



427 West 12800 South  
Draper, UT 84020

## Test Report Attachment

<b>FCC ID</b>	SWX-U7PRO
<b>ISED ID</b>	6545A-U7PRO
<b>Equipment Under Test</b>	U7-Pro
<b>Test Report Serial Number</b>	TR8580_01
<b>Date of Tests</b>	5 October 2023
<b>Report Issue Date</b>	24 October 2023

### Test Personnel

<b>Testing performed by</b>	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 2024. 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 2024. Unified Compliance Laboratory has been assigned Conformity Assessment Number US0223 by ISED and MRA US5037.



# 1 15.247 WiFi Band

## 1.1 2.4 GHz WiFi Summary

### 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
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
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
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
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
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	21.2	30.0	21.2	99.719	PASS

### OSP PowerMeter settings

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000 $\mu$ s	1.000 $\mu$ s

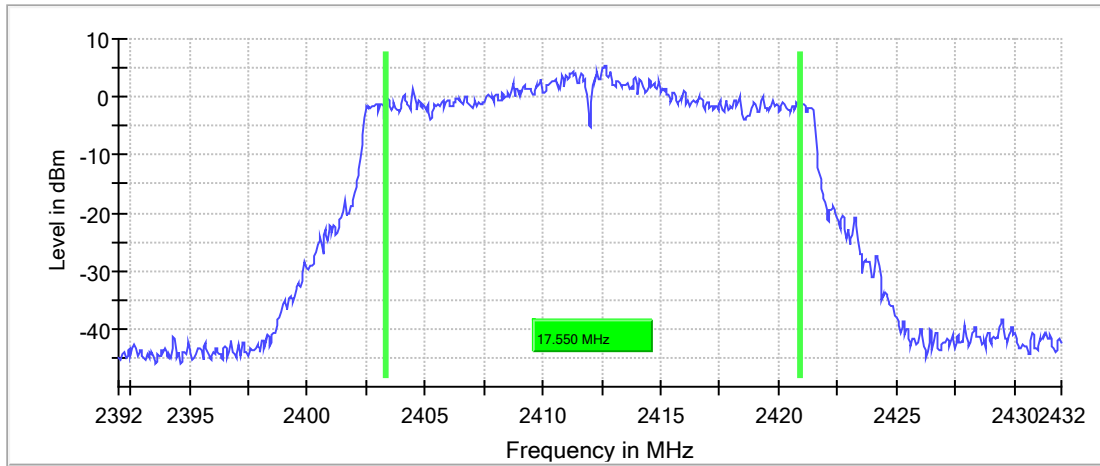
### Minimum Emission Bandwidth 6 dB (2412 MHz; 24.000 dBm; 20 MHz)

#### 6 dB Bandwidth

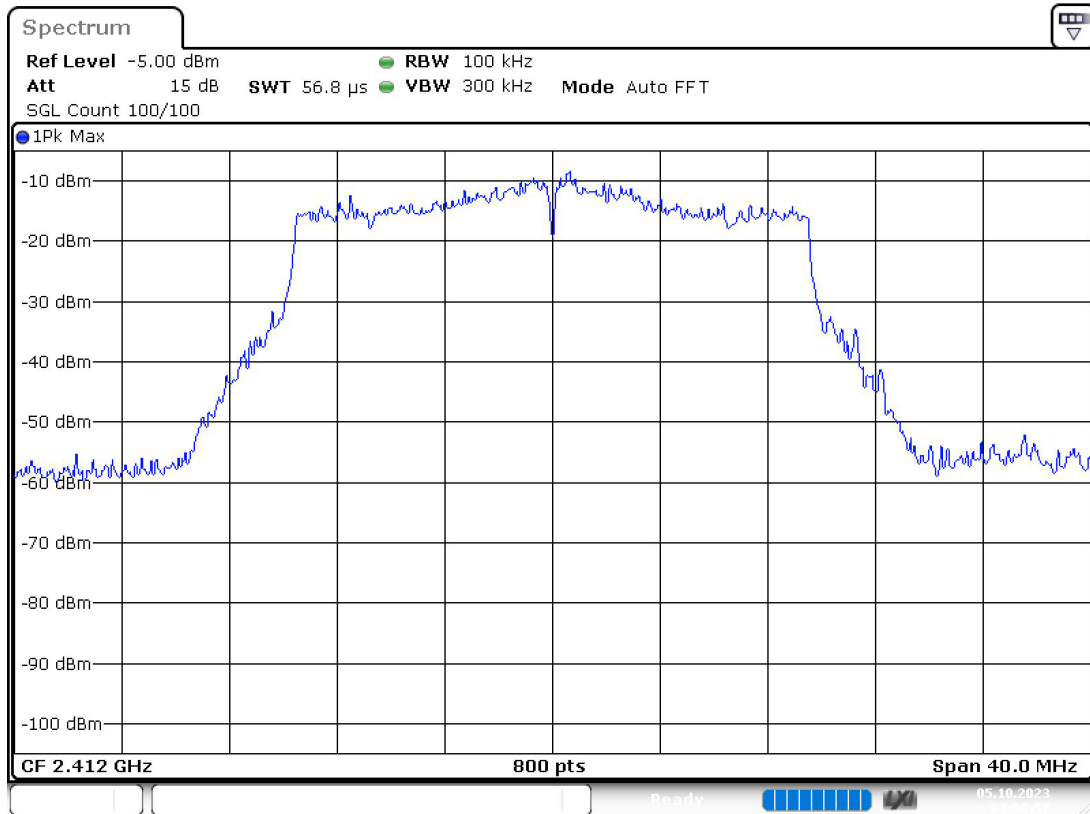
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2412.000000	17.550000	0.500000	---	2403.375000	2420.925000

DUT Frequency (MHz)	Max Level (dBm)	Result
2412.000000	5.5	PASS

6 dB Bandwidth



Bandwidth



Date: 5.OCT.2023 03:00:58

## 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 $\mu$ s	AUTO
Reference Level	-5.000 dBm	-5.000 dBm
Attenuation	15.000 dB	AUTO
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)

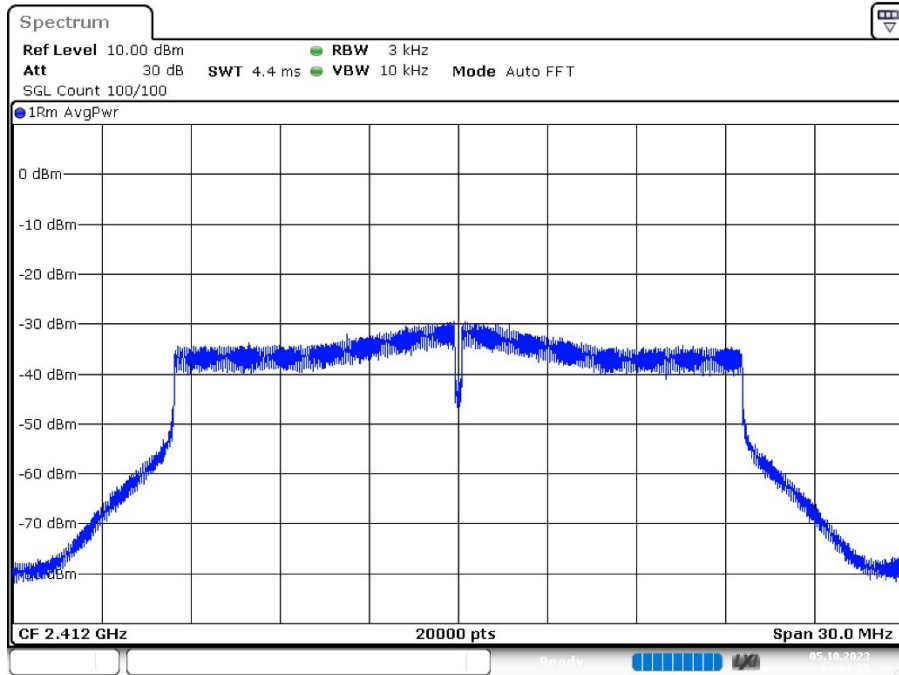
### Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2412.000000	2412.222750	-12.438	8.0	PASS

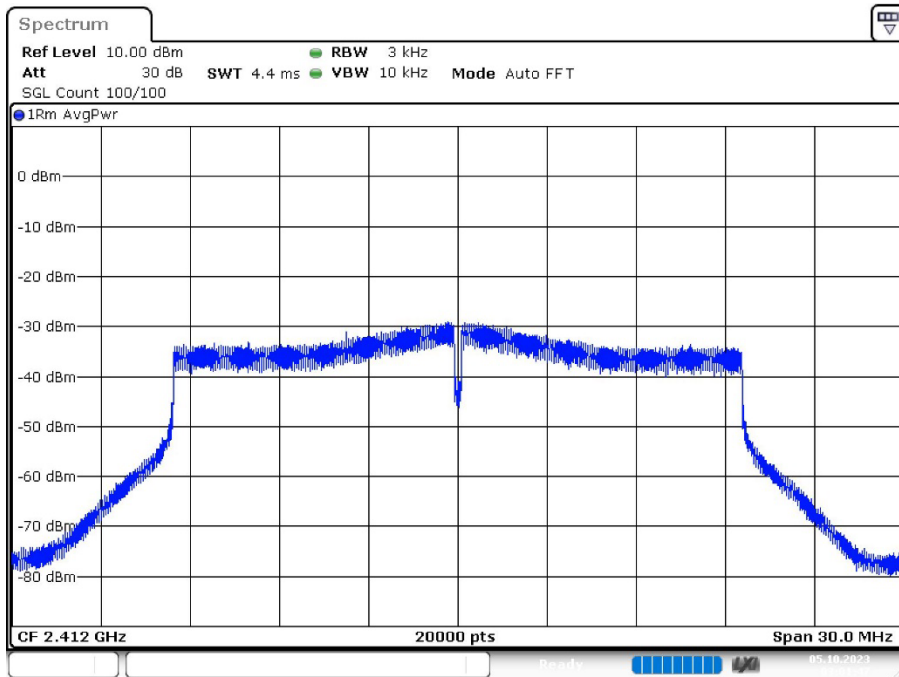
### Ports

Port	State
1	used
2	used

PSD Connector 1



PSD Connector 2



## 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	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

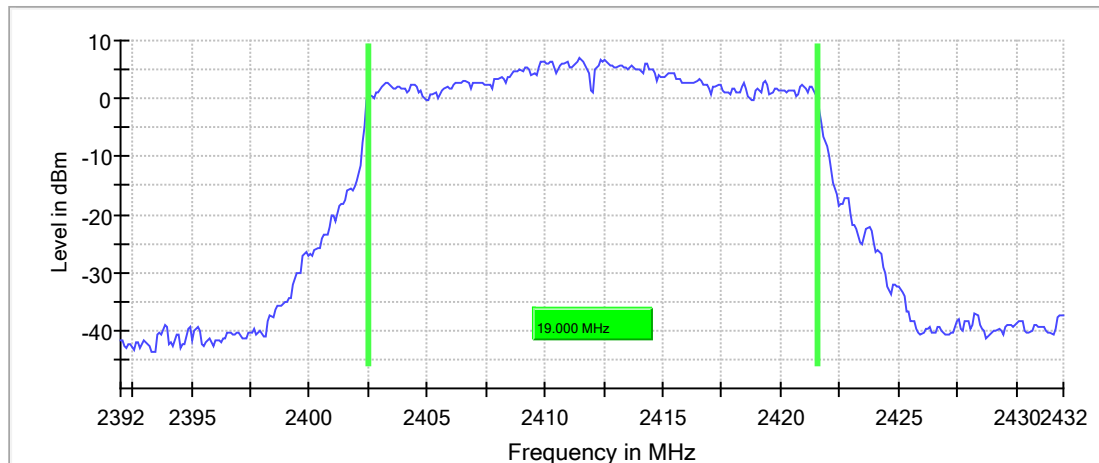
**Occupied Channel Bandwidth 99% (2412 MHz; 24.000 dBm; 20 MHz)**

## 99 % Bandwidth

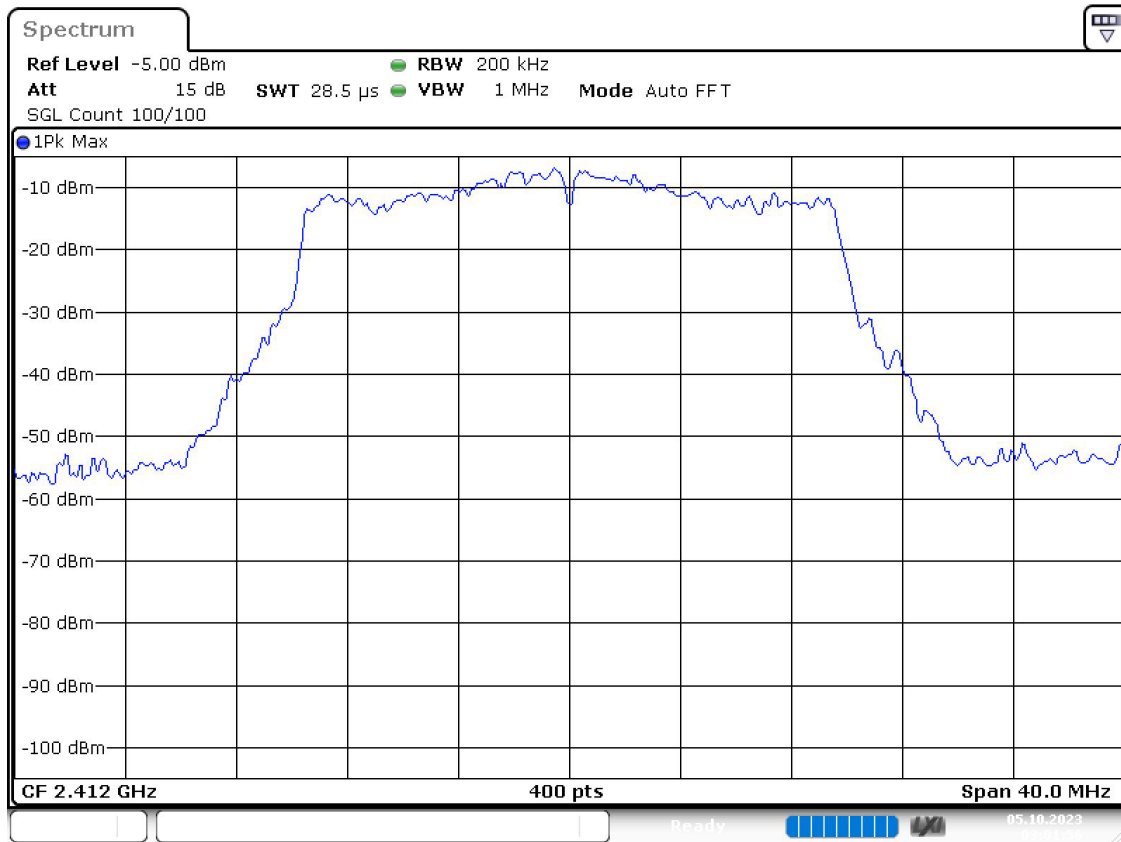
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2412.000000	19.000000	---	---	2402.550000	2421.550000

DUT Frequency (MHz)	Result
2412.000000	PASS

99 % Bandwidth



**Bandwidth**



Date: 5.OCT.2023 03:01:57

**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 μs	AUTO
Reference Level	-5.000 dBm	-5.000 dBm
Attenuation	15.000 dB	AUTO
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

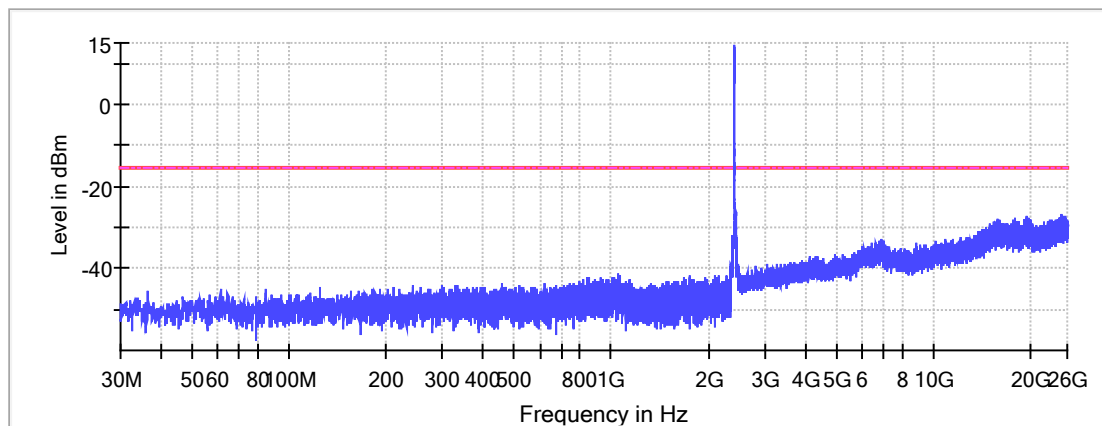
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2399.875000	-23.4	7.9	-15.5
2399.975000	-23.4	7.9	-15.5
2399.925000	-23.4	7.9	-15.5
2399.775000	-23.9	8.4	-15.5
2399.625000	-24.1	8.5	-15.5
2399.675000	-24.2	8.7	-15.5
2399.825000	-24.3	8.8	-15.5
2399.475000	-24.6	9.0	-15.5
2399.725000	-24.6	9.1	-15.5
2399.525000	-24.6	9.1	-15.5
2399.575000	-24.8	9.3	-15.5
2399.375000	-24.9	9.3	-15.5
2399.225000	-24.9	9.4	-15.5
2399.175000	-24.9	9.4	-15.5
2399.275000	-25.1	9.6	-15.5

### 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

### 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 $\mu$ 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

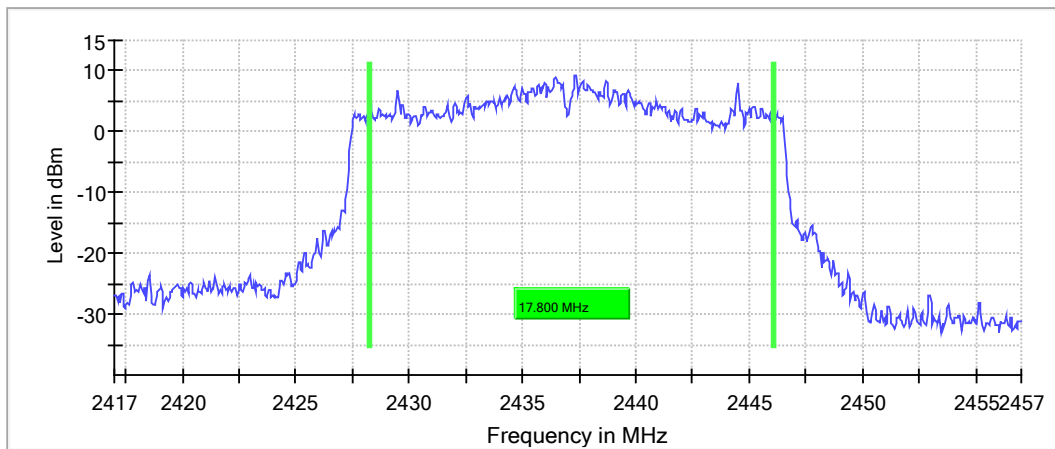
## Minimum Emission Bandwidth 6 dB (2437 MHz; 24.000 dBm; 20 MHz)

### 6 dB Bandwidth

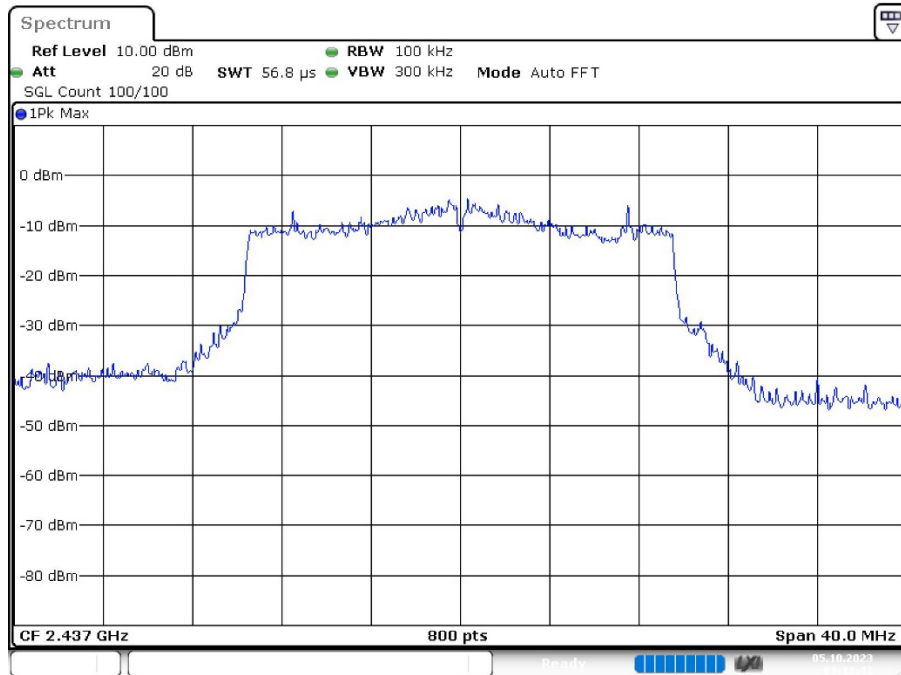
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2437.000000	17.800000	0.500000	---	2428.275000	2446.075000

DUT Frequency (MHz)	Max Level (dBm)	Result
2437.000000	9.2	PASS

6 dB Bandwidth



### Bandwidth



Date: 5.OCT.2023 03:11:42

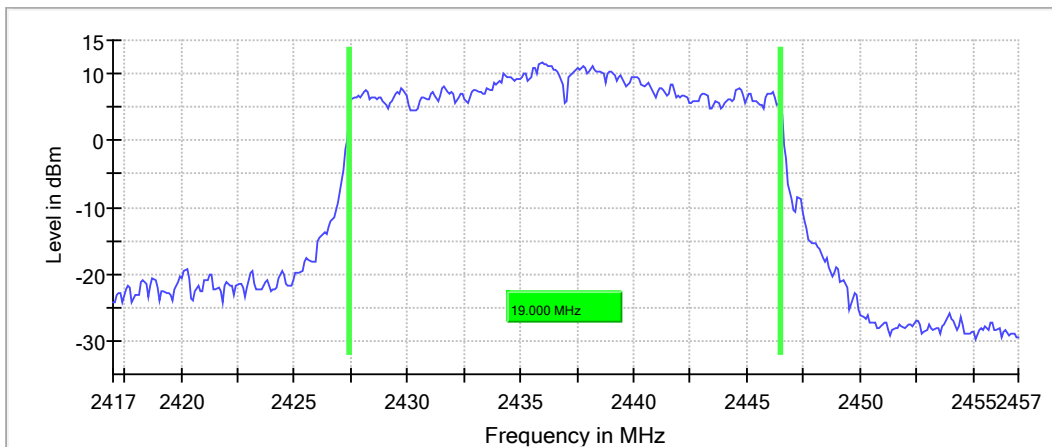
**Occupied Channel Bandwidth 99% (2437 MHz; 24.000 dBm; 20 MHz)**

**99 % Bandwidth**

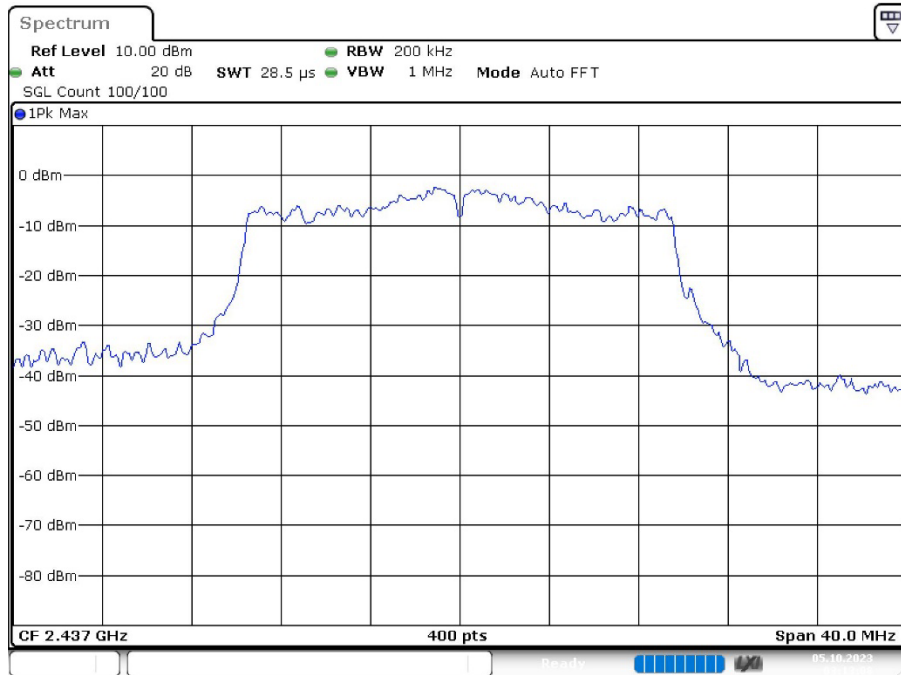
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2437.000000	19.000000	---	---	2427.450000	2446.450000

DUT Frequency (MHz)	Result
2437.000000	PASS

99 % Bandwidth



**Bandwidth**



Date: 5.OCT.2023 03:13:09

## 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
---	---	---	---	---	---

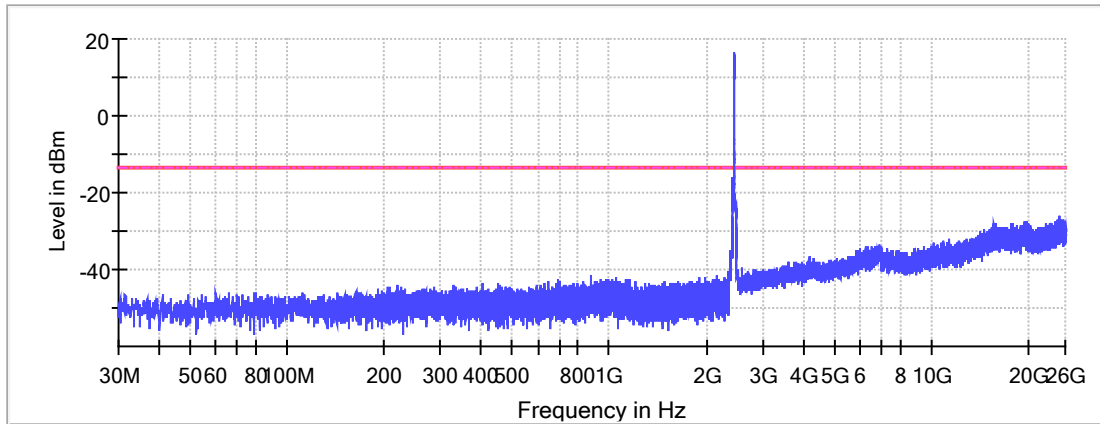
### Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
25075.169049	-26.2	12.6	-13.6
25516.824513	-26.8	13.2	-13.6
25182.459728	-26.8	13.2	-13.6
24747.418073	-27.2	13.6	-13.6
25097.215079	-27.2	13.6	-13.6
25615.296780	-27.4	13.8	-13.6
25146.451212	-27.4	13.8	-13.6
24774.608176	-27.4	13.8	-13.6
19804.698189	-27.4	13.8	-13.6
25083.987461	-27.5	13.8	-13.6
19815.721204	-27.5	13.8	-13.6
24746.683205	-27.5	13.9	-13.6
25163.353169	-27.5	13.9	-13.6
24163.198283	-27.5	13.9	-13.6
19406.399917	-27.6	14.0	-13.6

### 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

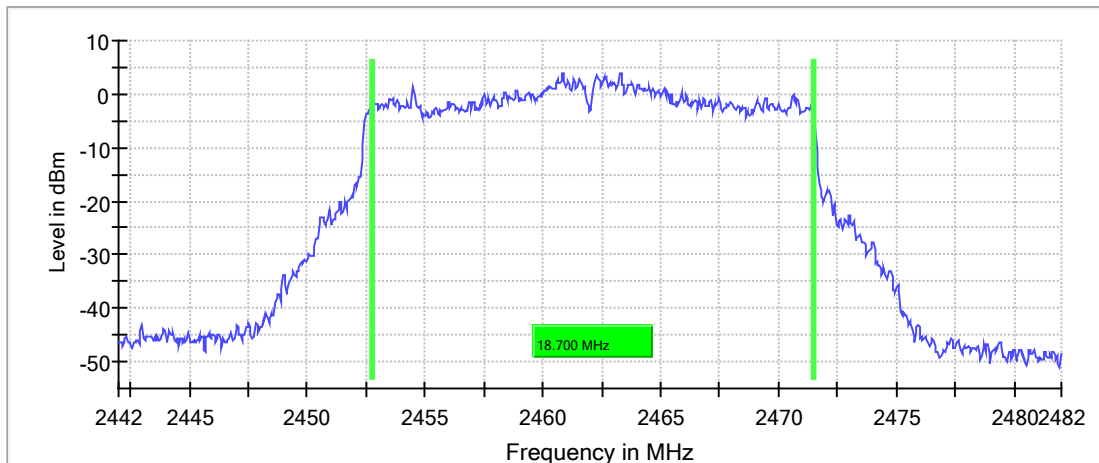
**Minimum Emission Bandwidth 6 dB (2462 MHz; 24.000 dBm; 20 MHz)**

**6 dB Bandwidth**

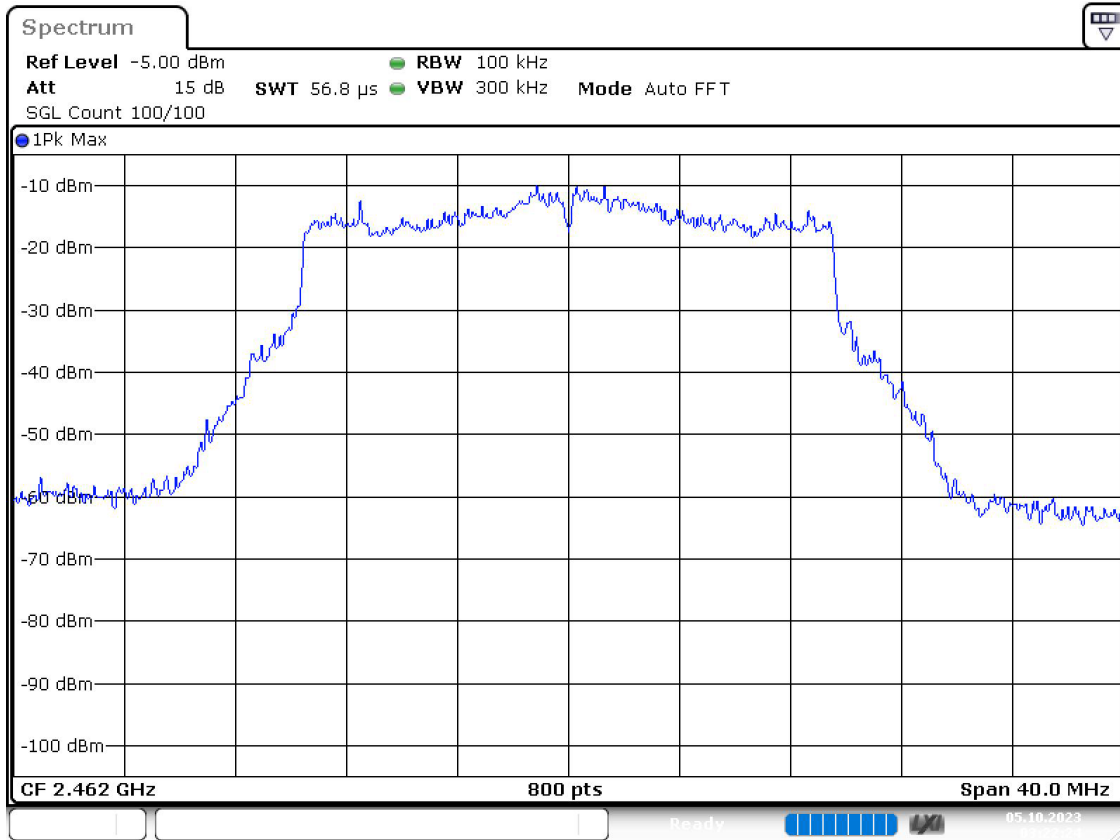
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2462.000000	18.700000	0.500000	---	2452.775000	2471.475000

DUT Frequency (MHz)	Max Level (dBm)	Result
2462.000000	4.0	PASS

6 dB Bandwidth



Bandwidth



Date: 5.OCT.2023 03:22:24

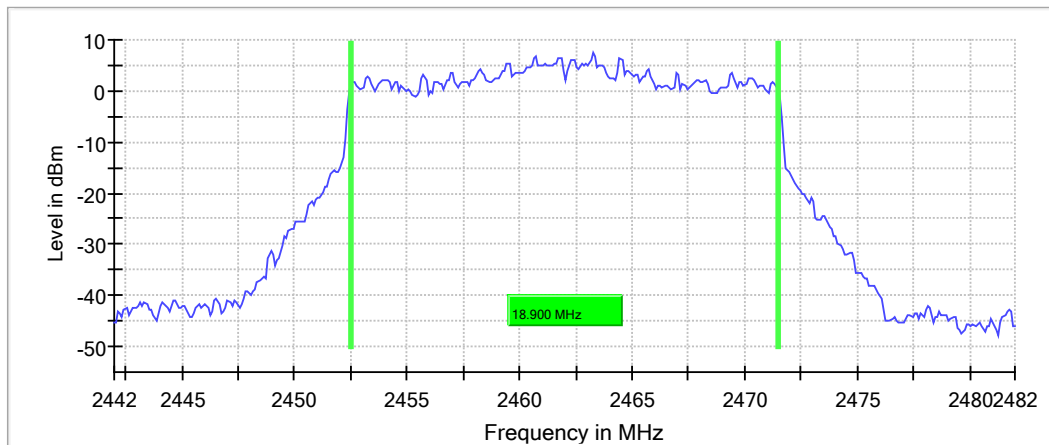
## Occupied Channel Bandwidth 99% (2462 MHz; 24.000 dBm; 20 MHz)

### 99 % Bandwidth

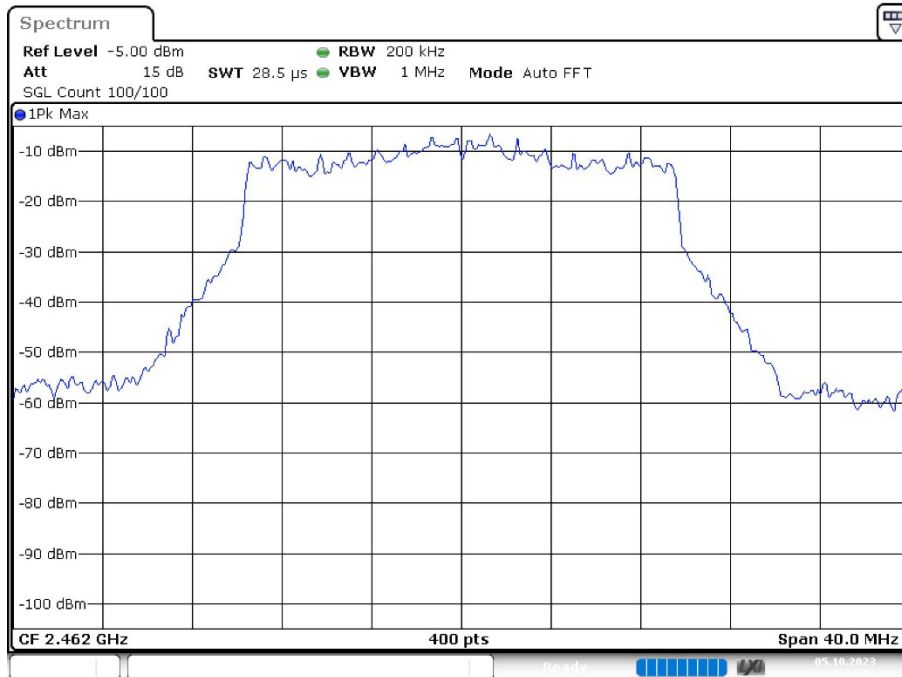
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2462.000000	18.900000	---	---	2452.550000	2471.450000

DUT Frequency (MHz)	Result
2462.000000	PASS

99 % Bandwidth



### Bandwidth



Date: 5.OCT.2023 03:23:21

## 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

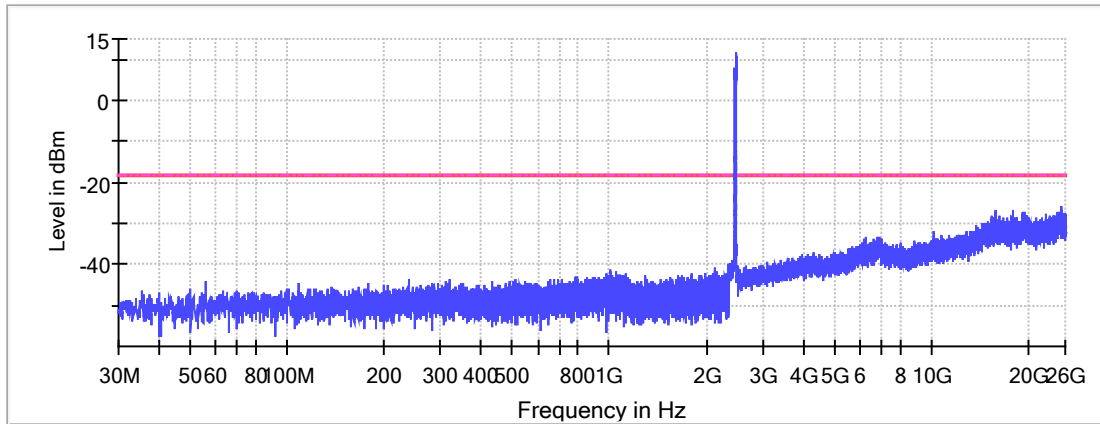
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
25152.330154	-25.6	7.2	-18.5
25123.670315	-26.6	8.2	-18.5
25129.549256	-26.9	8.4	-18.5
15801.139175	-26.9	8.4	-18.5
25156.004492	-26.9	8.5	-18.5
17782.342388	-26.9	8.5	-18.5
17812.471962	-27.0	8.6	-18.5
25164.088036	-27.1	8.6	-18.5
15743.819498	-27.1	8.7	-18.5
19432.120285	-27.2	8.7	-18.5
25061.941432	-27.3	8.8	-18.5
24755.501617	-27.3	8.8	-18.5
25209.649831	-27.3	8.9	-18.5
19083.058147	-27.4	8.9	-18.5
24989.924401	-27.4	9.0	-18.5

### 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

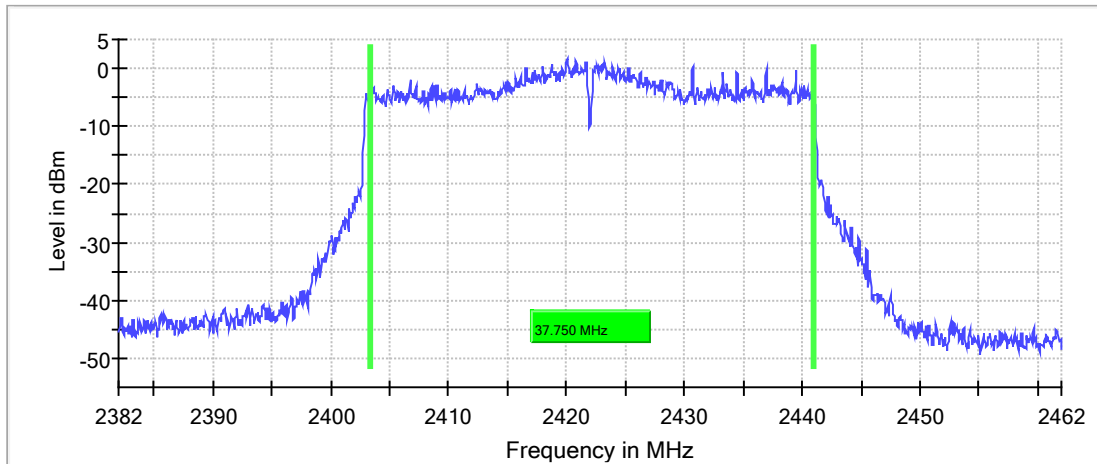
**Minimum Emission Bandwidth 6 dB (2422 MHz; 24.000 dBm; 40 MHz)**

**6 dB Bandwidth**

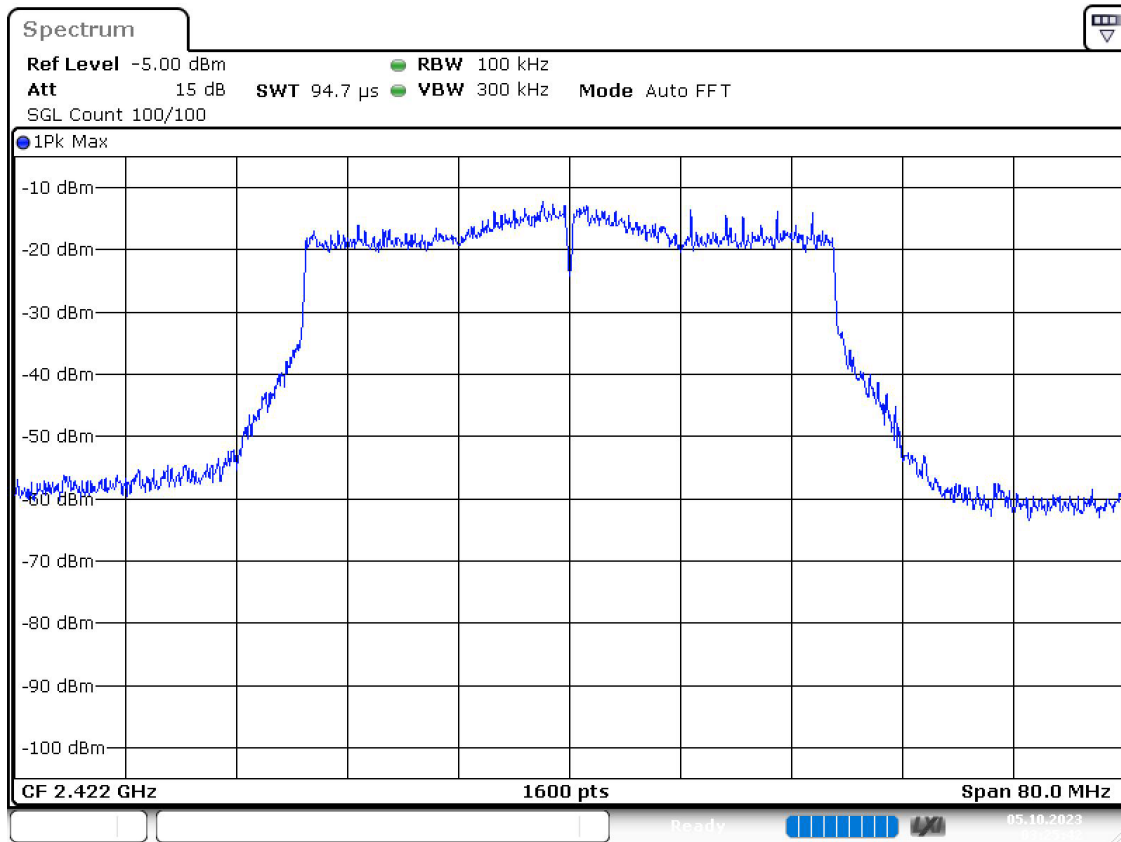
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2422.000000	37.750000	0.500000	---	2403.275000	2441.025000

DUT Frequency (MHz)	Max Level (dBm)	Result
2422.000000	1.8	PASS

6 dB Bandwidth



**Bandwidth**



Date: 5.OCT.2023 03:25:43

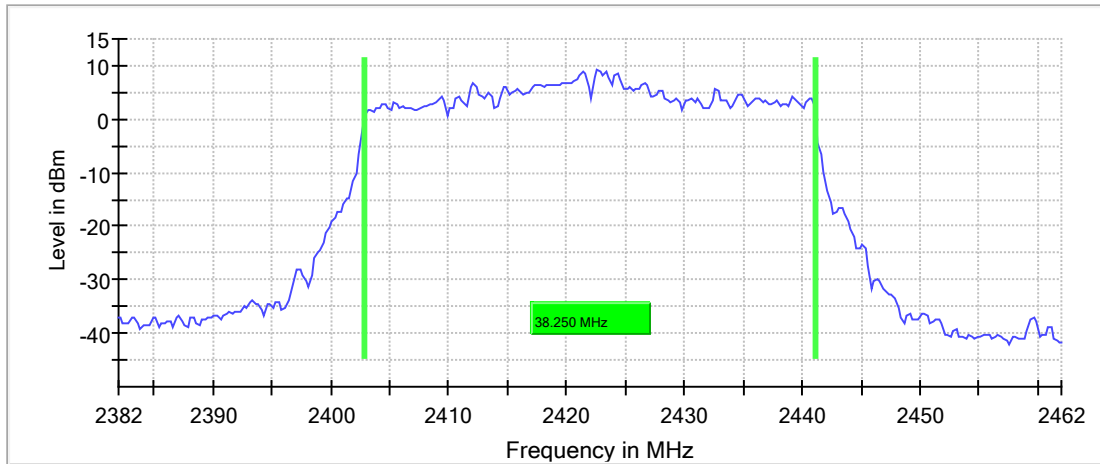
**Occupied Channel Bandwidth 99% (2422 MHz; 24.000 dBm; 40 MHz)**

**99 % Bandwidth**

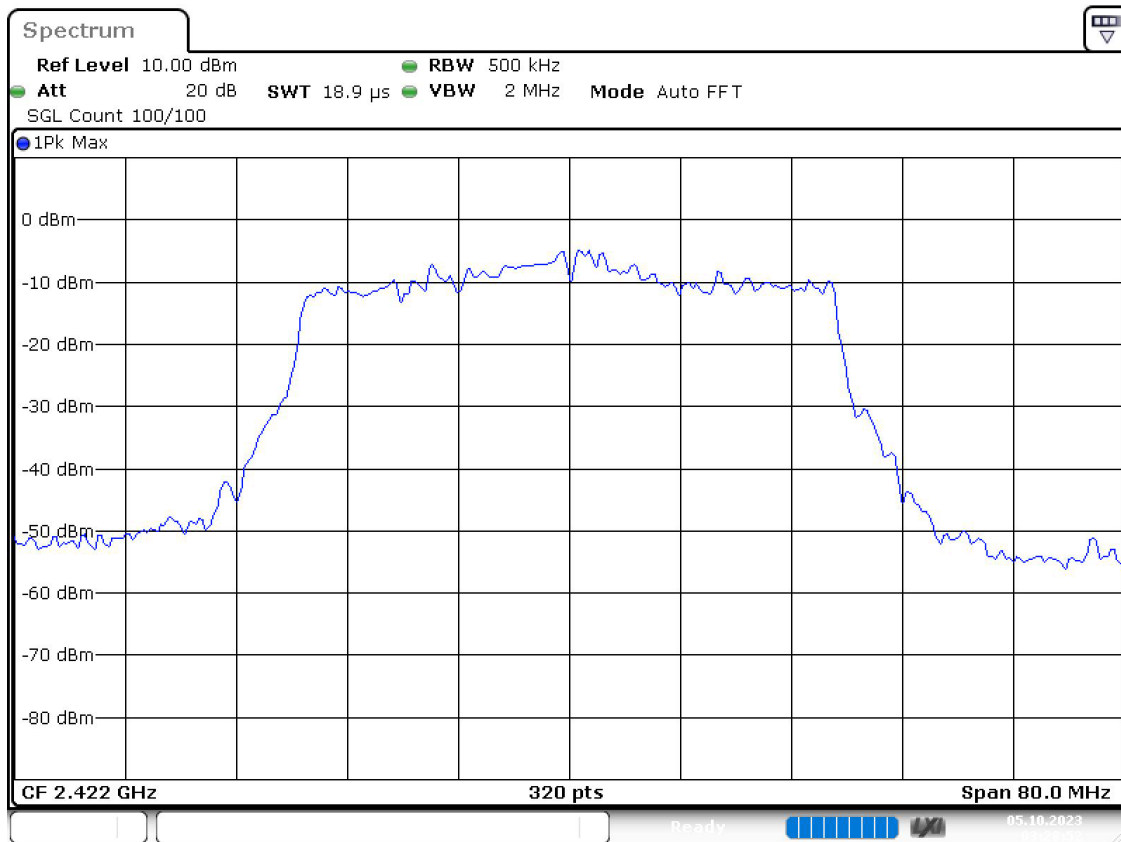
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2422.000000	38.250000	---	---	2402.875000	2441.125000

DUT Frequency (MHz)	Result
2422.000000	PASS

99 % Bandwidth



Bandwidth



Date: 5.OCT.2023 03:28:53

## 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
2399.824127	-23.6	-32.7	-21.6	11.0	PASS

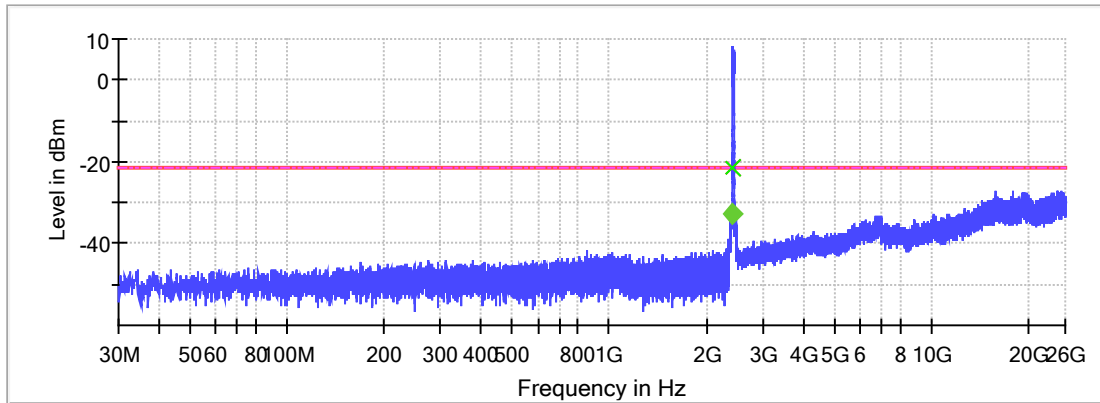
### Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2399.475000	-21.6	0.0	-21.6
2399.525000	-22.0	0.3	-21.6
2399.425000	-22.2	0.6	-21.6
2399.225000	-22.8	1.2	-21.6
2399.175000	-23.0	1.4	-21.6
2399.375000	-23.1	1.4	-21.6
2399.975000	-23.2	1.6	-21.6
2399.875000	-23.4	1.8	-21.6
2399.725000	-23.6	2.0	-21.6
2399.825000	-23.6	2.0	-21.6
2399.925000	-23.7	2.0	-21.6
2399.625000	-23.7	2.1	-21.6
2399.775000	-23.8	2.1	-21.6
2399.675000	-23.8	2.2	-21.6
2399.275000	-23.8	2.2	-21.6

### Measurement Settings

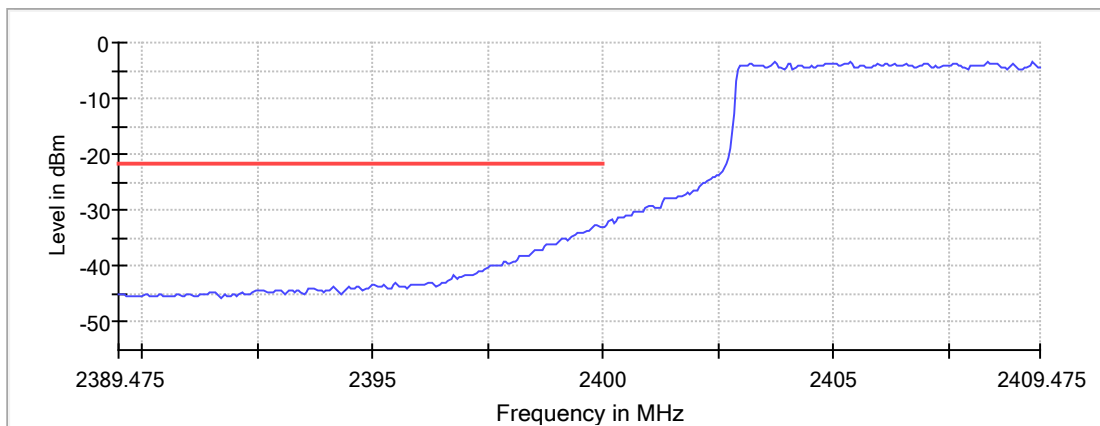
Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	2350.000000	1	1
2350.000000	2483.500000	2	1
2483.500000	26000.000000	1	1

Spurious



— Limit - - - Threshold — Sum Level x Critical  
x Final Critical ◆ Fail ◆ Pass

FinalMeas\_2399475000Hz



— Sum Level — Limit

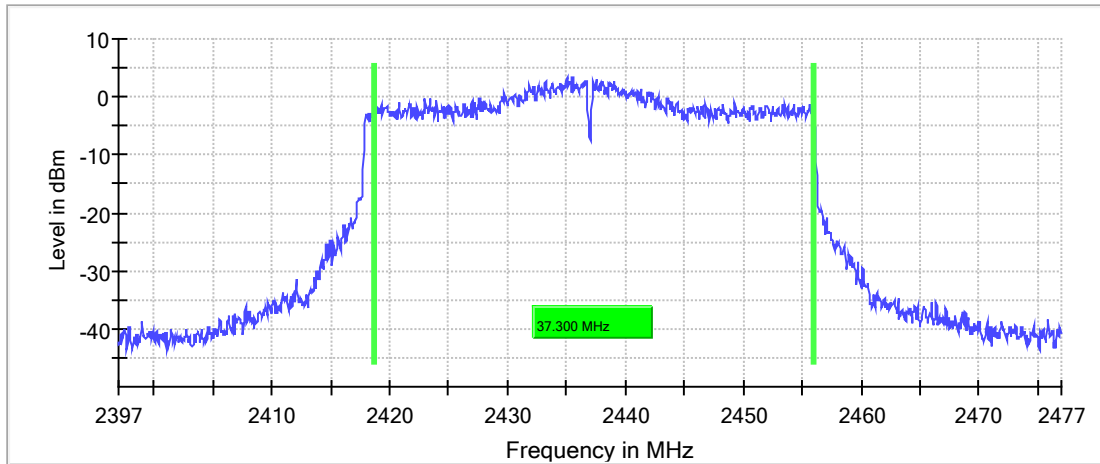
**Minimum Emission Bandwidth 6 dB (2437 MHz; 24.000 dBm; 40 MHz)**

**6 dB Bandwidth**

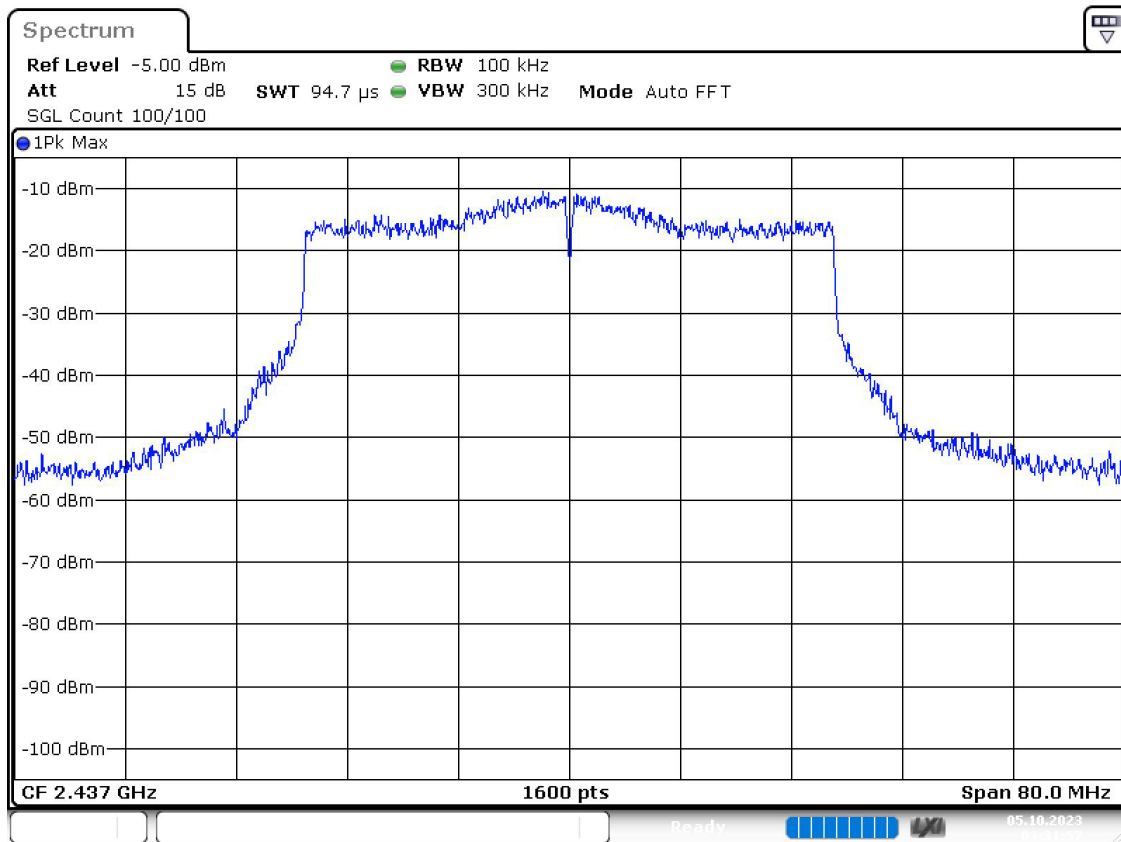
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2437.000000	37.300000	0.500000	---	2418.625000	2455.925000

DUT Frequency (MHz)	Max Level (dBm)	Result
2437.000000	3.5	PASS

6 dB Bandwidth



Bandwidth



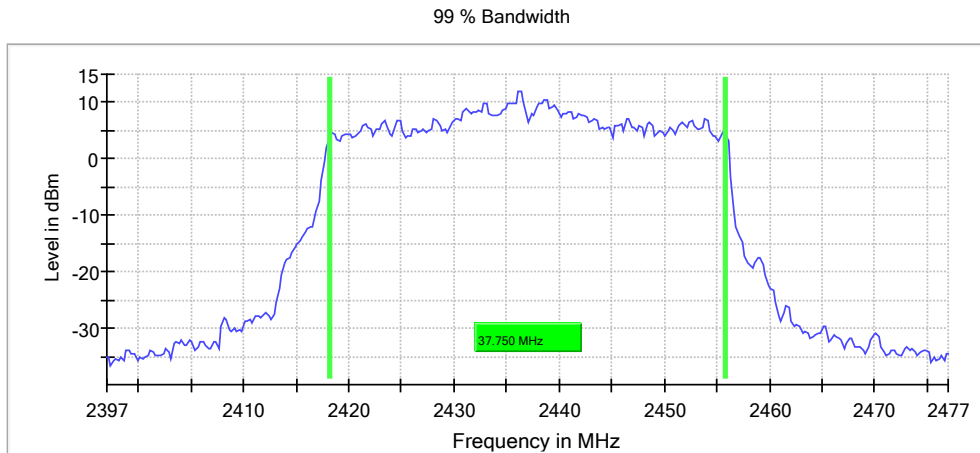
Date: 5.OCT.2023 03:31:57

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

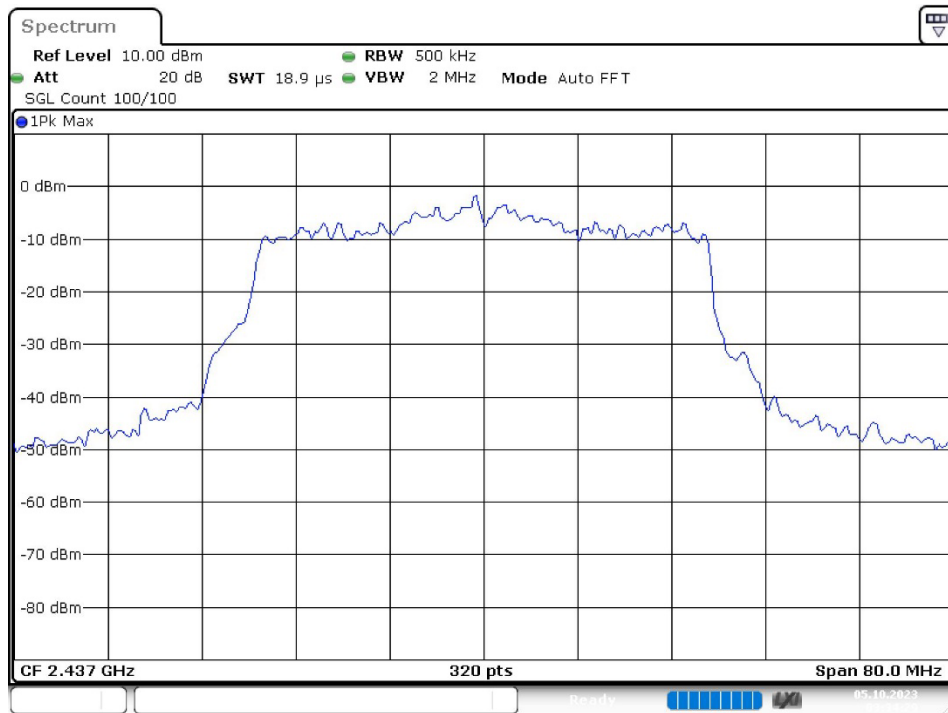
**99 % Bandwidth**

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**



Date: 5.OCT.2023 03:34:29

## 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
---	---	---	---	---	---

### Pre Measurements

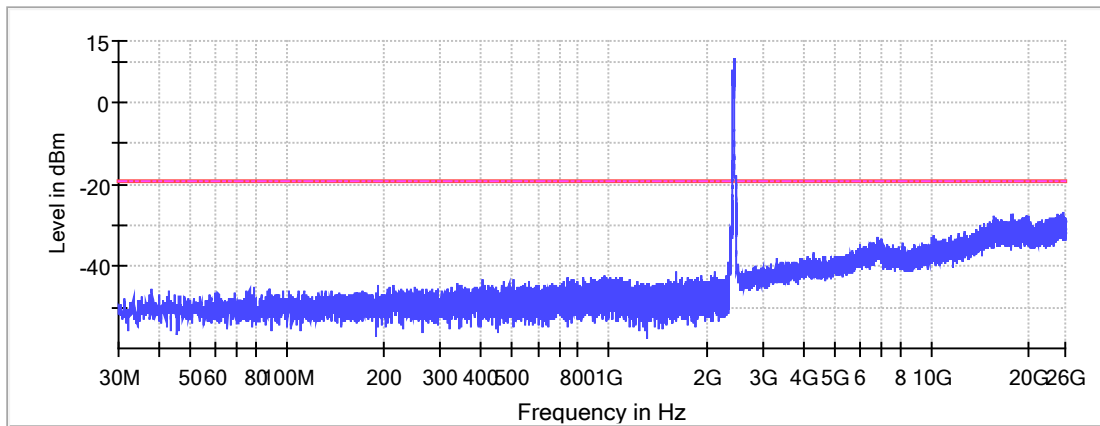
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
25511.680440	-26.8	7.6	-19.2
17805.858153	-27.2	8.0	-19.2
25144.246609	-27.2	8.0	-19.2
25125.140050	-27.2	8.0	-19.2
24743.008867	-27.3	8.1	-19.2
17772.054240	-27.3	8.1	-19.2
17824.229844	-27.4	8.2	-19.2
15691.643894	-27.5	8.3	-19.2
25053.857887	-27.6	8.4	-19.2
19812.046866	-27.6	8.4	-19.2
19847.320513	-27.6	8.4	-19.2
19844.381043	-27.6	8.4	-19.2
25145.716345	-27.6	8.5	-19.2
25003.886886	-27.7	8.5	-19.2
19872.306014	-27.7	8.5	-19.2

### 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

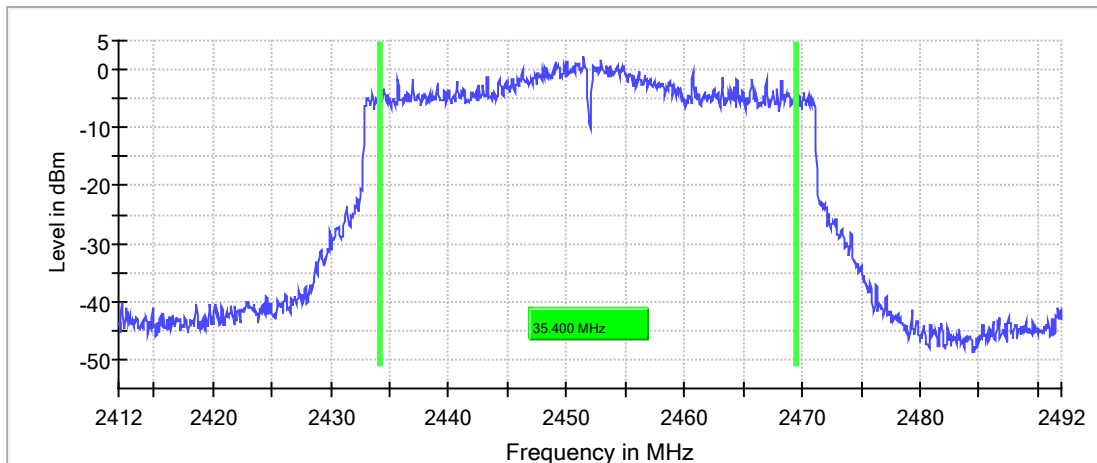
**Minimum Emission Bandwidth 6 dB (2452 MHz; 24.000 dBm; 40 MHz)**

**6 dB Bandwidth**

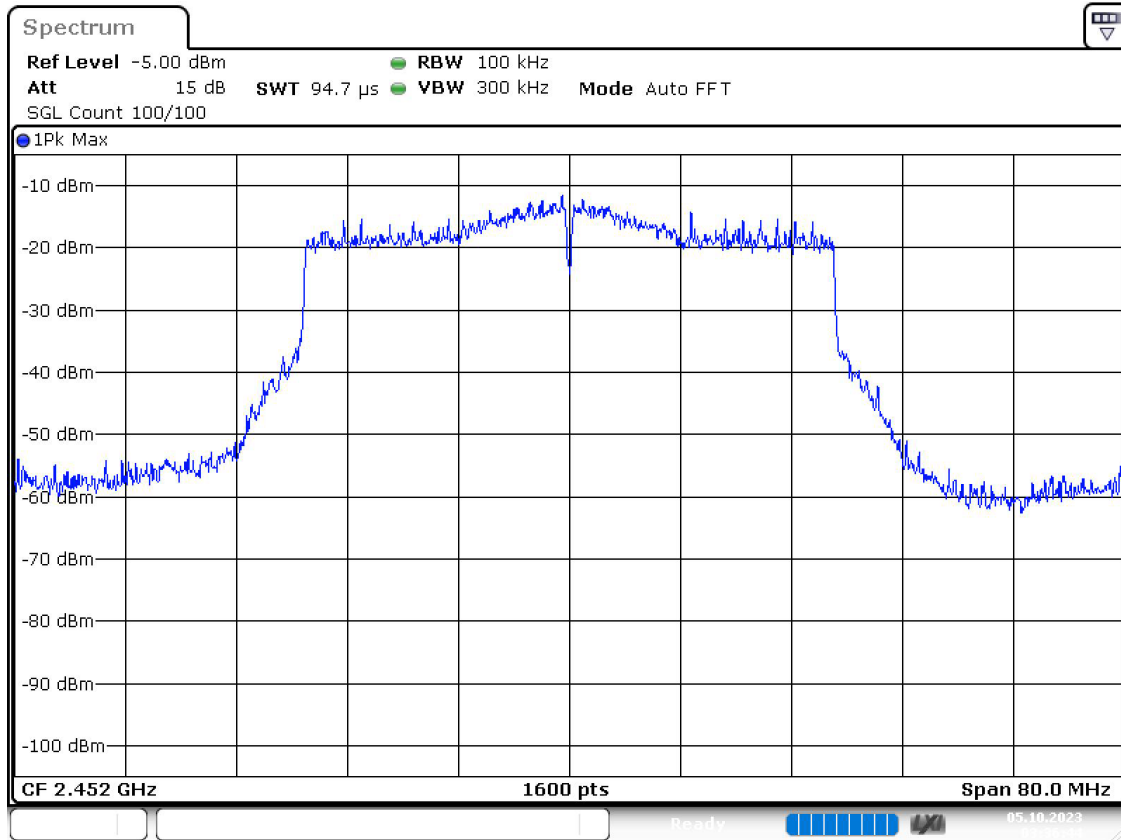
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2452.000000	35.400000	0.500000	---	2434.175000	2469.575000

DUT Frequency (MHz)	Max Level (dBm)	Result
2452.000000	2.3	PASS

6 dB Bandwidth



**Bandwidth**



Date: 5.OCT.2023 03:36:45

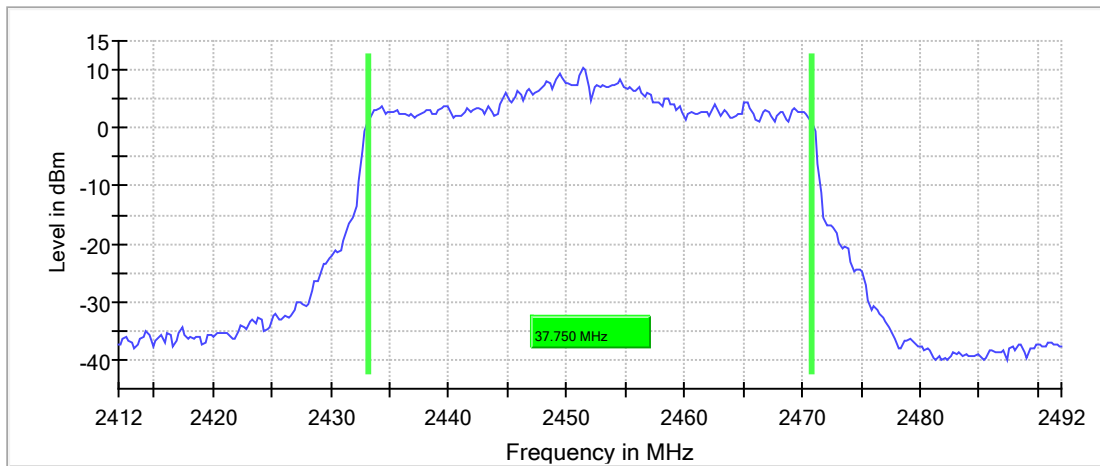
**Occupied Channel Bandwidth 99% (2452 MHz; 24.000 dBm; 40 MHz)**

**99 % Bandwidth**

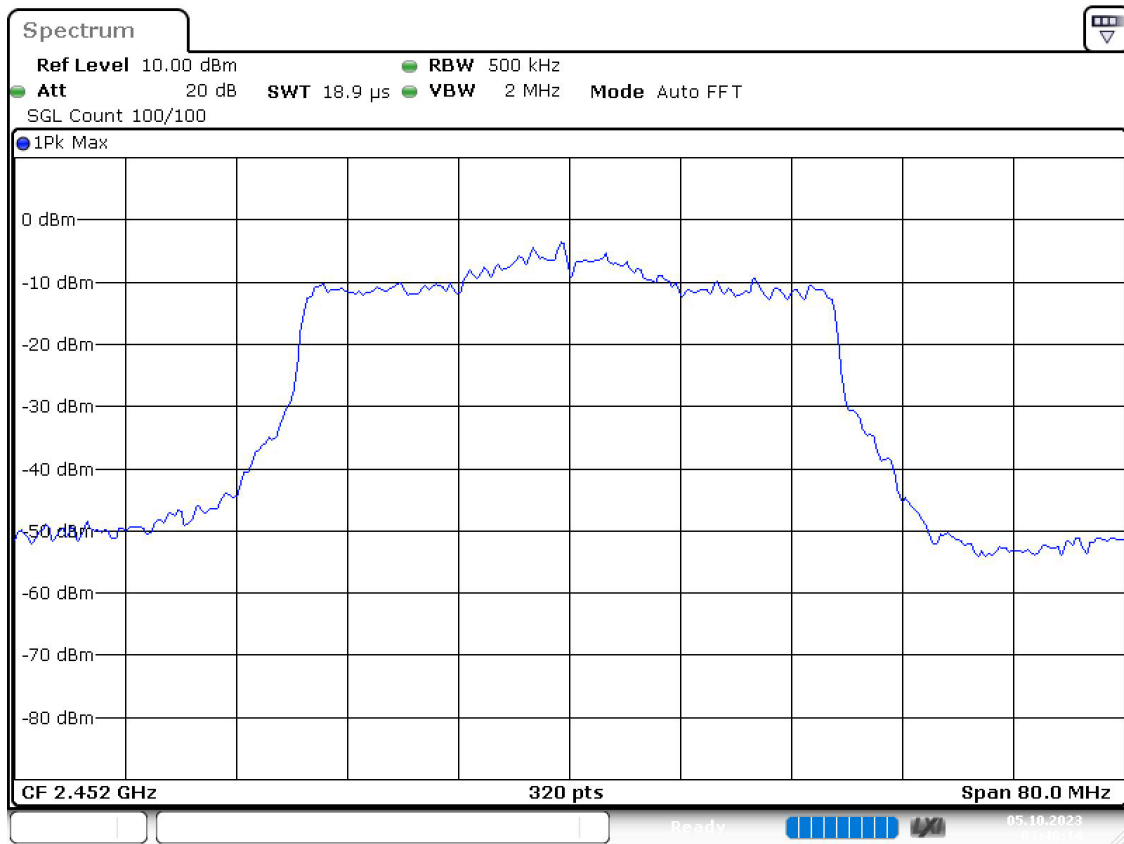
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2452.000000	37.750000	---	---	2433.125000	2470.875000

DUT Frequency (MHz)	Result
2452.000000	PASS

99 % Bandwidth



Bandwidth



Date: 5.OCT.2023 03:40:14

## 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
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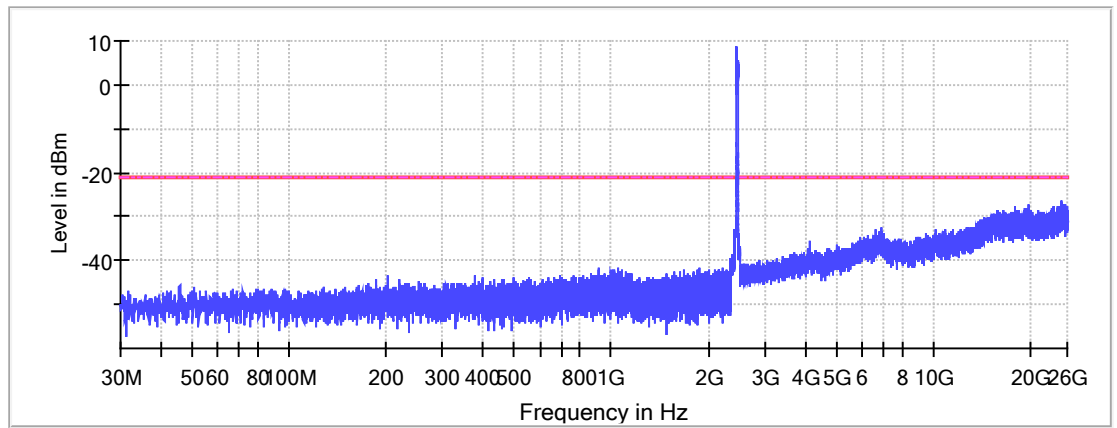
### Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
25075.169049	-26.5	5.4	-21.1
24995.803342	-26.9	5.7	-21.1
19845.850778	-27.3	6.1	-21.1
25107.503226	-27.3	6.2	-21.1
25388.957540	-27.3	6.2	-21.1
25064.880902	-27.3	6.2	-21.1
25601.334294	-27.4	6.2	-21.1
25934.964212	-27.4	6.3	-21.1
24845.155472	-27.4	6.3	-21.1
25079.578255	-27.4	6.3	-21.1
25494.778483	-27.5	6.4	-21.1
24699.651675	-27.5	6.4	-21.1
24607.058350	-27.6	6.4	-21.1
24848.094942	-27.6	6.4	-21.1
25555.037632	-27.6	6.4	-21.1

### 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

**-- End of Report --**