

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 SMBV100B (VG SMBV100B) @ VISA (ADR
TCPIP::192.168.48.29::INST0::INSTR), SN 101685, FW 4.70.006.33

Generator: SMB100Aa (1) (SMB100A) @ VISA (ADR
TCPIP::192.168.48.30::INST0::INSTR), SN 178361, FW 3.20.390.24
/ 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
1.27.0.0

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 |
| Time of Channel Occupancy | 2439.000 (hopping) | 20.0 | 3.000000 | PASS |
| Emission Bandwidth 20 dB | 2405.000 (single) | 20.0 | 3.000000 | PASS |
| Band Edge low | 2405.000 (single) | 20.0 | 3.000000 | PASS |
| Tx Spurious Emission | 2405.000 (single) | 20.0 | 3.000000 | PASS |
| Emission Bandwidth 20 dB | 2439.000 (single) | 20.0 | 3.000000 | PASS |
| Tx Spurious Emission | 2439.000 (single) | 20.0 | 3.000000 | PASS |
| Emission Bandwidth 20 dB | 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 |

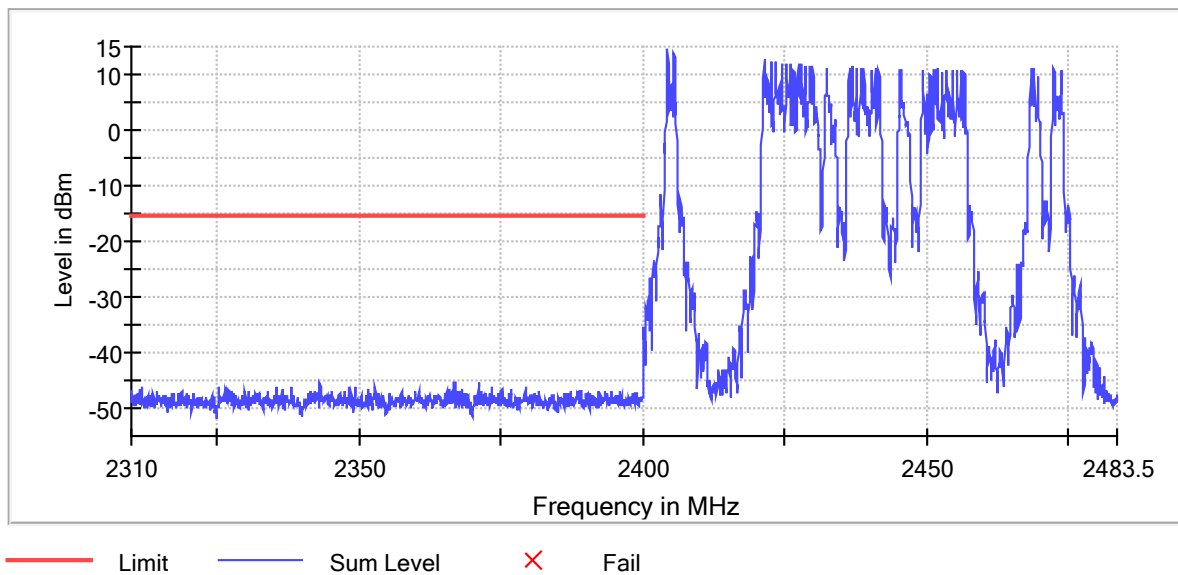
Inband Peak

| Frequency (MHz) | Level (dBm) |
|-----------------|-------------|
| 2404.425000 | 14.4 |

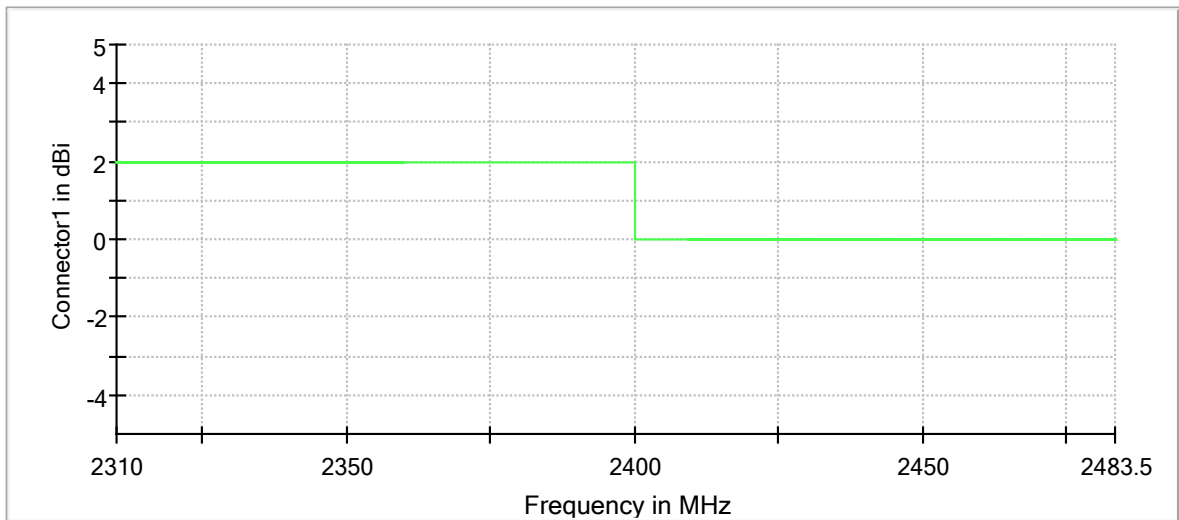
Measurements

| Frequency (MHz) | Level (dBm) | Margin (dB) | Limit (dBm) | Result |
|-----------------|-------------|-------------|-------------|--------|
| 2366.925000 | -45.4 | 29.8 | -15.6 | PASS |
| 2366.875000 | -45.4 | 29.9 | -15.6 | PASS |
| 2343.225000 | -45.5 | 29.9 | -15.6 | PASS |
| 2371.125000 | -45.5 | 29.9 | -15.6 | PASS |
| 2379.375000 | -46.0 | 30.4 | -15.6 | PASS |
| 2335.525000 | -46.0 | 30.5 | -15.6 | PASS |
| 2371.075000 | -46.1 | 30.5 | -15.6 | PASS |
| 2349.325000 | -46.1 | 30.5 | -15.6 | PASS |
| 2343.275000 | -46.1 | 30.6 | -15.6 | PASS |
| 2373.425000 | -46.2 | 30.6 | -15.6 | PASS |
| 2349.375000 | -46.2 | 30.6 | -15.6 | PASS |
| 2311.925000 | -46.2 | 30.6 | -15.6 | PASS |
| 2338.125000 | -46.2 | 30.7 | -15.6 | PASS |
| 2325.425000 | -46.2 | 30.7 | -15.6 | PASS |
| 2348.375000 | -46.3 | 30.7 | -15.6 | PASS |

Band Edge

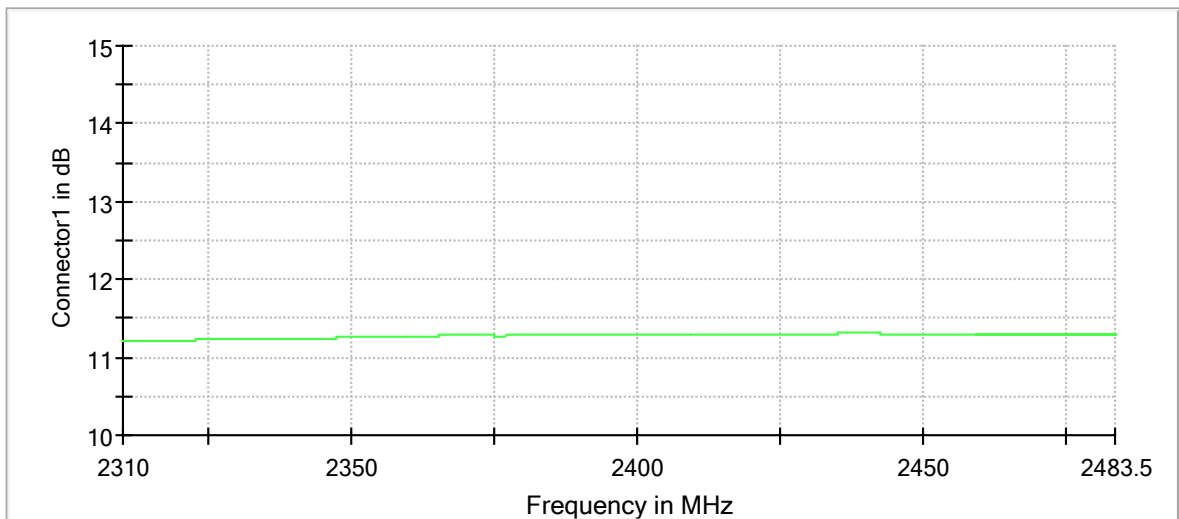


Gain



Connector1

Attenuation



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 μ 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 | 4 / 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 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 | 75 / max. 150 | max. 150 |
| Stable | 3 / 3 | 3 |
| Max Stable Difference | 0.00 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 |

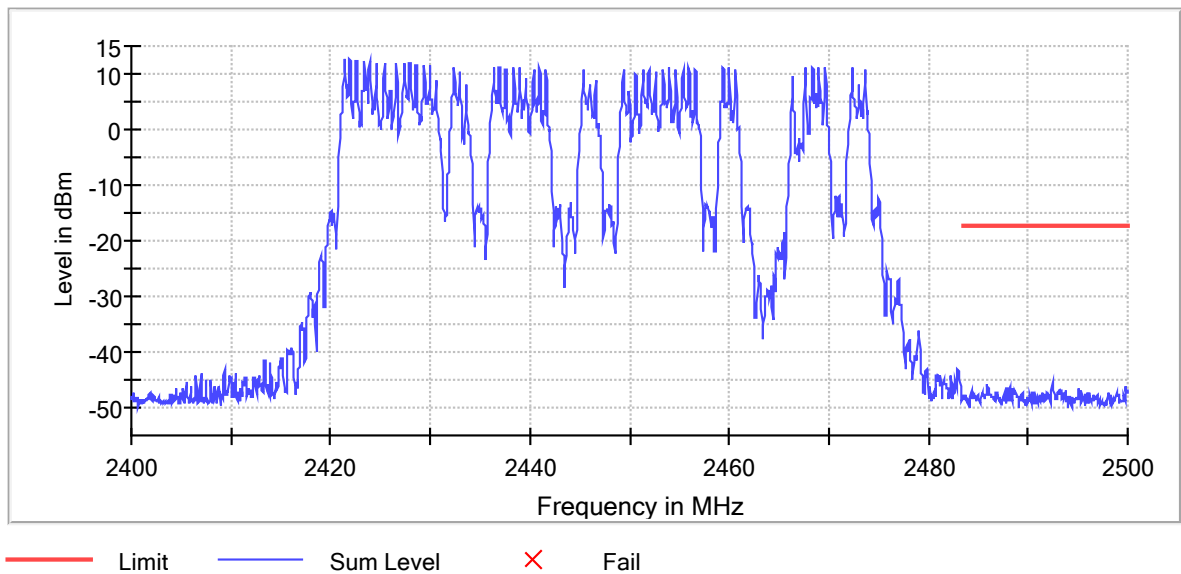
Inband Peak

| Frequency (MHz) | Level (dBm) |
|-----------------|-------------|
| 2421.425000 | 12.6 |

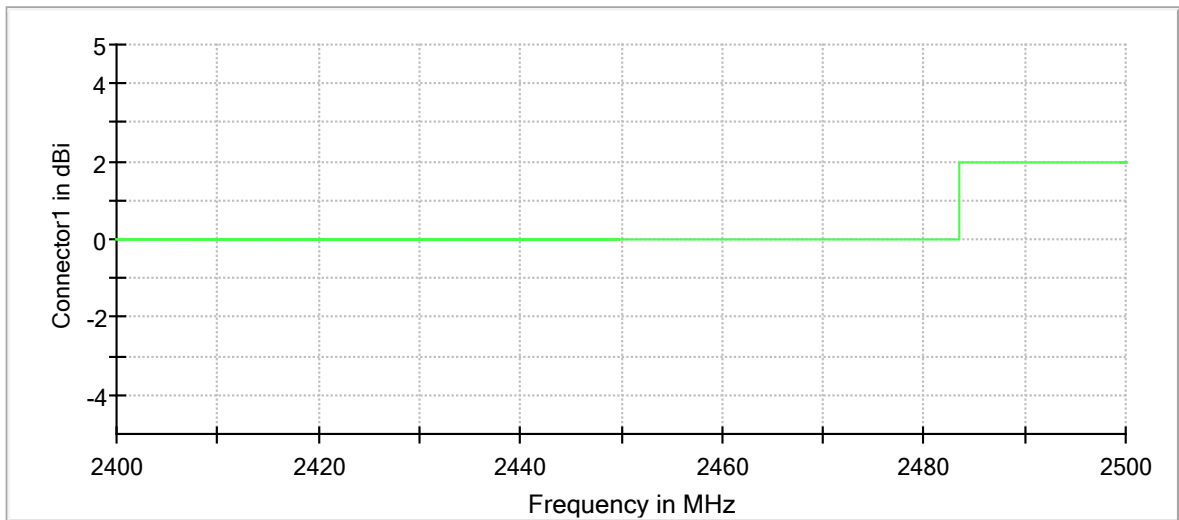
Measurements

| Frequency (MHz) | Level (dBm) | Margin (dB) | Limit (dBm) | Result |
|-----------------|-------------|-------------|-------------|--------|
| 2492.425000 | -45.6 | 28.1 | -17.4 | PASS |
| 2485.875000 | -45.7 | 28.3 | -17.4 | PASS |
| 2492.475000 | -45.8 | 28.4 | -17.4 | PASS |
| 2485.925000 | -46.0 | 28.6 | -17.4 | PASS |
| 2499.825000 | -46.1 | 28.6 | -17.4 | PASS |
| 2485.975000 | -46.3 | 28.9 | -17.4 | PASS |
| 2495.125000 | -46.4 | 29.0 | -17.4 | PASS |
| 2492.525000 | -46.5 | 29.0 | -17.4 | PASS |
| 2487.925000 | -46.5 | 29.0 | -17.4 | PASS |
| 2488.125000 | -46.5 | 29.0 | -17.4 | PASS |
| 2485.825000 | -46.5 | 29.0 | -17.4 | PASS |
| 2488.475000 | -46.5 | 29.1 | -17.4 | PASS |
| 2487.875000 | -46.5 | 29.1 | -17.4 | PASS |
| 2488.175000 | -46.6 | 29.2 | -17.4 | PASS |
| 2495.075000 | -46.6 | 29.2 | -17.4 | PASS |

Band Edge

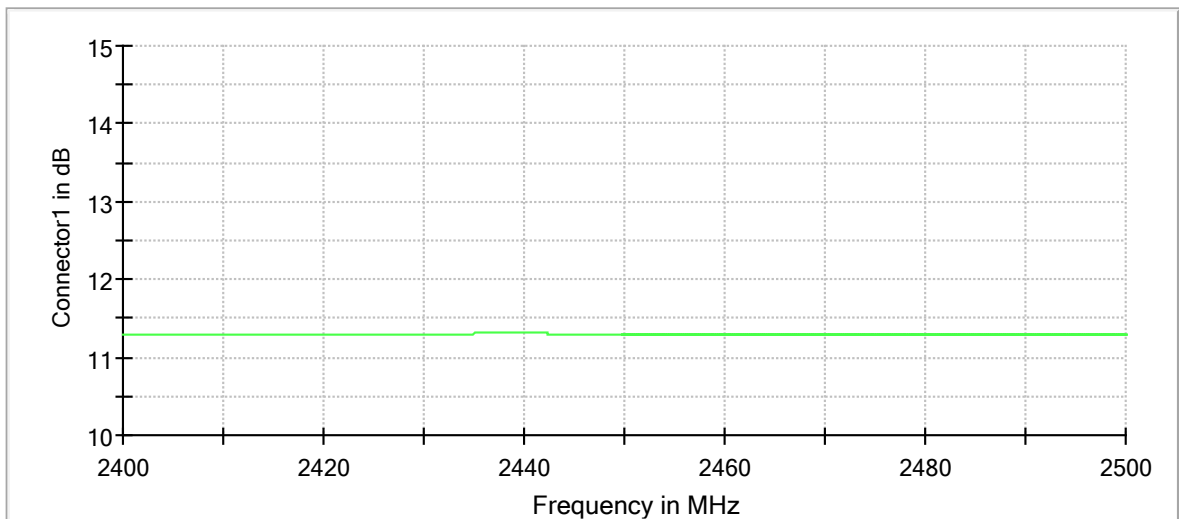


Gain



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 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 | 94 / 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 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 | 4 / max. 150 | max. 150 |
| Stable | 3 / 3 | 3 |
| Max Stable Difference | 0.00 dB | 0.50 dB |

Time of Channel Occupancy (2439 MHz; 20.000 dBm; 3 MHz)

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

Result

| DUT Frequency (MHz) | Result | Number of Hops | Average time of occupancy (ms) | Threshold (dBm) |
|---------------------|--------|----------------|--------------------------------|-----------------|
| 2439.000000 | PASS | 39 | 38.739 | 0.0 |

Periode

| Min (ms) | Max (ms) | Mean (ms) |
|----------|----------|-----------|
| 79.986 | 280.009 | 161.576 |

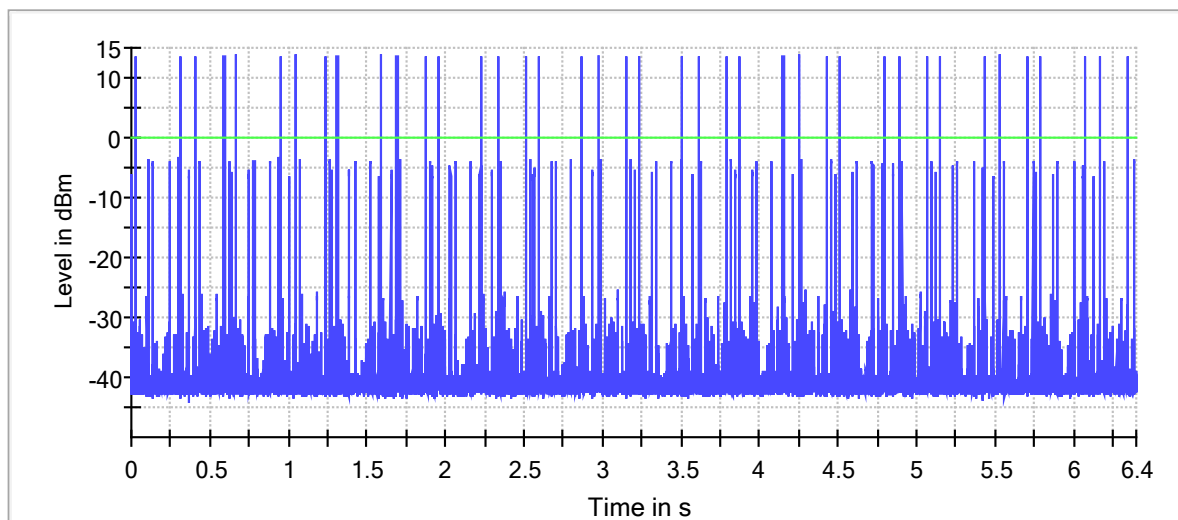
Transmit Time per Hop

| Min (ms) | Max (ms) | Limit Max for Max (ms) | Limit Min for Max (ms) | Mean (ms) |
|----------|----------|------------------------|------------------------|-----------|
| 0.96 | 0.97 | 400.000 | 0.000 | 0.968 |

DwellTime

| Min (ms) | Max (ms) | Mean (ms) |
|----------|----------|-----------|
| 0.96 | 0.97 | 0.968 |

Time of Channel Occupancy



— Trace — Threshold

Measurement

| Setting | Instrument Value | Target Value |
|------------------|------------------|--------------|
| Center Frequency | 2.43900 GHz | 2.43900 GHz |
| Span | ZeroSpan | ZeroSpan |

| | | |
|------------------------|--------------------|--------------------|
| RBW | 1.500 MHz | ~ 1.500 MHz |
| VBW | 3.000 MHz | ~ 3.000 MHz |
| SweepPoints | 30001 | ~ 30001 |
| SweepTime | 6.400 s | 6.400 s |
| Reference Level | -10.000 dBm | -10.000 dBm |
| Attenuation | 0.000 dB | 0.000 dB |
| Detector | MaxPeak | MaxPeak |
| SweepCount | 1 | 1 |
| Filter | Channel | Channel |
| Trace Mode | Clear Write | Clear Write |
| Sweeptype | Sweep | AUTO |
| Preamp | off | off |
| Trigger | External | External |
| Trigger Offset | 0.000 s | 0.000 s |

OSP

| Setting | Instrument Value | Target Value |
|-------------------------|-------------------------|---------------------|
| Measurement Time | 6.400 s | 6.400 s |
| Tracepoints | 6400000 | 6400000 |
| Time resolution | 1.000 µs | 1.000 µs |
| Detector | RMS | RMS |

Emission Bandwidth 20 dB (2405 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

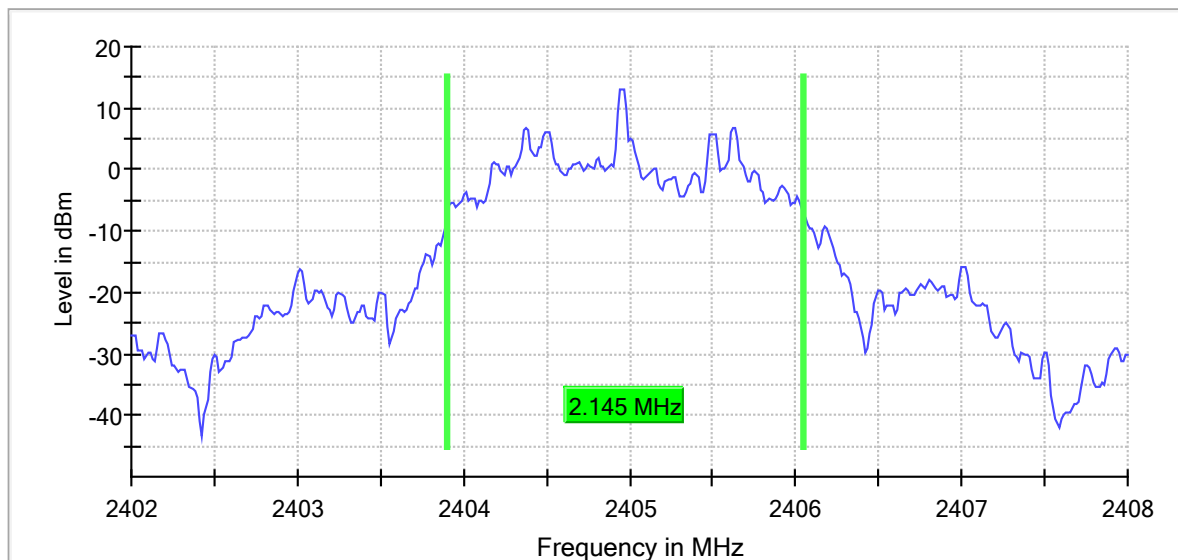
20 dB Bandwidth

| DUT Frequency (MHz) | Bandwidth (MHz) | Limit Min (MHz) | Limit Max (MHz) | Band Edge Left (MHz) | Band Edge Right (MHz) |
|---------------------|-----------------|-----------------|-----------------|----------------------|-----------------------|
| 2405.000000 | 2.145000 | --- | --- | 2403.897500 | 2406.042500 |

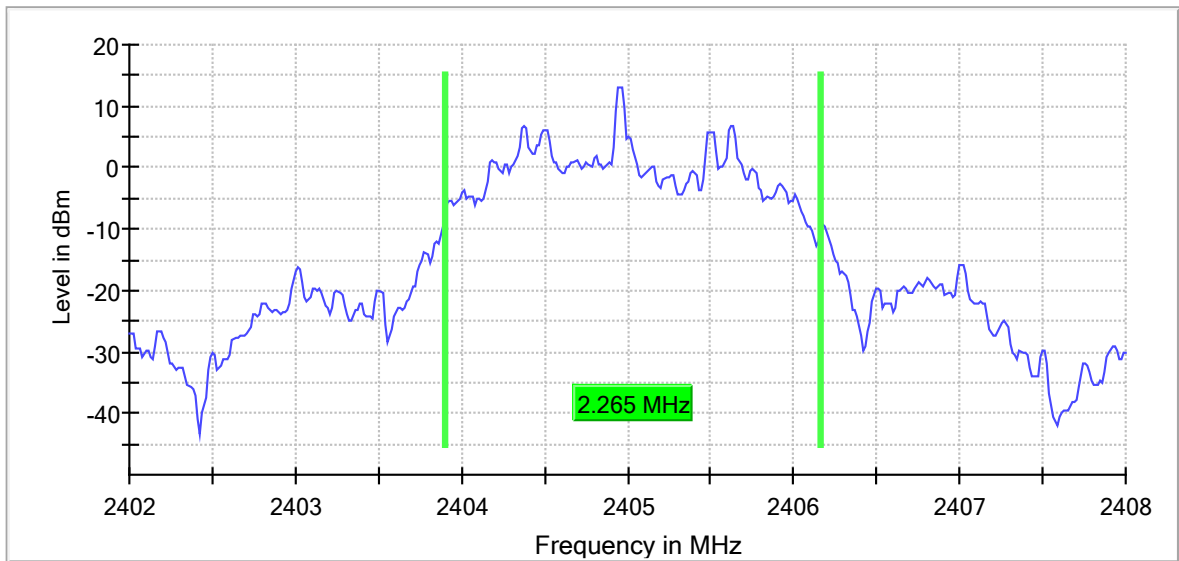
(continuation of the "20 dB Bandwidth" table from column 6 ...)

| DUT Frequency (MHz) | Max Level (dBm) | Result |
|---------------------|-----------------|--------|
| 2405.000000 | 13.0 | PASS |

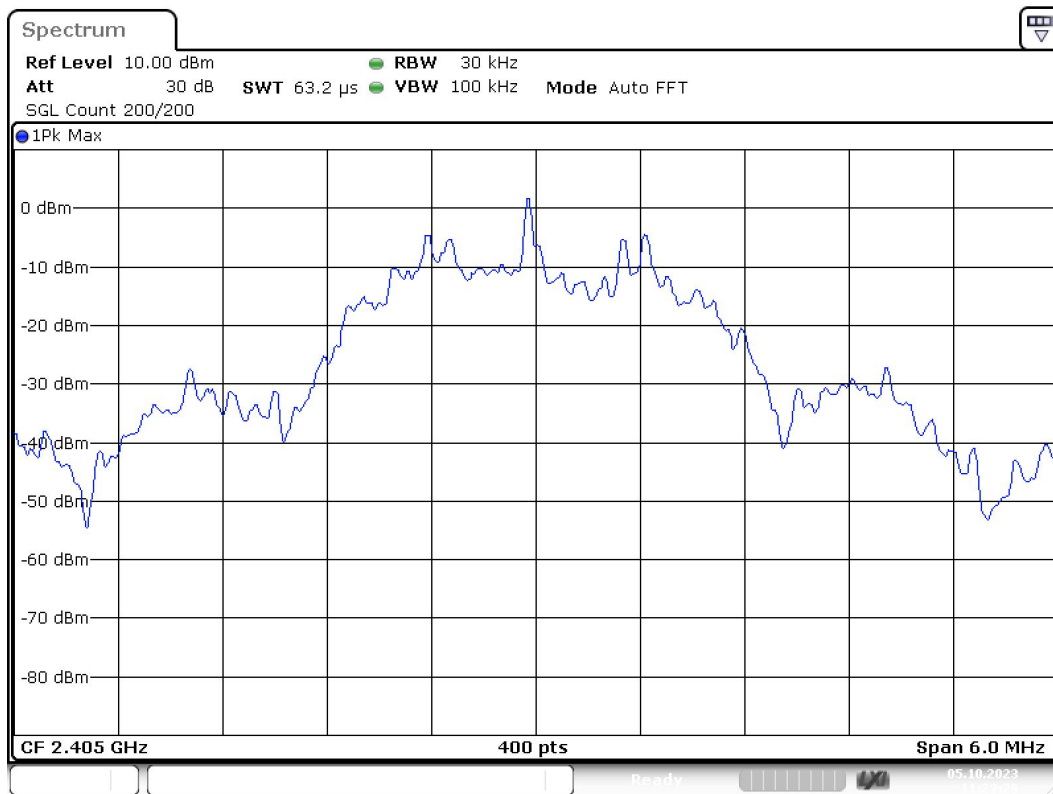
20 dB Bandwidth



99 % Bandwidth



Bandwidth



Date: 5.OCT.2023 11:23:30

Measurement

| Setting | Instrument Value | Target Value |
|-----------------|------------------|--------------|
| Start Frequency | 2.40200 GHz | 2.40200 GHz |
| Stop Frequency | 2.40800 GHz | 2.40800 GHz |
| Span | 6.000 MHz | 6.000 MHz |

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

Band Edge low (2405 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 |
|---------------------|--------|
| 2405.000000 | PASS |

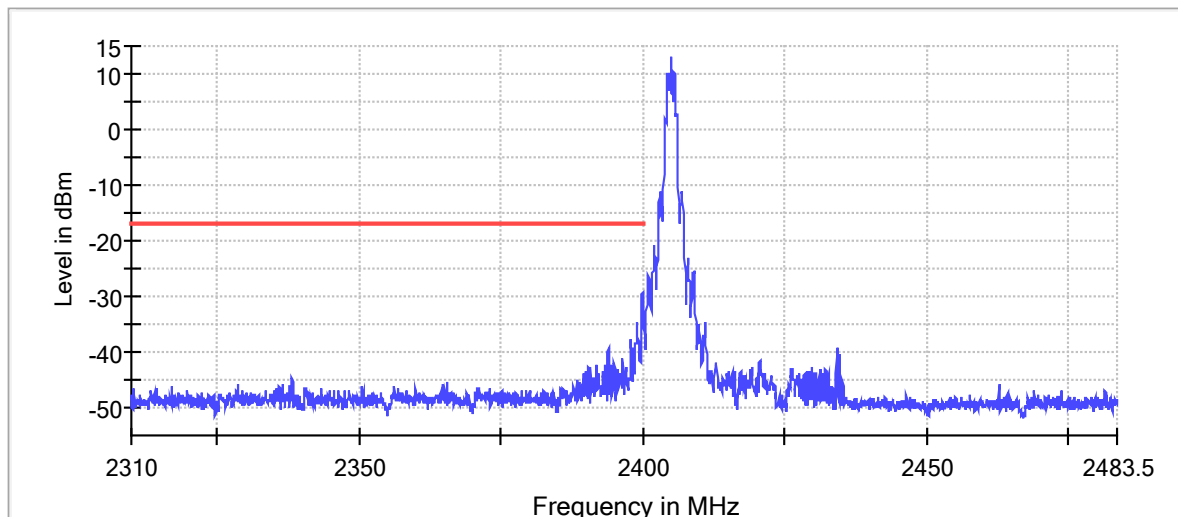
Inband Peak

| Frequency (MHz) | Level (dBm) |
|-----------------|-------------|
| 2404.975000 | 13.2 |

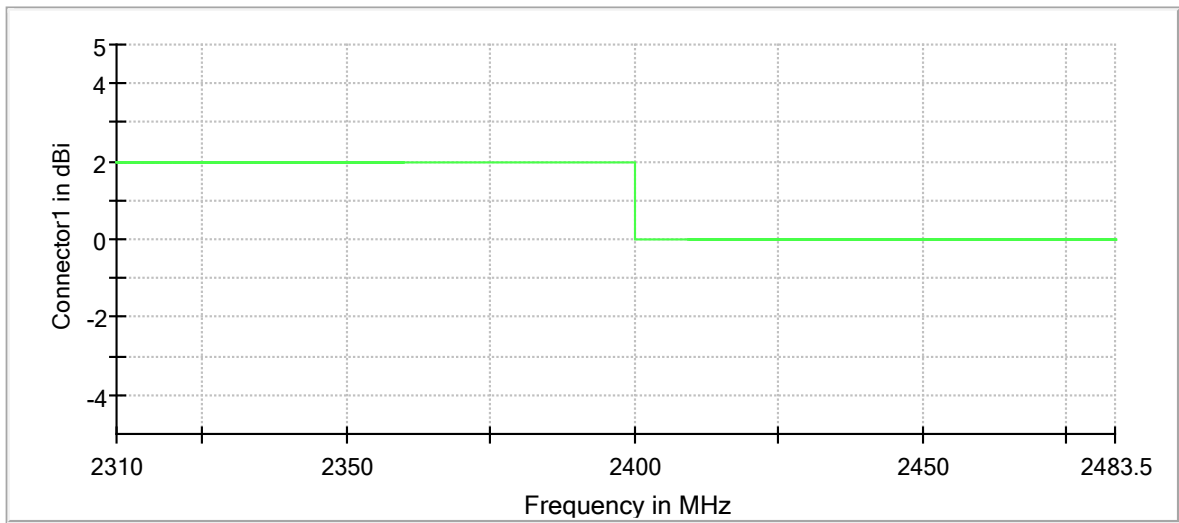
Measurements

| Frequency (MHz) | Level (dBm) | Margin (dB) | Limit (dBm) | Result |
|-----------------|-------------|-------------|-------------|--------|
| 2399.975000 | -29.4 | 12.6 | -16.8 | PASS |
| 2399.925000 | -29.5 | 12.7 | -16.8 | PASS |
| 2399.875000 | -32.2 | 15.4 | -16.8 | PASS |
| 2399.025000 | -34.7 | 17.9 | -16.8 | PASS |
| 2399.075000 | -34.7 | 17.9 | -16.8 | PASS |
| 2399.825000 | -35.2 | 18.4 | -16.8 | PASS |
| 2398.975000 | -35.6 | 18.8 | -16.8 | PASS |
| 2399.775000 | -36.0 | 19.2 | -16.8 | PASS |
| 2399.125000 | -36.6 | 19.8 | -16.8 | PASS |
| 2398.925000 | -37.1 | 20.3 | -16.8 | PASS |
| 2399.175000 | -37.3 | 20.4 | -16.8 | PASS |
| 2398.875000 | -37.6 | 20.7 | -16.8 | PASS |
| 2397.975000 | -37.8 | 21.0 | -16.8 | PASS |
| 2399.725000 | -38.0 | 21.2 | -16.8 | PASS |
| 2397.925000 | -38.1 | 21.3 | -16.8 | PASS |

Band Edge

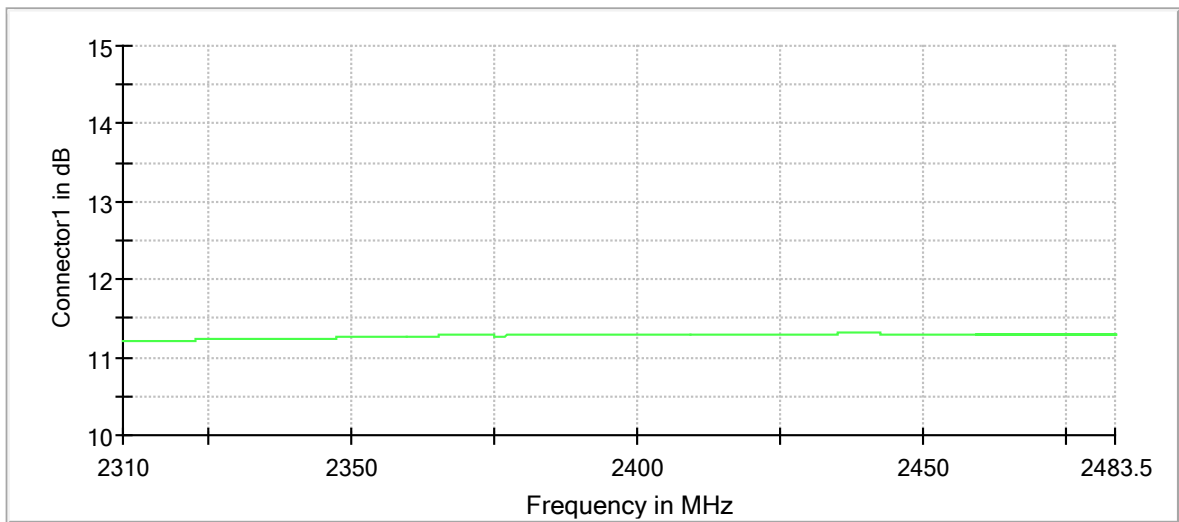


Gain



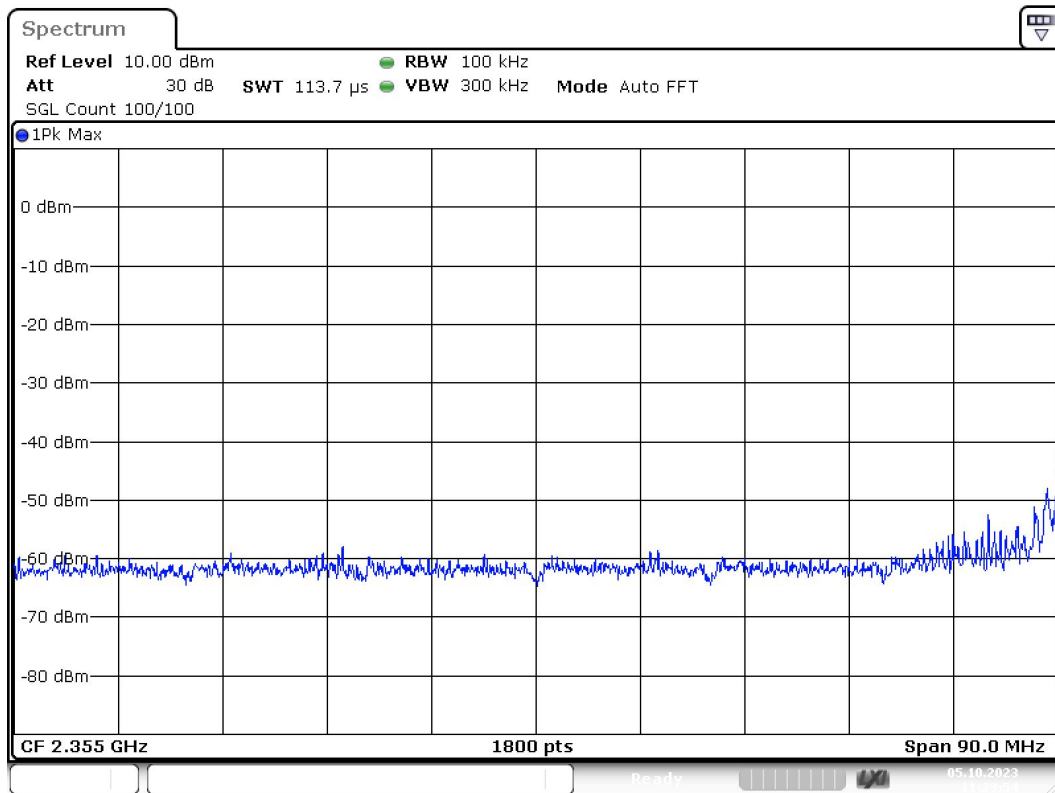
Connector1

Attenuation



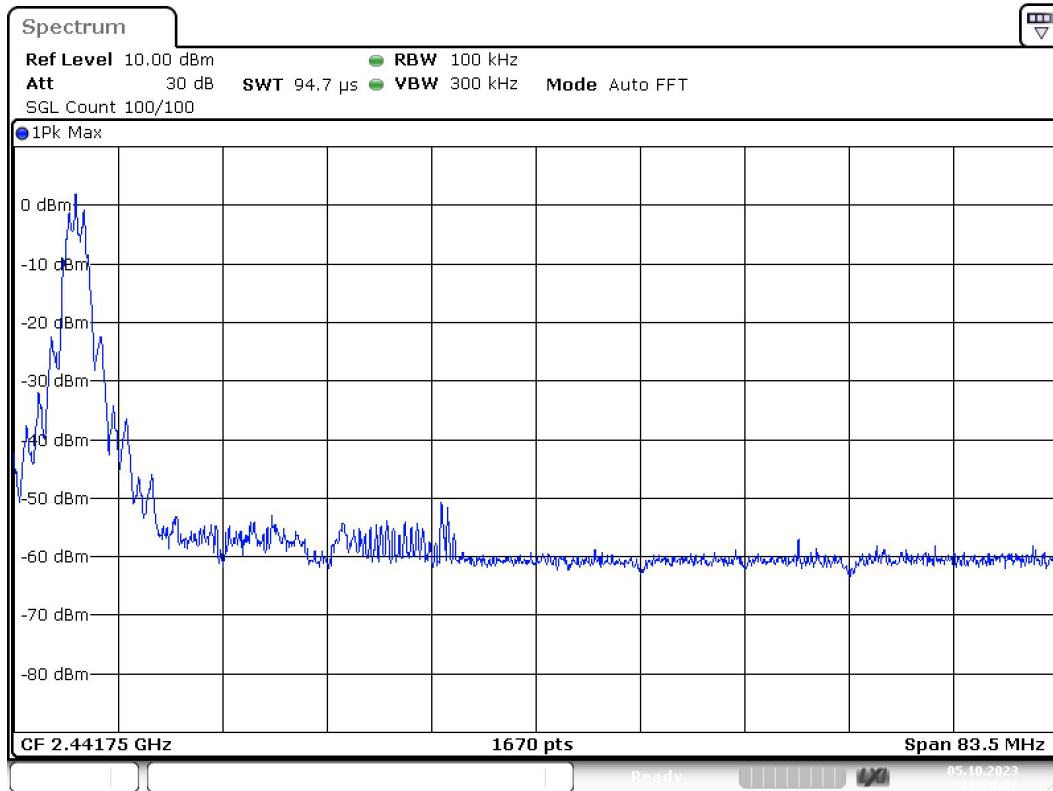
Connector1

Band Edge Connector 1_0



Date: 5.OCT.2023 11:23:54

Band Edge Connector 1_1



Date: 5.OCT.2023 11:24:23

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 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 | 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 | <= 100.000 kHz |
| VBW | 300.000 kHz | >= 300.000 kHz |

| | | |
|------------------------------|----------------------|-------------------|
| SweepPoints | 1670 | ~ 1670 |
| Sweeptime | 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 | 19 / max. 150 | max. 150 |
| Stable | 3 / 3 | 3 |
| Max Stable Difference | 0.39 dB | 0.50 dB |

Tx Spurious Emission (2405 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 |
|---------------------|--------|
| 2405.000000 | PASS |

Final measurements

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

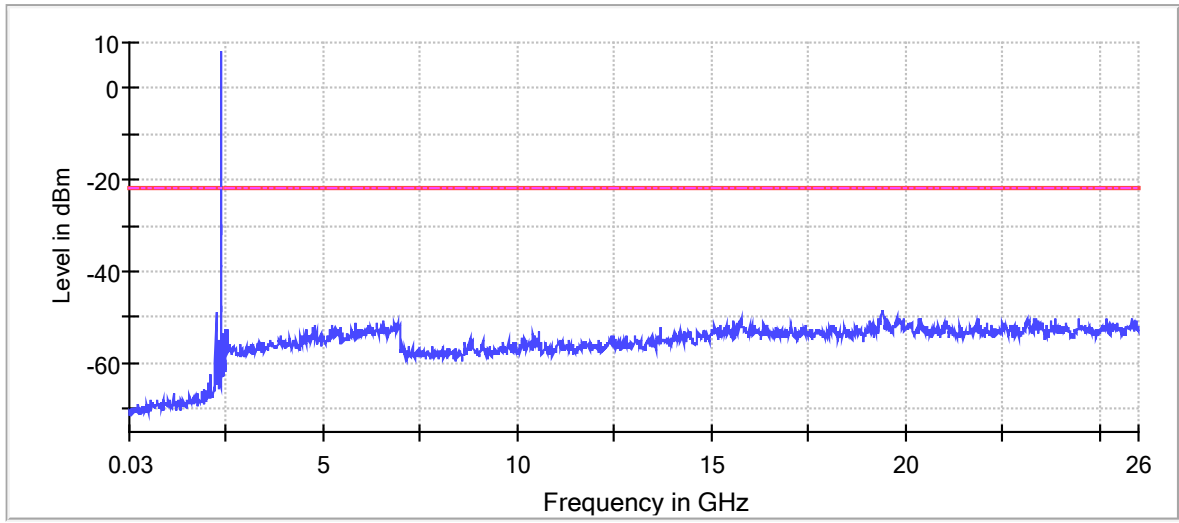
Pre Measurements

| Frequency (MHz) | Level (dBm) | Margin (dB) | Limit (dBm) |
|-----------------|-------------|-------------|-------------|
| 2395.021008 | -29.6 | 7.8 | -21.8 |
| 19418.778049 | -48.3 | 26.5 | -21.8 |
| 19408.783787 | -48.7 | 26.9 | -21.8 |
| 19438.766575 | -48.7 | 26.9 | -21.8 |
| 2255.609244 | -48.8 | 26.9 | -21.8 |
| 19398.789524 | -48.8 | 27.0 | -21.8 |
| 19428.772312 | -48.9 | 27.0 | -21.8 |
| 19388.795261 | -49.0 | 27.1 | -21.8 |
| 19768.577242 | -49.8 | 28.0 | -21.8 |
| 19378.800999 | -49.8 | 28.0 | -21.8 |
| 19458.755100 | -49.8 | 28.0 | -21.8 |
| 19838.537080 | -50.0 | 28.2 | -21.8 |
| 23846.236400 | -50.1 | 28.2 | -21.8 |
| 19948.473969 | -50.1 | 28.2 | -21.8 |
| 25165.479069 | -50.1 | 28.3 | -21.8 |

Measurement Settings

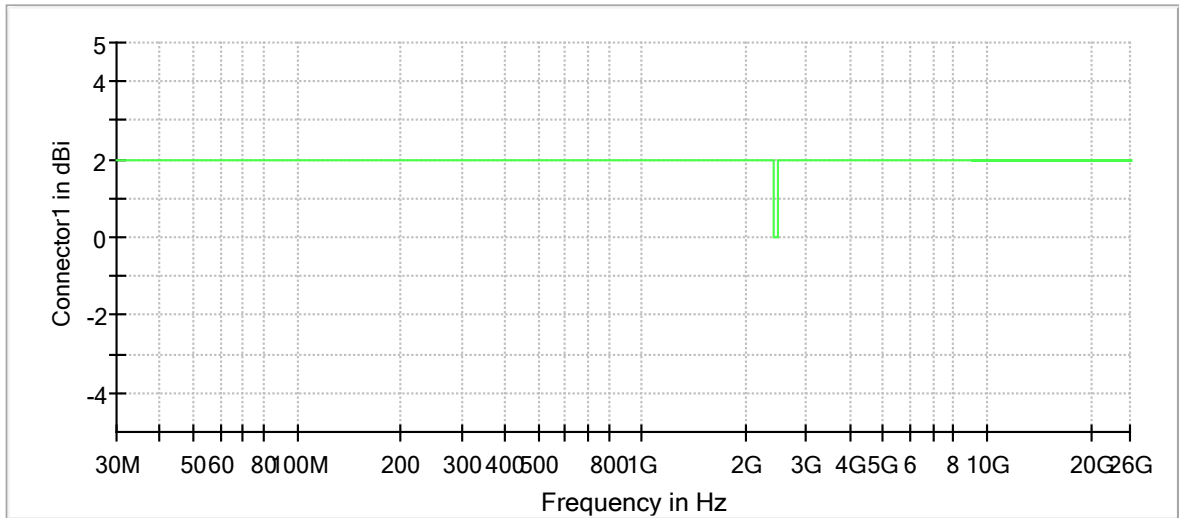
| Start Frequency (MHz) | Stop Frequency (MHz) | Pre Measurement | Final Measurement |
|-----------------------|----------------------|-----------------|-------------------|
| 30.000000 | 2400.000000 | 1 | 1 |
| 2400.000000 | 2483.500000 | 1 | 1 |
| 2483.500000 | 26000.000000 | 1 | 1 |

Spurious



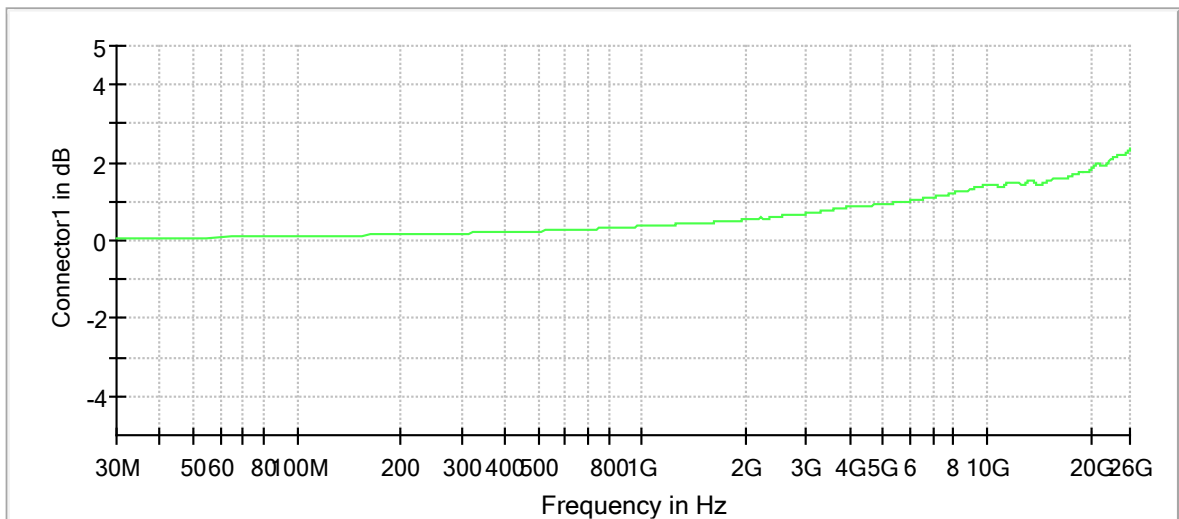
— Limit — Sum Level - - - Threshold × Critical × Final Critical

Gain



Connector1

Attenuation



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 | 5 / max. 40 | max. 40 |
| Stable | 3 / 3 | 3 |
| Max Stable Difference | 0.00 dB | 0.50 dB |

Emission Bandwidth 20 dB (2439 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

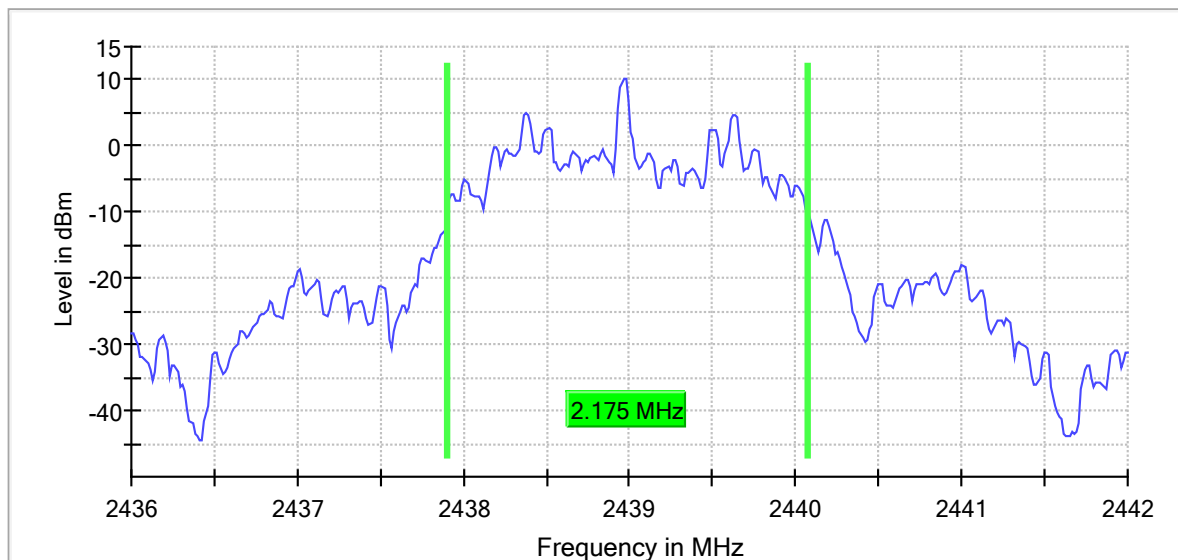
20 dB Bandwidth

| DUT Frequency (MHz) | Bandwidth (MHz) | Limit Min (MHz) | Limit Max (MHz) | Band Edge Left (MHz) | Band Edge Right (MHz) |
|---------------------|-----------------|-----------------|-----------------|----------------------|-----------------------|
| 2439.000000 | 2.175000 | --- | --- | 2437.897500 | 2440.072500 |

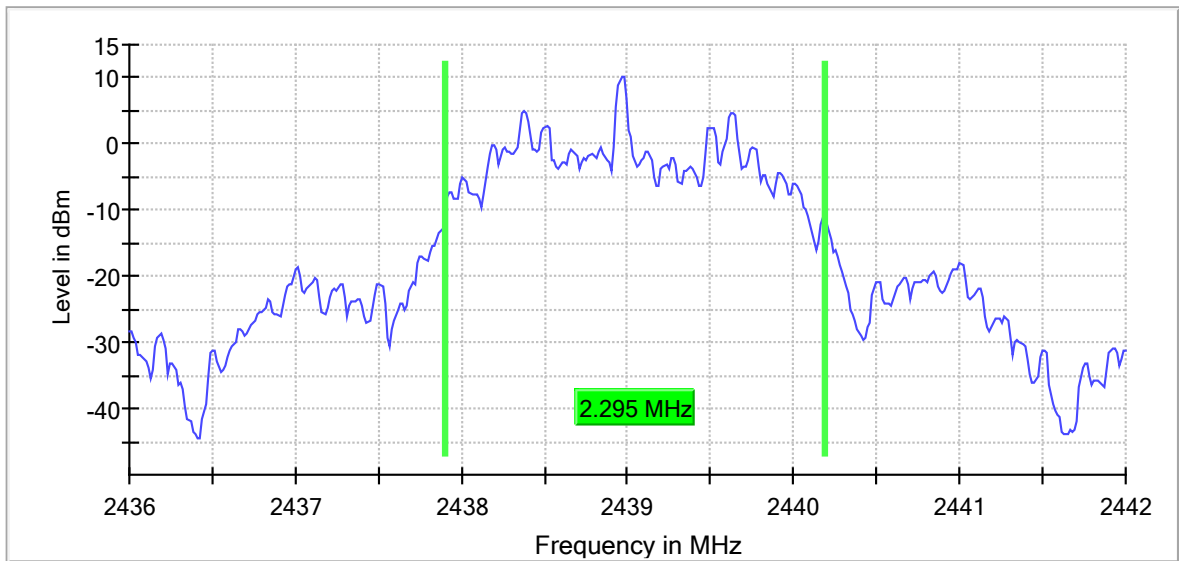
(continuation of the "20 dB Bandwidth" table from column 6 ...)

| DUT Frequency (MHz) | Max Level (dBm) | Result |
|---------------------|-----------------|--------|
| 2439.000000 | 10.2 | PASS |

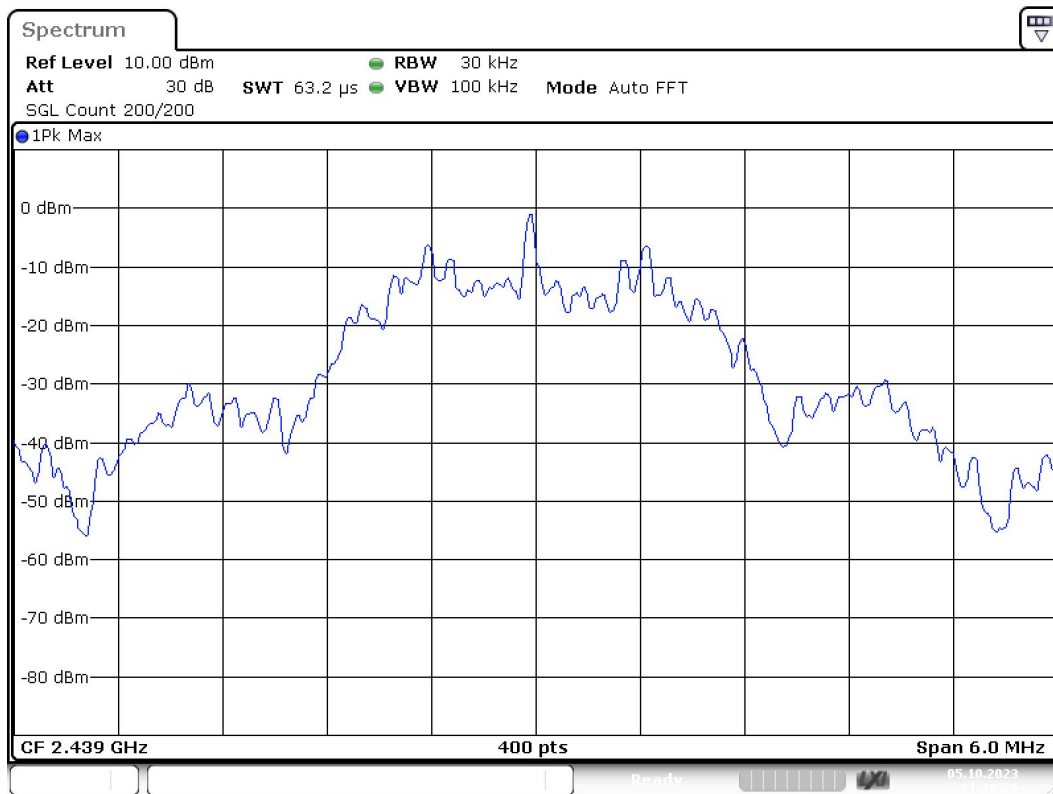
20 dB Bandwidth



99 % Bandwidth



Bandwidth



Date: 5.OCT.2023 11:28:27

Measurement

| Setting | Instrument Value | Target Value |
|-----------------|------------------|--------------|
| Start Frequency | 2.43600 GHz | 2.43600 GHz |
| Stop Frequency | 2.44200 GHz | 2.44200 GHz |
| Span | 6.000 MHz | 6.000 MHz |

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

Tx Spurious Emission (2439 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 |
|---------------------|--------|
| 2439.000000 | PASS |

Final measurements

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

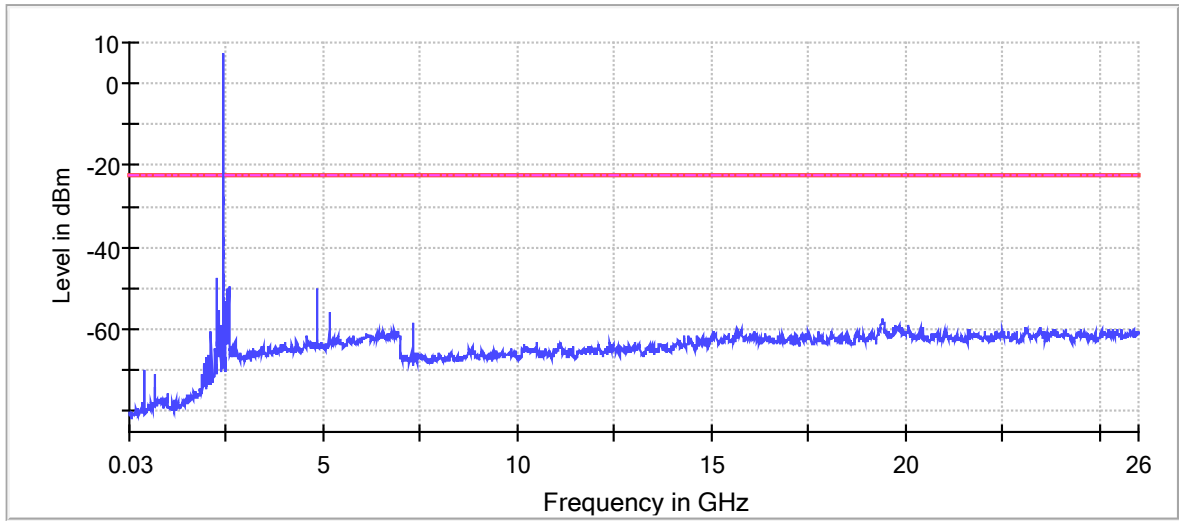
Pre Measurements

| Frequency (MHz) | Level (dBm) | Margin (dB) | Limit (dBm) |
|-----------------|-------------|-------------|-------------|
| 2285.483193 | -47.4 | 25.0 | -22.4 |
| 2588.439758 | -49.4 | 27.0 | -22.4 |
| 2538.468445 | -50.1 | 27.7 | -22.4 |
| 4877.125903 | -50.3 | 27.9 | -22.4 |
| 2498.491394 | -53.0 | 30.6 | -22.4 |
| 2345.231092 | -55.3 | 32.8 | -22.4 |
| 5176.953782 | -56.0 | 33.6 | -22.4 |
| 5186.948045 | -56.3 | 33.9 | -22.4 |
| 5196.942308 | -56.6 | 34.1 | -22.4 |
| 5206.936570 | -56.9 | 34.5 | -22.4 |
| 19418.778049 | -57.1 | 34.7 | -22.4 |
| 2508.485657 | -57.2 | 34.8 | -22.4 |
| 2548.462707 | -57.5 | 35.1 | -22.4 |
| 19428.772312 | -57.6 | 35.2 | -22.4 |
| 19408.783787 | -58.1 | 35.7 | -22.4 |

Measurement Settings

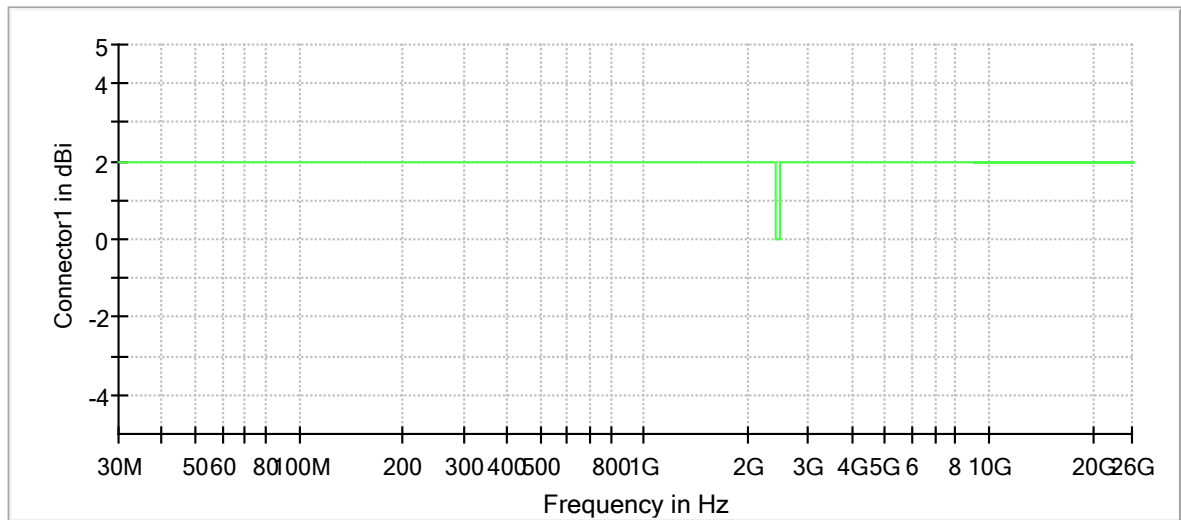
| Start Frequency (MHz) | Stop Frequency (MHz) | Pre Measurement | Final Measurement |
|-----------------------|----------------------|-----------------|-------------------|
| 30.000000 | 2400.000000 | 1 | 1 |
| 2400.000000 | 2483.500000 | 1 | 1 |
| 2483.500000 | 26000.000000 | 1 | 1 |

Spurious



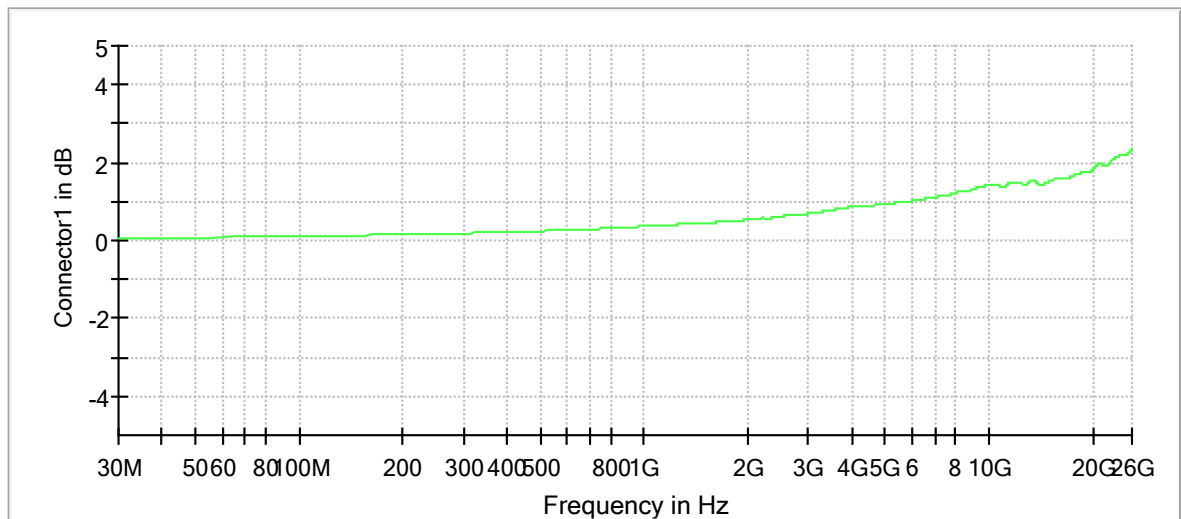
— Limit — Sum Level - - - Threshold × Critical × Final Critical

Gain



Connector1

Attenuation



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 | -20.000 dBm | -30.000 dBm |
| Attenuation | 10.000 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 | 5 / max. 40 | max. 40 |
| Stable | 3 / 3 | 3 |
| Max Stable Difference | 0.00 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

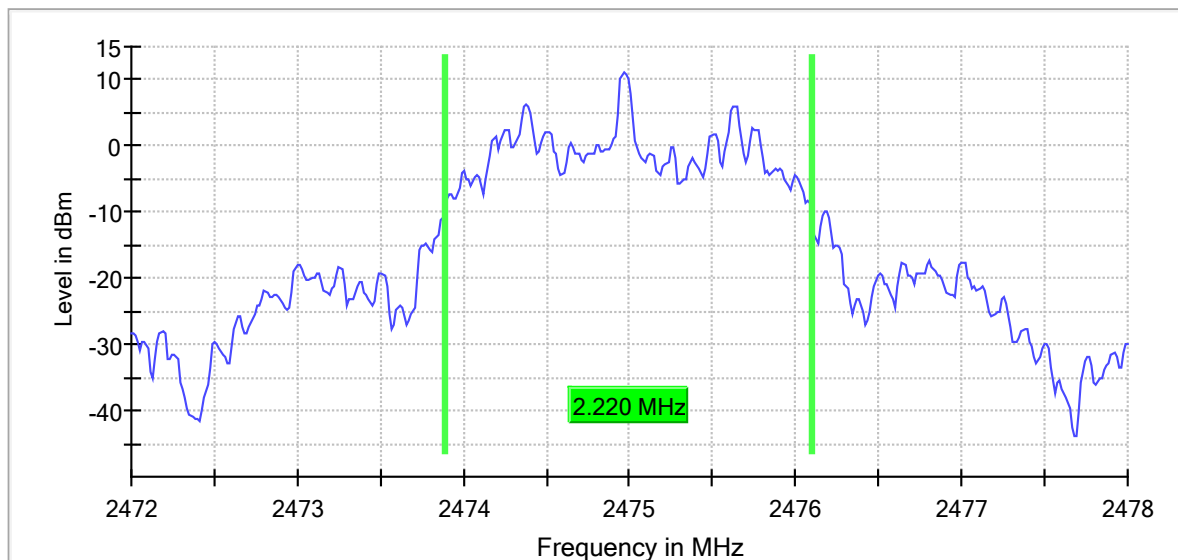
20 dB Bandwidth

| DUT Frequency (MHz) | Bandwidth (MHz) | Limit Min (MHz) | Limit Max (MHz) | Band Edge Left (MHz) | Band Edge Right (MHz) |
|---------------------|-----------------|-----------------|-----------------|----------------------|-----------------------|
| 2475.000000 | 2.220000 | --- | --- | 2473.882500 | 2476.102500 |

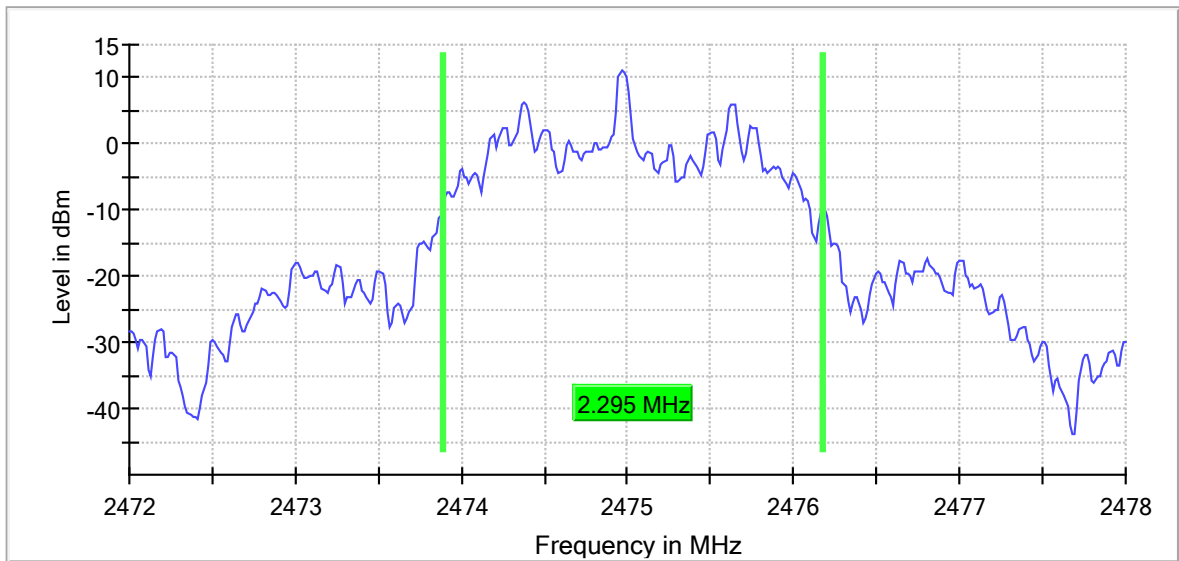
(continuation of the "20 dB Bandwidth" table from column 6 ...)

| DUT Frequency (MHz) | Max Level (dBm) | Result |
|---------------------|-----------------|--------|
| 2475.000000 | 11.3 | PASS |

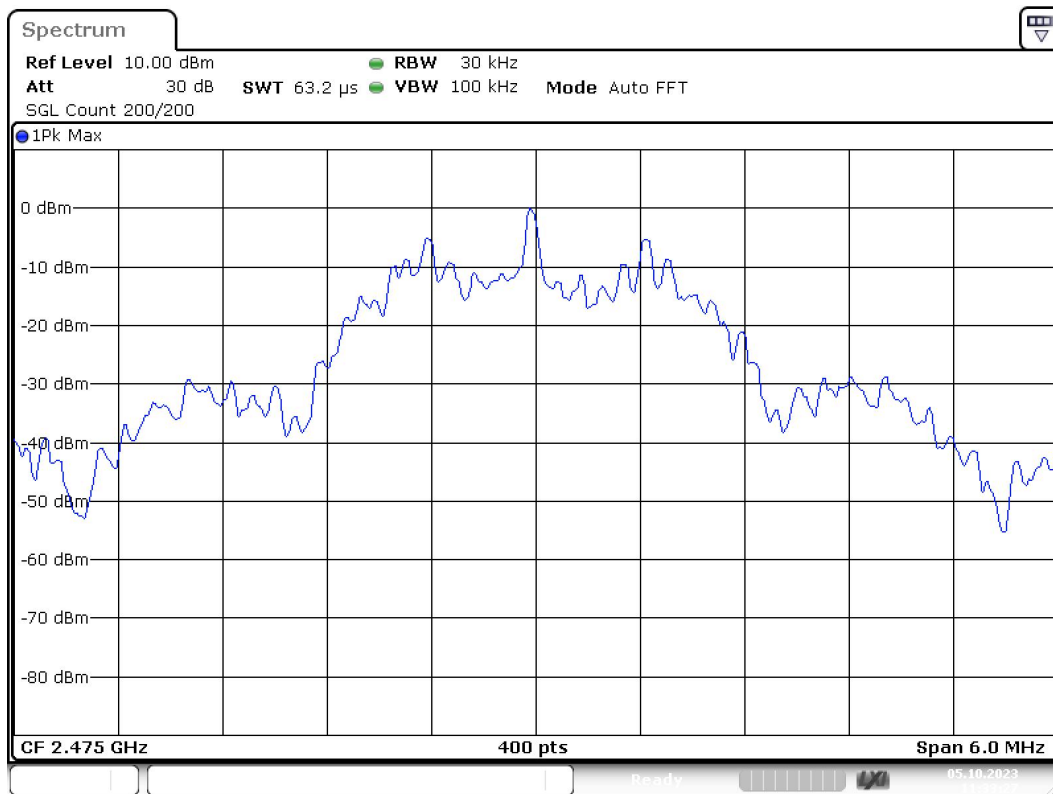
20 dB Bandwidth



99 % Bandwidth



Bandwidth



Date: 5.OCT.2023 11:33:28

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 |

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

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 |

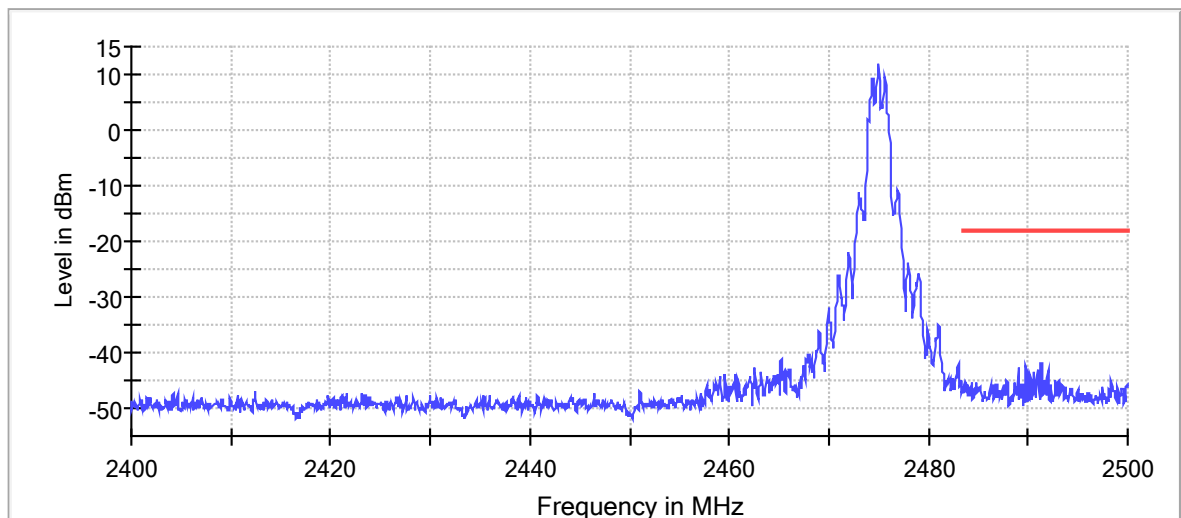
Inband Peak

| Frequency (MHz) | Level (dBm) |
|-----------------|-------------|
| 2474.975000 | 12.1 |

Measurements

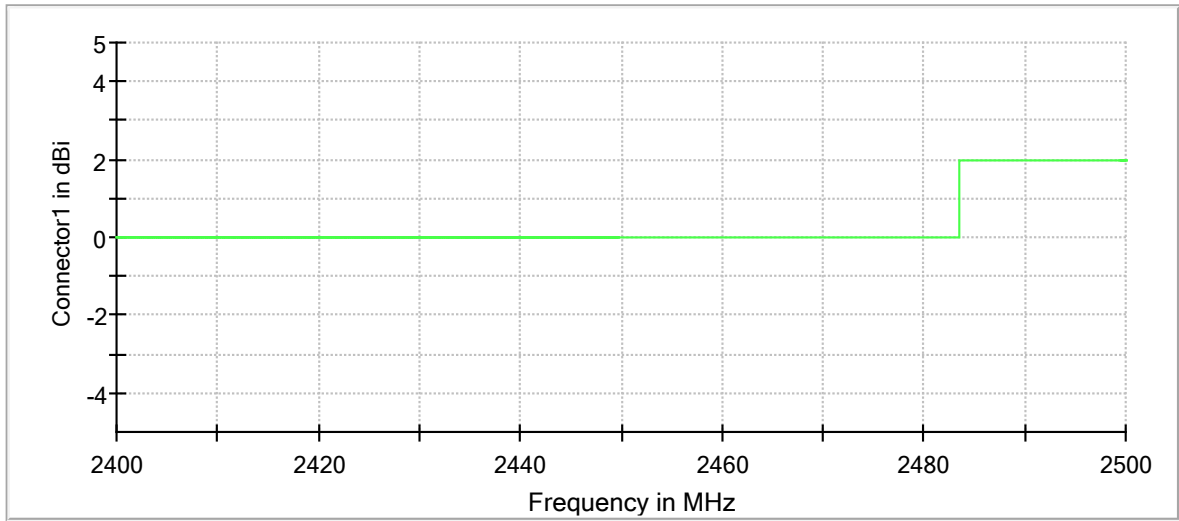
| Frequency (MHz) | Level (dBm) | Margin (dB) | Limit (dBm) | Result |
|-----------------|-------------|-------------|-------------|--------|
| 2491.325000 | -41.8 | 23.9 | -17.9 | PASS |
| 2491.375000 | -41.9 | 24.0 | -17.9 | PASS |
| 2489.825000 | -42.3 | 24.4 | -17.9 | PASS |
| 2489.775000 | -42.7 | 24.9 | -17.9 | PASS |
| 2489.025000 | -42.8 | 24.9 | -17.9 | PASS |
| 2488.975000 | -43.1 | 25.2 | -17.9 | PASS |
| 2491.275000 | -43.1 | 25.2 | -17.9 | PASS |
| 2491.975000 | -43.2 | 25.3 | -17.9 | PASS |
| 2490.925000 | -43.3 | 25.4 | -17.9 | PASS |
| 2490.975000 | -43.3 | 25.4 | -17.9 | PASS |
| 2492.025000 | -43.3 | 25.4 | -17.9 | PASS |
| 2490.575000 | -43.4 | 25.5 | -17.9 | PASS |
| 2490.625000 | -43.5 | 25.6 | -17.9 | PASS |
| 2489.875000 | -43.6 | 25.7 | -17.9 | PASS |
| 2490.225000 | -43.7 | 25.8 | -17.9 | PASS |

Band Edge



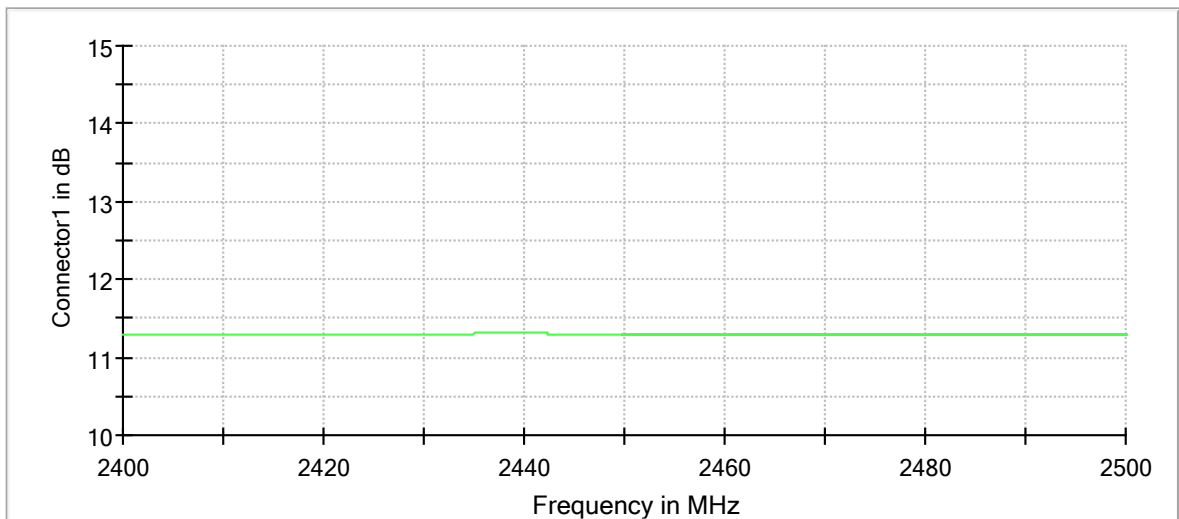
— Limit — Sum Level × Fail

Gain



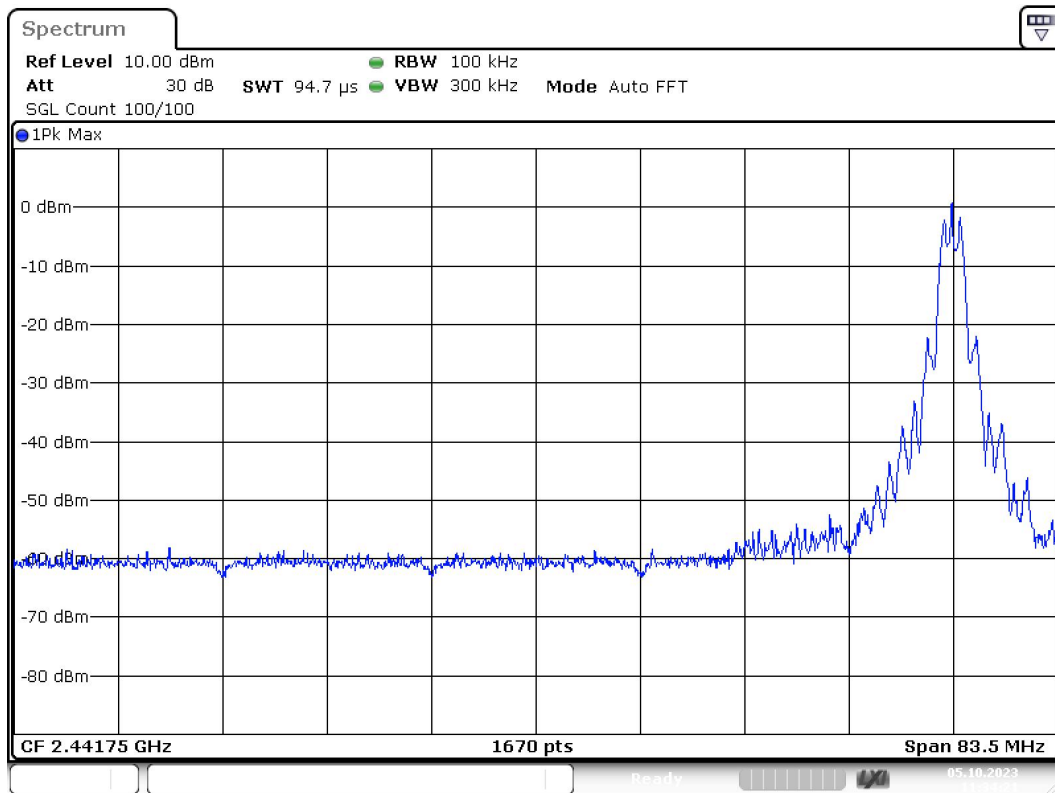
Connector1

Attenuation



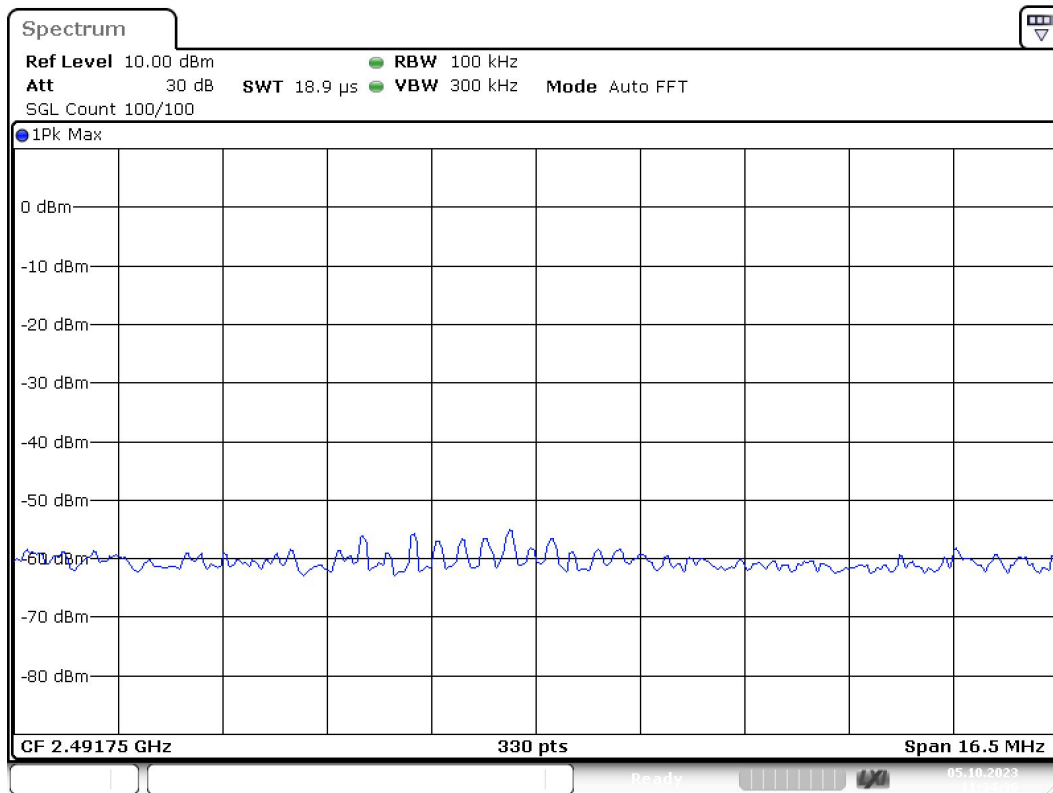
Connector1

Band Edge Connector 1_0



Date: 5.OCT.2023 11:34:22

Band Edge Connector 1_1



Date: 5.OCT.2023 11:34:30

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 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 | 20 / max. 150 | max. 150 |
| Stable | 3 / 3 | 3 |
| Max Stable Difference | 0.01 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 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 | 4 / max. 150 | max. 150 |
| Stable | 3 / 3 | 3 |
| Max Stable Difference | 0.00 dB | 0.50 dB |

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 |
|-----------------|-----------------------------|-------------|-------------|-------------|--------|
| --- | --- | --- | --- | --- | --- |

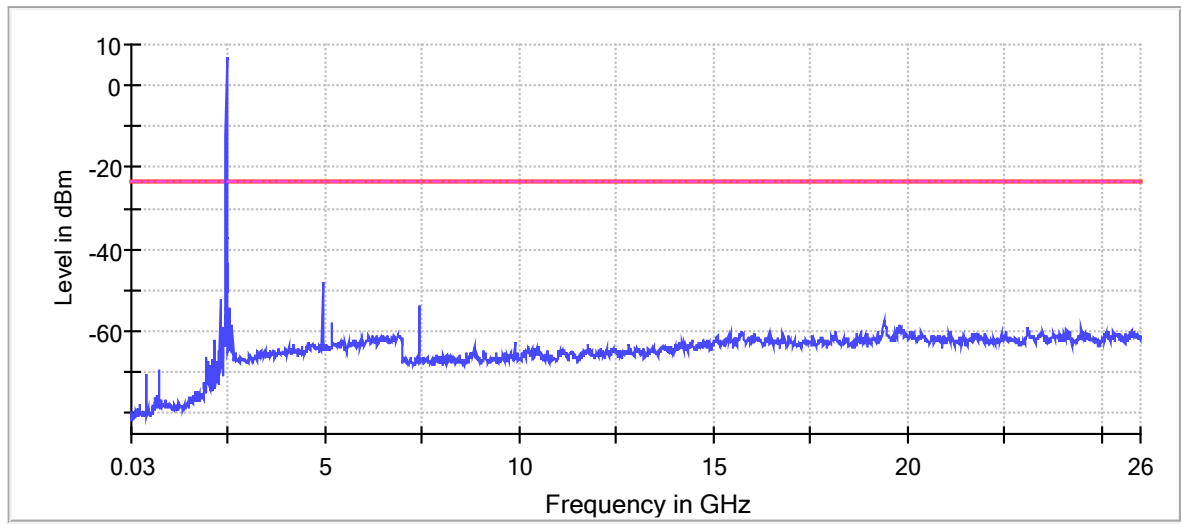
Pre Measurements

| Frequency (MHz) | Level (dBm) | Margin (dB) | Limit (dBm) |
|-----------------|-------------|-------------|-------------|
| 2488.497131 | -43.3 | 19.9 | -23.4 |
| 2498.491394 | -44.9 | 21.6 | -23.4 |
| 4947.085742 | -47.9 | 24.6 | -23.4 |
| 2315.357143 | -52.4 | 29.0 | -23.4 |
| 7425.662877 | -53.6 | 30.2 | -23.4 |
| 2568.451232 | -54.0 | 30.6 | -23.4 |
| 2325.315126 | -54.6 | 31.3 | -23.4 |
| 19428.772312 | -57.3 | 34.0 | -23.4 |
| 19388.795261 | -57.3 | 34.0 | -23.4 |
| 19418.778049 | -57.7 | 34.3 | -23.4 |
| 5206.936570 | -58.0 | 34.7 | -23.4 |
| 2538.468445 | -58.1 | 34.8 | -23.4 |
| 2628.416808 | -58.3 | 34.9 | -23.4 |
| 5196.942308 | -58.5 | 35.1 | -23.4 |
| 19778.571504 | -58.5 | 35.2 | -23.4 |

Measurement Settings

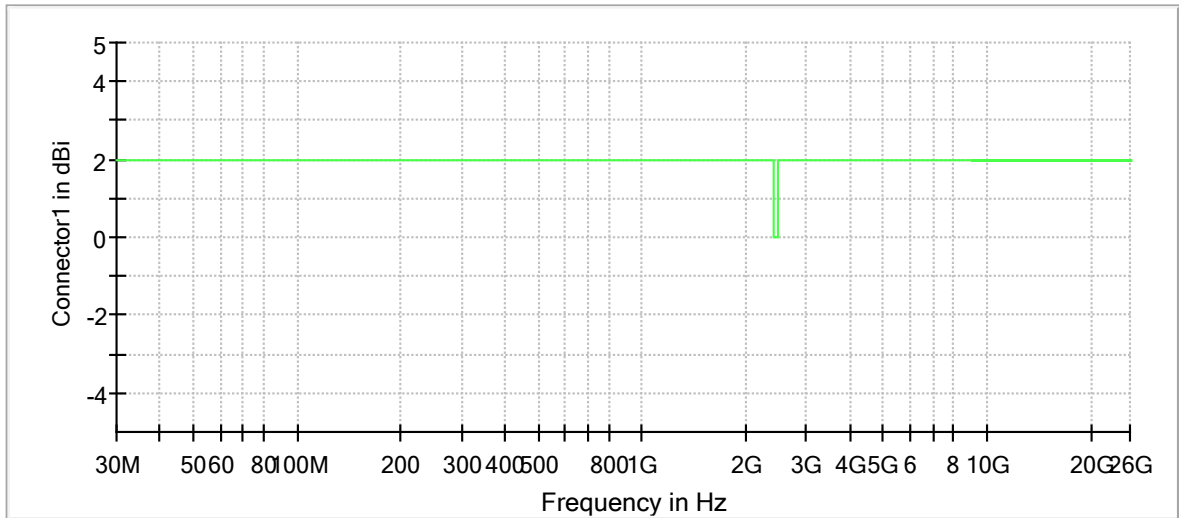
| Start Frequency (MHz) | Stop Frequency (MHz) | Pre Measurement | Final Measurement |
|-----------------------|----------------------|-----------------|-------------------|
| 30.000000 | 2400.000000 | 1 | 1 |
| 2400.000000 | 2483.500000 | 1 | 1 |
| 2483.500000 | 26000.000000 | 1 | 1 |

Spurious



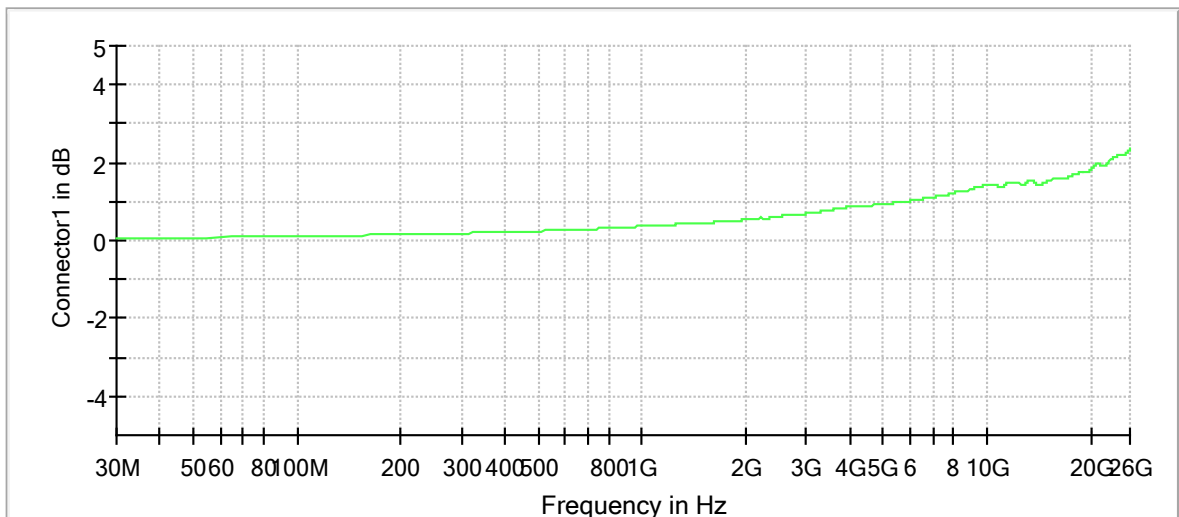
— Limit — Sum Level - - - Threshold × Critical × Final Critical

Gain



Connector1

Attenuation



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 | -20.000 dBm | -30.000 dBm |
| Attenuation | 10.000 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 | 5 / max. 40 | max. 40 |
| Stable | 3 / 3 | 3 |
| Max Stable Difference | 0.00 dB | 0.50 dB |

