

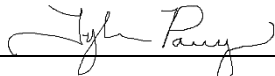


427 West 12800 South
Draper, UT 84020

Test Report Attachment

FCC ID	SWX-UKU
ISED ID	6545A-UKU
Equipment Under Test	UK-Ultra
Test Report Serial Number	TR8502_01
Date of Test(s)	10 August and 14 September 2023
Report Issue Date	20 September 2023

Test Personnel

Testing performed by	Tyler Parry 
-----------------------------	--

Test Location

Testing was performed at the Unified Compliance Laboratory located at 427 West 12800 South, Draper, UT 84020. Unified Compliance Laboratory is accredited by National Voluntary Laboratory Accreditation Program (NVLAP); NVLAP Code 600241-0 which is effective until 30 June 2023. This site has also been registered with Innovations, Science and Economic Development (ISED) department as was accepted under Appendix B, Phase 1 procedures of the APEC Tel MRA for Canadian recognition. ISED No.: 25346, effective until 30 June 2023. Unified Compliance Laboratory has been assigned Conformity Assessment Number US0223 by ISED and MRA US5037.



1 UNII-1 Band

1.1 Internal Antenna

Summary

Test	Frequency (MHz)	Nominal Power (dBm)	Nominal Bandwidth (MHz)	Result
Emission Bandwidth 26 dB	5180.000	24.0	20.000000	PASS
RF output power	5180.000	24.0	20.000000	PASS
Power Spectral Density	5180.000	24.0	20.000000	PASS
Occupied Channel Bandwidth 99%	5180.000	24.0	20.000000	PASS
Emission Bandwidth 26 dB	5210.000	24.0	20.000000	PASS
Occupied Channel Bandwidth 99%	5210.000	24.0	20.000000	PASS
Emission Bandwidth 26 dB	5240.000	24.0	20.000000	PASS
Occupied Channel Bandwidth 99%	5240.000	24.0	20.000000	PASS
Emission Bandwidth 26 dB	5190.000	24.0	40.000000	PASS
Occupied Channel Bandwidth 99%	5190.000	24.0	40.000000	PASS
Emission Bandwidth 26 dB	5230.000	24.0	40.000000	PASS
Occupied Channel Bandwidth 99%	5230.000	24.0	40.000000	PASS
Emission Bandwidth 26 dB	5210.000	24.0	80.000000	PASS
Occupied Channel Bandwidth 99%	5210.000	24.0	80.000000	PASS

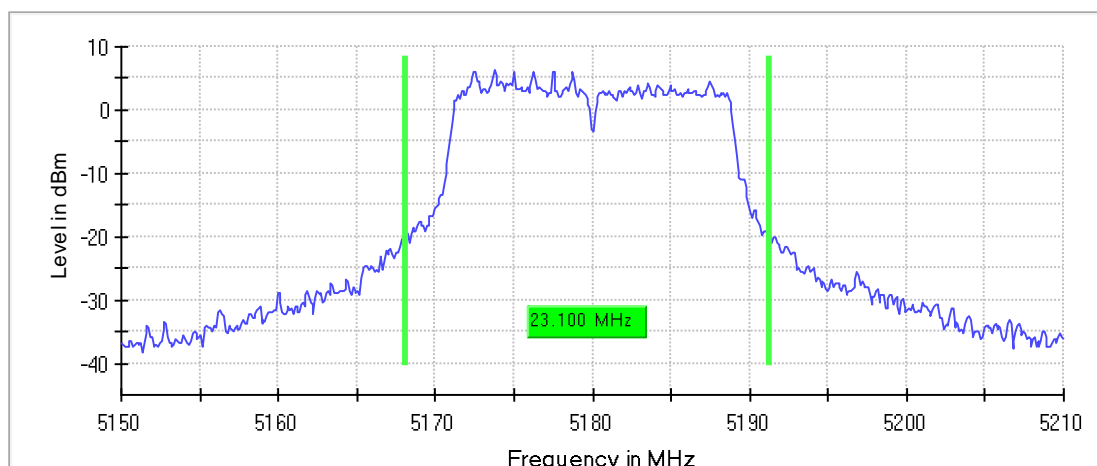
Emission Bandwidth 26 dB (5180 MHz; 24.000 dBm; 20 MHz)

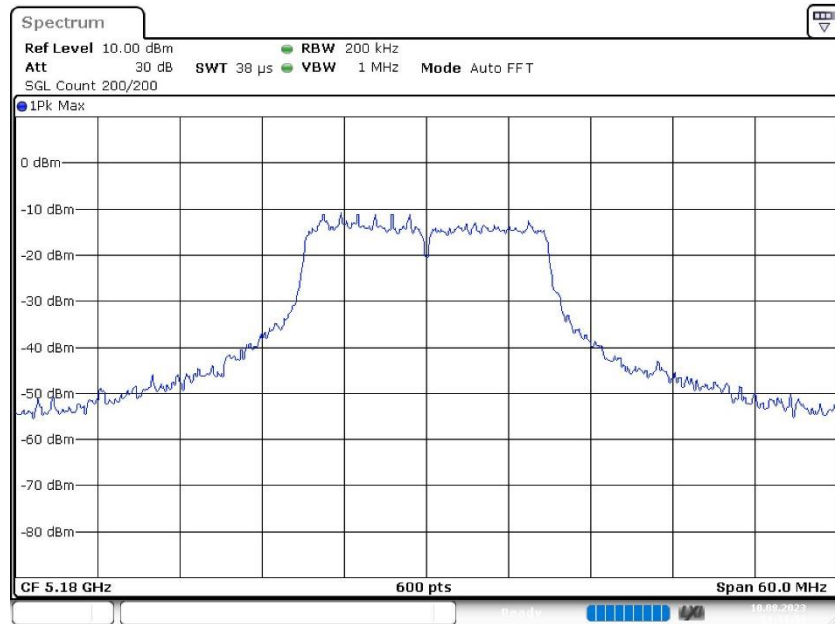
26 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5180.000000	23.100000	---	---	5168.150000	5191.250000

DUT Frequency (MHz)	Max Level (dBm)	Result
5180.000000	6.4	PASS

26 dB Bandwidth



Bandwidth

Measurement

Setting	Instrument Value	Target Value
Start Frequency	5.15000 GHz	5.15000 GHz
Stop Frequency	5.21000 GHz	5.21000 GHz
Span	60.000 MHz	60.000 MHz
RBW	200.000 kHz	~ 200.000 kHz
VBW	1.000 MHz	>= 600.000 kHz
SweepPoints	600	~ 600
SweepTime	37.969 μ s	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off

RF output power (5180 MHz; 24.000 dBm; 20 MHz)

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
5180.000000	20.3	30.0	20.3	93.185	PASS

OSP PowerMeter settings

Setting	Instrument Value	Target Value

Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000 μ s	1.000 μ s

Power Spectral Density (5180 MHz; 24.000 dBm; 20 MHz)

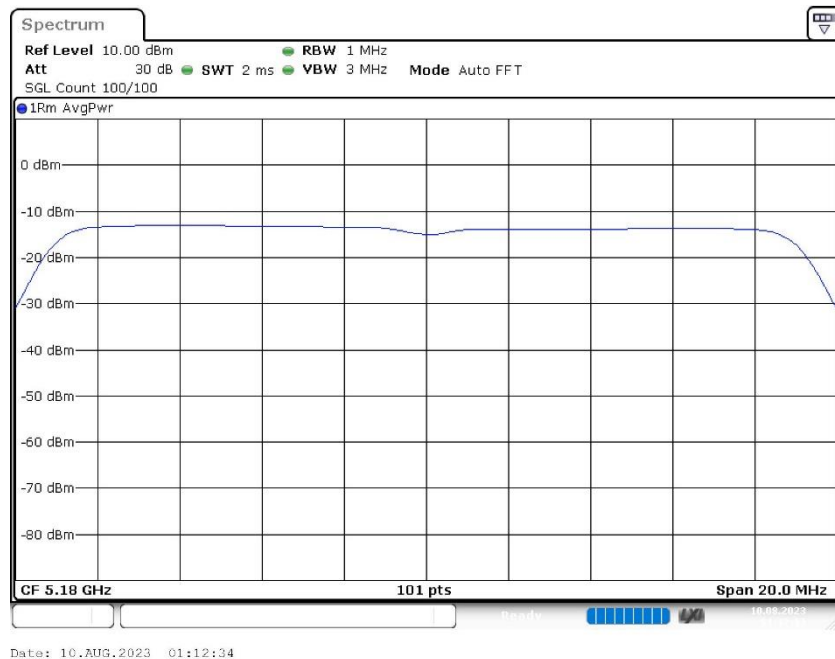
Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
5180.000000	5173.861386	7.176	17.0	PASS

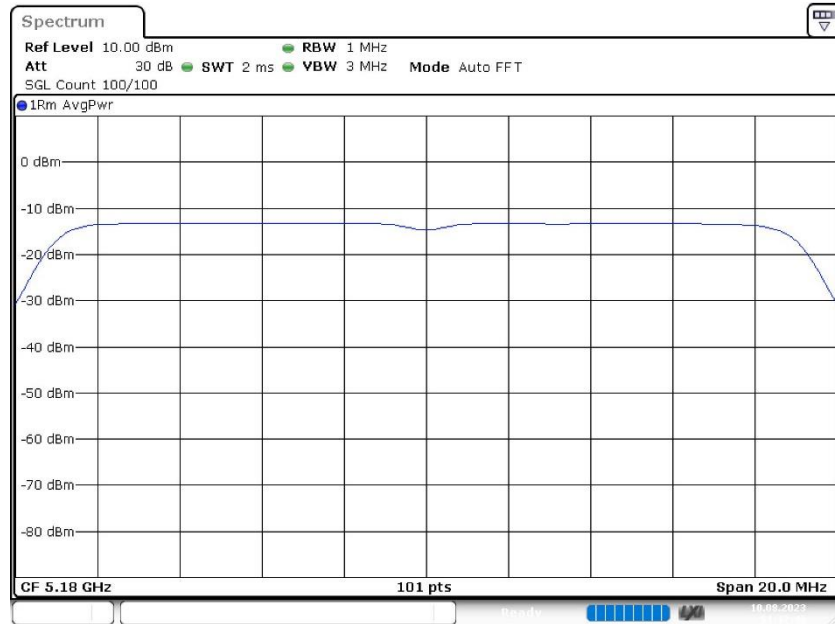
Ports

Port	State
1	used
2	used

PSD Connector 1



PSD Connector 2



Measurement

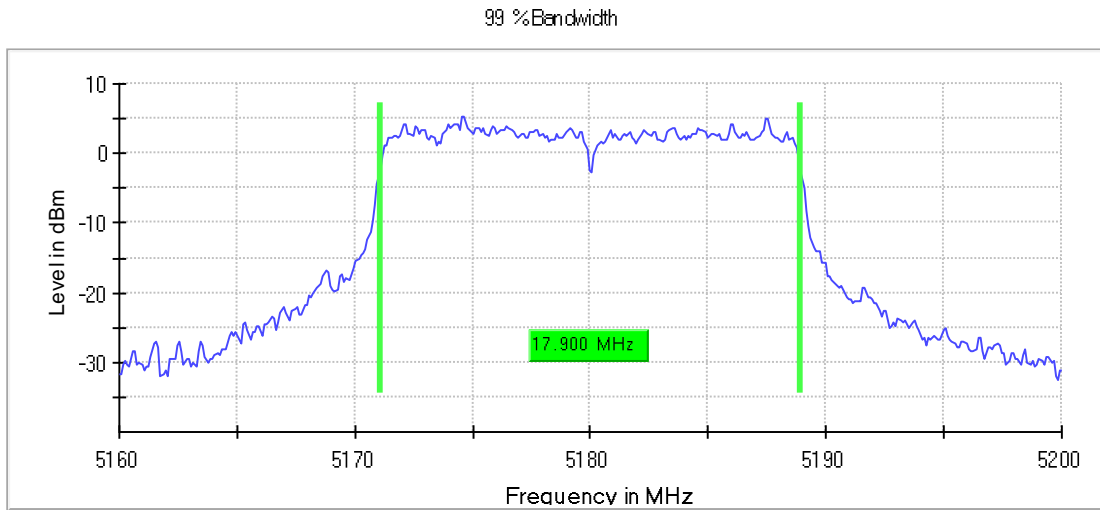
Setting	Instrument Value	Target Value
Start Frequency	5.17000 GHz	5.17000 GHz
Stop Frequency	5.19000 GHz	5.19000 GHz
Span	20.000 MHz	20.000 MHz
RBW	1.000 MHz	<= 1.000 MHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	101	~ 40
Sweeptime	2.020 ms	2.020 ms
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	RMS	RMS
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Average Power	Average Power
SweepType	FFT	AUTO
Preamp	off	off

Occupied Channel Bandwidth 99% (5180 MHz; 24.000 dBm; 20 MHz)

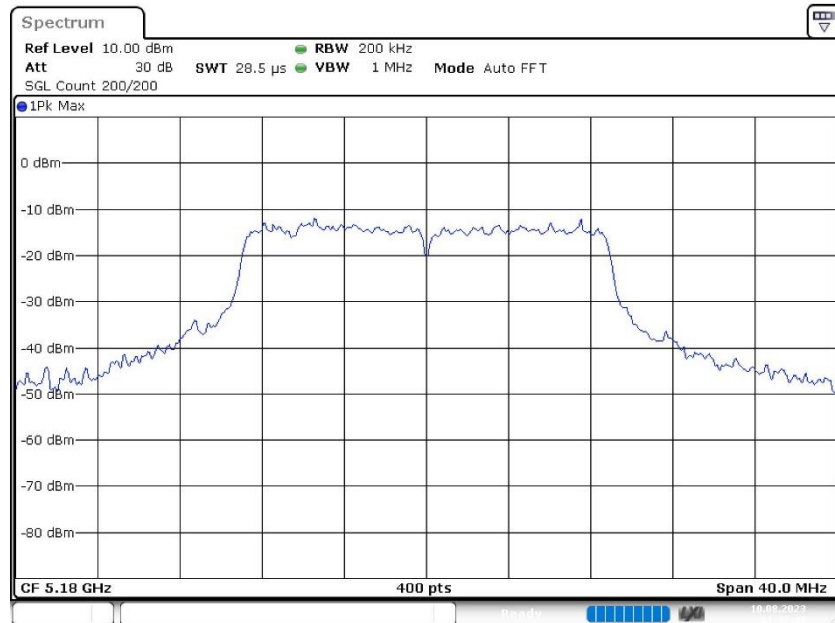
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5180.000000	17.900000	---	---	5171.050000	5188.950000

DUT Frequency (MHz)	Result
5180.000000	PASS



Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	5.16000 GHz	5.16000 GHz
Stop Frequency	5.20000 GHz	5.20000 GHz
Span	40.000 MHz	40.000 MHz
RBW	200.000 kHz	>= 200.000 kHz
VBW	1.000 MHz	>= 600.000 kHz
SweepPoints	400	~ 400

SweepTime	28.477 μ s	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off

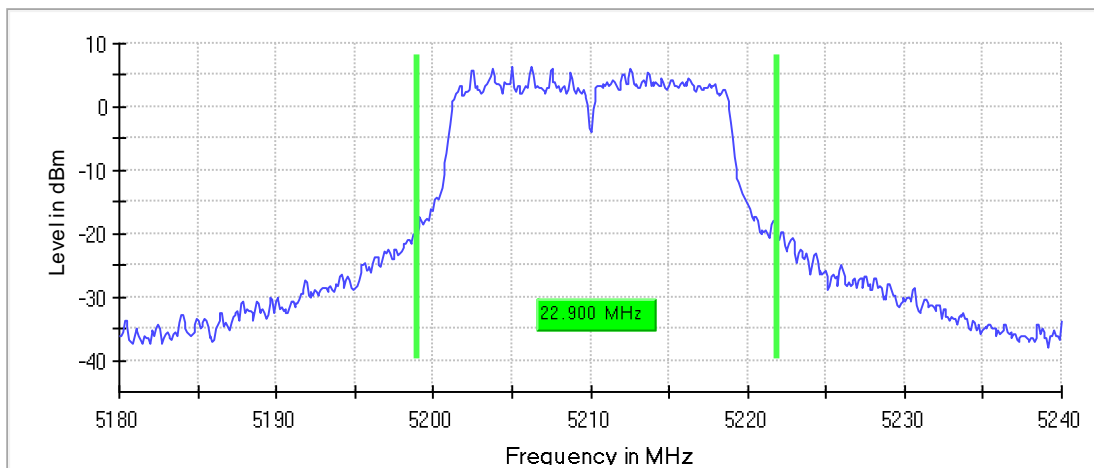
Emission Bandwidth 26 dB (5210 MHz; 24.000 dBm; 20 MHz)

26 dB Bandwidth

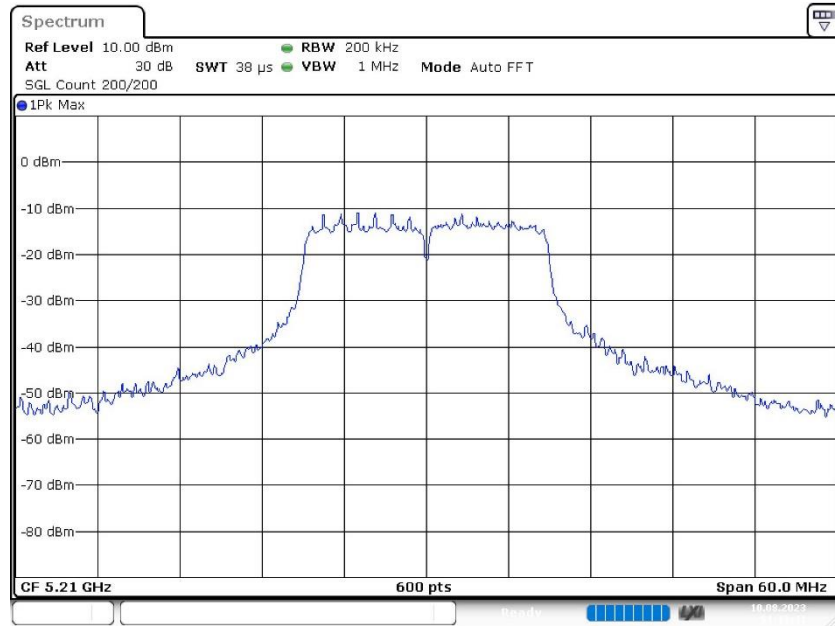
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5210.000000	22.900000	---	---	5198.950000	5221.850000

DUT Frequency (MHz)	Max Level (dBm)	Result
5210.000000	6.3	PASS

26 dB Bandwidth



Bandwidth



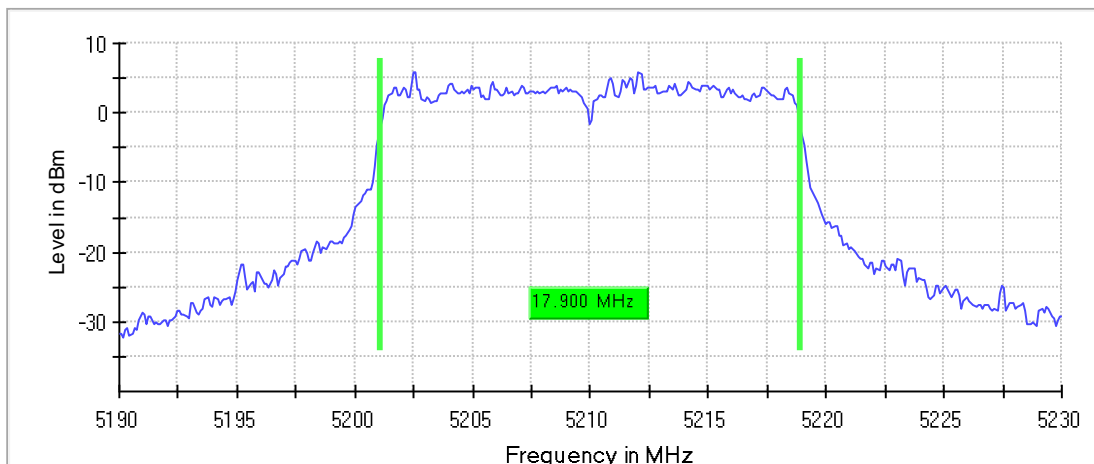
Occupied Channel Bandwidth 99% (5210 MHz; 24.000 dBm; 20 MHz)

99 % Bandwidth

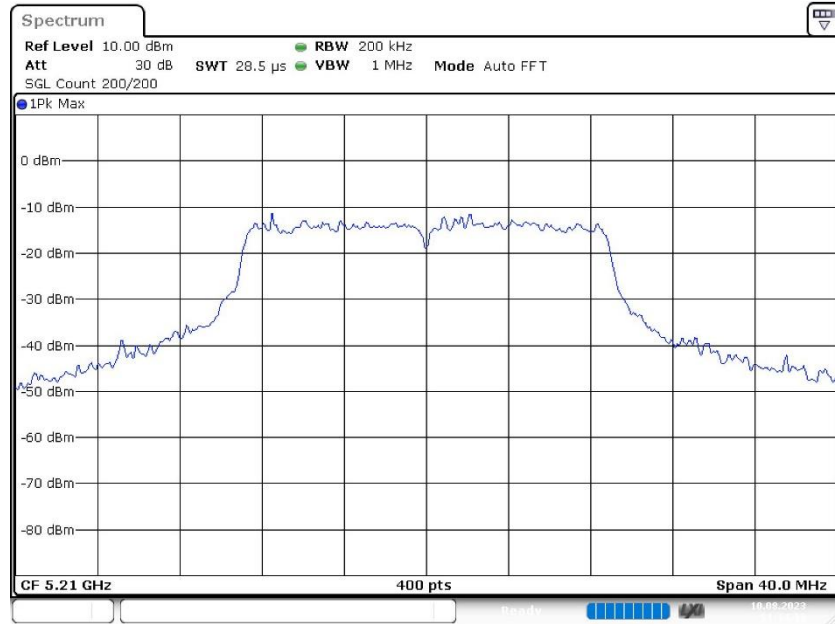
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5210.000000	17.900000	---	---	5201.050000	5218.950000

DUT Frequency (MHz)	Result
5210.000000	PASS

99 %Bandwidth



Bandwidth

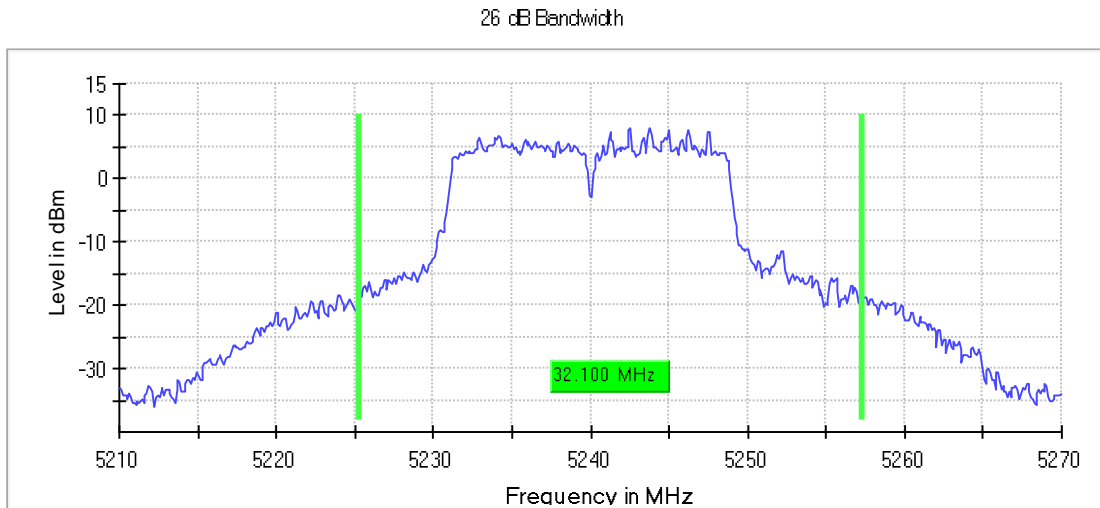


Emission Bandwidth 26 dB (5240 MHz; 24.000 dBm; 20 MHz)

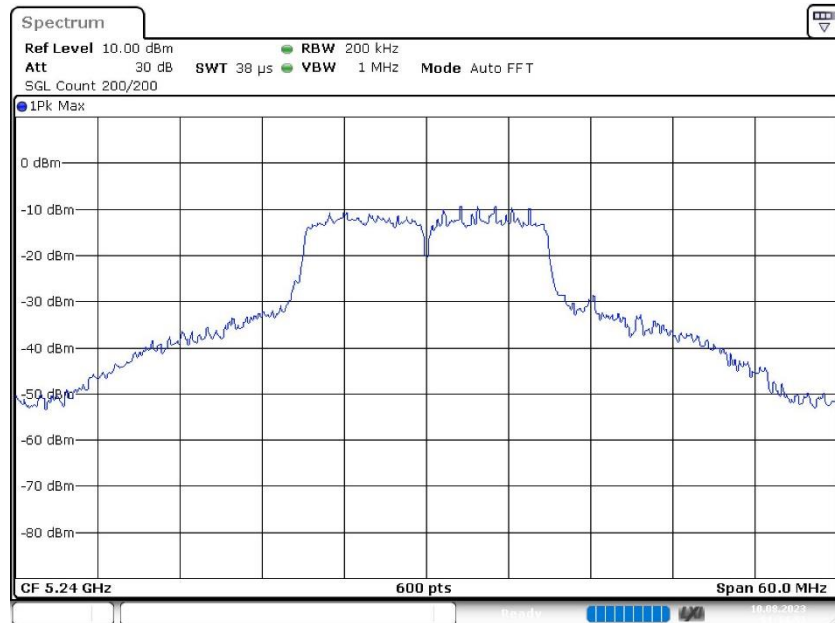
26 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5240.000000	32.100000	---	---	5225.250000	5257.350000

DUT Frequency (MHz)	Max Level (dBm)	Result
5240.000000	8.0	PASS



Bandwidth



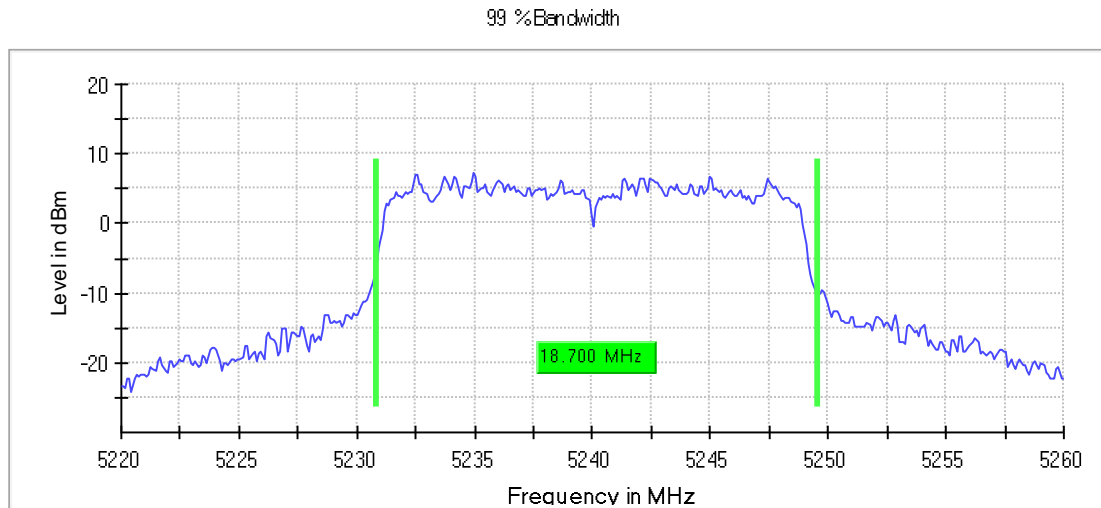
Date: 10.AUG.2023 01:14:53

Occupied Channel Bandwidth 99% (5240 MHz; 24.000 dBm; 20 MHz)

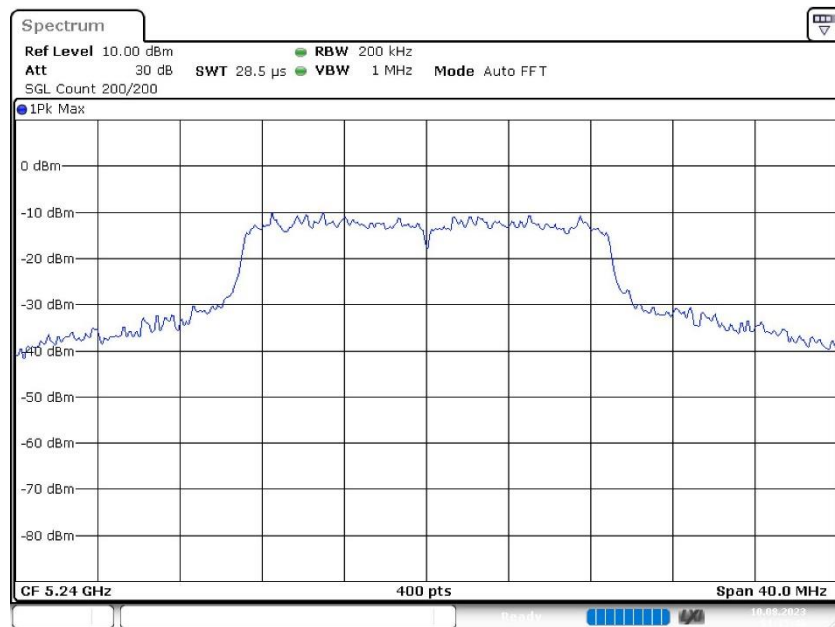
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5240.000000	18.700000	---	---	5230.850000	5249.550000

DUT Frequency (MHz)	Result
5240.000000	PASS



Bandwidth



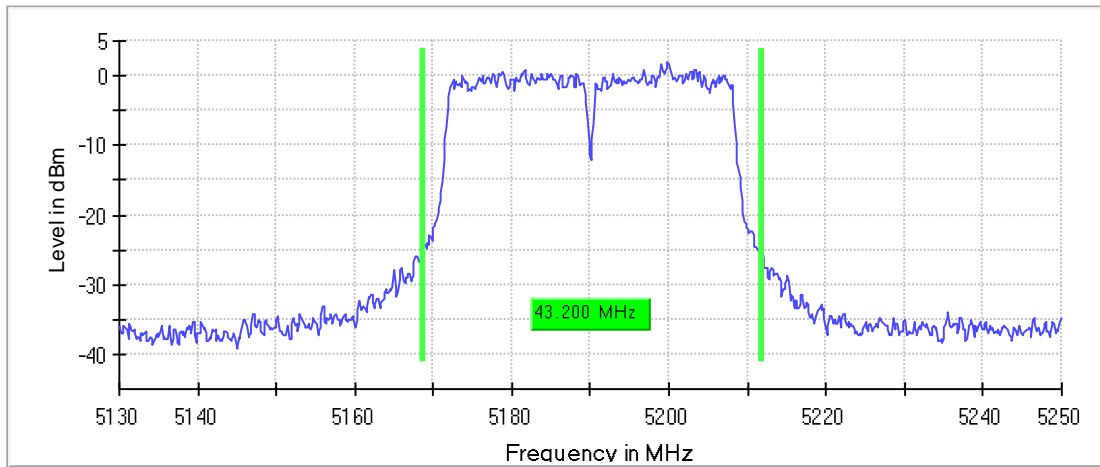
Emission Bandwidth 26 dB (5190 MHz; 24.000 dBm; 40 MHz)

26 dB Bandwidth

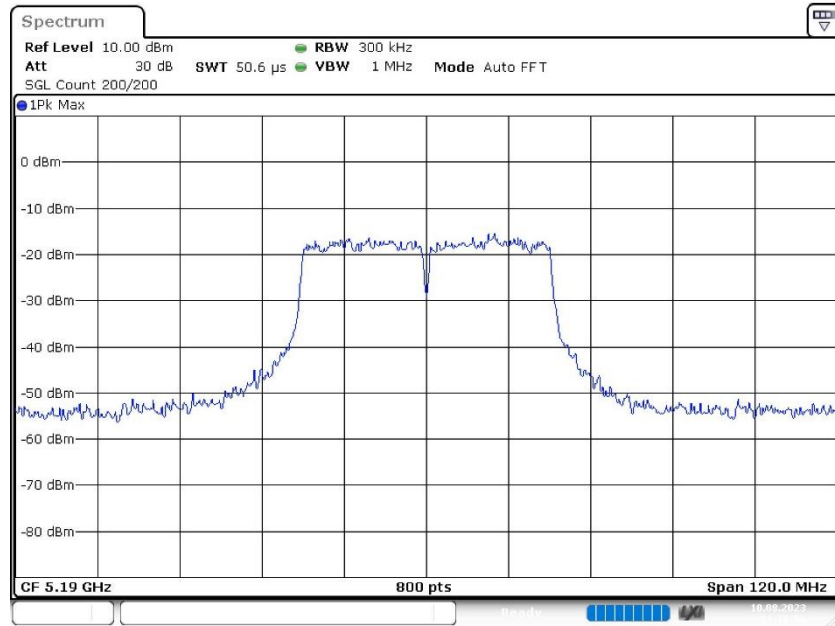
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5190.000000	43.200000	---	---	5168.625000	5211.825000

DUT Frequency (MHz)	Max Level (dBm)	Result
5190.000000	1.9	PASS

26 dB Bandwidth



Bandwidth



Date: 10.AUG.2023 01:16:09

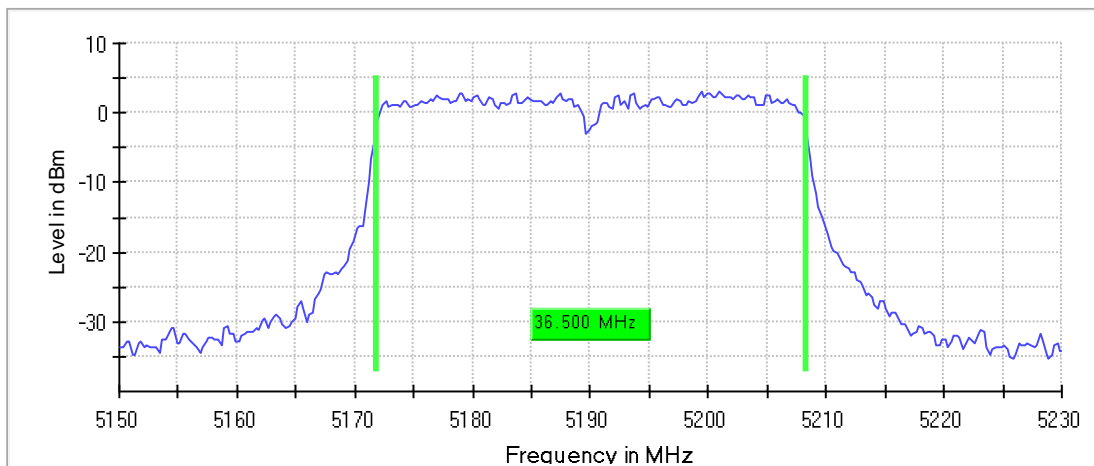
Occupied Channel Bandwidth 99% (5190 MHz; 24.000 dBm; 40 MHz)

99 % Bandwidth

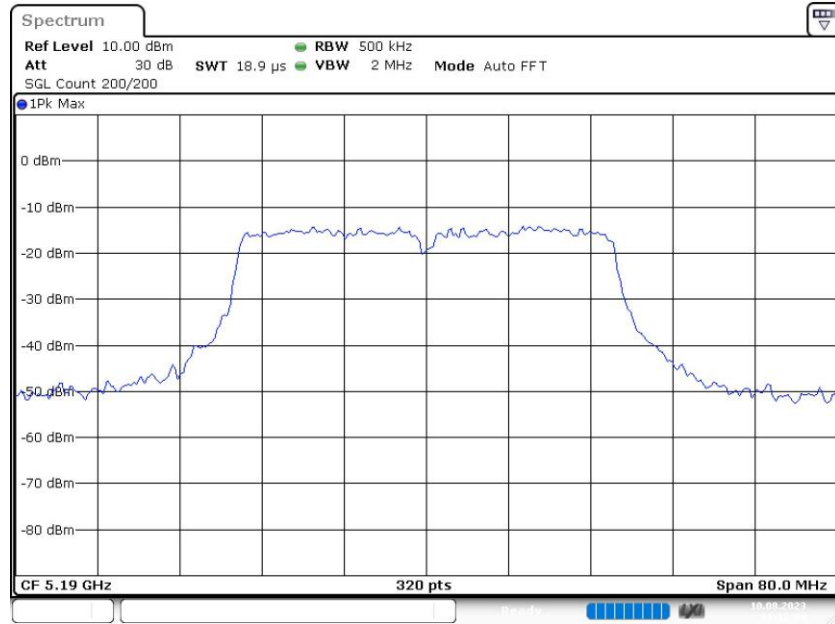
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5190.000000	36.500000	---	---	5171.875000	5208.375000

DUT Frequency (MHz)	Result
5190.000000	PASS

99 %Bandwidth



Bandwidth

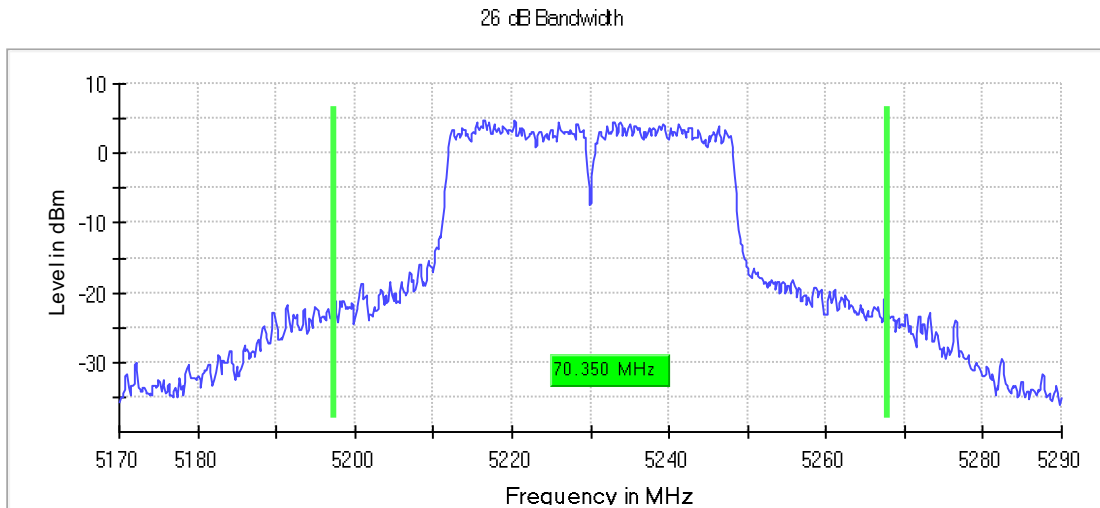


Emission Bandwidth 26 dB (5230 MHz; 24.000 dBm; 40 MHz)

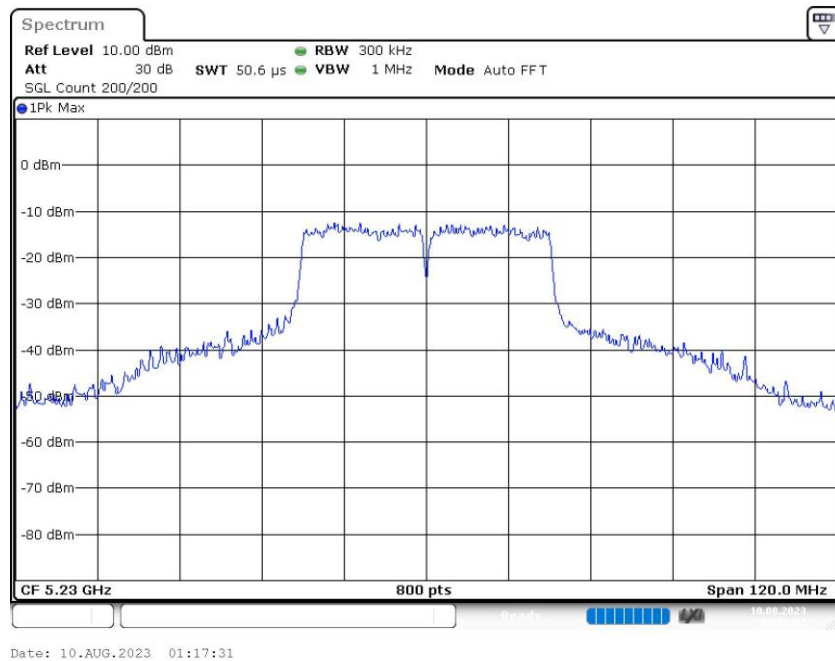
26 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5230.000000	70.350000	---	---	5197.375000	5267.725000

DUT Frequency (MHz)	Max Level (dBm)	Result
5230.000000	4.8	PASS



Bandwidth

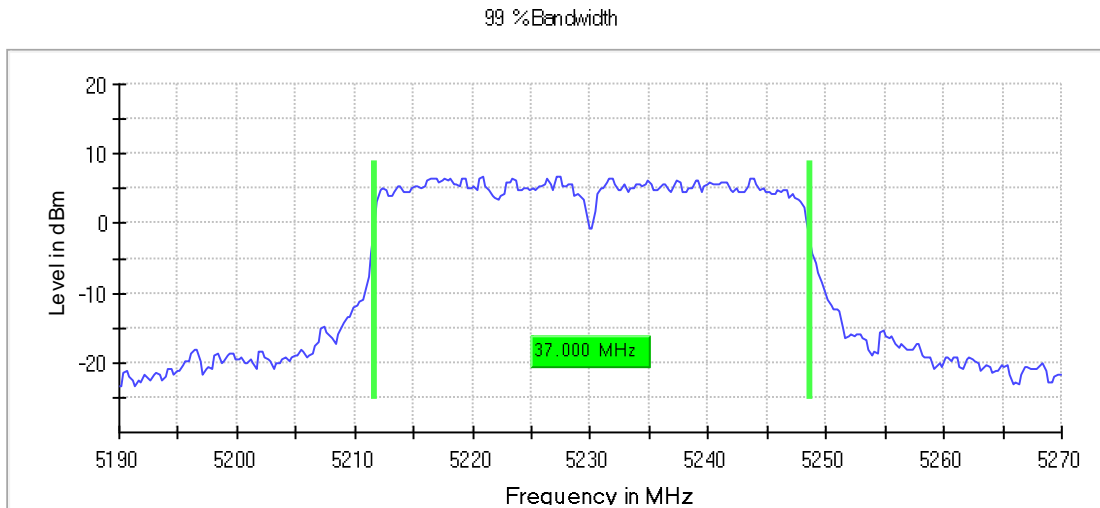


Occupied Channel Bandwidth 99% (5230 MHz; 24.000 dBm; 40 MHz)

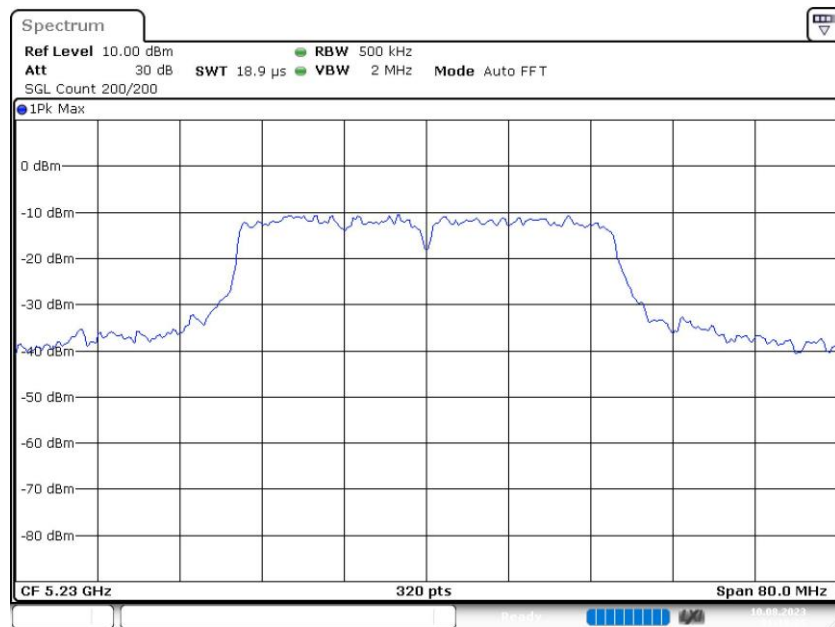
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5230.000000	37.000000	---	---	5211.625000	5248.625000

DUT Frequency (MHz)	Result
5230.000000	PASS



Bandwidth



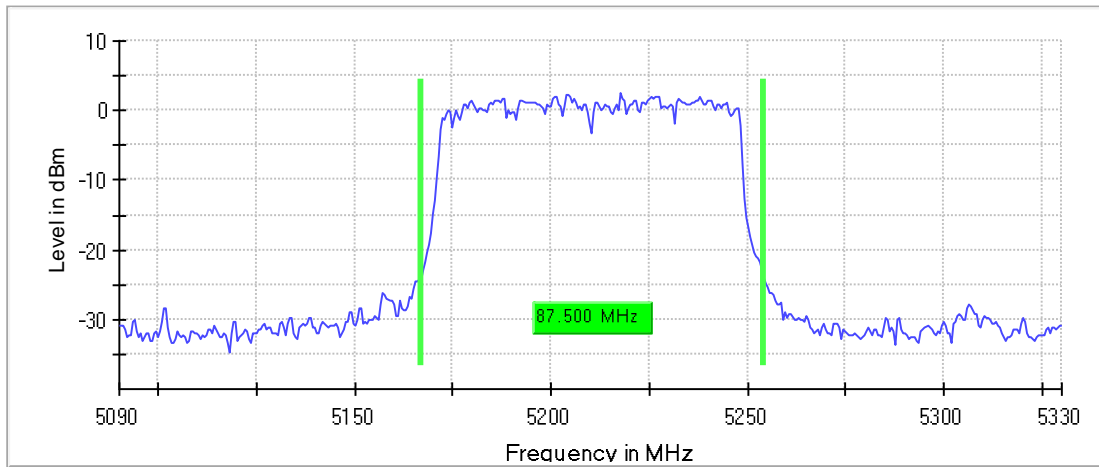
Emission Bandwidth 26 dB (5210 MHz; 24.000 dBm; 80 MHz)

26 dB Bandwidth

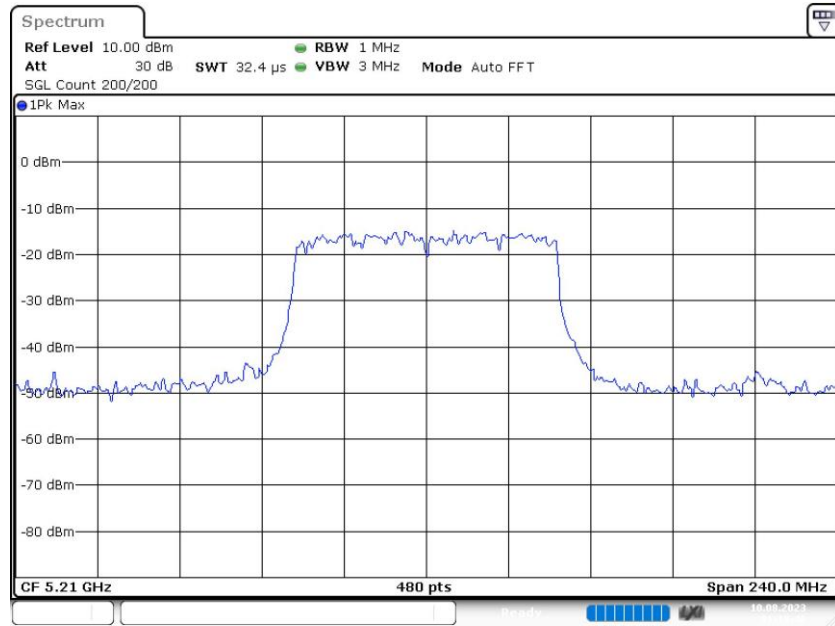
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5210.000000	87.500000	---	---	5166.750000	5254.250000

DUT Frequency (MHz)	Max Level (dBm)	Result
5210.000000	2.4	PASS

26 dB Bandwidth



Bandwidth



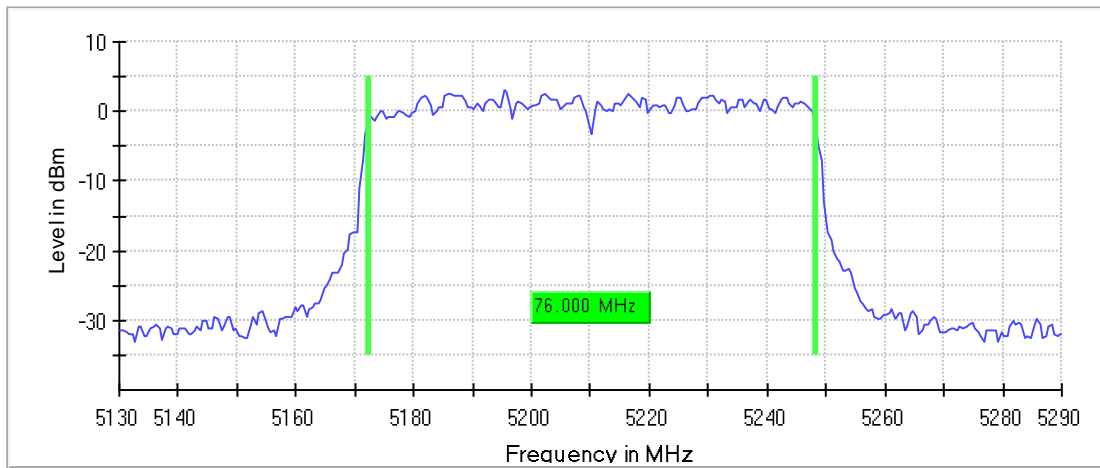
Occupied Channel Bandwidth 99% (5210 MHz; 24.000 dBm; 80 MHz)

99 % Bandwidth

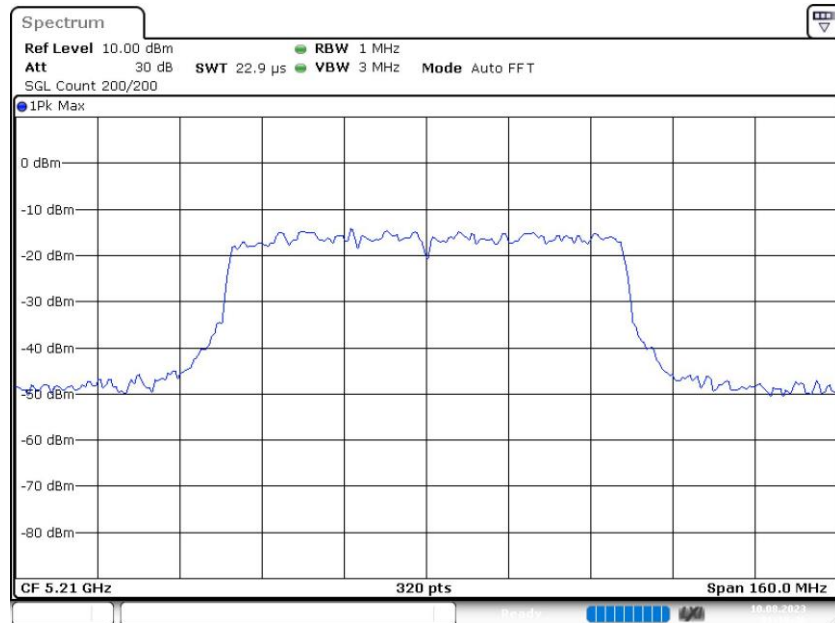
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5210.000000	76.000000	---	---	5172.250000	5248.250000

DUT Frequency (MHz)	Result
5210.000000	PASS

99 %Bandwidth



Bandwidth



1.2 External Antenna

Summary

Test	Frequency (MHz)	Nominal Power (dBm)	Nominal Bandwidth (MHz)	Result
Emission Bandwidth 26 dB	5180.000	24.0	20.000000	PASS
RF output power	5180.000	24.0	20.000000	PASS
Power Spectral Density	5180.000	24.0	20.000000	PASS
Occupied Channel Bandwidth 99%	5180.000	24.0	20.000000	PASS
Emission Bandwidth 26 dB	5210.000	24.0	20.000000	PASS
Occupied Channel Bandwidth 99%	5210.000	24.0	20.000000	PASS
Emission Bandwidth 26 dB	5240.000	24.0	20.000000	PASS
Occupied Channel Bandwidth 99%	5240.000	24.0	20.000000	PASS
Emission Bandwidth 26 dB	5190.000	24.0	40.000000	PASS
Occupied Channel Bandwidth 99%	5190.000	24.0	40.000000	PASS
Emission Bandwidth 26 dB	5230.000	24.0	40.000000	PASS
Occupied Channel Bandwidth 99%	5230.000	24.0	40.000000	PASS
Emission Bandwidth 26 dB	5210.000	24.0	80.000000	PASS
Occupied Channel Bandwidth 99%	5210.000	24.0	80.000000	PASS

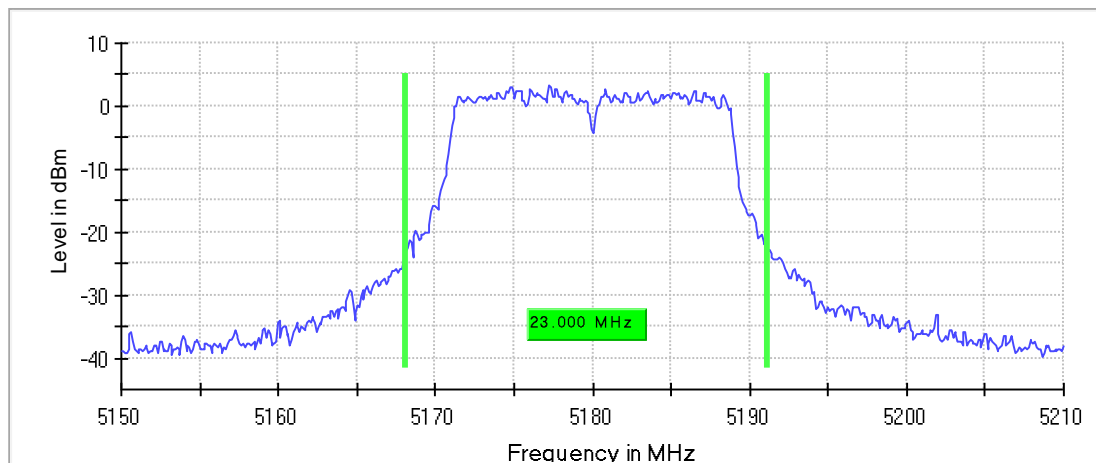
Emission Bandwidth 26 dB (5180 MHz; 24.000 dBm; 20 MHz)

26 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5180.000000	23.000000	---	---	5168.150000	5191.150000

DUT Frequency (MHz)	Max Level (dBm)	Result
5180.000000	3.2	PASS

26 dB Bandwidth



Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	5.15000 GHz	5.15000 GHz
Stop Frequency	5.21000 GHz	5.21000 GHz
Span	60.000 MHz	60.000 MHz
RBW	200.000 kHz	~ 200.000 kHz
VBW	1.000 MHz	>= 600.000 kHz
SweepPoints	600	~ 600
Sweeptime	37.969 μs	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off

RF output power (5180 MHz; 24.000 dBm; 20 MHz)

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
5180.000000	18.5	30.0	18.5	93.466	PASS

OSP PowerMeter settings

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s

Points	1000000	1000000
Time resolution	1.000 μ s	1.000 μ s

Power Spectral Density (5180 MHz; 24.000 dBm; 20 MHz)

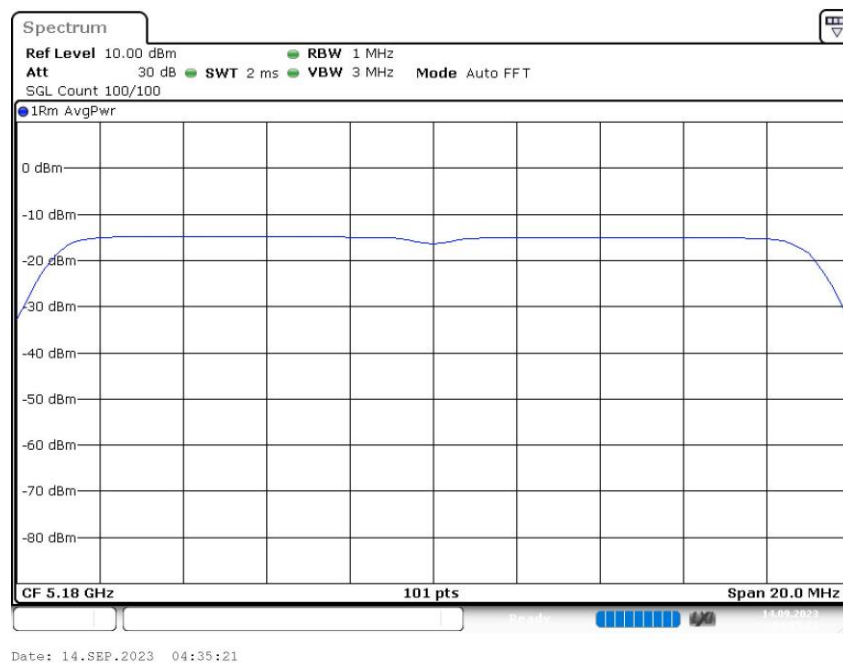
Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
5180.000000	5173.861386	5.240	17.0	PASS

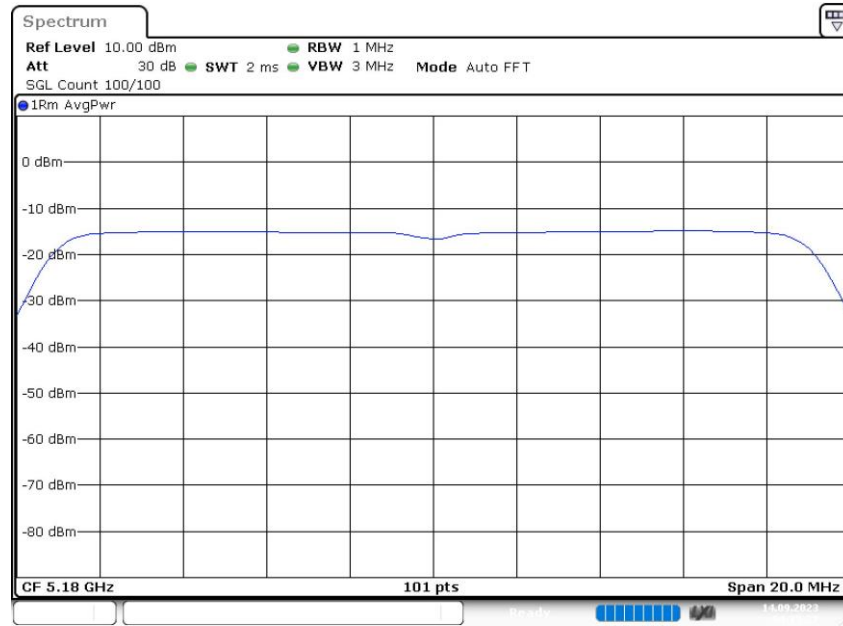
Ports

Port	State
1	used
2	used

PSD Connector 1



PSD Connector 2



Date: 14.SEP.2023 04:35:28

Measurement

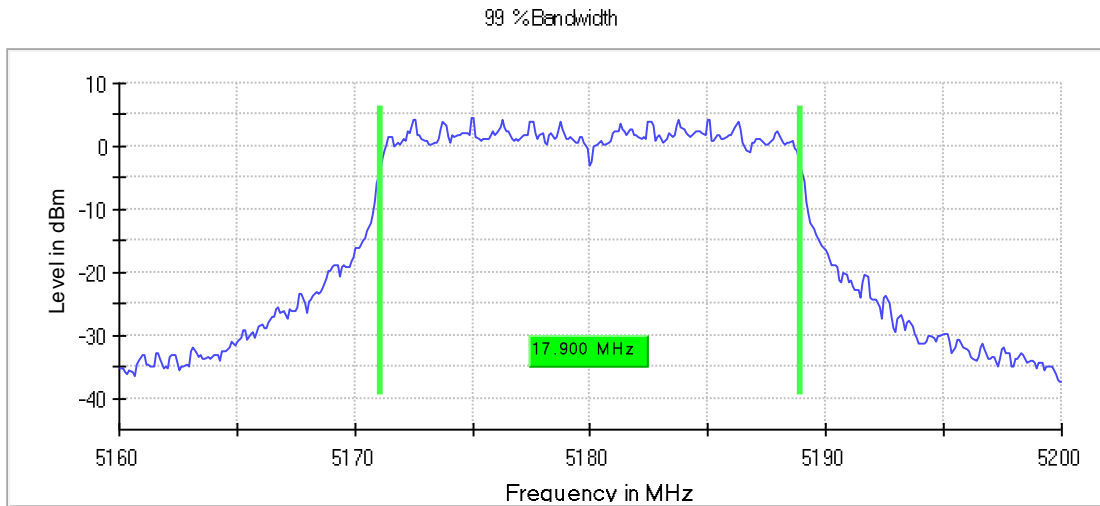
Setting	Instrument Value	Target Value
Start Frequency	5.17000 GHz	5.17000 GHz
Stop Frequency	5.19000 GHz	5.19000 GHz
Span	20.000 MHz	20.000 MHz
RBW	1.000 MHz	<= 1.000 MHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	101	~ 40
Sweeptime	2.020 ms	2.020 ms
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	RMS	RMS
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Average Power	Average Power
SweepType	FFT	AUTO
Preamp	off	off

Occupied Channel Bandwidth 99% (5180 MHz; 24.000 dBm; 20 MHz)

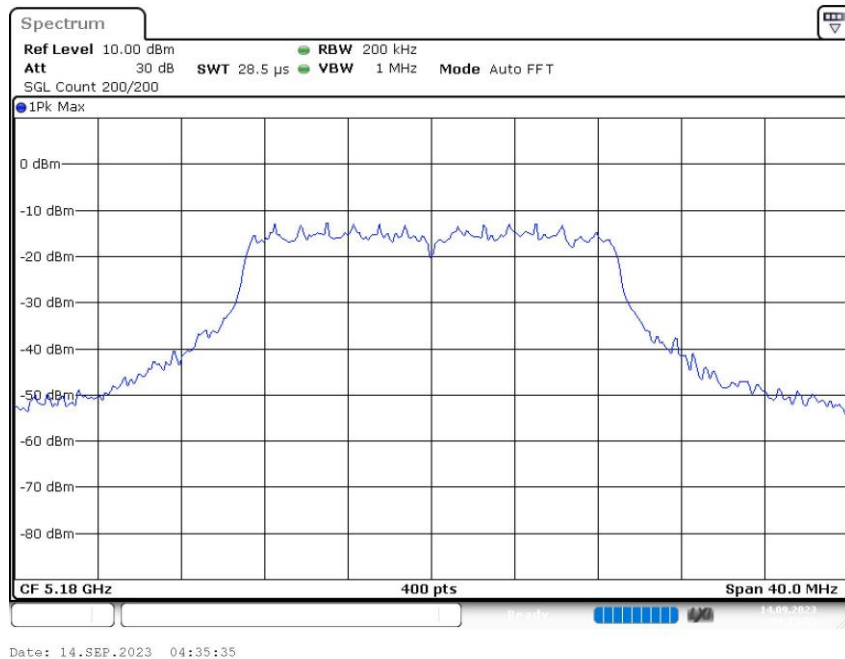
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5180.000000	17.900000	---	---	5171.050000	5188.950000

DUT Frequency (MHz)	Result
5180.000000	PASS



Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	5.16000 GHz	5.16000 GHz
Stop Frequency	5.20000 GHz	5.20000 GHz
Span	40.000 MHz	40.000 MHz
RBW	200.000 kHz	\geq 200.000 kHz
VBW	1.000 MHz	\geq 600.000 kHz
SweepPoints	400	\sim 400

SweepTime	28.477 μ s	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	30.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off

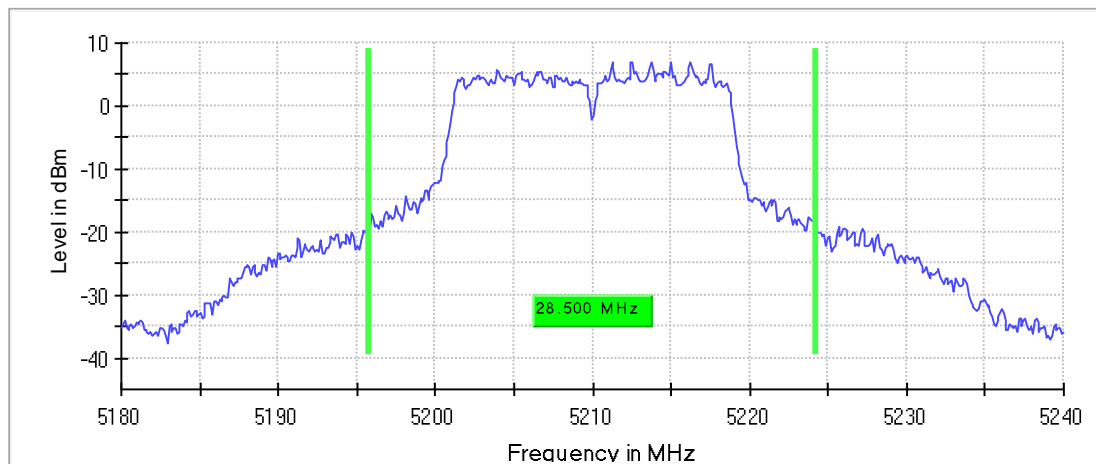
Emission Bandwidth 26 dB (5210 MHz; 24.000 dBm; 20 MHz)

26 dB Bandwidth

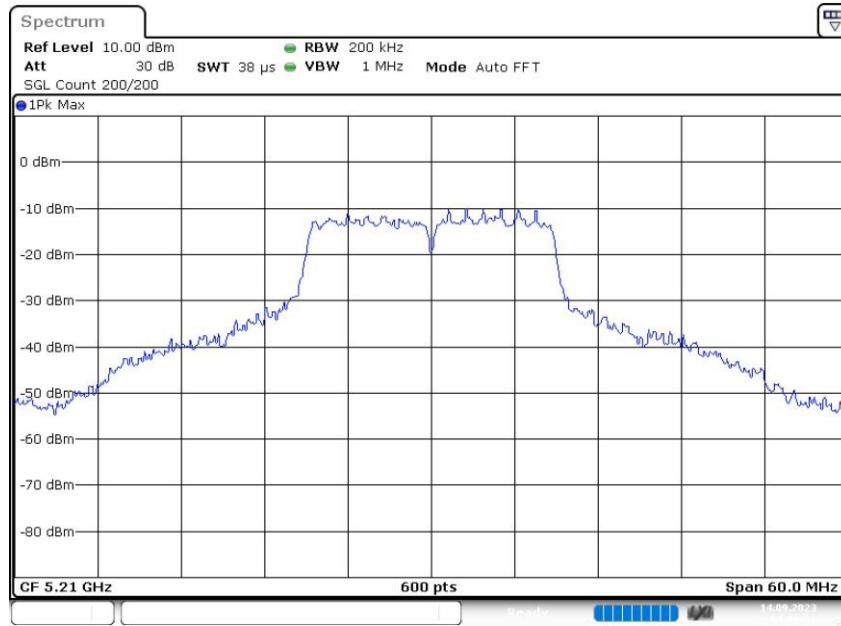
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5210.000000	28.500000	---	---	5195.750000	5224.250000

DUT Frequency (MHz)	Max Level (dBm)	Result
5210.000000	7.1	PASS

26 dB Bandwidth



Bandwidth



Date: 14.SEP.2023 04:36:57

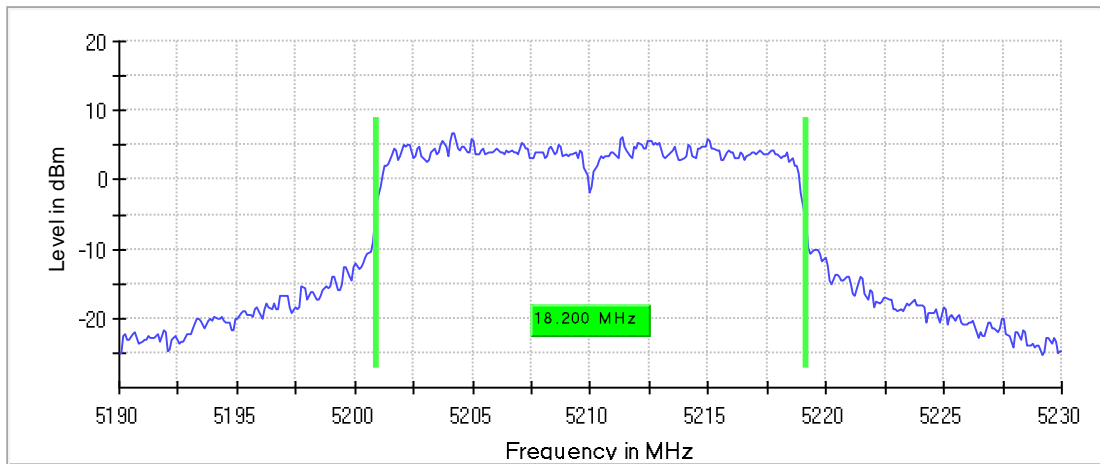
Occupied Channel Bandwidth 99% (5210 MHz; 24.000 dBm; 20 MHz)

99 % Bandwidth

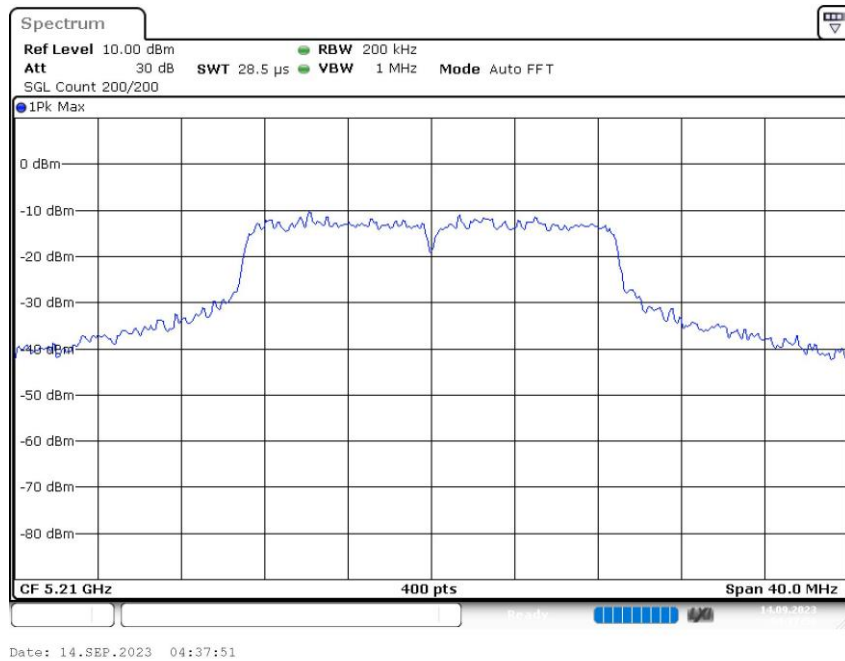
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5210.000000	18.200000	---	---	5200.950000	5219.150000

DUT Frequency (MHz)	Result
5210.000000	PASS

99 %Bandwidth



Bandwidth



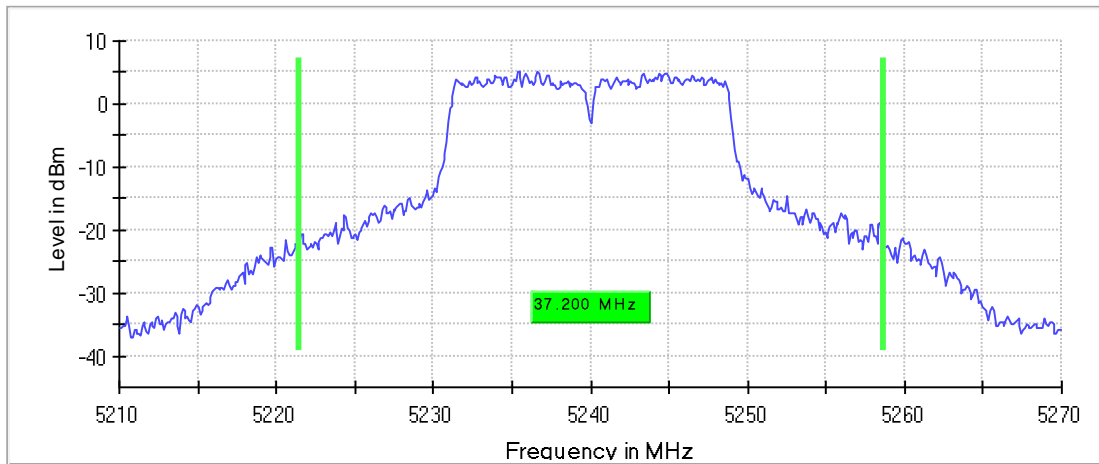
Emission Bandwidth 26 dB (5240 MHz; 24.000 dBm; 20 MHz)

26 dB Bandwidth

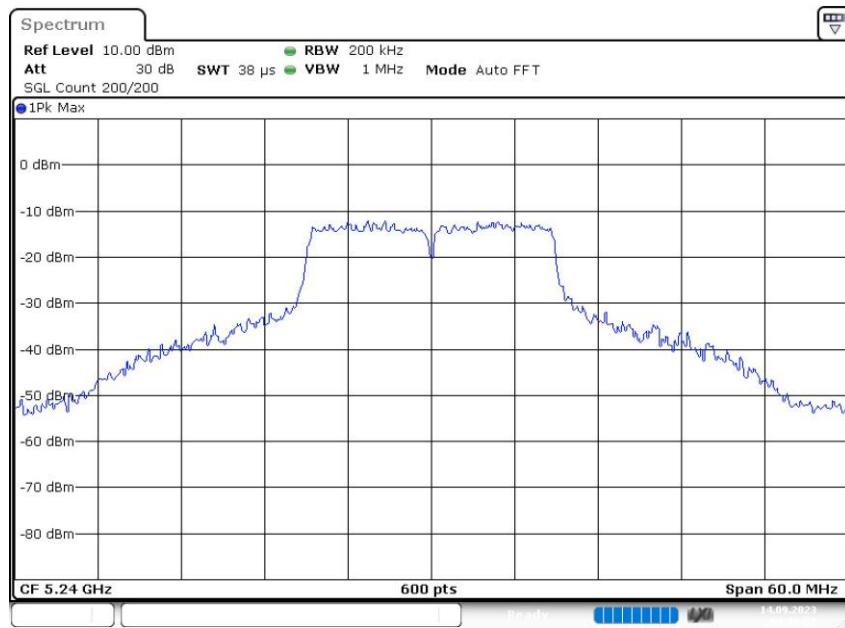
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5240.000000	37.200000	---	---	5221.450000	5258.650000

DUT Frequency (MHz)	Max Level (dBm)	Result
5240.000000	5.1	PASS

26 dB Bandwidth



Bandwidth

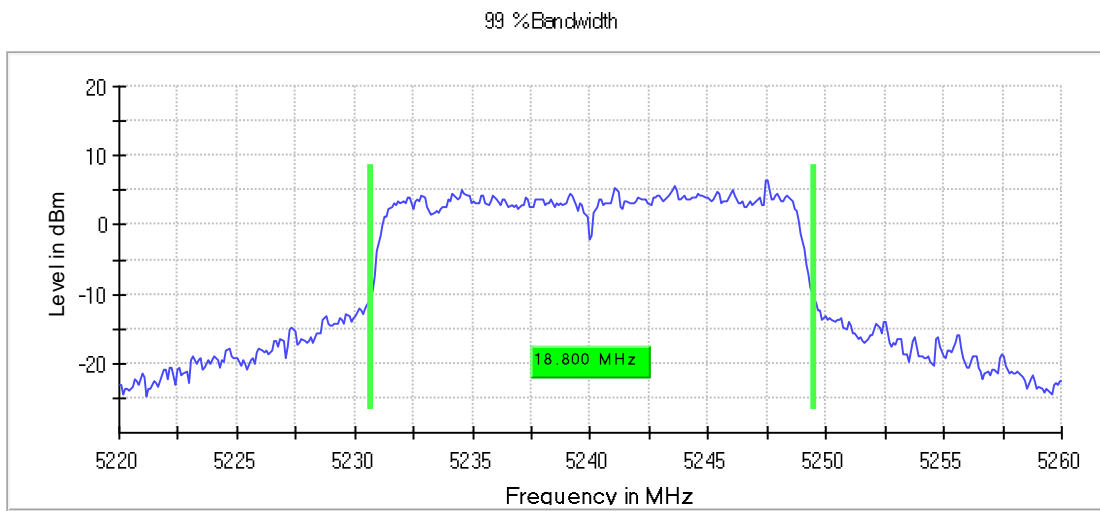


Occupied Channel Bandwidth 99% (5240 MHz; 24.000 dBm; 20 MHz)

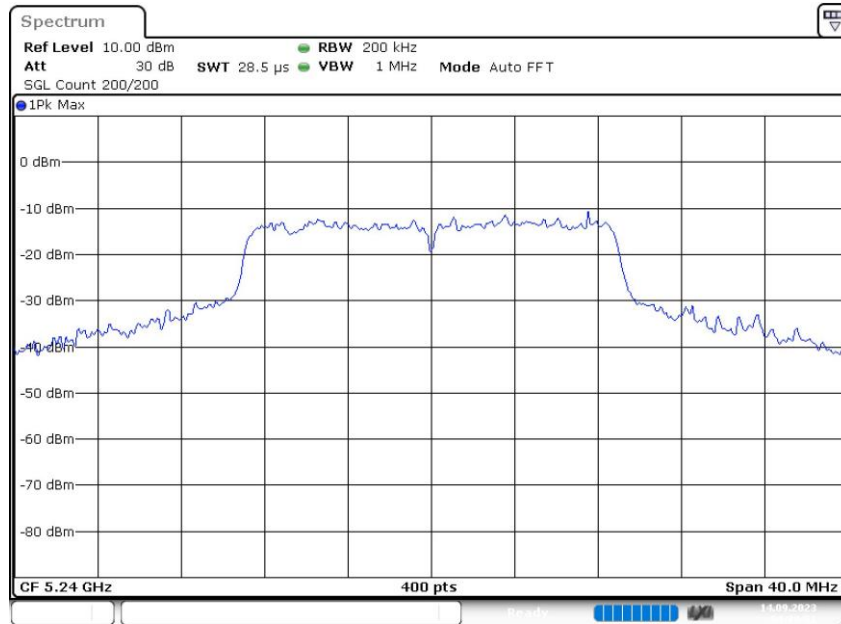
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5240.000000	18.800000	---	---	5230.650000	5249.450000

DUT Frequency (MHz)	Result
5240.000000	PASS



Bandwidth



Date: 14.SEP.2023 04:39:02

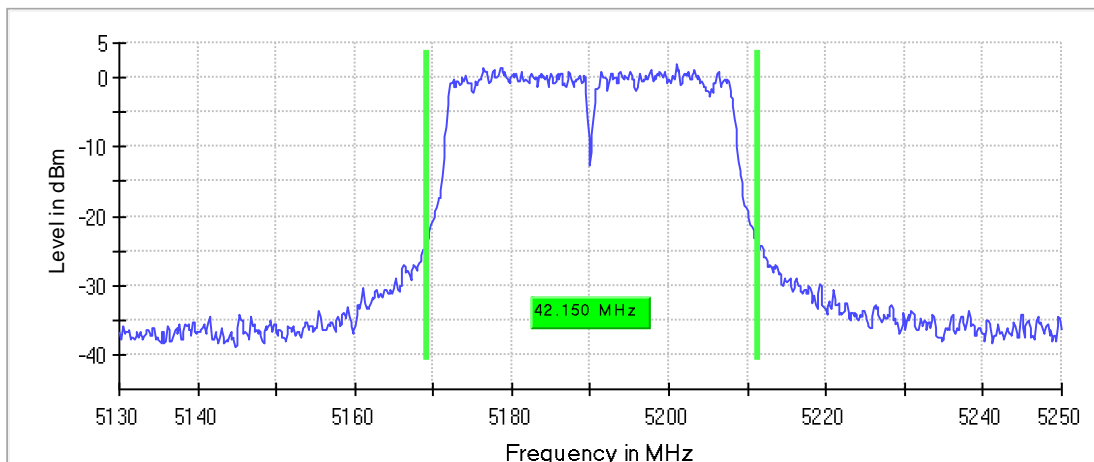
Emission Bandwidth 26 dB (5190 MHz; 24.000 dBm; 40 MHz)

26 dB Bandwidth

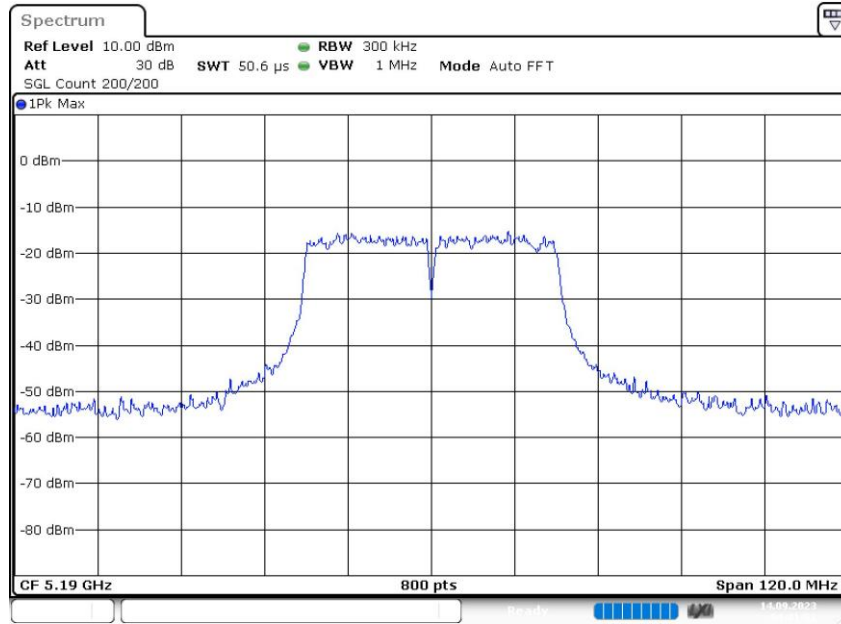
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5190.000000	42.150000	---	---	5169.075000	5211.225000

DUT Frequency (MHz)	Max Level (dBm)	Result
5190.000000	1.9	PASS

26 dB Bandwidth



Bandwidth

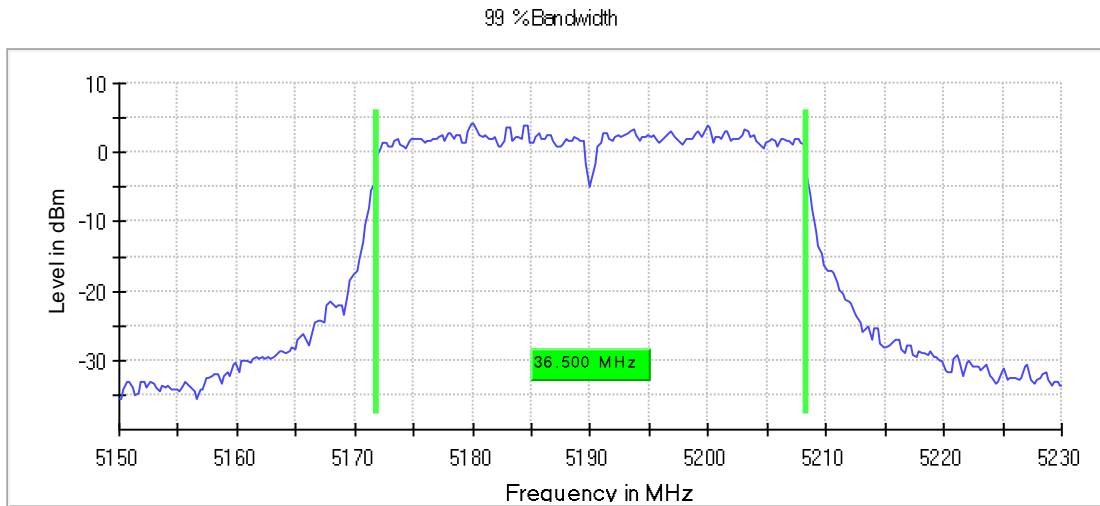


Occupied Channel Bandwidth 99% (5190 MHz; 24.000 dBm; 40 MHz)

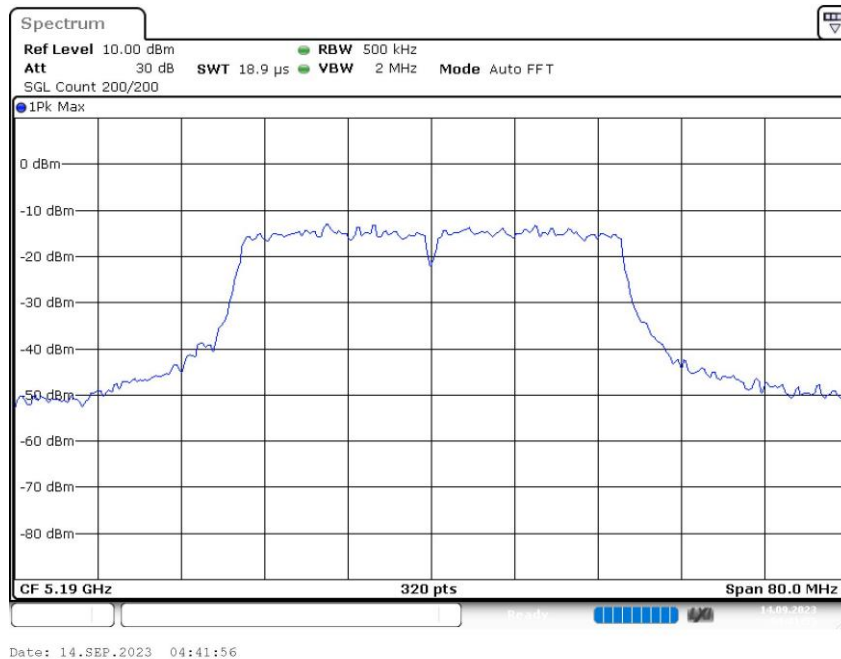
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5190.000000	36.500000	---	---	5171.875000	5208.375000

DUT Frequency (MHz)	Result
5190.000000	PASS



Bandwidth



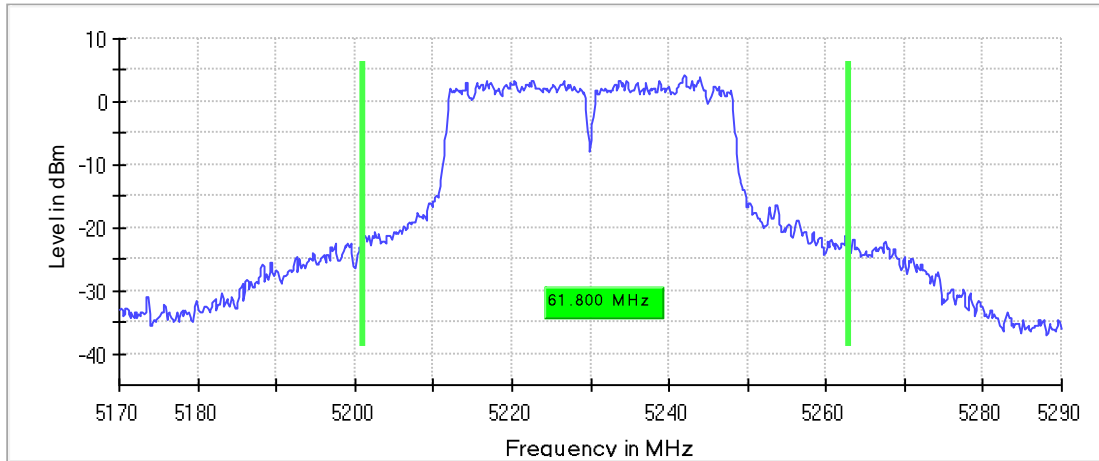
Emission Bandwidth 26 dB (5230 MHz; 24.000 dBm; 40 MHz)

26 dB Bandwidth

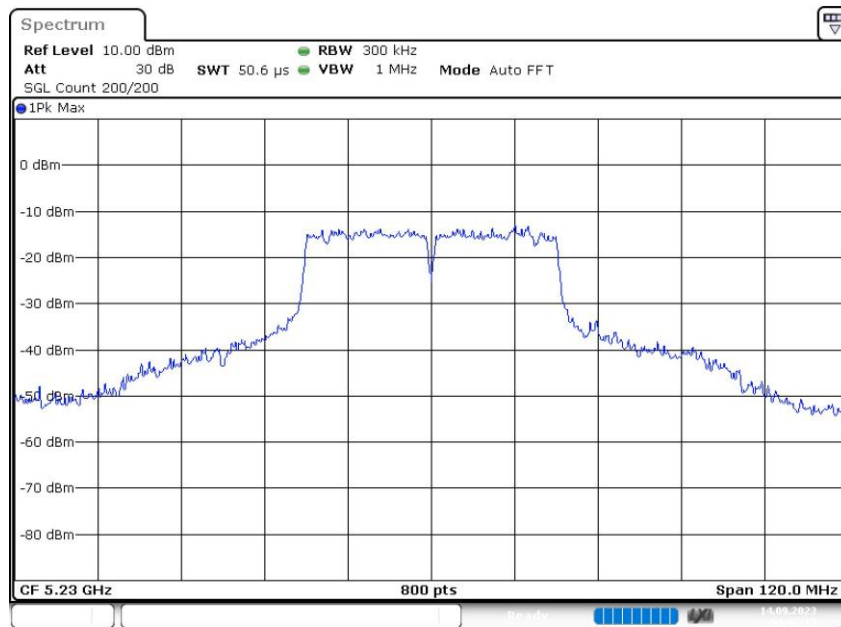
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5230.000000	61.800000	---	---	5200.975000	5262.775000

DUT Frequency (MHz)	Max Level (dBm)	Result
5230.000000	4.2	PASS

26 dB Bandwidth



Bandwidth

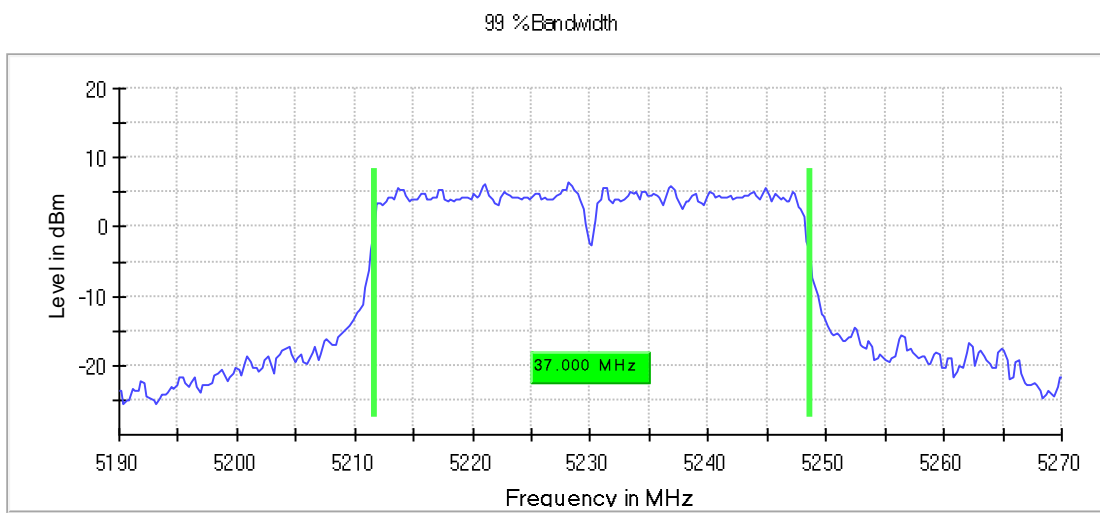


Occupied Channel Bandwidth 99% (5230 MHz; 24.000 dBm; 40 MHz)

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5230.000000	37.000000	---	---	5211.625000	5248.625000

DUT Frequency (MHz)	Result
5230.000000	PASS



Bandwidth



Date: 14.SEP.2023 04:43:10

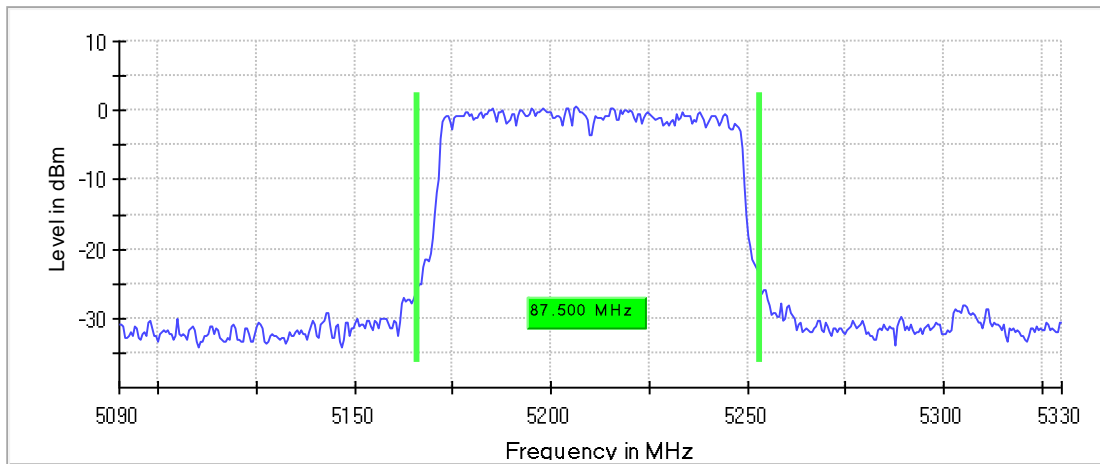
Emission Bandwidth 26 dB (5210 MHz; 24.000 dBm; 80 MHz)

26 dB Bandwidth

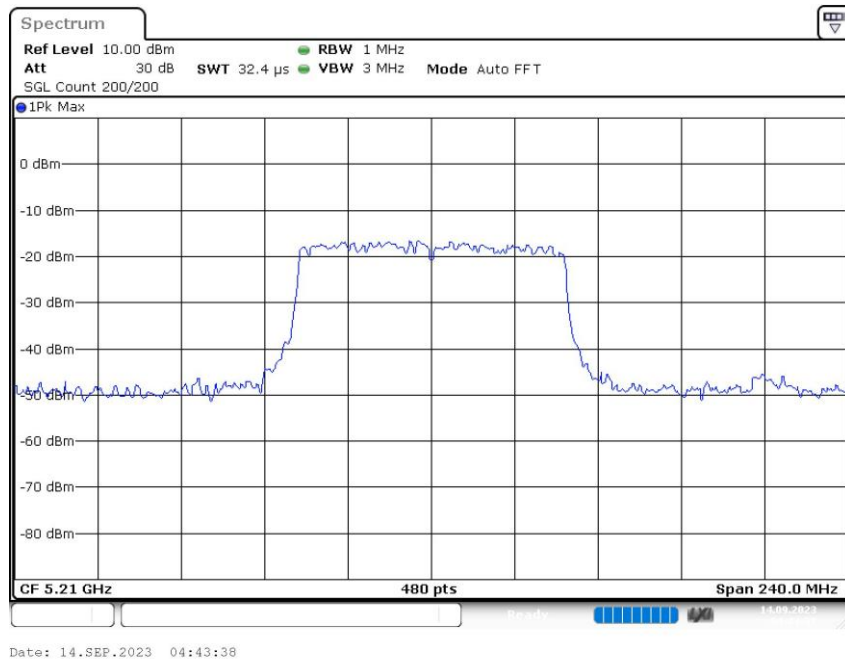
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5210.000000	87.500000	---	---	5165.750000	5253.250000

DUT Frequency (MHz)	Max Level (dBm)	Result
5210.000000	0.6	PASS

26 dB Bandwidth



Bandwidth

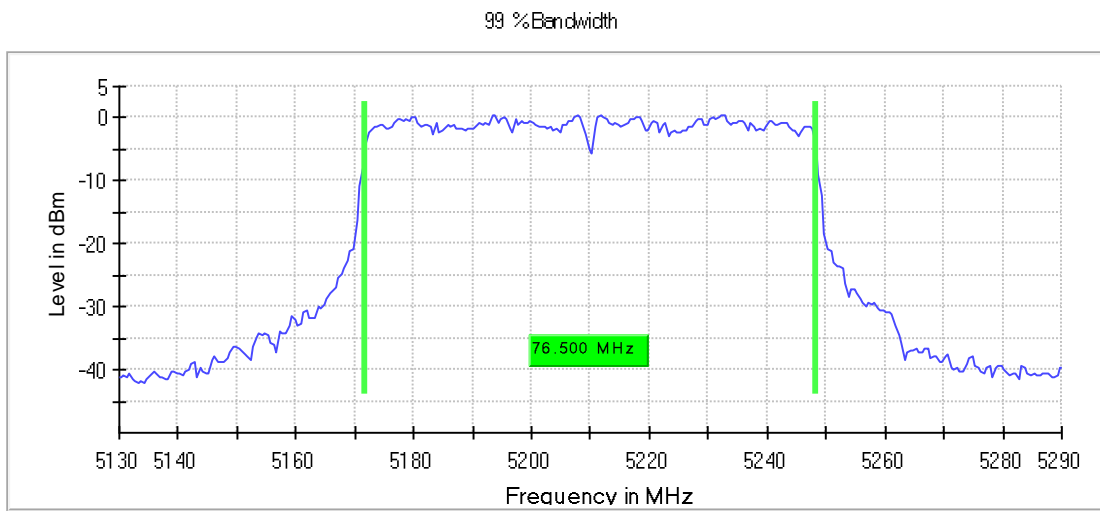


Occupied Channel Bandwidth 99% (5210 MHz; 24.000 dBm; 80 MHz)

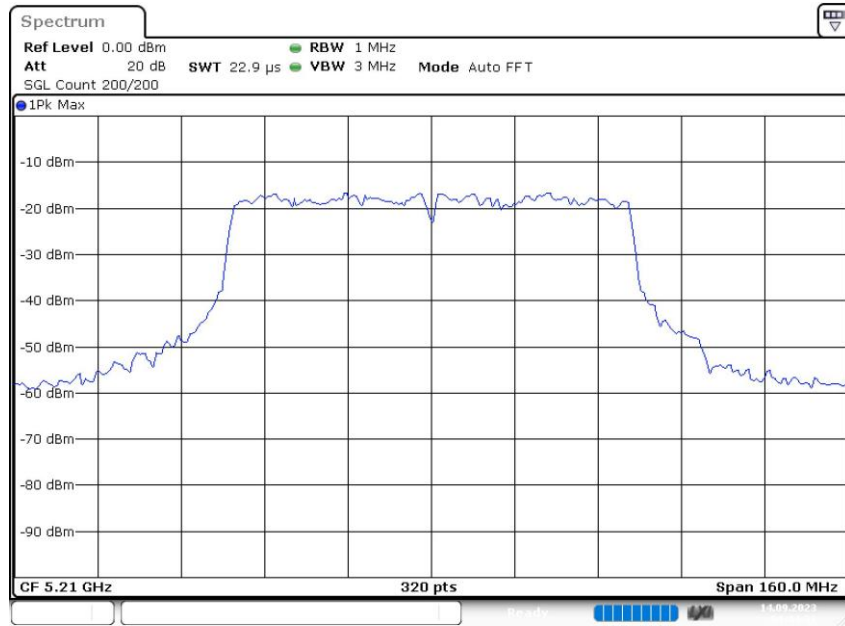
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5210.000000	76.500000	---	---	5171.750000	5248.250000

DUT Frequency (MHz)	Result
5210.000000	PASS



Bandwidth



Date: 14.SEP.2023 04:44:34

-- End of Report --