



Plot 7-104. Occupied Bandwidth Plot (NR Band n41 - 50MHz CP-OFDM 64-QAM - Full RB)



Plot 7-105. Occupied Bandwidth Plot (NR Band n41 - 50MHz CP-OFDM 256-QAM - Full RB)

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Plot 7-106. Occupied Bandwidth Plot (NR Band n41 - 60MHz DFT-s-OFDM π/2 BPSK - Full RB)



Plot 7-107. Occupied Bandwidth Plot (NR Band n41 - 60MHz DFT-s-OFDM QPSK - Full RB)

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Plot 7-108. Occupied Bandwidth Plot (NR Band n41 - 60MHz DFT-s-OFDM 16-QAM - Full RB)



Plot 7-109. Occupied Bandwidth Plot (NR Band n41 - 60MHz DFT-s-OFDM 64-QAM - Full RB)

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Plot 7-110. Occupied Bandwidth Plot (NR Band n41 - 60MHz DFT-s-OFDM 256-QAM - Full RB)



Plot 7-111. Occupied Bandwidth Plot (NR Band n41 - 80MHz DFT-s-OFDM π/2 BPSK - Full RB)

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Plot 7-112. Occupied Bandwidth Plot (NR Band n41 - 80MHz CP-OFDM QPSK - Full RB)



Plot 7-113. Occupied Bandwidth Plot (NR Band n41 - 80MHz CP-OFDM 16-QAM - Full RB)

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Plot 7-114. Occupied Bandwidth Plot (NR Band n41 - 80MHz CP-OFDM 64-QAM - Full RB)



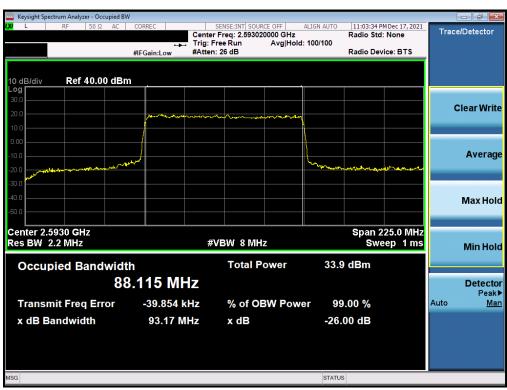
Plot 7-115. Occupied Bandwidth Plot (NR Band n41 - 80MHz CP-OFDM 256-QAM - Full RB)

FCC ID: BCGA2589	Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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Plot 7-116. Occupied Bandwidth Plot (NR Band n41 - 90MHz DFT-s-OFDM π/2 BPSK - Full RB)



Plot 7-117. Occupied Bandwidth Plot (NR Band n41 - 90MHz CP-OFDM QPSK - Full RB)

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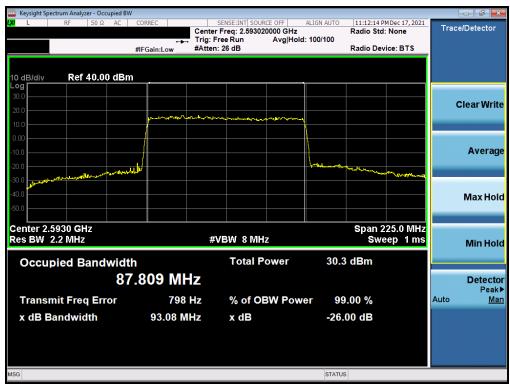
Plot 7-118. Occupied Bandwidth Plot (NR Band n41 - 90MHz CP-OFDM 16-QAM - Full RB)



Plot 7-119. Occupied Bandwidth Plot (NR Band n41 - 90MHz CP-OFDM 64-QAM - Full RB)

FCC ID: BCGA2589	Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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Plot 7-120. Occupied Bandwidth Plot (NR Band n41 - 90MHz CP-OFDM 256-QAM - Full RB)



Plot 7-121. Occupied Bandwidth Plot (NR Band n41 - 100MHz DFT-s-OFDM π/2 BPSK - Full RB)

FCC ID: BCGA2589	Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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Plot 7-122. Occupied Bandwidth Plot (NR Band n41 - 100MHz CP-OFDM QPSK - Full RB)



Plot 7-123. Occupied Bandwidth Plot (NR Band n41 - 100MHz CP-OFDM 16-QAM - Full RB)

FCC ID: BCGA2589	Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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Plot 7-124. Occupied Bandwidth Plot (NR Band n41 - 100MHz CP-OFDM 64-QAM - Full RB)



Plot 7-125. Occupied Bandwidth Plot (NR Band n41 - 100MHz CP-OFDM 256-QAM - Full RB)

FCC ID: BCGA2589	PCTEST* Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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## **ULCA - LTE Band 7**



Plot 7-126. Occupied Bandwidth Plot (LTE Band 7 - (20+20)MHz QPSK - Full RB)



Plot 7-127. Occupied Bandwidth Plot (LTE Band 7 - (20+20)MHz 16-QAM - Full RB)

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Plot 7-128. Occupied Bandwidth Plot (LTE Band 7 - (20+20)MHz 64-QAM - Full RB)



Plot 7-129. Occupied Bandwidth Plot (LTE Band 7 - (20+20)MHz 256-QAM - Full RB)

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## **ULCA - LTE Band 41**



Plot 7-130. Occupied Bandwidth Plot (LTE Band 41 - (20+20)MHz QPSK - Full RB)



Plot 7-131. Occupied Bandwidth Plot (LTE Band 41 - (20+20)MHz 16-QAM - Full RB)

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Plot 7-132. Occupied Bandwidth Plot (LTE Band 41 - (20+20)MHz 64-QAM - Full RB)



Plot 7-133. Occupied Bandwidth Plot (LTE Band 41 - (20+20)MHz 256-QAM - Full RB)

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# 7.3 Spurious and Harmonic Emissions at Antenna Terminal §2.1051, §27.53(a), §27.53(m)

## **Test Overview**

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10<sup>th</sup> harmonic. 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 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. All ports were tested and only the worst case data were reported.

For Band 30, the minimum permissible attenuation level of any spurious emission <2288MHz and >2365MHz is  $70 + 10 \log_{10}(P_{[Watts]})$ .

For LTE Bands 7, 41, and NR FR1 Band n41 the minimum permissible, n41 the minimum permissible attenuation level of any spurious emission is  $55 + 10\log_{10}(P_{[Watts]})$ .

### **Test Procedure Used**

KDB 971168 D01 v03r01 - Section 6.0

## **Test Settings**

- 1. Start frequency was set to 30MHz and stop frequency was set to 10GHz (separated into at least two plots per channel)
- 2. Detector = RMS
- 3. Trace mode = trace average for continuous emissions, max hold for pulse emissions
- 4. Sweep time = auto couple
- 5. The trace was allowed to stabilize
- 6. Please see test notes below for RBW and VBW settings

#### **Test Setup**

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

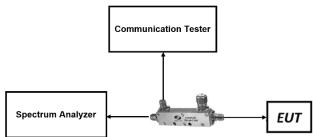


Figure 7-2. Test Instrument & Measurement Setup

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of contents thereof, please contact INFO@PCTEST.COM.

## **Test Notes**

- 1. Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth 100 kHz or greater for measurements below 1GHz. However, 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. 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.
- 2. For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) 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.
- 3. Uplink carrier aggregation for LTE Band 7 is only supported in this EUT while operating in Power Class 3.
- 4. Uplink carrier aggregation for LTE Band 41 is supported in this EUT while operating in Power Class 2 and Power Class 3.
- 5. Uplink carrier aggregation intra-band conducted spurious emissions were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth. Channel bandwidth data is shown in the tables below based only on the channel bandwidths that were supported in this device. The worst case (highest) powers were found while operating with QPSK modulation, as shown in the tables below, with both carriers set to transmit using 1RB.
- 6. Uplink carrier aggregation inter-band emission was investigated and found to not be the worst case.

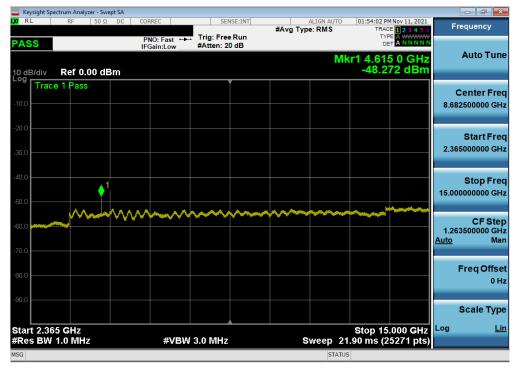
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## LTE Band 30



Plot 7-134. Conducted Spurious Plot (LTE Band 30 - 5MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-135. Conducted Spurious Plot (LTE Band 30 - 5MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

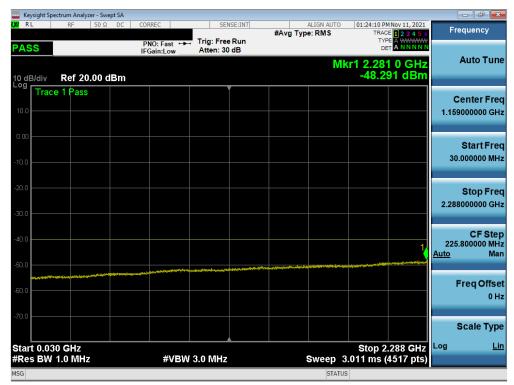
FCC ID: BCGA2589	Proud to be part of @element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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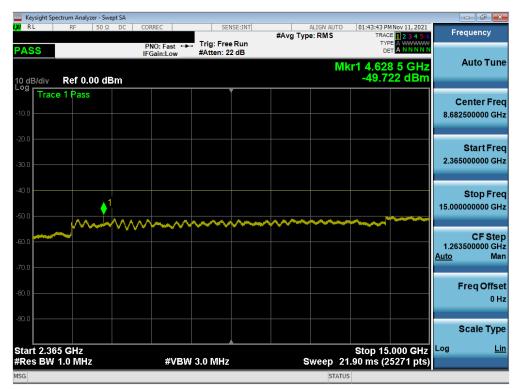
Plot 7-136. Conducted Spurious Plot (LTE Band 30 - 5MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-137. Conducted Spurious Plot (LTE Band 30 - 10MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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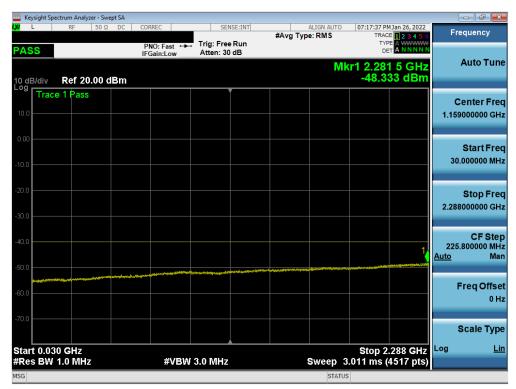
Plot 7-138. Conducted Spurious Plot (LTE Band 30 - 10MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



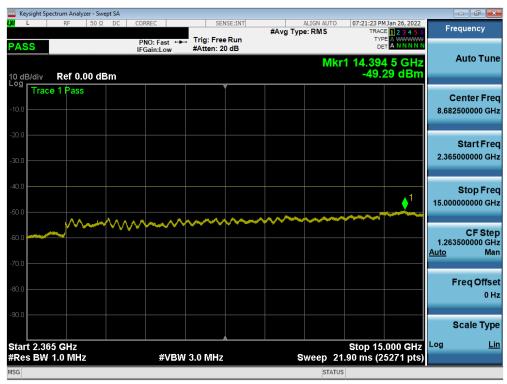
Plot 7-139. Conducted Spurious Plot (LTE Band 30 - 10MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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Plot 7-140. Conducted Spurious Plot (LTE Band 30 - 5MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-141. Conducted Spurious Plot (LTE Band 30 - 5MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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Plot 7-142. Conducted Spurious Plot (LTE Band 30 - 5MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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## LTE Band 7



Plot 7-143. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-144. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: BCGA2589	Proud to be part of @element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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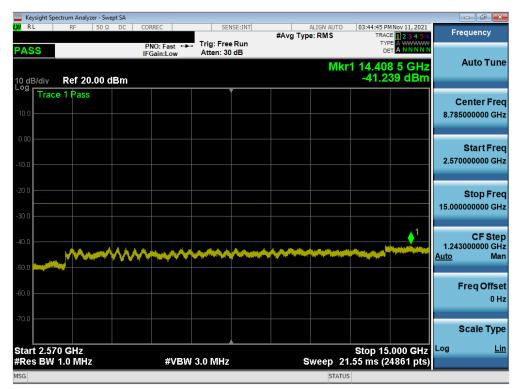
Plot 7-145. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



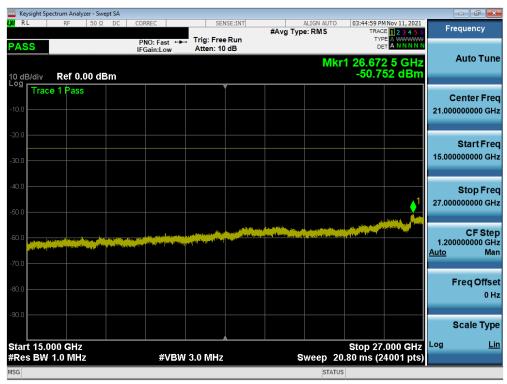
Plot 7-146. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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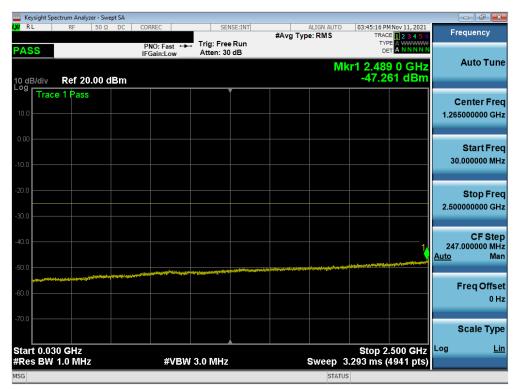
Plot 7-147. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



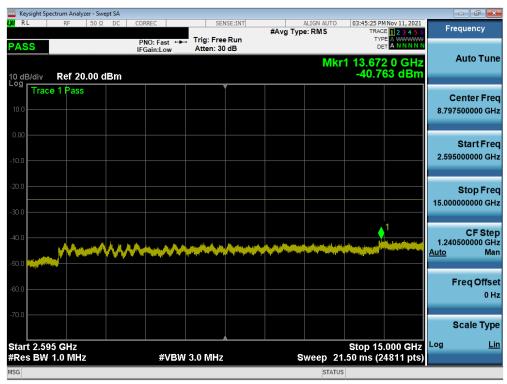
Plot 7-148. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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Plot 7-149. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-150. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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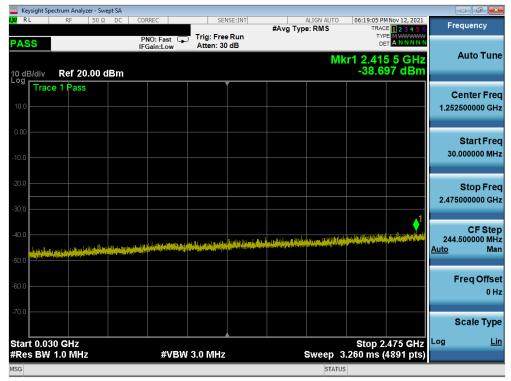


Plot 7-151. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

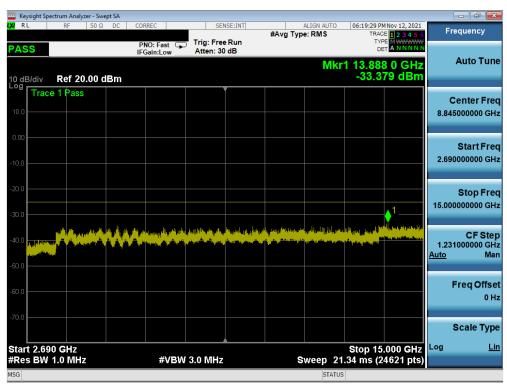
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## LTE Band 41



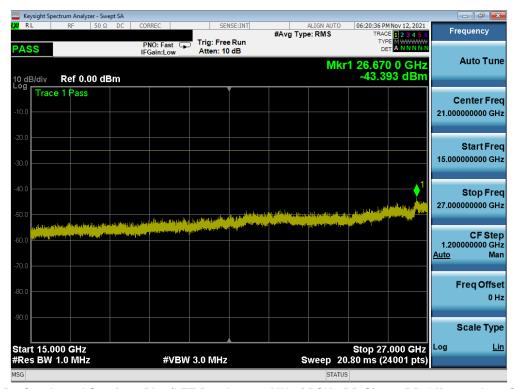
Plot 7-152. Conducted Spurious Plot (LTE Band 41 - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



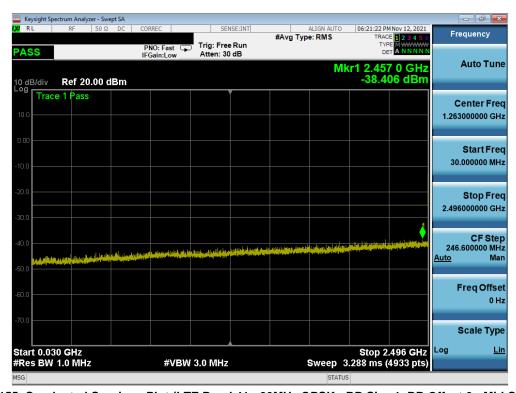
Plot 7-153. Conducted Spurious Plot (LTE Band 41 - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: BCGA2589	Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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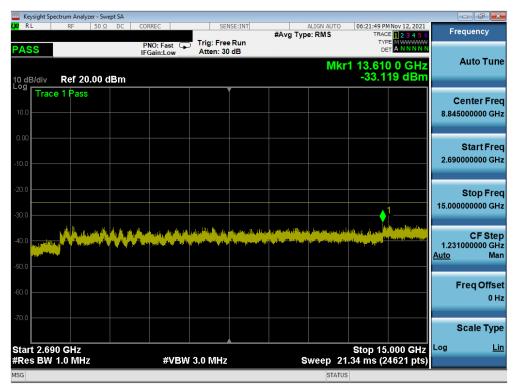
Plot 7-154. Conducted Spurious Plot (LTE Band 41 - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



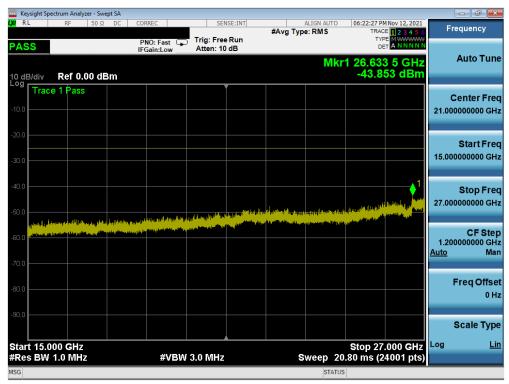
Plot 7-155. Conducted Spurious Plot (LTE Band 41 - 20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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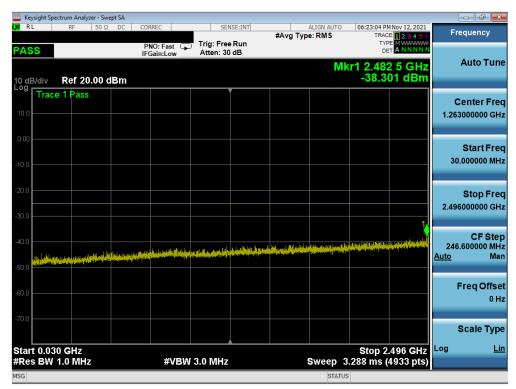
Plot 7-156. Conducted Spurious Plot (LTE Band 41 - 20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



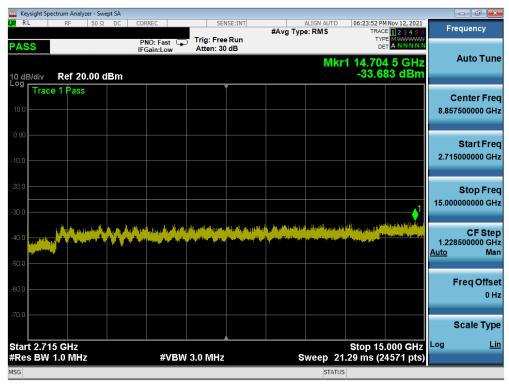
Plot 7-157. Conducted Spurious Plot (LTE Band 41 - 20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

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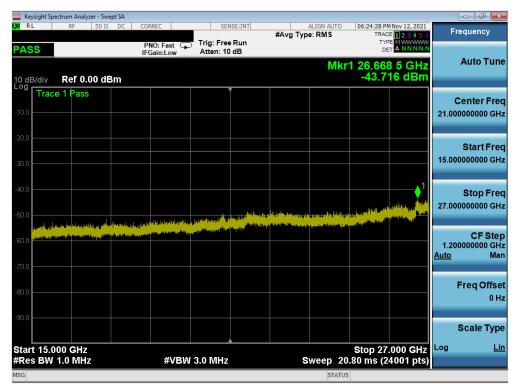
Plot 7-158. Conducted Spurious Plot (LTE Band 41 - 20MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-159. Conducted Spurious Plot (LTE Band 41 - 20MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

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Plot 7-160. Conducted Spurious Plot (LTE Band 41 - 20MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

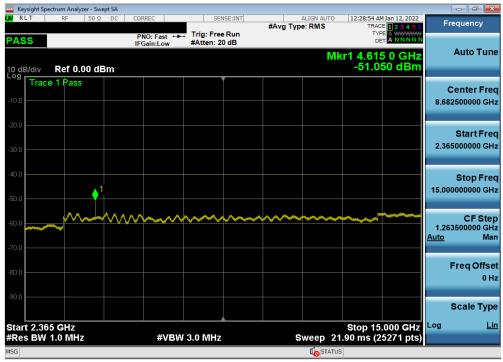
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## NR Band n30



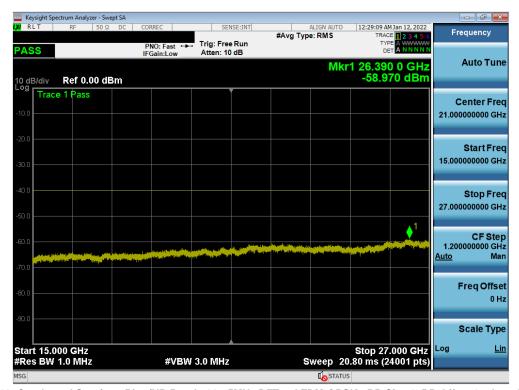
Plot 7-161. Conducted Spurious Plot (NR Band n30 - 5MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-162. Conducted Spurious Plot (NR Band n30 - 5MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - Low Channel)

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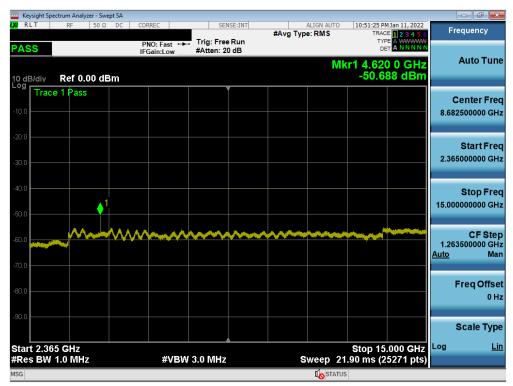
Plot 7-163. Conducted Spurious Plot (NR Band n30 - 5MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - Low Channel)



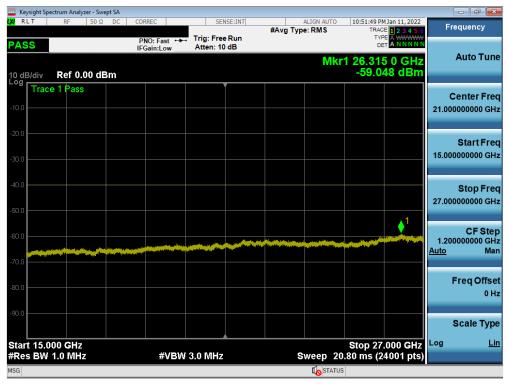
Plot 7-164. Conducted Spurious Plot (NR Band n30 - 10MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: BCGA2589	Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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Plot 7-165. Conducted Spurious Plot (NR Band n30 - 10MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - Mid Channel)



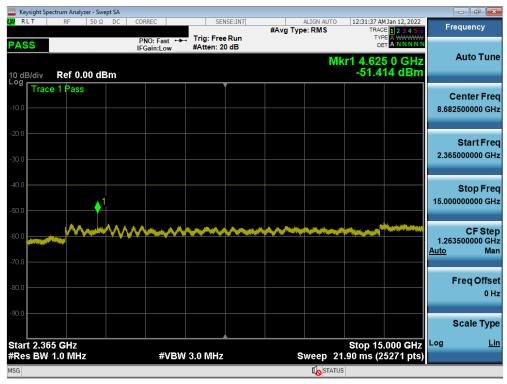
Plot 7-166. Conducted Spurious Plot (NR Band n30 - 10MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: BCGA2589	Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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Plot 7-167. Conducted Spurious Plot (NR Band n30 - 5MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-168. Conducted Spurious Plot (NR Band n30 - 5MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: BCGA2589	Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dama 104 of 266
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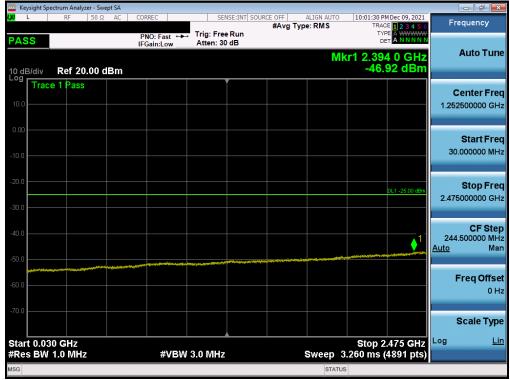


Plot 7-169. Conducted Spurious Plot (NR Band n30 - 5MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: BCGA2589	Proud to be part of element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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## NR Band n7



Plot 7-170. Conducted Spurious Plot (NR Band n7 - 40MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - Low Channel)



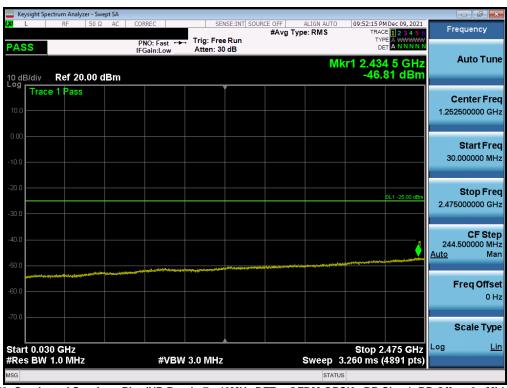
Plot 7-171. Conducted Spurious Plot (NR Band n7 - 40MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: BCGA2589	Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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Plot 7-172. Conducted Spurious Plot (NR Band n7 - 40MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-173. Conducted Spurious Plot (NR Band n7 - 40MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: BCGA2589	Proud to be part of @element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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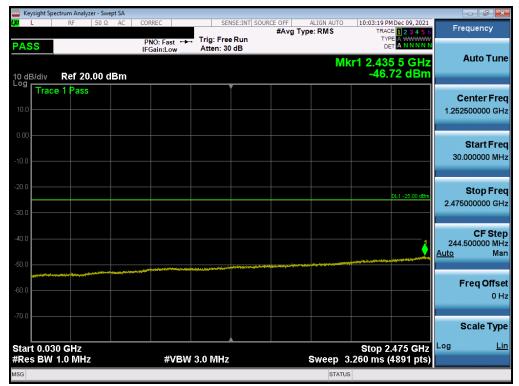
Plot 7-174. Conducted Spurious Plot (NR Band n7 - 40MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - Mid Channel)



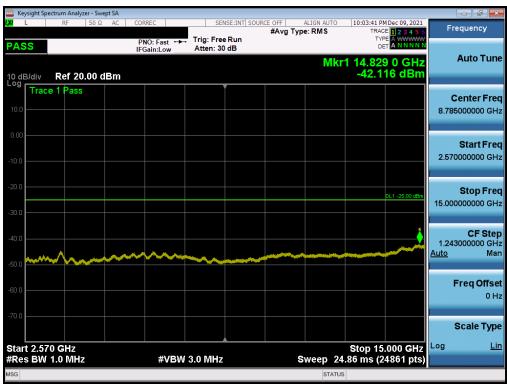
Plot 7-175. Conducted Spurious Plot (NR Band n7 - 40MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: BCGA2589	Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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Plot 7-176. Conducted Spurious Plot (NR Band n7 - 40MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-177. Conducted Spurious Plot (NR Band n7 - 40MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: BCGA2589	Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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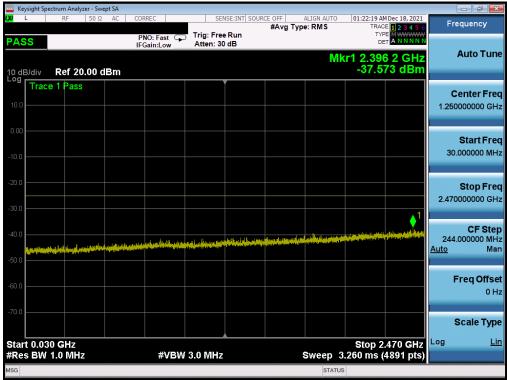


Plot 7-178. Conducted Spurious Plot (NR Band n7 - 40MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - High Channel)

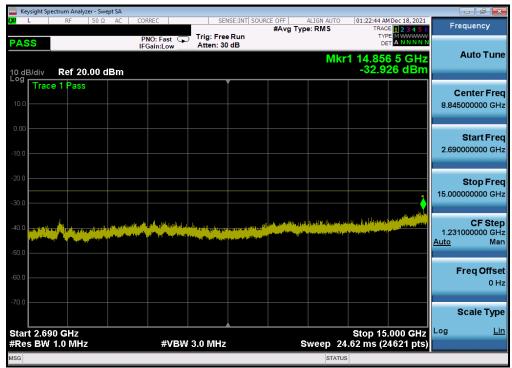
FCC ID: BCGA2589	Proud to be part of @element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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## NR Band n41



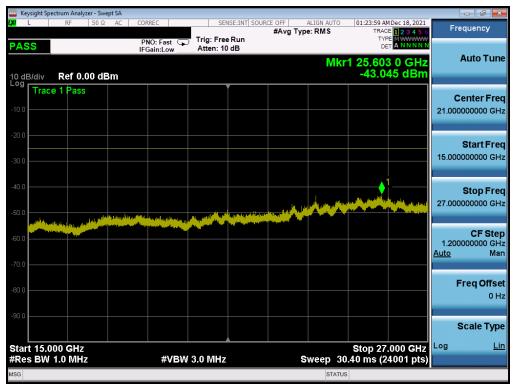
Plot 7-179. Conducted Spurious Plot (NR Band n41 - 100MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-180. Conducted Spurious Plot (NR Band n41 - 100MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: BCGA2589	Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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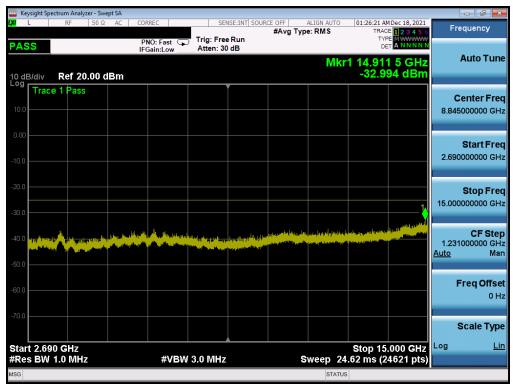
Plot 7-181. Conducted Spurious Plot (NR Band n41 - 100MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - Low Channel)



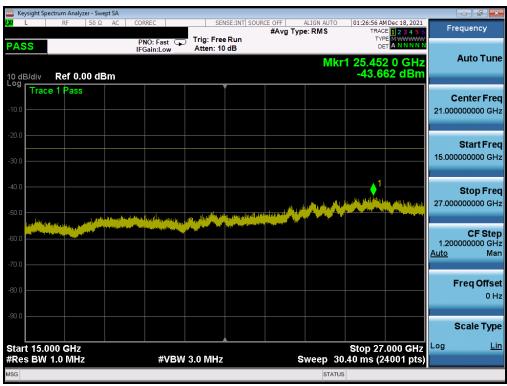
Plot 7-182. Conducted Spurious Plot (NR Band n41 - 100MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: BCGA2589	Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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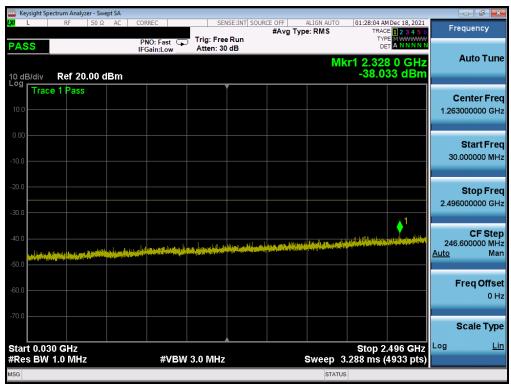
Plot 7-183. Conducted Spurious Plot (NR Band n41 - 100MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - Mid Channel)



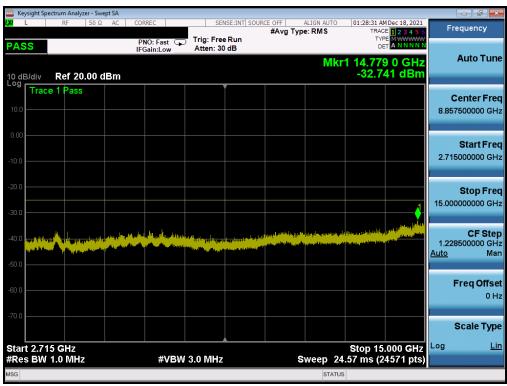
Plot 7-184. Conducted Spurious Plot (NR Band n41 - 100MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: BCGA2589	PCTEST* Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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Plot 7-185. Conducted Spurious Plot (NR Band n41 - 100MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-186. Conducted Spurious Plot (NR Band n41 - 100MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: BCGA2589	PCTEST* Proud to be part of @-element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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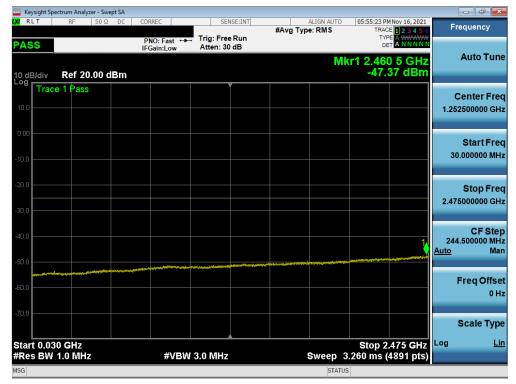


Plot 7-187. Conducted Spurious Plot (NR Band n41 - 100MHz DFT-s-OFDM-QPSK - RB Size 1, RB Offset 0 - High Channel)

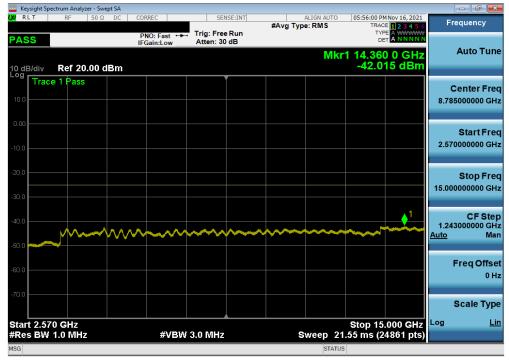
FCC ID: BCGA2589	Proud to be part of @element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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## **ULCA - LTE B7**



Plot 7-188. Conducted Spurious Plot (ULCA LTE B7 - (20+20)MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-189. Conducted Spurious Plot (ULCA LTE B7 - (20+20)MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

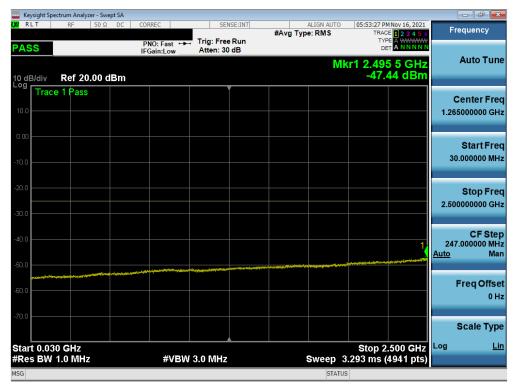
FCC ID: BCGA2589	Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 116 of 266
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Plot 7-190. Conducted Spurious Plot (ULCA LTE B7 - (20+20)MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-191. Conducted Spurious Plot (ULCA LTE B7 - (20+20)MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: BCGA2589	Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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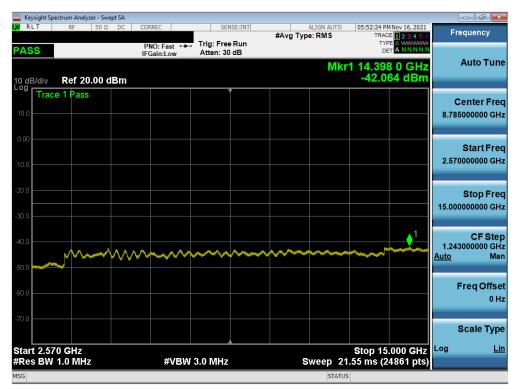
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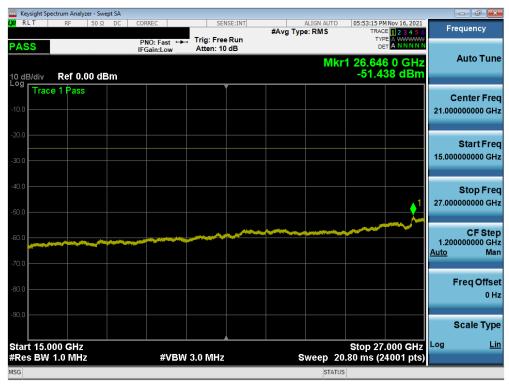
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Plot 7-192. Conducted Spurious Plot (ULCA LTE B7 - (20+20)MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



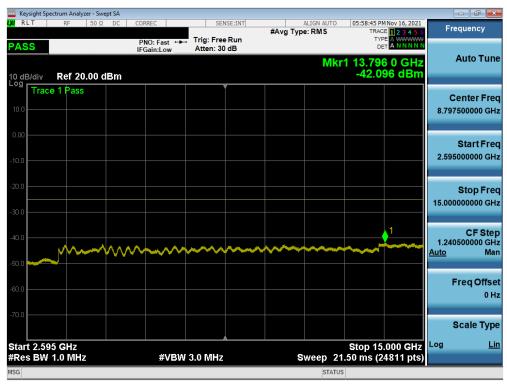
Plot 7-193. Conducted Spurious Plot (ULCA LTE B7 - (20+20)MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: BCGA2589	Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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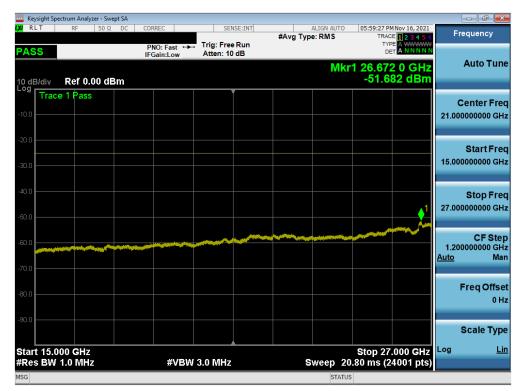
Plot 7-194. Conducted Spurious Plot (ULCA LTE B7 - (20+20)MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-195. Conducted Spurious Plot (ULCA LTE B7 - (20+20)MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: BCGA2589	Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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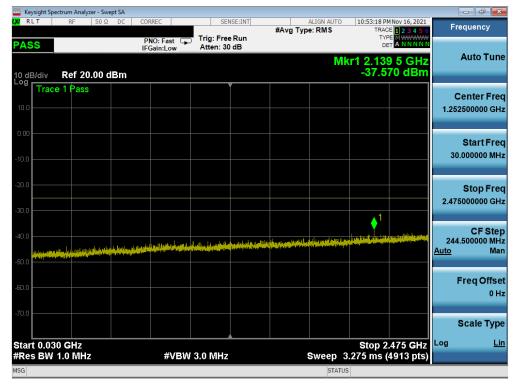


Plot 7-196. Conducted Spurious Plot (ULCA LTE B7 - (20+20)MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

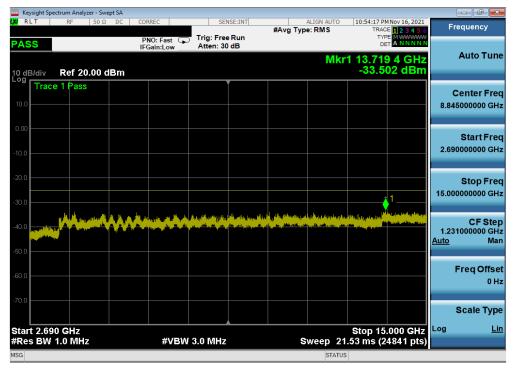
FCC ID: BCGA2589	Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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## **ULCA - LTE B41**



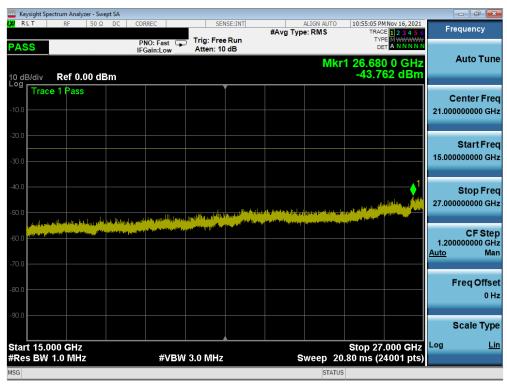
Plot 7-197. Conducted Spurious Plot (ULCA LTE B41 - (20+20)MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



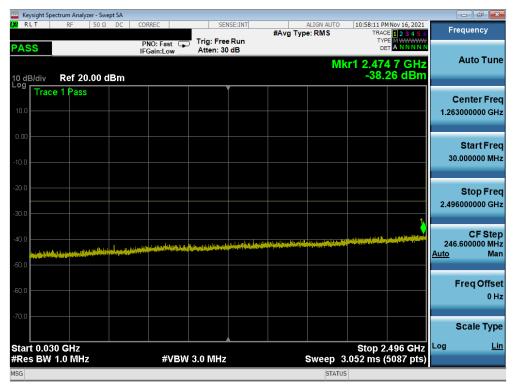
Plot 7-198. Conducted Spurious Plot (ULCA LTE B41 - (20+20)MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

FCC ID: BCGA2589	Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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Plot 7-199. Conducted Spurious Plot (ULCA LTE B41 - (20+20)MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-200. Conducted Spurious Plot (ULCA LTE B41 - (20+20)MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

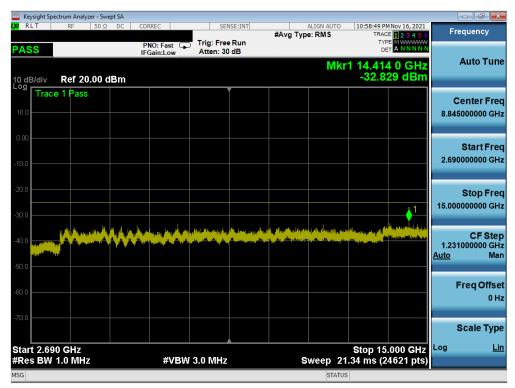
FCC ID: BCGA2589	Proud to be part of @element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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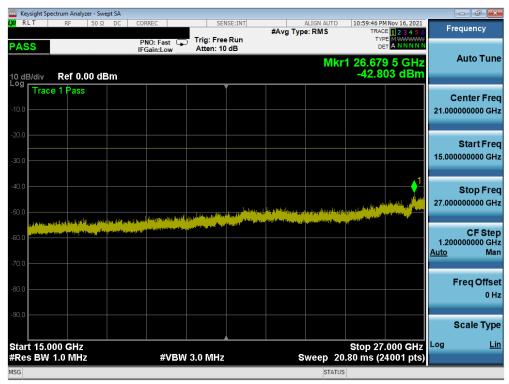
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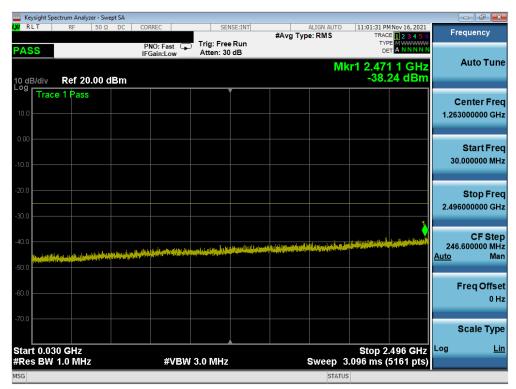
Plot 7-201. Conducted Spurious Plot (ULCA LTE B41 - (20+20)MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



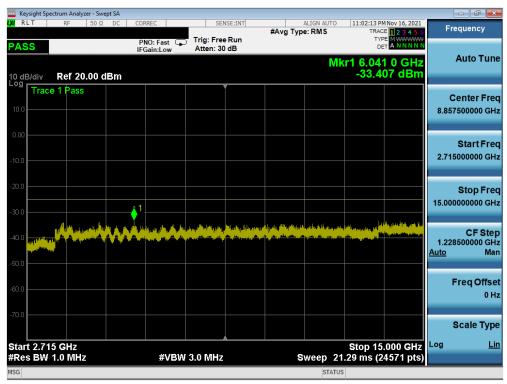
Plot 7-202. Conducted Spurious Plot (ULCA LTE B41 - (20+20)MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

FCC ID: BCGA2589	Proud to be part of @ element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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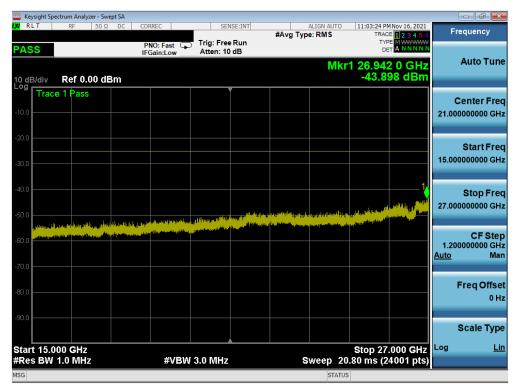
Plot 7-203. Conducted Spurious Plot (ULCA LTE B41 - (20+20)MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-204. Conducted Spurious Plot (ULCA LTE B41 - (20+20)MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: BCGA2589	PCTEST* Proud to be part of @-element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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Plot 7-205. Conducted Spurious Plot (ULCA LTE B41 - (20+20)MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

FCC ID: BCGA2589	Proud to be part of @element	PART 27 MEASUREMENT REPORT	Approved by: Technical Manager
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# 7.4 Band Edge Emissions at Antenna Terminal §2.1051, §27.53(a), §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 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. All ports were tested and only the worst case data was reported.

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

For LTE Bands 7, 41, and NR FR1 Band n41 the minimum permissible attenuation level is noted in the Test Notes on the following page.

#### **Test Procedure Used**

KDB 971168 D01 v03r01 - 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 ≥ 2 x Span/RBW
- 7. Trace mode = trace average for continuous emissions, max hold for pulse emissions
- 8. Sweep time = auto couple
- 9. The trace was allowed to stabilize

## **Test Setup**

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

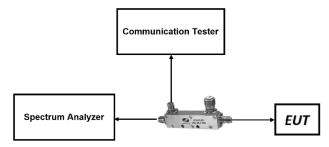


Figure 7-3. Test Instrument & Measurement Setup

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#### **Test Notes**

- 1. Per 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.
- 2. Per 27.53(a)(5) in the 1 MHz bands immediately outside and adjacent to the channel blocks at 2305, 2310, 2315, 2320, 2345, 2350, 2355, and 2360 MHz, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e., 1 MHz). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.
- 3. Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz.
- 4. For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) 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.

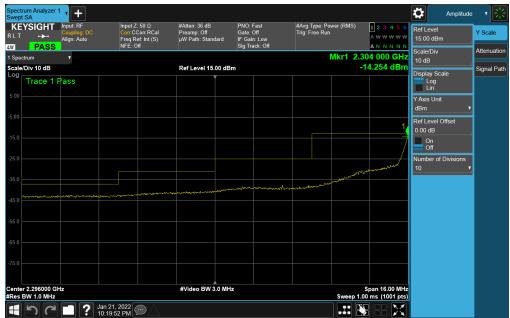
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## LTE Band 30



Plot 7-206. Lower Band Edge Plot (LTE Band 30 - 5MHz QPSK - Full RB)



Plot 7-207. Extended Lower Band Edge Plot (LTE Band 30 - 5MHz QPSK - Full RB)

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Plot 7-208. Upper Band Edge Plot (LTE Band 30 - 5MHz QPSK - Full RB)



Plot 7-209. Extended Upper Band Edge Plot (LTE Band 30 - 5MHz QPSK - Full RB)

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