



427 West 12800 South
Draper, UT 84020

Test Report Attachment

FCC ID	SWX-E7CP
ISED ID	6545A-E7CP
Equipment Under Test	E7-Campus
Test Report Serial Number	TR9075_01
Date of Test(s)	20 – 23 May 2024
Report Issue Date	24 June 2024

Test Personnel

Testing performed by	Evan Hartzell
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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 2025. 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 2025. Unified Compliance Laboratory has been assigned Conformity Assessment Number US0223 by ISED and MRA US5037.



1 2.4 GHz WiFi

1.1 Summary

Test	Frequency (MHz)	Nominal Power (dBm)	Nominal Bandwidth (MHz)	Result
RF output power	2412.000	24.0	20.000000	PASS
Minimum Emission Bandwidth 6 dB	2412.000	24.0	20.000000	PASS
Power Spectral Density	2412.000	24.0	20.000000	PASS
Occupied Channel Bandwidth 99%	2412.000	24.0	20.000000	PASS
Tx Spurious Emission	2412.000	24.0	20.000000	PASS
Minimum Emission Bandwidth 6 dB	2437.000	24.0	20.000000	PASS
Power Spectral Density	2437.000	24.0	20.000000	PASS
Occupied Channel Bandwidth 99%	2437.000	24.0	20.000000	PASS
Tx Spurious Emission	2437.000	24.0	20.000000	PASS
Minimum Emission Bandwidth 6 dB	2462.000	24.0	20.000000	PASS
Power Spectral Density	2462.000	24.0	20.000000	PASS
Occupied Channel Bandwidth 99%	2462.000	24.0	20.000000	PASS
Tx Spurious Emission	2462.000	24.0	20.000000	PASS
Minimum Emission Bandwidth 6 dB	2422.000	24.0	40.000000	PASS
Power Spectral Density	2422.000	24.0	40.000000	PASS
Occupied Channel Bandwidth 99%	2422.000	24.0	40.000000	PASS
Tx Spurious Emission	2422.000	24.0	40.000000	PASS
Minimum Emission Bandwidth 6 dB	2437.000	24.0	40.000000	PASS
Power Spectral Density	2437.000	24.0	40.000000	PASS
Occupied Channel Bandwidth 99%	2437.000	24.0	40.000000	PASS
Tx Spurious Emission	2437.000	24.0	40.000000	PASS
Minimum Emission Bandwidth 6 dB	2452.000	24.0	40.000000	PASS
Power Spectral Density	2452.000	24.0	40.000000	PASS
Occupied Channel Bandwidth 99%	2452.000	24.0	40.000000	PASS
Tx Spurious Emission	2452.000	24.0	40.000000	PASS

RF output power (2412 MHz; 24.000 dBm; 20 MHz)

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2412.000000	24.0	30.0	24.0	99.714	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

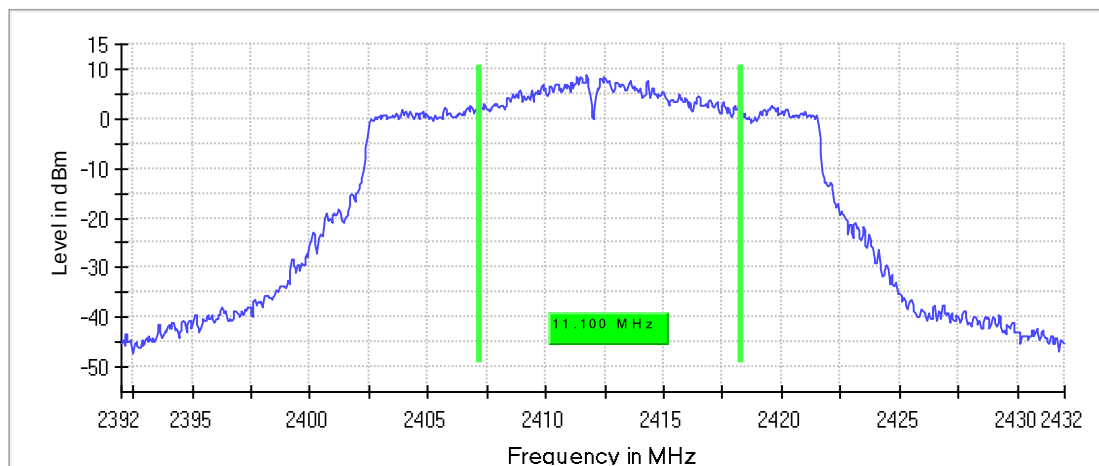
Minimum Emission Bandwidth 6 dB (2412 MHz; 24.000 dBm; 20 MHz)

6 dB Bandwidth

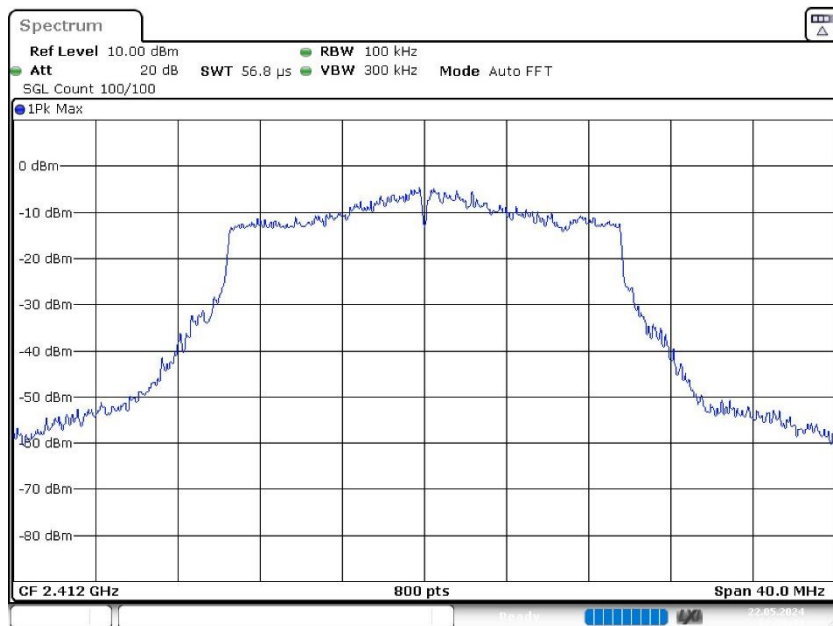
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2412.000000	11.100000	0.500000	---	2407.175000	2418.275000

DUT Frequency (MHz)	Max Level (dBm)	Result
2412.000000	8.6	PASS

6 dB Bandwidth



Bandwidth



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Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.39200 GHz	2.39200 GHz
Stop Frequency	2.43200 GHz	2.43200 GHz
Span	40.000 MHz	40.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	800	~ 800
SweepTime	56.836 μ s	AUTO
Reference Level	10.000 dBm	AUTO
Attenuation	20.000 dB	0.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off

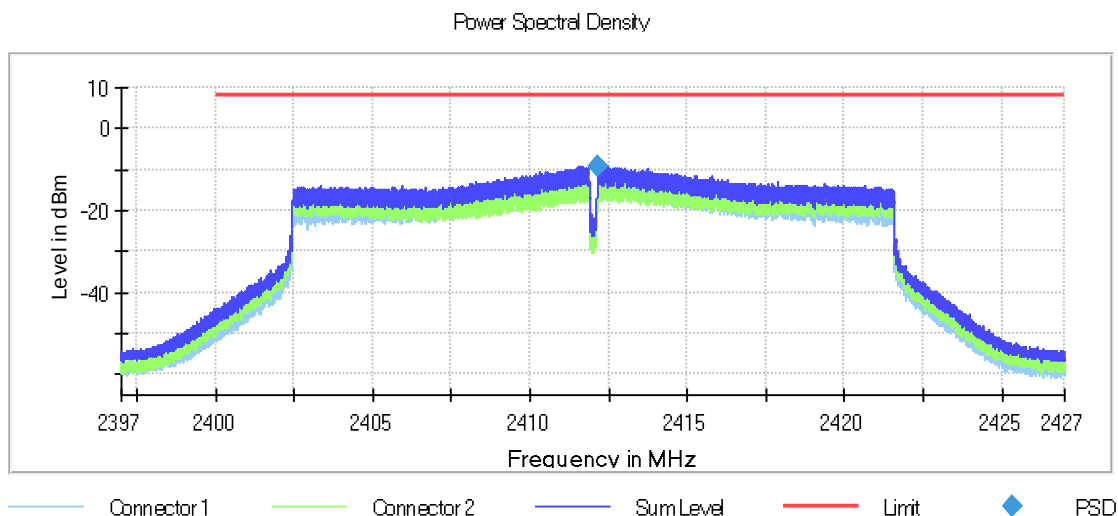
Power Spectral Density (2412 MHz; 24.000 dBm; 20 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2412.000000	2412.165750	-9.284	8.0	PASS

Ports

Port	State
1	used
2	used



Measurement

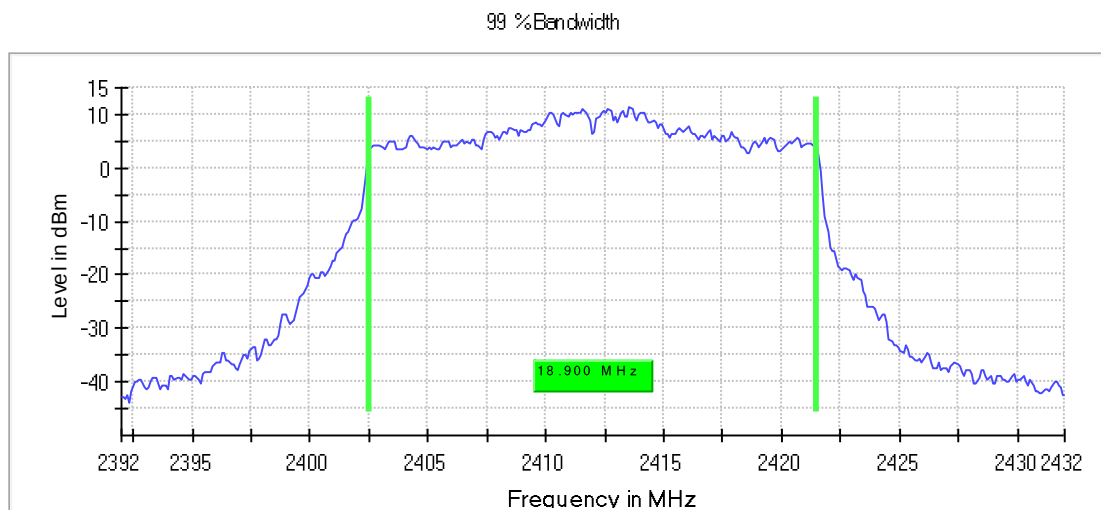
Setting	Instrument Value	Target Value
Start Frequency	2.39700 GHz	2.39700 GHz
Stop Frequency	2.42700 GHz	2.42700 GHz
Span	30.000 MHz	30.000 MHz
RBW	3.000 kHz	<= 3.000 kHz
VBW	10.000 kHz	>= 9.000 kHz
SweepPoints	20000	~ 20000
SweepTime	4.424 ms	AUTO
Reference Level	20.000 dBm	20.000 dBm
Attenuation	40.000 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% (2412 MHz; 24.000 dBm; 20 MHz)

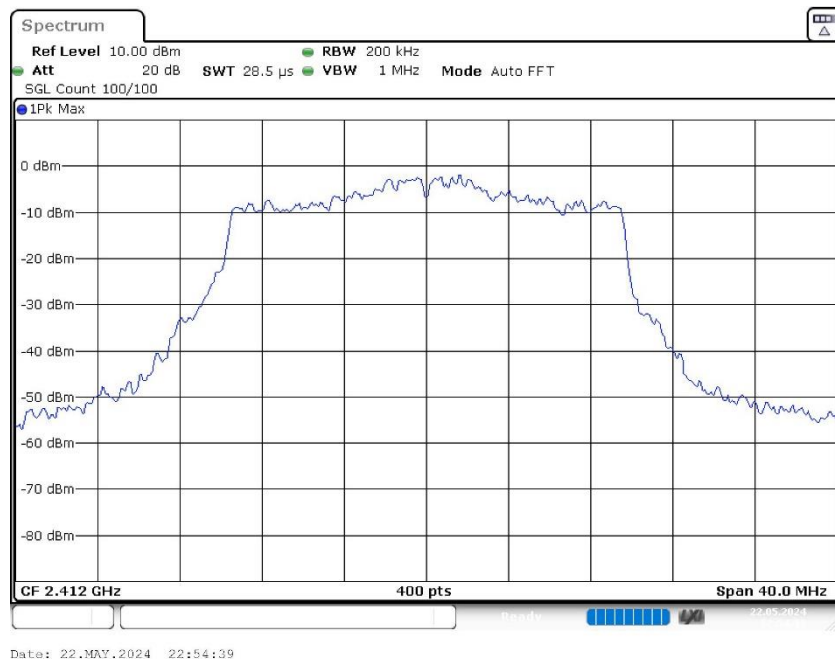
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2412.000000	18.900000	---	---	2402.550000	2421.450000

DUT Frequency (MHz)	Result
2412.000000	PASS



Bandwidth



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.39200 GHz	2.39200 GHz
Stop Frequency	2.43200 GHz	2.43200 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	AUTO
Attenuation	20.000 dB	0.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off

Tx Spurious Emission (2412 MHz; 24.000 dBm; 20 MHz)

Result

DUT Frequency (MHz)	Result
2412.000000	PASS

Final measurements

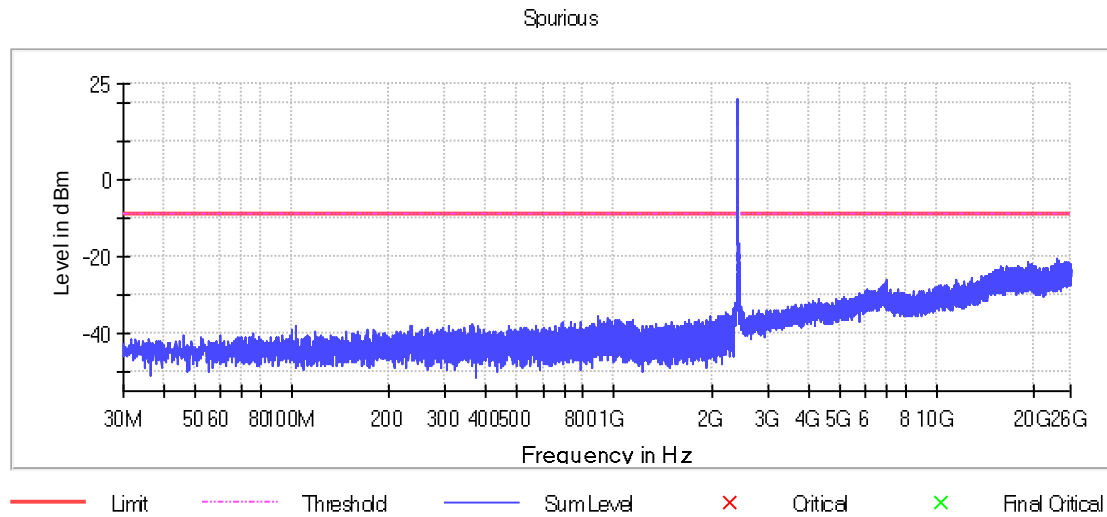
Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2399.825000	-13.0	4.2	-8.8
2399.875000	-13.3	4.5	-8.8
2399.775000	-13.6	4.8	-8.8
2399.925000	-13.8	5.0	-8.8
2399.725000	-14.0	5.2	-8.8
2399.975000	-14.2	5.4	-8.8
2399.675000	-14.3	5.5	-8.8
2399.575000	-14.7	5.9	-8.8
2399.625000	-14.9	6.1	-8.8
2399.325000	-15.2	6.4	-8.8
2399.375000	-15.3	6.5	-8.8
2399.425000	-15.3	6.5	-8.8
2399.475000	-15.3	6.5	-8.8
2399.525000	-15.4	6.7	-8.8
2399.275000	-15.5	6.7	-8.8

Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	2350.000000	1	1
2350.000000	2483.500000	2	1
2483.500000	26000.000000	1	1



Pre Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	≤ 100.000 kHz
VBW	300.000 kHz	≥ 300.000 kHz
SweepPoints	32001	~ 46400
SweepTime	32.100 ms	AUTO
Reference Level	20.000 dBm	20.000 dBm
Attenuation	40.000 dB	40.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	3	3
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off

Pre Measurement 2

Setting	Instrument Value	Target Value
RBW	100.000 kHz	≤ 100.000 kHz
VBW	300.000 kHz	≥ 300.000 kHz
SweepPoints	2670	~ 2670
SweepTime	151.563 μ s	AUTO
Reference Level	20.000 dBm	20.000 dBm
Attenuation	40.000 dB	40.000 dB
Detector	MaxPeak	MaxPeak
SweepCount	300	300
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off

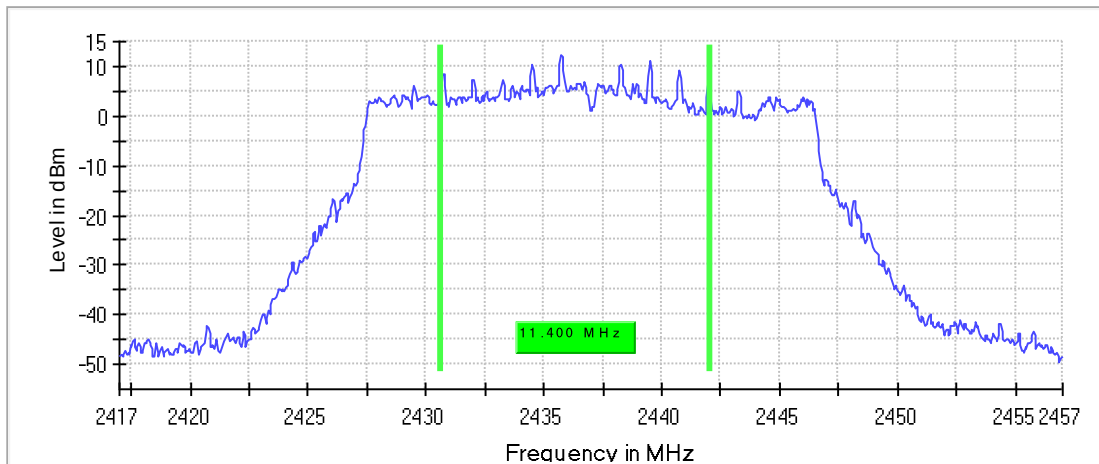
Minimum Emission Bandwidth 6 dB (2437 MHz; 24.000 dBm; 20 MHz)

6 dB Bandwidth

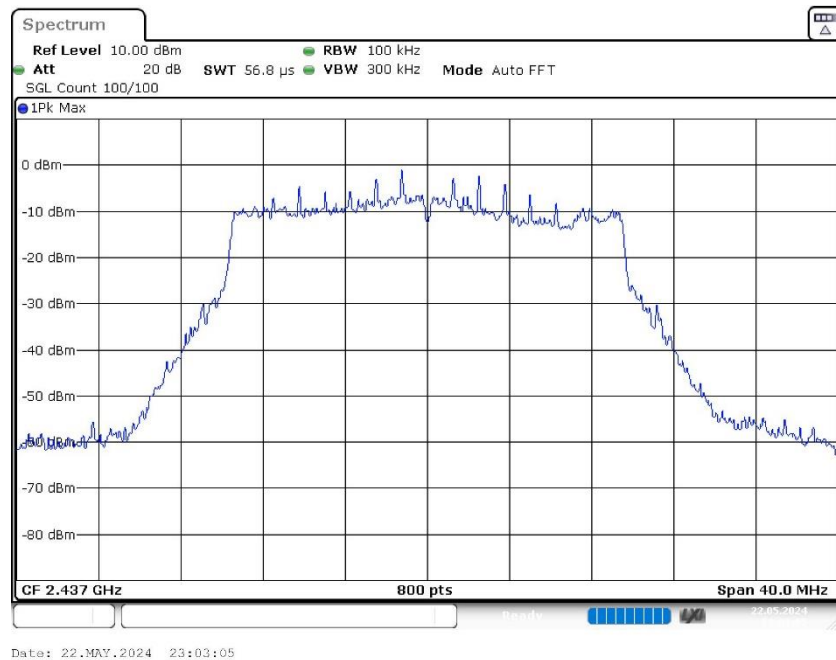
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2437.000000	11.400000	0.500000	---	2430.675000	2442.075000

DUT Frequency (MHz)	Max Level (dBm)	Result
2437.000000	12.2	PASS

6 dB Bandwidth



Bandwidth



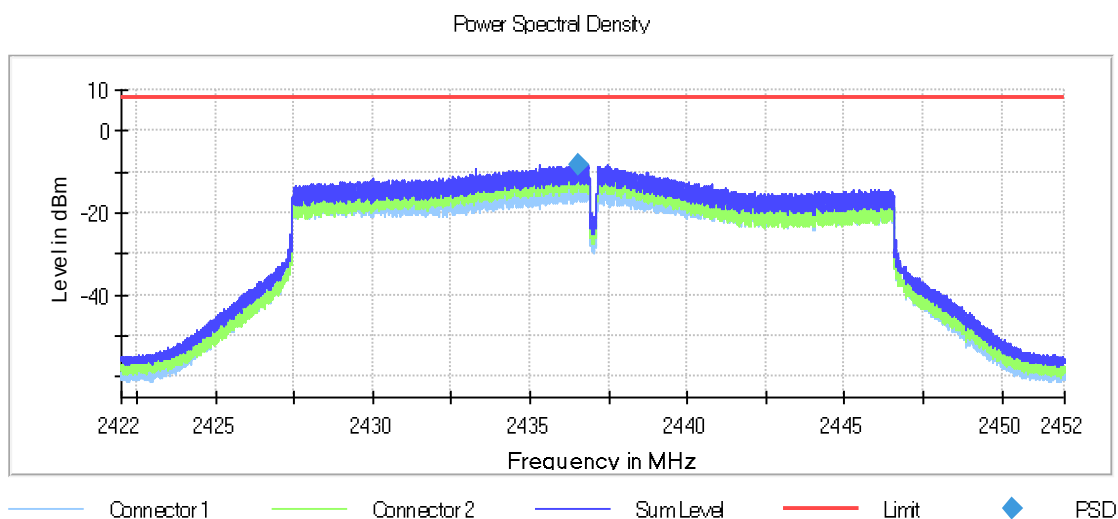
Power Spectral Density (2437 MHz; 24.000 dBm; 20 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2437.000000	2436.540250	-8.337	8.0	PASS

Ports

Port	State
1	used
2	used

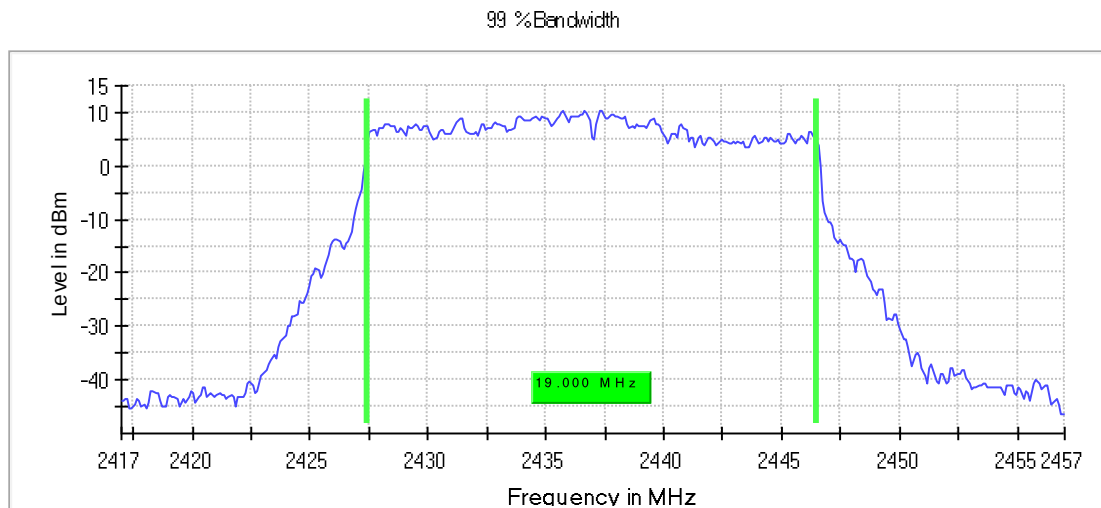


Occupied Channel Bandwidth 99% (2437 MHz; 24.000 dBm; 20 MHz)

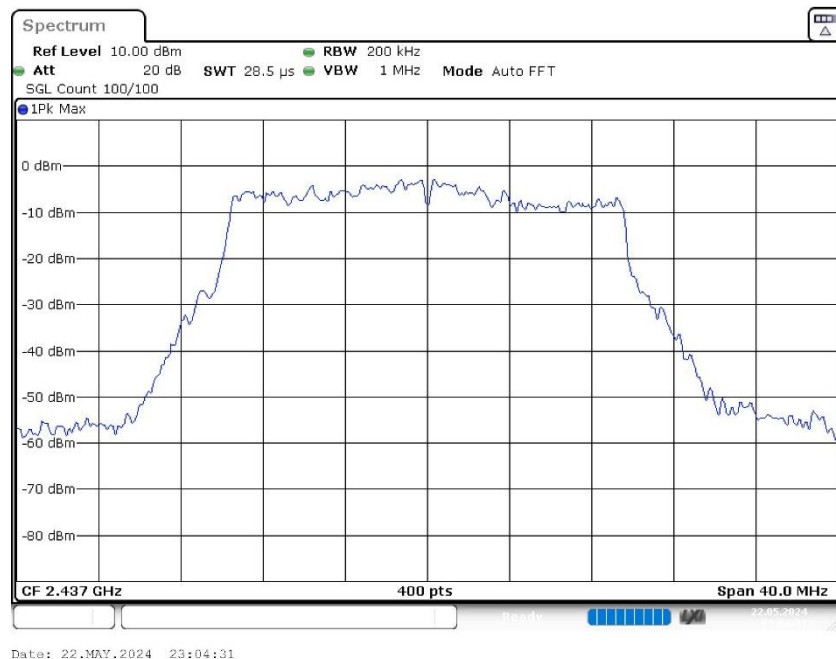
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2437.000000	19.000000	---	---	2427.450000	2446.450000

DUT Frequency (MHz)	Result
2437.000000	PASS



Bandwidth



Tx Spurious Emission (2437 MHz; 24.000 dBm; 20 MHz)

Result

DUT Frequency (MHz)	Result
2437.000000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

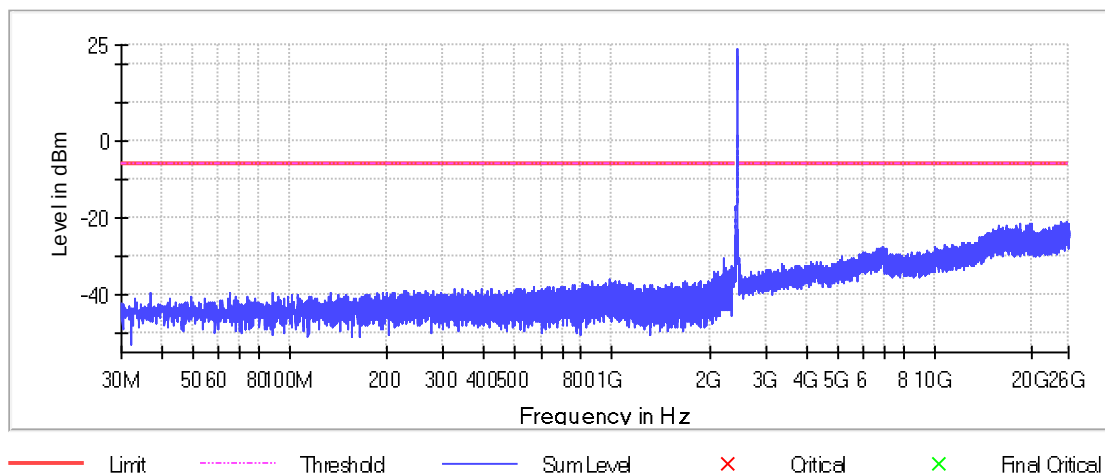
Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
24740.069396	-20.8	15.0	-5.8
25744.633488	-21.1	15.3	-5.8
19812.781733	-21.3	15.5	-5.8
24811.351559	-21.3	15.5	-5.8
24810.616692	-21.4	15.5	-5.8
25267.704376	-21.4	15.6	-5.8
24842.216001	-21.4	15.6	-5.8
25823.999195	-21.5	15.6	-5.8
24773.138441	-21.5	15.7	-5.8
18459.890371	-21.6	15.8	-5.8
25354.418760	-21.6	15.8	-5.8
25657.184236	-21.6	15.8	-5.8
24493.888730	-21.7	15.9	-5.8
25336.781937	-21.7	15.9	-5.8
19867.161940	-21.7	15.9	-5.8

Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	2350.000000	1	1
2350.000000	2483.500000	2	1
2483.500000	26000.000000	1	1

Spurious



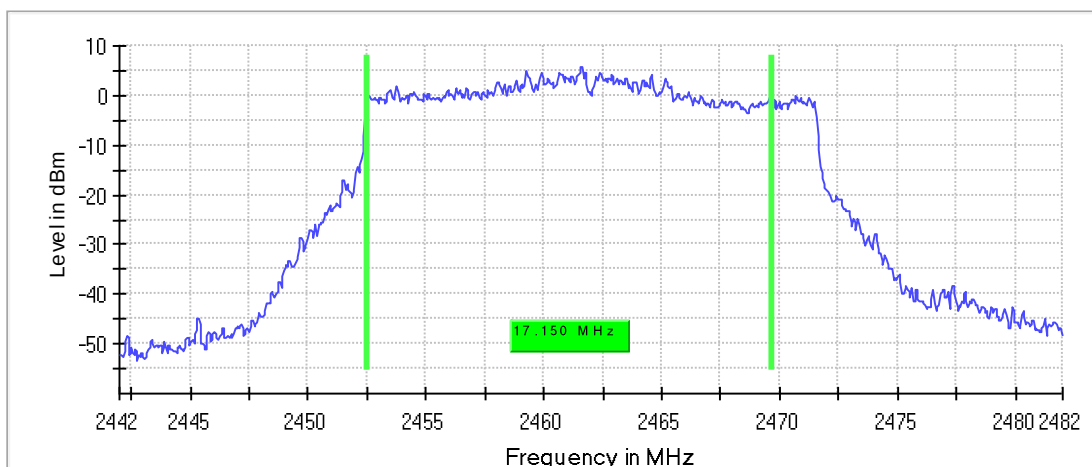
Minimum Emission Bandwidth 6 dB (2462 MHz; 24.000 dBm; 20 MHz)

6 dB Bandwidth

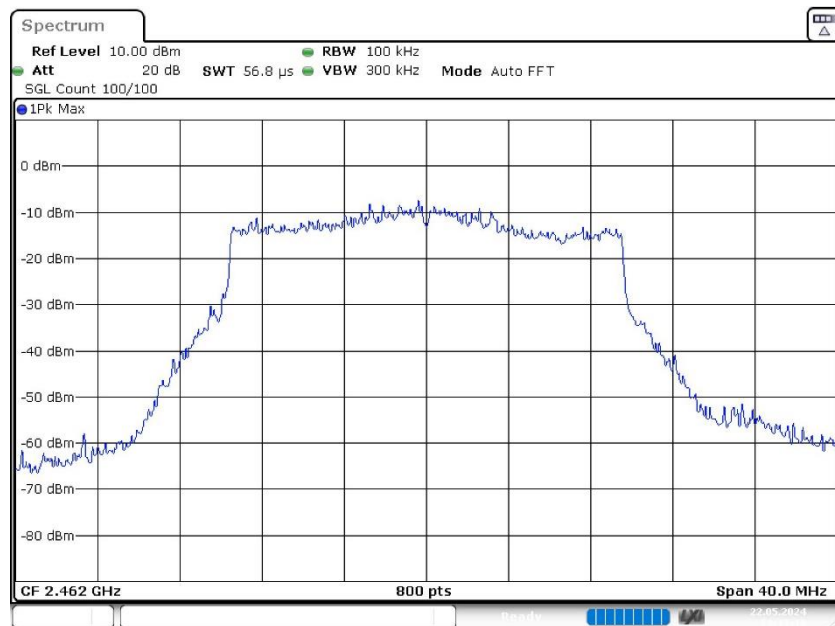
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2462.000000	17.150000	0.500000	---	2452.525000	2469.675000

DUT Frequency (MHz)	Max Level (dBm)	Result
2462.000000	5.9	PASS

6 dB Bandwidth



Bandwidth



Power Spectral Density (2462 MHz; 24.000 dBm; 20 MHz)

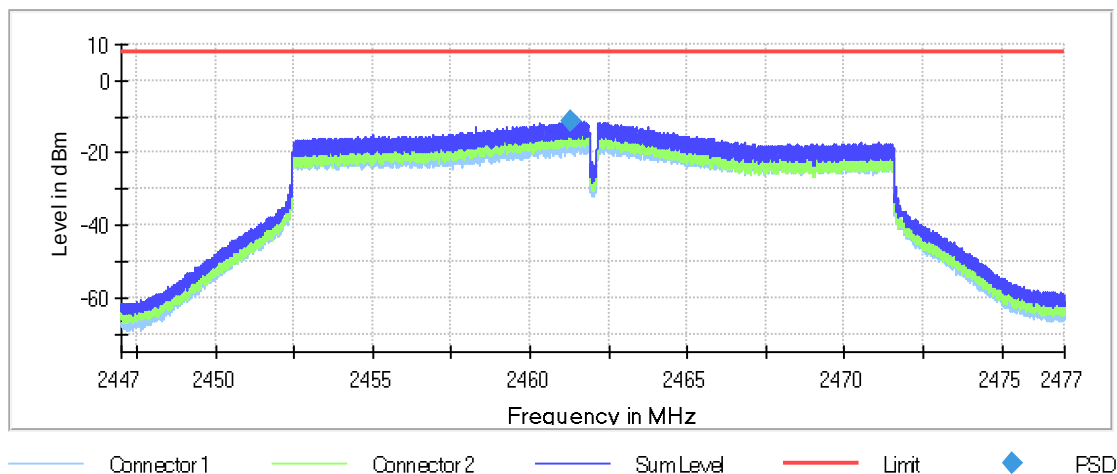
Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2462.000000	2461.306250	-11.323	8.0	PASS

Ports

Port	State
1	used
2	used

Power Spectral Density



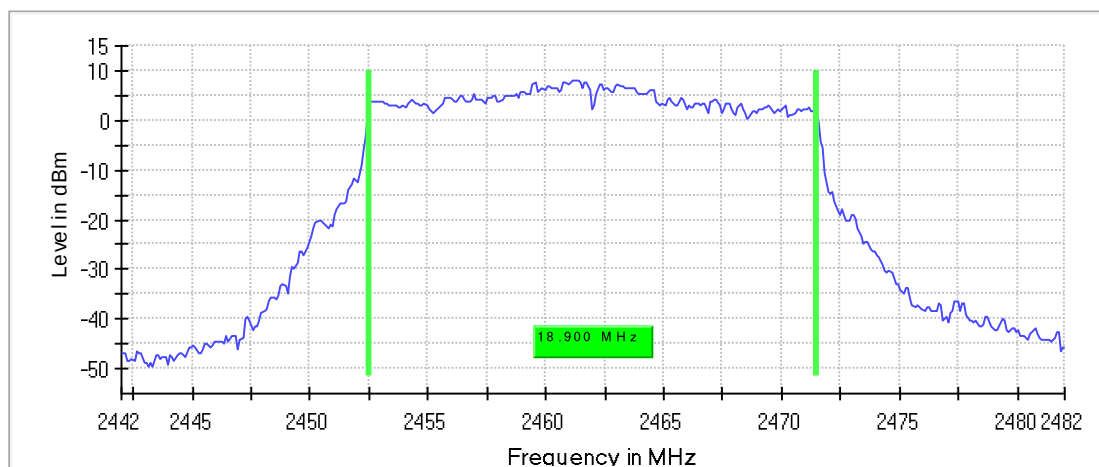
Occupied Channel Bandwidth 99% (2462 MHz; 24.000 dBm; 20 MHz)

99 % Bandwidth

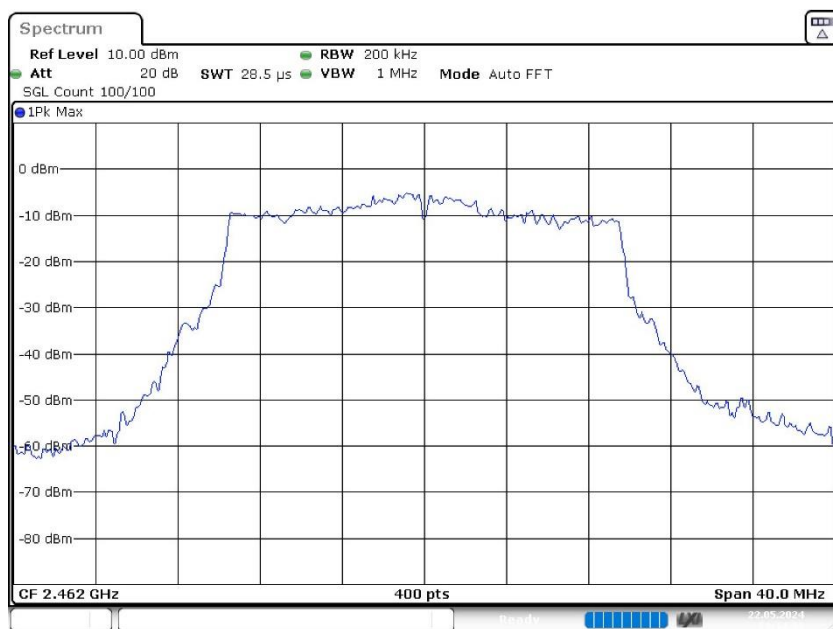
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2462.000000	18.900000	---	---	2452.550000	2471.450000

DUT Frequency (MHz)	Result
2462.000000	PASS

99 % Bandwidth



Bandwidth



Date: 22.MAY.2024 23:14:09

Tx Spurious Emission (2462 MHz; 24.000 dBm; 20 MHz)

Result

DUT Frequency (MHz)	Result
2462.000000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

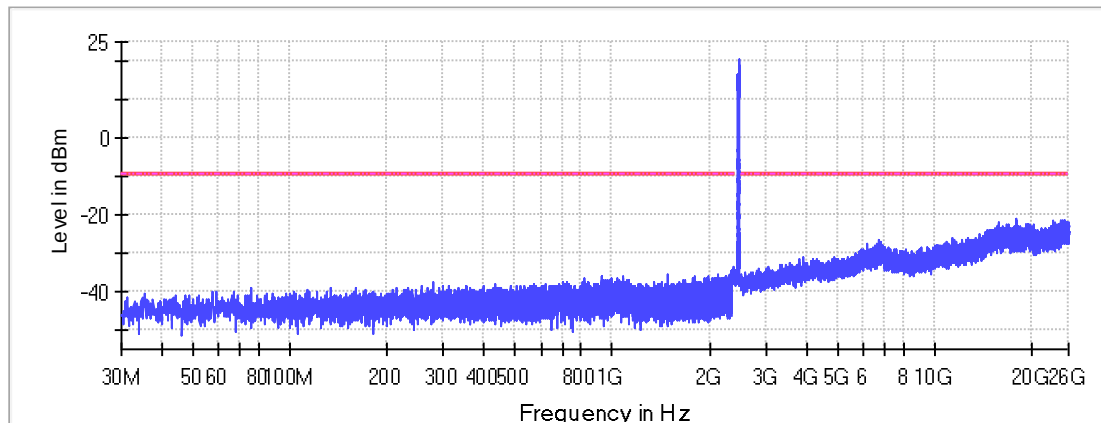
Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
17794.835138	-21.0	11.5	-9.5
25427.905526	-21.3	11.8	-9.5
24679.810248	-21.3	11.8	-9.5
25117.791374	-21.4	11.9	-9.5
23411.428666	-21.4	11.9	-9.5
17816.146300	-21.4	12.0	-9.5
25112.647300	-21.5	12.0	-9.5
25142.042006	-21.6	12.2	-9.5
25116.321638	-21.7	12.2	-9.5
25092.071006	-21.7	12.3	-9.5
24639.392527	-21.7	12.3	-9.5
17815.411432	-21.8	12.3	-9.5
25937.903683	-21.8	12.3	-9.5
24683.484586	-21.8	12.3	-9.5
15735.001086	-21.8	12.3	-9.5

Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	2350.000000	1	1
2350.000000	2483.500000	2	1
2483.500000	26000.000000	1	1

Spurious



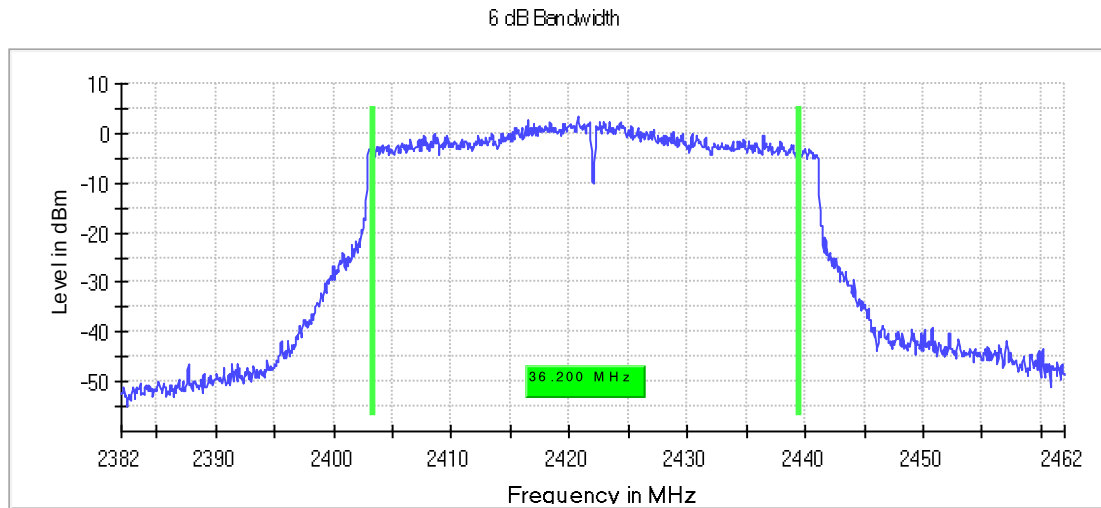
— Limit - - - - - Threshold — Sum Level × Critical × Final Critical

Minimum Emission Bandwidth 6 dB (2422 MHz; 24.000 dBm; 40 MHz)

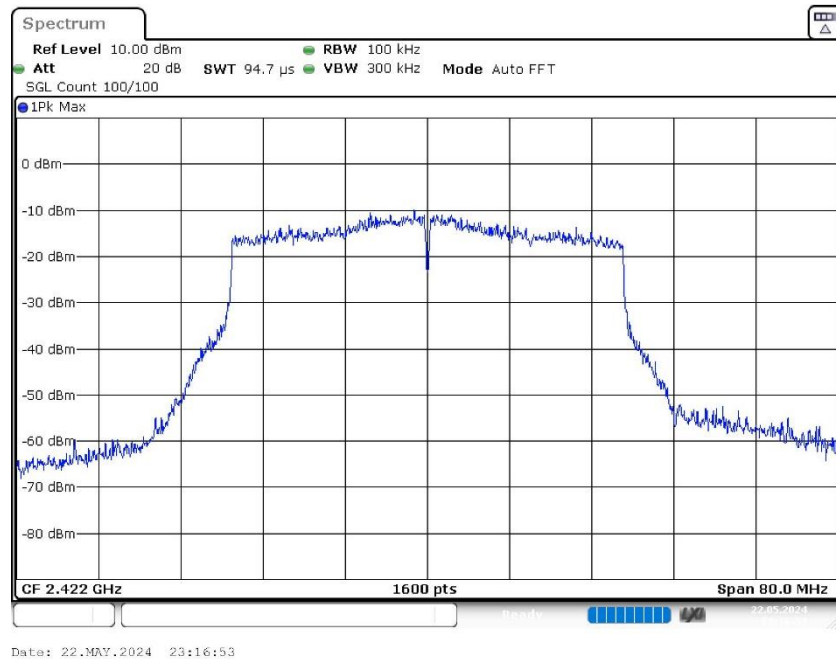
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2422.000000	36.200000	0.500000	---	2403.275000	2439.475000

DUT Frequency (MHz)	Max Level (dBm)	Result
2422.000000	3.4	PASS



Bandwidth



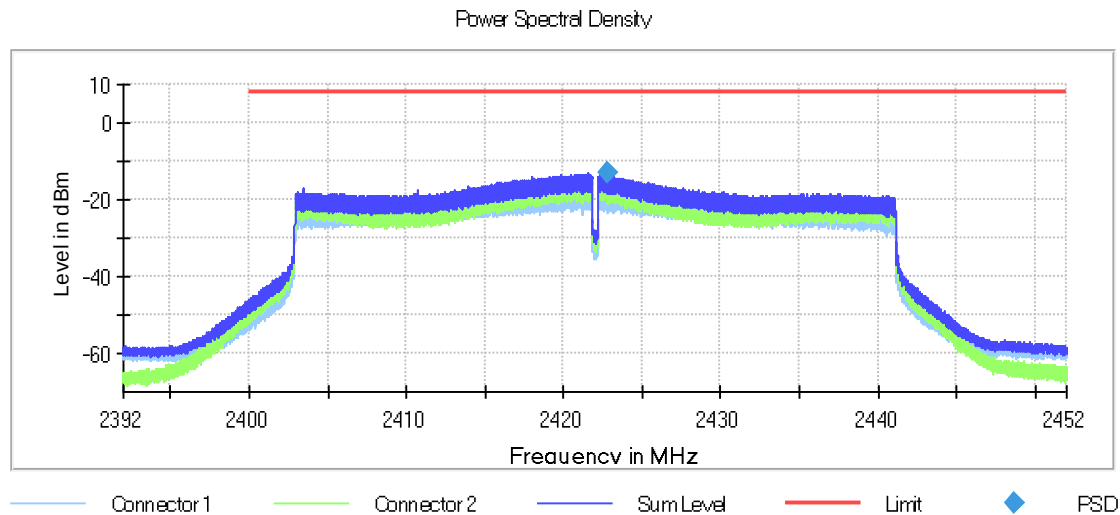
Power Spectral Density (2422 MHz; 24.000 dBm; 40 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2422.000000	2422.783726	-12.974	8.0	PASS

Ports

Port	State
1	used
2	used

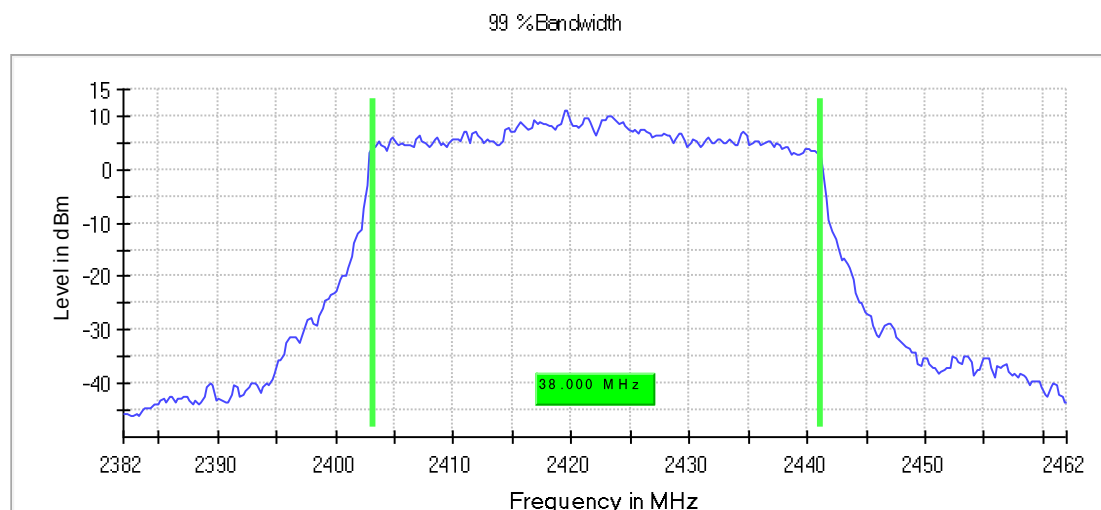


Occupied Channel Bandwidth 99% (2422 MHz; 24.000 dBm; 40 MHz)

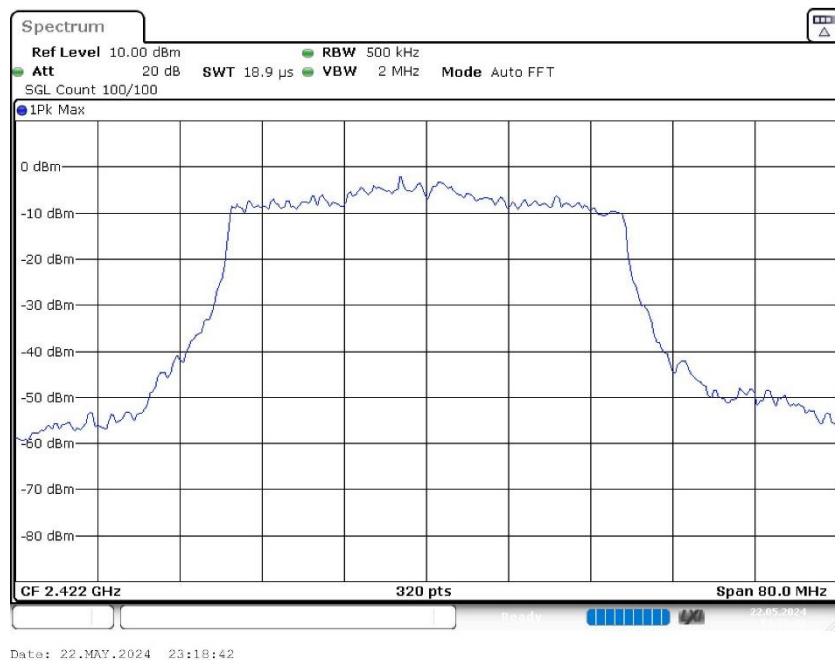
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2422.000000	38.000000	---	---	2403.125000	2441.125000

DUT Frequency (MHz)	Result
2422.000000	PASS



Bandwidth



Tx Spurious Emission (2422 MHz; 24.000 dBm; 40 MHz)

Result

DUT Frequency (MHz)	Result
2422.000000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

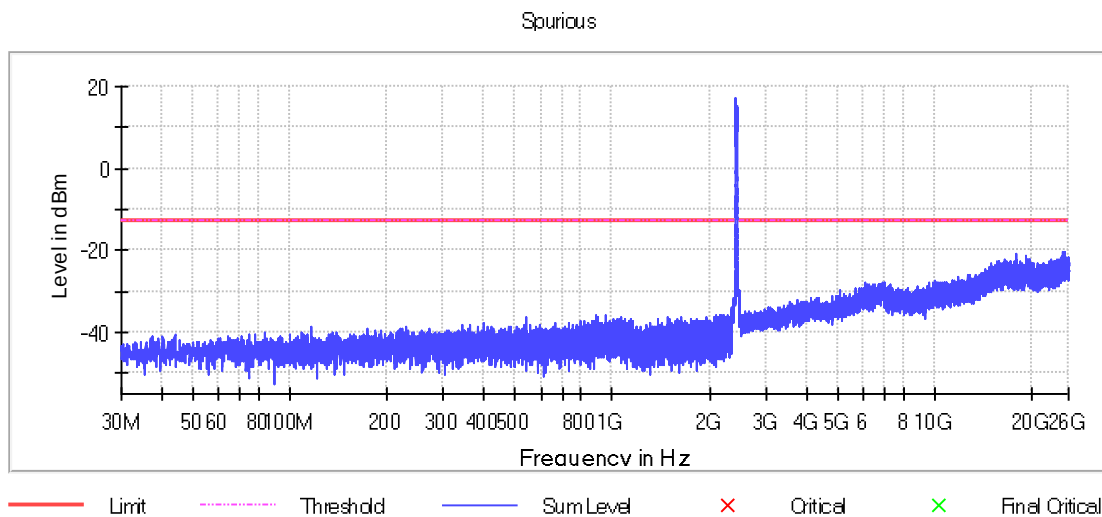
Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2399.475000	-14.0	1.3	-12.7
2399.525000	-14.3	1.6	-12.7
2399.575000	-14.8	2.1	-12.7
2399.225000	-14.9	2.2	-12.7
2399.425000	-15.0	2.3	-12.7
2399.775000	-15.0	2.3	-12.7
2399.175000	-15.0	2.3	-12.7
2399.825000	-15.3	2.6	-12.7
2399.975000	-15.4	2.7	-12.7
2399.725000	-15.5	2.8	-12.7
2399.625000	-15.6	2.9	-12.7
2399.925000	-15.7	3.0	-12.7
2399.875000	-15.7	3.0	-12.7
2399.275000	-15.9	3.2	-12.7

2399.325000	-16.4	3.7	-12.7
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Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	2350.000000	1	1
2350.000000	2483.500000	2	1
2483.500000	26000.000000	1	1

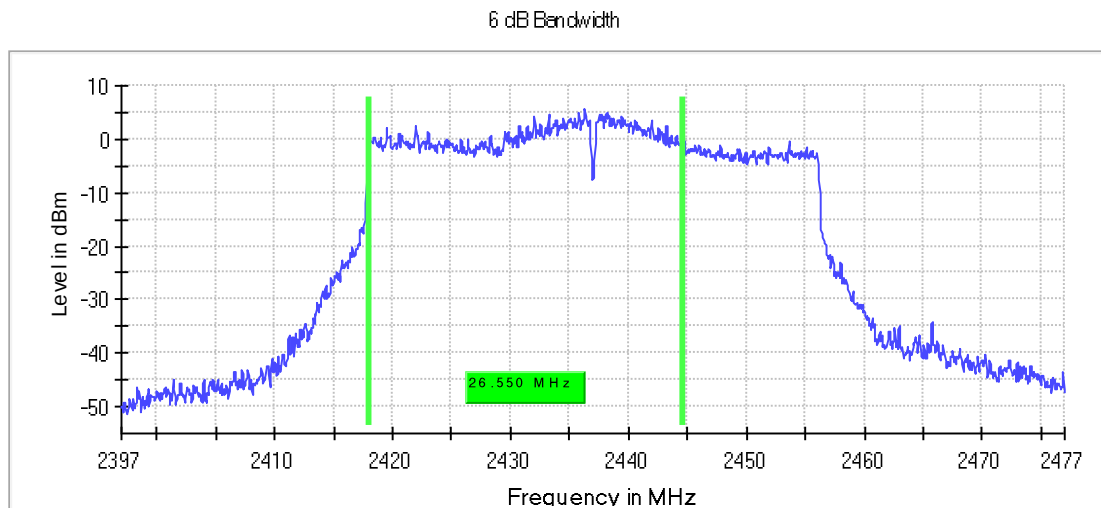


Minimum Emission Bandwidth 6 dB (2437 MHz; 24.000 dBm; 40 MHz)

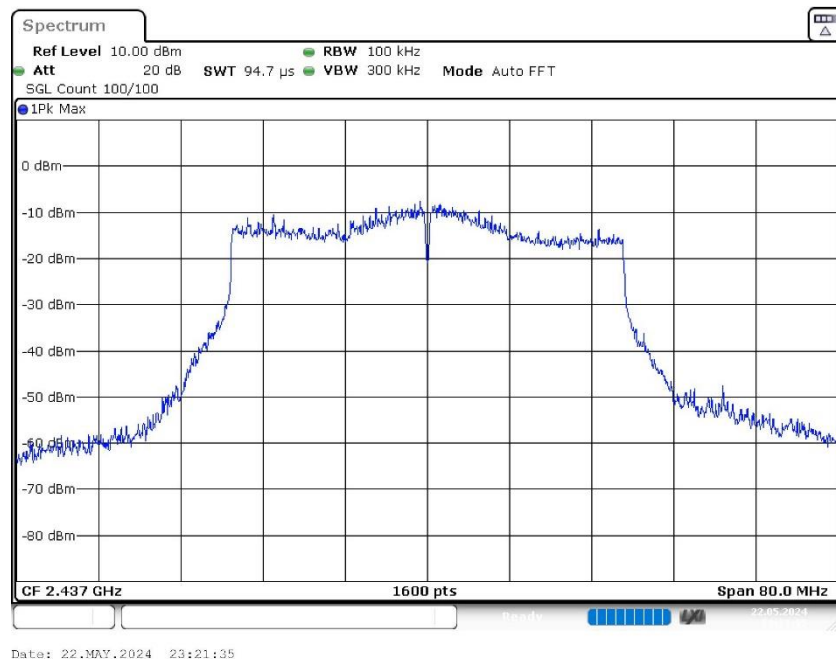
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2437.000000	26.550000	0.500000	---	2418.025000	2444.575000

DUT Frequency (MHz)	Max Level (dBm)	Result
2437.000000	5.7	PASS



Bandwidth



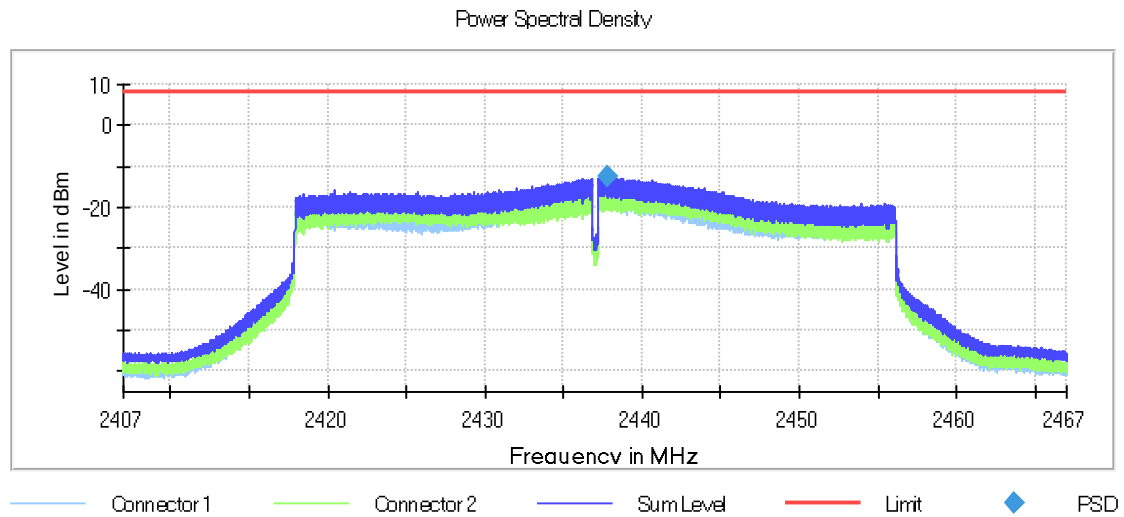
Power Spectral Density (2437 MHz; 24.000 dBm; 40 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2437.000000	2437.783726	-12.491	8.0	PASS

Ports

Port	State
1	used
2	used

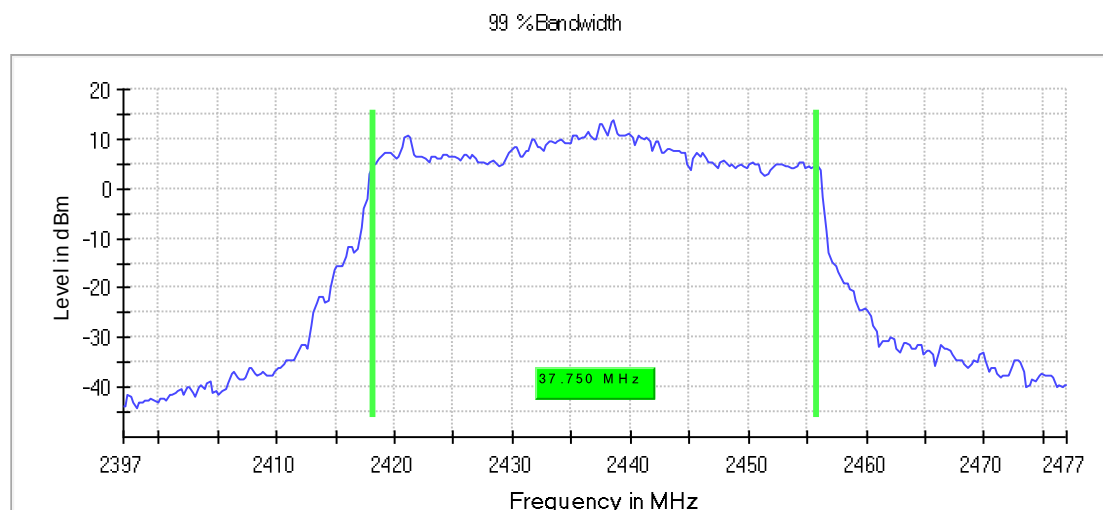


Occupied Channel Bandwidth 99% (2437 MHz; 24.000 dBm; 40 MHz)

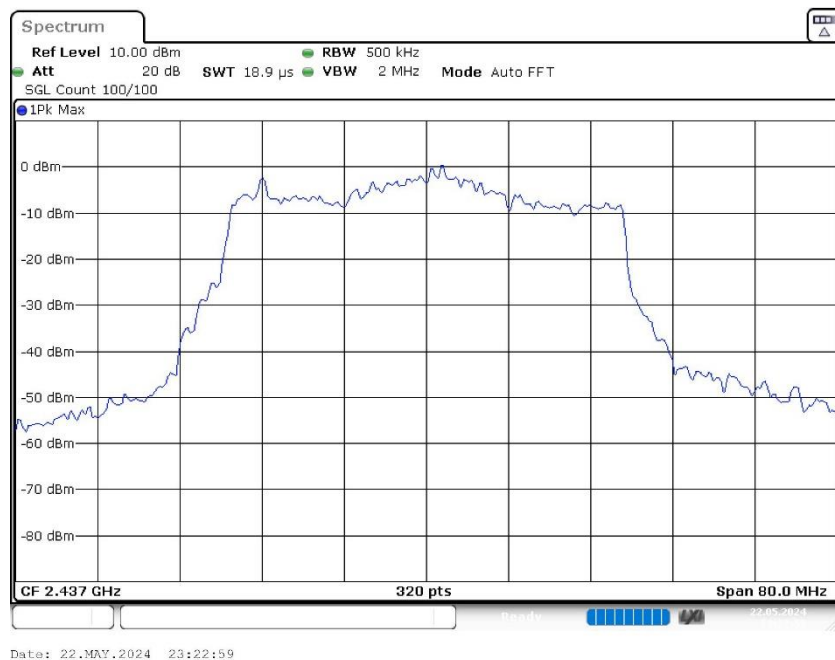
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2437.000000	37.750000	---	---	2418.125000	2455.875000

DUT Frequency (MHz)	Result
2437.000000	PASS



Bandwidth



Tx Spurious Emission (2437 MHz; 24.000 dBm; 40 MHz)

Result

DUT Frequency (MHz)	Result
2437.000000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
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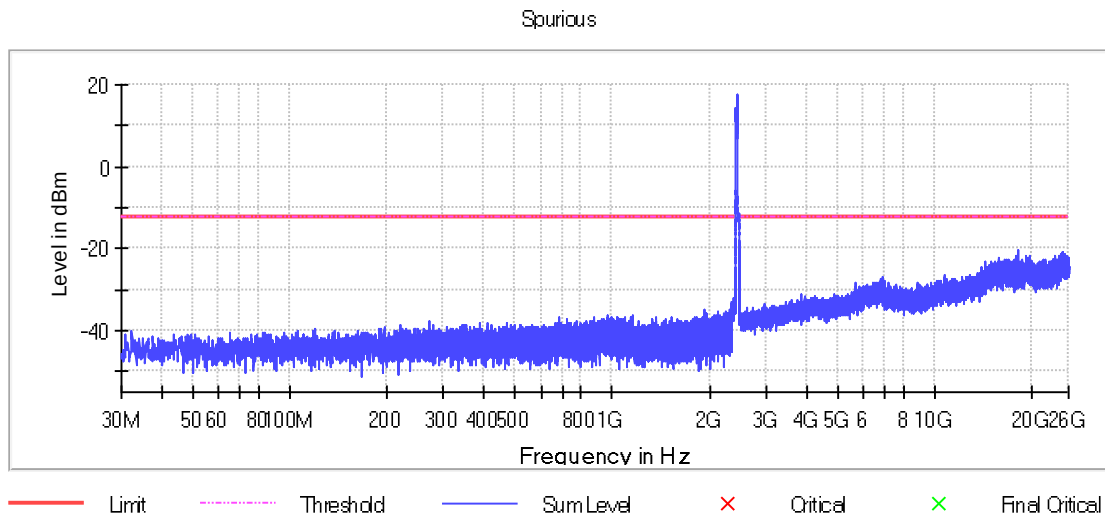
Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
18099.070349	-20.3	7.8	-12.5
25066.350637	-20.8	8.3	-12.5
25045.039475	-20.9	8.4	-12.5
25083.987461	-20.9	8.4	-12.5
25161.883433	-21.1	8.5	-12.5
25044.304608	-21.2	8.6	-12.5
24708.470087	-21.3	8.8	-12.5
25070.024976	-21.5	8.9	-12.5
25071.494711	-21.5	8.9	-12.5
25089.131535	-21.6	9.1	-12.5
25509.475837	-21.6	9.1	-12.5
24415.257890	-21.7	9.1	-12.5
24765.789764	-21.7	9.2	-12.5

24457.145347	-21.7	9.2	-12.5
24720.962837	-21.8	9.2	-12.5

Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	2350.000000	1	1
2350.000000	2483.500000	2	1
2483.500000	26000.000000	1	1

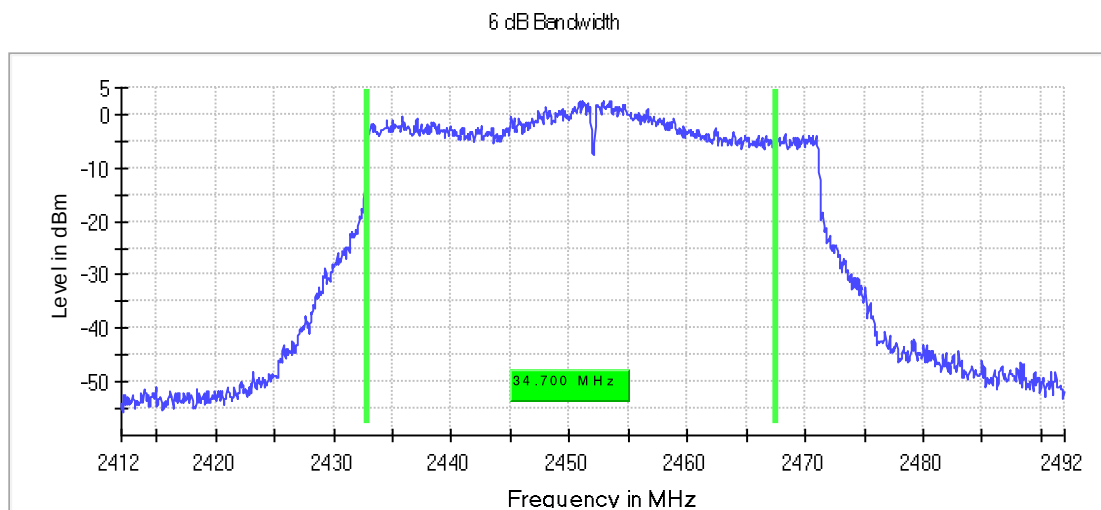


Minimum Emission Bandwidth 6 dB (2452 MHz; 24.000 dBm; 40 MHz)

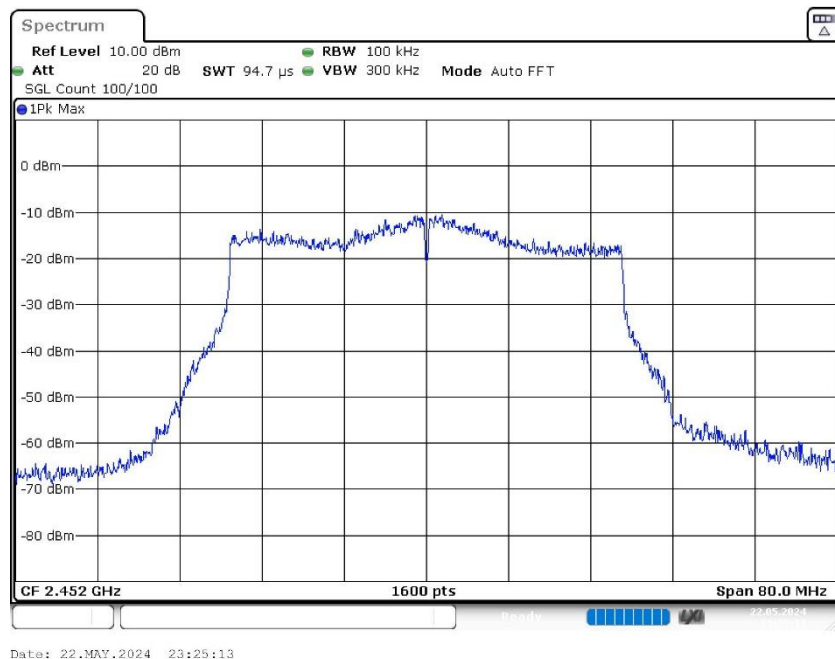
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2452.000000	34.700000	0.500000	---	2432.825000	2467.525000

DUT Frequency (MHz)	Max Level (dBm)	Result
2452.000000	2.6	PASS



Bandwidth



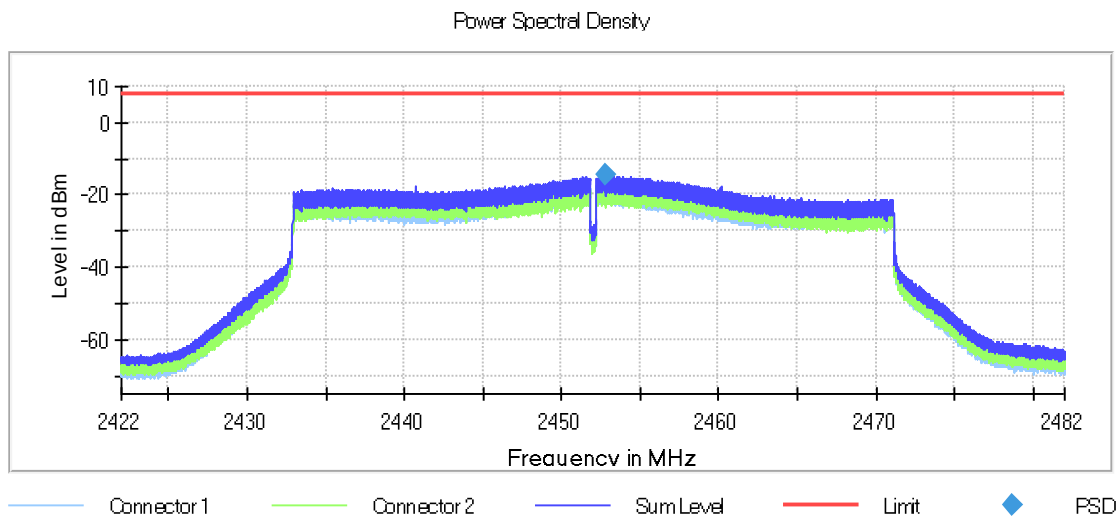
Power Spectral Density (2452 MHz; 24.000 dBm; 40 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2452.000000	2452.783726	-14.415	8.0	PASS

Ports

Port	State
1	used
2	used

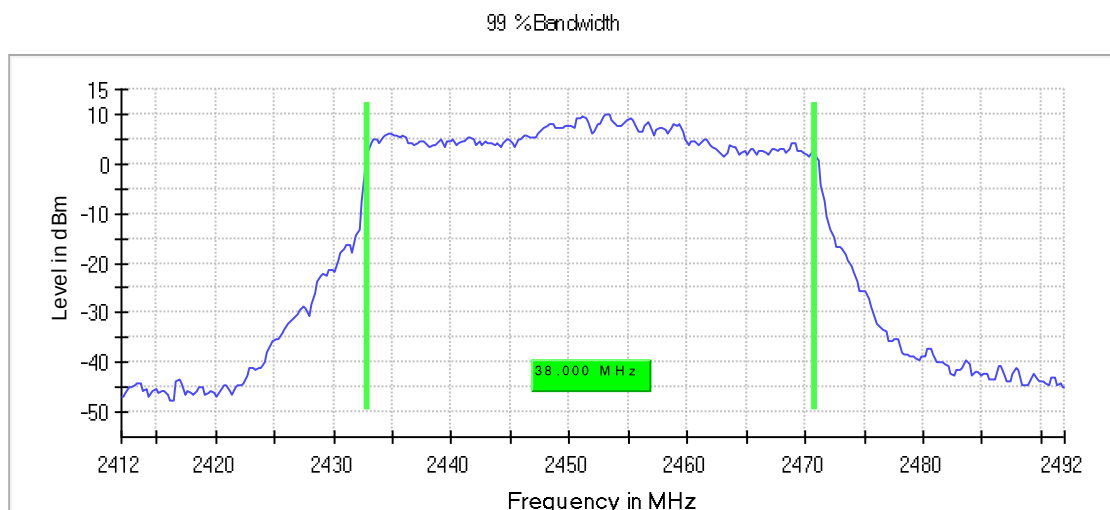


Occupied Channel Bandwidth 99% (2452 MHz; 24.000 dBm; 40 MHz)

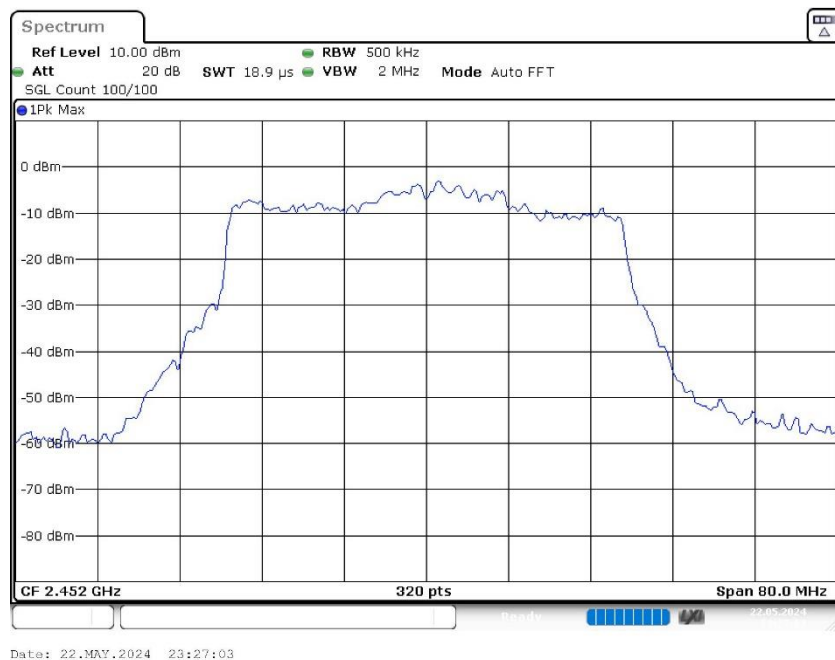
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2452.000000	38.000000	---	---	2432.875000	2470.875000

DUT Frequency (MHz)	Result
2452.000000	PASS



Bandwidth



Tx Spurious Emission (2452 MHz; 24.000 dBm; 40 MHz)

Result

DUT Frequency (MHz)	Result
2452.000000	PASS

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

Pre Measurements

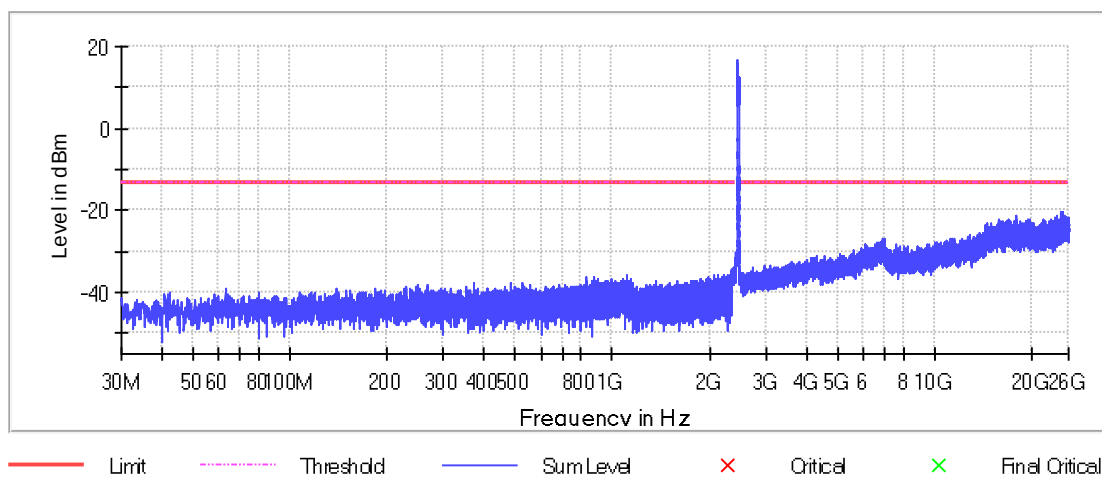
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
25076.638785	-20.2	7.2	-13.1
24734.925323	-20.4	7.4	-13.1
25108.972962	-21.1	8.1	-13.1
25048.713814	-21.3	8.2	-13.1
23793.559850	-21.3	8.2	-13.1
24795.919338	-21.4	8.4	-13.1
25111.912432	-21.5	8.4	-13.1
17833.783124	-21.5	8.4	-13.1
25172.906448	-21.5	8.4	-13.1
25006.091489	-21.5	8.5	-13.1
25142.776874	-21.6	8.5	-13.1
24727.576646	-21.6	8.6	-13.1
25092.805873	-21.6	8.6	-13.1
25112.647300	-21.7	8.6	-13.1

25153.065021	-21.7	8.7	-13.1
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Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	2350.000000	1	1
2350.000000	2483.500000	2	1
2483.500000	26000.000000	1	1

Spurious



-- End of Report --