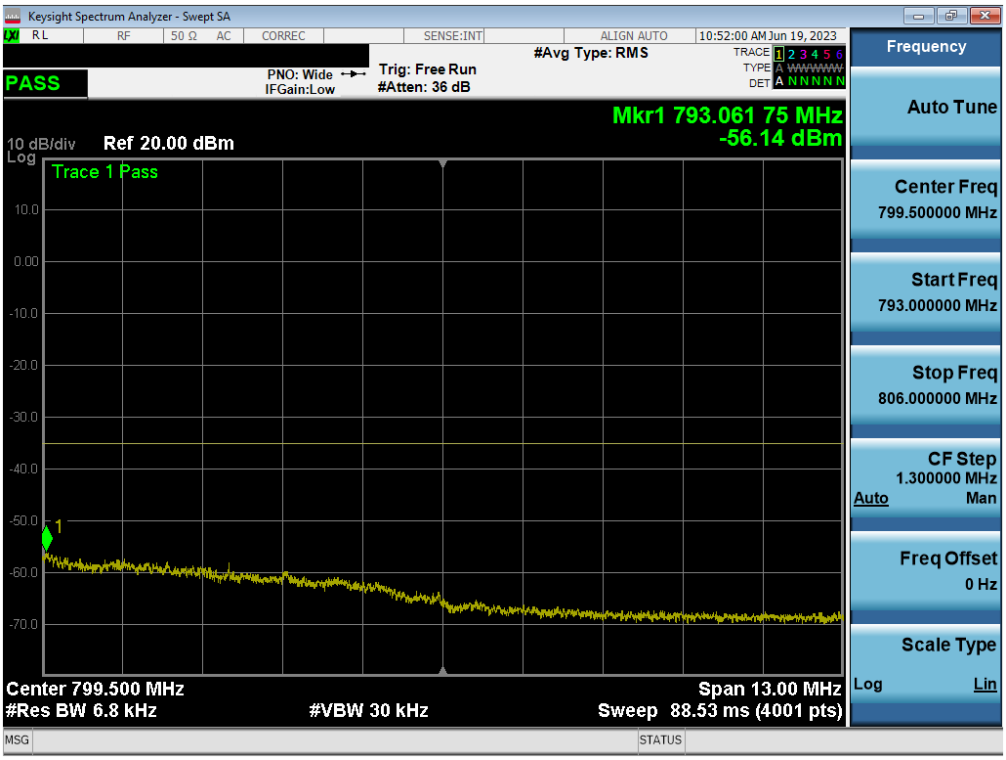
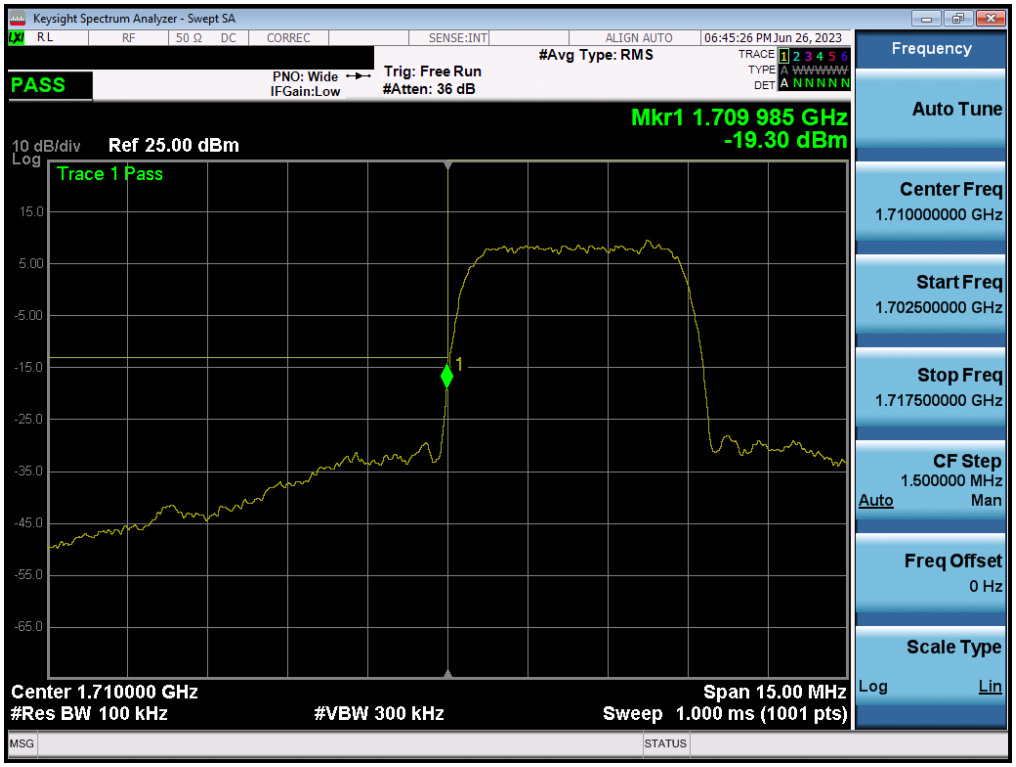


Plot 7-100. Upper Emission Mask Plot (LTE Band 13 - 5MHz QPSK – Full RB - Ant1)

WCDMA AWS – Ant1

Mode	Bandwidth	Channel	Test Case	Level [dBm]	Limit [dBm]	Margin [dB]
WCDMA1700	N/A	Low	Band Edge	-19.30	-13	-6.30
		Low	Extended	-15.04	-13	-2.04
		High	Band Edge	-31.02	-13	-18.02
		High	Extended	-18.41	-13	-5.41



Plot 7-101. Lower Band Edge Plot (WCDMA AWS – Ch. 1312 – Ant1)

Plot 7-102. Lower Extended Band Edge Plot (WCDMA AWS – Ch. 1312 – Ant1)

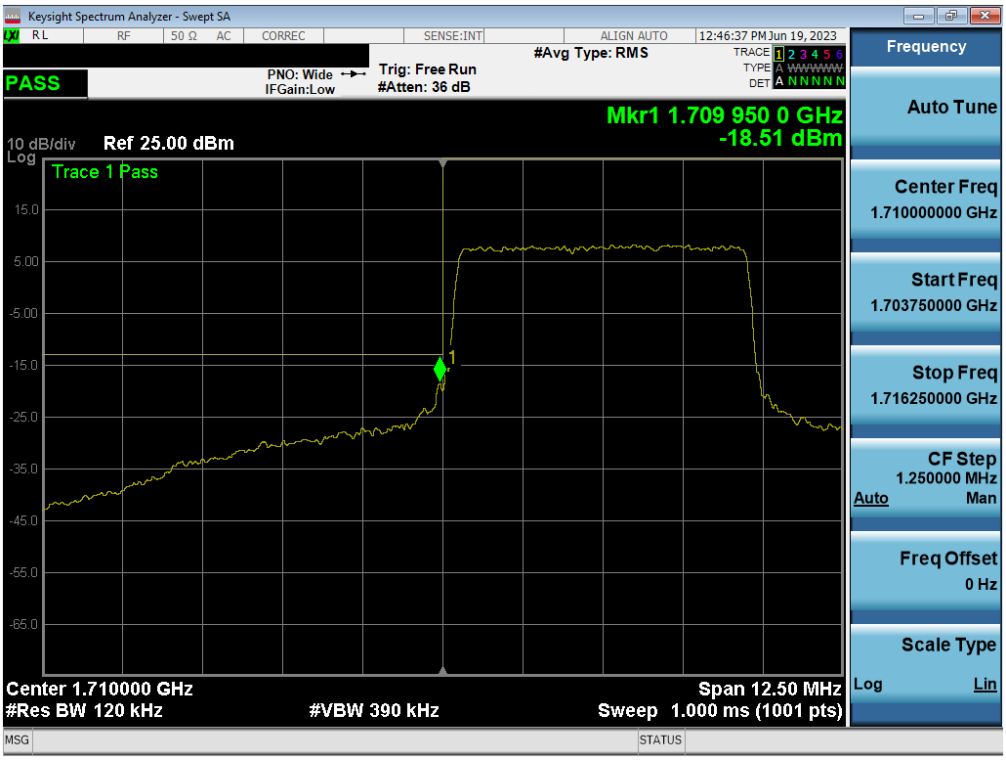
Plot 7-103. Upper Band Edge Plot (WCDMA AWS – Ch. 1513 – Ant1)

Plot 7-104. Upper Extended Band Edge Plot (WCDMA AWS – Ch. 1513– Ant1)

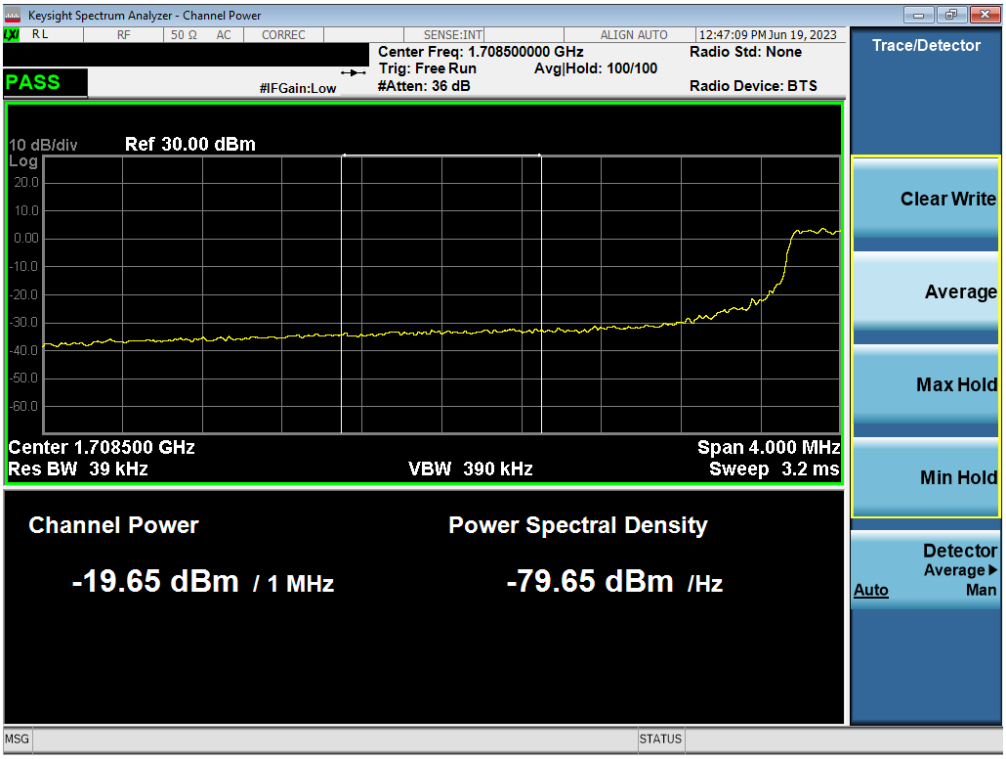
LTE Band 66/4 – Ant1

Mode	Bandwidth	Channel	Test Case	Level [dBm]	Limit [dBm]	Margin [dB]
LTE Band 66/4	20MHz	Low	Band Edge	-22.42	-13	-9.42
		Low	Extended	-22.10	-13	-9.10
		High (B4)	Band Edge	-25.79	-13	-12.79
		High (B4)	Extended	-25.44	-13	-12.44
		High (B66)	Band Edge	-25.78	-13	-12.78
		High (B66)	Extended	-24.26	-13	-11.26
	15MHz	Low	Band Edge	-21.19	-13	-8.19
		Low	Extended	-18.91	-13	-5.91
		High (B4)	Band Edge	-23.68	-13	-10.68
		High (B4)	Extended	-23.27	-13	-10.27
		High (B66)	Band Edge	-22.21	-13	-9.21
		High (B66)	Extended	-21.40	-13	-8.40
	10MHz	Low	Band Edge	-22.33	-13	-9.33
		Low	Extended	-20.87	-13	-7.87
		High (B4)	Band Edge	-21.31	-13	-8.31
		High (B4)	Extended	-21.31	-13	-8.31
		High (B66)	Band Edge	-24.47	-13	-11.47
		High (B66)	Extended	-20.16	-13	-7.16
	5MHz	Low	Band Edge	-18.51	-13	-5.51
		Low	Extended	-19.65	-13	-6.65
		High (B4)	Band Edge	-20.46	-13	-7.46
		High (B4)	Extended	-22.05	-13	-9.05
		High (B66)	Band Edge	-19.84	-13	-6.84
		High (B66)	Extended	-19.63	-13	-6.63
	3MHz	Low	Band Edge	-18.49	-13	-5.49
		Low	Extended	-19.19	-13	-6.19
		High (B4)	Band Edge	-19.32	-13	-6.32
		High (B4)	Extended	-20.62	-13	-7.62
		High (B66)	Band Edge	-19.30	-13	-6.30
		High (B66)	Extended	-18.08	-13	-5.08
	1.4MHz	Low	Band Edge	-21.40	-13	-8.40
		Low	Extended	-25.71	-13	-12.71
		High (B4)	Band Edge	-22.96	-13	-9.96
		High (B4)	Extended	-25.68	-13	-12.68
		High (B66)	Band Edge	-21.86	-13	-8.86
		High (B66)	Extended	-25.40	-13	-12.40

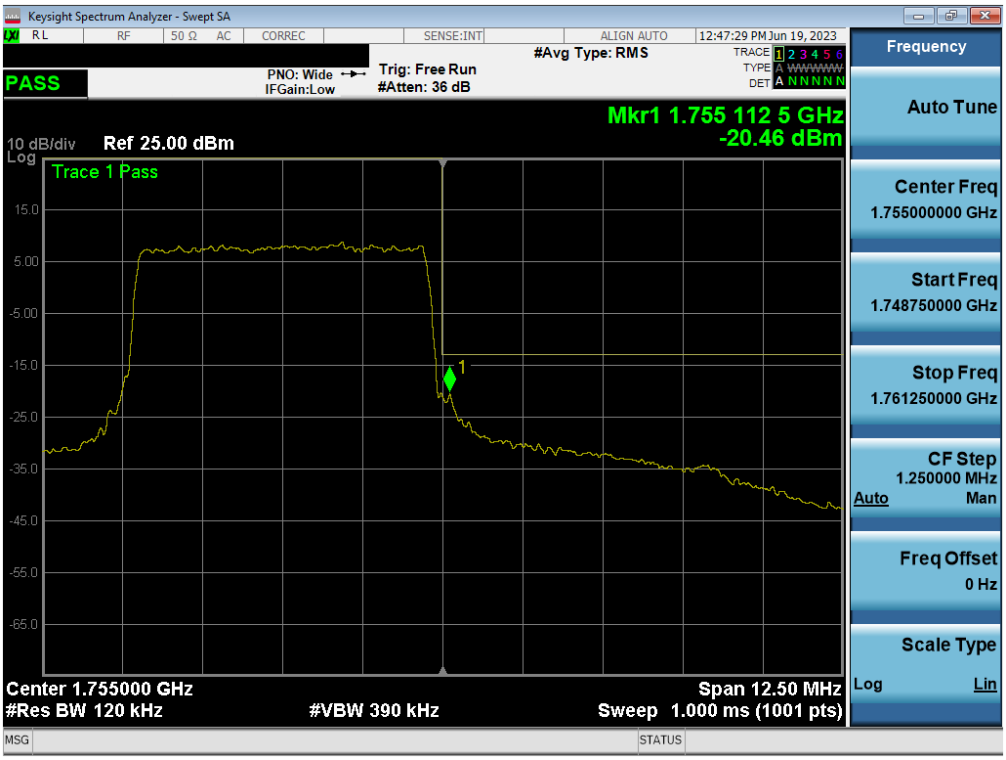
Table 7-15. Band Edge Test Results – Ant1



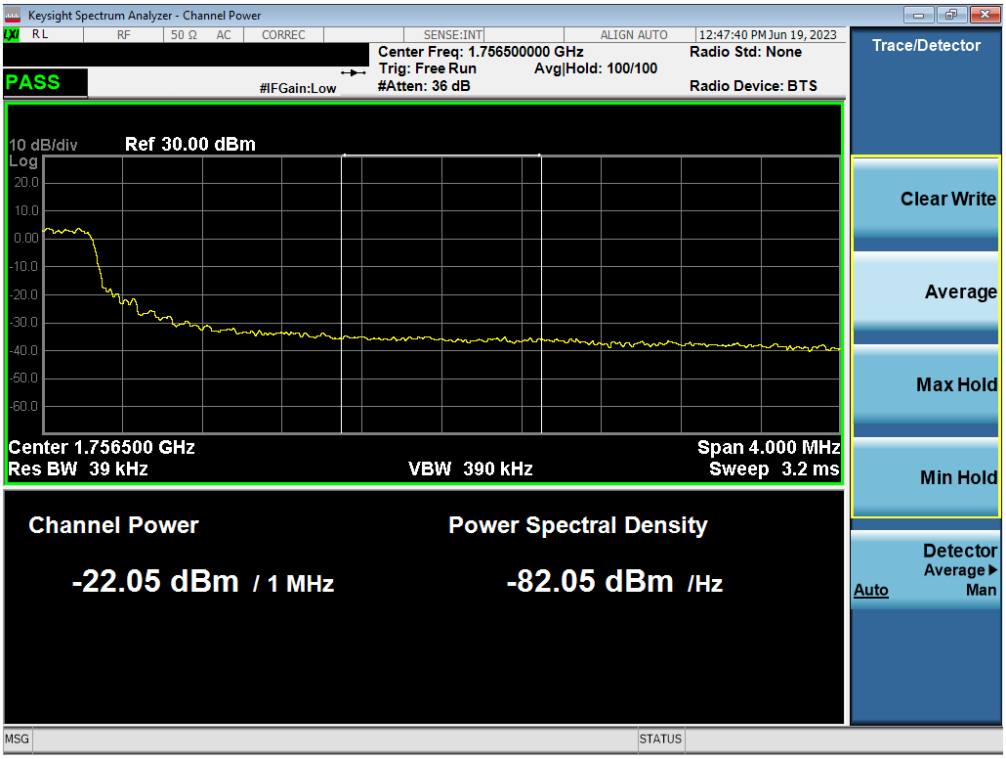
Plot 7-105. Lower Band Edge Plot (LTE Band 66/4 - 5MHz QPSK – Full RB - Ant1)



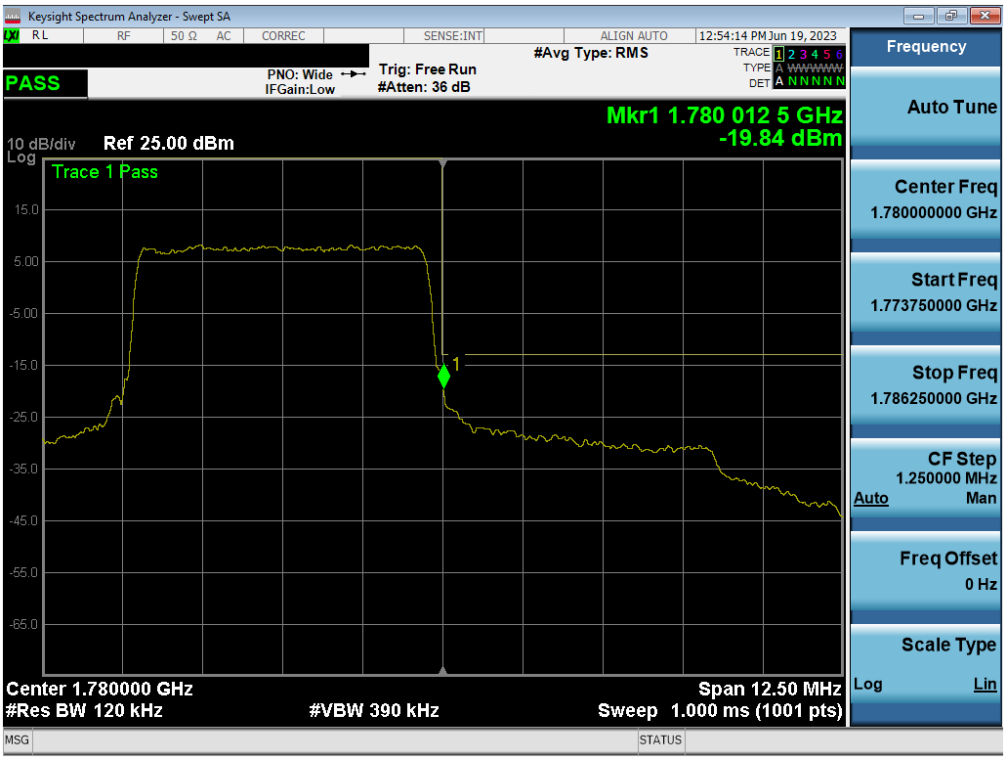
Plot 7-106. Lower Extended Band Edge Plot (LTE Band 66/4 - 5MHz QPSK – Full RB - Ant1)



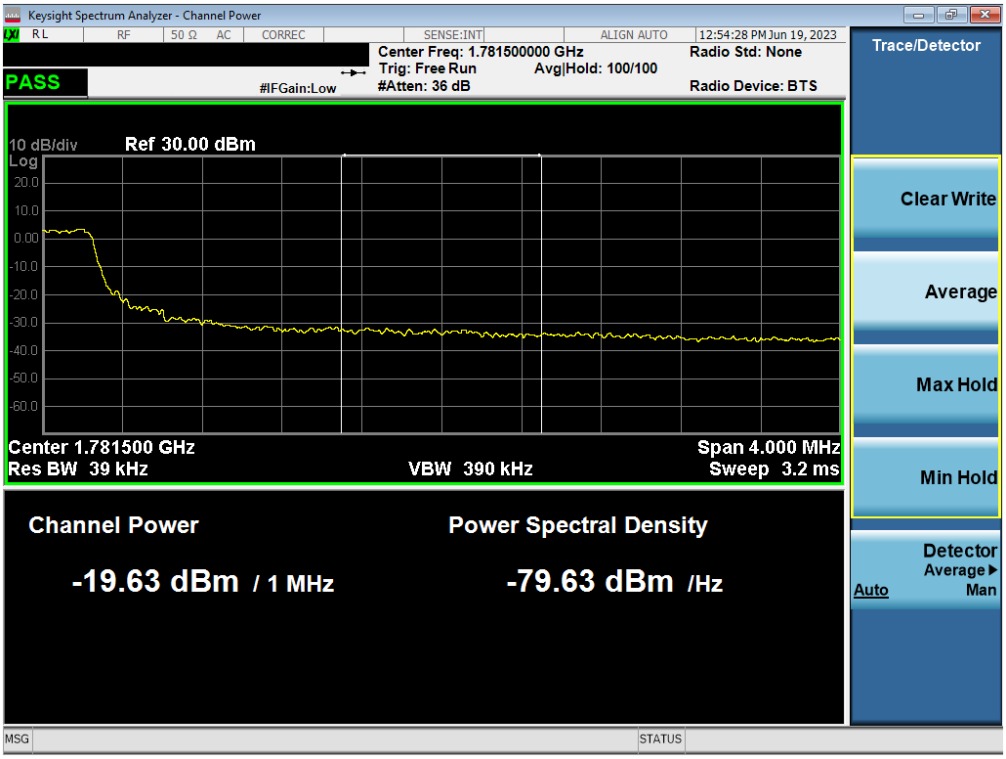
Plot 7-107. Upper Band Edge Plot (LTE Band 4 - 5MHz QPSK – Full RB - Ant1)



Plot 7-108. Upper Extended Band Edge Plot (LTE Band 4 - 5MHz QPSK – Full RB - Ant1)



Plot 7-109. Upper Band Edge Plot (LTE Band 66 - 5MHz QPSK – Full RB - Ant1)

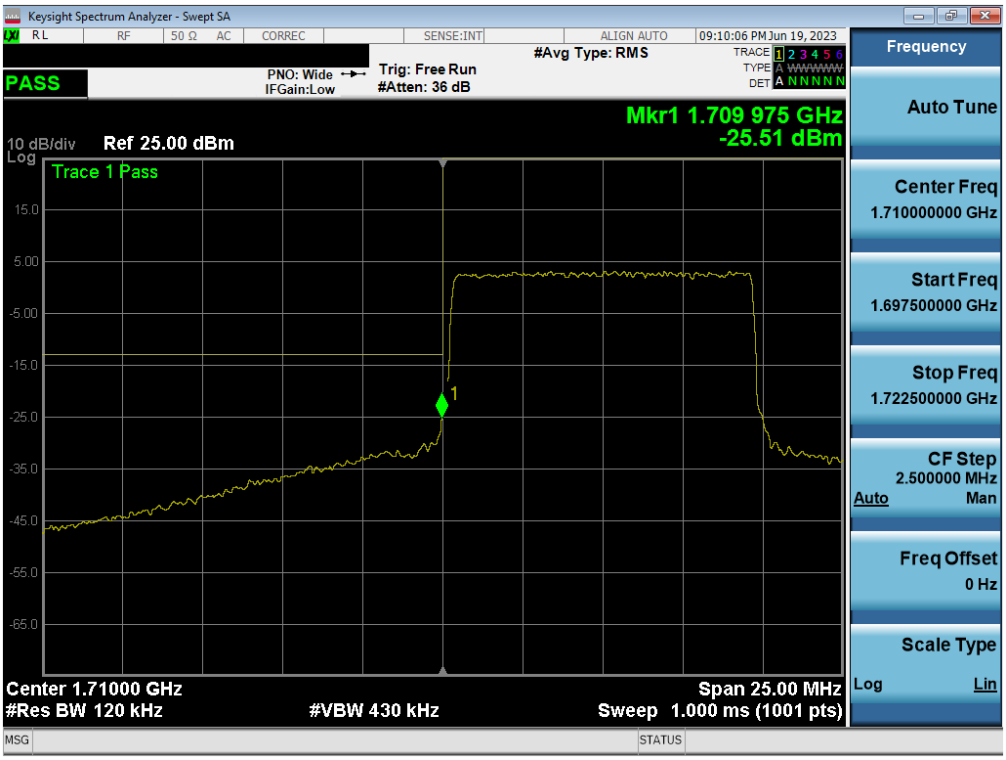


Plot 7-110. Upper Extended Band Edge Plot (LTE Band 66 - 5MHz QPSK – Full RB - Ant1)

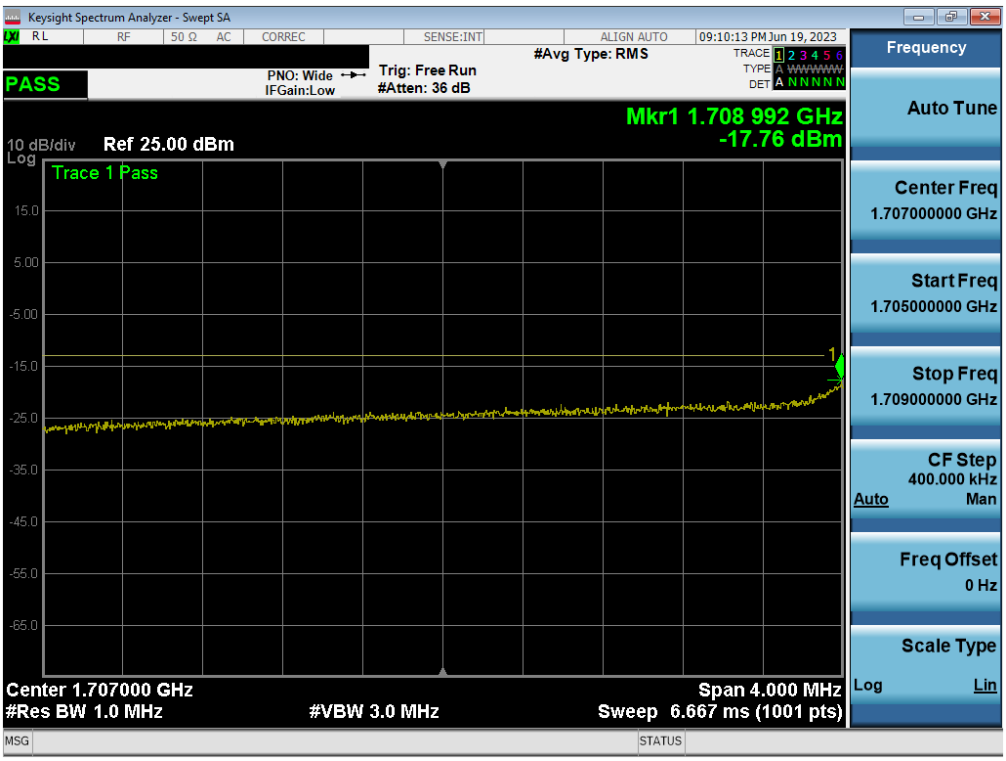
NR Band n66 – Ant1

Mode	Bandwidth	Channel	Test Case	Level [dBm]	Limit [dBm]	Margin [dB]
NR Band n66	40 MHz	Low	Band Edge	-23.06	-13	-10.06
		Low	Extended	-25.40	-13	-12.40
		High	Band Edge	-24.39	-13	-11.39
		High	Extended	-25.99	-13	-12.99
	30 MHz	Low	Band Edge	-25.78	-13	-12.78
		Low	Extended	-23.99	-13	-10.99
		High	Band Edge	-22.89	-13	-9.89
		High	Extended	-25.53	-13	-12.53
	20 MHz	Low	Band Edge	-26.63	-13	-13.63
		Low	Extended	-22.53	-13	-9.53
		High	Band Edge	-26.85	-13	-13.85
		High	Extended	-23.87	-13	-10.87
	15 MHz	Low	Band Edge	-27.02	-13	-14.02
		Low	Extended	-21.12	-13	-8.12
		High	Band Edge	-27.93	-13	-14.93
		High	Extended	-22.48	-13	-9.48
	10 MHz	Low	Band Edge	-25.52	-13	-12.52
		Low	Extended	-17.76	-13	-4.76
		High	Band Edge	-27.77	-13	-14.77
		High	Extended	-18.80	-13	-5.80
	5 MHz	Low	Band Edge	-25.32	-13	-12.32
		Low	Extended	-22.14	-13	-9.14
		High	Band Edge	-24.17	-13	-11.17
		High	Extended	-21.68	-13	-8.68

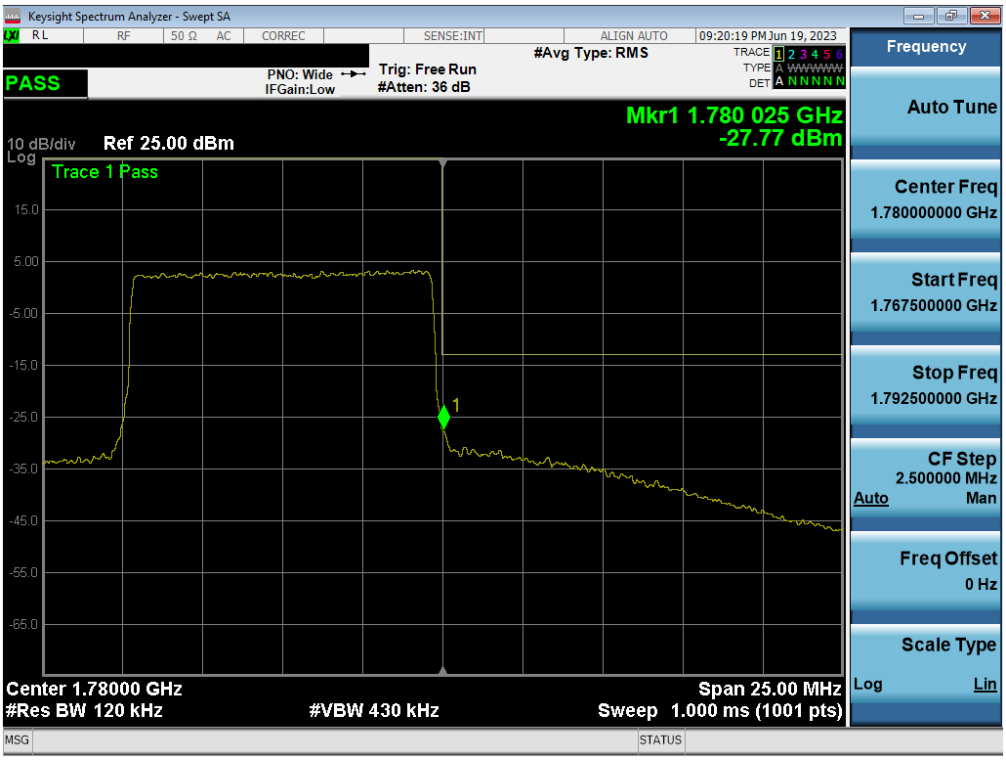
Table 7-16. Band Edge Test Results – Ant1



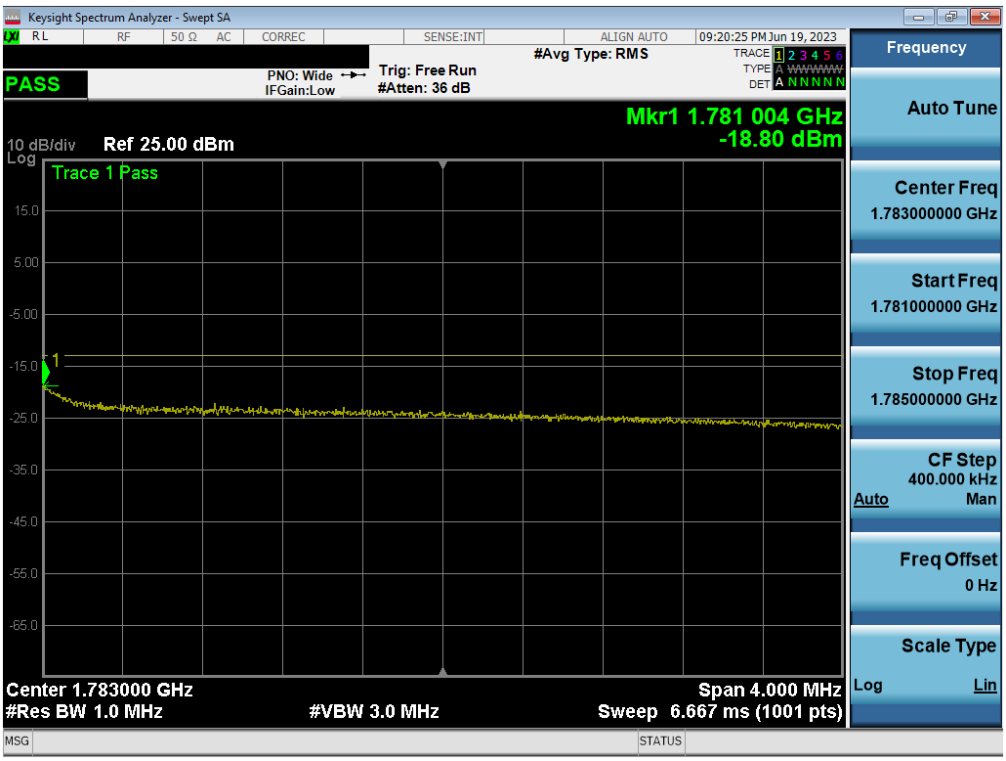
Plot 7-111. Lower Band Edge Plot (NR Band n66 – 10.0MHz - Full RB - Ant1)



Plot 7-112. Lower Extended Band Edge Plot (NR Band n66 – 10.0MHz - Full RB - Ant1)



Plot 7-113. Upper Band Edge Plot (NR Band n66 – 10.0MHz - Full RB - Ant1)

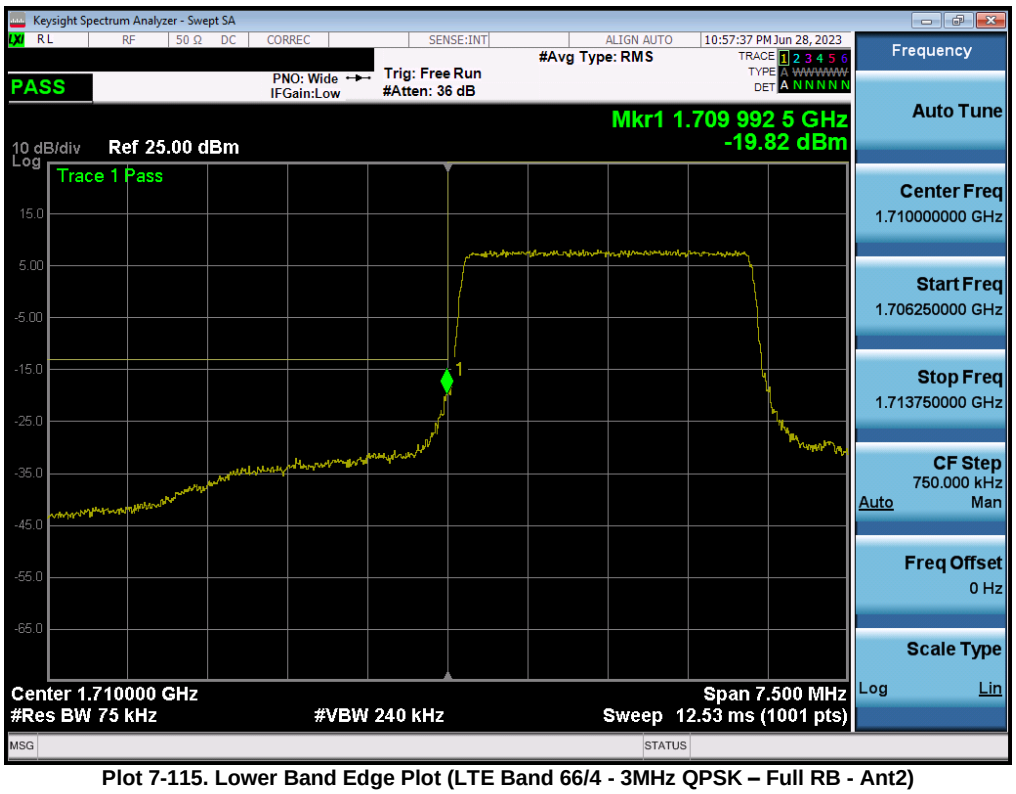


Plot 7-114. Upper Extended Band Edge Plot (NR Band n66 – 10.0MHz - Full RB - Ant1)

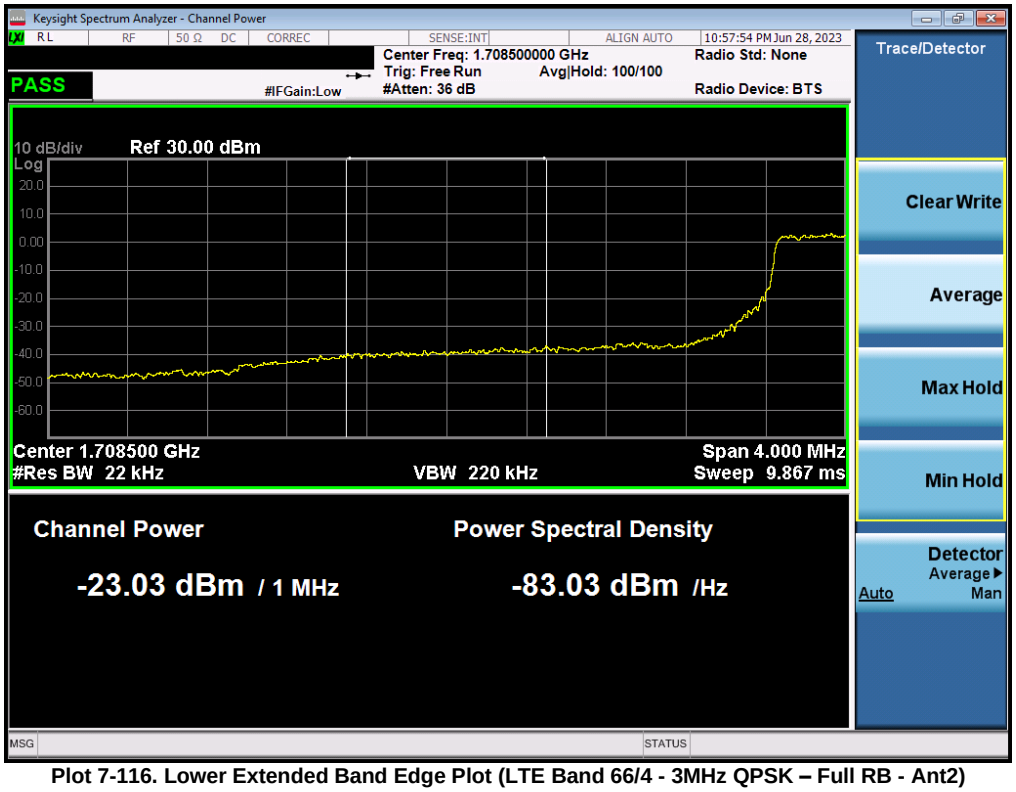
LTE Band 66/4 – Ant2

Mode	Bandwidth	Channel	Test Case	Level [dBm]	Limit [dBm]	Margin [dB]
LTE Band 66/4	20MHz	Low	Band Edge	-26.89	-13	-13.89
		Low	Extended	-26.78	-13	-13.78
		High (B4)	Band Edge	-27.94	-13	-14.94
		High (B4)	Extended	-29.29	-13	-16.29
		High (B66)	Band Edge	-27.91	-13	-14.91
		High (B66)	Extended	-29.00	-13	-16.00
	15MHz	Low	Band Edge	-26.46	-13	-13.46
		Low	Extended	-25.45	-13	-12.45
		High (B4)	Band Edge	-25.01	-13	-12.01
		High (B4)	Extended	-27.31	-13	-14.31
		High (B66)	Band Edge	-28.24	-13	-15.24
		High (B66)	Extended	-27.51	-13	-14.51
	10MHz	Low	Band Edge	-24.96	-13	-11.96
		Low	Extended	-21.49	-13	-8.49
		High (B4)	Band Edge	-23.99	-13	-10.99
		High (B4)	Extended	-22.71	-13	-9.71
		High (B66)	Band Edge	-23.99	-13	-10.99
		High (B66)	Extended	-22.52	-13	-9.52
	5MHz	Low	Band Edge	-20.76	-13	-7.76
		Low	Extended	-23.74	-13	-10.74
		High (B4)	Band Edge	-20.32	-13	-7.32
		High (B4)	Extended	-24.83	-13	-11.83
		High (B66)	Band Edge	-21.79	-13	-8.79
		High (B66)	Extended	-28.37	-13	-15.37
	3MHz	Low	Band Edge	-19.83	-13	-6.83
		Low	Extended	-23.03	-13	-10.03
		High (B4)	Band Edge	-19.00	-13	-6.00
		High (B4)	Extended	-23.61	-13	-10.61
		High (B66)	Band Edge	-19.76	-13	-6.76
		High (B66)	Extended	-27.30	-13	-14.30
	1.4MHz	Low	Band Edge	-24.12	-13	-11.12
		Low	Extended	-27.90	-13	-14.90
		High (B4)	Band Edge	-24.74	-13	-11.74
		High (B4)	Extended	-29.48	-13	-16.48
		High (B66)	Band Edge	-25.04	-13	-12.04
		High (B66)	Extended	-30.08	-13	-17.08

Table 7-17. Band Edge Test Results – Ant2

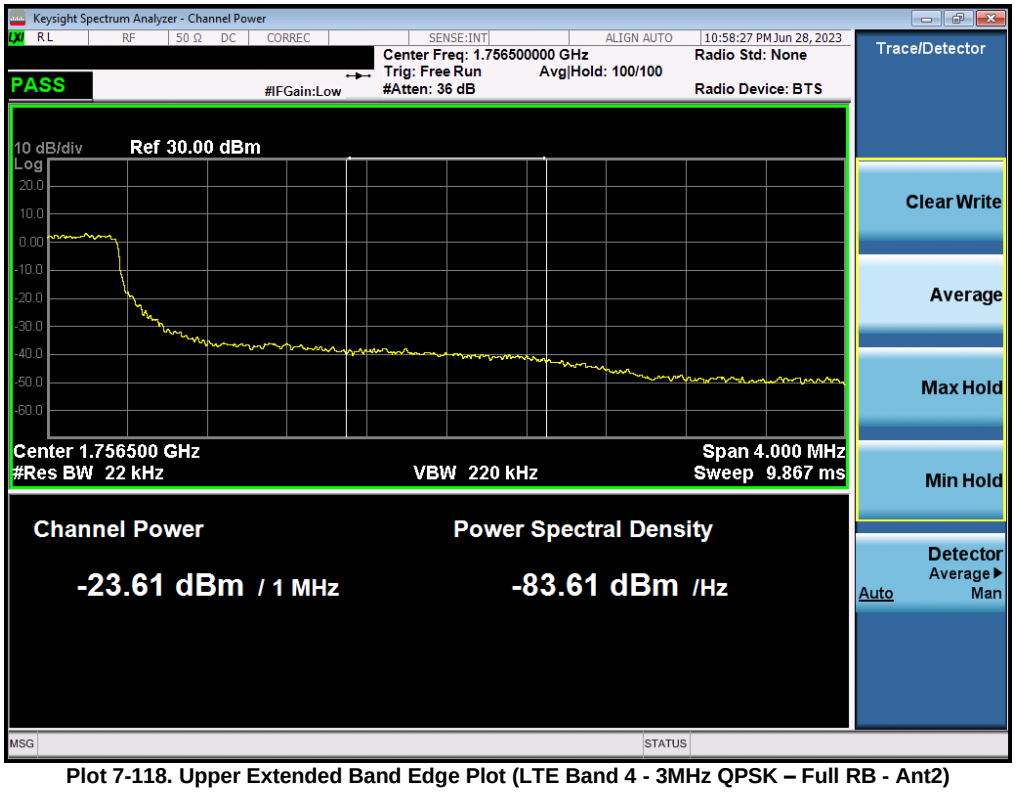


Plot 7-115. Lower Band Edge Plot (LTE Band 66/4 - 3MHz QPSK – Full RB - Ant2)



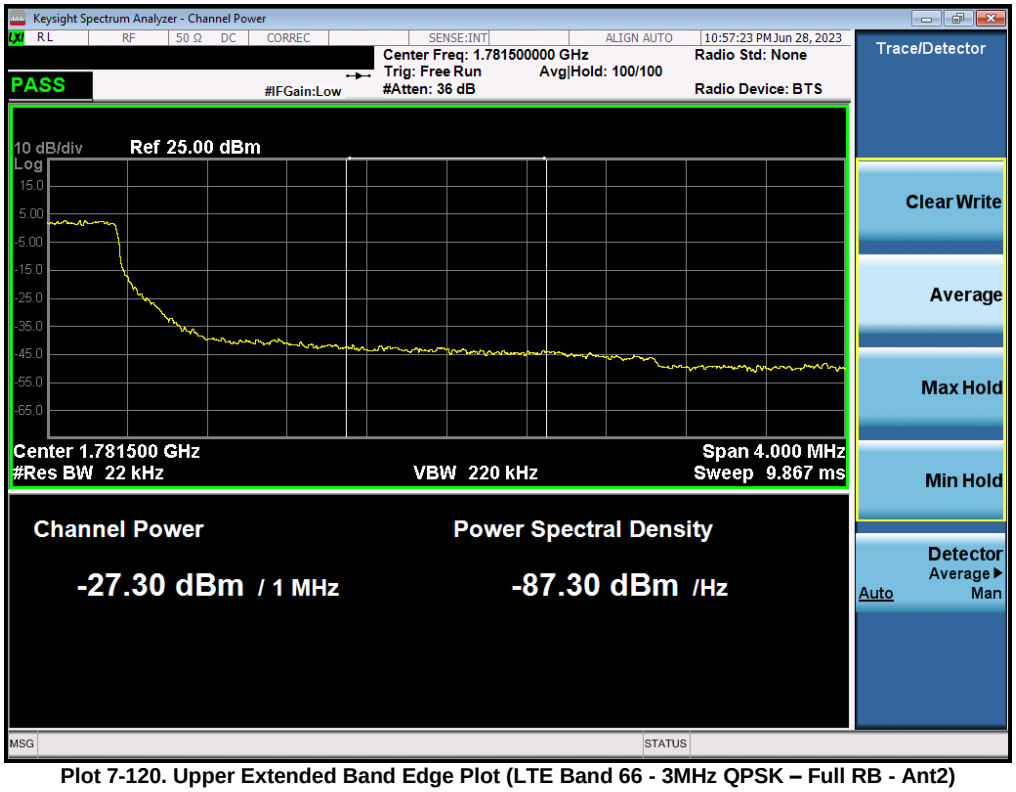
Plot 7-116. Lower Extended Band Edge Plot (LTE Band 66/4 - 3MHz QPSK – Full RB - Ant2)

Plot 7-117. Upper Band Edge Plot (LTE Band 4 - 3MHz QPSK – Full RB - Ant2)



Plot 7-118. Upper Extended Band Edge Plot (LTE Band 4 - 3MHz QPSK – Full RB - Ant2)

Plot 7-119. Upper Band Edge Plot (LTE Band 66 - 3MHz QPSK – Full RB - Ant2)

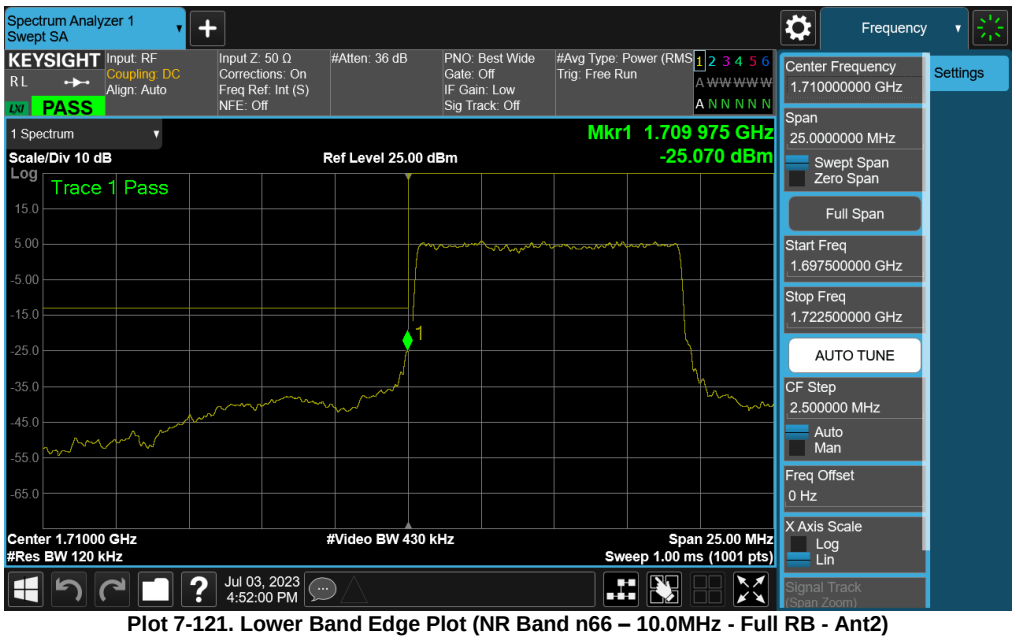


Plot 7-120. Upper Extended Band Edge Plot (LTE Band 66 - 3MHz QPSK – Full RB - Ant2)

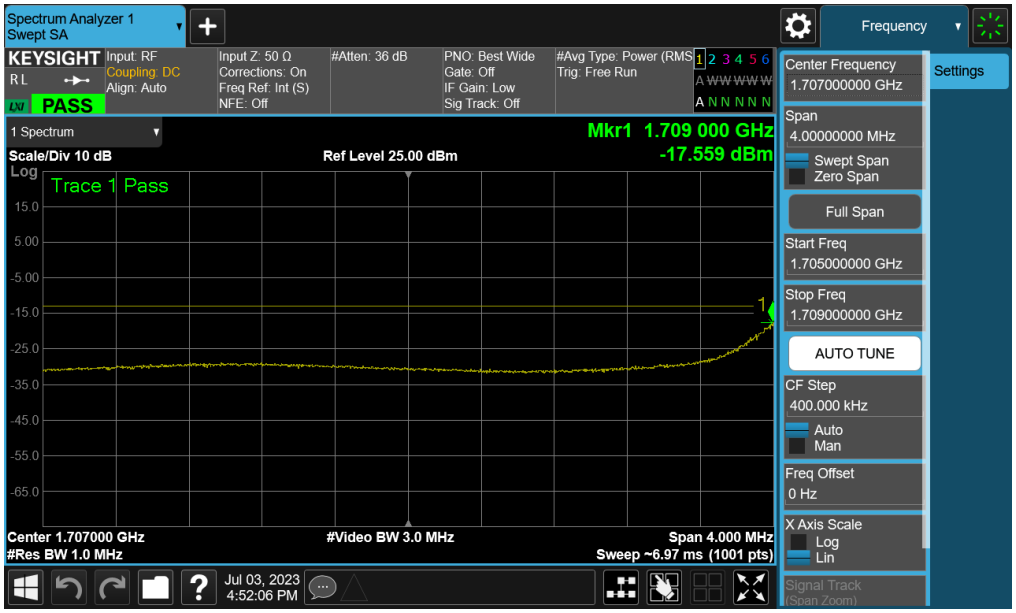
NR Band n66 – Ant2

Mode	Bandwidth	Channel	Test Case	Level [dBm]	Limit [dBm]	Margin [dB]
NR Band n66	40 MHz	Low	Band Edge	-22.99	-13	-9.99
		Low	Extended	-26.28	-13	-13.28
		High	Band Edge	-20.63	-13	-7.63
		High	Extended	-25.80	-13	-12.80
	30 MHz	Low	Band Edge	-23.38	-13	-10.38
		Low	Extended	-24.63	-13	-11.63
		High	Band Edge	-23.44	-13	-10.44
		High	Extended	-25.47	-13	-12.47
	20 MHz	Low	Band Edge	-27.90	-13	-14.90
		Low	Extended	-25.01	-13	-12.01
		High	Band Edge	-28.45	-13	-15.45
		High	Extended	-25.82	-13	-12.82
	15 MHz	Low	Band Edge	-27.79	-13	-14.79
		Low	Extended	-22.09	-13	-9.09
		High	Band Edge	-28.96	-13	-15.96
		High	Extended	-24.92	-13	-11.92
	10 MHz	Low	Band Edge	-25.07	-13	-12.07
		Low	Extended	-17.56	-13	-4.56
		High	Band Edge	-33.07	-13	-20.07
		High	Extended	-28.45	-13	-15.45
	5 MHz	Low	Band Edge	-24.11	-13	-11.11
		Low	Extended	-24.55	-13	-11.55
		High	Band Edge	-21.88	-13	-8.88
		High	Extended	-23.91	-13	-10.91

Table 7-18. Band Edge Test Results – Ant2

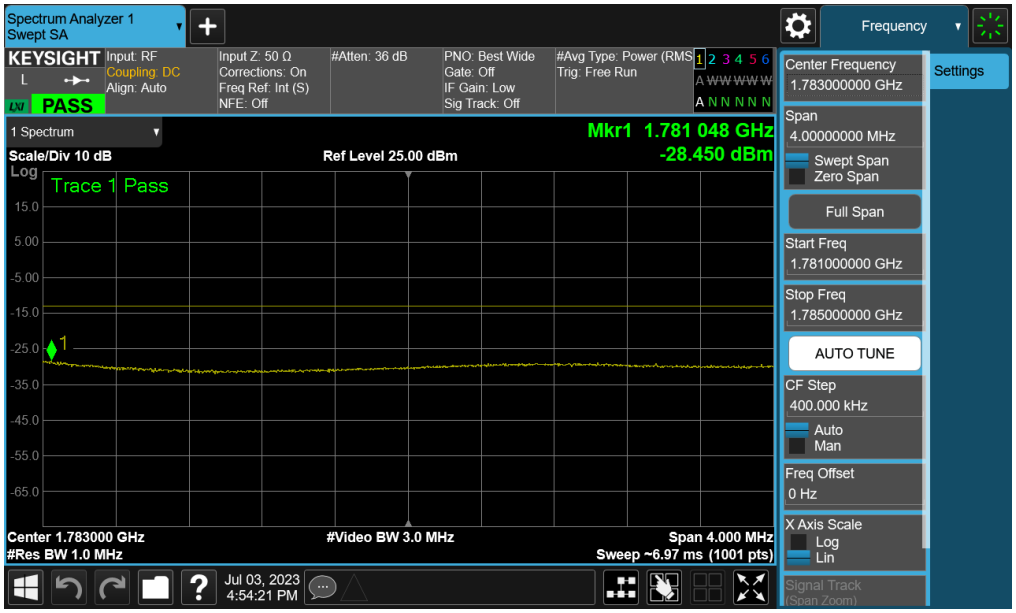


Plot 7-121. Lower Band Edge Plot (NR Band n66 – 10.0MHz - Full RB - Ant2)



Plot 7-122. Lower Extended Band Edge Plot (NR Band n66 – 10.0MHz - Full RB - Ant2)

Plot 7-123. Upper Band Edge Plot (NR Band n66 – 10.0MHz - Full RB - Ant2)



Plot 7-124. 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.

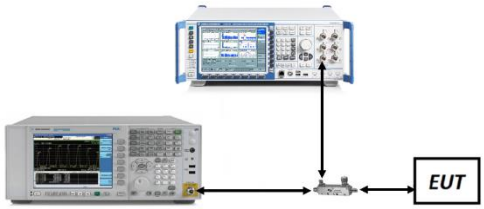


Figure 7-5. Test Instrument & Measurement Setup

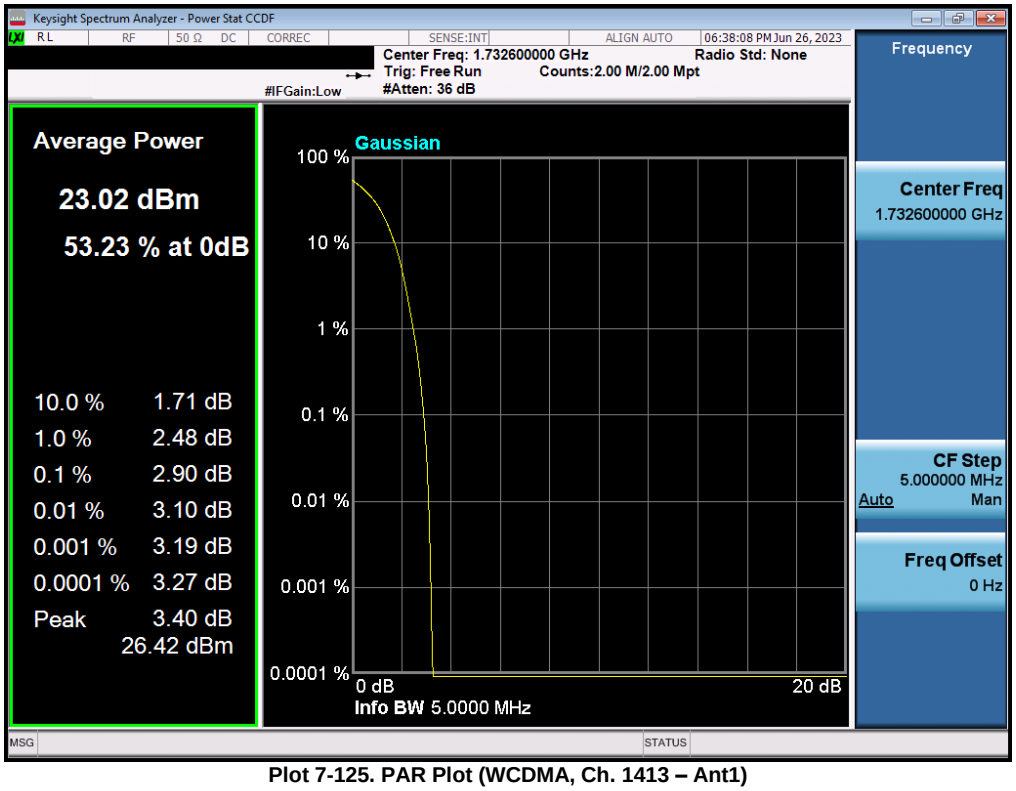
Test Notes

None.

Mode	Bandwidth	Modulation	Average Power [dBm]	PAR at 0.1% [dB]	PAR Limit [dB]	Margin [dB]
WCDMA1700	N/A	Spread Spectrum	23.02	2.90	13	-10.10
LTE Band 66/4	20 MHz	QPSK	23.09	5.20	13	-7.80
		256QAM	19.14	6.87	13	-6.13
	15 MHz	QPSK	23.17	5.40	13	-7.60
		256QAM	19.10	6.81	13	-6.19
	10 MHz	QPSK	23.17	5.26	13	-7.74
		256QAM	19.20	6.79	13	-6.21
	5 MHz	QPSK	23.06	5.26	13	-7.74
		256QAM	19.49	7.48	13	-5.52
	3 MHz	QPSK	23.07	5.25	13	-7.75
		256QAM	19.14	6.87	13	-6.13
	1.4 MHz	QPSK	23.05	5.18	13	-7.82
		256QAM	19.11	6.83	13	-6.17
NR Band n66	40 MHz	π/2 BPSK	23.62	4.86	13	-8.14
		QPSK	21.12	7.96	13	-5.04
		256QAM	17.63	8.61	13	-4.39
	30 MHz	π/2 BPSK	23.15	5.43	13	-7.57
		QPSK	21.18	8.00	13	-5.00
		256QAM	17.70	8.51	13	-4.49
	20 MHz	π/2 BPSK	23.73	4.34	13	-8.66
		QPSK	23.23	5.26	13	-7.74
		256QAM	19.72	6.69	13	-6.31
	15 MHz	π/2 BPSK	23.72	4.25	13	-8.75
		QPSK	21.18	7.93	13	-5.07
		256QAM	17.68	8.52	13	-4.48
	10 MHz	π/2 BPSK	23.70	4.31	13	-8.69
		QPSK	21.21	7.90	13	-5.10
		256QAM	17.71	8.56	13	-4.44
	5 MHz	π/2 BPSK	23.69	4.23	13	-8.77
		QPSK	21.19	7.82	13	-5.18
		256QAM	17.66	8.50	13	-4.50

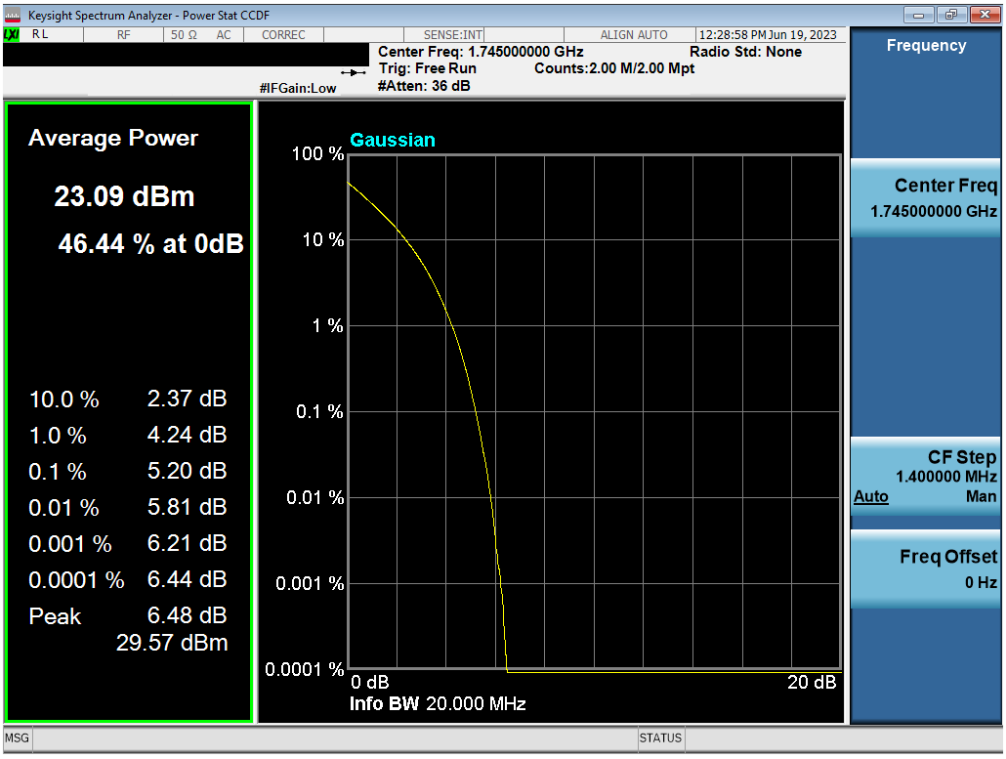
Table 7-19. Peak-Average Ratio – Ant1

WCDMA AWS – Ant1

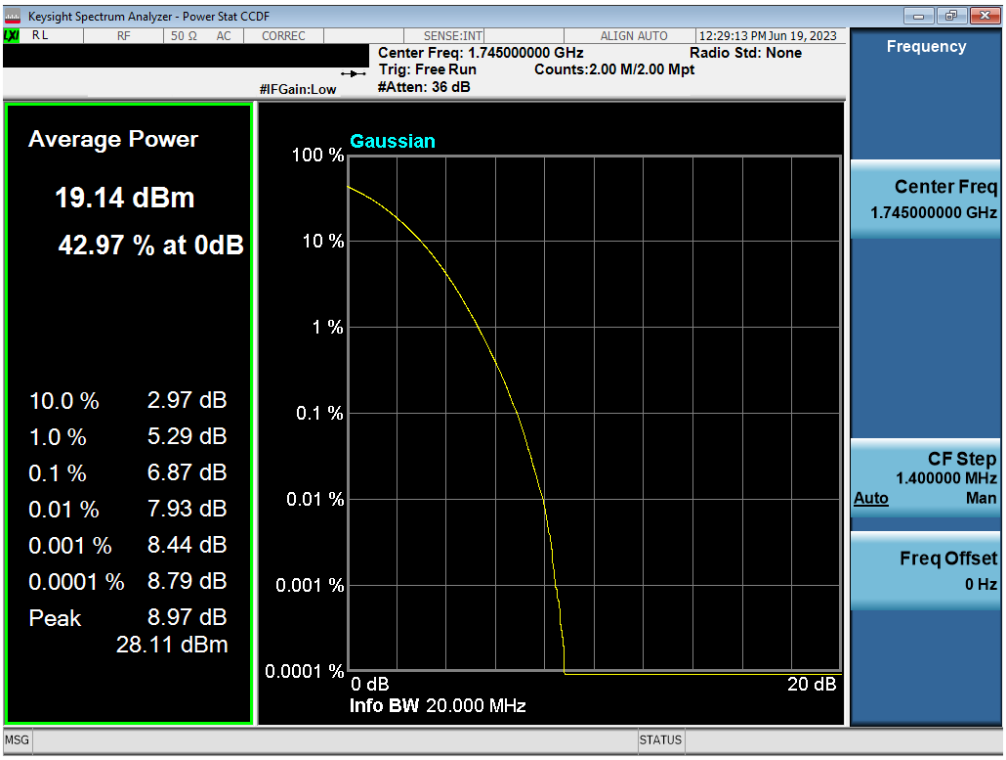


Plot 7-125. PAR Plot (WCDMA, Ch. 1413 – Ant1)

LTE Band 66/4 – Ant1



Plot 7-126. PAR Plot (LTE Band 66/4 - 20MHz QPSK - Full RB - Ant1)

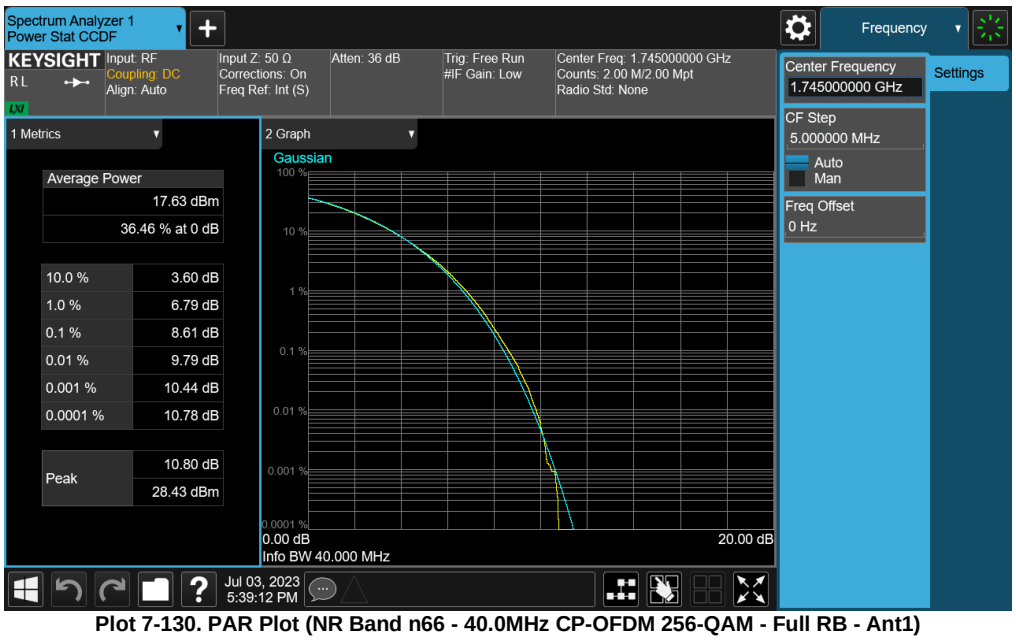


Plot 7-127. PAR Plot (LTE Band 66/4 - 20MHz 256-QAM - Full RB - Ant1)

NR Band n66 – Ant1

Plot 7-128. PAR Plot (NR Band n66 - 40.0MHz DFT-s-OFDM BPSK - Full RB - Ant1)

Plot 7-129. PAR Plot (NR Band n66 - 40.0MHz CP-OFDM QPSK - Full RB - Ant1)

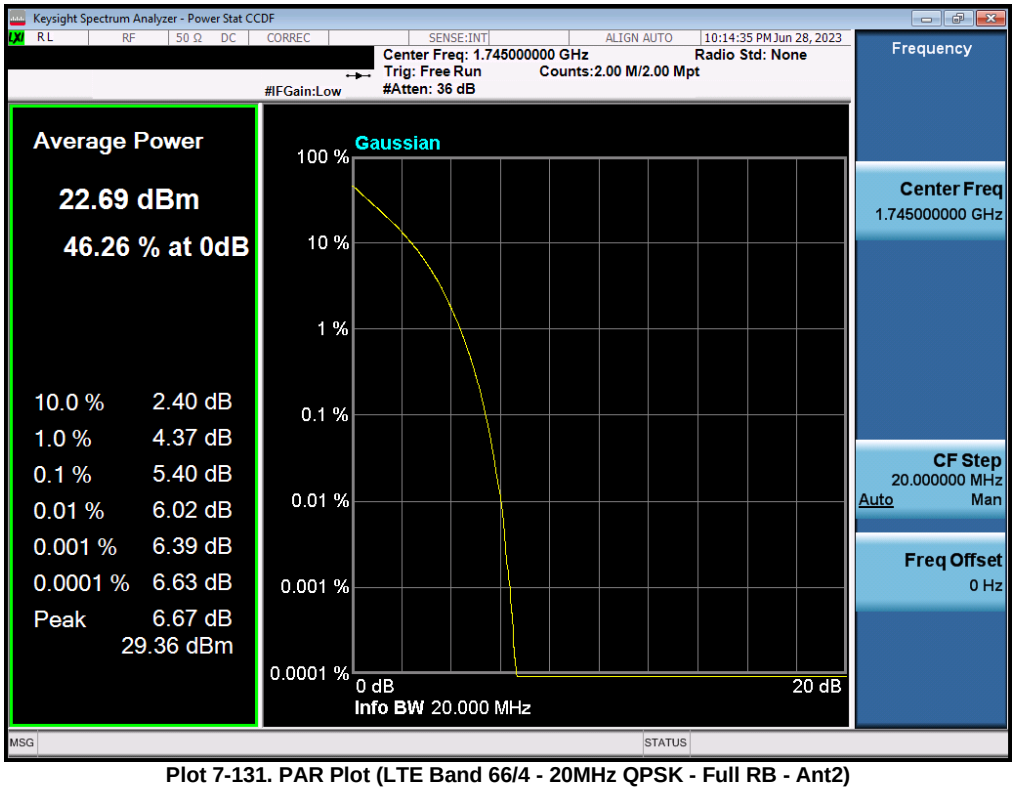


Plot 7-130. PAR Plot (NR Band n66 - 40.0MHz CP-OFDM 256-QAM - Full RB - Ant1)

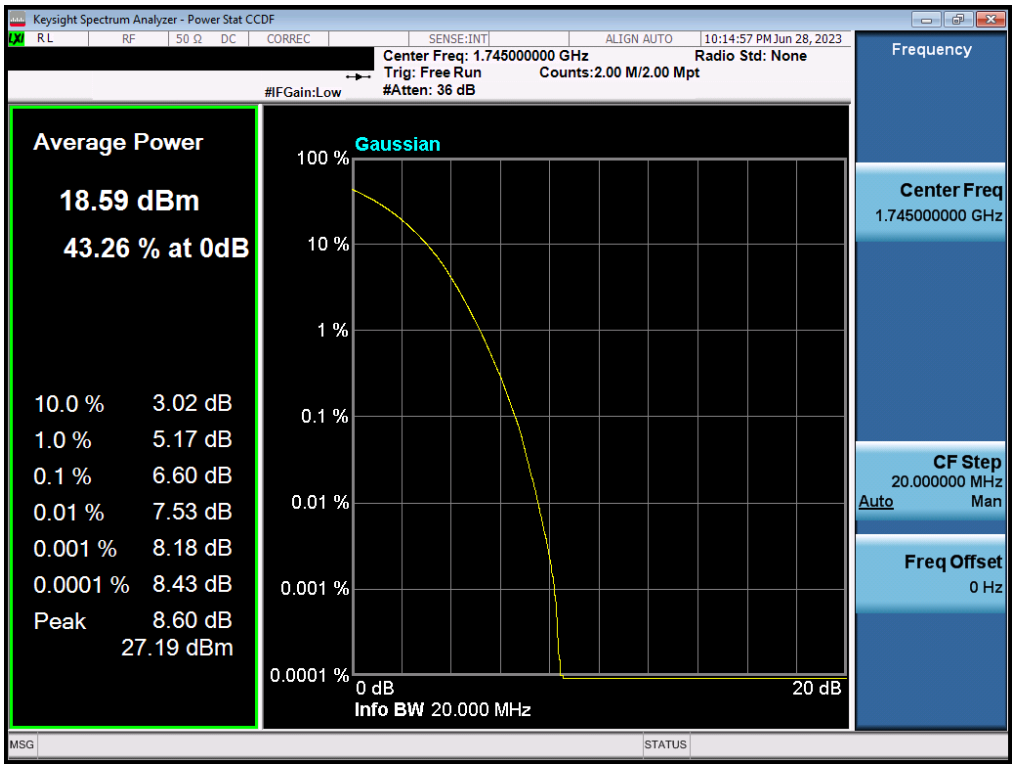
Mode	Bandwidth	Modulation	Average Power [dBm]	PAR at 0.1% [dB]	PAR Limit [dB]	Margin [dB]
LTE Band 66/4	20 MHz	QPSK	22.69	5.40	13.00	-7.60
		256QAM	18.59	6.60	13.00	-6.40
	15 MHz	QPSK	22.70	5.35	13.00	-7.65
		256QAM	18.71	6.54	13.00	-6.46
	10 MHz	QPSK	22.76	5.56	13.00	-7.44
		256QAM	18.73	6.57	13.00	-6.43
	5 MHz	QPSK	22.70	5.48	13.00	-7.52
		256QAM	18.71	6.56	13.00	-6.44
	3 MHz	QPSK	22.65	5.64	13.00	-7.36
		256QAM	18.67	6.58	13.00	-6.42
	1.4 MHz	QPSK	22.58	5.48	13.00	-7.52
		256QAM	18.65	6.65	13.00	-6.35
NR Band n66	40 MHz	π/2 BPSK	23.32	4.82	13.00	-8.18
		QPSK	22.80	5.44	13.00	-7.56
		256QAM	19.30	6.46	13.00	-6.54
	30 MHz	π/2 BPSK	23.33	4.22	13.00	-8.78
		QPSK	22.84	5.33	13.00	-7.67
		256QAM	19.31	6.34	13.00	-6.66
	20 MHz	π/2 BPSK	23.31	4.20	13.00	-8.80
		QPSK	20.82	7.82	13.00	-5.18
		256QAM	17.31	8.31	13.00	-4.69
	15 MHz	π/2 BPSK	23.33	4.10	13.00	-8.90
		QPSK	20.82	7.81	13.00	-5.19
		256QAM	17.34	8.34	13.00	-4.66
	10 MHz	π/2 BPSK	23.30	4.23	13.00	-8.77
		QPSK	20.83	7.86	13.00	-5.14
		256QAM	17.33	8.19	13.00	-4.81
	5 MHz	π/2 BPSK	23.32	4.21	13.00	-8.79
		QPSK	20.83	7.77	13.00	-5.23
		256QAM	17.30	8.23	13.00	-4.77

Table 7-20. Peak-Average Ratio – Ant2

LTE Band 66/4 – Ant2



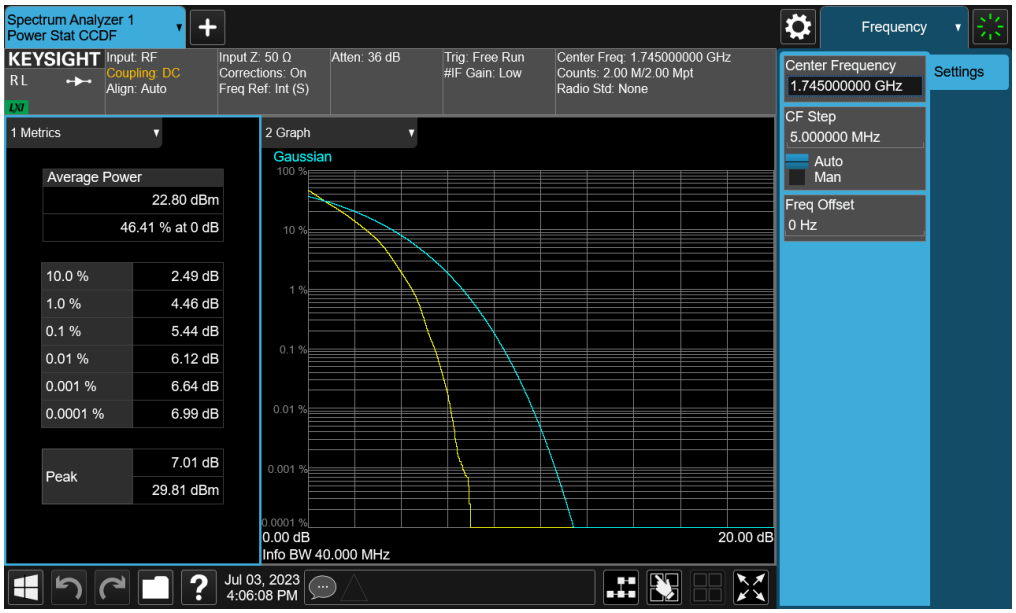
Plot 7-131. PAR Plot (LTE Band 66/4 - 20MHz QPSK - Full RB - Ant2)



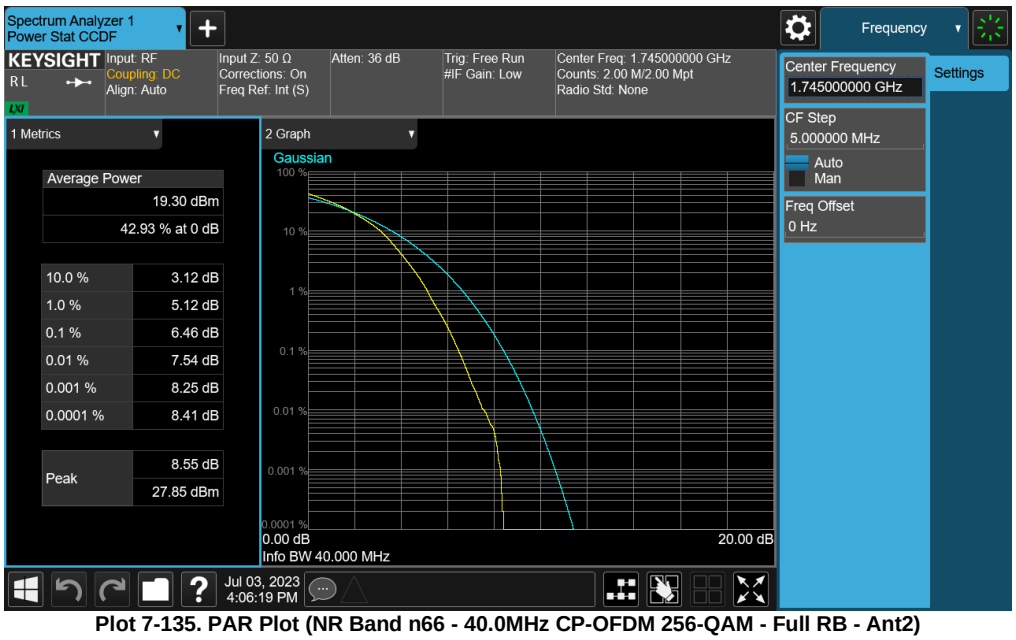
Plot 7-132. PAR Plot (LTE Band 66/4 - 20MHz 256-QAM - Full RB - Ant2)

NR Band n66 – Ant2

Plot 7-133. PAR Plot (NR Band n66 - 40.0MHz DFT-s-OFDM BPSK - Full RB - Ant2)



Plot 7-134. PAR Plot (NR Band n66 - 40.0MHz CP-OFDM QPSK - Full RB - Ant2)



Plot 7-135. PAR Plot (NR Band n66 - 40.0MHz 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.

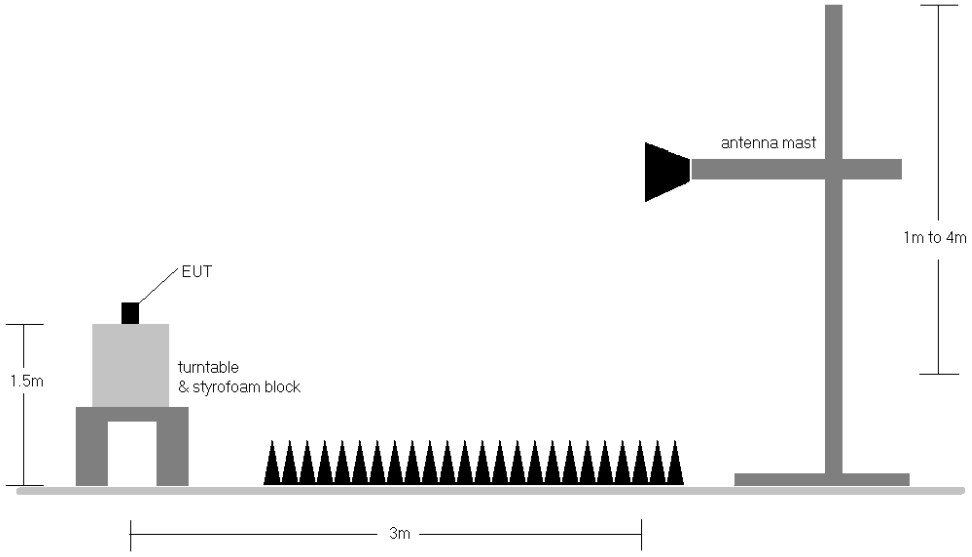


Figure 7-6. Radiated Test Setup <1GHz

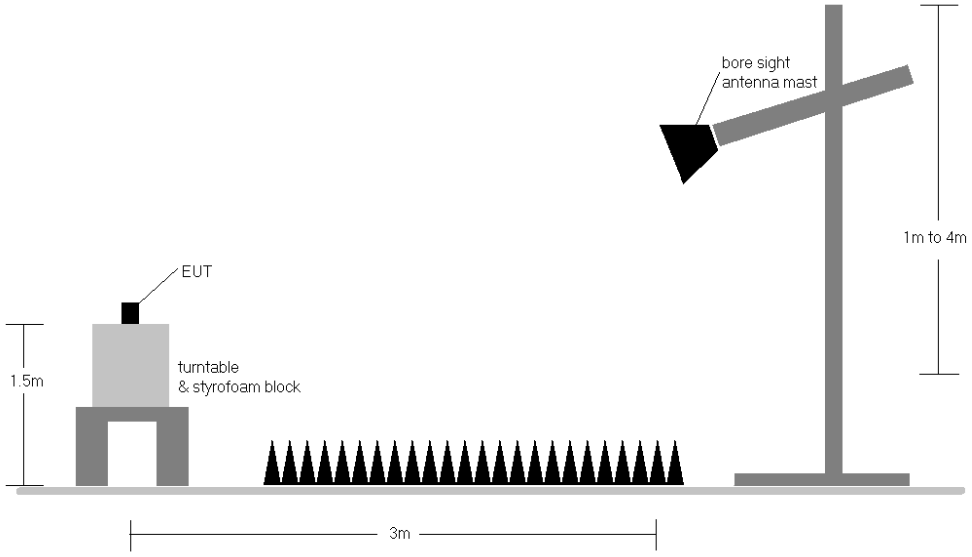


Figure 7-7. Radiated Test Setup >1GHz

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) This unit was tested with its standard battery.

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.

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]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
10 MHz	QPSK	704.0	H	131	280	1.14	1 / 49	19.73	20.87	0.122	36.99	-16.12	18.72	0.074	34.77	-16.05
	QPSK	707.5	H	144	287	1.16	1 / 0	19.71	20.87	0.122	36.99	-16.12	18.72	0.074	34.77	-16.05
	QPSK	711.0	H	130	284	1.17	1 / 49	20.26	**21.43**	0.139	36.99	-15.56	**19.28**	0.085	34.77	-15.49
	16-QAM	711.0	H	130	284	1.17	1 / 49	18.03	19.20	0.083	36.99	-17.79	17.05	0.051	34.77	-17.72
5 MHz	QPSK	701.5	H	131	280	1.13	1 / 0	19.83	20.96	0.125	36.99	-16.03	18.81	0.076	34.77	-15.96
	QPSK	707.5	H	144	287	1.16	1 / 0	19.63	20.79	0.120	36.99	-16.20	18.64	0.073	34.77	-16.13
	QPSK	713.5	H	130	284	1.19	1 / 12	20.17	**21.36**	0.137	36.99	-15.63	**19.21**	0.083	34.77	-15.56
	16-QAM	713.5	H	130	284	1.19	1 / 12	18.40	19.59	0.091	36.99	-17.40	17.44	0.055	34.77	-17.33
3 MHz	QPSK	700.5	H	131	280	1.12	1 / 0	19.86	20.98	0.125	36.99	-16.01	18.83	0.076	34.77	-15.94
	QPSK	707.5	H	144	287	1.16	1 / 14	19.73	20.89	0.123	36.99	-16.10	18.74	0.075	34.77	-16.03
	QPSK	714.5	H	130	284	1.19	1 / 7	20.10	**21.29**	0.135	36.99	-15.70	**19.14**	0.082	34.77	-15.63
	16-QAM	714.5	H	130	284	1.19	1 / 7	18.00	19.19	0.083	36.99	-17.80	17.04	0.051	34.77	-17.73
1.4 MHz	QPSK	699.7	H	131	280	1.12	1 / 5	19.72	20.83	0.121	36.99	-16.16	18.68	0.074	34.77	-16.09
	QPSK	707.5	H	144	287	1.16	1 / 5	19.63	20.79	0.120	36.99	-16.20	18.64	0.073	34.77	-16.13
	QPSK	715.3	H	130	284	1.20	1 / 3	20.13	**21.33**	0.136	36.99	-15.66	**19.18**	0.083	34.77	-15.59
	16-QAM	699.7	H	131	280	1.12	1 / 3	18.05	19.16	0.082	36.99	-17.83	17.01	0.050	34.77	-17.76
10 MHz	Opposite Pol.	711.0	V	174	319	1.17	1 / 49	18.66	19.83	0.096	36.99	-17.16	17.68	0.059	34.77	-17.09
	WCP	711.0	V	123	246	1.17	1 / 49	17.44	18.61	0.073	36.99	-18.38	16.46	0.044	34.77	-18.31

Table 7-21. 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]	EIRP [dBm]	EIRP [Watts]	EIRP Limit [dBm]	Margin [dB]	ERP [dBm]	ERP [Watts]	ERP Limit [dBm]	Margin [dB]
10 MHz	QPSK	782.0	H	105	287	1.09	1 / 0	20.88	**21.97**	0.157	36.99	-15.02	**19.82**	0.096	34.77	-14.96
	16-QAM	782.0	H	105	287	1.09	1 / 0	18.53	19.62	0.092	36.99	-17.37	17.47	0.056	34.77	-17.31
5 MHz	QPSK	779.5	H	105	287	1.11	1 / 0	21.01	22.12	0.163	36.99	-14.87	19.97	0.099	34.77	-14.80
	QPSK	782.0	H	105	287	1.09	1 / 0	21.01	22.09	0.162	36.99	-14.90	19.94	0.099	34.77	-14.83
	QPSK	784.5	H	105	287	1.06	1 / 0	21.22	**22.29**	0.169	36.99	-14.70	**20.14**	0.103	34.77	-14.63
	16-QAM	784.5	H	105	287	1.06	1 / 24	19.16	20.22	0.105	36.99	-16.77	18.07	0.064	34.77	-16.70
10 MHz	Opposite Pol.	782.0	V	154	217	1.09	1 / 0	19.82	20.91	0.123	36.99	-16.08	18.76	0.075	34.77	-16.01
	WCP	782.0	V	123	246	1.09	1 / 0	16.67	17.76	0.060	36.99	-19.23	15.61	0.036	34.77	-19.16

Table 7-22. ERP Data (LTE Band 13 – Ant1)

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	156.00	315.00	19.34	2.88	**22.22**	**0.167**	30.00	-7.78
1732.60	WCDMA1700	V	148.00	325.00	17.45	2.92	20.37	0.109	30.00	-9.63
1752.60	WCDMA1700	V	139.00	238.00	15.39	2.96	18.35	0.068	30.00	-11.65
1712.40	WCDMA1700 (WCP)	V	124.00	21.00	14.85	2.92	17.77	0.060	30.00	-12.23

Table 7-23. EIRP Data (WCDMA AWS – 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	1720.0	H	102	200	2.88	1 / 0	19.46	**22.34**	0.171	30.00	-7.66
	QPSK	1745.0	H	129	200	2.84	1 / 99	19.18	22.02	0.159	30.00	-7.98
	QPSK	1770.0	H	123	199	2.79	1 / 0	18.62	21.41	0.138	30.00	-8.59
	16-QAM	1720.0	H	102	200	2.88	1 / 0	18.29	21.17	0.131	30.00	-8.83
15 MHz	QPSK	1717.5	H	102	200	2.88	1 / 37	19.36	**22.24**	0.168	30.00	-7.76
	QPSK	1745.0	H	129	200	2.84	1 / 37	19.17	22.01	0.159	30.00	-7.99
	QPSK	1772.5	H	123	199	2.78	1 / 37	18.57	21.36	0.137	30.00	-8.64
	16-QAM	1717.5	H	102	200	2.88	1 / 37	18.53	21.42	0.139	30.00	-8.58
10 MHz	QPSK	1715.0	H	102	200	2.88	1 / 49	19.22	**22.11**	0.162	30.00	-7.89
	QPSK	1745.0	H	129	200	2.84	1 / 25	18.96	21.80	0.151	30.00	-8.20
	QPSK	1775.0	H	123	199	2.78	1 / 49	18.51	21.29	0.135	30.00	-8.71
	16-QAM	1715.0	H	102	200	2.88	1 / 25	18.34	21.22	0.133	30.00	-8.78
5 MHz	QPSK	1712.5	H	102	200	2.89	1 / 24	19.14	**22.02**	0.159	30.00	-7.98
	QPSK	1745.0	H	129	200	2.84	1 / 0	19.06	21.91	0.155	30.00	-8.09
	QPSK	1777.5	H	123	199	2.77	1 / 12	18.53	21.30	0.135	30.00	-8.70
	16-QAM	1712.5	H	102	200	2.89	1 / 12	18.40	21.28	0.134	30.00	-8.72
3 MHz	QPSK	1711.5	H	102	200	2.89	1 / 7	19.13	22.02	0.159	30.00	-7.98
	QPSK	1745.0	H	129	200	2.84	1 / 7	19.18	**22.02**	0.159	30.00	-7.98
	QPSK	1778.5	H	123	199	2.77	1 / 14	18.50	21.27	0.134	30.00	-8.73
	16-QAM	1711.5	H	102	200	2.89	1 / 0	18.17	21.05	0.127	30.00	-8.95
1.4 MHz	QPSK	1710.7	H	102	200	2.89	1 / 5	19.20	**22.09**	0.162	30.00	-7.91
	QPSK	1745.0	H	129	200	2.84	1 / 5	18.83	21.67	0.147	30.00	-8.33
	QPSK	1779.3	H	123	199	2.77	1 / 5	18.48	21.24	0.133	30.00	-8.76
	16-QAM	1710.7	H	102	200	2.89	1 / 3	18.13	21.02	0.126	30.00	-8.98
20 MHz	Opposite Pol.	1720.0	V	130	324	2.88	1 / 0	19.37	22.25	0.168	30.00	-7.75
	WCP	1720.0	V	124	279	2.88	1 / 0	18.43	21.31	0.135	30.00	-8.69

Table 7-24. EIRP Data (LTE Band 66 – 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]
40 MHz	π/2 BPSK	1730.0	V	163	315	2.92	1 / 54	20.04	**22.96**	0.198	30.00	-7.04
	π/2 BPSK	1745.0	V	139	327	2.94	1 / 54	19.39	22.33	0.171	30.00	-7.67
	π/2 BPSK	1760.0	V	139	323	2.99	1 / 108	19.19	22.18	0.165	30.00	-7.82
	QPSK	1730.0	V	163	315	2.92	1 / 54	19.98	22.90	0.195	30.00	-7.10
	QPSK	1745.0	V	139	327	2.94	1 / 54	19.36	22.30	0.170	30.00	-7.70
	QPSK	1760.0	V	139	323	2.99	1 / 108	19.04	22.03	0.159	30.00	-7.97
	16-QAM	1730.0	V	163	315	2.92	1 / 54	19.05	21.97	0.157	30.00	-8.03
30 MHz	π/2 BPSK	1725.0	V	163	315	2.91	1 / 80	19.99	**22.90**	0.195	30.00	-7.10
	π/2 BPSK	1745.0	V	139	327	2.94	1 / 40	19.53	22.47	0.177	30.00	-7.53
	π/2 BPSK	1765.0	V	139	323	3.00	1 / 80	19.27	22.28	0.169	30.00	-7.72
	QPSK	1725.0	V	163	315	2.91	1 / 80	19.87	22.78	0.190	30.00	-7.22
	QPSK	1745.0	V	139	327	2.94	1 / 40	19.47	22.42	0.174	30.00	-7.58
	QPSK	1765.0	V	139	323	3.00	1 / 80	19.19	22.19	0.166	30.00	-7.81
	16-QAM	1725.0	V	163	315	2.91	1 / 80	19.39	22.30	0.170	30.00	-7.70
20 MHz	π/2 BPSK	1720.0	V	163	315	2.90	1 / 53	20.04	**22.94**	0.197	30.00	-7.06
	π/2 BPSK	1745.0	V	139	327	2.94	1 / 53	19.56	22.50	0.178	30.00	-7.50
	π/2 BPSK	1770.0	V	139	323	3.02	1 / 26	19.28	22.30	0.170	30.00	-7.70
	QPSK	1720.0	V	163	315	2.90	1 / 53	19.93	22.83	0.192	30.00	-7.17
	QPSK	1745.0	V	139	327	2.94	1 / 53	19.37	22.32	0.170	30.00	-7.68
	QPSK	1770.0	V	139	323	3.02	1 / 26	18.91	21.94	0.156	30.00	-8.06
	16-QAM	1720.0	V	163	315	2.90	1 / 53	19.43	22.33	0.171	30.00	-7.67
15 MHz	π/2 BPSK	1717.5	V	163	315	2.89	1 / 39	20.12	**23.02**	0.200	30.00	-6.98
	π/2 BPSK	1745.0	V	139	327	2.94	1 / 58	19.49	22.43	0.175	30.00	-7.57
	π/2 BPSK	1772.5	V	139	323	3.03	1 / 58	19.17	22.20	0.166	30.00	-7.80
	QPSK	1717.5	V	163	315	2.89	1 / 58	19.80	22.70	0.186	30.00	-7.30
	QPSK	1745.0	V	139	327	2.94	1 / 58	19.33	22.27	0.169	30.00	-7.73
	QPSK	1772.5	V	139	323	3.03	1 / 58	18.86	21.89	0.154	30.00	-8.11
	16-QAM	1717.5	V	163	315	2.89	1 / 58	19.37	22.26	0.168	30.00	-7.74
10 MHz	π/2 BPSK	1715.0	V	163	315	2.89	1 / 38	19.97	**22.86**	0.193	30.00	-7.14
	π/2 BPSK	1745.0	V	139	327	2.94	1 / 26	19.66	22.60	0.182	30.00	-7.40
	π/2 BPSK	1775.0	V	139	323	3.04	1 / 26	19.16	22.20	0.166	30.00	-7.80
	QPSK	1715.0	V	163	315	2.89	1 / 38	19.79	22.68	0.185	30.00	-7.32
	QPSK	1745.0	V	139	327	2.94	1 / 26	19.51	22.46	0.176	30.00	-7.54
	QPSK	1775.0	V	139	323	3.04	1 / 26	18.85	21.89	0.154	30.00	-8.11
	16-QAM	1715.0	V	163	315	2.89	1 / 38	19.26	22.15	0.164	30.00	-7.85
5 MHz	π/2 BPSK	1712.5	V	163	315	2.88	1 / 12	19.99	**22.88**	0.194	30.00	-7.12
	π/2 BPSK	1745.0	V	139	327	2.94	1 / 12	19.62	22.57	0.181	30.00	-7.43
	π/2 BPSK	1777.5	V	139	323	3.05	1 / 18	19.17	22.22	0.167	30.00	-7.78
	QPSK	1712.5	V	163	315	2.88	1 / 12	19.89	22.77	0.189	30.00	-7.23
	QPSK	1745.0	V	139	327	2.94	1 / 12	19.55	22.49	0.177	30.00	-7.51
	QPSK	1777.5	V	139	323	3.05	1 / 18	18.89	21.94	0.156	30.00	-8.06
	16-QAM	1712.5	V	163	315	2.88	1 / 12	19.23	22.11	0.163	30.00	-7.89
40 MHz	QPSK (CP-OFDM)	1730.0	V	163	333	2.92	1 / 6	18.20	21.12	0.129	30.00	-8.88
	QPSK (WCP)	1730.0	V	156	48	2.92	1 / 18	15.33	18.25	0.067	30.00	-11.75

Table 7-25. EIRP Data (NR Band n66 – 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	1720.0	V	201	141	2.90	1 / 99	16.65	19.55	0.090	30.00	-10.45
	QPSK	1745.0	V	192	145	2.94	1 / 50	17.81	**20.75**	0.119	30.00	-9.25
	QPSK	1770.0	V	186	156	3.02	1 / 0	16.32	19.34	0.086	30.00	-10.66
	16-QAM	1745.0	V	192	145	2.94	1 / 50	17.71	20.65	0.116	30.00	-9.35
15 MHz	QPSK	1717.5	V	201	141	2.89	1 / 0	16.55	19.44	0.088	30.00	-10.56
	QPSK	1745.0	V	192	145	2.94	1 / 37	17.81	**20.75**	0.119	30.00	-9.25
	QPSK	1772.5	V	186	156	3.03	75 / 0	16.34	19.37	0.086	30.00	-10.63
	16-QAM	1745.0	V	192	145	2.94	1 / 37	17.69	20.63	0.116	30.00	-9.37
10 MHz	QPSK	1715.0	V	201	141	2.89	1 / 0	16.75	19.64	0.092	30.00	-10.36
	QPSK	1745.0	V	192	145	2.94	50 / 0	17.79	**20.73**	0.118	30.00	-9.27
	QPSK	1775.0	V	186	156	3.04	1 / 0	16.40	19.43	0.088	30.00	-10.57
	16-QAM	1745.0	V	192	145	2.94	1 / 0	17.75	20.70	0.117	30.00	-9.30
5 MHz	QPSK	1712.5	V	201	141	2.88	25 / 0	16.68	19.57	0.090	30.00	-10.43
	QPSK	1745.0	V	192	145	2.94	25 / 0	17.73	**20.67**	0.117	30.00	-9.33
	QPSK	1777.5	V	186	156	3.05	1 / 0	16.35	19.40	0.087	30.00	-10.60
	16-QAM	1745.0	V	192	145	2.94	1 / 12	17.65	20.60	0.115	30.00	-9.40
3 MHz	QPSK	1711.5	V	201	141	2.88	1 / 0	16.67	19.55	0.090	30.00	-10.45
	QPSK	1745.0	V	192	145	2.94	15 / 0	17.72	**20.67**	0.117	30.00	-9.33
	QPSK	1778.5	V	186	156	3.05	1 / 14	16.03	19.08	0.081	30.00	-10.92
	16-QAM	1745.0	V	192	145	2.94	1 / 14	17.63	20.58	0.114	30.00	-9.42
1.4 MHz	QPSK	1710.7	V	201	141	2.88	1 / 5	16.62	19.50	0.089	30.00	-10.50
	QPSK	1745.0	V	192	145	2.94	1 / 0	17.74	**20.68**	0.117	30.00	-9.32
	QPSK	1779.3	V	186	156	3.05	1 / 5	16.01	19.06	0.081	30.00	-10.94
	16-QAM	1745.0	V	192	145	2.94	1 / 0	17.67	20.61	0.115	30.00	-9.39
20 MHz	Opposite Pol.	1745.0	H	175	310	2.84	1 / 50	17.35	20.19	0.105	30.00	-9.81
	WCP	1745.0	V	192	175	2.94	1 / 0	13.38	16.32	0.043	30.00	-13.68

Table 7-26. EIRP Data (LTE Band 66 – 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]
40 MHz	π/2 BPSK	1730.0	V	114	16	2.92	1 / 54	17.60	20.52	0.113	30.00	-9.48
	π/2 BPSK	1745.0	V	111	21	2.94	1 / 108	18.13	21.07	0.128	30.00	-8.93
	π/2 BPSK	1760.0	V	114	17	2.99	1 / 54	18.56	**21.55**	0.143	30.00	-8.45
	QPSK	1730.0	V	114	16	2.92	1 / 54	16.54	19.46	0.088	30.00	-10.54
	QPSK	1745.0	V	111	21	2.94	1 / 108	18.07	21.01	0.126	30.00	-8.99
	QPSK	1760.0	V	114	17	2.99	1 / 54	18.40	21.39	0.138	30.00	-8.61
	16-QAM	1760.0	V	114	17	2.99	1 / 54	17.53	20.52	0.113	30.00	-9.48
30 MHz	π/2 BPSK	1725.0	V	114	16	2.91	1 / 80	17.58	20.48	0.112	30.00	-9.52
	π/2 BPSK	1745.0	V	111	21	2.94	1 / 80	18.13	21.07	0.128	30.00	-8.93
	π/2 BPSK	1765.0	V	114	17	3.00	1 / 80	18.57	**21.58**	0.144	30.00	-8.42
	QPSK	1725.0	V	114	16	2.91	1 / 80	16.52	19.42	0.088	30.00	-10.58
	QPSK	1745.0	V	111	21	2.94	1 / 80	18.07	21.02	0.126	30.00	-8.98
	QPSK	1765.0	V	114	17	3.00	1 / 80	18.34	21.34	0.136	30.00	-8.66
	16-QAM	1765.0	V	114	17	3.00	1 / 80	17.72	20.72	0.118	30.00	-9.28
20 MHz	π/2 BPSK	1720.0	V	114	16	2.90	1 / 79	17.55	20.44	0.111	30.00	-9.56
	π/2 BPSK	1745.0	V	111	21	2.94	1 / 53	18.10	21.04	0.127	30.00	-8.96
	π/2 BPSK	1770.0	V	114	17	3.02	1 / 26	18.45	**21.47**	0.140	30.00	-8.53
	QPSK	1720.0	V	114	16	2.90	1 / 79	16.55	19.45	0.088	30.00	-10.55
	QPSK	1745.0	V	111	21	2.94	1 / 53	18.06	21.01	0.126	30.00	-8.99
	QPSK	1770.0	V	114	17	3.02	1 / 26	18.31	21.33	0.136	30.00	-8.67
	16-QAM	1770.0	V	114	17	3.02	1 / 26	17.64	20.66	0.116	30.00	-9.34
15 MHz	π/2 BPSK	1717.5	V	114	16	2.89	1 / 58	17.33	20.22	0.105	30.00	-9.78
	π/2 BPSK	1745.0	V	111	21	2.94	1 / 39	18.06	21.00	0.126	30.00	-9.00
	π/2 BPSK	1772.5	V	114	17	3.03	1 / 20	18.51	**21.54**	0.142	30.00	-8.46
	QPSK	1717.5	V	114	16	2.89	1 / 58	16.43	19.32	0.086	30.00	-10.68
	QPSK	1745.0	V	111	21	2.94	1 / 39	18.06	21.00	0.126	30.00	-9.00
	QPSK	1772.5	V	114	17	3.03	1 / 20	18.32	21.35	0.136	30.00	-8.65
	16-QAM	1772.5	V	114	17	3.03	1 / 20	17.27	20.30	0.107	30.00	-9.70
10 MHz	π/2 BPSK	1715.0	V	114	16	2.89	1 / 38	17.26	20.15	0.104	30.00	-9.85
	π/2 BPSK	1745.0	V	111	21	2.94	1 / 26	18.03	20.97	0.125	30.00	-9.03
	π/2 BPSK	1775.0	V	114	17	3.04	1 / 13	18.49	**21.53**	0.142	30.00	-8.47
	QPSK	1715.0	V	114	16	2.89	1 / 38	16.36	19.25	0.084	30.00	-10.75
	QPSK	1745.0	V	111	21	2.94	1 / 26	18.00	20.94	0.124	30.00	-9.06
	QPSK	1775.0	V	114	17	3.04	1 / 13	18.36	21.39	0.138	30.00	-8.61
	16-QAM	1775.0	V	114	17	3.04	1 / 13	17.64	20.68	0.117	30.00	-9.32
5 MHz	π/2 BPSK	1712.5	V	114	16	2.88	1 / 6	17.22	20.10	0.102	30.00	-9.90
	π/2 BPSK	1745.0	V	111	21	2.94	1 / 12	18.06	21.00	0.126	30.00	-9.00
	π/2 BPSK	1777.5	V	114	17	3.05	1 / 12	18.44	**21.49**	0.141	30.00	-8.51
	QPSK	1712.5	V	114	16	2.88	1 / 6	16.28	19.16	0.082	30.00	-10.84
	QPSK	1745.0	V	111	21	2.94	1 / 12	18.03	20.97	0.125	30.00	-9.03
	QPSK	1777.5	V	114	17	3.05	1 / 12	18.16	21.20	0.132	30.00	-8.80
	16-QAM	1745.0	V	111	21	2.94	1 / 12	17.22	20.17	0.104	30.00	-9.83
40 MHz	QPSK (CP-OFDM)	1760.0	V	114	17	2.99	1 / 54	17.02	20.01	0.100	30.00	-9.99
	QPSK (WCP)	1760.0	V	114	17	2.99	1 / 54	15.79	18.78	0.075	30.00	-11.22

Table 7-27. 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.

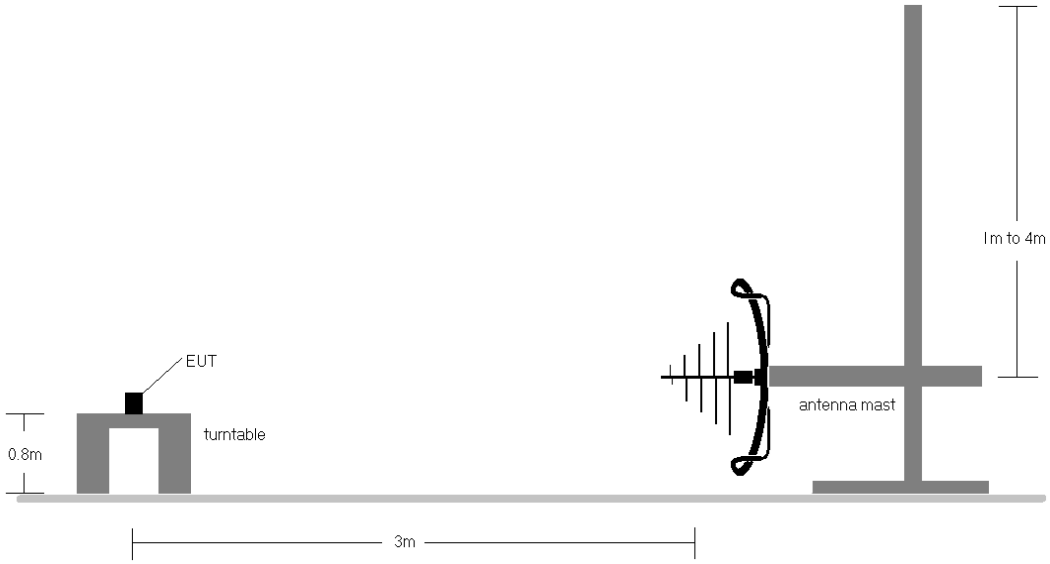


Figure 7-8. Test Instrument & Measurement Setup < 1GHz

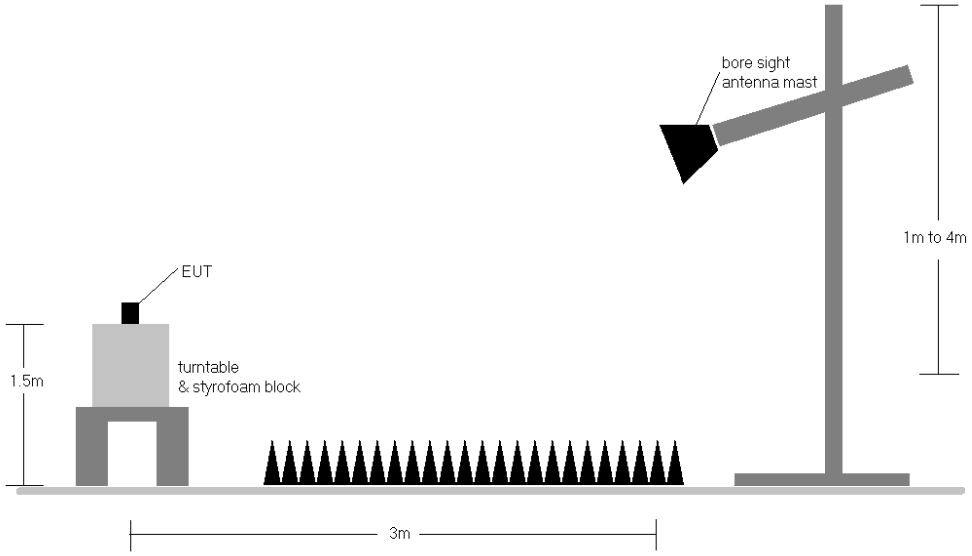


Figure 7-9. Test Instrument & Measurement Setup > 1GHz

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.

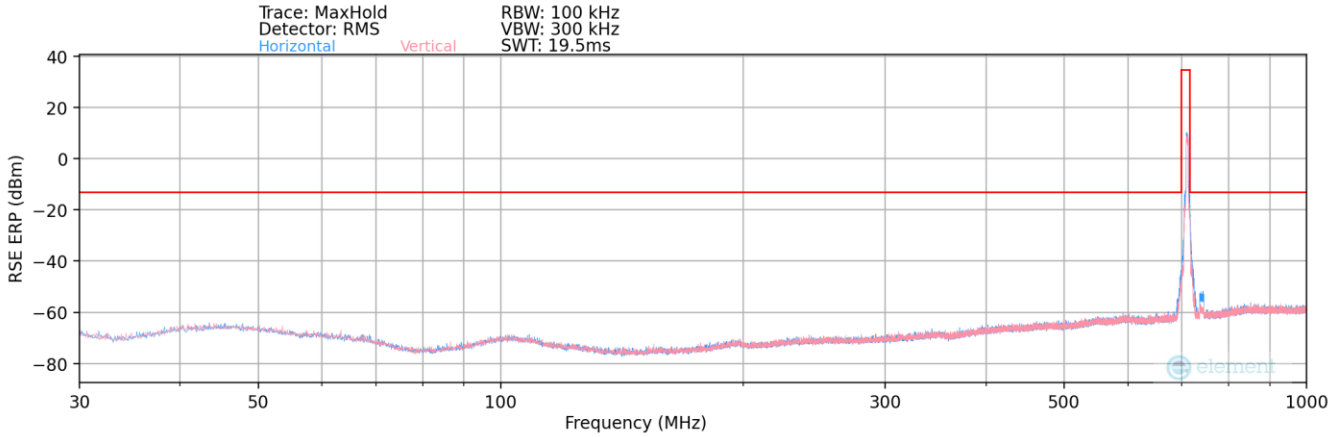
5) Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.

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

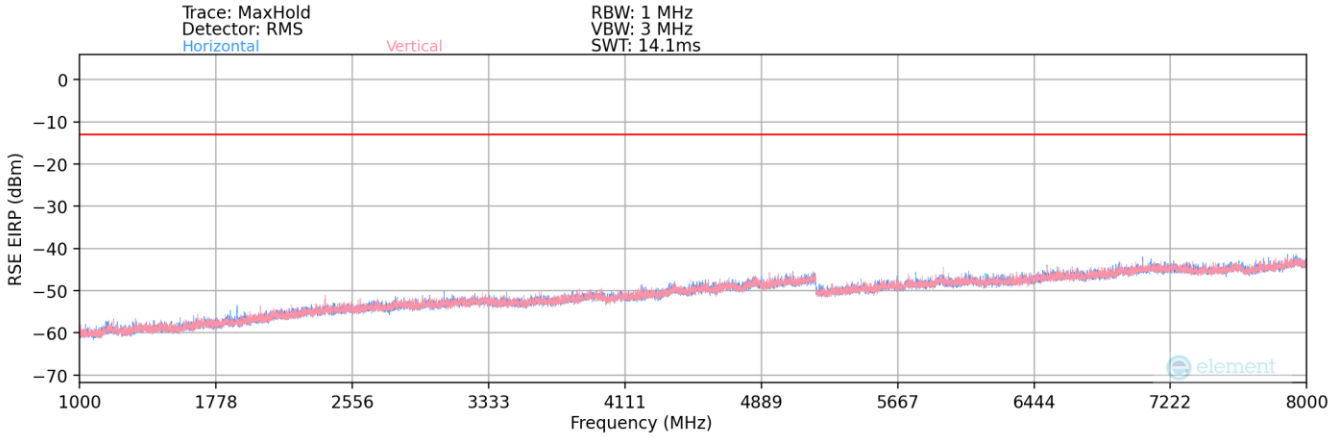
7) For NR operation, all subcarrier spacings (SCS) and transmission schemes (e.g. CP-OFDM and DFT-s-OFDM) were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

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.

LTE Band 12/17 – Ant1



Plot 7-136. Radiated Spurious Plot (LTE Band 12/17 – Ant1) – Below 1GHz



Plot 7-137. 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]
40.52	H	-	-	-64.77	-10.11	32.12	-63.13	-13.00	-50.13
149.02	H	-	-	-67.64	-14.61	24.75	-70.51	-13.00	-57.51
420.67	H	-	-	-67.50	-5.20	34.30	-60.96	-13.00	-47.96
434.76	H	-	-	-67.88	-5.08	34.04	-61.22	-13.00	-48.22
809.07	H	-	-	-67.83	0.77	39.94	-55.32	-13.00	-42.32

Table 7-28. Radiates Spurious Data (LTE Band 12/17 – Below 1GHz – 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	152.00	35.00	-73.30	-1.53	32.17	-63.09	-13.00	-50.09
2112.00	H	120.00	204.00	-77.32	2.65	32.33	-62.93	-13.00	-49.93
2816.00	H	-	-	-79.22	5.01	32.79	-62.47	-13.00	-49.47
3520.00	H	-	-	-79.83	6.66	33.83	-61.42	-13.00	-48.42
4224.00	H	-	-	-80.58	8.25	34.67	-60.59	-13.00	-47.59

Table 7-29. 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	153.00	189.00	-75.21	-1.53	30.26	-65.00	-13.00	-52.00
2122.50	H	150.00	207.00	-77.83	-1.53	27.64	-67.62	-13.00	-54.62
2830.00	H	-	-	-79.22	-1.53	26.25	-69.01	-13.00	-56.01
3537.50	H	-	-	-79.93	-1.53	25.54	-69.72	-13.00	-56.72
4245.00	H	-	-	-80.36	-1.53	25.11	-70.15	-13.00	-57.15

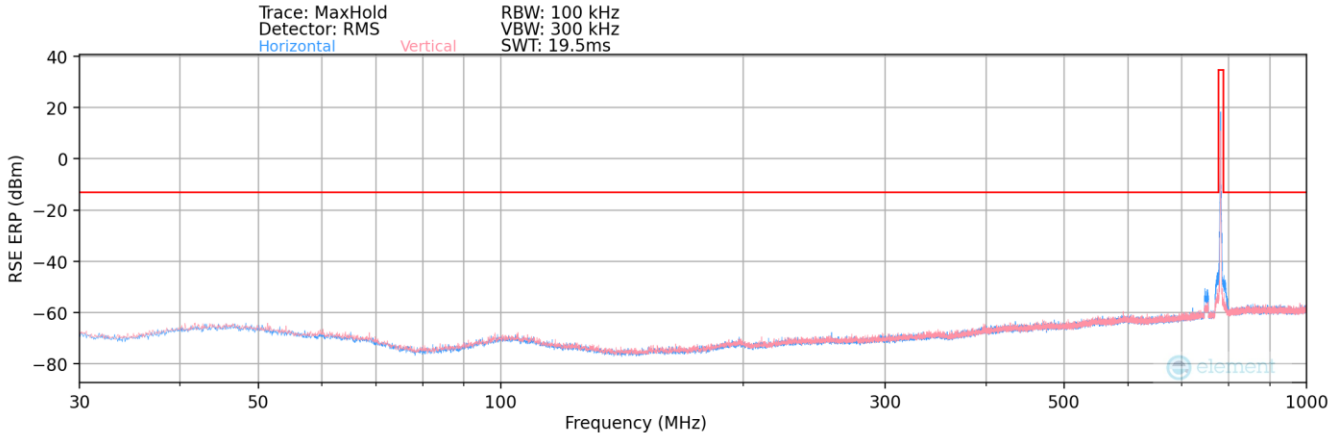
Table 7-30. Radiated Spurious Data (LTE Band 12/17 – Mid Channel – Ant1)

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

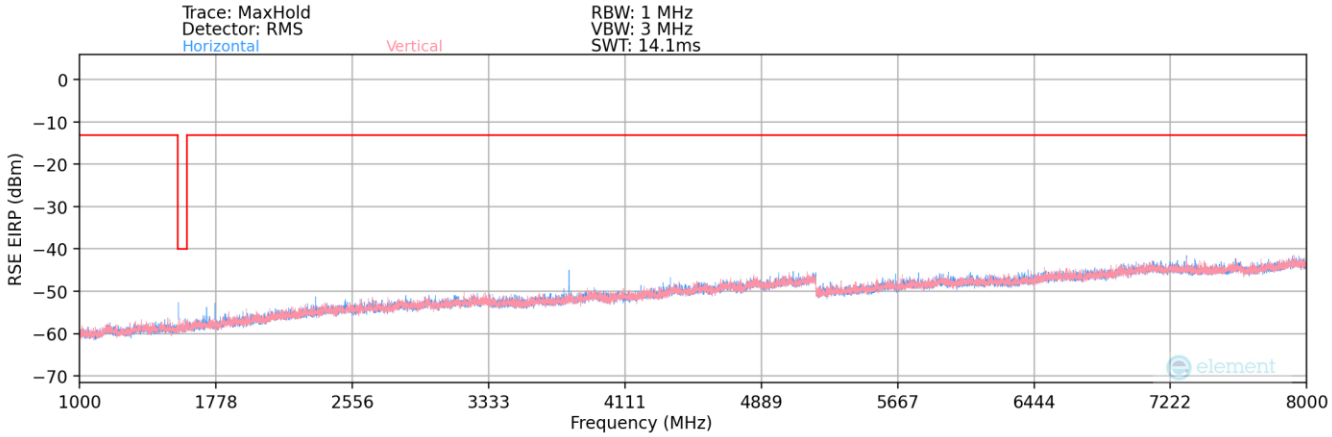
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1422.00	H	105.00	184.00	-75.28	-1.53	30.19	-65.07	-13.00	-52.07
2133.00	H	-	-	-78.85	-1.53	26.62	-68.64	-13.00	-55.64
2844.00	H	-	-	-79.33	-1.53	26.14	-69.12	-13.00	-56.12
3555.00	H	-	-	-80.00	-1.53	25.47	-69.79	-13.00	-56.79

Table 7-31. Radiated Spurious Data (LTE Band 12/17 – High Channel – Ant1)

LTE Band 13 – Ant1



Plot 7-138. Radiated Spurious Plot (LTE Band 13 – Ant1) – Below 1GHz



Plot 7-139. Radiated Spurious Plot (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]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
42.07	H	-	-	-63.94	-9.66	33.40	-61.86	-13.00	-48.86
130.67	H	-	-	-67.82	-14.00	25.18	-70.07	-13.00	-57.07
280.81	H	-	-	-68.84	-9.22	28.94	-66.31	-13.00	-53.31
447.34	H	-	-	-67.97	-5.61	33.42	-61.84	-13.00	-48.84
689.24	H	-	-	-68.05	-1.20	37.75	-57.51	-13.00	-44.51

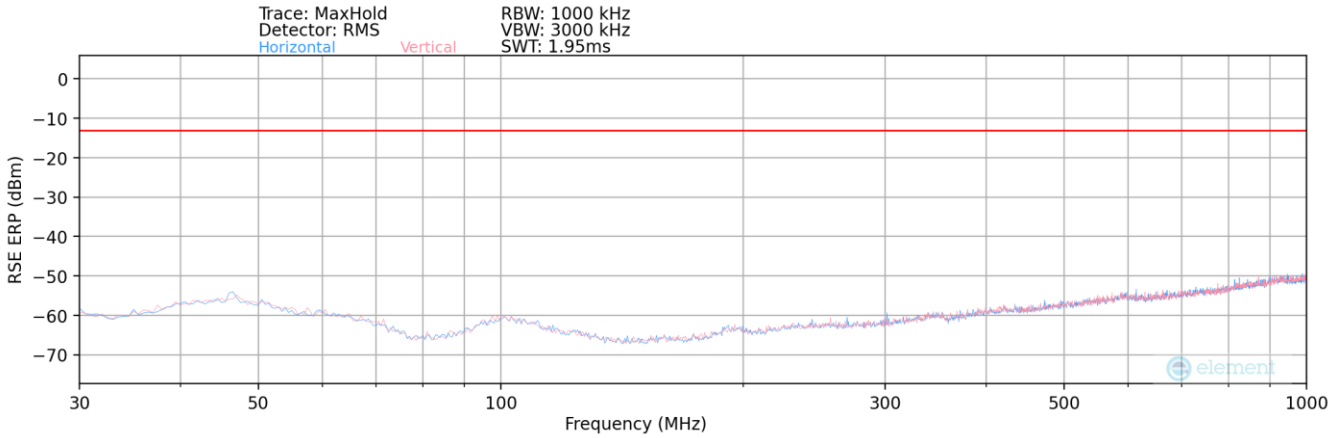
Table 7-32. Radiated Spurious Data (LTE Band 13 – Below 1GHz – Ant1)

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

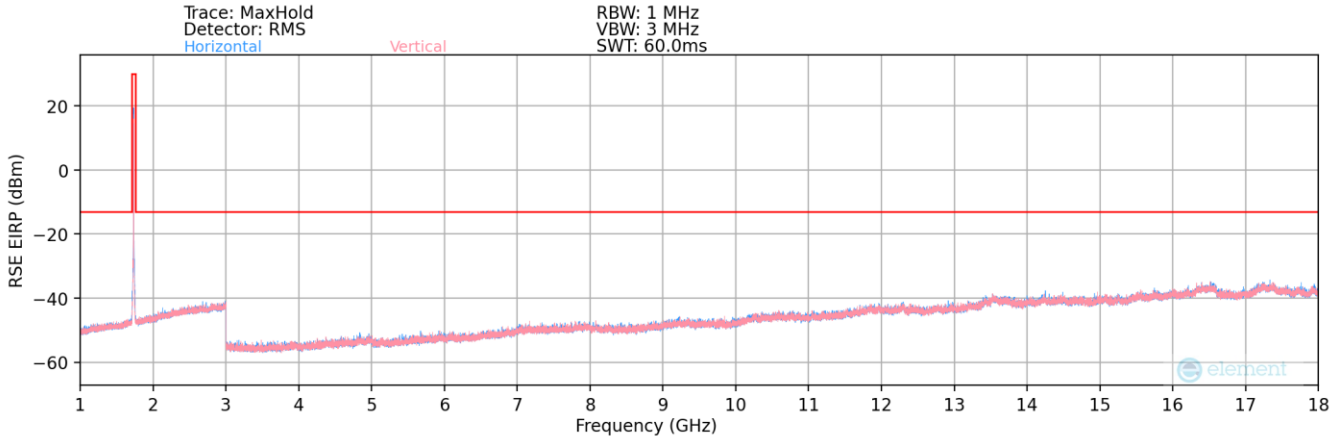
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
1564.00	H	129.00	185.00	-71.63	-1.02	34.35	-60.90	-40.00	-20.90
2346.00	H	107.00	50.00	-74.97	3.49	35.52	-59.74	-13.00	-46.74
3128.00	H	-	-	-79.52	5.84	33.32	-61.94	-13.00	-48.94
3910.00	H	-	-	-80.34	8.32	34.98	-60.28	-13.00	-47.28
4692.00	H	-	-	-80.80	9.80	36.00	-59.26	-13.00	-46.26

Table 7-33. Radiated Spurious Data (LTE Band 13 – Ant1)

WCDMA AWS – Ant1



Plot 7-140. Radiated Spurious Plot (WCDMA AWS – Ant1) – Below 1GHz



Plot 7-141. Radiated Spurious Plot (WCDMA AWS – 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]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
614.15	H	-	-	-76.57	-2.09	28.34	-66.91	-13.00	-53.91

Table 7-34. Radiated Spurious Data (WCDMA AWS – Below 1GHz – 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	H	-	-	-79.51	6.90	34.39	-60.87	-13.00	-47.87
5137.20	H	-	-	-81.24	10.58	36.34	-58.92	-13.00	-45.92
6849.60	H	-	-	-81.84	13.90	39.06	-56.20	-13.00	-43.20

7-35. 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	H	-	-	-79.66	6.81	34.15	-61.10	-13.00	-48.10
5197.80	H	-	-	-81.04	10.18	36.14	-59.12	-13.00	-46.12
6930.40	H	-	-	-81.89	13.64	38.75	-56.51	-13.00	-43.51

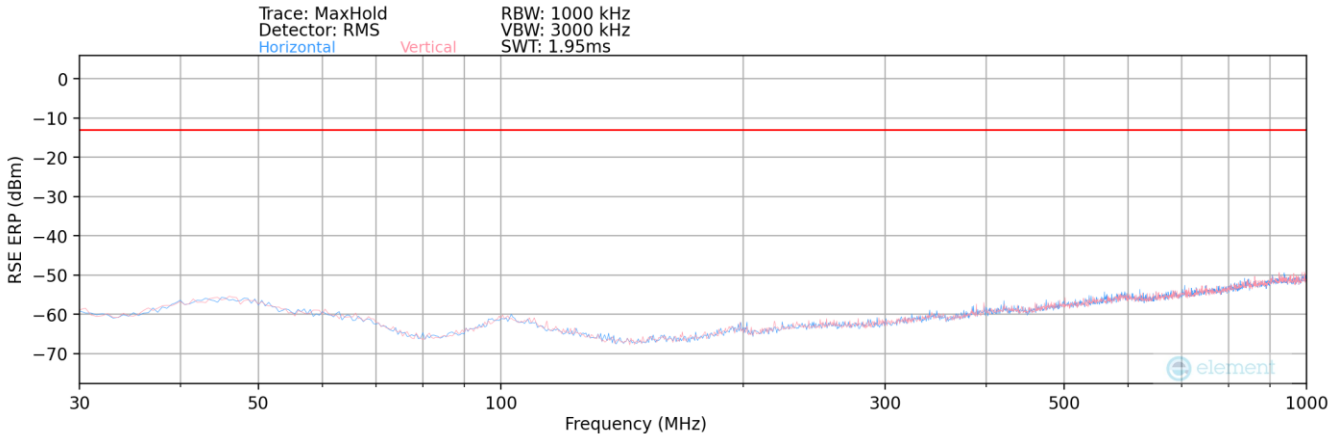
Table 7-36. Radiated Spurious Data (WCDMA AWS – Mid Channel – Ant1)

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

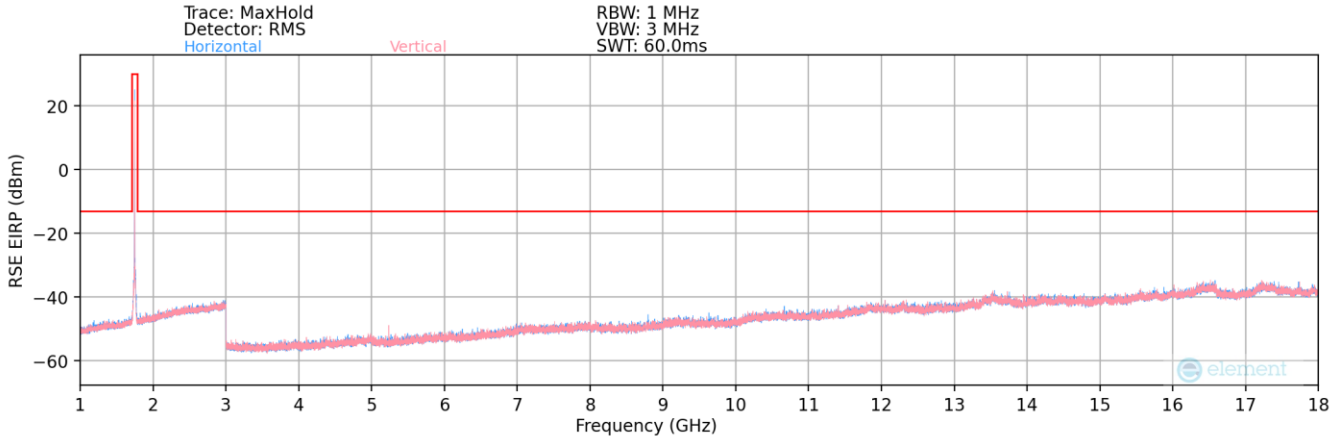
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3505.20	H	-	-	-79.86	6.93	34.07	-61.18	-13.00	-48.18
5257.80	H	-	-	-81.11	10.04	35.93	-59.33	-13.00	-46.33
7010.40	H	-	-	-82.00	14.41	39.41	-55.85	-13.00	-42.85

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

LTE Band 66/4 – Ant1



Plot 7-142. Radiated Spurious Plot (LTE Band 66/4 – Ant1) – Below 1GHz



Plot 7-143. Radiated Spurious Plot (LTE Band 66/4 – 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]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
382.74	V	-	-	-74.82	-6.55	25.63	-69.62	-13.00	-56.62

Table 7-38. Radiated Spurious Data (LTE Band 66/4 – Below 1GHz – 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	V	-	-	-79.67	6.66	33.99	-61.27	-13.00	-48.27
5160.00	V	104.00	36.00	-78.85	9.98	38.13	-57.13	-13.00	-44.13
6880.00	V	-	-	-81.79	12.91	38.12	-57.14	-13.00	-44.14
8600.00	V	-	-	-82.86	16.33	40.47	-54.79	-13.00	-41.79
10320.00	V	-	-	-83.04	19.41	43.37	-51.89	-13.00	-38.89

Table 7-39. 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	V	-	-	-80.98	6.56	32.58	-62.68	-13.00	-49.68
5235.00	V	291.00	358.00	-77.14	9.50	39.36	-55.90	-13.00	-42.90
6980.00	V	-	-	-81.76	12.83	38.07	-57.19	-13.00	-44.19
8725.00	V	-	-	-82.74	16.27	40.53	-54.72	-13.00	-41.72
10470.00	V	-	-	-83.00	19.66	43.66	-51.60	-13.00	-38.60

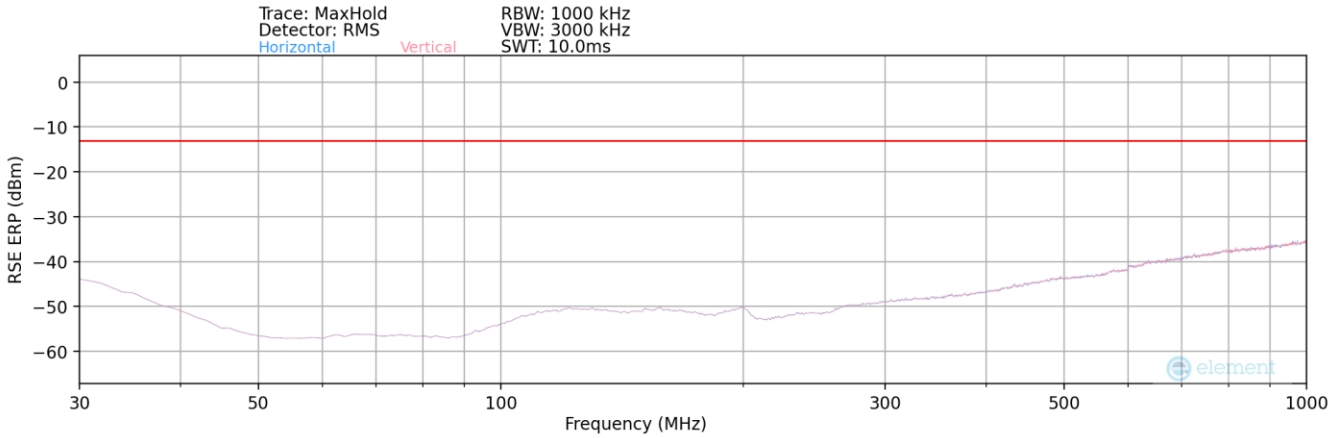
Table 7-40. Radiated Spurious Data (LTE Band 66/4 – Mid Channel – Ant1)

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

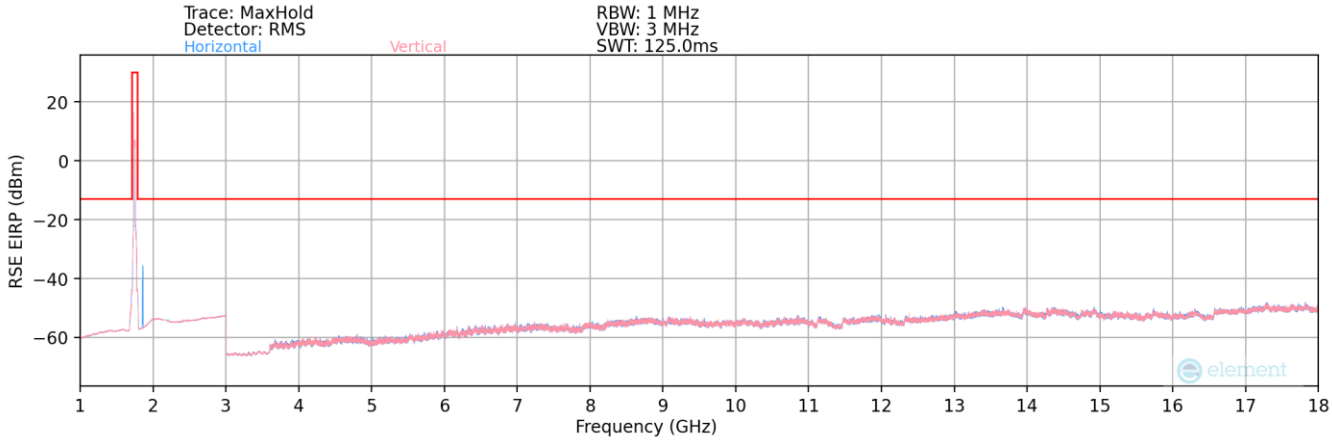
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3540.00	V	-	-	-79.99	6.65	33.66	-61.60	-13.00	-48.60
5310.00	V	108.00	352.00	-76.87	9.97	40.10	-55.16	-13.00	-42.16
7080.00	V	-	-	-81.89	13.08	38.19	-57.06	-13.00	-44.06
8850.00	V	-	-	-82.90	16.82	40.92	-54.34	-13.00	-41.34
10620.00	V	-	-	-83.04	20.03	43.99	-51.27	-13.00	-38.27

Table 7-41. Radiated Spurious Data (LTE Band 66/4 – High Channel – Ant1)

NR Band n66 – Ant1



Plot 7-144. Radiated Spurious Plot (NR Band n66 – Ant1) – Below 1GHz



Plot 7-145. Radiated Spurious Plot (NR Band n66 – Ant1)

Bandwidth (MHz):	40
Frequency (MHz):	1745
RB / Offset:	1/108

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]
400.00	H	-	-	-83.24	23.32	47.08	-48.18	-13.00	-35.18
550.00	H	-	-	-81.06	26.28	52.22	-43.04	-13.00	-30.04

Table 7-42. Radiated Spurious Data (NR Band n66 – Below 1GHz – Ant1)

Bandwidth (MHz):	40
Frequency (MHz):	1730
RB / Offset:	1 / 108
Mode:	Stand Alone

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]
3460.00	H	-	-	-77.65	0.95	30.30	-64.96	-13.00	-51.96
5190.00	H	-	-	-79.62	4.18	31.56	-63.70	-13.00	-50.70
6920.00	H	-	-	-80.22	8.70	35.48	-59.78	-13.00	-46.78

Table 7-43. Radiated Spurious Data (NR Band n66 – Low Channel – Ant1)

Bandwidth (MHz):	40
Frequency (MHz):	1745
RB / Offset:	1 / 108
Mode:	Stand Alone

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	-	-	-78.41	0.97	29.56	-65.70	-13.00	-52.70
5235.00	H	-	-	-78.47	4.29	32.82	-62.44	-13.00	-49.44
6980.00	H	-	-	-78.43	8.91	37.48	-57.78	-13.00	-44.78

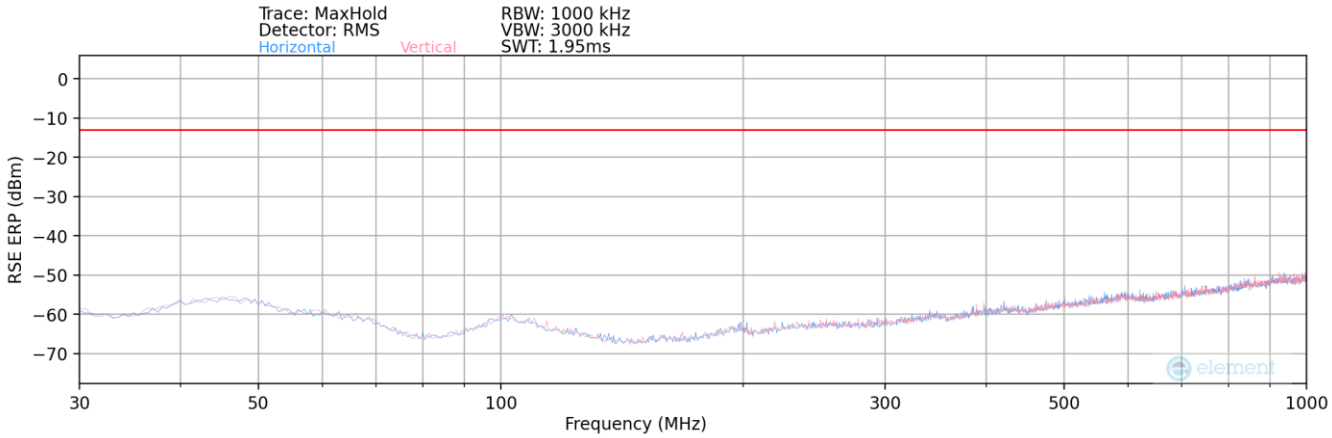
Table 7-44. Radiated Spurious Data (NR Band n66 – Mid Channel – Ant1)

Bandwidth (MHz):	40
Frequency (MHz):	1760
RB / Offset:	1 / 108
Mode:	Stand Alone

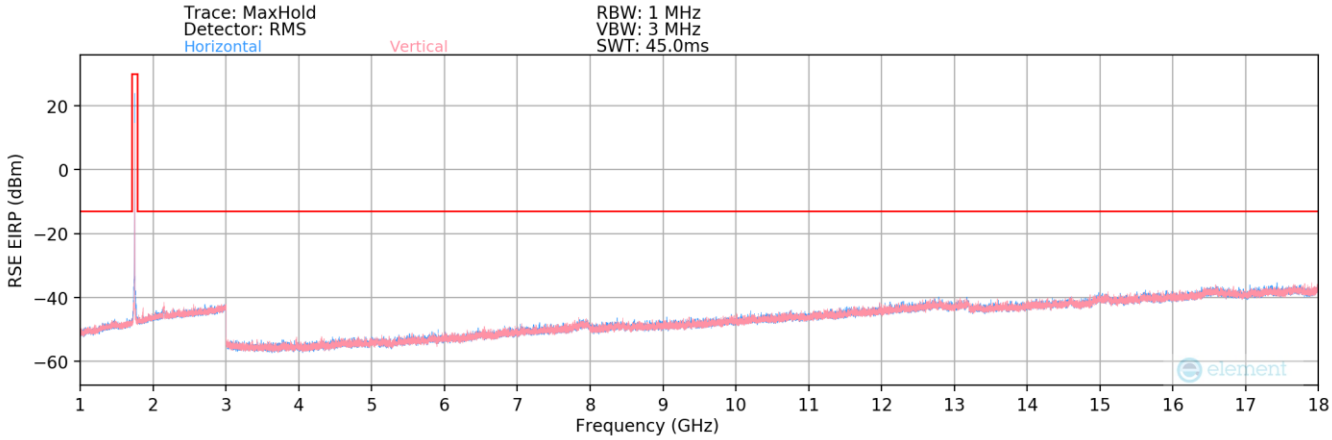
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3520.00	H	-	-	-77.90	0.95	30.05	-65.21	-13.00	-52.21
5280.00	H	-	-	-79.11	4.12	32.01	-63.25	-13.00	-50.25
7040.00	H	-	-	-80.13	9.32	36.19	-59.07	-13.00	-46.07

Table 7-45. Radiated Spurious Data (NR Band n66 – High Channel – Ant1)

LTE Band 66/4 – Ant2



Plot 7-146. Radiated Spurious Plot (LTE Band 66/4 – Ant2) – Below 1GHz



Plot 7-147. Radiated Spurious Plot (LTE Band 66/4 – 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]	ERP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
40.02	H	-	-	-64.24	-9.99	32.77	-62.49	-13.00	-49.49
71.47	H	-	-	-65.54	-13.65	27.81	-67.44	-13.00	-54.44
324.83	H	-	-	-68.76	-7.83	30.41	-64.85	-13.00	-51.85
546.69	H	-	-	-67.59	-3.51	35.90	-59.36	-13.00	-46.36
794.34	H	-	-	-67.35	0.08	39.73	-55.53	-13.00	-42.53

Table 7-46. Radiate Spurious Data (LTE Band 66/4 – Below 1GHz – 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	-	-	-78.74	5.31	33.57	-61.68	-13.00	-48.68
5160.00	H	-	-	-79.37	7.59	35.22	-60.04	-13.00	-47.04
6880.00	H	-	-	-80.70	11.55	37.85	-57.40	-13.00	-44.40

Table 7-47. 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	-	-	-78.46	5.26	33.80	-61.46	-13.00	-48.46
5235.00	H	-	-	-79.23	7.40	35.17	-60.08	-13.00	-47.08
6980.00	H	-	-	-80.05	11.15	38.10	-57.15	-13.00	-44.15

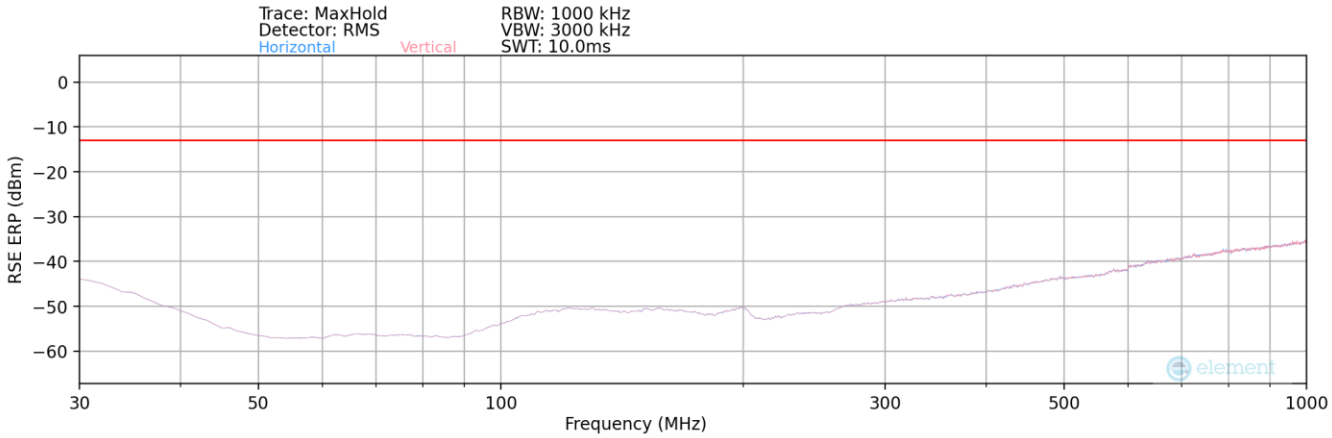
Table 7-48. Radiated Spurious Data (LTE Band 66/4 – Mid Channel – Ant2)

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

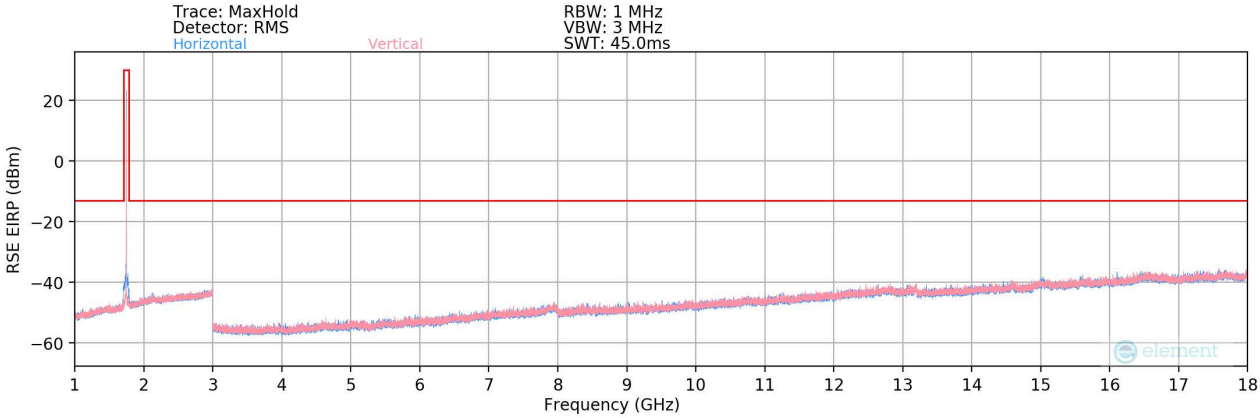
Frequency [MHz]	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	EIRP Spurious Emission Level [dBm]	Limit [dBm]	Margin [dB]
3540.00	H	-	-	-78.61	5.20	33.59	-61.67	-13.00	-48.67
5310.00	H	-	-	-79.33	7.76	35.43	-59.83	-13.00	-46.83
7080.00	H	-	-	-80.40	11.71	38.31	-56.95	-13.00	-43.95

Table 7-49. Radiated Spurious Data (LTE Band 66/4 – High Channel – Ant2)

NR Band n66 – Ant2



Plot 7-148. Radiated Spurious Plot (NR Band n66 – Ant2) – Below 1GHz



Plot 7-149. Radiated Spurious Plot (NR Band n66 – Ant2)

Bandwidth (MHz):	40
Frequency (MHz):	1745
RB / Offset:	1/108

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]
420.00	V	-	-	-85.26	24.08	45.82	-49.44	-13.00	-36.44
510.00	V	-	-	-82.63	26.16	50.53	-44.72	-13.00	-31.72

Table 7-50. Radiated Spurious Data (NR Band n66 - Below 1GHz – Ant2)

Bandwidth (MHz):	40
Frequency (MHz):	1730
RB / Offset:	1 / 108
Mode:	SA

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]
3460.00	V	-	-	-78.99	5.15	33.16	-62.10	-13.00	-49.10
5190.00	V	-	-	-79.46	7.24	34.78	-60.48	-13.00	-47.48
6920.00	V	-	-	-80.53	11.40	37.87	-57.39	-13.00	-44.39

Table 7-51. Radiated Spurious Data (NR Band n66 – Low Channel – Ant2)

Bandwidth (MHz):	40
Frequency (MHz):	1745
RB / Offset:	1 / 108
Mode:	SA

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	-	-	-78.84	5.26	33.42	-61.84	-13.00	-48.84
5235.00	V	-	-	-79.44	7.40	34.96	-60.29	-13.00	-47.29
6980.00	V	-	-	-80.24	11.15	37.91	-57.34	-13.00	-44.34

Table 7-52. Radiated Spurious Data (NR Band n66 – Mid Channel – Ant2)

Bandwidth (MHz):	40
Frequency (MHz):	1760
RB / Offset:	1 / 108

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]
3520.00	V	-	-	-78.75	5.22	33.47	-61.79	-13.00	-48.79
5280.00	V	-	-	-79.27	7.18	34.91	-60.35	-13.00	-47.35
7040.00	V	-	-	-80.35	11.34	37.99	-57.27	-13.00	-44.27

Table 7-53. 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

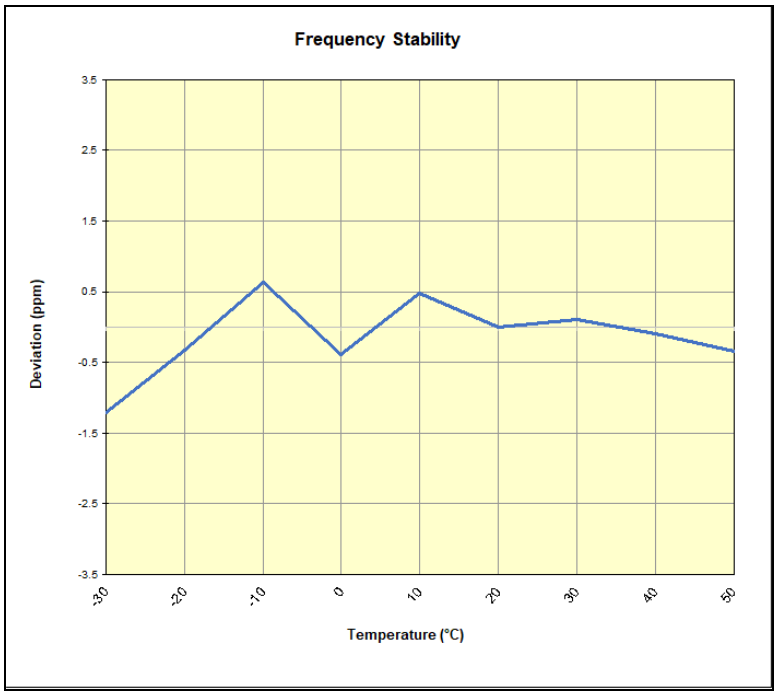
Frequency Stability / Temperature Variation

LTE Band 12/17

Operating Frequency (Hz):	707,500,000
Ref. Voltage (VDC):	4.43
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.43	- 30	707,784,031	-851	-0.0001202
		- 20	707,784,654	-228	-0.0000322
		- 10	707,785,333	451	0.0000637
		0	707,784,605	-277	-0.0000391
		+ 10	707,785,222	340	0.0000480
		+ 20 (Ref)	707,784,882	0	0.0000000
		+ 30	707,784,954	72	0.0000102
		+ 40	707,784,818	-64	-0.0000090
		+ 50	707,784,644	-238	-0.0000336
Battery Endpoint	3.27	+ 20	707,784,596	-286	-0.0000404

Table 7-54. LTE Band 12/17 Frequency Stability Data



Plot 7-150. LTE Band 12/17 Frequency Stability Chart

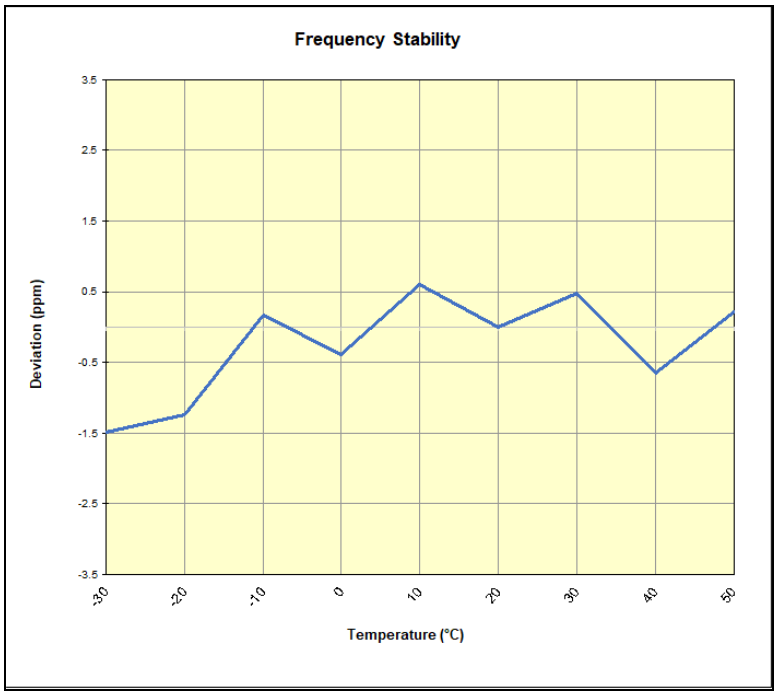
Frequency Stability / Temperature Variation

LTE Band 13

Operating Frequency (Hz):	782,000,000
Ref. Voltage (VDC):	4.43
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.43	- 30	782,284,819	-1,157	-0.0001479
		- 20	782,285,011	-965	-0.0001234
		- 10	782,286,111	135	0.0000173
		0	782,285,678	-298	-0.0000381
		+ 10	782,286,444	468	0.0000598
		+ 20 (Ref)	782,285,976	0	0.0000000
		+ 30	782,286,354	378	0.0000483
		+ 40	782,285,472	-504	-0.0000644
		+ 50	782,286,147	171	0.0000219
Battery Endpoint	3.27	+ 20	782,285,999	23	0.0000029

Table 7-55. LTE Band 13 Frequency Stability Data



Plot 7-151. LTE Band 13 Frequency Stability Chart

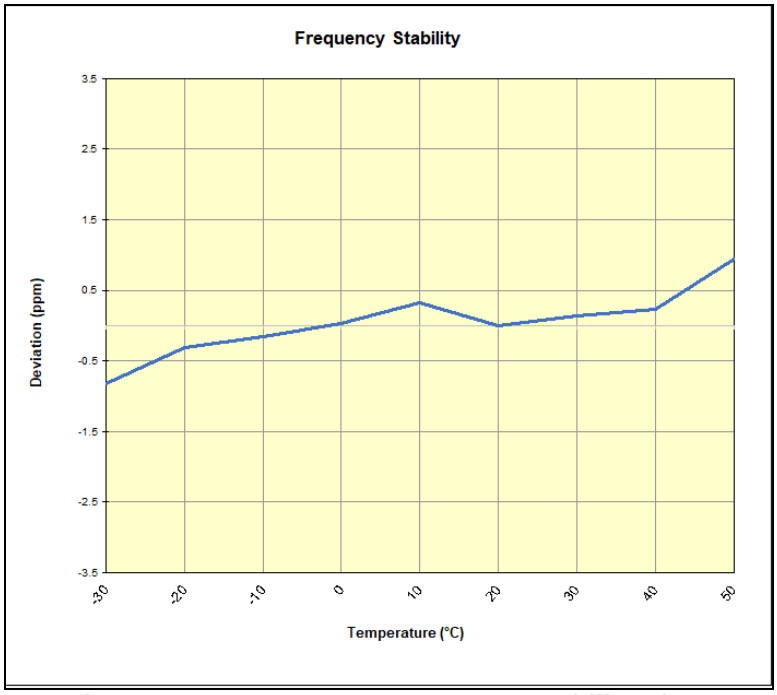
Frequency Stability / Temperature Variation

WCDMA AWS

Operating Frequency (Hz):	1,732,600,000
Ref. Voltage (VDC):	4.43
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.43	- 30	1,732,607,141	-1,425	-0.0000822
		- 20	1,732,608,033	-533	-0.0000308
		- 10	1,732,608,287	-279	-0.0000161
		0	1,732,608,618	52	0.0000030
		+ 10	1,732,609,132	566	0.0000327
		+ 20 (Ref)	1,732,608,566	0	0.0000000
		+ 30	1,732,608,813	247	0.0000143
		+ 40	1,732,608,977	411	0.0000237
		+ 50	1,732,610,201	1,635	0.0000944
Battery Endpoint	3.27	+ 20	1,732,608,169	-397	-0.0000229

Table 7-56. WCDMA AWS Frequency Stability Data



Plot 7-152. WCDMA AWS Frequency Stability Chart

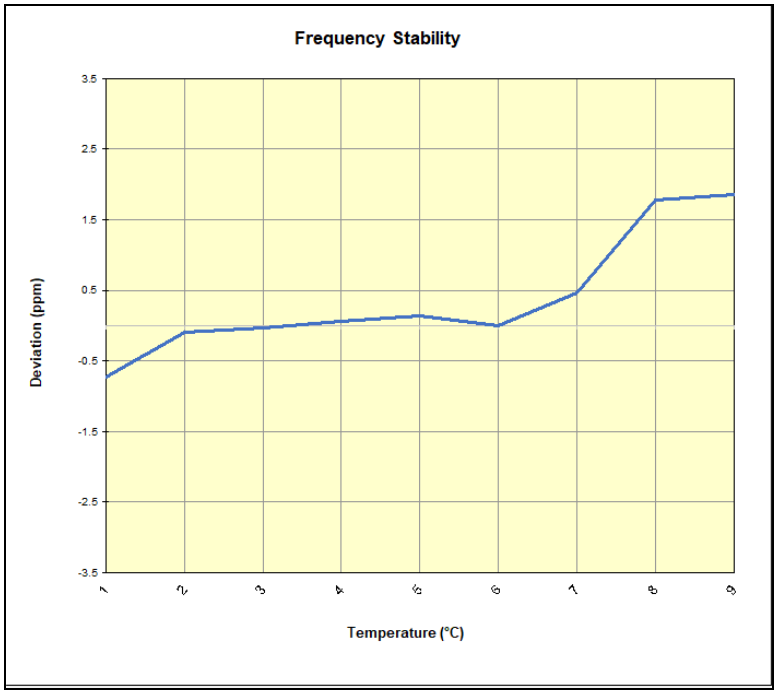
Frequency Stability / Temperature Variation

LTE Band 66/4

Operating Frequency (Hz):	1,745,000,000
Ref. Voltage (VDC):	4.43
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.43	- 30	1,745,281,596	-1,260	-0.0000722
		- 20	1,745,282,699	-157	-0.0000090
		- 10	1,745,282,789	-67	-0.0000038
		0	1,745,282,977	121	0.0000069
		+ 10	1,745,283,111	255	0.0000146
		+ 20 (Ref)	1,745,282,856	0	0.0000000
		+ 30	1,745,283,666	810	0.0000464
		+ 40	1,745,285,975	3,119	0.0001787
		+ 50	1,745,286,111	3,255	0.0001865
Battery Endpoint	3.27	+ 20	1,745,283,156	300	0.0000172

Table 7-57. LTE Band 66/4 Frequency Stability Data



Plot 7-153. LTE Band 66/4 Frequency Stability Chart

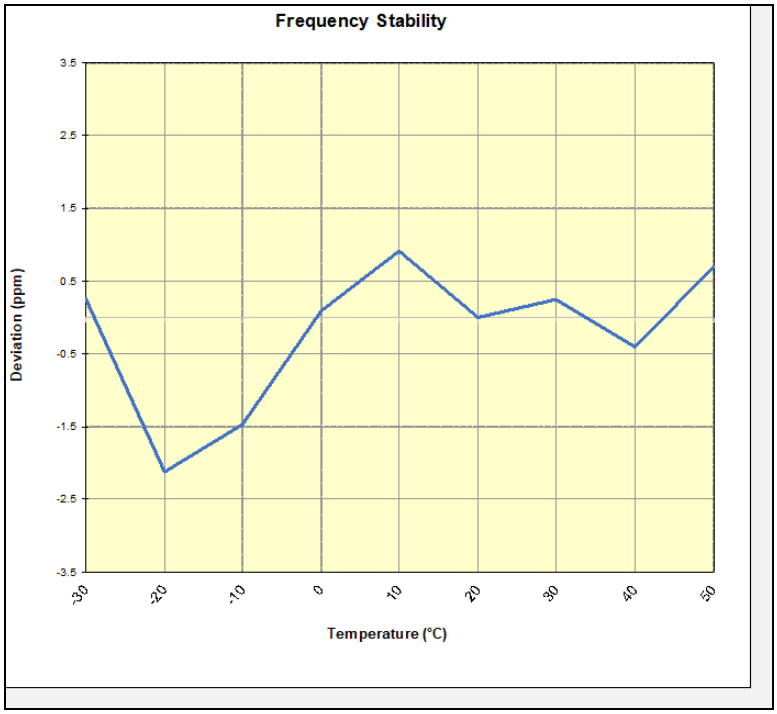
Frequency Stability / Temperature Variation

NR Band n66

Operating Frequency (Hz):	1,745,000,000
Ref. Voltage (VDC):	4.43
Deviation Limit:	± 0.00025% or 2.5 ppm

Voltage (%)	Power (VDC)	Temp (°C)	Frequency (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	4.43	- 30	1,745,013,023	457	0.0000262
		- 20	1,745,008,871	-3,695	-0.0002117
		- 10	1,745,010,002	-2,564	-0.0001469
		0	1,745,012,718	152	0.0000087
		+ 10	1,745,014,164	1,598	0.0000916
		+ 20 (Ref)	1,745,012,566	0	0.0000000
		+ 30	1,745,012,993	427	0.0000245
		+ 40	1,745,011,868	-698	-0.0000400
		+ 50	1,745,013,777	1,211	0.0000694
Battery Endpoin	3.27	+ 20	1,745,017,311	4,745	0.0002719

Table 7-58. NR Band n66 Frequency Stability Data



Plot 7-154. 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: A3LSMS711B** complies with all the requirements of Part 27 of the FCC rules.