7.3 Spurious and Harmonic Emissions at Antenna Terminal

§2.1051 §22.917(a) §24.238(a) §27.53(c.2) §27.53(g) §27.53(h) §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 10th 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 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.

For Band 41, the minimum permissible attenuation level of any spurious emission is 55 + $log_{10}(P_{[Watts]})$.

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 frequency was set to 30MHz and stop frequency was set to at least 10 * the fundamental frequency (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.

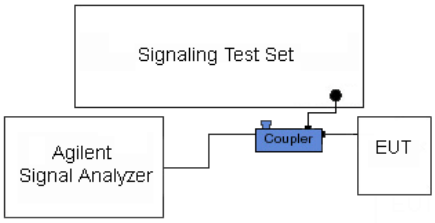

Figure 7-2. Test Instrument & Measurement Setup

Test Notes

Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for frequencies less than 1 GHz and 1 MHz or greater for frequencies greater than 1 GHz. 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

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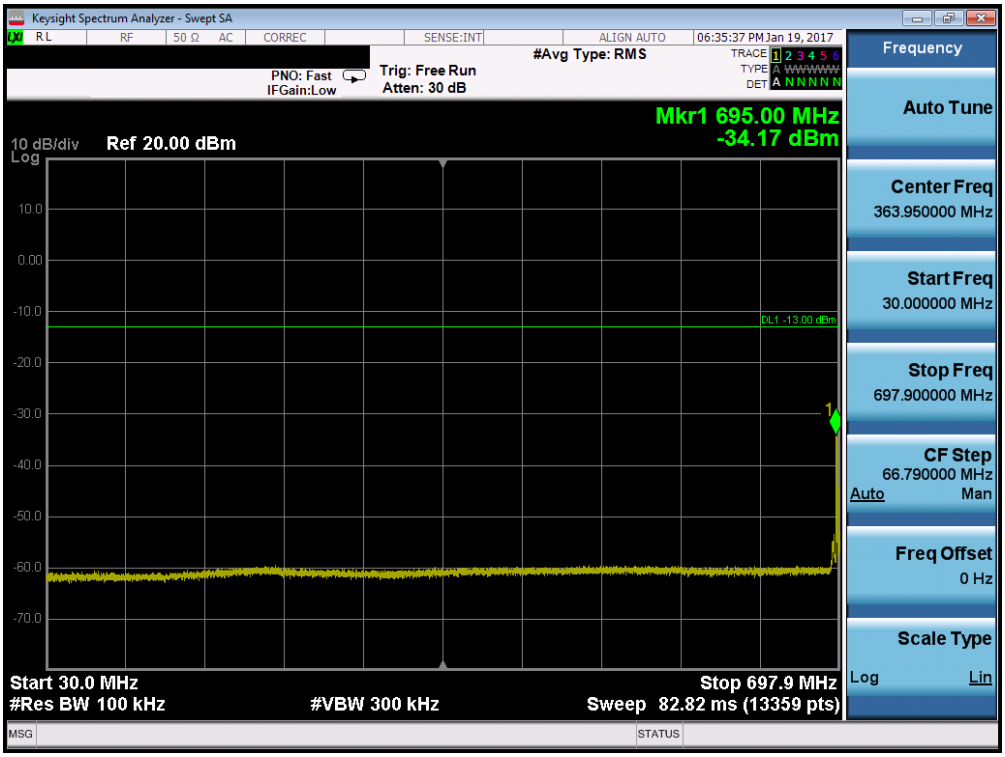
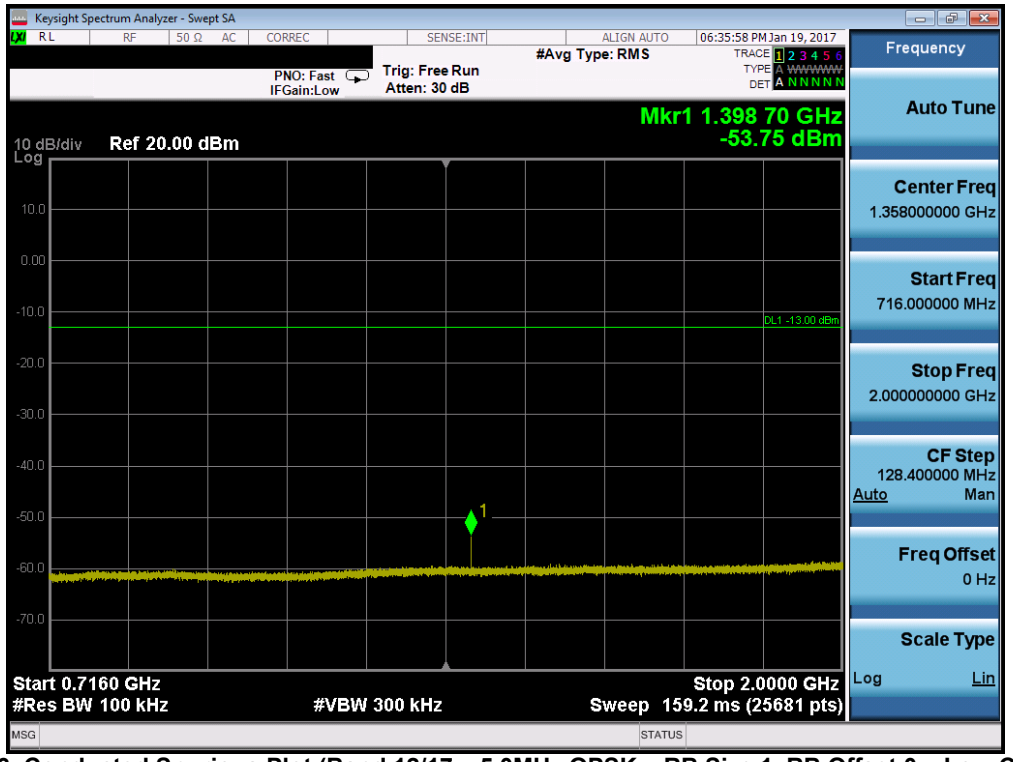
width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.



Plot 7-82. Conducted Spurious Plot (Band 12/17 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)



Plot 7-83. Conducted Spurious Plot (Band 12/17 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

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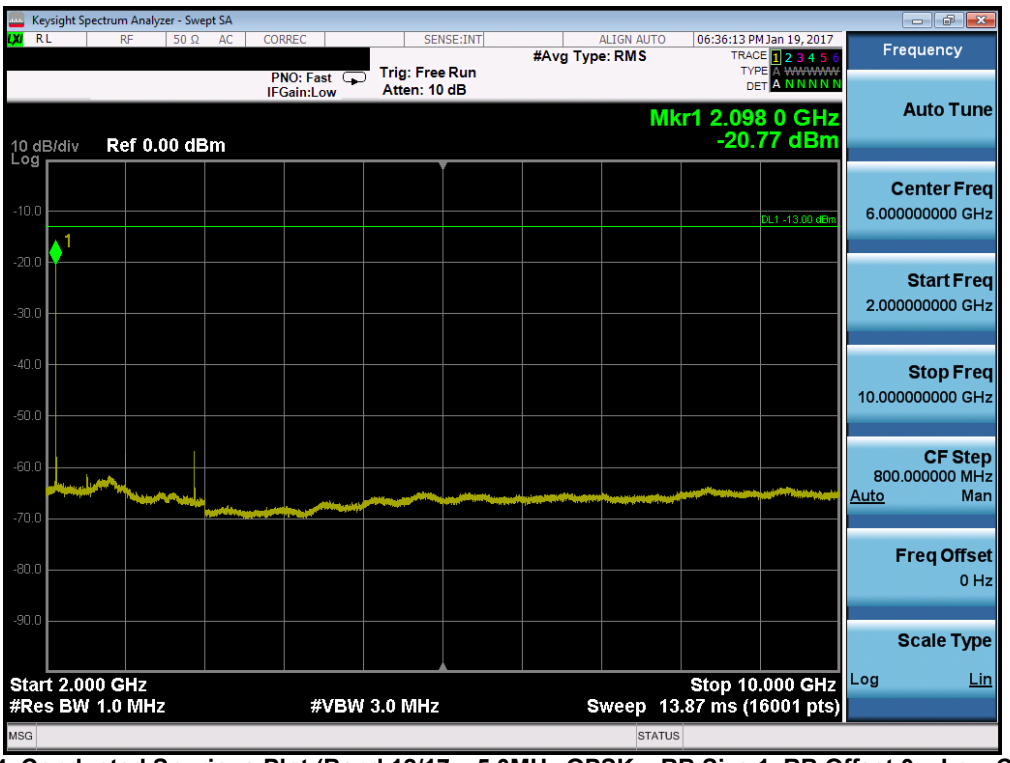
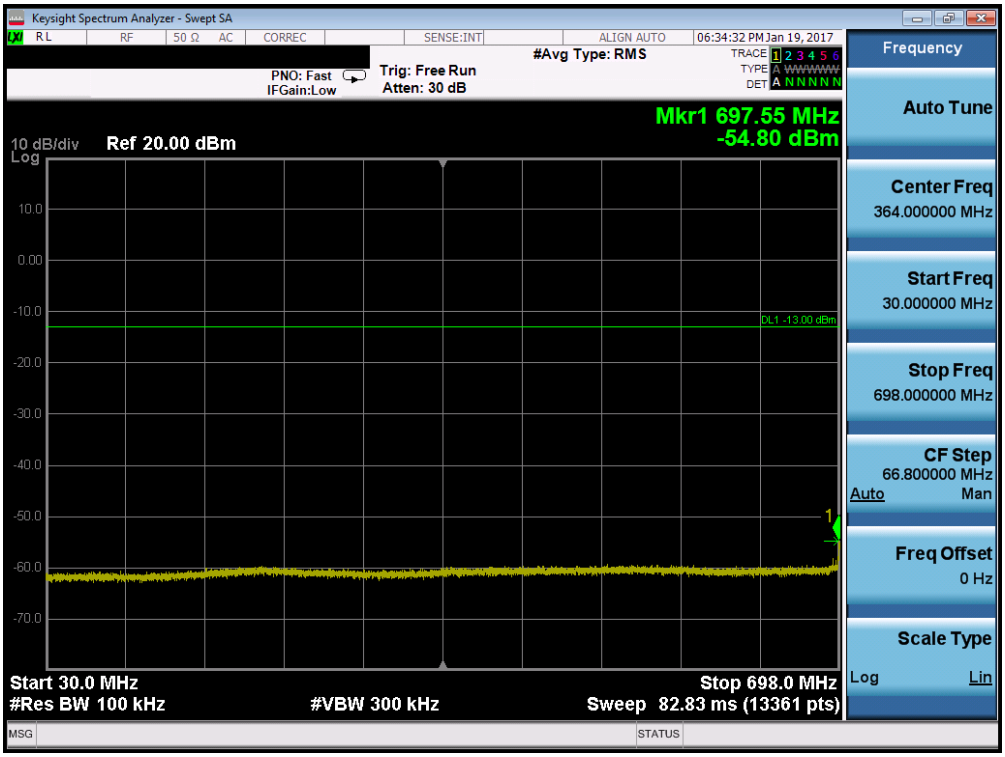


Plot 7-84. Conducted Spurious Plot (Band 12/17 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)



Plot 7-85. Conducted Spurious Plot (Band 12/17 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

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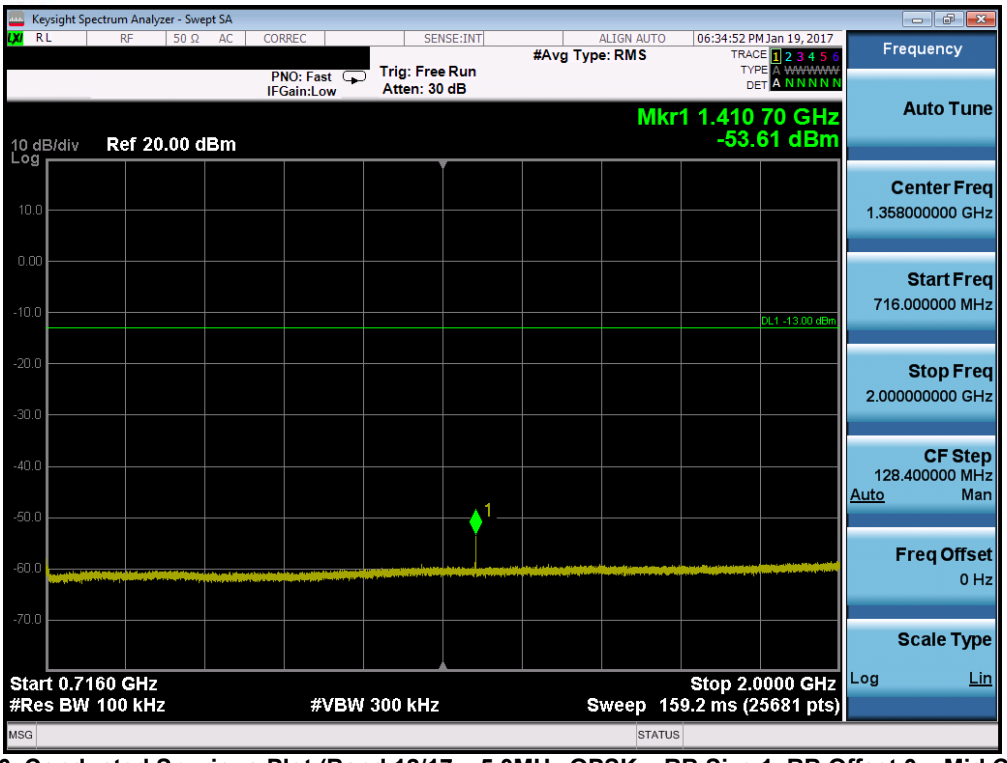
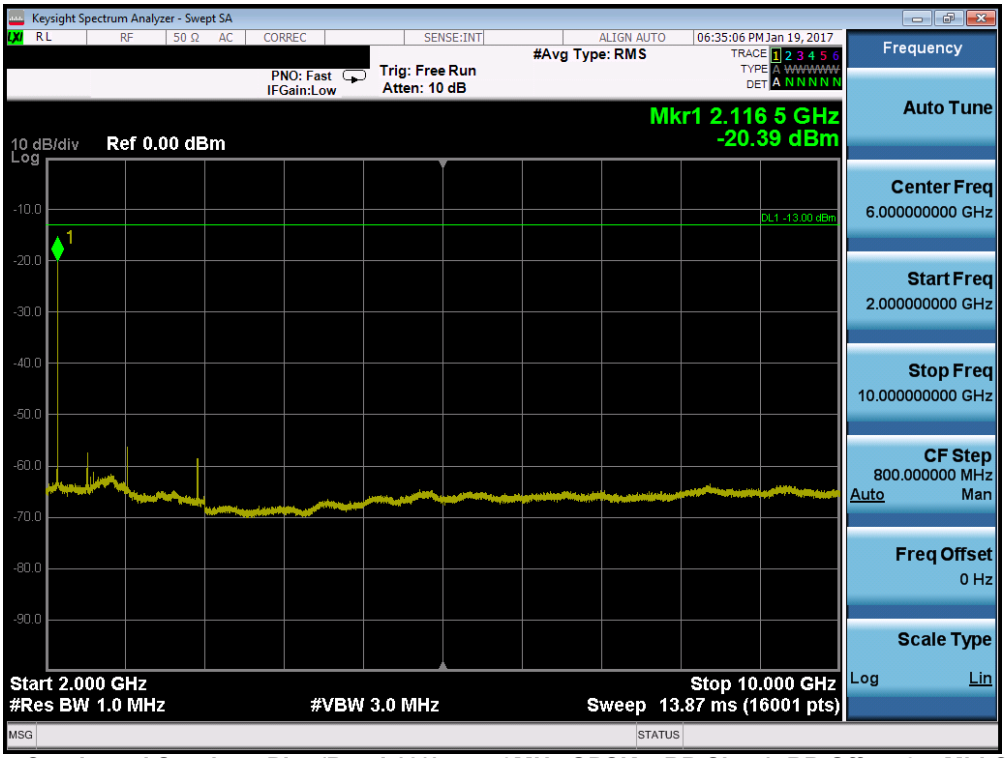


Plot 7-86. Conducted Spurious Plot (Band 12/17 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



Plot 7-87. Conducted Spurious Plot (Band 12/17 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

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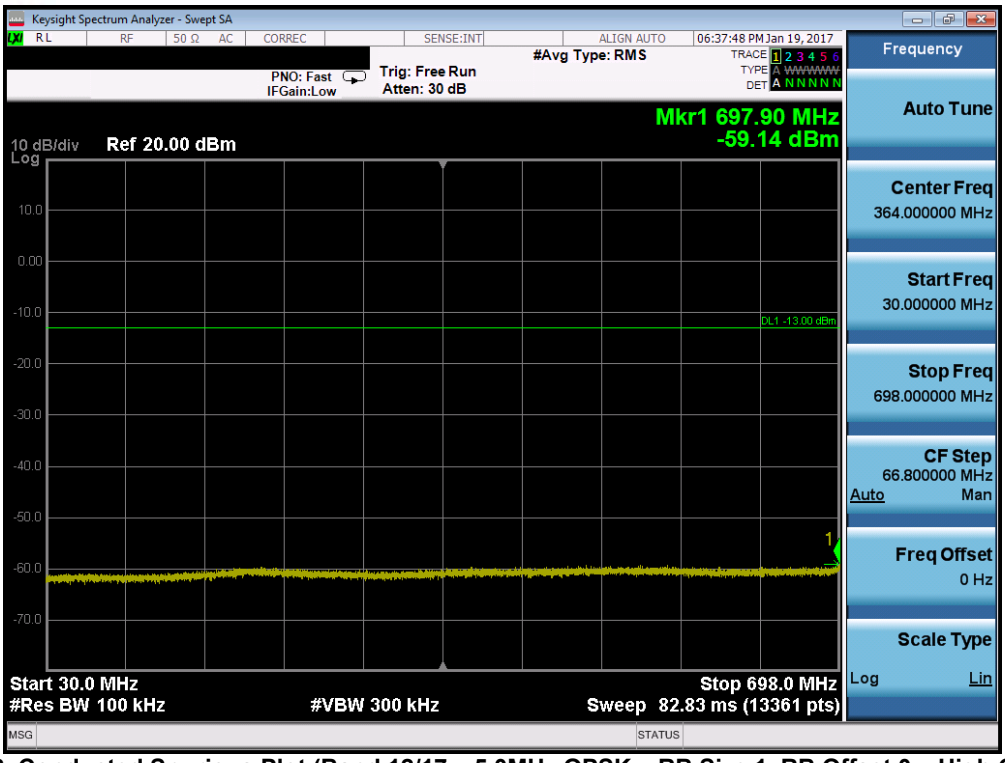
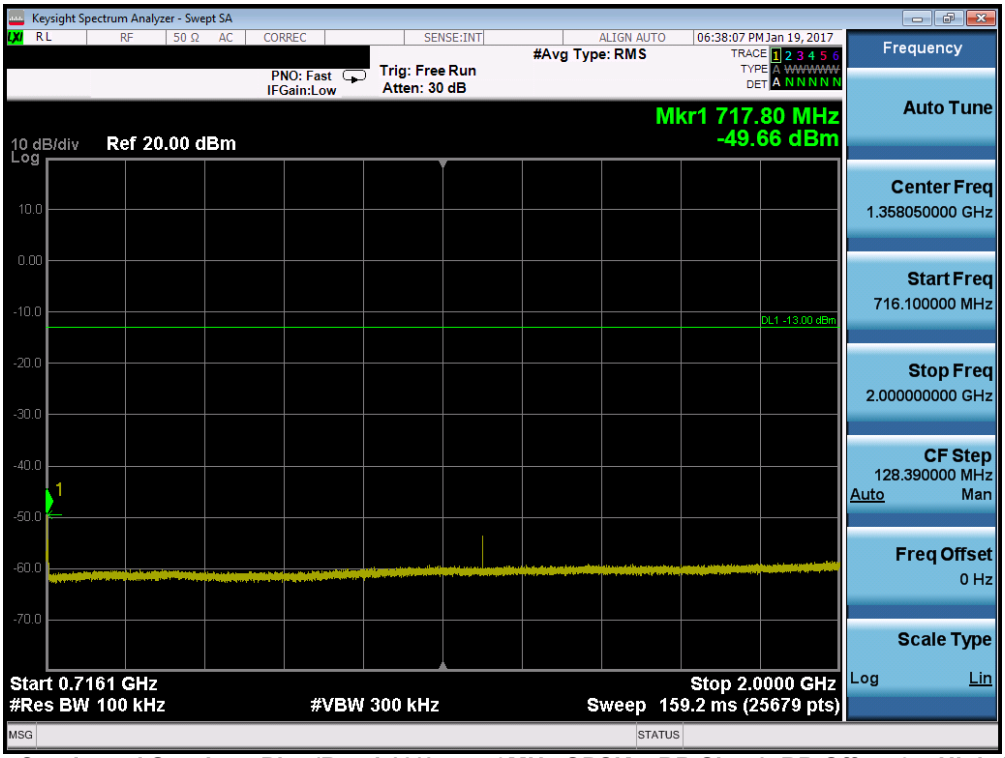


Plot 7-88. Conducted Spurious Plot (Band 12/17 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-89. Conducted Spurious Plot (Band 12/17 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

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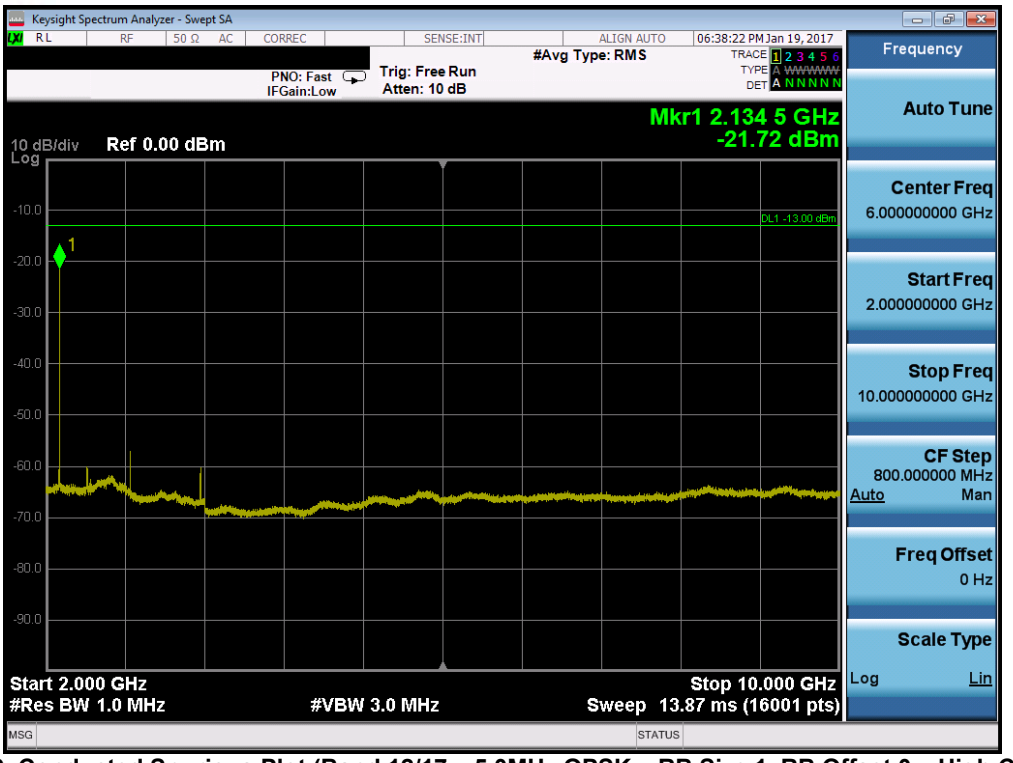
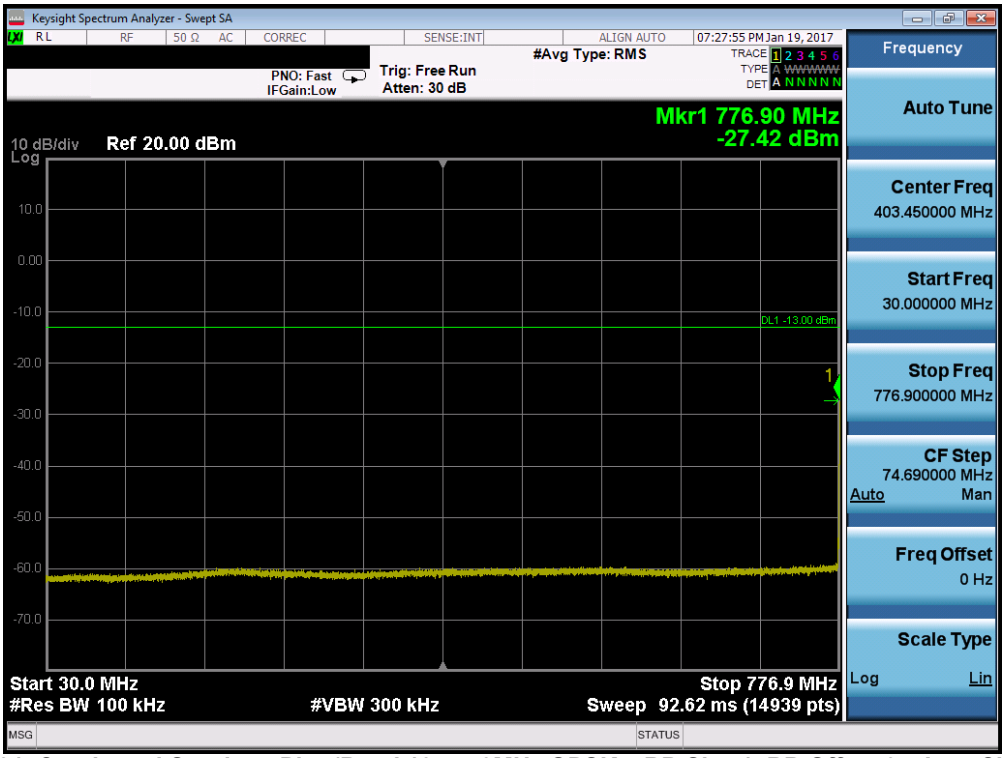


Plot 7-90. Conducted Spurious Plot (Band 12/17 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-91. Conducted Spurious Plot (Band 13 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

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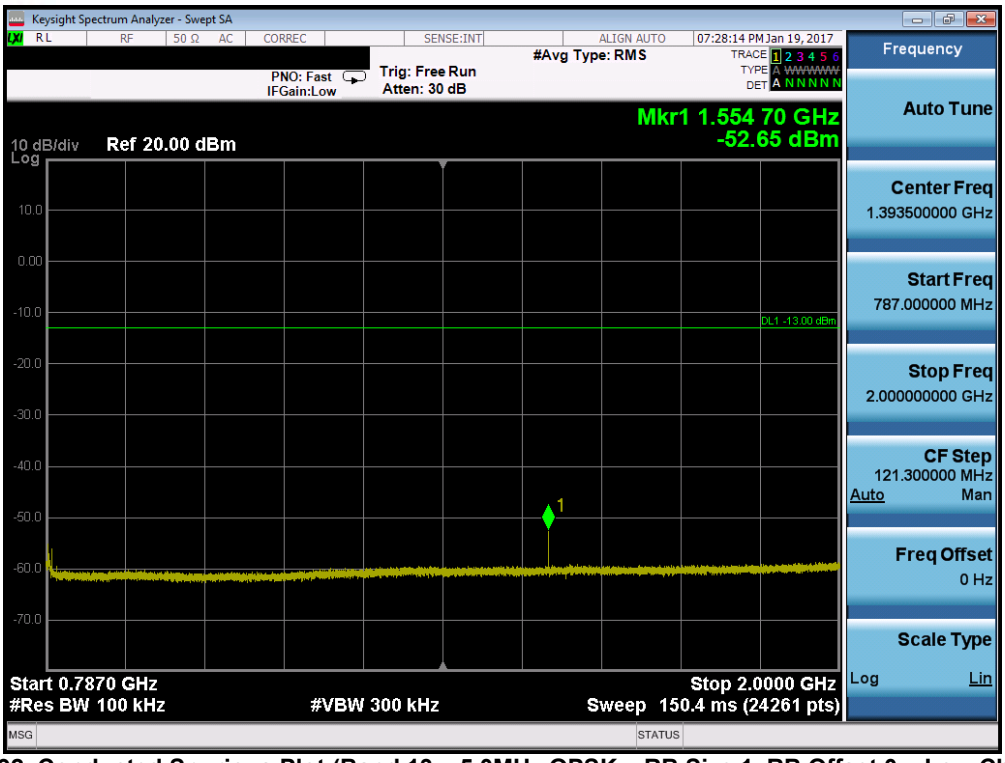
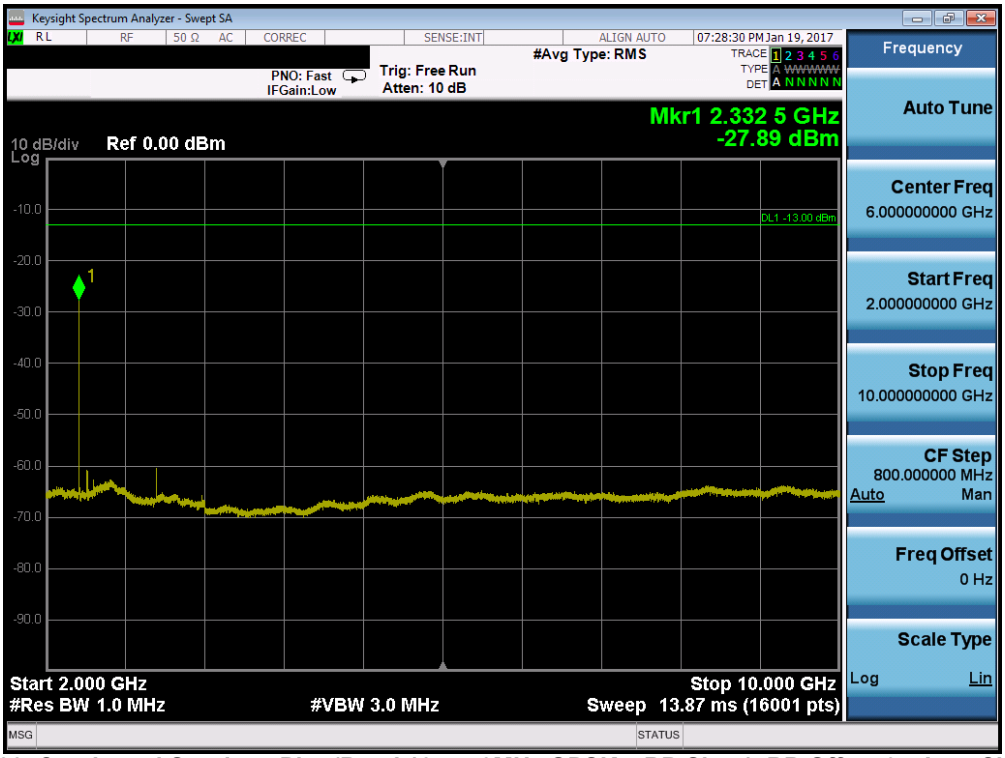


Plot 7-92. Conducted Spurious Plot (Band 13 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)



Plot 7-93. Conducted Spurious Plot (Band 13 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

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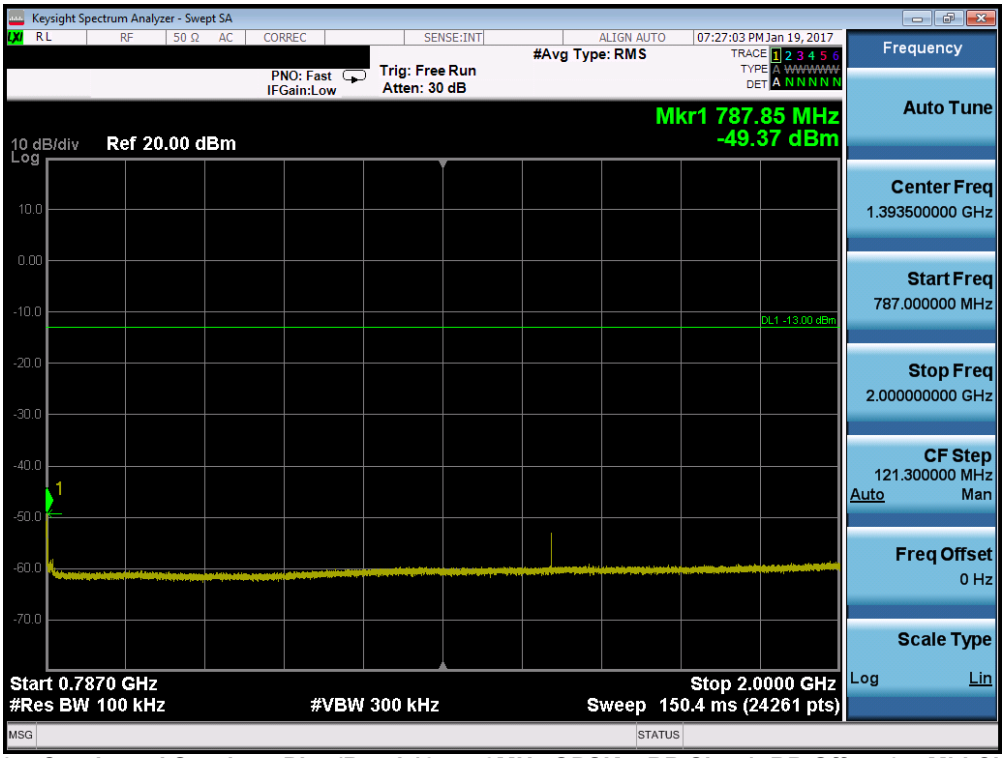
Plot 7-94. Conducted Spurious Plot (Band 13 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



Plot 7-95. Conducted Spurious Plot (Band 13 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

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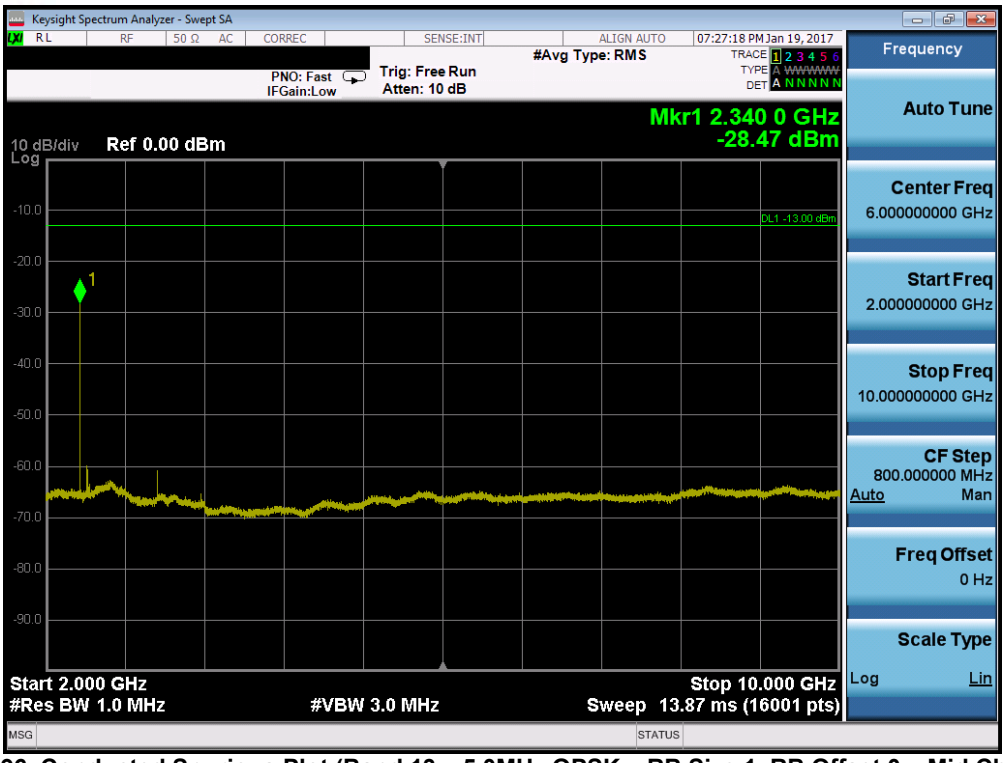
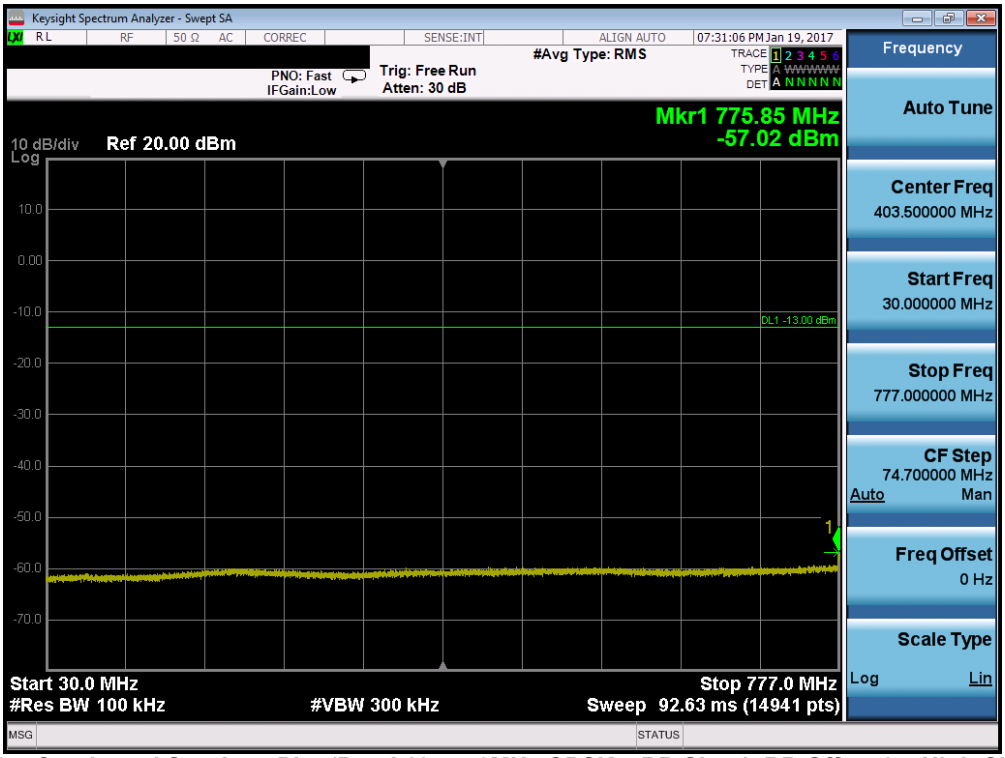


Plot 7-96. Conducted Spurious Plot (Band 13 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



Plot 7-97. Conducted Spurious Plot (Band 13 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

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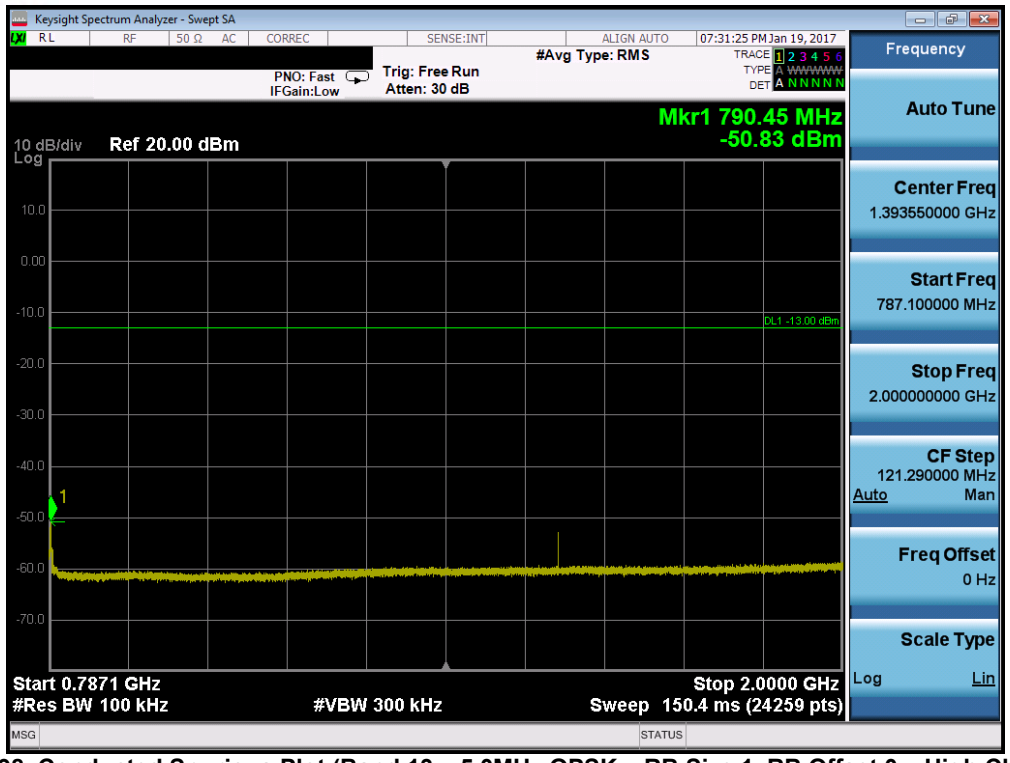
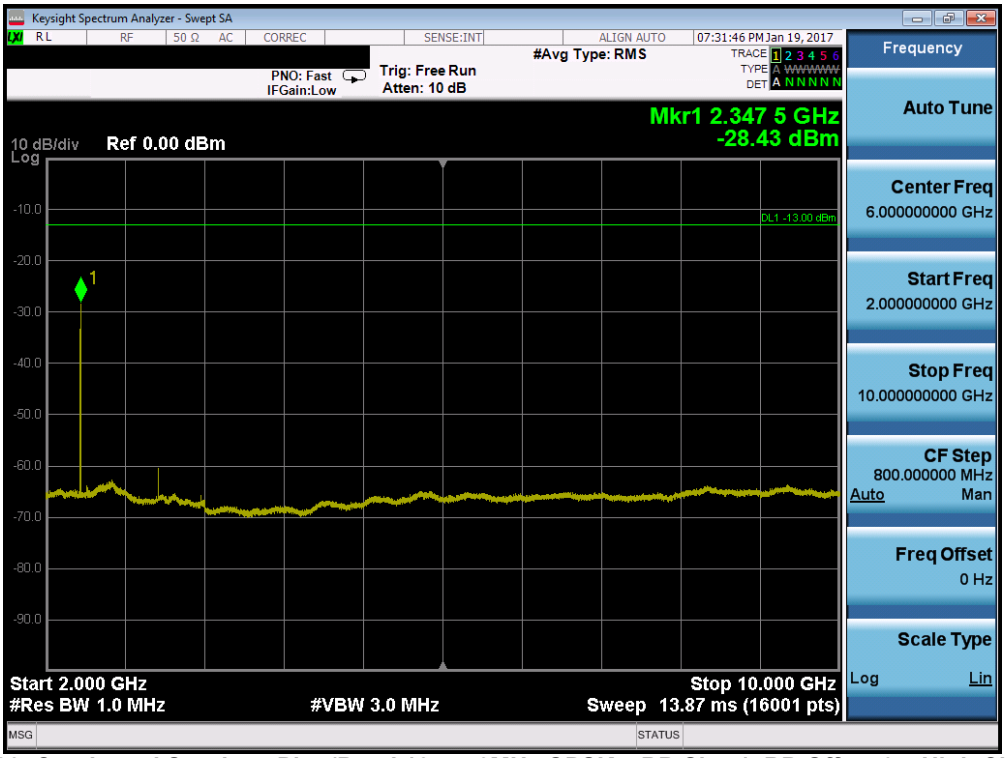


Plot 7-98. Conducted Spurious Plot (Band 13 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-99. Conducted Spurious Plot (Band 13 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

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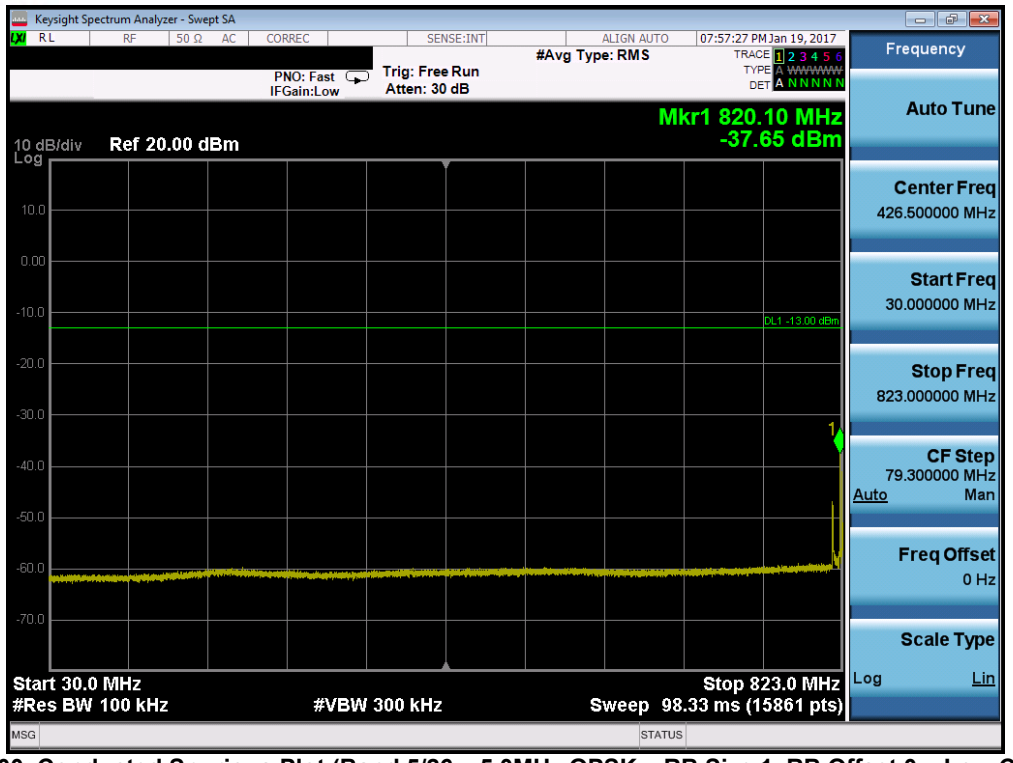
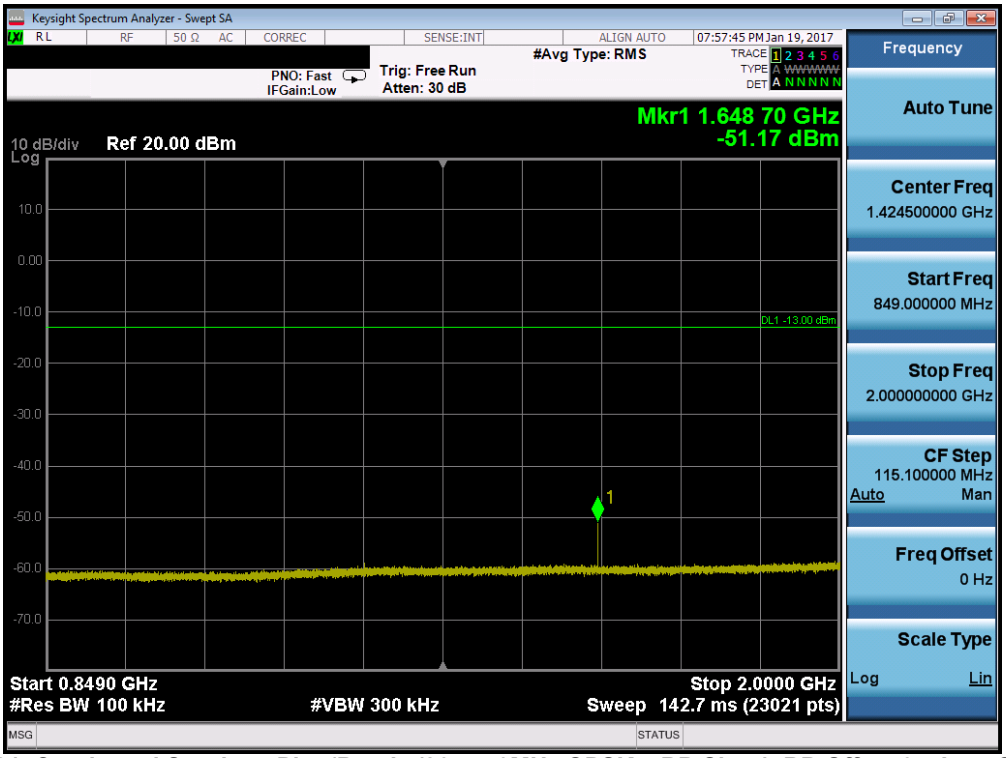


Plot 7-100. Conducted Spurious Plot (Band 5/26 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)



Plot 7-101. Conducted Spurious Plot (Band 5/26 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

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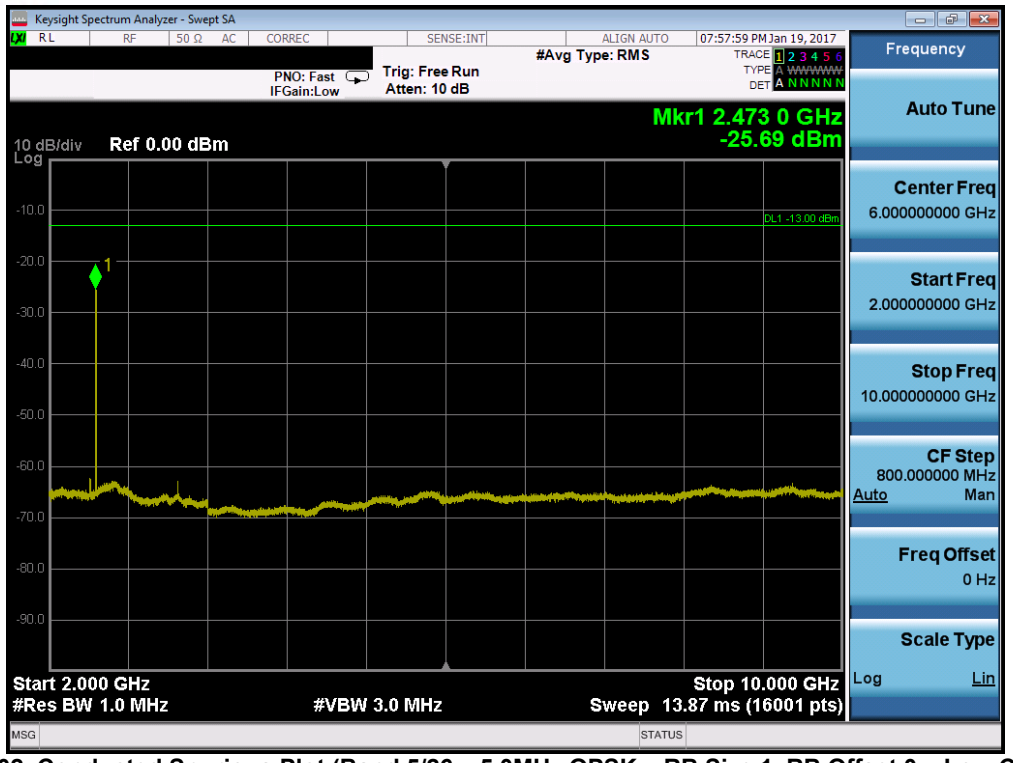
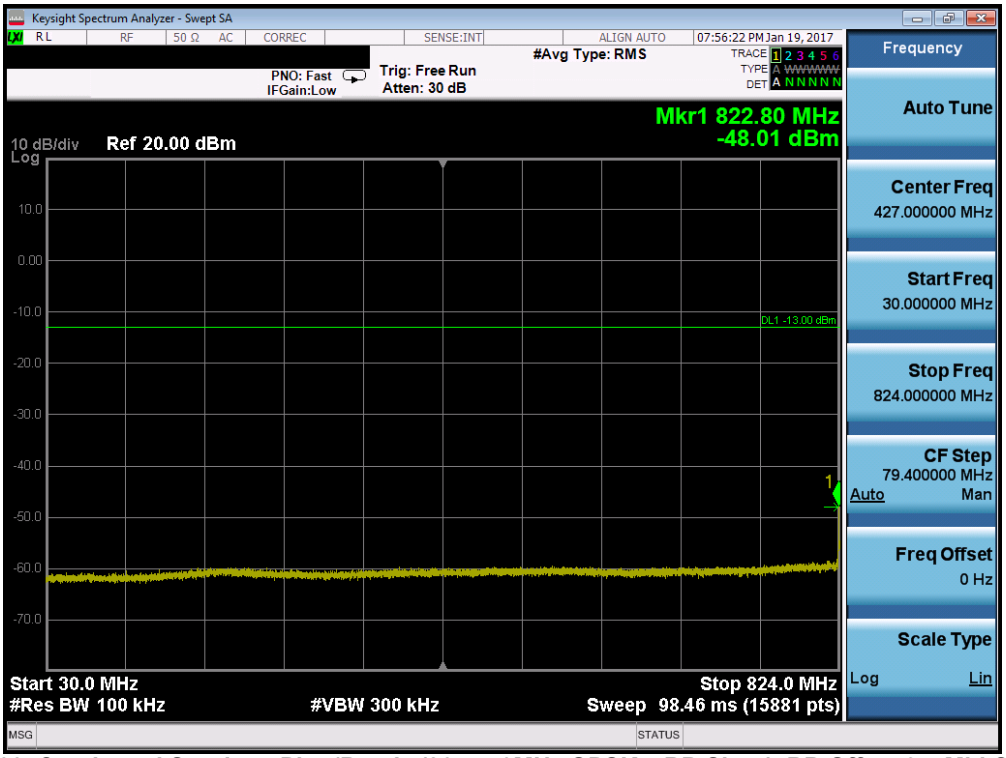


Plot 7-102. Conducted Spurious Plot (Band 5/26 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)



Plot 7-103. Conducted Spurious Plot (Band 5/26 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

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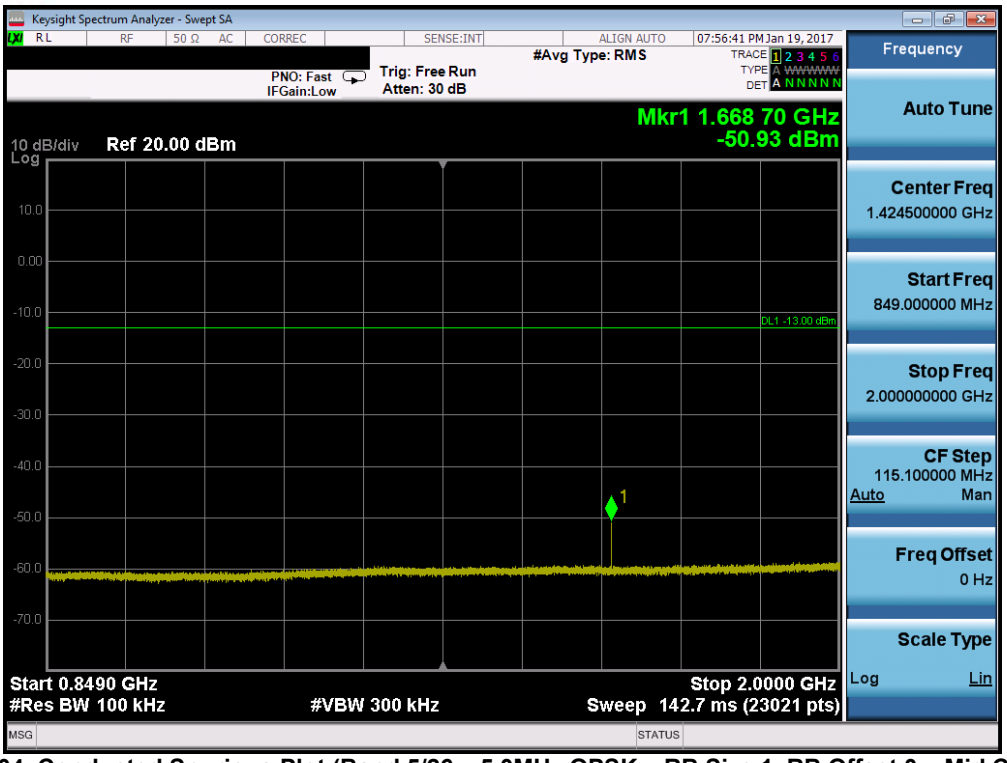
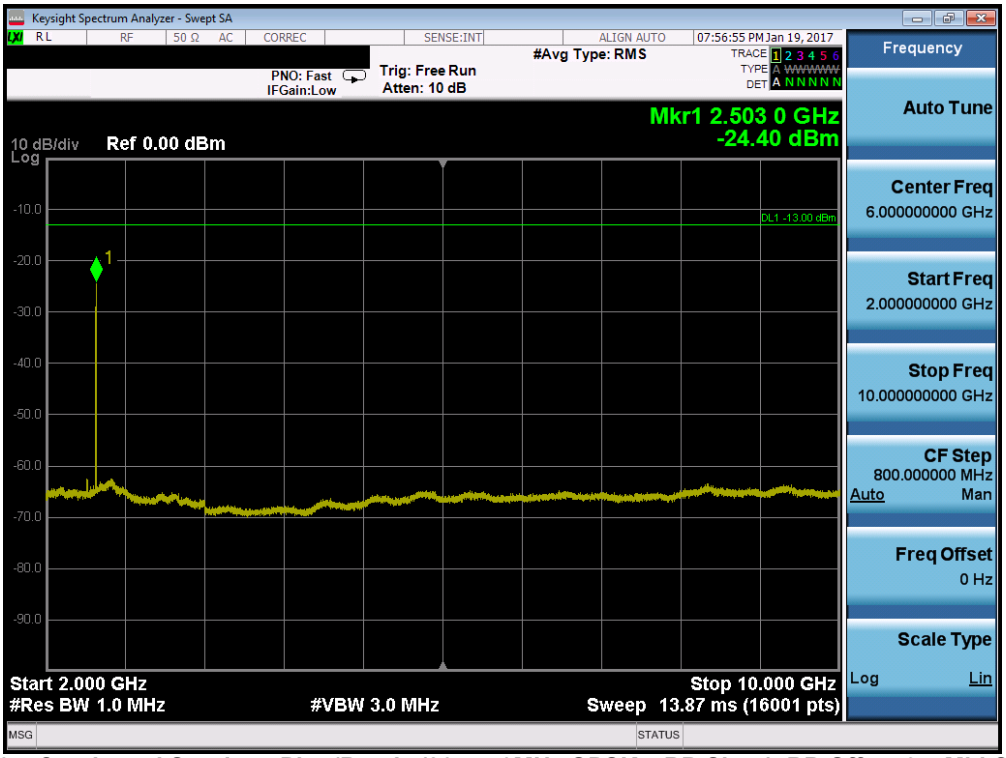


Plot 7-104. Conducted Spurious Plot (Band 5/26 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



Plot 7-105. Conducted Spurious Plot (Band 5/26 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

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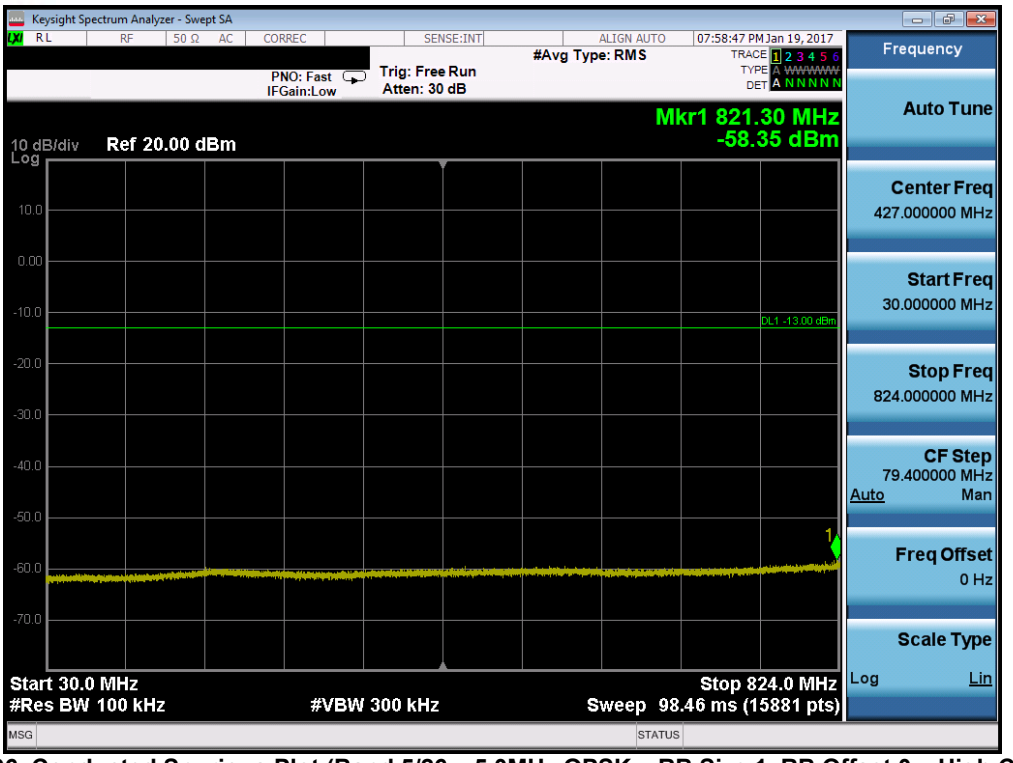
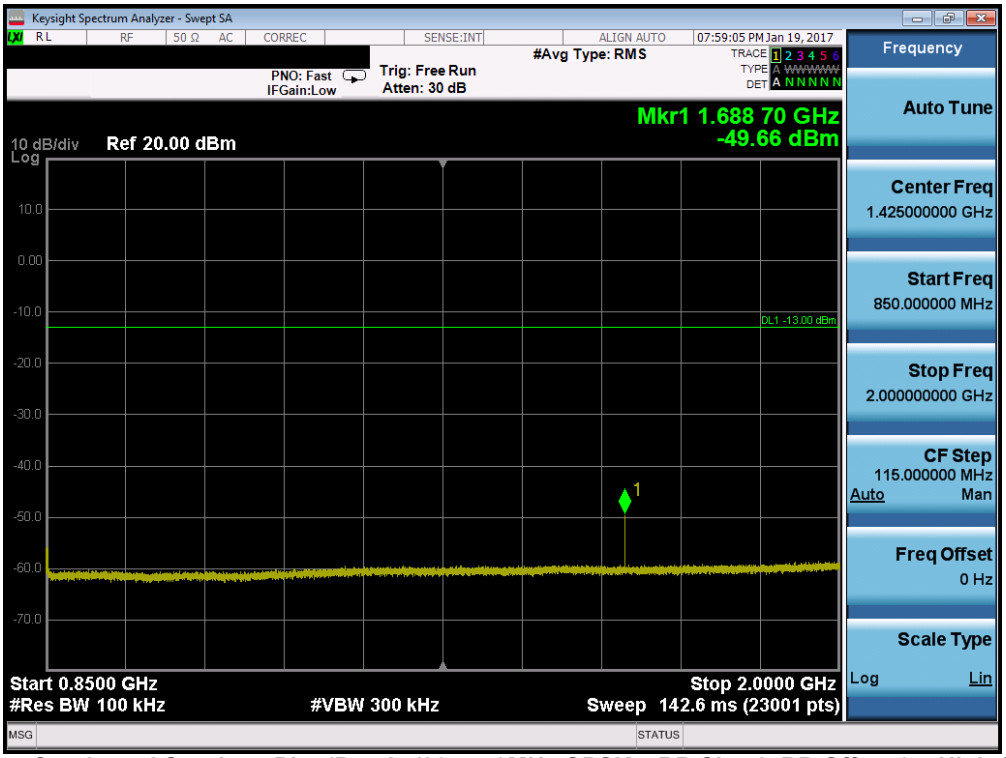


Plot 7-106. Conducted Spurious Plot (Band 5/26 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-107. Conducted Spurious Plot (Band 5/26 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

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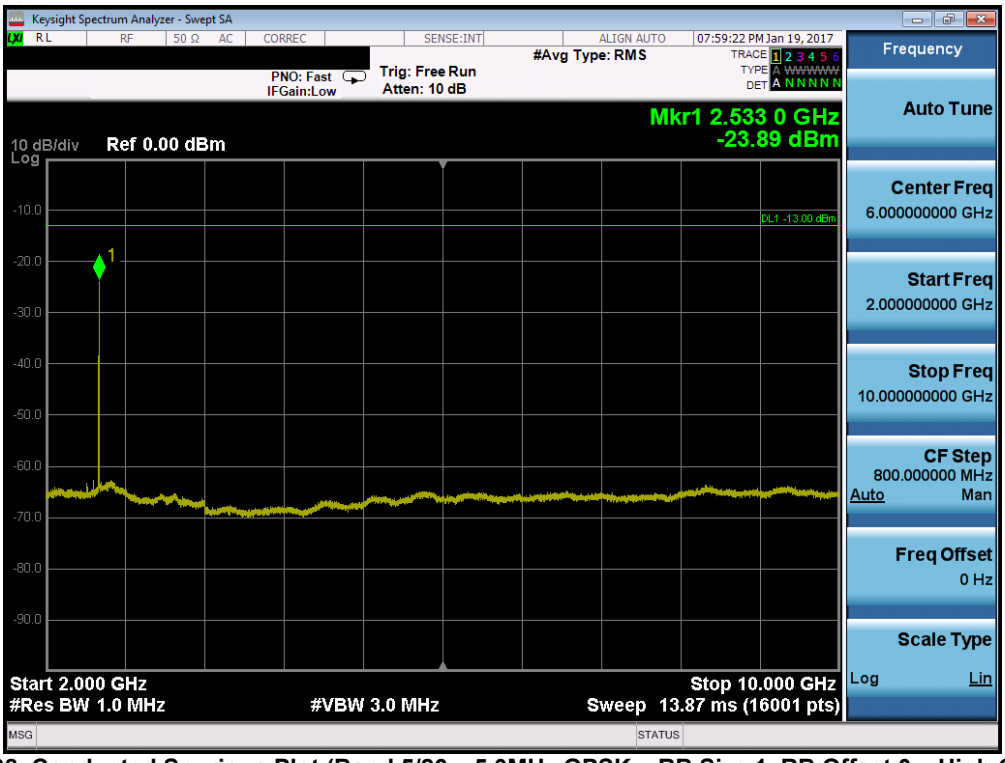
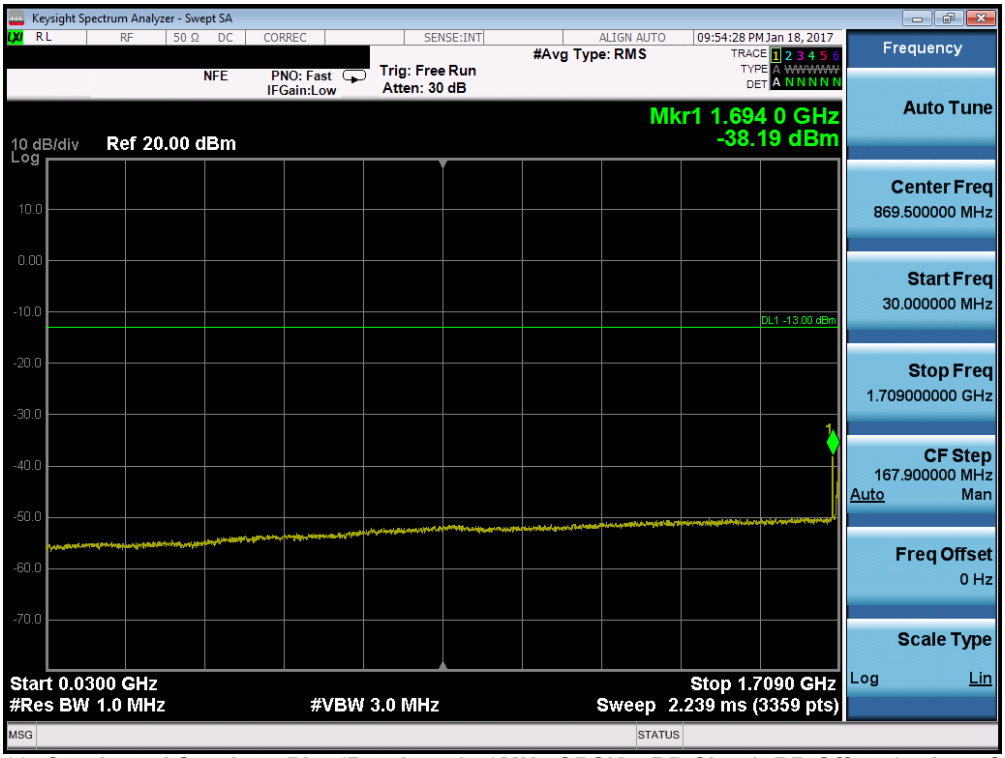


Plot 7-108. Conducted Spurious Plot (Band 5/26 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-109. Conducted Spurious Plot (Band 4 – 15.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

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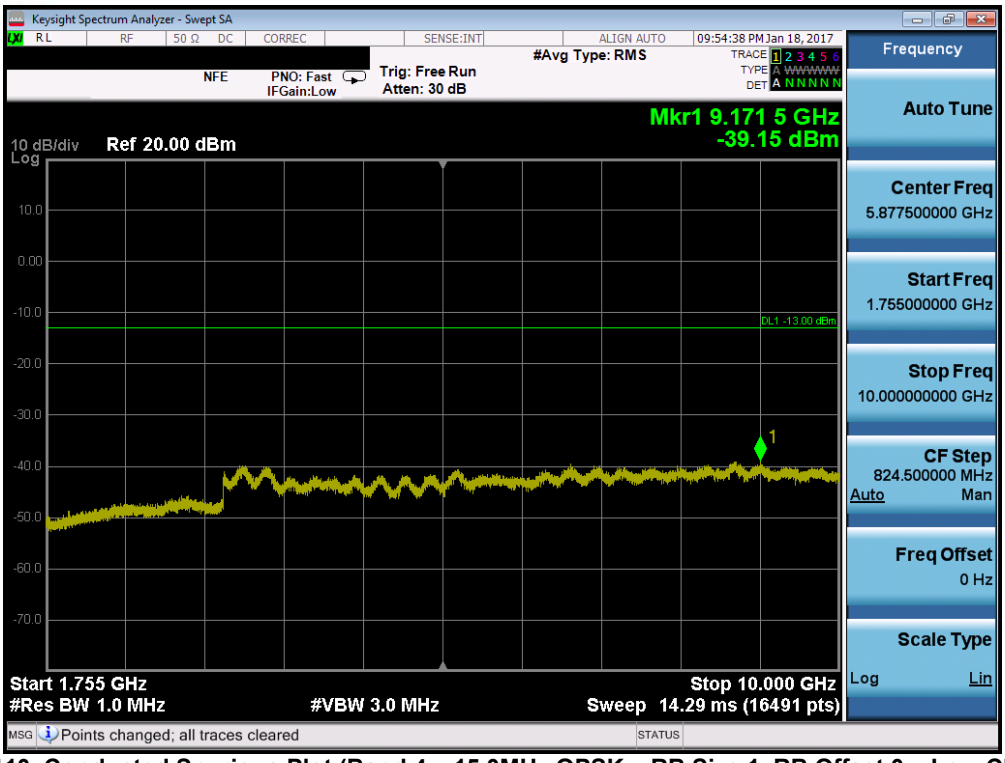
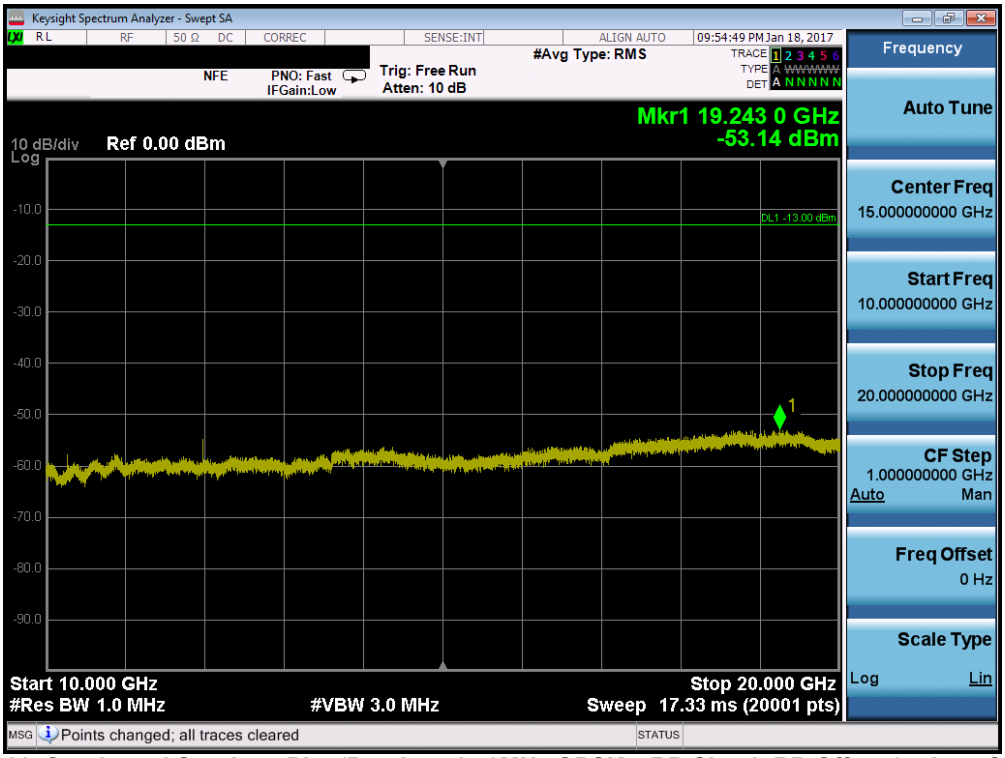


Plot 7-110. Conducted Spurious Plot (Band 4 – 15.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)



Plot 7-111. Conducted Spurious Plot (Band 4 – 15.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

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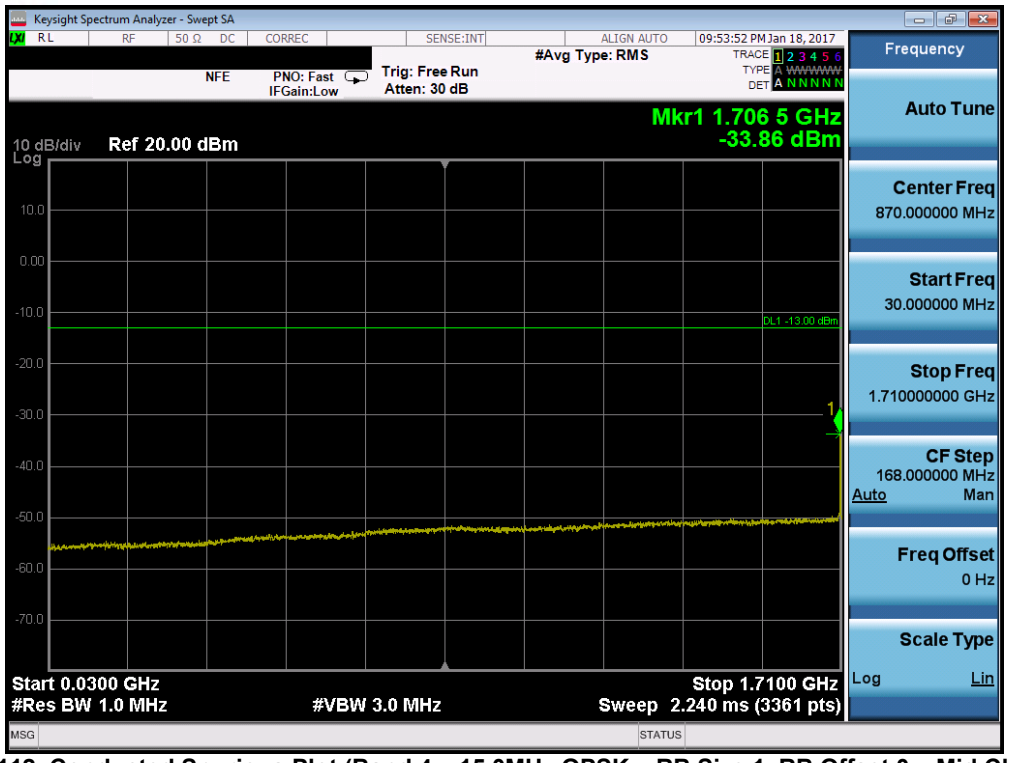
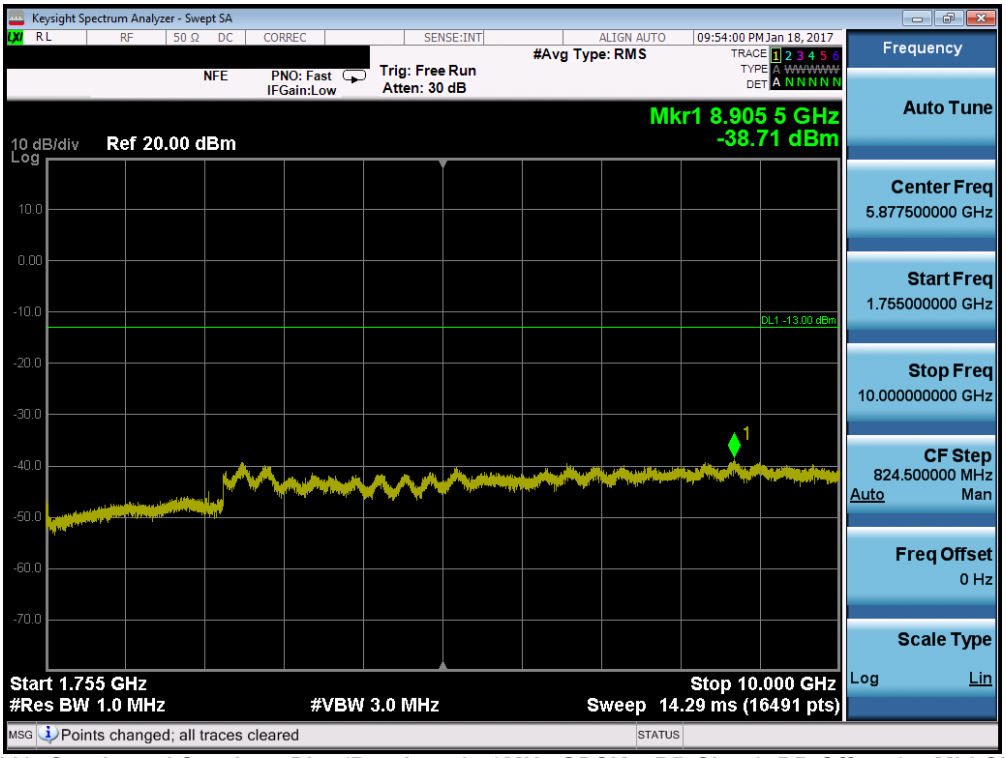


Plot 7-112. Conducted Spurious Plot (Band 4 – 15.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



Plot 7-113. Conducted Spurious Plot (Band 4 – 15.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

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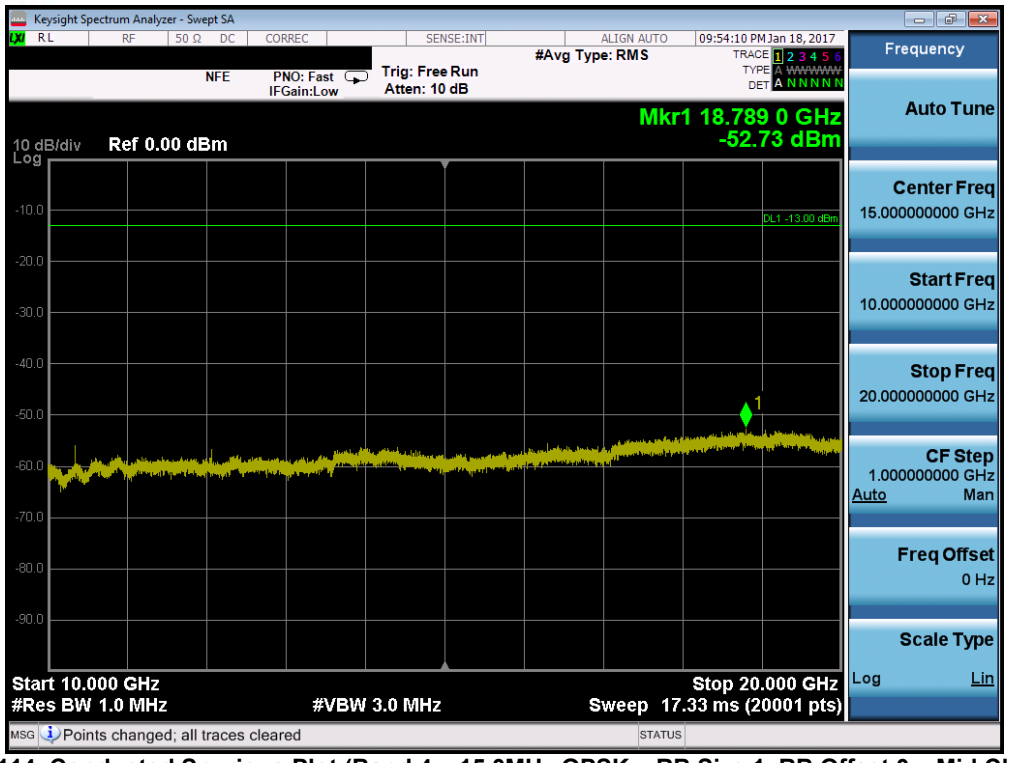
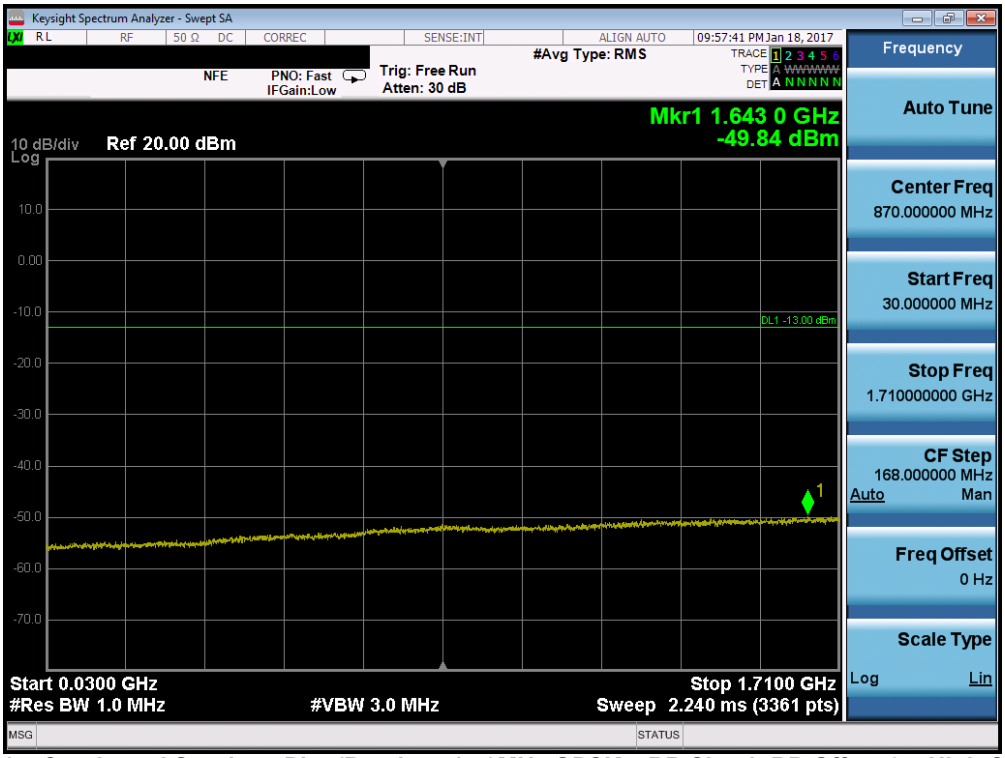


Plot 7-114. Conducted Spurious Plot (Band 4 – 15.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



Plot 7-115. Conducted Spurious Plot (Band 4 – 15.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

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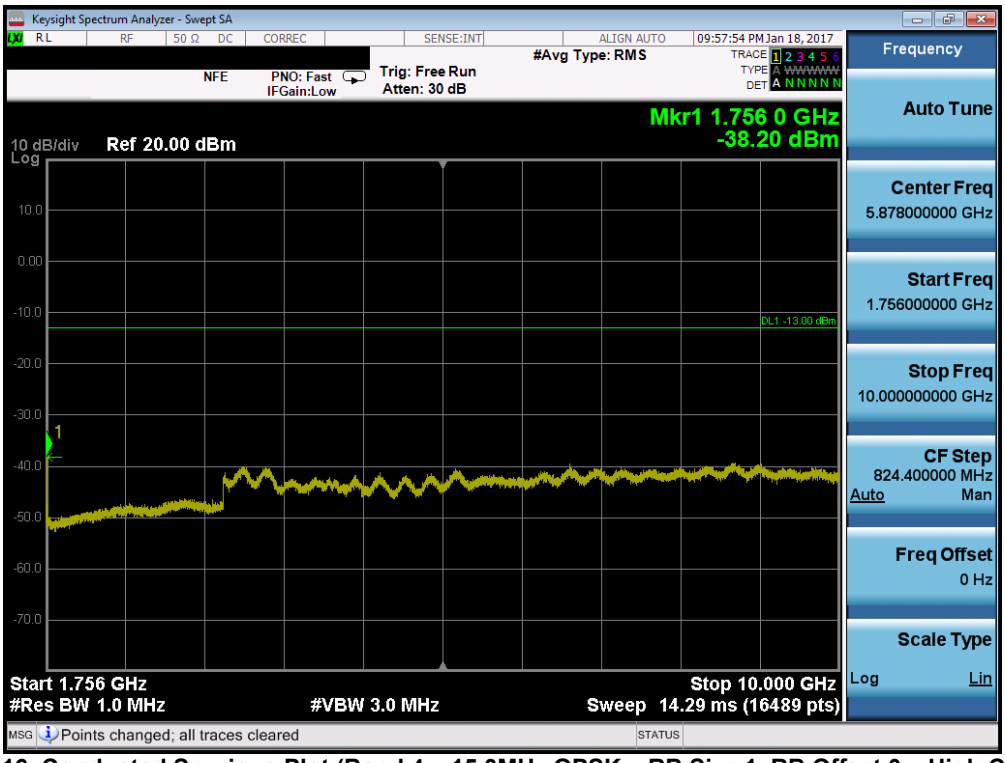
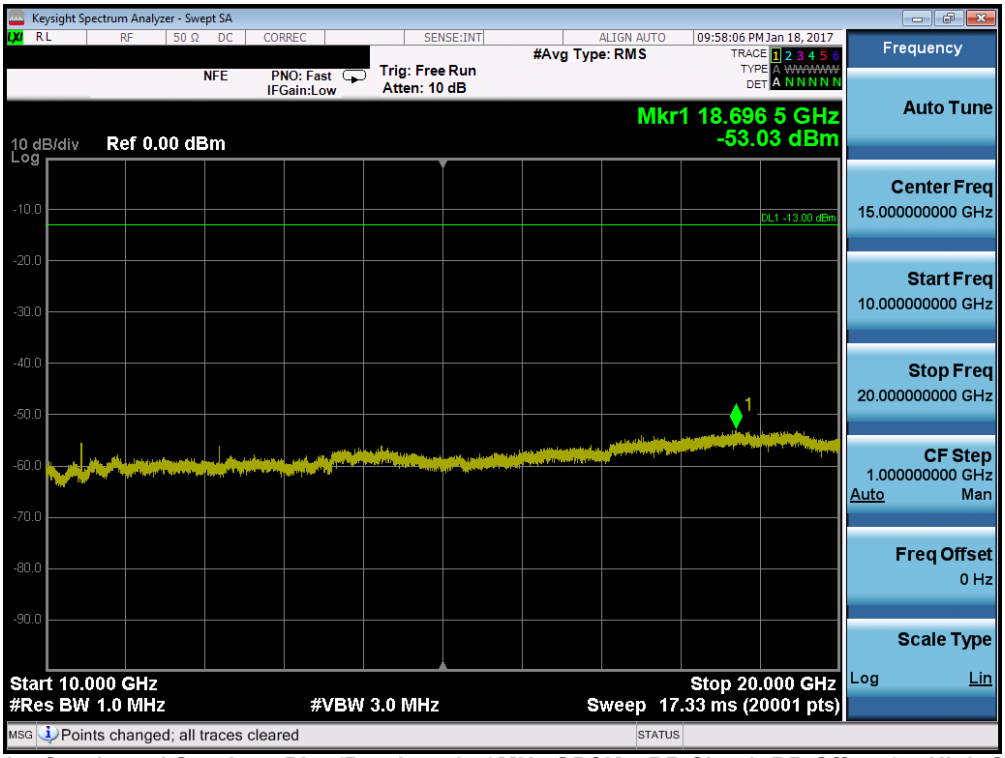


Plot 7-116. Conducted Spurious Plot (Band 4 – 15.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-117. Conducted Spurious Plot (Band 4 – 15.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

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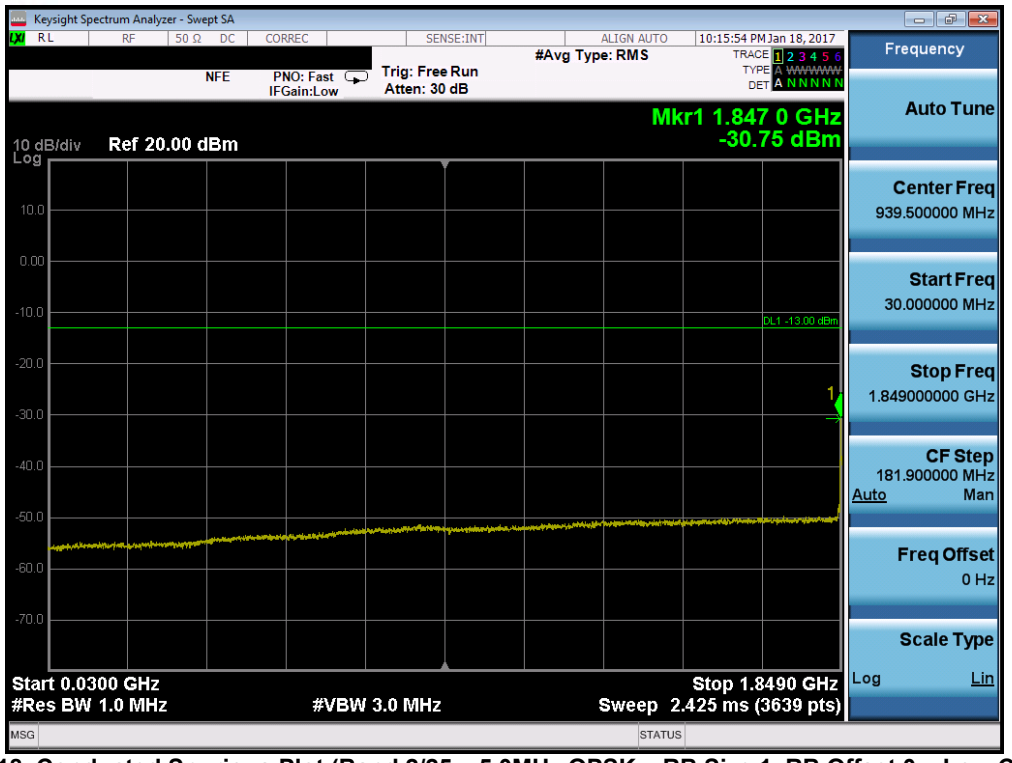
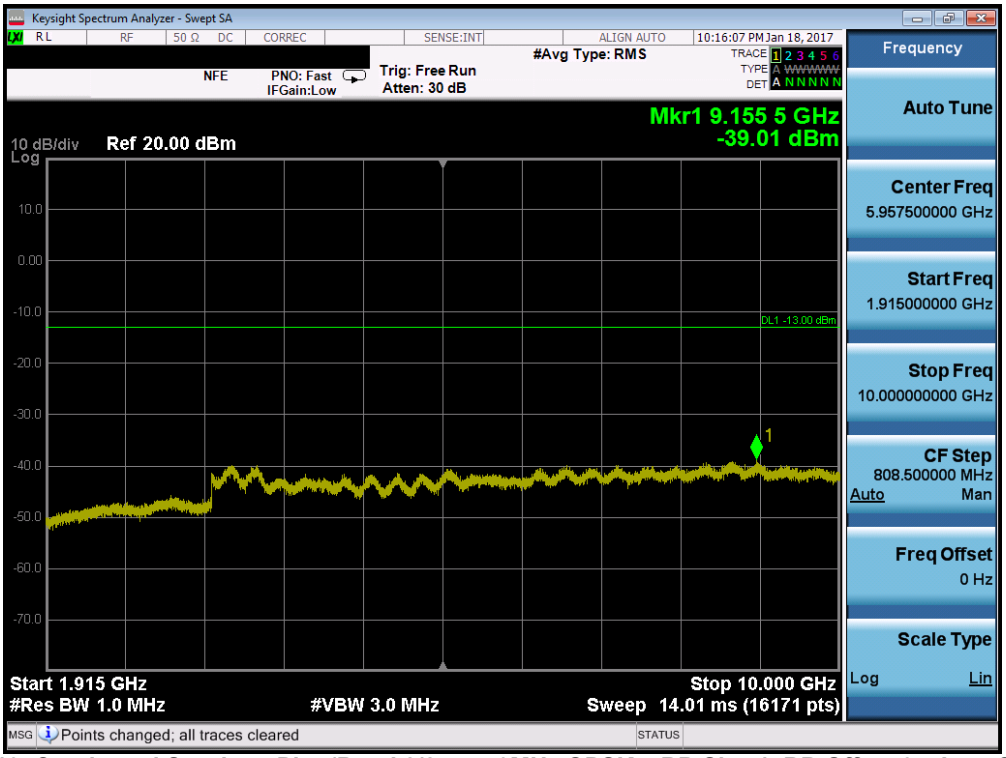


Plot 7-118. Conducted Spurious Plot (Band 2/25 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)



Plot 7-119. Conducted Spurious Plot (Band 2/25 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

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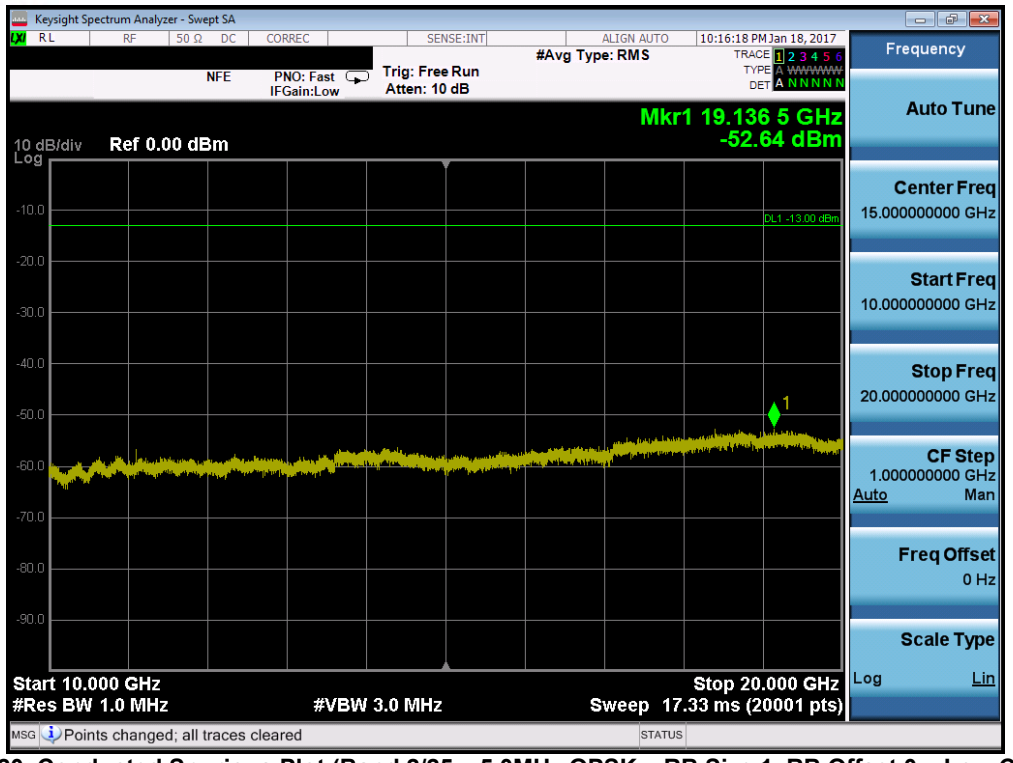
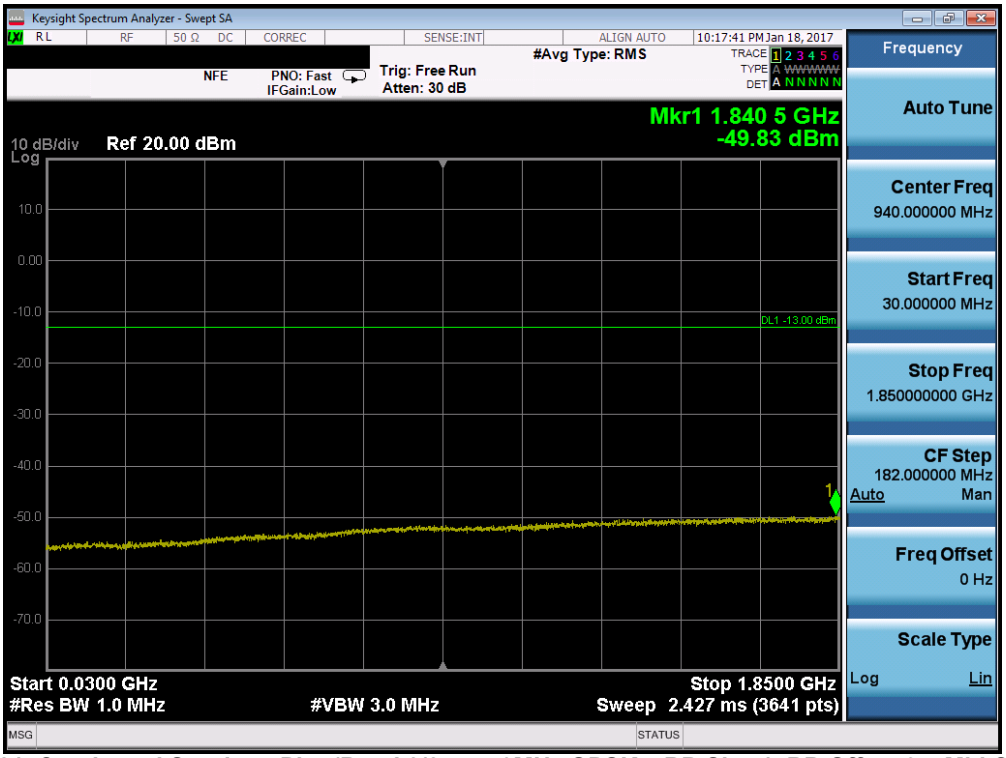


Plot 7-120. Conducted Spurious Plot (Band 2/25 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)



Plot 7-121. Conducted Spurious Plot (Band 2/25 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

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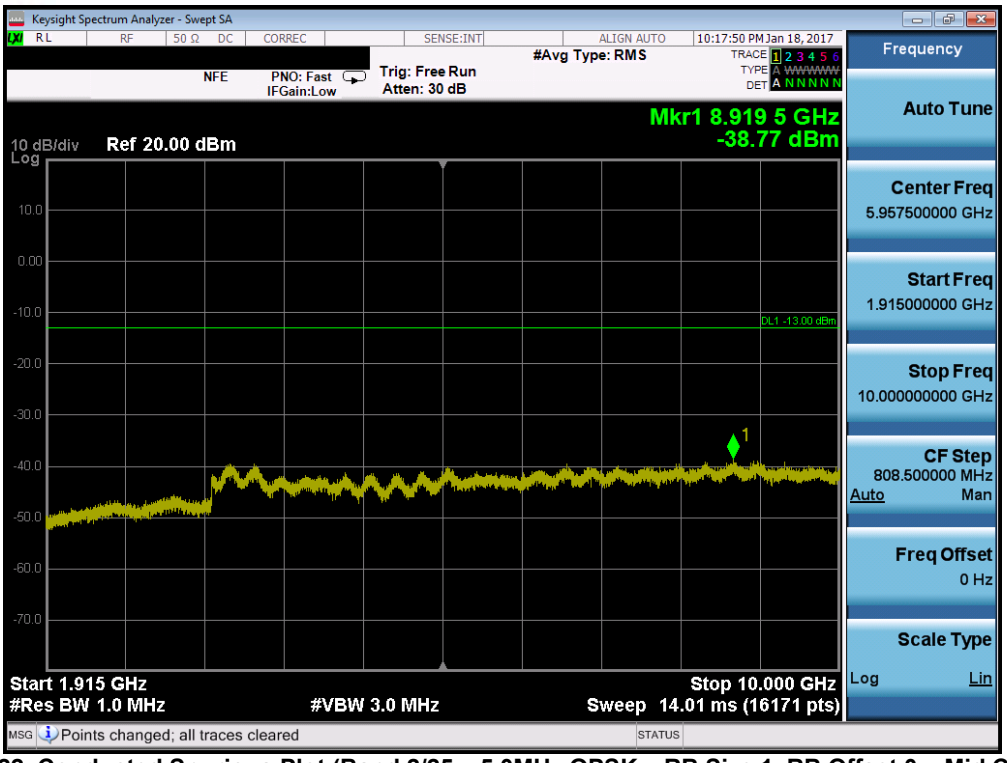
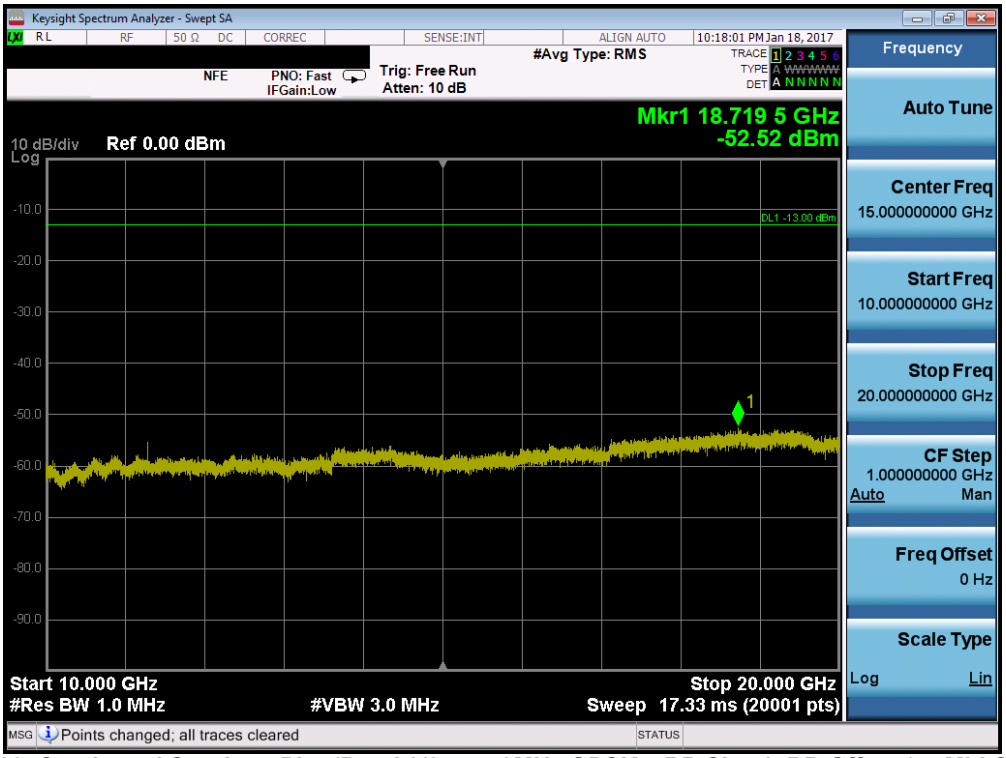


Plot 7-122. Conducted Spurious Plot (Band 2/25 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



Plot 7-123. Conducted Spurious Plot (Band 2/25 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

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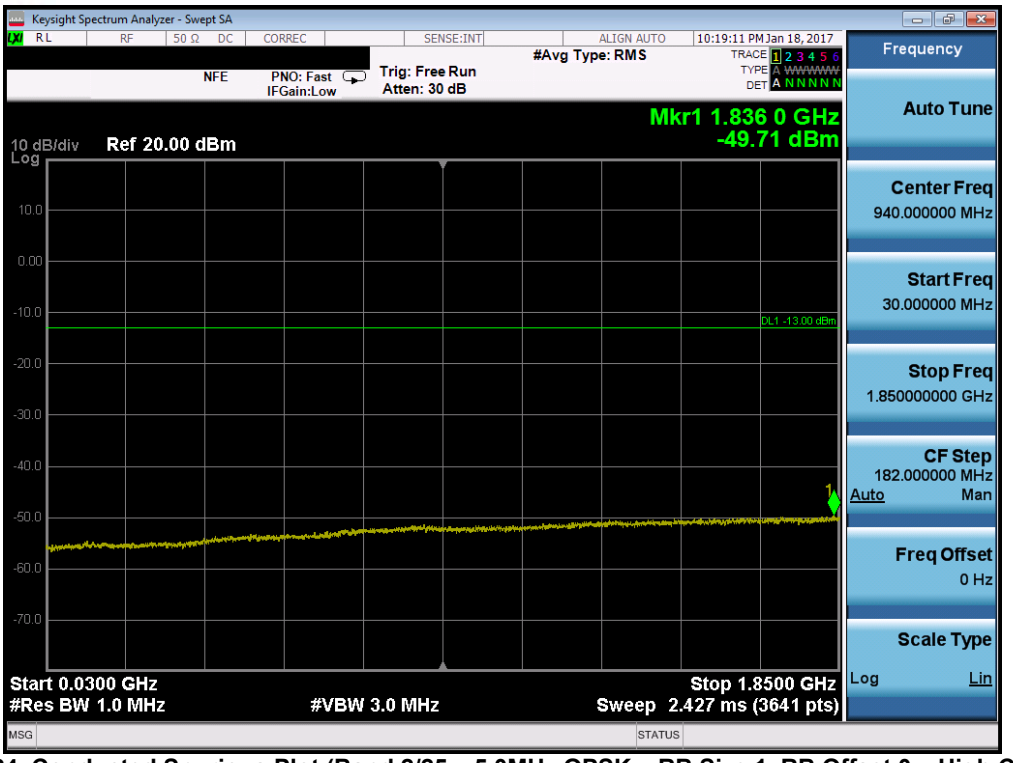
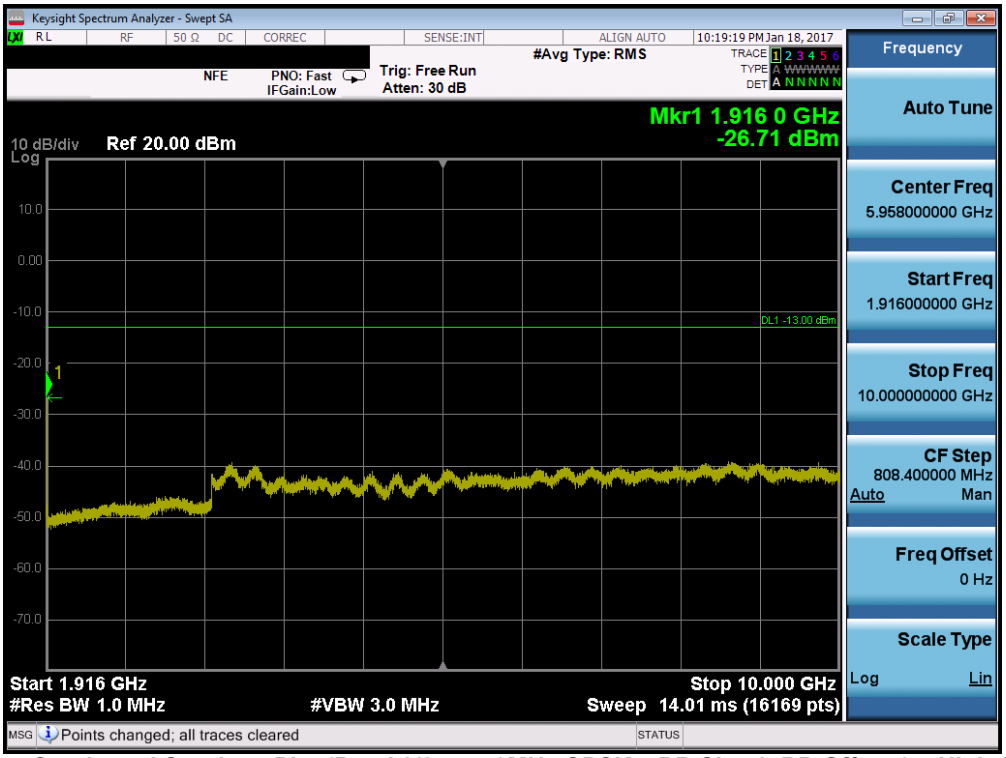


Plot 7-124. Conducted Spurious Plot (Band 2/25 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-125. Conducted Spurious Plot (Band 2/25 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

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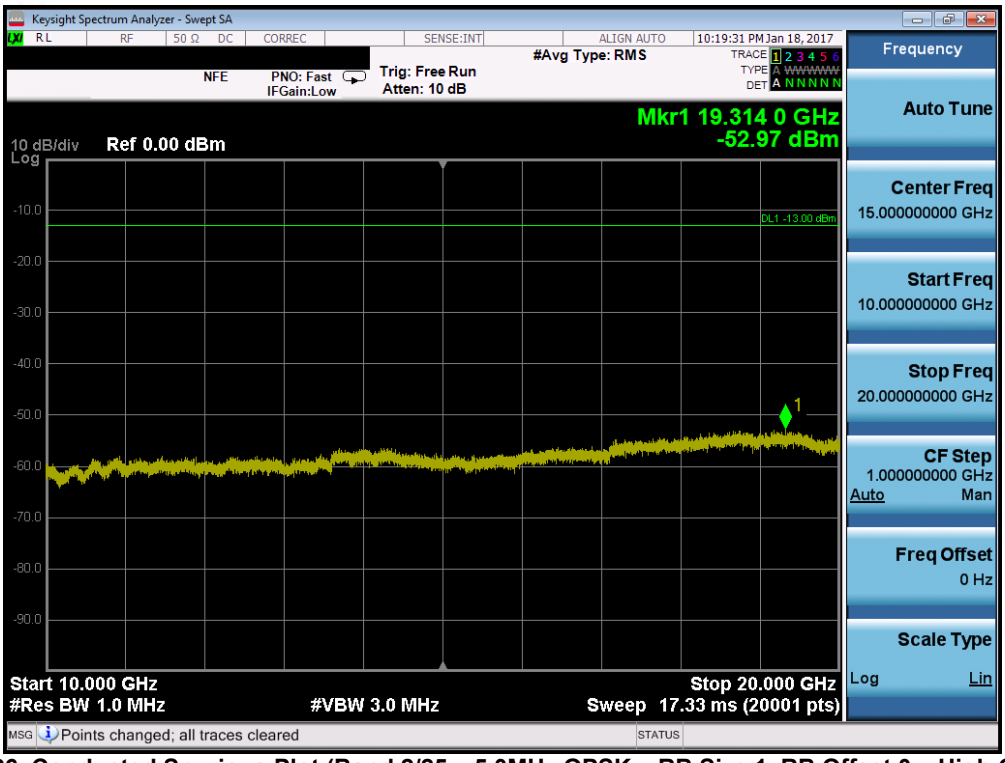
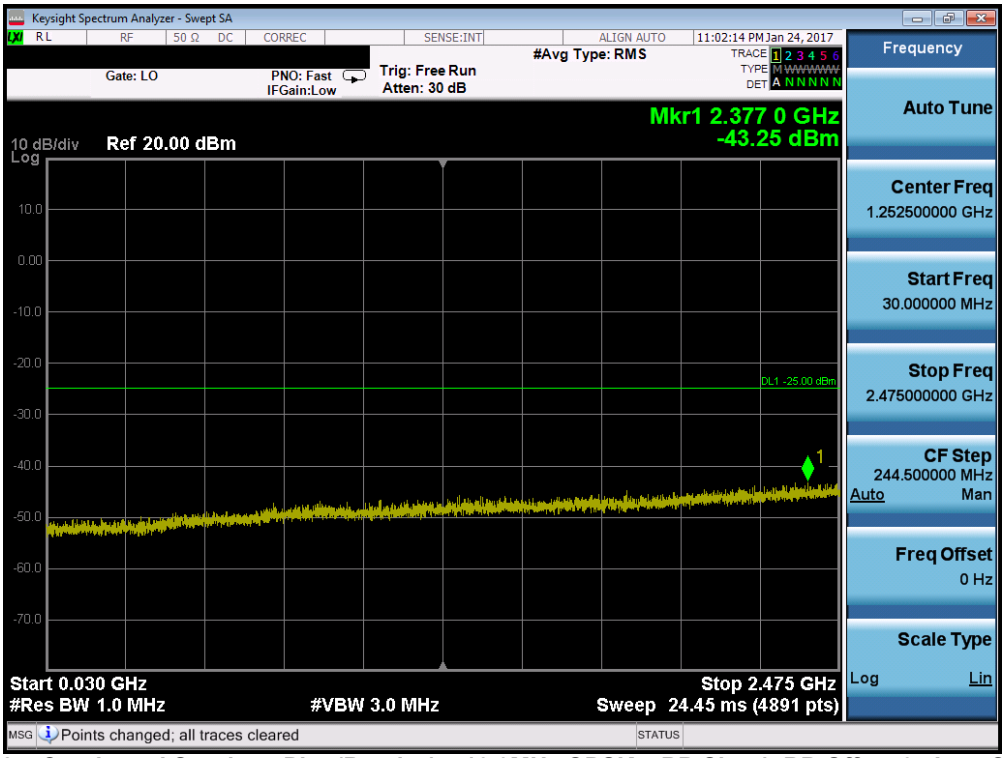


Plot 7-126. Conducted Spurious Plot (Band 2/25 – 5.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)



Plot 7-127. Conducted Spurious Plot (Band 41 – 10.0MHz QPSK – RB Size 1, RB Offset 0– Low Channel)

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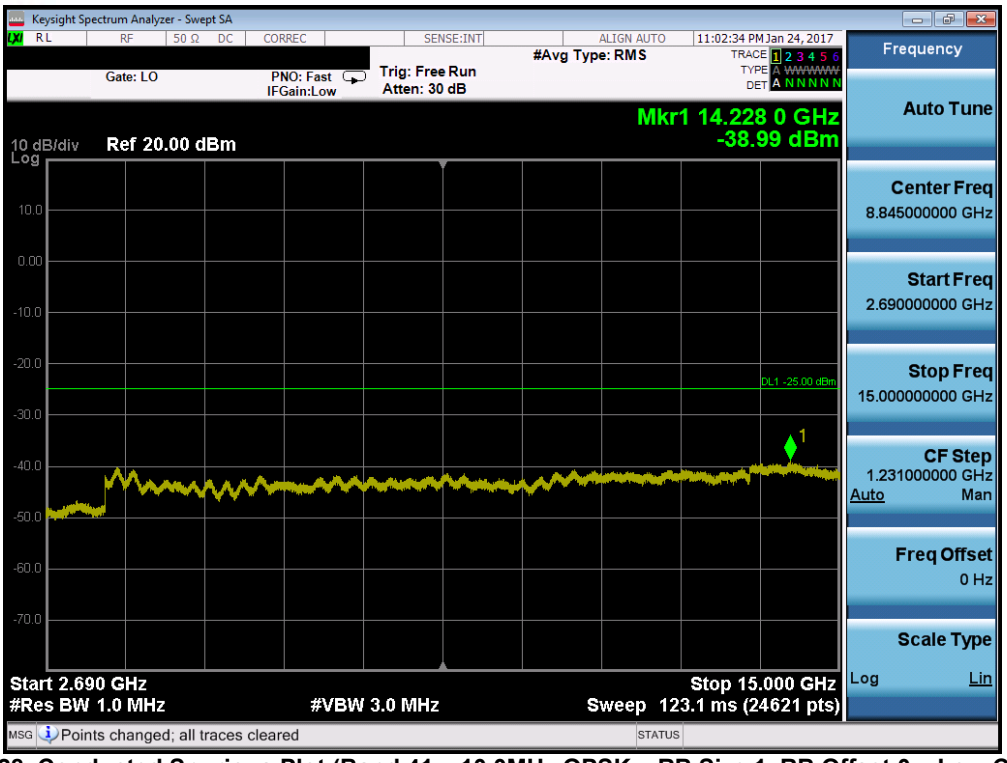

Plot 7-128. Conducted Spurious Plot (Band 41 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

Plot 7-129. Conducted Spurious Plot (Band 41 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Low Channel)

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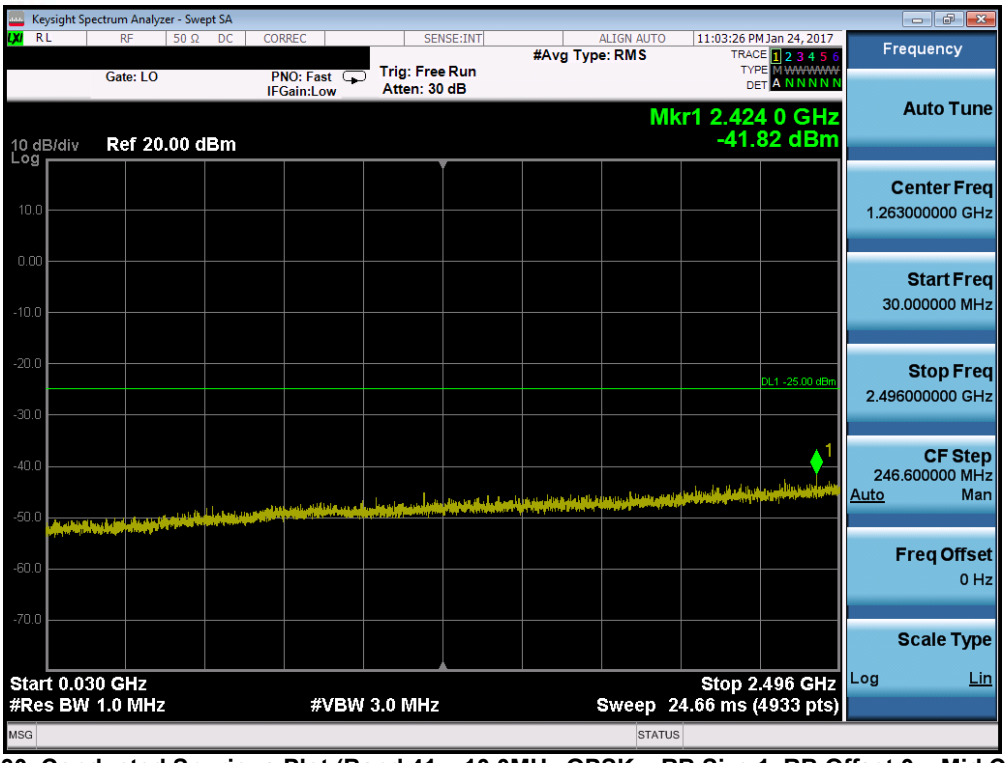
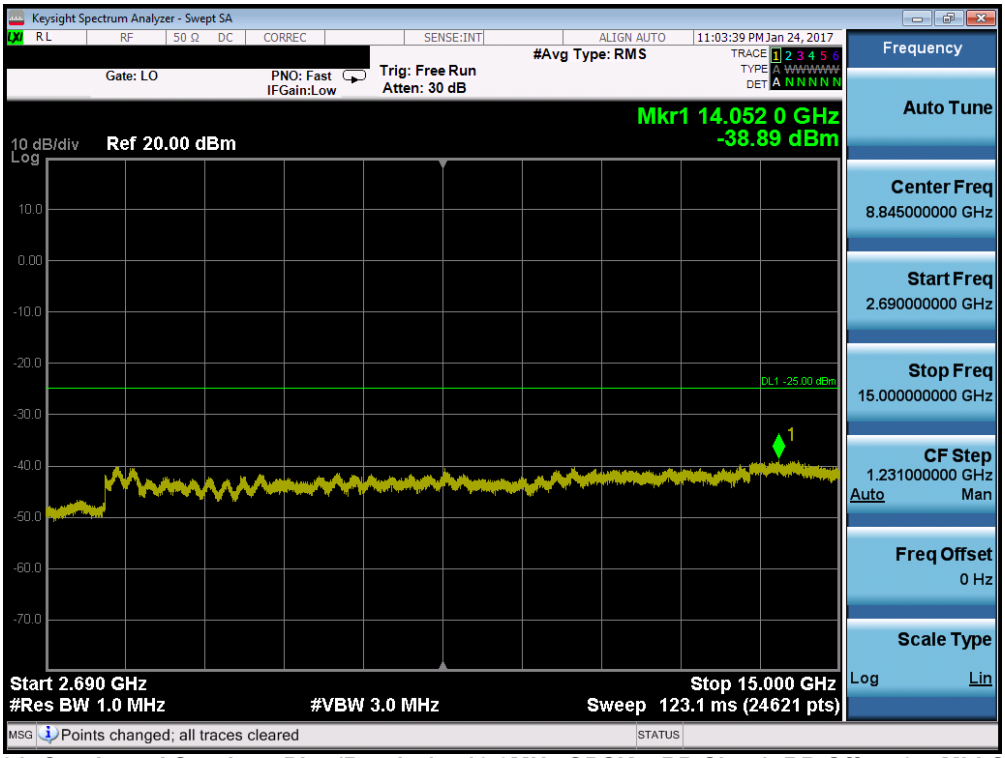


Plot 7-130. Conducted Spurious Plot (Band 41 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



Plot 7-131. Conducted Spurious Plot (Band 41 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)

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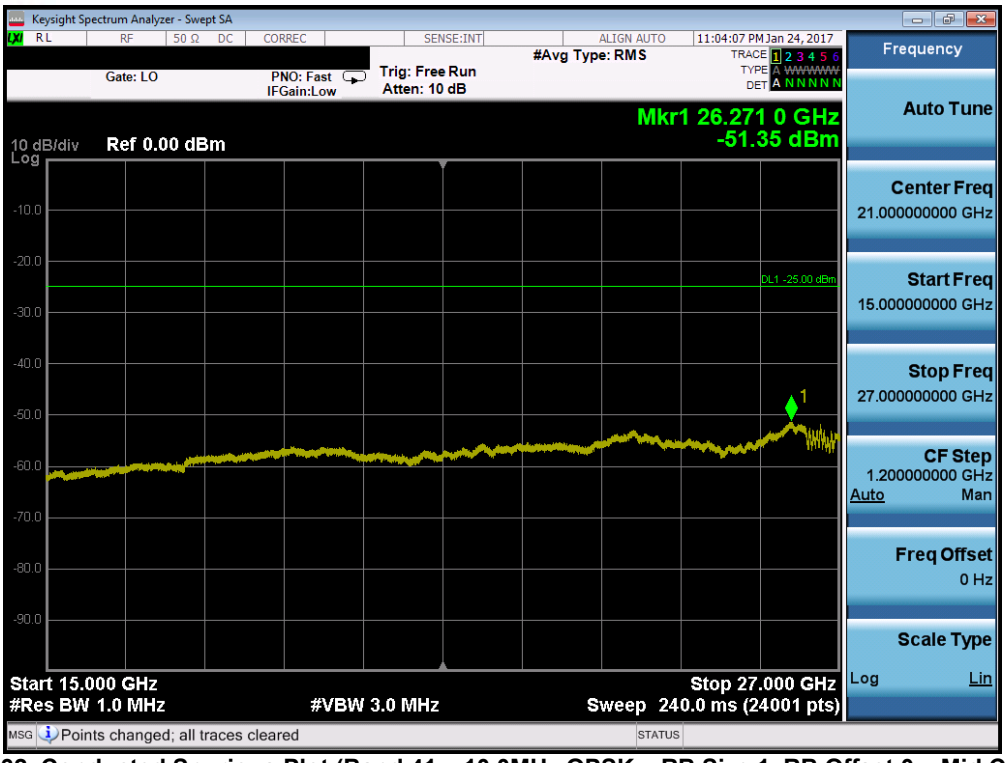
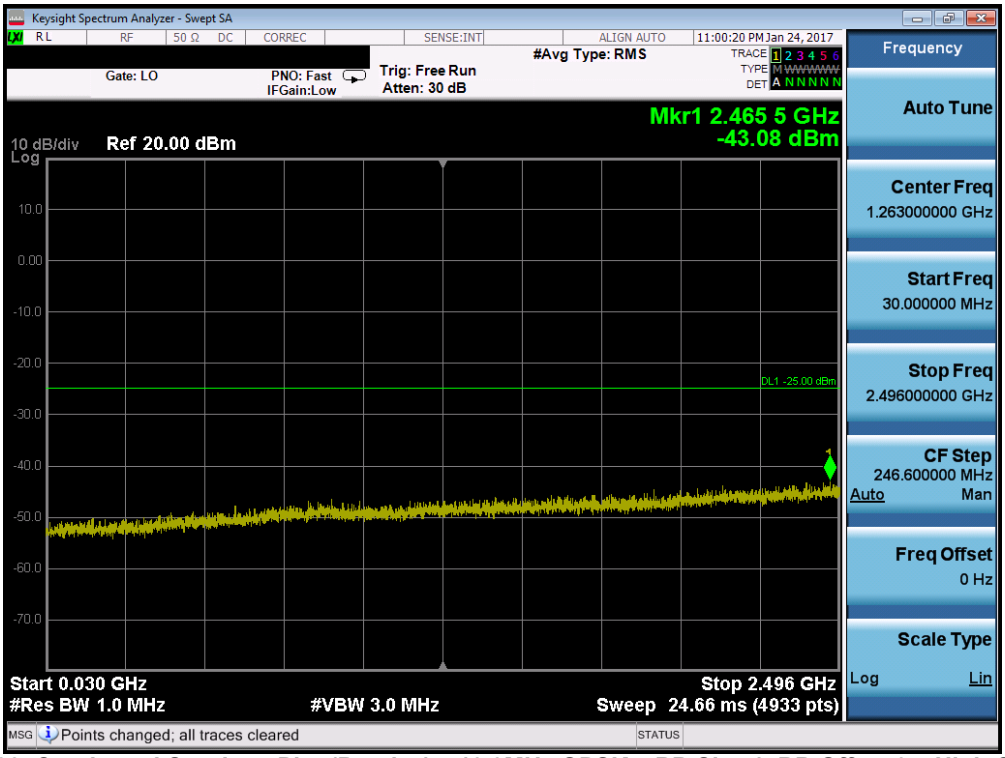


Plot 7-132. Conducted Spurious Plot (Band 41 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – Mid Channel)



Plot 7-133. Conducted Spurious Plot (Band 41 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

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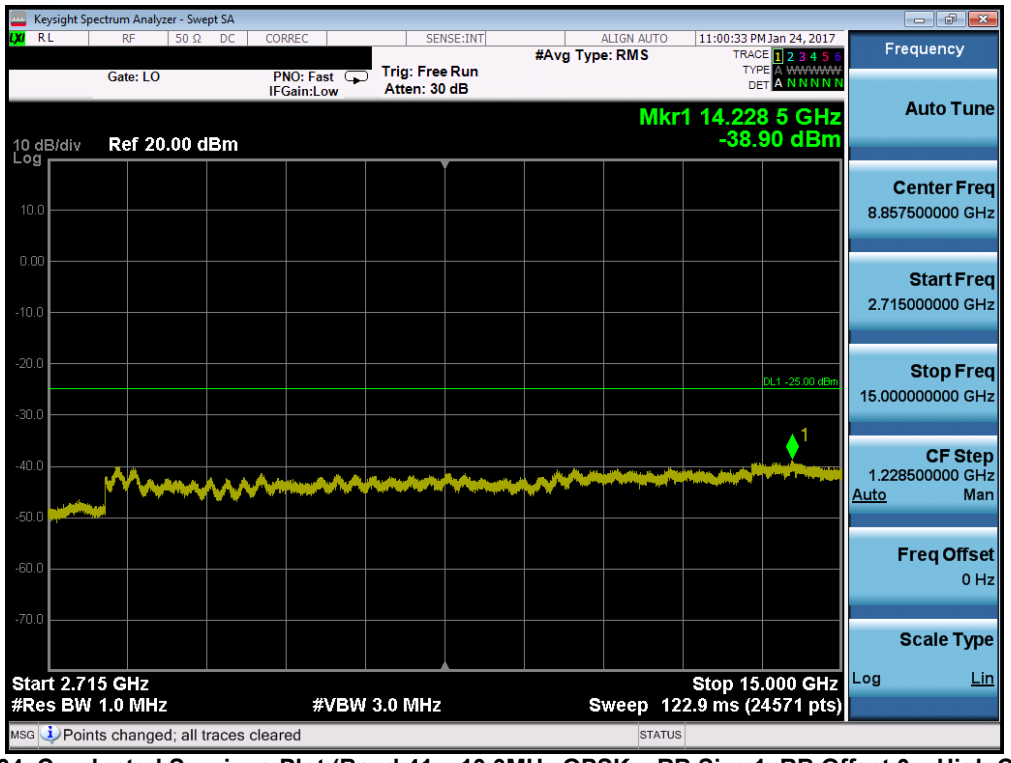

Plot 7-134. Conducted Spurious Plot (Band 41 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

Plot 7-135. Conducted Spurious Plot (Band 41 – 10.0MHz QPSK – RB Size 1, RB Offset 0 – High Channel)

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