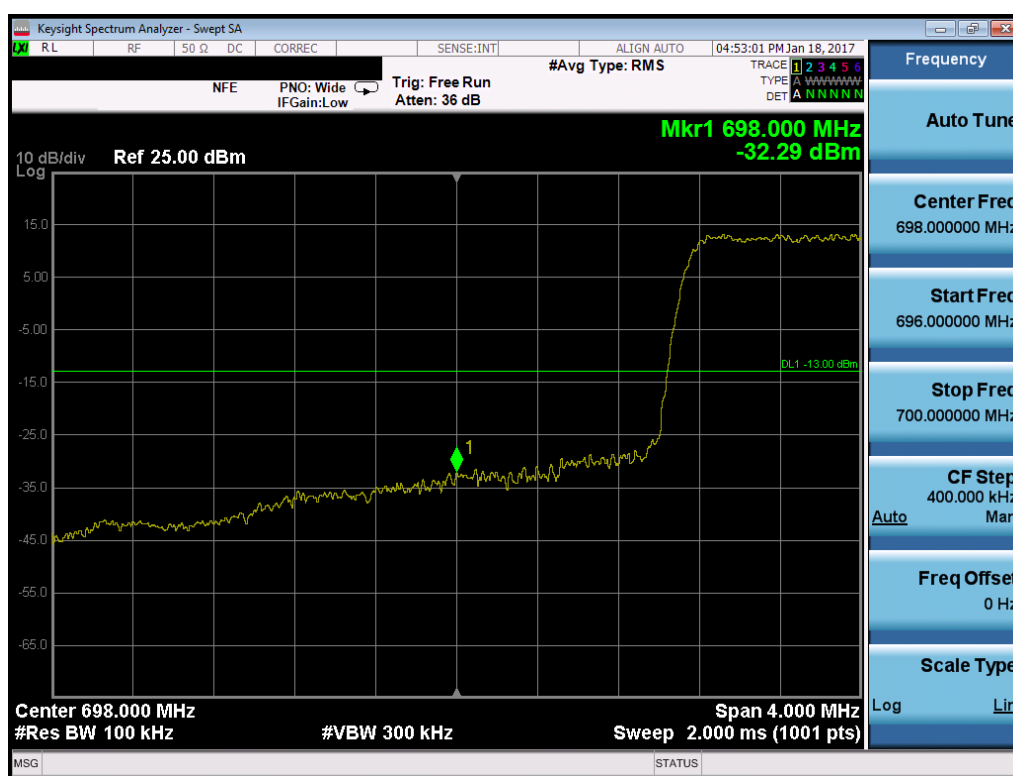
FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 87 of 176	

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.

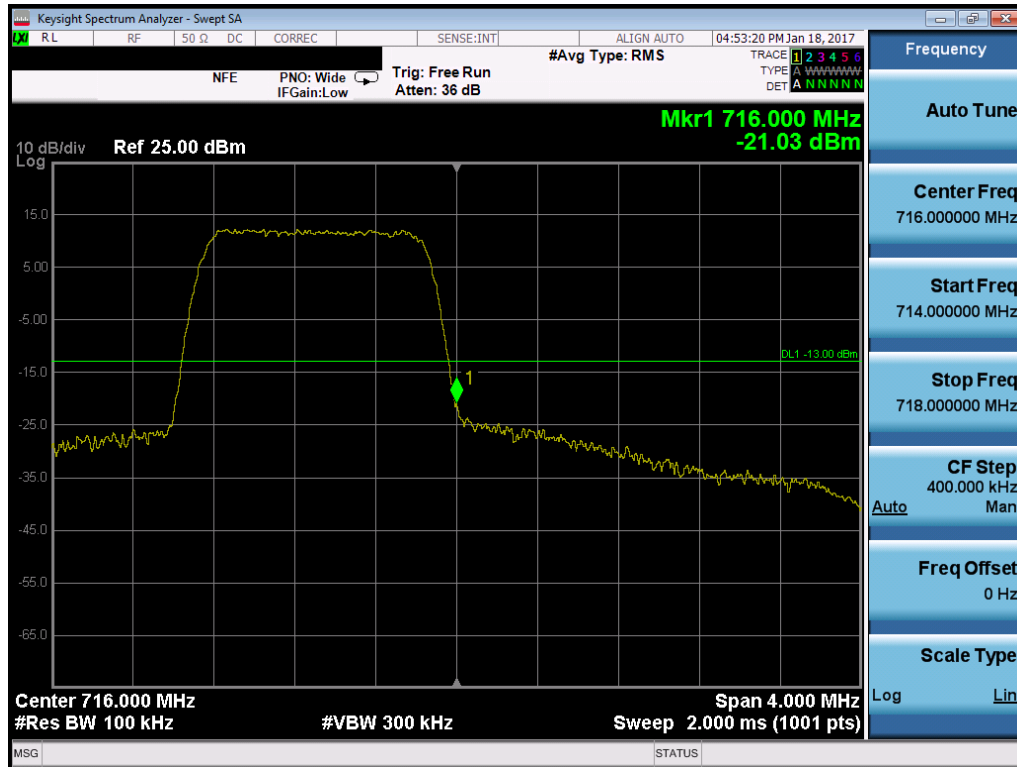
For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c.4) is $65 + 10\log_{10}(P) = -35\text{dBm}$ in a 6.25kHz bandwidth.

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.

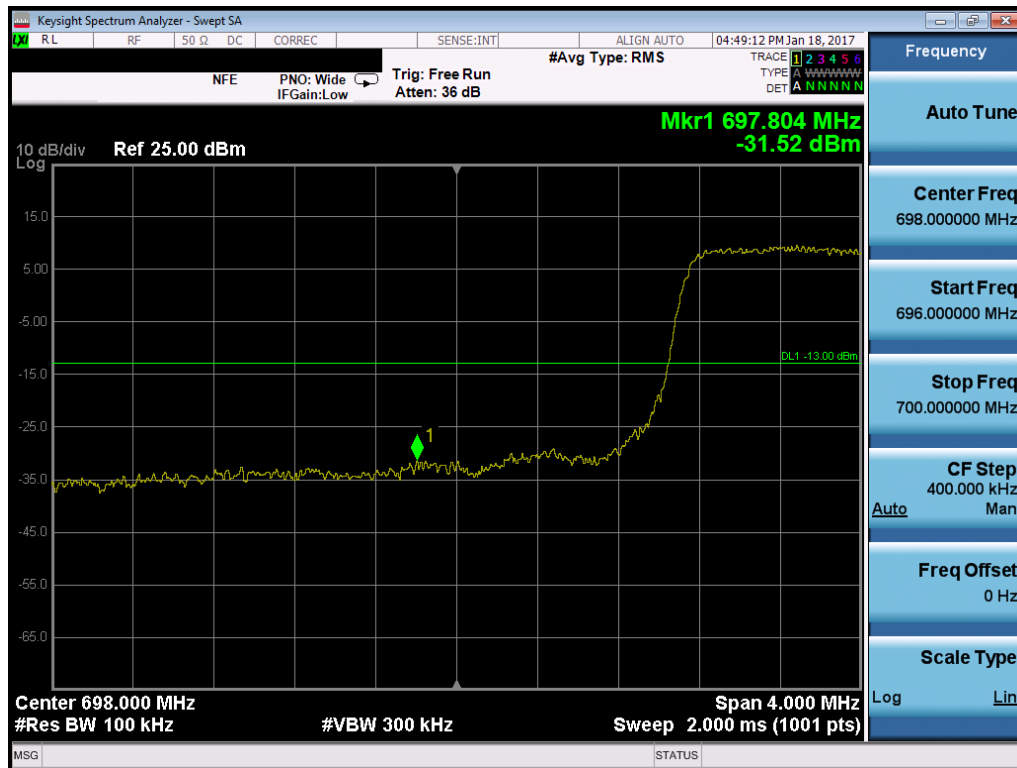


Plot 7-136. Lower Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 88 of 176



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

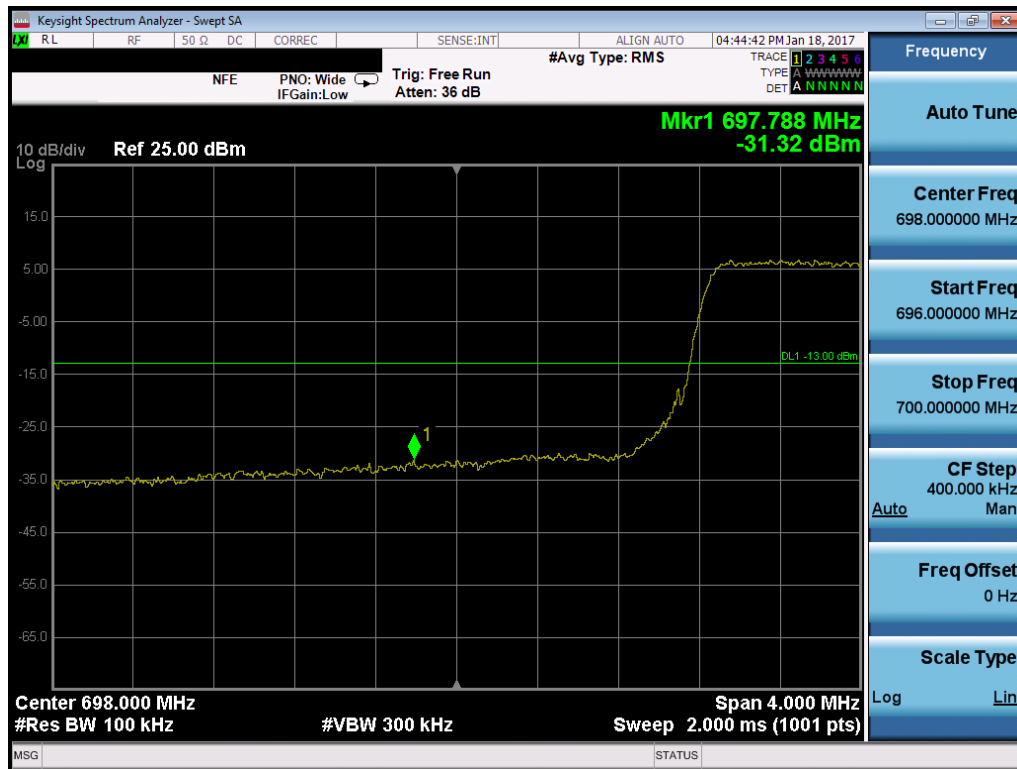


Plot 7-138. Lower Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 89 of 176



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

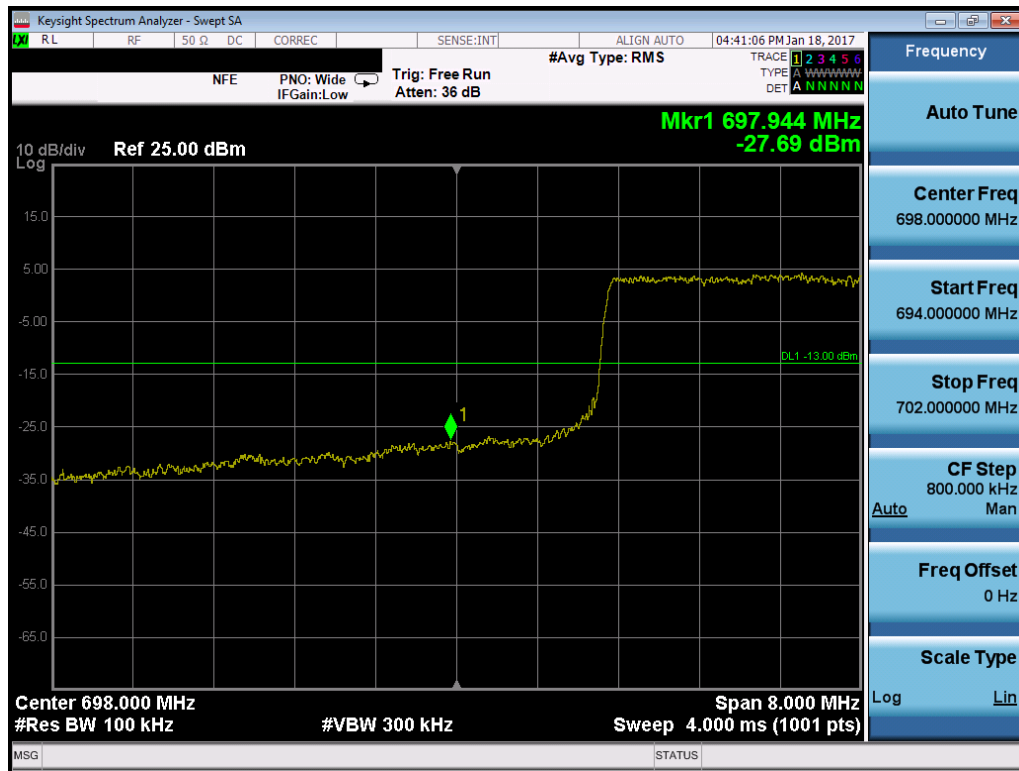


Plot 7-140. Lower Band Edge Plot (Band 12/17 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 90 of 176

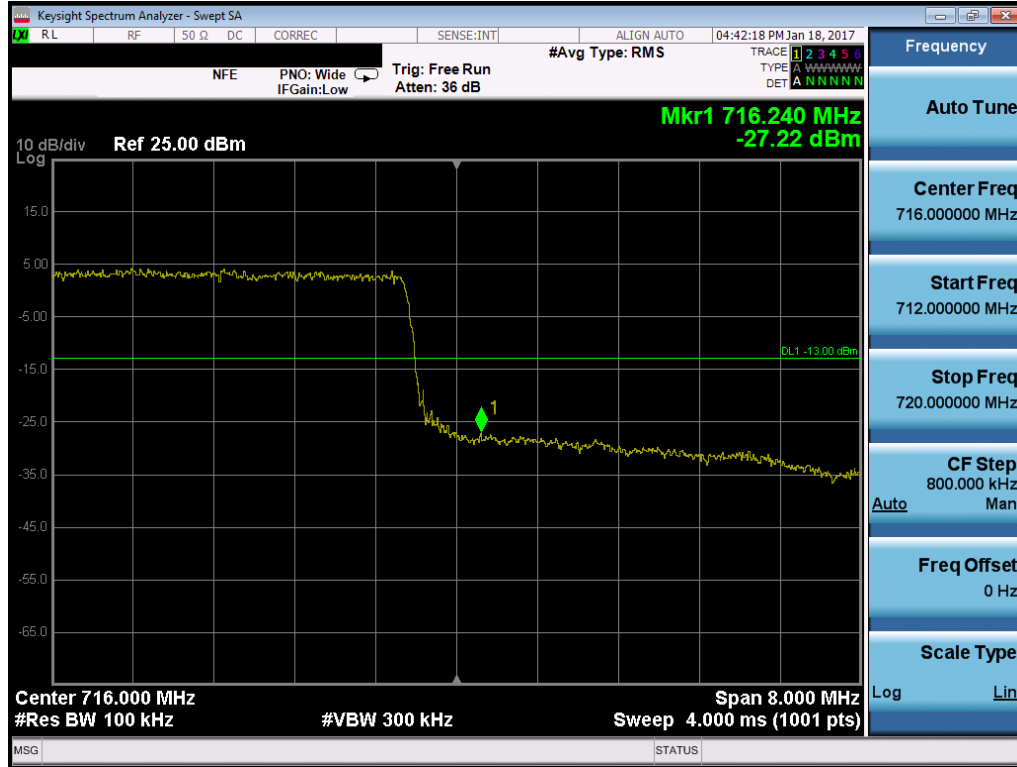


Plot 7-141. Upper Band Edge Plot (Band 12/17 - 5.0MHz QPSK - RB Size 25)



Plot 7-142. Lower Band Edge Plot (Band 12/17 - 10.0MHz QPSK - RB Size 50)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 91 of 176

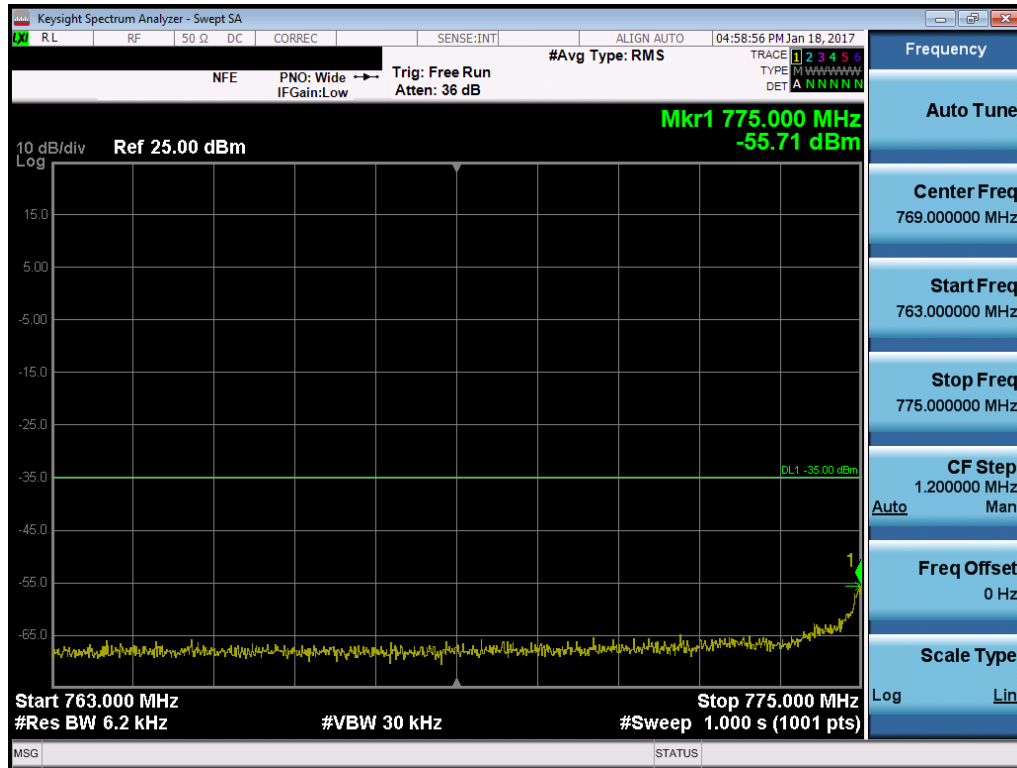


Plot 7-143. Upper Band Edge Plot (Band 12/17 – 10.0MHz QPSK – RB Size 50)



Plot 7-144. Lower Band Edge Plot (Band 13 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 92 of 176

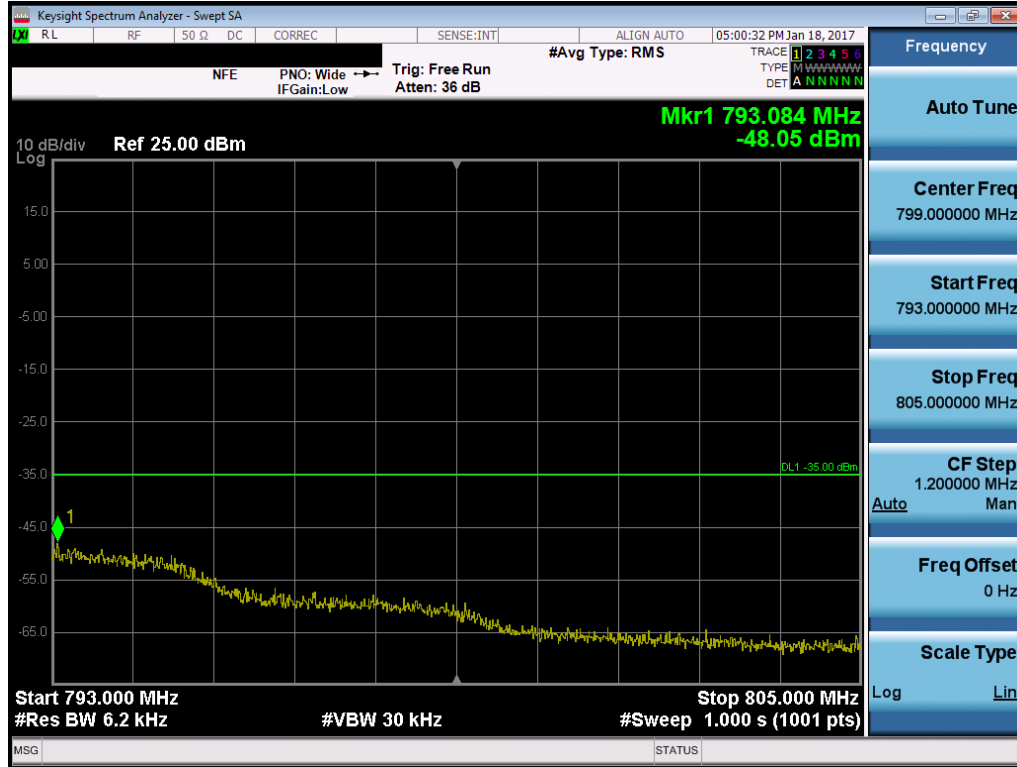


Plot 7-145. Lower Emission Mask Edge Plot (Band 13 - 5.0MHz QPSK - RB Size 25)

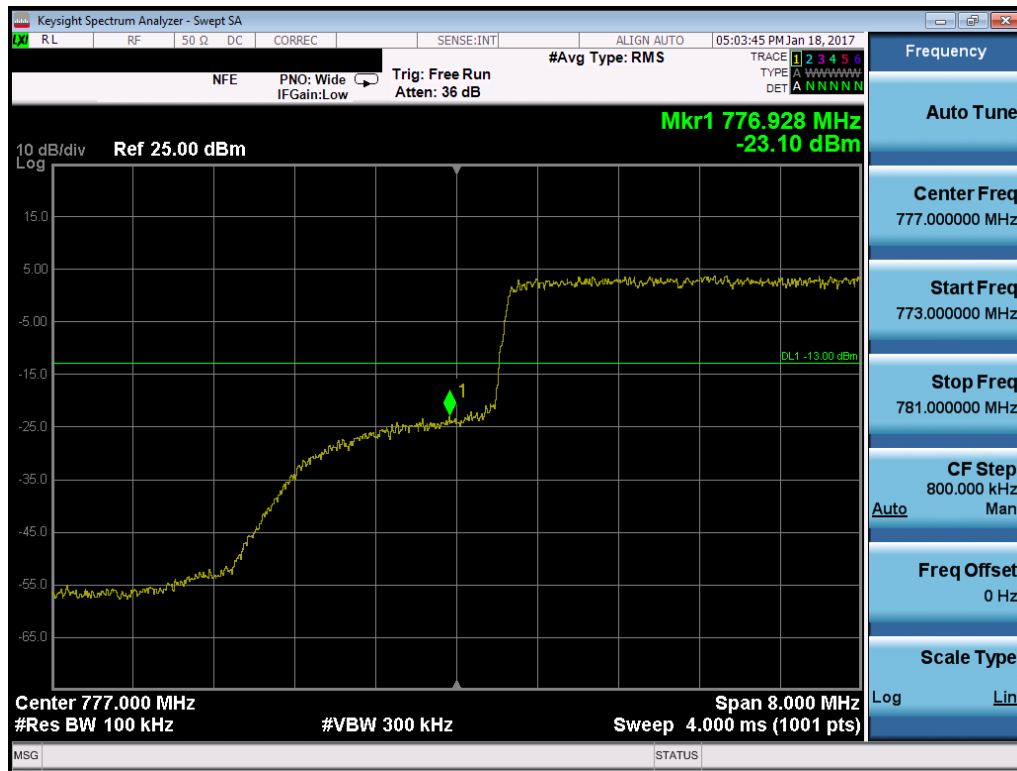


Plot 7-146. Upper Band Edge Plot (Band 13 - 5.0MHz QPSK - RB Size 25)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 93 of 176

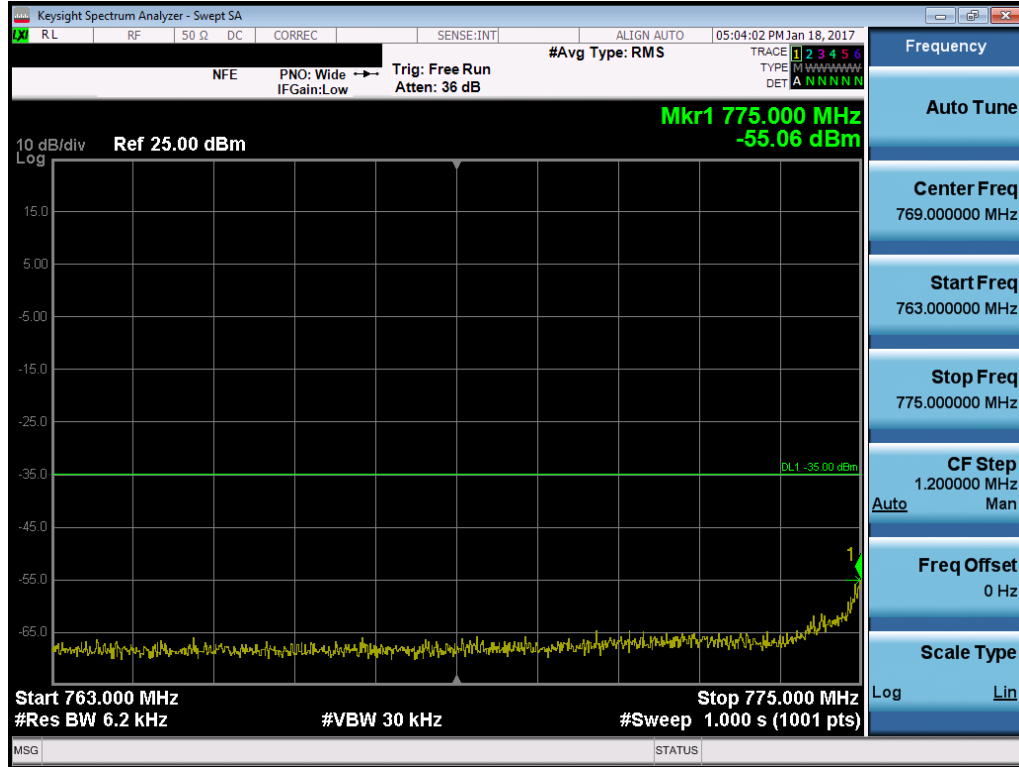


Plot 7-147. Upper Emission Mask Edge Plot (Band 13 – 5.0MHz QPSK – RB Size 25)

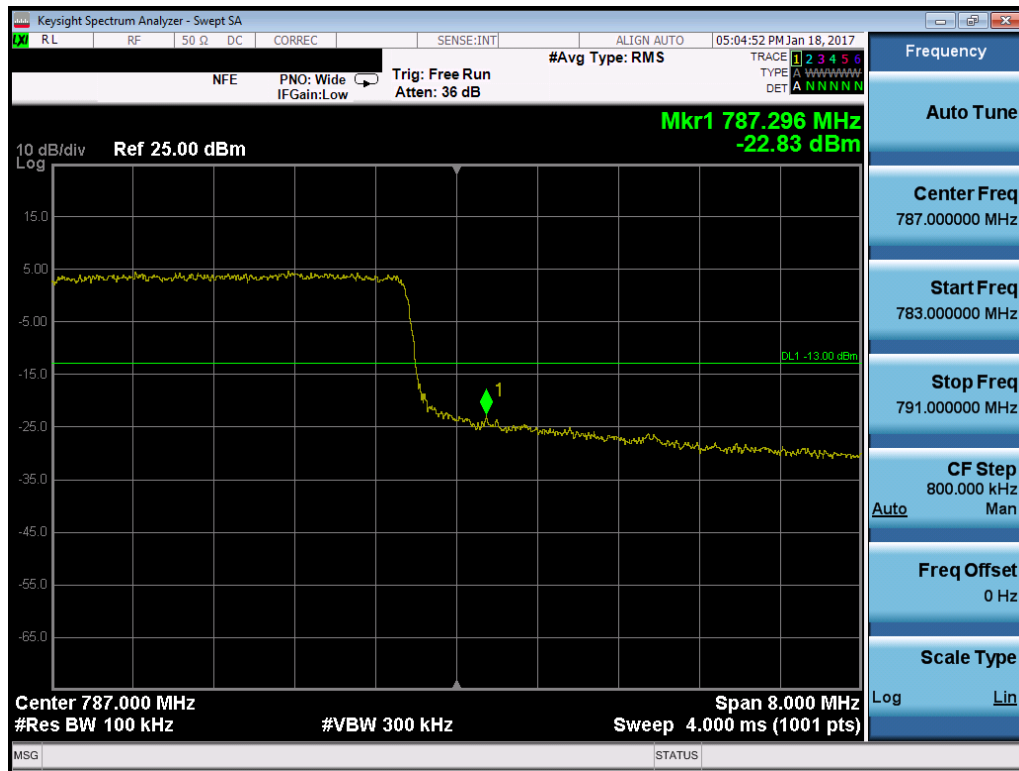


Plot 7-148. Lower Band Edge Plot (Band 13 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 94 of 176

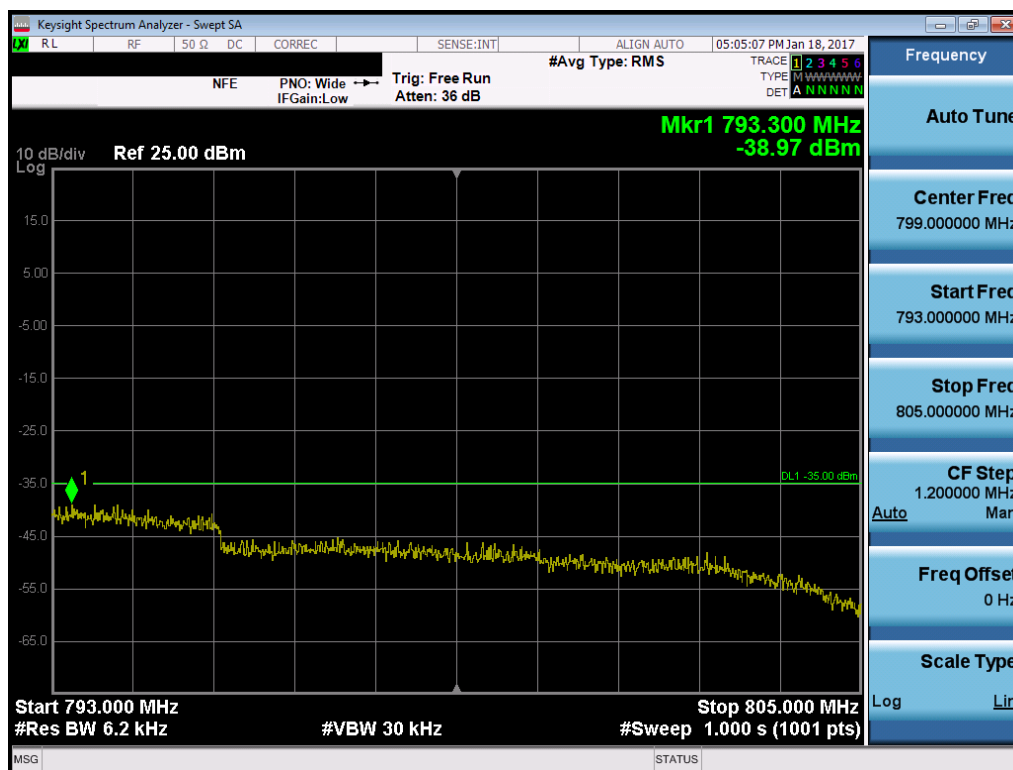


Plot 7-149. Lower Emission Mask Edge Plot (Band 13 - 10.0MHz QPSK - RB Size 50)

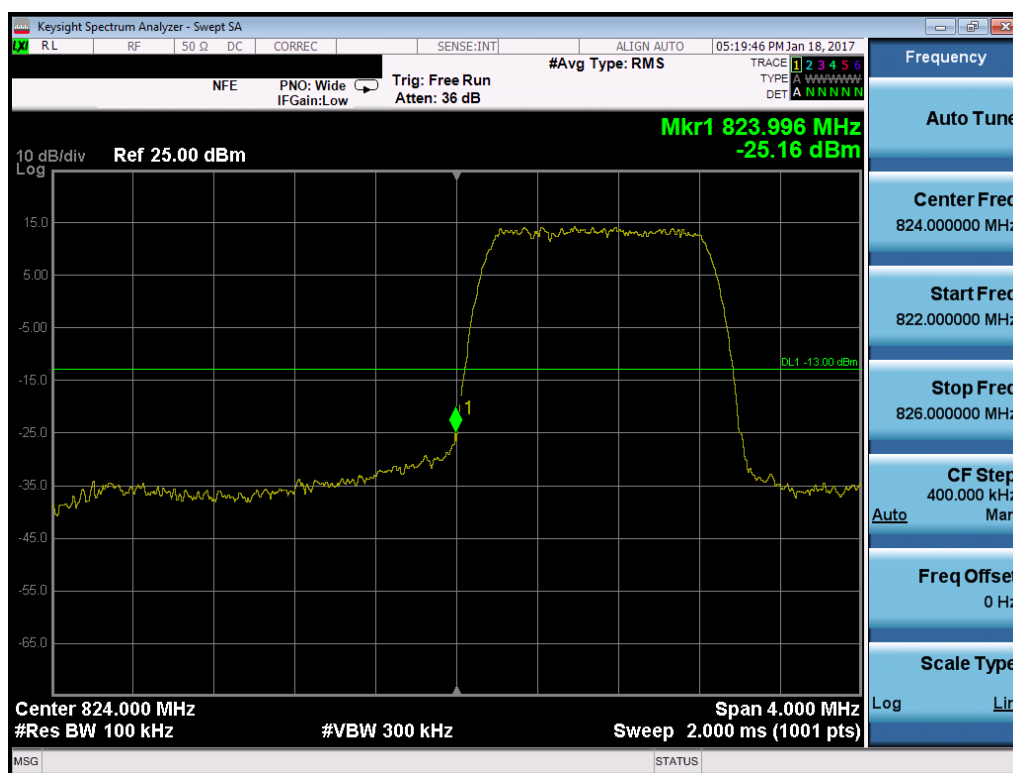


Plot 7-150. Upper Band Edge Plot (Band 13 - 10.0MHz QPSK - RB Size 50)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 95 of 176

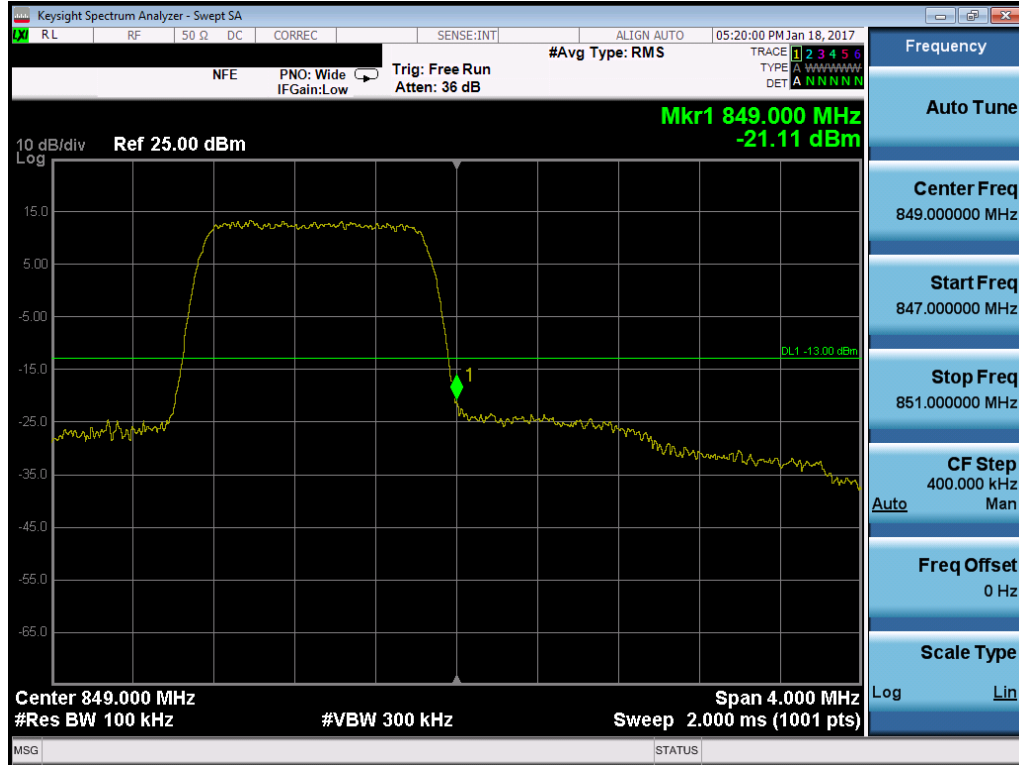


Plot 7-151. Upper Emission Mask Edge Plot (Band 13 - 10.0MHz QPSK - RB Size 50)

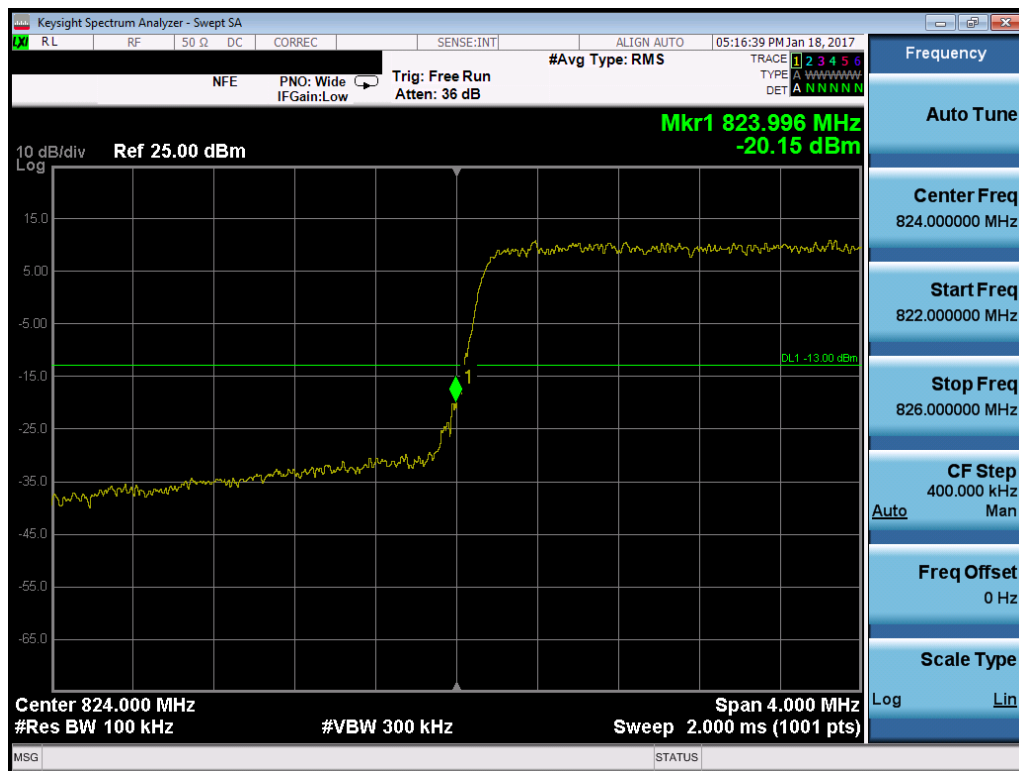


Plot 7-152. Lower Band Edge Plot (Band 5/26 - 1.4MHz QPSK - RB Size 6)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 96 of 176



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

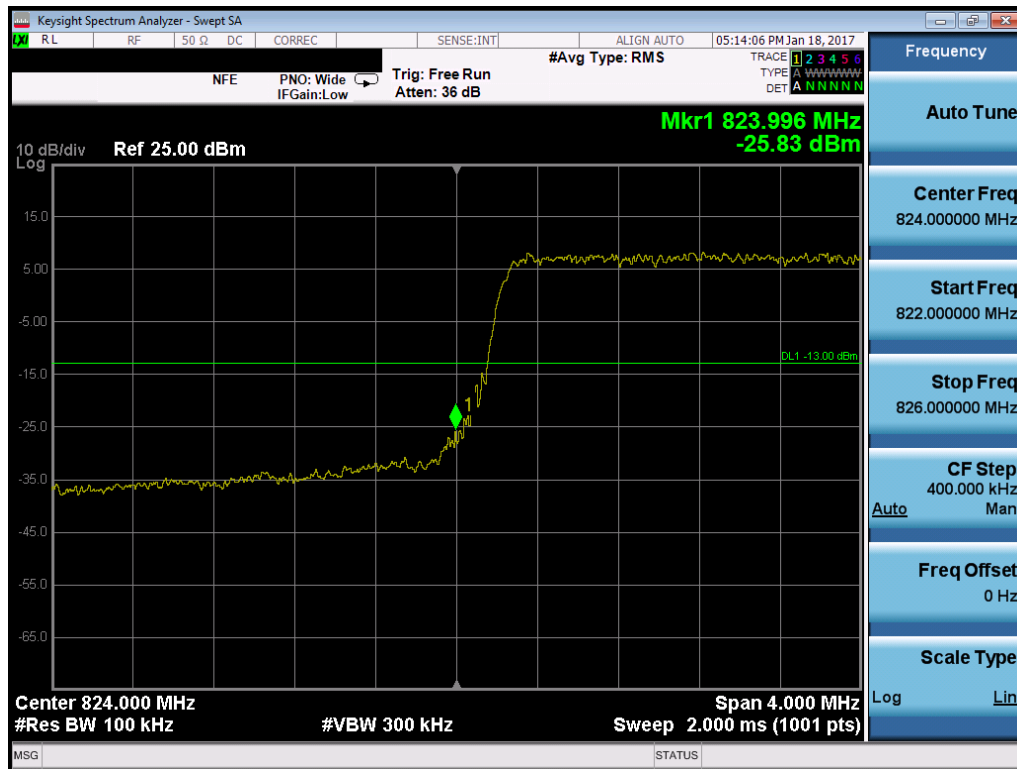


Plot 7-154. Lower Band Edge Plot (Band 5/26 – 3.0MHz QPSK – RB Size 15)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 97 of 176



Plot 7-155. Upper Band Edge Plot (Band 5/26 – 3.0MHz QPSK – RB Size 15)

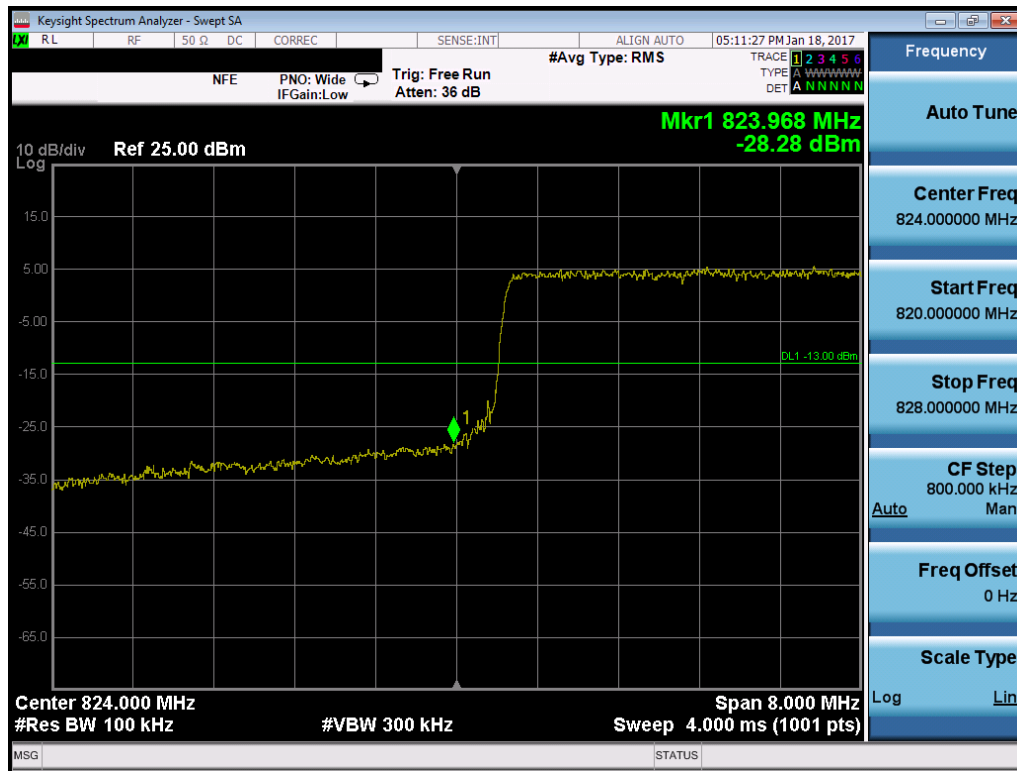


Plot 7-156. Lower Band Edge Plot (Band 5/26 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 98 of 176

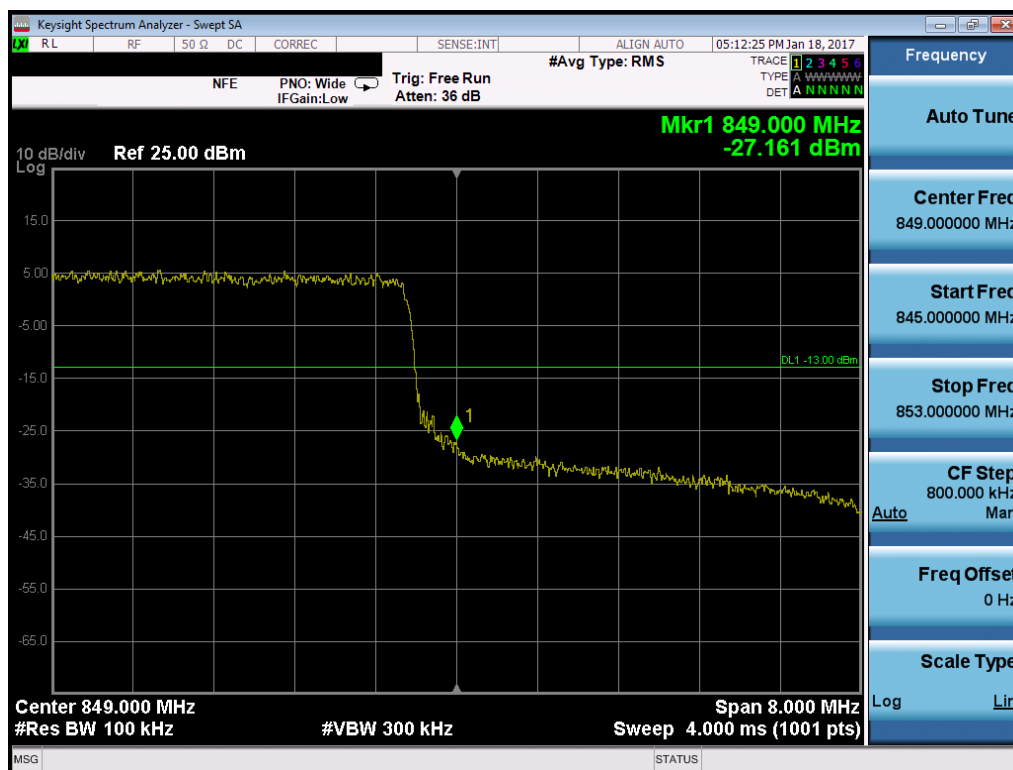


Plot 7-157. Upper Band Edge Plot (Band 5/26 – 5.0MHz QPSK – RB Size 25)

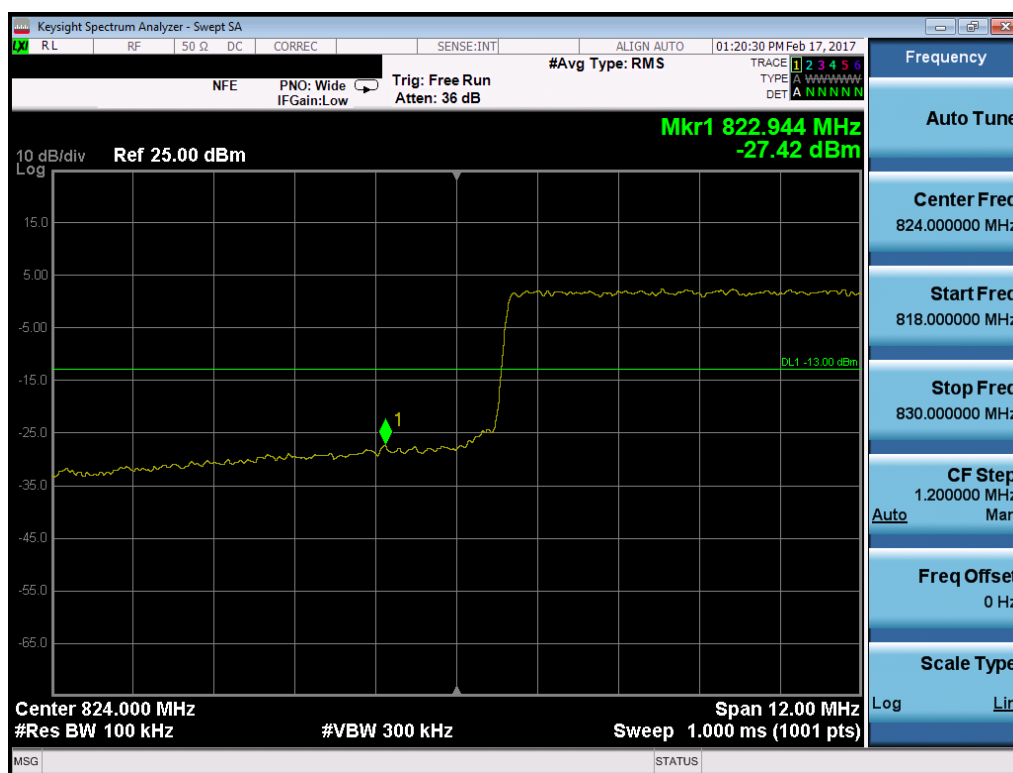


Plot 7-158. Lower Band Edge Plot (Band 5/26 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 99 of 176



Plot 7-159. Upper Band Edge Plot (Band 26 – 10.0MHz QPSK – RB Size 50)

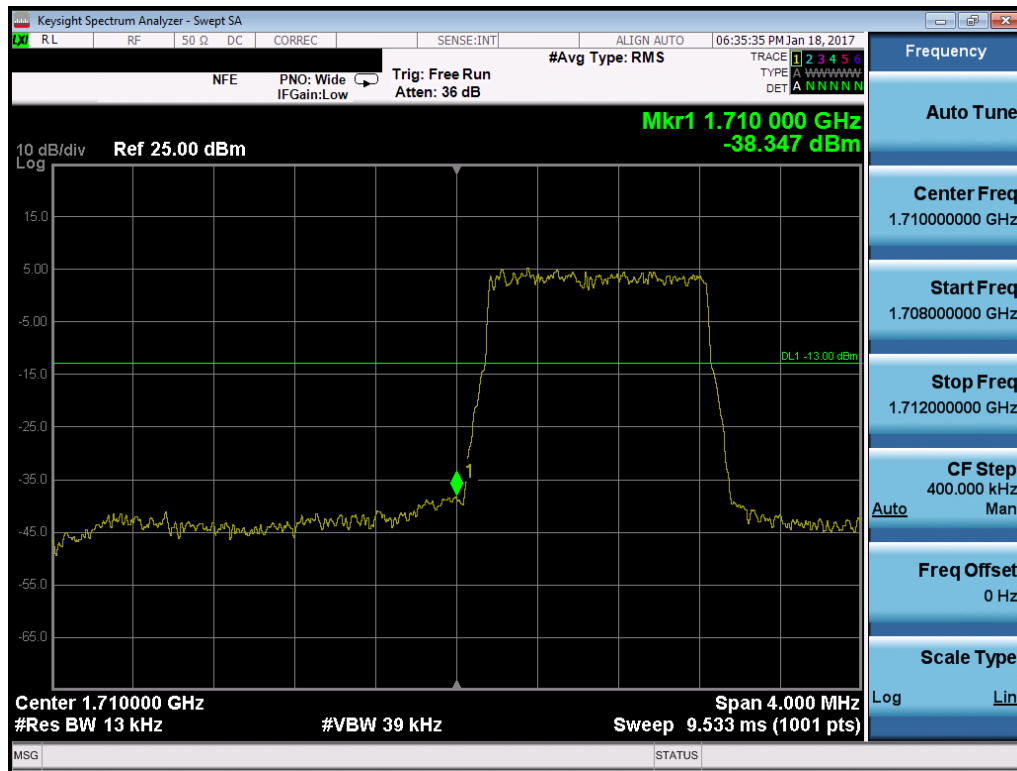


Plot 7-160. Lower Band Edge Plot (Band 26 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 100 of 176

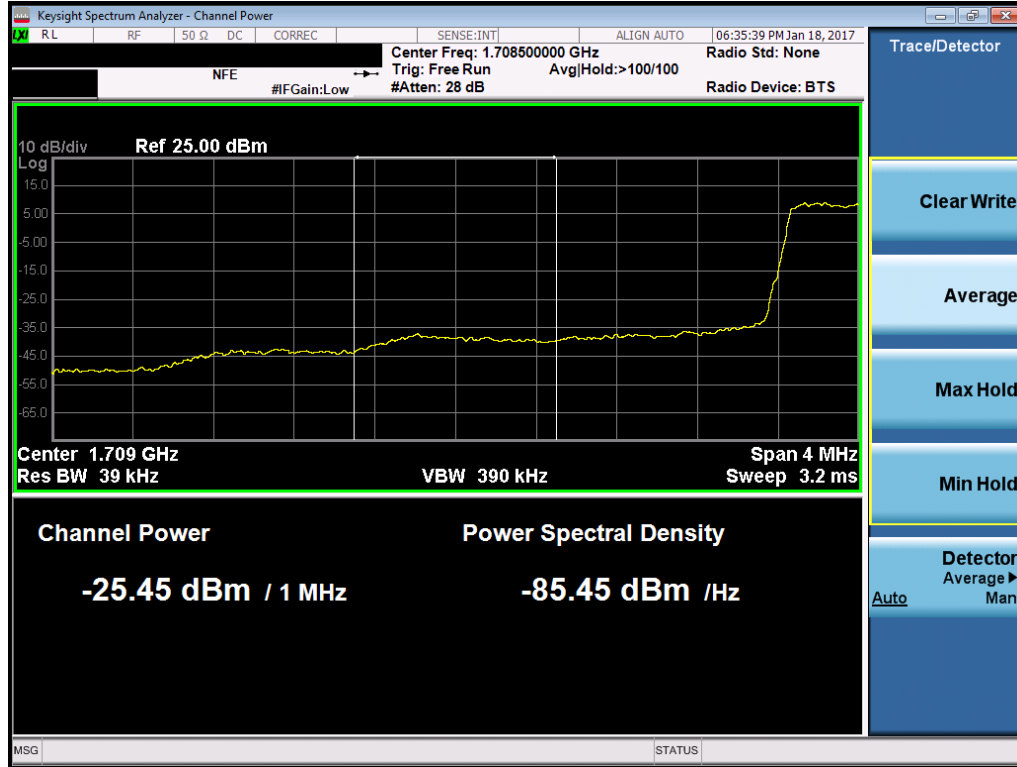


Plot 7-161. Upper Band Edge Plot (Band 26 – 15.0MHz QPSK – RB Size 75)

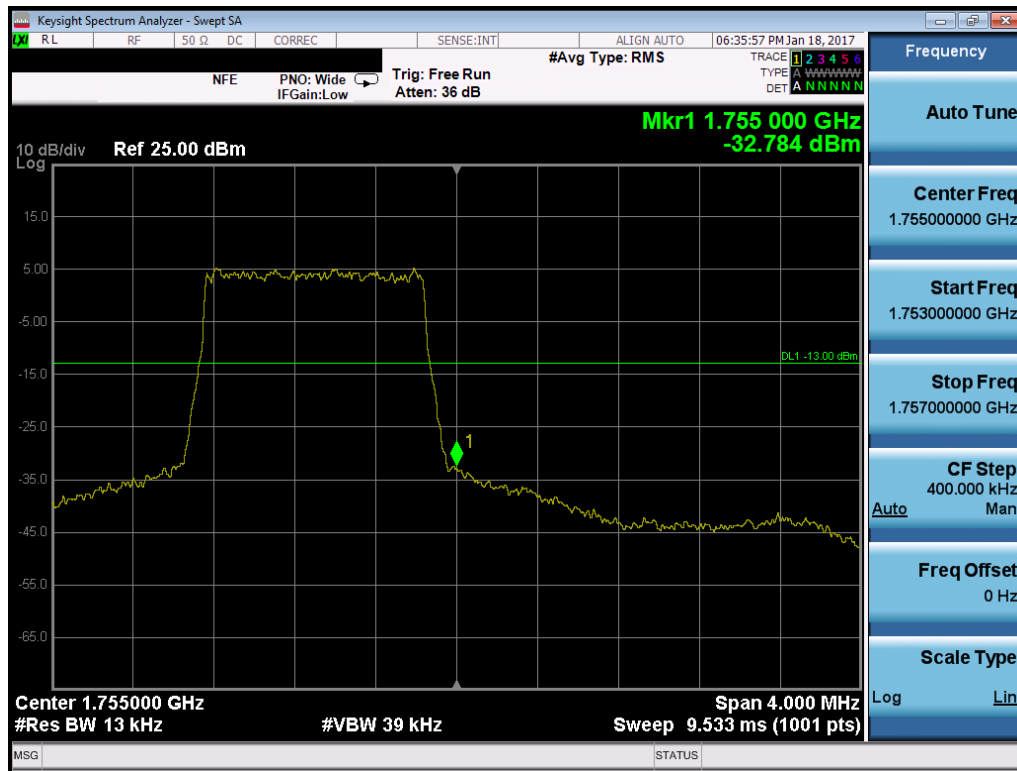


Plot 7-162. Lower Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 101 of 176

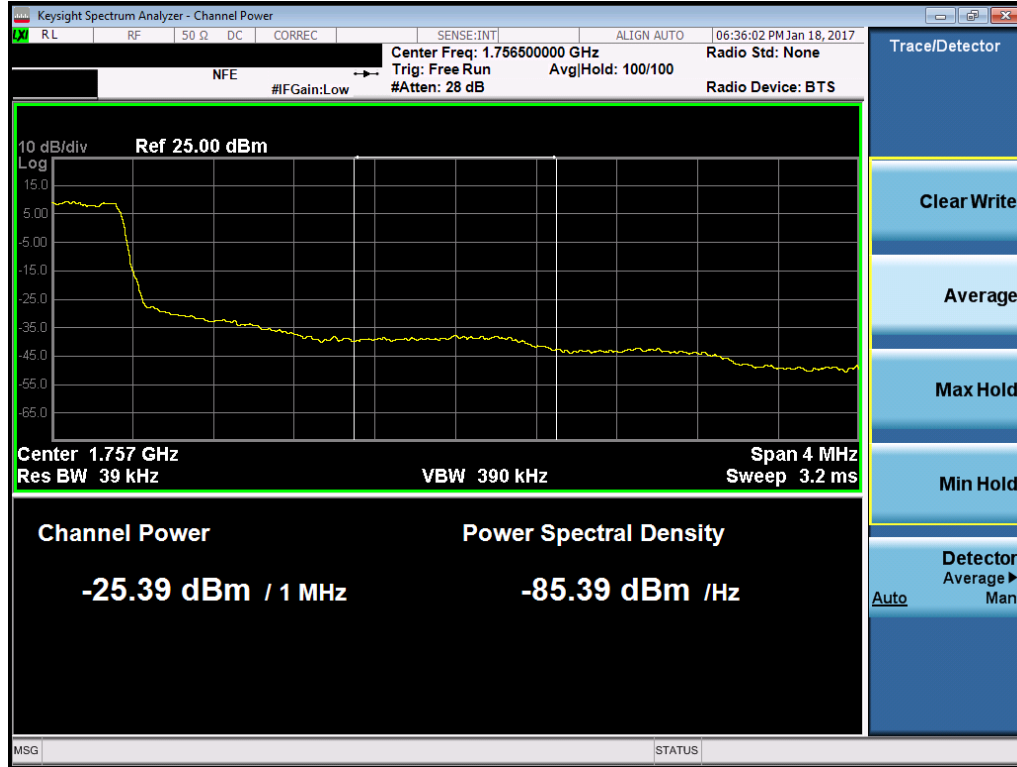


Plot 7-163. Lower Extended Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

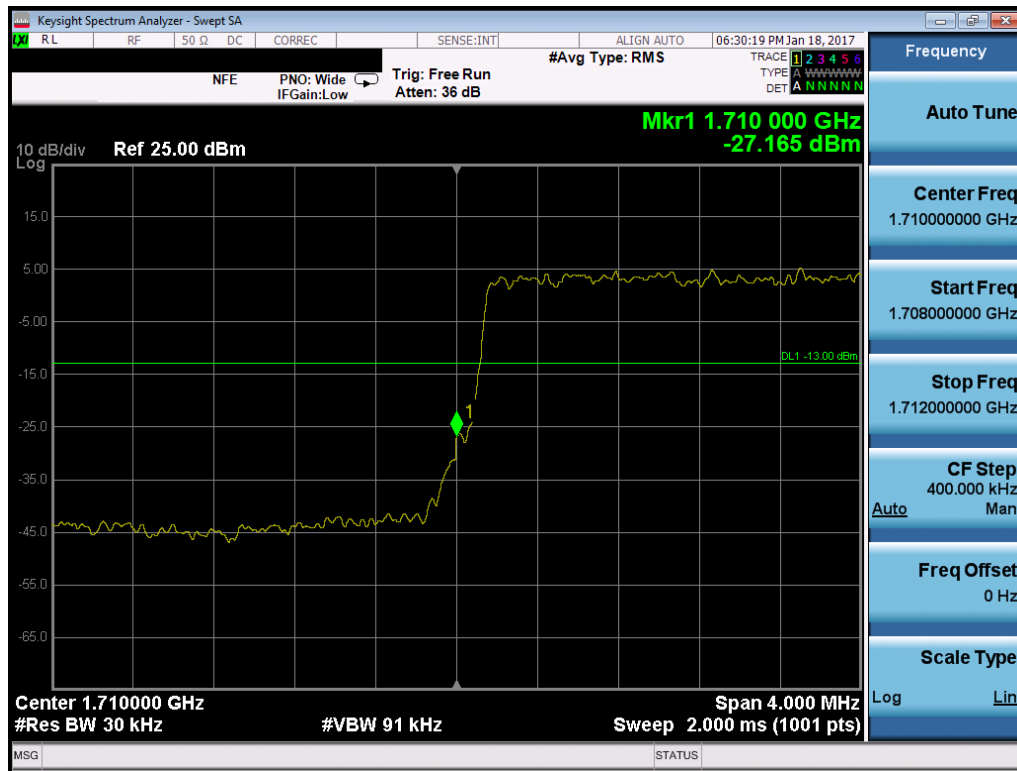


Plot 7-164. Upper Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 102 of 176

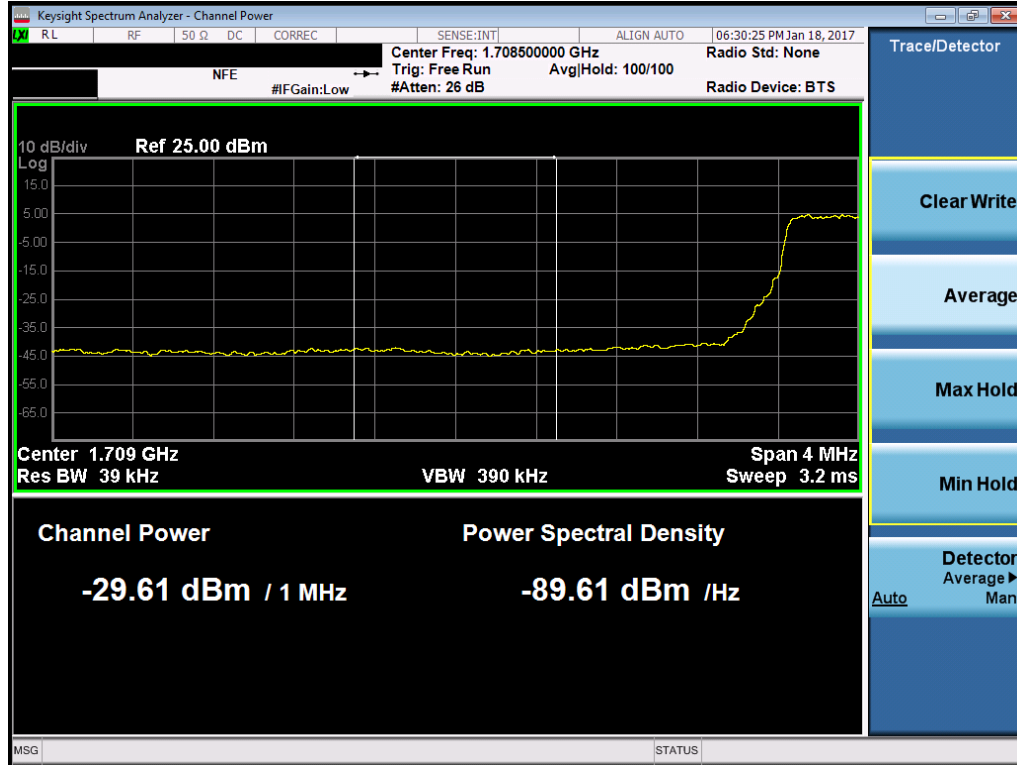


Plot 7-165. Upper Extended Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

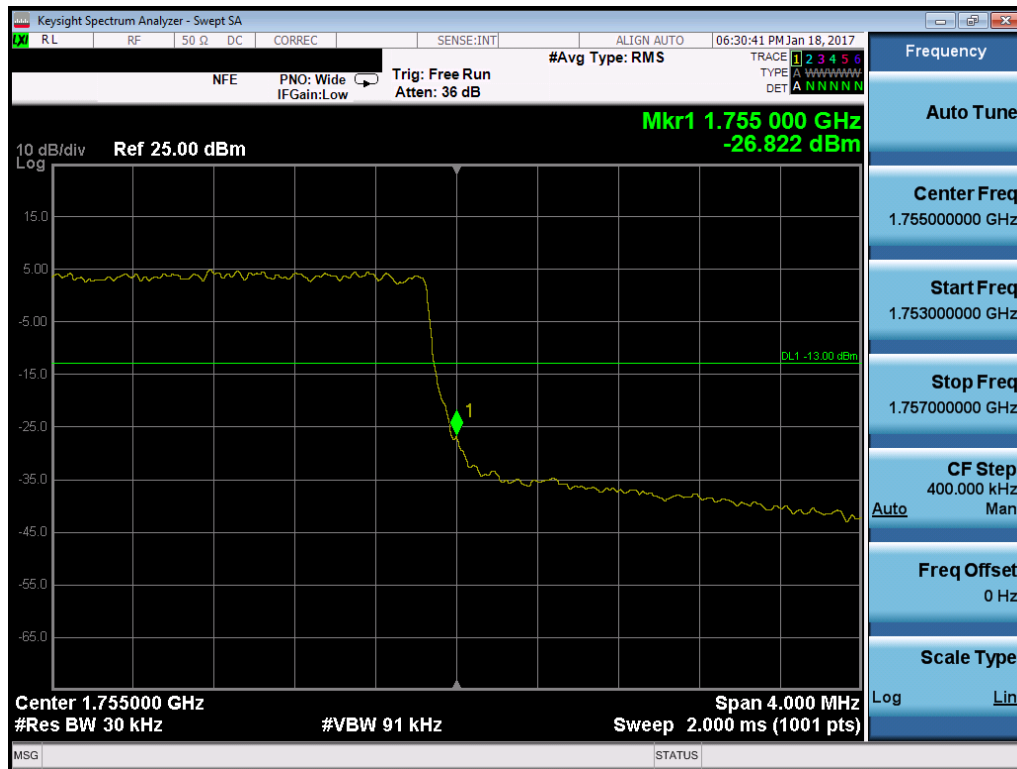


Plot 7-166. Lower Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 103 of 176

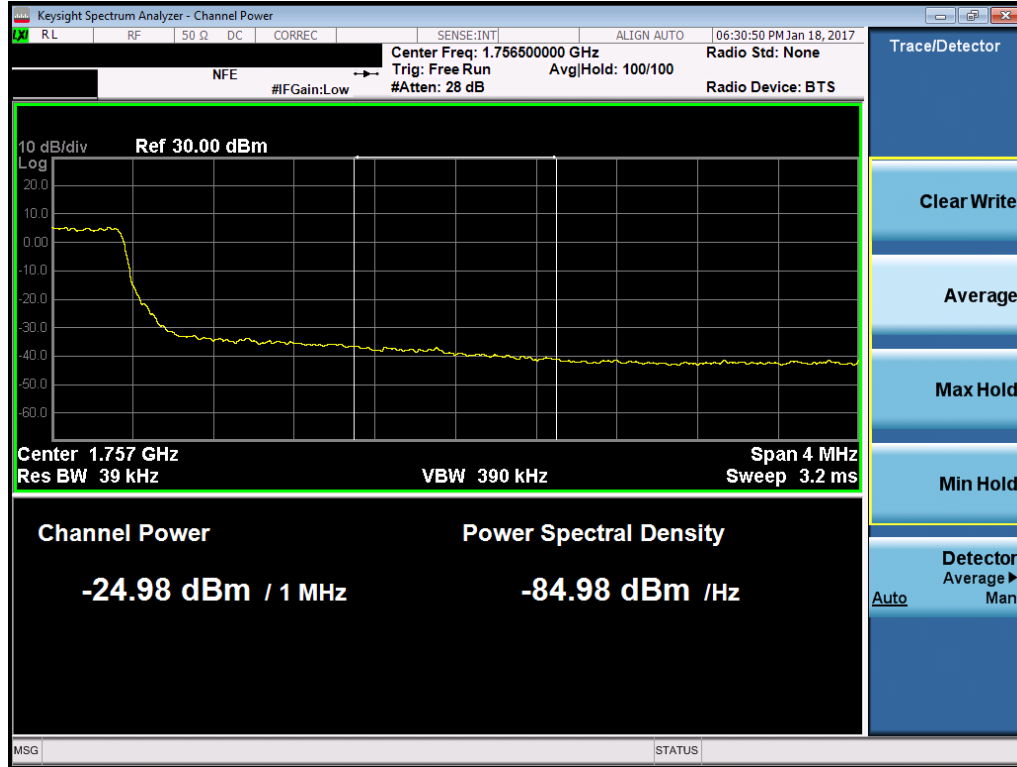


Plot 7-167. Lower Extended Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

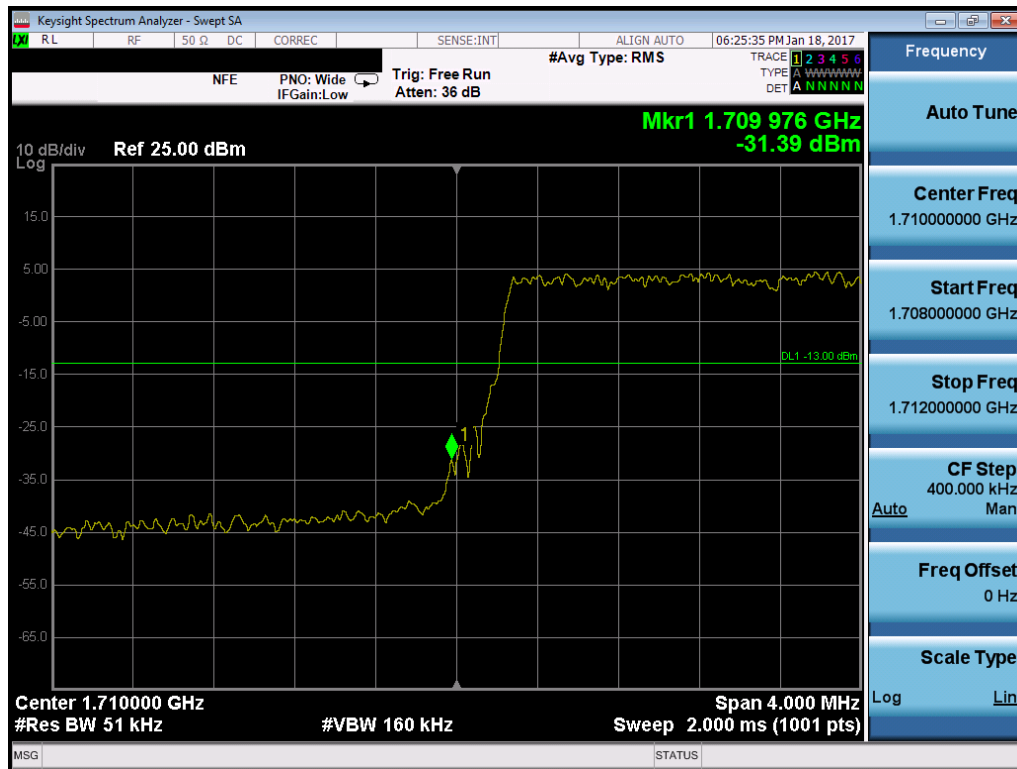


Plot 7-168. Upper Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 104 of 176	

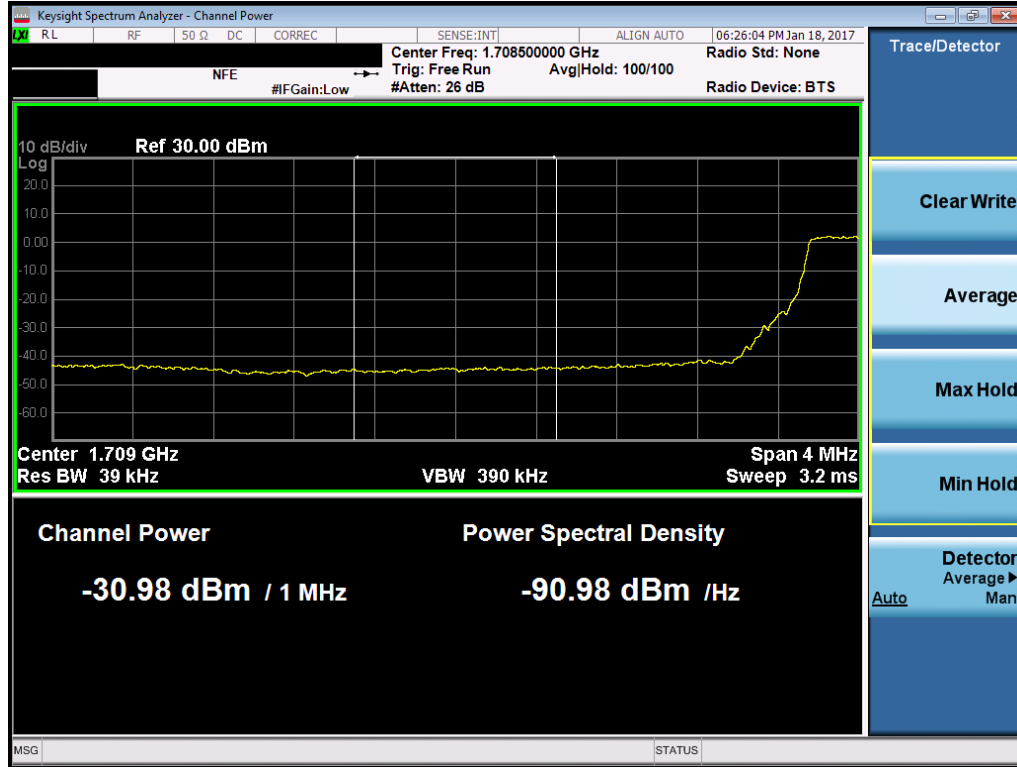


Plot 7-169. Upper Extended Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)



Plot 7-170. Lower Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 105 of 176	

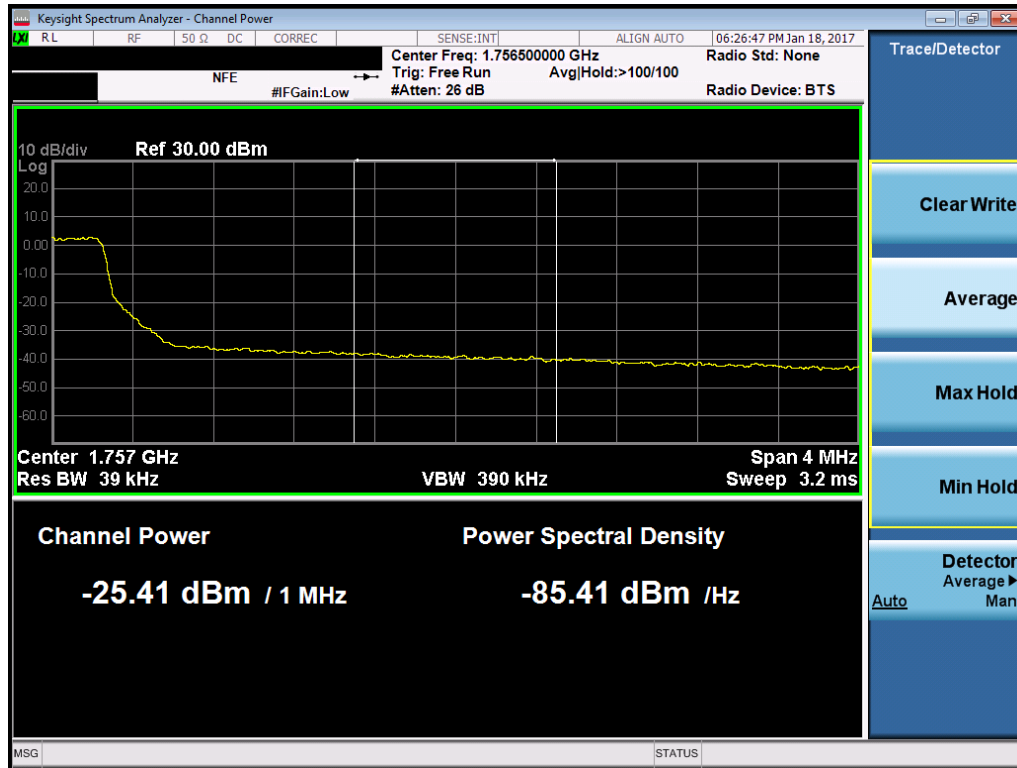


Plot 7-171. Lower Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

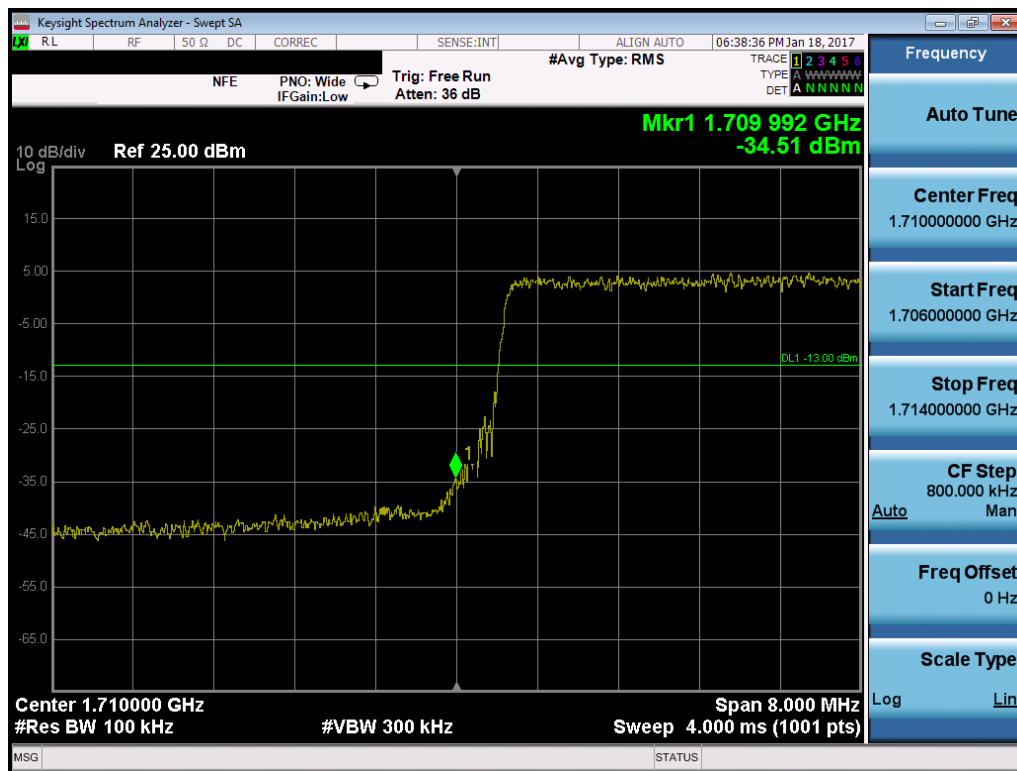


Plot 7-172. Upper Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 106 of 176

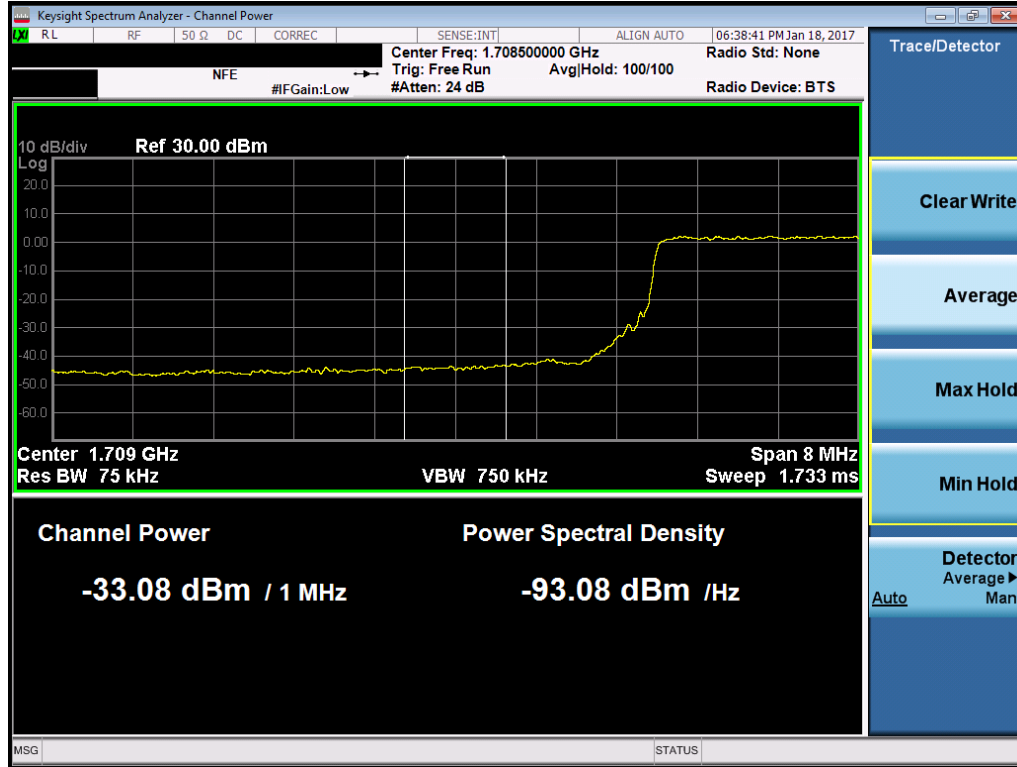


Plot 7-173. Upper Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

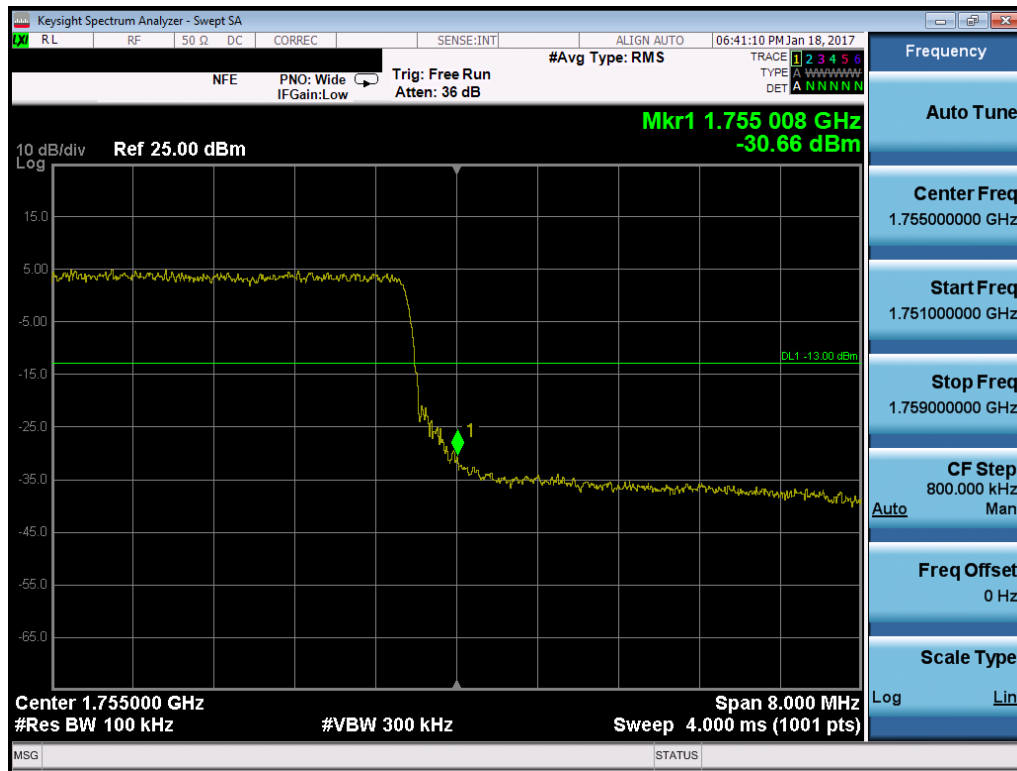


Plot 7-174. Lower Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 107 of 176

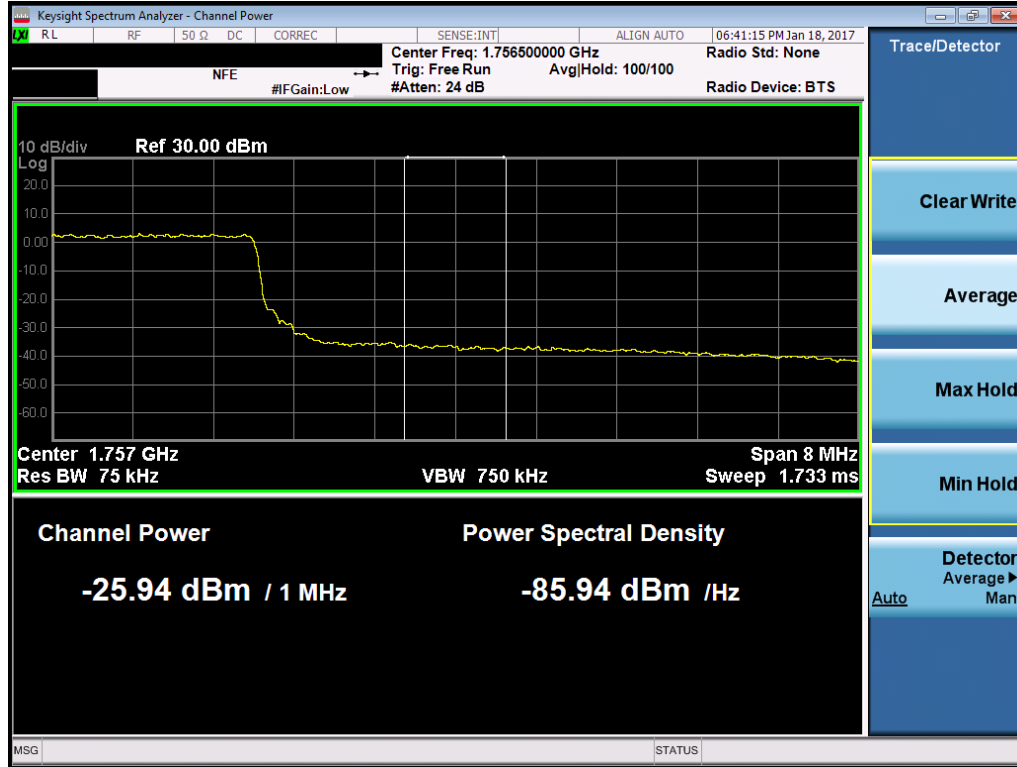


Plot 7-175. Lower Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

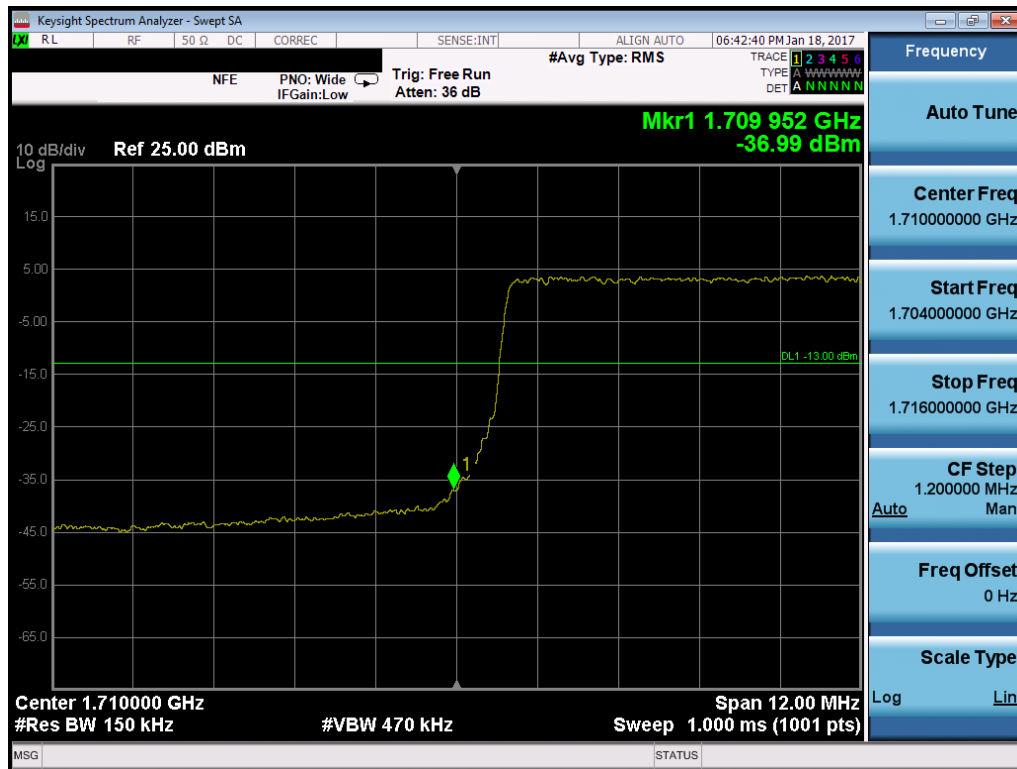


Plot 7-176. Upper Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 108 of 176

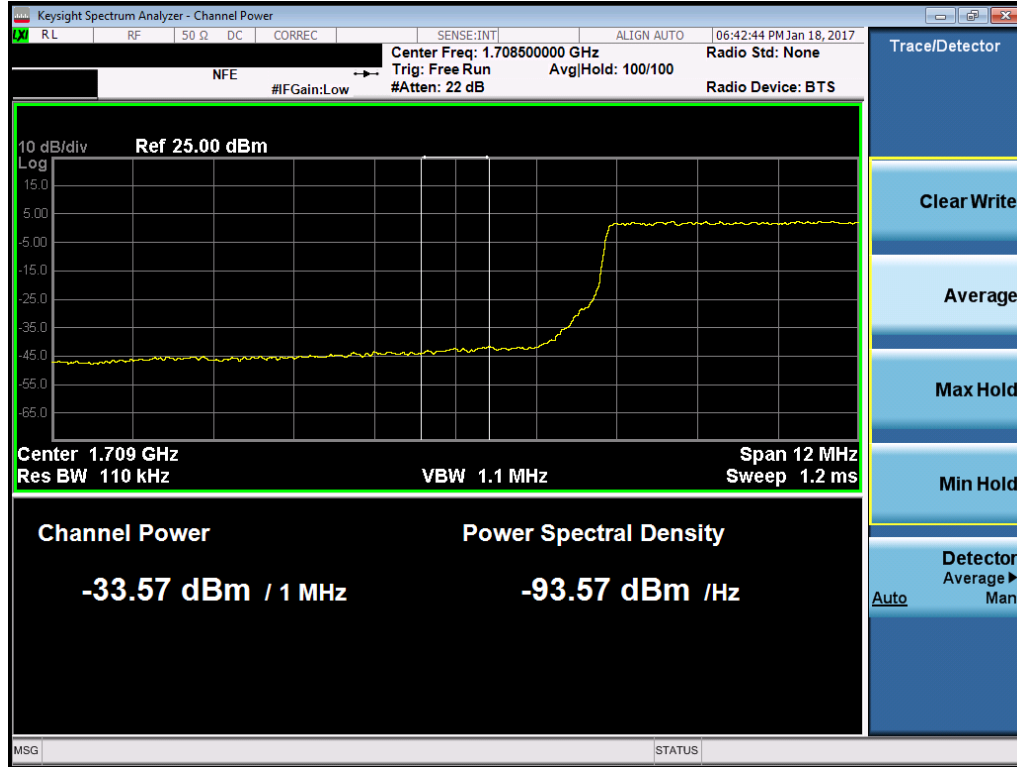


Plot 7-177. Upper Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

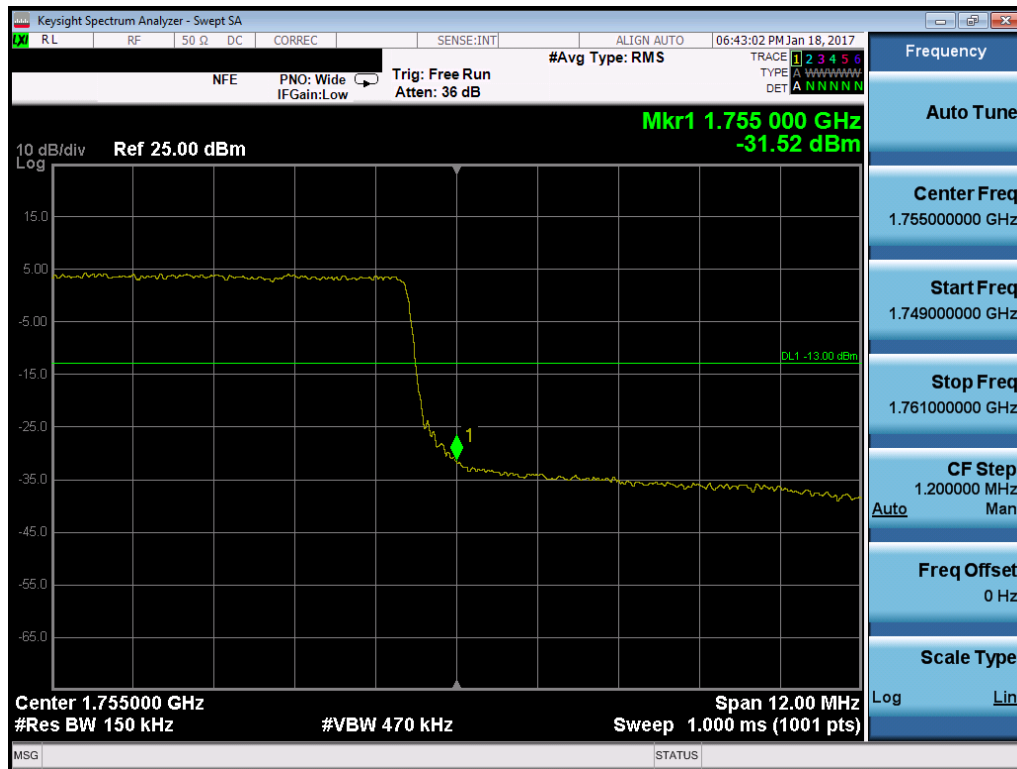


Plot 7-178. Lower Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 109 of 176

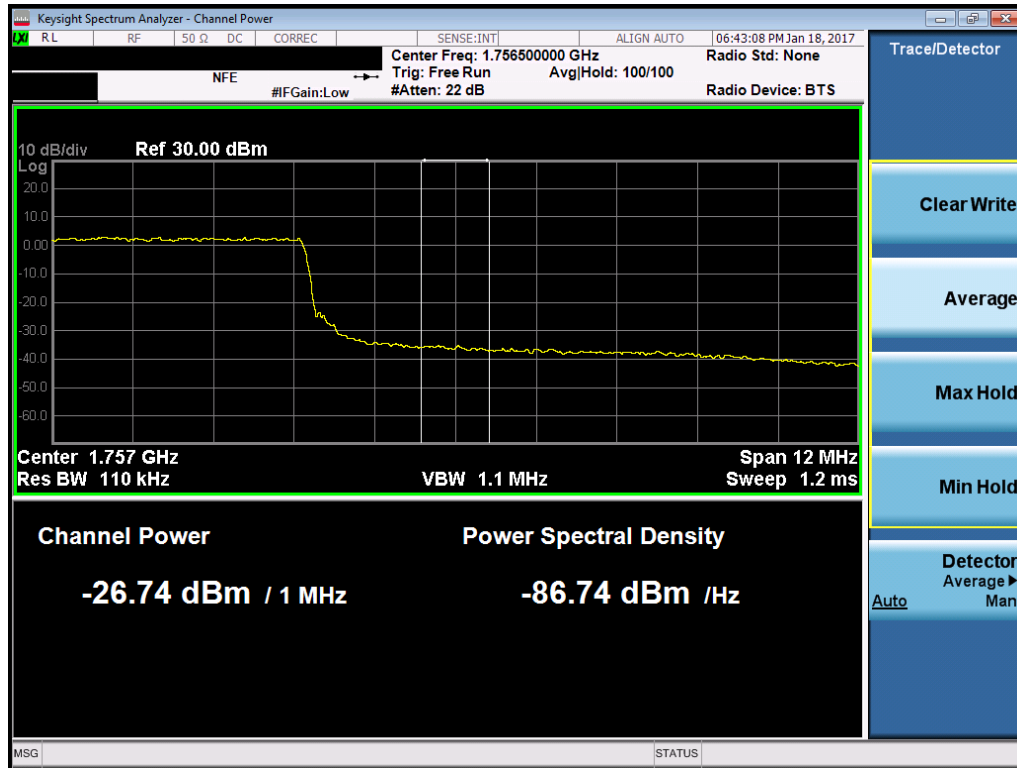


Plot 7-179. Lower Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

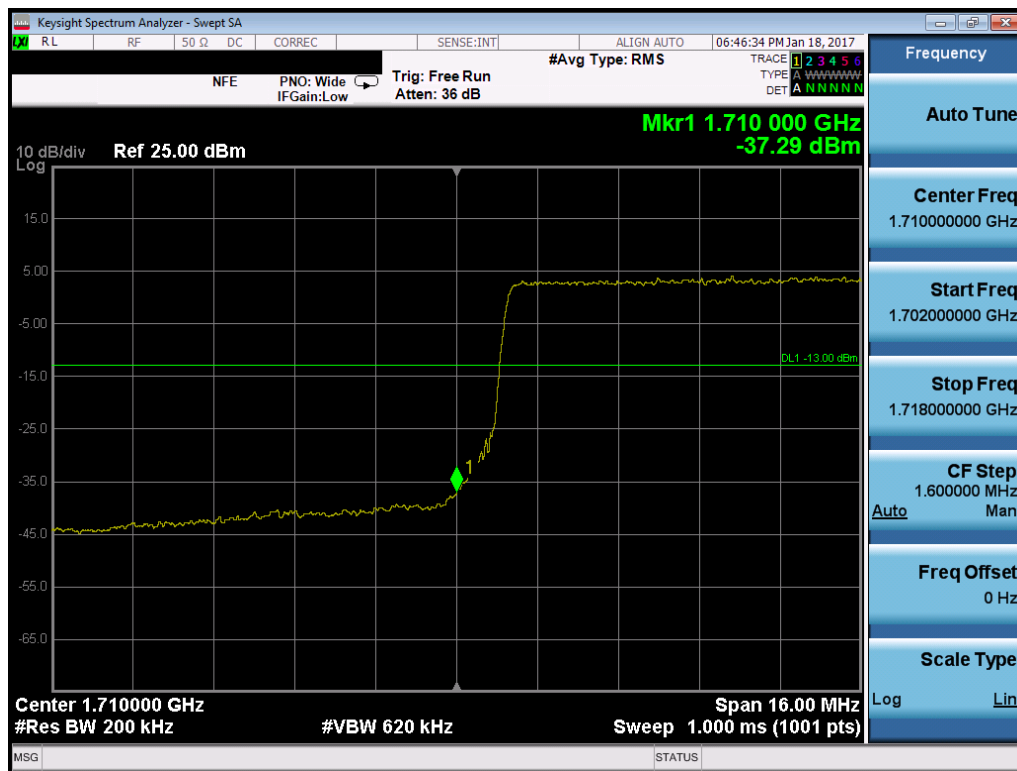


Plot 7-180. Upper Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 110 of 176	

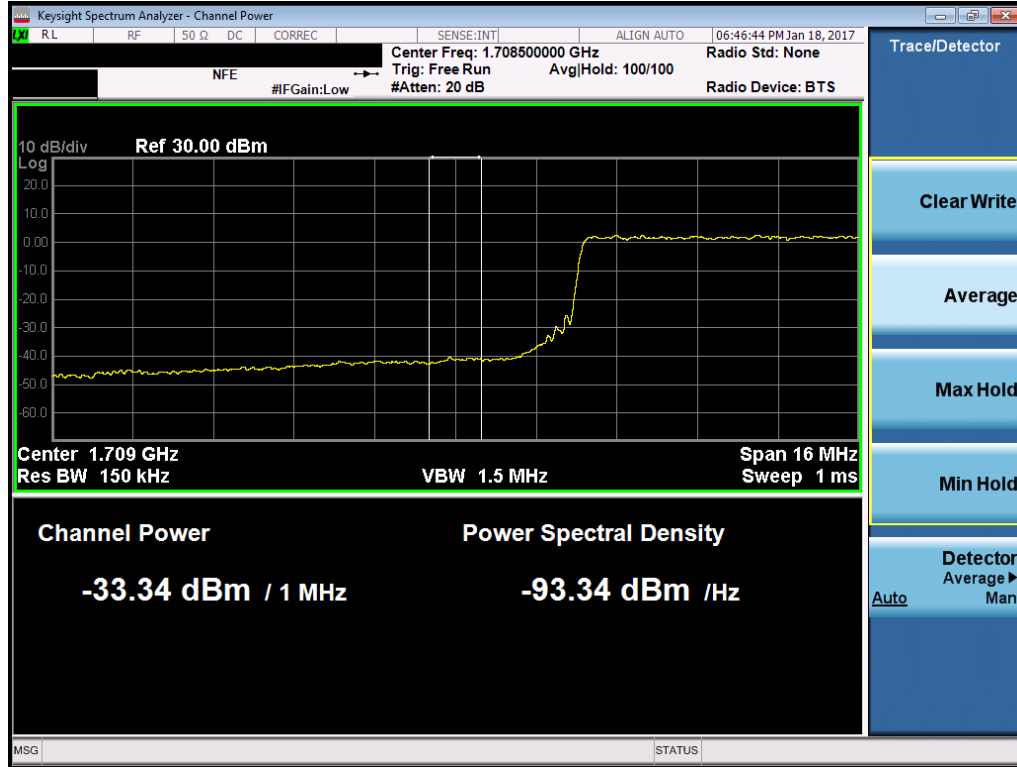


Plot 7-181. Upper Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

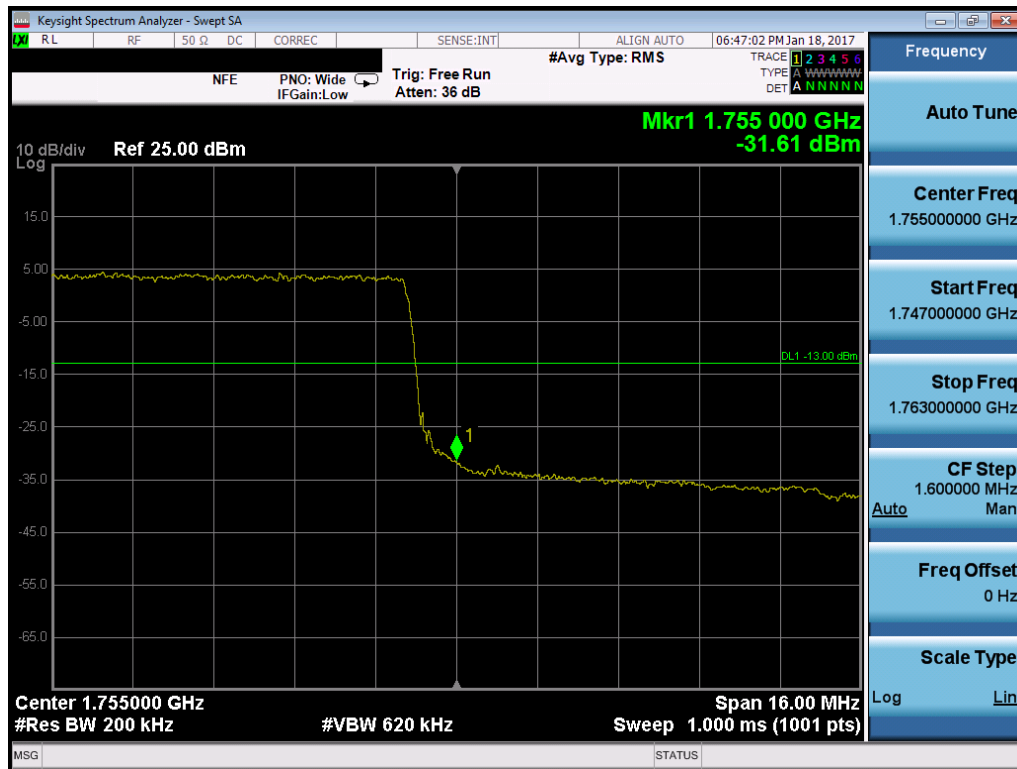


Plot 7-182. Lower Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 111 of 176

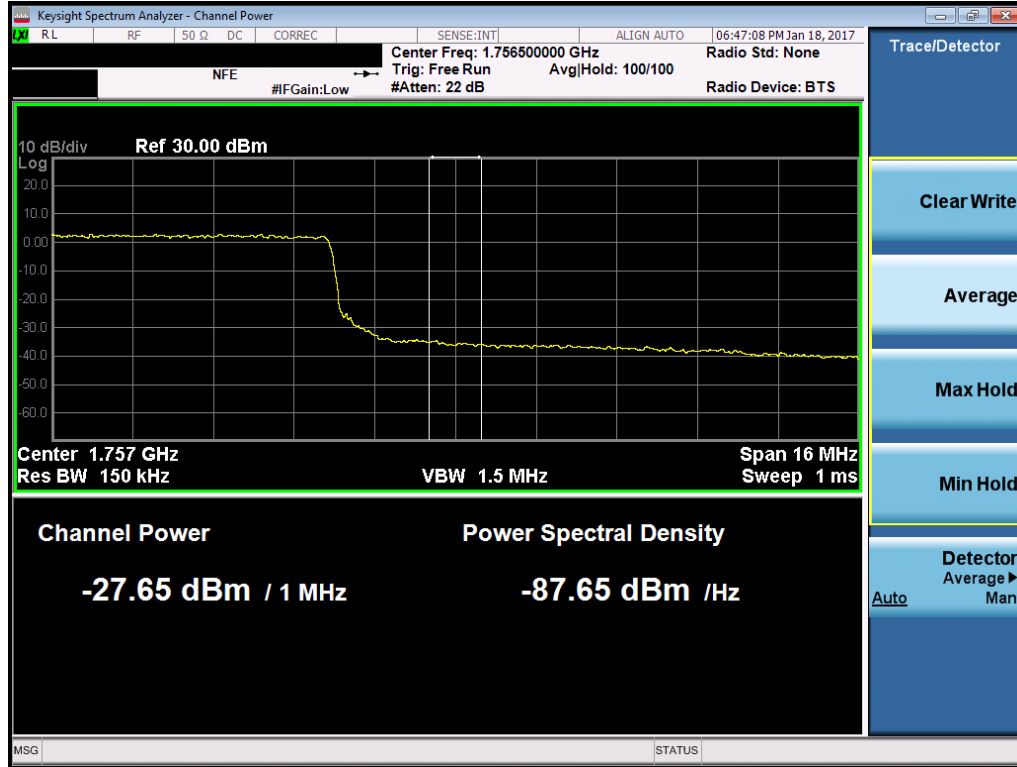


Plot 7-183. Lower Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

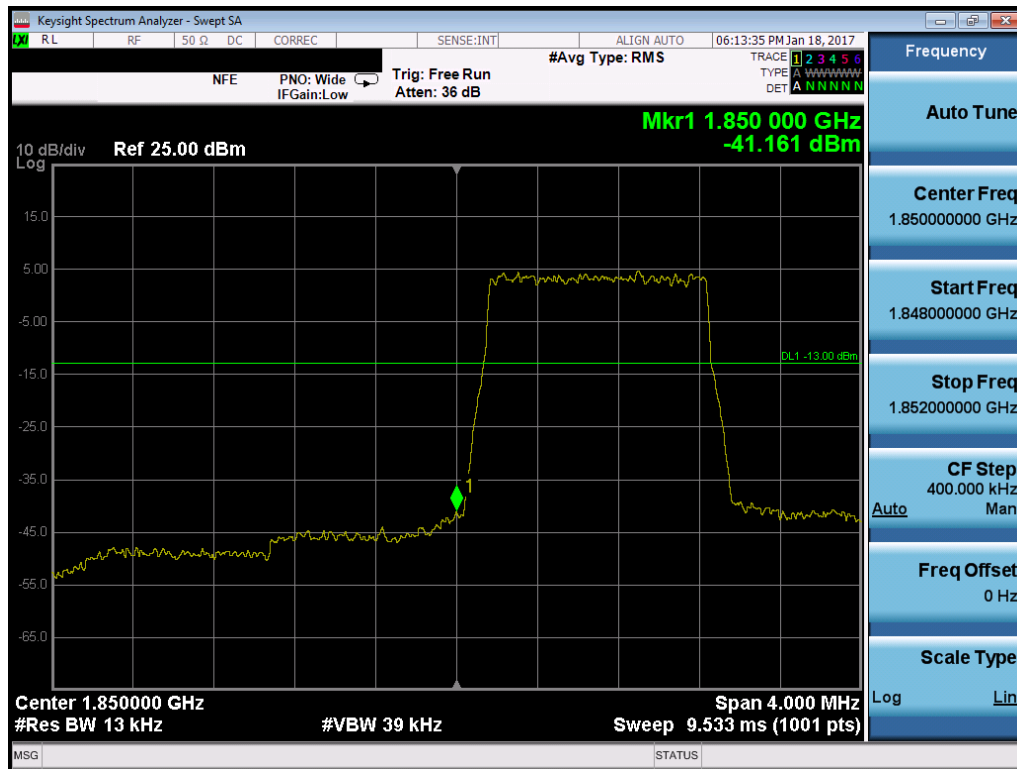


Plot 7-184. Upper Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 112 of 176	

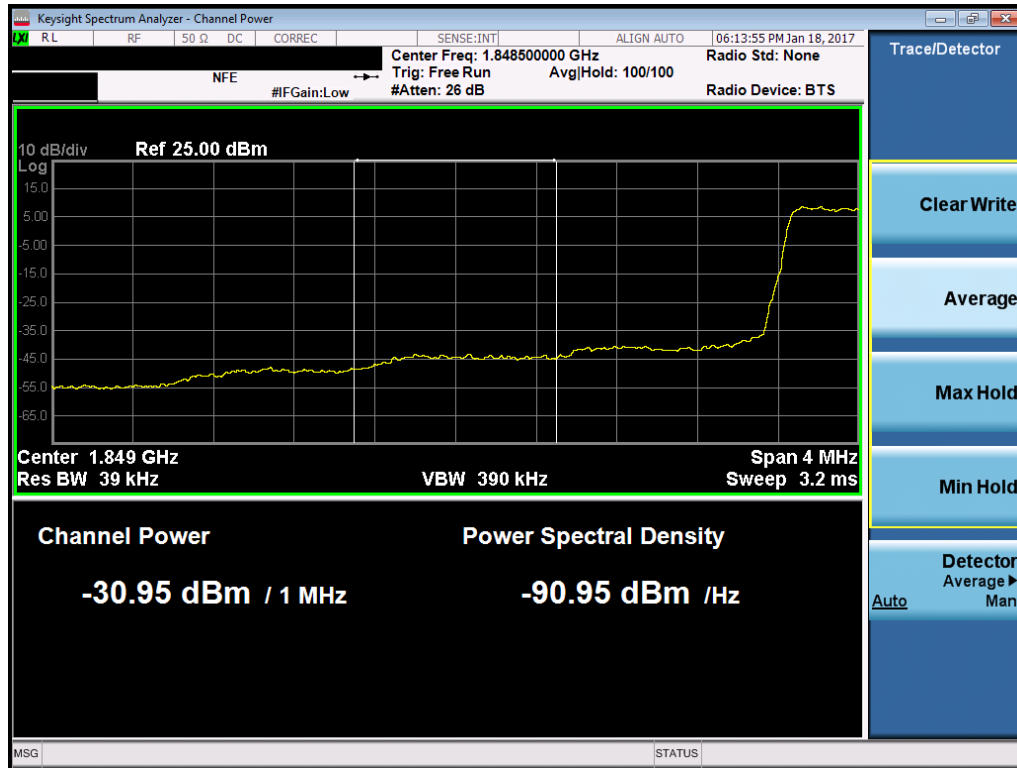


Plot 7-185. Upper Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)



Plot 7-186. Lower Band Edge Plot (Band 2/25 – 1.4MHz QPSK – RB Size 6)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 113 of 176	

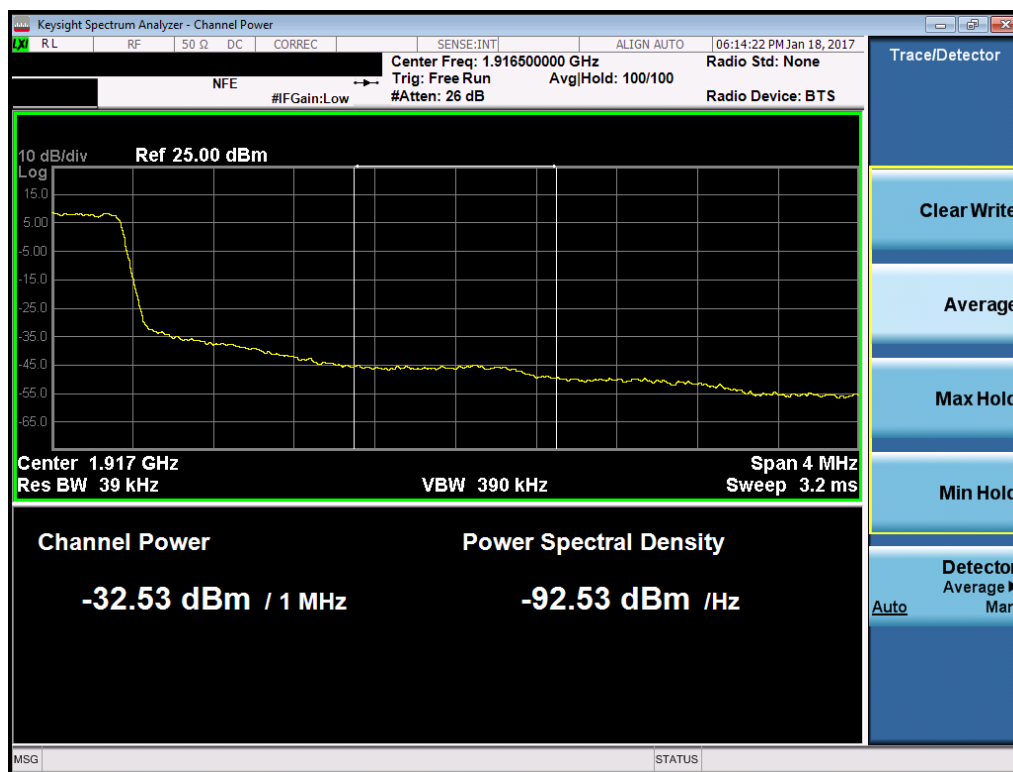


Plot 7-187. Lower Extended Band Edge Plot (Band 2/25 – 1.4MHz QPSK – RB Size 6)

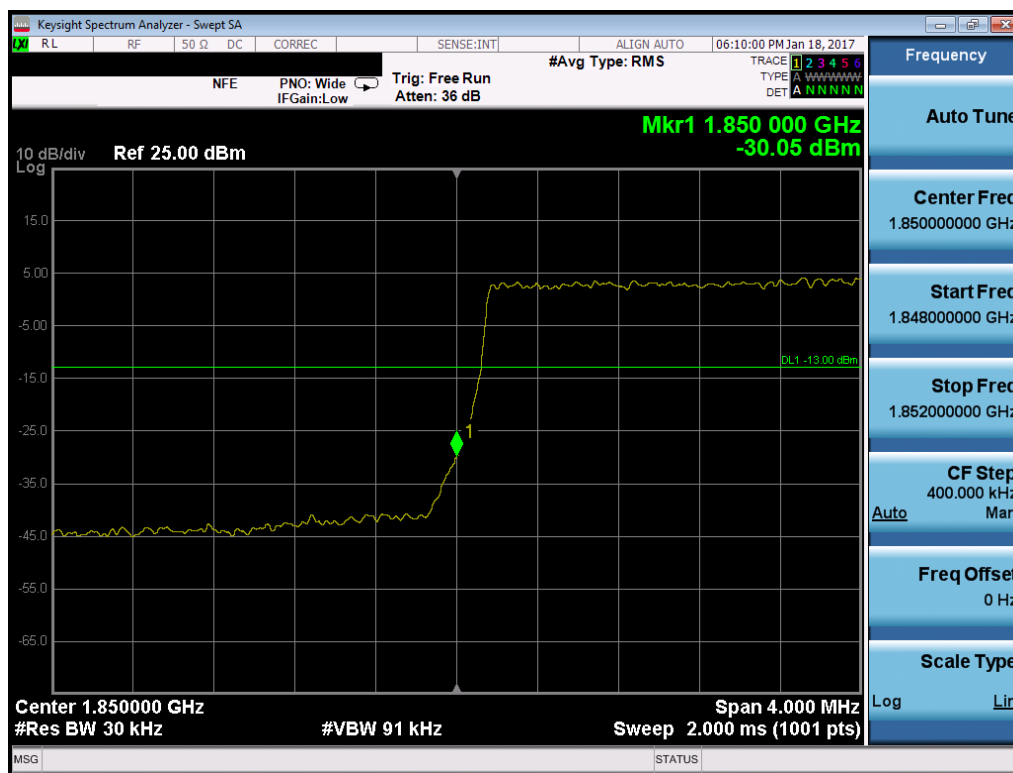


Plot 7-188. Upper Band Edge Plot (Band 2/25 – 1.4MHz QPSK – RB Size 6)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 114 of 176

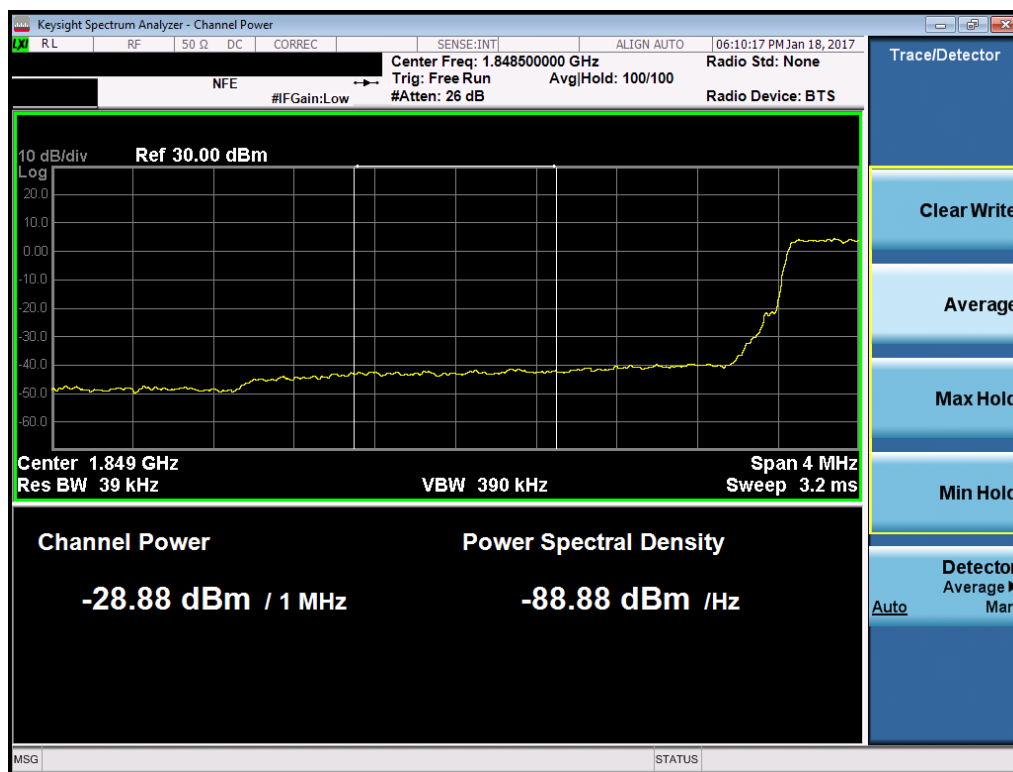


Plot 7-189. Upper Extended Band Edge Plot (Band 2/25 – 1.4MHz QPSK – RB Size 6)

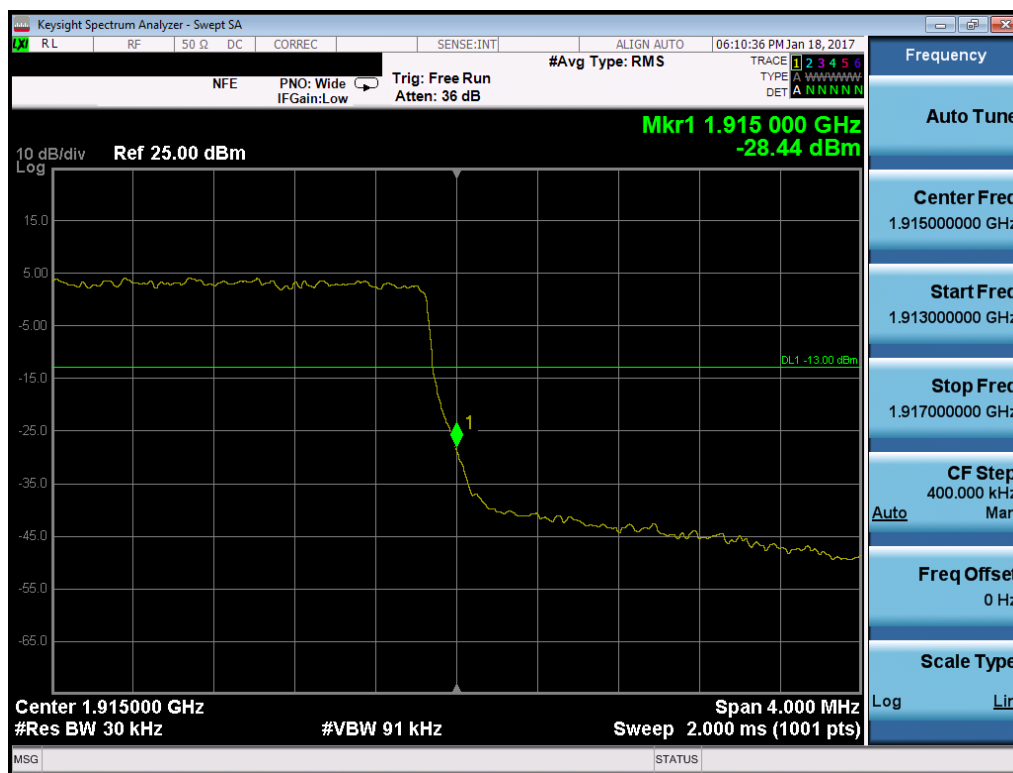


Plot 7-190. Lower Band Edge Plot (Band 2/25 – 3.0MHz QPSK – RB Size 15)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 115 of 176	

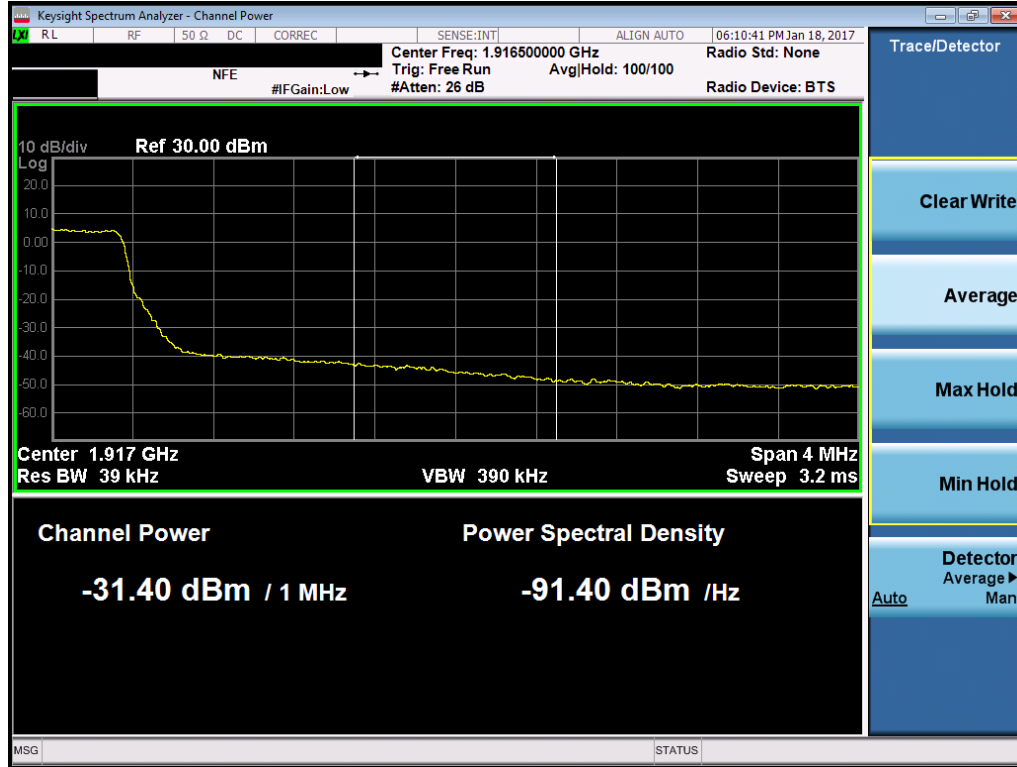


Plot 7-191. Lower Extended Band Edge Plot (Band 2/25 – 3.0MHz QPSK – RB Size 15)

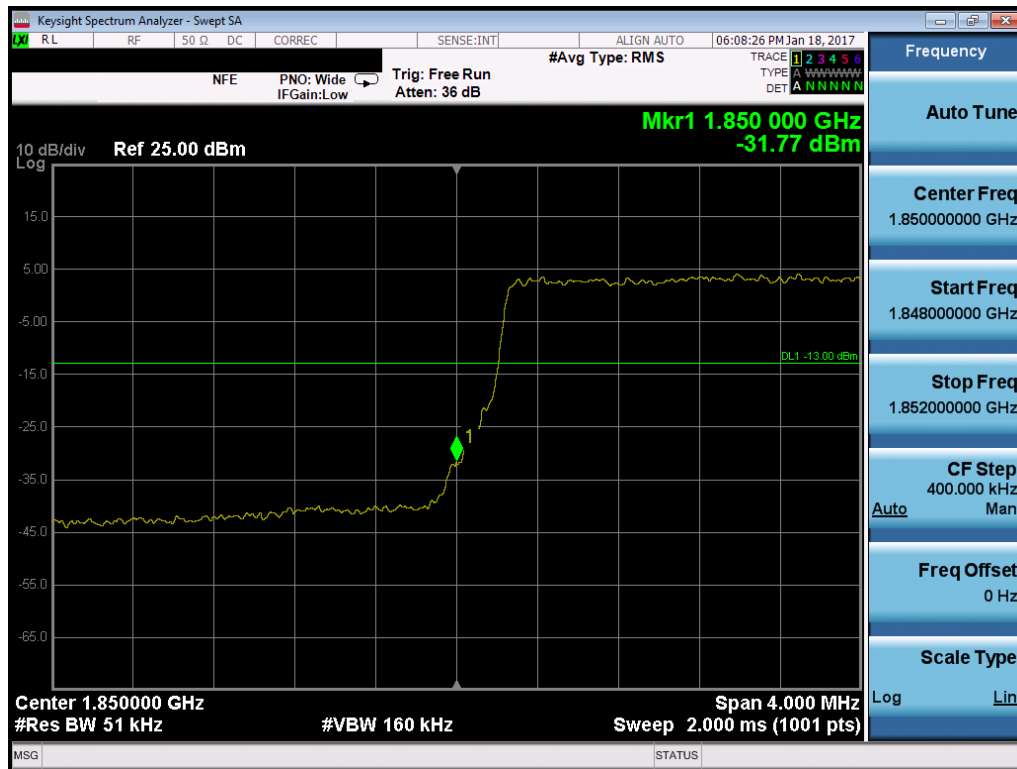


Plot 7-192. Upper Band Edge Plot (Band 2/25 – 3.0MHz QPSK – RB Size 15)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 116 of 176

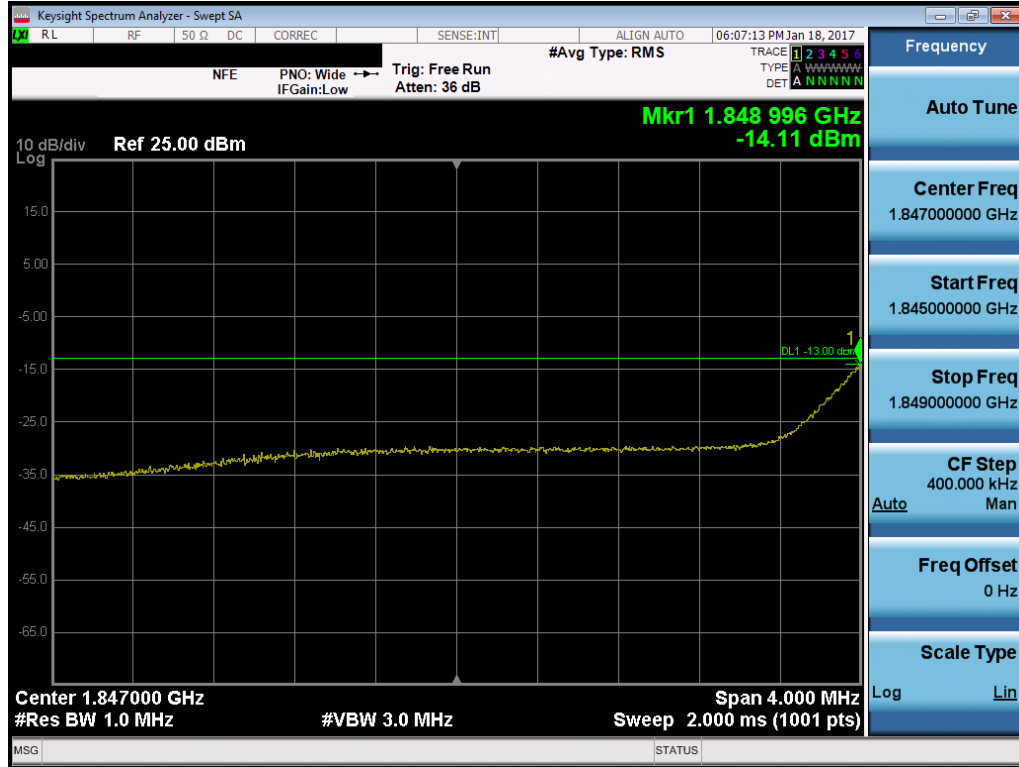


Plot 7-193. Upper Extended Band Edge Plot (Band 2/25 – 3.0MHz QPSK – RB Size 15)



Plot 7-194. Lower Band Edge Plot (Band 2/25 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 117 of 176

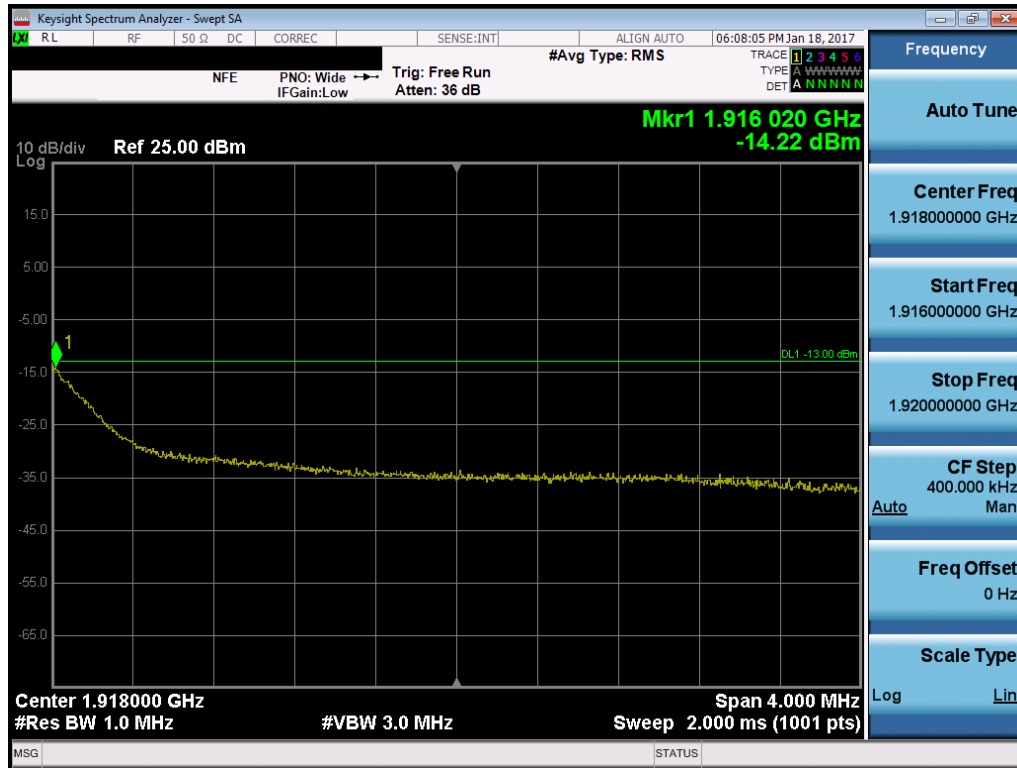


Plot 7-195. Lower Extended Band Edge Plot (Band 2/25 – 5.0MHz QPSK – RB Size 25)

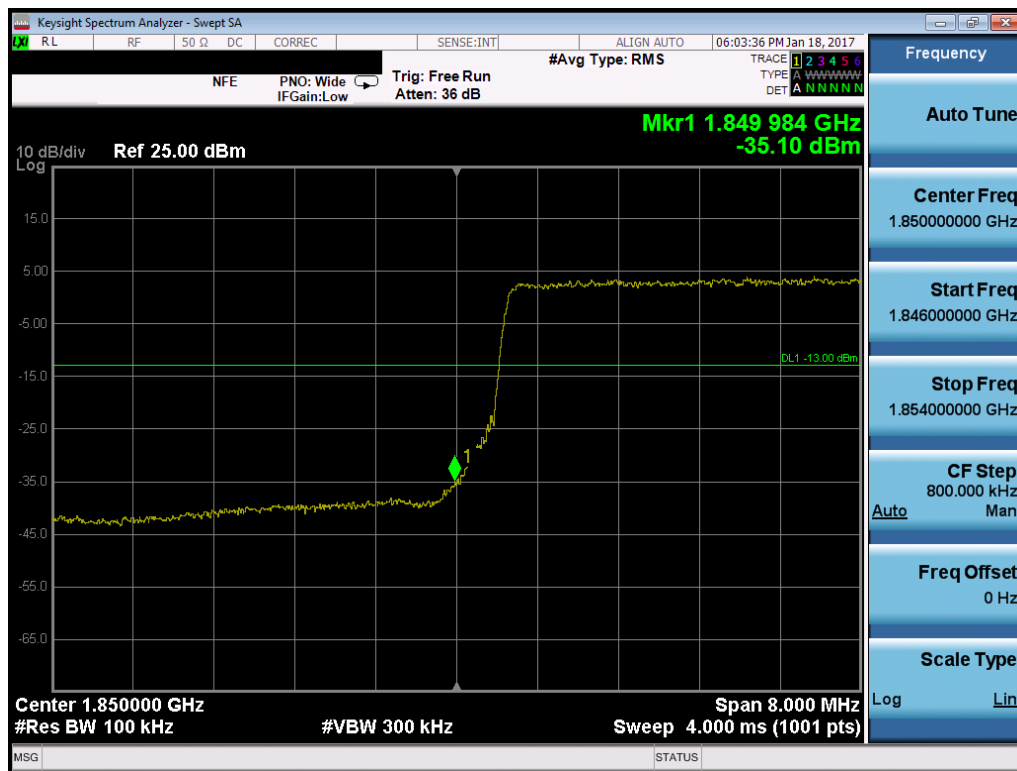


Plot 7-196. Upper Band Edge Plot (Band 2/25 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 118 of 176

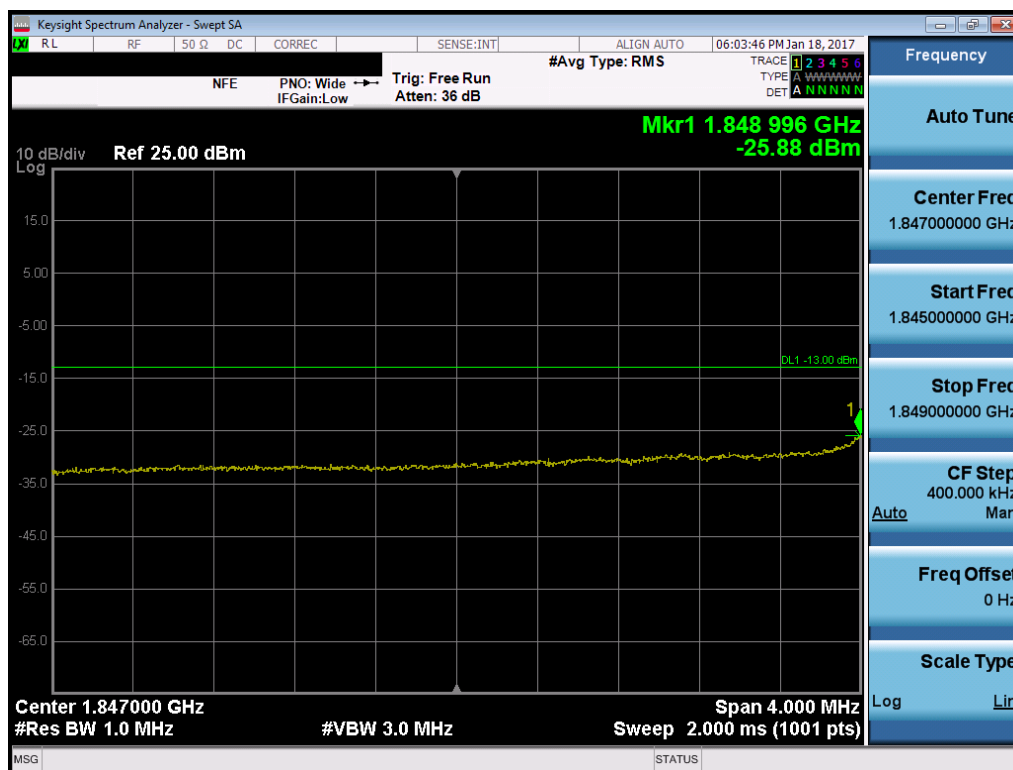


Plot 7-197. Upper Extended Band Edge Plot (Band 2/25 – 5.0MHz QPSK – RB Size 25)

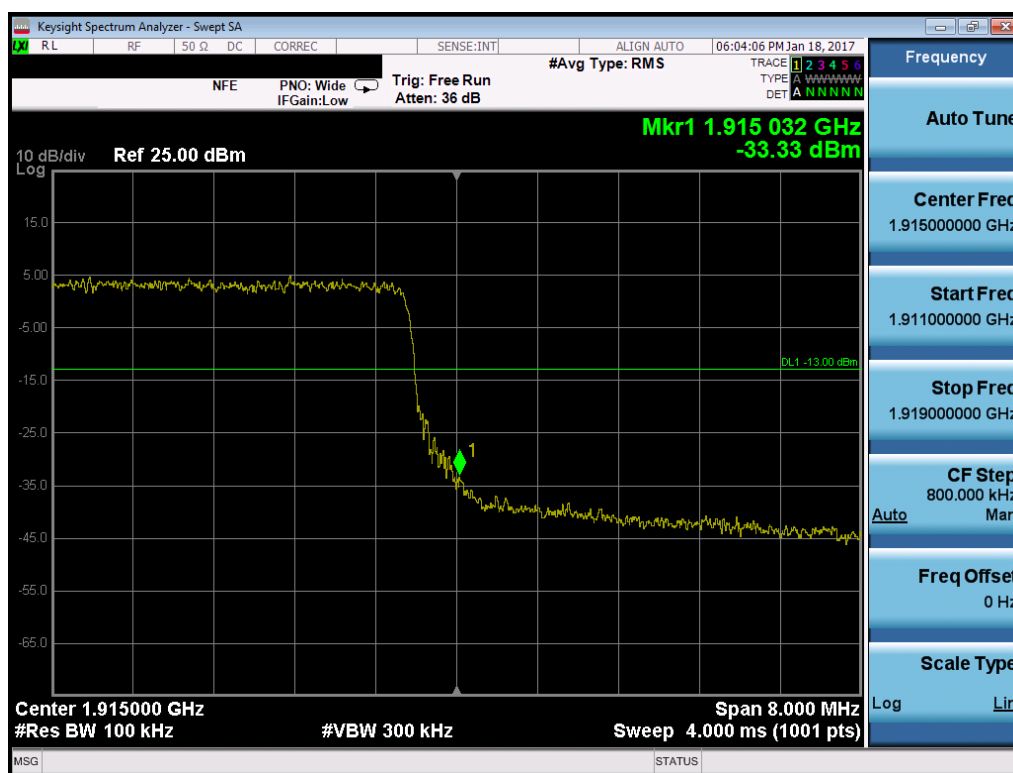


Plot 7-198. Lower Band Edge Plot (Band 2/25 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 119 of 176

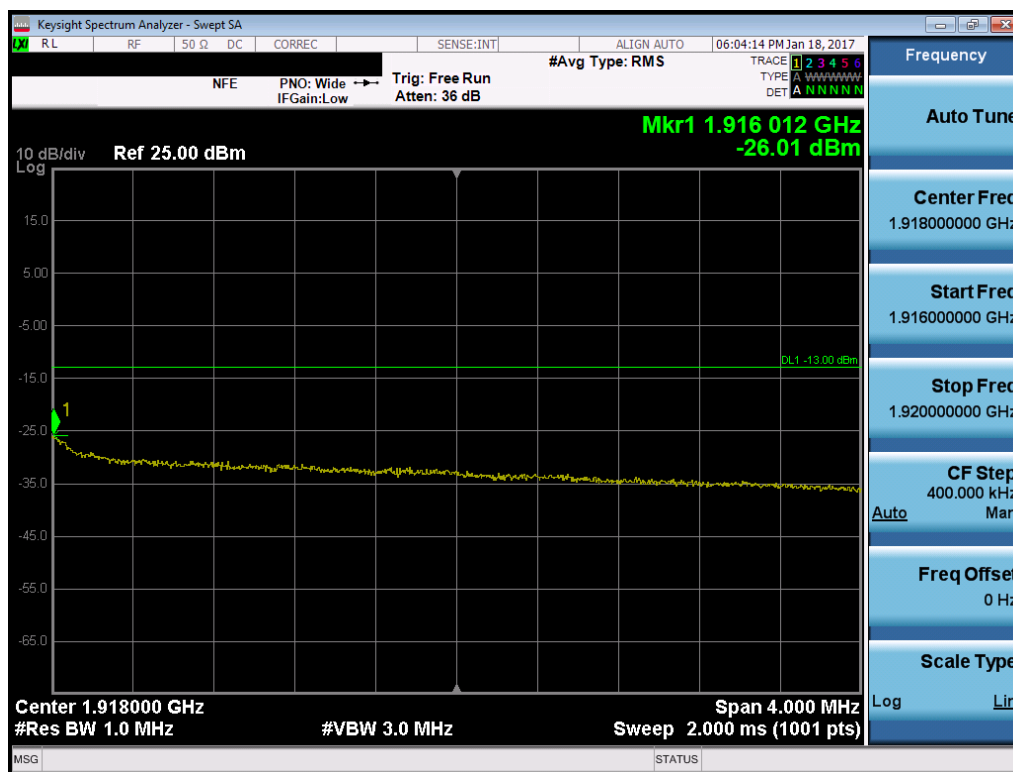


Plot 7-199. Lower Extended Band Edge Plot (Band 2/25 - 10.0MHz QPSK - RB Size 50)

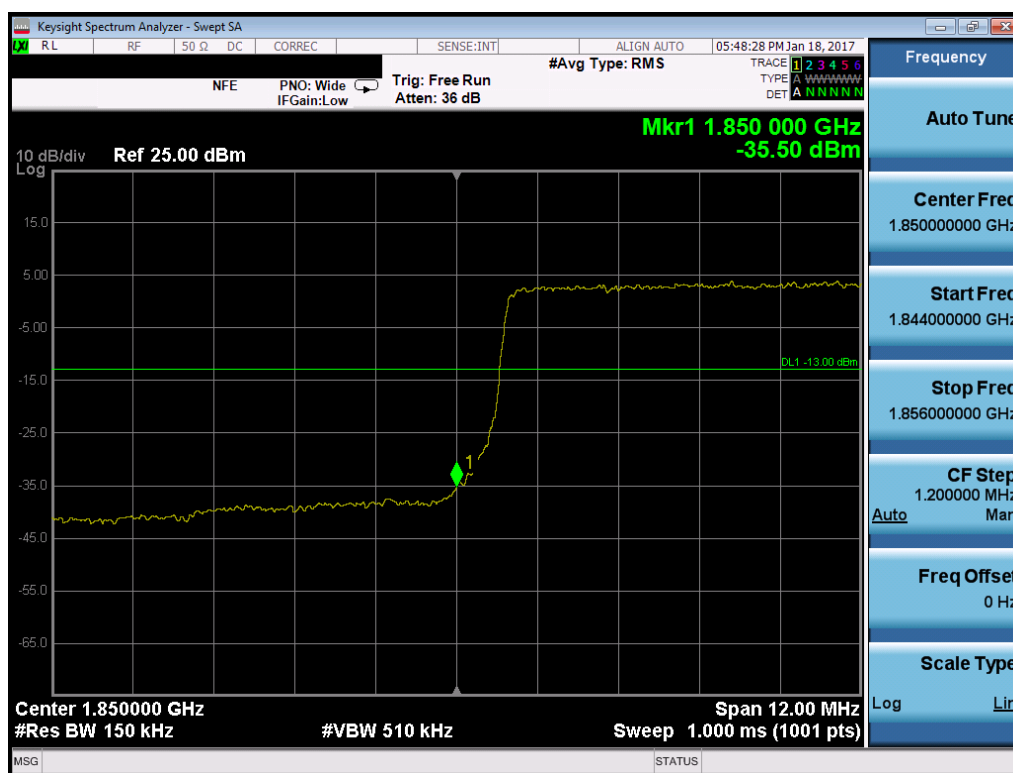


Plot 7-200. Upper Band Edge Plot (Band 2/25 - 10.0MHz QPSK - RB Size 50)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 120 of 176

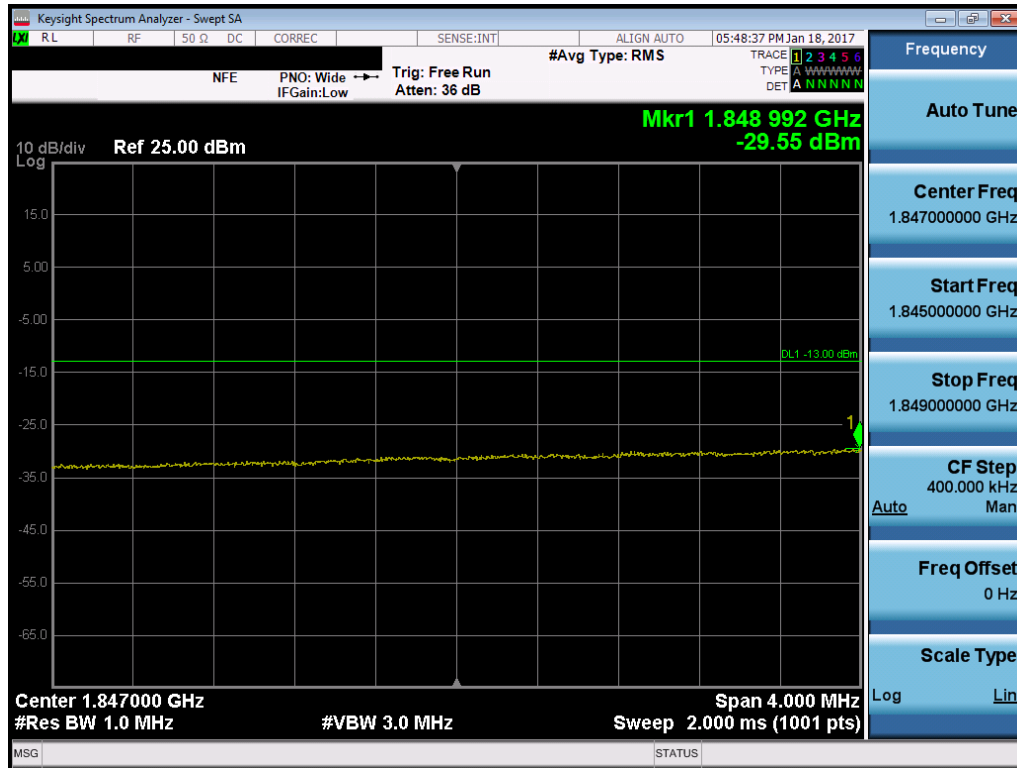


Plot 7-201. Upper Extended Band Edge Plot (Band 2/25 – 10.0MHz QPSK – RB Size 50)



Plot 7-202. Lower Band Edge Plot (Band 2/25 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 121 of 176



Plot 7-203. Lower Extended Band Edge Plot (Band 2/25 - 15.0MHz QPSK - RB Size 75)

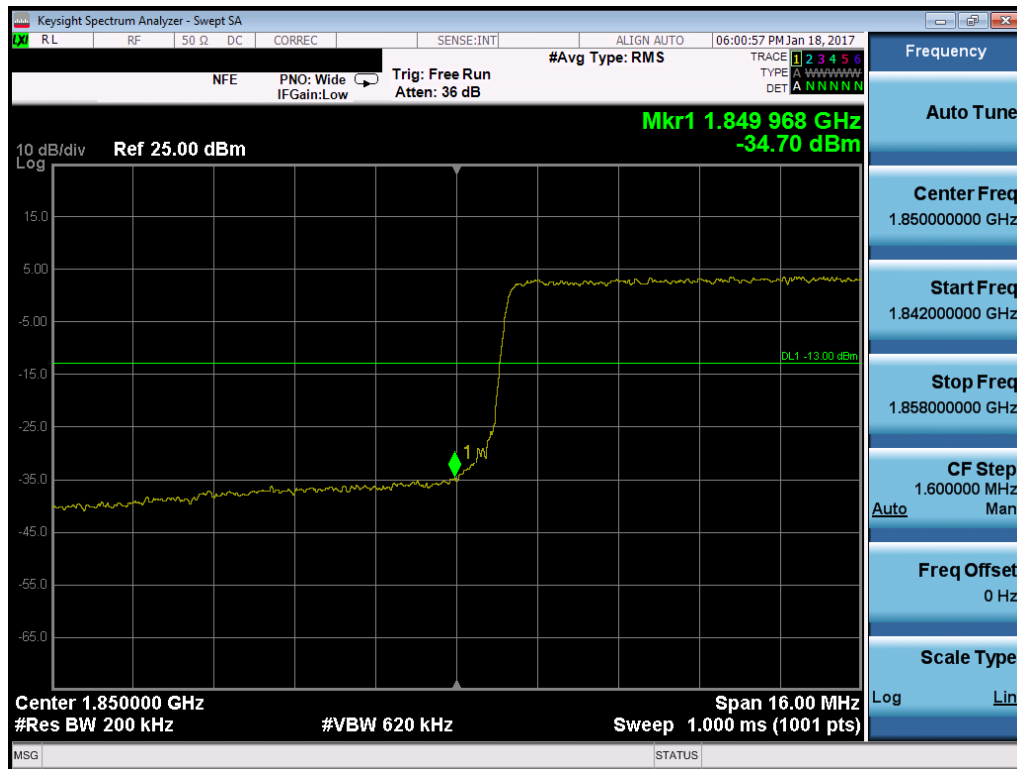


Plot 7-204. Upper Band Edge Plot (Band 2/25 - 15.0MHz QPSK - RB Size 75)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 122 of 176

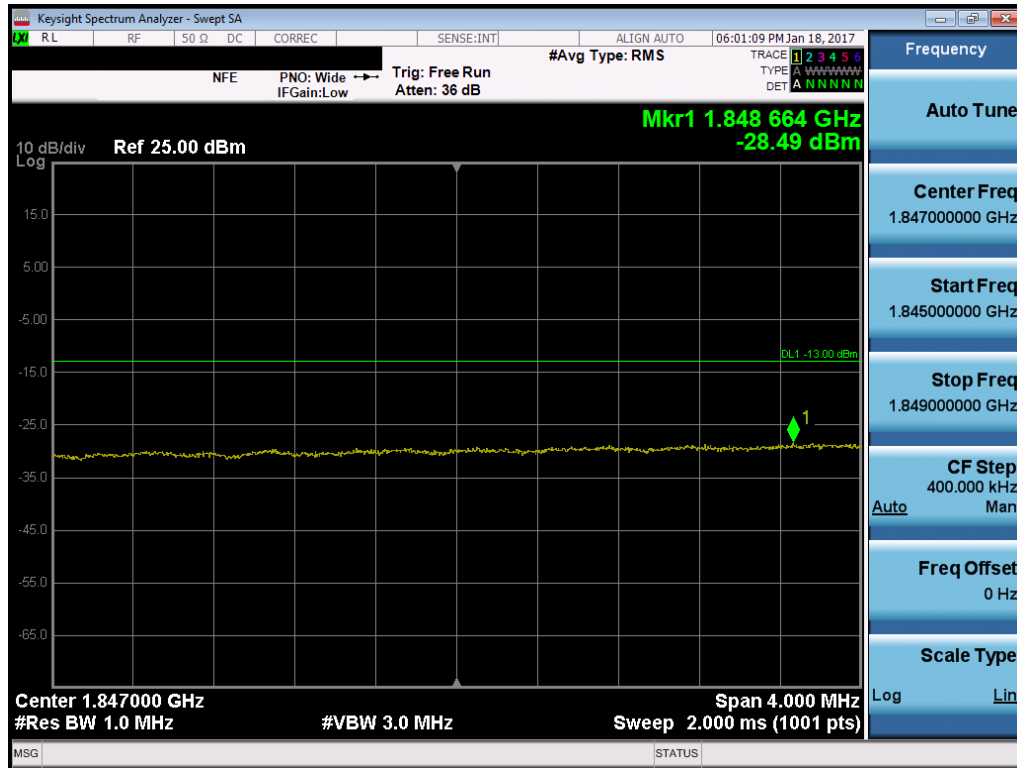


Plot 7-205. Upper Extended Band Edge Plot (Band 2/25 – 15.0MHz QPSK – RB Size 75)



Plot 7-206. Lower Band Edge Plot (Band 2/25 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 123 of 176

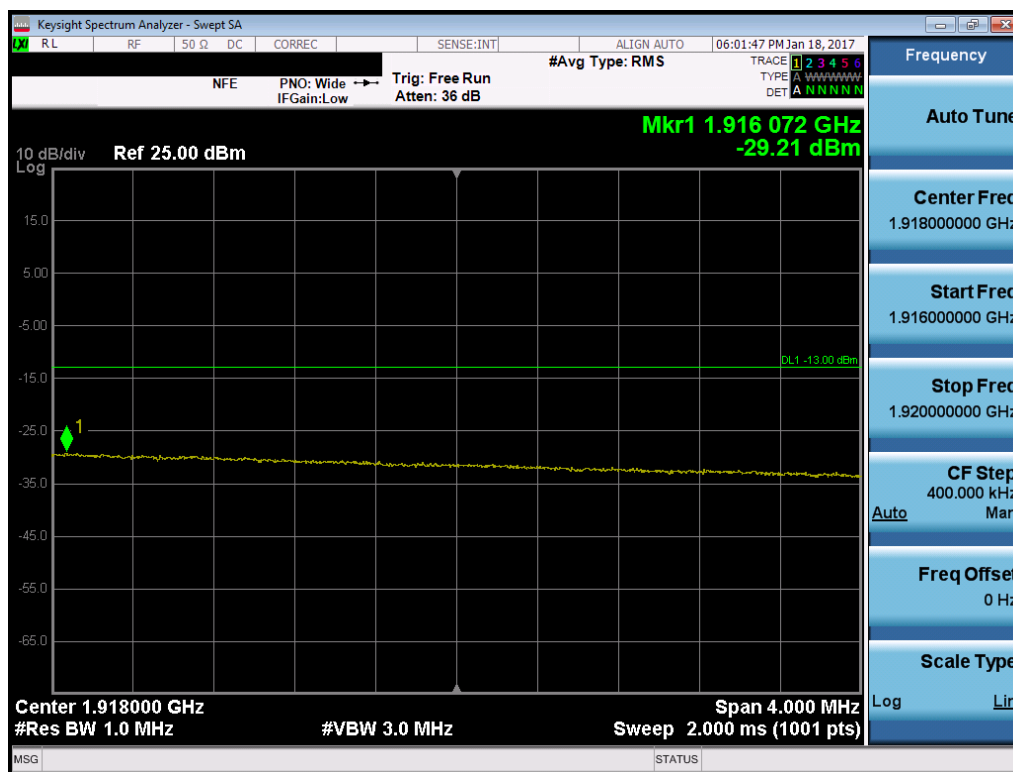


Plot 7-207. Lower Extended Band Edge Plot (Band 2/25 – 20.0MHz QPSK – RB Size 100)

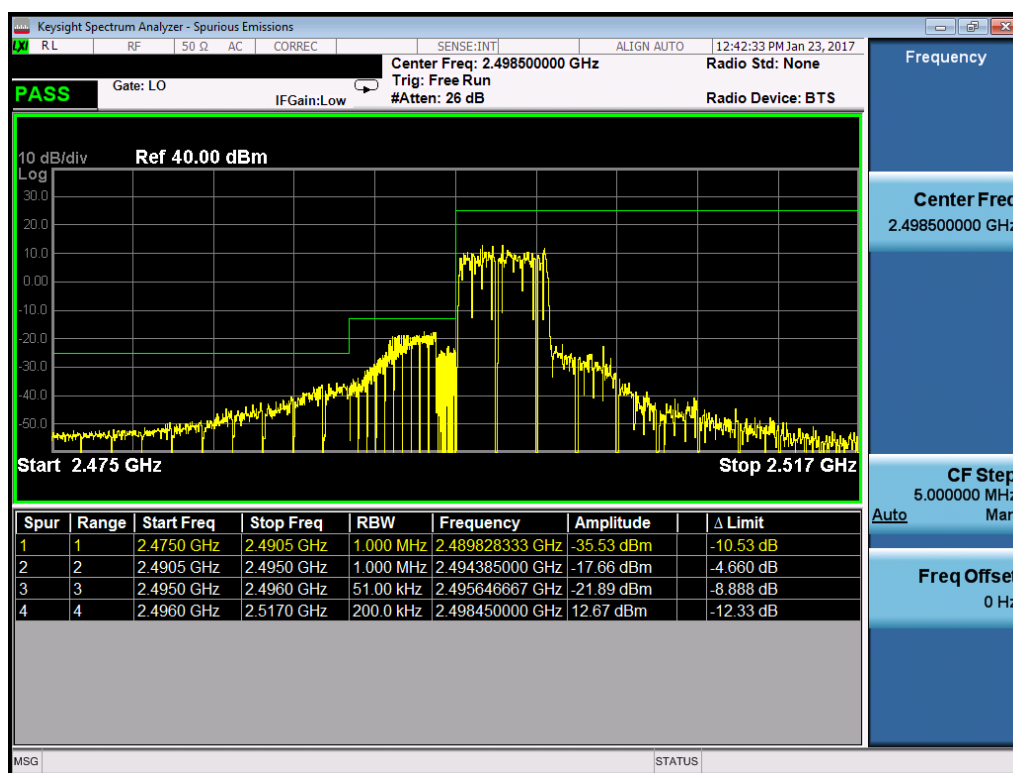


Plot 7-208. Upper Band Edge Plot (Band 2/25 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 124 of 176

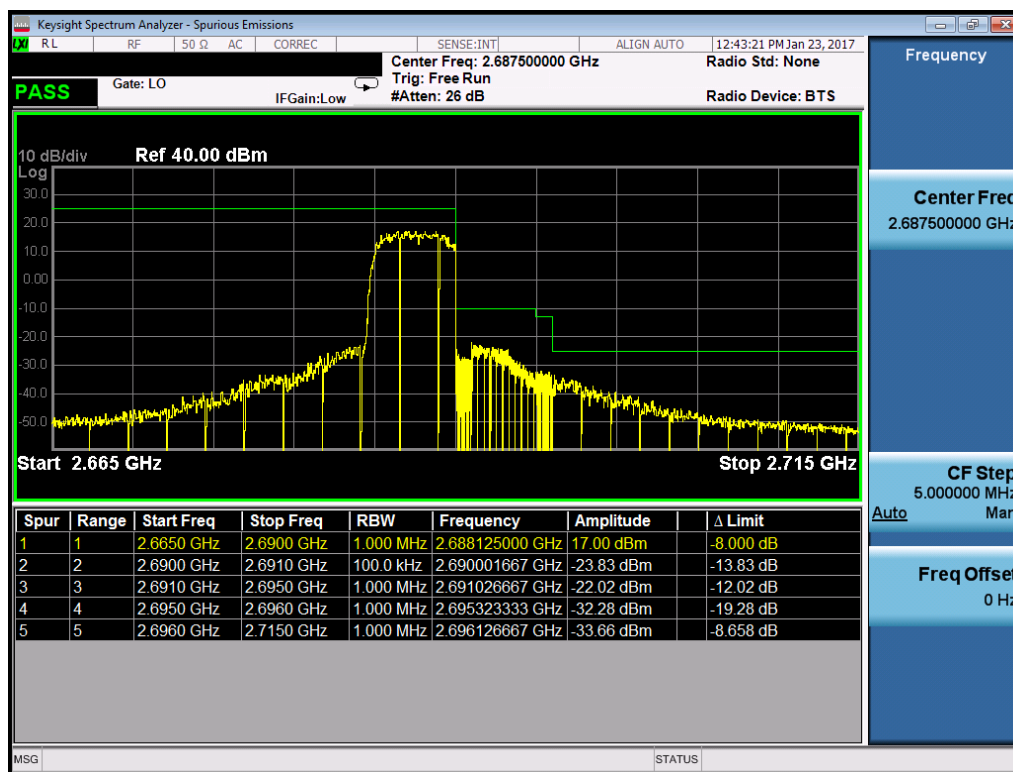


Plot 7-209. Upper Extended Band Edge Plot (Band 2/25 – 20.0MHz QPSK – RB Size 100)

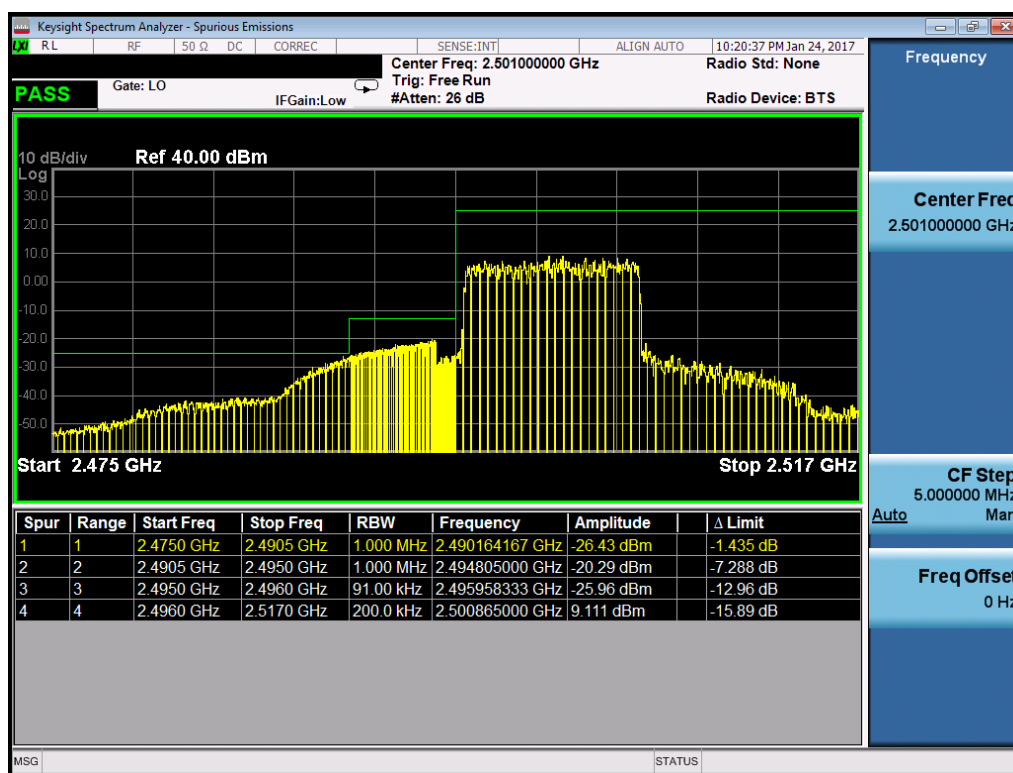


Plot 7-210. Lower ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 125 of 176	

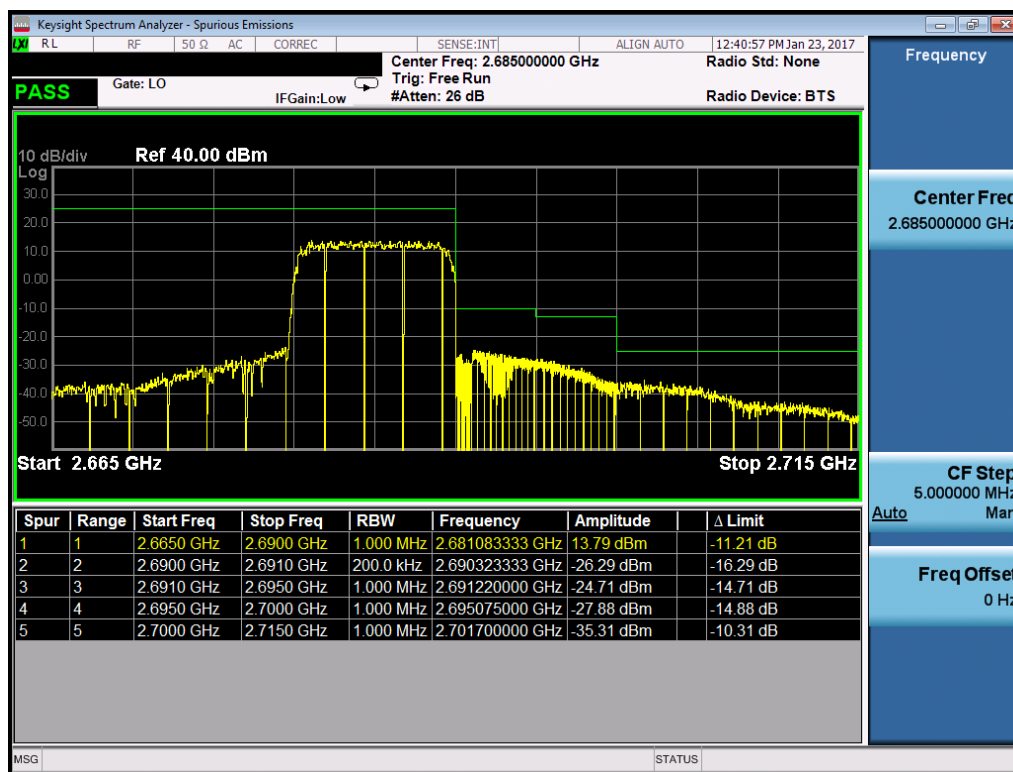


Plot 7-211. Upper ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)

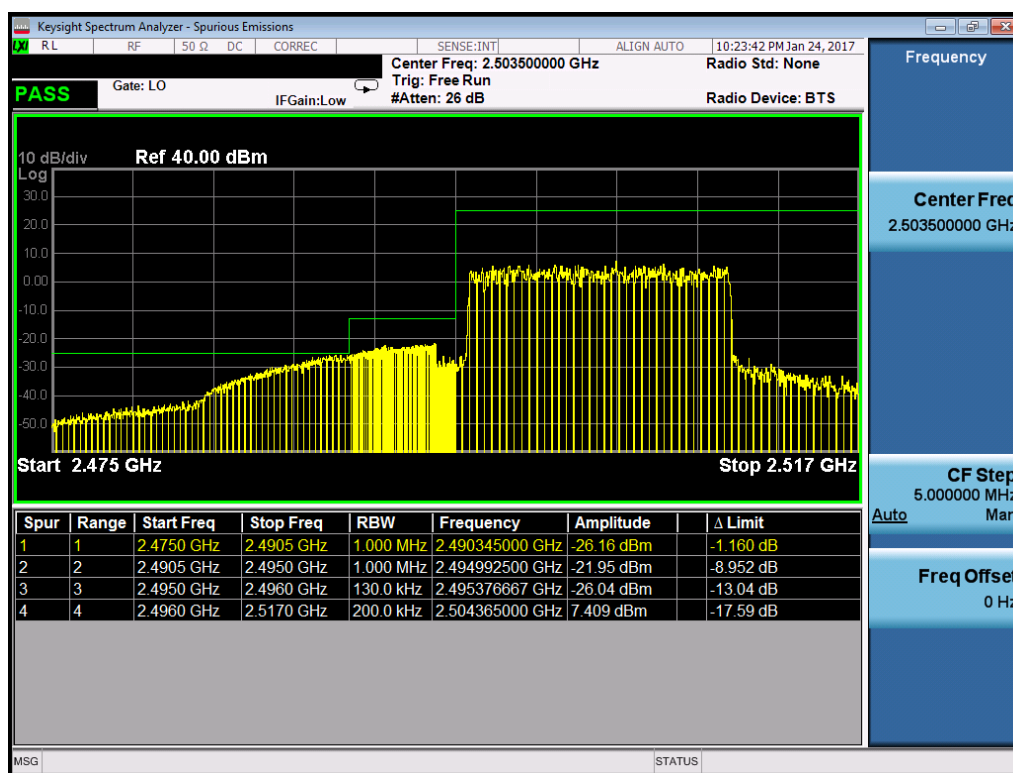


Plot 7-212. Lower ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 126 of 176	

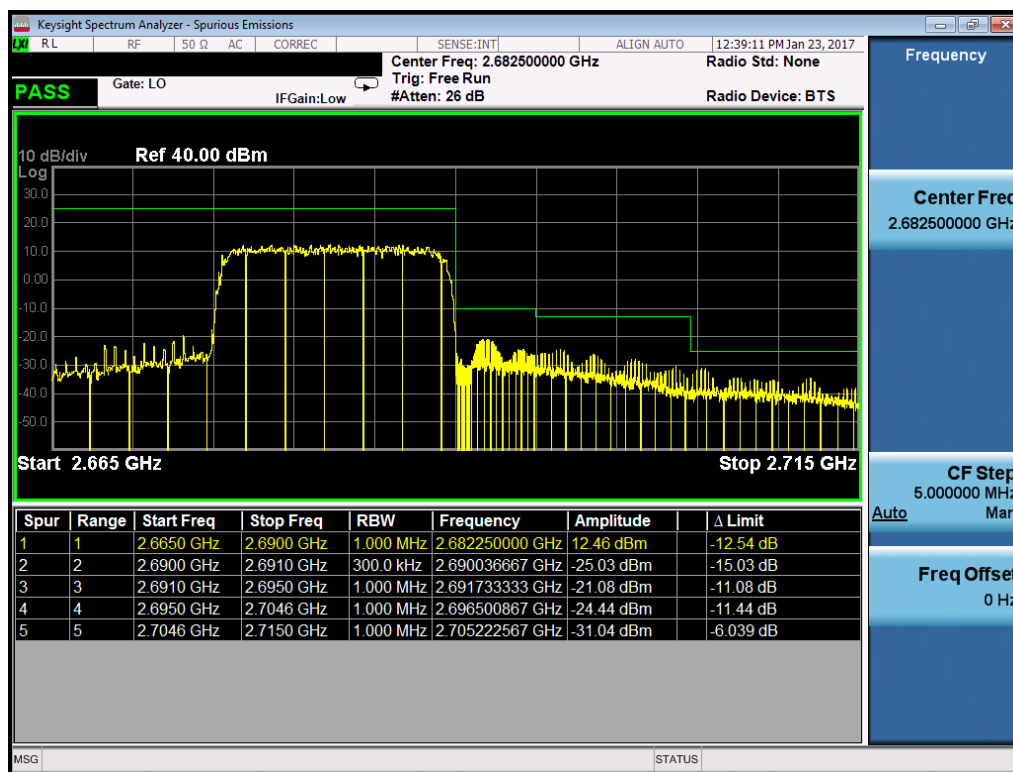


Plot 7-213. Upper ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)

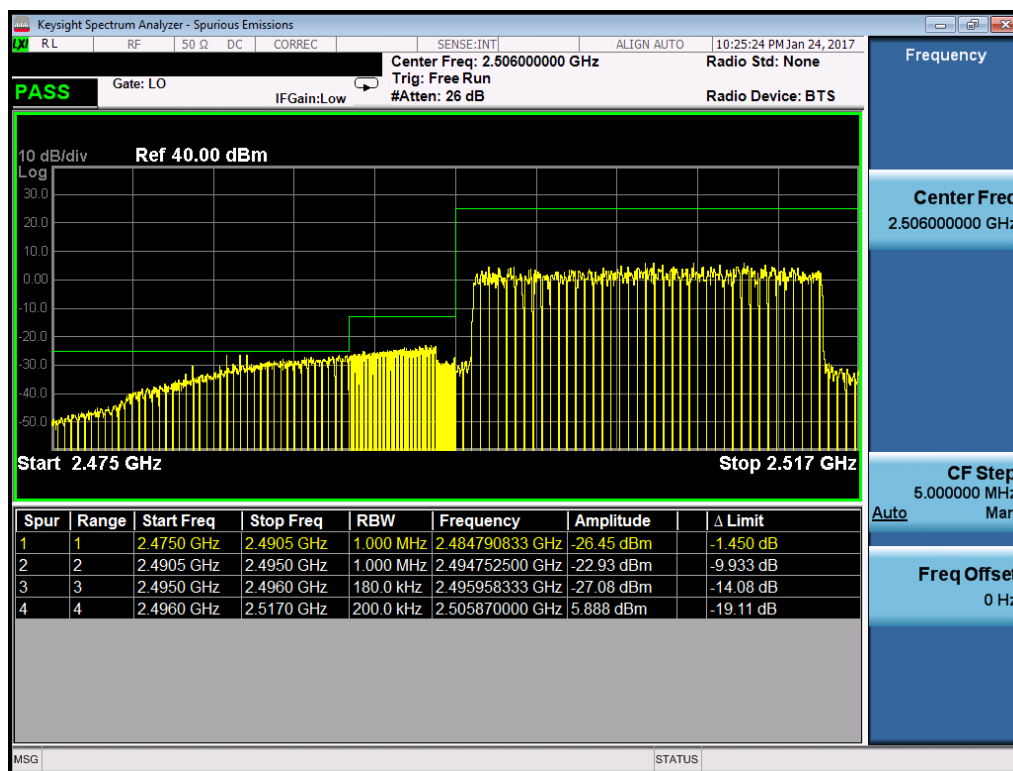


Plot 7-214. Lower ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 127 of 176	

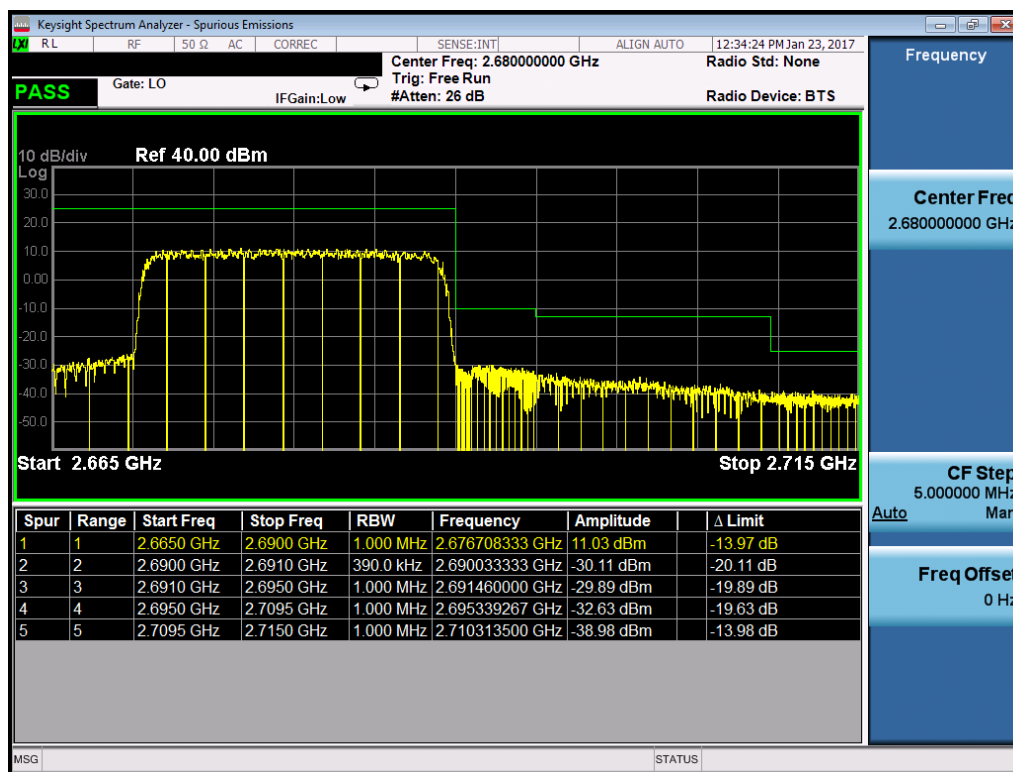


Plot 7-215. Upper ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)



Plot 7-216. Lower ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 128 of 176



Plot 7-217. Upper ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset			Page 129 of 176

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V 6.2

01/09/2016

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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.

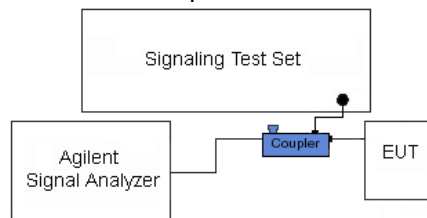
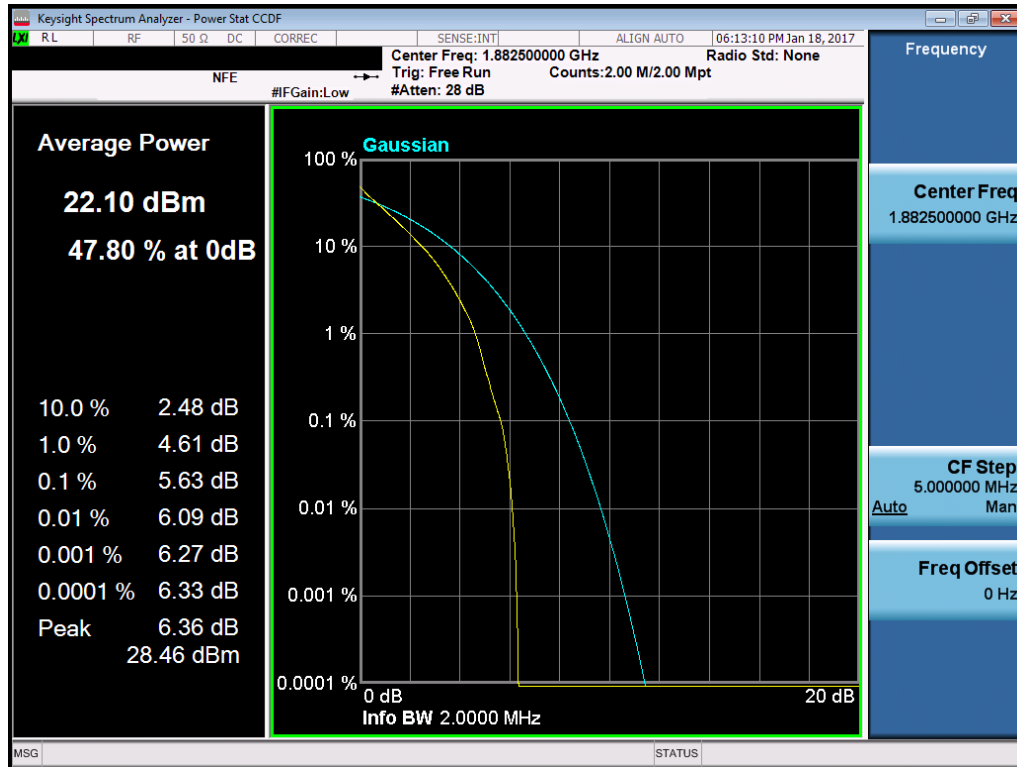


Figure 7-4. Test Instrument & Measurement Setup

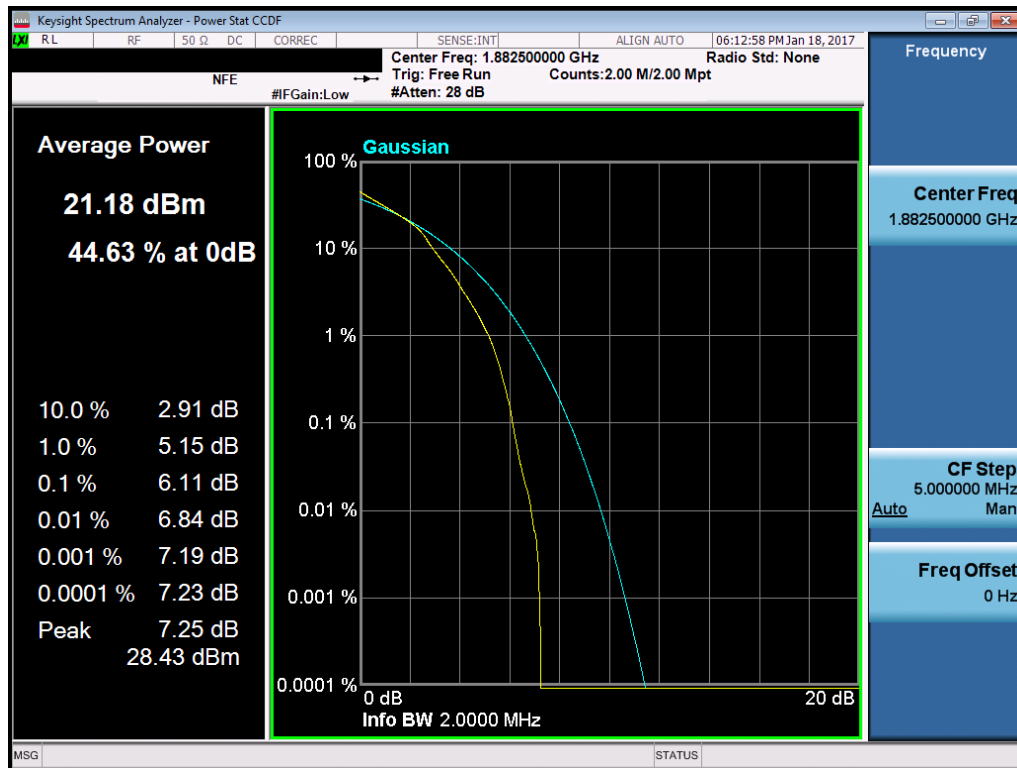
Test Notes

None.

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 130 of 176	

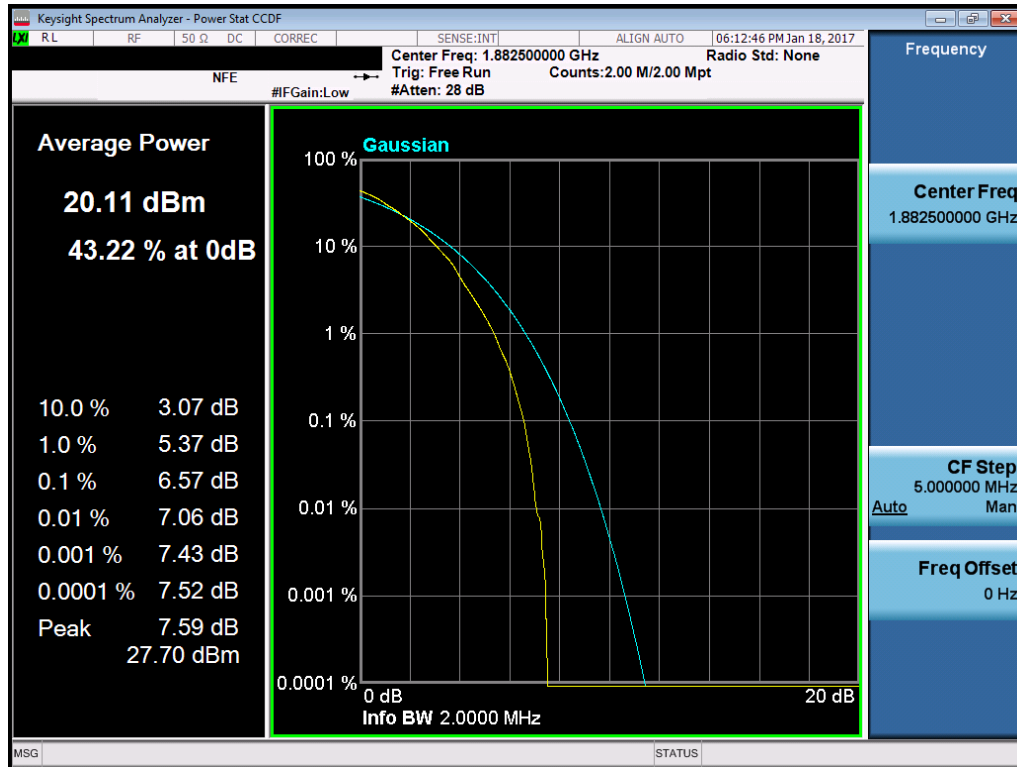


Plot 7-218. PAR Plot (Band 2/25 – 1.4MHz QPSK – RB Size 6)

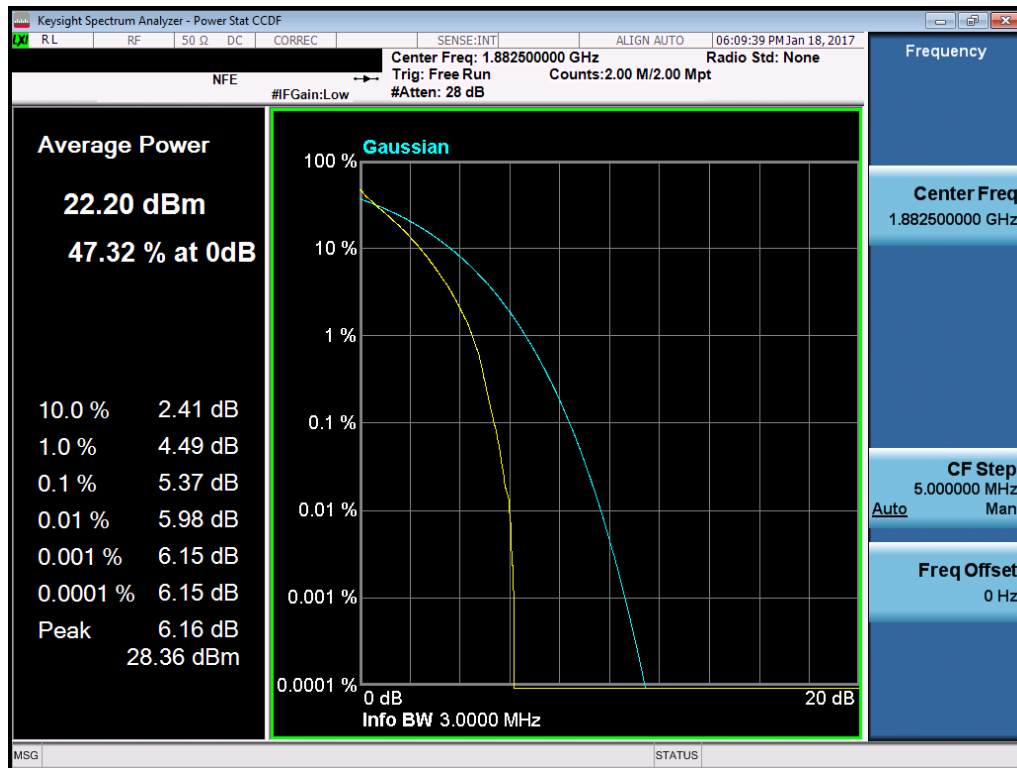


Plot 7-219. PAR Plot (Band 2/25 – 1.4MHz 16-QAM – RB Size 6)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 131 of 176

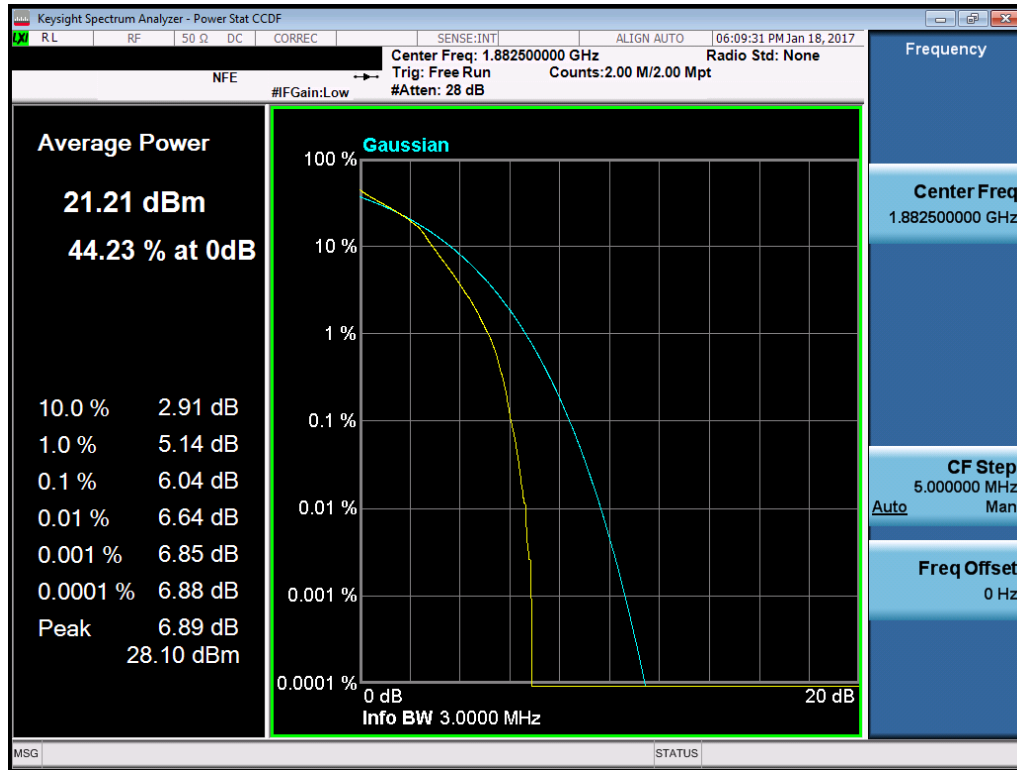


Plot 7-220. PAR Plot (Band 2/25 - 1.4MHz 64-QAM - RB Size 6)

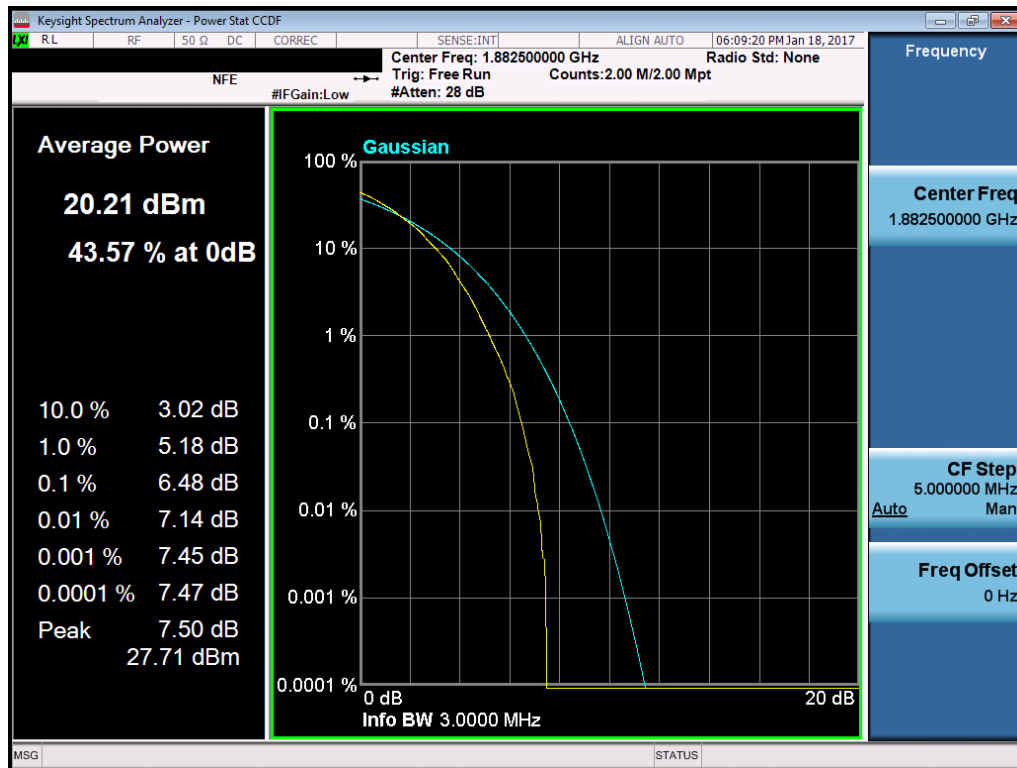


Plot 7-221. PAR Plot (Band 2/25 - 3.0MHz QPSK - RB Size 15)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 132 of 176

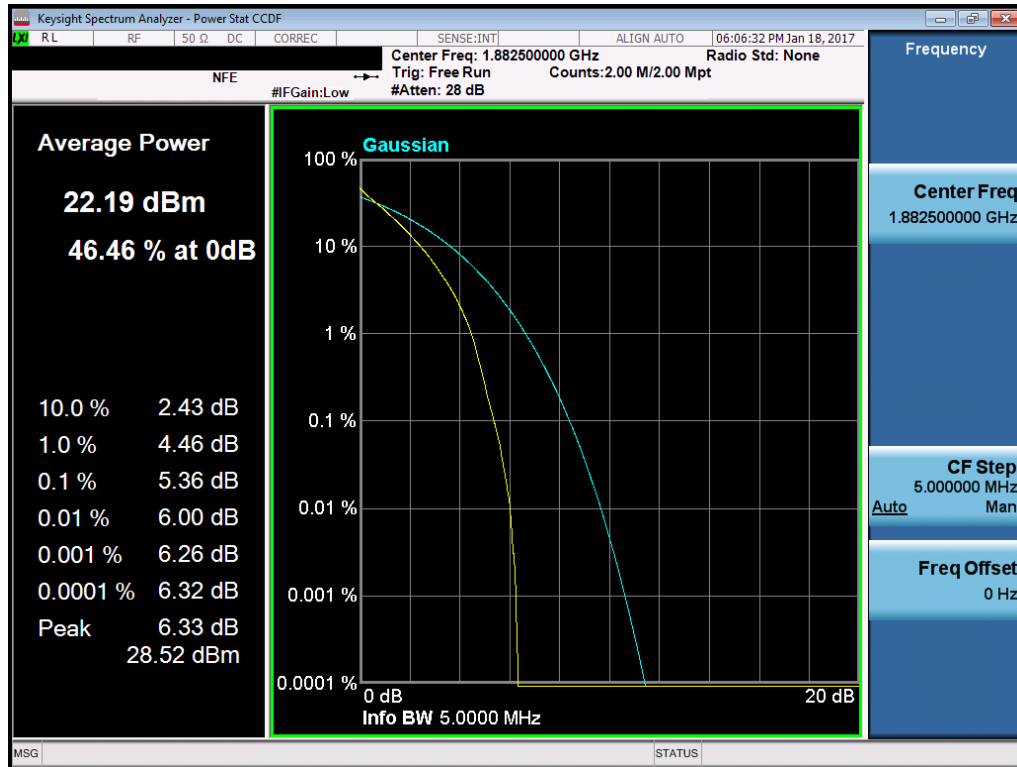


Plot 7-222. PAR Plot (Band 2/25 – 3.0MHz 16-QAM – RB Size 15)

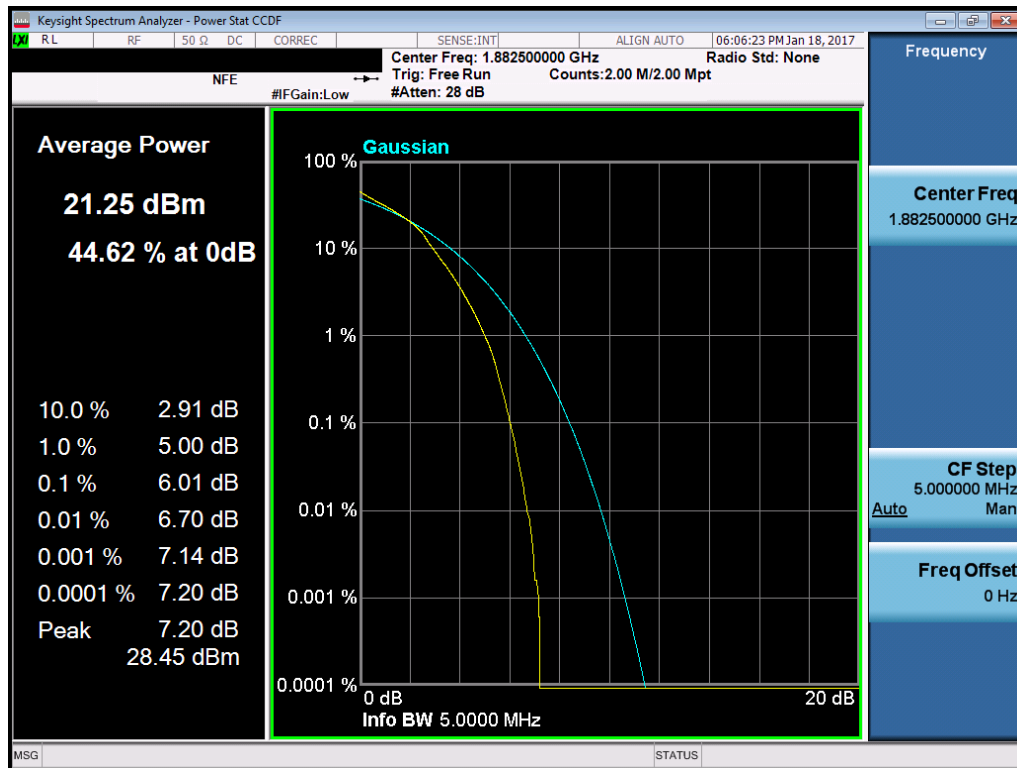


Plot 7-223. PAR Plot (Band 2/25 – 3.0MHz 64-QAM – RB Size 15)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-12/17/17	EUT Type: Portable Handset		Page 133 of 176

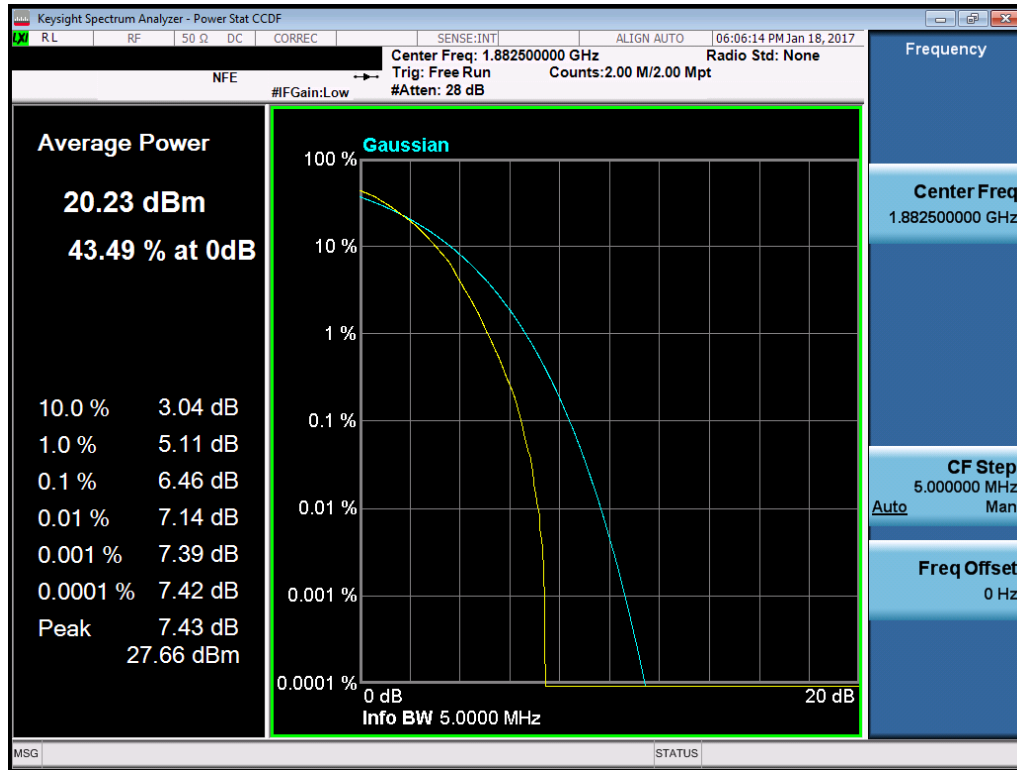


Plot 7-224. PAR Plot (Band 2/25 – 5.0MHz QPSK – RB Size 25)

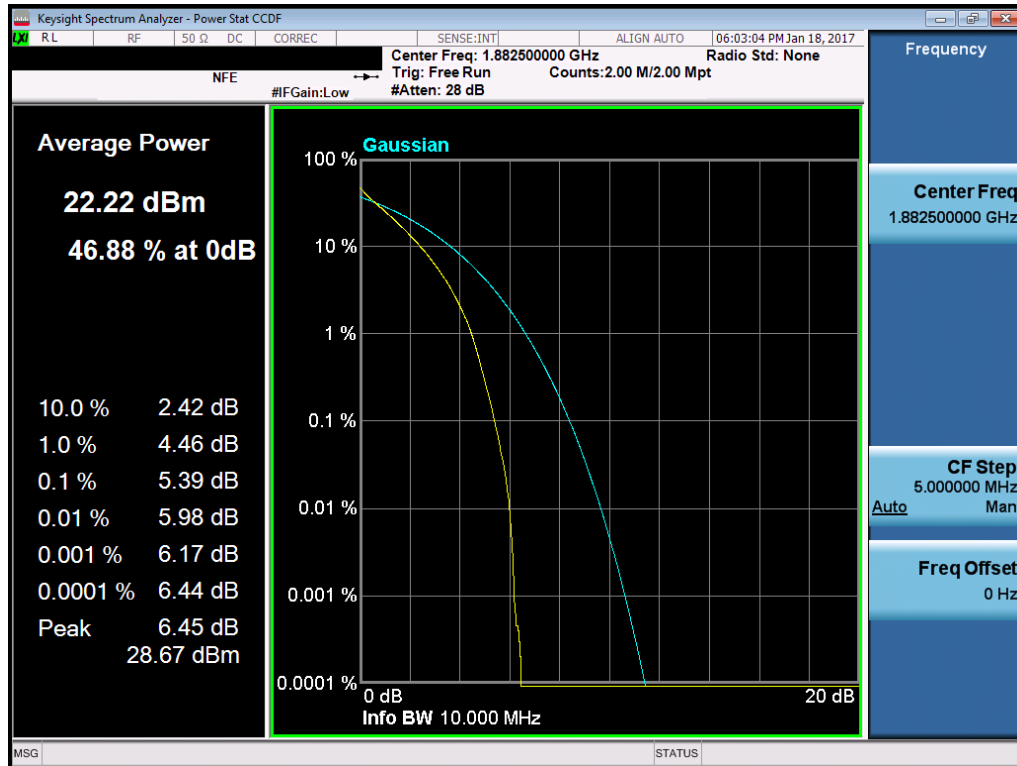


Plot 7-225. PAR Plot (Band 2/25 – 5.0MHz 16-QAM – RB Size 25)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-12/17/17	EUT Type: Portable Handset		Page 134 of 176

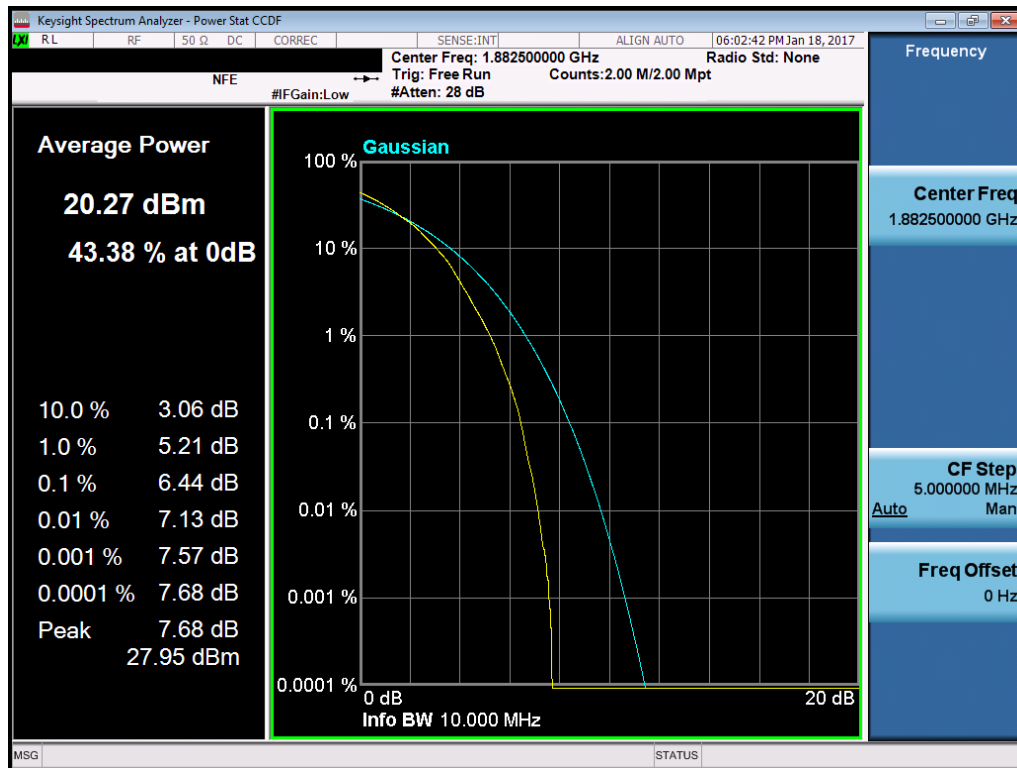
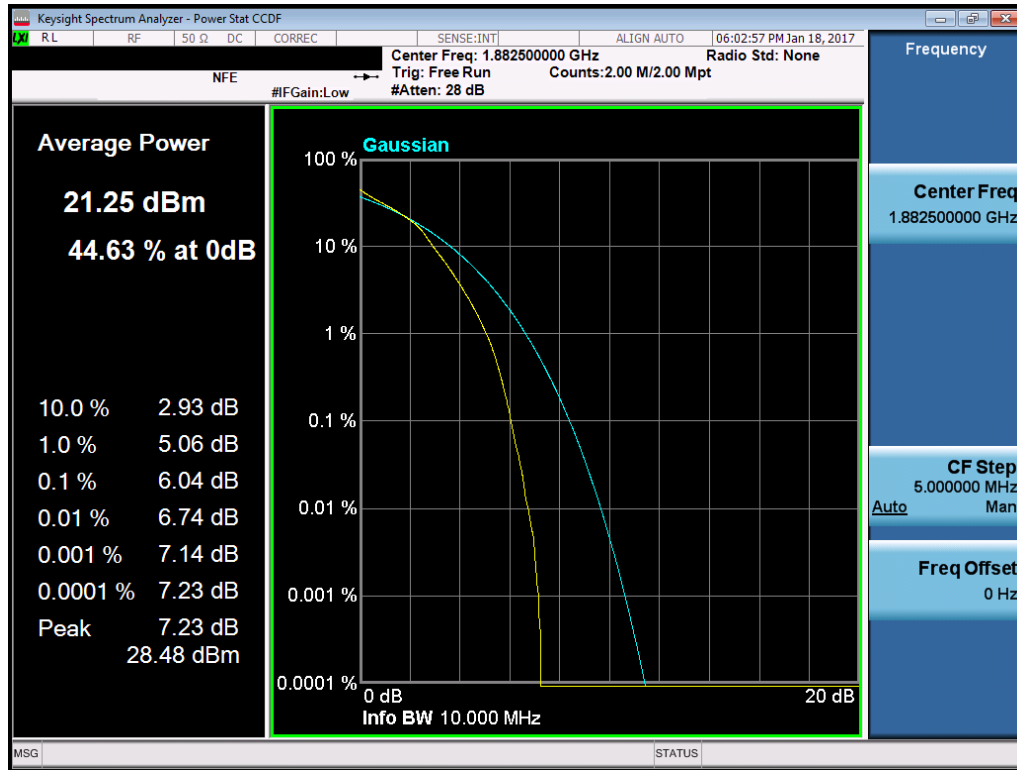


Plot 7-226. PAR Plot (Band 2/25 – 5.0MHz 64-QAM – RB Size 25)

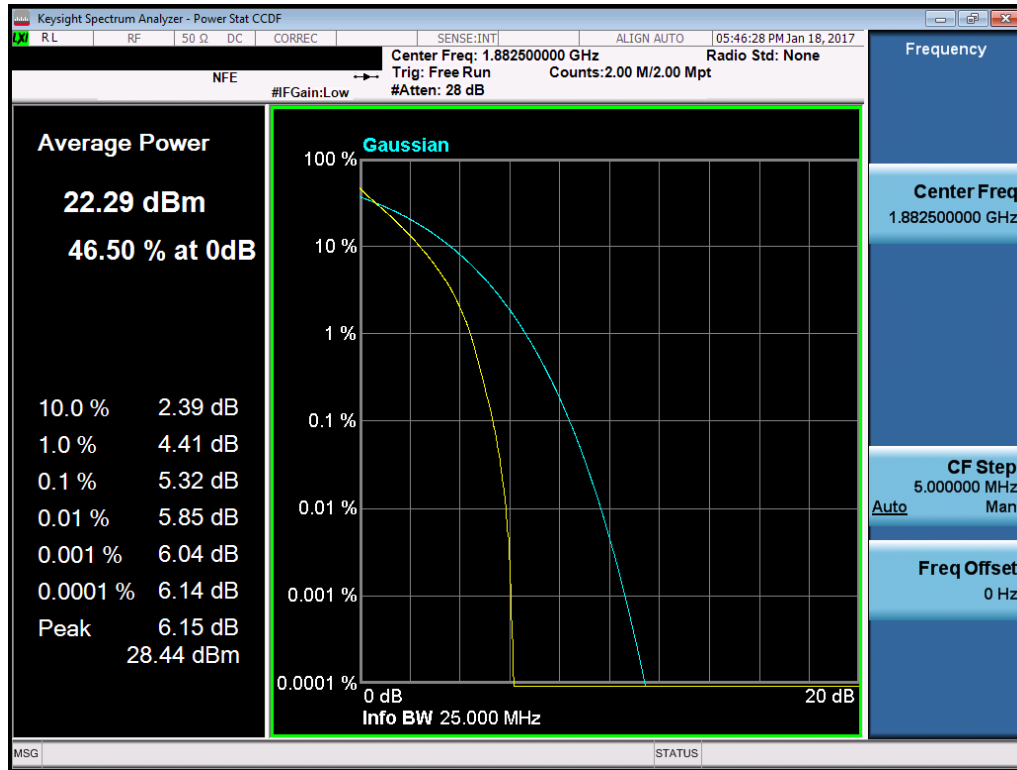


Plot 7-227. PAR Plot (Band 2/25 – 10.0MHz QPSK – RB Size 50)

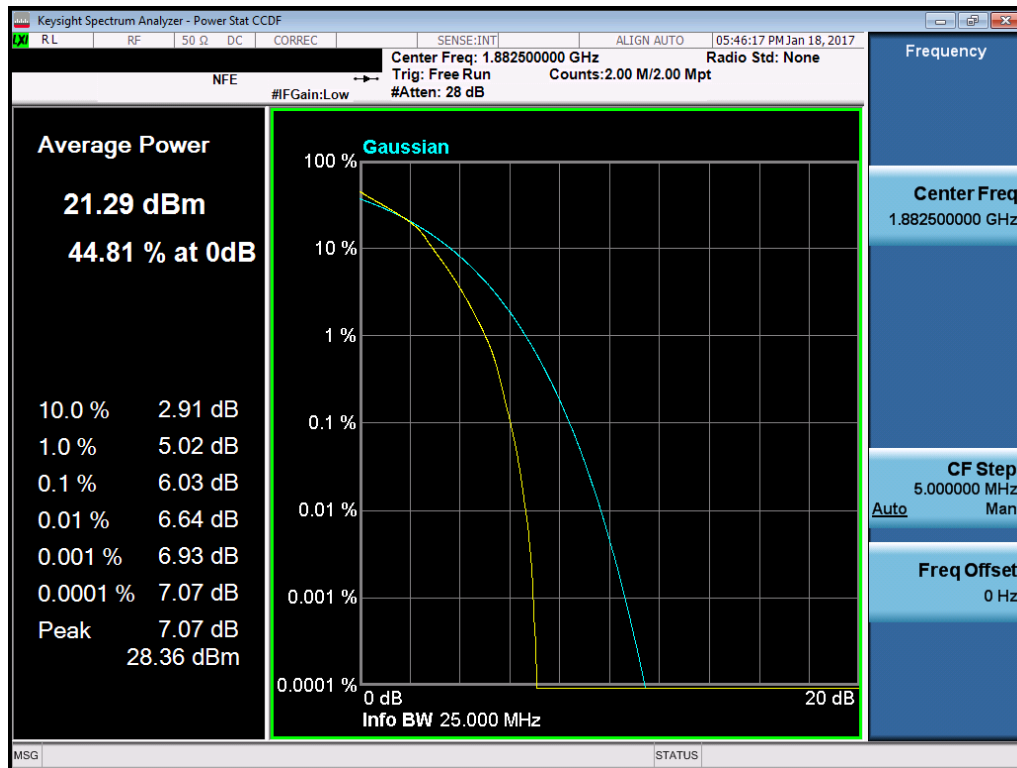
FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 135 of 176



FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-12/17/17	EUT Type: Portable Handset		Page 136 of 176

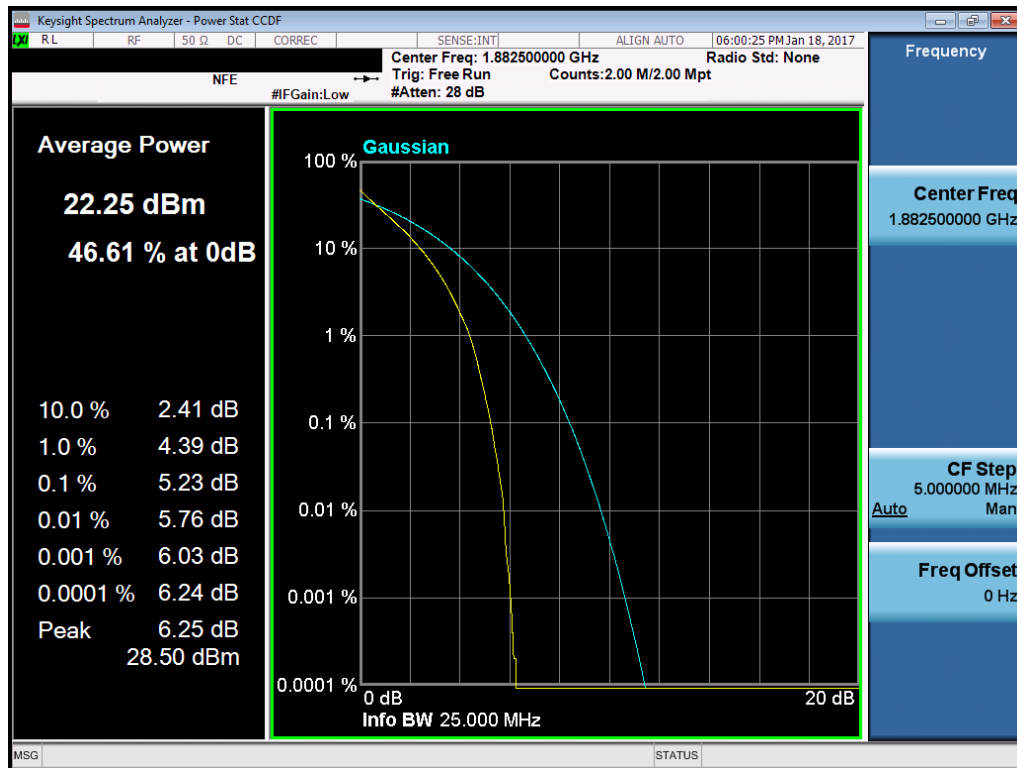
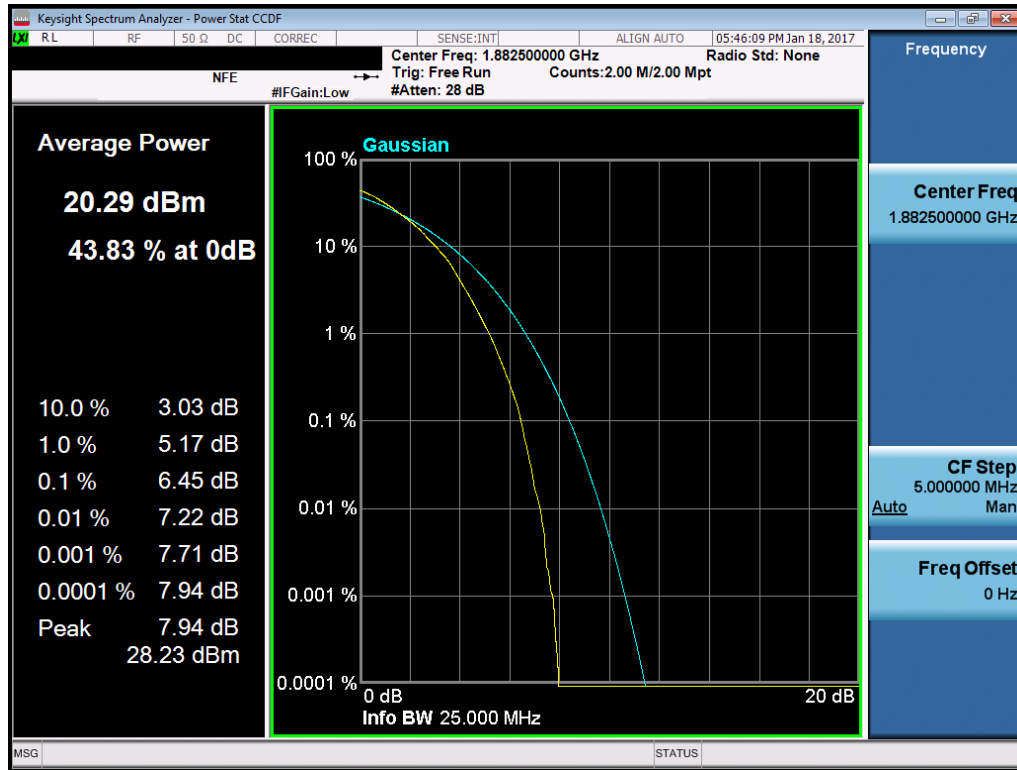


Plot 7-230. PAR Plot (Band 2/25 – 15.0MHz QPSK – RB Size 75)

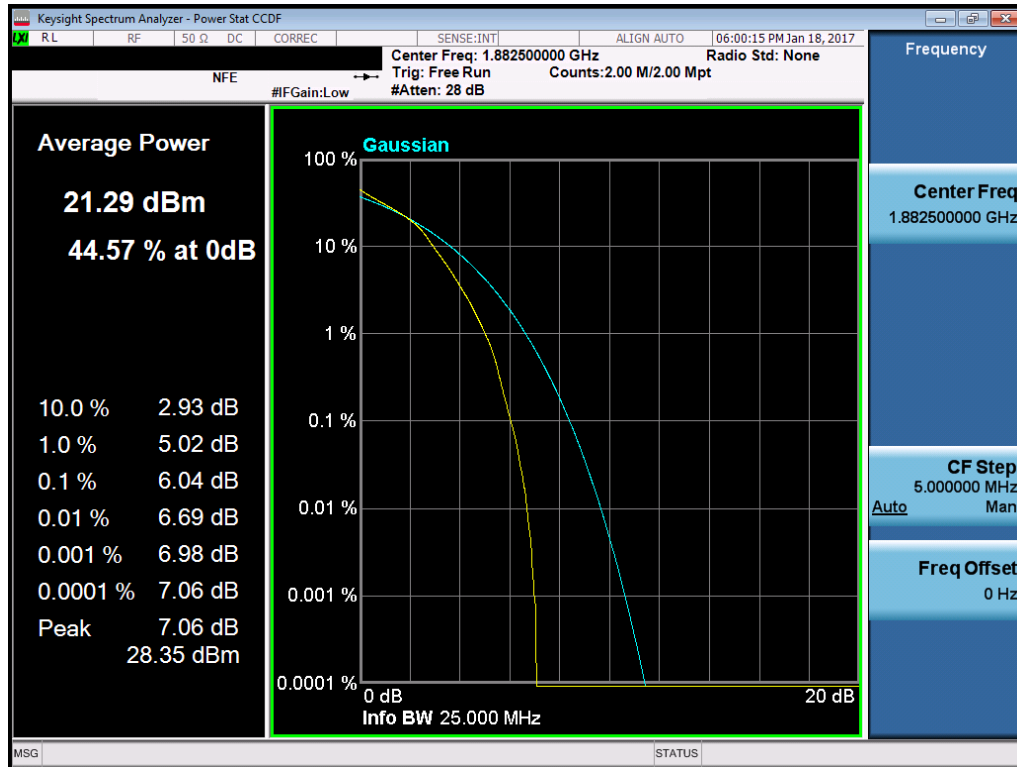


Plot 7-231. PAR Plot (Band 2/25 – 15.0MHz 16-QAM – RB Size 75)

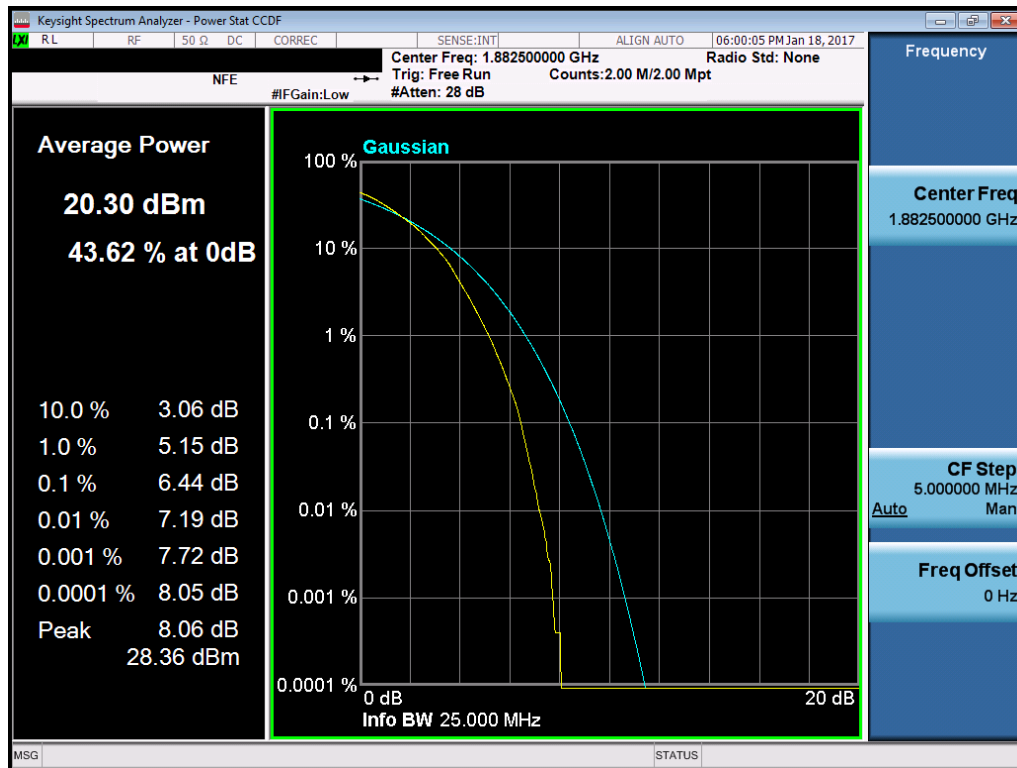
FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-12/17/17	EUT Type: Portable Handset		Page 137 of 176



FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 138 of 176



Plot 7-234. PAR Plot (Band 2/25 – 20.0MHz 16-QAM – RB Size 100)



Plot 7-235. PAR Plot (Band 2/25 – 20.0MHz 64-QAM – RB Size 100)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-12/17/17	EUT Type: Portable Handset		Page 139 of 176

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 $\geq 3 \times$ RBW
4. Span = 1.5 times the OBW
5. No. of sweep points $\geq 2 \times$ 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

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 140 of 176	

Test Setup

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

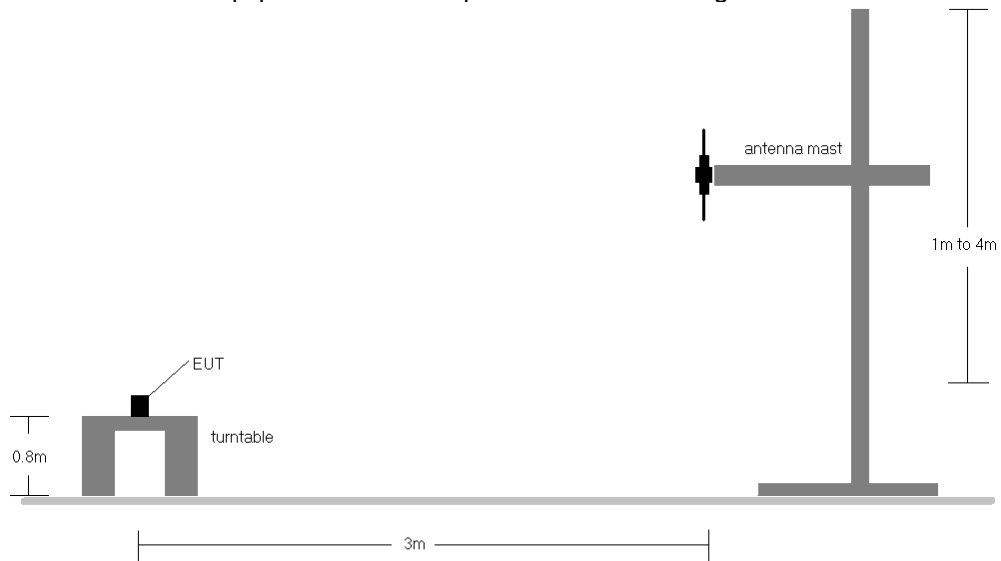


Figure 7-5. Radiated Test Setup <1GHz

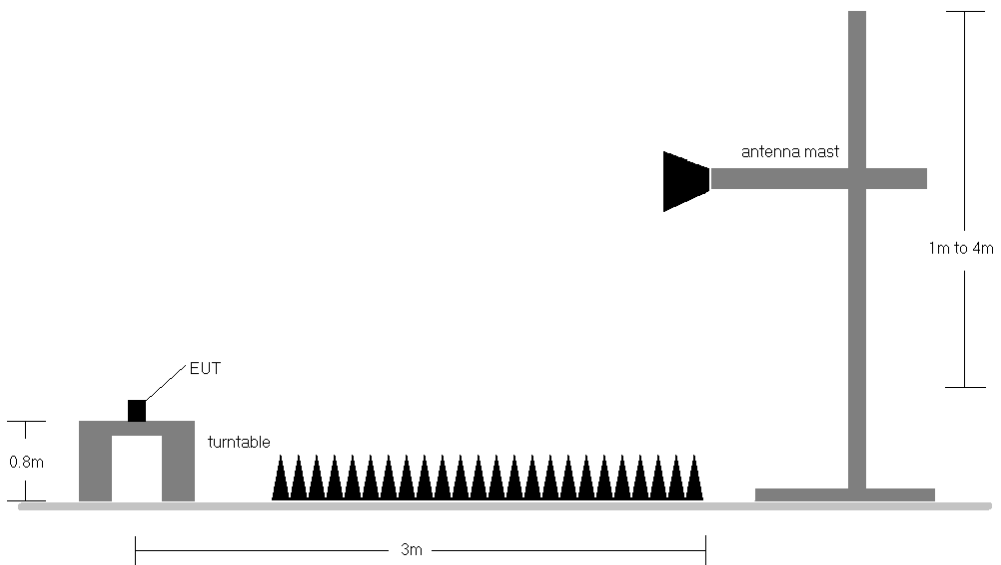


Figure 7-6. Radiated Test Setup >1GHz

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.

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 141 of 176

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	94	1 / 0	13.57	-1.05	12.52	34.77	-22.25
707.50	1.4	QPSK	V	150	77	1 / 0	14.68	-1.02	13.66	34.77	-21.11
715.30	1.4	QPSK	V	150	97	1 / 0	14.08	-0.99	13.09	34.77	-21.68
707.50	1.4	16-QAM	V	150	77	1 / 0	13.96	-1.02	12.94	34.77	-21.83
707.50	1.4	64-QAM	V	150	77	1 / 0	12.88	-1.02	11.86	34.77	-22.91
700.50	3	QPSK	V	150	101	1 / 0	13.70	-1.05	12.65	34.77	-22.12
707.50	3	QPSK	V	150	94	1 / 0	14.97	-1.02	13.95	34.77	-20.82
714.50	3	QPSK	V	150	88	1 / 14	14.44	-0.99	13.45	34.77	-21.32
707.50	3	16-QAM	V	150	94	1 / 0	14.25	-1.02	13.23	34.77	-21.54
707.50	3	64-QAM	V	150	94	1 / 0	13.14	-1.02	12.12	34.77	-22.65

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	91	1 / 24	14.93	-1.04	13.89	34.77	-20.88
707.50	5	QPSK	V	150	83	1 / 0	15.07	-1.02	14.05	34.77	-20.72
713.50	5	QPSK	V	150	89	1 / 24	14.67	-1.00	13.67	34.77	-21.10
707.50	5	16-QAM	V	150	83	1 / 0	14.35	-1.02	13.33	34.77	-21.44
707.50	5	64-QAM	V	150	83	1 / 0	13.24	-1.02	12.22	34.77	-22.55
704.00	10	QPSK	V	150	263	1 / 0	13.62	-1.03	12.59	34.77	-22.18
707.50	10	QPSK	V	150	278	1 / 0	14.73	-1.02	13.71	34.77	-21.06
711.00	10	QPSK	V	150	285	1 / 0	13.99	-1.01	12.98	34.77	-21.79
707.50	10	16-QAM	V	150	278	1 / 0	13.83	-1.02	12.81	34.77	-21.96
707.50	10	64-QAM	V	150	278	1 / 0	12.64	-1.02	11.62	34.77	-23.15
707.50	5	QPSK	H	150	260	1 / 0	14.18	-1.02	13.16	34.77	-21.61
707.50	5 (WCP)	QPSK	H	150	62	1 / 0	13.91	-1.02	12.89	34.77	-21.88

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

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)					Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset				Page 142 of 176	

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	263	5	1 / 0	15.02	2.47	17.49	34.77	-17.28
782.00	5	QPSK	H	243	6	1 / 0	14.51	2.54	17.05	34.77	-17.72
784.50	5	QPSK	H	238	11	1 / 0	14.77	2.63	17.40	34.77	-17.37
779.50	5	16-QAM	H	263	5	1 / 0	14.21	2.47	16.68	34.77	-18.09
779.50	5	64-QAM	H	263	5	1 / 0	13.18	2.47	15.65	34.77	-19.12
782.00	10	QPSK	H	236	15	1 / 49	14.21	2.54	16.75	34.77	-18.02
782.00	10	16-QAM	H	236	15	1 / 49	13.53	2.54	16.07	34.77	-18.70
782.00	10	64-QAM	H	236	15	1 / 49	12.42	2.54	14.96	34.77	-19.81
779.50	5	QPSK	V	141	217	1 / 74	12.30	3.92	16.22	34.77	-18.55
779.50	5 (WCP)	QPSK	H	220	0	1 / 0	13.79	2.47	16.26	34.77	-18.51

Table 7-4. ERP Data (Band 13)

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 143 of 176

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	V	143	118	3 / 2	15.15	5.36	20.51	38.45	-17.94
836.50	1.4	QPSK	V	152	109	1 / 0	14.71	5.15	19.86	38.45	-18.59
848.30	1.4	QPSK	V	143	57	1 / 0	13.91	5.16	19.07	38.45	-19.38
824.70	1.4	16-QAM	V	143	118	3 / 2	14.18	5.36	19.54	38.45	-18.91
824.70	1.4	64-QAM	V	143	118	3 / 2	13.30	5.36	18.66	38.45	-19.79
825.50	3	QPSK	V	130	280	1 / 0	15.11	5.35	20.46	38.45	-17.99
836.50	3	QPSK	V	152	260	1 / 0	15.06	5.15	20.21	38.45	-18.24
847.50	3	QPSK	V	137	295	1 / 0	15.08	5.14	20.22	38.45	-18.23
825.50	3	16-QAM	V	130	280	1 / 0	14.37	5.35	19.72	38.45	-18.73
825.50	3	64-QAM	V	130	280	1 / 0	13.30	5.35	18.65	38.45	-19.80
826.50	5	QPSK	V	143	64	1 / 24	15.75	5.34	21.09	38.45	-17.36
836.50	5	QPSK	V	151	65	1 / 0	16.15	5.15	21.30	38.45	-17.15
846.50	5	QPSK	V	140	60	1 / 0	15.09	5.13	20.22	38.45	-18.23
836.50	5	16-QAM	V	151	65	1 / 0	15.26	5.15	20.41	38.45	-18.04
836.50	5	64-QAM	V	151	65	1 / 0	14.20	5.15	19.35	38.45	-19.10
829.00	10	QPSK	V	135	73	1 / 0	15.39	5.15	20.54	38.45	-17.91
836.50	10	QPSK	V	145	69	1 / 0	15.89	5.11	21.00	38.45	-17.45
844.00	10	QPSK	V	154	69	1 / 0	15.11	5.30	20.41	38.45	-18.04
836.50	10	16-QAM	V	145	69	1 / 0	15.16	5.11	20.27	38.45	-18.18
836.50	10	64-QAM	V	145	69	1 / 0	14.05	5.11	19.16	38.45	-19.29
836.50	5	QPSK	H	204	195	1 / 0	14.75	5.14	19.89	38.45	-18.56
836.50	5 (WCP)	QPSK	H	201	16	1 / 0	14.69	5.14	19.83	38.45	-18.62

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	135	73	1 / 0	15.34	5.25	20.59	38.45	-17.87
836.50	15	QPSK	V	145	69	1 / 0	15.84	5.15	20.99	38.45	-17.46
841.50	15	QPSK	V	154	69	1 / 0	15.06	5.11	20.17	38.45	-18.28
836.50	15	16-QAM	V	145	69	1 / 0	15.11	5.15	20.26	38.45	-18.19
836.50	15	64-QAM	V	145	69	1 / 0	14.00	5.15	19.15	38.45	-19.30

Table 7-6. ERP Data (Band 26)

FCC ID: A3LSMG9550	 PCTEST ENGINEERING LABORATORY, INC.		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 144 of 176		

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	V	133	342	3 / 2	8.26	9.44	17.70	30.00	-12.30
1732.50	1.4	QPSK	V	126	344	3 / 2	9.71	9.32	19.03	30.00	-10.97
1754.30	1.4	QPSK	V	123	337	3 / 2	10.15	9.19	19.34	30.00	-10.66
1754.30	1.4	16-QAM	V	123	337	3 / 2	9.18	9.19	18.37	30.00	-11.63
1754.30	1.4	64-QAM	V	123	337	3 / 2	8.30	9.19	17.49	30.00	-12.51
1711.50	3	QPSK	V	129	342	1 / 14	8.75	9.44	18.19	30.00	-11.81
1732.50	3	QPSK	V	130	342	1 / 0	10.67	9.32	19.99	30.00	-10.01
1753.50	3	QPSK	V	122	342	1 / 14	10.49	9.20	19.69	30.00	-10.31
1732.50	3	16-QAM	V	130	342	1 / 0	9.88	9.32	19.20	30.00	-10.80
1732.50	3	64-QAM	V	130	342	1 / 0	8.90	9.32	18.22	30.00	-11.78
1712.50	5	QPSK	V	131	342	1 / 24	8.83	9.43	18.26	30.00	-11.74
1732.50	5	QPSK	V	129	344	1 / 0	10.15	9.32	19.47	30.00	-10.53
1752.50	5	QPSK	V	122	343	1 / 24	10.33	9.20	19.53	30.00	-10.47
1752.50	5	16-QAM	V	122	343	1 / 24	9.54	9.20	18.74	30.00	-11.26
1752.50	5	64-QAM	V	122	343	1 / 24	8.59	9.20	17.79	30.00	-12.21
1715.00	10	QPSK	V	127	345	1 / 49	8.35	9.42	17.77	30.00	-12.23
1732.50	10	QPSK	V	128	341	1 / 0	9.18	9.32	18.50	30.00	-11.50
1750.00	10	QPSK	V	121	344	1 / 0	10.11	9.22	19.33	30.00	-10.67
1750.00	10	16-QAM	V	121	344	1 / 0	9.39	9.22	18.61	30.00	-11.39
1750.00	10	64-QAM	V	121	344	1 / 0	8.31	9.22	17.53	30.00	-12.47
1717.50	15	QPSK	V	132	345	1 / 0	7.73	9.40	17.13	30.00	-12.87
1732.50	15	QPSK	V	131	343	1 / 74	8.71	9.32	18.03	30.00	-11.97
1747.50	15	QPSK	V	123	340	1 / 74	9.23	9.23	18.46	30.00	-11.54
1747.50	15	16-QAM	V	123	340	1 / 74	8.49	9.23	17.72	30.00	-12.28
1747.50	15	64-QAM	V	123	340	1 / 74	7.43	9.23	16.66	30.00	-13.34
1720.00	20	QPSK	V	125	343	1 / 99	9.02	9.39	18.41	30.00	-11.59
1732.50	20	QPSK	V	127	339	1 / 99	8.71	9.32	18.03	30.00	-11.97
1745.00	20	QPSK	V	126	342	1 / 99	9.31	9.25	18.56	30.00	-11.44
1745.00	20	16-QAM	V	126	342	1 / 99	8.63	9.25	17.88	30.00	-12.12
1745.00	20	64-QAM	V	126	342	1 / 99	7.54	9.25	16.79	30.00	-13.21
1732.50	3	QPSK	H	110	286	1 / 0	9.26	9.50	18.76	30.00	-11.24
1732.50	3 (WCP)	QPSK	H	110	286	1 / 0	8.96	9.50	18.46	30.00	-11.54

Table 7-7. EIRP Data (Band 4)

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 145 of 176	

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	V	110	358	1 / 0	13.70	8.97	22.67	33.01	-10.34
1882.50	1.4	QPSK	V	110	336	1 / 0	12.94	8.99	21.93	33.01	-11.08
1914.30	1.4	QPSK	V	110	354	1 / 0	12.49	8.97	21.46	33.01	-11.55
1850.70	1.4	16-QAM	V	110	358	1 / 0	12.94	8.97	21.91	33.01	-11.10
1850.70	1.4	64-QAM	V	110	358	1 / 0	11.88	8.97	20.85	33.01	-12.16
1851.50	3	QPSK	V	110	354	1 / 0	13.72	8.97	22.69	33.01	-10.32
1882.50	3	QPSK	V	113	336	1 / 0	13.18	8.99	22.17	33.01	-10.84
1913.50	3	QPSK	V	110	353	1 / 0	12.65	8.97	21.62	33.01	-11.39
1851.50	3	16-QAM	V	110	354	1 / 0	12.95	8.97	21.92	33.01	-11.09
1851.50	3	64-QAM	V	110	354	1 / 0	11.91	8.97	20.88	33.01	-12.13
1852.50	5	QPSK	V	113	356	1 / 0	13.84	8.97	22.81	33.01	-10.20
1882.50	5	QPSK	V	112	308	1 / 0	13.26	8.99	22.25	33.01	-10.76
1912.50	5	QPSK	V	110	352	1 / 24	12.51	8.98	21.49	33.01	-11.52
1852.50	5	16-QAM	V	113	356	1 / 0	13.07	8.97	22.04	33.01	-10.97
1852.50	5	64-QAM	V	113	356	1 / 0	11.99	8.97	20.96	33.01	-12.05
1855.00	10	QPSK	V	110	356	1 / 0	13.84	8.97	22.81	33.01	-10.20
1882.50	10	QPSK	V	110	350	1 / 0	13.48	8.99	22.47	33.01	-10.54
1910.00	10	QPSK	V	110	349	1 / 0	12.12	8.98	21.10	33.01	-11.91
1855.00	10	16-QAM	V	110	356	1 / 0	13.10	8.97	22.07	33.01	-10.94
1855.00	10	64-QAM	V	110	356	1 / 0	12.00	8.97	20.97	33.01	-12.04
1857.50	15	QPSK	V	110	337	1 / 74	13.48	8.97	22.45	33.01	-10.56
1882.50	15	QPSK	V	110	334	1 / 0	13.23	8.99	22.22	33.01	-10.79
1907.50	15	QPSK	V	110	353	1 / 0	12.38	8.99	21.37	33.01	-11.64
1857.50	15	16-QAM	V	110	337	1 / 74	12.69	8.97	21.66	33.01	-11.35
1857.50	15	64-QAM	V	110	337	1 / 74	11.62	8.97	20.59	33.01	-12.42
1860.00	20	QPSK	V	110	338	1 / 0	13.55	8.98	22.53	33.01	-10.48
1882.50	20	QPSK	V	110	335	1 / 0	13.25	8.99	22.24	33.01	-10.77
1905.00	20	QPSK	V	110	352	1 / 0	13.44	8.99	22.43	33.01	-10.58
1860.00	20	16-QAM	V	110	338	1 / 0	12.74	8.98	21.72	33.01	-11.29
1860.00	20	64-QAM	V	110	338	1 / 0	11.71	8.98	20.69	33.01	-12.32
1855.00	10	QPSK	H	109	279	1 / 0	10.73	9.12	19.85	33.01	-13.16
1855.00	10 (WCP)	QPSK	H	109	279	1 / 0	10.42	9.12	19.54	33.01	-13.47

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

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 146 of 176	

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	V	103	111	1 / 0	13.96	8.39	22.35	33.01	-10.66
2593.00	5	QPSK	V	100	86	1 / 0	14.31	8.74	23.05	33.01	-9.96
2687.50	5	QPSK	V	104	153	1 / 0	12.84	8.73	21.57	33.01	-11.44
2593.00	5	16-QAM	V	100	86	1 / 0	12.70	8.74	21.44	33.01	-11.57
2593.00	5	64-QAM	V	100	86	1 / 0	12.27	8.74	21.01	33.01	-12.00
2501.00	10	QPSK	V	105	108	1 / 0	13.90	8.38	22.28	33.01	-10.73
2593.00	10	QPSK	V	104	106	1 / 0	13.81	8.74	22.55	33.01	-10.46
2685.00	10	QPSK	V	100	153	1 / 0	12.42	8.73	21.15	33.01	-11.86
2593.00	10	16-QAM	V	104	106	1 / 0	12.42	8.74	21.16	33.01	-11.85
2593.00	10	64-QAM	V	104	106	1 / 0	11.93	8.74	20.67	33.01	-12.34
2503.50	15	QPSK	V	103	138	1 / 0	13.05	8.39	21.44	33.01	-11.57
2593.00	15	QPSK	V	100	82	1 / 0	13.83	8.74	22.57	33.01	-10.44
2682.50	15	QPSK	V	100	151	1 / 0	12.04	8.73	20.77	33.01	-12.24
2593.00	15	16-QAM	V	100	82	1 / 0	12.52	8.74	21.26	33.01	-11.75
2593.00	15	64-QAM	V	100	82	1 / 0	11.98	8.74	20.72	33.01	-12.29
2506.00	20	QPSK	V	103	109	1 / 0	13.97	8.40	22.37	33.01	-10.64
2593.00	20	QPSK	V	103	81	1 / 0	13.26	8.74	22.00	33.01	-11.01
2680.00	20	QPSK	V	100	31	1 / 0	13.29	8.73	22.02	33.01	-10.99
2506.00	20	16-QAM	V	103	109	1 / 0	12.42	8.40	20.82	33.01	-12.19
2506.00	20	64-QAM	V	103	109	1 / 0	12.00	8.40	20.40	33.01	-12.61
2593.00	5	QPSK	H	100	167	1 / 0	14.35	8.65	23.00	33.01	-10.01
2593.00	5 (WCP)	QPSK	H	110	103	1 / 0	8.56	8.65	17.21	33.01	-15.80

Table 7-9. EIRP Data (Band 41)

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 147 of 176	

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 $\geq 3 \times$ RBW
3. Span = 1.5 times the OBW
4. No. of sweep points $\geq 2 \times$ span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 148 of 176	

Test Setup

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

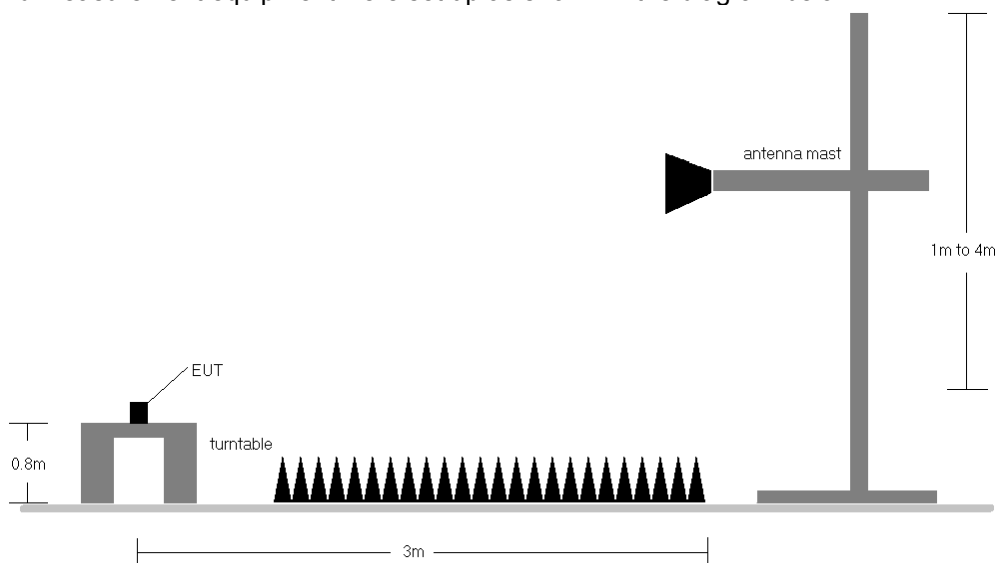


Figure 7-7. Test Instrument & Measurement Setup

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.

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 149 of 176

OPERATING FREQUENCY: 701.50 MHz
 CHANNEL: 23035
 MEASURED OUTPUT POWER: 13.89 dBm = 0.024 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 26.89 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]
1403.00	H	146	349	-74.44	5.60	-68.84	82.7
2104.50	H	123	337	-69.73	6.67	-63.05	76.9
2806.00	H	-	-	-72.58	7.92	-64.66	78.6

Table 7-10. Radiated Spurious Data (Band 12/17 – Low Channel)

OPERATING FREQUENCY: 707.50 MHz
 CHANNEL: 23095
 MEASURED OUTPUT POWER: 14.05 dBm = 0.025 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 27.05 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	119	352	-74.01	5.69	-68.31	82.4
2122.50	H	118	337	-69.88	6.75	-63.13	77.2
2830.00	H	-	-	-72.24	7.90	-64.34	78.4

Table 7-11. Radiated Spurious Data (Band 12/17 – Mid Channel)

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 150 of 176

OPERATING FREQUENCY: 713.50 MHz
 CHANNEL: 23155
 MEASURED OUTPUT POWER: 13.67 dBm = 0.023 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 26.67 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1427.00	H	213	355	-74.43	5.79	-68.64	82.3
2140.50	H	119	61	-69.26	6.82	-62.44	76.1
2854.00	H	-	-	-72.07	7.88	-64.19	77.9

Table 7-12. Radiated Spurious Data (Band 12/17 – High Channel)

OPERATING FREQUENCY: 707.50 MHz
 CHANNEL: 23095
 MEASURED OUTPUT POWER: 12.89 dBm = 0.019 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 25.89 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]
1415.00	H	110	0	-76.98	5.60	-71.38	84.3
2122.50	H	115	305	-72.42	6.67	-65.74	78.6
2830.00	H	-	-	-74.70	7.92	-66.78	79.7

Table 7-13. Radiated Spurious Data with WCP (Band 12/17 – Mid Channel)

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 151 of 176

OPERATING FREQUENCY: 779.50 MHz
 CHANNEL: 23205
 MEASURED OUTPUT POWER: 17.49 dBm = 0.056 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 30.49 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	126	257	-75.69	6.57	-69.12	86.6
3118.00	H	-	-	-74.90	7.33	-67.58	85.1

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

OPERATING FREQUENCY: 782.00 MHz
 CHANNEL: 23230
 MEASURED OUTPUT POWER: 17.05 dBm = 0.051 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 30.05 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	126	257	-71.39	7.33	-64.07	81.1
3128.00	H	-	-	-69.56	7.20	-62.36	79.4

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

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 152 of 176

OPERATING FREQUENCY: 784.50 MHz
 CHANNEL: 23255
 MEASURED OUTPUT POWER: 17.40 dBm = 0.055 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 30.40 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	126	257	-71.09	7.33	-63.77	81.2
3138.00	H	-	-	-69.89	7.20	-62.69	80.1

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
 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]
1559.00	H	124	273	-70.68	6.69	-63.99	-24.0
1564.00	H	124	273	-74.89	6.72	-68.17	-28.2
1569.00	H	124	273	-70.56	6.75	-63.81	-23.8

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

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 153 of 176

OPERATING FREQUENCY: 779.50 MHz
 CHANNEL: 23205
 MEASURED OUTPUT POWER: 16.26 dBm = 0.042 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 29.26 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]
2338.50	H	113	252	-71.81	7.33	-64.49	80.7
3118.00	H	-	-	-69.66	7.20	-62.46	78.7

Table 7-18. Radiated Spurious Data with WCP (Band 13 – Mid 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]
1559.00	H	100	238	-75.26	6.57	-68.69	-28.7

Table 7-19. Radiated Spurious Data with WCP(Band 13 – 1559-1610MHz Band)

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 154 of 176

OPERATING FREQUENCY: 826.50 MHz
 CHANNEL: 26815
 MEASURED OUTPUT POWER: 21.09 dBm = 0.128 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 34.09 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]
1653.00	H	113	269	-75.84	6.70	-69.14	90.2
2479.50	H	-	-	-74.32	7.58	-66.75	87.8

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

OPERATING FREQUENCY: 836.50 MHz
 CHANNEL: 26915
 MEASURED OUTPUT POWER: 21.30 dBm = 0.135 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 34.30 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	110	283	-76.64	6.70	-69.95	91.3
2509.50	H	-	-	-74.43	7.63	-66.80	88.1

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

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 155 of 176

OPERATING FREQUENCY: 846.50 MHz
 CHANNEL: 27015
 MEASURED OUTPUT POWER: 20.22 dBm = 0.105 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 33.22 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	110	237	-76.26	6.70	-69.56	89.8
2539.50	H	-	-	-75.02	7.61	-67.41	87.6

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

OPERATING FREQUENCY: 836.50 MHz
 CHANNEL: 26915
 MEASURED OUTPUT POWER: 19.83 dBm = 0.096 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 32.83 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	113	283	-76.61	6.70	-69.91	89.7
2509.50	H	-	-	-75.28	7.58	-67.71	87.5

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

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 156 of 176

OPERATING FREQUENCY: 1711.50 MHz
 CHANNEL: 19965
 MEASURED OUTPUT POWER: 18.19 dBm = 0.066 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 31.19 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]
3423.00	H	120	324	-68.42	9.87	-58.55	76.7
5134.50	H	-	-	-65.40	10.76	-54.64	72.8

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

OPERATING FREQUENCY: 1732.50 MHz
 CHANNEL: 20175
 MEASURED OUTPUT POWER: 19.99 dBm = 0.100 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 32.99 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	214	315	-69.52	9.91	-59.61	79.6
5197.50	H	-	-	-66.22	10.75	-55.48	75.5

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

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 157 of 176

OPERATING FREQUENCY: 1753.50 MHz
 CHANNEL: 20385
 MEASURED OUTPUT POWER: 19.69 dBm = 0.093 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 32.69 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]
3507.00	H	-	-	-69.65	9.95	-59.70	79.4
5260.50	H	-	-	-66.57	10.71	-55.86	75.5

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

OPERATING FREQUENCY: 1732.50 MHz
 CHANNEL: 20175
 MEASURED OUTPUT POWER: 18.46 dBm = 0.070 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 31.46 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]
3465.00	H	-	-	-69.52	9.91	-59.61	78.1
5197.50	H	-	-	-66.01	10.75	-55.27	73.7

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

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 158 of 176

OPERATING FREQUENCY: 1855.00 MHz
 CHANNEL: 26090
 MEASURED OUTPUT POWER: 22.81 dBm = 0.191 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) = 35.81$ 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]
3710.00	H	248	298	-68.17	9.51	-58.67	81.5
5565.00	H	-	-	-66.54	11.06	-55.48	78.3

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

OPERATING FREQUENCY: 1882.50 MHz
 CHANNEL: 26365
 MEASURED OUTPUT POWER: 22.47 dBm = 0.177 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) = 35.47$ 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]
3765.00	H	178	264	-67.27	9.37	-57.90	80.4
5647.50	H	-	-	-66.84	11.23	-55.61	78.1

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

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 159 of 176

OPERATING FREQUENCY: 1910.00 MHz
 CHANNEL: 26640
 MEASURED OUTPUT POWER: 21.10 dBm = 0.129 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 34.10 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]
3820.00	H	176	293	-60.25	9.32	-50.92	72.0
5730.00	H	179	286	-62.84	11.37	-51.47	72.6
7640.00	H	-	-	-59.07	11.33	-47.74	68.8

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

OPERATING FREQUENCY: 1855.00 MHz
 CHANNEL: 26090
 MEASURED OUTPUT POWER: 19.54 dBm = 0.090 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 32.54 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]
3710.00	H	-	-	-67.87	9.51	-58.37	77.9
5565.00	H	-	-	-66.72	11.06	-55.66	75.2

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

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 160 of 176

OPERATING FREQUENCY: 2498.50 MHz
 CHANNEL: 39675
 MEASURED OUTPUT POWER: 22.35 dBm = 0.172 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 47.35 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]
4997.00	H	129	306	-65.51	10.93	-54.58	76.9
7495.50	H	-	-	-57.00	11.06	-45.93	68.3
9994.00	H	-	-	-54.05	12.06	-42.00	64.3

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

OPERATING FREQUENCY: 2593.00 MHz
 CHANNEL: 40620
 MEASURED OUTPUT POWER: 23.05 dBm = 0.202 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 48.05 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]
5186.00	H	113	310	-51.36	10.75	-40.61	63.7
7779.00	H	110	273	-52.86	11.40	-41.46	64.5
10372.00	H	-	-	-54.93	12.59	-42.34	65.4

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

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 161 of 176

OPERATING FREQUENCY: 2687.50 MHz
 CHANNEL: 41565
 MEASURED OUTPUT POWER: 21.57 dBm = 0.144 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 46.57 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]
5375.00	H	138	288	-62.55	10.75	-51.80	73.4
8062.50	H	-	-	-56.59	11.15	-45.44	67.0
10750.00	H	-	-	-55.04	12.80	-42.24	63.8

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

OPERATING FREQUENCY: 2593.00 MHz
 CHANNEL: 40620
 MEASURED OUTPUT POWER: 17.21 dBm = 0.053 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 42.21 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	145	264	-65.97	10.93	-55.04	72.2
7779.00	H	-	-	-57.19	11.06	-46.12	63.3

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

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 162 of 176

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 $\pm 0.00025\%$ (± 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

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 163 of 176	

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)	707,499,874	-126	-0.0000178
100 %		- 30	707,500,022	22	0.0000031
100 %		- 20	707,499,914	-86	-0.0000122
100 %		- 10	707,499,777	-223	-0.0000315
100 %		0	707,499,793	-207	-0.0000293
100 %		+ 10	707,499,977	-23	-0.0000033
100 %		+ 20	707,500,007	7	0.0000010
100 %		+ 30	707,499,851	-149	-0.0000211
100 %		+ 40	707,500,030	30	0.0000042
100 %		+ 50	707,499,775	-225	-0.0000318
BATT. ENDPOINT	3.40	+ 20	707,500,010	10	0.0000014

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

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 164 of 176	

Band 12/17 Frequency Stability Measurements

\$2.1055 \$27.54

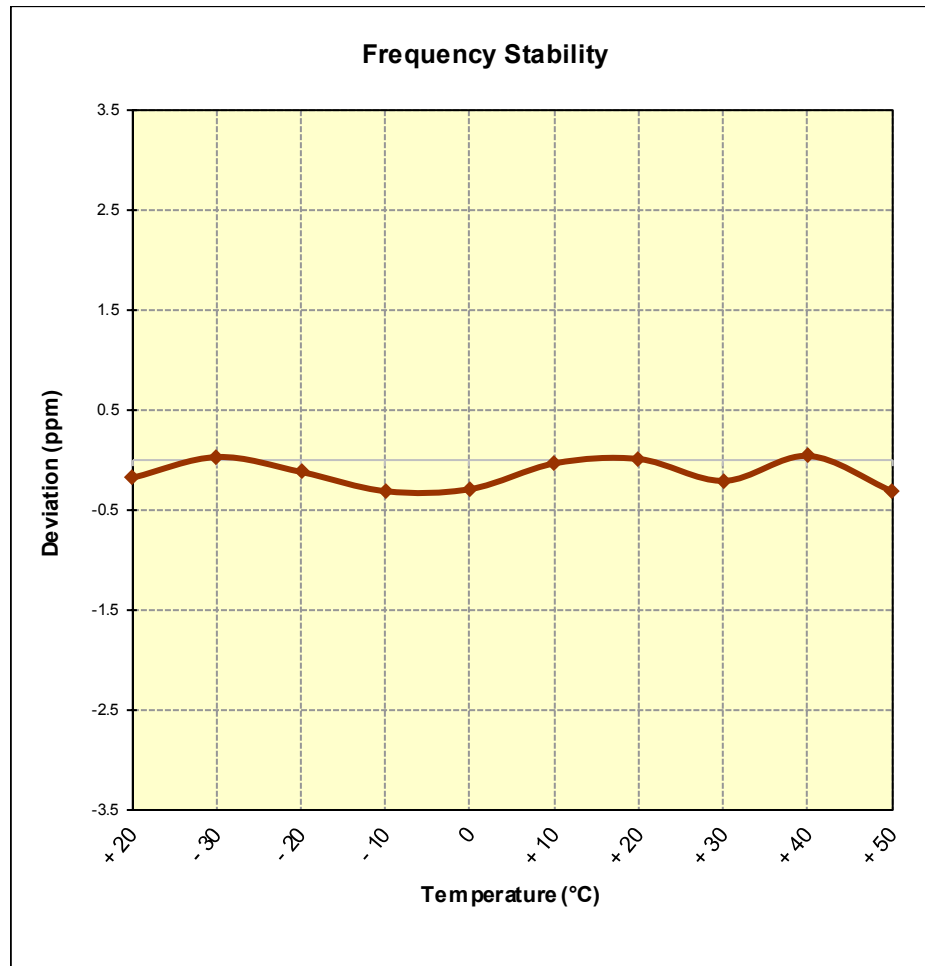


Figure 7-8. Frequency Stability Graph (Band 12/17)

FCC ID: A3LSMG9550	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 165 of 176

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)	782,000,032	32	0.0000041
100 %		- 30	781,999,921	-79	-0.0000101
100 %		- 20	782,000,023	23	0.0000029
100 %		- 10	782,000,387	387	0.0000495
100 %		0	781,999,764	-236	-0.0000302
100 %		+ 10	781,999,797	-203	-0.0000260
100 %		+ 20	782,000,225	225	0.0000288
100 %		+ 30	781,999,901	-99	-0.0000127
100 %		+ 40	781,999,565	-435	-0.0000556
100 %		+ 50	782,000,209	209	0.0000267
BATT. ENDPOINT	3.40	+ 20	782,000,093	93	0.0000119

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

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 166 of 176	

Band 13 Frequency Stability Measurements

\$2.1055 \$27.54

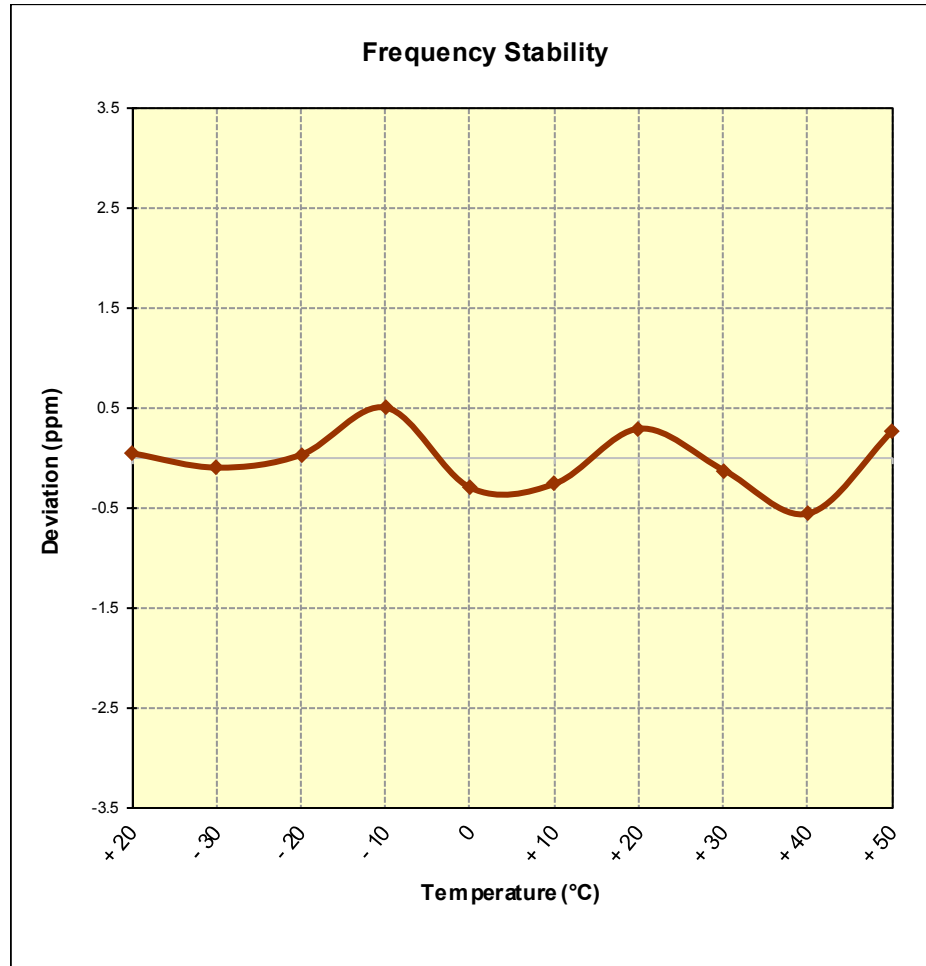


Figure 7-9. Frequency Stability Graph (Band 13)

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset			Page 167 of 176

Band 5/26 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)	831,499,943	-57	-0.0000069
100 %		- 30	831,499,857	-143	-0.0000172
100 %		- 20	831,500,334	334	0.0000402
100 %		- 10	831,499,621	-379	-0.0000456
100 %		0	831,500,353	353	0.0000425
100 %		+ 10	831,499,975	-25	-0.0000030
100 %		+ 20	831,500,125	125	0.0000150
100 %		+ 30	831,500,219	219	0.0000263
100 %		+ 40	831,499,980	-20	-0.0000024
100 %		+ 50	831,499,986	-14	-0.0000017
BATT. ENDPOINT	3.40	+ 20	831,500,046	46	0.0000055

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

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 168 of 176	

Band 5/26 Frequency Stability Measurements
\$2.1055 \$22.355

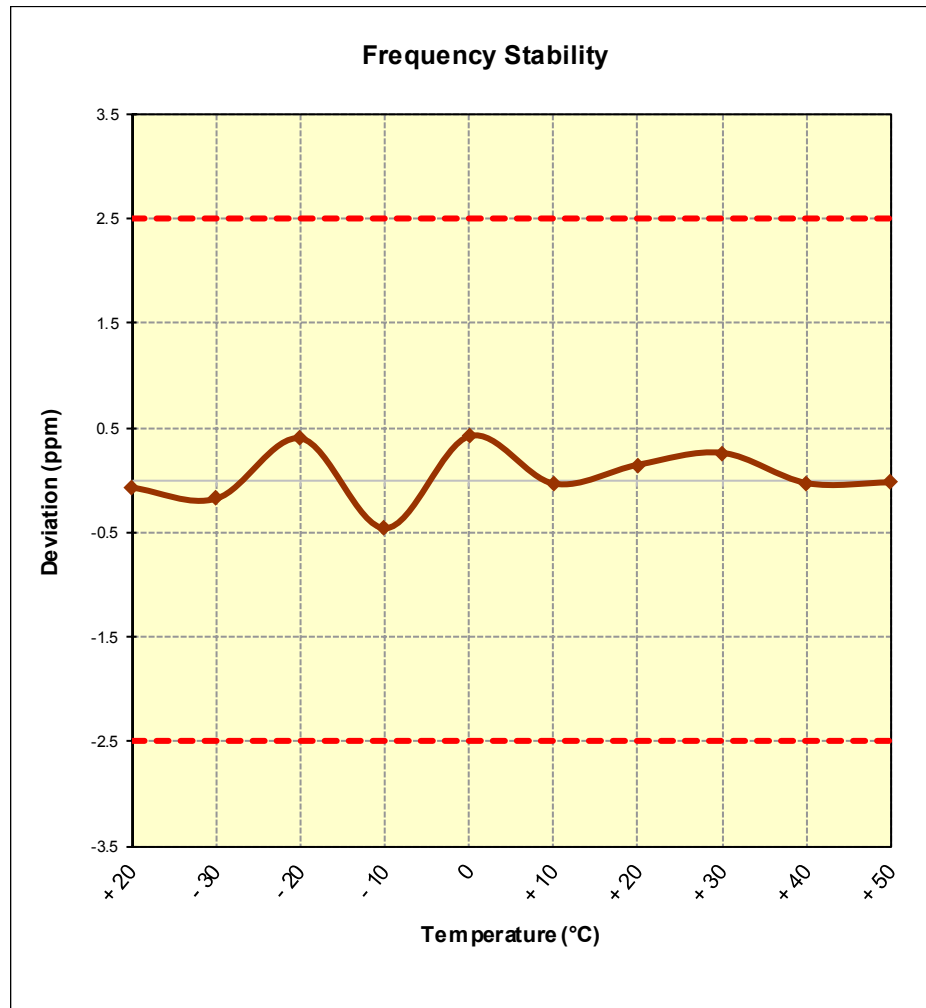


Figure 7-10. Frequency Stability Graph (Band 5/26)

FCC ID: A3LSMG9550			FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 169 of 176	

Band 4 Frequency Stability Measurements

\$2.1055 \$27.54

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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,732,500,243	243	0.0000140
100 %		- 30	1,732,499,853	-147	-0.0000085
100 %		- 20	1,732,499,798	-202	-0.0000117
100 %		- 10	1,732,499,909	-91	-0.0000053
100 %		0	1,732,500,240	240	0.0000139
100 %		+ 10	1,732,500,214	214	0.0000124
100 %		+ 20	1,732,500,016	16	0.0000009
100 %		+ 30	1,732,499,694	-306	-0.0000177
100 %		+ 40	1,732,499,890	-110	-0.0000063
100 %		+ 50	1,732,500,120	120	0.0000069
BATT. ENDPOINT	3.40	+ 20	1,732,499,936	-64	-0.0000037

Table 7-39. 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.

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 170 of 176	

Band 4 Frequency Stability Measurements

\$2.1055 \$27.54

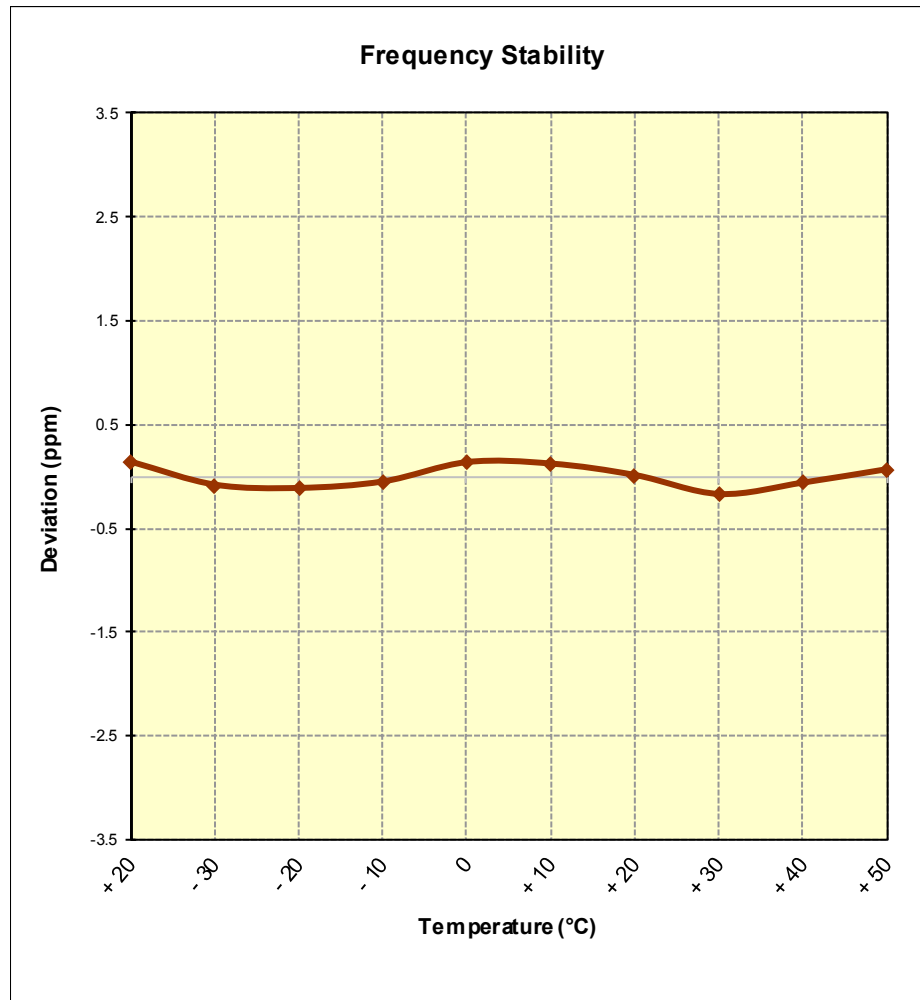


Figure 7-11. Frequency Stability Graph (Band 4)

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset			Page 171 of 176

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V 6.2

01/09/2016

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Band 2/25 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)	1,882,500,250	250	0.0000133
100 %		- 30	1,882,499,683	-317	-0.0000168
100 %		- 20	1,882,499,883	-117	-0.0000062
100 %		- 10	1,882,499,907	-93	-0.0000049
100 %		0	1,882,500,070	70	0.0000037
100 %		+ 10	1,882,500,179	179	0.0000095
100 %		+ 20	1,882,500,203	203	0.0000108
100 %		+ 30	1,882,499,739	-261	-0.0000139
100 %		+ 40	1,882,500,009	9	0.0000005
100 %		+ 50	1,882,500,032	32	0.0000017
BATT. ENDPOINT	3.40	+ 20	1,882,500,002	2	0.0000001

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.

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 172 of 176	

Band 2/25 Frequency Stability Measurements
\$2.1055 \$24.235

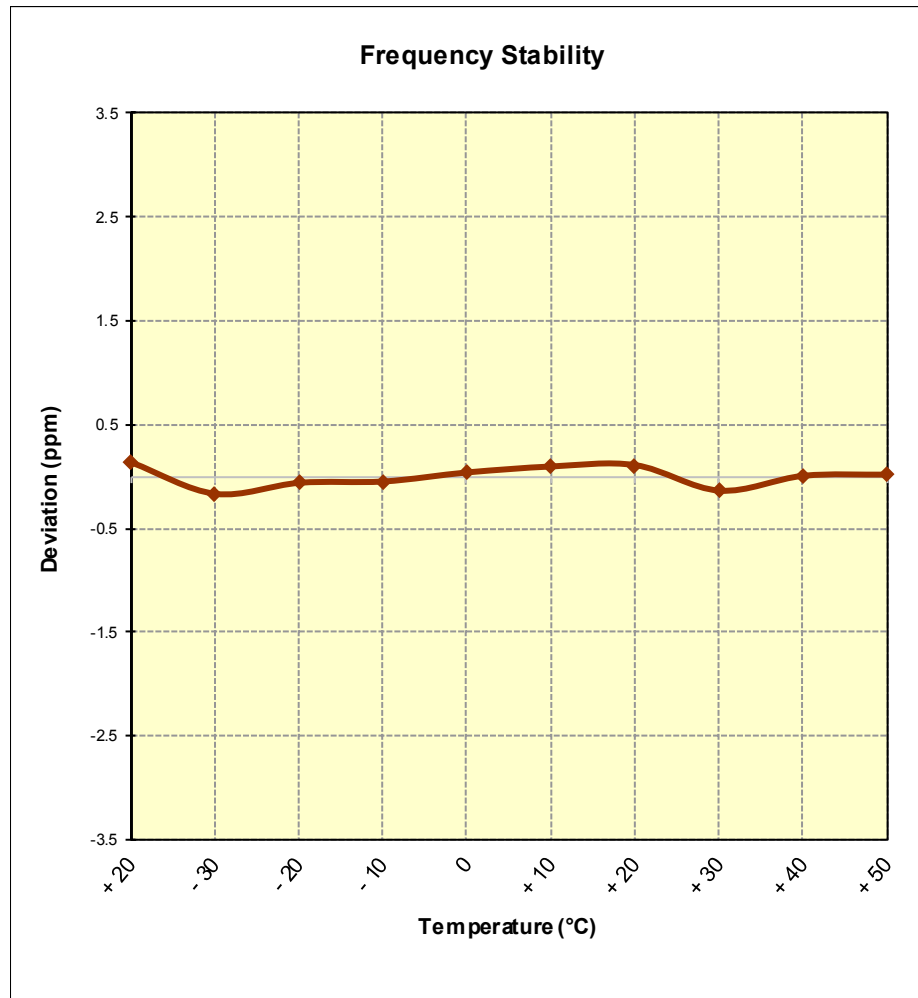


Figure 7-12. Frequency Stability Graph (Band 2/25)

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset			Page 173 of 176

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)	2,593,000,014	14	0.0000005
100 %		- 30	2,593,000,019	19	0.0000007
100 %		- 20	2,592,999,700	-300	-0.0000116
100 %		- 10	2,593,000,042	42	0.0000016
100 %		0	2,593,000,287	287	0.0000111
100 %		+ 10	2,592,999,812	-188	-0.0000073
100 %		+ 20	2,592,999,901	-99	-0.0000038
100 %		+ 30	2,592,999,820	-180	-0.0000069
100 %		+ 40	2,593,000,032	32	0.0000012
100 %		+ 50	2,592,999,985	-15	-0.0000006
BATT. ENDPOINT	3.40	+ 20	2,593,000,174	174	0.0000067

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.

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset	Page 174 of 176	

Band 41 Frequency Stability Measurements

\$2.1055 \$27.54

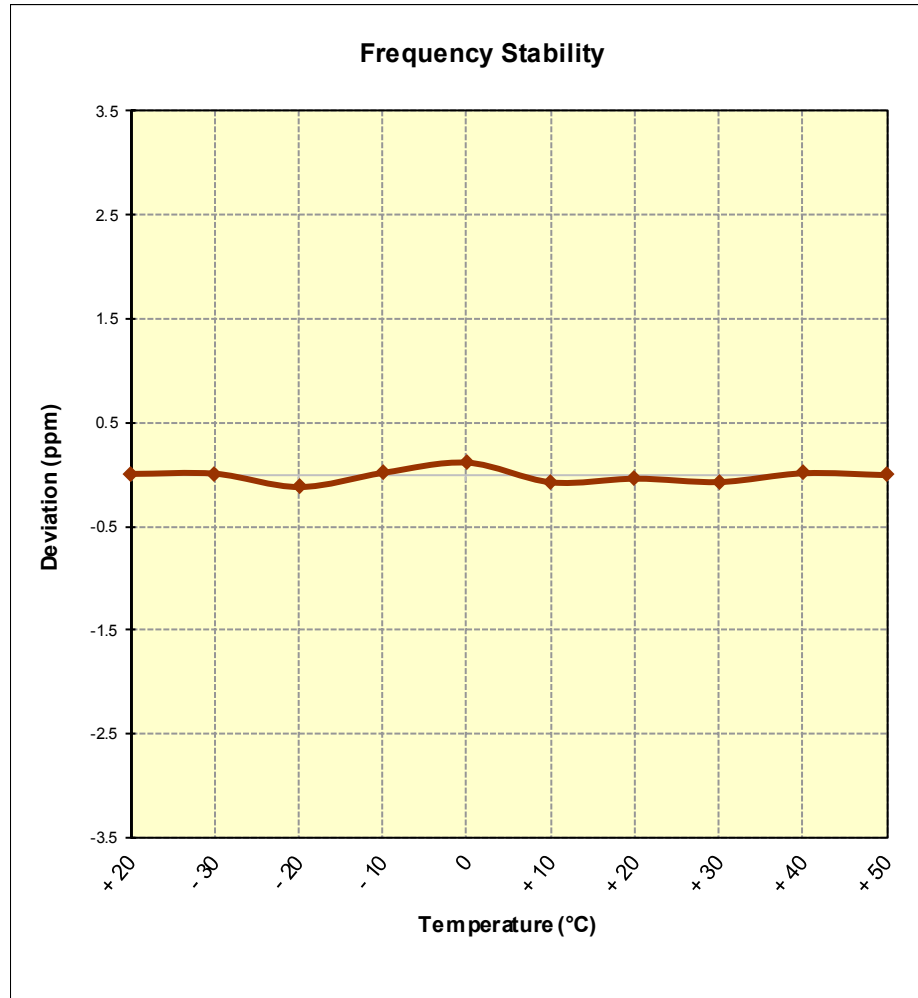


Figure 7-13. Frequency Stability Graph (Band 41)

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset			Page 175 of 176

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMG9550** complies with all the requirements of Parts 22, 24, & 27 of the FCC rules for LTE operation only.

FCC ID: A3LSMG9550		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1701160026-03.A3L	Test Dates: 12/27/16-2/17/17	EUT Type: Portable Handset		Page 176 of 176