

SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS, 16dBi



XMI 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
Generator - Signal	Agilent	N5173B	TIW	2020-07-17	2023-07-17
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
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 antenna port spurious emissions were measured at the RF output terminal of the EUT with 30dB of external attenuation on the RF input of the spectrum analyzer. Analyzer plots reference a 1MHz resolution bandwidth and 3MHz video bandwidth made for each modulation type from 9 kHz to 16 GHz. The rms average conducted power of spurious emissions, up to the 10th harmonic of the transmit frequency, were investigated to ensure they were less than or equal to -13 dBm.

Per the guidance provided in ANSI C63.26-2015 section 4.2.3 and 5.7.2 the limit for the 9kHz to 150kHz frequency range was adjusted to -46dBm to correct for a spectrum analyzer RBW of 1kHz versus required RBW of 1MHz [i.e.: -46dBm = -16dBm - 10log(1MHz/1kHz)]. The limit for the 150kHz to 20MHz frequency range was adjusted to -36dBm to correct for a spectrum analyzer RBW of 10kHz versus required RBW of 1MHz [i.e.: -36dBm = -16dBm - 10log(1MHz/10kHz)]. The required limit of -16dBm with a RBW of > 1MHz was used for all other frequency ranges.

The limit is adjusted to -16 dBm [-13 dBm -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).

The reference level offset for screen capture(s) uses an internal transducer factor on the analyzer to correct the displayed trace based on the cable loss over frequency. The reference level offset for the additional screen capture(s) is then based on the expected attenuator value and any other losses.

Screen capture(s) Offset = "Internal" cable loss factor not shown on screen capture + Ref Lvl Offset showing expected attenuator value and any other losses

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 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.

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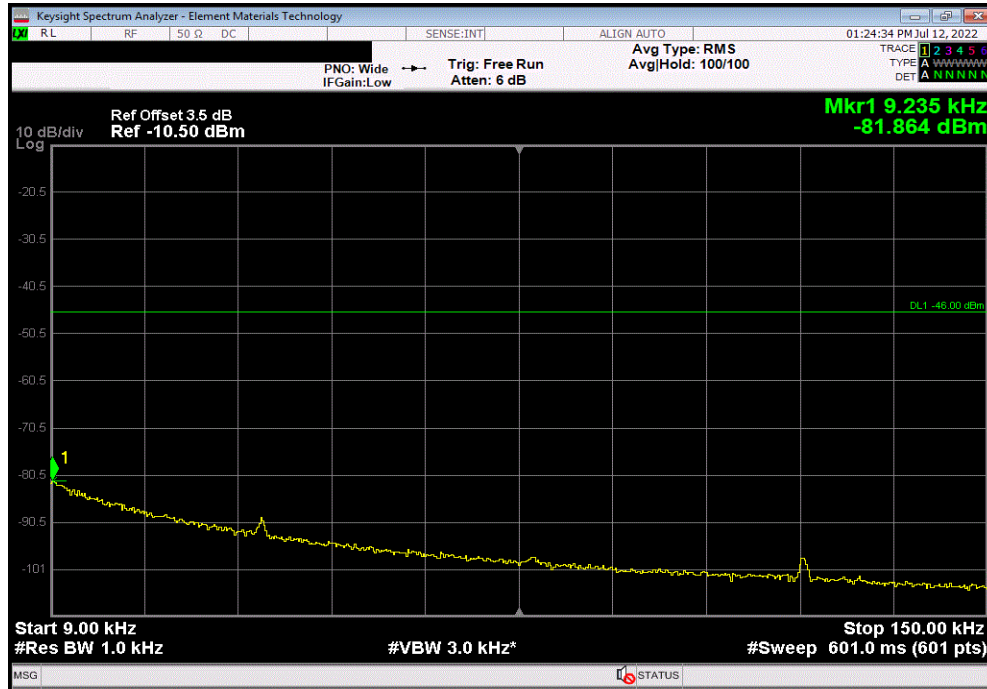
EUT: TR44KA Base Station			Work Order: MASY0006			
Serial Number: SV2146TR44KA000001			Date: 29-Jul-22			
Customer: Mavenir Systems, Inc			Temperature: 20.9 °C			
Attendees: None			Humidity: 53.7% RH			
Project: None			Barometric Pres.: 1017 mbar			
Tested by: Brandon Hobbs		Power: 48 VDC	Job Site: TX09			
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 limit was adjusted to -16 dBm [-13 dBm -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). Single worst case Resource Block / Offset configuration was used for each bandwidth.						
DEVIATIONS FROM TEST STANDARD						
None						
Configuration #	1,2	Signature 				
		Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result
5G NR, Band n24, SCS 15kHz						
5 MHz Bandwidth						
QPSK Modulation						
Low Channel 1528.5 MHz						
	25 RB/0 Offset	9 kHz - 150 kHz	0.01	-81.9	-46	Pass
	25 RB/0 Offset	150 kHz - 30 MHz	0.15	-45.8	-36	Pass
	25 RB/0 Offset	30 MHz - 1 GHz	1983.74	-42.6	-16	Pass
	25 RB/0 Offset	1 GHz - 16 GHz	3810.56	-34.6	-16	Pass
High Channel 1533.5 MHz						
	25 RB/0 Offset	9 kHz - 150 kHz	0.01	-81.6	-46	Pass
	25 RB/0 Offset	150 kHz - 30 MHz	0.15	-46.2	-36	Pass
	25 RB/0 Offset	30 MHz - 1 GHz	1984.73	-42.6	-16	Pass
	25 RB/0 Offset	1 GHz - 16 GHz	3848.07	-34.6	-16	Pass
16-QAM Modulation						
Low Channel 1528.5 MHz						
	25 RB/0 Offset	9 kHz - 150 kHz	0.01	-81.4	-46	Pass
	25 RB/0 Offset	150 kHz - 30 MHz	0.15	-46.9	-36	Pass
	25 RB/0 Offset	30 MHz - 1 GHz	1982.76	-42.5	-16	Pass
	25 RB/0 Offset	1 GHz - 16 GHz	3831.57	-34.7	-16	Pass
High Channel 1533.5 MHz						
	25 RB/0 Offset	9 kHz - 150 kHz	0.01	-81.5	-46	Pass
	25 RB/0 Offset	150 kHz - 30 MHz	0.16	-46.5	-36	Pass
	25 RB/0 Offset	30 MHz - 1 GHz	1961.58	-42.7	-16	Pass
	25 RB/0 Offset	1 GHz - 16 GHz	3844.57	-34.7	-16	Pass
64-QAM Modulation						
Low Channel 1528.5 MHz						
	25 RB/0 Offset	9 kHz - 150 kHz	0.01	-82.1	-46	Pass
	25 RB/0 Offset	150 kHz - 30 MHz	0.15	-46.5	-36	Pass
	25 RB/0 Offset	30 MHz - 1 GHz	1972.41	-42.6	-16	Pass
	25 RB/0 Offset	1 GHz - 16 GHz	3840.07	-34.6	-16	Pass
High Channel 1533.5 MHz						
	25 RB/0 Offset	9 kHz - 150 kHz	0.01	-81.7	-46	Pass
	25 RB/0 Offset	150 kHz - 30 MHz	0.15	-46.2	-36	Pass
	25 RB/0 Offset	30 MHz - 1 GHz	1964.53	-42.6	-16	Pass
	25 RB/0 Offset	1 GHz - 16 GHz	3825.57	-34.5	-16	Pass
256-QAM Modulation						
Low Channel 1528.5 MHz						
	25 RB/0 Offset	9 kHz - 150 kHz	0.01	-81.9	-46	Pass
	25 RB/0 Offset	150 kHz - 30 MHz	0.15	-46.9	-36	Pass
	25 RB/0 Offset	30 MHz - 1 GHz	1970.94	-42.6	-16	Pass
	25 RB/0 Offset	1 GHz - 16 GHz	3821.07	-34.6	-16	Pass
High Channel 1533.5 MHz						
	25 RB/0 Offset	9 kHz - 150 kHz	0.01	-81.6	-46	Pass
	25 RB/0 Offset	150 kHz - 30 MHz	0.15	-46.7	-36	Pass
	25 RB/0 Offset	30 MHz - 1 GHz	1976.85	-42.6	-16	Pass
	25 RB/0 Offset	1 GHz - 16 GHz	3801.56	-34.6	-16	Pass
10 MHz Bandwidth						
QPSK Modulation						
Mid Channel 1531 MHz						
	52 RB/0 Offset	9 kHz - 150 kHz	0.01	-81.9	-46	N/A
	52 RB/0 Offset	150 kHz - 30 MHz	0.15	-46.3	-36	N/A
	52 RB/0 Offset	30 MHz - 1 GHz	1989.65	-42.4	-16	N/A
	52 RB/0 Offset	1 GHz - 16 GHz	3823.07	-34.7	-16	N/A
16-QAM Modulation						
Mid Channel 1531 MHz						
	52 RB/0 Offset	9 kHz - 150 kHz	0.01	-82.0	-46	N/A
	52 RB/0 Offset	150 kHz - 30 MHz	0.15	-46.3	-36	N/A
	52 RB/0 Offset	30 MHz - 1 GHz	1989.65	-42.5	-16	N/A
	52 RB/0 Offset	1 GHz - 16 GHz	3818.06	-34.7	-16	N/A
64-QAM Modulation						
Mid Channel 1531 MHz						
	52 RB/0 Offset	9 kHz - 150 kHz	0.01	-81.8	-46	N/A
	52 RB/0 Offset	150 kHz - 30 MHz	0.15	-46.3	-36	N/A
	52 RB/0 Offset	30 MHz - 1 GHz	1984.73	-42.5	-16	N/A
	52 RB/0 Offset	1 GHz - 16 GHz	3820.07	-34.7	-16	N/A
256-QAM Modulation						
Mid Channel 1531 MHz						
	52 RB/0 Offset	9 kHz - 150 kHz	0.01	-81.7	-46	N/A
	52 RB/0 Offset	150 kHz - 30 MHz	0.15	-46.3	-36	N/A
	52 RB/0 Offset	30 MHz - 1 GHz	1988.67	-42.5	-16	N/A
	52 RB/0 Offset	1 GHz - 16 GHz	3826.57	-34.6	-16	N/A

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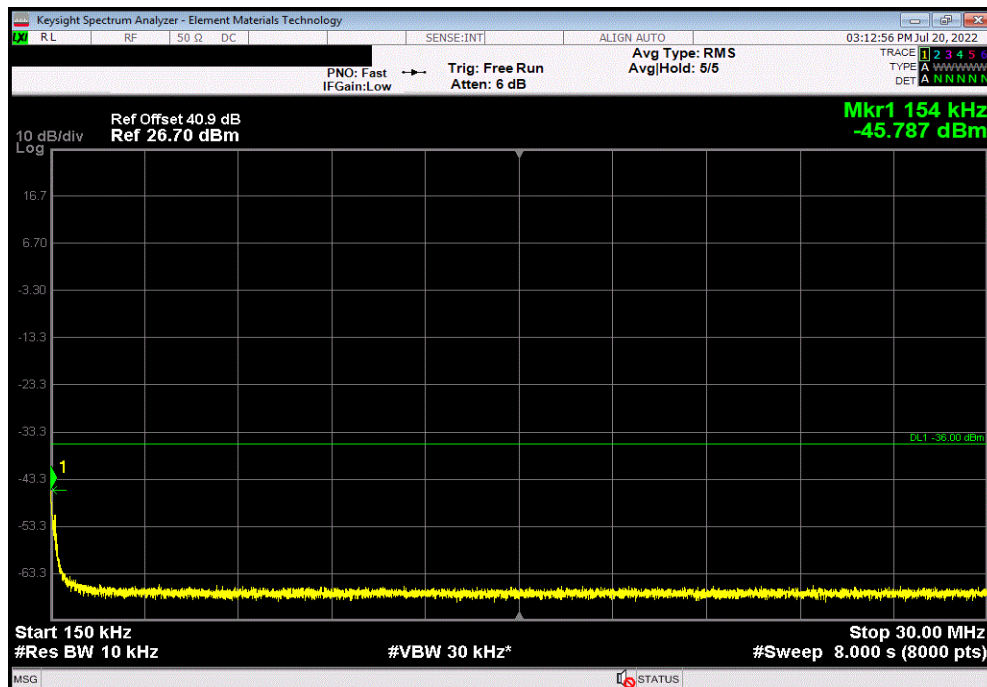


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5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, QPSK Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
9 kHz - 150 kHz	0.01	-81.86	-46	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, QPSK Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
150 kHz - 30 MHz	0.15	-45.79	-36	Pass	

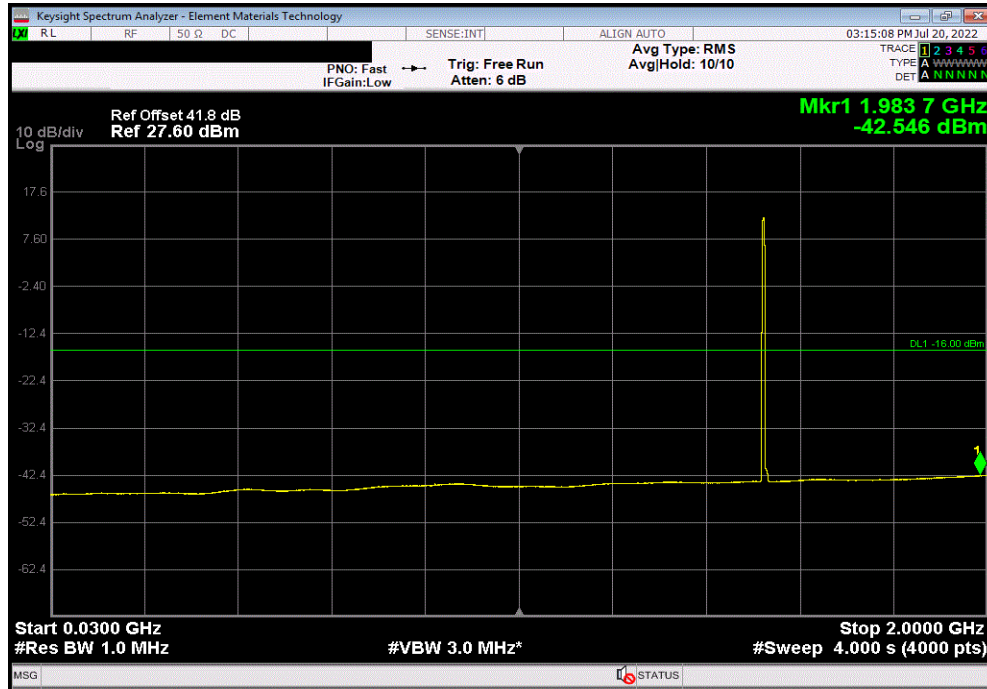


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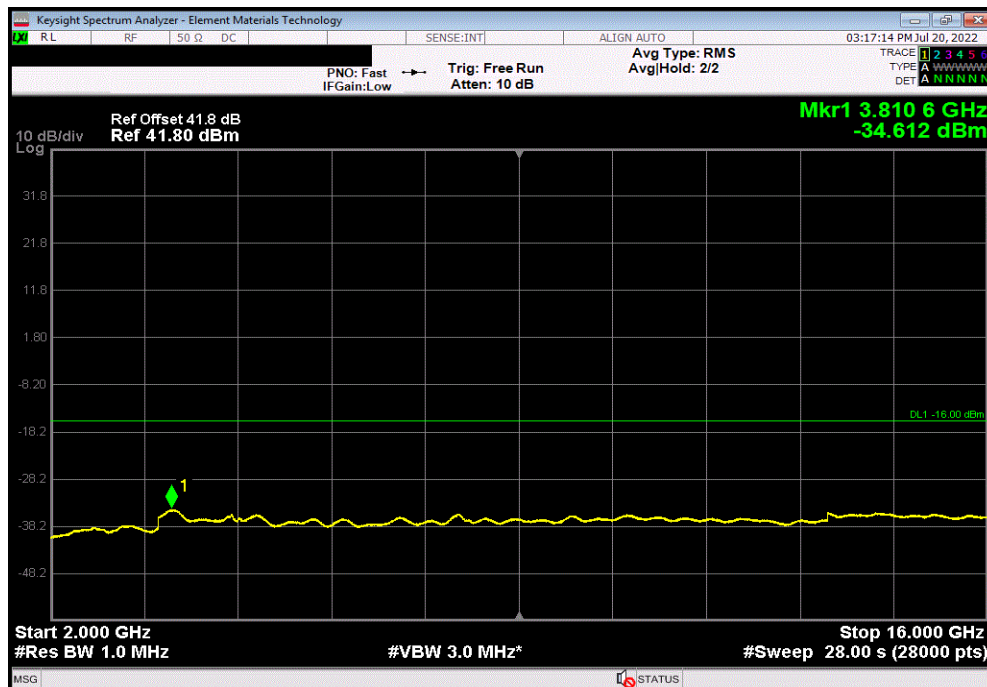


TbTtx 2022.05.02.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, QPSK Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
30 MHz - 1 GHz	1983.74	-42.55	-16	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, QPSK Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
1 GHz - 16 GHz	3810.56	-34.61	-16	Pass	

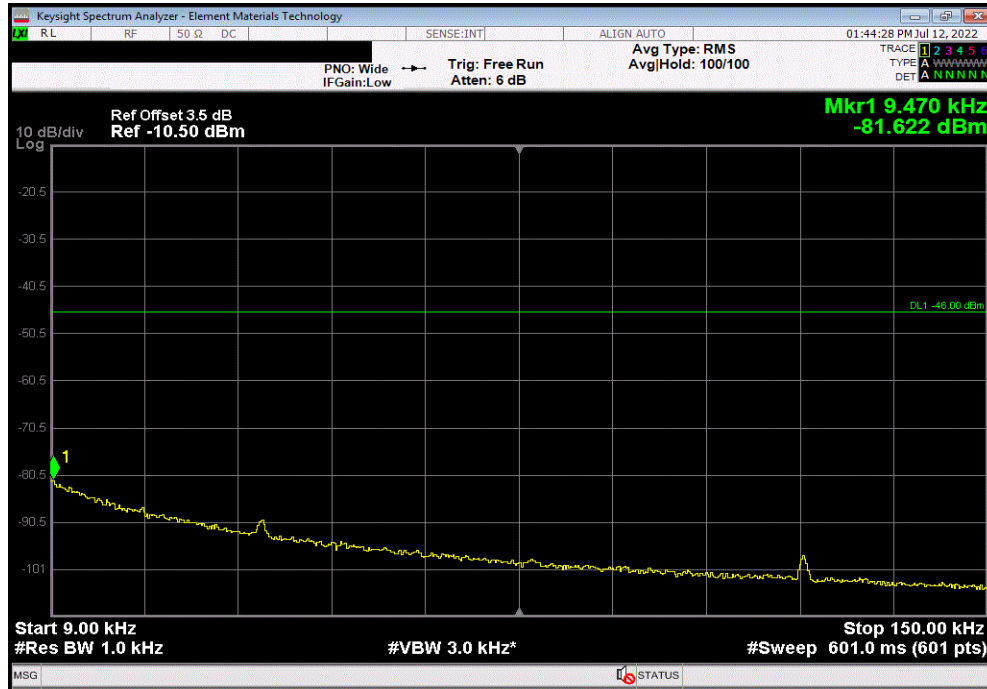


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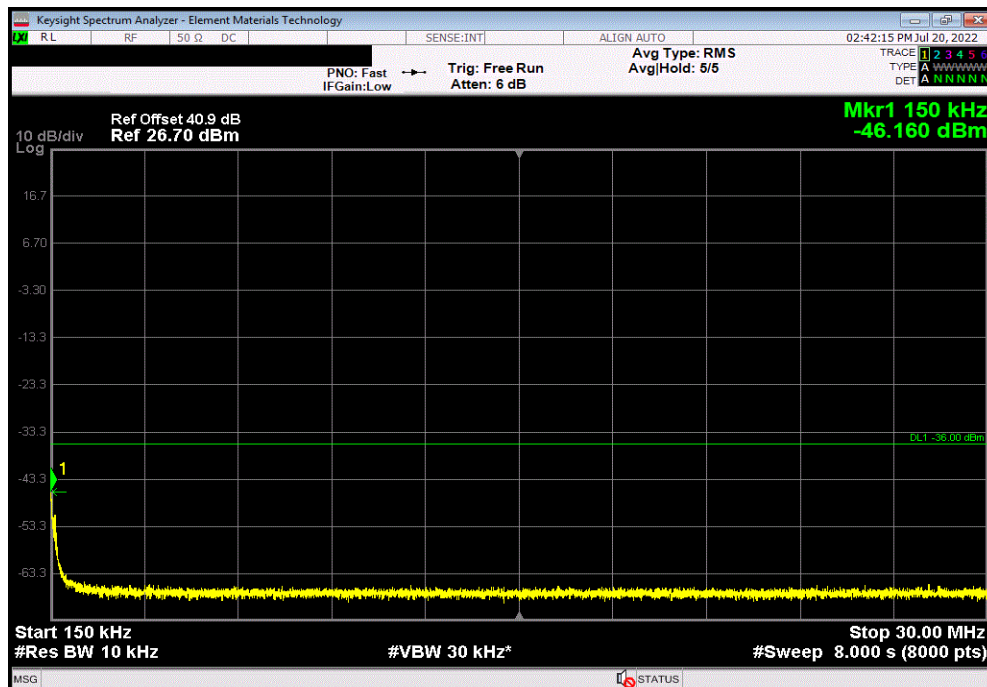


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5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
9 kHz - 150 kHz	0.01	-81.62	-46	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
150 kHz - 30 MHz	0.15	-46.16	-36	Pass	

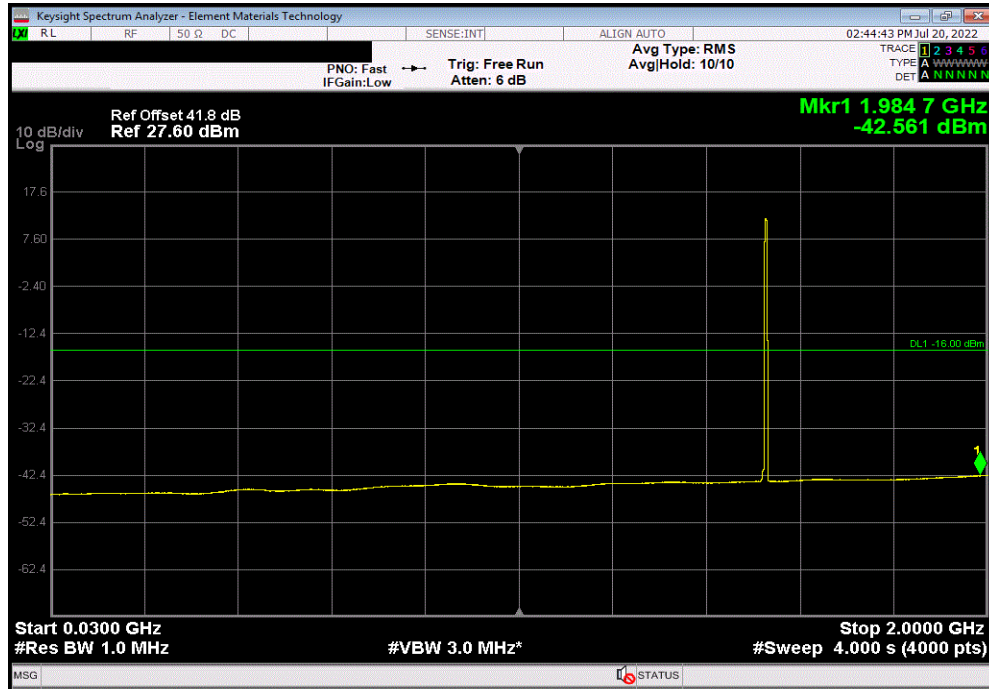


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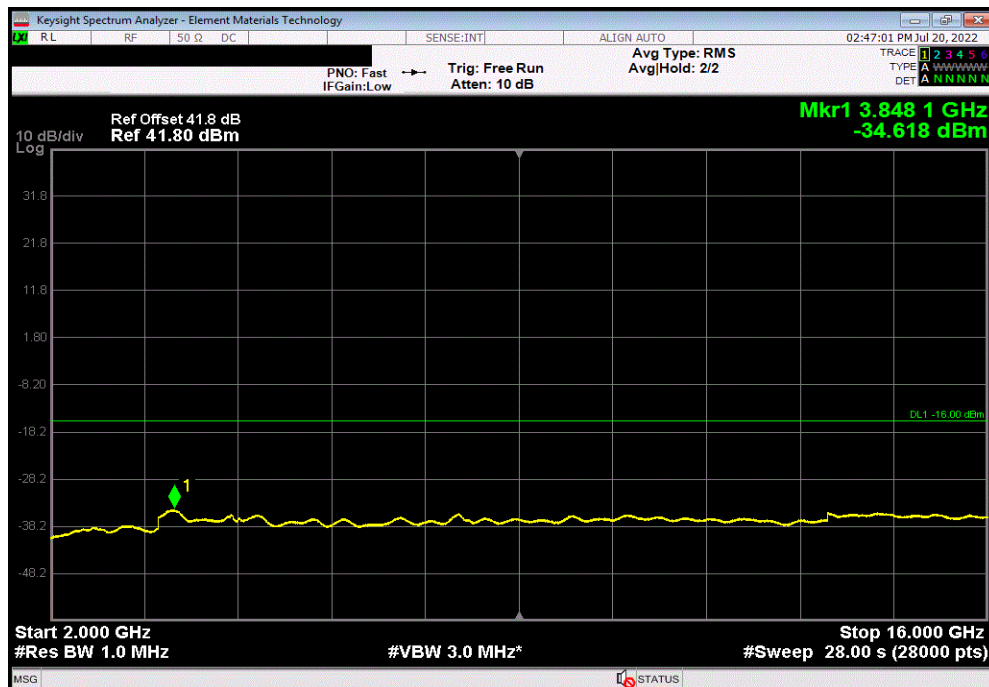


TbTtX 2022.05.02.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
30 MHz - 1 GHz	1984.73	-42.56	-16	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, QPSK Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
1 GHz - 16 GHz	3848.07	-34.62	-16	Pass	

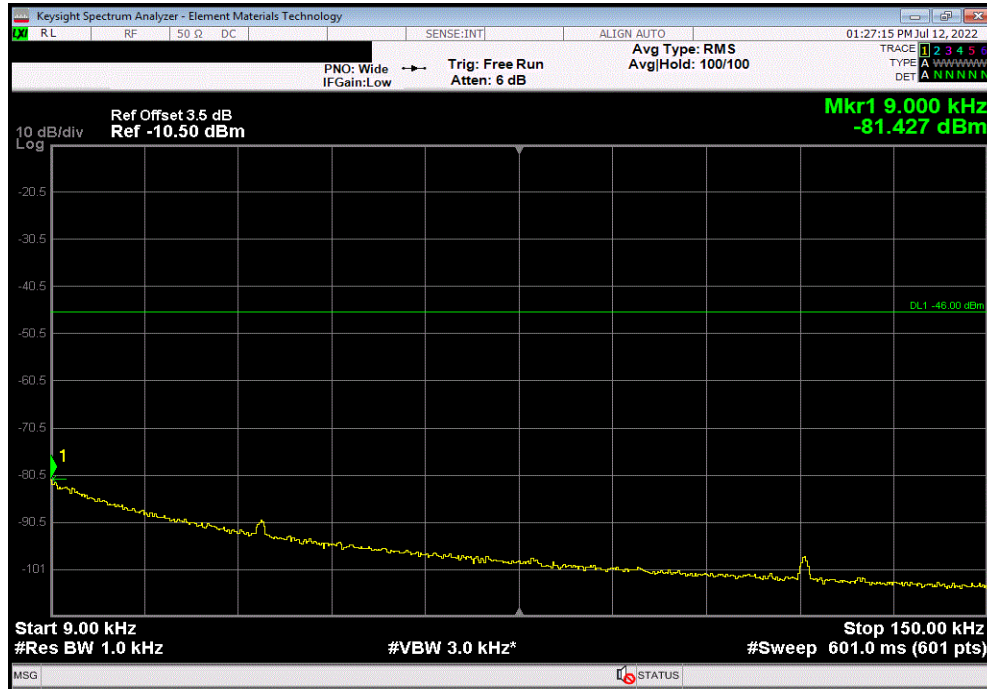


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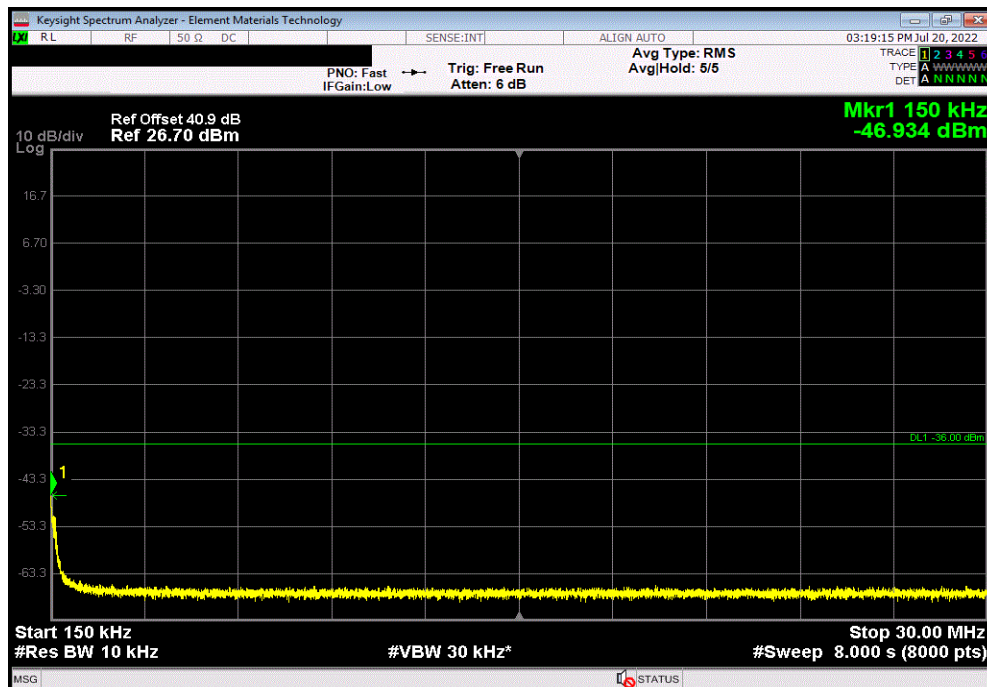


TbTx 2022.05.02.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 16-QAM Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
9 kHz - 150 kHz	0.01	-81.43	-46	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 16-QAM Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
150 kHz - 30 MHz	0.15	-46.93	-36	Pass	

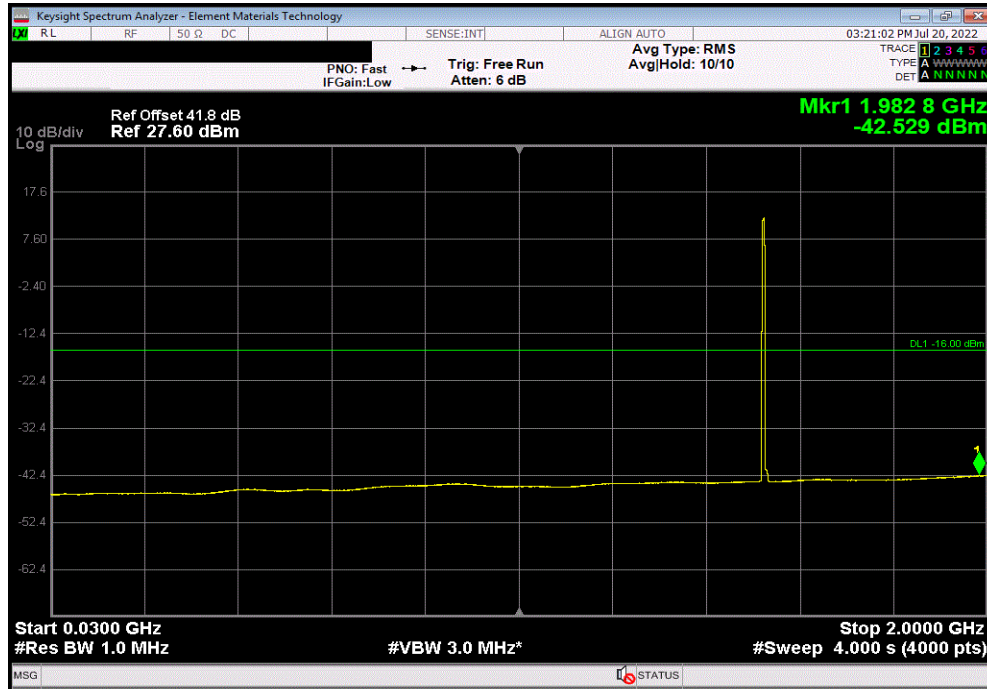


SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS, 16dBi

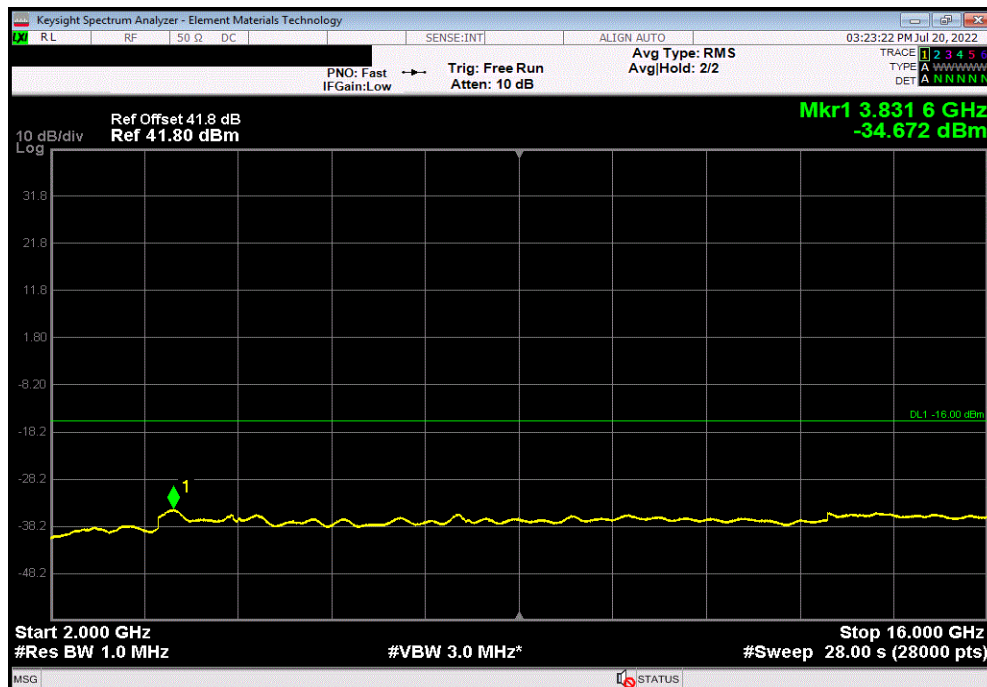


TbTtx 2022.05.02.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 16-QAM Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
30 MHz - 1 GHz	1982.76	-42.53	-16	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 16-QAM Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
1 GHz - 16 GHz	3831.57	-34.67	-16	Pass	

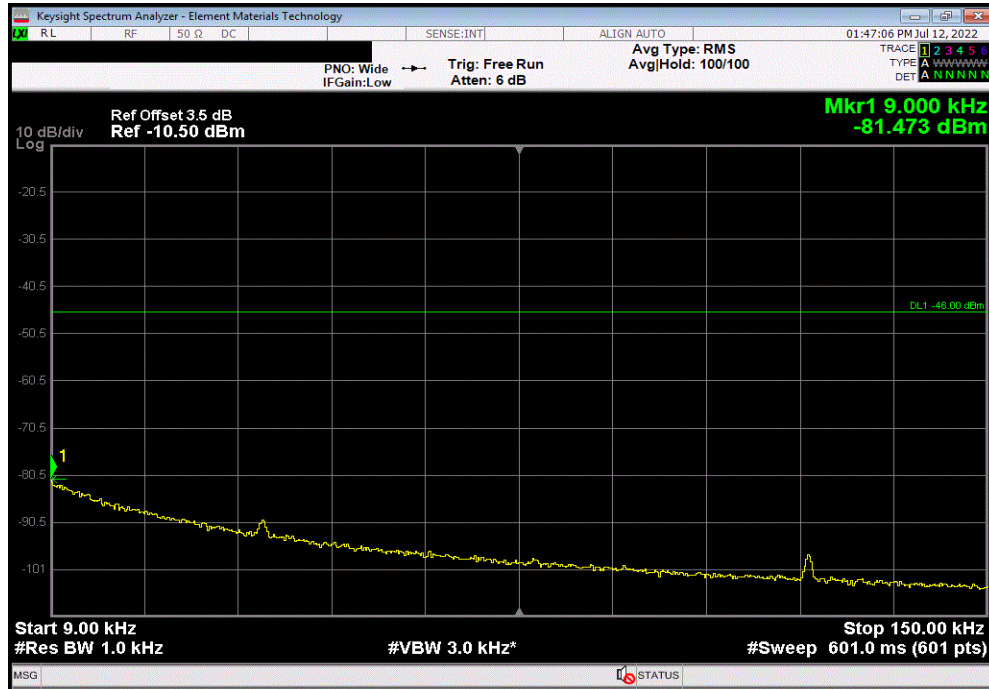


SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS, 16dBi

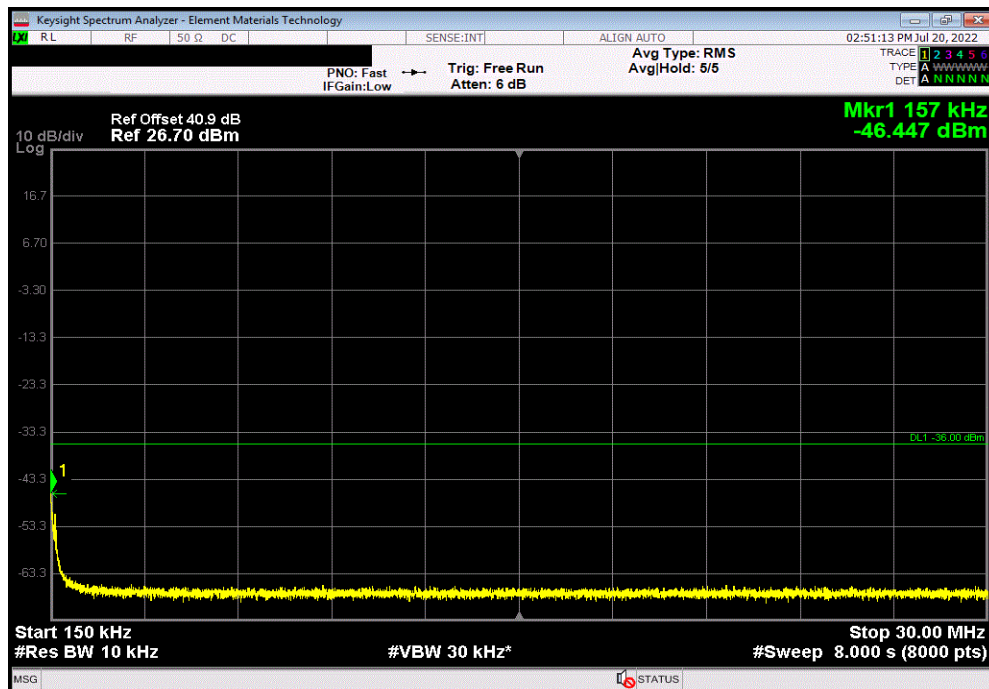


TbTtx 2022.05.02.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 16-QAM Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
9 kHz - 150 kHz	0.01	-81.47	-46	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 16-QAM Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
150 kHz - 30 MHz	0.16	-46.45	-36	Pass	

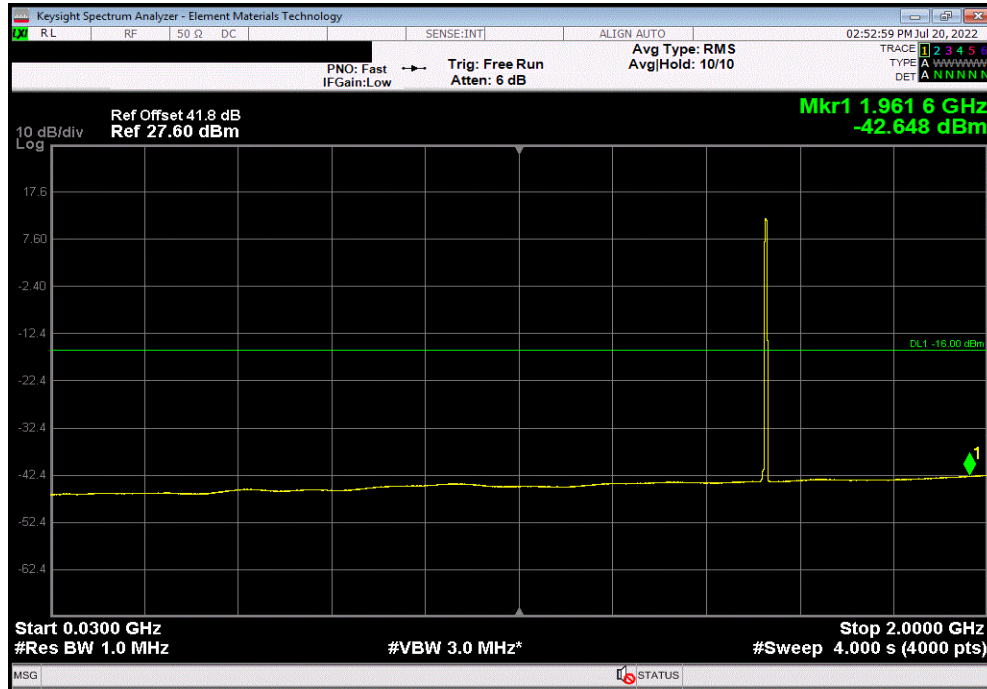


SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS, 16dBi

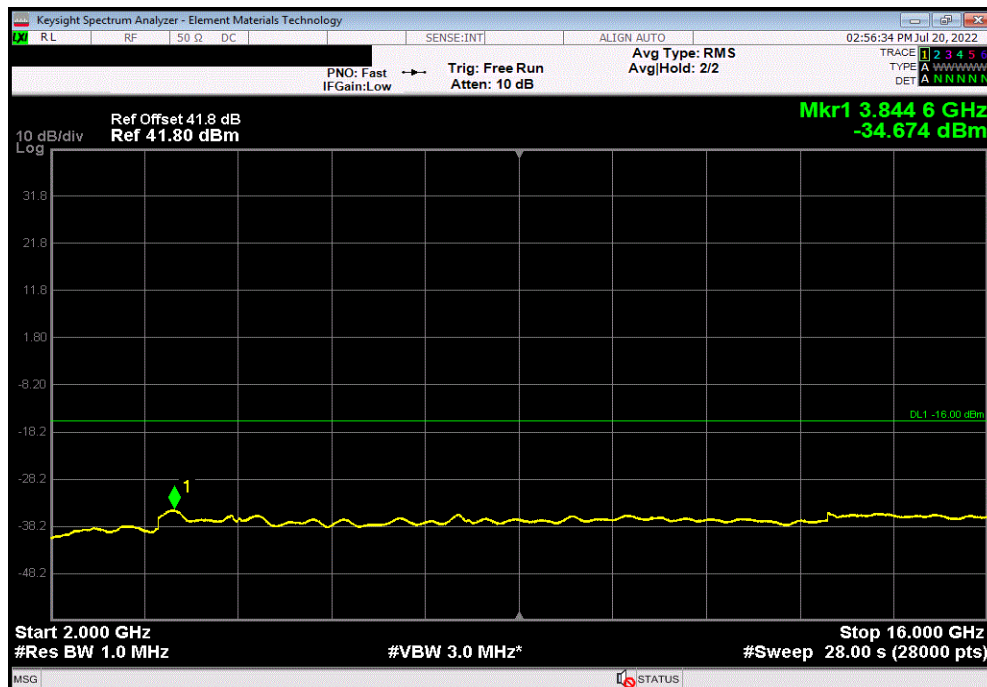


TbTtx 2022.05.02.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 16-QAM Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
30 MHz - 1 GHz	1961.58	-42.65	-16	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 16-QAM Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
1 GHz - 16 GHz	3844.57	-34.67	-16	Pass	

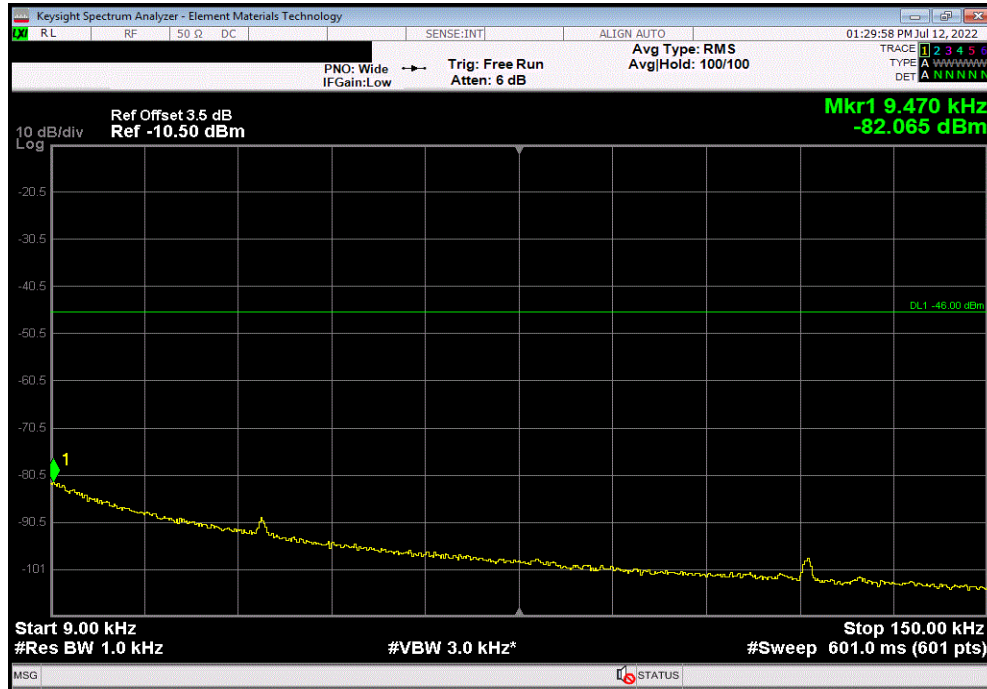


SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS, 16dBi

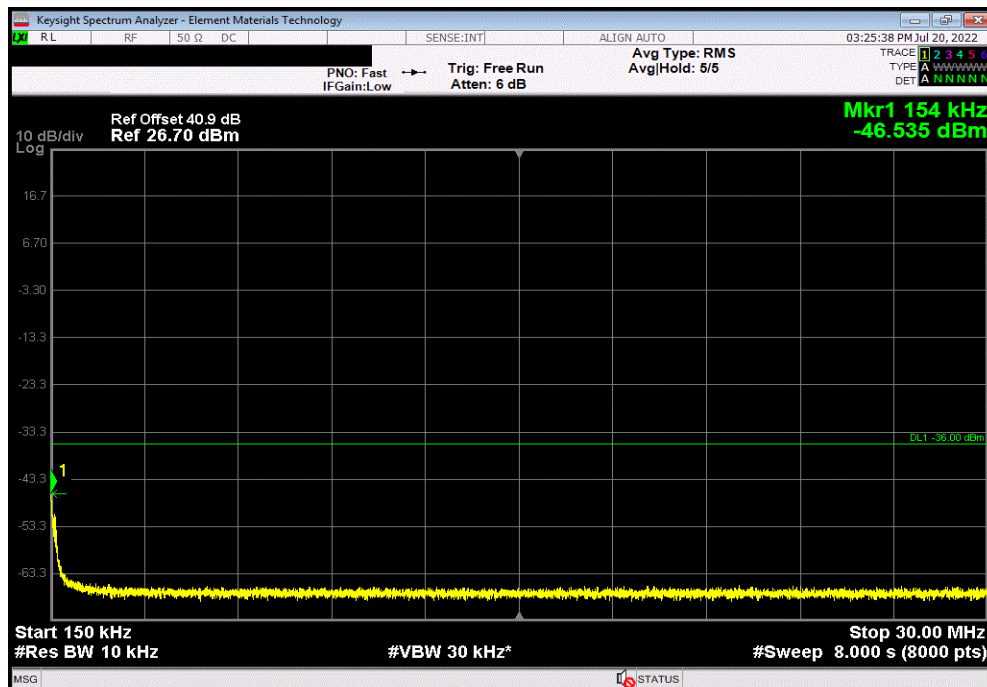


TbTx 2022.05.02.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 64-QAM Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
9 kHz - 150 kHz	0.01	-82.07	-46	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 64-QAM Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
150 kHz - 30 MHz	0.15	-46.54	-36	Pass	

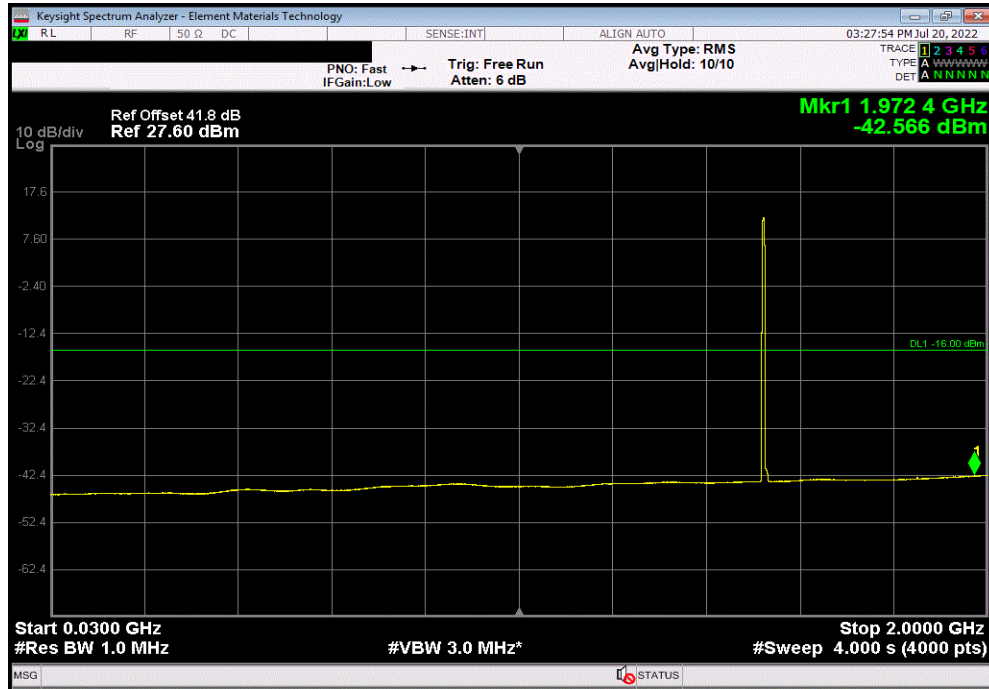


SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS, 16dBi

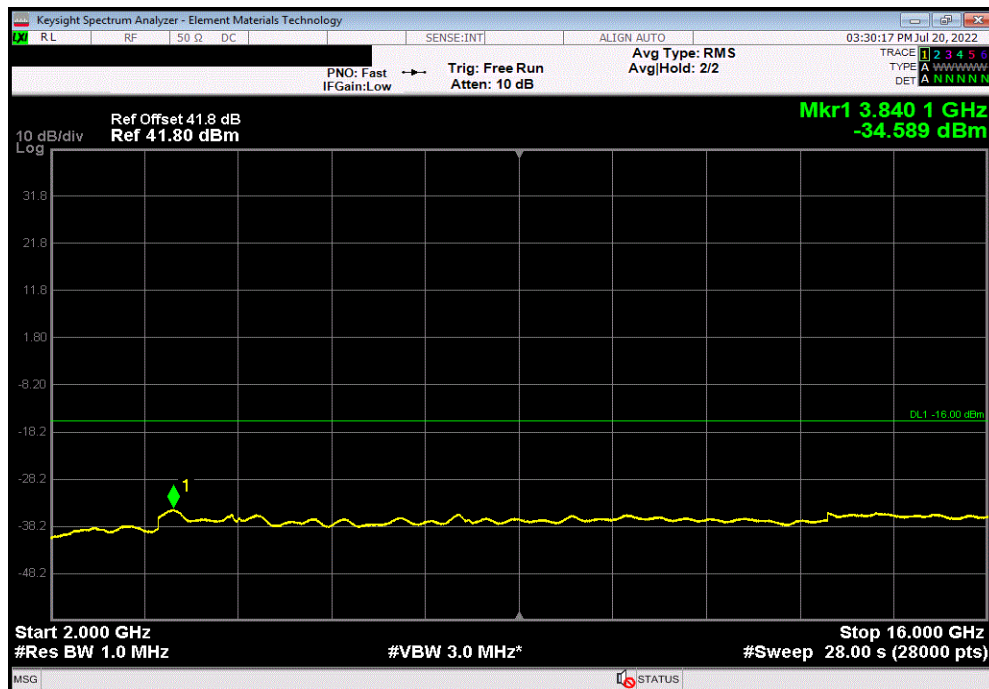


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5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 64-QAM Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
30 MHz - 1 GHz	1972.41	-42.57	-16	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 64-QAM Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
1 GHz - 16 GHz	3840.07	-34.59	-16	Pass	

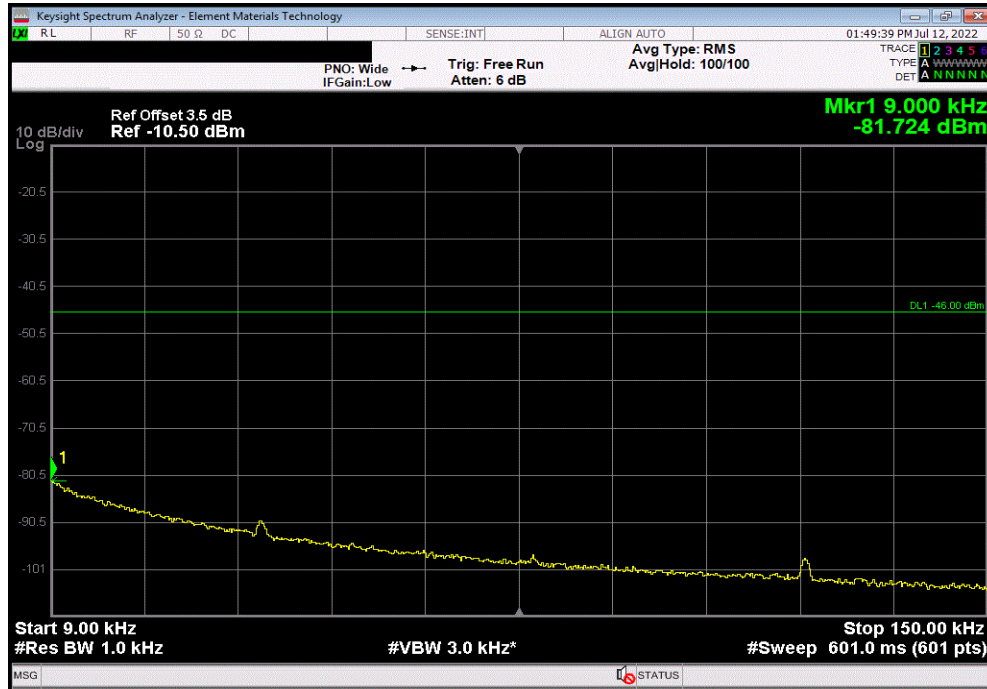


SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS, 16dBi

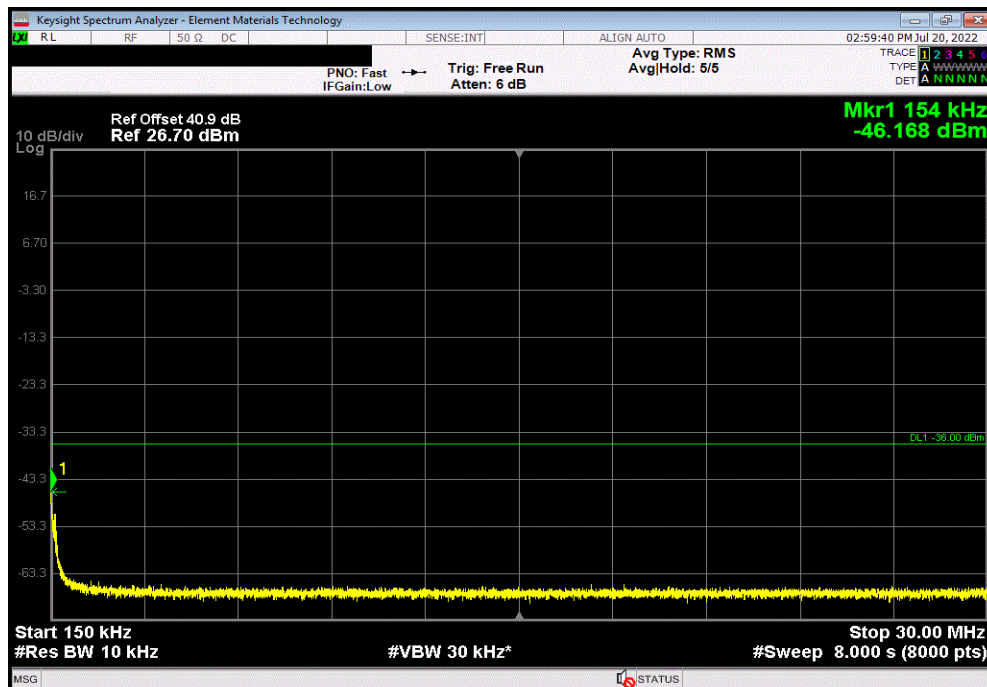


TbTx 2022.05.02.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 64-QAM Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
9 kHz - 150 kHz	0.01	-81.72	-46	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 64-QAM Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
150 kHz - 30 MHz	0.15	-46.17	-36	Pass	

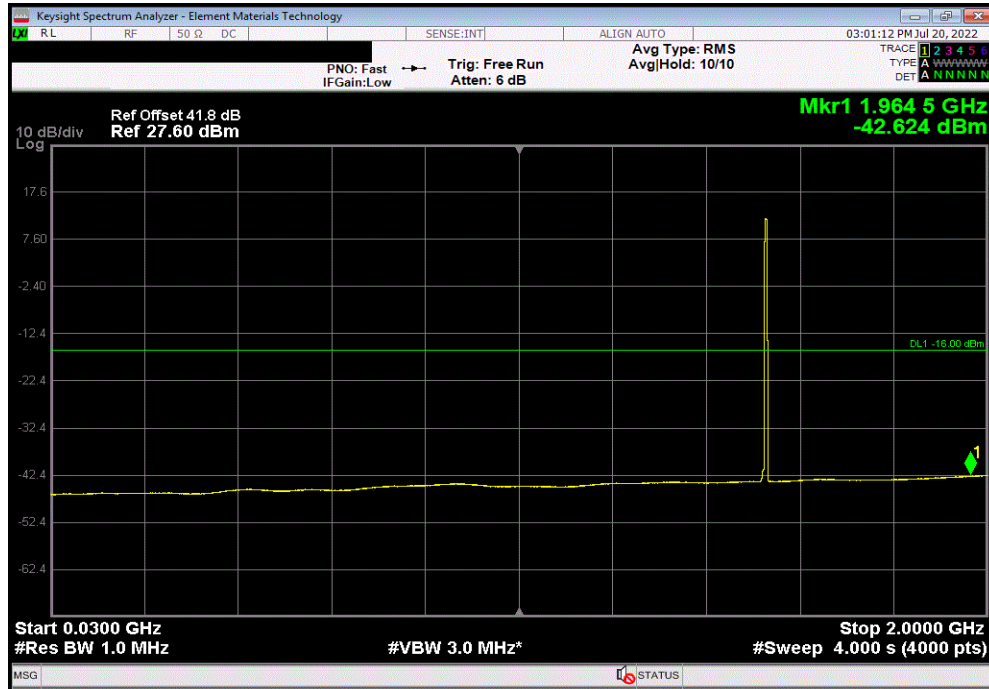


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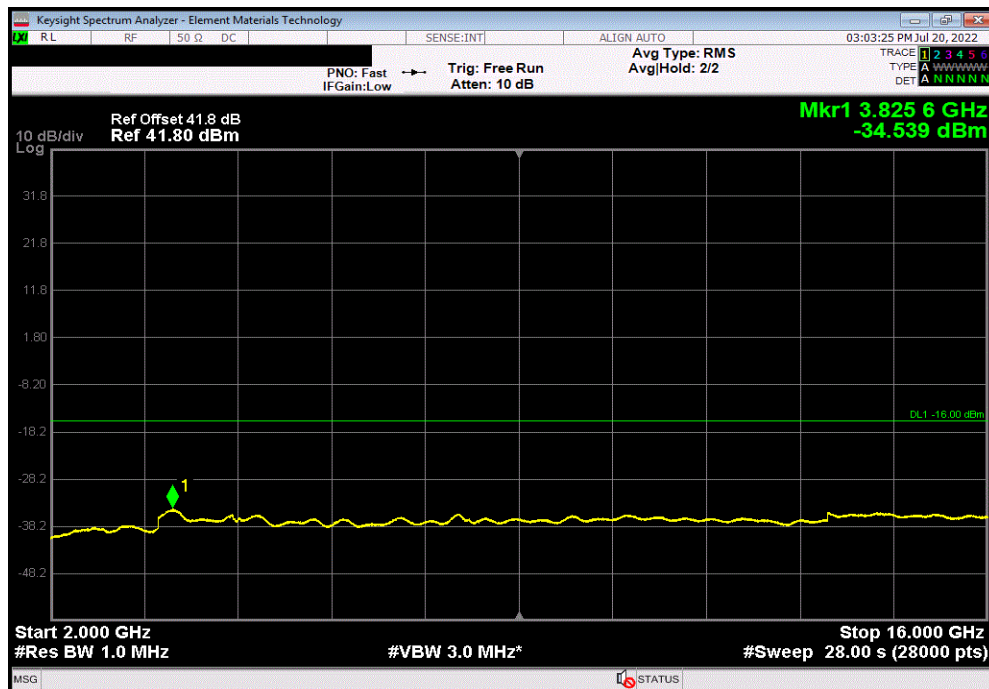


TbTtx 2022.05.02.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 64-QAM Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
30 MHz - 1 GHz	1964.53	-42.62	-16	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 64-QAM Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
1 GHz - 16 GHz	3825.57	-34.54	-16	Pass	

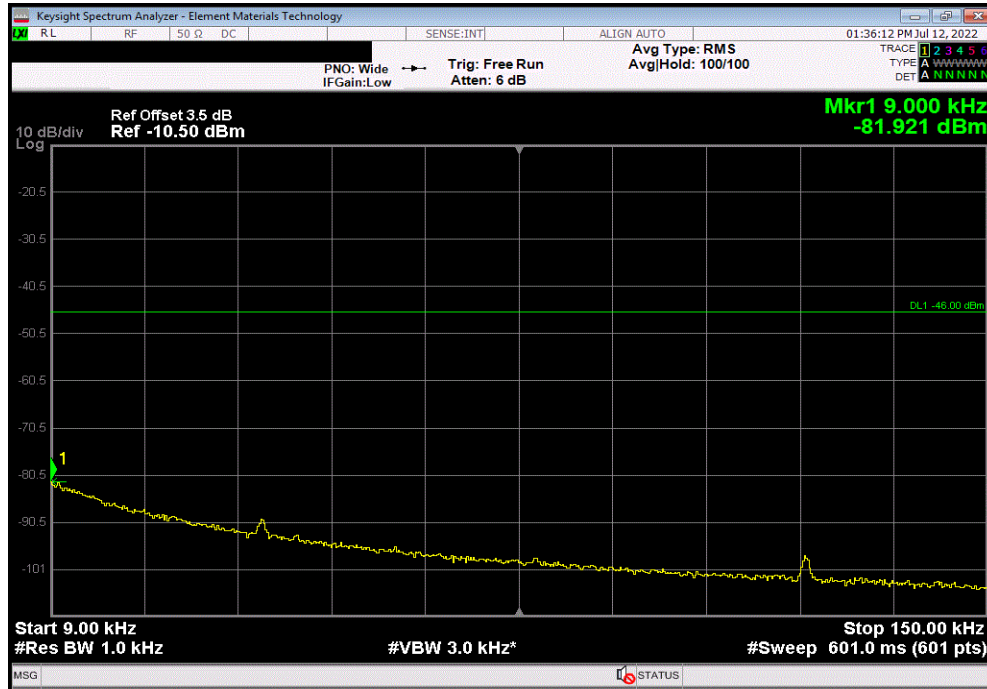


SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS, 16dBi

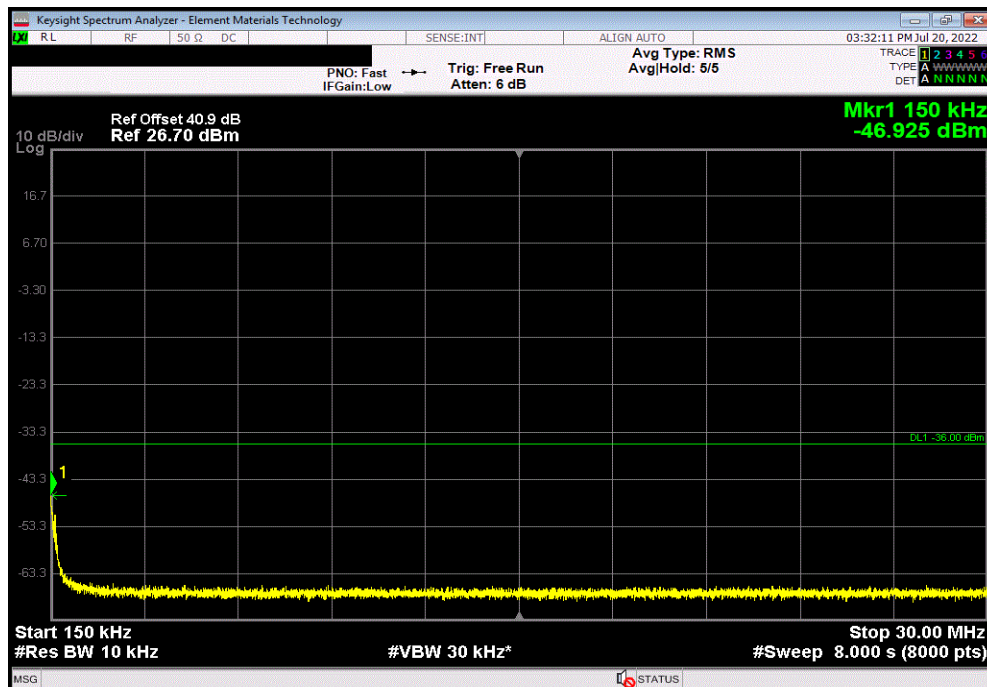


TbTtx 2022.05.02.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 256-QAM Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
9 kHz - 150 kHz	0.01	-81.92	-46	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 256-QAM Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
150 kHz - 30 MHz	0.15	-46.93	-36	Pass	

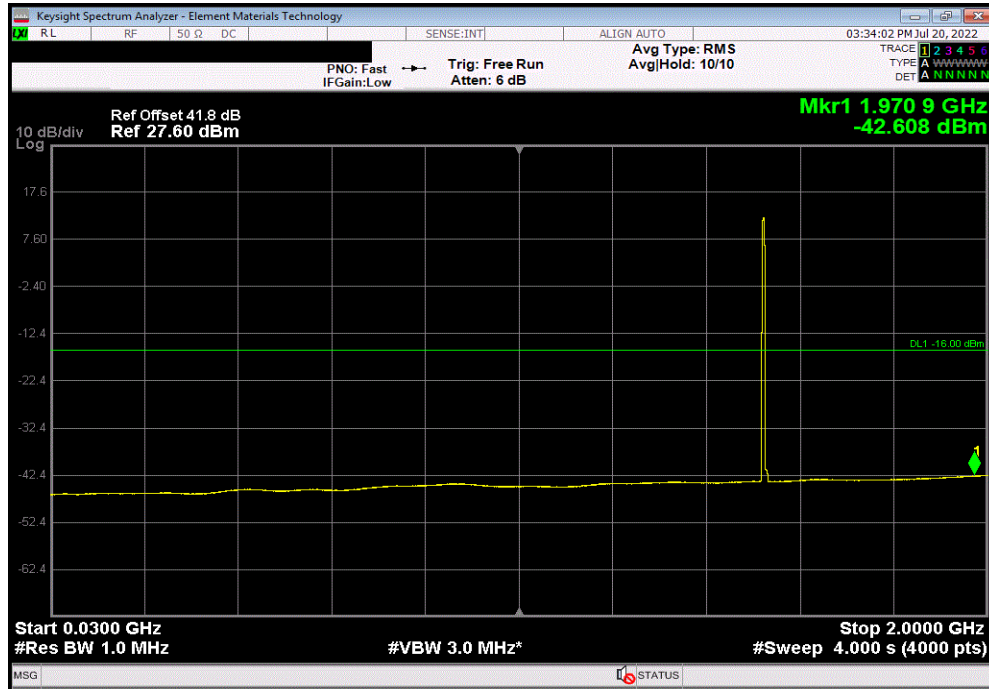


SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS, 16dBi

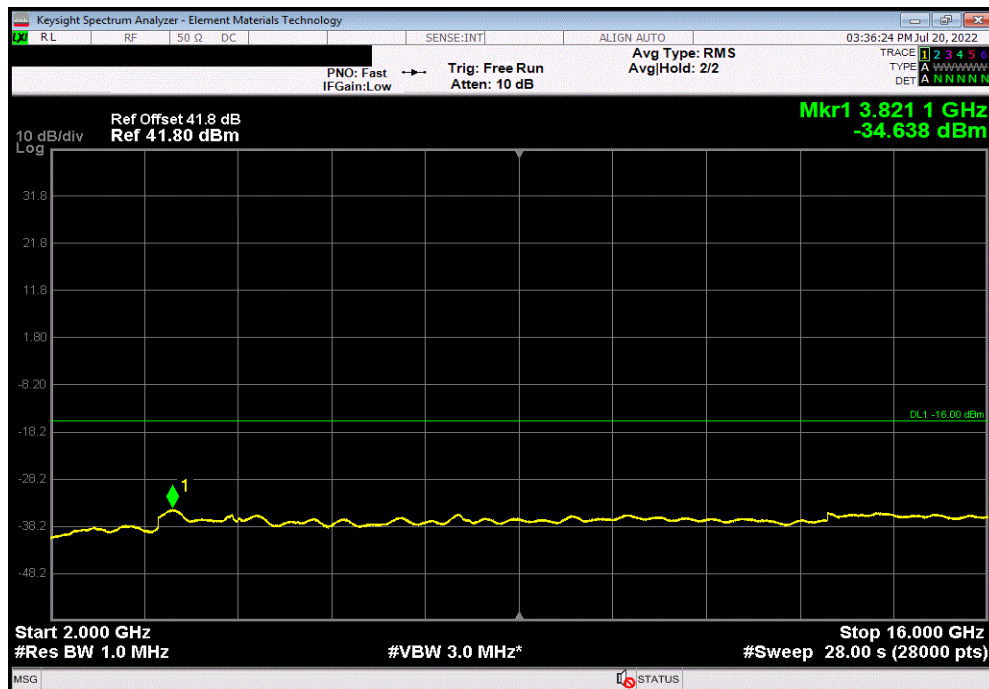


TbTtx 2022.05.02.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 256-QAM Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
30 MHz - 1 GHz	1970.94	-42.61	-16	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 256-QAM Modulation, Low Channel 1528.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
1 GHz - 16 GHz	3821.07	-34.64	-16	Pass	

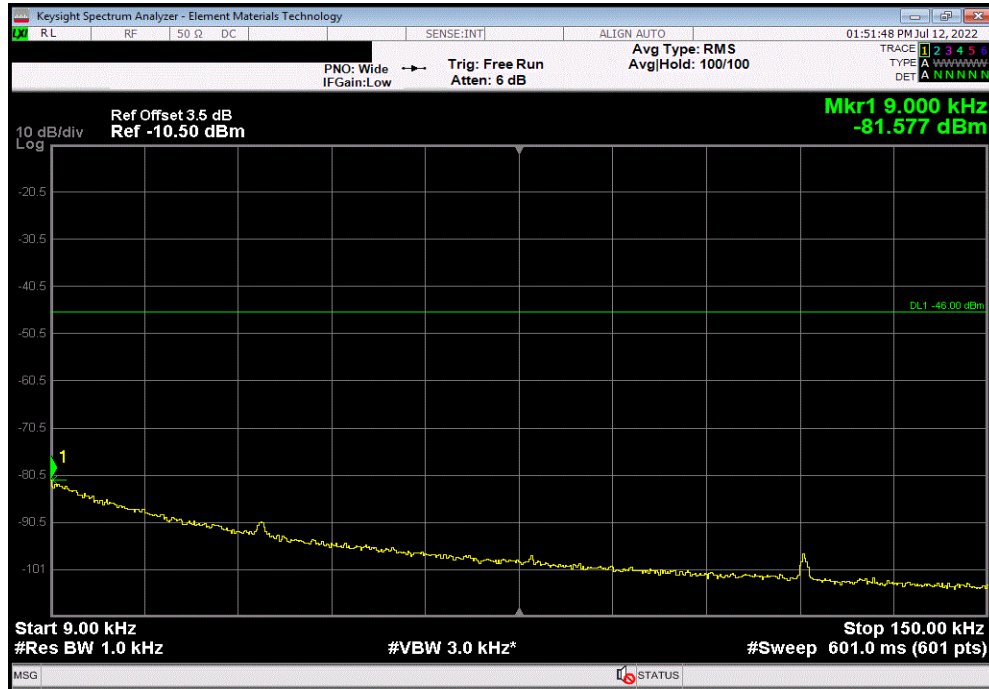


SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS, 16dBi

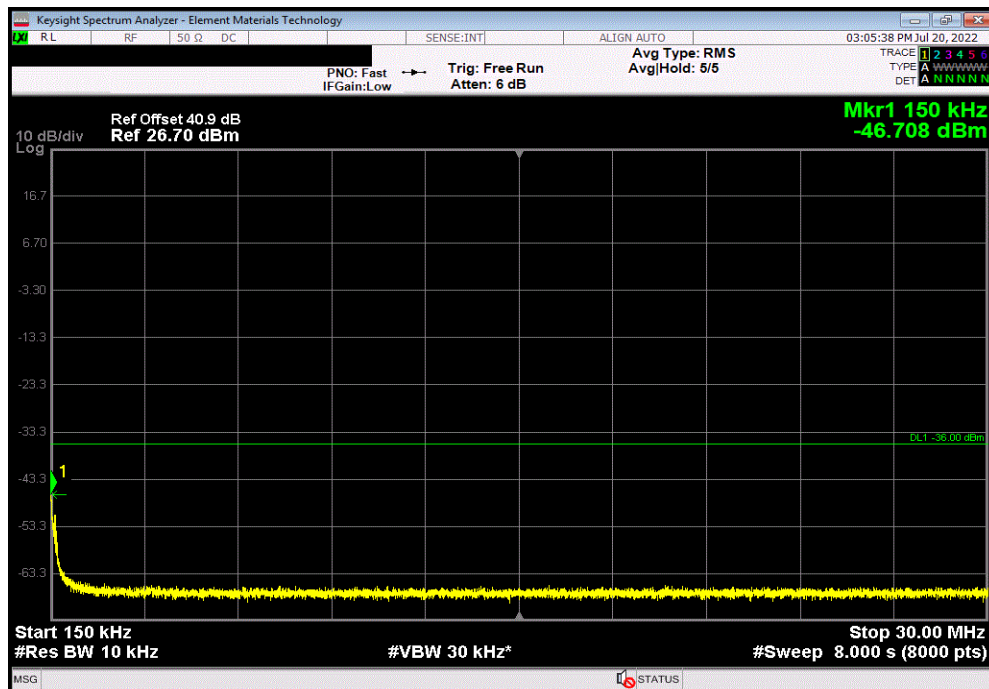


TbTx 2022.05.02.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 256-QAM Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
9 kHz - 150 kHz	0.01	-81.58	-46	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 256-QAM Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
150 kHz - 30 MHz	0.15	-46.71	-36	Pass	

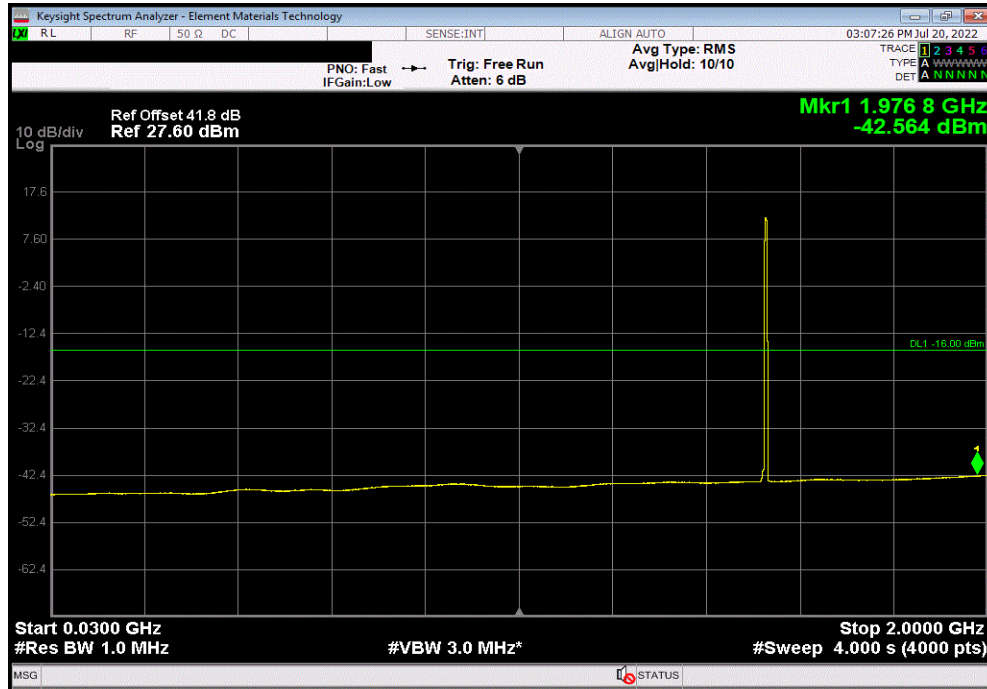


SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS, 16dBi

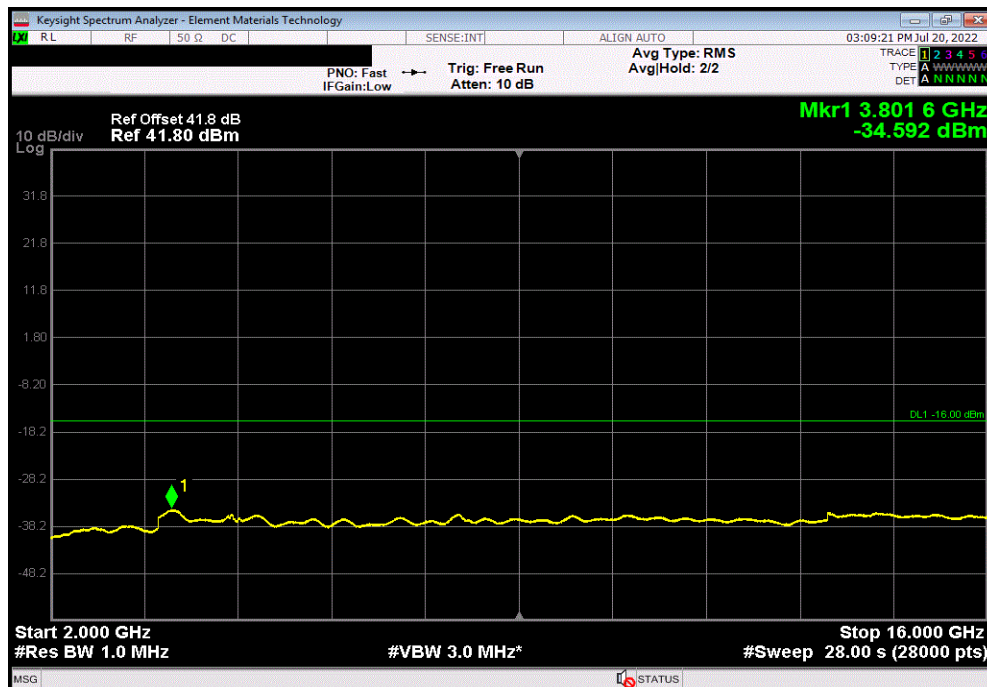


TbTtx 2022.05.02.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 256-QAM Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
30 MHz - 1 GHz	1976.85	-42.56	-16	Pass	



5G NR, Band n24, SCS 15kHz, 5 MHz Bandwidth, 256-QAM Modulation, High Channel 1533.5 MHz, 25 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
1 GHz - 16 GHz	3801.56	-34.59	-16	Pass	

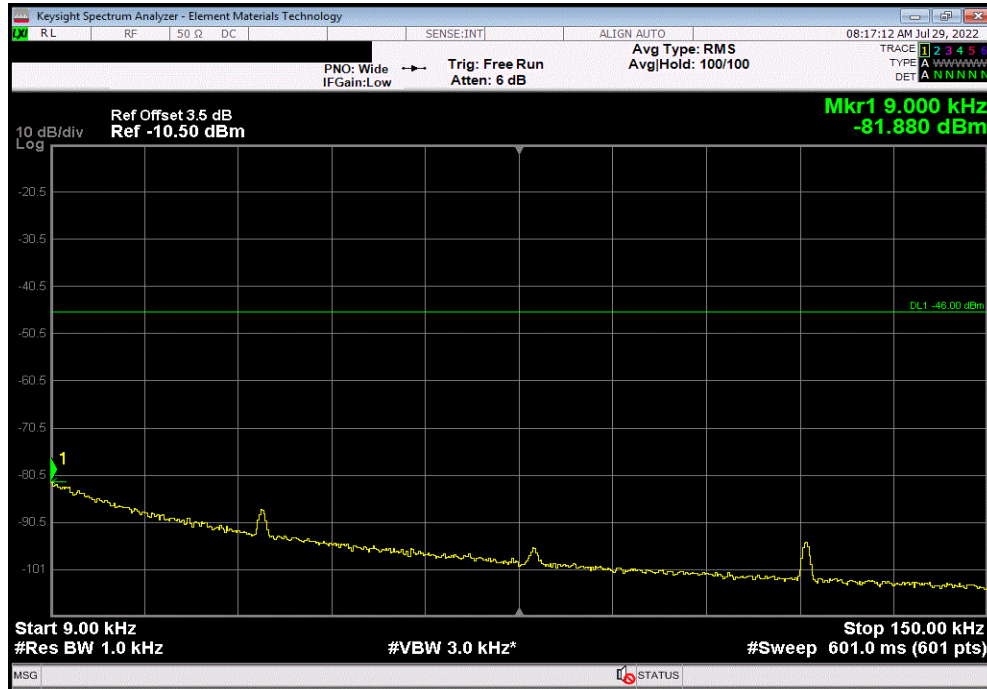


SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS, 16dBi

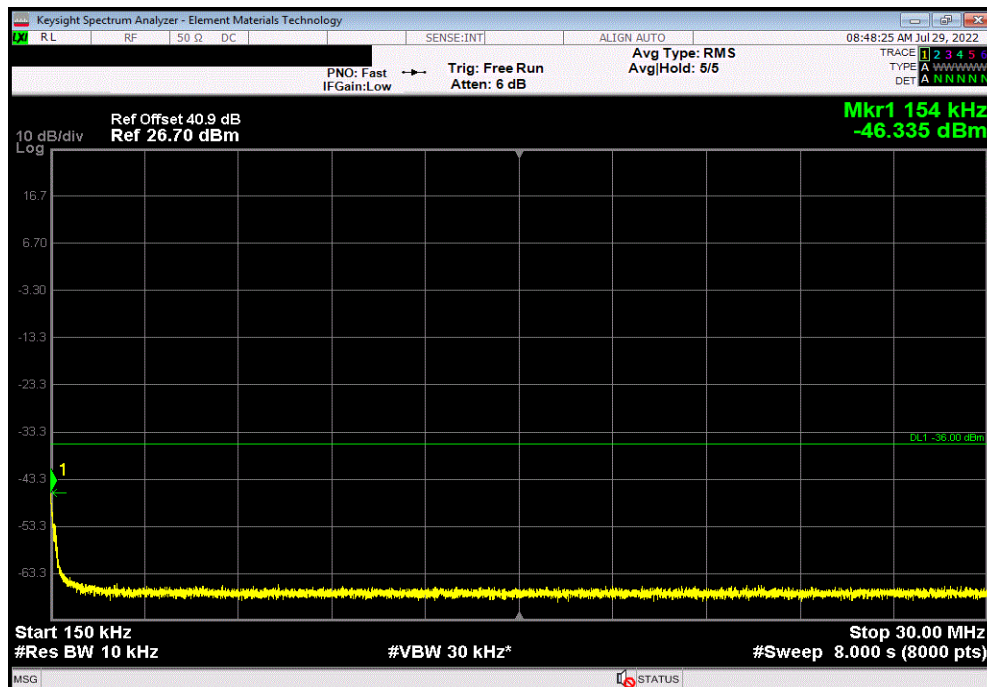


TbTtx 2022.05.02.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
9 kHz - 150 kHz	0.01	-81.88	-46	N/A	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
150 kHz - 30 MHz	0.15	-46.34	-36	N/A	

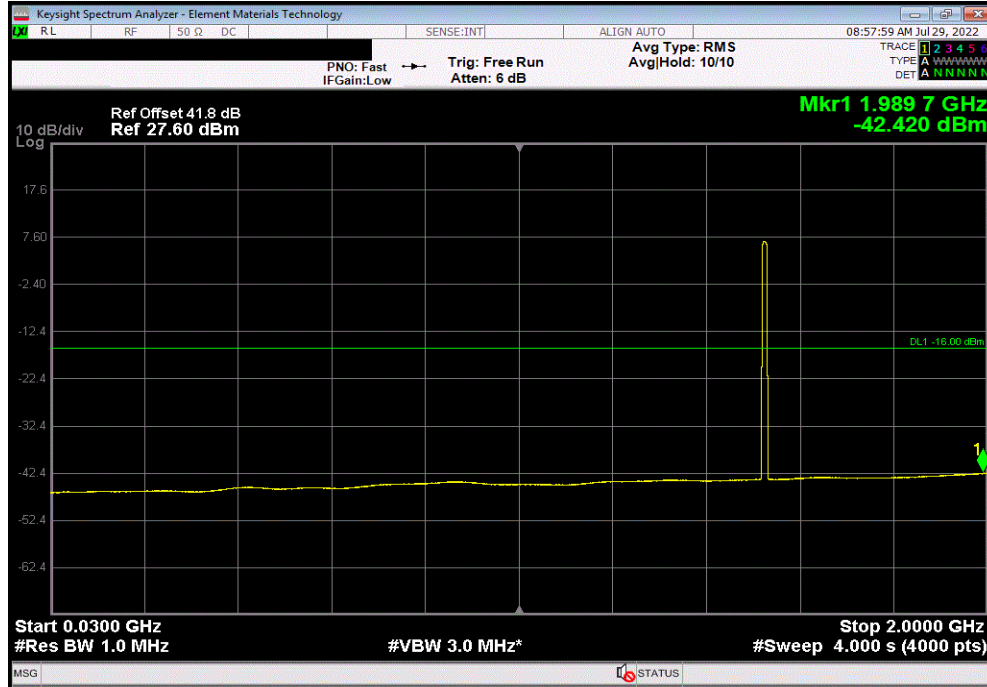


SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS, 16dBi

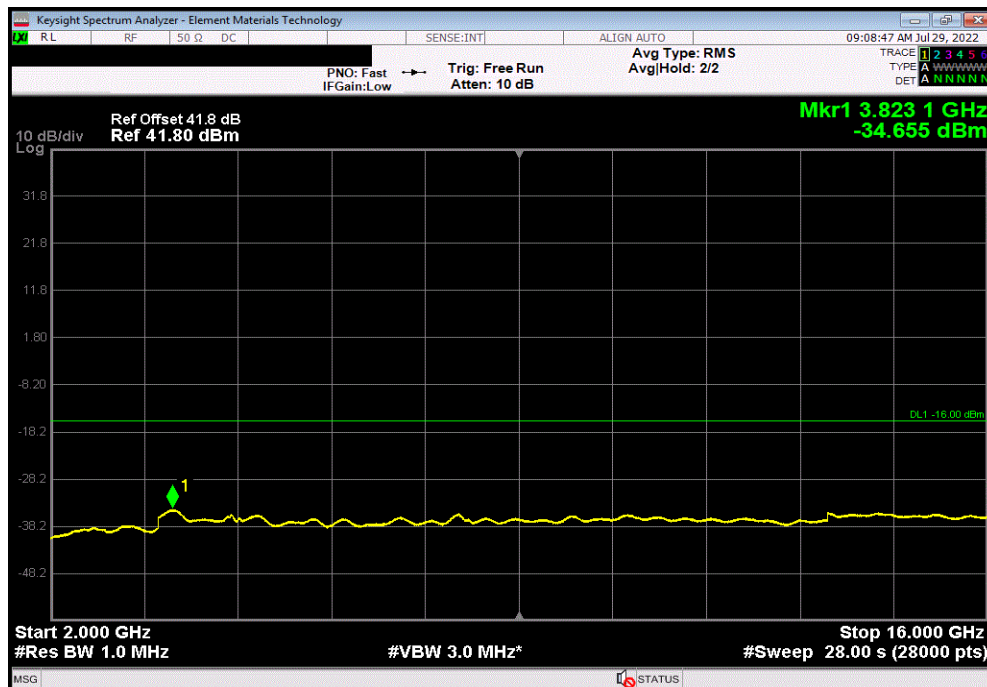


TbTtx 2022.05.02.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
30 MHz - 1 GHz	1989.65	-42.42	-16	N/A	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, QPSK Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
1 GHz - 16 GHz	3823.07	-34.66	-16	N/A	

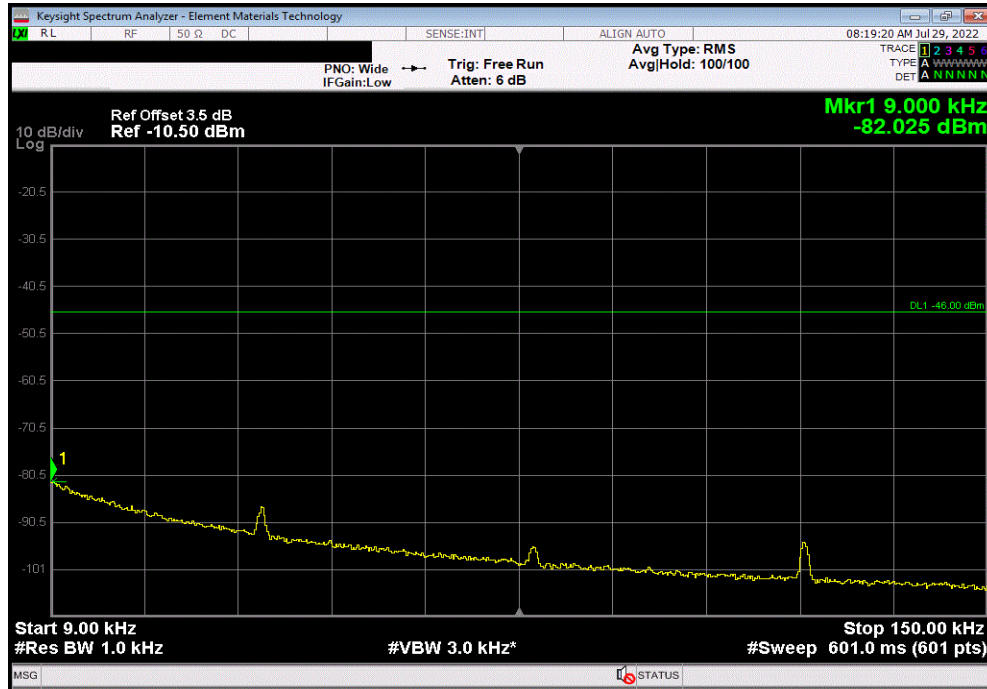


SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS, 16dBi

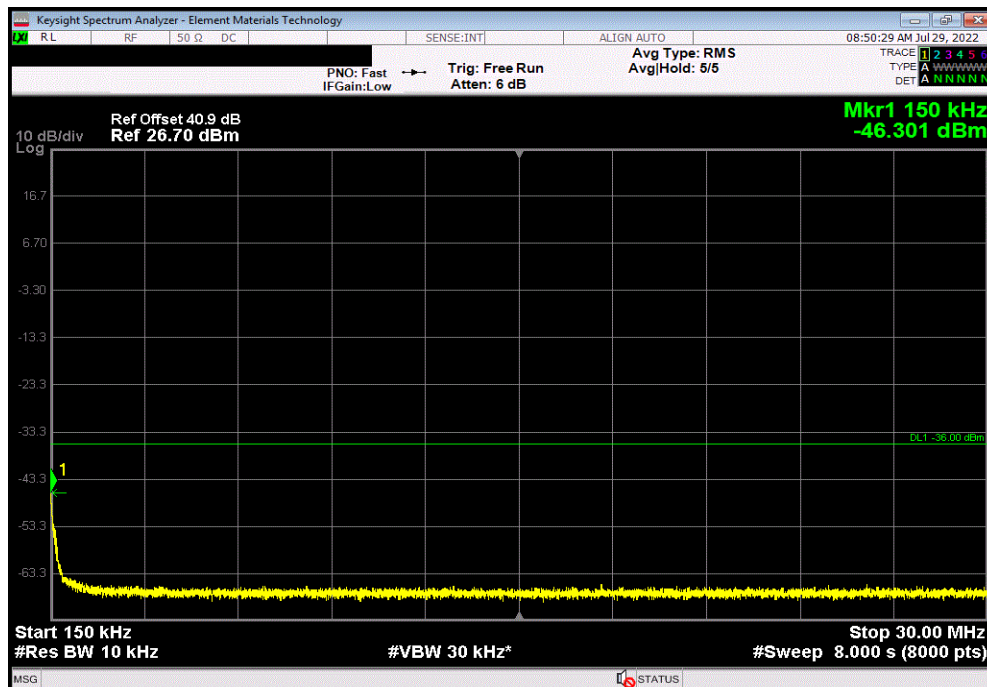


TbTx 2022.05.02.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
9 kHz - 150 kHz	0.01	-82.03	-46	N/A	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
150 kHz - 30 MHz	0.15	-46.3	-36	N/A	

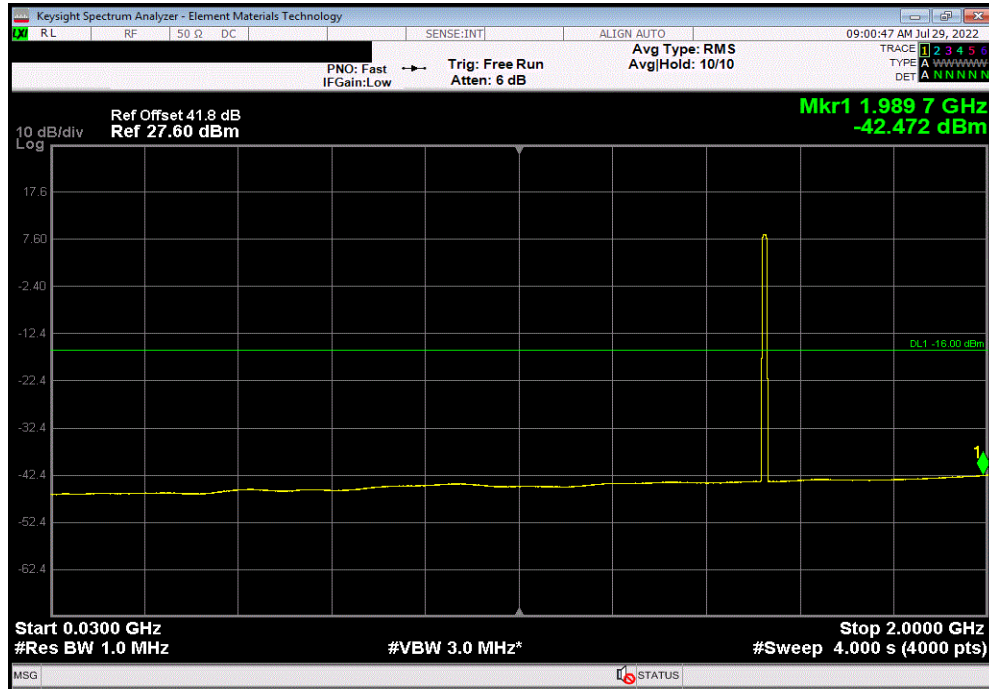


SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS, 16dBi

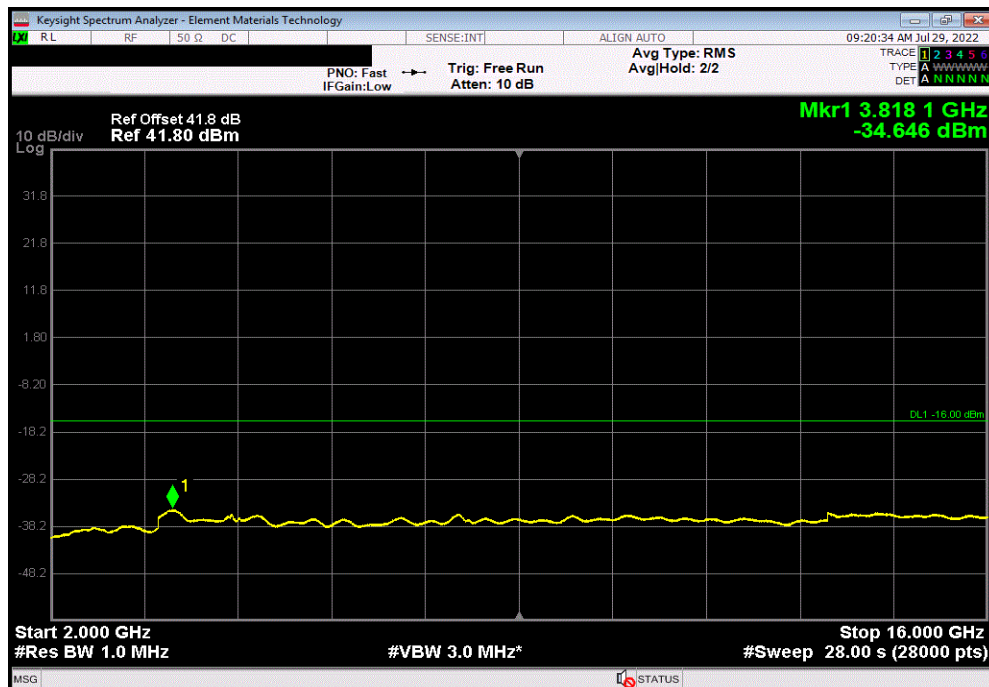


TbTtx 2022.05.02.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
30 MHz - 1 GHz	1989.65	-42.47	-16	N/A	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 16-QAM Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
1 GHz - 16 GHz	3818.06	-34.65	-16	N/A	

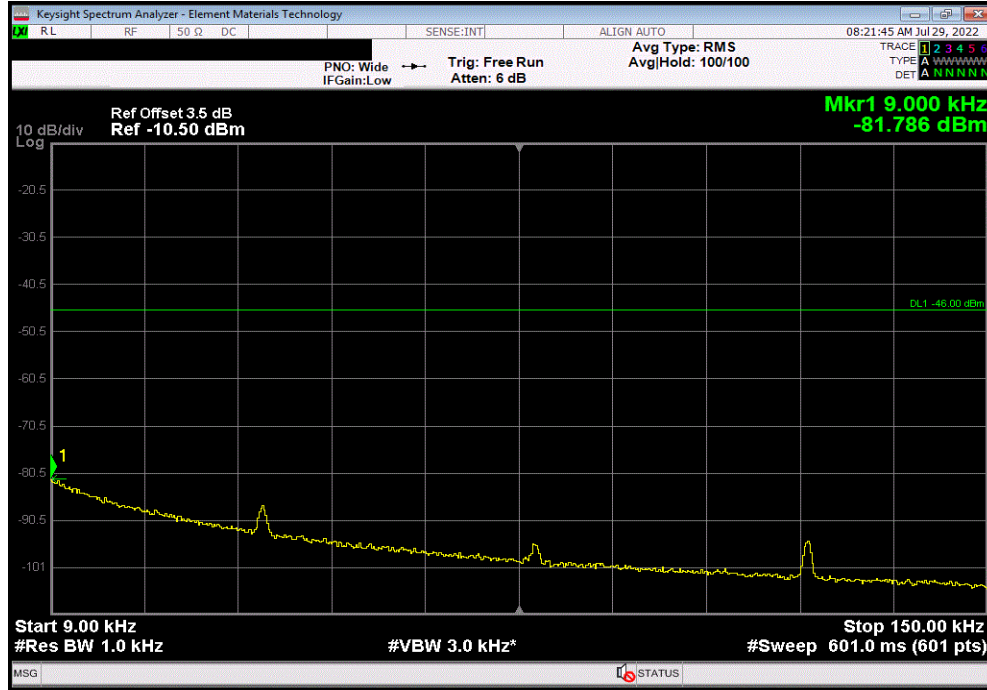


SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS, 16dBi

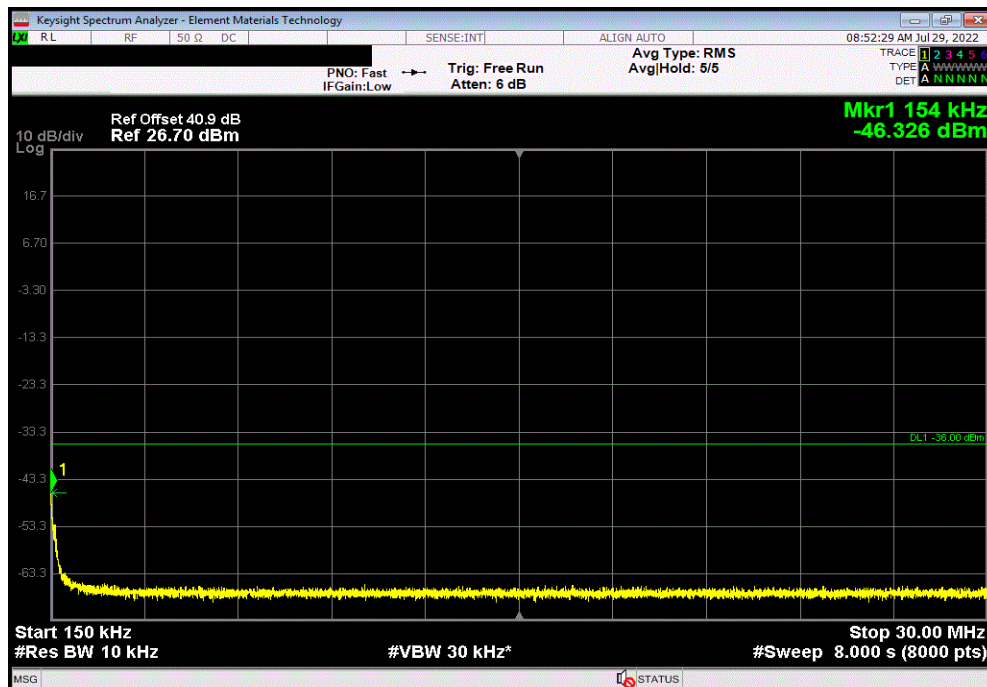


TbTx 2022.05.02.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
9 kHz - 150 kHz	0.01	-81.79	-46	N/A	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
150 kHz - 30 MHz	0.15	-46.33	-36	N/A	

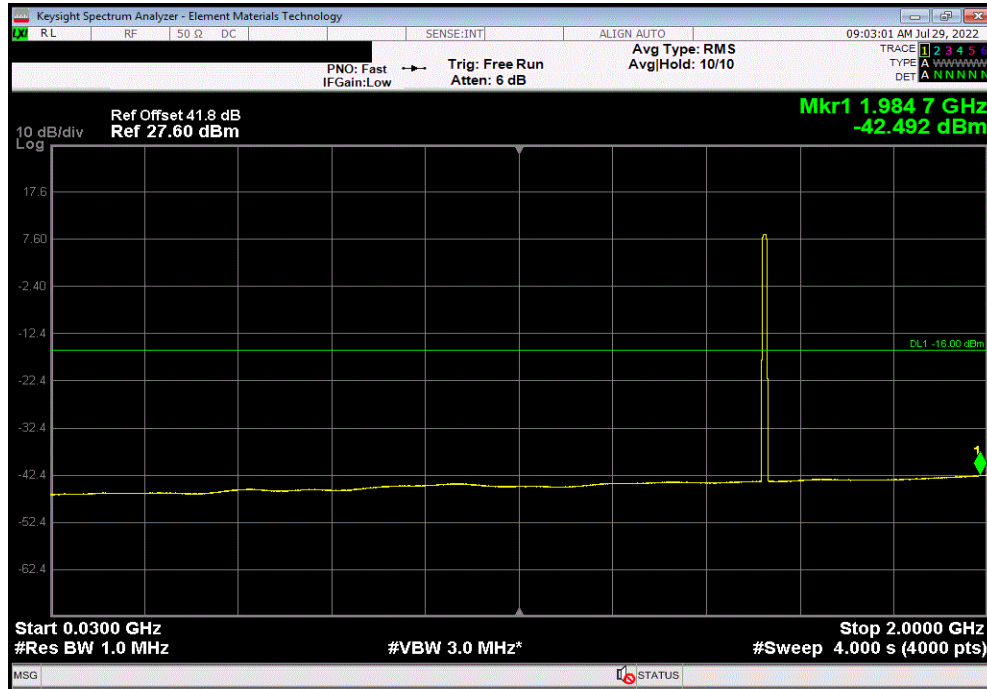


SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS, 16dBi

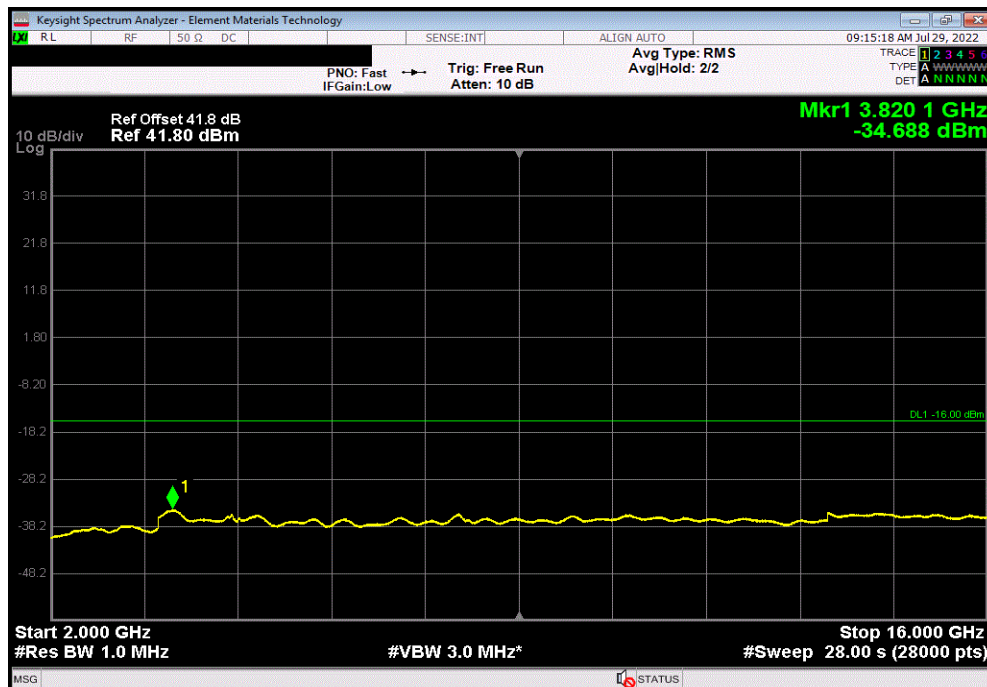


TbTtx 2022.05.02.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
30 MHz - 1 GHz	1984.73	-42.49	-16	N/A	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 64-QAM Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
1 GHz - 16 GHz	3820.07	-34.69	-16	N/A	

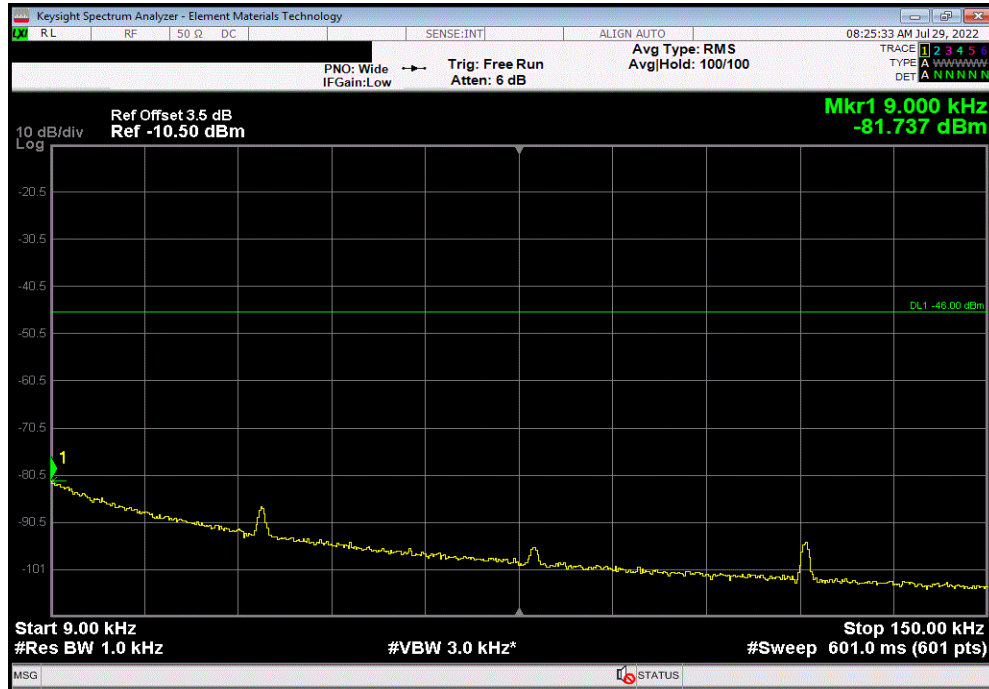


SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS, 16dBi

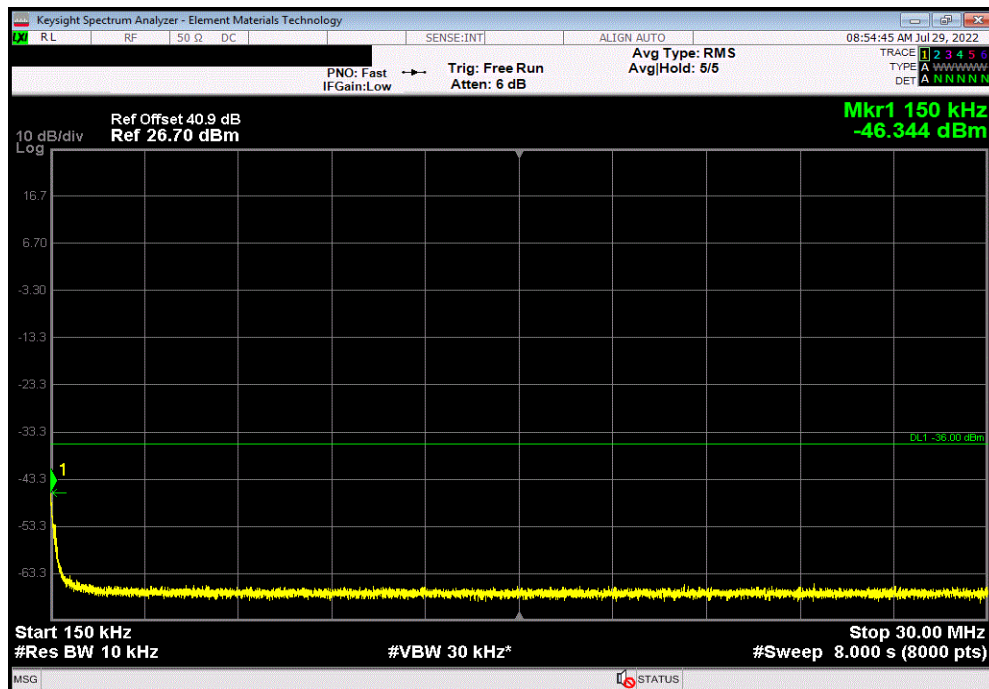


TbTx 2022.05.02.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
9 kHz - 150 kHz	0.01	-81.74	-46	N/A	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
150 kHz - 30 MHz	0.15	-46.34	-36	N/A	

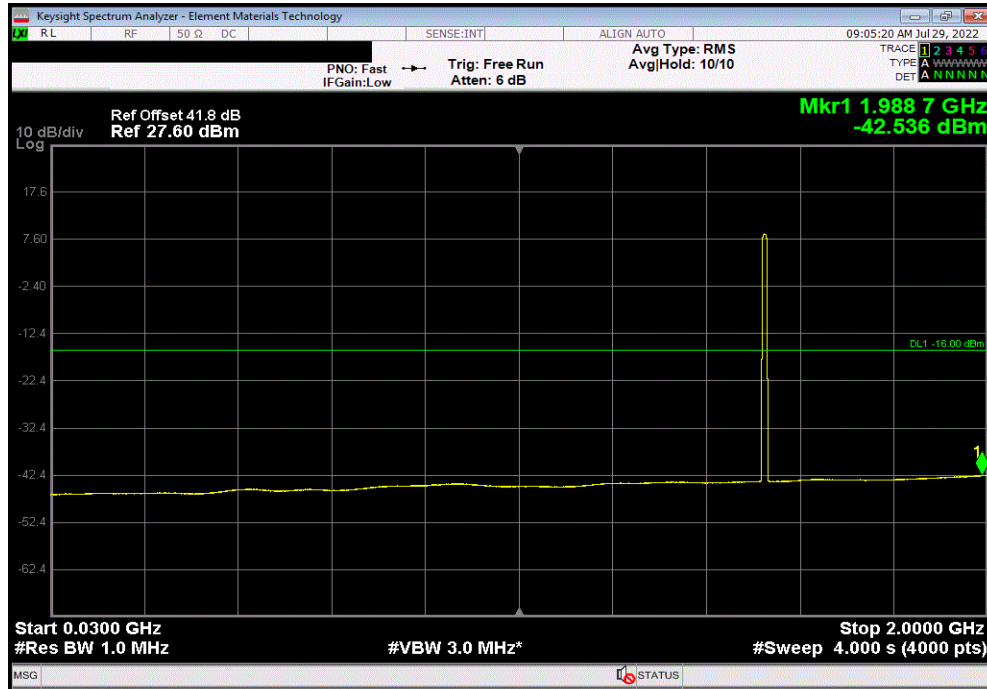


SPURIOUS EMISSIONS AT THE ANTENNA TERMINALS, 16dBi

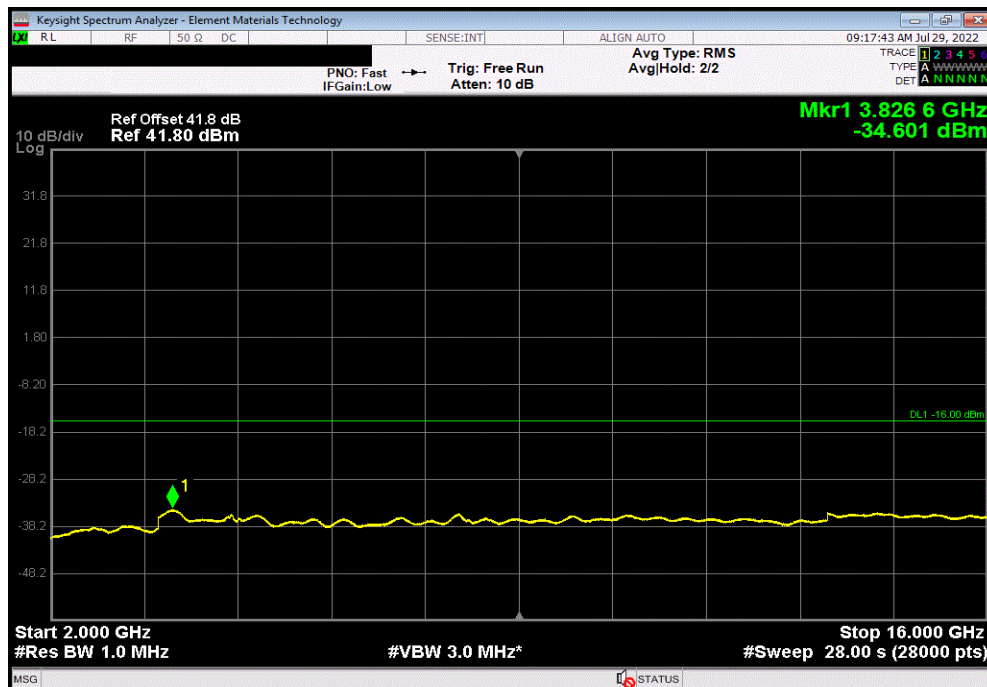


TbTtx 2022.05.02.0 XMt 2022.02.07.0

5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
30 MHz - 1 GHz	1988.67	-42.54	-16	N/A	



5G NR, Band n24, SCS 15kHz, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel 1531 MHz, 52 RB/0 Offset					
Frequency Range	Measured Freq (MHz)	Max Value (dBm)	Limit (dBm)	Result	
1 GHz - 16 GHz	3826.57	-34.6	-16	N/A	



SPURIOUS RADIATED EMISSIONS, 3dBi



PSA-ESCI 2022.1.12.0

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. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

CHANNEL OF OPERATION

5MHz Bandwidth, Low Channel 1528.5 MHz

5MHz Bandwidth, High Channel 1533.5 MHz

10MHz Bandwidth, Mid Channel 1531 MHz

MODES OF OPERATION INVESTIGATED

SCS 15kHz, 5MHz Bandwidth, RB25/0 Offset

SCS 15kHz, 10MHz Bandwidth, RB52/0 Offset

SCS 15kHz, 10MHz Bandwidth, RB40/0 Offset

SCS 15kHz, 10MHz Bandwidth, RB40/6 Offset

SCS 15kHz, 10MHz Bandwidth, RB40/12 Offset

SCS 15kHz, 10MHz Bandwidth, RB25/0 Offset

SCS 15kHz, 10MHz Bandwidth, RB25/13 Offset

SCS 15kHz, 10MHz Bandwidth, RB25/27 Offset

MODULATIONS INVESTIGATED

QPSK

16-QAM

64-QAM

256-QAM

POWER SETTINGS INVESTIGATED

48 VDC

CONFIGURATIONS INVESTIGATED

MASY0006 - 4

FREQUENCY RANGE INVESTIGATED

Start Frequency 30 MHz Stop Frequency 18000 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Amplifier - Pre-Amplifier	Fairview Microwave	FMAM63001	PAS	2022-04-19	2023-04-19
Cable	Northwest EMC	RE 9kHz - 1GHz	TXB	2022-06-10	2023-06-10
Antenna - Biconilog	Teseq	CBL 6141B	AYD	2022-03-01	2024-03-01
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	PAL	2021-09-13	2022-09-13
Antenna - Standard Gain	ETS Lindgren	3160-08	AJG	NCR	NCR
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	PAK	2021-09-13	2022-09-13
Cable	Northwest EMC	8-18GHz	TXD	2022-04-12	2023-04-12
Antenna - Standard Gain	ETS Lindgren	3160-07	AJF	NCR	NCR
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAJ	2022-04-19	2023-04-19
Cable	Northwest EMC	1-8.2 GHz	TXC	2022-04-19	2023-04-19
Antenna - Double Ridge	ETS Lindgren	3115	AJL	2020-10-20	2022-10-20
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2022-03-22	2023-03-22
Attenuator	Fairview Microwave	SA18N-06	TZT	2022-09-13	2023-09-13
Antenna - Double Ridge	ETS Lindgren	3115	AJA	2021-08-31	2023-08-31
Power Sensor	Gigatronics	80701A	SRC	2022-02-28	2023-02-28
Meter - Power	Gigatronics	8652A	SOZ	2022-02-28	2023-02-28
Generator - Signal	Keysight	N5182B	TEV	2021-04-27	2024-04-27

TEST DESCRIPTION

At an approved test site, the transmitter was placed on a remotely controlled turntable, and the measurement antenna was placed 3 meters from the transmitter. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis. The turntable azimuth was varied to maximize the level of spurious emissions. The height of the measurement antenna was also varied from 1 to 4 meters. A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity. The amplitude and frequency of the highest emissions was noted.

The transmitter was then replaced with a ½ wave dipole that was successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator was connected to the dipole (horn antenna for frequencies above 1 GHz), and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the cable loss to the antenna and its gain, the power (dBm) was determined for each radiated spurious emission.

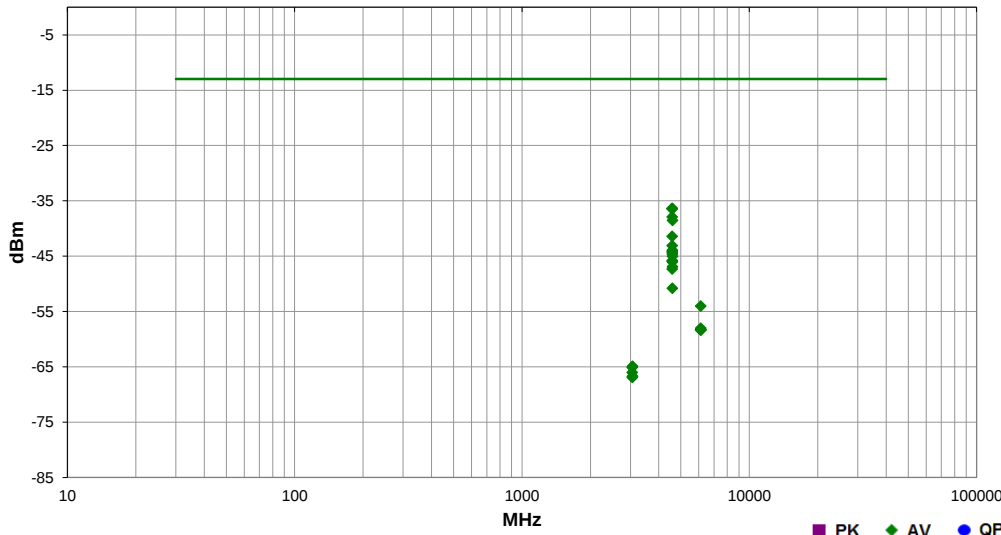
SPURIOUS RADIATED EMISSIONS, 3dBi



Work Order:	MASY0006	Date:	2022-08-12	EmiRS 2022.07.06.0 PSA-ESCI 2022.1.12.0 
Project:	None	Temperature:	21.4 °C	
Job Site:	TX02	Humidity:	53.7% RH	
Serial Number:	SV2146TR44KA000001	Barometric Pres.:	1017 mbar	
EUT:	TR44KA Base Station			Tested by: Brandon Hobbs
Configuration:	4			
Customer:	Mavenir Systems, Inc			
Attendees:	None			
EUT Power:	48 VDC			
Operating Mode:	SCS 15KHz, Reference the data comments for EUT orientation, modulation, configuration and channel.			
Deviations:	None			
Comments:	All RB configurations were first pre-scanned using QPSK modulation. Then all modulations and RB/Offset configurations were investigated on the single worst case harmonic seen during the per-scans. Then using the worst case modulation and RB/Offset configuration per receive polarity seen in the previous step, all the required subsequent harmonics were then investigated on all the required subsequent channels. A final software defined power level of 42 for the 3dBi antenna gain configuration was used for all measurements.			

Test Specifications	Test Method
FCC 25:2022	ANSI C63.26:2015

Run #	27	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
4585.000	1.2	229.0	Horz	AV	227.6E-9	-36.4	-13.0	-23.4	Low Ch.1528.5MHz, 16QAM, 25RB/0, EUT On Side
4585.000	1.2	229.0	Horz	AV	227.6E-9	-36.4	-13.0	-23.4	Low Ch.1528.5MHz, 64QAM, 25RB/0, EUT On Side
4585.000	1.2	229.0	Horz	AV	227.6E-9	-36.4	-13.0	-23.4	Low Ch.1528.5MHz, 256QAM, 25RB/0, EUT On Side
4585.000	1.2	229.0	Horz	AV	227.6E-9	-36.4	-13.0	-23.4	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT On Side
4585.000	1.2	232.9	Horz	AV	161.1E-9	-37.9	-13.0	-24.9	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT On Side
4600.500	1.2	229.0	Horz	AV	140.3E-9	-38.5	-13.0	-25.5	High Ch.1533.5MHz, QPSK, 25RB/0, EUT On Side
4585.000	1.2	224.0	Horz	AV	72.0E-9	-41.4	-13.0	-28.4	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT Horz
4585.000	3.3	235.0	Vert	AV	48.7E-9	-43.1	-13.0	-30.1	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT On Side
4592.000	1.2	231.9	Horz	AV	40.5E-9	-43.9	-13.0	-30.9	Mid Ch.1531MHz, QPSK, 52RB/0, EUT On Side
4592.000	1.2	229.1	Horz	AV	38.6E-9	-44.1	-13.0	-31.1	Mid Ch.1531MHz, QPSK, 40RB/0, EUT On Side
4585.000	3.8	182.0	Vert	AV	37.8E-9	-44.2	-13.0	-31.2	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT Horz
4592.000	1.2	229.7	Horz	AV	36.1E-9	-44.4	-13.0	-31.4	Mid Ch.1531MHz, QPSK, 40RB/6, EUT On Side
4592.000	1.2	228.9	Horz	AV	34.4E-9	-44.6	-13.0	-31.6	Mid Ch.1531MHz, QPSK, 40RB/12, EUT On Side
4600.500	2.4	184.9	Vert	AV	31.4E-9	-45.0	-13.0	-32.0	High Ch.1533.5MHz, QPSK, 25RB/0, EUT Horz
4585.000	2.3	88.9	Horz	AV	26.1E-9	-45.8	-13.0	-32.8	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT Vert
4586.000	1.4	223.0	Horz	AV	25.5E-9	-45.9	-13.0	-32.9	Mid Ch.1531MHz, QPSK, 25RB/0, EUT On Side
4593.000	1.3	228.0	Horz	AV	25.0E-9	-46.0	-13.0	-33.0	Mid Ch.1531MHz, QPSK, 25RB/13, EUT On Side
4600.000	1.2	229.0	Horz	AV	20.3E-9	-46.9	-13.0	-33.9	Mid Ch.1531MHz, QPSK, 25RB/27, EUT On Side
4585.000	1.7	22.9	Vert	AV	18.5E-9	-47.3	-13.0	-34.3	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT Vert
4593.000	1.8	187.0	Vert	AV	8.3E-9	-50.8	-13.0	-37.8	Mid Ch.1531MHz, QPSK, 52RB/0, EUT Horz
6124.000	1.3	243.0	Horz	AV	4.0E-9	-54.0	-13.0	-41.0	Mid Ch.1531MHz, QPSK, 52RB/0, EUT On Side
6124.000	1.5	297.5	Vert	AV	1.6E-9	-58.0	-13.0	-45.0	Mid Ch.1531MHz, QPSK, 52RB/0, EUT Horz
6114.000	1.5	308.0	Horz	AV	1.5E-9	-58.3	-13.0	-45.3	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT On Side
6114.000	1.5	286.9	Vert	AV	1.5E-9	-58.3	-13.0	-45.3	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT Horz
6134.000	1.5	207.9	Horz	AV	1.5E-9	-58.3	-13.0	-45.3	High Ch.1533.5MHz, QPSK, 25RB/0, EUT On Side
6134.000	1.5	127.0	Vert	AV	1.5E-9	-58.3	-13.0	-45.3	High Ch.1533.5MHz, QPSK, 25RB/0, EUT Vert
3067.000	2.2	243.0	Horz	AV	321.5E-12	-64.9	-13.0	-51.9	High Ch.1533.5MHz, QPSK, 25RB/0, EUT On Side
3057.000	1.5	243.0	Horz	AV	307.0E-12	-65.1	-13.0	-52.1	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT On Side
3057.000	1.5	205.0	Vert	AV	249.5E-12	-66.0	-13.0	-53.0	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT Horz
3067.000	1.5	14.0	Vert	AV	212.4E-12	-66.7	-13.0	-53.7	High Ch.1533.5MHz, QPSK, 25RB/0, EUT Vert
3062.000	3.9	228.0	Horz	AV	207.5E-12	-66.8	-13.0	-53.8	Mid Ch.1531MHz, QPSK, 52RB/0, EUT On Side
3062.000	1.5	360.0	Vert	AV	202.8E-12	-66.9	-13.0	-53.9	Mid Ch.1531MHz, QPSK, 52RB/0, EUT Horz

SPURIOUS RADIATED EMISSIONS, 3dBi

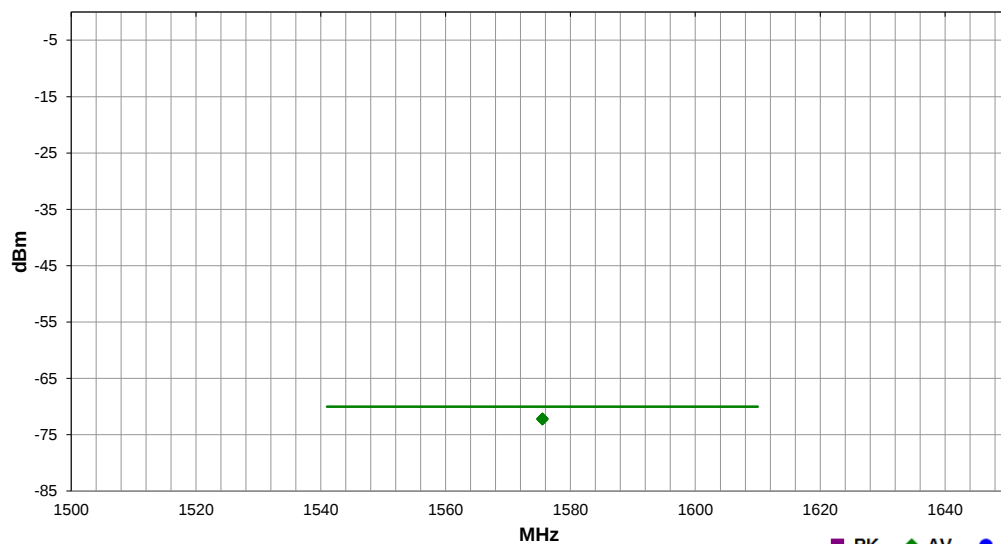


EmRS 2022.07.06.0 PSA-ESCI 2022.1.12.0

Work Order:	MASY0006	Date:	2022-08-12	
Project:	None	Temperature:	25.1 °C	
Job Site:	TX02	Humidity:	42.4% RH	
Serial Number:	SV2146TR44KA000001	Barometric Pres.:	1019 mbar	
EUT:	TR44KA Base Station			Tested by: Brandon Hobbs
Configuration:	4			
Customer:	Mavenir Systems, Inc			
Attendees:	None			
EUT Power:	48 VDC			
Operating Mode:	SCS 15KHz, Reference the data comments for EUT orientation, modulation, configuration and channel.			
Deviations:	None			
Comments:	Using the worst case modulation and RB/offest configuration per receive polarity seen in the previous measurements, the worst case restricted band limit (-70dBm/MHz) was applied across all restricted frequency ranges as called out in both part 25 and the FCC waiver document. A final software defined power level of 42 for the 3dBi antenna gain configuration was used for all measurements. Values seen in the data table represent noise floor measurements.			

Test Specifications	Test Method
FCC 25:2022	ANSI C63.26:2015

Run #	48	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
1575.500	3.62	20.0	Vert	AV	61.3E-12	-72.1	-70.0	-2.1	Mid Ch.1531MHz, QPSK, 52RB/0, EUT Horz
1575.500	1.5	309.0	Horz	AV	61.3E-12	-72.1	-70.0	-2.1	Mid Ch.1531MHz, QPSK, 52RB/0, EUT On Side
1575.500	1.78	0.0	Horz	AV	59.9E-12	-72.2	-70.0	-2.2	High Ch.1533.5MHz, QPSK, 25RB/0, EUT On Side
1575.500	3.0	20.0	Vert	AV	59.9E-12	-72.2	-70.0	-2.2	High Ch.1533.5MHz, QPSK, 25RB/0, EUT Horz
1575.500	3.32	20.0	Vert	AV	59.9E-12	-72.2	-70.0	-2.2	Low Ch.1528.5MHz, 16QAM, 25RB/0, EUT Horz
1575.500	1.78	0.0	Horz	AV	58.5E-12	-72.3	-70.0	-2.3	Low Ch.1528.5MHz, 16QAM, 25RB/0, EUT On Side

SPURIOUS RADIATED EMISSIONS, 16dBi



PSA-ESCI 2022.1.12.0

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. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

CHANNEL OF OPERATION

5MHz Bandwidth, Low Channel 1528.5 MHz

5MHz Bandwidth, High Channel 1533.5 MHz

10MHz Bandwidth, Mid Channel 1531 MHz

MODES OF OPERATION INVESTIGATED

SCS 15kHz, 5MHz Bandwidth, RB25/0 Offset

SCS 15kHz, 10MHz Bandwidth, RB52/0 Offset

SCS 15kHz, 10MHz Bandwidth, RB40/0 Offset

SCS 15kHz, 10MHz Bandwidth, RB40/6 Offset

SCS 15kHz, 10MHz Bandwidth, RB40/12 Offset

SCS 15kHz, 10MHz Bandwidth, RB25/0 Offset

SCS 15kHz, 10MHz Bandwidth, RB25/13 Offset

SCS 15kHz, 10MHz Bandwidth, RB25/27 Offset

MODULATIONS INVESTIGATED

QPSK

16-QAM

64-QAM

256-QAM

POWER SETTINGS INVESTIGATED

48 VDC

CONFIGURATIONS INVESTIGATED

MASY0006 - 4

FREQUENCY RANGE INVESTIGATED

Start Frequency 30 MHz Stop Frequency 18000 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Amplifier - Pre-Amplifier	Fairview Microwave	FMAM63001	PAS	2022-04-19	2023-04-19
Cable	Northwest EMC	RE 9kHz - 1GHz	TXB	2022-06-10	2023-06-10
Antenna - Biconilog	Teseq	CBL 6141B	AYD	2022-03-01	2024-03-01
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	PAL	2021-09-13	2022-09-13
Antenna - Standard Gain	ETS Lindgren	3160-08	AJG	NCR	NCR
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	PAK	2021-09-13	2022-09-13
Cable	Northwest EMC	8-18GHz	TXD	2022-04-12	2023-04-12
Antenna - Standard Gain	ETS Lindgren	3160-07	AJF	NCR	NCR
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAJ	2022-04-19	2023-04-19
Cable	Northwest EMC	1-8.2 GHz	TXC	2022-04-19	2023-04-19
Antenna - Double Ridge	ETS Lindgren	3115	AJL	2020-10-20	2022-10-20
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFL	2022-03-22	2023-03-22
Attenuator	Fairview Microwave	SA18N-06	TZT	2022-09-13	2023-09-13
Antenna - Double Ridge	ETS Lindgren	3115	AJA	2021-08-31	2023-08-31
Power Sensor	Gigatronics	80701A	SRC	2022-02-28	2023-02-28
Meter - Power	Gigatronics	8652A	SOZ	2022-02-28	2023-02-28
Generator - Signal	Keysight	N5182B	TEV	2021-04-27	2024-04-27

TEST DESCRIPTION

At an approved test site, the transmitter was placed on a remotely controlled turntable, and the measurement antenna was placed 3 meters from the transmitter. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axes. The turntable azimuth was varied to maximize the level of spurious emissions. The height of the measurement antenna was also varied from 1 to 4 meters. A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity. The amplitude and frequency of the highest emissions were noted.

The transmitter was then replaced with a 1/2 wave dipole that was successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator was connected to the dipole (horn antenna for frequencies above 1 GHz), and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the cable loss to the antenna and its gain, the power (dBm) was determined for each radiated spurious emission.

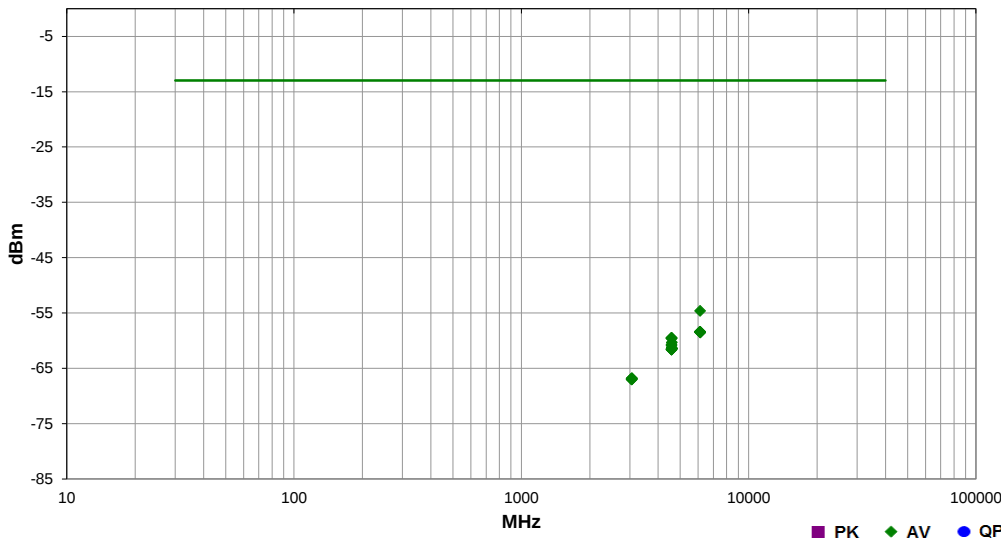
SPURIOUS RADIATED EMISSIONS, 16dBi



Work Order:	MASY0006	Date:	2022-08-12	
Project:	None	Temperature:	21.4 °C	
Job Site:	TX02	Humidity:	53.7% RH	
Serial Number:	SV2146TR44KA000001	Barometric Pres.:	1017 mbar	
EUT:	TR44KA Base Station			Tested by: Brandon Hobbs
Configuration:	4			
Customer:	Mavenir Systems, Inc			
Attendees:	None			
EUT Power:	48 VDC			
Operating Mode:	Please reference the data comments for EUT orientation, modulation, RB/Offset configuration and Channel.			
Deviations:	None			
Comments:	All RB configurations were pre-scanned using QPSK modulation first. Then all modulations and RB configurations investigated on the single worst case harmonic seen during the per-scans. Then using the worst case modulation and RB/Offset configuration, all subsequent harmonics were investigated against all subsequent channels. Software defined Power level of 29 was used for the 16dBi antenna power configuration.			

Test Specifications	FCC 25:2022	Test Method	ANSI C63.26:2015
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Run #	36	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
6124.000	1.5	253.0	Horz	AV	3.4E-9	-54.6	-13.0	-41.6	Mid Ch.1531MHz, QPSK, 52RB/0, EUT On Side
6114.000	1.5	110.0	Horz	AV	1.4E-9	-58.4	-13.0	-45.4	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT On Side
6114.000	1.5	40.9	Vert	AV	1.4E-9	-58.4	-13.0	-45.4	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT Horz
6124.000	1.5	21.9	Vert	AV	1.4E-9	-58.4	-13.0	-45.4	Mid Ch.1531MHz, QPSK, 52RB/0, EUT Horz
6134.000	3.53	350.0	Horz	AV	1.4E-9	-58.5	-13.0	-45.5	High Ch.1533.5MHz, QPSK, 25RB/0, EUT On Side
6134.000	1.5	165.4	Vert	AV	1.4E-9	-58.5	-13.0	-45.5	High Ch.1533.5MHz, QPSK, 25RB/0, EUT Horz
4585.500	1.08	231.9	Horz	AV	1.1E-9	-59.5	-13.0	-46.5	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT On Side
4585.500	1.16	229.0	Horz	AV	1.1E-9	-59.5	-13.0	-46.5	Low Ch.1528.5MHz, 16QAM, 25RB/0, EUT On Side
4585.500	1.16	229.0	Horz	AV	1.1E-9	-59.5	-13.0	-46.5	Low Ch.1528.5MHz, 64QAM, 25RB/0, EUT On Side
4585.500	1.16	229.0	Horz	AV	1.1E-9	-59.5	-13.0	-46.5	Low Ch.1528.5MHz, 256QAM, 25RB/0, EUT On Side
4585.500	1.5	231.0	Horz	AV	1.1E-9	-59.6	-13.0	-46.6	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT On Side
4600.500	1.5	226.9	Horz	AV	927.1E-12	-60.3	-13.0	-47.3	High Ch.1533.5MHz, QPSK, 25RB/0, EUT On Side
4584.917	3.81	178.9	Vert	AV	845.5E-12	-60.7	-13.0	-47.7	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT Horz
4585.500	1.5	223.0	Horz	AV	807.5E-12	-60.9	-13.0	-47.9	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT Horz
4593.000	1.5	322.9	Horz	AV	719.6E-12	-61.4	-13.0	-48.4	Mid Ch.1531MHz, QPSK, 52RB/0, EUT On Side
4593.000	3.39	201.9	Horz	AV	719.6E-12	-61.4	-13.0	-48.4	Mid Ch.1531MHz, QPSK, 40RB/0, EUT On Side
4593.000	1.5	328.9	Horz	AV	719.6E-12	-61.4	-13.0	-48.4	Mid Ch.1531MHz, QPSK, 40RB/6, EUT On Side
4593.000	3.61	314.0	Horz	AV	719.6E-12	-61.4	-13.0	-48.4	Mid Ch.1531MHz, QPSK, 40RB/12, EUT On Side
4593.000	1.5	124.9	Horz	AV	719.6E-12	-61.4	-13.0	-48.4	Mid Ch.1531MHz, QPSK, 25RB/0, EUT On Side
4593.000	2.08	21.0	Horz	AV	719.6E-12	-61.4	-13.0	-48.4	Mid Ch.1531MHz, QPSK, 25RB/13, EUT On Side
4593.000	1.5	36.0	Horz	AV	719.6E-12	-61.4	-13.0	-48.4	Mid Ch.1531MHz, QPSK, 25RB/27, EUT On Side
4593.000	1.5	144.0	Vert	AV	719.6E-12	-61.4	-13.0	-48.4	Mid Ch.1531MHz, QPSK, 52RB/0, EUT Horz
4600.500	1.5	309.0	Vert	AV	719.6E-12	-61.4	-13.0	-48.4	High Ch.1533.5MHz, QPSK, 25RB/0, EUT Horz
4585.500	1.5	339.9	Vert	AV	687.3E-12	-61.6	-13.0	-48.6	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT On Side
4585.500	2.23	30.0	Horz	AV	687.3E-12	-61.6	-13.0	-48.6	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT Vert
4585.500	1.5	351.0	Vert	AV	687.3E-12	-61.6	-13.0	-48.6	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT Vert
3067.000	1.5	160.9	Horz	AV	207.5E-12	-66.8	-13.0	-53.8	High Ch.1533.5MHz, QPSK, 25RB/0, EUT On Side
3067.000	1.5	106.9	Vert	AV	207.5E-12	-66.8	-13.0	-53.8	High Ch.1533.5MHz, QPSK, 25RB/0, EUT Horz
3057.000	2.4	45.0	Horz	AV	202.8E-12	-66.9	-13.0	-53.9	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT On Side
3057.000	1.5	120.0	Vert	AV	202.8E-12	-66.9	-13.0	-53.9	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT Horz
3062.000	1.5	217.0	Horz	AV	198.2E-12	-67.0	-13.0	-54.0	Mid Ch.1531MHz, QPSK, 52RB/0, EUT On Side
3062.000	1.5	202.9	Vert	AV	198.2E-12	-67.0	-13.0	-54.0	Mid Ch.1531MHz, QPSK, 52RB/0, EUT Horz

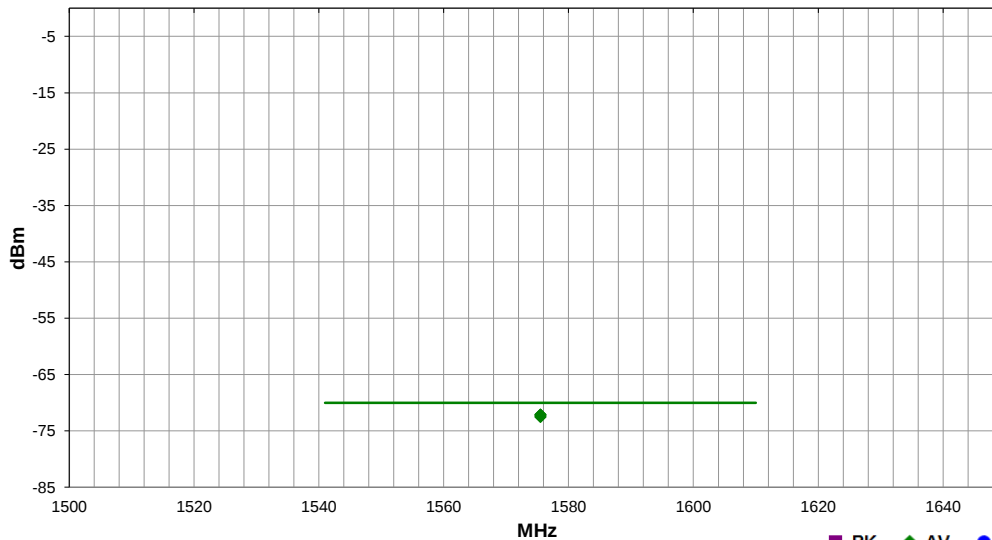
SPURIOUS RADIATED EMISSIONS, 16dBi



Work Order:	MASY0006	Date:	2022-08-12	
Project:	None	Temperature:	25.9 °C	
Job Site:	TX02	Humidity:	43.2% RH	
Serial Number:	SV2146TR44KA000001	Barometric Pres.:	1016 mbar	
EUT:	TR44KA Base Station			Tested by: Brandon Hobbs
Configuration:	4			
Customer:	Mavenir Systems, Inc			
Attendees:	None			
EUT Power:	48 VDC			
Operating Mode:	Please reference the data comments for EUT orientation, modulation, RB/Offset configuration and Channel.			
Deviations:	None			
Comments:	Using the worst case modulation and RB/Offset configuration, the restricted frequency bands called out in both part 25 and the FCC waiver document were investigated against all the required channels. Testing was then completed against the single most restrictive limit of -70dBm/MHz across all the restricted bands. the software defined power level of 29 was used for the 16dBi antenna power configuration. Values seen in the data table represent noise floor measurements.			

Test Specifications	FCC 25:2022	Test Method	ANSI C63.26:2015
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Run #	51	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
1575.500	1.45	0.0	Vert	AV	61.3E-12	-72.1	-70.0	-2.1	High Ch.1533.5MHz, QPSK, 25RB/0, EUT Horz
1575.500	1.8	178.0	Vert	AV	61.3E-12	-72.1	-70.0	-2.1	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT Horz
1575.500	1.5	66.0	Horz	AV	59.9E-12	-72.2	-70.0	-2.2	Mid Ch.1531MHz, QPSK, 52RB/0, EUT On Side
1575.500	1.5	306.0	Horz	AV	58.5E-12	-72.3	-70.0	-2.3	Low Ch.1528.5MHz, QPSK, 25RB/0, EUT On Side
1575.500	1.7	128.0	Vert	AV	55.9E-12	-72.5	-70.0	-2.5	Mid Ch.1531MHz, QPSK, 52RB/0, EUT Horz
1575.500	1.5	0.0	Horz	AV	55.9E-12	-72.5	-70.0	-2.5	High Ch.1533.5MHz, QPSK, 25RB/0, EUT On Side