AVERAGE POWER - 16dBi

XMit 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 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 5.2.4.4 of ANSI C63.26 was used to make the measurements. This method uses trace averaging across the ON and OFF times of the EUT transmissions in the spectrum analyzer channel power function using an RMS detector. Following the measurement a duty cycle correction was applied by adding [10 log (1/D)], where D is the duty cycle in decimal, to the measured power to compute the average power during the actual transmission times.

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

The EIRP limit is defined by the FCC-20-48A1 waiver document as 9.8dBW converted to 39.8dBm.

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element

TbtTx 2022.05.02.0 XMit 2022.02.07.0

EUT:	**TR44KA Base Station**			**Work Order:**	**MASY0006**
Serial Number:	**SV2146TR44KA000001**			**Date:**	**10-Aug-22**
Customer:	**Mavenir Systems, Inc**			**Temperature:**	**21.1 °C**
Attendees:	**None**			**Humidity:**	**56.1% 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 16dBi antenna (Final software value of 29). The output power was measured for a single carrier channel bandwidth on the worst case 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. The operating duty cycle was set at 100%.

DEVIATIONS FROM TEST STANDARD

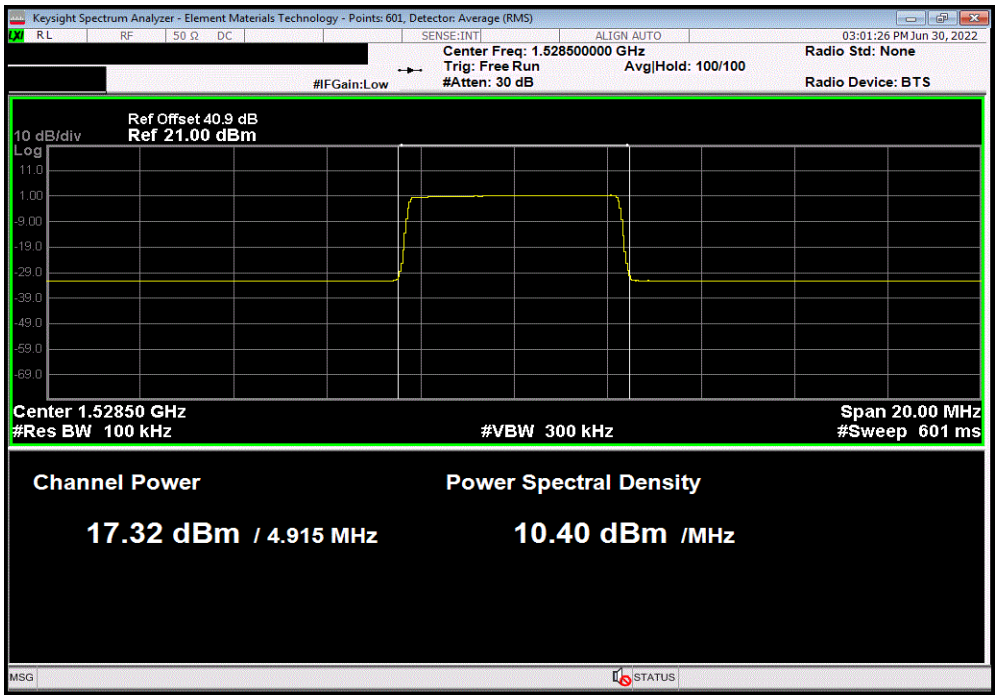
None

Configuration #	**1**	*Signature*

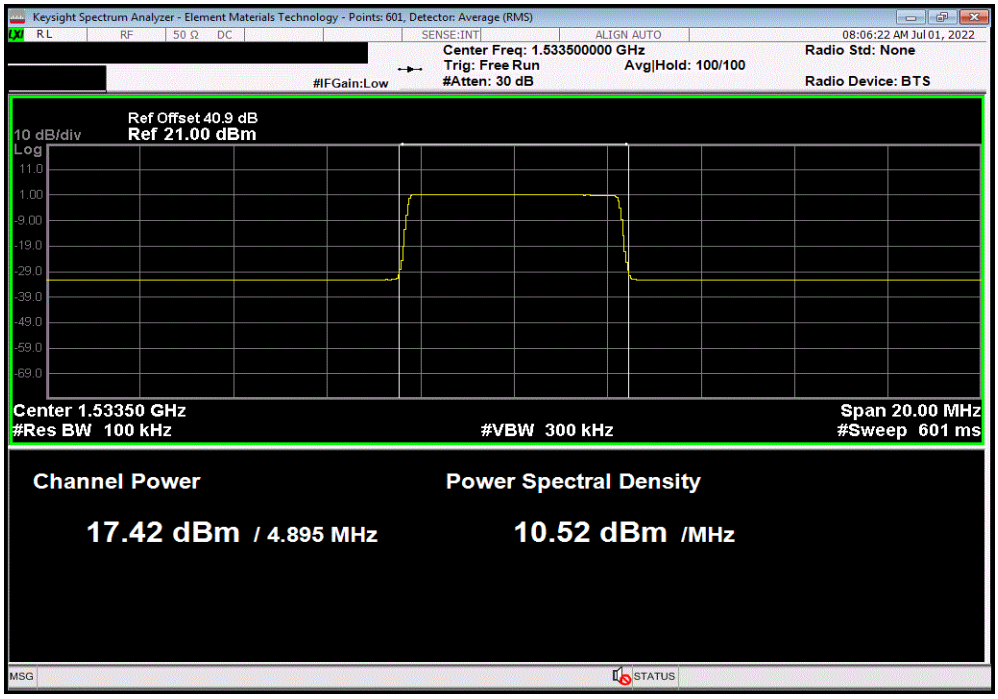
	Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
5G NR, Band n24, SCS 15kHz							
5 MHz Bandwidth							
QPSK Modulation							
Low Channel 1528.5 MHz							
25 RB/0 Offset	17.320	16	0	33.3	36.3	39.8	Pass
High Channel 1533.5 MHz							
25 RB/0 Offset	17.418	16	0	33.4	36.4	39.8	Pass
16-QAM Modulation							
Low Channel 1528.5 MHz							
25 RB/0 Offset	17.466	16	0	33.5	36.5	39.8	Pass
High Channel 1533.5 MHz							
25 RB/0 Offset	17.450	16	0	33.5	36.5	39.8	Pass
64-QAM Modulation							
Low Channel 1528.5 MHz							
25 RB/0 Offset	17.397	16	0	33.4	36.4	39.8	Pass
High Channel 1533.5 MHz							
25 RB/0 Offset	17.413	16	0	33.4	36.4	39.8	Pass
256-QAM Modulation							
Low Channel 1528.5 MHz							
25 RB/0 Offset	17.407	16	0	33.4	36.4	39.8	Pass
High Channel 1533.5 MHz							
25 RB/0 Offset	17.438	16	0	33.4	36.4	39.8	Pass
10 MHz Bandwidth							
QPSK Modulation							
Mid Channel 1531 MHz							
25 RB/0 Offset	12.055	16	0	28.1	31.1	39.8	Pass
25 RB/13 Offset	14.037	16	0	30.0	33.0	39.8	Pass
25 RB/27 Offset	12.203	16	0	28.2	31.2	39.8	Pass
40 RB/0 Offset	14.150	16	0	30.2	33.2	39.8	Pass
40 RB/6 Offset	14.042	16	0	30.0	33.0	39.8	Pass
40 RB/12 Offset	14.255	16	0	30.3	33.3	39.8	Pass
52 RB/0 Offset	15.475	16	0	31.5	34.5	39.8	Pass
16-QAM Modulation							
Mid Channel 1531 MHz							
25 RB/0 Offset	13.858	16	0	29.9	32.9	39.8	Pass
25 RB/13 Offset	14.246	16	0	30.2	33.2	39.8	Pass
25 RB/27 Offset	11.434	16	0	27.4	30.4	39.8	Pass
40 RB/0 Offset	14.157	16	0	30.2	33.2	39.8	Pass
40 RB/6 Offset	11.285	16	0	27.3	30.3	39.8	Pass
40 RB/12 Offset	14.257	16	0	30.3	33.3	39.8	Pass
52 RB/0 Offset	17.347	16	0	33.3	36.3	39.8	Pass
64-QAM Modulation							
Mid Channel 1531 MHz							
25 RB/0 Offset	12.028	16	0	28.0	31.0	39.8	Pass
25 RB/13 Offset	14.226	16	0	30.2	33.2	39.8	Pass
25 RB/27 Offset	12.191	16	0	28.2	31.2	39.8	Pass
40 RB/0 Offset	11.396	16	0	27.4	30.4	39.8	Pass
40 RB/6 Offset	14.021	16	0	30.0	33.0	39.8	Pass
40 RB/12 Offset	14.251	16	0	30.3	33.3	39.8	Pass
52 RB/0 Offset	17.319	16	0	33.3	36.3	39.8	Pass
256-QAM Modulation							
Mid Channel 1531 MHz							
25 RB/0 Offset	13.999	16	0	30.0	33.0	39.8	Pass
25 RB/13 Offset	12.296	16	0	28.3	31.3	39.8	Pass
25 RB/27 Offset	12.207	16	0	28.2	31.2	39.8	Pass
40 RB/0 Offset	14.162	16	0	30.2	33.2	39.8	Pass
40 RB/6 Offset	14.029	16	0	30.0	33.0	39.8	Pass
40 RB/12 Offset	14.266	16	0	30.3	33.3	39.8	Pass
52 RB/0 Offset	17.334	16	0	33.3	36.3	39.8	Pass

AVERAGE POWER - 16dBi

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, QPSK Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
17.32	16	0	33.32	36.32	39.8	Pass

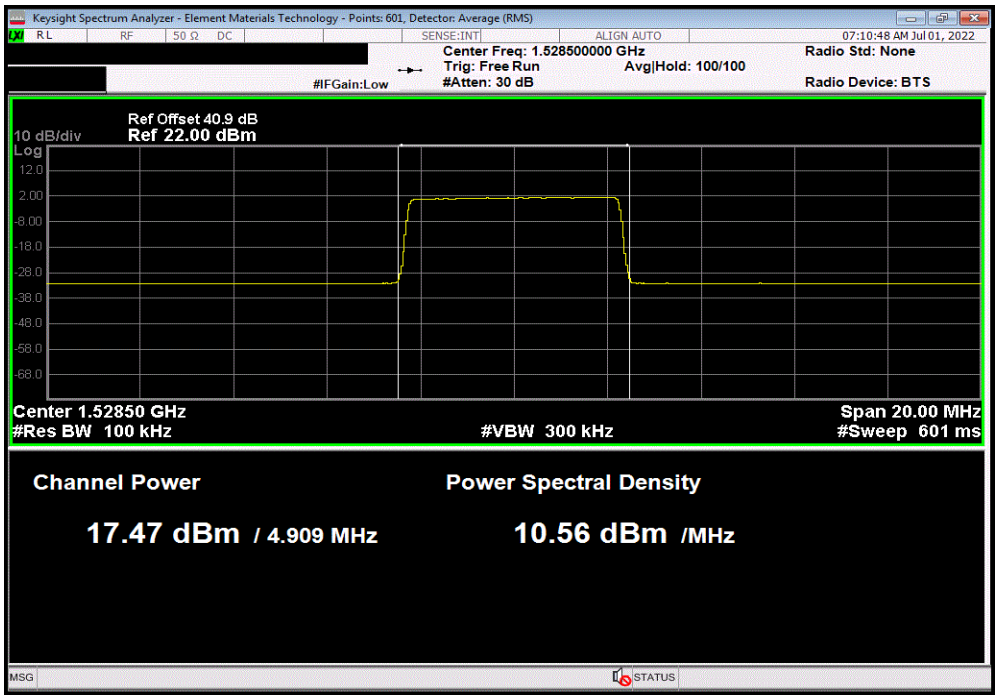


5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
17.418	16	0	33.418	36.418	39.8	Pass

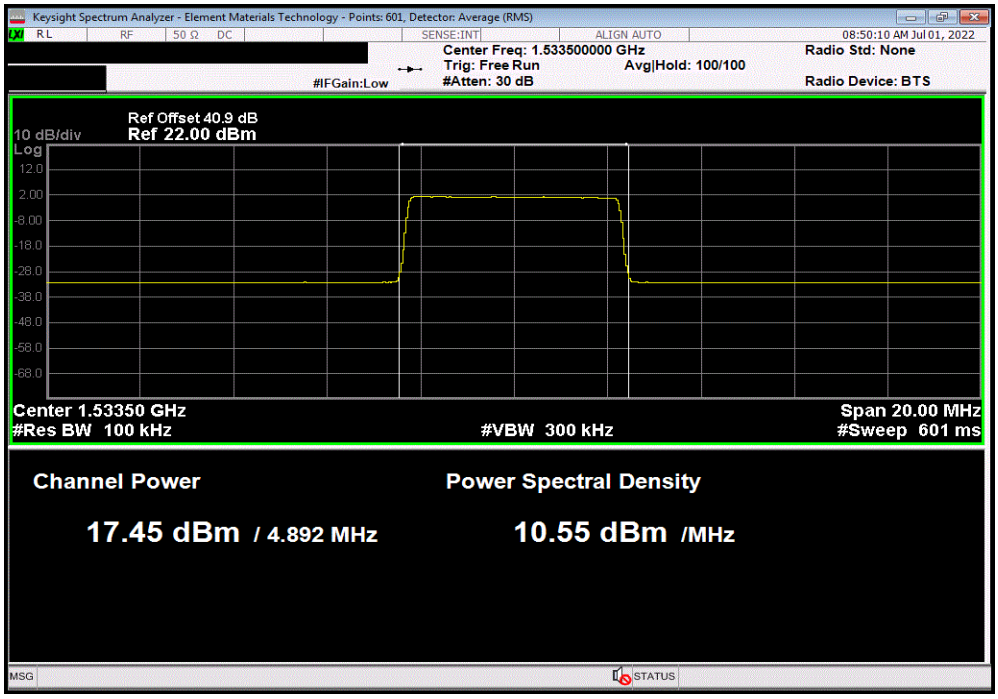


AVERAGE POWER - 16dBi

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 16-QAM Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
17.466	16	0	33.466	36.466	39.8	Pass

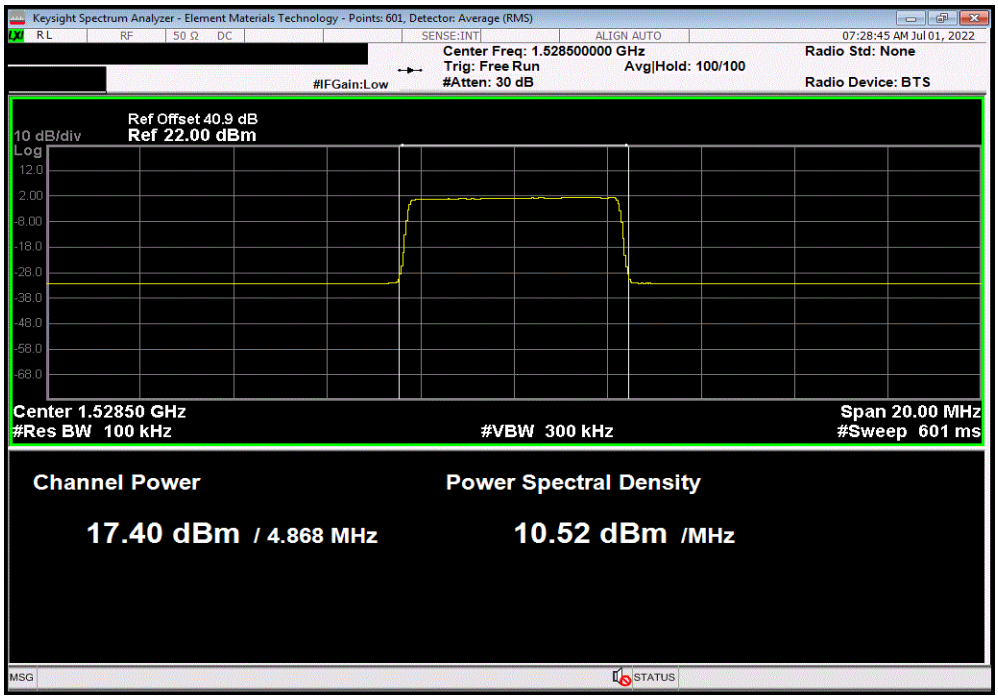


5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 16-QAM Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
17.45	16	0	33.45	36.45	39.8	Pass

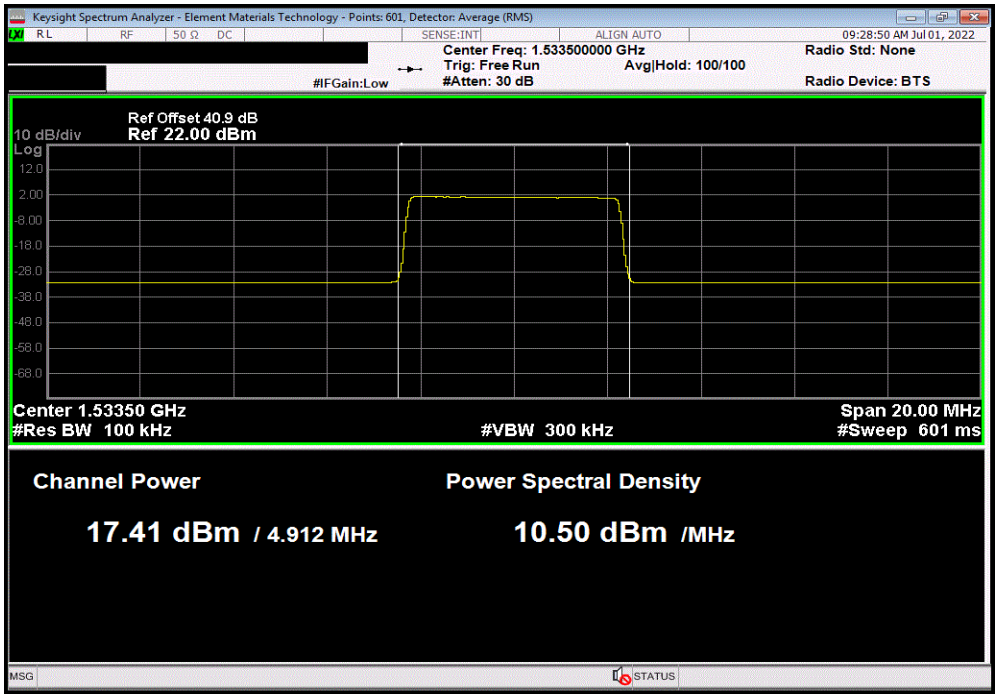


AVERAGE POWER - 16dBi

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 64-QAM Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
17.397	16	0	33.397	36.397	39.8	Pass

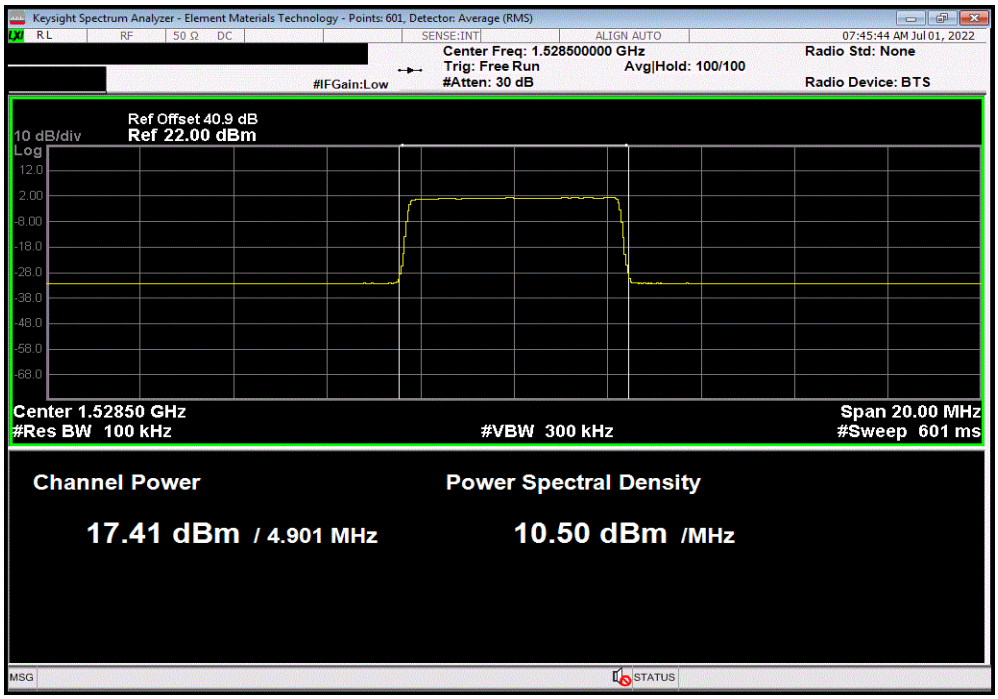


5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 64-QAM Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
17.413	16	0	33.413	36.413	39.8	Pass

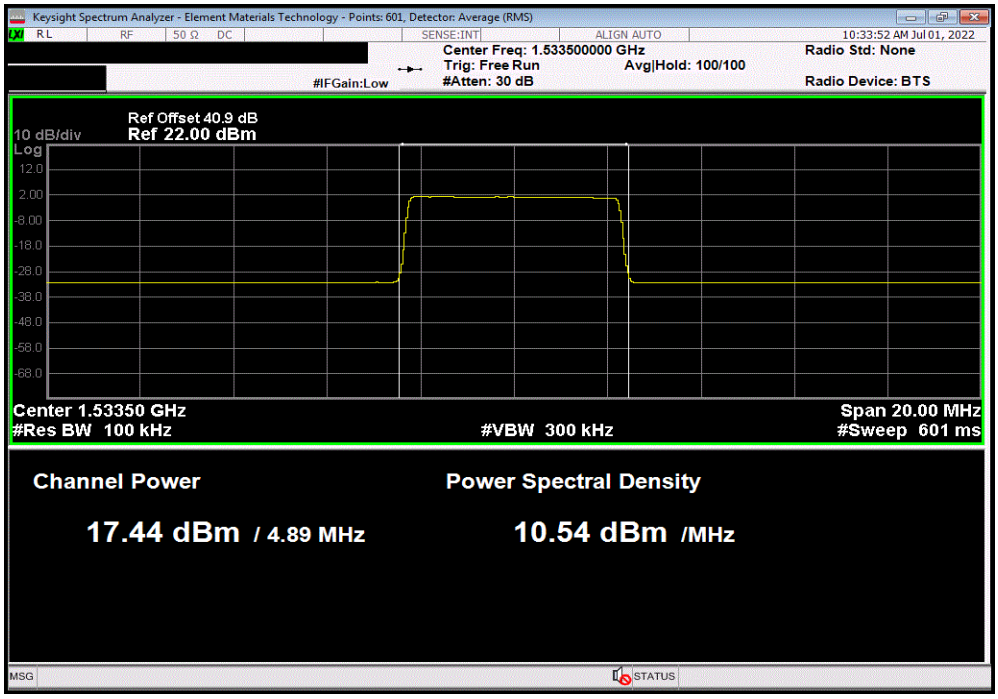


AVERAGE POWER - 16dBi

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 256-QAM Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
17.407	16	0	33.407	36.407	39.8	Pass

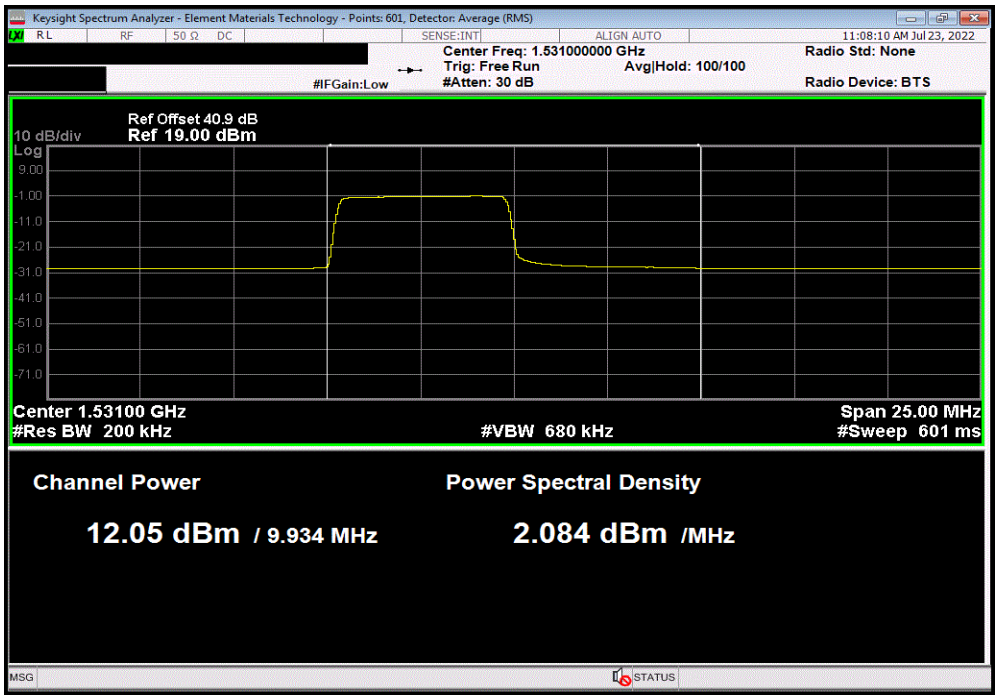


5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 256-QAM Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
17.438	16	0	33.438	36.438	39.8	Pass

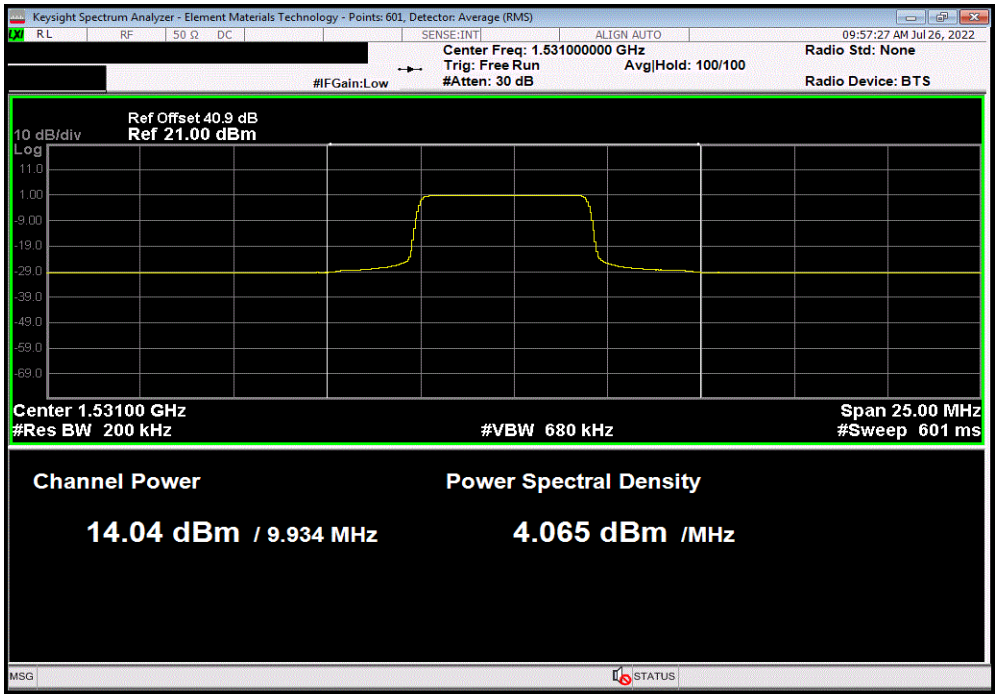


AVERAGE POWER - 16dBi

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 25 RB/0 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
12.055	16	0	28.055	31.055	39.8	Pass



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 25 RB/13 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
14.037	16	0	30.037	33.037	39.8	Pass



AVERAGE POWER - 16dBi

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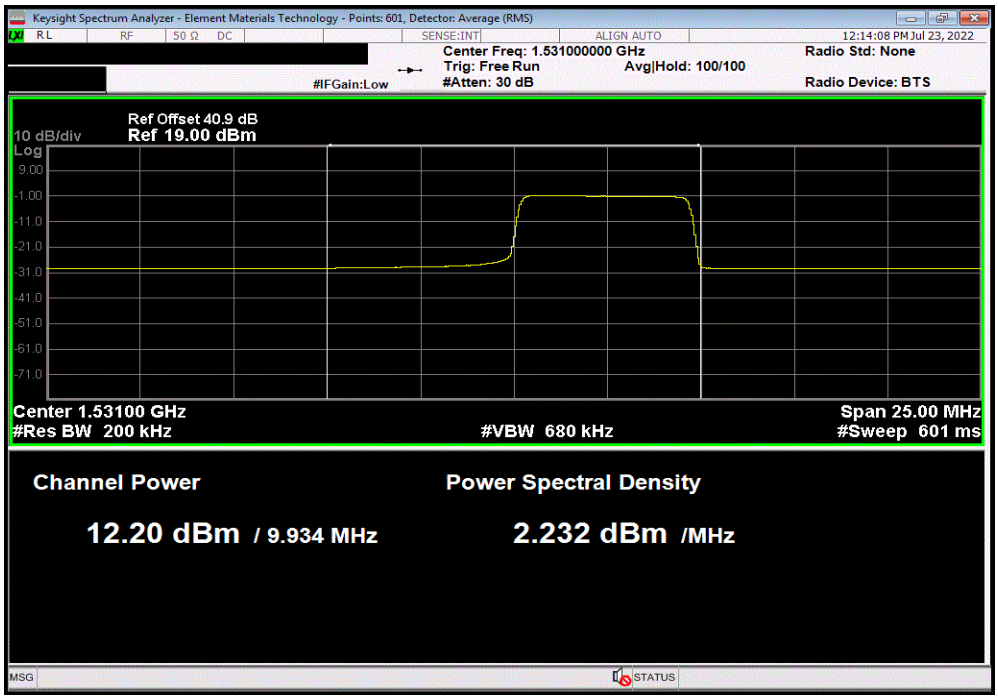
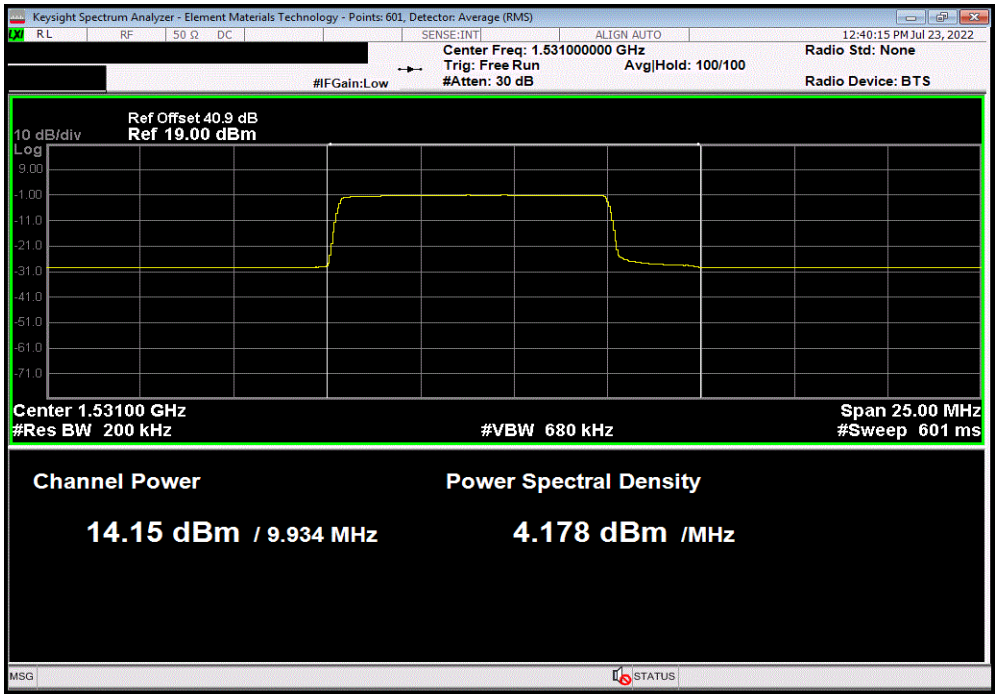
TbtTx 2022.05.02.0 XMit 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 25 RB/27 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
12.203	16	0	28.203	31.203	39.8	Pass

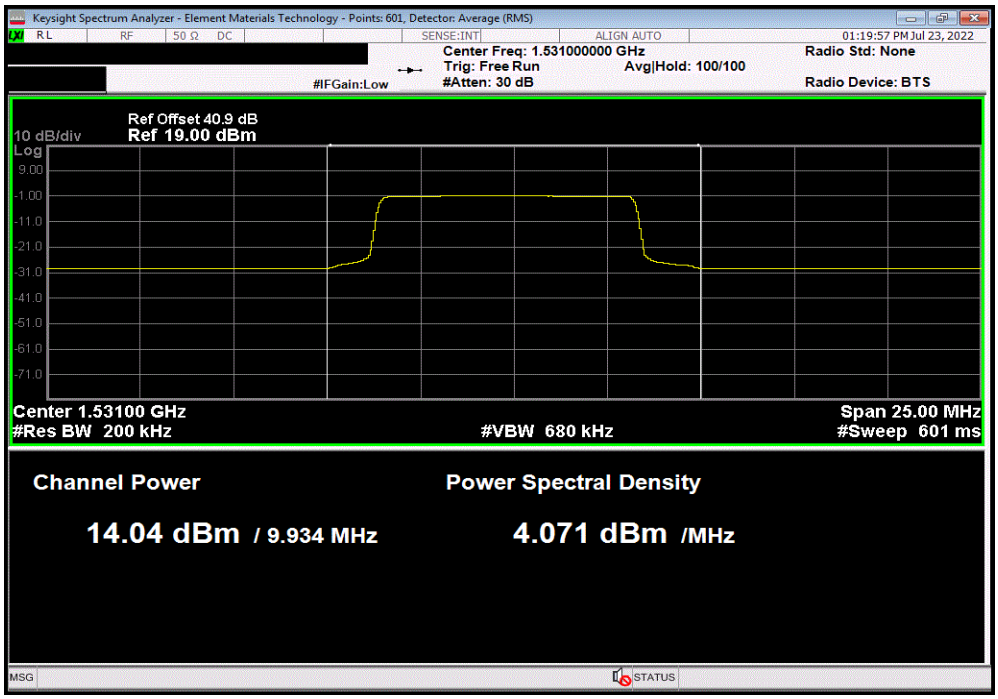


5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 40 RB/0 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
14.15	16	0	30.15	33.15	39.8	Pass

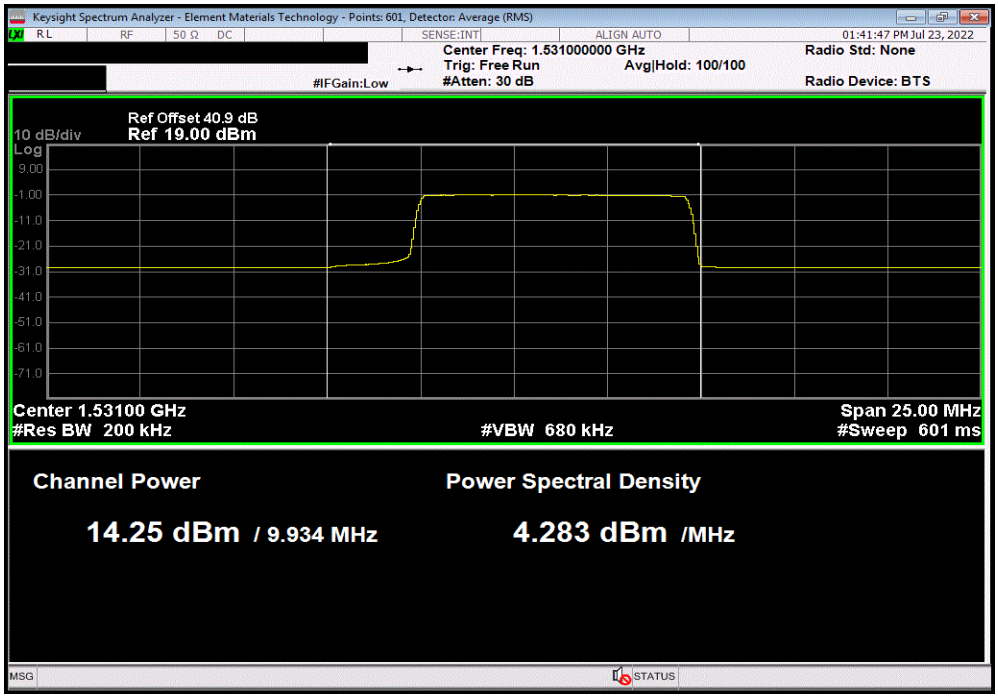


AVERAGE POWER - 16dBi

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 40 RB/6 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
14.042	16	0	30.042	33.042	39.8	Pass

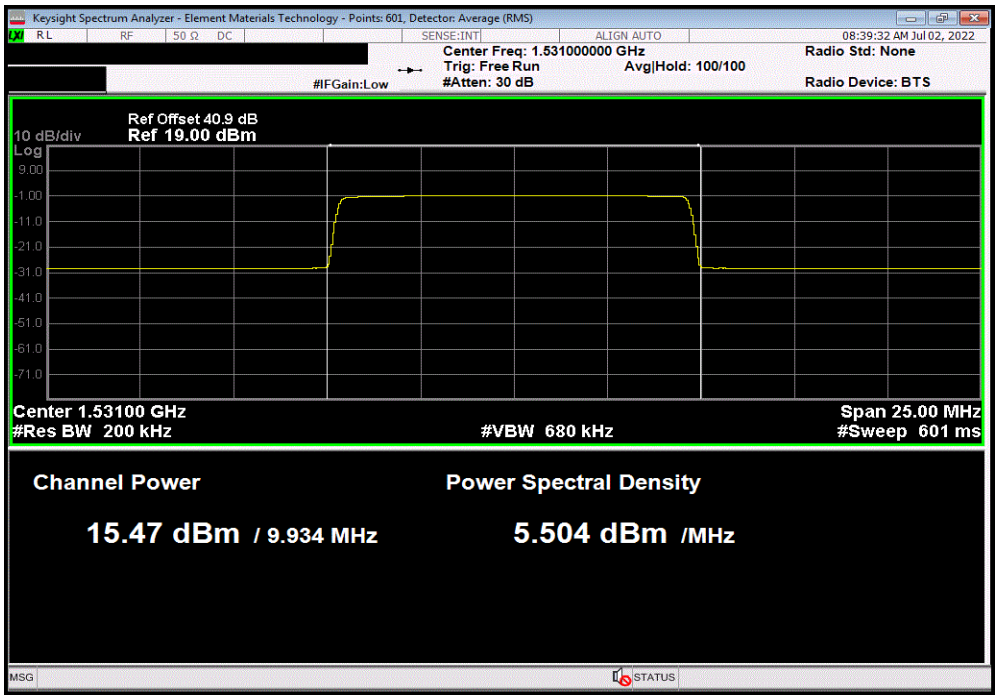


5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 40 RB/12 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
14.255	16	0	30.255	33.255	39.8	Pass

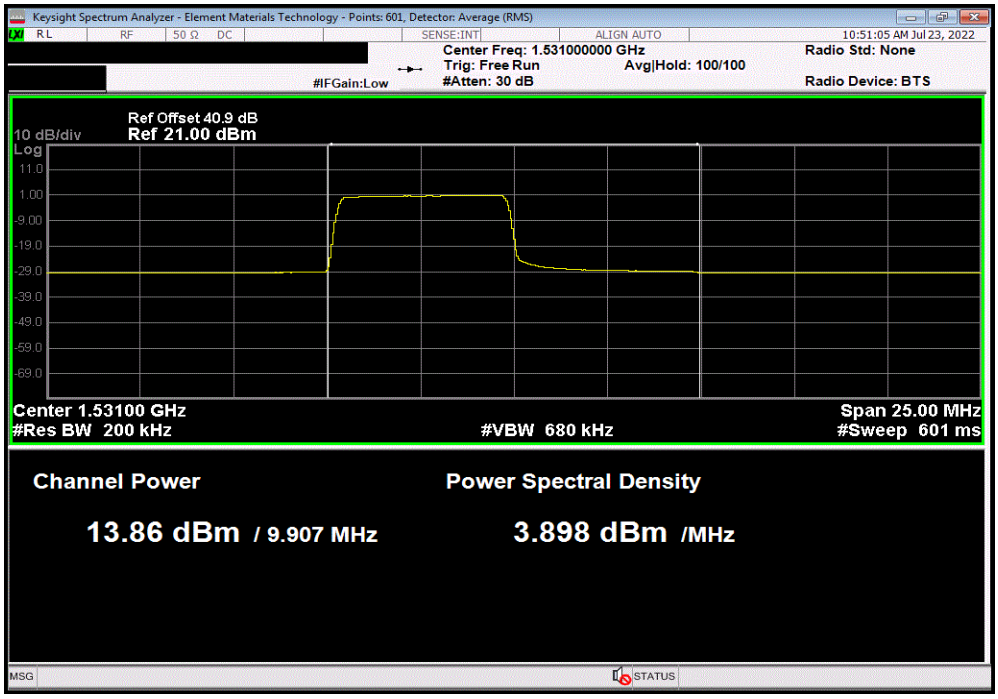


AVERAGE POWER - 16dBi

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
15.475	16	0	31.475	34.475	39.8	Pass

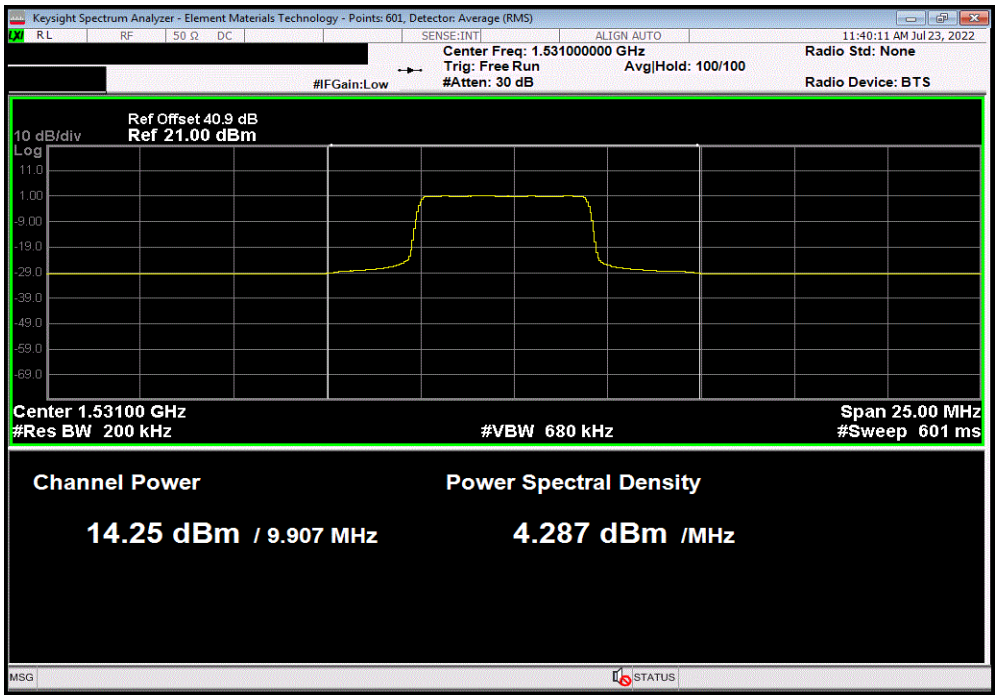


5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 25 RB/0 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
13.858	16	0	29.858	32.858	39.8	Pass

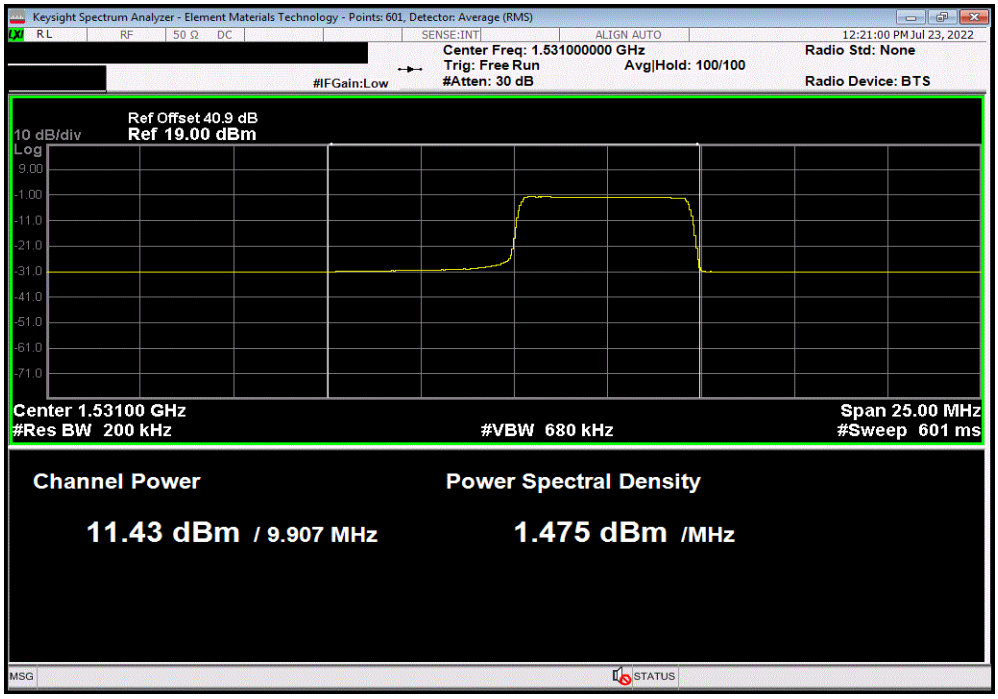


AVERAGE POWER - 16dBi

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 25 RB/13 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
14.246	16	0	30.246	33.246	39.8	Pass

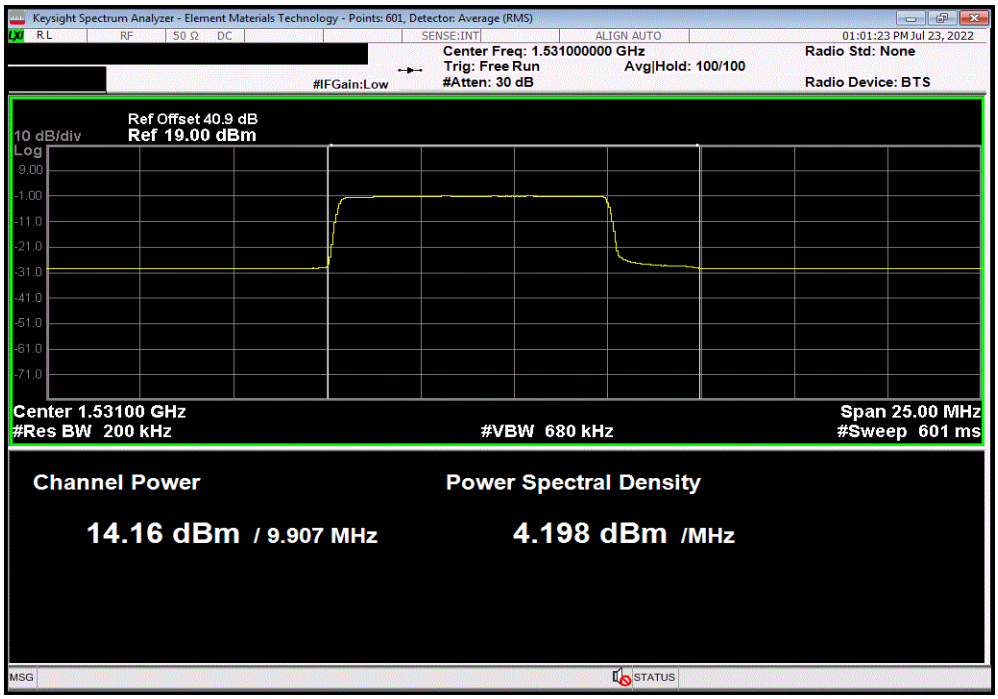


5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 25 RB/27 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
11.434	16	0	27.434	30.434	39.8	Pass

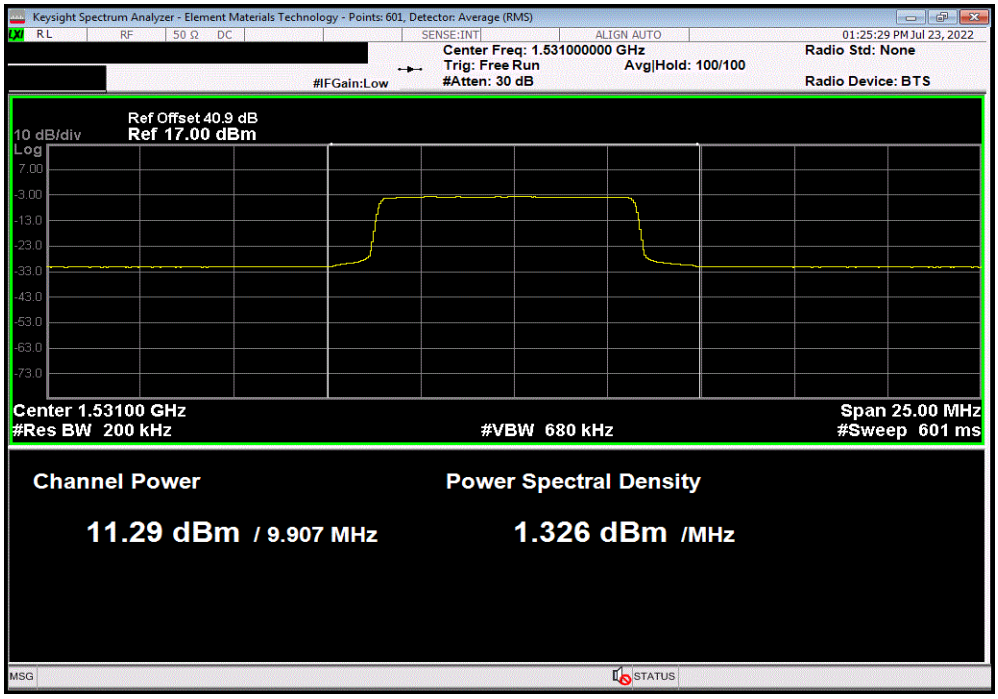


AVERAGE POWER - 16dBi

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 40 RB/0 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
14.157	16	0	30.157	33.157	39.8	Pass

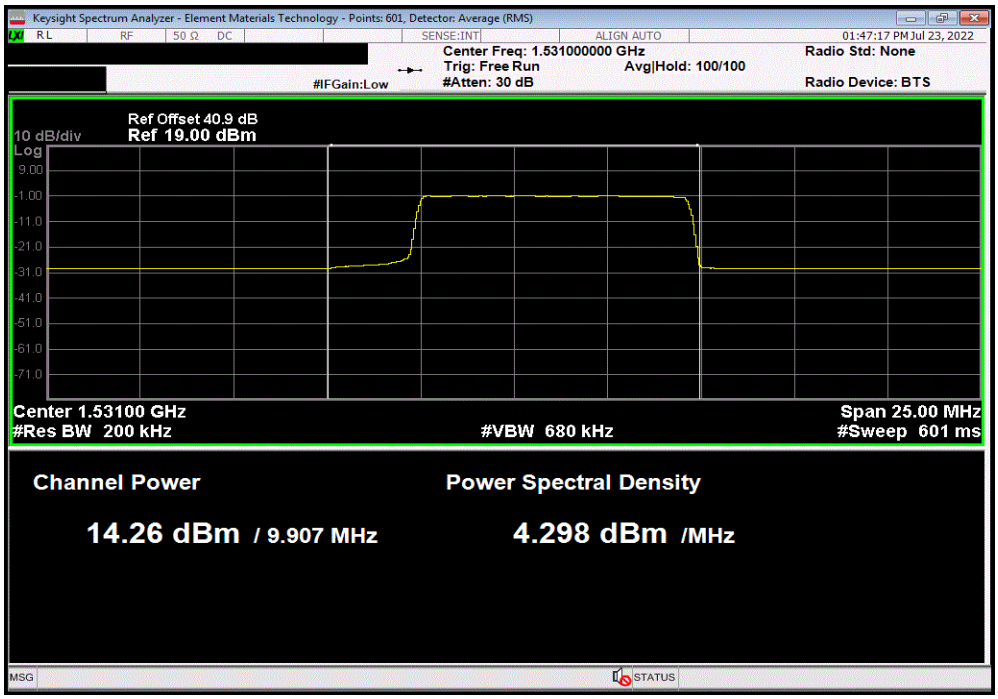


5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 40 RB/6 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
11.285	16	0	27.285	30.285	39.8	Pass

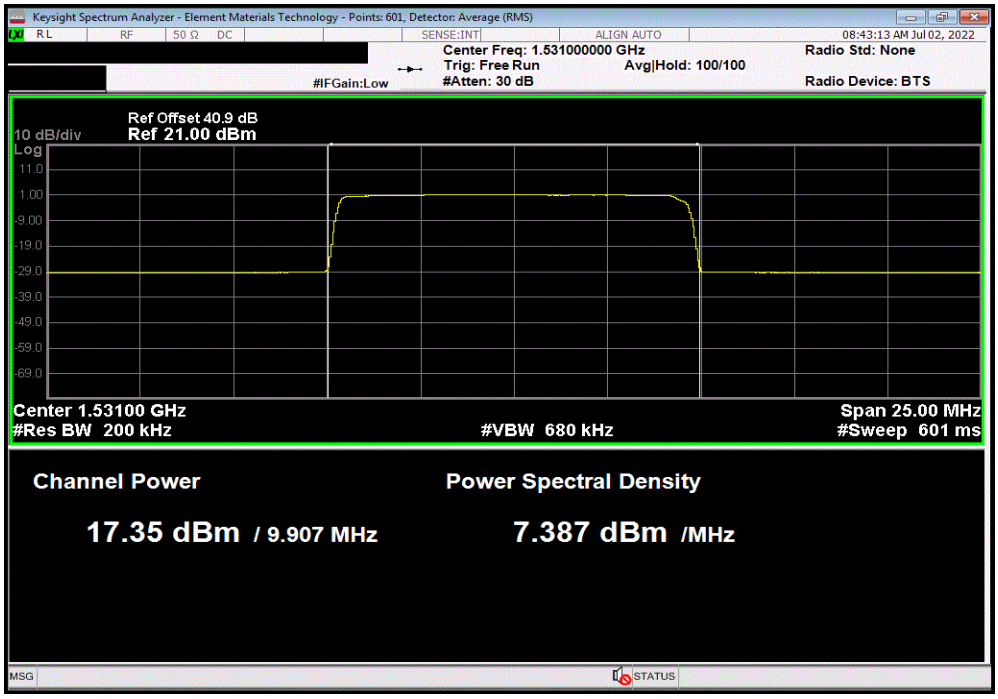


AVERAGE POWER - 16dBi

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 40 RB/12 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
14.257	16	0	30.257	33.257	39.8	Pass

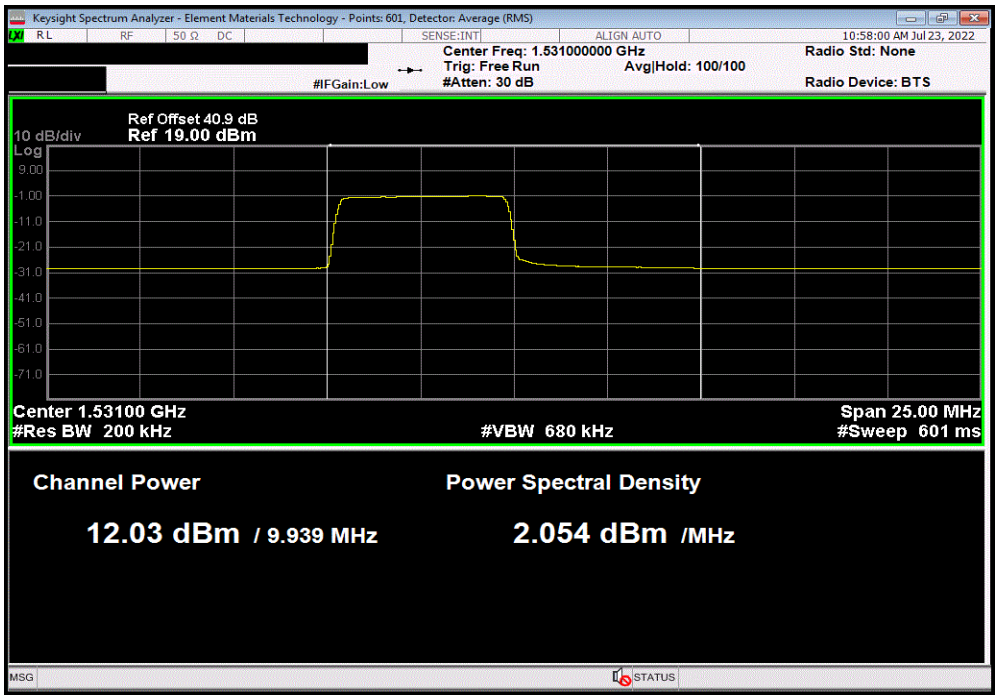


5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
17.347	16	0	33.347	36.347	39.8	Pass

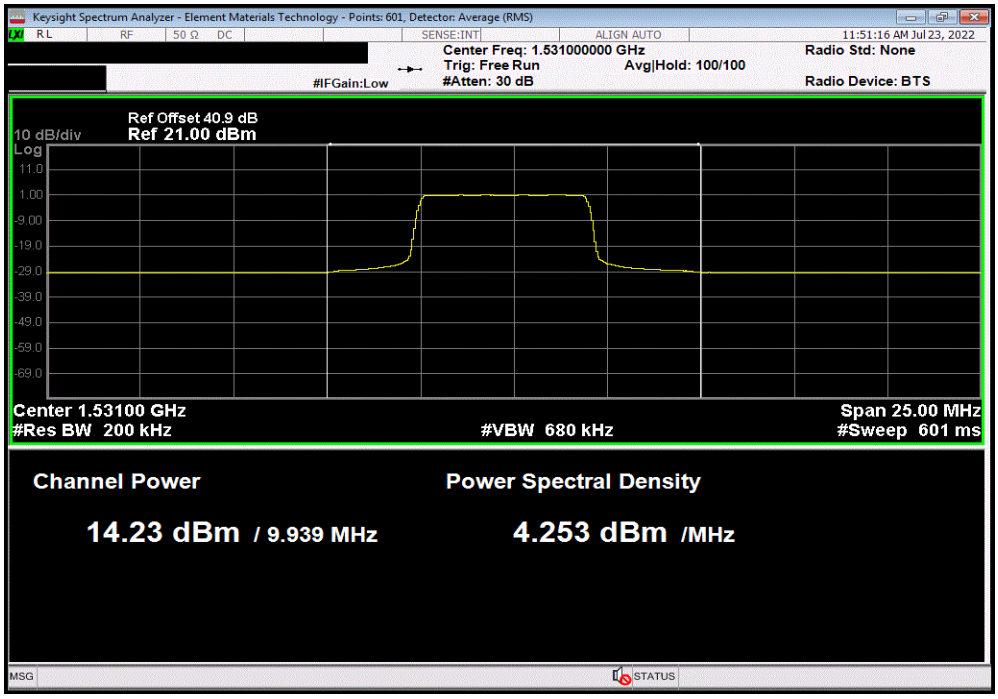


AVERAGE POWER - 16dBi

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 25 RB/0 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
12.028	16	0	28.028	31.028	39.8	Pass

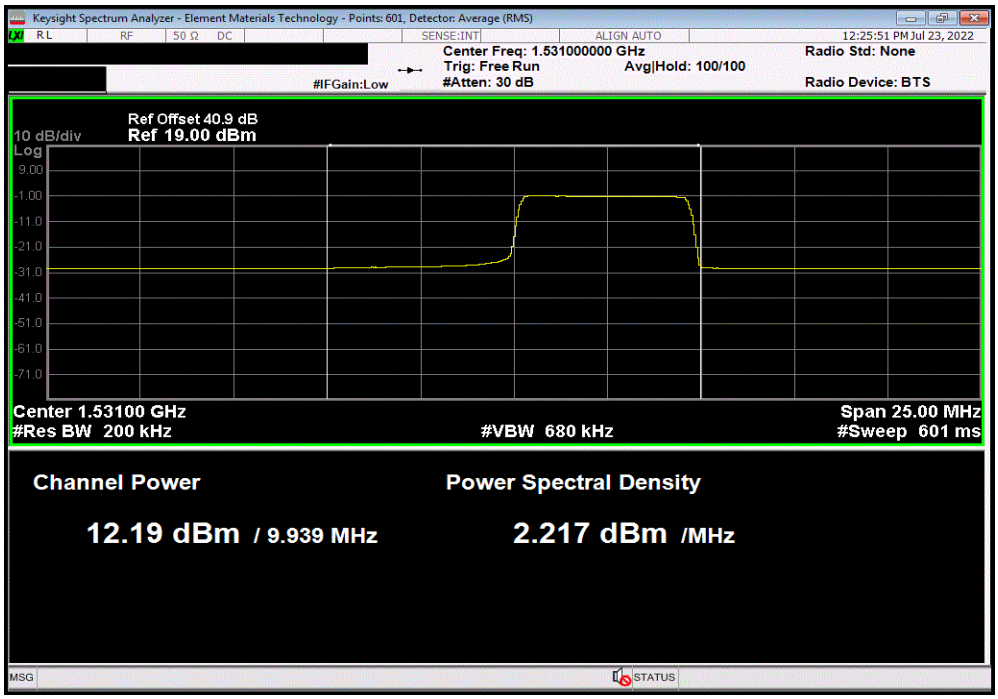


5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 25 RB/13 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
14.226	16	0	30.226	33.226	39.8	Pass

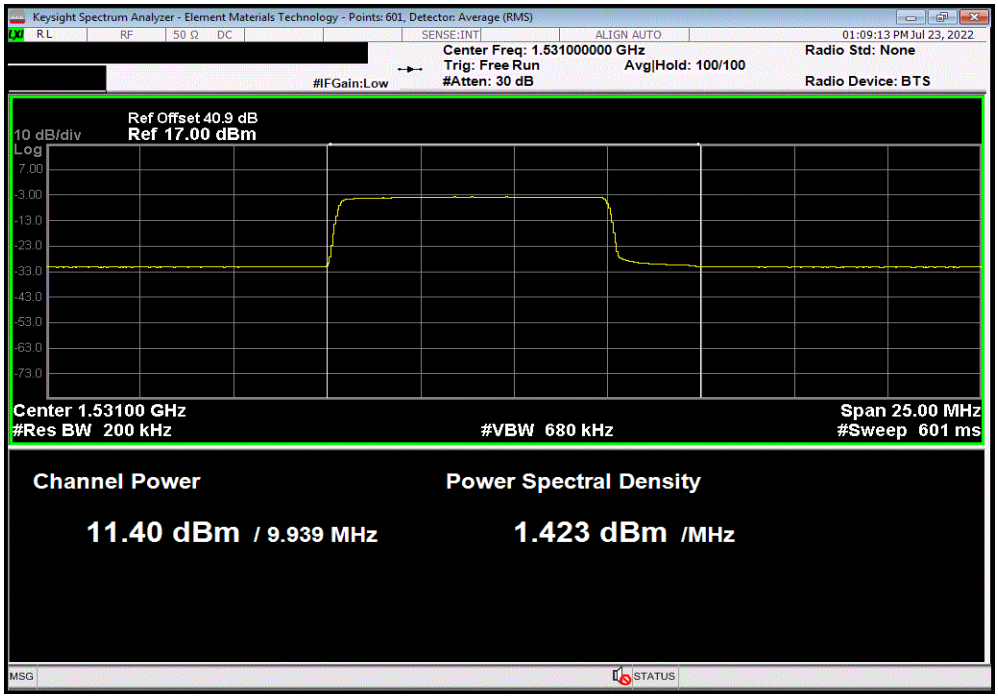


AVERAGE POWER - 16dBi

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 25 RB/27 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
12.191	16	0	28.191	31.191	39.8	Pass

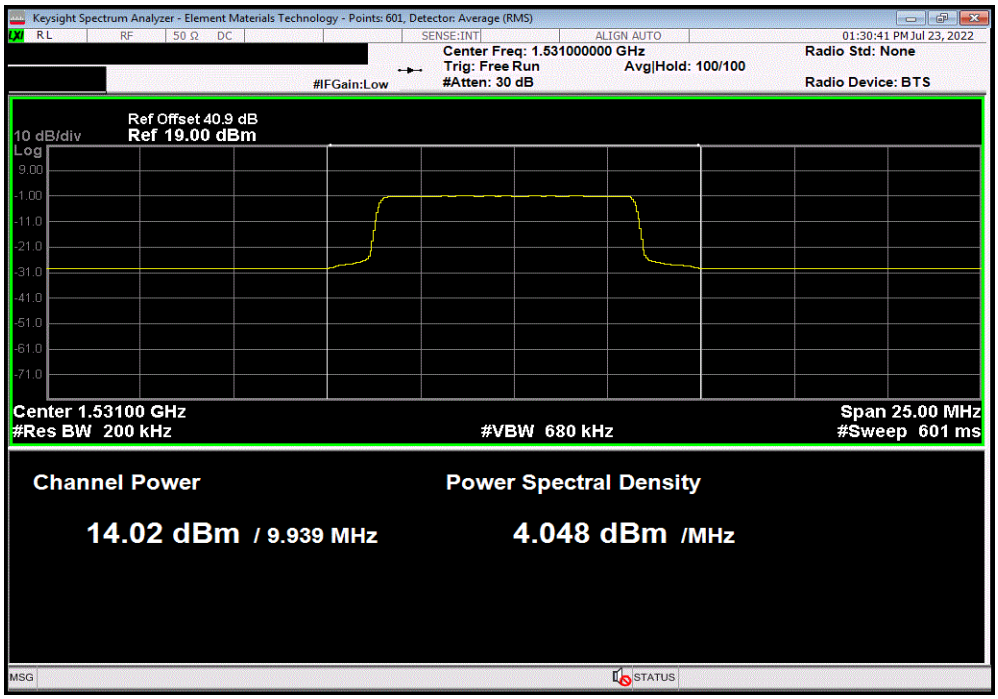


5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 40 RB/0 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
11.396	16	0	27.396	30.396	39.8	Pass

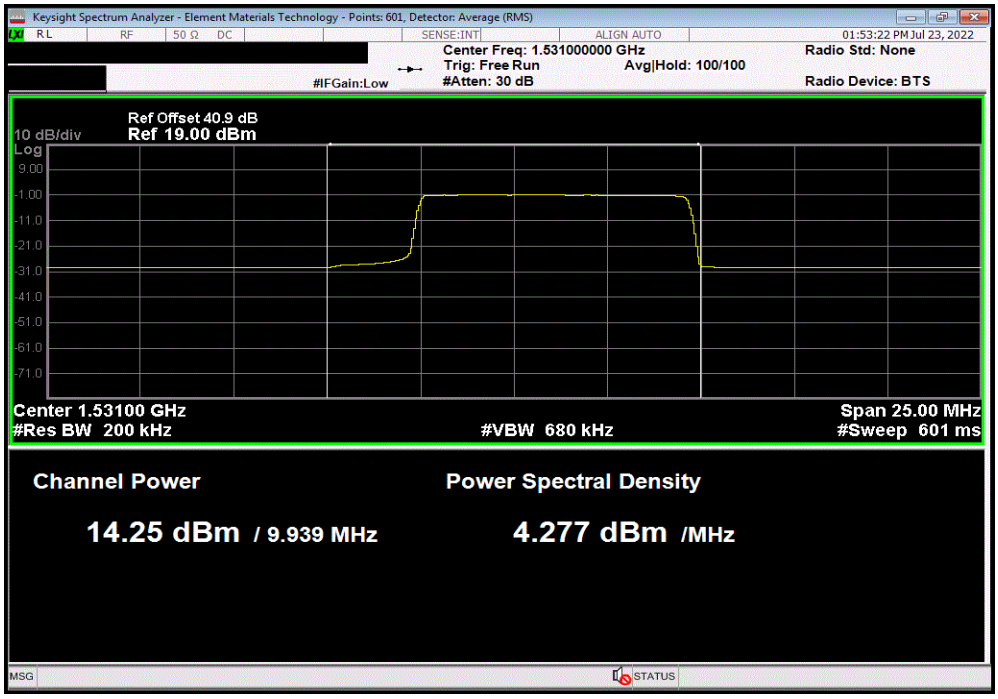


AVERAGE POWER - 16dBi

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 40 RB/6 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
14.021	16	0	30.021	33.021	39.8	Pass

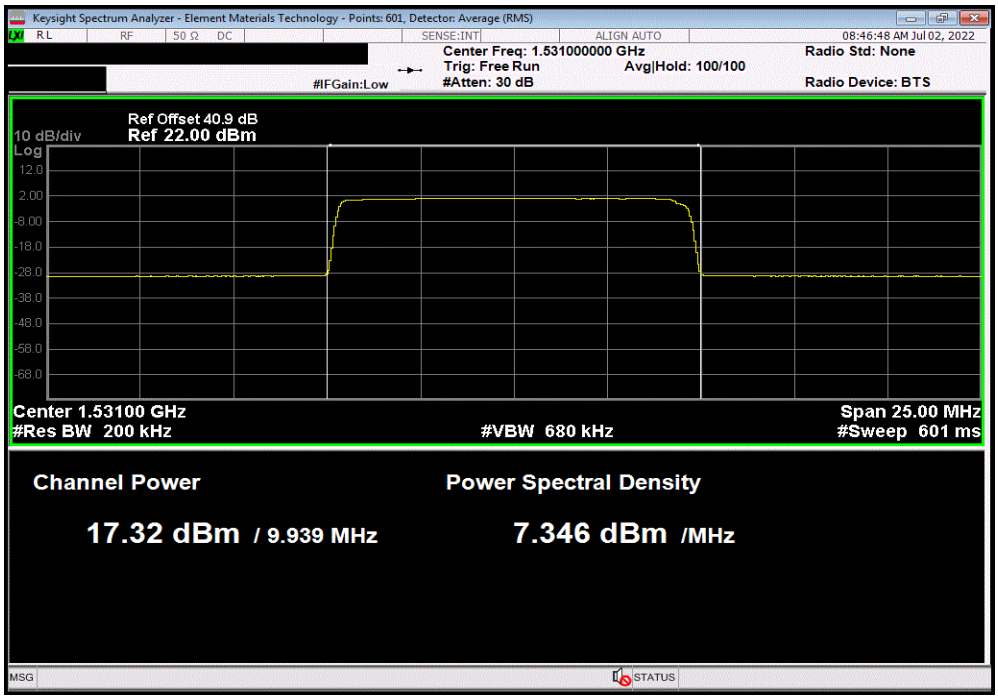


5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 40 RB/12 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
14.251	16	0	30.251	33.251	39.8	Pass

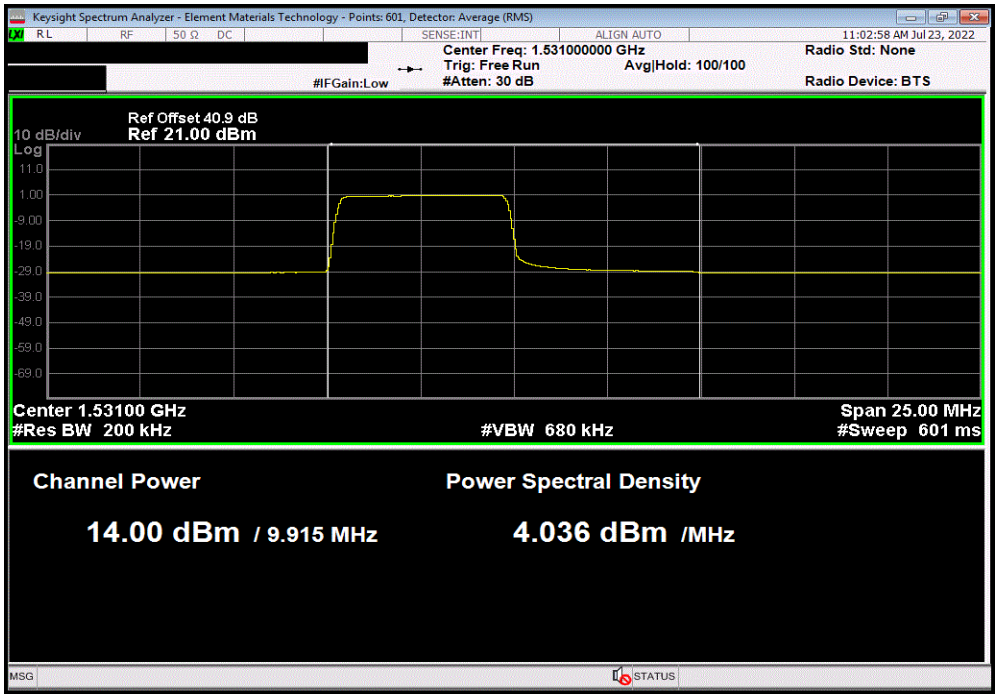


AVERAGE POWER - 16dBi

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
17.319	16	0	33.319	36.319	39.8	Pass

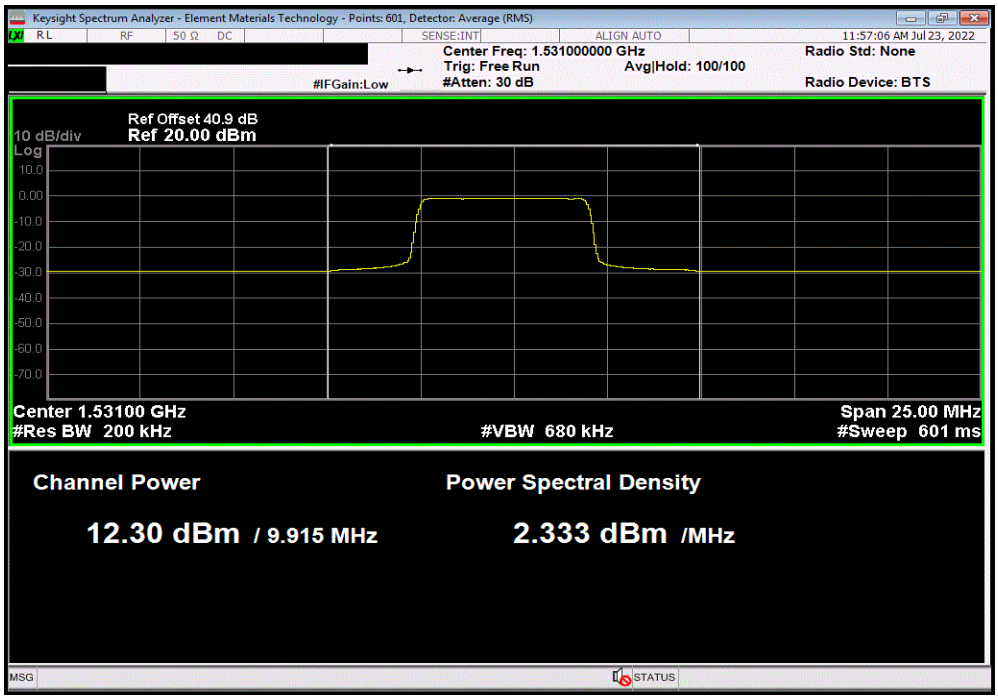


5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 25 RB/0 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
13.999	16	0	29.999	32.999	39.8	Pass

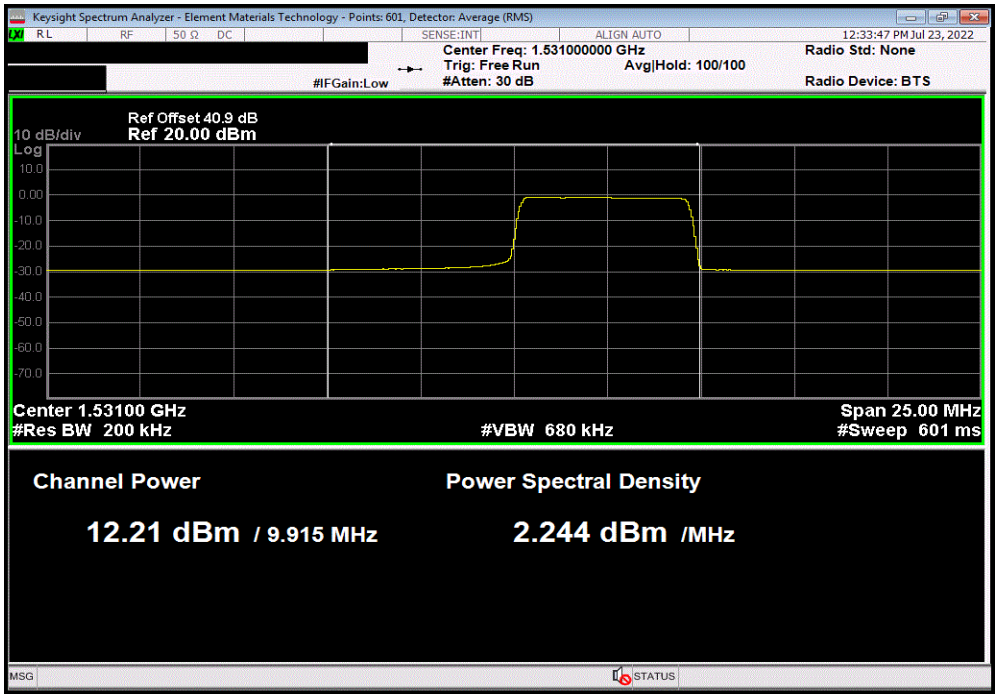


AVERAGE POWER - 16dBi

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 25 RB/13 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
12.296	16	0	28.296	31.296	39.8	Pass

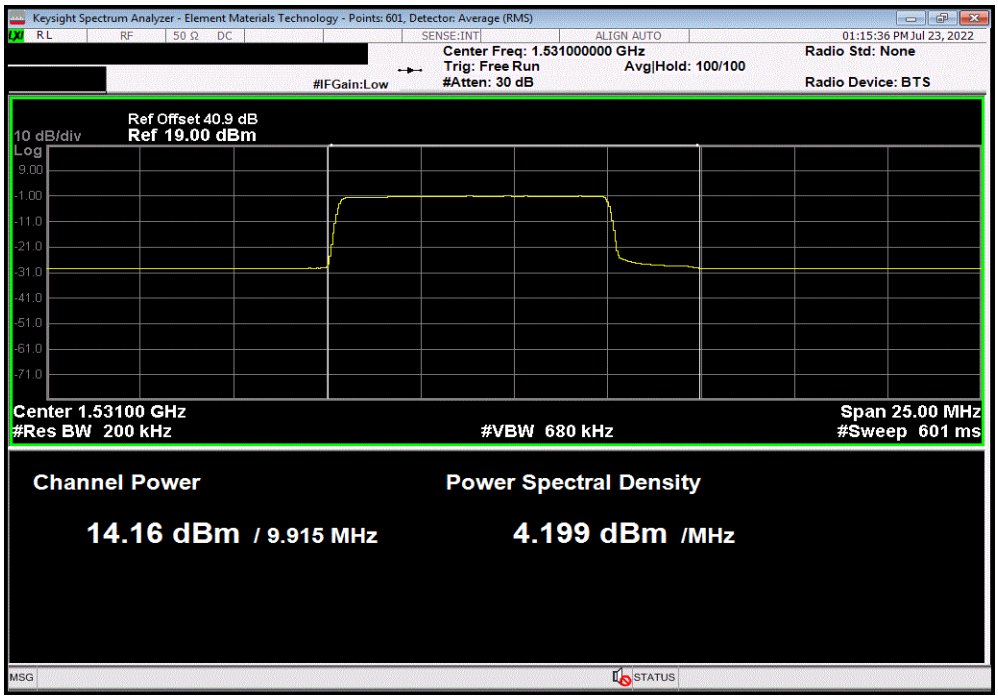


5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 25 RB/27 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
12.207	16	0	28.207	31.207	39.8	Pass

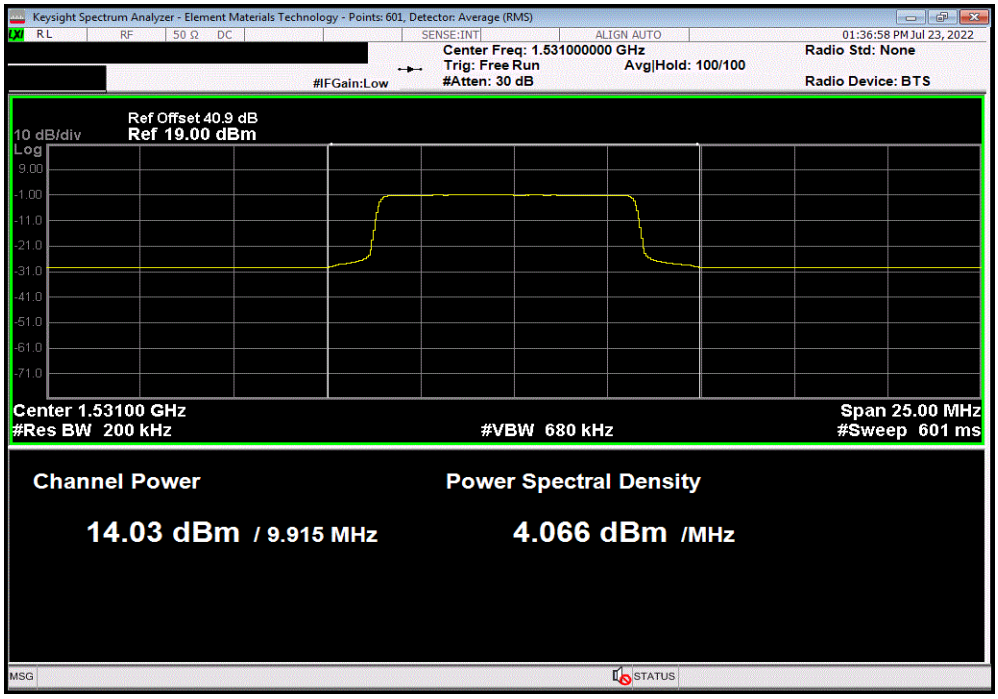


AVERAGE POWER - 16dBi

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 40 RB/0 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
14.162	16	0	30.162	33.162	39.8	Pass

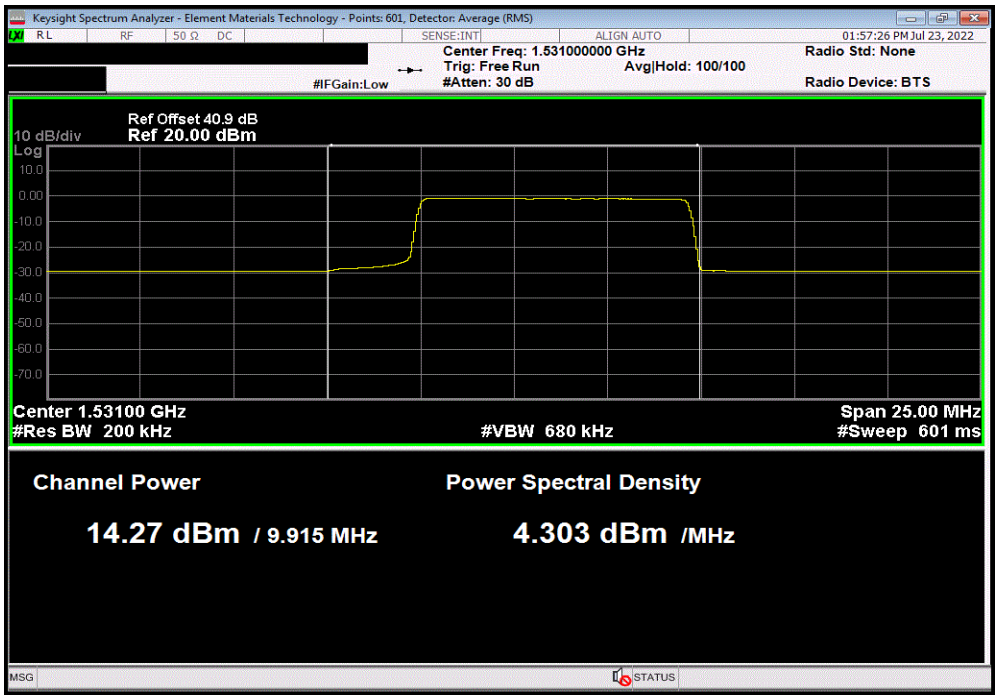


5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 40 RB/6 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
14.029	16	0	30.029	33.029	39.8	Pass

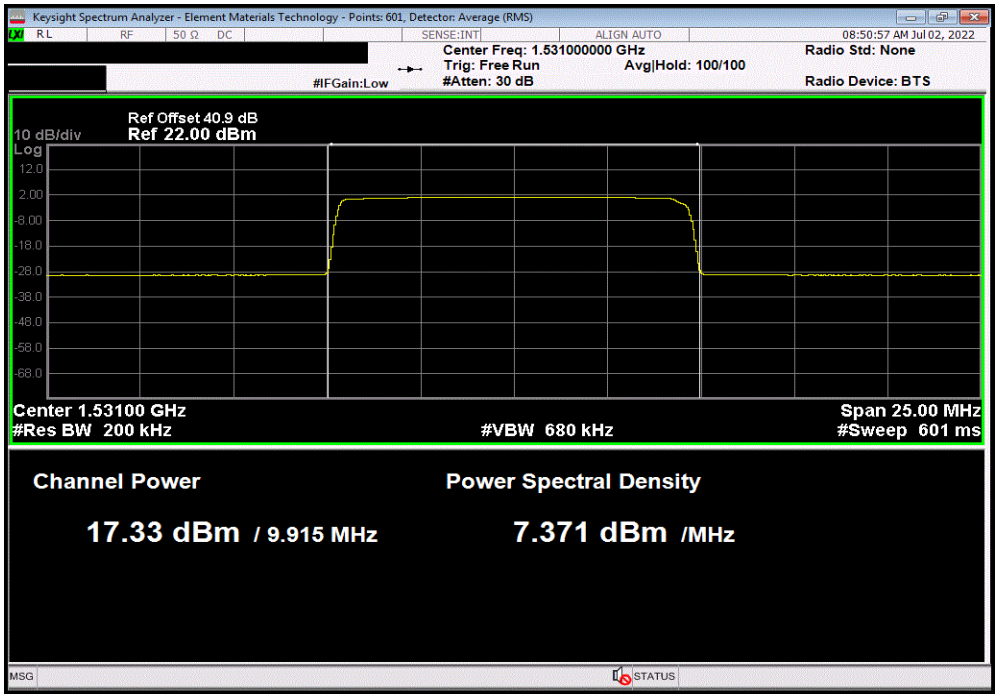


AVERAGE POWER - 16dBi

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 40 RB/12 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
14.266	16	0	30.266	33.266	39.8	Pass



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset						
Initial Value dBm/Carrier BW	Antenna Gain (dBi)	Duty Cycle Factor (dB)	2 Port (2x2 MIMO) dBm/Carrier BW	4 Port (4x4 MIMO) dBm/Carrier BW	Limit (dBm)	Results
17.334	16	0	33.334	36.334	39.8	Pass



AVERAGE POWER - ALL PORTS, 3dBi

XMit 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
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 5.2.4.4 of ANSI C63.26 was used to make the measurements. This method uses trace averaging across the ON and OFF times of the EUT transmissions in the spectrum analyzer channel power function using an RMS detector. Following the measurement a duty cycle correction was applied by adding [10 log (1/D)], where D is the duty cycle in decimal, to the measured power to compute the average power during the actual transmission times.

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 Nout(4)). The resulting total output power adjustment for four port operation is -3dB [i.e.: 10 Log (2/4)].

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

The EIRP limit is defined by the FCC-20-48A1 waiver document as 9.8dBW converted to 39.8dBm.

AVERAGE POWER - ALL PORTS, 3dBi

TbtTx 2022.06.03.0 XMit 2022.02.07.0

EUT:	TR44KA Base Station			**Work Order:**	MASY0006
Serial Number:	SV2146TR44KA000001			**Date:**	11-Aug-22
Customer:	Mavenir Systems, Inc			**Temperature:**	20.6 °C
Attendees:	None			**Humidity:**	60.5% RH
Project:	None			**Barometric Pres.:**	1020 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 modulation 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 were used for each bandwidth. The operating duty cycle was set at 100%. The all ports graphical tables showing the actual calculations are shown in the tabular data.

DEVIATIONS FROM TEST STANDARD

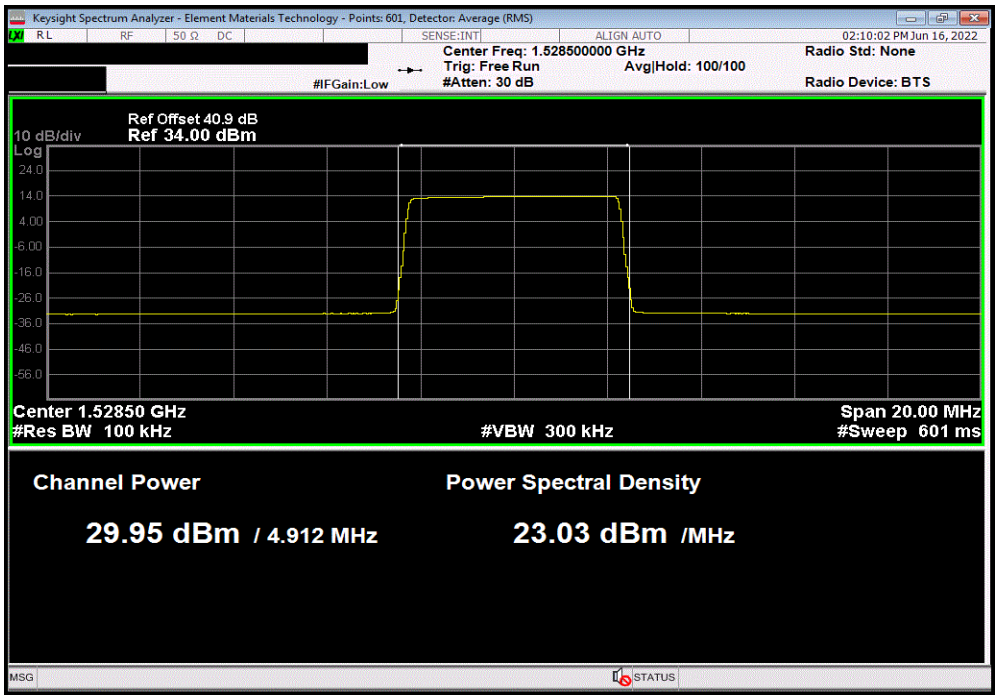
None

Configuration #	1	Signature

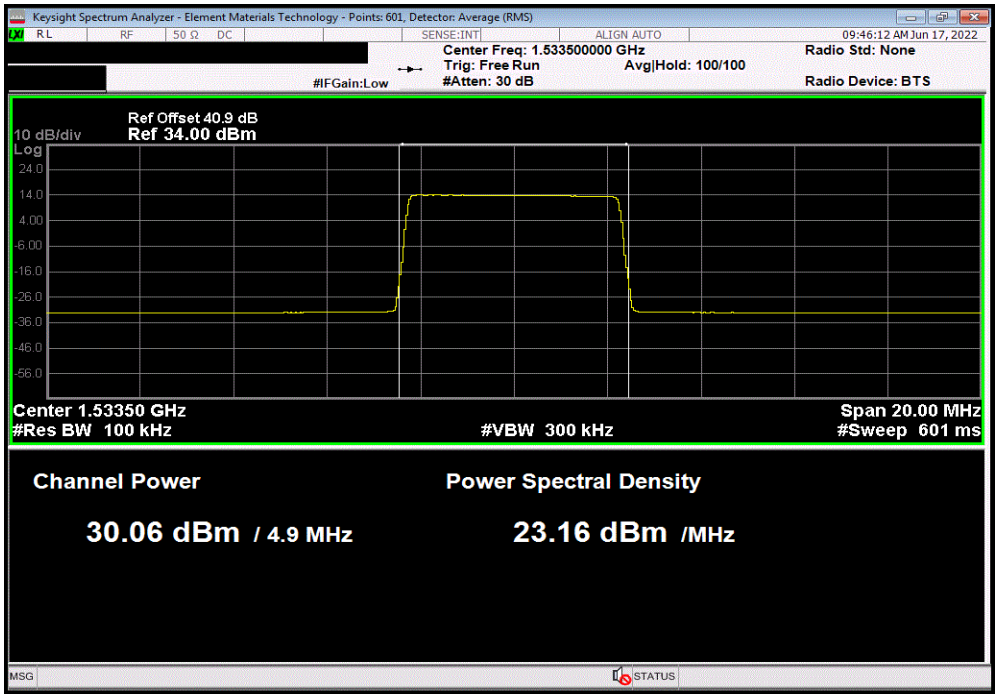
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
Antenna Port 1						
5G NR, Band n24, SCS 15kHz, 5 MHz BW						
QPSK Modulation						
Low Channel 1528.5 MHz						
25 RB/0 Offset	29.947	0	3	32.9	39.8	Pass
High Channel 1533.5 MHz						
25 RB/0 Offset	30.065	0	3	33.1	39.8	Pass
Antenna Port 2						
5G NR, Band n24, SCS 15kHz, 5 MHz BW						
QPSK Modulation						
Low Channel 1528.5 MHz						
25 RB/0 Offset	29.996	0	3	33.0	39.8	Pass
High Channel 1533.5 MHz						
25 RB/0 Offset	29.958	0	3	33.0	39.8	Pass
Antenna Port 3						
5G NR, Band n24, SCS 15kHz, 5 MHz BW						
QPSK Modulation						
Low Channel 1528.5 MHz						
25 RB/0 Offset	30.014	0	3	33.0	39.8	Pass
High Channel 1533.5 MHz						
25 RB/0 Offset	30.209	0	3	33.2	39.8	Pass
Antenna Port 4						
5G NR, Band n24, SCS 15kHz, 5 MHz BW						
QPSK Modulation						
Low Channel 1528.5 MHz						
25 RB/0 Offset	29.41	0	3	32.4	39.8	Pass
High Channel 1533.5 MHz						
25 RB/0 Offset	29.405	0	3	32.4	39.8	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	N/A	35.9	39.8	Pass
High Channel 1533.5 MHz						
25 RB/0 Offset	N/A	N/A	N/A	36.0	39.8	Pass

AVERAGE POWER - ALL PORTS, 3dBi

Antenna Port 1, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
	29.947	0	3	32.9	39.8	Pass

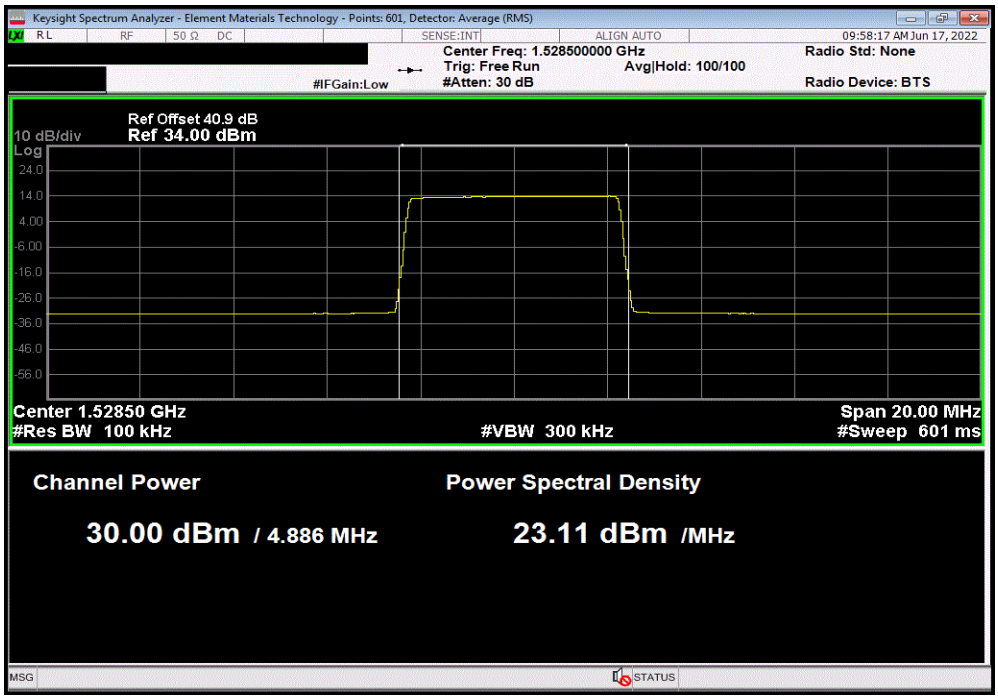


Antenna Port 1, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
	30.065	0	3	33.1	39.8	Pass

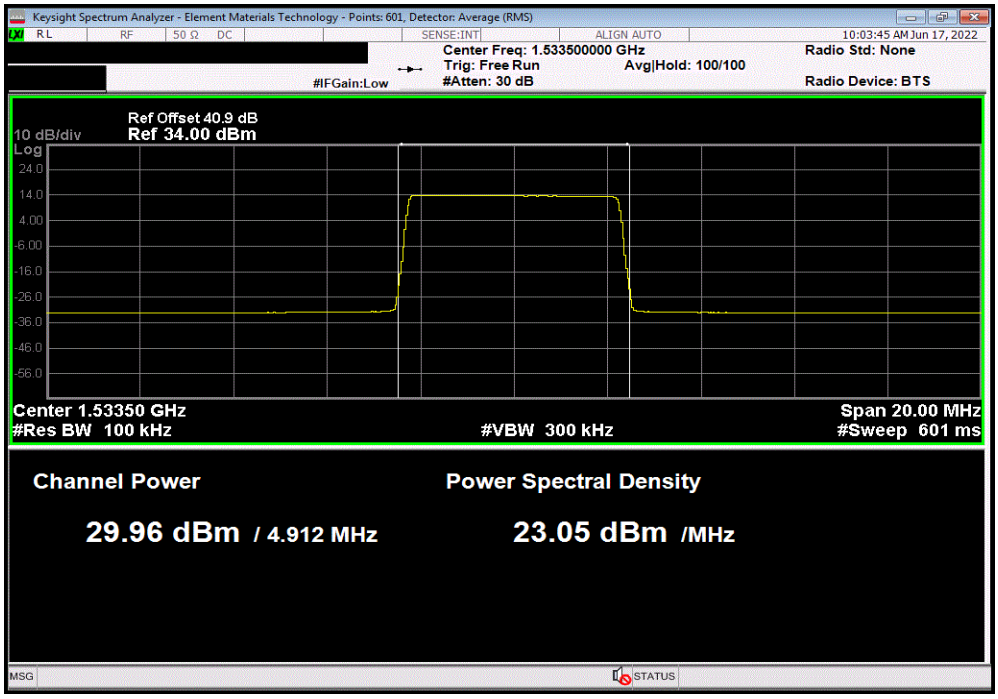


AVERAGE POWER - ALL PORTS, 3dBi

Antenna Port 2, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
	29.996	0	3	33	39.8	Pass

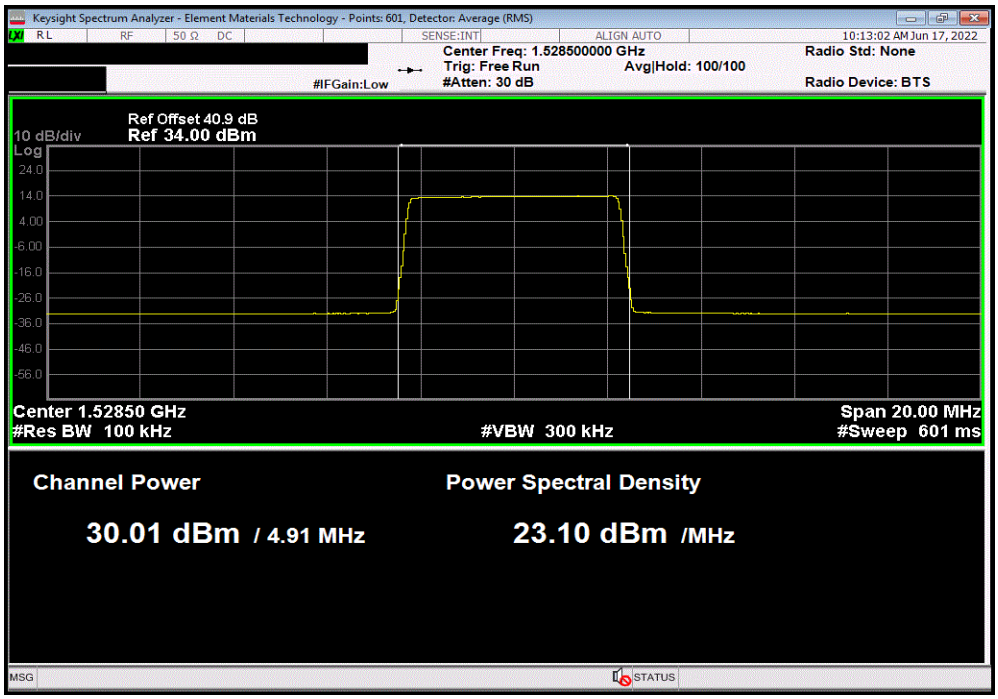


Antenna Port 2, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
	29.958	0	3	33	39.8	Pass

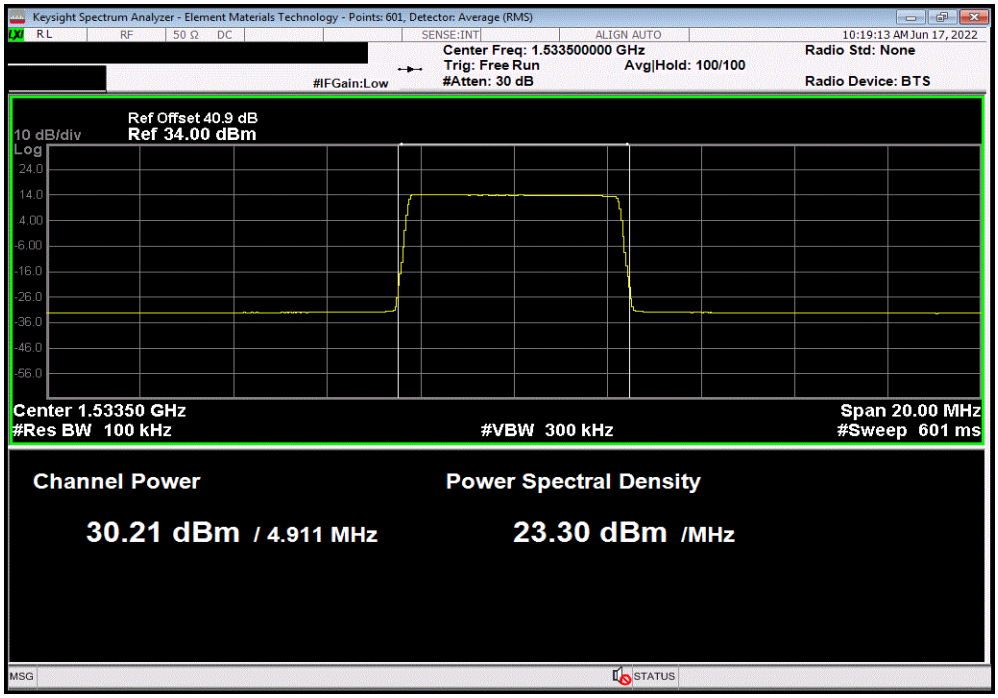


AVERAGE POWER - ALL PORTS, 3dBi

Antenna Port 3, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
	30.014	0	3	33	39.8	Pass

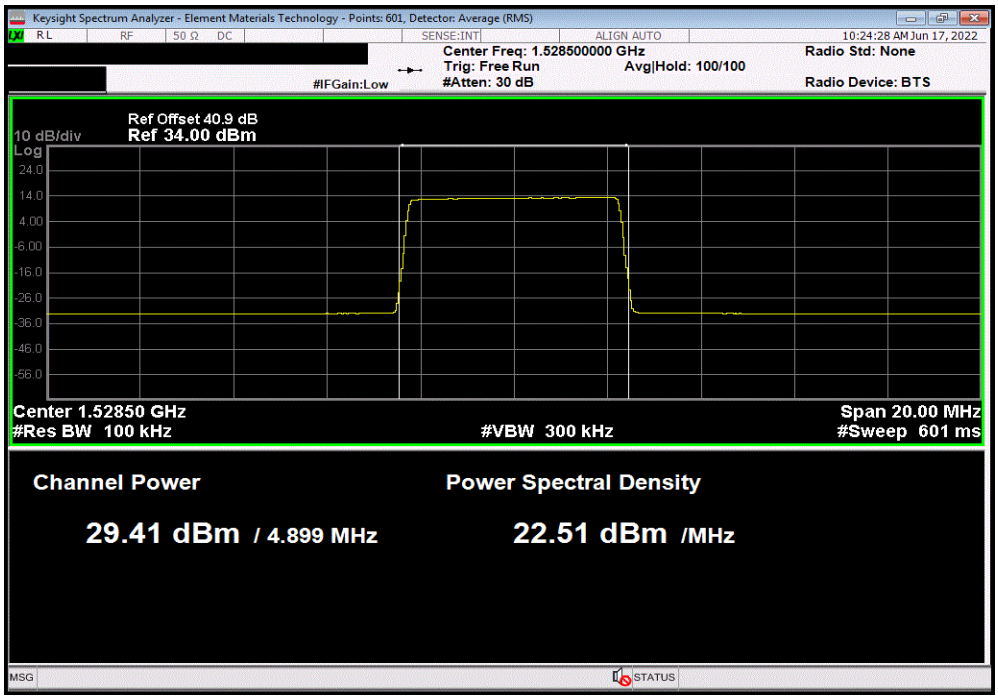


Antenna Port 3, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
	30.209	0	3	33.2	39.8	Pass

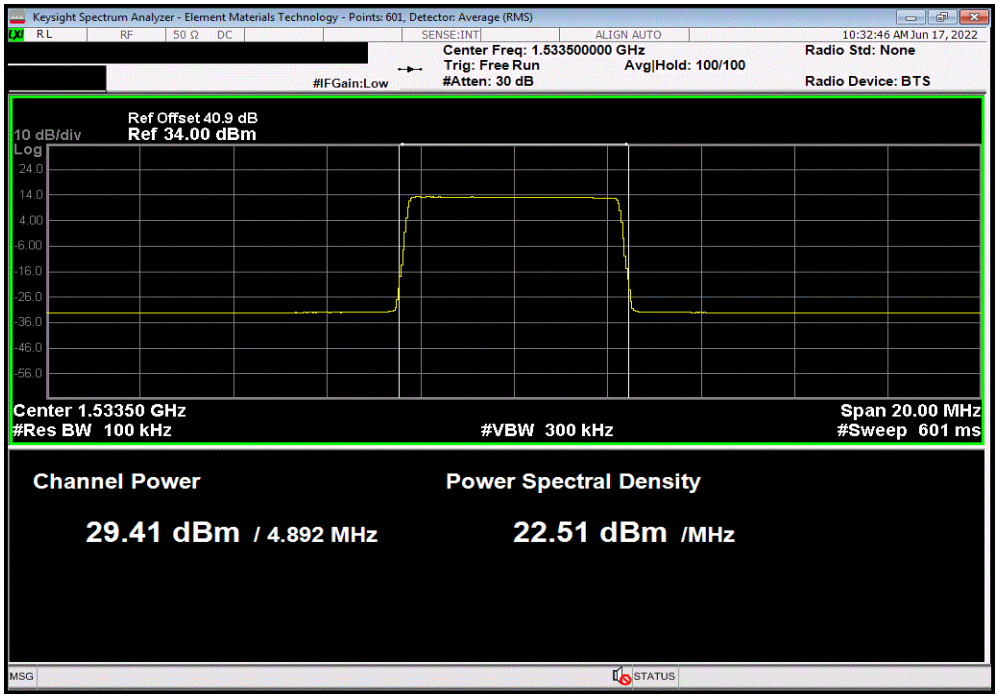


AVERAGE POWER - ALL PORTS, 3dBi

Antenna Port 4, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
	29.41	0	3	32.4	39.8	Pass



Antenna Port 4, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
	29.405	0	3	32.4	39.8	Pass



AVERAGE POWER - ALL PORTS, 3dBi

element

TbtTx 2022.06.03.0 XMit 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						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
	N/A	N/A	N/A	35.86	39.8	Pass

	Port 1	Port 2	Port 3	Port 4	All Ports	Cross Polarized Adj
dBm	32.9	33	33	32.4		
Watts	1.95	2	2	1.74		
Total dBm					38.86	**35.86**
Total Watts					7.69	**3.85**

All Ports, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
	N/A	N/A	N/A	35.96	39.8	Pass

	Port 1	Port 2	Port 3	Port 4	All Ports	Cross Polarized Adj
dBm	33.1	33	33.2	32.4		
Watts	2.04	2	2.09	1.74		
Total dBm					38.96	**35.96**
Total Watts					7.87	**3.94**

AVERAGE POWER - ALL PORTS, 16dBi

XMit 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
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 5.2.4.4 of ANSI C63.26 was used to make the measurements. This method uses trace averaging across the ON and OFF times of the EUT transmissions in the spectrum analyzer channel power function using an RMS detector. Following the measurement a duty cycle correction was applied by adding [10 log (1/D)], where D is the duty cycle in decimal, to the measured power to compute the average power during the actual transmission times.

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 Nout(4)). The resulting total output power adjustment for four port operation is -3dB [i.e.: 10 Log (2/4)].

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

The EIRP limit is defined by the FCC-20-48A1 waiver document as 9.8dBW converted to 39.8dBm.

AVERAGE POWER - ALL PORTS, 16dBi

element

TbtTx 2022.05.02.0 XMit 2022.02.07.0

EUT:	TR44KA Base Station			**Work Order:**	MASY0006
Serial Number:	SV2146TR44KA000001			**Date:**	11-Aug-22
Customer:	Mavenir Systems, Inc			**Temperature:**	20.9 °C
Attendees:	None			**Humidity:**	61% 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 using typical worst case bandwidth and modulation 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 Resource Block / Offset configuration was used. The operating duty cycle was set at 100%. The all ports graphical tables showing the actual calculations are shown in the tabular data.

DEVIATIONS FROM TEST STANDARD

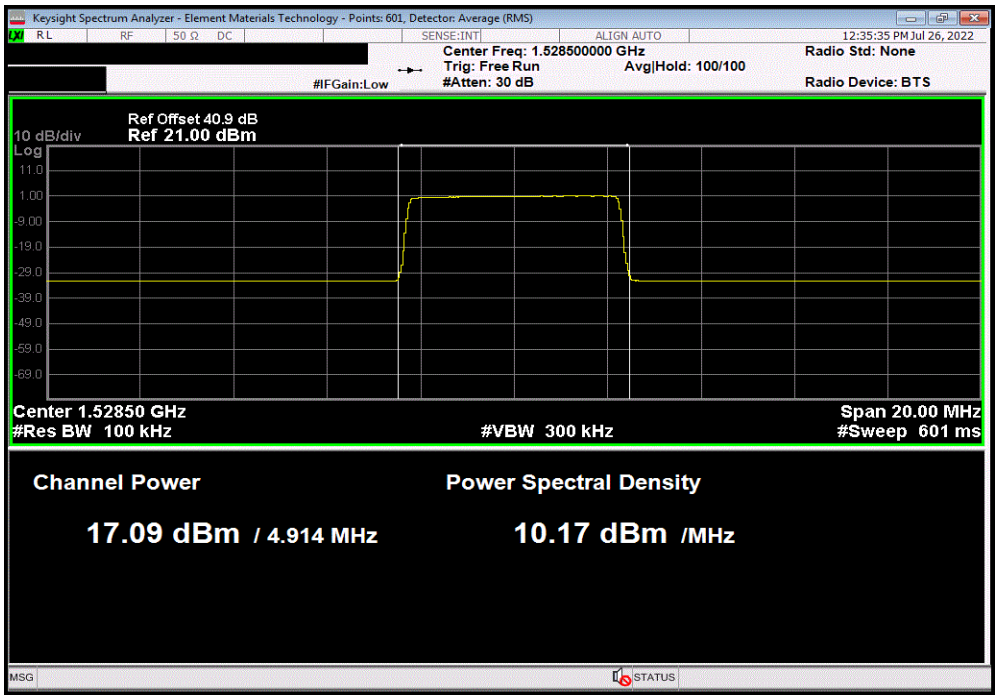
None

Configuration #	1	*Signature*

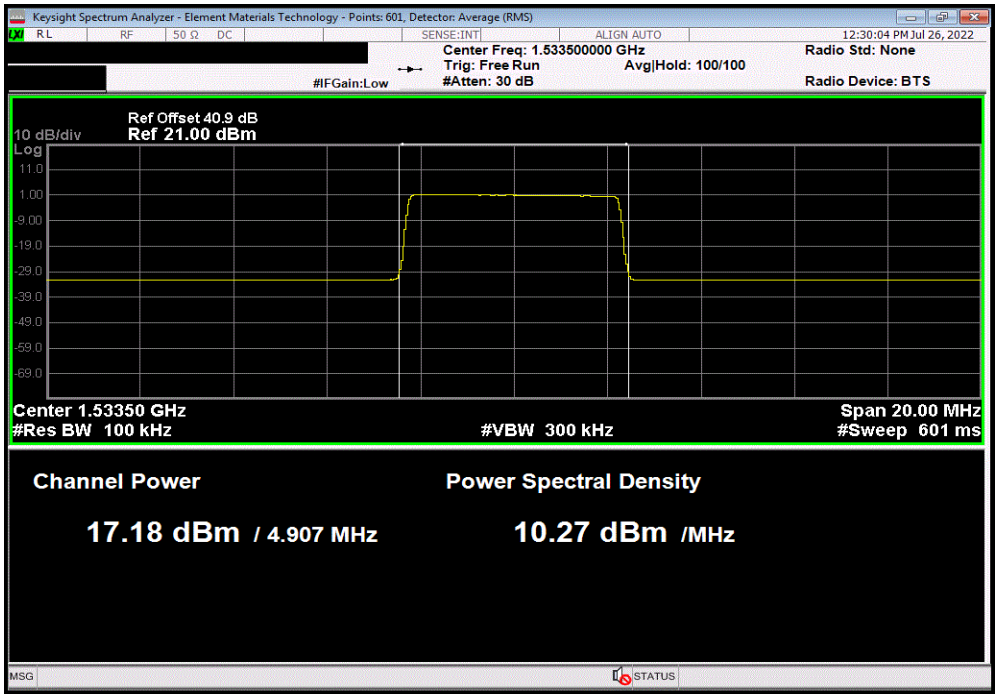
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
Antenna Port 1						
5G NR, Band n24, SCS 15kHz, 5 MHz BW						
QPSK Modulation						
Low Channel 1528.5 MHz						
25 RB/0 Offset	17.088	0	16	33.1	39.8	Pass
High Channel 1533.5 MHz						
25 RB/0 Offset	17.178	0	16	33.2	39.8	Pass
Antenna Port 2						
5G NR, Band n24, SCS 15kHz, 5 MHz BW						
QPSK Modulation						
Low Channel 1528.5 MHz						
25 RB/0 Offset	17.150	0	16	33.2	39.8	Pass
High Channel 1533.5 MHz						
25 RB/0 Offset	17.150	0	16	33.2	39.8	Pass
Antenna Port 3						
5G NR, Band n24, SCS 15kHz, 5 MHz BW						
QPSK Modulation						
Low Channel 1528.5 MHz						
25 RB/0 Offset	17.363	0	16	33.4	39.8	Pass
High Channel 1533.5 MHz						
25 RB/0 Offset	17.471	0	16	33.5	39.8	Pass
Antenna Port 4						
5G NR, Band n24, SCS 15kHz, 5 MHz BW						
QPSK Modulation						
Low Channel 1528.5 MHz						
25 RB/0 Offset	16.473	0	16	32.5	39.8	Pass
High Channel 1533.5 MHz						
25 RB/0 Offset	16.494	0	16	32.5	39.8	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	N/A	36.1	39.8	Pass
High Channel 1533.5 MHz						
25 RB/0 Offset	N/A	N/A	N/A	36.1	39.8	Pass

AVERAGE POWER - ALL PORTS, 16dBi

Antenna Port 1, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
	17.088	0	16	33.1	39.8	Pass

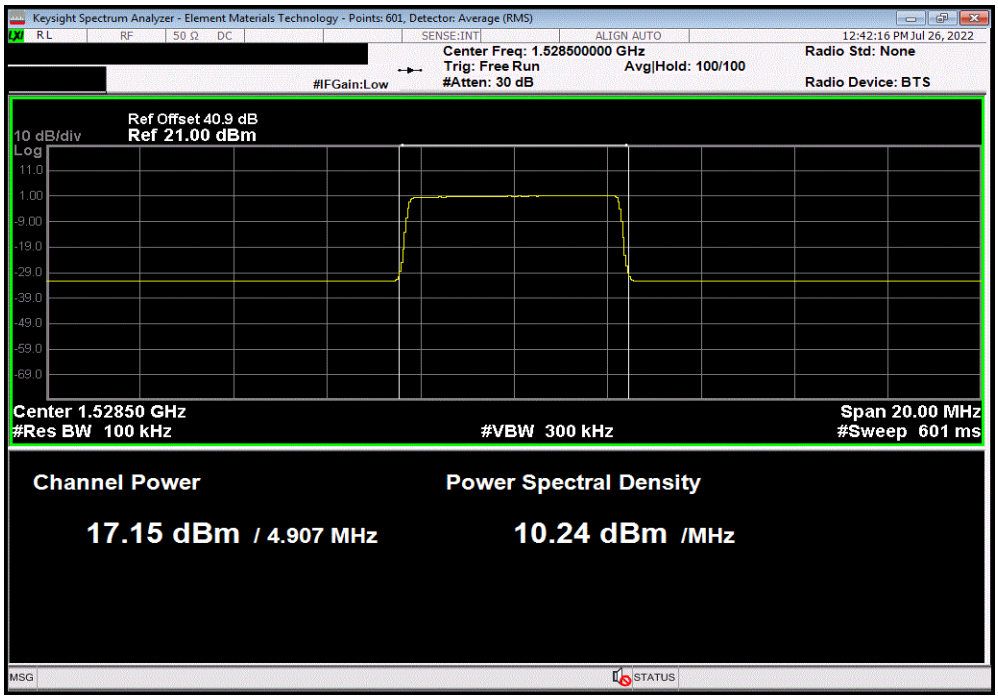


Antenna Port 1, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
	17.178	0	16	33.178	39.8	Pass

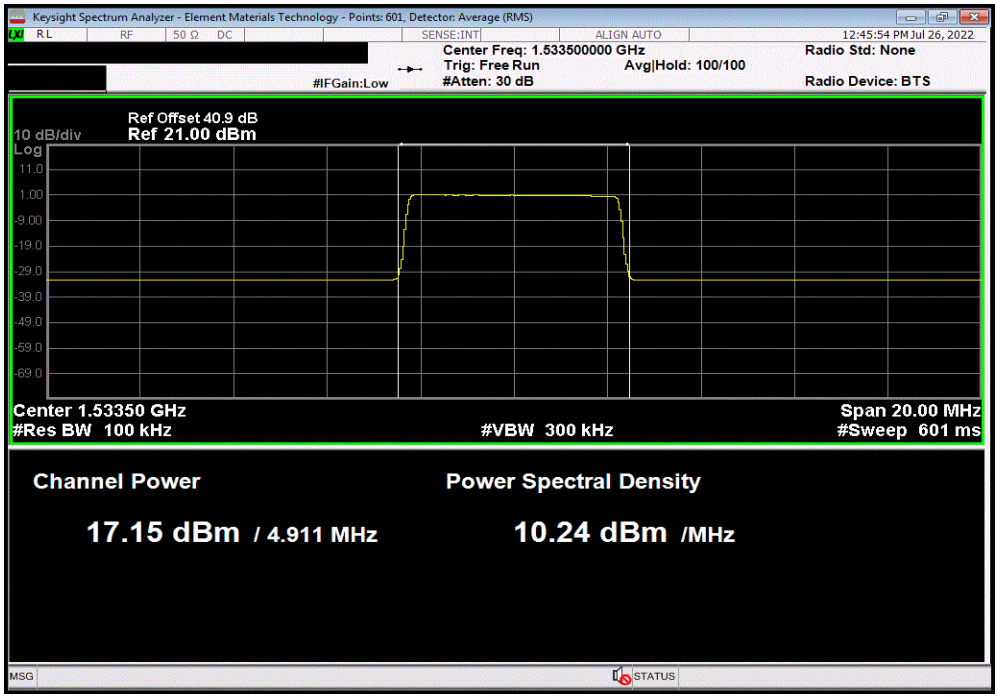


AVERAGE POWER - ALL PORTS, 16dBi

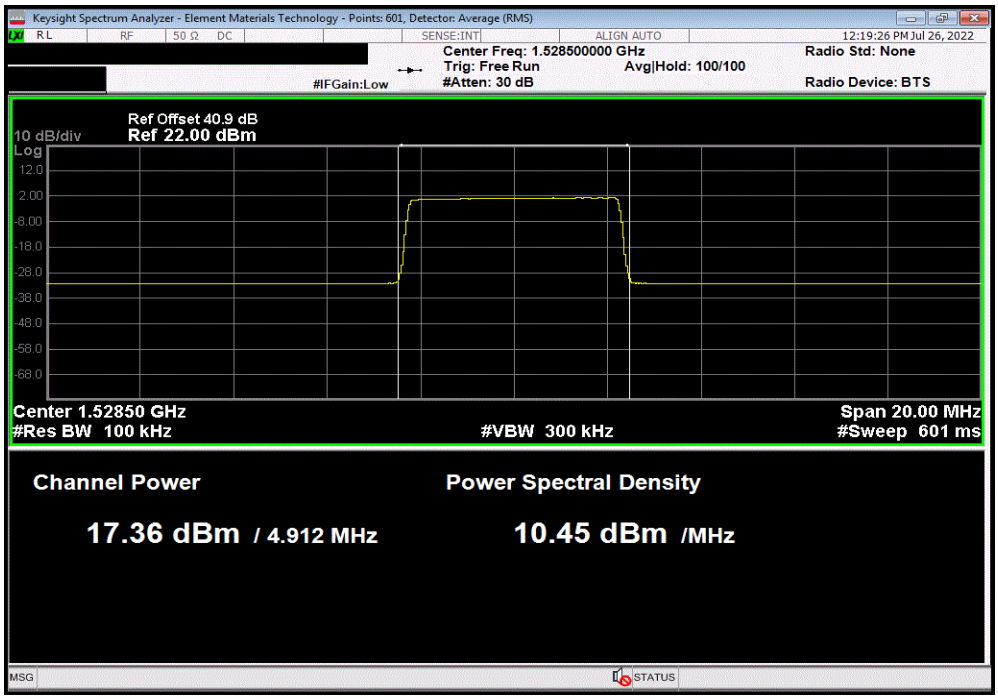
Antenna Port 2, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
	17.15	0	16	33.2	39.8	Pass



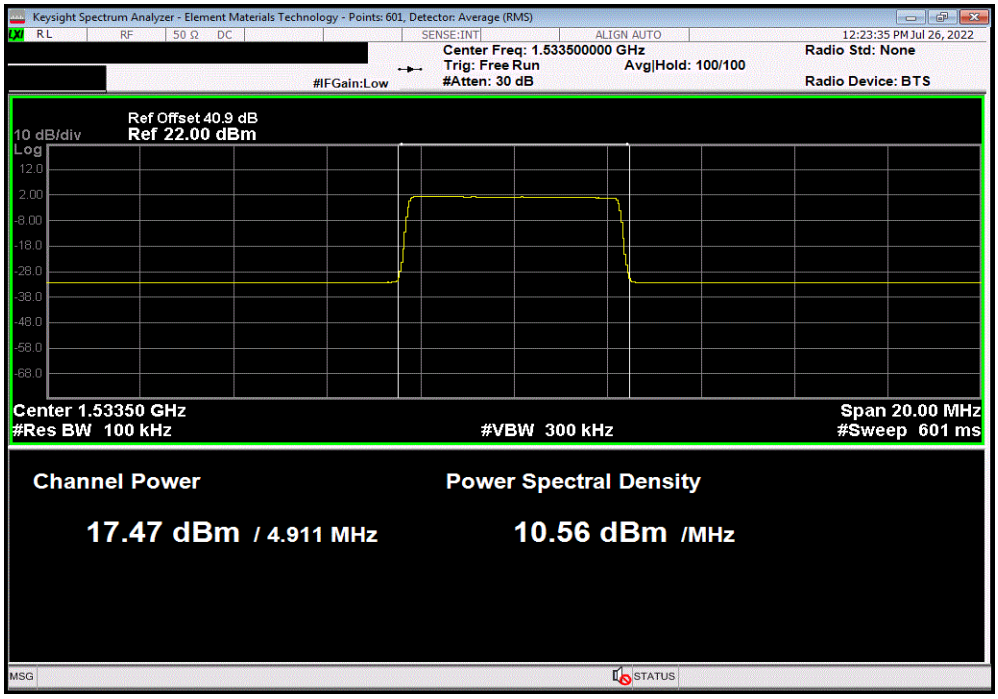
Antenna Port 2, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
	17.15	0	16	33.15	39.8	Pass



Antenna Port 3, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
	17.363	0	16	33.4	39.8	Pass

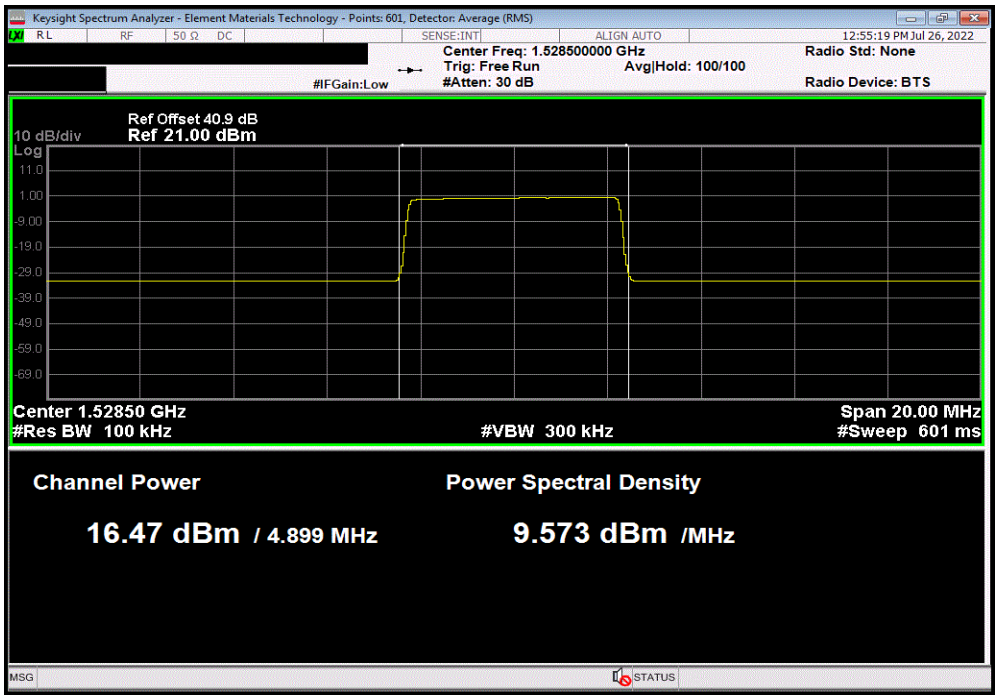


Antenna Port 3, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
	17.471	0	16	33.471	39.8	Pass

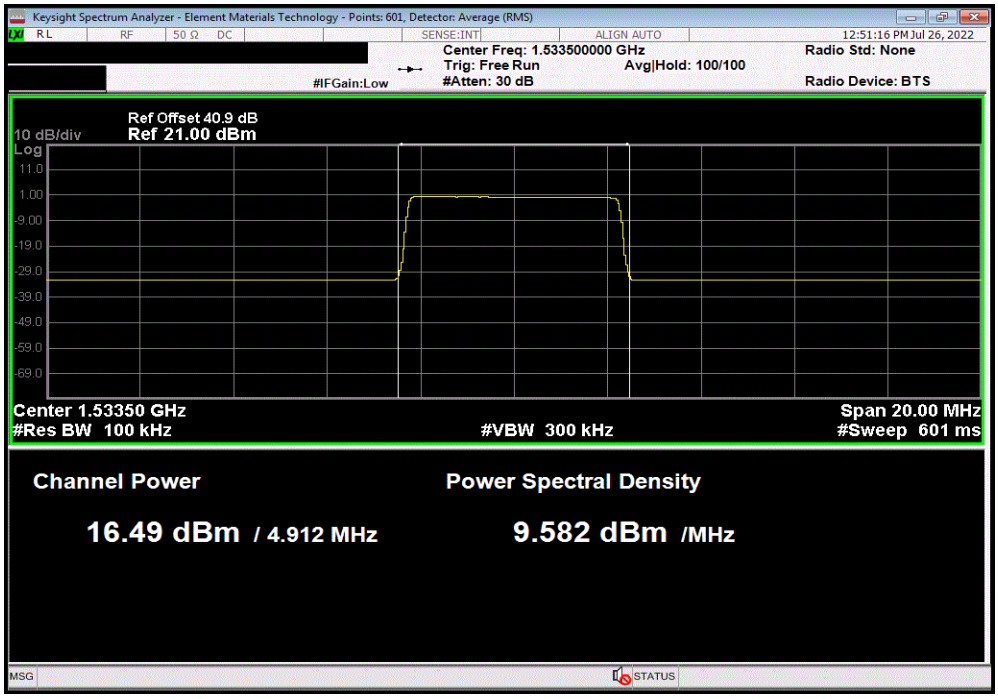


AVERAGE POWER - ALL PORTS, 16dBi

Antenna Port 4, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
	16.473	0	16	32.5	39.8	Pass



Antenna Port 4, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
	16.494	0	16	32.494	39.8	Pass



AVERAGE POWER - ALL PORTS, 16dBi

All Ports, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
	N/A	N/A	N/A	36.08	39.8	Pass

	Port 1	Port 2	Port 3	Port 4	All Ports	Cross Polarized Adj
dBm	33.1	33.2	33.4	32.5		
Watts	2.04	2.09	2.19	1.78		
Total dBm					39.08	**36.08**
Total Watts					8.1	**4.06**

All Ports, 5G NR, Band n24, SCS 15kHz, 5 MHz BW, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Results
	N/A	N/A	N/A	36.14	39.8	Pass

	Port 1	Port 2	Port 3	Port 4	All Ports	Cross Polarized Adj
dBm	33.2	33.2	33.5	32.5		
Watts	2.09	2.09	2.24	1.78		
Total dBm					39.14	**36.14**
Total Watts					8.2	**4.11**