

POWER SPECTRAL DENSITY - 3dBi



XMM 2022.02.07.0

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	Keysight	N9010A	AFN	2022-01-19	2023-01-19
Block - DC	Fairview Microwave	SD3235-2148	ANF	2022-05-27	2023-05-27
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Cable	UtiFlex Micro-Coax	1150A-1-0720-200	TXK	2021-09-13	2022-09-13

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The fundamental emission output power (maximum peak conducted power spectral density) was measured using the channels and modes as called out on the following data sheets. The transmit power was set to its default maximum for the antenna gain shown in the data set.

The method in section 5.2.3.5 of ANSI C63.26 was used to make the peak detector measurements.

The Remote Radio Head (RRH) may operate as a 4 port MIMO transmitter with transmitter outputs connected to two cross-polarized antennas [two transmitter outputs are connected to (+) radiators and two transmitter outputs are connected to (-) radiators]. The measurement is adjusted to +3dB [10 log (2)] 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).

RF conducted emissions testing was performed only on one port. The Remote Radio Head (RRH) antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown during 4 port output power testing) and antenna port 3 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.

The total peak transmit power of all antenna ports was determined per ANSI C63.26-2015 paragraph 6.4.3.1.

The EIRP PSD limit is defined by FCC Part 25.253(d)(1) as $31.9 - 10\log(\text{number of carriers (4)})$ dBW/200kHz.

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TbTb 2022.06.03.0 XME 2022.02.07.0

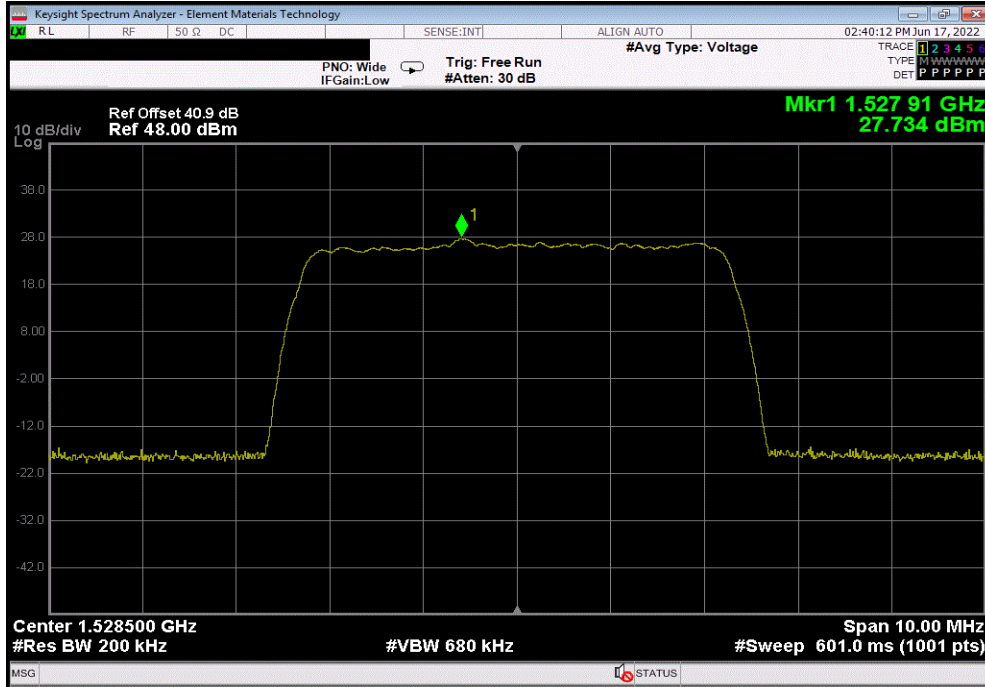
EUT:	TR44KA Base Station			Work Order:			MASY0006		
Serial Number:	SV2146TR44KA000001			Date:			10-Aug-22		
Customer:	Mavenir Systems, Inc			Temperature:			21 °C		
Attendees:	None			Humidity:			56.8% RH		
Project:	None			Barometric Pres.:			1019 mbar		
Tested by:	Brandon Hobbs		Power:	48 VDC		Job Site:			TX09
TEST SPECIFICATIONS				Test Method					
FCC 25:2022				ANSI C63.26:2015					
COMMENTS									
All conducted path losses were accounted for: cables, attenuators, adapters, DC block and notch filter. The PA gain was adjusted for a 3dBi antenna (Final software value of 42). The output power was measured for a single carrier channel bandwidth on port 3. The total output power for multiport (2x2 MIMO and 4x4 MIMO) operation was determined based upon ANSI C63.26 clauses 6.4.3.1 and 6.4.3.2.4 (10 Log Nout). After the cross polarization antenna considerations, the total output power for two port operation is single port power + 0dB [i.e.: 10 Log(1)]. The total output power for four port operation is single port power + 3dB [i.e.: 10 Log(2)]. All available Resource Block / Offset configurations were used for each bandwidth.									
DEVIATIONS FROM TEST STANDARD									
None									
Configuration #	1		Signature 						
			Initial Value dBm/200kHz	Antenna Gain (dBi)	2 Port (2x2 MIMO) dBm/200kHz	4 Port (4x4 MIMO) dBm/200kHz	Limit (dBm)	Results	
5G NR, Band n24, SCS 15kHz									
5 MHz Bandwidth									
QPSK Modulation									
Low Channel 1528.5 MHz									
25 RB/0 Offset			27.734	3	30.7	33.7	55.9	Pass	
High Channel 1533.5 MHz									
25 RB/0 Offset			27.532	3	30.5	33.5	55.9	Pass	
16-QAM Modulation									
Low Channel 1528.5 MHz									
25 RB/0 Offset			27.737	3	30.7	33.7	55.9	Pass	
High Channel 1533.5 MHz									
25 RB/0 Offset			27.517	3	30.5	33.5	55.9	Pass	
64-QAM Modulation									
Low Channel 1528.5 MHz									
25 RB/0 Offset			28.067	3	31.1	34.1	55.9	Pass	
High Channel 1533.5 MHz									
25 RB/0 Offset			27.812	3	30.8	33.8	55.9	Pass	
256-QAM Modulation									
Low Channel 1528.5 MHz									
25 RB/0 Offset			28.371	3	31.4	34.4	55.9	Pass	
High Channel 1533.5 MHz									
25 RB/0 Offset			28.651	3	31.7	34.7	55.9	Pass	
10 MHz Bandwidth									
QPSK Modulation									
Mid Channel 1531 MHz									
25 RB/0 Offset			21.583	3	24.6	27.6	55.9	Pass	
25 RB/13 Offset			23.973	3	27.0	30.0	55.9	Pass	
25 RB/27 Offset			22.006	3	25.0	28.0	55.9	Pass	
40 RB/0 Offset			21.961	3	25.0	28.0	55.9	Pass	
40 RB/6 Offset			21.632	3	24.6	27.6	55.9	Pass	
40 RB/12 Offset			21.844	3	24.8	27.8	55.9	Pass	
52 RB/0 Offset			22.433	3	25.4	28.4	55.9	Pass	
16-QAM Modulation									
Mid Channel 1531 MHz									
25 RB/0 Offset			24.206	3	27.2	30.2	55.9	Pass	
25 RB/13 Offset			24.319	3	27.3	30.3	55.9	Pass	
25 RB/27 Offset			24.171	3	27.2	30.2	55.9	Pass	
40 RB/0 Offset			22.222	3	25.2	28.2	55.9	Pass	
40 RB/6 Offset			21.817	3	24.8	27.8	55.9	Pass	
40 RB/12 Offset			22.703	3	25.7	28.7	55.9	Pass	
52 RB/0 Offset			24.699	3	27.7	30.7	55.9	Pass	
64-QAM Modulation									
Mid Channel 1531 MHz									
25 RB/0 Offset			22.559	3	25.6	28.6	55.9	Pass	
25 RB/13 Offset			24.625	3	27.6	30.6	55.9	Pass	
25 RB/27 Offset			22.498	3	25.5	28.5	55.9	Pass	
40 RB/0 Offset			22.742	3	25.7	28.7	55.9	Pass	
40 RB/6 Offset			22.690	3	25.7	28.7	55.9	Pass	
40 RB/12 Offset			23.054	3	26.1	29.1	55.9	Pass	
52 RB/0 Offset			24.683	3	27.7	30.7	55.9	Pass	
256-QAM Modulation									
Mid Channel 1531 MHz									
25 RB/0 Offset			24.877	3	27.9	30.9	55.9	Pass	
25 RB/13 Offset			23.311	3	26.3	29.3	55.9	Pass	
25 RB/27 Offset			23.291	3	26.3	29.3	55.9	Pass	
40 RB/0 Offset			22.185	3	25.2	28.2	55.9	Pass	
40 RB/6 Offset			22.067	3	25.1	28.1	55.9	Pass	
40 RB/12 Offset			22.288	3	25.3	28.3	55.9	Pass	
52 RB/0 Offset			25.039	3	28.0	31.0	55.9	Pass	

POWER SPECTRAL DENSITY - 3dBi

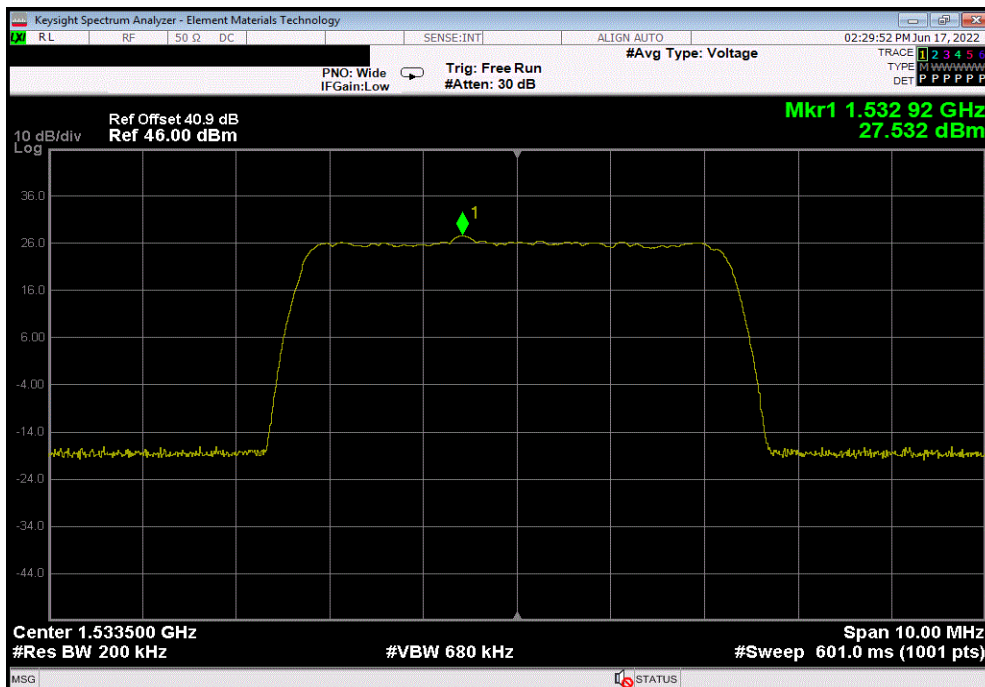


TMTx 2022.06.03.0 XMII 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, QPSK Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
27.734	3	30.734	33.734	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
27.532	3	30.532	33.532	55.9	Pass	



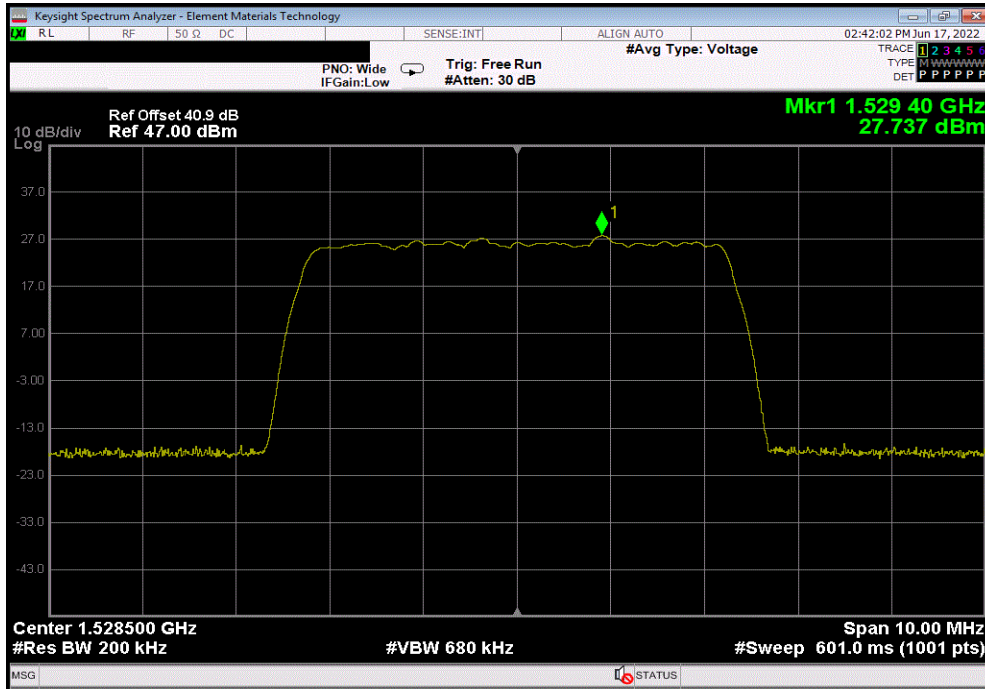
POWER SPECTRAL DENSITY - 3dBi



TMTx 2022.06.03.0 XMII 2022.02.07.0

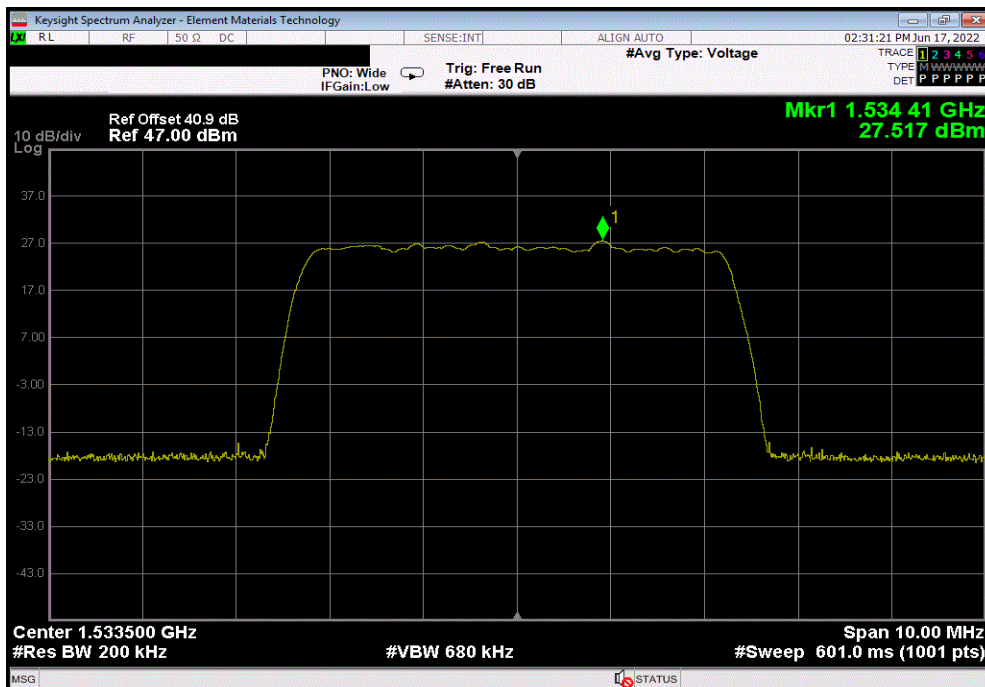
5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 16-QAM Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset

Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)	
27.737	3	30.737	33.737	55.9	Pass



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 16-QAM Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset

Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)	
27.517	3	30.517	33.517	55.9	Pass

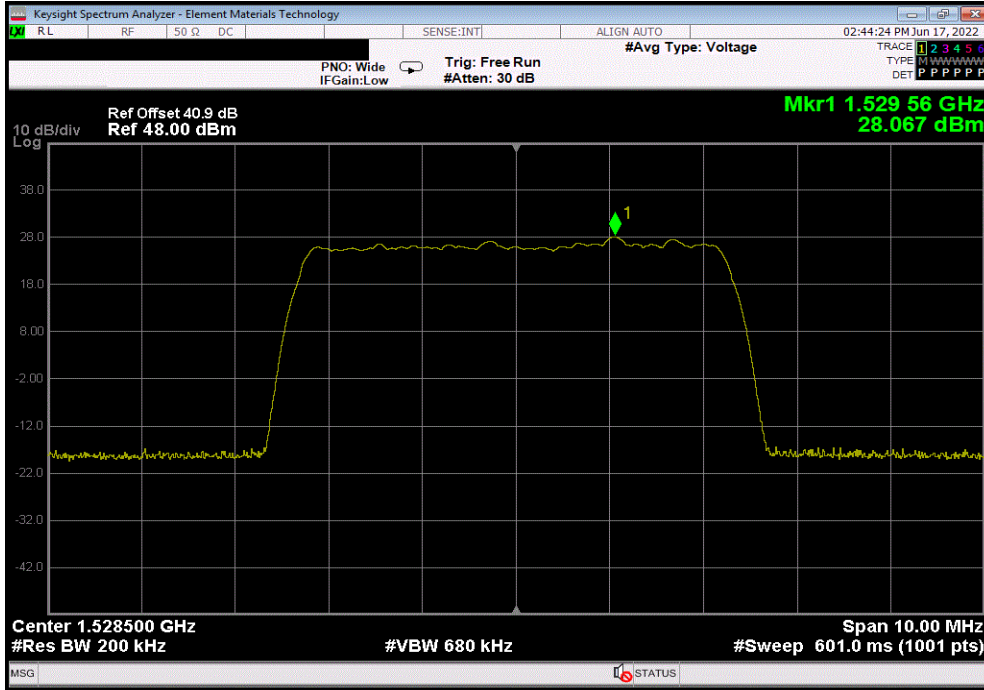


POWER SPECTRAL DENSITY - 3dBi

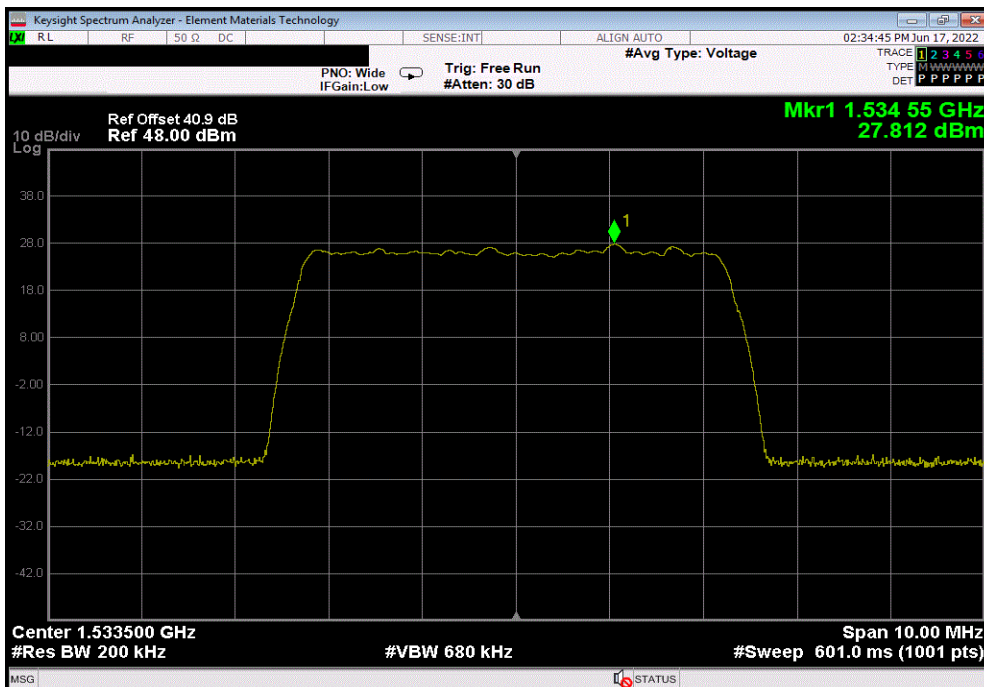


TMTx 2022.06.03.0 XMt 2022.02.07.0

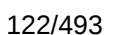
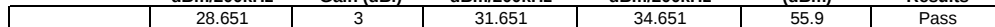
5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 64-QAM Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
28.067	3	31.067	34.067	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 64-QAM Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
27.812	3	30.812	33.812	55.9	Pass	



	28.371	3	31.371	34.371	55.9	Pass
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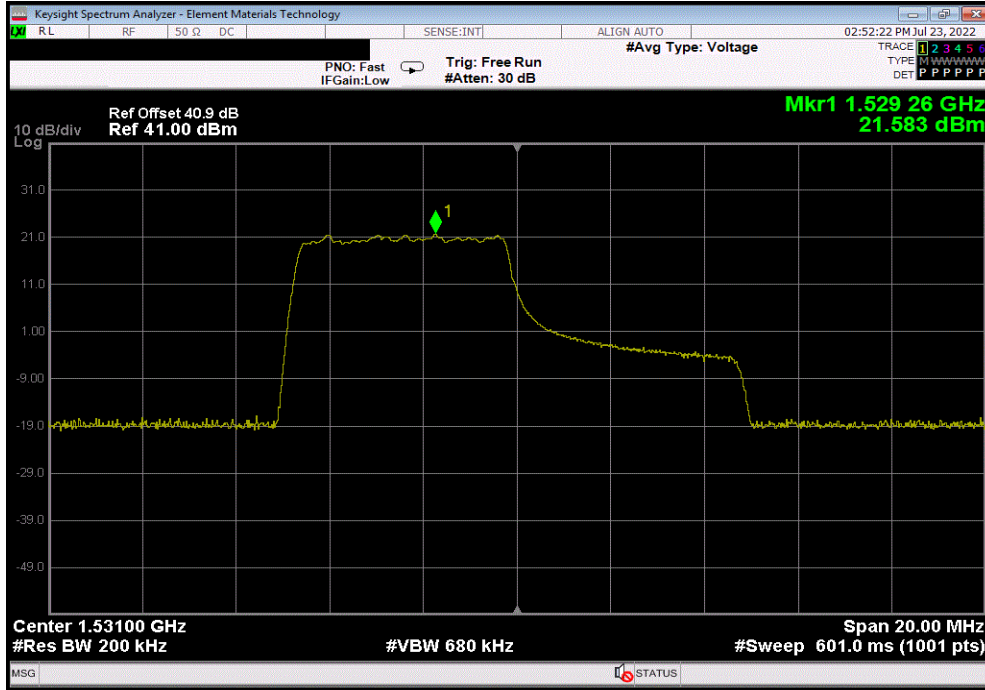


POWER SPECTRAL DENSITY - 3dBi

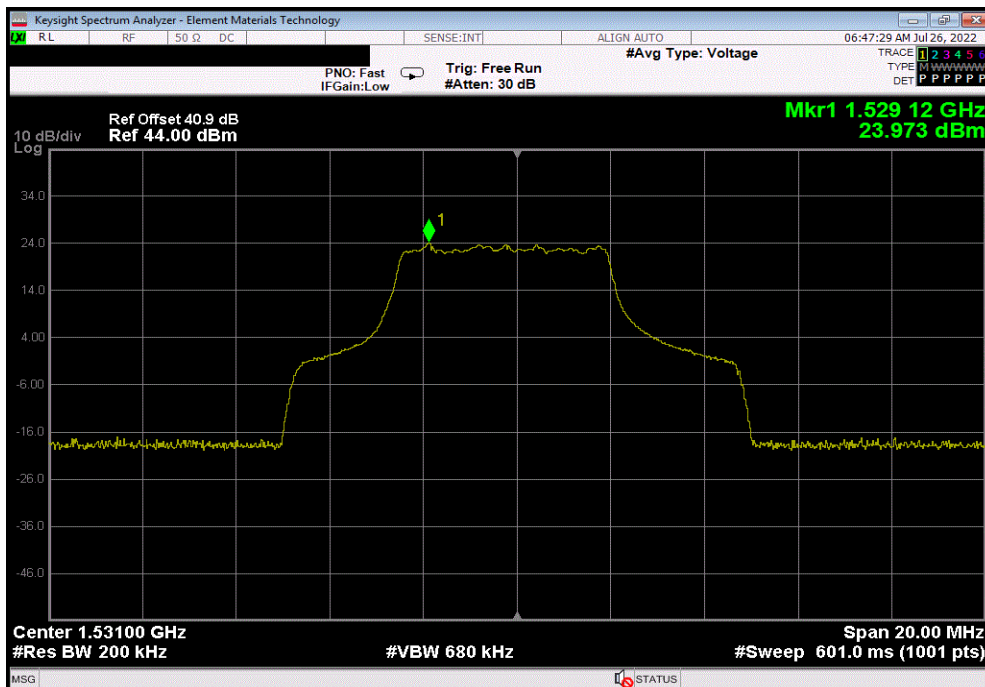


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5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 25 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
21.583	3	24.583	27.583	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 25 RB/13 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
23.973	3	26.973	29.973	55.9	Pass	

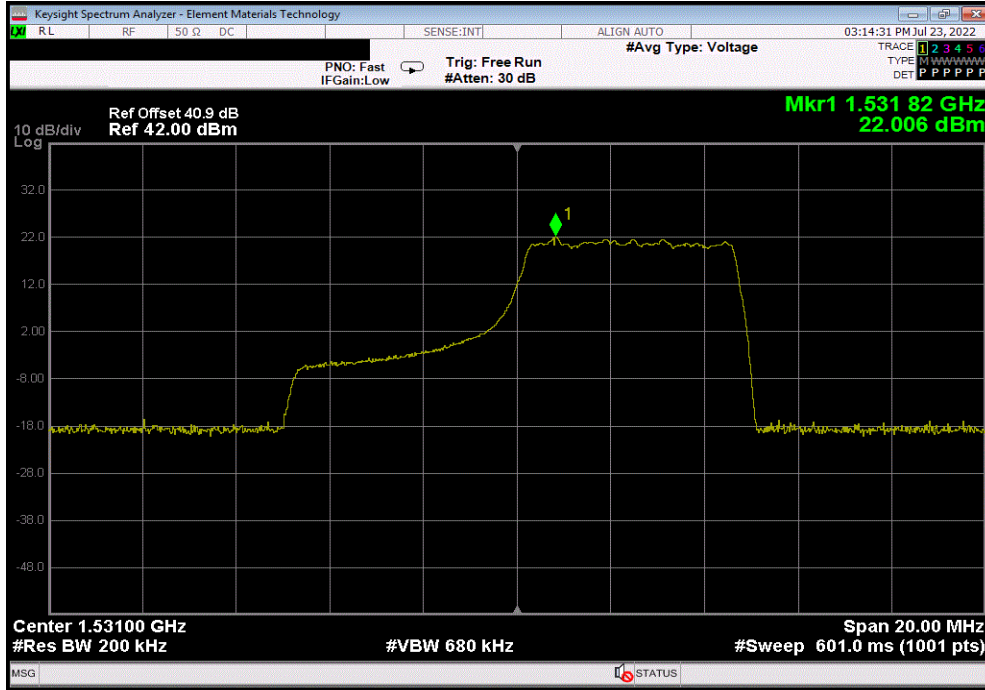


POWER SPECTRAL DENSITY - 3dBi

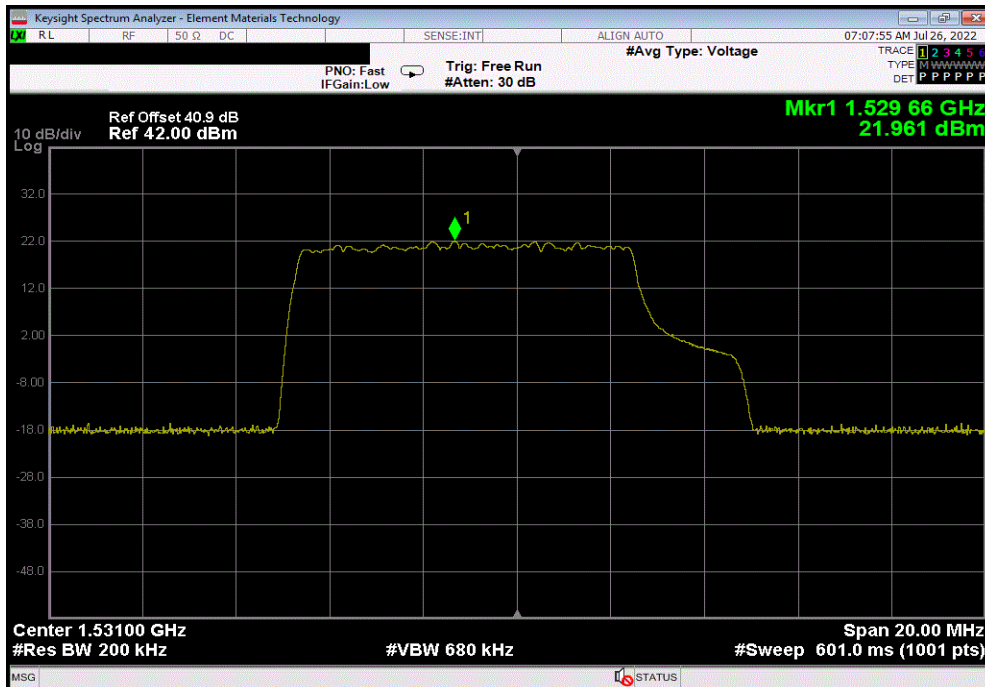


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5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 25 RB/27 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
22.006	3	25.006	28.006	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 40 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
21.961	3	24.961	27.961	55.9	Pass	

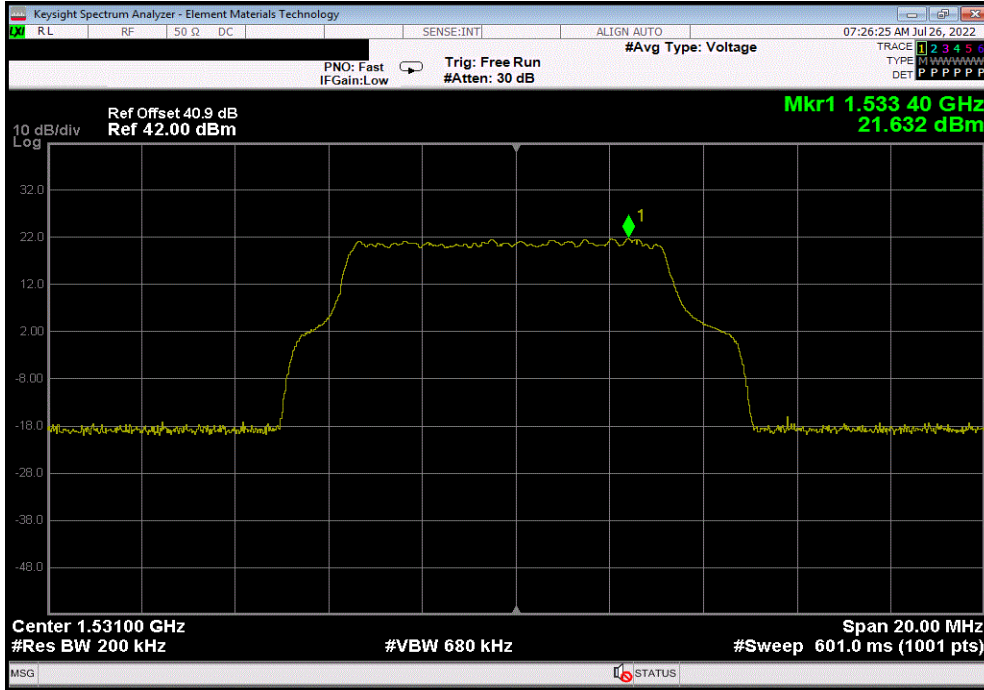


POWER SPECTRAL DENSITY - 3dBi

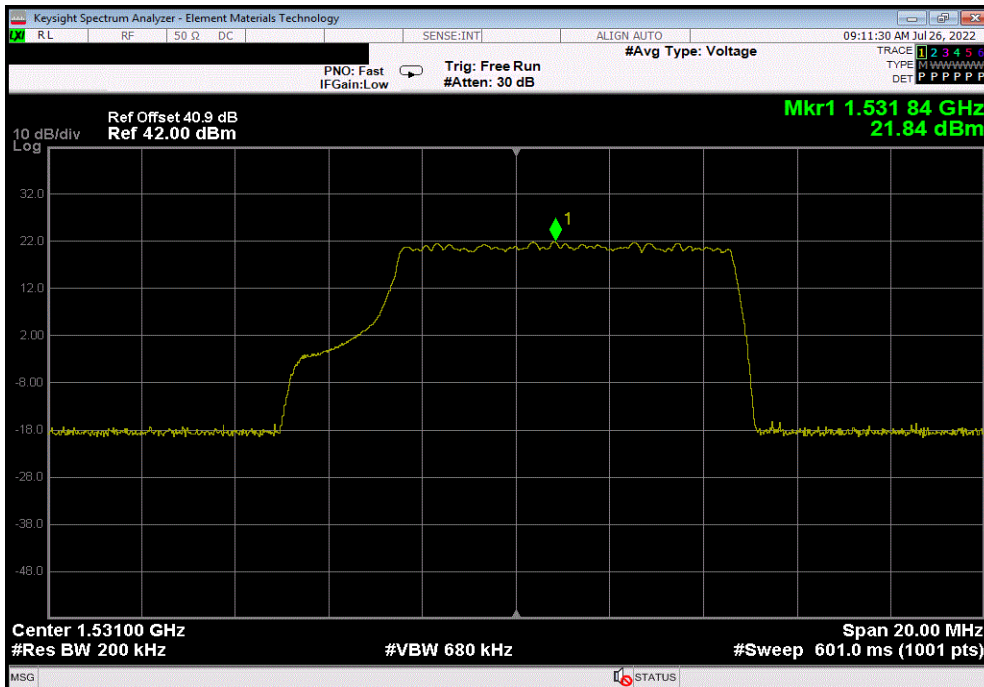


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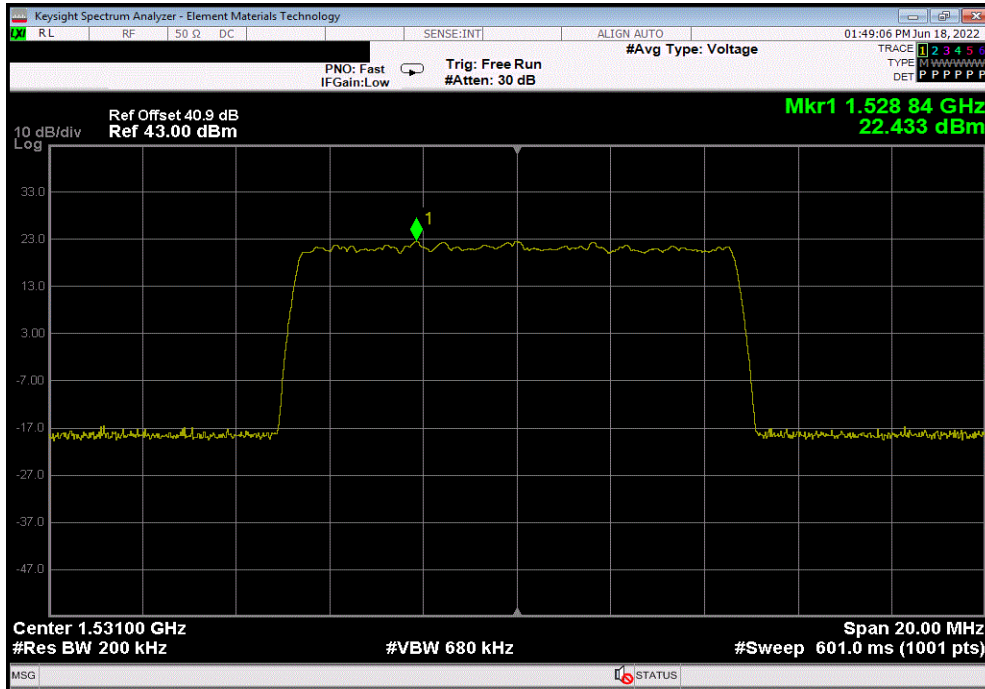
5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 40 RB/12 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
21.632	3	24.632	27.632	55.9	Pass	



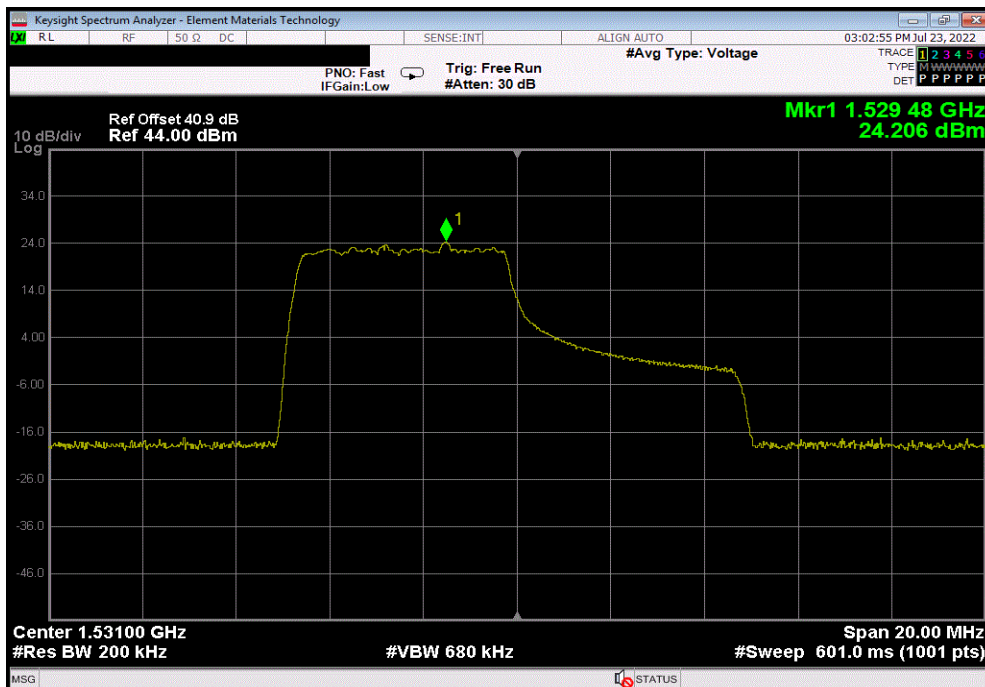
5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 40 RB/12 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
21.844	3	24.844	27.844	55.9	Pass	



	22.433	3	25.433	28.433	55.9	Pass
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Initial Value dBm/200kHz	Antenna Gain (dBi)	2 Port (2x2 MIMO) dBm/200kHz	4 Port (4x4 MIMO) dBm/200kHz	Limit (dBm)	Results
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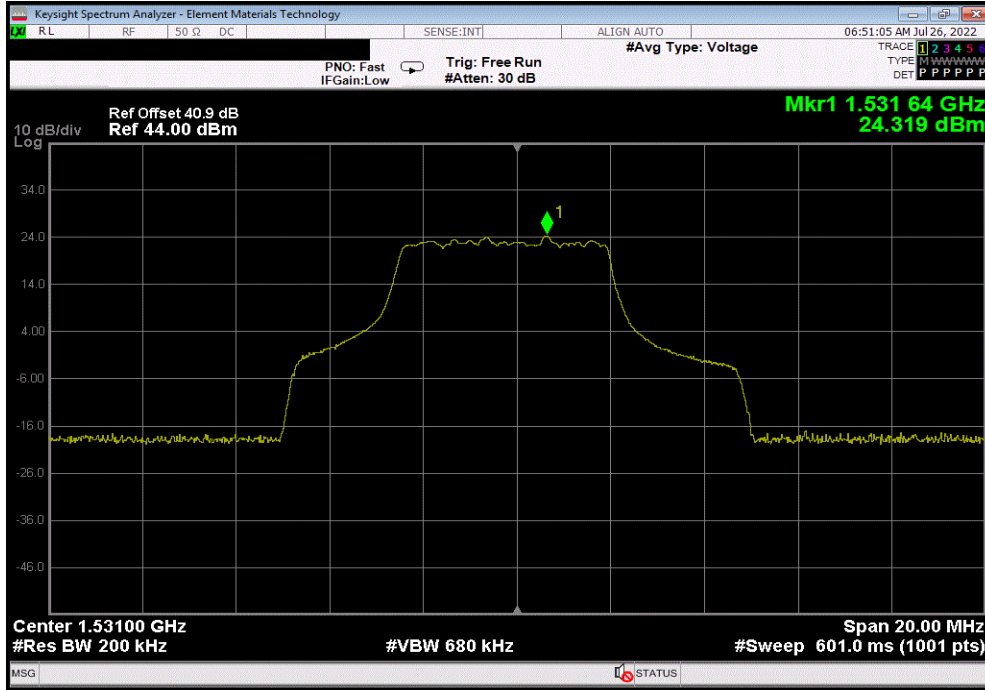


POWER SPECTRAL DENSITY - 3dBi

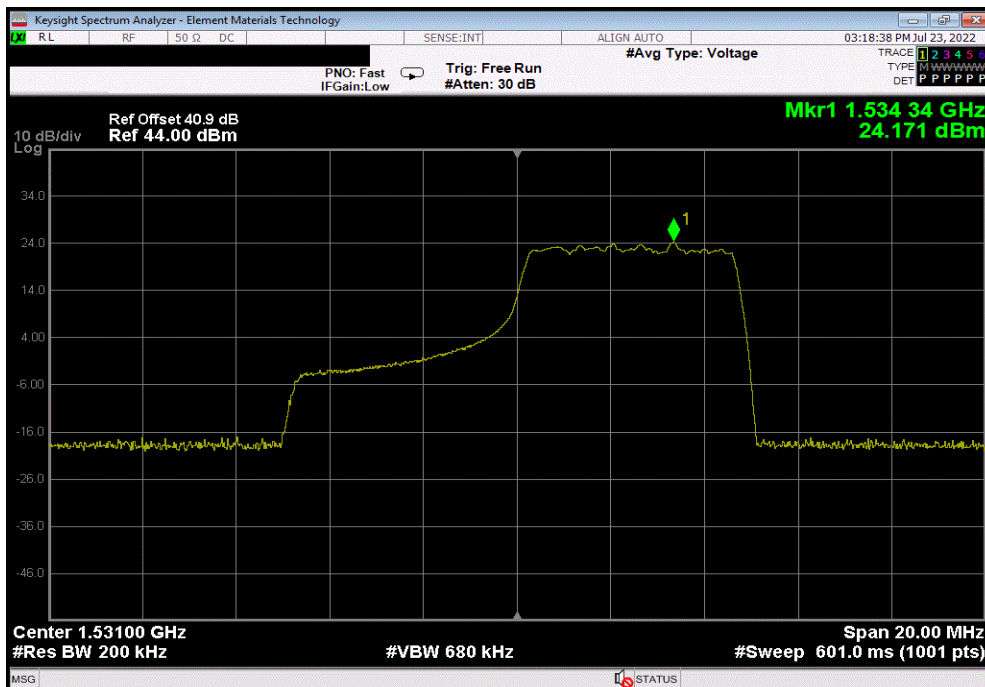


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5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 25 RB/13 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
24.319	3	27.319	30.319	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 25 RB/27 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
24.171	3	27.171	30.171	55.9	Pass	

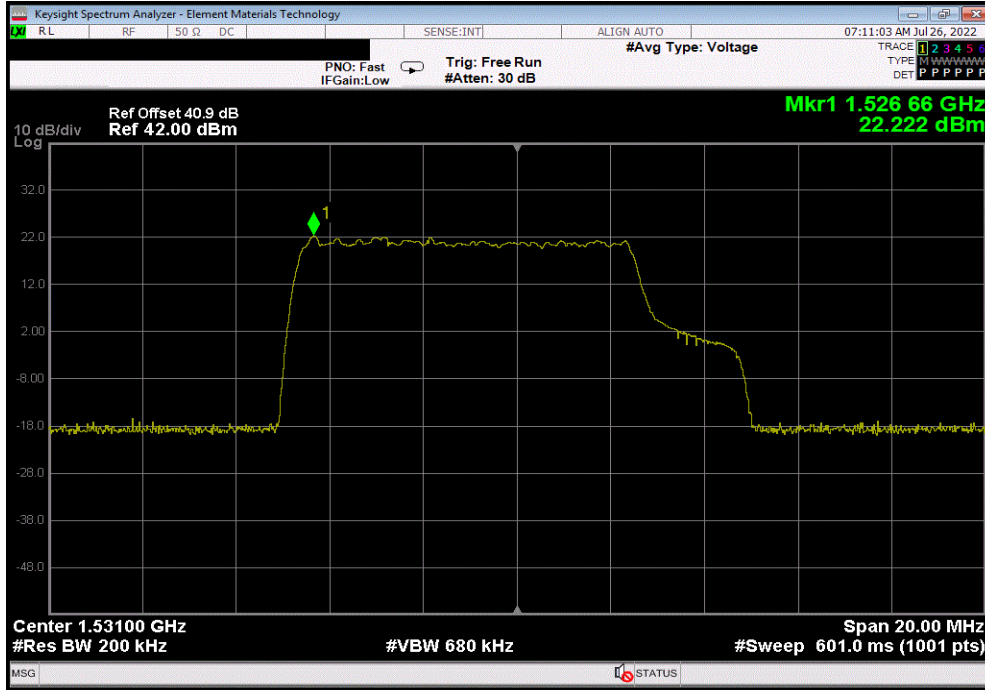


POWER SPECTRAL DENSITY - 3dBi

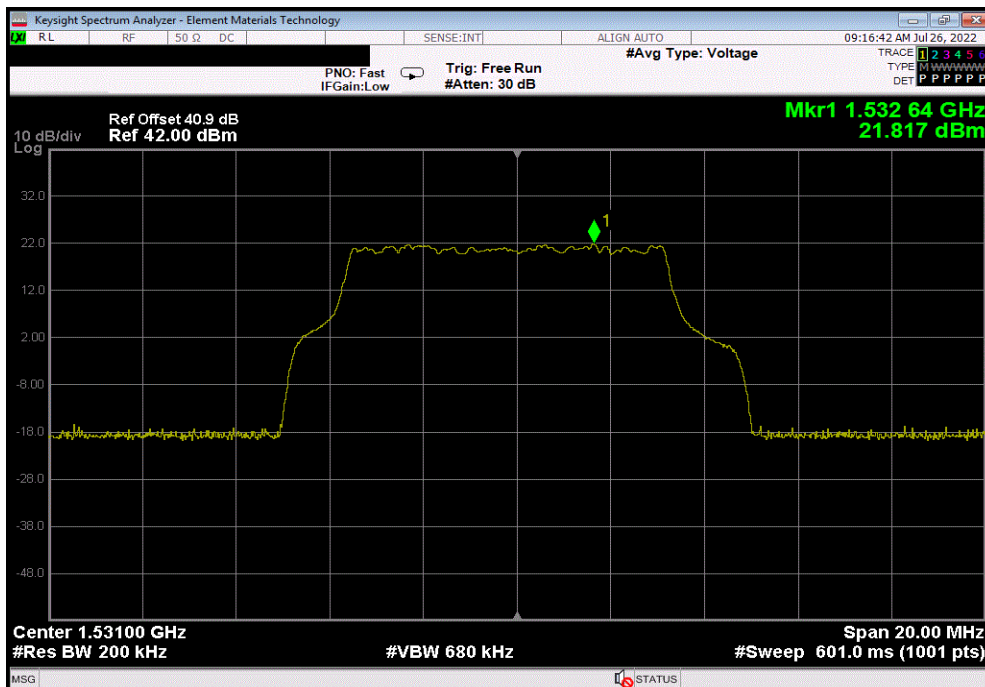


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5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 40 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
22.222	3	25.222	28.222	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 40 RB/6 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
21.817	3	24.817	27.817	55.9	Pass	

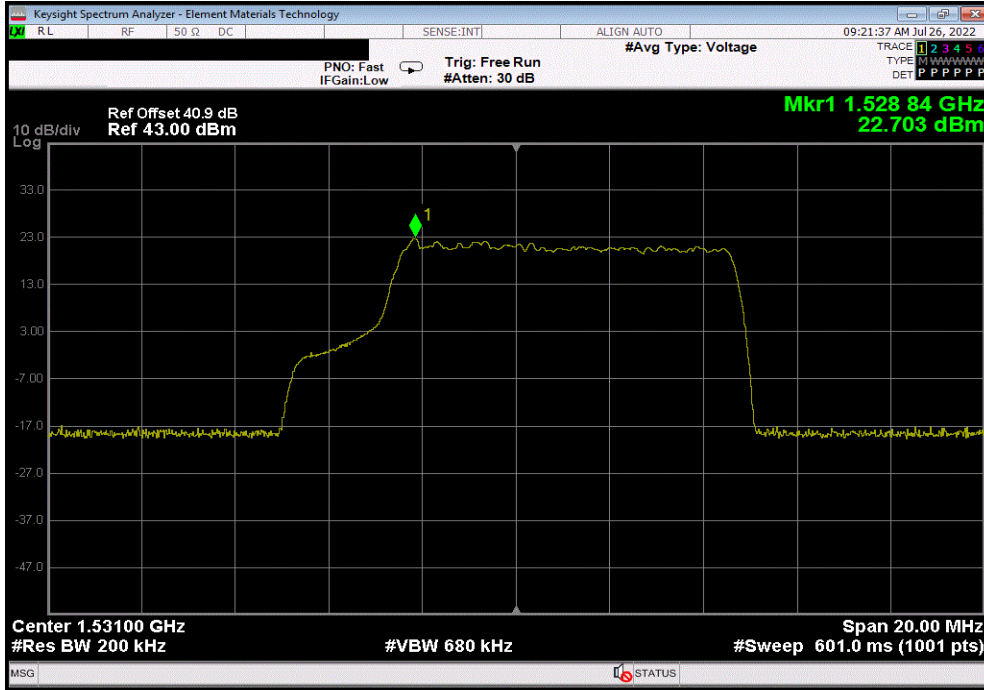


POWER SPECTRAL DENSITY - 3dBi

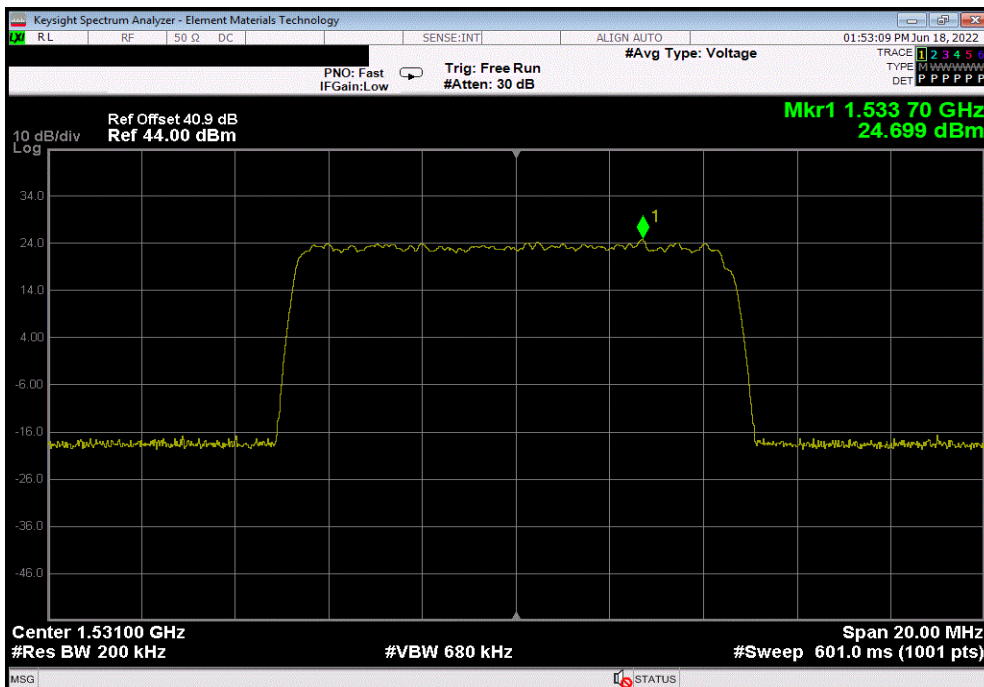


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5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 40 RB/12 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
22.703	3	25.703	28.703	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
24.699	3	27.699	30.699	55.9	Pass	

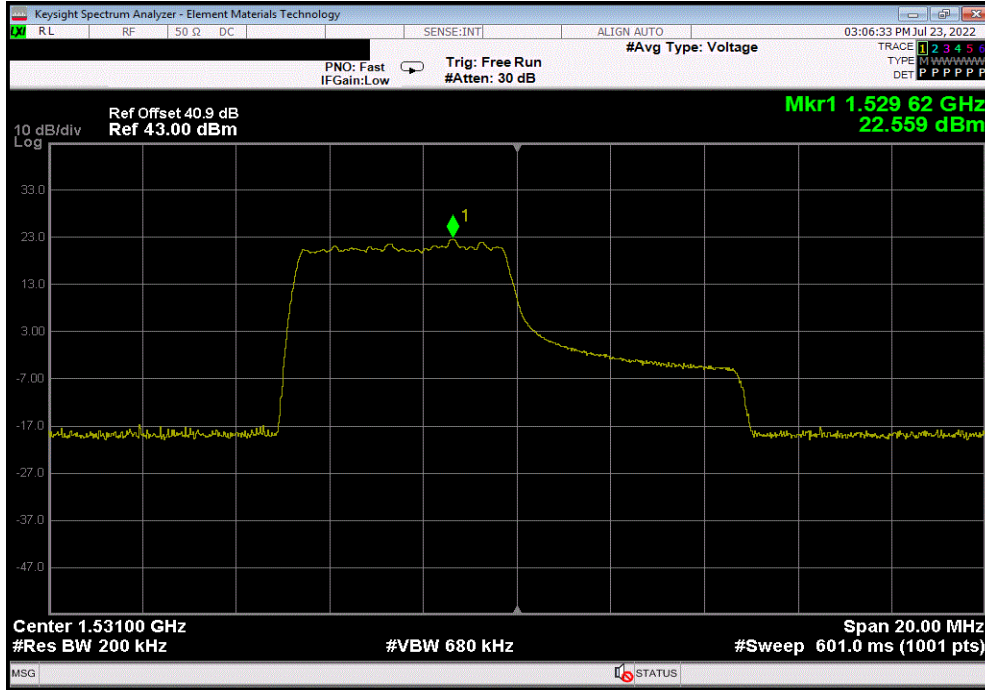


POWER SPECTRAL DENSITY - 3dBi

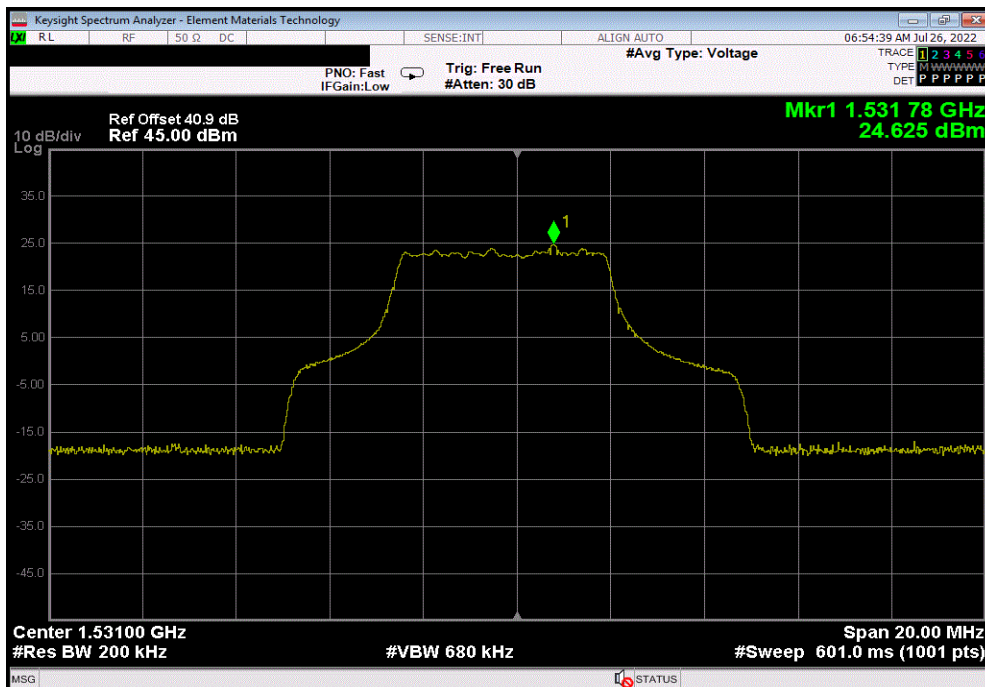


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5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 25 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
22.559	3	25.559	28.559	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 25 RB/13 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
24.625	3	27.625	30.625	55.9	Pass	

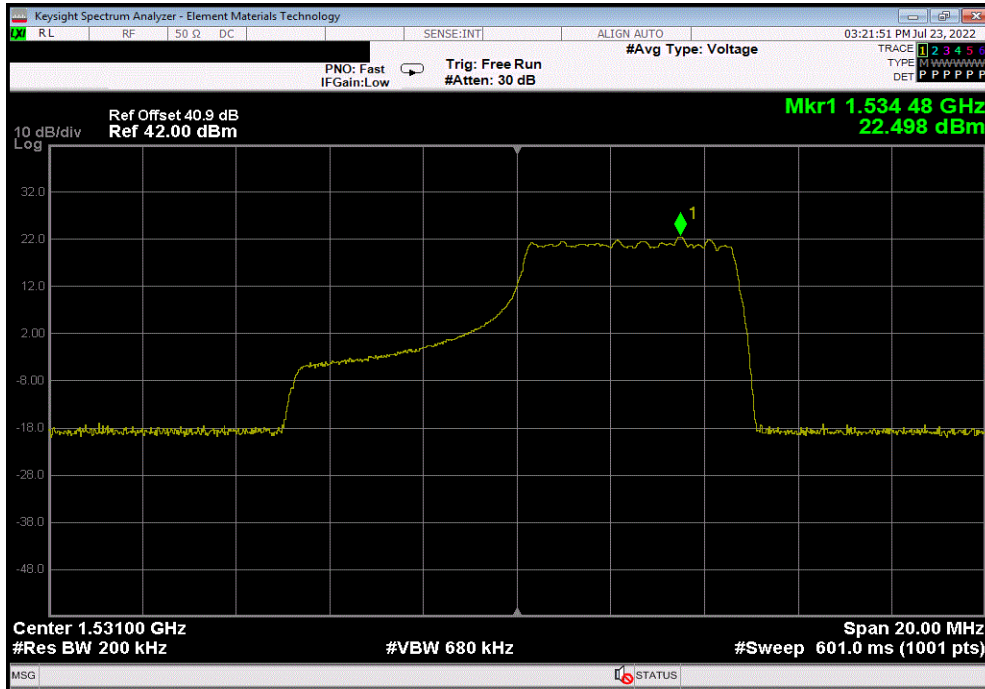


POWER SPECTRAL DENSITY - 3dBi

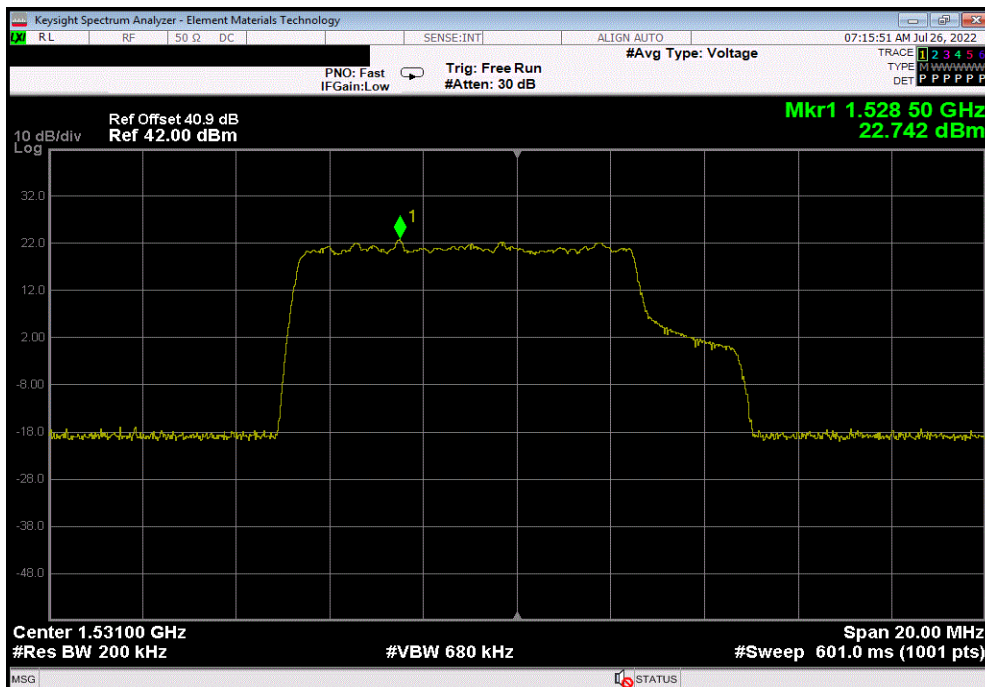


TMTx 2022.06.03.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 25 RB/27 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
22.498	3	25.498	28.498	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 40 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
22.742	3	25.742	28.742	55.9	Pass	

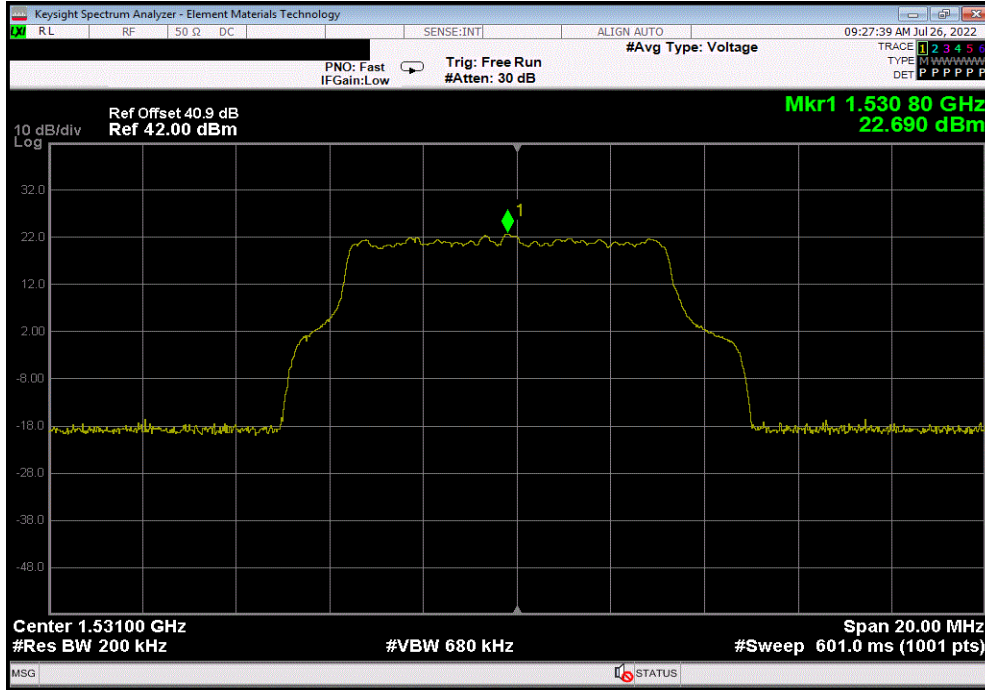


POWER SPECTRAL DENSITY - 3dBi

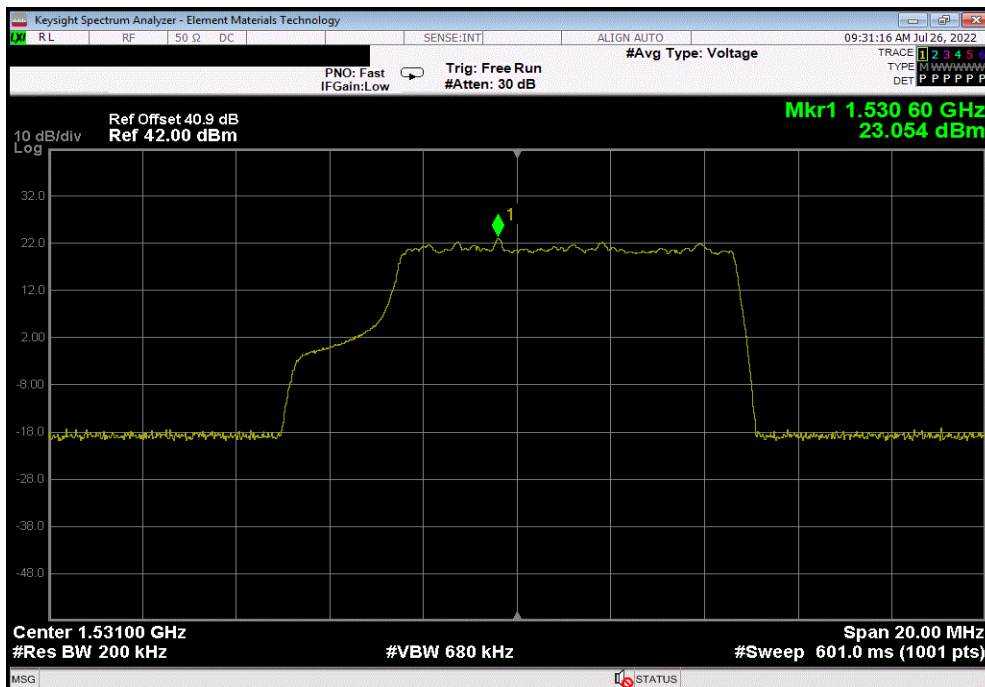


TMTx 2022.06.03.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 40 RB/6 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
22.69	3	25.69	28.69	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 40 RB/12 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
23.054	3	26.054	29.054	55.9	Pass	

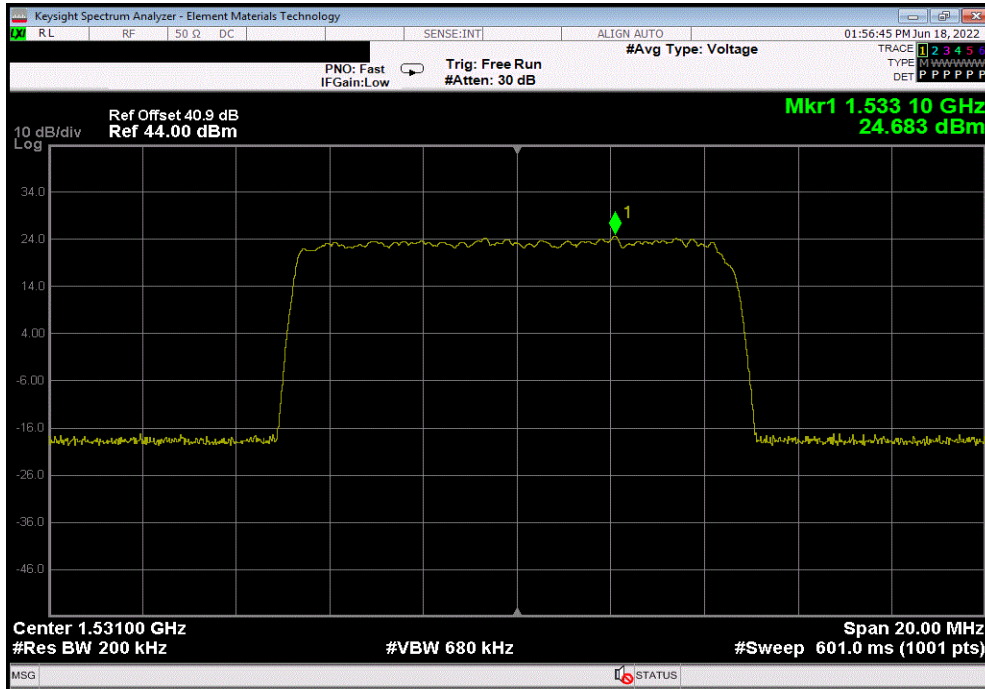


POWER SPECTRAL DENSITY - 3dBi

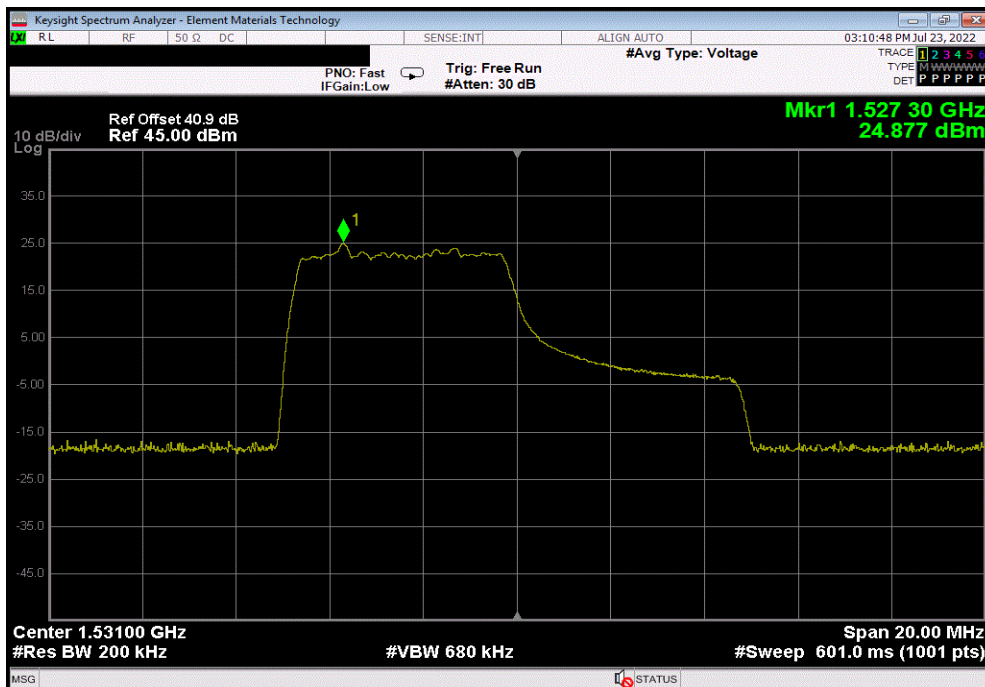


TMTx 2022.06.03.0 XMM 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
24.683	3	27.683	30.683	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 25 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
24.877	3	27.877	30.877	55.9	Pass	

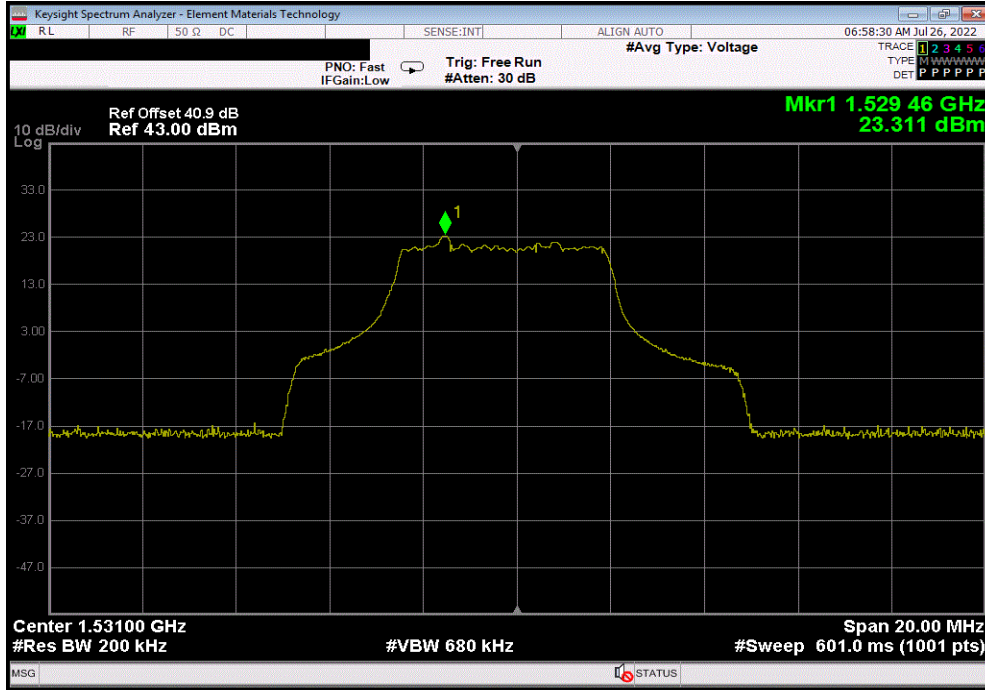


POWER SPECTRAL DENSITY - 3dBi

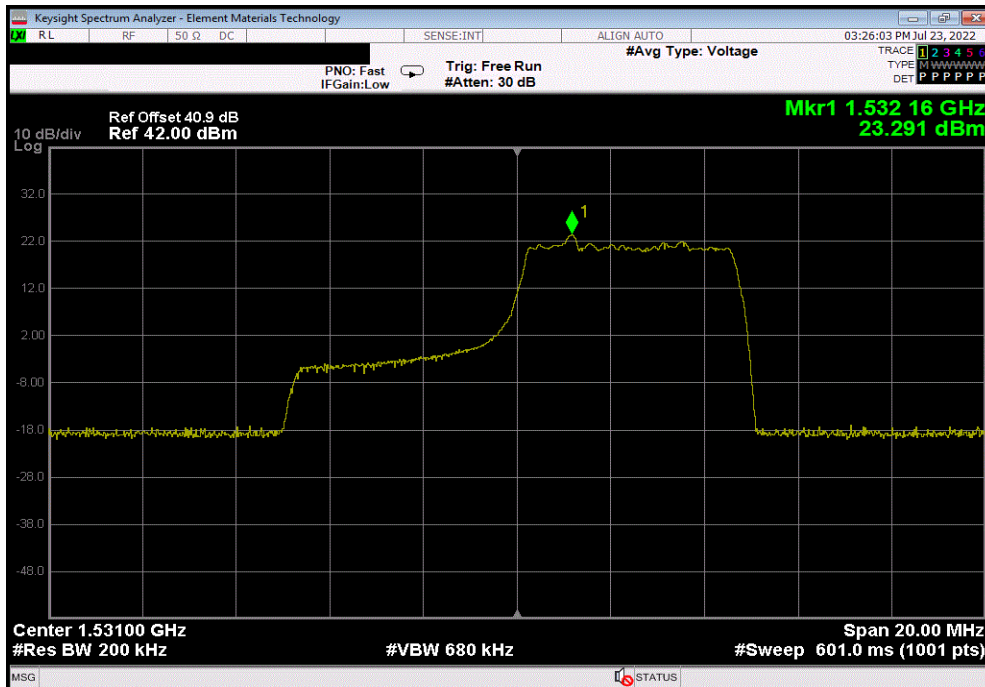


TMTx 2022.06.03.0 XMM 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 25 RB/13 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
23.311	3	26.311	29.311	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 25 RB/27 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
23.291	3	26.291	29.291	55.9	Pass	

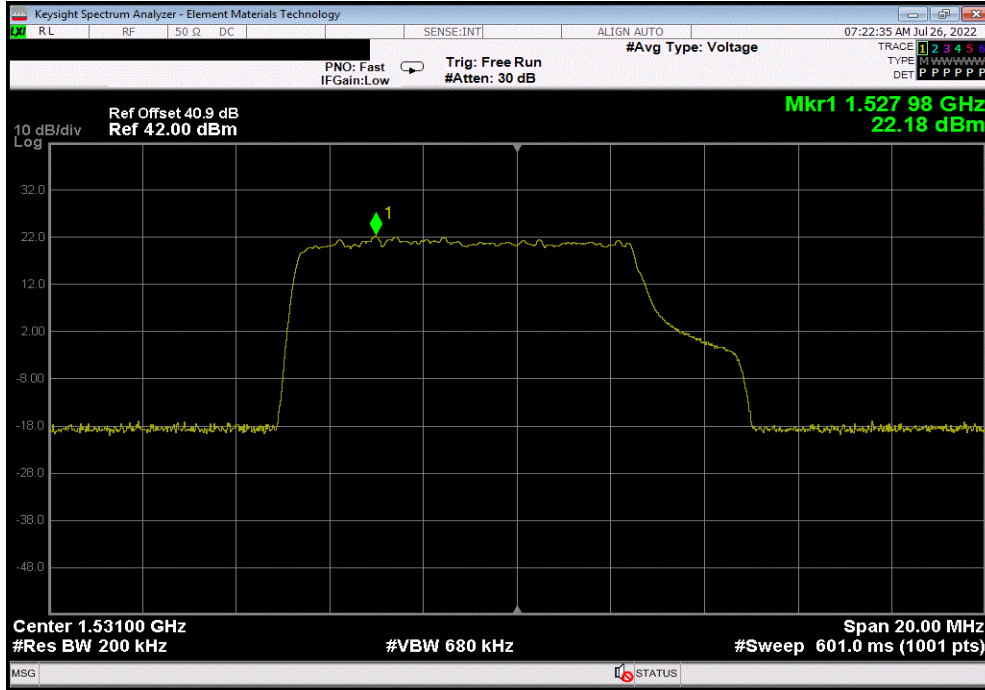


POWER SPECTRAL DENSITY - 3dBi

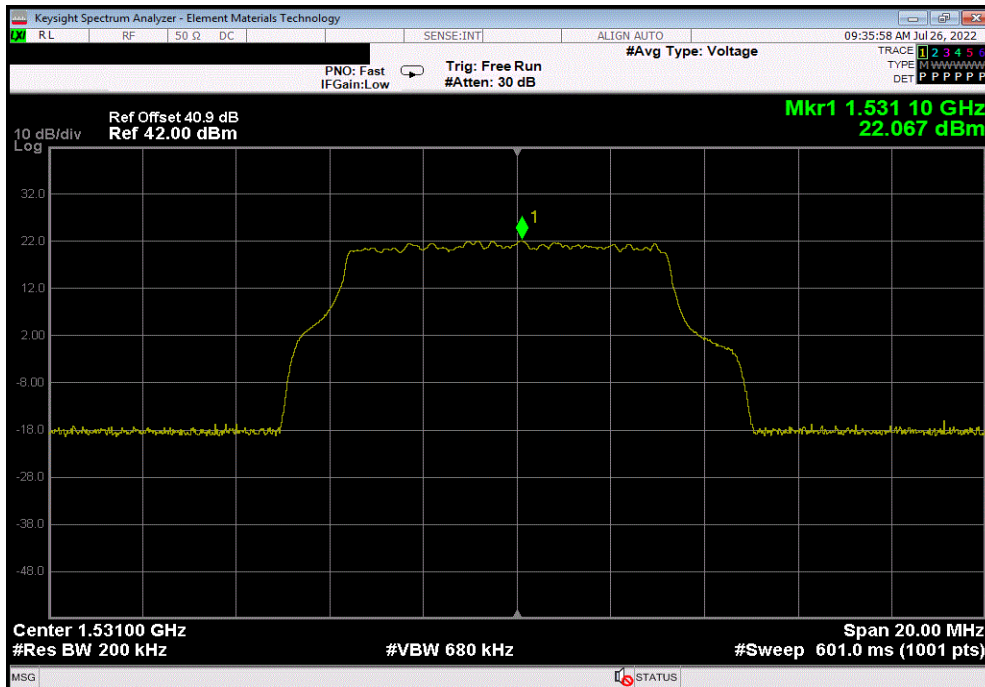


TMTx 2022.06.03.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 40 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
22.185	3	25.185	28.185	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 40 RB/6 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
22.067	3	25.067	28.067	55.9	Pass	

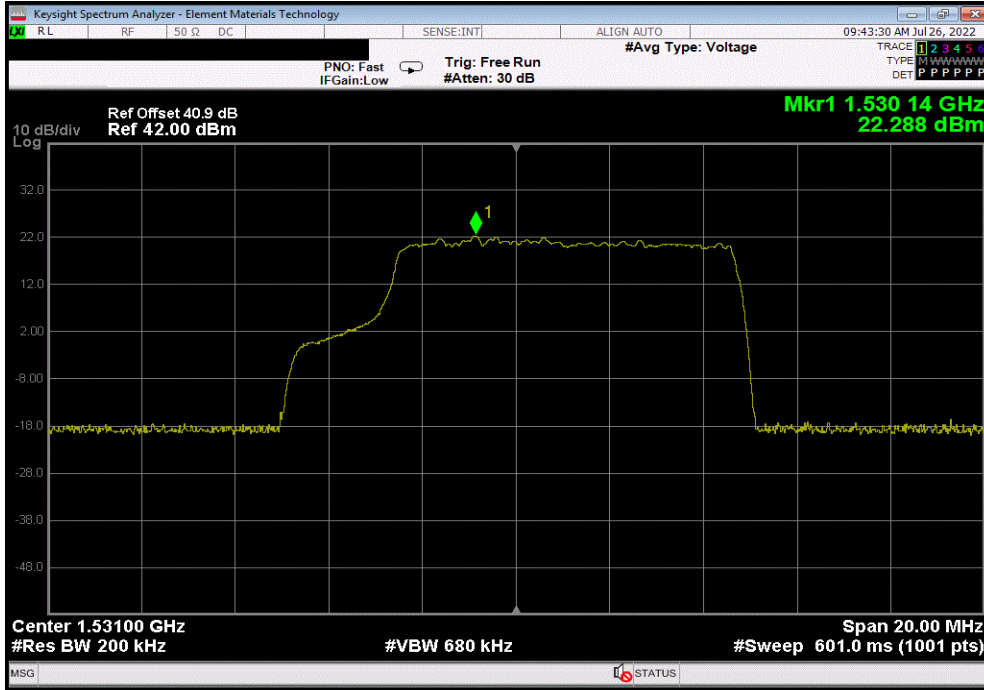


POWER SPECTRAL DENSITY - 3dBi

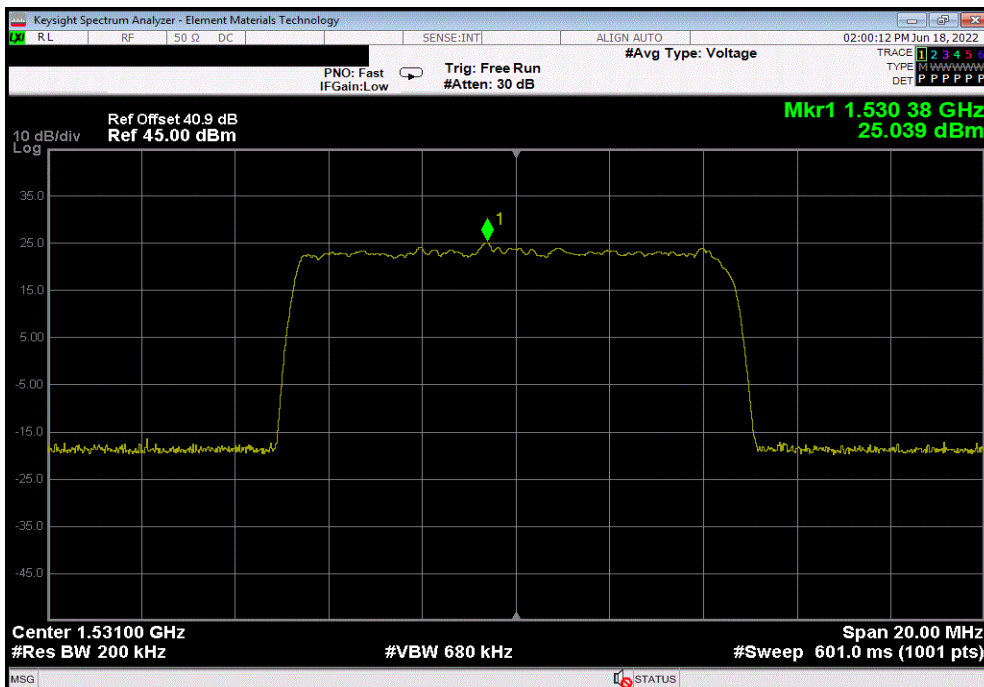


TMTx 2022.06.03.0 XMM 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 40 RB/12 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
22.288	3	25.288	28.288	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
25.039	3	28.039	31.039	55.9	Pass	



POWER SPECTRAL DENSITY - 16dBi



XMR 2022.02.07.0

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	Keysight	N9010A	AFN	2022-01-19	2023-01-19
Block - DC	Fairview Microwave	SD3235-2148	ANF	2022-05-27	2023-05-27
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Cable	UtiFlex Micro-Coax	UFD1150A-1-0720-200200	TXK	2021-09-13	2022-09-13

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The fundamental emission output power (maximum peak conducted power spectral density) was measured using the channels and modes as called out on the following data sheets. The transmit power was set to its default maximum for the antenna gain shown in the data set.

The method in section 5.2.3.5 of ANSI C63.26 was used to make the peak detector measurements.

The Remote Radio Head (RRH) may operate as a 4 port MIMO transmitter with transmitter outputs connected to two cross-polarized antennas [two transmitter outputs are connected to (+) radiators and two transmitter outputs are connected to (-) radiators]. The measurement is adjusted to +3dB [10 log (2)] 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).

RF conducted emissions testing was performed only on one port. The Remote Radio Head (RRH) antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown during 4 port output power testing) and antenna port 3 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.

The total peak transmit power of all antenna ports was determined per ANSI C63.26-2015 paragraph 6.4.3.1.

The EIRP PSD limit is defined by FCC Part 25.253(d)(1) as 31.9 - 10Log(number of carriers (4)) dBW/200kHz.

POWER SPECTRAL DENSITY - 16dBi



TbTx 2022.05.02.0 XMI 2022.02.07.0

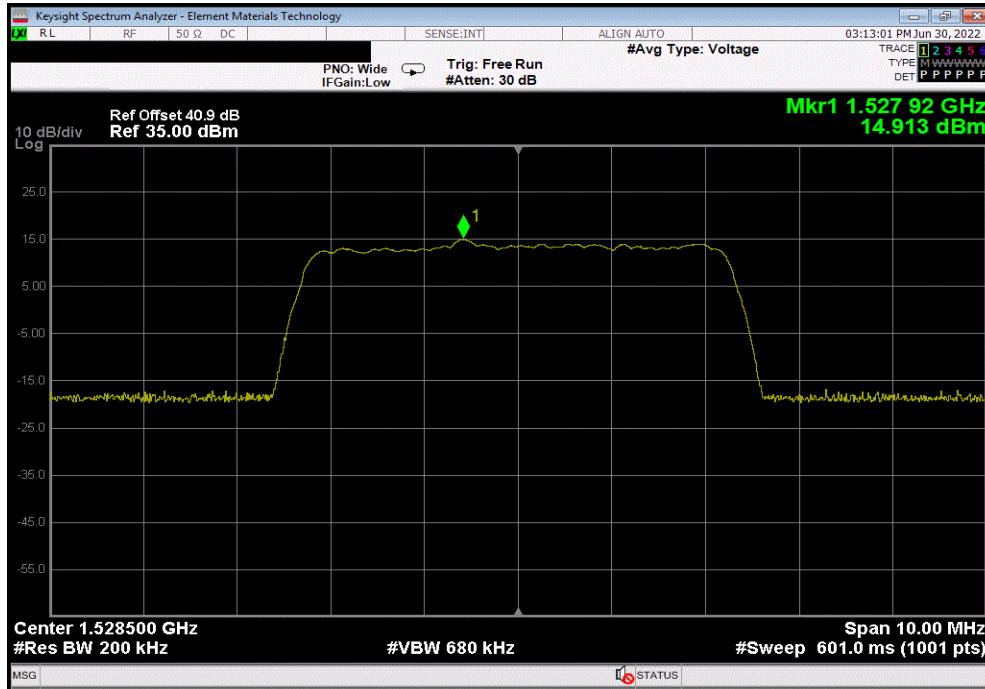
EUT:	TR44KA Base Station		Work Order:		MASY0006	
Serial Number:	SV2146TR44KA000001		Date:		11-Aug-22	
Customer:	Mavenir Systems, Inc		Temperature:		20.7 °C	
Attendees:	None		Humidity:		59.7% RH	
Project:	None		Barometric Pres.:		1021 mbar	
Tested by:	Brandon Hobbs	Power:	48 VDC	Job Site:	TX09	
TEST SPECIFICATIONS			Test Method			
FCC 25:2022			ANSI C63.26:2015			
COMMENTS						
All conducted path losses were accounted for: cables, attenuators, adapters, DC block and notch filter. The PA gain was adjusted for a 16dBi antenna (Final software value of 29). The output power was measured for a single carrier channel bandwidth on port 3. The total output power for multiport (2x2 MIMO and 4x4 MIMO) operation was determined based upon ANSI C63.26 clauses 6.4.3.1 and 6.4.3.2.4 (10 Log Nout). After the cross polarization antenna considerations, the total output power for two port operation is single port power + 0dB [i.e.: 10 Log(1)]. The total output power for four port operation is single port power + 3dB [i.e.: 10 Log(2)]. All available Resource Block / Offset configurations were used for each bandwidth.						
DEVIATIONS FROM TEST STANDARD						
None						
Configuration #	1	Signature 				
		Initial Value dBm/200kHz	Antenna Gain (dBi)	2 Port (2x2 MIMO) dBm/200kHz	4 Port (4x4 MIMO) dBm/200kHz	Limit (dBm)
Results						
5G NR, Band n24, SCS 15kHz						
5 MHz Bandwidth						
QPSK Modulation						
Low Channel 1528.5 MHz						
	25 RB/0 Offset	14.913	16	30.9	33.9	55.9
						Pass
High Channel 1533.5 MHz						
	25 RB/0 Offset	15.075	16	31.1	34.1	55.9
						Pass
16-QAM Modulation						
Low Channel 1528.5 MHz						
	25 RB/0 Offset	14.973	16	31.0	34.0	55.9
						Pass
High Channel 1533.5 MHz						
	25 RB/0 Offset	14.963	16	31.0	34.0	55.9
						Pass
64-QAM Modulation						
Low Channel 1528.5 MHz						
	25 RB/0 Offset	15.541	16	31.5	34.5	55.9
						Pass
High Channel 1533.5 MHz						
	25 RB/0 Offset	15.258	16	31.3	34.3	55.9
						Pass
256-QAM Modulation						
Low Channel 1528.5 MHz						
	25 RB/0 Offset	15.619	16	31.6	34.6	55.9
						Pass
High Channel 1533.5 MHz						
	25 RB/0 Offset	16.092	16	32.1	35.1	55.9
						Pass
10 MHz Bandwidth						
QPSK Modulation						
Mid Channel 1531 MHz						
	25 RB/0 Offset	9.161	16	25.2	28.2	55.9
						Pass
	25 RB/13 Offset	11.307	16	27.3	30.3	55.9
						Pass
	25 RB/27 Offset	9.595	16	25.6	28.6	55.9
						Pass
	40 RB/0 Offset	9.470	16	25.5	28.5	55.9
						Pass
	40 RB/6 Offset	9.343	16	25.3	28.3	55.9
						Pass
	40 RB/12 Offset	9.633	16	25.6	28.6	55.9
						Pass
	52 RB/0 Offset	9.729	16	25.7	28.7	55.9
						Pass
16-QAM Modulation						
Mid Channel 1531 MHz						
	25 RB/0 Offset	11.712	16	27.7	30.7	55.9
						Pass
	25 RB/13 Offset	11.827	16	27.8	30.8	55.9
						Pass
	25 RB/27 Offset	11.669	16	27.7	30.7	55.9
						Pass
	40 RB/0 Offset	9.805	16	25.8	28.8	55.9
						Pass
	40 RB/6 Offset	9.521	16	25.5	28.5	55.9
						Pass
	40 RB/12 Offset	10.384	16	26.4	29.4	55.9
						Pass
	52 RB/0 Offset	12.047	16	28.0	31.0	55.9
						Pass
64-QAM Modulation						
Mid Channel 1531 MHz						
	25 RB/0 Offset	10.114	16	26.1	29.1	55.9
						Pass
	25 RB/13 Offset	12.175	16	28.2	31.2	55.9
						Pass
	25 RB/27 Offset	10.141	16	26.1	29.1	55.9
						Pass
	40 RB/0 Offset	10.258	16	26.3	29.3	55.9
						Pass
	40 RB/6 Offset	10.518	16	26.5	29.5	55.9
						Pass
	40 RB/12 Offset	10.757	16	26.8	29.8	55.9
						Pass
	52 RB/0 Offset	12.055	16	28.1	31.1	55.9
						Pass
256-QAM Modulation						
Mid Channel 1531 MHz						
	25 RB/0 Offset	12.388	16	28.4	31.4	55.9
						Pass
	25 RB/13 Offset	10.816	16	26.8	29.8	55.9
						Pass
	25 RB/27 Offset	10.851	16	26.9	29.9	55.9
						Pass
	40 RB/0 Offset	9.728	16	25.7	28.7	55.9
						Pass
	40 RB/6 Offset	9.783	16	25.8	28.8	55.9
						Pass
	40 RB/12 Offset	9.995	16	26.0	29.0	55.9
						Pass
	52 RB/0 Offset	12.418	16	28.4	31.4	55.9
						Pass

POWER SPECTRAL DENSITY - 16dBi

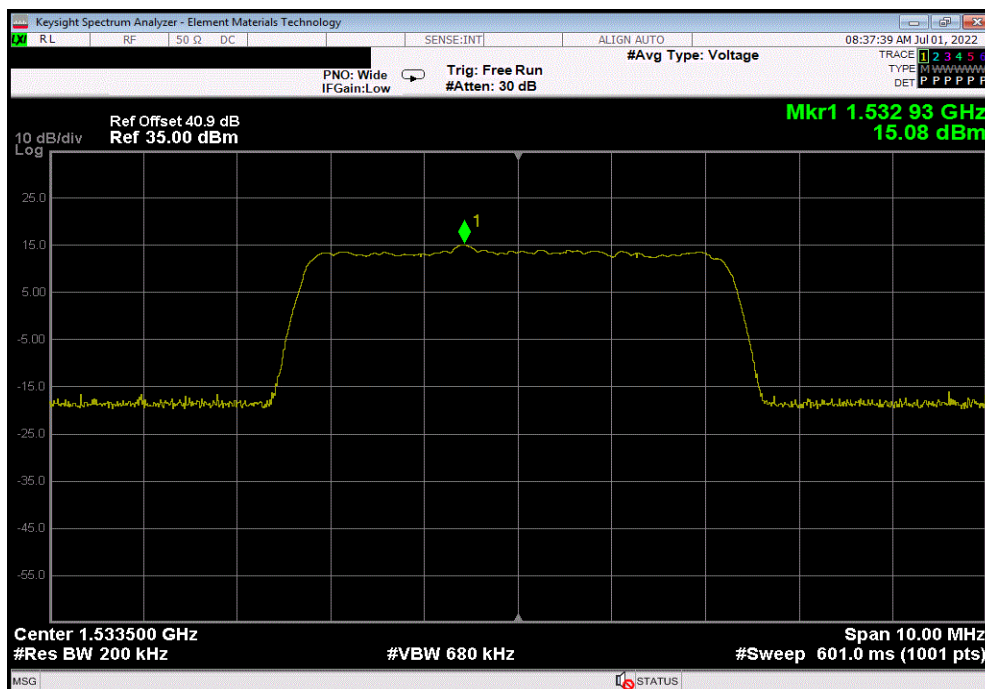


Thru 2022.05.02.0 XMIT 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, QPSK Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
14.913	16	30.913	33.913	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
15.075	16	31.075	34.075	55.9	Pass	

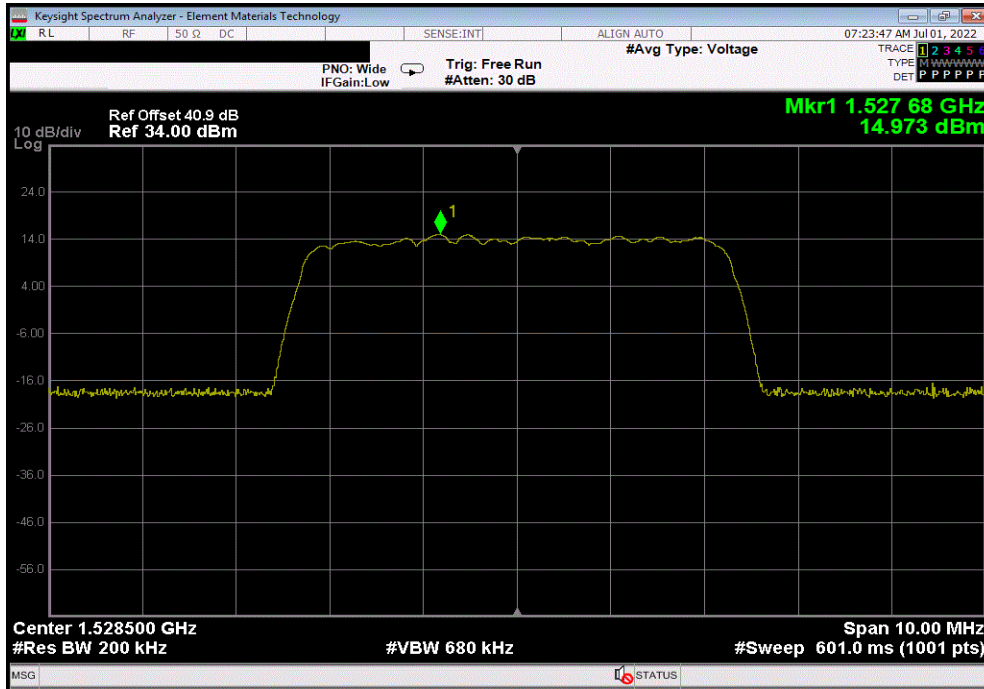


POWER SPECTRAL DENSITY - 16dBi

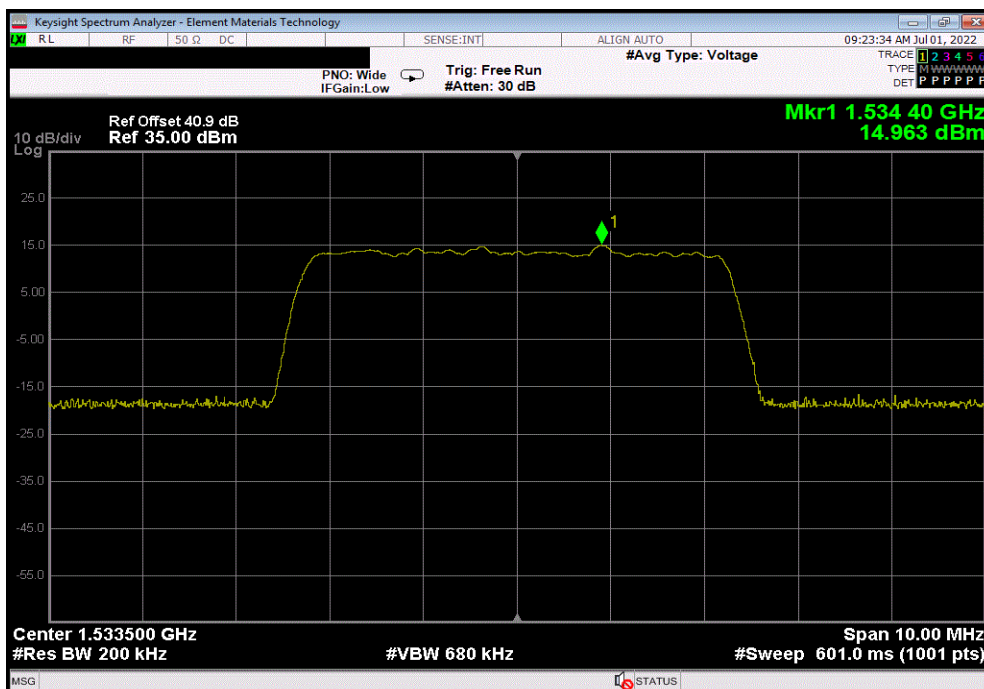


Thru 2022.05.02.0 XMit 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 16-QAM Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
14.973	16	30.973	33.973	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 16-QAM Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
14.963	16	30.963	33.963	55.9	Pass	

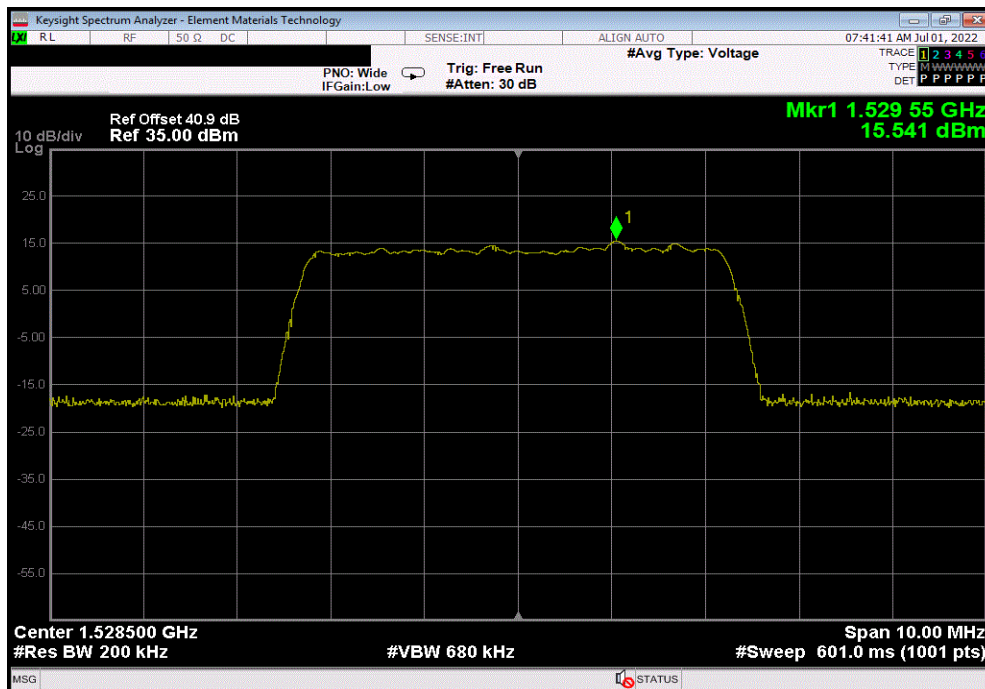


POWER SPECTRAL DENSITY - 16dBi

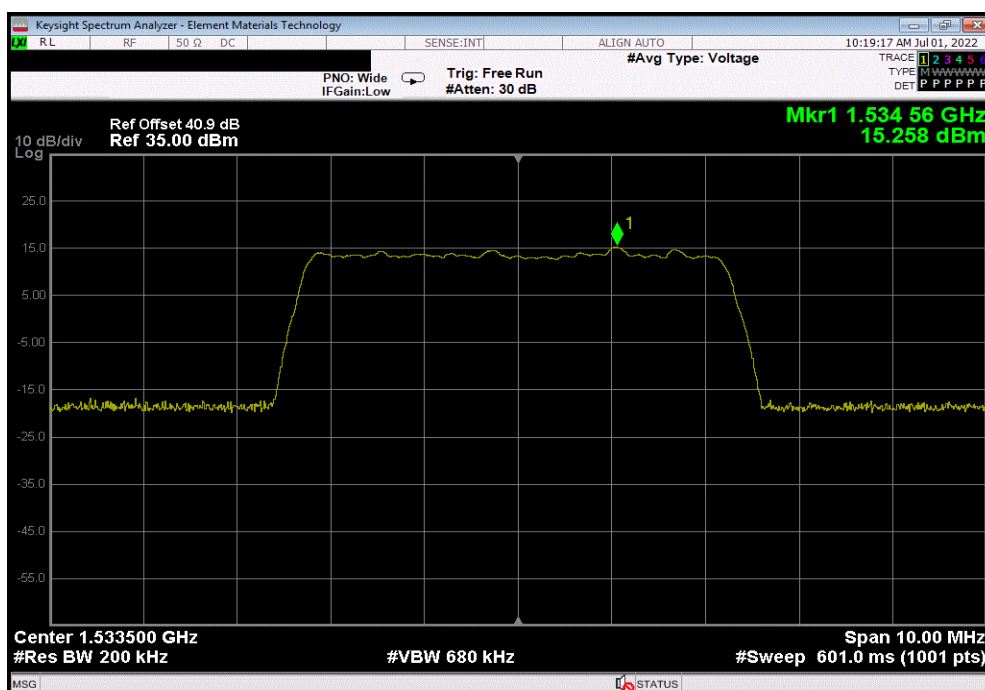


Thru 2022.05.02.0 XMit 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 64-QAM Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
15.541	16	31.541	34.541	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 64-QAM Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
15.258	16	31.258	34.258	55.9	Pass	

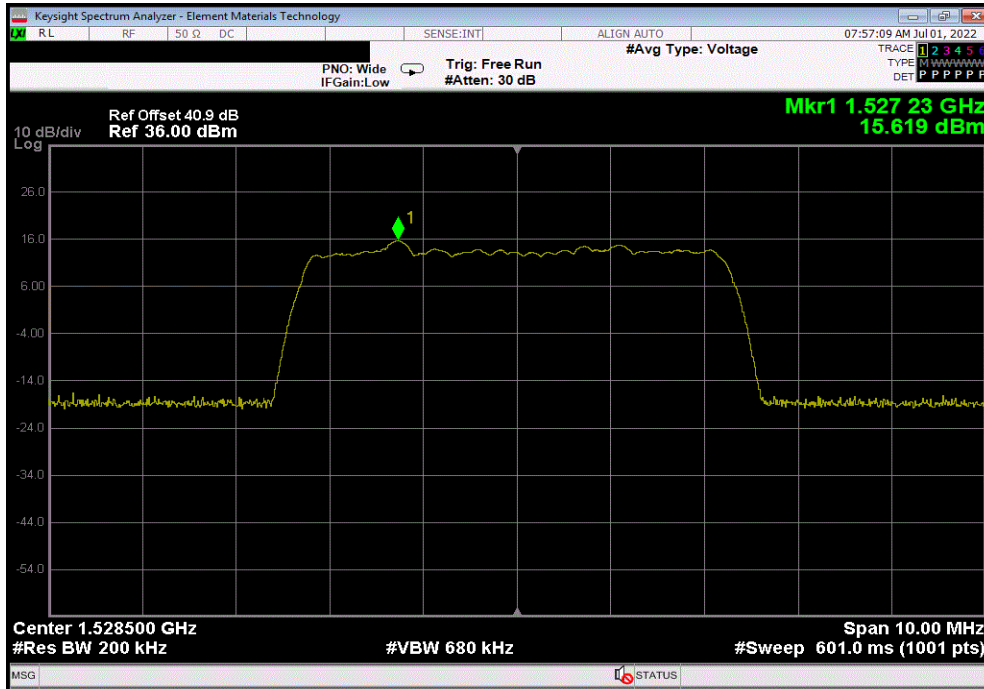


POWER SPECTRAL DENSITY - 16dBi

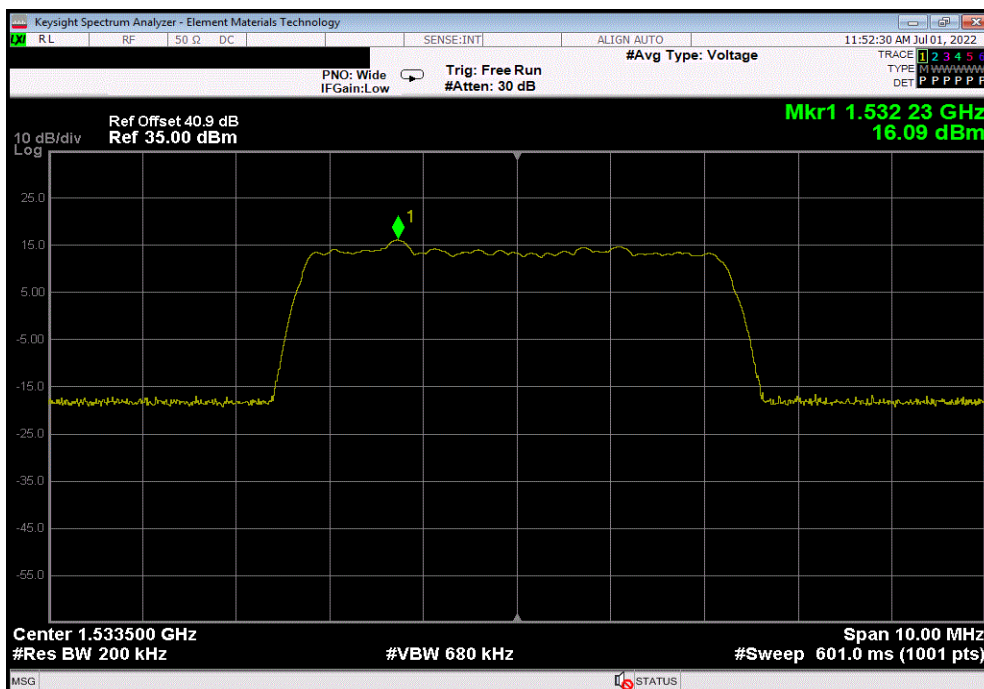


Thru 2022.05.02.0 XMit 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 256-QAM Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
15.619	16	31.619	34.619	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 256-QAM Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
16.092	16	32.092	35.092	55.9	Pass	

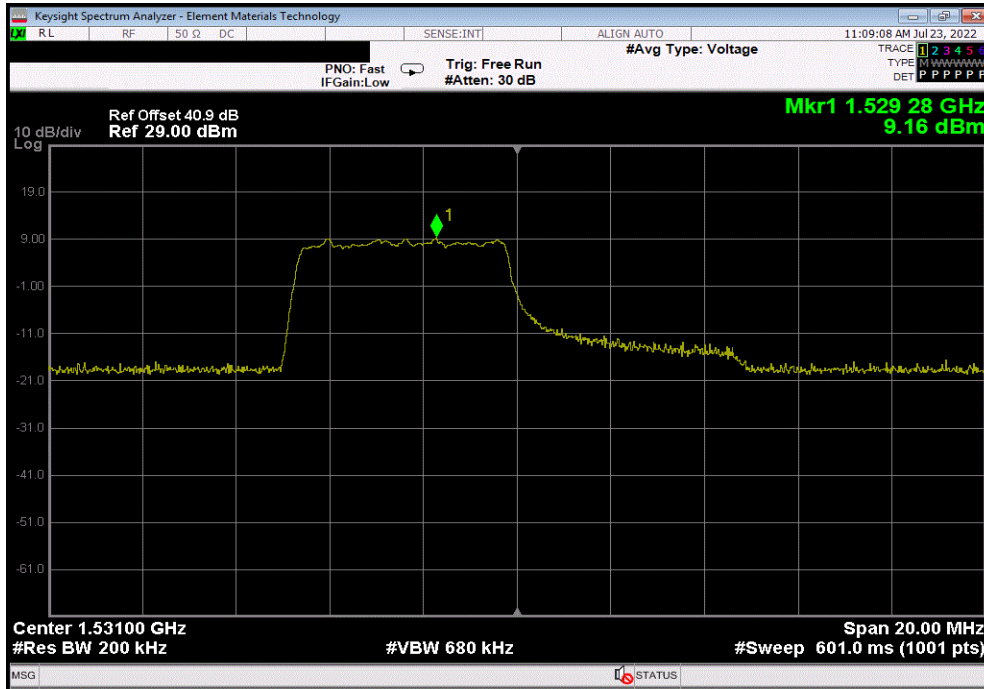


POWER SPECTRAL DENSITY - 16dBi

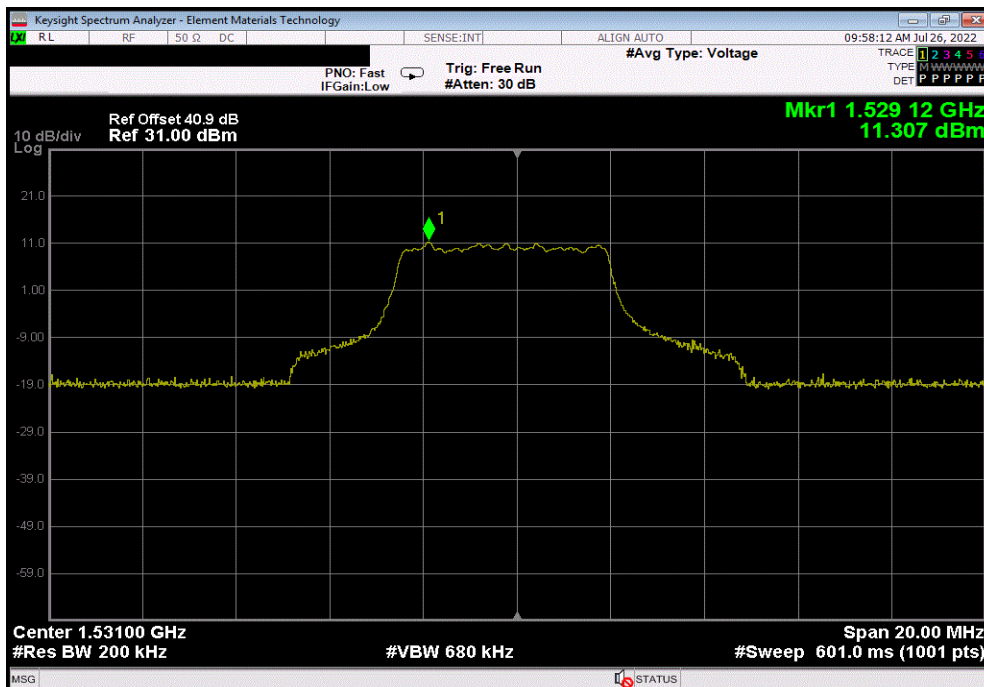


Thru 2022.05.02.0 XMit 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 25 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
9.161	16	25.161	28.161	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 25 RB/13 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
11.307	16	27.307	30.307	55.9	Pass	

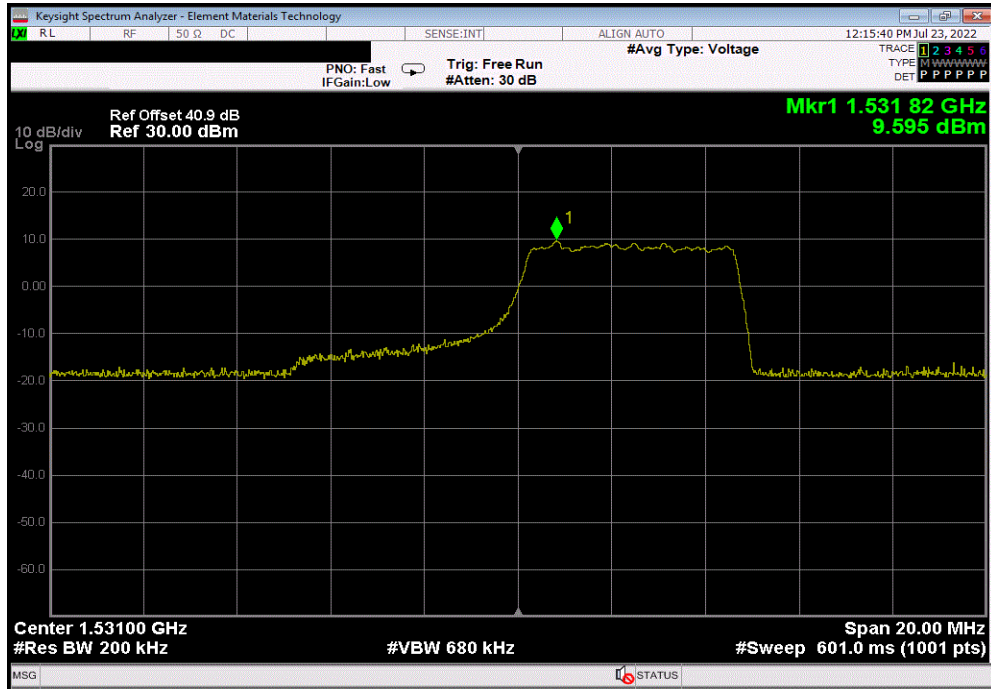


POWER SPECTRAL DENSITY - 16dBi

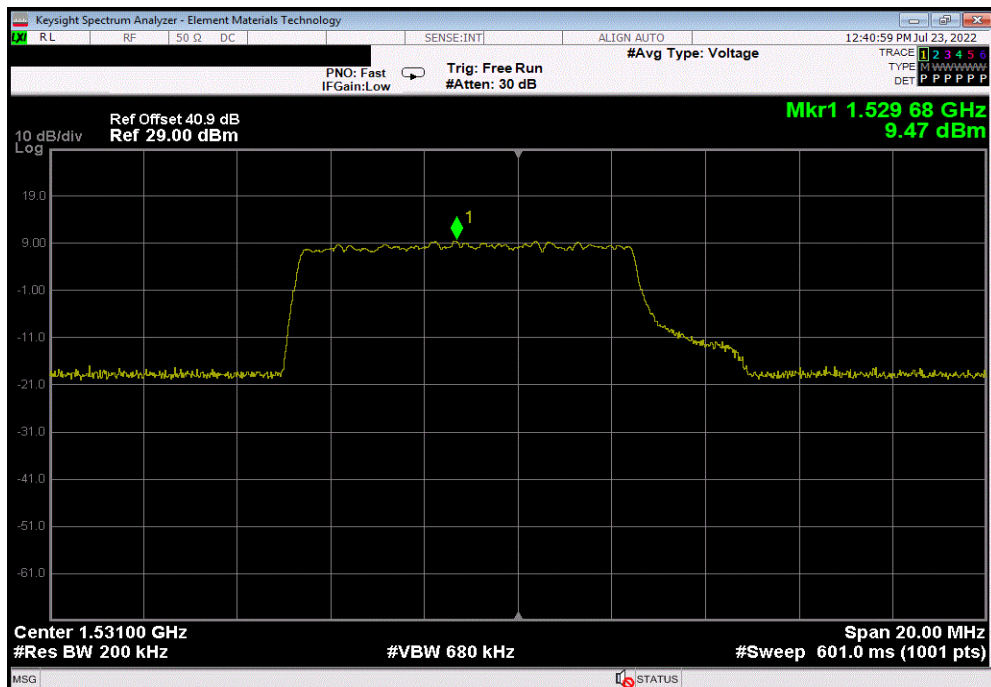


Thru 2022.05.02.0 XMit 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 25 RB/27 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
9.595	16	25.595	28.595	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 40 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
9.47	16	25.47	28.47	55.9	Pass	

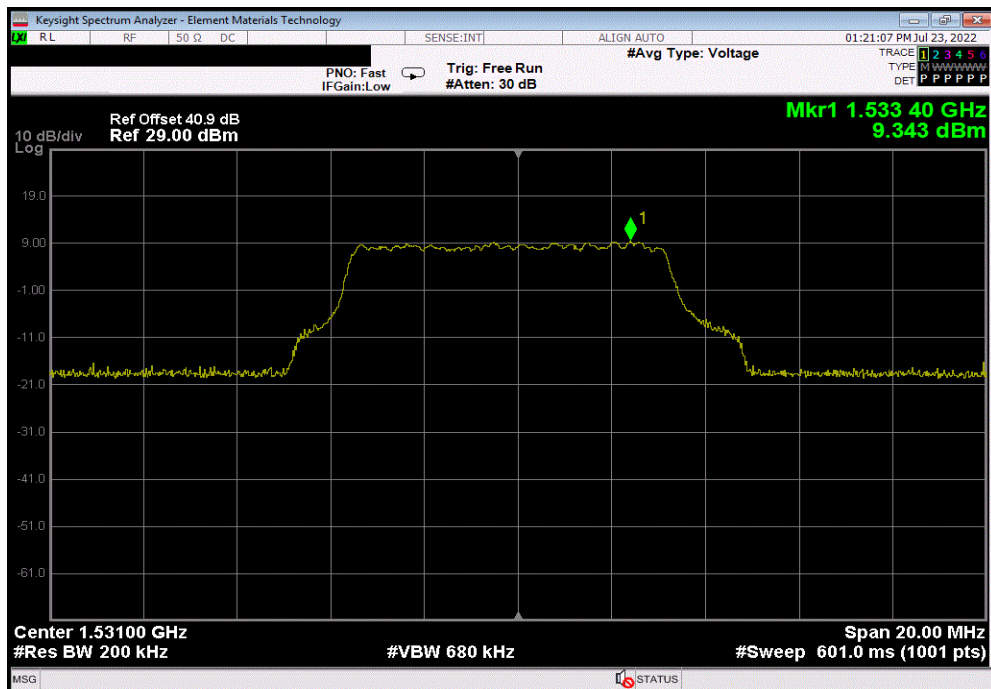


POWER SPECTRAL DENSITY - 16dBi

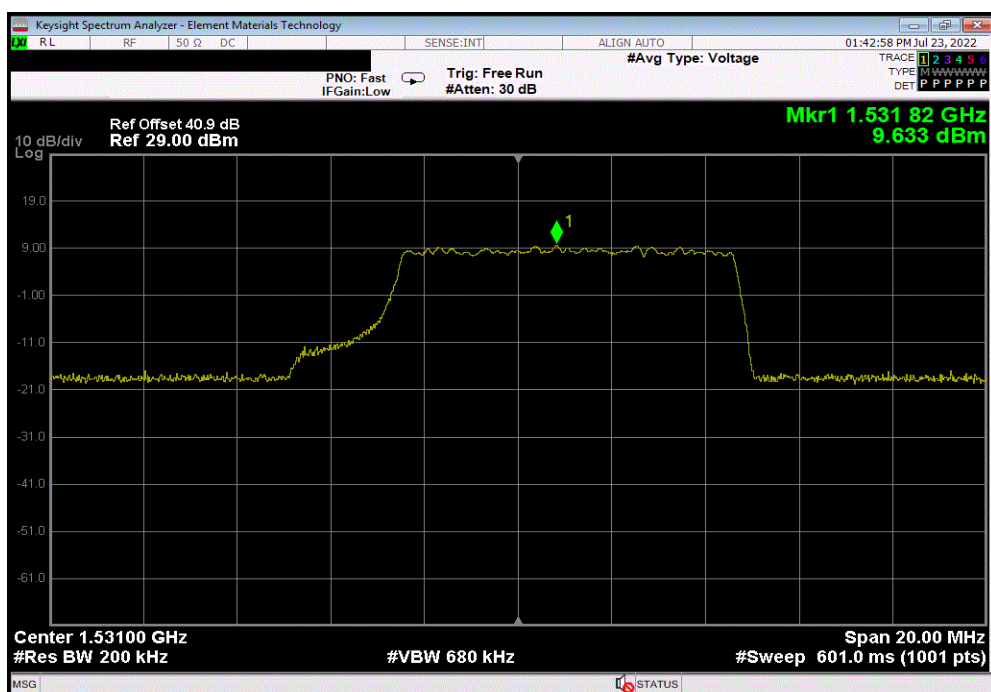


Thru 2022.05.02.0 XMIT 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 40 RB/6 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
9.343	16	25.343	28.343	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 40 RB/12 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
9.633	16	25.633	28.633	55.9	Pass	

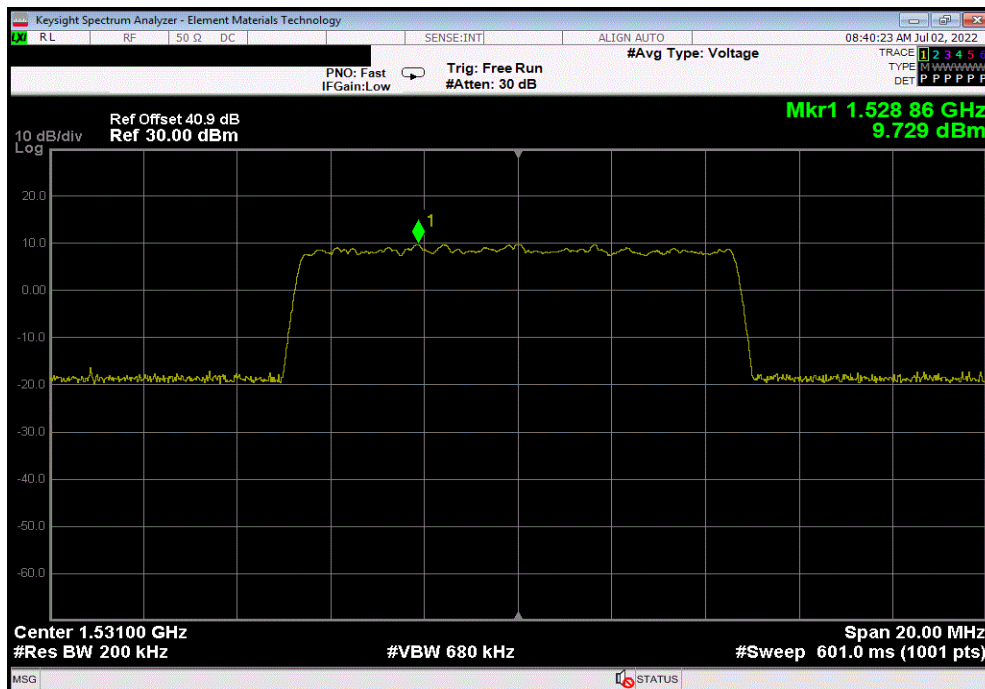


POWER SPECTRAL DENSITY - 16dBi

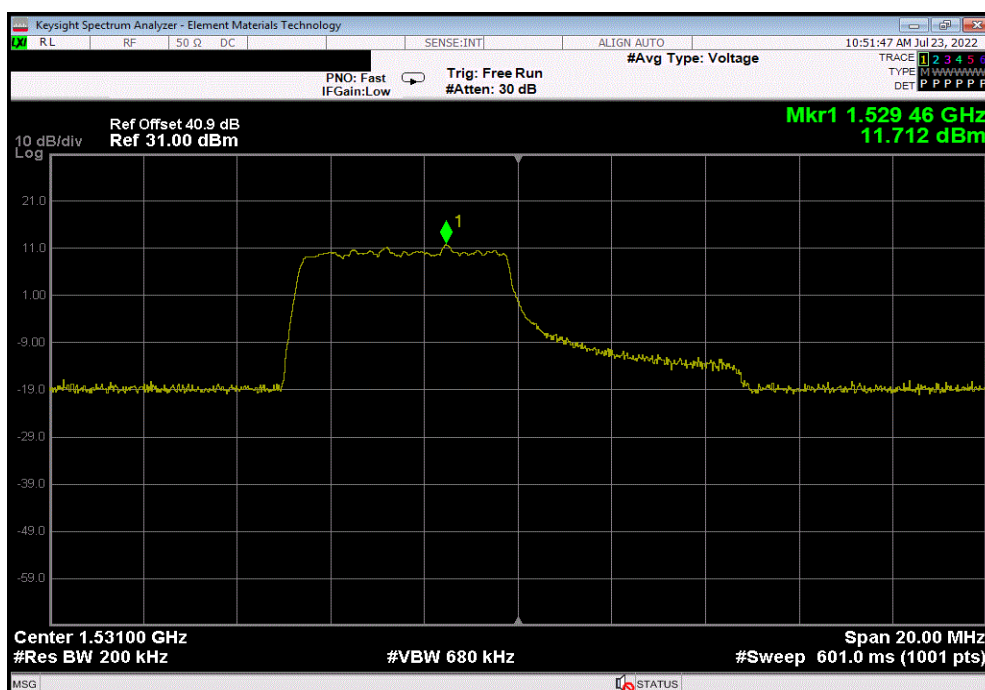


Thru 2022.05.02.0 XMit 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
9.729	16	25.729	28.729	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 25 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
11.712	16	27.712	30.712	55.9	Pass	

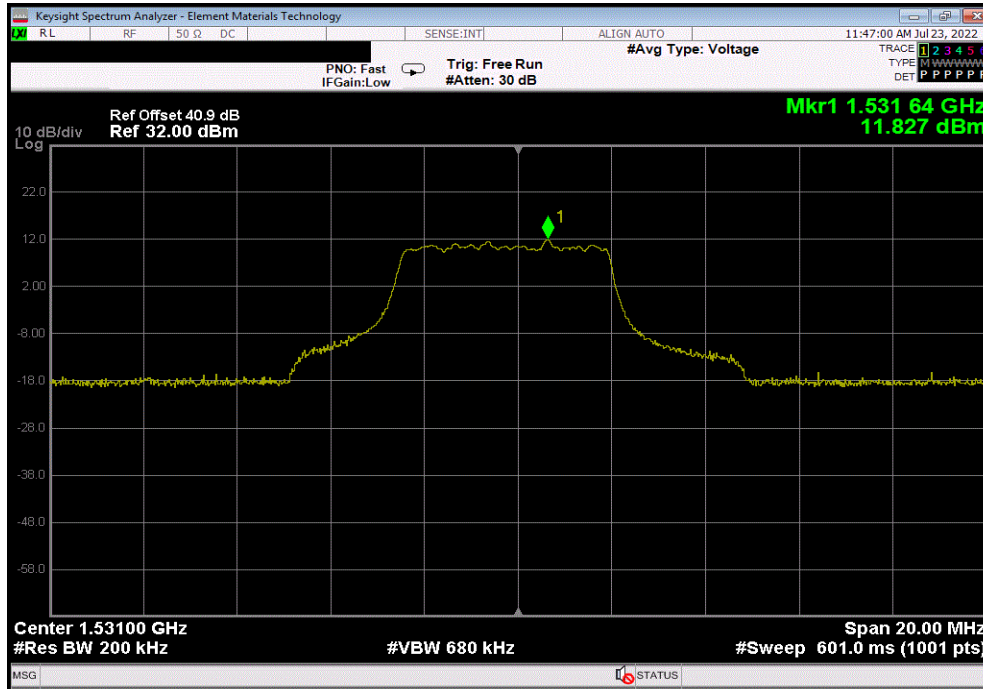


POWER SPECTRAL DENSITY - 16dBi

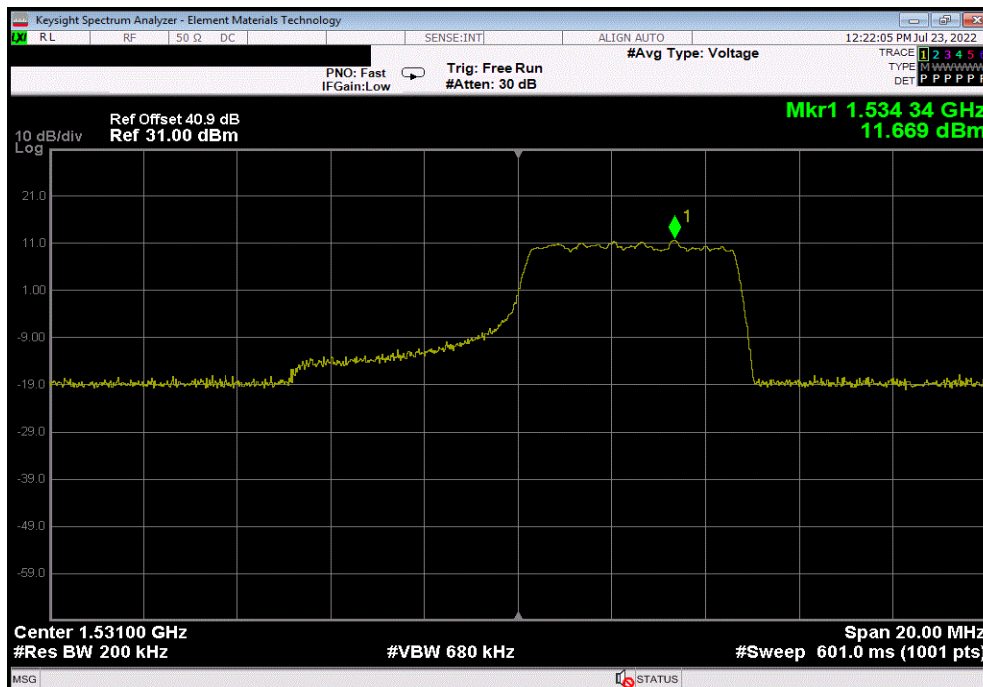


Thru 2022.05.02.0 XMit 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 25 RB/13 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
11.827	16	27.827	30.827	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 25 RB/27 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
11.669	16	27.669	30.669	55.9	Pass	

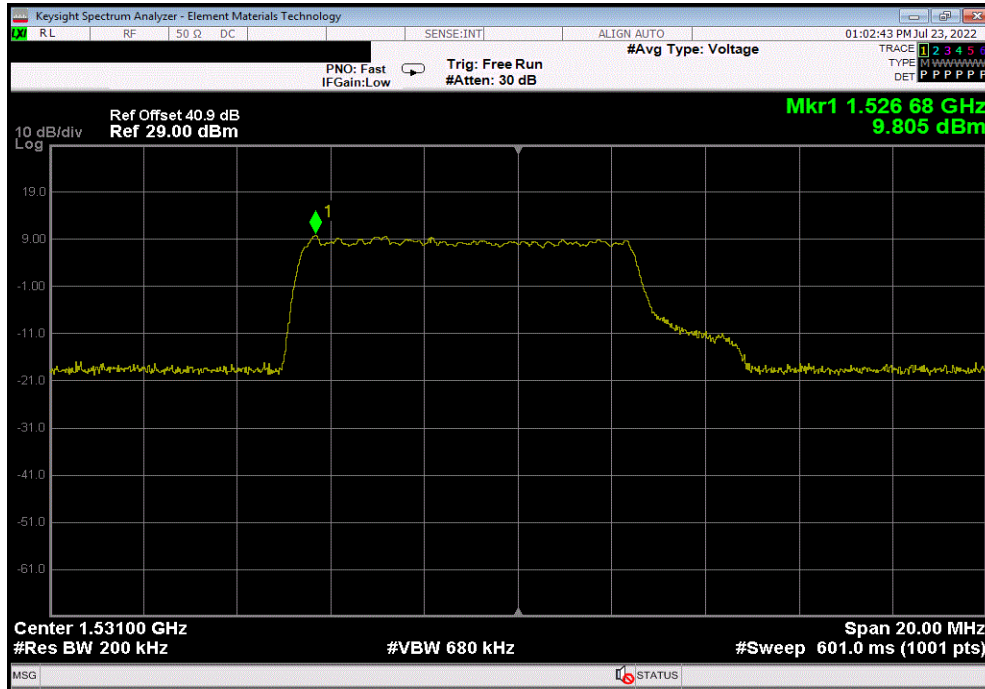


POWER SPECTRAL DENSITY - 16dBi

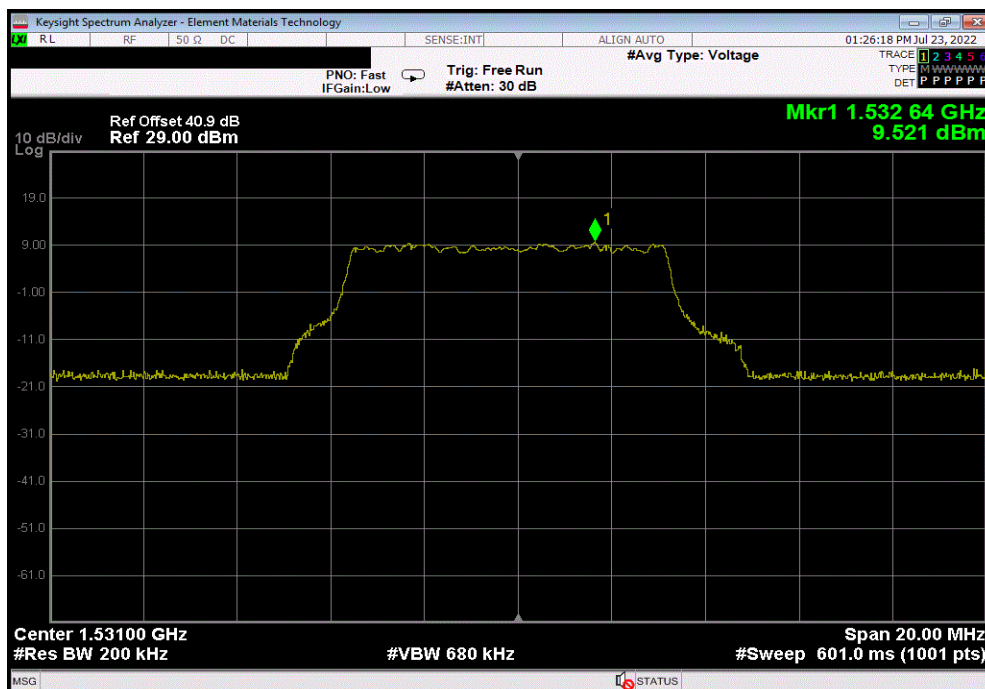


Thru 2022.05.02.0 XMit 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 40 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
9.805	16	25.805	28.805	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 40 RB/6 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
9.521	16	25.521	28.521	55.9	Pass	

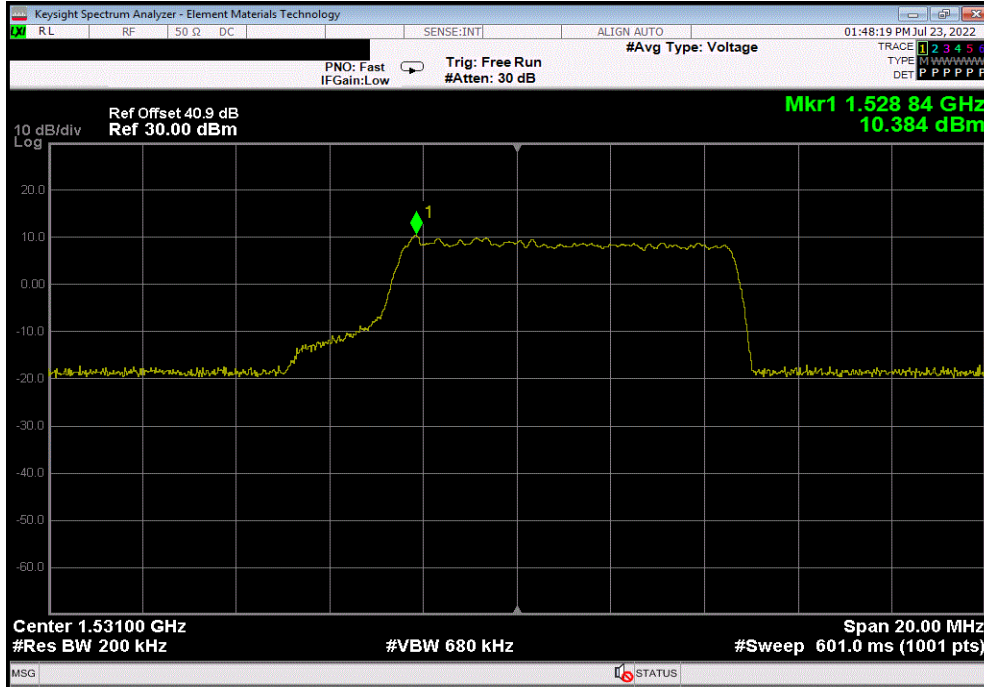


POWER SPECTRAL DENSITY - 16dBi

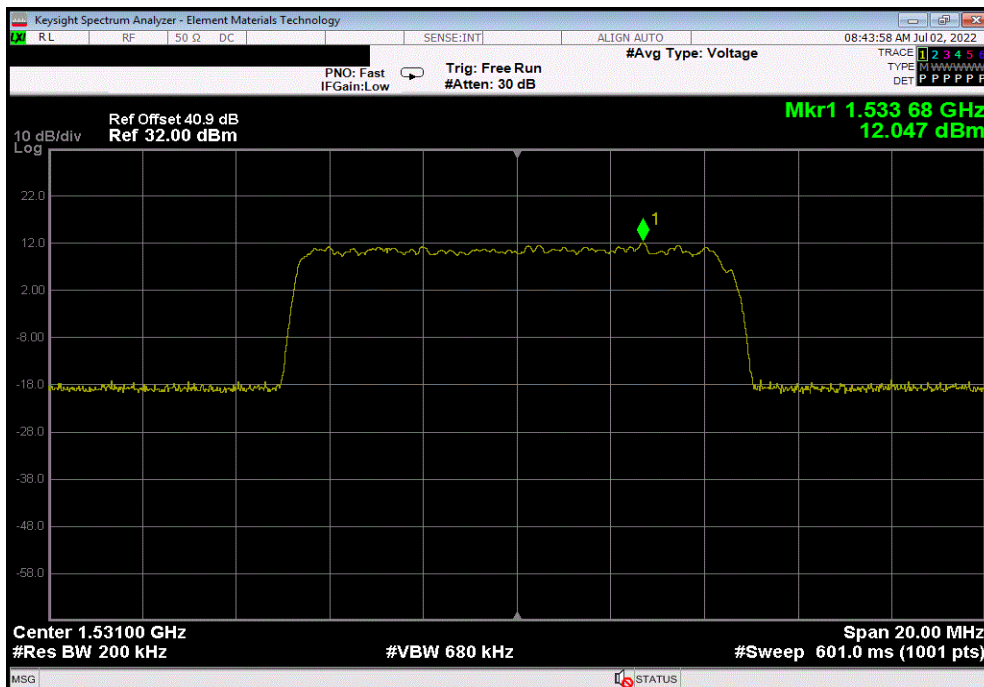


Thru 2022.05.02.0 XMIT 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 40 RB/12 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
10.384	16	26.384	29.384	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
12.047	16	28.047	31.047	55.9	Pass	

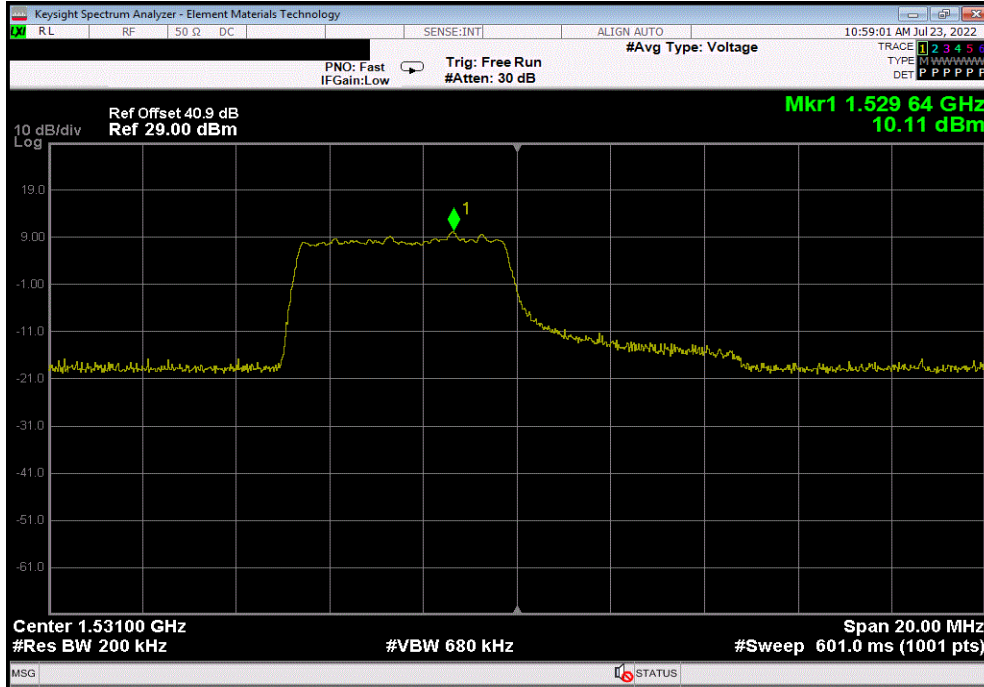


POWER SPECTRAL DENSITY - 16dBi

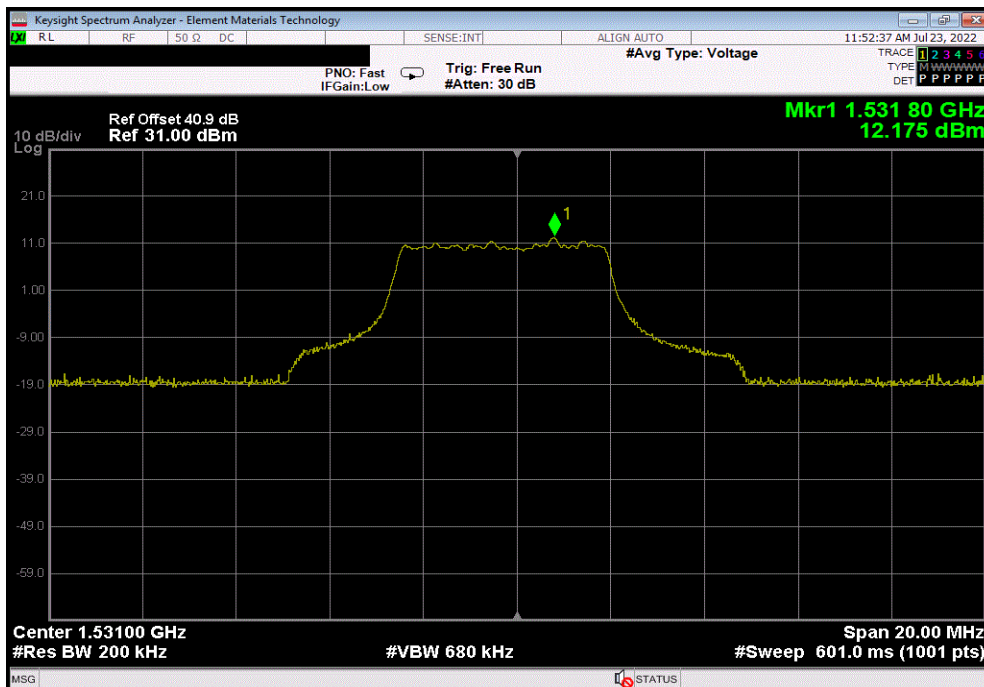


Thru 2022.05.02.0 XMill 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 25 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
10.114	16	26.114	29.114	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 25 RB/13 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
12.175	16	28.175	31.175	55.9	Pass	

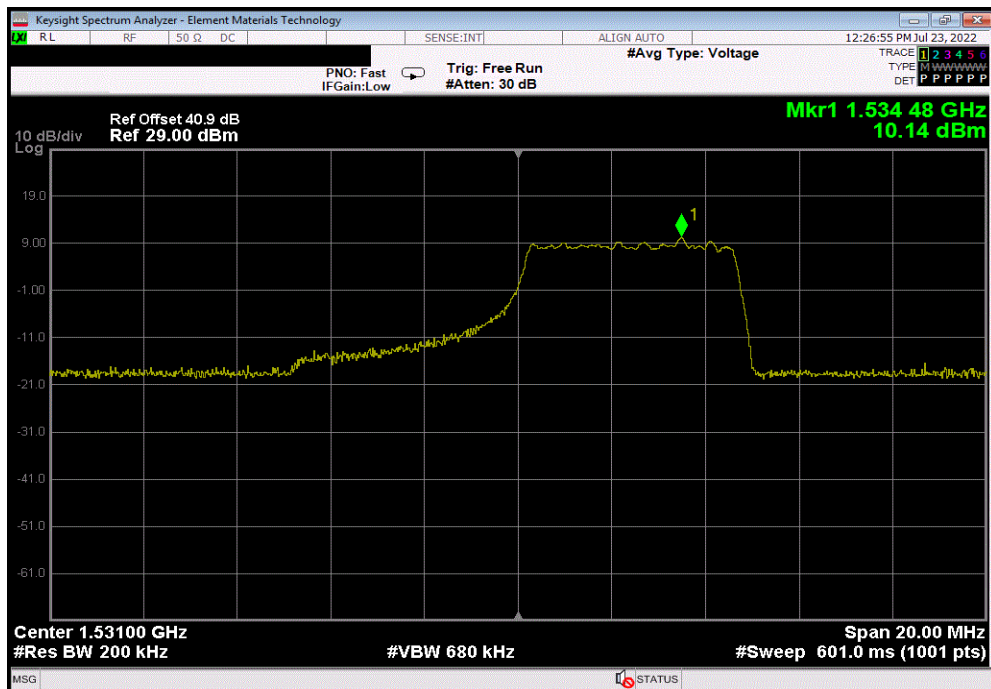


POWER SPECTRAL DENSITY - 16dBi

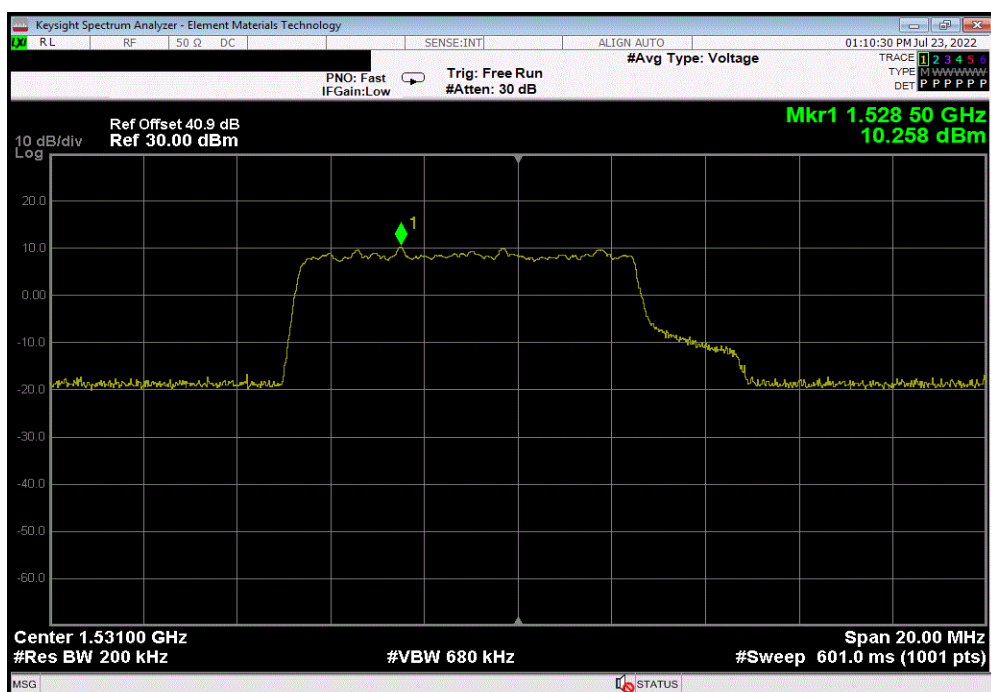


Thru 2022.05.02.0 XMit 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 25 RB/27 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
10.141	16	26.141	29.141	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 40 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
10.258	16	26.258	29.258	55.9	Pass	

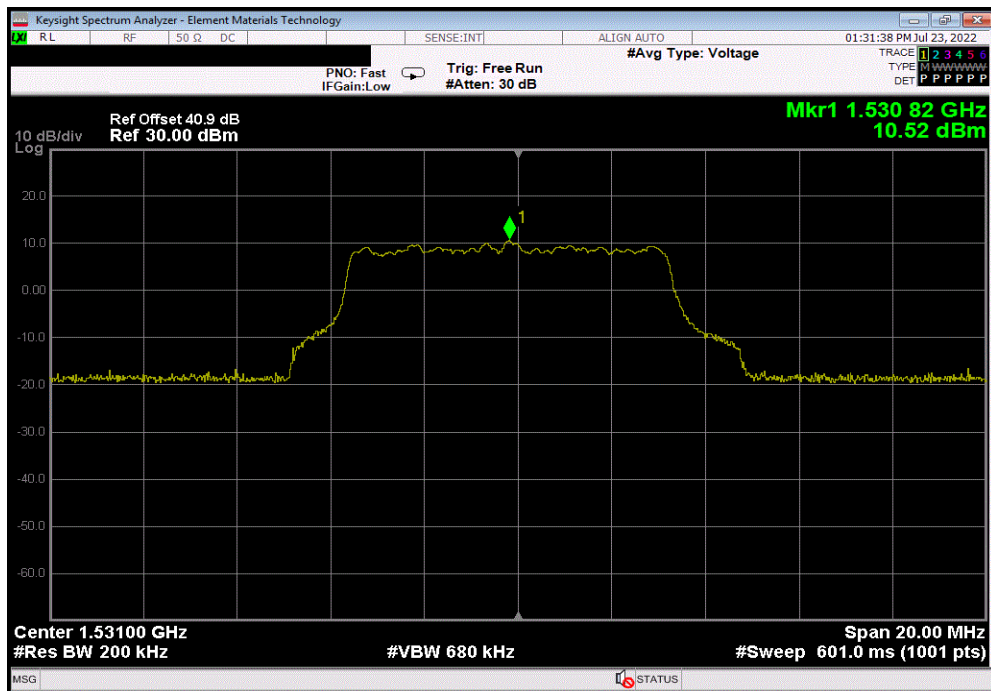


POWER SPECTRAL DENSITY - 16dBi

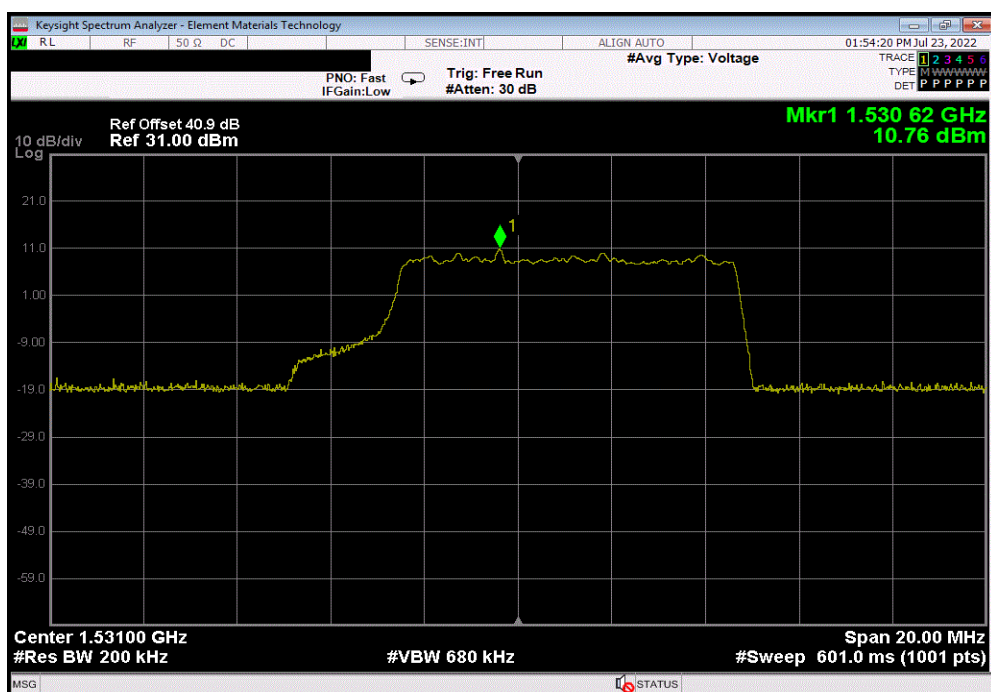


Thru 2022.05.02.0 XMit 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 40 RB/6 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
10.518	16	26.518	29.518	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 40 RB/12 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
10.757	16	26.757	29.757	55.9	Pass	

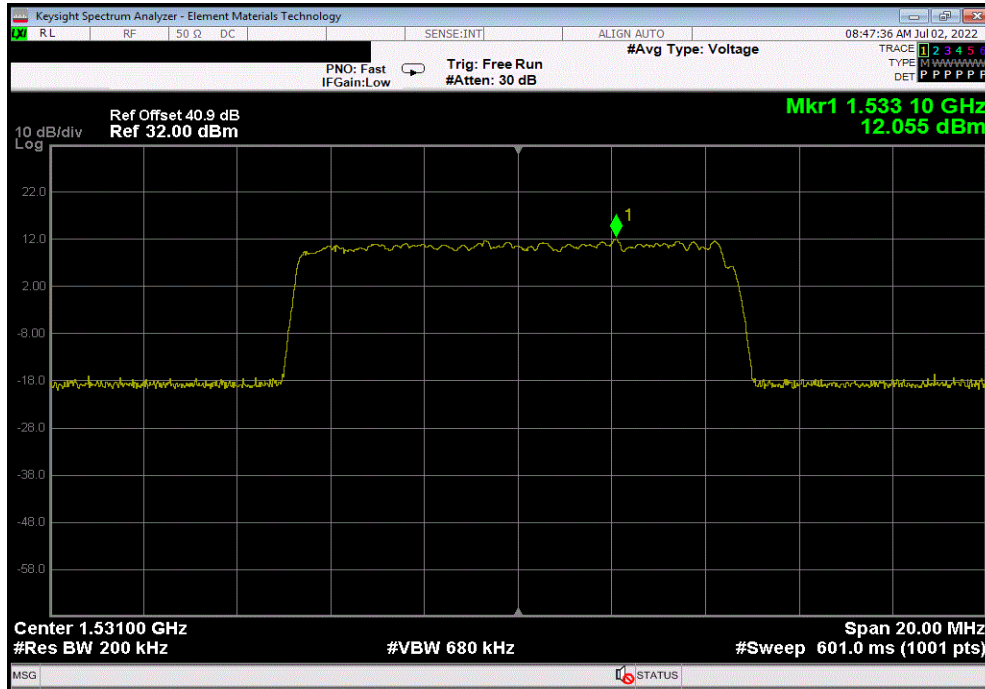


POWER SPECTRAL DENSITY - 16dBi

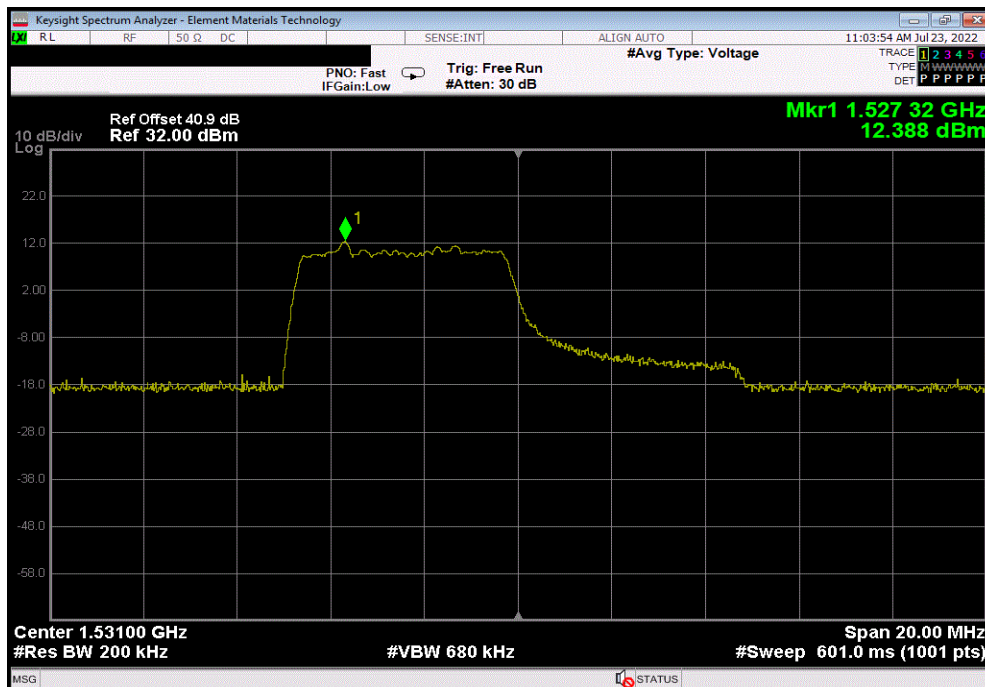


Testx 2022.05.02.0 XMit 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
12.055	16	28.055	31.055	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 25 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
12.388	16	28.388	31.388	55.9	Pass	

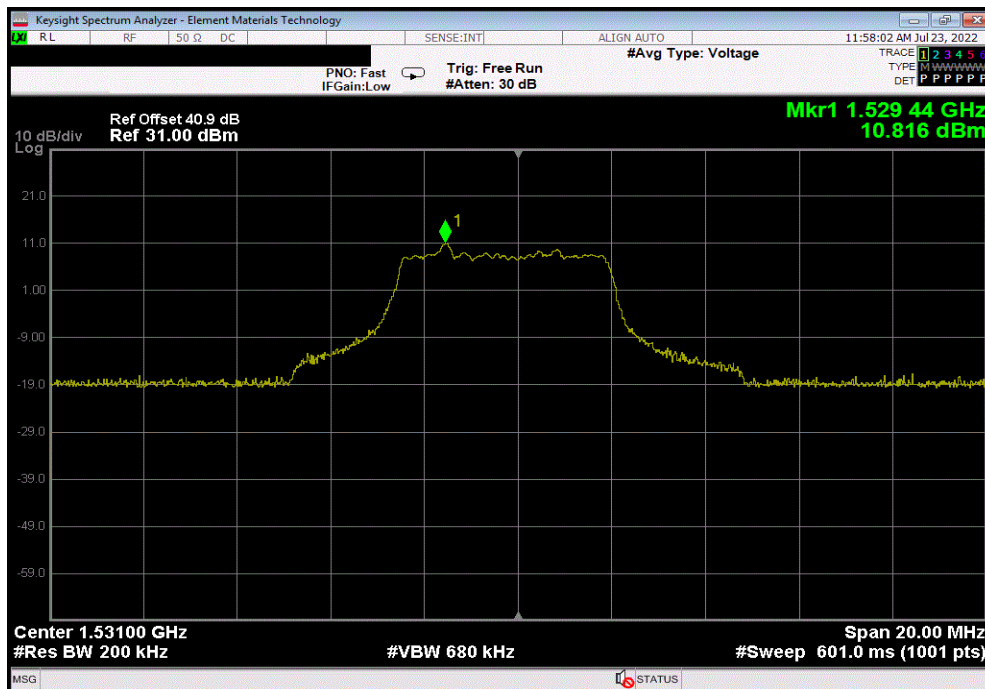


POWER SPECTRAL DENSITY - 16dBi

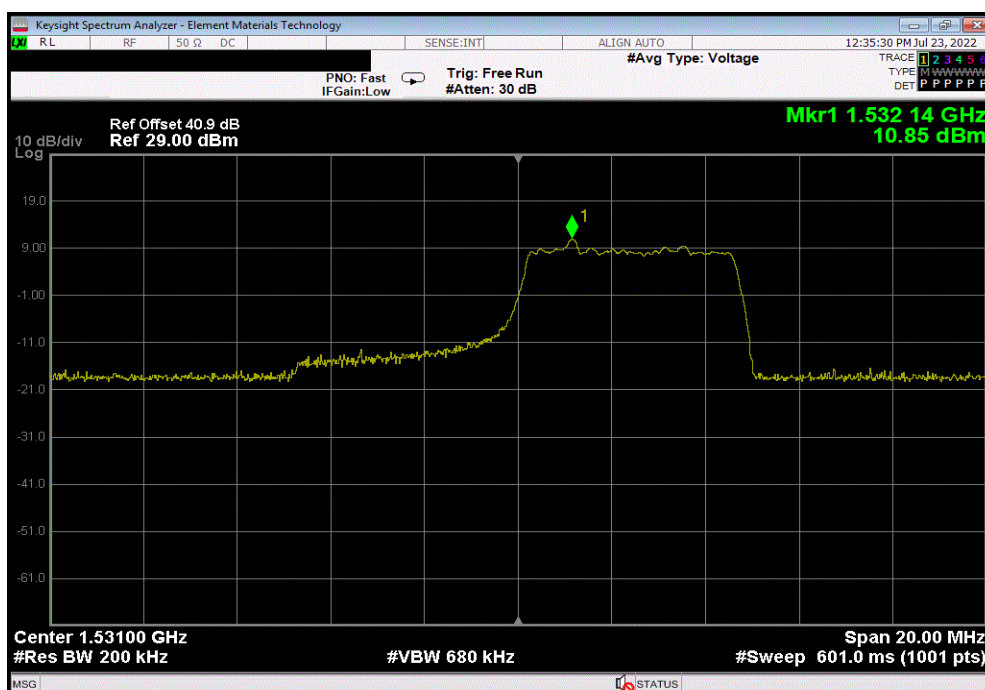


Thru 2022.05.02.0 XMit 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 25 RB/13 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
10.816	16	26.816	29.816	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 25 RB/27 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
10.851	16	26.851	29.851	55.9	Pass	

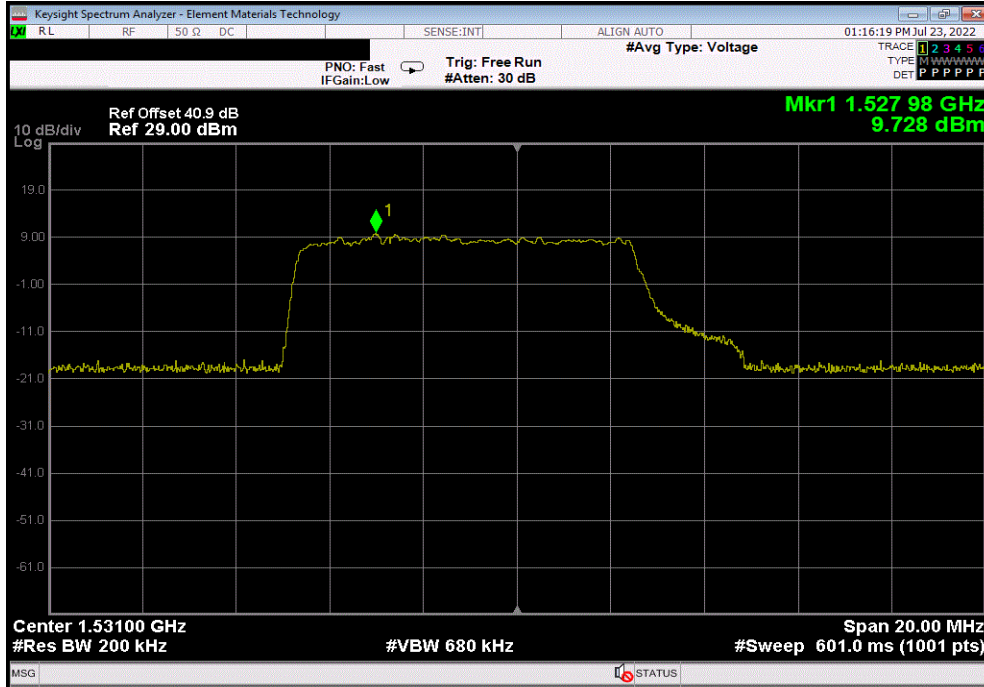


POWER SPECTRAL DENSITY - 16dBi

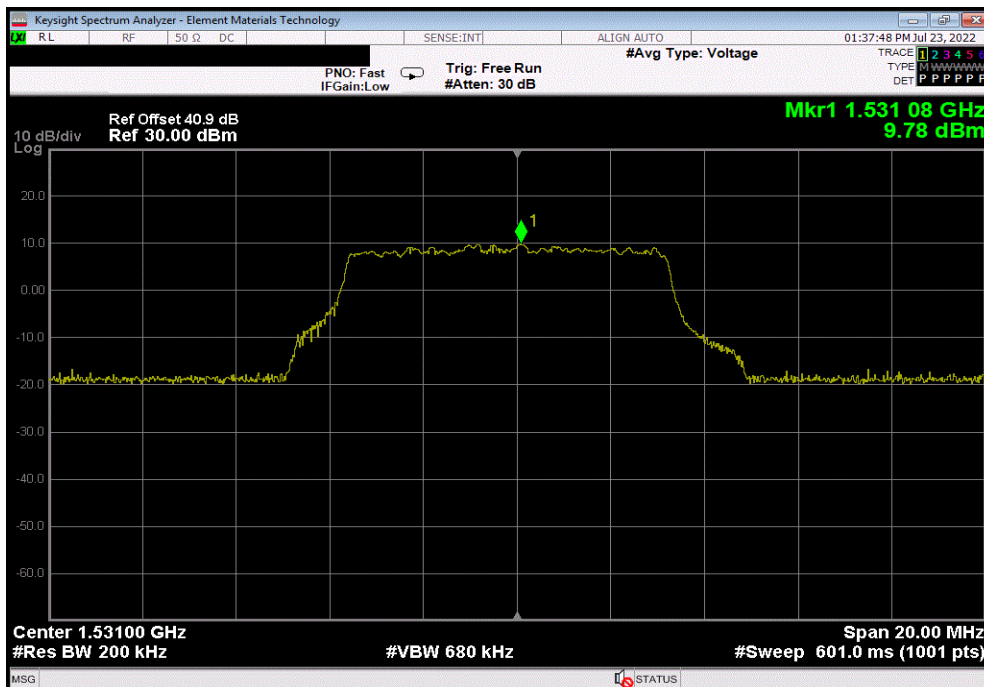


Thru 2022.05.02.0 XMit 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 40 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
9.728	16	25.728	28.728	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 40 RB/6 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
9.783	16	25.783	28.783	55.9	Pass	

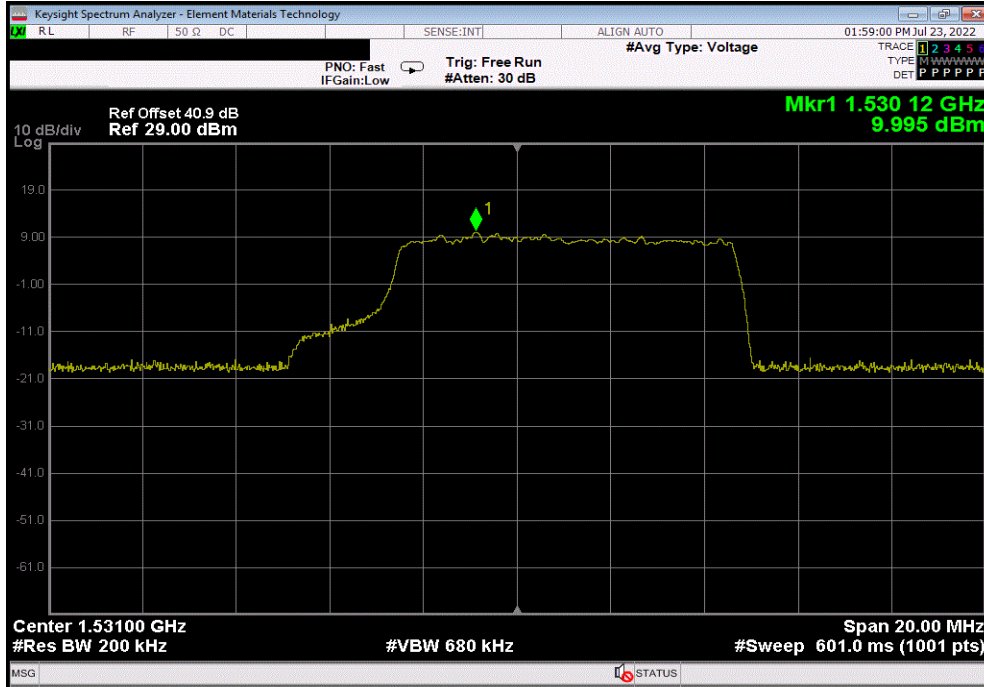


POWER SPECTRAL DENSITY - 16dBi

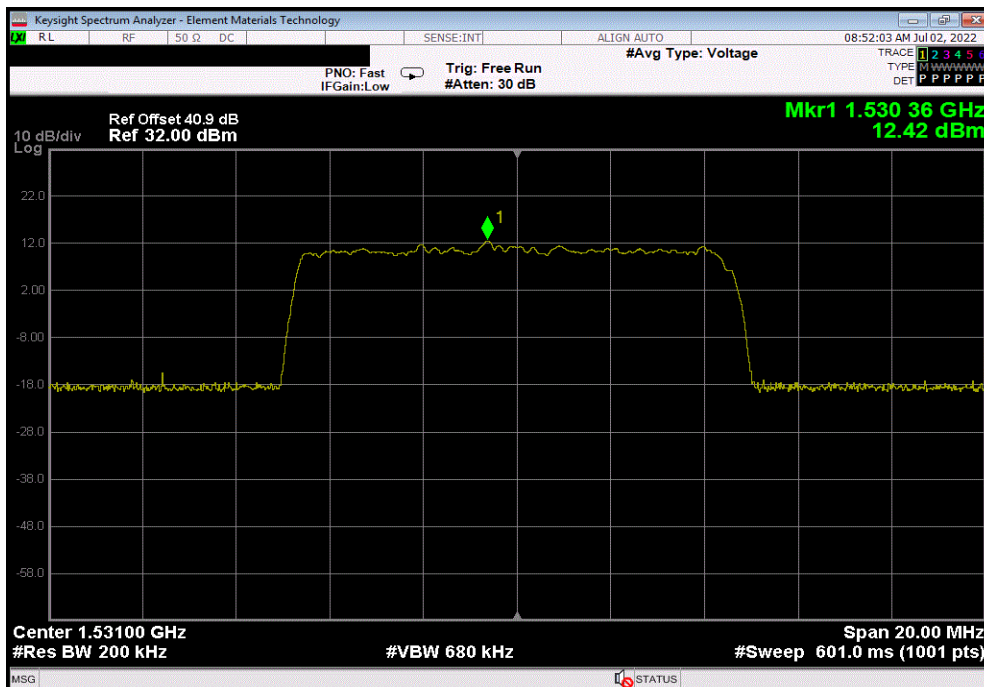


Thru 2022.05.02.0 XMit 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 40 RB/12 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
9.995	16	25.995	28.995	55.9	Pass	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset						
Initial Value	Antenna	2 Port (2x2 MIMO)	4 Port (4x4 MIMO)	Limit	Results	
dBm/200kHz	Gain (dBi)	dBm/200kHz	dBm/200kHz	(dBm)		
12.418	16	28.418	31.418	55.9	Pass	



POWER SPECTRAL DENSITY - ALL PORTS, 3dBi



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
Block - DC	Fairview Microwave	SD3235-2148	ANF	2022-05-27	2023-05-27
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFN	2022-01-19	2023-01-19
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
Cable	UtiFlex Micro-Coax	UFD1150A-1-0720-200200	TXK	2021-09-13	2022-09-13

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The fundamental emission output power (maximum average conducted output power) was measured using the channels and modes as called out on the following data sheets. The transmit power was set to its default maximum.

The method in section 5.2.3.5 of ANSI C63.26 was used to make the peak detector measurements.

The Remote Radio Head (RRH) may operate as a 4 port MIMO transmitter with transmitter outputs connected to two cross-polarized antennas [two transmitter outputs are connected to (+) radiators and two transmitter outputs are connected to (-) radiators]. The measurement value of $[10 \log (2)]$ per FCC KDB 662911D01 v02r01, ANSI C63.26-2015 section 6.4.6.3 b)2) and KDB 662911 D02v01 page 3 example (2) (cross-polarized radiators) which is then subtracted against the total number of actual ports measured represented by ANSI C63.26 clauses 6.4.3.1 and 6.4.3.2.4 ($10 \log N_{out}(4)$). The resulting total output power adjustment for four port operation is - 3dB [i.e.: $10 \log (2/4)$].

The total peak transmit power of all antenna ports was determined per ANSI C63.26-2015 paragraph 6.4.3.1.

The EIRP PSD limit is defined by FCC Part 25.253(d)(1) as $31.9 - 10 \log(\text{number of carriers } (4))$ dBW/200kHz.

POWER SPECTRAL DENSITY - ALL PORTS, 3dBi



TbTx 2022.06.03.0 XMi 2022.02.07.0

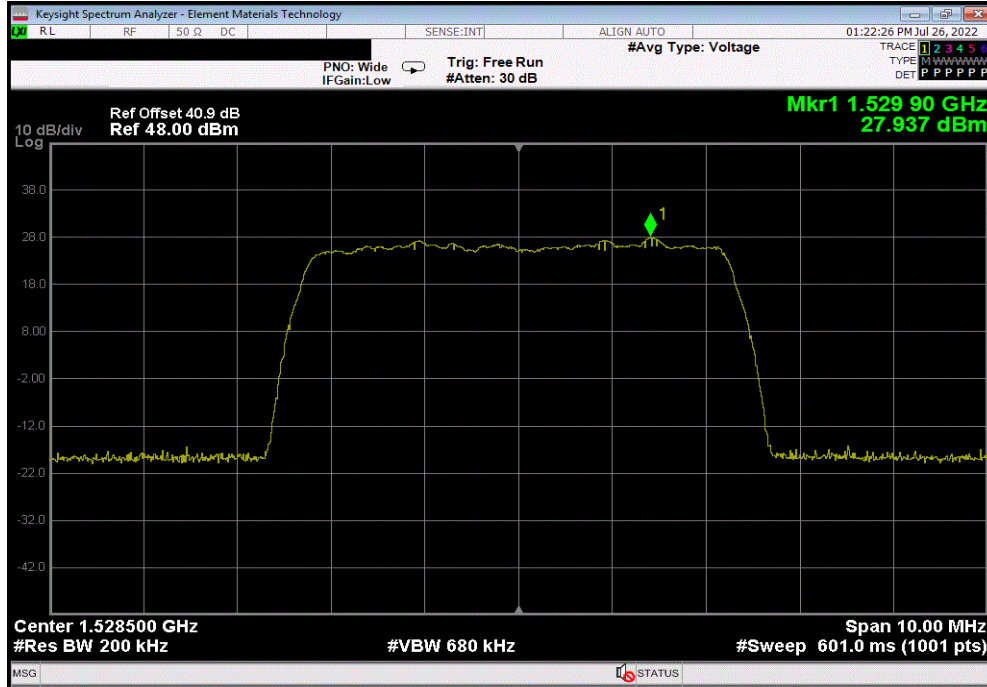
EUT:	TR44KA Base Station		Work Order:		MASY0006	
Serial Number:	SV2146TR44KA000001		Date:		11-Aug-22	
Customer:	Mavenir Systems, Inc		Temperature:		20.1 °C	
Attendees:	None		Humidity:		59.3% RH	
Project:	None		Barometric Pres.:		1021 mbar	
Tested by:	Brandon Hobbs	Power:	48 VDC	Job Site:	TX09	
TEST SPECIFICATIONS			Test Method			
FCC 25:2022			ANSI C63.26:2015			
COMMENTS						
All conducted path losses were accounted for: cables, attenuators, adapters, DC block and notch filter. The PA gain was adjusted for a 3dBi antenna (Final software value of 42). The output power was measured for a single carrier using typical worst case bandwidth and modulations of 5 MHz QPSK. The total output power for multiport (2x2 MIMO and 4x4 MIMO) operation was determined based upon ANSI C63.26 clauses 6.4.3.1 and 6.4.3.2.4 (10 Log Nout(N)) - (10 Log Cross Polarized corrected Port Count (CP)) = (10 Log CP/N). After the cross polarization antenna considerations, the total output power for all four port operation -3dB [i.e.: 10 Log(2/4)]. Worst Case Bandwidth and Resource Block / Offset configurations was used. The operating duty cycle was set to 100%. The all ports graphical tables showing the actual calculations are shown in the tabular data.						
DEVIATIONS FROM TEST STANDARD						
None						
Configuration #	1	Signature 				
		Initial PSD Pwr (dBm/200kHz)	Antenna Gain (dBi)	EIRP (dBm/200kHz)	Limit (dBm/200kHz)	Results
Antenna Port 1						
5G NR, Band n24, SCS 15kHz, 5 MHz BW						
QPSK Modulation						
Low Channel 1528.5 MHz						
25 RB/0 Offset						
27.937						
3						
30.9						
55.9						
Pass						
High Channel 1533.5 MHz						
25 RB/0 Offset						
27.660						
3						
30.7						
55.9						
Pass						
Antenna Port 2						
5G NR, Band n24, SCS 15kHz, 5 MHz BW						
QPSK Modulation						
Low Channel 1528.5 MHz						
25 RB/0 Offset						
27.177						
3						
30.2						
55.9						
Pass						
High Channel 1533.5 MHz						
25 RB/0 Offset						
27.870						
3						
30.9						
55.9						
Pass						
Antenna Port 3						
5G NR, Band n24, SCS 15kHz, 5 MHz BW						
QPSK Modulation						
Low Channel 1528.5 MHz						
25 RB/0 Offset						
27.531						
3						
30.5						
55.9						
Pass						
High Channel 1533.5 MHz						
25 RB/0 Offset						
27.656						
3						
30.7						
55.9						
Pass						
Antenna Port 4						
5G NR, Band n24, SCS 15kHz, 5 MHz BW						
QPSK Modulation						
Low Channel 1528.5 MHz						
25 RB/0 Offset						
26.871						
3						
29.9						
55.9						
Pass						
High Channel 1533.5 MHz						
25 RB/0 Offset						
27.367						
3						
30.4						
55.9						
Pass						
All Ports						
5G NR, Band n24, SCS 15kHz, 5 MHz BW						
QPSK Modulation						
Low Channel 1528.5 MHz						
25 RB/0 Offset						
N/A						
N/A						
33.4						
55.9						
Pass						
High Channel 1533.5 MHz						
25 RB/0 Offset						
N/A						
N/A						
33.7						
55.9						
Pass						

POWER SPECTRAL DENSITY - ALL PORTS, 3dBi

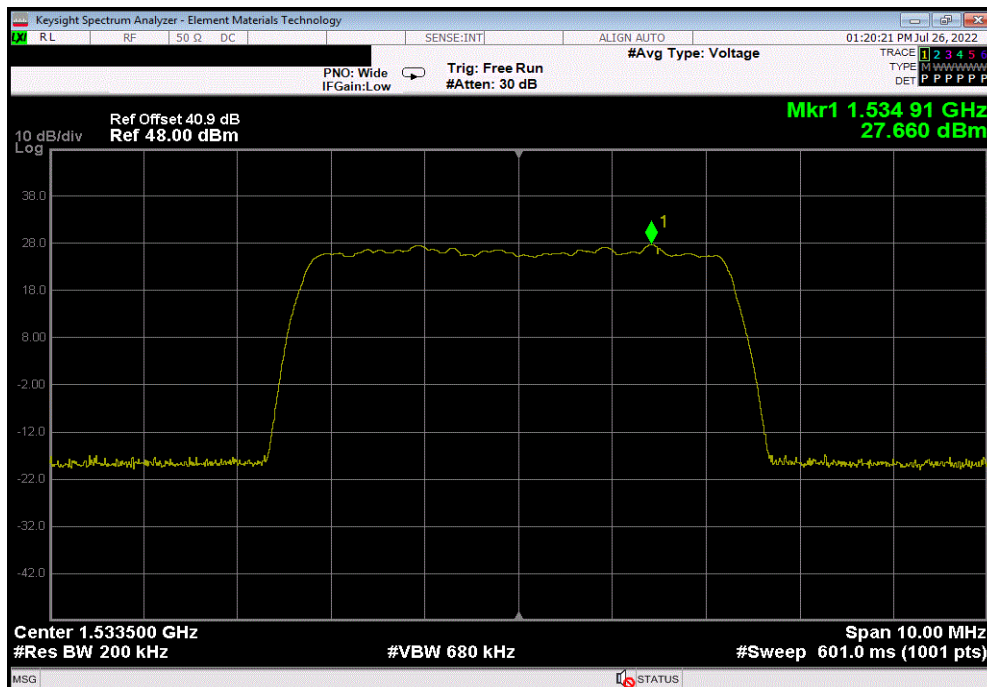


TbTx 2022.06.03.0 XMt 2022.02.07.0

Antenna Port 1, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
Initial PSD	Antenna	EIRP	Limit			
Pwr (dBm/200kHz)	Gain (dBi)	(dBm/200kHz)	(dBm/200kHz)	Results		
27.937	3	30.937	55.9	Pass		



Antenna Port 1, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
Initial PSD	Antenna	EIRP	Limit			
Pwr (dBm/200kHz)	Gain (dBi)	(dBm/200kHz)	(dBm/200kHz)	Results		
27.66	3	30.66	55.9	Pass		

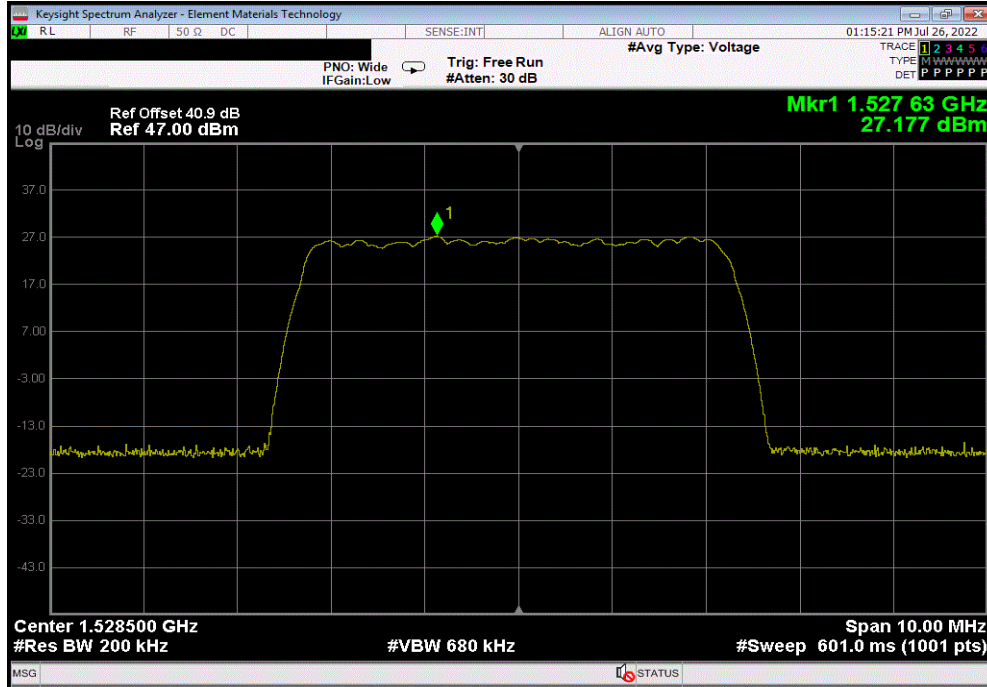


POWER SPECTRAL DENSITY - ALL PORTS, 3dBi

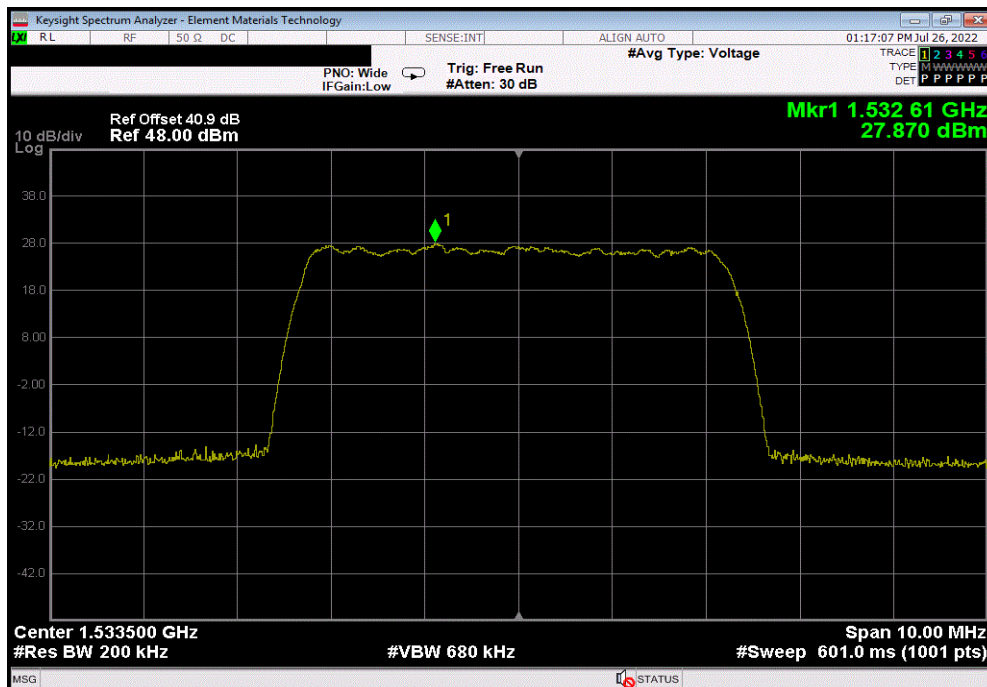


TbTx 2022.06.03.0 XMtX 2022.02.07.0

Antenna Port 2, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
Initial PSD	Antenna	EIRP	Limit			
Pwr (dBm/200kHz)	Gain (dBi)	(dBm/200kHz)	(dBm/200kHz)	Results		
27.177	3	30.177	55.9	Pass		



Antenna Port 2, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
Initial PSD	Antenna	EIRP	Limit			
Pwr (dBm/200kHz)	Gain (dBi)	(dBm/200kHz)	(dBm/200kHz)	Results		
27.87	3	30.87	55.9	Pass		

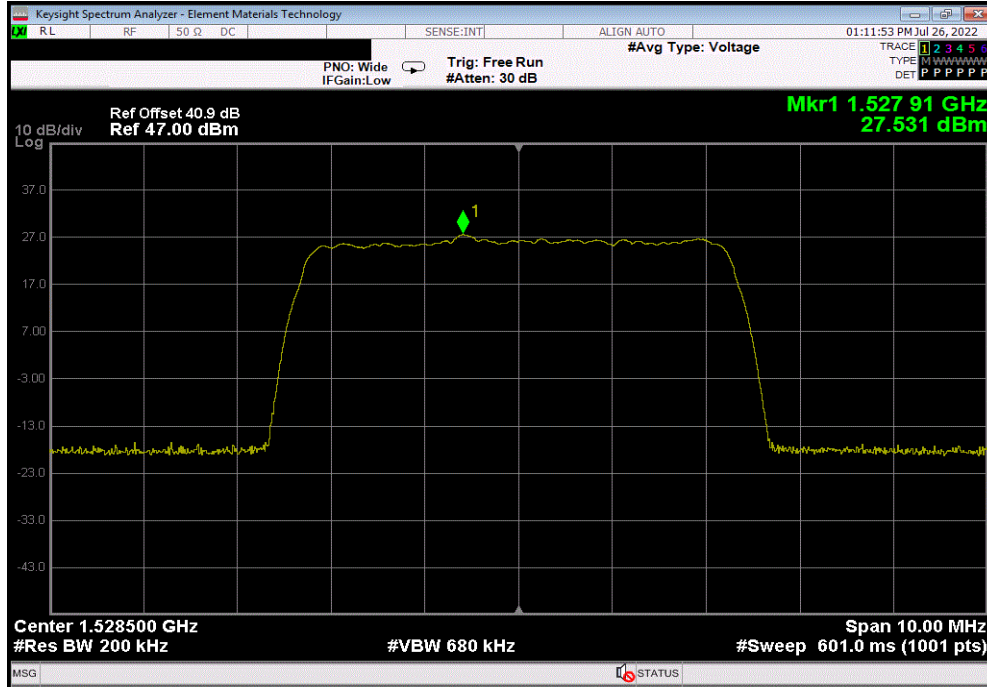


POWER SPECTRAL DENSITY - ALL PORTS, 3dBi

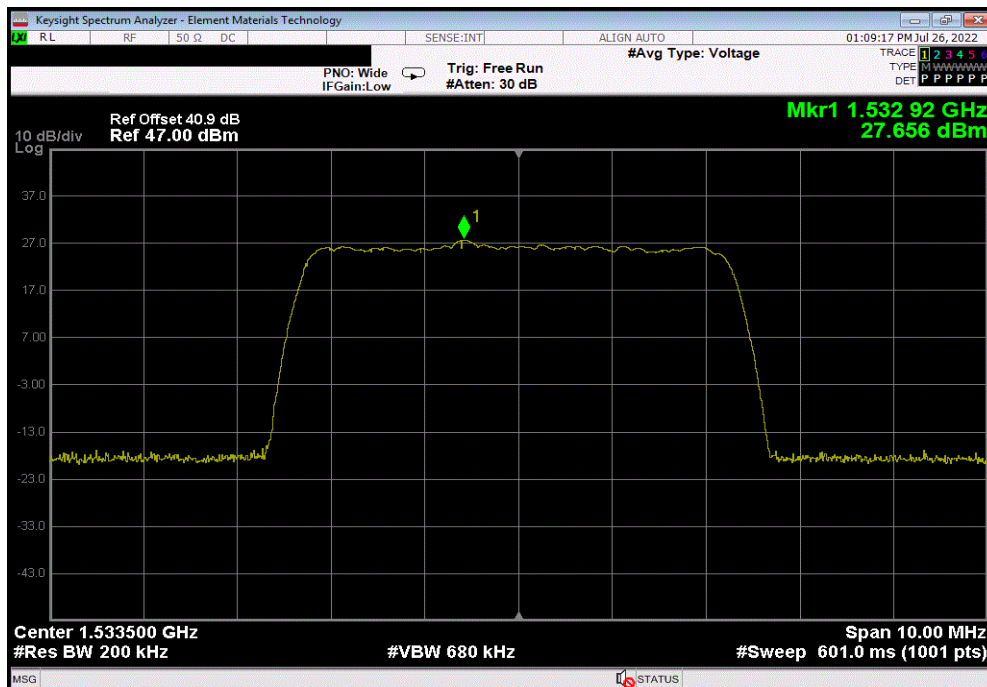


TMTx 2022.06.03.0 XMt 2022.02.07.0

Antenna Port 3, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
Initial PSD	Antenna	EIRP	Limit			
Pwr (dBm/200kHz)	Gain (dBi)	(dBm/200kHz)	(dBm/200kHz)	Results		
27.531	3	30.531	55.9	Pass		



Antenna Port 3, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
Initial PSD	Antenna	EIRP	Limit			
Pwr (dBm/200kHz)	Gain (dBi)	(dBm/200kHz)	(dBm/200kHz)	Results		
27.656	3	30.656	55.9	Pass		

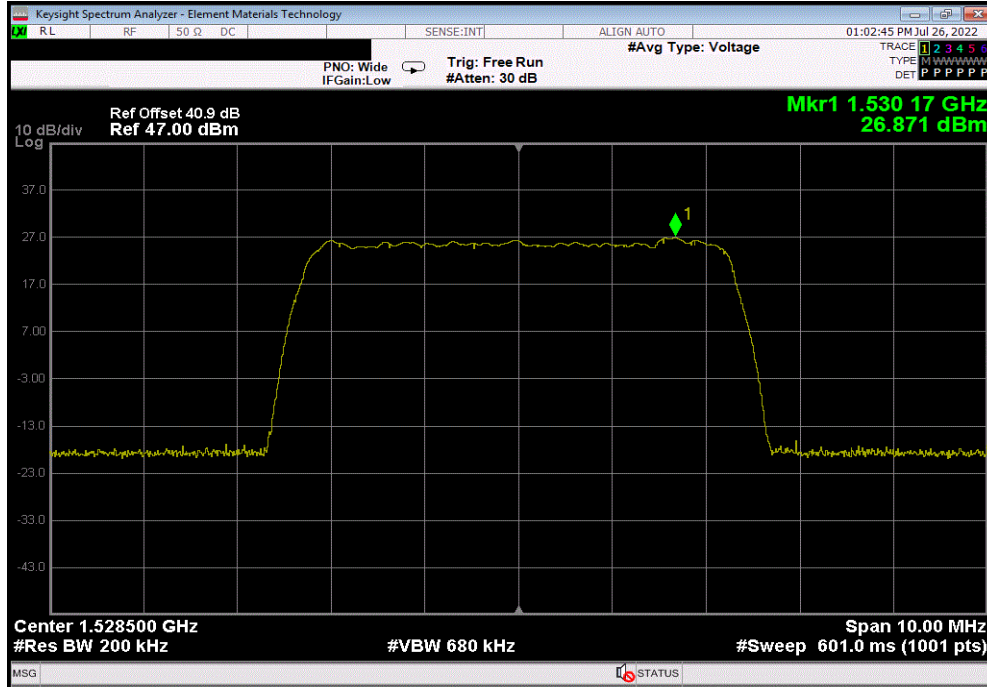


POWER SPECTRAL DENSITY - ALL PORTS, 3dBi

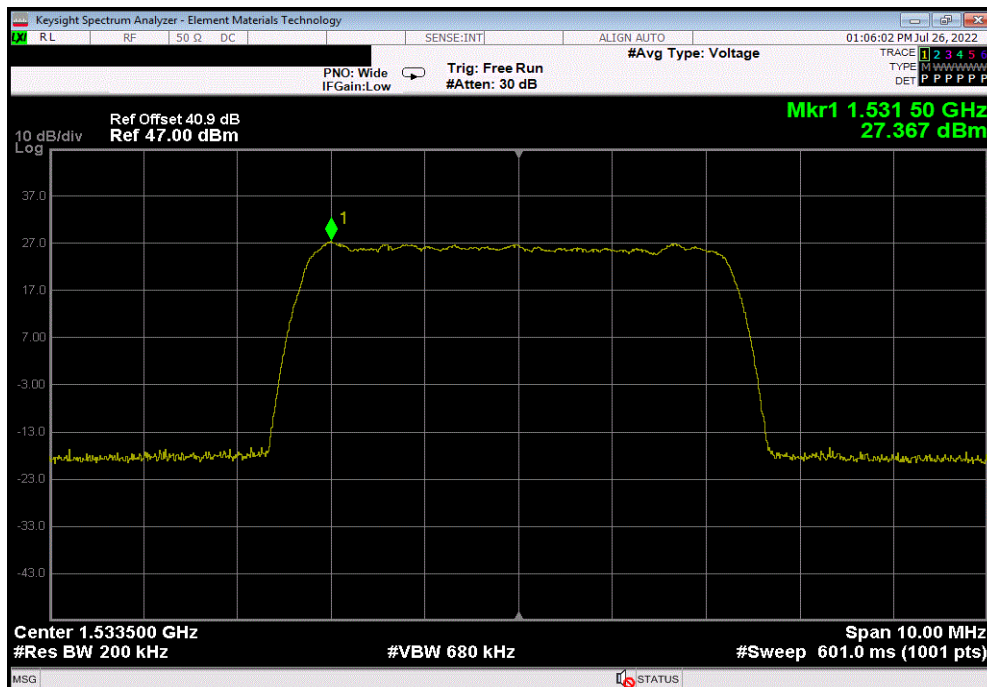


TbTx 2022.06.03.0 XMt 2022.02.07.0

Antenna Port 4, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
	Initial PSD	Antenna	EIRP	Limit		
	Pwr (dBm/200kHz)	Gain (dBi)	(dBm/200kHz)	(dBm/200kHz)	Results	
	26.871	3	29.871	55.9	Pass	



Antenna Port 4, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
	Initial PSD	Antenna	EIRP	Limit		
	Pwr (dBm/200kHz)	Gain (dBi)	(dBm/200kHz)	(dBm/200kHz)	Results	
	27.367	3	30.367	55.9	Pass	



POWER SPECTRAL DENSITY - ALL PORTS, 3dBi



TSTx 2022.06.03.0 XMII 2022.02.07.0

All Ports, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
	Initial PSD	Antenna	EIRP	Limit	Results	
	Pwr (dBm/200kHz)	Gain (dBi)	(dBm/200kHz)	(dBm/200kHz)		
	N/A	N/A	33.41	55.9	Pass	

	Port 1	Port 2	Port 3	Port 4	All Ports	Cross Polarized Adj
dBm	30.9	30.2	30.5	29.9		
Watts	1.23	1.05	1.12	0.98		
Total dBm					36.41	33.41
Total Watts					4.38	2.2

All Ports, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
	Initial PSD	Antenna	EIRP	Limit	Results	
	Pwr (dBm/200kHz)	Gain (dBi)	(dBm/200kHz)	(dBm/200kHz)		
	N/A	N/A	33.69	55.9	Pass	

	Port 1	Port 2	Port 3	Port 4	All Ports	Cross Polarized Adj
dBm	30.7	30.9	30.7	30.4		
Watts	1.17	1.23	1.17	1.1		
Total dBm					36.69	33.69
Total Watts					4.67	2.34