

PEAK TO AVERAGE POWER (PAPR) CCDF

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	27-Feb-20	27-Feb-21
Generator - Signal	Keysight	N5171B-506	TEW	2-May-18	2-May-21
Block - DC	Fairview Microwave	SD3464	ANA	25-Sep-20	25-Sep-21

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer.

Because the conducted Output Power was measured using a RMS Average detector, the Peak to Average Power Ratio (PAPR) was measured to show that the maximum peak-max-hold spectrum to the maximum of the average spectrum does not exceed the rule part defined limit.

The PAPR measurement method is described in ANSI C63.26 section 5.2.3.4.
The PAPR was measured using the CCDF function of the spectrum analyzer.

Per 27.50(d)(2), RSS-139 section 6.5, and RSS-170 section 5.3.1, the PAPR limit shall not exceed 13 dB for more than the ANSI described 0.1% of the time.

RF conducted emissions testing was performed on one port. The FRIJ antenna ports are essentially electrically identical (the RF power variation between antenna ports is small) and port 4 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i and 6.4.

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PEAK TO AVERAGE (PAPR) CCDF



TMTx 2020.10.20.0 BETA XMR 2020.03.25.0

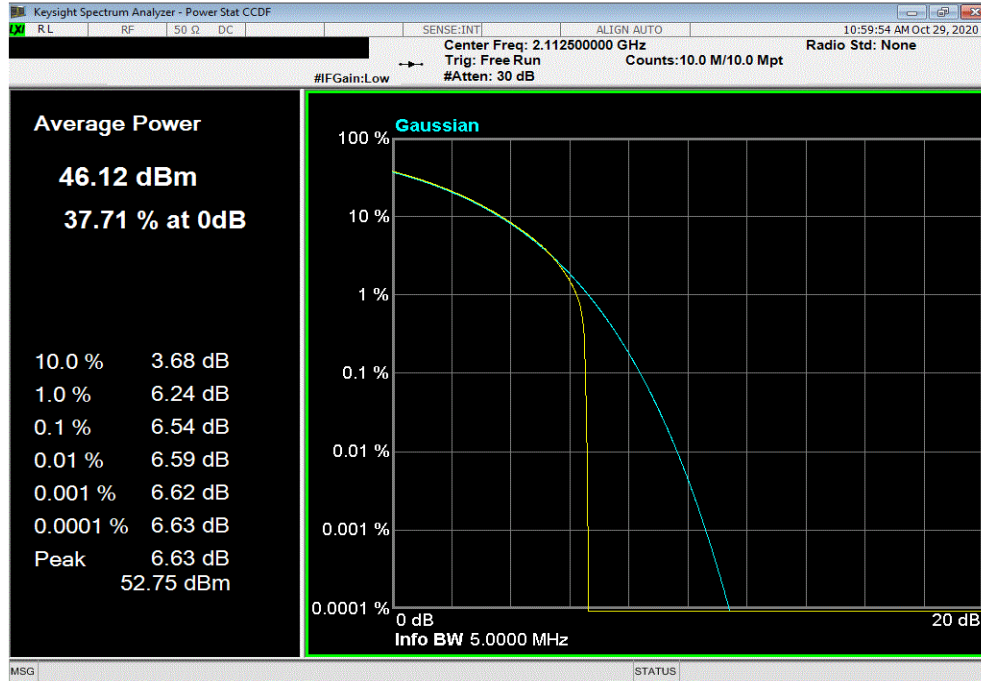
EUT: FRIJ		Work Order: NOKI0019
Serial Number: YK160800020		Date: 2-Nov-20
Customer: Nokia Solutions and Networks		Temperature: 22.8 °C
Attendees: Mitchell Hill, John Rattanaovong		Humidity: 34.9% RH
Project: None		Barometric Pres.: 1037 mbar
Tested by: Brandon Hobbs	Power: 54 VDC	Job Site: TX05
TEST SPECIFICATIONS		
FCC 27:2020		Test Method
RSS-139:2015, RSS-170:2015		ANSI C63.26:2015
COMMENTS		RSS-139:2015, RSS-170:2015
All measurement path losses were accounted for in the reference level offset including any attenuators, filters and DC blocks. Band n66 carriers are enabled at maximum power (40 watts/carrier).		
DEVIATIONS FROM TEST STANDARD		
None		
Configuration #	2	Signature
		PAPR Value (dB) PAPR Limit (dB) Results
Port 4, Band n66, 2110 MHz - 2200 MHz		
5 MHz Bandwidth		
QPSK Modulation		
Low Channel 2112.5 MHz		6.54 13 Pass
Mid Channel 2155 MHz		6.54 13 Pass
High Channel 2197.5 MHz		6.54 13 Pass
16-QAM Modulation		
Low Channel 2112.5 MHz		6.69 13 Pass
Mid Channel 2155 MHz		6.68 13 Pass
High Channel 2197.5 MHz		6.69 13 Pass
64-QAM Modulation		
Low Channel 2112.5 MHz		6.50 13 Pass
Mid Channel 2155 MHz		6.50 13 Pass
High Channel 2197.5 MHz		6.51 13 Pass
256-QAM Modulation		
Low Channel 2112.5 MHz		6.60 13 Pass
Mid Channel 2155 MHz		6.60 13 Pass
High Channel 2197.5 MHz		6.60 13 Pass
10 MHz Bandwidth		
QPSK Modulation		
Low Channel 2115 MHz		6.56 13 Pass
Mid Channel 2155 MHz		6.52 13 Pass
High Channel 2195 MHz		6.56 13 Pass
16-QAM Modulation		
Low Channel 2115 MHz		6.69 13 Pass
Mid Channel 2155 MHz		6.66 13 Pass
High Channel 2195 MHz		6.70 13 Pass
64-QAM Modulation		
Low Channel 2115 MHz		6.55 13 Pass
Mid Channel 2155 MHz		6.52 13 Pass
High Channel 2195 MHz		6.56 13 Pass
256-QAM Modulation		
Low Channel 2115 MHz		6.62 13 Pass
Mid Channel 2155 MHz		6.60 13 Pass
High Channel 2195 MHz		6.64 13 Pass
15 MHz Bandwidth		
QPSK Modulation		
Low Channel 2117.5 MHz		6.59 13 Pass
Mid Channel 2155 MHz		6.51 13 Pass
High Channel 2192.5 MHz		6.60 13 Pass
16-QAM Modulation		
Low Channel 2117.5 MHz		6.65 13 Pass
Mid Channel 2155 MHz		6.59 13 Pass
High Channel 2192.5 MHz		6.68 13 Pass
64-QAM Modulation		
Low Channel 2117.5 MHz		6.54 13 Pass
Mid Channel 2155 MHz		6.50 13 Pass
High Channel 2192.5 MHz		6.59 13 Pass
256-QAM Modulation		
Low Channel 2117.5 MHz		6.56 13 Pass
Mid Channel 2155 MHz		6.51 13 Pass
High Channel 2192.5 MHz		6.62 13 Pass
20 MHz Bandwidth		
QPSK Modulation		
Low Channel 2120 MHz		6.55 13 Pass
Mid Channel 2155 MHz		6.46 13 Pass
High Channel 2190 MHz		6.62 13 Pass
16-QAM Modulation		
Low Channel 2120 MHz		6.61 13 Pass
Mid Channel 2155 MHz		6.53 13 Pass
High Channel 2190 MHz		6.67 13 Pass
64-QAM Modulation		
Low Channel 2120 MHz		6.56 13 Pass
Mid Channel 2155 MHz		6.47 13 Pass
High Channel 2190 MHz		6.62 13 Pass
256-QAM Modulation		
Low Channel 2120 MHz		6.54 13 Pass
Mid Channel 2155 MHz		6.47 13 Pass
High Channel 2190 MHz		6.62 13 Pass

PEAK TO AVERAGE (PAPR) CCDF

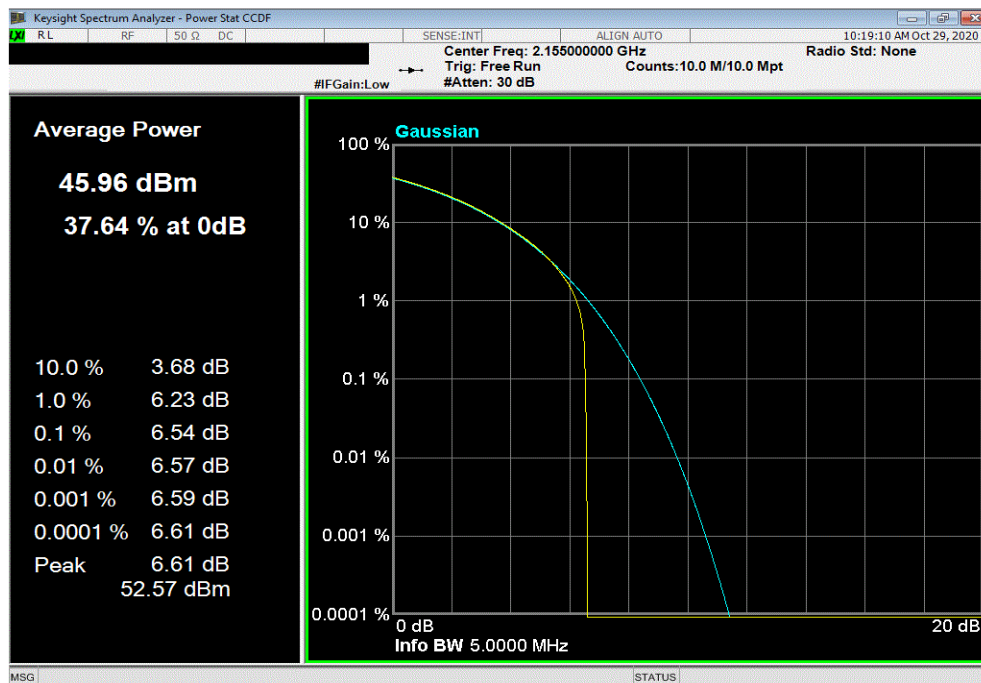


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Port 4, Band n66, 2110 MHz - 2200 MHz, 5 MHz Bandwidth, QPSK Modulation, Low Channel 2112.5 MHz						
	PAPR Value (dB)	PAPR Limit (dB)	Results			
	6.54	13	Pass			



Port 4, Band n66, 2110 MHz - 2200 MHz, 5 MHz Bandwidth, QPSK Modulation, Mid Channel 2155 MHz						
	PAPR Value (dB)	PAPR Limit (dB)	Results			
	6.54	13	Pass			

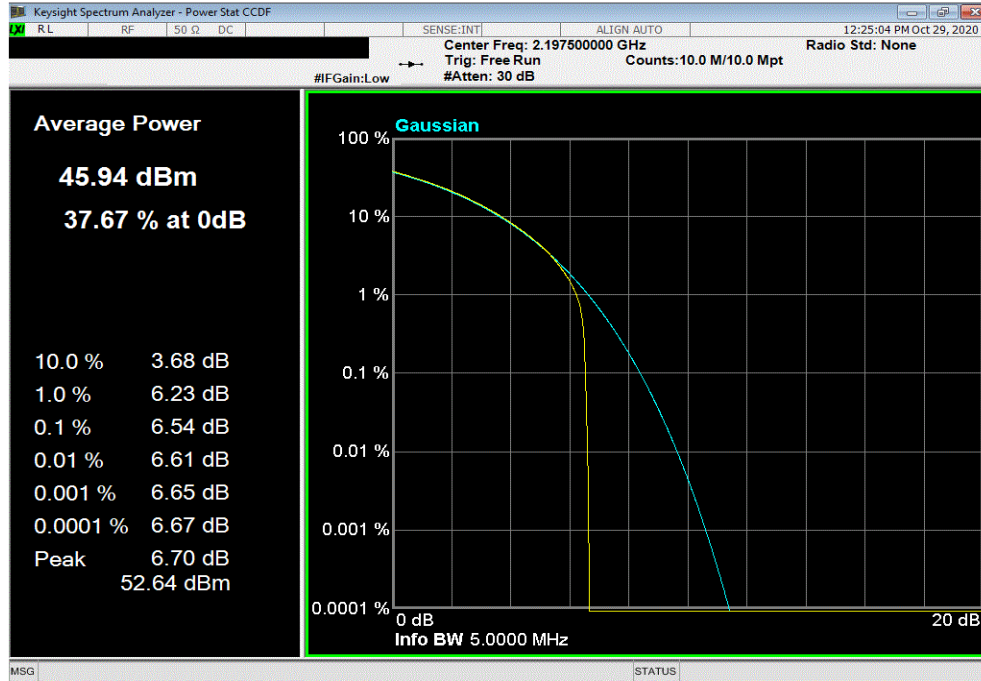


PEAK TO AVERAGE (PAPR) CCDF

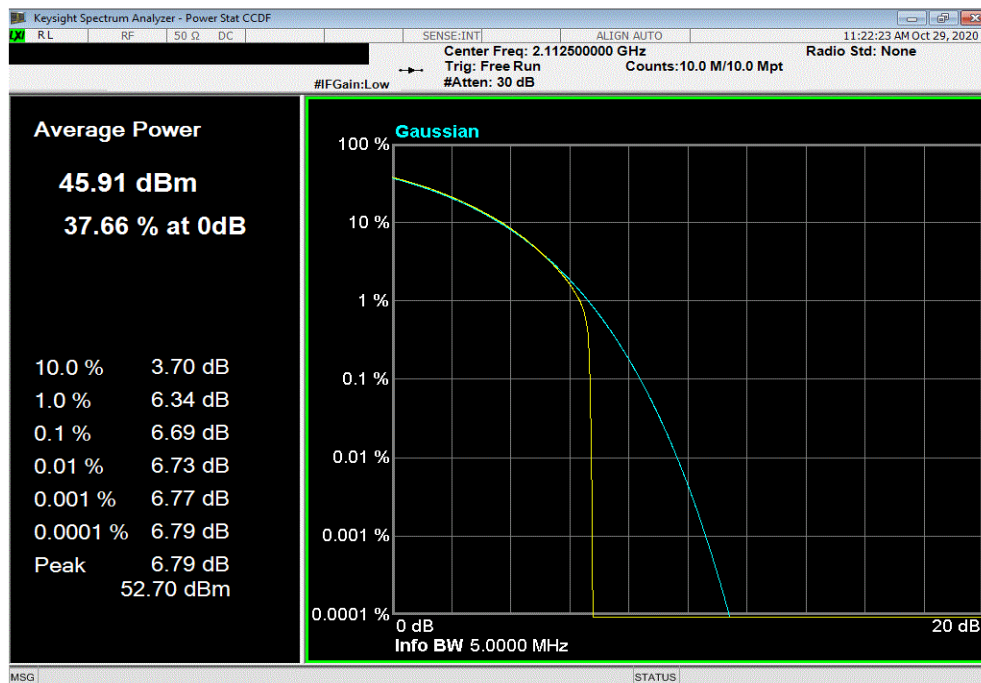


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Port 4, Band n66, 2110 MHz - 2200 MHz, 5 MHz Bandwidth, QPSK Modulation, High Channel 2197.5 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.54	13	Pass



Port 4, Band n66, 2110 MHz - 2200 MHz, 5 MHz Bandwidth, 16-QAM Modulation, Low Channel 2112.5 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.69	13	Pass

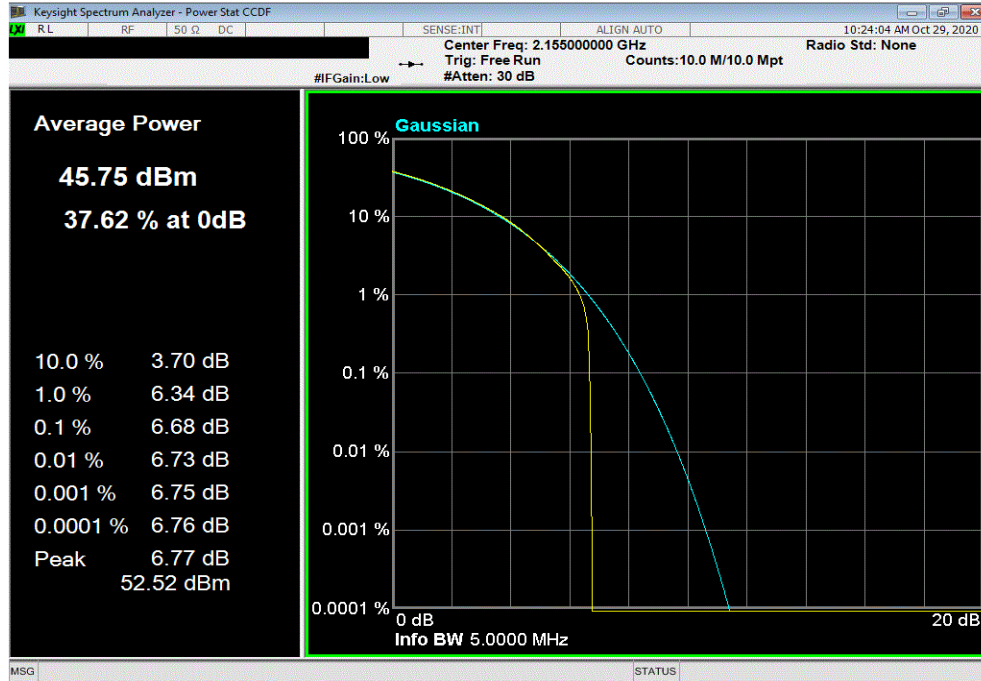


PEAK TO AVERAGE (PAPR) CCDF

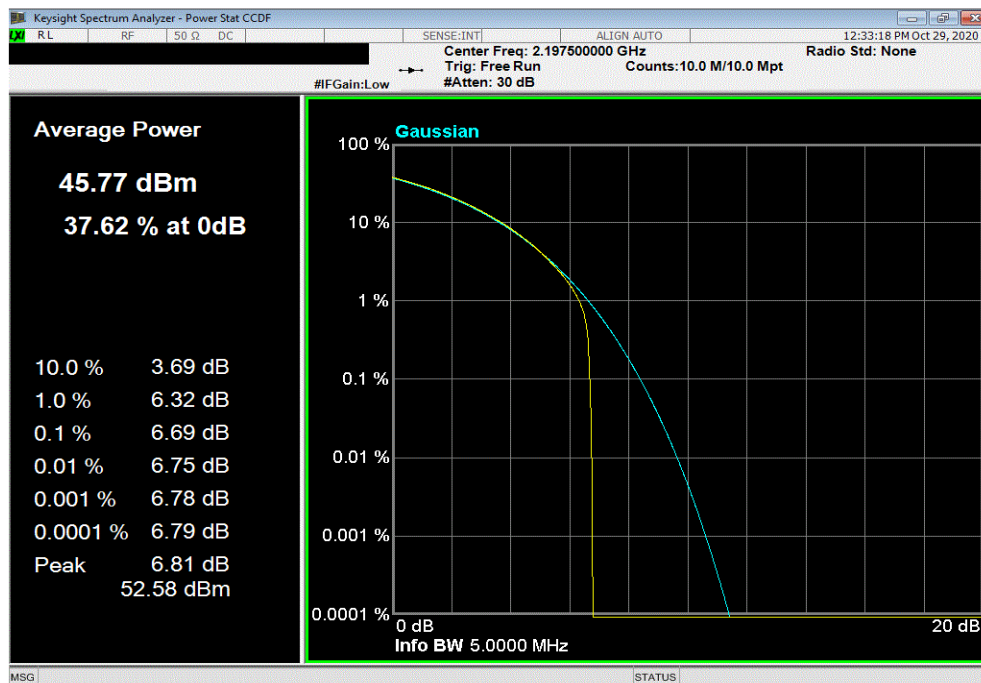


TMTx 2020.10.20.0 BETA XMI 2020.03.25.0

Port 4, Band n66, 2110 MHz - 2200 MHz, 5 MHz Bandwidth, 16-QAM Modulation, Mid Channel 2155 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.68	13	Pass



Port 4, Band n66, 2110 MHz - 2200 MHz, 5 MHz Bandwidth, 16-QAM Modulation, High Channel 2197.5 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.69	13	Pass

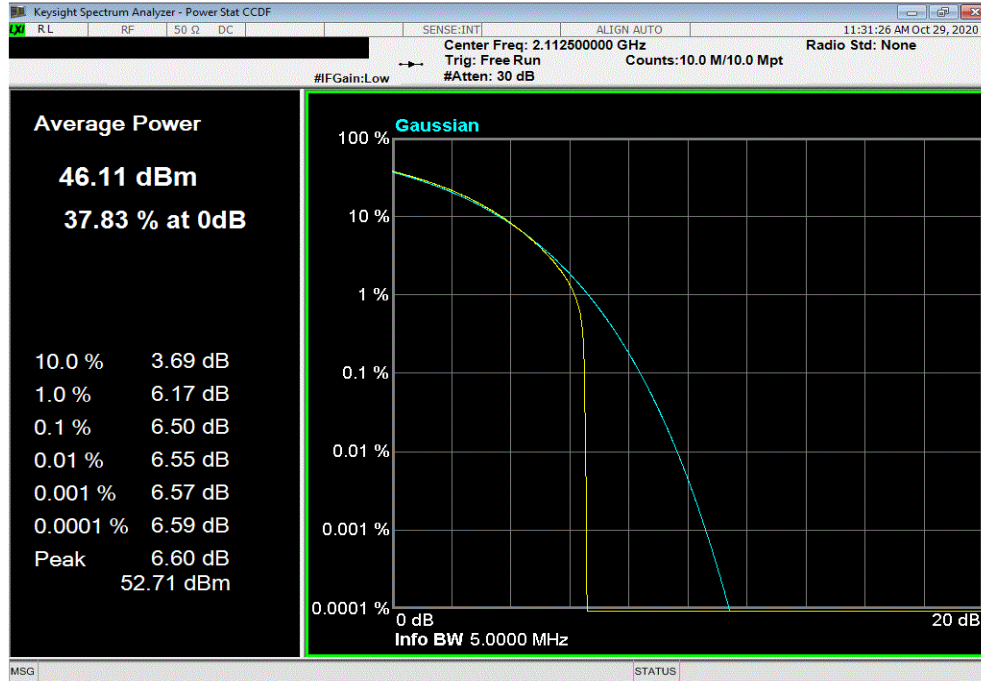


PEAK TO AVERAGE (PAPR) CCDF

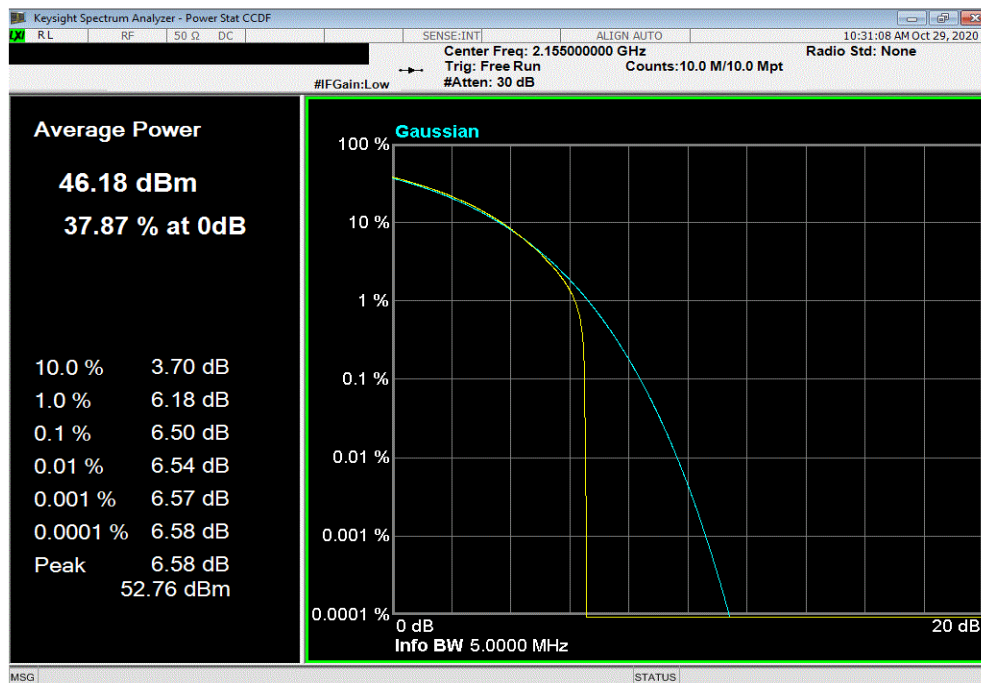


TMTx 2020.10.20.0 BETA XMR 2020.03.25.0

Port 4, Band n66, 2110 MHz - 2200 MHz, 5 MHz Bandwidth , 64-QAM Modulation, Low Channel 2112.5 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.5	13	Pass



Port 4, Band n66, 2110 MHz - 2200 MHz, 5 MHz Bandwidth , 64-QAM Modulation, Mid Channel 2155 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.5	13	Pass

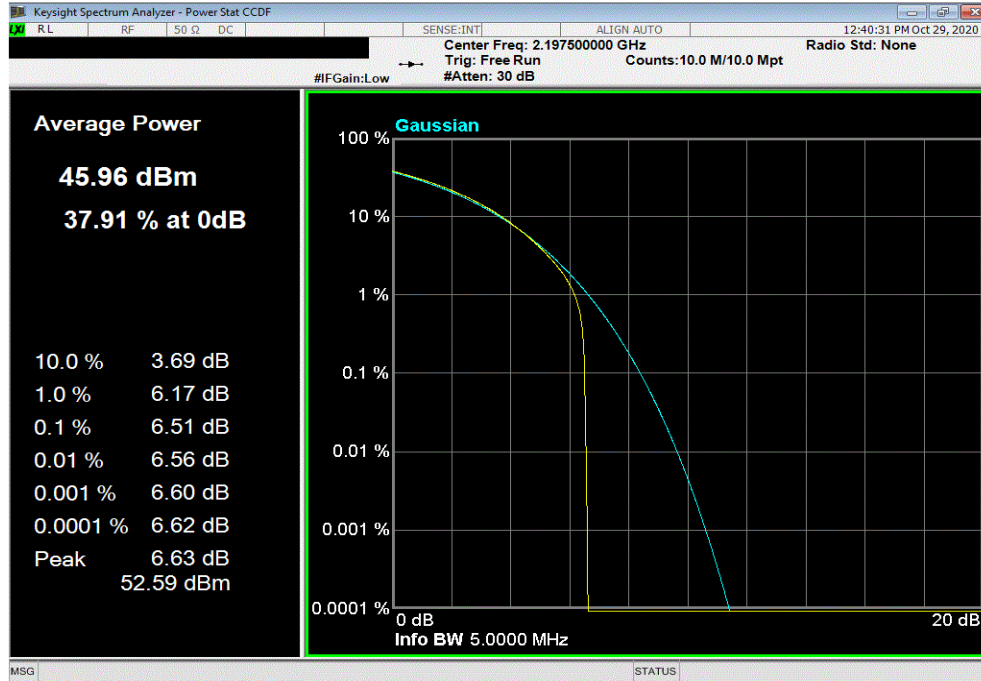


PEAK TO AVERAGE (PAPR) CCDF

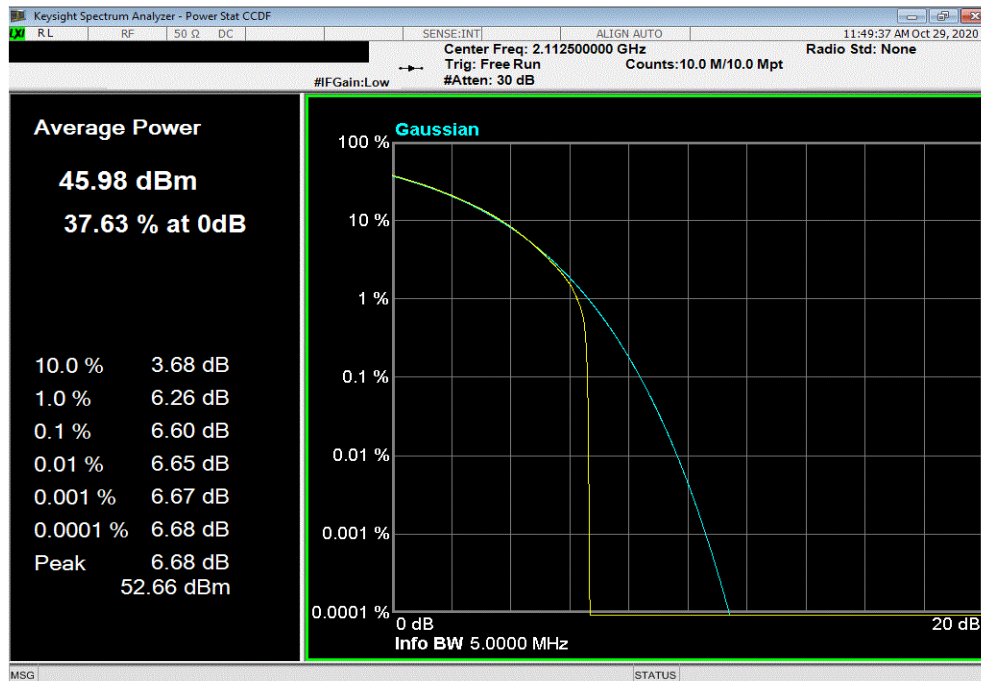


TMTx 2020.10.20.0 BETA XMR 2020.03.25.0

Port 4, Band n66, 2110 MHz - 2200 MHz, 5 MHz Bandwidth , 64-QAM Modulation, High Channel 2197.5 MHz						
	PAPR Value (dB)	PAPR Limit (dB)	Results			
	6.51	13	Pass			



Port 4, Band n66, 2110 MHz - 2200 MHz, 5 MHz Bandwidth , 256-QAM Modulation, Low Channel 2112.5 MHz						
	PAPR Value (dB)	PAPR Limit (dB)	Results			
	6.6	13	Pass			

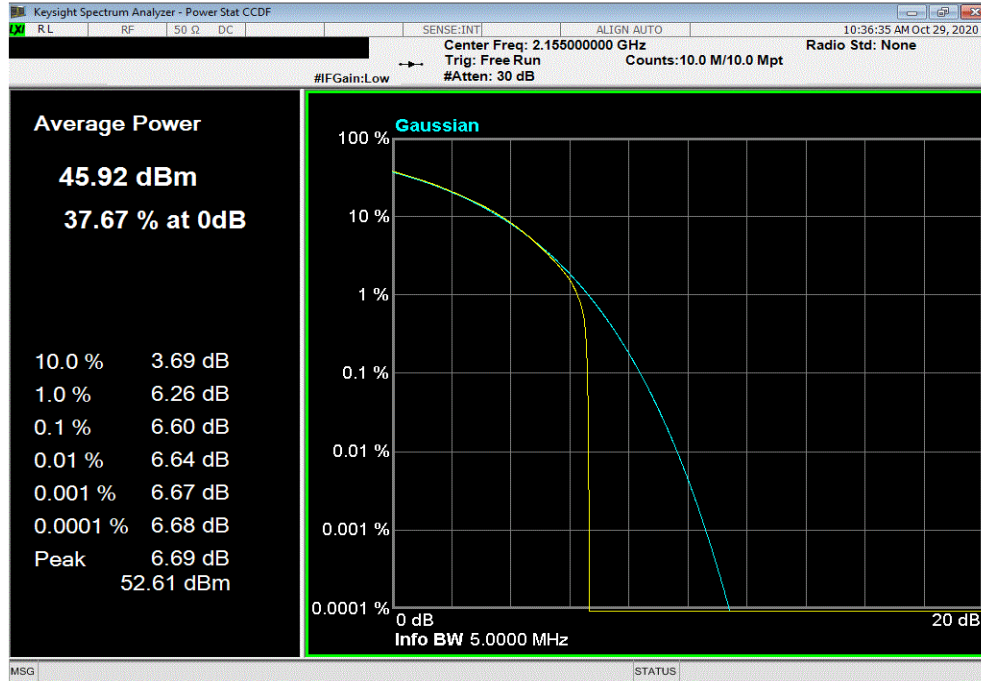


PEAK TO AVERAGE (PAPR) CCDF

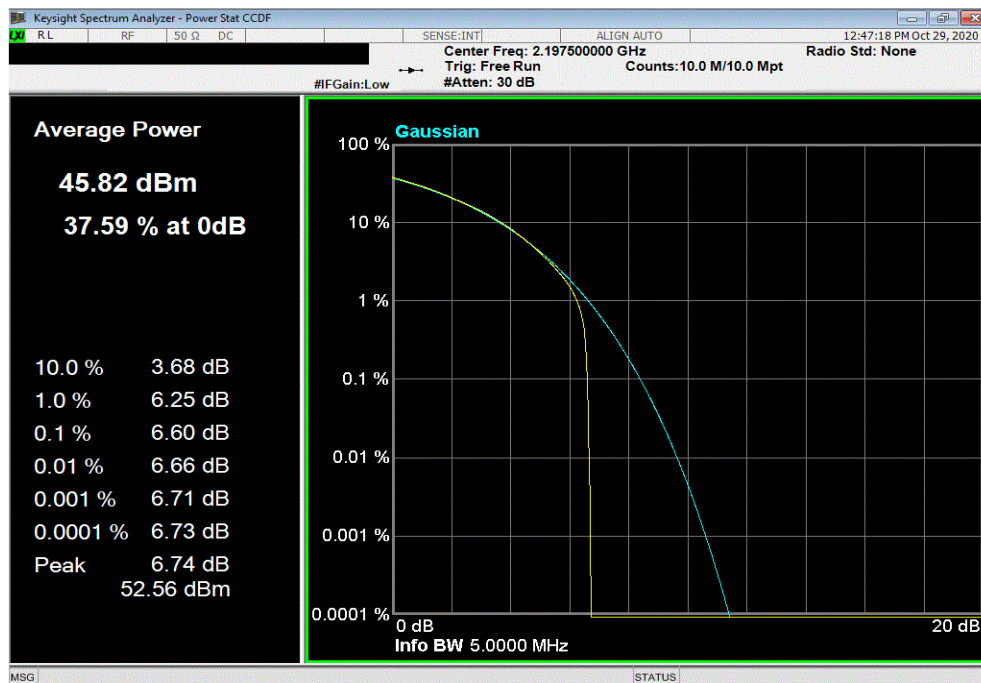


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Port 4, Band n66, 2110 MHz - 2200 MHz, 5 MHz Bandwidth , 256-QAM Modulation, Mid Channel 2155 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.6	13	Pass



Port 4, Band n66, 2110 MHz - 2200 MHz, 5 MHz Bandwidth , 256-QAM Modulation, High Channel 2197.5 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.6	13	Pass

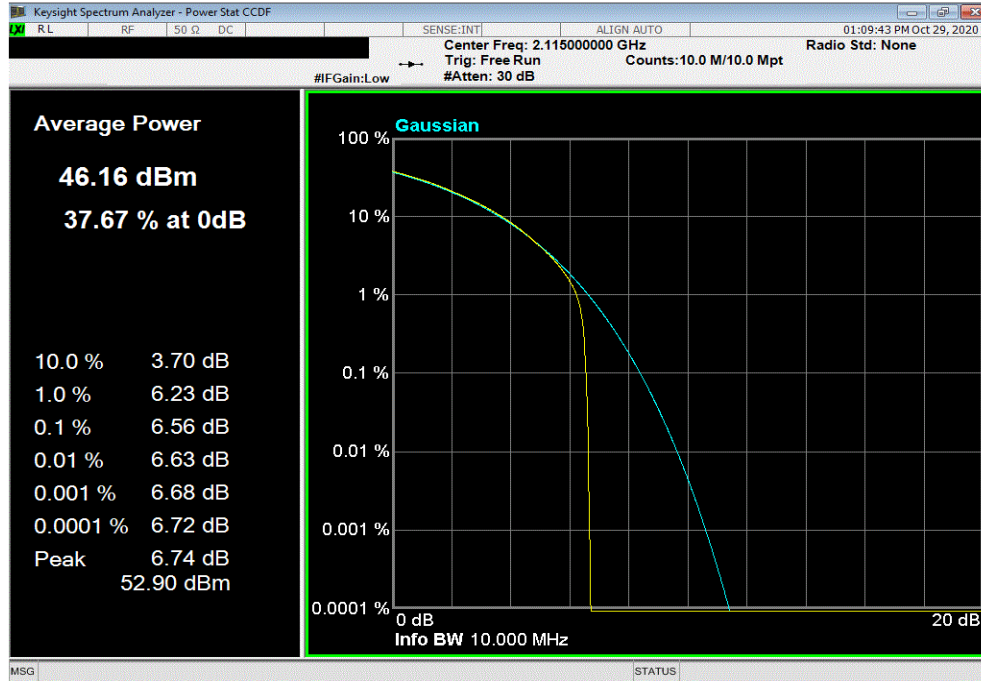


PEAK TO AVERAGE (PAPR) CCDF

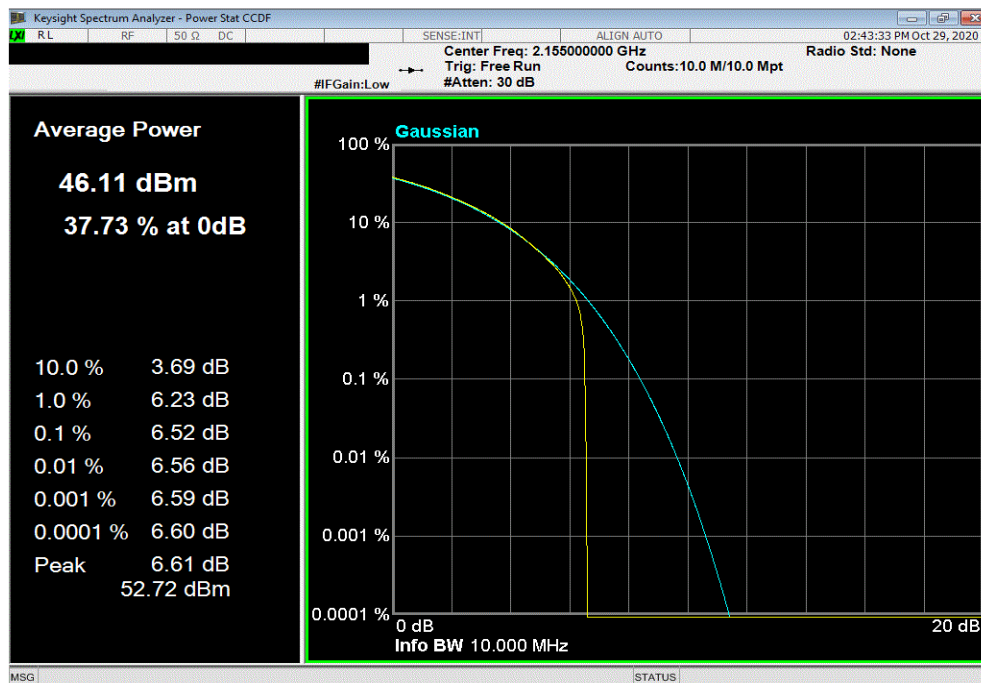


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Port 4, Band n66, 2110 MHz - 2200 MHz, 10 MHz Bandwidth , QPSK Modulation, Low Channel 2115 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.56	13	Pass



Port 4, Band n66, 2110 MHz - 2200 MHz, 10 MHz Bandwidth , QPSK Modulation, Mid Channel 2155 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.52	13	Pass

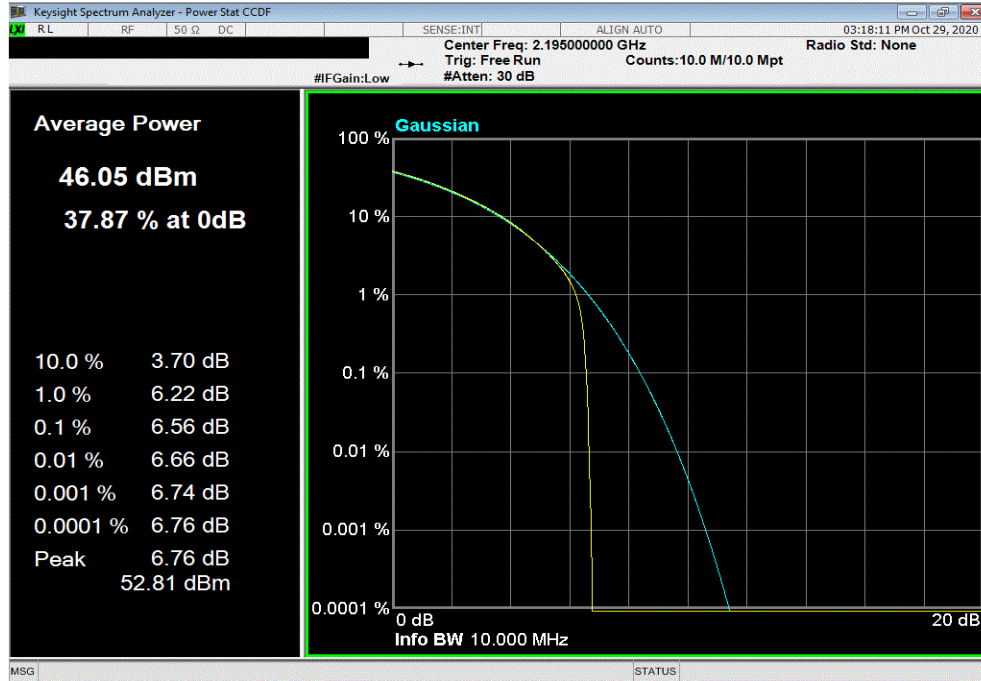


PEAK TO AVERAGE (PAPR) CCDF

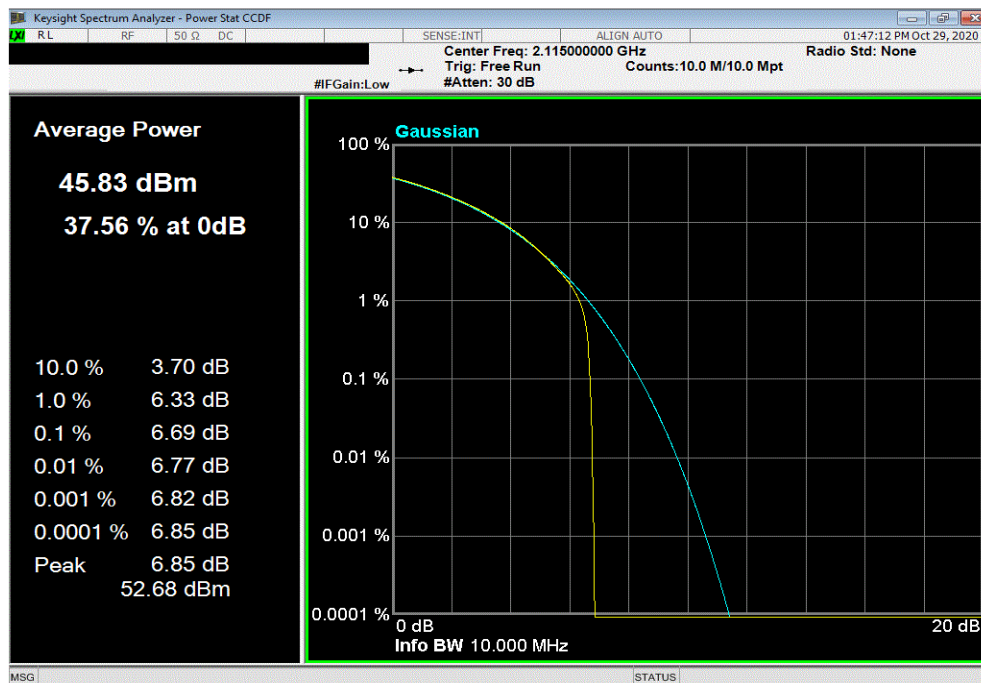


TMTx 2020.10.20.0 BETA XMR 2020.03.25.0

Port 4, Band n66, 2110 MHz - 2200 MHz, 10 MHz Bandwidth , QPSK Modulation, High Channel 2195 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.56	13	Pass



Port 4, Band n66, 2110 MHz - 2200 MHz, 10 MHz Bandwidth , 16-QAM Modulation, Low Channel 2115 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.69	13	Pass

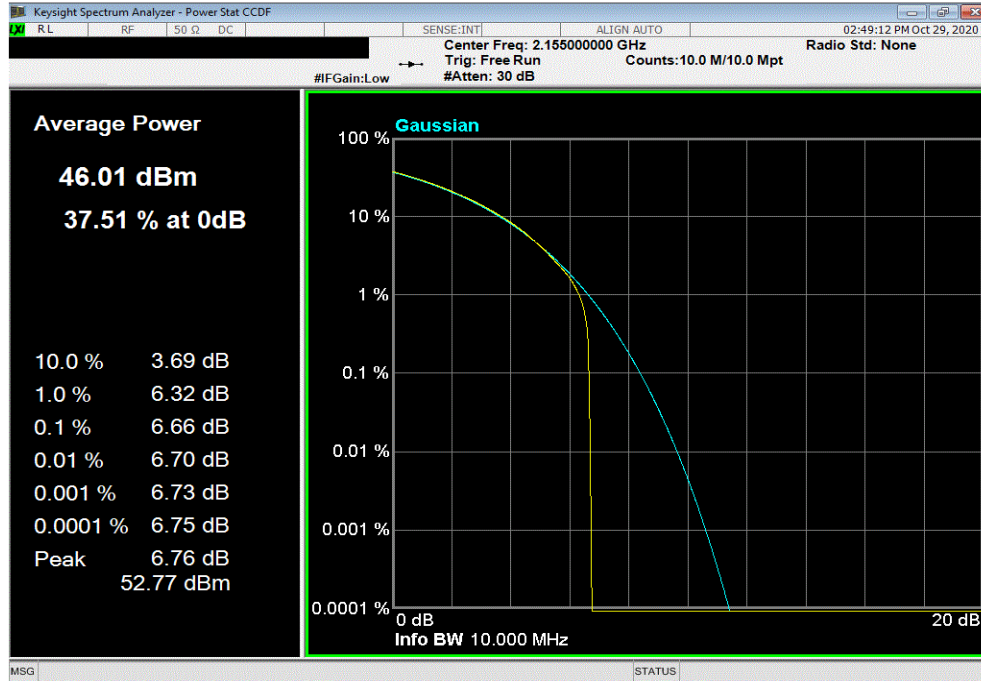


PEAK TO AVERAGE (PAPR) CCDF

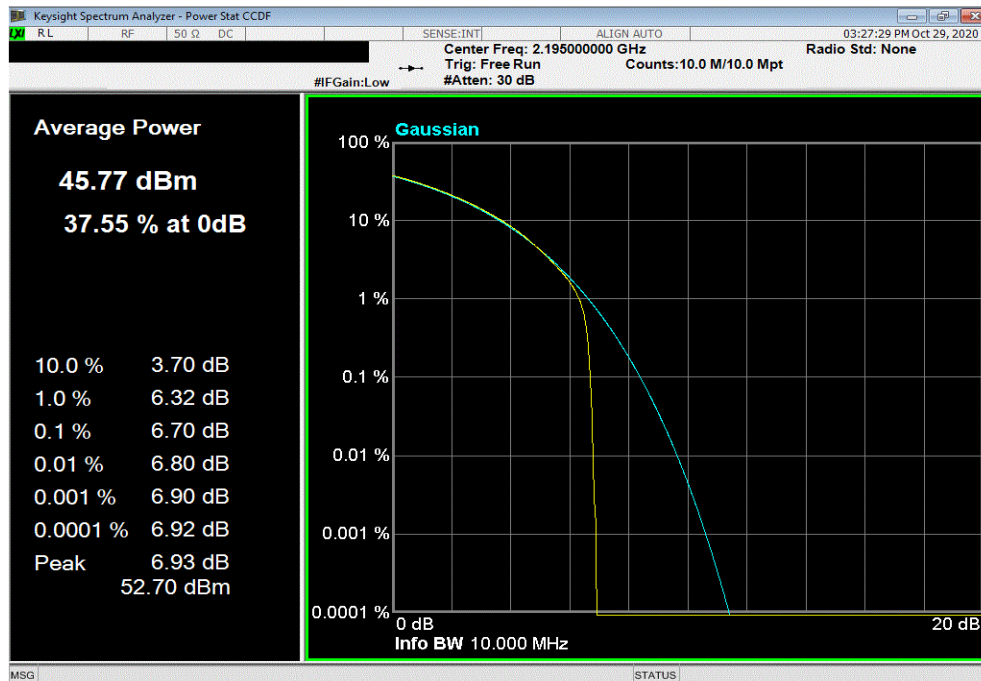


TMTx 2020.10.20.0 BETA XMI 2020.03.25.0

Port 4, Band n66, 2110 MHz - 2200 MHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 2155 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.66	13	Pass



Port 4, Band n66, 2110 MHz - 2200 MHz, 10 MHz Bandwidth, 16-QAM Modulation, High Channel 2195 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.7	13	Pass

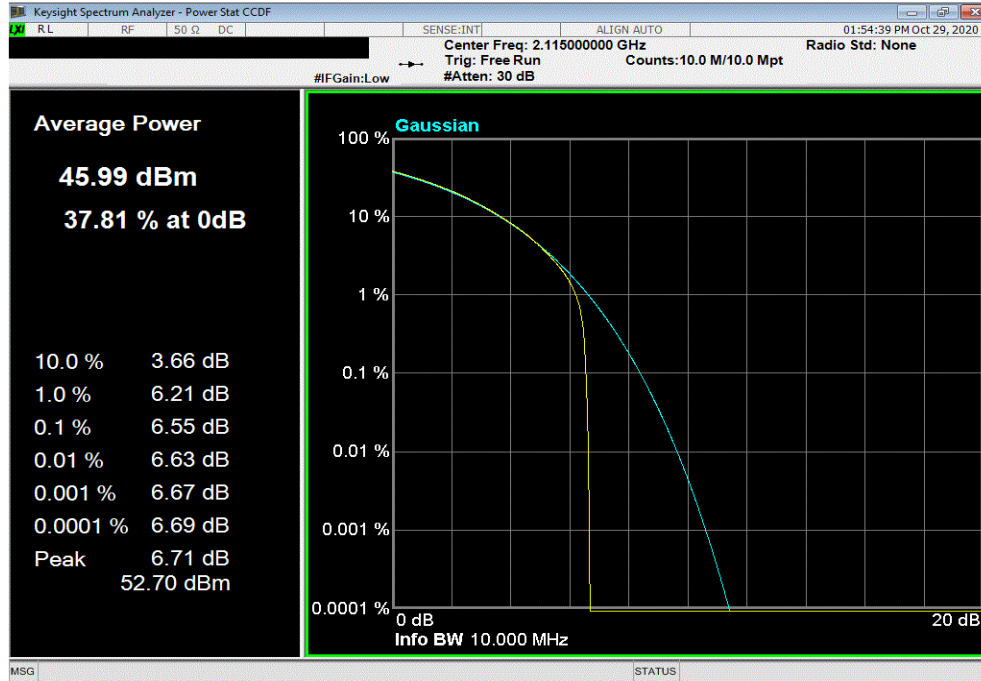


PEAK TO AVERAGE (PAPR) CCDF

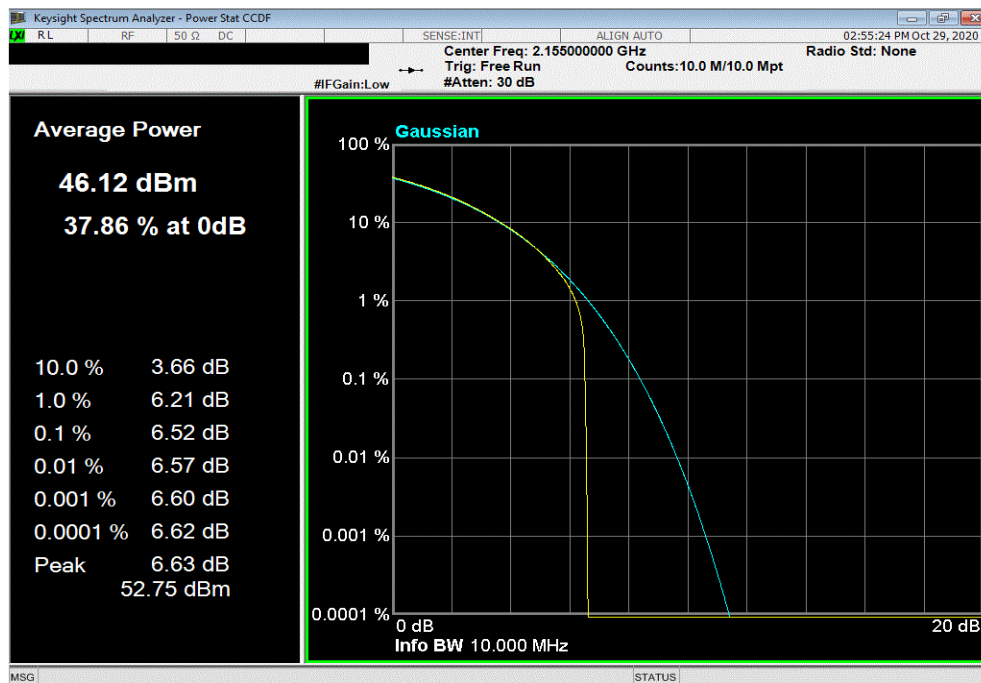


TMTx 2020.10.20.0 BETA XMR 2020.03.25.0

Port 4, Band n66, 2110 MHz - 2200 MHz, 10 MHz Bandwidth, 64-QAM Modulation, Low Channel 2115 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.55	13	Pass



Port 4, Band n66, 2110 MHz - 2200 MHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 2155 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.52	13	Pass

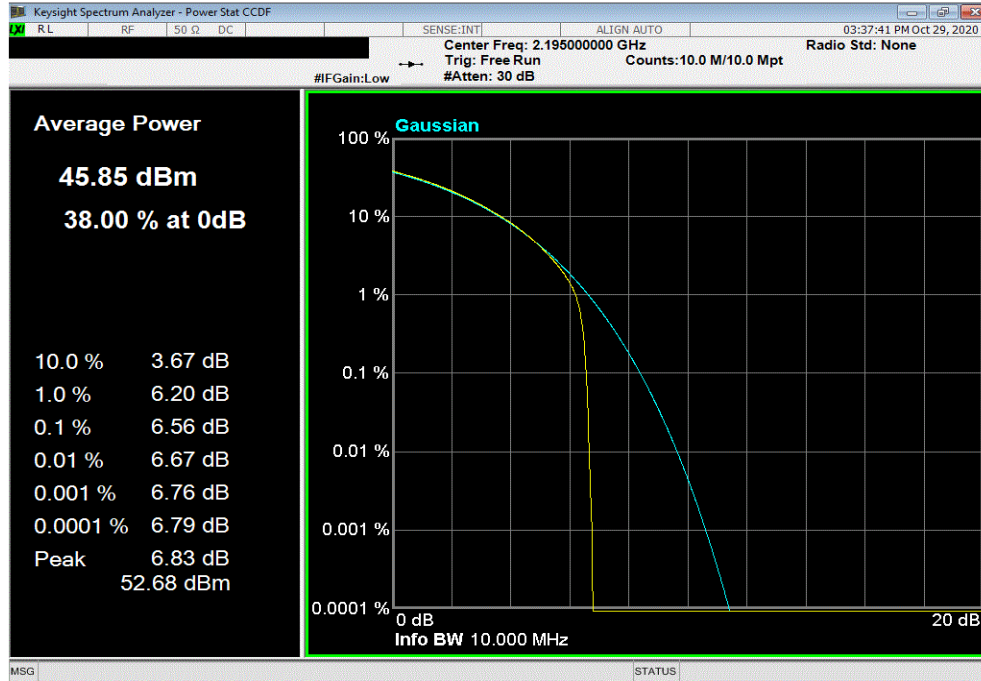


PEAK TO AVERAGE (PAPR) CCDF

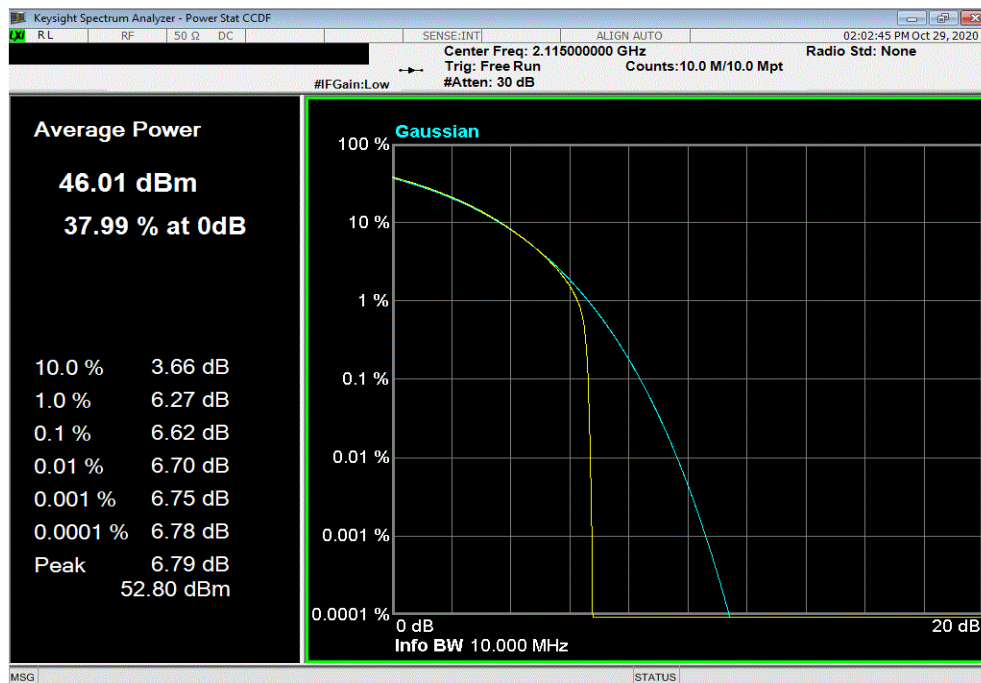


TMTx 2020.10.20.0 BETA XMt 2020.03.25.0

Port 4, Band n66, 2110 MHz - 2200 MHz, 10 MHz Bandwidth, 64-QAM Modulation, High Channel 2195 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.56	13	Pass



Port 4, Band n66, 2110 MHz - 2200 MHz, 10 MHz Bandwidth, 256-QAM Modulation, Low Channel 2115 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.62	13	Pass

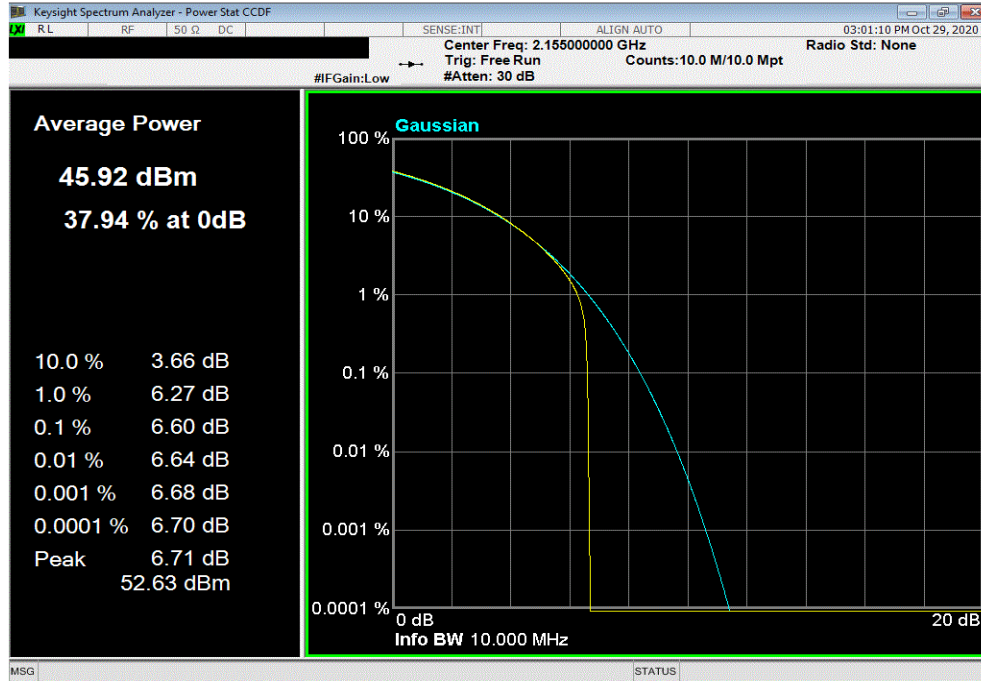


PEAK TO AVERAGE (PAPR) CCDF

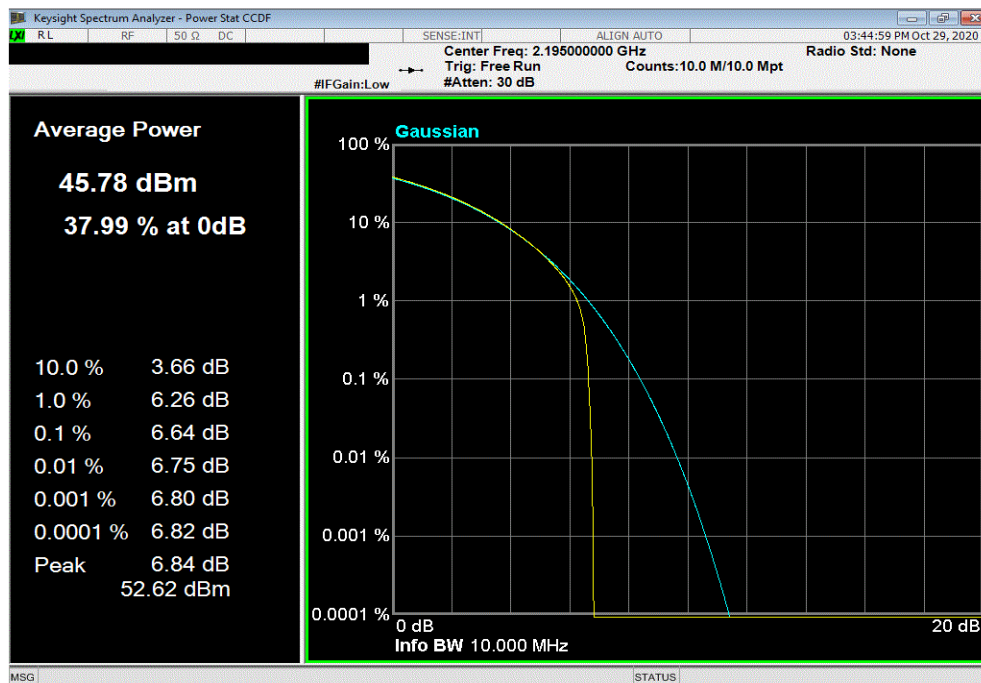


TMTx 2020.10.20.0 BETA XMR 2020.03.25.0

Port 4, Band n66, 2110 MHz - 2200 MHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 2155 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.6	13	Pass



Port 4, Band n66, 2110 MHz - 2200 MHz, 10 MHz Bandwidth, 256-QAM Modulation, High Channel 2195 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.64	13	Pass

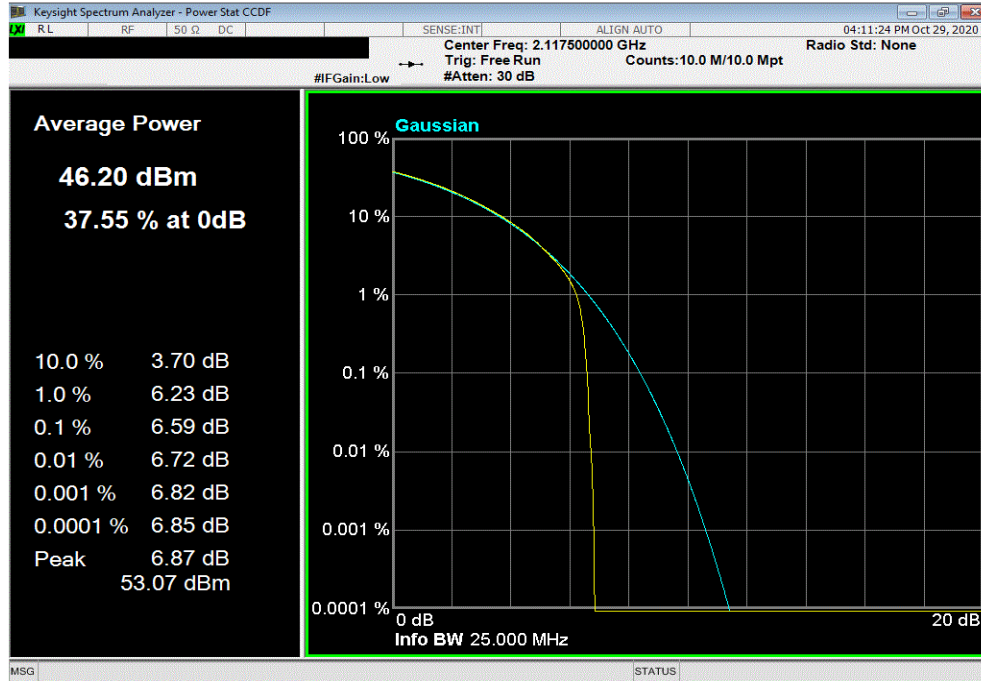


PEAK TO AVERAGE (PAPR) CCDF

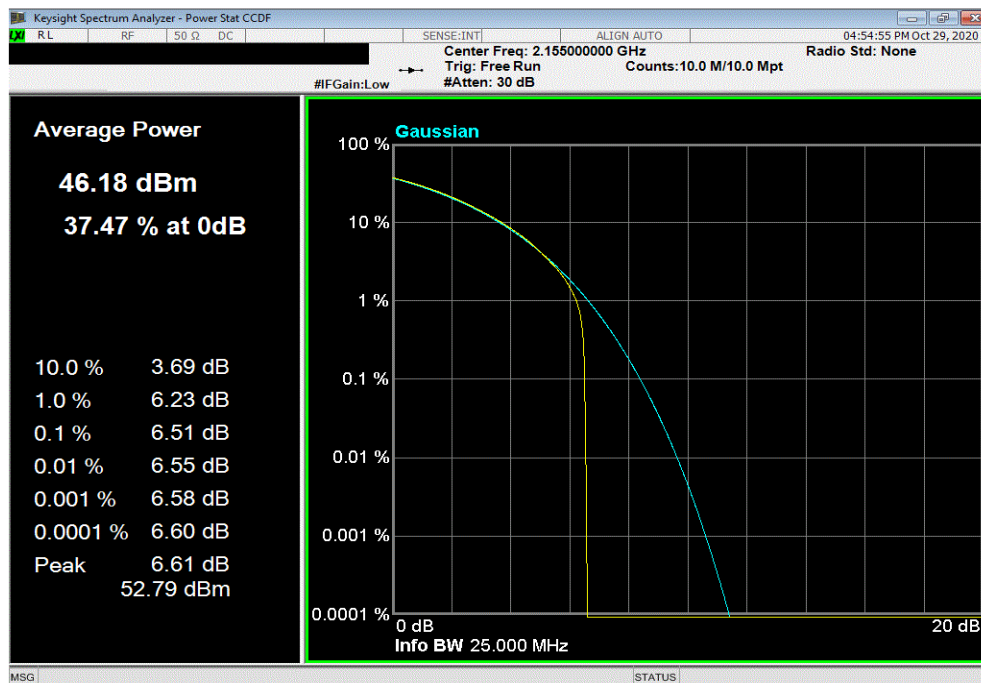


TMTx 2020.10.20.0 BETA XMR 2020.03.25.0

Port 4, Band n66, 2110 MHz - 2200 MHz, 15 MHz Bandwidth, QPSK Modulation, Low Channel 2117.5 MHz						
	PAPR Value (dB)	PAPR Limit (dB)	Results			
	6.59	13	Pass			



Port 4, Band n66, 2110 MHz - 2200 MHz, 15 MHz Bandwidth, QPSK Modulation, Mid Channel 2155 MHz						
	PAPR Value (dB)	PAPR Limit (dB)	Results			
	6.51	13	Pass			

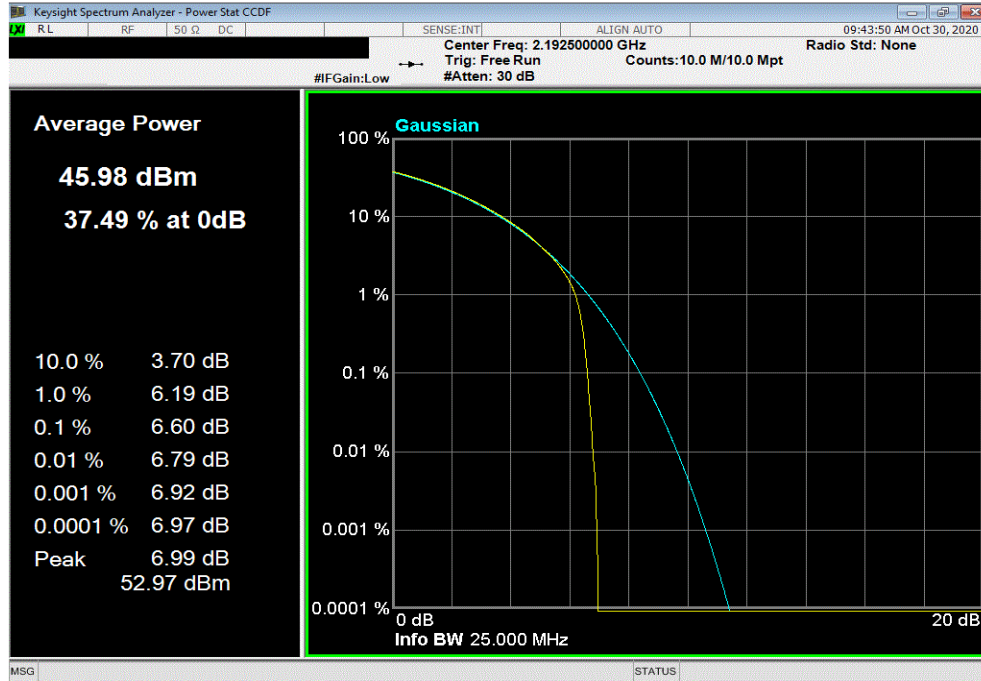


PEAK TO AVERAGE (PAPR) CCDF

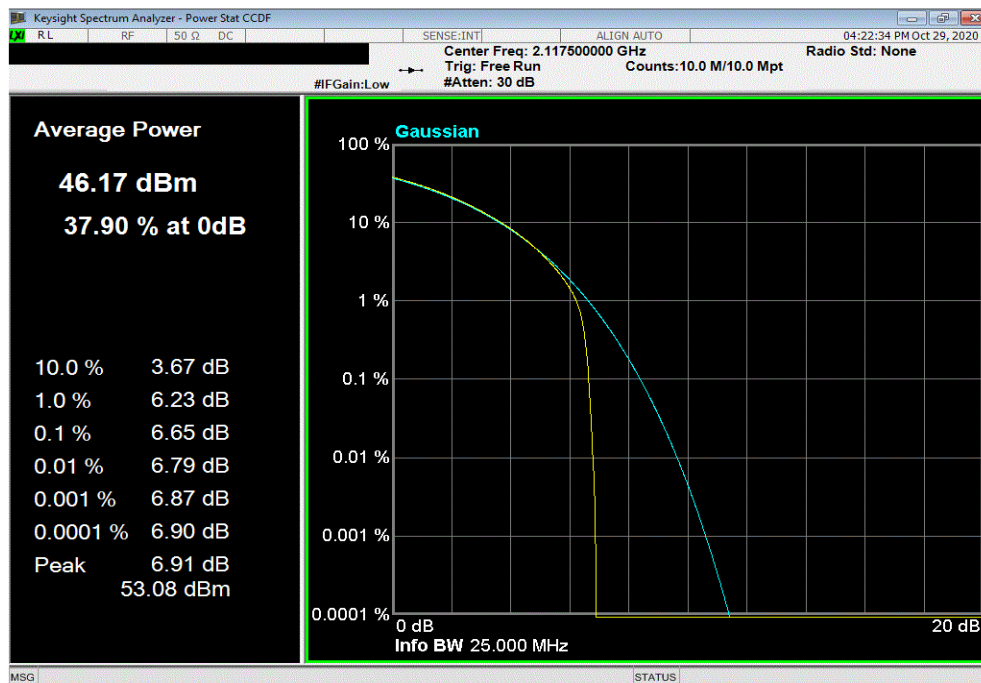


TMTx 2020.10.20.0 BETA XMI 2020.03.25.0

Port 4, Band n66, 2110 MHz - 2200 MHz, 15 MHz Bandwidth , QPSK Modulation, High Channel 2192.5 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.6	13	Pass



Port 4, Band n66, 2110 MHz - 2200 MHz, 15 MHz Bandwidth , 16-QAM Modulation, Low Channel 2117.5 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.65	13	Pass

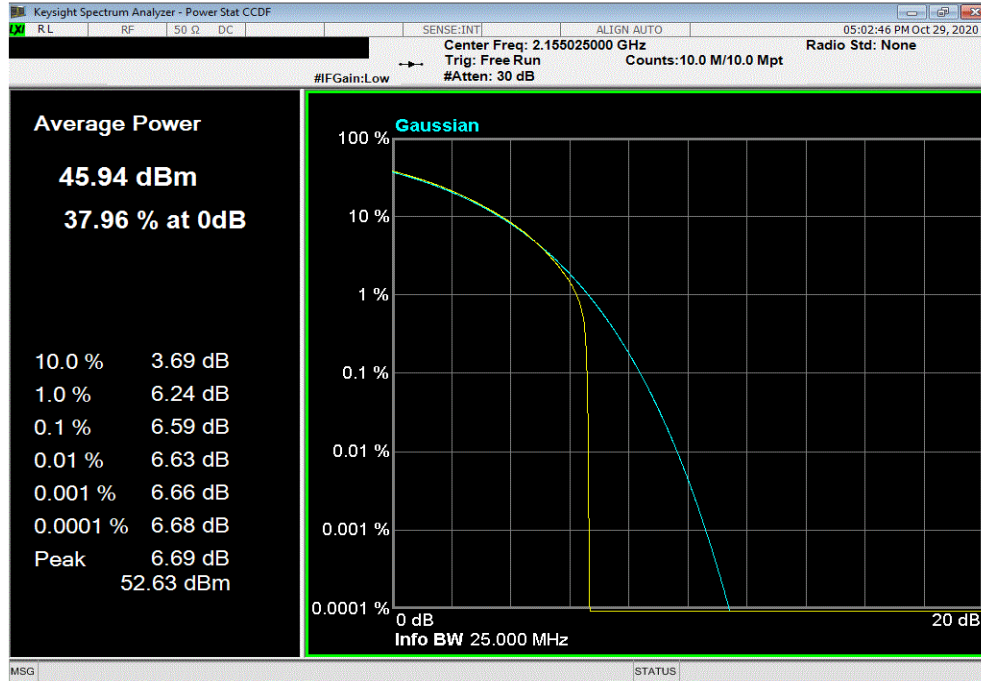


PEAK TO AVERAGE (PAPR) CCDF

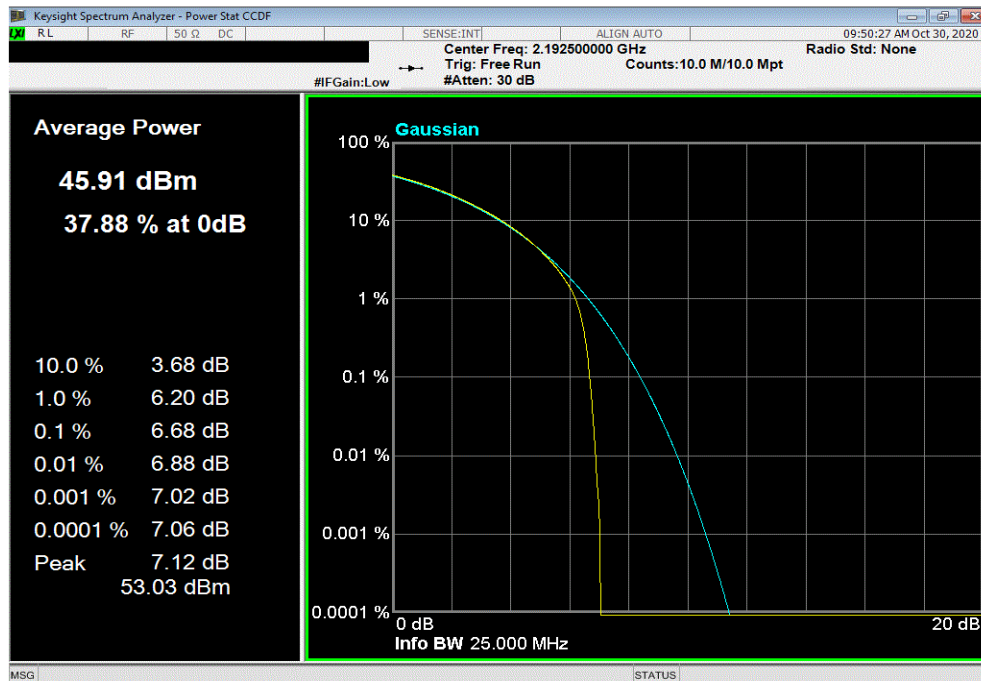


TMTx 2020.10.20.0 BETA XMI 2020.03.25.0

Port 4, Band n66, 2110 MHz - 2200 MHz, 15 MHz Bandwidth, 16-QAM Modulation, Mid Channel 2155 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.59	13	Pass



Port 4, Band n66, 2110 MHz - 2200 MHz, 15 MHz Bandwidth, 16-QAM Modulation, High Channel 2192.5 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.68	13	Pass

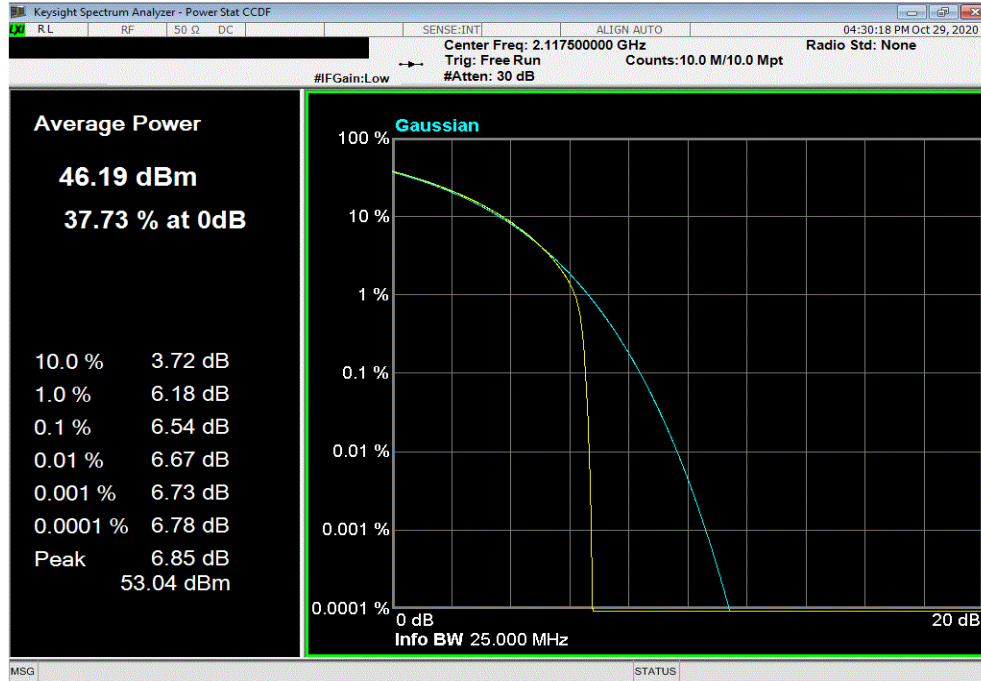


PEAK TO AVERAGE (PAPR) CCDF

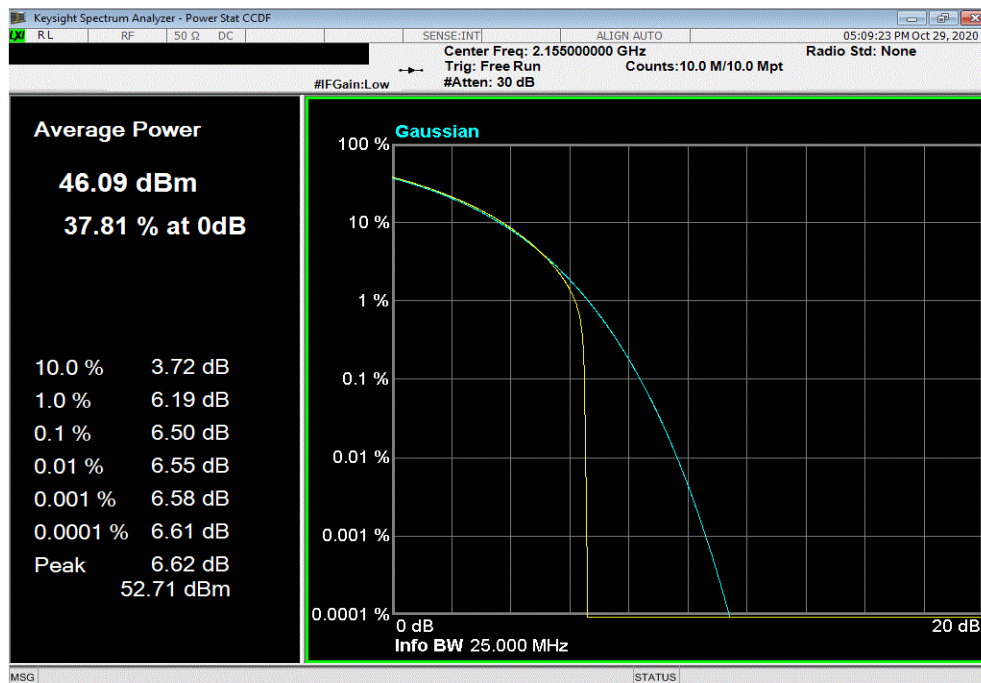


TMTx 2020.10.20.0 BETA XMR 2020.03.25.0

Port 4, Band n66, 2110 MHz - 2200 MHz, 15 MHz Bandwidth , 64-QAM Modulation, Low Channel 2117.5 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.54	13	Pass



Port 4, Band n66, 2110 MHz - 2200 MHz, 15 MHz Bandwidth , 64-QAM Modulation, Mid Channel 2155 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.5	13	Pass

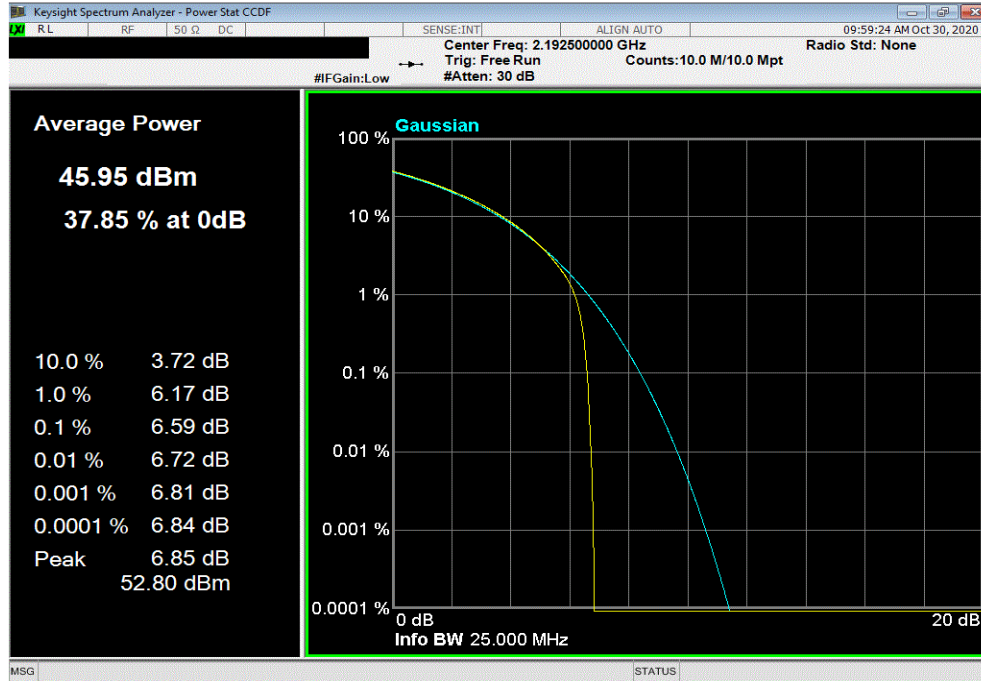


PEAK TO AVERAGE (PAPR) CCDF

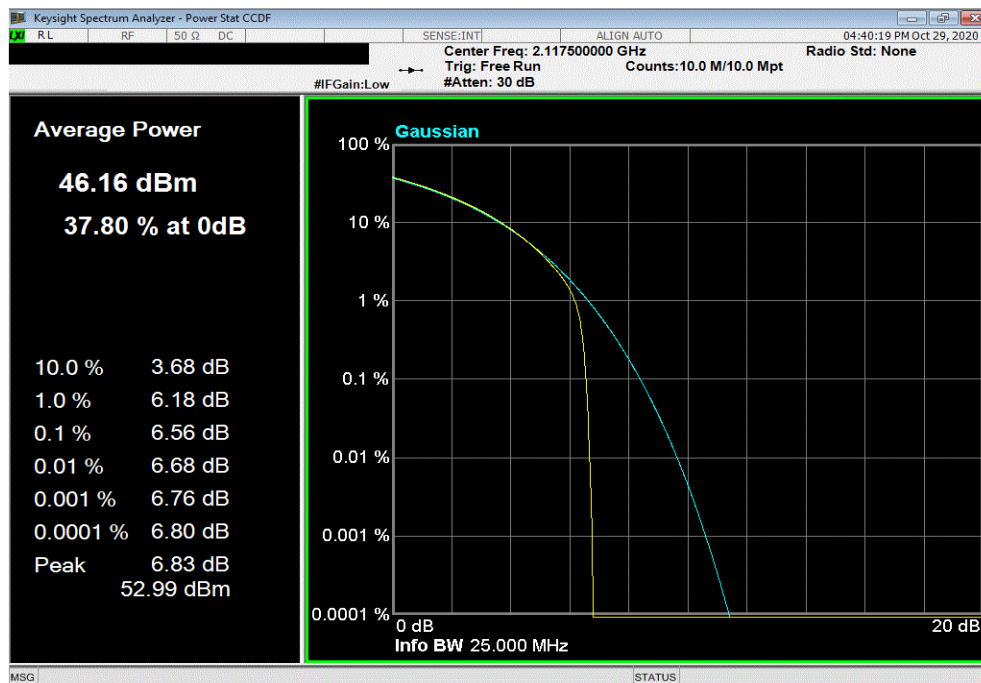


TMTx 2020.10.20.0 BETA XMR 2020.03.25.0

Port 4, Band n66, 2110 MHz - 2200 MHz, 15 MHz Bandwidth , 64-QAM Modulation, High Channel 2192.5 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.59	13	Pass



Port 4, Band n66, 2110 MHz - 2200 MHz, 15 MHz Bandwidth , 256-QAM Modulation, Low Channel 2117.5 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.56	13	Pass

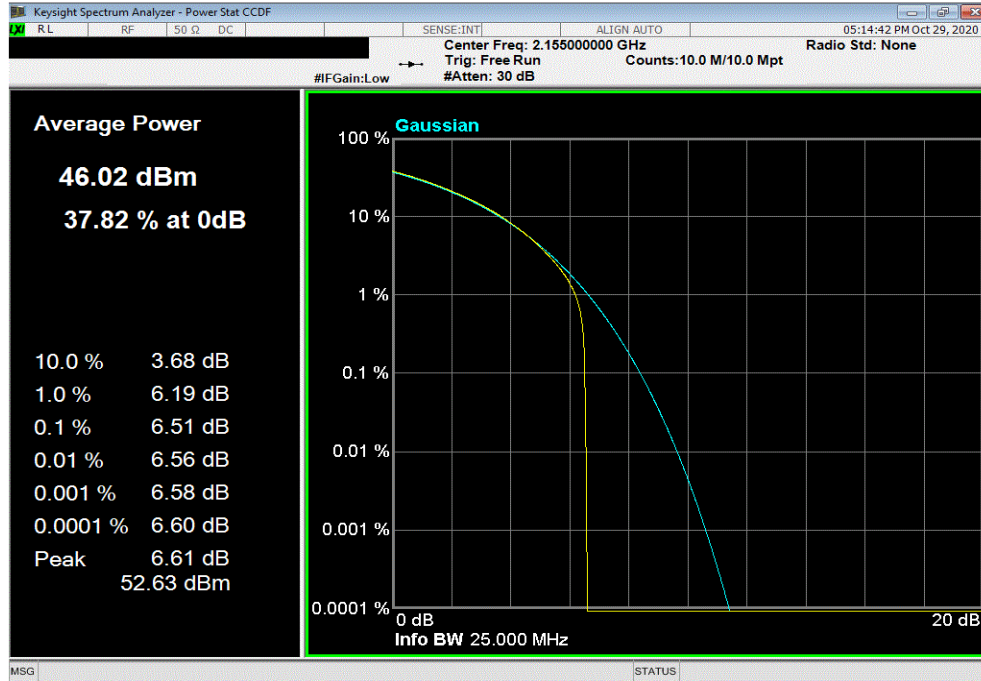


PEAK TO AVERAGE (PAPR) CCDF

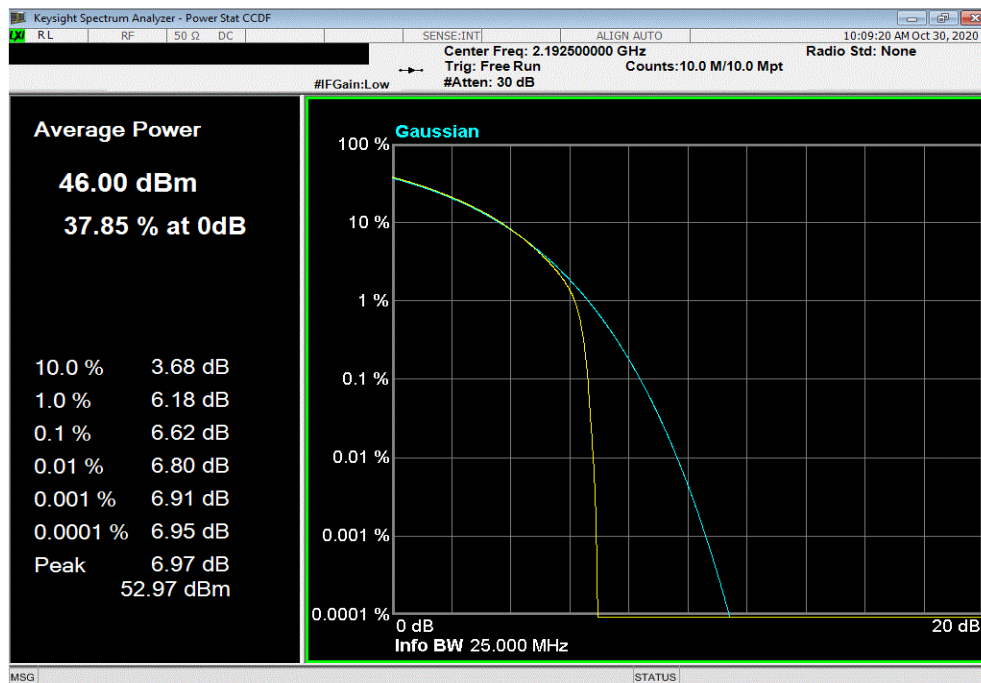


TMTx 2020.10.20.0 BETA XMR 2020.03.25.0

Port 4, Band n66, 2110 MHz - 2200 MHz, 15 MHz Bandwidth, 256-QAM Modulation, Mid Channel 2155 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.51	13	Pass



Port 4, Band n66, 2110 MHz - 2200 MHz, 15 MHz Bandwidth, 256-QAM Modulation, High Channel 2192.5 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.62	13	Pass

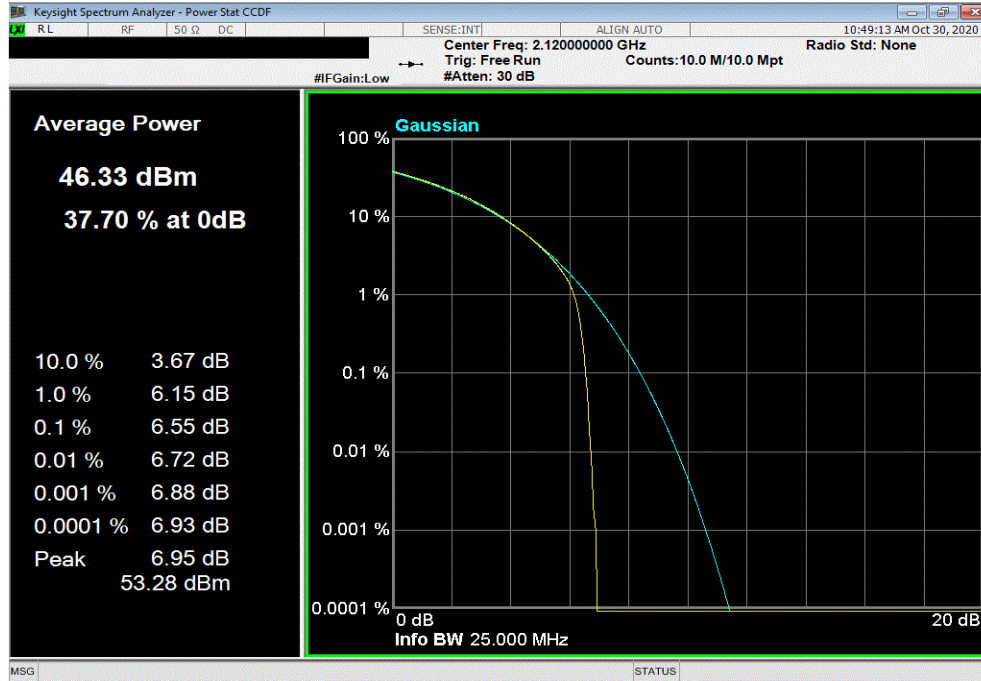


PEAK TO AVERAGE (PAPR) CCDF

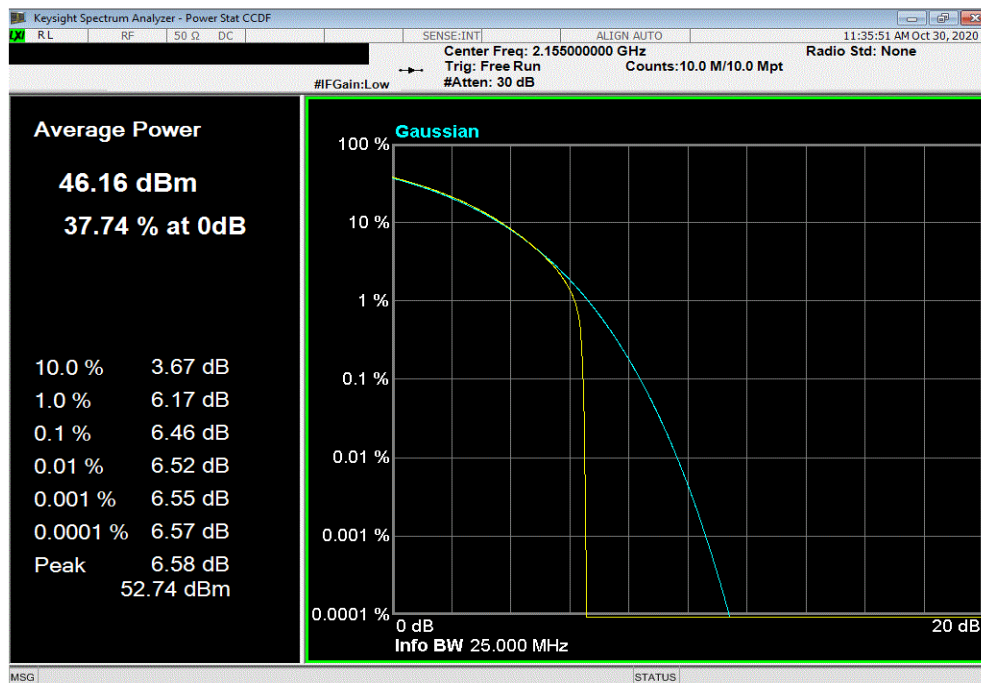


TMTx 2020.10.20.0 BETA XMR 2020.03.25.0

Port 4, Band n66, 2110 MHz - 2200 MHz, 20 MHz Bandwidth, QPSK Modulation, Low Channel 2120 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.55	13	Pass



Port 4, Band n66, 2110 MHz - 2200 MHz, 20 MHz Bandwidth, QPSK Modulation, Mid Channel 2155 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.46	13	Pass

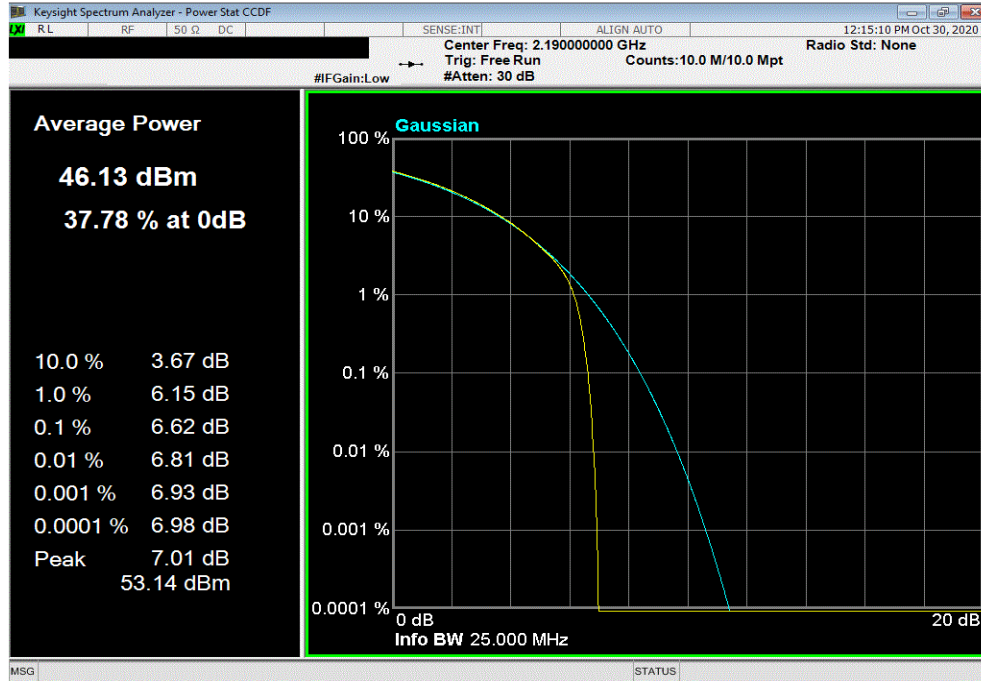


PEAK TO AVERAGE (PAPR) CCDF

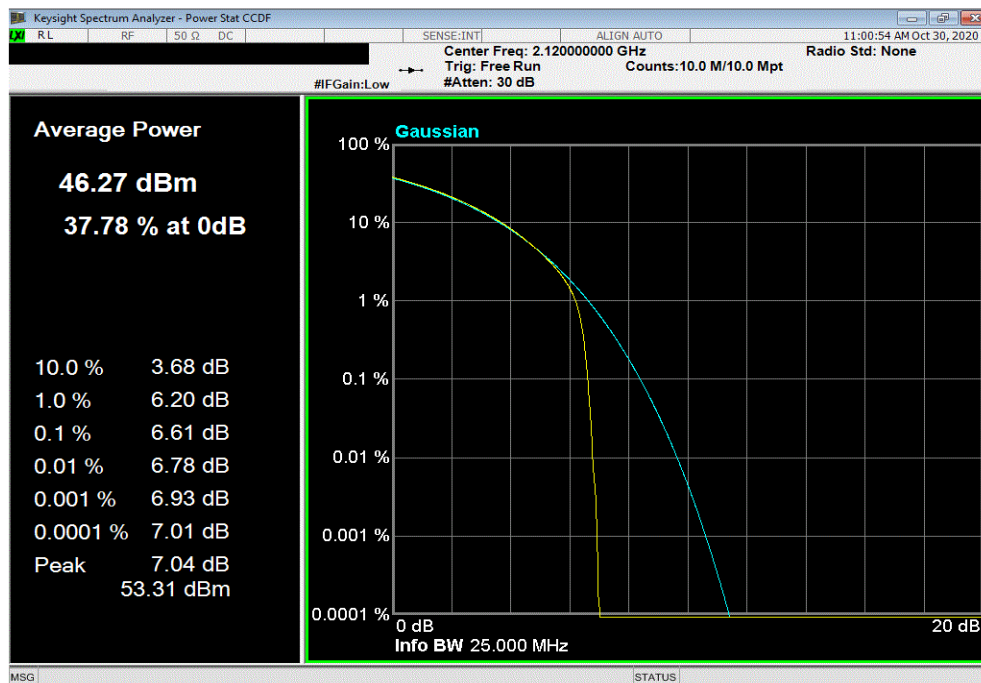


TMTx 2020.10.20.0 BETA XMt 2020.03.25.0

Port 4, Band n66, 2110 MHz - 2200 MHz, 20 MHz Bandwidth, QPSK Modulation, High Channel 2190 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.62	13	Pass



Port 4, Band n66, 2110 MHz - 2200 MHz, 20 MHz Bandwidth, 16-QAM Modulation, Low Channel 2120 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.61	13	Pass

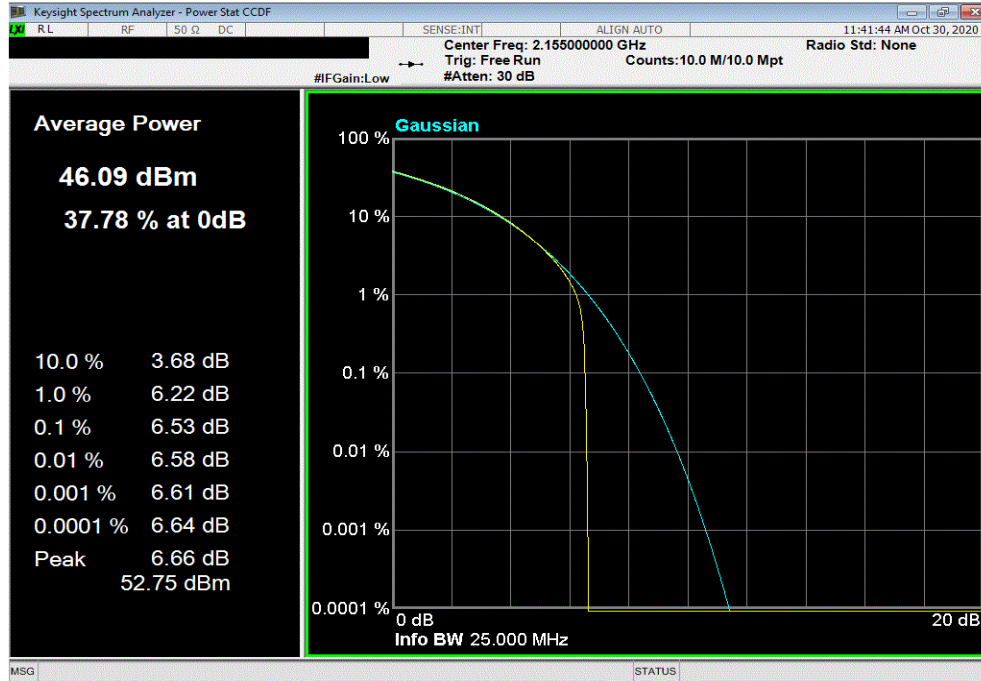


PEAK TO AVERAGE (PAPR) CCDF

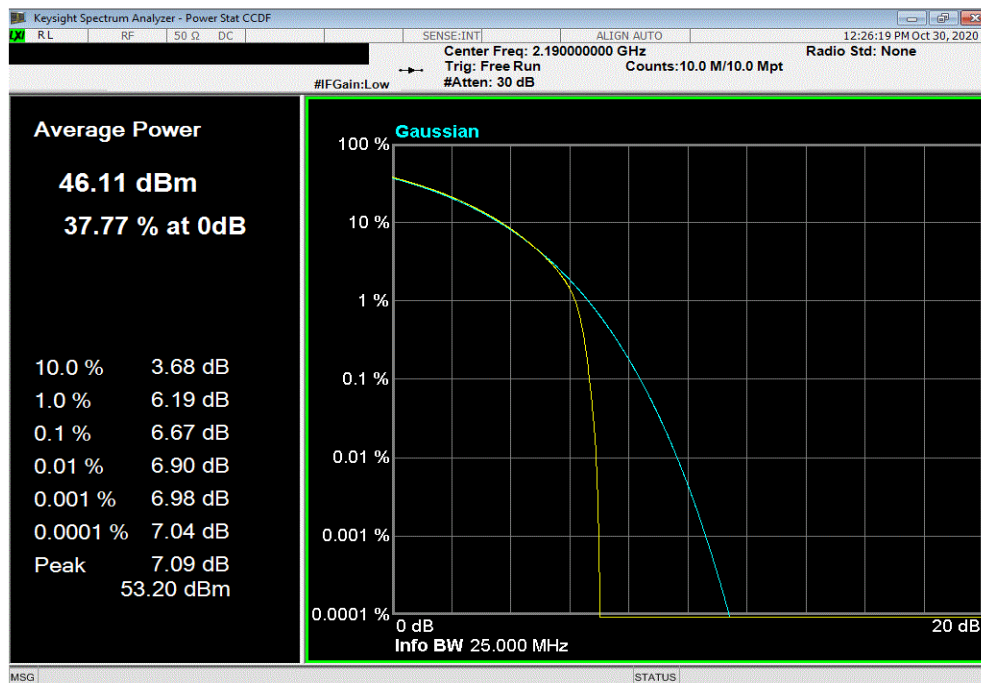


TMTx 2020.10.20.0 BETA XMR 2020.03.25.0

Port 4, Band n66, 2110 MHz - 2200 MHz, 20 MHz Bandwidth, 16-QAM Modulation, Mid Channel 2155 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.53	13	Pass



Port 4, Band n66, 2110 MHz - 2200 MHz, 20 MHz Bandwidth, 16-QAM Modulation, High Channel 2190 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.67	13	Pass

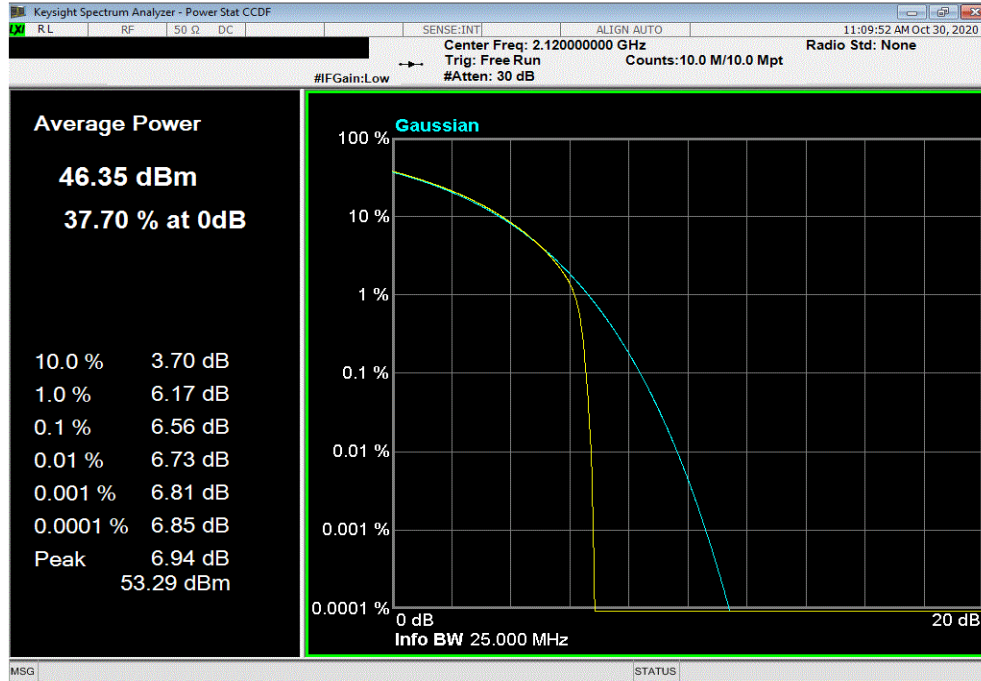


PEAK TO AVERAGE (PAPR) CCDF

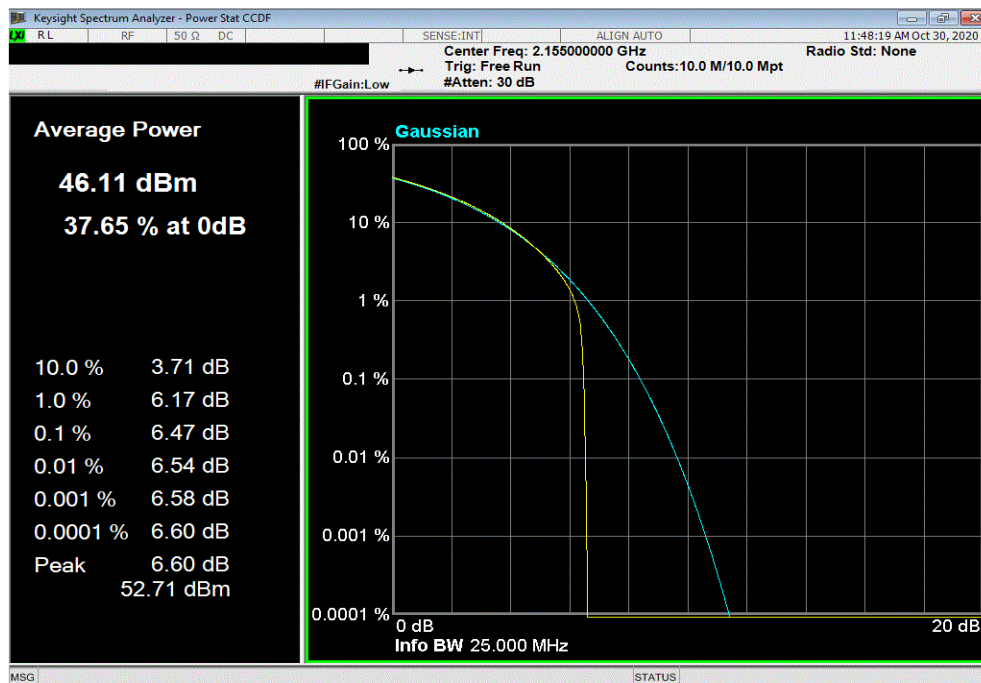


TMTx 2020.10.20.0 BETA XMR 2020.03.25.0

Port 4, Band n66, 2110 MHz - 2200 MHz, 20 MHz Bandwidth, 64-QAM Modulation, Low Channel 2120 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.56	13	Pass



Port 4, Band n66, 2110 MHz - 2200 MHz, 20 MHz Bandwidth, 64-QAM Modulation, Mid Channel 2155 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.47	13	Pass

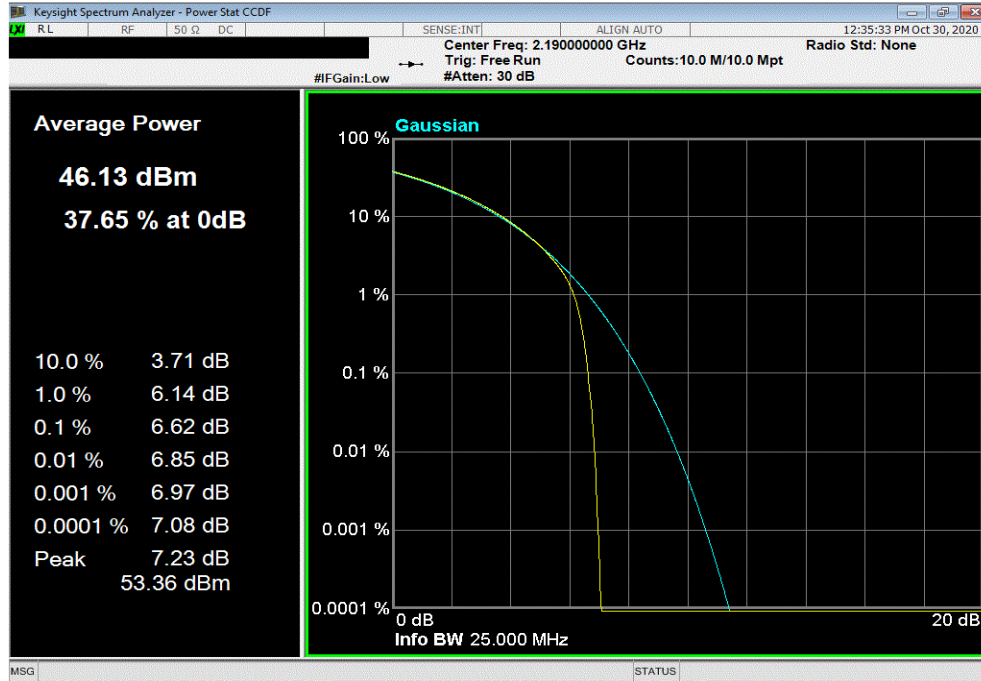


PEAK TO AVERAGE (PAPR) CCDF

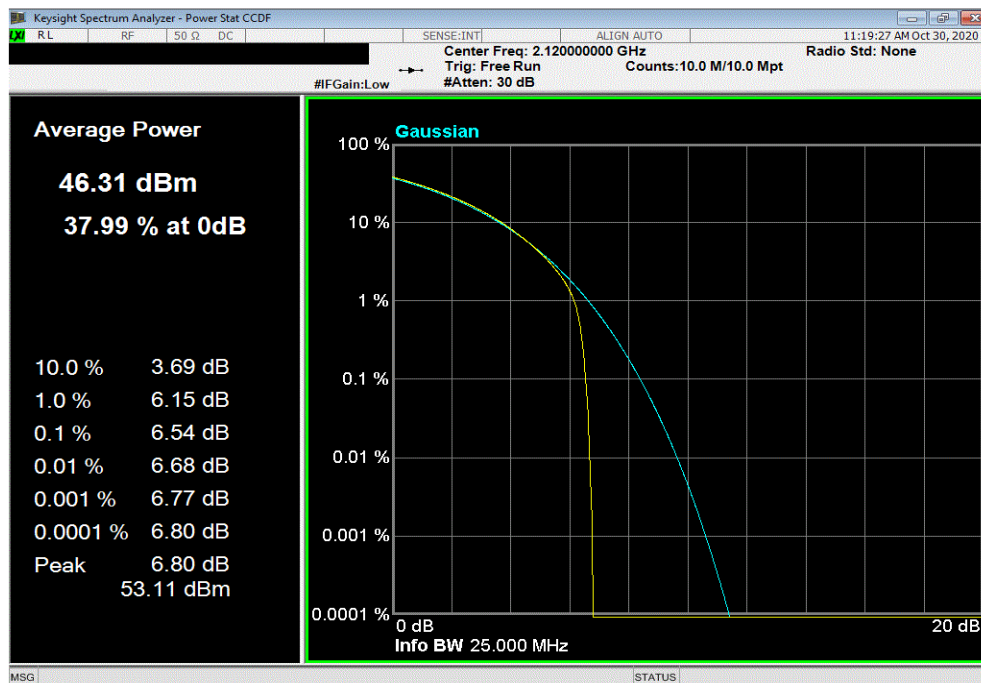


TMTx 2020.10.20.0 BETA XMI 2020.03.25.0

Port 4, Band n66, 2110 MHz - 2200 MHz, 20 MHz Bandwidth, 64-QAM Modulation, High Channel 2190 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.62	13	Pass



Port 4, Band n66, 2110 MHz - 2200 MHz, 20 MHz Bandwidth, 256-QAM Modulation, Low Channel 2120 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.54	13	Pass

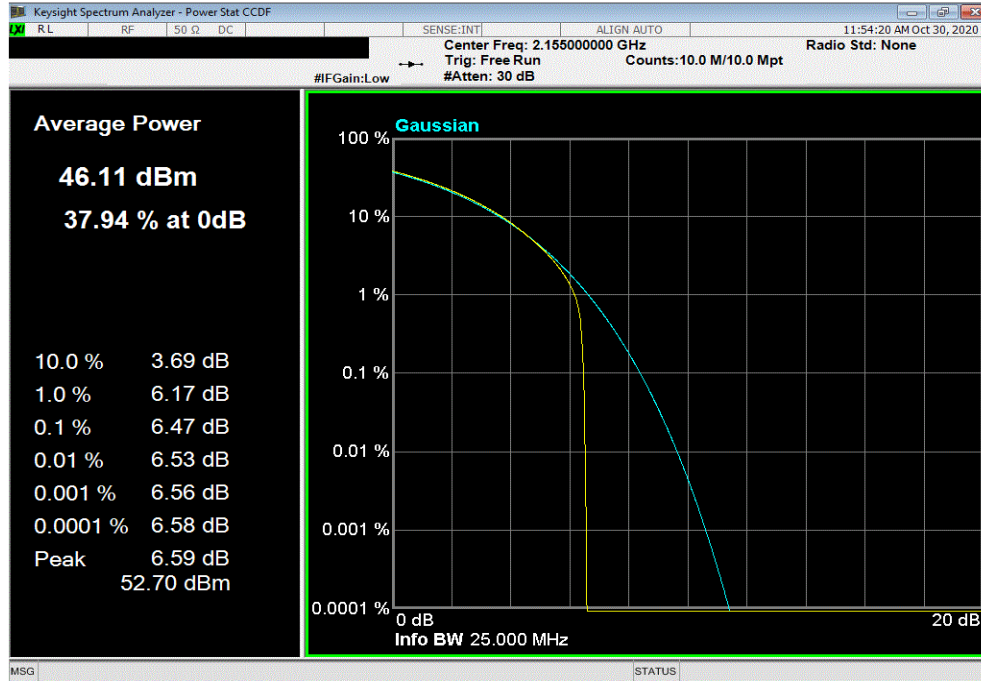


PEAK TO AVERAGE (PAPR) CCDF



TMTx 2020.10.20.0 BETA XMI 2020.03.25.0

Port 4, Band n66, 2110 MHz - 2200 MHz, 20 MHz Bandwidth, 256-QAM Modulation, Mid Channel 2155 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.47	13	Pass



Port 4, Band n66, 2110 MHz - 2200 MHz, 20 MHz Bandwidth, 256-QAM Modulation, High Channel 2190 MHz						
				PAPR Value (dB)	PAPR Limit (dB)	Results
				6.62	13	Pass

