

6.4 Band Edge Emissions at Antenna Terminal

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

Test Overview

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

The minimum permissible attenuation level of any spurious emission is $43 + \log_{10}(P_{\text{Watts}})$, where P is the transmitter power in Watts.

The minimum permissible attenuation level for Band 41 is $> 40 + 10\log_{10}(P_{\text{Watts}})$ between channel edges and 5MHz away from channel edge, $> 43 + 10\log_{10}(P_{\text{Watts}})$ between 5MHz and X MHz and $> 55 + 10\log_{10}(P_{\text{Watts}})$ at frequencies greater than X , where X is the greater of 6MHz or the emission BW 43.

Test Procedure Used

KDB 971168 v02r01 – 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 x RBW
5. Detector = RMS
6. Number of sweep points \geq 2 x Span/RBW
7. Trace mode = max hold
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.

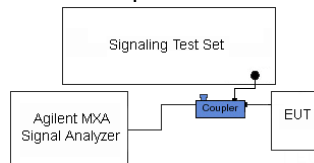


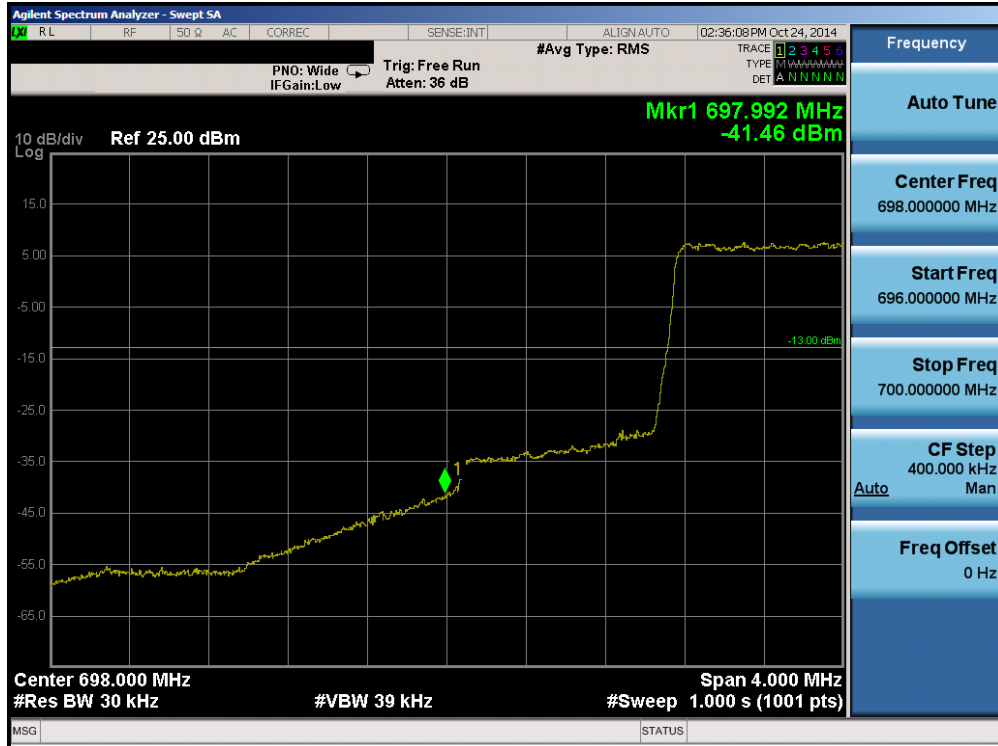
Figure 6-3. Test Instrument & Measurement Setup

Test Notes

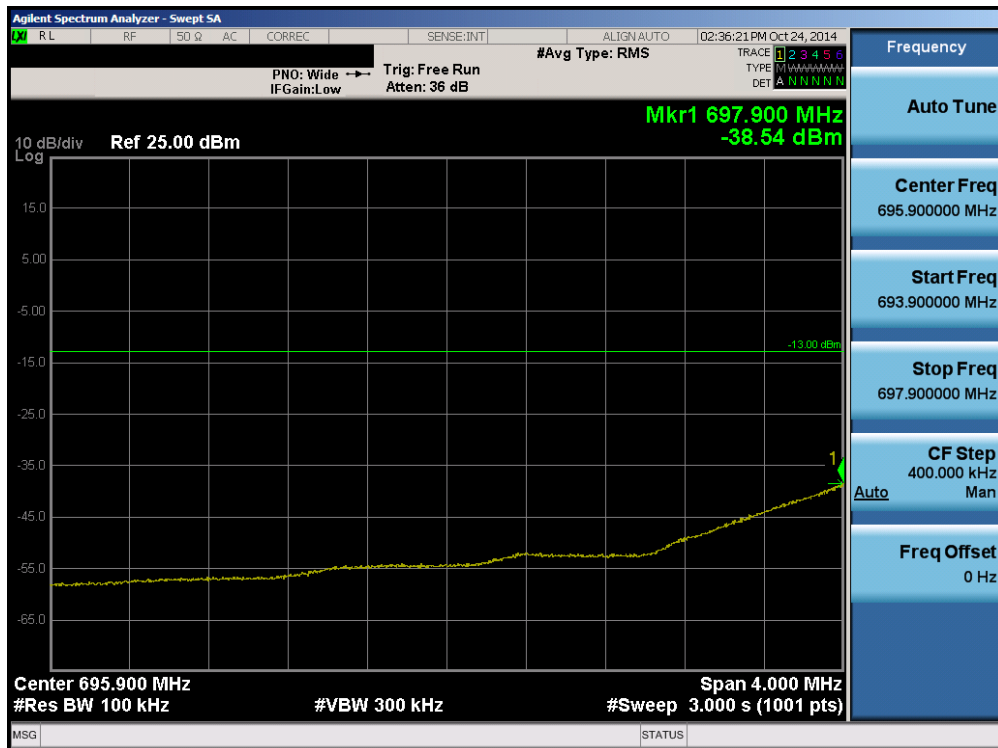
Per 22.917(b) 24.238(a) 27.53(h) in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to demonstrate compliance with the out-of-band emissions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

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 56 of 139

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.

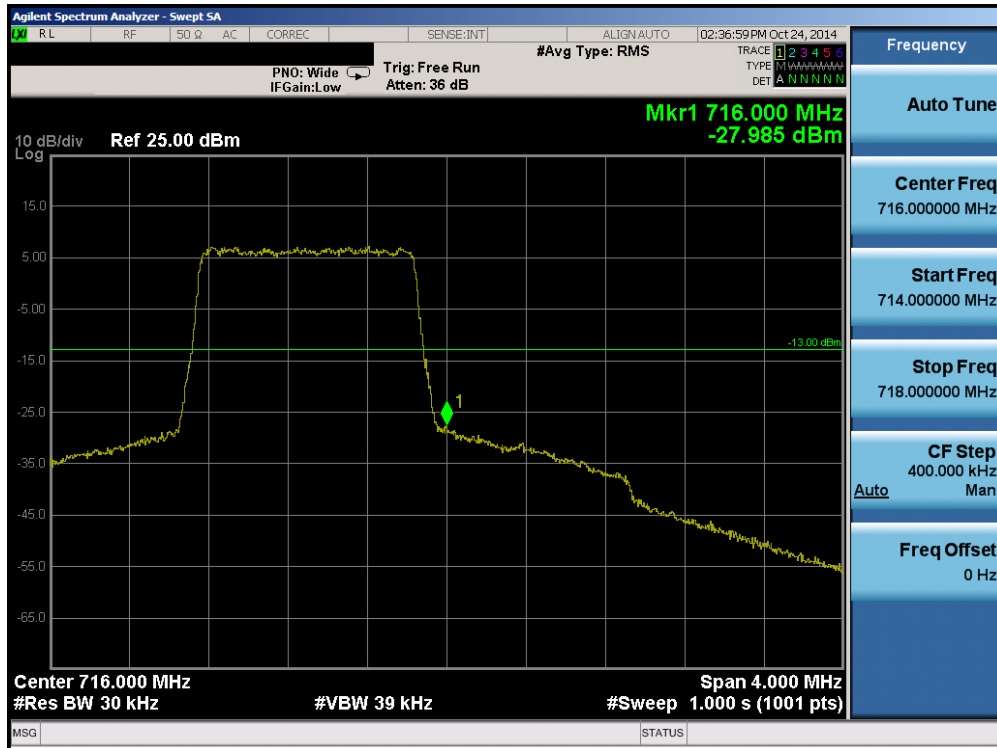


Plot 6-84. Lower Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)



FCC ID: ZNFLS996	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 57 of 139

Plot 6-85. Lower Extended Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)

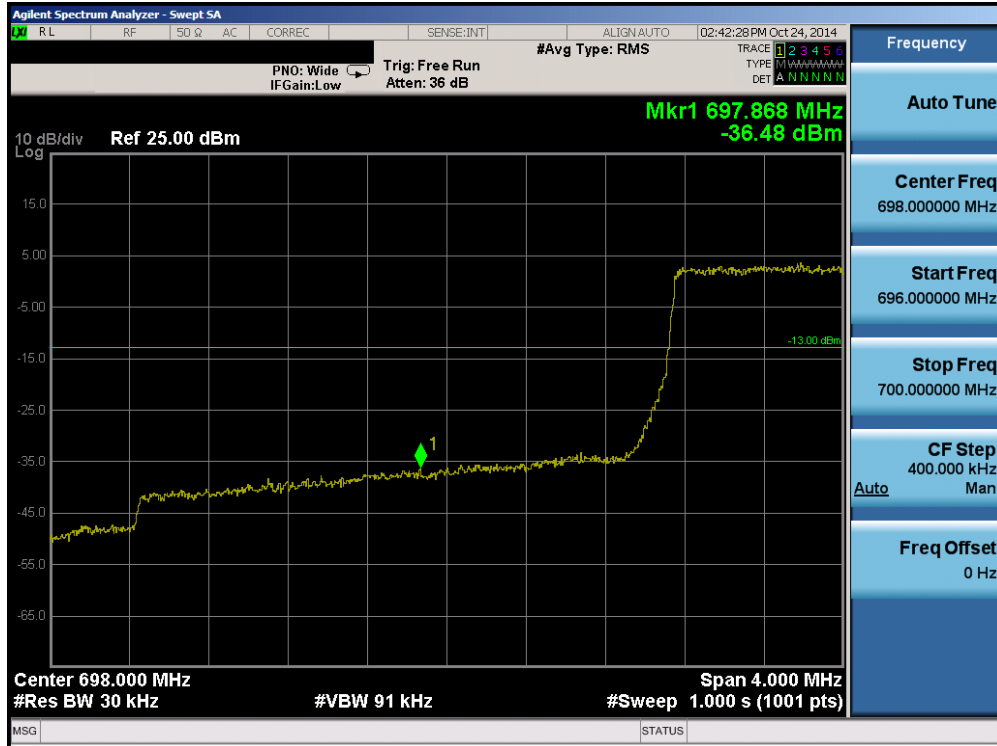


Plot 6-86. Upper Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)



Plot 6-87. Upper Extended Band Edge Plot (Band 12 – 1.4MHz QPSK – RB Size 6)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 58 of 139



Plot 6-88. Lower Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)



Plot 6-89. Lower Extended Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 59 of 139

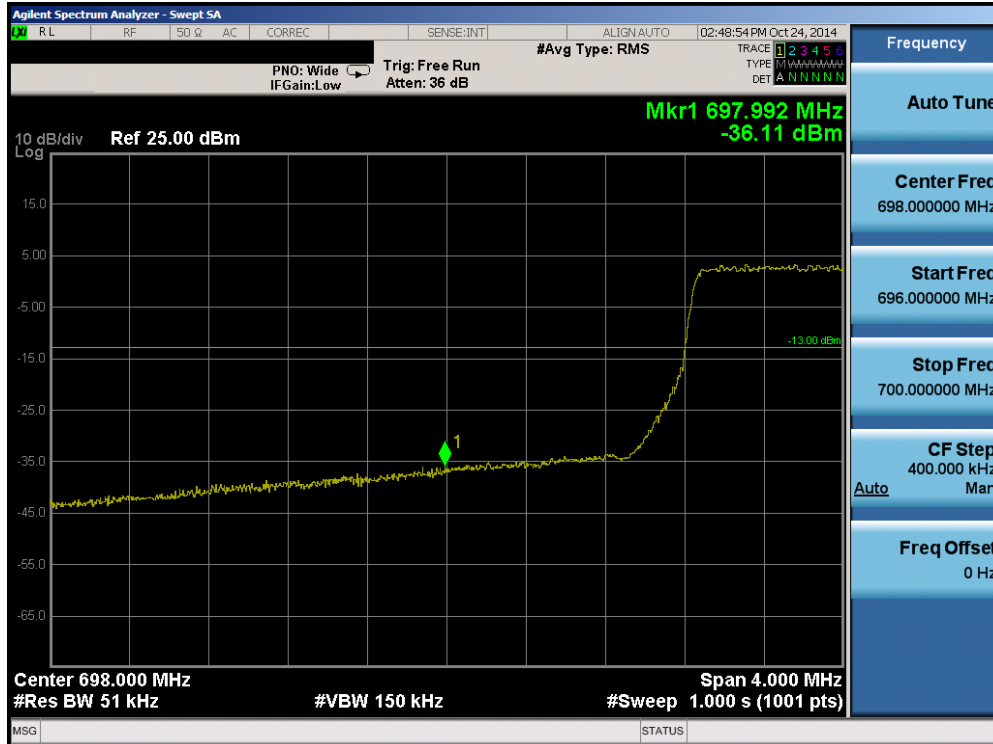


Plot 6-90. Upper Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)

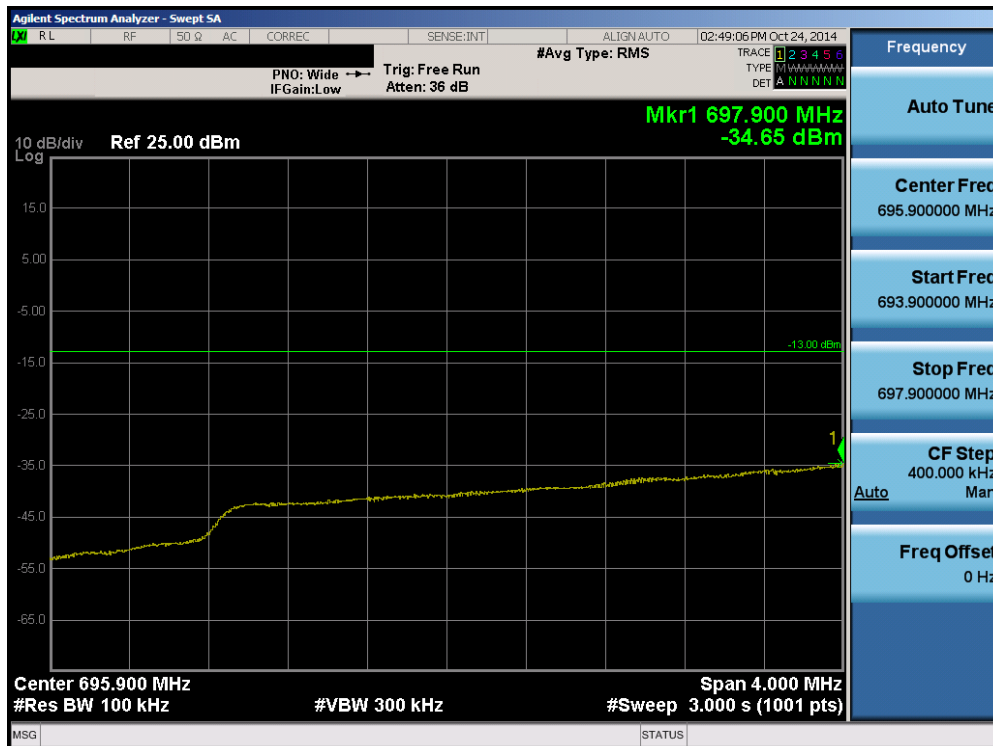


Plot 6-91. Upper Extended Band Edge Plot (Band 12 – 3.0MHz QPSK – RB Size 15)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 60 of 139

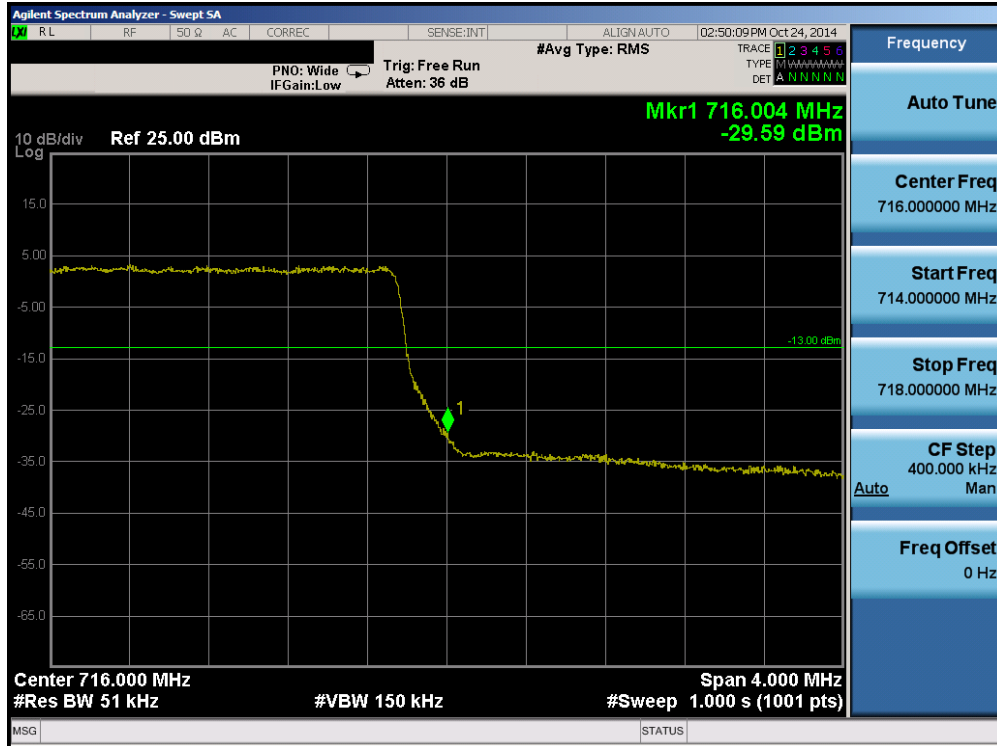


Plot 6-92. Lower Band Edge Plot (Band 12 – 5.0MHz QPSK – RB Size 25)

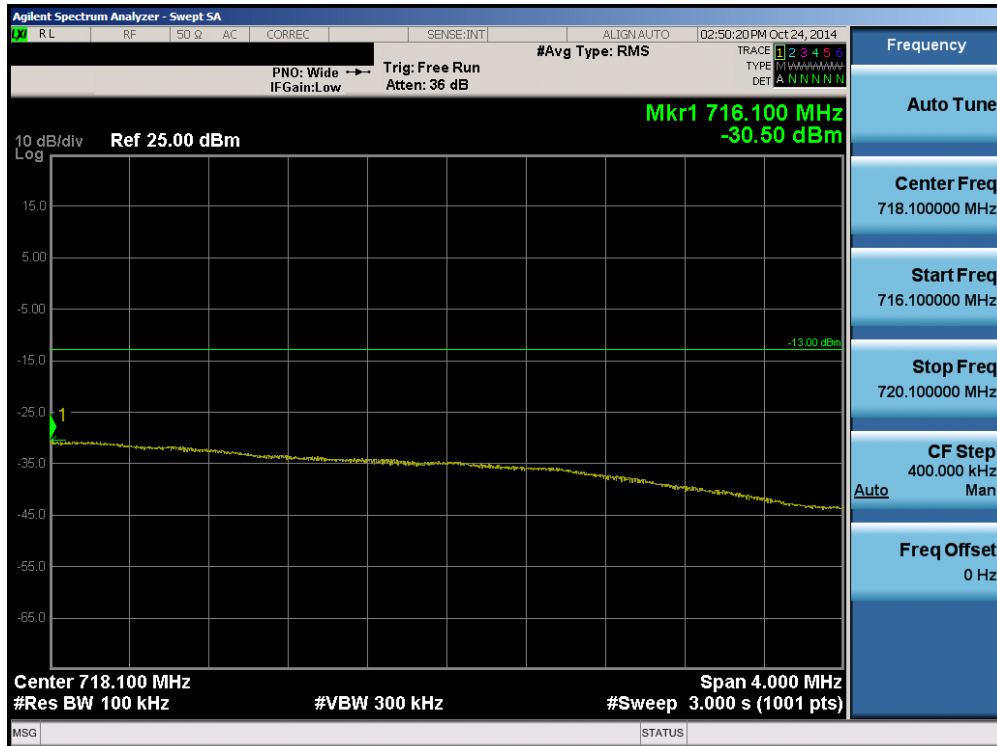


Plot 6-93. Lower Extended Band Edge Plot (Band 12 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 61 of 139

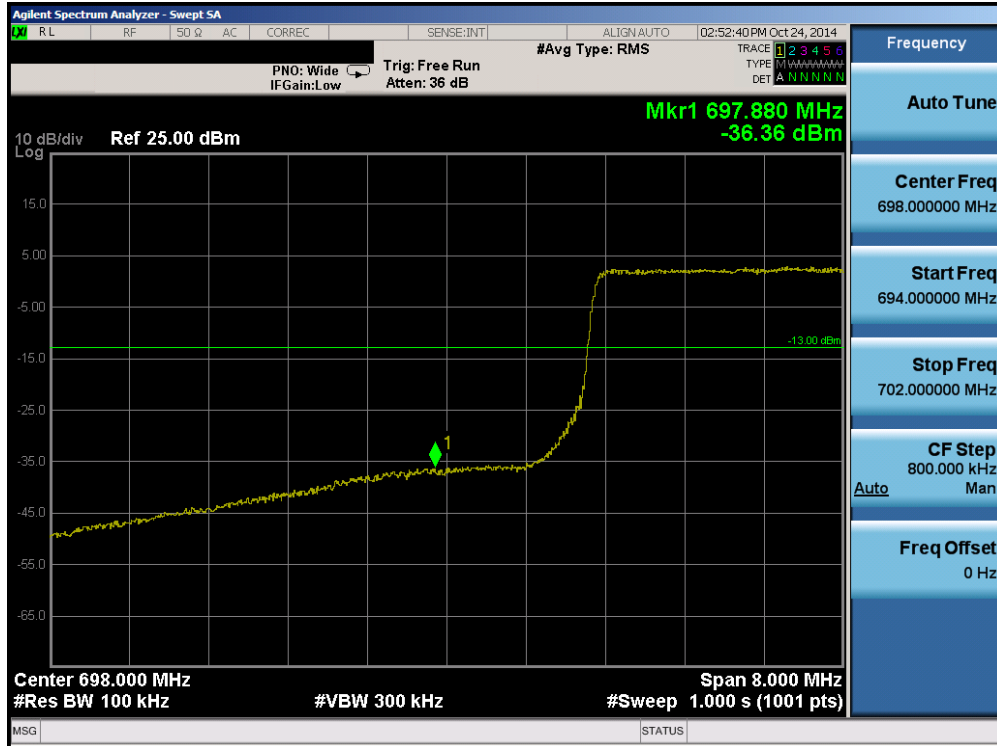


Plot 6-94. Upper Band Edge Plot (Band 12 – 5.0MHz QPSK – RB Size 25)

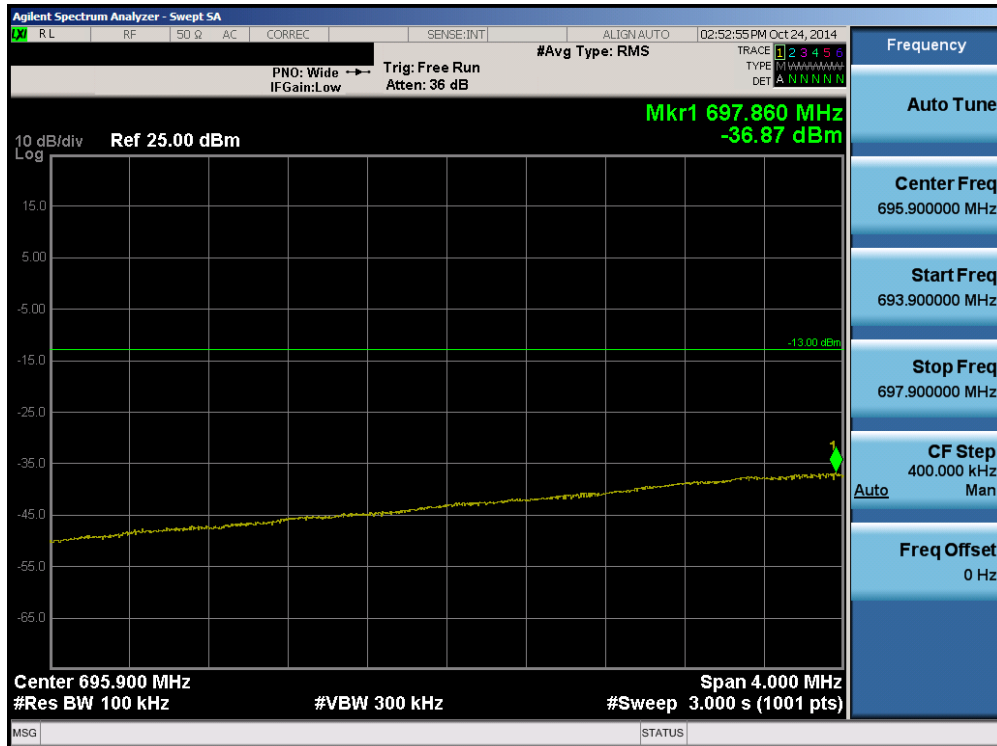


Plot 6-95. Upper Extended Band Edge Plot (Band 12 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFLS996	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 62 of 139

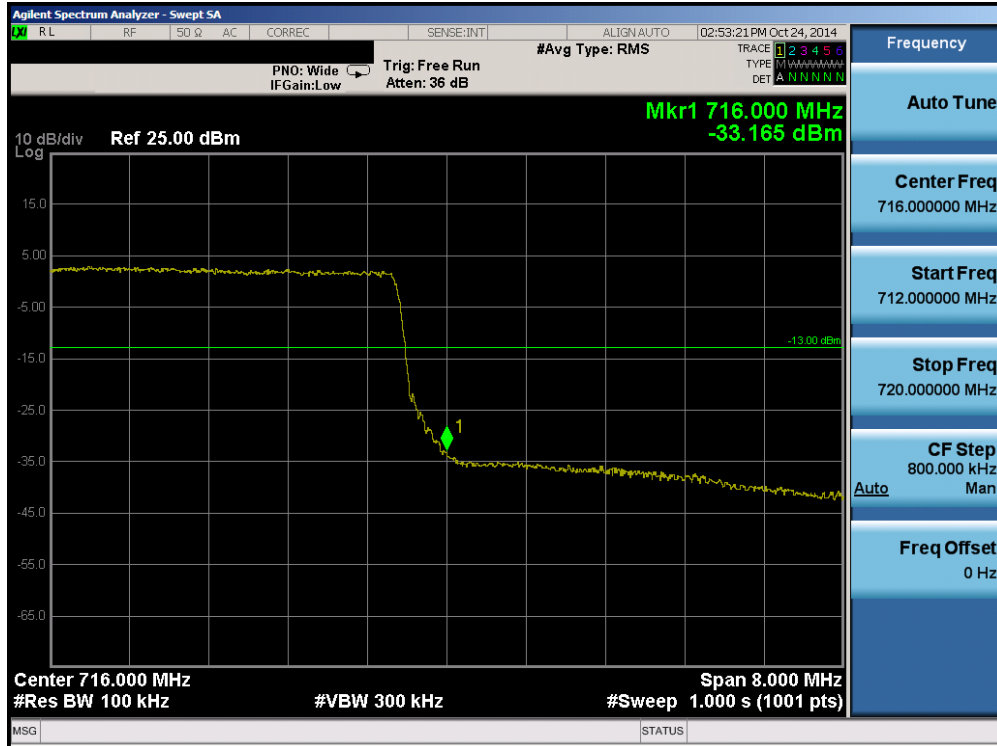


Plot 6-96. Lower Band Edge Plot (Band 12 – 10.0MHz QPSK – RB Size 50)

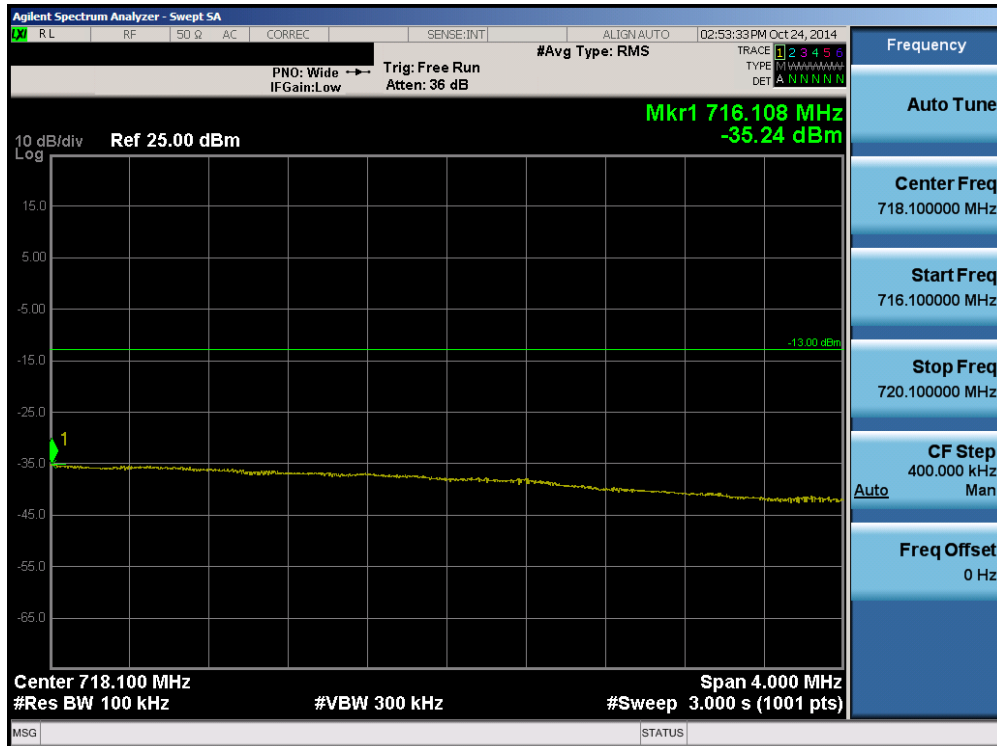


Plot 6-97. Lower Extended Band Edge Plot (Band 12 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 63 of 139

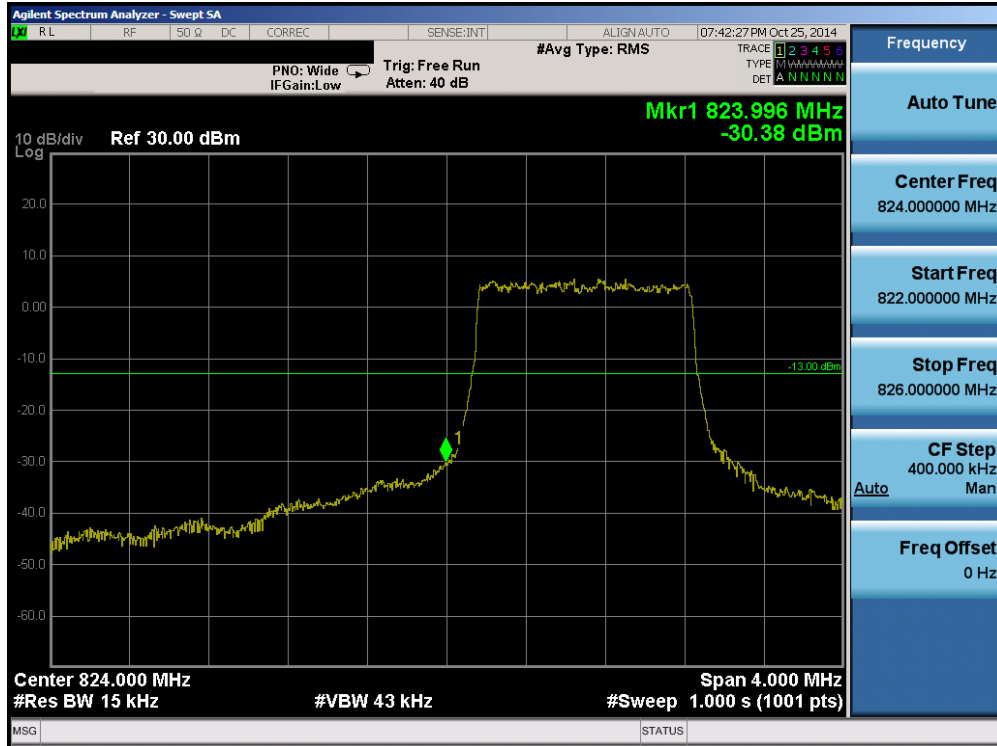


Plot 6-98. Upper Band Edge Plot (Band 12 – 10.0MHz QPSK – RB Size 50)



Plot 6-99. Upper Extended Band Edge Plot (Band 12 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 64 of 139

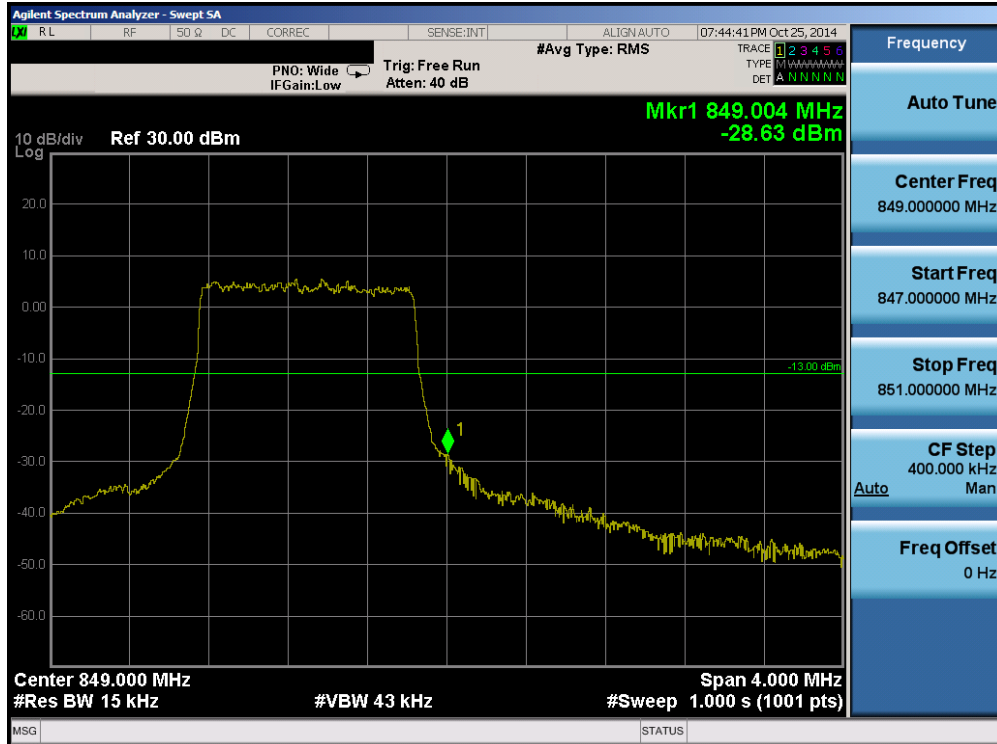


Plot 6-100. Lower Band Edge Plot (Band 26 – 1.4MHz QPSK – RB Size 6)

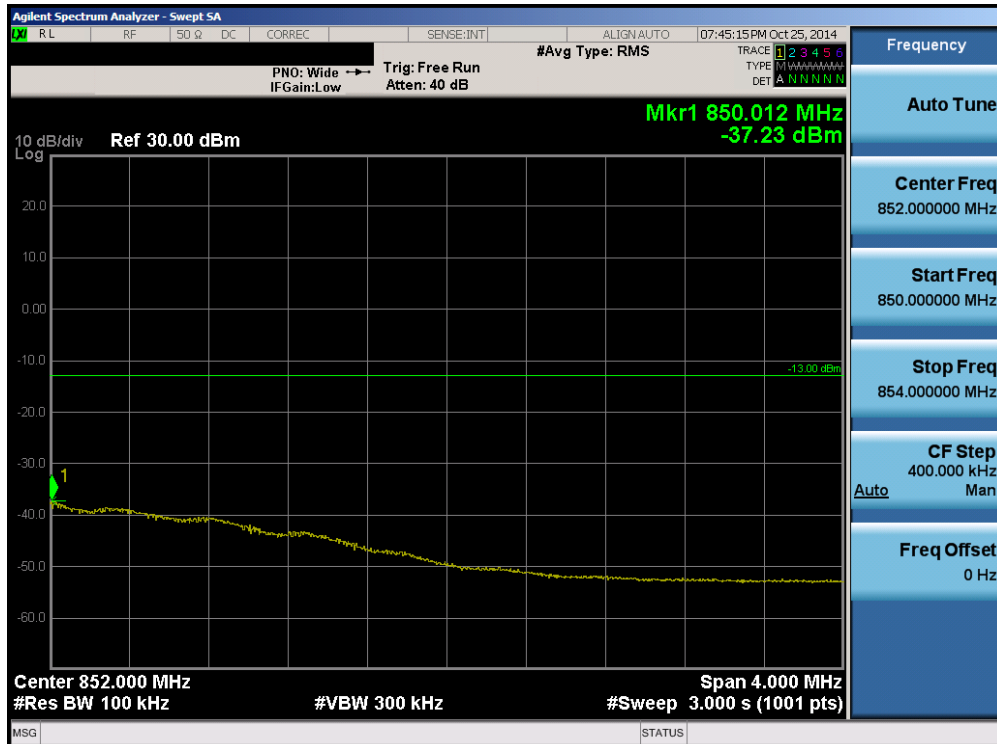


Plot 6-101. Lower Extended Band Edge Plot (Band 26 – 1.4MHz QPSK – RB Size 6)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 65 of 139

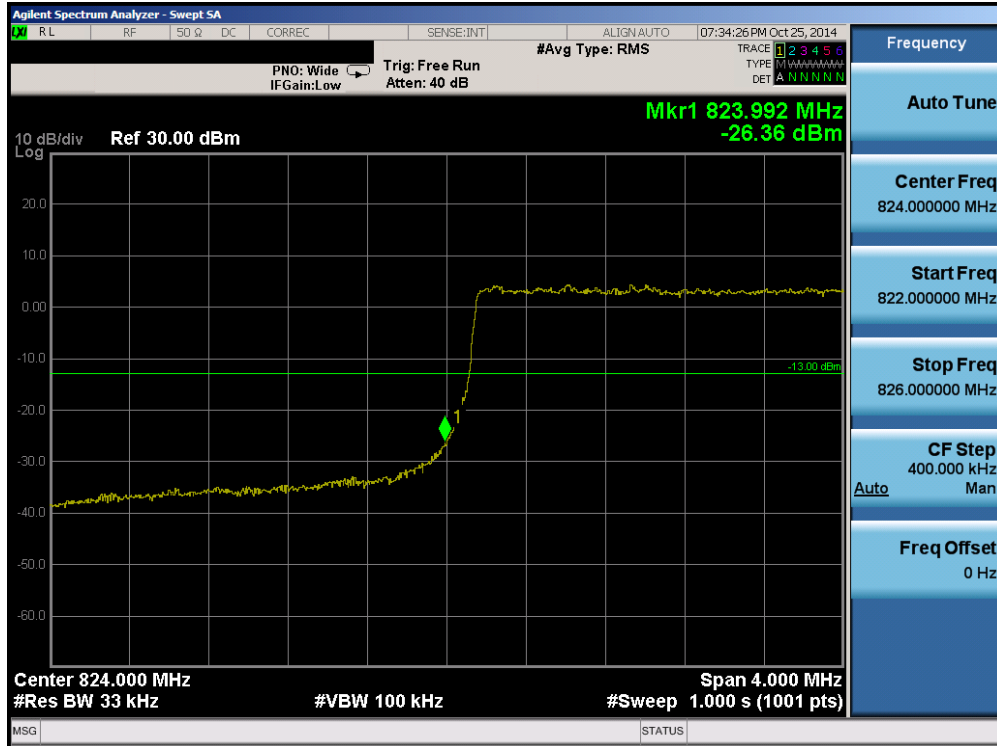


Plot 6-102. Upper Band Edge Plot (Band 26 – 1.4MHz QPSK – RB Size 6)



Plot 6-103. Upper Extended Band Edge Plot (Band 26 – 1.4MHz QPSK – RB Size 6)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 66 of 139

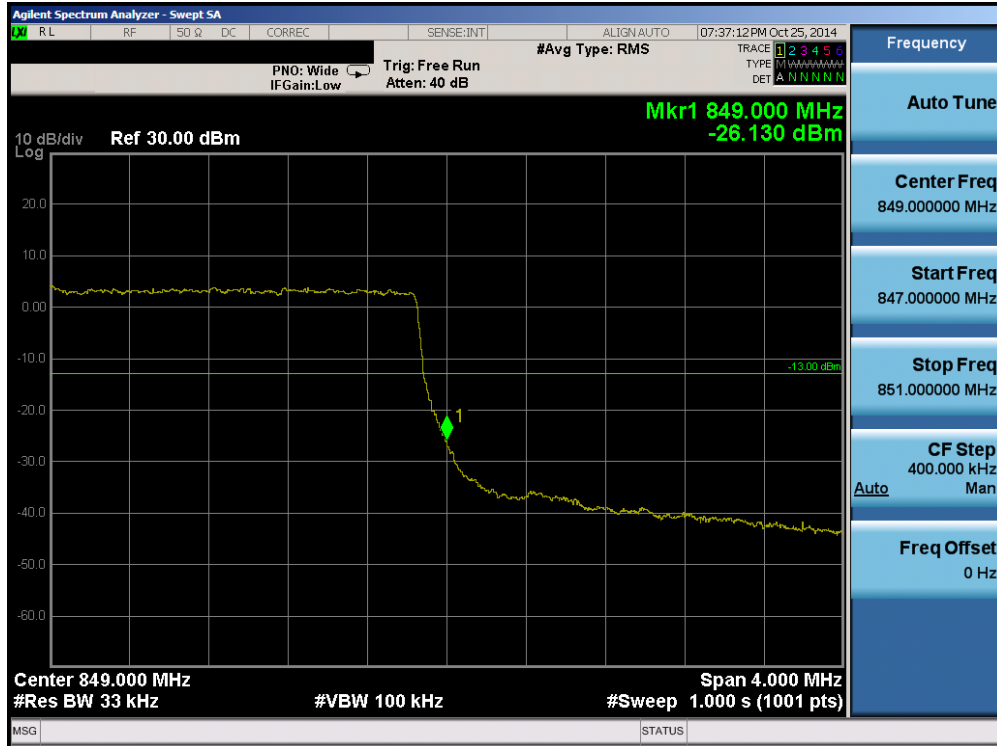


Plot 6-104. Lower Band Edge Plot (Band 26 – 3.0MHz QPSK – RB Size 15)

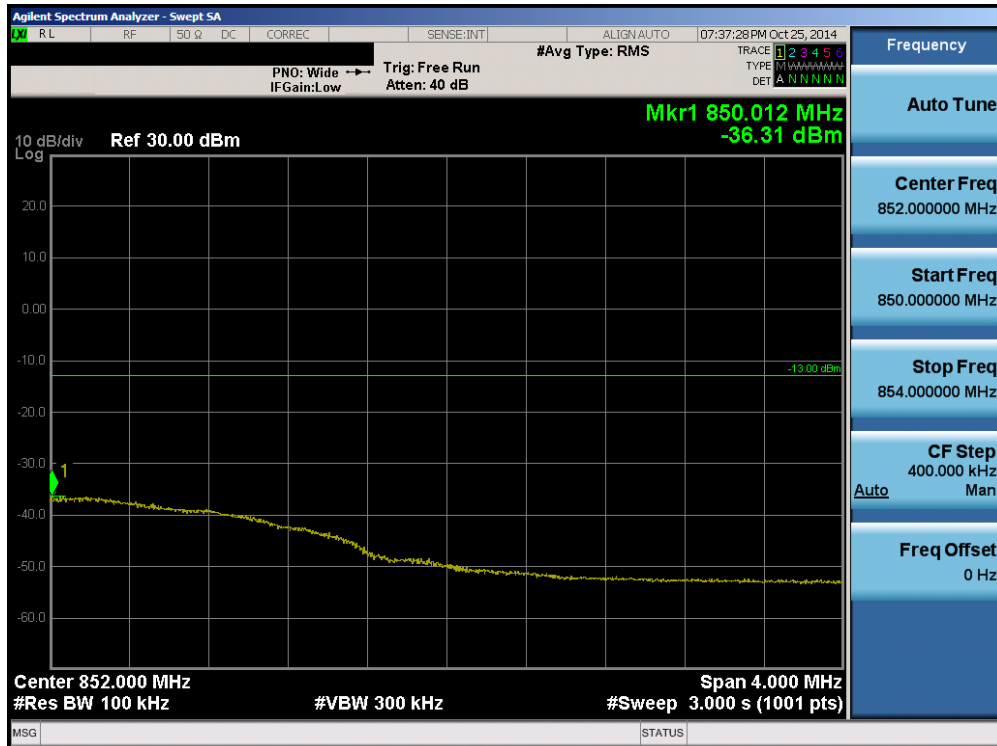


Plot 6-105. Lower Extended Band Edge Plot (Band 26 – 3.0MHz QPSK – RB Size 15)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 67 of 139

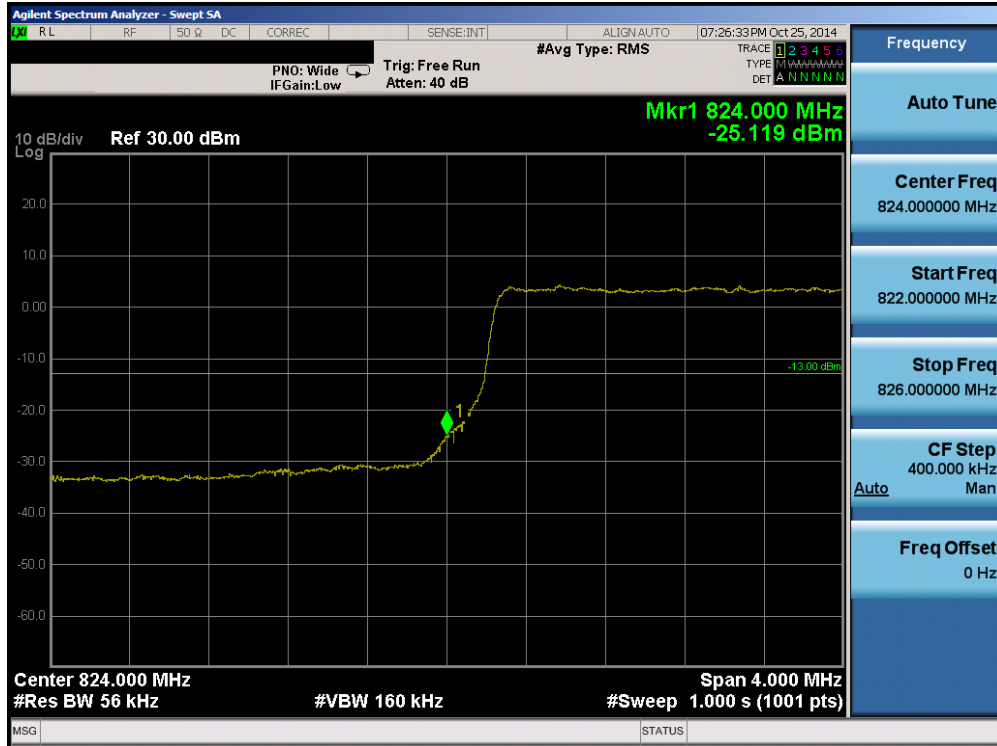


Plot 6-106. Upper Band Edge Plot (Band 26 – 3.0MHz QPSK – RB Size 15)



Plot 6-107. Upper Extended Band Edge Plot (Band 26 – Band 5 – 3.0MHz QPSK – RB Size 15)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 68 of 139



Plot 6-108. Lower Band Edge Plot (Band 26 – 5.0MHz QPSK – RB Size 25)



Plot 6-109. Lower Extended Band Edge Plot (Band 26 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 69 of 139

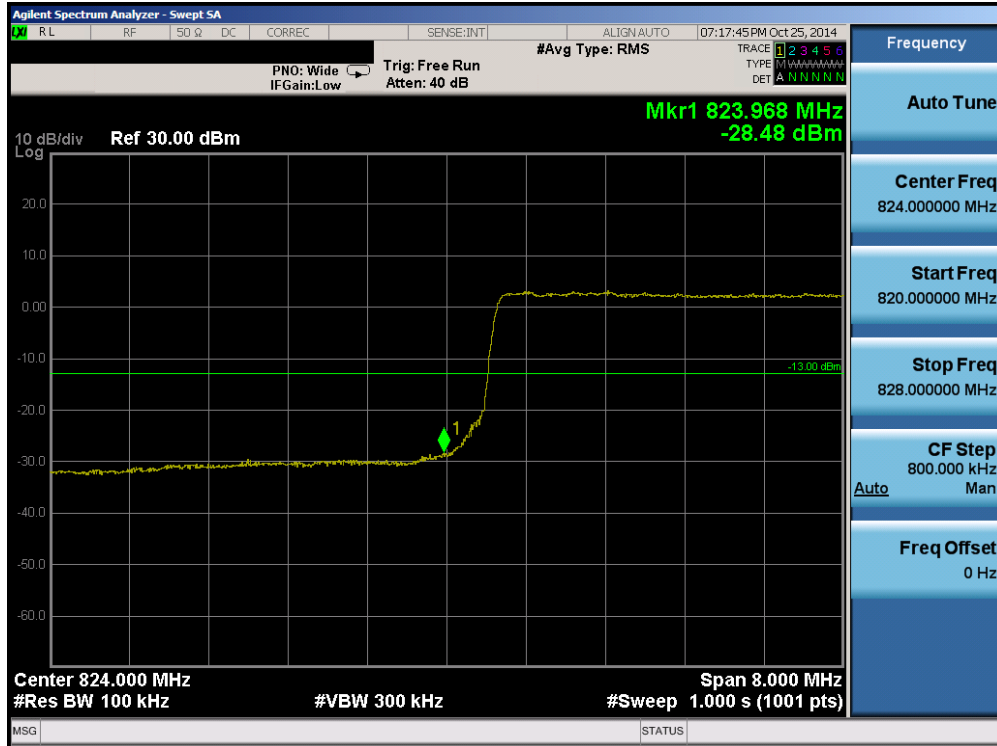


Plot 6-110. Upper Band Edge Plot (Band 26 – 5.0MHz QPSK – RB Size 25)

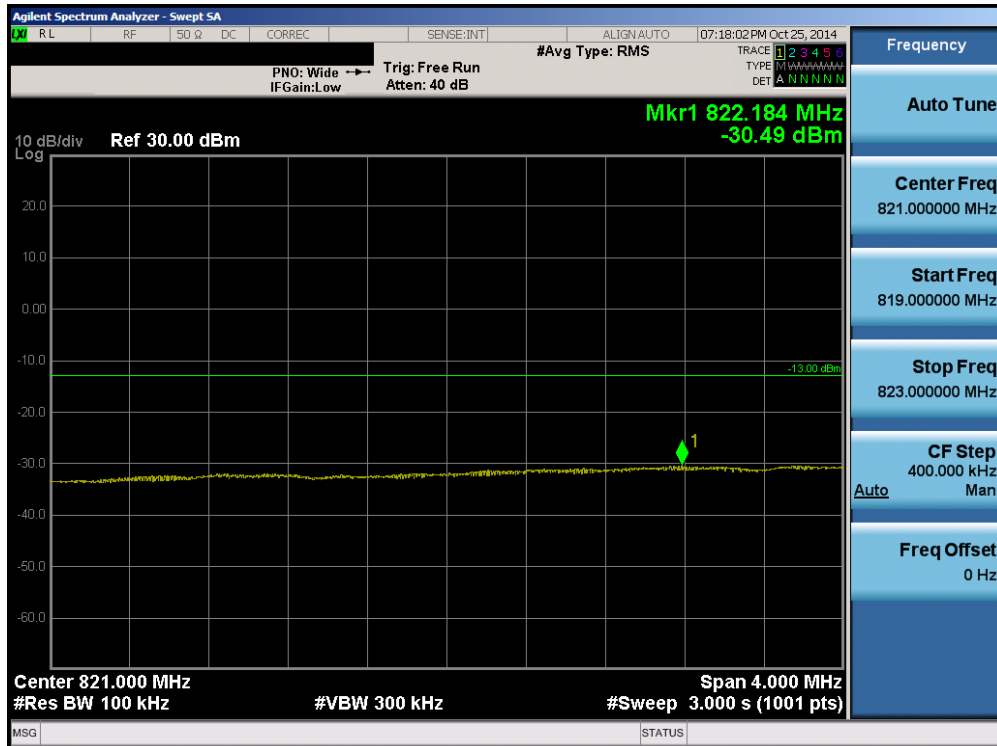


Plot 6-111. Upper Extended Band Edge Plot (Band 26 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFLS996	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 70 of 139



Plot 6-112. Lower Band Edge Plot (Band 26 – 10.0MHz QPSK – RB Size 50)



Plot 6-113. Lower Extended Band Edge Plot (Band 26 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFLS996	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 71 of 139

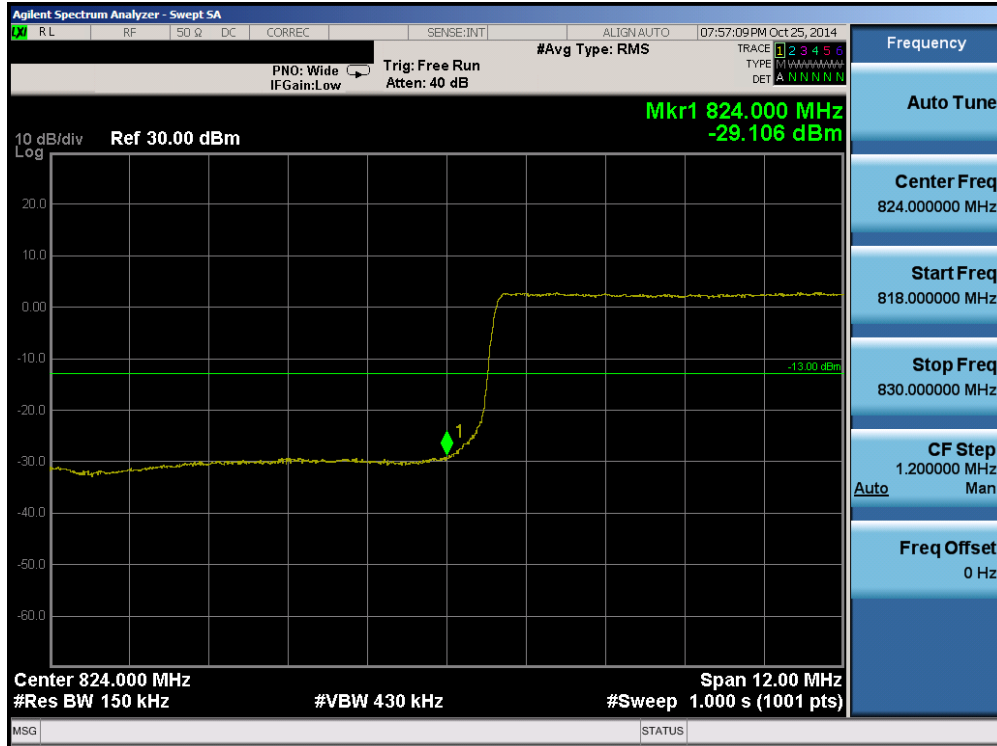


Plot 6-114. Upper Band Edge Plot (Band 26 – 10.0MHz QPSK – RB Size 50)

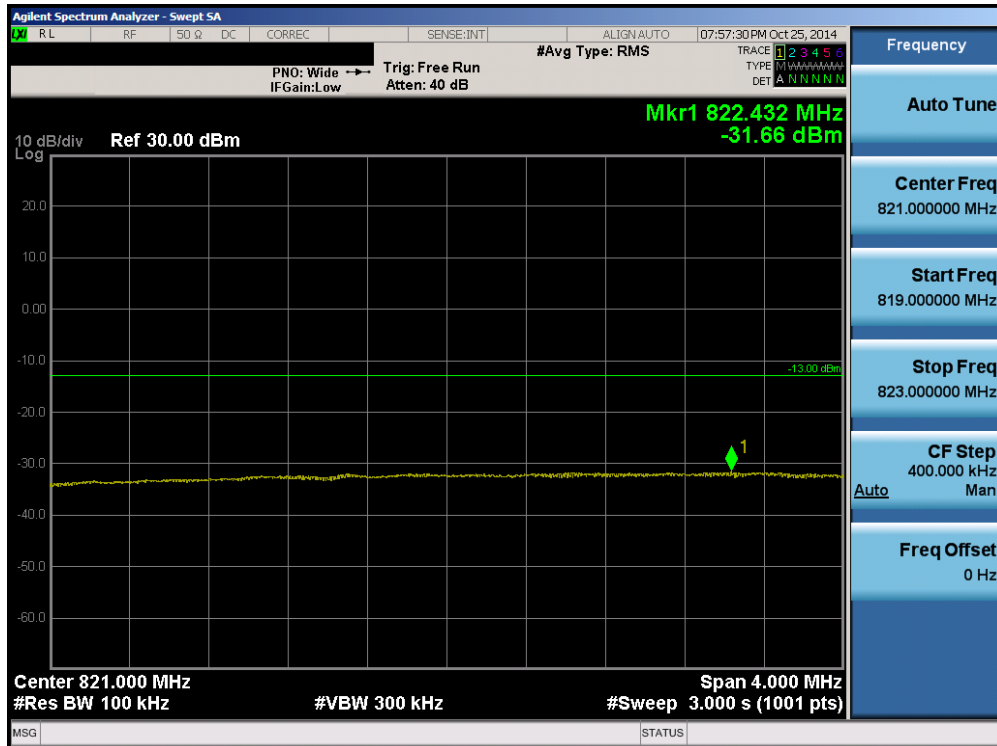


Plot 6-115. Upper Extended Band Edge Plot (Band 26 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFLS996	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 72 of 139



Plot 6-116. Lower Band Edge Plot (Band 26 – 15.0MHz QPSK – RB Size 75)



Plot 6-117. Lower Extended Band Edge Plot (Band 26 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 73 of 139

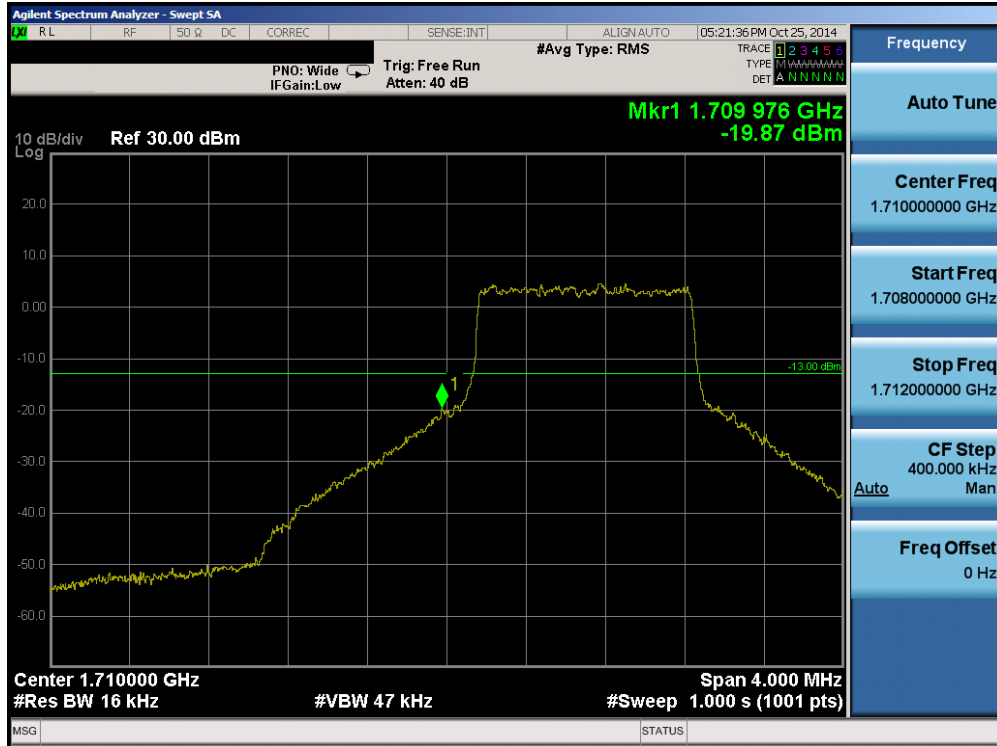


Plot 6-118. Upper Band Edge Plot (Band 26 – 15.0MHz QPSK – RB Size 75)

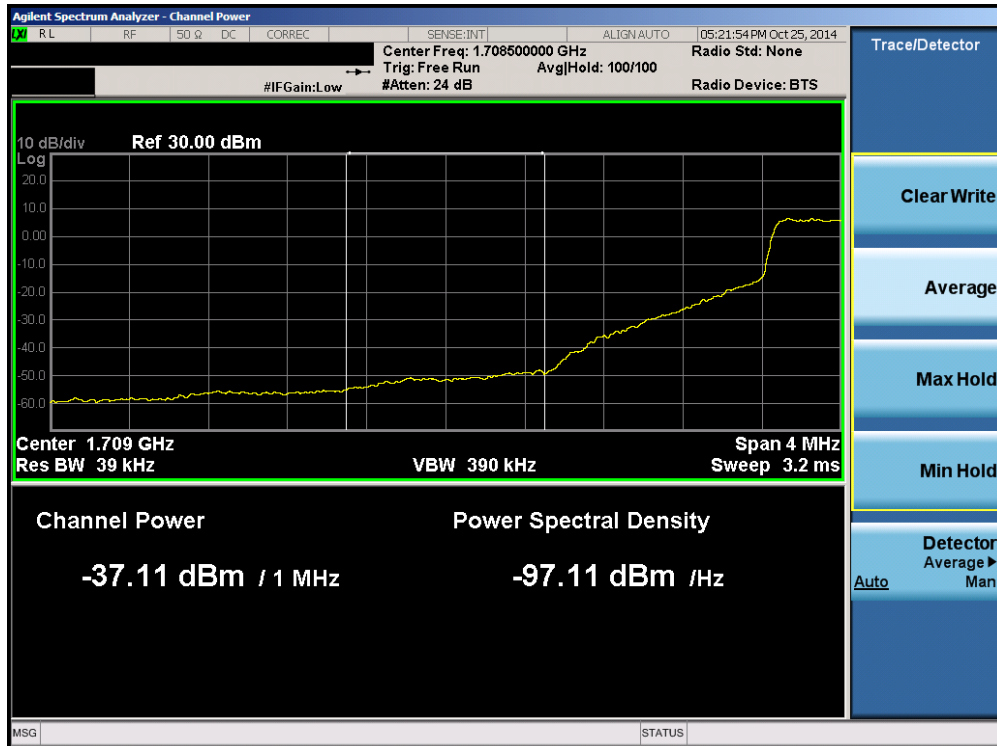


Plot 6-119. Upper Extended Band Edge Plot (Band 26 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 74 of 139



Plot 6-120. Lower Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

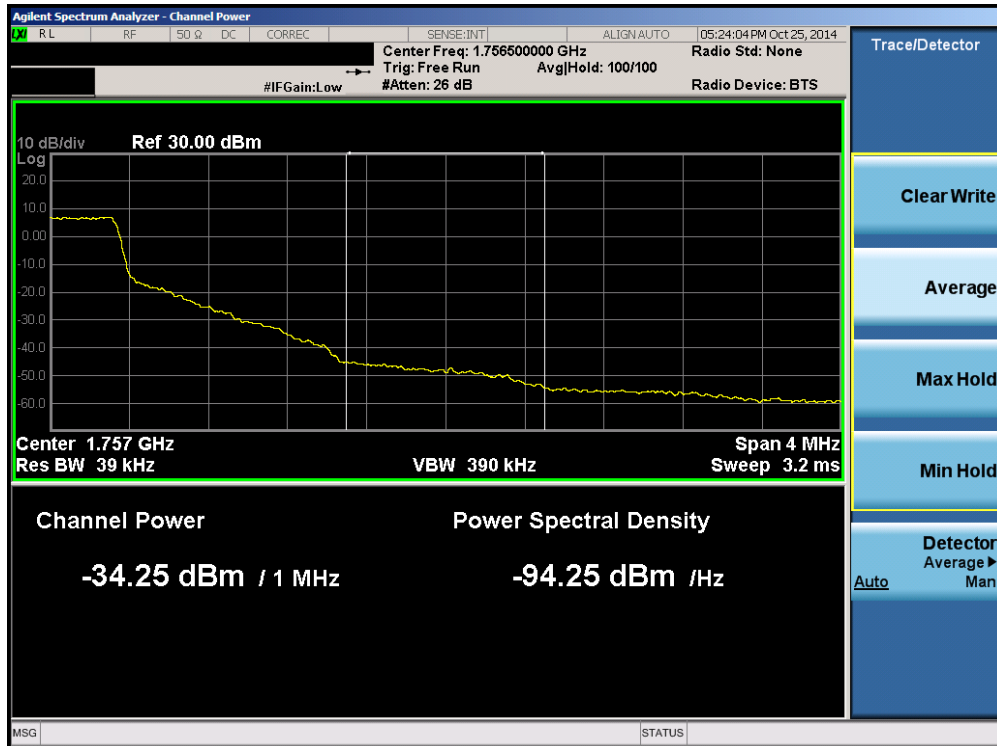


Plot 6-121. Lower Extended Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 75 of 139

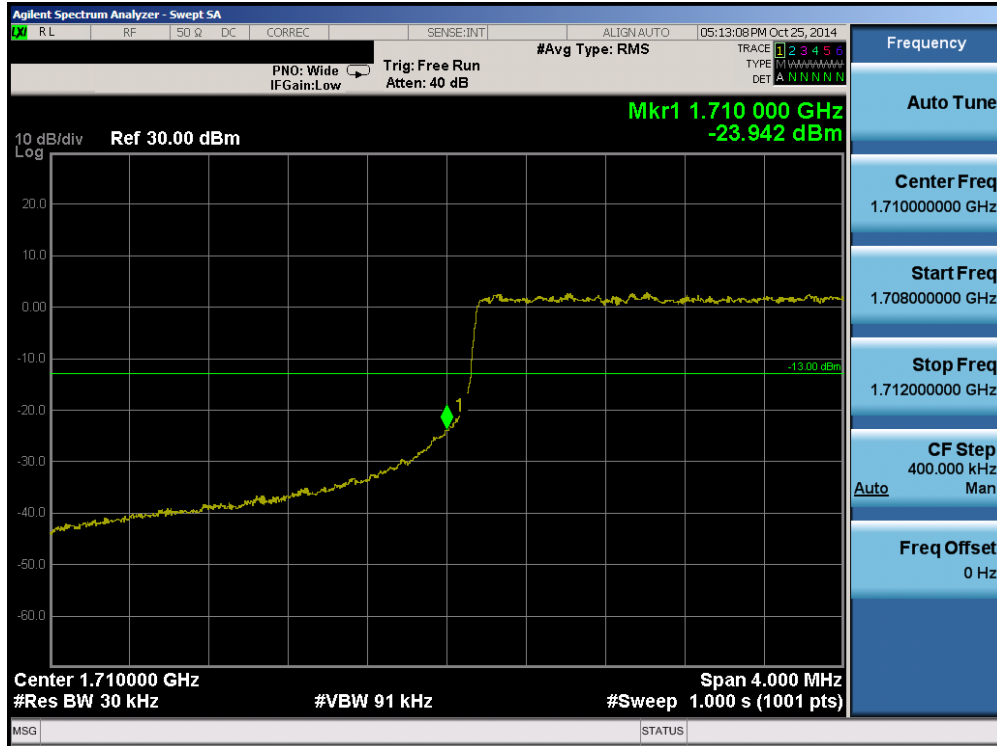


Plot 6-122. Upper Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

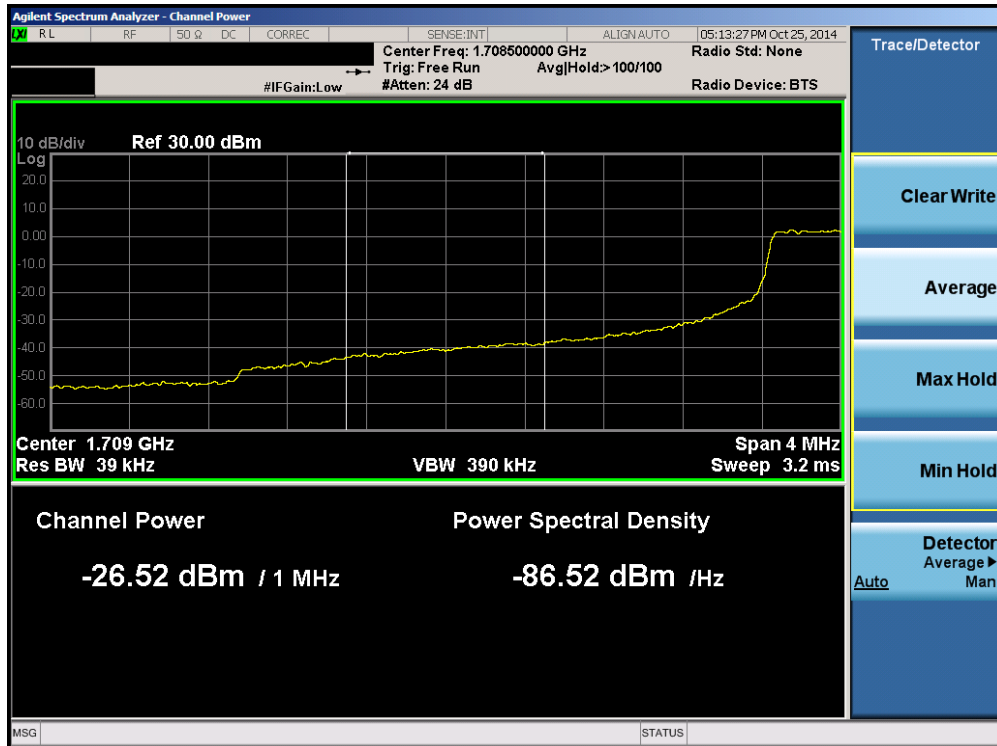


Plot 6-123. Upper Extended Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 76 of 139



Plot 6-124. Lower Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

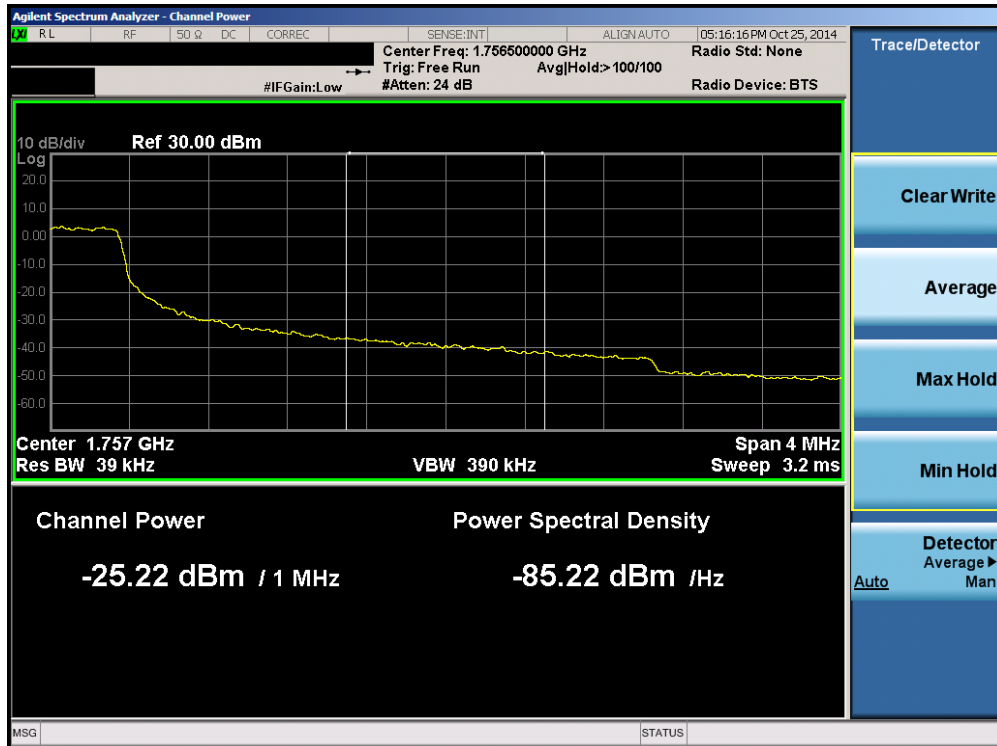


Plot 6-125. Lower Extended Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

FCC ID: ZNFLS996	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 77 of 139

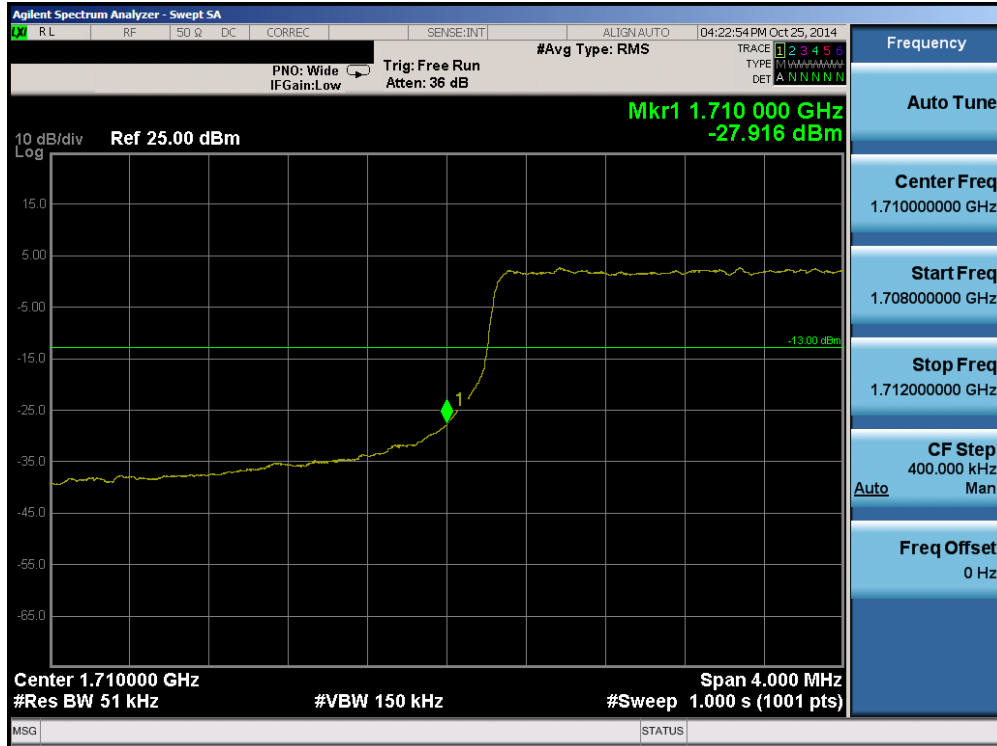


Plot 6-126. Upper Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

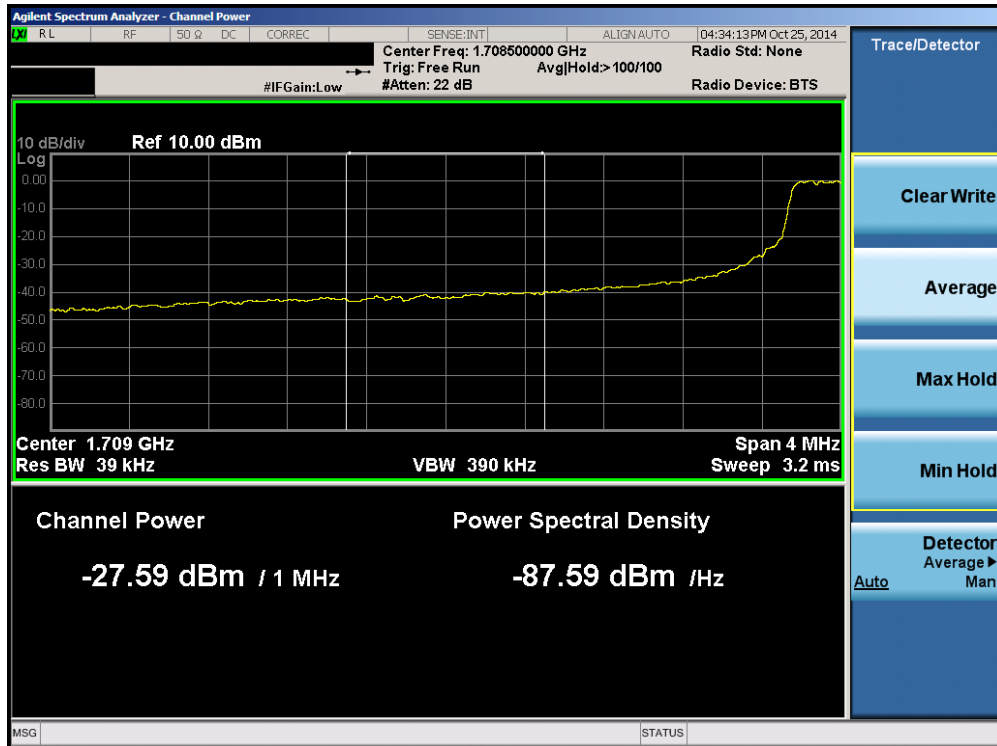


Plot 6-127. Upper Extended Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

FCC ID: ZNFLS996	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 78 of 139



Plot 6-128. Lower Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

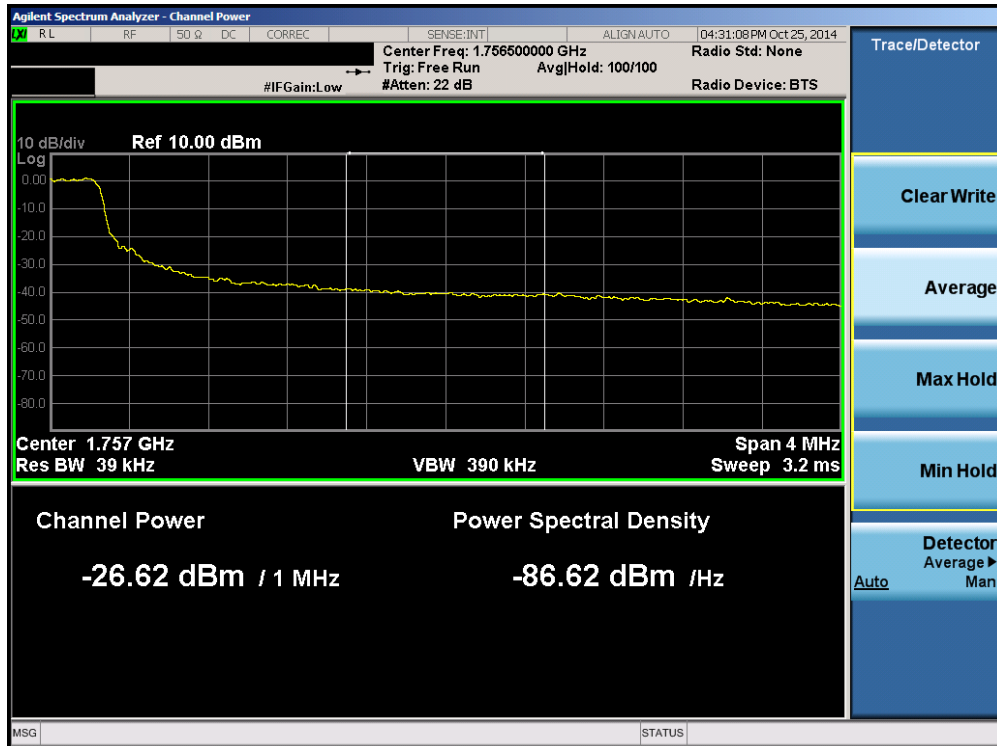


Plot 6-129. Lower Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFLS996	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset	Page 79 of 139	

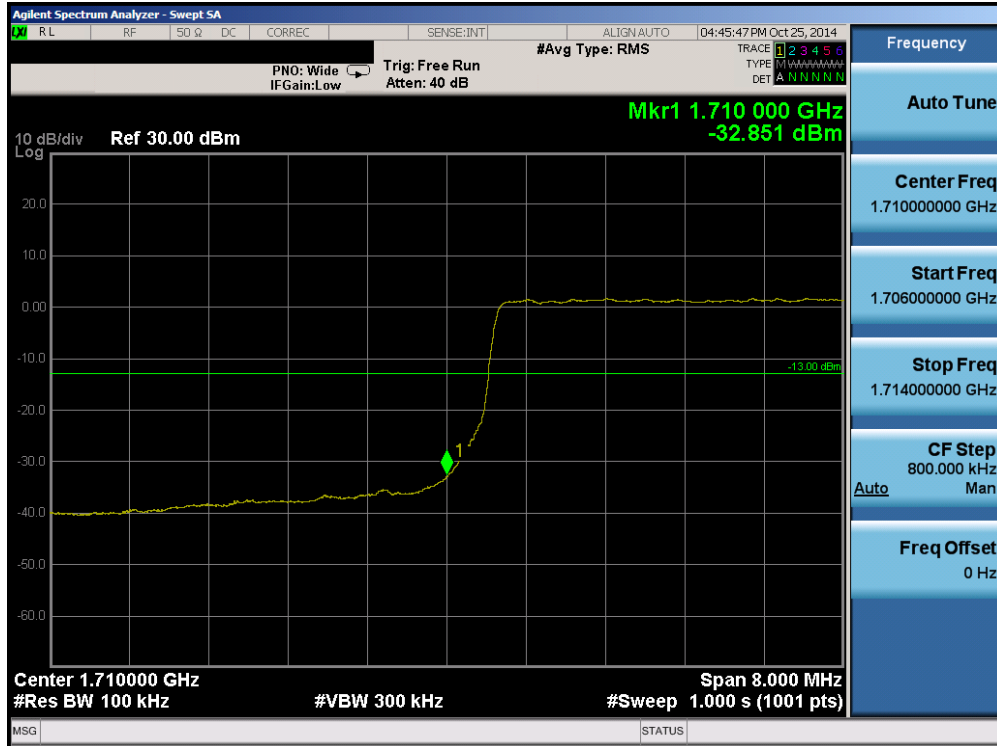


Plot 6-130. Upper Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

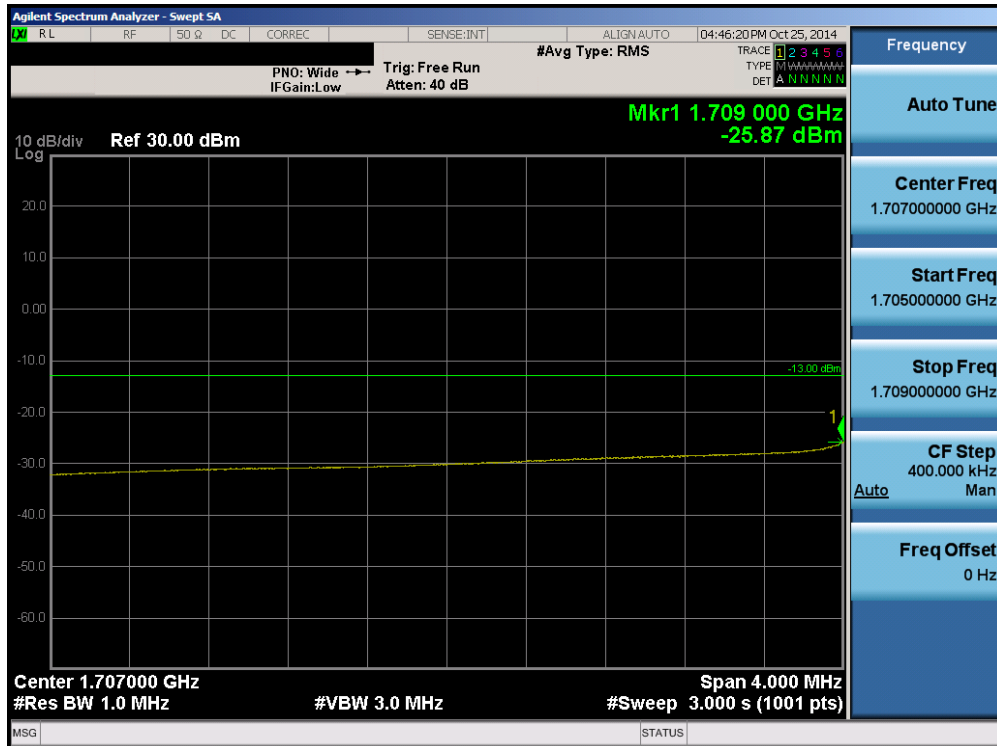


Plot 6-131. Upper Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)



FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 80 of 139



Plot 6-132. Lower Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

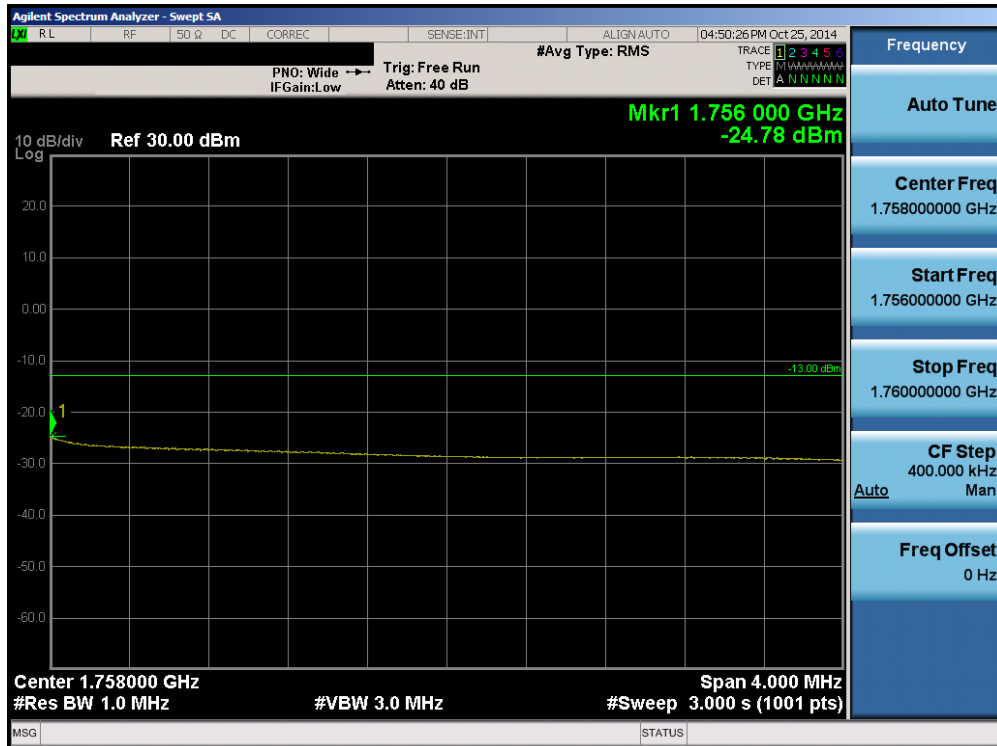


Plot 6-133. Lower Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 81 of 139

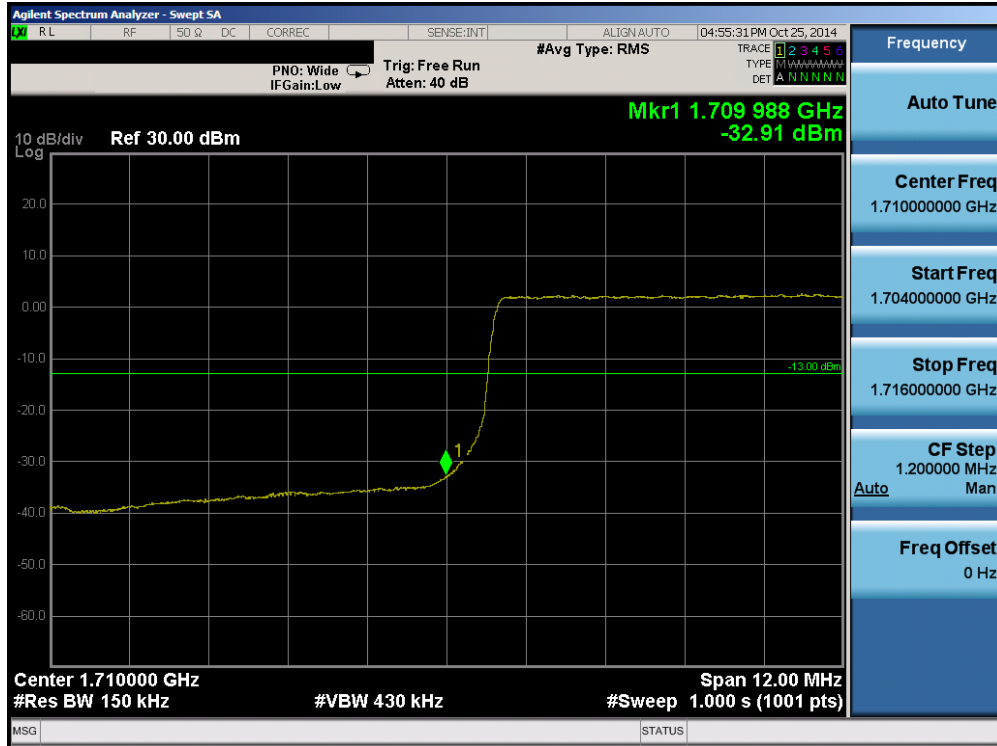


Plot 6-134. Upper Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

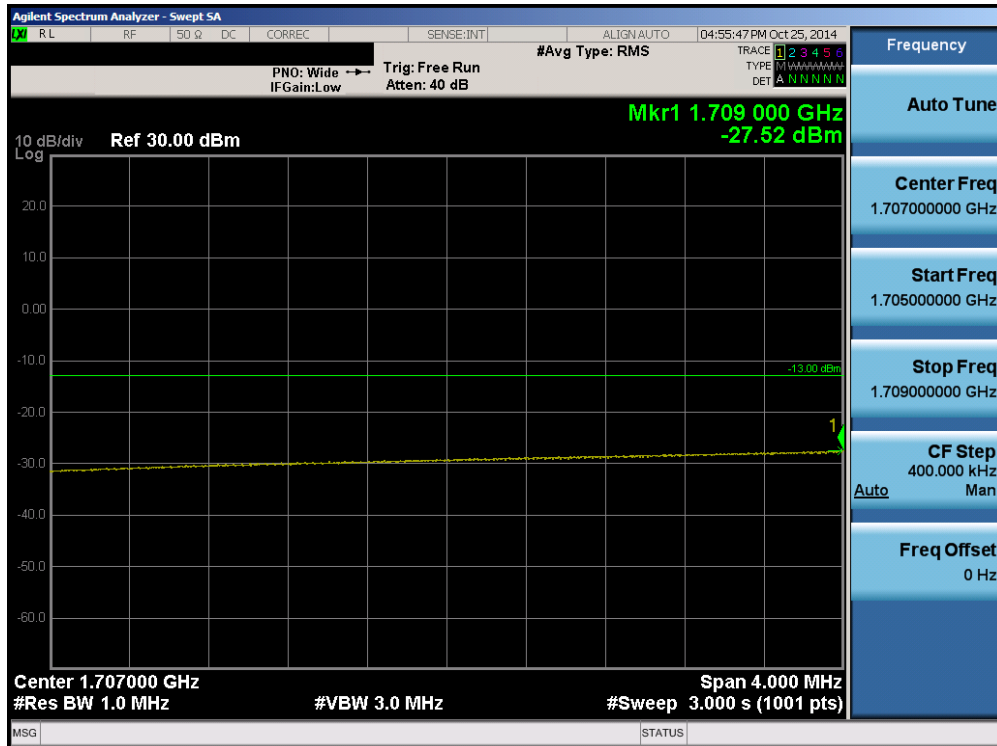


Plot 6-135. Upper Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFLS996	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 82 of 139



Plot 6-136. Lower Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)



Plot 6-137. Lower Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFLS996	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 83 of 139

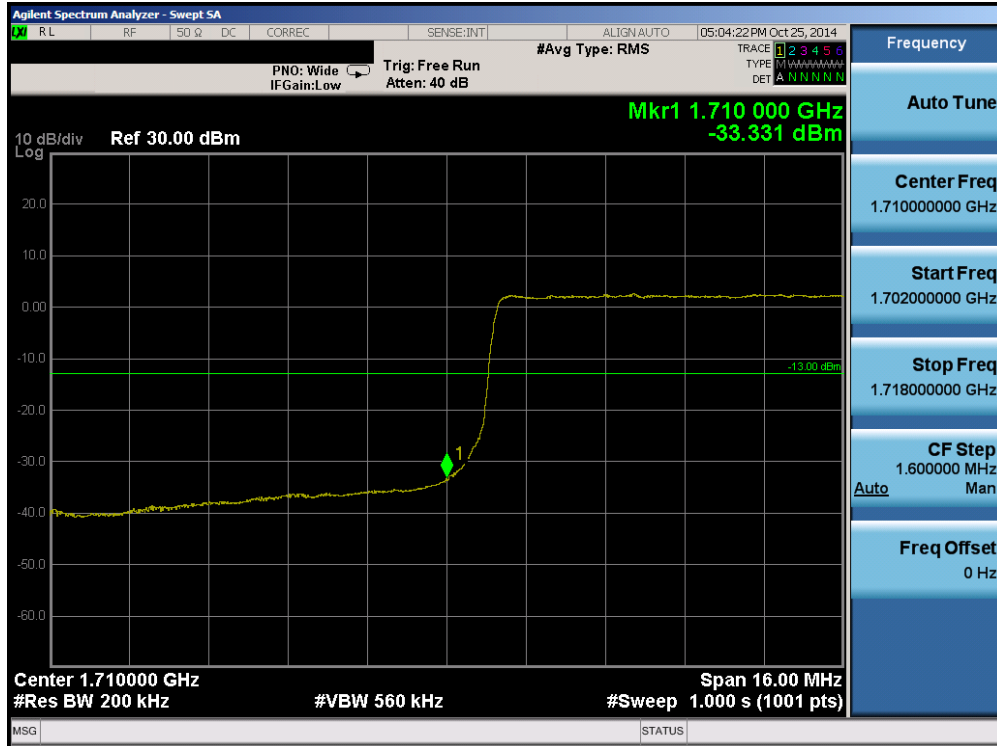


Plot 6-138. Upper Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

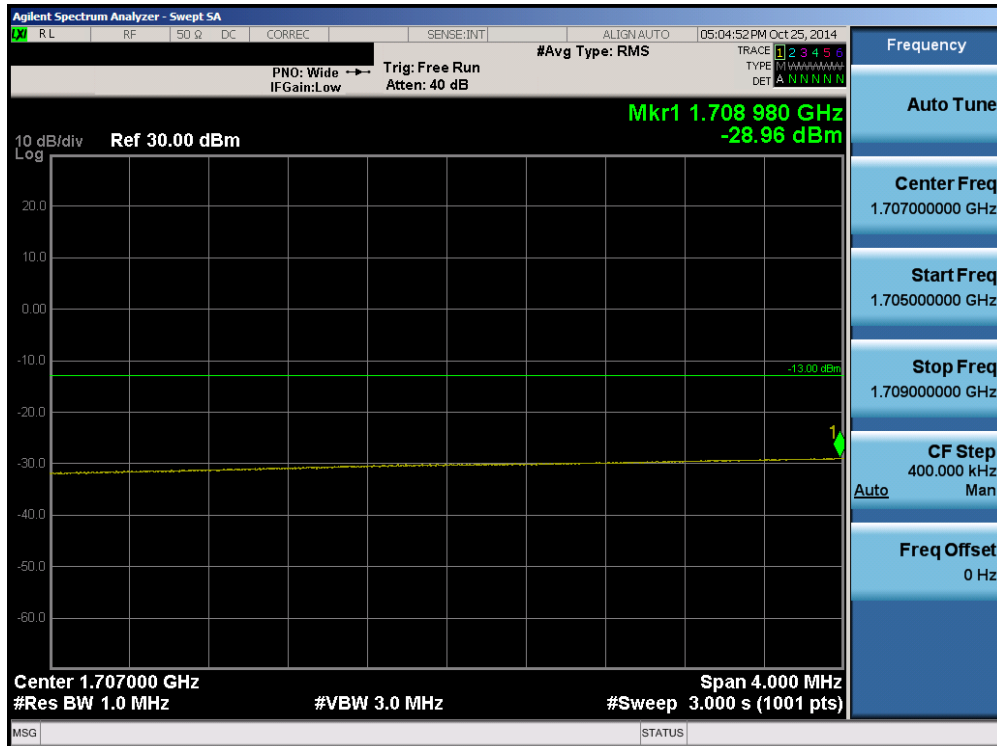


Plot 6-139. Upper Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFLS996	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 84 of 139

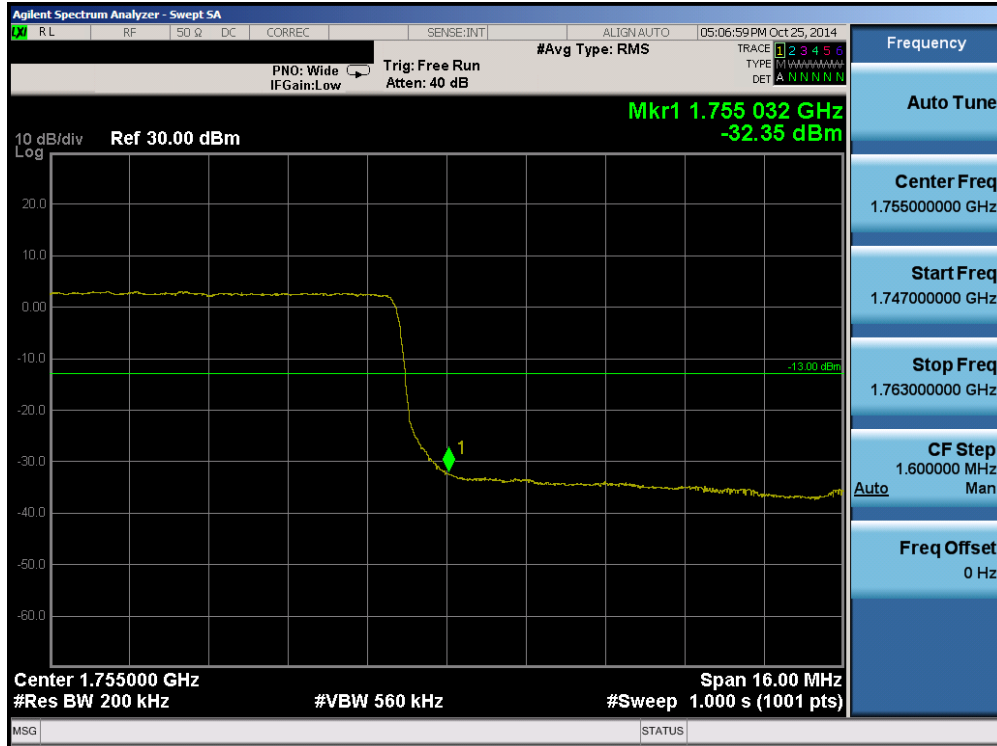


Plot 6-140. Lower Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

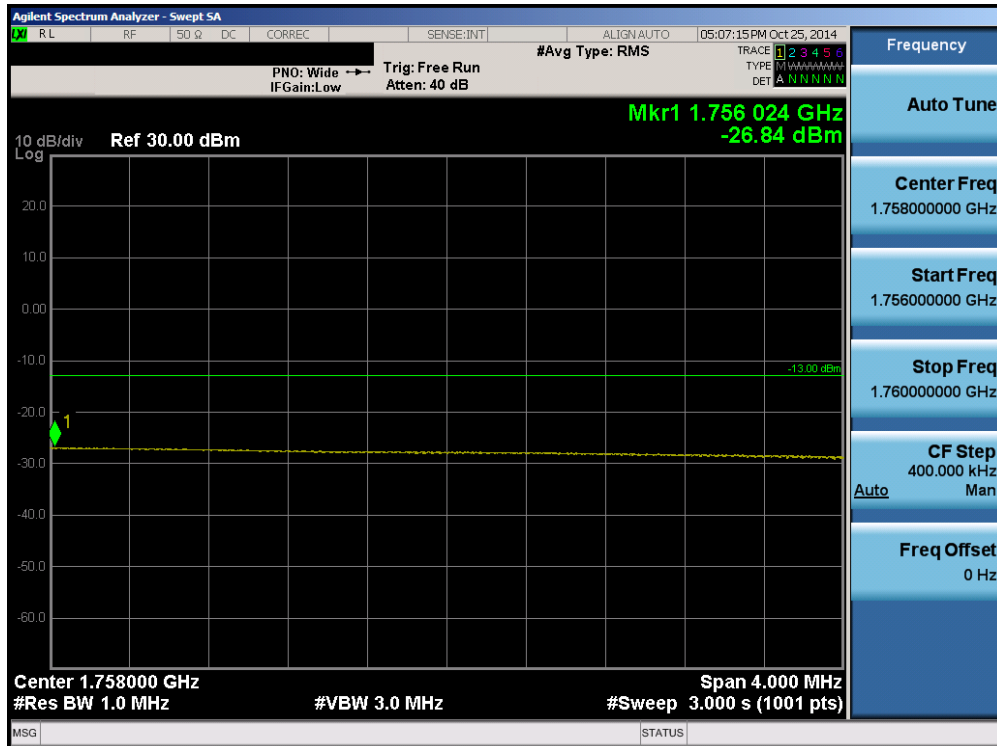


Plot 6-141. Lower Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFLS996	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 85 of 139

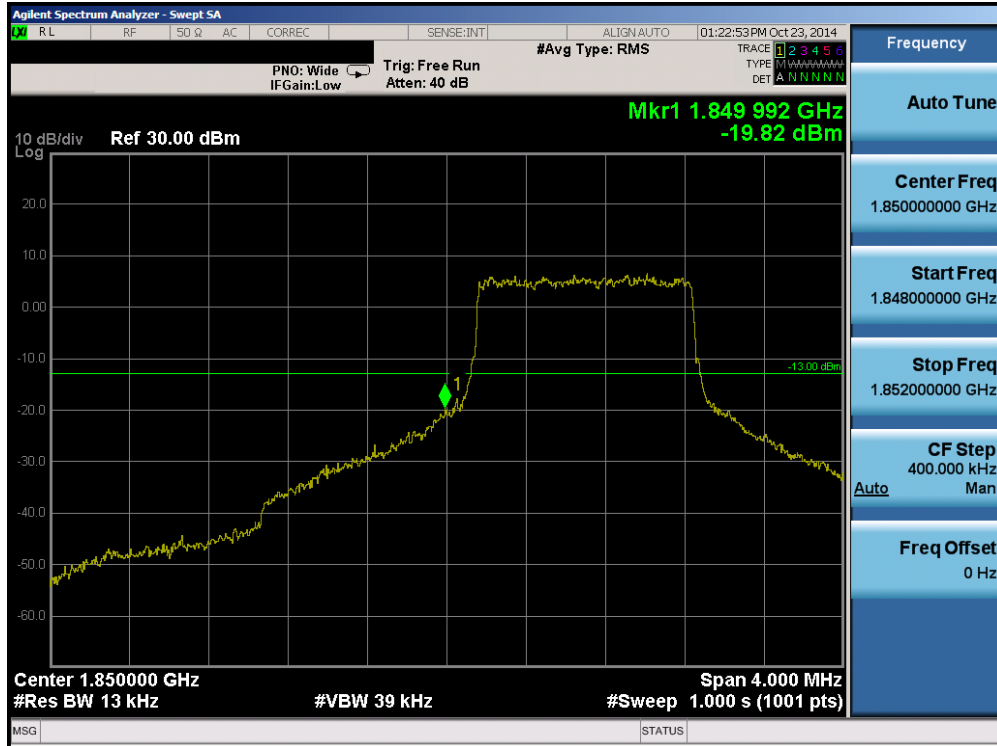


Plot 6-142. Upper Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

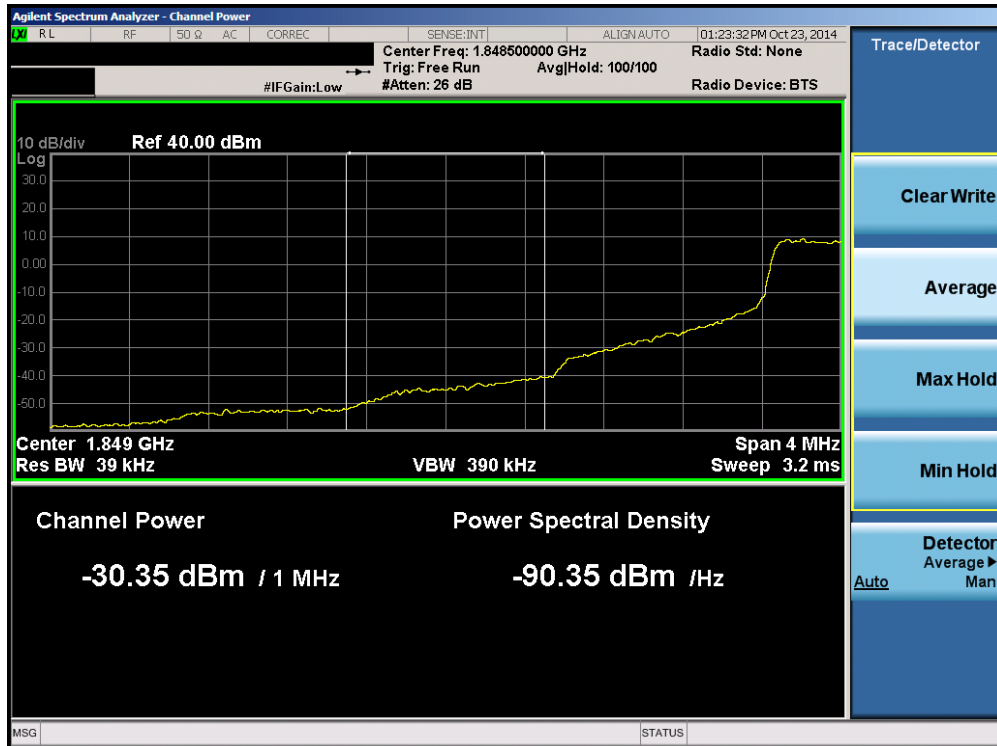


Plot 6-143. Upper Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFLS996	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 86 of 139



Plot 6-144. Lower Band Edge Plot (Band 25 – 1.4MHz QPSK – RB Size 6)

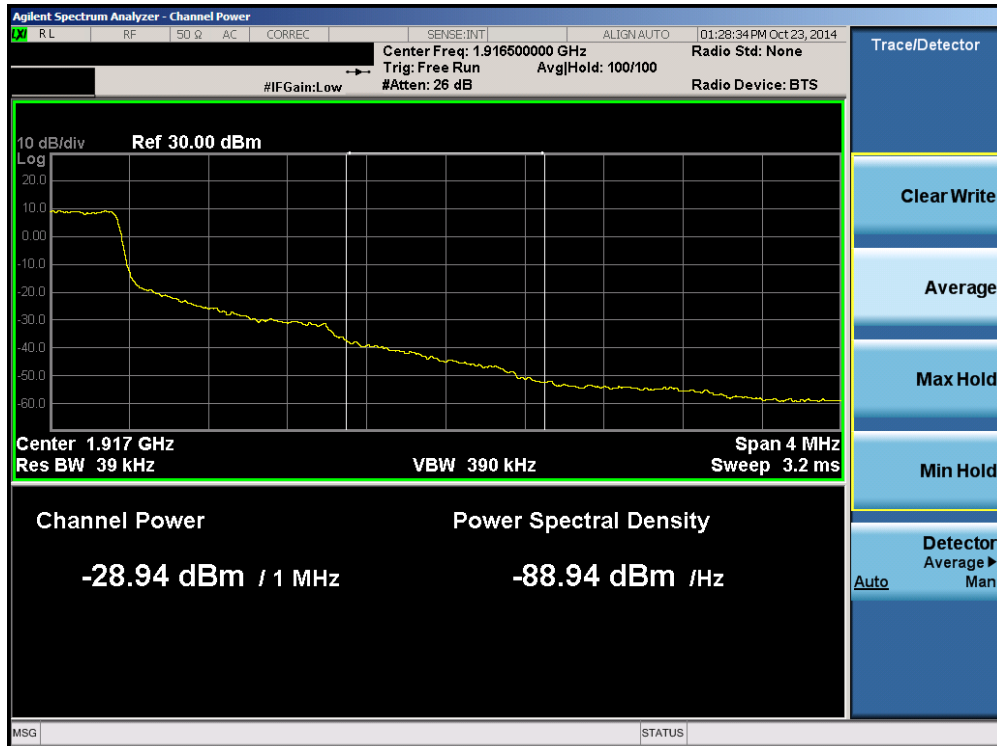


Plot 6-145. Lower Extended Band Edge Plot (Band 25 – 1.4MHz QPSK – RB Size 6)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 87 of 139

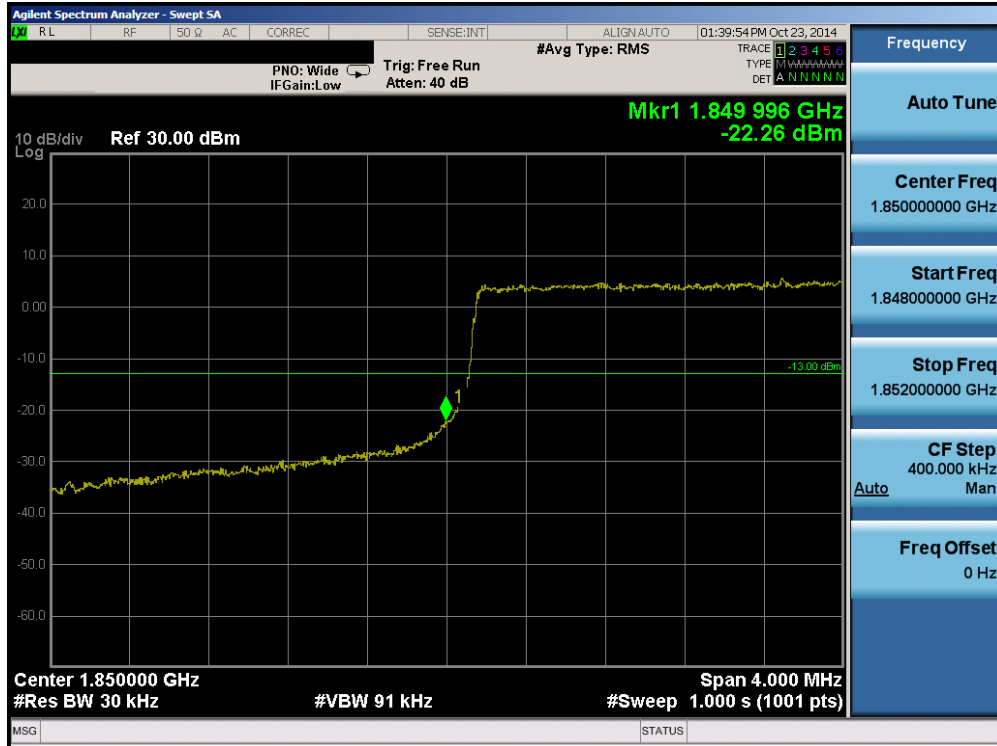


Plot 6-146. Upper Band Edge Plot (Band 25 – 1.4MHz QPSK – RB Size 6)

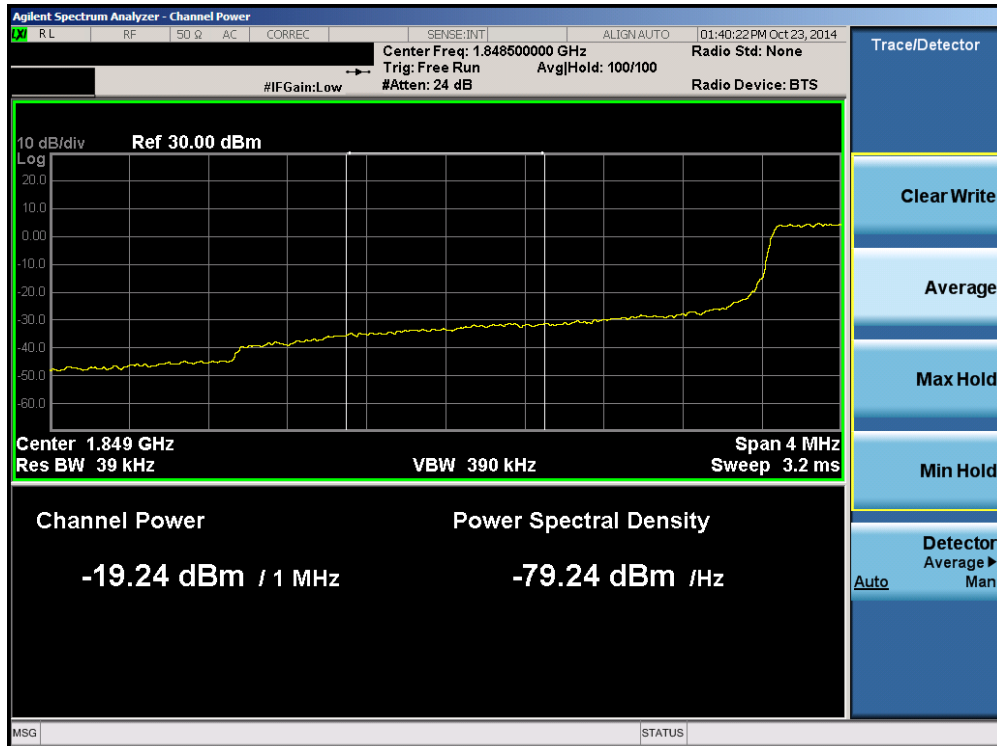


Plot 6-147. Upper Extended Band Edge Plot (Band 25 – 1.4MHz QPSK – RB Size 6)

FCC ID: ZNFLS996	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 88 of 139

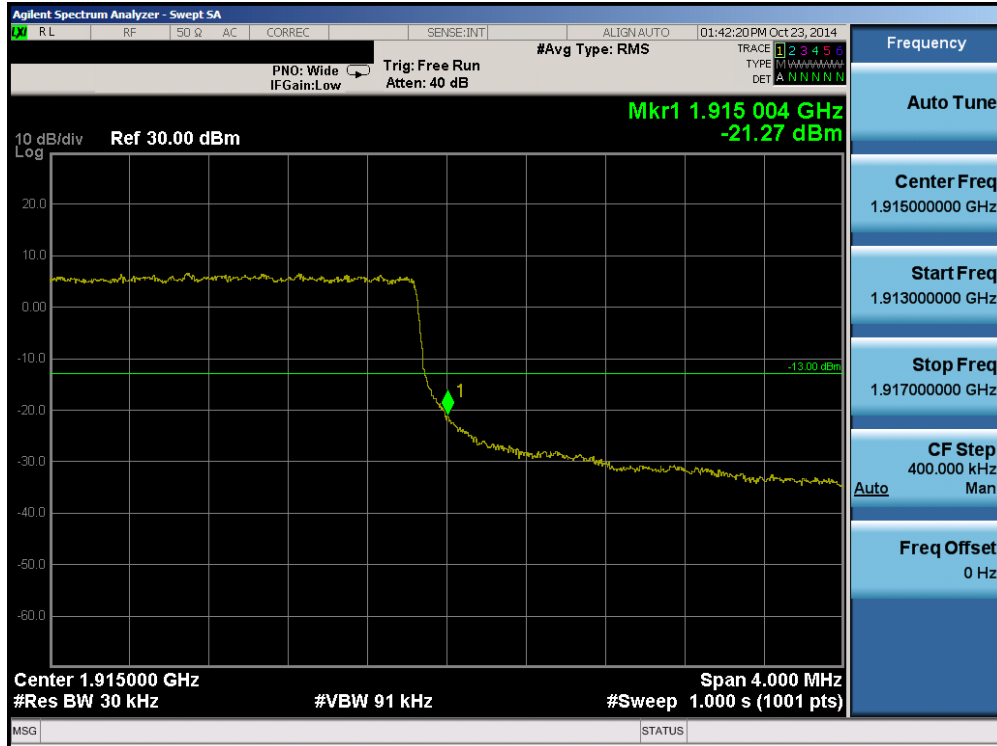


Plot 6-148. Lower Band Edge Plot (Band 25 – 3.0MHz QPSK – RB Size 15)

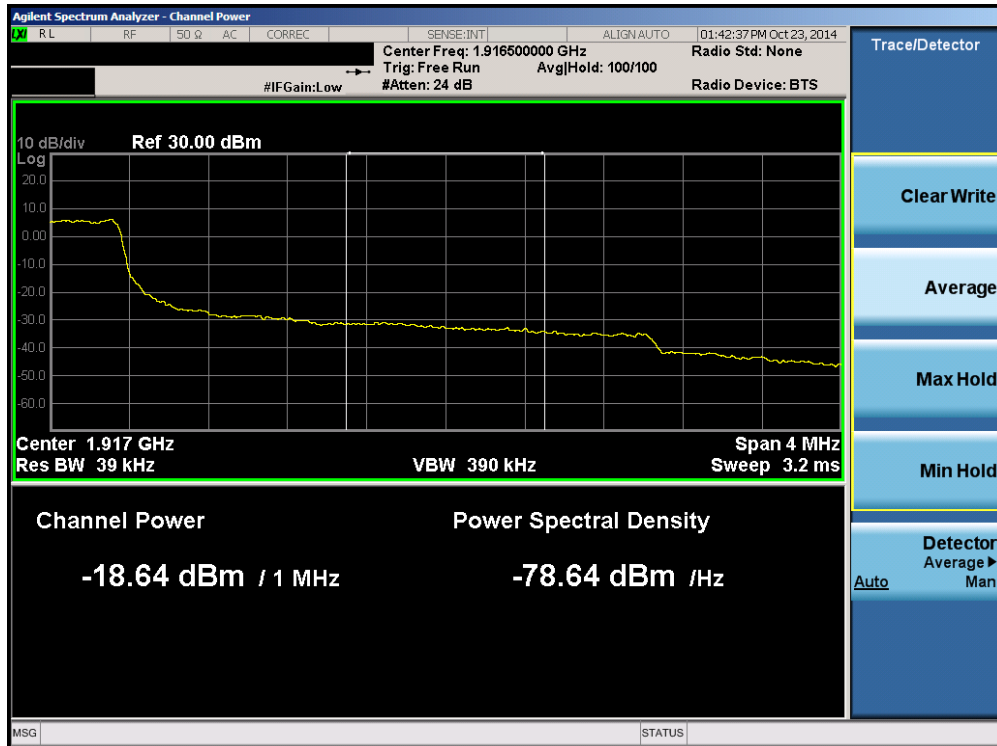


Plot 6-149. Lower Extended Band Edge Plot (Band 25 – 3.0MHz QPSK – RB Size 15)

FCC ID: ZNFLS996	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 89 of 139

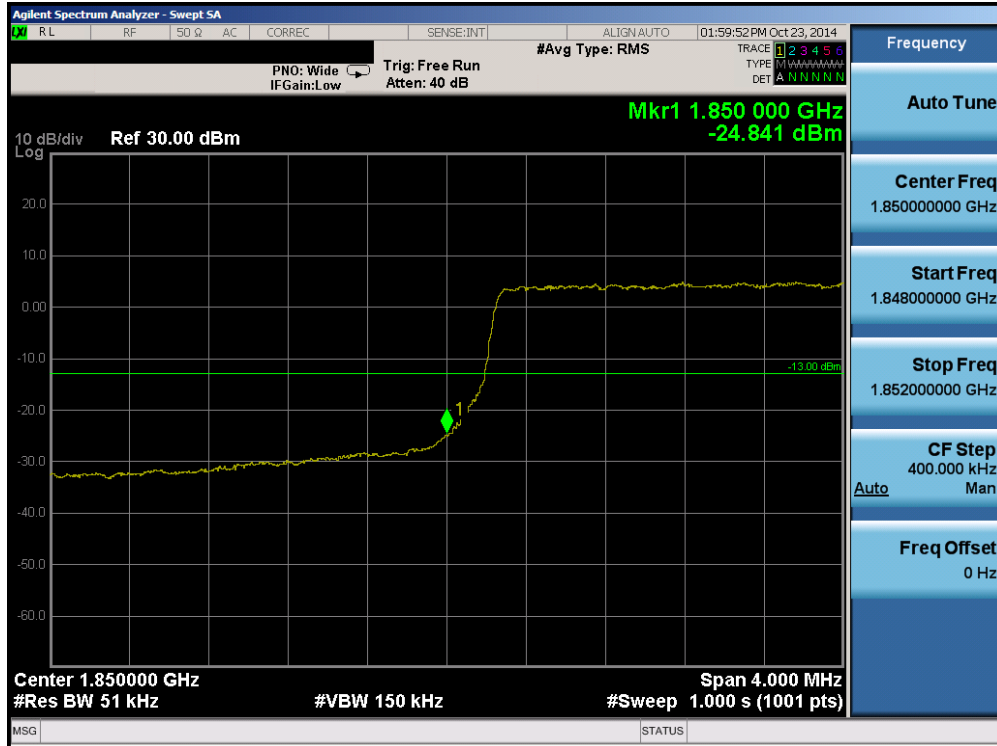


Plot 6-150. Upper Band Edge Plot (Band 25 – 3.0MHz QPSK – RB Size 15)

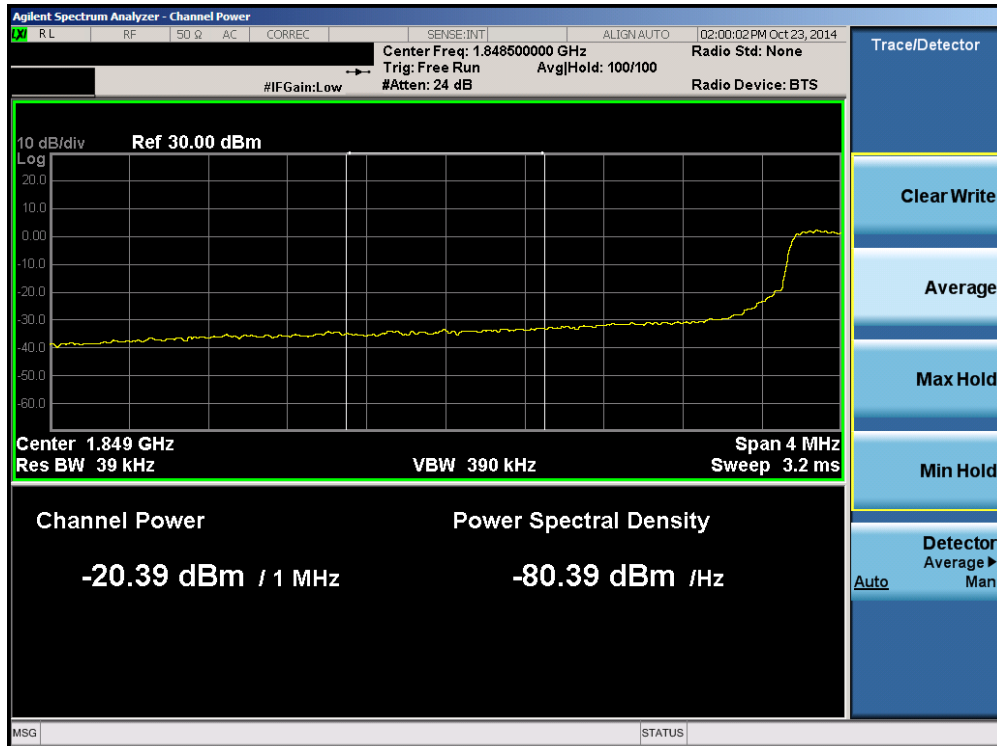


Plot 6-151. Upper Extended Band Edge Plot (Band 25 – 3.0MHz QPSK – RB Size 15)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 90 of 139

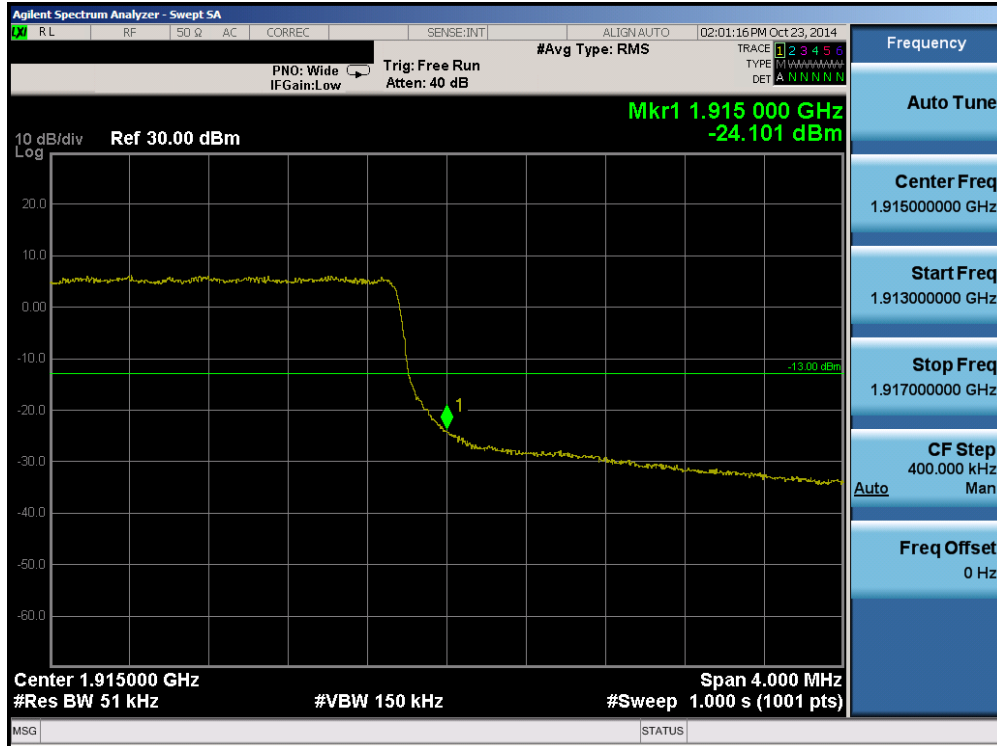


Plot 6-152. Lower Band Edge Plot (Band 25 – 5.0MHz QPSK – RB Size 25)

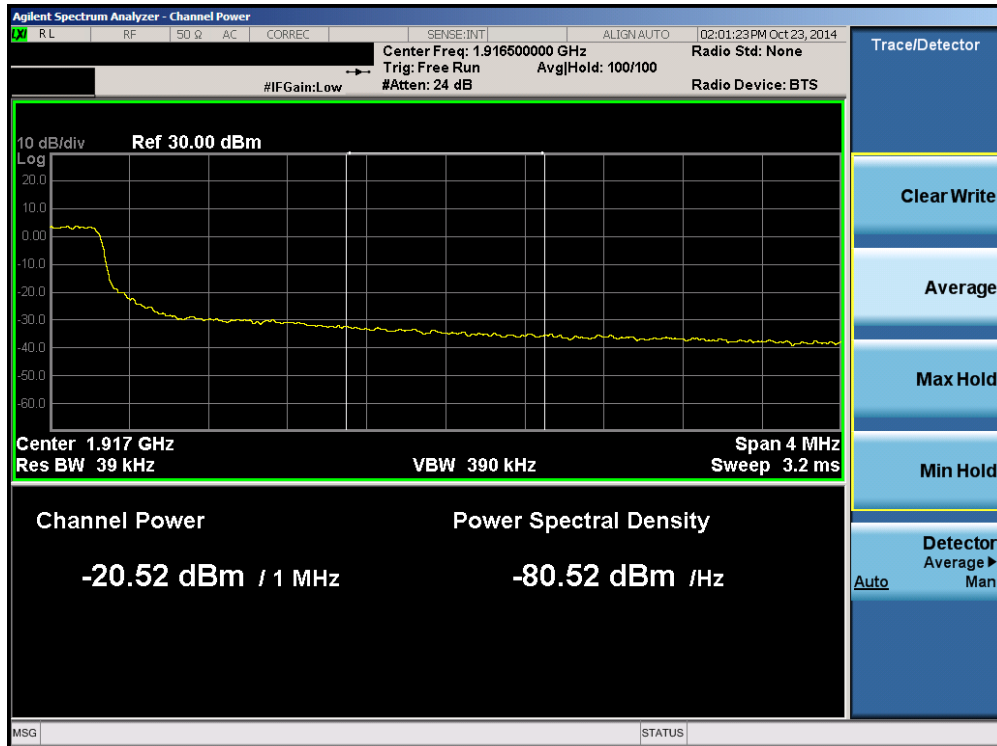


Plot 6-153. Lower Extended Band Edge Plot (Band 25 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 91 of 139

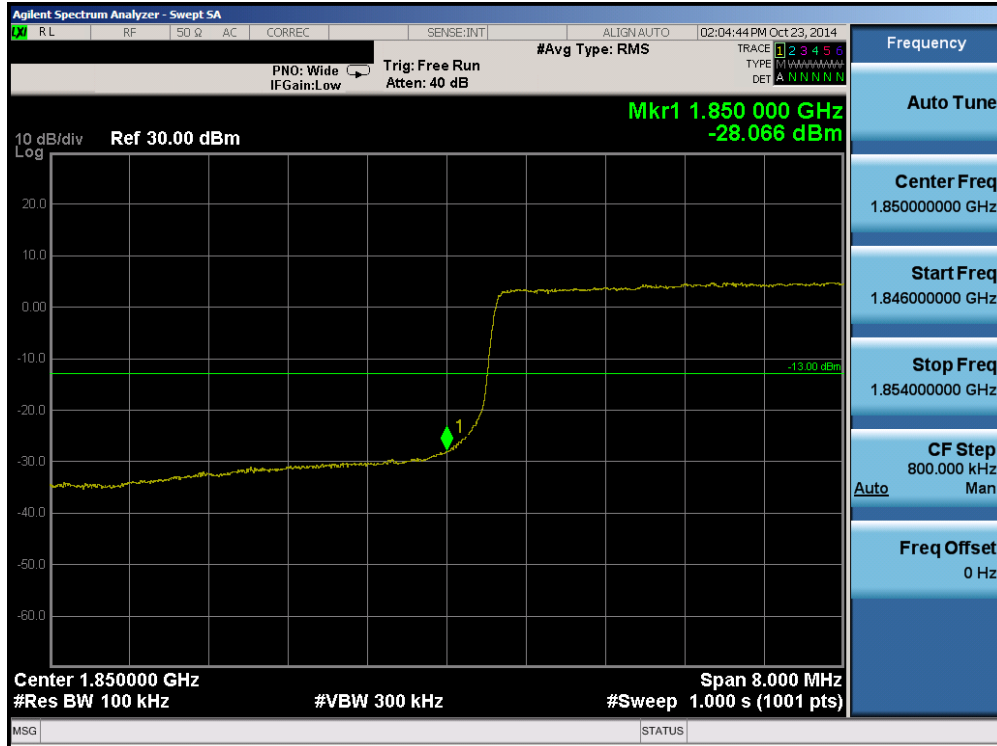


Plot 6-154. Upper Band Edge Plot (Band 25 – 5.0MHz QPSK – RB Size 25)

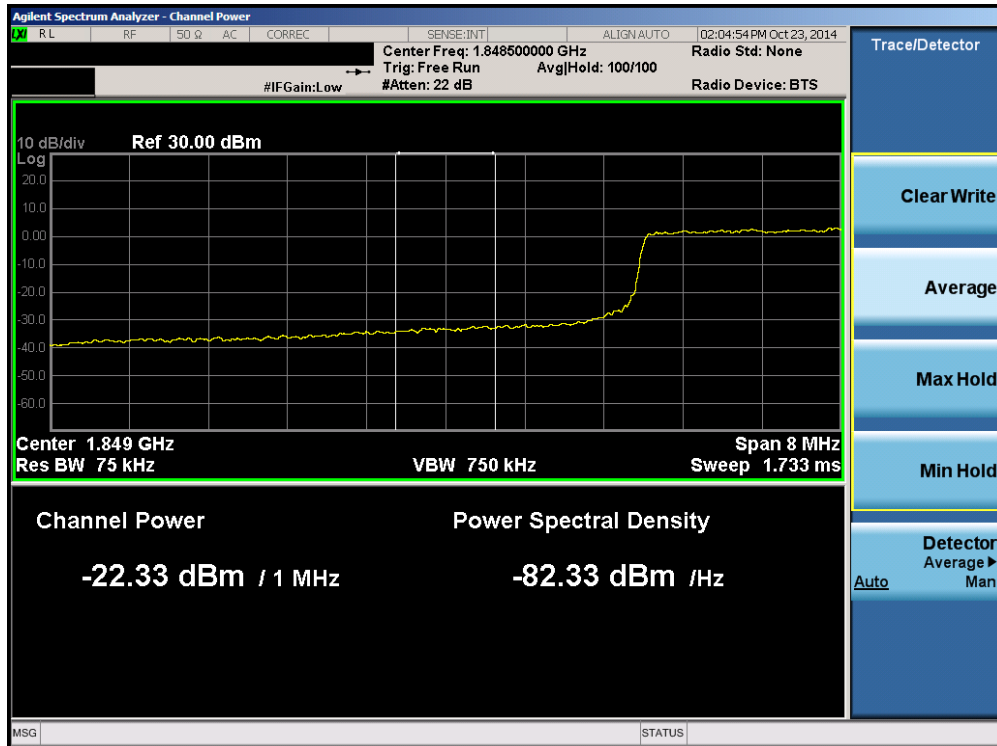


Plot 6-155. Upper Extended Band Edge Plot (Band 25 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 92 of 139

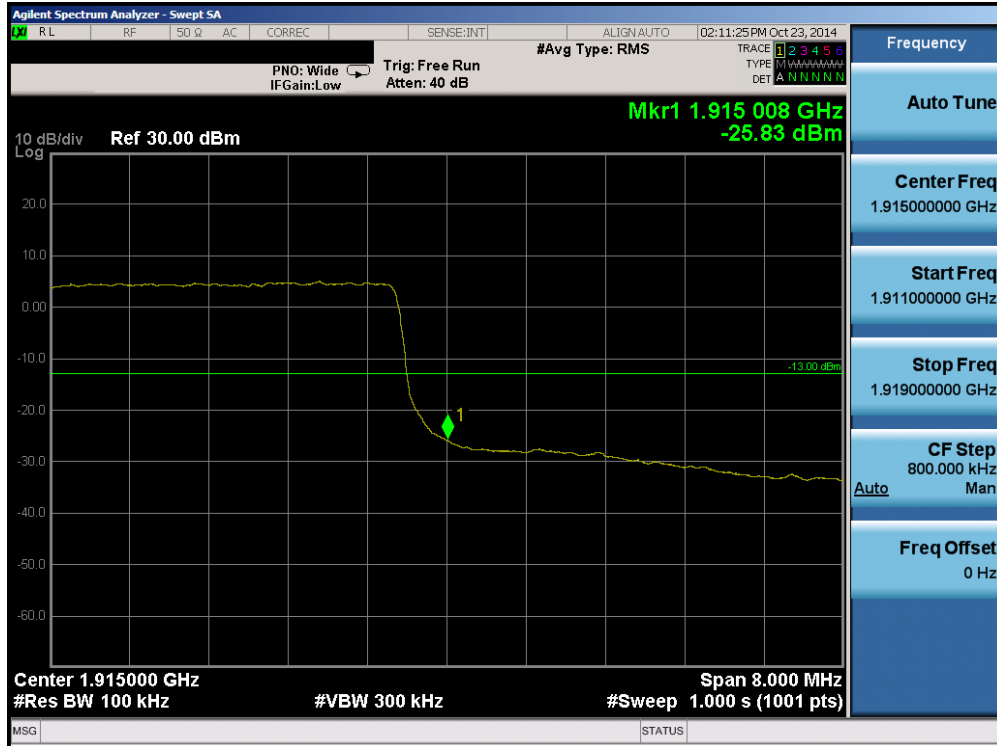


Plot 6-156. Lower Band Edge Plot (Band 25 – 10.0MHz QPSK – RB Size 50)

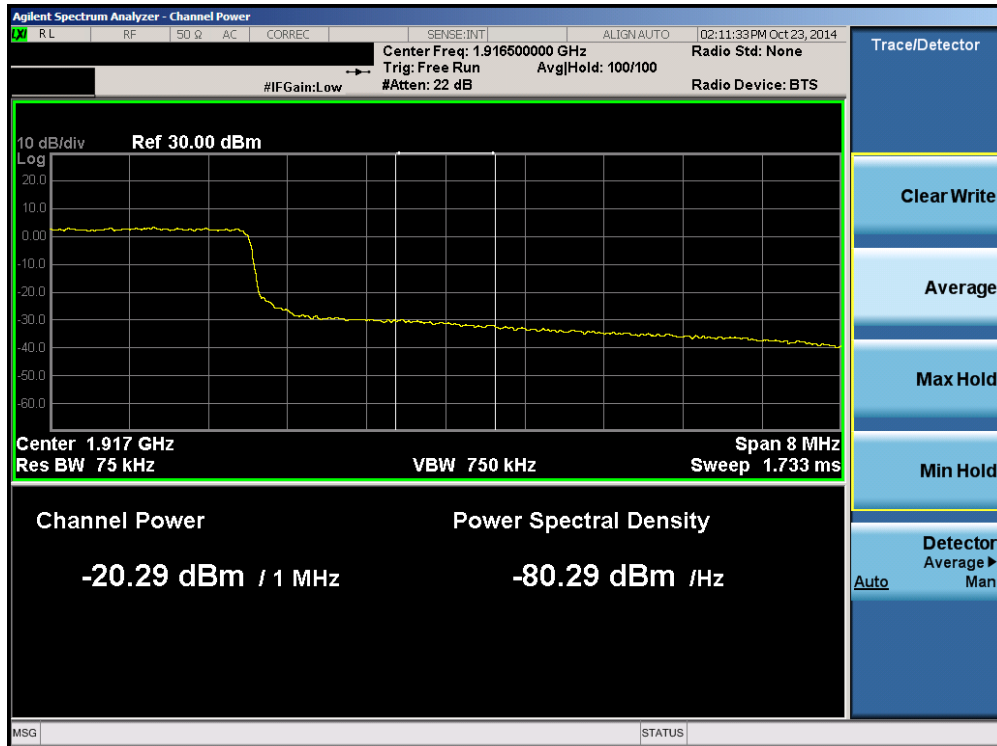


Plot 6-157. Lower Extended Band Edge Plot (Band 25 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFLS996	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 93 of 139

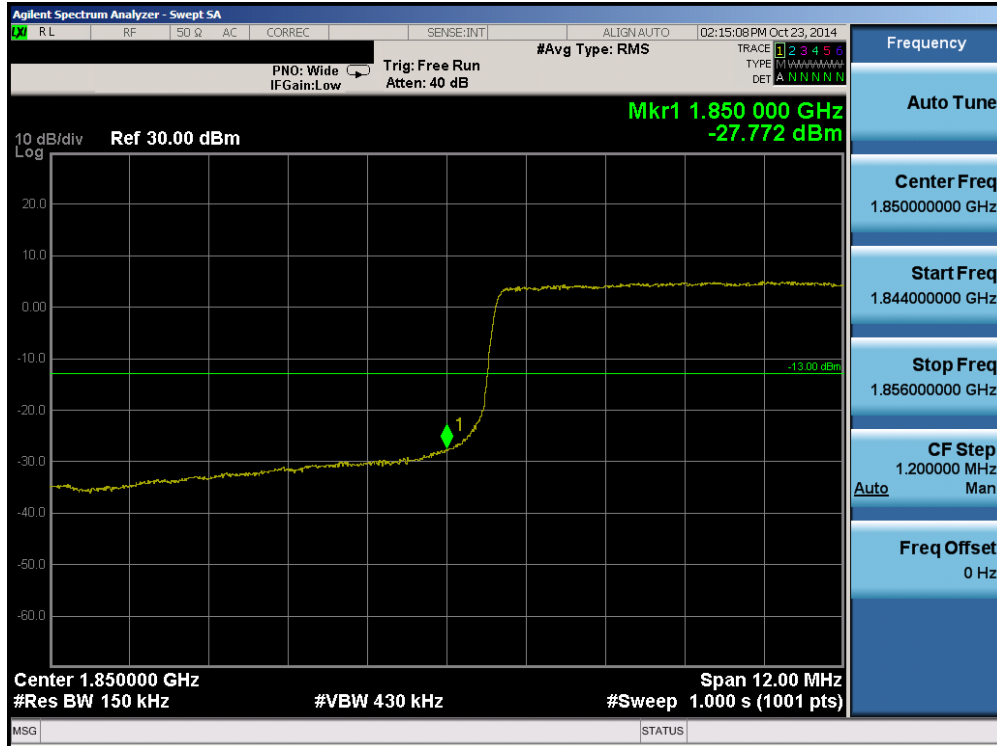


Plot 6-158. Upper Band Edge Plot (Band 25 – 10.0MHz QPSK – RB Size 50)

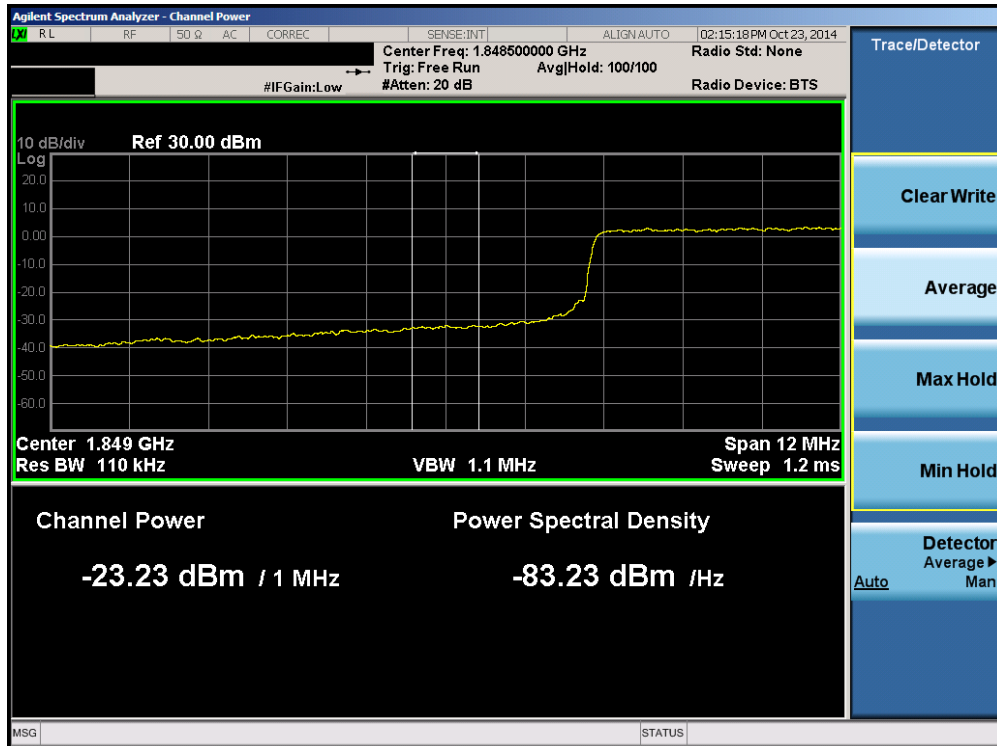


Plot 6-159. Upper Extended Band Edge Plot (Band 25 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 94 of 139



Plot 6-160. Lower Band Edge Plot (Band 25 – 15.0MHz QPSK – RB Size 75)

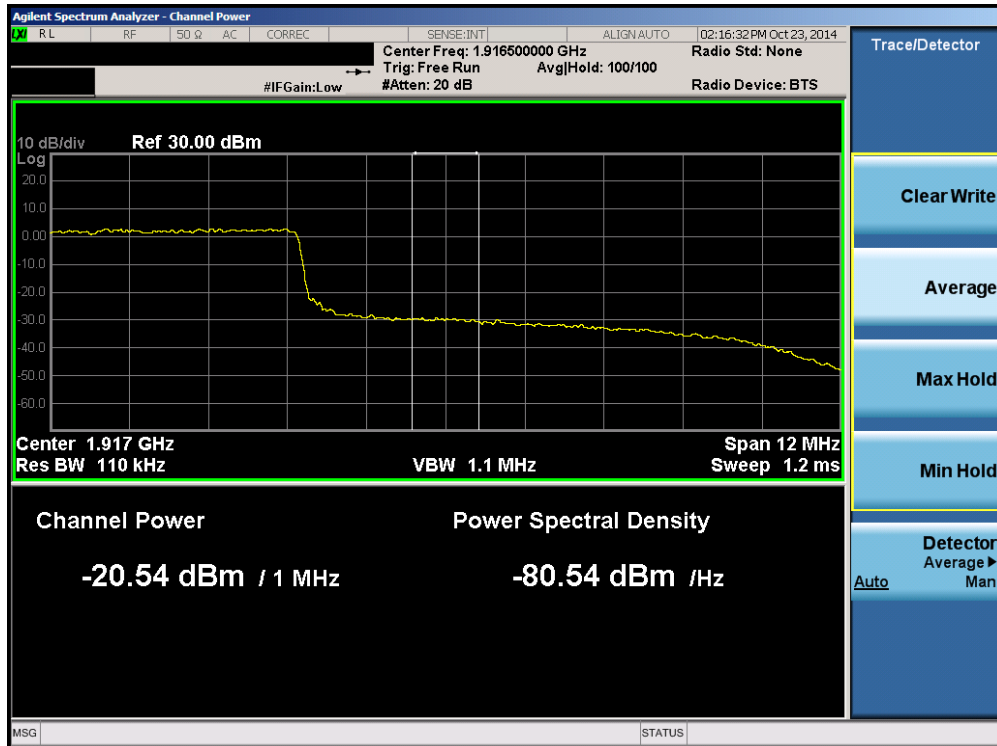


Plot 6-161. Lower Extended Band Edge Plot (Band 25 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 95 of 139

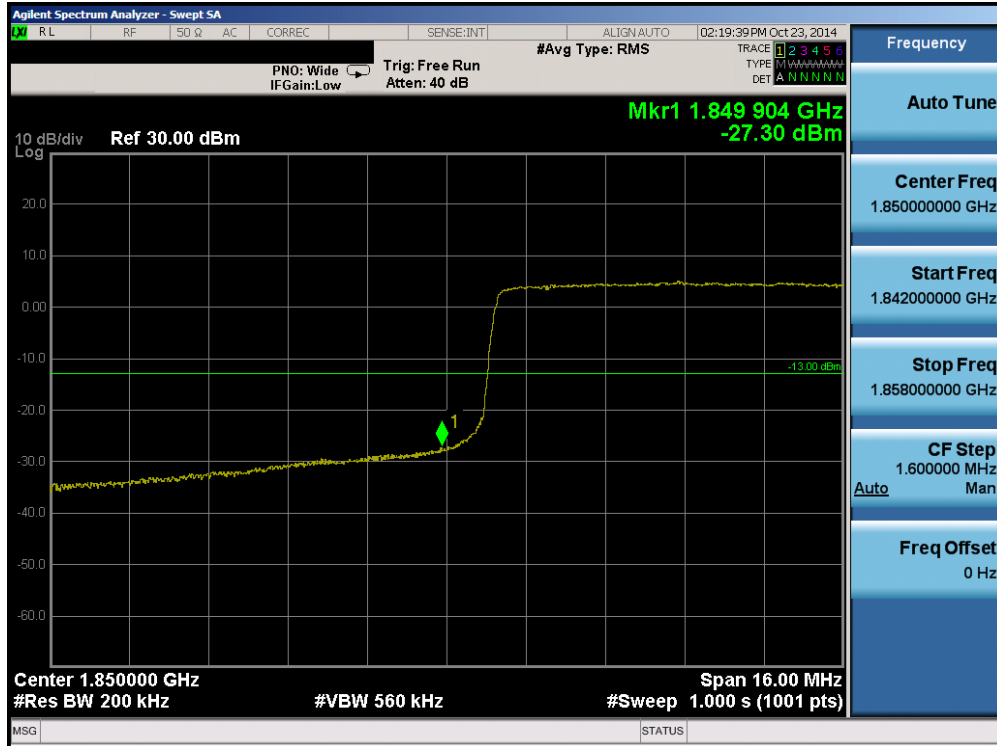


Plot 6-162. Upper Band Edge Plot (Band 25 – 15.0MHz QPSK – RB Size 75)

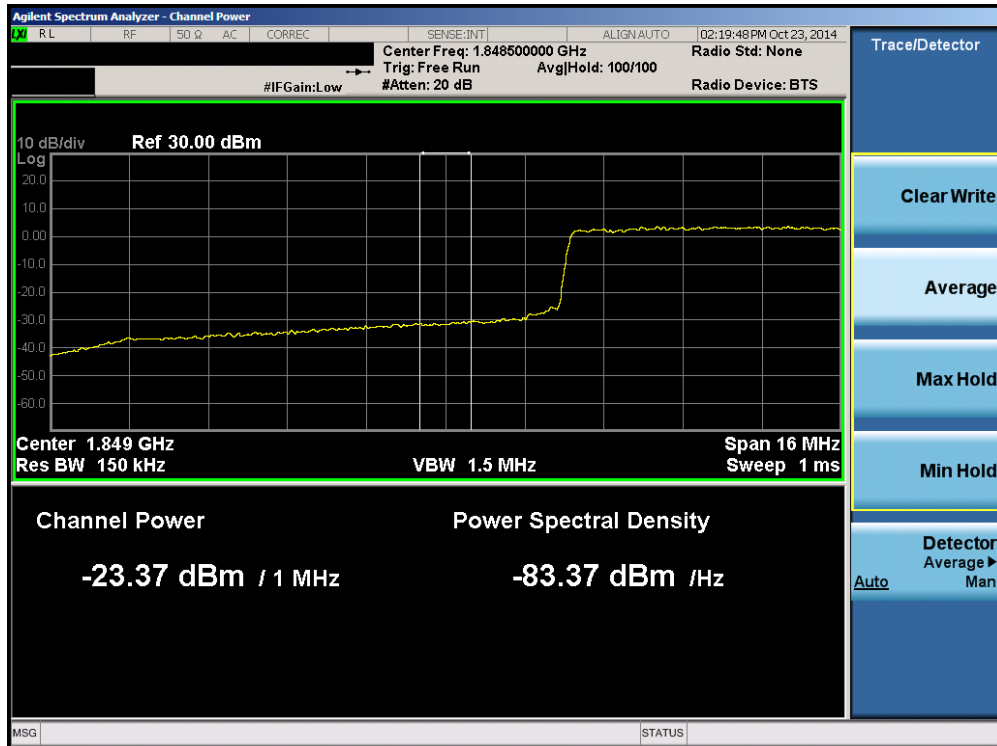


Plot 6-163. Upper Extended Band Edge Plot (Band 25 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 96 of 139

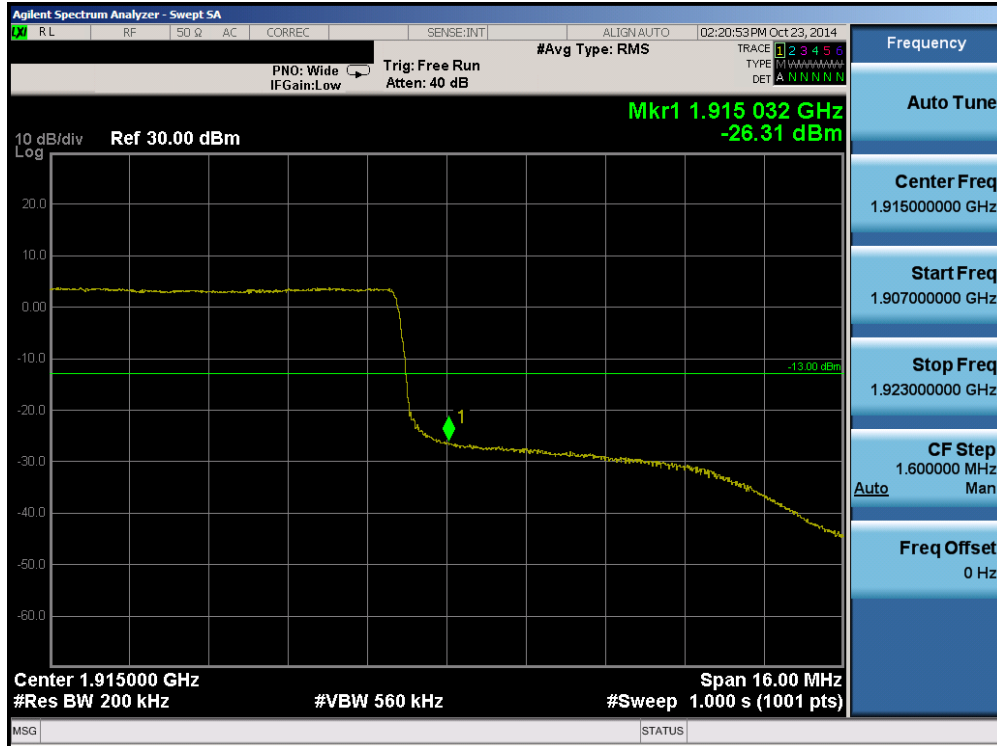


Plot 6-164. Lower Band Edge Plot (Band 25 – 20.0MHz QPSK – RB Size 100)

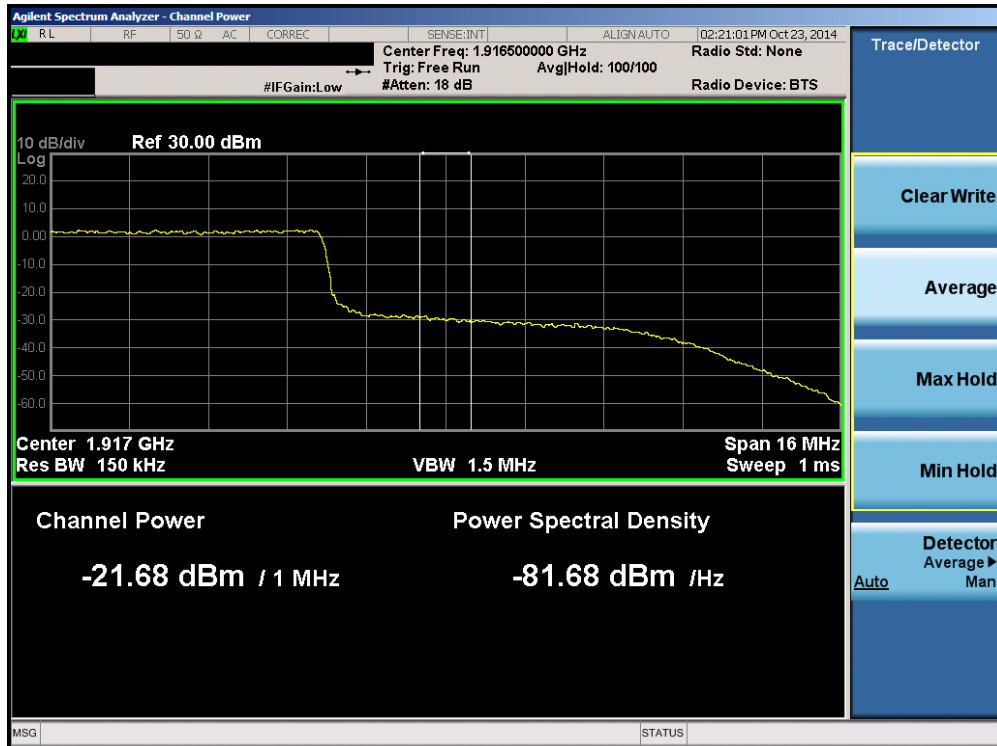


Plot 6-165. Lower Extended Band Edge Plot (Band 25 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFLS996	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 97 of 139

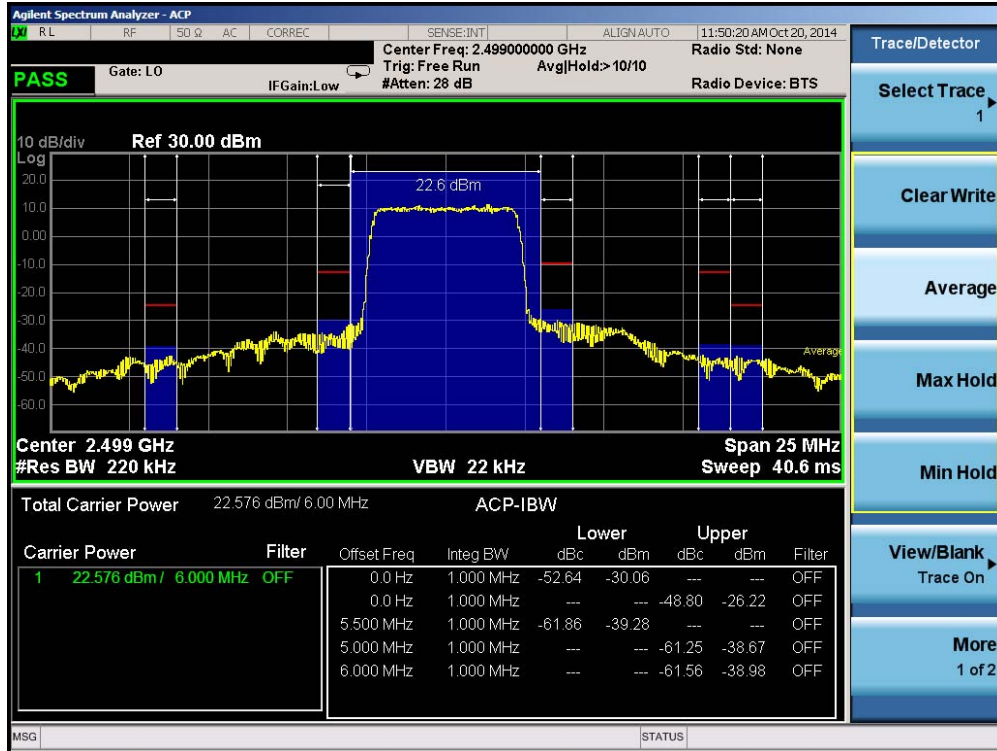


Plot 6-166. Upper Band Edge Plot (Band 25 – 20.0MHz QPSK – RB Size 100)

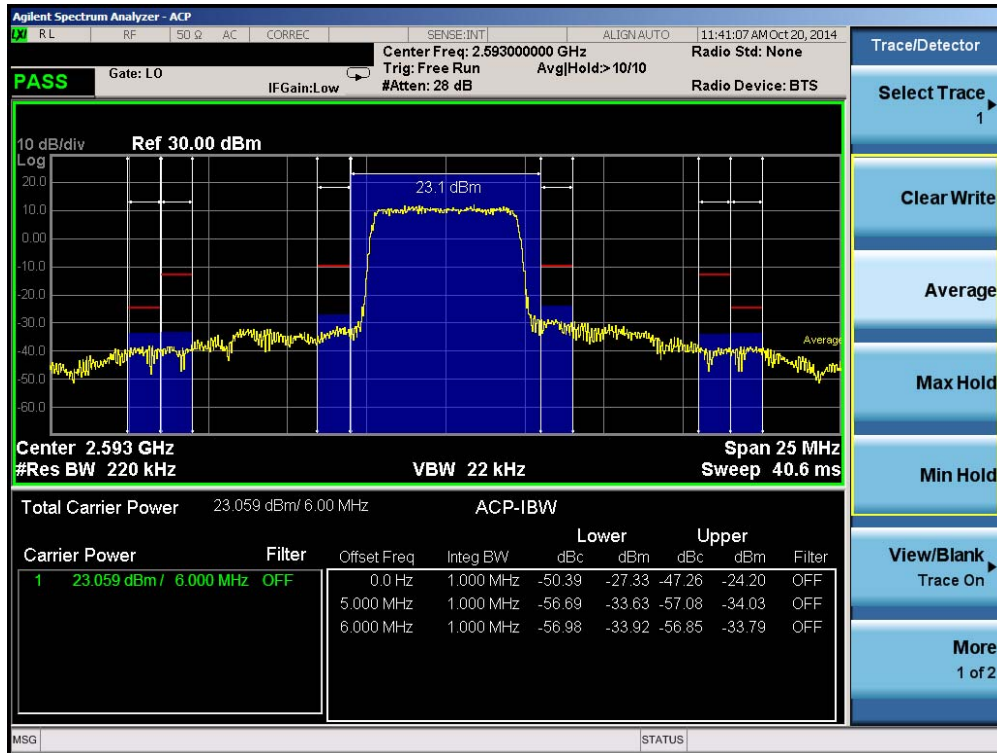


Plot 6-167. Upper Extended Band Edge Plot (Band 25 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 98 of 139

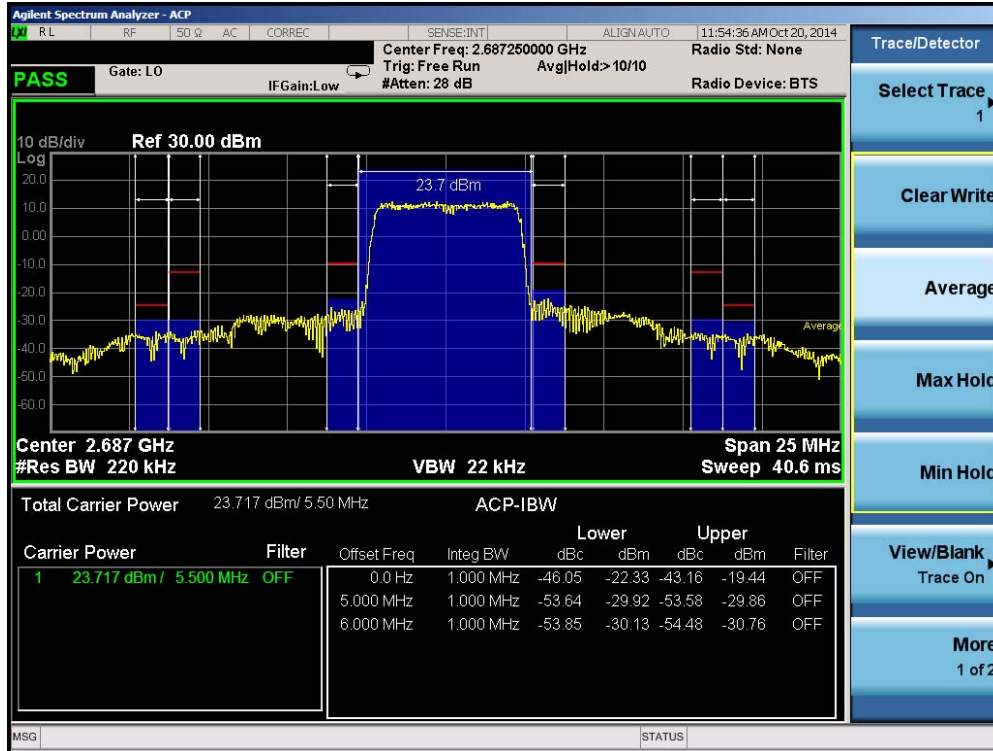


Plot 6-168. Lower ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)

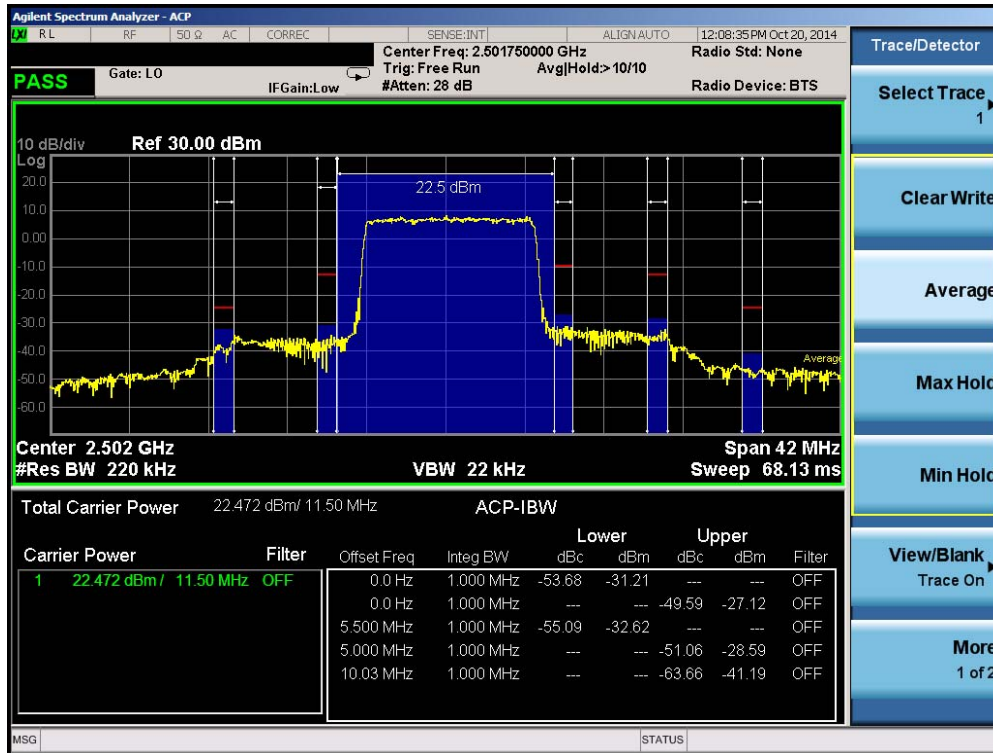


Plot 6-169. Mid ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 99 of 139

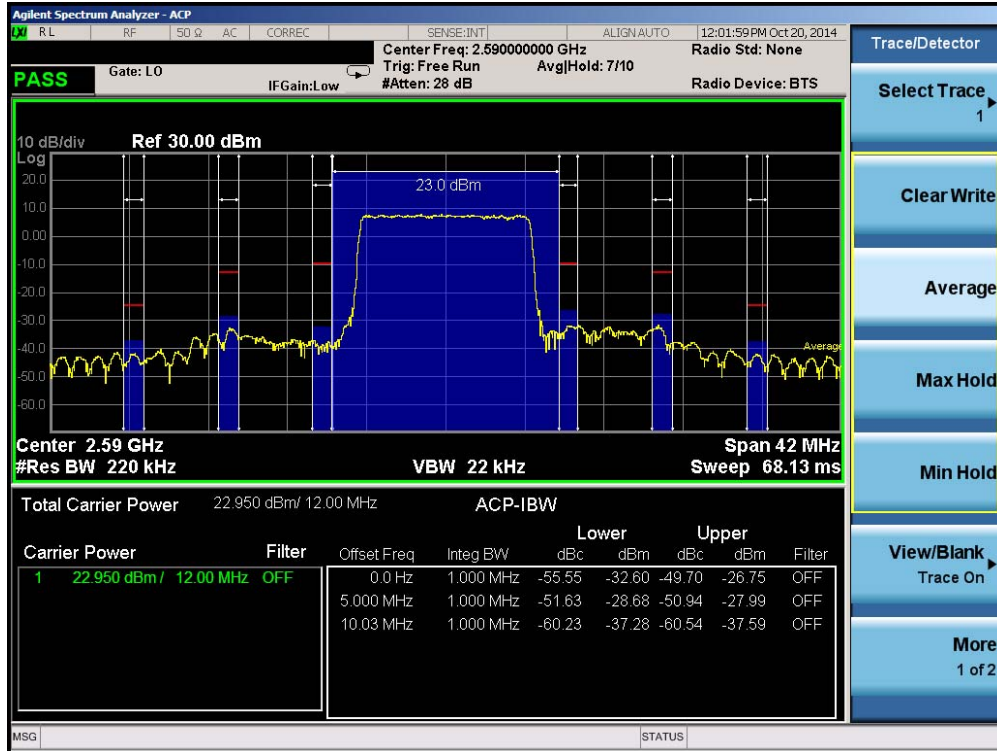


Plot 6-170. Upper ACP Plot (Band 41 – 5.0MHz QPSK – RB Size 25)

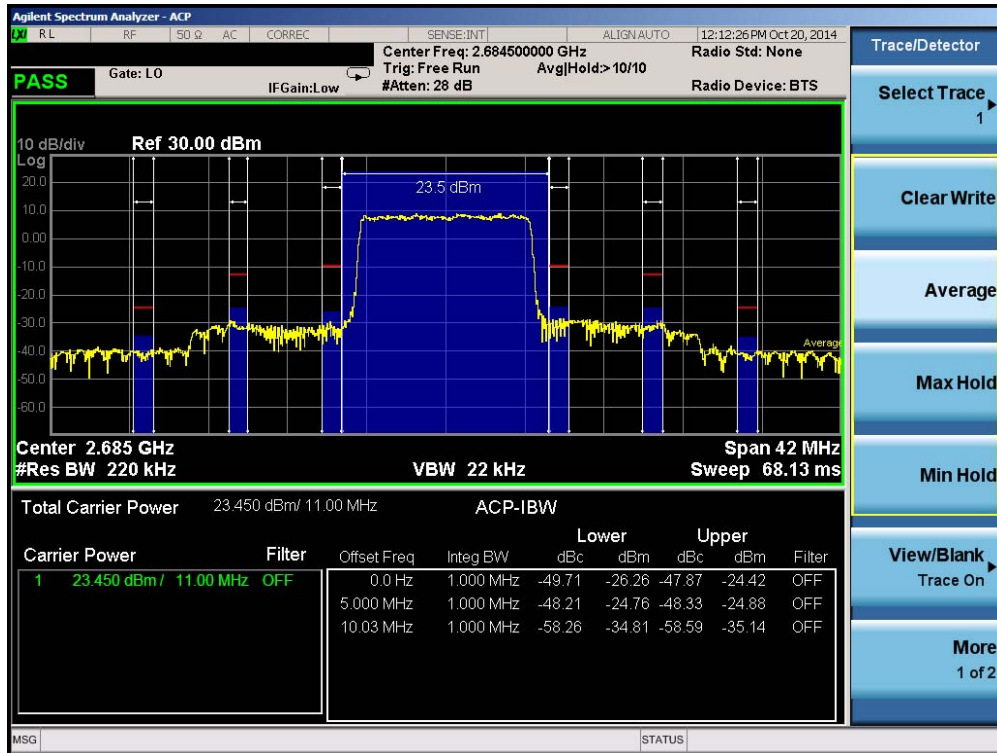


Plot 6-171. Lower ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 100 of 139

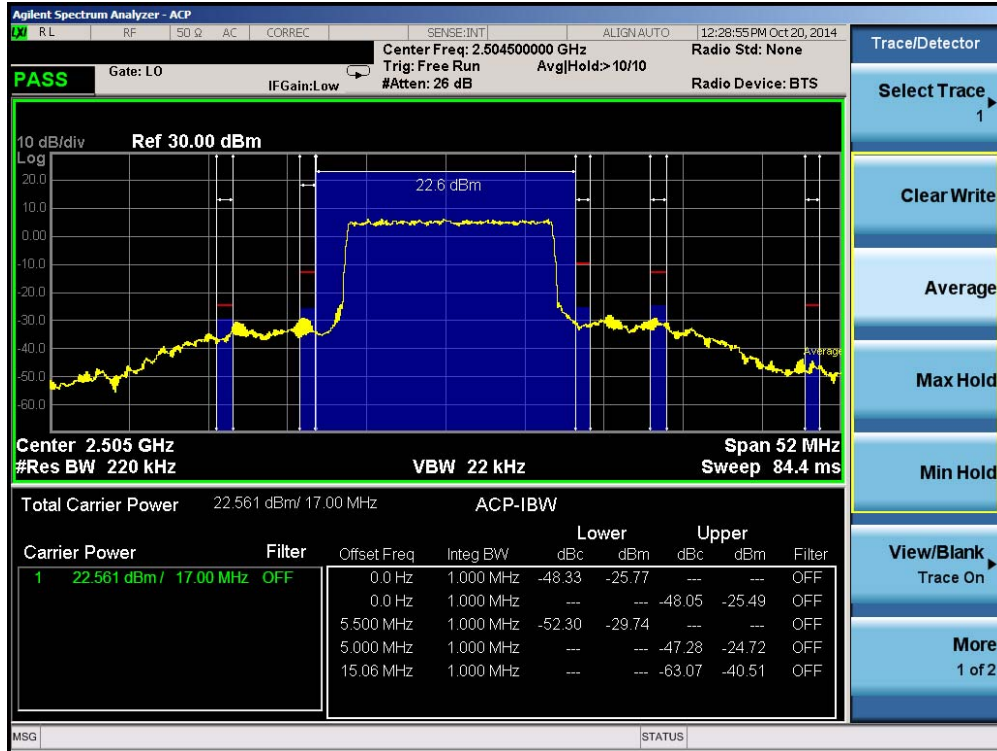


Plot 6-172. Mid ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)

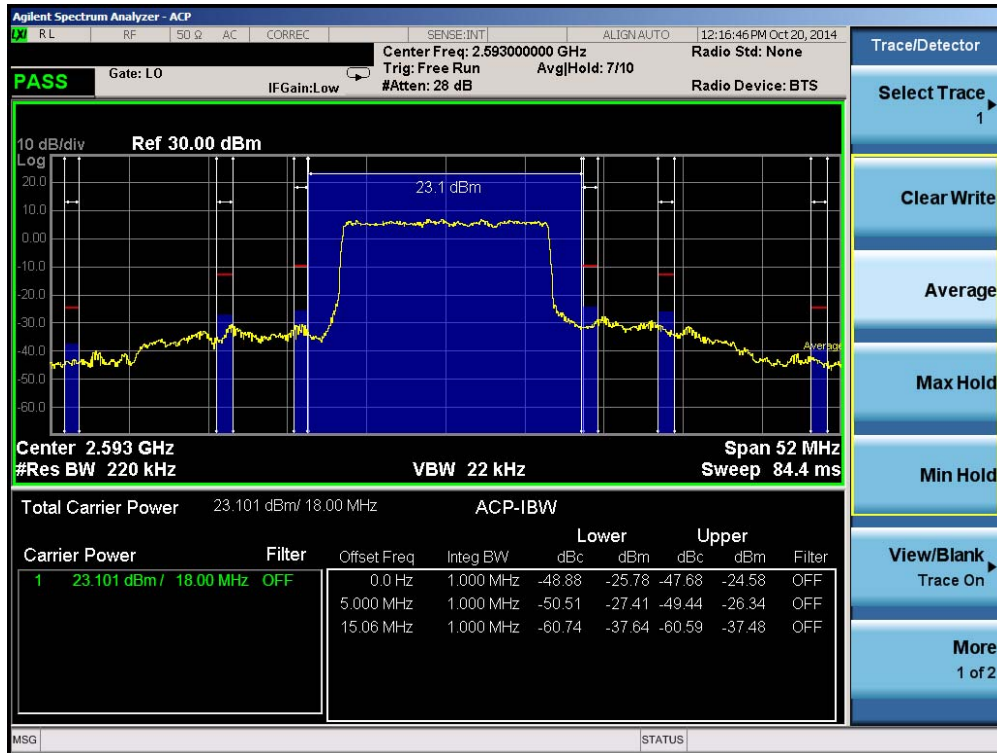


Plot 6-173. Upper ACP Plot (Band 41 – 10.0MHz QPSK – RB Size 50)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 101 of 139

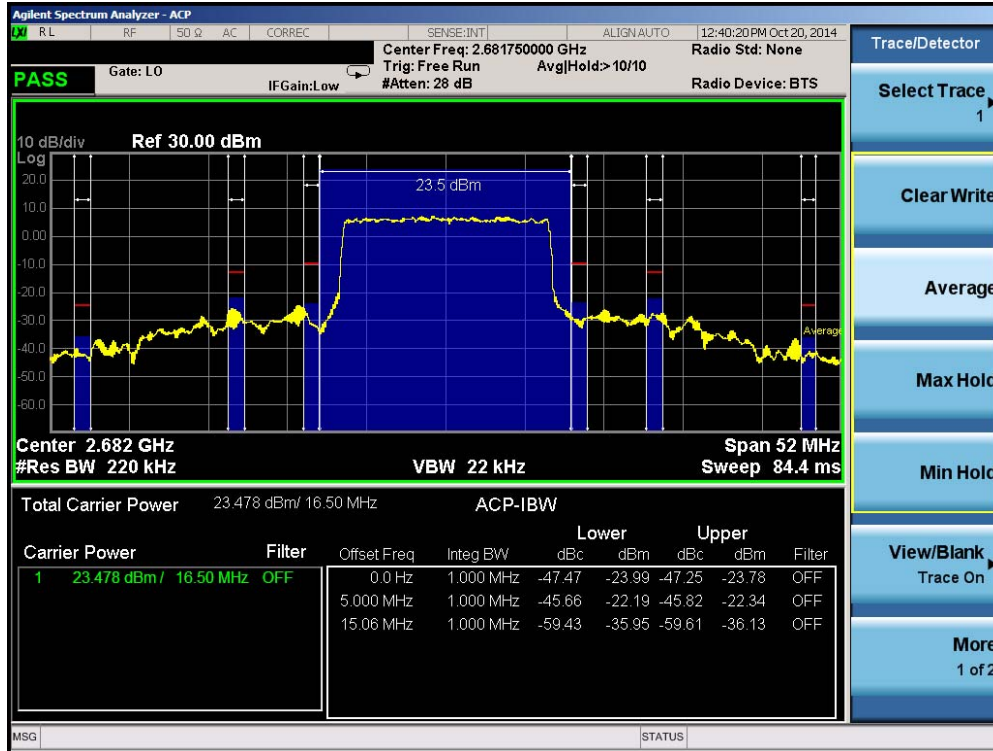


Plot 6-174. Lower ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)

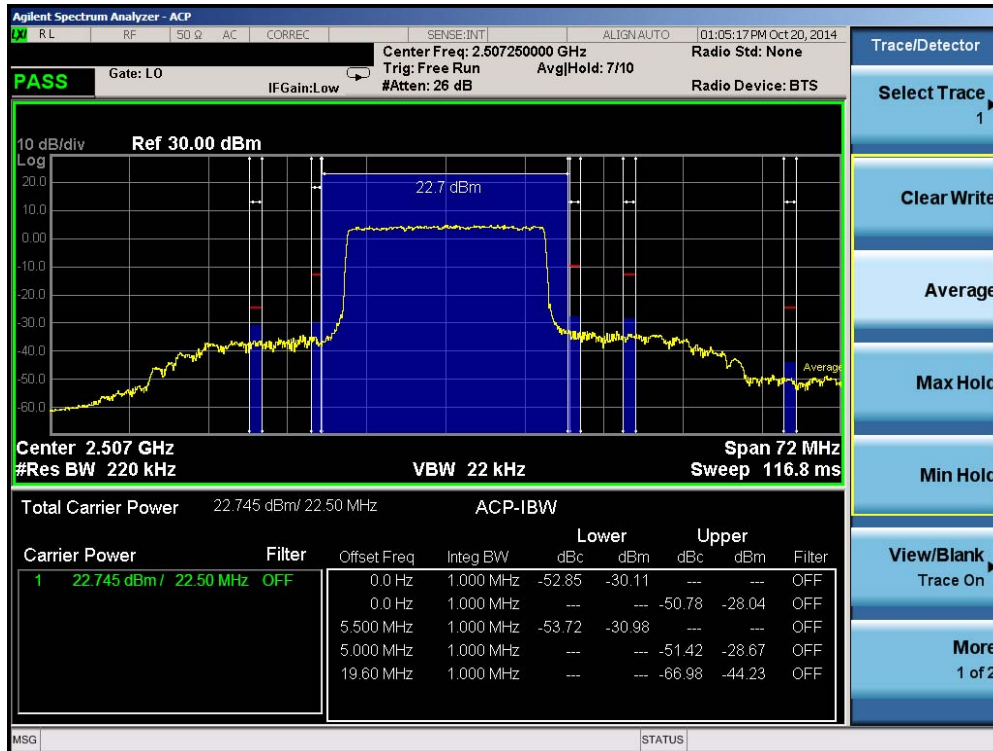


Plot 6-175. Mid ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 102 of 139

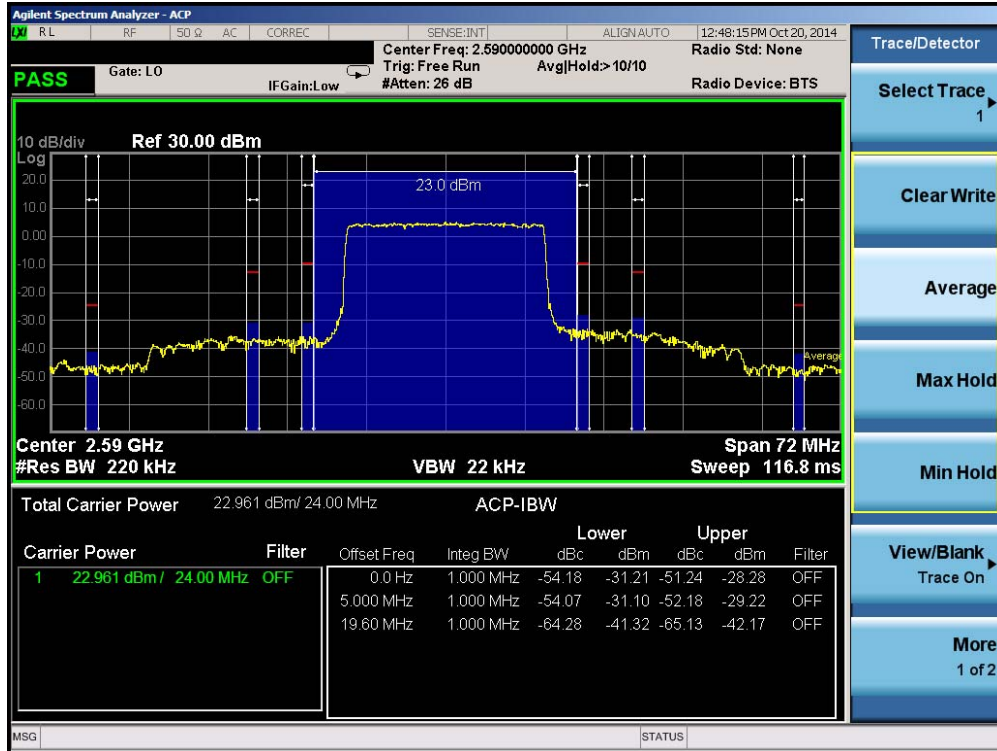


Plot 6-176. Upper ACP Plot (Band 41 – 15.0MHz QPSK – RB Size 75)

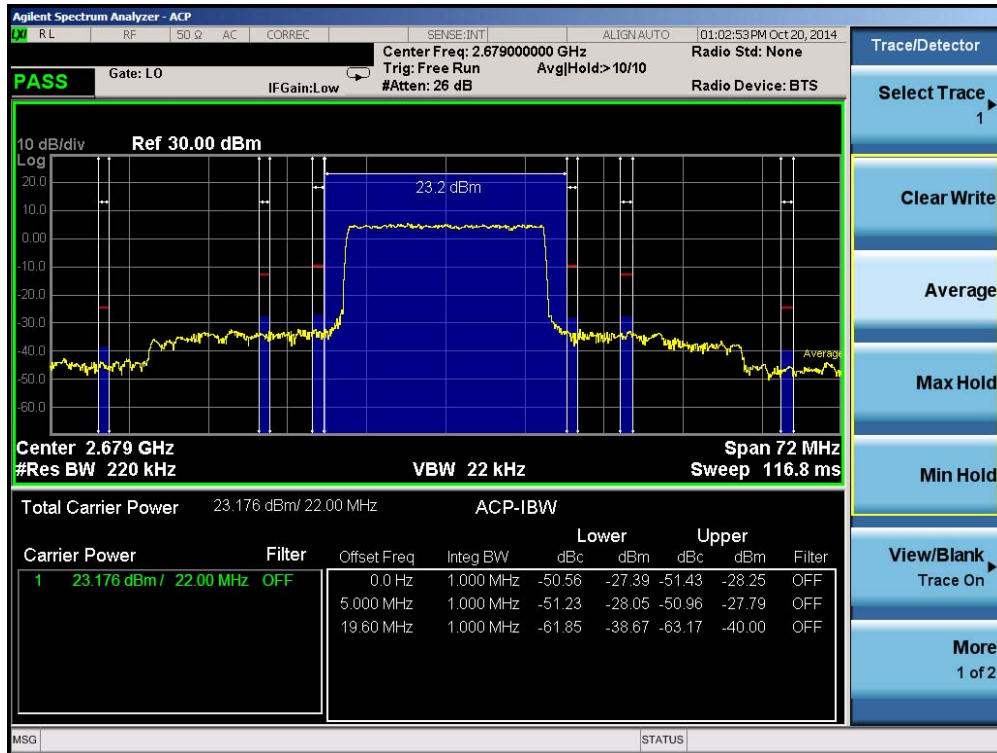


Plot 6-177. Lower ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 103 of 139



Plot 6-178. Mid ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)



Plot 6-179. Upper ACP Plot (Band 41 – 20.0MHz QPSK – RB Size 100)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 104 of 139

6.5 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 v02r01 – 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.

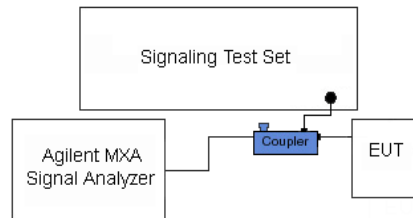

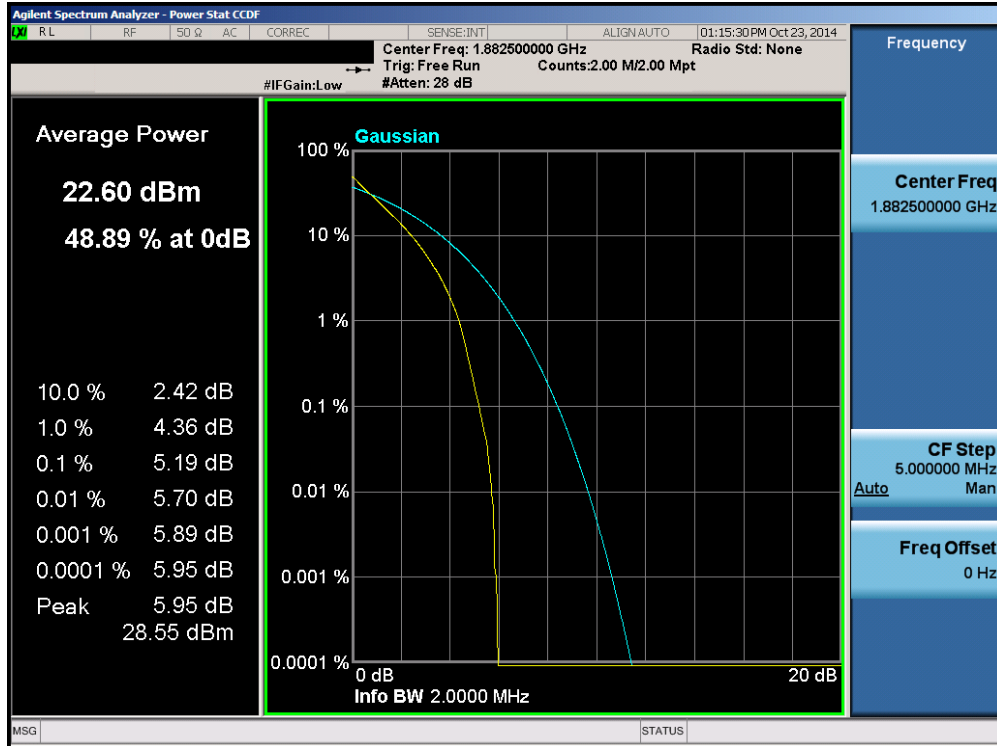


Figure 6-4. Test Instrument & Measurement Setup

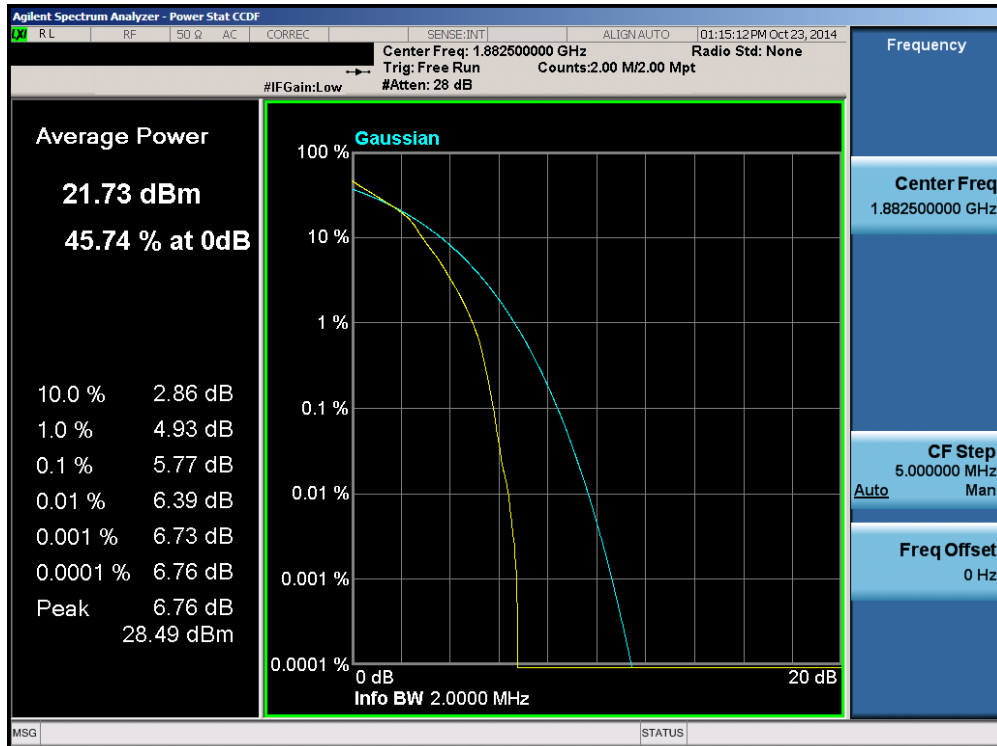
Test Notes

None.

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 105 of 139

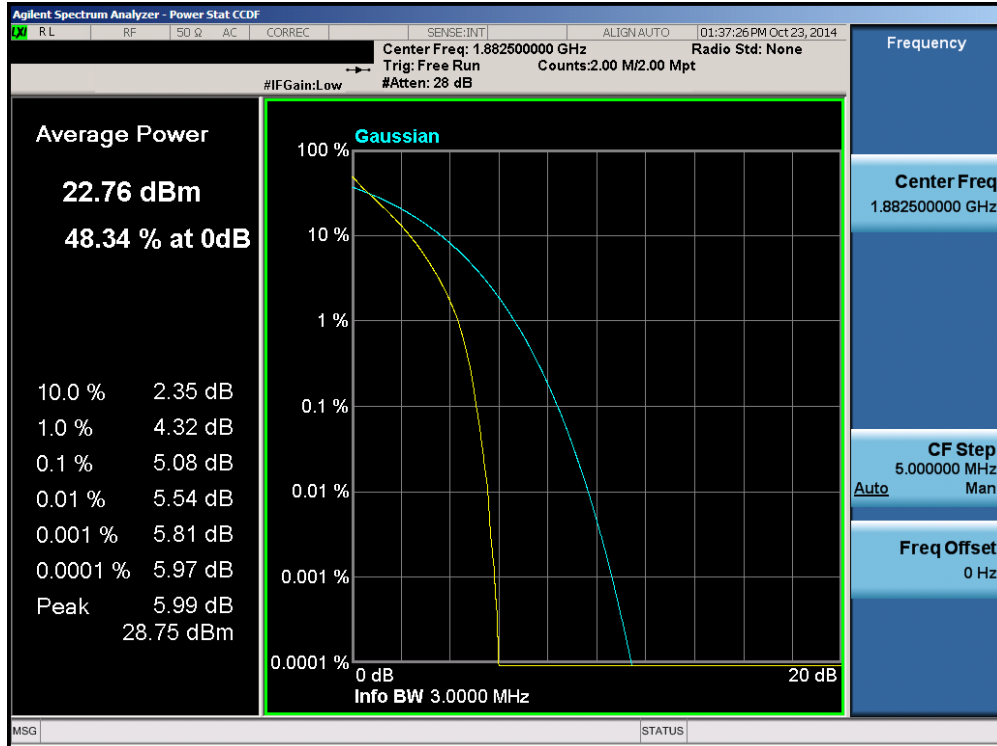


Plot 6-180. PAR Plot (Band 25 – 1.4MHz QPSK – RB Size 6)

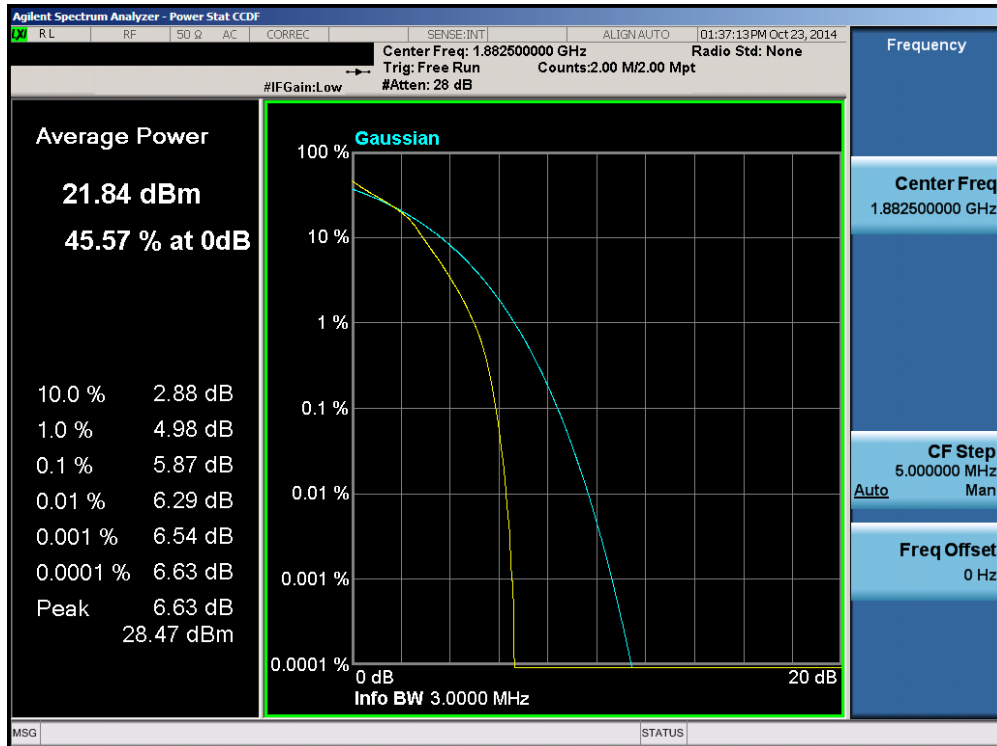


Plot 6-181. PAR Plot (Band 25 – 1.4MHz 16-QAM – RB Size 6)

FCC ID: ZNFLS996	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 106 of 139

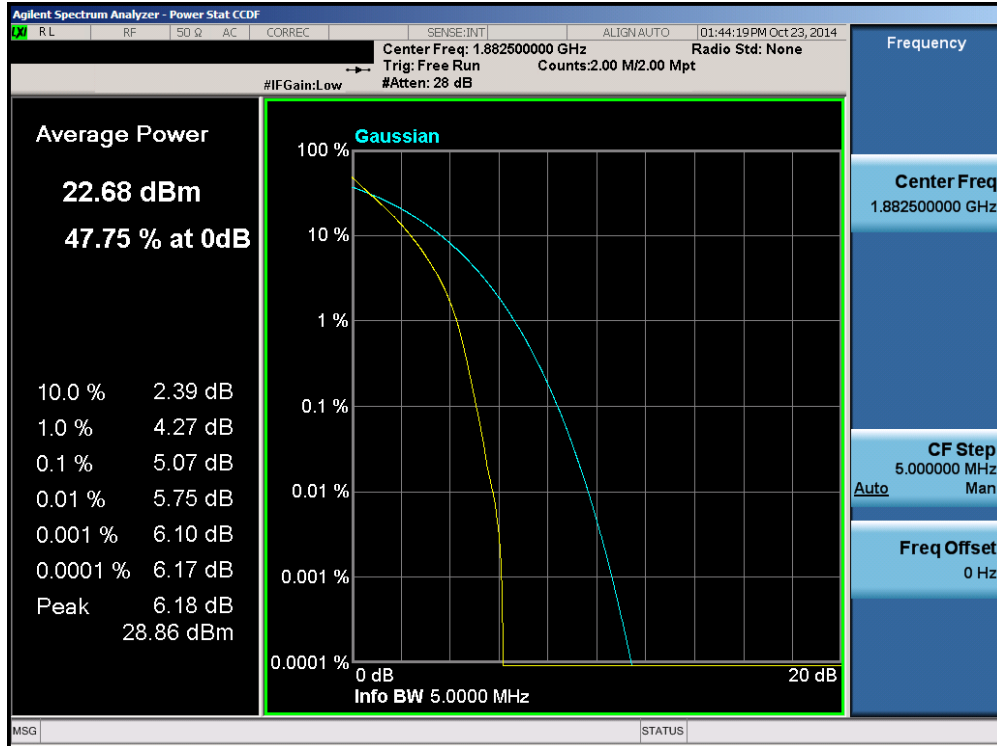


Plot 6-182. PAR Plot (Band 25 – 3.0MHz QPSK – RB Size 15)

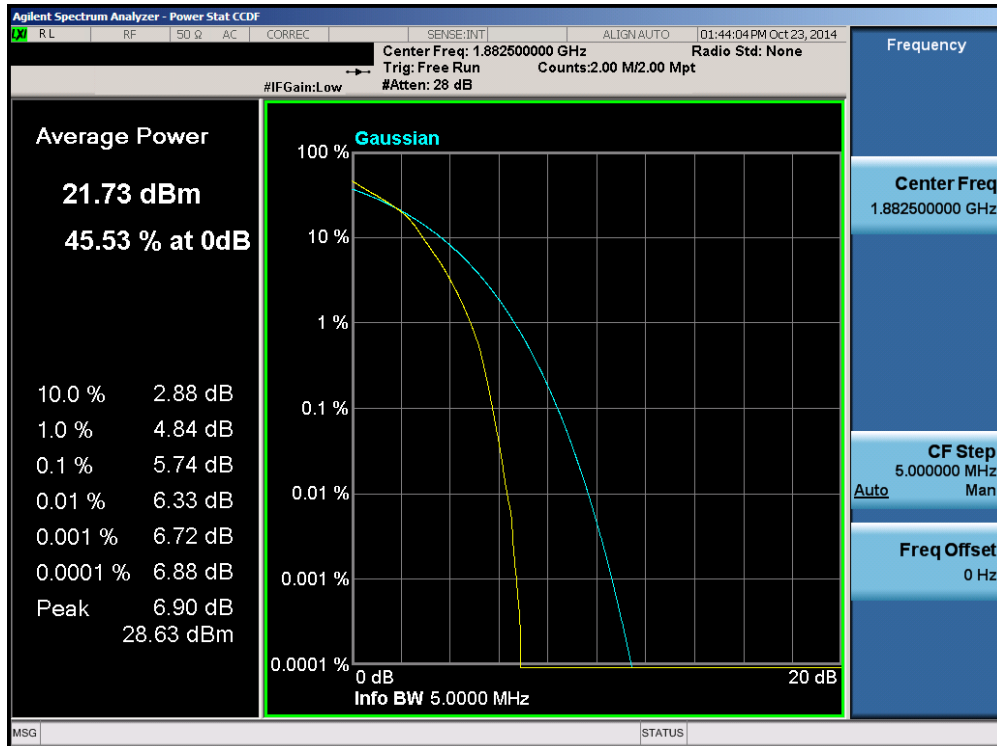


Plot 6-183. PAR Plot (Band 25 – 3.0MHz 16-QAM – RB Size 15)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 107 of 139

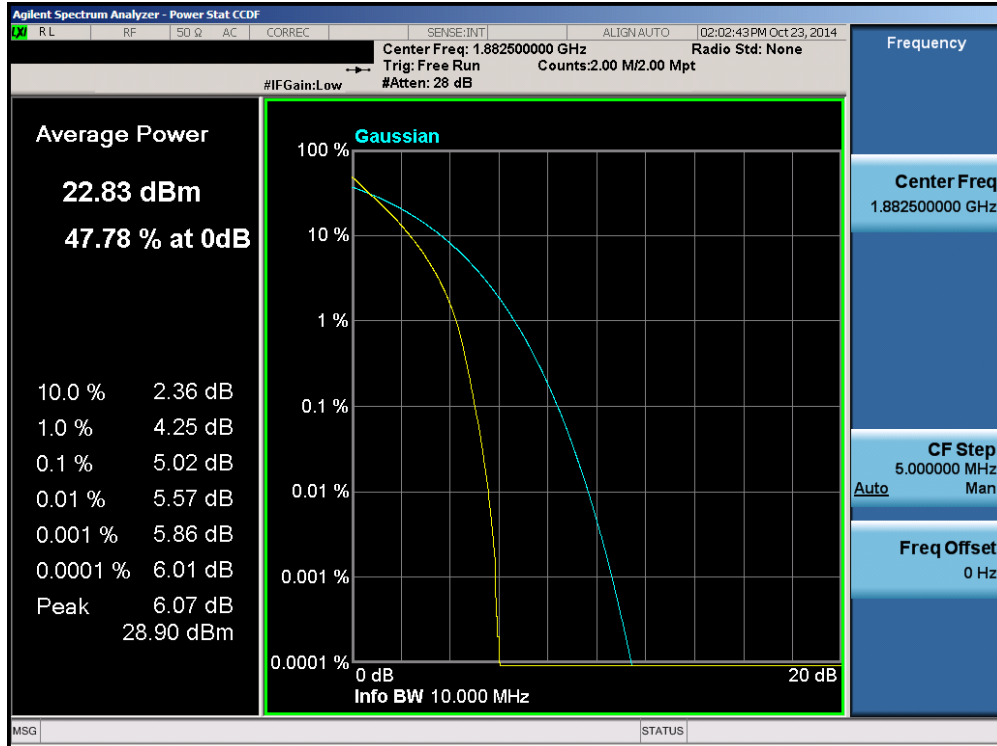


Plot 6-184. PAR Plot (Band 25 – 5.0MHz QPSK – RB Size 25)

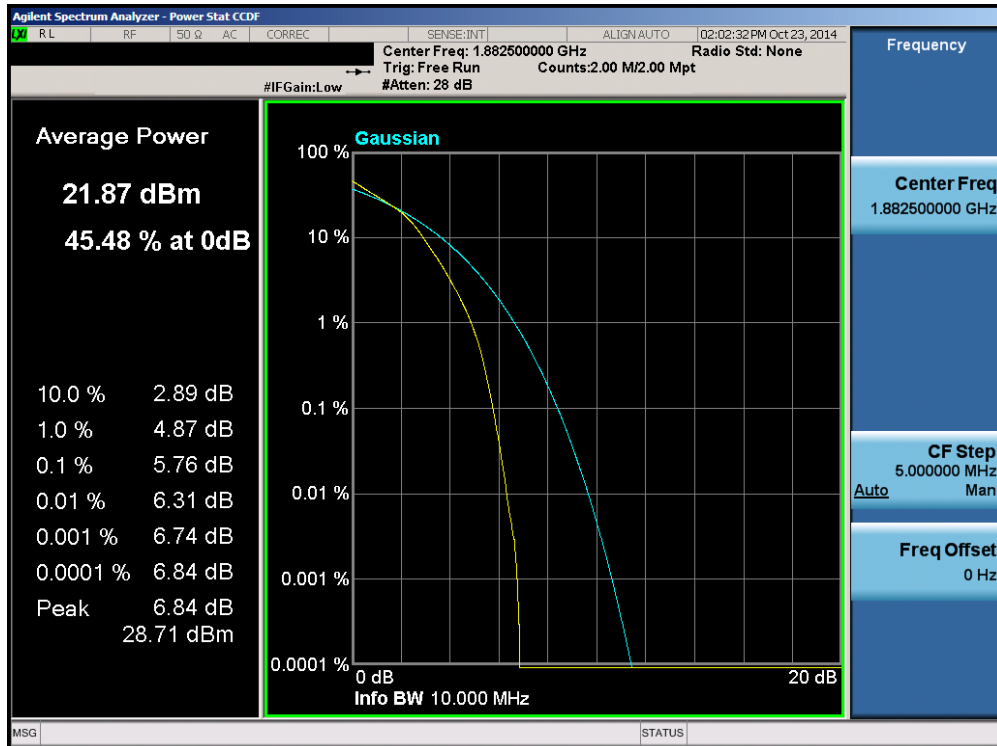


Plot 6-185. PAR Plot (Band 25 – 5.0MHz 16-QAM – RB Size 25)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 108 of 139

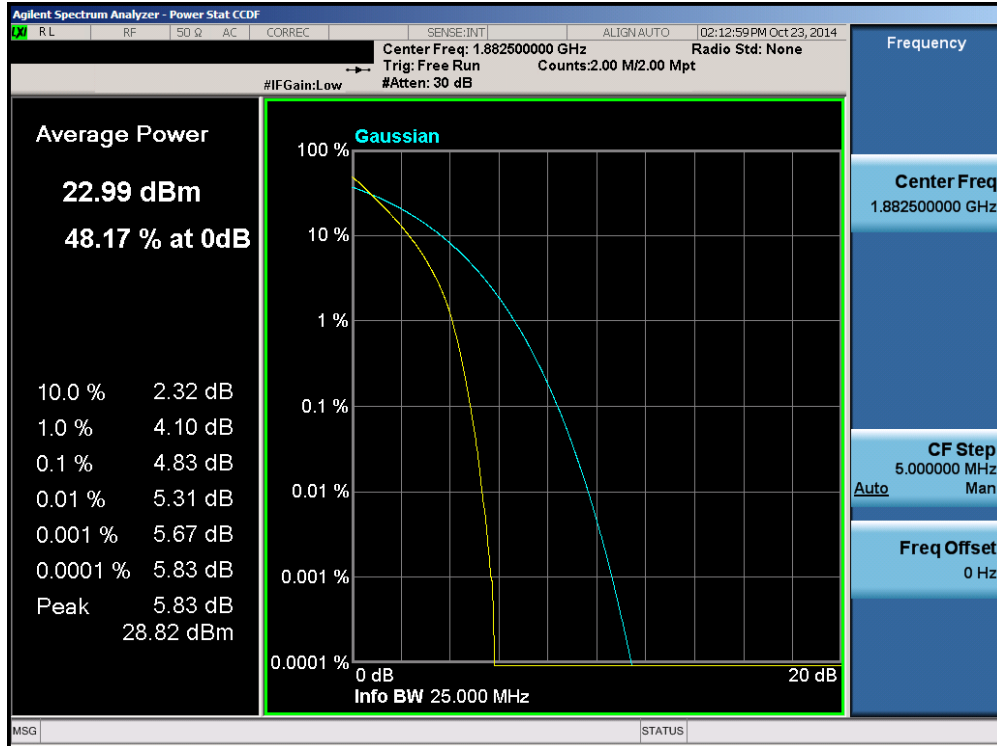


Plot 6-186. PAR Plot (Band 25 – 10.0MHz QPSK – RB Size 50)

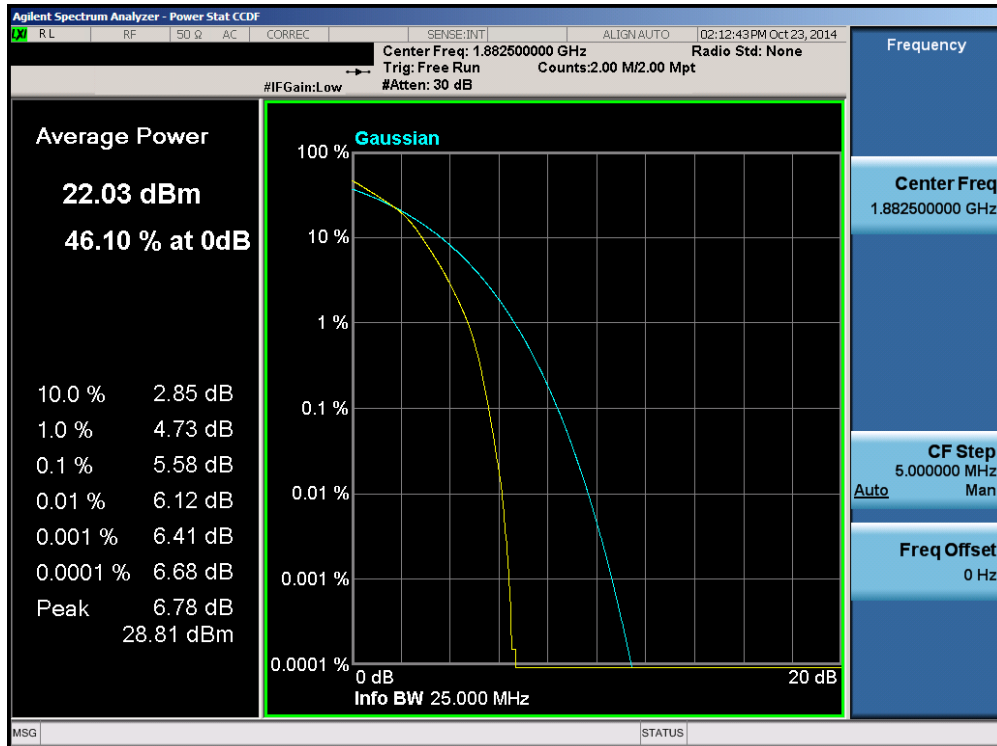


Plot 6-187. PAR Plot (Band 25 – 10.0MHz 16-QAM – RB Size 50)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 109 of 139

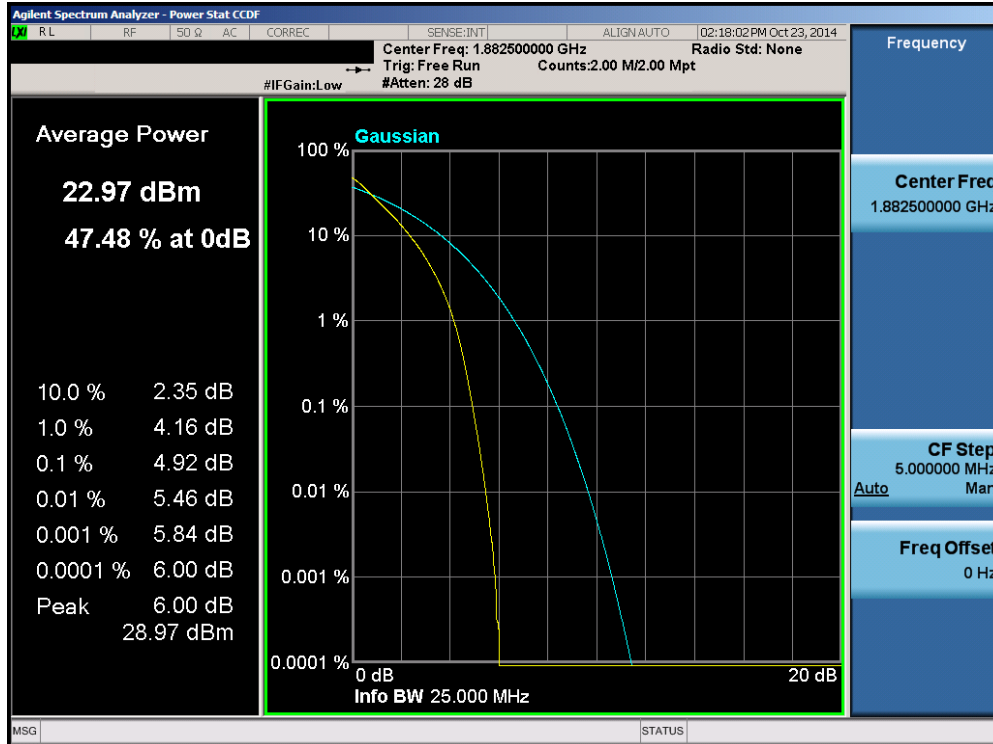


Plot 6-188. PAR Plot (Band 25 – 15.0MHz QPSK – RB Size 75)

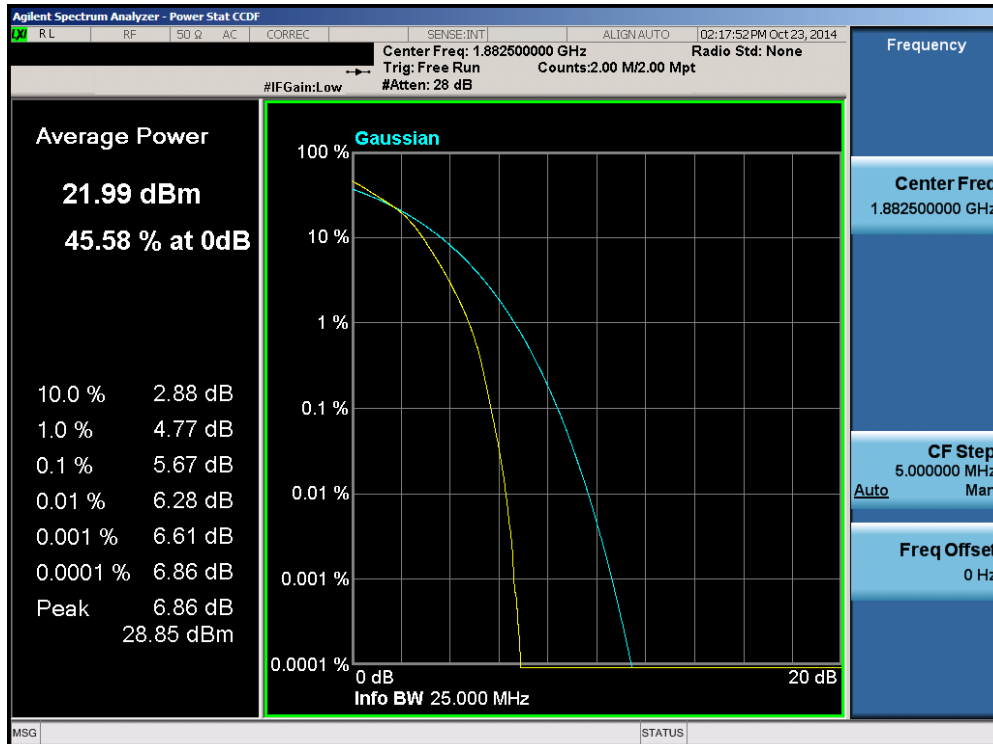


Plot 6-189. PAR Plot (Band 25 – 15.0MHz 16-QAM – RB Size 75)

FCC ID: ZNFLS996	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 110 of 139



Plot 6-190. PAR Plot (Band 25 – 20.0MHz QPSK – RB Size 100)



Plot 6-191. PAR Plot (Band 25 – 20.0MHz 16-QAM – RB Size 100)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 111 of 139

6.6 Radiated Power (ERP/EIRP)

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

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI/TIA-603-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 v02r01 – 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 “gating function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
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: ZNFLS996	 PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	 LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset	Page 112 of 139	

Test Setup

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

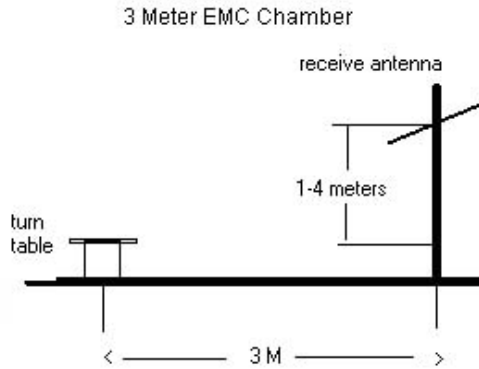




Figure 6-5. Test Instrument & Measurement Setup



Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The “H” positioning is defined with the EUT lying flat on the test surface, the “H2” positioning is defined with the EUT standing up on its side, and the “V” positioning is defined with the EUT standing upright. 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) The unit was tested with its standard battery.

FCC ID: ZNFLS996	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		 Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset	Page 113 of 139



Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Battery	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	Ant. Pol. [H/V]	EUT Pol.	ERP [dBm]	ERP [Watts]	Margin [dB]
699.70	1.4	QPSK	Standard	1 / 0	13.47	2.71	V	V	16.18	0.041	-18.59
707.50	1.4	QPSK	Standard	1 / 0	14.38	2.71	V	V	17.09	0.051	-17.68
715.30	1.4	QPSK	Standard	1 / 5	12.84	2.71	V	V	15.55	0.036	-19.22
699.70	1.4	16-QAM	Standard	1 / 0	12.64	2.71	V	V	15.35	0.034	-19.42
707.50	1.4	16-QAM	Standard	1 / 0	13.42	2.71	V	V	16.13	0.041	-18.64
715.30	1.4	16-QAM	Standard	1 / 5	11.94	2.71	V	V	14.65	0.029	-20.12
700.50	3	QPSK	Standard	1 / 0	14.16	2.71	V	V	16.87	0.049	-17.90
707.50	3	QPSK	Standard	1 / 0	14.52	2.71	V	V	17.23	0.053	-17.54
714.50	3	QPSK	Standard	1 / 14	13.04	2.71	V	V	15.75	0.038	-19.02
700.50	3	16-QAM	Standard	1 / 0	13.34	2.71	V	V	16.05	0.040	-18.72
707.50	3	16-QAM	Standard	1 / 0	13.70	2.71	V	V	16.41	0.044	-18.36
714.50	3	16-QAM	Standard	1 / 14	12.11	2.71	V	V	14.82	0.030	-19.95
701.50	5	QPSK	Standard	1 / 0	14.02	2.71	V	V	16.73	0.047	-18.04
707.50	5	QPSK	Standard	1 / 0	14.22	2.71	V	V	16.93	0.049	-17.84
713.50	5	QPSK	Standard	1 / 0	12.78	2.71	V	V	15.49	0.035	-19.28
701.50	5	16-QAM	Standard	1 / 0	13.14	2.71	V	V	15.85	0.038	-18.92
707.50	5	16-QAM	Standard	1 / 0	13.21	2.71	V	V	15.92	0.039	-18.85
713.50	5	16-QAM	Standard	1 / 0	11.93	2.71	V	V	14.64	0.029	-20.13
704.00	10	QPSK	Standard	1 / 49	14.00	2.71	V	V	16.71	0.047	-18.06
707.50	10	QPSK	Standard	25 / 12	12.92	2.71	V	V	15.63	0.037	-19.14
711.00	10	QPSK	Standard	1 / 0	14.21	2.71	V	V	16.92	0.049	-17.85
704.00	10	16-QAM	Standard	1 / 49	13.17	2.71	V	V	15.88	0.039	-18.89
707.50	10	16-QAM	Standard	1 / 0	11.86	2.71	V	V	14.57	0.029	-20.20
711.00	10	16-QAM	Standard	1 / 0	13.38	2.71	V	V	16.09	0.041	-18.68

Table 6-2. ERP Data (Band 12)

FCC ID: ZNFLS996	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 114 of 139



Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Battery	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	Ant. Pol. [H/V]	EUT Pol.	ERP [dBm]	ERP [Watts]	Margin [dB]
824.70	1.4	QPSK	Standard	1 / 5	16.91	3.01	V	V	19.92	0.098	-18.54
836.50	1.4	QPSK	Standard	1 / 0	16.91	3.15	V	V	20.06	0.101	-18.40
848.30	1.4	QPSK	Standard	1 / 0	14.61	3.28	V	V	17.89	0.062	-20.56
824.70	1.4	16-QAM	Standard	1 / 5	15.89	3.01	V	V	18.90	0.078	-19.56
836.50	1.4	16-QAM	Standard	1 / 0	15.83	3.15	V	V	18.98	0.079	-19.48
848.30	1.4	16-QAM	Standard	1 / 0	13.59	3.28	V	V	16.87	0.049	-21.58
825.50	3	QPSK	Standard	1 / 0	17.19	3.02	V	V	20.21	0.105	-18.25
836.50	3	QPSK	Standard	1 / 0	16.78	3.15	V	V	19.93	0.098	-18.53
847.50	3	QPSK	Standard	1 / 0	14.51	3.27	V	V	17.78	0.060	-20.67
825.50	3	16-QAM	Standard	1 / 0	16.23	3.02	V	V	19.25	0.084	-19.21
836.50	3	16-QAM	Standard	1 / 0	15.66	3.15	V	V	18.81	0.076	-19.65
847.50	3	16-QAM	Standard	1 / 0	13.43	3.27	V	V	16.70	0.047	-21.75
826.50	5	QPSK	Standard	1 / 0	17.38	3.03	V	V	20.41	0.110	-18.04
836.50	5	QPSK	Standard	1 / 0	17.05	3.15	V	V	20.20	0.105	-18.26
846.50	5	QPSK	Standard	1 / 24	13.64	3.26	V	V	16.90	0.049	-21.55
826.50	5	16-QAM	Standard	1 / 0	16.36	3.03	V	V	19.39	0.087	-19.06
836.50	5	16-QAM	Standard	1 / 0	16.06	3.15	V	V	19.21	0.083	-19.25
846.50	5	16-QAM	Standard	1 / 24	12.83	3.26	V	V	16.09	0.041	-22.36
829.00	10	QPSK	Standard	1 / 49	16.97	3.06	V	V	20.03	0.101	-18.42
836.50	10	QPSK	Standard	1 / 0	17.09	3.15	V	V	20.24	0.106	-18.22
844.00	10	QPSK	Standard	1 / 0	15.33	3.23	V	V	18.56	0.072	-19.89
829.00	10	16-QAM	Standard	1 / 49	15.94	3.06	V	V	19.00	0.079	-19.45
836.50	10	16-QAM	Standard	1 / 0	16.00	3.15	V	V	19.15	0.082	-19.31
844.00	10	16-QAM	Standard	1 / 0	14.35	3.23	V	V	17.58	0.057	-20.87
831.50	15	QPSK	Standard	1 / 0	17.25	3.09	V	V	20.34	0.108	-18.11
831.50	15	16-QAM	Standard	1 / 0	16.15	3.09	V	V	19.24	0.084	-19.21

Table 6-3. ERP Data (Band 26)

FCC ID: ZNFLS996	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 115 of 139



Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Battery	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	Ant. Pol. [H/V]	EUT Pol.	EIRP [dBm]	EIRP [Watts]	Margin [dB]
1710.70	1.4	QPSK	Standard	1 / 0	8.83	9.29	V	H	18.12	0.065	-11.88
1732.50	1.4	QPSK	Standard	1 / 5	10.55	9.34	V	H	19.89	0.097	-10.11
1754.30	1.4	QPSK	Standard	1 / 5	10.50	9.38	V	H	19.88	0.097	-10.12
1710.70	1.4	16-QAM	Standard	1 / 0	7.74	9.29	V	H	17.03	0.051	-12.97
1732.50	1.4	16-QAM	Standard	1 / 5	9.38	9.34	V	H	18.72	0.074	-11.28
1754.30	1.4	16-QAM	Standard	1 / 5	9.37	9.38	V	H	18.75	0.075	-11.25
1711.50	3	QPSK	Standard	1 / 14	8.35	9.30	V	H	17.65	0.058	-12.35
1732.50	3	QPSK	Standard	1 / 14	10.73	9.34	V	H	20.07	0.102	-9.93
1753.50	3	QPSK	Standard	1 / 14	10.62	9.38	V	H	20.00	0.100	-10.00
1711.50	3	16-QAM	Standard	1 / 14	7.24	9.30	V	H	16.54	0.045	-13.46
1732.50	3	16-QAM	Standard	1 / 14	9.60	9.34	V	H	18.94	0.078	-11.06
1753.50	3	16-QAM	Standard	1 / 14	9.40	9.38	V	H	18.78	0.076	-11.22
1712.50	5	QPSK	Standard	1 / 0	8.62	9.30	V	H	17.92	0.062	-12.08
1732.50	5	QPSK	Standard	1 / 24	11.12	9.34	V	H	20.46	0.111	-9.54
1752.50	5	QPSK	Standard	1 / 24	10.82	9.38	V	H	20.20	0.105	-9.80
1712.50	5	16-QAM	Standard	1 / 0	7.51	9.30	V	H	16.81	0.048	-13.19
1732.50	5	16-QAM	Standard	1 / 24	9.99	9.34	V	H	19.33	0.086	-10.67
1752.50	5	16-QAM	Standard	1 / 24	9.69	9.38	V	H	19.07	0.081	-10.93
1715.00	10	QPSK	Standard	1 / 0	8.26	9.30	V	H	17.56	0.057	-12.44
1732.50	10	QPSK	Standard	1 / 49	10.55	9.34	V	H	19.89	0.097	-10.11
1750.00	10	QPSK	Standard	1 / 0	10.50	9.37	V	H	19.87	0.097	-10.13
1715.00	10	16-QAM	Standard	1 / 0	7.15	9.30	V	H	16.45	0.044	-13.55
1732.50	10	16-QAM	Standard	1 / 49	9.43	9.34	V	H	18.77	0.075	-11.23
1750.00	10	16-QAM	Standard	1 / 0	10.47	9.37	V	H	19.84	0.096	-10.16
1717.50	15	QPSK	Standard	1 / 74	8.98	9.31	V	H	18.29	0.067	-11.71
1732.50	15	QPSK	Standard	1 / 74	10.61	9.34	V	H	19.95	0.099	-10.05
1747.50	15	QPSK	Standard	1 / 0	10.21	9.37	V	H	19.58	0.091	-10.42
1717.50	15	16-QAM	Standard	1 / 74	7.92	9.31	V	H	17.23	0.053	-12.77
1732.50	15	16-QAM	Standard	1 / 74	9.49	9.34	V	H	18.83	0.076	-11.17
1747.50	15	16-QAM	Standard	1 / 0	9.17	9.37	V	H	18.54	0.071	-11.46
1720.00	20	QPSK	Standard	1 / 99	9.61	9.31	V	H	18.92	0.078	-11.08
1732.50	20	QPSK	Standard	1 / 99	10.57	9.34	V	H	19.91	0.098	-10.09
1745.00	20	QPSK	Standard	1 / 0	10.72	9.36	V	H	20.08	0.102	-9.92
1720.00	20	16-QAM	Standard	1 / 99	8.44	9.31	V	H	17.75	0.060	-12.25
1732.50	20	16-QAM	Standard	1 / 99	9.47	9.34	V	H	18.81	0.076	-11.19
1745.00	20	16-QAM	Standard	1 / 0	9.59	9.36	V	H	18.95	0.079	-11.05

Table 6-4. EIRP Data (Band 4)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset	Page 116 of 139	

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Battery	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	Ant. Pol. [H/V]	EUT Pol.	EIRP [dBm]	EIRP [Watts]	Margin [dB]
1850.70	1.4	QPSK	Standard	3 / 2	12.23	9.38	V	H2	21.61	0.145	-11.40
1882.50	1.4	QPSK	Standard	3 / 2	9.65	9.33	V	H2	18.98	0.079	-14.03
1914.30	1.4	QPSK	Standard	1 / 0	11.24	9.28	V	H2	20.52	0.113	-12.49
1850.70	1.4	16-QAM	Standard	3 / 2	10.48	9.38	V	H2	19.86	0.097	-13.15
1882.50	1.4	16-QAM	Standard	3 / 2	8.23	9.33	V	H2	17.56	0.057	-15.45
1914.30	1.4	16-QAM	Standard	3 / 2	9.65	9.28	V	H2	18.93	0.078	-14.08
1851.50	3	QPSK	Standard	1 / 0	12.15	9.38	V	H2	21.53	0.142	-11.48
1882.50	3	QPSK	Standard	1 / 0	9.76	9.33	V	H2	19.09	0.081	-13.92
1913.50	3	QPSK	Standard	1 / 0	10.87	9.28	V	H2	20.15	0.104	-12.86
1851.50	3	16-QAM	Standard	1 / 0	11.21	9.38	V	H2	20.59	0.115	-12.42
1882.50	3	16-QAM	Standard	1 / 0	8.45	9.33	V	H2	17.78	0.060	-15.23
1913.50	3	16-QAM	Standard	1 / 0	9.40	9.28	V	H2	18.68	0.074	-14.33
1852.50	5	QPSK	Standard	1 / 0	11.72	9.38	V	H2	21.10	0.129	-11.91
1882.50	5	QPSK	Standard	1 / 24	10.26	9.33	V	H2	19.59	0.091	-13.42
1912.50	5	QPSK	Standard	1 / 0	10.91	9.29	V	H2	20.20	0.105	-12.82
1852.50	5	16-QAM	Standard	1 / 0	10.79	9.38	V	H2	20.17	0.104	-12.84
1882.50	5	16-QAM	Standard	1 / 24	8.84	9.33	V	H2	18.17	0.066	-14.84
1912.50	5	16-QAM	Standard	1 / 0	9.18	9.29	V	H2	18.47	0.070	-14.55
1855.00	10	QPSK	Standard	1 / 0	11.65	9.37	V	H2	21.02	0.127	-11.99
1882.50	10	QPSK	Standard	1 / 49	10.32	9.33	V	H2	19.65	0.092	-13.36
1910.00	10	QPSK	Standard	1 / 49	9.15	9.29	V	H2	18.44	0.070	-14.57
1855.00	10	16-QAM	Standard	1 / 0	10.18	9.37	V	H2	19.55	0.090	-13.46
1882.50	10	16-QAM	Standard	1 / 49	8.81	9.33	V	H2	18.14	0.065	-14.87
1910.00	10	16-QAM	Standard	1 / 49	7.93	9.29	V	H2	17.22	0.053	-15.79
1857.50	15	QPSK	Standard	1 / 0	11.94	9.37	V	H2	21.31	0.135	-11.70
1882.50	15	QPSK	Standard	1 / 74	10.66	9.33	V	H2	19.99	0.100	-13.02
1907.50	15	QPSK	Standard	1 / 74	10.58	9.29	V	H2	19.87	0.097	-13.14
1857.50	15	16-QAM	Standard	1 / 0	10.42	9.37	V	H2	19.79	0.095	-13.22
1882.50	15	16-QAM	Standard	1 / 74	9.68	9.33	V	H2	19.01	0.080	-14.00
1907.50	15	16-QAM	Standard	1 / 74	9.76	9.29	V	H2	19.05	0.080	-13.96
1860.00	20	QPSK	Standard	1 / 0	11.86	9.37	V	H2	21.23	0.133	-11.78
1882.50	20	QPSK	Standard	1 / 0	10.82	9.33	V	H2	20.15	0.103	-12.86
1905.00	20	QPSK	Standard	1 / 0	11.63	9.29	V	H2	20.92	0.124	-12.09
1860.00	20	16-QAM	Standard	1 / 0	10.38	9.37	V	H2	19.75	0.094	-13.26
1882.50	20	16-QAM	Standard	1 / 0	9.87	9.33	V	H2	19.20	0.083	-13.81
1905.00	20	16-QAM	Standard	1 / 0	10.10	9.29	V	H2	19.39	0.087	-13.62

Table 6-5. EIRP Data (Band 25)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset	Page 117 of 139	

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Battery	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	Ant. Pol. [H/V]	EUT Pol.	EIRP [dBm]	EIRP [Watts]	Margin [dB]
2499.00	5	QPSK	Standard	1 / 0	16.46	9.12	V	H	25.58	0.362	-7.43
2593.00	5	QPSK	Standard	1 / 24	17.08	8.52	V	H	25.60	0.363	-7.41
2687.30	5	QPSK	Standard	1 / 0	18.16	8.70	V	H	26.86	0.486	-6.15
2499.00	5	16-QAM	Standard	1 / 0	15.70	9.12	V	H	24.82	0.304	-8.19
2593.00	5	16-QAM	Standard	1 / 24	16.25	8.52	V	H	24.77	0.300	-8.24
2687.30	5	16-QAM	Standard	1 / 0	17.61	8.70	V	H	26.31	0.428	-6.70
2502.00	10	QPSK	Standard	1 / 0	15.23	9.11	V	H	24.34	0.272	-8.67
2590.00	10	QPSK	Standard	1 / 49	16.61	8.54	V	H	25.15	0.327	-7.86
2684.50	10	QPSK	Standard	1 / 49	16.91	8.70	V	H	25.61	0.364	-7.40
2502.00	10	16-QAM	Standard	1 / 0	14.25	9.11	V	H	23.36	0.217	-9.65
2590.00	10	16-QAM	Standard	1 / 49	14.94	8.54	V	H	23.48	0.223	-9.53
2684.50	10	16-QAM	Standard	1 / 49	15.42	8.70	V	H	24.12	0.258	-8.89
2504.70	15	QPSK	Standard	1 / 0	15.80	9.09	V	H	24.89	0.308	-8.12
2593.00	15	QPSK	Standard	1 / 74	17.05	8.52	V	H	25.57	0.360	-7.44
2681.80	15	QPSK	Standard	1 / 74	17.22	8.69	V	H	25.91	0.390	-7.10
2504.70	15	16-QAM	Standard	1 / 0	14.44	9.09	V	H	23.53	0.225	-9.48
2593.00	15	16-QAM	Standard	1 / 74	15.39	8.52	V	H	23.91	0.246	-9.10
2681.80	15	16-QAM	Standard	1 / 74	15.79	8.69	V	H	24.48	0.281	-8.53
2507.50	20	QPSK	Standard	1 / 0	15.34	9.07	V	H	24.41	0.276	-8.60
2590.00	20	QPSK	Standard	1 / 99	16.36	8.54	V	H	24.90	0.309	-8.11
2679.00	20	QPSK	Standard	1 / 99	17.26	8.68	V	H	25.94	0.393	-7.07
2507.30	20	16-QAM	Standard	1 / 0	14.18	9.07	V	H	23.25	0.212	-9.76
2590.00	20	16-QAM	Standard	1 / 99	15.29	8.54	V	H	23.83	0.241	-9.18
2679.00	20	16-QAM	Standard	1 / 99	16.38	8.68	V	H	25.06	0.321	-7.95

Table 6-6. EIRP Data (Band 41)

FCC ID: ZNFLS996	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 118 of 139

6.7 Radiated Spurious Emissions Measurements

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

Test Overview

Radiated spurious emissions measurements are performed using the substitution method described in ANSI/TIA-603-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 v02r01 – 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

Test Setup

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

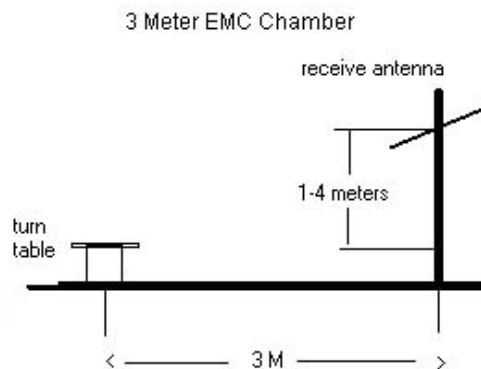



Figure 6-6. Test Instrument & Measurement Setup

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset	Page 119 of 139	

Test Notes

- 1) The EUT was tested in three orthogonal planes and in all possible test configurations and positioning. The “H” positioning is defined with the EUT lying flat on the test surface, the “H2” positioning is defined with the EUT standing up on its side, and the “V” positioning is defined with the EUT standing upright. 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) The 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.

OPERATING FREQUENCY: 700.50 MHz
 CHANNEL: 23025
 MEASURED OUTPUT POWER: 16.87 dBm = 0.049 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: ~~43 + 10 log₁₀(W)~~ = 29.87 dBc

Frequency [MHz]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	Ant. Pol. [H/V]	EUT Pol. [H/H2/V]	[dBc]
1401.00	-57.31	2.43	-54.88	H	H	71.8
2101.50	-56.32	2.95	-53.37	H	H	70.2
2802.00	-64.25	4.76	-59.49	H	H	76.4

Table 6-7. Radiated Spurious Data (Band 12 – Low Channel)

OPERATING FREQUENCY: 707.50 MHz
 CHANNEL: 23095
 MEASURED OUTPUT POWER: 17.23 dBm = 0.053 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 30.23 dBc


Frequency [MHz]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	Ant. Pol. [H/V]	EUT Pol. [H/H2/V]	[dBc]
1415.00	-61.01	2.59	-58.42	H	H	75.7
2122.50	-59.74	3.02	-56.73	H	H	74.0
2830.00	-63.61	4.74	-58.87	H	H	76.1

Table 6-8. Radiated Spurious Data (Band 12 – Mid Channel)

OPERATING FREQUENCY: 714.50 MHz
 CHANNEL: 23165
 MEASURED OUTPUT POWER: 15.75 dBm = 0.038 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 3.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 28.75 dBc

Frequency [MHz]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	Ant. Pol. [H/V]	EUT Pol. [H/H2/V]	[dBc]
1429.00	-56.16	2.74	-53.41	H	H	69.2
2143.50	-58.43	3.08	-55.35	H	H	71.1
2858.00	-63.77	4.72	-59.04	H	H	74.8

Table 6-9. Radiated Spurious Data (Band 12 – High Channel)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 121 of 139

OPERATING FREQUENCY: 826.50 MHz
 CHANNEL: 26815
 MEASURED OUTPUT POWER: 20.41 dBm = 0.110 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 33.41 dBc

Frequency [MHz]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Ant. Pol. [H/V]	EUT Pol. [H/H2/V]	[dBc]
1653.00	-62.39	3.57	-58.82	V	V	79.2
2479.50	-62.77	3.53	-59.24	V	V	79.6
3306.00	-63.90	5.66	-58.25	V	V	78.7

Table 6-10. Radiated Spurious Data (Band 26 – Low Channel)

OPERATING FREQUENCY: 836.50 MHz
 CHANNEL: 26915
 MEASURED OUTPUT POWER: 20.20 dBm = 0.105 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 33.20 dBc

Frequency [MHz]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	Ant. Pol. [H/V]	EUT Pol. [H/H2/V]	[dBc]
1673.00	-61.79	3.50	-58.29	V	V	78.5
2509.50	-62.20	3.53	-58.67	V	V	78.9
3346.00	-64.64	5.77	-58.87	V	V	79.1

Table 6-11. Radiated Spurious Data (Band 26 – Mid Channel)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset	Page 122 of 139	

OPERATING FREQUENCY: 846.50 MHz
 CHANNEL: 27015
 MEASURED OUTPUT POWER: 16.90 dBm = 0.049 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 29.90 dBc

Frequency [MHz]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	Ant. Pol. [H/V]	EUT Pol. [H/H2/V]	[dBc]
1693.00	-58.11	3.42	-54.70	V	V	71.6
2539.50	-62.54	3.60	-58.94	V	V	75.8
3386.00	-63.84	5.87	-57.96	V	V	74.9

Table 6-12. Radiated Spurious Data (Band 26 – High Channel)

OPERATING FREQUENCY: 1712.50 MHz
 CHANNEL: 19975
 MEASURED OUTPUT POWER: 17.92 dBm = 0.062 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 30.92 dBc

Frequency [MHz]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Ant. Pol. [H/V]	EUT Pol. [H/H2/V]	[dBc]
3425.00	-59.68	9.68	-49.99	H	H2	67.9
5137.50	-58.53	10.68	-47.85	H	H2	65.8
6850.00	-61.14	11.74	-49.40	H	H2	67.3
8562.50	-52.22	11.05	-41.17	H	H2	59.1
10275.00	-58.68	12.27	-46.42	H	H2	64.3
11987.50	-56.85	12.48	-44.37	H	H2	62.3

Table 6-13. Radiated Spurious Data (Band 4 – Low Channel)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 123 of 139

OPERATING FREQUENCY: 1732.50 MHz
 CHANNEL: 20175
 MEASURED OUTPUT POWER: 20.46 dBm = 0.111 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 33.46 dBc

Frequency [MHz]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Ant. Pol. [H/V]	EUT Pol. [H/H2/V]	[dBc]
3465.00	-58.81	9.71	-49.10	H	H2	69.6
5197.50	-58.61	10.59	-48.02	H	H2	68.5
6930.00	-61.39	11.75	-49.64	H	H2	70.1
8662.50	-54.43	11.06	-43.36	H	H2	63.8
10395.00	-58.88	12.37	-46.50	H	H2	67.0

Table 6-14. Radiated Spurious Data (Band 4 – Mid Channel)

OPERATING FREQUENCY: 1752.50 MHz
 CHANNEL: 20375
 MEASURED OUTPUT POWER: 20.20 dBm = 0.105 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 33.20 dBc

Frequency [MHz]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Ant. Pol. [H/V]	EUT Pol. [H/H2/V]	[dBc]
3505.00	-60.84	9.73	-51.11	H	H2	71.3
5257.50	-53.67	10.64	-43.03	H	H2	63.2
7010.00	-61.52	11.75	-49.76	H	H2	70.0
8762.50	-51.97	11.00	-40.96	H	H2	61.2
10515.00	-58.88	12.48	-46.41	H	H2	66.6

Table 6-15. Radiated Spurious Data (Band 4 – High Channel)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset	Page 124 of 139	

OPERATING FREQUENCY: 1850.70 MHz
 CHANNEL: 26047
 MEASURED OUTPUT POWER: 21.61 dBm = 0.145 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 34.61 dBc


Frequency [MHz]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Ant. Pol. [H/V]	EUT Pol. [H/H2/V]	[dBc]
3701.40	-59.96	8.40	-51.56	H	H	73.2
5552.10	-60.43	10.56	-49.87	H	H	71.5
7402.80	-61.53	12.05	-49.47	H	H	71.1
9253.50	-66.20	13.22	-52.98	H	H	74.6

Table 6-16. Radiated Spurious Data (Band 25 – Low Channel)

OPERATING FREQUENCY: 1882.50 MHz
 CHANNEL: 26365
 MEASURED OUTPUT POWER: 18.98 dBm = 0.079 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 31.98 dBc

Frequency [MHz]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Ant. Pol. [H/V]	EUT Pol. [H/H2/V]	[dBc]
3765.00	-58.94	8.38	-50.56	H	H	69.5
5647.50	-63.00	10.70	-52.30	H	H	71.3
7530.00	-65.73	12.11	-53.62	H	H	72.6

Table 6-17. Radiated Spurious Data (Band 25 – Mid Channel)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset	Page 125 of 139	

OPERATING FREQUENCY: 1914.30 MHz
 CHANNEL: 26683
 MEASURED OUTPUT POWER: 20.52 dBm = 0.113 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 1.4 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 33.52 dBc



Frequency [MHz]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Ant. Pol. [H/V]	EUT Pol. [H/H2/V]	[dBc]
3828.60	-55.38	8.42	-46.96	H	H	67.5
5742.90	-58.34	10.77	-47.57	H	H	68.1
7657.20	-61.97	12.24	-49.73	H	H	70.3
9571.50	-65.81	13.18	-52.63	H	H	73.2

Table 6-18. Radiated Spurious Data (Band 25 – High Channel)

OPERATING FREQUENCY: 2499.00 MHz
 CHANNEL: 39680
 MEASURED OUTPUT POWER: 25.58 dBm = 0.362 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10} (W) =$ 50.58 dBc

Frequency [MHz]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Ant. Pol. [H/V]	EUT Pol. [H/H2/V]	[dBc]
4998.00	-61.90	10.14	-51.76	V	H2	77.3
7497.00	-49.50	12.07	-37.43	V	H2	63.0
9996.00	-54.63	13.26	-41.37	V	H2	67.0
12495.00	-61.96	13.19	-48.77	V	H2	74.3

Table 6-19. Radiated Spurious Data (Band 41 – Low Channel)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset	Page 126 of 139	

OPERATING FREQUENCY: 2593.00 MHz
 CHANNEL: 40620
 MEASURED OUTPUT POWER: 25.60 dBm = 0.363 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W) =$ 50.60 dBc



Frequency [MHz]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Ant. Pol. [H/V]	EUT Pol. [H/H2/V]	[dBc]
5186.00	-59.25	10.31	-48.94	V	H2	74.5
7779.00	-41.26	12.30	-28.95	V	H2	54.6
10372.00	-56.74	13.19	-43.55	V	H2	69.1
12965.00	-61.53	13.41	-48.12	V	H2	73.7

Table 6-20. Radiated Spurious Data (Band 41 – Mid Channel)

OPERATING FREQUENCY: 2687.30 MHz
 CHANNEL: 41563
 MEASURED OUTPUT POWER: 26.86 dBm = 0.486 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W) =$ 51.86 dBc

Frequency [MHz]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	Ant. Pol. [H/V]	EUT Pol. [H/H2/V]	[dBc]
5374.60	-60.77	10.35	-50.42	V	H2	77.3
8061.90	-43.12	12.60	-30.52	V	H2	57.4
10749.20	-56.47	12.93	-43.54	V	H2	70.4
13436.50	-61.63	13.72	-47.91	V	H2	74.8

Table 6-21. Radiated Spurious Data (Band 41 – High Channel)

FCC ID: ZNFLS996			FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset	Page 127 of 139		

6.8 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

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset	Page 128 of 139	

Band 12 Frequency Stability Measurements

§2.1055 §27.54



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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	707,500,008	8	0.0000011
100 %		- 30	707,500,003	3	0.0000004
100 %		- 20	707,500,028	28	0.0000040
100 %		- 10	707,499,987	-13	-0.0000018
100 %		0	707,500,008	8	0.0000011
100 %		+ 10	707,499,997	-3	-0.0000004
100 %		+ 20	707,500,000	0	0.0000000
100 %		+ 30	707,499,995	-5	-0.0000007
100 %		+ 40	707,499,982	-18	-0.0000025
100 %		+ 50	707,499,980	-20	-0.0000028
BATT. ENDPOINT		3.40	+ 20	707,499,980	-20

Table 6-22. 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.

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset	Page 129 of 139	

Band 12 Frequency Stability Measurements
§2.1055 §27.54

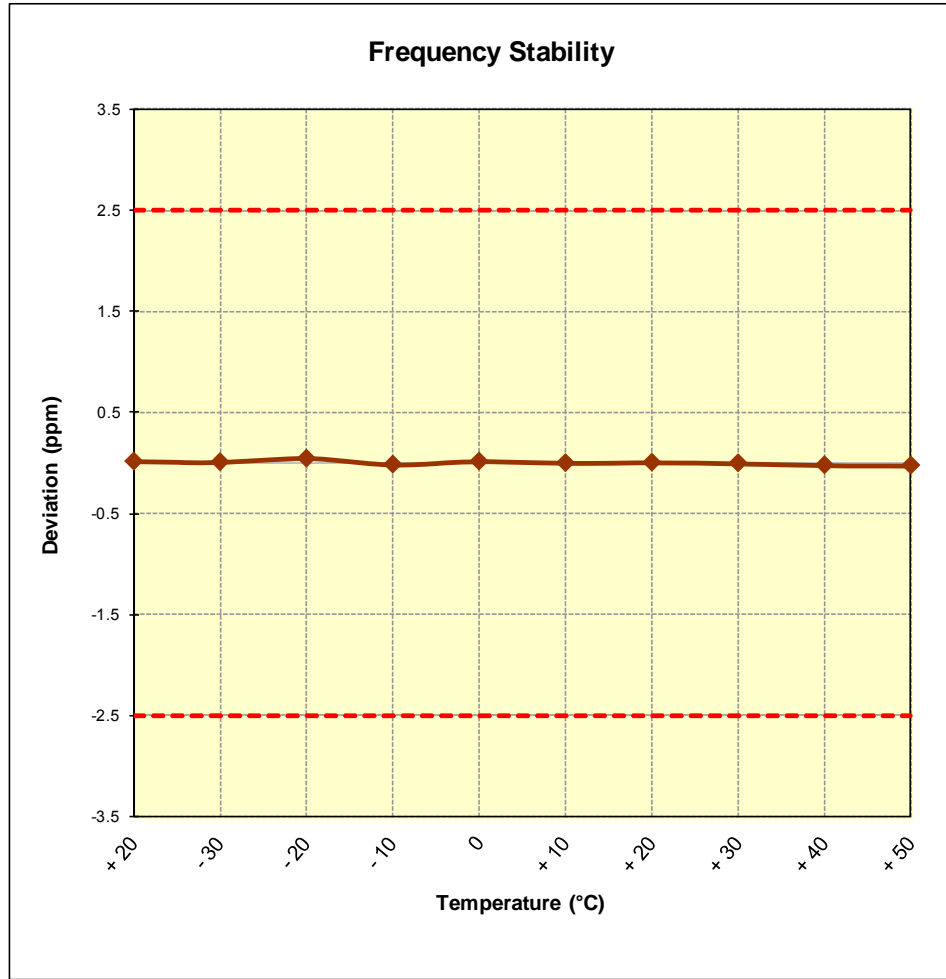


Figure 6-7. Frequency Stability Graph (Band 12)

FCC ID: ZNFLS996	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 130 of 139



Band 26 Frequency Stability Measurements

§2.1055 §22.355

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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	831,500,024	24	0.0000029
100 %		- 30	831,499,980	-20	-0.0000024
100 %		- 20	831,499,987	-13	-0.0000016
100 %		- 10	831,500,017	17	0.0000020
100 %		0	831,499,978	-22	-0.0000026
100 %		+ 10	831,500,004	4	0.0000005
100 %		+ 20	831,499,999	-1	-0.0000001
100 %		+ 30	831,499,983	-17	-0.0000020
100 %		+ 40	831,500,006	6	0.0000007
100 %		+ 50	831,499,979	-21	-0.0000025
BATT. ENDPOINT		3.40	+ 20	831,499,983	-17

Table 6-23. Frequency Stability Data (Band 26)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset	Page 131 of 139	

Band 26 Frequency Stability Measurements
§2.1055 §22.355

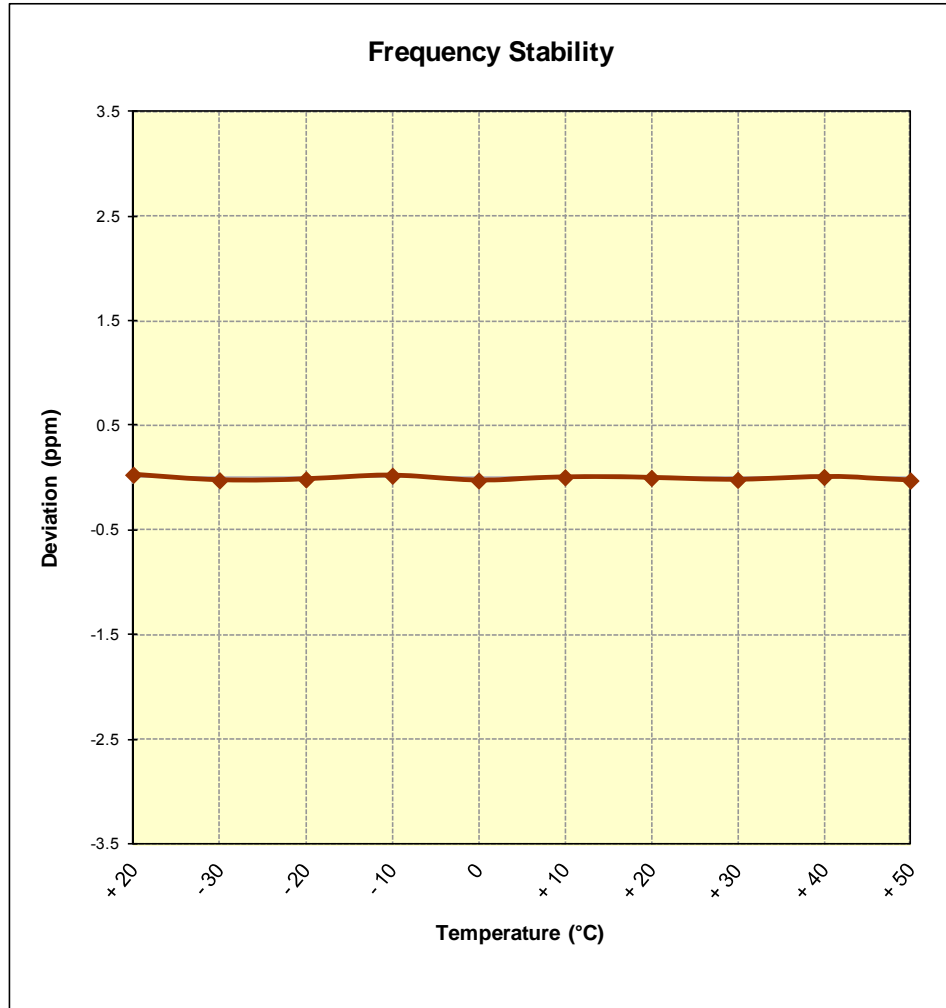


Figure 6-8. Frequency Stability Graph (Band 26)

FCC ID: ZNFLS996	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 132 of 139

Band 4 Frequency Stability Measurements
§2.1055 §§27.54


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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,732,499,998	-2	-0.0000001
100 %		- 30	1,732,500,027	27	0.0000016
100 %		- 20	1,732,500,008	8	0.0000005
100 %		- 10	1,732,499,997	-3	-0.0000002
100 %		0	1,732,500,000	0	0.0000000
100 %		+ 10	1,732,499,980	-20	-0.0000012
100 %		+ 20	1,732,500,013	13	0.0000008
100 %		+ 30	1,732,500,020	20	0.0000012
100 %		+ 40	1,732,499,991	-9	-0.0000005
100 %		+ 50	1,732,500,028	28	0.0000016
BATT. ENDPOINT	3.40	+ 20	1,732,499,995	-5	-0.0000003

Table 6-24. 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: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset	Page 133 of 139	

Band 4 Frequency Stability Measurements
§2.1055 §§27.54

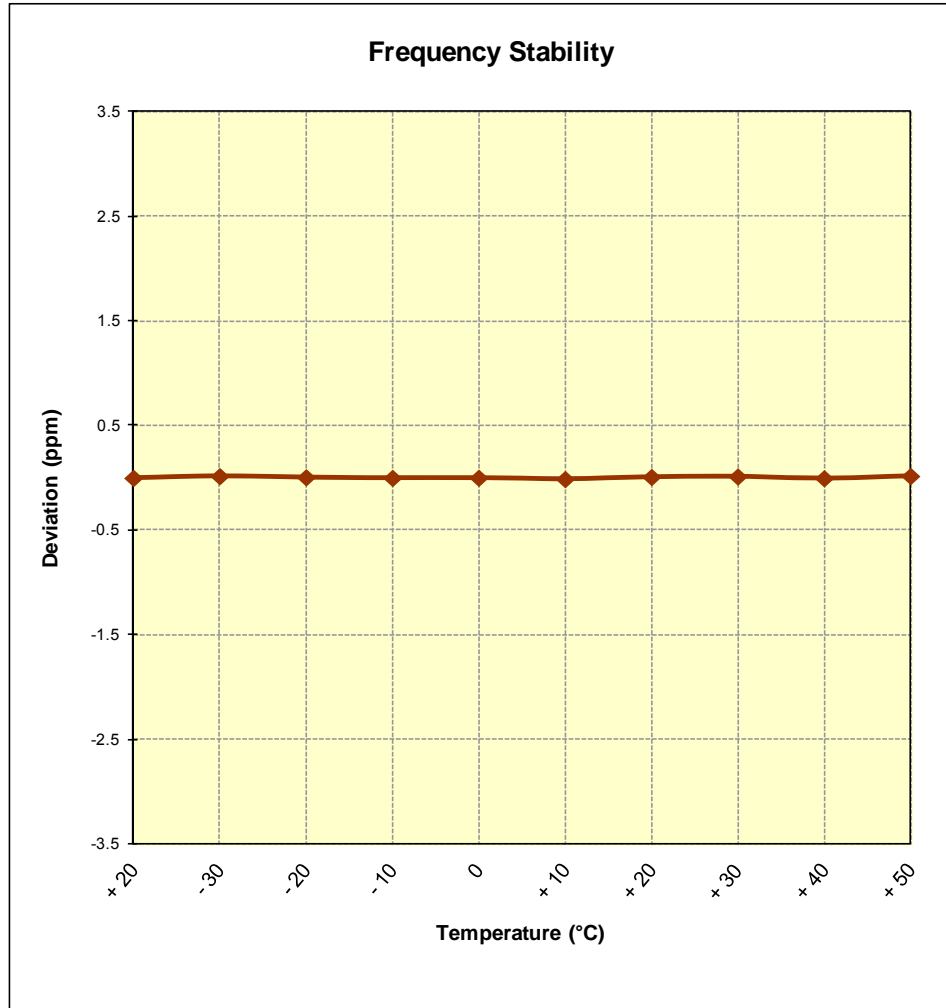




Figure 6-9. Frequency Stability Graph (Band 4)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset	Page 134 of 139	

Band 25 Frequency Stability Measurements
§2.1055 §24.235



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

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	1,882,500,004	4	0.0000002
100 %		- 30	1,882,499,985	-15	-0.0000008
100 %		- 20	1,882,499,984	-16	-0.0000008
100 %		- 10	1,882,499,974	-26	-0.0000014
100 %		0	1,882,499,993	-7	-0.0000004
100 %		+ 10	1,882,499,997	-3	-0.0000002
100 %		+ 20	1,882,499,984	-16	-0.0000008
100 %		+ 30	1,882,499,981	-19	-0.0000010
100 %		+ 40	1,882,499,973	-27	-0.0000014
100 %		+ 50	1,882,500,018	18	0.0000010
BATT. ENDPOINT	3.40	+ 20	1,882,499,986	-14	-0.0000007

Table 6-25. 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: ZNFLS996	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset	Page 135 of 139	

Band 25 Frequency Stability Measurements
§2.1055 §24.235

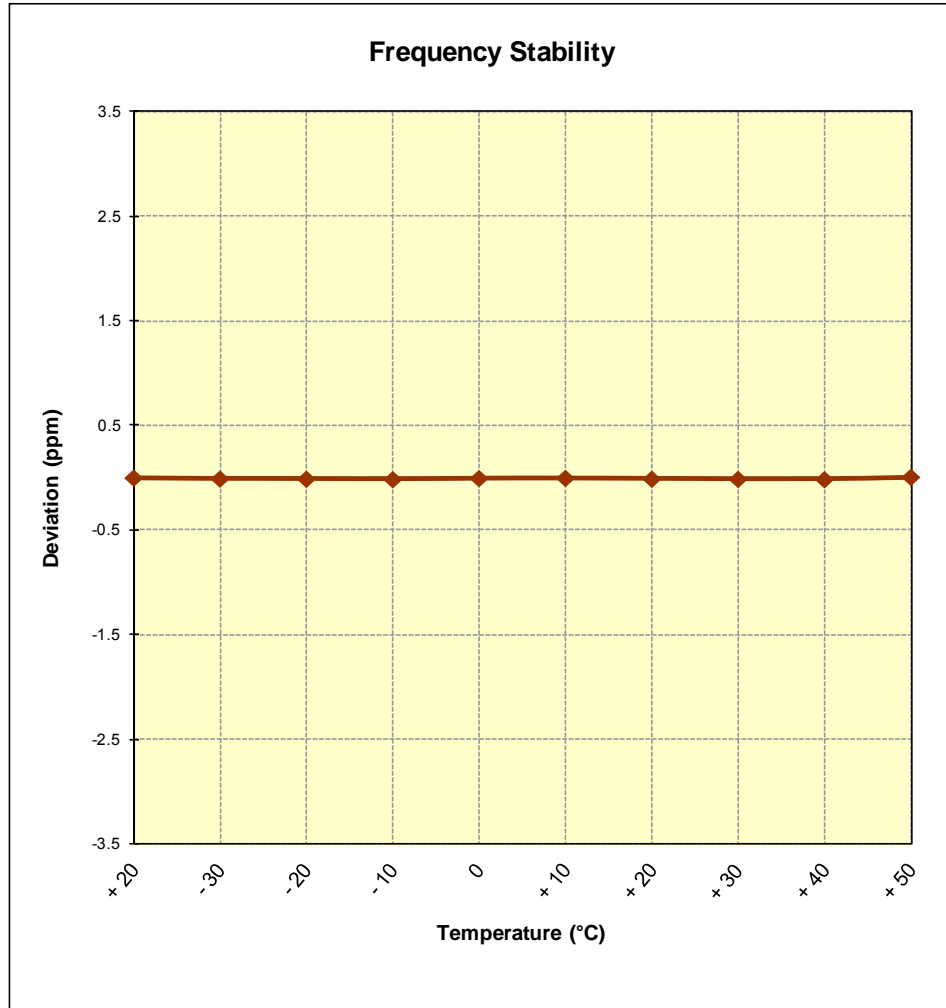




Figure 6-10. Frequency Stability Graph (Band 25)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 136 of 139

Band 41 Frequency Stability Measurements
§2.1055 §27.54



OPERATING FREQUENCY: 2,590,000,000 Hz
 CHANNEL: 40590
 REFERENCE VOLTAGE: 3.80 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.80	+ 20 (Ref)	2,589,999,988	-12	-0.0000005
100 %		- 30	2,590,000,014	14	0.0000005
100 %		- 20	2,589,999,980	-20	-0.0000008
100 %		- 10	2,589,999,996	-4	-0.0000002
100 %		0	2,589,999,978	-22	-0.0000008
100 %		+ 10	2,589,999,986	-14	-0.0000005
100 %		+ 20	2,589,999,980	-20	-0.0000008
100 %		+ 30	2,589,999,985	-15	-0.0000006
100 %		+ 40	2,590,000,002	2	0.0000001
100 %		+ 50	2,590,000,004	4	0.0000002
BATT. ENDPOINT	3.40	+ 20	2,590,000,006	6	0.0000002

Table 6-26. 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: ZNFLS996	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset		Page 137 of 139

Band 41 Frequency Stability Measurements
§2.1055 §27.54

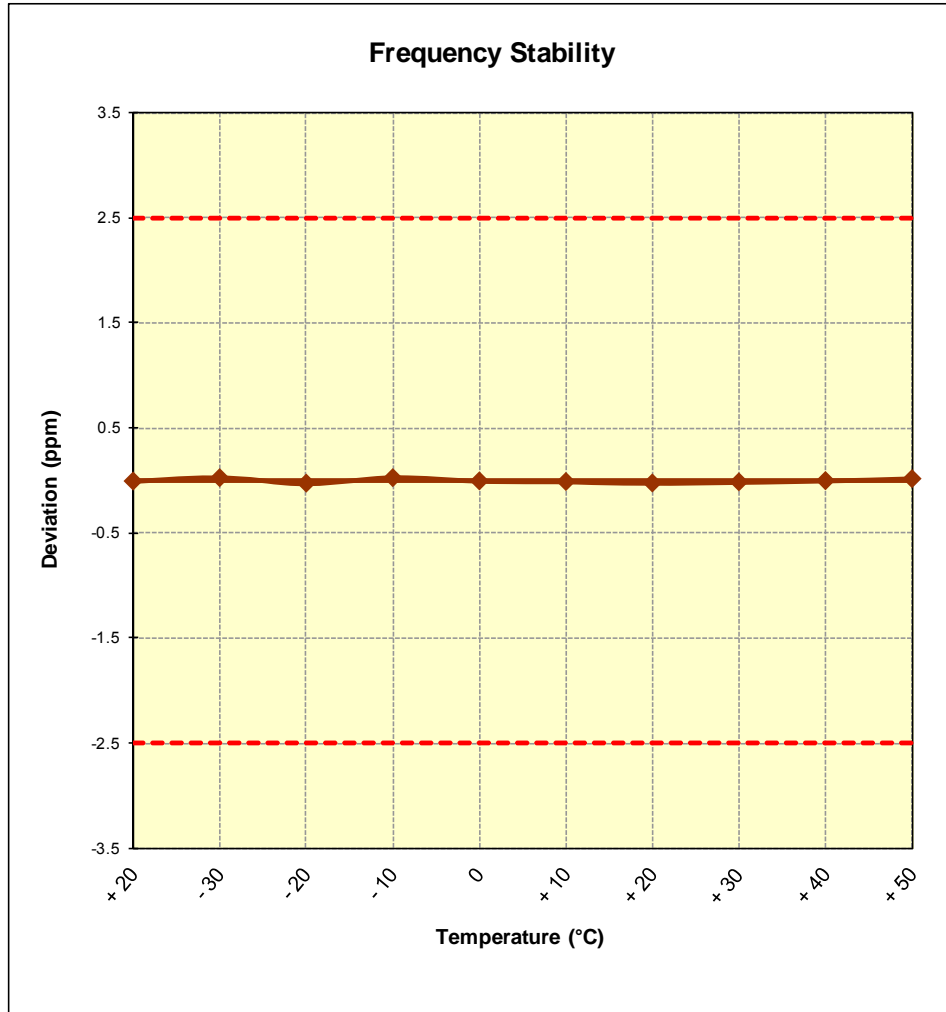






Figure 6-11. Frequency Stability Graph (Band 41)

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset	Page 138 of 139	

7.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **LG Electronics MobileComm U.S.A Portable Handset FCC ID: ZNFLS996** complies with all the requirements of Parts 22, 24, & 27 of the FCC rules for LTE operation only.

FCC ID: ZNFLS996		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1410202023.ZNF	Test Dates: 10/18 - 10/30/2014	EUT Type: Portable Handset	Page 139 of 139	