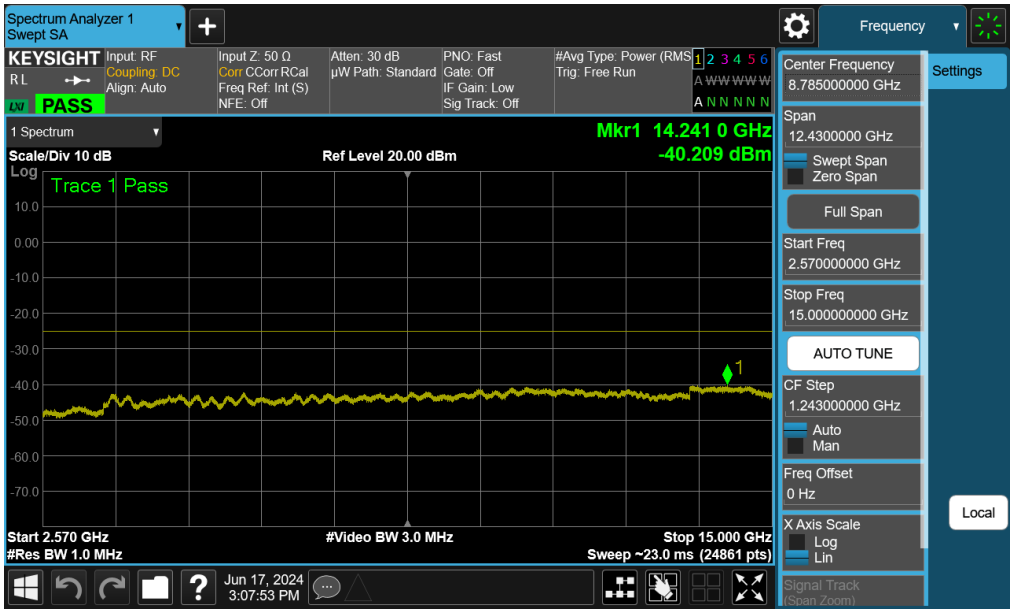
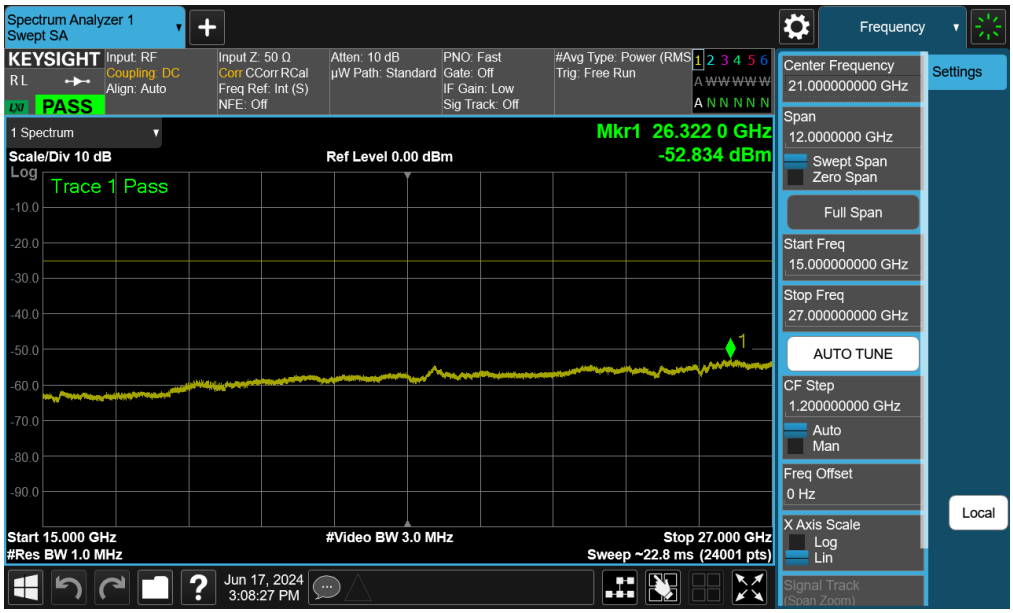


Plot 7-113. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

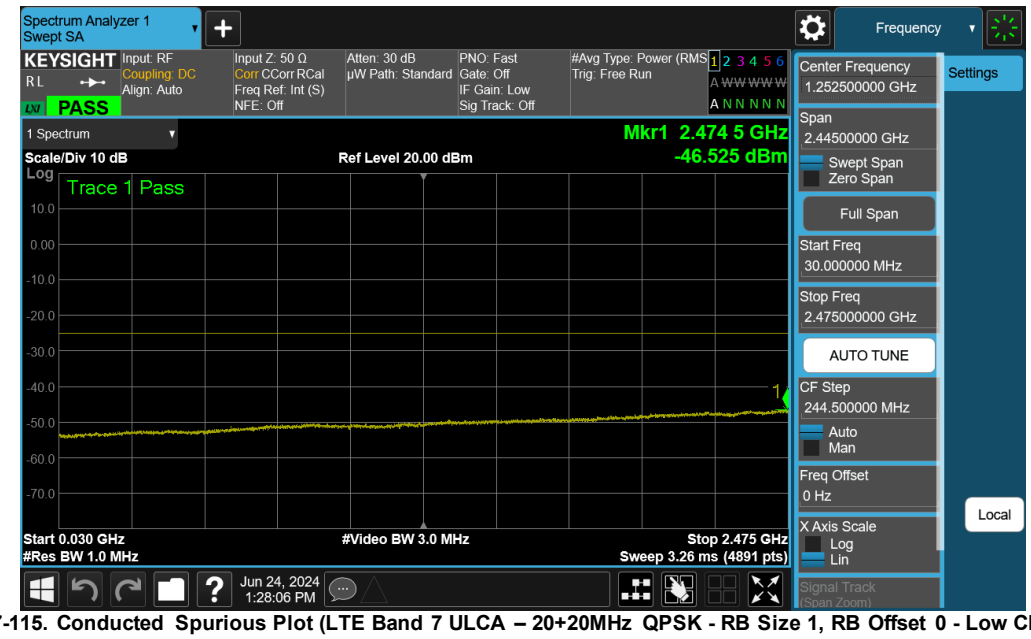


Plot 7-114. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

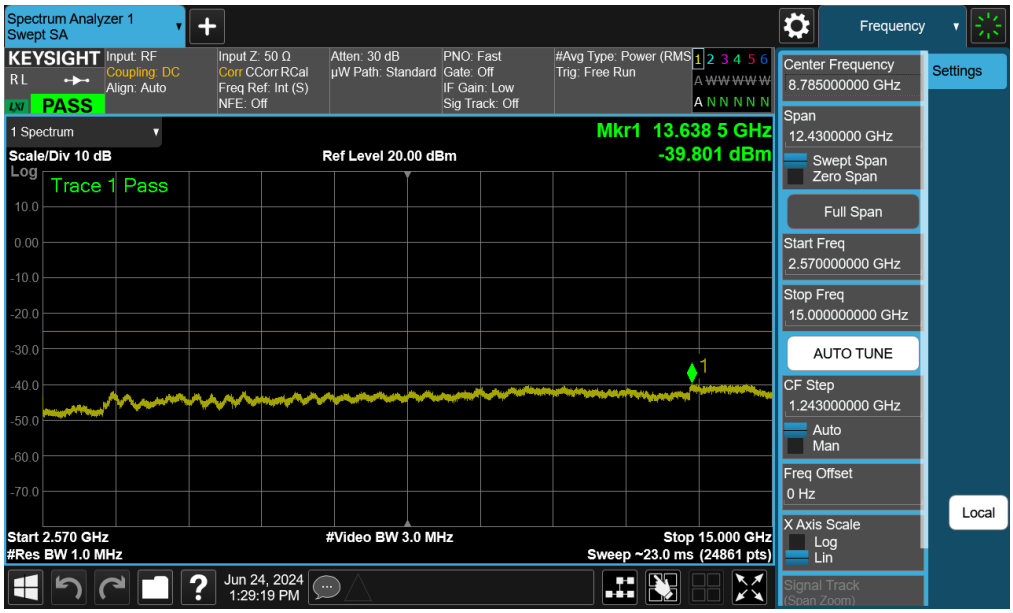
ULCA – LTE Band 7

Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
LTE-B7	20+20MHz	Low	30.0 - 2475.0	-46.53	-25	-21.53
		Low	2570.0 - 15000.0	-39.80	-25	-14.80
		Low	15000.0 - 27000.0	-52.55	-25	-27.55
		Mid	30.0 - 2500.0	-44.30	-25	-19.30
		Mid	2570.0 - 15000.0	-40.14	-25	-15.14
		Mid	15000.0 - 27000.0	-52.53	-25	-27.53
		High	30.0 - 2500.0	-43.46	-25	-18.46
		High	2595.0 - 15000.0	-40.03	-25	-15.03
		High	15000.0 - 27000.0	-51.80	-25	-26.80

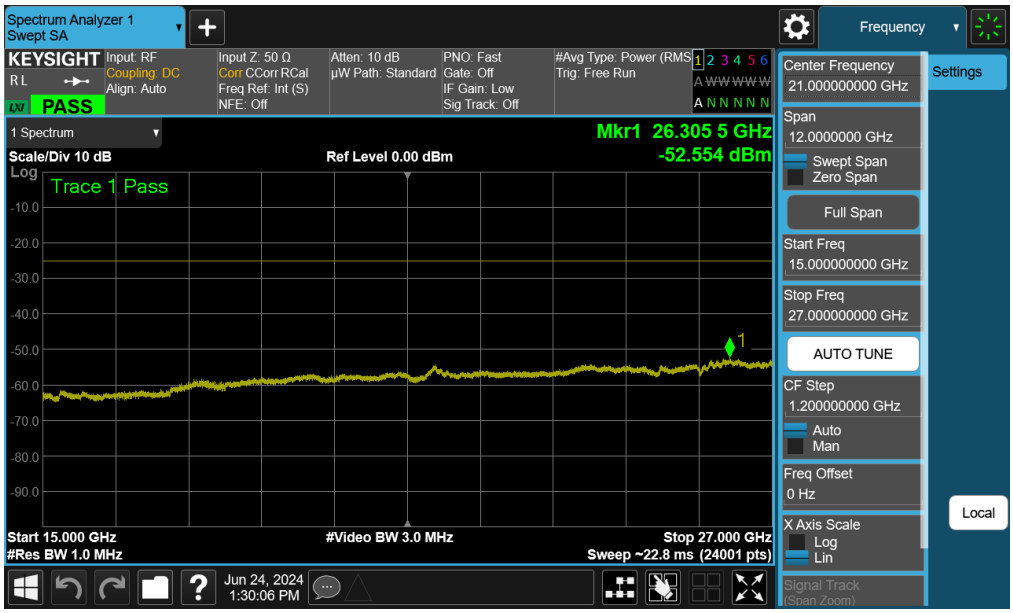
Table 7-13. Conducted Emission Test Results



Plot 7-115. Conducted Spurious Plot (LTE Band 7 ULCA – 20+20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-116. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

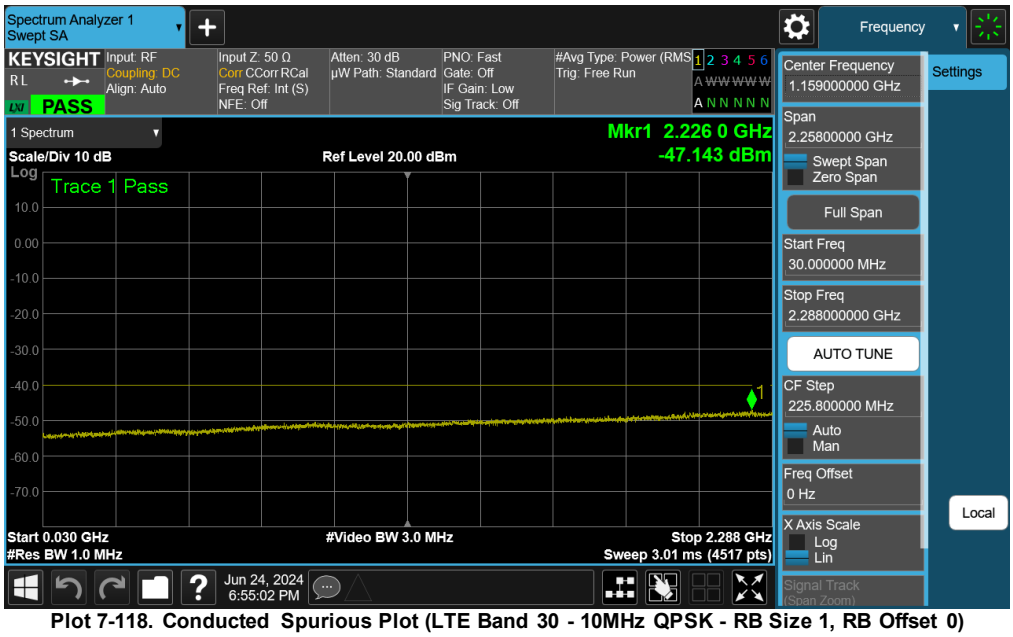


Plot 7-117. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

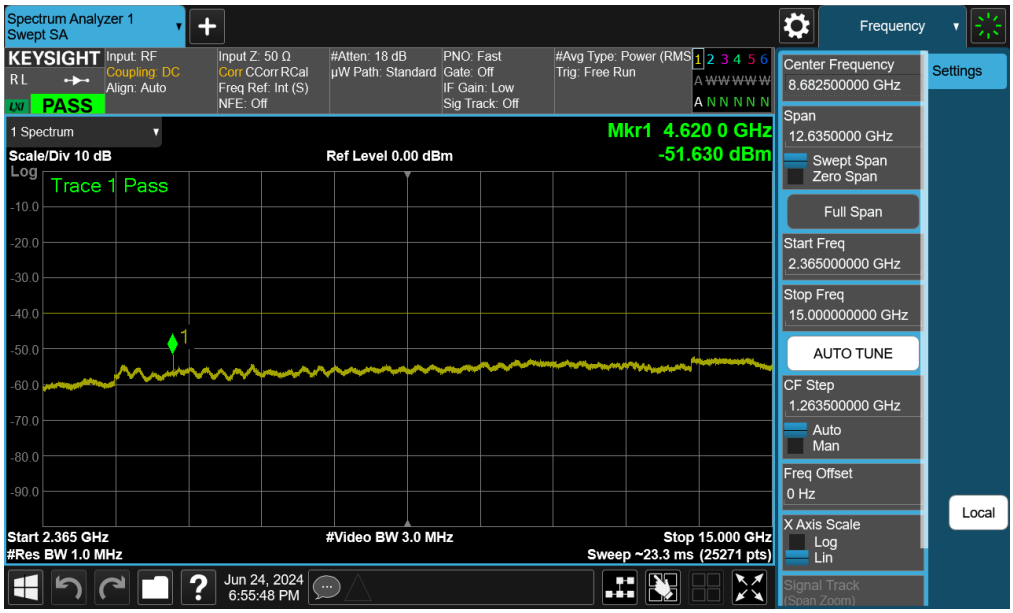
LTE Band 30 – Ant S2

Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
LTE-B30	10MHz	Mid	30.0 - 2288.0	-47.14	-40	-7.14
		Mid	2365.0 - 15000.0	-51.63	-40	-11.63
		Mid	15000.0 - 27000.0	-52.32	-40	-12.32

Table 7-14. Conducted Emission Test Results



Plot 7-118. Conducted Spurious Plot (LTE Band 30 - 10MHz QPSK - RB Size 1, RB Offset 0)



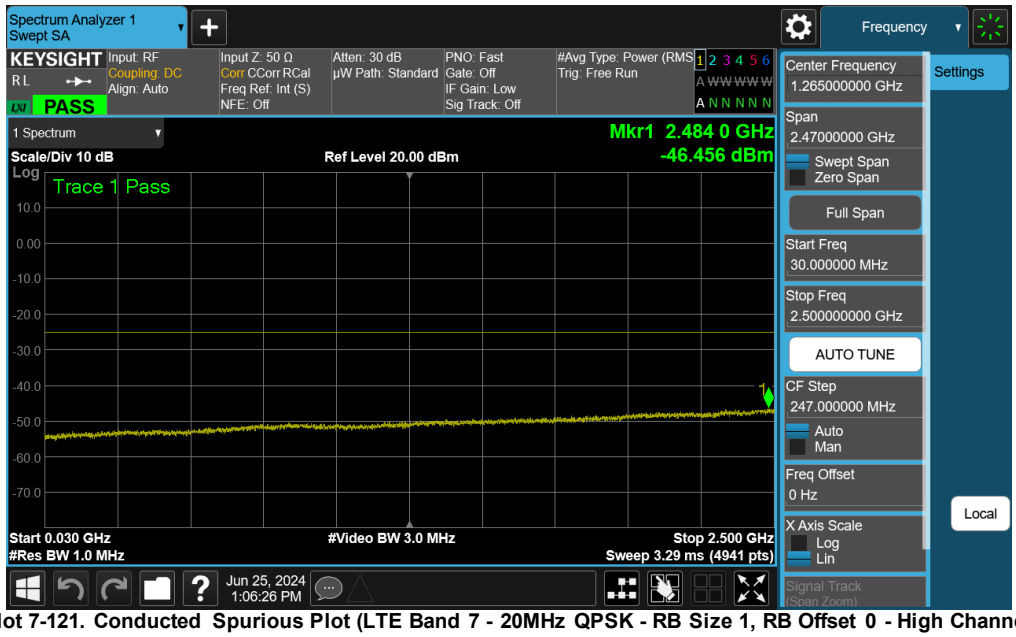
Plot 7-119. Conducted Spurious Plot (LTE Band 30 - 10MHz QPSK - RB Size 1, RB Offset 0)

Plot 7-120. Conducted Spurious Plot (LTE Band 30 - 10MHz QPSK - RB Size 1, RB Offset 0)

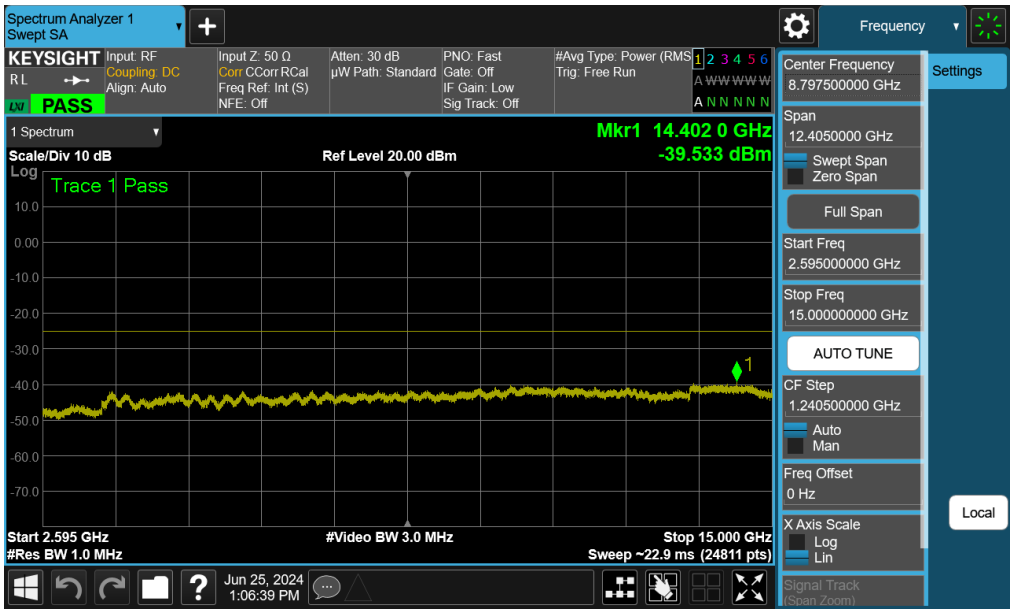
LTE Band 7 – Ant S2

Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
LTE-B7	20MHz	Low	30.0 - 2500.0	-46.38	-25	-21.38
		Low	2570.0 - 15000.0	-39.73	-25	-14.73
		Low	15000.0 - 27000.0	-52.22	-25	-27.22
		Mid	30.0 - 2500.0	-46.54	-25	-21.54
		Mid	2570.0 - 15000.0	-39.61	-25	-14.61
		Mid	15000.0 - 27000.0	-52.3	-25	-27.30
		High	30.0 - 2500.0	-46.46	-25	-21.46
		High	2570.0 - 15000.0	-39.53	-25	-14.53
		High	15000.0 - 27000.0	-51.84	-25	-26.84

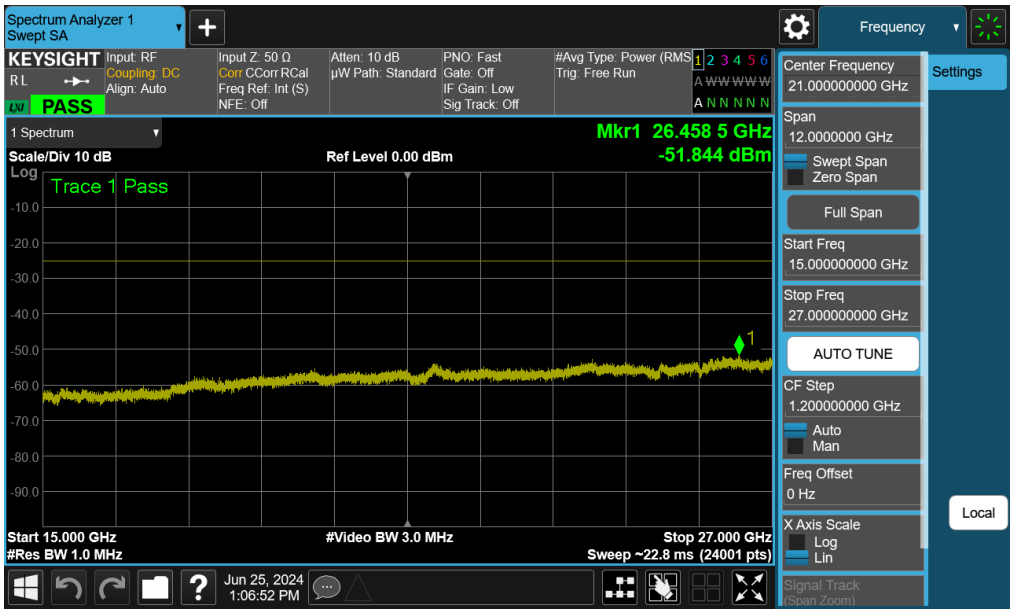
Table 7-15. Conducted Emission Test Results



Plot 7-121. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-122. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

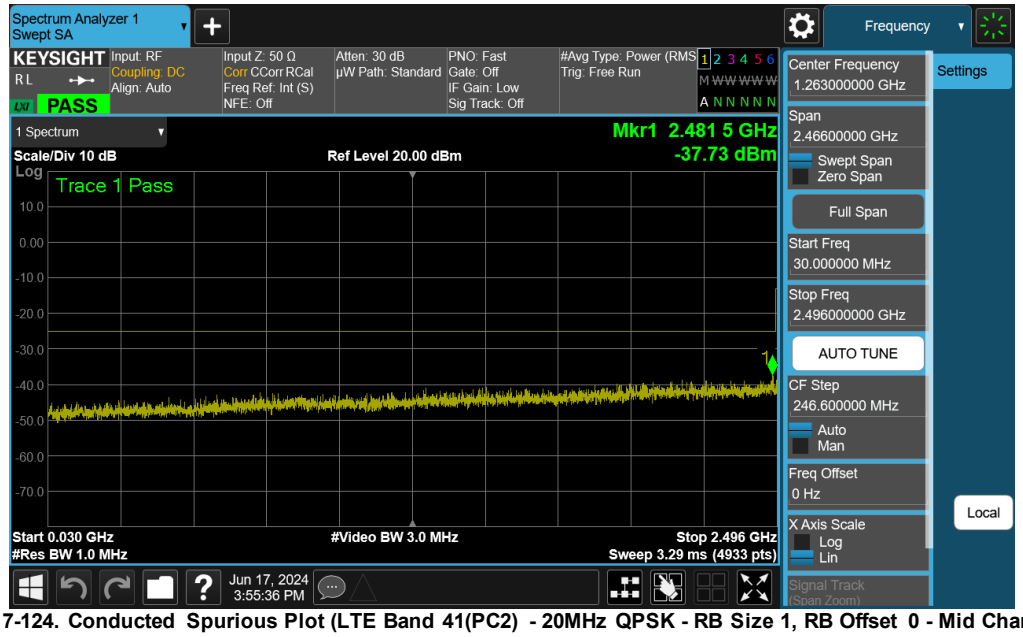


Plot 7-123. Conducted Spurious Plot (LTE Band 7 - 20MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

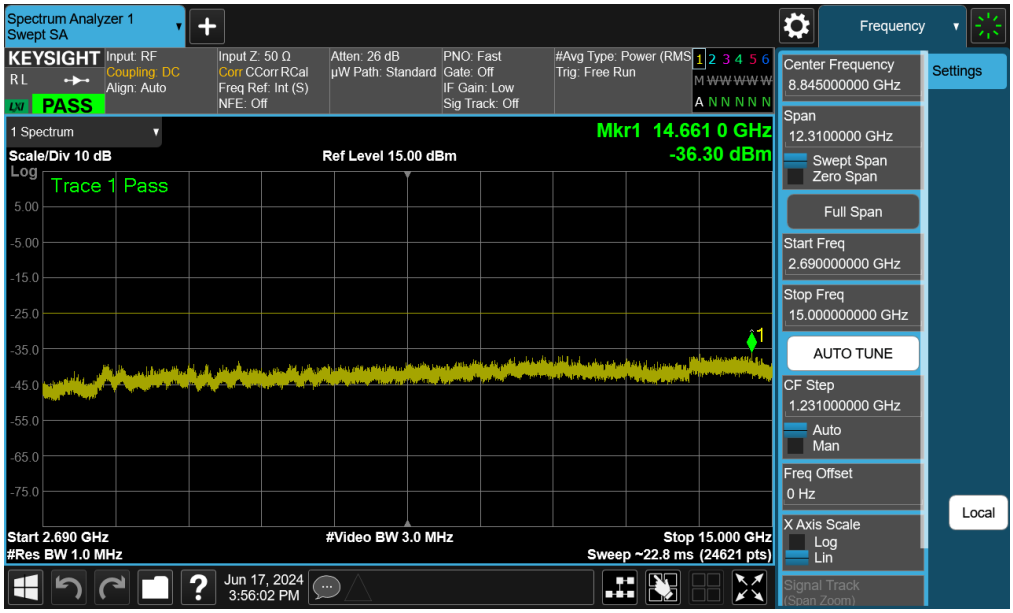
LTE Band 41(PC2)

Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
LTE-B41PC2	20MHz	Low	30.0 - 2475.0	-38.47	-25	-13.47
		Low	2690.0 - 15000.0	-36.34	-25	-11.34
		Low	15000.0 - 27000.0	-44.70	-25	-19.70
		Mid	30.0 - 2496.0	-37.73	-25	-12.73
		Mid	2690.0 - 15000.0	-36.30	-25	-11.30
		Mid	15000.0 - 27000.0	-45.27	-25	-20.27
		High	30.0 - 2500.0	-38.77	-25	-13.77
		High	2690.0 - 15000.0	-36.35	-25	-11.35
		High	15000.0 - 27000.0	-45.14	-25	-20.14

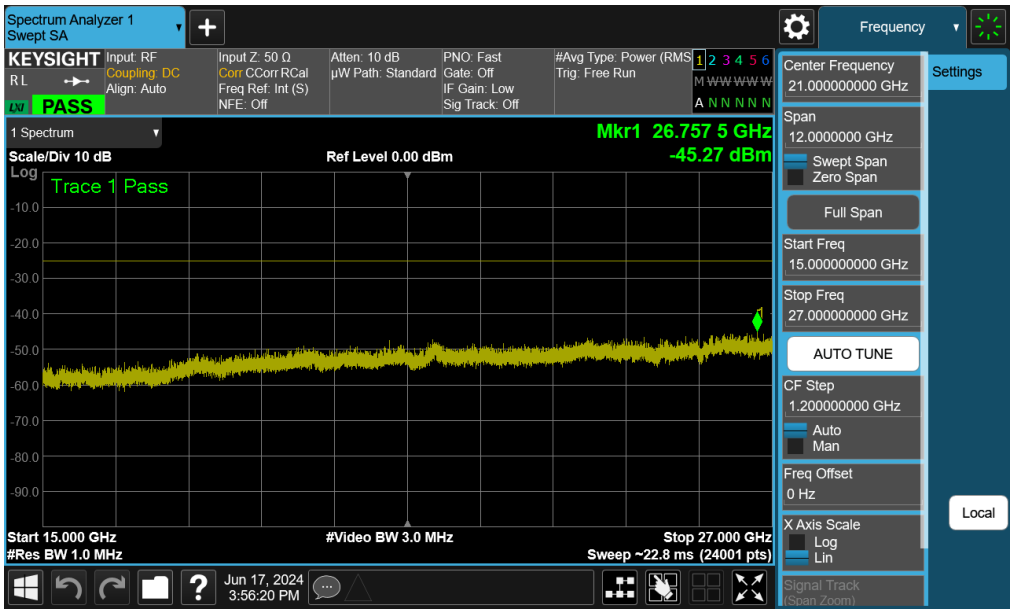
Table 7-16. Conducted Emission Test Results



Plot 7-124. Conducted Spurious Plot (LTE Band 41(PC2) - 20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-125. Conducted Spurious Plot (LTE Band 41(PC2) - 20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

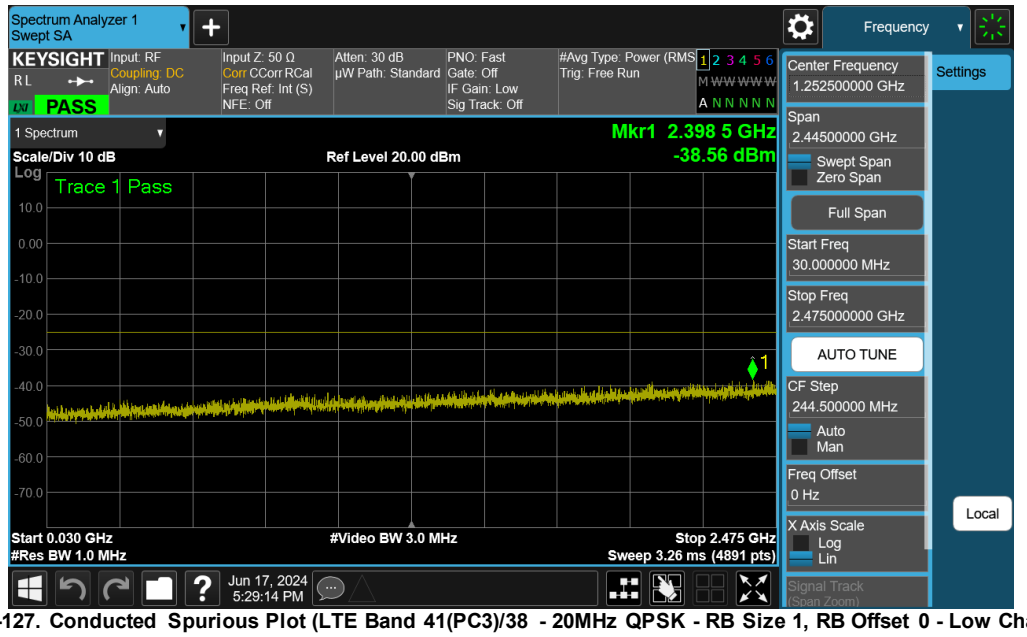


Plot 7-126. Conducted Spurious Plot (LTE Band 41(PC2) - 20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

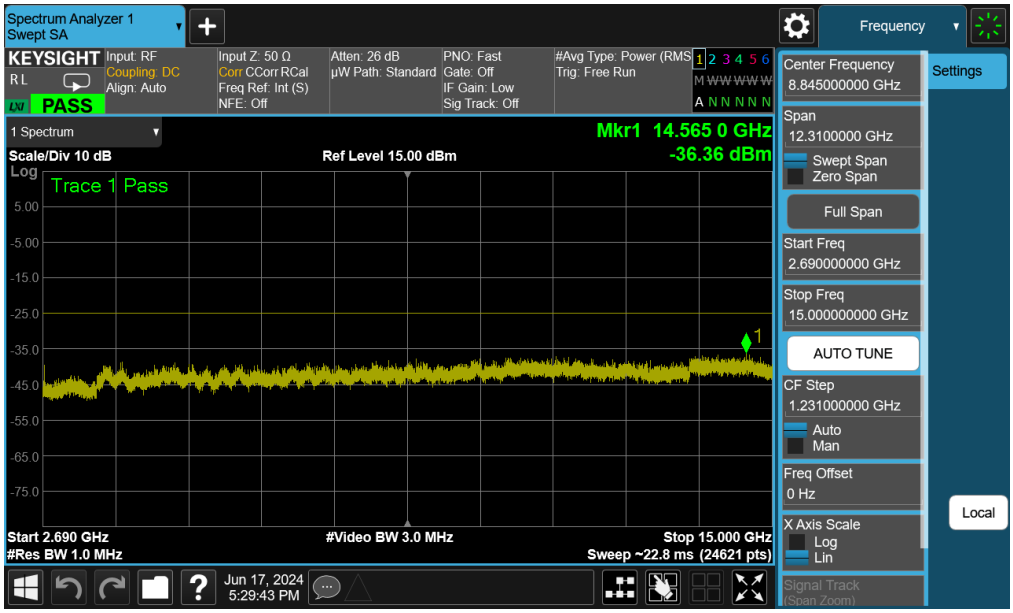
LTE Band 41(PC3)/38

Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
LTE-B41PC3-38	20MHz	Low	30.0 - 2475.0	-38.56	-25	-13.56
		Low	2690.0 - 15000.0	-36.36	-25	-11.36
		Low	15000.0 - 27000.0	-43.39	-25	-18.39
		Mid	30.0 - 2500.0	-37.81	-25	-12.81
		Mid	2690.0 - 15000.0	-36.55	-25	-11.55
		Mid	15000.0 - 27000.0	-45.72	-25	-20.72
		High	30.0 - 2500.0	-38.73	-25	-13.73
		High	2690.0 - 15000.0	-36.73	-25	-11.73
		High	15000.0 - 27000.0	-44.81	-25	-19.81

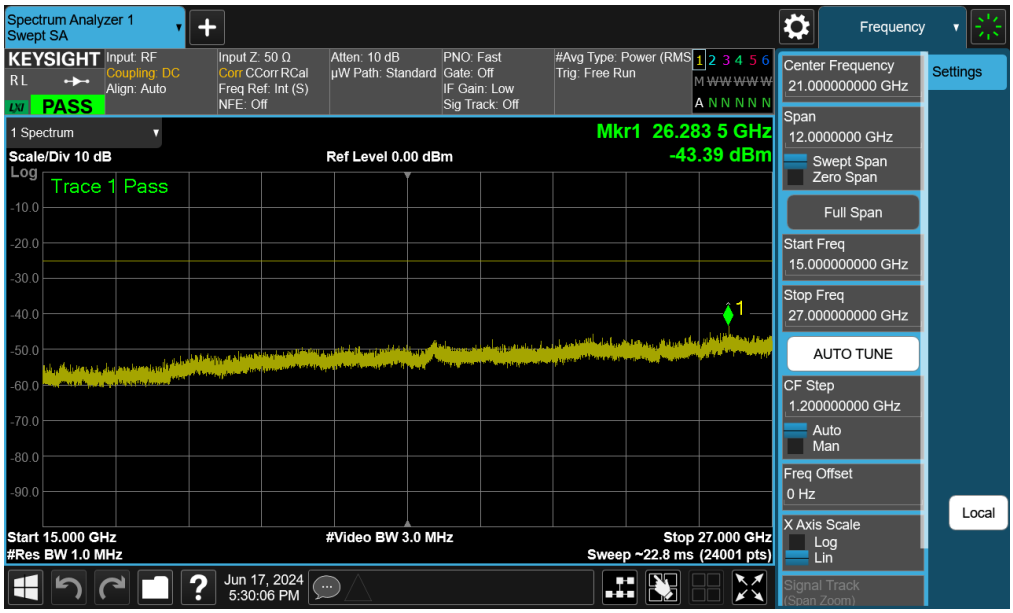
Table 7-17. Conducted Emission Test Results



Plot 7-127. Conducted Spurious Plot (LTE Band 41(PC3)/38 - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-128. Conducted Spurious Plot (LTE Band 41(PC3)/38 - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

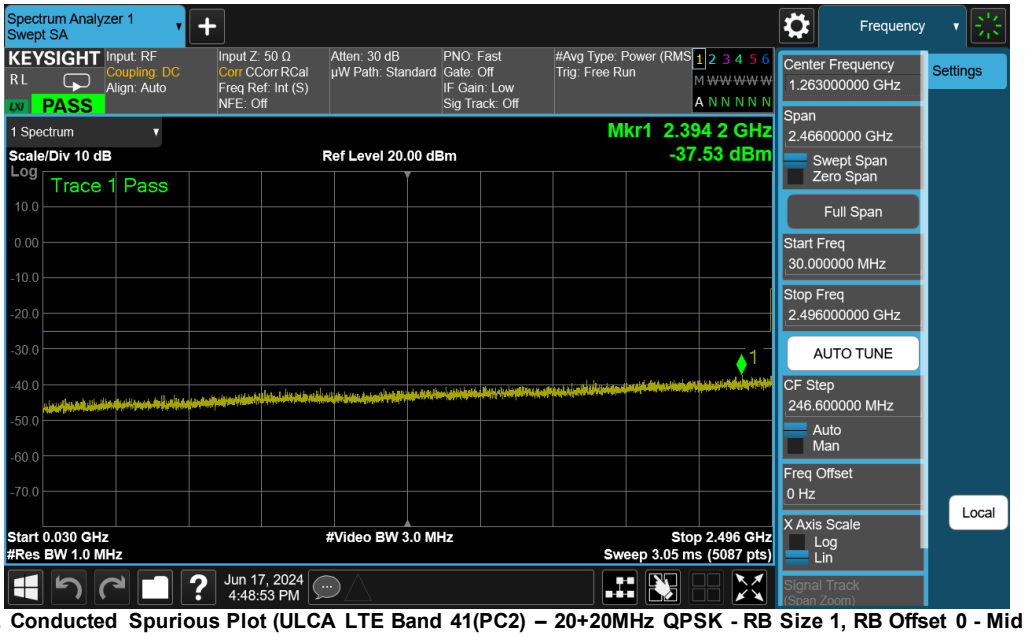


Plot 7-129. Conducted Spurious Plot (LTE Band 41(PC3)/38 - 20MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

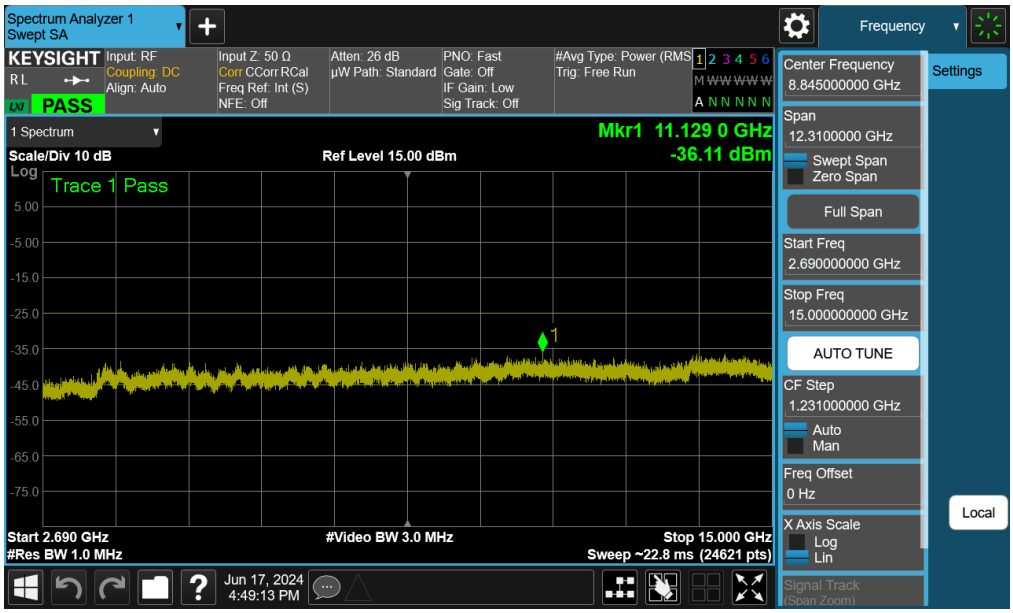
ULCA – LTE Band 41(PC2)

Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
LTE-B41PC2	20+20MHz	Low	30.0 - 2475.0	-37.75	-25	-12.75
		Low	2690.0 - 15000.0	-36.27	-25	-11.27
		Low	15000.0 - 27000.0	-45.31	-25	-20.31
		Mid	30.0 - 2496.0	-37.53	-25	-12.53
		Mid	2690.0 - 15000.0	-36.11	-25	-11.11
		Mid	15000.0 - 27000.0	-44.78	-25	-19.78
		High	30.0 - 2496.0	-36.53	-25	-11.53
		High	2690.0 - 15000.0	-36.37	-25	-11.37
		High	15000.0 - 27000.0	-44.73	-25	-19.73

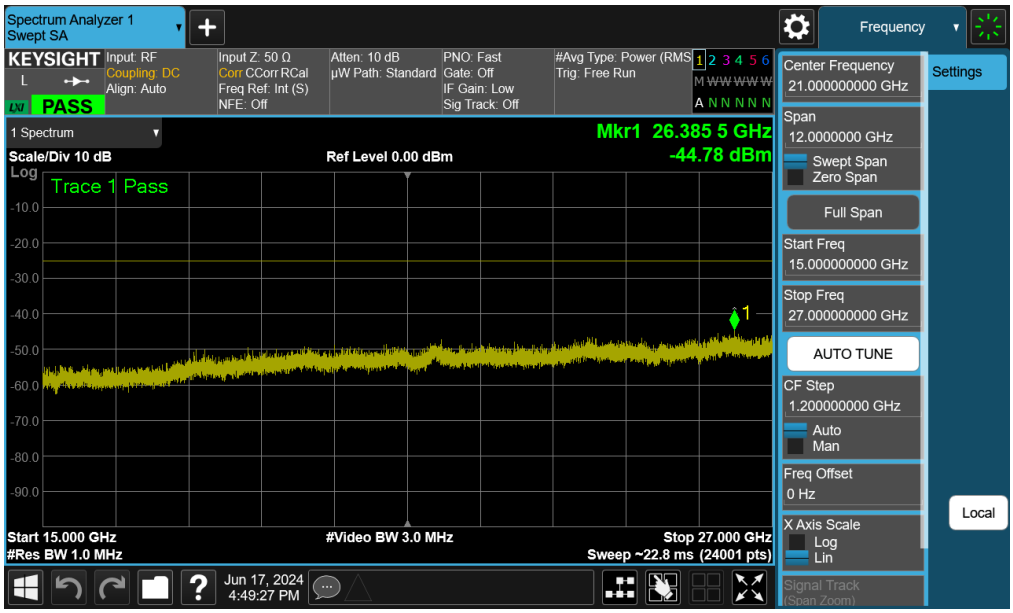
Table 7-18. Conducted Emission Test Results



Plot 7-130. Conducted Spurious Plot (ULCA LTE Band 41(PC2) – 20+20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-131. Conducted Spurious Plot (ULCA LTE Band 41(PC2) – 20+20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



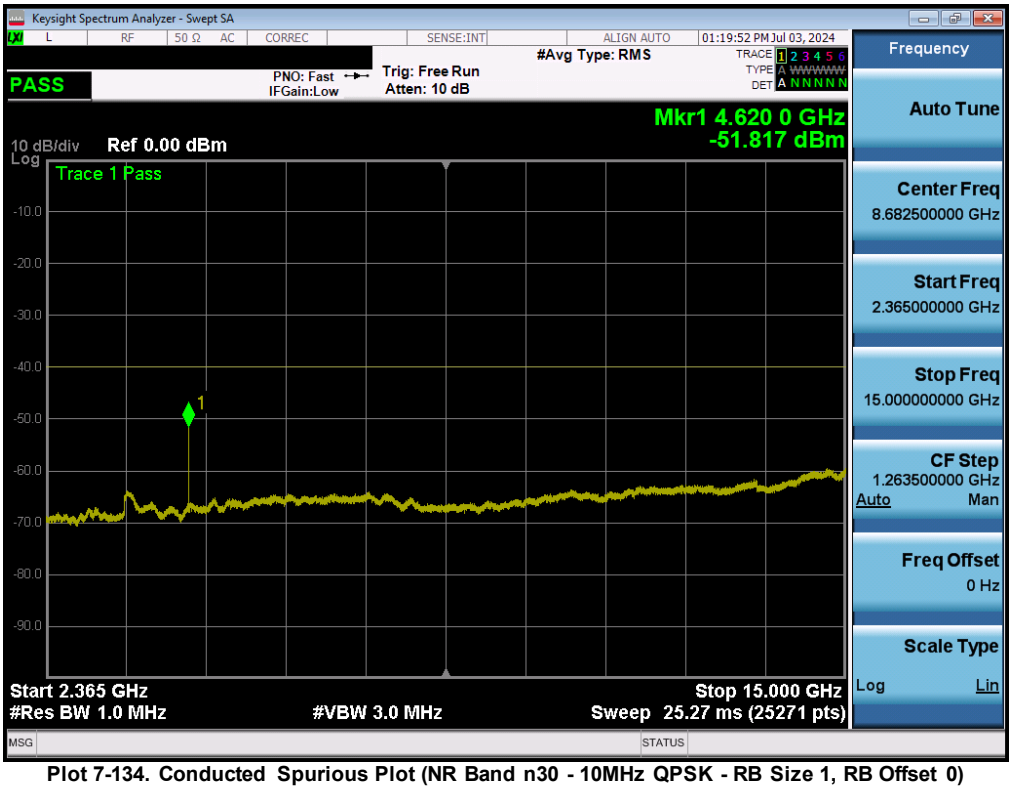
Plot 7-132. Conducted Spurious Plot (ULCA LTE Band 41(PC2) – 20+20MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

NR Band n30

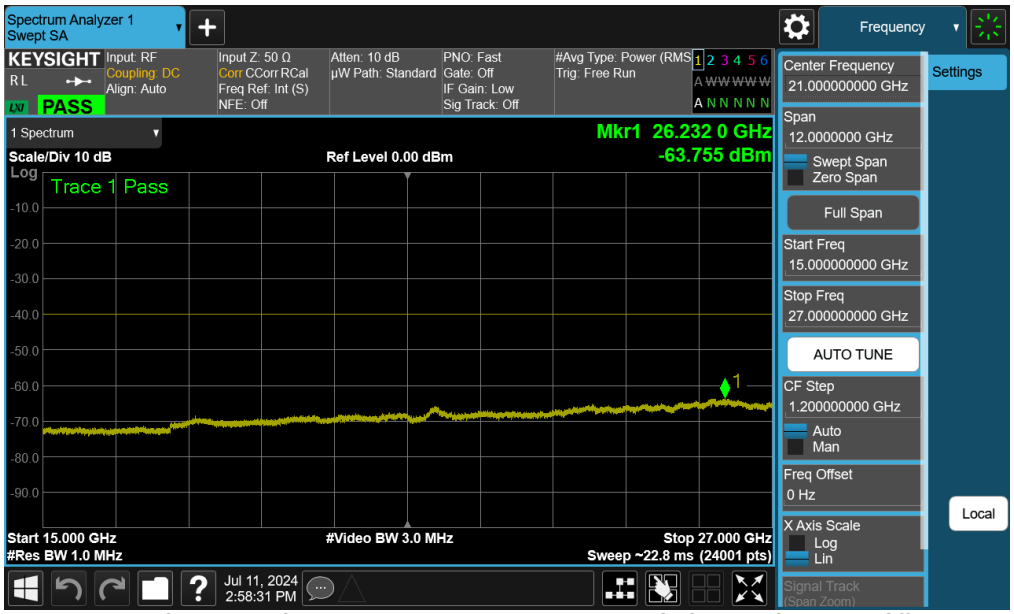
Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
NR-n30	10MHz	Mid	30.0 - 2288.0	-58.18	-40	-18.18
		Mid	2365.0 - 15000.0	-51.82	-40	-11.82
		Mid	15000.0 - 27000.0	-63.76	-40	-23.76

Table 7-19. Conducted Emission Test Results

Plot 7-133. Conducted Spurious Plot (NR Band n30 - 10MHz QPSK - RB Size 1, RB Offset 0)



Plot 7-134. Conducted Spurious Plot (NR Band n30 - 10MHz QPSK - RB Size 1, RB Offset 0)



Plot 7-135. Conducted Spurious Plot (NR Band n30 - 10MHz QPSK - RB Size 1, RB Offset 0)

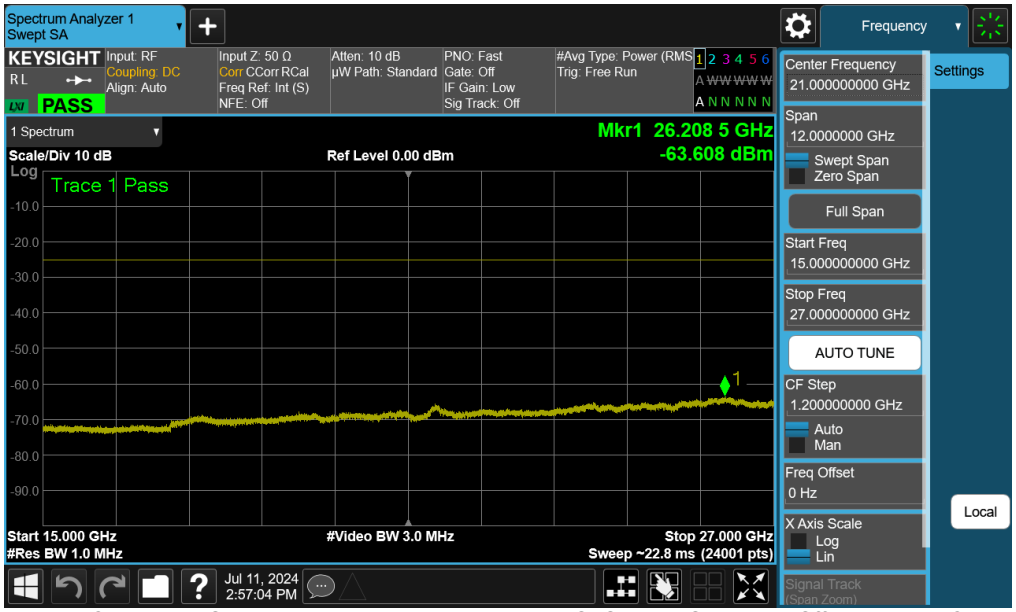
NR Band n7

Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
NR-n7	40MHz	Low	30.0 - 2475.0	-46.98	-25	-21.97
		Low	2570.0 - 15000.0	-39.00	-25	-14.00
		Low	15000.0 - 27000.0	-63.93	-25	-38.93
		Mid	30.0 - 2475.0	-46.88	-25	-21.88
		Mid	2570.0 - 15000.0	-39.02	-25	-14.02
		Mid	15000.0 - 27000.0	-63.78	-25	-38.78
		High	30.0 - 2475.0	-47.18	-25	-22.18
		High	2570.0 - 15000.0	-38.99	-25	-13.99
		High	15000.0 - 27000.0	-63.61	-25	-38.61

Table 7-20. Conducted Emission Test Results

Plot 7-136. Conducted Spurious Plot (NR Band n7 - 40MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

Plot 7-137. Conducted Spurious Plot (NR Band n7 - 40MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

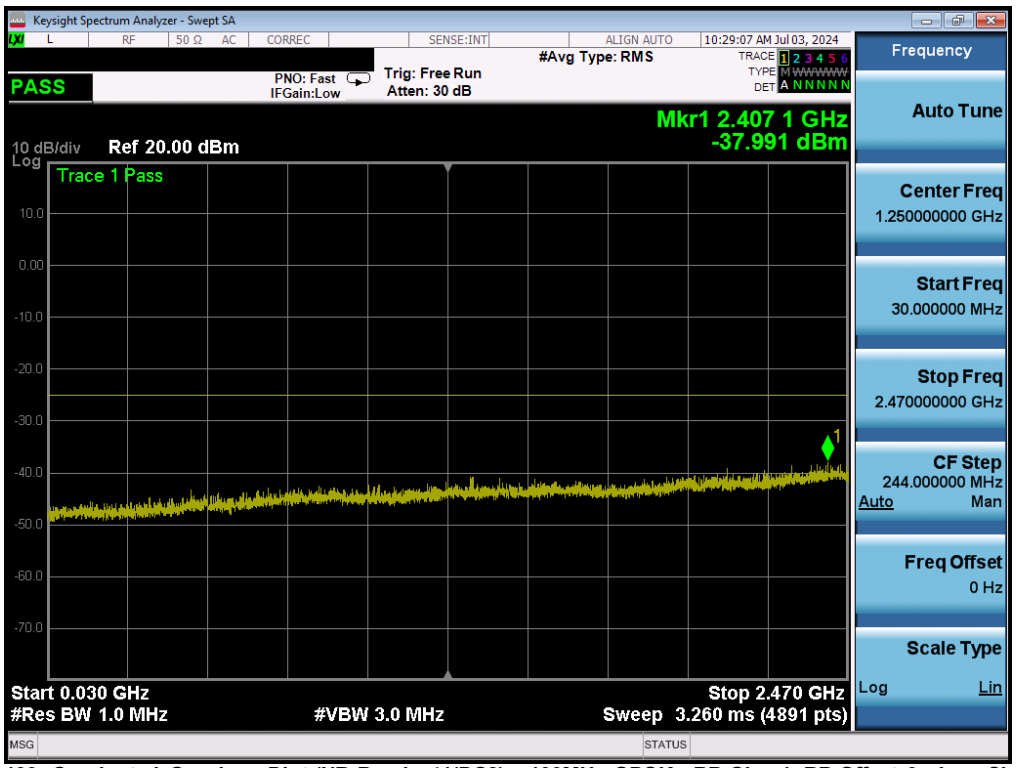


Plot 7-138. Conducted Spurious Plot (NR Band n7 - 40MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

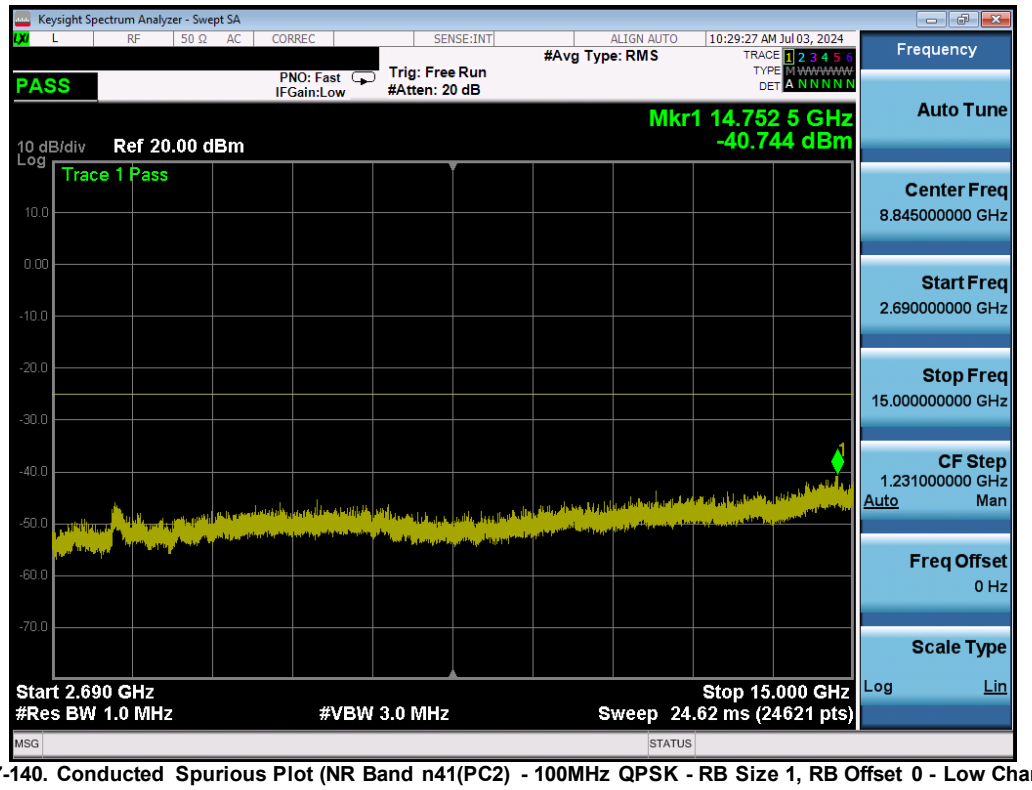
NR Band n41(PC2)

Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
NR-n41PC2	100MHz	Low	30.0 - 2470.0	-37.99	-25	-12.99
		Low	2690.0 - 15000.0	-40.74	-25	-15.74
		Low	15000.0 - 27000.0	-54.72	-25	-29.72
		Mid	30.0 - 2470.0	-38.40	-25	-13.40
		Mid	2690.0 - 15000.0	-41.88	-25	-16.88
		Mid	15000.0 - 27000.0	-55.58	-25	-30.58
		High	30.0 - 2470.0	-38.31	-25	-13.31
		High	2690.0 - 15000.0	-41.28	-25	-16.28
		High	15000.0 - 27000.0	-55.76	-25	-30.76

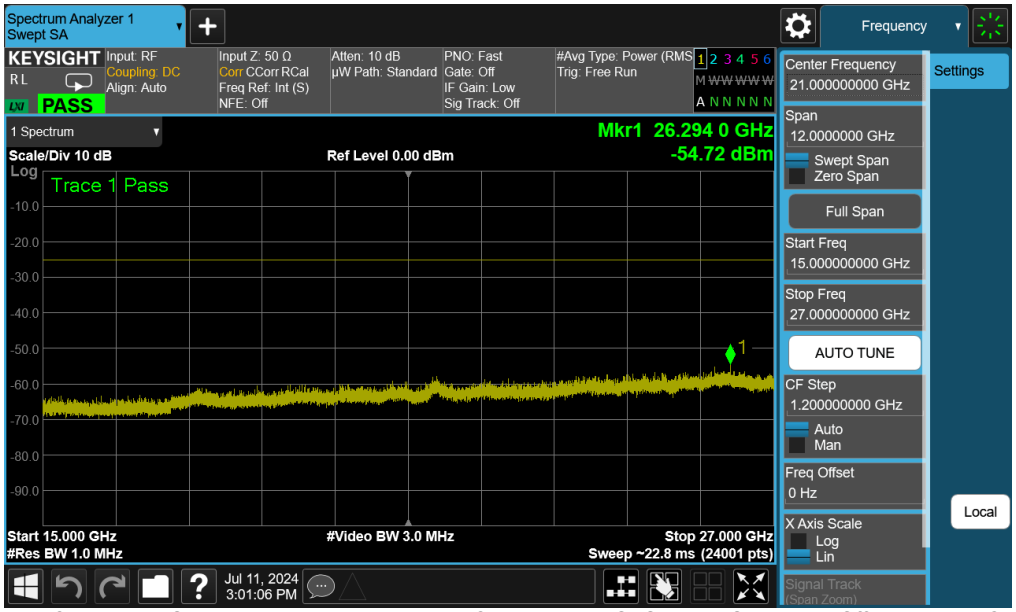
Table 7-21. Conducted Emission Test Results



Plot 7-139. Conducted Spurious Plot (NR Band n41(PC2) - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)



Plot 7-140. Conducted Spurious Plot (NR Band n41(PC2) - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

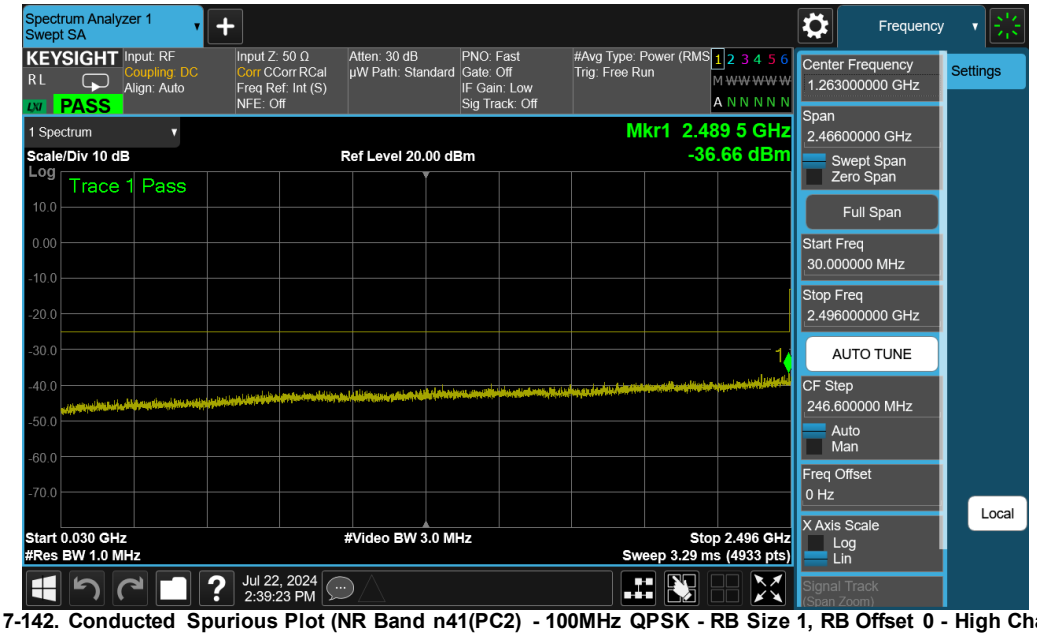


Plot 7-141. Conducted Spurious Plot (NR Band n41(PC2) - 100MHz QPSK - RB Size 1, RB Offset 0 - Low Channel)

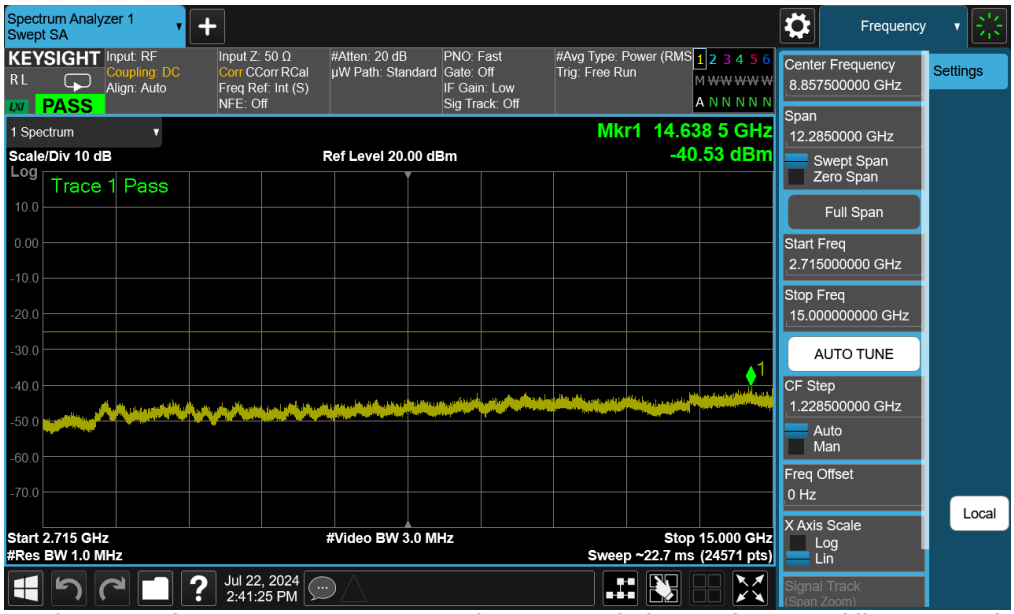
NR Band n41(PC2) – Ant S2

Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
NR-n41PC2	100MHz	Low	30.0 - 2470.0	-36.83	-25	-11.83
		Low	2690.0 - 15000.0	-41.55	-25	-16.55
		Low	15000.0 - 27000.0	-54.98	-25	-29.98
		Mid	30.0 - 2470.0	-37.33	-25	-12.33
		Mid	2690.0 - 15000.0	-41.43	-25	-16.43
		Mid	15000.0 - 27000.0	-55.29	-25	-30.29
		High	30.0 - 2470.0	-36.66	-25	-11.66
		High	2715.0 - 15000.0	-40.53	-25	-15.53
		High	15000.0 - 27000.0	-55.77	-25	-30.77

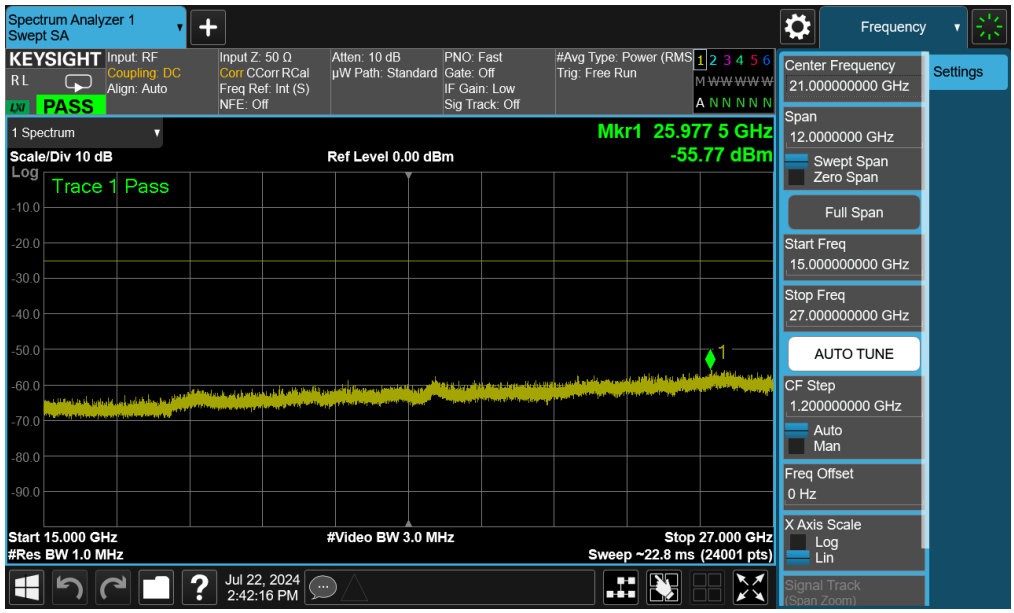
Table 7-22. Conducted Emission Test Results



Plot 7-142. Conducted Spurious Plot (NR Band n41(PC2) - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-143. Conducted Spurious Plot (NR Band n41(PC2) - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

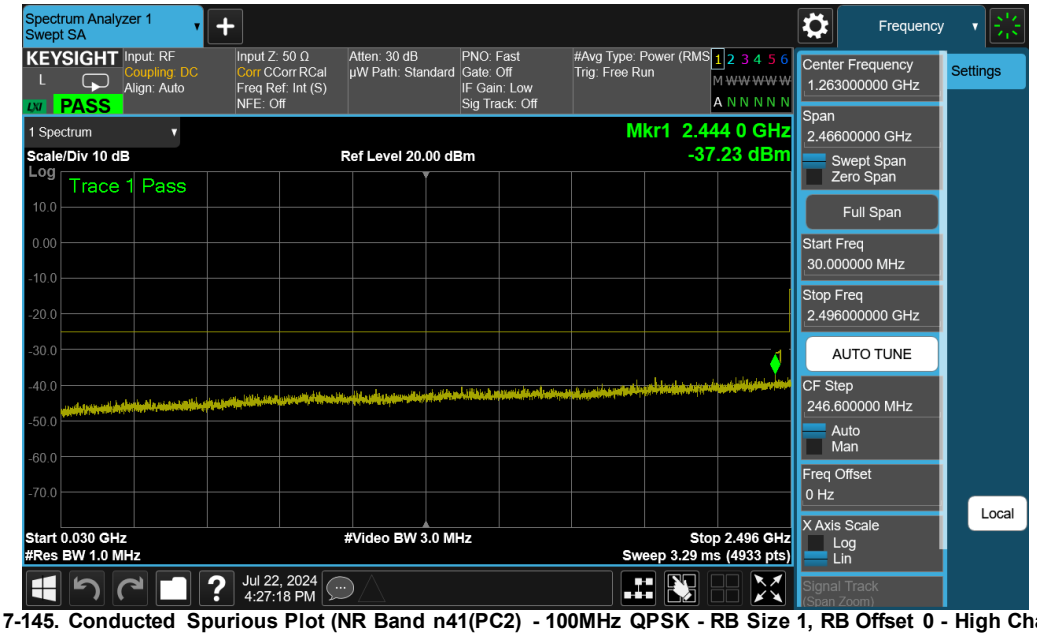


Plot 7-144. Conducted Spurious Plot (NR Band n41(PC2) - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

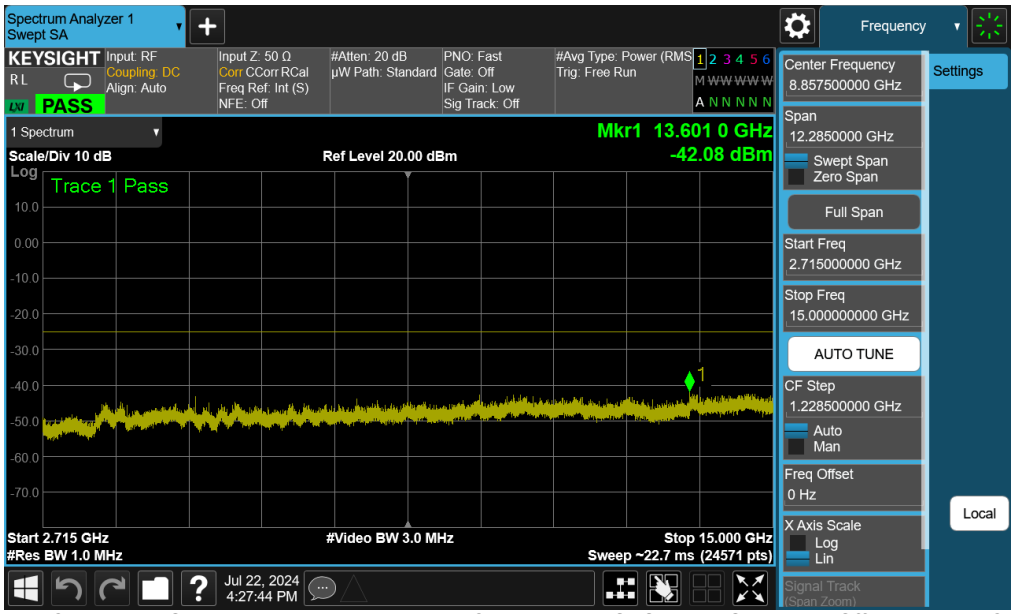
NR Band n41(PC2) – Ant S4

Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
NR-n41PC2	100MHz	Low	30.0 - 2470.0	-37.69	-25	-12.69
		Low	2690.0 - 15000.0	-41.77	-25	-16.76
		Low	15000.0 - 27000.0	-55.69	-25	-30.69
		Mid	30.0 - 2470.0	-37.23	-25	-12.23
		Mid	2690.0 - 15000.0	-41.29	-25	-16.29
		Mid	15000.0 - 27000.0	-55.32	-25	-30.32
		High	30.0 - 2470.0	-37.23	-25	-12.23
		High	2715.0 - 15000.0	-42.08	-25	-17.08
		High	15000.0 - 27000.0	-54.86	-25	-29.86

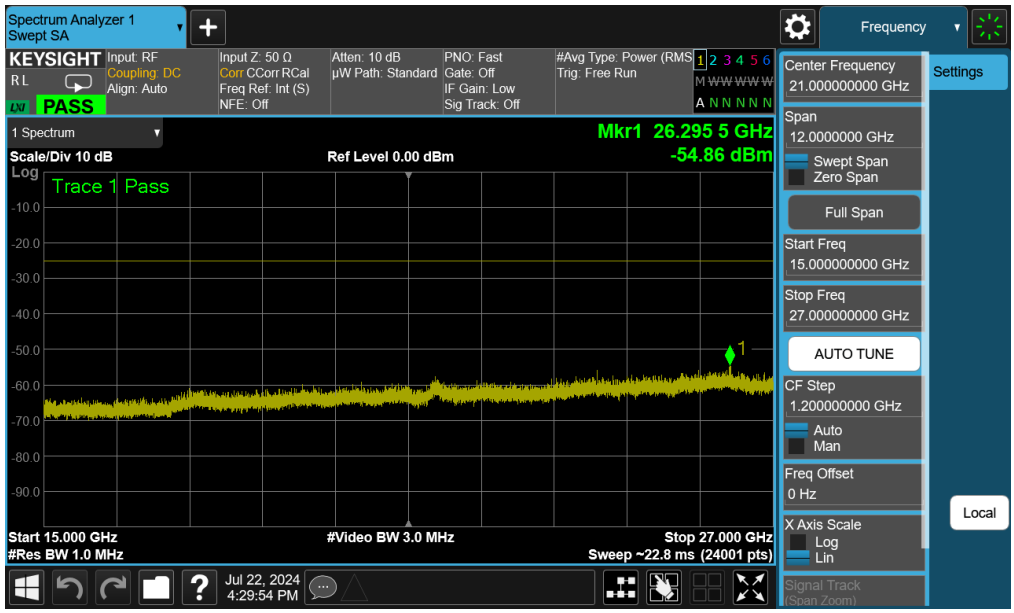
Table 7-23. Conducted Emission Test Results



Plot 7-145. Conducted Spurious Plot (NR Band n41(PC2) - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel)



Plot 7-146. Conducted Spurious Plot (NR Band n41(PC2) - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

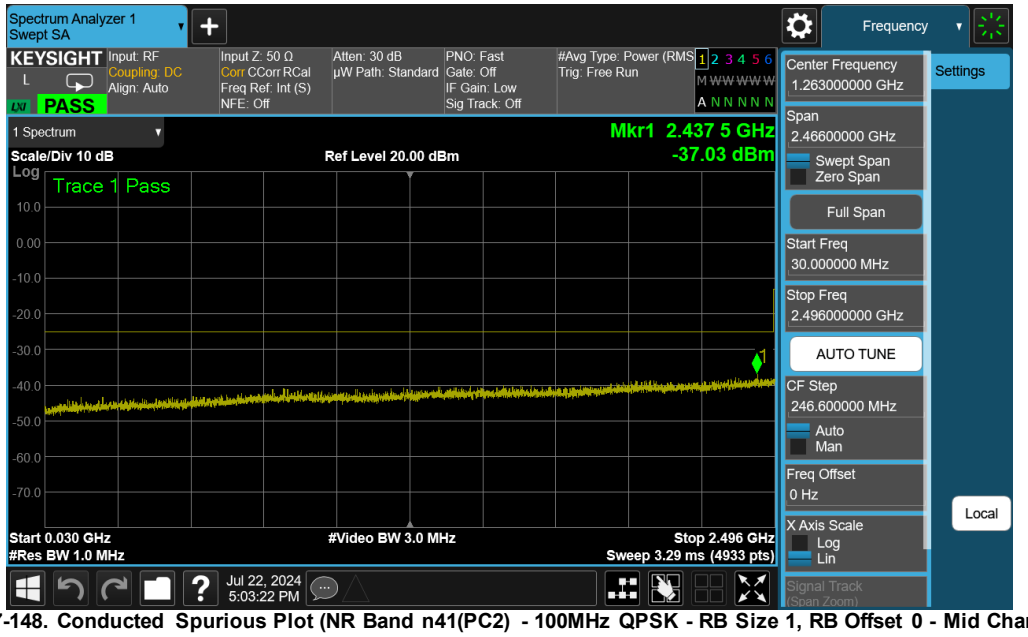


Plot 7-147. Conducted Spurious Plot (NR Band n41(PC2) - 100MHz QPSK - RB Size 1, RB Offset 0 - High Channel)

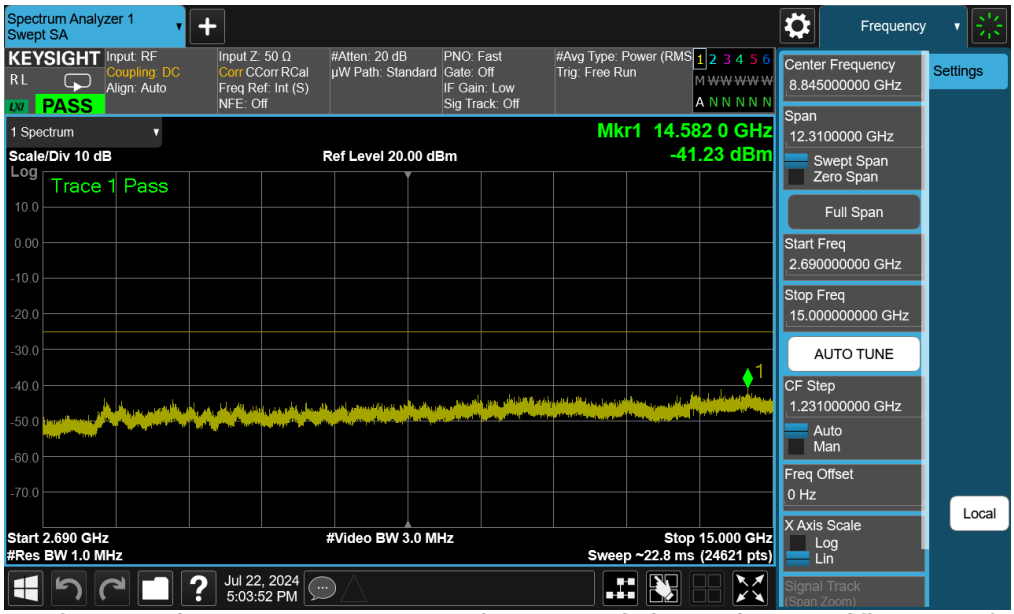
NR Band n41(PC2) – Ant S1

Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
NR-n41PC2	100MHz	Low	30.0 - 2470.0	-37.84	-25	-12.84
		Low	2690.0 - 15000.0	-41.79	-25	-16.79
		Low	15000.0 - 27000.0	-55.41	-25	-30.41
		Mid	30.0 - 2470.0	-37.03	-25	-12.03
		Mid	2690.0 - 15000.0	-41.23	-25	-16.23
		Mid	15000.0 - 27000.0	-55.55	-25	-30.55
		High	30.0 - 2470.0	-37.3	-25	-12.30
		High	2715.0 - 15000.0	-41.3	-25	-16.30
		High	15000.0 - 27000.0	-55.07	-25	-30.07

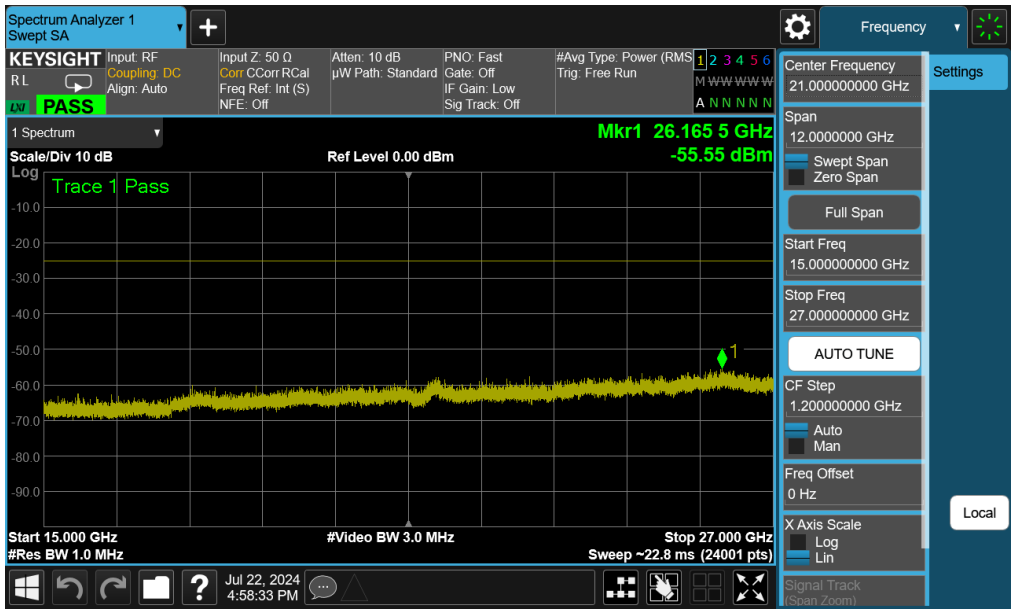
Table 7-24. Conducted Emission Test Results



Plot 7-148. Conducted Spurious Plot (NR Band n41(PC2) - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-149. Conducted Spurious Plot (NR Band n41(PC2) - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)



Plot 7-150. Conducted Spurious Plot (NR Band n41(PC2) - 100MHz QPSK - RB Size 1, RB Offset 0 - Mid Channel)

7.5 Band Edge Emissions at Antenna Terminal

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.

The minimum permissible attenuation level for Band 30 is > 43 + 10 log10 (P[Watts] at 2300-2305MHz & 2345-2360MHz, > 55 + 10 log10 (P[Watts]) at 2320-2324MHz & 2341-2345MHz, > 61 + 10 log10 (P[Watts]) at 2324-2328MHz & 2337-2341MHz, > 67 + 10 log10 (P[Watts]) at 2288-2292MHz & 2328-2337MHz, and > 70 + 10 log10 (P[Watts]) at frequencies < 2288MHz & >2365MHz.

The minimum permissible attenuation level for Band 7 and 41 is as noted in the Test Notes on the following page.

Test Procedure Used

ANSI C63.26-2015 – Section 5.7.3

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 ≥ 1% of the emission bandwidth
4. VBW ≥ 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.

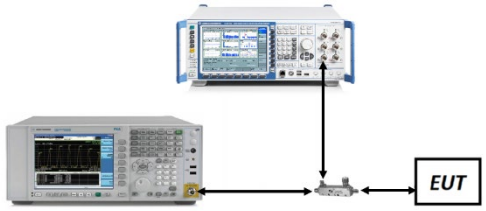


Figure 7-4. Test Instrument & Measurement Setup

Test Notes

1. 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.

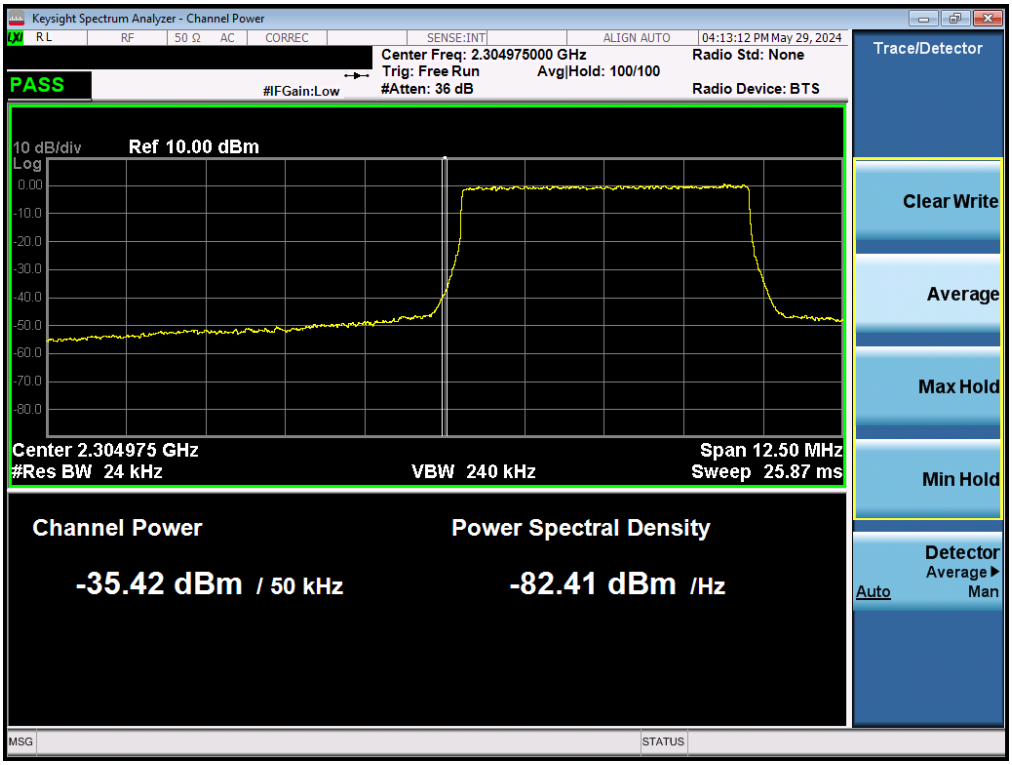
2. Per 27.53(m) for operations in the BRS/EBS bands, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and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

3. 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.

LTE Band 30

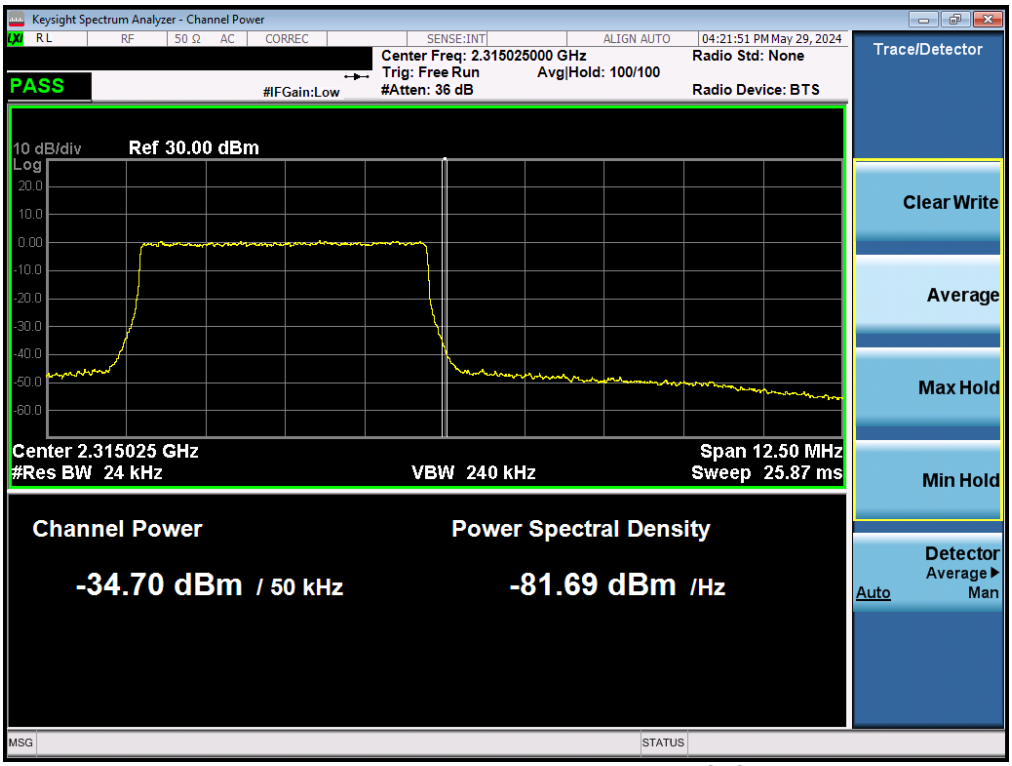
Mode	Bandwidth	Channel	Test Case	Level [dBm]	Limit [dBm]	Margin [dB]
LTE-B30	10MHz	Low	Band Edge	-41.21	-13	-28.21
		Low	Extended	-41.03	-37	-4.03
		High	Band Edge	-41.57	-13	-28.57
		High	Extended	-42.86	-37	-5.86
	5MHz	Low	Band Edge	-35.42	-13	-22.42
		Low	Extended	-14.89	-13	-1.89
		High	Band Edge	-34.70	-13	-21.70
		High	Extended	-43.2	-37	-6.20

Table 7-25. Conducted Band Edge Test Results



Plot 7-151. Lower Band Edge Plot (LTE Band 30 - 5MHz QPSK – Full RB)

Plot 7-152. Extended Lower Band Edge Plot (LTE Band 30 - 5MHz QPSK – Full RB)



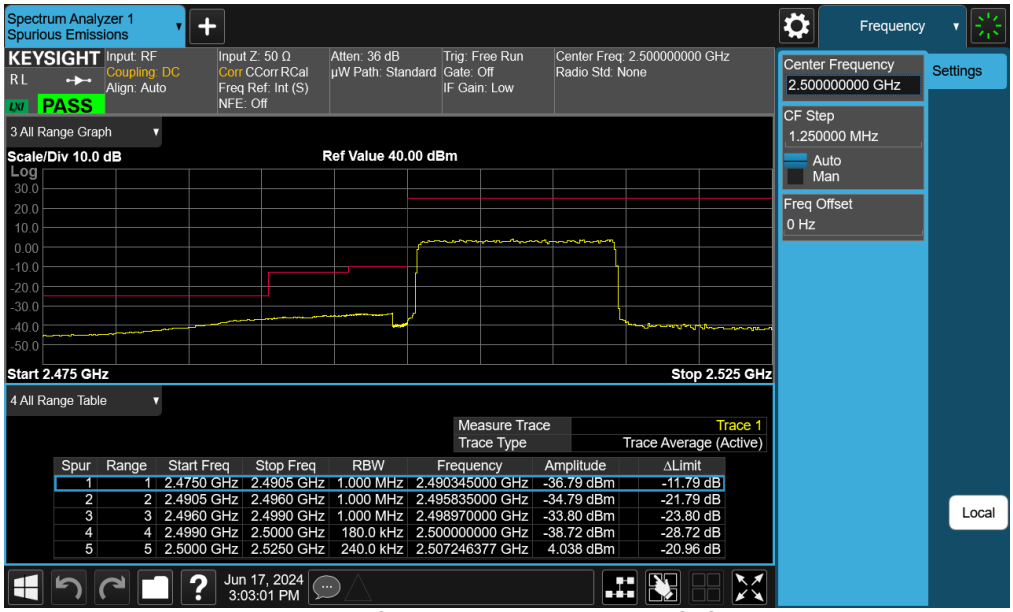
Plot 7-153. Upper Band Edge Plot (LTE Band 30 - 5MHz QPSK – Full RB)

Plot 7-154. Extended Upper Band Edge Plot (LTE Band 30 - 5MHz QPSK – Full RB)

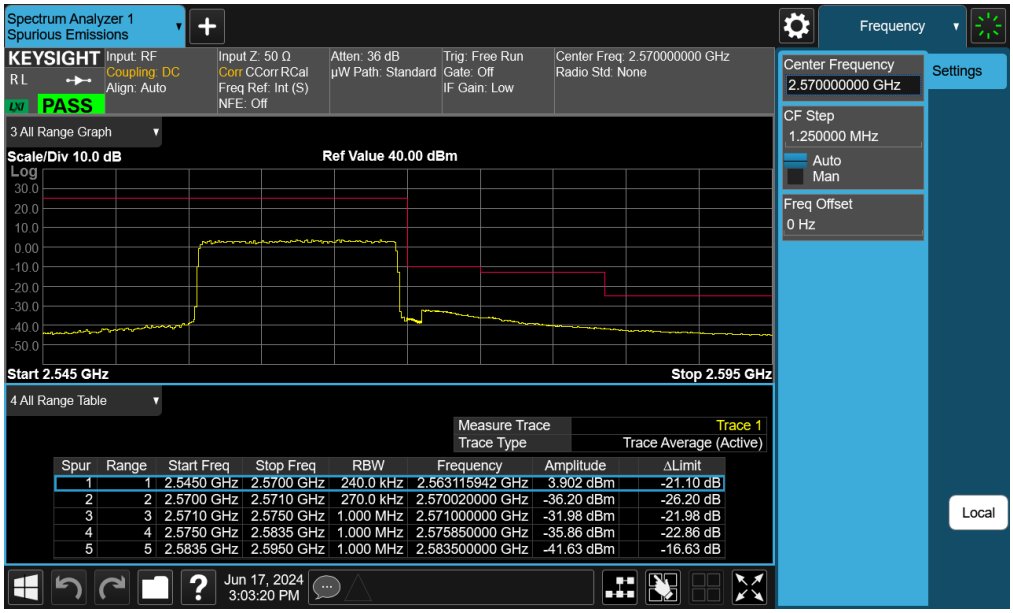
LTE Band 7

Mode	Bandwidth	Channel	Test Case	Level [dBm]	Limit [dBm]	Margin [dB]
LTE-B7	20MHz	Low	Band Edge	-37.74	-25	-12.74
		High	Band Edge	-42.85	-25	-17.85
	15MHz	Low	Band Edge	-36.79	-25	-11.79
		High	Band Edge	-41.63	-25	-16.63
	10MHz	Low	Band Edge	-40.29	-25	-15.29
		High	Band Edge	-41.95	-25	-16.95
	5MHz	Low	Band Edge	-40.47	-25	-15.47
		High	Band Edge	-41.52	-25	-16.52

Table 7-26. Conducted Band Edge Test Results



Plot 7-155. Lower ACP Plot (LTE Band 7 - 15MHz QPSK – Full RB)



Plot 7-156. Upper ACP Plot (LTE Band 7 - 15MHz QPSK – Full RB)