

BAND EDGE COMPLIANCE 5G



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

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in the available band. The channels closest to the band edges were selected. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.

Per FCC Part 27.53(m)(2), the power of any emission outside of the authorized operating frequency range cannot exceed -13 dBm. The BTS may operate as a 8 port MIMO transmitter with transmitter outputs connected to four cross-polarized antennas [four transmitter outputs are connected to (+) radiators and four transmitter outputs are connected to (-) radiators]. The limit is adjusted to -19 dBm [-13 dBm -10 log (4)] per FCC KDB 662911D01 v02r01, ANSI C63.26-2015 section 6.4.6.3 b)2) and KDB 662911 D02v01 page 3 example (2) since the transmitter outputs to each antenna are 90 degree-phase shifted relative to each other (cross-polarized radiators).

Per FCC 27.53(m)(6), "Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.....A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 megahertz or 1 percent of emission bandwidth, as specified)".

RF conducted emissions testing was performed only on one port. The AZHL antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown during output power testing) and antenna port 1 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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TestTx 2019.08.30.0 XMM 2020.12.30.0

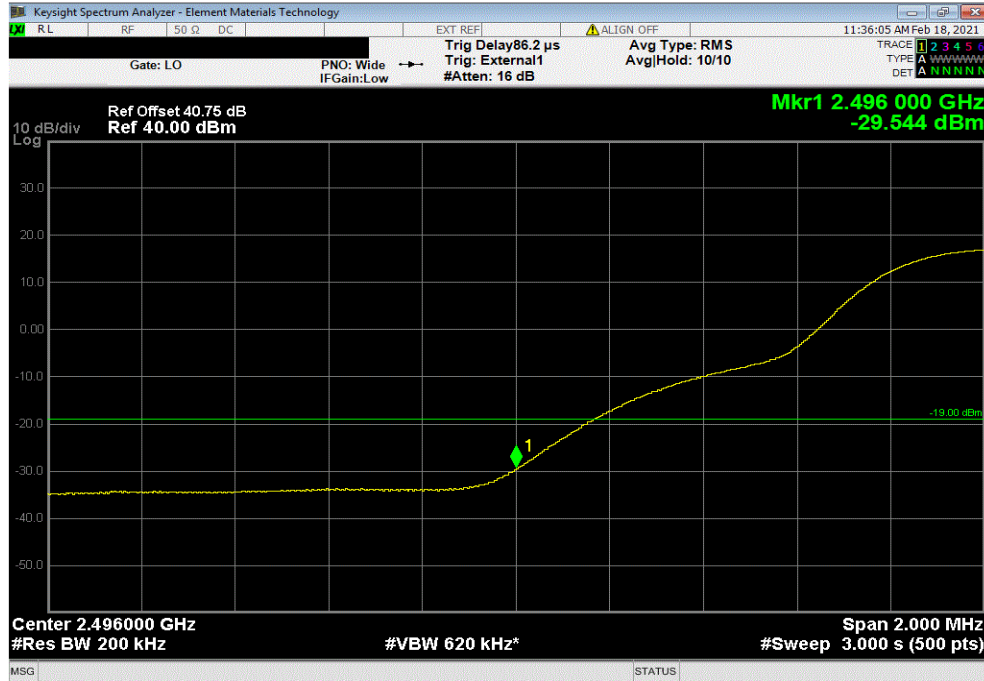
EUT: AZHL		Work Order: NOKI0018				
Serial Number: YK203400016		Date: 19-Feb-21				
Customer: Nokia Solutions and Networks		Temperature: 23.6 °C				
Attendees: John Rattanavong, Mitchell Hill, David Le		Humidity: 14.9% RH				
Project: None		Barometric Pres.: 1037 mbar				
Tested by: Mark Baytan		Job Site: TX05				
Power: 54 VDC						
TEST SPECIFICATIONS		Test Method				
FCC 27:2021		ANSI C63.26:2015				
COMMENTS						
External 1 gating was set using a trig delay = 86.2us and a gate length = 3.714ms. Reference level offset adjusted to include (2) coax cables, DC block, and attenuator. The carrier power was set to maximum for all testing.						
DEVIATIONS FROM TEST STANDARD						
None						
Configuration #	2	Signature 				
		Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
5G NR, Band n41, 2496 MHz - 2690 MHz						
Port 1						
NR20 (20MHz)						
256QAM						
	Low Channel 2506.02 MHz	2.495 GHz - 2.496 MHz	2496	-29.54	-19	Pass
	Low Channel 2506.02 MHz	2.485 GHz - 2.495 GHz	2495	-26.02	-19	Pass
	High Channel 2679.99 MHz	2.690 GHz - 2.691 GHz	2690	-29.18	-19	Pass
	High Channel 2679.99 MHz	2.691 GHz - 2.701 GHz	2691	-25.95	-19	Pass
NR40 (40MHz)						
256QAM						
	Low Channel 2516.01 MHz	2.495 GHz - 2.497 GHz	2495.79	-28.39	-19	Pass
	Low Channel 2516.01 MHz	2.485 MHz - 2.495 MHz	2495	-26.39	-19	Pass
	High Channel 2670 MHz	2.689 GHz - 2.691 GHz	2690.22	-28.45	-19	Pass
	High Channel 2670 MHz	2.691 GHz - 2.701 GHz	2691	-26.35	-19	Pass
NR60 (60MHz)						
256QAM						
	Low Channel 2526 MHz	2.495 GHz - 2.497 GHz	2495.69	-27.54	-19	Pass
	Low Channel 2526 MHz	2.495 GHz - 2.495 GHz	2495	-27.02	-19	Pass
	High Channel 2659.98 MHz	2.689 GHz - 2.691 GHz	2690.31	-27.54	-19	Pass
	High Channel 2659.98 MHz	2.691 GHz - 2.701 GHz	2691.04	-26.73	-19	Pass
NR80 (80MHz)						
256QAM						
	Low Channel 2536.02 MHz	2.495 GHz - 2.497 MHz	2495.59	-23.49	-19	Pass
	Low Channel 2536.02 MHz	2.485 GHz - 2.495 GHz	2494.94	-27.682	-19	Pass
	High Channel 2649.99 MHz	2.689 GHz - 2.691 GHz	2690.41	-23.562	-19	Pass
	High Channel 2649.99 MHz	2.691 GHz - 2.701 GHz	2691.04	-25.953	-19	Pass
NR100 (100MHz)						
QPSK						
	Low Channel 2546.01 MHz	2.495 GHz - 2.496 GHz	Integration	-24.94	-19	Pass
	Low Channel 2546.01 MHz	2.494 GHz - 2.495 GHz	Integration	-25.01	-19	Pass
	Low Channel 2546.01 MHz	2.48625 GHz - 2.49400 GHz	2494	-25.01	-19	Pass
	High Channel 2640 MHz	2.690 GHz - 2.691 GHz	Integration	23.80	-19	Pass
	High Channel 2640 MHz	2.691 GHz - 2.692 GHz	Integration	-24.17	-19	Pass
	High Channel 2640 MHz	2.69200 GHz - 2.69975 GHz	2692	-24.31	-19	Pass
16QAM						
	Low Channel 2546.01 MHz	2.495 GHz - 2.496 GHz	Integration	-24.77	-19	Pass
	Low Channel 2546.01 MHz	2.494 GHz - 2.495 GHz	Integration	-25.1	-19	Pass
	Low Channel 2546.01 MHz	2.48625 GHz - 2.49400 GHz	2494	-24.87	-19	Pass
	High Channel 2640 MHz	2.690 GHz - 2.691 GHz	Integration	-24.33	-19	Pass
	High Channel 2640 MHz	2.691 GHz - 2.692 GHz	Integration	-27.14	-19	Pass
	High Channel 2640 MHz	2.69200 GHz - 2.69975 GHz	2692	-24.58	-19	Pass
64QAM						
	Low Channel 2546.01 MHz	2.495 GHz - 2.496 GHz	Integration	-24.94	-19	Pass
	Low Channel 2546.01 MHz	2.494 GHz - 2.495 GHz	Integration	-24.81	-19	Pass
	Low Channel 2546.01 MHz	2.48625 GHz - 2.49400 GHz	2494	-24.66	-19	Pass
	High Channel 2640 MHz	2.690 GHz - 2.691 GHz	Integration	-23.65	-19	Pass
	High Channel 2640 MHz	2.691 GHz - 2.692 GHz	Integration	-24.08	-19	Pass
	High Channel 2640 MHz	2.69200 GHz - 2.69975 GHz	2692	-24.01	-19	Pass
256QAM						
	Low Channel 2546.01 MHz	2.495 GHz - 2.496 GHz	Integration	-25.02	-19	Pass
	Low Channel 2546.01 MHz	2.494 GHz - 2.495 GHz	Integration	-25.26	-19	Pass
	Low Channel 2546.01 MHz	2.48625 GHz - 2.494 GHz	2494	-25.06	-19	Pass
	High Channel 2640 MHz	2.690 GHz - 2.691 GHz	Integration	-23.74	-19	Pass
	High Channel 2640 MHz	2.691 GHz - 2.692 GHz	Integration	-24.13	-19	Pass
	High Channel 2640 MHz	2.69200 GHz - 2.69975 GHz	2692	-24.14	-19	Pass

BAND EDGE COMPLIANCE 5G

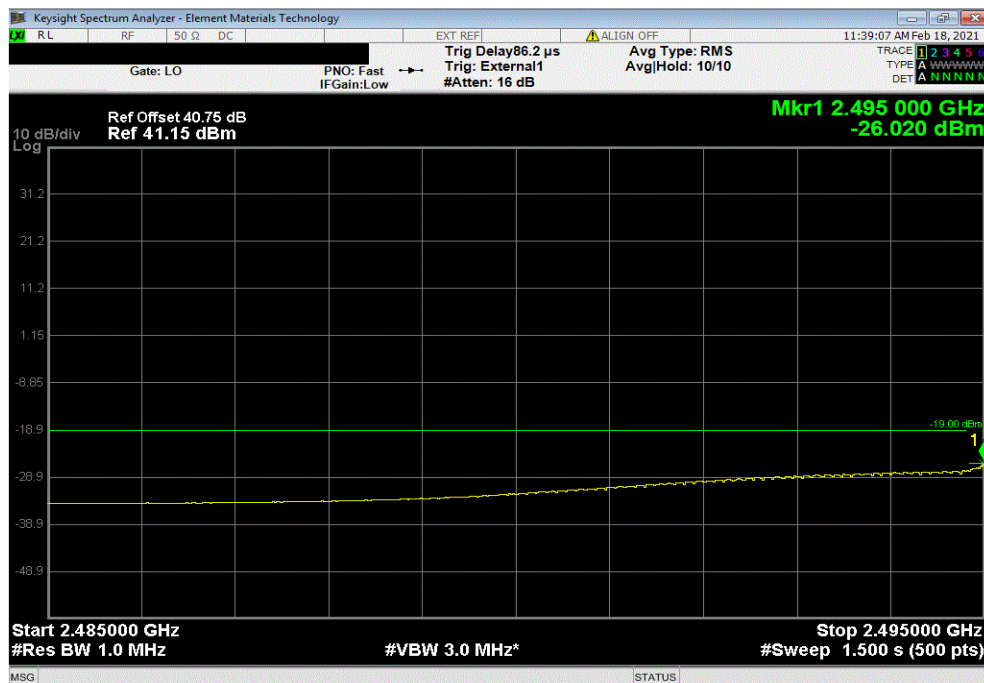


TbTtX 2019.08.30.0 XMt 2020.12.30.0

5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR20 (20MHz), 256QAM, Low Channel 2506.02 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.495 GHz - 2.496 MHz	2496	-29.54	-19	Pass	



5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR20 (20MHz), 256QAM, Low Channel 2506.02 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.485 GHz - 2.495 GHz	2495	-26.02	-19	Pass	

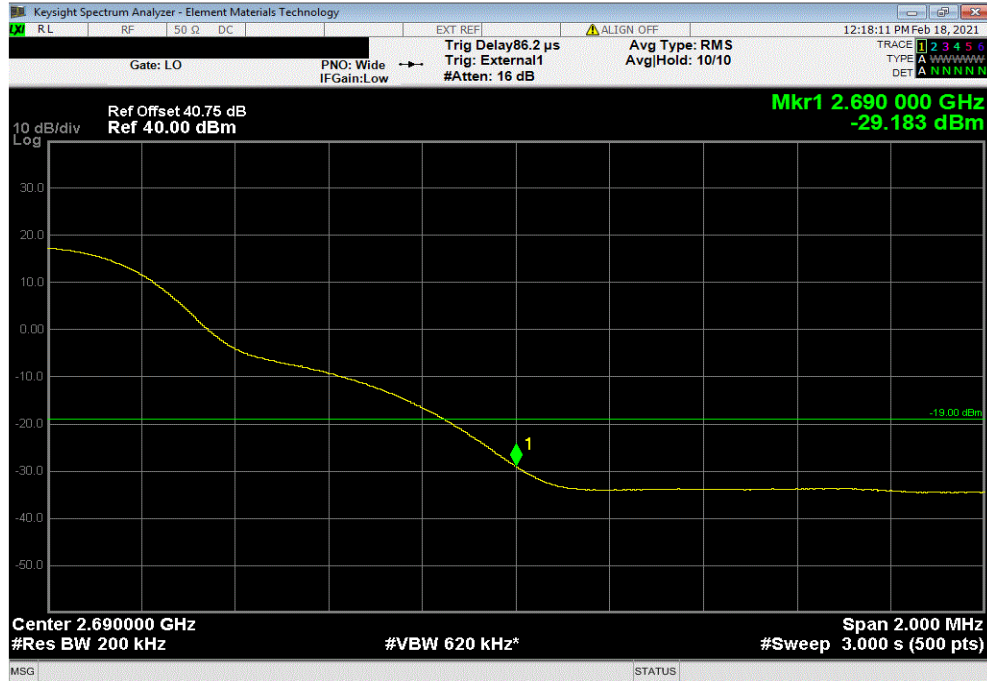


BAND EDGE COMPLIANCE 5G

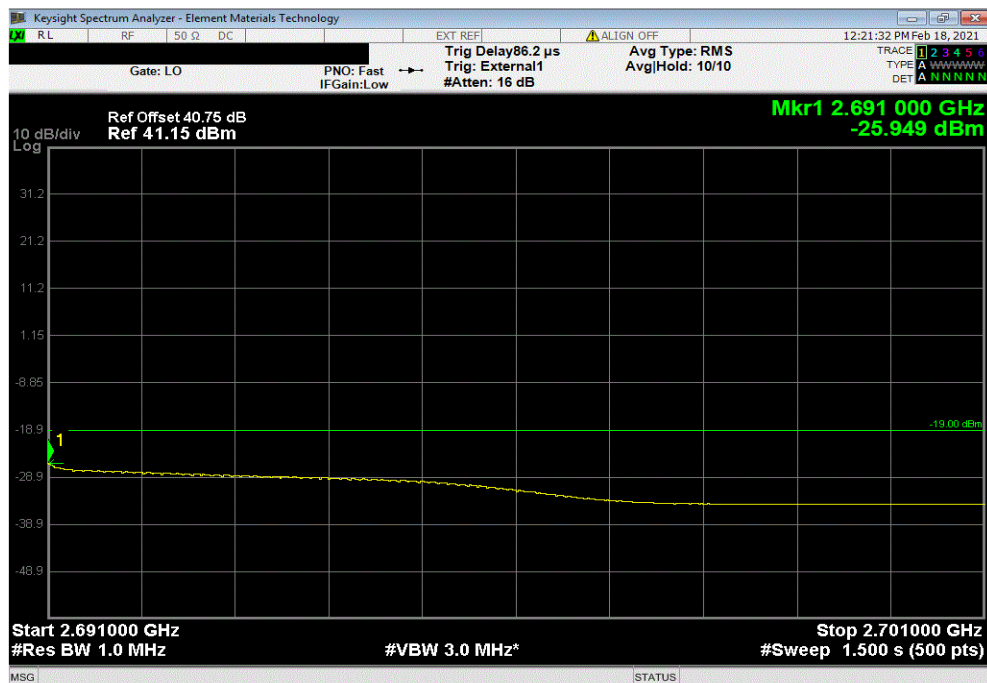


TbTtx 2019.08.30.0 XMt 2020.12.30.0

5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR20 (20MHz), 256QAM, High Channel 2679.99 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.690 GHz - 2.691 GHz	2690	-29.18	-19	Pass	



5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR20 (20MHz), 256QAM, High Channel 2679.99 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.691 GHz - 2.701 GHz	2691	-25.95	-19	Pass	

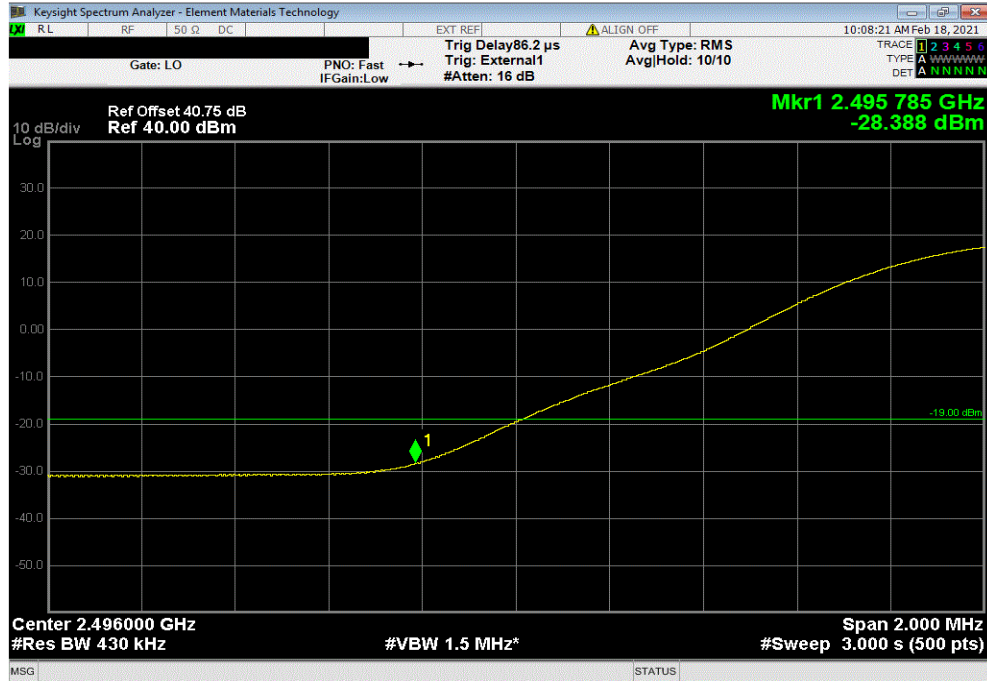


BAND EDGE COMPLIANCE 5G

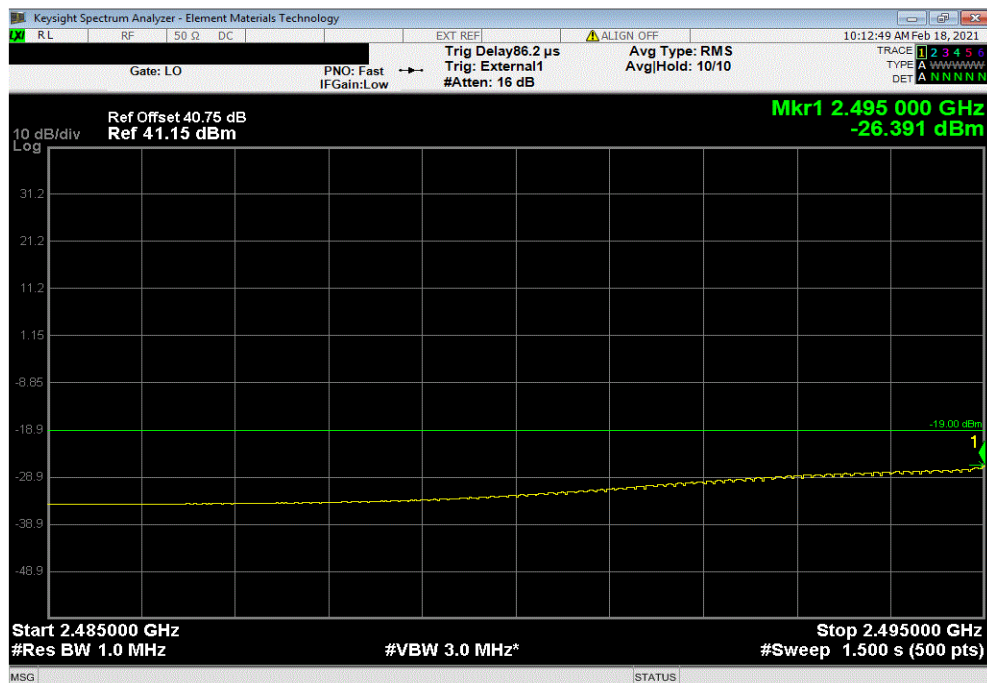


TbTtX 2019.08.30.0 XMt 2020.12.30.0

5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR40 (40MHz), 256QAM, Low Channel 2516.01 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.495 GHz - 2.497 GHz	2495.79	-28.39	-19	Pass	



5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR40 (40MHz), 256QAM, Low Channel 2516.01 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.485 MHz - 2.495 MHz	2495	-26.39	-19	Pass	

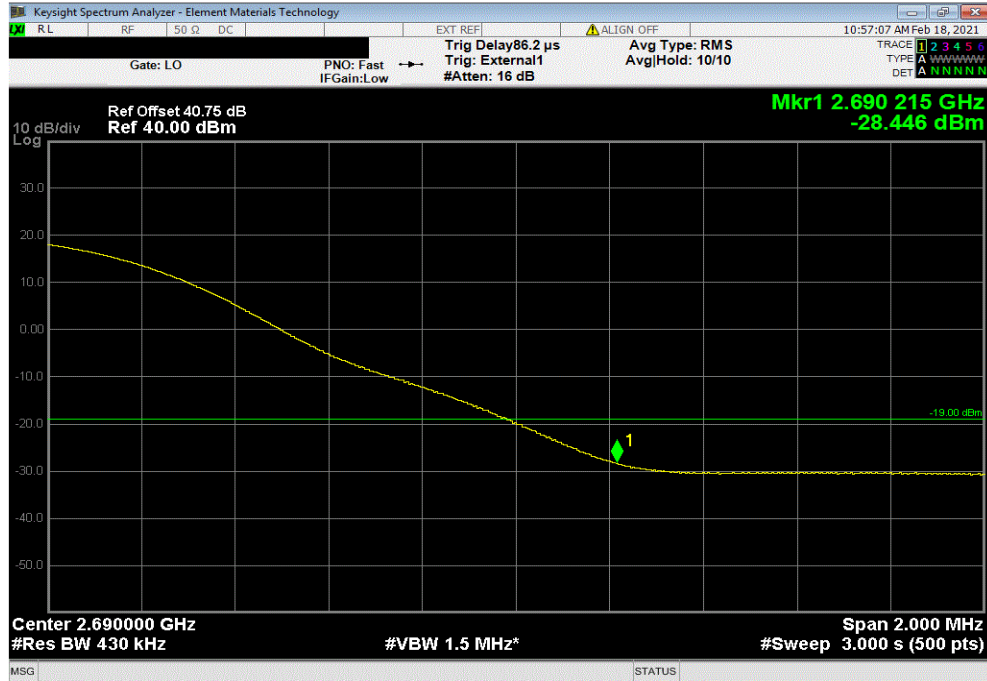


BAND EDGE COMPLIANCE 5G

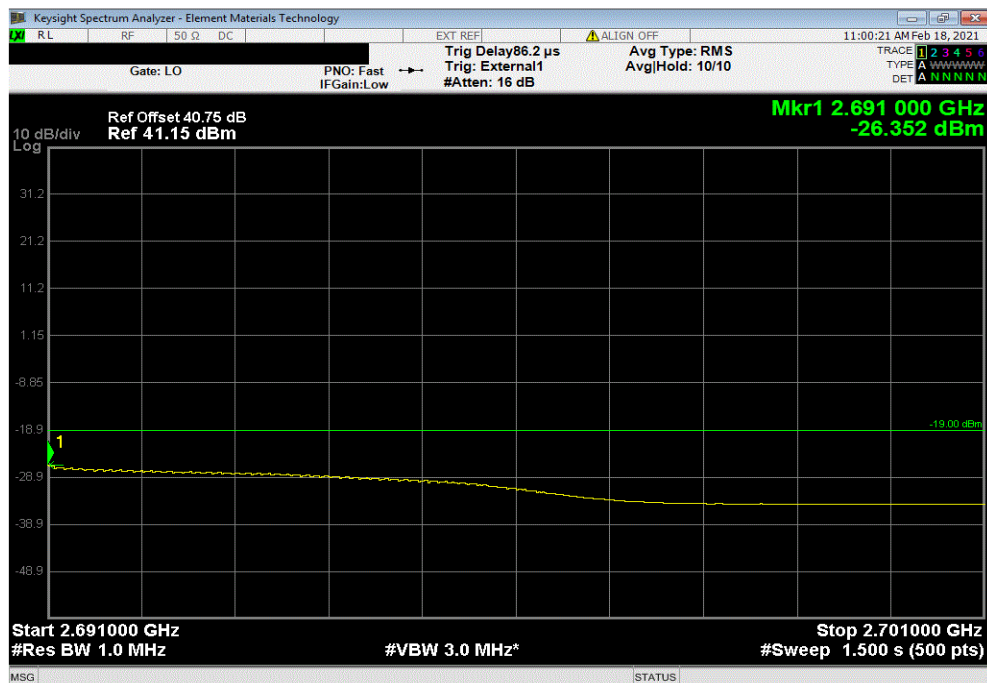


TbTtx 2019.08.30.0 XMt 2020.12.30.0

5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR40 (40MHz), 256QAM, High Channel 2670 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.689 GHz - 2.691 GHz	2690.22	-28.45	-19	Pass	



5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR40 (40MHz), 256QAM, High Channel 2670 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.691 GHz - 2.701 GHz	2691	-26.35	-19	Pass	

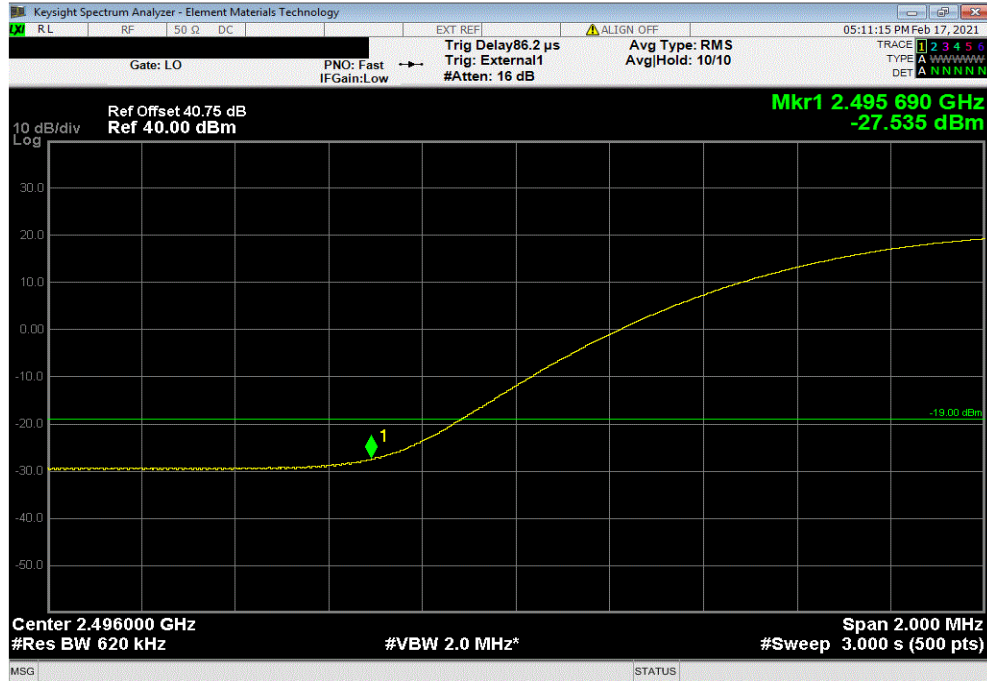


BAND EDGE COMPLIANCE 5G

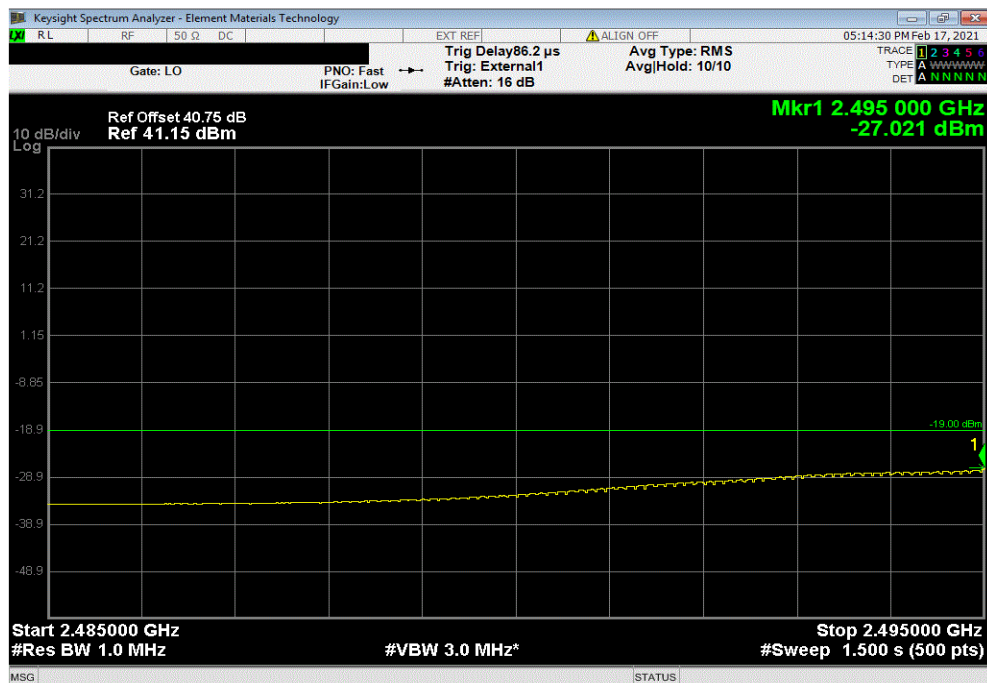


TbTtx 2019.08.30.0 XMt 2020.12.30.0

5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR60 (60MHz), 256QAM, Low Channel 2526 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.495 GHz - 2.497 GHz	2495.69	-27.54	-19	Pass	



5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR60 (60MHz), 256QAM, Low Channel 2526 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.495 GHz - 2.495 GHz	2495	-27.02	-19	Pass	

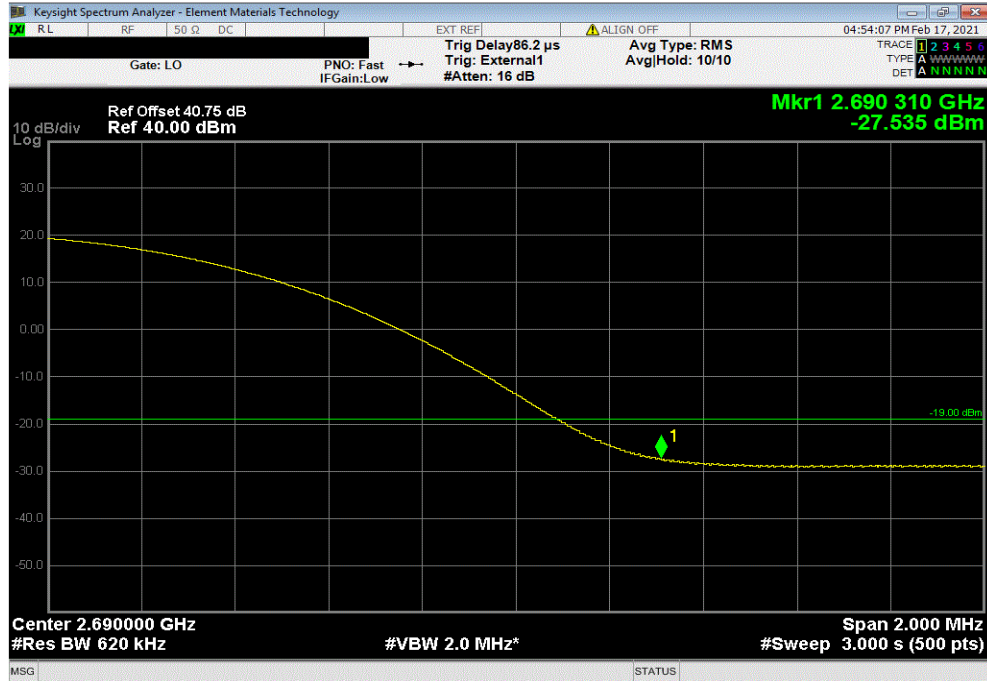


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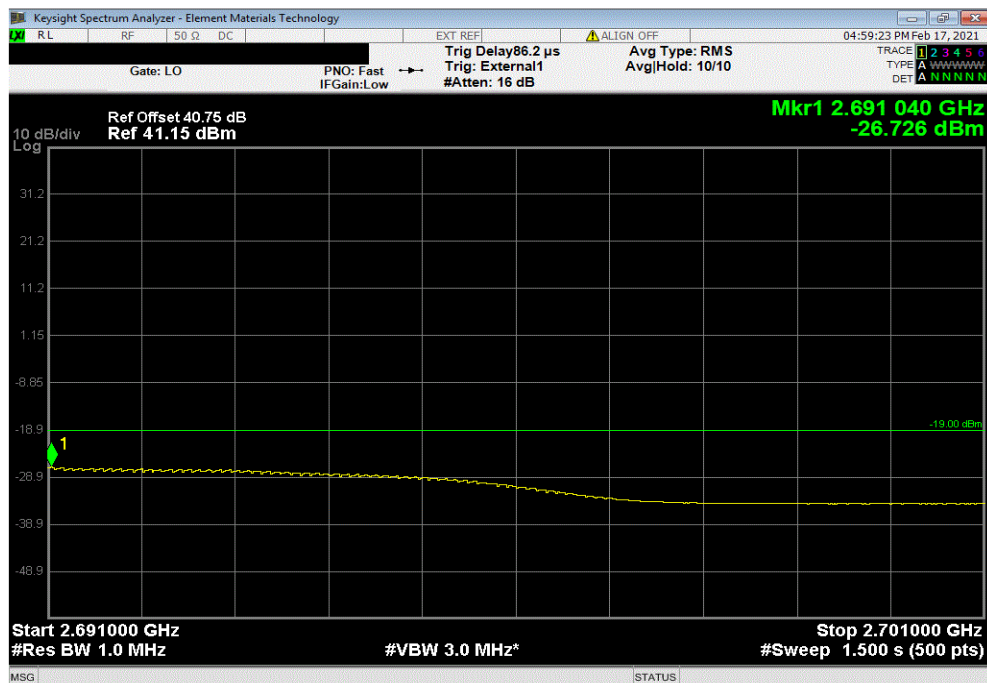


TbTx 2019.08.30.0 XbTx 2020.12.30.0

5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR60 (60MHz), 256QAM, High Channel 2659.98 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.689 GHz - 2.691 GHz	2690.31	-27.54	-19	Pass	



5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR60 (60MHz), 256QAM, High Channel 2659.98 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.691 GHz - 2.701 GHz	2691.04	-26.73	-19	Pass	

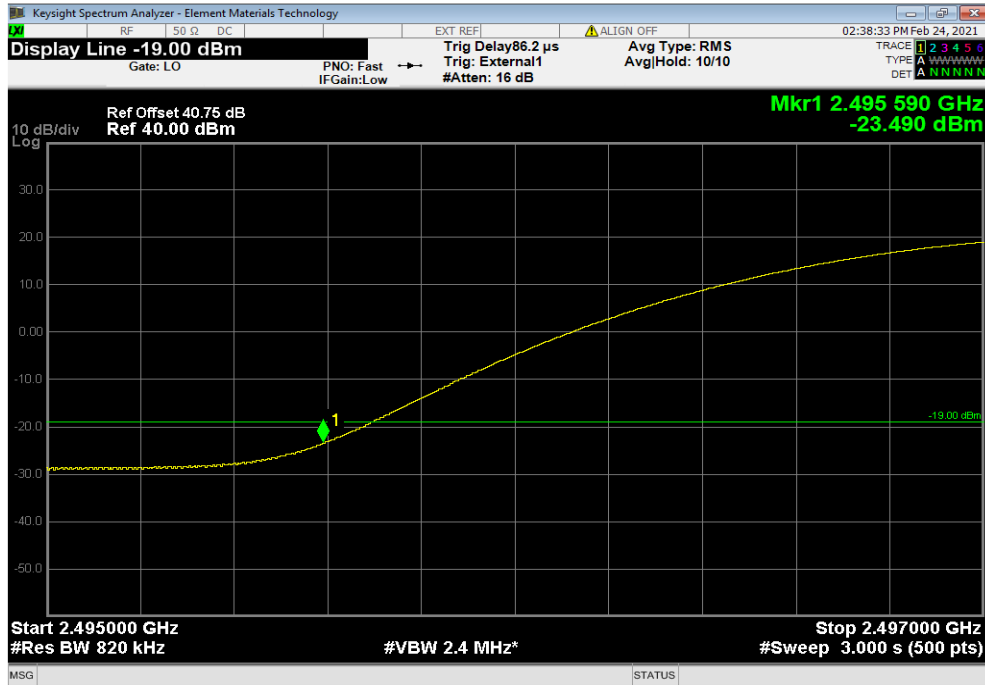


BAND EDGE COMPLIANCE 5G

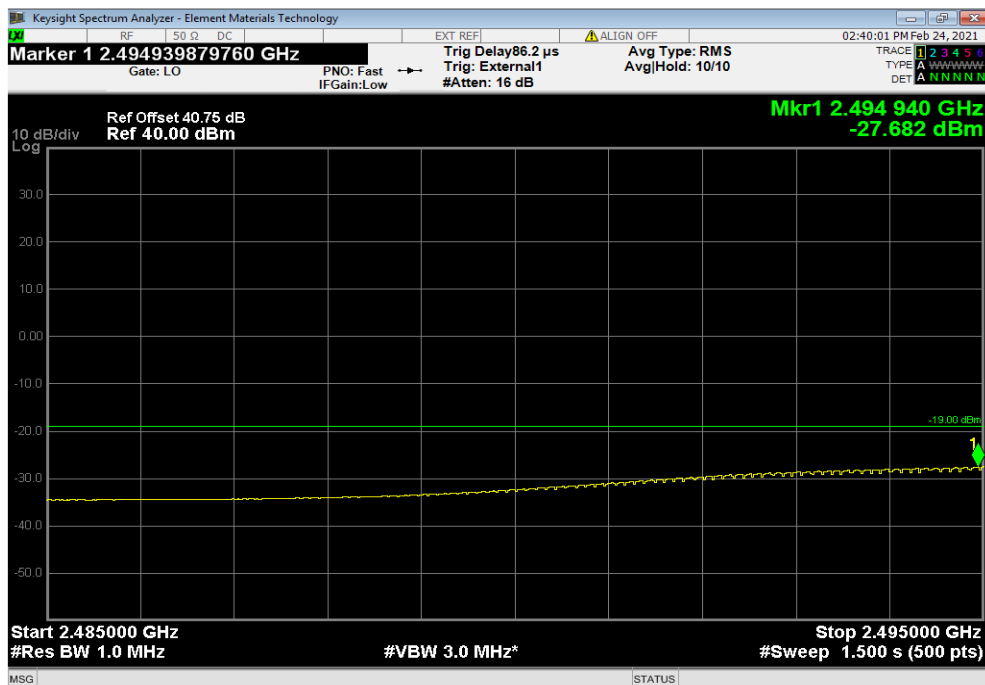


TbTtx 2019.08.30.0 XMt 2020.12.30.0

5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR80 (80MHz), 256QAM, Low Channel 2536.02 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.495 GHz - 2.497 MHz	2495.59	-23.49	-19	Pass	



5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR80 (80MHz), 256QAM, Low Channel 2536.02 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.485 GHz - 2.495 GHz	2494.94	-27.682	-19	Pass	

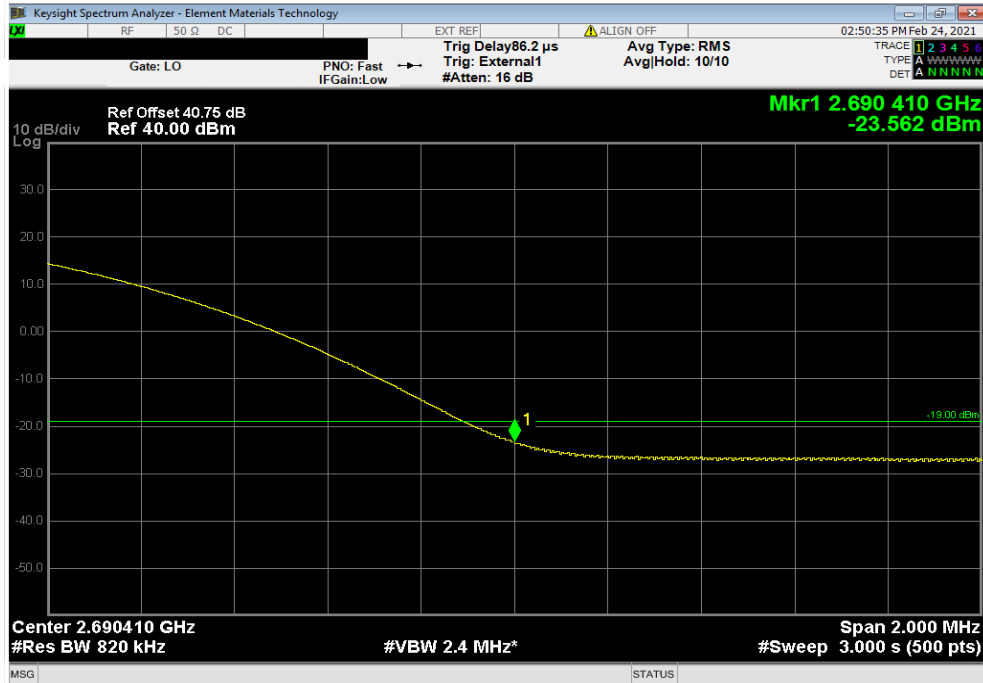


BAND EDGE COMPLIANCE 5G

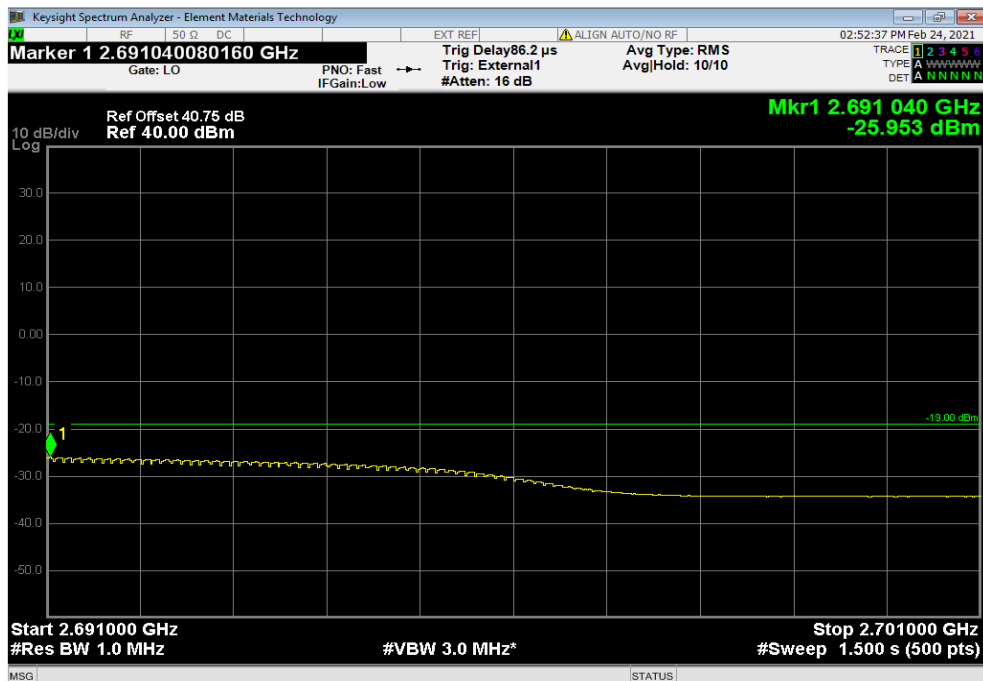


TbTx 2019.08.30.0 XMt 2020.12.30.0

5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR80 (80MHz), 256QAM, High Channel 2649.99 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.689 GHz - 2.691 GHz	2690.41	-23.562	-19	Pass	



5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR80 (80MHz), 256QAM, High Channel 2649.99 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.691 GHz - 2.701 GHz	2691.04	-25.953	-19	Pass	

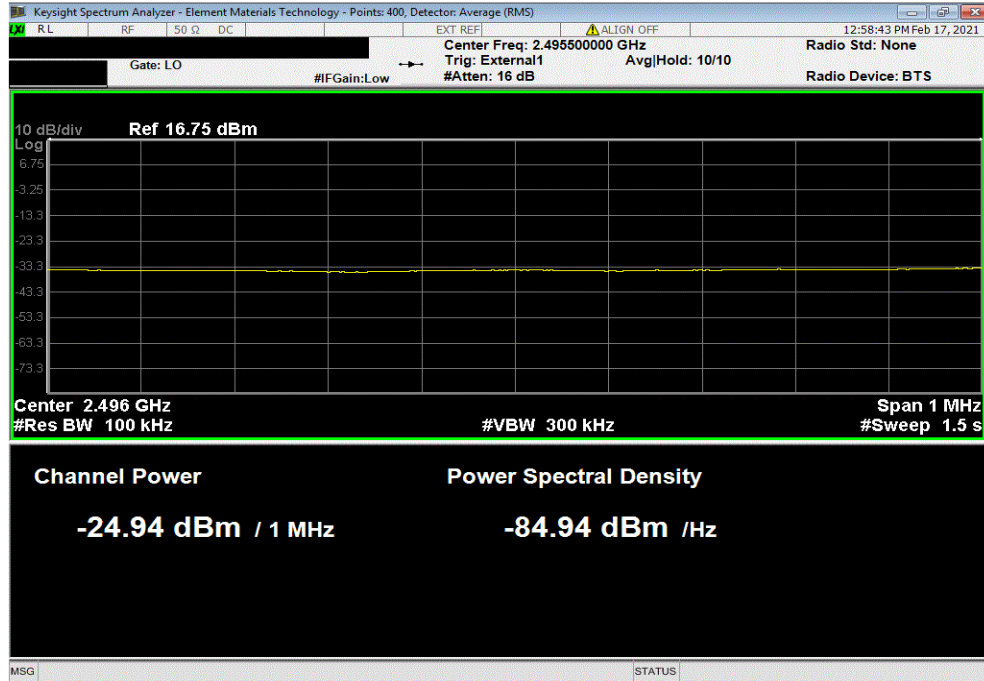


BAND EDGE COMPLIANCE 5G

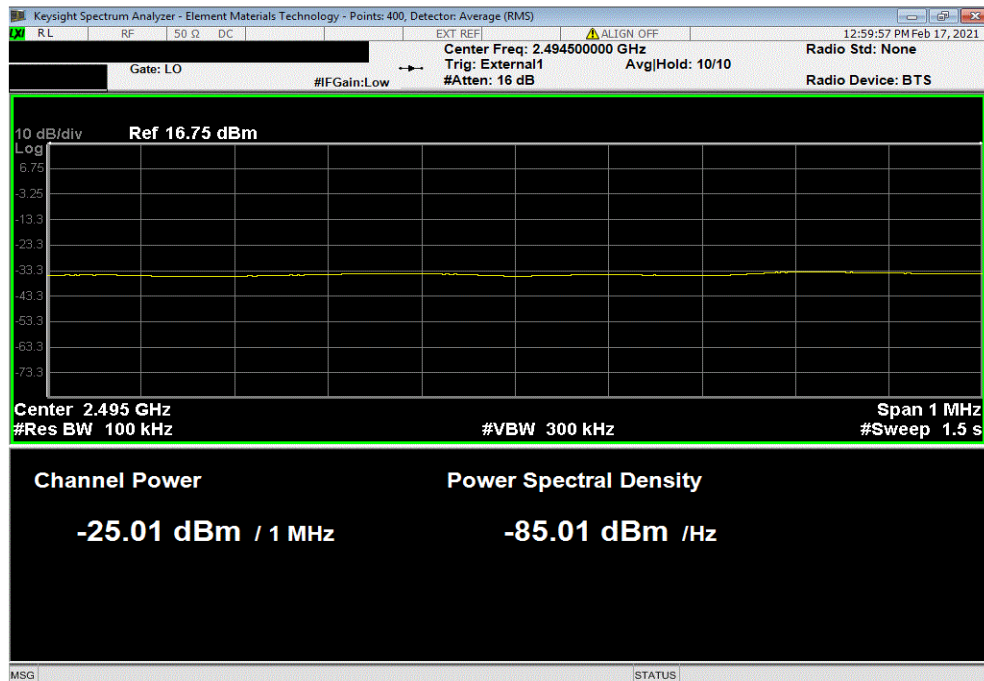


TbTx 2019.08.30.0 XMI 2020.12.30.0

5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), QPSK, Low Channel 2546.01 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.495 GHz - 2.496 GHz	Integration	-24.94	-19	Pass	



5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), QPSK, Low Channel 2546.01 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.494 GHz - 2.495 GHz	Integration	-25.01	-19	Pass	

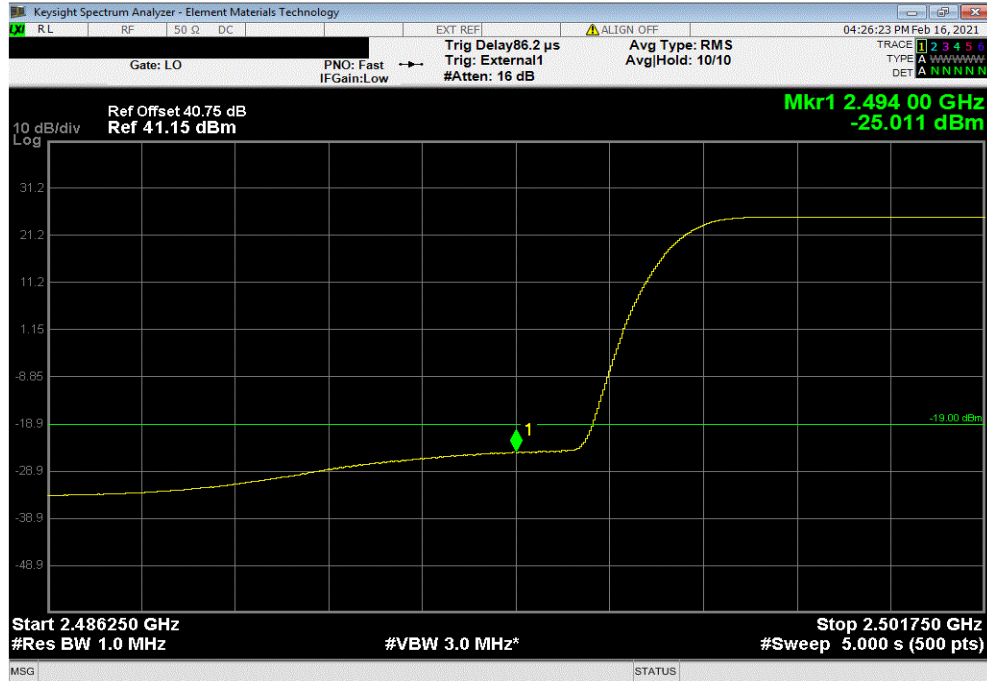


BAND EDGE COMPLIANCE 5G

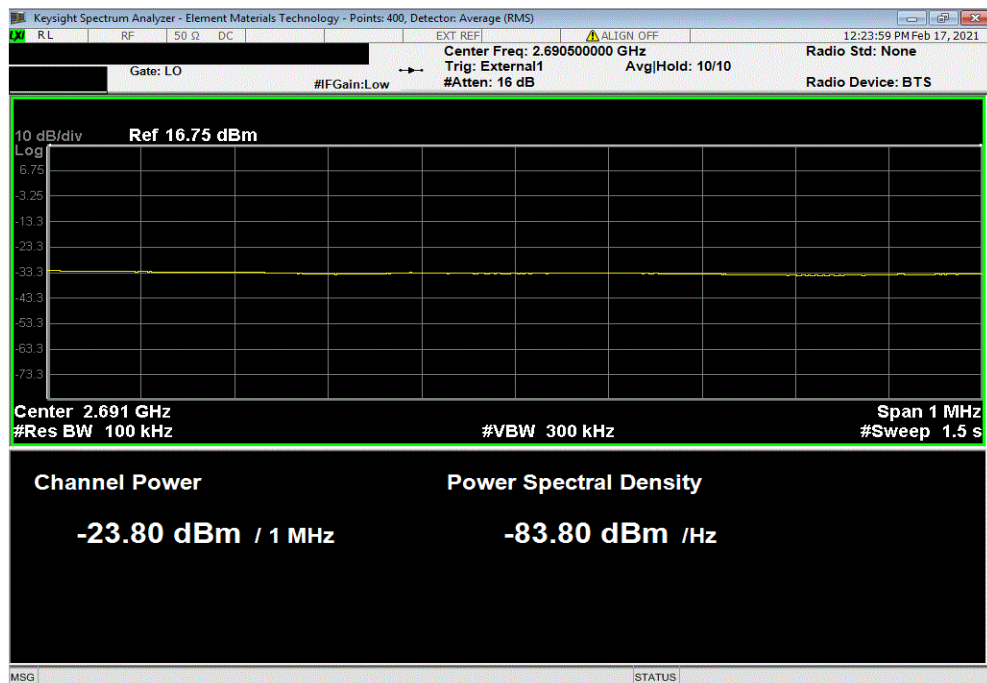


TbTx 2019.08.30.0 XbTx 2020.12.30.0

5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), QPSK, Low Channel 2546.01 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.48625 GHz - 2.49400 GHz	2494	-25.01	-19	Pass	



5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), QPSK, High Channel 2640 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.690 GHz - 2.691 GHz	Integration	23.80	-19	Pass	

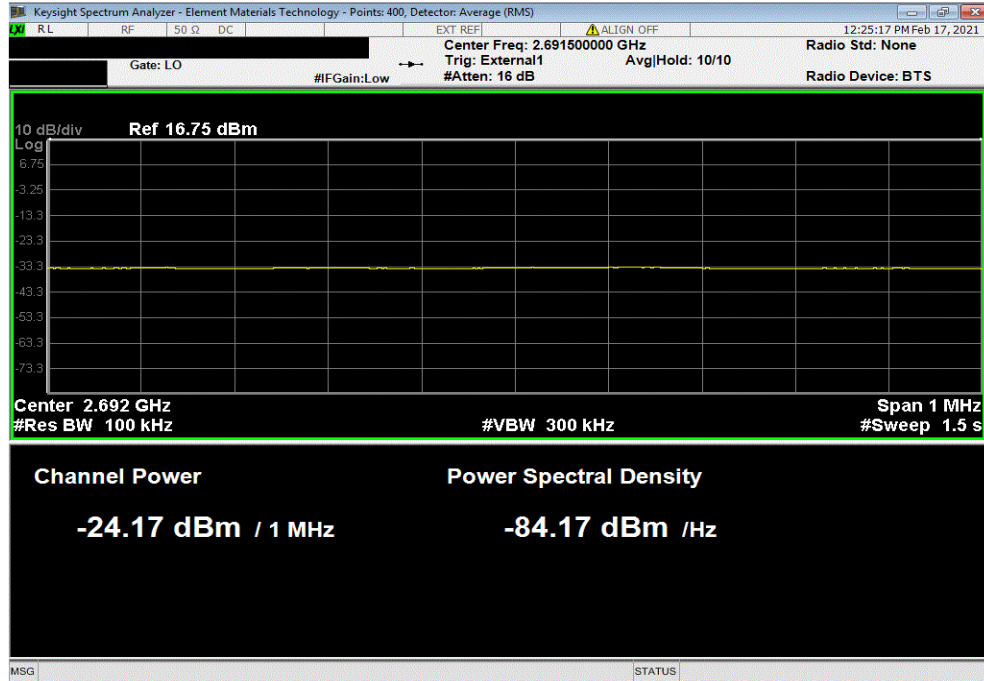


BAND EDGE COMPLIANCE 5G

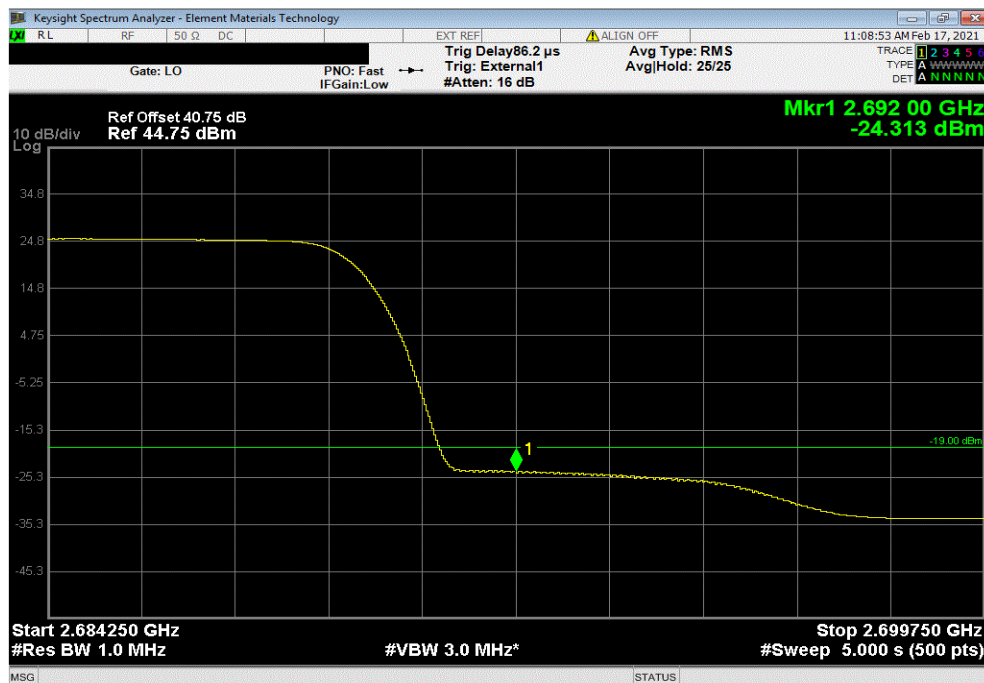


TMxTx 2019.08.30.0 XMt 2020.12.30.0

5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), QPSK, High Channel 2640 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.691 GHz - 2.692 GHz	Integration	-24.17	-19	Pass	



5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), QPSK, High Channel 2640 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.69200 GHz - 2.69975 GHz	2692	-24.31	-19	Pass	

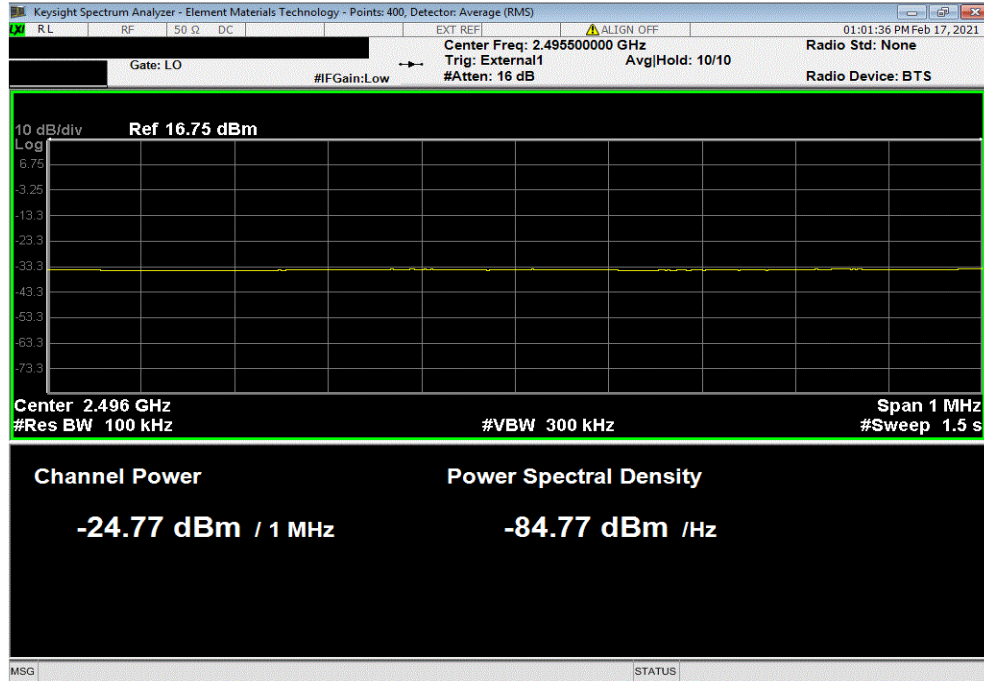


BAND EDGE COMPLIANCE 5G

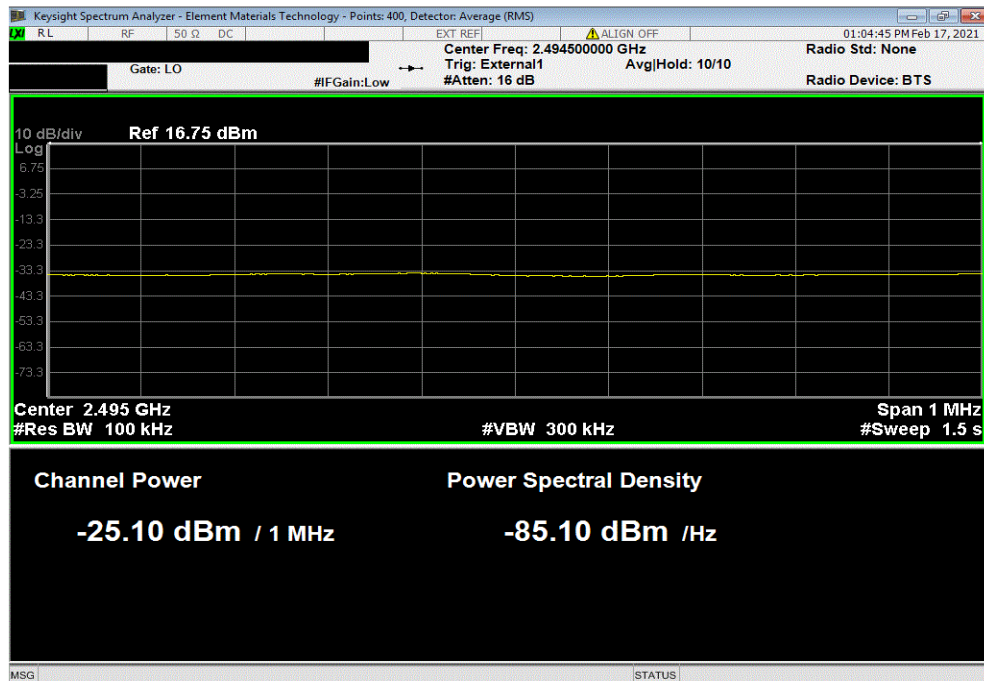


TbTx 2019.08.30.0 XMt 2020.12.30.0

5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), 16QAM, Low Channel 2546.01 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.495 GHz - 2.496 GHz	Integration	-24.77	-19	Pass	



5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), 16QAM, Low Channel 2546.01 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.494 GHz - 2.495 GHz	Integration	-25.1	-19	Pass	

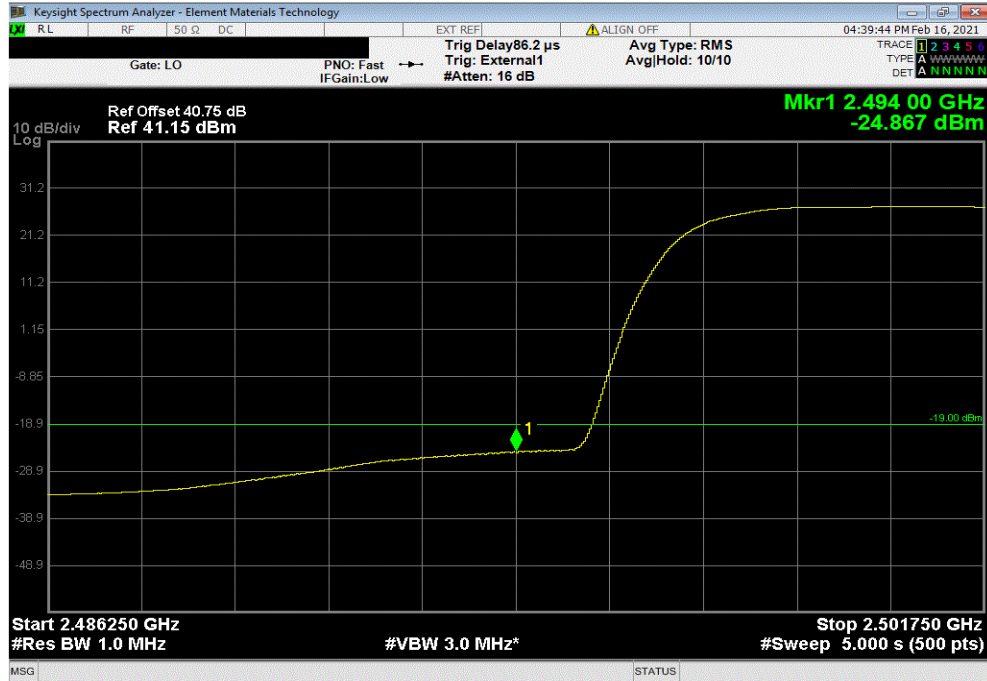


BAND EDGE COMPLIANCE 5G

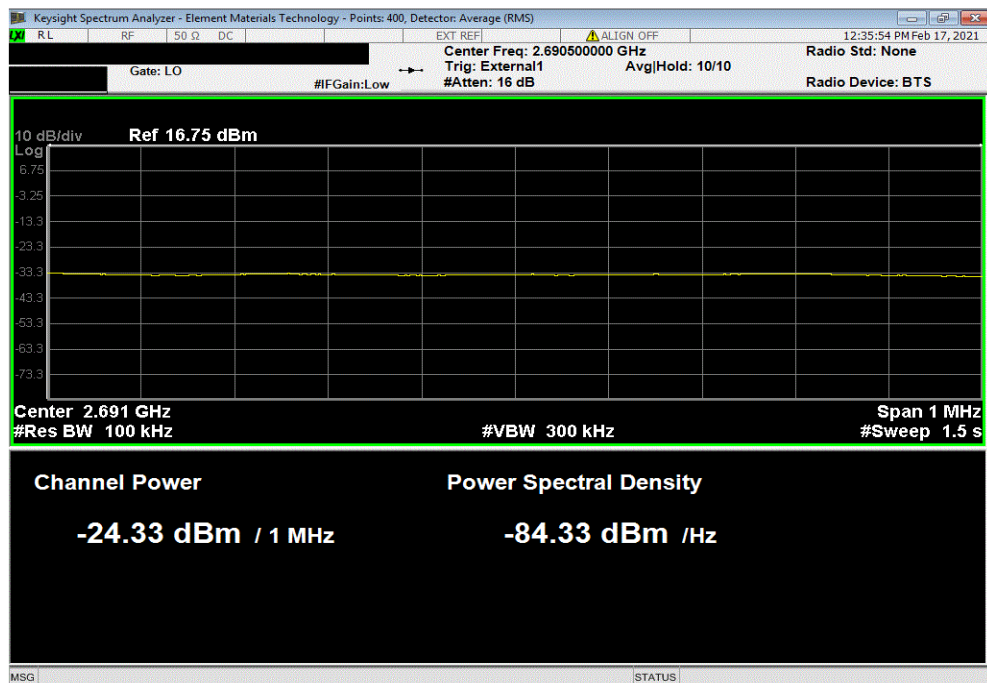


TbTx 2019.08.30.0 XbTx 2020.12.30.0

5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), 16QAM, Low Channel 2546.01 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.48625 GHz - 2.49400 GHz	2494	-24.87	-19	Pass	



5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), 16QAM, High Channel 2640 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.690 GHz - 2.691 GHz	Integration	-24.33	-19	Pass	

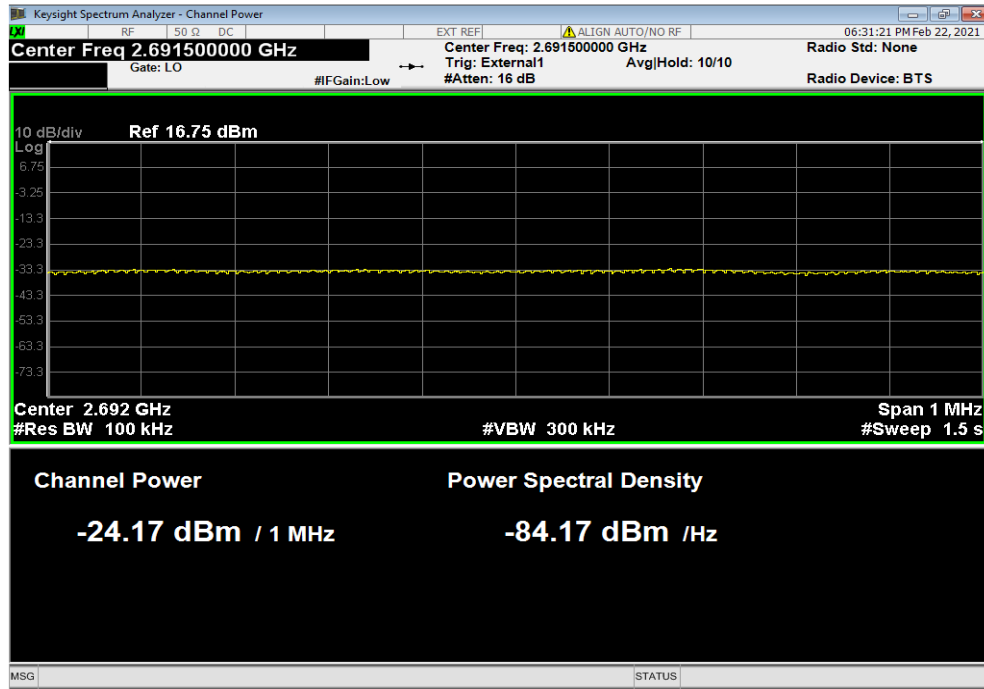


BAND EDGE COMPLIANCE 5G

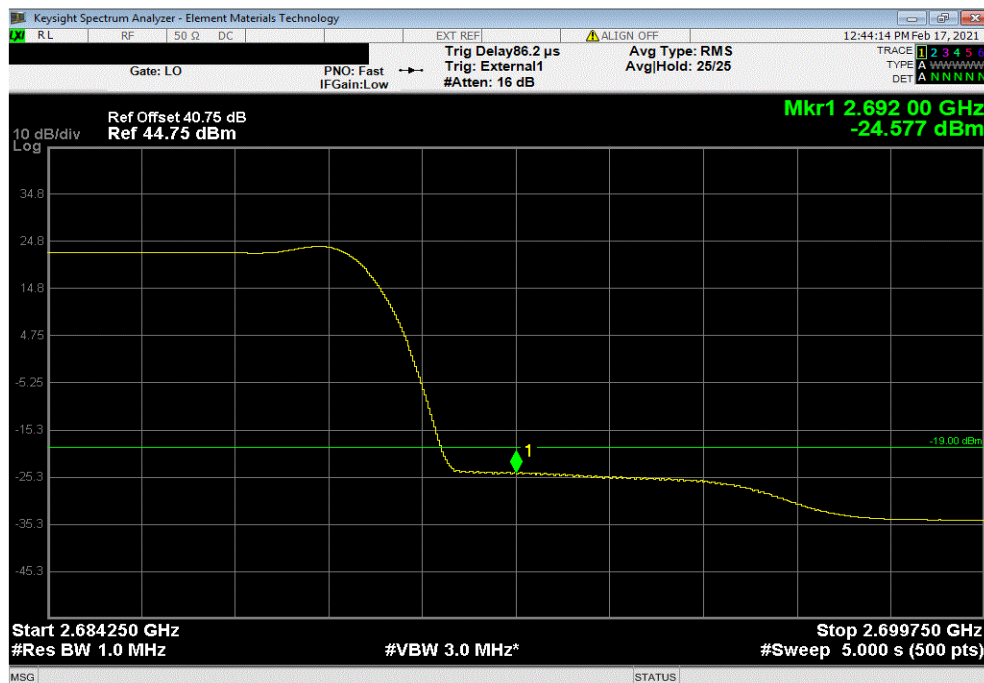


TbTx 2019.08.30.0 XbTx 2020.12.30.0

5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), 16QAM, High Channel 2640 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.691 GHz - 2.692 GHz	Integration	-27.14	-19	Pass	



5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), 16QAM, High Channel 2640 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.69200 GHz - 2.69975 GHz	2692	-24.58	-19	Pass	

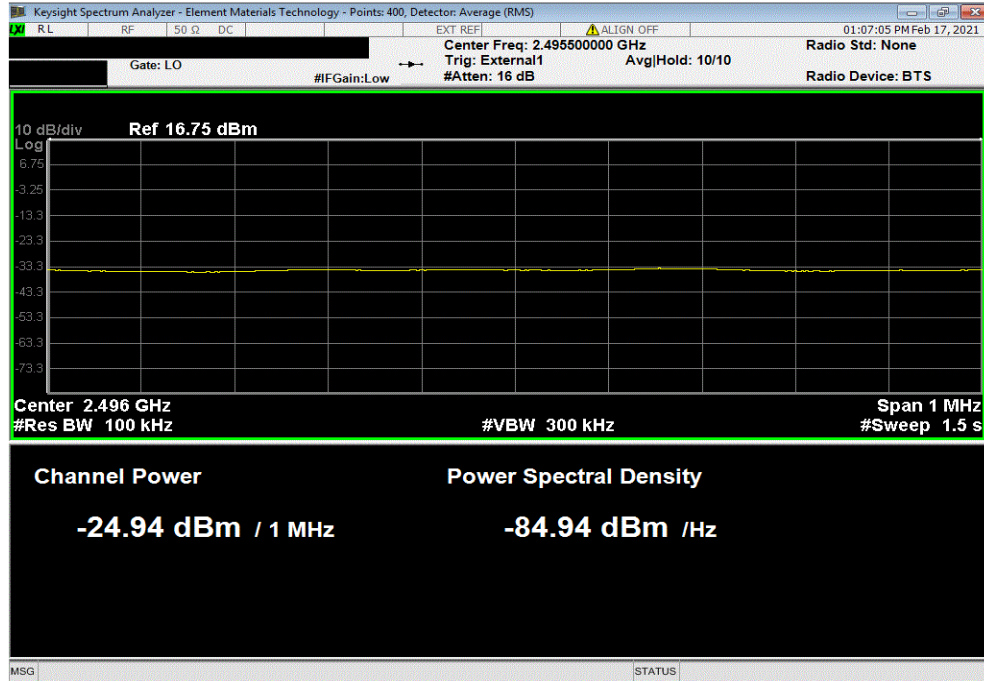


BAND EDGE COMPLIANCE 5G

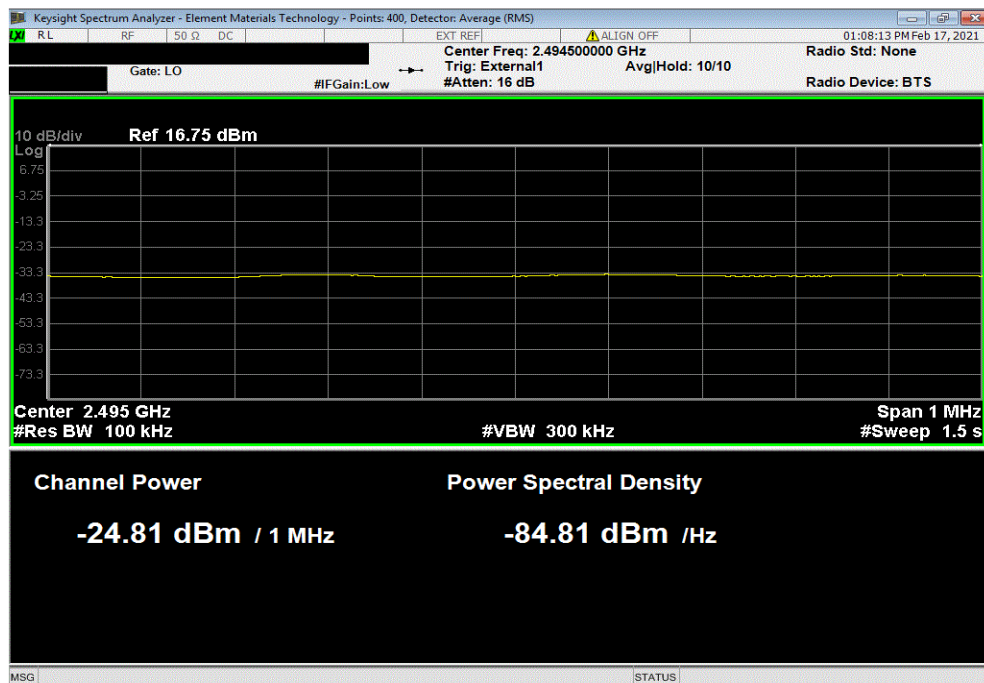


TbTx 2019.08.30.0 XMI 2020.12.30.0

5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), 64QAM, Low Channel 2546.01 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.495 GHz - 2.496 GHz	Integration	-24.94	-19	Pass	



5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), 64QAM, Low Channel 2546.01 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.494 GHz - 2.495 GHz	Integration	-24.81	-19	Pass	

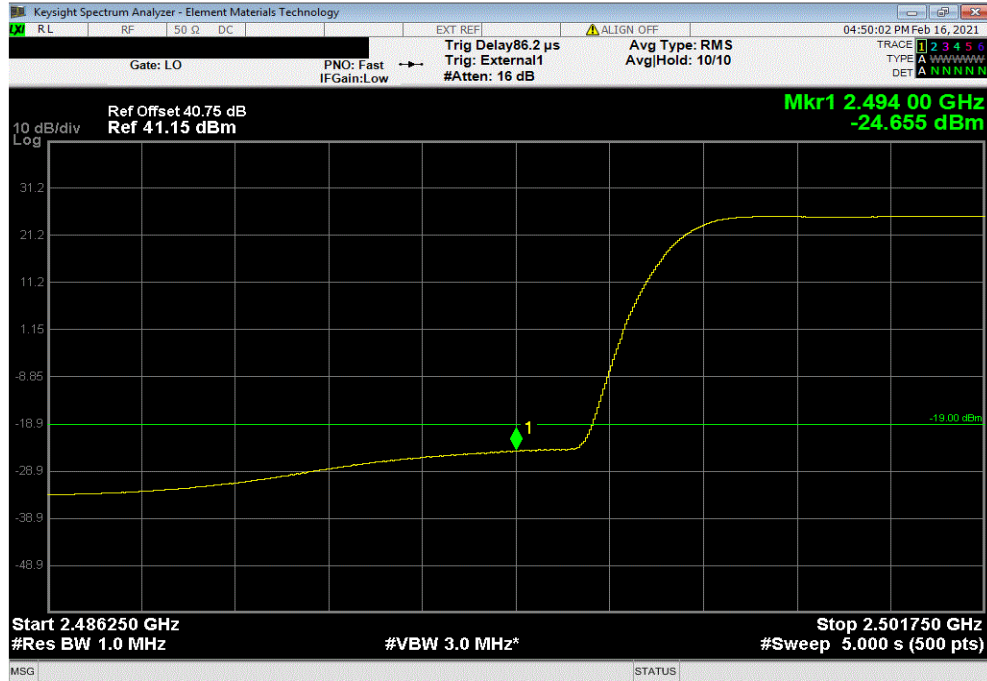


BAND EDGE COMPLIANCE 5G

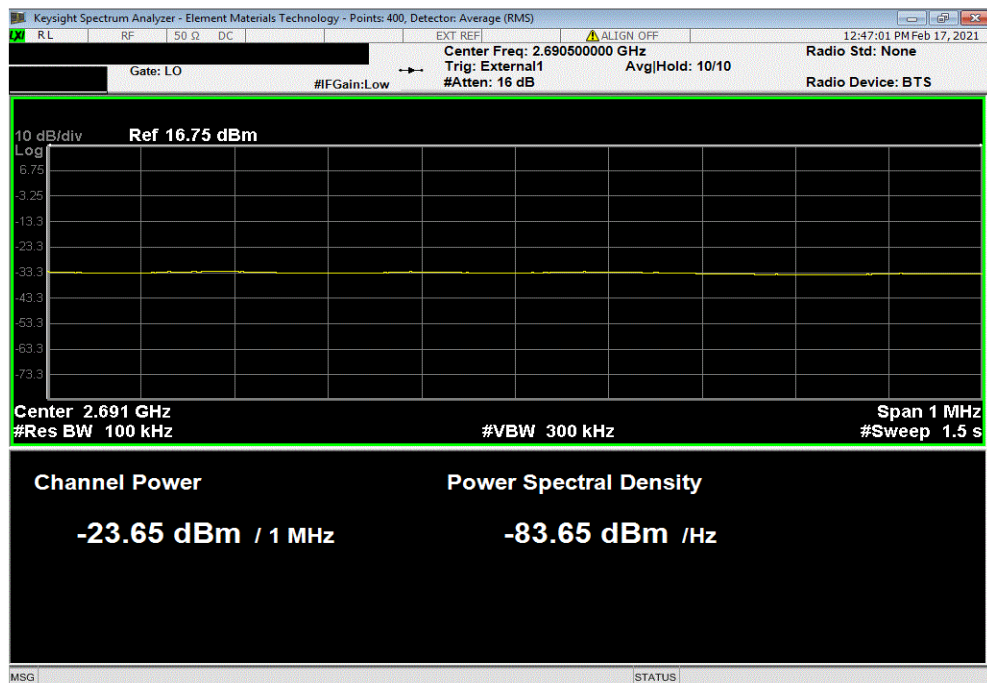


TbTx 2019.08.30.0 XbTx 2020.12.30.0

5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), 64QAM, Low Channel 2546.01 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.48625 GHz - 2.49400 GHz	2494	-24.66	-19	Pass	



5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), 64QAM, High Channel 2640 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.690 GHz - 2.691 GHz	Integration	-23.65	-19	Pass	

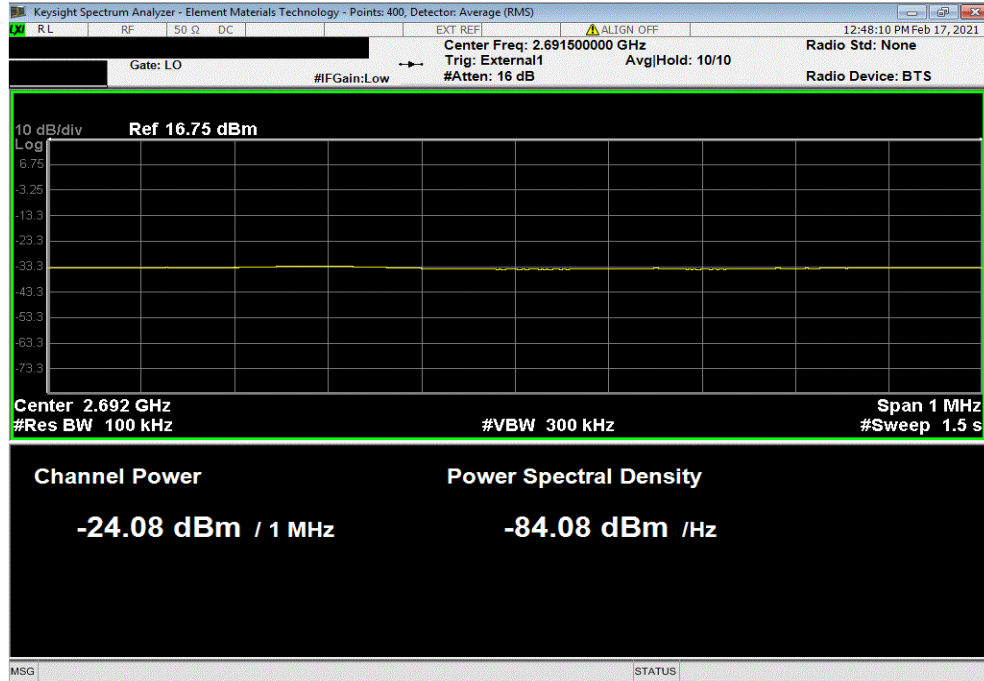


BAND EDGE COMPLIANCE 5G

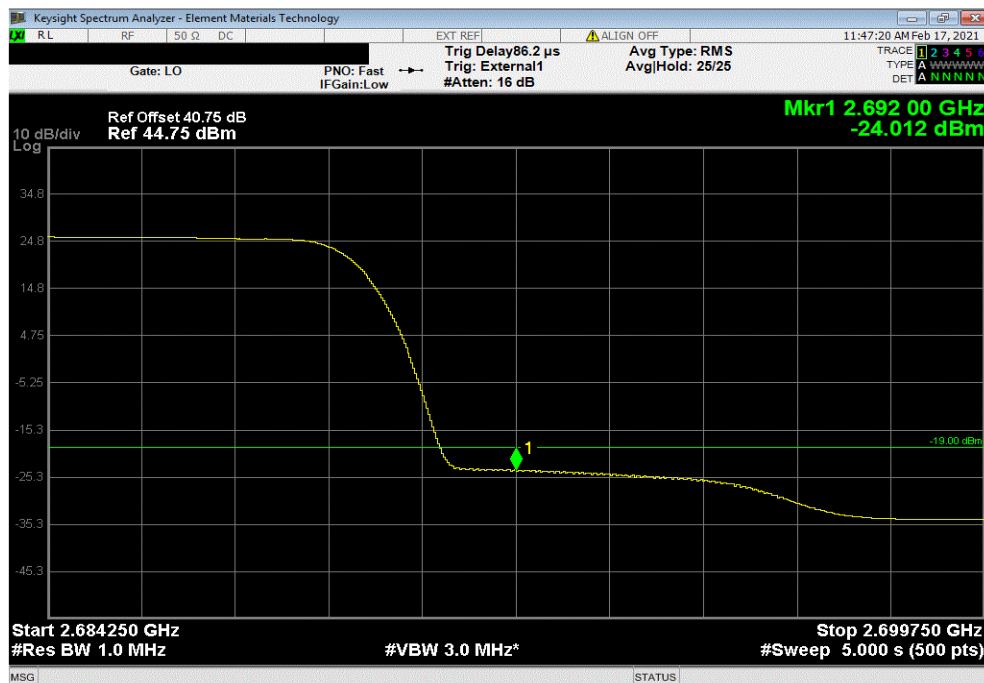


TM17x 2019.08.30.0 XM17 2020.12.30.0

5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), 64QAM, High Channel 2640 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.691 GHz - 2.692 GHz	Integration	-24.08	-19	Pass	



5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), 64QAM, High Channel 2640 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.69200 GHz - 2.69975 GHz	2692	-24.01	-19	Pass	

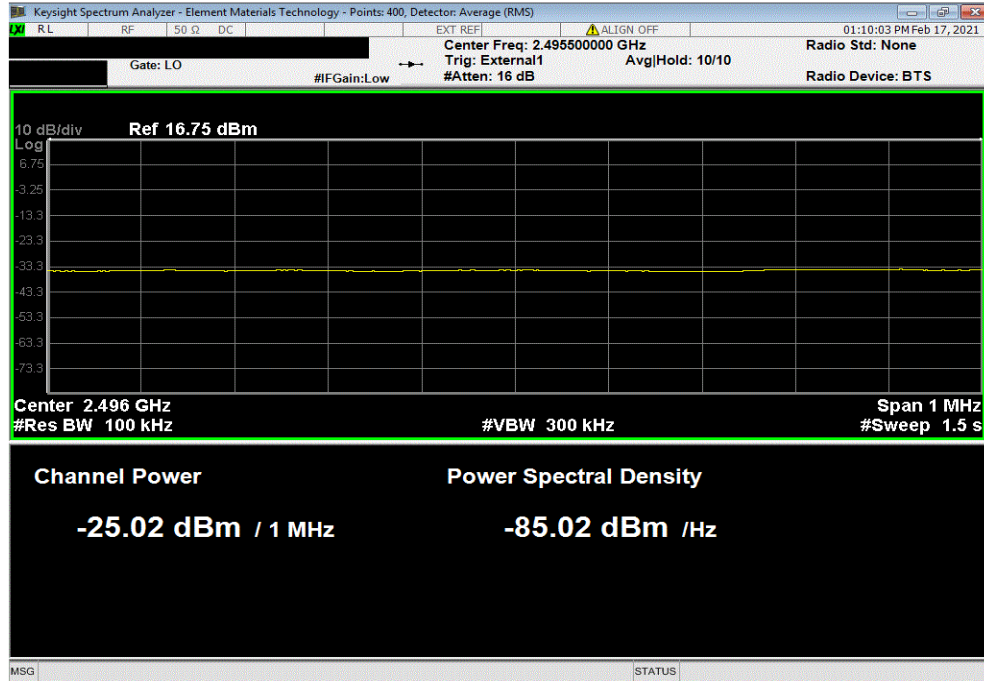


BAND EDGE COMPLIANCE 5G

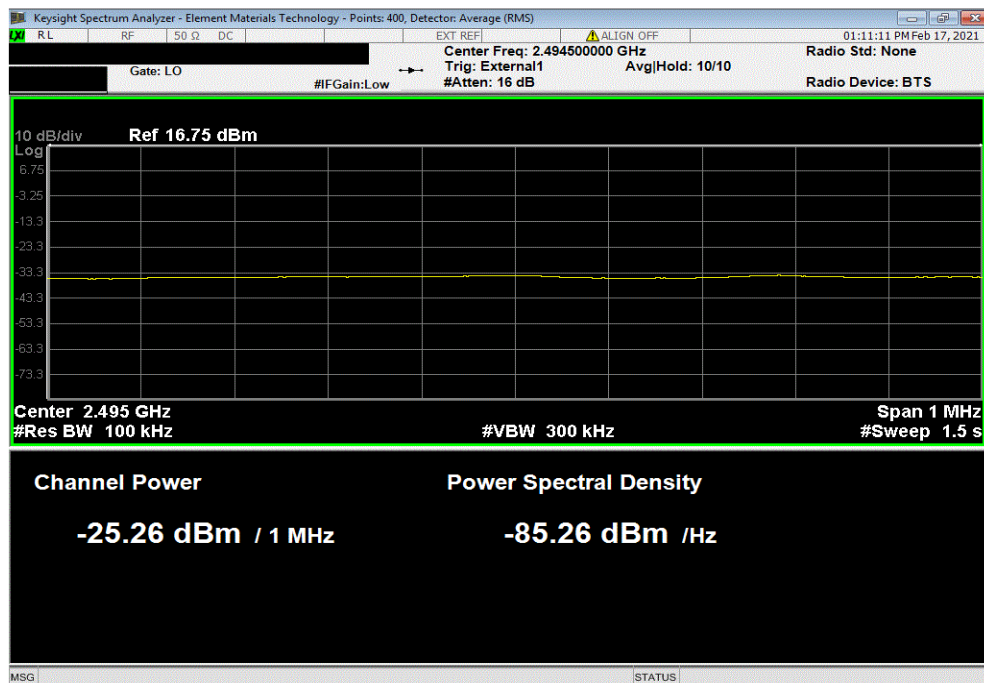


TbTx 2019.08.30.0 XMI 2020.12.30.0

5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), 256QAM, Low Channel 2546.01 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.495 GHz - 2.496 GHz	Integration	-25.02	-19	Pass	



5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), 256QAM, Low Channel 2546.01 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.494 GHz - 2.495 GHz	Integration	-25.26	-19	Pass	

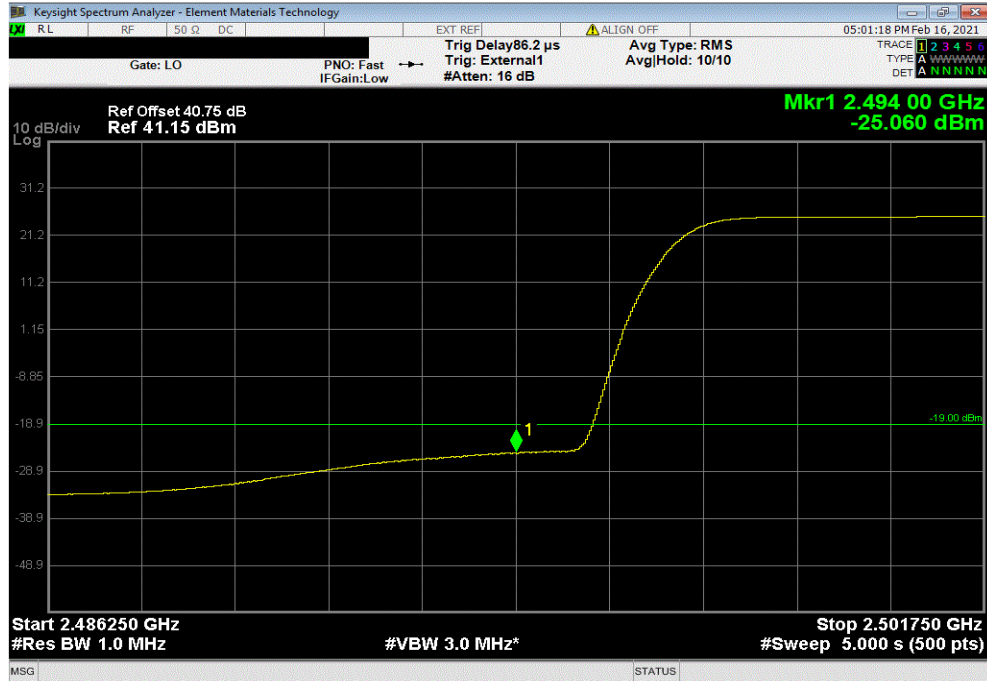


BAND EDGE COMPLIANCE 5G

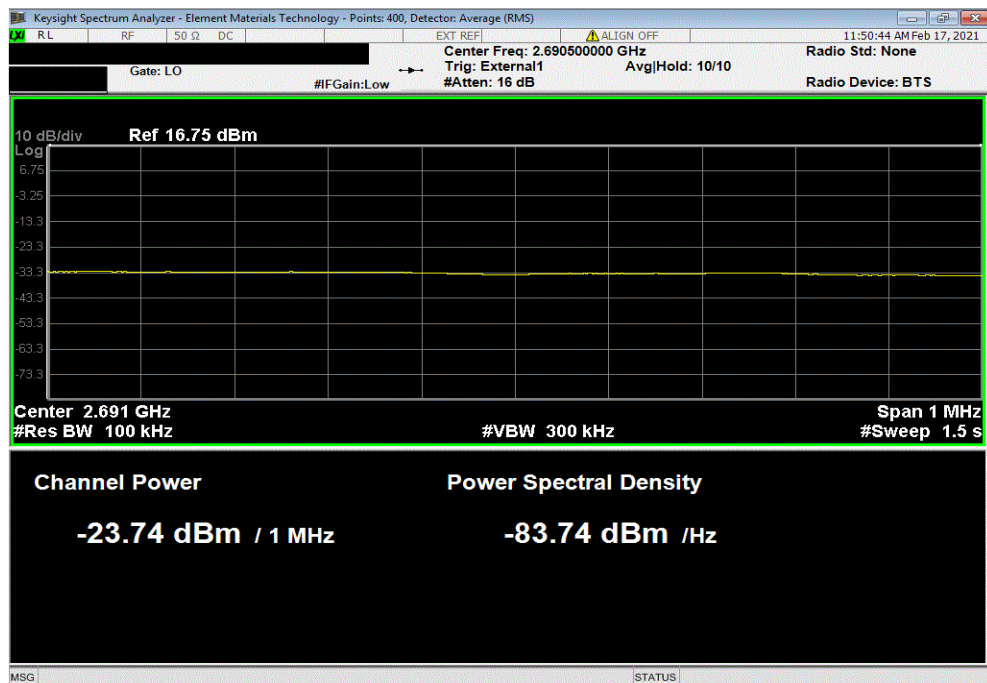


TbTx 2019.08.30.0 XbTx 2020.12.30.0

5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), 256QAM, Low Channel 2546.01 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.48625 GHz - 2.494 GHz	2494	-25.06	-19	Pass	



5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), 256QAM, High Channel 2640 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.690 GHz - 2.691 GHz	Integration	-23.74	-19	Pass	

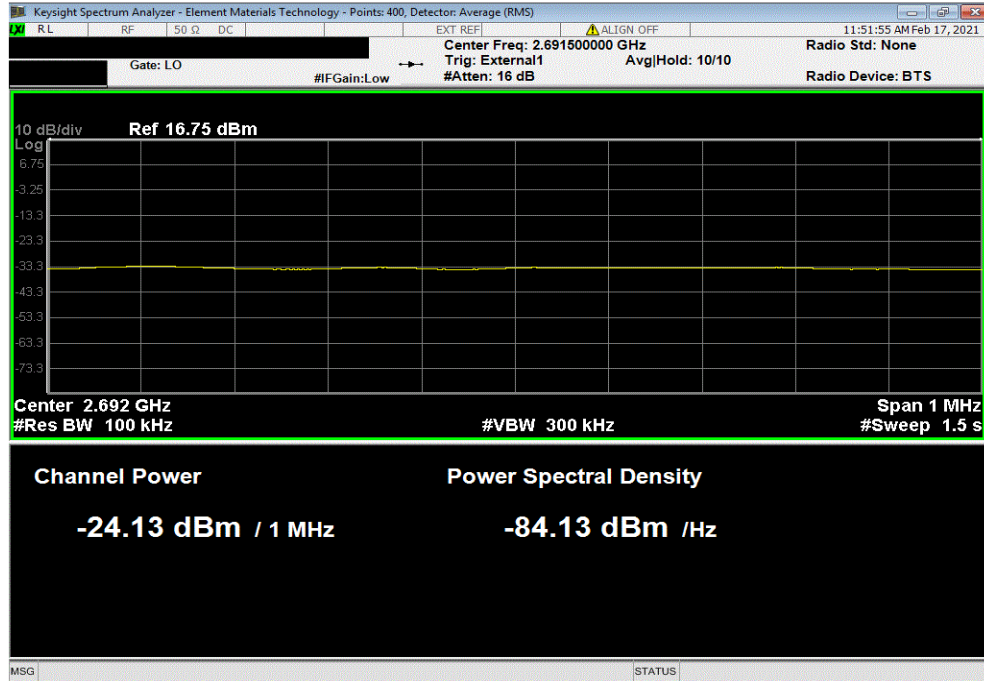


BAND EDGE COMPLIANCE 5G

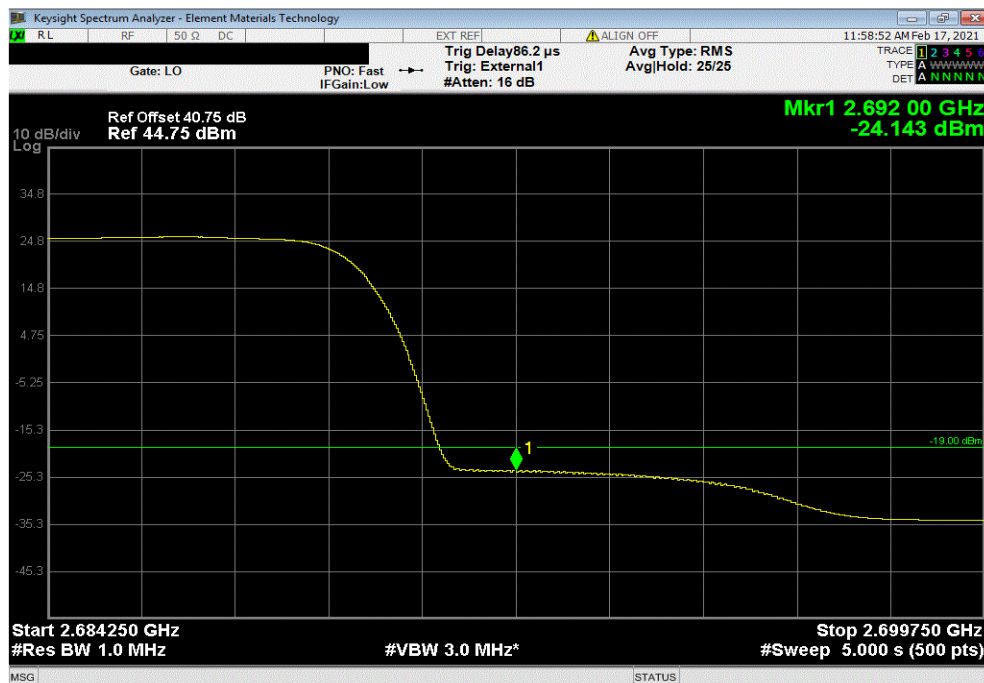


TM1Tx 2019.08.30.0 XM1 2020.12.30.0

5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), 256QAM, High Channel 2640 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.691 GHz - 2.692 GHz	Integration	-24.13	-19	Pass	



5G NR, Band n41, 2496 MHz - 2690 MHz, Port 1, NR100 (100MHz), 256QAM, High Channel 2640 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.69200 GHz - 2.69975 GHz	2692	-24.14	-19	Pass	



BAND EDGE COMPLIANCE LTE



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

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in the available band. The channels closest to the band edges were selected. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.

Per FCC Part 27.53(m)(2), the power of any emission outside of the authorized operating frequency range cannot exceed -13 dBm. The BTS may operate as a 8 port MIMO transmitter with transmitter outputs connected to four cross-polarized antennas [four transmitter outputs are connected to (+) radiators and four transmitter outputs are connected to (-) radiators]. The limit is adjusted to -19 dBm [-13 dBm -10 log (4)] per FCC KDB 662911D01 v02r01, ANSI C63.26-2015 section 6.4.6.3 b)2) and KDB 662911 D02v01 page 3 example (2) since the transmitter outputs to each antenna are 90 degree-phase shifted relative to each other (cross-polarized radiators).

Per FCC 27.53(m)(6), "Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.....A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 megahertz or 1 percent of emission bandwidth, as specified)".

RF conducted emissions testing was performed only on one port. The AZHL antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown during output power testing) and antenna port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraph 5.2.5.3, 5.7.2i, and 6.4.

BAND EDGE COMPLIANCE LTE



TbTx 2019.08.30.0 XMI 2020.12.30.0

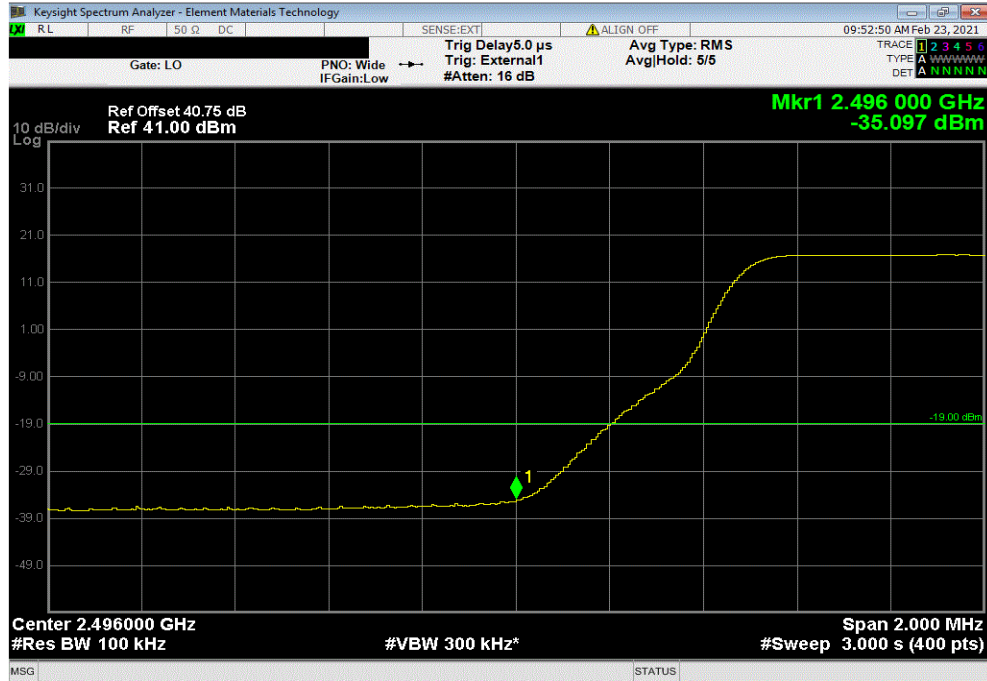
EUT: AZHL		Work Order: NOKI0018				
Serial Number: YK203400016		Date: 23-Feb-21				
Customer: Nokia Solutions and Networks		Temperature: 23.6 °C				
Attendees: John Rattanaovong, Mitchell Hill, David Le		Humidity: 14.9% RH				
Project: None		Barometric Pres.: 1037 mbar				
Tested by: Mark Baytan		Job Site: TX05				
Power: 54 VDC						
TEST SPECIFICATIONS		Test Method				
FCC 27:2021		ANSI C63.26:2015				
COMMENTS						
External 1 gating was set using a trig delay = 5.0us and a gate length = 6.786ms. Reference level offset adjusted to include (2) coax cables, DC block, and attenuator. The carrier power was set to maximum for all testing.						
DEVIATIONS FROM TEST STANDARD						
None						
Configuration #	2	Signature 				
		Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result
4G LTE, Band 41, 2496 MHz - 2690 MHz						
Port 1						
LTE10 (10MHz)						
QPSK						
	Low Channel 2501 MHz	2.495 GHz - 2.496 GHz	2496	-35.1	-19	Pass
	Low Channel 2501 MHz	2.494 GHz - 2.495 GHz	Integration	-26.58	-19	Pass
	Low Channel 2501 MHz	2.484 GHz - 2.494 MHz	2494	-27.82	-19	Pass
	High Channel 2685 MHz	2.690 GHz - 2.691 GHz	2690	-34.97	-19	Pass
	High Channel 2685 MHz	2.961 GHz - 2.962 GHz	Integration	-26.67	19	Pass
	High Channel 2685 MHz	2.692 GHz - 2.702 GHz	2692	-27.62	-19	Pass
16QAM						
	Low Channel 2501 MHz	2.495 GHz - 2.496 GHz	2496	-35.21	-19	Pass
	Low Channel 2501 MHz	2.494 GHz - 2.495 GHz	Integration	-26.78	-19	Pass
	Low Channel 2501 MHz	2.484 GHz - 2.494 GHz	2493.95	-27.60	-19	Pass
	High Channel 2685 MHz	2.690 GHz - 2.691 GHz	2690	-35.16	-19	Pass
	High Channel 2685 MHz	2.691 GHz - 2.692 GHz	Integration	-26.68	-19	Pass
	High Channel 2685 MHz	2.692 GHz - 2.702 GHz	2692	-27.58	-19	Pass
64QAM						
	Low Channel 2501 MHz	2.495 GHz - 2.496 GHz	2496	-35.52	-19	Pass
	Low Channel 2501 MHz	2.494 GHz - 2.495 GHz	Integration	-26.77	-19	Pass
	Low Channel 2501 MHz	2.484 GHz - 2.494 GHz	2493.97	-27.56	-19	Pass
	High Channel 2685 MHz	2.690 GHz - 2.691 GHz	2690	-35.12	-19	Pass
	High Channel 2685 MHz	2.691 GHz - 2.692 GHz	Integration	-26.48	-19	Pass
	High Channel 2685 MHz	2.692 GHz - 2.702 GHz	2692	-27.80	-19	Pass
256QAM						
	Low Channel 2501 MHz	2.495 GHz - 2.496 GHz	2496	-35.72	-19	Pass
	Low Channel 2501 MHz	2.494 GHz - 2.495 GHz	Integration	-26.75	-19	Pass
	Low Channel 2501 MHz	2.484 GHz - 2.494 GHz	2493.97	-27.78	-19	Pass
	High Channel 2685 MHz	2.690 GHz - 2.691 GHz	2690	-34.85	-19	Pass
	High Channel 2685 MHz	2.691 GHz - 2.692 GHz	Integration	-26.50	-19	Pass
	High Channel 2685 MHz	2.692 GHz - 2.702 GHz	2692.02	-27.67	-19	Pass
LTE15 (15MHz)						
256QAM						
	Low Channel 2503.5 MHz	2.495 GHz - 2.496 GHz	2496	-35.16	-19	Pass
	Low Channel 2503.5 MHz	2.485GHz - 2.495 GHz	2495	-25.57	-19	Pass
	High Channel 2682.5 MHz	2.690 GHz - 2.691 GHz	2690	-34.67	-19	Pass
	High Channel 2682.5 MHz	2.691 GHz - 2.701 GHz	2691	-25.49	-19	Pass
LTE20 (20MHz)						
256QAM						
	Low Channel 2506 MHz	2.495 GHz - 2.496 GHz	2496	-34.21	-19	Pass
	Low Channel 2506 MHz	2.485 GHz - 2.495 GHz	2495	-27.69	-19	Pass
	High Channel 2680 MHz	2.690 GHz - 2.691 GHz	2690	-34.22	-19	Pass
	High Channel 2680 MHz	2.691 GHz - 2.701 GHz	2691.02	-27.83	-19	Pass

BAND EDGE COMPLIANCE LTE

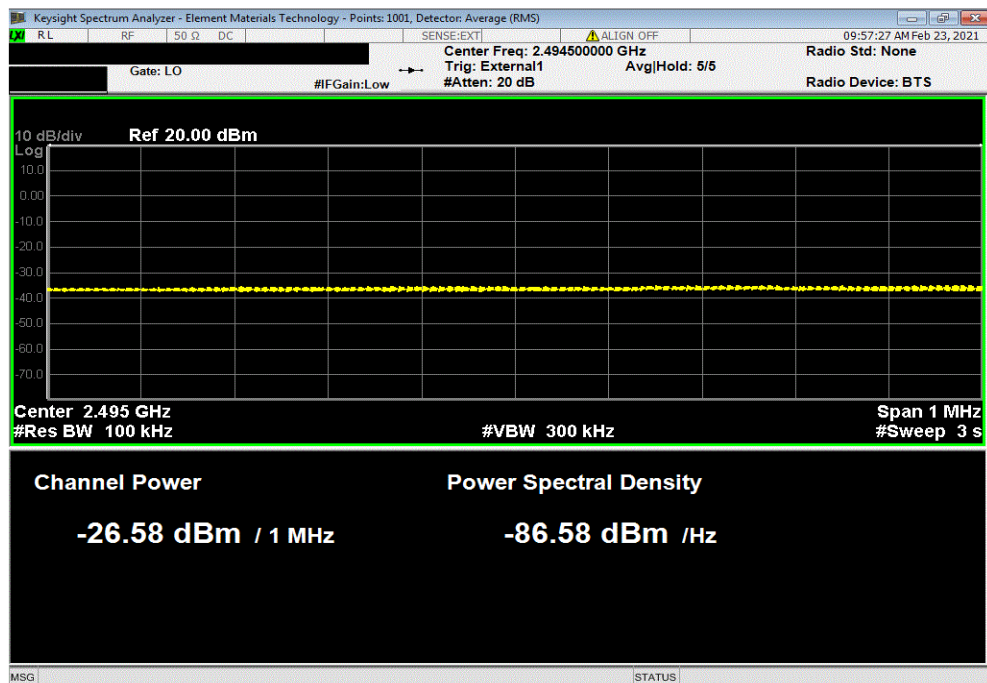


TbTx 2019.08.30.0 XMt 2020.12.30.0

4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), QPSK, Low Channel 2501 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.495 GHz - 2.496 GHz	2496	-35.1	-19	Pass	



4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), QPSK, Low Channel 2501 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.494 GHz - 2.495 GHz	Integration	-26.58	-19	Pass	

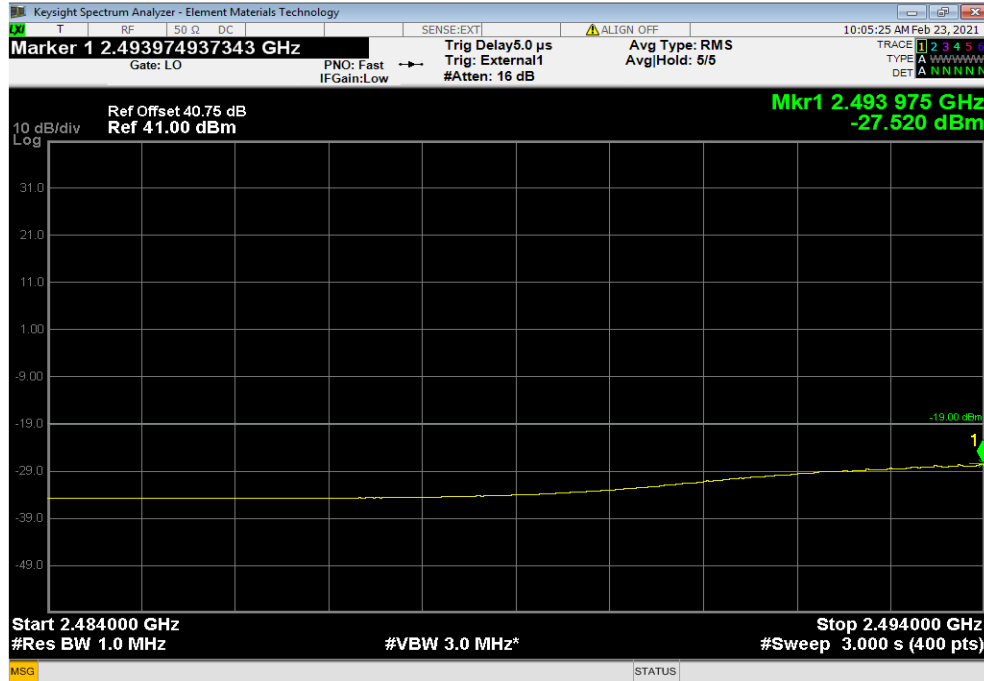


BAND EDGE COMPLIANCE LTE

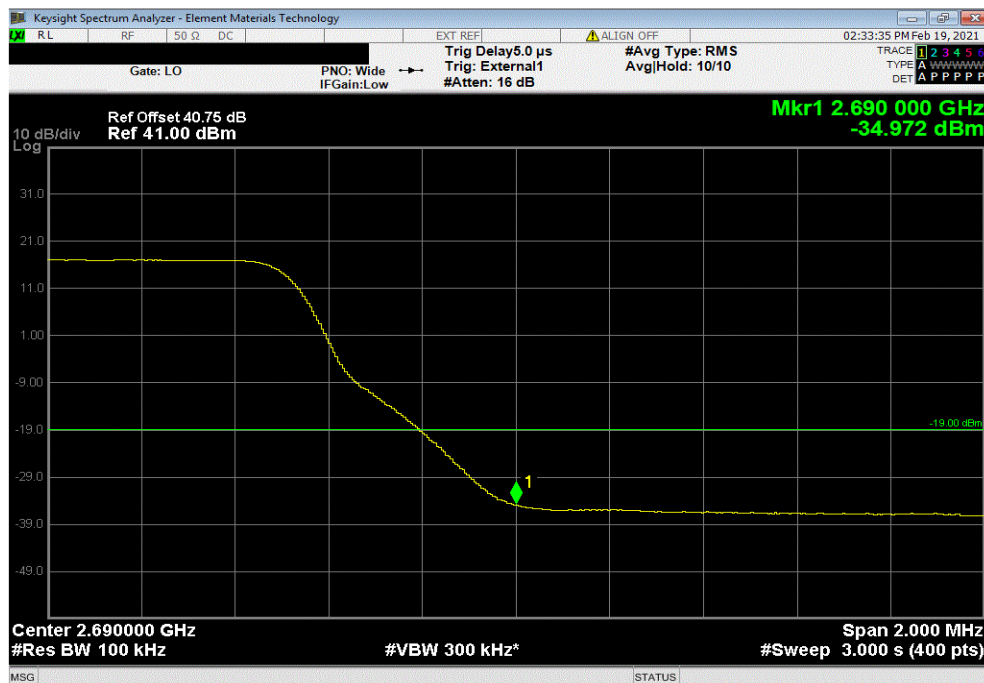


TbTtx 2019.08.30.0 XMTx 2020.12.30.0

4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), QPSK, Low Channel 2501 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.484 GHz - 2.494 MHz	2494	-27.82	-19	Pass	



4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), QPSK, High Channel 2685 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.690 GHz - 2.691 GHz	2690	-34.97	-19	Pass	

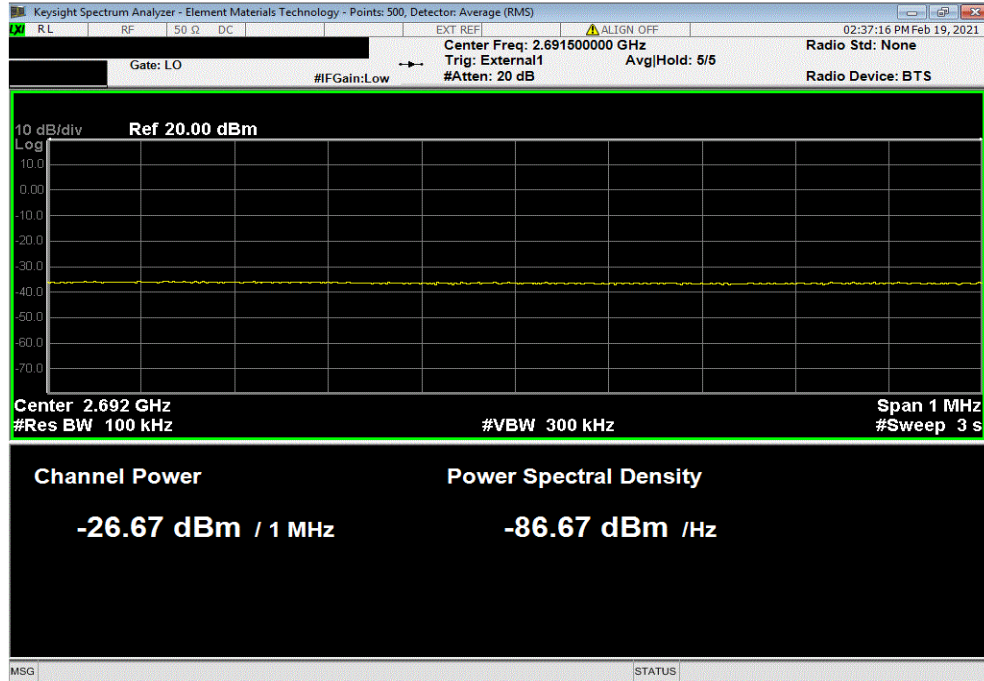


BAND EDGE COMPLIANCE LTE

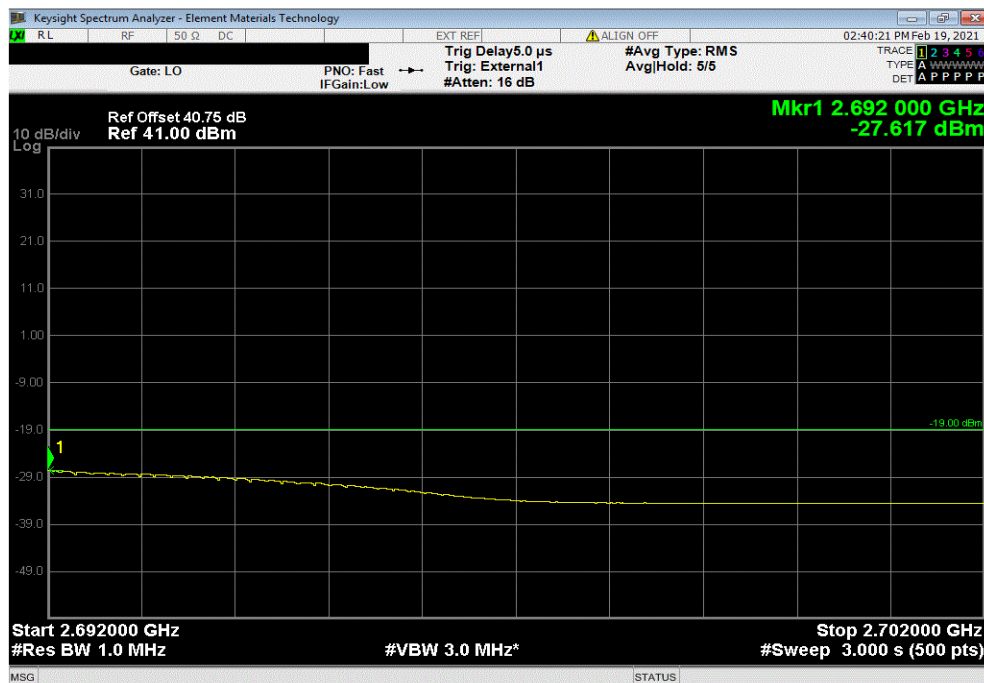


TM1Tx 2019.08.30.0 XM1 2020.12.30.0

4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), QPSK, High Channel 2685 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.961 GHz - 2.962 GHz	Integration	-26.67	19	Pass	



4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), QPSK, High Channel 2685 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.692 GHz - 2.702 GHz	2692	-27.62	-19	Pass	

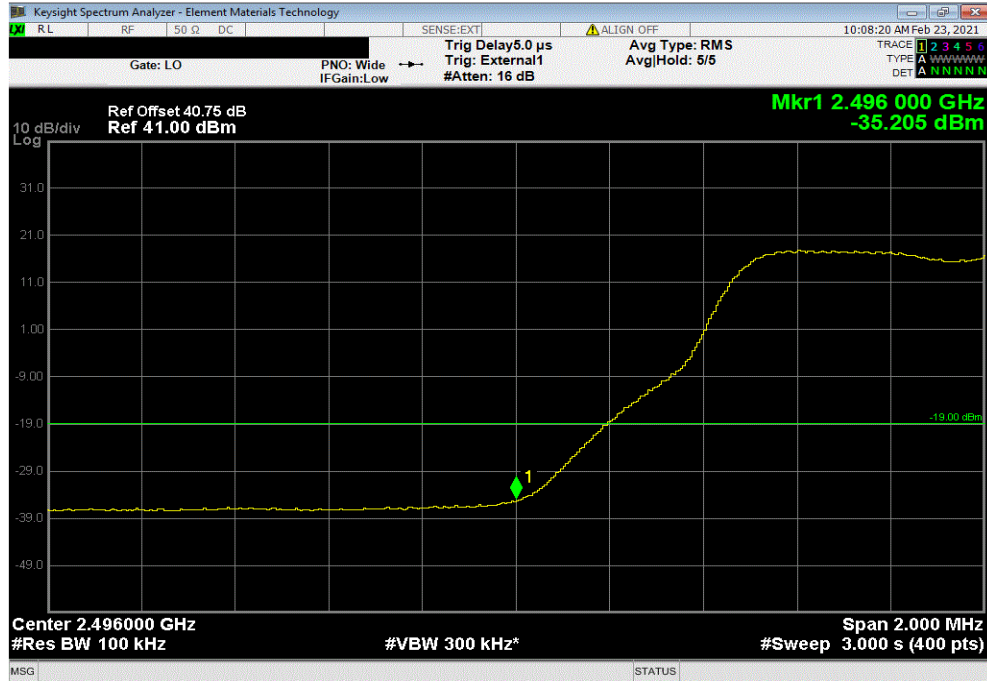


BAND EDGE COMPLIANCE LTE

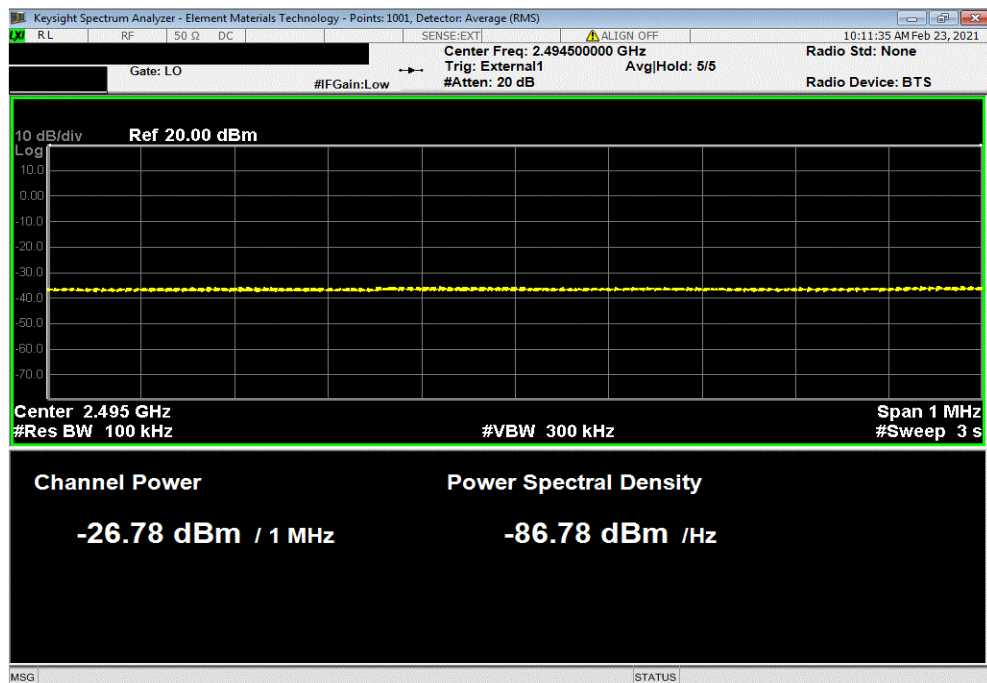


TbTx 2019.08.30.0 XbTx 2020.12.30.0

4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), 16QAM, Low Channel 2501 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.495 GHz - 2.496 GHz	2496	-35.21	-19	Pass	



4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), 16QAM, Low Channel 2501 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.494 GHz - 2.495 GHz	Integration	-26.78	-19	Pass	

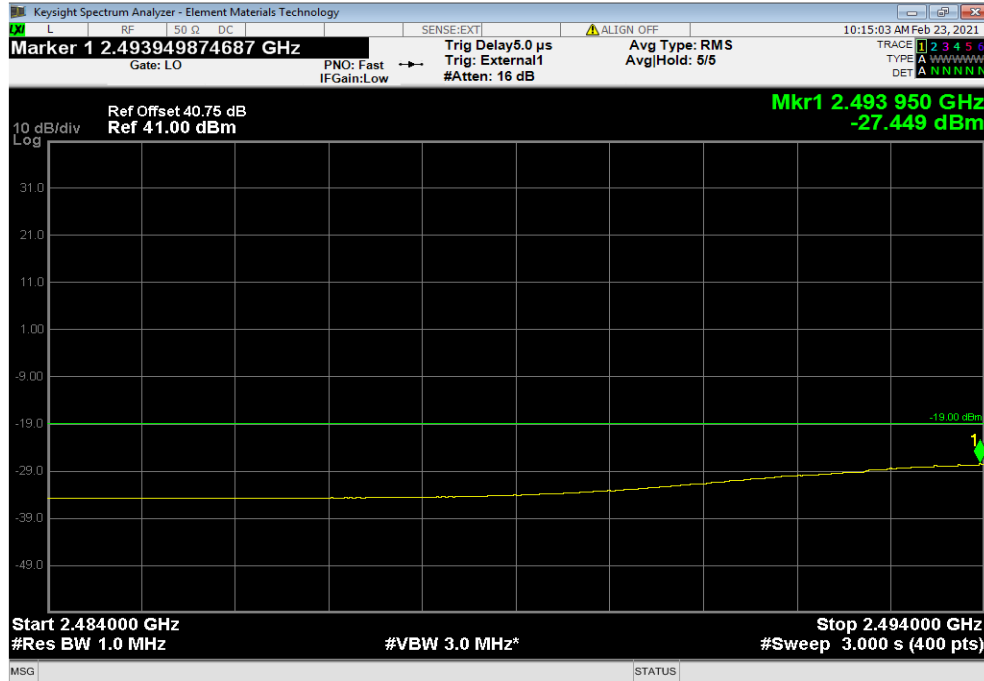


BAND EDGE COMPLIANCE LTE

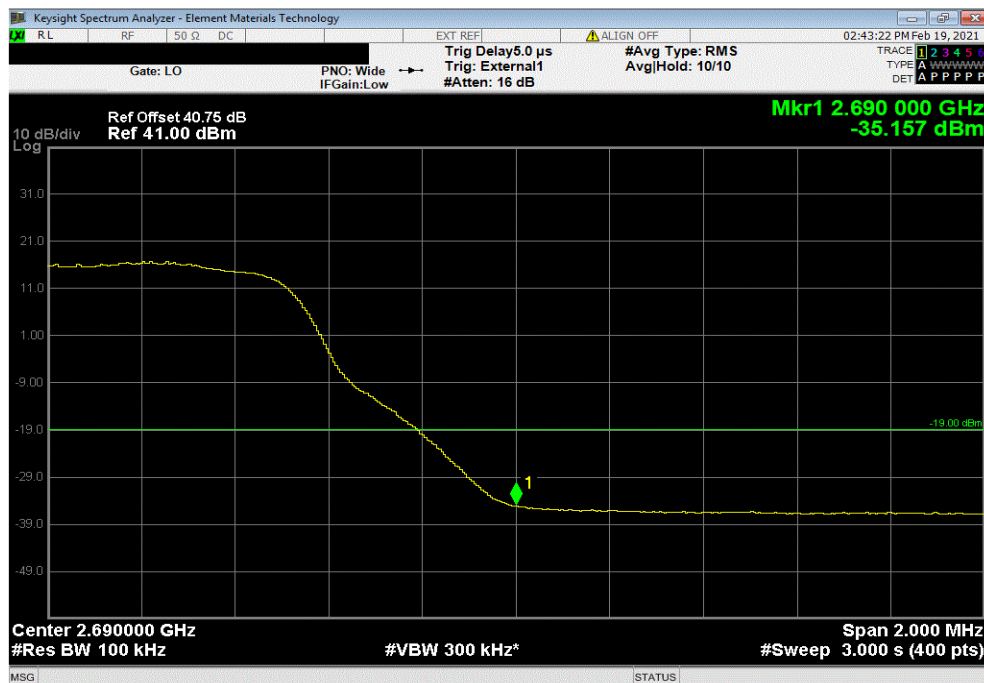


TM1Tx 2019.08.30.0 XM1 2020.12.30.0

4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), 16QAM, Low Channel 2501 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.484 GHz - 2.494 GHz	2493.95	-27.60	-19	Pass	



4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), 16QAM, High Channel 2685 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.690 GHz - 2.691 GHz	2690	-35.16	-19	Pass	

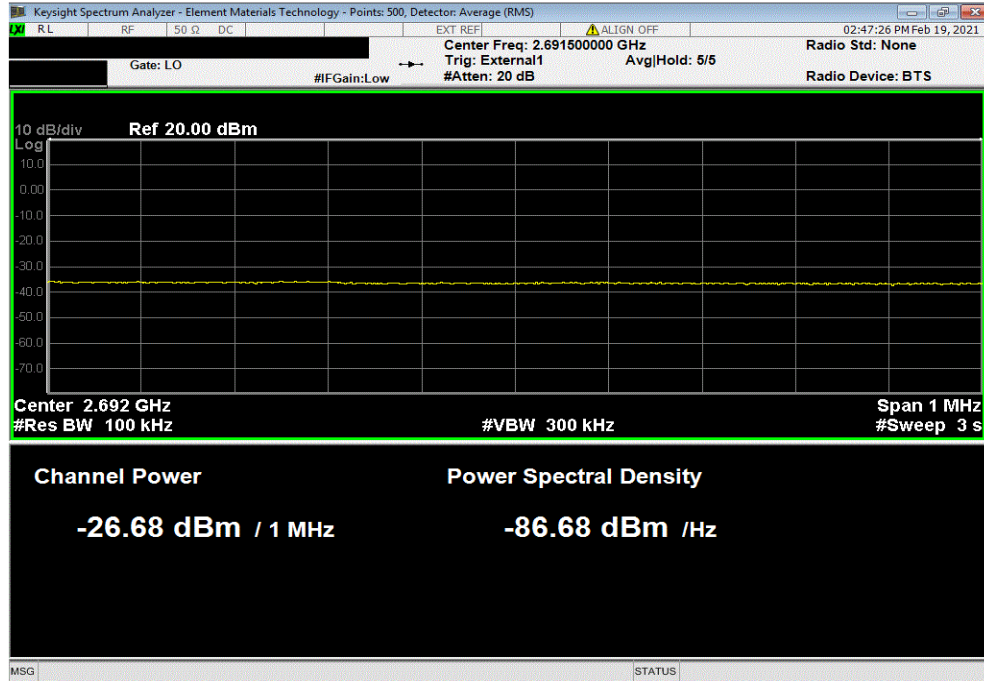


BAND EDGE COMPLIANCE LTE

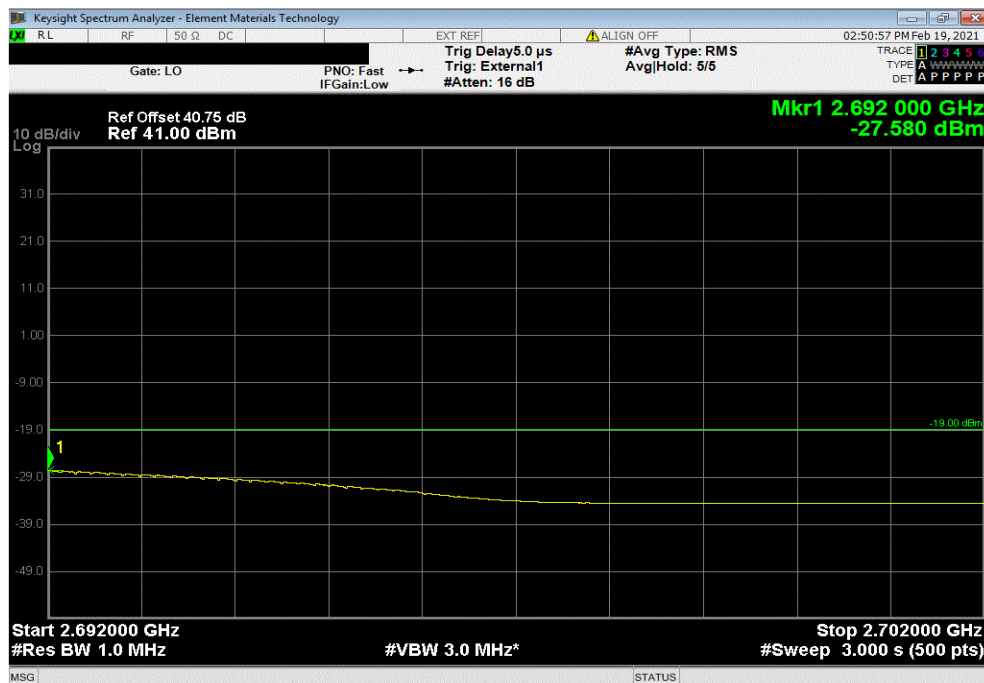


TbTx 2019.08.30.0 XMI 2020.12.30.0

4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), 16QAM, High Channel 2685 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.691 GHz - 2.692 GHz	Integration	-26.68	-19	Pass	



4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), 16QAM, High Channel 2685 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.692 GHz - 2.702 GHz	2692	-27.58	-19	Pass	

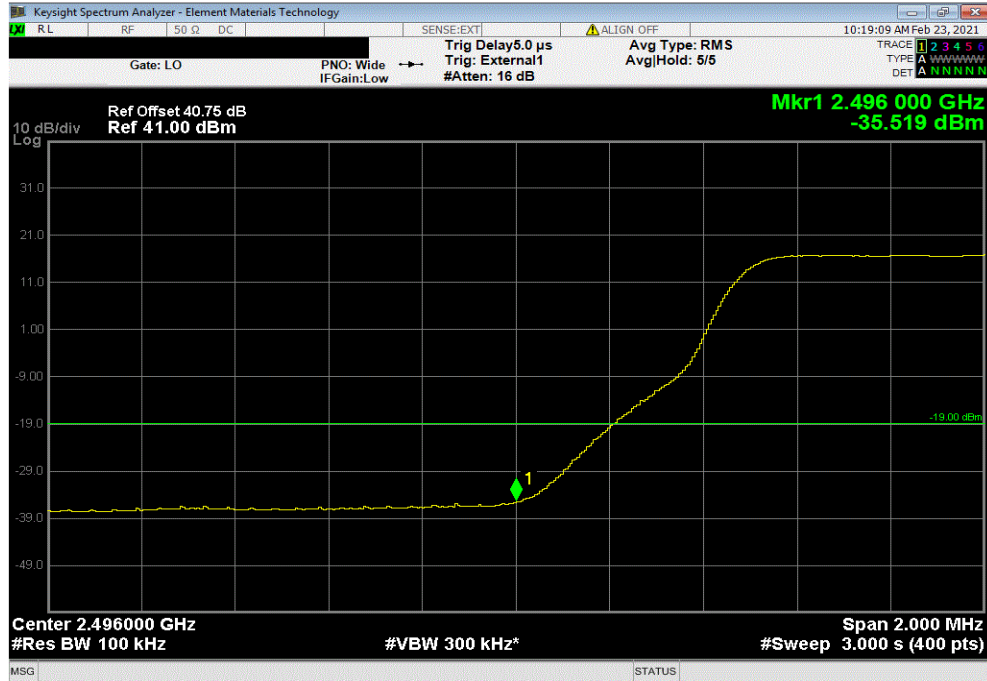


BAND EDGE COMPLIANCE LTE

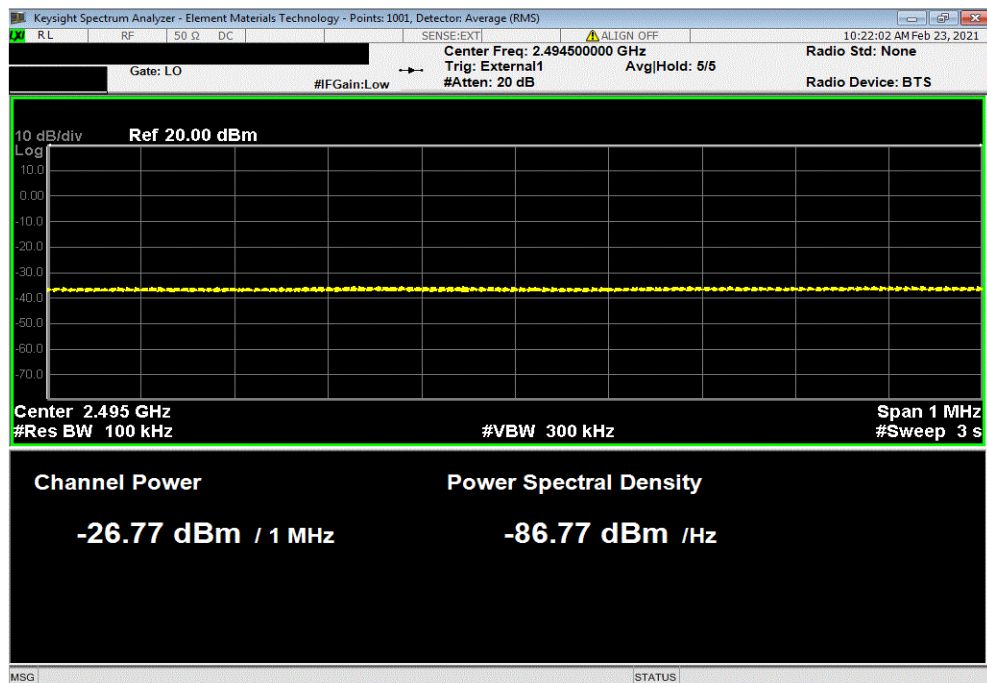


TbTx 2019.08.30.0 XbTx 2020.12.30.0

4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), 64QAM, Low Channel 2501 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.495 GHz - 2.496 GHz	2496	-35.52	-19	Pass	



4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), 64QAM, Low Channel 2501 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.494 GHz - 2.495 GHz	Integration	-2.68E+01	-19	Pass	

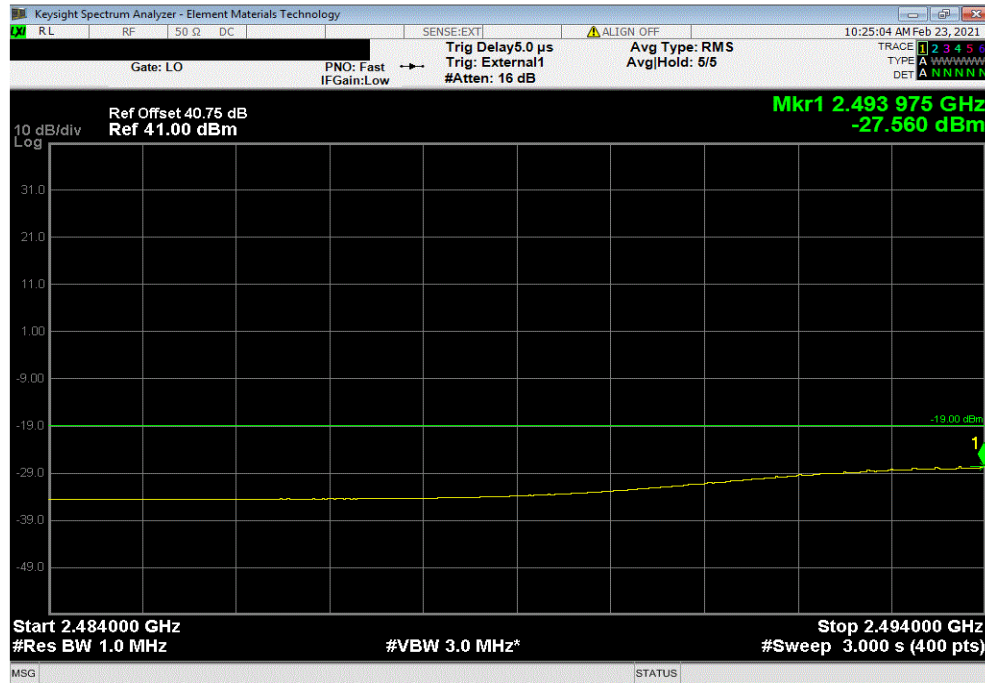


BAND EDGE COMPLIANCE LTE

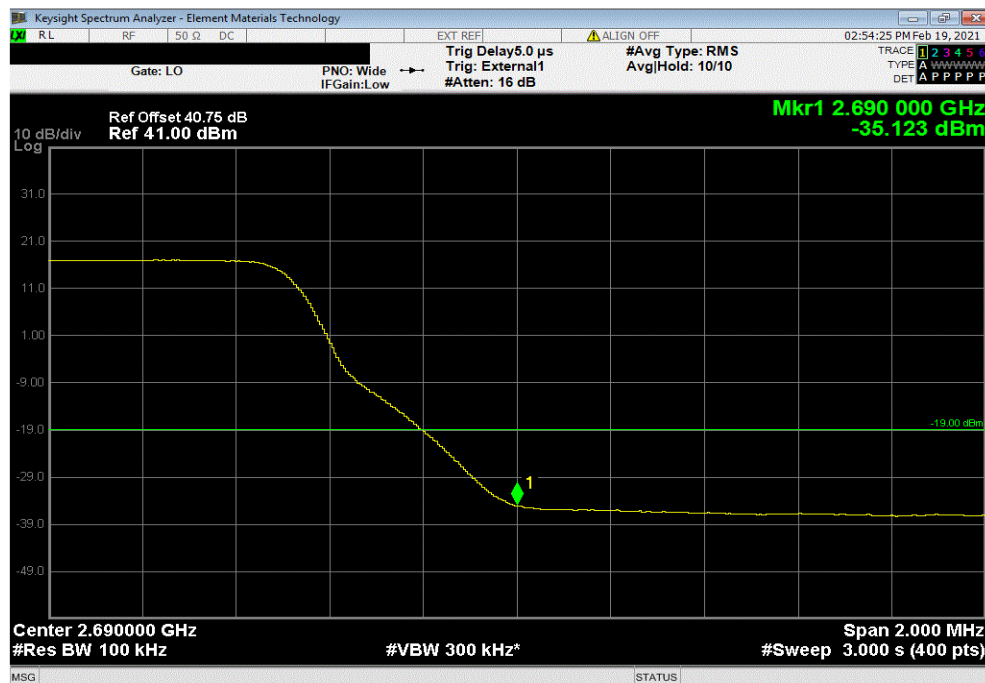


TbTtx 2019.08.30.0 XMt 2020.12.30.0

4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), 64QAM, Low Channel 2501 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.484 GHz - 2.494 GHz	2493.97	-27.56	-19	Pass	



4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), 64QAM, High Channel 2685 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.690 GHz - 2.691 GHz	2690	-35.12	-19	Pass	

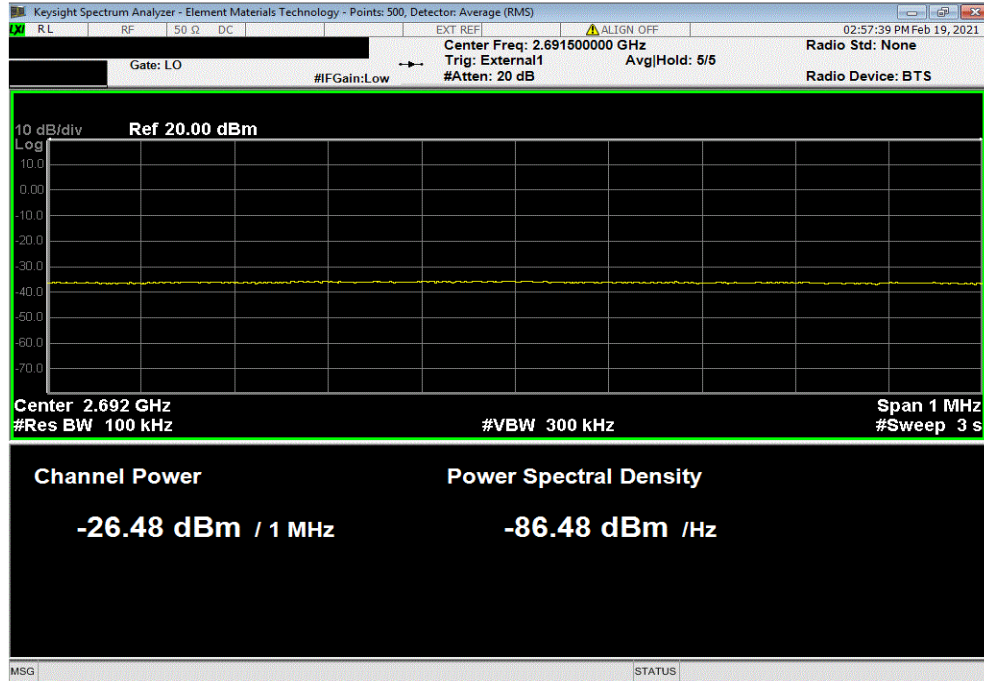


BAND EDGE COMPLIANCE LTE

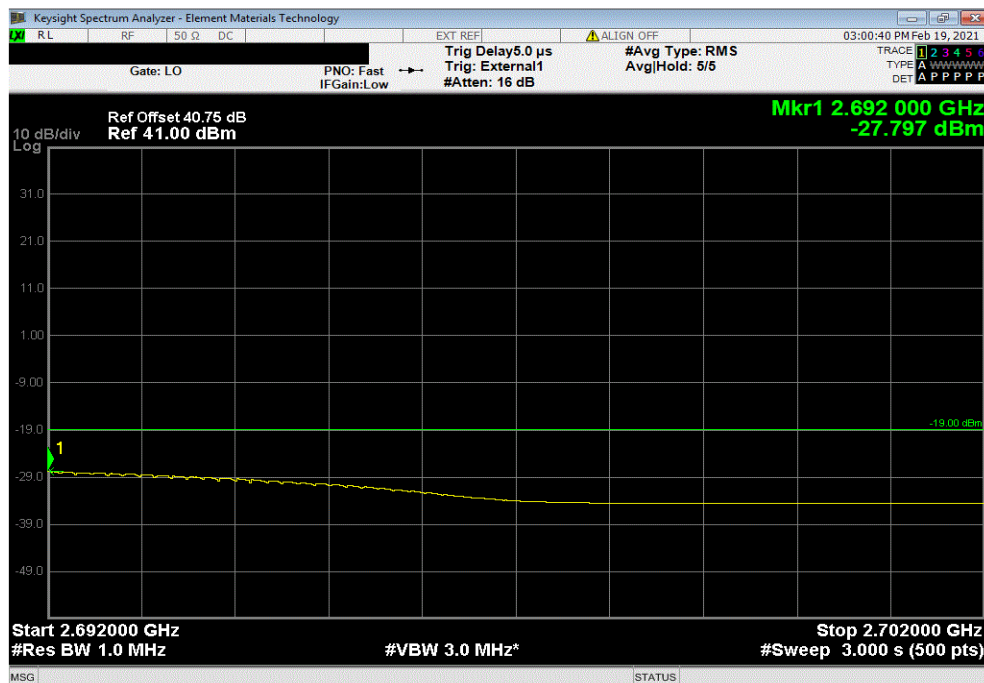


TbTx 2019.08.30.0 XbM 2020.12.30.0

4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), 64QAM, High Channel 2685 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.691 GHz - 2.692 GHz	Integration	-26.48	-19	Pass	



4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), 64QAM, High Channel 2685 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.692 GHz - 2.702 GHz	2692	-27.80	-19	Pass	

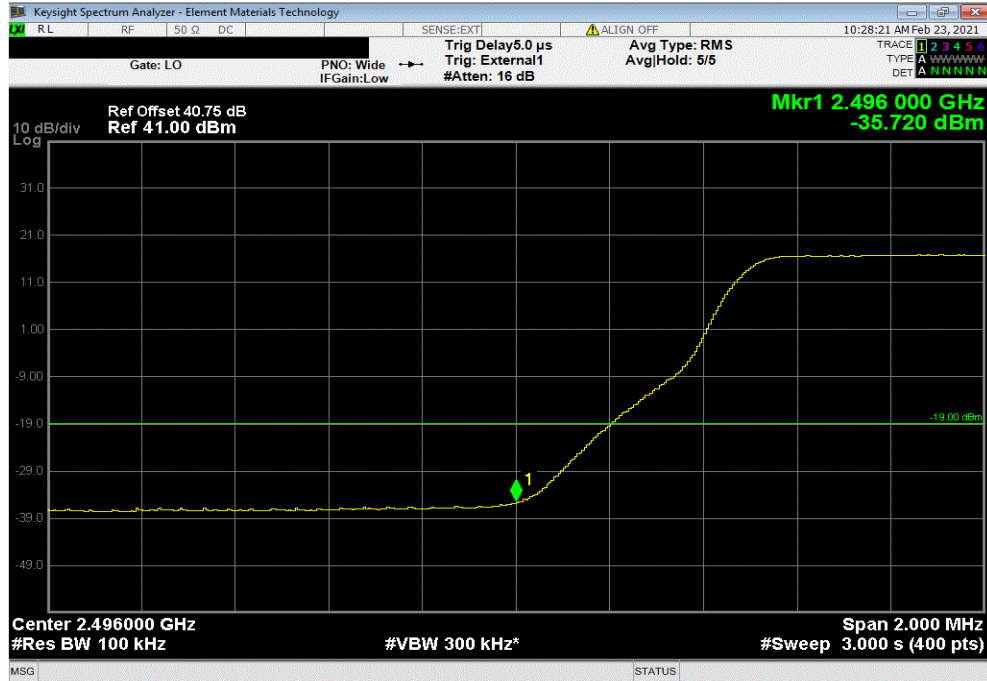


BAND EDGE COMPLIANCE LTE

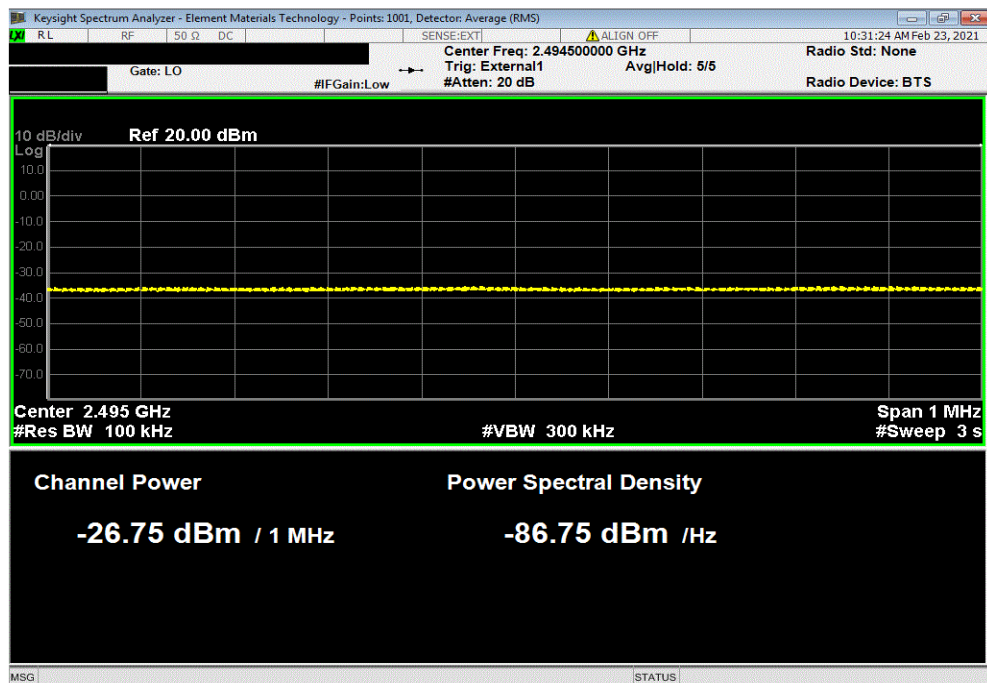


TbTx 2019.08.30.0 XbTx 2020.12.30.0

4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), 256QAM, Low Channel 2501 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.495 GHz - 2.496 GHz	2496	-35.72	-19	Pass	



4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), 256QAM, Low Channel 2501 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.494 GHz - 2.495 GHz	Integration	-26.75	-19	Pass	

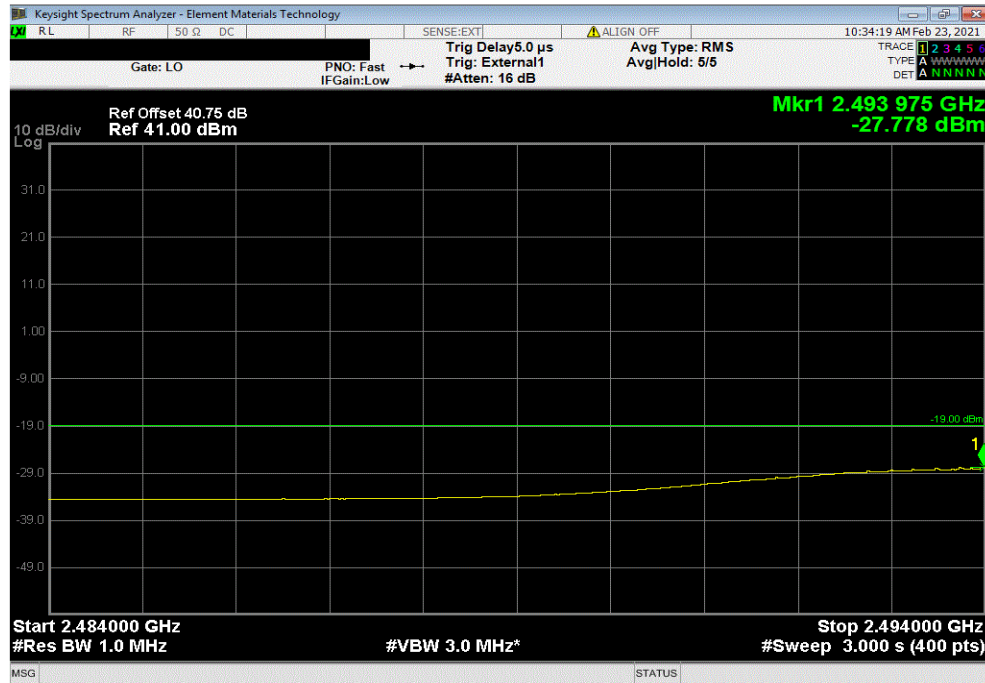


BAND EDGE COMPLIANCE LTE

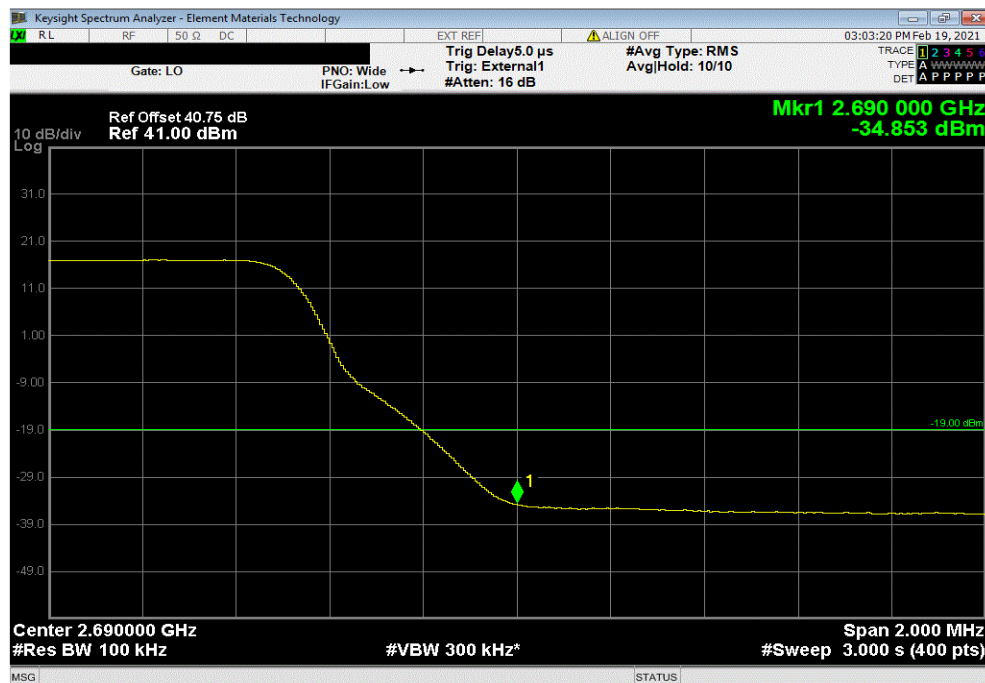


TbTx 2019.08.30.0 XbTx 2020.12.30.0

4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), 256QAM, Low Channel 2501 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.484 GHz - 2.494 GHz	2493.97	-27.78	-19	Pass	



4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), 256QAM, High Channel 2685 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.690 GHz - 2.691 GHz	2690	-34.85	-19	Pass	

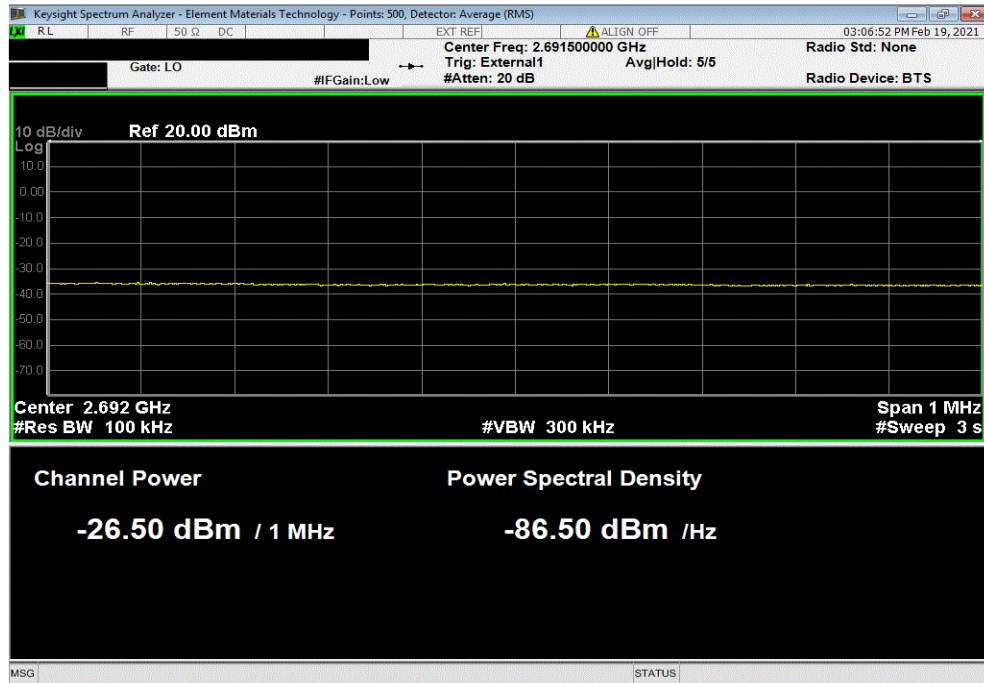


BAND EDGE COMPLIANCE LTE

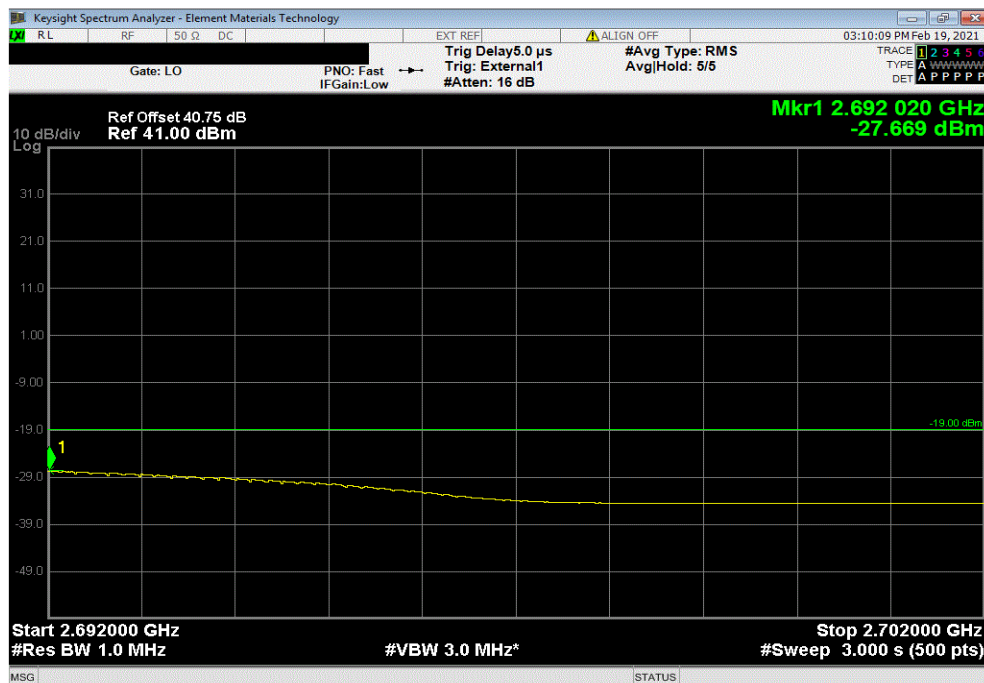


TM1Tx 2019.08.30.0 XM1 2020.12.30.0

4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), 256QAM, High Channel 2685 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.691 GHz - 2.692 GHz	Integration	-26.50	-19	Pass	



4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE10 (10MHz), 256QAM, High Channel 2685 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.692 GHz - 2.702 GHz	2692.02	-27.67	-19	Pass	

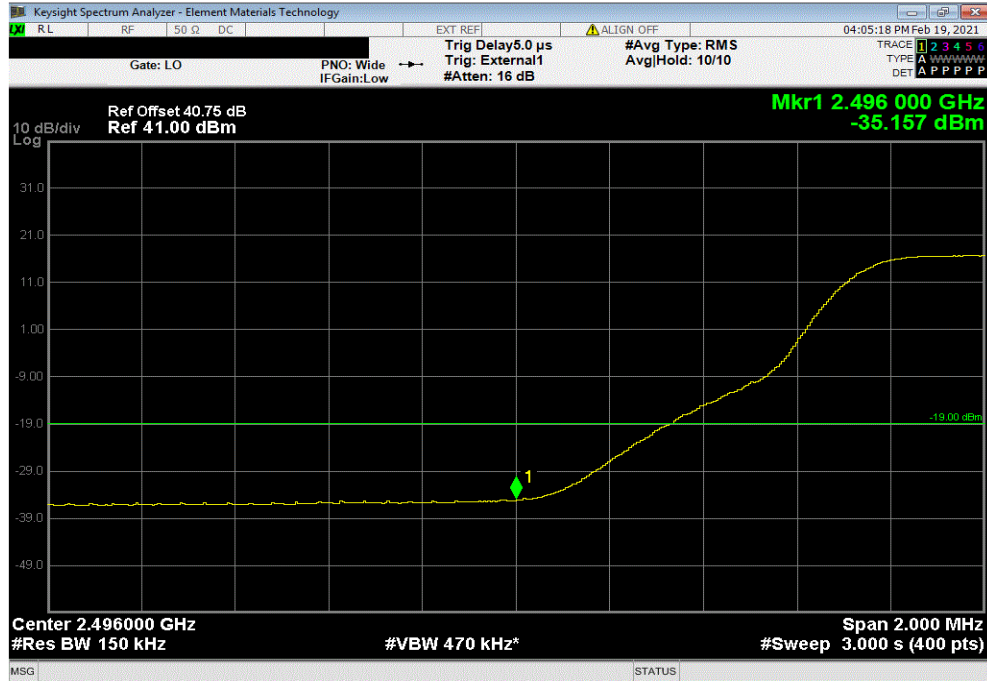


BAND EDGE COMPLIANCE LTE

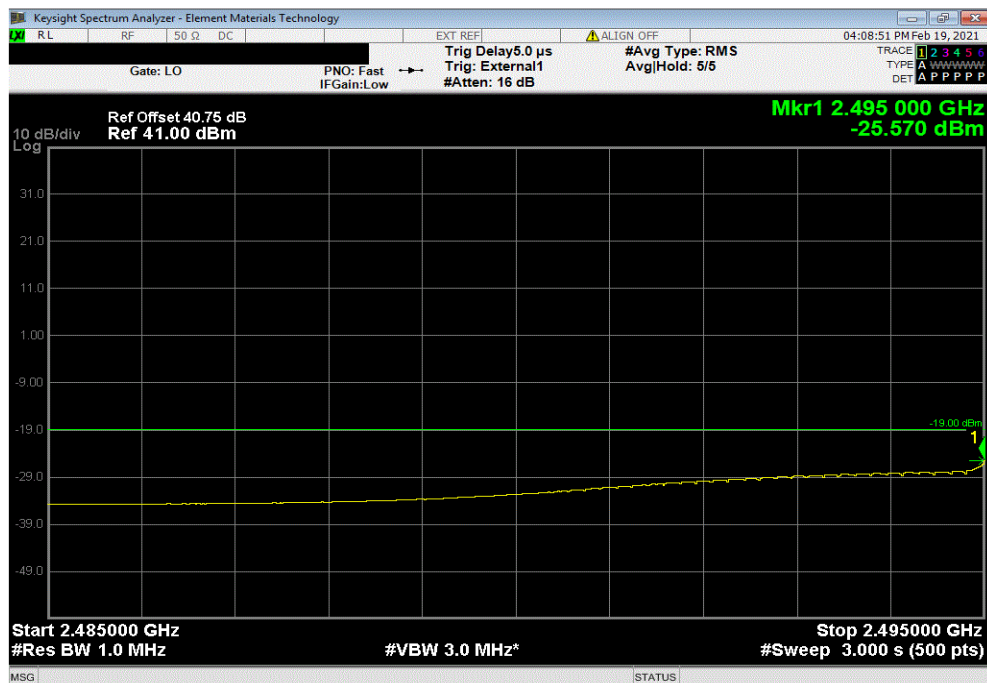


TbTtx 2019.08.30.0 XMt 2020.12.30.0

4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE15 (15MHz), 256QAM, Low Channel 2503.5 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.495 GHz - 2.496 GHz	2496	-35.16	-19	Pass	



4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE15 (15MHz), 256QAM, Low Channel 2503.5 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.485GHz - 2.495 GHz	2495	-25.57	-19	Pass	

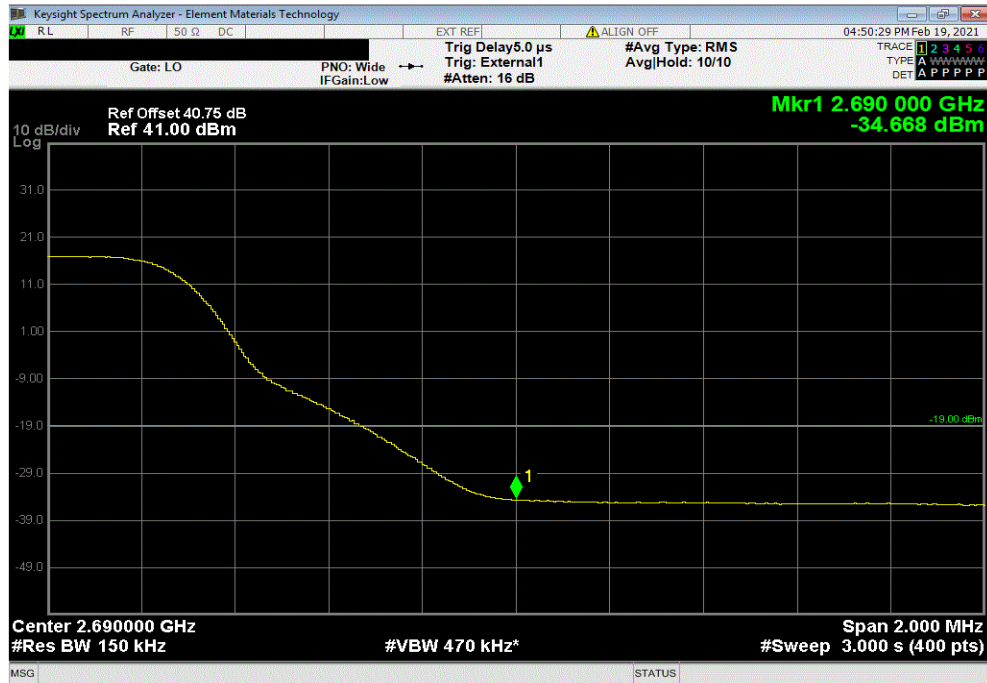


BAND EDGE COMPLIANCE LTE

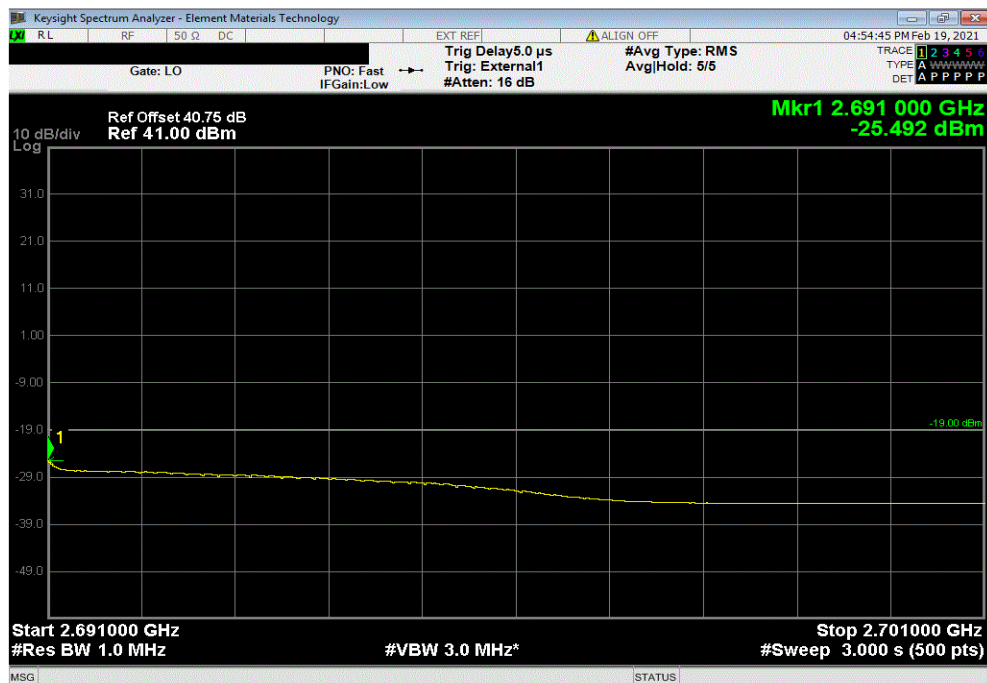


TbTx 2019.08.30.0 XbTx 2020.12.30.0

4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE15 (15MHz), 256QAM, High Channel 2682.5 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.690 GHz - 2.691 GHz	2690	-34.67	-19	Pass	



4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE15 (15MHz), 256QAM, High Channel 2682.5 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.691 GHz - 2.701 GHz	2691	-25.49	-19	Pass	

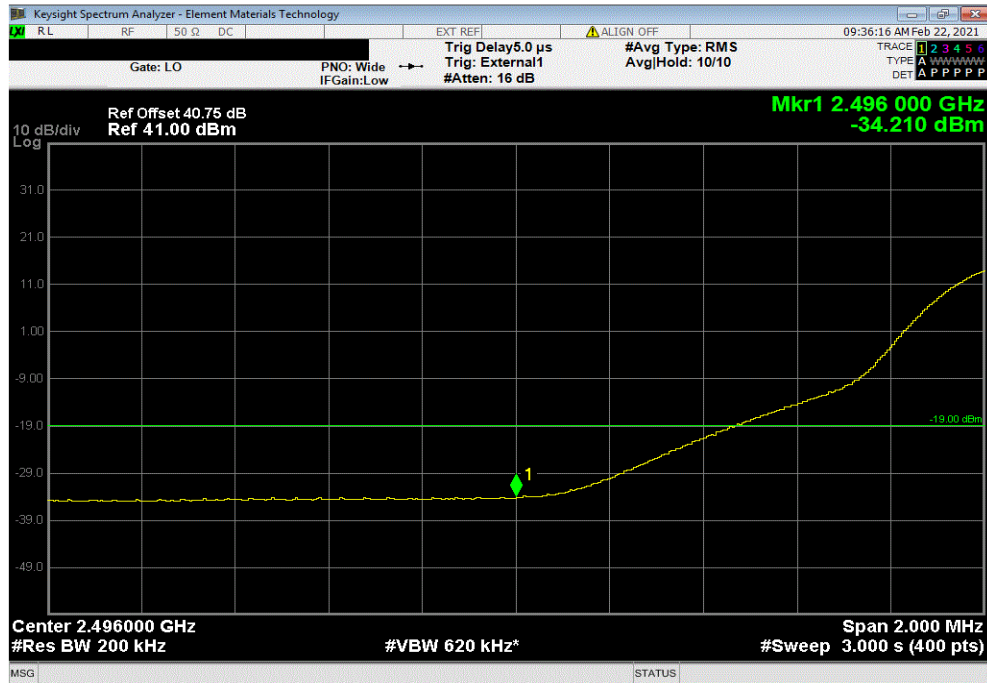


BAND EDGE COMPLIANCE LTE

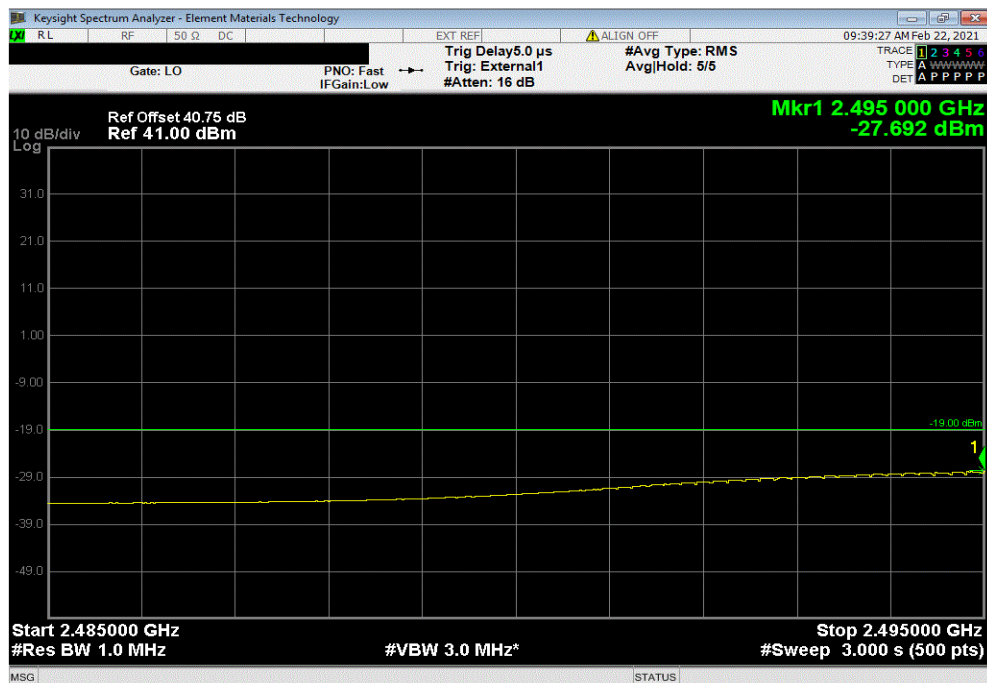


TbTtX 2019.08.30.0 XMt 2020.12.30.0

4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE20 (20MHz), 256QAM, Low Channel 2506 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.495 GHz - 2.496 GHz	2496	-34.21	-19	Pass	



4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE20 (20MHz), 256QAM, Low Channel 2506 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.485 GHz - 2.495 GHz	2495	-27.69	-19	Pass	

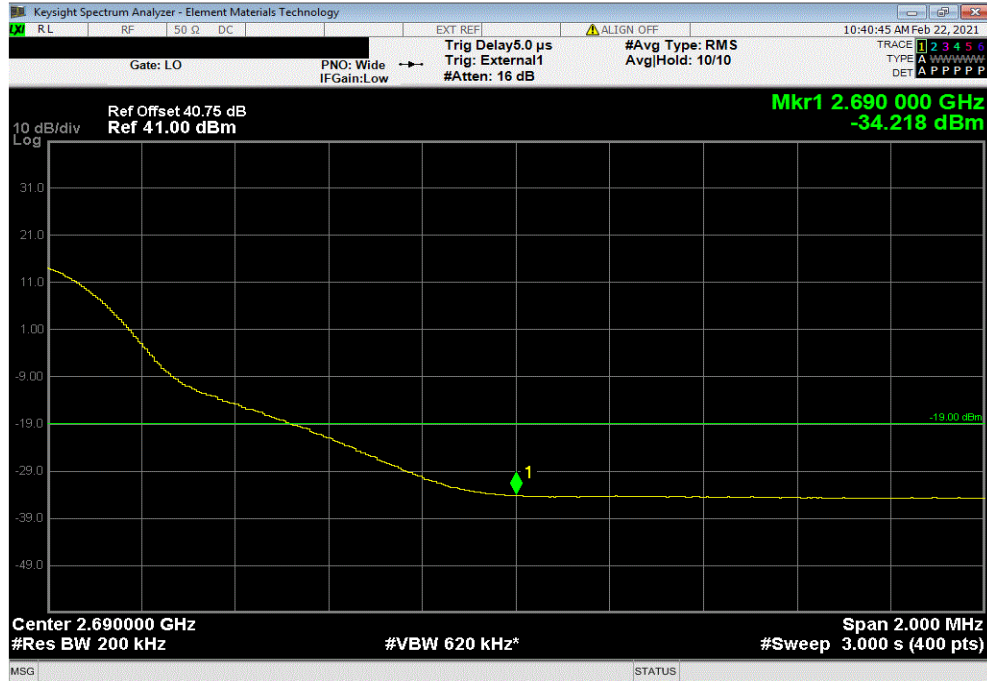


BAND EDGE COMPLIANCE LTE



TbTx 2019.08.30.0 XbTx 2020.12.30.0

4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE20 (20MHz), 256QAM, High Channel 2680 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.690 GHz - 2.691 GHz	2690	-34.22	-19	Pass	



4G LTE, Band 41, 2496 MHz - 2690 MHz, Port 1, LTE20 (20MHz), 256QAM, High Channel 2680 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit < (dBm)	Result	
2.691 GHz - 2.701 GHz	2691.02	-27.83	-19	Pass	

