

7.4 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 for Band 7 and 41 is as noted in the Test Notes on the following page.

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

Test Procedure Used

KDB 971168 D01 v02r02 – Section 6.0

Test Settings

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW $\geq 1\%$ of the emission bandwidth
4. VBW $\geq 3 \times$ RBW
5. Detector = RMS
6. Number of sweep points $\geq 2 \times$ Span/RBW
7. Trace mode = trace average for continuous emissions, max hold for pulse emissions
8. Sweep time = auto couple
9. The trace was allowed to stabilize

Test Setup

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

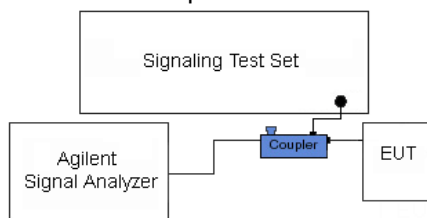


Figure 7-3. Test Instrument & Measurement Setup

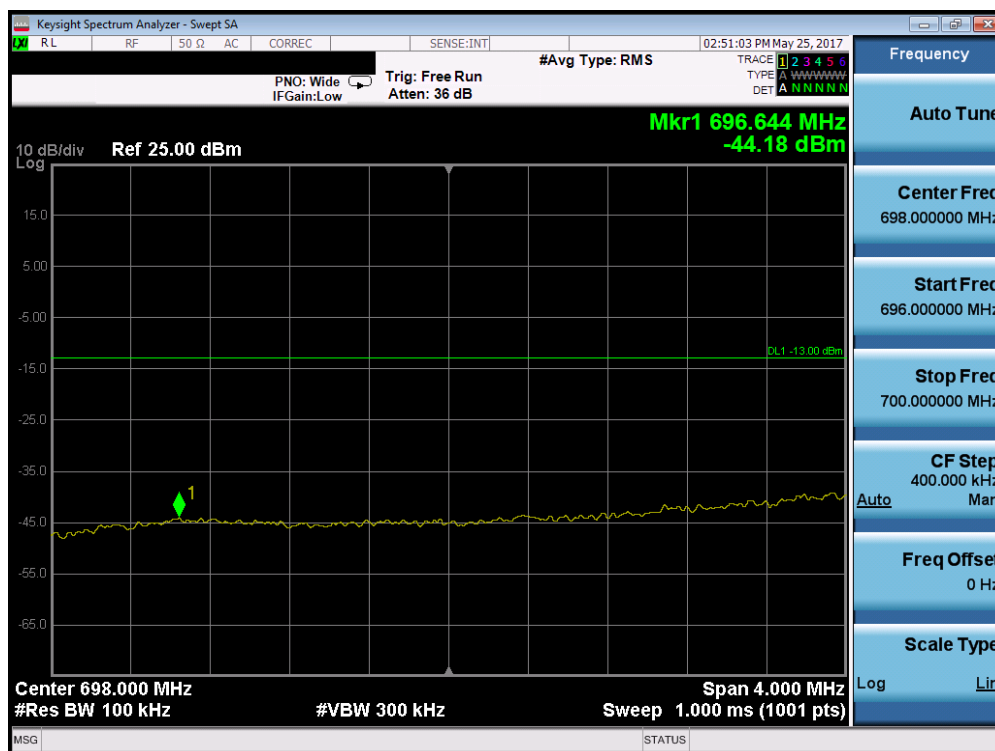
Test Notes

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

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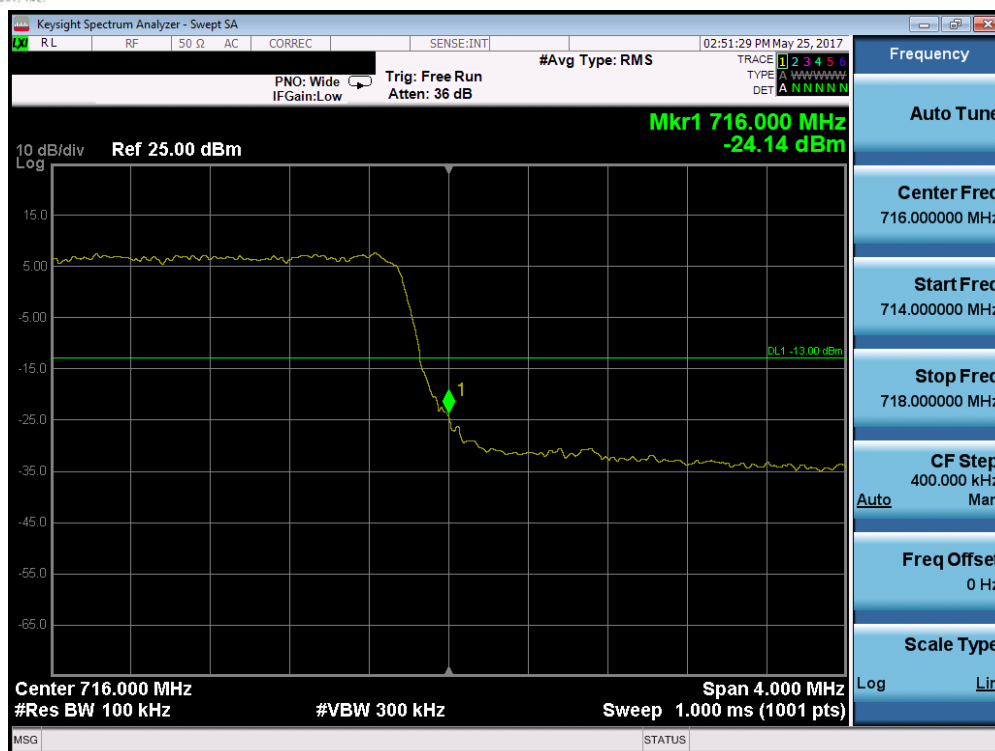
Per 27.53(g) for operations in the 698-746 MHz band, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30 kHz may be employed to demonstrate compliance with the out-of-band emissions limit.

Per 27.53(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 than $43 + 10 \log(P)$ dB on all frequencies between 2490.5 MHz and 2496 MHz and $55 + 10 \log(P)$ dB at or below 2490.5 MHz.

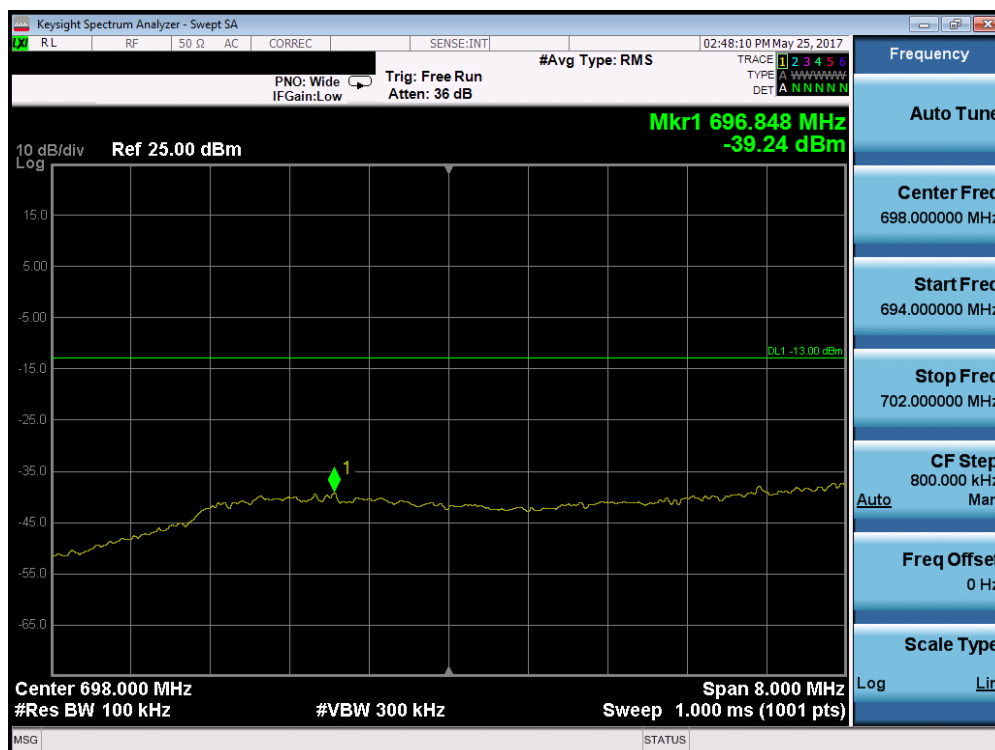


Plot 7-107. Lower Band Edge Plot (Band 17 – 5.0MHz QPSK – RB Size 25)

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Plot 7-108. Upper Band Edge Plot (Band 17 – 5.0MHz QPSK – RB Size 25)

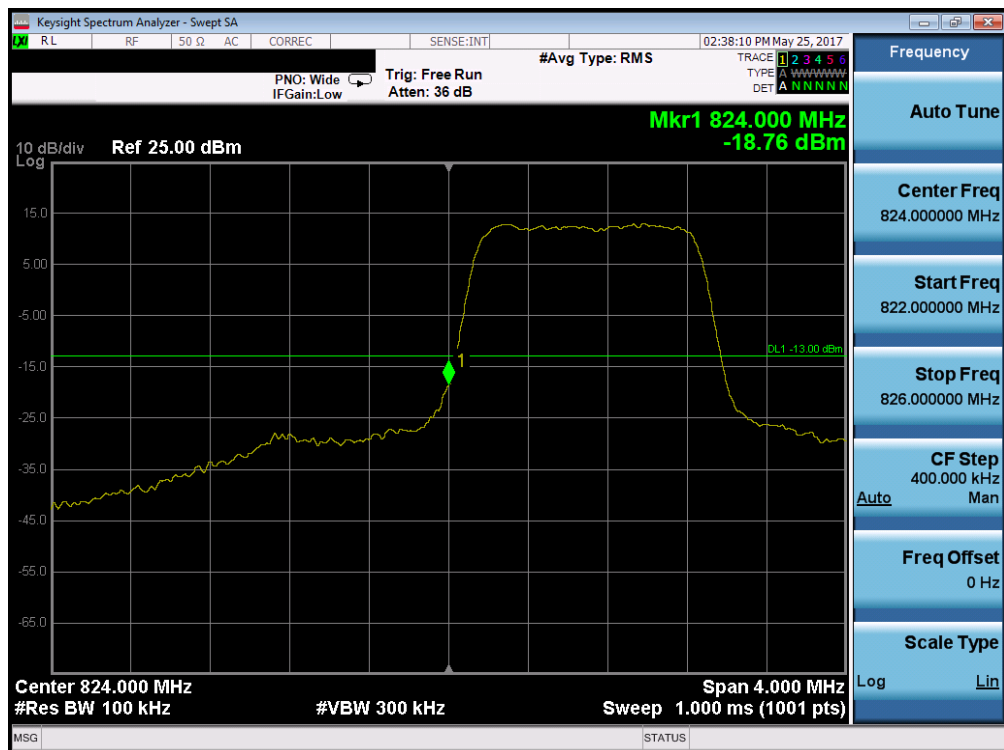


Plot 7-109. Lower Band Edge Plot (Band 17 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
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Plot 7-110. Upper Band Edge Plot (Band 17 – 10.0MHz QPSK – RB Size 50)

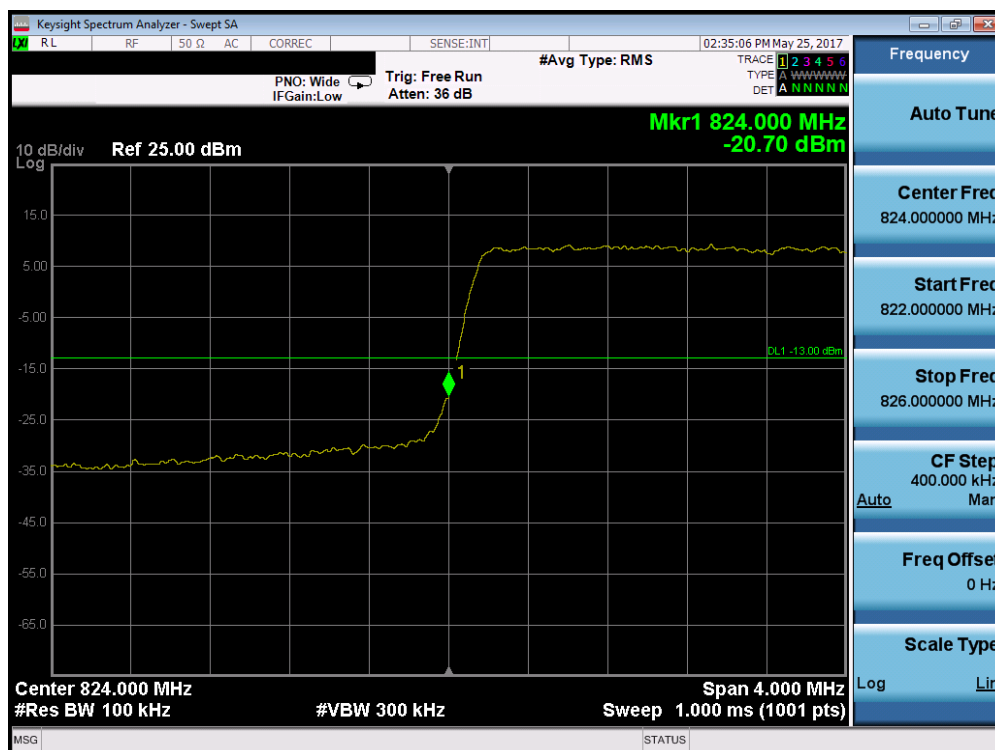


Plot 7-111. Lower Band Edge Plot (Band 5 – 1.4MHz QPSK – RB Size 6)

FCC ID: A3LSMT385	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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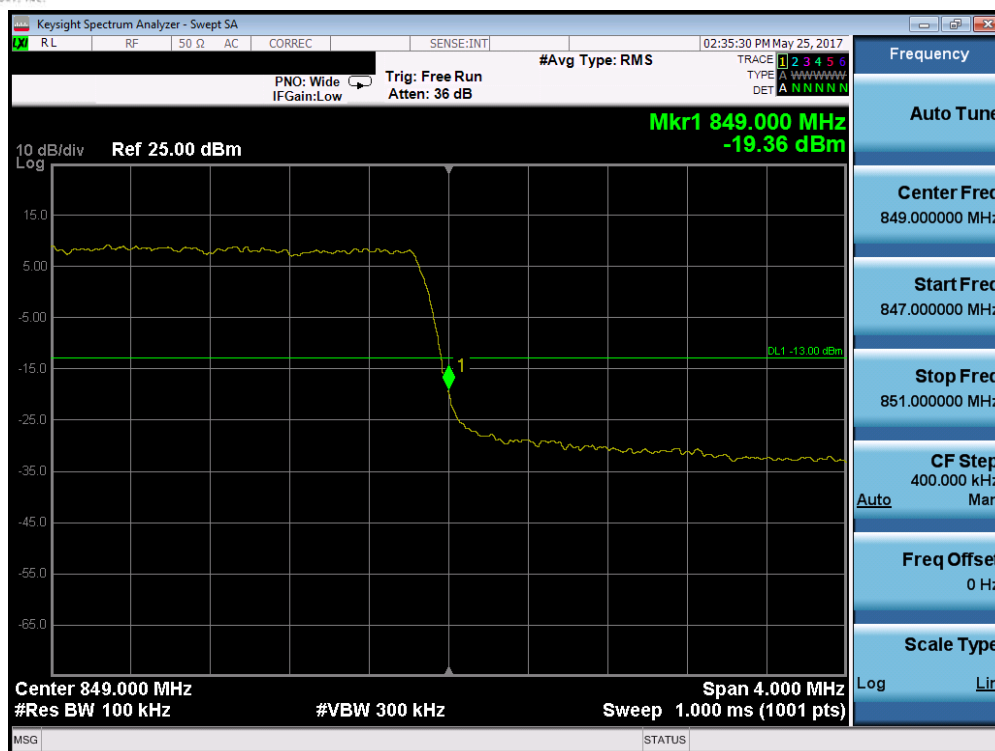


Plot 7-112. Upper Band Edge Plot (Band 5 - 1.4MHz QPSK - RB Size 6)

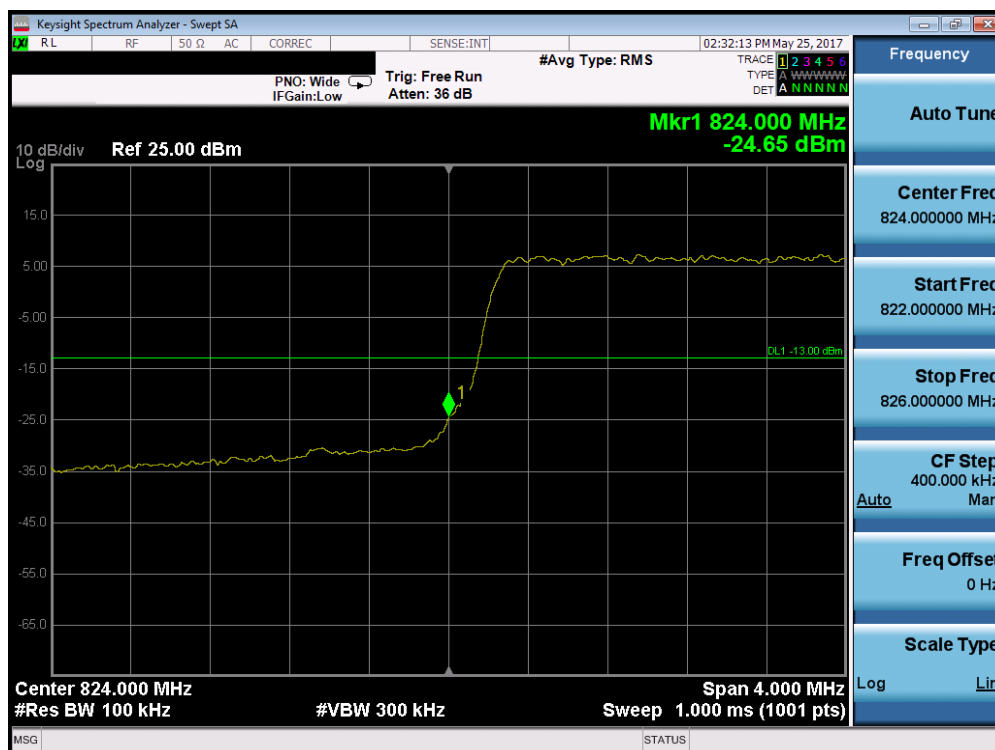


Plot 7-113. Lower Band Edge Plot (Band 5 - 3.0MHz QPSK - RB Size 15)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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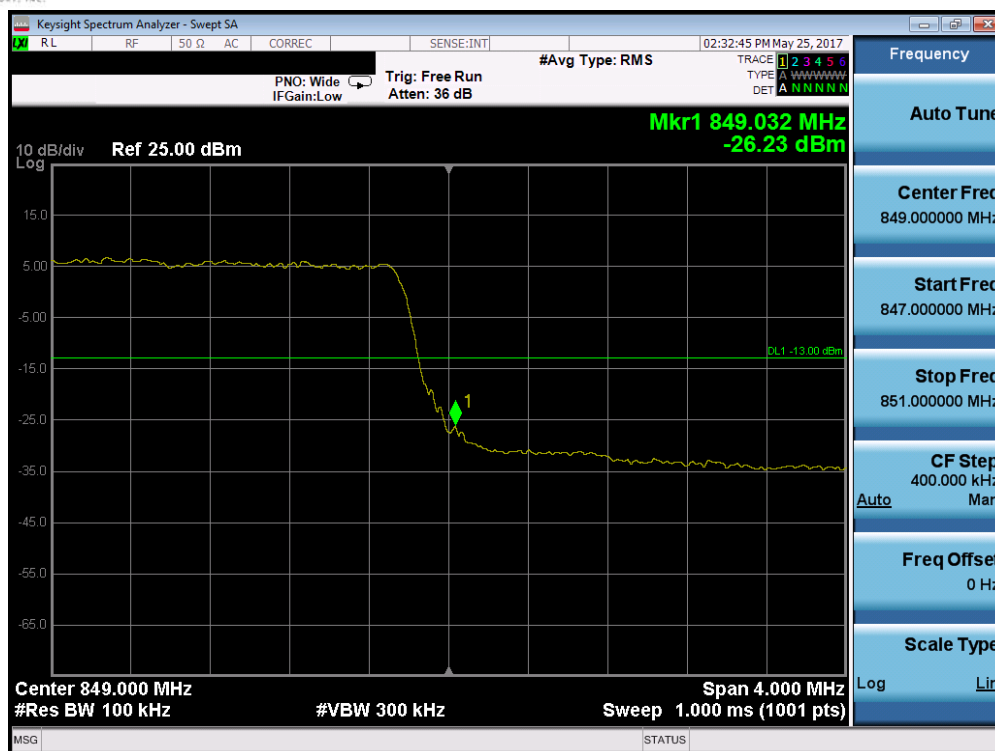


Plot 7-114. Upper Band Edge Plot (Band 5 – 3.0MHz QPSK – RB Size 15)

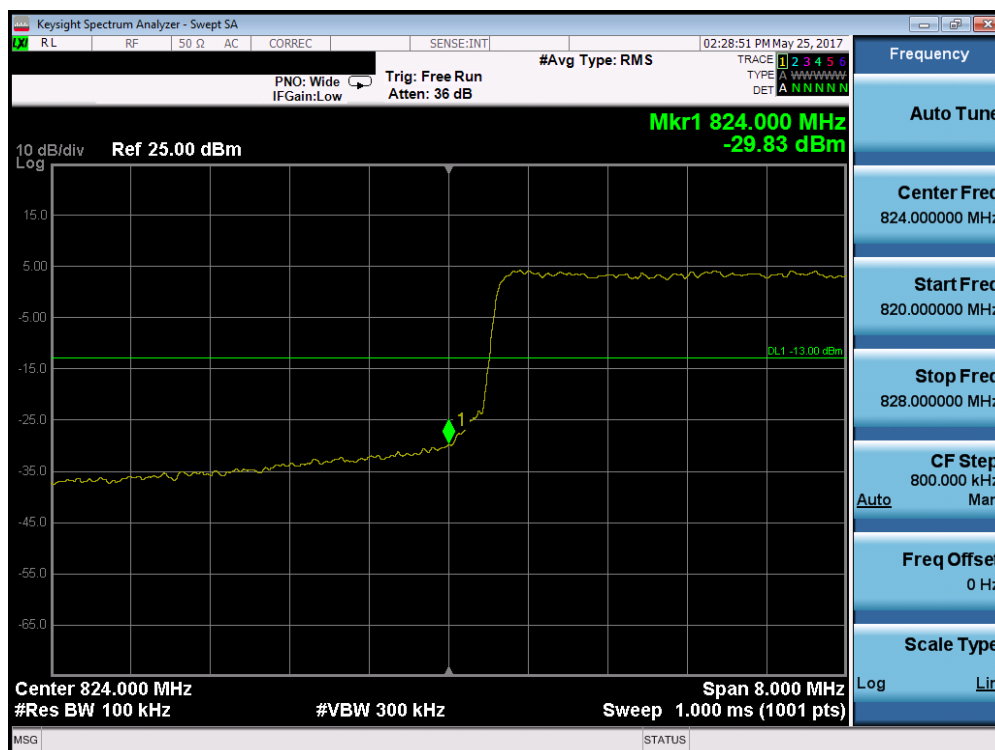


Plot 7-115. Lower Band Edge Plot (Band 5 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Plot 7-116. Upper Band Edge Plot (Band 5 – 5.0MHz QPSK – RB Size 25)

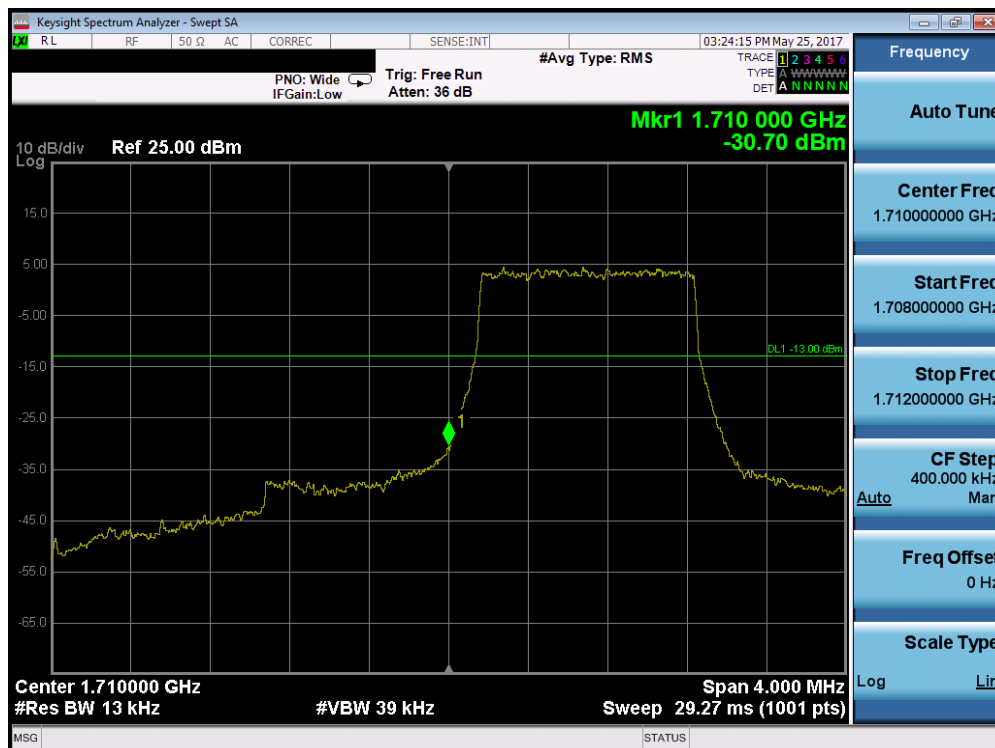


Plot 7-117. Lower Band Edge Plot (Band 5 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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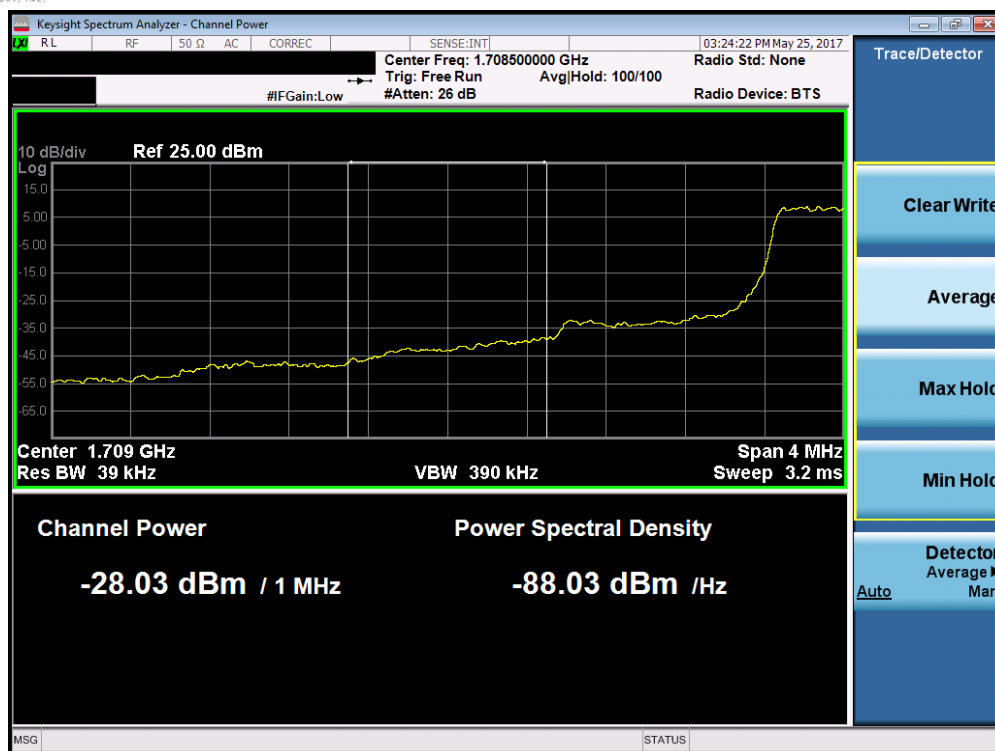


Plot 7-118. Upper Band Edge Plot (Band 5 – 10.0MHz QPSK – RB Size 50)

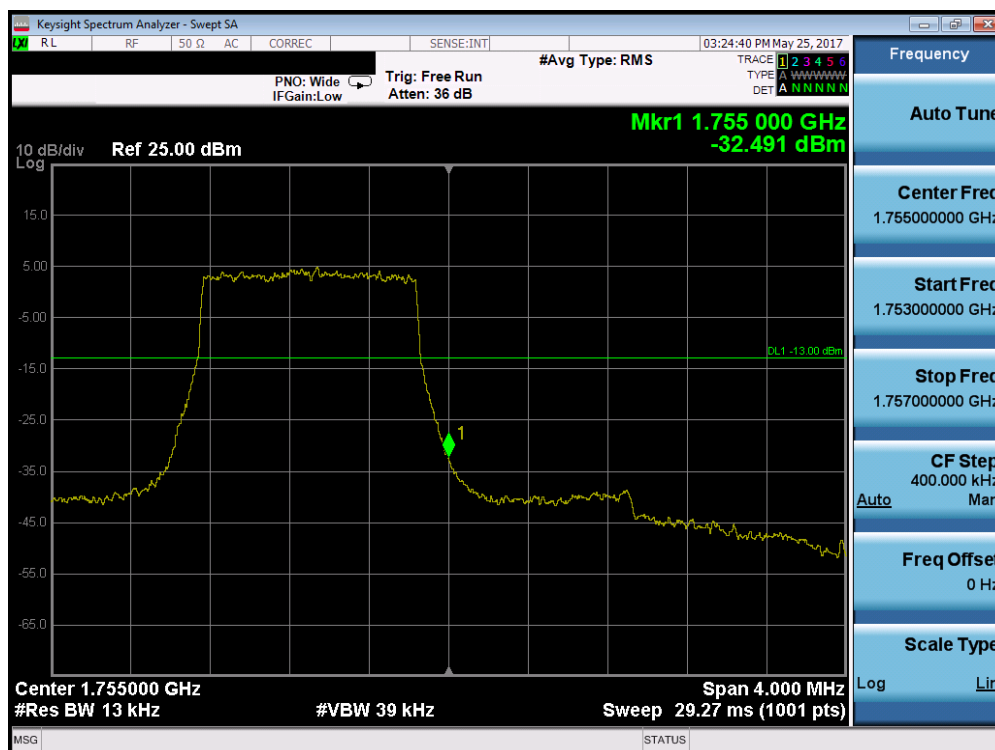


Plot 7-119. Lower Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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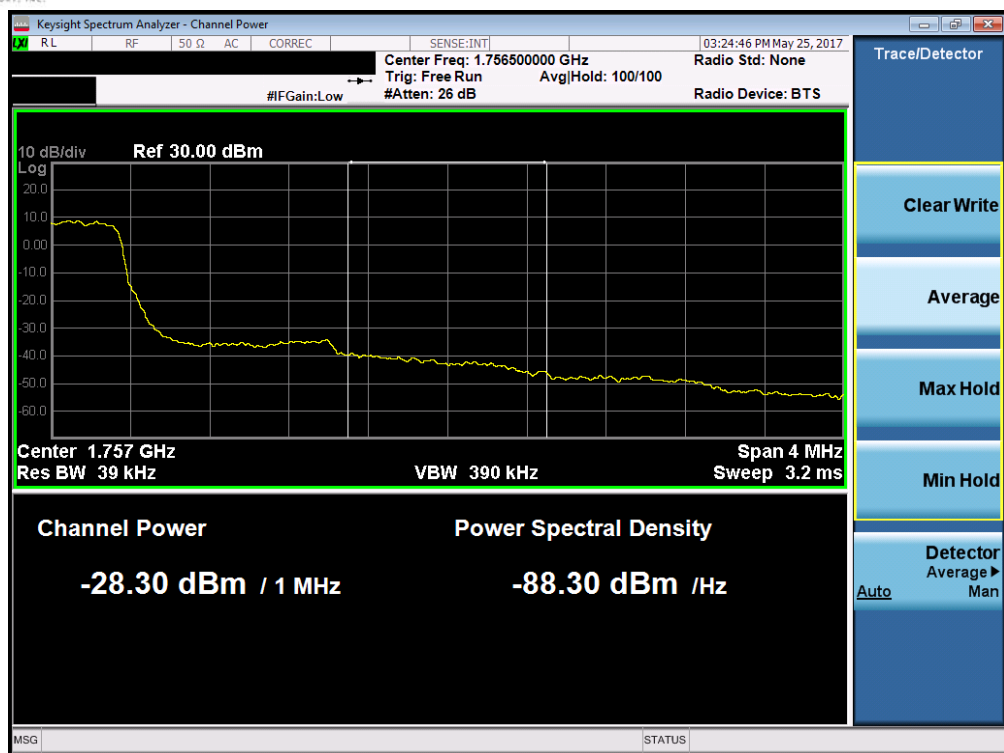


Plot 7-120. Lower Extended Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

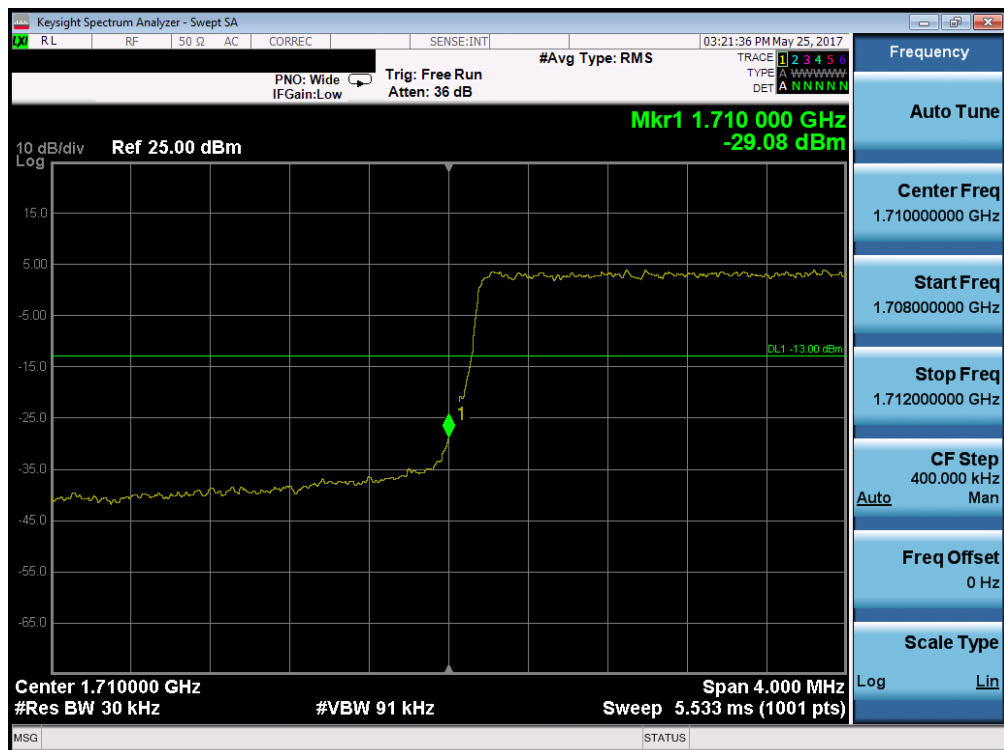


Plot 7-121. Upper Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

FCC ID: A3LSMT385	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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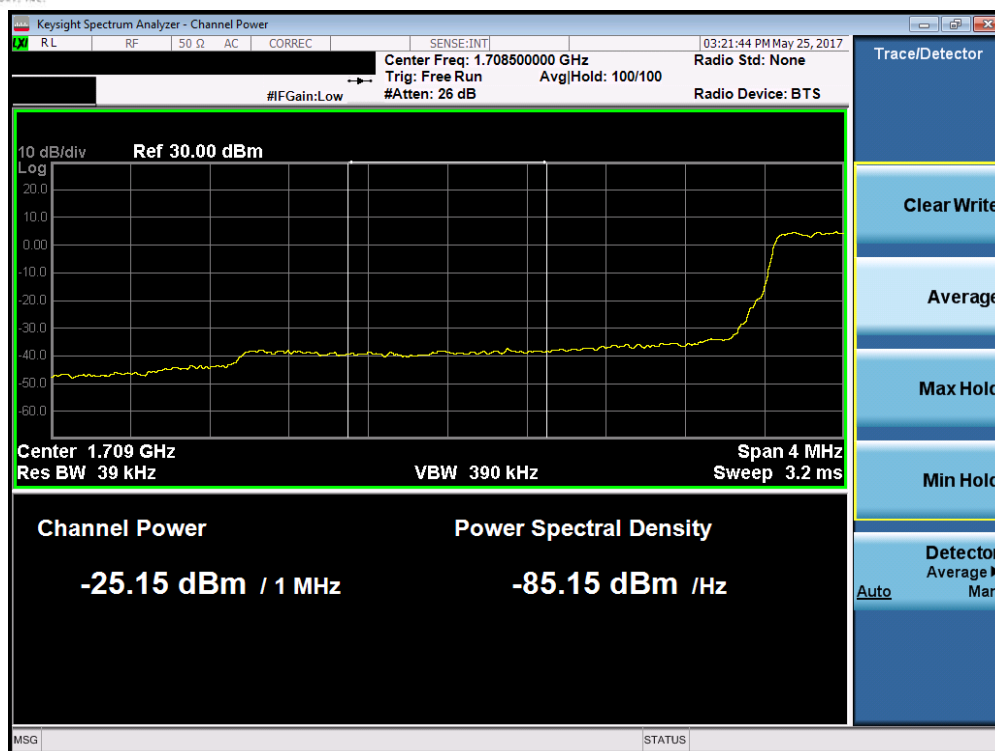


Plot 7-122. Upper Extended Band Edge Plot (Band 4 – 1.4MHz QPSK – RB Size 6)

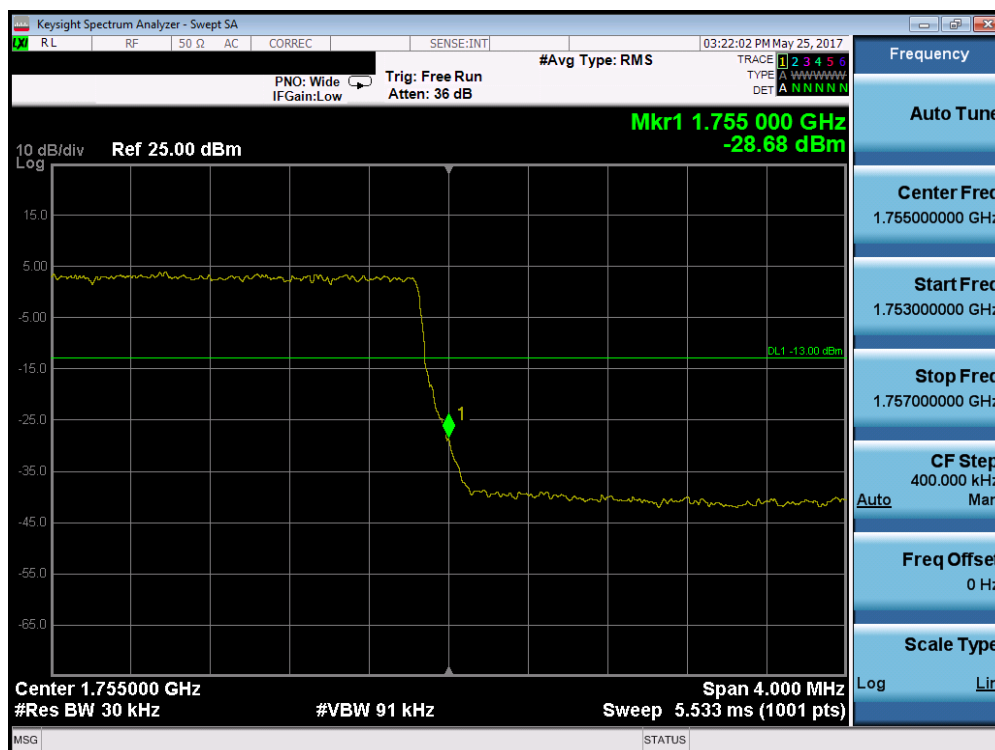


Plot 7-123. Lower Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

FCC ID: A3LSMT385	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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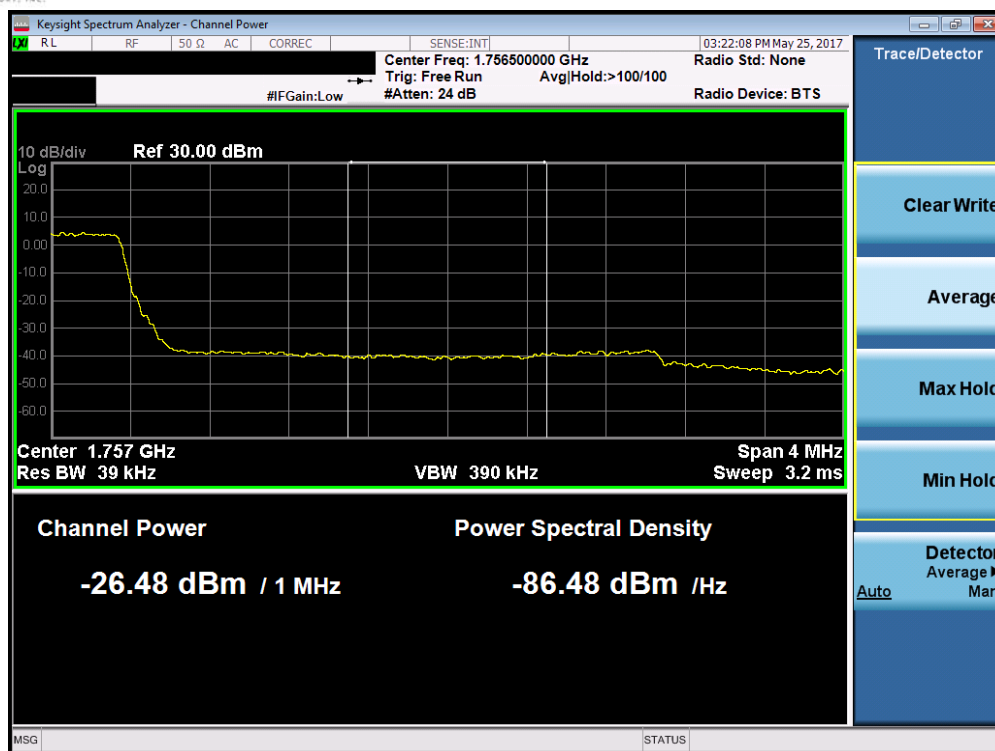


Plot 7-124. Lower Extended Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

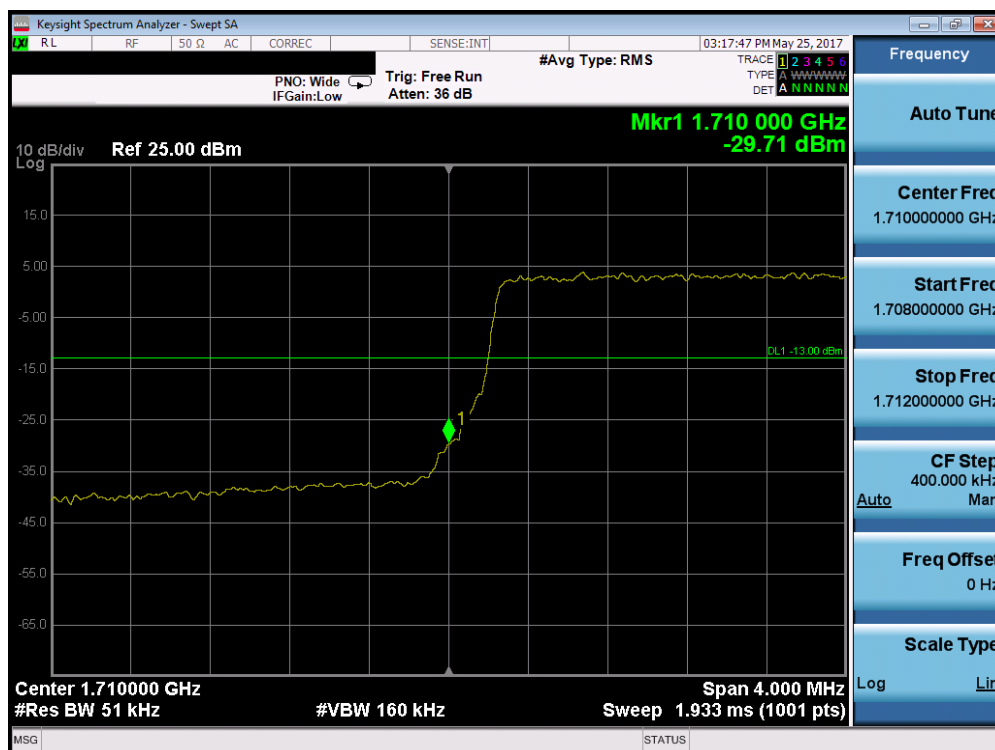


Plot 7-125. Upper Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

FCC ID: A3LSMT385	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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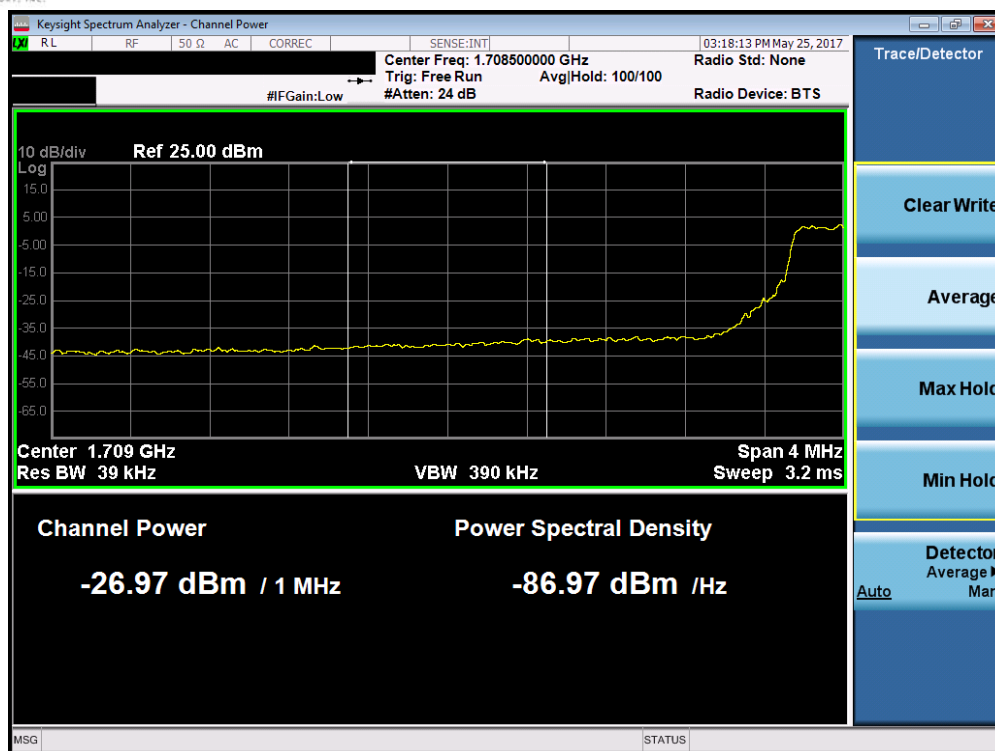


Plot 7-126. Upper Extended Band Edge Plot (Band 4 – 3.0MHz QPSK – RB Size 15)

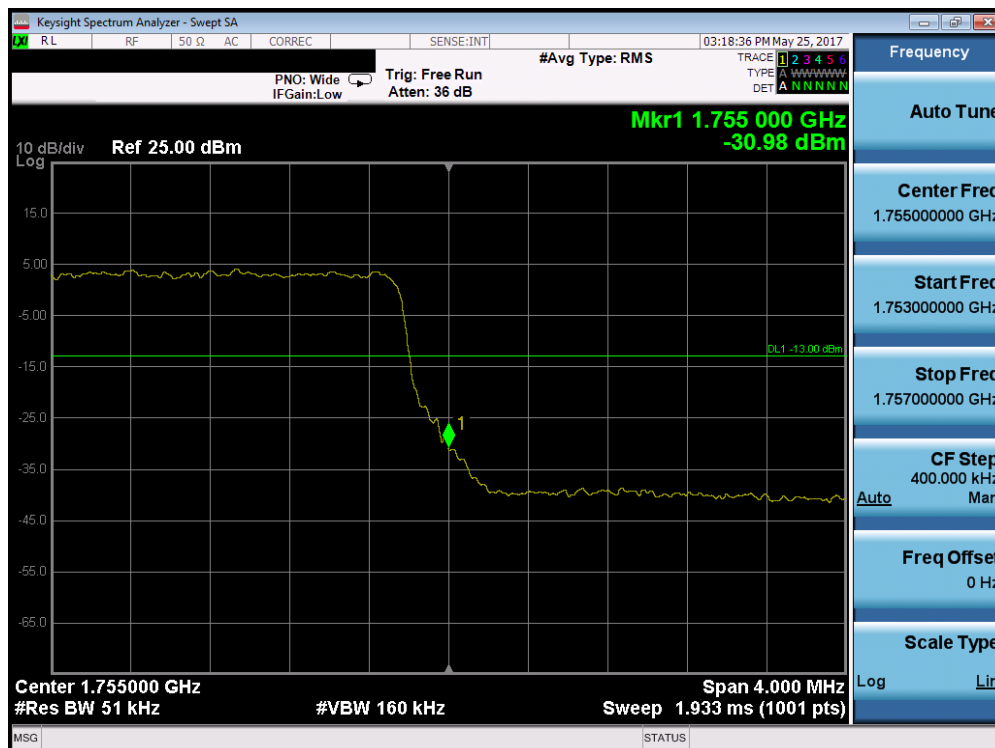


Plot 7-127. Lower Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMT385	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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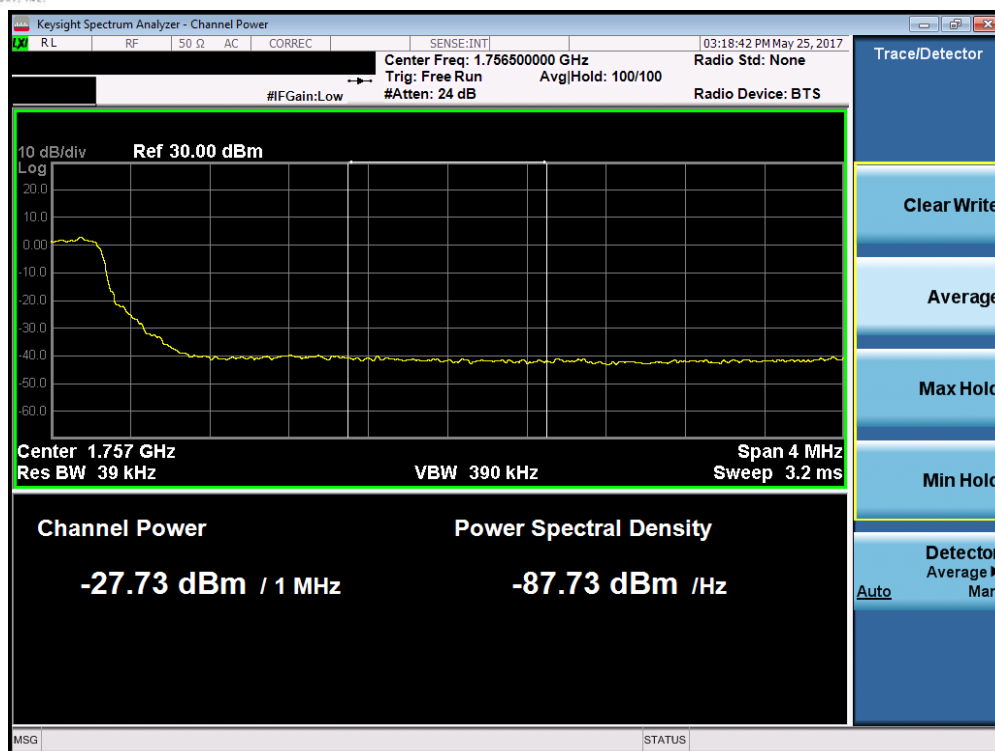


Plot 7-128. Lower Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

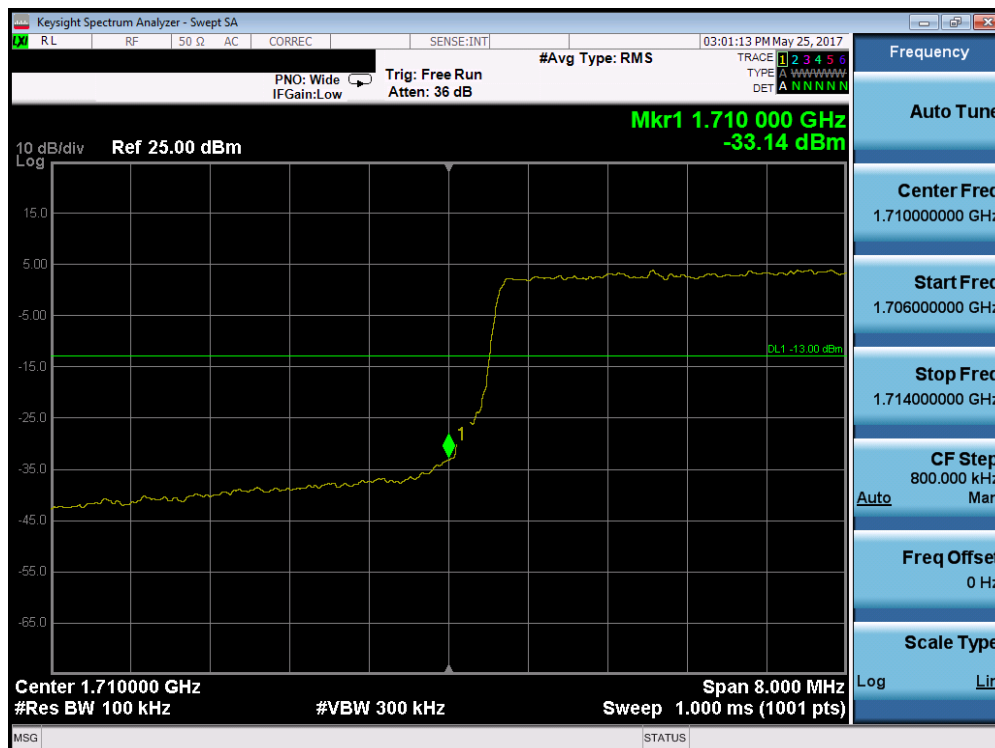


Plot 7-129. Upper Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMT385	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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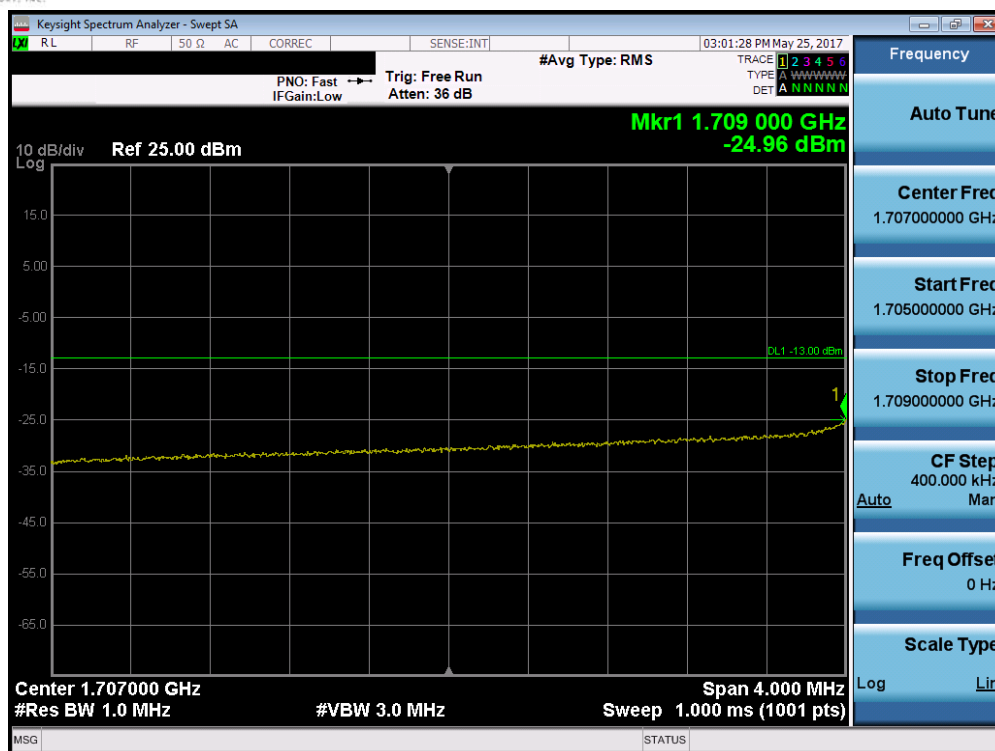


Plot 7-130. Upper Extended Band Edge Plot (Band 4 – 5.0MHz QPSK – RB Size 25)

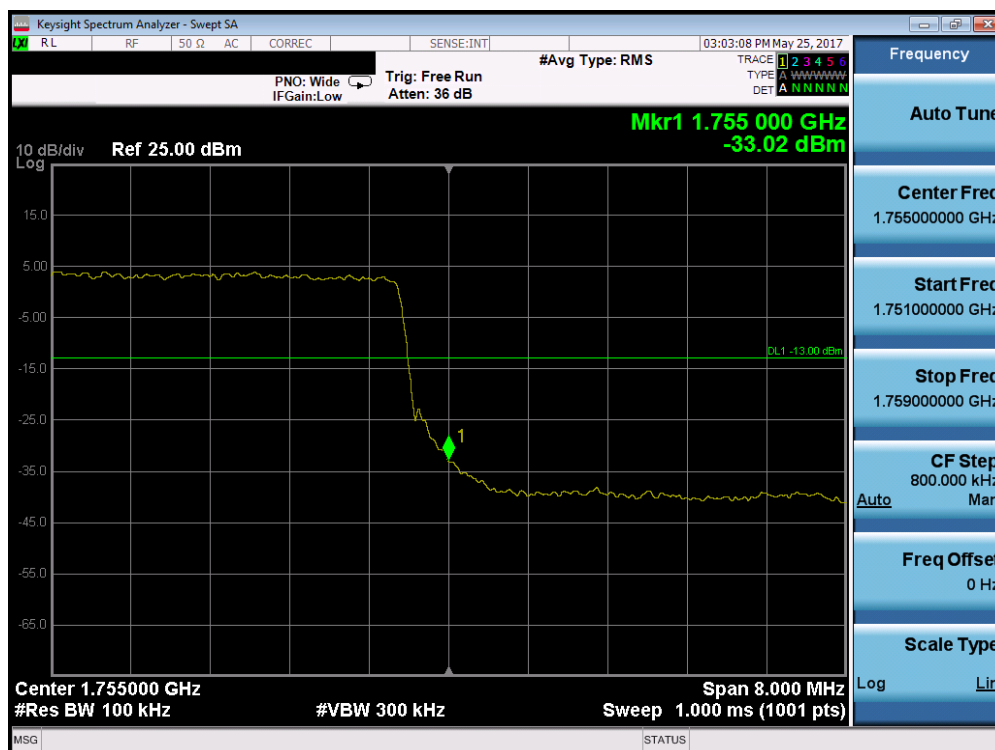


Plot 7-131. Lower Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMT385	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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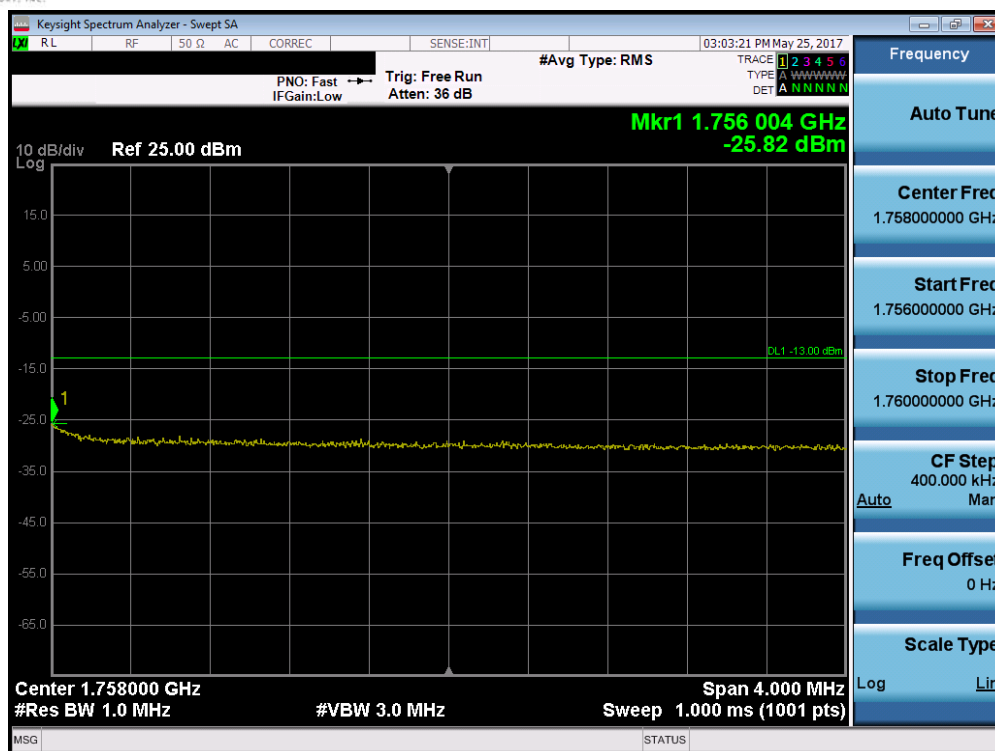


Plot 7-132. Lower Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

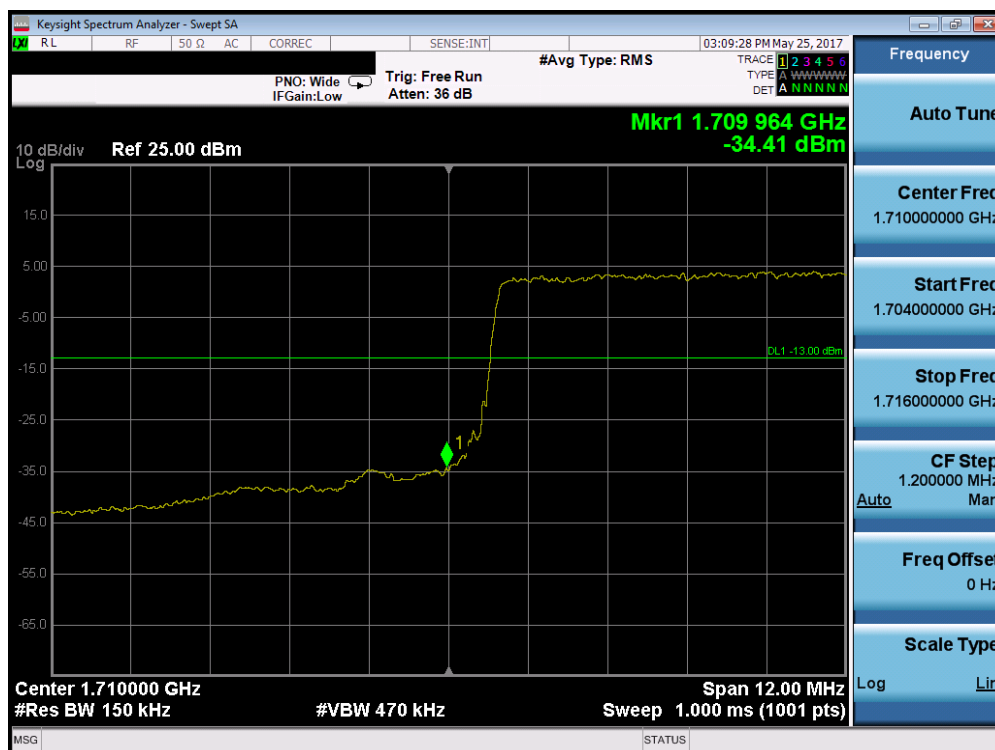


Plot 7-133. Upper Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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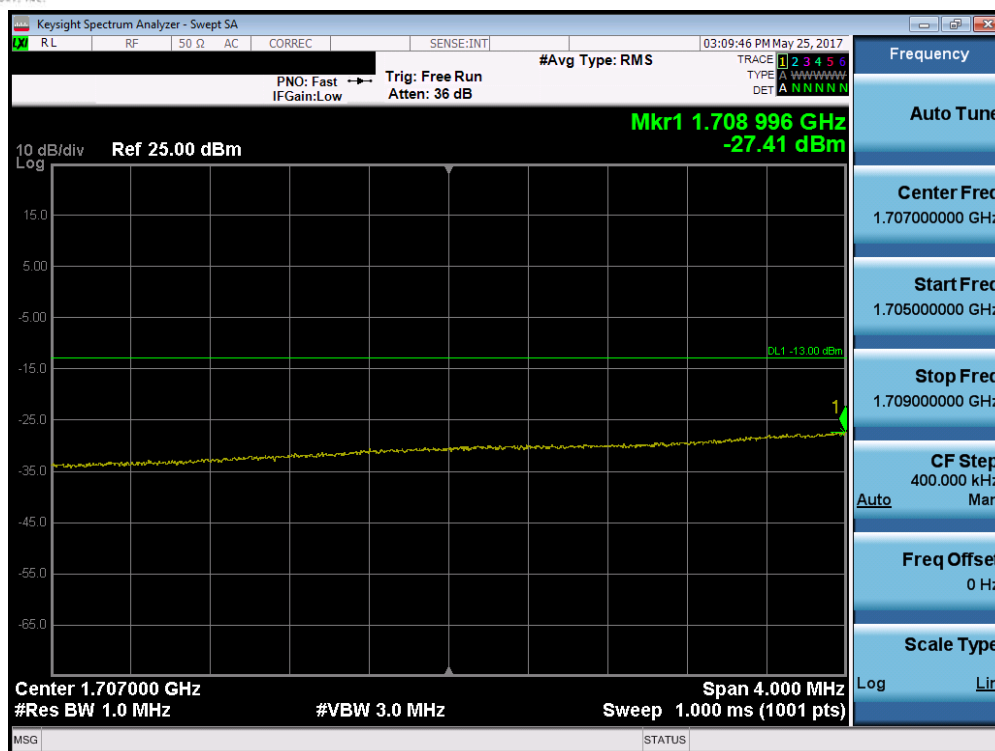


Plot 7-134. Upper Extended Band Edge Plot (Band 4 – 10.0MHz QPSK – RB Size 50)

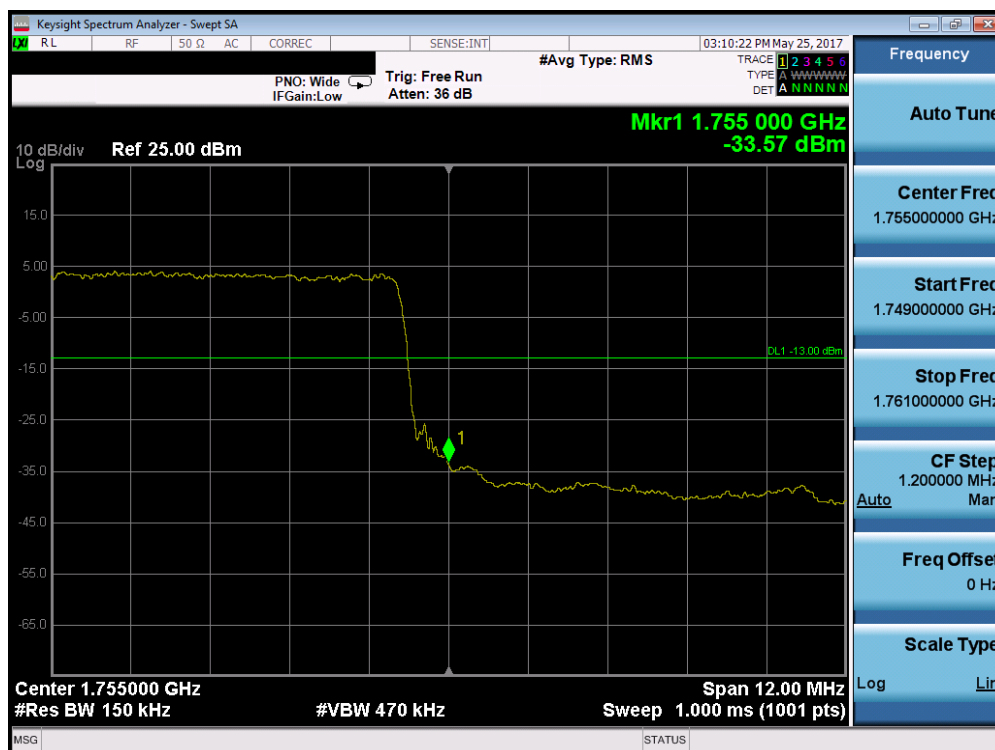


Plot 7-135. Lower Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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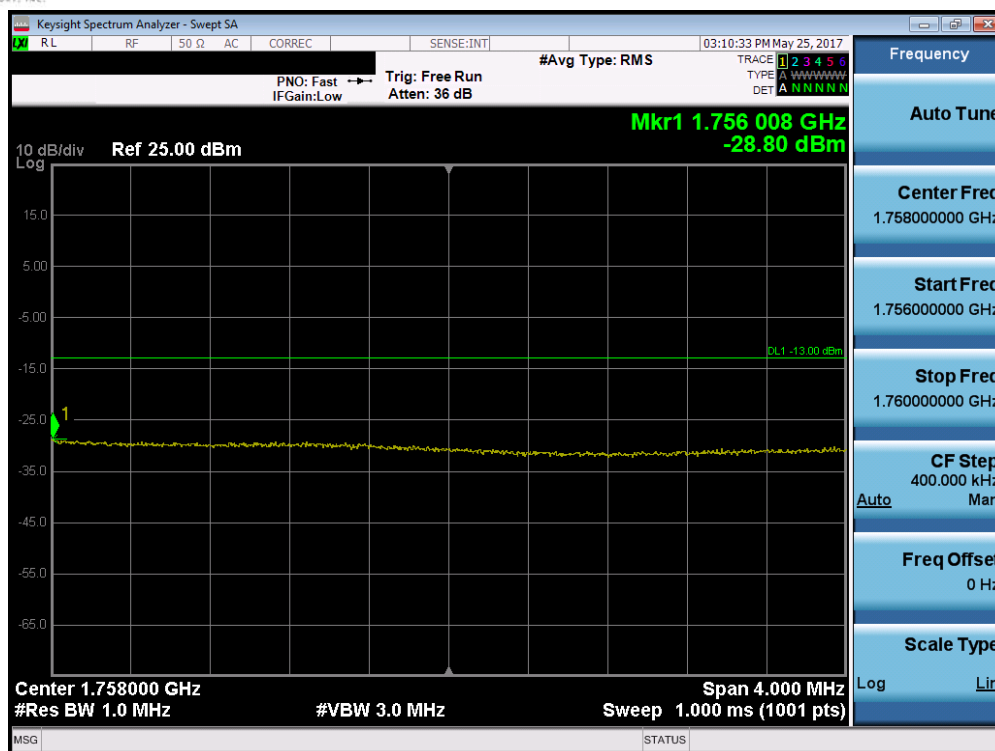


Plot 7-136. Lower Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

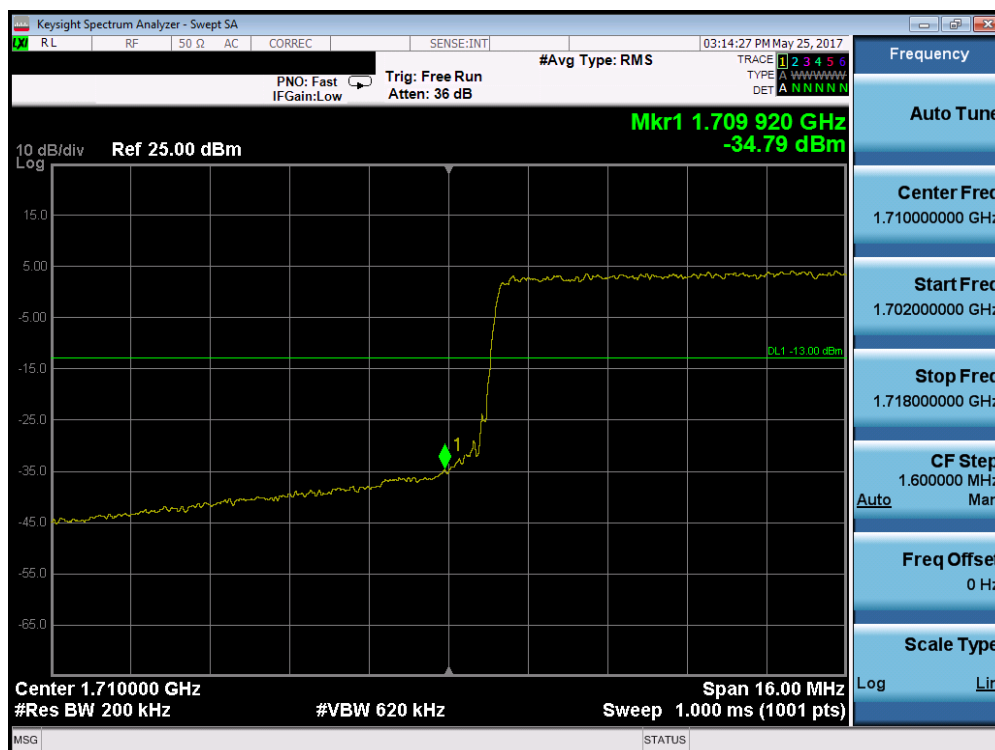


Plot 7-137. Upper Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		 Approved by: Quality Manager
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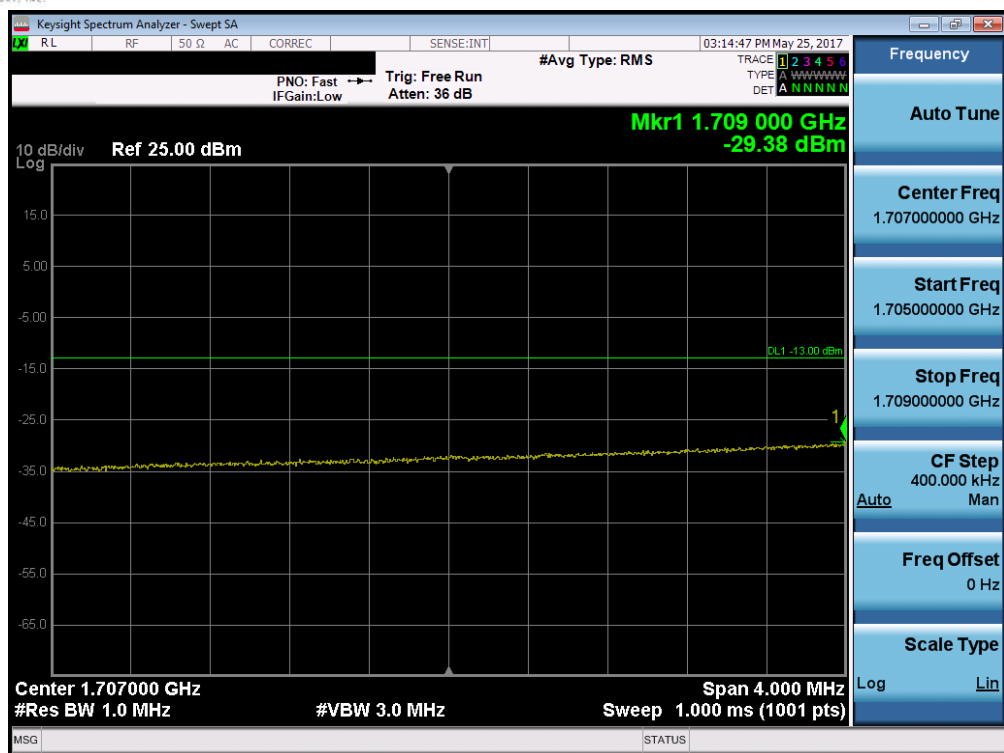


Plot 7-138. Upper Extended Band Edge Plot (Band 4 – 15.0MHz QPSK – RB Size 75)



Plot 7-139. Lower Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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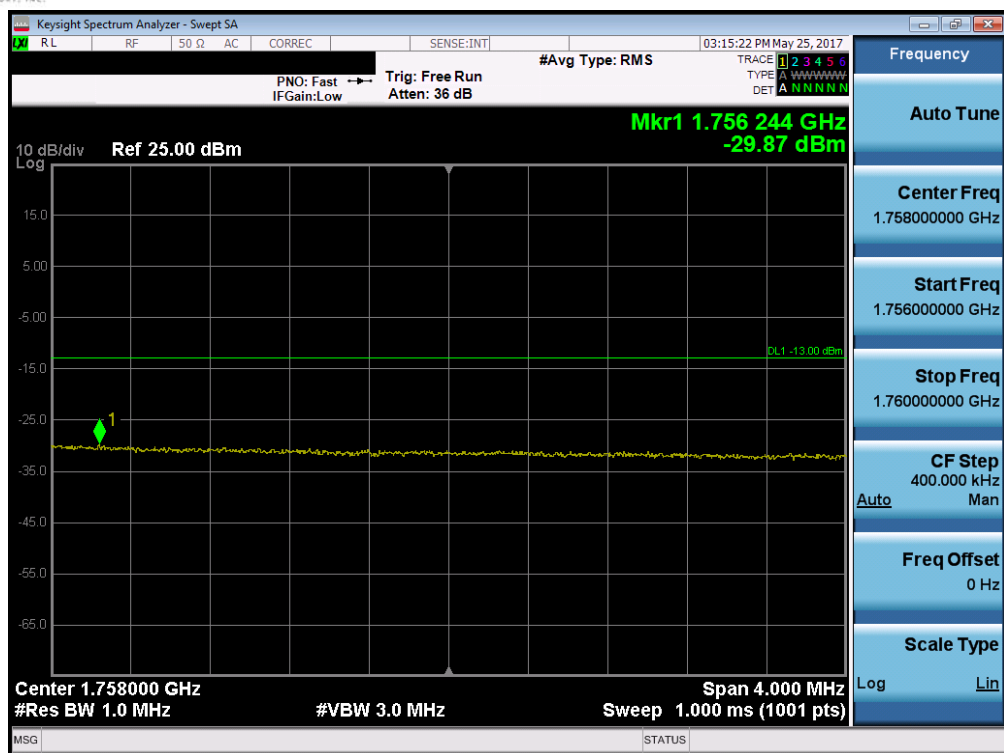


Plot 7-140. Lower Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

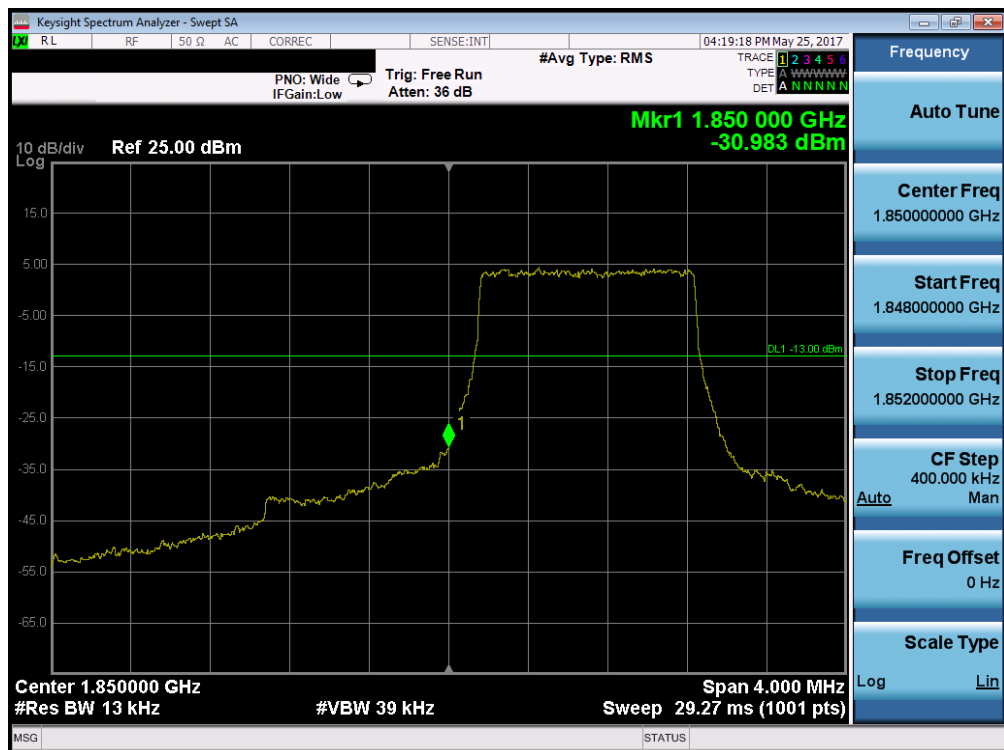


Plot 7-141. Upper Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
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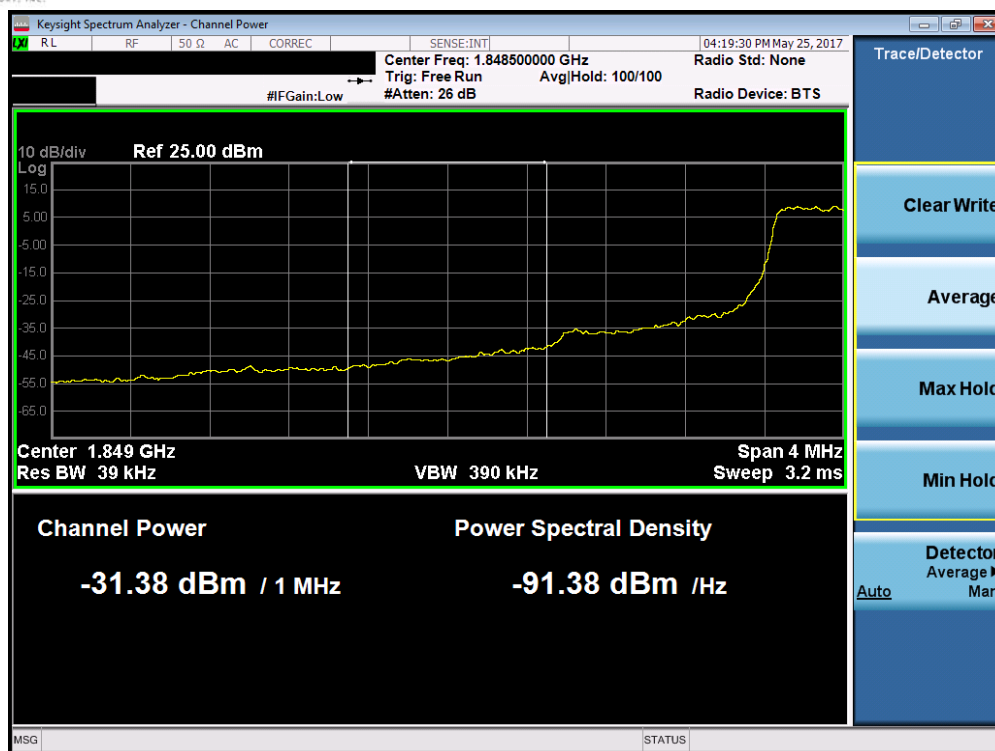


Plot 7-142. Upper Extended Band Edge Plot (Band 4 – 20.0MHz QPSK – RB Size 100)



Plot 7-143. Lower Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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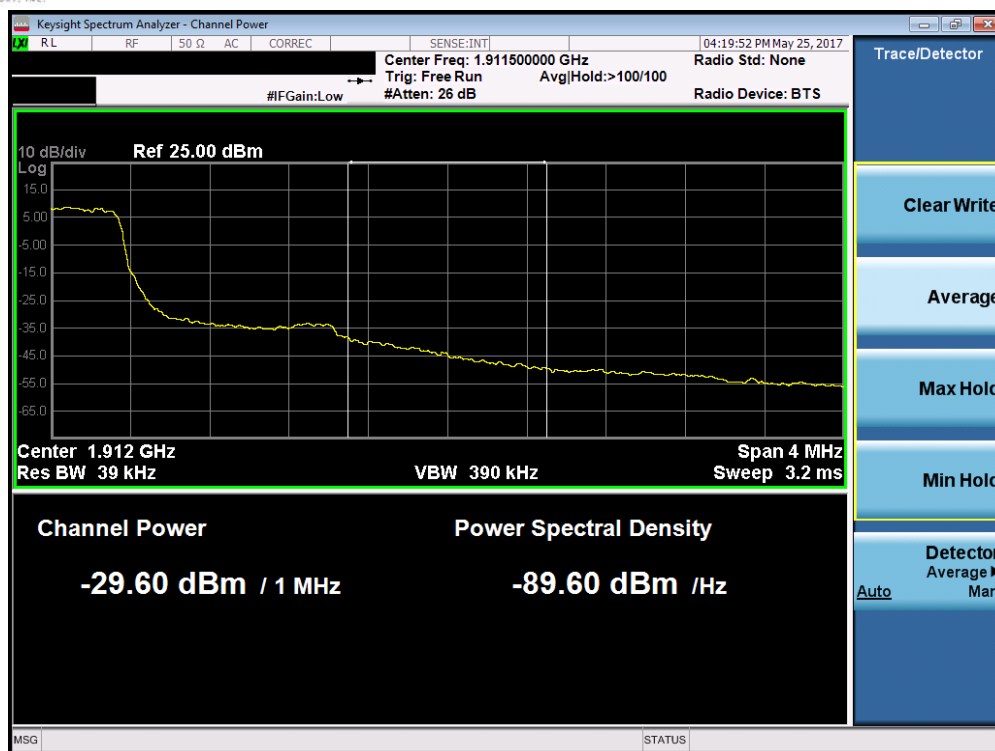


Plot 7-144. Lower Extended Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)

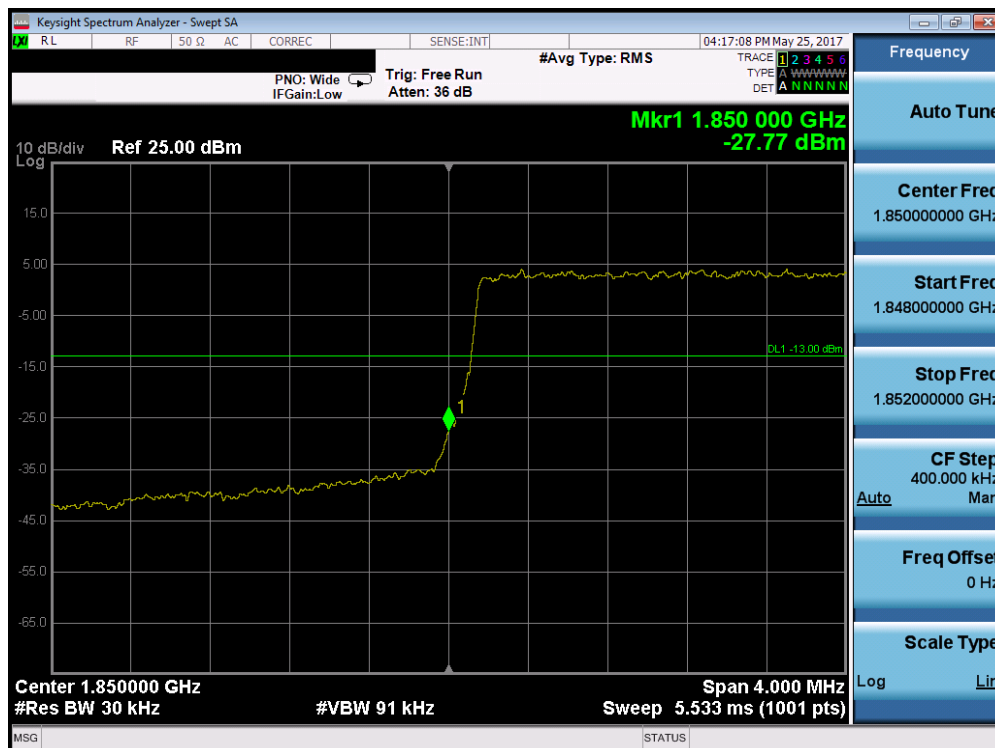


Plot 7-145. Upper Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)

FCC ID: A3LSMT385	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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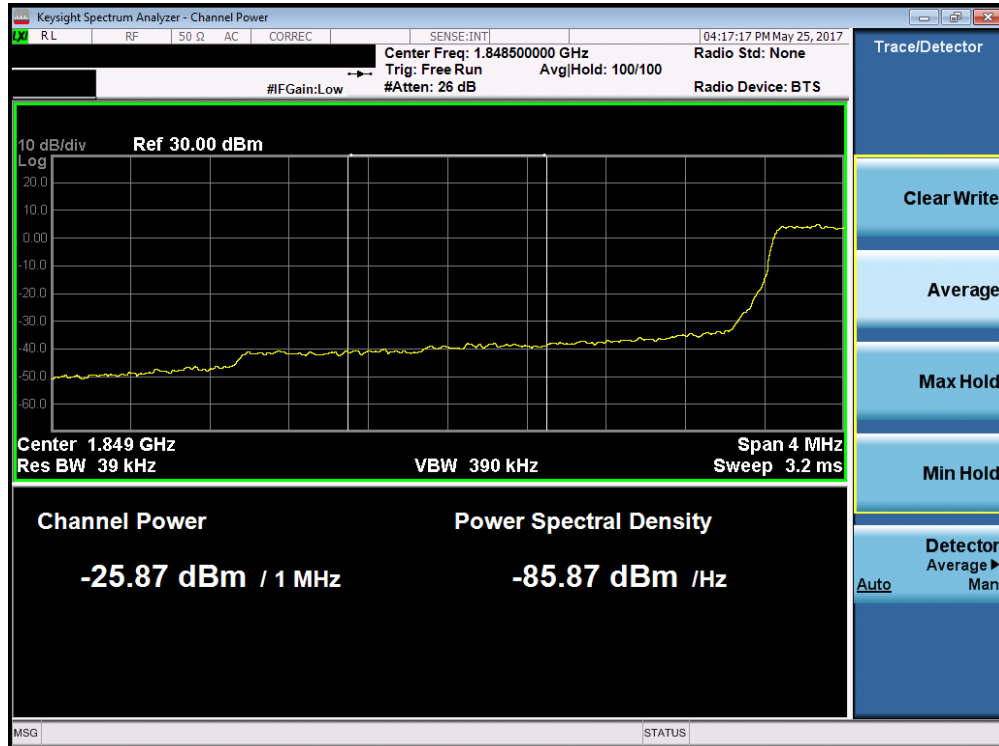


Plot 7-146. Upper Extended Band Edge Plot (Band 2 – 1.4MHz QPSK – RB Size 6)

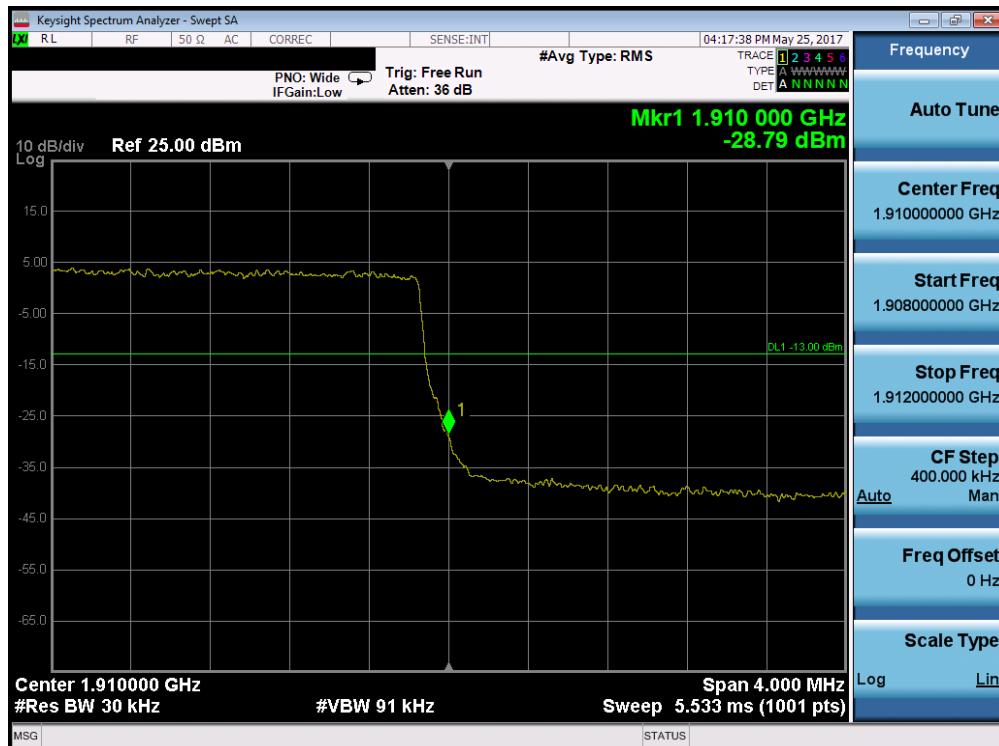


Plot 7-147. Lower Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)

FCC ID: A3LSMT385	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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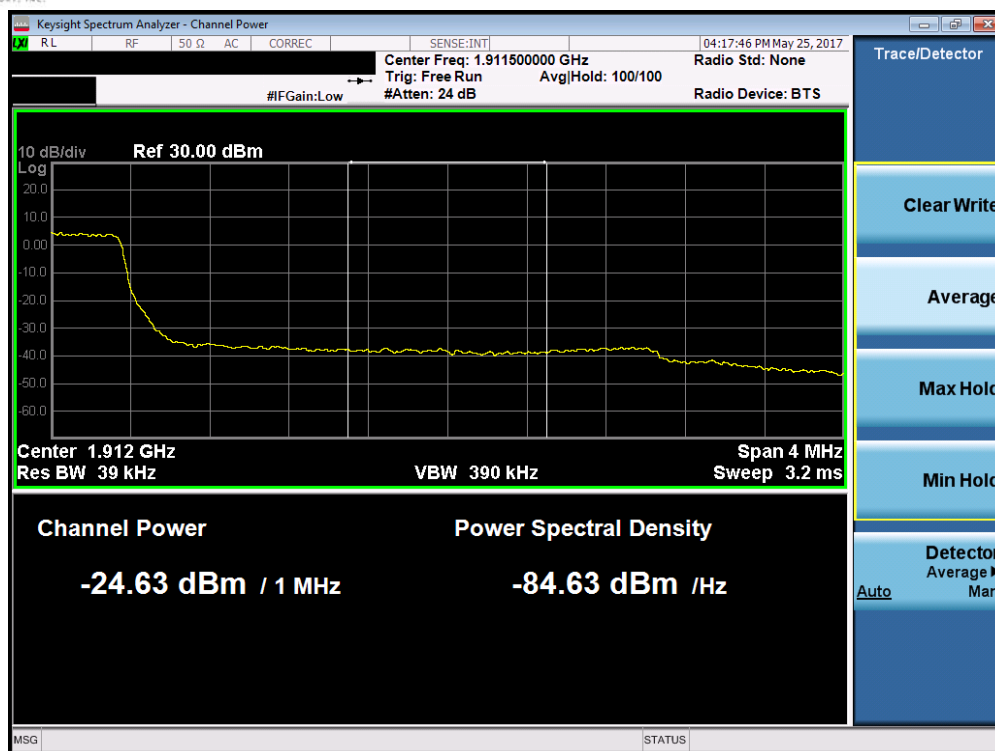


Plot 7-148. Lower Extended Band Edge Plot (Band 2 - 3.0MHz QPSK - RB Size 15)

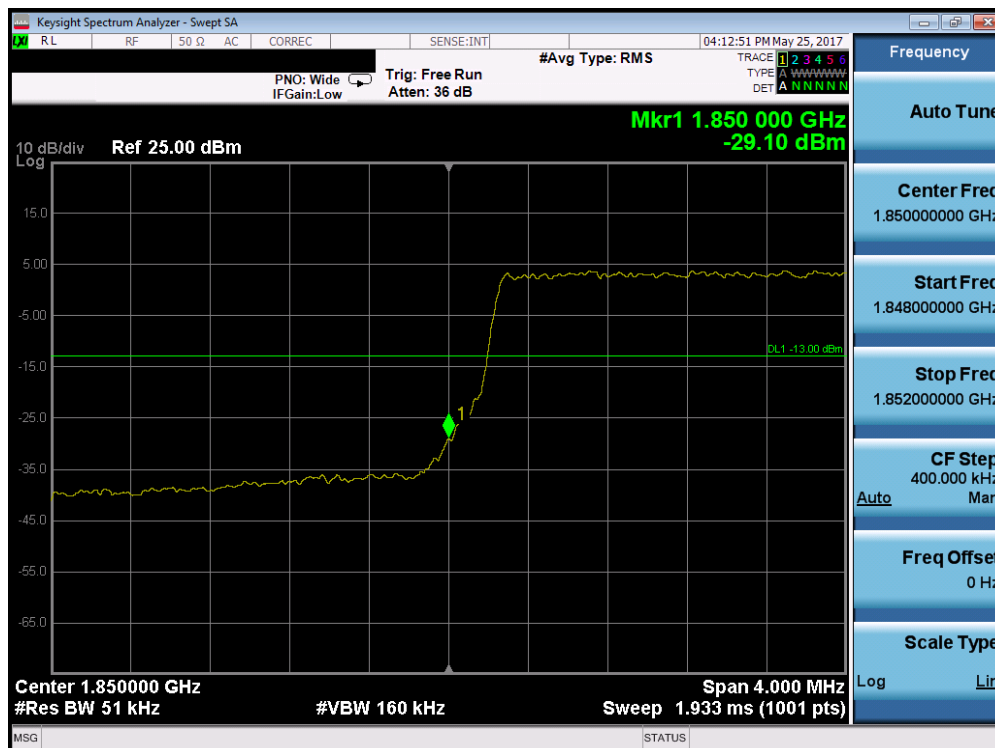


Plot 7-149. Upper Band Edge Plot (Band 2 - 3.0MHz QPSK - RB Size 15)

FCC ID: A3LSMT385	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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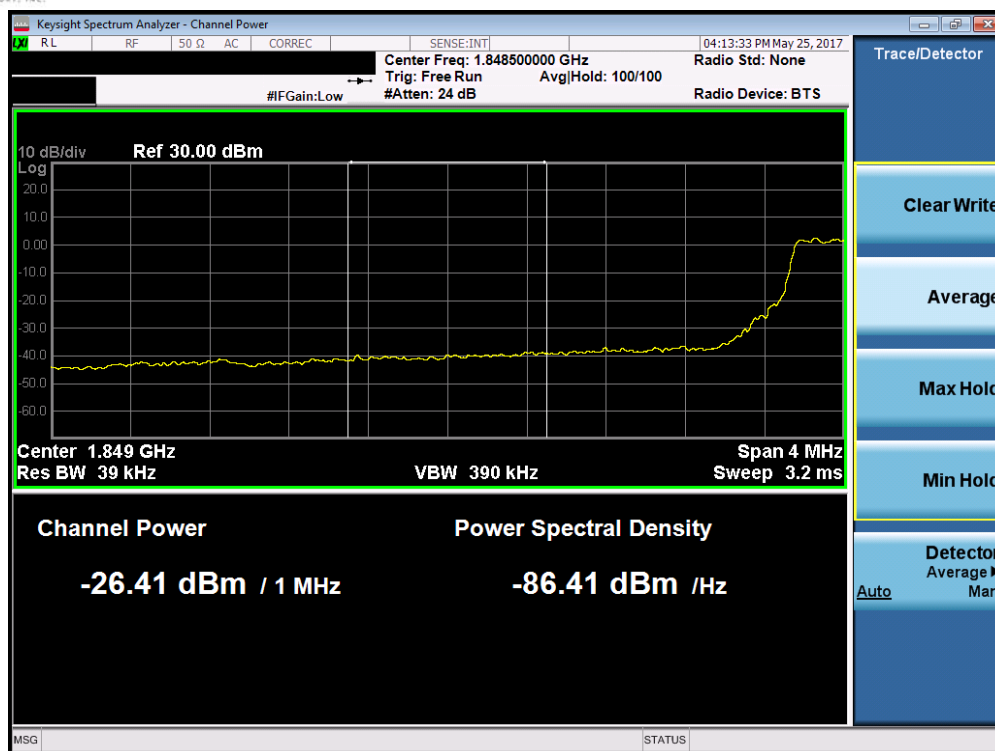


Plot 7-150. Upper Extended Band Edge Plot (Band 2 – 3.0MHz QPSK – RB Size 15)



Plot 7-151. Lower Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMT385	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet		Page 93 of 149

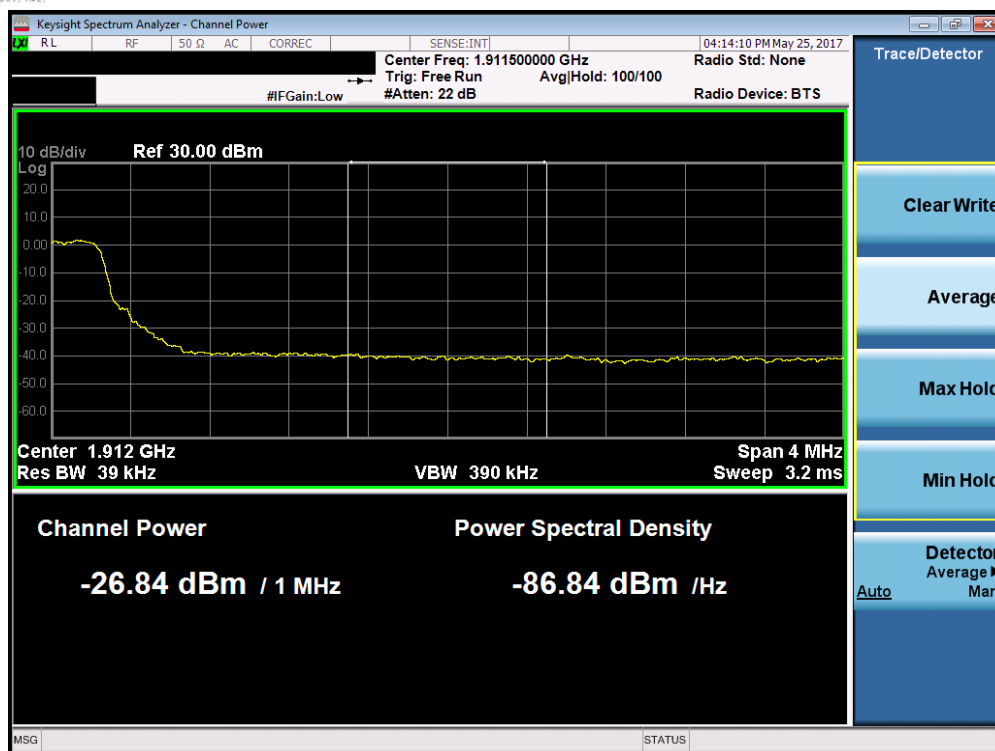


Plot 7-152. Lower Extended Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

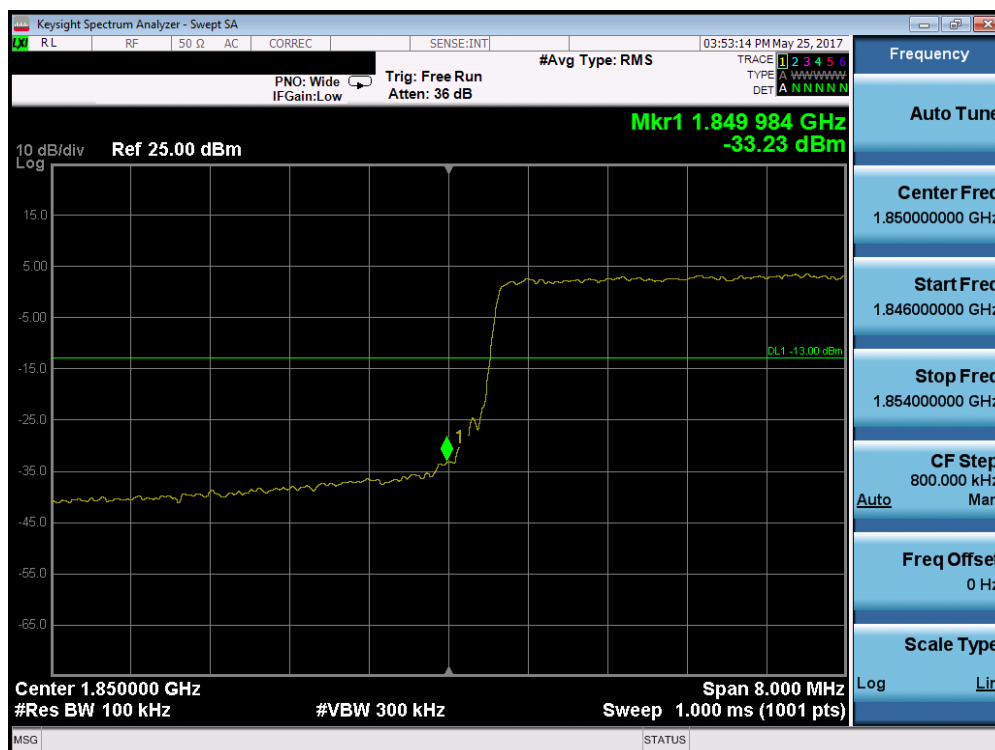


Plot 7-153. Upper Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet	Page 94 of 149

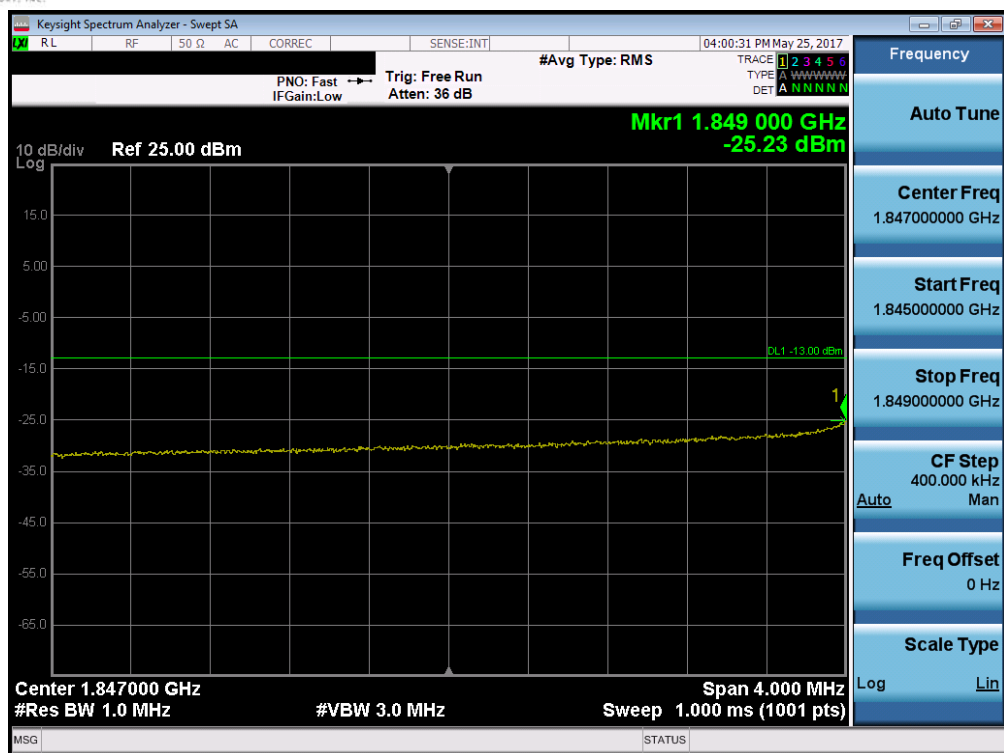


Plot 7-154. Upper Extended Band Edge Plot (Band 2 – 5.0MHz QPSK – RB Size 25)



Plot 7-155. Lower Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMT385	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet		Page 95 of 149

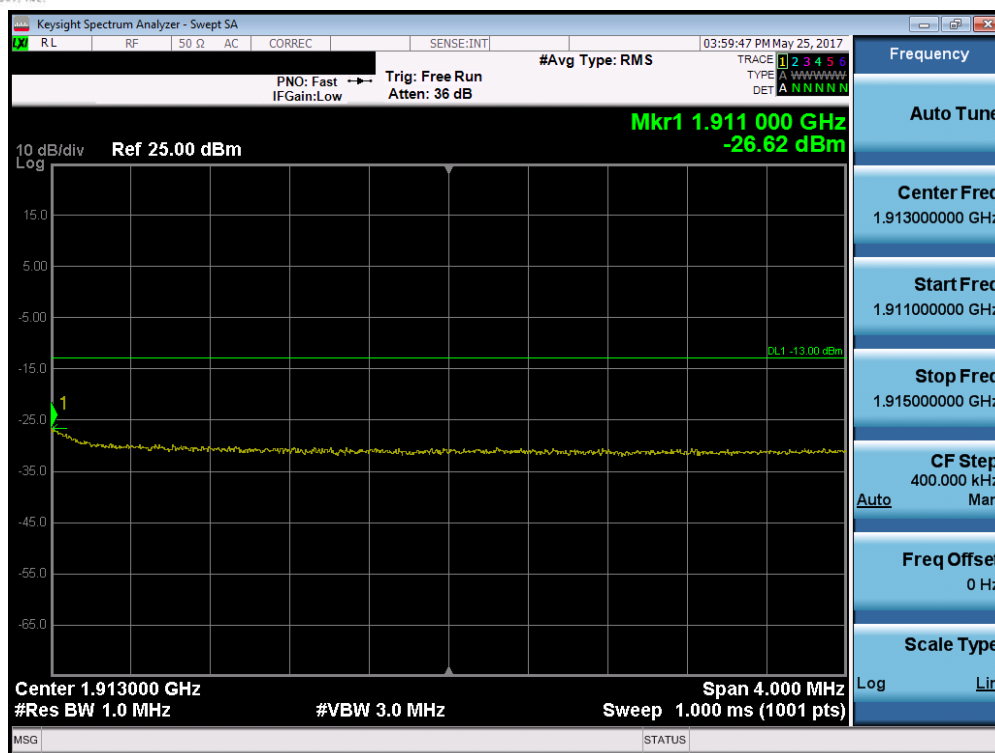


Plot 7-156. Lower Extended Band Edge Plot (Band 2 - 10.0MHz QPSK - RB Size 50)

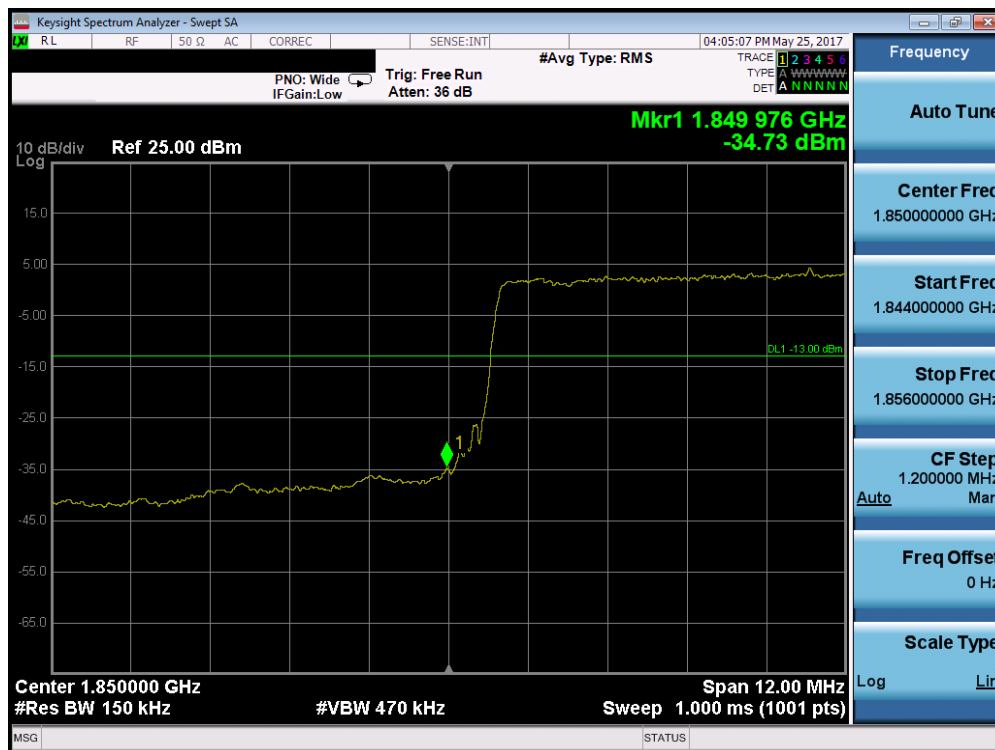


Plot 7-157. Upper Band Edge Plot (Band 2 - 10.0MHz QPSK - RB Size 50)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet	Page 96 of 149

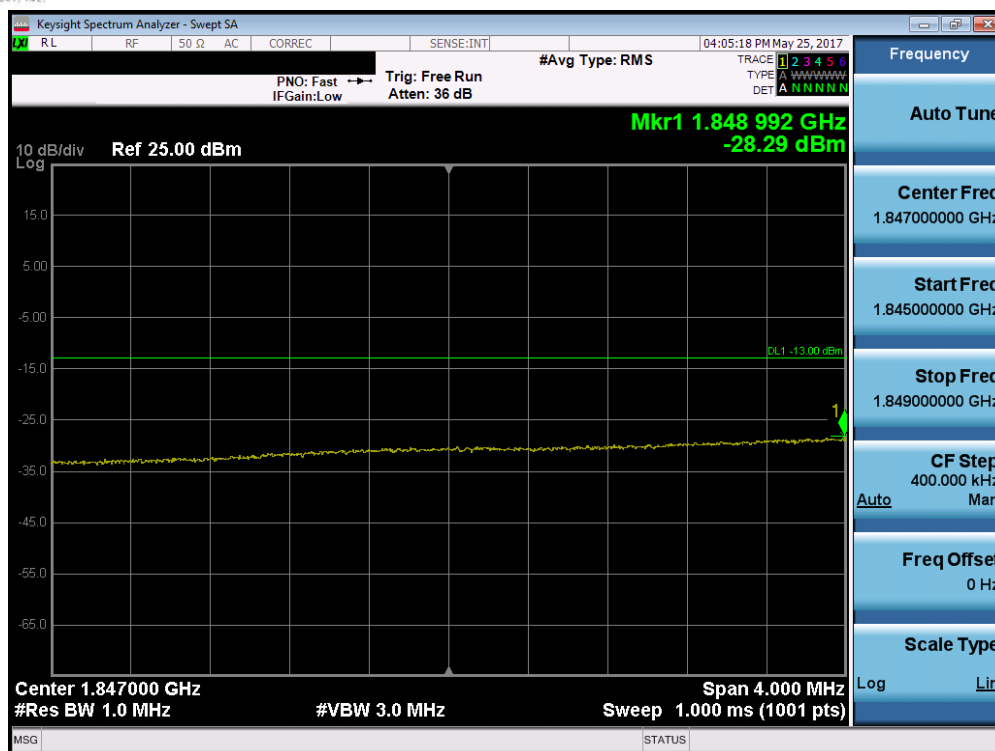


Plot 7-158. Upper Extended Band Edge Plot (Band 2 – 10.0MHz QPSK – RB Size 50)



Plot 7-159. Lower Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)			Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet	Page 97 of 149	

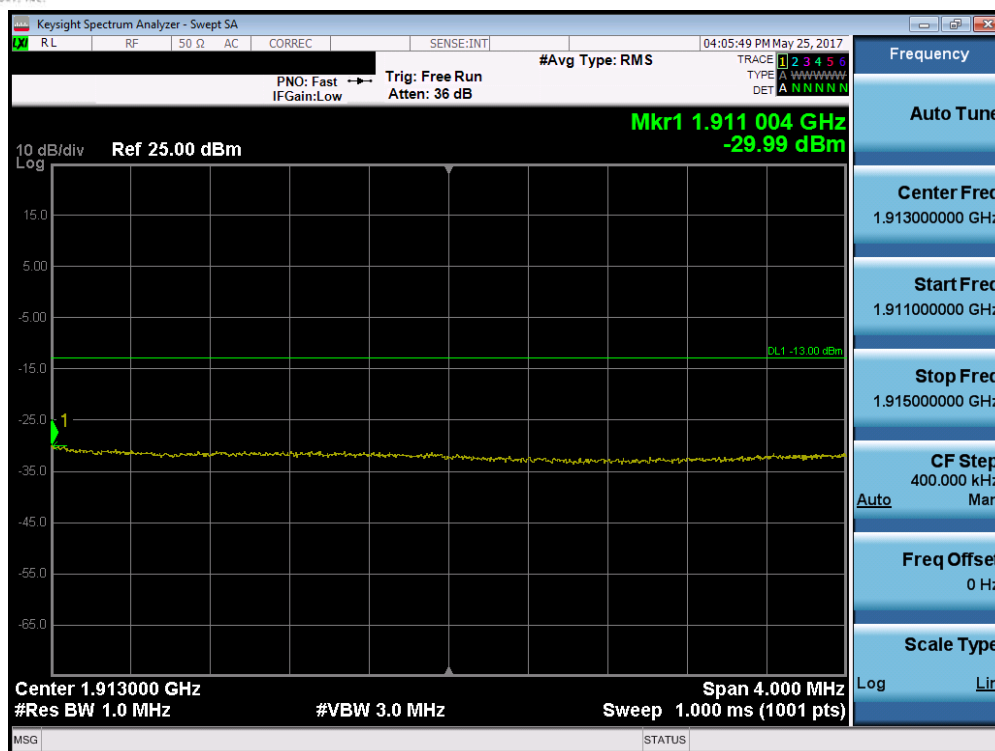


Plot 7-160. Lower Extended Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)

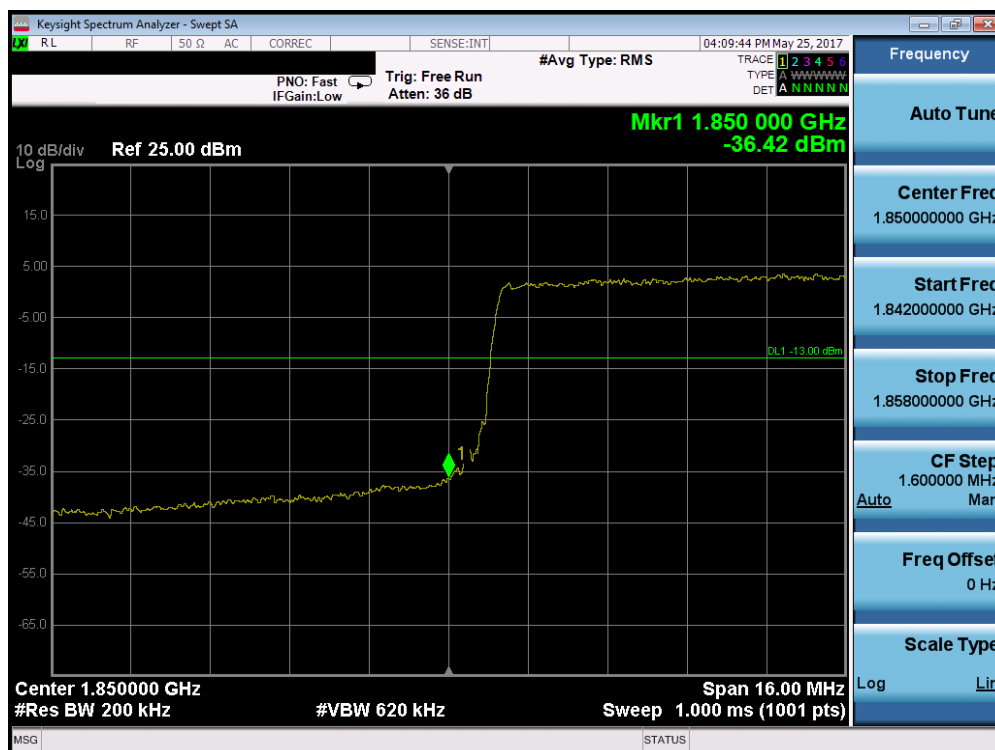


Plot 7-161. Upper Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet	Page 98 of 149

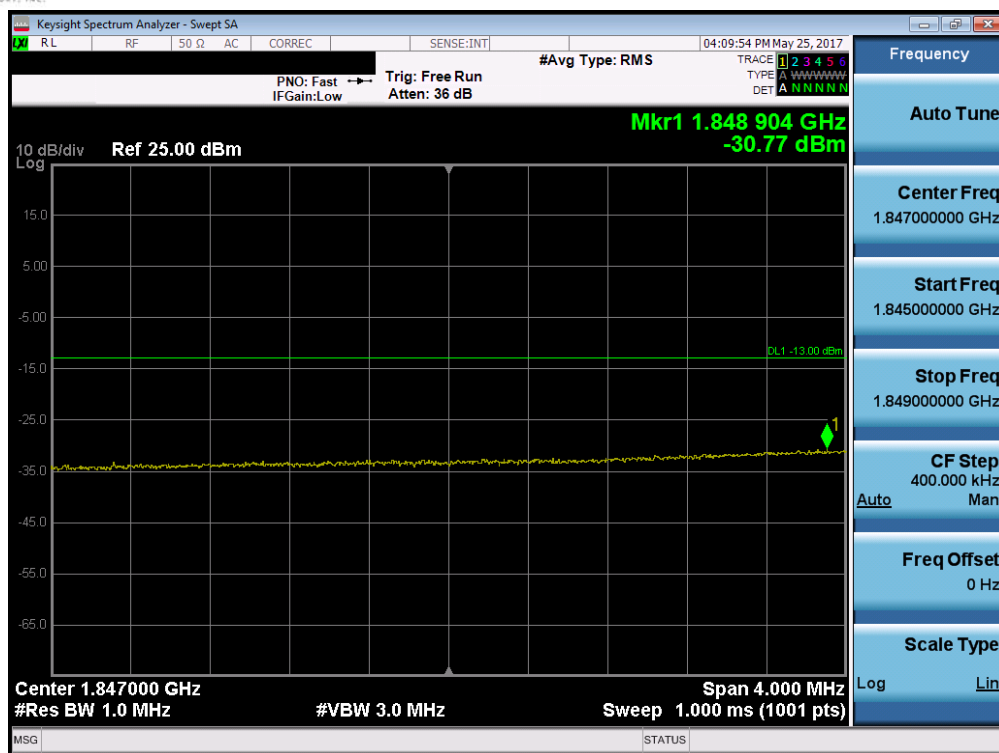


Plot 7-162. Upper Extended Band Edge Plot (Band 2 – 15.0MHz QPSK – RB Size 75)



Plot 7-163. Lower Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet	Page 99 of 149

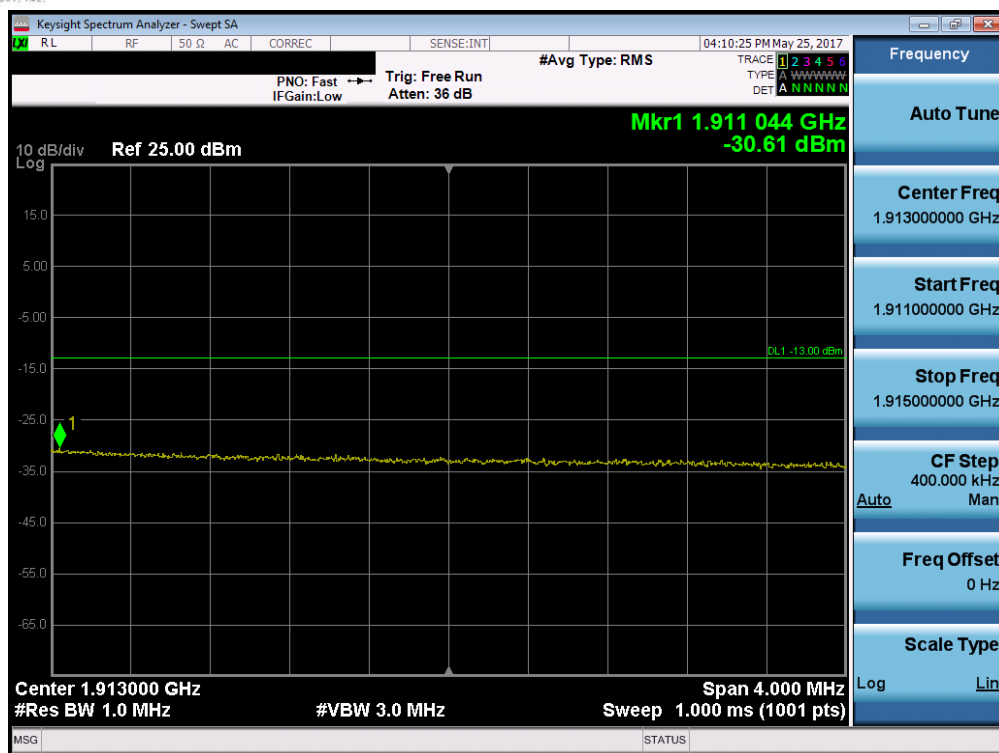


Plot 7-164. Lower Extended Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)

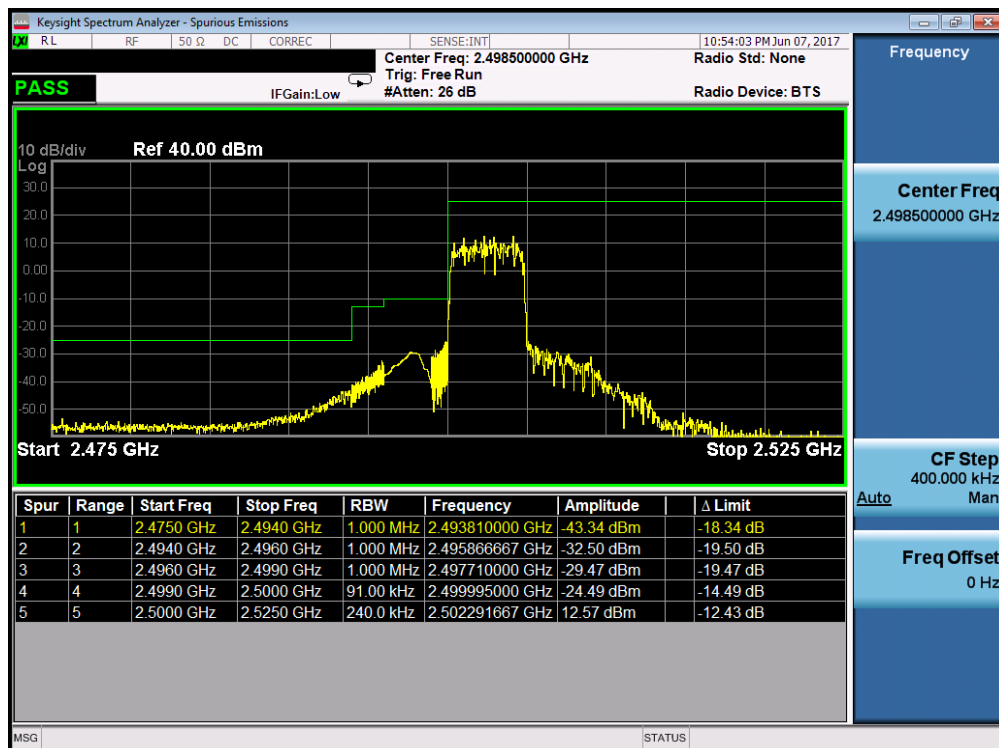


Plot 7-165. Upper Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet	Page 100 of 149

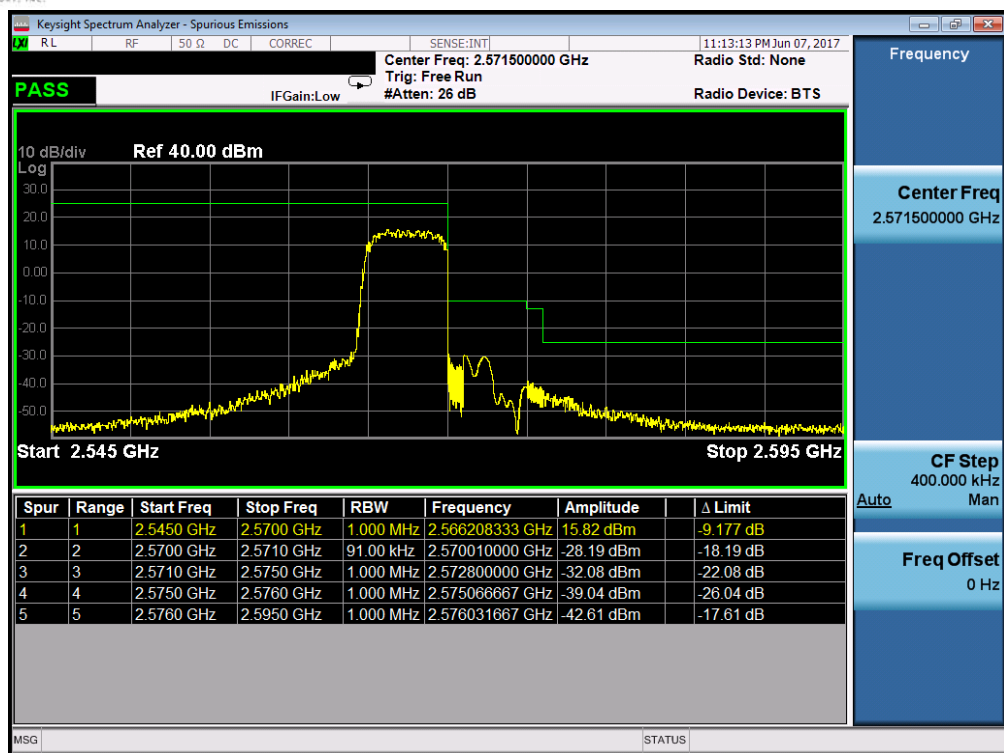


Plot 7-166. Upper Extended Band Edge Plot (Band 2 – 20.0MHz QPSK – RB Size 100)

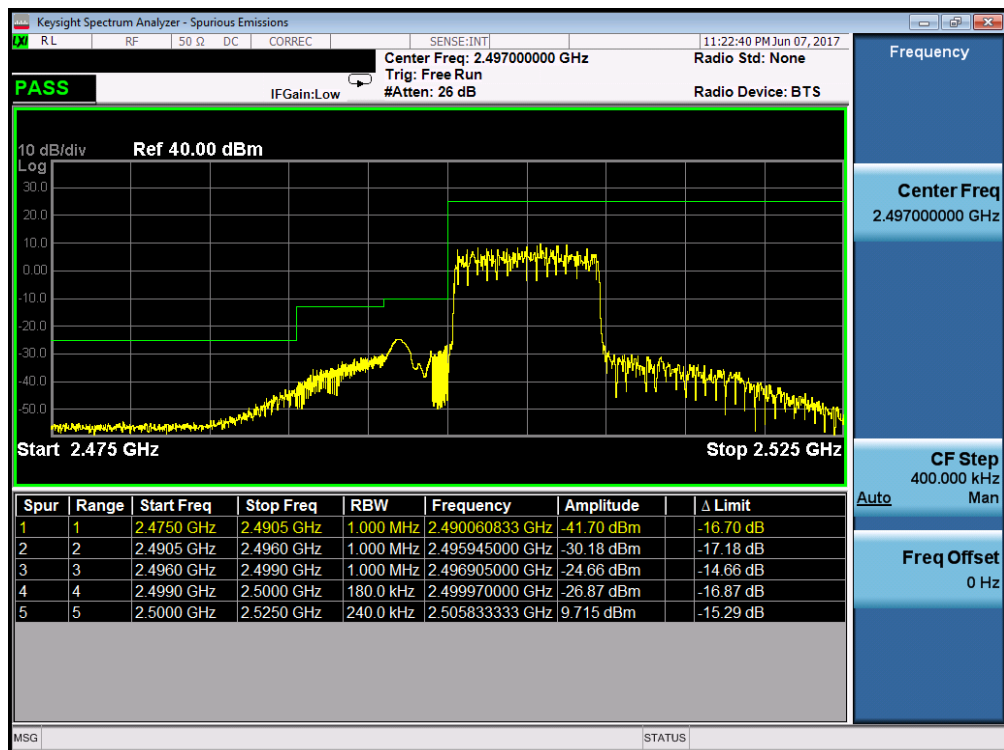


Plot 7-167. Lower ACP Plot (Band 7 – 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet	Page 101 of 149

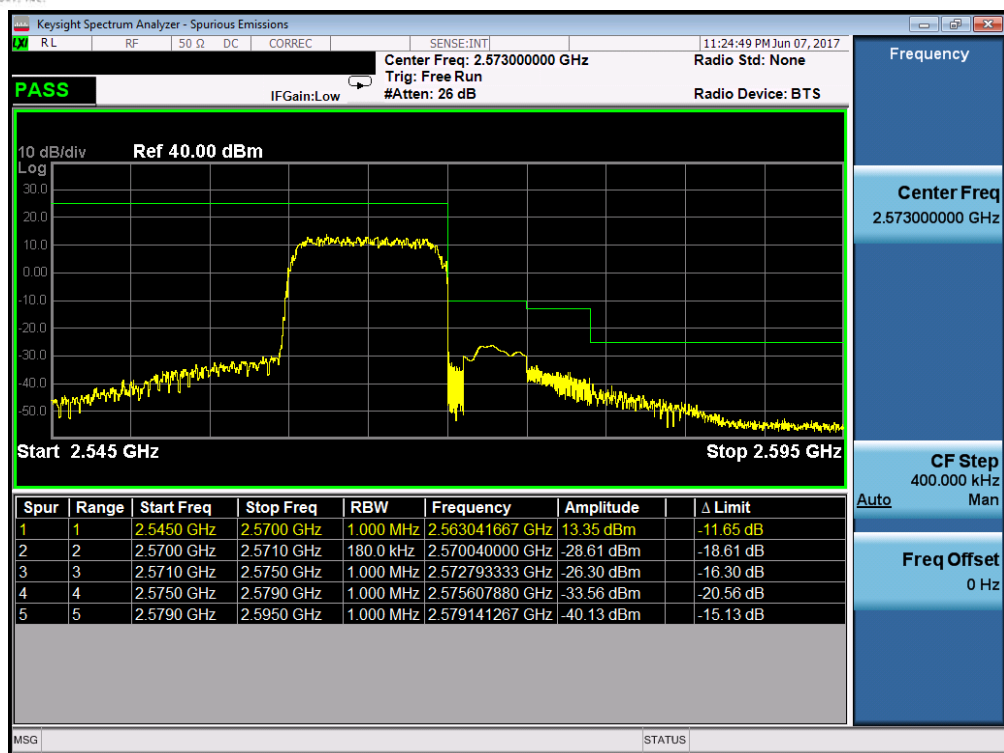


Plot 7-168. Upper ACP Plot (Band 7 – 5.0MHz QPSK – RB Size 25)

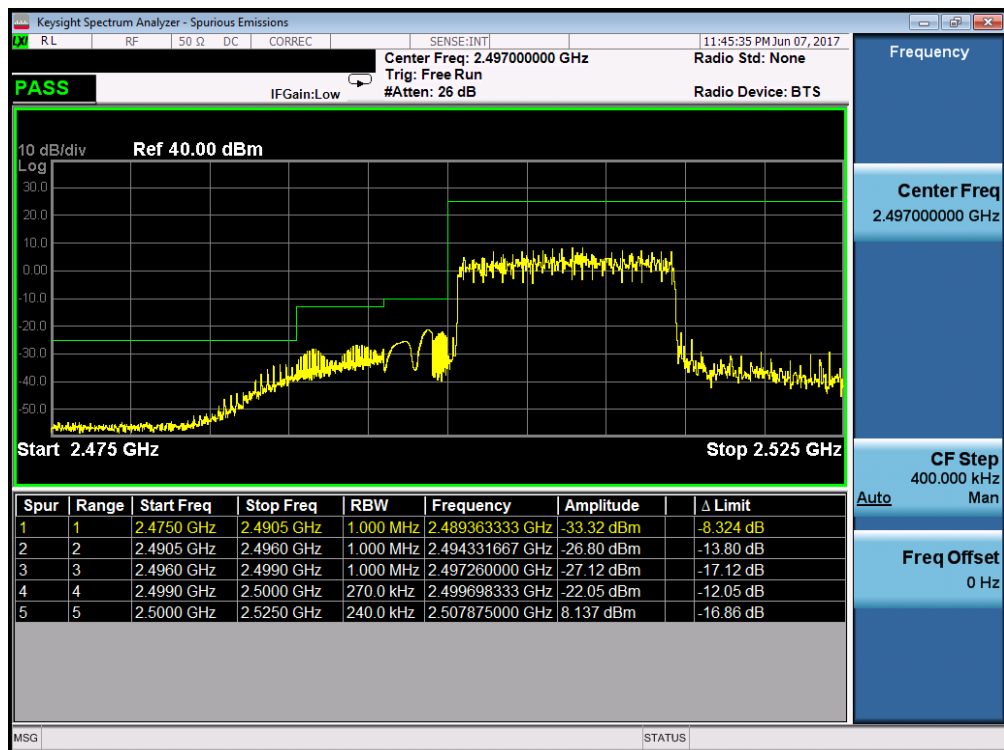


Plot 7-169. Lower ACP Plot (Band 7 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet	Page 102 of 149

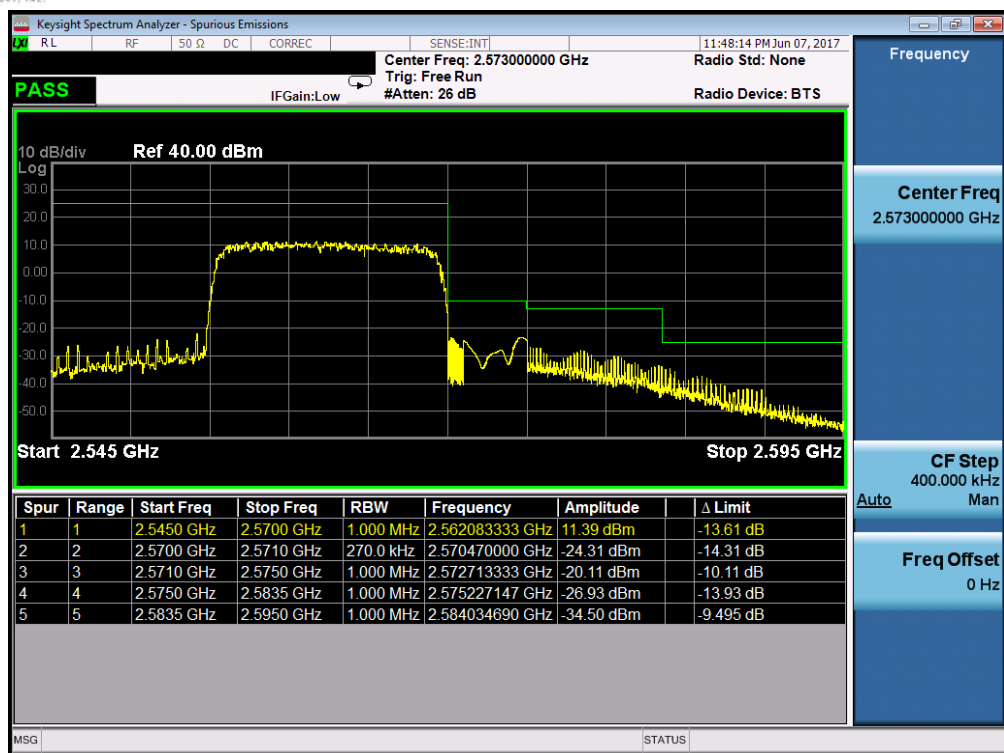


Plot 7-170. Upper ACP Plot (Band 7 – 10.0MHz QPSK – RB Size 50)

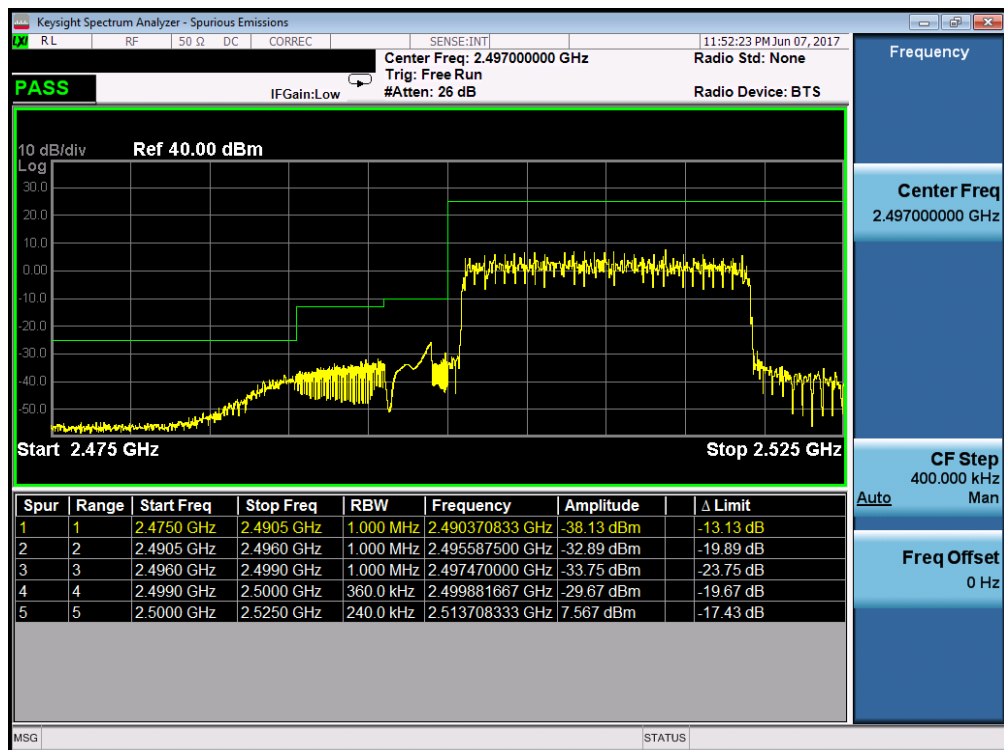


Plot 7-171. Lower ACP Plot (Band 7 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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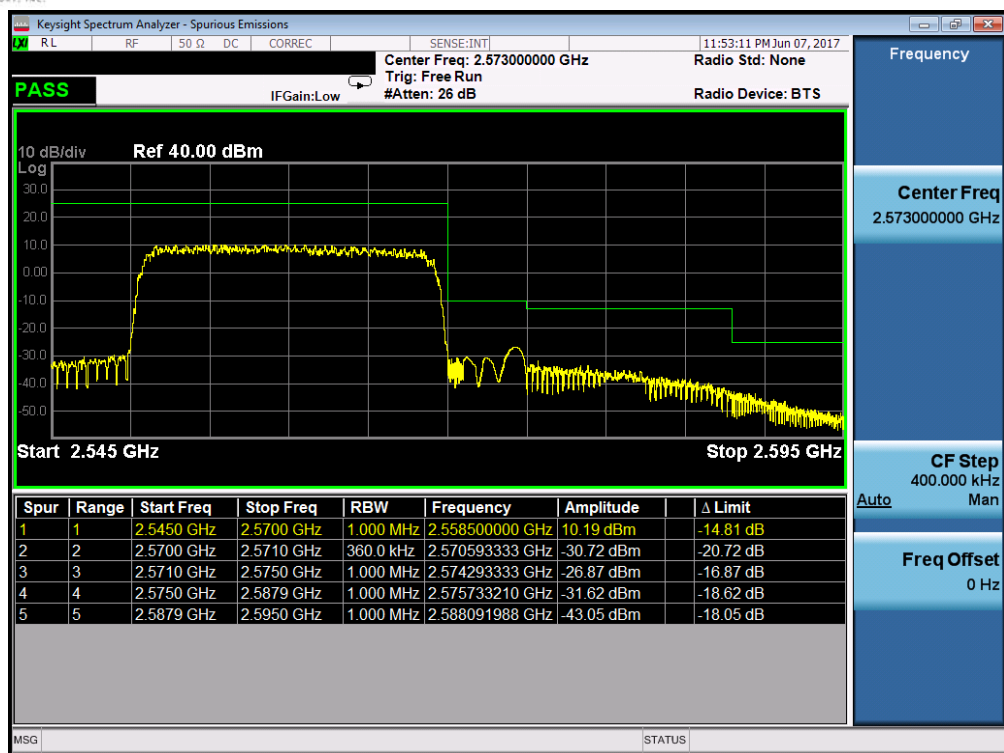


Plot 7-172. Upper ACP Plot (Band 7 – 15.0MHz QPSK – RB Size 75)

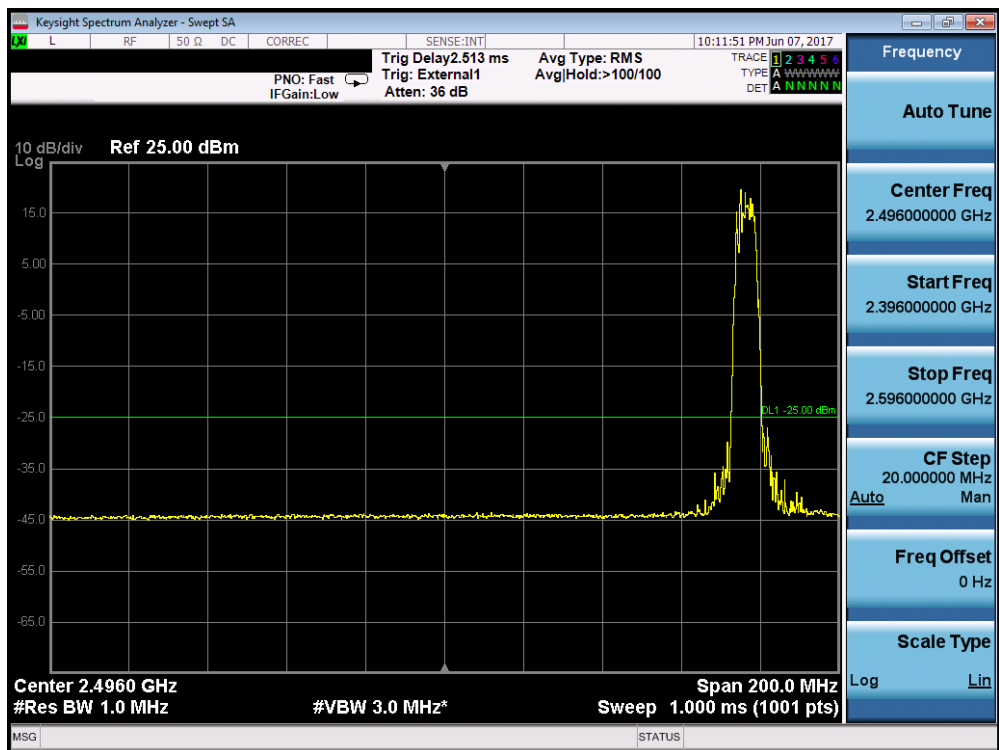


Plot 7-173. Lower ACP Plot (Band 7 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet	Page 104 of 149

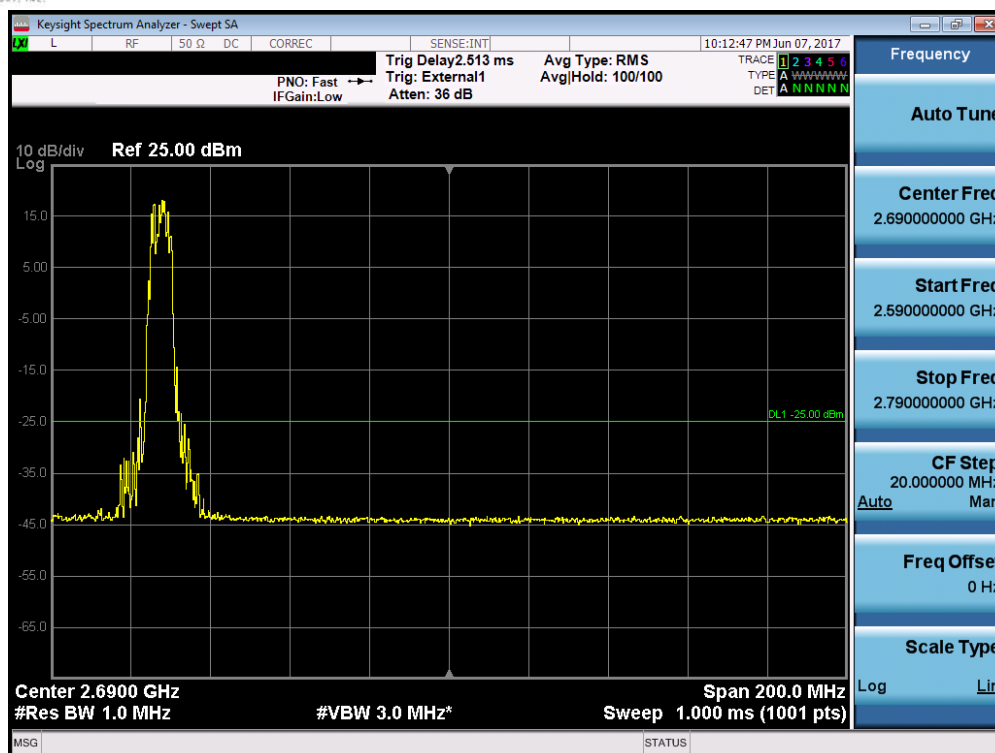


Plot 7-174. Upper ACP Plot (Band 7 – 20.0MHz QPSK – RB Size 100)

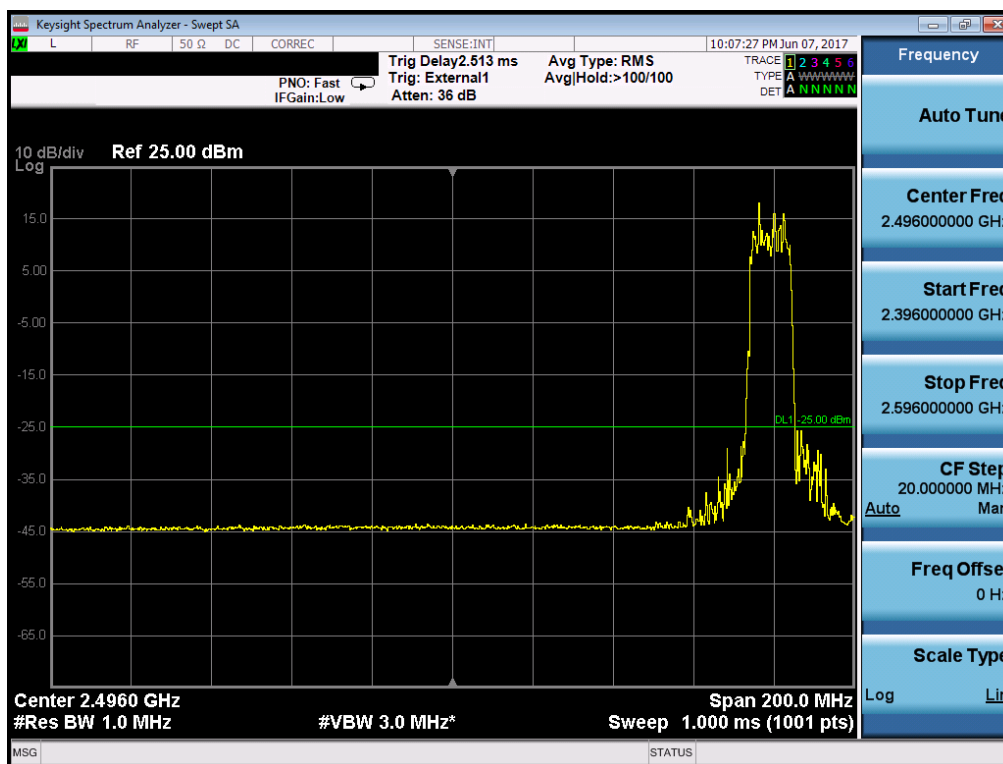


Plot 7-175. Lower Band Edge Plot (Band 38– 5.0MHz QPSK – RB Size 25)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet	Page 105 of 149

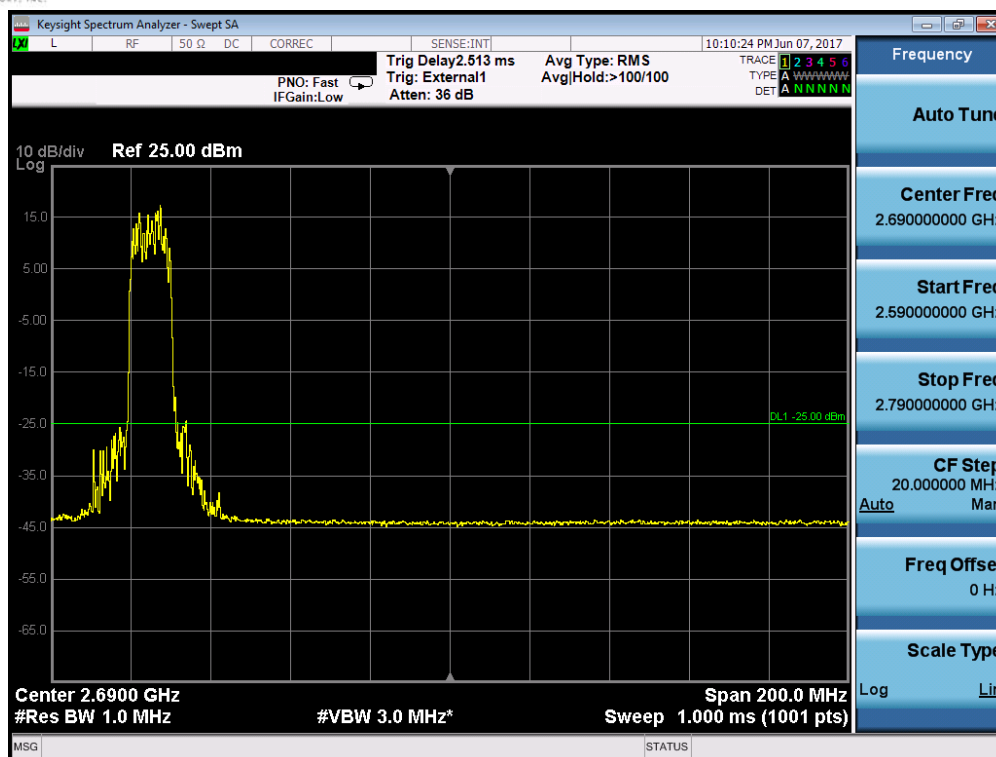


Plot 7-176. Upper Band Edge Plot (Band 38 – 5.0MHz QPSK – RB Size 25)

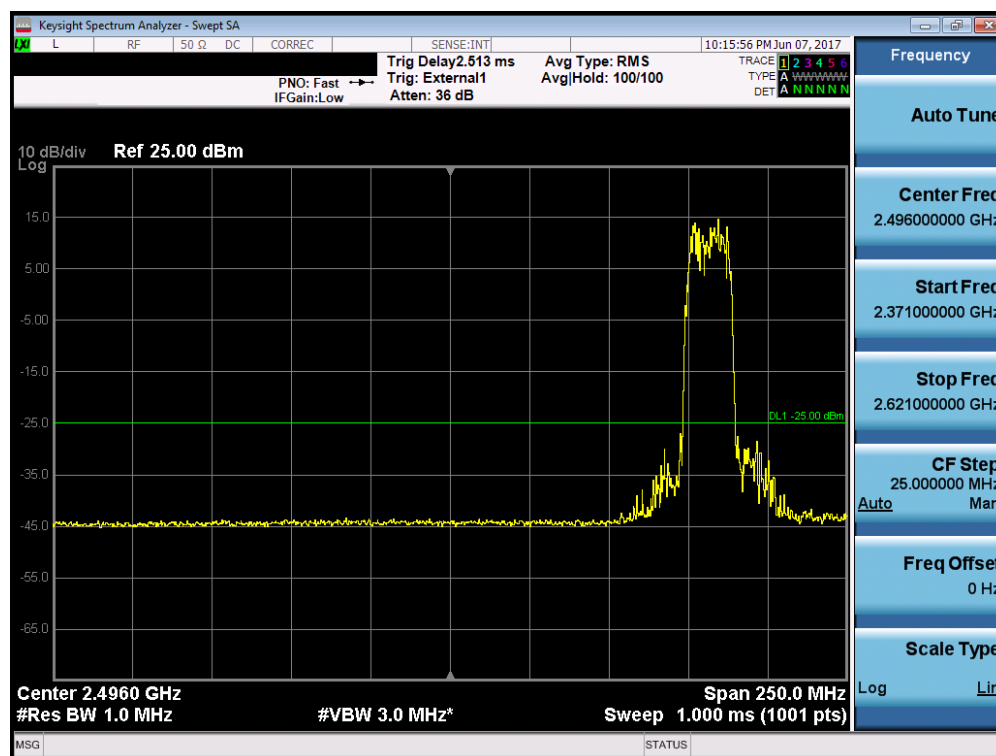


Plot 7-177. Lower Band Edge Plot (Band 38 – 10.0MHz QPSK – RB Size 50)

FCC ID: A3LSMT385	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		 Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet	Page 106 of 149

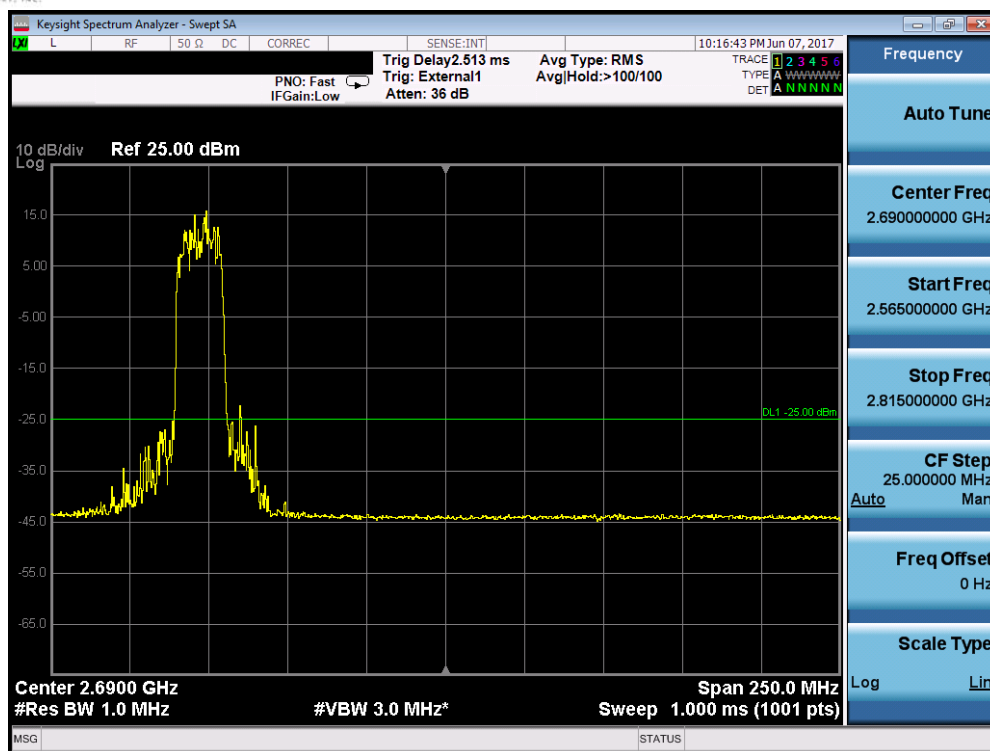


Plot 7-178. Upper Band Edge Plot (Band 38 – 10.0MHz QPSK – RB Size 50)

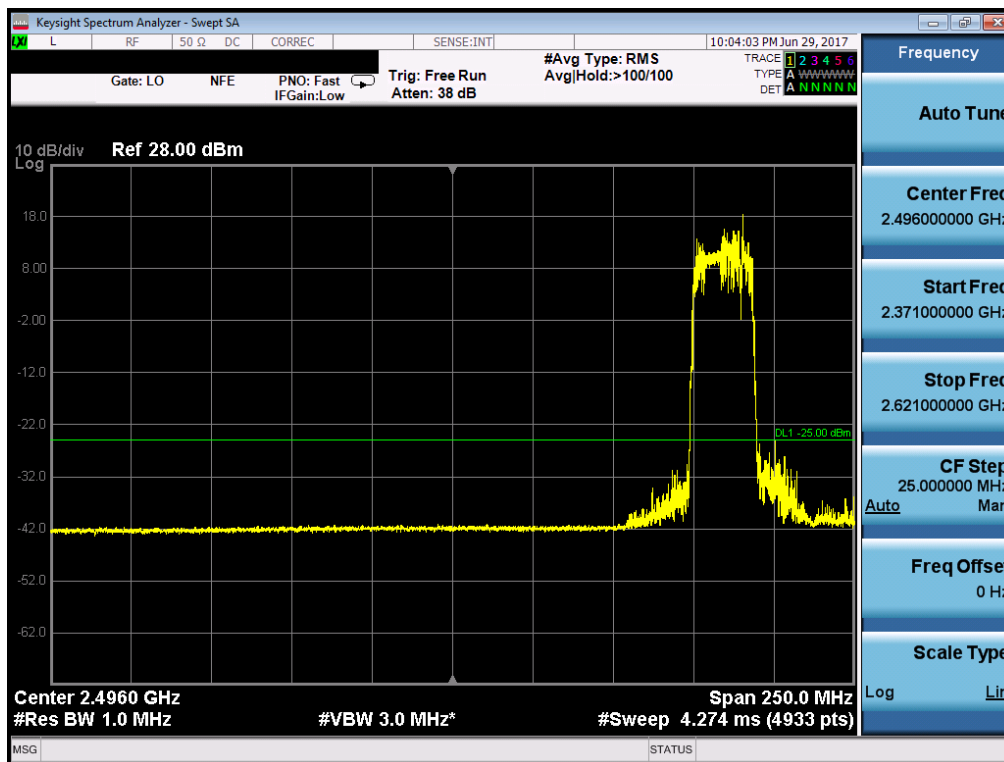


Plot 7-179. Lower Band Edge Plot (Band 38 – 15.0MHz QPSK – RB Size 75)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet	Page 107 of 149

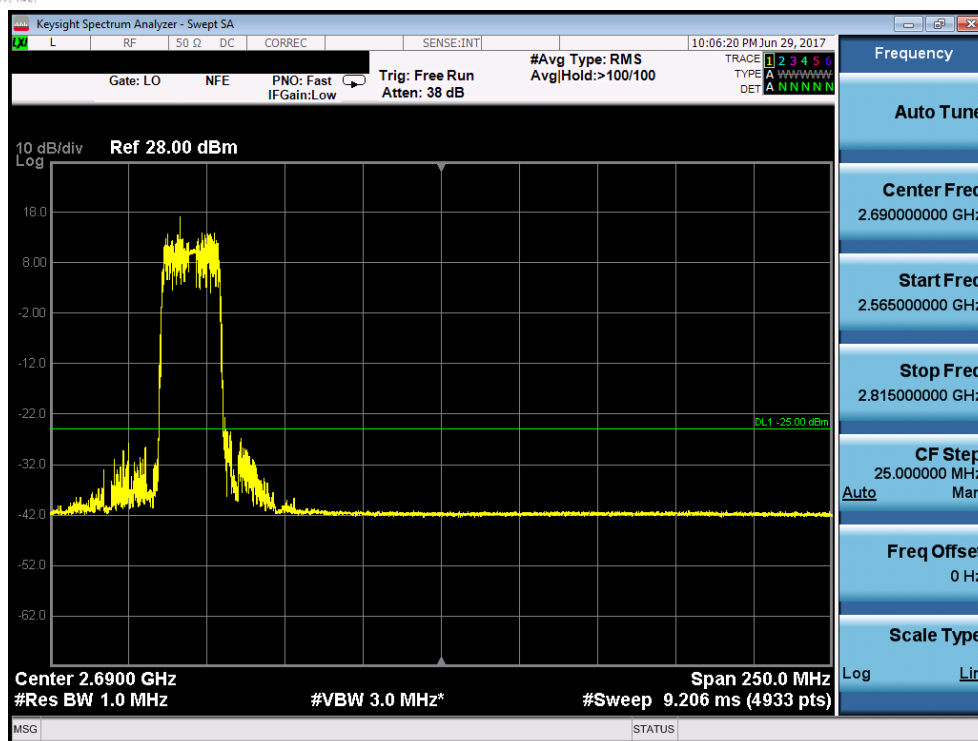


Plot 7-180. Upper Band Edge Plot (Band 38 – 15.0MHz QPSK – RB Size 75)



Plot 7-181. Lower Band Edge Plot (Band 38 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet	Page 108 of 149



Plot 7-182. Upper Band Edge Plot (Band 38 – 20.0MHz QPSK – RB Size 100)

FCC ID: A3LSMT385	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet		Page 109 of 149

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7.5 Peak-Average Ratio

§24.232(d)

Test Overview

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

Test Procedure Used

KDB 971168 D01 v02r02 – Section 5.7.1

Test Settings

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW > Emission bandwidth of signal
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

Test Setup

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

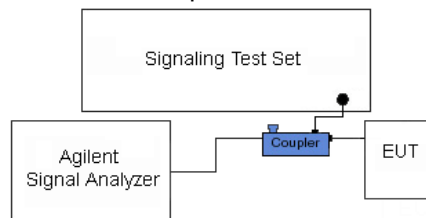
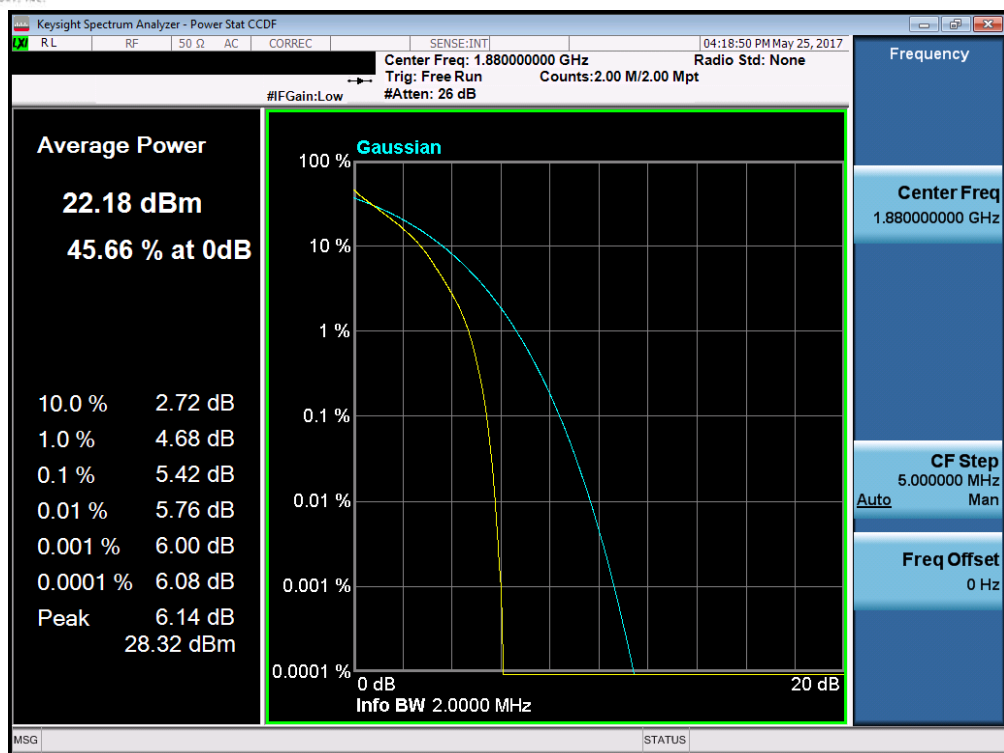


Figure 7-4. Test Instrument & Measurement Setup

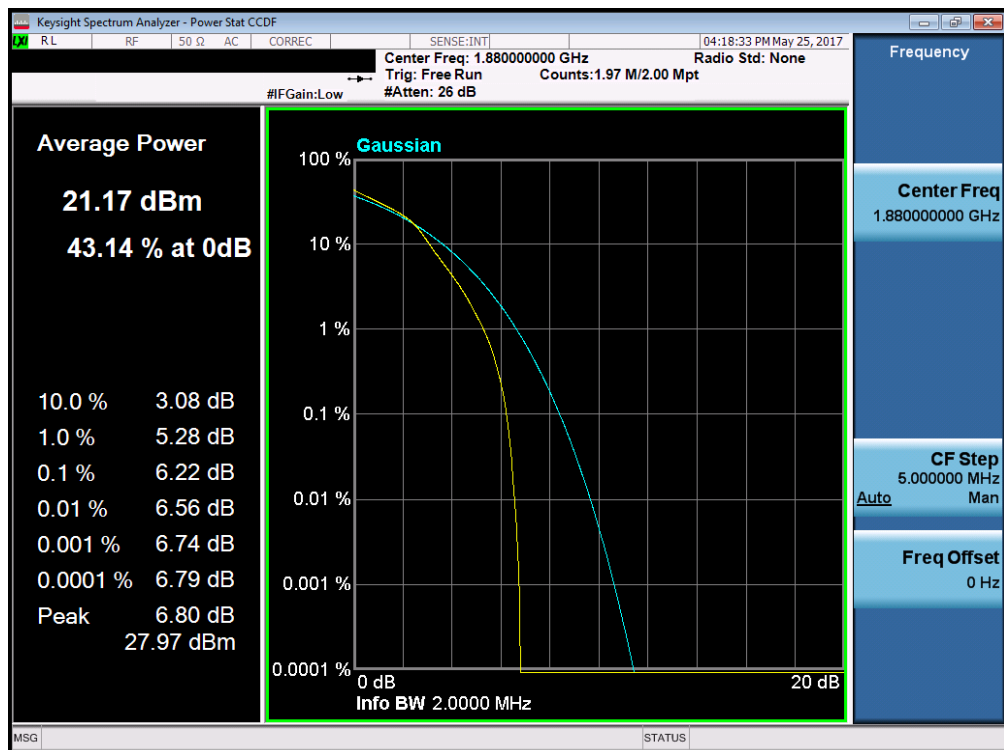
Test Notes

None.

FCC ID: A3LSMT385	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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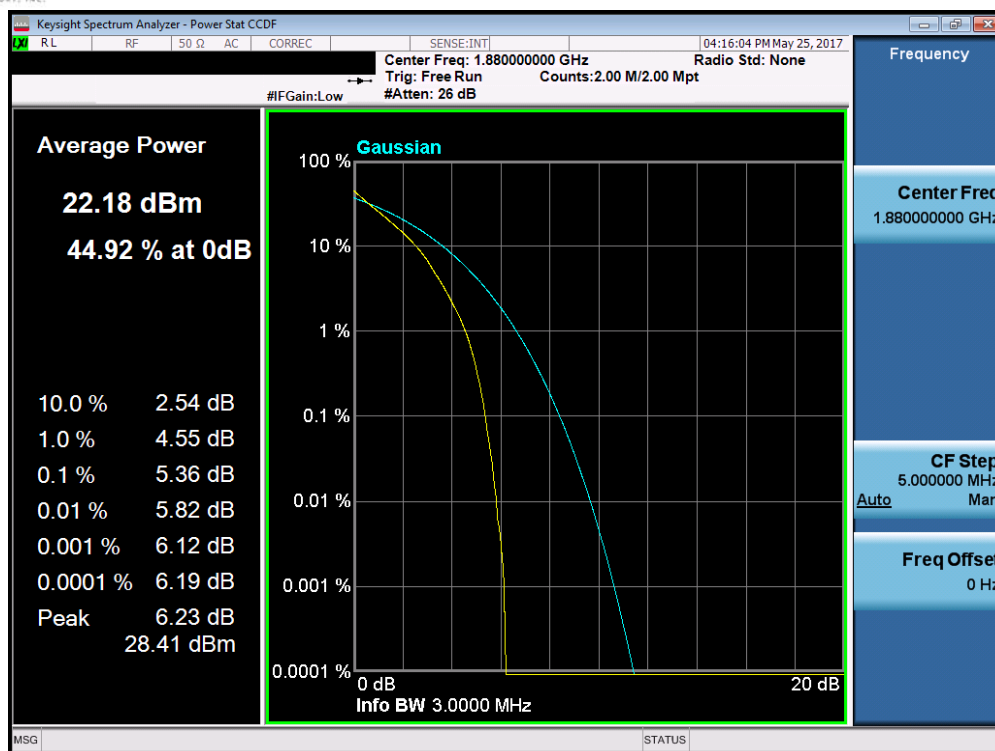


Plot 7-183. PAR Plot (Band 2 – 1.4MHz QPSK – RB Size 6)

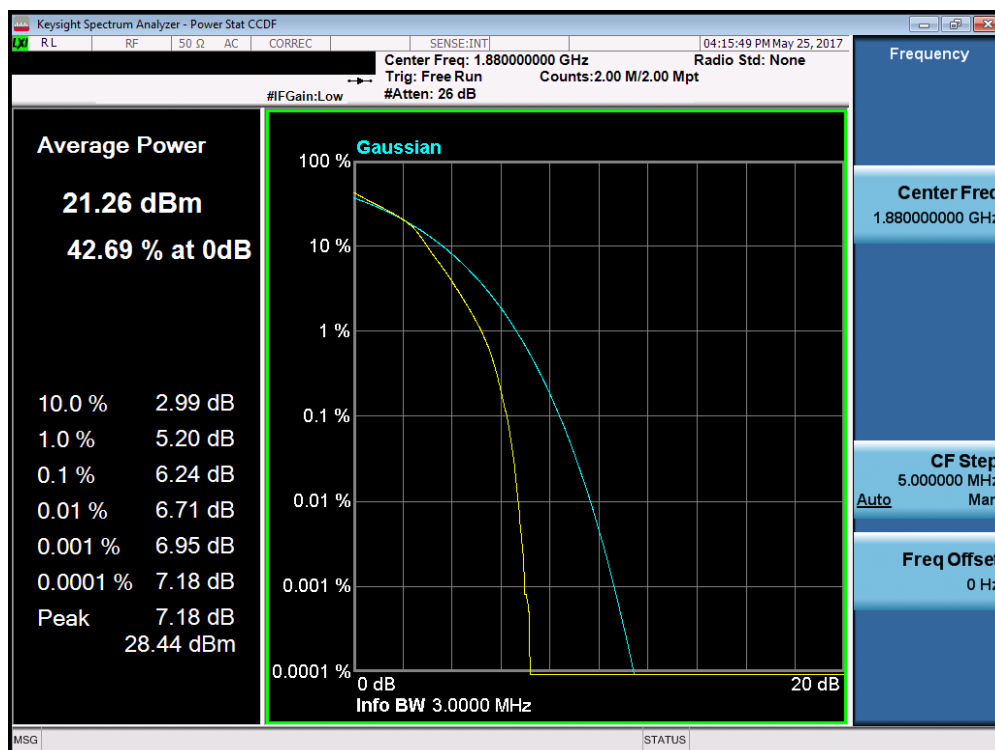


Plot 7-184. PAR Plot (Band 2 – 1.4MHz 16-QAM – RB Size 6)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet	Page 111 of 149

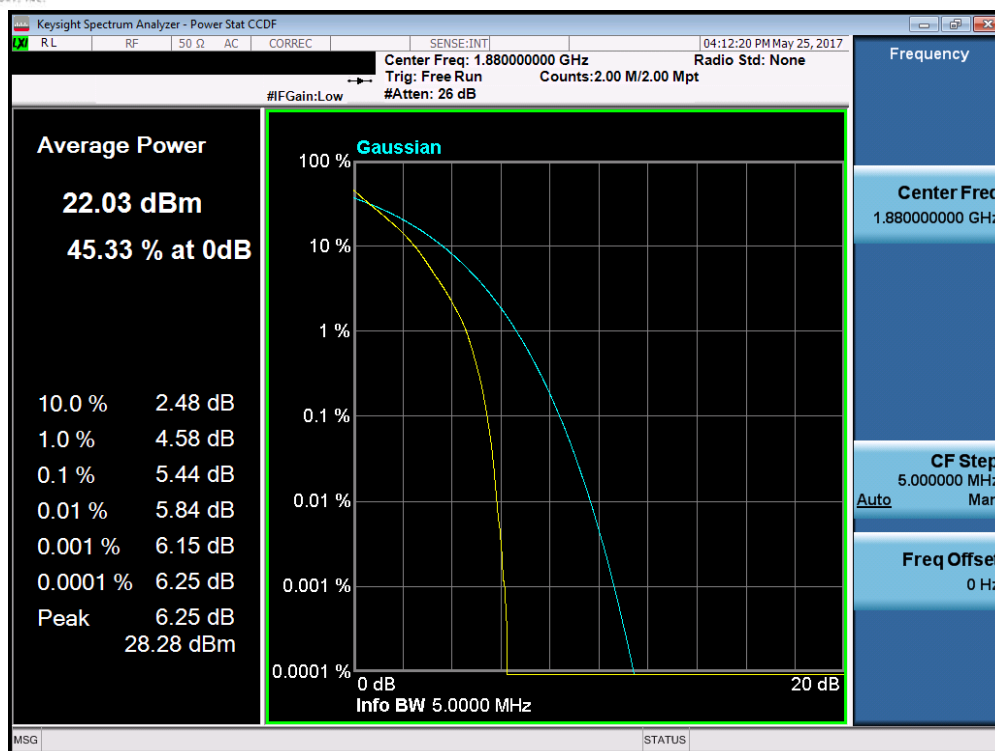


Plot 7-185. PAR Plot (Band 2 – 3.0MHz QPSK – RB Size 15)

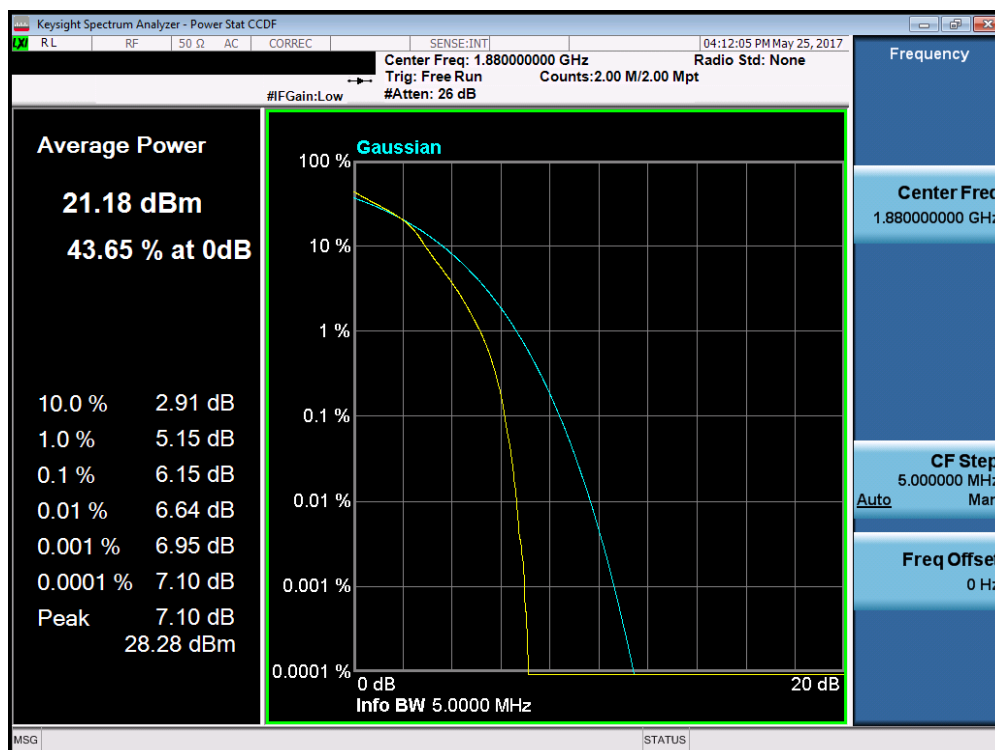


Plot 7-186. PAR Plot (Band 2 – 3.0MHz 16-QAM – RB Size 15)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet	Page 112 of 149

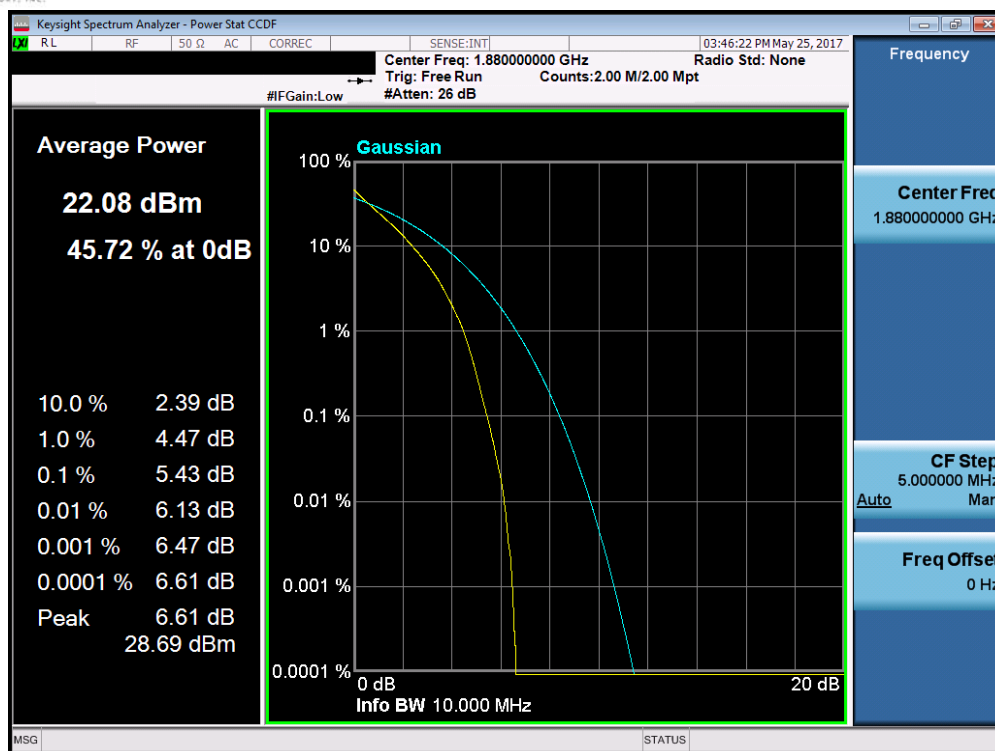


Plot 7-187. PAR Plot (Band 2 – 5.0MHz QPSK – RB Size 25)

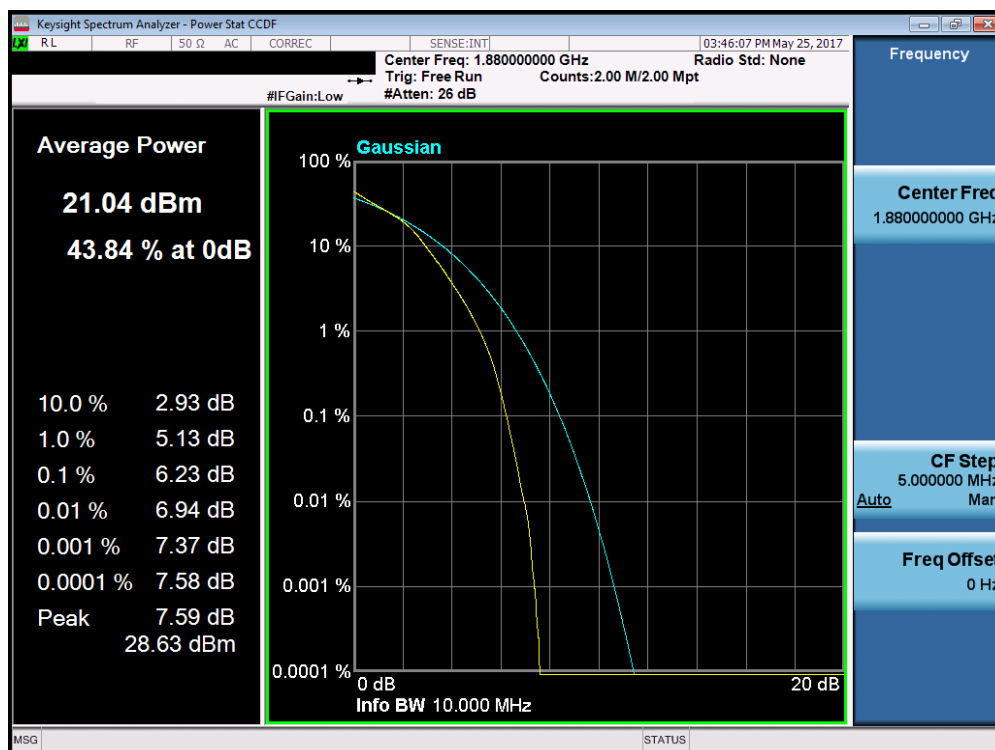


Plot 7-188. PAR Plot (Band 2 – 5.0MHz 16-QAM – RB Size 25)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet	Page 113 of 149

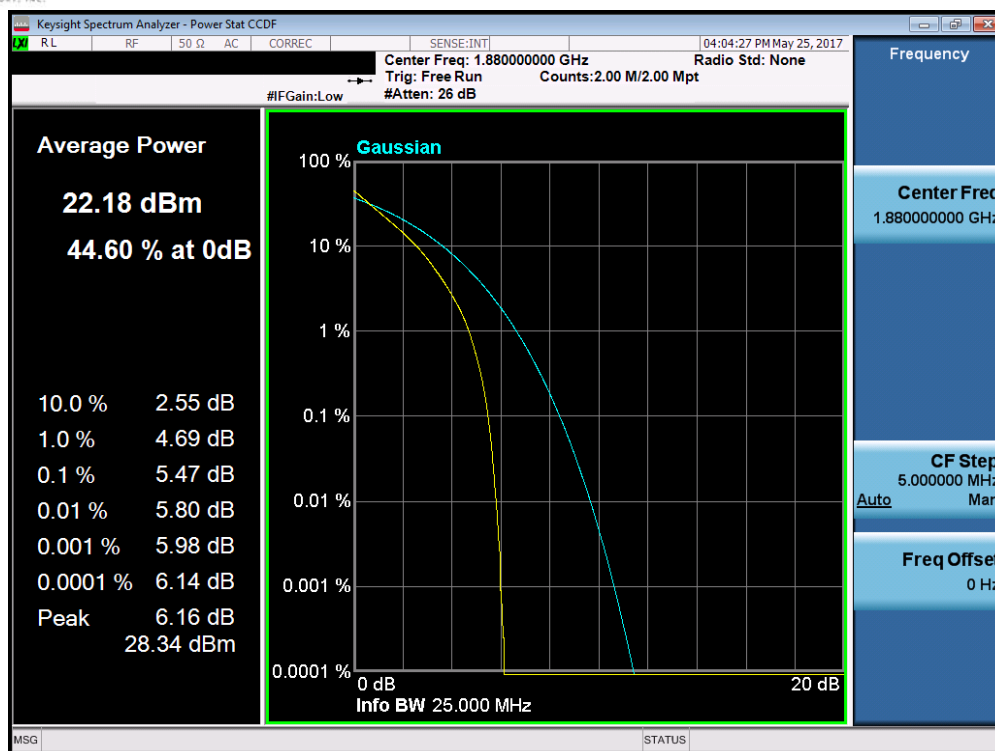


Plot 7-189. PAR Plot (Band 2 – 10.0MHz QPSK – RB Size 50)

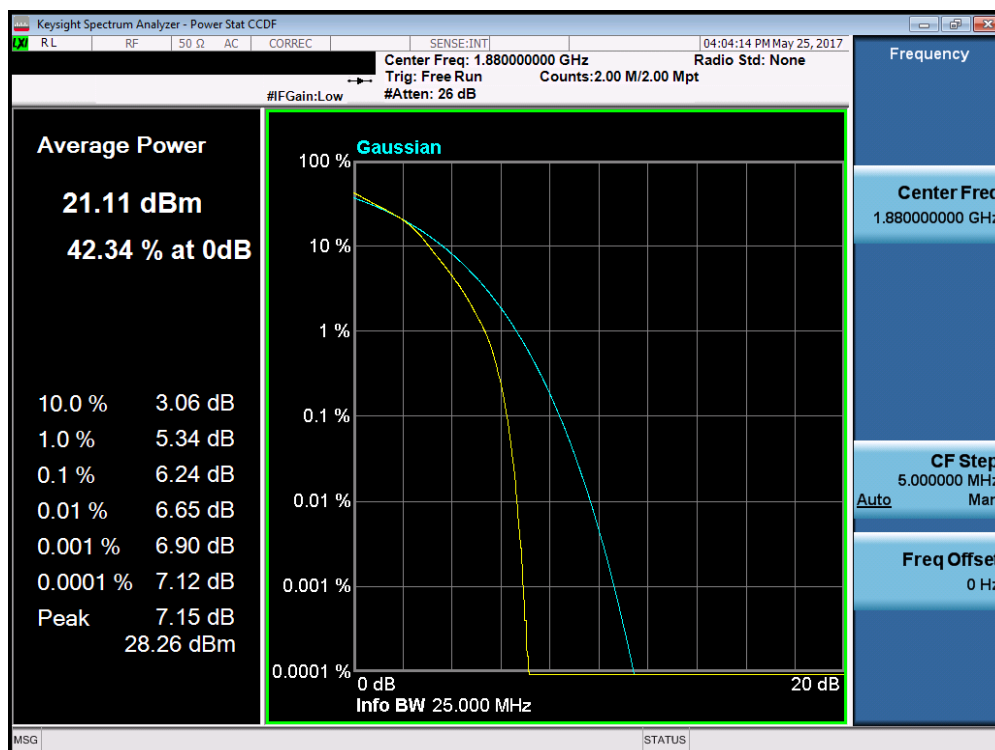


Plot 7-190. PAR Plot (Band 2 – 10.0MHz 16-QAM – RB Size 50)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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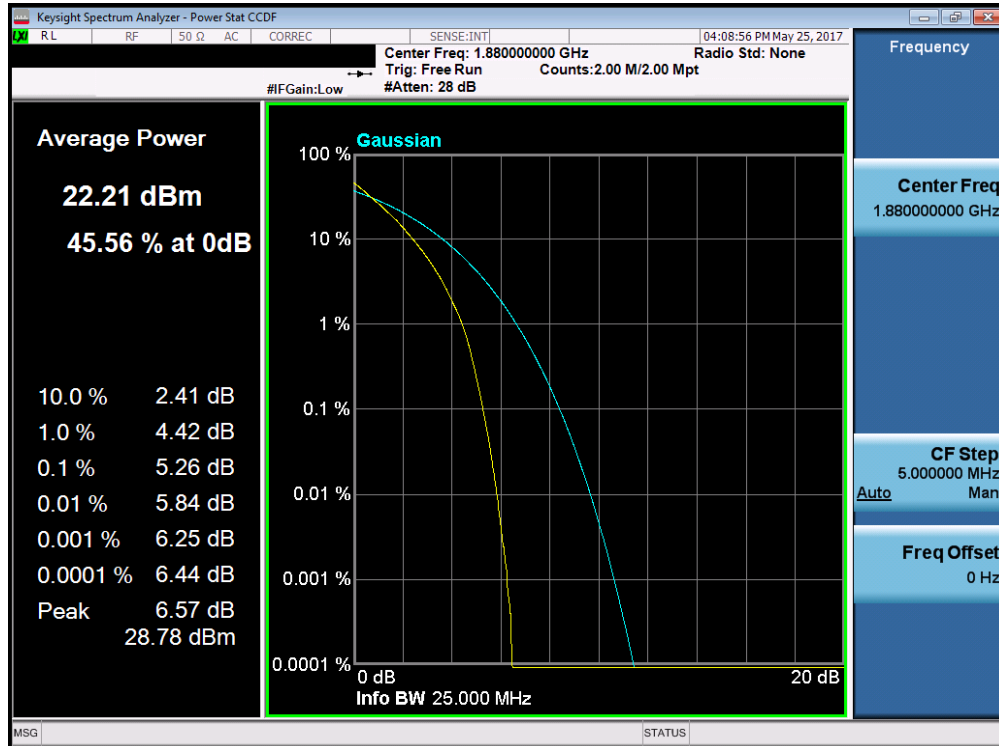


Plot 7-191. PAR Plot (Band 2 – 15.0MHz QPSK – RB Size 75)

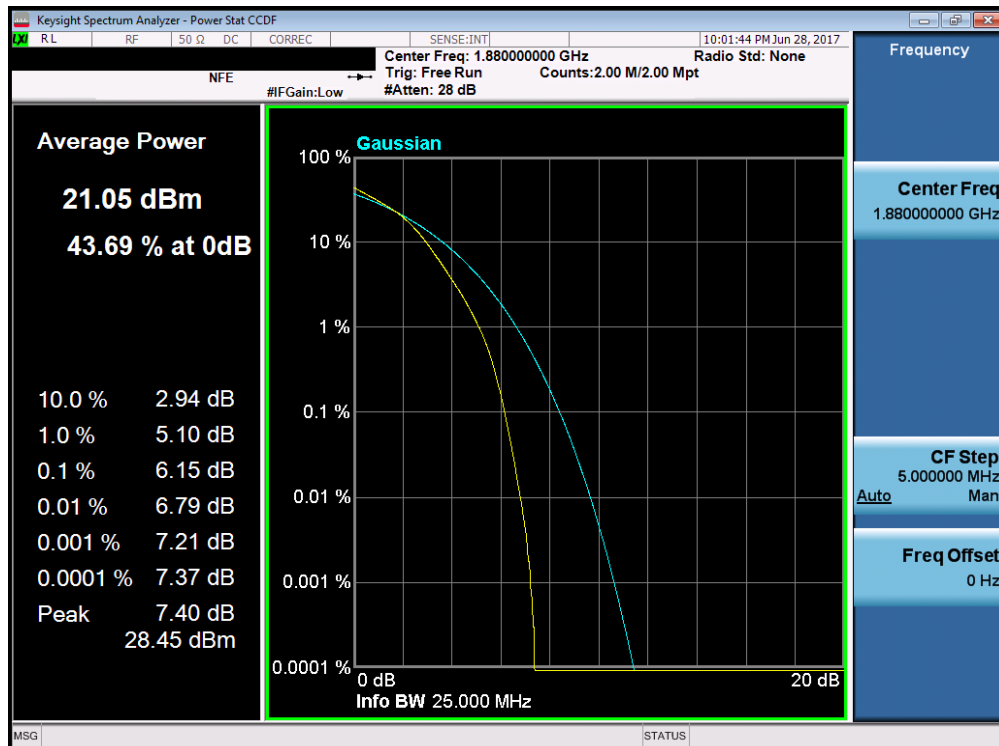


Plot 7-192. PAR Plot (Band 2 – 15.0MHz 16-QAM – RB Size 75)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Plot 7-193. PAR Plot (Band 2 – 20.0MHz QPSK – RB Size 100)



Plot 7-194. PAR Plot (Band 2 – 20.0MHz 16-QAM – RB Size 100)

FCC ID: A3LSMT385	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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7.6 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-D-2010 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

Test Procedures Used

KDB 971168 D01 v02r02 – Section 5.2.1

ANSI/TIA-603-D-2010 – Section 2.2.17

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation. For signals with burst transmission, the signal analyzer's "time domain power" measurement capability is used
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW $\geq 3 \times$ RBW
4. Span = 1.5 times the OBW
5. No. of sweep points $\geq 2 \times$ span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
Trigger is set to enable triggering only on full power bursts with the sweep time set less than or equal to the transmission burst duration
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation. For signals with burst transmission, the "gating" function was enabled to ensure that measurements are performed during times in which the transmitter is operating at its maximum power
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

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Test Setup

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

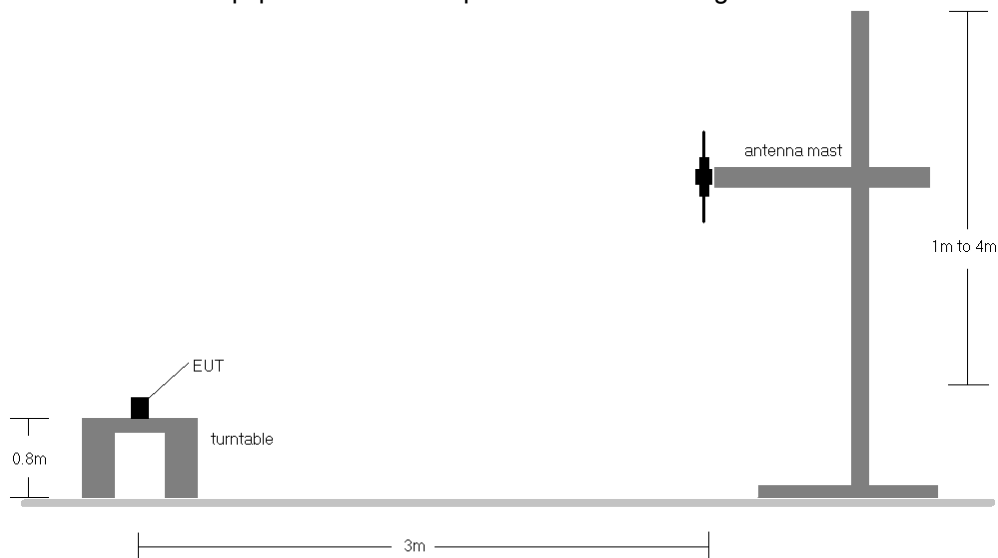


Figure 7-5. Radiated Test Setup <1GHz

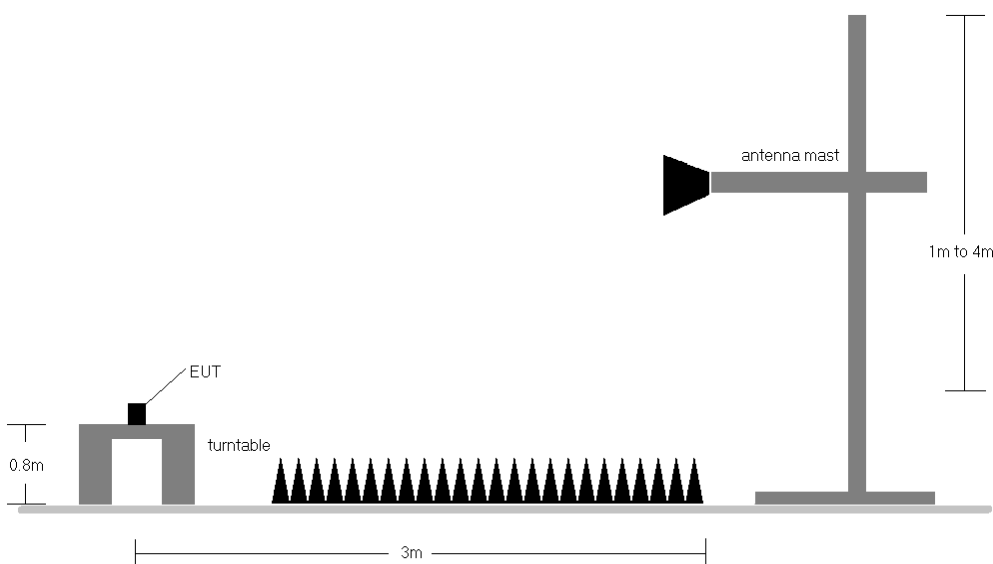


Figure 7-6. Radiated Test Setup >1GHz

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.

FCC ID: A3LSMT385	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet		Page 118 of 149

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	H	119	289	1 / 0	18.80	2.54	21.34	34.77	-13.43
710.00	5	QPSK	H	121	139	1 / 24	18.54	2.60	21.14	34.77	-13.64
713.50	5	QPSK	H	119	265	1 / 24	18.70	2.60	21.30	34.77	-13.47
706.50	5	16-QAM	H	119	289	1 / 0	17.27	2.54	19.81	34.77	-14.96
710.00	5	16-QAM	H	121	139	1 / 24	17.16	2.60	19.76	34.77	-15.02
713.50	5	16-QAM	H	119	265	1 / 24	17.65	2.60	20.25	34.77	-14.52
709.00	10	QPSK	H	139	119	1 / 49	18.93	2.58	21.51	34.77	-13.26
710.00	10	QPSK	H	137	122	1 / 49	18.66	2.60	21.26	34.77	-13.52
711.00	10	QPSK	H	142	119	1 / 49	18.89	2.60	21.49	34.77	-13.29
709.00	10	16-QAM	H	139	119	1 / 49	17.89	2.58	20.47	34.77	-14.30
710.00	10	16-QAM	H	137	122	1 / 49	17.25	2.60	19.85	34.77	-14.93
711.00	10	16-QAM	H	142	119	1 / 49	17.39	2.60	19.99	34.77	-14.79
709.00	10	QPSK	V	121	252	1 / 0	13.25	2.58	15.83	34.77	-18.94

Table 7-2. ERP Data (Band 17)

FCC ID: A3LSMT385		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet		Page 119 of 149

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBd]	ERP [dBm]	ERP Limit [dBm]	Margin [dB]
824.70	1.4	QPSK	H	397	117	1 / 0	15.13	5.51	20.64	38.45	-17.81
836.50	1.4	QPSK	H	113	395	1 / 0	15.73	5.14	20.87	38.45	-17.58
848.30	1.4	QPSK	H	356	113	1 / 0	15.63	4.68	20.31	38.45	-18.14
824.70	1.4	16-QAM	H	397	117	1 / 5	14.98	5.51	20.49	38.45	-17.96
836.50	1.4	16-QAM	H	113	395	1 / 0	14.60	5.14	19.74	38.45	-18.71
848.30	1.4	16-QAM	H	356	113	1 / 0	14.63	4.68	19.31	38.45	-19.14
825.50	3	QPSK	H	392	119	1 / 14	15.63	5.52	21.15	38.45	-17.30
836.50	3	QPSK	H	206	121	1 / 14	14.53	5.14	19.67	38.45	-18.78
847.50	3	QPSK	H	358	113	1 / 14	15.88	4.67	20.55	38.45	-17.90
825.50	3	16-QAM	H	392	119	1 / 14	14.90	5.52	20.42	38.45	-18.03
836.50	3	16-QAM	H	206	121	1 / 14	14.93	5.14	20.07	38.45	-18.38
847.50	3	16-QAM	H	358	113	1 / 14	14.63	4.67	19.30	38.45	-19.15
826.50	5	QPSK	H	119	395	1 / 24	16.13	5.51	21.64	38.45	-16.81
836.50	5	QPSK	H	206	119	1 / 0	15.53	5.14	20.67	38.45	-17.78
846.50	5	QPSK	H	115	358	1 / 24	16.69	4.66	21.35	38.45	-17.10
826.50	5	16-QAM	H	119	395	1 / 24	15.73	5.51	21.24	38.45	-17.21
836.50	5	16-QAM	H	206	119	1 / 0	15.29	5.14	20.43	38.45	-18.02
846.50	5	16-QAM	H	115	358	1 / 24	15.89	4.66	20.55	38.45	-17.90
829.00	10	QPSK	H	117	297	1 / 49	17.37	5.49	22.86	38.45	-15.59
836.50	10	QPSK	H	111	395	1 / 0	17.52	5.14	22.66	38.45	-15.79
844.00	10	QPSK	H	113	361	1 / 49	16.98	4.70	21.68	38.45	-16.77
829.00	10	16-QAM	H	117	297	1 / 49	17.23	5.49	22.72	38.45	-15.73
836.50	10	16-QAM	H	111	395	1 / 0	16.13	5.14	21.27	38.45	-17.18
844.00	10	16-QAM	H	113	361	1 / 49	14.93	4.70	19.63	38.45	-18.82
829.00	10	QPSK	V	110	281	1 / 74	17.28	5.49	22.77	38.45	-15.68

Table 7-3. ERP Data (Band 5)

FCC ID: A3LSMT385		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet		Page 120 of 149

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
1710.70	1.4	QPSK	H	112	266	1 / 0	12.90	9.51	22.41	30.00	-7.59
1732.50	1.4	QPSK	H	107	282	1 / 0	13.06	9.51	22.57	30.00	-7.43
1754.30	1.4	QPSK	H	112	267	1 / 0	12.69	9.51	22.20	30.00	-7.80
1710.70	1.4	16-QAM	H	112	266	1 / 5	11.97	9.51	21.48	30.00	-8.52
1732.50	1.4	16-QAM	H	107	282	1 / 0	12.10	9.51	21.61	30.00	-8.39
1754.30	1.4	16-QAM	H	112	267	1 / 0	11.88	9.51	21.39	30.00	-8.61
1711.50	3	QPSK	H	107	273	1 / 0	13.18	9.51	22.69	30.00	-7.31
1732.50	3	QPSK	H	110	282	1 / 0	13.16	9.51	22.67	30.00	-7.33
1753.50	3	QPSK	H	103	283	1 / 14	13.62	9.51	23.13	30.00	-6.87
1711.50	3	16-QAM	H	107	273	1 / 0	12.03	9.51	21.54	30.00	-8.46
1732.50	3	16-QAM	H	110	282	1 / 0	12.00	9.51	21.51	30.00	-8.49
1753.50	3	16-QAM	H	103	283	1 / 14	12.50	9.51	22.01	30.00	-7.99
1712.50	5	QPSK	H	101	272	1 / 0	14.27	9.51	23.78	30.00	-6.22
1732.50	5	QPSK	H	107	279	1 / 0	14.00	9.51	23.51	30.00	-6.49
1752.50	5	QPSK	H	103	283	1 / 24	14.65	9.51	24.16	30.00	-5.84
1712.50	5	16-QAM	H	101	272	1 / 0	12.60	9.51	22.11	30.00	-7.89
1732.50	5	16-QAM	H	107	279	1 / 24	12.70	9.51	22.21	30.00	-7.79
1752.50	5	16-QAM	H	103	283	1 / 24	13.64	9.51	23.15	30.00	-6.85
1715.00	10	QPSK	H	108	277	1 / 0	14.40	9.51	23.91	30.00	-6.09
1732.50	10	QPSK	H	110	228	1 / 49	14.38	9.51	23.89	30.00	-6.11
1750.00	10	QPSK	H	106	280	1 / 0	15.36	9.51	24.87	30.00	-5.13
1715.00	10	16-QAM	H	108	277	1 / 49	13.10	9.51	22.61	30.00	-7.39
1732.50	10	16-QAM	H	110	228	1 / 49	12.79	9.51	22.30	30.00	-7.70
1750.00	10	16-QAM	H	106	280	1 / 0	13.90	9.51	23.41	30.00	-6.59
1717.50	15	QPSK	H	112	274	1 / 0	14.37	9.51	23.88	30.00	-6.12
1732.50	15	QPSK	H	112	282	1 / 74	14.60	9.51	24.11	30.00	-5.89
1747.50	15	QPSK	H	110	280	1 / 0	14.90	9.51	24.41	30.00	-5.59
1717.50	15	16-QAM	H	112	274	1 / 0	12.90	9.51	22.41	30.00	-7.59
1732.50	15	16-QAM	H	112	282	1 / 74	13.10	9.51	22.61	30.00	-7.39
1747.50	15	16-QAM	H	110	280	1 / 0	13.85	9.51	23.36	30.00	-6.64
1720.00	20	QPSK	H	107	283	1 / 0	13.94	9.51	23.45	30.00	-6.55
1732.50	20	QPSK	H	107	289	1 / 99	14.70	9.51	24.21	30.00	-5.79
1745.00	20	QPSK	H	112	283	1 / 99	14.72	9.51	24.23	30.00	-5.77
1720.00	20	16-QAM	H	107	283	1 / 0	12.68	9.51	22.19	30.00	-7.81
1732.50	20	16-QAM	H	107	289	1 / 99	13.33	9.51	22.84	30.00	-7.16
1745.00	20	16-QAM	H	112	283	1 / 99	12.98	9.51	22.49	30.00	-7.51
1750.00	10	QPSK	V	161	86	1 / 99	11.61	9.51	21.12	30.00	-8.88

Table 7-4. EIRP Data (Band 4)

FCC ID: A3LSMT385		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet	Page 121 of 149	

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	100	305	1 / 0	13.94	9.12	23.06	33.01	-9.95
1880.00	1.4	QPSK	H	100	304	1 / 5	13.94	9.10	23.04	33.01	-9.97
1909.30	1.4	QPSK	H	100	309	1 / 0	13.49	9.16	22.65	33.01	-10.36
1850.70	1.4	16-QAM	H	100	305	1 / 5	12.99	9.12	22.11	33.01	-10.90
1880.00	1.4	16-QAM	H	100	304	1 / 5	12.94	9.10	22.04	33.01	-10.97
1909.30	1.4	16-QAM	H	100	309	1 / 0	12.26	9.16	21.42	33.01	-11.59
1851.50	3	QPSK	H	101	310	1 / 0	14.27	9.12	23.39	33.01	-9.62
1880.00	3	QPSK	H	100	302	1 / 0	14.04	9.10	23.14	33.01	-9.87
1908.50	3	QPSK	H	101	307	1 / 0	13.72	9.15	22.87	33.01	-10.14
1851.50	3	16-QAM	H	101	310	1 / 0	12.64	9.12	21.76	33.01	-11.25
1880.00	3	16-QAM	H	100	302	1 / 0	13.04	9.10	22.14	33.01	-10.87
1908.50	3	16-QAM	H	101	307	1 / 0	12.39	9.15	21.54	33.01	-11.47
1852.50	5	QPSK	H	101	302	1 / 0	15.14	9.12	24.26	33.01	-8.75
1880.00	5	QPSK	H	100	298	1 / 0	14.62	9.10	23.72	33.01	-9.29
1907.50	5	QPSK	H	100	310	1 / 24	14.23	9.15	23.38	33.01	-9.63
1852.50	5	16-QAM	H	101	302	1 / 0	13.38	9.12	22.50	33.01	-10.51
1880.00	5	16-QAM	H	100	298	1 / 0	12.69	9.10	21.79	33.01	-11.22
1907.50	5	16-QAM	H	100	310	1 / 24	12.59	9.15	21.74	33.01	-11.27
1855.00	10	QPSK	H	100	308	1 / 0	15.34	9.12	24.46	33.01	-8.55
1880.00	10	QPSK	H	100	303	1 / 49	15.07	9.10	24.17	33.01	-8.84
1905.00	10	QPSK	H	101	309	1 / 49	14.75	9.13	23.88	33.01	-9.13
1855.00	10	16-QAM	H	100	308	1 / 0	14.34	9.12	23.46	33.01	-9.55
1880.00	10	16-QAM	H	100	303	1 / 49	13.34	9.10	22.44	33.01	-10.57
1905.00	10	16-QAM	H	101	309	1 / 49	13.73	9.13	22.86	33.01	-10.15
1857.50	15	QPSK	H	100	305	1 / 0	15.34	9.11	24.45	33.01	-8.56
1880.00	15	QPSK	H	100	298	1 / 74	14.94	9.10	24.04	33.01	-8.97
1902.50	15	QPSK	H	100	302	1 / 0	15.08	9.11	24.19	33.01	-8.82
1857.50	15	16-QAM	H	100	305	1 / 74	14.14	9.11	23.25	33.01	-9.76
1880.00	15	16-QAM	H	100	298	1 / 74	13.56	9.10	22.66	33.01	-10.35
1902.50	15	16-QAM	H	100	302	1 / 0	14.07	9.11	23.18	33.01	-9.83
1860.00	20	QPSK	H	101	299	1 / 0	15.17	9.11	24.28	33.01	-8.73
1880.00	20	QPSK	H	100	296	1 / 99	14.78	9.10	23.88	33.01	-9.13
1900.00	20	QPSK	H	101	306	1 / 0	14.54	9.09	23.63	33.01	-9.38
1860.00	20	16-QAM	H	101	299	1 / 0	13.18	9.11	22.29	33.01	-10.72
1880.00	20	16-QAM	H	100	296	1 / 99	13.44	9.10	22.54	33.01	-10.47
1900.00	20	16-QAM	H	101	306	1 / 0	12.91	9.09	22.00	33.01	-11.01
1855.00	10	QPSK	V	122	268	1 / 99	13.23	9.12	22.35	33.01	-10.66

Table 7-5. EIRP Data (Band 2)

FCC ID: A3LSMT385	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet	Page 122 of 149

Frequency [MHz]	Channel Bandwidth [MHz]	Mod.	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	RB Size/Offset	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Margin [dB]
2502.50	5	QPSK	H	100	130	1 / 24	13.64	8.42	22.06	33.01	-10.95
2535.00	5	QPSK	H	100	128	1 / 24	13.44	8.50	21.94	33.01	-11.07
2567.50	5	QPSK	H	107	233	1 / 0	15.00	8.59	23.59	33.01	-9.42
2502.50	5	16-QAM	H	100	130	1 / 24	12.70	8.42	21.12	33.01	-11.89
2535.00	5	16-QAM	H	100	128	1 / 24	12.45	8.50	20.95	33.01	-12.06
2567.50	5	16-QAM	H	107	233	1 / 0	13.99	8.59	22.58	33.01	-10.43
2505.00	10	QPSK	H	110	232	1 / 49	14.09	8.42	22.51	33.01	-10.50
2535.00	10	QPSK	H	110	240	1 / 49	13.91	8.50	22.41	33.01	-10.60
2565.00	10	QPSK	H	105	233	1 / 49	15.00	8.58	23.58	33.01	-9.43
2505.00	10	16-QAM	H	110	232	1 / 49	13.09	8.42	21.51	33.01	-11.50
2535.00	10	16-QAM	H	110	240	1 / 0	12.72	8.50	21.22	33.01	-11.79
2565.00	10	16-QAM	H	105	233	1 / 49	13.70	8.58	22.28	33.01	-10.73
2507.50	15	QPSK	H	110	239	1 / 74	14.35	8.43	22.78	33.01	-10.23
2535.00	15	QPSK	H	112	234	1 / 74	13.74	8.50	22.24	33.01	-10.77
2562.50	15	QPSK	H	105	233	1 / 74	15.15	8.57	23.72	33.01	-9.29
2507.50	15	16-QAM	H	110	239	1 / 74	13.25	8.43	21.68	33.01	-11.33
2535.00	15	16-QAM	H	112	234	1 / 74	12.60	8.50	21.10	33.01	-11.91
2562.50	15	16-QAM	H	105	233	1 / 74	13.75	8.57	22.32	33.01	-10.69
2510.00	20	QPSK	H	130	101	1 / 0	13.59	8.44	22.03	33.01	-10.98
2535.00	20	QPSK	H	100	128	1 / 99	13.58	8.50	22.08	33.01	-10.93
2560.00	20	QPSK	H	101	126	1 / 0	13.15	8.57	21.72	33.01	-11.29
2510.00	20	16-QAM	H	130	101	1 / 0	11.88	8.44	20.32	33.01	-12.69
2535.00	20	16-QAM	H	100	128	1 / 99	12.31	8.50	20.81	33.01	-12.20
2560.00	20	16-QAM	H	101	126	1 / 0	12.15	8.57	20.72	33.01	-12.29
2562.50	15	QPSK	V	114	95	1 / 99	13.63	8.57	22.20	33.01	-10.81

Table 7-6. EIRP Data (Band 7)

FCC ID: A3LSMT385	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) 			Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet		Page 123 of 149

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]
2572.50	5	QPSK	H	106	236	1 / 24	11.15	8.60	19.75	33.01	-13.26
2595.00	5	QPSK	H	100	222	1 / 24	11.39	8.66	20.05	33.01	-12.96
2617.50	5	QPSK	H	221	106	1 / 24	11.22	8.62	19.84	33.01	-13.17
2572.50	5	16-QAM	H	106	236	1 / 24	9.97	8.60	18.57	33.01	-14.44
2595.00	5	16-QAM	H	100	222	1 / 24	10.03	8.66	18.69	33.01	-14.32
2617.50	5	16-QAM	H	221	106	1 / 24	10.29	8.62	18.91	33.01	-14.10
2575.00	10	QPSK	H	114	228	1 / 0	11.04	8.60	19.64	33.01	-13.37
2595.00	10	QPSK	H	100	228	1 / 49	11.71	8.66	20.37	33.01	-12.64
2615.00	10	QPSK	H	106	237	1 / 49	11.38	8.63	20.01	33.01	-13.00
2575.00	10	16-QAM	H	114	228	1 / 0	10.45	8.60	19.05	33.01	-13.96
2595.00	10	16-QAM	H	100	228	1 / 49	10.54	8.66	19.20	33.01	-13.81
2615.00	10	16-QAM	H	106	237	1 / 49	9.73	8.63	18.36	33.01	-14.65
2577.50	15	QPSK	H	106	306	1 / 0	9.74	8.61	18.35	33.01	-14.66
2595.00	15	QPSK	H	110	20	1 / 0	12.03	8.66	20.69	33.01	-12.32
2612.50	15	QPSK	H	106	241	1 / 74	11.52	8.64	20.16	33.01	-12.85
2577.50	15	16-QAM	H	106	306	1 / 0	8.80	8.61	17.41	33.01	-15.60
2595.00	15	16-QAM	H	110	20	1 / 0	10.96	8.66	19.62	33.01	-13.39
2612.50	15	16-QAM	H	106	241	1 / 74	9.89	8.64	18.53	33.01	-14.48
2580.00	20	QPSK	H	115	30	1 / 0	12.65	8.42	21.07	33.01	-11.94
2595.00	20	QPSK	H	118	32	1 / 0	11.60	8.66	20.26	33.01	-12.75
2610.00	20	QPSK	H	112	35	1 / 0	12.05	8.46	20.51	33.01	-12.50
2580.00	20	16-QAM	H	115	30	1 / 0	11.50	8.42	19.92	33.01	-13.09
2595.00	20	16-QAM	H	118	32	1 / 0	10.58	8.65	19.23	33.01	-13.78
2610.00	20	16-QAM	H	112	35	1 / 0	11.10	8.46	19.56	33.01	-13.45
2580.00	20	QPSK	V	112	34	1 / 99	8.03	8.42	16.45	33.01	-16.56

Table 7-7. EIRP Data (Band 38)

FCC ID: A3LSMT385		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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7.7 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-D-2010 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized tuned dipole antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas.

Test Procedures Used

KDB 971168 D01 v02r02 – Section 5.8

ANSI/TIA-603-D-2010 – Section 2.2.12

Test Settings

1. RBW = 100kHz for emissions below 1GHz and 1MHz for emissions above 1GHz
2. VBW $\geq 3 \times$ RBW
3. Span = 1.5 times the OBW
4. No. of sweep points $\geq 2 \times$ span / RBW
5. Detector = RMS
6. Trace mode = Average (Max Hold for pulsed emissions)
7. The trace was allowed to stabilize

FCC ID: A3LSMT385	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Test Setup

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

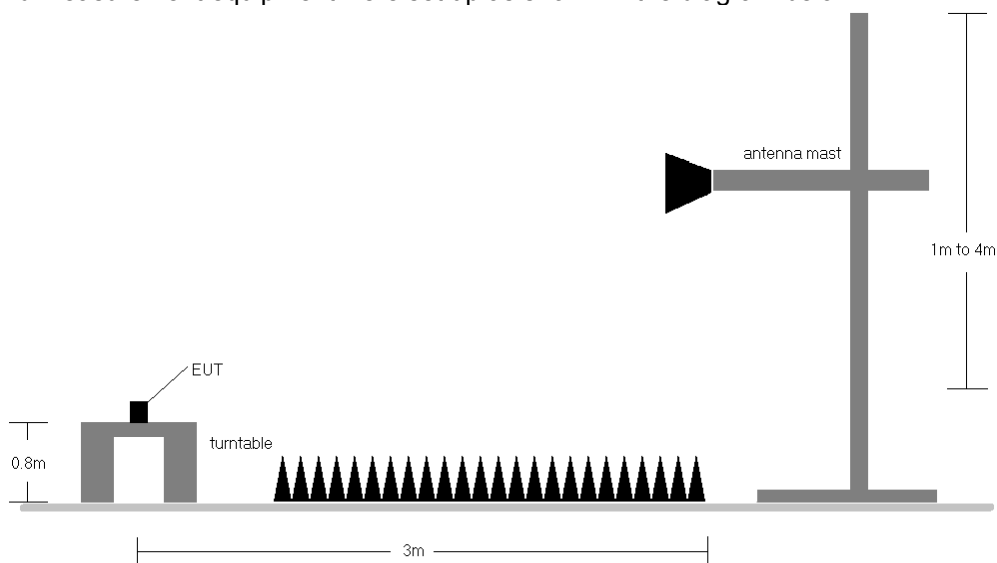


Figure 7-7. Test Instrument & Measurement Setup

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.
- 5) The "-" shown in the following RSE tables are used to denote a noise floor measurement.

FCC ID: A3LSMT385	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	SAMSUNG	Approved by: Quality Manager
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OPERATING FREQUENCY: 709.00 MHz
 CHANNEL: 23780
 MEASURED OUTPUT POWER: 21.51 dBm = 0.142 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 34.51 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]
1418.00	H	110	131	-59.05	5.72	-53.33	74.8
2127.00	H	254	106	-69.28	6.77	-62.51	84.0
2836.00	H	100	78	-62.78	7.89	-54.89	76.4
3545.00	H	184	280	-37.96	7.81	-30.15	51.7
4254.00	H	178	37	-56.37	8.44	-47.93	69.4
4963.00	H	-	-	-67.89	8.75	-59.14	80.6

Table 7-8. Radiated Spurious Data (Band 17 – Low Channel)

OPERATING FREQUENCY: 710.00 MHz
 CHANNEL: 23790
 MEASURED OUTPUT POWER: 21.26 dBm = 0.134 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 34.26 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1420.00	H	100	126	-57.73	5.73	-51.99	73.2
2130.00	H	202	263	-66.36	6.78	-59.58	80.8
2840.00	H	204	61	-64.78	7.89	-56.89	78.1
3550.00	H	184	281	-36.96	7.81	-29.15	50.4
4260.00	H	-	-	-70.35	8.46	-61.89	83.1

Table 7-9. Radiated Spurious Data (Band 17 – Mid Channel)

FCC ID: A3LSMT385		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 711.00 MHz
 CHANNEL: 23800
 MEASURED OUTPUT POWER: 21.49 dBm = 0.141 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 34.49 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBd]	Spurious Emission Level [dBm]	[dBc]
1422.00	H	111	139	-58.14	5.75	-52.39	73.9
2133.00	H	123	104	-66.09	6.79	-59.30	80.8
2844.00	H	112	83	-61.52	7.88	-53.64	75.1
3555.00	H	187	276	-36.09	7.81	-28.27	49.8
4266.00	H	182	28	-56.18	8.48	-47.71	69.2
4977.00	H	-	-	-67.85	8.76	-59.09	80.6

Table 7-10. Radiated Spurious Data (Band 17 – High Channel)

OPERATING FREQUENCY: 829.00 MHz
 CHANNEL: 20450
 MEASURED OUTPUT POWER: 22.86 dBm = 0.193 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 35.86 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]
1658.00	H	100	93	-53.52	6.70	-46.83	69.7
2487.00	H	-	-	-73.45	7.58	-65.88	88.7
3316.00	H	100	283	-52.90	7.42	-45.48	68.3
4145.00	H	185	35	-44.21	8.13	-36.08	58.9
4974.00	H	-	-	-67.82	8.76	-59.06	81.9

Table 7-11. Radiated Spurious Data (Band 5 – Low Channel)

FCC ID: A3LSMT385		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 836.50 MHz
 CHANNEL: 20525
 MEASURED OUTPUT POWER: 22.66 dBm = 0.185 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 35.66 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	123	317	-63.77	6.70	-57.07	79.7
2509.50	H	117	312	-73.10	7.63	-65.47	88.1
3346.00	H	190	78	-51.44	7.51	-43.93	66.6
4182.50	H	184	27	-45.69	8.23	-37.46	60.1
5019.00	H	-	-	-67.69	8.75	-58.94	81.6

Table 7-12. Radiated Spurious Data (Band 5 – Mid Channel)

OPERATING FREQUENCY: 844.00 MHz
 CHANNEL: 20600
 MEASURED OUTPUT POWER: 21.68 dBm = 0.147 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 34.68 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]
1688.00	H	121	98	-53.36	6.70	-46.66	68.3
2532.00	H	189	105	-67.80	7.61	-60.19	81.9
3376.00	H	186	86	-50.58	7.61	-42.97	64.7
4220.00	H	184	17	-45.37	8.33	-37.04	58.7
5064.00	H	-	-	-67.31	8.67	-58.64	80.3

Table 7-13. Radiated Spurious Data (Band 5 – High Channel)

FCC ID: A3LSMT385		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 1715.00 MHz
 CHANNEL: 20000
 MEASURED OUTPUT POWER: 23.91 dBm = 0.246 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 36.91 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3430.00	H	204	64	-68.96	9.87	-59.08	83.0
5145.00	H	281	201	-67.14	10.75	-56.38	80.3
6860.00	H	-	-	-61.56	11.68	-49.88	73.8

Table 7-14. Radiated Spurious Data (Band 4 – Low Channel)

OPERATING FREQUENCY: 1732.50 MHz
 CHANNEL: 20175
 MEASURED OUTPUT POWER: 23.89 dBm = 0.245 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 36.89 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	193	282	-67.09	9.91	-57.18	81.1
5197.50	H	-	-	-67.74	10.75	-57.00	80.9

Table 7-15. Radiated Spurious Data (Band 4 – Mid Channel)

FCC ID: A3LSMT385		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet		Page 130 of 149

OPERATING FREQUENCY: 1750.00 MHz
 CHANNEL: 20350
 MEASURED OUTPUT POWER: 24.87 dBm = 0.307 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 37.87 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]
3500.00	H	178	41	-69.50	9.95	-59.55	84.4
5250.00	H	200	71	-67.41	10.71	-56.70	81.6
7000.00	H	-	-	-61.14	11.84	-49.30	74.2

Table 7-16. Radiated Spurious Data (Band 4 – High Channel)

OPERATING FREQUENCY: 1855.00 MHz
 CHANNEL: 18650
 MEASURED OUTPUT POWER: 24.46 dBm = 0.279 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10}(W) =$ 37.46 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3710.00	H	287	51	-57.60	9.99	-47.60	72.1
5565.00	H	-	-	-67.25	11.21	-56.04	80.5

Table 7-17. Radiated Spurious Data (Band 2 – Low Channel)

FCC ID: A3LSMT385		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 1880.00 MHz
 CHANNEL: 18900
 MEASURED OUTPUT POWER: 24.17 dBm = 0.261 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 37.17 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
3760.00	H	171	235	-50.66	9.79	-40.87	65.0
5640.00	H	-	-	-67.31	11.35	-55.96	80.1

Table 7-18. Radiated Spurious Data (Band 2 – Mid Channel)

OPERATING FREQUENCY: 1905.00 MHz
 CHANNEL: 19150
 MEASURED OUTPUT POWER: 23.88 dBm = 0.244 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 10.0 MHz
 DISTANCE: 3 meters
 LIMIT: $43 + 10 \log_{10} (W) =$ 36.88 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]
3810.00	H	166	235	-49.22	9.59	-39.63	63.5
5715.00	H	-	-	-67.51	11.43	-56.08	80.0

Table 7-19. Radiated Spurious Data (Band 2 – High Channel)

FCC ID: A3LSMT385		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet		Page 132 of 149

OPERATING FREQUENCY: 2507.50 MHz
 CHANNEL: 20825
 MEASURED OUTPUT POWER: 22.78 dBm = 0.190 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 47.78 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]
5015.00	H	101	358	-66.25	11.16	-55.09	77.9
7522.50	H	-	-	-61.47	11.22	-50.24	73.0

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

OPERATING FREQUENCY: 2535.00 MHz
 CHANNEL: 21100
 MEASURED OUTPUT POWER: 22.24 dBm = 0.168 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 47.24 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]	RUN1
5070.00	H	151	126	-64.27	11.04	-53.23	75.5
7605.00	H	159	252	-60.62	11.47	-49.15	71.4
10140.00	H	-	-	-59.86	12.67	-47.19	69.4

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

FCC ID: A3LSMT385		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 2562.50 MHz
 CHANNEL: 21375
 MEASURED OUTPUT POWER: 23.72 dBm = 0.236 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 15.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 48.72 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
5125.00	H	159	331	-64.32	10.93	-53.39	77.1
7687.50	H	-	-	-61.03	11.55	-49.49	73.2

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

OPERATING FREQUENCY: 2572.50 MHz
 CHANNEL: 37775
 MEASURED OUTPUT POWER: 19.75 dBm = 0.094 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 44.75 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
5145.00	H	103	54	-51.47	10.90	-40.57	60.3
7717.50	H	188	60	-55.29	11.57	-43.72	63.5
10290.00	H	-	-	-58.83	12.76	-46.07	65.8

Table 7-23. Radiated Spurious Data (Band 38 – Low Channel)

FCC ID: A3LSMT385		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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OPERATING FREQUENCY: 2595.00 MHz
 CHANNEL: 38000
 MEASURED OUTPUT POWER: 20.05 dBm = 0.101 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 45.05 dBc

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Level at Antenna Terminals [dBm]	Substitute Antenna Gain [dBi]	Spurious Emission Level [dBm]	[dBc]
5190.00	H	100	55	-54.84	10.82	-44.02	64.1
7785.00	H	101	52	-56.37	11.60	-44.77	64.8
10380.00	H	-	-	-58.57	12.74	-45.84	65.9

Table 7-24. Radiated Spurious Data (Band 38 – Mid Channel)

OPERATING FREQUENCY: 2617.50 MHz
 CHANNEL: 38225
 MEASURED OUTPUT POWER: 19.84 dBm = 0.096 W
 MODULATION SIGNAL: QPSK
 BANDWIDTH: 5.0 MHz
 DISTANCE: 3 meters
 LIMIT: $55 + 10 \log_{10}(W)$ 44.84 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]
5235.00	H	100	234	-43.48	10.88	-32.60	52.4
7852.50	H	104	235	-45.21	11.56	-33.65	53.5
10470.00	H	-	-	-57.57	12.69	-44.88	64.7

Table 7-25. Radiated Spurious Data (Band 38 – High Channel)

FCC ID: A3LSMT385		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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7.8 Frequency Stability / Temperature Variation

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

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI/TIA-603-D-2010. The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

For Part 22, the frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5 ppm) of the center frequency. For Part 24 and Part 27, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Procedure Used

ANSI/TIA-603-D-2010

Test Settings

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

Test Setup

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

Test Notes

None

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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)	709,999,949	-51	-0.0000071
100 %		- 30	709,999,960	-40	-0.0000056
100 %		- 20	709,999,937	-63	-0.0000089
100 %		- 10	709,999,941	-59	-0.0000084
100 %		0	709,999,951	-49	-0.0000069
100 %		+ 10	709,999,942	-58	-0.0000082
100 %		+ 20	709,999,817	-183	-0.0000258
100 %		+ 30	709,999,906	-94	-0.0000133
100 %		+ 40	709,999,893	-107	-0.0000151
100 %		+ 50	709,999,989	-11	-0.0000015
BATT. ENDPOINT	3.45	+ 20	709,999,901	-99	-0.0000139

Table 7-26. Frequency Stability Data (Band 17)

FCC ID: A3LSMT385	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet	Page 137 of 149

Band 17 Frequency Stability Measurements

§2.1055 §27.54

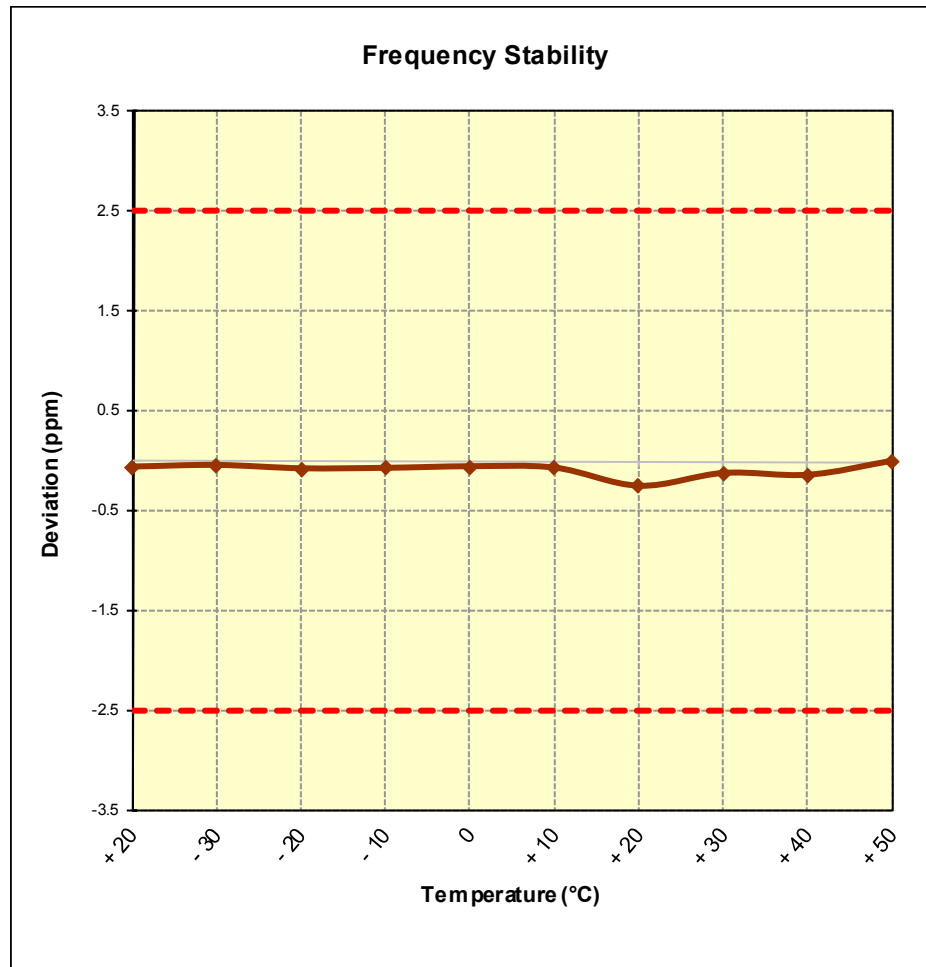


Figure 7-8. Frequency Stability Graph (Band 17)

FCC ID: A3LSMT385			FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	 Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet		Page 138 of 149

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)	836,499,956	-44	-0.0000053
100 %		- 30	836,499,882	-118	-0.0000140
100 %		- 20	836,499,989	-11	-0.0000013
100 %		- 10	836,499,986	-14	-0.0000016
100 %		0	836,499,867	-133	-0.0000158
100 %		+ 10	836,499,976	-24	-0.0000028
100 %		+ 20	836,499,847	-153	-0.0000183
100 %		+ 30	836,499,859	-141	-0.0000168
100 %		+ 40	836,499,800	-200	-0.0000239
100 %		+ 50	836,499,942	-58	-0.0000070
BATT. ENDPOINT	3.45	+ 20	836,499,841	-159	-0.0000190

Table 7-27. Frequency Stability Data (Band 5)

FCC ID: A3LSMT385	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 5 Frequency Stability Measurements

§2.1055 §22.355

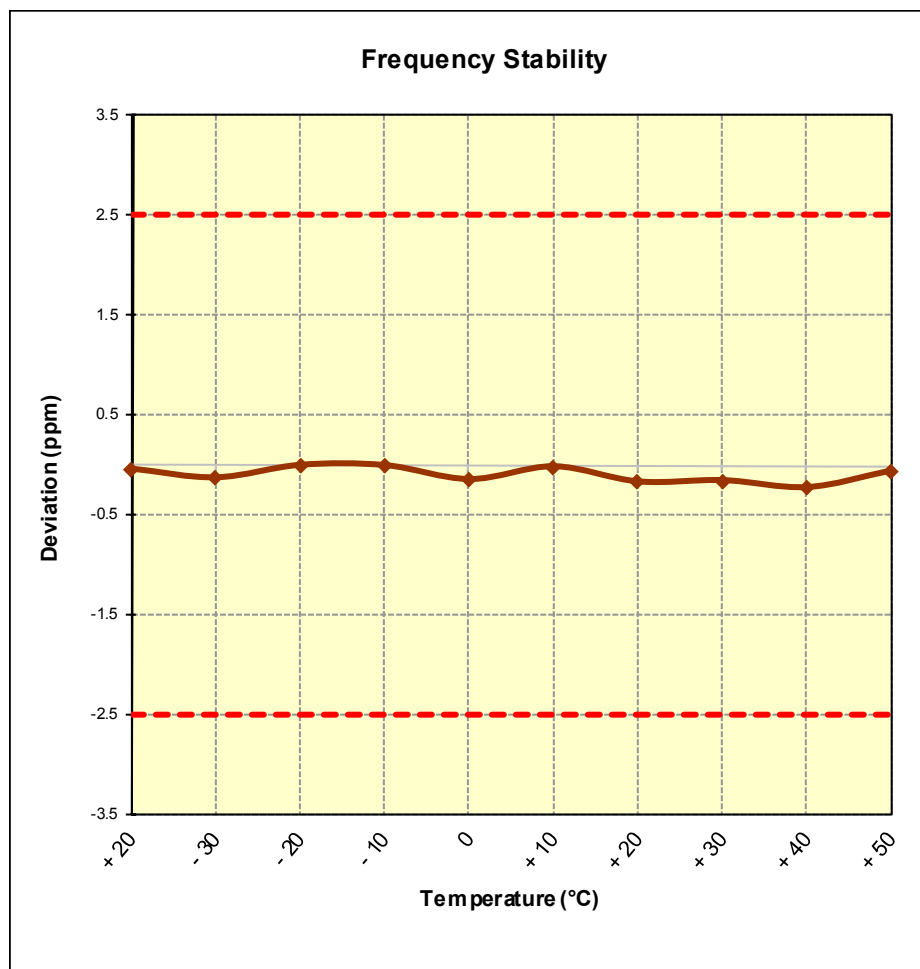


Figure 7-9. Frequency Stability Graph (Band 5)

FCC ID: A3LSMT385			FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	 Approved 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)	1,732,499,929	-71	-0.0000041
100 %		- 30	1,732,499,845	-155	-0.0000089
100 %		- 20	1,732,499,901	-99	-0.0000057
100 %		- 10	1,732,499,873	-127	-0.0000073
100 %		0	1,732,499,849	-151	-0.0000087
100 %		+ 10	1,732,499,827	-173	-0.0000100
100 %		+ 20	1,732,499,901	-99	-0.0000057
100 %		+ 30	1,732,499,828	-172	-0.0000099
100 %		+ 40	1,732,499,803	-197	-0.0000114
100 %		+ 50	1,732,499,925	-75	-0.0000043
BATT. ENDPOINT	3.45	+ 20	1,732,499,855	-145	-0.0000083

Table 7-28. 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: A3LSMT385	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 4 Frequency Stability Measurements

§2.1055 §§27.54

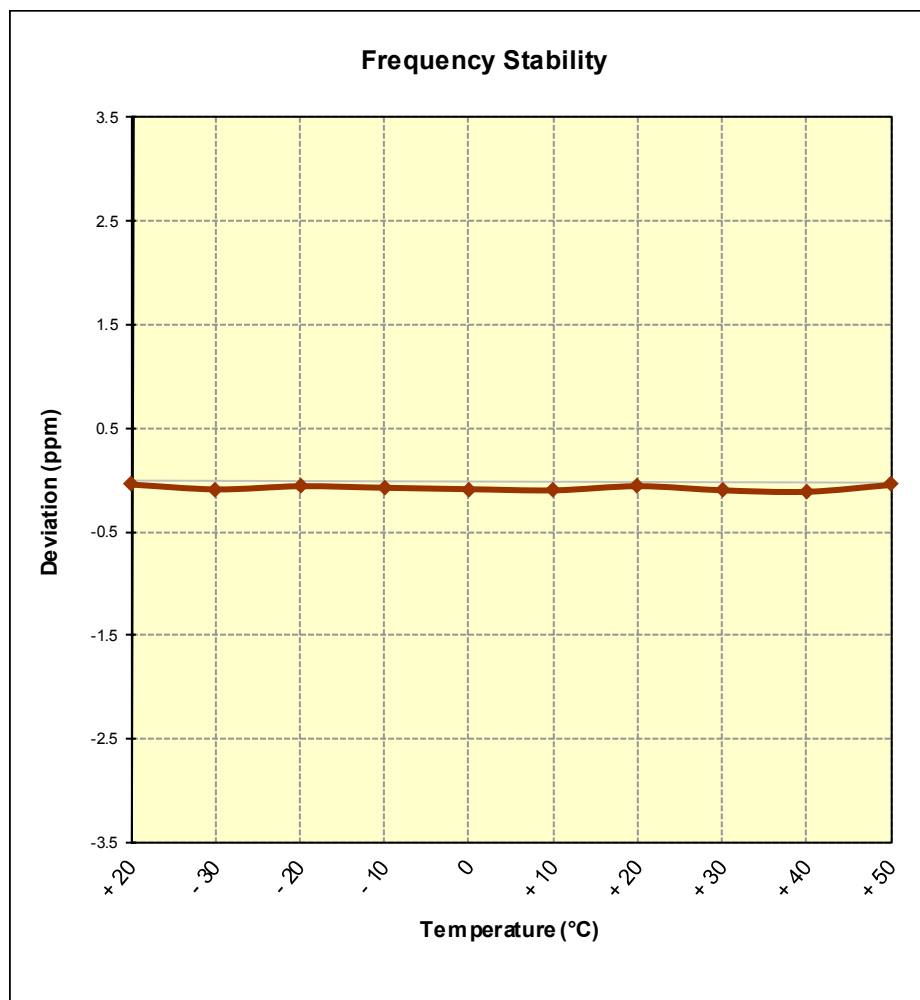


Figure 7-10. Frequency Stability Graph (Band 4)

FCC ID: A3LSMT385			FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	 Approved 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)	1,879,999,994	-6	-0.0000003
100 %		- 30	1,879,999,816	-184	-0.0000098
100 %		- 20	1,879,999,939	-61	-0.0000032
100 %		- 10	1,879,999,808	-192	-0.0000102
100 %		0	1,879,999,964	-36	-0.0000019
100 %		+ 10	1,879,999,810	-190	-0.0000101
100 %		+ 20	1,879,999,922	-78	-0.0000042
100 %		+ 30	1,879,999,969	-31	-0.0000017
100 %		+ 40	1,879,999,988	-12	-0.0000006
100 %		+ 50	1,879,999,845	-155	-0.0000083
BATT. ENDPOINT	3.45	+ 20	1,879,999,811	-189	-0.0000101

Table 7-29. 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: A3LSMT385	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 2 Frequency Stability Measurements

§2.1055 §24.235

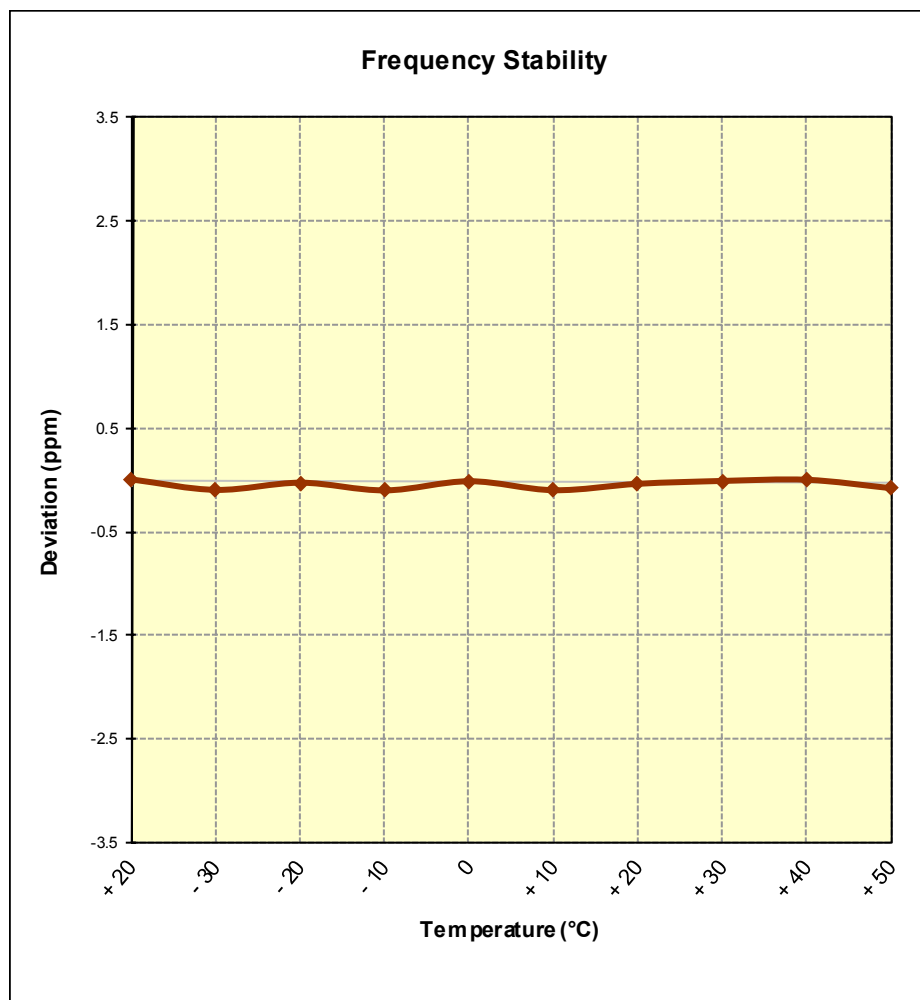


Figure 7-11. Frequency Stability Graph (Band 2)

FCC ID: A3LSMT385	FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
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Band 7 Frequency Stability Measurements

\$2.1055 \$27.54

OPERATING FREQUENCY: 2,535,000,000 Hz

CHANNEL: 21100

REFERENCE VOLTAGE: 3.85 VDC

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQUENCY (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	+ 20 (Ref)	2,534,999,951	-49	-0.0000019
100 %		- 30	2,534,999,832	-168	-0.0000066
100 %		- 20	2,534,999,921	-79	-0.0000031
100 %		- 10	2,534,999,988	-12	-0.0000005
100 %		0	2,534,999,932	-68	-0.0000027
100 %		+ 10	2,534,999,923	-77	-0.0000031
100 %		+ 20	2,534,999,976	-24	-0.0000009
100 %		+ 30	2,534,999,896	-104	-0.0000041
100 %		+ 40	2,534,999,859	-141	-0.0000056
100 %		+ 50	2,534,999,902	-98	-0.0000039
BATT. ENDPOINT	3.45	+ 20	2,534,999,840	-160	-0.0000063

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

Note:

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

FCC ID: A3LSMT385	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 7 Frequency Stability Measurements

§2.1055 §27.54

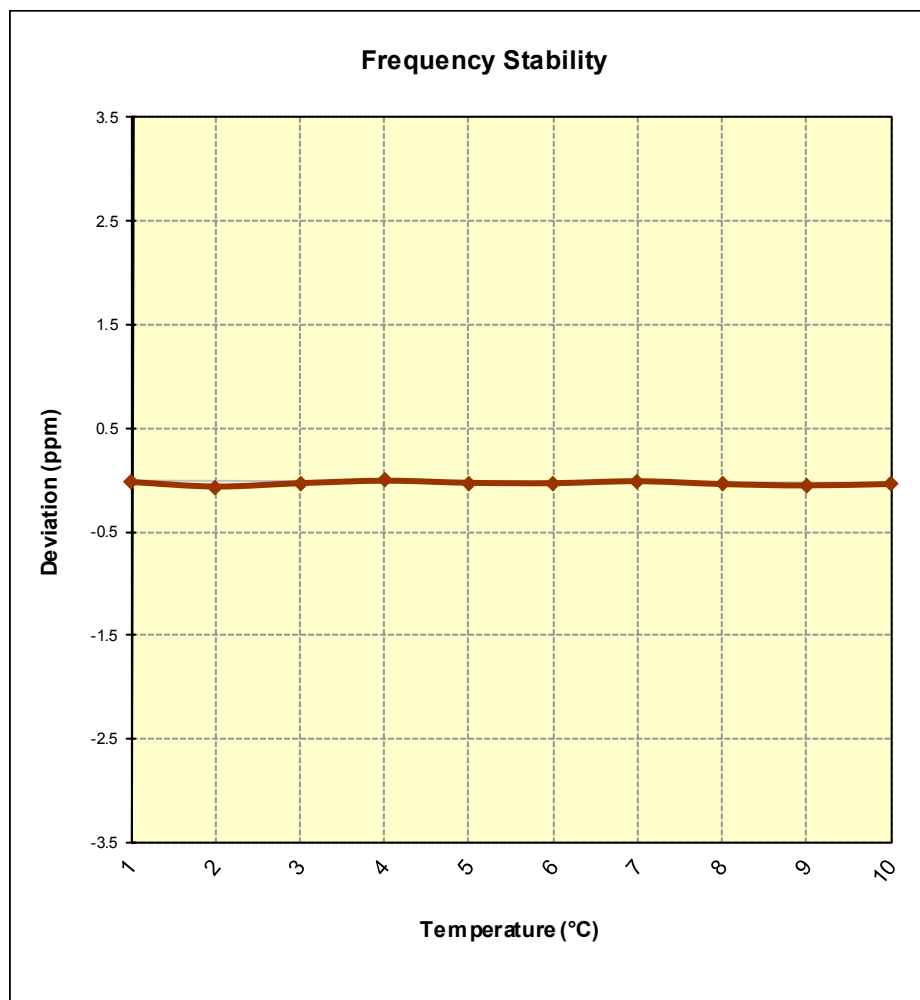


Figure 7-12. Frequency Stability Graph (Band 7)

FCC ID: A3LSMT385			FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Band 38 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)	2,592,999,908	-92	-0.0000035
100 %		- 30	2,592,999,831	-169	-0.0000065
100 %		- 20	2,592,999,899	-101	-0.0000039
100 %		- 10	2,592,999,819	-181	-0.0000070
100 %		0	2,592,999,948	-52	-0.0000020
100 %		+ 10	2,592,999,869	-131	-0.0000050
100 %		+ 20	2,592,999,948	-52	-0.0000020
100 %		+ 30	2,592,999,971	-29	-0.0000011
100 %		+ 40	2,592,999,928	-72	-0.0000028
100 %		+ 50	2,592,999,932	-68	-0.0000026
BATT. ENDPOINT	3.45	+ 20	2,592,999,932	-68	-0.0000026

Table 7-31. Frequency Stability Data (Band 38)

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: A3LSMT385	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION) 		Approved by: Quality Manager
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Band 38 Frequency Stability Measurements

§2.1055 §27.54

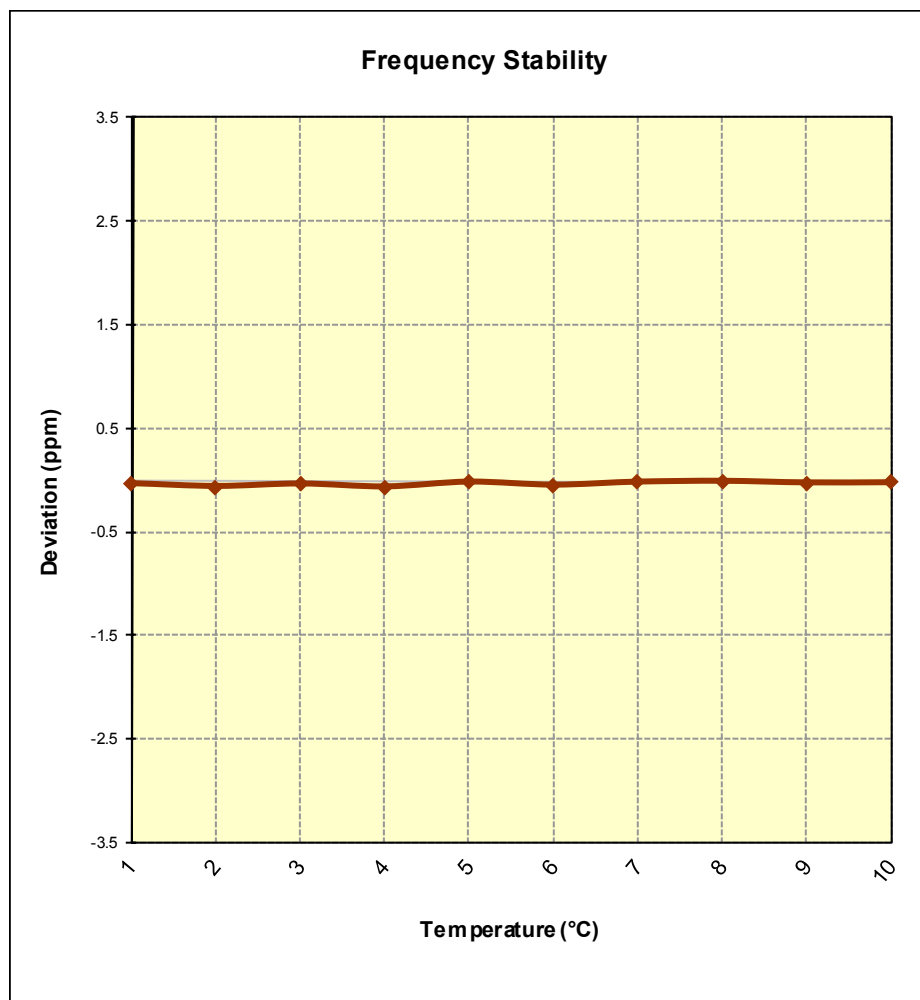


Figure 7-13. Frequency Stability Graph (Band 38)

FCC ID: A3LSMT385	 FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		 Approved 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 Tablet FCC ID: A3LSMT385** complies with all the requirements of Parts 22, 24, & 27 of the FCC rules for LTE operation only.

FCC ID: A3LSMT385		FCC Pt. 22, 24, & 27 LTE MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1M1705250180-03-R1.A3L	Test Dates: 5/25 - 6/29/2017	EUT Type: Portable Tablet	Page 149 of 149	