

OUTPUT POWER

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	Keysight	N5182B	TEV	2021-04-27	2024-04-27
Block - DC	Fairview Microwave	SD3379	AMM	2021-09-14	2022-09-14
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2022-01-17	2023-01-17

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

RF conducted emissions testing was performed only on one port. The testing was performed on the same version of hardware (AHFII) as the original certification test. The AHFII antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in this certification testing) and antenna port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i and 6.4.

The total average transmit power of all antenna ports was determined per ANSI C63.26-2105 paragraph 6.4.3.1.

OUTPUT POWER



TbTb 2021.12.14.1 XMM 2022.02.07.0

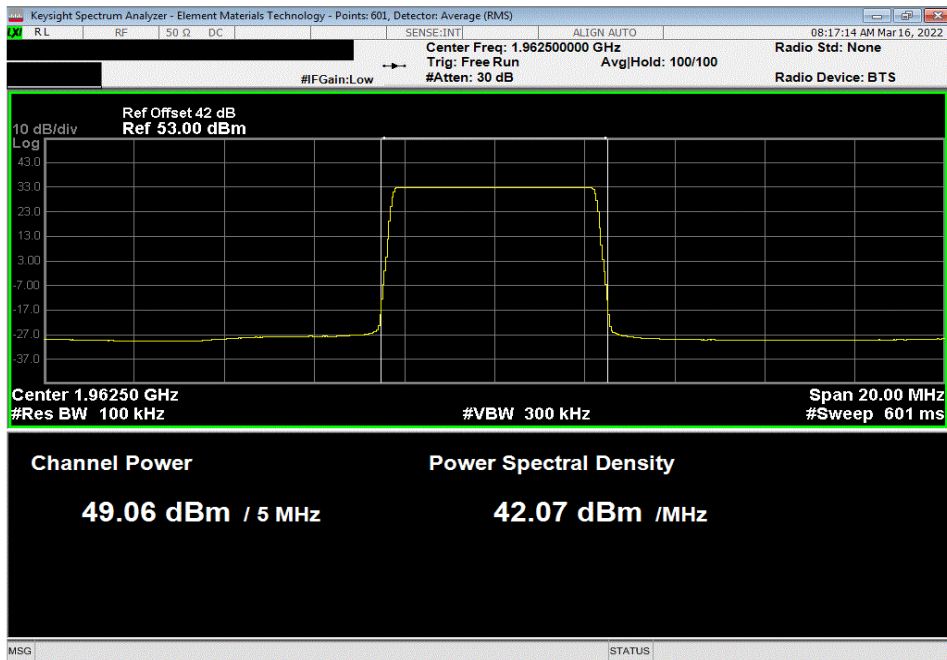
EUT: AHFI Remote Radio Head		Work Order: NOKI0038				
Serial Number: YK214000035		Date: 16-Mar-22				
Customer: Nokia of America Corporation		Temperature: 22.9 °C				
Attendees: Mitchell Hill		Humidity: 24.6% RH				
Project: None		Barometric Pres.: 1024 mbar				
Tested by: Brandon Hobbs		Power: 54 VDC	Job Site: TX06			
TEST SPECIFICATIONS		Test Method				
FCC 24E:2022		ANSI C63.26:2015				
RSS-133 Issue 6:2013+A1:2018		RSS-133 Issue 6:2013+A1:2018				
COMMENTS						
All measurement path losses were accounted for in the reference level offset including any attenuators, filters and DC blocks. Band n25 carriers are enabled at maximum power (80 watts/carrier). The following is the output power measurements at the radio output ports. The output power was measured for a single carrier over the carrier channel bandwidth on port 1. The total output power for multiport (2x2 MIMO, 4x4 MIMO) operation was determined based upon ANSI 63.26 clauses 6.4.3.1 and 6.4.3.2.4 (10 log Nout). The total output power for two port operation is single port power + 3dB [i.e. 10log(2)]. The total output power for four port operation is single port power + 6dB [i.e. 10log(4)].						
DEVIATIONS FROM TEST STANDARD						
None						
Configuration #	2	Signature 				
		Initial Value dBm/MHz	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	Two Port (2x2 MIMO) dBm/Carrier BW	Four Port (4x4 MIMO) dBm/Carrier BW
Band n25, 1930 MHz - 1995 MHz, 5G NR						
Port 1						
5 MHz Bandwidth						
QPSK Modulation						
Mid Channel, 1962.5 MHz		49.1	0	49.1	52.1	55.1
16-QAM Modulation						
Mid Channel, 1962.5 MHz		48.9	0	48.9	51.9	54.9
64-QAM Modulation						
Mid Channel, 1962.5 MHz		49.1	0	49.1	52.1	55.1
256-QAM Modulation						
Low Channel, 1932.5 MHz		49.2	0	49.2	52.2	55.2
Mid Channel, 1962.5 MHz		49.1	0	49.1	52.1	55.1
High Channel, 1992.5 MHz		49.1	0	49.1	52.1	55.1
10 MHz Bandwidth						
256-QAM Modulation						
Low Channel, 1935 MHz		49.3	0	49.3	52.3	55.3
Mid Channel, 1962.5 MHz		49.1	0	49.1	52.1	55.1
High Channel, 1990 MHz		49.2	0	49.2	52.2	55.2
15 MHz Bandwidth						
256-QAM Modulation						
Low Channel, 1937.5 MHz		49.3	0	49.3	52.3	55.3
Mid Channel, 1962.5 MHz		49.1	0	49.1	52.1	55.1
High Channel, 1987.5 MHz		49.2	0	49.2	52.2	55.2
20 MHz Bandwidth						
256-QAM Modulation						
Low Channel, 1940 MHz		49.4	0	49.4	52.4	55.4
Mid Channel, 1962.5 MHz.		49.2	0	49.2	52.2	55.2
High Channel, 1985 MHz		49.2	0	49.2	52.2	55.2
30 MHz Bandwidth						
256-QAM Modulation						
Low Channel, 1945 MHz		49.3	0	49.3	52.3	55.3
Mid Channel, 1962.5 MHz		49.2	0	49.2	52.2	55.2
High Channel, 1980 MHz		49.3	0	49.3	52.3	55.3

OUTPUT POWER

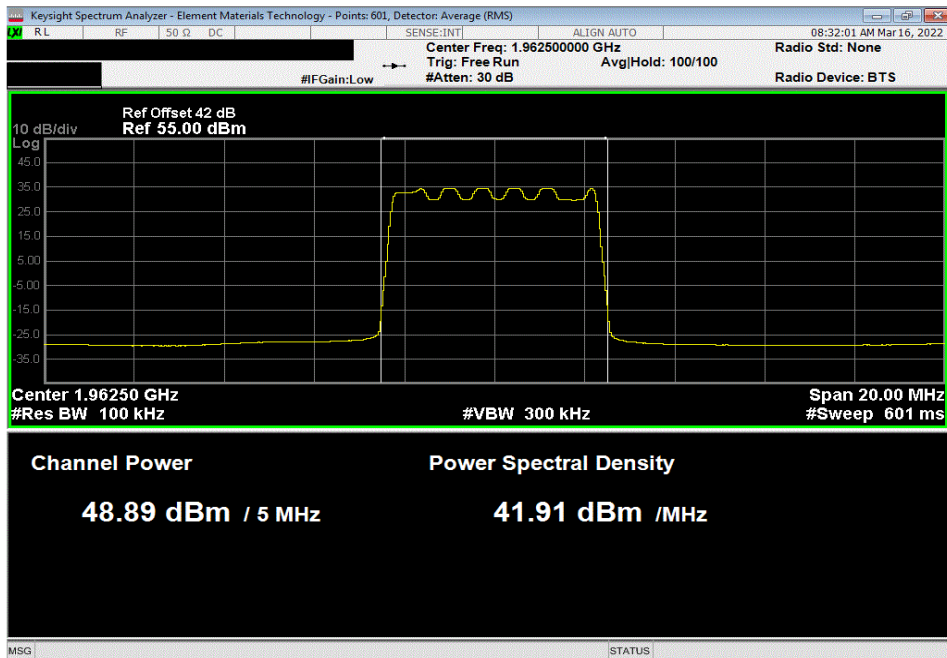


TbTx 2021.12.14.1 XMI 2022.02.07.0

Band n25, 1930 MHz - 1995 MHz, 5G NR, Port 1, 5 MHz Bandwidth, QPSK Modulation, Mid Channel, 1962.5 MHz						
	Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
	dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	49.06	0	49.1	52.1	55.1	



Band n25, 1930 MHz - 1995 MHz, 5G NR, Port 1, 5 MHz Bandwidth, 16-QAM Modulation, Mid Channel, 1962.5 MHz						
	Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
	dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	48.895	0	48.9	51.9	54.9	

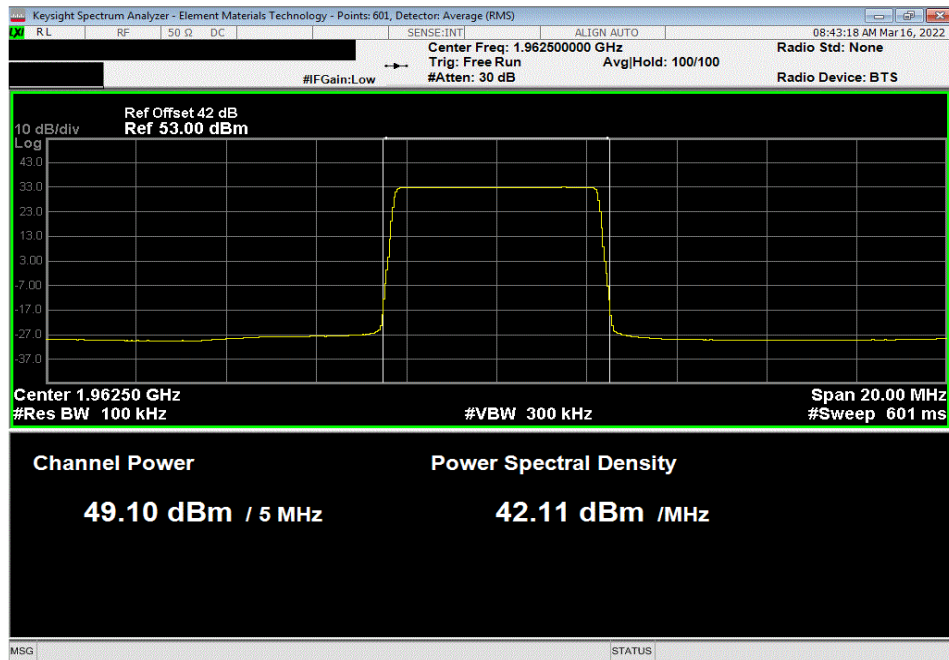


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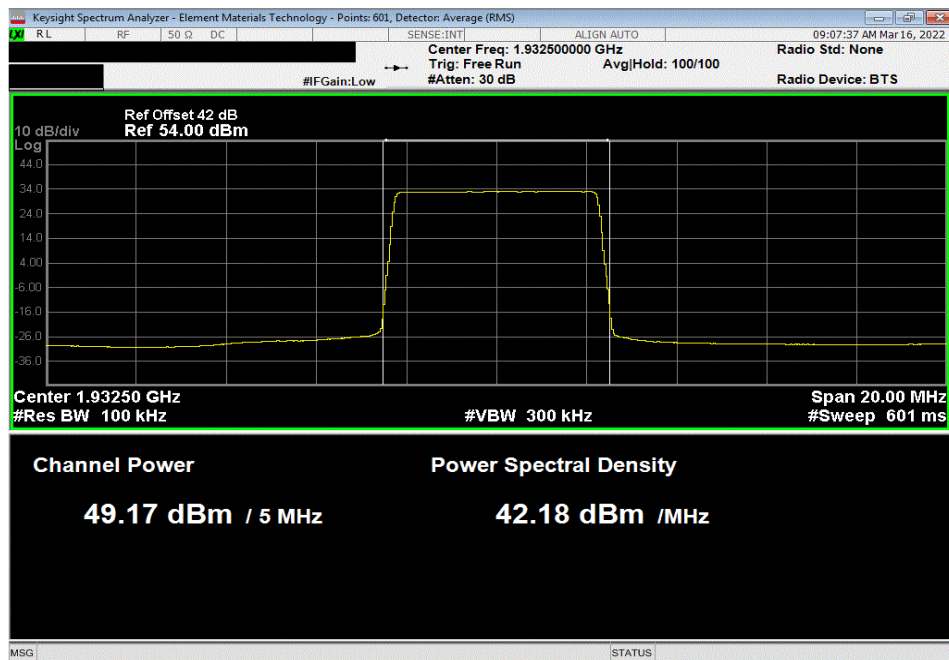


TbTx 2021.12.14.1 XMI 2022.02.07.0

Band n25, 1930 MHz - 1995 MHz, 5G NR, Port 1, 5 MHz Bandwidth, 64-QAM Modulation, Mid Channel, 1962.5 MHz						
	Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
	dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	49.10	0	49.1	52.1	55.1	



Band n25, 1930 MHz - 1995 MHz, 5G NR, Port 1, 5 MHz Bandwidth, 256-QAM Modulation, Low Channel, 1932.5 MHz						
	Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
	dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	49.169	0	49.2	52.2	55.2	

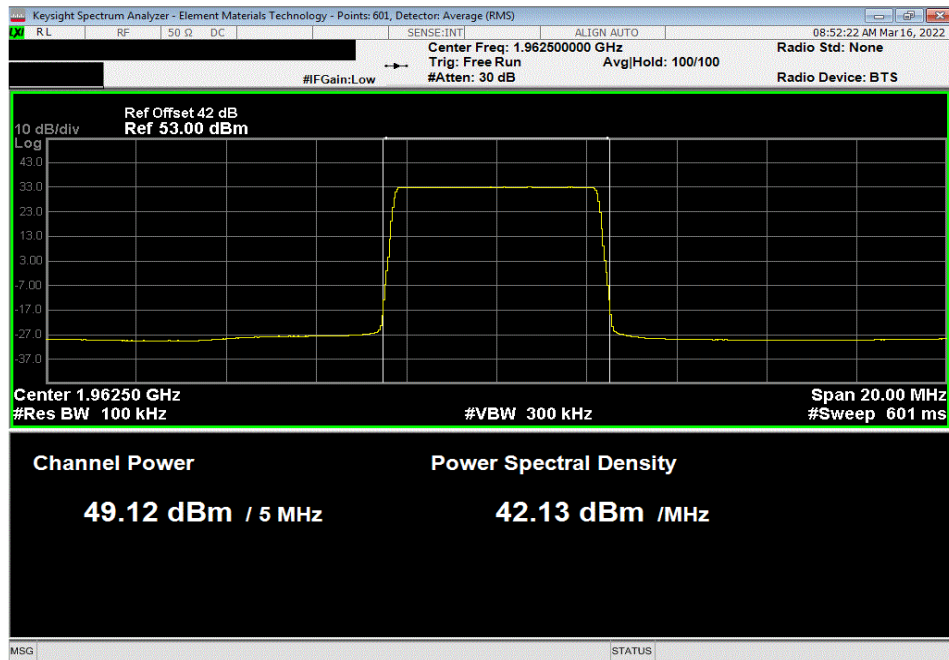


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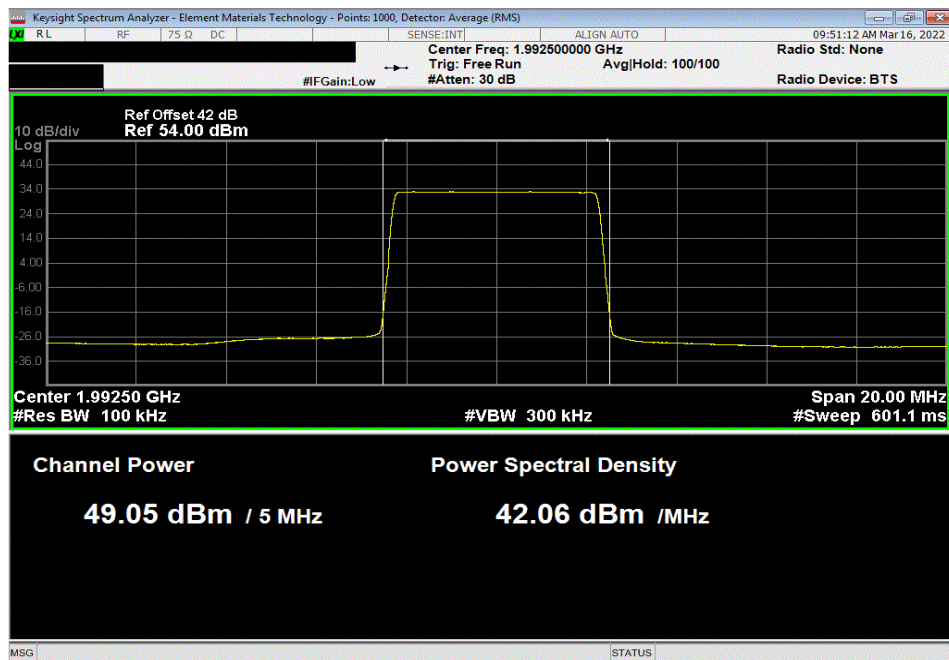


TbTx 2021.12.14.1 XMI 2022.02.07.0

Band n25, 1930 MHz - 1995 MHz, 5G NR, Port 1, 5 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 1962.5 MHz						
	Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
	dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	49.12	0	49.1	52.1	55.1	



Band n25, 1930 MHz - 1995 MHz, 5G NR, Port 1, 5 MHz Bandwidth, 256-QAM Modulation, High Channel, 1992.5 MHz						
	Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
	dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	49.1	0	49.1	52.1	55.1	

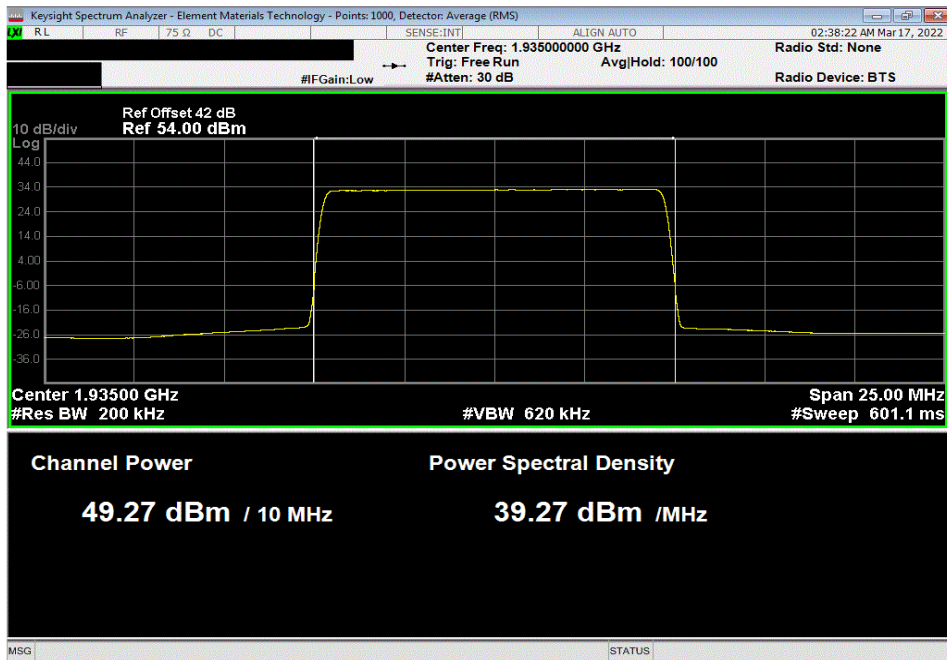


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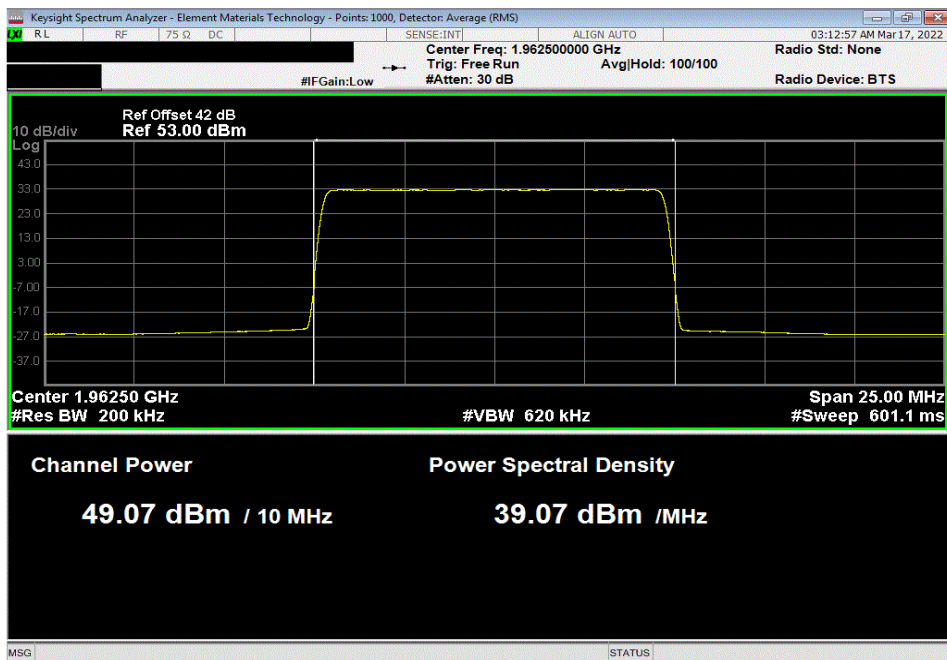


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Band n25, 1930 MHz - 1995 MHz, 5G NR, Port 1, 10 MHz Bandwidth, 256-QAM Modulation, Low Channel, 1935 MHz						
	Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
	dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	49.30	0	49.3	52.3	55.3	



Band n25, 1930 MHz - 1995 MHz, 5G NR, Port 1, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 1962.5 MHz						
	Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
	dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	49.1	0	49.1	52.1	55.1	

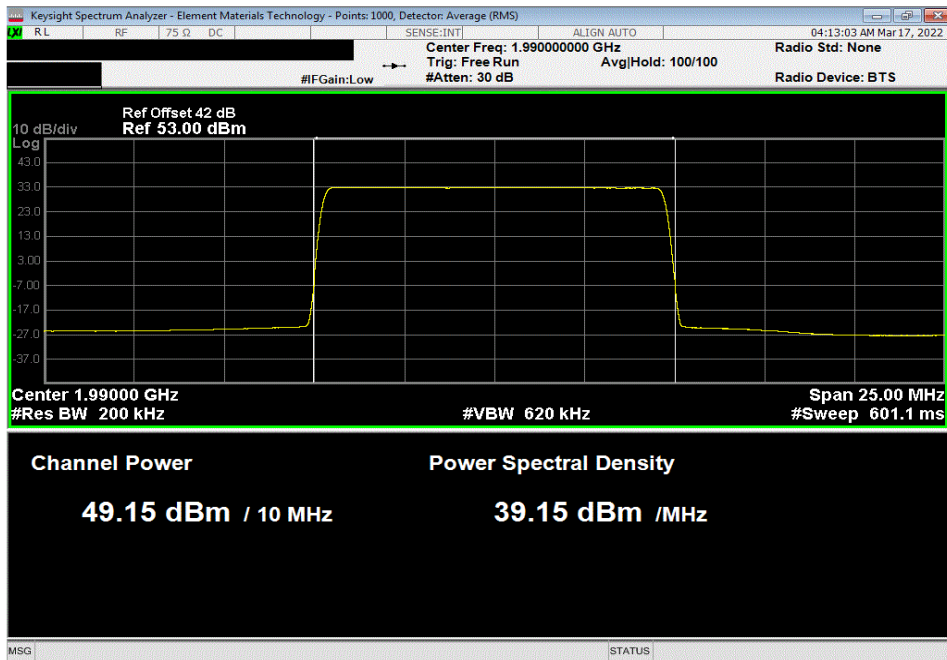


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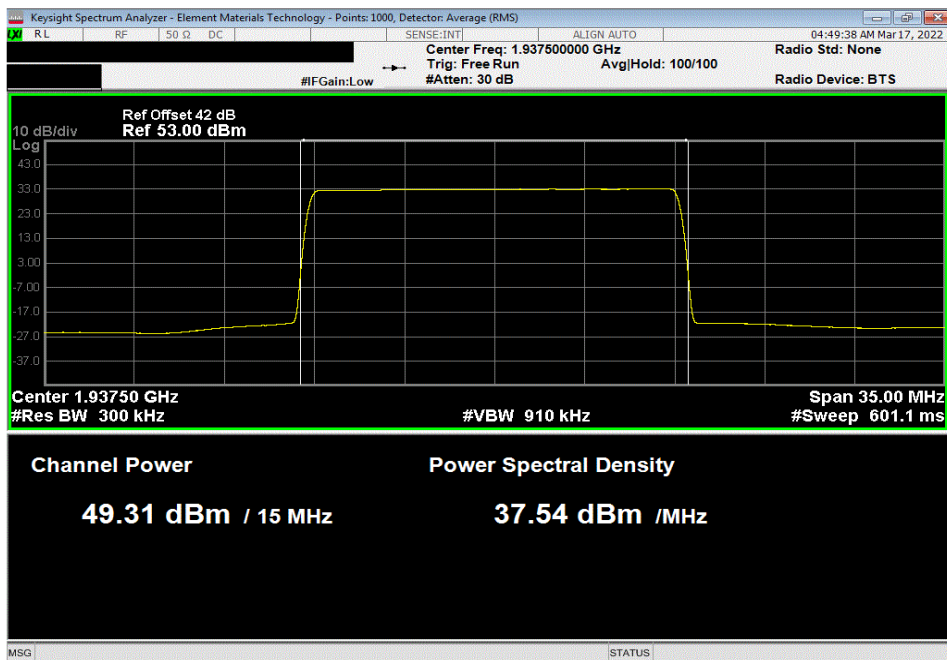


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Band n25, 1930 MHz - 1995 MHz, 5G NR, Port 1, 10 MHz Bandwidth, 256-QAM Modulation, High Channel, 1990 MHz						
	Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
	dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	49.20	0	49.2	52.2	55.2	



Band n25, 1930 MHz - 1995 MHz, 5G NR, Port 1, 15 MHz Bandwidth, 256-QAM Modulation, Low Channel, 1937.5 MHz						
	Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
	dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	49.3	0	49.3	52.3	55.3	

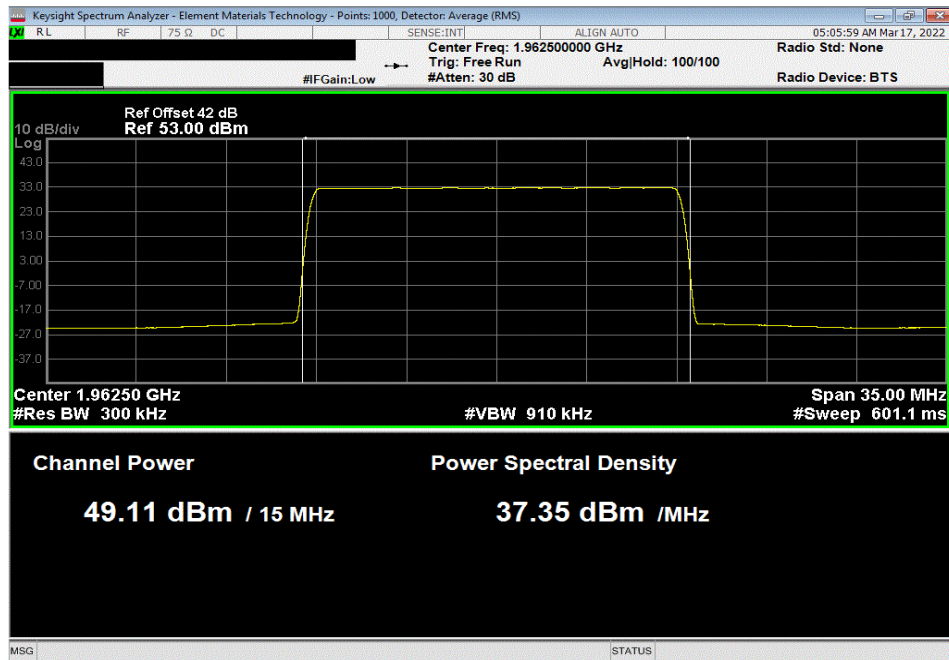


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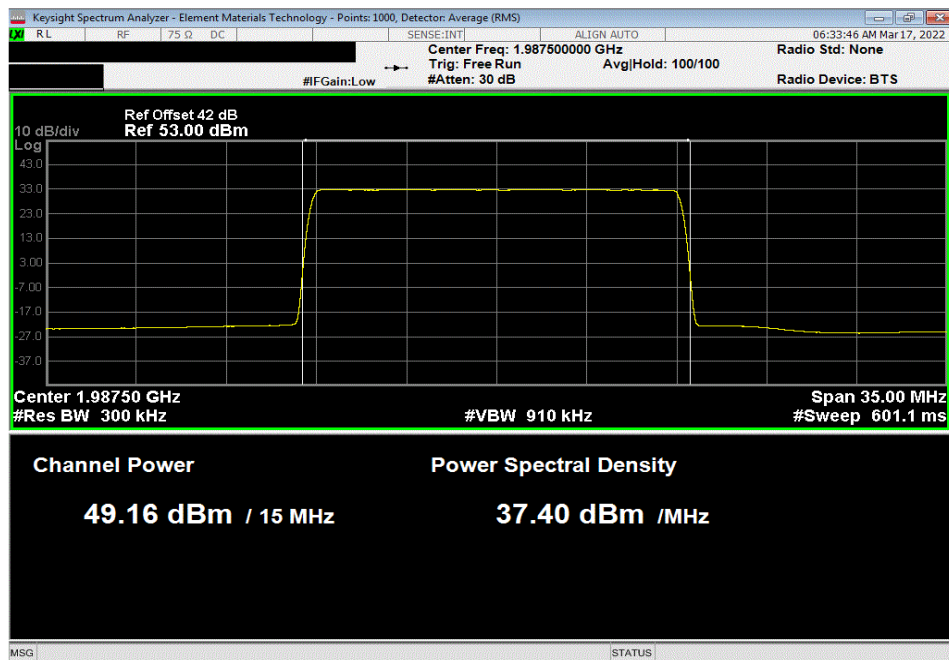


TbTtx 2021.12.14.1 XMI 2022.02.07.0

Band n25, 1930 MHz - 1995 MHz, 5G NR, Port 1, 15 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 1962.5 MHz						
	Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
	dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	49.10	0	49.1	52.1	55.1	



Band n25, 1930 MHz - 1995 MHz, 5G NR, Port 1, 15 MHz Bandwidth, 256-QAM Modulation, High Channel, 1987.5 MHz						
	Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
	dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	49.2	0	49.2	52.2	55.2	

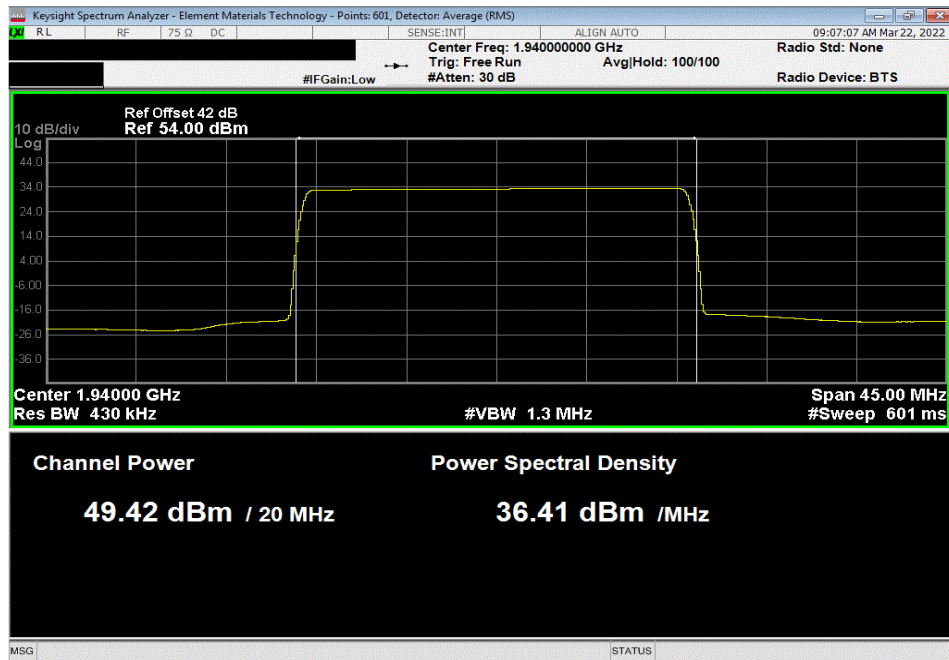


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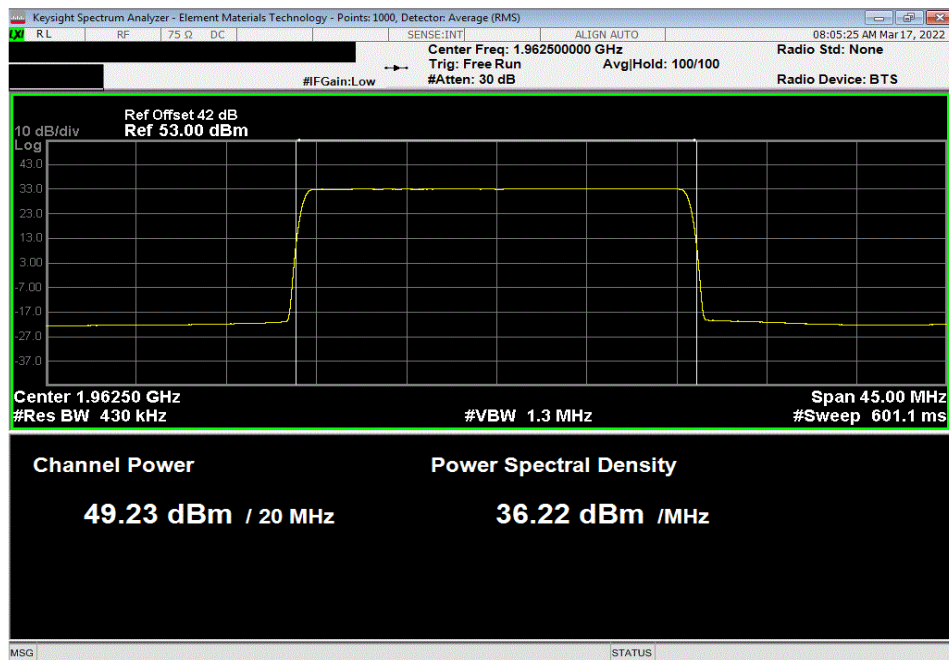


TbTtX 2021.12.14.1 XMI 2022.02.07.0

Band n25, 1930 MHz - 1995 MHz, 5G NR, Port 1, 20 MHz Bandwidth, 256-QAM Modulation, Low Channel, 1940 MHz						
	Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
	dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	49.40	0	49.4	52.4	55.4	



Band n25, 1930 MHz - 1995 MHz, 5G NR, Port 1, 20 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 1962.5 MHz.						
	Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
	dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	49.2	0	49.2	52.2	55.2	

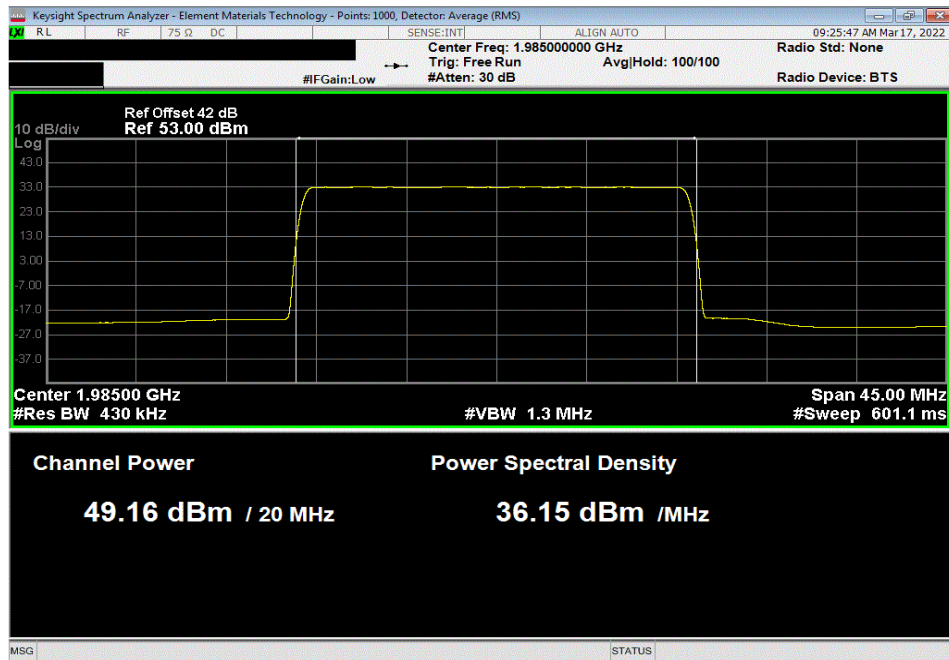


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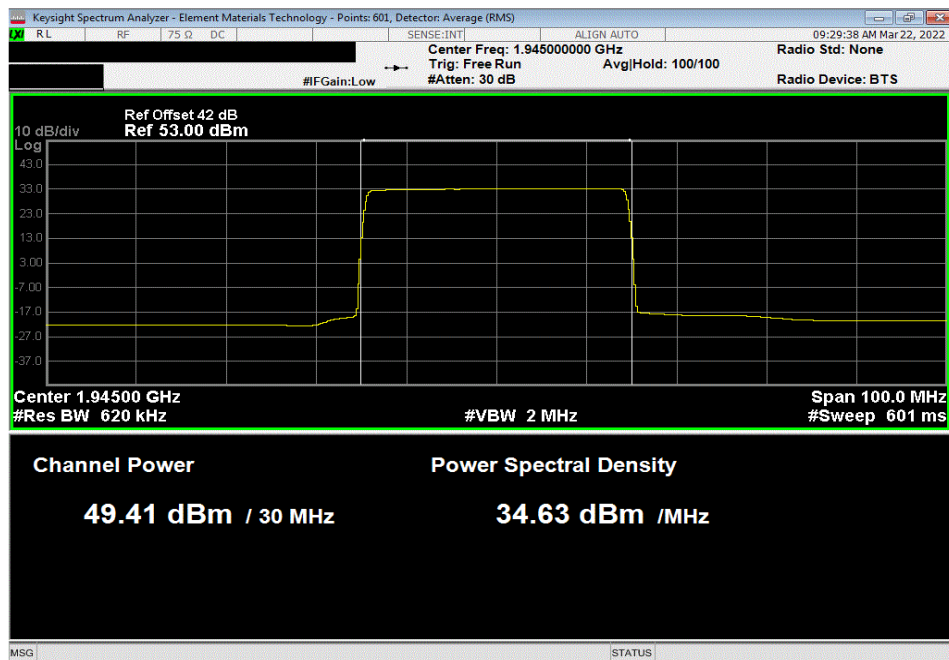


TbTb 2021.12.14.1 XMI 2022.02.07.0

Band n25, 1930 MHz - 1995 MHz, 5G NR, Port 1, 20 MHz Bandwidth, 256-QAM Modulation, High Channel, 1985 MHz						
	Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
	dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	49.20	0	49.2	52.2	55.2	



Band n25, 1930 MHz - 1995 MHz, 5G NR, Port 1, 30 MHz Bandwidth, 256-QAM Modulation, Low Channel, 1945 MHz						
	Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
	dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	49.3	0	49.3	52.3	55.3	

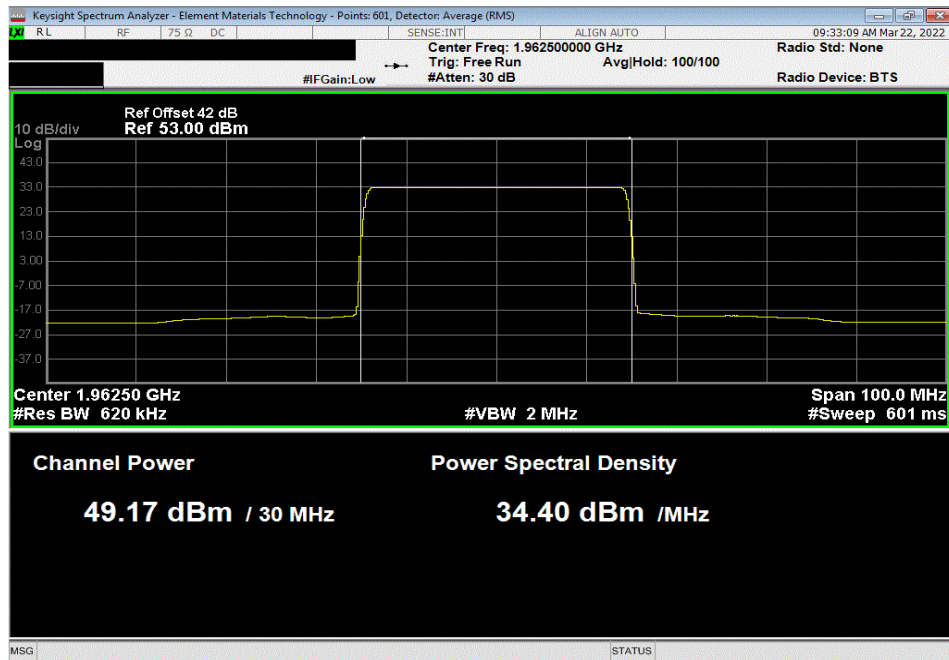


OUTPUT POWER

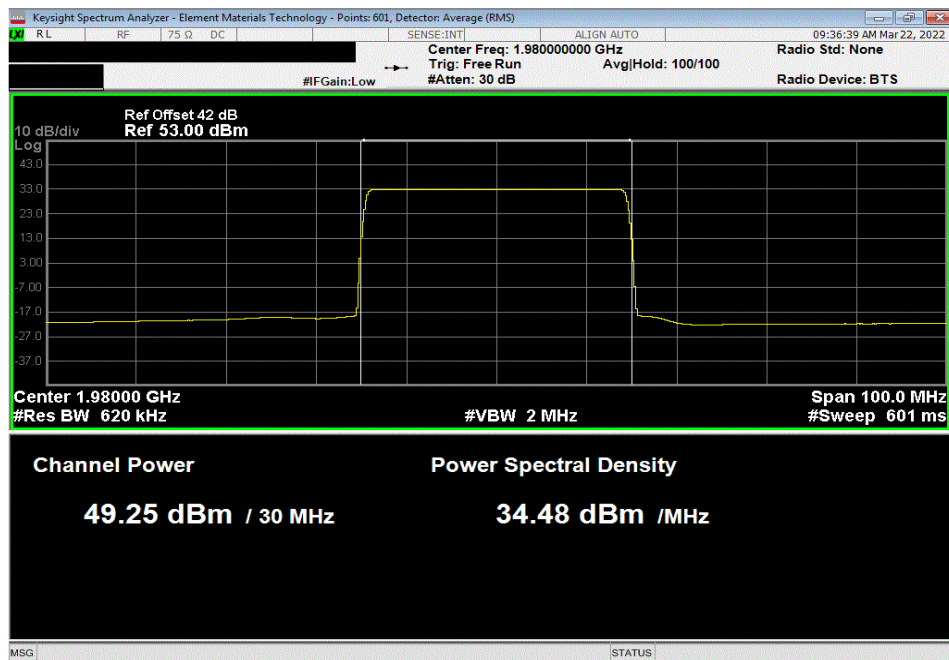


TbTtX 2021.12.14.1 XMI 2022.02.07.0

Band n25, 1930 MHz - 1995 MHz, 5G NR, Port 1, 30 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 1962.5 MHz						
	Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
	dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	49.20	0	49.2	52.2	55.2	



Band n25, 1930 MHz - 1995 MHz, 5G NR, Port 1, 30 MHz Bandwidth, 256-QAM Modulation, High Channel, 1980 MHz						
	Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
	dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	49.3	0	49.3	52.3	55.3	



OUTPUT POWER



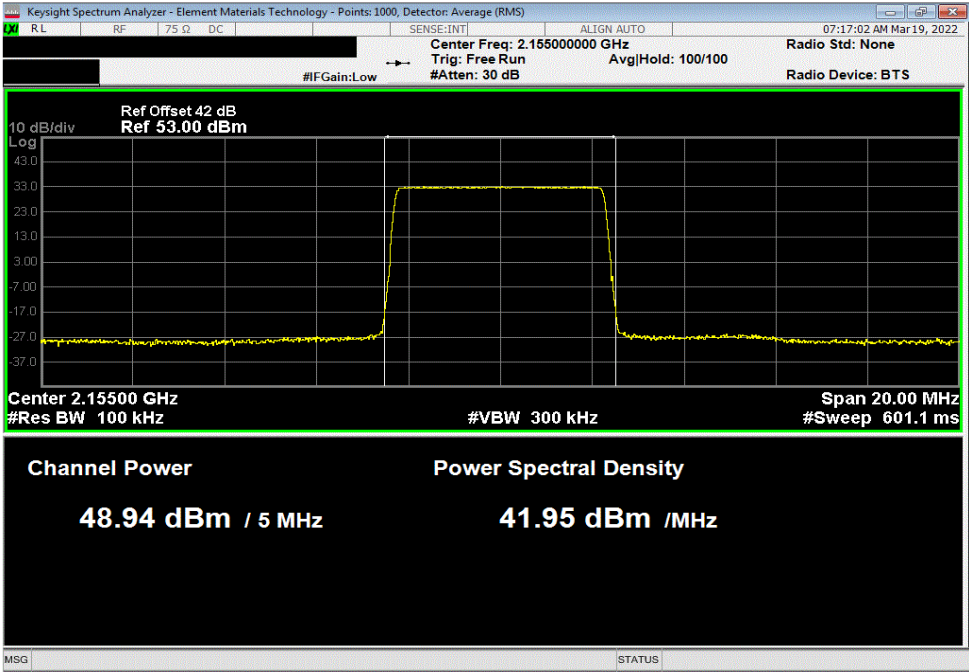
EUT: AHFII Remote Radio Head			Work Order: NOKI0038			
Serial Number: YK214000035			Date: 19-Mar-22			
Customer: Nokia of America Corporation			Temperature: 23.9 °C			
Attendees: Mitchell Hill			Humidity: 34.3% RH			
Project: None			Barometric Pres.: 1020 mbar			
Tested by: Brandon Hobbs		Power: 54 VDC	Job Site: TX09			
TEST SPECIFICATIONS			Test Method			
FCC 24E:2022			ANSI C63.26:2015			
RSS-139 Issue 3:2015, RSS-170 Issue 3:2015			RSS-139 Issue 3:2015, RSS-170 Issue 3:2015			
COMMENTS						
All measurement path losses were accounted for in the reference level offset including any attenuators, filters and DC blocks.). Band n66 carriers are enabled at maximum power (80 watts/carrier). The following is the output power measurements at the radio output ports. The output power was measured for a single carrier over the carrier channel bandwidth on port 1. The total output power for multiport (2x2 MIMO and 4x4 MIMO) operation was determined based upon ANSI 63.26 clauses 6.4.3.1 and 6.4.3.2.4 (10 log Nout). The total output power for two port operation is single port power + 3dB [i.e. 10log(2)]. The total output power for four port operation is single port power + 6dB [i.e. 10log(4)].						
DEVIATIONS FROM TEST STANDARD						
None						
Configuration #	2	Signature 				
		Initial Value dBm/MHz	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	Two Port (2x2 MIMO) dBm/Carrier BW	Four Port (4x4 MIMO) dBm/Carrier BW
Band n66, 2110 MHz - 2200 MHz, 5G NR						
Port 1						
5 MHz Bandwidth						
QPSK Modulation						
Mid Channel, 2155 MHz		48.941	0	48.9	51.9	54.9
16-QAM Modulation						
Mid Channel, 2155 MHz		48.618	0	48.6	51.6	54.6
64-QAM Modulation						
Mid Channel, 2155 MHz		48.779	0	48.8	51.8	54.8
256-QAM Modulation						
Low Channel, 2112.5 MHz		49.001	0	49.0	52.0	55.0
Mid Channel, 2155 MHz		48.806	0	48.8	51.8	54.8
High Channel, 2197.5 MHz		48.867	0	48.9	51.9	54.9
10 MHz Bandwidth						
256-QAM Modulation						
Low Channel, 2115 MHz		48.970	0	49.0	52.0	55.0
Mid Channel, 2155 MHz		48.717	0	48.7	51.7	54.7
High Channel, 2195 MHz		48.969	0	49.0	52.0	55.0
15 MHz Bandwidth						
256-QAM Modulation						
Low Channel, 2117.5 MHz		49.068	0	49.1	52.1	55.1
Mid Channel, 2155 MHz		48.755	0	48.8	51.8	54.8
High Channel, 2192.5 MHz		49.082	0	49.1	52.1	55.1
20 MHz Bandwidth						
256-QAM Modulation						
Low Channel, 2120 MHz		49.112	0	49.1	52.1	55.1
Mid Channel, 2155 MHz		49.000	0	49.0	52.0	55.0
High Channel, 2190 MHz		49.107	0	49.1	52.1	55.1
30 MHz Bandwidth						
256-QAM Modulation						
Low Channel, 2125 MHz		49.162	0	49.2	52.2	55.2
Mid Channel, 2155 MHz		48.885	0	48.9	51.9	54.9
High Channel, 2185 MHz		49.213	0	49.2	52.2	55.2

OUTPUT POWER

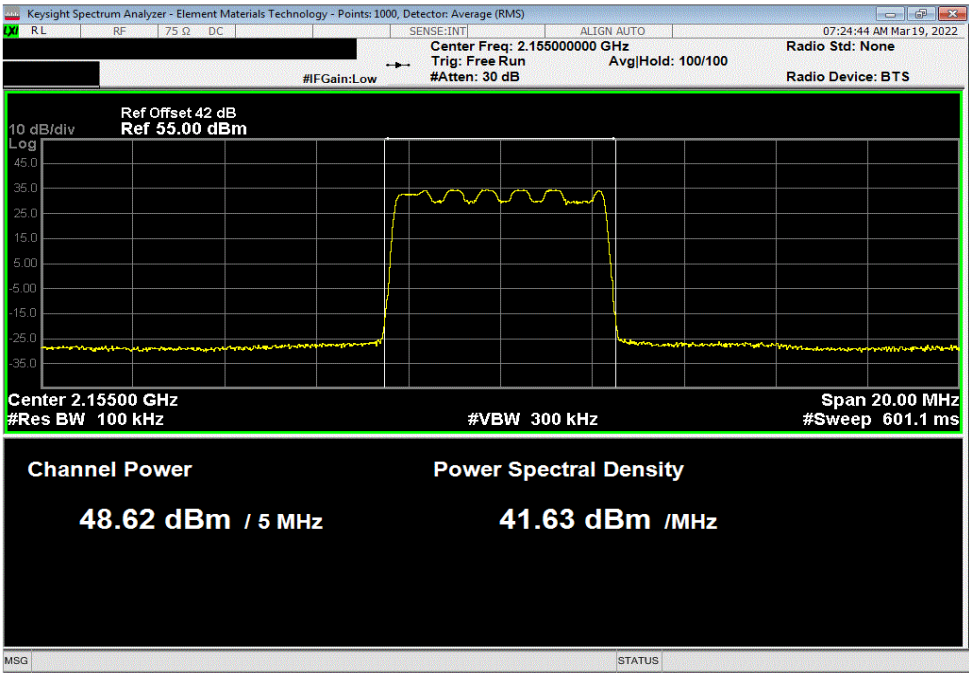


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Band n66, 2110 MHz - 2200 MHz, 5G NR, Port 1, 5 MHz Bandwidth, QPSK Modulation, Mid Channel, 2155 MHz					
Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
48.941	0	48.941	51.941	54.941	



Band n66, 2110 MHz - 2200 MHz, 5G NR, Port 1, 5 MHz Bandwidth, 16-QAM Modulation, Mid Channel, 2155 MHz					
Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
48.618	0	48.618	51.618	54.618	

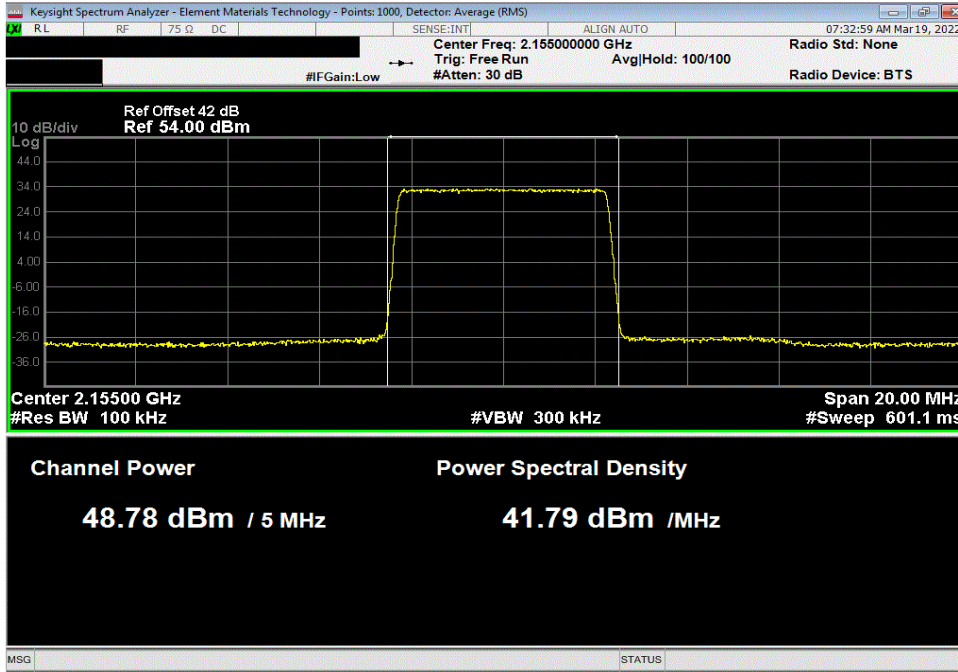


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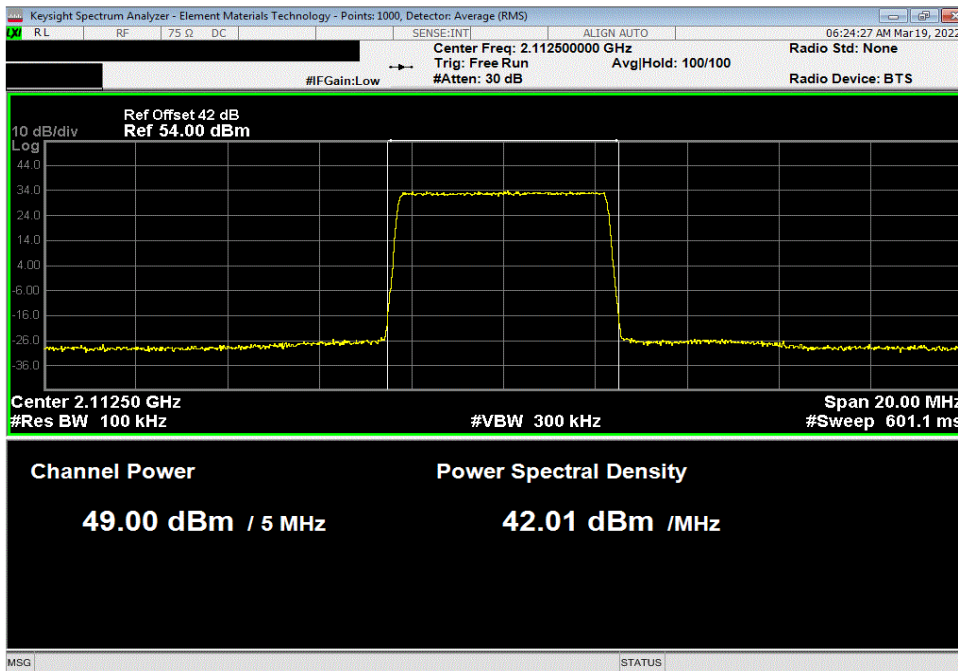


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Band n66, 2110 MHz - 2200 MHz, 5G NR, Port 1, 5 MHz Bandwidth, 64-QAM Modulation, Mid Channel, 2155 MHz					
Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
48.779	0	48.779	51.779	54.779	



Band n66, 2110 MHz - 2200 MHz, 5G NR, Port 1, 5 MHz Bandwidth, 256-QAM Modulation, Low Channel, 2112.5 MHz					
Initial Value	Duty Cycle	Single Port	Two Port (2x2 MIMO)	Four Port (4x4 MIMO)	
dBm/MHz	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
49.001	0	49.001	52.001	55.001	

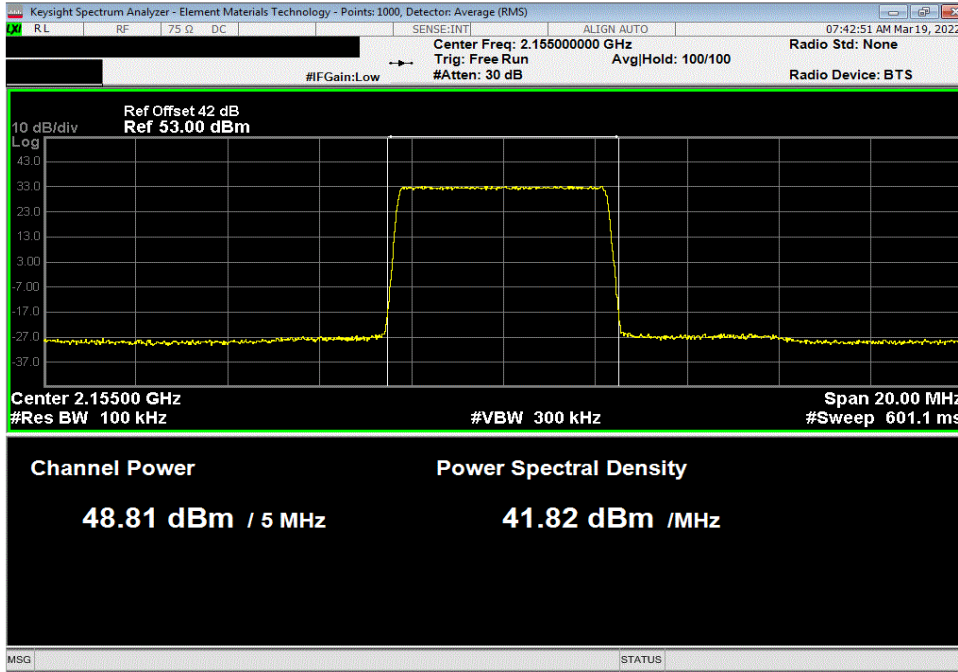


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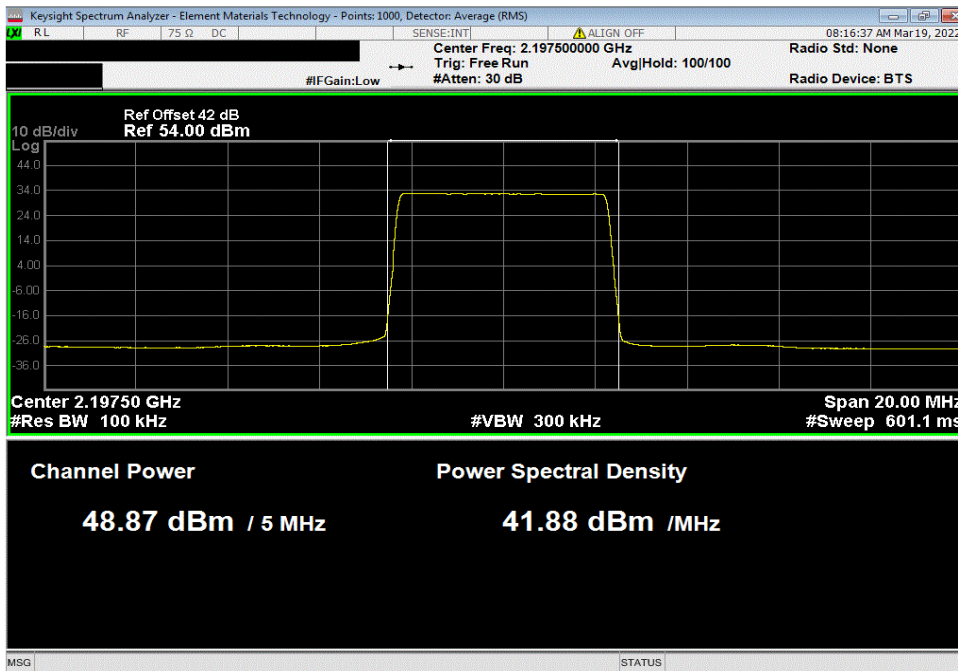


TbTtX 2022.03.14.0 XME 2022.02.07.0

Band n66, 2110 MHz - 2200 MHz, 5G NR, Port 1, 5 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 2155 MHz						
	Initial Value dBm/MHz	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	Two Port (2x2 MIMO) dBm/Carrier BW	Four Port (4x4 MIMO) dBm/Carrier BW	
	48.806	0	48.806	51.806	54.806	



Band n66, 2110 MHz - 2200 MHz, 5G NR, Port 1, 5 MHz Bandwidth, 256-QAM Modulation, High Channel, 2197.5 MHz						
	Initial Value dBm/MHz	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	Two Port (2x2 MIMO) dBm/Carrier BW	Four Port (4x4 MIMO) dBm/Carrier BW	
	48.867	0	48.867	51.867	54.867	

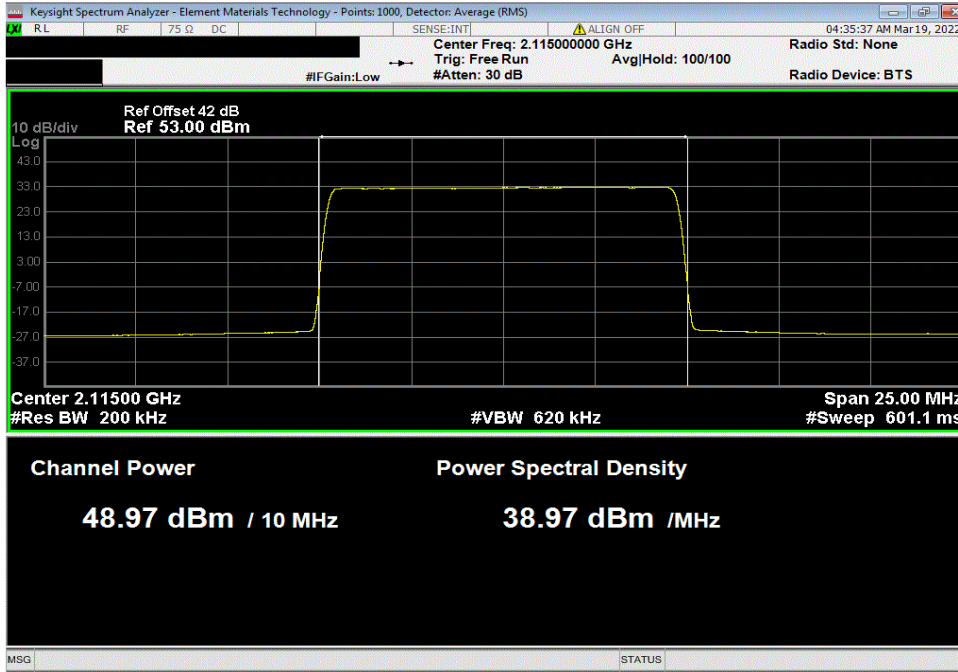


OUTPUT POWER

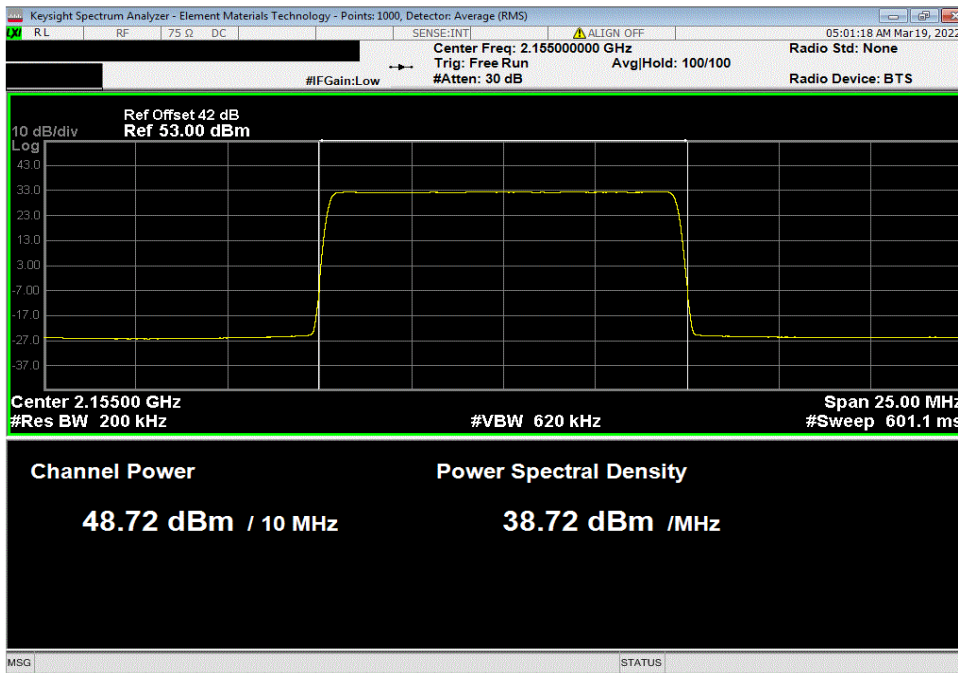


TbTtX 2022.03.14.0 XME 2022.02.07.0

Band n66, 2110 MHz - 2200 MHz, 5G NR, Port 1, 10 MHz Bandwidth, 256-QAM Modulation, Low Channel, 2115 MHz						
	Initial Value dBm/MHz	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	Two Port (2x2 MIMO) dBm/Carrier BW	Four Port (4x4 MIMO) dBm/Carrier BW	
	48.97	0	48.97	51.97	54.97	



Band n66, 2110 MHz - 2200 MHz, 5G NR, Port 1, 10 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 2155 MHz						
	Initial Value dBm/MHz	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	Two Port (2x2 MIMO) dBm/Carrier BW	Four Port (4x4 MIMO) dBm/Carrier BW	
	48.717	0	48.717	51.717	54.717	

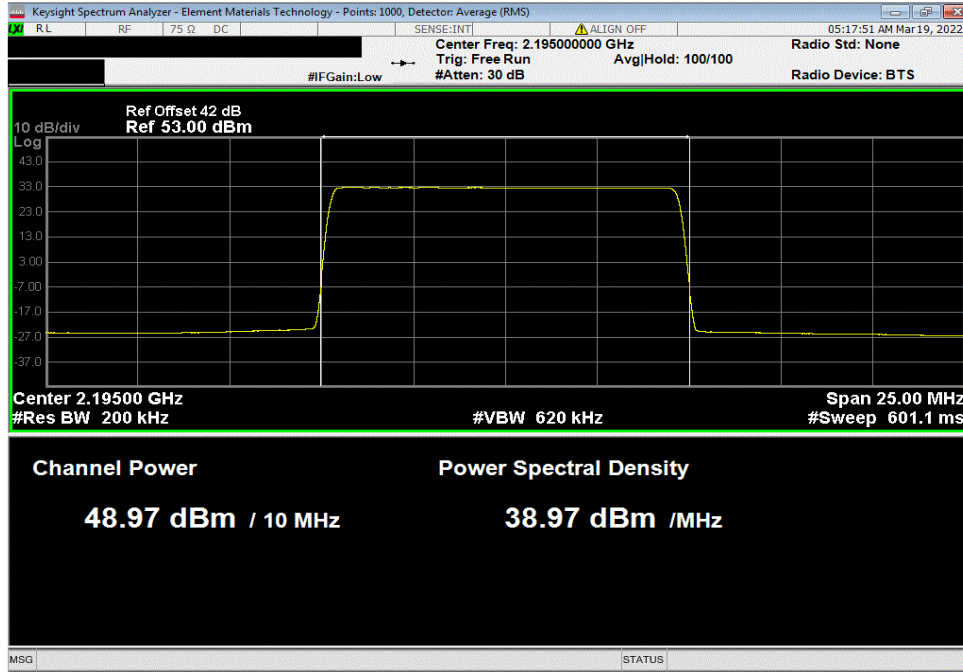


OUTPUT POWER

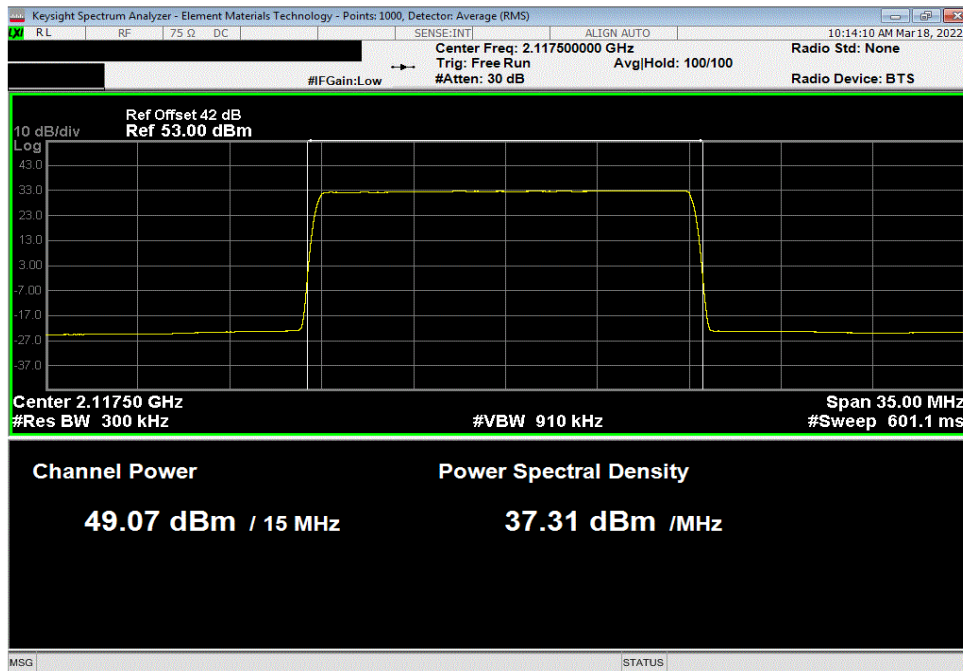


TbTtX 2022.03.14.0 XME 2022.02.07.0

Band n66, 2110 MHz - 2200 MHz, 5G NR, Port 1, 10 MHz Bandwidth, 256-QAM Modulation, High Channel, 2195 MHz						
	Initial Value dBm/MHz	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	Two Port (2x2 MIMO) dBm/Carrier BW	Four Port (4x4 MIMO) dBm/Carrier BW	
	48.969	0	48.969	51.969	54.969	



Band n66, 2110 MHz - 2200 MHz, 5G NR, Port 1, 15 MHz Bandwidth, 256-QAM Modulation, Low Channel, 2117.5 MHz						
	Initial Value dBm/MHz	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	Two Port (2x2 MIMO) dBm/Carrier BW	Four Port (4x4 MIMO) dBm/Carrier BW	
	49.068	0	49.068	52.068	55.068	

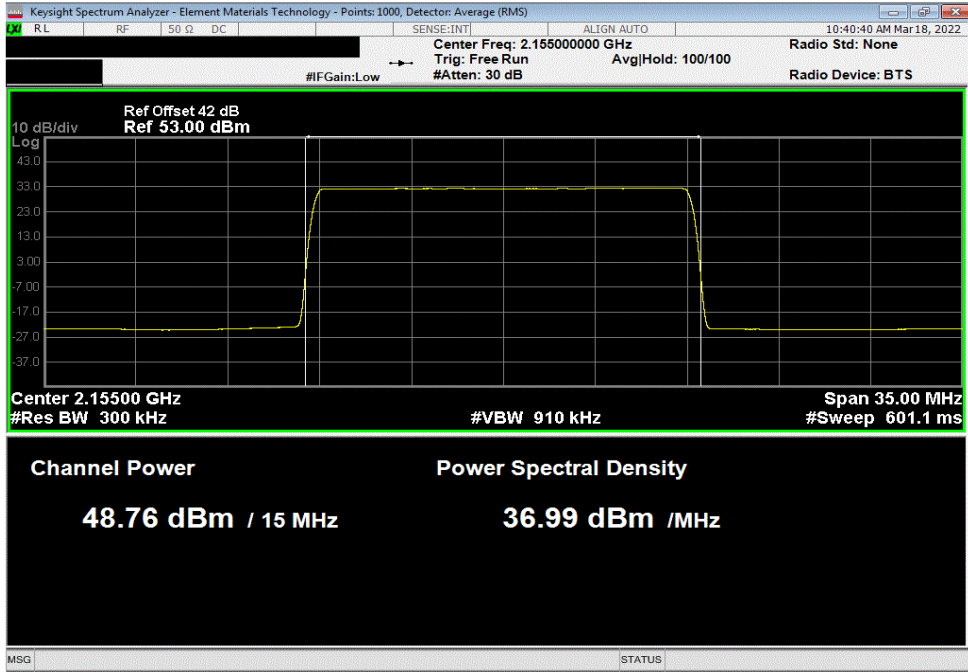


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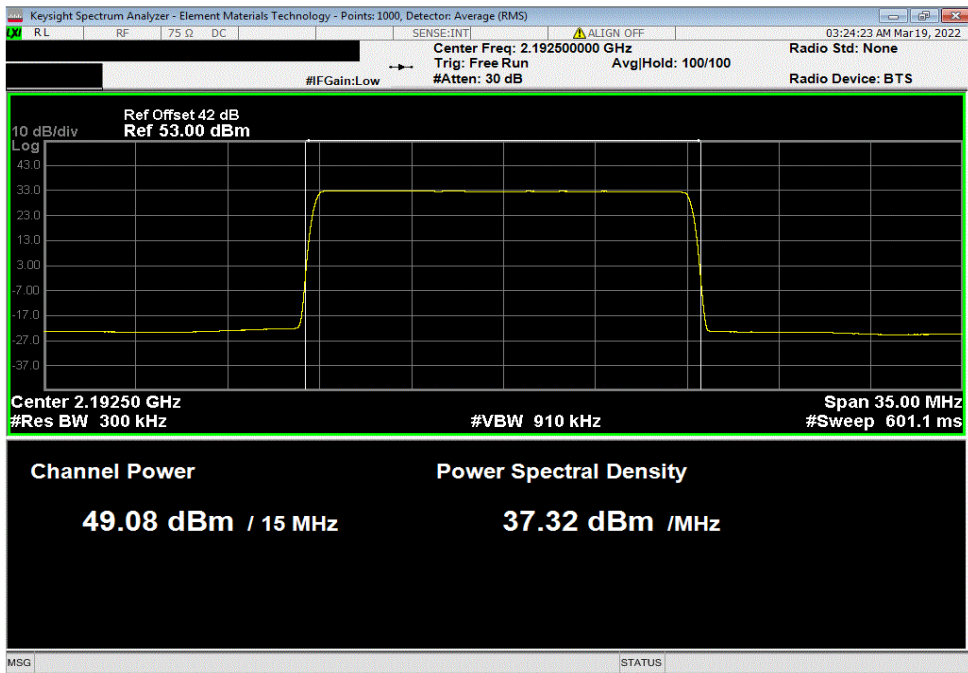


TbTtX 2022.03.14.0 XME 2022.02.07.0

Band n66, 2110 MHz - 2200 MHz, 5G NR, Port 1, 15 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 2155 MHz						
	Initial Value dBm/MHz	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	Two Port (2x2 MIMO) dBm/Carrier BW	Four Port (4x4 MIMO) dBm/Carrier BW	
	48.755	0	48.755	51.755	54.755	



Band n66, 2110 MHz - 2200 MHz, 5G NR, Port 1, 15 MHz Bandwidth, 256-QAM Modulation, High Channel, 2192.5 MHz						
	Initial Value dBm/MHz	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	Two Port (2x2 MIMO) dBm/Carrier BW	Four Port (4x4 MIMO) dBm/Carrier BW	
	49.082	0	49.082	52.082	55.082	

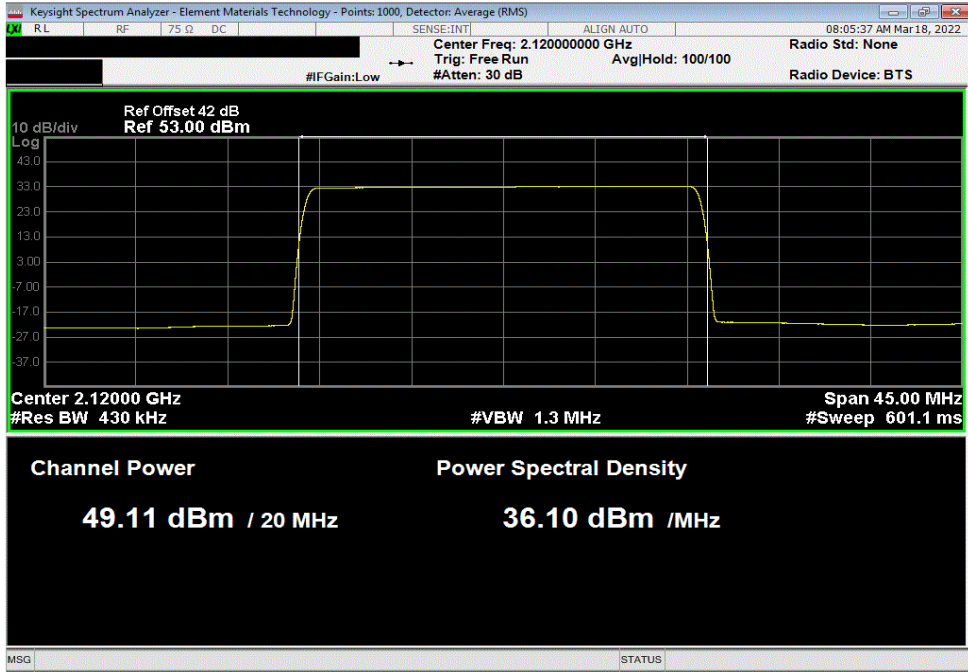


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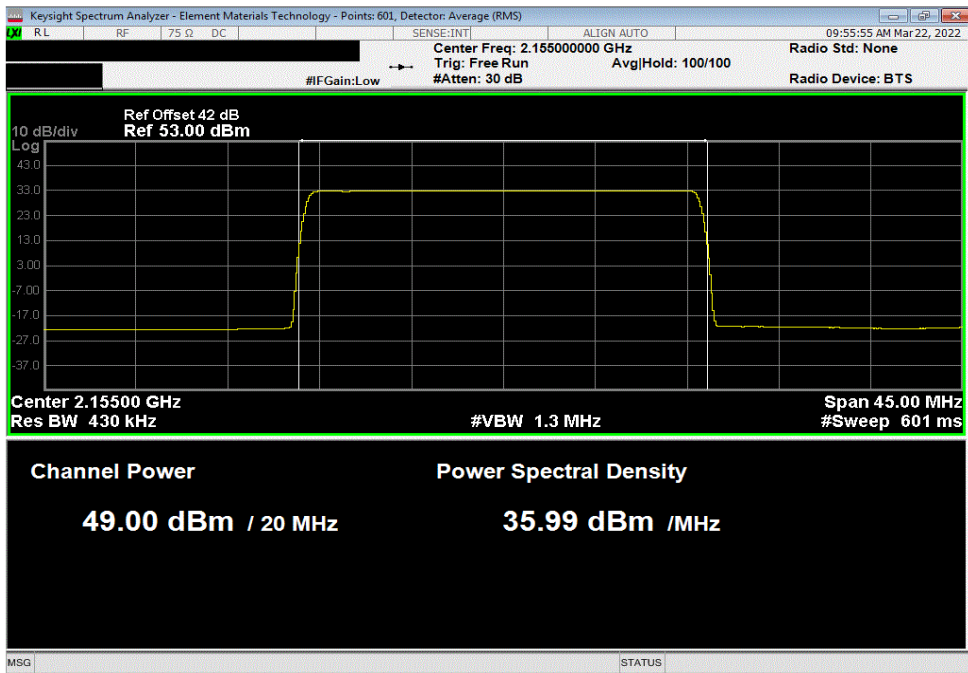


TbTtX 2022.03.14.0 XME 2022.02.07.0

Band n66, 2110 MHz - 2200 MHz, 5G NR, Port 1, 20 MHz Bandwidth, 256-QAM Modulation, Low Channel, 2120 MHz						
	Initial Value dBm/MHz	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	Two Port (2x2 MIMO) dBm/Carrier BW	Four Port (4x4 MIMO) dBm/Carrier BW	
	49.112	0	49.112	52.112	55.112	



Band n66, 2110 MHz - 2200 MHz, 5G NR, Port 1, 20 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 2155 MHz						
	Initial Value dBm/MHz	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	Two Port (2x2 MIMO) dBm/Carrier BW	Four Port (4x4 MIMO) dBm/Carrier BW	
	49	0	49	52	55	

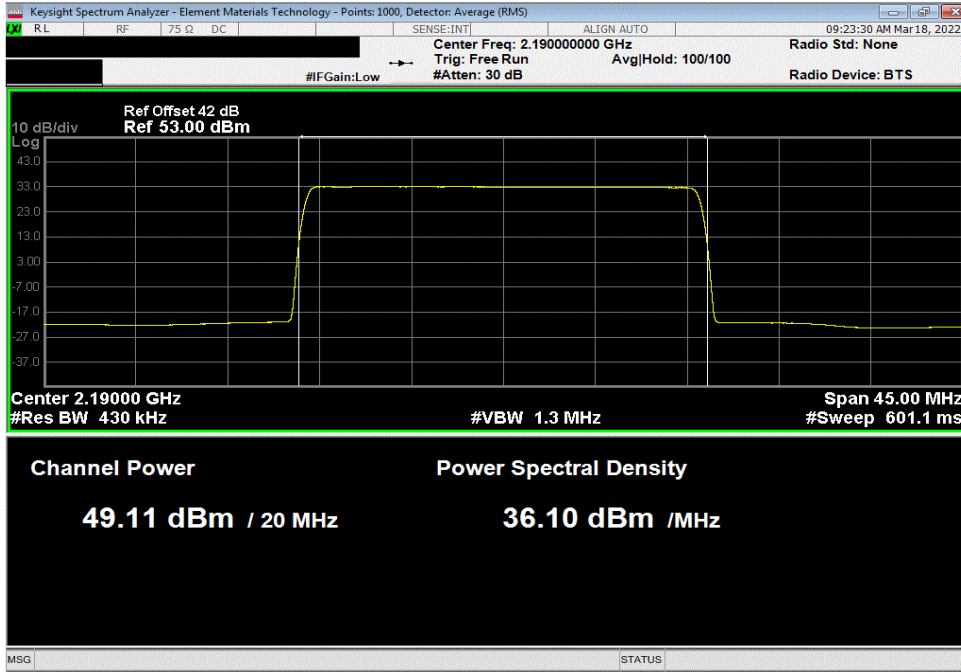


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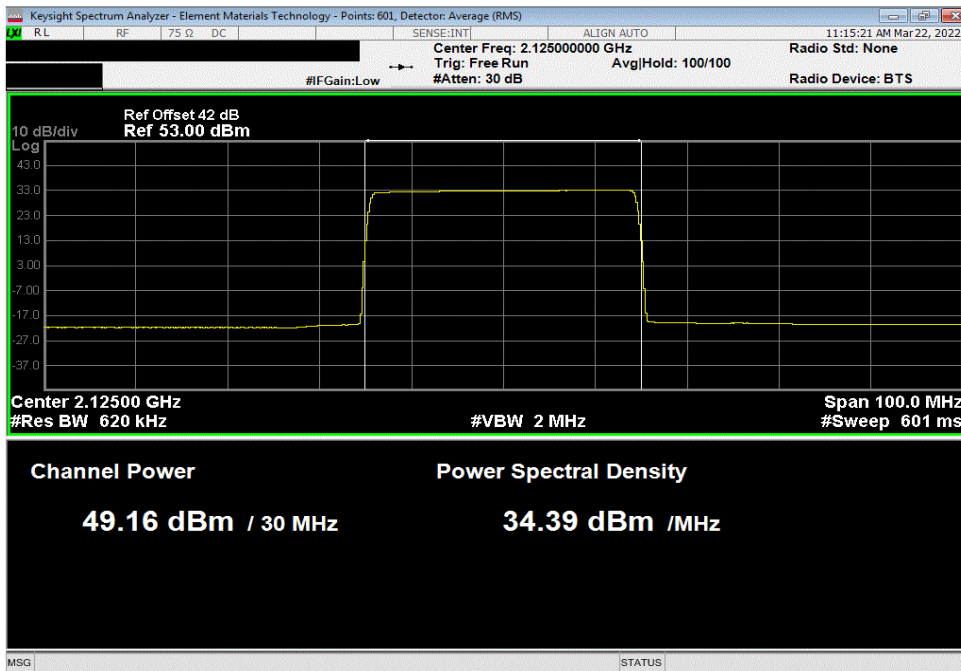


TbTtX 2022.03.14.0 XME 2022.02.07.0

Band n66, 2110 MHz - 2200 MHz, 5G NR, Port 1, 20 MHz Bandwidth, 256-QAM Modulation, High Channel, 2190 MHz						
	Initial Value dBm/MHz	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	Two Port (2x2 MIMO) dBm/Carrier BW	Four Port (4x4 MIMO) dBm/Carrier BW	
	49.107	0	49.107	52.107	55.107	



Band n66, 2110 MHz - 2200 MHz, 5G NR, Port 1, 30 MHz Bandwidth, 256-QAM Modulation, Low Channel, 2125 MHz						
	Initial Value dBm/MHz	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	Two Port (2x2 MIMO) dBm/Carrier BW	Four Port (4x4 MIMO) dBm/Carrier BW	
	49.162	0	49.162	52.162	55.162	

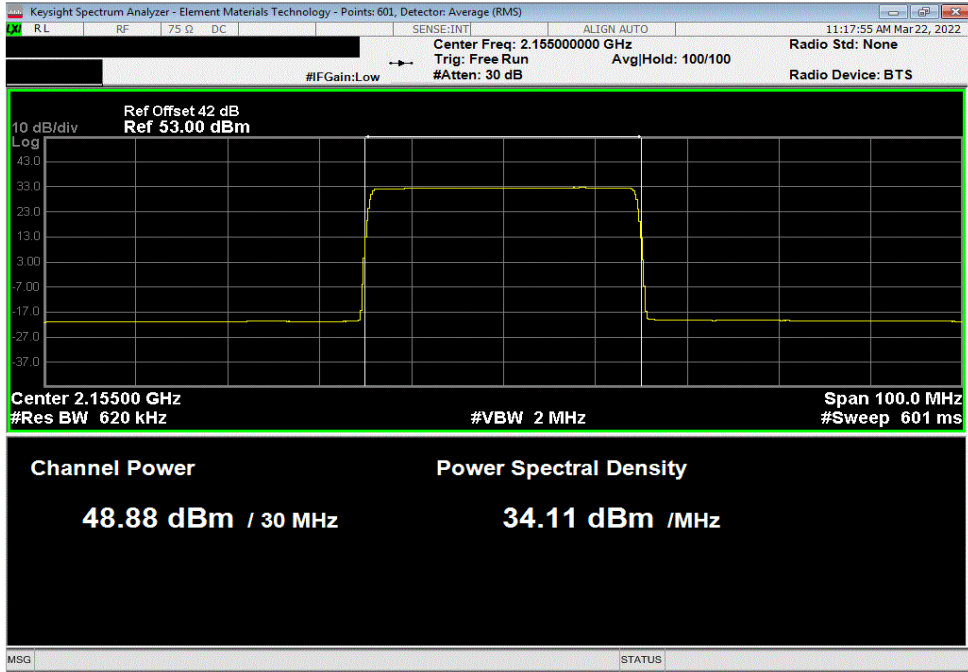


OUTPUT POWER

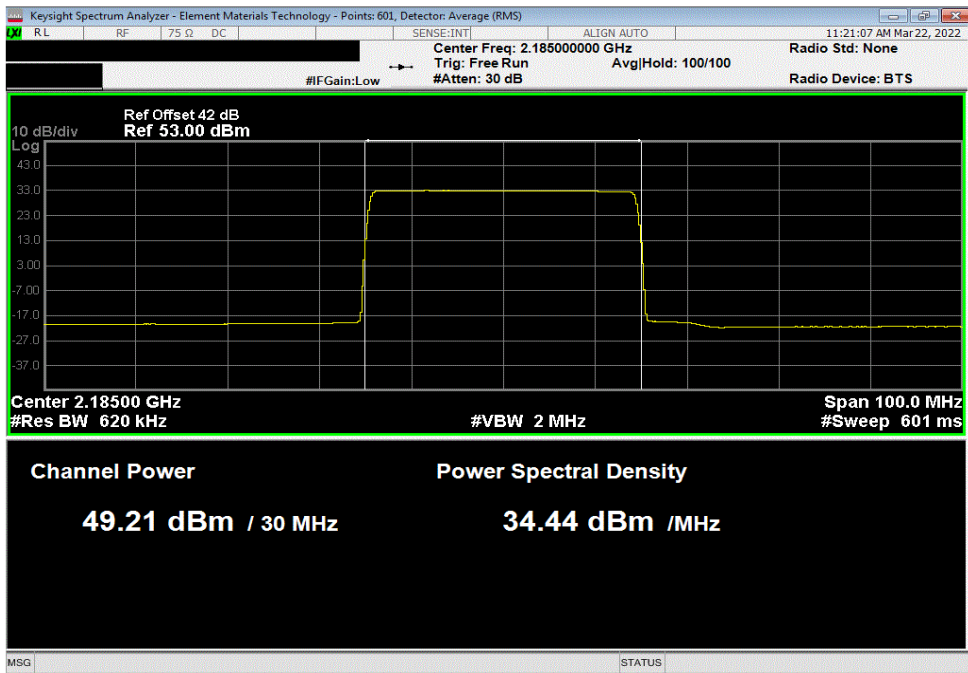


TbTtX 2022.03.14.0 XME 2022.02.07.0

Band n66, 2110 MHz - 2200 MHz, 5G NR, Port 1, 30 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 2155 MHz						
	Initial Value dBm/MHz	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	Two Port (2x2 MIMO) dBm/Carrier BW	Four Port (4x4 MIMO) dBm/Carrier BW	
	48.885	0	48.885	51.885	54.885	



Band n66, 2110 MHz - 2200 MHz, 5G NR, Port 1, 30 MHz Bandwidth, 256-QAM Modulation, High Channel, 2185 MHz						
	Initial Value dBm/MHz	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	Two Port (2x2 MIMO) dBm/Carrier BW	Four Port (4x4 MIMO) dBm/Carrier BW	
	49.213	0	49.213	52.213	55.213	



OUTPUT POWER



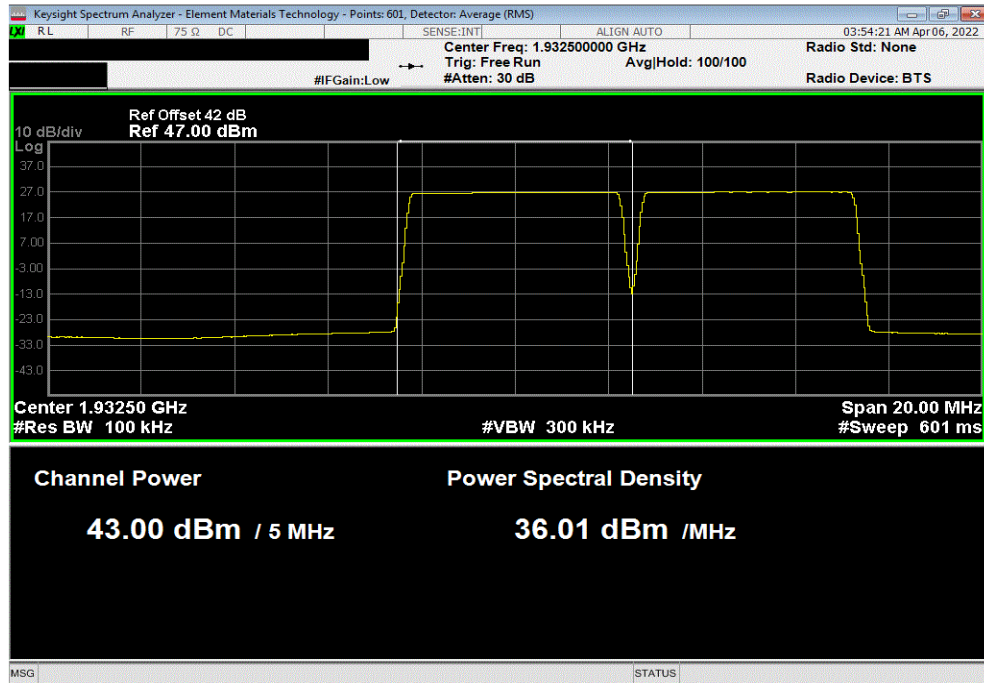
EUT: AHFII Remote Radio Head		Work Order: NOKI0038	
Serial Number: YK214000035		Date: 6-Apr-22	
Customer: Nokia of America Corporation		Temperature: 22.6 °C	
Attendees: Mitchell Hill		Humidity: 23.7% RH	
Project: None		Barometric Pres.: 1026 mbar	
Tested by: Mark Baytan	Power: 54 VDC	Job Site: TX09	
TEST SPECIFICATIONS		Test Method	
FCC 24E:2022		ANSI C63.26:2015	
RSS-133 Issue 6:2013+A1:2018		RSS-133 Issue 6:2013+A1:2018	
COMMENTS			
All measurement path losses were accounted for in the reference level offset including any attenuators, filters and DC blocks.). For Test Case 1: The carriers are operated at maximum power (~26.6W or ~44.2dBm/PCS carrier and 40W/AWS carrier) with at total port power of 120 watts (80W for PCS band carriers + 40W for AWS band carrier). For Test Case 2 and 3: The carriers are operated at maximum power (~40W/PCS carrier and 40W/AWS carrier) with at total port power of 120 watts (80W for PCS band carriers + 40W for AWS band carrier). The total output power for multiport (2x2 MIMO and 4x4 MIMO) operation was determined based upon ANSI 63.26 clauses 6.4.3.1 and 6.4.3.2.4 (10 log Nout). The total output power for two port operation is single port power + 3dB [i.e. 10log(2)]. The total output power for four port operation is single port power + 6dB [i.e. 10log(4)].			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	2	Signature	
		Initial Value dBm/Carrier BW	Duty Cycle Factor (dB)
		Single Port dBm/Carrier BW	Two Port dBm/Carrier BW
			Four Port dBm/Carrier BW
PCS Multicarrier Multiband			
Port 1			
Test Case 1: PCS Band NR5 (3 Carriers), AWS Band NR5 (Single Carrier)			
256-QAM Modulation			
	PCS Carrier 1, 1932.5 MHz	43.001	0
	PCS Carrier 2, 1937.5 MHz	43.234	0
	PCS Carrier 3, 1992.5 MHz	43.711	0
	AWS Single Carrier, 2155 MHz	45.694	0
		43.0	46.0
		43.2	46.2
		43.7	46.7
		46.7	52.7
Test Case 2: PCS Band NR30 (2 Carriers), AWS Band NR30 (Single Carrier)			
256-QAM Modulation			
	PCS Carrier 1, 1945 MHz	45.305	0
	PCS Carrier 2, 1975 MHz	45.651	0
	AWS Single Carrier, 2155 MHz.	45.754	0
		45.3	48.3
		45.7	48.7
		45.8	48.8
			51.3
			51.7
			51.8
Test Case 3: PCS Band NR30 (2 Carriers), AWS Band NR30 (Single Carrier)			
256-QAM Modulation			
	PCS Carrier 1, 1950 MHz	45.374	0
	PCS Carrier 2, 1980 MHz	45.626	0
	AWS Single Carrier, 2155 MHz..	45.74	0
		45.4	48.4
		45.6	48.6
		45.7	48.7
			51.4
			51.6
			51.7

OUTPUT POWER

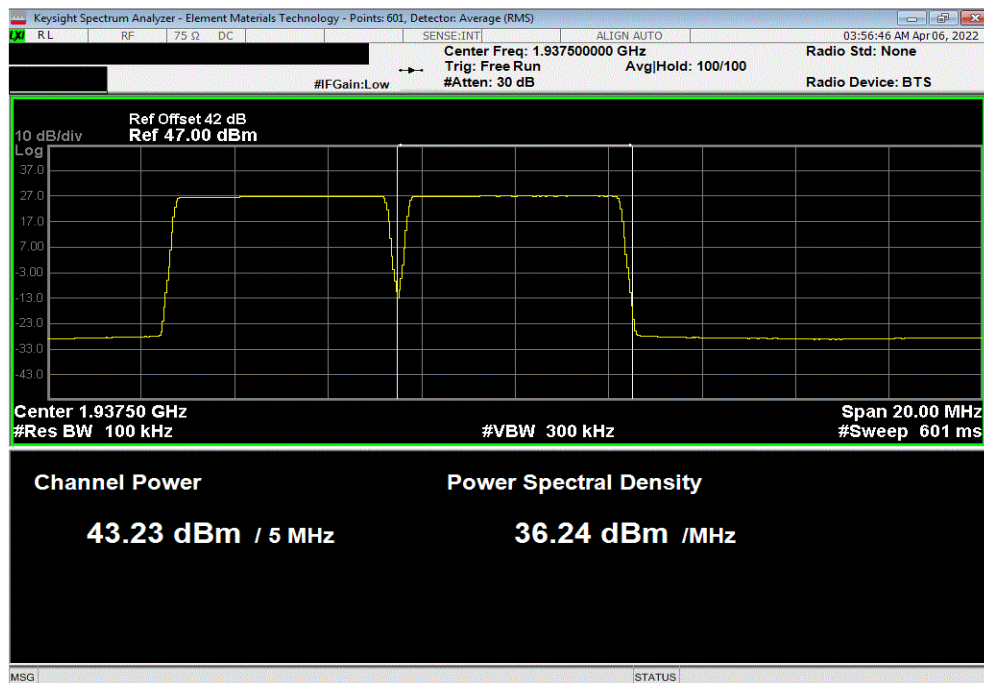


TbTx 2021.12.14.1 XMt 2022.02.07.0

PCS Multicarrier Multiband, Port 1, Test Case 1: PCS Band NR5 (3 Carriers), AWS Band NR5 (Single Carrier), 256-QAM Modulation, PCS Carrier 1, 1932.5 MHz						
	Initial Value	Duty Cycle	Single Port	Two Port	Four Port	
	dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	43.001	0	43.0	46.0	49.0	



PCS Multicarrier Multiband, Port 1, Test Case 1: PCS Band NR5 (3 Carriers), AWS Band NR5 (Single Carrier), 256-QAM Modulation, PCS Carrier 2, 1937.5 MHz						
	Initial Value	Duty Cycle	Single Port	Two Port	Four Port	
	dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	43.234	0	43.2	46.2	49.2	

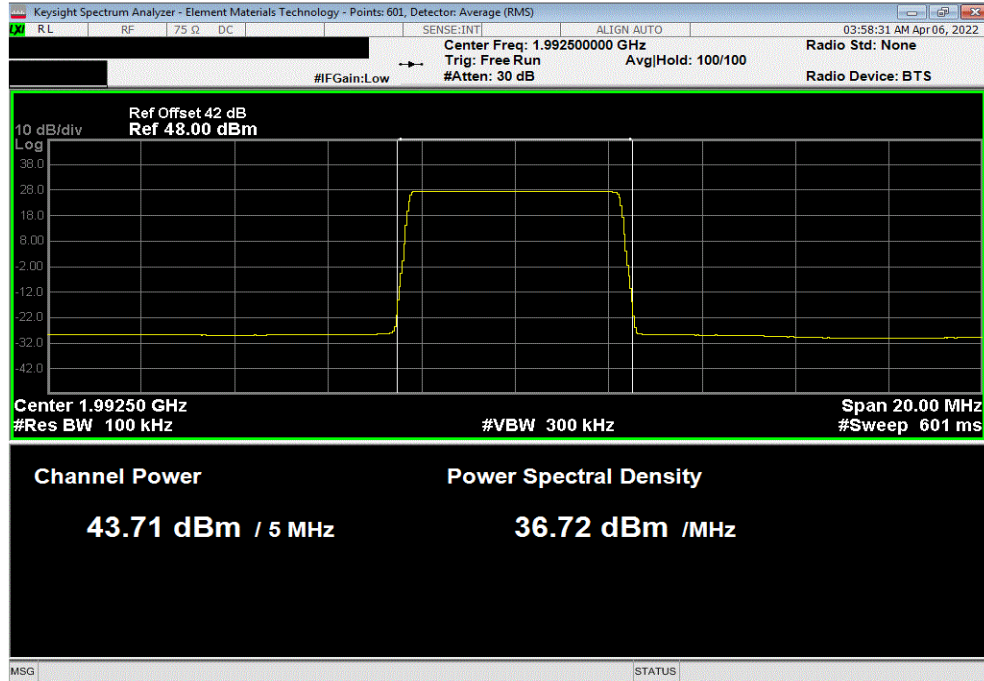


OUTPUT POWER

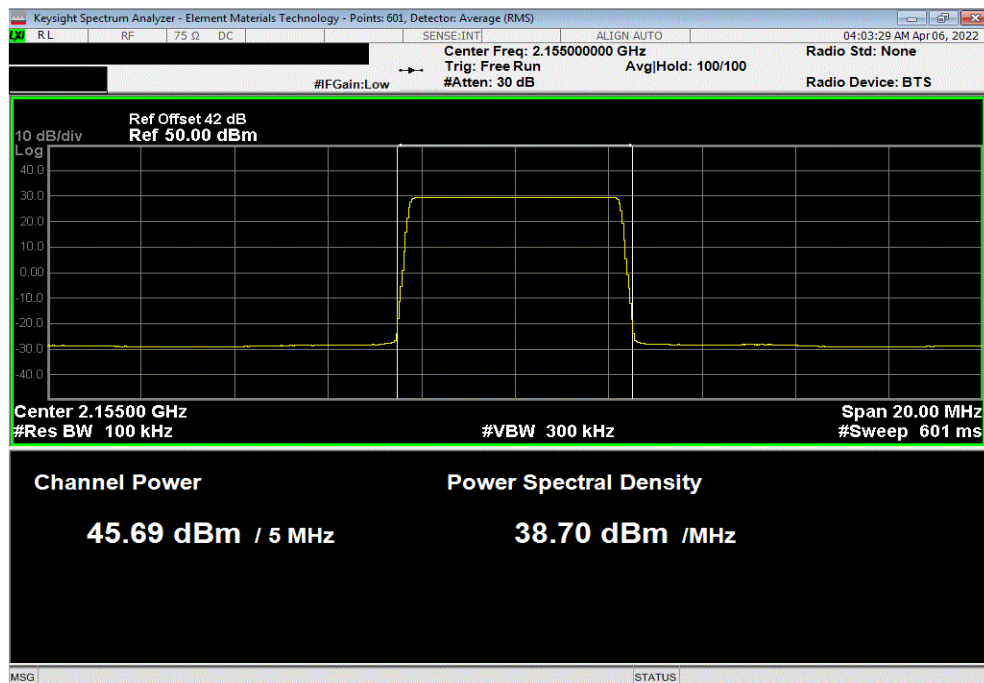


TbTx 2021.12.14.1 XMt 2022.02.07.0

PCS Multicarrier Multiband, Port 1, Test Case 1: PCS Band NR5 (3 Carriers), AWS Band NR5 (Single Carrier), 256-QAM Modulation, PCS Carrier 3, 1992.5 MHz						
Initial Value	Duty Cycle	Single Port	Two Port	Four Port		
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW		
43.711	0	43.7	46.7	49.7		



PCS Multicarrier Multiband, Port 1, Test Case 1: PCS Band NR5 (3 Carriers), AWS Band NR5 (Single Carrier), 256-QAM Modulation, AWS Single Carrier, 2155 MHz						
Initial Value	Duty Cycle	Single Port	Two Port	Four Port		
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW		
45.694	0	46.7	49.7	52.7		

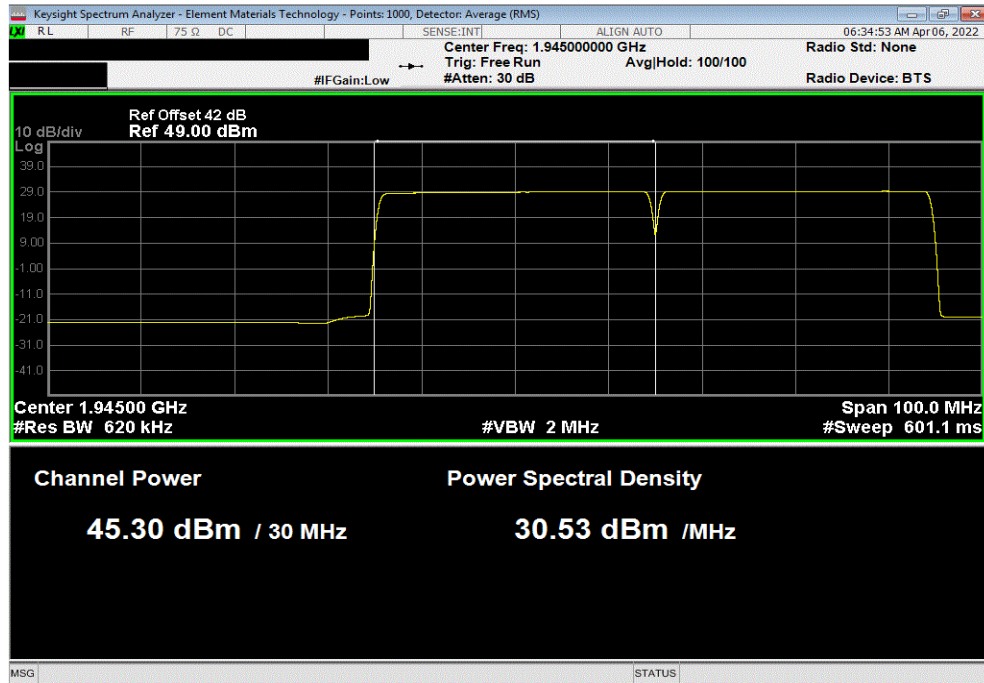


OUTPUT POWER

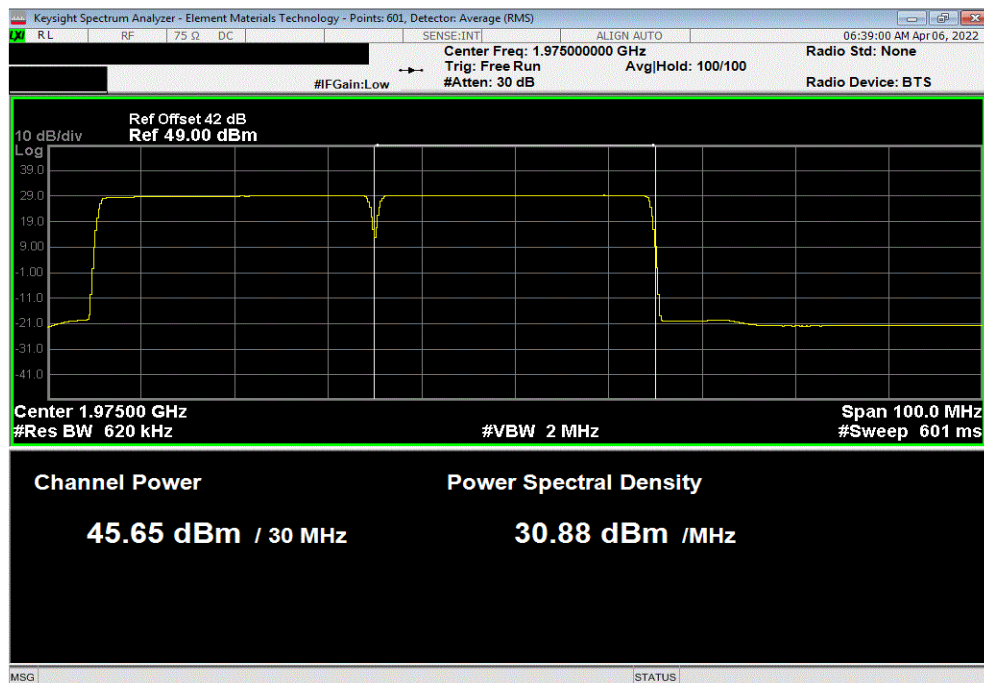


TbTx 2021.12.14.1 XMR 2022.02.07.0

PCS Multicarrier Multiband, Port 1, Test Case 2: PCS Band NR30 (2 Carriers), AWS Band NR30 (Single Carrier), 256-QAM Modulation, PCS Carrier 1, 1945 MHz						
Initial Value	Duty Cycle	Single Port	Two Port	Four Port		
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW		
45.305	0	45.3	48.3	51.3		



PCS Multicarrier Multiband, Port 1, Test Case 2: PCS Band NR30 (2 Carriers), AWS Band NR30 (Single Carrier), 256-QAM Modulation, PCS Carrier 2, 1975 MHz						
Initial Value	Duty Cycle	Single Port	Two Port	Four Port		
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW		
45.651	0	45.7	48.7	51.7		

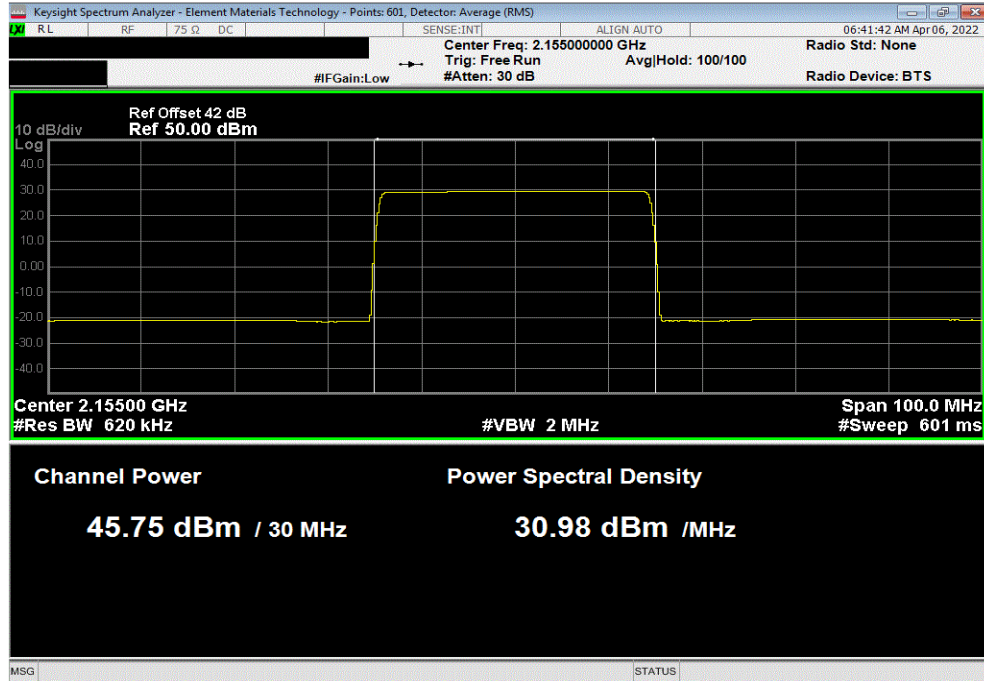


OUTPUT POWER

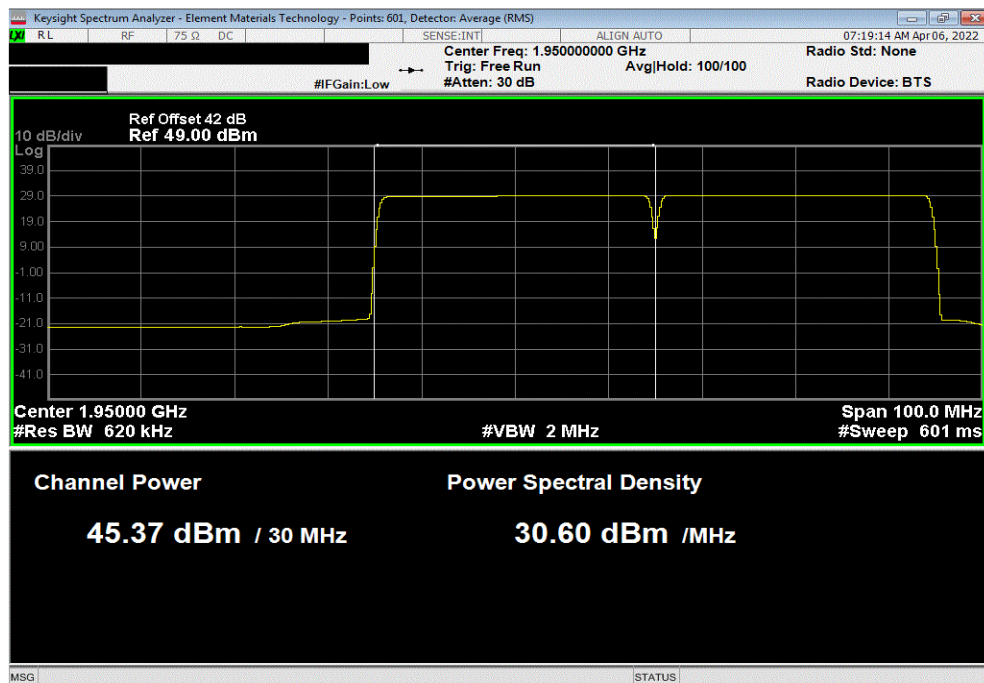


TbTx 2021.12.14.1 XMR 2022.02.07.0

PCS Multicarrier Multiband, Port 1, Test Case 2: PCS Band NR30 (2 Carriers), AWS Band NR30 (Single Carrier), 256-QAM Modulation, AWS Single Carrier, 2155 MHz.						
	Initial Value	Duty Cycle	Single Port	Two Port	Four Port	
	dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	45.754	0	45.8	48.8	51.8	



PCS Multicarrier Multiband, Port 1, Test Case 3: PCS Band NR30 (2 Carriers), AWS Band NR30 (Single Carrier), 256-QAM Modulation, PCS Carrier 1, 1950 MHz						
	Initial Value	Duty Cycle	Single Port	Two Port	Four Port	
	dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	45.374	0	45.4	48.4	51.4	

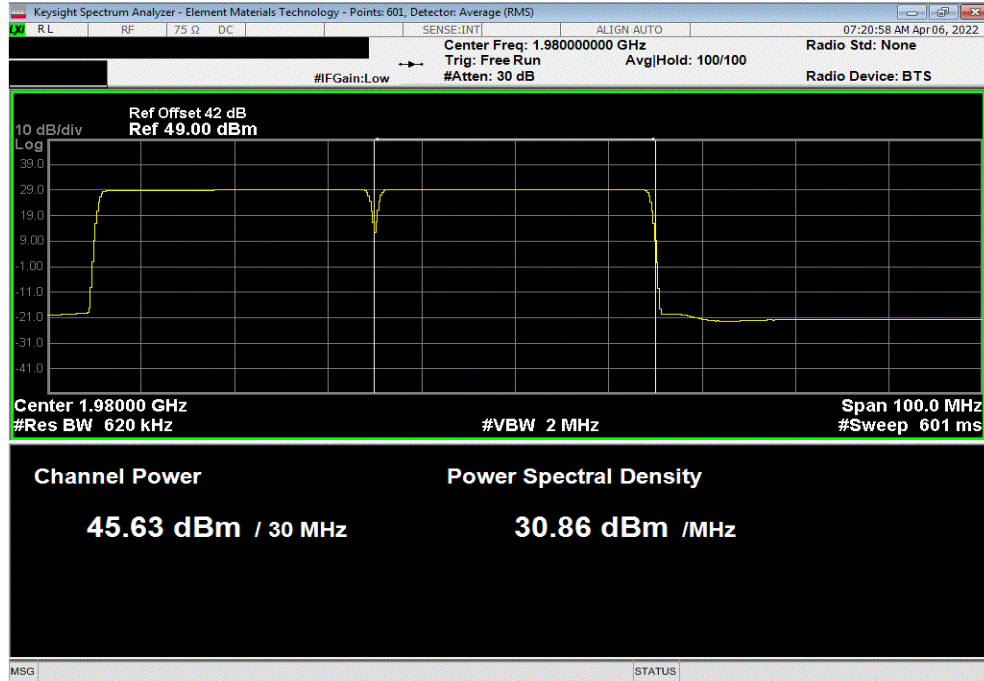


OUTPUT POWER

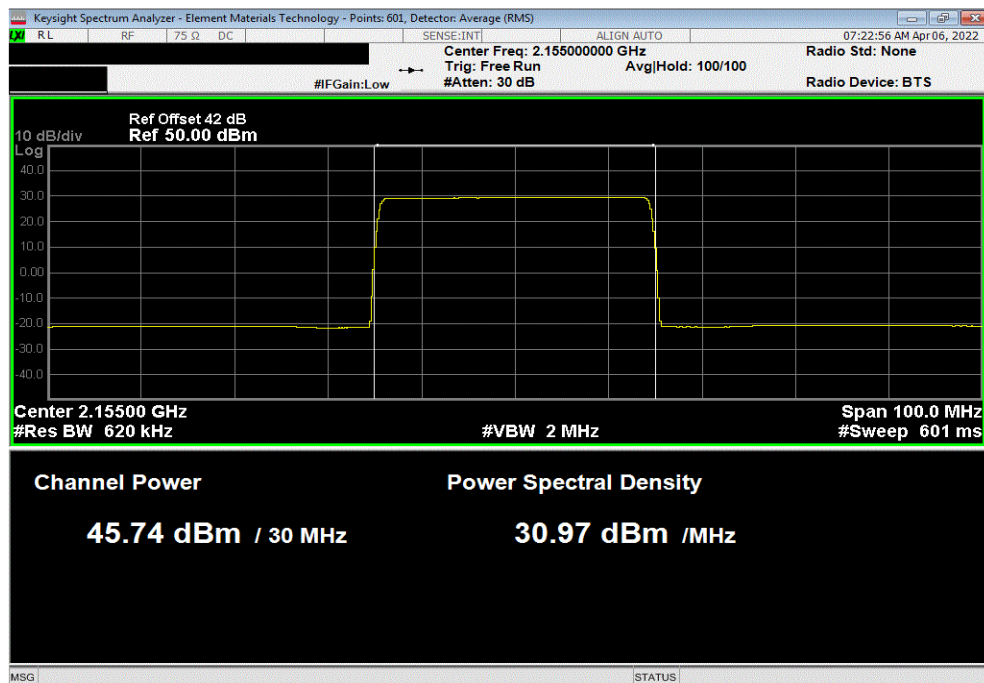


TbTx 2021.12.14.1 XMt 2022.02.07.0

PCS Multicarrier Multiband, Port 1, Test Case 3: PCS Band NR30 (2 Carriers), AWS Band NR30 (Single Carrier), 256-QAM Modulation, PCS Carrier 2, 1980 MHz						
Initial Value	Duty Cycle	Single Port	Two Port	Four Port		
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW		
45.626	0	45.6	48.6	51.6		



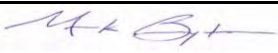
PCS Multicarrier Multiband, Port 1, Test Case 3: PCS Band NR30 (2 Carriers), AWS Band NR30 (Single Carrier), 256-QAM Modulation, AWS Single Carrier, 2155 MHz..						
Initial Value	Duty Cycle	Single Port	Two Port	Four Port		
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW		
45.74	0	45.7	48.7	51.7		



OUTPUT POWER



TW/Tx 2021.12.14.1 XMM 2022.02.07.0

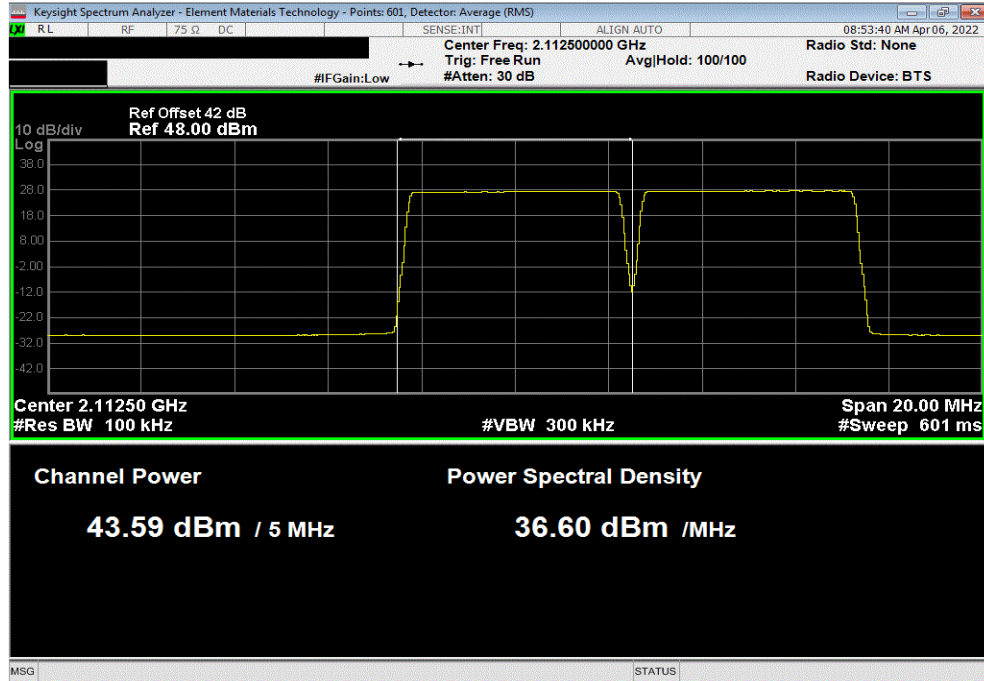
EUT:	AHFII Remote Radio Head	Work Order:	NOKI0038
Serial Number:	YK214000035	Date:	6-Apr-22
Customer:	Nokia of America Corporation	Temperature:	22.6 °C
Attendees:	Mitchell Hill	Humidity:	23.7% RH
Project:	None	Barometric Pres.:	1026 mbar
Tested by:	Mark Baytan	Power:	54 VDC
		Job Site:	TX09
TEST SPECIFICATIONS		Test Method	
FCC 27:2022		ANSI C63.26:2015	
RSS-139 Issue 3:2015		RSS-139 Issue 3:2015	
RSS-170 Issue 3:2015		RSS-170 Issue 3:2015	
COMMENTS			
All measurement path losses were accounted for in the reference level offset including any attenuators, filters and DC blocks.). For Test Case 1: The carriers are operated at maximum power (~26.6W or ~44.2dBm/AWS carrier and 40W/PCS carrier) with at total port power of 120 watts (80W for AWS band carriers + 40W for PCS band carrier). For Test Case 2 and 3: The carriers are operated at maximum power (~40W/AWS carrier and 40W/PCS carrier) with at total port power of 120 watts (80W for AWS band carriers + 40W for PCS band carrier). The total output power for multiport (2x2 MIMO and 4x4 MIMO) operation was determined based upon ANSI 63.26 clauses 6.4.3.1 and 6.4.3.2.4 (10 log Nout). The total output power for two port operation is single port power + 3dB [i.e. 10log(2)]. The total output power for four port operation is single port power + 6dB [i.e. 10log(4)].			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	2	Signature 	
		Initial Value dBm/Carrier BW	Duty Cycle Factor (dB)
		Single Port dBm/Carrier BW	Two Port dBm/Carrier BW
		Four Port dBm/Carrier BW	
AWS Multicarrier Multiband			
Port 1			
Test Case 1: AWS Band NR5 (3 Carriers), PCS Band NR5 (Single Carrier)			
256-QAM Modulation			
	AWS Carrier 1, 2112.5 MHz	43.587	0
	AWS Carrier 2, 2117.5 MHz	43.853	0
	AWS Carrier 3, 2197.5 MHz	44.353	0
	PCS Single Carrier, 1962.5 MHz	46.214	0
Test Case 2: AWS Band NR30 (2 Carriers), PCS Band NR30 (Single Carrier)			
256-QAM Modulation			
	AWS Carrier 1, 2125 MHz	45.54	0
	AWS Carrier 2, 2155 MHz	46.115	0
	PCS Single Carrier, 1962.5 MHz	45.409	0
Test Case 3: AWS Band NR30 (2 Carriers), PCS Band NR30 (Single Carrier)			
256-QAM Modulation			
	AWS Carrier 1, 2155 MHz	45.765	0
	AWS Carrier 2, 2185 MHz	45.8	0
	PCS Single Carrier, 1962.5 MHz..	45.442	0

OUTPUT POWER

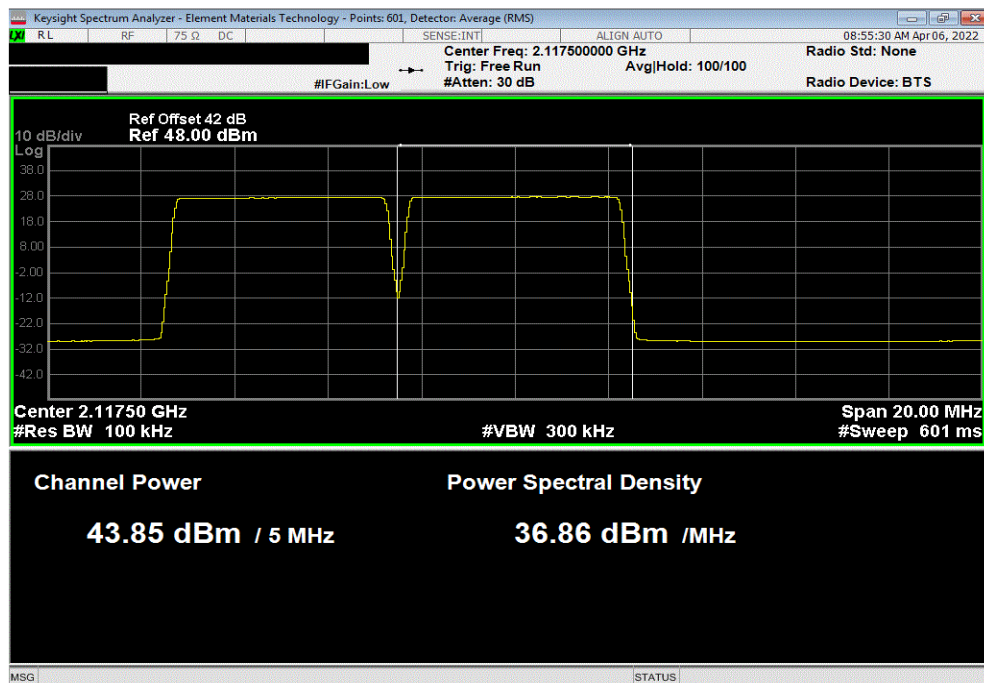


TbTx 2021.12.14.1 XMt 2022.02.07.0

AWS Multicarrier Multiband, Port 1, Test Case 1: AWS Band NR5 (3 Carriers), PCS Band NR5 (Single Carrier), 256-QAM Modulation, AWS Carrier 1, 2112.5 MHz						
Initial Value	Duty Cycle	Single Port	Two Port	Four Port		
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW		
43.587	0	43.6	46.6	49.6		



AWS Multicarrier Multiband, Port 1, Test Case 1: AWS Band NR5 (3 Carriers), PCS Band NR5 (Single Carrier), 256-QAM Modulation, AWS Carrier 2, 2117.5 MHz						
Initial Value	Duty Cycle	Single Port	Two Port	Four Port		
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW		
43.853	0	43.9	46.9	49.9		

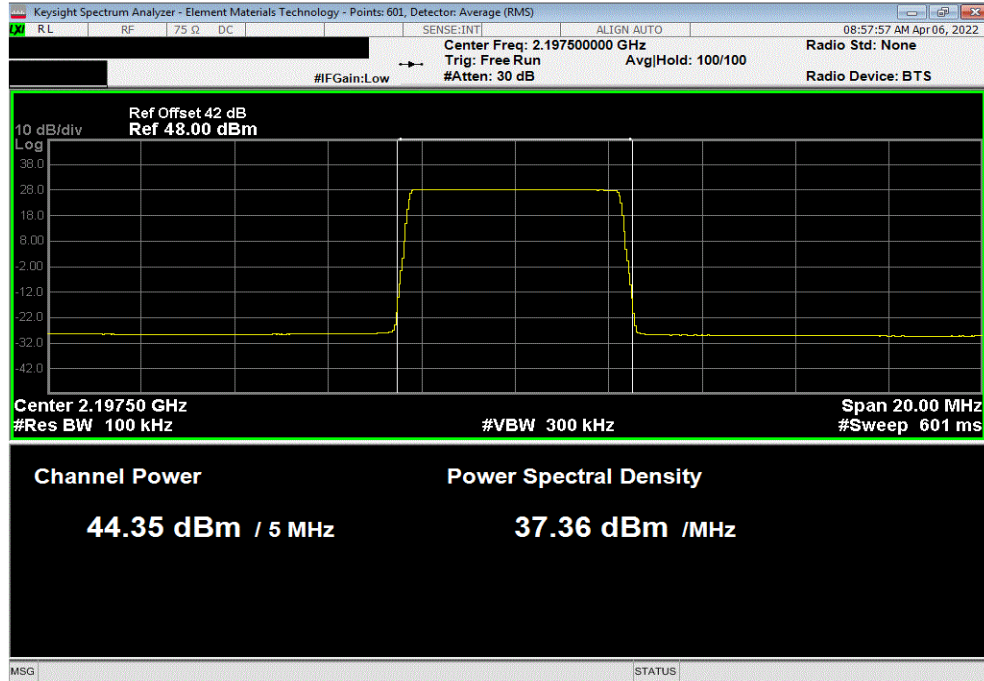


OUTPUT POWER

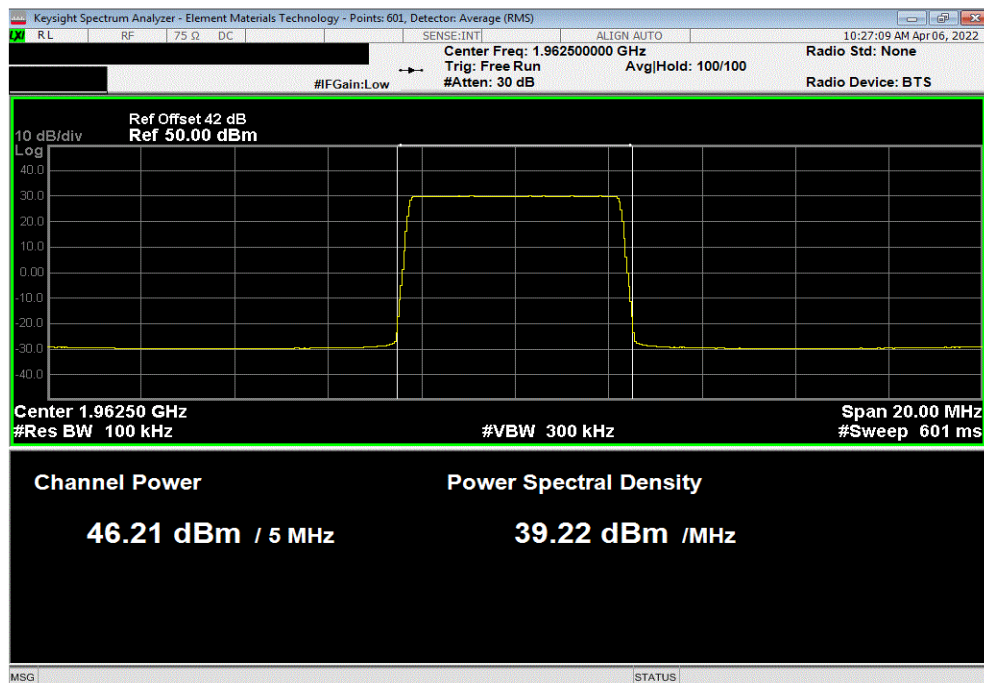


TbTx 2021.12.14.1 XMt 2022.02.07.0

AWS Multicarrier Multiband, Port 1, Test Case 1: AWS Band NR5 (3 Carriers), PCS Band NR5 (Single Carrier), 256-QAM Modulation, AWS Carrier 3, 2197.5 MHz						
Initial Value	Duty Cycle	Single Port	Two Port	Four Port		
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW		
44.353	0	44.4	47.4	50.4		



AWS Multicarrier Multiband, Port 1, Test Case 1: AWS Band NR5 (3 Carriers), PCS Band NR5 (Single Carrier), 256-QAM Modulation, PCS Single Carrier, 1962.5 MHz						
Initial Value	Duty Cycle	Single Port	Two Port	Four Port		
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW		
46.214	0	46.2	49.2	52.2		

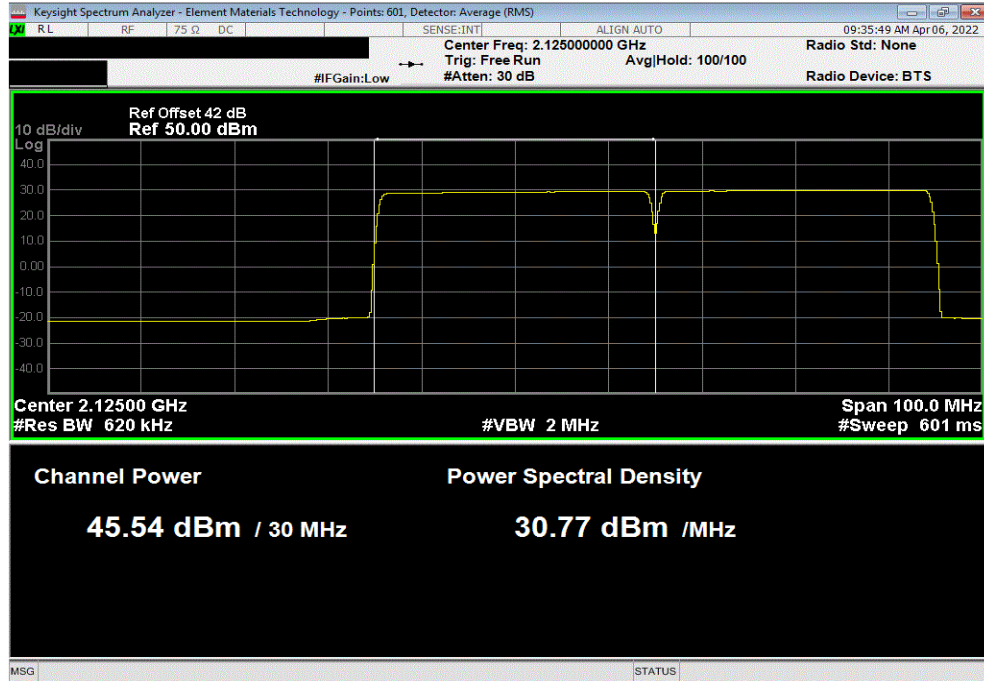


OUTPUT POWER

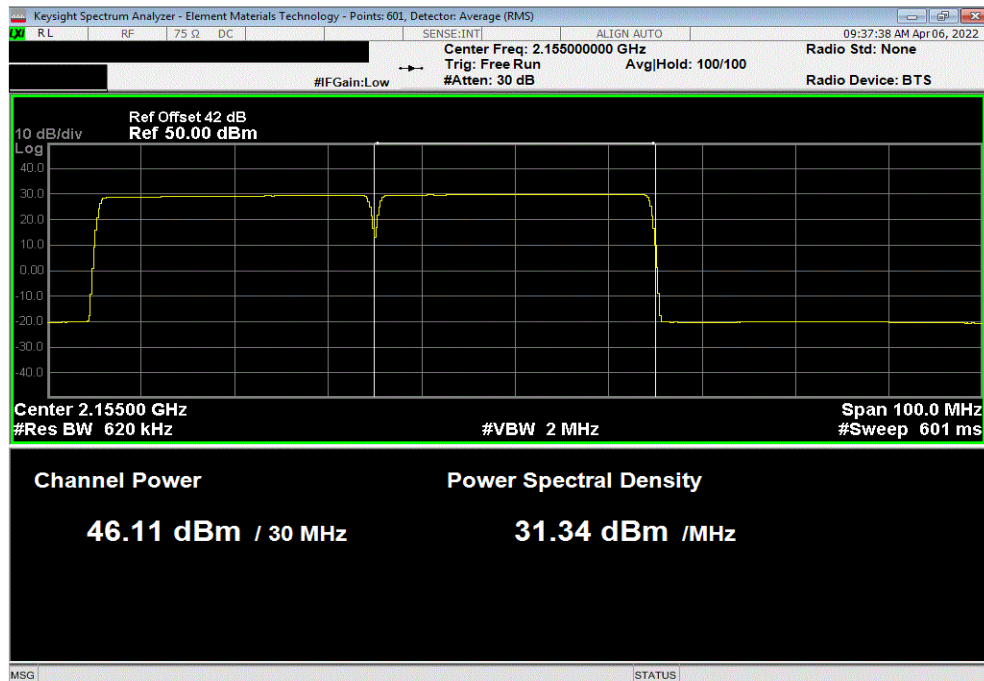


TbTx 2021.12.14.1 XMR 2022.02.07.0

AWS Multicarrier Multiband, Port 1, Test Case 2: AWS Band NR30 (2 Carriers), PCS Band NR30 (Single Carrier), 256-QAM Modulation, AWS Carrier 1, 2125 MHz						
Initial Value	Duty Cycle	Single Port	Two Port	Four Port		
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW		
45.54	0	45.5	48.5	51.5		



AWS Multicarrier Multiband, Port 1, Test Case 2: AWS Band NR30 (2 Carriers), PCS Band NR30 (Single Carrier), 256-QAM Modulation, AWS Carrier 2, 2155 MHz						
Initial Value	Duty Cycle	Single Port	Two Port	Four Port		
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW		
46.115	0	46.1	49.1	52.1		

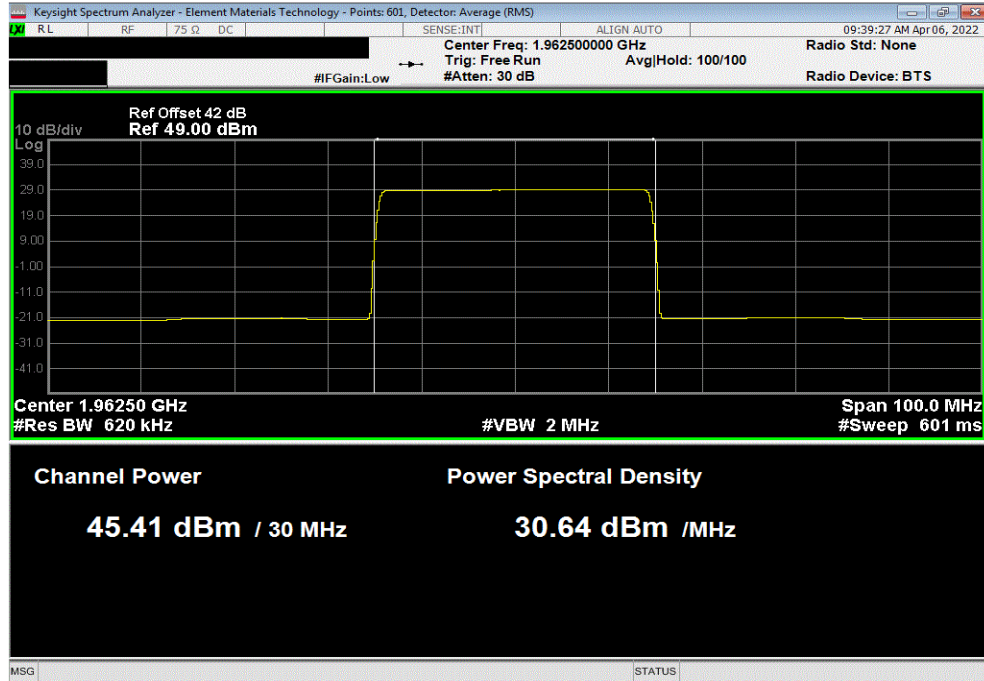


OUTPUT POWER

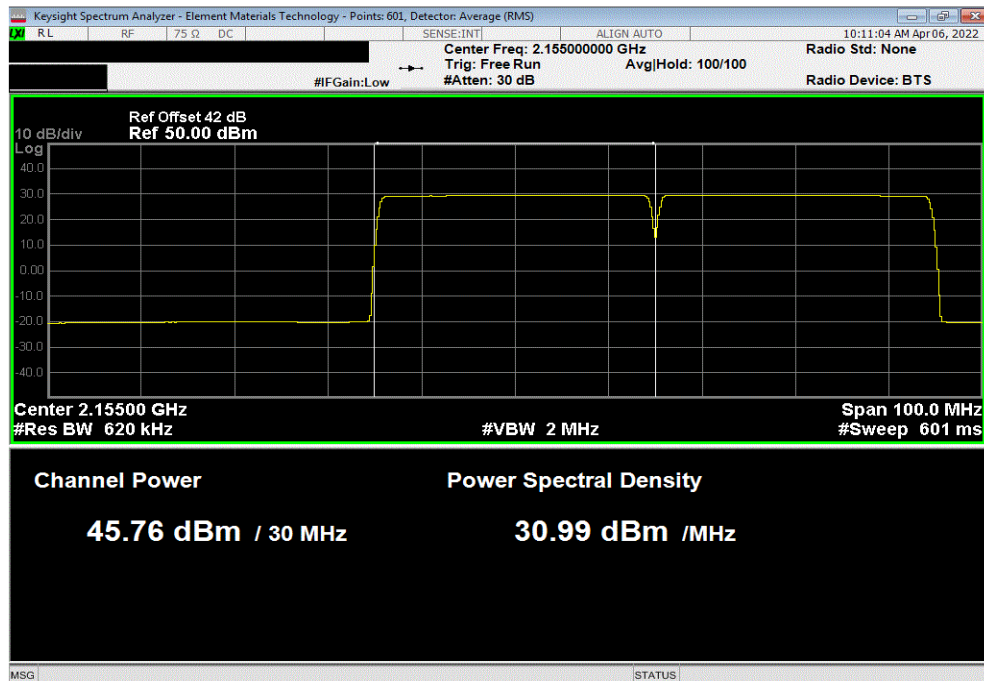


TbTx 2021.12.14.1 XMt 2022.02.07.0

AWS Multicarrier Multiband, Port 1, Test Case 2: AWS Band NR30 (2 Carriers), PCS Band NR30 (Single Carrier), 256-QAM Modulation, PCS Single Carrier, 1962.5 MHz.						
	Initial Value	Duty Cycle	Single Port	Two Port	Four Port	
	dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	45.409	0	45.4	48.4	51.4	



AWS Multicarrier Multiband, Port 1, Test Case 3: AWS Band NR30 (2 Carriers), PCS Band NR30 (Single Carrier), 256-QAM Modulation, AWS Carrier 1, 2155 MHz						
	Initial Value	Duty Cycle	Single Port	Two Port	Four Port	
	dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW	
	45.765	0	45.8	48.8	51.8	

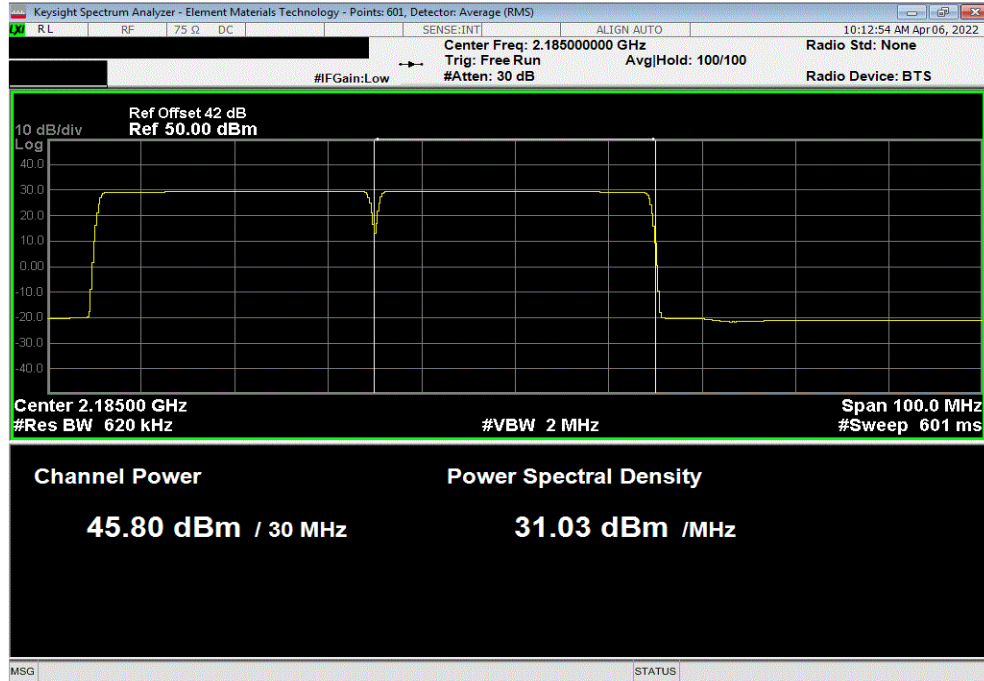


OUTPUT POWER

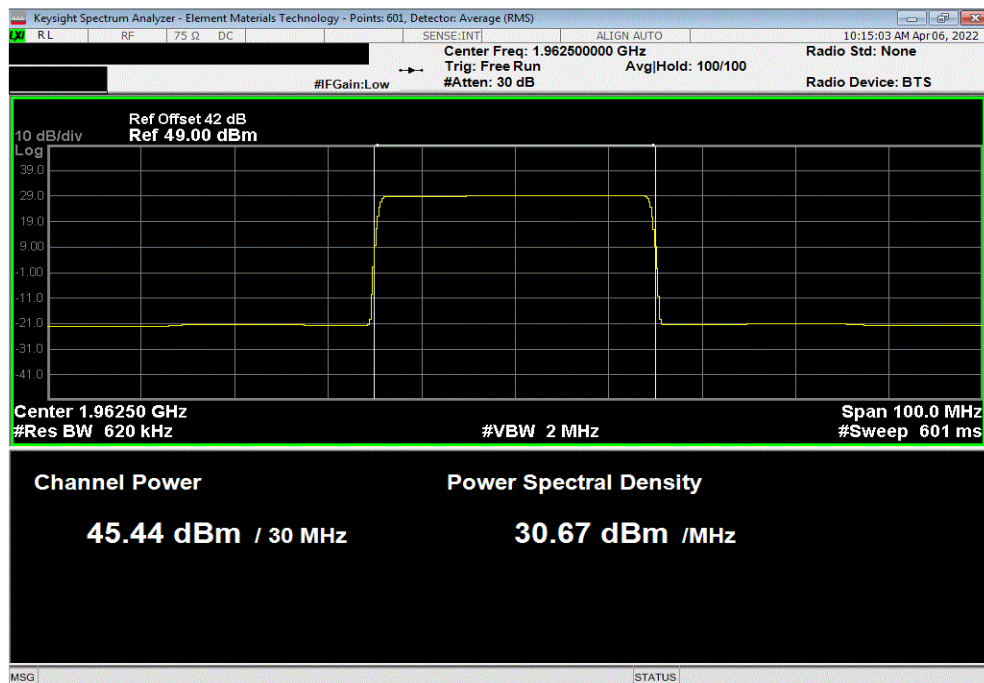


TbTx 2021.12.14.1 XMR 2022.02.07.0

AWS Multicarrier Multiband, Port 1, Test Case 3: AWS Band NR30 (2 Carriers), PCS Band NR30 (Single Carrier), 256-QAM Modulation, AWS Carrier 2, 2185 MHz						
Initial Value	Duty Cycle	Single Port	Two Port	Four Port		
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW		
45.8	0	45.8	48.8	51.8		



AWS Multicarrier Multiband, Port 1, Test Case 3: AWS Band NR30 (2 Carriers), PCS Band NR30 (Single Carrier), 256-QAM Modulation, PCS Single Carrier, 1962.5 MHz..						
Initial Value	Duty Cycle	Single Port	Two Port	Four Port		
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW		
45.442	0	45.4	48.4	51.4		



OUTPUT POWER



TWtX 2021.12.14.1 XMtX 2022.02.07.0

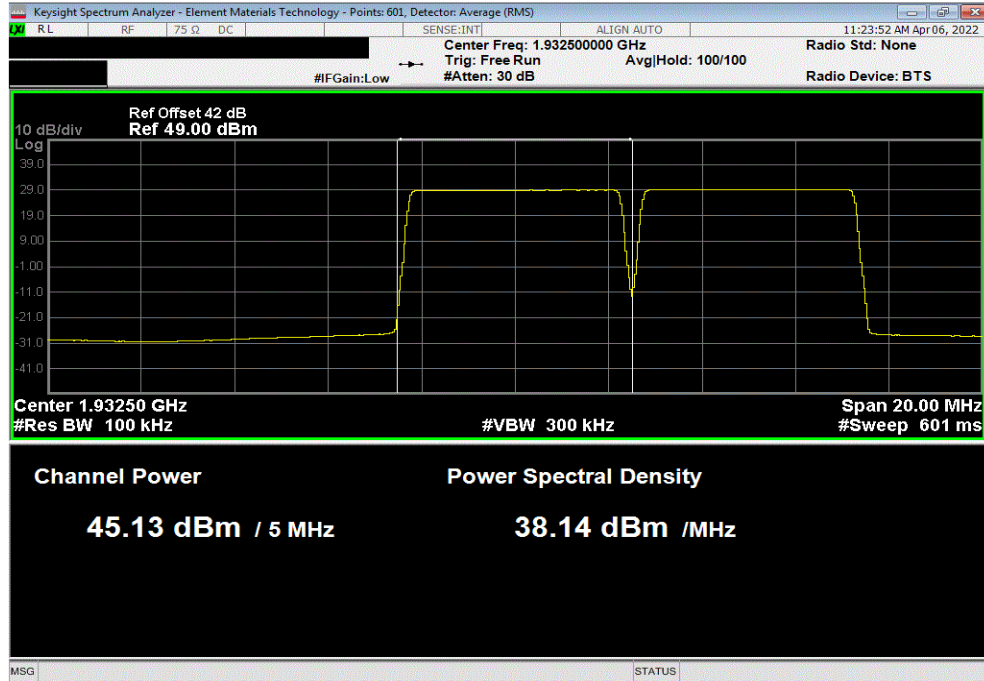
EUT: AHFII Remote Radio Head		Work Order: NOKI0038	
Serial Number: YK214000035		Date: 6-Apr-22	
Customer: Nokia of America Corporation		Temperature: 22.6 °C	
Attendees: Mitchell Hill		Humidity: 23.7% RH	
Project: None		Barometric Pres.: 1026 mbar	
Tested by: Mark Baytan		Power: 54 VDC	Job Site: TX09
TEST SPECIFICATIONS			
FCC 24E:2022		Test Method	
RSS-133 Issue 6:2013+A1:2018		ANSI C63.26:2015	
FCC 27:2022		RSS-133 Issue 6:2013+A1:2018	
RSS-139 Issue 3:2015		ANSI C63.26:2015	
RSS-170 Issue 3:2015		RSS-139 Issue 3:2015	
COMMENTS			
All measurement path losses were accounted for in the reference level offset including any attenuators, filters and DC blocks.). The carriers were operated at maximum power (40W/PCS carrier and 40W/AWS carrier) with at total port power of 120 watts (80W for PCS band carriers + 40W for AWS band carrier). The total output power for multiport (2x2 MIMO and 4x4 MIMO) operation was determined based upon ANSI 63.26 clauses 6.4.3.1 and 6.4.3.2.4 (10 log Nout). The total output power for two port operation is single port power + 3dB [i.e. 10log(2)]. The total output power for four port operation is single port power + 6dB [i.e. 10log(4)].			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	2	Signature	
		Initial Value dBm/Carrier BW	Duty Cycle Factor (dB)
		Single Port dBm/Carrier BW	Two Port dBm/Carrier BW
		Four Port dBm/Carrier BW	
Multicarrier Multiband			
Port 1			
Test Case: PCS Band NR5 (2 Carriers), AWS Band NR5 (Single Carrier)			
QPSK Modulation			
	PCS Carrier 1, 1932.5 MHz	45.133	0
	PCS Carrier 2, 1937.5 MHz	45.375	0
	AWS Single Carrier, 2197.5 MHz	45.721	0
		45.1	48.1
		45.4	48.4
		45.7	48.7
		51.1	51.4
			51.7

OUTPUT POWER

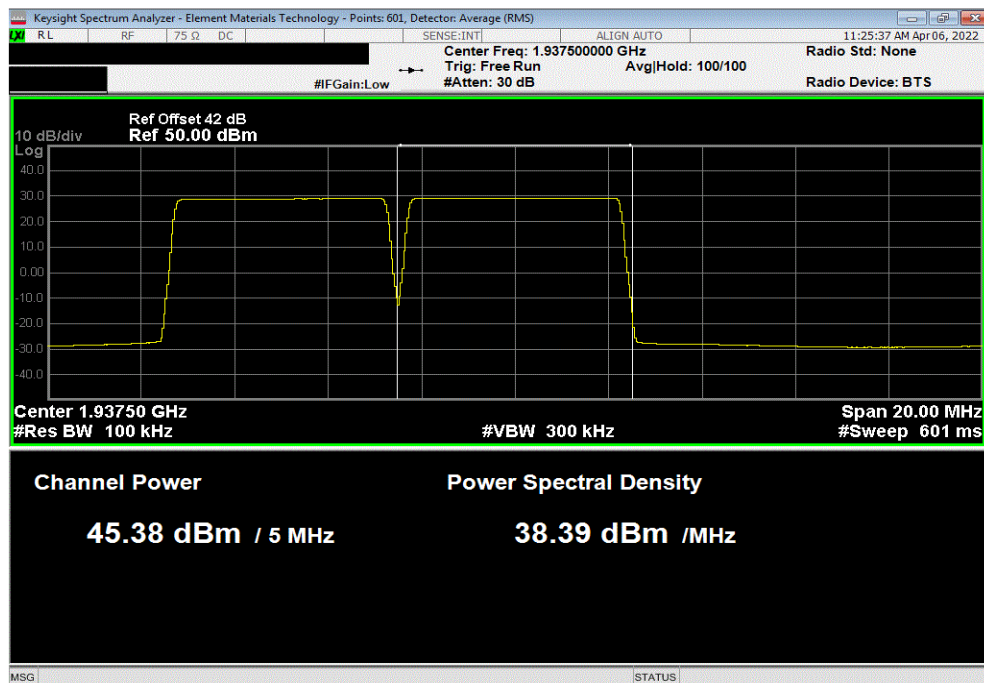


TbTx 2021.12.14.1 XMt 2022.02.07.0

Multicarrier Multiband, Port 1, Test Case: PCS Band NR5 (2 Carriers), AWS Band NR5 (Single Carrier), QPSK Modulation, PCS Carrier 1, 1932.5 MHz						
Initial Value	Duty Cycle	Single Port	Two Port	Four Port		
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW		
45.133	0	45.1	48.1	51.1		



Multicarrier Multiband, Port 1, Test Case: PCS Band NR5 (2 Carriers), AWS Band NR5 (Single Carrier), QPSK Modulation, PCS Carrier 2, 1937.5 MHz						
Initial Value	Duty Cycle	Single Port	Two Port	Four Port		
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW		
45.375	0	45.4	48.4	51.4		

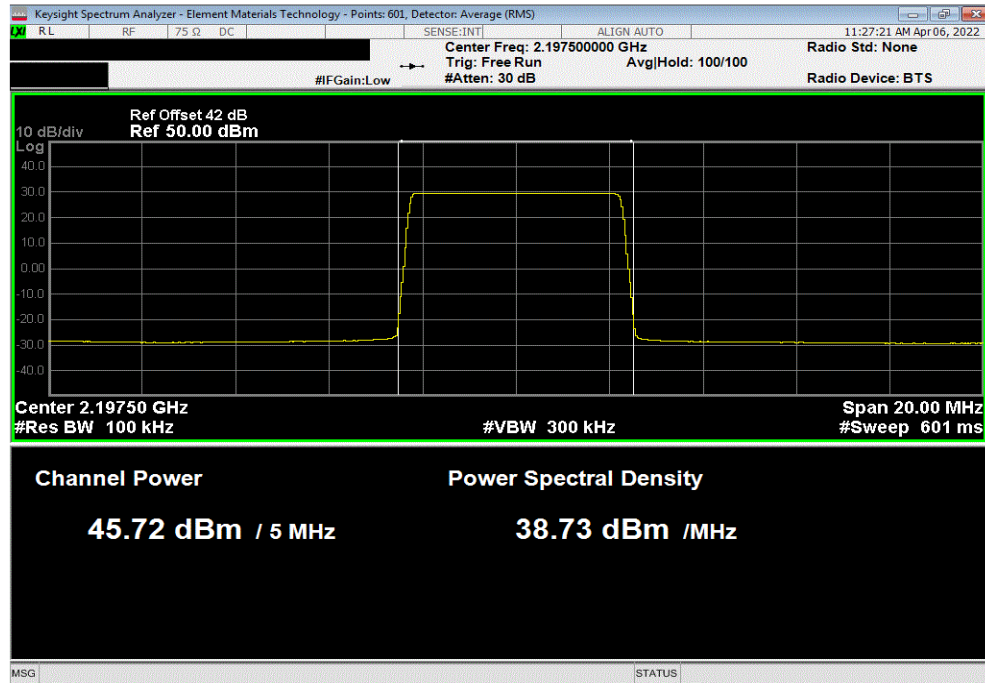


OUTPUT POWER



TbTx 2021.12.14.1 XMt 2022.02.07.0

Multicarrier Multiband, Port 1, Test Case: PCS Band NR5 (2 Carriers), AWS Band NR5 (Single Carrier), QPSK Modulation, AWS Single Carrier, 2197.5 MHz						
Initial Value	Duty Cycle	Single Port	Two Port	Four Port		
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	dBm/Carrier BW	dBm/Carrier BW		
45.721	0	45.7	48.7	51.7		



OUTPUT POWER - LOWERED POWER

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	Keysight	N5182B	TEV	2021-04-27	2024-04-27
Block - DC	Fairview Microwave	SD3379	AMM	2021-09-14	2022-09-14
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2022-01-17	2023-01-17

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 measurement. This method uses trace averaging across 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 to the measured power to compute the average power during the actual transmission times.

RF conducted emissions testing was performed on one port. The AHFII antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in this certification report) and port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i and 6.4. The total average transmit power of all antenna ports was determined per ANSI C63.26-2015 paragraph 6.4.3.1.

Compliance check for EIRP Limit of 3280W/MHz or 65.16dBm/MHz:

As shown in the EIRP calculation tables in the "PSD and EIRP Calculations" report sections, the highest AHFII antenna port 1 PSD level that will not cause the calculated EIRP to exceed the EIRP limit is 41.2dBm/MHz for Band n25 and 40.9dBm/MHz for Band n66. The maximum carrier power levels were reduced by changing the carrier power parameters in the configuration file for the base station to comply with the EIRP limit.

Compliance check for EIRP Limit of 1640W/MHz or 62.15dBm/MHz:

As shown in the EIRP calculation tables in the "PSD and EIRP Calculations" report sections, the highest AHFII antenna port 1 PSD level that will not cause the calculated EIRP to exceed the EIRP limit is 38.2dBm/MHz for Band n25 and 37.9dBm/MHz for Band n66. The maximum carrier power levels were reduced by changing the carrier power parameters in the configuration file for the base station to comply with the EIRP limit.

OUTPUT POWER - LOWERED POWER



Thru 2022.03.14.0 XMI 2022.02.07.0

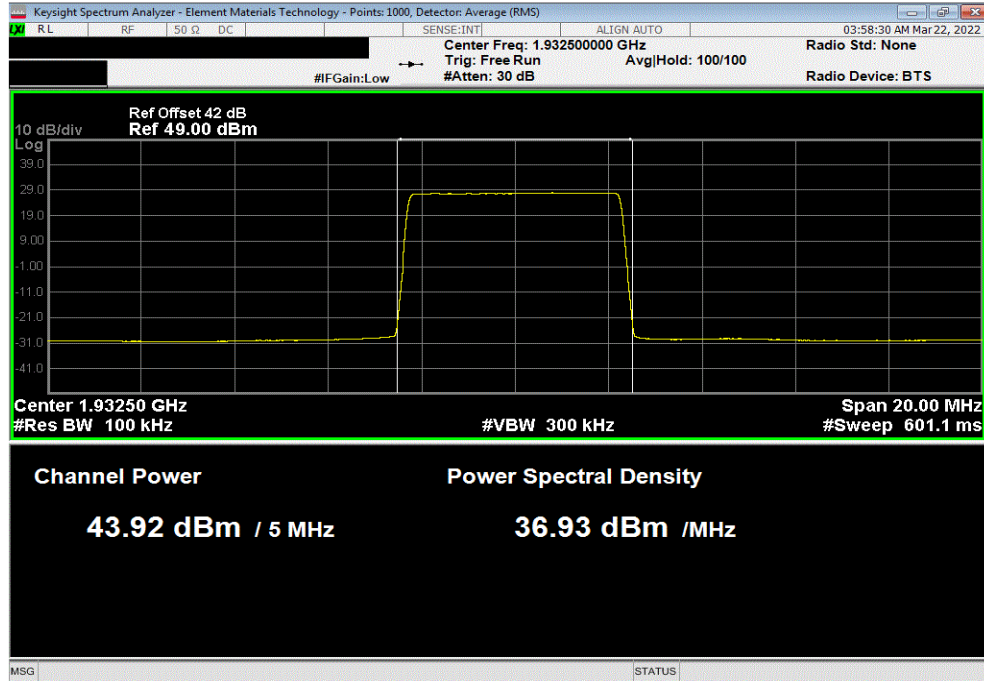
EUT: AHFII Remote Radio Head		Work Order: NOKI0038	
Serial Number: YK214000035		Date: 22-Mar-22	
Customer: Nokia of America Corporation		Temperature: 22.7 °C	
Attendees: Mitchell Hill		Humidity: 24.3% RH	
Project: None		Barometric Pres.: 1023 mbar	
Tested by: Brandon Hobbs	Power: 54 VDC	Job Site: TX06	
TEST SPECIFICATIONS		Test Method	
FCC 24E:2022		ANSI C63.26:2015	
RSS-133 Issue 6:2013+A1:2018		RSS-133 Issue 6:2013+A1:2018	
COMMENTS			
All measurement path losses were accounted for in the reference level offset including any attenuators, filters and DC blocks. The Band n25 NR5, NR10, NR15 and NR20 carrier power levels were reduced to demonstrate compliance with EIRP limits shown elsewhere in this report.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	2	Signature 	
		Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)
		Value (dBm)	Limit (dBm)
			Results
Port 1, Band n25, 1930 MHz - 1995 MHz, 5G NR			
256-QAM Modulation			
Single Carrier			
5 MHz Bandwidth, Low Limit			
	Low Channel, 1932.5 MHz	43.917	0
	5 MHz Bandwidth, High Limit		
	Low Channel, 1932.5 MHz	46.909	0
16-QAM Modulation			
Single Carrier			
10 MHz Bandwidth, Low Limit			
	Mid Channel, 1962.5 MHz	46.441	0
15 MHz Bandwidth, Low Limit			
	Mid Channel, 1962.5 MHz	47.345	0
20 MHz Bandwidth, Low Limit			
	Mid Channel, 1962.5 MHz	48.493	0

OUTPUT POWER - LOWERED POWER

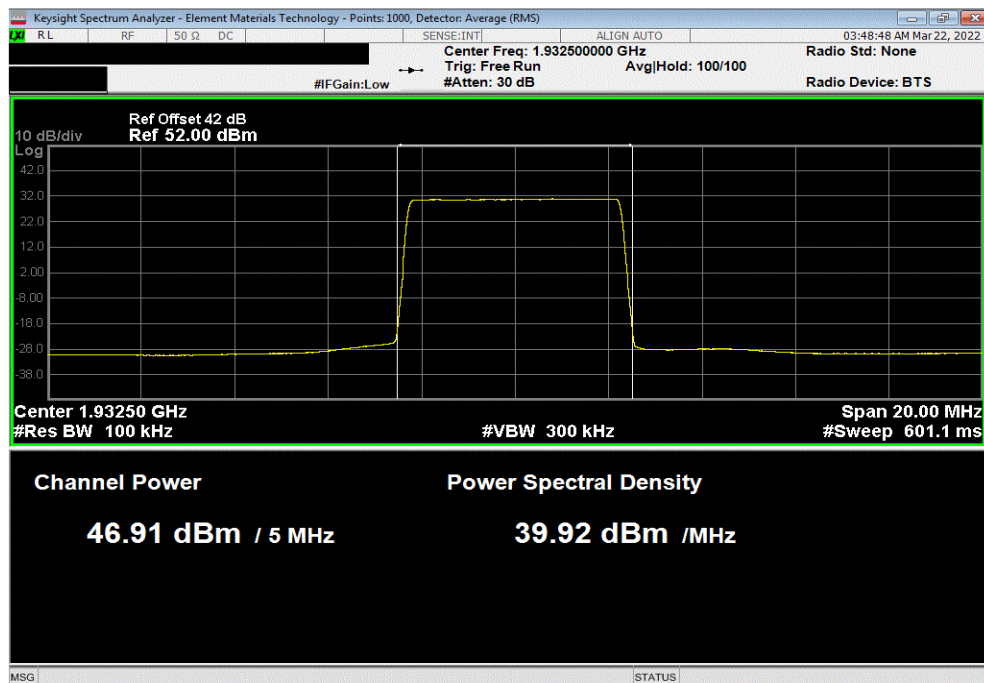


TbTx 2022.03.14.0 XMt 2022.02.07.0

Port 1, Band n25, 1930 MHz - 1995 MHz, 5G NR, 256-QAM Modulation, Single Carrier, 5 MHz Bandwidth, Low Limit , Low Channel, 1932.5 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Value (dBm)	Limit (dBm)	Results	
	43.917	0	43.9	N/A	N/A	



Port 1, Band n25, 1930 MHz - 1995 MHz, 5G NR, 256-QAM Modulation, Single Carrier, 5 MHz Bandwidth, High Limit, Low Channel, 1932.5 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Value (dBm)	Limit (dBm)	Results	
	46.909	0	46.9	N/A	N/A	

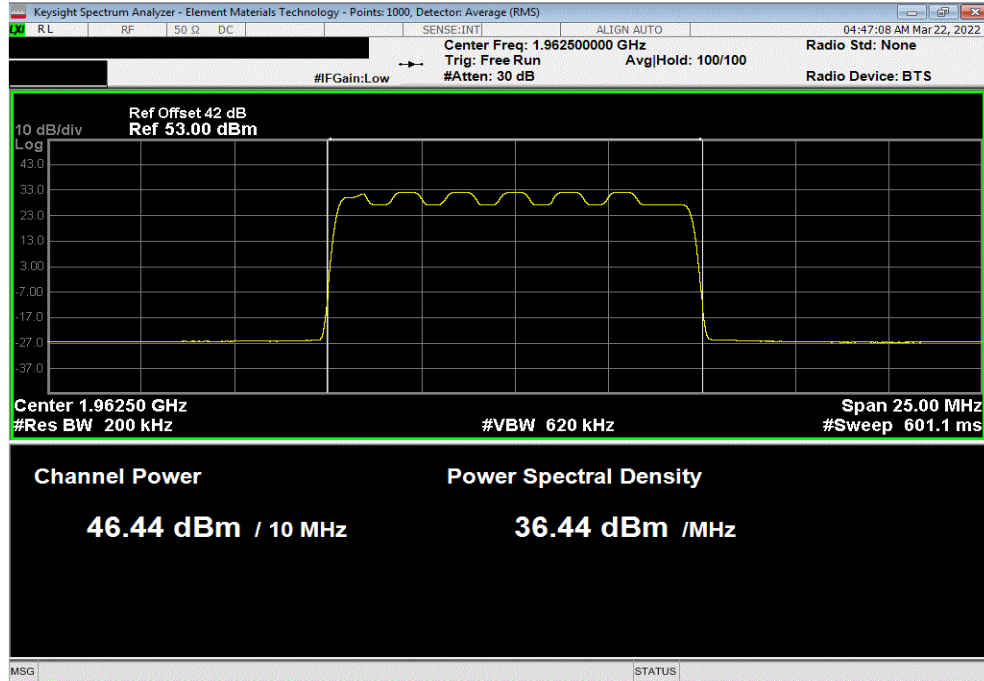


OUTPUT POWER - LOWERED POWER

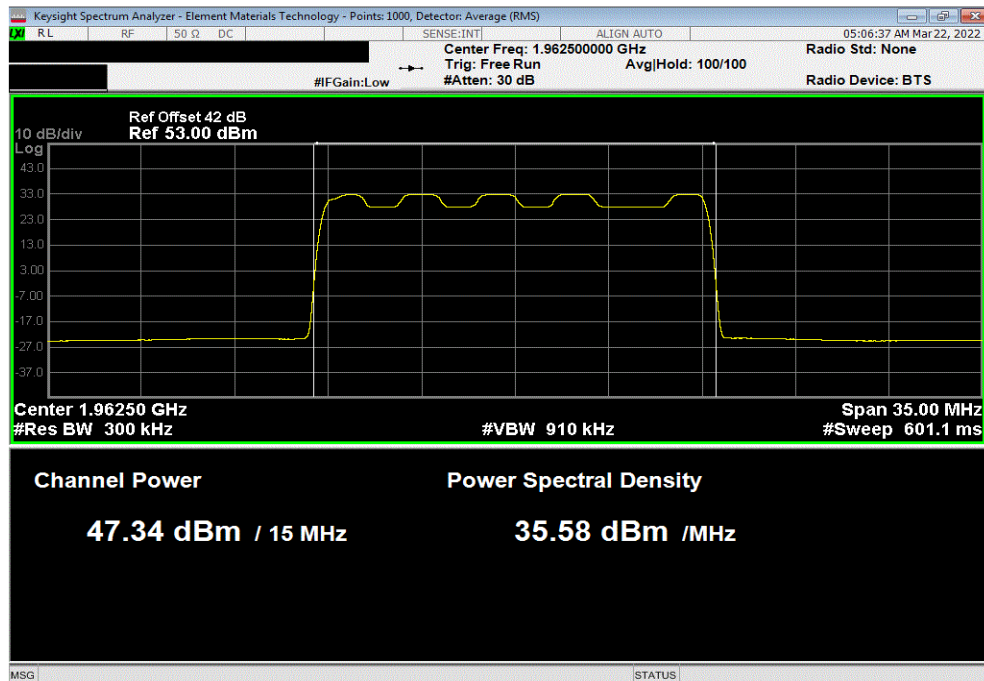


TbTx 2022.03.14.0 XMt 2022.02.07.0

Port 1, Band n25, 1930 MHz - 1995 MHz, 5G NR, 16-QAM Modulation, Single Carrier, 10 MHz Bandwidth, Low Limit, Mid Channel, 1962.5 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Value (dBm)	Limit (dBm)	Results	
	46.441	0	46.4	N/A	N/A	



Port 1, Band n25, 1930 MHz - 1995 MHz, 5G NR, 16-QAM Modulation, Single Carrier, 15 MHz Bandwidth, Low Limit, Mid Channel, 1962.5 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Value (dBm)	Limit (dBm)	Results	
	47.345	0	47.3	N/A	N/A	

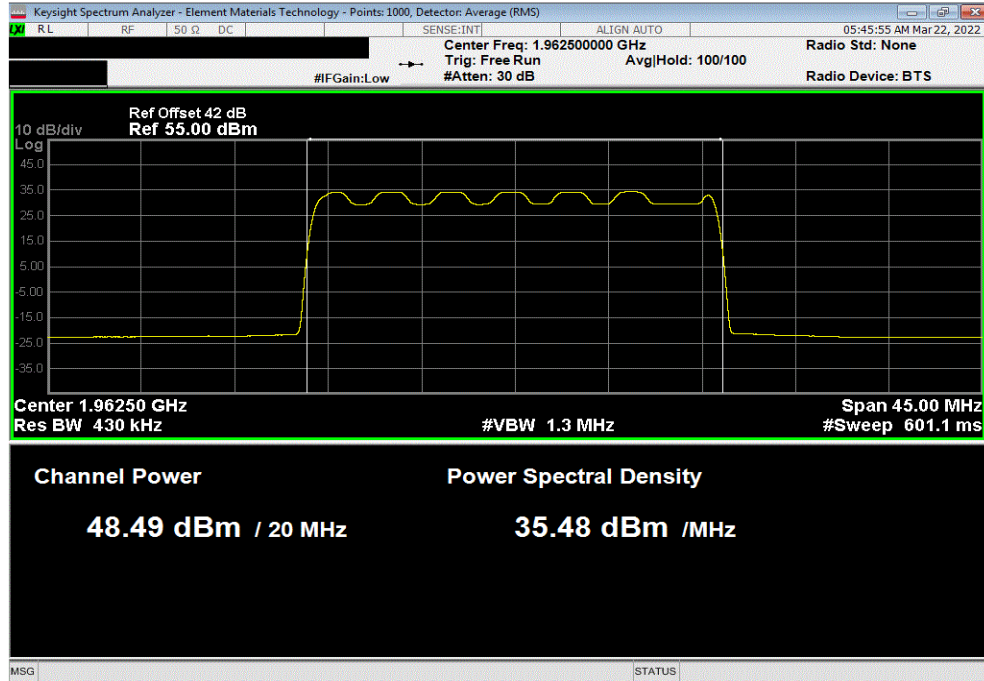


OUTPUT POWER - LOWERED POWER



TbTx 2022.03.14.0 XMt 2022.02.07.0

Port 1, Band n25, 1930 MHz - 1995 MHz, 5G NR, 16-QAM Modulation, Single Carrier, 20 MHz Bandwidth, Low Limit, Mid Channel, 1962.5 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	48.493	0		48.5	N/A	N/A



N/A	N/A
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OUTPUT POWER - LOWERED POWER



THxv 2022.03.14.0 XMI 2022.02.07.0

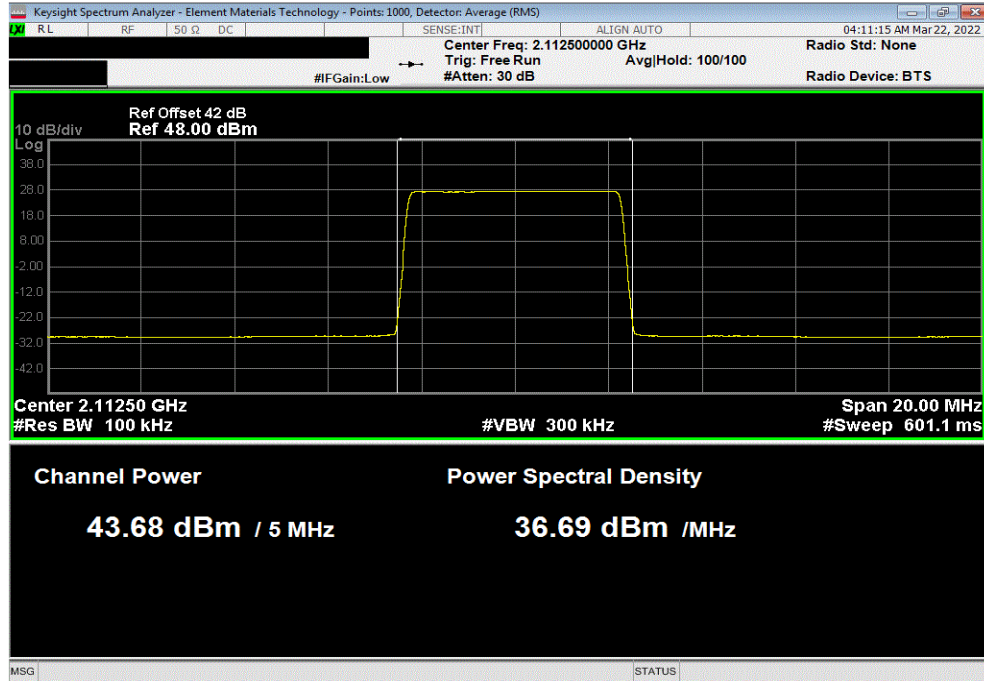
EUT: AHFII Remote Radio Head		Work Order: NOKI0038	
Serial Number: YK214000035		Date: 22-Mar-22	
Customer: Nokia of America Corporation		Temperature: 22 °C	
Attendees: Mitchell Hill		Humidity: 42.5% RH	
Project: None		Barometric Pres.: 1018 mbar	
Tested by: Brandon Hobbs	Power: 54 VDC	Job Site: TX09	
TEST SPECIFICATIONS		Test Method	
FCC 27:2022		ANSI C63.26:2015	
RSS-139 Issue 3:2015, RSS-170 Issue 3:2015		RSS-139 Issue 3:2015, RSS-170 Issue 3:2015	
COMMENTS			
All measurement path losses were accounted for in the reference level offset including any attenuators, filters and DC blocks. The Band n66 NR5, NR10, NR15 and NR20 carrier power levels were reduced to demonstrate compliance with EIRP limits shown elsewhere in this report.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	2	Signature	
		Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)
		Value (dBm)	Limit (dBm)
			Results
Port 1, Band n66, 2110 MHz - 2200 MHz, 5G NR			
QPSK Modulation			
Single Carrier			
5 MHz Bandwidth, Low Limit			
	Low Channel, 2112.5 MHz	43.677	0
	5 MHz Bandwidth, High Limit		
	Low Channel, 2112.5 MHz	46.754	0
16-QAM Modulation			
Single Carrier			
10 MHz Bandwidth, Low Limit			
	Mid Channel, 2155.0 MHz	45.800	0
15 MHz Bandwidth, Low Limit			
	Mid Channel, 2155.0 MHz	46.930	0
20 MHz Bandwidth, Low Limit			
	Mid Channel, 2155.0 MHz	47.980	0

OUTPUT POWER - LOWERED POWER

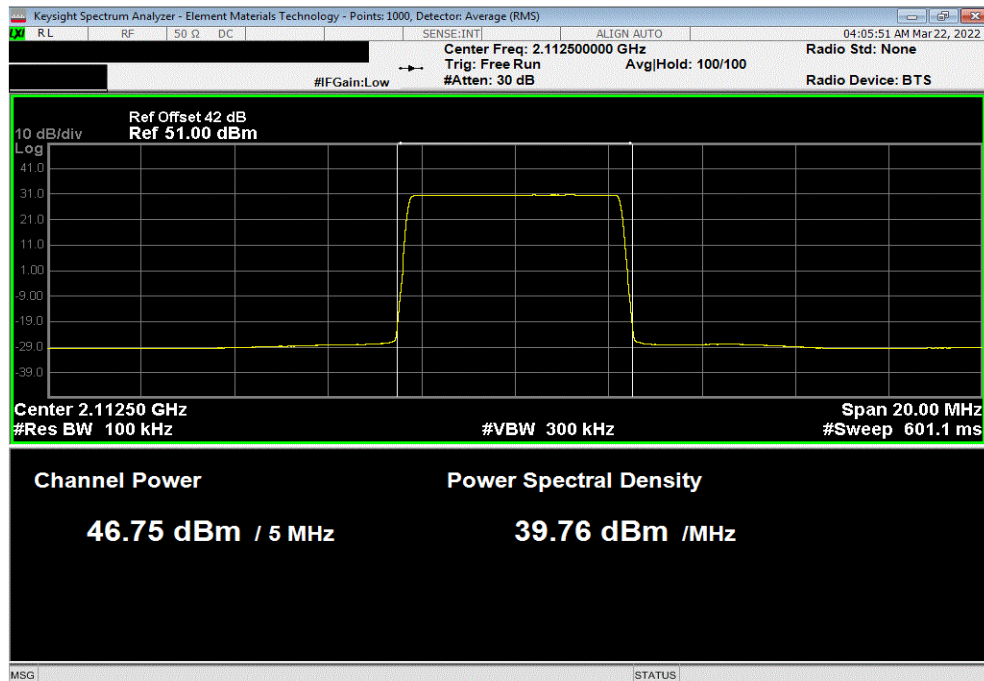


TbTx 2022.03.14.0 XMt 2022.02.07.0

Port 1, Band n66, 2110 MHz - 2200 MHz, 5G NR, QPSK Modulation, Single Carrier, 5 MHz Bandwidth, Low Limit , Low Channel, 2112.5 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Value (dBm)	Limit (dBm)	Results	
	43.677	0	43.7	N/A	N/A	



Port 1, Band n66, 2110 MHz - 2200 MHz, 5G NR, QPSK Modulation, Single Carrier, 5 MHz Bandwidth, High Limit, Low Channel, 2112.5 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Value (dBm)	Limit (dBm)	Results	
	46.754	0	46.8	N/A	N/A	

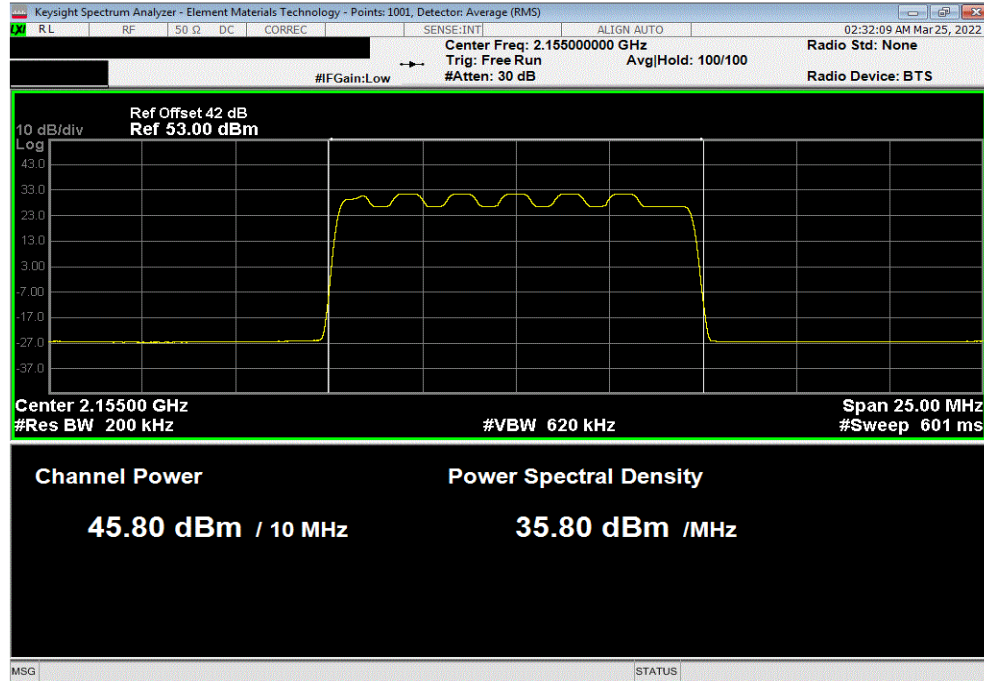


OUTPUT POWER - LOWERED POWER

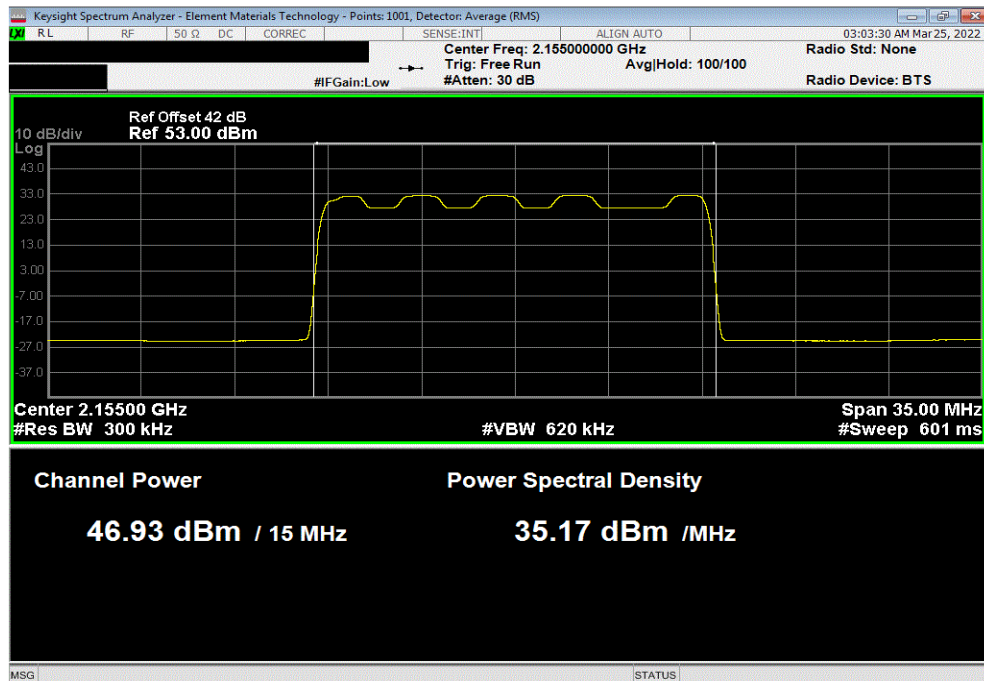


TbTx 2022.03.14.0 XMt 2022.02.07.0

Port 1, Band n66, 2110 MHz - 2200 MHz, 5G NR, 16-QAM Modulation, Single Carrier, 10 MHz Bandwidth, Low Limit, Mid Channel, 2155.0 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Value (dBm)	Limit (dBm)	Results	
	45.8	0	45.8	N/A	N/A	



Port 1, Band n66, 2110 MHz - 2200 MHz, 5G NR, 16-QAM Modulation, Single Carrier, 15 MHz Bandwidth, Low Limit, Mid Channel, 2155.0 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Value (dBm)	Limit (dBm)	Results	
	46.93	0	47	N/A	N/A	

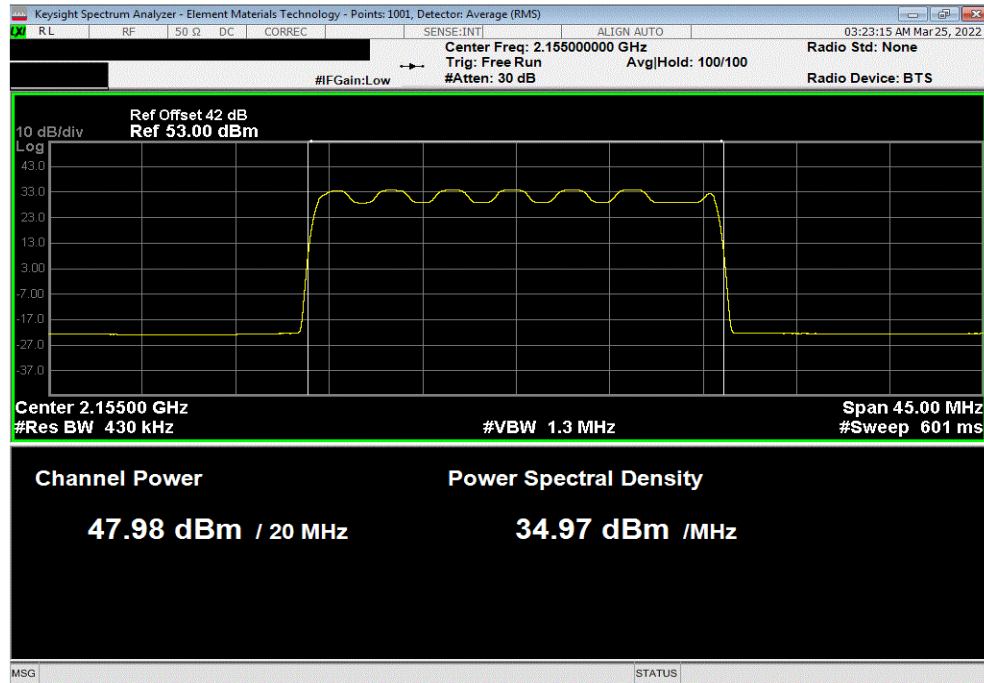


OUTPUT POWER - LOWERED POWER



TbTx 2022.03.14.0 XMt 2022.02.07.0

Port 1, Band n66, 2110 MHz - 2200 MHz, 5G NR, 16-QAM Modulation, Single Carrier, 20 MHz Bandwidth, Low Limit, Mid Channel, 2155.0 MHz						
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results
	47.98	0		48	N/A	N/A



OUTPUT POWER - ALL PORTS

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	Keysight	N5182B	TEV	2021-04-27	2024-04-27
Block - DC	Fairview Microwave	SD3379	AMM	2021-09-14	2022-09-14
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFQ	2022-01-17	2023-01-17

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

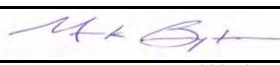
RF conducted emissions testing was performed only on one port. The testing was performed on the same version of hardware (AHFII) as the original certification test. The AHFII antenna ports are essentially electrically identical (the RF power variation between antenna ports is small as shown in this certification testing) and antenna port 1 was selected to perform the testing under this effort as allowed by ANSI C63.26-2015 paragraphs 5.2.5.3, 5.7.2i and 6.4.

The total average transmit power of all antenna ports was determined per ANSI C63.26-2105 paragraph 6.4.3.1.

OUTPUT POWER - ALL PORTS



TSTx 2021.12.14.1 XMR 2022.02.07.0

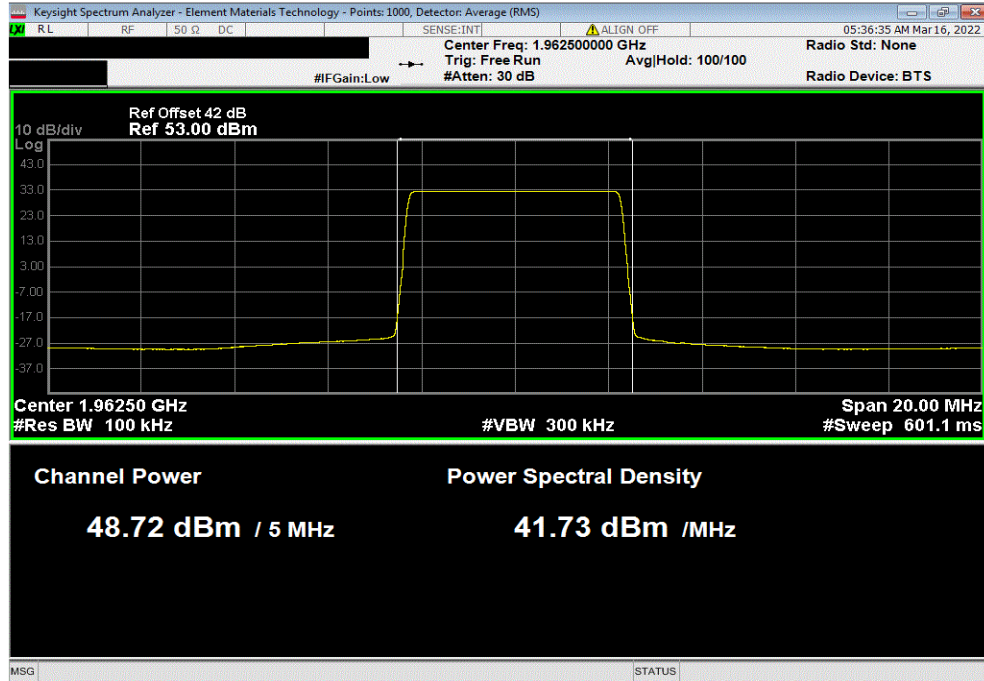
EUT: AHFII Remote Radio Head				Work Order: NOKI0038			
Serial Number: YK214000035				Date: 16-Mar-22			
Customer: Nokia of America Corporation				Temperature: 22.6 °C			
Attendees: Mitchell Hill				Humidity: 23.7% RH			
Project: None				Barometric Pres.: 1026 mbar			
Tested by: Mark Baytan		Power: 54 VDC		Job Site: TX09			
TEST SPECIFICATIONS				Test Method			
FCC 24E:2022		ANSI C63.26:2015					
RSS-133 Issue 6:2013+A1:2018		RSS-133 Issue 6:2013+A1:2018					
COMMENTS							
All measurement path losses were accounted for in the reference level offset including any attenuators, filters and DC blocks. Band n25 and n66 carriers are enabled at maximum power (PCS:80 watts/carrier, AWS:40 watts/carrier).							
DEVIATIONS FROM TEST STANDARD							
None							
Configuration #	2	Signature 					
		Initial Value	Duty Cycle	Single Port	All Ports	Limit	Results
		dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	(dBm)		
Band n25, 1930 MHz - 1995 MHz, 5G NR (Power: 80W)							
Port 1							
5 MHz Bandwidth							
256-QAM Modulation							
Mid Channel, 1962.5 MHz							
		48.717	0	48.7	N/A	Inside Tolerance	N/A
Port 2							
5 MHz Bandwidth							
256-QAM Modulation							
Mid Channel, 1962.5 MHz							
		48.877	0	48.9	N/A	Inside Tolerance	N/A
Port 3							
5 MHz Bandwidth							
256-QAM Modulation							
Mid Channel, 1962.5 MHz							
		48.832	0	48.8	N/A	Inside Tolerance	N/A
Port 4							
5 MHz Bandwidth							
256-QAM Modulation							
Mid Channel, 1962.5 MHz							
		48.57	0	48.6	N/A	Inside Tolerance	N/A
Band n66, 2110 MHz - 2200 MHz, 5G NR (Power: 40W)							
Port 1							
5 MHz Bandwidth							
256-QAM Modulation							
Mid Channel, 2155 MHz							
		45.797	0	45.8	N/A	Inside Tolerance	N/A
Port 2							
5 MHz Bandwidth							
256-QAM Modulation							
Mid Channel, 2155 MHz							
		45.77	0	45.8	N/A	Inside Tolerance	N/A
Port 3							
5 MHz Bandwidth							
256-QAM Modulation							
Mid Channel, 2155 MHz							
		45.876	0	45.9	N/A	Inside Tolerance	N/A
Port 4							
5 MHz Bandwidth							
256-QAM Modulation							
Mid Channel, 2155 MHz							
		45.929	0	45.9	N/A	Inside Tolerance	N/A
Band n25, 1930 MHz - 1995 MHz, 5G NR (Power: 80W) and Band n66, 2110 MHz - 2200 MHz, 5G NR (Power: 40W)							
All Ports							
5 MHz Bandwidth							
256-QAM Modulation							
Mid Channel							
		N/A	0	N/A	56.6	N/A	N/A

OUTPUT POWER - ALL PORTS

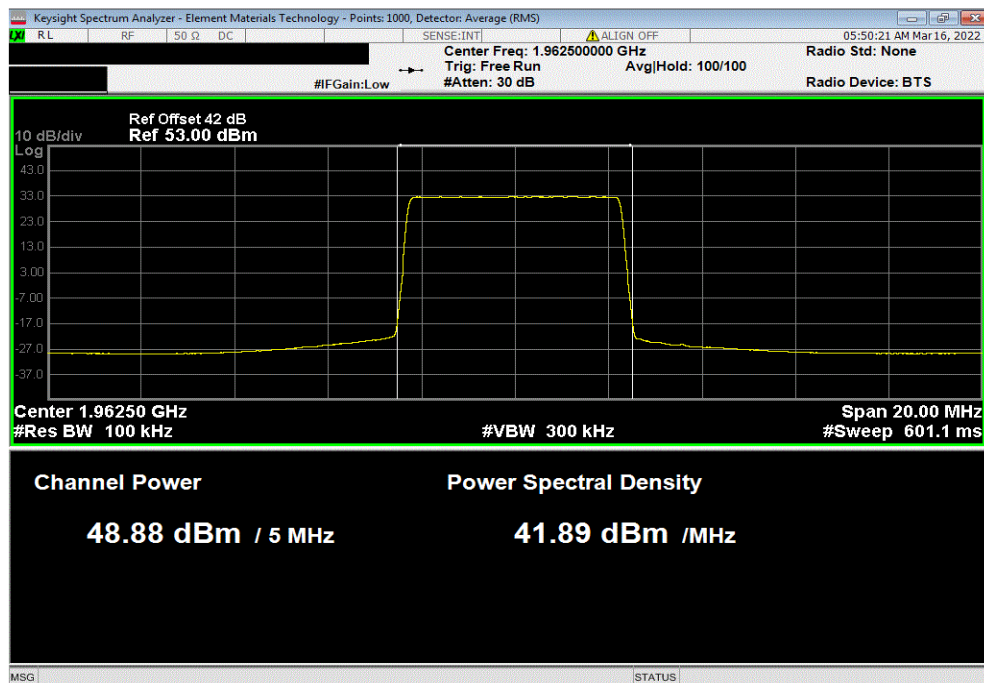


TbTx 2021.12.14.1 XMt 2022.02.07.0

Band n25, 1930 MHz - 1995 MHz, 5G NR (Power: 80W), Port 1, 5 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 1962.5 MHz						
Initial Value	Duty Cycle	Single Port	All Ports	Limit	Results	
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	(dBm)			
48.717	0	48.7	N/A	Inside Tolerance	N/A	



Band n25, 1930 MHz - 1995 MHz, 5G NR (Power: 80W), Port 2, 5 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 1962.5 MHz						
Initial Value	Duty Cycle	Single Port	All Ports	Limit	Results	
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	(dBm)			
48.877	0	48.9	N/A	Inside Tolerance	N/A	

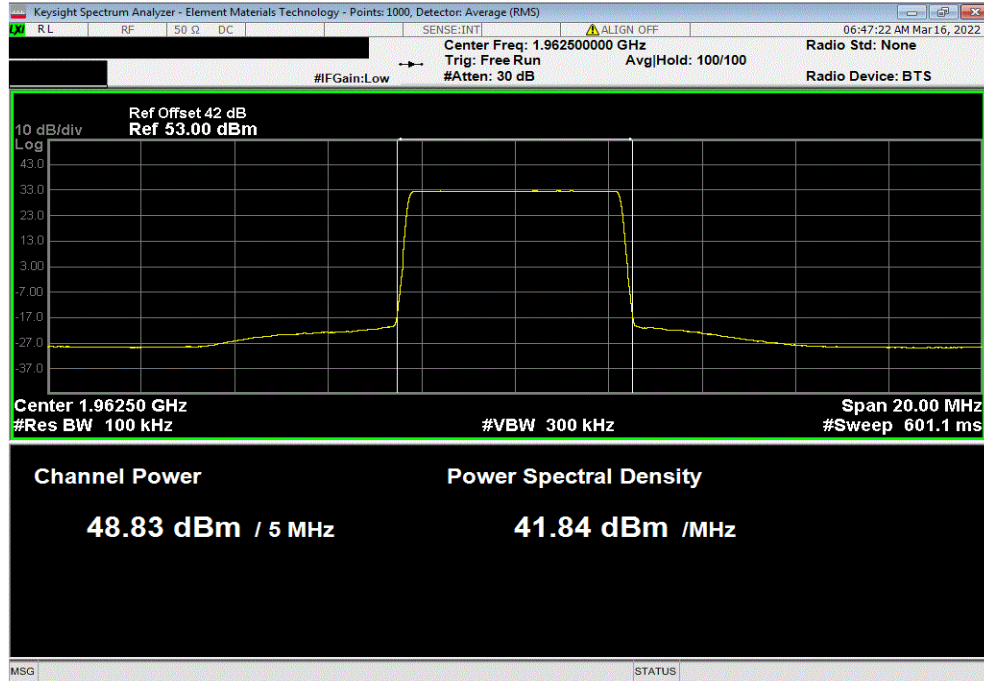


OUTPUT POWER - ALL PORTS

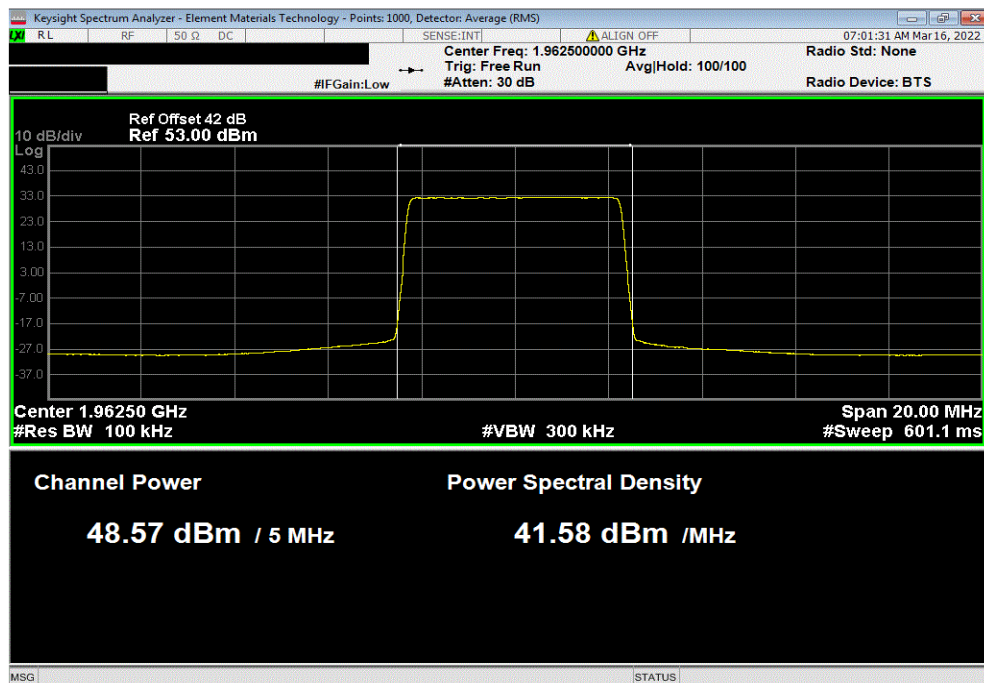


TbTx 2021.12.14.1 XMt 2022.02.07.0

Band n25, 1930 MHz - 1995 MHz, 5G NR (Power: 80W), Port 3, 5 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 1962.5 MHz						
Initial Value	Duty Cycle	Single Port	All Ports	Limit	Results	
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	(dBm)			
48.832	0	48.8	N/A	Inside Tolerance	N/A	



Band n25, 1930 MHz - 1995 MHz, 5G NR (Power: 80W), Port 4, 5 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 1962.5 MHz						
Initial Value	Duty Cycle	Single Port	All Ports	Limit	Results	
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	(dBm)			
48.57	0	48.6	N/A	Inside Tolerance	N/A	

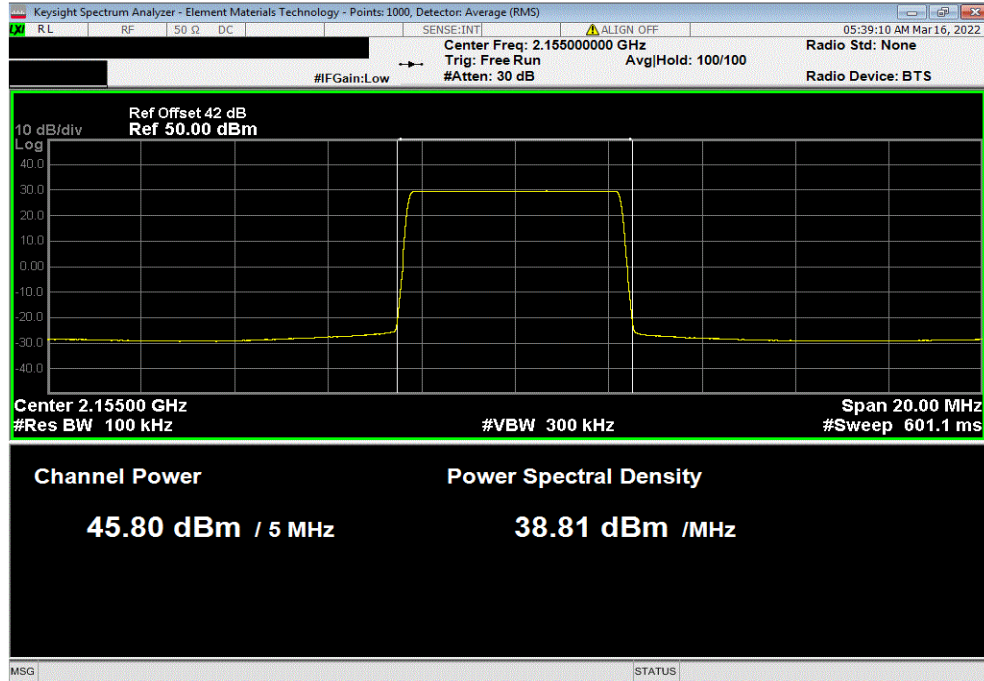


OUTPUT POWER - ALL PORTS

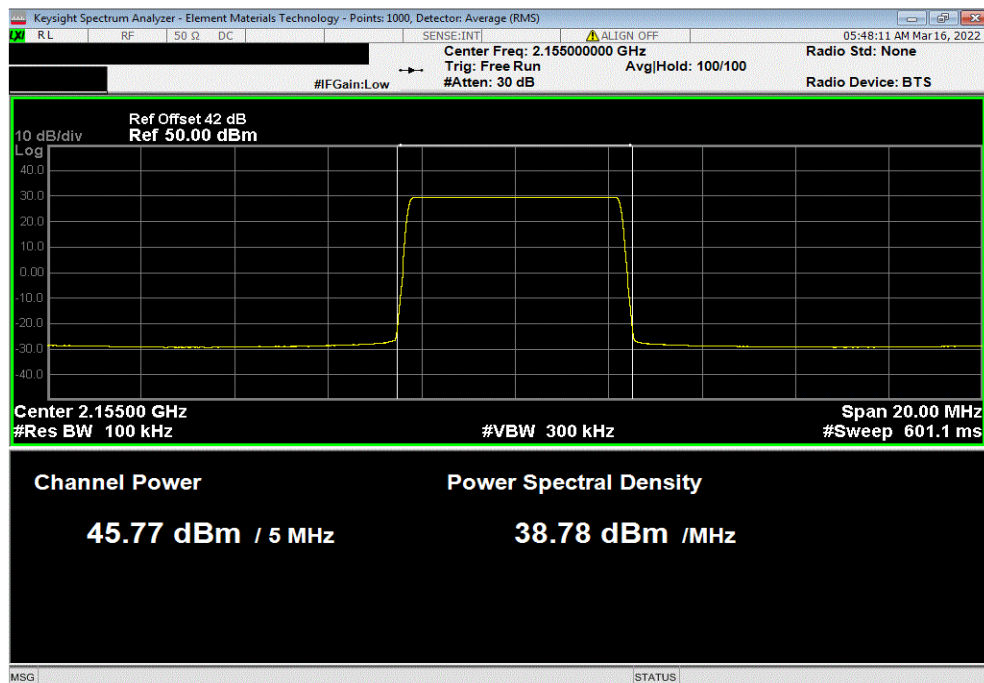


TbTx 2021.12.14.1 XMt 2022.02.07.0

Band n66, 2110 MHz - 2200 MHz, 5G NR (Power: 40W), Port 1, 5 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 2155 MHz						
Initial Value	Duty Cycle	Single Port	All Ports	Limit	Results	
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	(dBm)			
45.797	0	45.8	N/A	Inside Tolerance	N/A	



Band n66, 2110 MHz - 2200 MHz, 5G NR (Power: 40W), Port 2, 5 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 2155 MHz						
Initial Value	Duty Cycle	Single Port	All Ports	Limit	Results	
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	(dBm)			
45.77	0	45.8	N/A	Inside Tolerance	N/A	

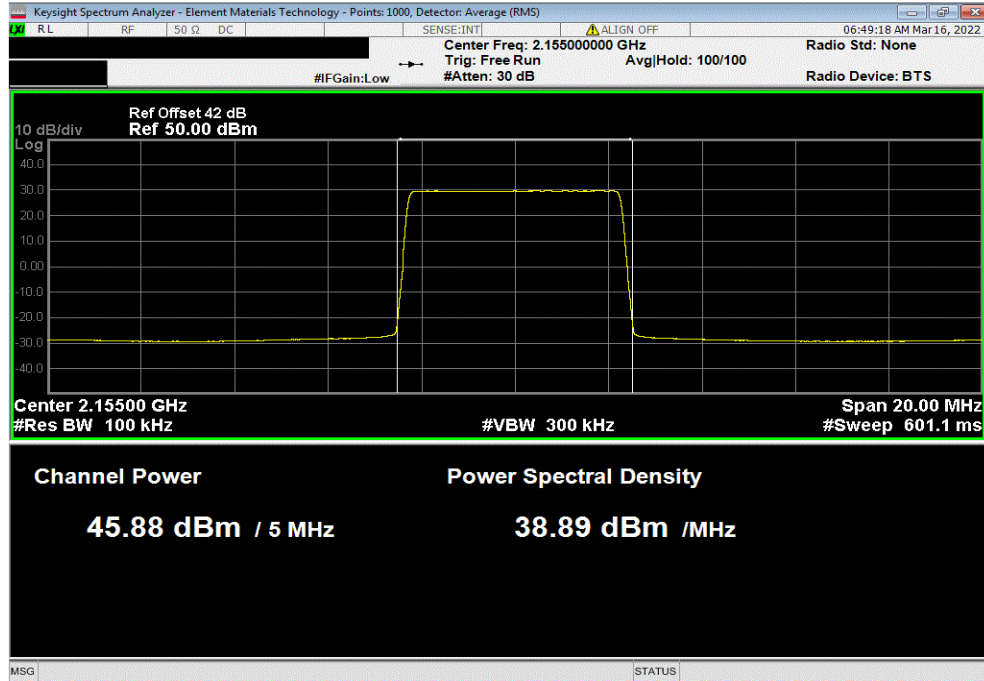


OUTPUT POWER - ALL PORTS

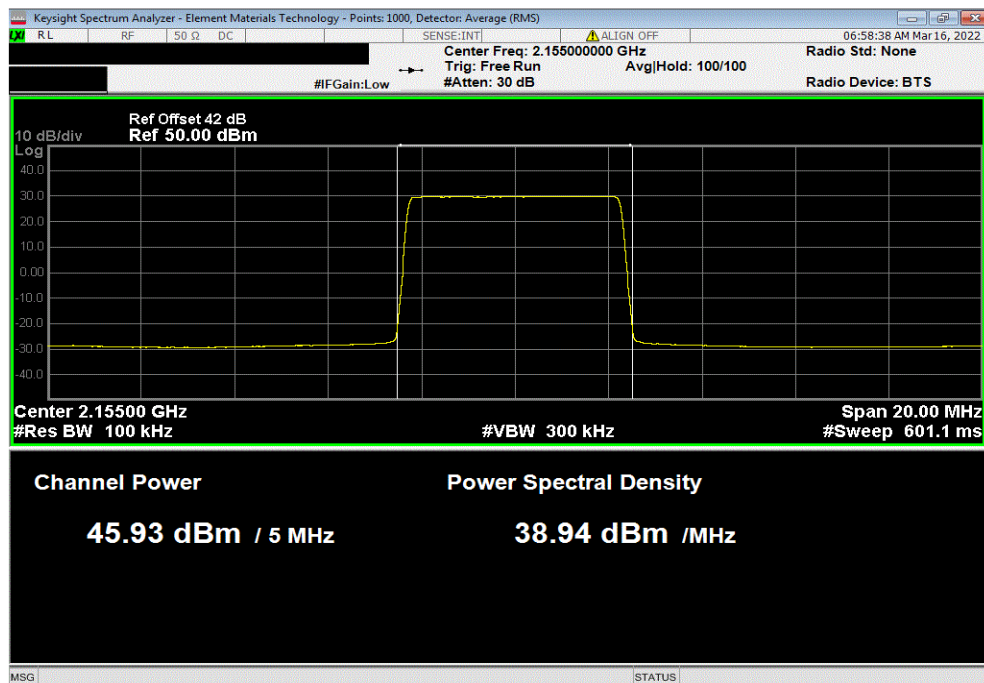


TbTx 2021.12.14.1 XMt 2022.02.07.0

Band n66, 2110 MHz - 2200 MHz, 5G NR (Power: 40W), Port 3, 5 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 2155 MHz						
Initial Value	Duty Cycle	Single Port	All Ports	Limit	Results	
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	(dBm)			
45.876	0	45.9	N/A	Inside Tolerance	N/A	



Band n66, 2110 MHz - 2200 MHz, 5G NR (Power: 40W), Port 4, 5 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 2155 MHz						
Initial Value	Duty Cycle	Single Port	All Ports	Limit	Results	
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW	(dBm)			
45.929	0	45.9	N/A	Inside Tolerance	N/A	



OUTPUT POWER - ALL PORTS



TbTx 2021.12.14.1 XMI 2022.02.07.0

Band n25, 1930 MHz - 1995 MHz, 5G NR (Power: 80W) and Band n66, 2110 MHz - 2200 MHz, 5G NR (Power: 40W), All Ports, 5 MHz Bandwidth, 256-QAM Modulation							
	Initial Value dBm/Carrier BW	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	All Ports (dBm)	Limit	Results	
	N/A	0	N/A	N/A	N/A	N/A	

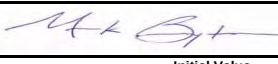
BAND N25 - AVERAGE PORT SUMMING					
	PORT 1	PORT 2	PORT 3	PORT 4	SUM TOTAL
INITIAL VALUE (dBm)	48.7	48.9	48.8	48.6	N/A
INITIAL VALUE (Watts)	74.1	77.6	75.9	72.4	300
TOTAL VALUE (dBm)	N/A	N/A	N/A	N/A	54.8

BAND N66 - AVERAGE PORT SUMMING					
	PORT 1	PORT 2	PORT 3	PORT 4	SUM TOTAL
INITIAL VALUE (dBm)	45.8	45.8	45.9	45.9	N/A
INITIAL VALUE (Watts)	74.1	77.6	75.9	72.4	154
TOTAL VALUE (dBm)	N/A	N/A	N/A	N/A	51.9

BAND N25 & N66 - AVERAGE PORT SUMMING			
	BAND N25	BAND N66	SUM TOTAL
INITIAL VALUE (dBm)	54.8	51.9	N/A
INITIAL VALUE (Watts)	300	154	454
TOTAL VALUE (dBm)	N/A	N/A	56.6

OUTPUT POWER (ALL PORTS)



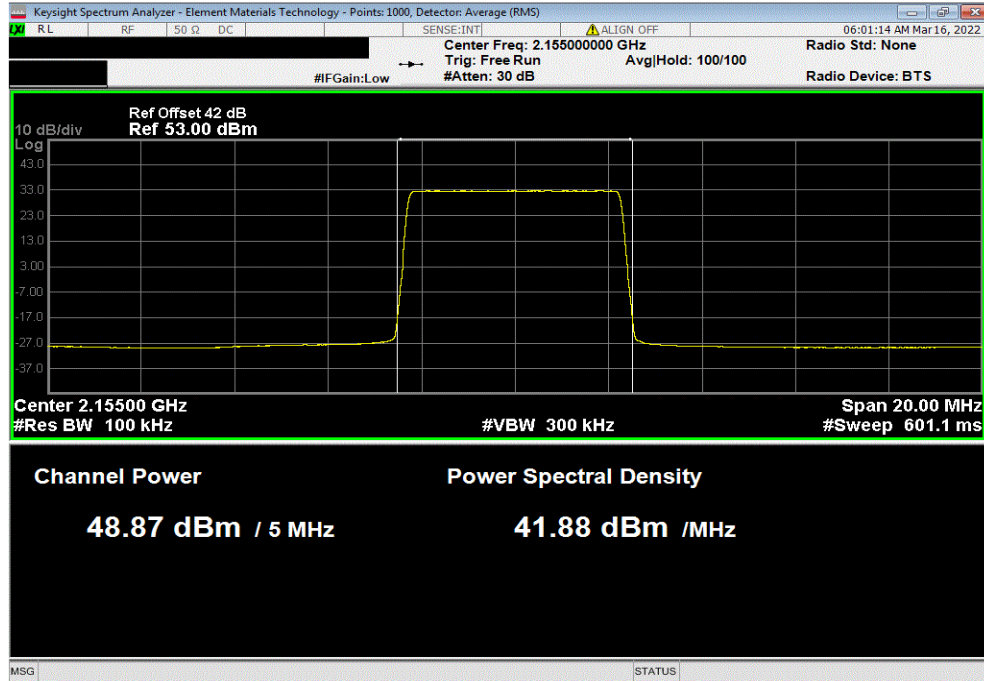
EUT: AHFII Remote Radio Head				Work Order: NOKI0038				
Serial Number: YK214000035				Date: 16-Mar-22				
Customer: Nokia of America Corporation				Temperature: 22.6 °C				
Attendees: Mitchell Hill				Humidity: 23.7% RH				
Project: None				Barometric Pres.: 1026 mbar				
Tested by: Mark Baytan			Power: 54 VDC	Job Site: TX09				
TEST SPECIFICATIONS				Test Method				
FCC 24E:2022				ANSI C63.26:2015				
RSS-139 Issue 3:2015				RSS-139 Issue 3:2015				
RSS-170 Issue 3:2015				RSS-170 Issue 3:2015				
COMMENTS								
All measurement path losses were accounted for in the reference level offset including any attenuators, filters and DC blocks. Band n25 and n66 carriers are enabled at maximum power (AWS:80 watts/carrier, PCS:40 watts/carrier).								
DEVIATIONS FROM TEST STANDARD								
None								
Configuration #	2	Signature 						
				Initial Value dBm/Carrier BW	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	Limit	Results
Band n66, 2110 MHz - 2200 MHz, 5G NR (Power: 80W)								
Port 1								
5 MHz Bandwidth								
256-QAM Modulation								
Mid Channel, 2155 MHz								
				48.872	0	48.9	Inside Tolerance	N/A
Port 2								
5 MHz Bandwidth								
256-QAM Modulation								
Mid Channel, 2155 MHz								
				48.745	0	48.7	Inside Tolerance	N/A
Port 3								
5 MHz Bandwidth								
256-QAM Modulation								
Mid Channel, 2155 MHz								
				48.705	0	48.7	Inside Tolerance	N/A
Port 4								
5 MHz Bandwidth								
256-QAM Modulation								
Mid Channel, 2155 MHz								
				48.83	0	48.8	Inside Tolerance	N/A
Band n25, 1930 MHz - 1995 MHz, 5G NR (Power: 40W)								
Port 1								
5 MHz Bandwidth								
256-QAM Modulation								
Mid Channel, 1962.5 MHz								
				45.809	0	45.8	Inside Tolerance	N/A
Port 2								
5 MHz Bandwidth								
256-QAM Modulation								
Mid Channel, 1962.5 MHz								
				45.876	0	45.9	Inside Tolerance	N/A
Port 3								
5 MHz Bandwidth								
256-QAM Modulation								
Mid Channel, 1962.5 MHz								
				45.744	0	45.7	Inside Tolerance	N/A
Port 4								
5 MHz Bandwidth								
256-QAM Modulation								
Mid Channel, 1962.5 MHz								
				45.529	0	45.5	Inside Tolerance	N/A
Band n66, 2110 MHz - 2200 MHz, 5G NR (Power: 80W) and Band n25, 1930 MHz - 1995 MHz, 5G NR (Power: 40W)								
All Ports								
5 MHz Bandwidth								
256-QAM Modulation								
Mid Channel								
				N/A	0	N/A	N/A	N/A

OUTPUT POWER (ALL PORTS)

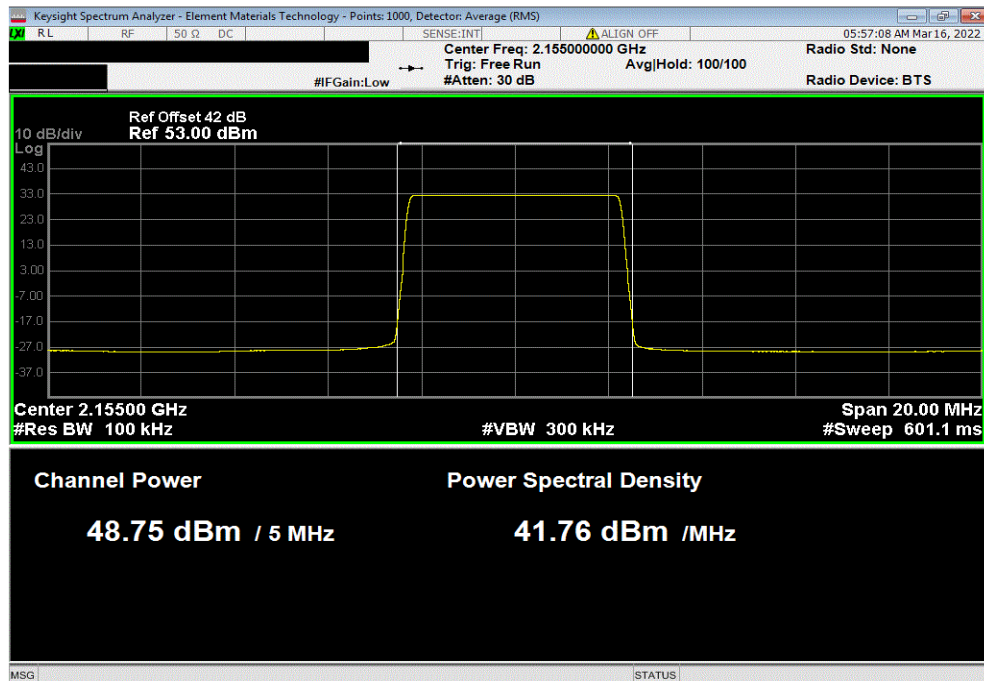


TbTx 2021.12.14.1 XMt 2022.02.07.0

Band n66, 2110 MHz - 2200 MHz, 5G NR (Power: 80W), Port 1, 5 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 2155 MHz						
Initial Value	Duty Cycle	Single Port		Limit	Results	
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW				
48.872	0	48.9		Inside Tolerance	N/A	



Band n66, 2110 MHz - 2200 MHz, 5G NR (Power: 80W), Port 2, 5 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 2155 MHz						
Initial Value	Duty Cycle	Single Port		Limit	Results	
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW				
48.745	0	48.7		Inside Tolerance	N/A	

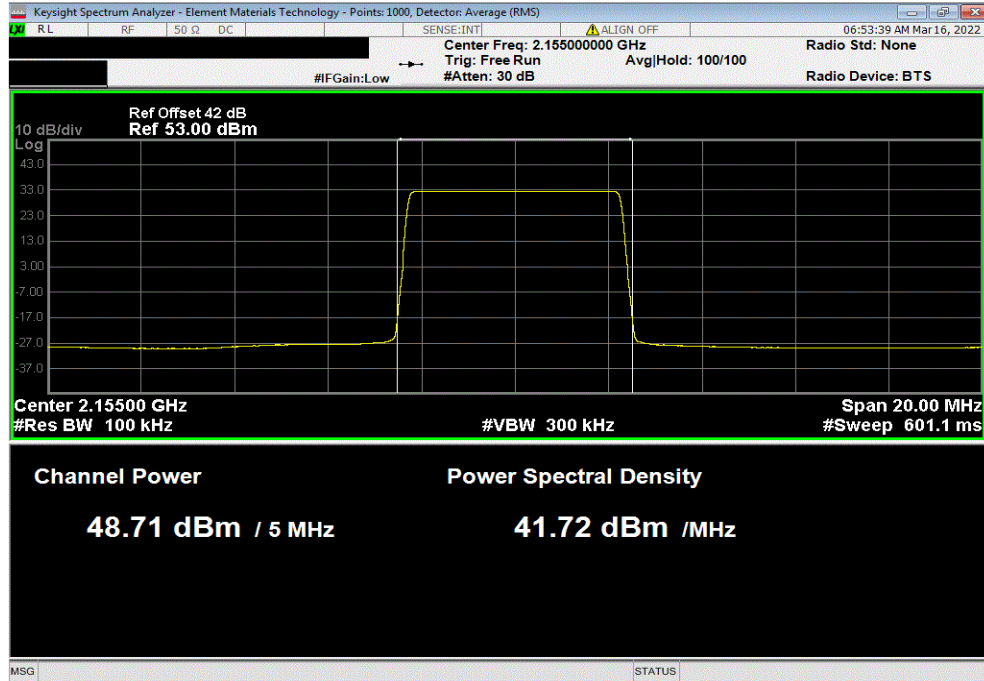


OUTPUT POWER (ALL PORTS)

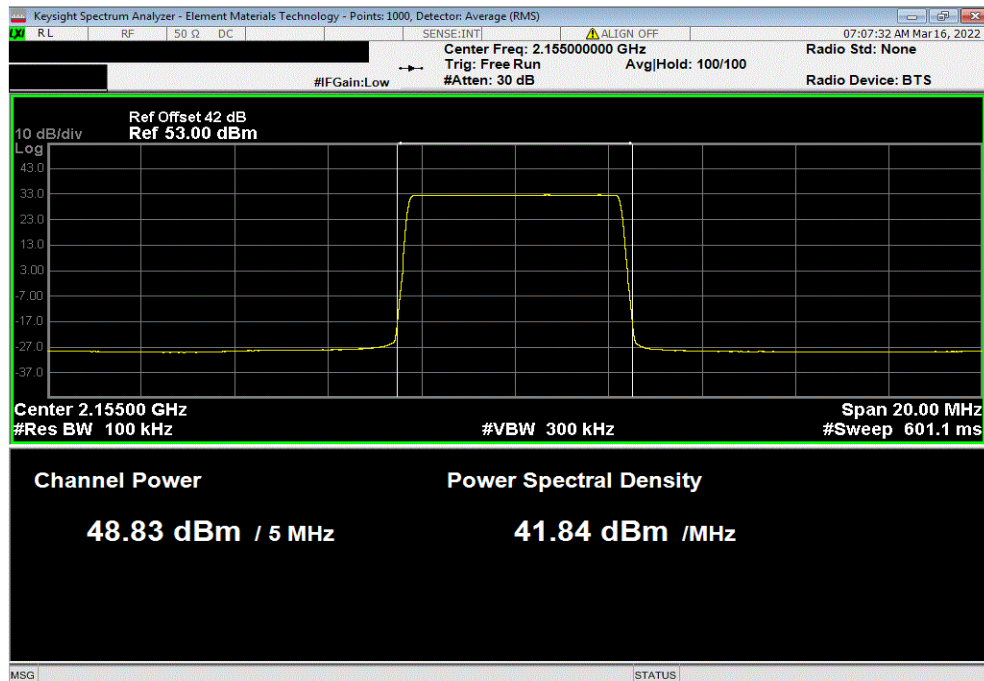


TbTx 2021.12.14.1 XMt 2022.02.07.0

Band n66, 2110 MHz - 2200 MHz, 5G NR (Power: 80W), Port 3, 5 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 2155 MHz						
Initial Value	Duty Cycle	Single Port		Limit	Results	
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW				
48.705	0	48.7		Inside Tolerance	N/A	



Band n66, 2110 MHz - 2200 MHz, 5G NR (Power: 80W), Port 4, 5 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 2155 MHz						
Initial Value	Duty Cycle	Single Port		Limit	Results	
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW				
48.83	0	48.8		Inside Tolerance	N/A	

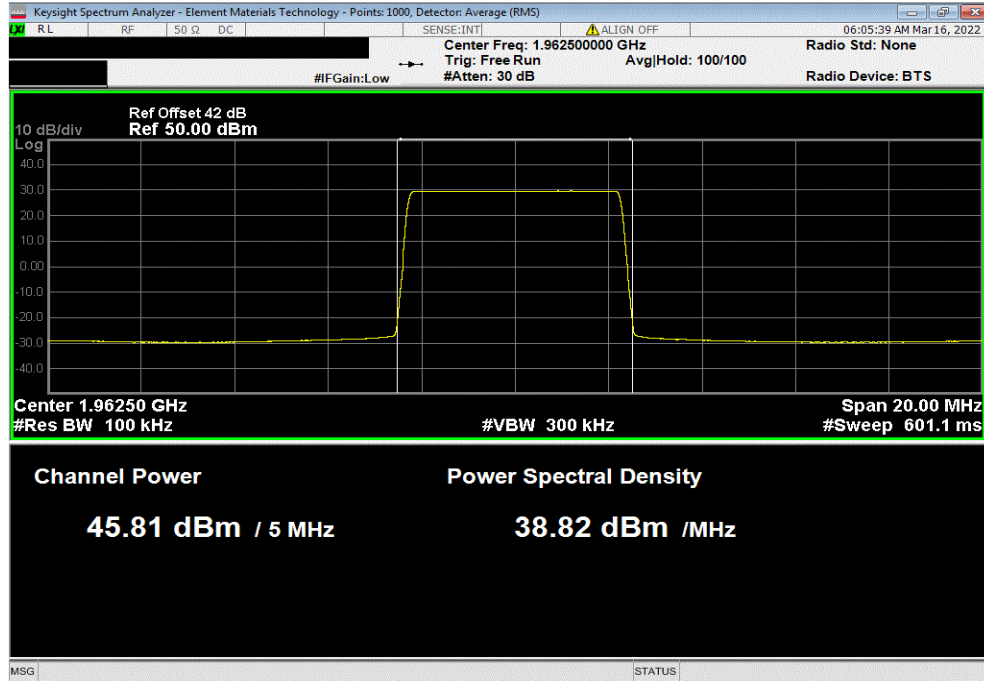


OUTPUT POWER (ALL PORTS)

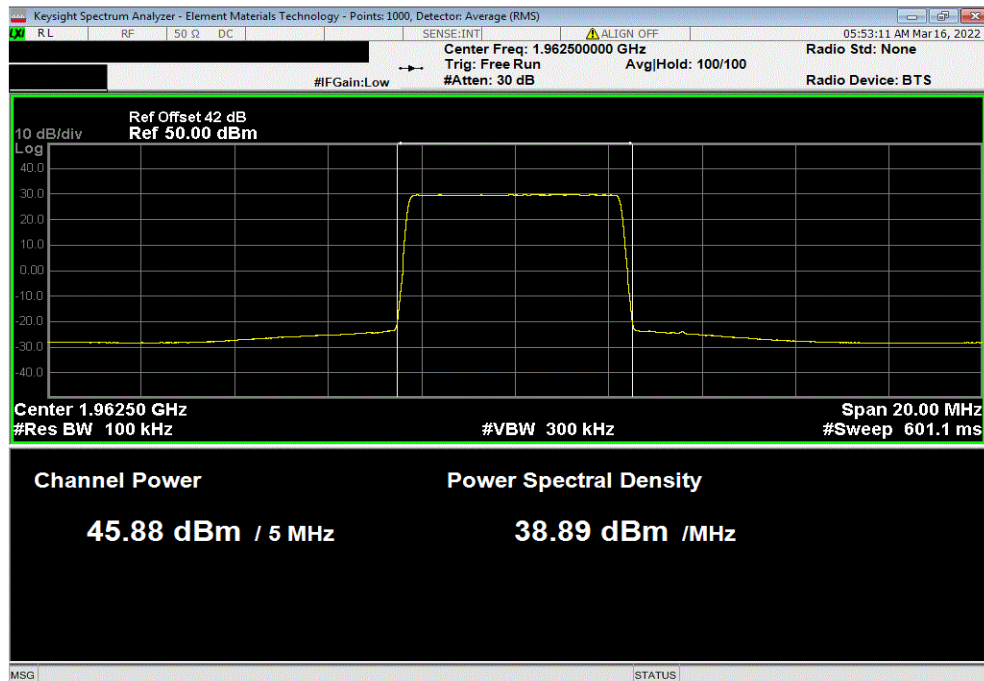


TbTx 2021.12.14.1 XMt 2022.02.07.0

Band n25, 1930 MHz - 1995 MHz, 5G NR (Power: 40W), Port 1, 5 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 1962.5 MHz						
Initial Value	Duty Cycle	Single Port		Limit	Results	
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW				
45.809	0	45.8		Inside Tolerance	N/A	



Band n25, 1930 MHz - 1995 MHz, 5G NR (Power: 40W), Port 2, 5 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 1962.5 MHz						
Initial Value	Duty Cycle	Single Port		Limit	Results	
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW				
45.876	0	45.9		Inside Tolerance	N/A	

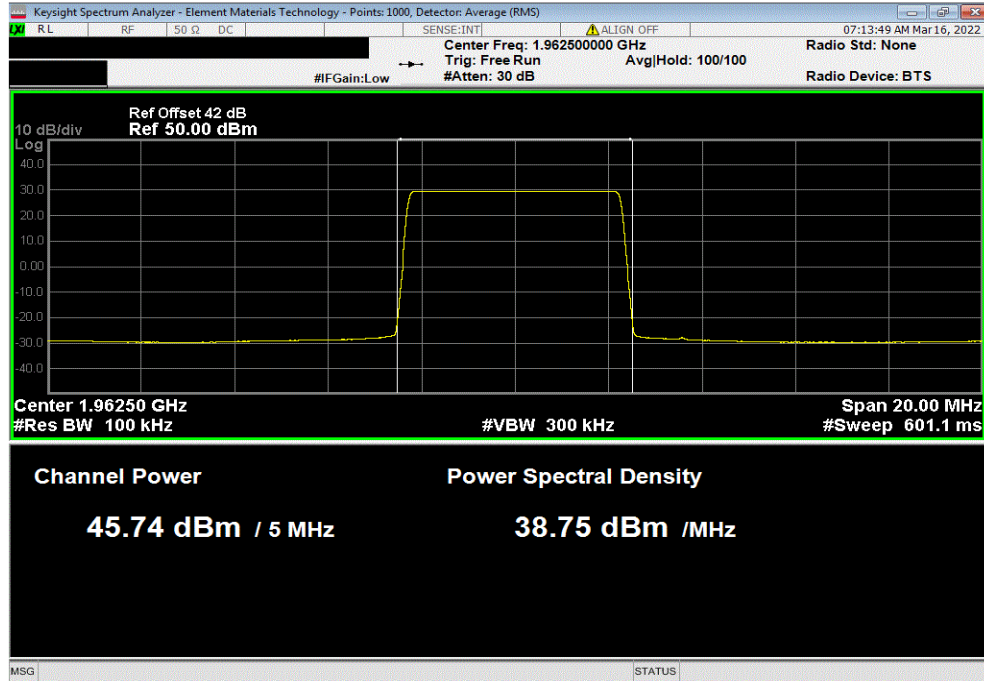


OUTPUT POWER (ALL PORTS)

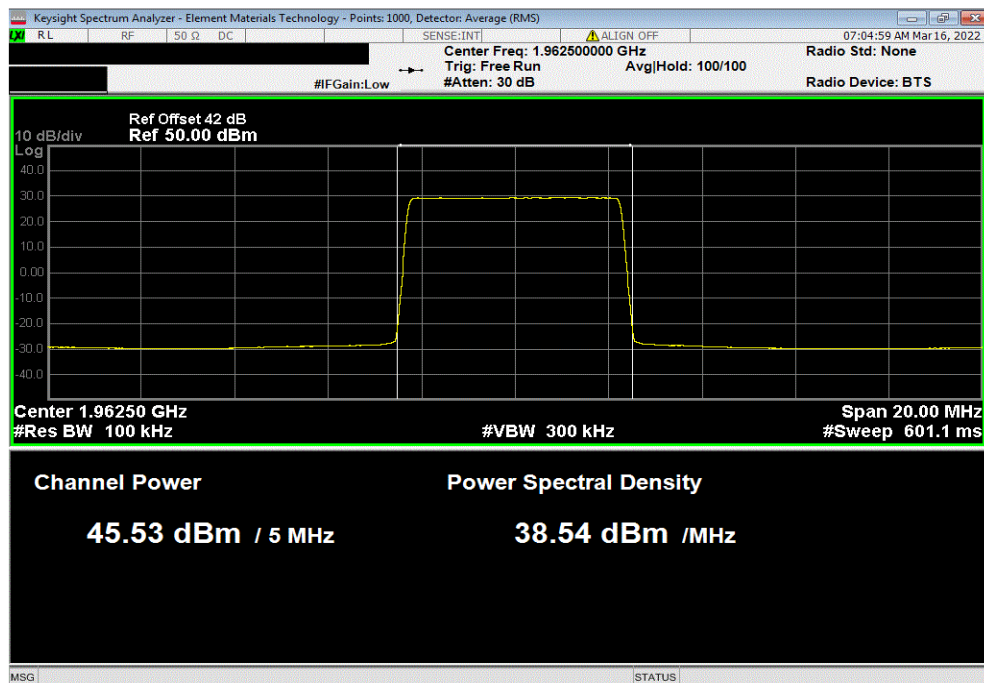


TbTx 2021.12.14.1 XMt 2022.02.07.0

Band n25, 1930 MHz - 1995 MHz, 5G NR (Power: 40W), Port 3, 5 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 1962.5 MHz						
Initial Value	Duty Cycle	Single Port		Limit		Results
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW				
45.744	0	45.7		Inside Tolerance		N/A



Band n25, 1930 MHz - 1995 MHz, 5G NR (Power: 40W), Port 4, 5 MHz Bandwidth, 256-QAM Modulation, Mid Channel, 1962.5 MHz						
Initial Value	Duty Cycle	Single Port		Limit		Results
dBm/Carrier BW	Factor (dB)	dBm/Carrier BW				
45.529	0	45.5		Inside Tolerance		N/A



OUTPUT POWER - ALL PORTS



TbTx 2021.12.14.1 XMI 2022.02.07.0

Band n66, 2110 MHz - 2200 MHz, 5G NR (Power: 80W) and Band n25, 1930 MHz - 1995 MHz, 5G NR (Power: 40W), All Ports, 5 MHz Bandwidth, 256-QAM Modulation							
	Initial Value dBm/Carrier BW	Duty Cycle Factor (dB)	Single Port dBm/Carrier BW	All Ports (dBm)	Limit	Results	
	N/A	0	N/A	N/A	N/A	N/A	

BAND N66 - AVERAGE PORT SUMMING					
	PORT 1	PORT 2	PORT 3	PORT 4	SUM TOTAL
INITIAL VALUE (dBm)	48.9	48.7	48.7	48.8	N/A
INITIAL VALUE (Watts)	77.6	74.1	74.1	75.9	302
TOTAL VALUE (dBm)	N/A	N/A	N/A	N/A	54.8

BAND N25 - AVERAGE PORT SUMMING					
	PORT 1	PORT 2	PORT 3	PORT 4	SUM TOTAL
INITIAL VALUE (dBm)	45.8	45.9	45.7	45.5	N/A
INITIAL VALUE (Watts)	38.0	38.9	37.2	35.5	150
TOTAL VALUE (dBm)	N/A	N/A	N/A	N/A	51.8

BAND N25 & N66 - AVERAGE PORT SUMMING			
	BAND N25	BAND N66	SUM TOTAL
INITIAL VALUE (dBm)	54.8	51.8	N/A
INITIAL VALUE (Watts)	302	150	452
TOTAL VALUE (dBm)	N/A	N/A	56.6