

7.4 Band Edge Emissions at Antenna Terminal

§2.1051 §22.917(a) §24.238(a) §27.53(c) §27.53(g) §27.53(h) §27.53(m) §27.53(a.4)

Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

The minimum permissible attenuation level for Band 30 is $> 43 + 10\log_{10}(P[\text{Watts}] \text{ at } 2300\text{-}2305\text{MHz} \text{ \& } 2345\text{-}2360\text{MHz}, > 55 + 10\log_{10}(P[\text{Watts}]) \text{ at } 2320\text{-}2324\text{MHz} \text{ \& } 2341\text{-}2345\text{MHz}, > 61 + 10\log_{10}(P[\text{Watts}]) \text{ at } 2324\text{-}2328\text{MHz} \text{ \& } 2337\text{-}2341\text{MHz}, > 67 + 10\log_{10}(P[\text{Watts}]) \text{ at } 2288\text{-}2292\text{MHz} \text{ \& } 2328\text{-}2337\text{MHz}, \text{ and } > 70 + 10\log_{10}(P[\text{Watts}]) \text{ at frequencies } < 2288\text{MHz} \text{ \& } > 2365\text{MHz}.$

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.

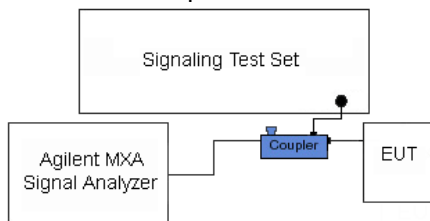


Figure 7-3. Test Instrument & Measurement Setup

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Test Notes

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

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

Per 27.53(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.

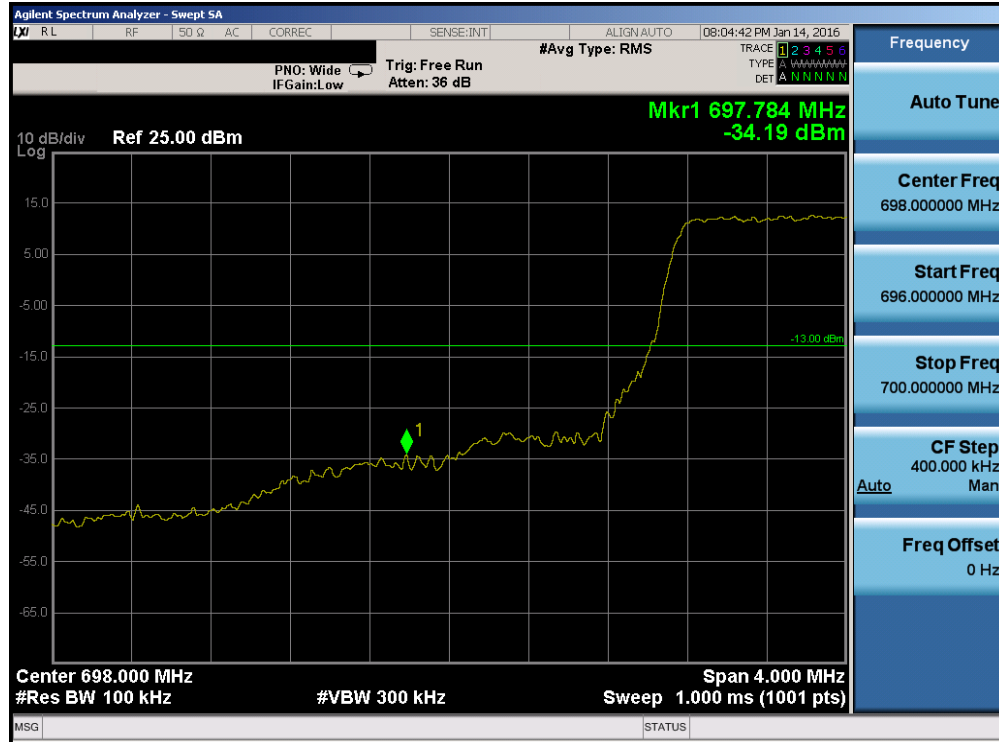
For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c.4) is $65 + 10\log_{10}(P) = -35\text{dBm}$ in a 6.25kHz bandwidth.

Per 27.53(a)(5) in the 1 MHz bands immediately outside and adjacent to the channel blocks at 2305, 2310, 2315, 2320, 2345, 2350, 2355, and 2360 MHz, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e., 1 MHz). 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 emissions are attenuated at least 26 dB below the transmitter power.

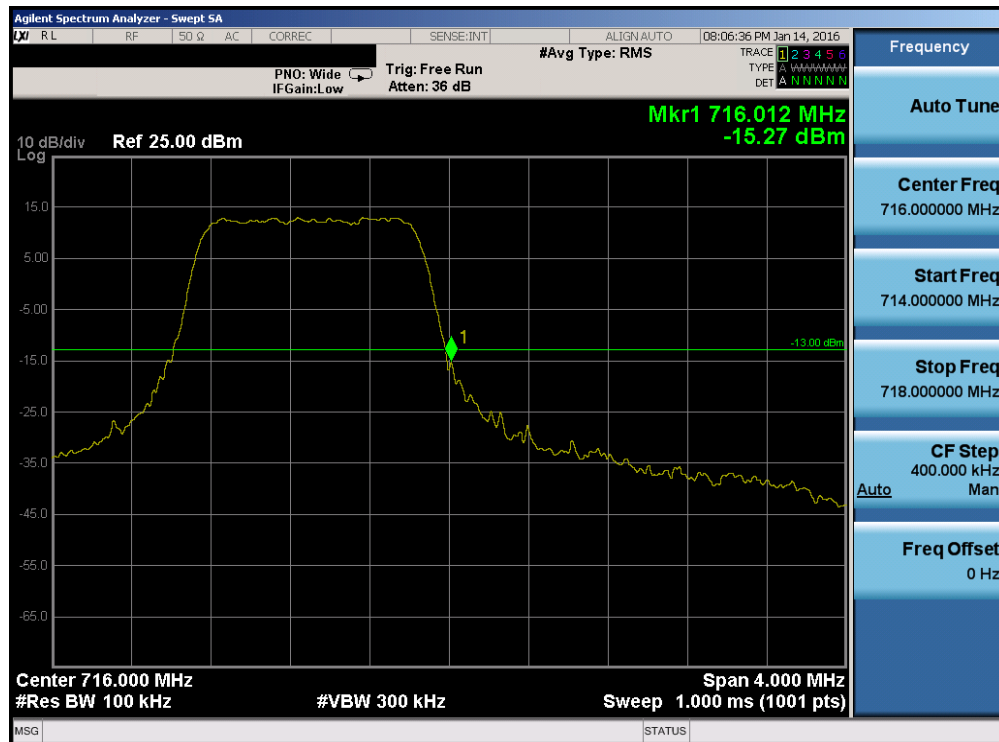
Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge,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

The upper band edge was measured for LTE Band 2 and Band 25 at 1910MHz and 1915MHz respectively. The worst case is reported.

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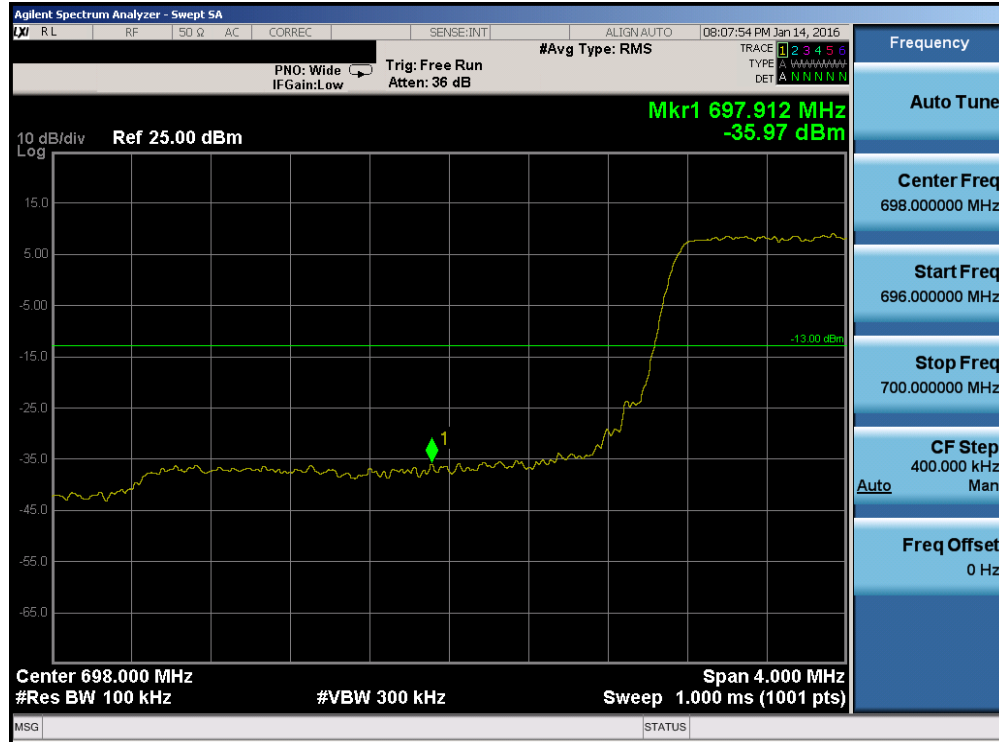


Plot 7-127. Lower Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)

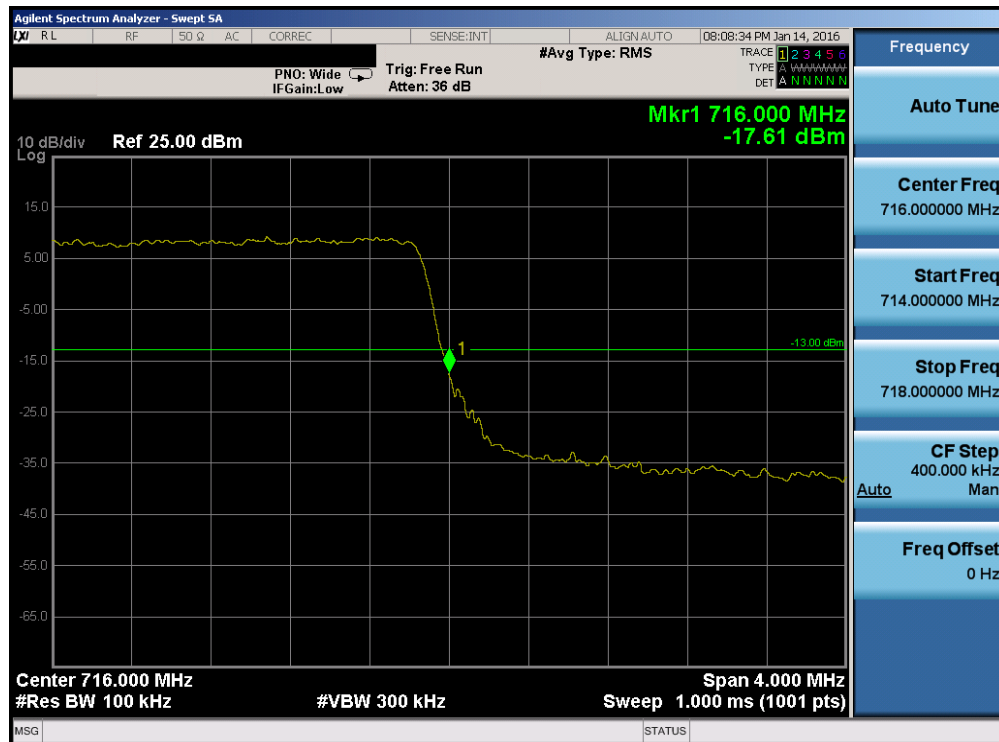


Plot 7-128. Upper Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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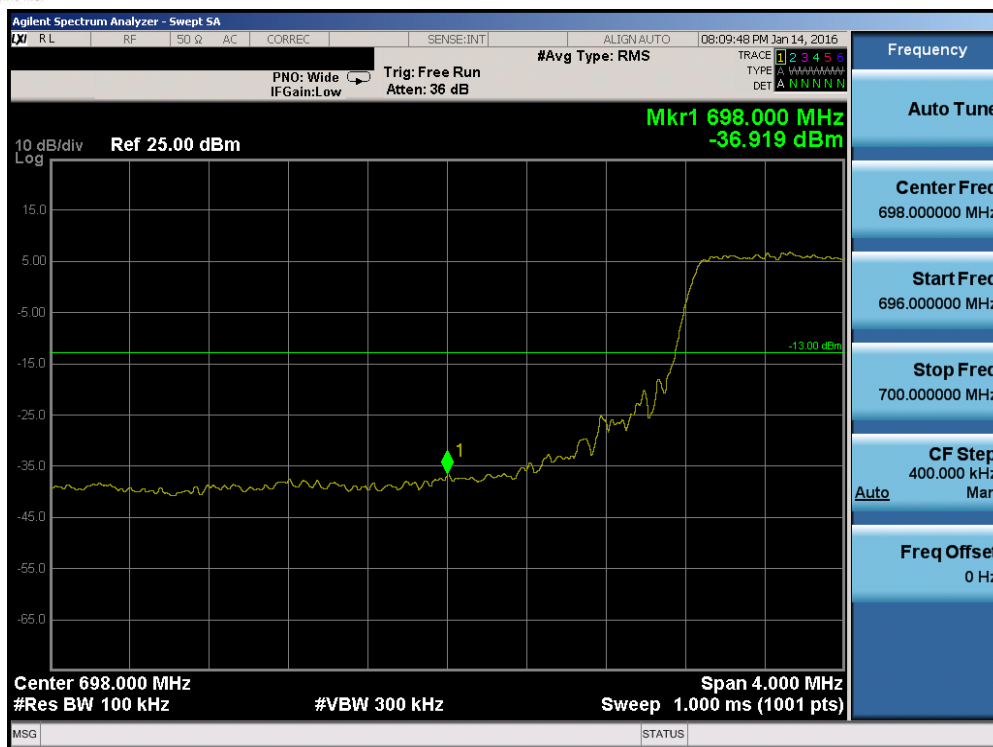


Plot 7-129. Lower Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)

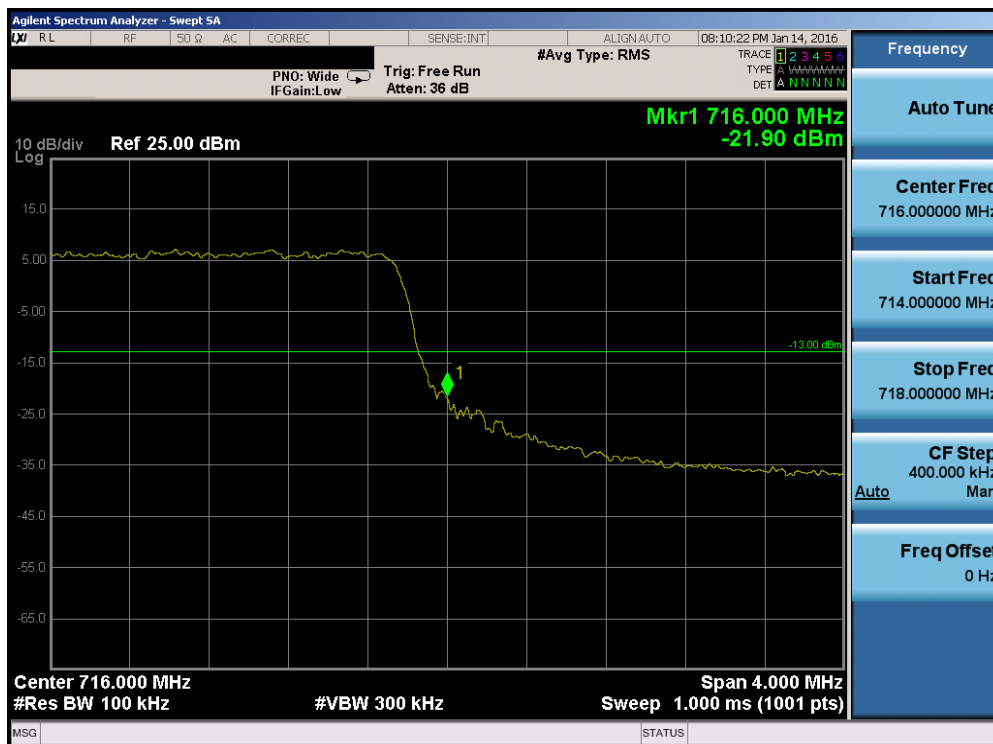


Plot 7-130. Upper Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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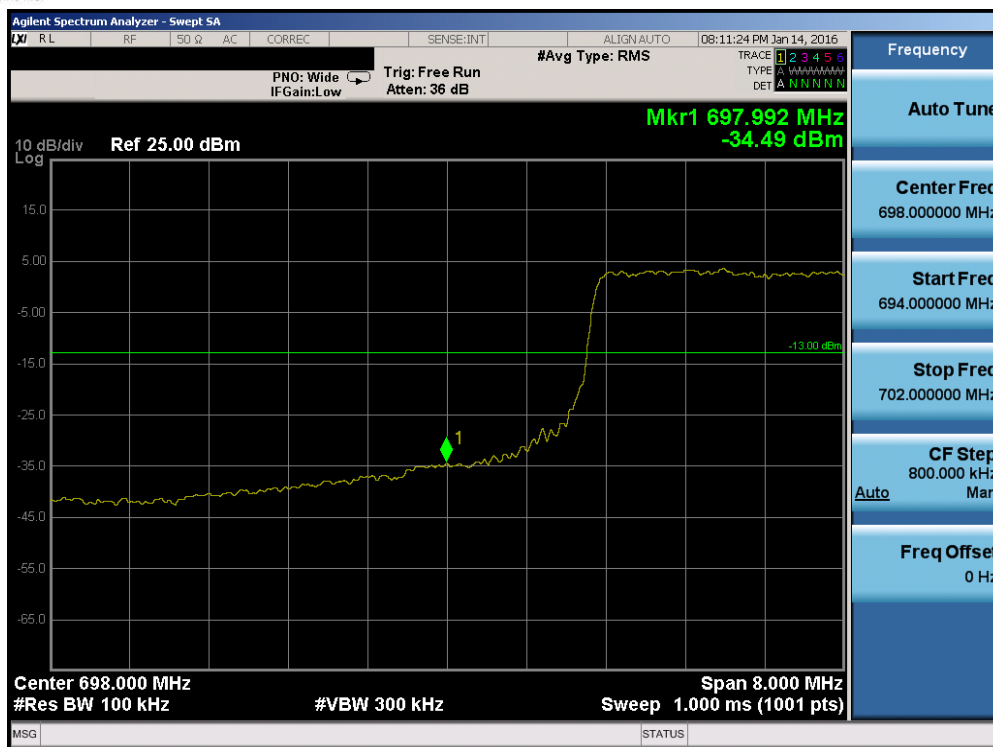


Plot 7-131. Lower Band Edge Plot (Band 12 – 5.0MHz QPSK – RB Size 25)

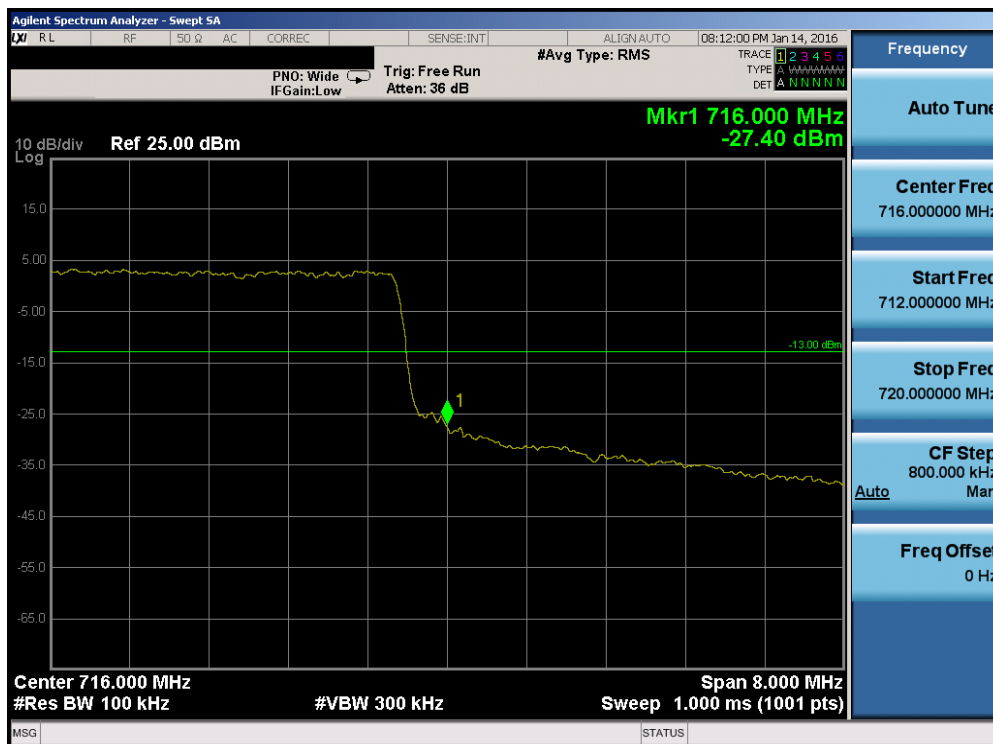


Plot 7-132. Upper Band Edge Plot (Band 12 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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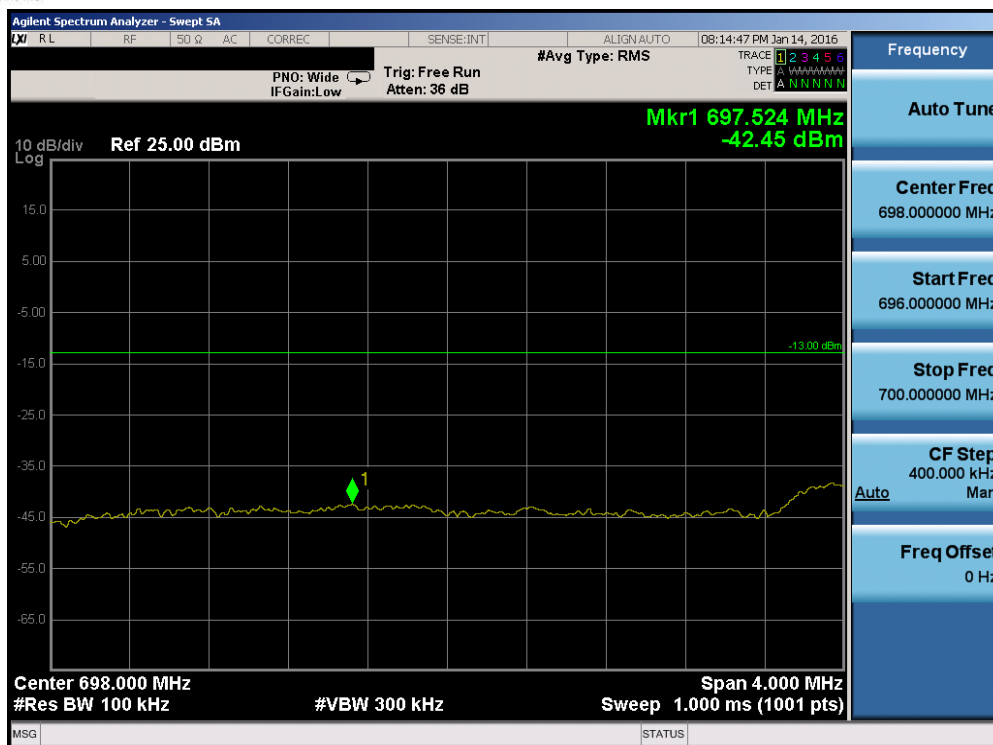


Plot 7-133. Lower Band Edge Plot (Band 12 – 10.0MHz QPSK – RB Size 50)



Plot 7-134. Upper Band Edge Plot (Band 12 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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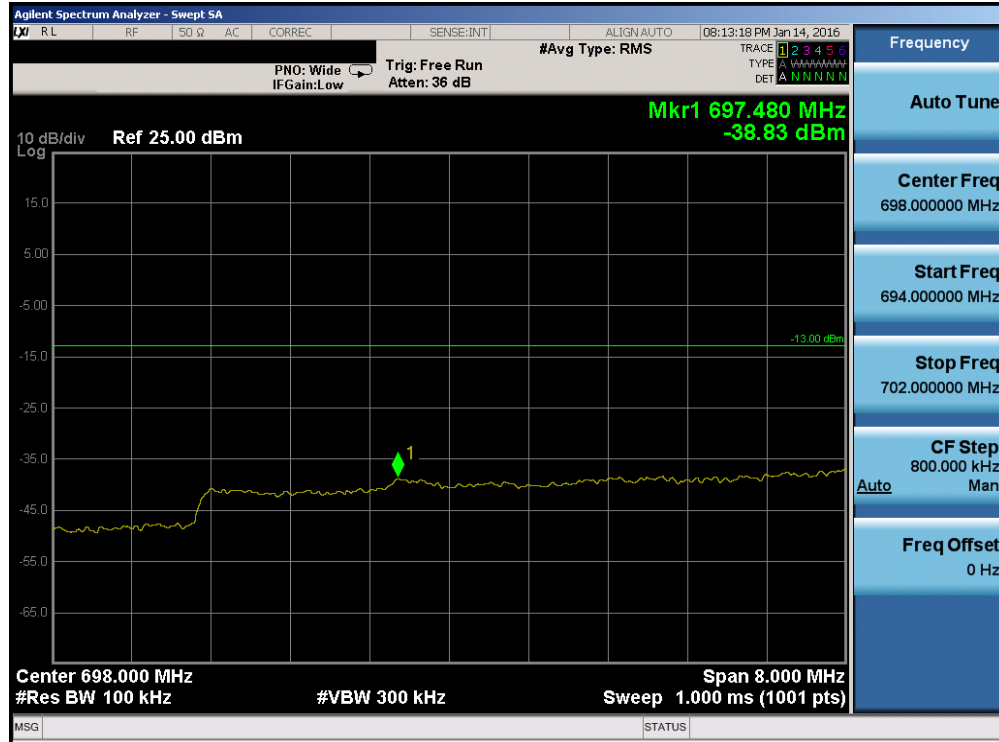


Plot 7-135. Lower Band Edge Plot (Band 17 – 5.0MHz QPSK – RB Size 25)

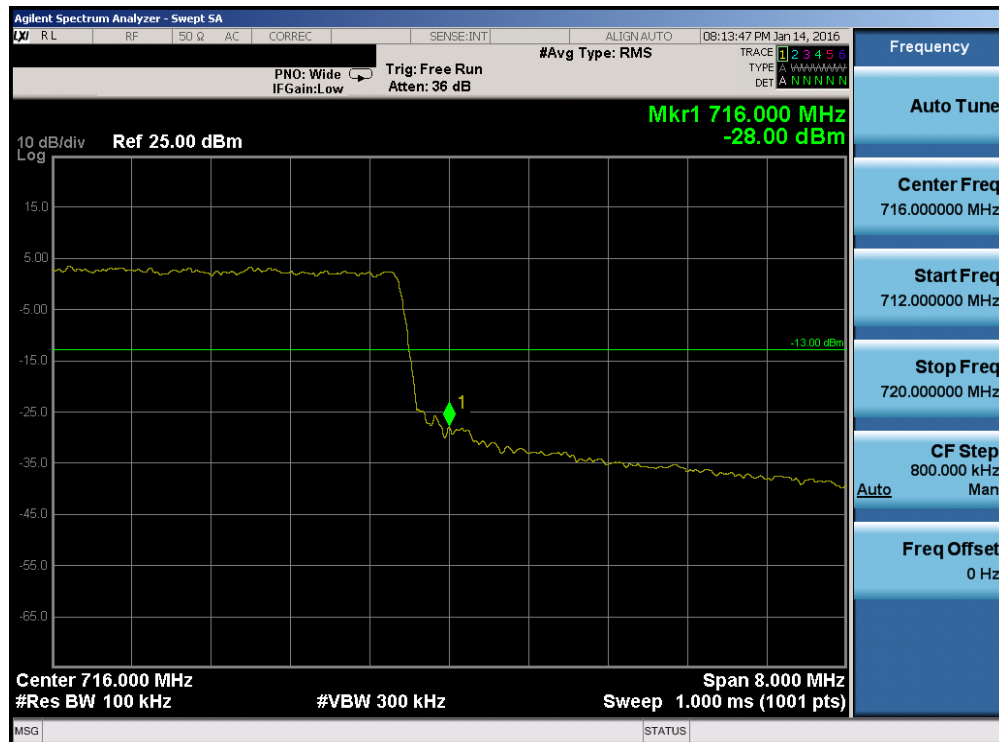


Plot 7-136. Upper Band Edge Plot (Band 17 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG935W8	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
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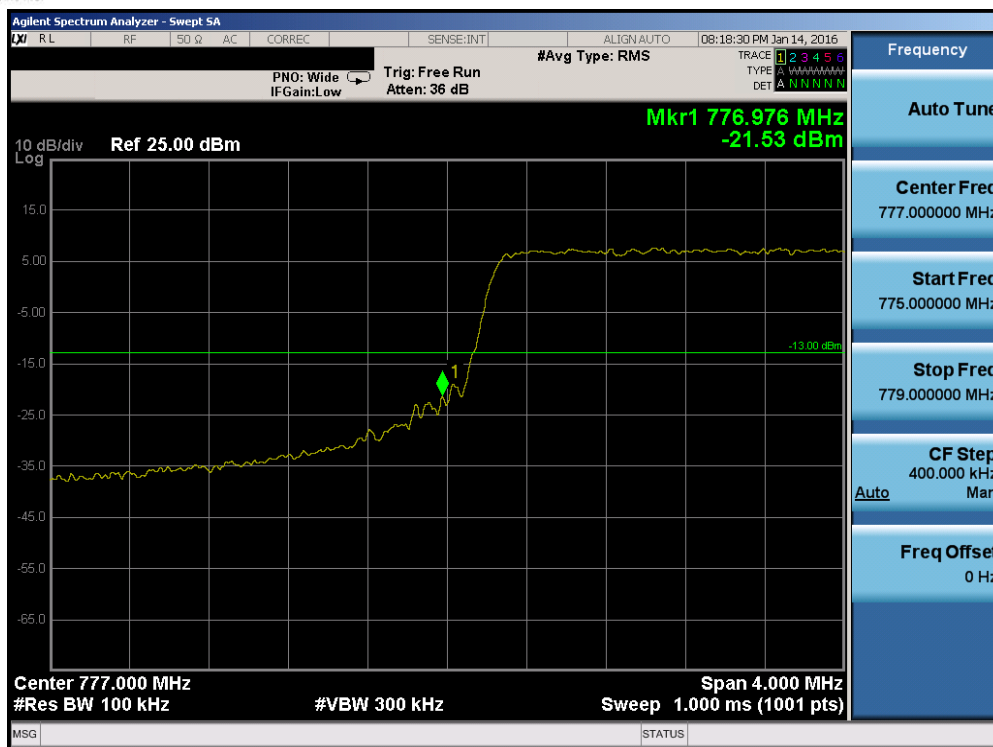


Plot 7-137. Lower Band Edge Plot (Band 17 – 10.0MHz QPSK – RB Size 50)

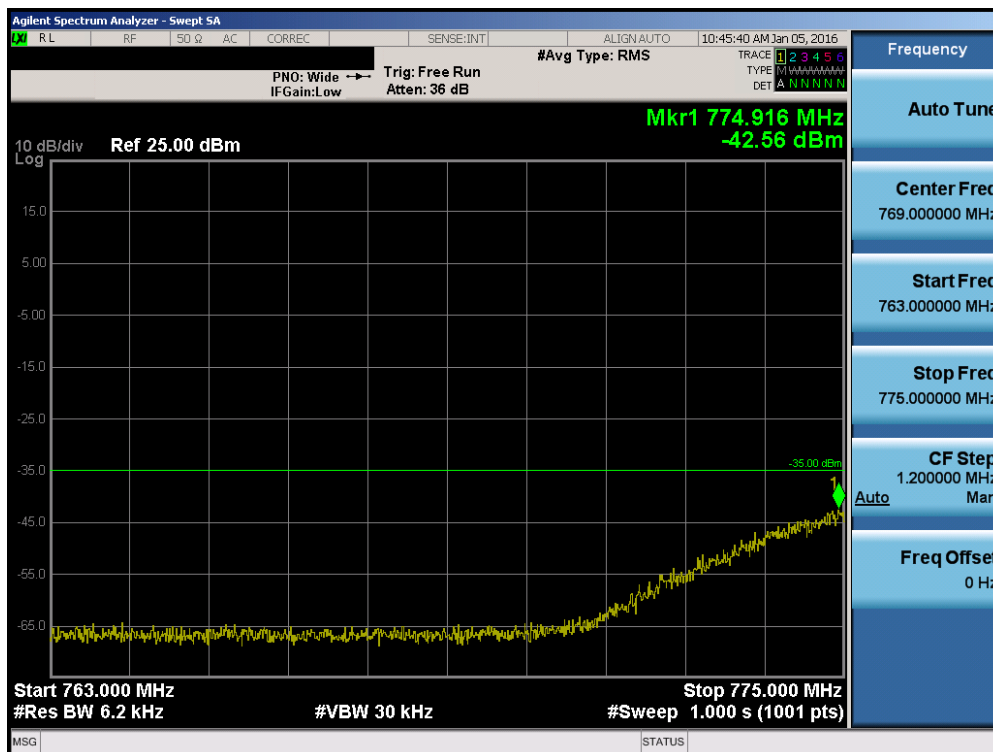


Plot 7-138. Upper Band Edge Plot (Band 17 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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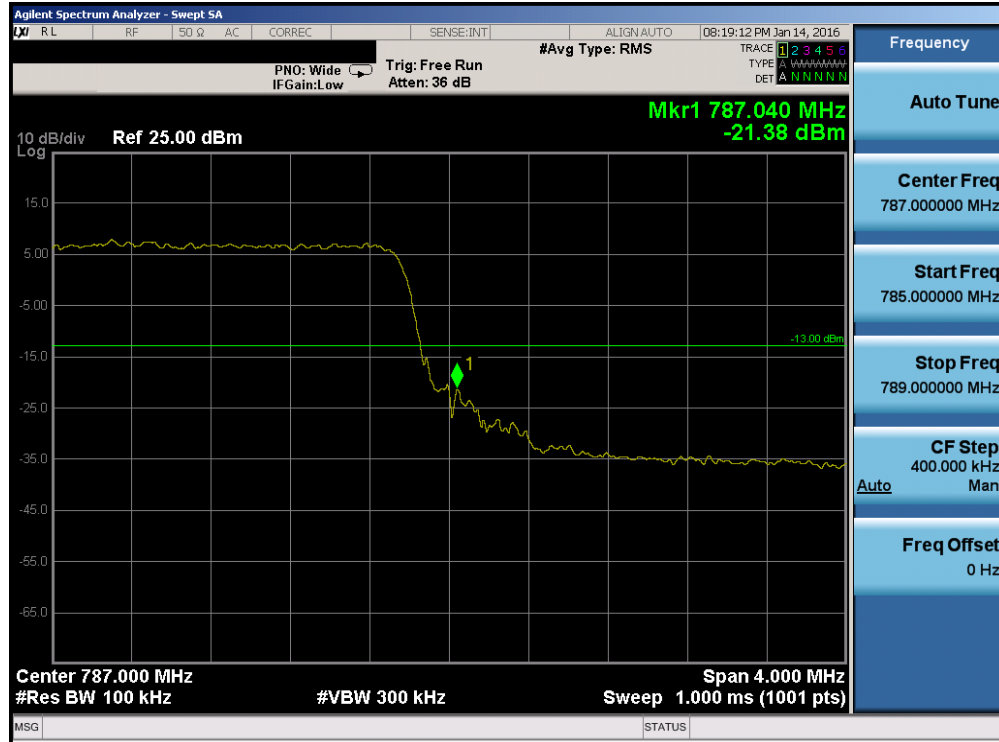


Plot 7-139. Lower Band Edge Plot (Band 13 – 5.0MHz QPSK – RB Size 25)

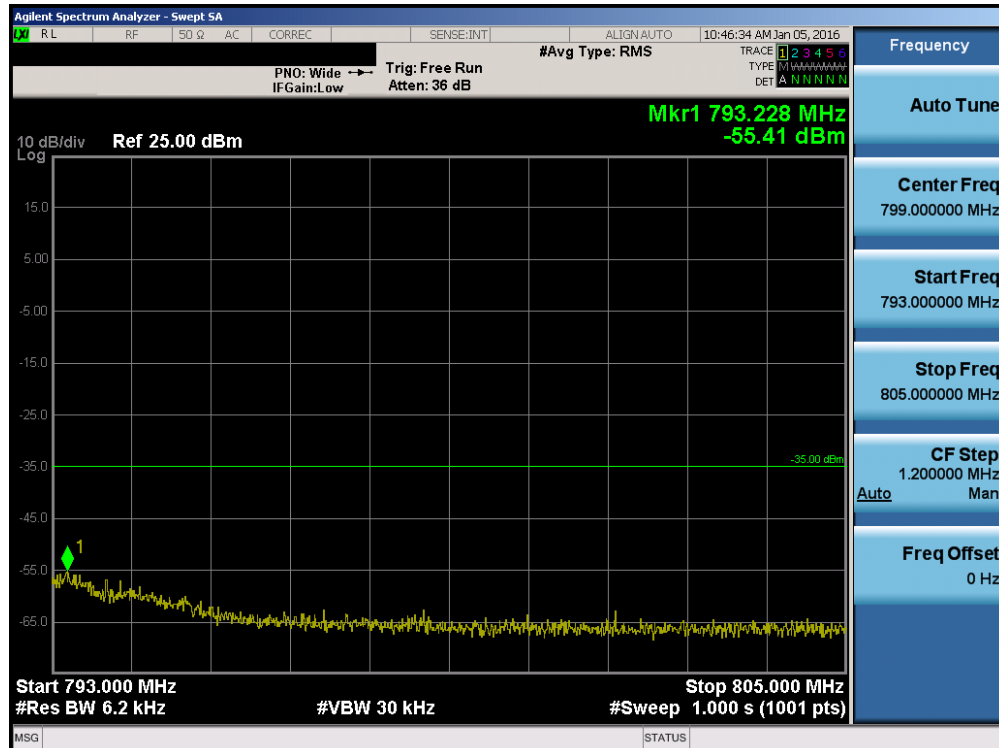


Plot 7-140. Lower Emission Mask Edge Plot (Band 13 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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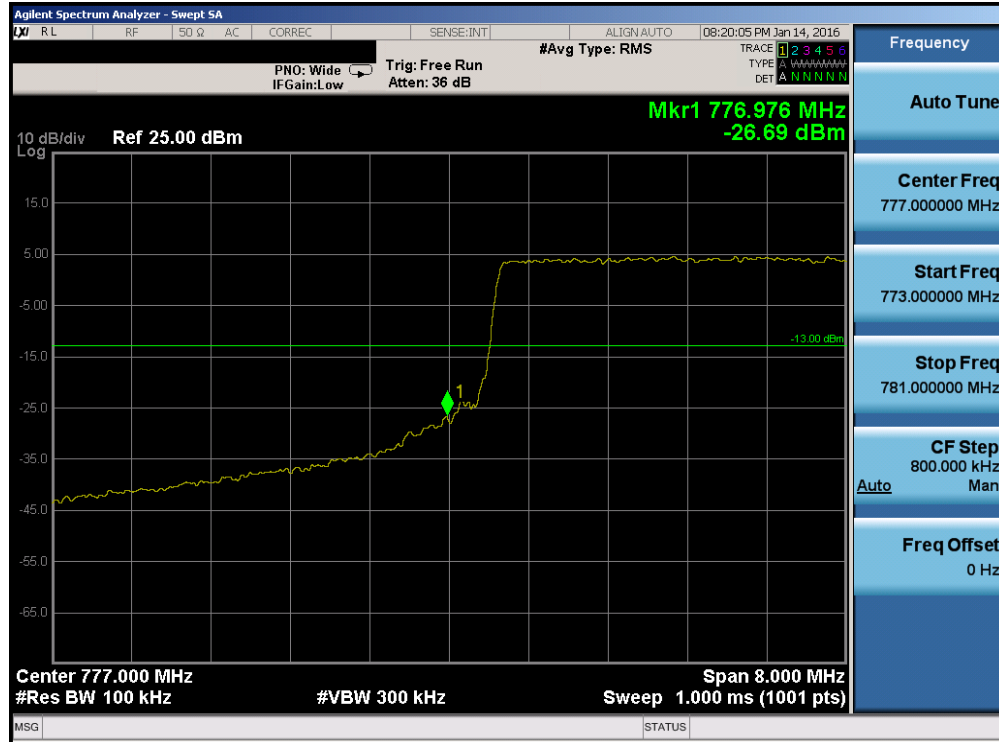


Plot 7-141. Upper Band Edge Plot (Band 13 – 5.0MHz QPSK – RB Size 25)

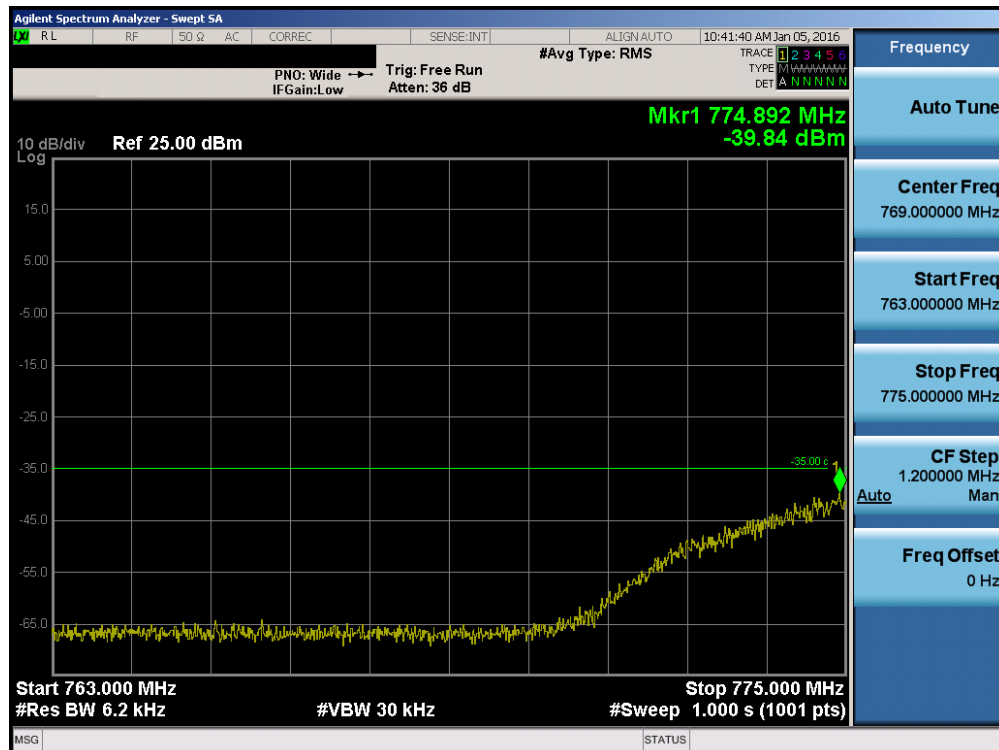


Plot 7-142. Upper Emission Mask Edge Plot (Band 13 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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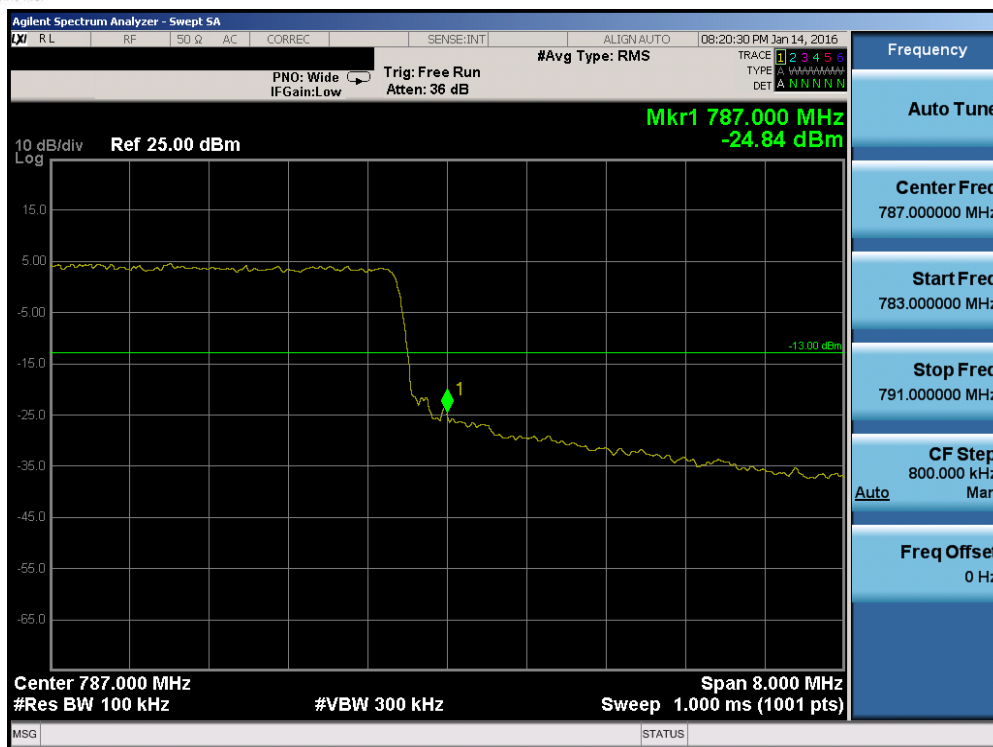


Plot 7-143. Lower Band Edge Plot (Band 13 – 10.0MHz QPSK – RB Size 50)



Plot 7-144. Lower Emission Mask Edge Plot (Band 13 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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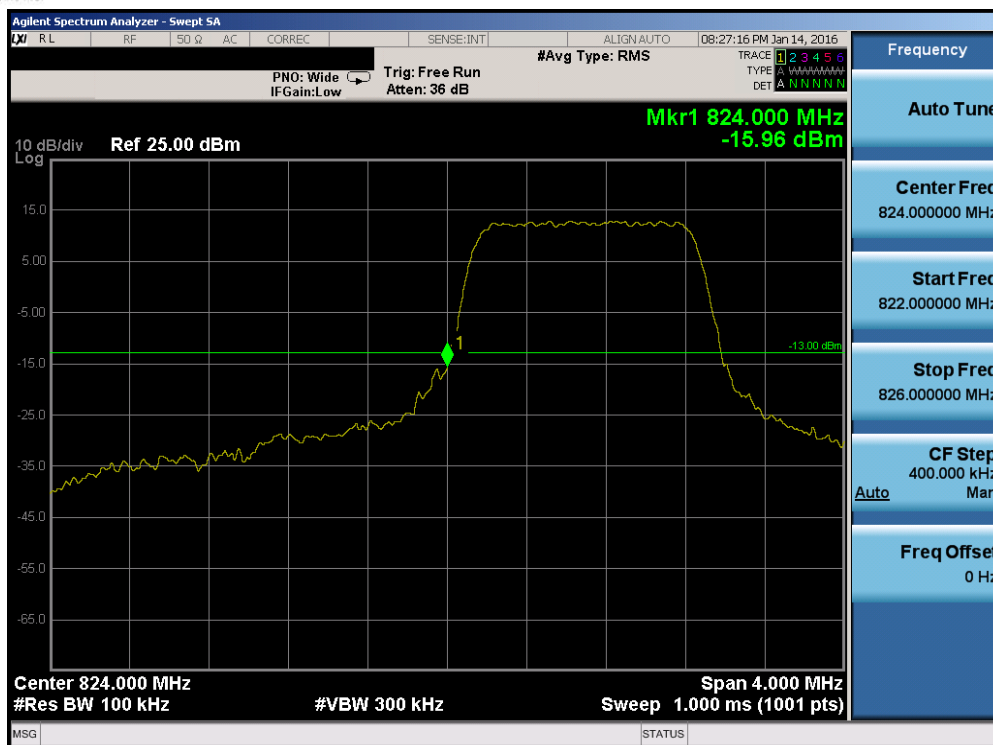


Plot 7-145. Upper Band Edge Plot (Band 13 – 10.0MHz QPSK – RB Size 50)

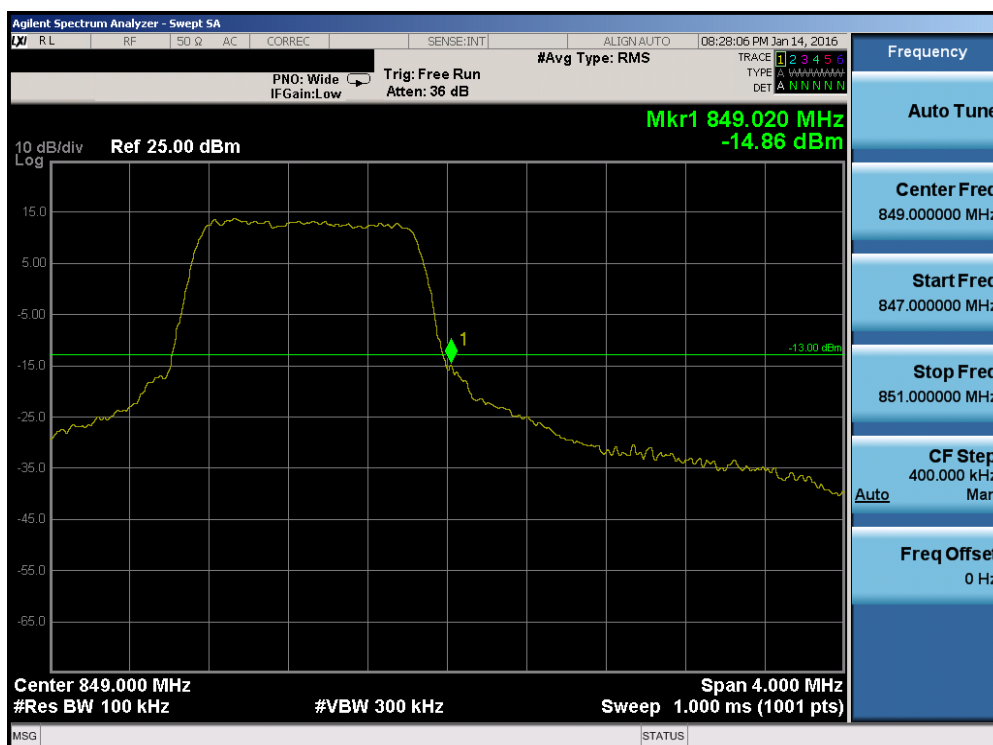


Plot 7-146. Upper Emission Mask Edge Plot (Band 13 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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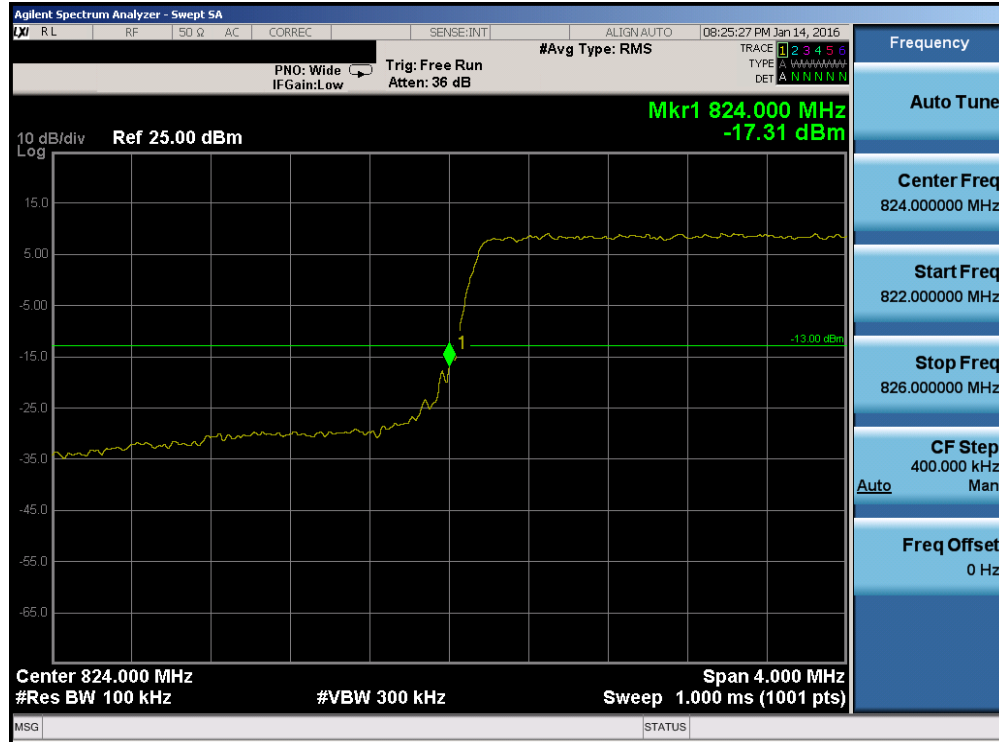


Plot 7-147. Lower Band Edge Plot (Band 5 – 1.4MHz QPSK – RB Size 6)



Plot 7-148. Upper Band Edge Plot (Band 5 – 1.4MHz QPSK – RB Size 6)

FCC ID: A3LSMG935W8	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
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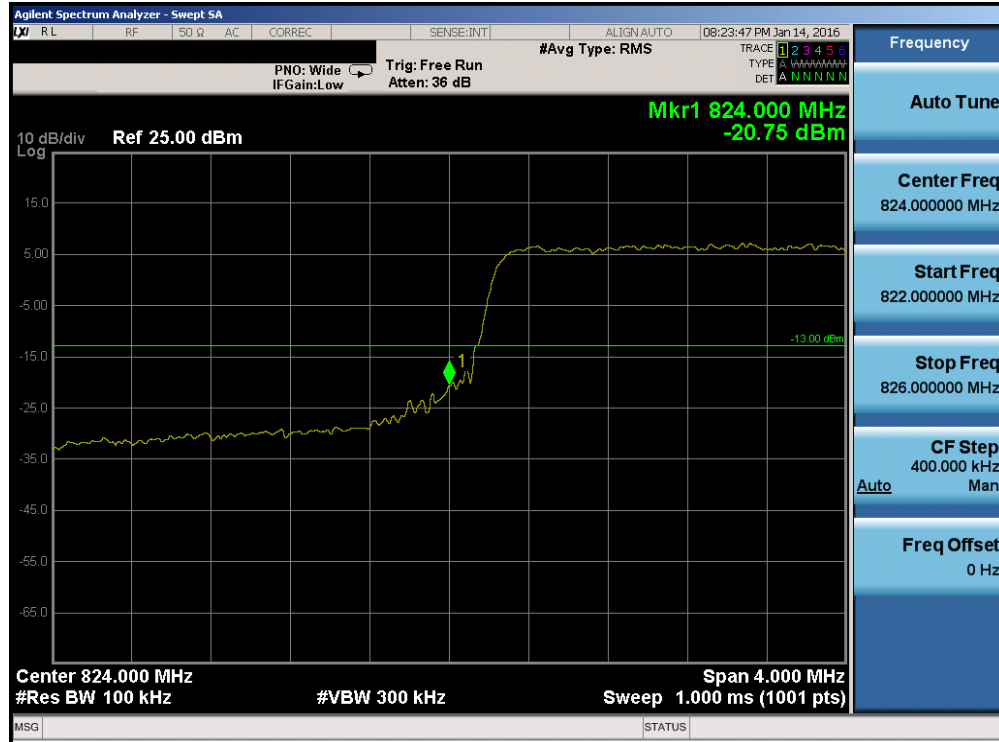


Plot 7-149. Lower Band Edge Plot (Band 5 – 3.0MHz QPSK – RB Size 15)



Plot 7-150. Upper Band Edge Plot (Band 5 – 3.0MHz QPSK – RB Size 15)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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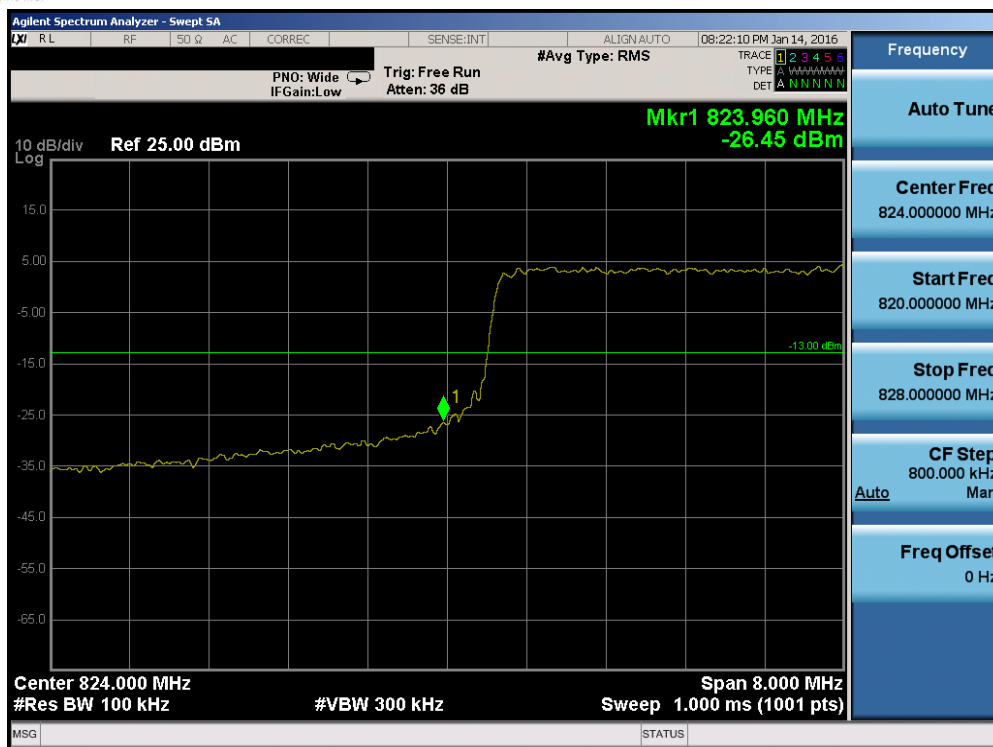


Plot 7-151. Lower Band Edge Plot (Band 5 – 5.0MHz QPSK – RB Size 25)

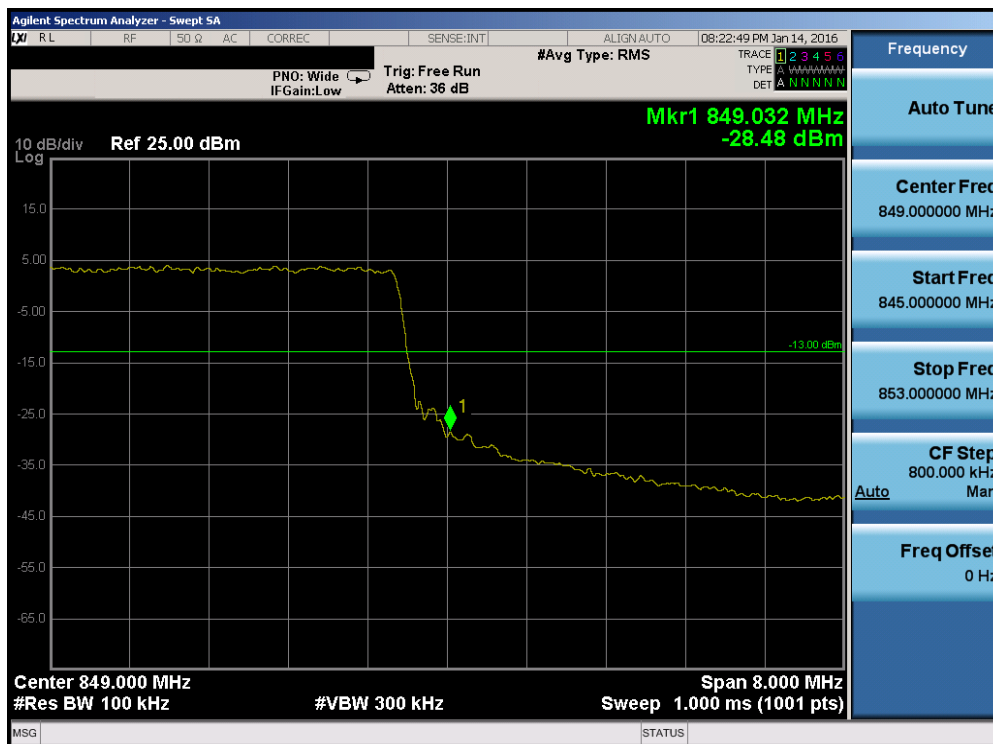


Plot 7-152. Upper Band Edge Plot (Band 5 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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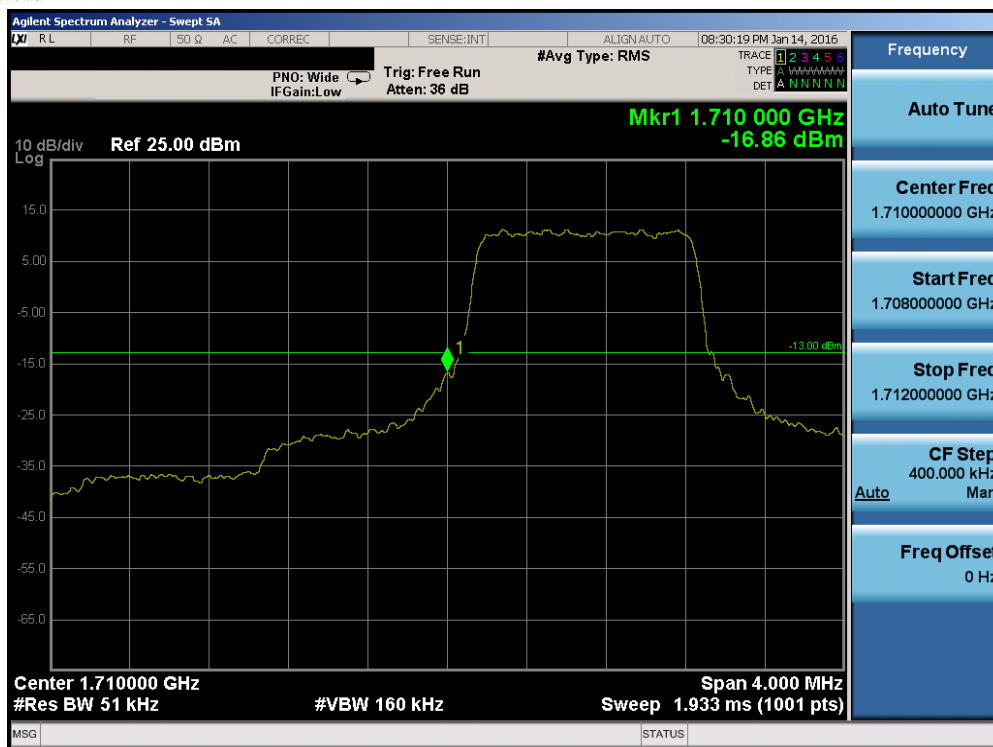


Plot 7-153. Lower Band Edge Plot (Band 5 – 10.0MHz QPSK – RB Size 50)

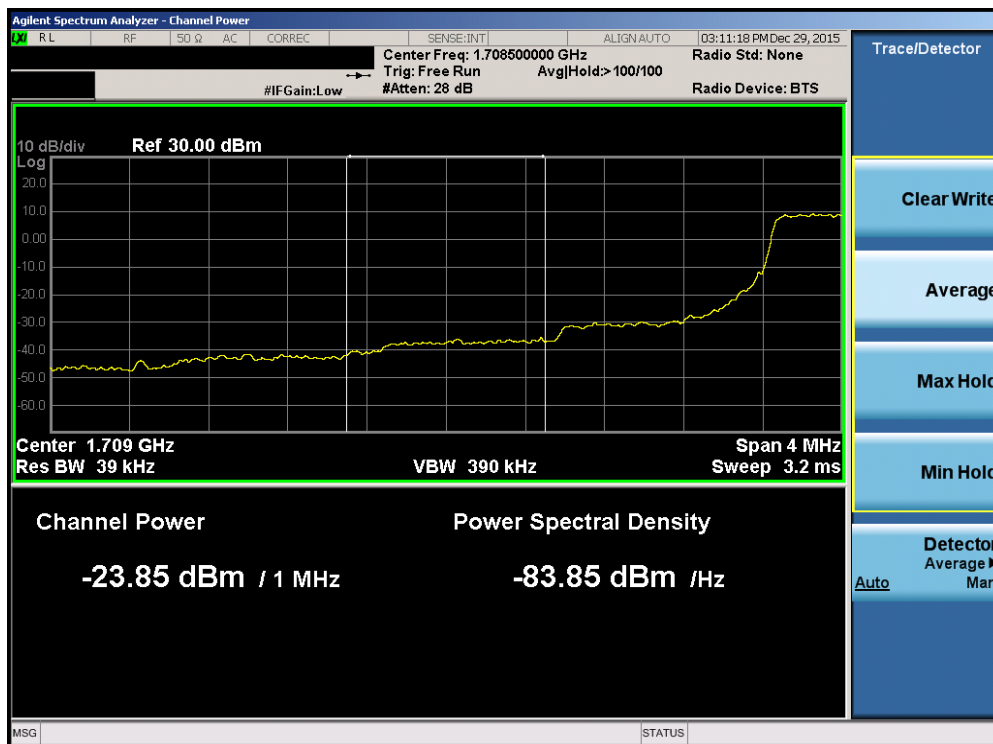


Plot 7-154. Upper Band Edge Plot (Band 5 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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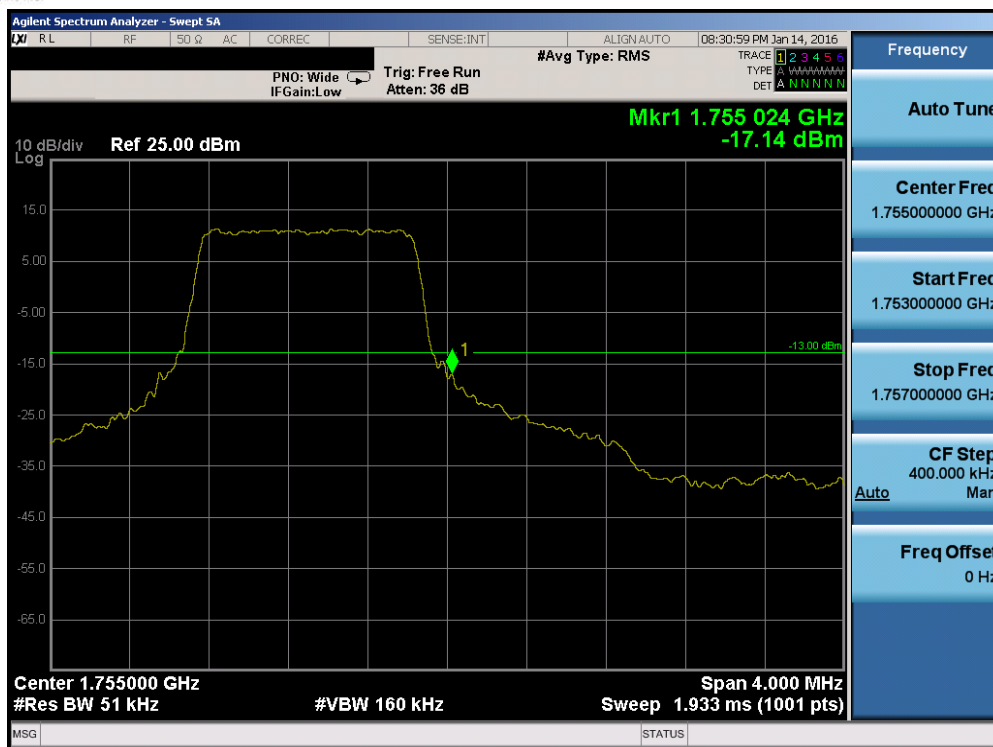


Plot 7-155. Lower Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

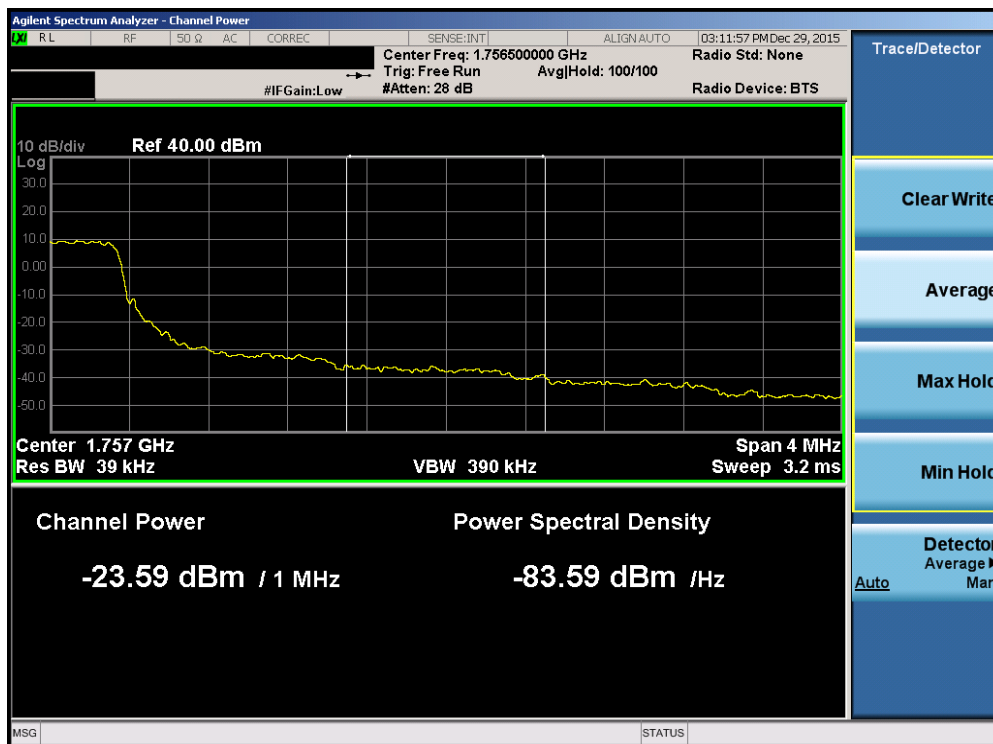


Plot 7-156. Lower Extended Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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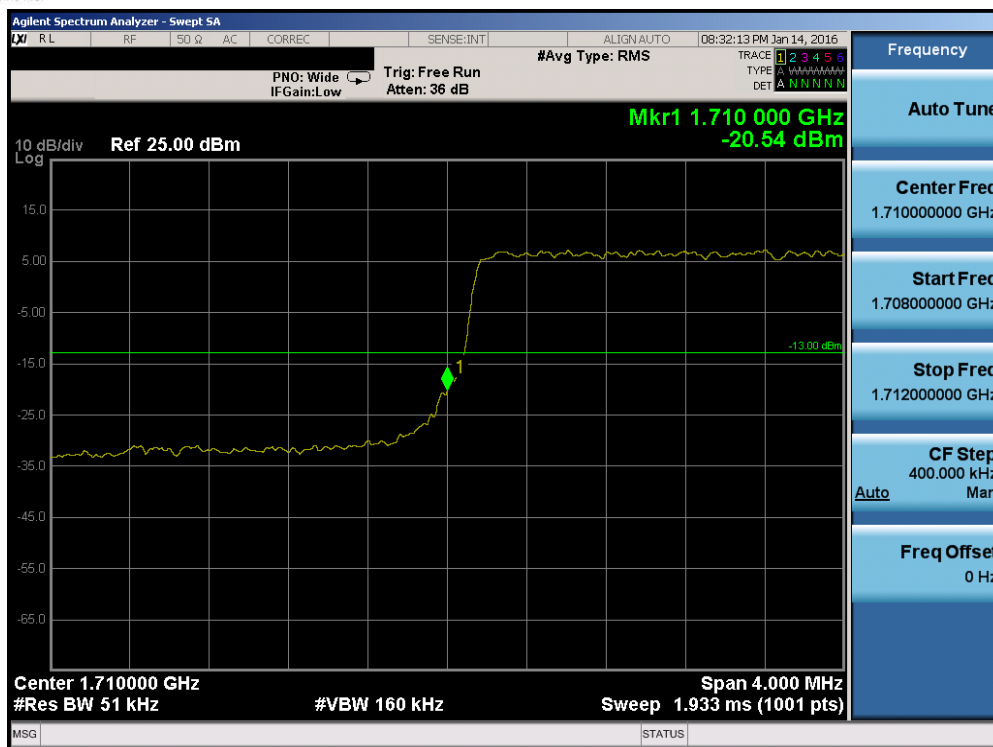


Plot 7-157. Upper Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

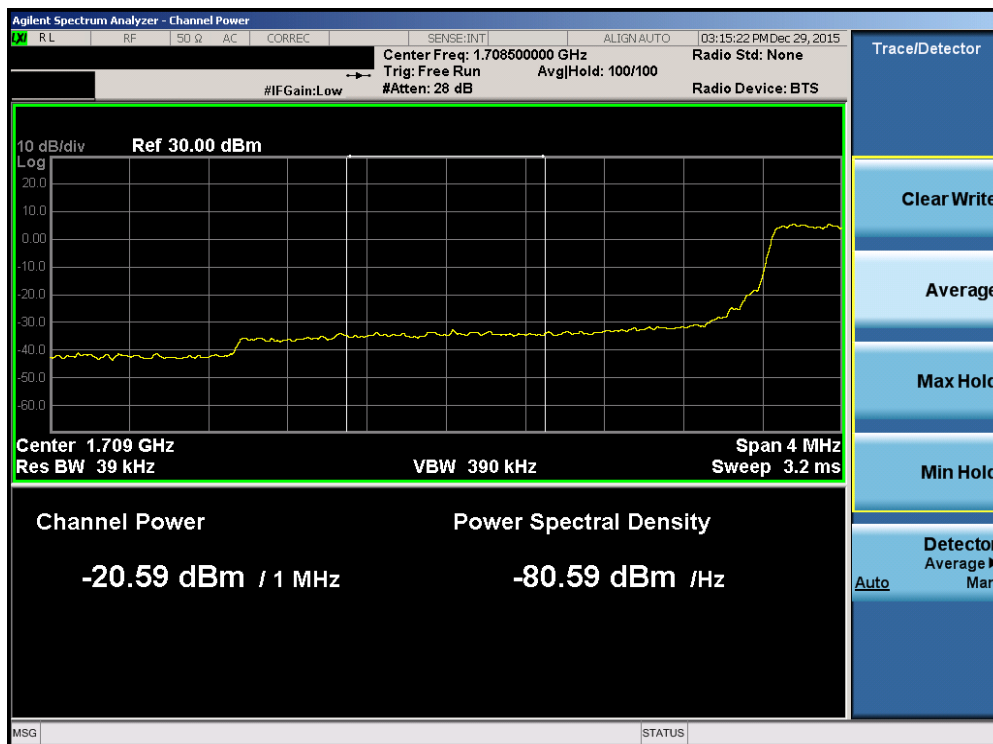


Plot 7-158. Upper Extended Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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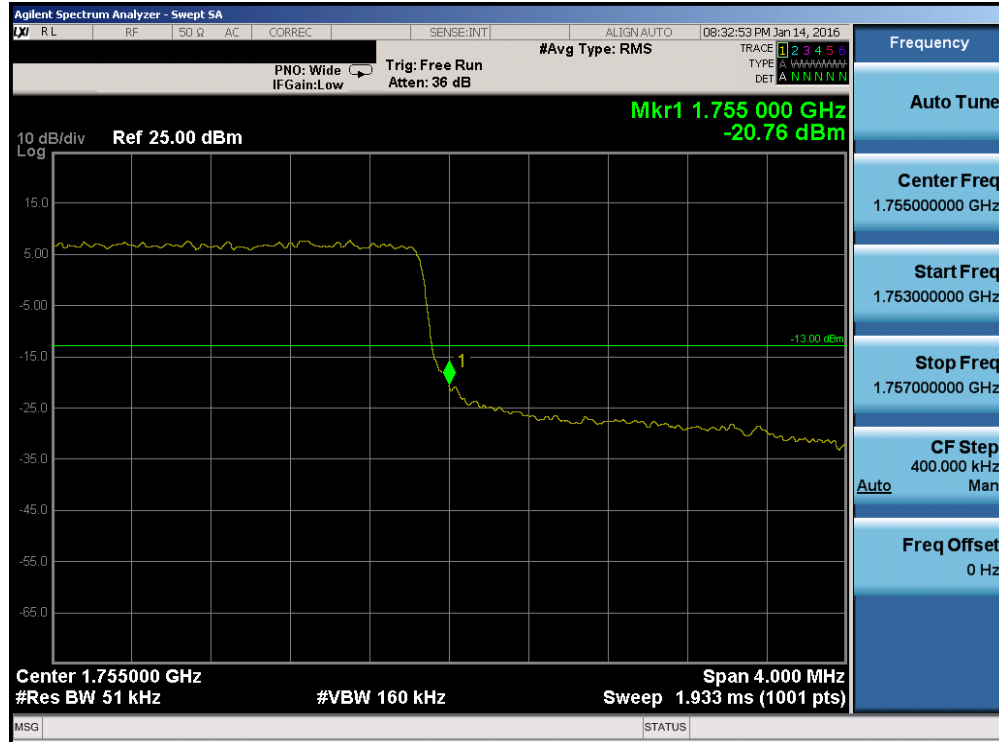


Plot 7-159. Lower Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

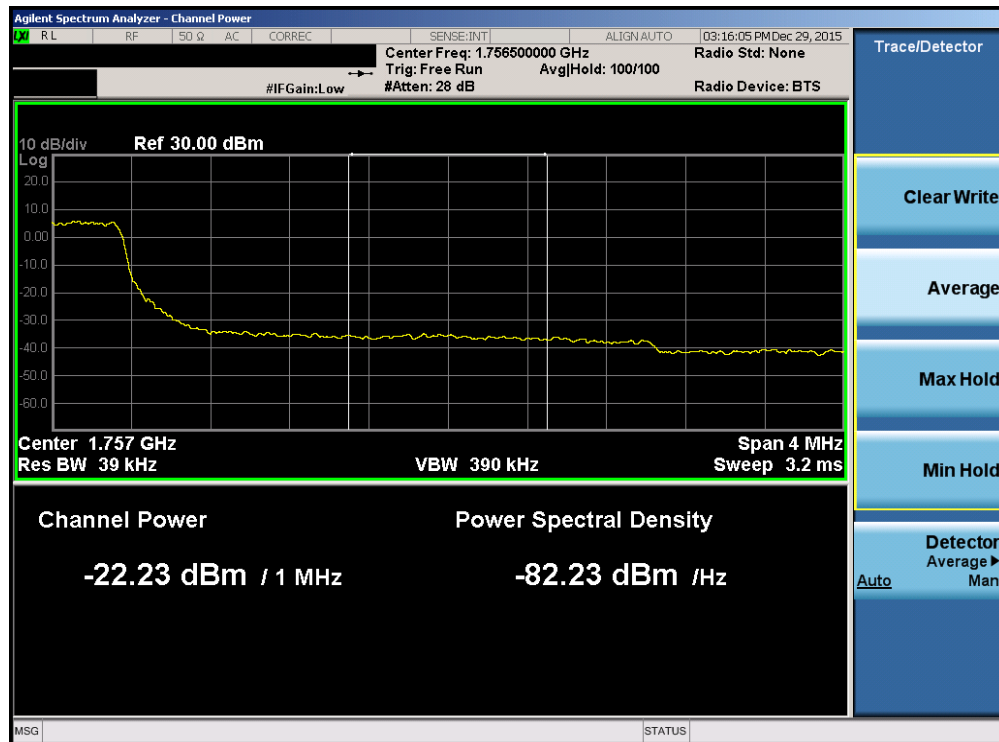


Plot 7-160. Lower Extended Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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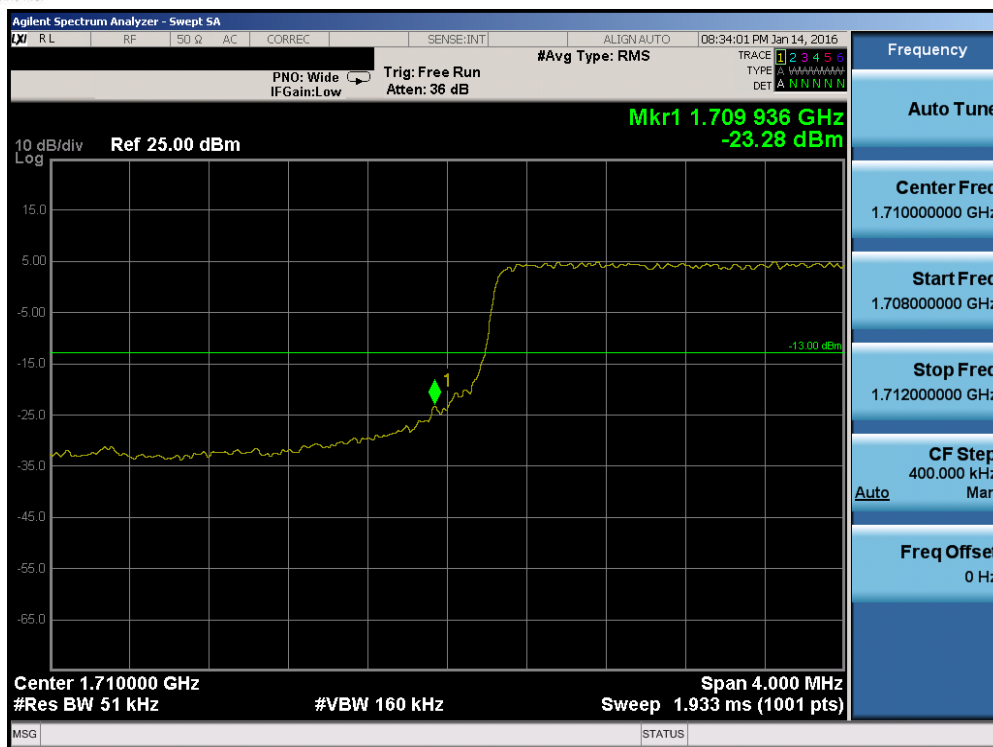


Plot 7-161. Upper Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

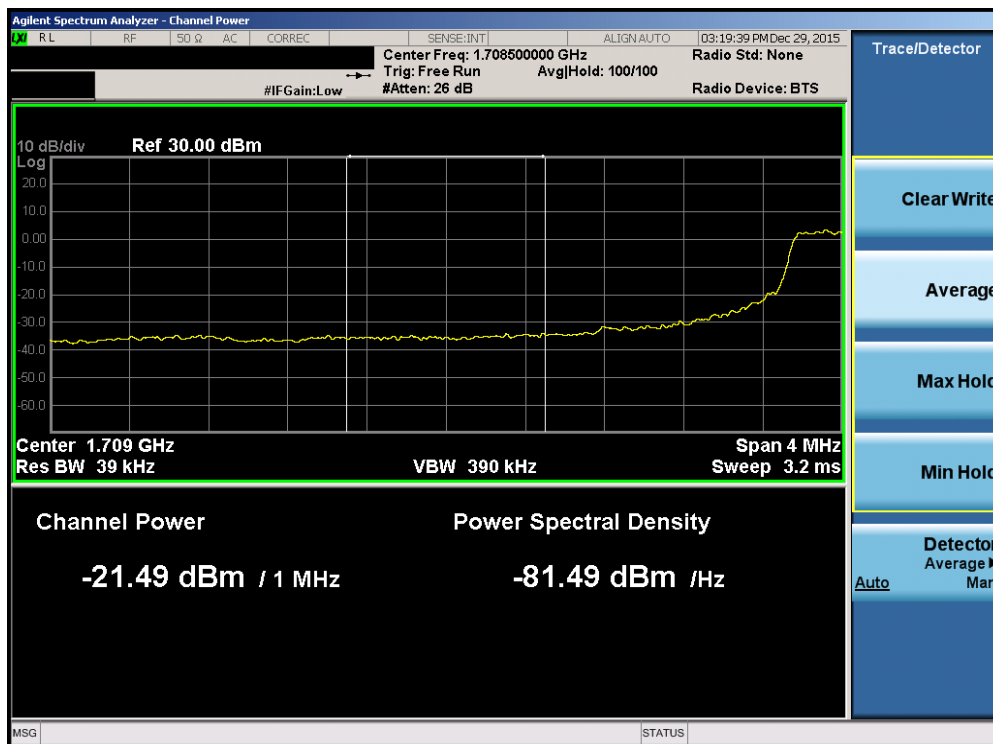


Plot 7-162. Upper Extended Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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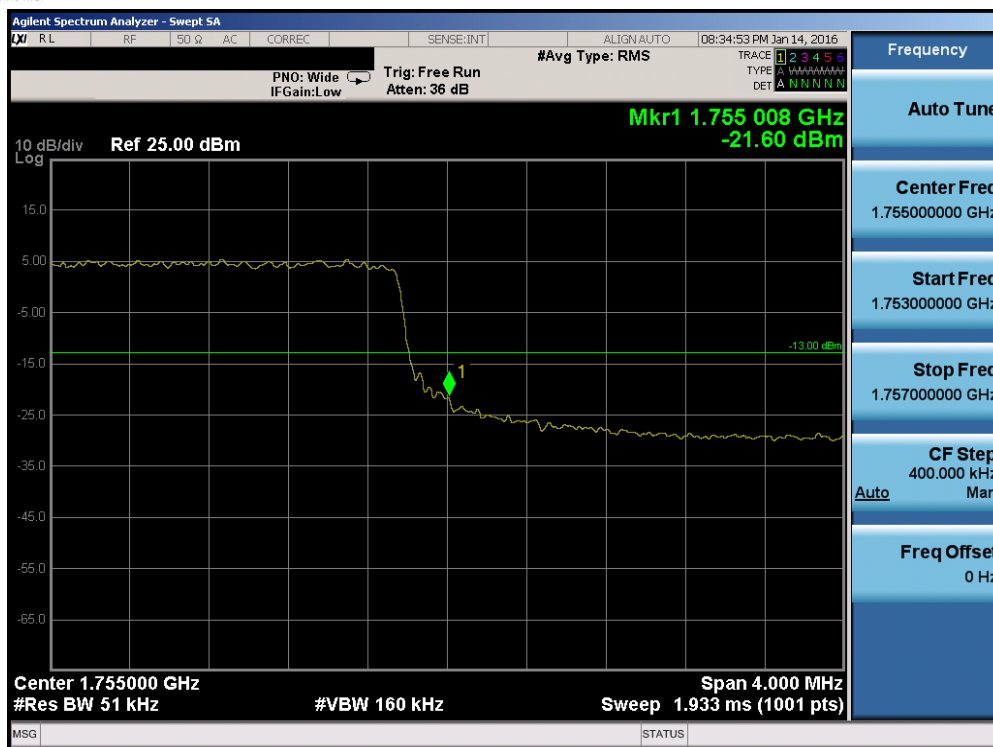


Plot 7-163. Lower Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

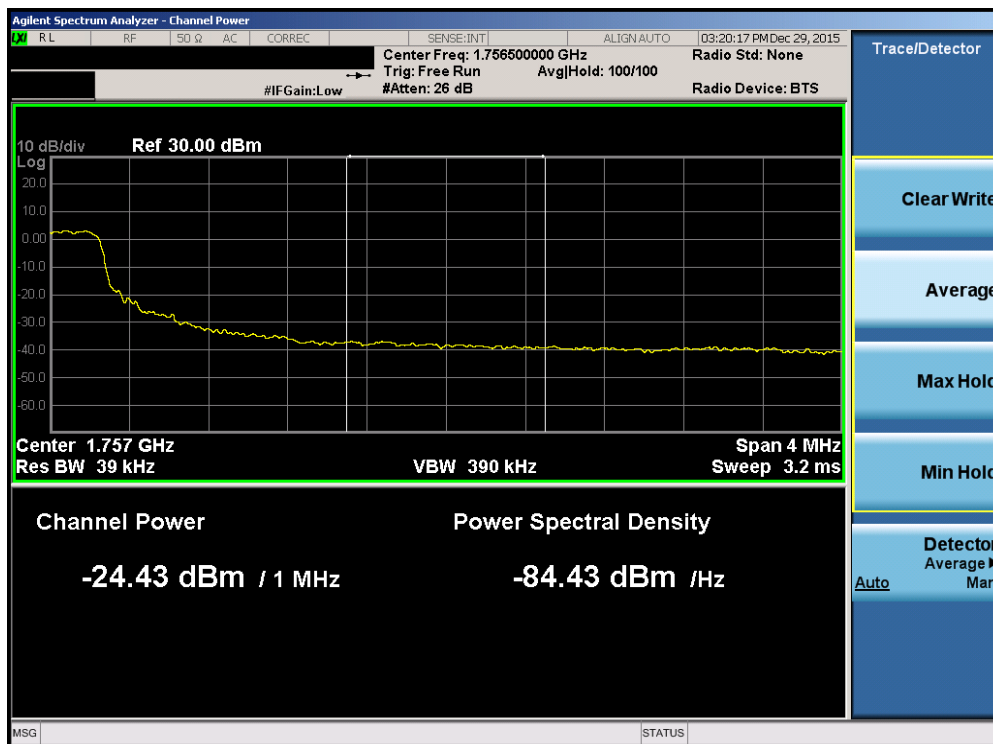


Plot 7-164. Lower Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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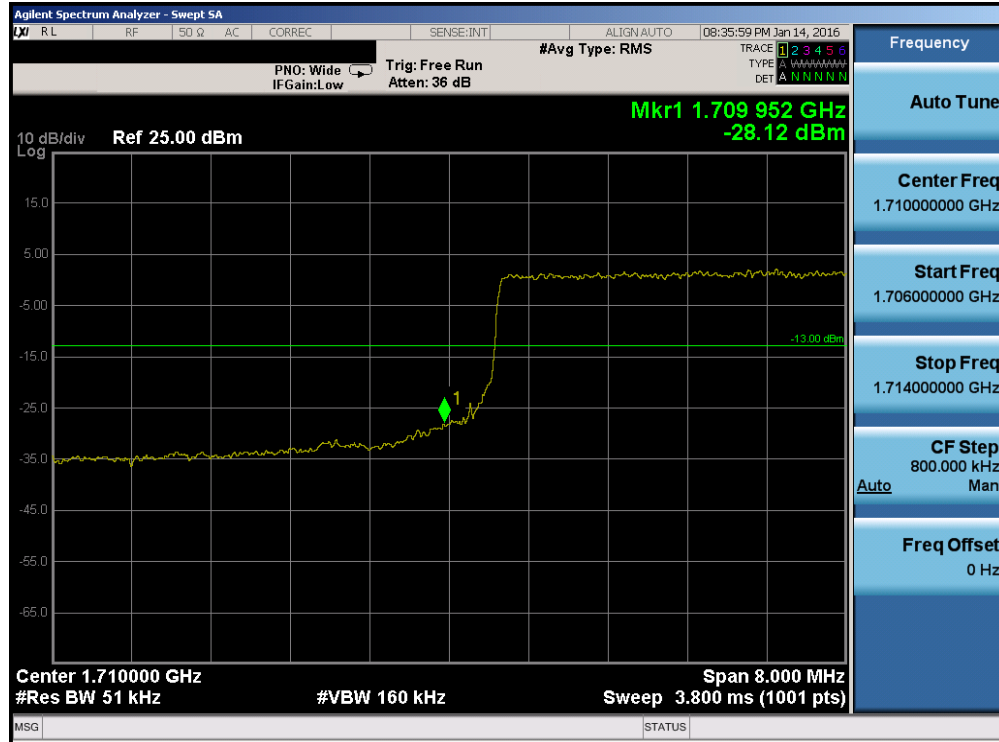


Plot 7-165. Upper Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

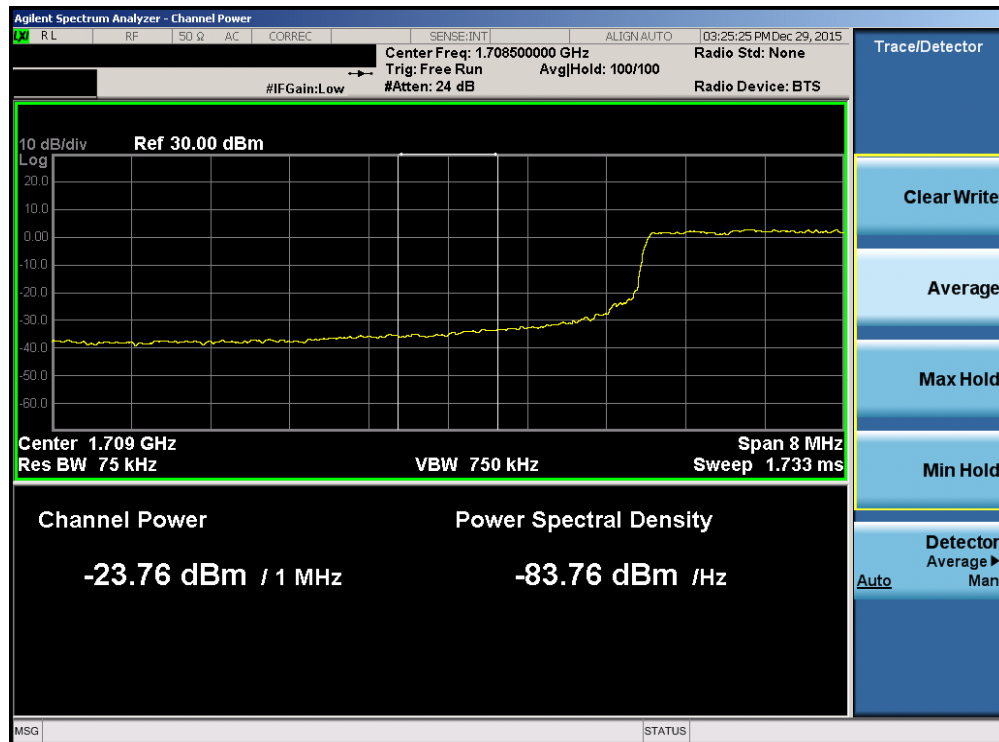


Plot 7-166. Upper Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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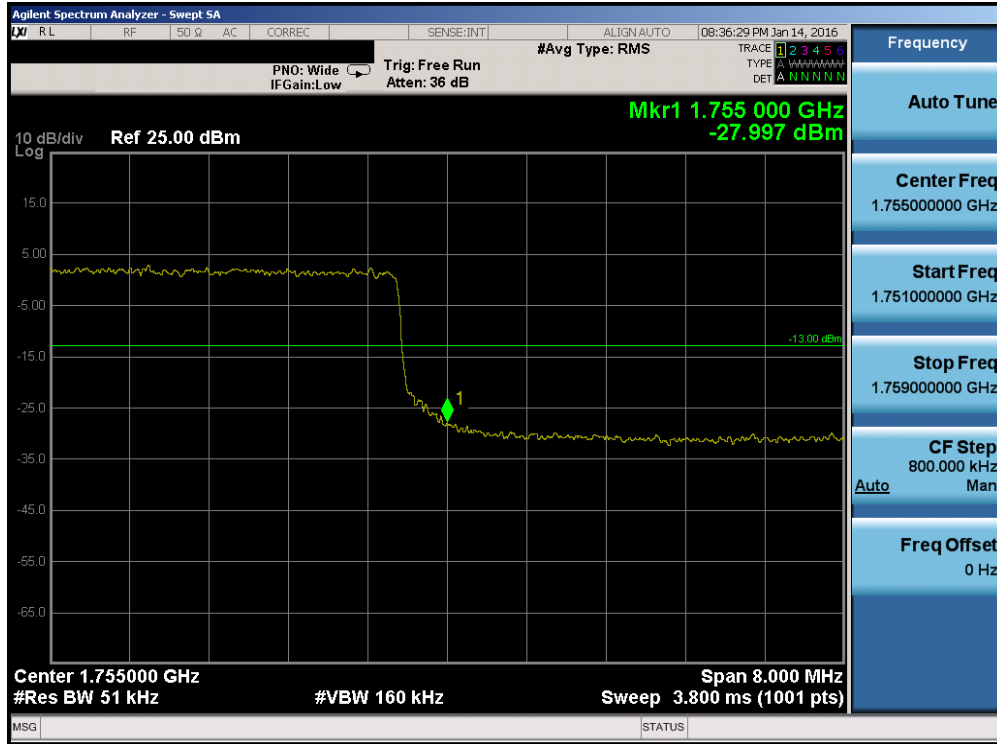


Plot 7-167. Lower Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

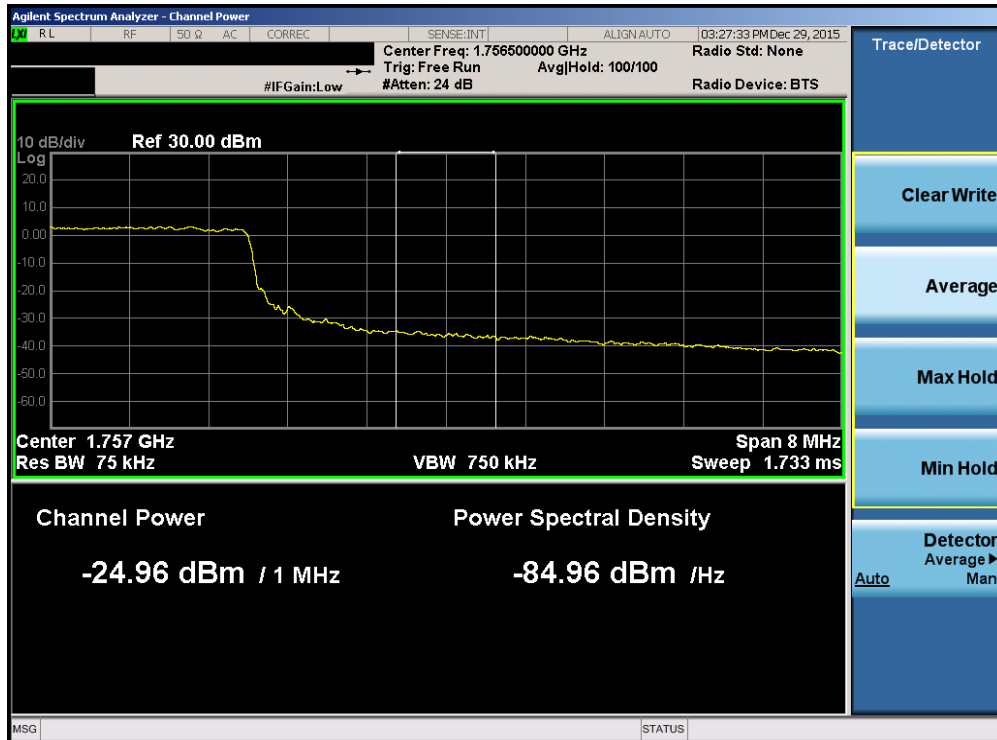


Plot 7-168. Lower Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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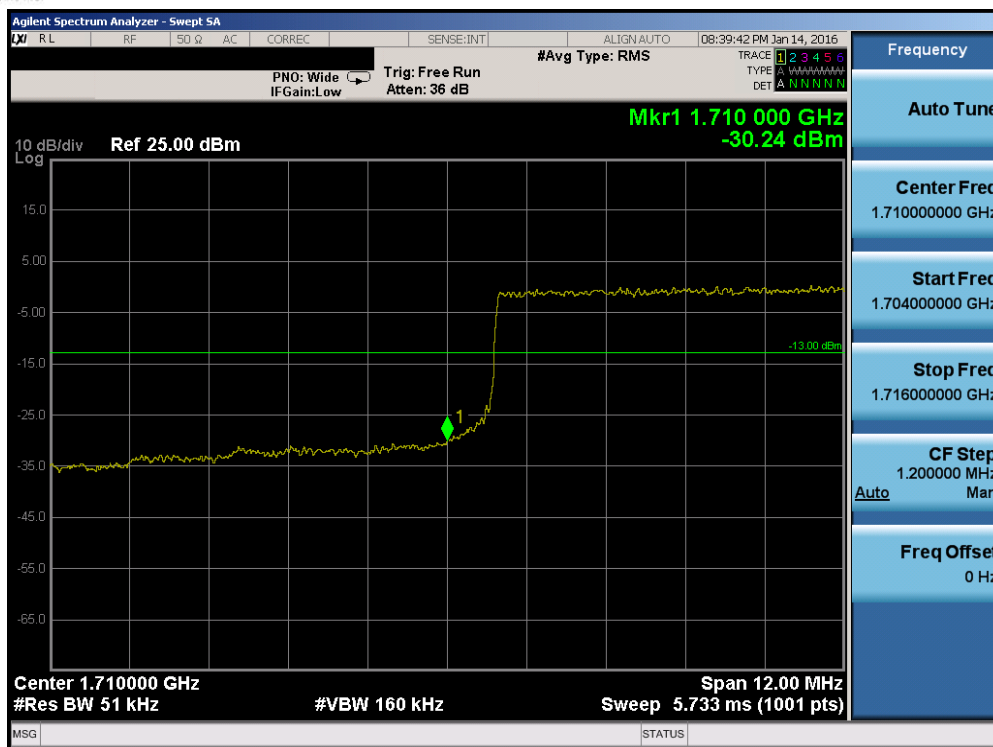


Plot 7-169. Upper Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

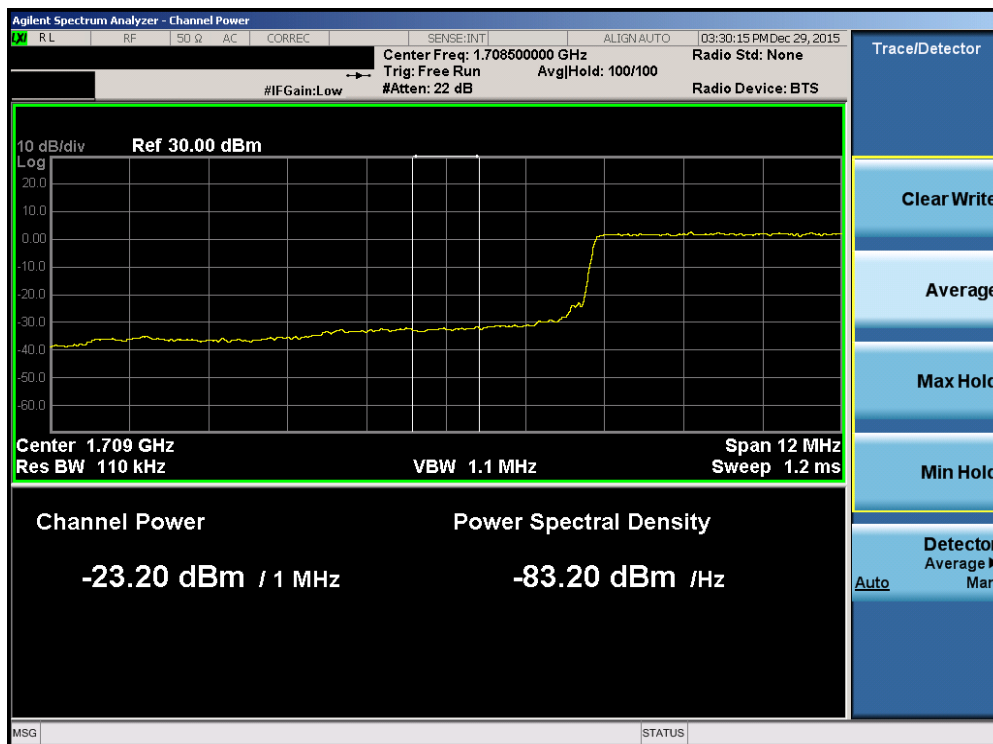


Plot 7-170. Upper Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 103 of 182

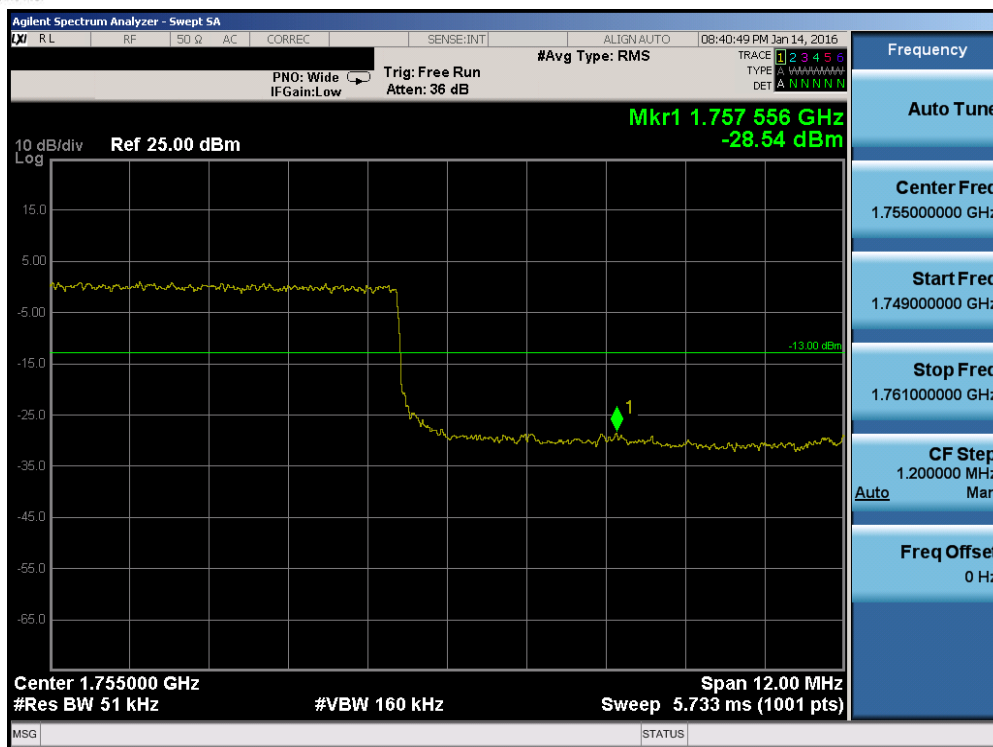


Plot 7-171. Lower Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

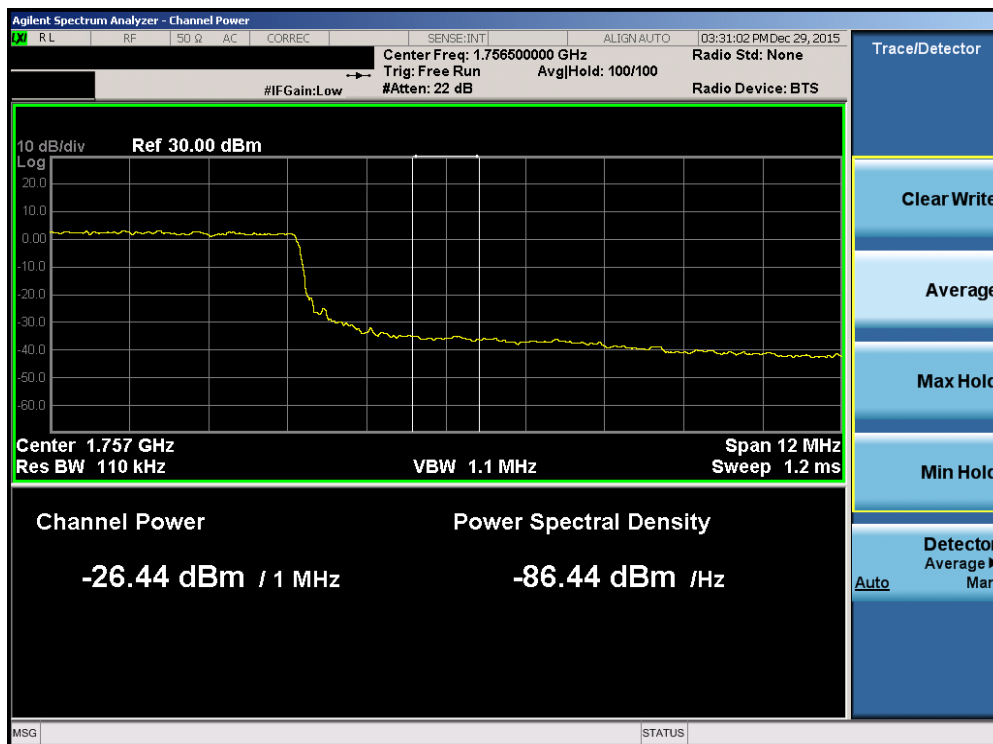


Plot 7-172. Lower Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 104 of 182

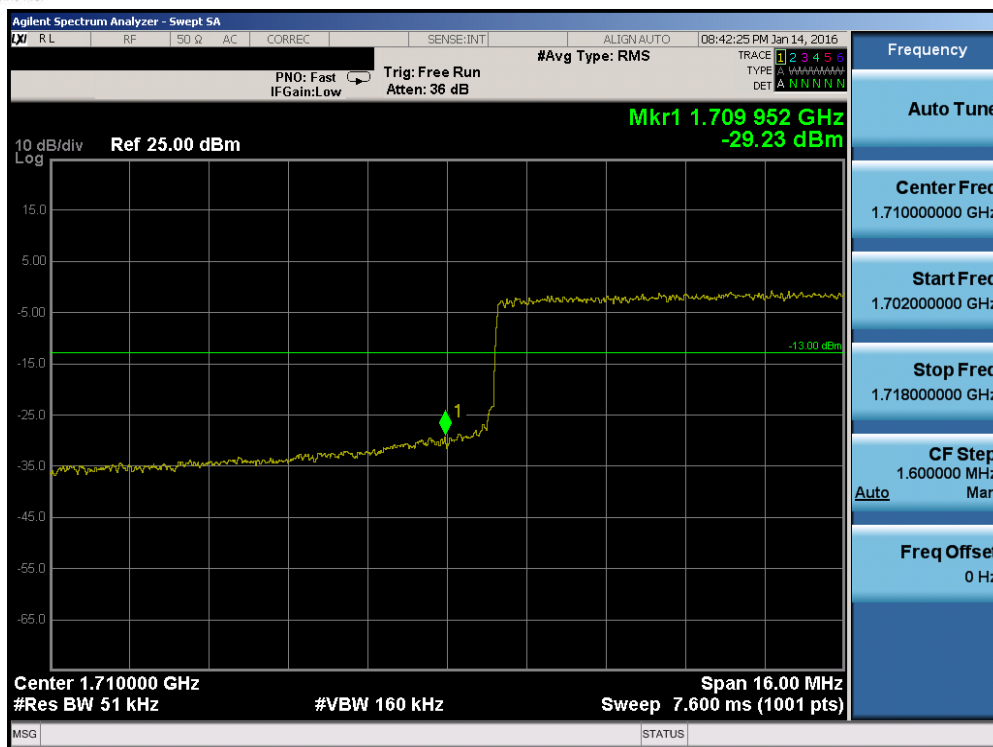


Plot 7-173. Upper Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

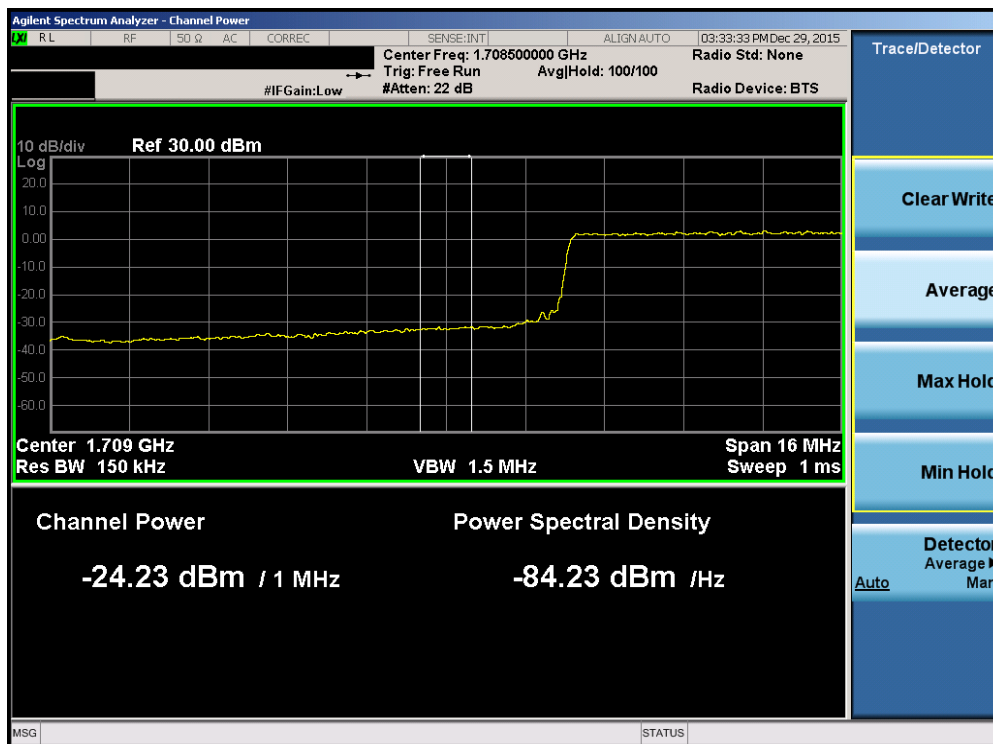


Plot 7-174. Upper Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 105 of 182

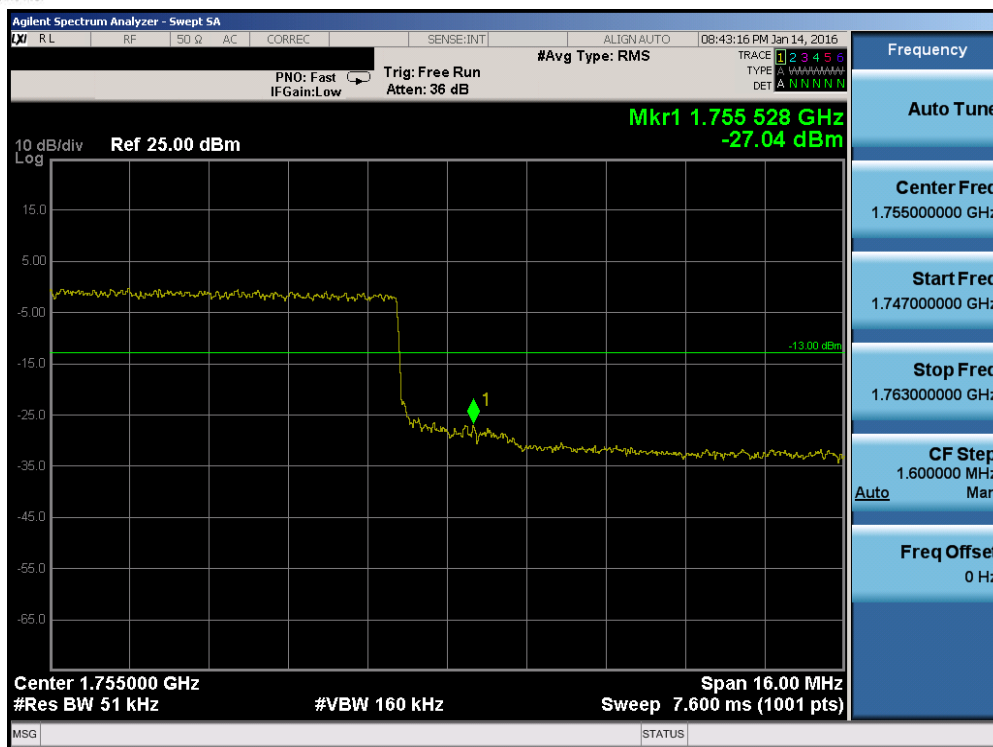


Plot 7-175. Lower Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

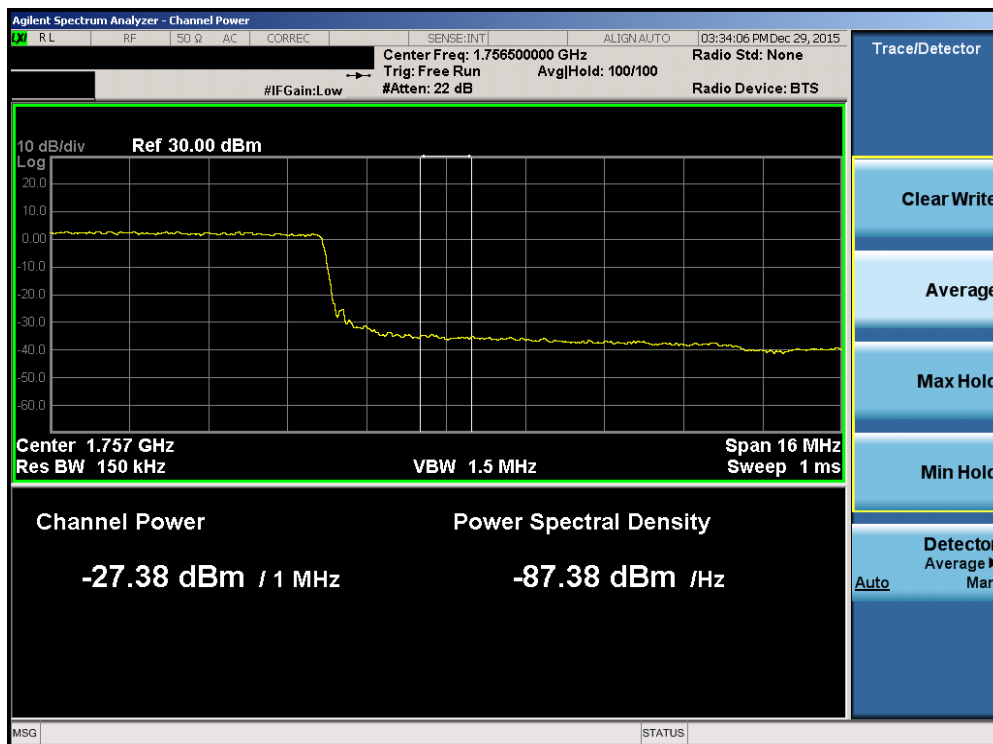


Plot 7-176. Lower Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 106 of 182

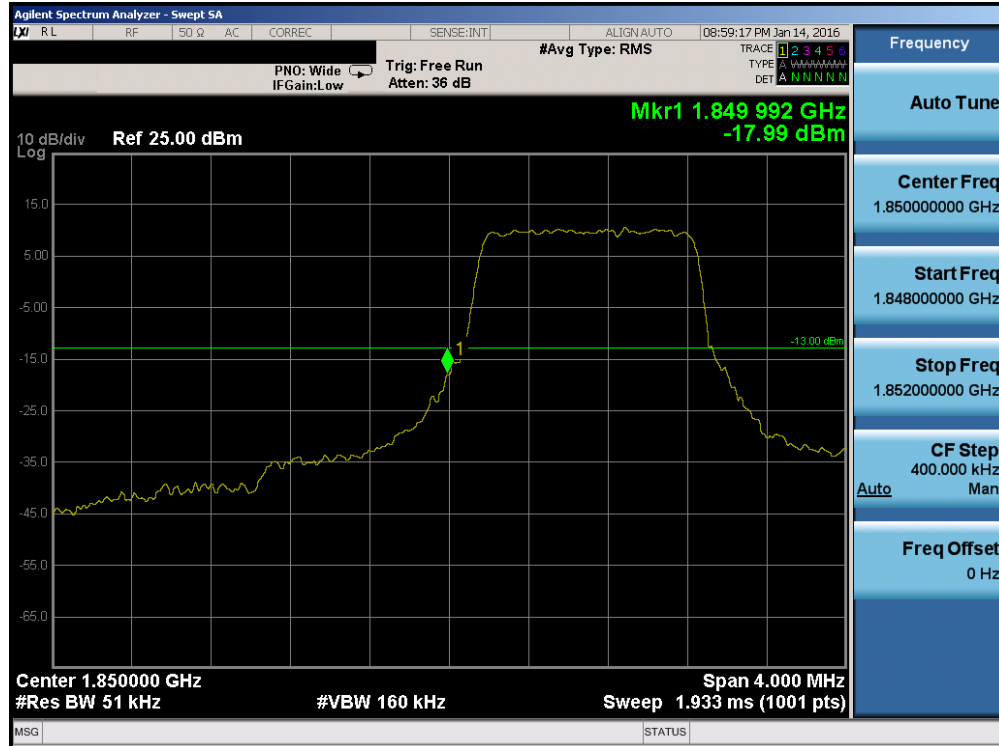


Plot 7-177. Upper Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

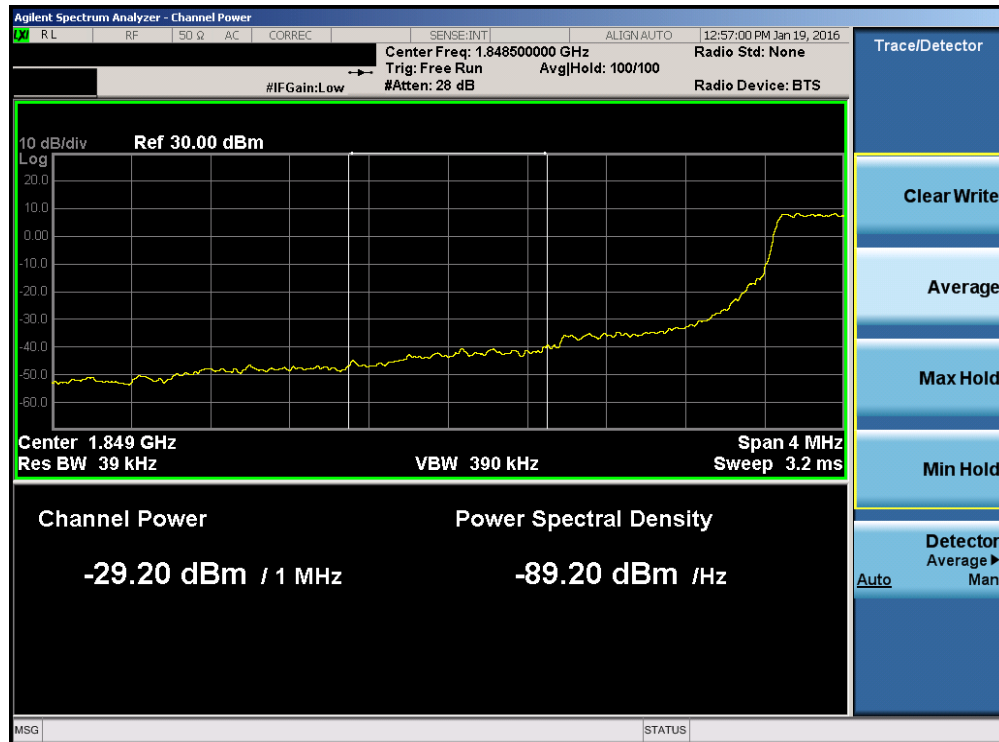


Plot 7-178. Upper Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 107 of 182

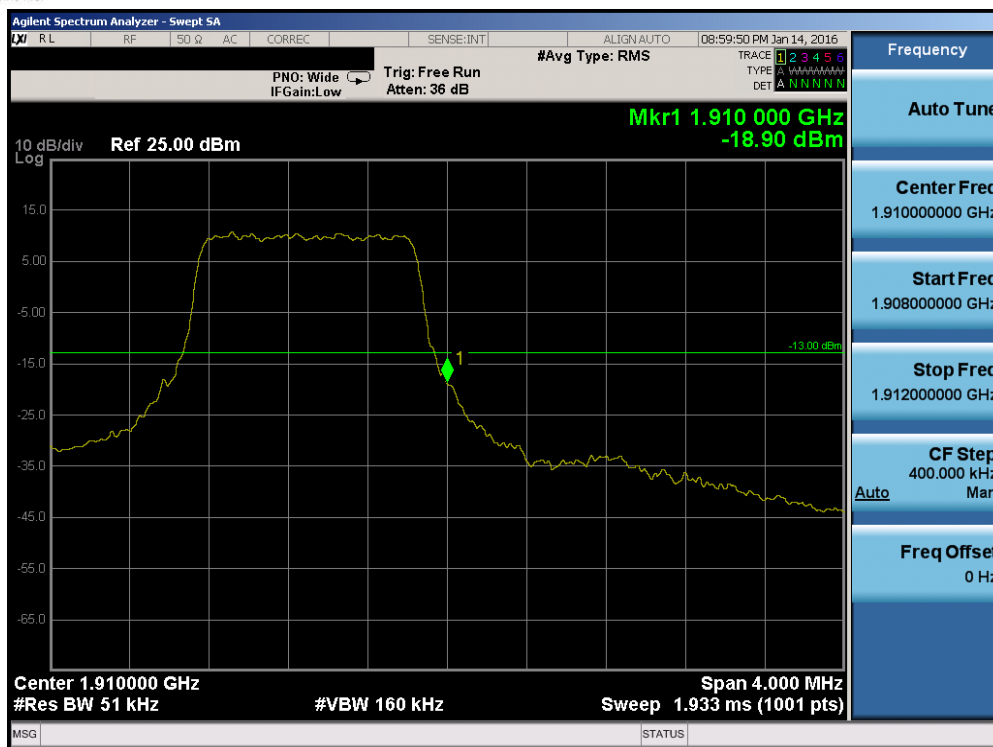


Plot 7-179. Lower Band Edge Plot (Band 2/25 – 1.4MHz QPSK – RB Size 6)

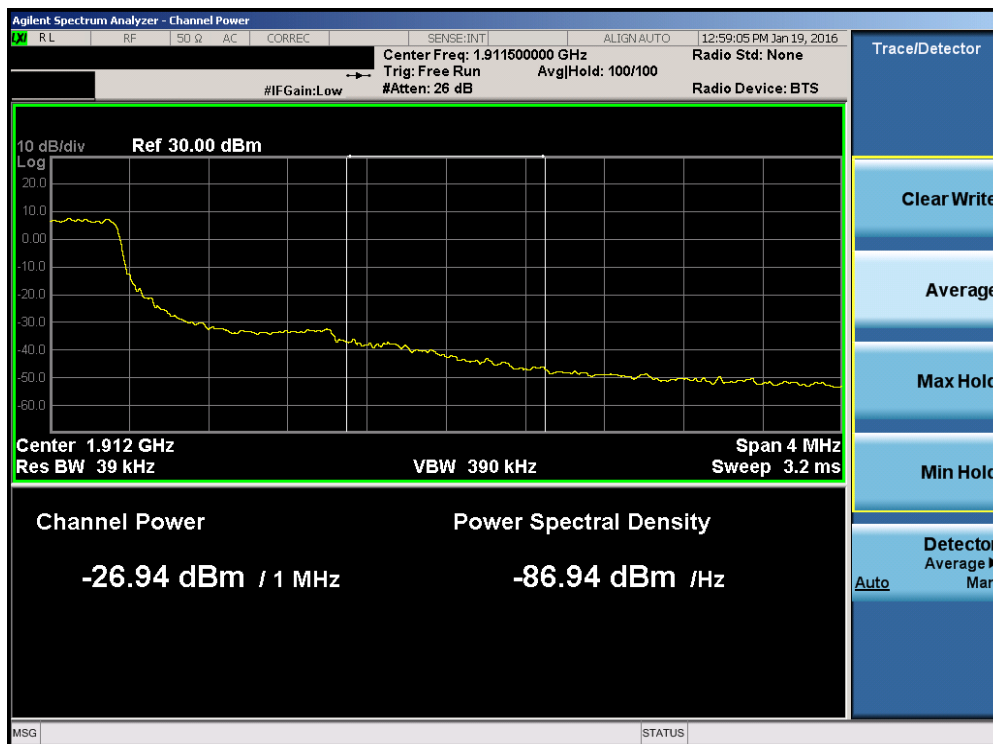


Plot 7-180. Lower Extended Band Edge Plot (Band 2/25 – 1.4MHz QPSK – RB Size 6)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 108 of 182

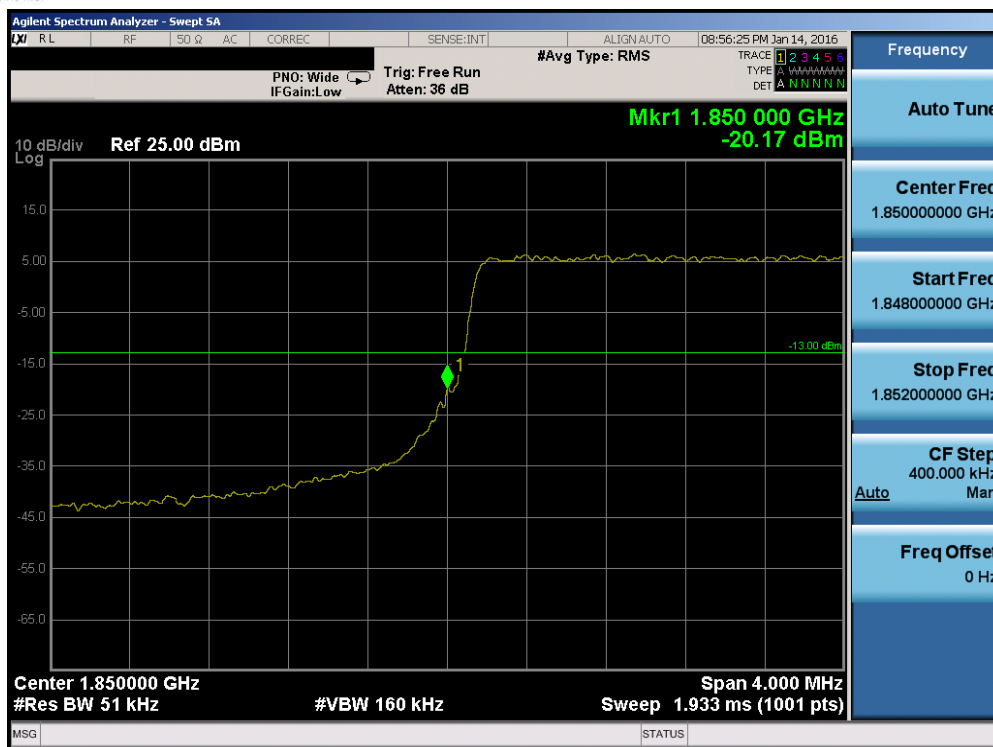


Plot 7-181. Upper Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)

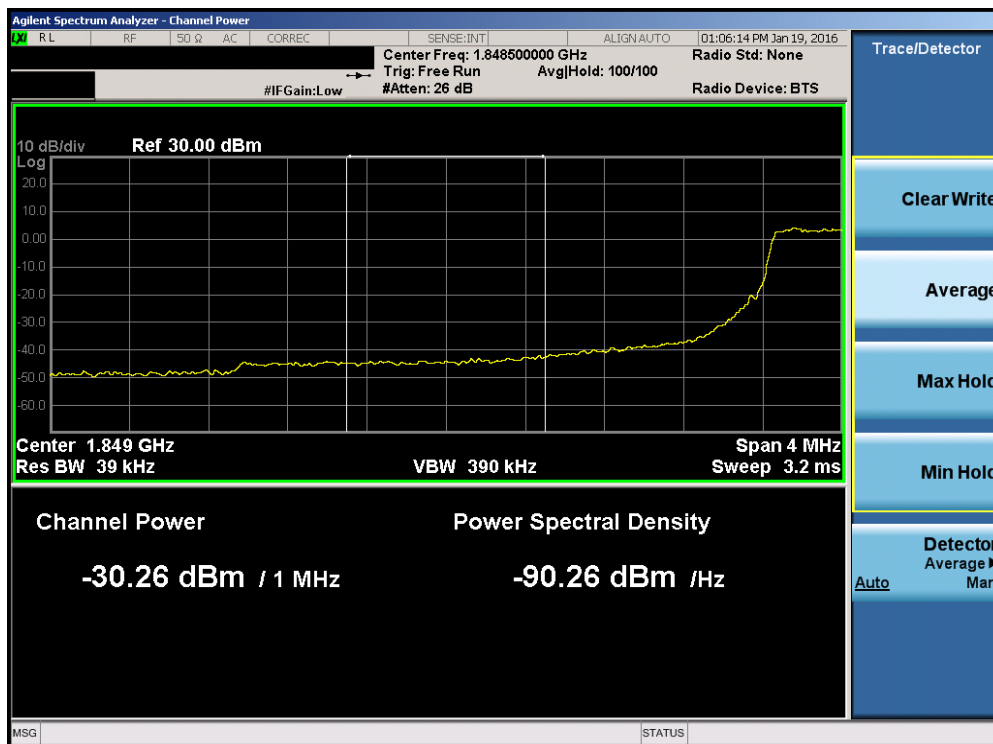


Plot 7-182. Upper Extended Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 109 of 182

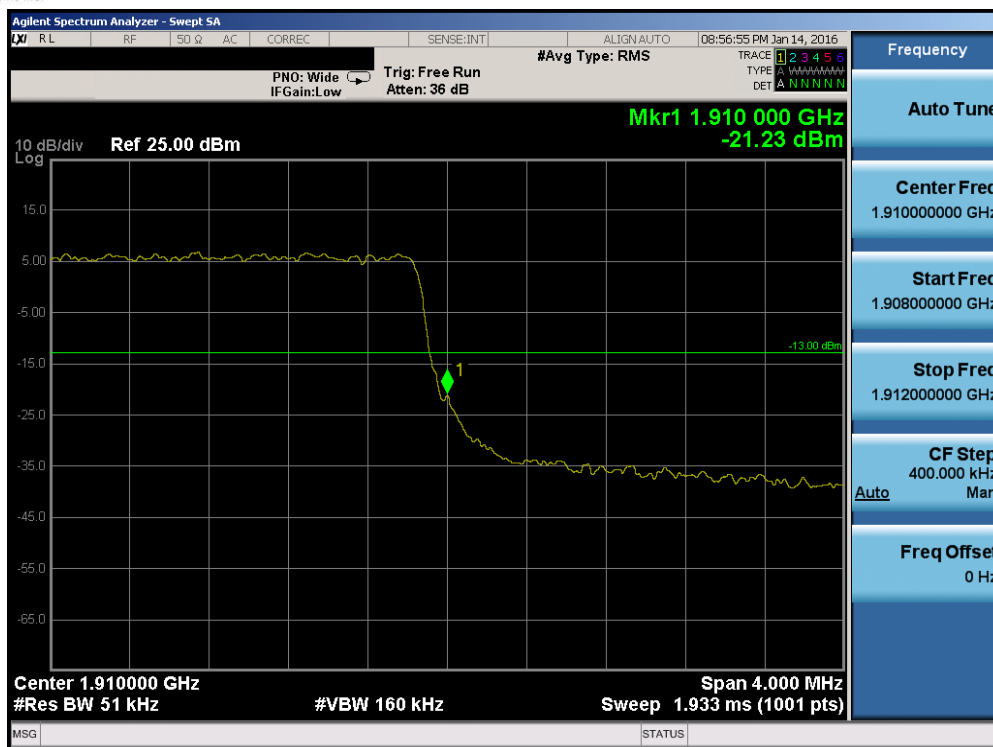


Plot 7-183. Lower Band Edge Plot (Band 2/25 – 3.0MHz QPSK – RB Size 15)

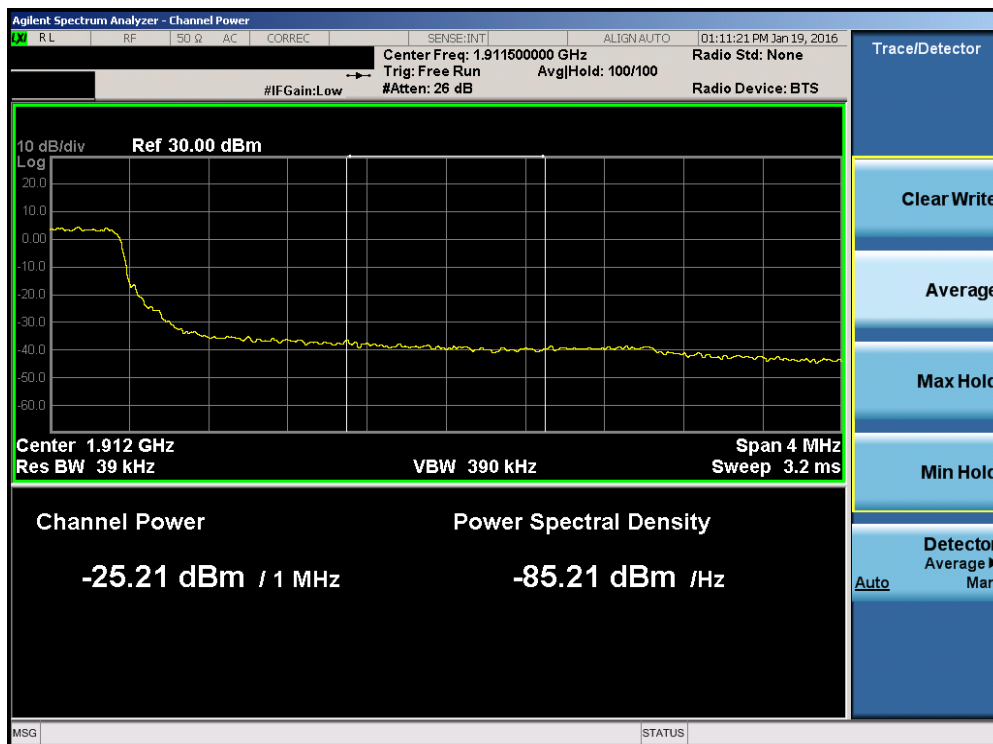


Plot 7-184. Lower Extended Band Edge Plot (Band 2/25 – 3.0MHz QPSK – RB Size 15)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 110 of 182

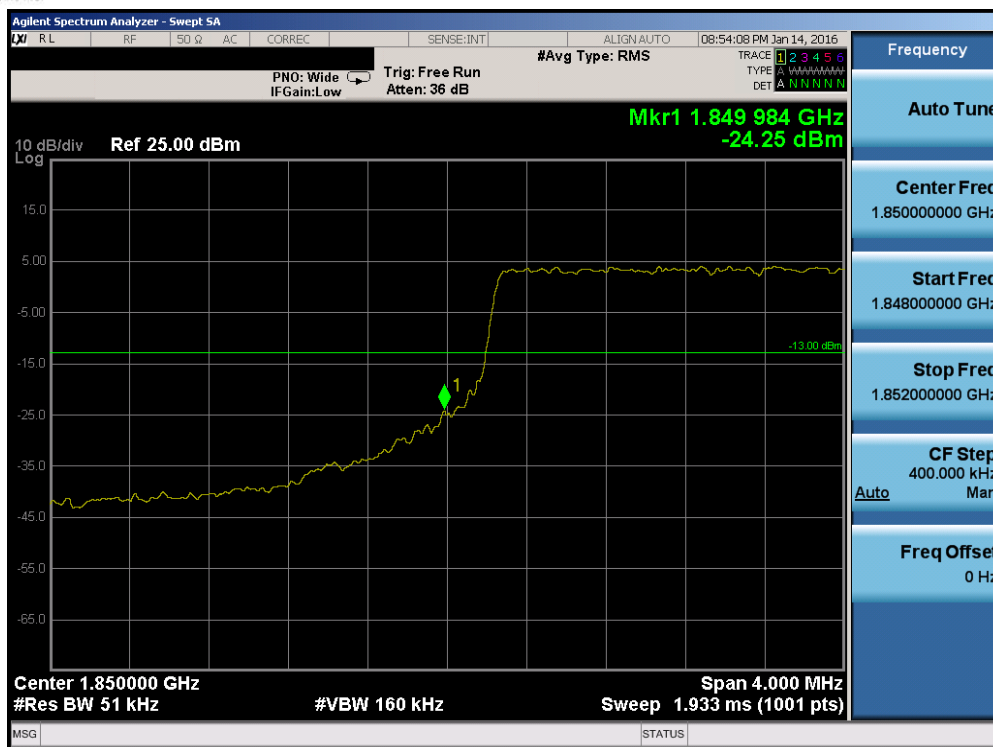


Plot 7-185. Upper Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)

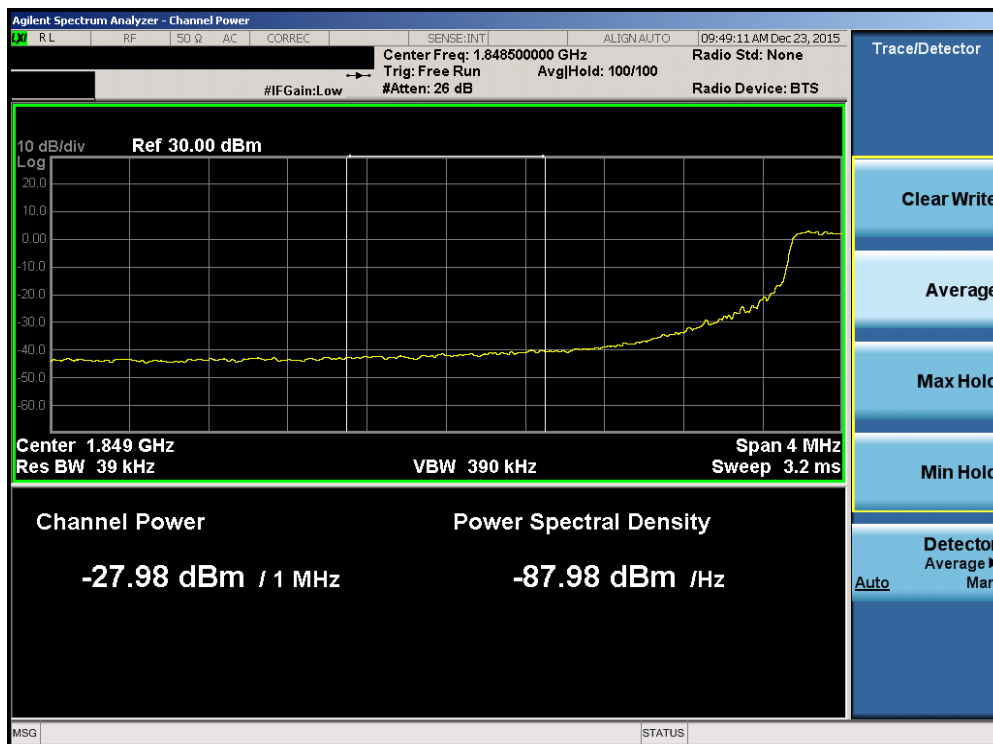


Plot 7-186. Upper Extended Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 111 of 182

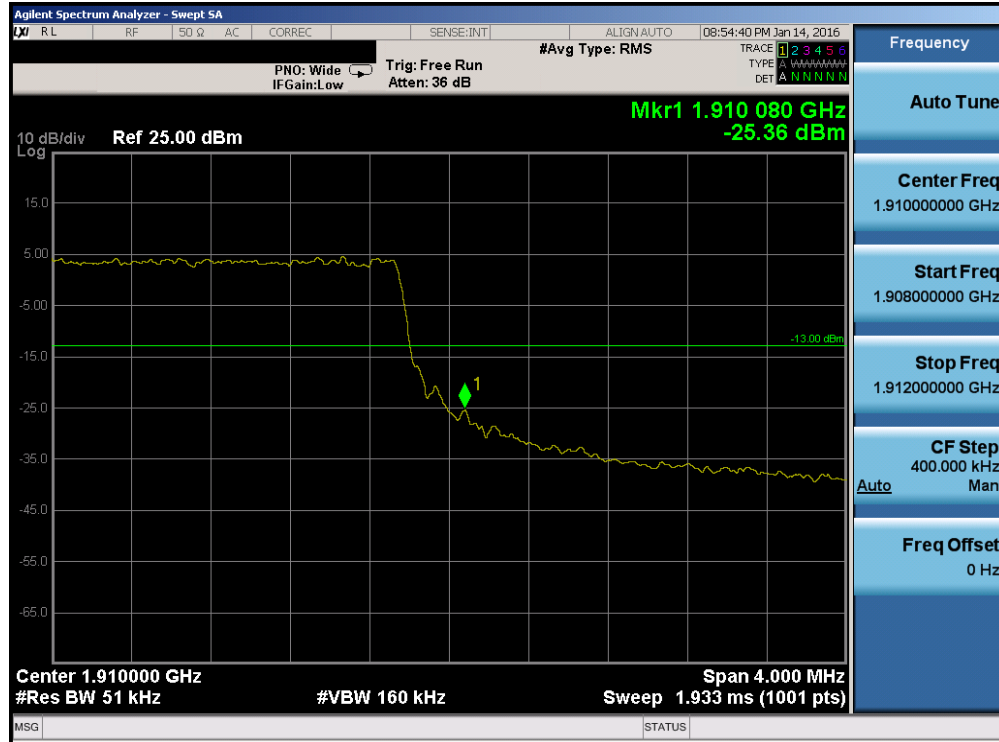


Plot 7-187. Lower Band Edge Plot (Band 2/25 – 5.0MHz QPSK – RB Size 25)

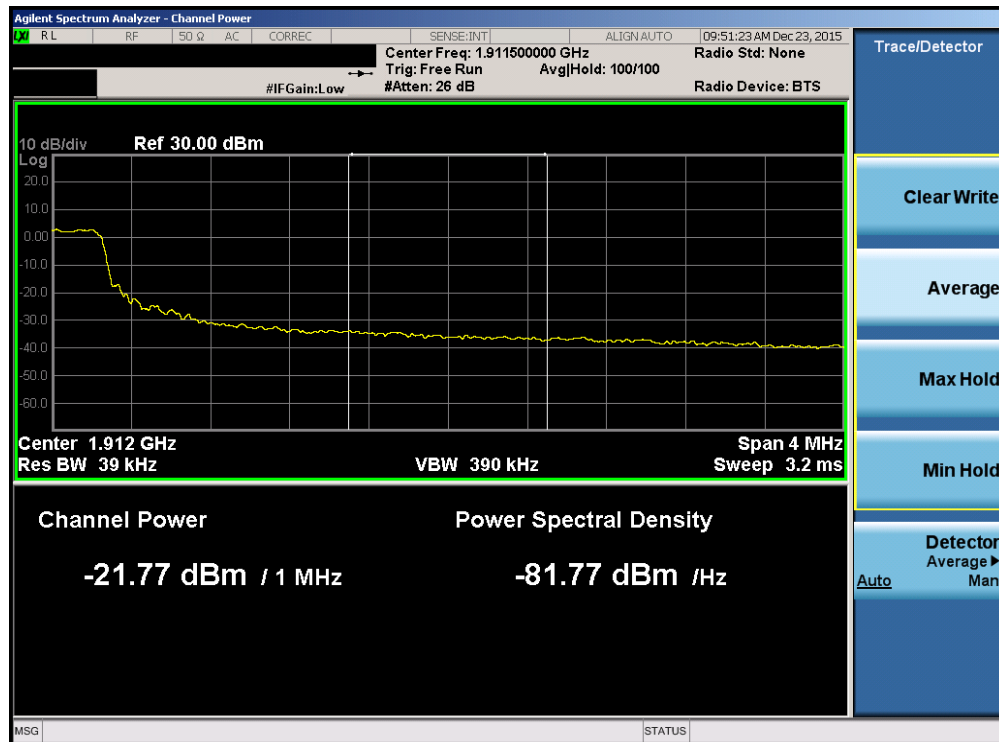


Plot 7-188. Lower Extended Band Edge Plot (Band 2/25 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 112 of 182

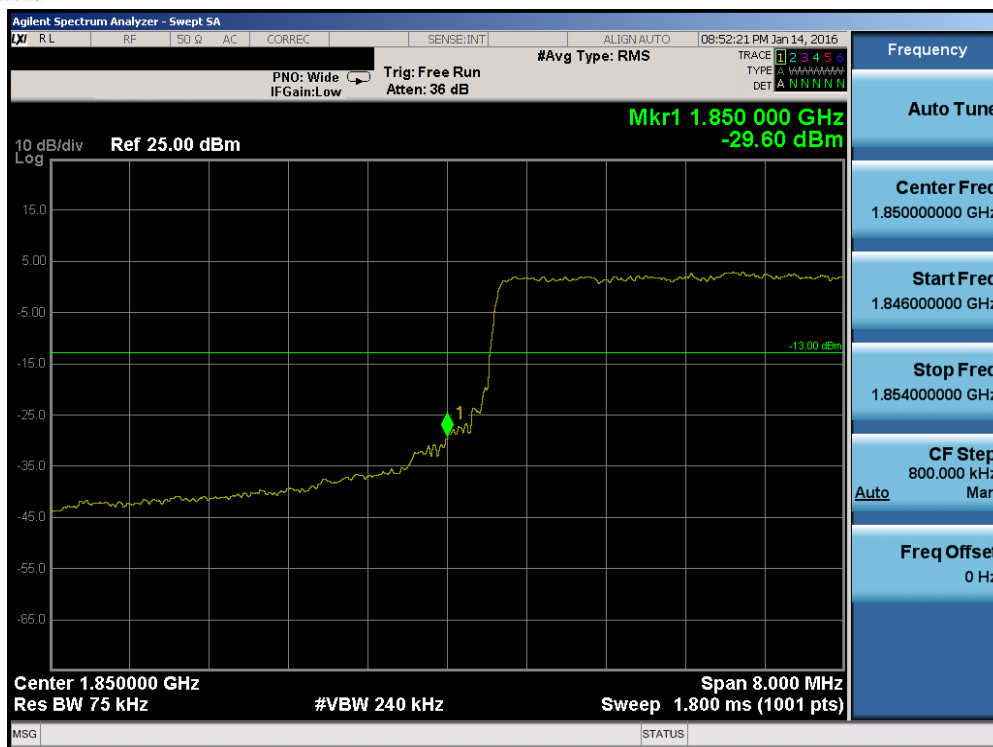


Plot 7-189. Upper Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

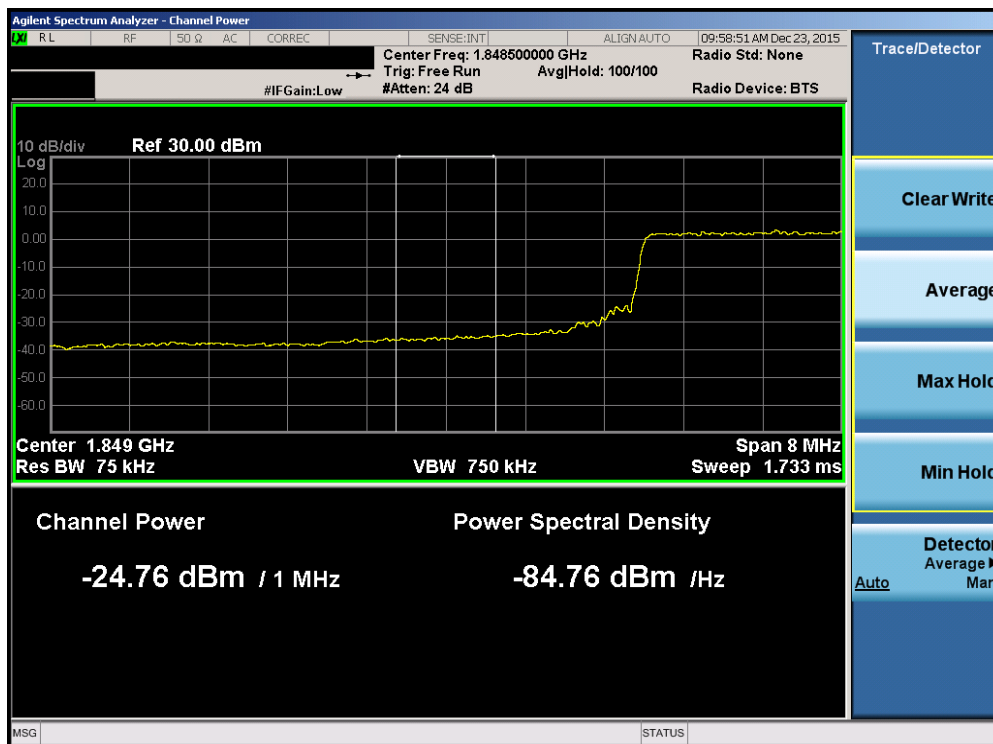


Plot 7-190. Upper Extended Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 113 of 182

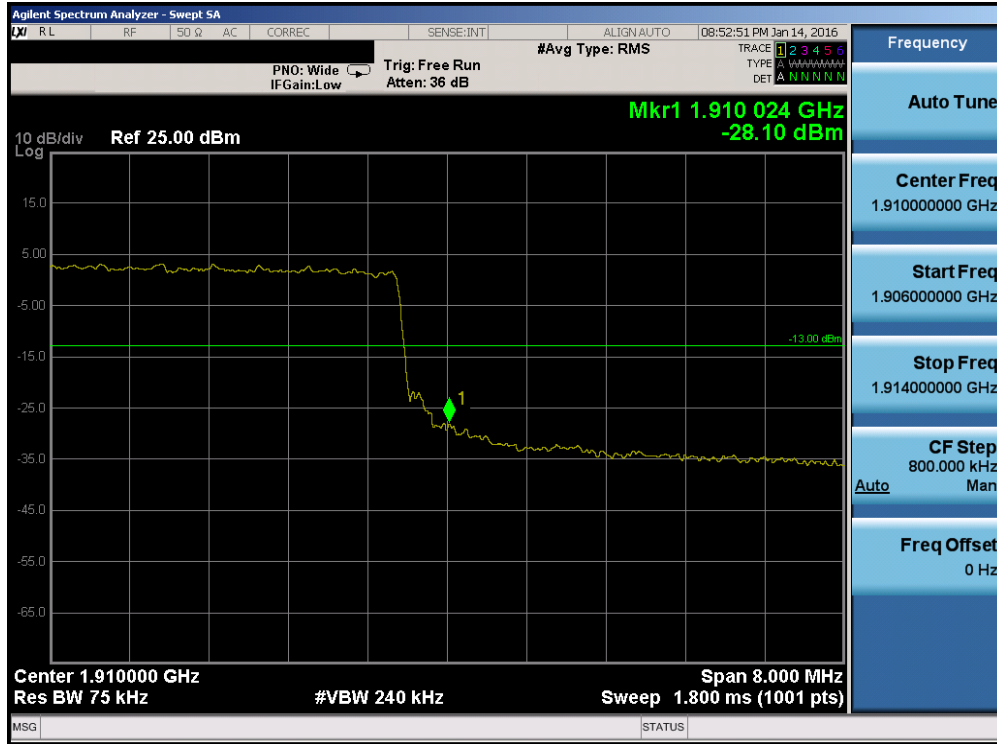


Plot 7-191. Lower Band Edge Plot (Band 2/25 – 10.0MHz QPSK – RB Size 50)

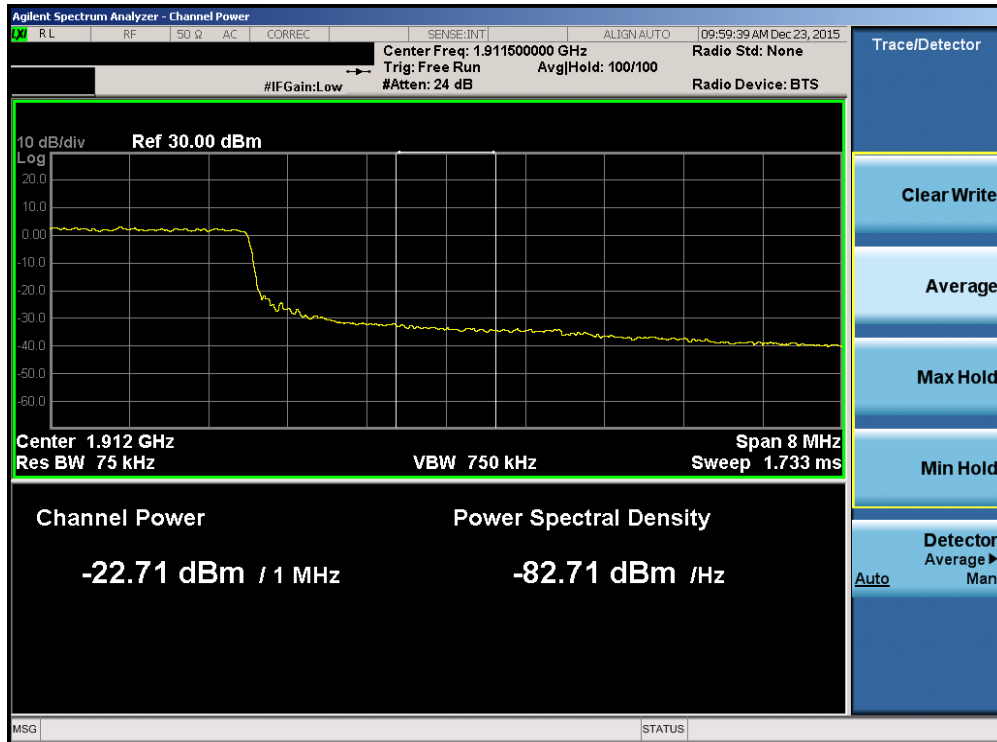


Plot 7-192. Lower Extended Band Edge Plot (Band 2/25 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 114 of 182

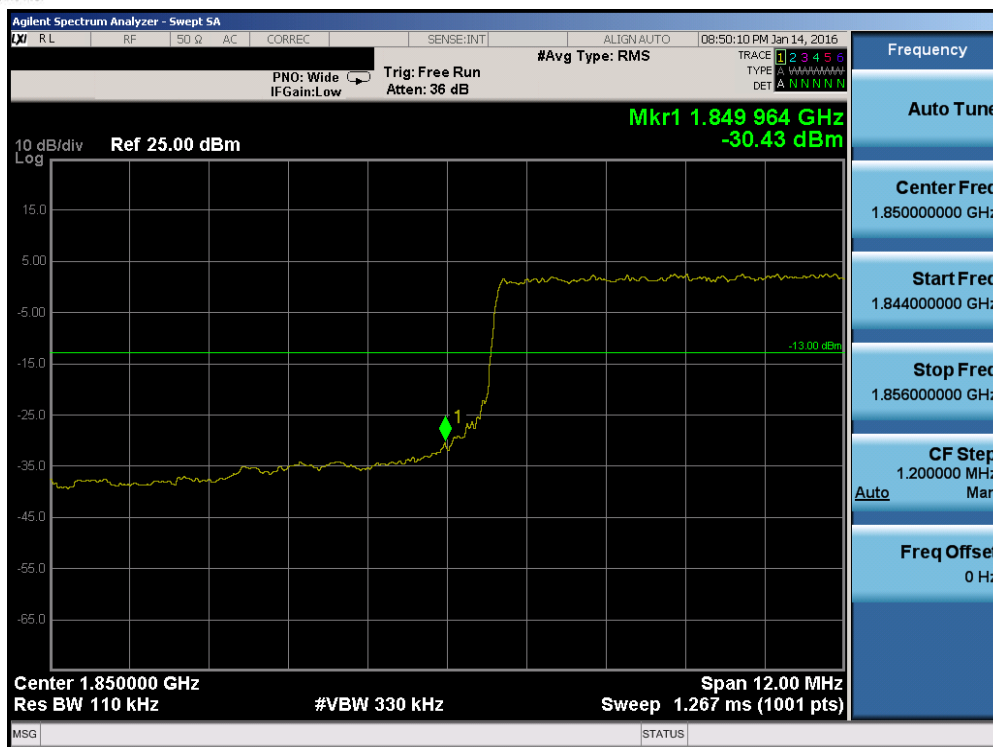


Plot 7-193. Upper Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

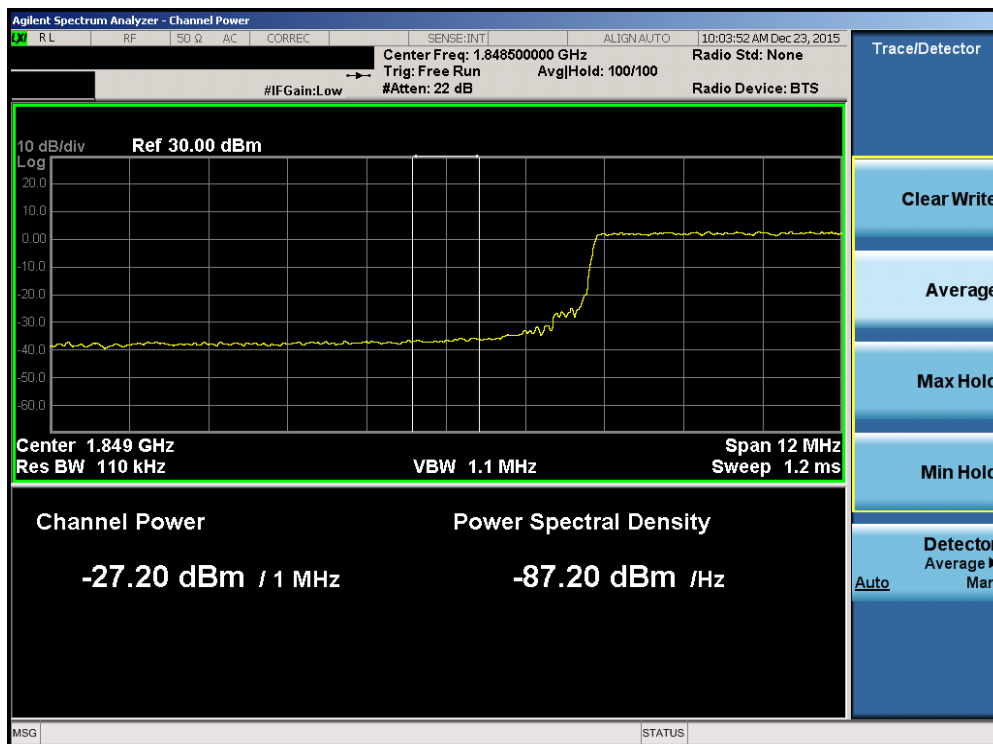


Plot 7-194. Upper Extended Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 115 of 182

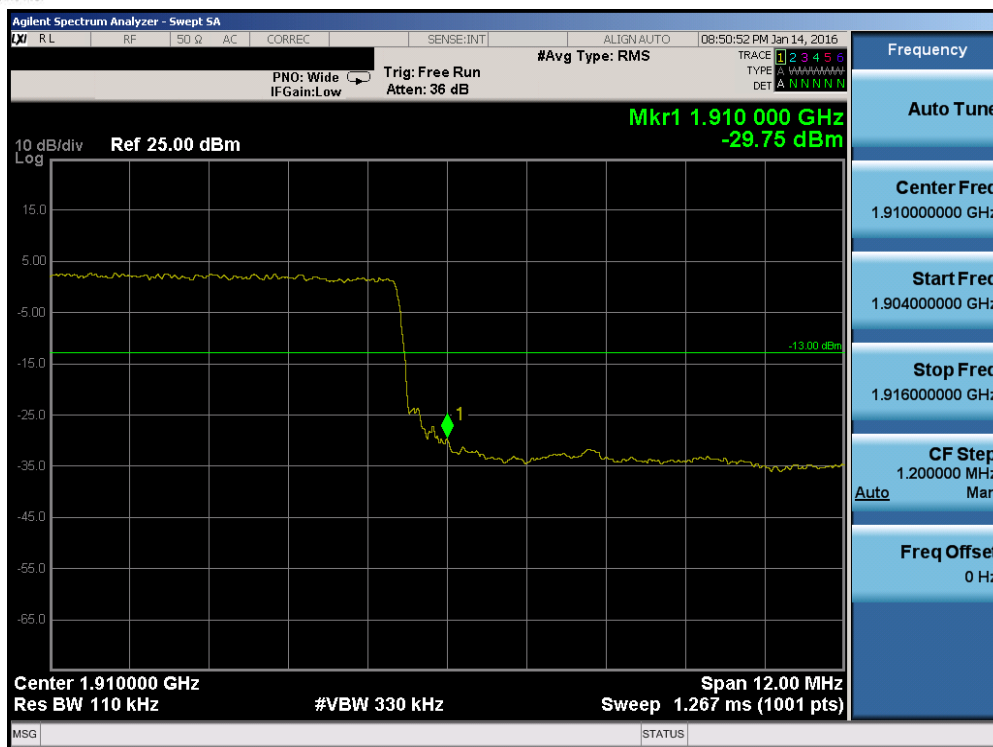


Plot 7-195. Lower Band Edge Plot (Band 2/25 – 15.0MHz QPSK – RB Size 75)

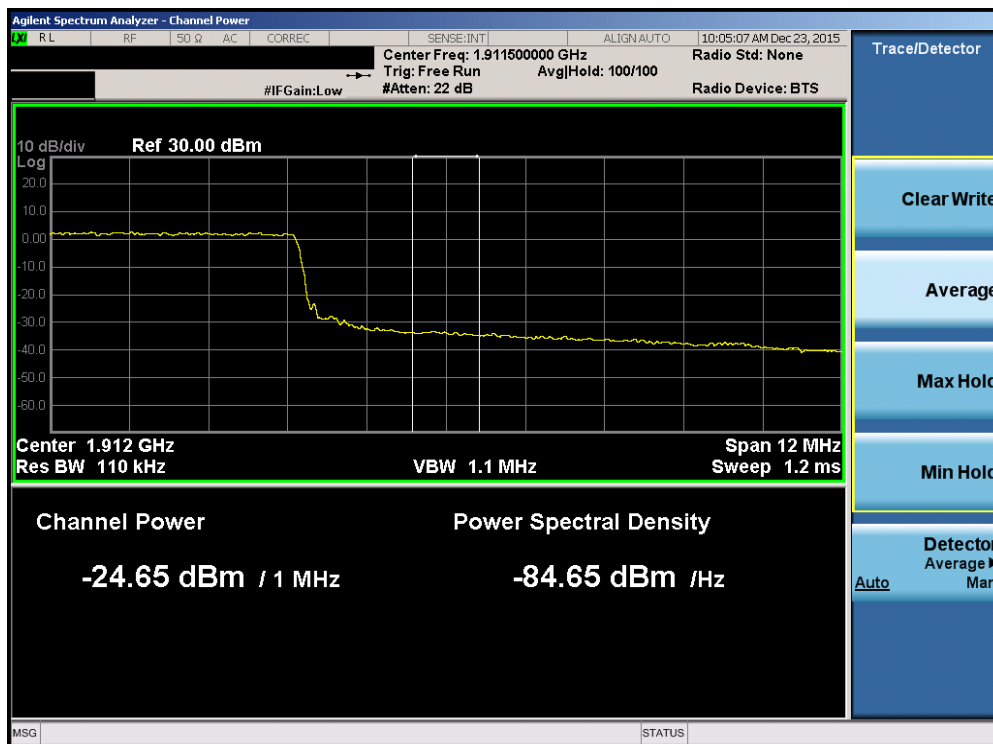


Plot 7-196. Lower Extended Band Edge Plot (Band 2/25 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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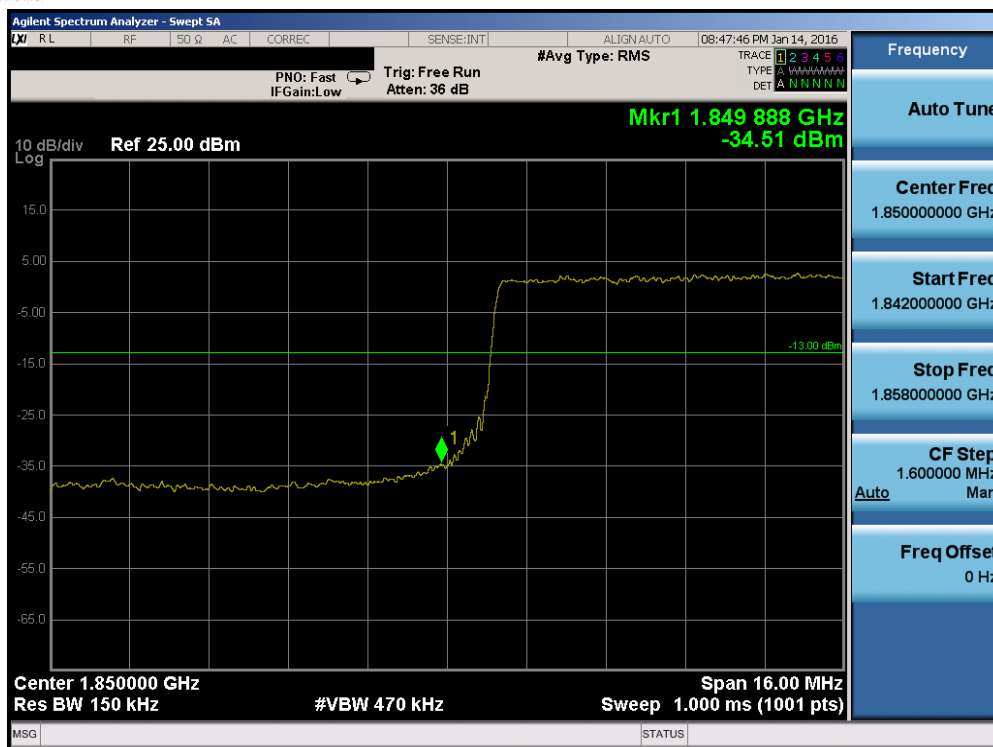


Plot 7-197. Upper Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)

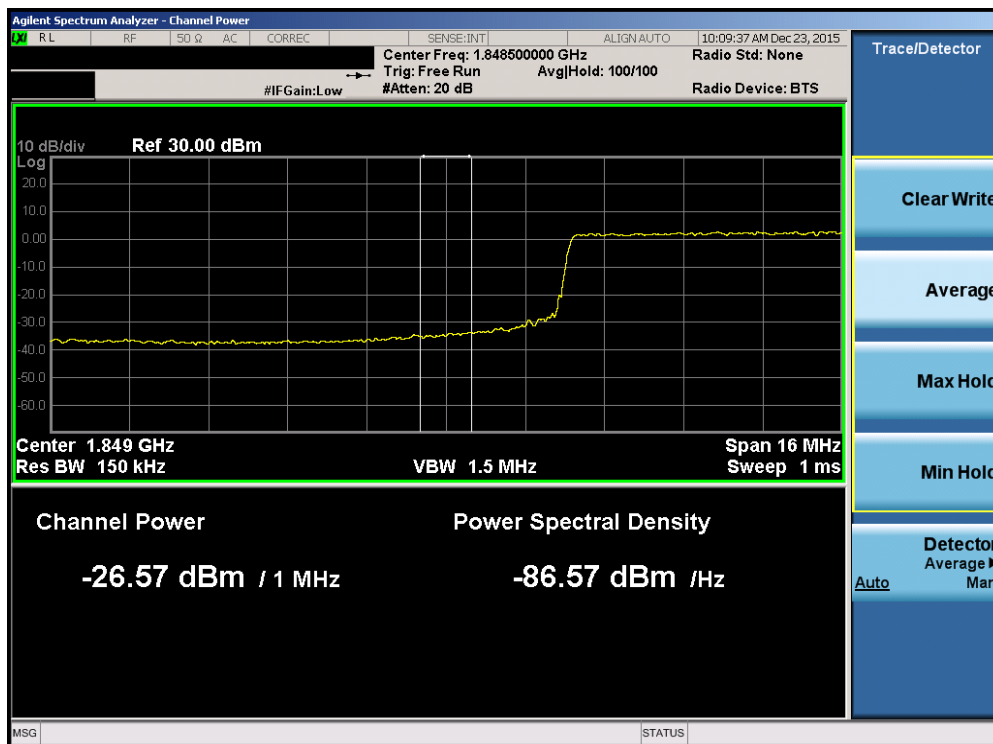


Plot 7-198. Upper Extended Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 117 of 182

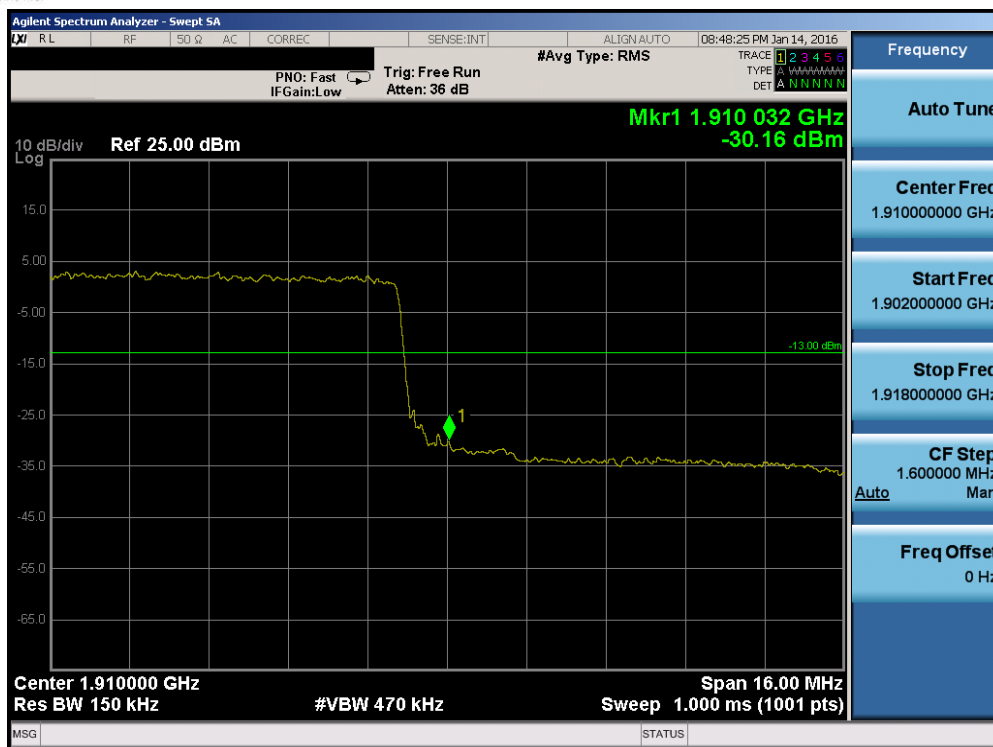


Plot 7-199. Lower Band Edge Plot (Band 2/25 – 20.0MHz QPSK – RB Size 100)

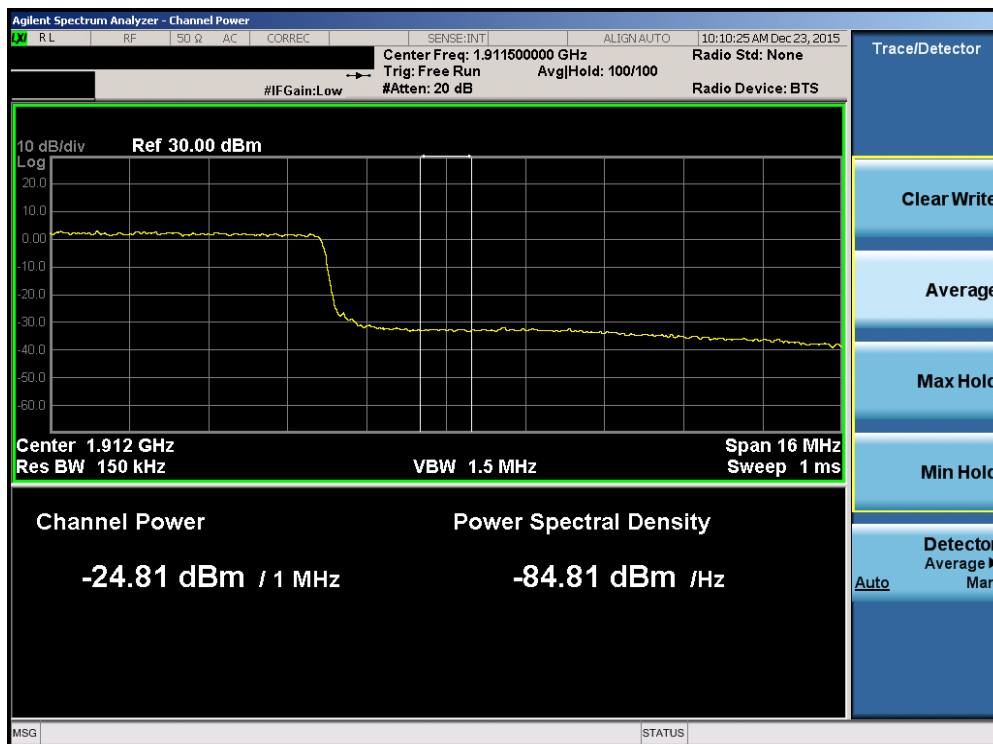


Plot 7-200. Lower Extended Band Edge Plot (Band 2/25 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 118 of 182

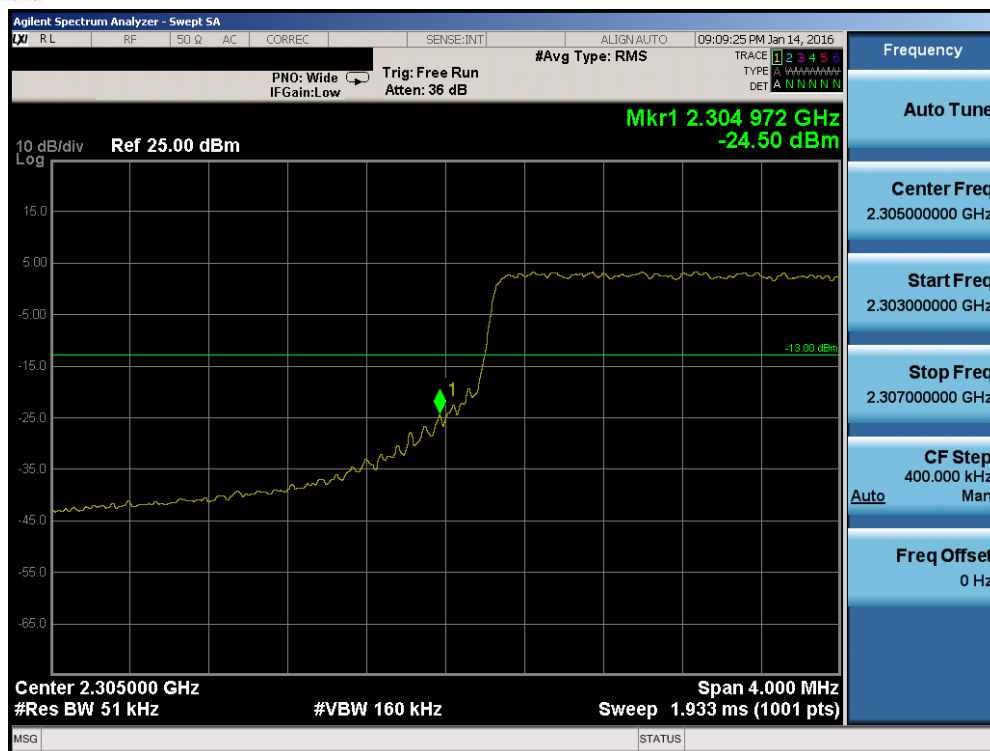


Plot 7-201. Upper Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)



Plot 7-202. Upper Extended Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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Plot 7-203. Lower Band Edge Plot (Band 30 – 5.0MHz QPSK – RB Size 25)

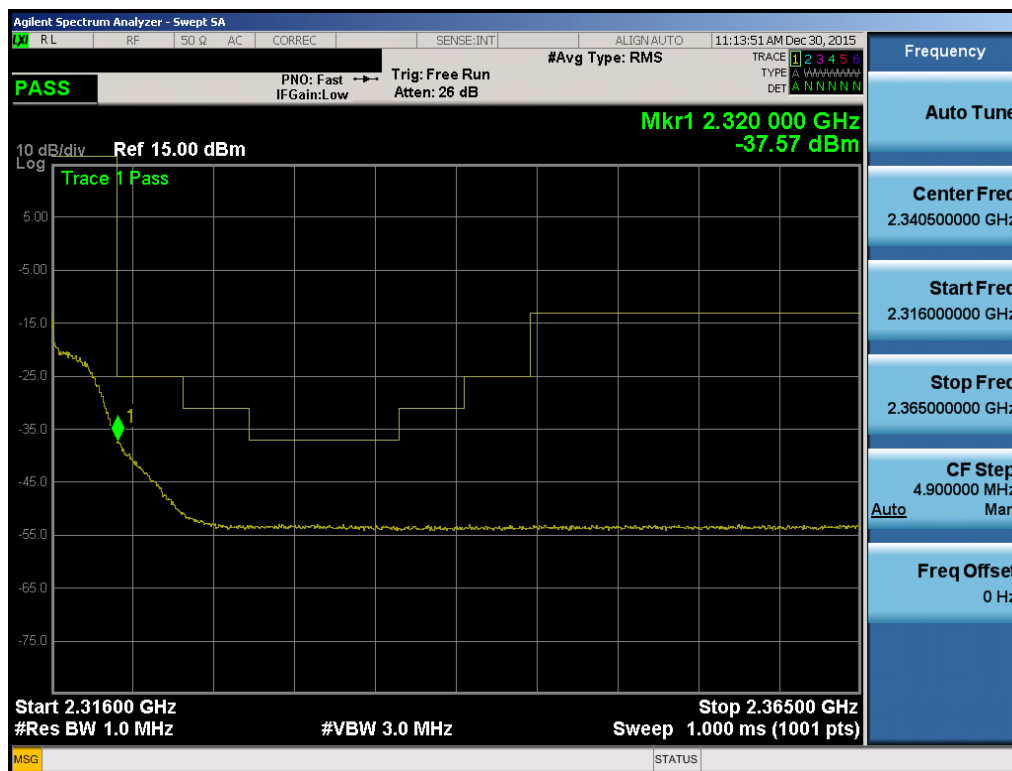


Plot 7-204. Lower Extended Band Edge Plot (Band 30 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 120 of 182

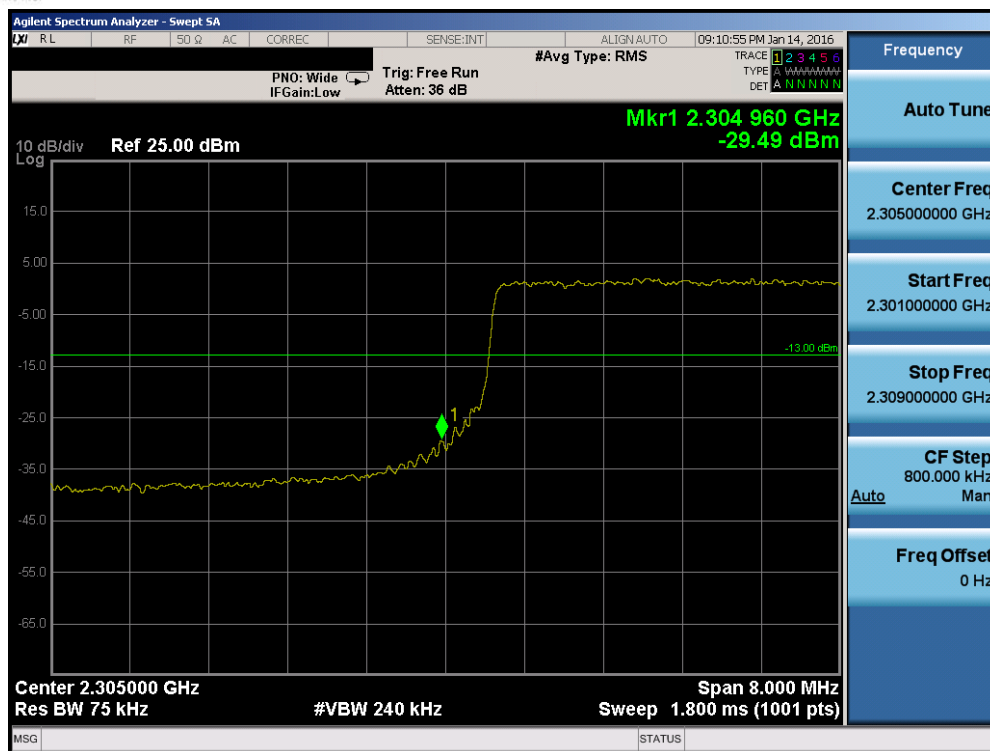


Plot 7-205. Upper Band Edge Plot (Band 30 – 5.0MHz QPSK – RB Size 25)

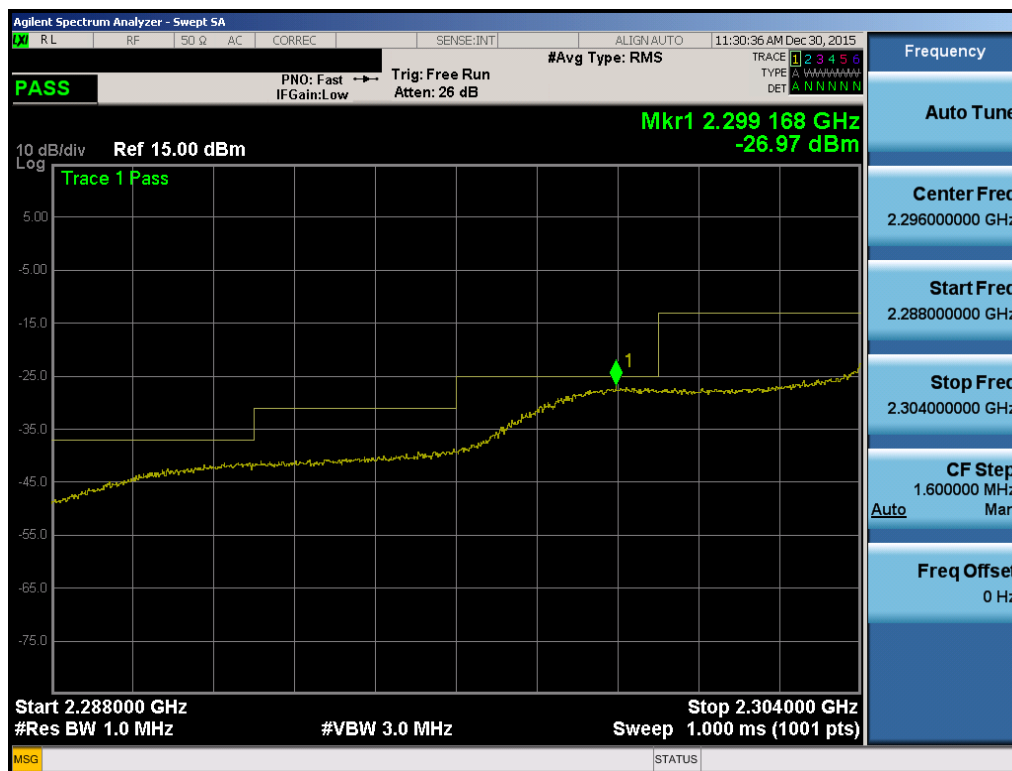


Plot 7-206. Upper Extended Band Edge Plot (Band 30 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 121 of 182

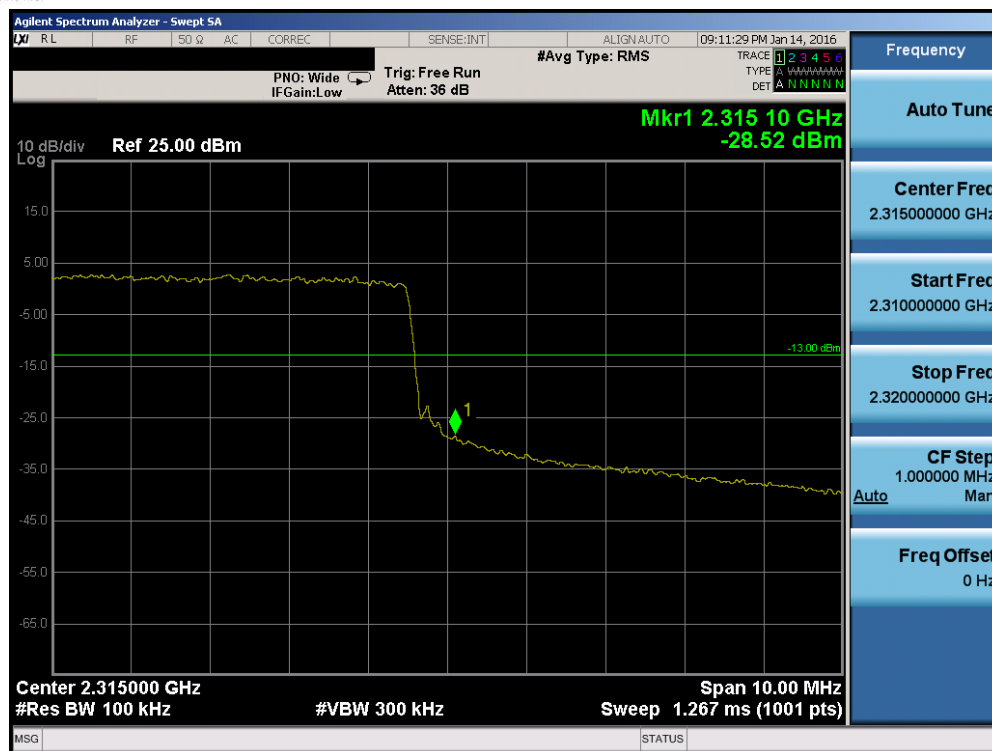


Plot 7-207. Lower Band Edge Plot (Band 30 – 10.0MHz QPSK – RB Size 50)

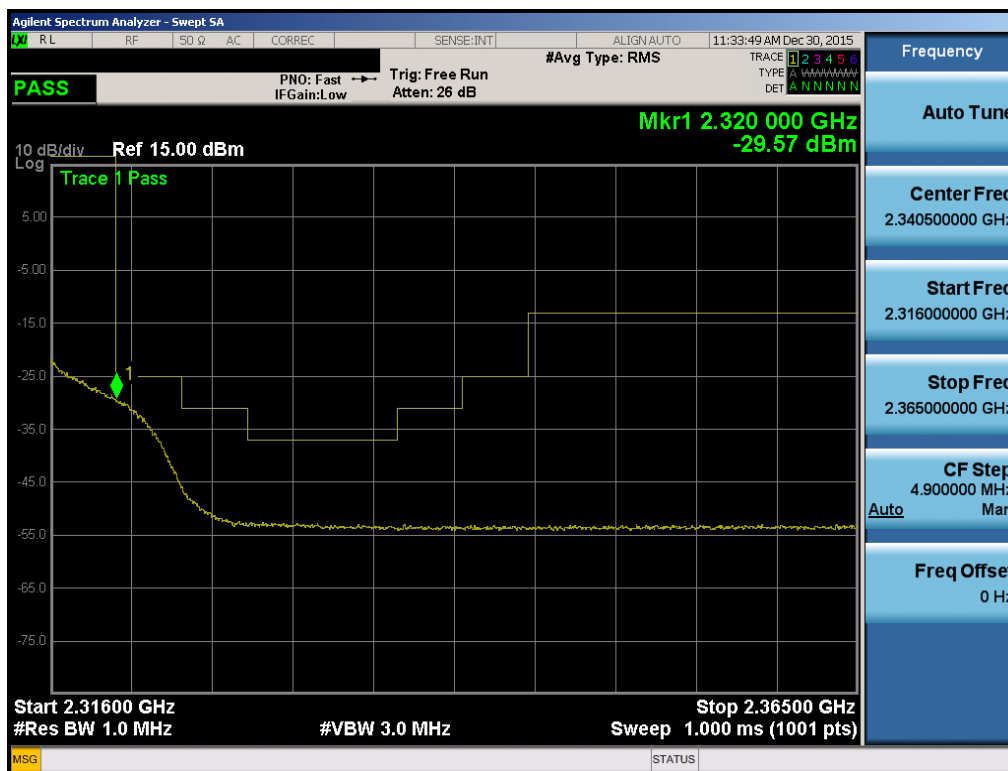


Plot 7-208. Lower Extended Band Edge Plot (Band 30 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 122 of 182

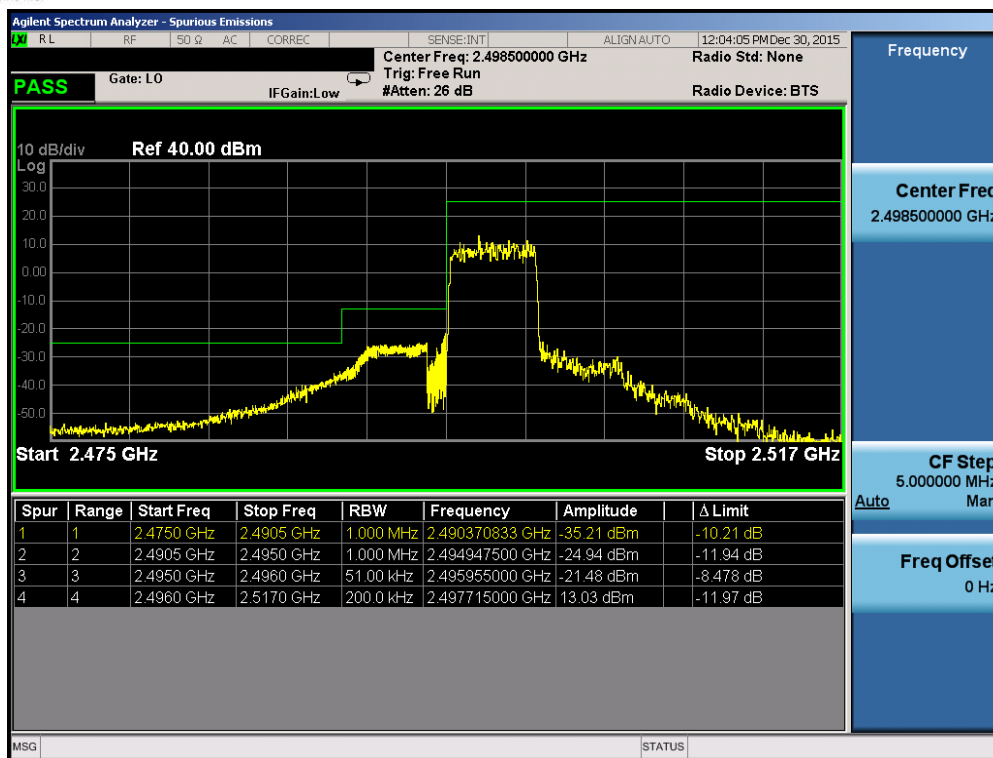


Plot 7-209. Upper Band Edge Plot (Band 30 – 10.0MHz QPSK – RB Size 50)

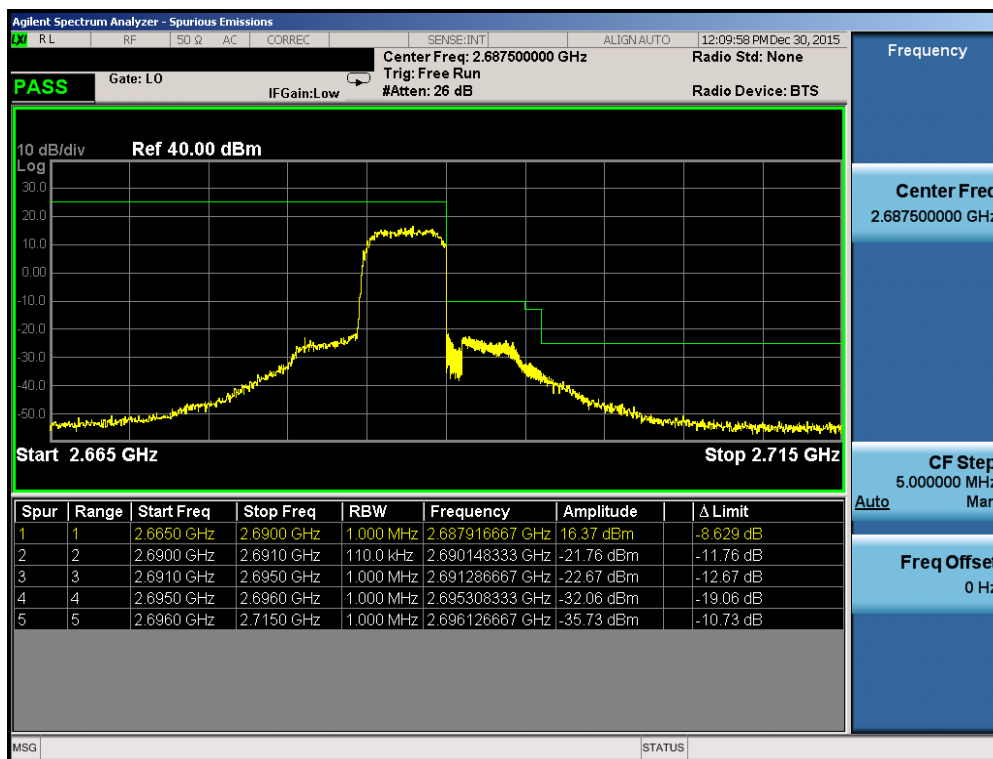


Plot 7-210. Upper Extended Band Edge Plot (Band 30 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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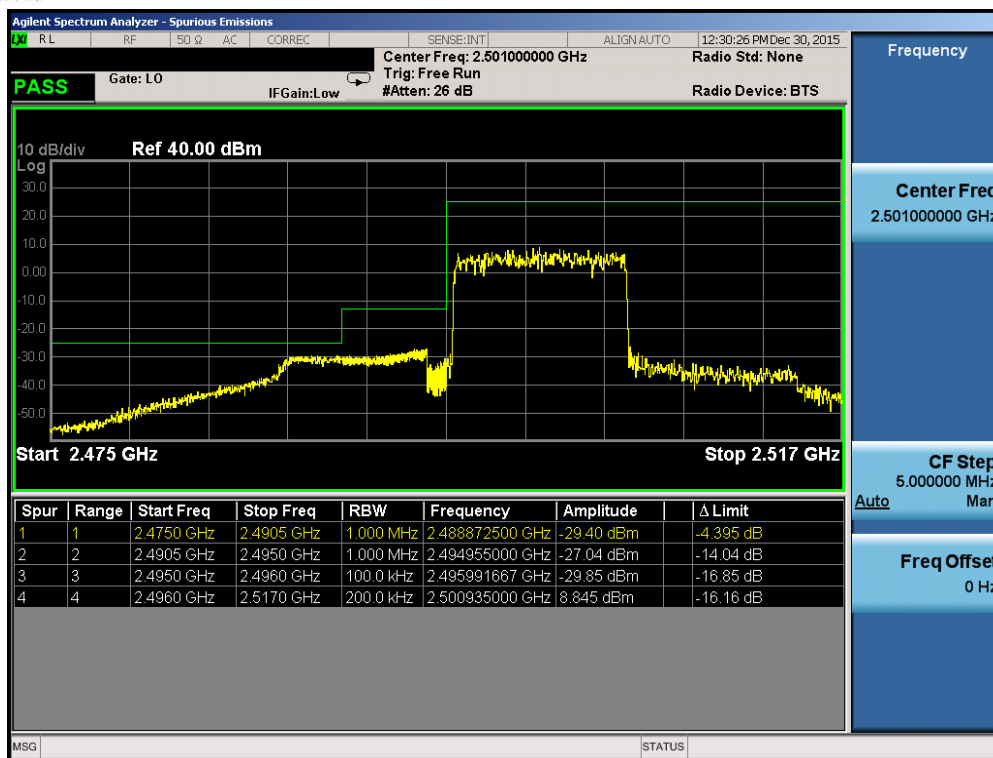


Plot 7-211. Lower ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)

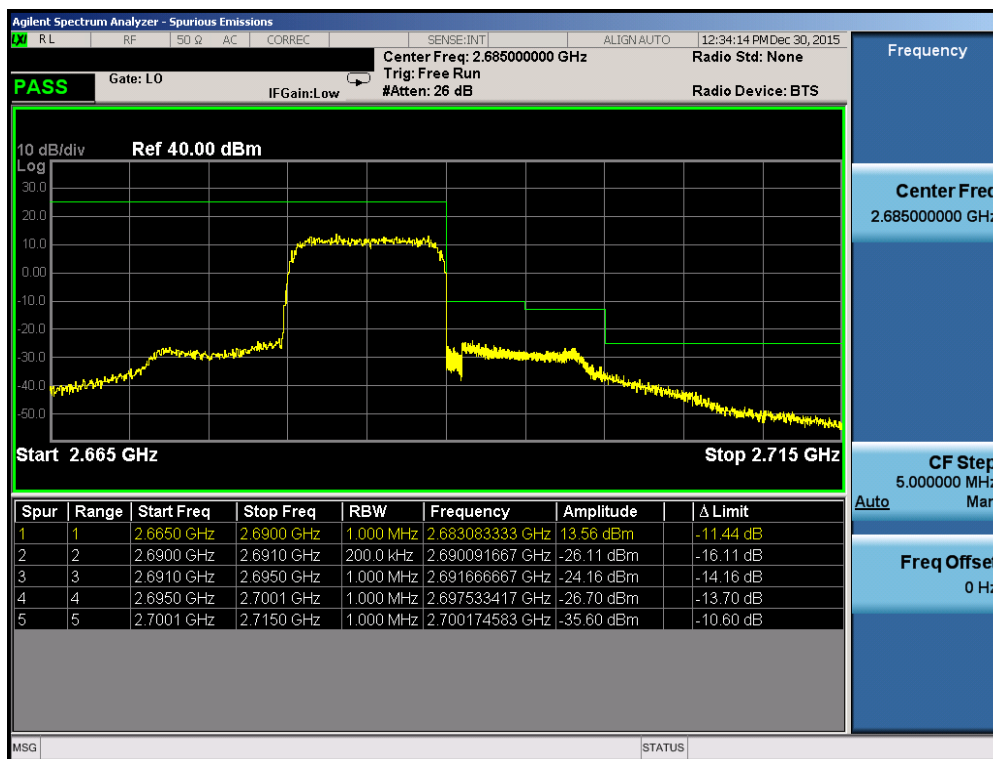


Plot 7-212. Upper ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 124 of 182

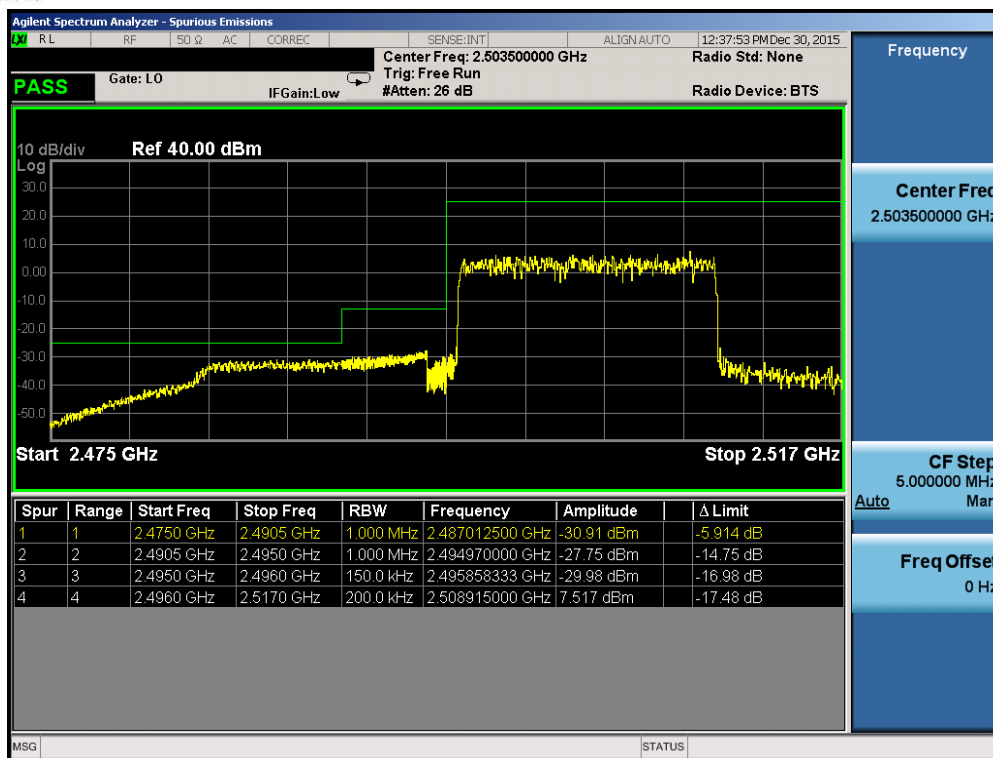


Plot 7-213. Lower ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)

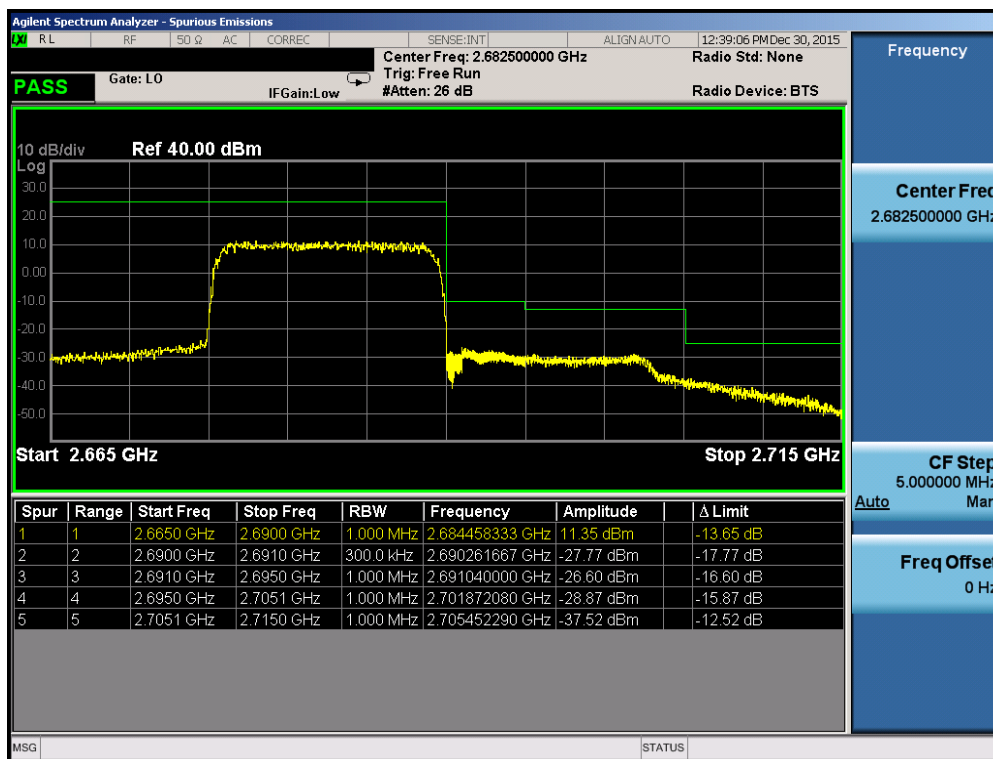


Plot 7-214. Upper ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 125 of 182

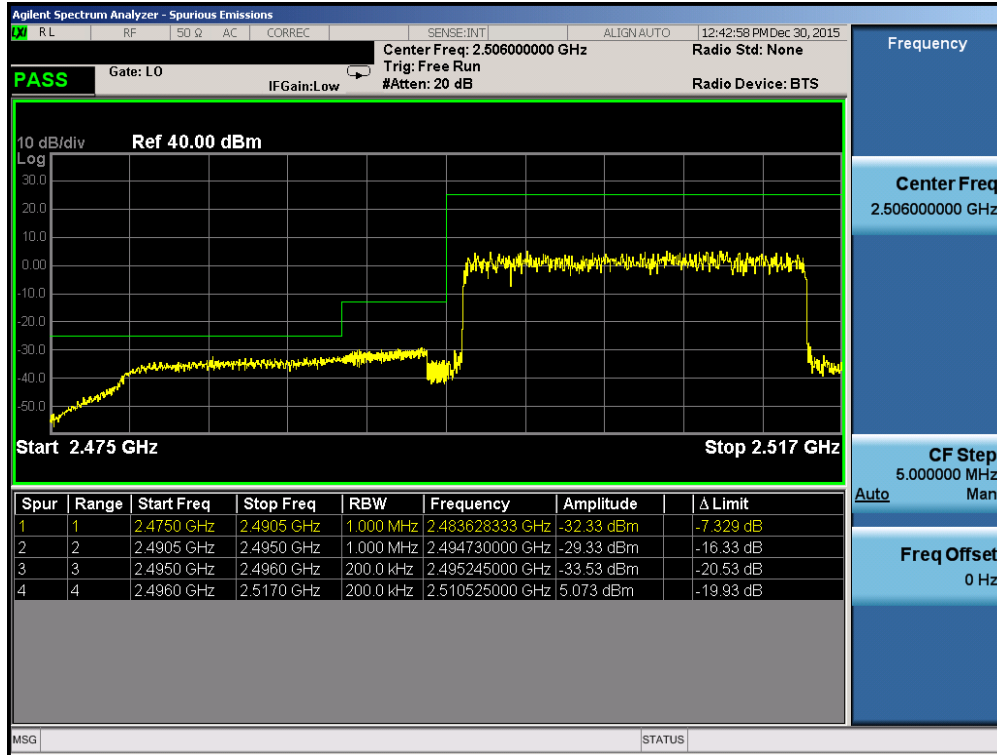


Plot 7-215. Lower ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)

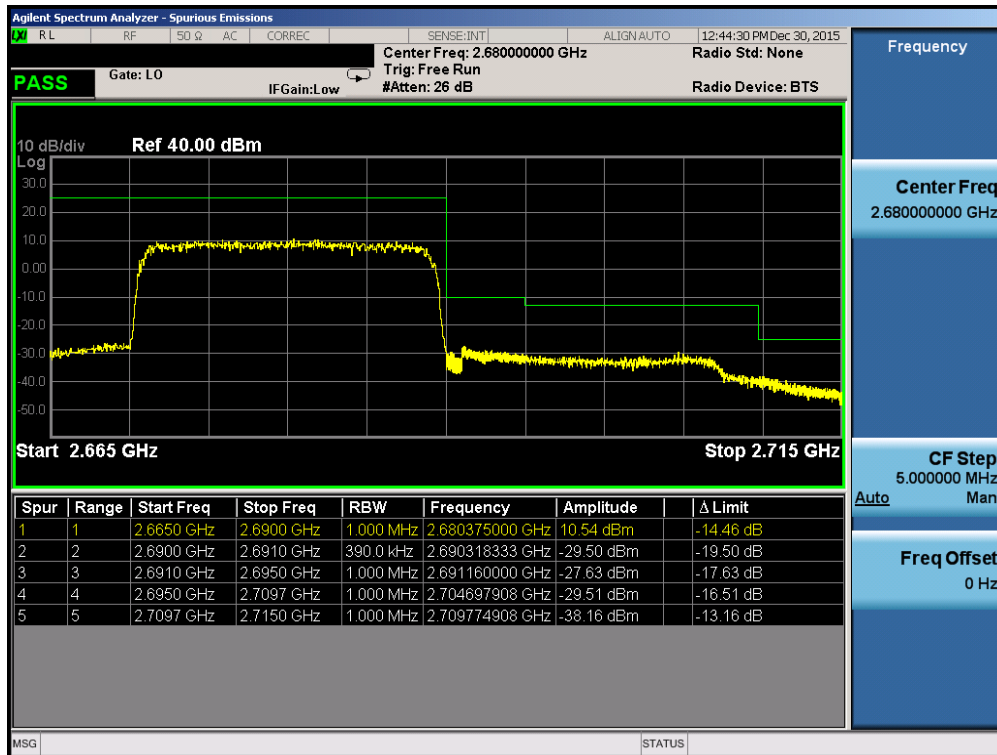


Plot 7-216. Upper ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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Plot 7-217. Lower ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)



Plot 7-218. Upper ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 127 of 182

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.

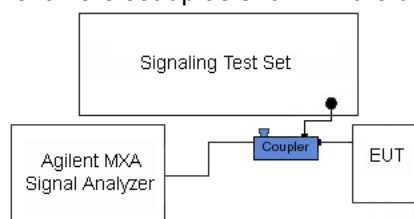
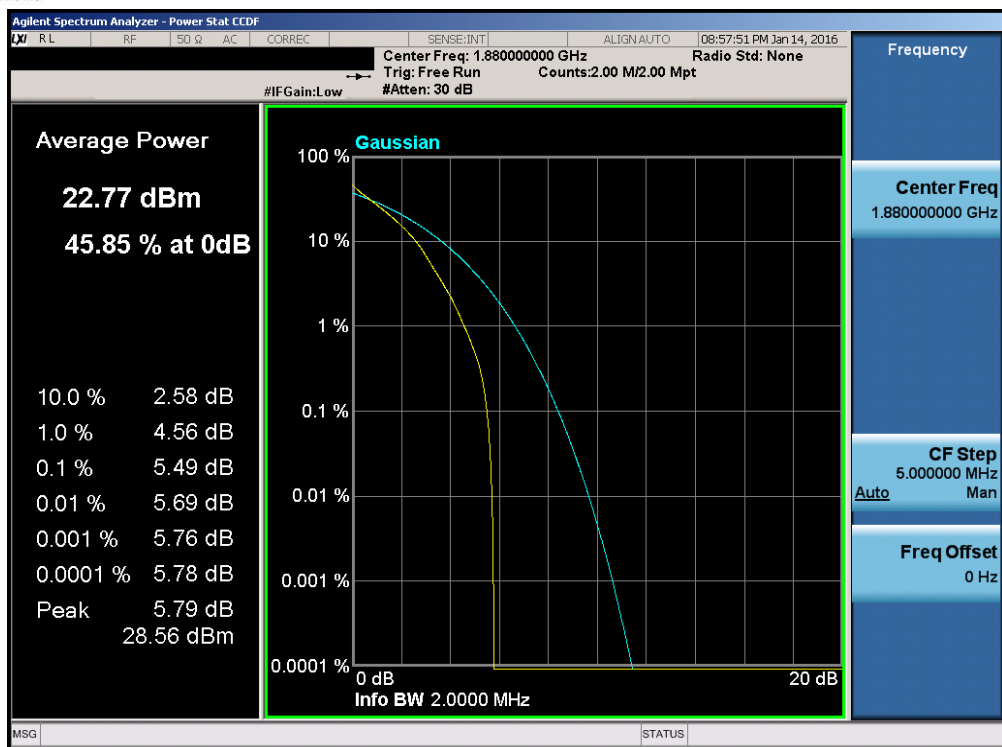


Figure 7-4. Test Instrument & Measurement Setup

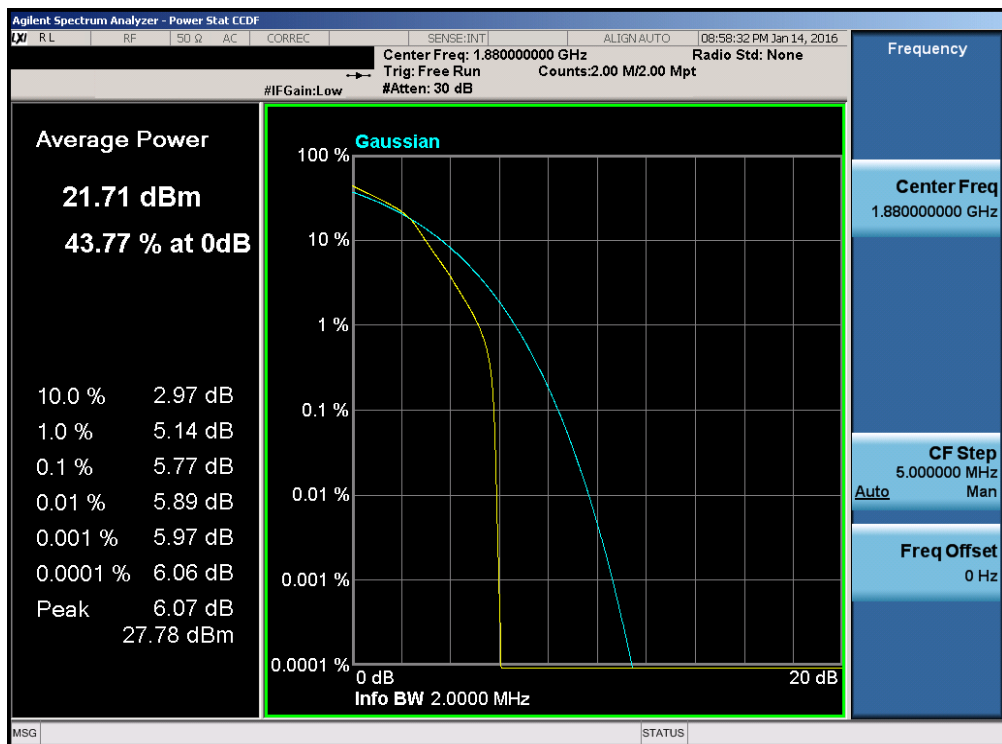
Test Notes

None.

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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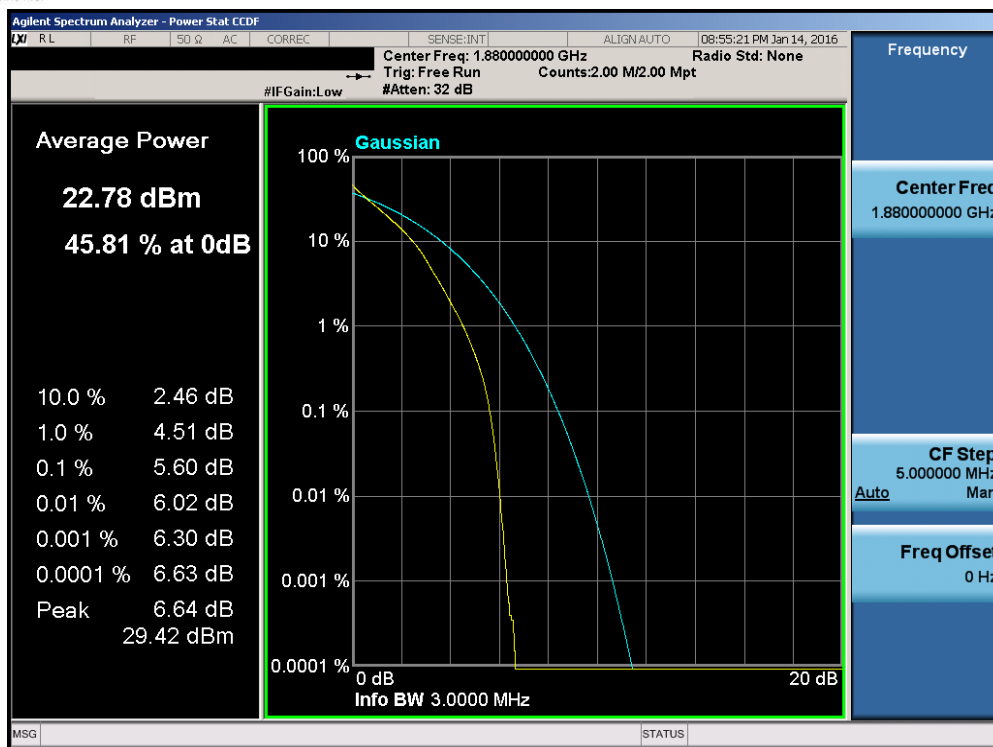


Plot 7-219. PAR Plot (Band 2/25 – 1.4MHz QPSK – RB Size 6)

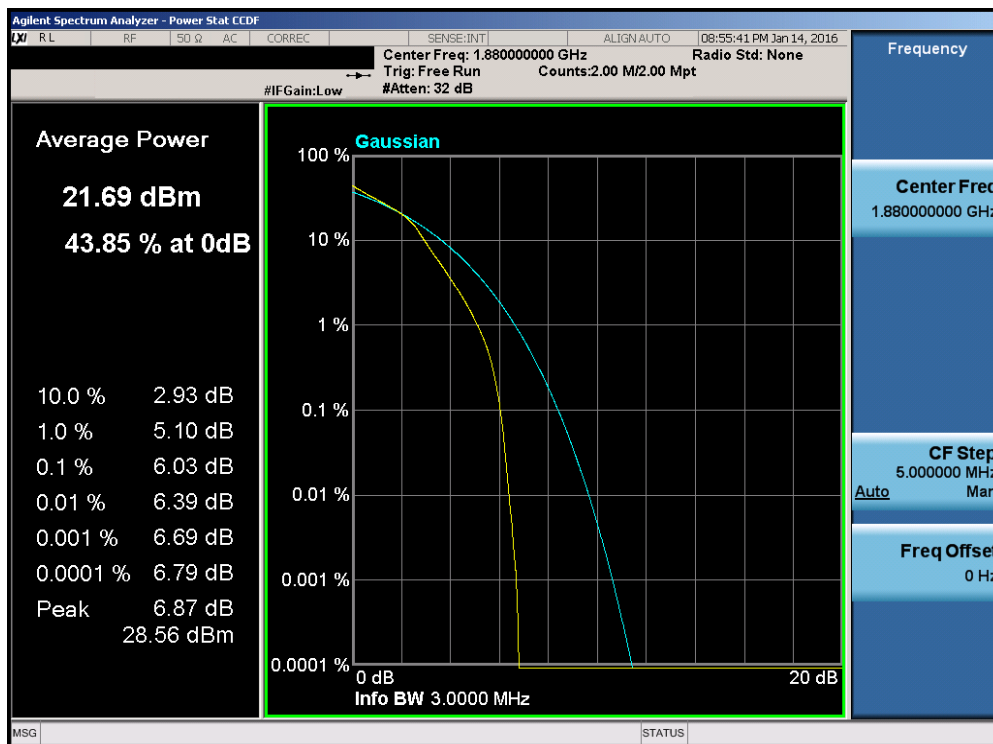


Plot 7-220. PAR Plot (Band 2/25 – 1.4MHz 16-QAM – RB Size 6)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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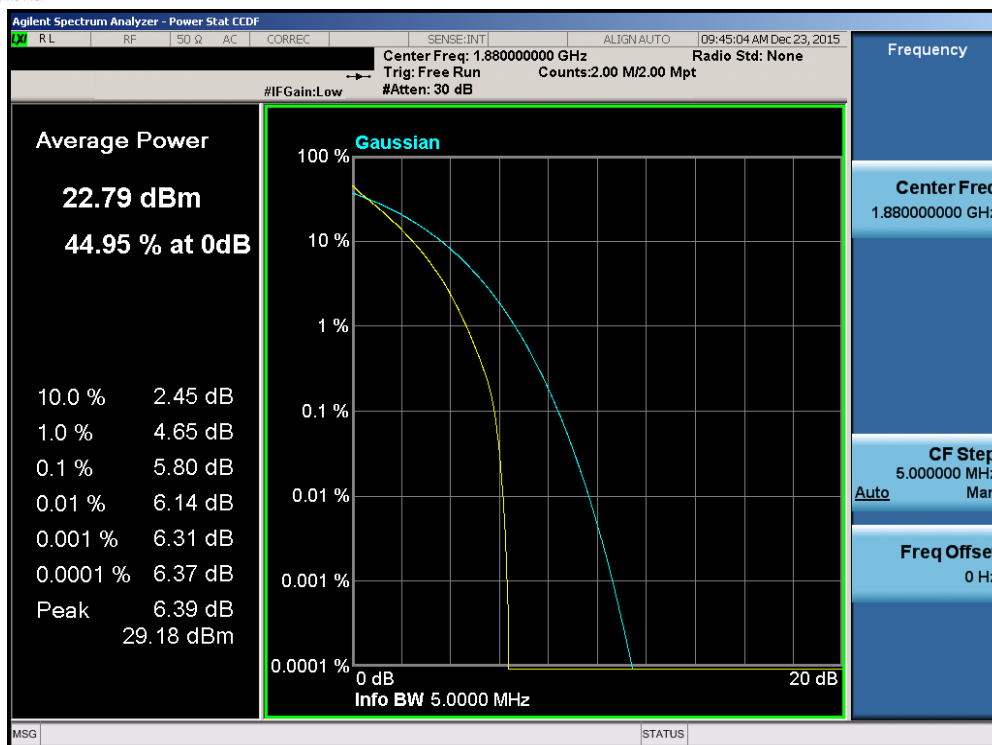


Plot 7-221. PAR Plot (Band 2/25 – 3.0MHz QPSK – RB Size 15)

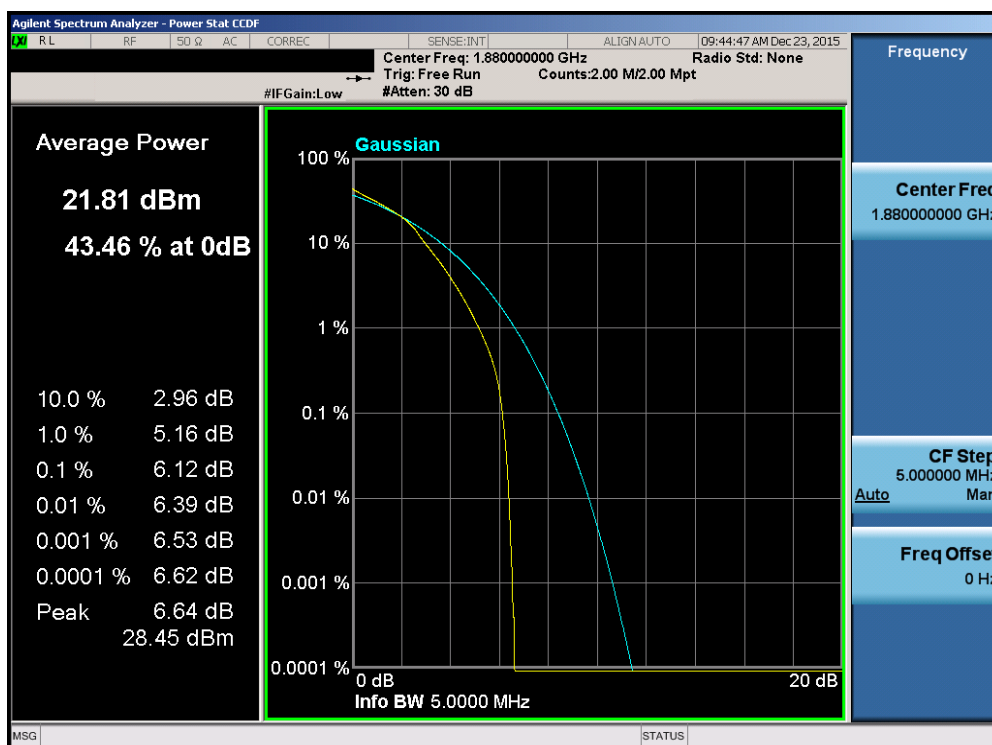


Plot 7-222. PAR Plot (Band 2/25 – 3.0MHz 16-QAM – RB Size 15)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 130 of 182

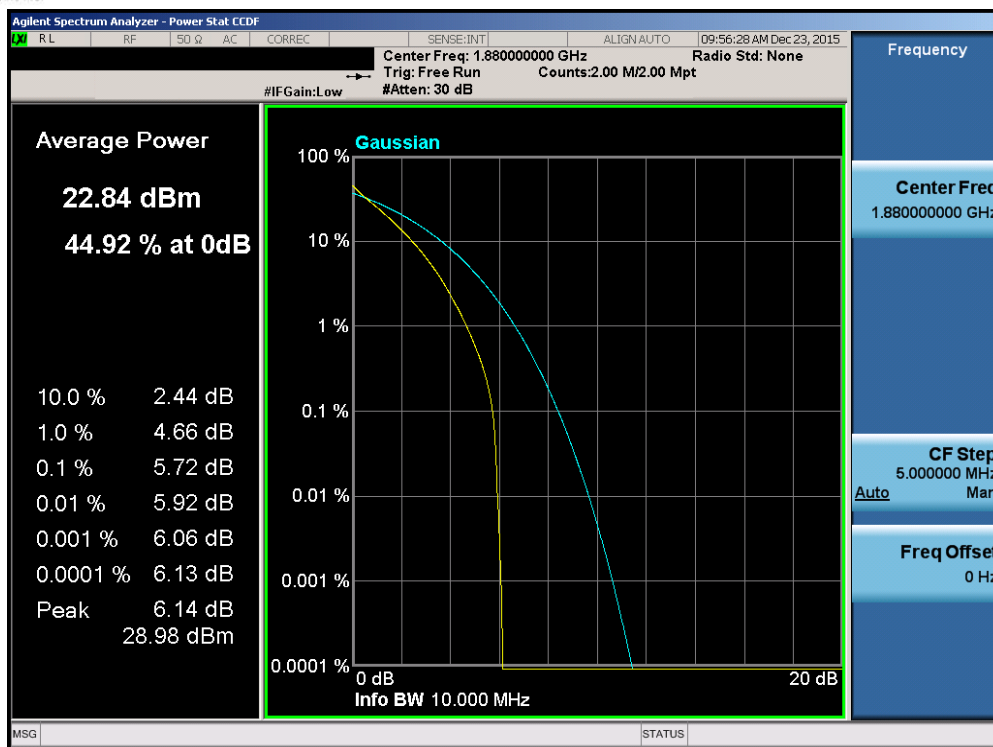


Plot 7-223. PAR Plot (Band 2/25 – 5.0MHz QPSK – RB Size 25)

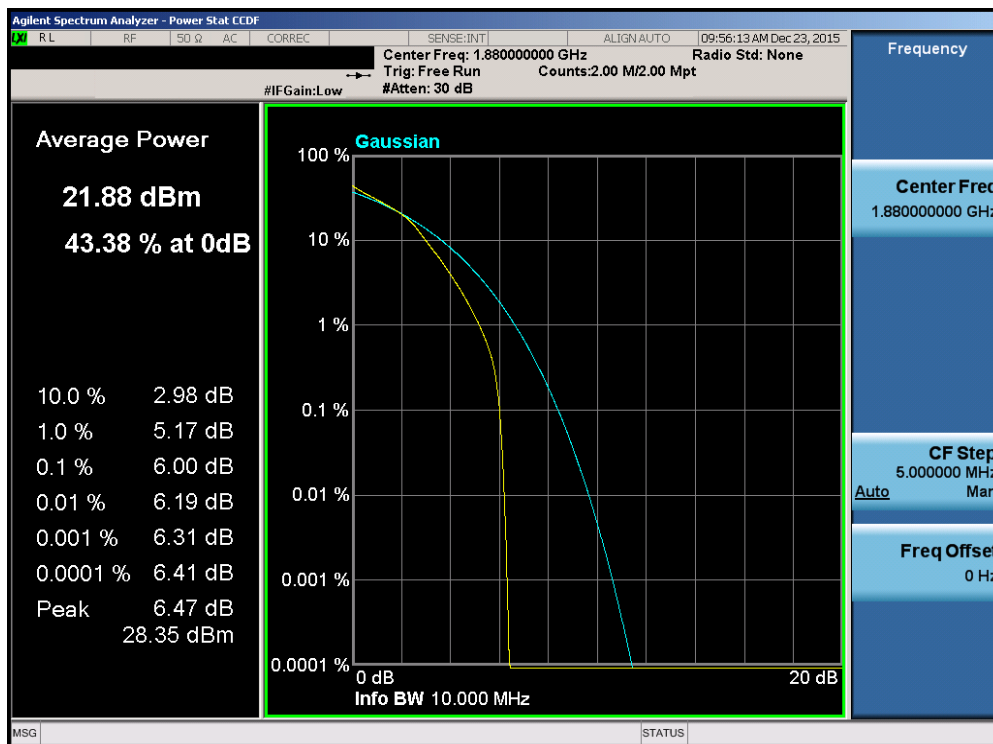


Plot 7-224. PAR Plot (Band 2/25 – 5.0MHz 16-QAM – RB Size 25)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 131 of 182

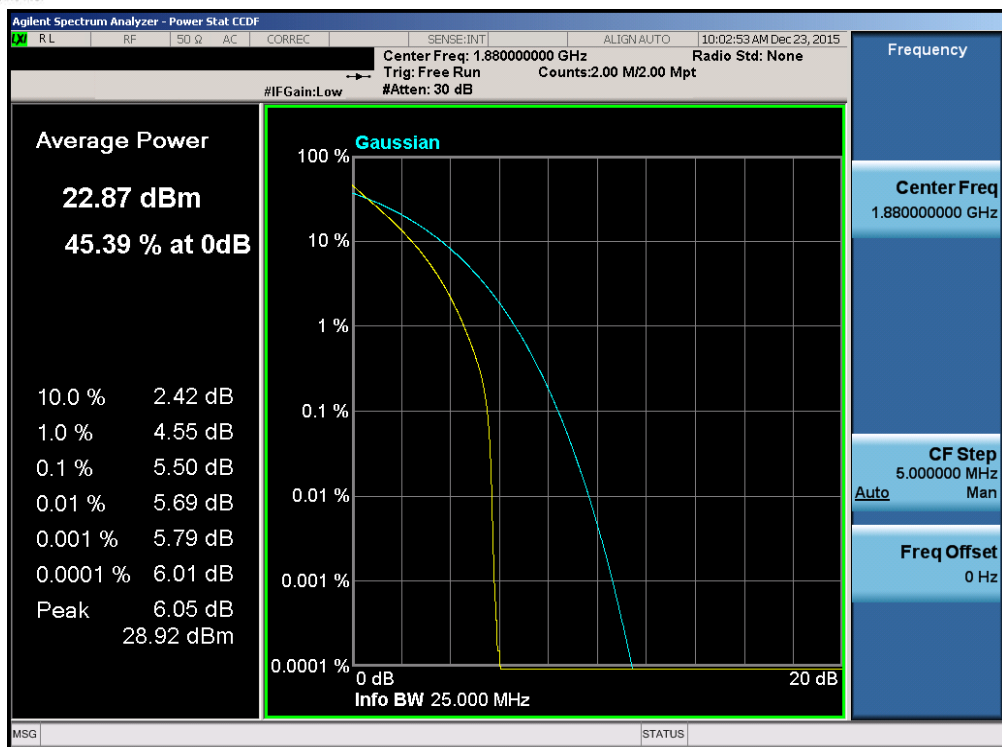


Plot 7-225. PAR Plot (Band 2/25 – 10.0MHz QPSK – RB Size 50)

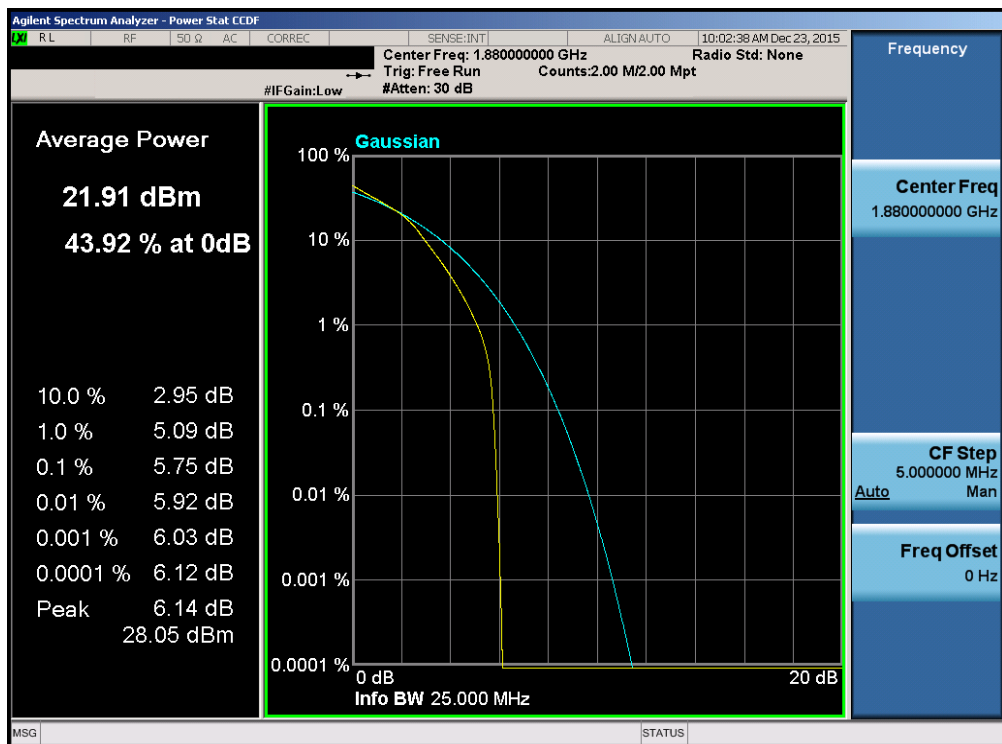


Plot 7-226. PAR Plot (Band 2/25 – 10.0MHz 16-QAM – RB Size 50)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 132 of 182

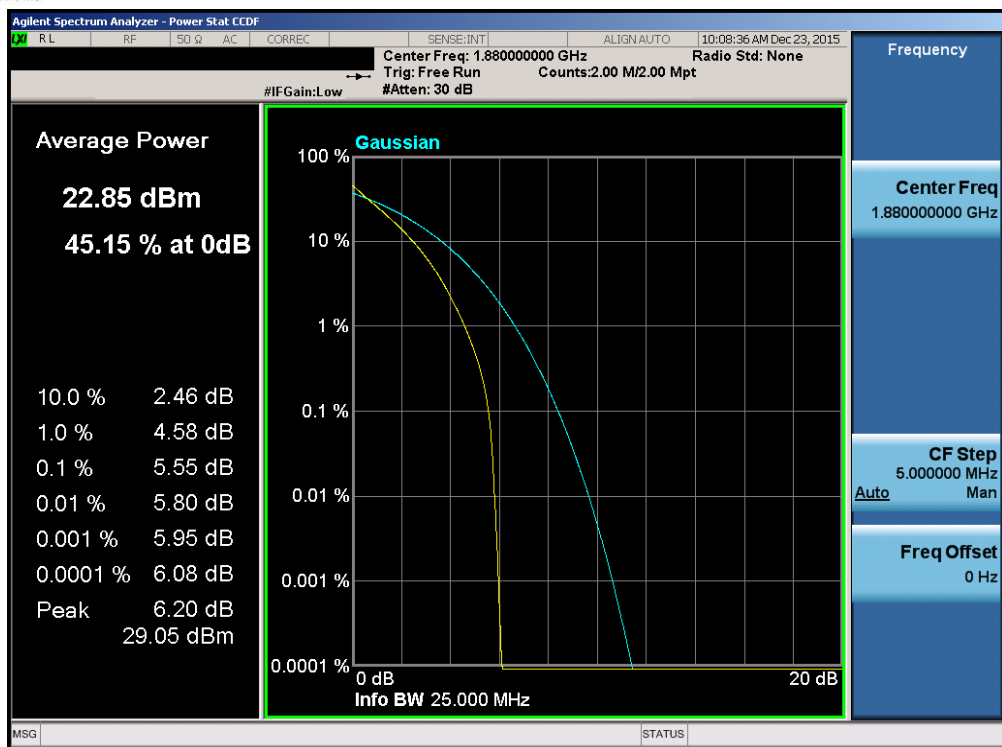


Plot 7-227. PAR Plot (Band 2/25 – 15.0MHz QPSK – RB Size 75)

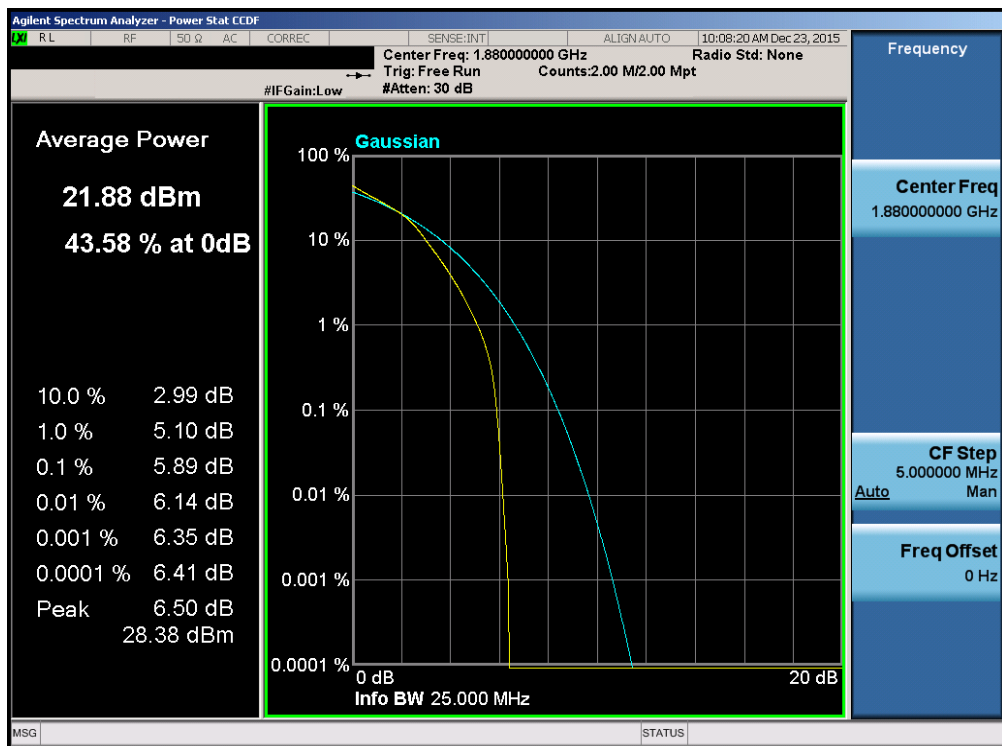


Plot 7-228. PAR Plot (Band 2/25 – 15.0MHz 16-QAM – RB Size 75)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 133 of 182



Plot 7-229. PAR Plot (Band 2/25 – 20.0MHz QPSK – RB Size 100)



Plot 7-230. PAR Plot (Band 2/25 – 20.0MHz 16-QAM – RB Size 100)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 134 of 182

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) §27.50(a.3)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-C-2004 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically 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-C-2004 – 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: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Test Setup

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

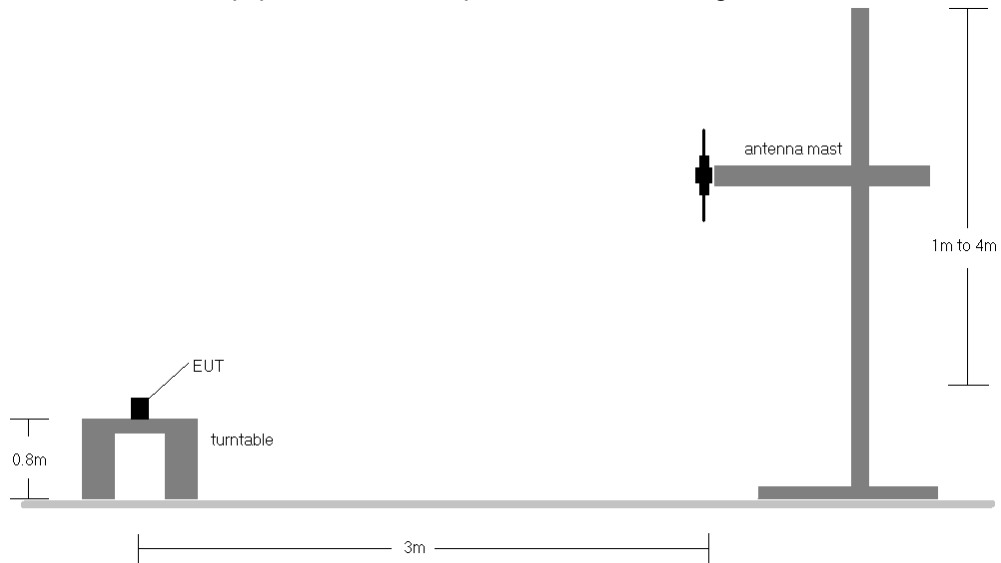


Figure 7-5. Radiated Test Setup <1GHz

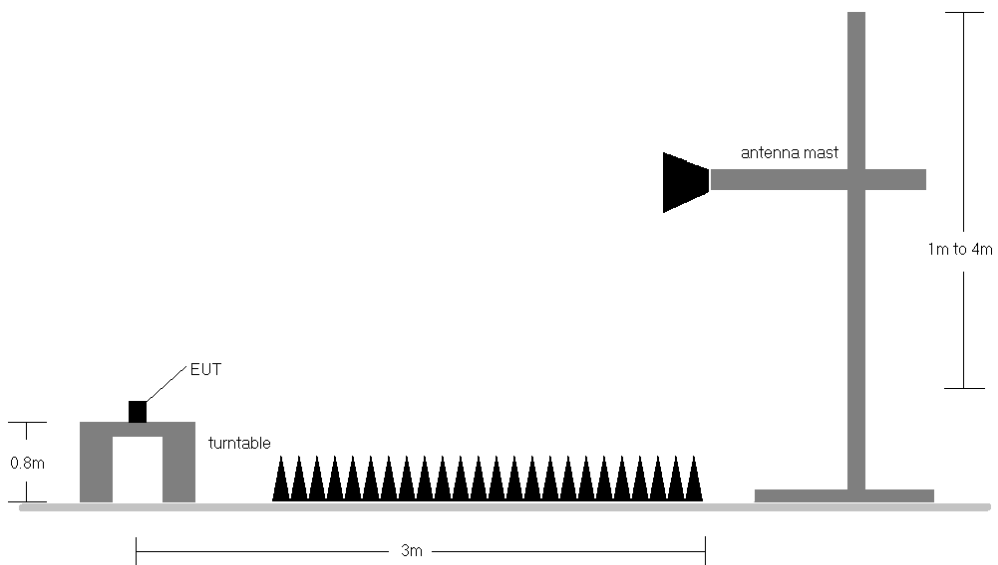


Figure 7-6. Radiated Test Setup >1GHz

Test Notes

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

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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	156	235	1 / 0	18.77	0.92	19.69	34.77	-15.08
707.50	1.4	QPSK	V	156	235	1 / 0	17.67	1.07	18.74	34.77	-16.03
715.30	1.4	QPSK	V	156	235	1 / 0	17.66	1.23	18.89	34.77	-15.89
699.70	1.4	16-QAM	V	156	235	1 / 0	17.69	0.92	18.61	34.77	-16.16
707.50	1.4	16-QAM	V	156	235	1 / 0	16.62	1.07	17.69	34.77	-17.08
715.30	1.4	16-QAM	V	156	235	1 / 0	16.58	1.23	17.81	34.77	-16.97
700.50	3	QPSK	V	156	238	1 / 0	18.77	0.92	19.69	34.77	-15.08
707.50	3	QPSK	V	156	238	1 / 0	18.24	1.07	19.31	34.77	-15.46
714.50	3	QPSK	V	156	238	1 / 0	17.76	1.21	18.97	34.77	-15.80
700.50	3	16-QAM	V	156	238	1 / 0	17.71	0.92	18.63	34.77	-16.14
707.50	3	16-QAM	V	156	238	1 / 0	17.27	1.07	18.34	34.77	-16.43
714.50	3	16-QAM	V	156	238	1 / 0	17.02	1.21	18.23	34.77	-16.54
701.50	5	QPSK	V	155	240	1 / 0	18.84	0.94	19.78	34.77	-14.99
707.50	5	QPSK	V	155	240	1 / 0	18.32	1.07	19.39	34.77	-15.38
713.50	5	QPSK	V	155	240	1 / 0	17.92	1.19	19.11	34.77	-15.66
701.50	5	16-QAM	V	155	240	1 / 0	17.86	0.94	18.80	34.77	-15.97
707.50	5	16-QAM	V	155	240	1 / 0	17.41	1.07	18.48	34.77	-16.29
713.50	5	16-QAM	V	155	240	1 / 0	17.12	1.19	18.31	34.77	-16.46
704.00	10	QPSK	V	155	238	1 / 25	18.42	1.00	19.42	34.77	-15.35
707.50	10	QPSK	V	155	238	1 / 0	18.49	1.07	19.56	34.77	-15.21
711.00	10	QPSK	V	156	239	1 / 25	17.88	1.14	19.02	34.77	-15.75
704.00	10	16-QAM	V	155	238	1 / 25	17.49	1.00	18.49	34.77	-16.28
707.50	10	16-QAM	V	155	238	1 / 0	17.43	1.07	18.50	34.77	-16.27
711.00	10	16-QAM	V	156	239	1 / 25	16.84	1.14	17.98	34.77	-16.79

Table 7-2. ERP Data (Band 12)

FCC ID: A3LSMG935W8	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) 			Reviewed by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
706.50	5	QPSK	V	168	287	1 / 24	17.05	1.05	18.10	34.77	-16.67
710.00	5	QPSK	V	168	287	1 / 0	17.33	1.12	18.45	34.77	-16.32
713.50	5	QPSK	V	168	287	1 / 24	16.99	1.19	18.18	34.77	-16.59
706.50	5	16-QAM	V	168	287	1 / 24	15.64	1.05	16.69	34.77	-18.08
710.00	5	16-QAM	V	168	287	1 / 0	15.64	1.12	16.76	34.77	-18.01
713.50	5	16-QAM	V	168	287	1 / 24	15.63	1.19	16.82	34.77	-17.95
709.00	10	QPSK	V	167	294	1 / 25	16.74	1.10	17.84	34.77	-16.93
710.00	10	QPSK	V	167	294	1 / 25	16.72	1.12	17.84	34.77	-16.93
711.00	10	QPSK	V	167	294	1 / 0	16.57	1.14	17.71	34.77	-17.06
709.00	10	16-QAM	V	167	294	1 / 25	15.37	1.10	16.47	34.77	-18.30
710.00	10	16-QAM	V	167	294	1 / 25	15.21	1.12	16.33	34.77	-18.44
711.00	10	16-QAM	V	167	294	1 / 0	15.11	1.14	16.25	34.77	-18.52

Table 7-3. ERP Data (Band 17)

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	V	133	277	1 / 0	14.75	2.47	17.22	34.77	-17.55
782.00	5	QPSK	V	139	283	1 / 0	14.48	2.51	16.99	34.77	-17.78
784.50	5	QPSK	V	137	268	1 / 0	14.49	2.56	17.05	34.77	-17.72
779.50	5	16QAM	V	133	277	1 / 0	13.72	2.47	16.19	34.77	-18.58
782.00	5	16QAM	V	139	283	1 / 0	13.42	2.51	15.93	34.77	-18.84
784.50	5	16QAM	V	137	268	1 / 0	13.50	2.56	16.06	34.77	-18.71
782.00	10	QPSK	V	137	279	1 / 0	14.50	2.51	17.01	34.77	-17.76
782.00	10	16QAM	V	137	279	1 / 0	13.46	2.51	15.97	34.77	-18.80

Table 7-4. ERP Data (Band 13)

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	V	131	275	1 / 5	15.47	2.98	18.45	38.45	-20.00
836.50	1.4	QPSK	V	129	256	3 / 2	16.08	3.04	19.12	38.45	-19.33
848.30	1.4	QPSK	V	131	249	3 / 2	15.59	3.10	18.69	38.45	-19.76
824.70	1.4	16-QAM	V	131	275	1 / 5	14.06	2.98	17.04	38.45	-21.41
836.50	1.4	16-QAM	V	129	256	3 / 2	14.99	3.04	18.03	38.45	-20.42
848.30	1.4	16-QAM	V	131	249	3 / 2	15.59	3.10	18.69	38.45	-19.76
825.50	3	QPSK	V	129	273	1 / 7	15.66	2.98	18.64	38.45	-19.81
836.50	3	QPSK	V	129	273	1 / 7	16.52	3.04	19.56	38.45	-18.89
847.50	3	QPSK	V	129	273	1 / 0	16.23	3.10	19.33	38.45	-19.12
825.50	3	16-QAM	V	129	273	1 / 7	14.66	2.98	17.64	38.45	-20.81
836.50	3	16-QAM	V	129	273	1 / 7	15.41	3.04	18.45	38.45	-20.00
847.50	3	16-QAM	V	129	273	1 / 0	14.87	3.10	17.97	38.45	-20.48
826.50	5	QPSK	V	129	249	1 / 12	15.84	2.99	18.83	38.45	-19.62
836.50	5	QPSK	V	129	249	1 / 12	16.70	3.04	19.74	38.45	-18.71
846.50	5	QPSK	V	129	249	1 / 0	16.32	3.09	19.41	38.45	-19.04
826.50	5	16-QAM	V	129	249	1 / 12	14.71	2.99	17.70	38.45	-20.75
836.50	5	16-QAM	V	129	249	1 / 12	15.60	3.04	18.64	38.45	-19.81
846.50	5	16-QAM	V	129	249	1 / 0	15.29	3.09	18.38	38.45	-20.07
829.00	10	QPSK	V	137	245	1 / 49	16.02	3.00	19.02	38.45	-19.43
836.50	10	QPSK	V	137	245	1 / 25	16.45	3.04	19.49	38.45	-18.96
844.00	10	QPSK	V	137	245	1 / 0	16.32	3.08	19.40	38.45	-19.05
829.00	10	16-QAM	V	137	245	1 / 49	14.95	3.00	17.95	38.45	-20.50
836.50	10	16-QAM	V	137	245	1 / 25	14.84	3.04	17.88	38.45	-20.57
844.00	10	16-QAM	V	137	245	1 / 0	15.24	3.08	18.32	38.45	-20.13

Table 7-5. ERP Data (Band 5)

FCC ID: A3LSMG935W8	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) 			Reviewed by: Quality Manager
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Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]
1710.70	1.4	QPSK	H	235	114	1 / 0	12.62	9.84	22.46	30.00
1732.50	1.4	QPSK	H	212	105	1 / 0	11.51	9.78	21.29	30.00
1754.30	1.4	QPSK	H	201	130	1 / 0	10.69	9.73	20.42	30.00
1710.70	1.4	16-QAM	H	235	114	1 / 0	10.73	9.84	20.57	30.00
1732.50	1.4	16-QAM	H	212	105	1 / 0	9.78	9.78	19.56	30.00
1754.30	1.4	16-QAM	H	201	130	1 / 0	9.20	9.73	18.93	30.00
1711.50	3	QPSK	H	271	210	1 / 0	12.63	9.84	22.47	30.00
1732.50	3	QPSK	H	137	194	1 / 0	11.71	9.78	21.49	30.00
1753.50	3	QPSK	H	219	183	1 / 0	10.74	9.73	20.47	30.00
1711.50	3	16-QAM	H	271	210	1 / 0	10.84	9.84	20.68	30.00
1732.50	3	16-QAM	H	137	194	1 / 0	10.03	9.78	19.81	30.00
1753.50	3	16-QAM	H	219	183	1 / 0	9.31	9.73	19.04	30.00
1712.50	5	QPSK	H	280	194	1 / 0	12.72	9.84	22.56	30.00
1732.50	5	QPSK	H	285	176	1 / 12	11.66	9.78	21.44	30.00
1752.50	5	QPSK	H	174	323	1 / 0	10.90	9.73	20.63	30.00
1712.50	5	16-QAM	H	280	194	1 / 0	10.99	9.84	20.83	30.00
1732.50	5	16-QAM	H	285	176	1 / 0	10.01	9.78	19.79	30.00
1752.50	5	16-QAM	H	174	323	1 / 0	9.09	9.73	18.82	30.00
1715.00	10	QPSK	H	272	110	1 / 0	12.56	9.84	22.40	30.00
1732.50	10	QPSK	H	236	248	1 / 0	11.50	9.78	21.28	30.00
1750.00	10	QPSK	H	222	159	1 / 0	10.79	9.73	20.52	30.00
1715.00	10	16-QAM	H	272	110	1 / 0	10.99	9.84	20.83	30.00
1732.50	10	16-QAM	H	236	248	1 / 0	10.10	9.78	19.88	30.00
1750.00	10	16-QAM	H	222	159	1 / 0	9.14	9.73	18.87	30.00
1717.50	15	QPSK	H	175	151	1 / 0	12.51	9.84	22.35	30.00
1732.50	15	QPSK	H	137	259	1 / 0	11.51	9.78	21.29	30.00
1747.50	15	QPSK	H	216	175	1 / 0	10.79	9.73	20.52	30.00
1717.50	15	16-QAM	H	175	151	1 / 0	10.79	9.84	20.63	30.00
1732.50	15	16-QAM	H	137	259	1 / 0	9.92	9.78	19.70	30.00
1747.50	15	16-QAM	H	216	175	1 / 0	9.18	9.73	18.91	30.00
1720.00	20	QPSK	H	153	255	1 / 0	12.48	9.84	22.32	30.00
1732.50	20	QPSK	H	155	193	1 / 0	11.56	9.78	21.34	30.00
1745.00	20	QPSK	H	206	158	1 / 0	10.89	9.73	20.62	30.00
1720.00	20	16-QAM	H	153	255	1 / 0	10.64	9.84	20.48	30.00
1732.50	20	16-QAM	H	155	193	1 / 0	9.95	9.78	19.73	30.00
1745.00	20	16-QAM	H	206	158	1 / 0	9.37	9.73	19.10	30.00

Table 7-6. EIRP Data (Band 4)

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset	Page 140 of 182	

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
1850.70	1.4	QPSK	H	189	263	1 / 0	12.88	9.35	22.22	33.01	-10.79
1880.00	1.4	QPSK	H	189	263	1 / 0	14.19	9.27	23.46	33.01	-9.55
1914.30	1.4	QPSK	H	189	263	1 / 5	12.45	9.25	21.69	33.01	-11.32
1850.70	1.4	16-QAM	H	189	263	1 / 0	11.84	9.35	21.18	33.01	-11.83
1880.00	1.4	16-QAM	H	189	263	1 / 0	12.99	9.27	22.27	33.01	-10.75
1914.30	1.4	16-QAM	H	189	263	1 / 5	11.54	9.25	20.79	33.01	-12.22
1851.50	3	QPSK	H	166	202	1 / 0	12.99	9.35	22.33	33.01	-10.68
1880.00	3	QPSK	H	166	202	1 / 0	14.19	9.27	23.46	33.01	-9.55
1913.50	3	QPSK	H	166	202	1 / 14	12.56	9.25	21.81	33.01	-11.20
1851.50	3	16-QAM	H	166	202	1 / 0	11.80	9.35	21.15	33.01	-11.86
1880.00	3	16-QAM	H	166	202	1 / 0	13.02	9.27	22.29	33.01	-10.72
1913.50	3	16-QAM	H	166	202	1 / 14	11.63	9.25	20.88	33.01	-12.14
1852.50	5	QPSK	H	171	198	1 / 0	13.09	9.34	22.43	33.01	-10.58
1880.00	5	QPSK	H	171	198	1 / 0	14.33	9.27	23.60	33.01	-9.41
1912.50	5	QPSK	H	171	198	1 / 24	12.66	9.24	21.90	33.01	-11.11
1852.50	5	16-QAM	H	171	198	1 / 0	12.02	9.34	21.36	33.01	-11.65
1880.00	5	16-QAM	H	171	198	1 / 0	13.17	9.27	22.44	33.01	-10.57
1912.50	5	16-QAM	H	171	198	1 / 24	11.68	9.24	20.91	33.01	-12.10
1855.00	10	QPSK	H	164	210	1 / 0	13.01	9.34	22.35	33.01	-10.66
1880.00	10	QPSK	H	164	210	1 / 49	14.60	9.27	23.87	33.01	-9.14
1910.00	10	QPSK	H	164	210	1 / 49	12.80	9.24	22.03	33.01	-10.98
1855.00	10	16-QAM	H	164	210	1 / 0	11.95	9.34	21.29	33.01	-11.72
1880.00	10	16-QAM	H	164	210	1 / 0	13.16	9.27	22.43	33.01	-10.58
1910.00	10	16-QAM	H	164	210	1 / 49	11.78	9.24	21.01	33.01	-12.00
1857.50	15	QPSK	H	152	205	1 / 0	13.03	9.33	22.36	33.01	-10.65
1880.00	15	QPSK	H	152	205	1 / 0	14.15	9.27	23.42	33.01	-9.59
1907.50	15	QPSK	H	152	205	1 / 74	12.86	9.23	22.08	33.01	-10.93
1857.50	15	16-QAM	H	152	205	1 / 0	11.94	9.33	21.27	33.01	-11.74
1880.00	15	16-QAM	H	152	205	1 / 0	13.11	9.27	22.39	33.01	-10.62
1907.50	15	16-QAM	H	152	205	1 / 74	11.58	9.23	20.81	33.01	-12.20
1860.00	20	QPSK	H	157	201	1 / 0	12.79	9.32	22.11	33.01	-10.90
1880.00	20	QPSK	H	157	201	1 / 0	14.20	9.27	23.47	33.01	-9.54
1905.00	20	QPSK	H	157	201	1 / 0	12.39	9.22	21.61	33.01	-11.40
1860.00	20	16-QAM	H	157	201	1 / 0	11.81	9.32	21.13	33.01	-11.88
1880.00	20	16-QAM	H	157	201	1 / 0	12.96	9.27	22.23	33.01	-10.78
1905.00	20	16-QAM	H	157	201	1 / 0	11.65	9.22	20.87	33.01	-12.14

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

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset	Page 141 of 182	

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]
2307.50	5	QPSK	H	293	101	1 / 0	10.43	9.09	19.52	23.98	-4.46
2310.00	5	QPSK	H	293	101	1 / 0	11.52	9.09	20.61	23.98	-3.37
2312.50	5	QPSK	H	293	101	1 / 0	10.49	9.08	19.58	23.98	-4.40
2307.50	5	16-QAM	H	293	101	1 / 0	9.23	9.09	18.33	23.98	-5.65
2310.00	5	16-QAM	H	293	101	1 / 0	9.63	9.09	18.72	23.98	-5.26
2312.50	5	16-QAM	H	293	101	1 / 0	9.33	9.08	18.41	23.98	-5.56
2310.00	10	QPSK	H	292	221	1 / 0	10.41	9.09	19.50	23.98	-4.48
2310.00	10	16-QAM	H	292	221	1 / 0	9.23	9.09	18.32	23.98	-5.66

Table 7-8. EIRP Data (Band 30)

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 142 of 182

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	132	305	1 / 24	10.05	7.09	17.14	33.01	-15.87
2593.00	5	QPSK	V	100	309	1 / 24	11.89	7.55	19.44	33.01	-13.57
2687.50	5	QPSK	V	143	306	1 / 0	11.92	7.82	19.74	33.01	-13.27
2498.50	5	16-QAM	V	132	305	1 / 24	8.73	7.09	15.82	33.01	-17.19
2593.00	5	16-QAM	V	100	309	1 / 24	11.02	7.55	18.57	33.01	-14.44
2687.50	5	16-QAM	V	143	306	1 / 0	10.48	7.82	18.30	33.01	-14.71
2501.00	10	QPSK	V	100	303	1 / 49	8.37	7.08	15.45	33.01	-17.56
2593.00	10	QPSK	V	100	303	1 / 0	12.70	7.55	20.25	33.01	-12.76
2685.00	10	QPSK	V	144	297	1 / 0	13.01	7.81	20.82	33.01	-12.19
2501.00	10	16-QAM	V	100	303	1 / 49	7.56	7.08	14.64	33.01	-18.37
2593.00	10	16-QAM	V	100	303	1 / 0	11.96	7.55	19.51	33.01	-13.50
2685.00	10	16-QAM	V	144	297	1 / 0	11.83	7.81	19.64	33.01	-13.37
2503.50	15	QPSK	V	100	319	1 / 0	11.32	7.10	18.42	33.01	-14.59
2593.00	15	QPSK	V	100	319	1 / 74	13.81	7.55	21.36	33.01	-11.65
2682.50	15	QPSK	V	122	327	1 / 0	13.54	7.81	21.35	33.01	-11.66
2503.50	15	16-QAM	V	100	319	1 / 0	10.45	7.10	17.55	33.01	-15.46
2593.00	15	16-QAM	V	100	319	1 / 74	13.26	7.55	20.81	33.01	-12.20
2682.50	15	16-QAM	V	122	327	1 / 0	12.60	7.81	20.41	33.01	-12.60
2506.00	20	QPSK	V	100	305	1 / 99	11.00	7.11	18.11	33.01	-14.90
2593.00	20	QPSK	V	100	305	1 / 0	13.42	7.55	20.97	33.01	-12.04
2680.00	20	QPSK	V	100	305	1 / 99	12.99	7.80	20.79	33.01	-12.22
2506.00	20	16-QAM	V	100	305	1 / 99	9.85	7.11	16.96	33.01	-16.05
2593.00	20	16-QAM	V	100	305	1 / 0	12.57	7.55	20.12	33.01	-12.89
2680.00	20	16-QAM	V	100	305	1 / 99	11.99	7.80	19.79	33.01	-13.22

Table 7-9. EIRP Data (Band 41)

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 143 of 182

7.7 Radiated Spurious Emissions Measurements

\$2.1053 \$22.917(a) \$24.238(a) \$27.53(c) \$27.53(f) \$27.53(g) \$27.53(h) \$27.53(m) \$27.53(a.4)

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-C-2004 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-C-2004 – 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 = Peak
6. Trace mode = max hold
7. The trace was allowed to stabilize

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Test Setup

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

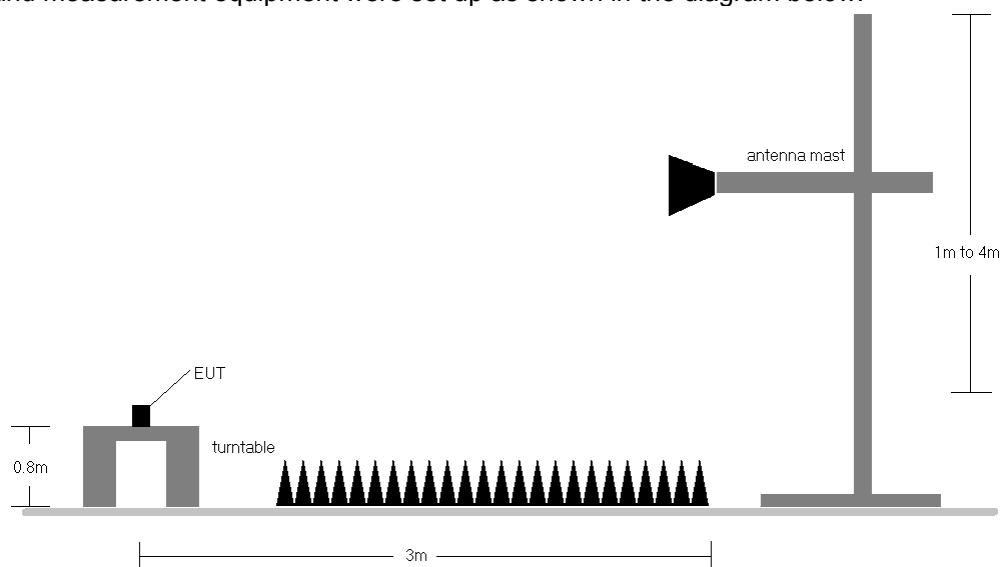


Figure 7-7. Test Instrument & Measurement Setup

Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the tables below.
- 2) This unit was tested with its standard battery.
- 3) The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
- 4) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 145 of 182

OPERATING FREQUENCY: 701.50 MHz
 CHANNEL: 23035
 MEASURED OUTPUT POWER: 19.78 dBm = 0.095 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 32.78 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	128	161	-59.04	5.66	-53.38	73.2
2104.50	H	128	161	-51.12	6.63	-44.49	64.3
2806.00	H	128	161	-62.90	7.84	-55.07	74.9

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

OPERATING FREQUENCY: 707.50 MHz
 CHANNEL: 23095
 MEASURED OUTPUT POWER: 19.39 dBm = 0.087 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 32.39 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	129	165	-59.91	5.73	-54.18	73.6
2122.50	H	129	165	-54.02	6.73	-47.29	66.7
2830.00	H	129	165	-62.39	7.80	-54.59	74.0

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

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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OPERATING FREQUENCY: 713.50 MHz
 CHANNEL: 23155
 MEASURED OUTPUT POWER: 19.11 dBm = 0.081 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 32.11 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	124	162	-60.96	5.80	-55.16	74.3
2140.50	H	124	162	-55.05	6.83	-48.22	67.3
2854.00	H	124	162	-62.44	7.76	-54.67	73.8

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

OPERATING FREQUENCY: 701.50 MHz
 CHANNEL: 23035
 MEASURED OUTPUT POWER: 19.78 dBm = 0.095 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 32.78 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	130	131	-63.96	5.66	-58.30	78.1
2104.50	H	130	131	-54.84	6.63	-48.21	68.0
2806.00	H	130	131	-64.36	7.84	-56.53	76.3

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

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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OPERATING FREQUENCY: 706.50 MHz
 CHANNEL: 23755
 MEASURED OUTPUT POWER: 18.10 dBm = 0.065 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 31.10 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]
1413.00	H	129	165	-51.84	2.56	-49.27	67.4
2119.50	H	129	165	-44.01	3.01	-41.00	59.1
2826.00	H	129	165	-56.53	4.74	-51.79	69.9

Table 7-14. Radiated Spurious Data (Band 17 – Low Channel)

OPERATING FREQUENCY: 710.00 MHz
 CHANNEL: 23790
 MEASURED OUTPUT POWER: 18.45 dBm = 0.070 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 31.45 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]
1420.00	H	135	170	-52.93	2.64	-50.29	68.7
2130.00	H	135	170	-46.52	3.04	-43.48	61.9
2840.00	H	135	170	-56.50	4.73	-51.77	70.2

Table 7-15. Radiated Spurious Data (Band 17 – Mid Channel)

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 148 of 182

OPERATING FREQUENCY: 713.50 MHz
 CHANNEL: 23825
 MEASURED OUTPUT POWER: 18.18 dBm = 0.066 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) = 31.18$ dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1427.00	H	118	158	-55.03	2.72	-52.31	70.5
2140.50	H	118	158	-47.42	3.07	-44.35	62.5
2854.00	H	118	158	-56.41	4.73	-51.69	69.9

Table 7-16. Radiated Spurious Data (Band 17 – High Channel)

OPERATING FREQUENCY: 710.00 MHz
 CHANNEL: 23790
 MEASURED OUTPUT POWER: 18.45 dBm = 0.070 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) = 31.45$ 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]
1420.00	H	135	134	-55.82	2.64	-53.18	71.6
2130.00	H	130	131	-45.72	3.04	-42.68	61.1
2840.00	H	130	131	-56.47	4.73	-51.74	70.2

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

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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OPERATING FREQUENCY: 779.50 MHz
 CHANNEL: 23205
 MEASURED OUTPUT POWER: 17.22 dBm = 0.053 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 30.22 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]
2338.50	H	108	169	-46.54	7.28	-39.27	56.5
3118.00	H	108	169	-47.68	7.25	-40.42	57.6
3897.50	H	108	169	-59.61	7.10	-52.51	69.7

Table 7-18. Radiated Spurious Data (Band 13 – Low Channel)

OPERATING FREQUENCY: 782.00 MHz
 CHANNEL: 23230
 MEASURED OUTPUT POWER: 16.99 dBm = 0.050 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 29.99 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	108	173	-45.32	7.26	-38.06	55.1
3128.00	H	108	173	-47.39	7.26	-40.13	57.1
3910.00	H	108	173	-57.99	7.14	-50.85	67.8

Table 7-19. Radiated Spurious Data (Band 13 – Mid Channel)

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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OPERATING FREQUENCY: 784.50 MHz
 CHANNEL: 23255
 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]
2353.50	H	112	170	-46.26	7.25	-39.01	56.1
3138.00	H	112	170	-49.23	7.27	-41.96	59.0
3922.50	H	112	170	-57.59	7.20	-50.39	67.4

Table 7-20. 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	108	169	-50.17	6.42	-43.75	-3.8
1564.00	H	108	173	-50.15	6.44	-43.71	-3.7
1569.00	H	112	170	-51.14	6.46	-44.68	-4.7

Table 7-21. Radiated Spurious Data (Band 13 – 1559-1610MHz Band)

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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OPERATING FREQUENCY: 779.50 MHz
 CHANNEL: 23205
 MEASURED OUTPUT POWER: 17.22 dBm = 0.053 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 30.22 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]
1559.00	H	121	191	-55.45	6.42	-49.03	66.3
2338.50	H	121	191	-48.84	7.28	-41.57	58.8
3118.00	H	121	191	-58.00	7.25	-50.74	68.0
3897.50	H	121	191	-56.80	7.10	-49.70	66.9

Table 7-22. Radiated Spurious Data with WCP (Band 13 – Low Channel)

OPERATING FREQUENCY: 826.50 MHz
 CHANNEL: 20425
 MEASURED OUTPUT POWER: 18.83 dBm = 0.076 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 31.83 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]
1653.00	H	178	176	-45.41	6.56	-38.85	57.7
2479.50	H	178	176	-57.54	7.31	-50.24	69.1
3306.00	H	178	176	-61.09	7.38	-53.72	72.5

Table 7-23. Radiated Spurious Data (Band 5 – Low Channel)

OPERATING FREQUENCY: 836.50 MHz
 CHANNEL: 20525
 MEASURED OUTPUT POWER: 19.74 dBm = 0.094 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 32.74 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	181	175	-44.21	6.55	-37.66	57.4
2509.50	H	181	175	-54.05	7.34	-46.71	66.5
3346.00	H	181	175	-61.27	7.44	-53.83	73.6

Table 7-24. Radiated Spurious Data (Band 5 – Mid Channel)

OPERATING FREQUENCY: 846.50 MHz
 CHANNEL: 20625
 MEASURED OUTPUT POWER: 19.41 dBm = 0.087 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 32.41 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	179	172	-46.84	6.55	-40.29	59.7
2539.50	H	179	172	-54.72	7.36	-47.36	66.8
3386.00	H	179	172	-61.87	7.50	-54.37	73.8

Table 7-25. Radiated Spurious Data (Band 5 – High Channel)

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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OPERATING FREQUENCY: 836.50 MHz
 CHANNEL: 20525
 MEASURED OUTPUT POWER: 16.05 dBm = 0.040 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 29.05 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]
1673.00	H	114	347	-42.27	6.55	-35.72	51.8
2509.50	H	114	347	-53.12	7.34	-45.78	61.8
3346.00	H	114	347	-47.90	7.44	-40.46	56.5
4182.50	H	114	347	-53.38	8.20	-45.18	61.2
5019.00	H	114	347	-53.30	8.74	-44.55	60.6
5855.50	H	114	347	-51.14	9.29	-41.85	57.9
6692.00	H	114	347	-55.55	9.65	-45.90	62.0

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

OPERATING FREQUENCY: 1712.50 MHz
 CHANNEL: 19975
 MEASURED OUTPUT POWER: 22.56 dBm = 0.180 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 35.56 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]
3425.00	H	137	346	-42.86	9.68	-33.18	55.7
5137.50	H	137	346	-40.81	10.68	-30.13	52.7
6850.00	H	137	346	-54.45	11.74	-42.70	65.3
8562.50	H	137	346	-50.81	11.05	-39.76	62.3

Table 7-27. Radiated Spurious Data (Band 4 – Low Channel)

OPERATING FREQUENCY: 1732.50 MHz
 CHANNEL: 20175
 MEASURED OUTPUT POWER: 21.44 dBm = 0.139 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 34.44 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	139	339	-43.95	9.71	-34.25	55.7
5197.50	H	139	339	-42.06	10.59	-31.48	52.9
6930.00	H	139	339	-54.37	11.75	-42.62	64.1
8662.50	H	139	339	-50.49	11.06	-39.43	60.9

Table 7-28. Radiated Spurious Data (Band 4 – Mid Channel)

OPERATING FREQUENCY: 1752.50 MHz
 CHANNEL: 20375
 MEASURED OUTPUT POWER: 20.63 dBm = 0.116 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 33.63 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3505.00	H	136	351	-43.92	9.73	-34.19	54.8
5257.50	H	136	351	-43.32	10.64	-32.68	53.3
7010.00	H	136	351	-54.51	11.75	-42.76	63.4
8762.50	H	136	351	-50.01	11.00	-39.01	59.6

Table 7-29. Radiated Spurious Data (Band 4 – High Channel)

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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OPERATING FREQUENCY: 1712.50 MHz
 CHANNEL: 19975
 MEASURED OUTPUT POWER: 22.56 dBm = 0.180 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 35.56 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]
3425.00	H	168	322	-39.65	9.68	-29.97	52.5
5137.50	H	168	322	-42.34	10.68	-31.66	54.2
6850.00	H	168	322	-54.62	11.74	-42.87	65.4
8562.50	H	168	322	-50.56	11.05	-39.51	62.1

Table 7-30. Radiated Spurious Data with WCP (Band 4 – Low Channel)

OPERATING FREQUENCY: 1855.00 MHz
 CHANNEL: 18650
 MEASURED OUTPUT POWER: 22.35 dBm = 0.172 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 35.35 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]
3710.00	H	134	90	-32.93	9.43	-23.50	45.9
5565.00	H	134	90	-40.95	10.80	-30.15	52.5
7420.00	H	134	90	-48.71	10.71	-38.00	60.3
9275.00	H	134	90	-49.40	11.58	-37.82	60.2
11130.00	H	134	90	-51.62	12.79	-38.83	61.2

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

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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OPERATING FREQUENCY: 1880.00 MHz
 CHANNEL: 18900
 MEASURED OUTPUT POWER: 23.87 dBm = 0.244 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 36.87 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3760.00	H	139	84	-29.12	9.28	-19.84	43.7
5640.00	H	139	84	-39.94	11.03	-28.90	52.8
7520.00	H	139	84	-49.10	10.97	-38.13	62.0
9400.00	H	139	84	-45.98	11.53	-34.45	58.3
11280.00	H	139	84	-51.15	12.71	-38.44	62.3

Table 7-32. Radiated Spurious Data (Band 2/25 – Mid Channel)

OPERATING FREQUENCY: 1910.00 MHz
 CHANNEL: 19150
 MEASURED OUTPUT POWER: 22.03 dBm = 0.160 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 35.03 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	136	97	-32.24	9.19	-23.05	45.1
5730.00	H	136	97	-39.66	11.27	-28.38	50.4
7640.00	H	136	97	-50.73	11.17	-39.56	61.6
9550.00	H	136	97	-47.90	11.80	-36.10	58.1
11460.00	H	136	97	-50.78	12.72	-38.06	60.1

Table 7-33. Radiated Spurious Data (Band 2/25 – High Channel)

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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OPERATING FREQUENCY: 1880.00 MHz
 CHANNEL: 18900
 MEASURED OUTPUT POWER: 23.87 dBm = 0.244 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 36.87 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3760.00	H	135	106	-29.40	9.28	-20.12	44.0
5640.00	H	135	106	-41.59	11.03	-30.55	54.4
7520.00	H	135	106	-47.27	10.97	-36.30	60.2
9400.00	H	135	106	-47.27	11.53	-35.74	59.6
11280.00	H	135	106	-50.76	12.71	-38.05	61.9

Table 7-34. Radiated Spurious Data with WCP (Band 2/25 – Mid Channel)

OPERATING FREQUENCY: 2307.50 MHz
 CHANNEL: 27685
 MEASURED OUTPUT POWER: 19.52 dBm = 0.090 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $70 + 10 \log_{10} (W) =$ 59.52 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]
4615.00	H	115	13	-65.30	10.88	-54.42	73.9
6922.50	H	115	13	-65.59	11.75	-53.84	73.4
9230.00	H	-	-	-60.70	11.57	-49.13	68.6

Table 7-35. Radiated Spurious Data (Band 30 – Low Channel)

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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OPERATING FREQUENCY: 2310.00 MHz
 CHANNEL: 27710
 MEASURED OUTPUT POWER: 20.61 dBm = 0.115 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $70 + 10 \log_{10} (W) :$ 60.61 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
4620.00	H	120	26	-65.76	10.87	-54.89	75.5
6930.00	H	120	26	-65.66	11.75	-53.91	74.5
9240.00	H	-	-	-60.66	11.57	-49.09	69.7

Table 7-36. Radiated Spurious Data (Band 30 – Mid Channel)

OPERATING FREQUENCY: 2312.50 MHz
 CHANNEL: 27735
 MEASURED OUTPUT POWER: 19.58 dBm = 0.091 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $70 + 10 \log_{10} (W) :$ 59.58 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
4625.00	H	106	32	-65.79	10.87	-54.92	74.5
6937.50	H	106	32	-67.20	11.75	-55.45	75.0
9250.00	H	-	-	-60.97	11.58	-49.39	69.0

Table 7-37. Radiated Spurious Data (Band 30 – High Channel)

OPERATING FREQUENCY: 2310.00 MHz
 CHANNEL: 27710
 MEASURED OUTPUT POWER: 20.61 dBm = 0.115 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $70 + 10 \log_{10} (W)$: 60.61 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
4620.00	H	123	22	-66.49	10.87	-55.62	76.2
6930.00	H	123	22	-66.83	11.75	-55.08	75.7
9240.00	H	-	-	-62.06	11.58	-50.48	71.1

Table 7-38. Radiated Spurious Data with WCP (Band 30 – High Channel)

OPERATING FREQUENCY: 2503.50 MHz
 CHANNEL: 39725
 MEASURED OUTPUT POWER: 18.42 dBm = 0.069 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10} (W)$: 43.42 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
5007.00	H	129	35	-53.69	10.92	-42.77	61.2
7510.50	H	129	35	-52.64	10.95	-41.69	60.1
10014.00	H	-	-	-50.14	12.04	-38.11	56.5

Table 7-39. Radiated Spurious Data (Band 41 – Low Channel)

OPERATING FREQUENCY: 2593.00 MHz
 CHANNEL: 40620
 MEASURED OUTPUT POWER: 21.36 dBm = 0.137 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10} (W)$ 46.36 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	247	26	-48.56	10.60	-37.96	59.3
7779.00	H	247	26	-52.35	11.22	-41.13	62.5
10372.00	H	-	-	-50.89	12.36	-38.53	59.9

Table 7-40. Radiated Spurious Data (Band 41 – Mid Channel)

OPERATING FREQUENCY: 2682.50 MHz
 CHANNEL: 41515
 MEASURED OUTPUT POWER: 21.35 dBm = 0.136 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10} (W)$ 46.35 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]
5365.00	H	148	16	-50.06	10.60	-39.47	60.8
8047.50	H	148	16	-49.85	11.10	-38.75	60.1
10730.00	H	-	-	-52.85	12.56	-40.28	61.6

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

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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OPERATING FREQUENCY: 2593.00 MHz
 CHANNEL: 40620
 MEASURED OUTPUT POWER: 21.36 dBm = 0.137 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10} (W)$ 46.36 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	148	13	-53.80	10.60	-43.20	64.6
7779.00	H	148	13	-49.60	11.22	-38.38	59.7
10372.00	H	-	-	-50.53	12.36	-38.17	59.5

Table 7-42. Radiated Spurious Data with WCP (Band 41 – Mid Channel)

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7.8 Frequency Stability / Temperature Variation

\$2.1055 \$22.355 \$24.235 \$27.54

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-C-2004. 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-C-2004

Test Settings

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

Test Setup

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

Test Notes

None

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Band 12 Frequency Stability Measurements

\$2.1055 \$27.54

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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	707,500,186	186	0.0000263
100 %		- 30	707,499,939	-61	-0.0000086
100 %		- 20	707,500,049	49	0.0000069
100 %		- 10	707,500,111	111	0.0000157
100 %		0	707,499,978	-22	-0.0000031
100 %		+ 10	707,499,850	-150	-0.0000212
100 %		+ 20	707,499,651	-349	-0.0000493
100 %		+ 30	707,500,046	46	0.0000065
100 %		+ 40	707,499,915	-85	-0.0000120
100 %		+ 50	707,499,846	-154	-0.0000218
BATT. ENDPOINT	3.45	+ 20	707,499,743	-257	-0.0000363

Table 7-43. Frequency Stability Data (Band 12)

Note:

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

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Band 12 Frequency Stability Measurements

§2.1055 §27.54

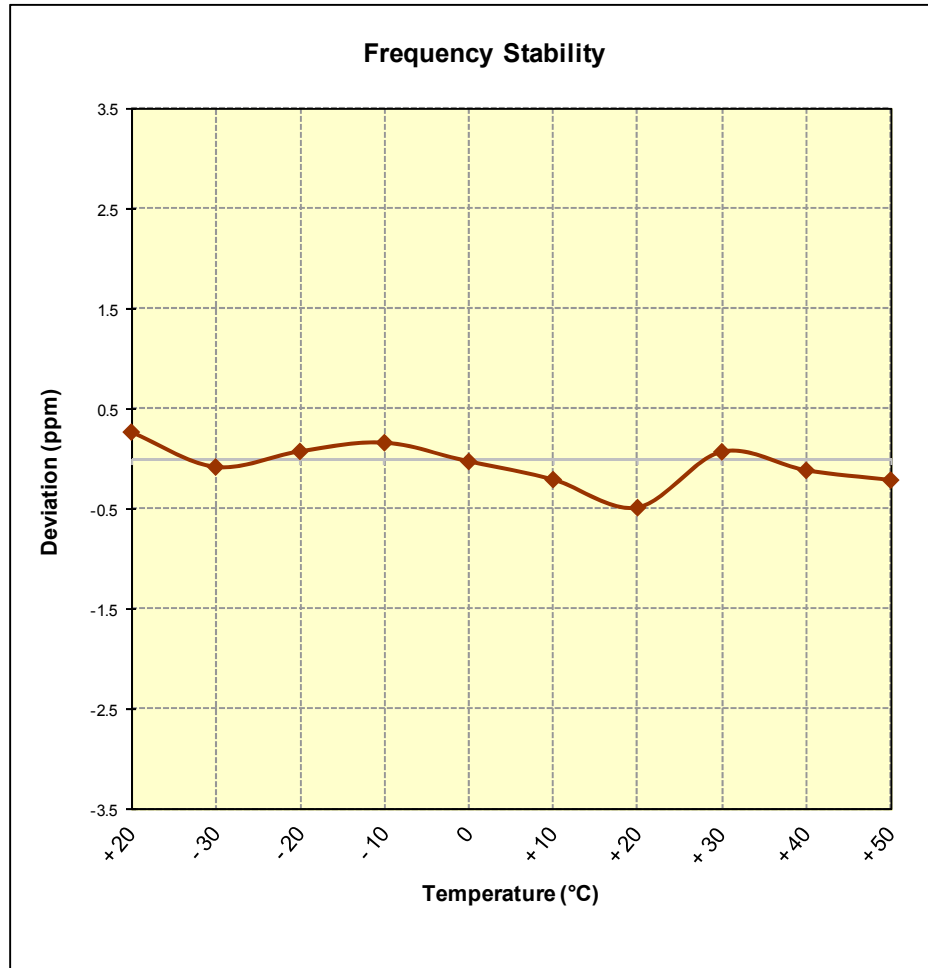


Figure 7-8. Frequency Stability Graph (Band 12)

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Band 17 Frequency Stability Measurements

\$2.1055 \$27.54

OPERATING FREQUENCY: 710,000,000 Hz
 CHANNEL: 23090
 REFERENCE VOLTAGE: 3.85 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	709,999,911	-89	-0.0000125
100 %		- 30	709,999,952	-48	-0.0000068
100 %		- 20	709,999,589	-411	-0.0000579
100 %		- 10	709,999,639	-361	-0.0000508
100 %		0	710,000,036	36	0.0000051
100 %		+ 10	710,000,077	77	0.0000108
100 %		+ 20	710,000,028	28	0.0000039
100 %		+ 30	709,999,895	-105	-0.0000148
100 %		+ 40	710,000,011	11	0.0000015
100 %		+ 50	709,999,582	-418	-0.0000589
BATT. ENDPOINT	3.45	+ 20	710,000,214	214	0.0000301

Table 7-44. Frequency Stability Data (Band 17)

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: A3LSMG935W8	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Reviewed by: Quality Manager
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Band 17 Frequency Stability Measurements

§2.1055 §27.54

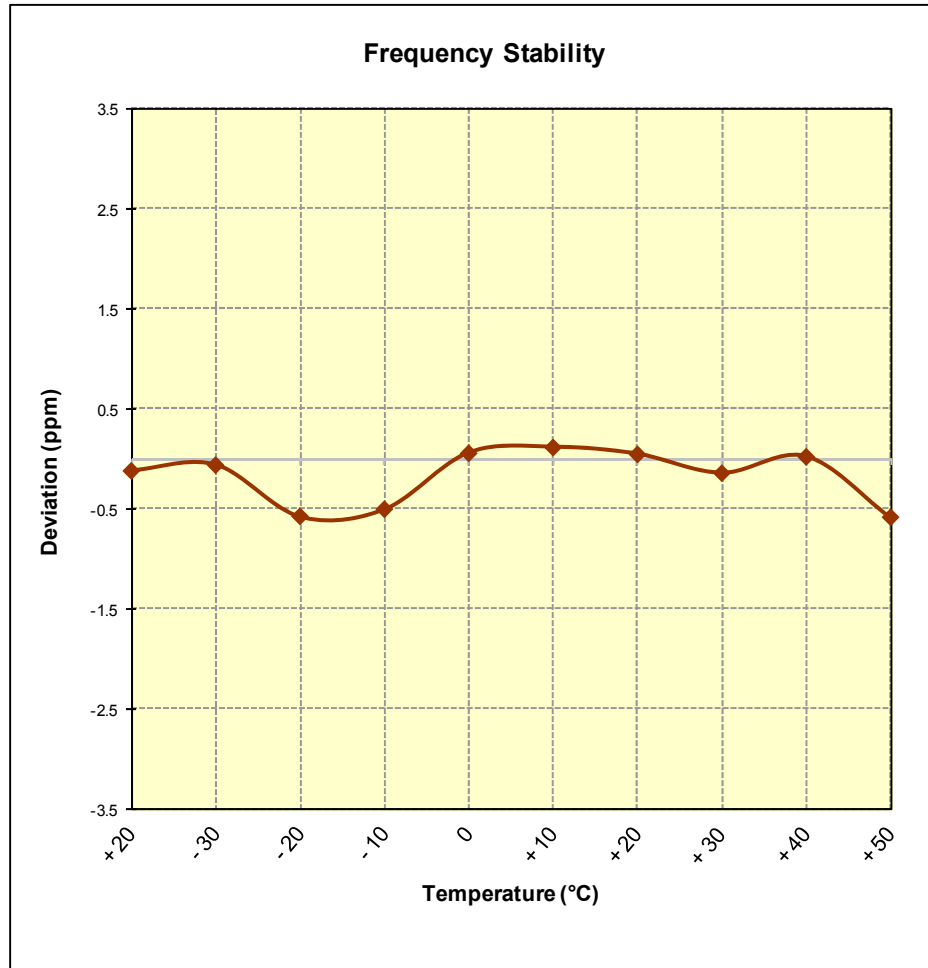


Figure 7-9. Frequency Stability Graph (Band 17)

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Band 13 Frequency Stability Measurements

§2.1055 §27.54

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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	782,000,015	15	0.0000019
100 %		- 30	781,999,650	-350	-0.0000448
100 %		- 20	781,999,735	-265	-0.0000339
100 %		- 10	781,999,886	-114	-0.0000146
100 %		0	781,999,723	-277	-0.0000354
100 %		+ 10	782,000,173	173	0.0000221
100 %		+ 20	782,000,048	48	0.0000061
100 %		+ 30	781,999,866	-134	-0.0000171
100 %		+ 40	782,000,209	209	0.0000267
100 %		+ 50	781,999,782	-218	-0.0000279
BATT. ENDPOINT	3.45	+ 20	781,999,931	-69	-0.0000088

Table 7-45. Frequency Stability Data (Band 13)

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: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Band 13 Frequency Stability Measurements

§2.1055 §27.54

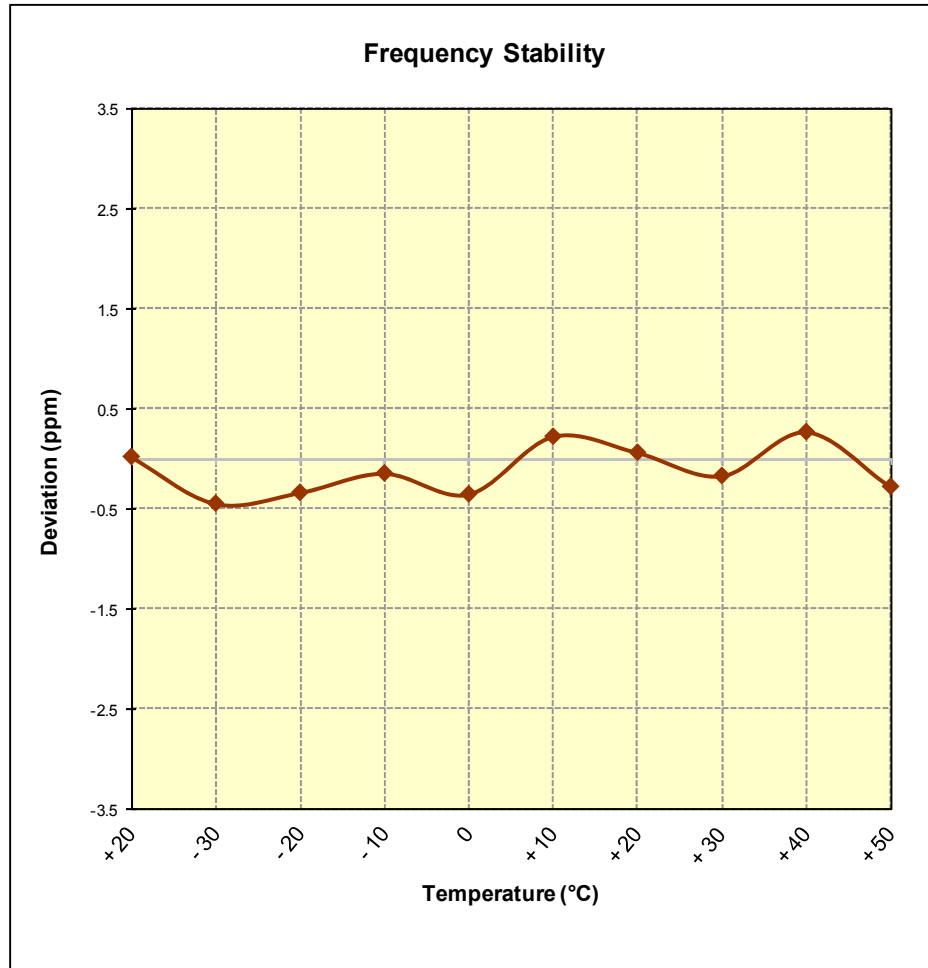


Figure 7-10. Frequency Stability Graph (Band 13)

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Band 5 Frequency Stability Measurements

§2.1055 §22.355

OPERATING FREQUENCY: 836,500,000 Hz

CHANNEL: 20525

REFERENCE VOLTAGE: 3.85 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	836,499,996	-4	-0.0000005
100 %		- 30	836,500,249	249	0.0000298
100 %		- 20	836,499,801	-199	-0.0000238
100 %		- 10	836,499,771	-229	-0.0000274
100 %		0	836,499,920	-80	-0.0000096
100 %		+ 10	836,500,052	52	0.0000062
100 %		+ 20	836,499,972	-28	-0.0000033
100 %		+ 30	836,499,821	-179	-0.0000214
100 %		+ 40	836,500,231	231	0.0000276
100 %		+ 50	836,499,780	-220	-0.0000263
BATT. ENDPOINT	3.45	+ 20	836,500,042	42	0.0000050

Table 7-46. Frequency Stability Data (Band 5)

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Band 5 Frequency Stability Measurements

§2.1055 §22.355

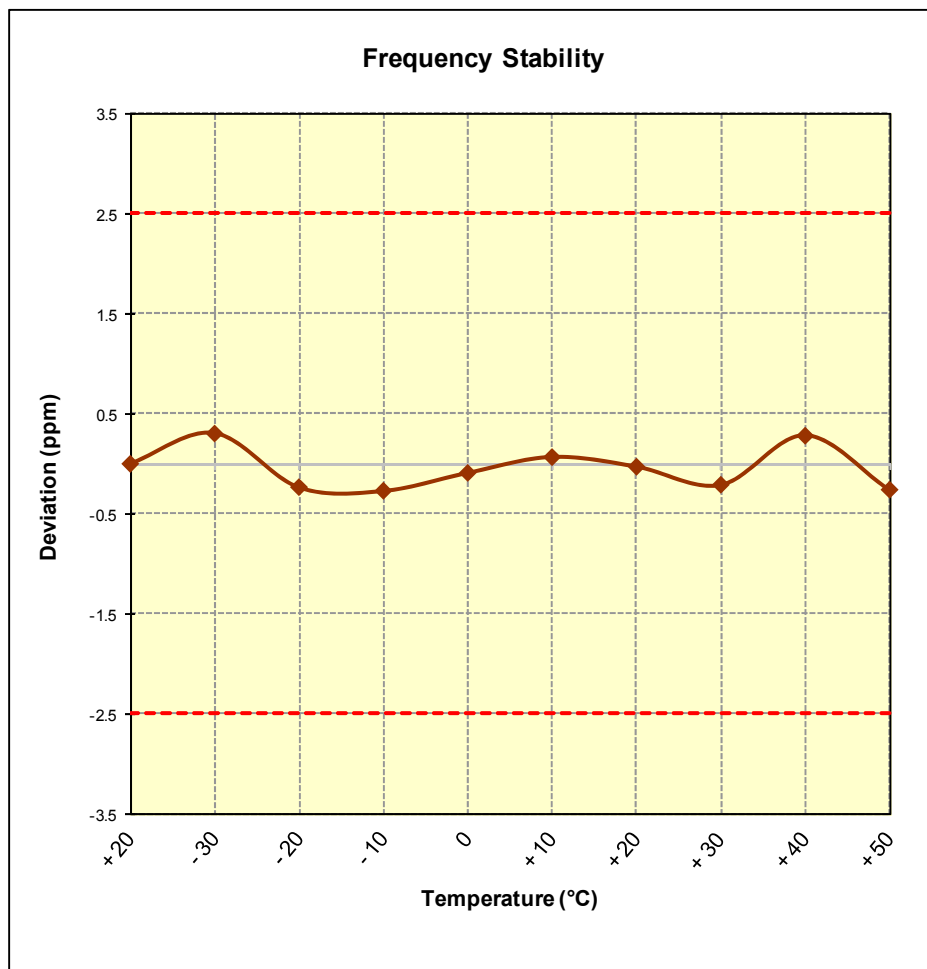


Figure 7-11. Frequency Stability Graph (Band 5)

FCC ID: A3LSMG935W8	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Reviewed by: Quality Manager
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Band 4 Frequency Stability Measurements

\$2.1055 \$27.54

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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,732,499,887	-113	-0.0000065
100 %		- 30	1,732,499,968	-32	-0.0000018
100 %		- 20	1,732,500,155	155	0.0000089
100 %		- 10	1,732,499,963	-37	-0.0000021
100 %		0	1,732,500,118	118	0.0000068
100 %		+ 10	1,732,499,849	-151	-0.0000087
100 %		+ 20	1,732,499,754	-246	-0.0000142
100 %		+ 30	1,732,500,194	194	0.0000112
100 %		+ 40	1,732,499,916	-84	-0.0000048
100 %		+ 50	1,732,500,099	99	0.0000057
BATT. ENDPOINT	3.45	+ 20	1,732,499,849	-151	-0.0000087

Table 7-47. 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: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Band 4 Frequency Stability Measurements

§2.1055 §27.54

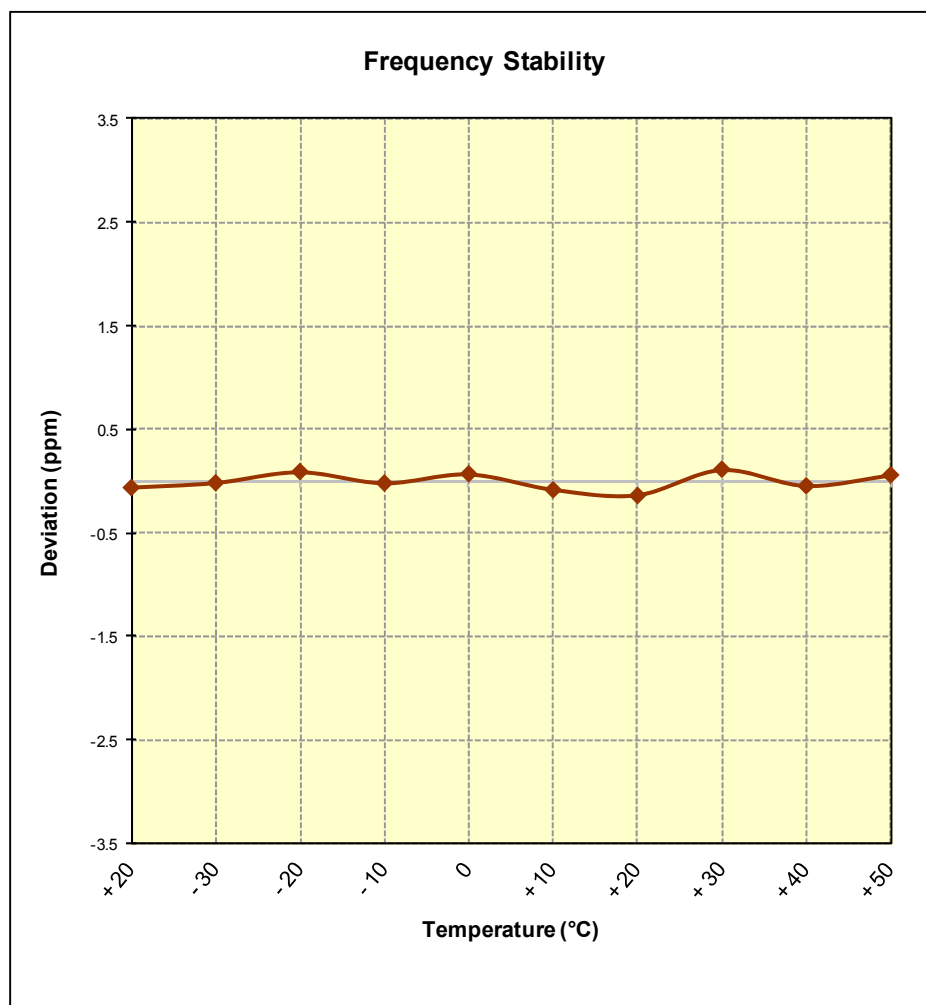


Figure 7-12. Frequency Stability Graph (Band 4)

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Band 2 Frequency Stability Measurements

§2.1055 §24.235

OPERATING FREQUENCY: 1,880,000,000 Hz

CHANNEL: 18900

REFERENCE VOLTAGE: 3.85 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,880,000,178	178	0.0000095
100 %		- 30	1,879,999,944	-56	-0.0000030
100 %		- 20	1,880,000,077	77	0.0000041
100 %		- 10	1,879,999,822	-178	-0.0000095
100 %		0	1,879,999,905	-95	-0.0000051
100 %		+ 10	1,879,999,795	-205	-0.0000109
100 %		+ 20	1,879,999,920	-80	-0.0000043
100 %		+ 30	1,880,000,071	71	0.0000038
100 %		+ 40	1,879,999,739	-261	-0.0000139
100 %		+ 50	1,879,999,955	-45	-0.0000024
BATT. ENDPOINT	3.45	+ 20	1,880,000,396	396	0.0000211

Table 7-48. Frequency Stability Data (Band 2)

Note:

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

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Band 2 Frequency Stability Measurements

§2.1055 §24.235

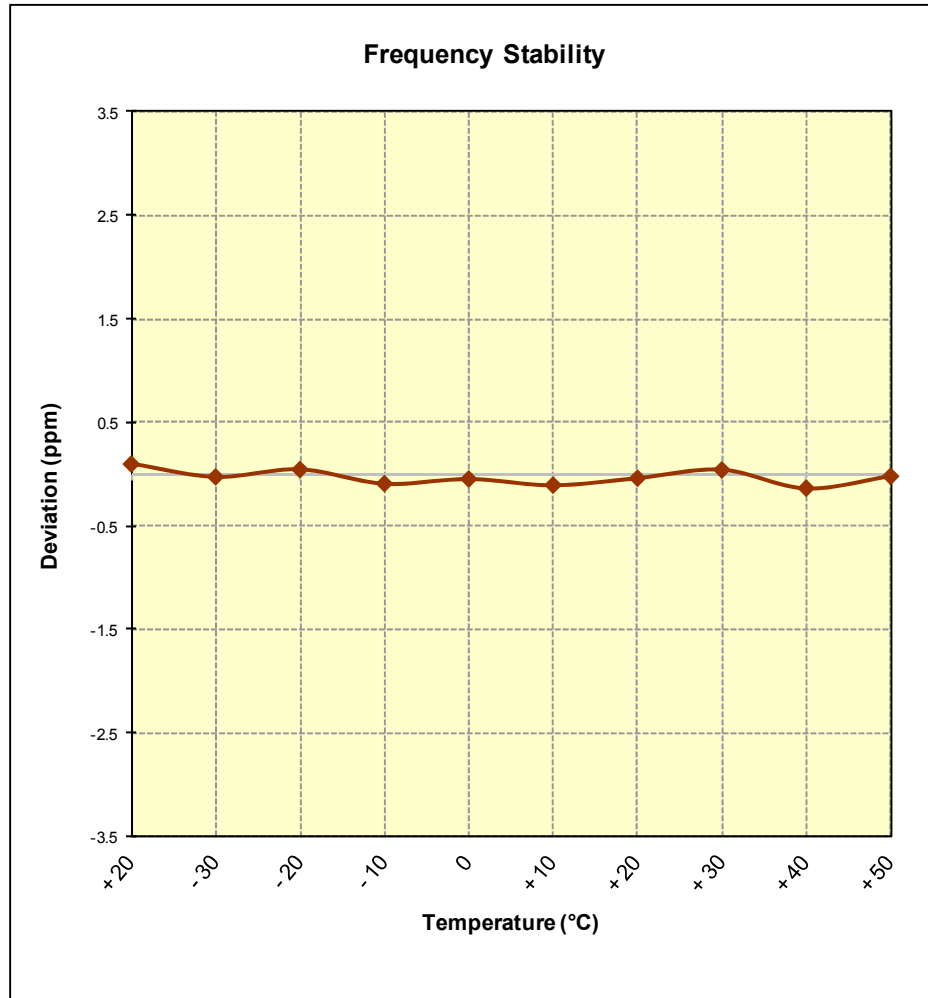


Figure 7-13. Frequency Stability Graph (Band 2)

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Band 25 Frequency Stability Measurements

§2.1055 §24.235

OPERATING FREQUENCY: 1,882,500,000 Hz

CHANNEL: 26365

REFERENCE VOLTAGE: 3.85 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	1,882,500,362	362	0.0000192
100 %		- 30	1,882,499,926	-74	-0.0000039
100 %		- 20	1,882,499,907	-93	-0.0000049
100 %		- 10	1,882,499,631	-369	-0.0000196
100 %		0	1,882,499,795	-205	-0.0000109
100 %		+ 10	1,882,500,122	122	0.0000065
100 %		+ 20	1,882,500,139	139	0.0000074
100 %		+ 30	1,882,499,915	-85	-0.0000045
100 %		+ 40	1,882,499,756	-244	-0.0000130
100 %		+ 50	1,882,499,992	-8	-0.0000004
BATT. ENDPOINT	3.45	+ 20	1,882,500,238	238	0.0000126

Table 7-49. Frequency Stability Data (Band 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: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Band 25 Frequency Stability Measurements

§2.1055 §24.235

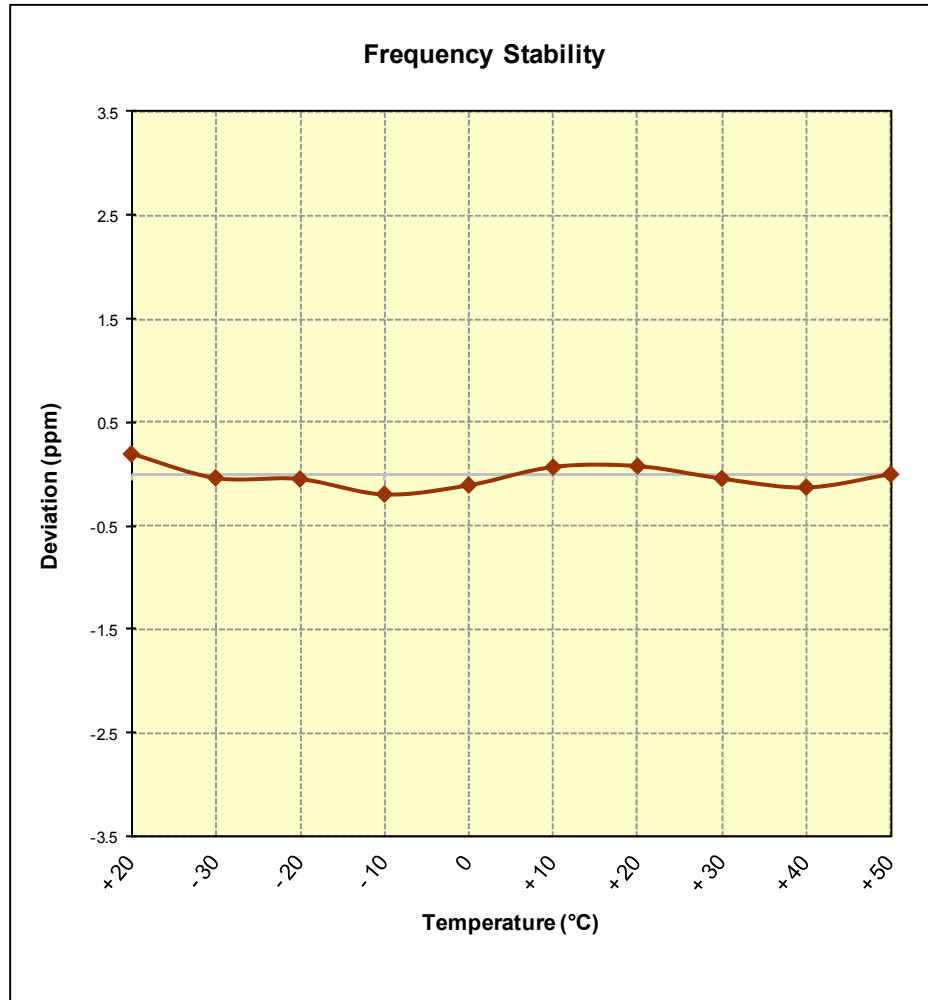


Figure 7-14. Frequency Stability Graph (Band 25)

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Band 30 Frequency Stability Measurements

§2.1055 §24.235

OPERATING FREQUENCY: 2,310,000,000 Hz
 CHANNEL: 27710
 REFERENCE VOLTAGE: 3.85 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	2,309,999,731	-269	-0.0000116
100 %		- 30	2,309,999,983	-17	-0.0000007
100 %		- 20	2,309,999,627	-373	-0.0000161
100 %		- 10	2,310,000,189	189	0.0000082
100 %		0	2,309,999,703	-297	-0.0000129
100 %		+ 10	2,310,000,236	236	0.0000102
100 %		+ 20	2,310,000,210	210	0.0000091
100 %		+ 30	2,310,000,141	141	0.0000061
100 %		+ 40	2,309,999,769	-231	-0.0000100
100 %		+ 50	2,309,999,950	-50	-0.0000022
BATT. ENDPOINT	3.45	+ 20	2,309,999,914	-86	-0.0000037

Table 7-50. Frequency Stability Data (Band 30)

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: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Band 30 Frequency Stability Measurements

§2.1055 §24.235

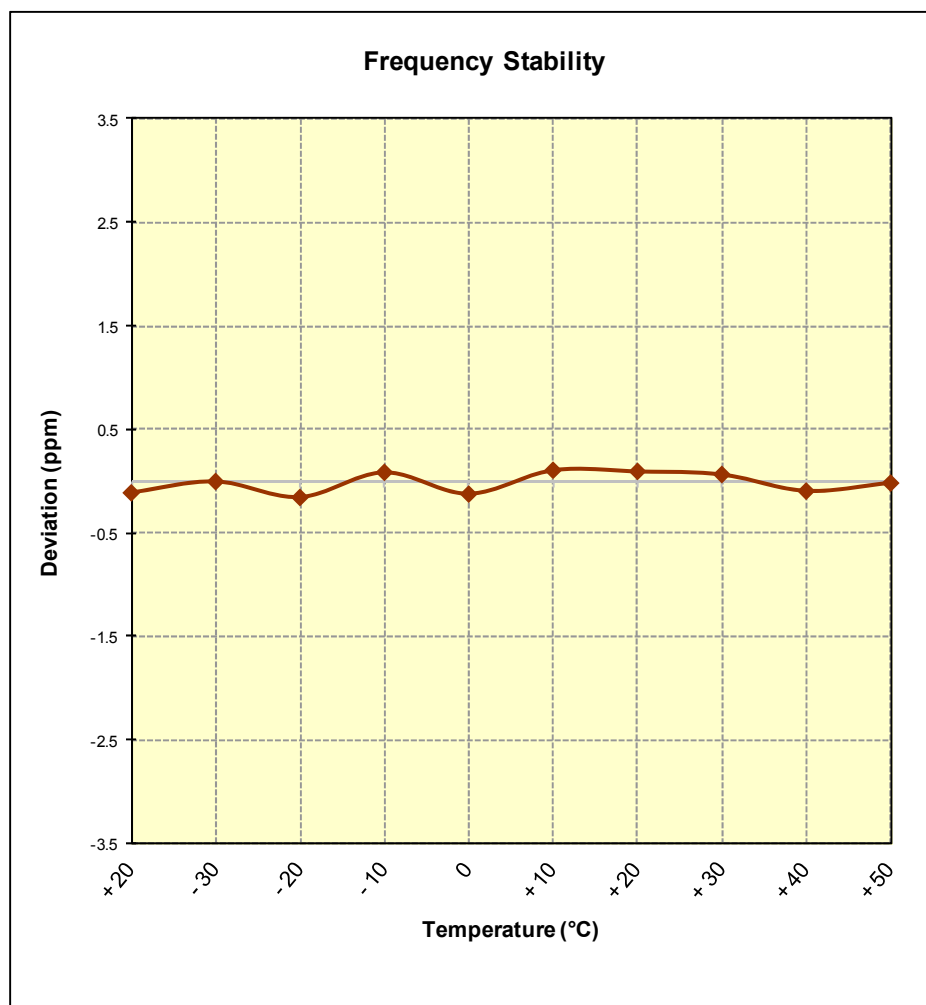


Figure 7-15. Frequency Stability Graph (Band 30)

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Band 41 Frequency Stability Measurements

\$2.1055 \$27.54

OPERATING FREQUENCY: 2,593,000,000 Hz
 CHANNEL: 40620
 REFERENCE VOLTAGE: 3.85 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	2,592,999,852	-148	-0.0000057
100 %		- 30	2,593,000,410	410	0.0000158
100 %		- 20	2,593,000,001	1	0.0000000
100 %		- 10	2,593,000,114	114	0.0000044
100 %		0	2,592,999,925	-75	-0.0000029
100 %		+ 10	2,593,000,051	51	0.0000020
100 %		+ 20	2,593,000,036	36	0.0000014
100 %		+ 30	2,592,999,872	-128	-0.0000049
100 %		+ 40	2,593,000,077	77	0.0000030
100 %		+ 50	2,592,999,847	-153	-0.0000059
BATT. ENDPOINT	3.45	+ 20	2,592,999,971	-29	-0.0000011

Table 7-51. 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: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Band 41 Frequency Stability Measurements

§2.1055 §27.54

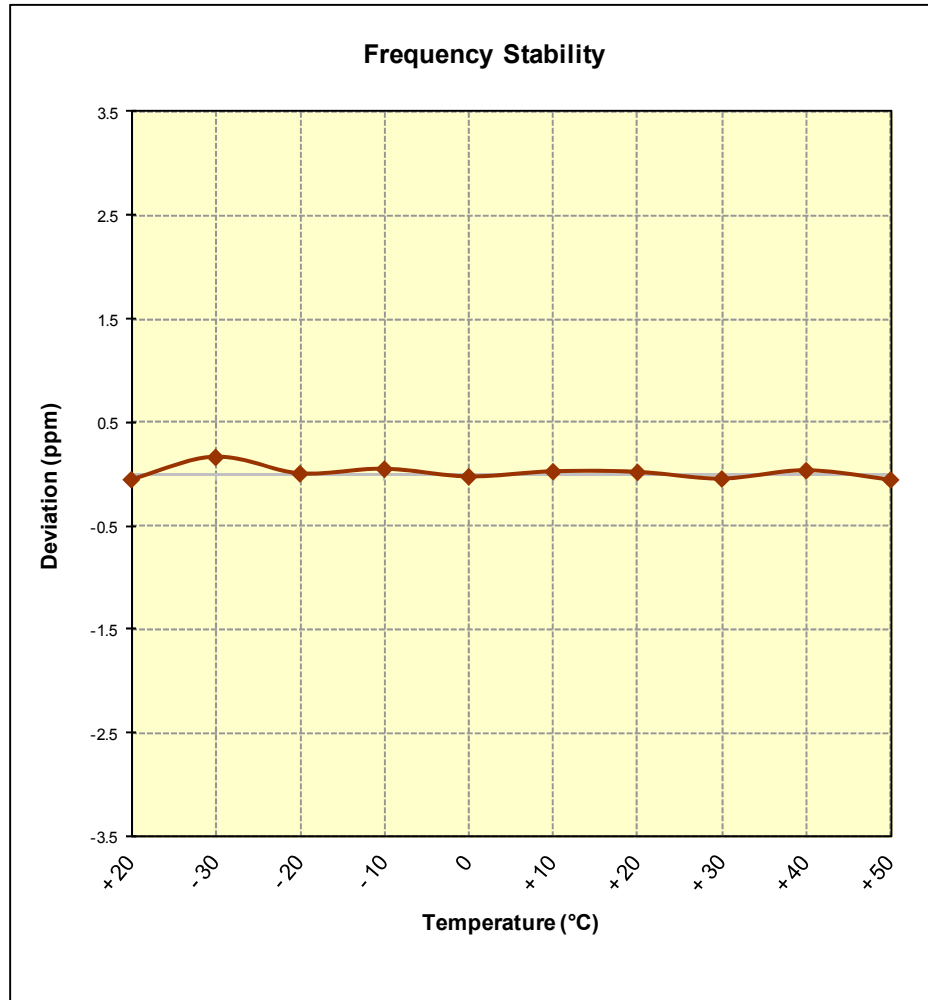


Figure 7-16. Frequency Stability Graph (Band 41)

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMG935W8** complies with all the requirements of Parts 22, 24, & 27 of the FCC rules for LTE operation only.

FCC ID: A3LSMG935W8		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1512222197-R3.A3L	Test Dates: 12/22/2015 - 1/28/2016	EUT Type: Portable Handset		Page 182 of 182