

# FCC Part 47 §15.247 2400-2483.5 MHz 2015

## DUT Information

### Frequencies

|                     |                     |                     |
|---------------------|---------------------|---------------------|
| BT CH 0 (2402 MHz)  | BT CH 1 (2403 MHz)  | BT CH 2 (2404 MHz)  |
| BT CH 3 (2405 MHz)  | BT CH 4 (2406 MHz)  | BT CH 5 (2407 MHz)  |
| BT CH 6 (2408 MHz)  | BT CH 7 (2409 MHz)  | BT CH 8 (2410 MHz)  |
| BT CH 9 (2411 MHz)  | BT CH 10 (2412 MHz) | BT CH 11 (2413 MHz) |
| BT CH 12 (2414 MHz) | BT CH 13 (2415 MHz) | BT CH 14 (2416 MHz) |
| BT CH 15 (2417 MHz) | BT CH 16 (2418 MHz) | BT CH 17 (2419 MHz) |
| BT CH 18 (2420 MHz) | BT CH 19 (2421 MHz) | BT CH 20 (2422 MHz) |
| BT CH 21 (2423 MHz) | BT CH 22 (2424 MHz) | BT CH 23 (2425 MHz) |
| BT CH 24 (2426 MHz) | BT CH 25 (2427 MHz) | BT CH 26 (2428 MHz) |
| BT CH 27 (2429 MHz) | BT CH 28 (2430 MHz) | BT CH 29 (2431 MHz) |
| BT CH 30 (2432 MHz) | BT CH 31 (2433 MHz) | BT CH 32 (2434 MHz) |
| BT CH 33 (2435 MHz) | BT CH 34 (2436 MHz) | BT CH 35 (2437 MHz) |
| BT CH 36 (2438 MHz) | BT CH 37 (2439 MHz) | BT CH 38 (2440 MHz) |
| BT CH 39 (2441 MHz) | BT CH 40 (2442 MHz) | BT CH 41 (2443 MHz) |
| BT CH 42 (2444 MHz) | BT CH 43 (2445 MHz) | BT CH 44 (2446 MHz) |
| BT CH 45 (2447 MHz) | BT CH 46 (2448 MHz) | BT CH 47 (2449 MHz) |
| BT CH 48 (2450 MHz) | BT CH 49 (2451 MHz) | BT CH 50 (2452 MHz) |
| BT CH 51 (2453 MHz) | BT CH 52 (2454 MHz) | BT CH 53 (2455 MHz) |
| BT CH 54 (2456 MHz) | BT CH 55 (2457 MHz) | BT CH 56 (2458 MHz) |
| BT CH 57 (2459 MHz) | BT CH 58 (2460 MHz) | BT CH 59 (2461 MHz) |
| BT CH 60 (2462 MHz) | BT CH 61 (2463 MHz) | BT CH 62 (2464 MHz) |
| BT CH 63 (2465 MHz) | BT CH 64 (2466 MHz) | BT CH 65 (2467 MHz) |
| BT CH 66 (2468 MHz) | BT CH 67 (2469 MHz) | BT CH 68 (2470 MHz) |
| BT CH 69 (2471 MHz) | BT CH 70 (2472 MHz) | BT CH 71 (2473 MHz) |
| BT CH 72 (2474 MHz) | BT CH 73 (2475 MHz) | BT CH 74 (2476 MHz) |
| BT CH 75 (2477 MHz) | BT CH 76 (2478 MHz) | BT CH 77 (2479 MHz) |
| BT CH 78 (2480 MHz) |                     |                     |

### Bandwidths

|               |               |               |
|---------------|---------------|---------------|
| 1 MHz (1 MHz) | 2 MHz (2 MHz) | 3 MHz (3 MHz) |
|---------------|---------------|---------------|

### Power

20.000 dBm (20 dBm)

### Beamforming Gain

|                        |                              |
|------------------------|------------------------------|
| Powerstep name (value) | Beamforming gain table names |
| 20.000 dBm (20 dBm)    | ---                          |

### Gain Tables

|                        |                  |
|------------------------|------------------|
| Powerstep name (value) | Gain table names |
| 20.000 dBm (20 dBm)    | Port 1: ---;     |

### DUT Settings

|                              |       |
|------------------------------|-------|
| No. of transmission chains   | 1     |
| Equipment Type               | Other |
| Digital Modulation           | No    |
| Frequency Hopping            | Yes   |
| Carrier Frequency Separation | 1 MHz |
| Dwell Time                   | 5 ms  |

## Hardware Setup: WMS Measurements\TS8997

Spectrum Analyzer: SA FSV 40 (SA FSV 40) @ VISA (ADR  
TCPIP::192.168.48.111::INST0::INSTR), SN 1307.9002K40/101076,  
FW 3.40

Vector Generator: VG SMBV100A (VG SMBV100A) @ VISA (ADR  
TCPIP::192.168.48.25::INST0::INSTR), SN 260451, FW 4.70.108.41

Generator: SMB100Aa (SMB100A) @ VISA (ADR  
TCPIP::192.168.48.30::INST0::INSTR), SN 177894, FW / Drv:Rev  
2.21.0, 07/2016, CVI 2015

OSP: OSP-B157W (OSP-B157W) @ VISA (ADR  
TCPIP::192.168.48.157::INST0::INSTR), SN 1527.1144. /, FW  
1.23.0.2

## Summary

| Test                     | Frequency (MHz)   | Nominal Power (dBm) | Nominal Bandwidth (MHz) | Result |
|--------------------------|-------------------|---------------------|-------------------------|--------|
| Band Edge low            | --- (hopping)     | 20.0                | 3.000000                | PASS   |
| Band Edge high           | --- (hopping)     | 20.0                | 3.000000                | PASS   |
| RF output power          | 2406.000 (single) | 20.0                | 3.000000                | PASS   |
| Emission Bandwidth 20 dB | 2406.000 (single) | 20.0                | 3.000000                | PASS   |
| Band Edge low            | 2406.000 (single) | 20.0                | 3.000000                | PASS   |
| Tx Spurious Emission     | 2406.000 (single) | 20.0                | 3.000000                | PASS   |
| Emission Bandwidth 20 dB | 2442.000 (single) | 20.0                | 3.000000                | PASS   |
| RF output power          | 2442.000 (single) | 20.0                | 3.000000                | PASS   |
| Tx Spurious Emission     | 2442.000 (single) | 20.0                | 3.000000                | PASS   |
| Emission Bandwidth 20 dB | 2475.000 (single) | 20.0                | 3.000000                | PASS   |
| RF output power          | 2475.000 (single) | 20.0                | 3.000000                | PASS   |
| Band Edge high           | 2475.000 (single) | 20.0                | 3.000000                | PASS   |
| Tx Spurious Emission     | 2475.000 (single) | 20.0                | 3.000000                | PASS   |

**Band Edge low (frequency independent; 20.000 dBm; 3 MHz)**

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

**Result**

| DUT Frequency (MHz) | Result |
|---------------------|--------|
| hopping             | PASS   |

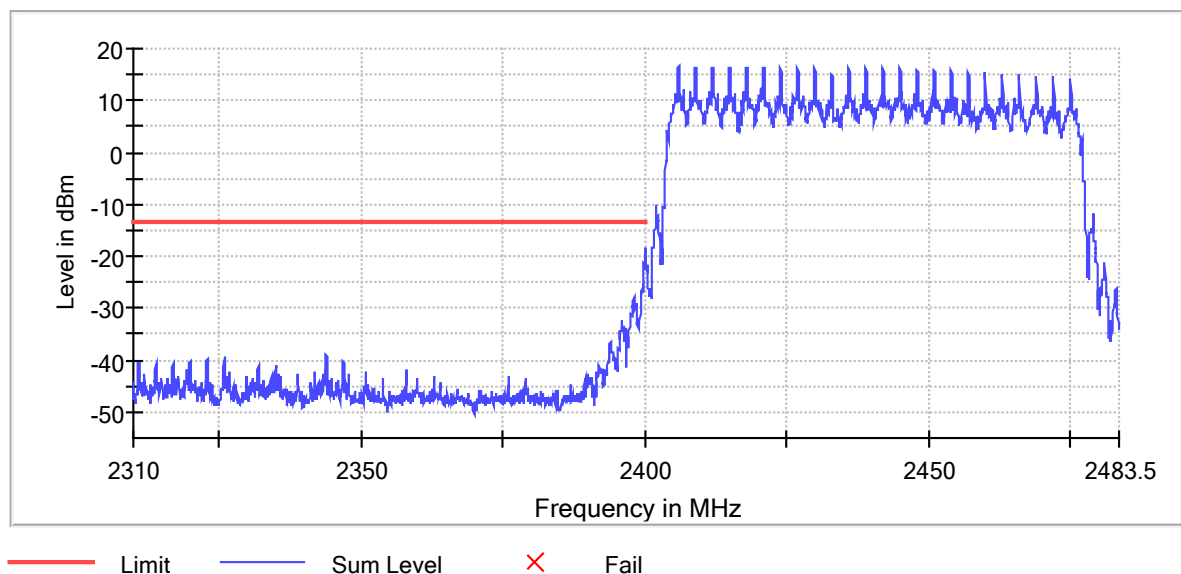
**Inband Peak**

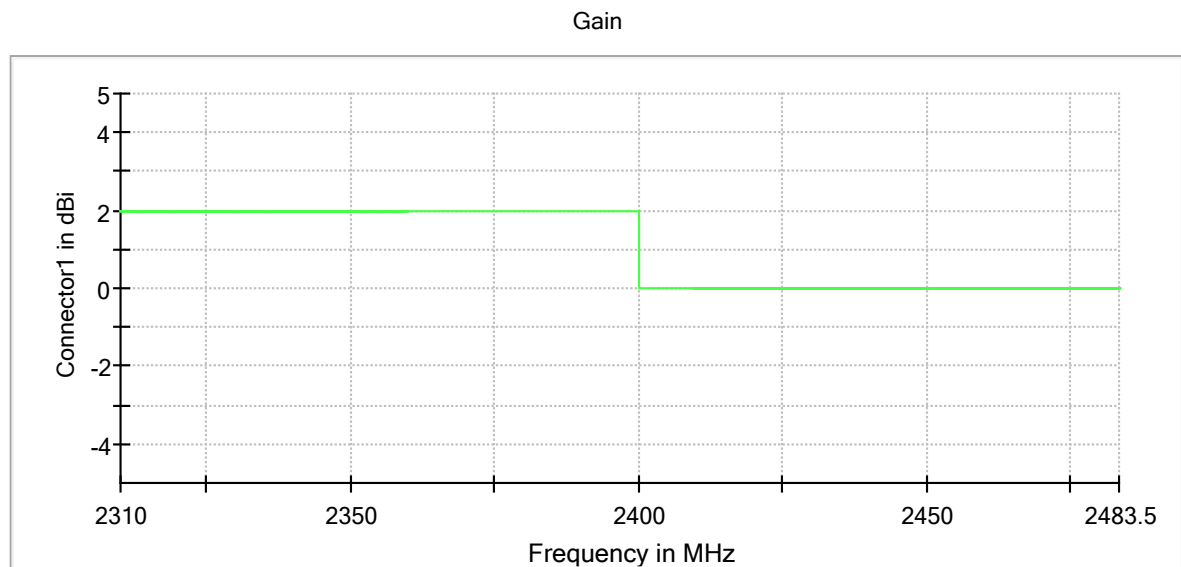
| Frequency (MHz) | Level (dBm) |
|-----------------|-------------|
| 2405.975000     | 16.5        |

**Measurements**

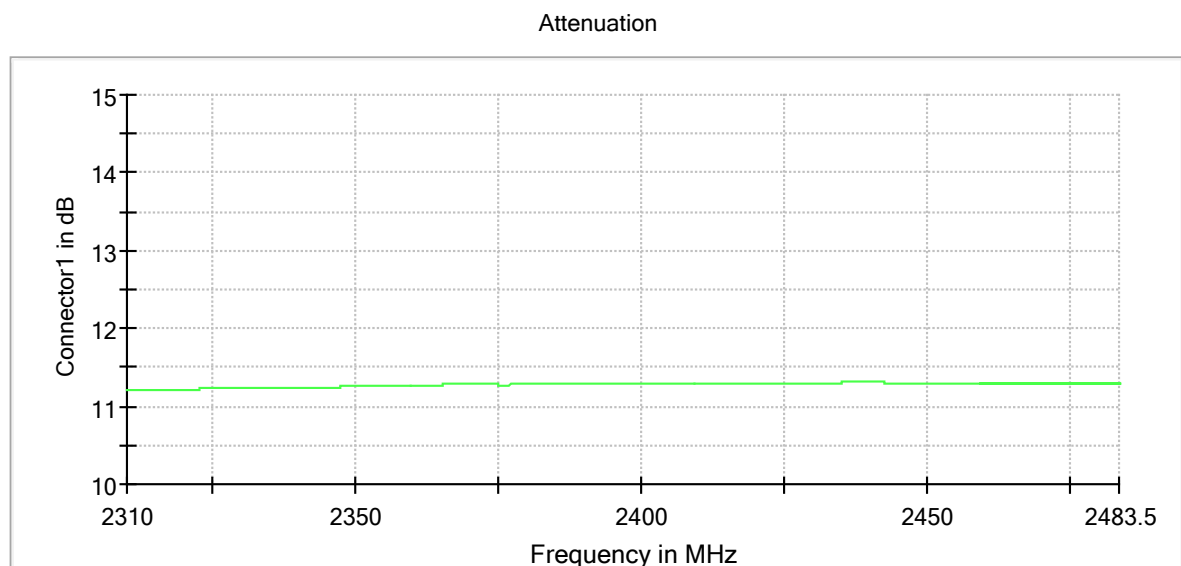
| Frequency (MHz) | Level (dBm) | Margin (dB) | Limit (dBm) | Result |
|-----------------|-------------|-------------|-------------|--------|
| 2399.925000     | -21.0       | 7.5         | -13.5       | PASS   |
| 2399.875000     | -21.5       | 8.0         | -13.5       | PASS   |
| 2399.975000     | -21.5       | 8.0         | -13.5       | PASS   |
| 2399.825000     | -23.5       | 10.1        | -13.5       | PASS   |
| 2399.775000     | -24.7       | 11.3        | -13.5       | PASS   |
| 2399.725000     | -25.1       | 11.7        | -13.5       | PASS   |
| 2399.625000     | -25.6       | 12.1        | -13.5       | PASS   |
| 2399.575000     | -25.9       | 12.4        | -13.5       | PASS   |
| 2399.475000     | -26.6       | 13.1        | -13.5       | PASS   |
| 2399.525000     | -26.9       | 13.4        | -13.5       | PASS   |
| 2399.675000     | -26.9       | 13.4        | -13.5       | PASS   |
| 2399.375000     | -26.9       | 13.5        | -13.5       | PASS   |
| 2399.425000     | -27.4       | 13.9        | -13.5       | PASS   |
| 2398.075000     | -27.9       | 14.4        | -13.5       | PASS   |
| 2399.325000     | -28.0       | 14.6        | -13.5       | PASS   |

Band Edge





Connector1



Connector1

## Measurement 1

| Setting         | Instrument Value | Target Value   |
|-----------------|------------------|----------------|
| Start Frequency | 2.31000 GHz      | 2.31000 GHz    |
| Stop Frequency  | 2.40000 GHz      | 2.40000 GHz    |
| Span            | 90.000 MHz       | 90.000 MHz     |
| RBW             | 100.000 kHz      | <= 100.000 kHz |
| VBW             | 300.000 kHz      | >= 300.000 kHz |
| SweepPoints     | 1800             | ~ 1800         |
| SweepTime       | 113.672 $\mu$ s  | AUTO           |
| Reference Level | 10.000 dBm       | 10.000 dBm     |
| Attenuation     | 30.000 dB        | AUTO           |
| Detector        | MaxPeak          | MaxPeak        |
| SweepCount      | 100              | 100            |
| Filter          | 3 dB             | 3 dB           |
| Trace Mode      | Max Hold         | Max Hold       |
| SweepType       | FFT              | AUTO           |
| Preamplifier    | off              | off            |
| Stablemode      | Trace            | Trace          |
| Stablevalue     | 0.50 dB          | 0.50 dB        |

|                       |               |          |
|-----------------------|---------------|----------|
| Run                   | 13 / max. 150 | max. 150 |
| Stable                | 3 / 3         | 3        |
| Max Stable Difference | 0.00 dB       | 0.50 dB  |

## Measurement 2

| Setting               | Instrument Value | Target Value   |
|-----------------------|------------------|----------------|
| Start Frequency       | 2.40000 GHz      | 2.40000 GHz    |
| Stop Frequency        | 2.48350 GHz      | 2.48350 GHz    |
| Span                  | 83.500 MHz       | 83.500 MHz     |
| RBW                   | 100.000 kHz      | <= 100.000 kHz |
| VBW                   | 300.000 kHz      | >= 300.000 kHz |
| SweepPoints           | 1670             | ~ 1670         |
| Sweeptime             | 94.727 $\mu$ s   | AUTO           |
| Reference Level       | 10.000 dBm       | 10.000 dBm     |
| Attenuation           | 30.000 dB        | AUTO           |
| Detector              | MaxPeak          | MaxPeak        |
| SweepCount            | 100              | 100            |
| Filter                | 3 dB             | 3 dB           |
| Trace Mode            | Max Hold         | Max Hold       |
| SweepType             | FFT              | AUTO           |
| Preamplifier          | off              | off            |
| Stablemode            | Trace            | Trace          |
| Stablevalue           | 0.50 dB          | 0.50 dB        |
| Run                   | 99 / max. 150    | max. 150       |
| Stable                | 3 / 3            | 3              |
| Max Stable Difference | 0.04 dB          | 0.50 dB        |

## Band Edge high (frequency independent; 20.000 dBm; 3 MHz)

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

### Result

| DUT Frequency (MHz) | Result |
|---------------------|--------|
| hopping             | PASS   |

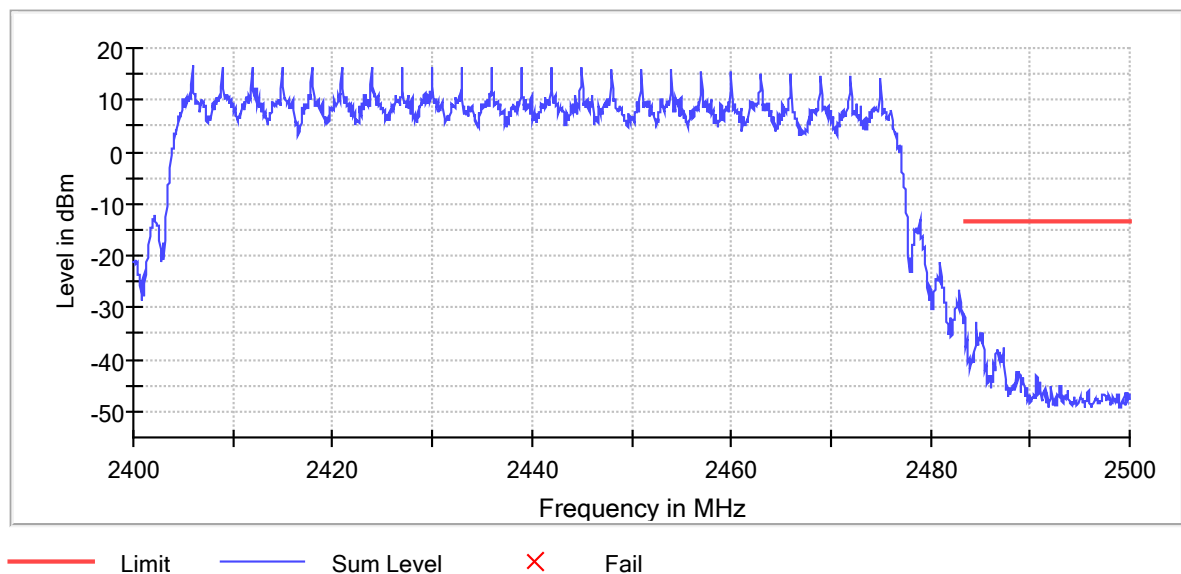
### Inband Peak

| Frequency (MHz) | Level (dBm) |
|-----------------|-------------|
| 2405.975000     | 16.5        |

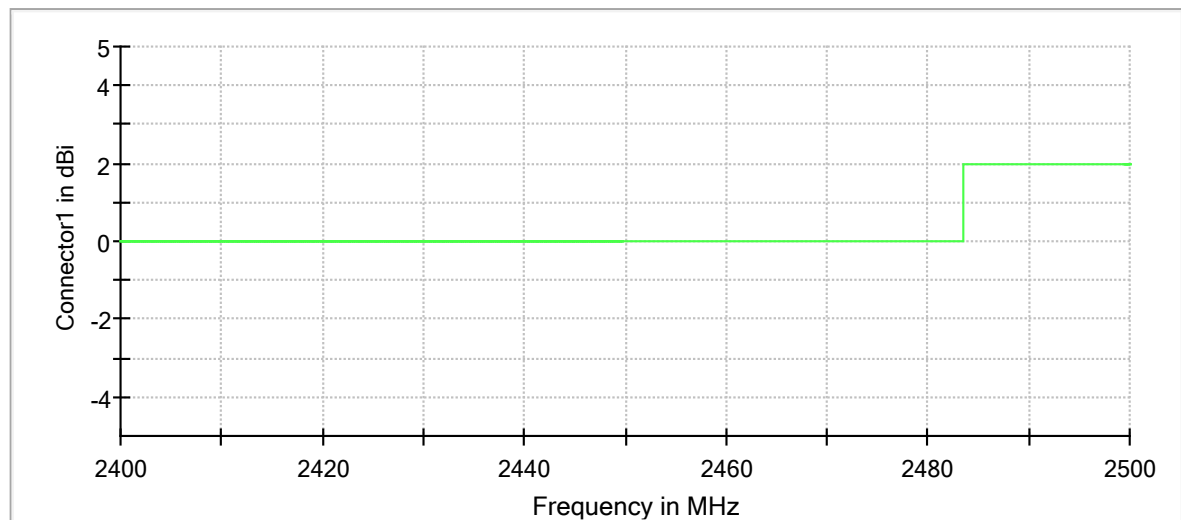
### Measurements

| Frequency (MHz) | Level (dBm) | Margin (dB) | Limit (dBm) | Result |
|-----------------|-------------|-------------|-------------|--------|
| 2484.625000     | -32.8       | 19.3        | -13.5       | PASS   |
| 2484.575000     | -33.2       | 19.7        | -13.5       | PASS   |
| 2484.675000     | -33.9       | 20.5        | -13.5       | PASS   |
| 2484.975000     | -34.8       | 21.3        | -13.5       | PASS   |
| 2485.225000     | -34.9       | 21.4        | -13.5       | PASS   |
| 2485.175000     | -34.9       | 21.4        | -13.5       | PASS   |
| 2485.025000     | -35.4       | 21.9        | -13.5       | PASS   |
| 2484.925000     | -35.5       | 22.0        | -13.5       | PASS   |
| 2484.825000     | -35.5       | 22.1        | -13.5       | PASS   |
| 2484.775000     | -35.6       | 22.2        | -13.5       | PASS   |
| 2485.275000     | -35.7       | 22.2        | -13.5       | PASS   |
| 2483.675000     | -36.1       | 22.6        | -13.5       | PASS   |
| 2483.625000     | -36.1       | 22.6        | -13.5       | PASS   |
| 2483.525000     | -36.1       | 22.6        | -13.5       | PASS   |
| 2485.075000     | -36.2       | 22.7        | -13.5       | PASS   |

Band Edge

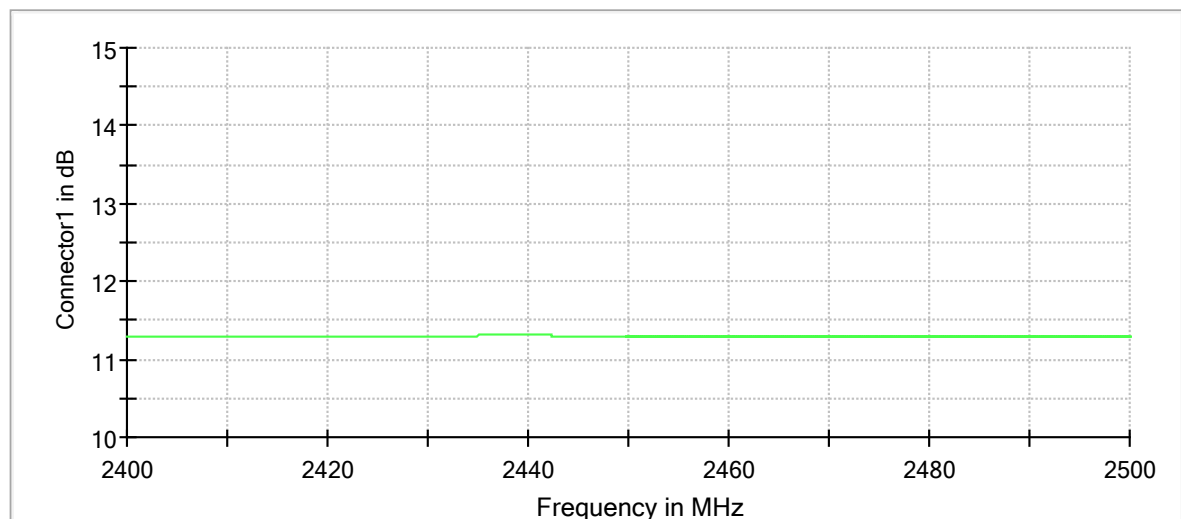


Gain



Connector1

Attenuation



Connector1

## Measurement 1

| Setting         | Instrument Value | Target Value   |
|-----------------|------------------|----------------|
| Start Frequency | 2.40000 GHz      | 2.40000 GHz    |
| Stop Frequency  | 2.48350 GHz      | 2.48350 GHz    |
| Span            | 83.500 MHz       | 83.500 MHz     |
| RBW             | 100.000 kHz      | <= 100.000 kHz |
| VBW             | 300.000 kHz      | >= 300.000 kHz |
| SweepPoints     | 1670             | ~ 1670         |
| SweepTime       | 94.727 $\mu$ s   | AUTO           |
| Reference Level | 10.000 dBm       | 10.000 dBm     |
| Attenuation     | 30.000 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            |
| Stablemode      | Trace            | Trace          |
| Stablevalue     | 0.50 dB          | 0.50 dB        |



|                       |                |          |
|-----------------------|----------------|----------|
| Run                   | 100 / max. 150 | max. 150 |
| Stable                | 3 / 3          | 3        |
| Max Stable Difference | 0.00 dB        | 0.50 dB  |

## Measurement 2

| Setting               | Instrument Value | Target Value   |
|-----------------------|------------------|----------------|
| Start Frequency       | 2.48350 GHz      | 2.48350 GHz    |
| Stop Frequency        | 2.50000 GHz      | 2.50000 GHz    |
| Span                  | 16.500 MHz       | 16.500 MHz     |
| RBW                   | 100.000 kHz      | <= 100.000 kHz |
| VBW                   | 300.000 kHz      | >= 300.000 kHz |
| SweepPoints           | 330              | ~ 330          |
| Sweeptime             | 18.945 $\mu$ s   | AUTO           |
| Reference Level       | 10.000 dBm       | 10.000 dBm     |
| Attenuation           | 30.000 dB        | AUTO           |
| Detector              | MaxPeak          | MaxPeak        |
| SweepCount            | 100              | 100            |
| Filter                | 3 dB             | 3 dB           |
| Trace Mode            | Max Hold         | Max Hold       |
| SweepType             | FFT              | AUTO           |
| Preamplifier          | off              | off            |
| Stablemode            | Trace            | Trace          |
| Stablevalue           | 0.50 dB          | 0.50 dB        |
| Run                   | 5 / max. 150     | max. 150       |
| Stable                | 3 / 3            | 3              |
| Max Stable Difference | 0.00 dB          | 0.50 dB        |

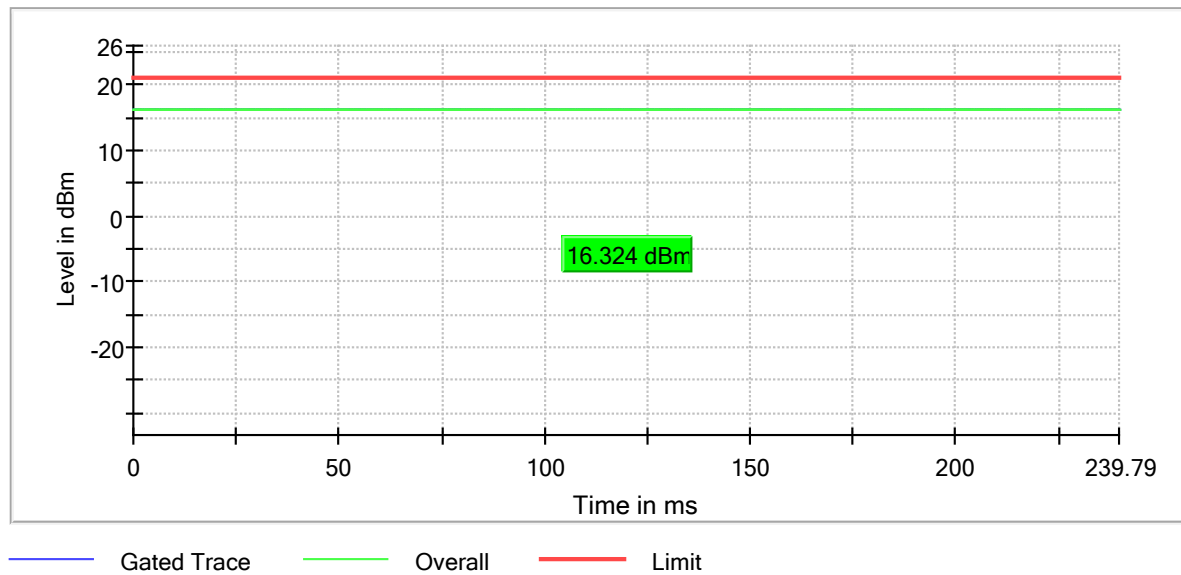
## RF output power (2406 MHz; 20.000 dBm; 3 MHz; Test Mode)

Test according to FCC title 47 part 15 §15.247(b), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

### Result

| DUT Frequency (MHz) | Gated RMS (dBm) | Limit Max (dBm) | Gated EIRP (dBm) | DutyCycle (%) | Result |
|---------------------|-----------------|-----------------|------------------|---------------|--------|
| 2406.000000         | 16.3            | 21.0            | 16.3             | 24.107        | PASS   |

Gated Trace



### 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 |

## Emission Bandwidth 20 dB (2406 MHz; 20.000 dBm; 3 MHz; Test Mode)

Customized settings.

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

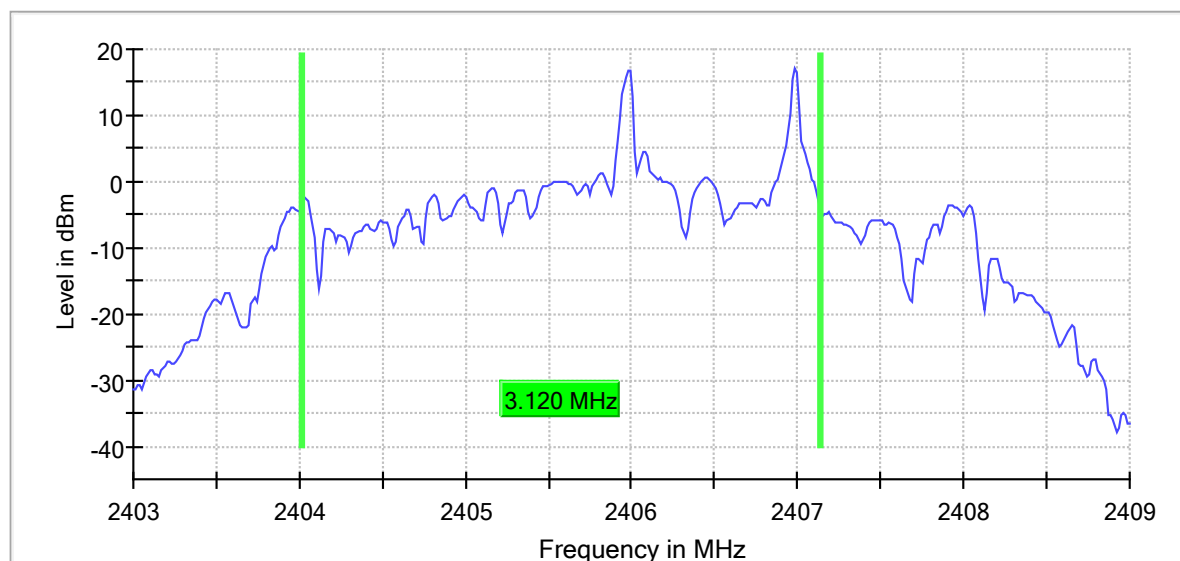
### 20 dB Bandwidth

| DUT Frequency (MHz) | Bandwidth (MHz) | Limit Min (MHz) | Limit Max (MHz) | Band Edge Left (MHz) | Band Edge Right (MHz) |
|---------------------|-----------------|-----------------|-----------------|----------------------|-----------------------|
| 2406.000000         | 3.120000        | ---             | ---             | 2404.012500          | 2407.132500           |

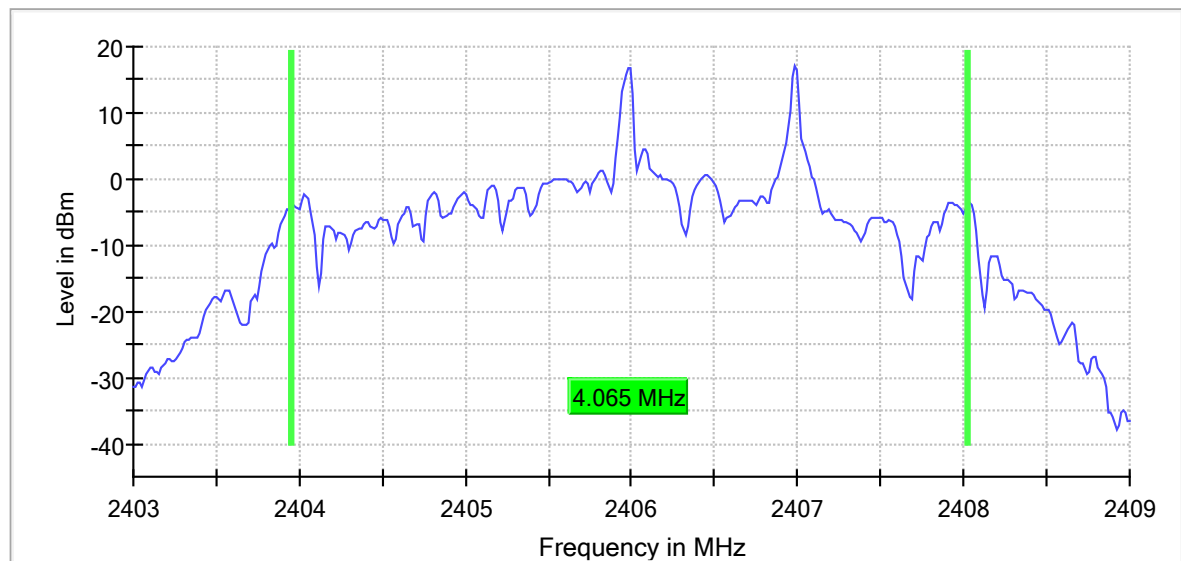
(continuation of the "20 dB Bandwidth" table from column 6 ...)

| DUT Frequency (MHz) | Max Level (dBm) | Result |
|---------------------|-----------------|--------|
| 2406.000000         | 17.0            | PASS   |

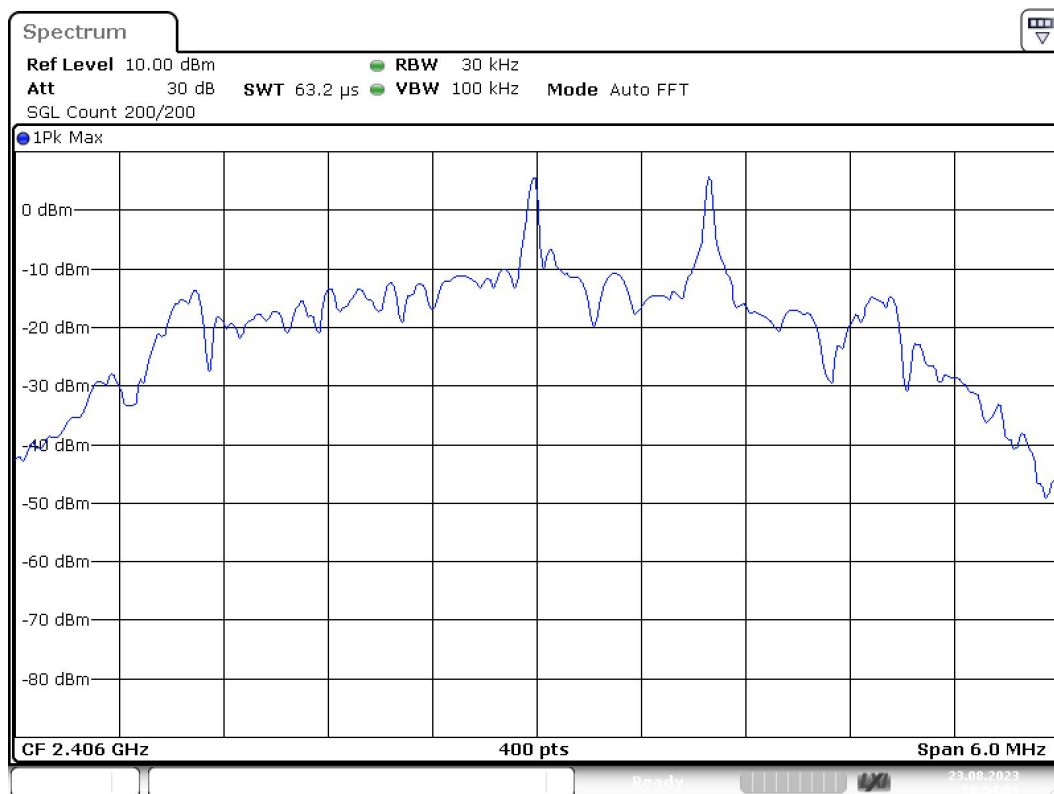
20 dB Bandwidth



99 % Bandwidth



Bandwidth



Date: 23.AUG.2023 10:54:10

## Measurement

| Setting         | Instrument Value | Target Value |
|-----------------|------------------|--------------|
| Start Frequency | 2.40300 GHz      | 2.40300 GHz  |
| Stop Frequency  | 2.40900 GHz      | 2.40900 GHz  |
| Span            | 6.000 MHz        | 6.000 MHz    |

|                              |                    |                         |
|------------------------------|--------------------|-------------------------|
| <b>RBW</b>                   | <b>30.000 kHz</b>  | <b>&gt;= 30.000 kHz</b> |
| <b>VBW</b>                   | <b>100.000 kHz</b> | <b>&gt;= 90.000 kHz</b> |
| <b>SweepPoints</b>           | <b>400</b>         | <b>~ 400</b>            |
| <b>SweepTime</b>             | <b>63.216 µs</b>   | <b>AUTO</b>             |
| <b>Reference Level</b>       | <b>10.000 dBm</b>  | <b>10.000 dBm</b>       |
| <b>Attenuation</b>           | <b>30.000 dB</b>   | <b>AUTO</b>             |
| <b>Detector</b>              | <b>MaxPeak</b>     | <b>MaxPeak</b>          |
| <b>SweepCount</b>            | <b>200</b>         | <b>200</b>              |
| <b>Filter</b>                | <b>3 dB</b>        | <b>3 dB</b>             |
| <b>Trace Mode</b>            | <b>Max Hold</b>    | <b>Max Hold</b>         |
| <b>SweepType</b>             | <b>FFT</b>         | <b>AUTO</b>             |
| <b>Preamp</b>                | <b>off</b>         | <b>off</b>              |
| <b>Stablemode</b>            | <b>Trace</b>       | <b>Trace</b>            |
| <b>Stablevalue</b>           | <b>0.50 dB</b>     | <b>0.50 dB</b>          |
| <b>Run</b>                   | <b>1 / max. 1</b>  | <b>max. 1</b>           |
| <b>Stable</b>                | <b>0 / 1</b>       | <b>1</b>                |
| <b>Max Stable Difference</b> | <b>0.00 dB</b>     | <b>0.50 dB</b>          |

## Band Edge low (2406 MHz; 20.000 dBm; 3 MHz; Test Mode)

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

### Result

| DUT Frequency (MHz) | Result |
|---------------------|--------|
| 2406.000000         | PASS   |

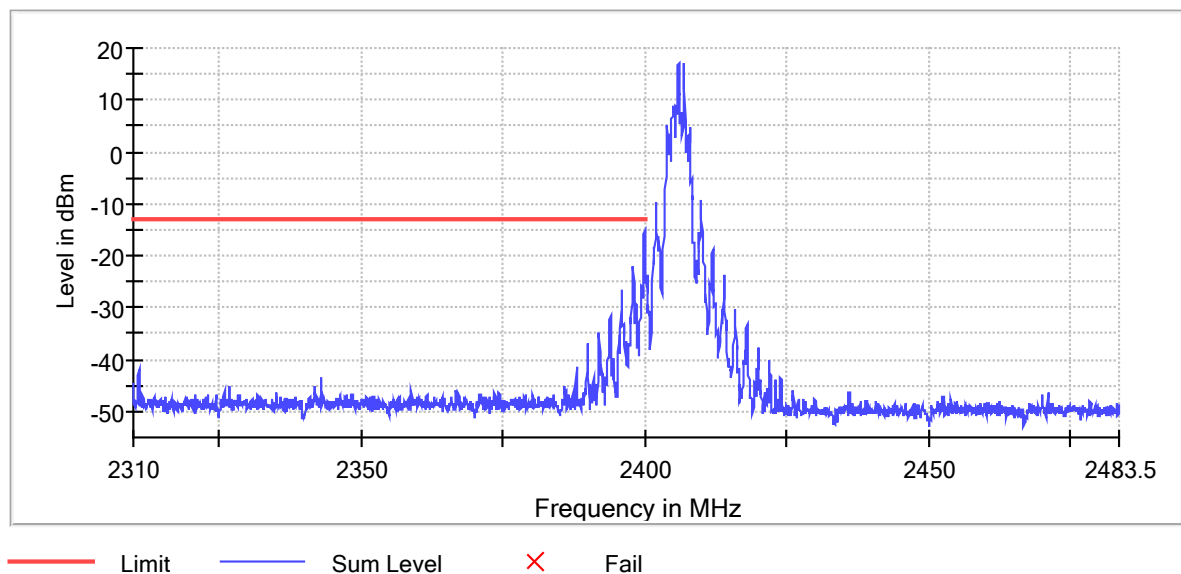
### Inband Peak

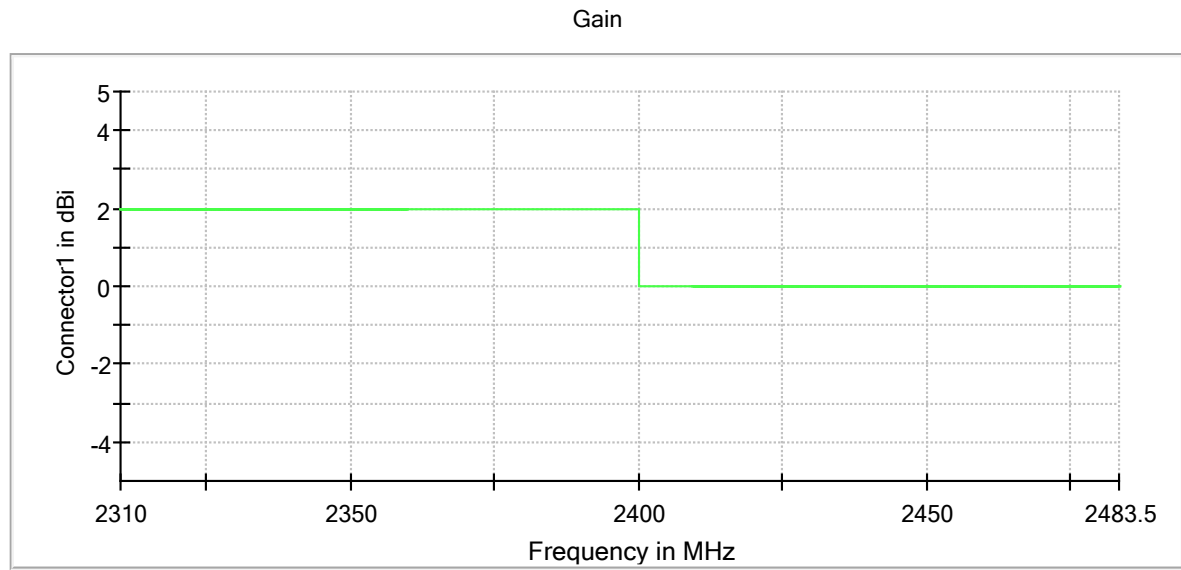
| Frequency (MHz) | Level (dBm) |
|-----------------|-------------|
| 2405.975000     | 17.0        |

### Measurements

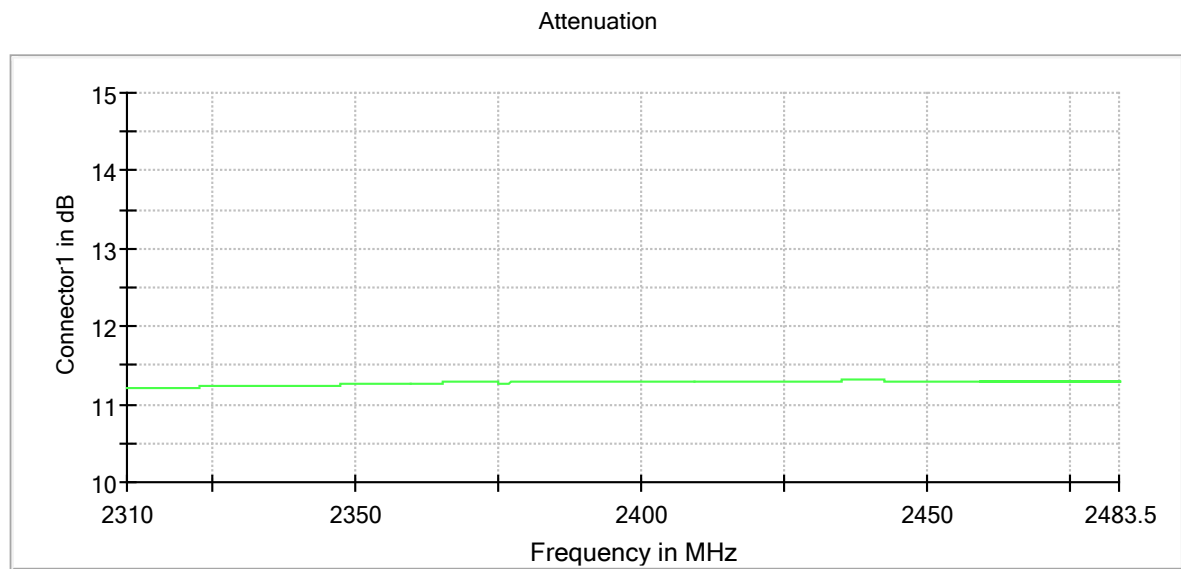
| Frequency (MHz) | Level (dBm) | Margin (dB) | Limit (dBm) | Result |
|-----------------|-------------|-------------|-------------|--------|
| 2399.975000     | -15.2       | 2.2         | -13.0       | PASS   |
| 2399.925000     | -16.0       | 3.0         | -13.0       | PASS   |
| 2399.875000     | -18.8       | 5.9         | -13.0       | PASS   |
| 2399.825000     | -20.5       | 7.5         | -13.0       | PASS   |
| 2397.975000     | -22.1       | 9.2         | -13.0       | PASS   |
| 2398.025000     | -22.4       | 9.5         | -13.0       | PASS   |
| 2397.925000     | -22.9       | 9.9         | -13.0       | PASS   |
| 2399.775000     | -23.5       | 10.5        | -13.0       | PASS   |
| 2398.075000     | -25.5       | 12.5        | -13.0       | PASS   |
| 2398.125000     | -25.6       | 12.6        | -13.0       | PASS   |
| 2399.525000     | -25.8       | 12.8        | -13.0       | PASS   |
| 2399.575000     | -26.1       | 13.1        | -13.0       | PASS   |
| 2399.475000     | -26.4       | 13.4        | -13.0       | PASS   |
| 2395.975000     | -26.5       | 13.5        | -13.0       | PASS   |
| 2396.025000     | -26.6       | 13.6        | -13.0       | PASS   |

Band Edge



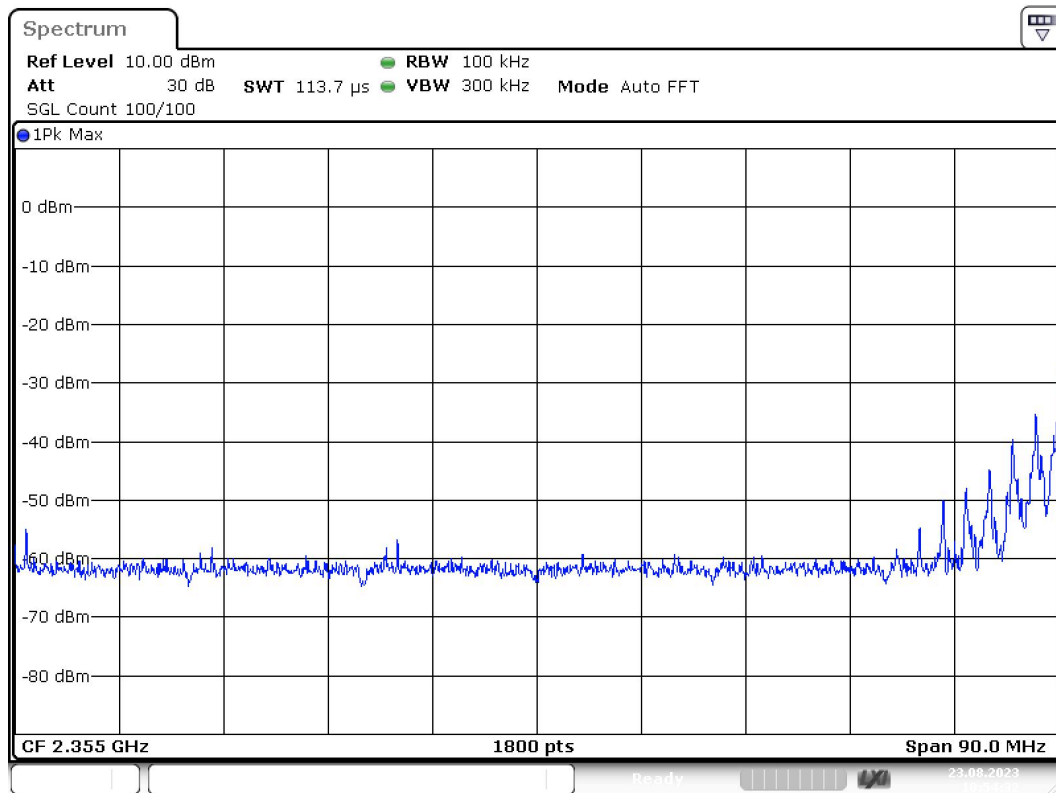


Connector1



Connector1

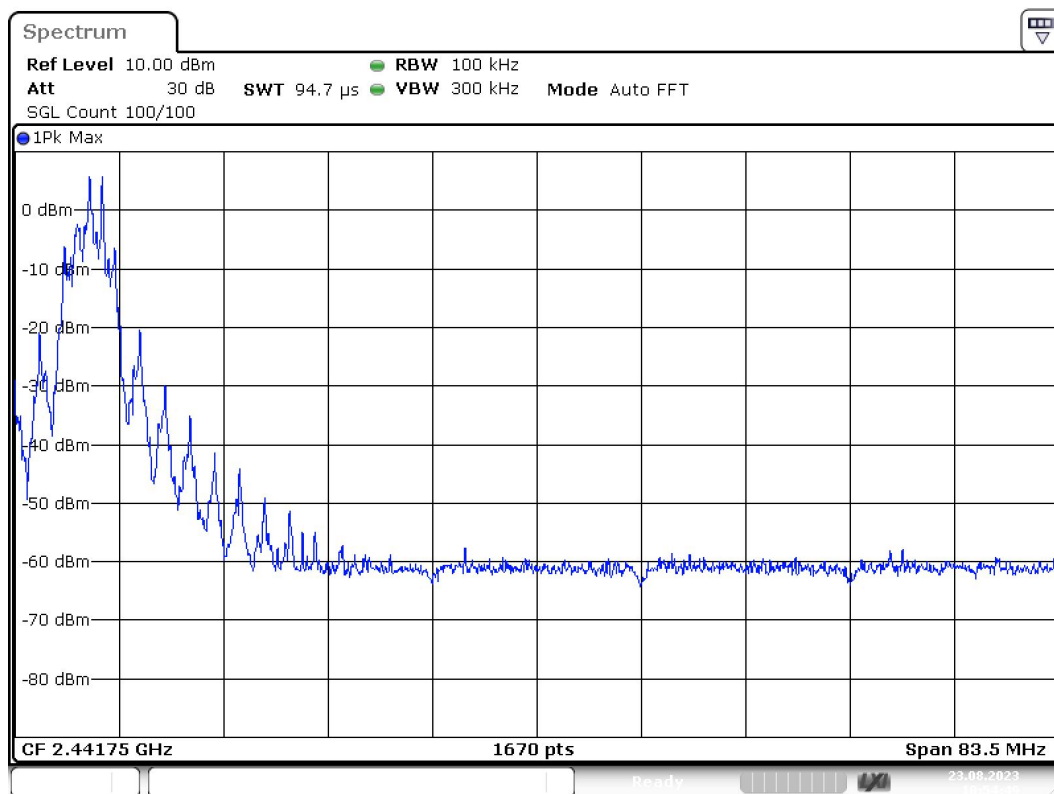
Band Edge Connector 1\_0



Date: 23.AUG.2023 10:54:33

Band Edge Connector 1\_1





Date: 23.AUG.2023 10:54:49

## Measurement 1

| Setting               | Instrument Value | Target Value       |
|-----------------------|------------------|--------------------|
| Start Frequency       | 2.31000 GHz      | 2.31000 GHz        |
| Stop Frequency        | 2.40000 GHz      | 2.40000 GHz        |
| Span                  | 90.000 MHz       | 90.000 MHz         |
| RBW                   | 100.000 kHz      | $\leq 100.000$ kHz |
| VBW                   | 300.000 kHz      | $\geq 300.000$ kHz |
| SweepPoints           | 1800             | $\sim 1800$        |
| Sweptime              | 113.672 $\mu$ s  | AUTO               |
| Reference Level       | 10.000 dBm       | 10.000 dBm         |
| Attenuation           | 30.000 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                |
| Stablemode            | Trace            | Trace              |
| Stablevalue           | 0.50 dB          | 0.50 dB            |
| Run                   | 5 / max. 150     | max. 150           |
| Stable                | 3 / 3            | 3                  |
| Max Stable Difference | 0.00 dB          | 0.50 dB            |

## Measurement 2

| Setting         | Instrument Value | Target Value       |
|-----------------|------------------|--------------------|
| Start Frequency | 2.40000 GHz      | 2.40000 GHz        |
| Stop Frequency  | 2.48350 GHz      | 2.48350 GHz        |
| Span            | 83.500 MHz       | 83.500 MHz         |
| RBW             | 100.000 kHz      | $\leq 100.000$ kHz |
| VBW             | 300.000 kHz      | $\geq 300.000$ kHz |

|                              |                     |                   |
|------------------------------|---------------------|-------------------|
| <b>SweepPoints</b>           | <b>1670</b>         | <b>~ 1670</b>     |
| <b>Sweeptime</b>             | <b>94.727 µs</b>    | <b>AUTO</b>       |
| <b>Reference Level</b>       | <b>10.000 dBm</b>   | <b>10.000 dBm</b> |
| <b>Attenuation</b>           | <b>30.000 dB</b>    | <b>AUTO</b>       |
| <b>Detector</b>              | <b>MaxPeak</b>      | <b>MaxPeak</b>    |
| <b>SweepCount</b>            | <b>100</b>          | <b>100</b>        |
| <b>Filter</b>                | <b>3 dB</b>         | <b>3 dB</b>       |
| <b>Trace Mode</b>            | <b>Max Hold</b>     | <b>Max Hold</b>   |
| <b>SweepType</b>             | <b>FFT</b>          | <b>AUTO</b>       |
| <b>Preamp</b>                | <b>off</b>          | <b>off</b>        |
| <b>Stablemode</b>            | <b>Trace</b>        | <b>Trace</b>      |
| <b>Stablevalue</b>           | <b>0.50 dB</b>      | <b>0.50 dB</b>    |
| <b>Run</b>                   | <b>9 / max. 150</b> | <b>max. 150</b>   |
| <b>Stable</b>                | <b>3 / 3</b>        | <b>3</b>          |
| <b>Max Stable Difference</b> | <b>0.00 dB</b>      | <b>0.50 dB</b>    |

**Tx Spurious Emission (2406 MHz; 20.000 dBm; 3 MHz; Test Mode)**

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

**Result**

| DUT Frequency (MHz) | Result |
|---------------------|--------|
| 2406.000000         | PASS   |

**Final measurements**

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

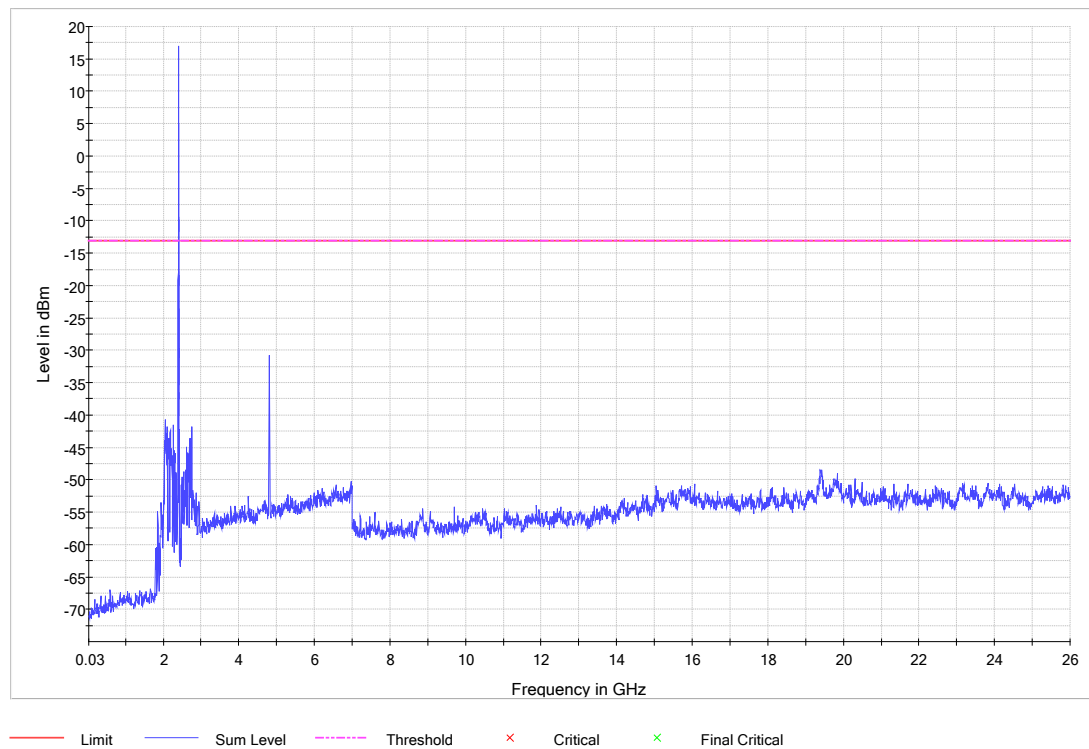
**Pre Measurements**

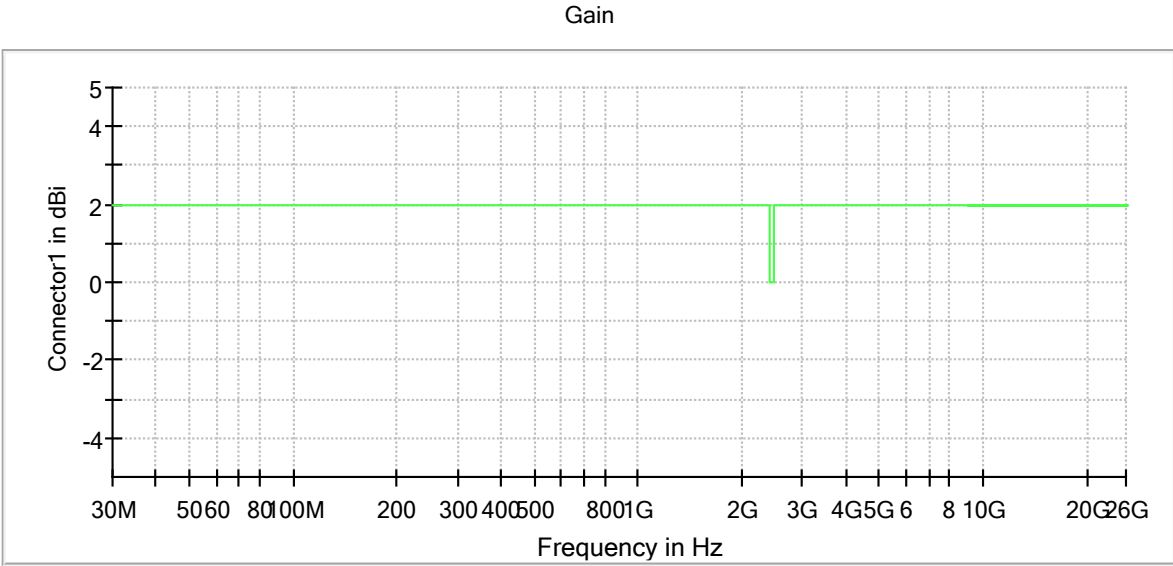
| Frequency (MHz) | Level (dBm) | Margin (dB) | Limit (dBm) |
|-----------------|-------------|-------------|-------------|
| 2395.021008     | -19.2       | 6.2         | -13.0       |
| 4817.160327     | -30.7       | 17.7        | -13.0       |
| 4807.166065     | -30.8       | 17.8        | -13.0       |
| 2056.449580     | -40.6       | 27.6        | -13.0       |
| 2275.525210     | -41.5       | 28.5        | -13.0       |
| 2106.239496     | -41.7       | 28.7        | -13.0       |
| 2758.342223     | -41.8       | 28.8        | -13.0       |
| 2195.861345     | -42.4       | 29.3        | -13.0       |
| 2185.903361     | -42.7       | 29.7        | -13.0       |
| 2086.323529     | -42.8       | 29.8        | -13.0       |
| 2066.407563     | -43.4       | 30.4        | -13.0       |
| 2708.370909     | -43.6       | 30.6        | -13.0       |
| 2146.071429     | -43.6       | 30.6        | -13.0       |
| 2165.987395     | -43.9       | 30.9        | -13.0       |
| 2116.197479     | -43.9       | 30.9        | -13.0       |

**Measurement Settings**

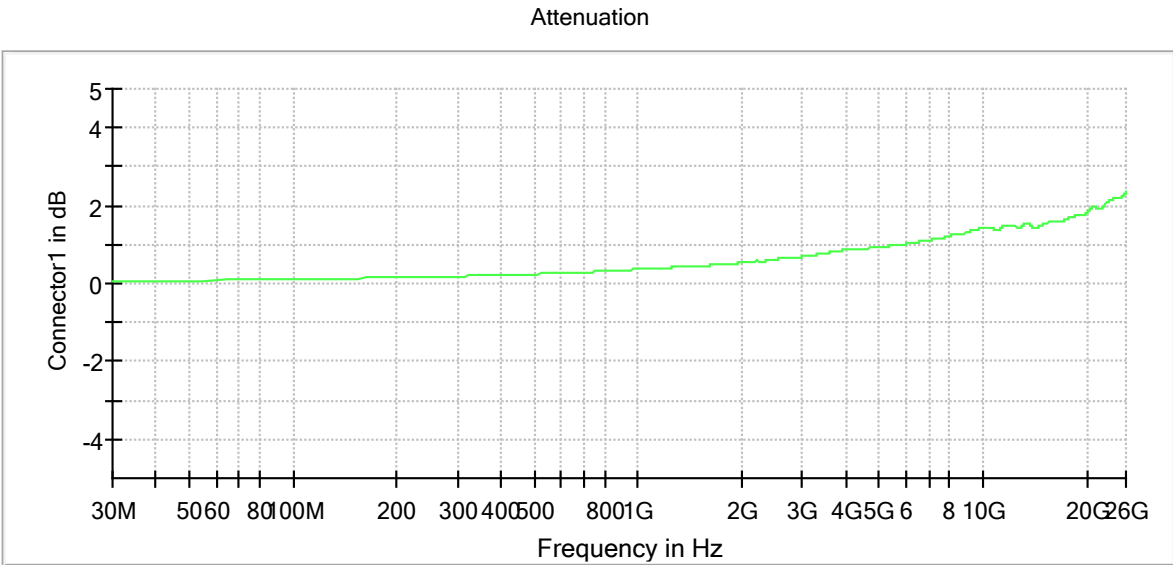
| Start Frequency (MHz) | Stop Frequency (MHz) | Pre Measurement | Final Measurement |
|-----------------------|----------------------|-----------------|-------------------|
| 30.000000             | 2400.000000          | 1               | 1                 |
| 2400.000000           | 2483.500000          | 1               | 1                 |
| 2483.500000           | 26000.000000         | 1               | 1                 |

Spurious





Connector1



Connector1

Pre Measurement 1

| Setting               | Instrument Value | Target Value   |
|-----------------------|------------------|----------------|
| RBW                   | 100.000 kHz      | <= 100.000 kHz |
| VBW                   | 300.000 kHz      | >= 300.000 kHz |
| SweepPoints           | 238              | ~ 238          |
| SweepTime             | 23.700 ms        | AUTO           |
| Reference Level       | -10.000 dBm      | -30.000 dBm    |
| Attenuation           | 20.000 dB        | AUTO           |
| Detector              | MaxPeak          | MaxPeak        |
| SweepCount            | 3                | 3              |
| Filter                | 3 dB             | 3 dB           |
| Trace Mode            | Max Hold         | Max Hold       |
| SweepType             | Sweep            | AUTO           |
| Preamp                | off              | off            |
| Stablemode            | Trace            | Trace          |
| Stablevalue           | 0.50 dB          | 0.50 dB        |
| Run                   | 9 / max. 40      | max. 40        |
| Stable                | 3 / 3            | 3              |
| Max Stable Difference | 0.00 dB          | 0.50 dB        |

## Emission Bandwidth 20 dB (2442 MHz; 20.000 dBm; 3 MHz; Test Mode)

Customized settings.

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

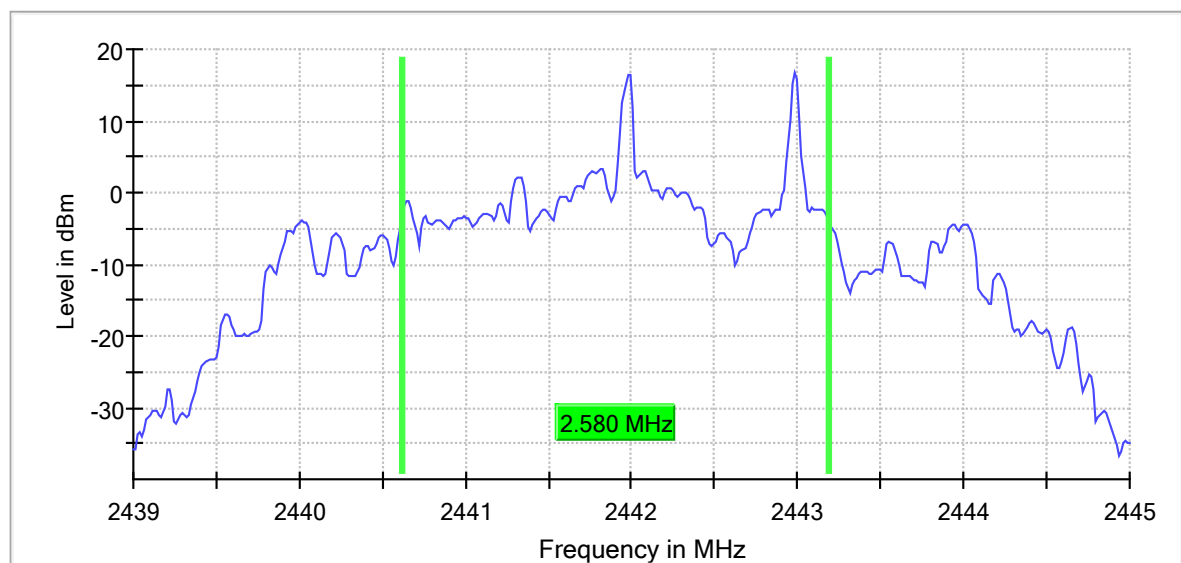
### 20 dB Bandwidth

| DUT Frequency (MHz) | Bandwidth (MHz) | Limit Min (MHz) | Limit Max (MHz) | Band Edge Left (MHz) | Band Edge Right (MHz) |
|---------------------|-----------------|-----------------|-----------------|----------------------|-----------------------|
| 2442.000000         | 2.580000        | ---             | ---             | 2440.612500          | 2443.192500           |

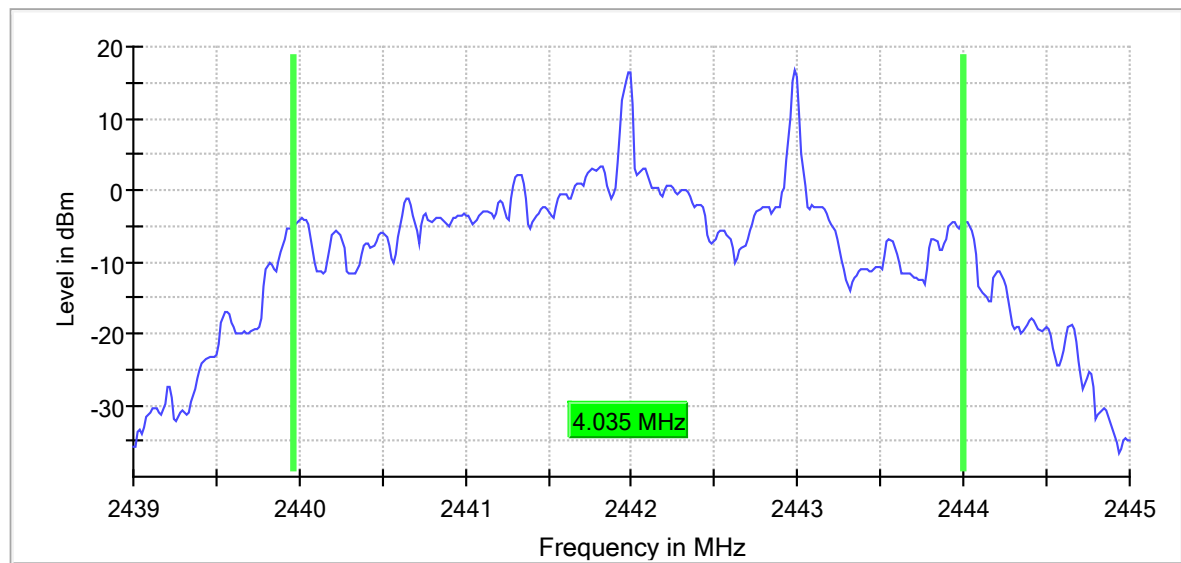
(continuation of the "20 dB Bandwidth" table from column 6 ...)

| DUT Frequency (MHz) | Max Level (dBm) | Result |
|---------------------|-----------------|--------|
| 2442.000000         | 16.6            | PASS   |

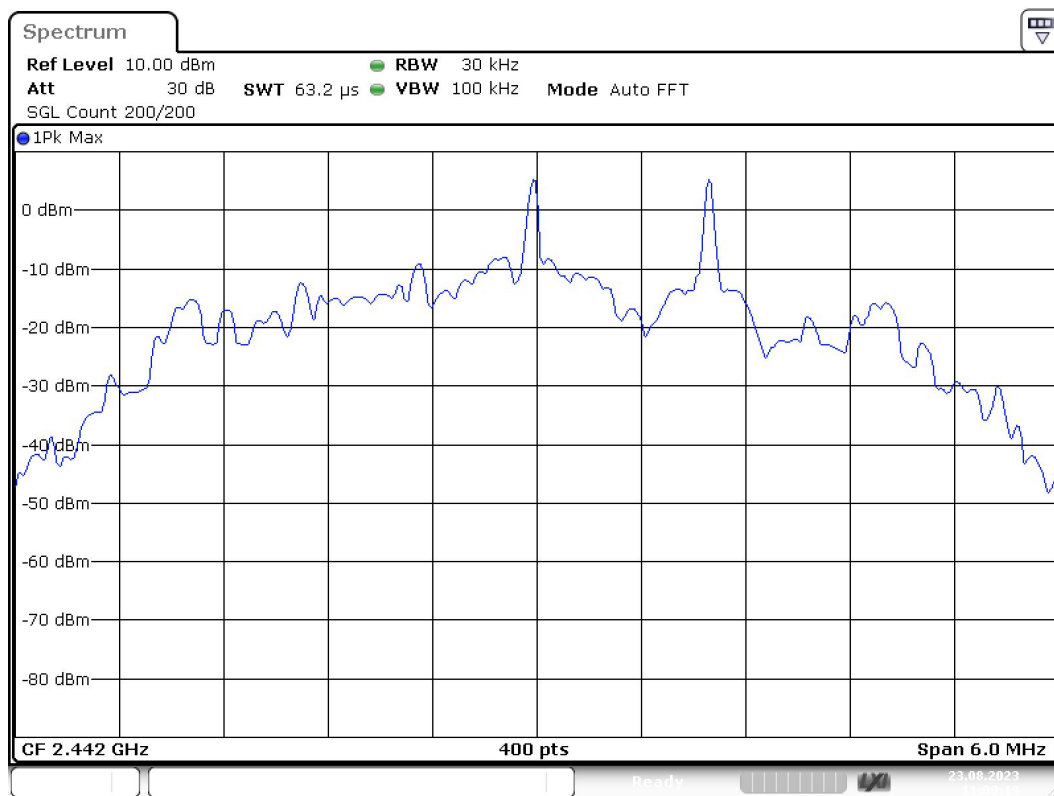
20 dB Bandwidth



99 % Bandwidth



Bandwidth



Date: 23.AUG.2023 11:00:19

## Measurement

| Setting         | Instrument Value | Target Value |
|-----------------|------------------|--------------|
| Start Frequency | 2.43900 GHz      | 2.43900 GHz  |
| Stop Frequency  | 2.44500 GHz      | 2.44500 GHz  |
| Span            | 6.000 MHz        | 6.000 MHz    |

|                              |                    |                         |
|------------------------------|--------------------|-------------------------|
| <b>RBW</b>                   | <b>30.000 kHz</b>  | <b>&gt;= 30.000 kHz</b> |
| <b>VBW</b>                   | <b>100.000 kHz</b> | <b>&gt;= 90.000 kHz</b> |
| <b>SweepPoints</b>           | <b>400</b>         | <b>~ 400</b>            |
| <b>SweepTime</b>             | <b>63.216 µs</b>   | <b>AUTO</b>             |
| <b>Reference Level</b>       | <b>10.000 dBm</b>  | <b>10.000 dBm</b>       |
| <b>Attenuation</b>           | <b>30.000 dB</b>   | <b>AUTO</b>             |
| <b>Detector</b>              | <b>MaxPeak</b>     | <b>MaxPeak</b>          |
| <b>SweepCount</b>            | <b>200</b>         | <b>200</b>              |
| <b>Filter</b>                | <b>3 dB</b>        | <b>3 dB</b>             |
| <b>Trace Mode</b>            | <b>Max Hold</b>    | <b>Max Hold</b>         |
| <b>SweepType</b>             | <b>FFT</b>         | <b>AUTO</b>             |
| <b>Preamp</b>                | <b>off</b>         | <b>off</b>              |
| <b>Stablemode</b>            | <b>Trace</b>       | <b>Trace</b>            |
| <b>Stablevalue</b>           | <b>0.50 dB</b>     | <b>0.50 dB</b>          |
| <b>Run</b>                   | <b>1 / max. 1</b>  | <b>max. 1</b>           |
| <b>Stable</b>                | <b>0 / 1</b>       | <b>1</b>                |
| <b>Max Stable Difference</b> | <b>0.00 dB</b>     | <b>0.50 dB</b>          |



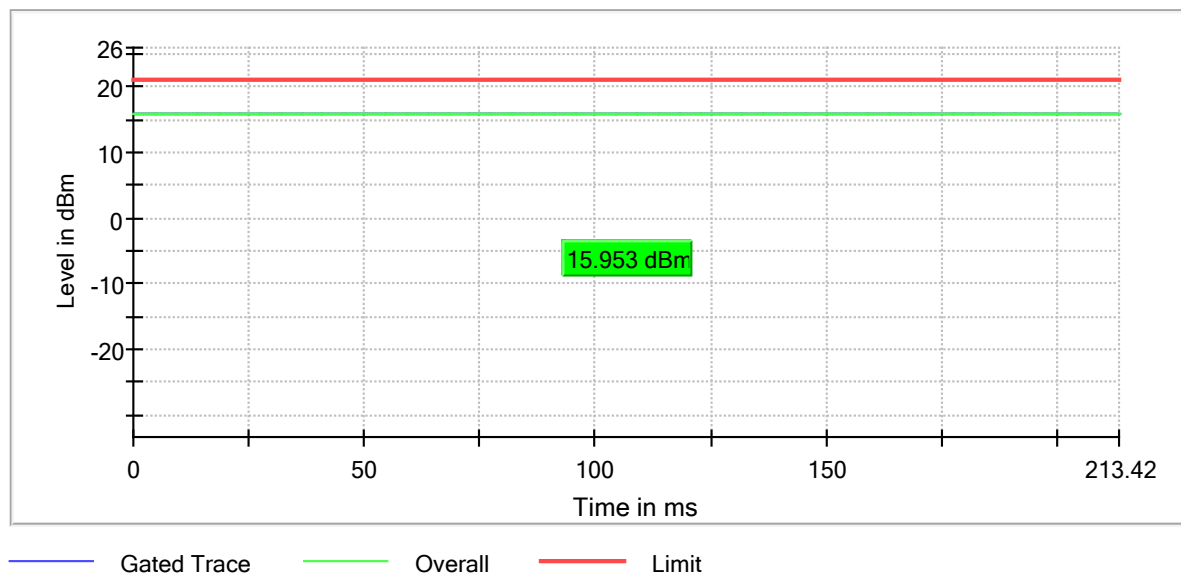
## RF output power (2442 MHz; 20.000 dBm; 3 MHz; Test Mode)

Test according to FCC title 47 part 15 §15.247(b), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

### Result

| DUT Frequency (MHz) | Gated RMS (dBm) | Limit Max (dBm) | Gated EIRP (dBm) | DutyCycle (%) | Result |
|---------------------|-----------------|-----------------|------------------|---------------|--------|
| 2442.000000         | 16.0            | 21.0            | 16.0             | 21.455        | PASS   |

Gated Trace



### 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 |

**Tx Spurious Emission (2442 MHz; 20.000 dBm; 3 MHz; Test Mode)**

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

**Result**

| DUT Frequency (MHz) | Result |
|---------------------|--------|
| 2442.000000         | PASS   |

**Final measurements**

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

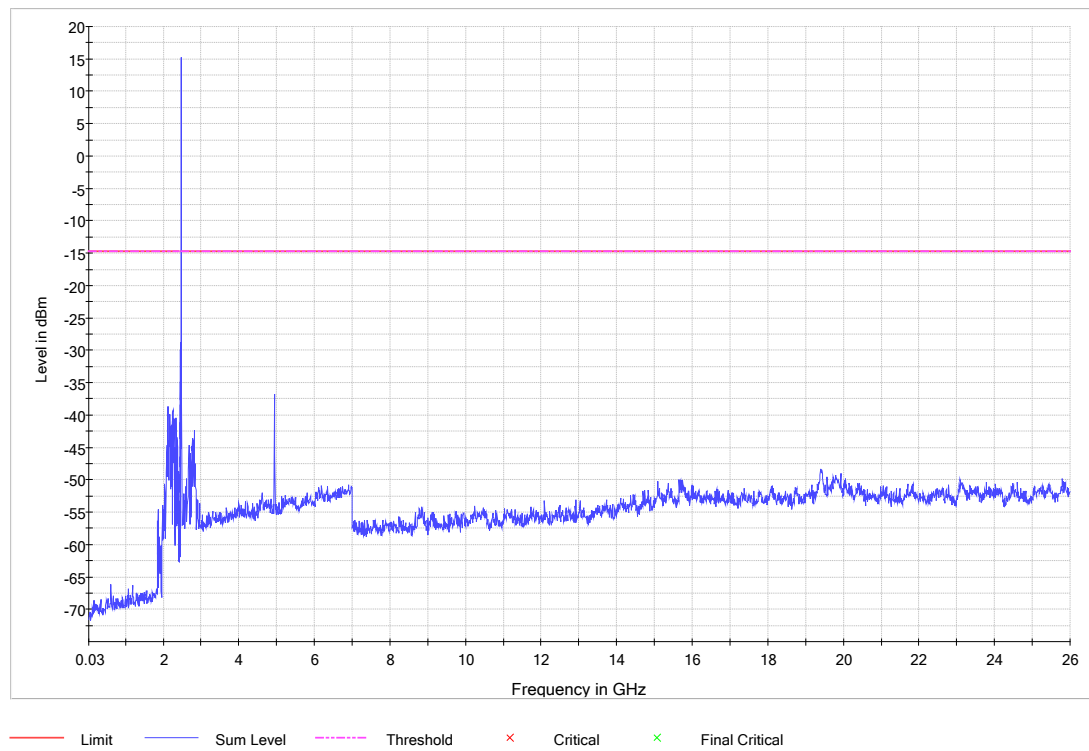
**Pre Measurements**

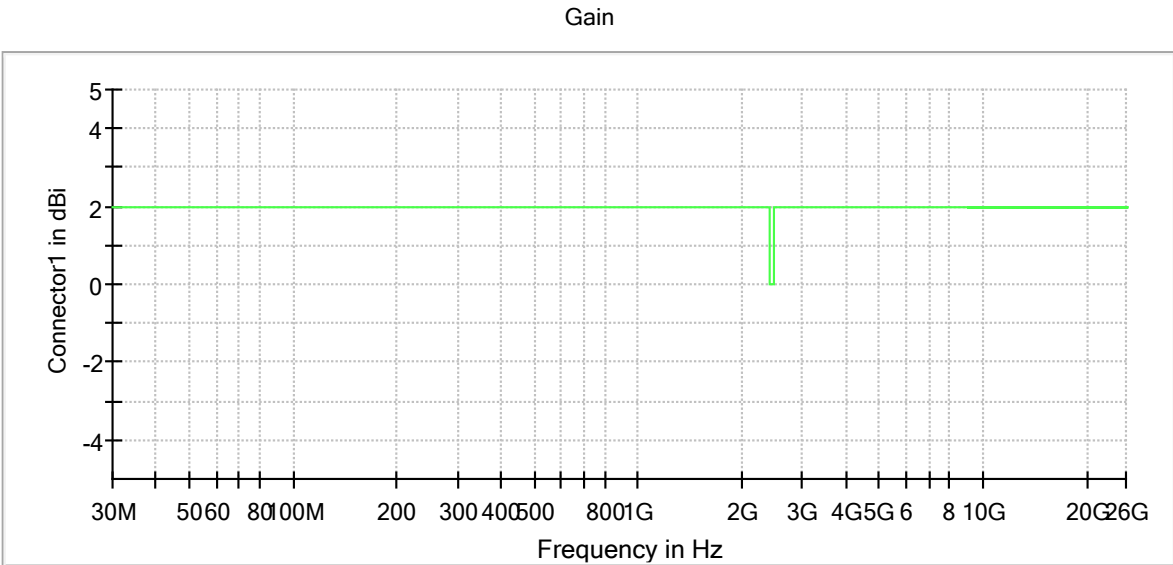
| Frequency (MHz) | Level (dBm) | Margin (dB) | Limit (dBm) |
|-----------------|-------------|-------------|-------------|
| 2488.497131     | -32.2       | 17.5        | -14.7       |
| 4947.085742     | -36.8       | 22.0        | -14.7       |
| 2126.155462     | -38.6       | 23.9        | -14.7       |
| 2265.567227     | -39.2       | 24.5        | -14.7       |
| 2255.609244     | -39.7       | 24.9        | -14.7       |
| 2175.945378     | -39.9       | 25.2        | -14.7       |
| 2185.903361     | -40.3       | 25.6        | -14.7       |
| 2345.231092     | -40.5       | 25.8        | -14.7       |
| 2285.483193     | -40.6       | 25.8        | -14.7       |
| 2136.113445     | -40.9       | 26.1        | -14.7       |
| 2235.693277     | -41.0       | 26.3        | -14.7       |
| 2215.777311     | -41.5       | 26.8        | -14.7       |
| 2205.819328     | -42.2       | 27.5        | -14.7       |
| 2828.302061     | -42.4       | 27.6        | -14.7       |
| 2365.147059     | -43.4       | 28.6        | -14.7       |

**Measurement Settings**

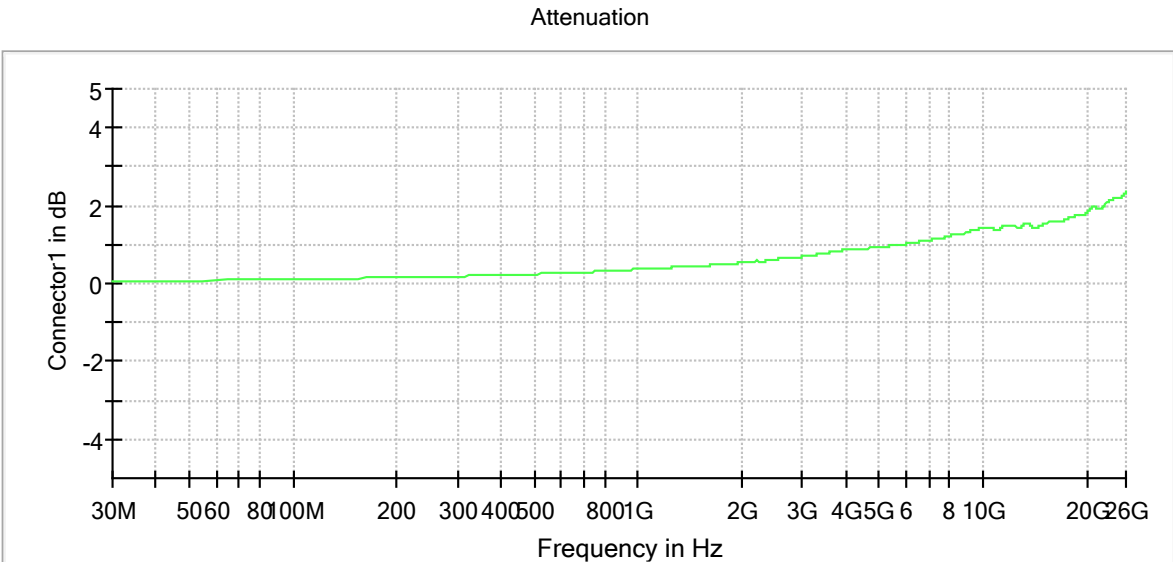
| Start Frequency (MHz) | Stop Frequency (MHz) | Pre Measurement | Final Measurement |
|-----------------------|----------------------|-----------------|-------------------|
| 30.000000             | 2400.000000          | 1               | 1                 |
| 2400.000000           | 2483.500000          | 1               | 1                 |
| 2483.500000           | 26000.000000         | 1               | 1                 |

Spurious





Connector1



Connector1

Pre Measurement 1

| Setting               | Instrument Value | Target Value   |
|-----------------------|------------------|----------------|
| RBW                   | 100.000 kHz      | <= 100.000 kHz |
| VBW                   | 300.000 kHz      | >= 300.000 kHz |
| SweepPoints           | 238              | ~ 238          |
| SweepTime             | 23.700 ms        | AUTO           |
| Reference Level       | -10.000 dBm      | -30.000 dBm    |
| Attenuation           | 20.000 dB        | AUTO           |
| Detector              | MaxPeak          | MaxPeak        |
| SweepCount            | 3                | 3              |
| Filter                | 3 dB             | 3 dB           |
| Trace Mode            | Max Hold         | Max Hold       |
| SweepType             | Sweep            | AUTO           |
| Preamp                | off              | off            |
| Stablemode            | Trace            | Trace          |
| Stablevalue           | 0.50 dB          | 0.50 dB        |
| Run                   | 9 / max. 40      | max. 40        |
| Stable                | 3 / 3            | 3              |
| Max Stable Difference | 0.22 dB          | 0.50 dB        |

## Emission Bandwidth 20 dB (2475 MHz; 20.000 dBm; 3 MHz; Test Mode)

Customized settings.

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

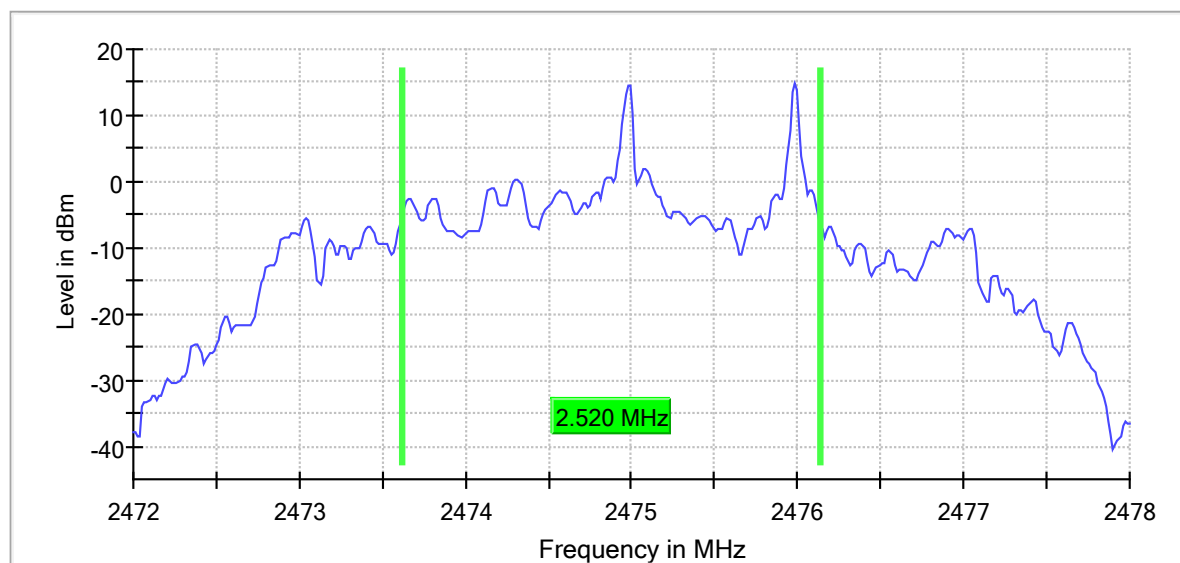
### 20 dB Bandwidth

| DUT Frequency (MHz) | Bandwidth (MHz) | Limit Min (MHz) | Limit Max (MHz) | Band Edge Left (MHz) | Band Edge Right (MHz) |
|---------------------|-----------------|-----------------|-----------------|----------------------|-----------------------|
| 2475.000000         | 2.520000        | ---             | ---             | 2473.612500          | 2476.132500           |

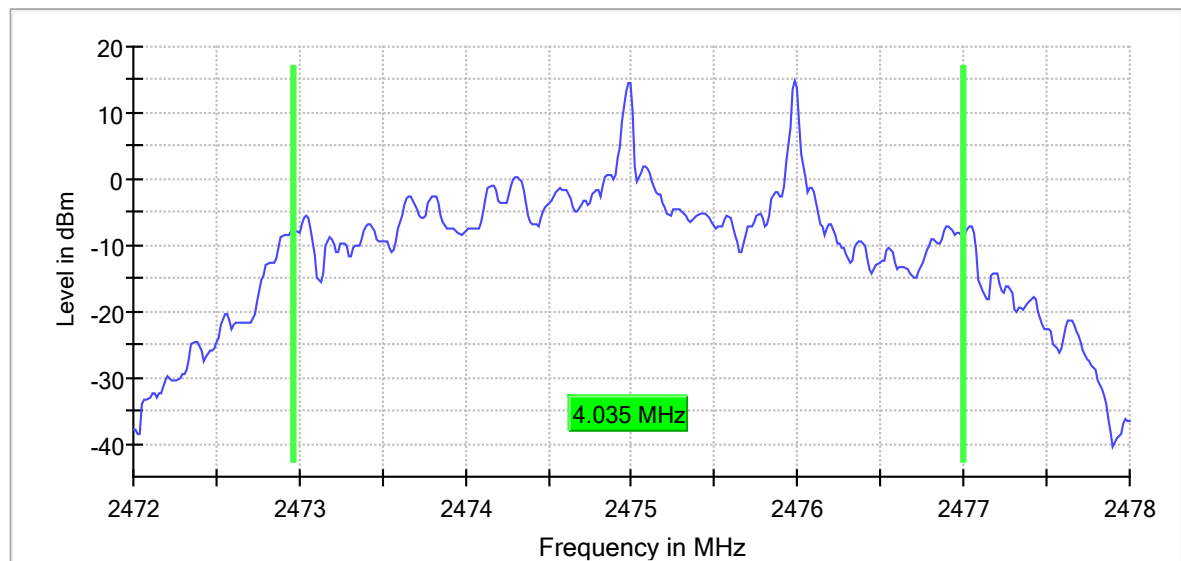
(continuation of the "20 dB Bandwidth" table from column 6 ...)

| DUT Frequency (MHz) | Max Level (dBm) | Result |
|---------------------|-----------------|--------|
| 2475.000000         | 14.7            | PASS   |

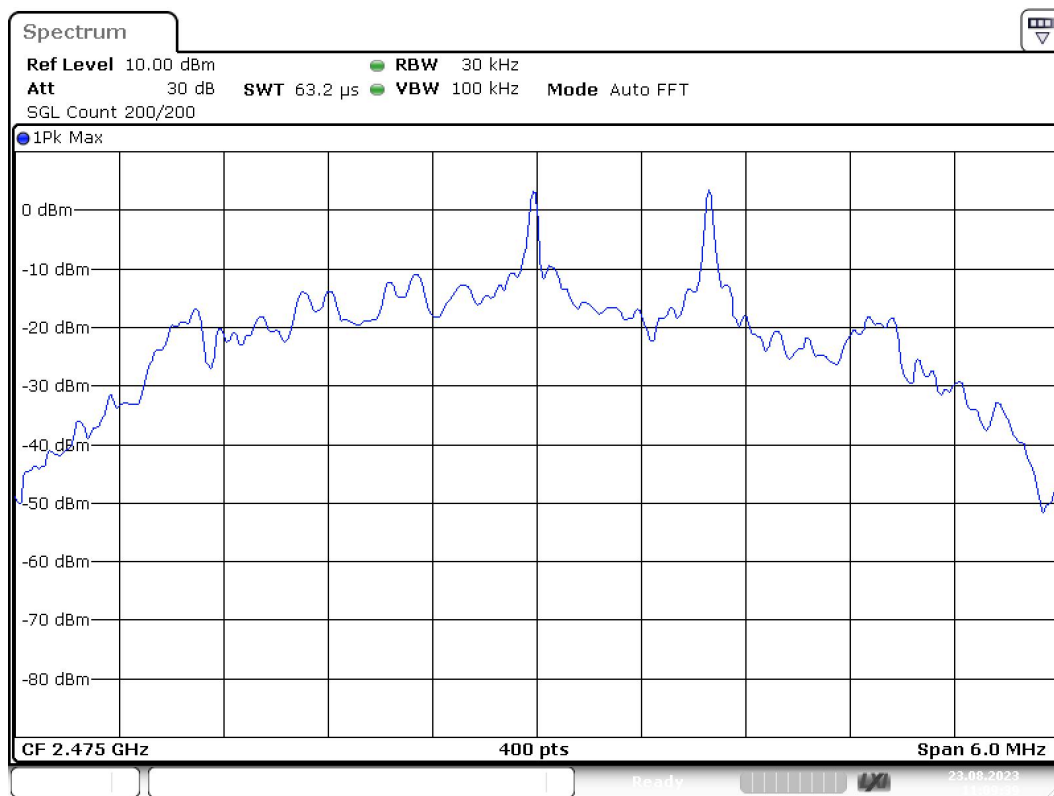
20 dB Bandwidth



99 % Bandwidth



Bandwidth



Date: 23.AUG.2023 11:09:39

## Measurement

| Setting         | Instrument Value | Target Value |
|-----------------|------------------|--------------|
| Start Frequency | 2.47200 GHz      | 2.47200 GHz  |
| Stop Frequency  | 2.47800 GHz      | 2.47800 GHz  |
| Span            | 6.000 MHz        | 6.000 MHz    |

|                              |                    |                         |
|------------------------------|--------------------|-------------------------|
| <b>RBW</b>                   | <b>30.000 kHz</b>  | <b>&gt;= 30.000 kHz</b> |
| <b>VBW</b>                   | <b>100.000 kHz</b> | <b>&gt;= 90.000 kHz</b> |
| <b>SweepPoints</b>           | <b>400</b>         | <b>~ 400</b>            |
| <b>SweepTime</b>             | <b>63.216 µs</b>   | <b>AUTO</b>             |
| <b>Reference Level</b>       | <b>10.000 dBm</b>  | <b>10.000 dBm</b>       |
| <b>Attenuation</b>           | <b>30.000 dB</b>   | <b>AUTO</b>             |
| <b>Detector</b>              | <b>MaxPeak</b>     | <b>MaxPeak</b>          |
| <b>SweepCount</b>            | <b>200</b>         | <b>200</b>              |
| <b>Filter</b>                | <b>3 dB</b>        | <b>3 dB</b>             |
| <b>Trace Mode</b>            | <b>Max Hold</b>    | <b>Max Hold</b>         |
| <b>SweepType</b>             | <b>FFT</b>         | <b>AUTO</b>             |
| <b>Preamp</b>                | <b>off</b>         | <b>off</b>              |
| <b>Stablemode</b>            | <b>Trace</b>       | <b>Trace</b>            |
| <b>Stablevalue</b>           | <b>0.50 dB</b>     | <b>0.50 dB</b>          |
| <b>Run</b>                   | <b>1 / max. 1</b>  | <b>max. 1</b>           |
| <b>Stable</b>                | <b>0 / 1</b>       | <b>1</b>                |
| <b>Max Stable Difference</b> | <b>0.00 dB</b>     | <b>0.50 dB</b>          |

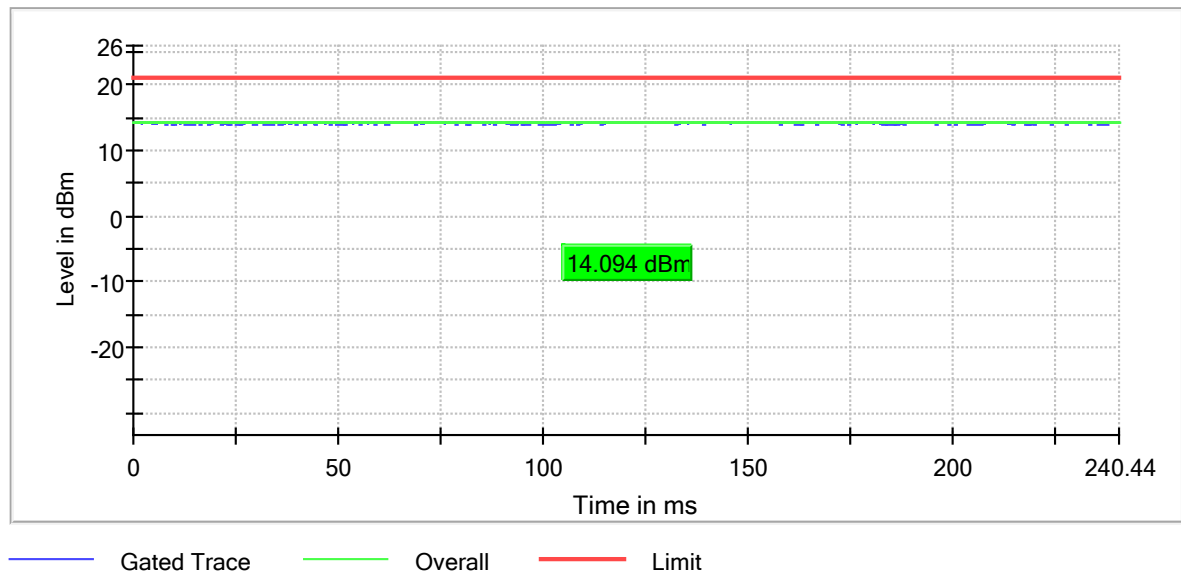
**RF output power (2475 MHz; 20.000 dBm; 3 MHz; Test Mode)**

Test according to FCC title 47 part 15 §15.247(b), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

**Result**

| DUT Frequency (MHz) | Gated RMS (dBm) | Limit Max (dBm) | Gated EIRP (dBm) | DutyCycle (%) | Result |
|---------------------|-----------------|-----------------|------------------|---------------|--------|
| 2475.000000         | 14.1            | 21.0            | 14.1             | 24.178        | PASS   |

Gated Trace

**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 |



## Band Edge high (2475 MHz; 20.000 dBm; 3 MHz; Test Mode)

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

### Result

| DUT Frequency (MHz) | Result |
|---------------------|--------|
| 2475.000000         | PASS   |

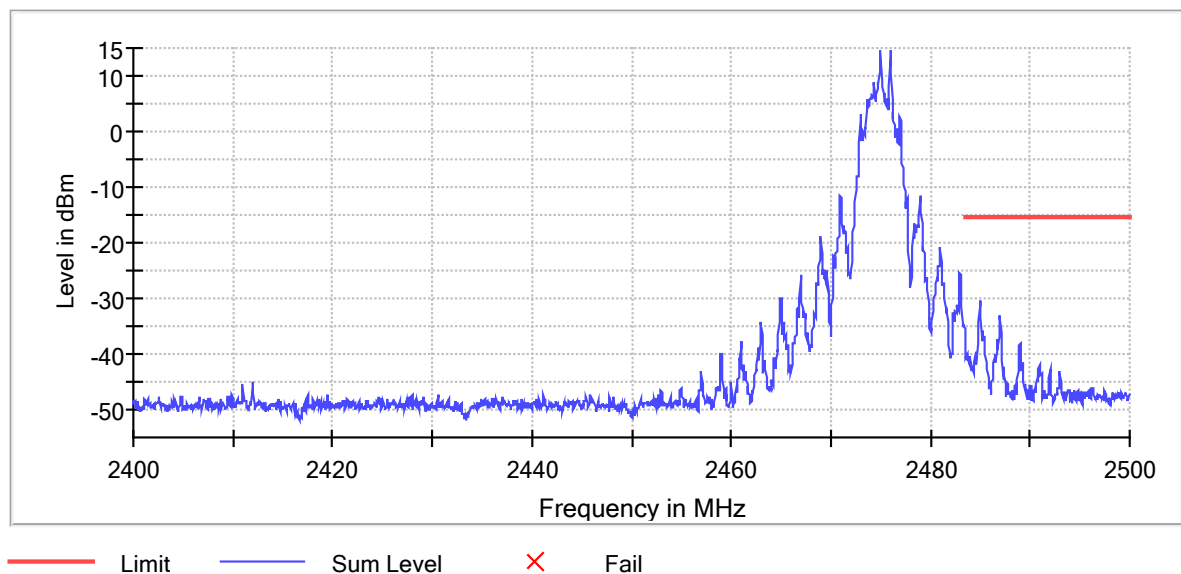
### Inband Peak

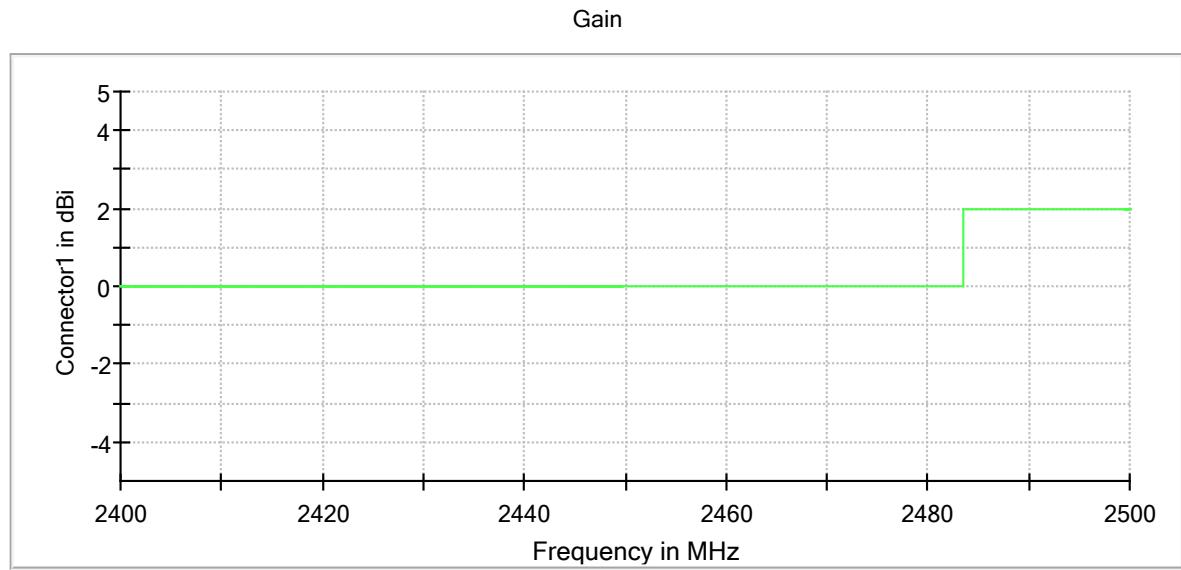
| Frequency (MHz) | Level (dBm) |
|-----------------|-------------|
| 2474.975000     | 14.8        |

### Measurements

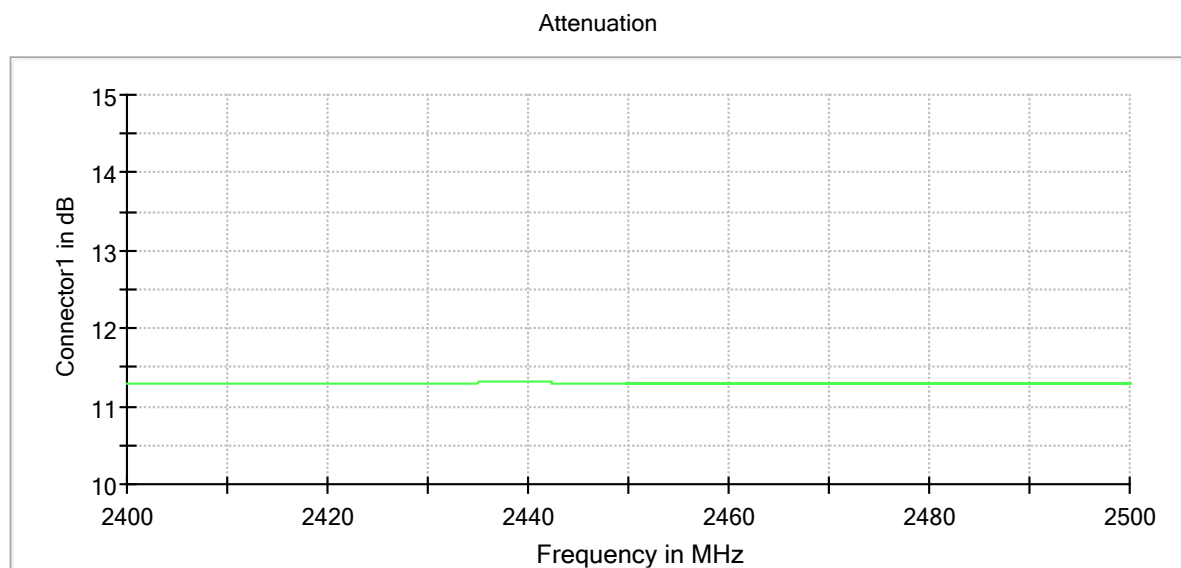
| Frequency (MHz) | Level (dBm) | Margin (dB) | Limit (dBm) | Result |
|-----------------|-------------|-------------|-------------|--------|
| 2484.975000     | -30.5       | 15.2        | -15.2       | PASS   |
| 2485.025000     | -30.8       | 15.6        | -15.2       | PASS   |
| 2484.925000     | -31.1       | 15.8        | -15.2       | PASS   |
| 2486.975000     | -33.3       | 18.0        | -15.2       | PASS   |
| 2485.075000     | -33.5       | 18.3        | -15.2       | PASS   |
| 2487.025000     | -33.6       | 18.4        | -15.2       | PASS   |
| 2486.925000     | -34.0       | 18.8        | -15.2       | PASS   |
| 2484.875000     | -34.1       | 18.8        | -15.2       | PASS   |
| 2484.825000     | -34.9       | 19.7        | -15.2       | PASS   |
| 2485.275000     | -35.8       | 20.5        | -15.2       | PASS   |
| 2487.075000     | -36.0       | 20.7        | -15.2       | PASS   |
| 2484.775000     | -36.1       | 20.8        | -15.2       | PASS   |
| 2485.225000     | -36.2       | 21.0        | -15.2       | PASS   |
| 2485.325000     | -36.9       | 21.7        | -15.2       | PASS   |
| 2487.125000     | -37.0       | 21.8        | -15.2       | PASS   |

Band Edge



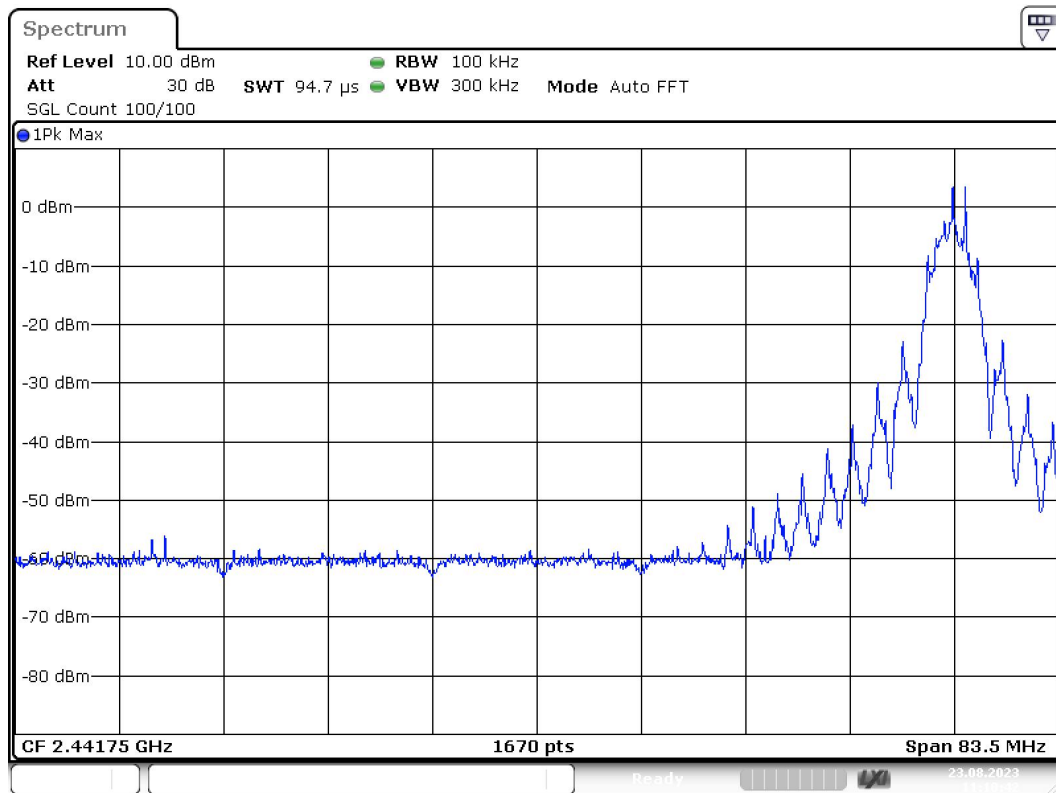


Connector1



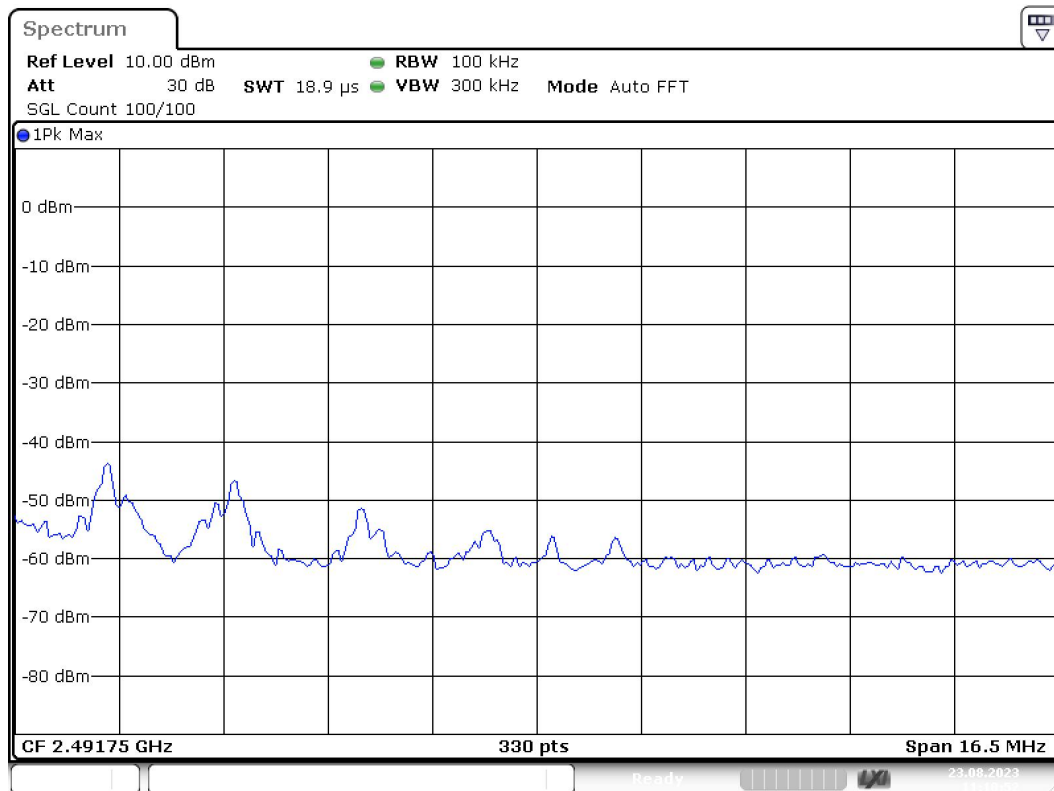
Connector1

Band Edge Connector 1\_0



Date: 23.AUG.2023 11:10:43

Band Edge Connector 1\_1



Date: 23.AUG.2023 11:10:53

## Measurement 1

| Setting               | Instrument Value | Target Value   |
|-----------------------|------------------|----------------|
| Start Frequency       | 2.40000 GHz      | 2.40000 GHz    |
| Stop Frequency        | 2.48350 GHz      | 2.48350 GHz    |
| Span                  | 83.500 MHz       | 83.500 MHz     |
| RBW                   | 100.000 kHz      | <= 100.000 kHz |
| VBW                   | 300.000 kHz      | >= 300.000 kHz |
| SweepPoints           | 1670             | ~ 1670         |
| Sweptime              | 94.727 µs        | AUTO           |
| Reference Level       | 10.000 dBm       | 10.000 dBm     |
| Attenuation           | 30.000 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            |
| Stablemode            | Trace            | Trace          |
| Stablevalue           | 0.50 dB          | 0.50 dB        |
| Run                   | 31 / max. 150    | max. 150       |
| Stable                | 3 / 3            | 3              |
| Max Stable Difference | 0.03 dB          | 0.50 dB        |

## Measurement 2

| Setting         | Instrument Value | Target Value   |
|-----------------|------------------|----------------|
| Start Frequency | 2.48350 GHz      | 2.48350 GHz    |
| Stop Frequency  | 2.50000 GHz      | 2.50000 GHz    |
| Span            | 16.500 MHz       | 16.500 MHz     |
| RBW             | 100.000 kHz      | <= 100.000 kHz |
| VBW             | 300.000 kHz      | >= 300.000 kHz |

|                              |                                 |                   |
|------------------------------|---------------------------------|-------------------|
| <b>SweepPoints</b>           | <b>330</b>                      | <b>~ 330</b>      |
| <b>Sweeptime</b>             | <b>18.945 <math>\mu</math>s</b> | <b>AUTO</b>       |
| <b>Reference Level</b>       | <b>10.000 dBm</b>               | <b>10.000 dBm</b> |
| <b>Attenuation</b>           | <b>30.000 dB</b>                | <b>AUTO</b>       |
| <b>Detector</b>              | <b>MaxPeak</b>                  | <b>MaxPeak</b>    |
| <b>SweepCount</b>            | <b>100</b>                      | <b>100</b>        |
| <b>Filter</b>                | <b>3 dB</b>                     | <b>3 dB</b>       |
| <b>Trace Mode</b>            | <b>Max Hold</b>                 | <b>Max Hold</b>   |
| <b>SweepType</b>             | <b>FFT</b>                      | <b>AUTO</b>       |
| <b>Preamplifier</b>          | <b>off</b>                      | <b>off</b>        |
| <b>Stablemode</b>            | <b>Trace</b>                    | <b>Trace</b>      |
| <b>Stablevalue</b>           | <b>0.50 dB</b>                  | <b>0.50 dB</b>    |
| <b>Run</b>                   | <b>10 / max. 150</b>            | <b>max. 150</b>   |
| <b>Stable</b>                | <b>3 / 3</b>                    | <b>3</b>          |
| <b>Max Stable Difference</b> | <b>0.00 dB</b>                  | <b>0.50 dB</b>    |

**Tx Spurious Emission (2475 MHz; 20.000 dBm; 3 MHz; Test Mode)**

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

**Result**

| DUT Frequency (MHz) | Result |
|---------------------|--------|
| 2475.000000         | PASS   |

**Final measurements**

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

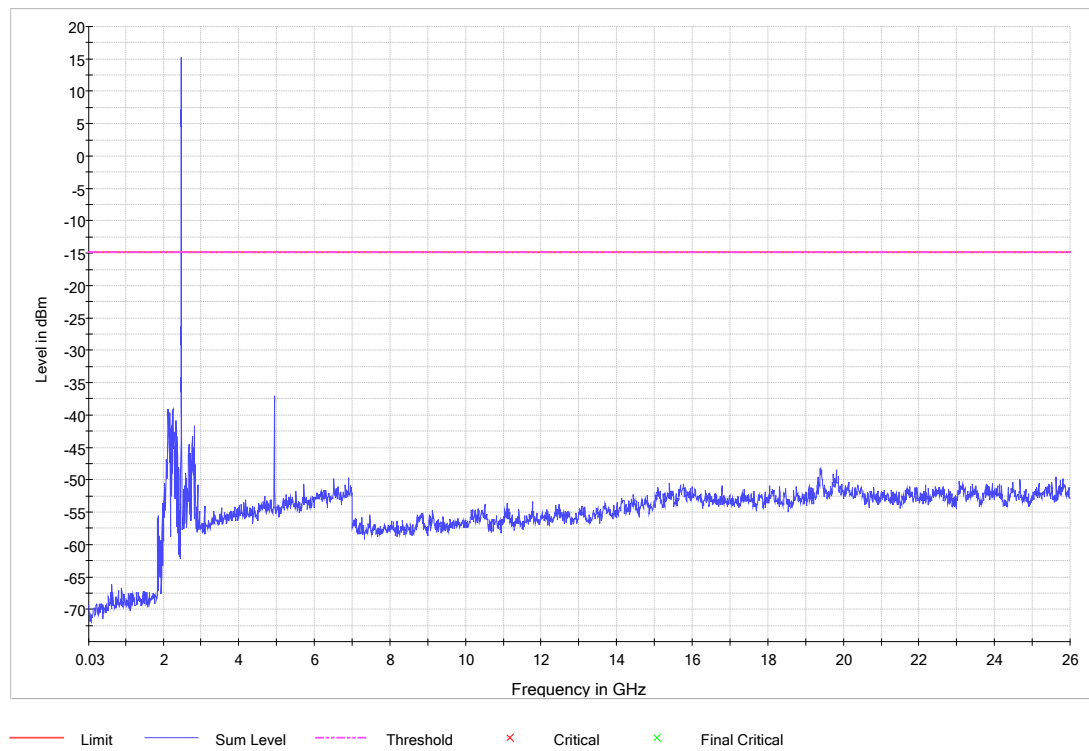
**Pre Measurements**

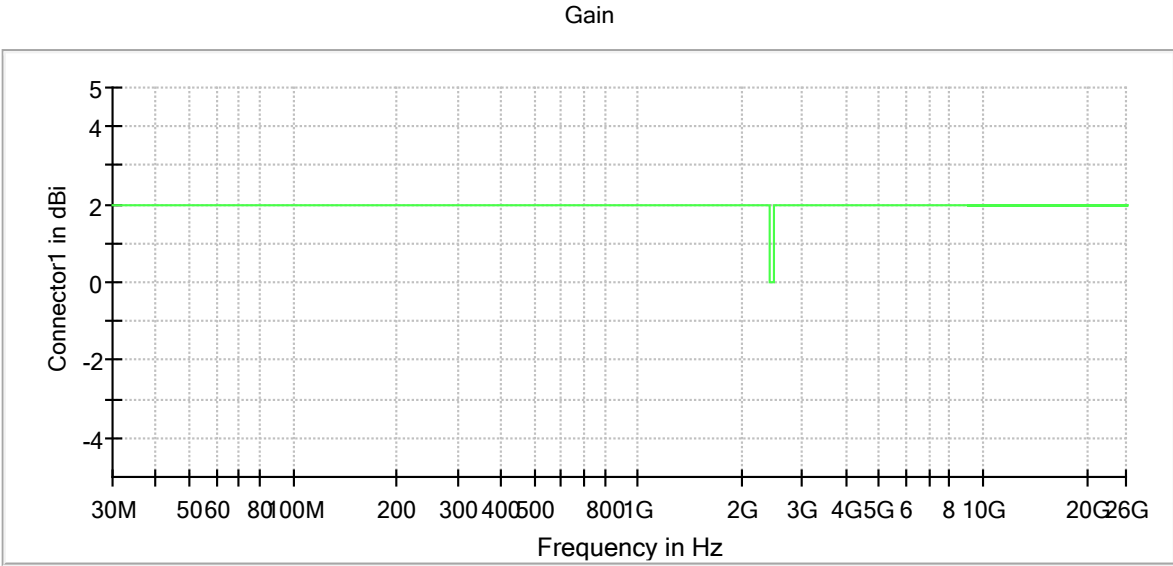
| Frequency (MHz) | Level (dBm) | Margin (dB) | Limit (dBm) |
|-----------------|-------------|-------------|-------------|
| 4947.085742     | -37.0       | 22.1        | -14.8       |
| 2488.497131     | -38.1       | 23.2        | -14.8       |
| 2126.155462     | -39.0       | 24.2        | -14.8       |
| 2265.567227     | -39.1       | 24.3        | -14.8       |
| 2255.609244     | -39.4       | 24.5        | -14.8       |
| 2175.945378     | -39.6       | 24.8        | -14.8       |
| 2136.113445     | -39.9       | 25.1        | -14.8       |
| 2185.903361     | -40.1       | 25.3        | -14.8       |
| 2235.693277     | -40.7       | 25.8        | -14.8       |
| 2345.231092     | -40.8       | 26.0        | -14.8       |
| 2828.302061     | -41.7       | 26.9        | -14.8       |
| 2215.777311     | -41.9       | 27.0        | -14.8       |
| 2205.819328     | -42.5       | 27.7        | -14.8       |
| 2285.483193     | -42.6       | 27.7        | -14.8       |
| 2778.330748     | -43.3       | 28.4        | -14.8       |

**Measurement Settings**

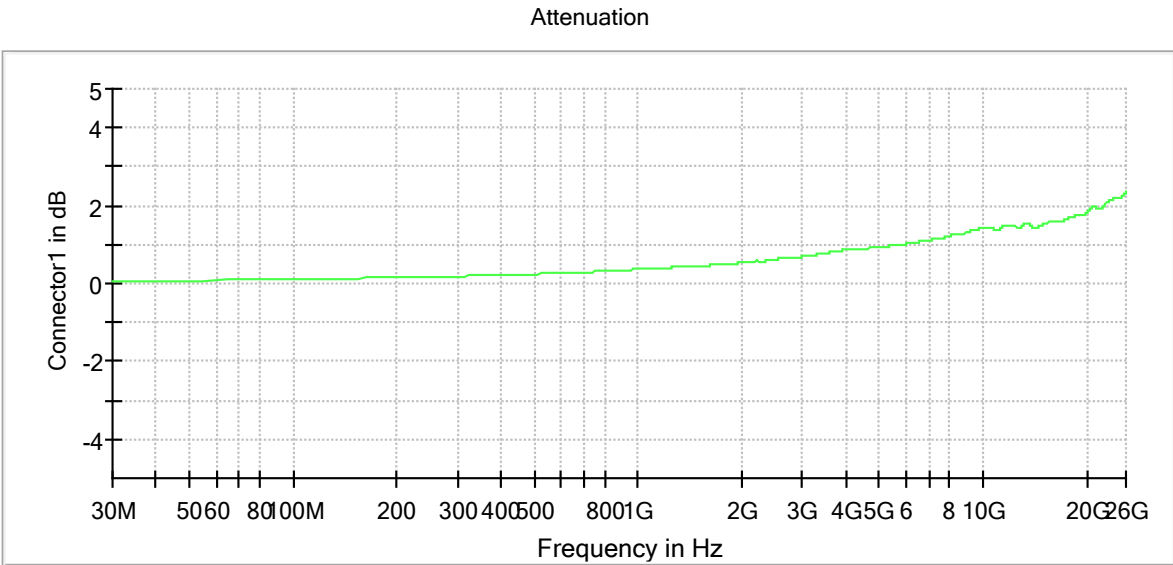
| Start Frequency (MHz) | Stop Frequency (MHz) | Pre Measurement | Final Measurement |
|-----------------------|----------------------|-----------------|-------------------|
| 30.000000             | 2400.000000          | 1               | 1                 |
| 2400.000000           | 2483.500000          | 1               | 1                 |
| 2483.500000           | 26000.000000         | 1               | 1                 |

Spurious





Connector1



Connector1

Pre Measurement 1

| Setting               | Instrument Value | Target Value   |
|-----------------------|------------------|----------------|
| RBW                   | 100.000 kHz      | <= 100.000 kHz |
| VBW                   | 300.000 kHz      | >= 300.000 kHz |
| SweepPoints           | 238              | ~ 238          |
| SweepTime             | 23.700 ms        | AUTO           |
| Reference Level       | -10.000 dBm      | -30.000 dBm    |
| Attenuation           | 20.000 dB        | AUTO           |
| Detector              | MaxPeak          | MaxPeak        |
| SweepCount            | 3                | 3              |
| Filter                | 3 dB             | 3 dB           |
| Trace Mode            | Max Hold         | Max Hold       |
| SweepType             | Sweep            | AUTO           |
| Preamp                | off              | off            |
| Stablemode            | Trace            | Trace          |
| Stablevalue           | 0.50 dB          | 0.50 dB        |
| Run                   | 8 / max. 40      | max. 40        |
| Stable                | 3 / 3            | 3              |
| Max Stable Difference | 0.39 dB          | 0.50 dB        |