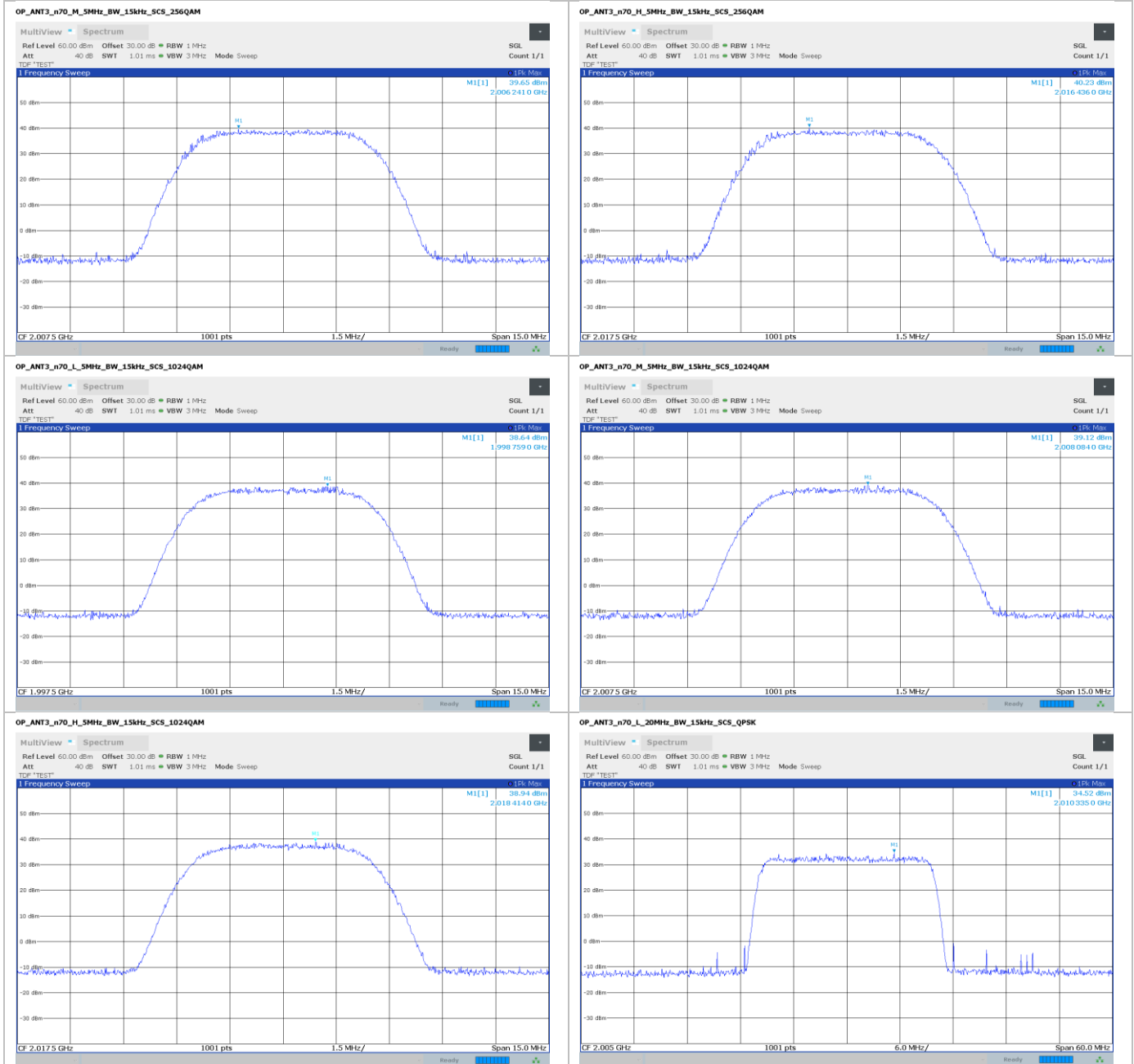
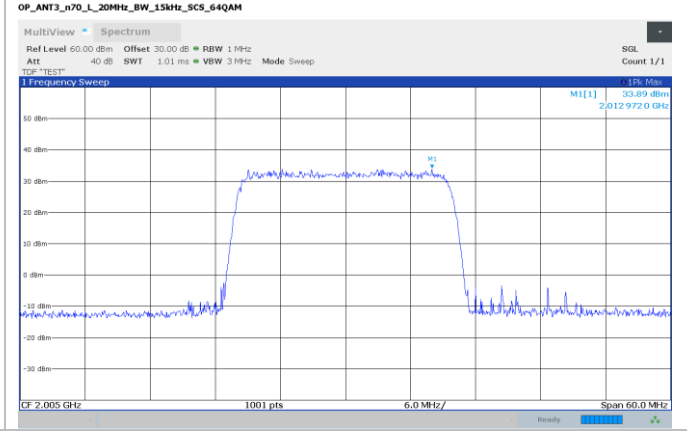
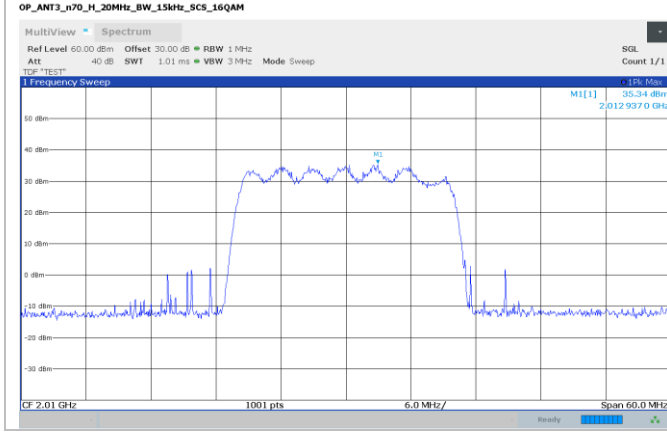
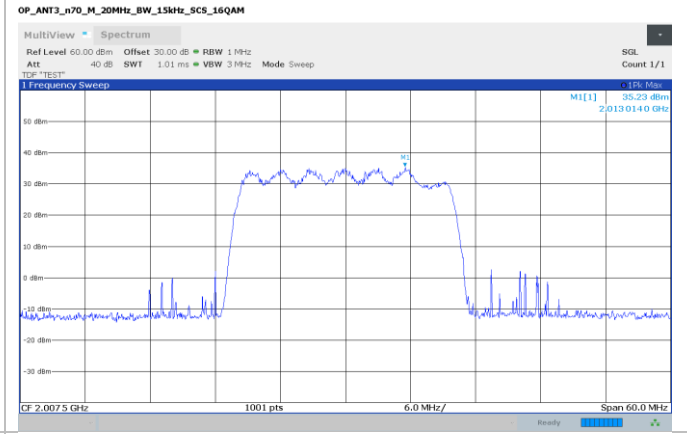
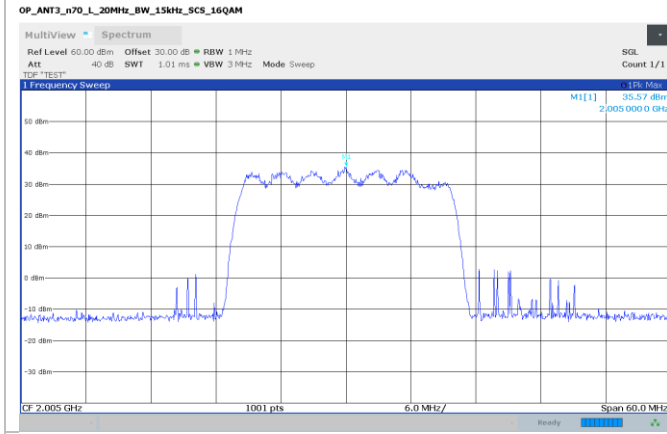
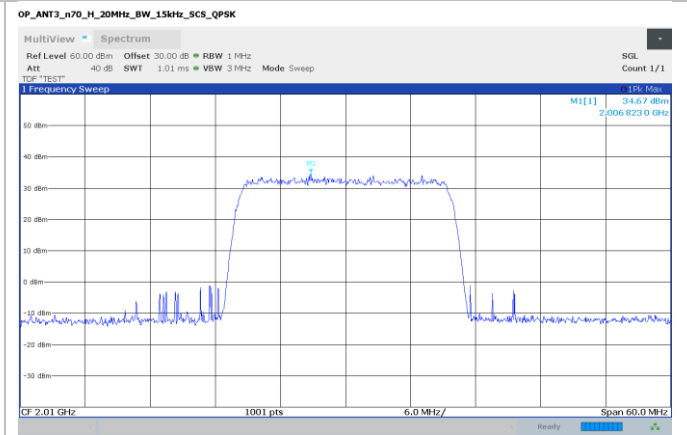
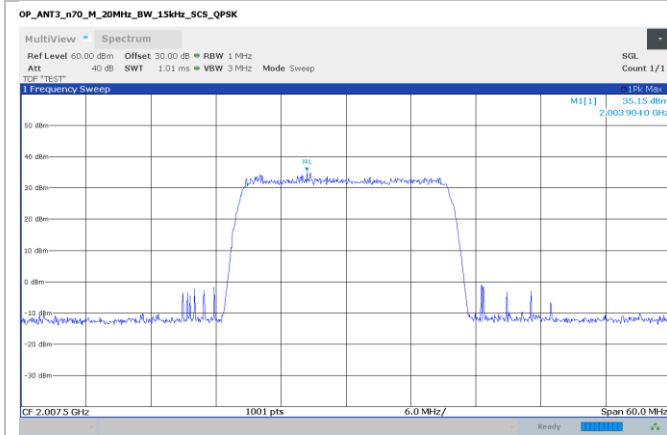


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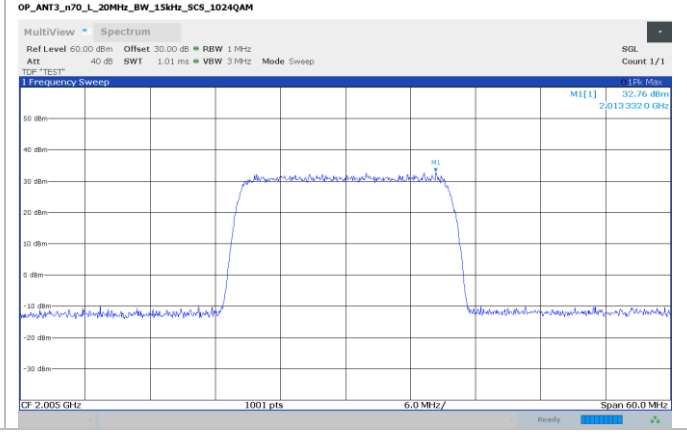
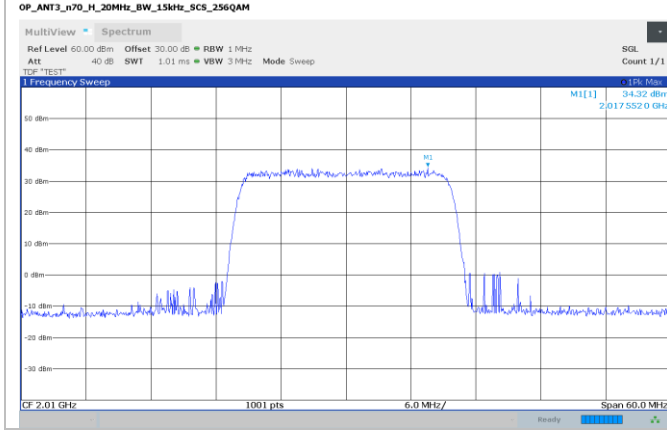
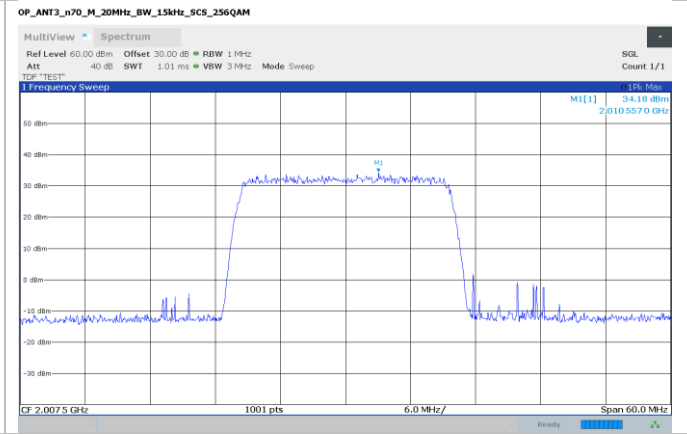
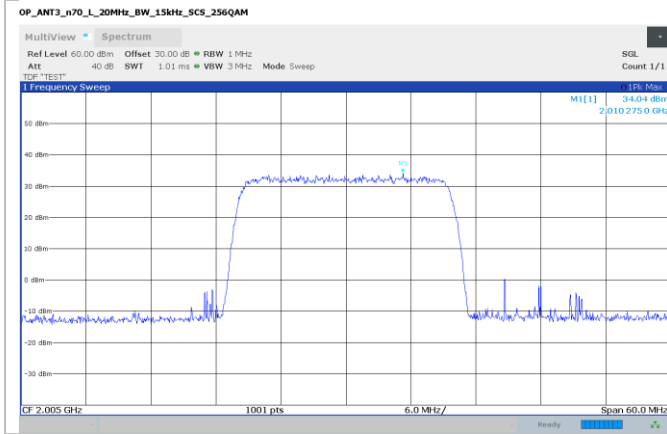
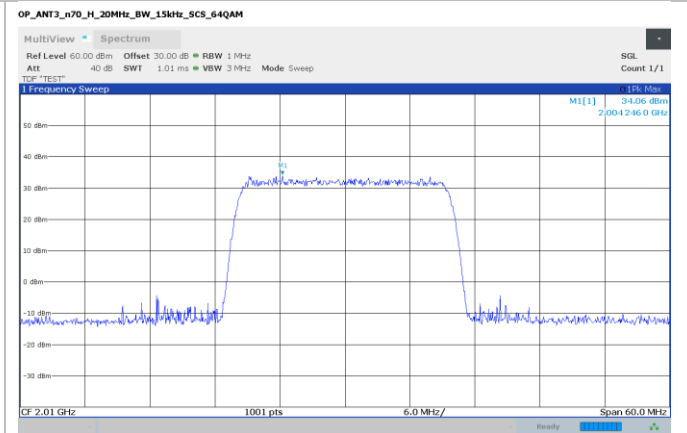
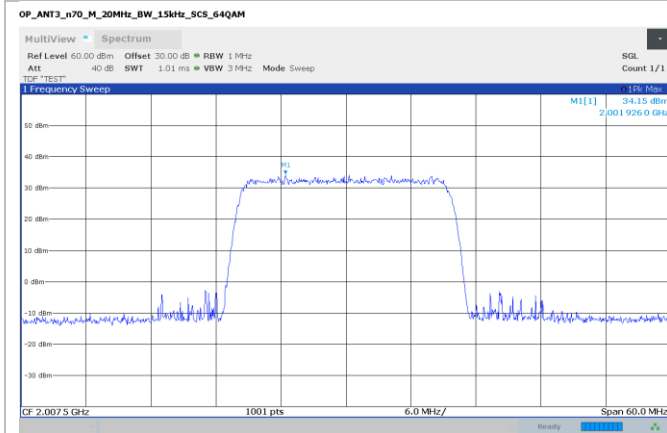
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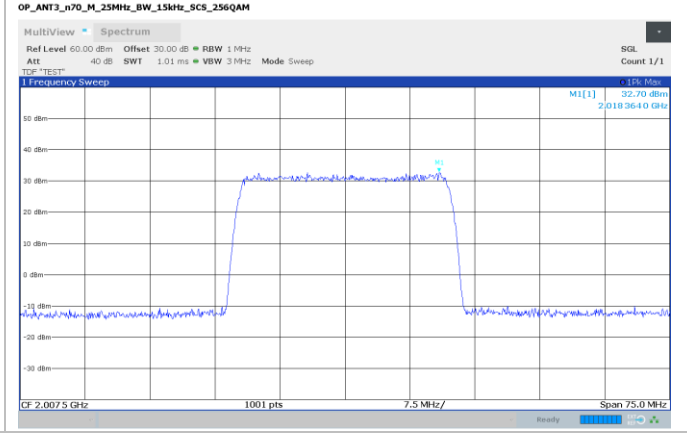
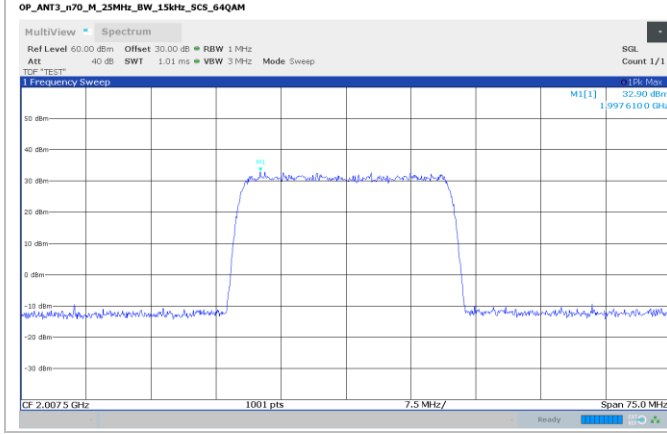
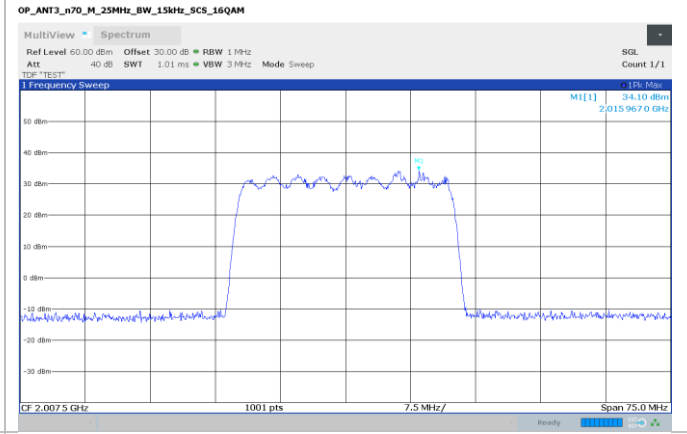
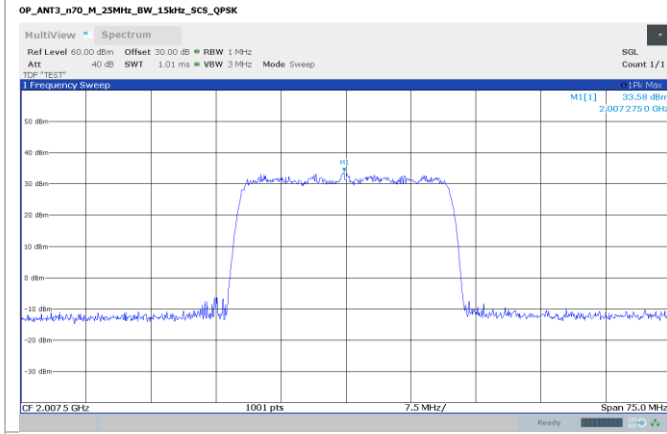
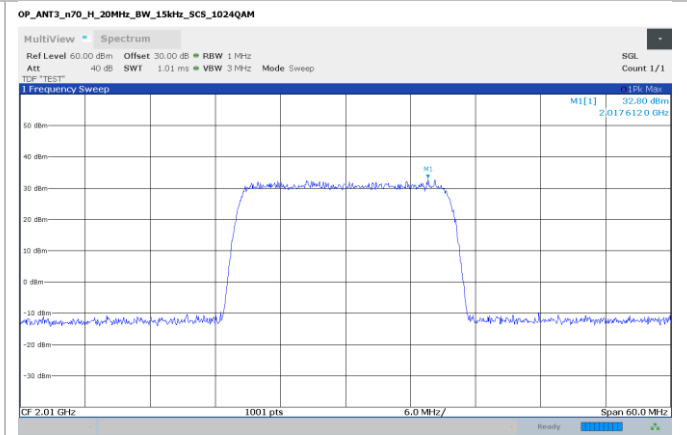
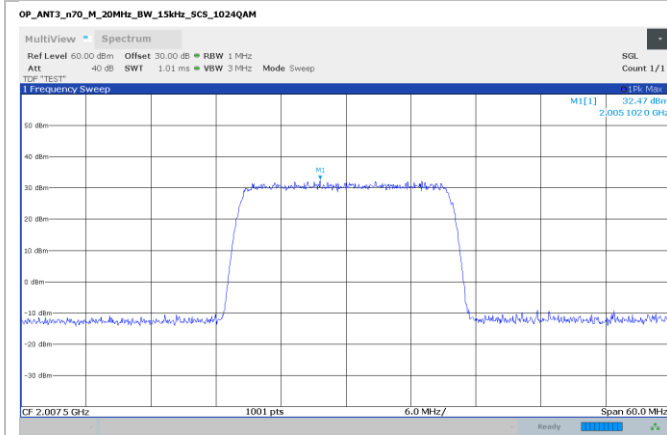
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8.5 FCC 27.50(B) Peak to Average Power Ratio

8.5.1 Definitions and limits

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

8.5.2 Test summary

Test date	July 15, 2022	Temperature	22 °C
Test engineer	Lan Sayasane, EMC Test Engineer	Air pressure	1001 mbar
Verdict	Pass	Relative humidity	62%

8.5.3 Observations, settings and special notes

Selection of Port D (Band n66) and Port C (Band n70) was according to section 8.5.4 of this document.

Test method: ANSI C63.26 Section 5.2.3.4.

Spectrum analyzer settings:

Resolution bandwidth	≥ OBW
Number of counts	The necessary number up to stabilizes the measured
Trace mode	Clear/Write

8.5.4 Test data

Band n66:

Band	OBW Declared	Port	Channel (MHz)	0.1% (dB)	0.1% Limit (dB)	Margin (dB)
n66	5 MHz	D	2112.5	7.6	13	5.4
n66	5 MHz	D	2155	7.6	13	5.4
n66	5 MHz	D	2197.5	7.6	13	5.4

Table 8.5-1: Peak to average power ratio, QPSK Modulation, 5 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n66	5 MHz	D	2112.5	7.6	13	5.4
n66	5 MHz	D	2155	7.6	13	5.4
n66	5 MHz	D	2197.5	7.6	13	5.4

Table 8.5-2: Peak to average power ratio, 16QAM Modulation, 5 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n66	5 MHz	D	2112.5	7.62	13	5.38
n66	5 MHz	D	2155	7.62	13	5.38
n66	5 MHz	D	2197.5	7.62	13	5.38

Table 8.5-3: Peak to average power ratio, 64QAM Modulation, 5 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n66	5 MHz	D	2112.5	7.66	13	5.34
n66	5 MHz	D	2155	7.66	13	5.34
n66	5 MHz	D	2197.5	7.66	13	5.34

Table 8.5-4: Peak to average power ratio, 256QAM Modulation, 5 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n66	5 MHz	D	2112.5	8.38	13	4.62
n66	5 MHz	D	2155	8.38	13	4.62
n66	5 MHz	D	2197.5	8.38	13	4.62

Table 8.5-5: Peak to average power ratio, 1024QAM Modulation, 5 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1% (dB)	0.1% Limit (dB)	Margin (dB)
n66	10 MHz	D	2115	7.66	13	5.34
n66	10 MHz	D	2155	7.66	13	5.34
n66	10 MHz	D	2195	7.66	13	5.34

Table 8.5-6: Peak to average power ratio, QPSK Modulation, 10 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n66	10 MHz	D	2115	7.68	13	5.32
n66	10 MHz	D	2155	7.68	13	5.32
n66	10 MHz	D	2195	7.66	13	5.34

Table 8.5-7: Peak to average power ratio, 16QAM Modulation, 10 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n66	10 MHz	D	2115	7.66	13	5.34
n66	10 MHz	D	2155	7.66	13	5.34
n66	10 MHz	D	2195	7.64	13	5.36

Table 8.5-8: Peak to average power ratio, 64QAM Modulation, 10 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n66	10 MHz	D	2115	7.66	13	5.34
n66	10 MHz	D	2155	7.66	13	5.34
n66	10 MHz	D	2195	7.66	13	5.34

Table 8.5-9: Peak to average power ratio, 256QAM Modulation, 10 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n66	10 MHz	D	2115	8.36	13	4.64
n66	10 MHz	D	2155	8.36	13	4.64
n66	10 MHz	D	2195	8.36	13	4.64

Table 8.5-10: Peak to average power ratio, 1024QAM Modulation, 10 MHz



Band	OBW Declared	Port	Channel (MHz)	0.1% (dB)	0.1% Limit (dB)	Margin (dB)
n66	15 MHz	D	2117.5	7.66	13	5.34
n66	15 MHz	D	2155	7.66	13	5.34
n66	15 MHz	D	2192.5	7.66	13	5.34

Table 8.5-11: Peak to average power ratio, QPSK Modulation, 15 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n66	15 MHz	D	2117.5	7.64	13	5.36
n66	15 MHz	D	2155	7.64	13	5.36
n66	15 MHz	D	2192.5	7.64	13	5.36

Table 8.5-12: Peak to average power ratio, 16QAM Modulation, 15MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n66	15 MHz	D	2117.5	7.66	13	5.34
n66	15 MHz	D	2155	7.66	13	5.34
n66	15 MHz	D	2192.5	7.66	13	5.34

Table 8.5-13: Peak to average power ratio, 64QAM Modulation, 15 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n66	15 MHz	D	2117.5	7.64	13	5.36
n66	15 MHz	D	2155	7.66	13	5.34
n66	15 MHz	D	2192.5	7.66	13	5.34

Table 8.5-14: Peak to average power ratio, 256QAM Modulation, 15 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n66	15 MHz	D	2117.5	8.36	13	4.64
n66	15 MHz	D	2155	8.36	13	4.64
n66	15 MHz	D	2192.5	8.36	13	4.64

Table 8.5-15: Peak to average power ratio, 1024QAM Modulation, 15 MHz



Band	OBW Declared	Port	Channel (MHz)	0.1% (dB)	0.1% Limit (dB)	Margin (dB)
n66	20 MHz	D	2120	7.68	13	5.32
n66	20 MHz	D	2155	7.66	13	5.34
n66	20 MHz	D	2190	7.68	13	5.32

Table 8.5-16: Peak to average power ratio, QPSK Modulation, 20 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n66	20 MHz	D	2120	7.68	13	5.32
n66	20 MHz	D	2155	7.68	13	5.32
n66	20 MHz	D	2190	7.7	13	5.3

Table 8.5-17: Peak to average power ratio, 16QAM Modulation, 20 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n66	20 MHz	D	2120	7.7	13	5.3
n66	20 MHz	D	2155	7.68	13	5.32
n66	20 MHz	D	2190	7.68	13	5.32

Table 8.5-18: Peak to average power ratio, 64QAM Modulation, 20 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n66	20 MHz	D	2120	7.7	13	5.3
n66	20 MHz	D	2155	7.68	13	5.32
n66	20 MHz	D	2190	7.68	13	5.32

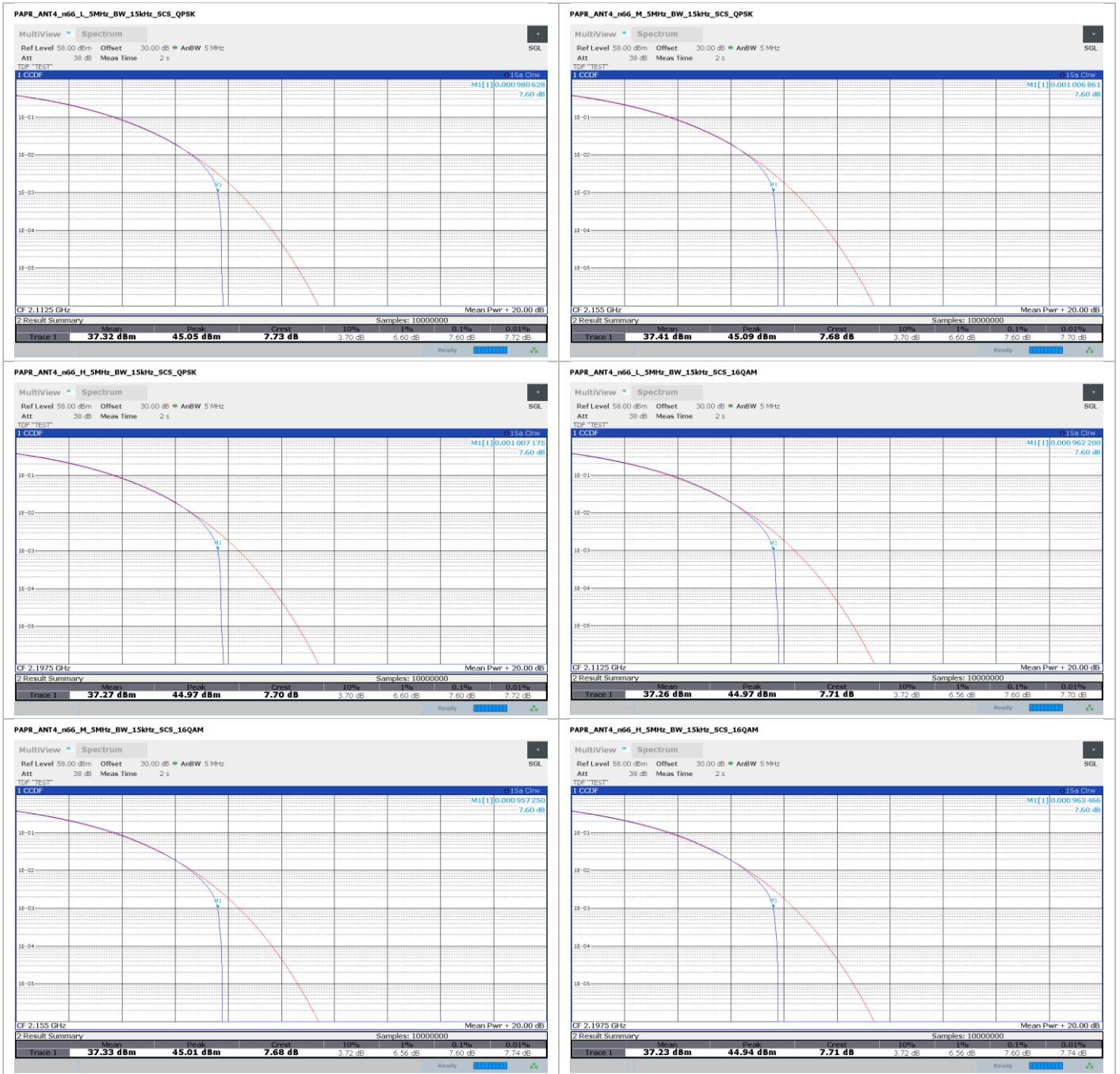
Table 8.5-19: Peak to average power ratio, 256QAM Modulation, 20 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n66	20 MHz	D	2120	8.38	13	4.62
n66	20 MHz	D	2155	8.38	13	4.62
n66	20 MHz	D	2190	8.4	13	4.6

Table 8.5-20: Peak to average power ratio, 1024QAM Modulation, 20 MHz

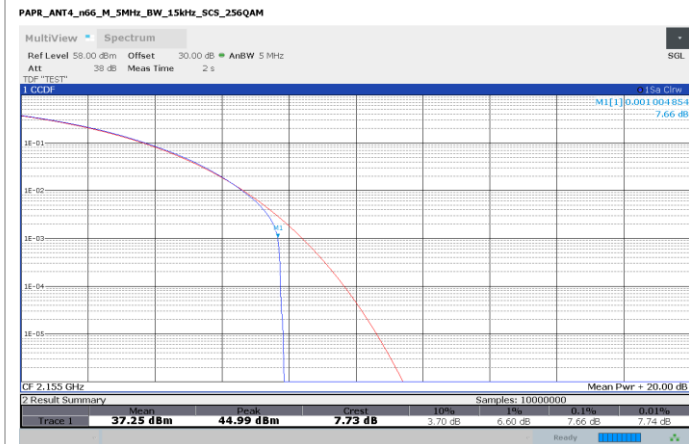
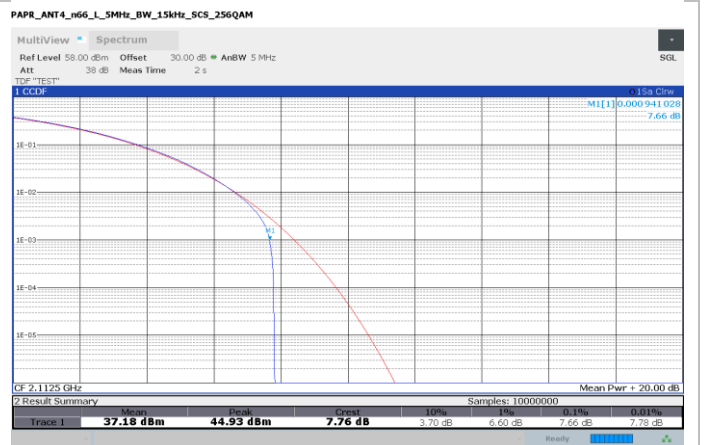
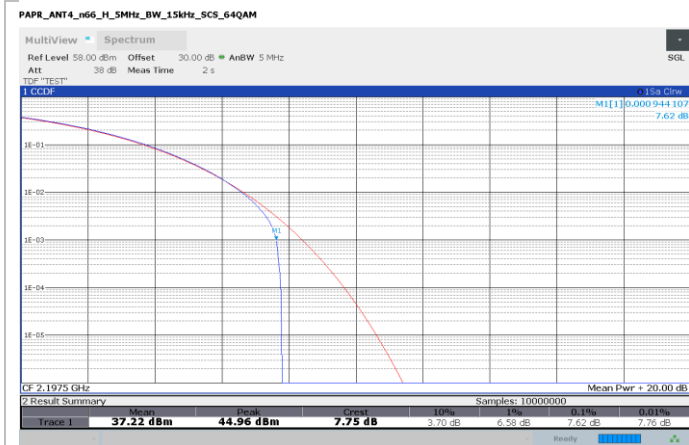
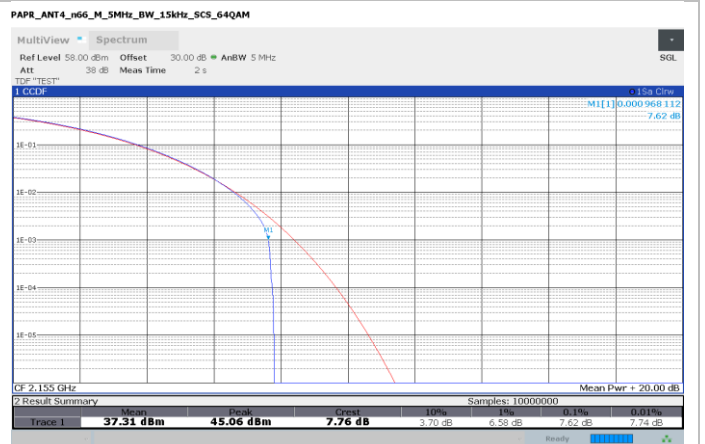
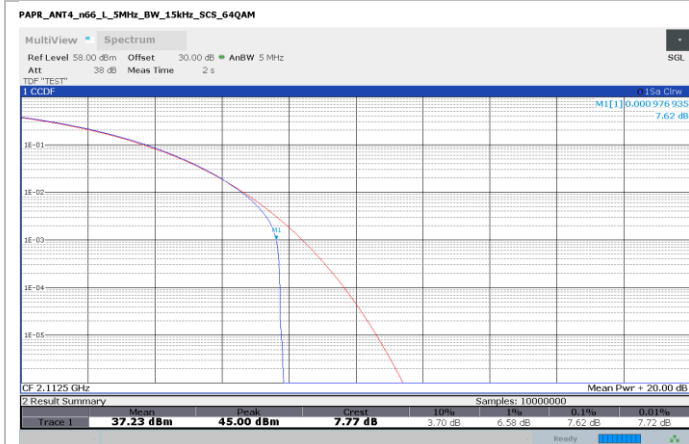
Band n66

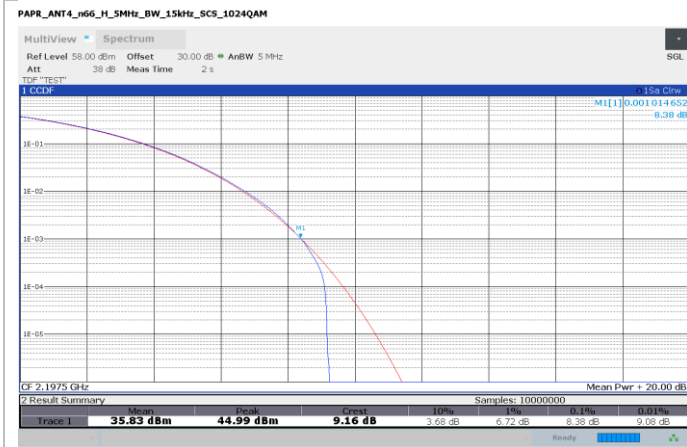
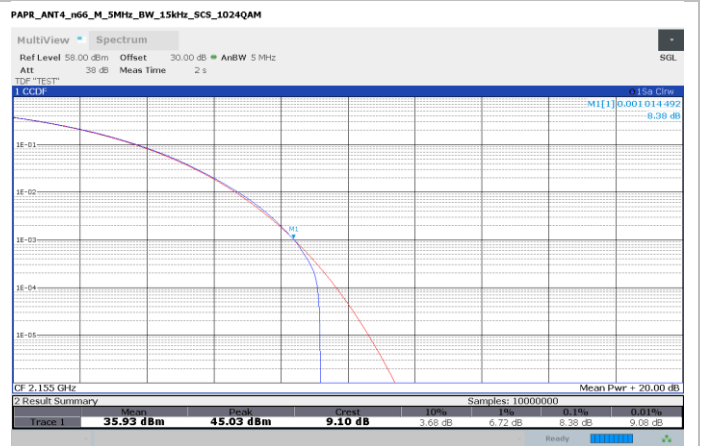
5 MHz



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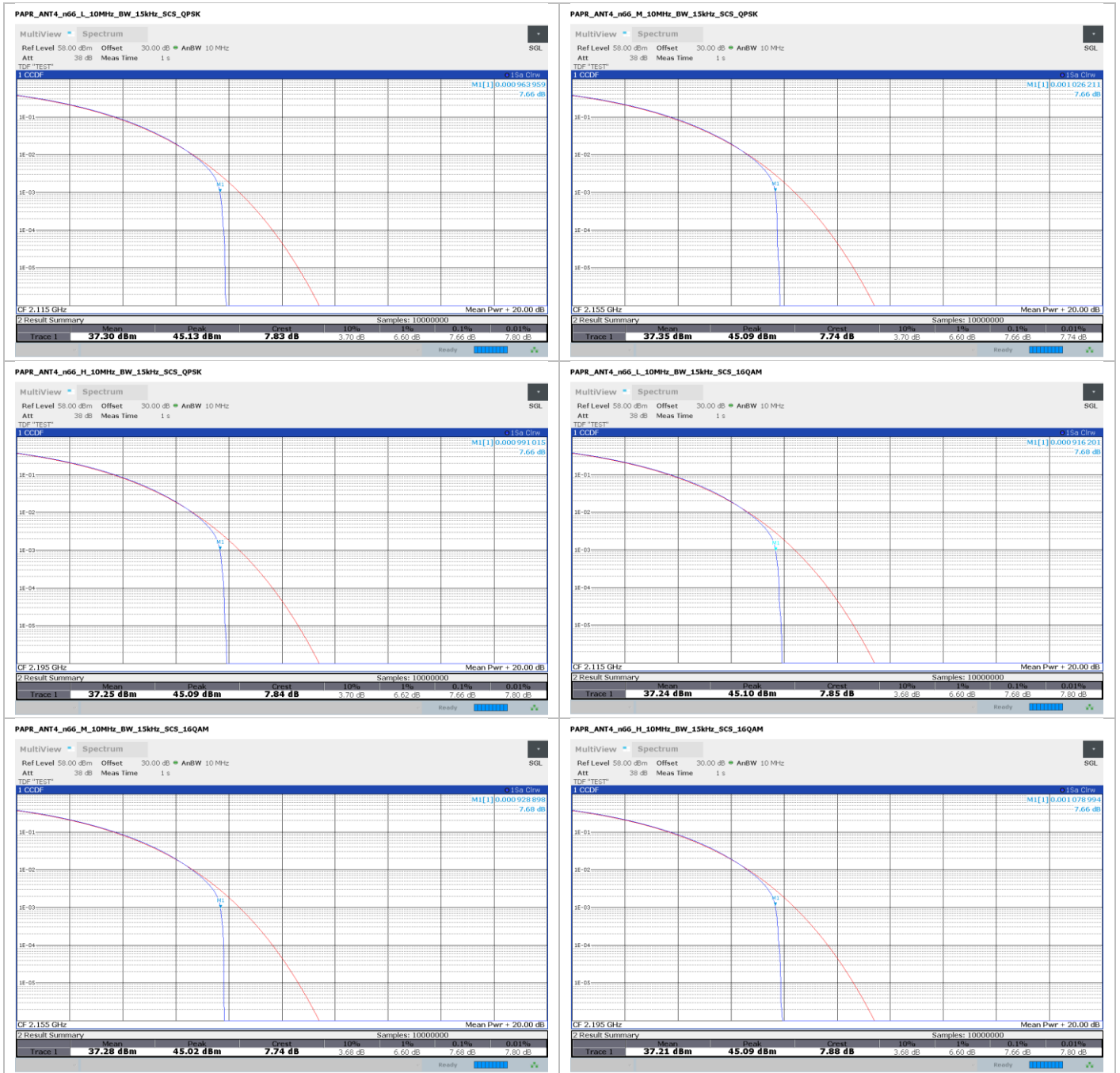
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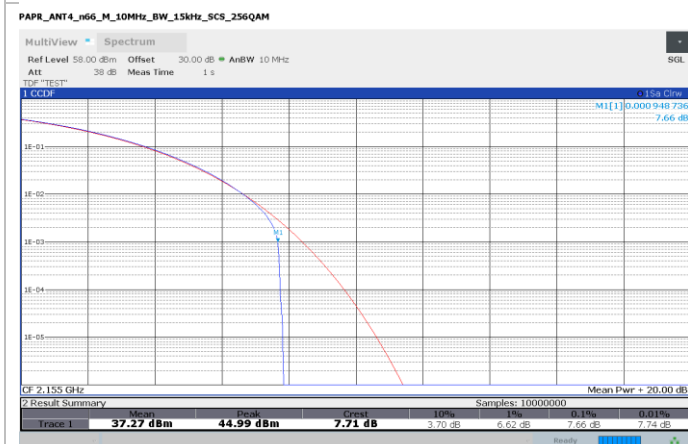
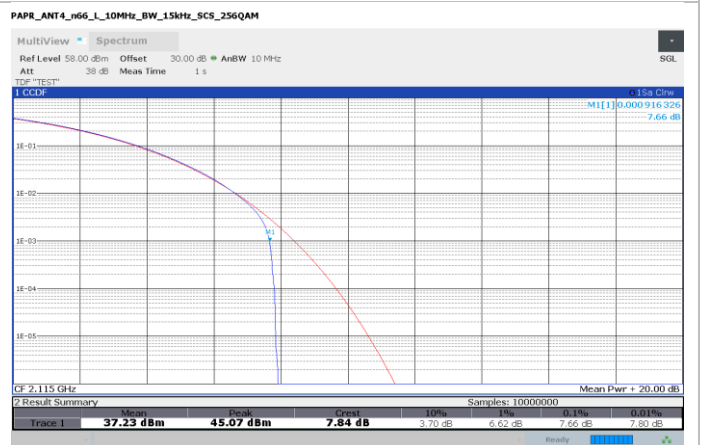
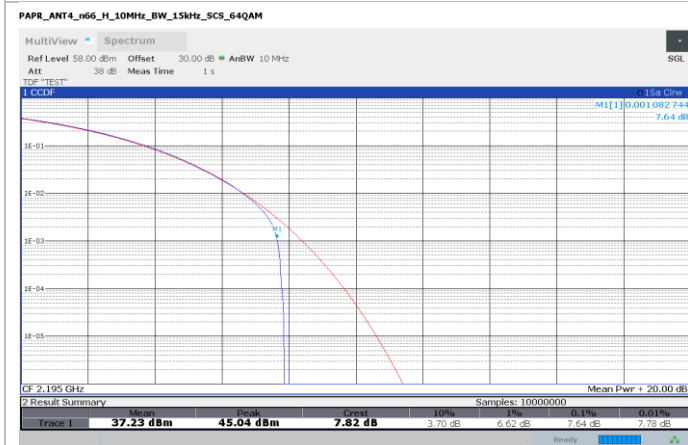
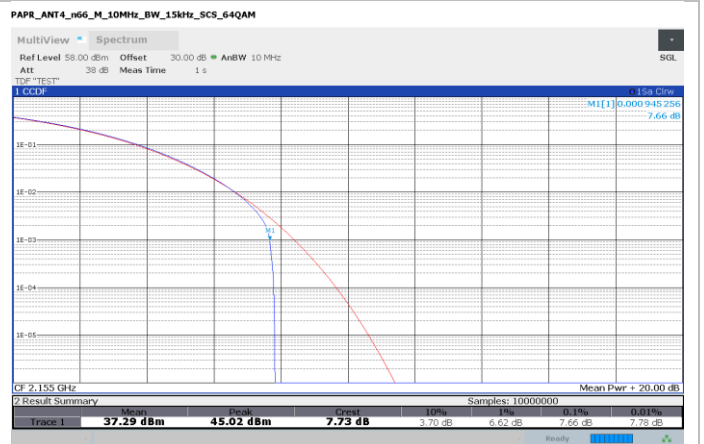
Band n66

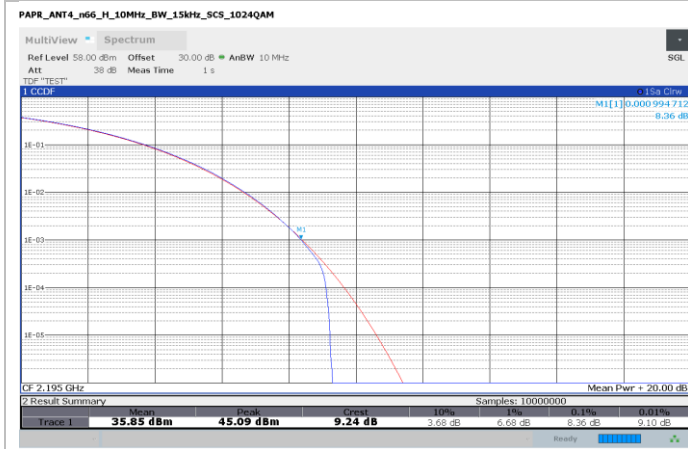
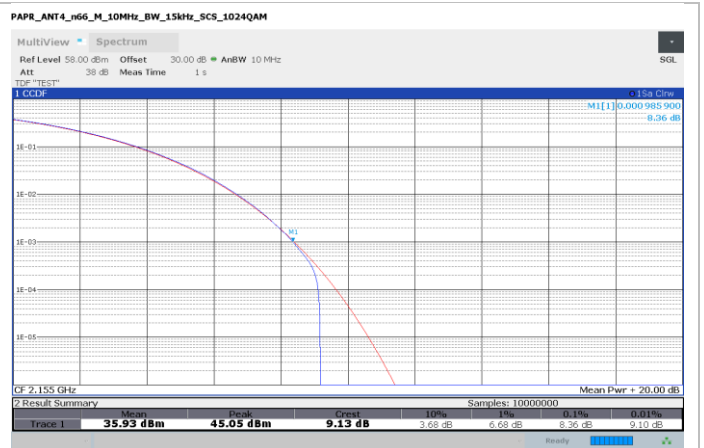
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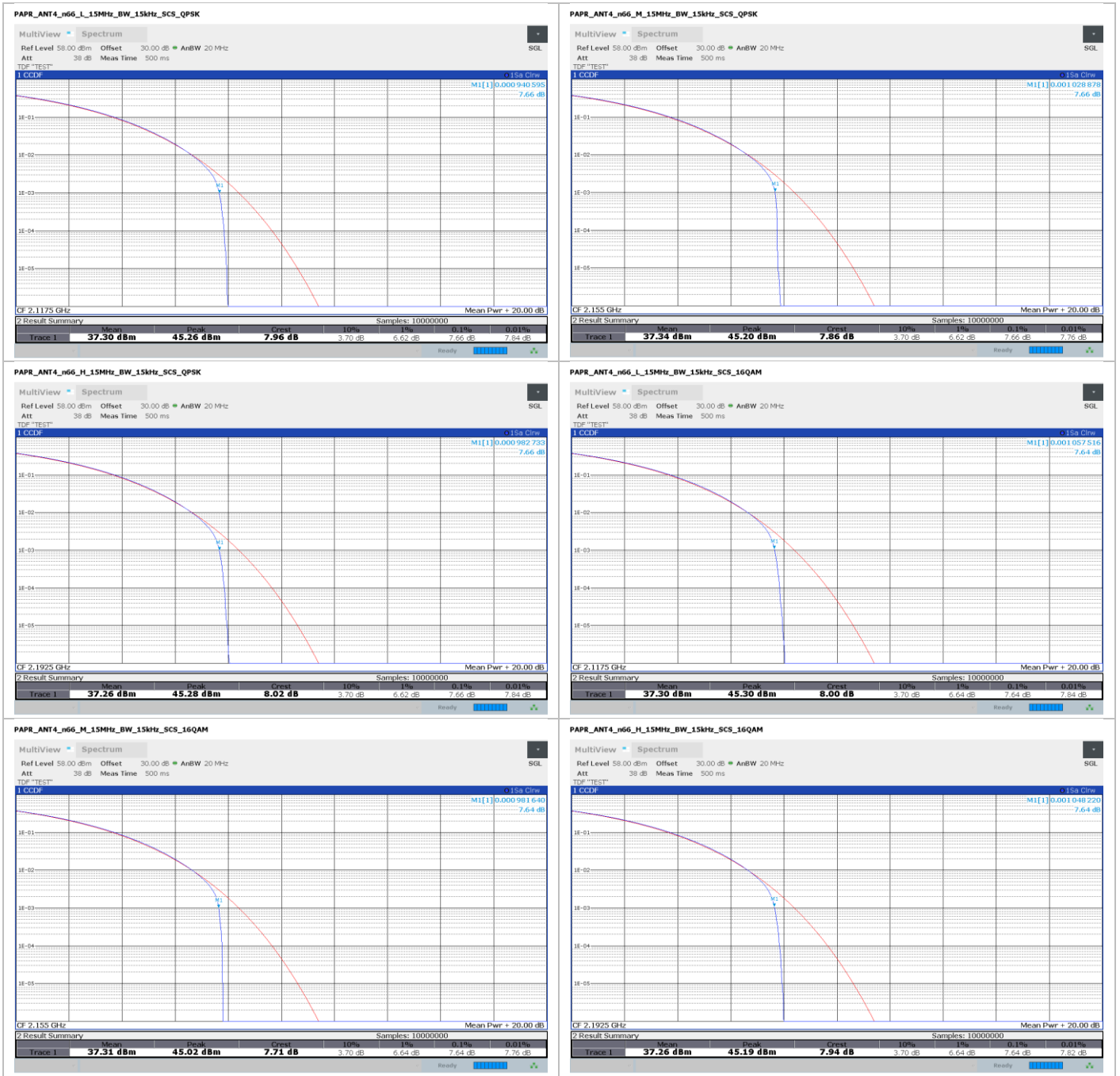
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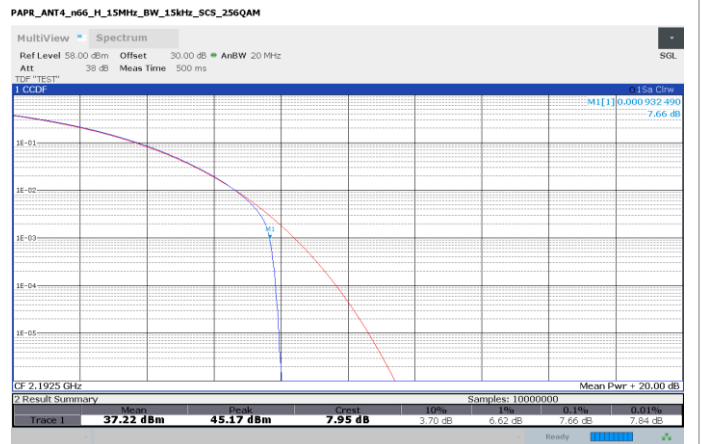
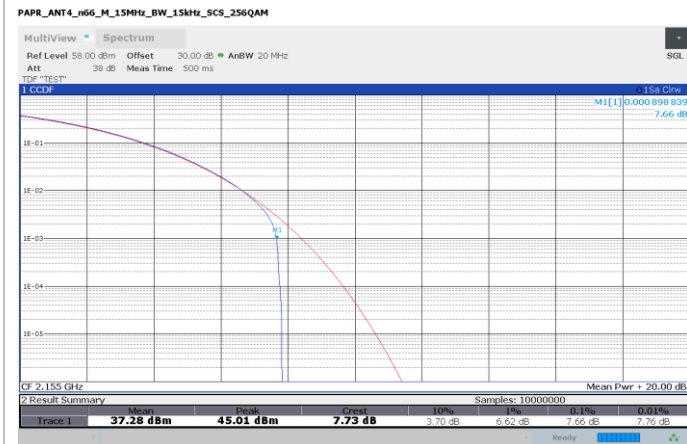
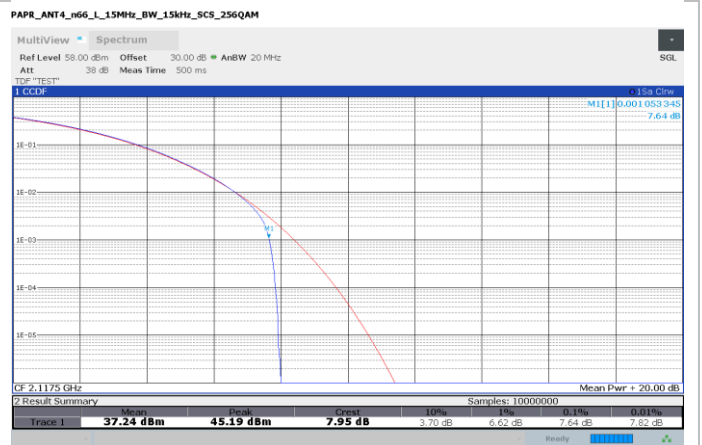
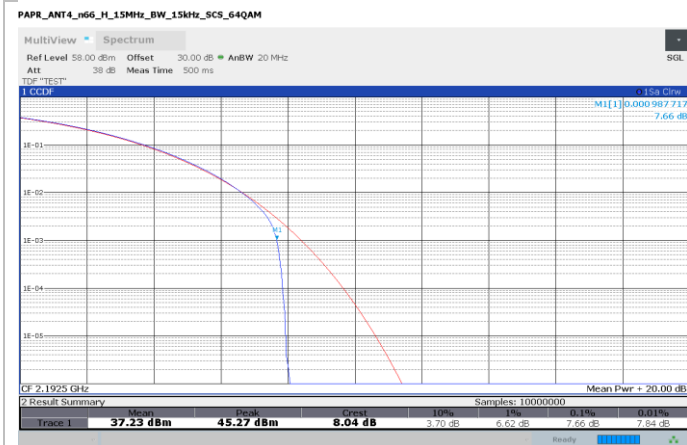
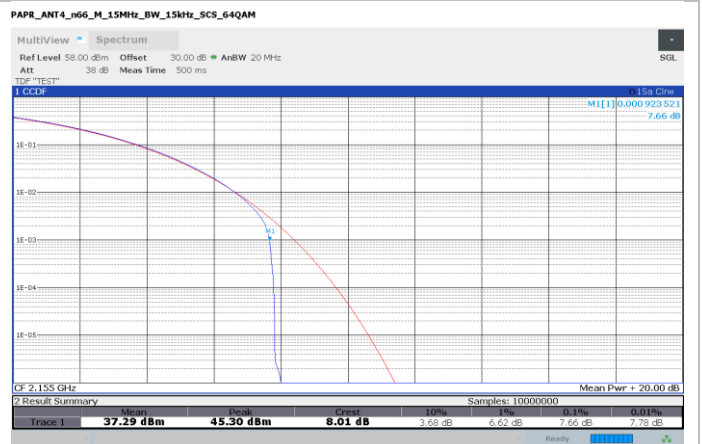
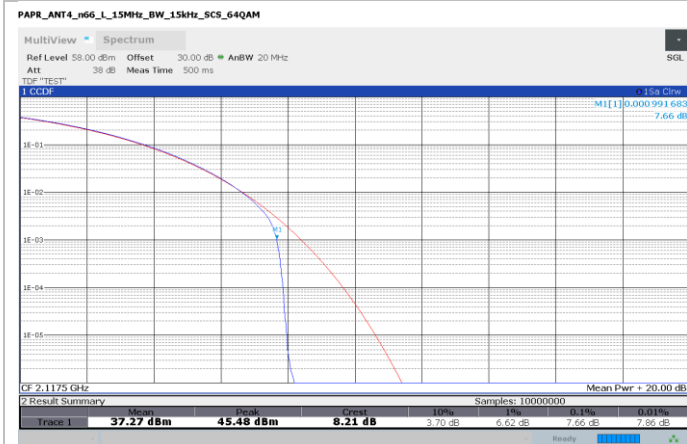
Band n66

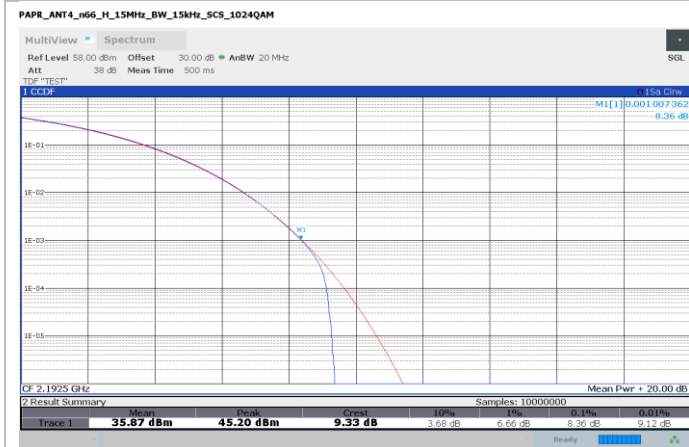
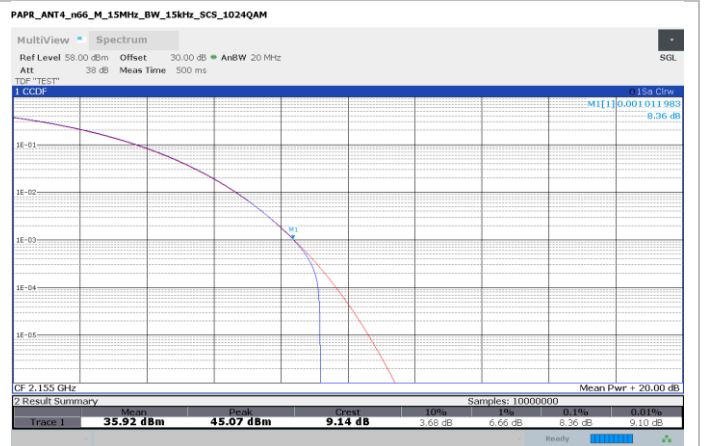
15 MHz



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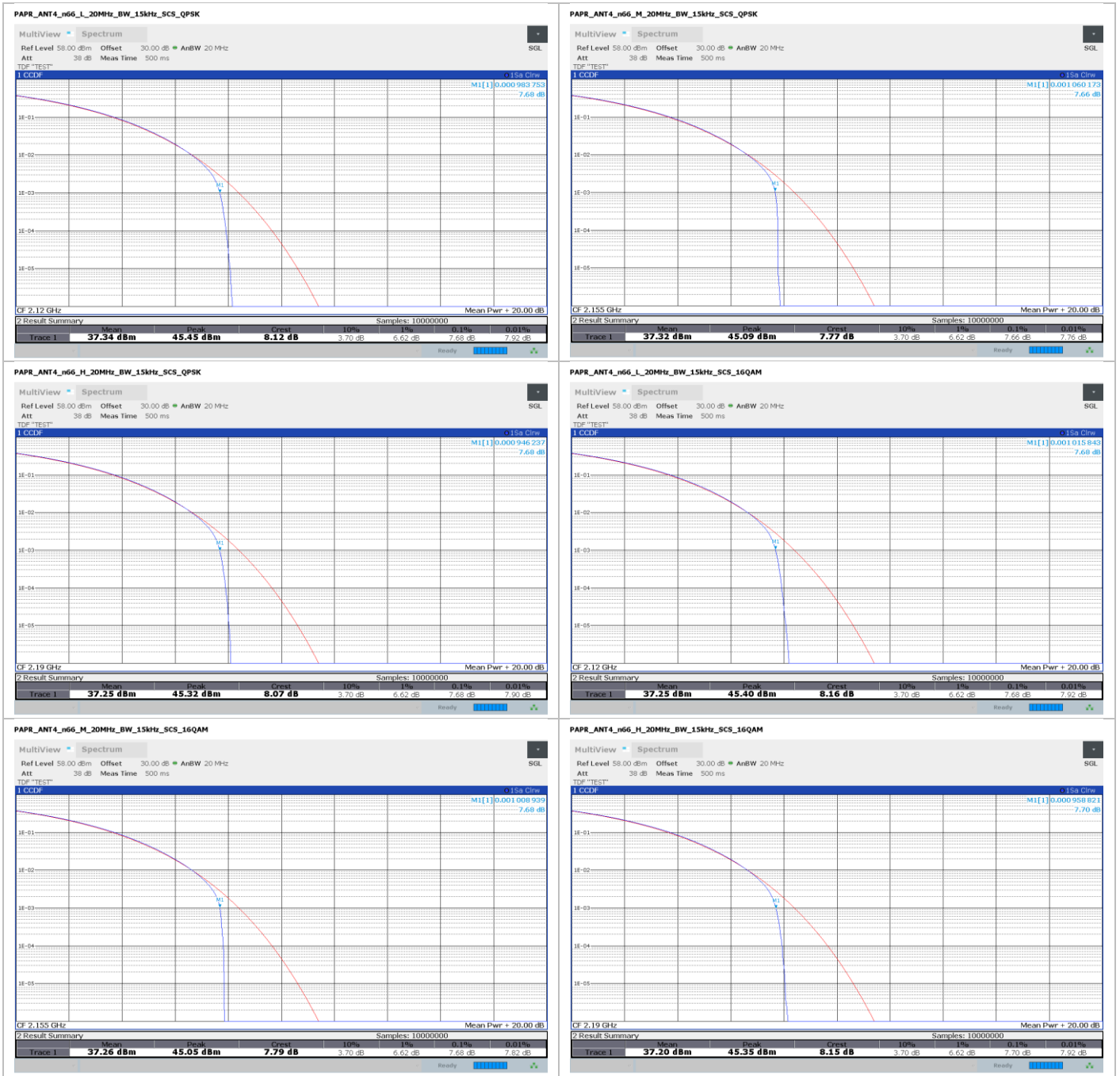
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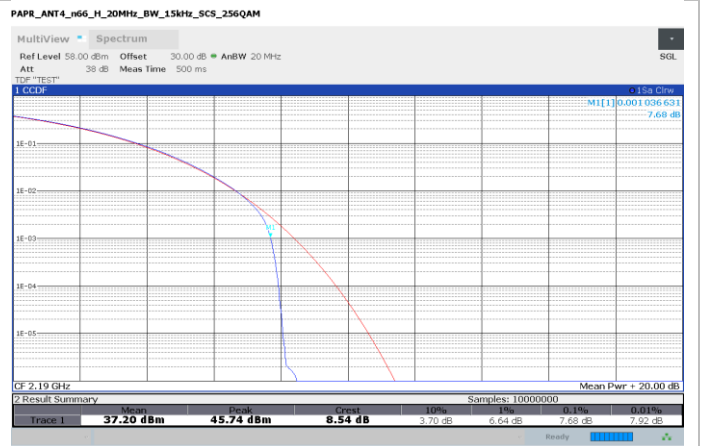
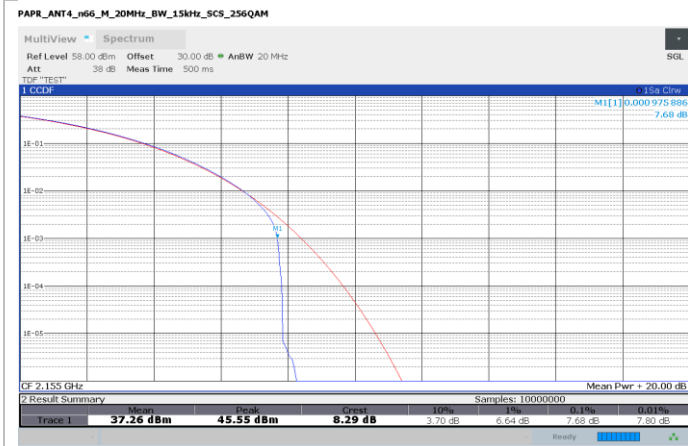
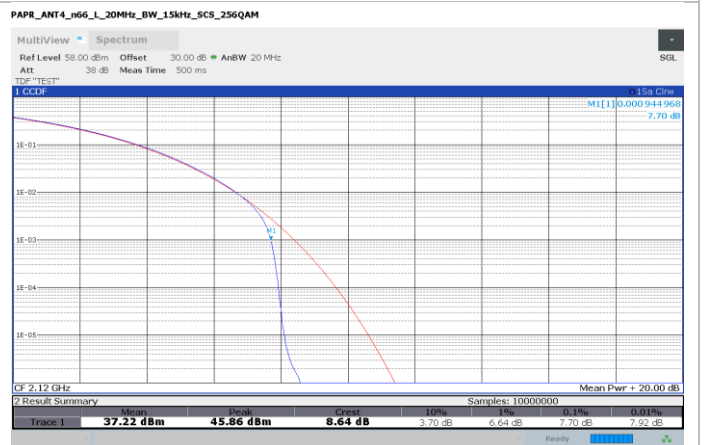
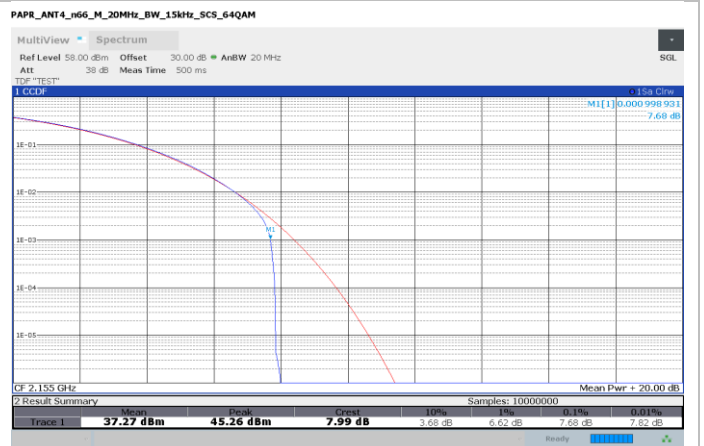
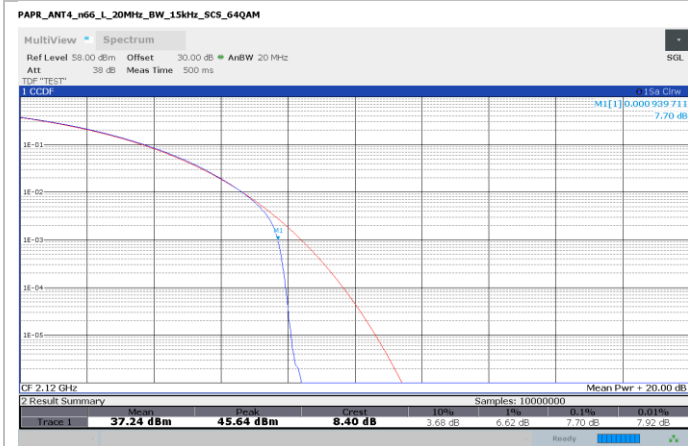
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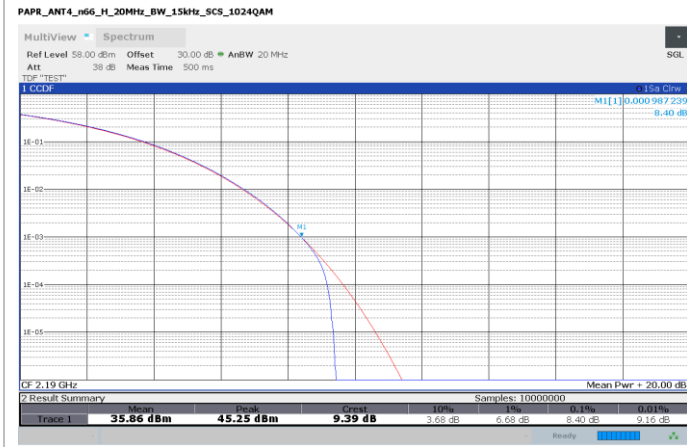
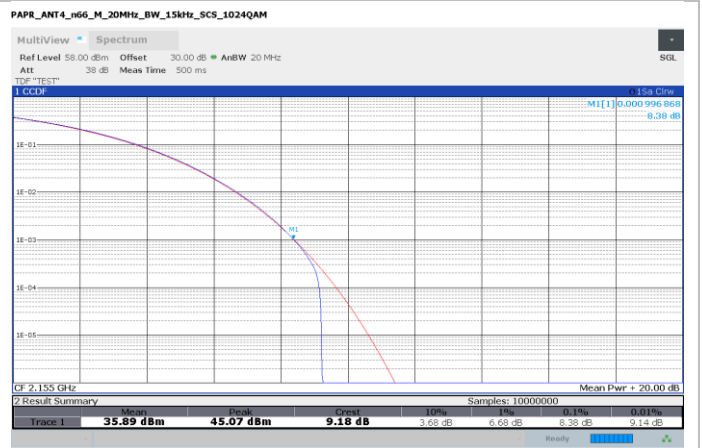
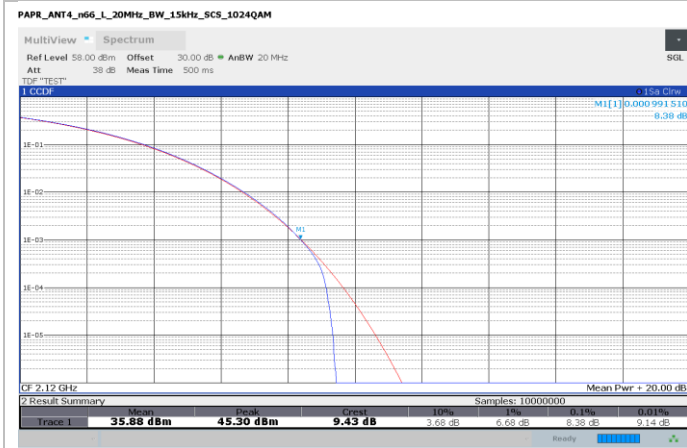
20 MHz



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Band n70:

Band	OBW Declared	Port	Channel (MHz)	0.1% (dB)	0.1% Limit (dB)	Margin (dB)
n70	5 MHz	C	1997.5	7.3	13	5.7
n70	5 MHz	C	2007.5	7.3	13	5.7
n70	5 MHz	C	2017.5	7.3	13	5.7

Table 8.5-21: Peak to average power ratio, QPSK Modulation, 5 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n70	5 MHz	C	1997.5	7.3	13	5.7
n70	5 MHz	C	2007.5	7.32	13	5.68
n70	5 MHz	C	2017.5	7.32	13	5.68

Table 8.5-22: Peak to average power ratio, 16QAM Modulation, 5 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n70	5 MHz	C	1997.5	7.34	13	5.66
n70	5 MHz	C	2007.5	7.34	13	5.66
n70	5 MHz	C	2017.5	7.34	13	5.66

Table 8.5-23: Peak to average power ratio, 64QAM Modulation, 5 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n70	5 MHz	C	1997.5	7.36	13	5.64
n70	5 MHz	C	2007.5	7.36	13	5.64
n70	5 MHz	C	2017.5	7.36	13	5.64

Table 8.5-24: Peak to average power ratio, 256QAM Modulation, 5 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n70	5 MHz	C	1997.5	8.32	13	4.68
n70	5 MHz	C	2007.5	8.32	13	4.68
n70	5 MHz	C	2017.5	8.32	13	4.68

Table 8.5-25: Peak to average power ratio, 1024QAM Modulation, 5 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1% (dB)	0.1% Limit (dB)	Margin (dB)
n70	10 MHz	C	2000	7.48	13	5.52
n70	10 MHz	C	2007.5	7.5	13	5.5
n70	10 MHz	C	2015	7.5	13	5.5

Table 8.5-26: Peak to average power ratio, QPSK Modulation, 10 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n70	10 MHz	C	2000	7.5	13	5.5
n70	10 MHz	C	2007.5	7.5	13	5.5
n70	10 MHz	C	2015	7.5	13	5.5

Table 8.5-27: Peak to average power ratio, 16QAM Modulation, 10 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n70	10 MHz	C	2000	7.5	13	5.5
n70	10 MHz	C	2007.5	7.5	13	5.5
n70	10 MHz	C	2015	7.5	13	5.5

Table 8.5-28: Peak to average power ratio, 64QAM Modulation, 10 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n70	10 MHz	C	2000	7.5	13	5.5
n70	10 MHz	C	2007.5	7.5	13	5.5
n70	10 MHz	C	2015	7.5	13	5.5

Table 8.5-29: Peak to average power ratio, 256QAM Modulation, 10 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n70	10 MHz	C	2000	8.32	13	4.68
n70	10 MHz	C	2007.5	8.32	13	4.68
n70	10 MHz	C	2015	8.32	13	4.68

Table 8.5-30: Peak to average power ratio, 1024QAM Modulation.



Band	OBW Declared	Port	Channel (MHz)	0.1% (dB)	0.1% Limit (dB)	Margin (dB)
n70	20 MHz	C	2005	7.52	13	5.48
n70	20 MHz	C	2007.5	7.52	13	5.48
n70	20 MHz	C	2010	7.52	13	5.48

Table 8.5-31: Peak to average power ratio, QPSK Modulation, 20 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n70	20 MHz	C	2005	7.52	13	5.48
n70	20 MHz	C	2007.5	7.52	13	5.48
n70	20 MHz	C	2010	7.52	13	5.48

Table 8.5-32: Peak to average power ratio, 16QAM Modulation, 20 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n70	20 MHz	C	2005	7.54	13	5.46
n70	20 MHz	C	2007.5	7.52	13	5.48
n70	20 MHz	C	2010	7.52	13	5.48

Table 8.5-33: Peak to average power ratio, 64QAM Modulation, 20 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n70	20 MHz	C	2005	7.52	13	5.48
n70	20 MHz	C	2007.5	7.52	13	5.48
n70	20 MHz	C	2010	7.52	13	5.48

Table 8.5-34: Peak to average power ratio, 256QAM Modulation, 20 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n70	20 MHz	C	2005	8.34	13	4.66
n70	20 MHz	C	2007.5	8.34	13	4.66
n70	20 MHz	C	2010	8.36	13	4.66

Table 8.5-35: Peak to average power ratio, 1024QAM Modulation, 20 MHz



Band	OBW Declared	Port	Channel (MHz)	0.1% (dB)	0.1% Limit (dB)	Margin (dB)
n70	25 MHz	C	2007.5	7.54	13	5.46

Table 8.5-36: Peak to average power ratio, QPSK Modulation, 25 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n70	25 MHz	C	2007.5	7.5	13	5.5

Table 8.5-37: Peak to average power ratio, 16QAM Modulation, 25 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n70	25 MHz	C	2007.5	7.52	13	5.48

Table 8.5-38: Peak to average power ratio, 64QAM Modulation, 25 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n70	25 MHz	C	2007.5	7.52	13	5.48

Table 8.5-39: Peak to average power ratio, 256QAM Modulation, 25 MHz

Band	OBW Declared	Port	Channel (MHz)	0.1%	0.1% Limit	Margin
n70	25 MHz	C	2007.5	8.72	13	4.28

Table 8.5-40: Peak to average power ratio, 1024QAM Modulation, 25 MHz

Band n70

5 MHz

