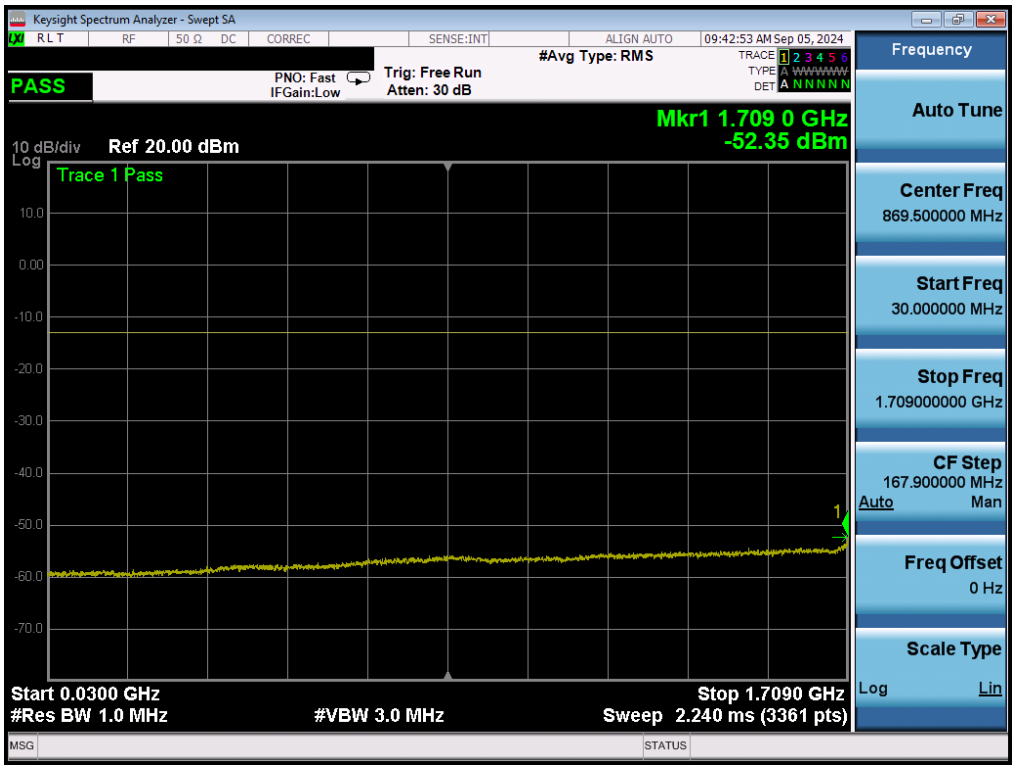
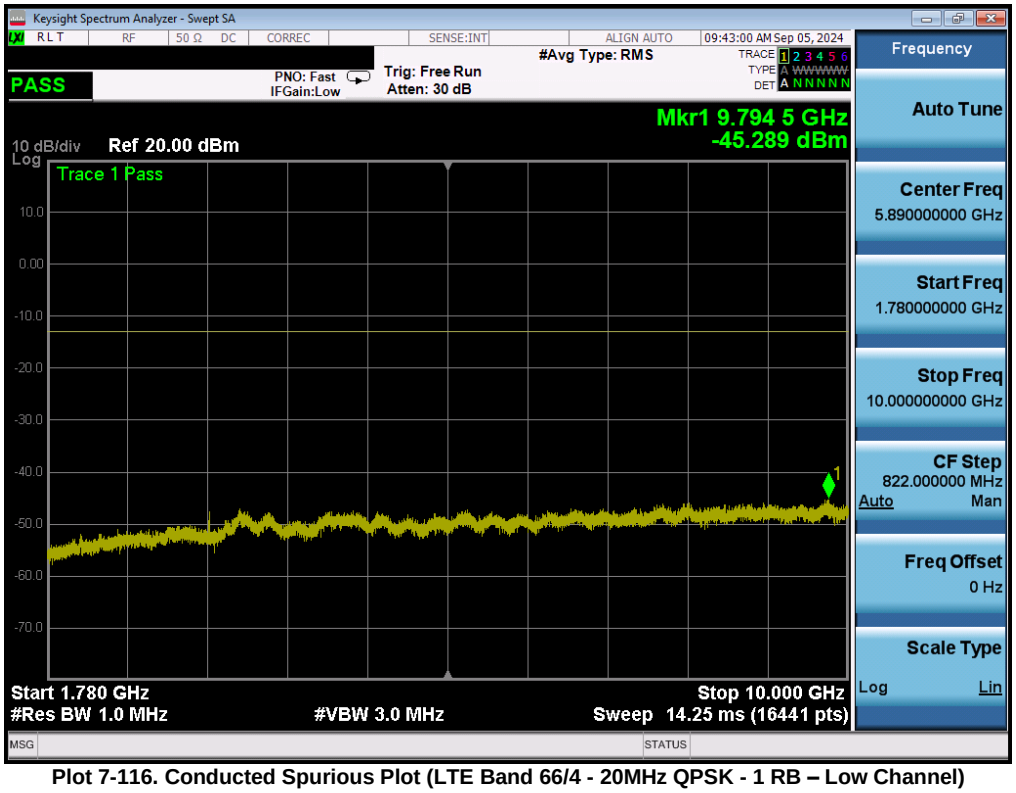
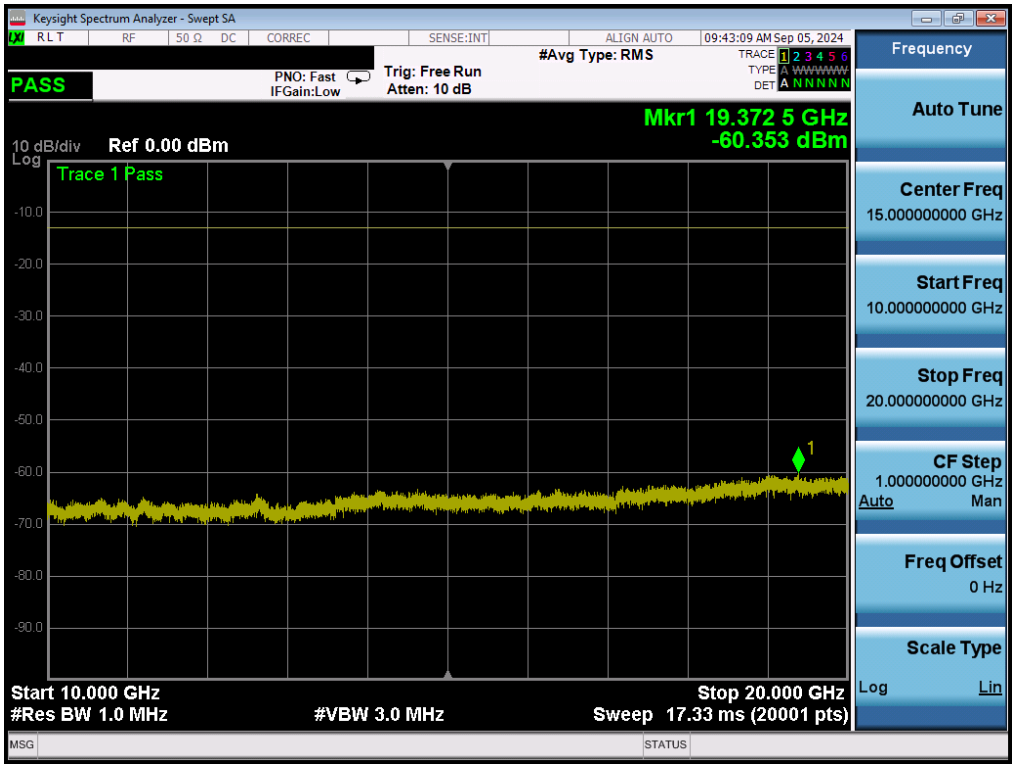
LTE Band 66/4 – ANT1



Plot 7-115. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - 1 RB – Low Channel)

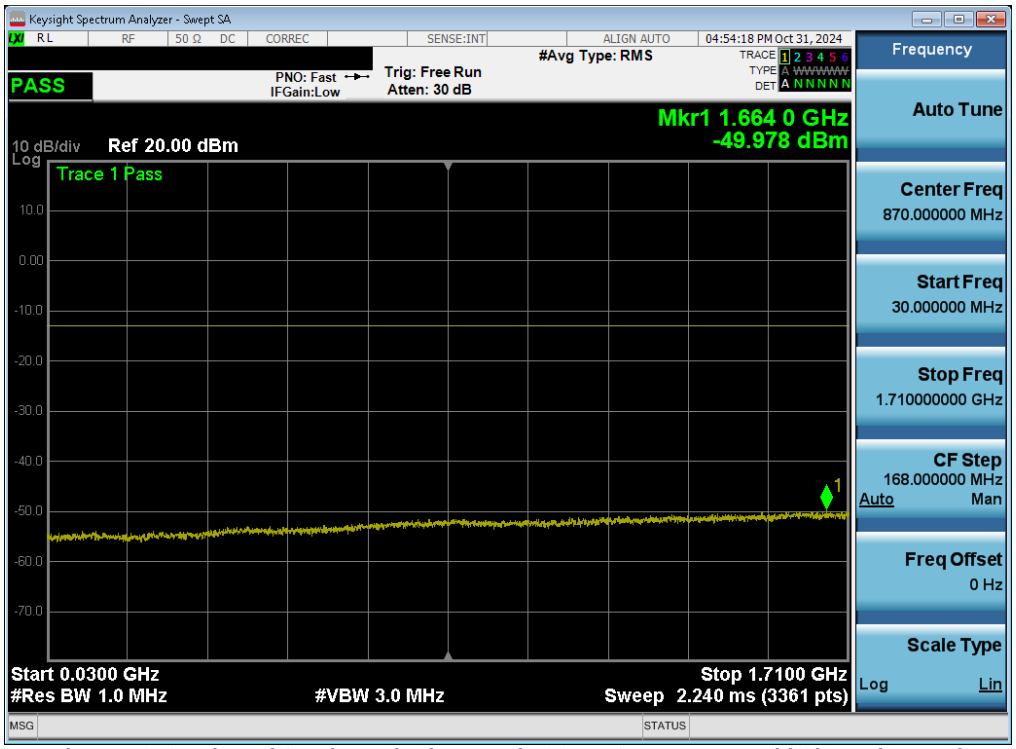


Plot 7-116. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - 1 RB – Low Channel)

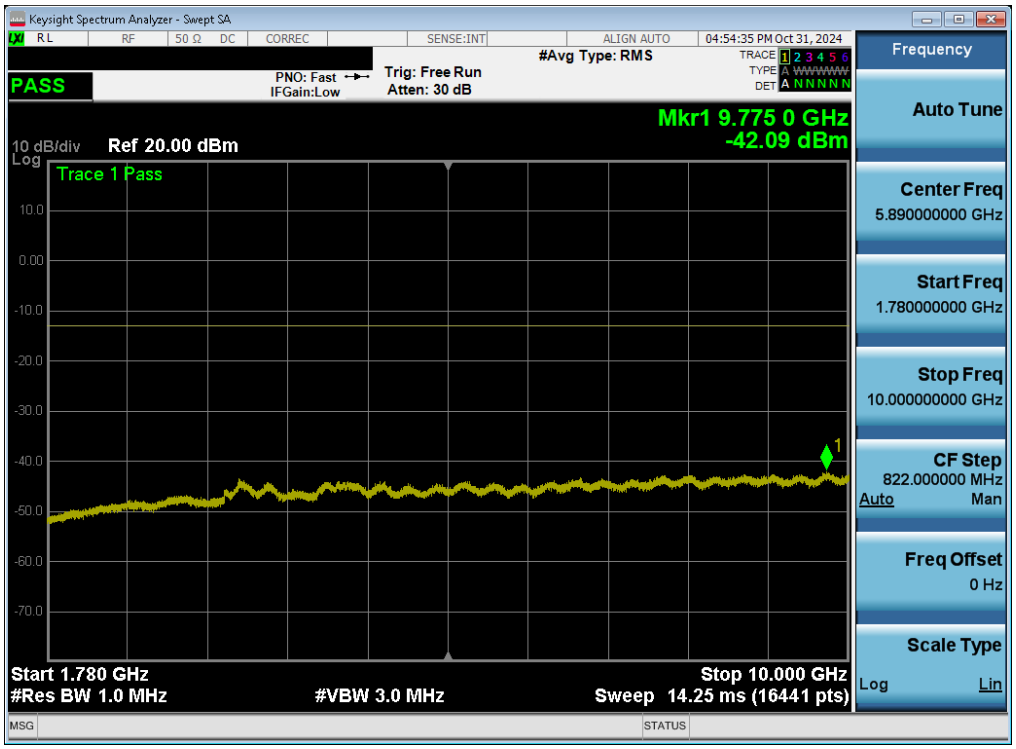


Plot 7-117. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - 1 RB – Low Channel)

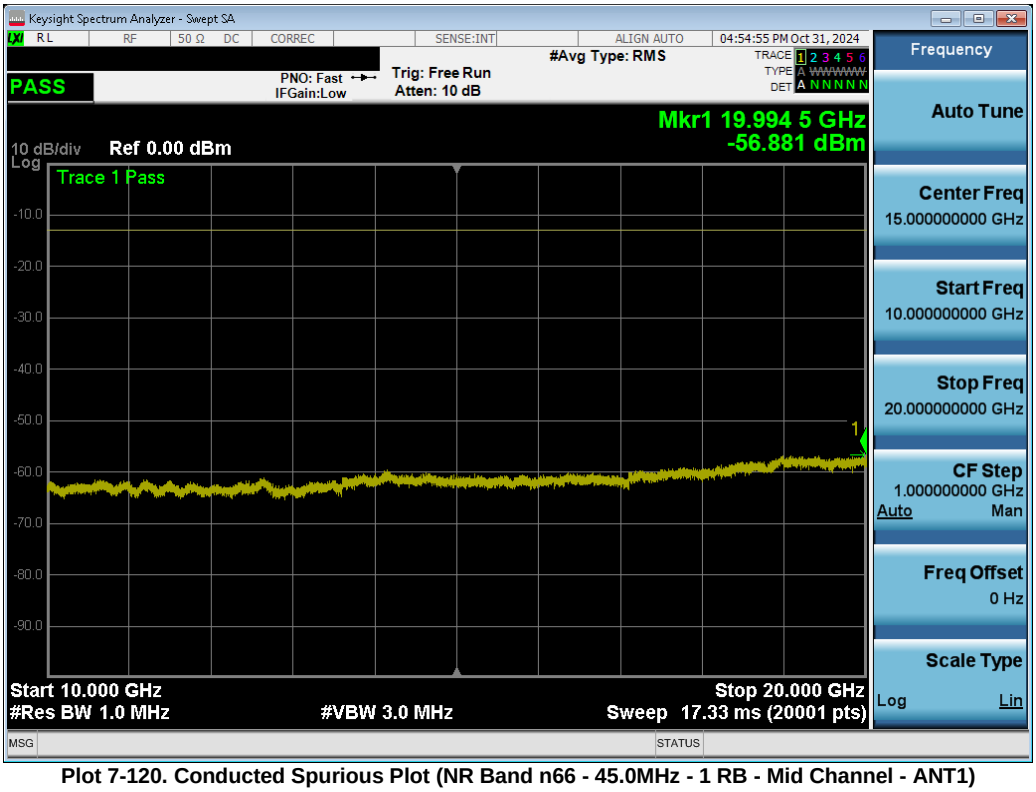
NR Band n66 – ANT1



Plot 7-118. Conducted Spurious Plot (NR Band n66 - 45.0MHz - 1 RB - Mid Channel - ANT1)



Plot 7-119. Conducted Spurious Plot (NR Band n66 - 45.0MHz - 1 RB - Mid Channel - ANT1)



Plot 7-120. Conducted Spurious Plot (NR Band n66 - 45.0MHz - 1 RB - Mid Channel - ANT1)

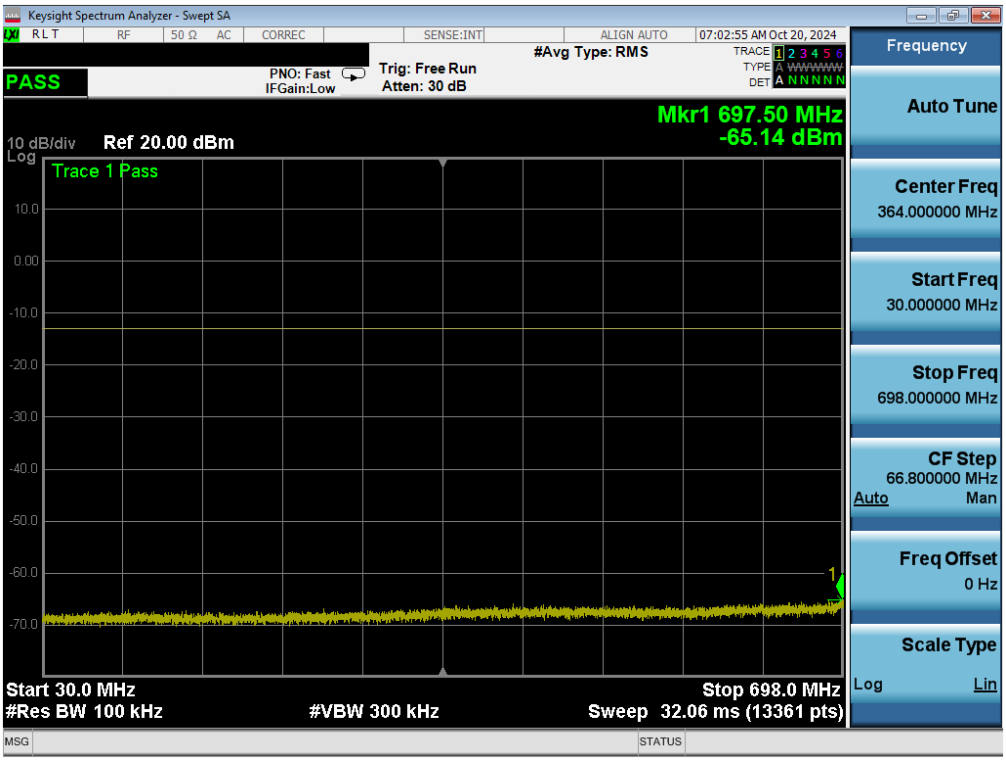
Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
LTE Band 12/17	10 MHz	Low	30.0 - 697.9	-63.12	-13	-50.12
		Low	716.0 - 1000.0	-65.33	-13	-52.33
		Low	1000.0 - 10000.0	-43.51	-13	-30.51
		Mid	30.0 - 698.0	-64.49	-13	-51.49
		Mid	716.0 - 1000.0	-65.33	-13	-52.33
		Mid	1000.0 - 10000.0	-44.59	-13	-31.59
		High	30.0 - 697.9	-65.14	-13	-52.14
		High	716.1 - 1000.0	-59.36	-13	-46.36
		High	1000.0 - 10000.0	-43.34	-13	-30.34
LTE Band 13	10 MHz	Mid	30.0 - 777.0	-65.40	-35	-30.40
		Mid	787.0 - 1000.0	-65.30	-13	-52.30
		Mid	1000.0 - 20000.0	-41.04	-13	-28.04

Table 7-17. Conducted Spurious Emissions Results – Ant2

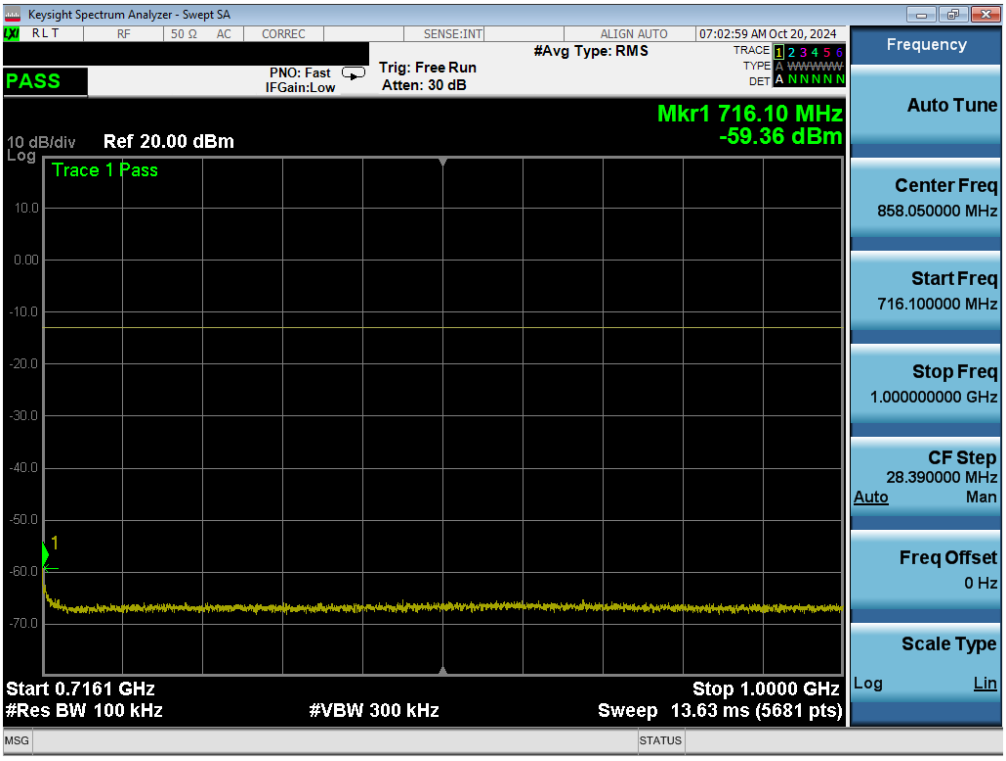
Mode	Bandwidth	Channel	Range [MHz]	Level [dBm]	Limit [dBm]	Margin [dB]
LTE-B66-4	20 MHz	Low	30.0 - 663.0	-45.24	-13	-32.24
		Low	698.0 - 1000.0	-47.52	-13	-34.52
		Low	1000.0 - 10000.0	-63.44	-13	-50.44
		Mid	30.0 - 663.0	-54.04	-13	-41.04
		Mid	698.0 - 1000.0	-47.46	-13	-34.46
		Mid	1000.0 - 10000.0	-63.26	-13	-50.26
		High	30.0 - 663.0	-53.69	-13	-40.69
		High	698.0 - 1000.0	-47.48	-13	-34.48
		High	1000.0 - 10000.0	-63.19	-13	-50.19
NR Band n66	45 MHz	Low	30.0 - 1710.0	-49.50	-13	-36.50
		Low	1780.0 - 10000.0	-43.42	-13	-30.42
		Low	10000.0 - 20000.0	-59.32	-13	-46.32
		Mid	30.0 - 1710.0	-49.83	-13	-36.83
		Mid	1780.0 - 10000.0	-43.55	-13	-30.55
		Mid	10000.0 - 20000.0	-59.14	-13	-46.14
		High	30.0 - 1710.0	-49.65	-13	-36.65
		High	1780.0 - 10000.0	-43.55	-13	-30.55
		High	10000.0 - 20000.0	-59.16	-13	-46.16

Table 7-18. Conducted Spurious Emissions Results – Ant2

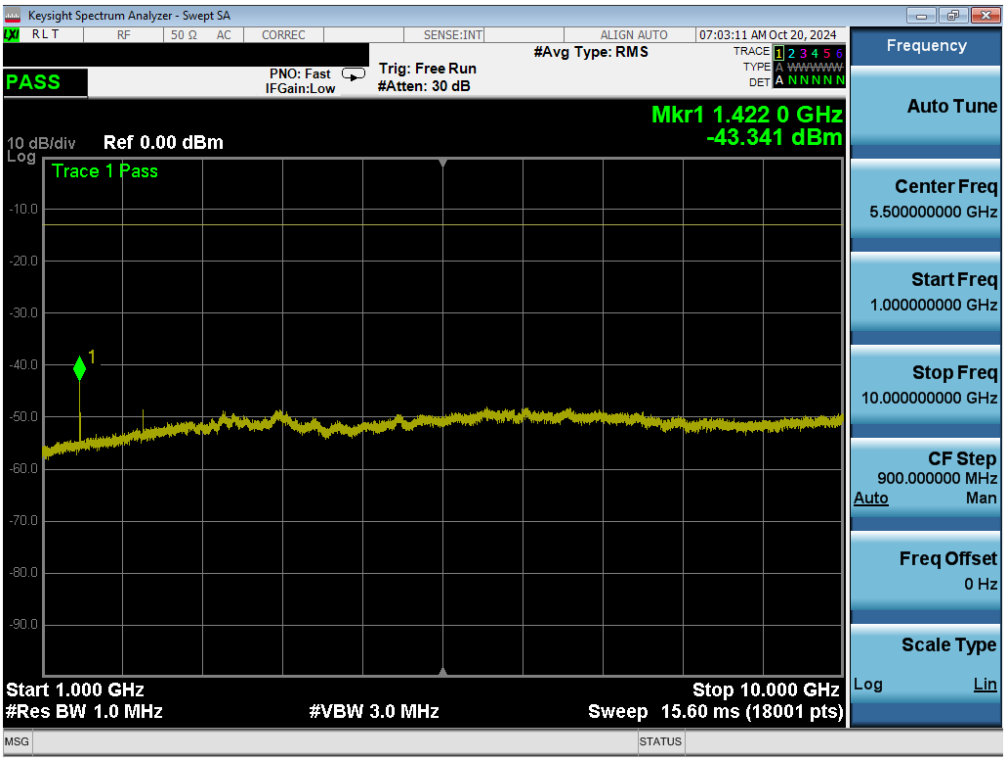
LTE Band 12/17 – ANT2



Plot 7-121. Conducted Spurious Plot (LTE Band 12 /17- 10MHz QPSK - 1 RB - High Channel - ANT2)

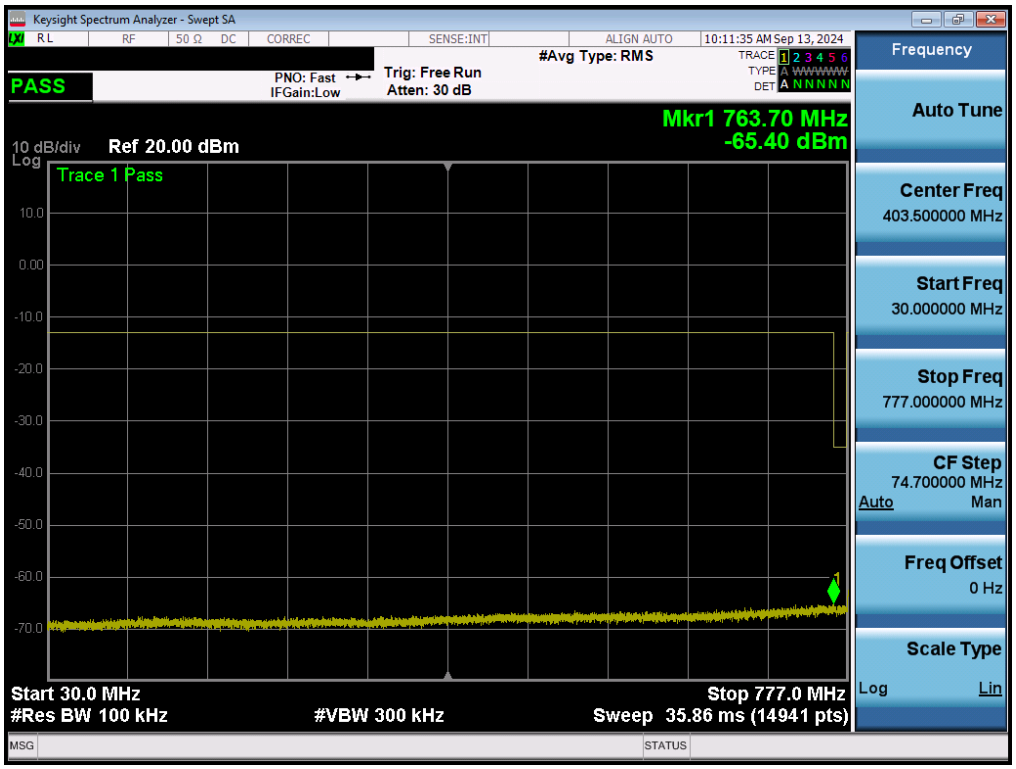


Plot 7-122. Conducted Spurious Plot (LTE Band 12/17 - 10MHz QPSK - 1 RB - High Channel - ANT2)

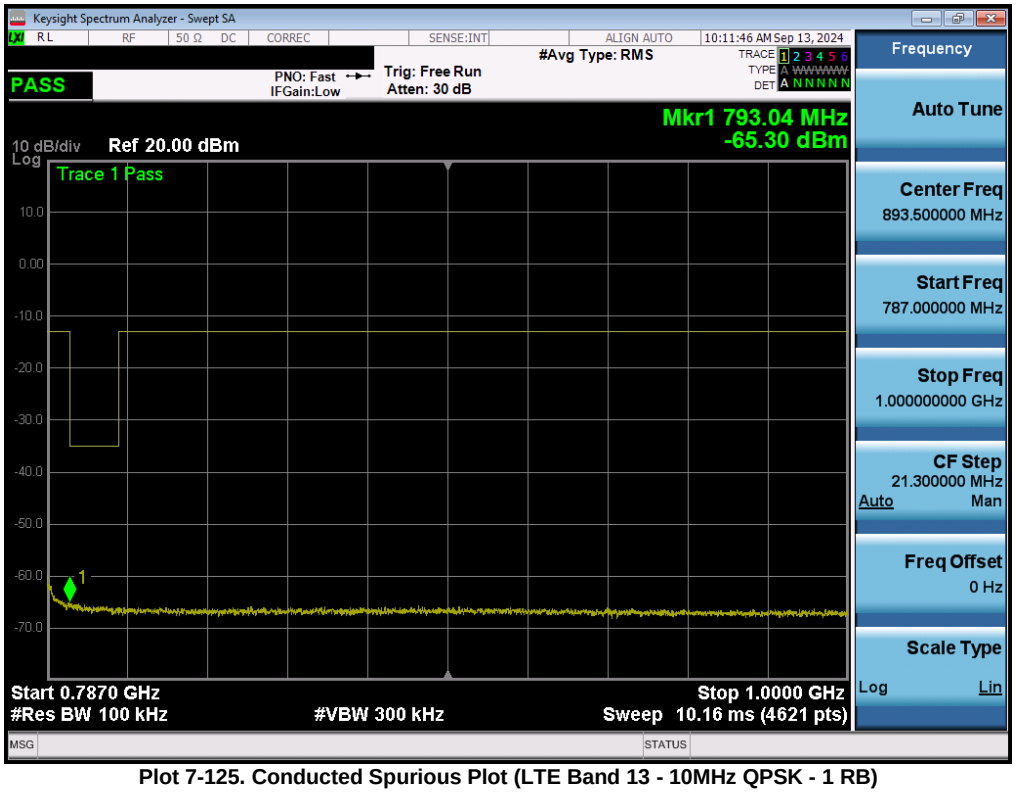


Plot 7-123. Conducted Spurious Plot (LTE Band 12/17 - 10MHz QPSK - 1 RB - High Channel - ANT2)

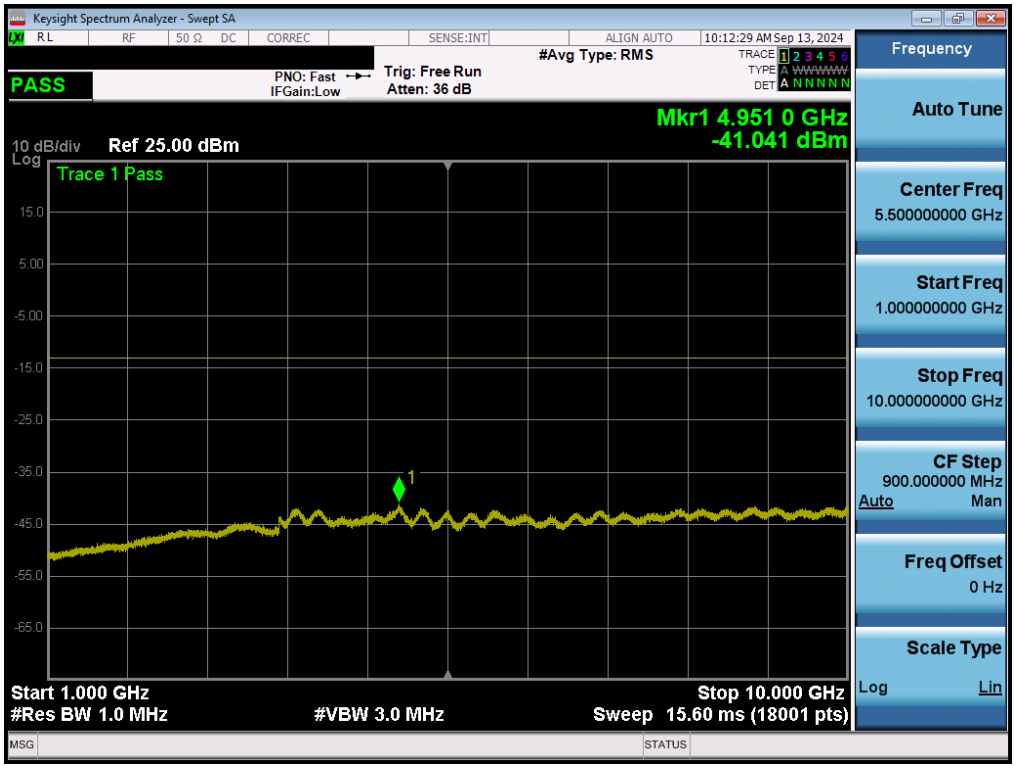
LTE Band 13 – ANT2



Plot 7-124. Conducted Spurious Plot (LTE Band 13 - 10MHz QPSK - 1 RB)

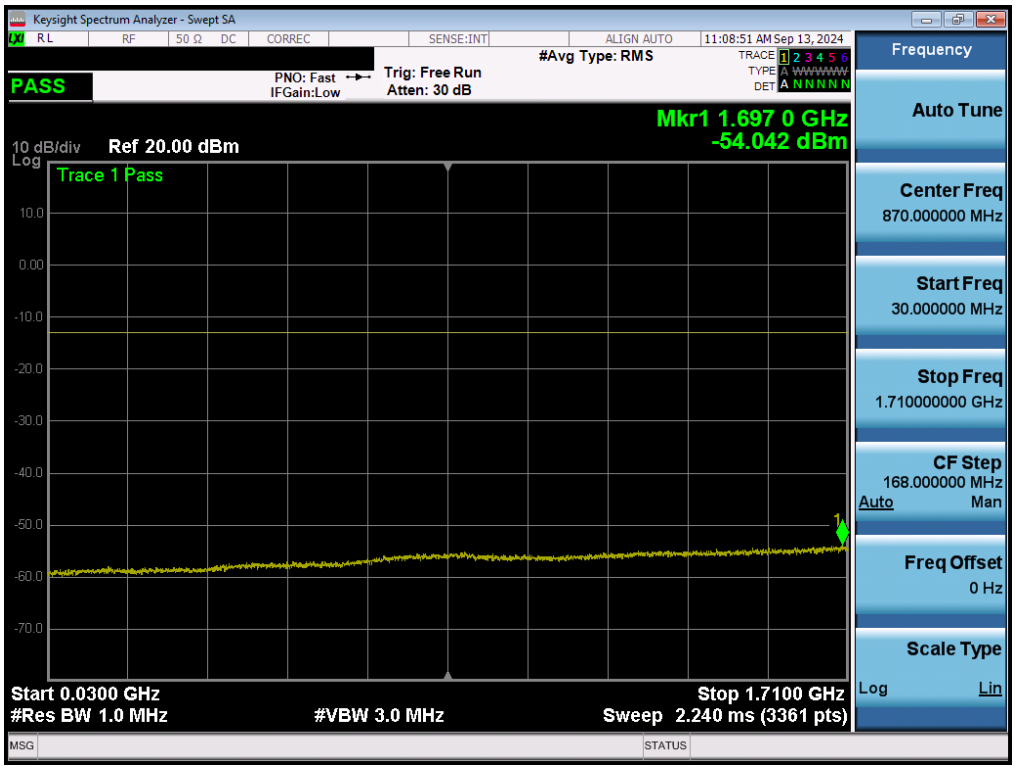


Plot 7-125. Conducted Spurious Plot (LTE Band 13 - 10MHz QPSK - 1 RB)



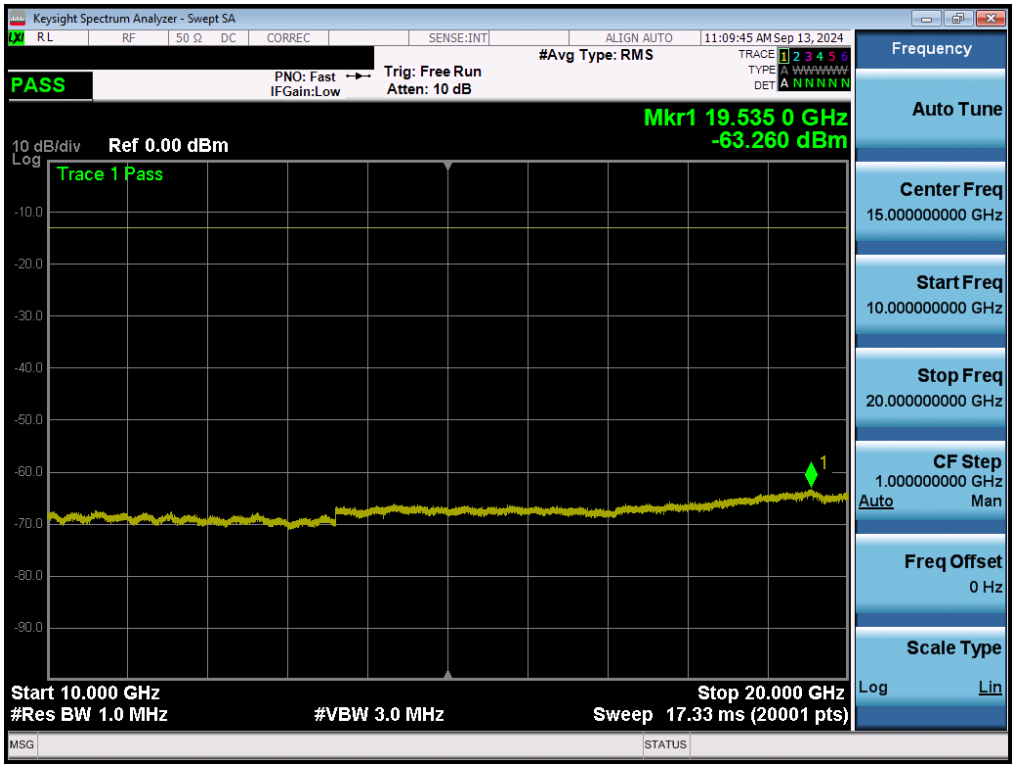
Plot 7-126. Conducted Spurious Plot (LTE Band 13 - 10MHz QPSK - 1 RB)

LTE Band 66/4 – ANT2



Plot 7-127. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - 1 RB – Mid Channel)

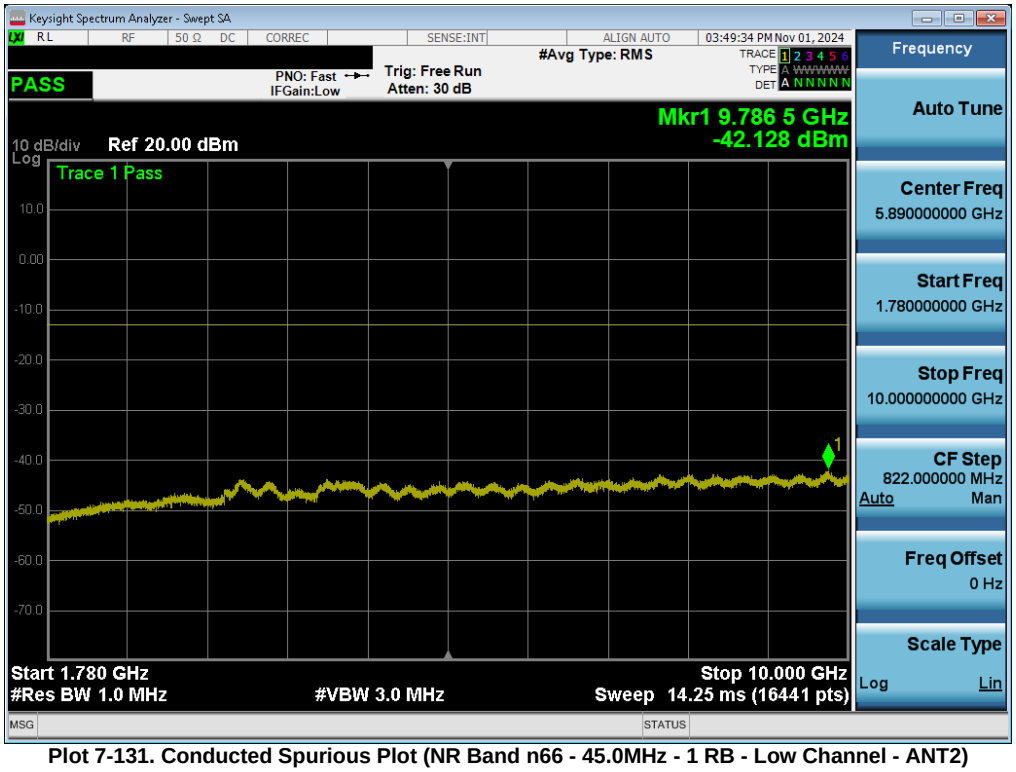
Plot 7-128. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - 1 RB – Mid Channel)



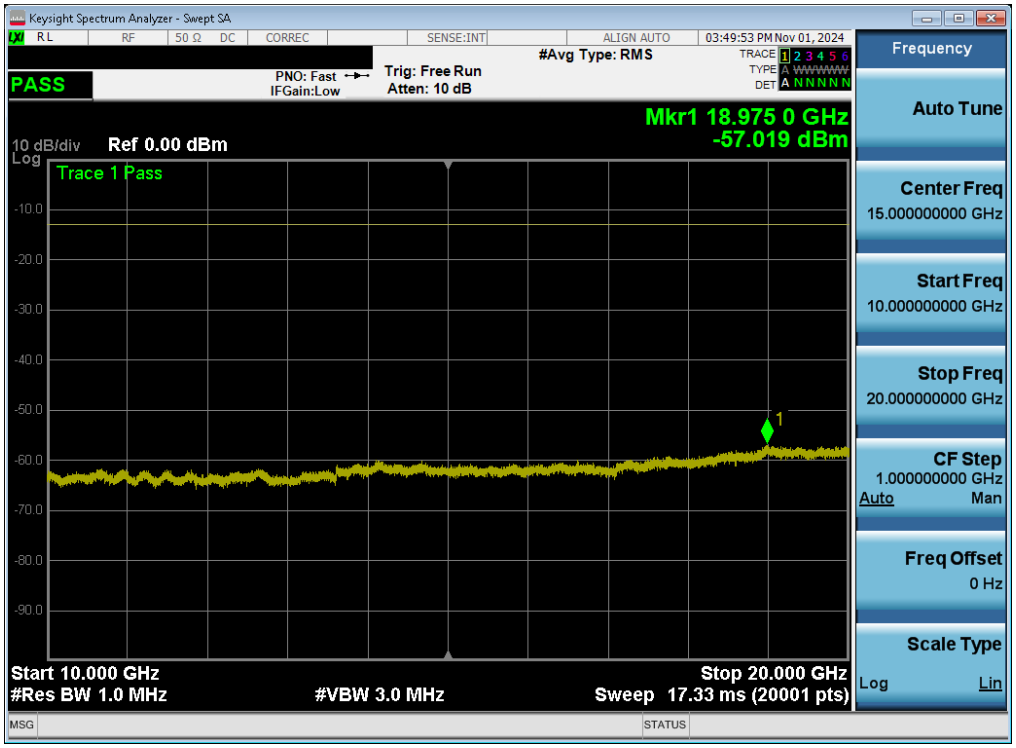
Plot 7-129. Conducted Spurious Plot (LTE Band 66/4 - 20MHz QPSK - 1 RB – High Channel)

NR Band n66 – ANT2

Plot 7-130. Conducted Spurious Plot (NR Band n66 - 45.0MHz - 1 RB - Low Channel - ANT2)



Plot 7-131. Conducted Spurious Plot (NR Band n66 - 45.0MHz - 1 RB - Low Channel - ANT2)



Plot 7-132. Conducted Spurious Plot (NR Band n66 - 45.0MHz - 1 RB - Low Channel - ANT2)

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 its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst-case configuration. All modes of operation were investigated and the worst-case configuration results are reported in this section.

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

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.

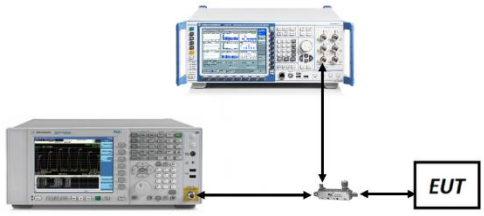


Figure 7-4. Test Instrument & Measurement Setup

Test Notes

1. Per 27.53(h) for AWS band operation, 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(g) for operations in the 663 - 698 MHz and 698 – 746MHz bands, 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.

3. Per 27.53(c)(5) for operations in the 776-788 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.

4. For all plots showing emissions in the 763 – 775MHz and 793 – 805MHz band, the FCC limit per 27.53(c)(4) is $65 + 10 \log_{10}(P) = -35$dBm in a 6.25kHz bandwidth.

Mode	Bandwidth	Channel	Test Case	Level [dBm]	Limit [dBm]	Margin [dB]
LTE Band 12/17	10 MHz	Low	Band Edge	-29.47	-13	-16.47
		Low	Band Edge (B17)	-30.48	-13	-17.48
		High	Band Edge	-30.71	-13	-17.71
	5 MHz	Low	Band Edge	-23.68	-13	-10.68
		Low	Band Edge (B17)	-22.64	-13	-9.64
		High	Band Edge	-23.30	-13	-10.30
	3 MHz	Low	Band Edge	-17.33	-13	-4.33
		High	Band Edge	-19.49	-13	-6.49
	1.4 MHz	Low	Band Edge	-25.35	-13	-12.35
		High	Band Edge	-26.00	-13	-13.00
LTE Band 13	10 MHz	Low	Band Edge	-27.89	-13	-14.89
		Low	Emission Mask	-64.07	-13	-51.07
		High	Band Edge	-26.89	-13	-13.89
		High	Emission Mask	-45.69	-13	-32.69
	5 MHz	Low	Band Edge	-23.31	-13	-10.31
		Low	Emission Mask	-59.11	-13	-46.11
		High	Band Edge	-22.74	-13	-9.74
		High	EmMask	-54.56	-13	-41.56

Table 7-19. Conducted Band Edge Results – Ant1

Mode	Bandwidth	Channel	Test Case	Level [dBm]	Limit [dBm]	Margin [dB]
WCDMA1700	N/A	Low	Band Edge	-23.25	-13	-10.25
		High	Band Edge	-24.40	-13	-11.40
Mode	**Bandwidth**	**Channel**	**Test Case**	**Level [dBm]**	**Limit [dBm]**	**Margin [dB]**
LTE Band 66/4	20MHz	Low	Band Edge	-27.41	-13	-14.41
		Low	Extended	-23.14	-13	-10.14
		High (B4)	Band Edge	-26.32	-13	-13.32
		High (B4)	Extended	-24.28	-13	-11.28
		High (B66)	Band Edge	-26.63	-13	-13.63
		High (B66)	Extended	-24.25	-13	-11.25
	15MHz	Low	Band Edge	-24.99	-13	-11.99
		Low	Extended	-21.31	-13	-8.31
		High (B4)	Band Edge	-25.30	-13	-12.30
		High (B4)	Extended	-22.35	-13	-9.35
		High (B66)	Band Edge	-25.76	-13	-12.76
		High (B66)	Extended	-22.57	-13	-9.57
	10MHz	Low	Band Edge	-25.48	-13	-12.48
		Low	Extended	-20.51	-13	-7.51
		High (B4)	Band Edge	-21.37	-13	-8.37
		High (B4)	Extended	-20.01	-13	-7.01
		High (B66)	Band Edge	-24.00	-13	-11.00
		High (B66)	Extended	-20.20	-13	-7.20
	5MHz	Low	Band Edge	-19.94	-13	-6.94
		Low	Extended	-23.06	-13	-10.06
		High (B4)	Band Edge	-21.40	-13	-8.40
		High (B4)	Extended	-26.28	-13	-13.28
		High (B66)	Band Edge	-22.12	-13	-9.12
		High (B66)	Extended	-26.58	-13	-13.58
	3MHz	Low	Band Edge	-18.51	-13	-5.51
		Low	Extended	-24.48	-13	-11.48
		High (B4)	Band Edge	-19.35	-13	-6.35
		High (B4)	Extended	-22.84	-13	-9.84
		High (B66)	Band Edge	-21.66	-13	-8.66
		High (B66)	Extended	-24.77	-13	-11.77
	1.4MHz	Low	Band Edge	-21.15	-13	-8.15
		Low	Extended	-32.13	-13	-19.13
		High (B4)	Band Edge	-20.17	-13	-7.17
		High (B4)	Extended	-27.21	-13	-14.21
		High (B66)	Band Edge	-19.60	-13	-6.60
		High (B66)	Extended	-30.61	-13	-17.61
Mode	**Bandwidth**	**Channel**	**Test Case**	**Level [dBm]**	**Limit [dBm]**	**Margin [dB]**
NR Band n66	45 MHz	Low	Band Edge	-29.64	-13	-16.64
		Low	Extended	-30.39	-13	-17.39
		High	Band Edge	-32.26	-13	-19.26
		High	Extended	-34.47	-13	-21.47
	40 MHz	Low	Band Edge	-26.42	-13	-13.42
		Low	Extended	-30.17	-13	-17.17
		High	Band Edge	-23.27	-13	-10.27
		High	Extended	-32.66	-13	-19.66
	35 MHz	Low	Band Edge	-31.63	-13	-18.63
		Low	Extended	-29.67	-13	-16.67
		High	Band Edge	-33.45	-13	-20.45
		High	Extended	-32.84	-13	-19.84
	30 MHz	Low	Band Edge	-28.43	-13	-15.43
		Low	Extended	-29.96	-13	-16.96
		High	Band Edge	-28.51	-13	-15.51
		High	Extended	-30.89	-13	-17.89
	25 MHz	Low	Band Edge	-33.24	-13	-20.24
		Low	Extended	-33.24	-13	-20.24
		High	Band Edge	-36.43	-13	-23.43
		High	Extended	-36.43	-13	-23.43
	20 MHz	Low	Band Edge	-30.11	-13	-17.11
		Low	Extended	-26.59	-13	-13.59
		High	Band Edge	-32.60	-13	-19.60
		High	Extended	-28.82	-13	-15.82
	15 MHz	Low	Band Edge	-26.56	-13	-13.56
		Low	Extended	-23.29	-13	-10.29
		High	Band Edge	-32.86	-13	-19.86
		High	Extended	-26.28	-13	-13.28
	10 MHz	Low	Band Edge	-27.63	-13	-14.63
		Low	Extended	-19.57	-13	-6.57
		High	Band Edge	-29.46	-13	-16.46
		High	Extended	-21.71	-13	-8.71
	5 MHz	Low	Band Edge	-26.78	-13	-13.78
		Low	Extended	-28.26	-13	-15.26
		High	Band Edge	-26.90	-13	-13.90
		High	Extended	-31.42	-13	-18.42

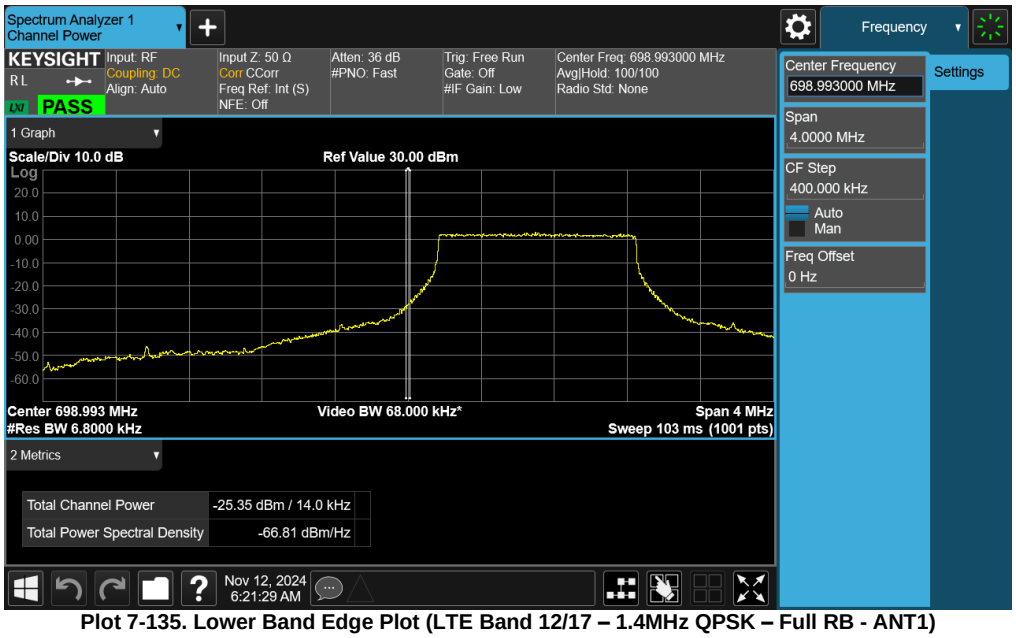
Table 7-20. Conducted Band Edge Results – Ant1

WCDMA AWS – ANT1

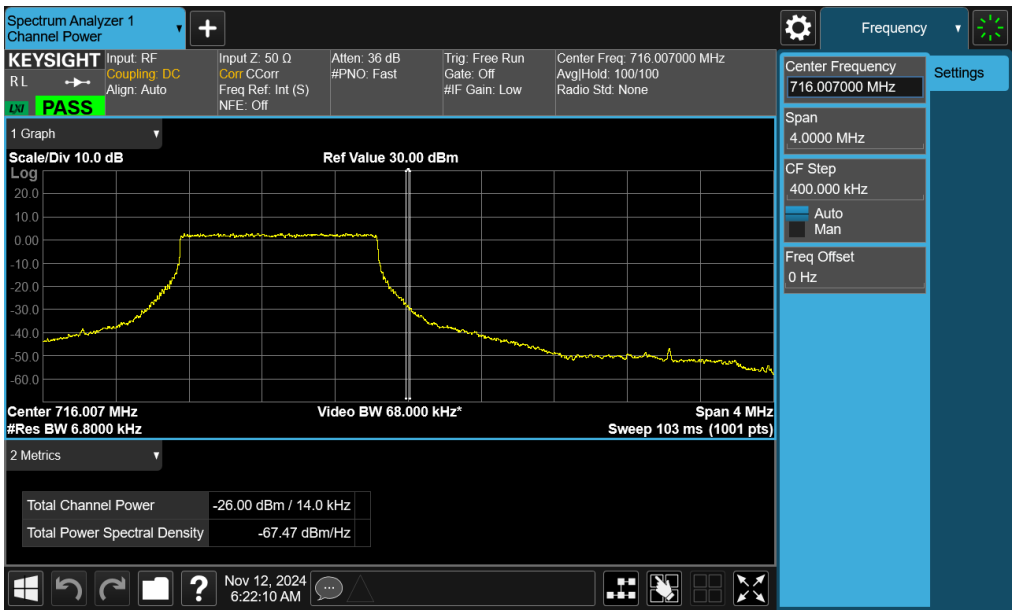
Plot 7-133. Lower Band Edge Plot (WCDMA AWS – Ch. 1312 – ANT1)

Plot 7-134. Upper Band Edge Plot (WCDMA AWS – Ch. 1513 – ANT1

LTE Band 12/17 – ANT1

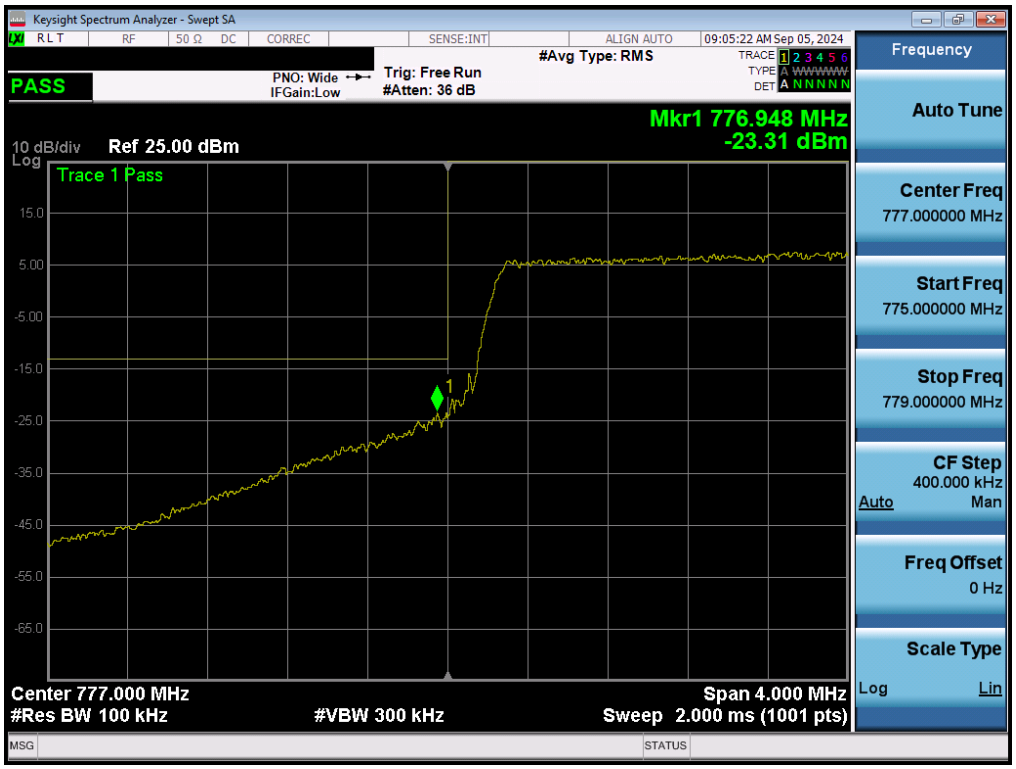


Plot 7-135. Lower Band Edge Plot (LTE Band 12/17 – 1.4MHz QPSK – Full RB - ANT1)

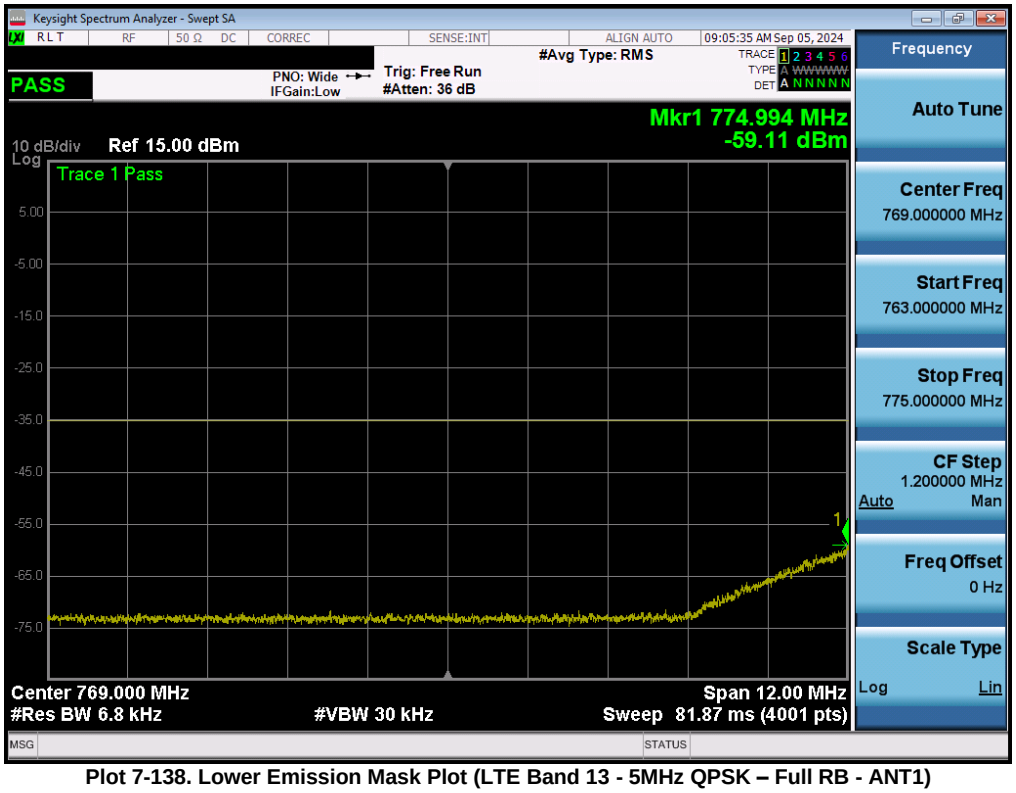


Plot 7-136. Upper Band Edge Plot (LTE Band 12/17 – 1.4MHz QPSK – Full RB - ANT1

LTE Band 13 – ANT1

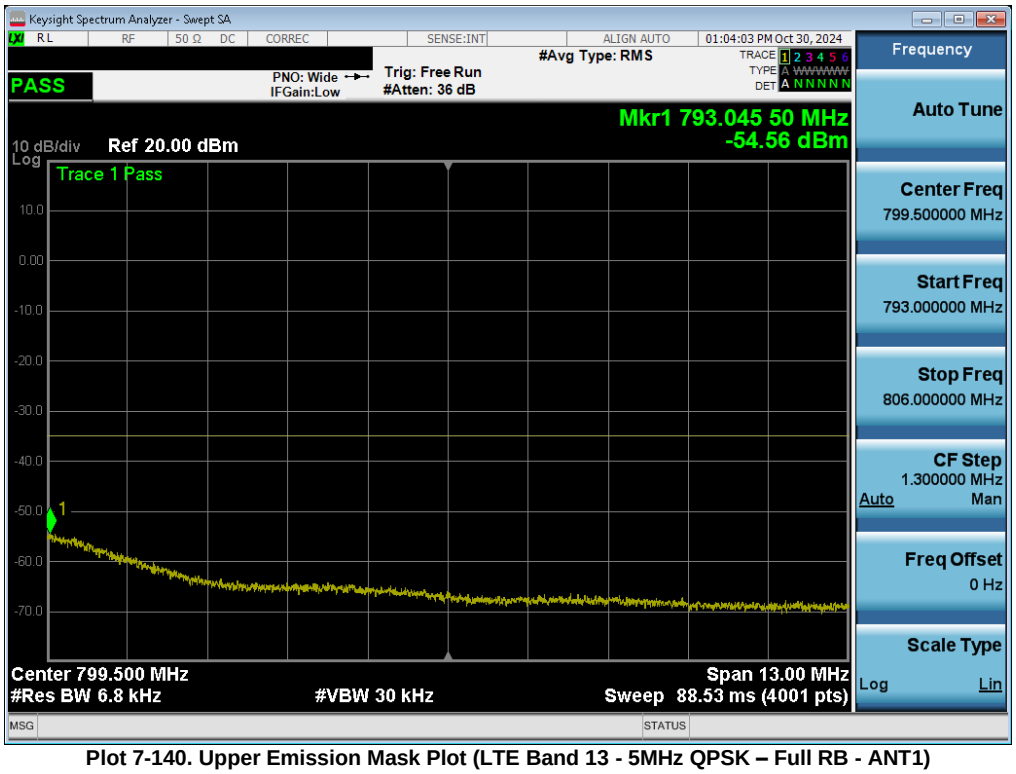


Plot 7-137. Lower Band Edge Plot (LTE Band 13 - 5MHz QPSK – Full RB - ANT1)



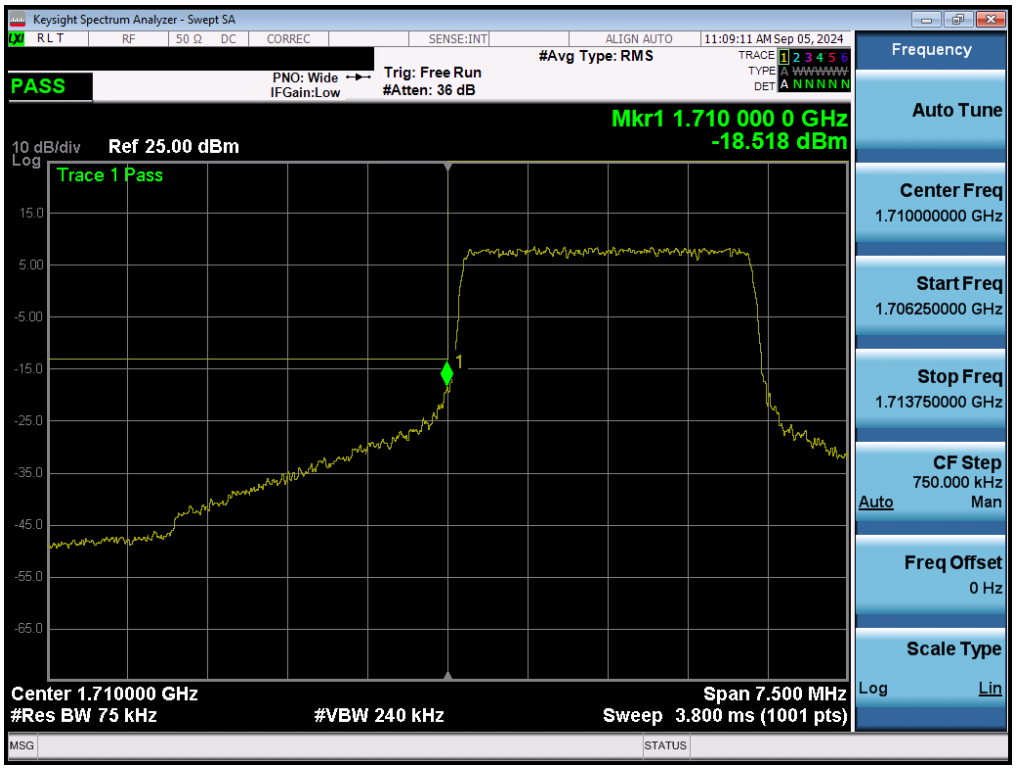
Plot 7-138. Lower Emission Mask Plot (LTE Band 13 - 5MHz QPSK – Full RB - ANT1)

Plot 7-139. Upper Band Edge Plot (LTE Band 13 - 5MHz QPSK – Full RB - ANT1)

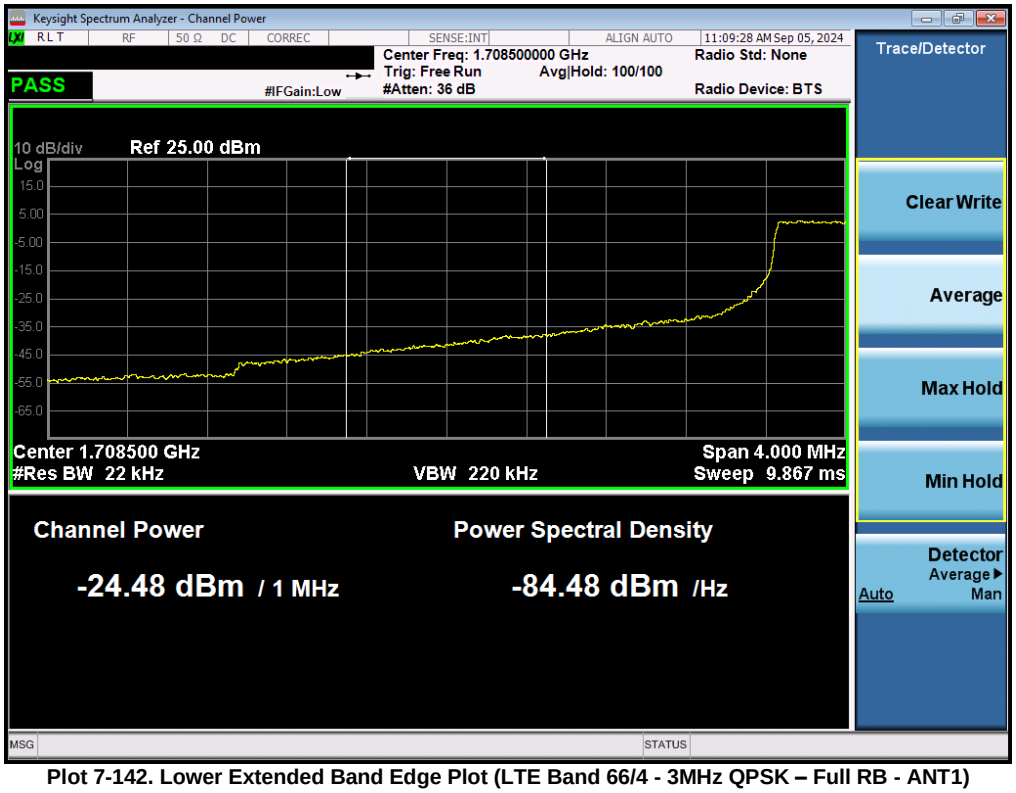


Plot 7-140. Upper Emission Mask Plot (LTE Band 13 - 5MHz QPSK – Full RB - ANT1)

LTE Band 66/4 – ANT1

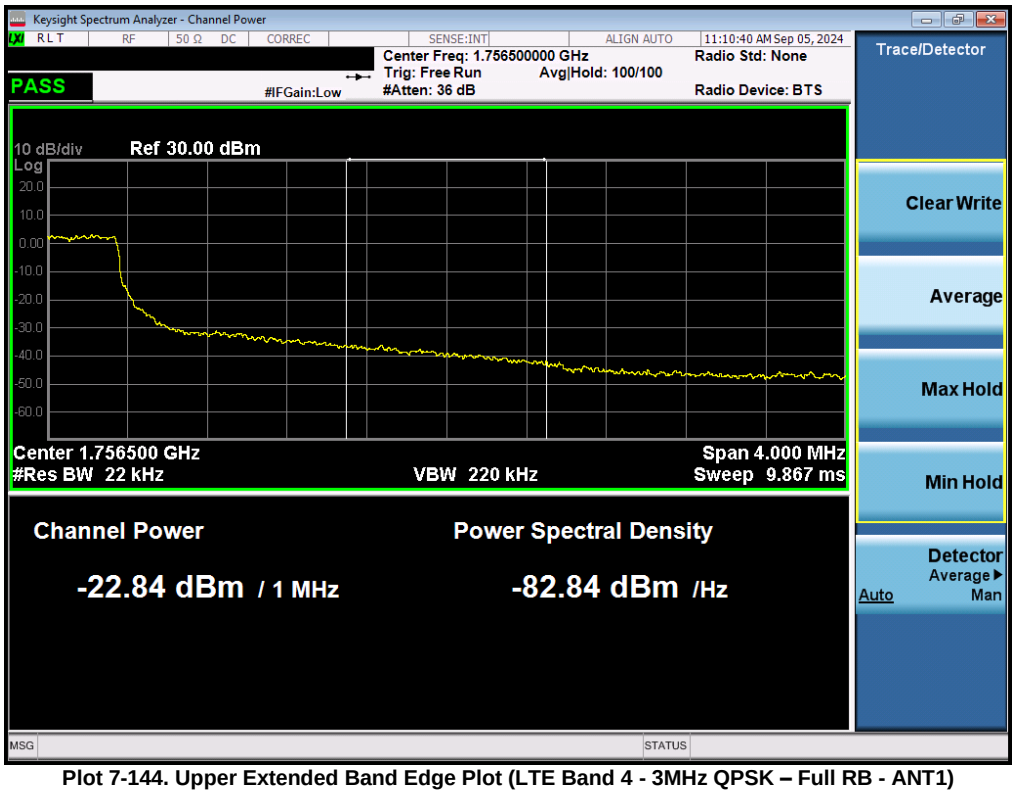


Plot 7-141. Lower Band Edge Plot (LTE Band 66/4 - 3MHz QPSK – Full RB - ANT1)

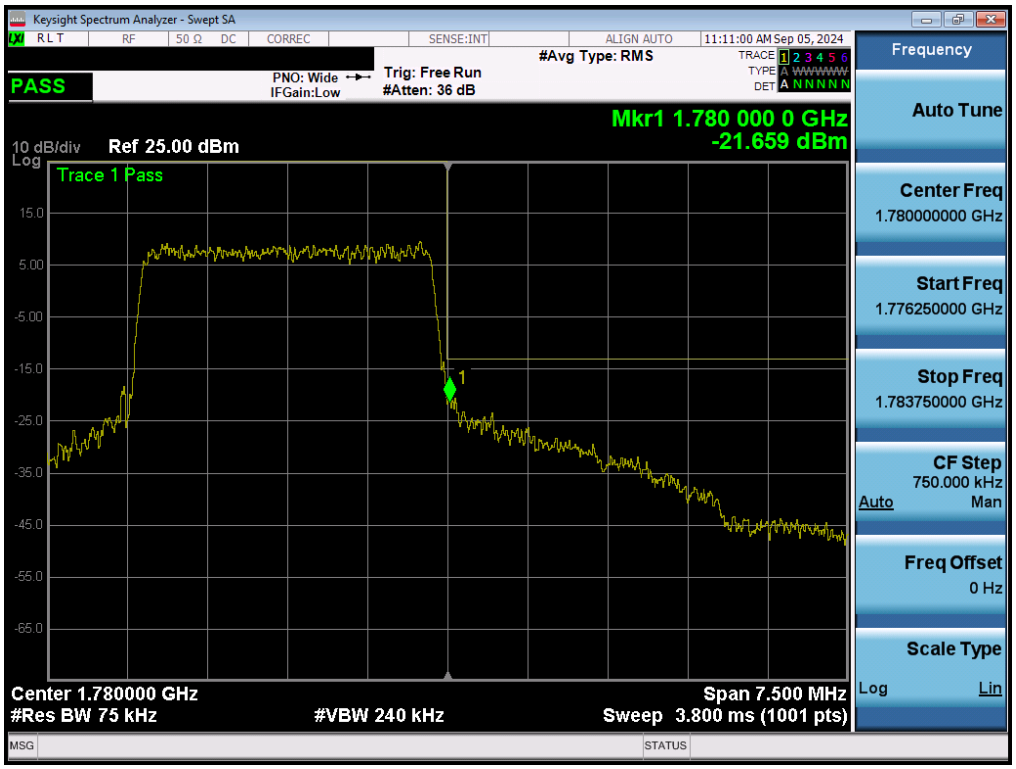


Plot 7-142. Lower Extended Band Edge Plot (LTE Band 66/4 - 3MHz QPSK – Full RB - ANT1)

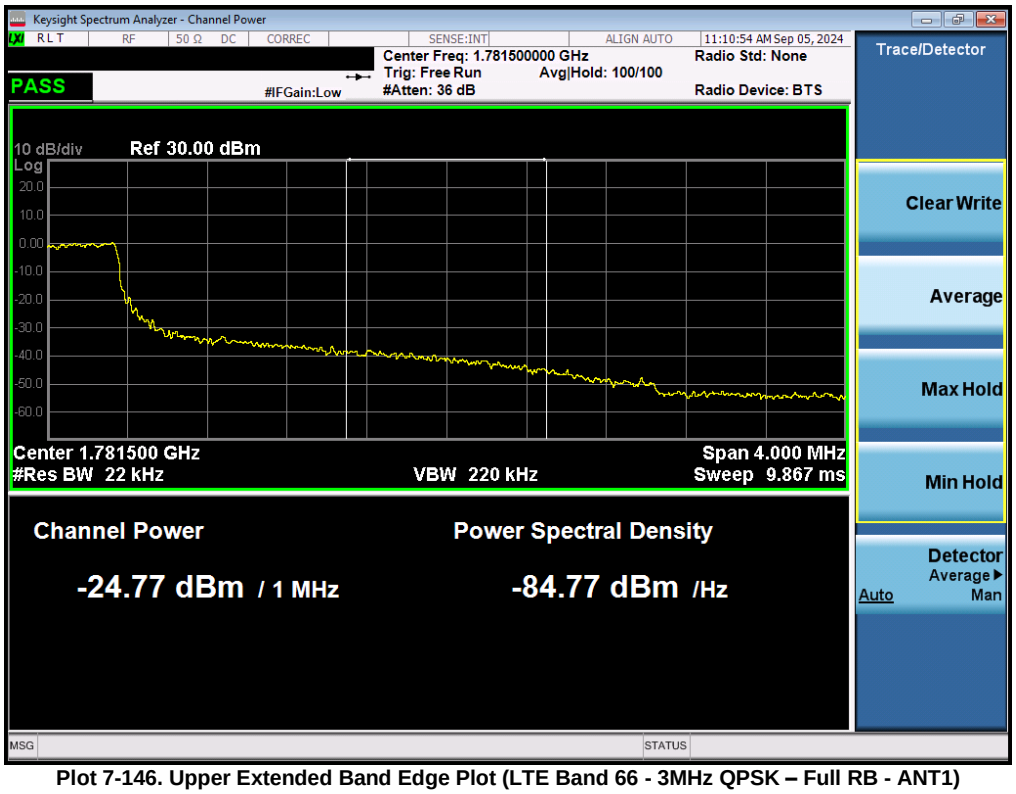
Plot 7-143. Upper Band Edge Plot (LTE Band 4 - 3MHz QPSK – Full RB - ANT1)



Plot 7-144. Upper Extended Band Edge Plot (LTE Band 4 - 3MHz QPSK – Full RB - ANT1)



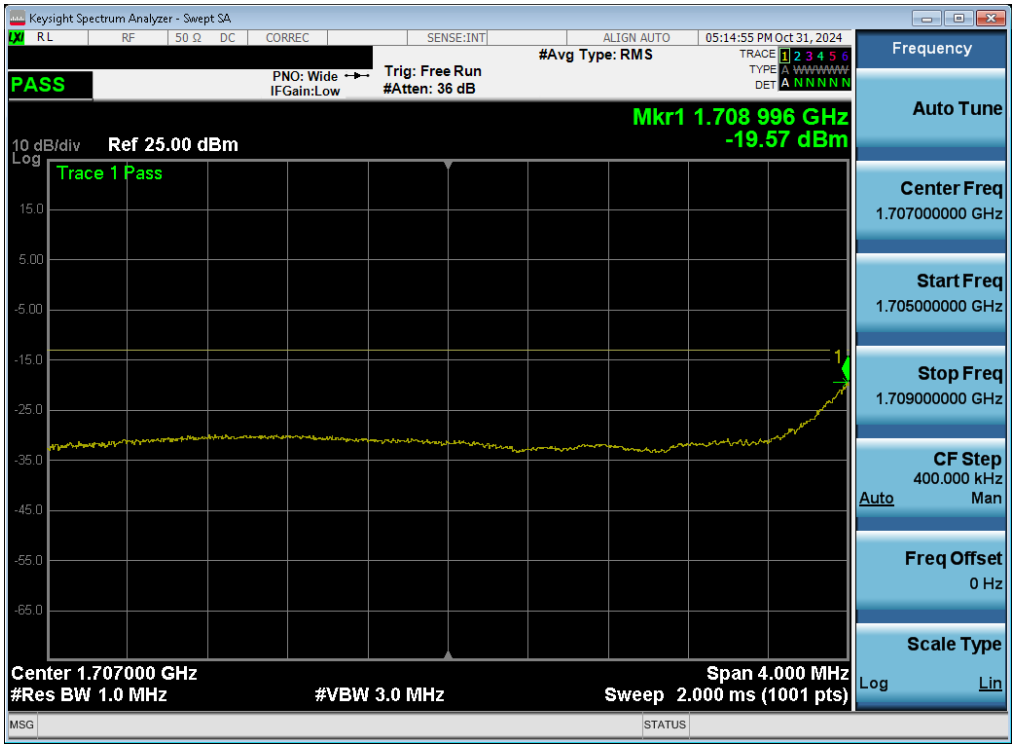
Plot 7-145. Upper Band Edge Plot (LTE Band 66 - 3MHz QPSK – Full RB - ANT1)



Plot 7-146. Upper Extended Band Edge Plot (LTE Band 66 - 3MHz QPSK – Full RB - ANT1)

NR Band n66 – ANT1

Plot 7-147. Lower Band Edge Plot (NR Band n66 – 10.0MHz - Full RB - ANT1)



Plot 7-148. Lower Extended Band Edge Plot (NR Band n66 – 10.0MHz - Full RB - ANT1)

Plot 7-149. Upper Band Edge Plot (NR Band n66 – 10.0MHz - Full RB - ANT1)

Plot 7-150. Upper Extended Band Edge Plot (NR Band n66 – 10.0MHz - Full RB - ANT1)

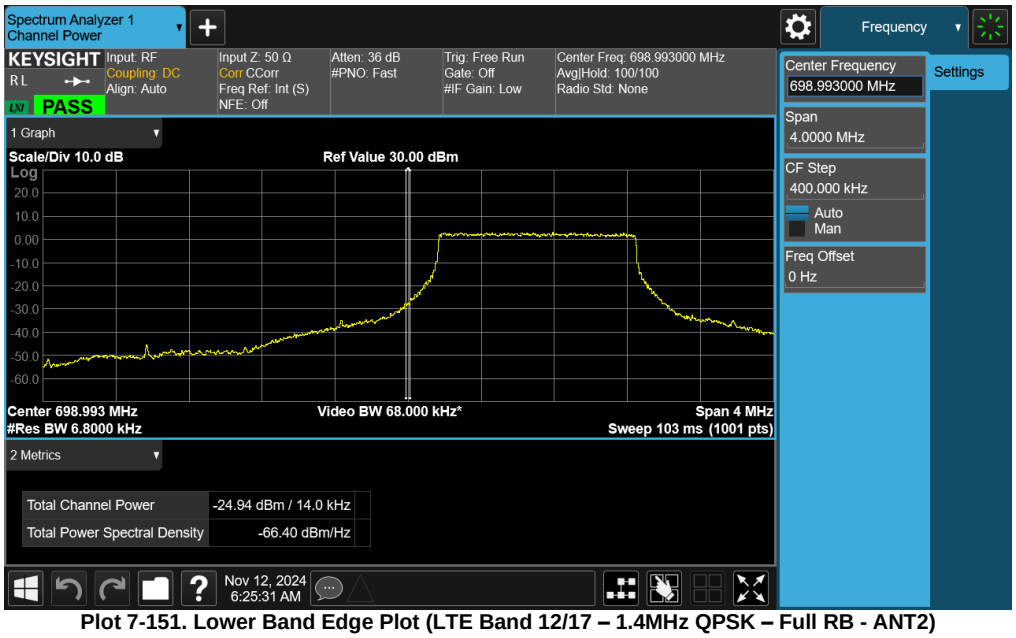
Mode	Bandwidth	Channel	Test Case	Level [dBm]	Limit [dBm]	Margin [dB]
LTE Band 12/17	10 MHz	Low	Band Edge	-29.63	-13	-16.63
		Low	Band Edge (B17)	-29.45	-12	-17.45
		High	Band Edge	-28.79	-13	-15.79
	5 MHz	Low	Band Edge	-21.75	-13	-8.75
		Low	Band Edge (B17)	-22.30	-12	-10.30
		High	Band Edge	-21.74	-13	-8.74
	3 MHz	Low	Band Edge	-17.42	-13	-4.42
		High	Band Edge	-16.38	-13	-3.38
	1.4 MHz	Low	Band Edge	-24.94	-13	-11.94
		High	Band Edge	-25.65	-13	-12.65
LTE Band 13	10 MHz	Low	Band Edge	-28.47	-13	-15.47
		Low	Emission Mask	-63.94	-13	-50.94
		High	Band Edge	-25.60	-13	-12.60
		High	Emission Mask	-45.12	-13	-32.12
	5 MHz	Low	Band Edge	-21.11	-13	-8.11
		Low	Emission Mask	-60.14	-13	-47.14
		High	Band Edge	-20.11	-13	-7.11
		High	EmMask	-54.39	-13	-41.39

Table 7-21. Conducted Band Edge Results – Ant2

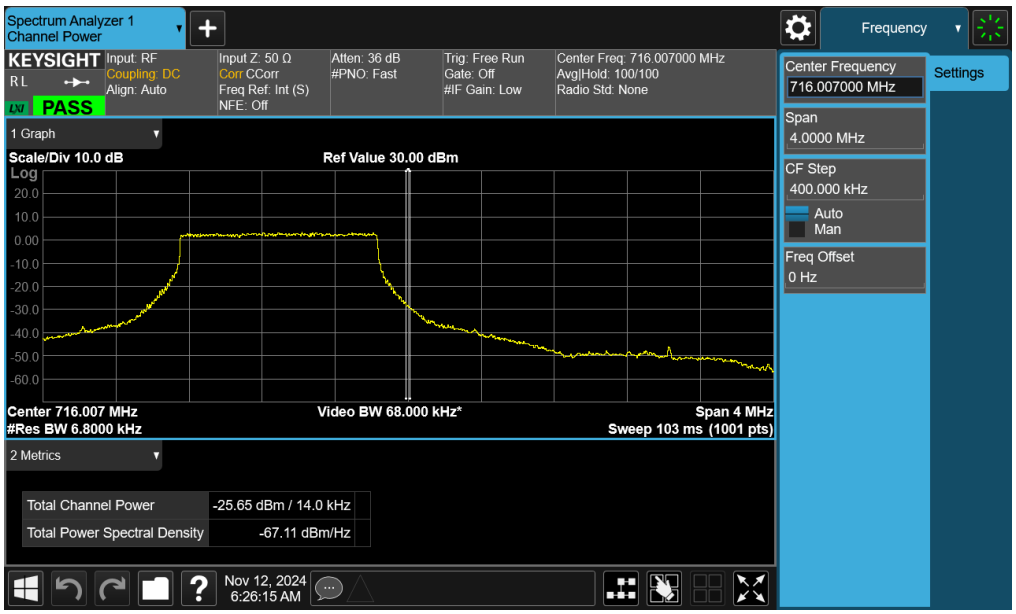
Mode	Bandwidth	Channel	Test Case	Level [dBm]	Limit [dBm]	Margin [dB]
LTE Band 66/4	20MHz	Low	Band Edge	-21.96	-13	-8.96
		Low	Extended	-20.18	-13	-7.18
		High (B4)	Band Edge	-17.83	-13	-4.83
		High (B4)	Extended	-15.60	-13	-2.60
		High (B66)	Band Edge	-24.41	-13	-11.41
		High (B66)	Extended	-23.67	-13	-10.67
	15MHz	Low	Band Edge	-20.90	-13	-7.90
		Low	Extended	-19.09	-13	-6.09
		High (B4)	Band Edge	-16.80	-13	-3.80
		High (B4)	Extended	-14.93	-13	-1.93
		High (B66)	Band Edge	-25.21	-13	-12.21
		High (B66)	Extended	-23.06	-13	-10.06
	10MHz	Low	Band Edge	-19.50	-13	-6.50
		Low	Extended	-15.53	-13	-2.53
		High (B4)	Band Edge	-17.61	-13	-4.61
		High (B4)	Extended	-14.16	-13	-1.16
		High (B66)	Band Edge	-21.18	-13	-8.18
		High (B66)	Extended	-20.87	-13	-7.87
	5MHz	Low	Band Edge	-16.89	-13	-3.89
		Low	Extended	-21.37	-13	-8.37
		High (B4)	Band Edge	-16.59	-13	-3.59
		High (B4)	Extended	-14.02	-13	-1.02
		High (B66)	Band Edge	-20.63	-13	-7.63
		High (B66)	Extended	-19.06	-13	-6.06
	3MHz	Low	Band Edge	-14.66	-13	-1.66
		Low	Extended	-20.94	-13	-7.94
		High (B4)	Band Edge	-16.77	-13	-3.77
		High (B4)	Extended	-14.07	-13	-1.07
		High (B66)	Band Edge	-20.74	-13	-7.74
		High (B66)	Extended	-18.22	-13	-5.22
	1.4MHz	Low	Band Edge	-16.69	-13	-3.69
		Low	Extended	-28.05	-13	-15.05
		High (B4)	Band Edge	-17.66	-13	-4.66
		High (B4)	Extended	-31.04	-13	-18.04
		High (B66)	Band Edge	-20.19	-13	-7.19
		High (B66)	Extended	-33.30	-13	-20.30
Mode	**Bandwidth**	**Channel**	**Test Case**	**Level [dBm]**	**Limit [dBm]**	**Margin [dB]**
NR Band n66	45 MHz	Low	Band Edge	-29.89	-13	-16.89
		Low	Extended	-31.44	-13	-18.44
		High	Band Edge	-32.92	-13	-19.92
		High	Extended	-35.49	-13	-22.49
	40 MHz	Low	Band Edge	-27.69	-13	-14.69
		Low	Extended	-30.25	-13	-17.25
		High	Band Edge	-24.99	-13	-11.99
		High	Extended	-33.25	-13	-20.25
	35 MHz	Low	Band Edge	-30.25	-13	-17.25
		Low	Extended	-30.82	-13	-17.82
		High	Band Edge	-34.01	-13	-21.01
		High	Extended	-33.48	-13	-20.48
	30 MHz	Low	Band Edge	-30.38	-13	-17.38
		Low	Extended	-30.70	-13	-17.70
		High	Band Edge	-29.13	-13	-16.13
		High	Extended	-33.01	-13	-20.01
	25 MHz	Low	Band Edge	-33.10	-13	-20.10
		Low	Extended	-33.10	-13	-20.10
		High	Band Edge	-35.86	-13	-22.86
		High	Extended	-35.86	-13	-22.86
	20 MHz	Low	Band Edge	-31.36	-13	-18.36
		Low	Extended	-26.89	-13	-13.89
		High	Band Edge	-32.08	-13	-19.08
		High	Extended	-30.03	-13	-17.03
	15 MHz	Low	Band Edge	-31.47	-13	-18.47
		Low	Extended	-23.78	-13	-10.78
		High	Band Edge	-35.65	-13	-22.65
		High	Extended	-26.89	-13	-13.89
	10 MHz	Low	Band Edge	-27.95	-13	-14.95
		Low	Extended	-19.69	-13	-6.69
		High	Band Edge	-31.35	-13	-18.35
		High	Extended	-22.45	-13	-9.45
	5 MHz	Low	Band Edge	-25.68	-13	-12.68
		Low	Extended	-14.76	-13	-1.76
		High	Band Edge	-26.28	-13	-13.28
		High	Extended	-14.53	-13	-1.53

Table 7-22. Conducted Band Edge Results – Ant2

LTE Band 12/17 – ANT2

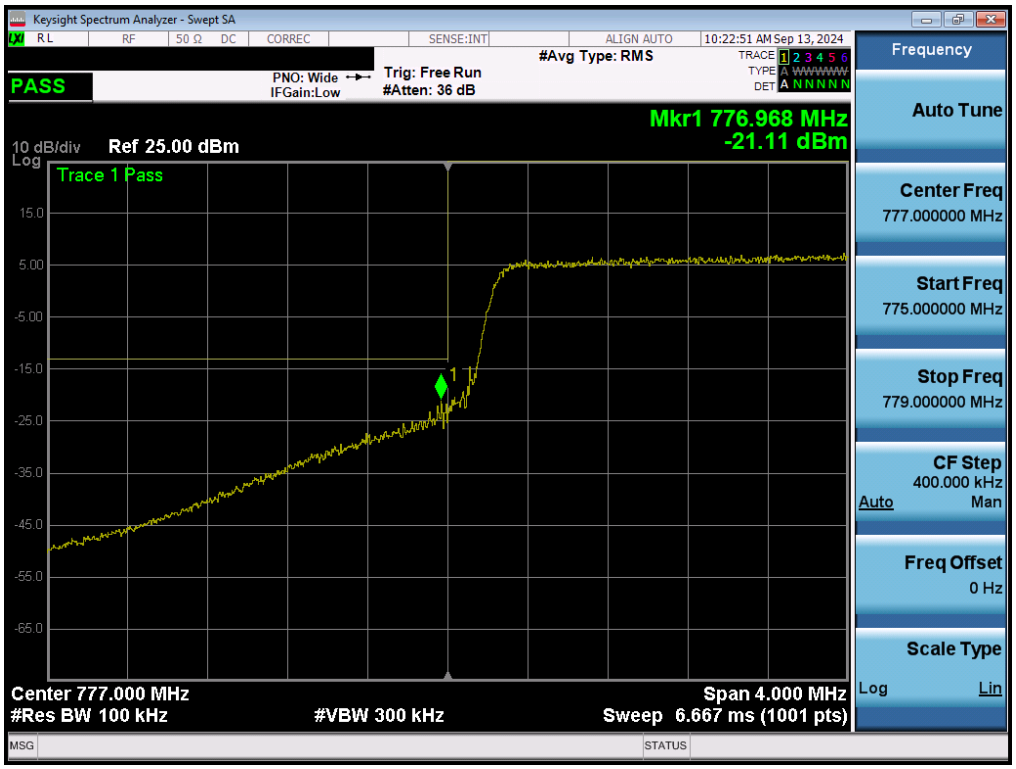


Plot 7-151. Lower Band Edge Plot (LTE Band 12/17 – 1.4MHz QPSK – Full RB - ANT2)

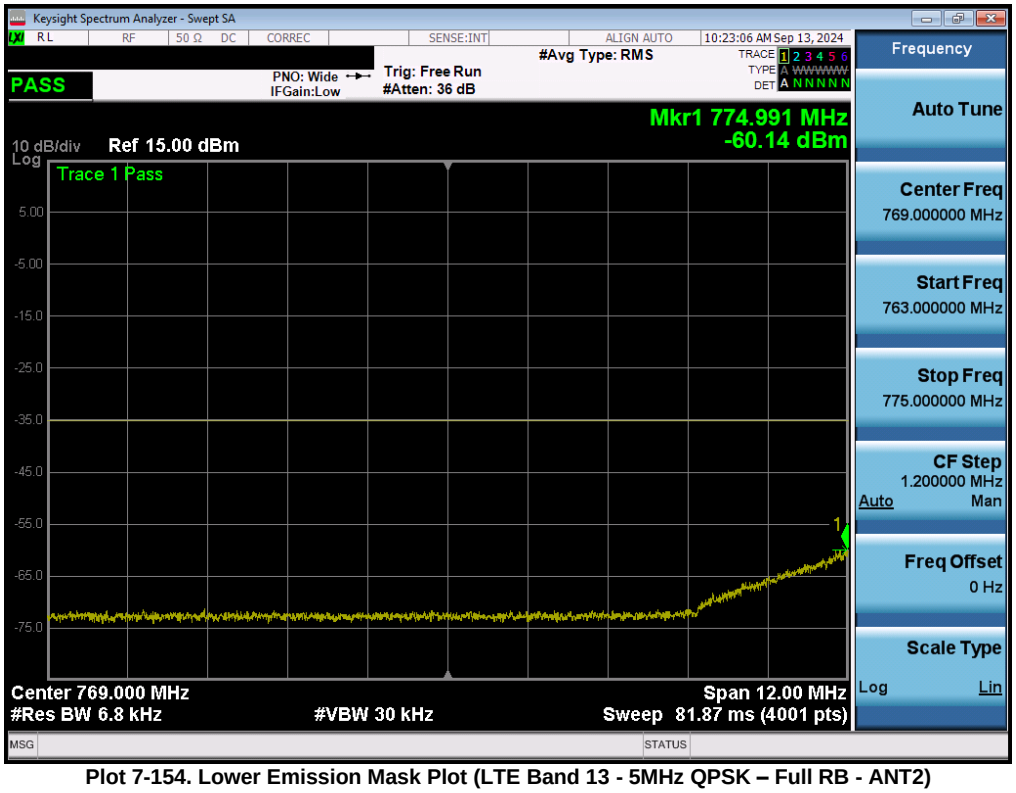


Plot 7-152. Upper Band Edge Plot (LTE Band 12/17 – 1.4MHz QPSK – Full RB - ANT2)

LTE Band 13 – ANT2

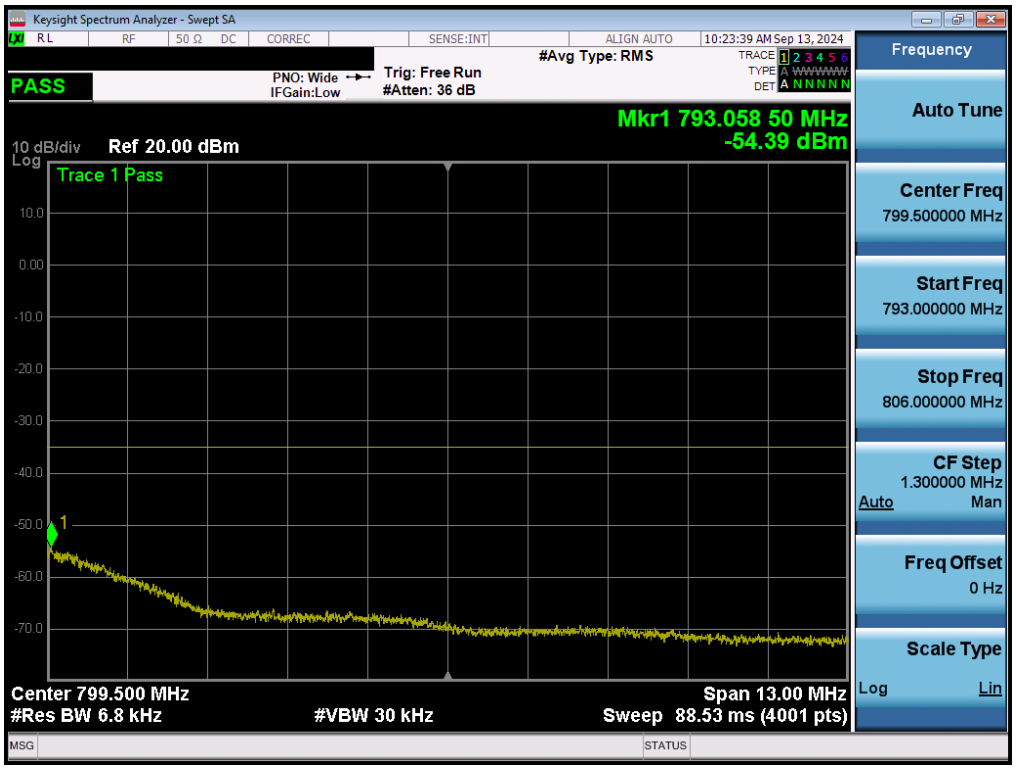


Plot 7-153. Lower Band Edge Plot (LTE Band 13 - 5MHz QPSK – Full RB - ANT2)



Plot 7-154. Lower Emission Mask Plot (LTE Band 13 - 5MHz QPSK – Full RB - ANT2)

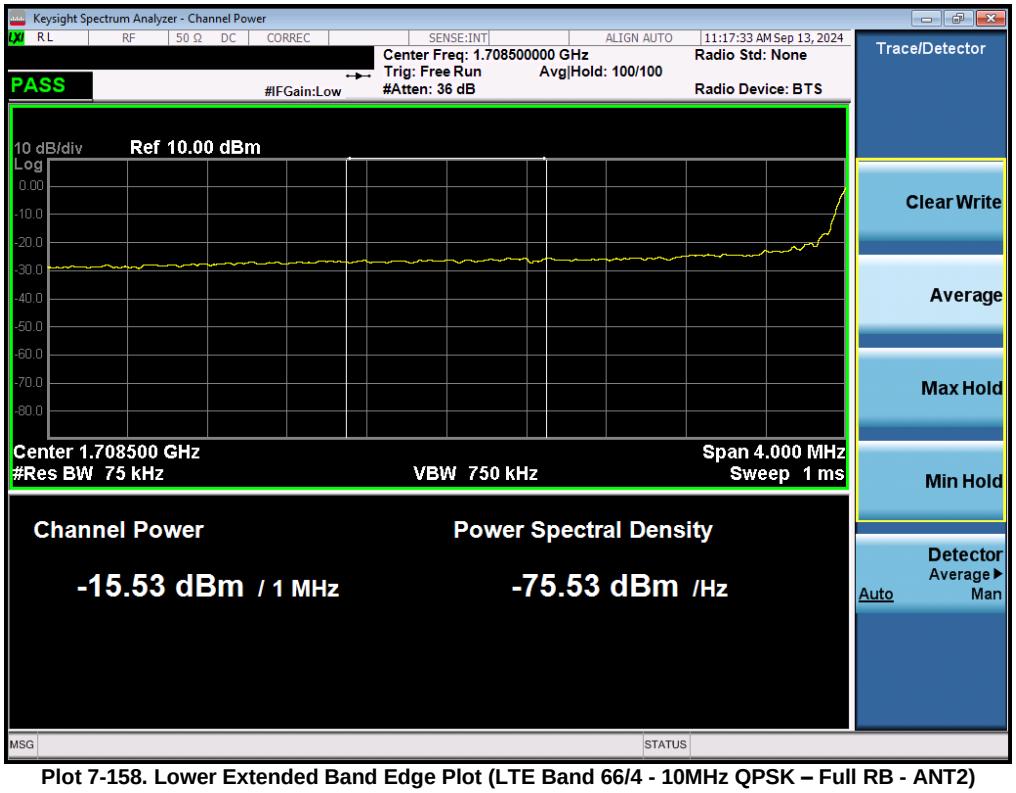
Plot 7-155. Upper Band Edge Plot (LTE Band 13 - 5MHz QPSK – Full RB - ANT2)



Plot 7-156. Upper Emission Mask Plot (LTE Band 13 - 5MHz QPSK – Full RB - ANT2)

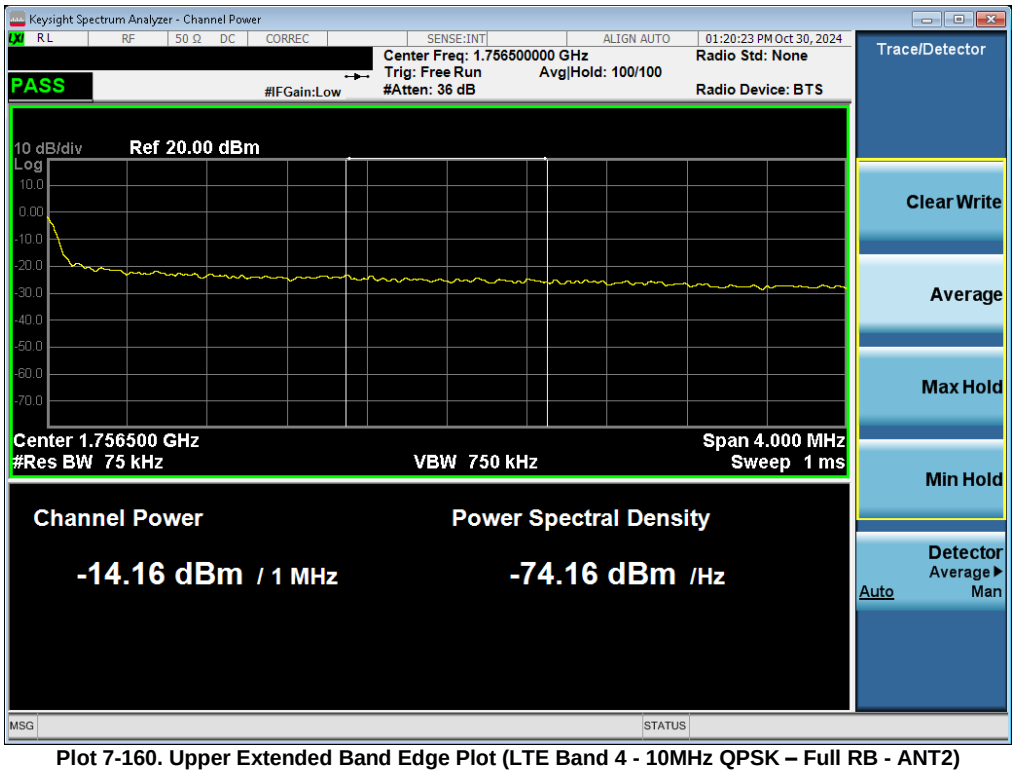
LTE Band 66/4 – ANT2

Plot 7-157. Lower Band Edge Plot (LTE Band 66/4 - 10MHz QPSK – Full RB - ANT2)



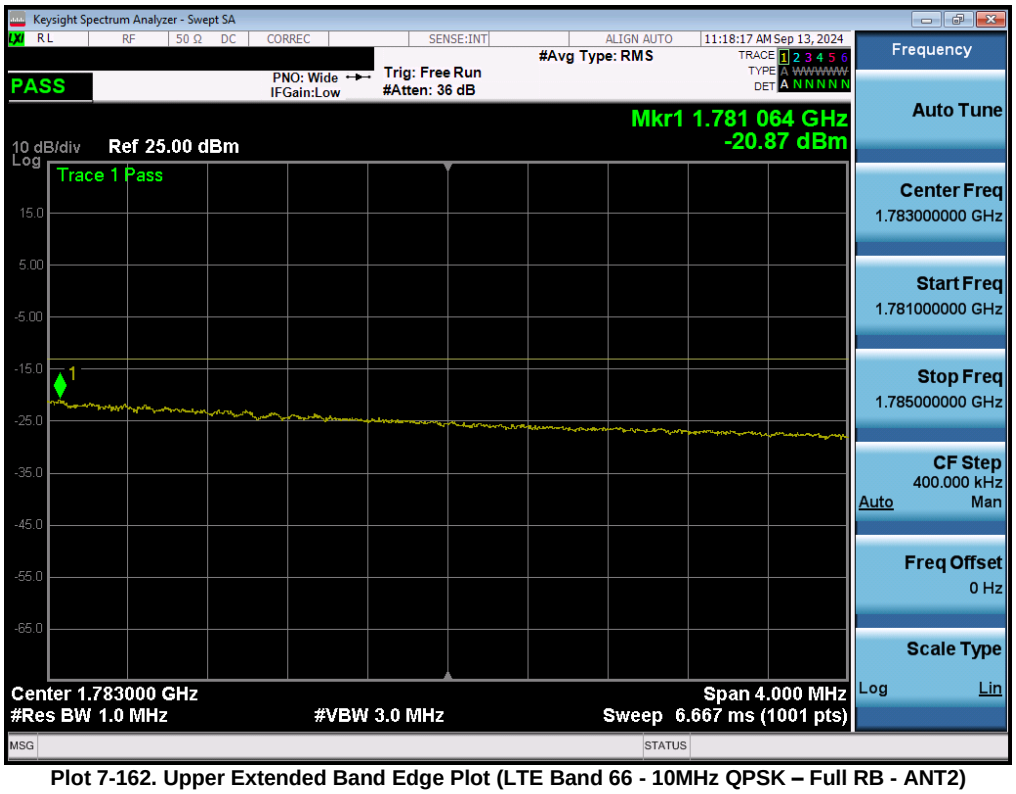
Plot 7-158. Lower Extended Band Edge Plot (LTE Band 66/4 - 10MHz QPSK – Full RB - ANT2)

Plot 7-159. Upper Band Edge Plot (LTE Band 4 - 10MHz QPSK – Full RB - ANT2)



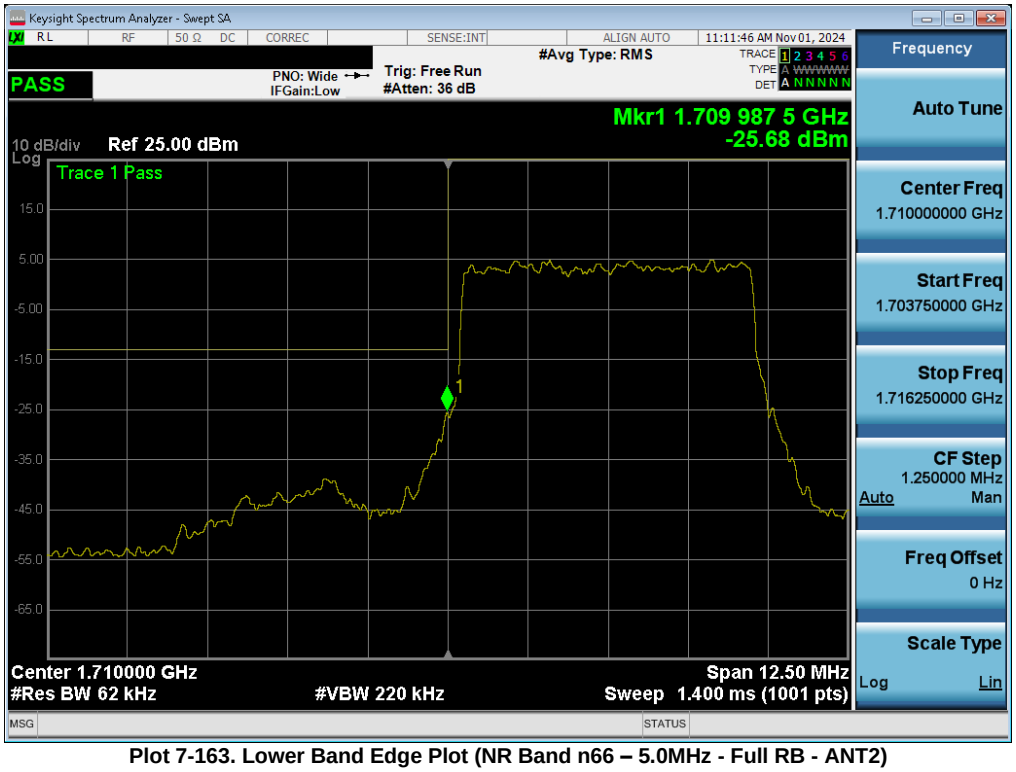
Plot 7-160. Upper Extended Band Edge Plot (LTE Band 4 - 10MHz QPSK – Full RB - ANT2)

Plot 7-161. Upper Band Edge Plot (LTE Band 66 - 10MHz QPSK – Full RB - ANT2)

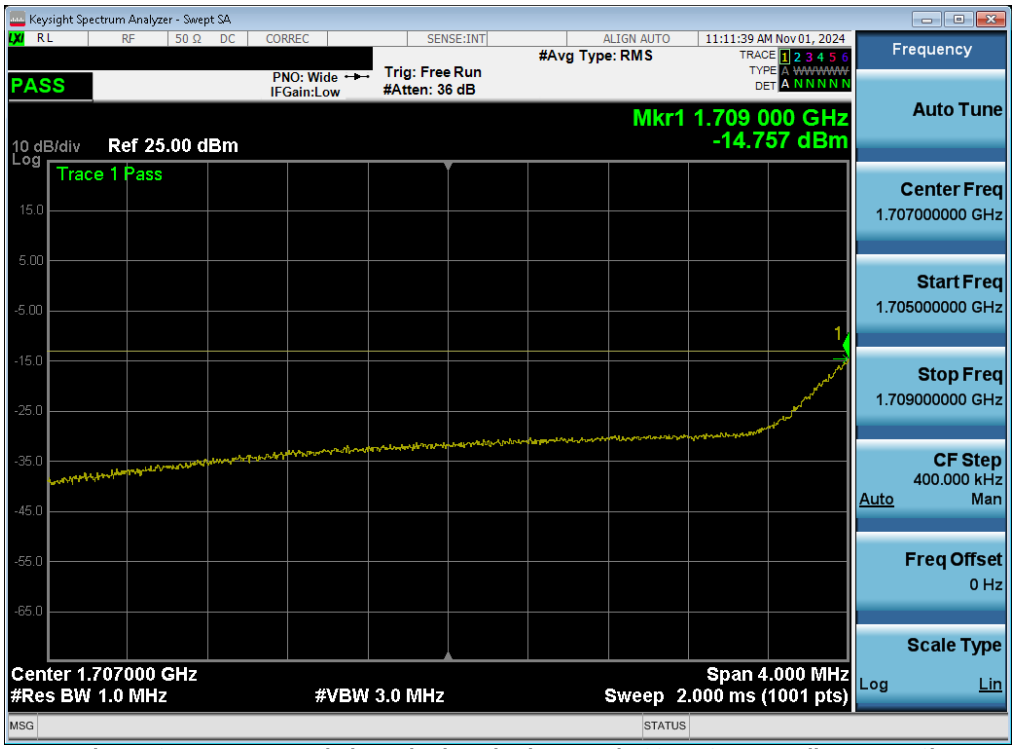


Plot 7-162. Upper Extended Band Edge Plot (LTE Band 66 - 10MHz QPSK – Full RB - ANT2)

NR Band n66 – ANT2



Plot 7-163. Lower Band Edge Plot (NR Band n66 – 5.0MHz - Full RB - ANT2)



Plot 7-164. Lower Extended Band Edge Plot (NR Band n66 – 5.0MHz - Full RB - ANT2)

Plot 7-165. Upper Band Edge Plot (NR Band n66 – 5.0MHz - Full RB - ANT2)

Plot 7-166. Upper Extended Band Edge Plot (NR Band n66 – 10.0MHz - Full RB - ANT2)

7.6 Peak-Average Ratio

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

ANSI C63.26-2015 – Section 5.2.3.4

Test Settings

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW ≥ OBW or specified reference bandwidth
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.

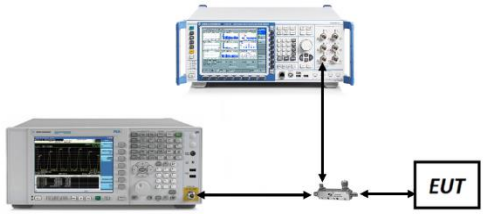


Figure 7-5. Test Instrument & Measurement Setup

Test Notes

For the QAM modulations, 256QAM was found to have the worst-case peak-to-average ratio so it is the only QAM measurement included in this section.

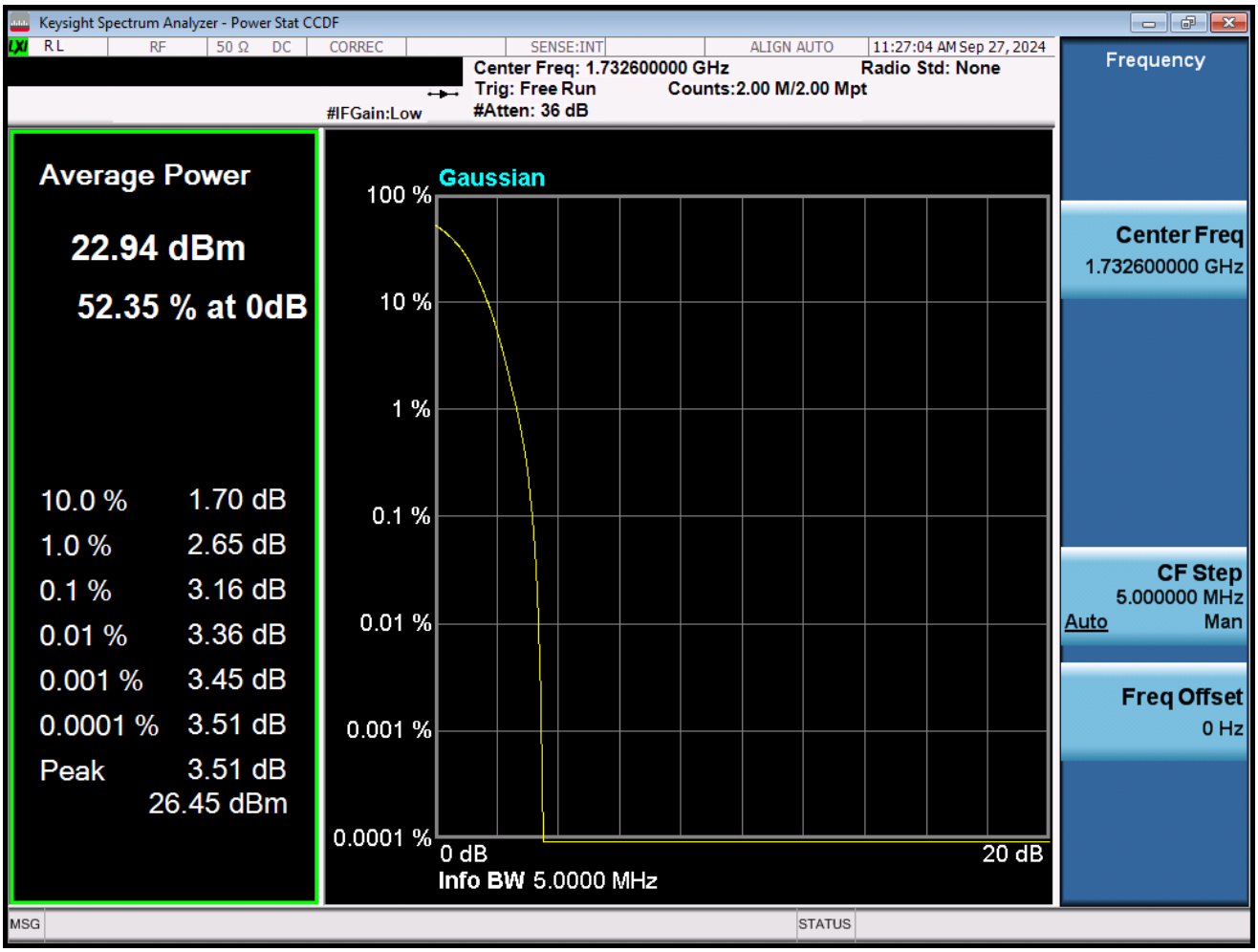
Mode	Bandwidth	Modulation	Average Power [dBm]	PAR at 0.1% [dB]	PAR Limit [dB]	Margin [dB]
WCDMA-AWS	5MHz	GMSK	22.94	3.16	13	-9.84
LTE-B66-4	20MHz	QPSK	22.48	4.62	13	-8.38
		256QAM	18.47	6.72	13	-6.28
	15MHz	QPSK	22.74	4.58	13	-8.42
		256QAM	18.83	6.66	13	-6.34
	10MHz	QPSK	22.86	4.67	13	-8.33
		256QAM	18.90	6.74	13	-6.26
	5MHz	QPSK	22.90	4.79	13	-8.21
		256QAM	18.96	6.70	13	-6.30
	3MHz	QPSK	22.86	4.76	13	-8.24
		256QAM	18.94	6.76	13	-6.24
	1.4MHz	QPSK	22.78	4.67	13	-8.33
		256QAM	18.87	6.77	13	-6.23

Table 7-23. Peak-Average Ratio Results – Ant1

Mode	Bandwidth	Modulation	Average Power [dBm]	PAR at 0.1% [dB]	PAR Limit [dB]	Margin [dB]
NR-n66	45MHz	π/2 BPSK	22.20	4.59	13	-8.41
		QPSK	19.58	7.78	13	-5.22
		256QAM	16.15	8.48	13	-4.52
	40MHz	π/2 BPSK	22.18	4.70	13	-8.30
		QPSK	19.61	7.51	13	-5.49
		256QAM	16.06	8.58	13	-4.42
	35MHz	π/2 BPSK	22.02	4.62	13	-8.38
		QPSK	19.54	7.70	13	-5.30
		256QAM	16.08	8.57	13	-4.43
	30MHz	π/2 BPSK	21.97	4.09	13	-8.91
		QPSK	19.47	7.84	13	-5.16
		256QAM	16.01	8.57	13	-4.43
	25MHz	π/2 BPSK	22.08	4.38	13	-8.62
		QPSK	19.69	7.80	13	-5.20
		256QAM	16.09	9.96	13	-3.04
	20MHz	π/2 BPSK	22.08	4.11	13	-8.89
		QPSK	19.57	8.01	13	-4.99
		256QAM	16.01	8.61	13	-4.39
	15MHz	π/2 BPSK	22.00	4.24	13	-8.76
		QPSK	19.65	7.69	13	-5.31
		256QAM	16.02	8.53	13	-4.47
	10MHz	π/2 BPSK	22.10	4.08	13	-8.92
		QPSK	19.60	7.69	13	-5.31
		256QAM	16.08	8.84	13	-4.16
	5MHz	π/2 BPSK	22.03	4.22	13	-8.78
		QPSK	19.64	8.06	13	-4.94
		256QAM	16.05	8.55	13	-4.45

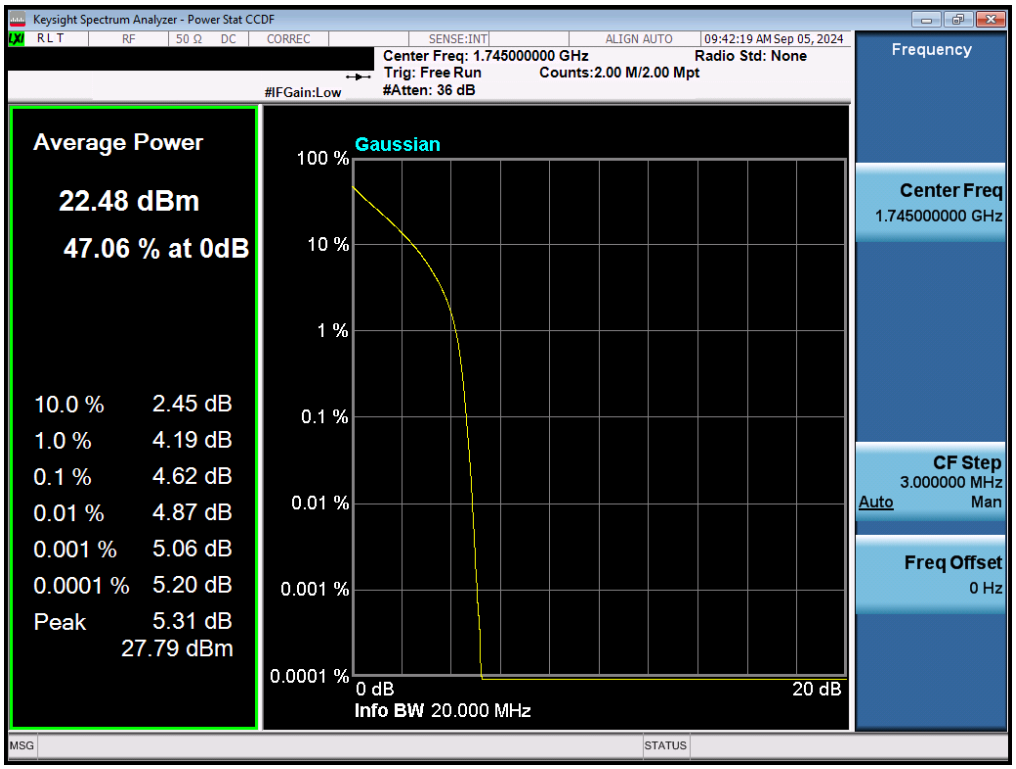
Table 7-24. Peak-Average Ratio Results – Ant1

WCDMA AWS – ANT1

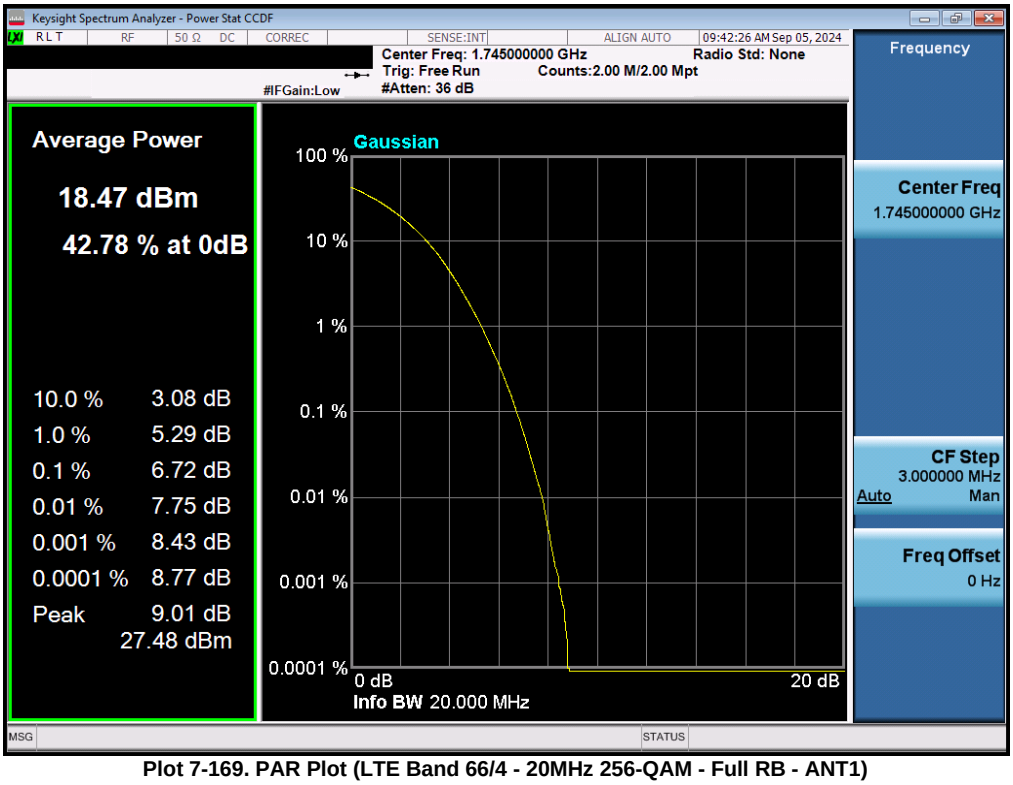


Plot 7-167. PAR Plot (WCDMA, Ch. 1413 – ANT1)

LTE Band 66/4 – ANT1

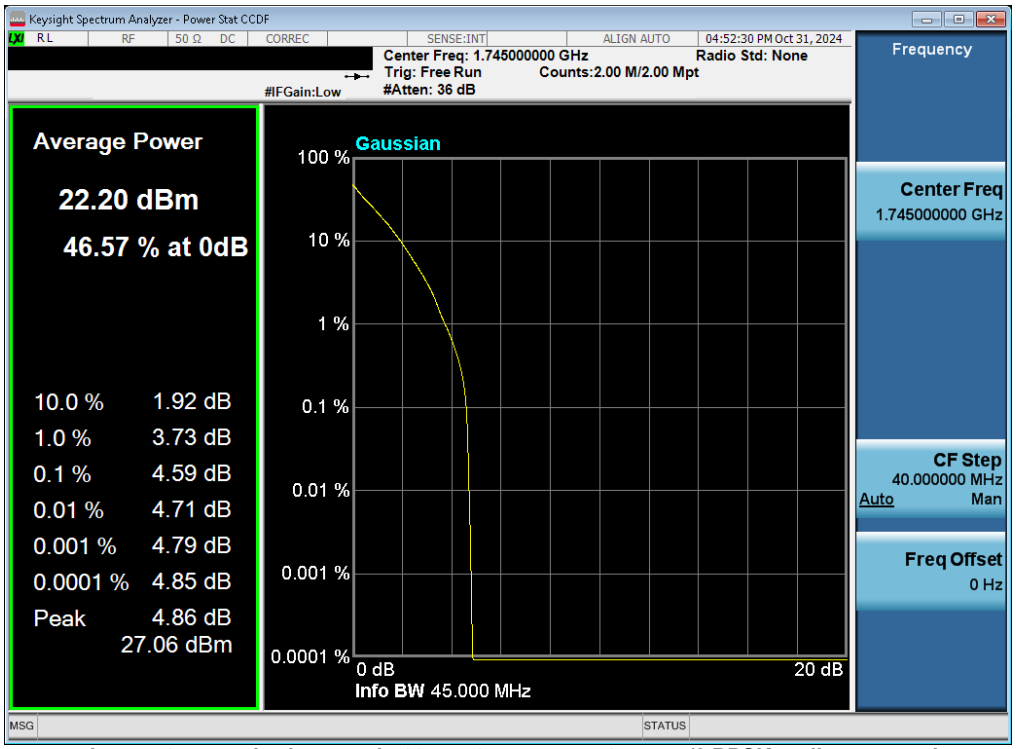


Plot 7-168. PAR Plot (LTE Band 66/4 - 20MHz QPSK - Full RB - ANT1)

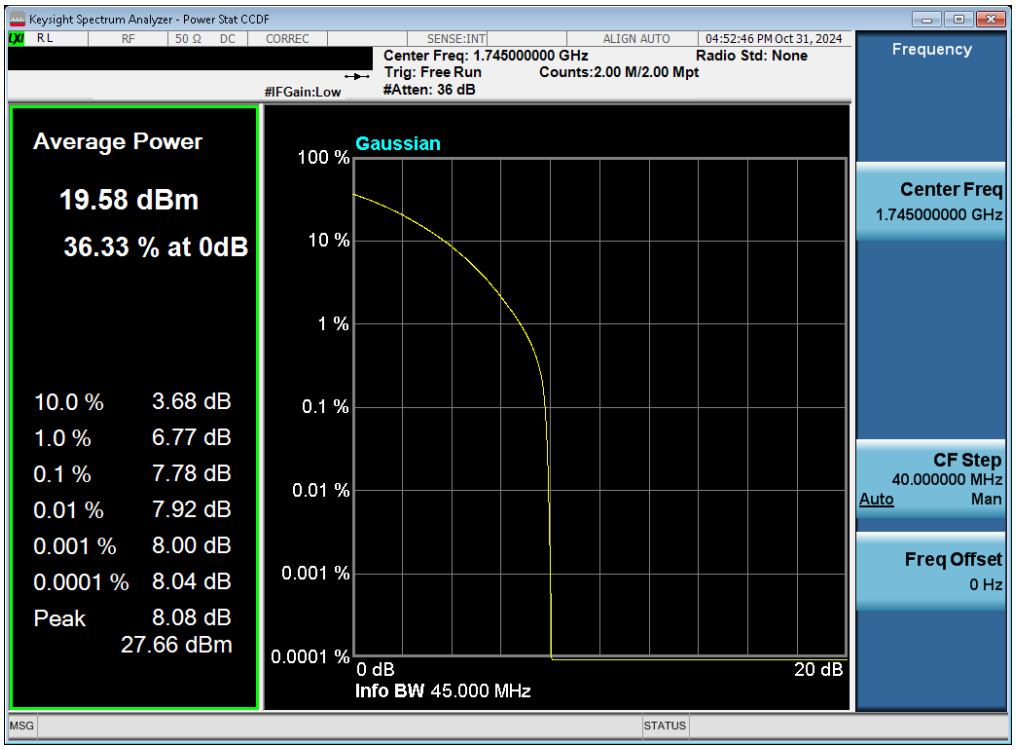


Plot 7-169. PAR Plot (LTE Band 66/4 - 20MHz 256-QAM - Full RB - ANT1)

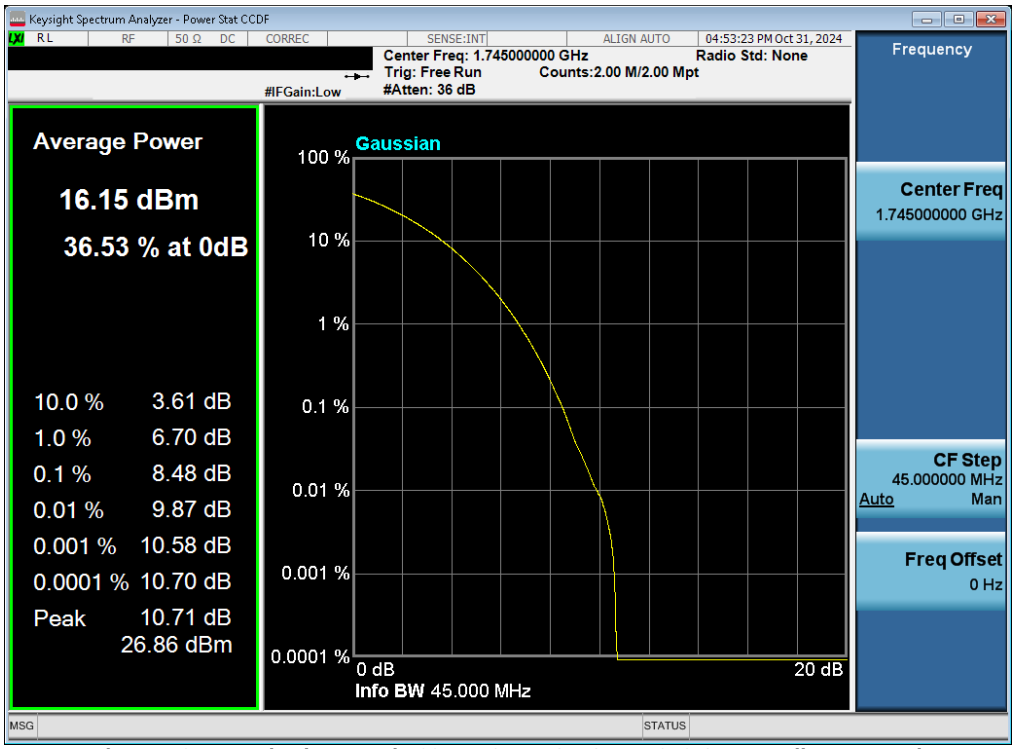
NR Band n66 – ANT1



Plot 7-170. PAR Plot (NR Band n66 - 45.0MHz DFT-s-OFDM π/2 BPSK- Full RB - ANT1)



Plot 7-171. PAR Plot (NR Band n66 - 45.0MHz CP-OFDM QPSK - Full RB - ANT1)

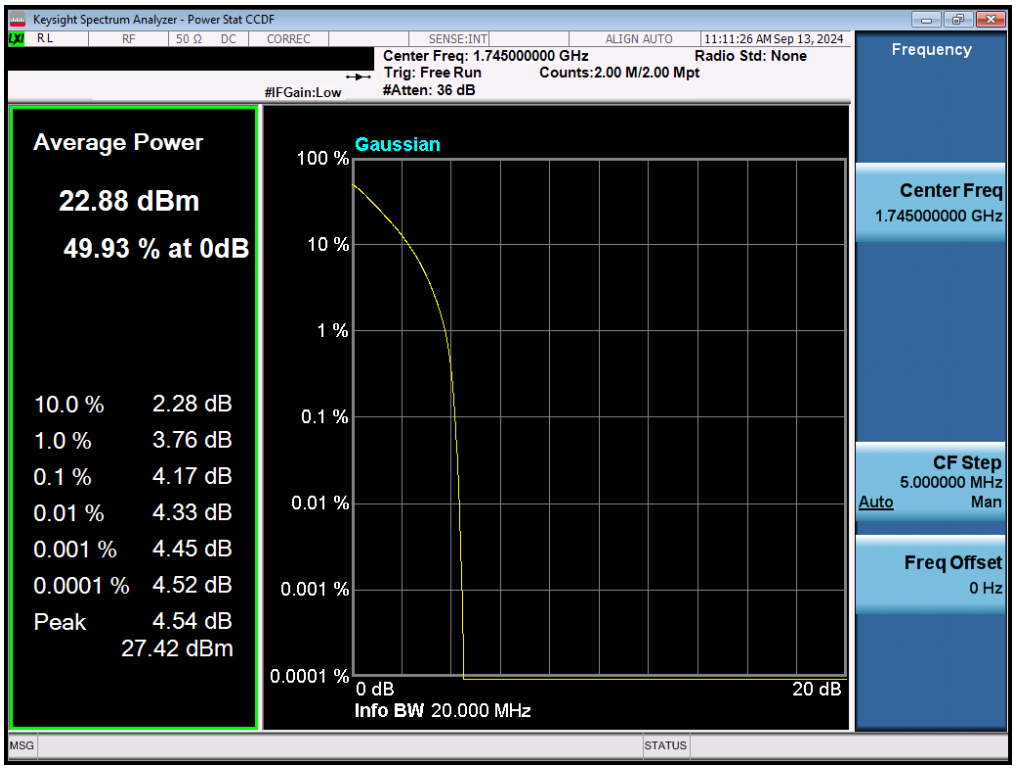


Plot 7-172. PAR Plot (NR Band n66 - 45.0MHz CP-OFDM 256-QAM - Full RB - ANT1)

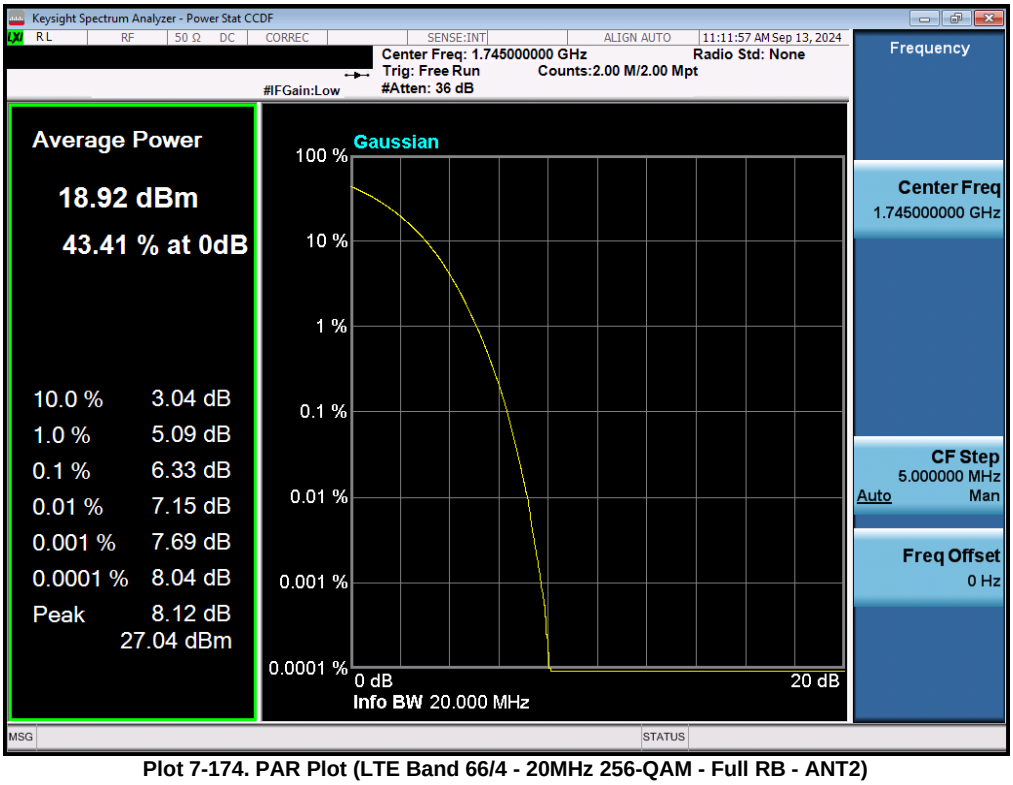
Mode	Bandwidth	Modulation	Average Power [dBm]	PAR at 0.1% [dB]	PAR Limit [dB]	Margin [dB]
LTE-B66-4	20MHz	QPSK	22.88	4.17	13	-8.83
		256QAM	18.92	6.33	13	-6.67
	15MHz	QPSK	22.90	4.14	13	-8.86
		256QAM	18.91	6.34	13	-6.66
	10MHz	QPSK	22.96	4.21	13	-8.79
		256QAM	18.95	6.35	13	-6.65
	5MHz	QPSK	23.01	4.13	13	-8.87
		256QAM	19.01	6.33	13	-6.67
	3MHz	QPSK	23.04	4.04	13	-8.96
		256QAM	18.74	7.50	13	-5.50
	1.4MHz	QPSK	22.98	3.96	13	-9.04
		256QAM	18.95	6.35	13	-6.65
NR-n66	45MHz	π/2 BPSK	21.81	4.37	13	-8.63
		QPSK	19.29	8.01	13	-4.99
		256QAM	15.96	8.40	13	-4.61
	40MHz	π/2 BPSK	21.74	4.27	13	-8.73
		QPSK	19.28	7.71	13	-5.29
		256QAM	15.93	8.49	13	-4.51
	35MHz	π/2 BPSK	21.69	4.25	13	-8.75
		QPSK	19.20	7.77	13	-5.23
		256QAM	15.93	8.45	13	-4.55
	30MHz	π/2 BPSK	21.71	4.20	13	-8.80
		QPSK	19.13	7.82	13	-5.18
		256QAM	15.93	8.47	13	-4.53
	25MHz	π/2 BPSK	21.76	4.46	13	-8.54
		QPSK	19.36	7.77	13	-5.23
		256QAM	16.00	8.75	13	-4.25
	20MHz	π/2 BPSK	21.84	21.84	13	8.84
		QPSK	19.32	7.75	13	-5.25
		256QAM	16.03	8.52	13	-4.48
	15MHz	π/2 BPSK	21.77	4.24	13	-8.76
		QPSK	19.29	7.67	13	-5.33
		256QAM	15.90	8.43	13	-4.57
	10MHz	π/2 BPSK	21.85	4.06	13	-8.94
		QPSK	19.41	7.53	13	-5.47
		256QAM	15.99	8.72	13	-4.28
	5MHz	π/2 BPSK	21.84	4.20	13	-8.80
		QPSK	19.42	7.76	13	-5.24
		256QAM	16.06	8.47	13	-4.53

Table 7-25. Peak-Average Ratio Results – Ant2

LTE Band 66/4 – ANT2

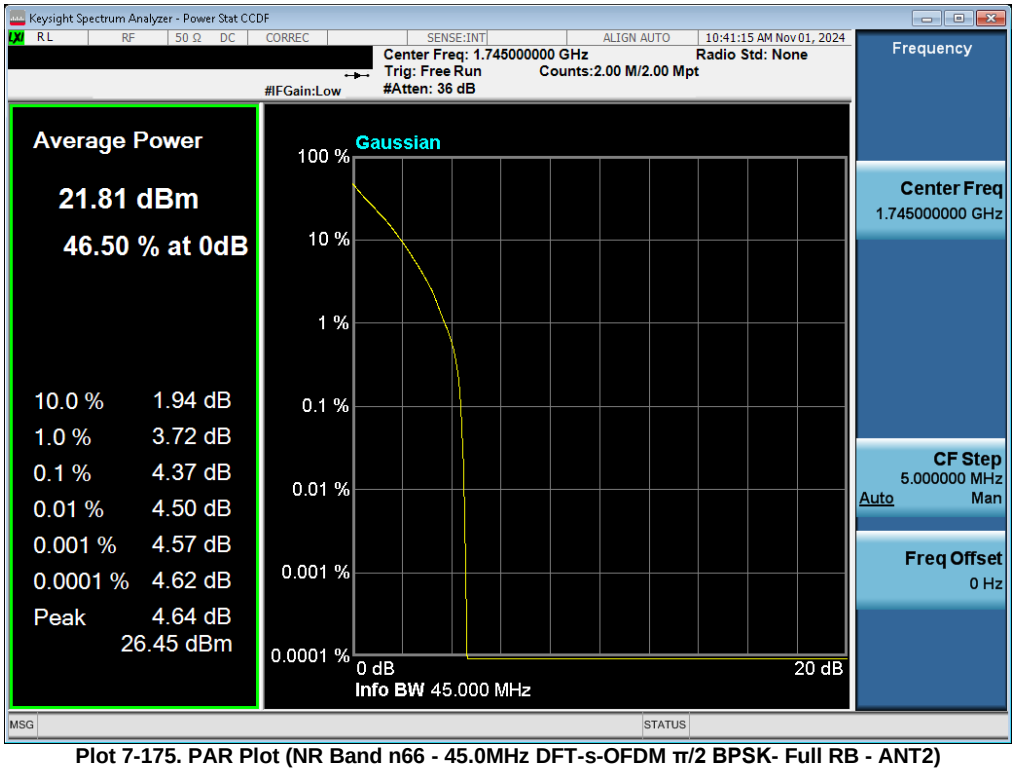


Plot 7-173. PAR Plot (LTE Band 66/4 - 20MHz QPSK - Full RB - ANT2)

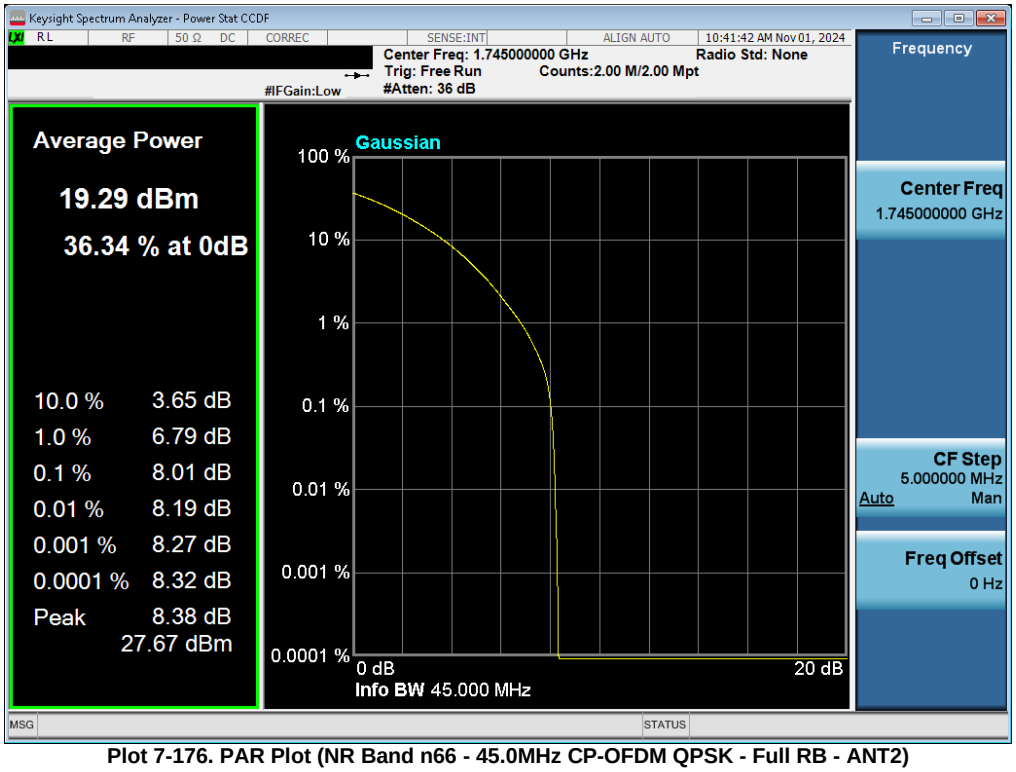


Plot 7-174. PAR Plot (LTE Band 66/4 - 20MHz 256-QAM - Full RB - ANT2)

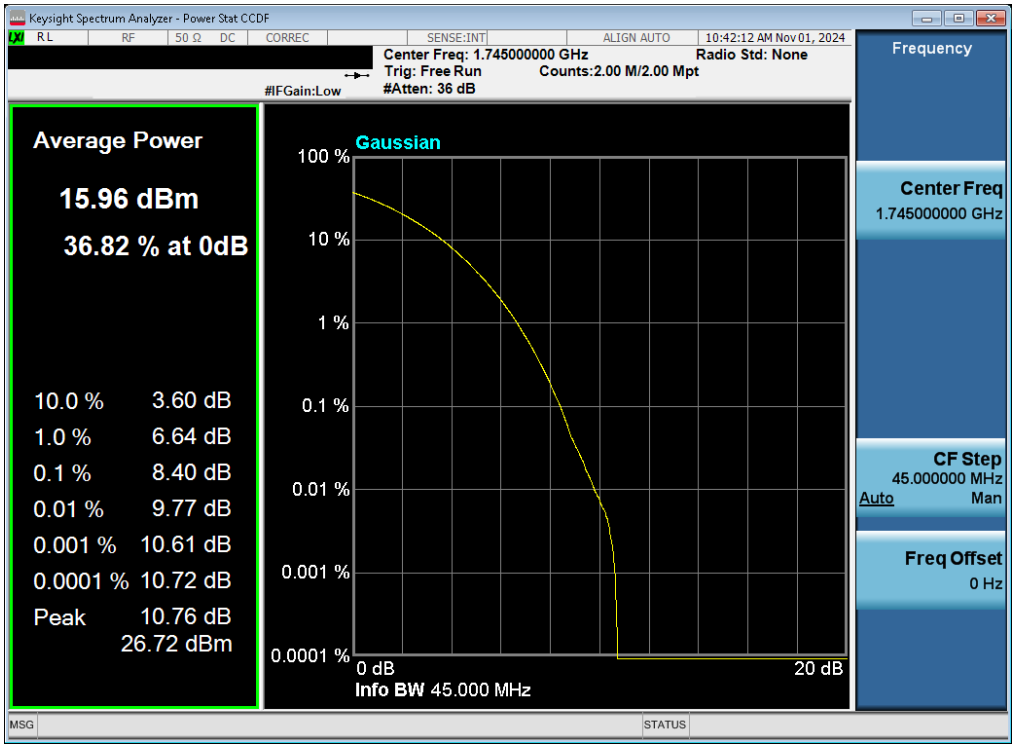
NR Band n66 – ANT2



Plot 7-175. PAR Plot (NR Band n66 - 45.0MHz DFT-s-OFDM π/2 BPSK- Full RB - ANT2)



Plot 7-176. PAR Plot (NR Band n66 - 45.0MHz CP-OFDM QPSK - Full RB - ANT2)



Plot 7-177. PAR Plot (NR Band n66 - 45.0MHz CP-OFDM 256-QAM - Full RB - ANT2)

7.7 Radiated Power (ERP/EIRP)

Test Overview

Effective Radiated Power (ERP) and Equivalent Isotropic Radiated Power (EIRP) measurements are performed using the substitution method described in ANSI C63.26-2015 with the EUT transmitting into an integral antenna. Measurements are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS average measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

Test Procedures Used

ANSI C63.26-2015 – Section 5.2.4.4

Test Settings

1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
2. RBW = 1 – 5% of the expected OBW, not to exceed 1MHz
3. VBW ≥ 3 x RBW
4. Span = 1.5 times the OBW
5. No. of sweep points ≥ 2 x span / RBW
6. Detector = RMS
7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".
8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.
9. Trace mode = trace averaging (RMS) over 100 sweeps
10. The trace was allowed to stabilize

Test Setup

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

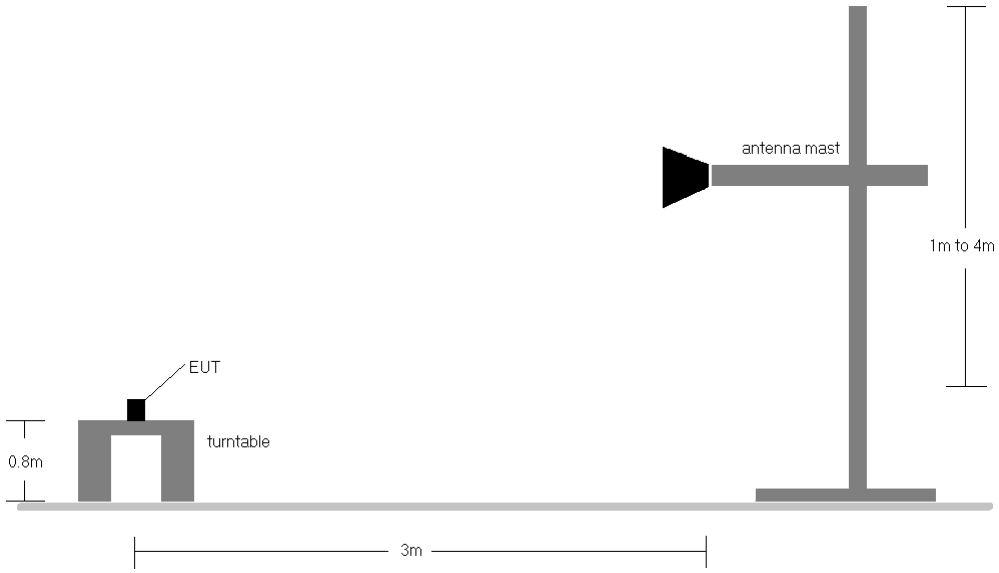


Figure 7-6. Radiated Test Setup <1GHz

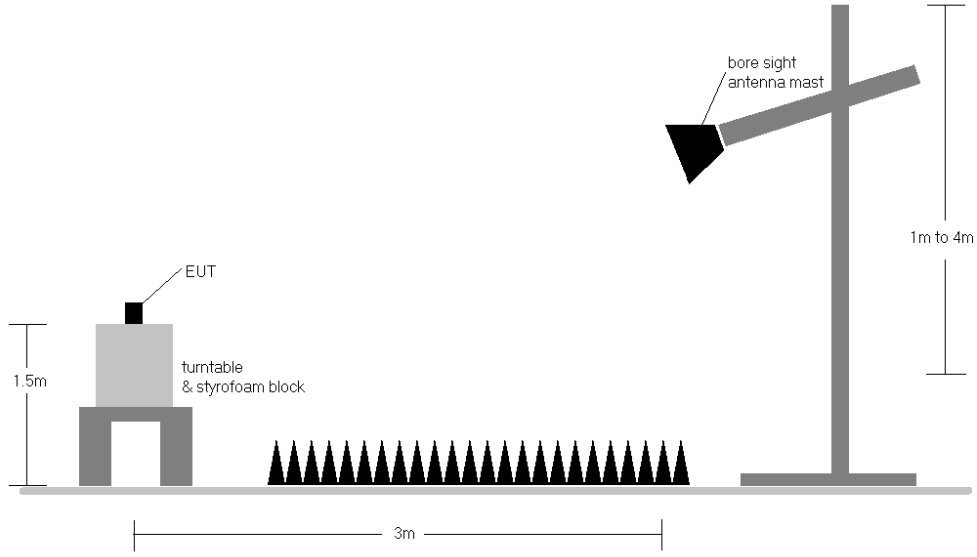


Figure 7-7. Radiated Test Setup >1GHz

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) 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.

3) This unit was tested with its standard battery.

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.

Frequency [MHz]	Mode	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Substitute Level [dBm]	Ant. Gain [dBi]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
1712.40	WCDMA1700	V	157	325	20.12	2.88	23.00	0.200	30.00	-7.00
1732.60	WCDMA1700	V	149	332	20.02	2.92	22.94	0.197	30.00	-7.06
1752.60	WCDMA1700	V	142	323	20.38	2.96	**23.34**	**0.216**	30.00	-6.66
1752.60	WCDMA1700	H	137	354	18.37	2.83	21.20	0.132	30.00	-8.80
1752.60	WCDMA1700 (WCP)	V	290	127	8.52	2.96	11.48	0.014	30.00	-18.52

Table 7-26. EIRP Data (WCDMA AWS) – Ant1

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	EUT Pol.	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
10 MHz	QPSK	704.00	V	X	260	176	1.12	1 / 49	19.89	21.01	0.126	36.99	-15.98	18.86	0.077	34.77	-15.91
	QPSK	707.50	V	X	107	172	1.14	1 / 49	20.19	21.33	0.136	36.99	-15.65	19.18	0.083	34.77	-15.59
	QPSK	711.00	V	X	260	176	1.17	1 / 49	20.31	**21.48**	0.141	36.99	-15.51	**19.33**	0.086	34.77	-15.44
	16-QAM	711.00	V	X	260	176	1.17	1 / 49	19.54	20.71	0.118	36.99	-16.28	18.56	0.072	34.77	-16.21
5 MHz	QPSK	701.50	V	X	260	176	1.10	1 / 12	20.15	21.25	0.133	36.99	-15.74	19.10	0.081	34.77	-15.67
	QPSK	707.50	V	X	107	172	1.14	1 / 0	20.43	**21.57**	0.144	36.99	-15.42	**19.42**	0.088	34.77	-15.35
	QPSK	713.50	V	X	260	176	1.19	1 / 24	20.26	21.45	0.140	36.99	-15.54	19.30	0.085	34.77	-15.47
	16-QAM	713.50	V	X	260	176	1.19	1 / 24	19.55	20.74	0.119	36.99	-16.25	18.59	0.072	34.77	-16.18
3 MHz	QPSK	700.50	V	X	260	176	1.09	1 / 7	20.06	21.15	0.130	36.99	-15.84	19.00	0.079	34.77	-15.77
	QPSK	707.50	V	X	107	172	1.14	1 / 7	20.23	**21.37**	0.137	36.99	-15.62	**19.22**	0.084	34.77	-15.55
	QPSK	714.50	V	X	260	176	1.20	1 / 7	20.01	21.21	0.132	36.99	-15.78	19.06	0.081	34.77	-15.71
	16-QAM	714.50	V	X	260	176	1.20	1 / 7	19.63	20.83	0.121	36.99	-16.16	18.68	0.074	34.77	-16.09
1.4 MHz	QPSK	699.70	V	X	260	176	1.08	1 / 5	19.90	20.98	0.125	36.99	-16.01	18.83	0.076	34.77	-15.94
	QPSK	707.50	V	X	107	172	1.14	1 / 5	20.25	21.40	0.138	36.99	-15.59	19.25	0.084	34.77	-15.52
	QPSK	715.30	V	X	260	176	1.21	1 / 5	20.20	**21.41**	0.138	36.99	-15.58	**19.26**	0.084	34.77	-15.51
	16-QAM	715.30	V	X	260	176	1.21	1 / 5	19.47	20.68	0.117	36.99	-16.31	18.53	0.071	34.77	-16.24
10 MHz	WCP	711.00	V	WCP	281	266	1.12	1 / 49	16.25	17.37	0.055	36.99	-19.62	15.22	0.033	34.77	-19.55

Table 7-27. ERP Data (LTE Band 12/17) – Ant1

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
10 MHz	QPSK	782.00	V	155	127	0.89	1 / 0	19.04	**17.78**	0.060	34.77	-16.99
	16-QAM	782.00	V	155	127	0.89	1 / 0	18.39	17.13	0.052	34.77	-17.64
5 MHz	QPSK	779.50	V	155	127	0.94	1 / 12	18.97	17.75	0.060	34.77	-17.02
	QPSK	782.00	V	155	127	0.89	1 / 24	19.10	**17.84**	0.061	34.77	-16.93
	QPSK	784.50	V	155	127	0.85	1 / 12	19.06	17.75	0.060	34.77	-17.02
	16-QAM	779.50	V	155	127	0.94	1 / 12	18.38	17.16	0.052	34.77	-17.61
10 MHz	Opposite Pol.	782.00	H	247	64	1.09	1 / 0	18.74	17.68	0.059	34.77	-17.10
	WCP	782.00	V	228	20	0.89	1 / 0	15.18	13.92	0.025	34.77	-20.85

Table 7-28. ERP Data (LTE Band 13) – Ant1

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	QPSK	1720.00	V	155	324	2.90	1 / 50	19.71	**22.61**	0.182	30.00	-7.39
	QPSK	1745.00	V	142	333	2.94	1 / 0	19.31	22.25	0.168	30.00	-7.75
	QPSK	1770.00	V	148	328	3.02	1 / 50	19.02	22.04	0.160	30.00	-7.96
	16-QAM	1720.00	V	155	324	2.90	1 / 50	18.88	21.78	0.151	30.00	-8.22
15 MHz	QPSK	1717.50	V	155	324	2.89	1 / 37	20.19	**23.08**	0.203	30.00	-6.92
	QPSK	1745.00	V	142	333	2.94	1 / 37	19.92	22.86	0.193	30.00	-7.14
	QPSK	1772.50	V	148	328	3.03	1 / 0	18.88	21.91	0.155	30.00	-8.09
	16-QAM	1717.50	V	155	324	2.89	1 / 37	19.45	22.34	0.171	30.00	-7.66
10 MHz	QPSK	1715.00	V	155	324	2.89	1 / 25	20.16	**23.05**	0.202	30.00	-6.95
	QPSK	1745.00	V	142	333	2.94	1 / 49	19.83	22.77	0.189	30.00	-7.23
	QPSK	1775.00	V	148	328	3.04	1 / 0	18.80	21.84	0.153	30.00	-8.16
	16-QAM	1715.00	V	155	324	2.89	1 / 0	19.22	22.11	0.163	30.00	-7.89
5 MHz	QPSK	1712.50	V	155	324	2.88	1 / 24	20.17	**23.05**	0.202	30.00	-6.95
	QPSK	1745.00	V	142	333	2.94	1 / 12	19.79	22.74	0.188	30.00	-7.26
	QPSK	1777.50	V	148	328	3.05	1 / 0	18.88	21.92	0.156	30.00	-8.08
	16-QAM	1712.50	V	155	324	2.88	1 / 0	19.27	22.15	0.164	30.00	-7.85
3 MHz	QPSK	1711.50	V	155	324	2.88	1 / 7	20.25	**23.13**	0.206	30.00	-6.87
	QPSK	1745.00	V	142	333	2.94	1 / 7	19.84	22.78	0.190	30.00	-7.22
	QPSK	1778.50	V	148	328	3.05	1 / 7	18.80	21.85	0.153	30.00	-8.15
	16-QAM	1711.50	V	155	324	2.88	1 / 0	19.25	22.13	0.163	30.00	-7.87
1.4 MHz	QPSK	1710.70	V	155	324	2.88	1 / 0	20.16	**23.04**	0.201	30.00	-6.96
	QPSK	1745.00	V	142	333	2.94	1 / 3	19.72	22.66	0.184	30.00	-7.34
	QPSK	1779.30	V	148	328	3.05	1 / 0	18.68	21.73	0.149	30.00	-8.27
	16-QAM	1710.70	V	155	324	2.88	1 / 0	19.10	21.98	0.158	30.00	-8.02
20 MHz	Opposite Pol.	1720.00	H	152	356	2.88	1 / 50	19.07	21.95	0.157	30.00	-8.05
	WCP	1720.00	V	146	203	2.90	1 / 0	5.17	8.07	0.006	30.00	-21.93

Table 7-29. EIRP Data (LTE Band 66/4) – Ant1

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	EUT Pol.	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
45 MHz	π/2 BPSK	1732.50	V	H	143	211	2.92	1 / 121	18.92	21.84	0.153	30.00	-8.16
	π/2 BPSK	1745.00	V	H	143	211	2.94	1 / 121	19.03	**21.97**	0.158	30.00	-8.03
	π/2 BPSK	1757.50	V	H	140	180	2.98	1 / 1	18.24	21.22	0.132	30.00	-8.78
	QPSK	1732.50	V	H	143	211	2.92	1 / 121	18.88	21.80	0.151	30.00	-8.20
	QPSK	1745.00	V	H	143	211	2.94	1 / 121	18.99	21.93	0.156	30.00	-8.07
	QPSK	1757.50	V	H	140	180	2.98	1 / 1	18.17	21.15	0.130	30.00	-8.85
	16-QAM	1745.00	V	H	143	211	2.94	1 / 121	18.08	21.02	0.127	30.00	-8.98
40 MHz	π/2 BPSK	1730.00	V	H	143	211	2.92	1 / 214	18.75	21.67	0.147	30.00	-8.33
	π/2 BPSK	1745.00	V	H	143	211	2.94	1 / 214	18.85	21.79	0.151	30.00	-8.21
	π/2 BPSK	1760.00	V	H	140	180	2.99	1 / 214	18.15	21.14	0.130	30.00	-8.86
	QPSK	1730.00	V	H	143	211	2.92	1 / 214	19.01	**21.92**	0.156	30.00	-8.08
	QPSK	1745.00	V	H	143	211	2.94	1 / 214	18.94	21.88	0.154	30.00	-8.12
	QPSK	1760.00	V	H	140	180	2.99	1 / 214	18.08	21.06	0.128	30.00	-8.94
	16-QAM	1745.00	V	H	143	211	2.94	1 / 214	17.83	20.77	0.119	30.00	-9.23
35 MHz	π/2 BPSK	1727.50	V	H	143	211	2.91	1 / 1	18.53	21.44	0.139	30.00	-8.56
	π/2 BPSK	1745.00	V	H	143	211	2.94	1 / 186	18.77	**21.71**	0.148	30.00	-8.29
	π/2 BPSK	1762.50	V	H	140	180	2.99	1 / 186	18.12	21.11	0.129	30.00	-8.89
	QPSK	1727.50	V	H	143	211	2.91	1 / 1	18.71	21.62	0.145	30.00	-8.38
	QPSK	1745.00	V	H	143	211	2.94	1 / 186	18.63	21.57	0.144	30.00	-8.43
	QPSK	1762.50	V	H	140	180	2.99	1 / 186	18.21	21.20	0.132	30.00	-8.80
	16-QAM	1745.00	V	H	143	211	2.94	1 / 186	18.37	21.31	0.135	30.00	-8.69
30 MHz	π/2 BPSK	1725.00	V	H	143	211	2.91	1 / 1	18.82	21.73	0.149	30.00	-8.27
	π/2 BPSK	1745.00	V	H	143	211	2.94	1 / 158	18.95	21.89	0.155	30.00	-8.11
	π/2 BPSK	1765.00	V	H	140	180	3.00	1 / 158	18.14	21.15	0.130	30.00	-8.85
	QPSK	1725.00	V	H	143	211	2.91	1 / 1	18.95	21.86	0.153	30.00	-8.14
	QPSK	1745.00	V	H	143	211	2.94	1 / 158	19.00	**21.94**	0.156	30.00	-8.06
	QPSK	1765.00	V	H	140	180	3.00	1 / 158	18.20	21.20	0.132	30.00	-8.80
	16-QAM	1725.00	V	H	143	211	2.91	1 / 1	18.08	20.99	0.126	30.00	-9.01
25 MHz	π/2 BPSK	1722.5	V	H	143	211	2.90	1 / 1	18.83	21.73	0.149	30.00	-8.27
	π/2 BPSK	1745.0	V	H	143	211	2.94	1 / 66	18.92	21.87	0.154	30.00	-8.13
	π/2 BPSK	1767.5	V	H	140	180	3.01	1 / 1	18.04	21.05	0.127	30.00	-8.95
	QPSK	1722.5	V	H	143	211	2.90	1 / 1	19.03	**21.93**	0.156	30.00	-8.07
	QPSK	1745.0	V	H	143	211	2.94	1 / 66	18.82	21.76	0.150	30.00	-8.24
	QPSK	1767.5	V	H	140	180	3.01	1 / 1	18.13	21.14	0.130	30.00	-8.86
	16-QAM	1722.5	V	H	143	211	2.90	1 / 1	18.10	21.01	0.126	30.00	-8.99
20 MHz	π/2 BPSK	1720.00	V	H	143	211	2.90	1 / 1	18.77	21.67	0.147	30.00	-8.33
	π/2 BPSK	1745.00	V	H	143	211	2.94	1 / 104	18.86	21.80	0.152	30.00	-8.20
	π/2 BPSK	1770.00	V	H	140	180	3.02	1 / 104	18.10	21.12	0.129	30.00	-8.88
	QPSK	1720.00	V	H	143	211	2.90	1 / 1	18.76	21.66	0.147	30.00	-8.34
	QPSK	1745.00	V	H	143	211	2.94	1 / 104	18.89	**21.83**	0.152	30.00	-8.17
	QPSK	1770.00	V	H	140	180	3.02	1 / 104	18.02	21.04	0.127	30.00	-8.96
	16-QAM	1720.00	V	H	143	211	2.90	1 / 1	18.23	21.13	0.130	30.00	-8.87
15 MHz	π/2 BPSK	1717.50	V	H	143	211	2.89	1 / 77	18.79	21.69	0.147	30.00	-8.31
	π/2 BPSK	1745.00	V	H	143	211	2.94	1 / 1	18.92	21.86	0.153	30.00	-8.14
	π/2 BPSK	1772.50	V	H	140	180	3.03	1 / 39	18.08	21.11	0.129	30.00	-8.89
	QPSK	1717.50	V	H	143	211	2.89	1 / 77	18.95	21.85	0.153	30.00	-8.15
	QPSK	1745.00	V	H	143	211	2.94	1 / 1	18.92	**21.87**	0.154	30.00	-8.13
	QPSK	1772.50	V	H	140	180	3.03	1 / 39	17.93	20.96	0.125	30.00	-9.04
	16-QAM	1717.50	V	H	143	211	2.89	1 / 77	18.27	21.16	0.131	30.00	-8.84
10 MHz	π/2 BPSK	1715.00	V	H	143	211	2.89	1 / 26	18.72	21.61	0.145	30.00	-8.39
	π/2 BPSK	1745.00	V	H	143	211	2.94	1 / 26	18.80	**21.74**	0.149	30.00	-8.26
	π/2 BPSK	1775.00	V	H	140	180	3.04	1 / 50	17.90	20.94	0.124	30.00	-9.06
	QPSK	1715.00	V	H	143	211	2.89	1 / 26	18.73	21.62	0.145	30.00	-8.38
	QPSK	1745.00	V	H	143	211	2.94	1 / 26	18.71	21.65	0.146	30.00	-8.35
	QPSK	1775.00	V	H	140	180	3.04	1 / 50	17.98	21.02	0.126	30.00	-8.98
	16-QAM	1745.00	V	H	143	211	2.94	1 / 26	17.65	20.59	0.115	30.00	-9.41
5 MHz	π/2 BPSK	1712.50	V	H	143	211	2.88	1 / 23	18.85	**21.73**	0.149	30.00	-8.27
	π/2 BPSK	1745.00	V	H	143	211	2.94	1 / 1	18.68	21.63	0.145	30.00	-8.37
	π/2 BPSK	1777.50	V	H	140	180	3.05	1 / 12	18.03	21.08	0.128	30.00	-8.92
	QPSK	1745.00	V	H	143	211	2.94	1 / 1	18.72	21.66	0.147	30.00	-8.34
	16-QAM	1712.50	V	H	143	211	2.88	1 / 23	18.02	20.90	0.123	30.00	-9.10
45 MHz	QPSK (CP-OFDM)	1745.00	V	H	140	180	2.92	1 / 121	16.78	19.70	0.093	30.00	-10.30
	QPSK (WCP)	1745.00	V	WCP	143	211	2.92	1 / 121	18.76	21.68	0.147	30.00	-8.32

Table 7-30. EIRP Data (NR Band n66) – Ant1

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	EUT Pol.	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
10 MHz	QPSK	704.00	V	X	133	257	1.12	1 / 49	21.16	**22.28**	0.169	36.99	-14.71	**20.13**	0.103	34.77	-14.64
	QPSK	707.50	V	X	131	254	1.14	1 / 49	20.82	21.96	0.157	36.99	-15.02	19.81	0.096	34.77	-14.96
	QPSK	711.00	V	X	131	256	1.17	1 / 49	19.68	20.85	0.122	36.99	-16.14	18.70	0.074	34.77	-16.07
	16-QAM	704.00	V	X	133	257	1.12	1 / 49	20.04	21.16	0.131	36.99	-15.83	19.01	0.080	34.77	-15.76
	16-QAM	707.50	V	X	131	254	1.14	1 / 49	19.80	20.94	0.124	36.99	-16.04	18.79	0.076	34.77	-15.98
	16-QAM	711.00	V	X	131	256	1.17	1 / 49	18.86	20.03	0.101	36.99	-16.96	17.88	0.061	34.77	-16.89
	64-QAM	704.00	V	X	133	257	1.12	1 / 49	19.23	20.35	0.108	36.99	-16.64	18.20	0.066	34.77	-16.57
5 MHz	QPSK	701.50	V	X	133	257	1.10	1 / 12	21.32	**22.42**	0.175	36.99	-14.57	**20.27**	0.106	34.77	-14.50
	QPSK	707.50	V	X	131	254	1.14	1 / 0	20.72	21.86	0.154	36.99	-15.13	19.71	0.094	34.77	-15.06
	QPSK	713.50	V	X	131	256	1.19	1 / 24	19.87	21.06	0.128	36.99	-15.93	18.91	0.078	34.77	-15.86
	16-QAM	701.50	V	X	133	257	1.10	1 / 12	19.99	21.09	0.129	36.99	-15.90	18.94	0.078	34.77	-15.83
3 MHz	QPSK	700.50	V	X	133	257	1.09	1 / 7	21.19	**22.28**	0.169	36.99	-14.71	**20.13**	0.103	34.77	-14.65
	QPSK	707.50	V	X	131	254	1.14	1 / 7	20.73	21.87	0.154	36.99	-15.12	19.72	0.094	34.77	-15.05
	QPSK	714.50	V	X	131	256	1.20	1 / 7	19.75	20.95	0.124	36.99	-16.04	18.80	0.076	34.77	-15.97
	16-QAM	707.50	V	X	131	254	1.14	1 / 7	20.00	21.15	0.130	36.99	-15.84	19.00	0.079	34.77	-15.78
1.4 MHz	QPSK	699.70	V	X	133	257	1.08	1 / 0	21.21	**22.29**	0.169	36.99	-14.70	**20.14**	0.103	34.77	-14.63
	QPSK	707.50	V	X	131	254	1.14	1 / 5	20.66	21.81	0.152	36.99	-15.18	19.66	0.092	34.77	-15.11
	QPSK	715.30	V	X	131	256	1.21	1 / 0	19.65	20.86	0.122	36.99	-16.13	18.71	0.074	34.77	-16.06
	16-QAM	699.70	V	X	133	257	1.08	1 / 0	19.81	20.89	0.123	36.99	-16.10	18.74	0.075	34.77	-16.03
10 MHz	WCP	704.00	V	WCP	132	248	1.12	1 / 49	20.97	22.09	0.162	36.99	-14.90	19.94	0.099	34.77	-14.83

Table 7-31. ERP Data (LTE Band 12/17) – Ant2

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
10 MHz	QPSK	782.00	V	139	253	0.89	1 / 0	20.91	**19.65**	0.092	34.77	-15.12
	16-QAM	782.00	V	139	253	0.89	1 / 0	20.21	18.95	0.079	34.77	-15.82
5 MHz	QPSK	779.50	V	139	253	0.94	1 / 12	20.79	19.58	0.091	34.77	-15.19
	QPSK	782.00	V	139	253	0.89	1 / 12	20.93	**19.67**	0.093	34.77	-15.10
	QPSK	784.50	V	139	253	0.85	1 / 12	20.87	19.56	0.090	34.77	-15.21
	16-QAM	784.50	V	139	253	0.85	1 / 12	20.35	19.05	0.080	34.77	-15.72
10 MHz	Opposite Pol.	782.00	H	224	269	1.09	1 / 0	20.50	19.44	0.088	34.77	-15.34
	WCP	782.00	V	222	176	0.89	1 / 49	15.57	14.31	0.027	34.77	-20.46

Table 7-32. ERP Data (LTE Band 13) – Ant2

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
20 MHz	QPSK	1720.00	H	316	345	2.88	1 / 0	17.30	**20.18**	0.104	30.00	-9.82
	QPSK	1745.00	H	310	345	2.84	1 / 50	16.60	19.44	0.088	30.00	-10.56
	QPSK	1770.00	H	309	343	2.79	1 / 0	15.92	18.71	0.074	30.00	-11.29
	16-QAM	1720.00	H	316	345	2.88	1 / 0	16.70	19.58	0.091	30.00	-10.42
15 MHz	QPSK	1717.50	H	316	345	2.88	1 / 50	17.77	**20.65**	0.116	30.00	-9.35
	QPSK	1745.00	H	310	345	2.84	1 / 50	17.21	20.06	0.101	30.00	-9.94
	QPSK	1772.50	H	309	343	2.78	1 / 50	15.79	18.57	0.072	30.00	-11.43
	16-QAM	1717.50	H	316	345	2.88	1 / 50	17.26	20.14	0.103	30.00	-9.86
10 MHz	QPSK	1715.00	H	316	345	2.88	1 / 37	17.74	**20.62**	0.115	30.00	-9.38
	QPSK	1745.00	H	310	345	2.84	1 / 37	17.12	19.97	0.099	30.00	-10.03
	QPSK	1775.00	H	309	343	2.78	1 / 0	15.73	18.51	0.071	30.00	-11.49
	16-QAM	1715.00	H	316	345	2.88	1 / 37	17.02	19.91	0.098	30.00	-10.09
5 MHz	QPSK	1712.50	H	316	345	2.89	1 / 25	17.73	**20.62**	0.115	30.00	-9.38
	QPSK	1745.00	H	310	345	2.84	1 / 49	17.08	19.93	0.098	30.00	-10.07
	QPSK	1777.50	H	309	343	2.77	1 / 0	15.82	18.59	0.072	30.00	-11.41
	16-QAM	1712.50	H	316	345	2.89	1 / 0	17.06	19.95	0.099	30.00	-10.05
3 MHz	QPSK	1711.50	H	316	345	2.89	1 / 24	17.81	**20.70**	0.117	30.00	-9.30
	QPSK	1745.00	H	310	345	2.84	1 / 12	17.13	19.97	0.099	30.00	-10.03
	QPSK	1778.50	H	309	343	2.77	1 / 0	15.75	18.51	0.071	30.00	-11.49
	16-QAM	1711.50	H	316	345	2.89	1 / 0	17.04	19.93	0.098	30.00	-10.07
1.4 MHz	QPSK	1710.70	H	316	345	2.89	1 / 7	17.72	**20.61**	0.115	30.00	-9.39
	QPSK	1745.00	H	310	345	2.84	1 / 7	17.01	19.85	0.097	30.00	-10.15
	QPSK	1779.30	H	309	343	2.77	1 / 7	15.63	18.40	0.069	30.00	-11.60
	16-QAM	1710.70	H	316	345	2.89	1 / 0	16.89	19.78	0.095	30.00	-10.22
20 MHz	Opposite Pol.	1720.00	V	127	315	2.90	1 / 0	17.09	19.99	0.100	30.00	-10.01
	WCP	1720.00	H	146	303	2.88	1 / 0	17.82	20.70	0.117	30.00	-9.30

Table 7-33. EIRP Data (LTE Band 66/4) – Ant2

Bandwidth	Mod.	Frequency [MHz]	Ant. Pol. [H/V]	EUT Pol.	Antenna Height [cm]	Turntable Azimuth [degree]	Ant. Gain [dBi]	RB Size/Offset	Substitute Level [dBm]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]
45 MHz	π/2 BPSK	1732.50	V	X	115	247	2.92	1 / 121	20.10	23.02	0.200	30.00	-6.98
	π/2 BPSK	1745.00	V	X	115	247	2.94	1 / 1	20.29	23.23	0.211	30.00	-6.77
	π/2 BPSK	1757.50	V	X	115	247	2.98	1 / 1	19.76	22.74	0.188	30.00	-7.26
	QPSK	1732.50	V	X	115	247	2.92	1 / 121	20.05	22.97	0.198	30.00	-7.03
	QPSK	1745.00	V	X	115	247	2.94	1 / 1	20.33	**23.27**	0.212	30.00	-6.73
	QPSK	1757.50	V	X	115	247	2.98	1 / 1	19.55	22.53	0.179	30.00	-7.47
	16-QAM	1745.00	V	X	115	247	2.94	1 / 1	19.44	22.38	0.173	30.00	-7.62
40 MHz	π/2 BPSK	1730.00	V	X	115	247	2.92	1 / 1	19.93	22.85	0.193	30.00	-7.15
	π/2 BPSK	1745.00	V	X	115	247	2.94	1 / 1	20.19	**23.14**	0.206	30.00	-6.86
	π/2 BPSK	1760.00	V	X	115	247	2.99	1 / 1	19.49	22.47	0.177	30.00	-7.53
	QPSK	1730.00	V	X	115	247	2.92	1 / 1	20.03	22.95	0.197	30.00	-7.05
	QPSK	1745.00	V	X	115	247	2.94	1 / 1	20.10	23.04	0.202	30.00	-6.96
	QPSK	1760.00	V	X	115	247	2.99	1 / 1	19.31	22.30	0.170	30.00	-7.70
	16-QAM	1730.00	V	X	115	247	2.92	1 / 1	18.92	21.83	0.153	30.00	-8.17
35 MHz	π/2 BPSK	1727.50	V	X	115	247	2.91	1 / 94	20.25	23.16	0.207	30.00	-6.84
	π/2 BPSK	1745.00	V	X	115	247	2.94	1 / 94	20.21	23.15	0.206	30.00	-6.85
	π/2 BPSK	1762.50	V	X	115	247	2.99	1 / 94	19.48	22.48	0.177	30.00	-7.52
	QPSK	1727.50	V	X	115	247	2.91	1 / 94	19.96	22.88	0.194	30.00	-7.12
	QPSK	1745.00	V	X	115	247	2.94	1 / 94	20.30	**23.25**	0.211	30.00	-6.75
	QPSK	1762.50	V	X	115	247	2.99	1 / 94	19.50	22.49	0.178	30.00	-7.51
	16-QAM	1745.00	V	X	115	247	2.94	1 / 94	19.34	22.29	0.169	30.00	-7.71
30 MHz	π/2 BPSK	1725.00	V	X	115	247	2.91	1 / 1	20.10	**23.01**	0.200	30.00	-6.99
	π/2 BPSK	1745.00	V	X	115	247	2.94	1 / 158	20.06	23.00	0.199	30.00	-7.00
	π/2 BPSK	1765.00	V	X	115	247	3.00	1 / 158	19.60	22.60	0.182	30.00	-7.40
	QPSK	1725.00	V	X	115	247	2.91	1 / 1	20.09	23.00	0.200	30.00	-7.00
	QPSK	1745.00	V	X	115	247	2.94	1 / 158	20.02	22.96	0.198	30.00	-7.04
	QPSK	1765.00	V	X	115	247	3.00	1 / 158	19.40	22.40	0.174	30.00	-7.60
	16-QAM	1745.00	V	X	115	247	2.94	1 / 158	19.37	22.31	0.170	30.00	-7.69
25 MHz	π/2 BPSK	1722.5	V	X	115	247	2.90	1 / 66	20.21	23.12	0.205	30.00	-6.88
	π/2 BPSK	1745.0	V	X	115	247	2.94	1 / 131	20.14	23.08	0.203	30.00	-6.92
	π/2 BPSK	1767.5	V	X	115	247	3.01	1 / 66	19.44	22.45	0.176	30.00	-7.55
	QPSK	1722.5	V	X	115	247	2.90	1 / 66	19.98	22.88	0.194	30.00	-7.12
	QPSK	1745.0	V	X	115	247	2.94	1 / 131	20.24	**23.18**	0.208	30.00	-6.82
	QPSK	1767.5	V	X	115	247	3.01	1 / 66	19.38	22.39	0.174	30.00	-7.61
	16-QAM	1745.0	V	X	115	247	2.94	1 / 131	19.37	22.31	0.170	30.00	-7.69
20 MHz	π/2 BPSK	1720.00	V	X	115	247	2.90	1 / 104	20.07	22.97	0.198	30.00	-7.03
	π/2 BPSK	1745.00	V	X	115	247	2.94	1 / 53	20.14	**23.09**	0.203	30.00	-6.91
	π/2 BPSK	1770.00	V	X	115	247	3.02	1 / 53	19.39	22.41	0.174	30.00	-7.59
	QPSK	1720.00	V	X	115	247	2.90	1 / 104	19.99	22.89	0.194	30.00	-7.11
	QPSK	1745.00	V	X	115	247	2.94	1 / 53	20.07	23.01	0.200	30.00	-6.99
	QPSK	1770.00	V	X	115	247	3.02	1 / 53	19.38	22.40	0.174	30.00	-7.60
	16-QAM	1745.00	V	X	115	247	2.94	1 / 53	18.91	21.85	0.153	30.00	-8.15
15 MHz	π/2 BPSK	1717.50	V	X	115	247	2.89	1 / 1	20.09	22.98	0.199	30.00	-7.02
	π/2 BPSK	1745.00	V	X	115	247	2.94	1 / 1	20.16	23.10	0.204	30.00	-6.90
	π/2 BPSK	1772.50	V	X	115	247	3.03	1 / 1	19.46	22.49	0.177	30.00	-7.51
	QPSK	1717.50	V	X	115	247	2.89	1 / 1	20.28	**23.17**	0.208	30.00	-6.83
	QPSK	1745.00	V	X	115	247	2.94	1 / 1	20.20	23.15	0.206	30.00	-6.85
	QPSK	1772.50	V	X	115	247	3.03	1 / 1	19.30	22.33	0.171	30.00	-7.67
	16-QAM	1717.50	V	X	115	247	2.89	1 / 1	18.72	21.62	0.145	30.00	-8.38
10 MHz	π/2 BPSK	1715.00	V	X	115	247	2.89	1 / 50	20.05	22.94	0.197	30.00	-7.06
	π/2 BPSK	1745.00	V	X	115	247	2.94	1 / 1	20.11	**23.06**	0.202	30.00	-6.94
	π/2 BPSK	1775.00	V	X	115	247	3.04	1 / 26	19.43	22.46	0.176	30.00	-7.54
	QPSK	1715.00	V	X	115	247	2.89	1 / 50	19.90	22.79	0.190	30.00	-7.21
	QPSK	1745.00	V	X	115	247	2.94	1 / 1	20.06	23.00	0.200	30.00	-7.00
	QPSK	1775.00	V	X	115	247	3.04	1 / 26	19.20	22.24	0.167	30.00	-7.76
	16-QAM	1715.00	V	X	115	247	2.89	1 / 50	18.48	21.37	0.137	30.00	-8.63
5 MHz	π/2 BPSK	1712.50	V	X	115	247	2.88	1 / 12	20.17	23.06	0.202	30.00	-6.94
	π/2 BPSK	1745.00	V	X	115	247	2.94	1 / 23	20.21	**23.15**	0.207	30.00	-6.85
	π/2 BPSK	1777.50	V	X	115	247	3.05	1 / 12	19.58	22.62	0.183	30.00	-7.38
	QPSK	1712.50	V	X	115	247	2.88	1 / 12	19.84	22.72	0.187	30.00	-7.28
	QPSK	1745.00	V	X	115	247	2.94	1 / 23	20.18	23.12	0.205	30.00	-6.88
	QPSK	1777.50	V	X	115	247	3.05	1 / 12	19.47	22.52	0.179	30.00	-7.48
	16-QAM	1777.50	V	X	115	247	3.05	1 / 12	18.52	21.56	0.143	30.00	-8.44
45 MHz	QPSK (CP-OFDM)	1745.00	V	X	115	247	2.92	1 / 1	18.94	21.86	0.153	30.00	-8.14
	QPSK (WCP)	1745.00	V	WCP	146	243	2.92	1 / 121	16.46	19.38	0.087	30.00	-10.62

Table 7-34. EIRP Data (NR Band n66) – Ant2

7.8 Radiated Spurious Emissions Measurements

Test Overview

Radiated spurious emissions measurements are performed using the field strength conversion method described in ANSI C63.26-2015 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using hybrid (biconical/log) antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas. All measurements are performed as RMS measurements while the EUT is operating at maximum power, and at the appropriate frequencies.

Test Procedures Used

ANSI C63.26-2015 – Section 5.5.4

Test Settings

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

Test Setup

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

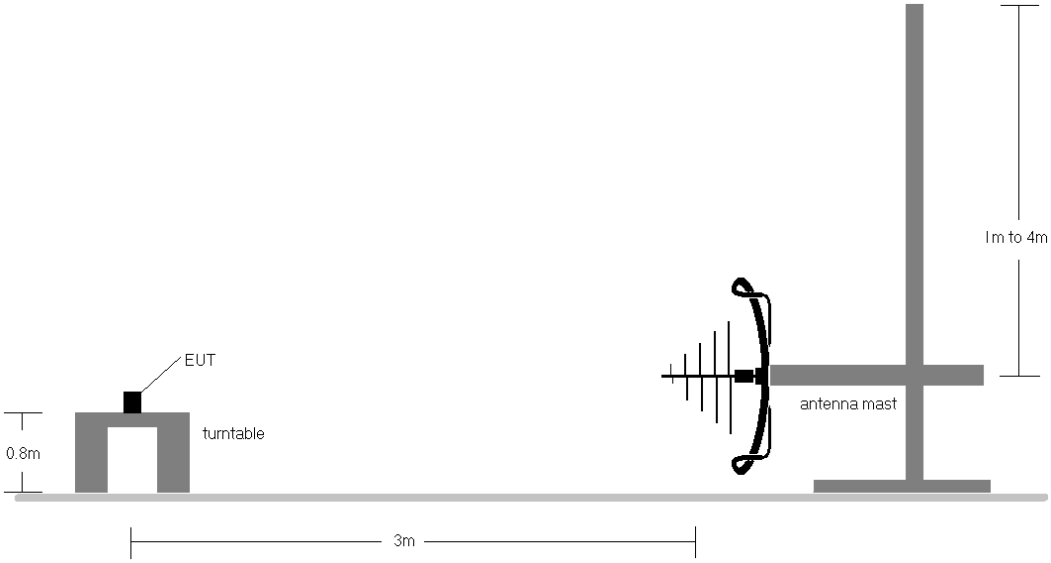


Figure 7-8. Test Instrument & Measurement Setup < 1GHz

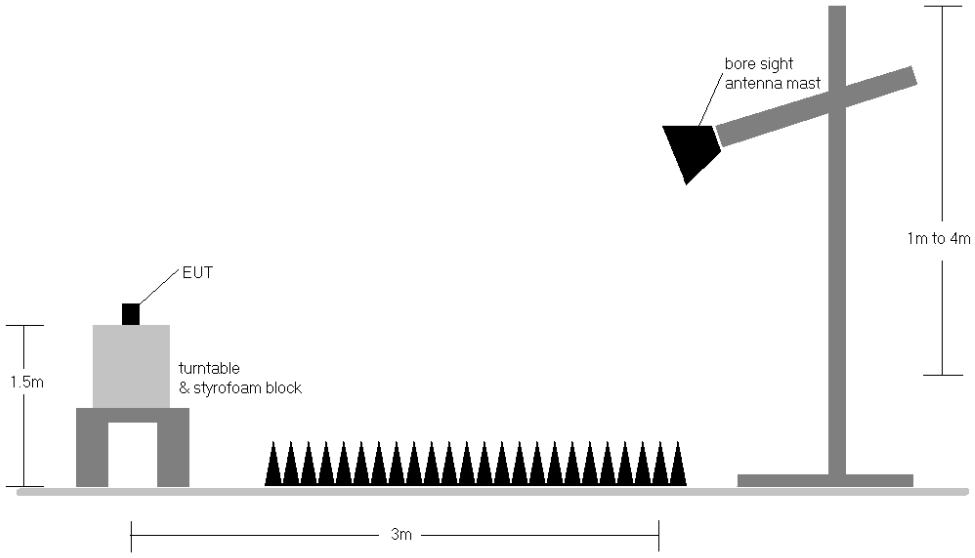


Figure 7-9. Test Instrument & Measurement Setup > 1GHz

Test Notes

1. Field strengths are calculated using the Measurement quantity conversions in ANSI C63.26-2015 Section 5.2.7:
   a) E(dBµV/m) = Measured amplitude level (dBm) + 107 + Cable Loss (dB) + Antenna Factor (dB/m)
   b) EIRP (dBm) = E(dBµV/m) + 20logD – 104.8; where D is the measurement distance in meters.

2. 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.

3. This unit was tested with its standard battery.

4. The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.

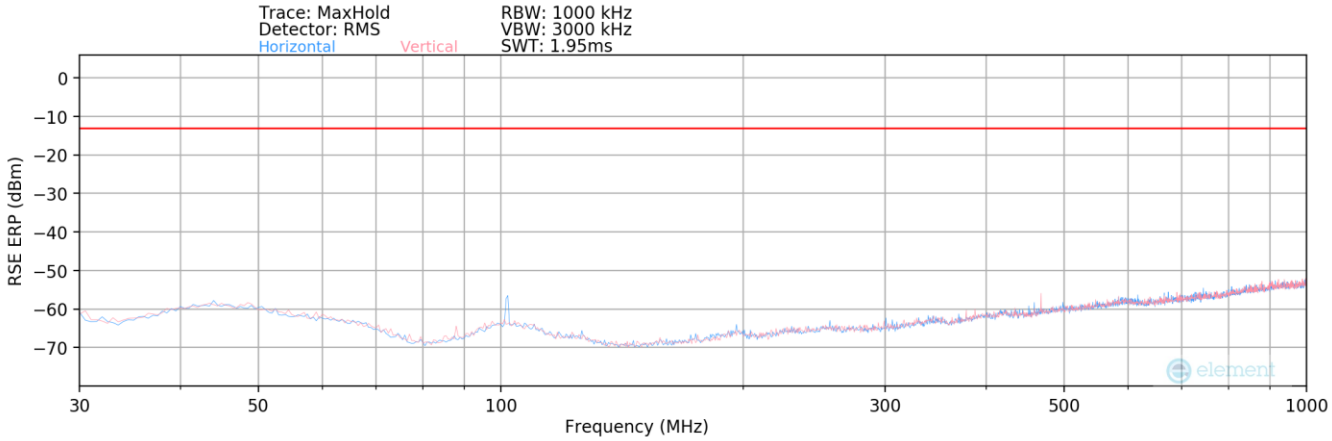
5. Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.

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

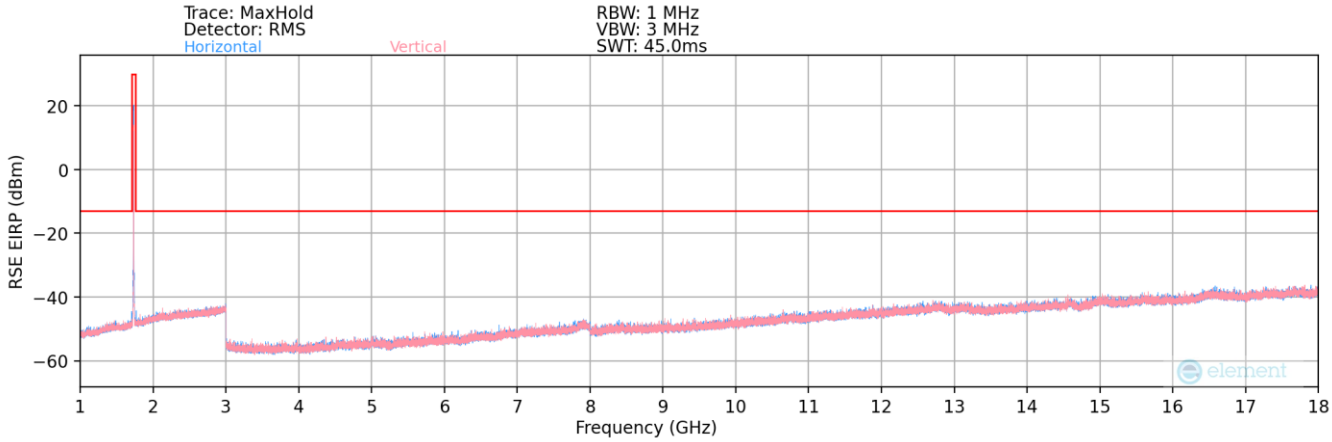
7. For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

8. Spurious emission in EN-DC Operating mode with Sub 6GHz NR carrier as well as an LTE carrier (anchor) has been checked and was found to not to be the worst case. Spurious emissions from the NR carrier device are subject to the rules under which the NR carrier operates. Spurious emissions caused by the LTE carrier must meet the requirements of the rules under which the LTE carrier operates.

WCDMA AWS – Ant1



Plot 7-178. Radiated Spurious Plot (WCDMA AWS) – Ant1



Plot 7-179. Radiated Spurious Plot (WCDMA AWS) – Ant1

Mode:	Stand Alone
Channel:	1413
Frequency (MHz):	1732.6

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
101.00	H	349	255	-78.40	-13.52	15.08	-82.33	-13.00	-69.33

Table 7-35. Radiated Spurious Data (WCDMA AWS – Mid Channel) – Ant1

Mode:	WCDMA RMC
Channel:	1312
Frequency (MHz):	1712.4

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3424.80	V	-	-	-78.82	4.62	32.80	-62.46	-13.00	-49.46
5137.20	V	-	-	-79.41	7.28	34.87	-60.39	-13.00	-47.39
6849.60	V	-	-	-80.73	10.90	37.17	-58.08	-13.00	-45.08

7-36. Radiated Spurious Data (WCDMA AWS – Low Channel) – Ant1

Mode:	WCDMA RMC
Channel:	1413
Frequency (MHz):	1732.6

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3465.20	V	-	-	-78.73	4.39	32.66	-62.60	-13.00	-49.60
5197.80	V	-	-	-79.58	7.32	34.74	-60.51	-13.00	-47.51
6930.40	V	-	-	-80.49	11.59	38.10	-57.16	-13.00	-44.16

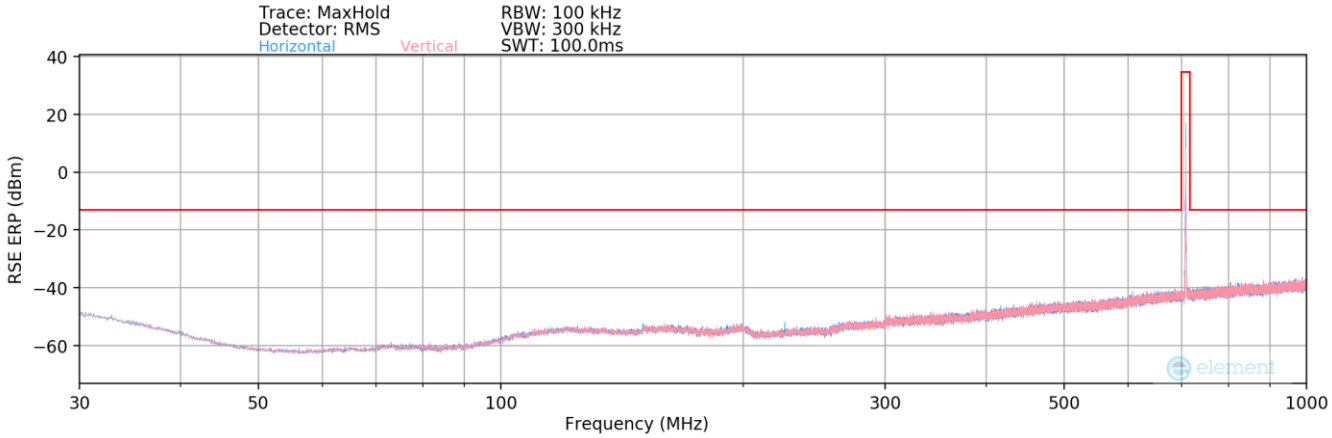
Table 7-37. Radiated Spurious Data (WCDMA AWS – Mid Channel) – Ant1

Mode:	WCDMA RMC
Channel:	1513
Frequency (MHz):	1752.6

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3505.20	V	-	-	-78.97	4.41	32.44	-62.82	-13.00	-49.82
5257.80	V	-	-	-79.35	7.52	35.17	-60.09	-13.00	-47.09
7010.40	V	-	-	-80.28	11.54	38.26	-57.00	-13.00	-44.00

Table 7-38. Radiated Spurious Data (WCDMA AWS – High Channel) – Ant1

LTE Band 12/17 – Ant1



Plot 7-180. Radiated Spurious Plot (LTE Band 12/17) – Ant1

Bandwidth (MHz):	10
Frequency (MHz):	707.5
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
224.00	H	-	-	-94.03	17.95	30.92	-66.49	-13.00	-53.49

Plot 7-181. Radiated Spurious Plot (LTE Band 12/17) – Ant1

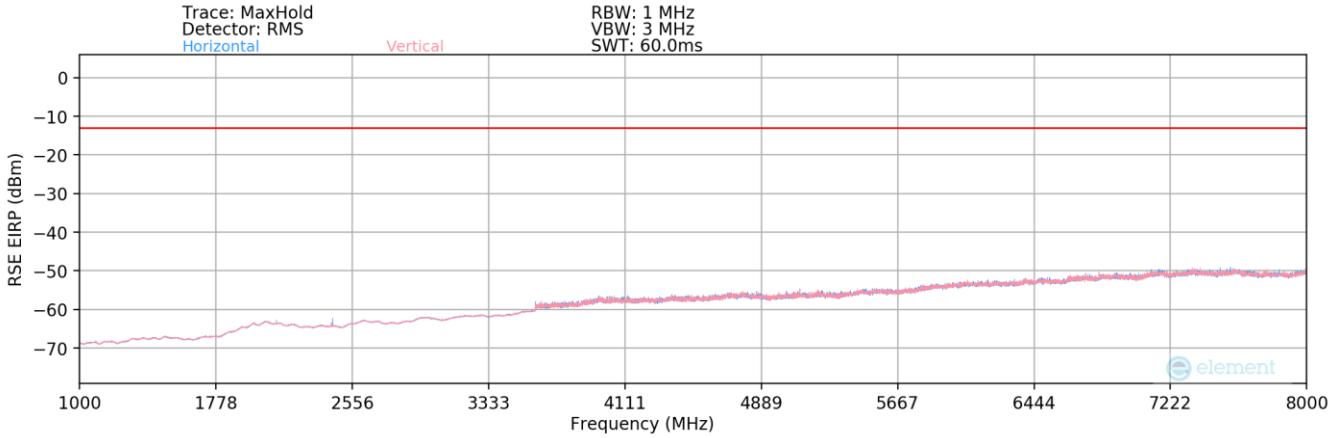


Table 7-39. Radiated Spurious Data (LTE Band 12/17 – Mid Channel) – Ant1

Bandwidth (MHz):	10
Frequency (MHz):	704
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1408.00	H	230	220	-77.45	-6.95	22.60	-72.66	-13.00	-59.66
2112.00	H	154	191	-72.15	-2.79	32.06	-63.20	-13.00	-50.20
2816.00	H	-	-	-77.92	-2.84	26.24	-69.01	-13.00	-56.01
3520.00	H	-	-	-77.52	-0.32	29.16	-66.10	-13.00	-53.10
4224.00	H	-	-	-77.83	1.61	30.78	-64.48	-13.00	-51.48

Table 7-40. Radiated Spurious Data (LTE Band 12/17 – Low Channel) – Ant1

Bandwidth (MHz):	10
Frequency (MHz):	707.5
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1415.00	H	-	-	-76.43	-6.96	23.61	-71.64	-13.00	-58.64
2122.50	H	144	198	-74.29	-2.87	29.84	-65.41	-13.00	-52.41
2830.00	H	-	-	-77.77	-2.68	26.55	-68.71	-13.00	-55.71
3537.50	H	-	-	-77.65	-0.21	29.14	-66.12	-13.00	-53.12
4245.00	H	-	-	-78.24	1.70	30.46	-64.80	-13.00	-51.80

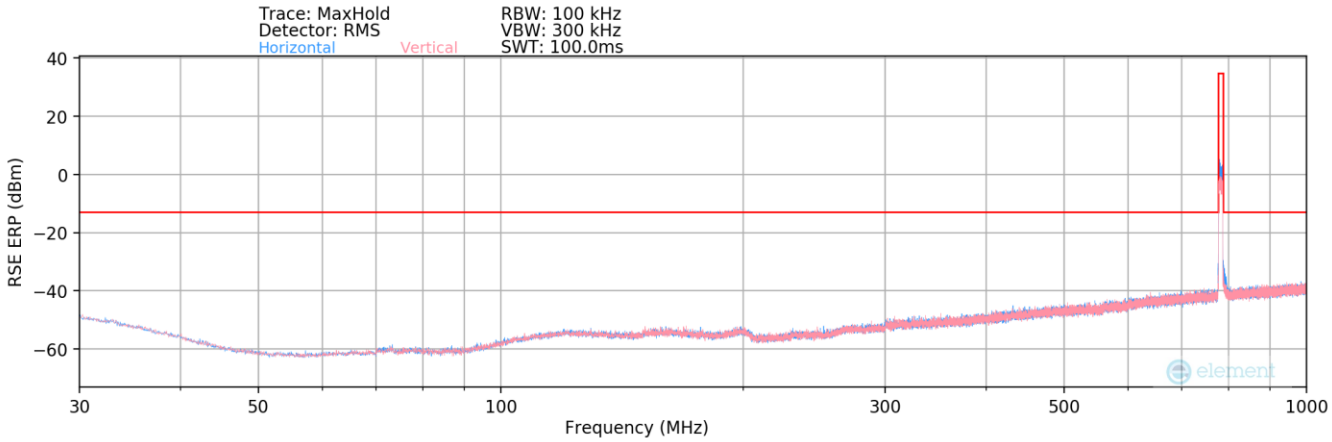
Table 7-41. Radiated Spurious Data (LTE Band 12/17 – Mid Channel) – Ant1

Bandwidth (MHz):	10
Frequency (MHz):	711
RB / Offset:	1 / 25

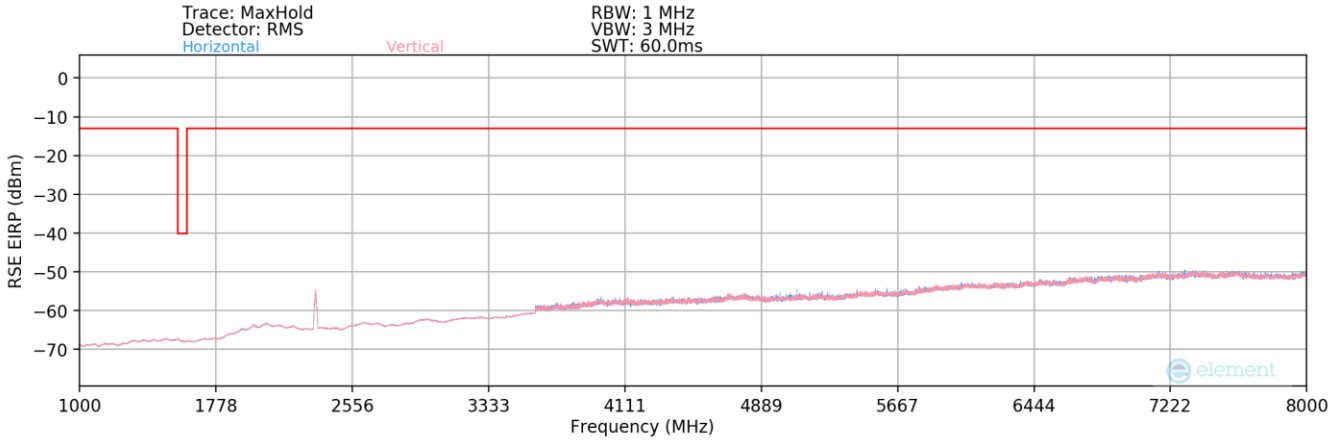
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1422.00	H	155	159	-76.07	-6.95	23.98	-71.27	-13.00	-58.27
2133.00	H	150	204	-74.41	-2.96	29.63	-65.63	-13.00	-52.63
2844.00	H	-	-	-77.43	-2.59	26.98	-68.28	-13.00	-55.28
3555.00	H	-	-	-77.57	-0.04	29.39	-65.87	-13.00	-52.87
4266.00	H	-	-	-78.44	1.79	30.35	-64.91	-13.00	-51.91

Table 7-42. Radiated Spurious Data (LTE Band 12/17 – High Channel) – Ant1

LTE Band 13 – Ant1



Plot 7-182. Radiated Spurious Plot (LTE Band 13) – Ant1



Plot 7-183. Radiated Spurious Plot (LTE Band 13) – Ant1

Mode:	Stand Alone
Frequency (MHz):	782

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
193.59	H	396	233	-84.57	19.18	41.61	-55.80	-13.00	-42.80

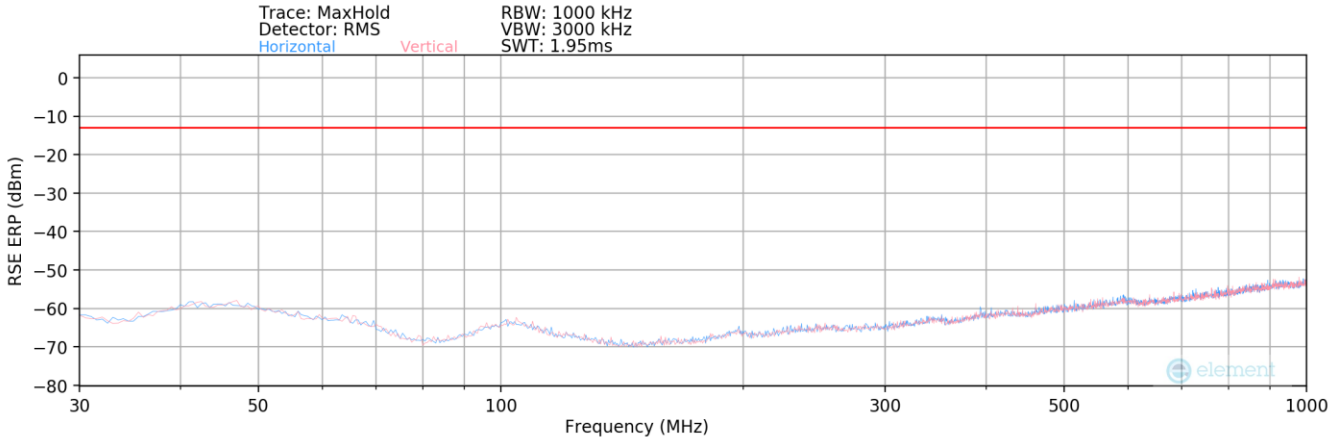
Table 7-43. Radiated Spurious Data (LTE Band 13) – Ant1

Bandwidth (MHz):	10
Frequency (MHz):	782
RB / Offset:	1 / 25

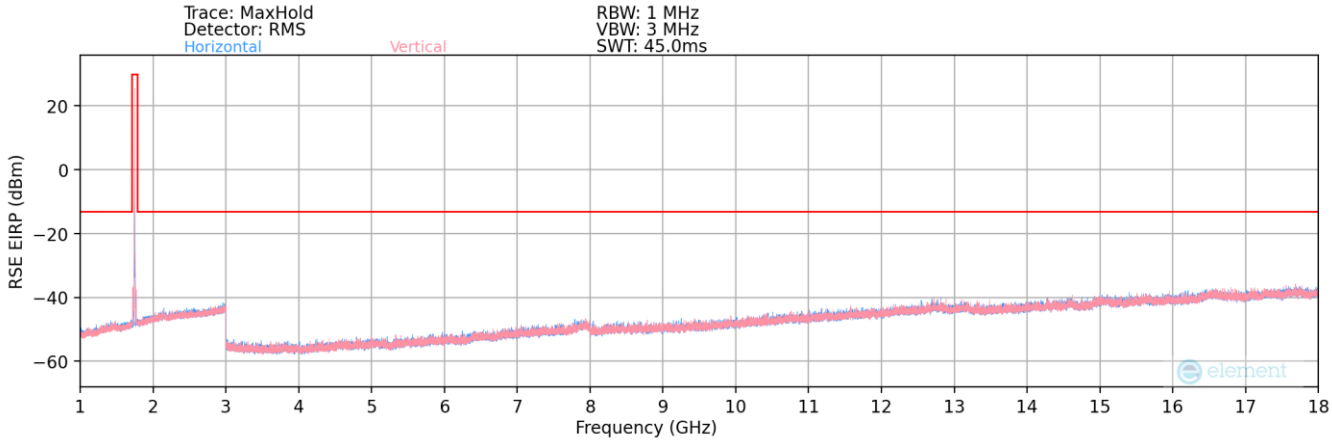
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1564.00	H	165	333	-69.34	-6.90	30.76	-64.49	-40.00	-24.49
2346.00	H	187	315	-51.91	-3.81	51.28	-43.98	-13.00	-30.98
3128.00	H	-	-	-76.87	-1.71	28.42	-66.84	-13.00	-53.84
3910.00	H	302	241	-75.19	1.51	33.32	-61.94	-13.00	-48.94
4692.00	H	-	-	-78.32	3.01	31.69	-63.56	-13.00	-50.56
5474.00	H	-	-	-78.65	4.42	32.77	-62.48	-13.00	-49.48
6256.00	H	-	-	-78.65	6.63	34.98	-60.28	-13.00	-47.28

Table 7-44. Radiated Spurious Data (LTE Band 13 – Mid Channel) – Ant1

LTE Band 66/4 – Ant1



Plot 7-184. Radiated Spurious Plot (LTE Band 66/4) – Ant1



Plot 7-185. Radiated Spurious Plot (LTE Band 66/4) – Ant1

Mode:	Stand Alone
Frequency (MHz):	1361

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
100.00	H	400	110	-78.38	-13.64	14.98	-82.43	-13.00	-69.43

Table 7-45. Radiated Spurious Data (LTE Band 66/4) – Ant1

Bandwidth (MHz):	20
Frequency (MHz):	1720
RB / Offset:	1 / 50

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3440.00	H	-	-	-78.74	5.27	33.53	-61.73	-13.00	-48.73
5160.00	H	-	-	-79.66	7.54	34.88	-60.38	-13.00	-47.38
6880.00	H	-	-	-80.51	11.63	38.12	-57.13	-13.00	-44.13

Table 7-46. Radiated Spurious Data (LTE Band 66/4 – Low Channel) – Ant1

Bandwidth (MHz):	20
Frequency (MHz):	1745
RB / Offset:	1 / 50

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3490.00	H	-	-	-78.78	5.31	33.53	-61.72	-13.00	-48.72
5235.00	H	-	-	-79.38	7.26	34.88	-60.38	-13.00	-47.38
6980.00	H	-	-	-80.19	11.06	37.87	-57.38	-13.00	-44.38

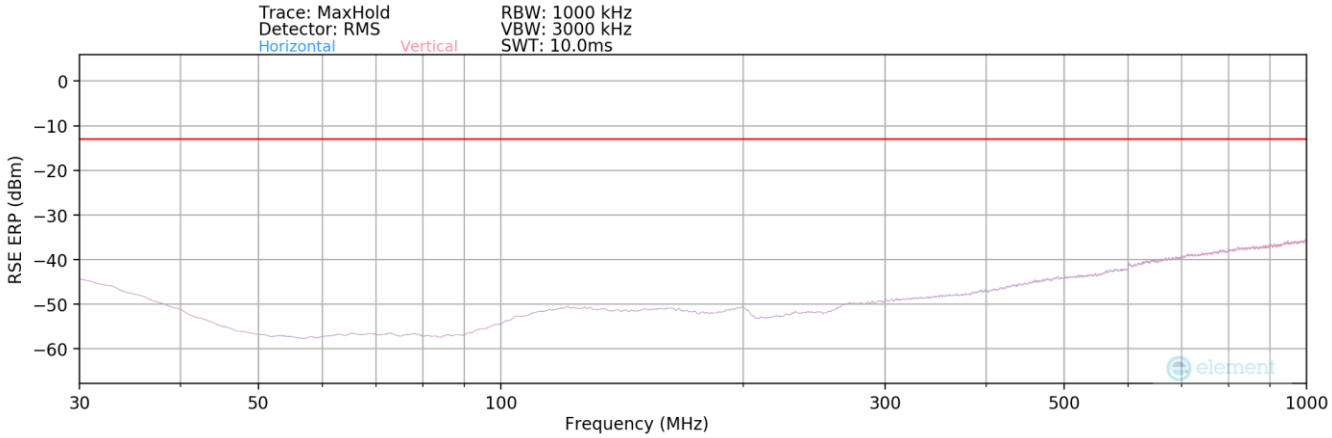
Table 7-47. Radiated Spurious Data (LTE Band 66/4 – Mid Channel) – Ant1

Bandwidth (MHz):	20
Frequency (MHz):	1770
RB / Offset:	1 / 50

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3540.00	H	-	-	-78.48	5.24	33.76	-61.50	-13.00	-48.50
5310.00	H	-	-	-79.37	7.65	35.28	-59.98	-13.00	-46.98
7080.00	H	-	-	-80.27	11.66	38.39	-56.87	-13.00	-43.87

Table 7-48. Radiated Spurious Data (LTE Band 66/4 – High Channel) – Ant1

NR Band n66 – Ant1



Plot 7-186. Radiated Spurious Plot (NR Band n66) – Ant1

Mode:	Stand Alone
Channel:	349000
Frequency (MHz):	1745

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
69.83	H	-	-	-108.06	14.65	13.59	-83.82	-13.00	-70.82
131.73	H	-	-	-107.95	20.12	19.17	-78.24	-13.00	-65.24
298.84	H	-	-	-107.66	21.09	20.43	-76.98	-13.00	-63.98

Plot 7-187. Radiated Spurious Plot (NR Band n66) – Ant1

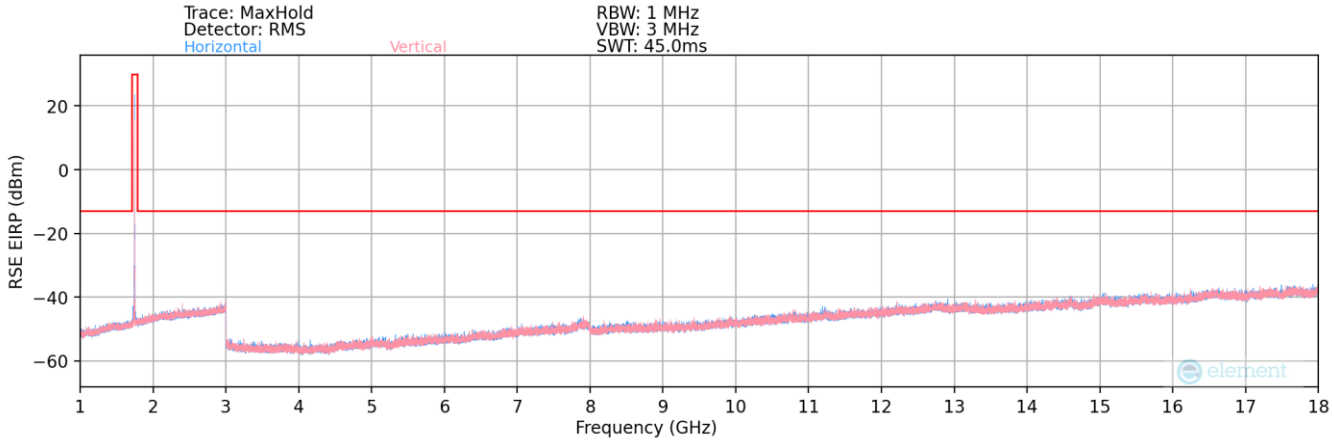


Table 7-49. Radiated Spurious Data (NR Band n66) – Ant1

Bandwidth (MHz):	45
Frequency (MHz):	1732.5
RB / Offset:	1 / 120

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3465.00	V	-	-	-80.25	5.23	31.98	-63.27	-13.00	-50.27
5197.50	V	-	-	-80.91	7.24	33.33	-61.93	-13.00	-48.93
6930.00	V	-	-	-81.63	11.32	36.69	-58.57	-13.00	-45.57

Table 7-50. Radiated Spurious Data (NR Band n66 – Low Channel) – Ant1

Bandwidth (MHz):	45
Frequency (MHz):	1745
RB / Offset:	1 / 120

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3490.00	V	-	-	-79.60	5.31	32.71	-62.54	-13.00	-49.54
5235.00	V	-	-	-80.34	7.26	33.92	-61.34	-13.00	-48.34
6980.00	V	-	-	-81.39	11.06	36.67	-58.58	-13.00	-45.58

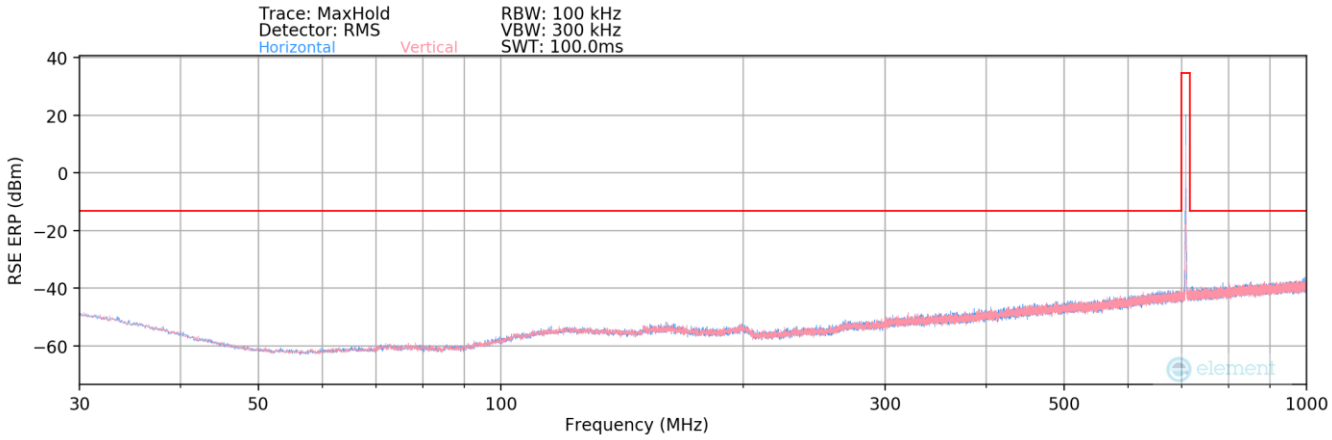
Table 7-51. Radiated Spurious Data (NR Band n66 – Mid Channel) – Ant1

Bandwidth (MHz):	45
Frequency (MHz):	1757.5
RB / Offset:	1 / 120

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3515.00	V	-	-	-80.01	5.28	32.27	-62.99	-13.00	-49.99
5272.50	V	-	-	-80.25	7.11	33.86	-61.39	-13.00	-48.39
7030.00	V	-	-	-80.64	11.24	37.60	-57.66	-13.00	-44.66

Table 7-52. Radiated Spurious Data (NR Band n66 – High Channel) – Ant1

LTE Band 12/17 – Ant2



Plot 7-188. Radiated Spurious Plot (LTE Band 12/17) – Ant2

Bandwidth (MHz):	10
Frequency (MHz):	707.5
Frequency (MHz):	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
621.00	V	-	-	-97.03	27.29	37.26	-60.14	-13.00	-47.14

Plot 7-189. Radiated Spurious Plot (LTE Band 12/17) – Ant2

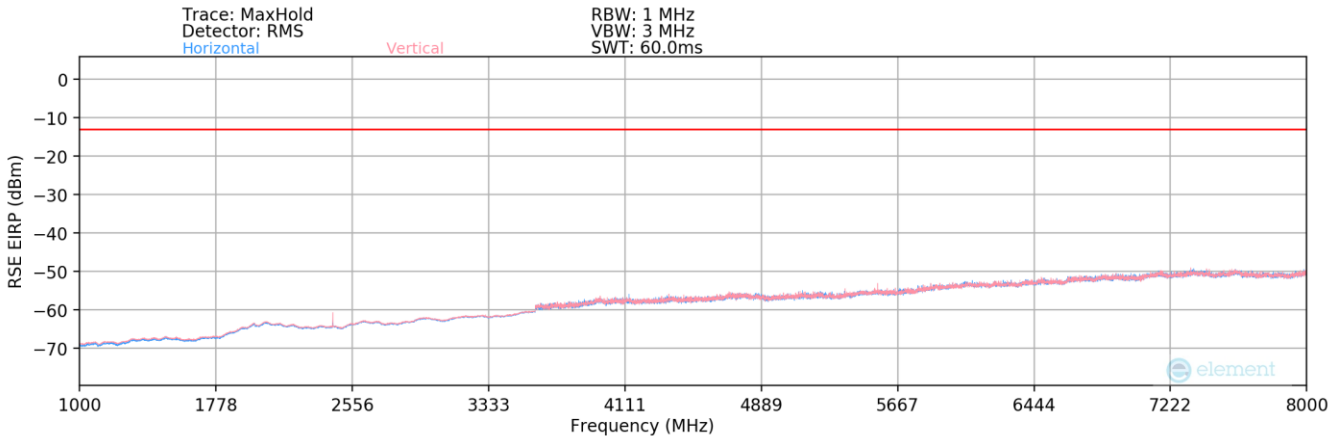


Table 7-53. Radiated Spurious Data (LTE Band 12/17 – Mid Channel) – Ant2

Bandwidth (MHz):	10
Frequency (MHz):	704
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1408.00	V	-	-	-76.99	-6.95	23.06	-72.20	-13.00	-59.20
2112.00	V	-	-	-78.15	-2.79	26.06	-69.20	-13.00	-56.20
2816.00	V	-	-	-77.99	-2.84	26.17	-69.08	-13.00	-56.08

Table 7-54. Radiated Spurious Data (LTE Band 12/17 – Low Channel) – Ant2

Bandwidth (MHz):	10
Frequency (MHz):	707.5
RB / Offset:	1 / 25

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1415.00	V	-	-	-76.38	-6.96	23.66	-71.59	-13.00	-58.59
2122.50	V	-	-	-77.40	-2.87	26.73	-68.52	-13.00	-55.52
2830.00	V	-	-	-77.76	-2.68	26.56	-68.70	-13.00	-55.70

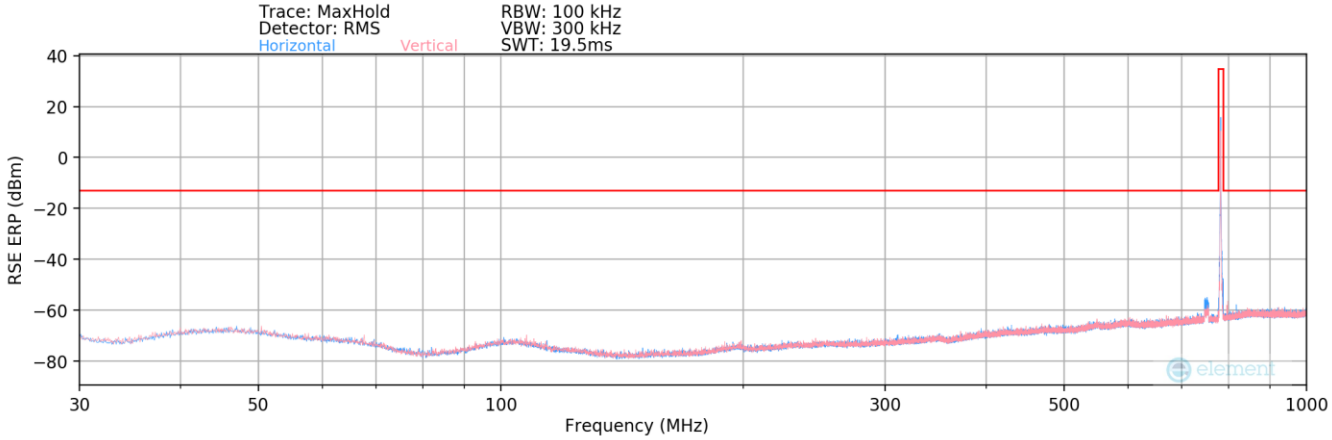
Table 7-55. Radiated Spurious Data (LTE Band 12/17 – Mid Channel) – Ant2

Bandwidth (MHz):	10
Frequency (MHz):	711
RB / Offset:	1 / 25

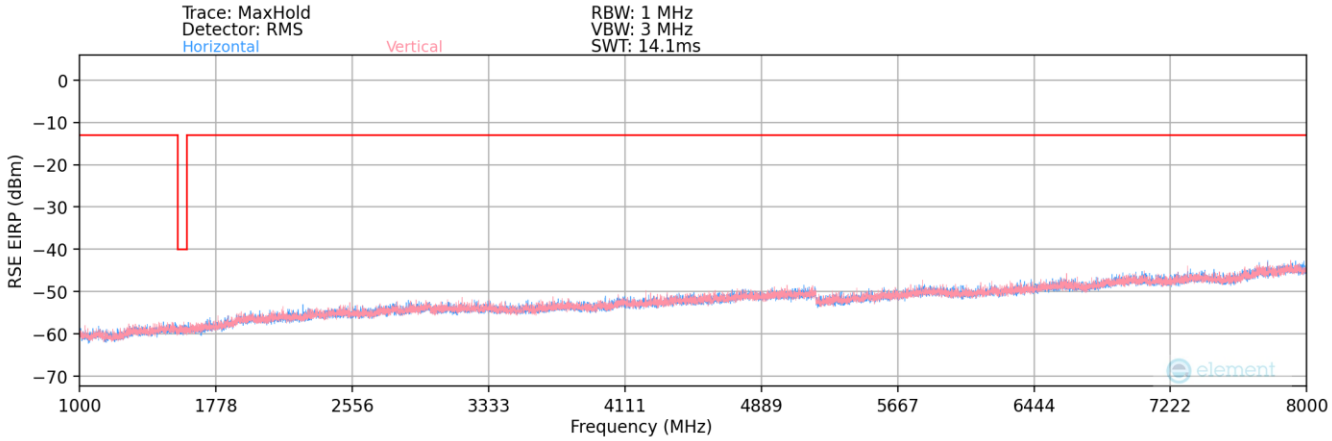
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1422.00	V	-	-	-76.30	-6.95	23.75	-71.50	-13.00	-58.50
2133.00	V	-	-	-77.19	-2.96	26.85	-68.41	-13.00	-55.41
2844.00	V	-	-	-77.56	-2.59	26.85	-68.41	-13.00	-55.41

Table 7-56. Radiated Spurious Data (LTE Band 12/17 – High Channel) – Ant2

LTE Band 13 – Ant2



Plot 7-190. Radiated Spurious Plot (LTE Band 13) – Ant2



Plot 7-191. Radiated Spurious Plot (LTE Band 13) – Ant2

Mode:	Stand Alone
Frequency (MHz):	782

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
101.60	H	210	61	-78.59	-13.48	14.93	-82.48	-13.00	-69.48

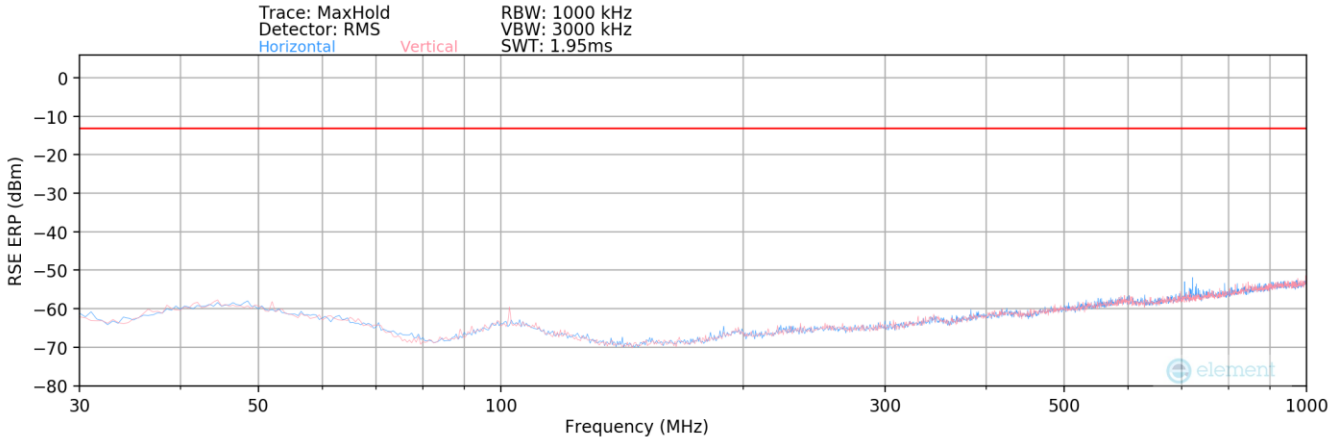
Table 7-57. Radiated Spurious Data (LTE Band 13) – Ant2

Bandwidth (MHz):	10
Frequency (MHz):	782
RB / Offset:	1 / 25

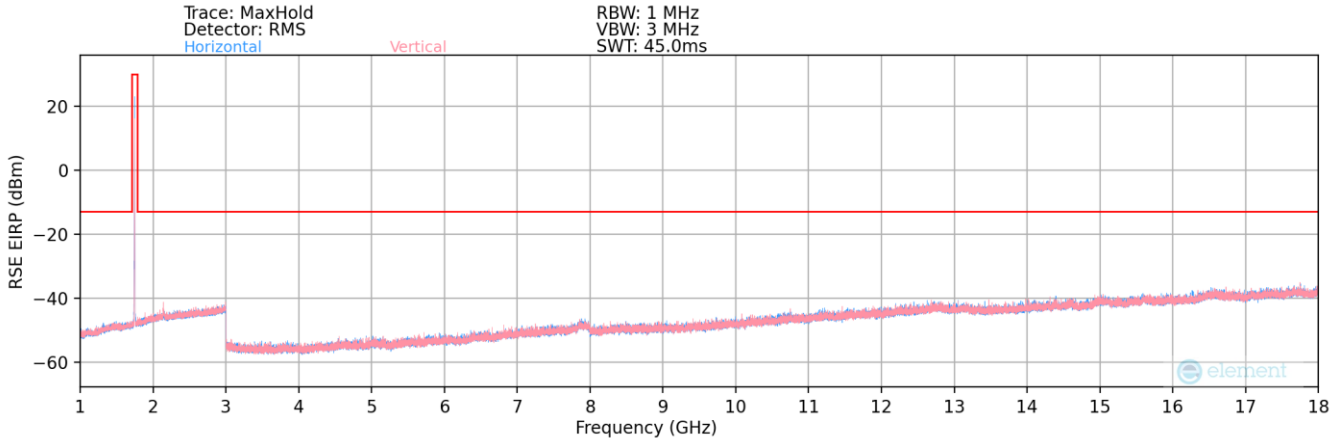
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1564.00	H	-	-	-77.41	-1.45	28.14	-67.12	-40.00	-27.12
2346.00	H	-	-	-78.10	2.43	31.33	-63.93	-13.00	-50.93
3128.00	H	-	-	-78.02	3.84	32.82	-62.44	-13.00	-49.44

Table 7-58. Radiated Spurious Data (LTE Band 13 – Mid Channel) – Ant2

LTE Band 66/4 – Ant2



Plot 7-192. Radiated Spurious Plot (LTE Band 66/4) – Ant2



Plot 7-193. Radiated Spurious Plot (LTE Band 66/4) – Ant2

Mode:	Stand Alone
Frequency (MHz):	1745

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
98.81	V	170	171	-78.46	-13.80	14.74	-82.67	-13.00	-69.67

Table 7-59. Radiated Spurious Data (LTE Band 66/4) – Ant2

Bandwidth (MHz):	20
Frequency (MHz):	1720
RB / Offset:	1 / 50

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3440.00	H	-	-	-78.83	4.49	32.66	-62.60	-13.00	-49.60
5160.00	H	-	-	-79.44	7.31	34.87	-60.39	-13.00	-47.39
6880.00	H	-	-	-80.59	10.97	37.38	-57.88	-13.00	-44.88

Table 7-60. Radiated Spurious Data (LTE Band 66/4 – Low Channel) – Ant2

Bandwidth (MHz):	20
Frequency (MHz):	1745
RB / Offset:	1 / 50

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3490.00	H	-	-	-78.57	4.38	32.81	-62.44	-13.00	-49.44
5235.00	H	-	-	-79.27	7.45	35.18	-60.08	-13.00	-47.08
6980.00	H	-	-	-80.35	11.61	38.26	-57.00	-13.00	-44.00

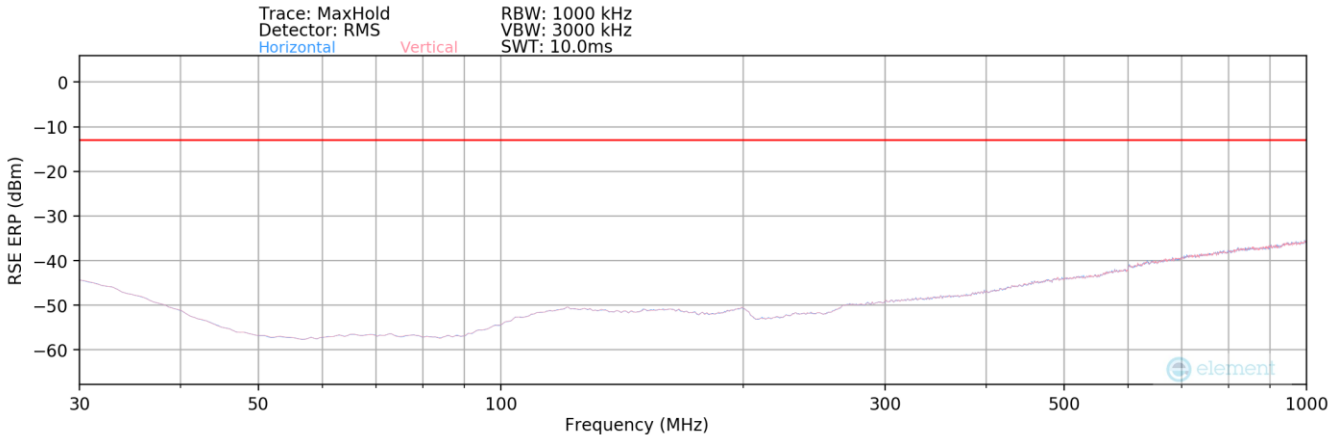
Table 7-61. Radiated Spurious Data (LTE Band 66/4 – Mid Channel) – Ant2

Bandwidth (MHz):	20
Frequency (MHz):	1770
RB / Offset:	1 / 50

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3540.00	H	-	-	-78.51	4.45	32.94	-62.32	-13.00	-49.32
5310.00	H	-	-	-79.53	7.62	35.09	-60.17	-13.00	-47.17
7080.00	H	-	-	-80.28	11.70	38.42	-56.84	-13.00	-43.84

Table 7-62. Radiated Spurious Data (LTE Band 66/4 – High Channel) – Ant2

NR Band n66 – Ant2



Plot 7-194. Radiated Spurious Plot (NR Band n66) – Ant2

Mode:	Stand Alone
Channel:	349000
Frequency (MHz):	1745

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
69.83	H	-	-	-108.06	14.65	13.59	-83.82	-13.00	-70.82
131.73	H	-	-	-107.95	20.12	19.17	-78.24	-13.00	-65.24
298.84	H	-	-	-107.66	21.09	20.43	-76.98	-13.00	-63.98

Plot 7-195. Radiated Spurious Plot (NR Band n66) – Ant2

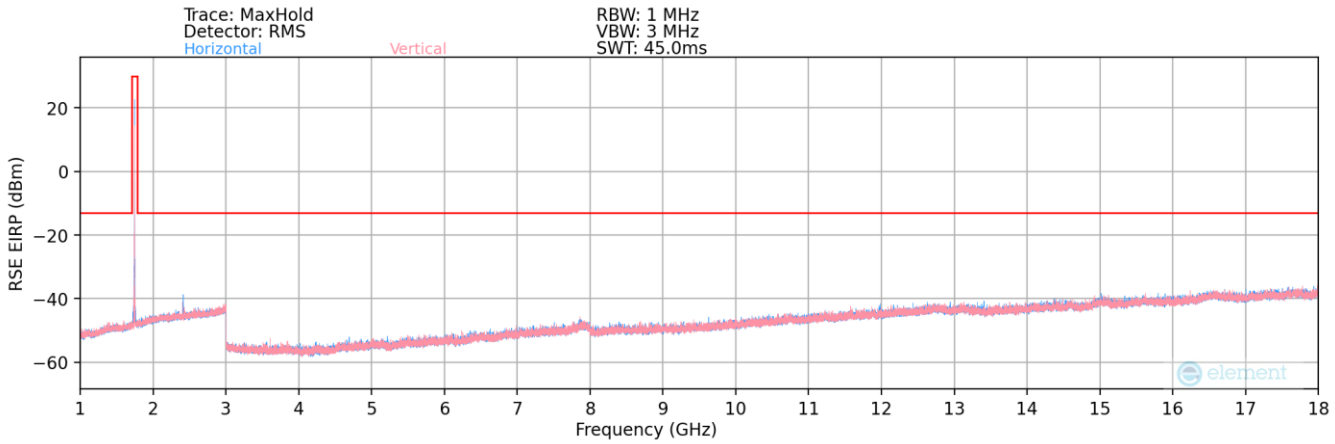


Table 7-63. Radiated Spurious Data (NR Band n66) – Ant2

Bandwidth (MHz):	45
Frequency (MHz):	1732.5
RB / Offset:	1 / 120

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3465.00	H	-	-	-79.67	5.23	32.56	-62.69	-13.00	-49.69
5197.50	H	-	-	-80.64	7.24	33.60	-61.66	-13.00	-48.66
6930.00	H	-	-	-81.73	11.32	36.59	-58.67	-13.00	-45.67

Table 7-64. Radiated Spurious Data (NR Band n66 – Low Channel) – Ant2

Bandwidth (MHz):	45
Frequency (MHz):	1745
RB / Offset:	1 / 120

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3490.00	H	-	-	-80.26	5.31	32.05	-63.20	-13.00	-50.20
5235.00	H	-	-	-81.00	7.26	33.26	-62.00	-13.00	-49.00
6980.00	H	-	-	-82.13	11.06	35.93	-59.32	-13.00	-46.32

Table 7-65. Radiated Spurious Data (NR Band n66 – Mid Channel) – Ant2

Bandwidth (MHz):	45
Frequency (MHz):	1757.5
RB / Offset:	1 / 120

Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3515.00	H	-	-	-80.67	5.28	31.61	-63.65	-13.00	-50.65
5272.50	H	-	-	-81.22	7.11	32.89	-62.36	-13.00	-49.36
7030.00	H	-	-	-81.42	11.24	36.82	-58.44	-13.00	-45.44

Table 7-66. Radiated Spurious Data (NR Band n66 – High Channel) – Ant2

7.9 Frequency Stability / Temperature Variation

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015. 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 27, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Procedure Used

ANSI C63.26-2015 – Section 5.6

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

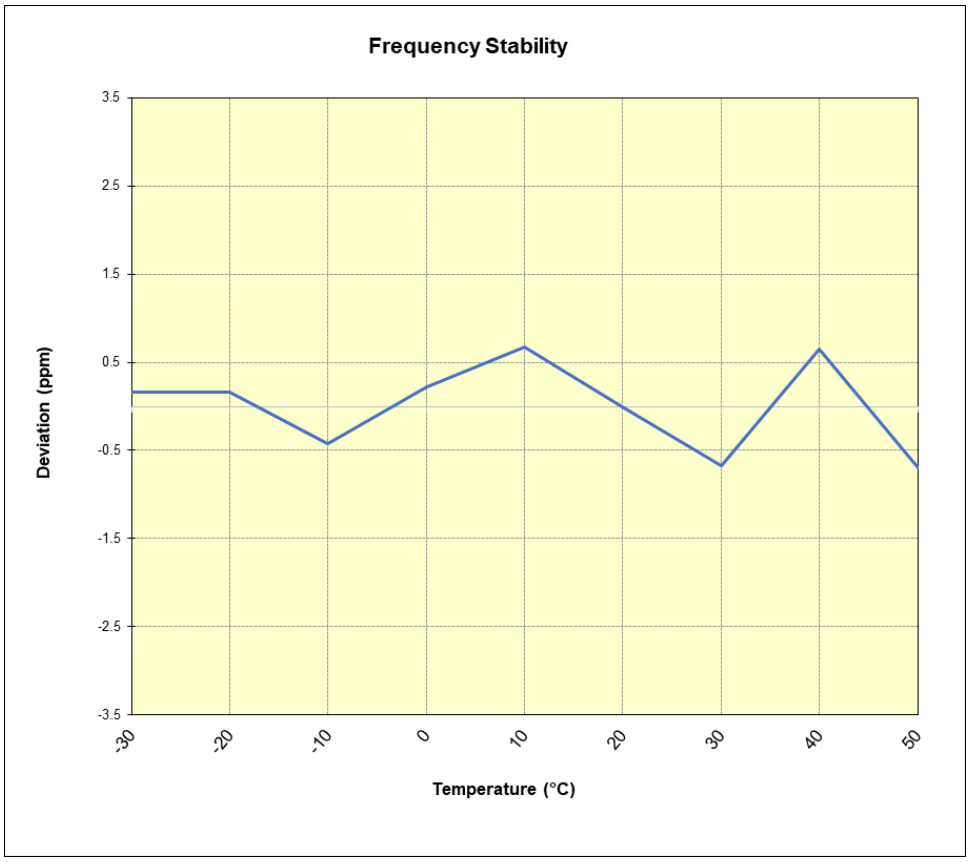
None

WCDMA AWS

Operating Frequency (Hz):	1,732,600,000
Ref. Voltage (VDC):	3.85
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	- 30	1,732,503,998	283	0.0000163
		- 20	1,732,503,999	284	0.0000164
		- 10	1,732,502,987	-728	-0.0000420
		0	1,732,504,096	381	0.0000220
		+ 10	1,732,504,889	1,174	0.0000678
		+ 20 (Ref)	1,732,503,715	0	0.0000000
		+ 30	1,732,502,554	-1,161	-0.0000670
		+ 40	1,732,504,840	1,125	0.0000649
		+ 50	1,732,502,509	-1,206	-0.0000696
Battery Endpoint	3.21	+ 20	1,732,504,221	506	0.0000292

Table 7-67.WCDMA AWS Frequency Stability Data



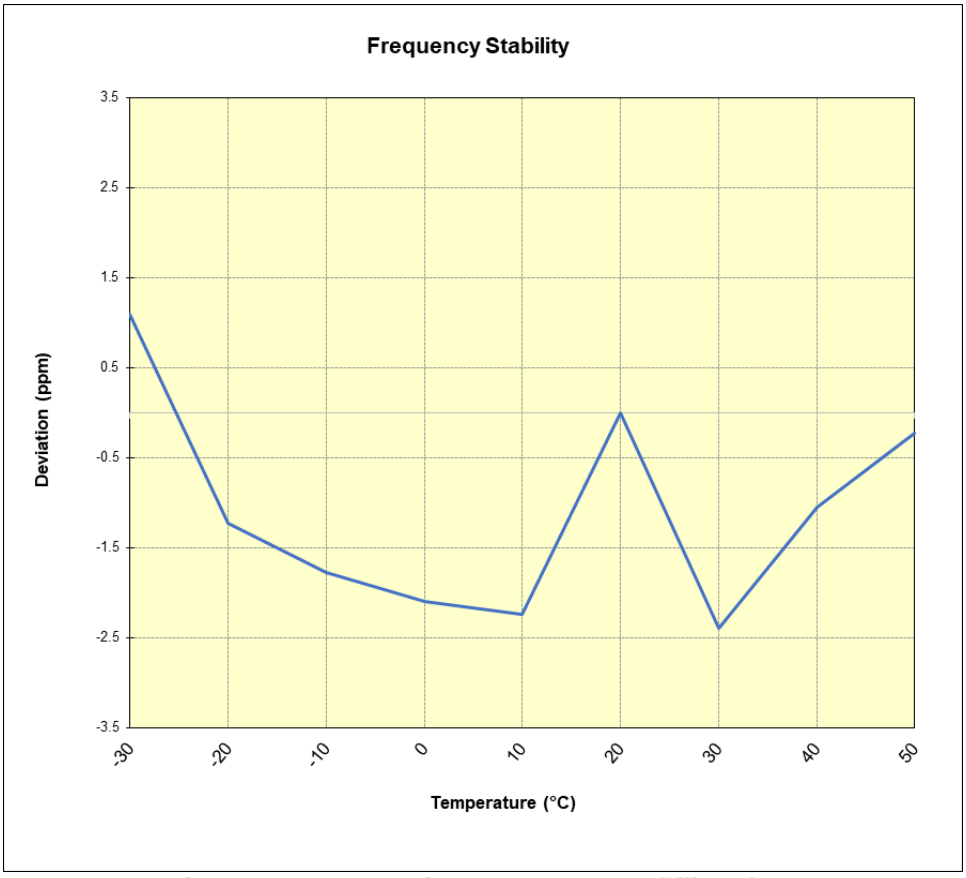
Plot 7-196. WCDMA AWS Frequency Stability Chart

LTE Band 12

Operating Frequency (Hz):	707,500,000
Ref. Voltage (VDC):	3.85
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	- 30	707,603,478	774	0.0001094
		- 20	707,601,834	-870	-0.0001230
		- 10	707,601,448	-1,256	-0.0001775
		0	707,601,220	-1,484	-0.0002097
		+ 10	707,601,122	-1,582	-0.0002236
		+ 20 (Ref)	707,602,704	0	0.0000000
		+ 30	707,601,011	-1,693	-0.0002393
		+ 40	707,601,963	-741	-0.0001047
		+ 50	707,602,546	-158	-0.0000223
Battery Endpoint	3.21	+ 20	707,602,478	-226	-0.0000319

Table 7-68. LTE Band 12 Frequency Stability Data



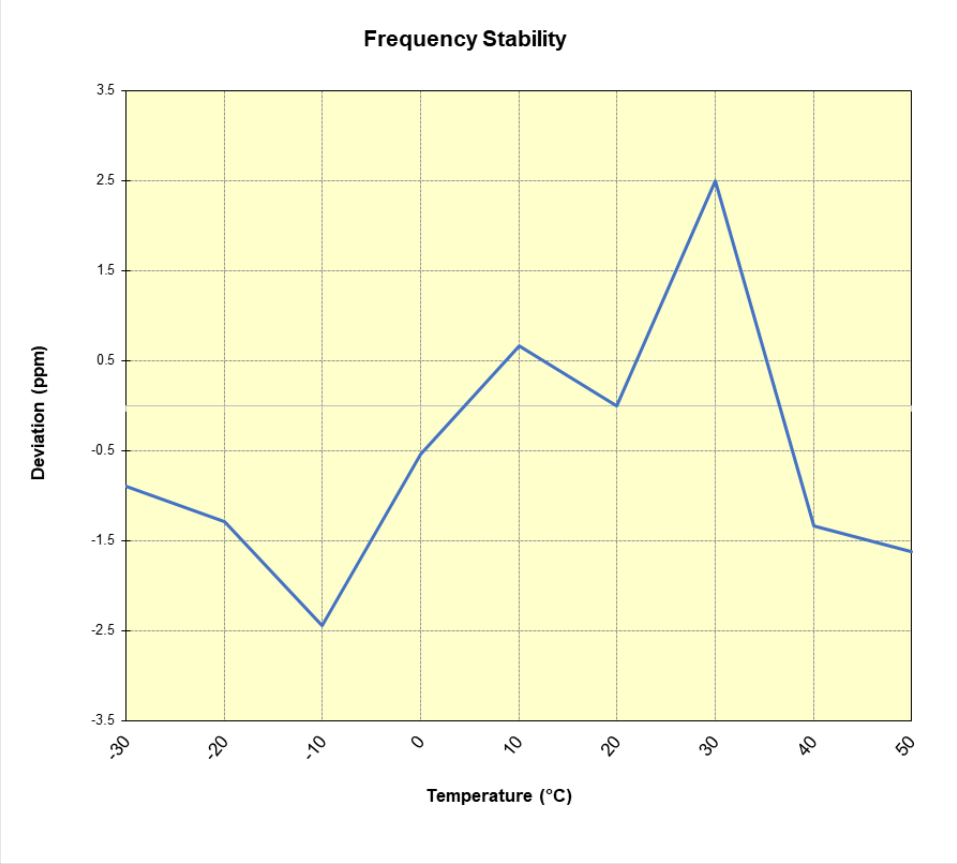
Plot 7-197. LTE Band 12 Frequency Stability Chart

LTE Band 13

Operating Frequency (Hz):	782,000,000
Ref. Voltage (VDC):	3.85
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	- 30	782,094,733	-696	-0.0000890
		- 20	782,094,425	-1,004	-0.0001284
		- 10	782,093,522	-1,907	-0.0002438
		0	782,095,008	-421	-0.0000538
		+ 10	782,095,953	524	0.0000670
		+ 20 (Ref)	782,095,429	0	0.0000000
		+ 30	782,097,389	1,960	0.0002506
		+ 40	782,094,391	-1,038	-0.0001327
		+ 50	782,094,166	-1,263	-0.0001615
Battery Endpoint	3.21	+ 20	782,094,455	-974	-0.0001245

Table 7-69. LTE Band 13 Frequency Stability Data



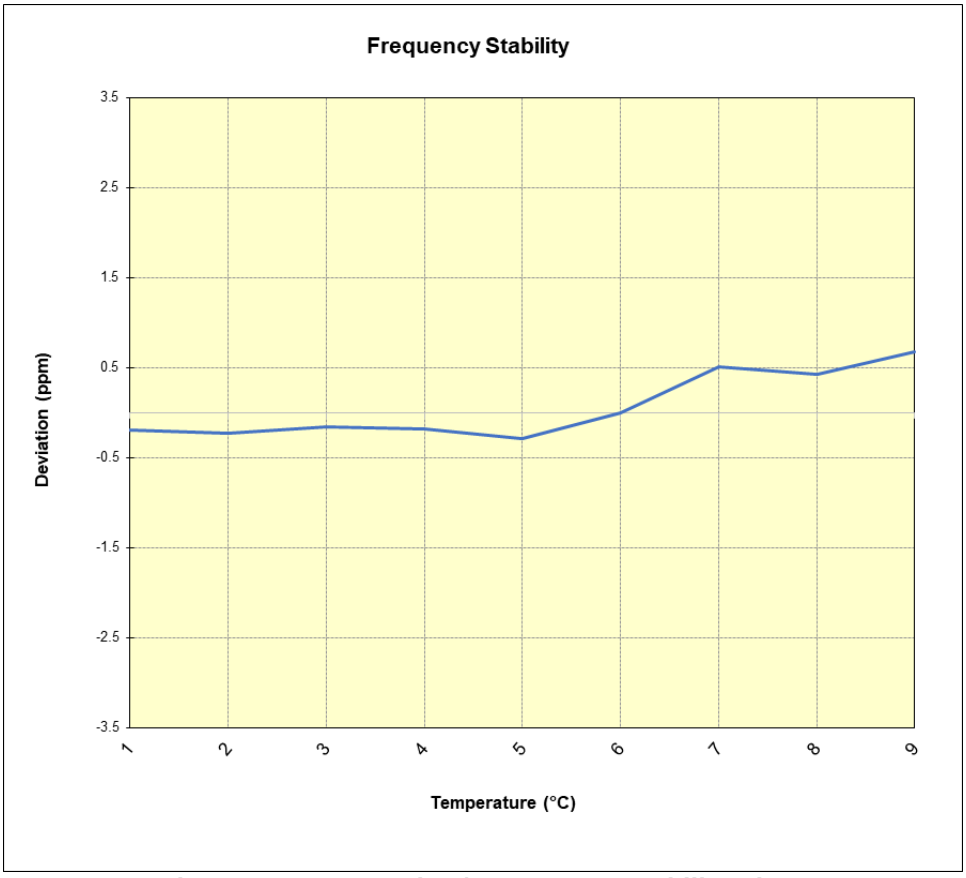
Plot 7-198. LTE Band 13 Frequency Stability Chart

LTE Band 66/4

Operating Frequency (Hz):	1,745,000,000
Ref. Voltage (VDC):	3.85
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	- 30	1,745,049,501	-334	-0.0000191
		- 20	1,745,049,433	-402	-0.0000230
		- 10	1,745,049,569	-266	-0.0000152
		0	1,745,049,529	-306	-0.0000175
		+ 10	1,745,049,337	-498	-0.0000285
		+ 20 (Ref)	1,745,049,835	0	0.0000000
		+ 30	1,745,050,736	901	0.0000516
		+ 40	1,745,050,591	756	0.0000433
		+ 50	1,745,051,015	1,180	0.0000676
Battery Endpoint	3.21	+ 20	1,745,048,555	-1,280	-0.0000734

Table 7-70. LTE Band 66/4 Frequency Stability Data



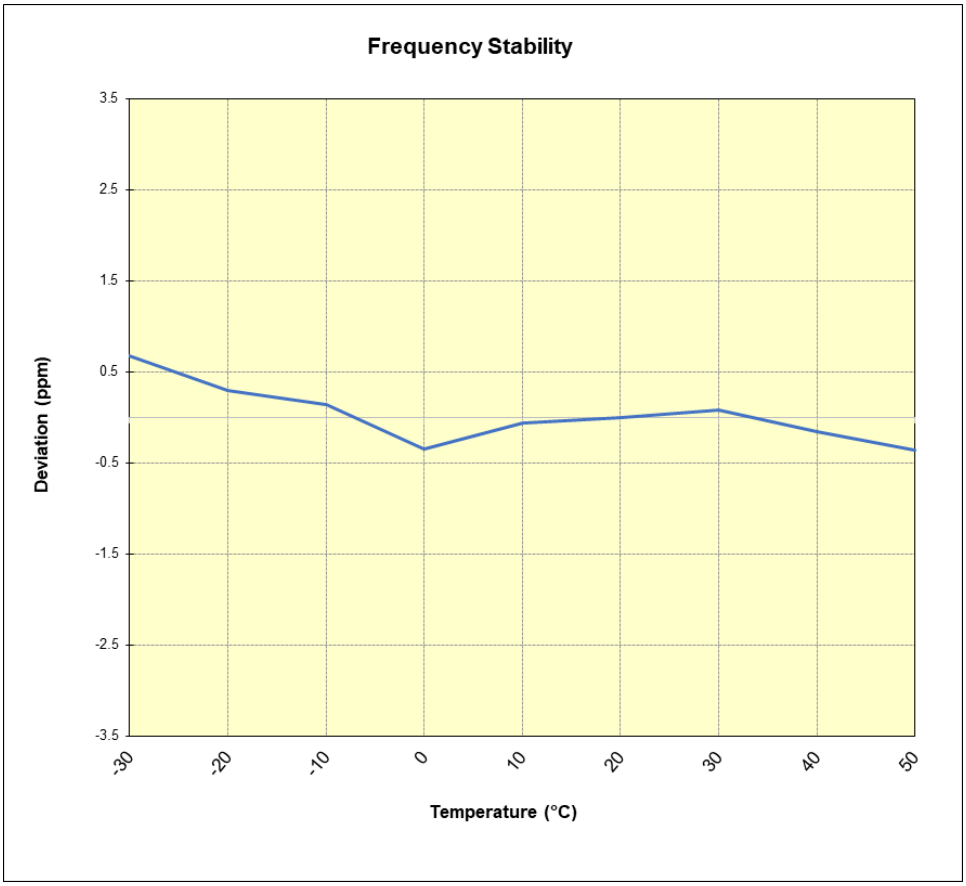
Plot 7-199. LTE Band 66/4Frequency Stability Chart

NR Band n12

Operating Frequency (Hz):	707,500,000
Ref. Voltage (VDC):	3.85
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	- 30	707,497,703	481	0.0000680
		- 20	707,497,436	214	0.0000302
		- 10	707,497,327	105	0.0000148
		0	707,496,980	-242	-0.0000342
		+ 10	707,497,178	-44	-0.0000062
		+ 20 (Ref)	707,497,222	0	0.0000000
		+ 30	707,497,281	59	0.0000083
		+ 40	707,497,111	-111	-0.0000157
		+ 50	707,496,971	-251	-0.0000355
Battery Endpoint	3.21	+ 20	707,497,706	484	0.0000684

Table 7-71. NR Band n12 Frequency Stability Data



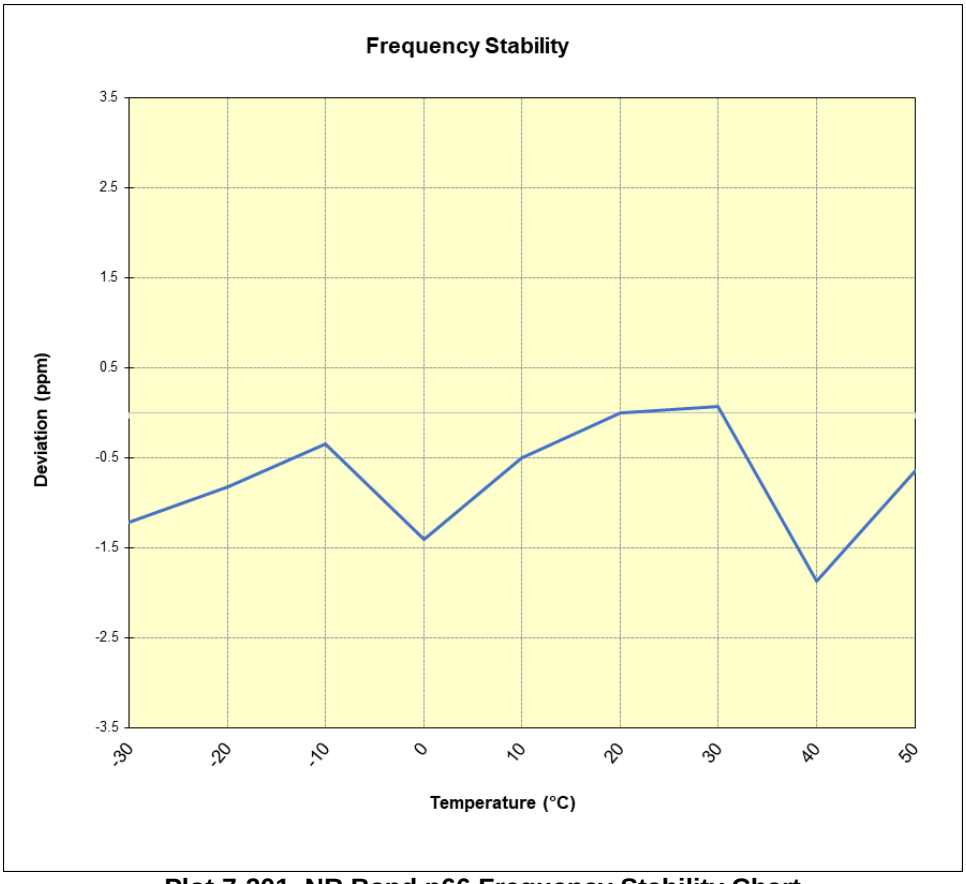
Plot 7-200. NR Band n12 Frequency Stability Chart

NR Band n66

Operating Frequency (Hz):	1,745,000,000
Ref. Voltage (VDC):	3.85
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.85	- 30	1,745,000,249	-2,110	-0.0001209
		- 20	1,745,000,931	-1,428	-0.0000818
		- 10	1,745,001,760	-599	-0.0000343
		0	1,744,999,915	-2,444	-0.0001401
		+ 10	1,745,001,485	-874	-0.0000501
		+ 20 (Ref)	1,745,002,359	0	0.0000000
		+ 30	1,745,002,484	125	0.0000072
		+ 40	1,744,999,103	-3,256	-0.0001866
		+ 50	1,745,001,248	-1,111	-0.0000637
Battery Endpoint	3.21	+ 20	1,745,004,903	2,544	0.0001458

Table 7-72. NR Band n66 Frequency Stability Data



Plot 7-201. NR Band n66 Frequency Stability Chart

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung Portable Handset FCC ID: A3LSMS938B** complies with all the requirements of Part 27 of the FCC rules.