

Measurement Results

No.1-0211/20-01-03_Annex_MR_A1

Test logging

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For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

Test/s performed:

Michael Dorongovski
Lab Manager
Radio Communications

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EUT Information

| EUT DEFINITION | |
|----------------------|------------------------------|
| Manufacturer | Bury Sp. z.o.o. |
| Type | SIM Reader for Personal eSIM |
| Serial Number | Conducted sample 3 |
| Setup Number | 1.0 |
| Version SW | 3.3.2 |
| Version FW | NI |
| Version HW | 006 |
| Comment 1 | |
| Comment 2 | |
| Temperature [°C] Min | -30 |
| Temperature [°C] Nom | 20 |
| Temperature [°C] Max | 80 |
| Voltage [V] Min | 2.1 |
| Voltage [V] Nom | 3.6 |
| Voltage [V] Max | 6 |

Common2G4 Peak OP 3MHz/3MHz ~ BT LE 1 Msps

| Test References | |
|-----------------------------------|--|
| TC Start | 18.10.2021 10:53:33 |
| Ambit Temp [°C] Humidity [rel%] | 23.6 34 |
| System Version | 3.0.2.2 |
| Test Specification | None |
| Test Method | |
| TC Version | 0.0.1 |
| My Description | Peak Output Power conducted 3MHz/3MHz - BT LE 1 Msps |
| Add. Information | |

| EUT Common Settings BT Low Energy | |
|--|--|
| Intermodulation Value N | 3 |
| Image Freq. Low Mid High [MHz] | 0 0 0 |
| Power Class | 2 |
| 1 Mbps supported | True TXpayload 255 RXpayload 255 |
| 2 Mbps supported | True TXpayload 255 RXpayload 255 |
| Longrange S8 supported | False TXpayload 255 RXpayload 255 |
| Longrange S2 supported | False TXpayload 255 RXpayload 255 |
| Signaling Settings | WS_USB_RS232 HCI 27 115200 None S1 None On |
| Signaling RF Settings | RF1com 0 0 On |
| User Interaction | No |
| Switch Matrix & Pathcompensation enabled | Yes |

| Test Parameter | |
|--|--|
| Technology to test | BT LE 1 Msps |
| Antenna Port used | 1 |
| Temperature | nom |
| Voltage | nom |
| Frequency low to test | True Freq [MHz] 2402 |
| Frequency mid to test | True Freq [MHz] 2440 |
| Frequency high to test | True Freq [MHz] 2480 |
| Auto Control enabled Power Supply Climatic Box | No No |
| Additional Path Loss [dB] | 0.7 |
| Switched Path | EUT - SignalingUnit - SpectrumAnalyzer |

| Test Equipment | |
|---|--|
| Signal analyzer,Rohde&Schwarz,FSV-30,1321.3008K30/103809,3.70 | |
| Signaling unit,Rohde&Schwarz,CMW,1201.0002k75/102550,3.8.13 | |
| Switch matrix,CTCadvanced,RSM-1 NI DAQ,29655273,NI | |

Test at TX 2402 MHz

RESULT: Reference Power cond.

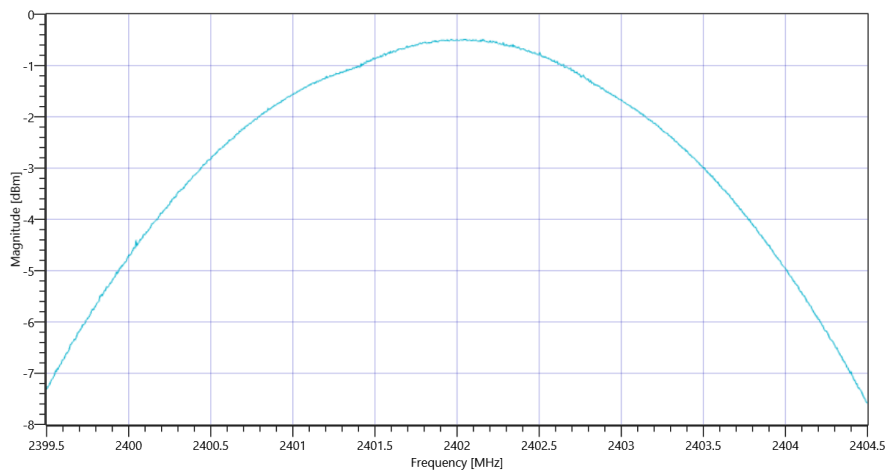
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------------------|-------------|-------------|----------|------|---------|
| Ref. Power 1MHz/1MHz cond. | --- | --- | -0.77 | dBm | INFO |
| Ref. Frequency | --- | --- | 2401.700 | MHz | INFO |

READ SA SETTINGS:

| | |
|--|------------------------|
| RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB] | 9.23 10.79 15 |
| Start [MHz] Stop [MHz] | 2399.500 2404.500 |
| RBW [MHz] VBW [MHz] | 3.000000 3.000000 |
| Detector TraceMode | POS MAXH |
| Sweep: Time [ms] Count Points per Section Type | 1000 10 1001 SWE |

RESULT

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------|-------------|-------------|----------|------|---------|
| Peak Power | --- | --- | -0.49 | dBm | Info |
| Peak Power | --- | --- | 0.893305 | mW | Info |
| Frequency at Peak | --- | --- | 2401.965 | MHz | Info |



Common2G4 Peak OP 3MHz-3MHz ~ BT LE 1 Msps

Test at TX 2440 MHz

RESULT: Reference Power cond.

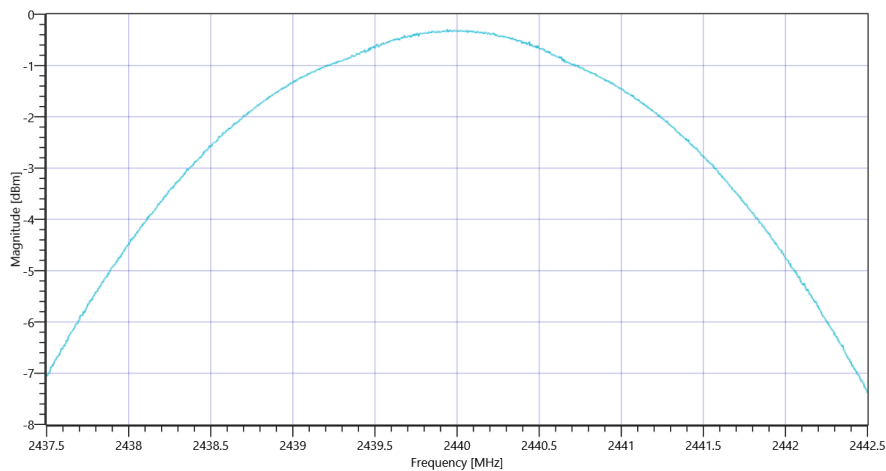
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------------------|-------------|-------------|----------|------|---------|
| Ref. Power 1MHz/1MHz cond. | --- | --- | -0.59 | dBm | INFO |
| Ref. Frequency | --- | --- | 2440.200 | MHz | INFO |

READ SA SETTINGS:

| | |
|--|------------------------|
| RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB] | 9.41 10.8 15 |
| Start [MHz] Stop [MHz] | 2437.500 2442.500 |
| RBW [MHz] VBW [MHz] | 3.000000 3.000000 |
| Detector TraceMode | POS MAXH |
| Sweep: Time [ms] Count Points per Section Type | 1000 10 1001 SWE |

RESULT

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------|-------------|-------------|----------|------|---------|
| Peak Power | --- | --- | -0.3 | dBm | Info |
| Peak Power | --- | --- | 0.933254 | mW | Info |
| Frequency at Peak | --- | --- | 2439.94 | MHz | Info |



Common2G4 Peak OP 3MHz-3MHz ~ BT LE 1 Msps

Test at TX 2480 MHz

RESULT: Reference Power cond.

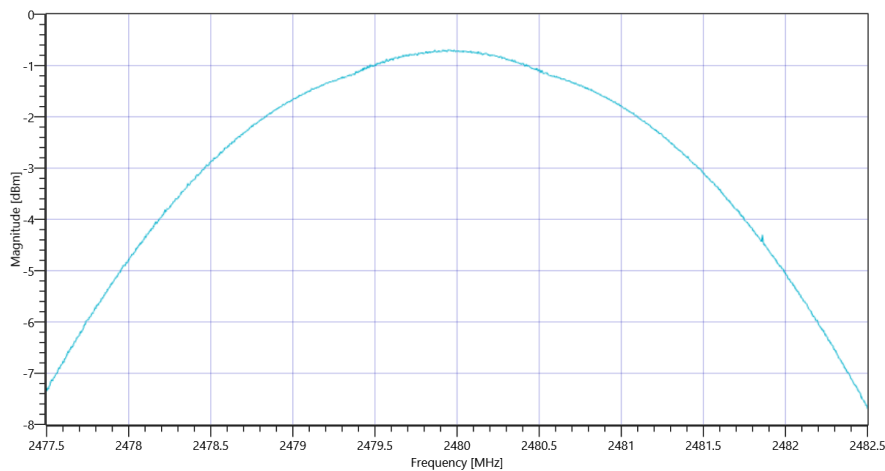
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------------------|-------------|-------------|----------|------|---------|
| Ref. Power 1MHz/1MHz cond. | --- | --- | -1.02 | dBm | INFO |
| Ref. Frequency | --- | --- | 2479.700 | MHz | INFO |

READ SA SETTINGS:

| | |
|--|------------------------|
| RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB] | 8.99 10.85 15 |
| Start [MHz] Stop [MHz] | 2477.500 2482.500 |
| RBW [MHz] VBW [MHz] | 3.000000 3.000000 |
| Detector TraceMode | POS MAXH |
| Sweep: Time [ms] Count Points per Section Type | 1000 10 1001 SWE |

RESULT

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------|-------------|-------------|----------|------|---------|
| Peak Power | --- | --- | -0.7 | dBm | Info |
| Peak Power | --- | --- | 0.851138 | mW | Info |
| Frequency at Peak | --- | --- | 2479.945 | MHz | Info |



Common2G4 Peak OP 3MHz-3MHz ~ BT LE 1 Msps

General verdict

PASS

FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ BT LE 1 Msps

| Test References | |
|-----------------------------------|---|
| TC Start | 18.10.2021 10:55:05 |
| Ambit Temp [°C] Humidity [rel%] | 23.6 34 |
| System Version | 3.0.2.2 |
| Test Specification | FCC Part 15.247 |
| Test Method | DTS: KDB 558074 D01 V05 - Chapter 8.3.1.1 RBW ≥ DTS Bandwidth |
| TC Version | 0.0.1 |
| My Description | FCC 15.247 Maximum Peak Output Power Conducted DTS - BT LE 1 Msps |
| Add. Information | |

| EUT Common Settings BT Low Energy | |
|--|--|
| Intermodulation Value N | 3 |
| Image Freq. Low Mid High [MHz] | 0 0 0 |
| Power Class | 2 |
| 1 Mbps supported | True TXpayload 255 RXpayload 255 |
| 2 Mbps supported | True TXpayload 255 RXpayload 255 |
| Longrange S8 supported | False TXpayload 255 RXpayload 255 |
| Longrange S2 supported | False TXpayload 255 RXpayload 255 |
| Signaling Settings | WS_USB_RS232 HCI 27 115200 None S1 None On |
| Signaling RF Settings | RF1com 0 0 On |
| User Interaction | No |
| Switch Matrix & Pathcompensation enabled | Yes |

| Test Parameter | |
|--|--|
| Technology to test | BT LE 1 Msps |
| Antenna Port used | 1 |
| Temperature | nom |
| Voltage | nom |
| Frequency low to test | True Freq [MHz] 2402 |
| Frequency mid to test | True Freq [MHz] 2440 |
| Frequency high to test | True Freq [MHz] 2480 |
| Auto Control enabled Power Supply Climatic Box | No No |
| Additional Path Loss [dB] | 0.7 |
| Switched Path | EUT - SignalingUnit - SpectrumAnalyzer |

| Test Equipment | |
|---|--|
| Signal analyzer,Rohde&Schwarz,FSV-30,1321.3008K30/103809,3.70 | |
| Signaling unit,Rohde&Schwarz,CMW,1201.0002k75/102550,3.8.13 | |
| Switch matrix,CTCadvanced,RSM-1 NI DAQ,29655273,NI | |

Test at TX 2402 MHz

RESULT: Reference Power cond.

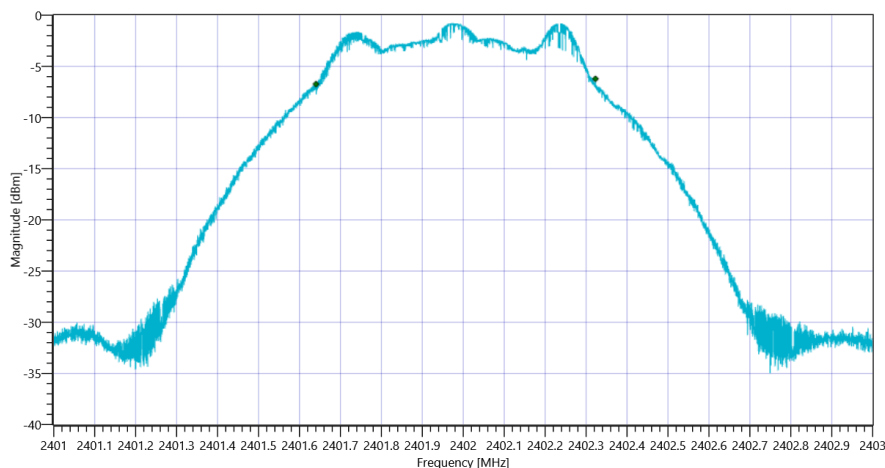
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------------------|-------------|-------------|----------|------|---------|
| Ref. Power 1MHz/1MHz cond. | --- | --- | -0.68 | dBm | INFO |
| Ref. Frequency | --- | --- | 2401.700 | MHz | INFO |

READ SA SETTINGS:

| | |
|--|------------------------|
| RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB] | 4.32 10.79 10 |
| Start [MHz] Stop [MHz] | 2401.000 2403.000 |
| RBW [MHz] VBW [MHz] | 0.100000 0.300000 |
| Detector TraceMode | POS MAXH |
| Sweep: Time [ms] Count Points per Section Type | 50 200 10001 SWE |

DTS Bandwidth

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|------------------------|-------------|-------------|----------|------|---------|
| DTS Bandwidth (6dB) | --- | --- | 683 | kHz | INFO |



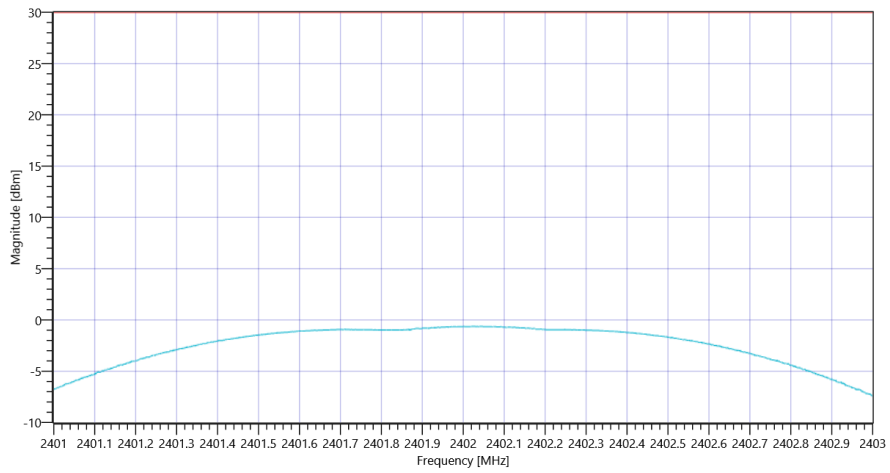
FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ BT LE 1 Msps DTS BW

READ SA SETTINGS:

| | |
|--|-----------------------|
| RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB] | 9.32 10.79 15 |
| Start [MHz] Stop [MHz] | 2401.000 2403.000 |
| RBW [MHz] VBW [MHz] | 1.000000 5.000000 |
| Detector TraceMode | POS MAXH |
| Sweep: Time [ms] Count Points per Section Type | 50 200 1001 SWE |

RESULT

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------|-------------|-------------|----------|------|---------|
| Peak Power | --- | 30.00 | -0.63 | dBm | PASS |
| Peak Power | --- | 1000 | 0.864968 | mW | PASS |
| Frequency at Peak | --- | --- | 2402.022 | MHz | INFO |



FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ BT LE 1 Msp

Test at TX 2440 MHz

RESULT: Reference Power cond.

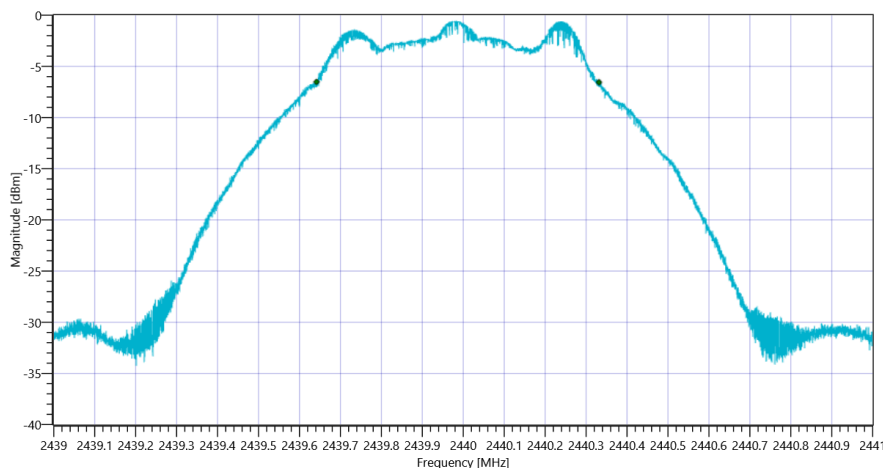
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------------------|-------------|-------------|----------|------|---------|
| Ref. Power 1MHz/1MHz cond. | --- | --- | -0.59 | dBm | INFO |
| Ref. Frequency | --- | --- | 2439.700 | MHz | INFO |

READ SA SETTINGS:

| | |
|--|------------------------|
| RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB] | 4.41 10.8 10 |
| Start [MHz] Stop [MHz] | 2439.000 2441.000 |
| RBW [MHz] VBW [MHz] | 0.100000 0.300000 |
| Detector TraceMode | POS MAXH |
| Sweep: Time [ms] Count Points per Section Type | 50 200 10001 SWE |

DTS Bandwidth

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|------------------------|-------------|-------------|----------|------|---------|
| DTS Bandwidth (6dB) | --- | --- | 690 | kHz | INFO |



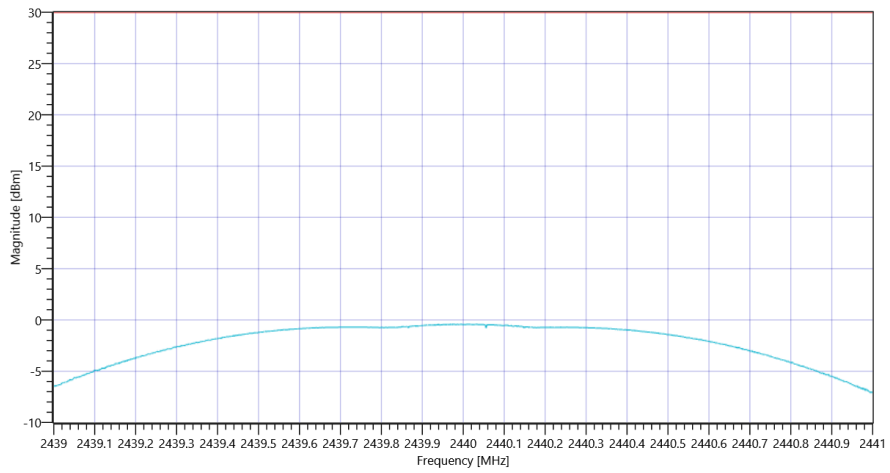
FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ BT LE 1 Msps DTS BW

READ SA SETTINGS:

| | |
|--|-----------------------|
| RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB] | 9.41 10.8 15 |
| Start [MHz] Stop [MHz] | 2439.000 2441.000 |
| RBW [MHz] VBW [MHz] | 1.000000 5.000000 |
| Detector TraceMode | POS MAXH |
| Sweep: Time [ms] Count Points per Section Type | 50 200 1001 SWE |

RESULT

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------|-------------|-------------|----------|------|---------|
| Peak Power | --- | 30.00 | -0.42 | dBm | PASS |
| Peak Power | --- | 1000 | 0.907821 | mW | PASS |
| Frequency at Peak | --- | --- | 2440.01 | MHz | INFO |



FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ BT LE 1 Msp

Test at TX 2480 MHz

RESULT: Reference Power cond.

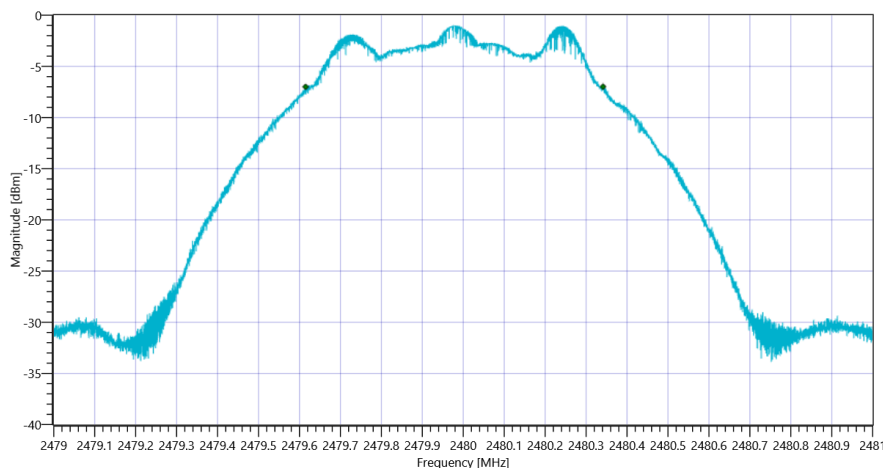
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------------------|-------------|-------------|----------|------|---------|
| Ref. Power 1MHz/1MHz cond. | --- | --- | -0.97 | dBm | INFO |
| Ref. Frequency | --- | --- | 2480.300 | MHz | INFO |

READ SA SETTINGS:

| | |
|--|------------------------|
| RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB] | 4.03 10.85 10 |
| Start [MHz] Stop [MHz] | 2479.000 2481.000 |
| RBW [MHz] VBW [MHz] | 0.100000 0.300000 |
| Detector TraceMode | POS MAXH |
| Sweep: Time [ms] Count Points per Section Type | 50 200 10001 SWE |

DTS Bandwidth

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|------------------------|-------------|-------------|----------|------|---------|
| DTS Bandwidth (6dB) | --- | --- | 726 | kHz | INFO |



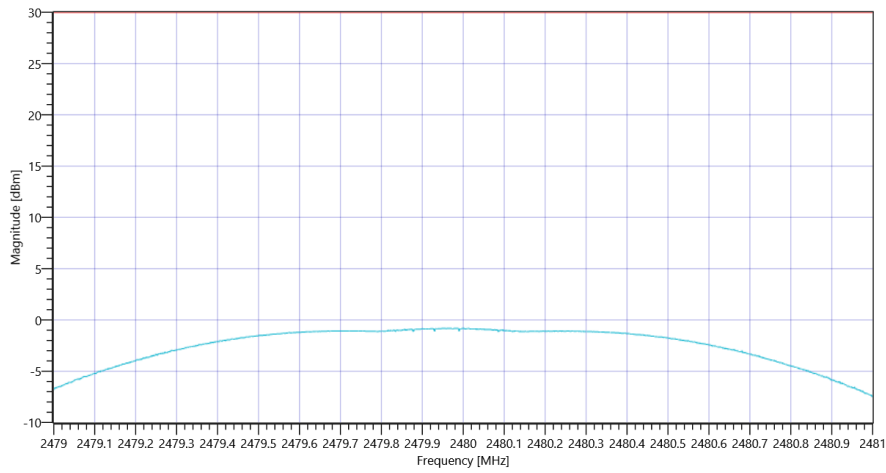
FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ BT LE 1 Msps DTS BW

READ SA SETTINGS:

| | |
|--|-----------------------|
| RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB] | 9.03 10.85 15 |
| Start [MHz] Stop [MHz] | 2479.000 2481.000 |
| RBW [MHz] VBW [MHz] | 1.000000 5.000000 |
| Detector TraceMode | POS MAXH |
| Sweep: Time [ms] Count Points per Section Type | 50 200 1001 SWE |

RESULT

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------|-------------|-------------|----------|------|---------|
| Peak Power | --- | 30.00 | -0.81 | dBm | PASS |
| Peak Power | --- | 1000 | 0.829851 | mW | PASS |
| Frequency at Peak | --- | --- | 2479.968 | MHz | INFO |



FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ BT LE 1 Msp

General verdict

PASS

FCC Part 15.247 Bandwidth 6dB DTS ~ BT LE 1 Msps

| Test References | |
|-----------------------------------|---|
| TC Start | 18.10.2021 10:57:31 |
| Ambit Temp [°C] Humidity [rel%] | 23.5 34 |
| System Version | 3.0.2.2 |
| Test Specification | FCC Part 15.247 |
| Test Method | 99 |
| TC Version | 0.0.1 |
| My Description | FCC 15.247 Bandwidth 6dB DTS - BT LE 1 Msps |
| Add. Information | |

| EUT Common Settings BT Low Energy | |
|--|--|
| Intermodulation Value N | 3 |
| Image Freq. Low Mid High [MHz] | 0 0 0 |
| Power Class | 2 |
| 1 Mbps supported | True TXpayload 255 RXpayload 255 |
| 2 Mbps supported | True TXpayload 255 RXpayload 255 |
| Longrange S8 supported | False TXpayload 255 RXpayload 255 |
| Longrange S2 supported | False TXpayload 255 RXpayload 255 |
| Signaling Settings | WS_USB_RS232 HCI 27 115200 None S1 None On |
| Signaling RF Settings | RF1com 0 0 On |
| User Interaction | No |
| Switch Matrix & Pathcompensation enabled | Yes |

| Test Parameter | |
|--|--|
| Technology to test | BT LE 1 Msps |
| Antenna Port used | 1 |
| Temperature | nom |
| Voltage | nom |
| Frequency low to test | True Freq [MHz] 2402 |
| Frequency mid to test | True Freq [MHz] 2440 |
| Frequency high to test | True Freq [MHz] 2480 |
| Auto Control enabled Power Supply Climatic Box | No No |
| Additional Path Loss [dB] | 0.7 |
| Switched Path | EUT - SignalingUnit - SpectrumAnalyzer |

| Test Equipment | |
|---|--|
| Signal analyzer,Rohde&Schwarz,FSV-30,1321.3008K30/103809,3.70 | |
| Signaling unit,Rohde&Schwarz,CMW,1201.0002k75/102550,3.8.13 | |
| Switch matrix,CTCadvanced,RSM-1 NI DAQ,29655273,NI | |

Test at TX 2402 MHz

RESULT: Reference Power cond.

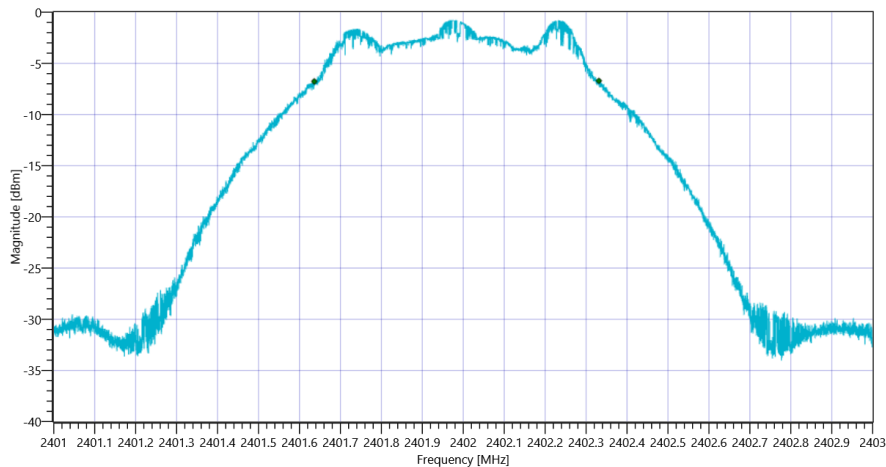
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------------------|-------------|-------------|----------|------|---------|
| Ref. Power 1MHz/1MHz cond. | --- | --- | -0.71 | dBm | INFO |
| Ref. Frequency | --- | --- | 2401.700 | MHz | INFO |

READ SA SETTINGS:

| | |
|--|------------------------|
| RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB] | 4.29 10.79 10 |
| Start [MHz] Stop [MHz] | 2401.000 2403.000 |
| RBW [MHz] VBW [MHz] | 0.100000 0.300000 |
| Detector TraceMode | POS MAXH |
| Sweep: Time [ms] Count Points per Section Type | 50 200 10001 SWE |

RESULT

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|------------------------|-------------|-------------|----------|------|---------|
| DTS Bandwidth (6dB) | 500 | --- | 695 | kHz | PASS |



FCC Part 15.247 Bandwidth 6dB DTS ~ BT LE 1 Msps

Test at TX 2440 MHz

RESULT: Reference Power cond.

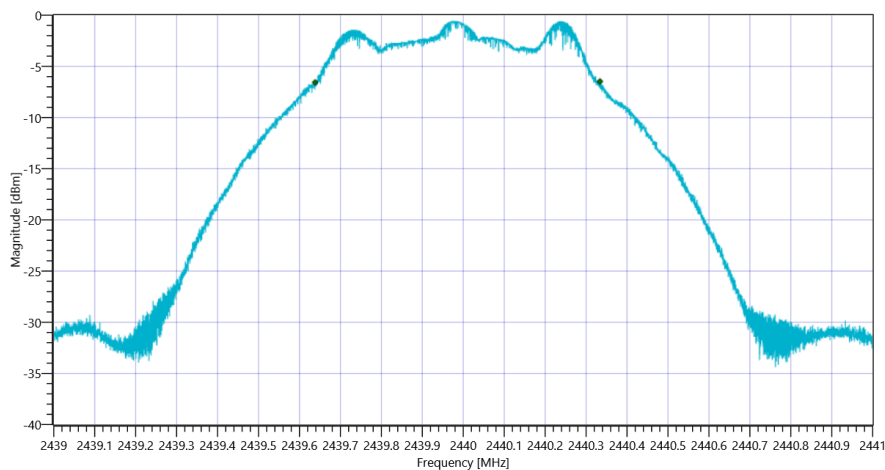
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------------------|-------------|-------------|----------|------|---------|
| Ref. Power 1MHz/1MHz cond. | --- | --- | -0.59 | dBm | INFO |
| Ref. Frequency | --- | --- | 2439.700 | MHz | INFO |

READ SA SETTINGS:

| | |
|--|------------------------|
| RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB] | 4.41 10.8 10 |
| Start [MHz] Stop [MHz] | 2439.000 2441.000 |
| RBW [MHz] VBW [MHz] | 0.100000 0.300000 |
| Detector TraceMode | POS MAXH |
| Sweep: Time [ms] Count Points per Section Type | 50 200 10001 SWE |

RESULT

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|------------------------|-------------|-------------|----------|------|---------|
| DTS Bandwidth (6dB) | 500 | --- | 696 | kHz | PASS |



FCC Part 15.247 Bandwidth 6dB DTS ~ BT LE 1 Msps

Test at TX 2480 MHz

RESULT: Reference Power cond.

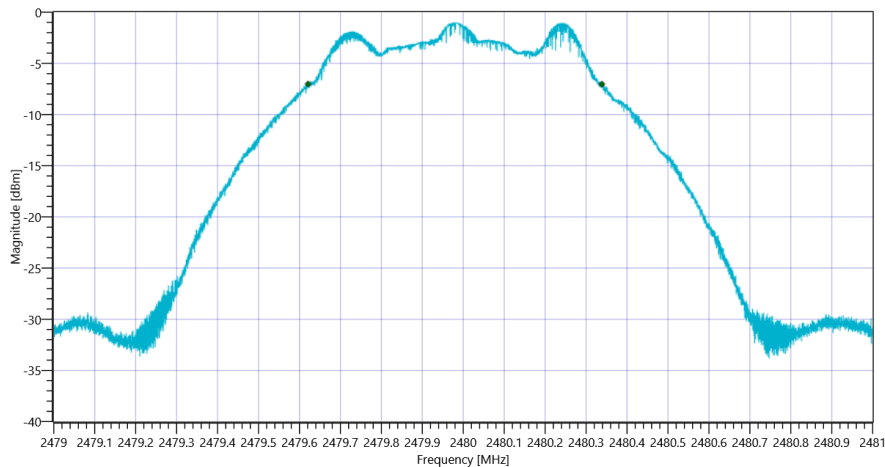
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------------------|-------------|-------------|----------|------|---------|
| Ref. Power 1MHz/1MHz cond. | --- | --- | -0.94 | dBm | INFO |
| Ref. Frequency | --- | --- | 2479.700 | MHz | INFO |

READ SA SETTINGS:

| | |
|--|------------------------|
| RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB] | 4.06 10.85 10 |
| Start [MHz] Stop [MHz] | 2479.000 2481.000 |
| RBW [MHz] VBW [MHz] | 0.100000 0.300000 |
| Detector TraceMode | POS MAXH |
| Sweep: Time [ms] Count Points per Section Type | 50 200 10001 SWE |

RESULT

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|------------------------|-------------|-------------|----------|------|---------|
| DTS Bandwidth (6dB) | 500 | --- | 718 | kHz | PASS |



FCC Part 15.247 Bandwidth 6dB DTS ~ BT LE 1 Msp/s

General verdict

PASS

FCC Part 15.247 Peak Power Spectral Density DTS ~ BT LE 1 Msps

| Test References | |
|-----------------------------------|--|
| TC Start | 18.10.2021 10:59:03 |
| Ambit Temp [°C] Humidity [rel%] | 23.5 34 |
| System Version | 3.0.2.2 |
| Test Specification | FCC Part 15.247 |
| Test Method | DTS: KDB 558074 D01 V05 - Chapter 8.4 DTS maximum power spectral density level in the fundamental emission |
| TC Version | 0.0.1 |
| My Description | FCC 15.247 Peak Power Spectral Density DTS - BT LE 1 Msps |
| Add. Information | |

| EUT Common Settings BT Low Energy | |
|--|--|
| Intermodulation Value N | 3 |
| Image Freq. Low Mid High [MHz] | 0 0 0 |
| Power Class | 2 |
| 1 Mbps supported | True TXpayload 255 RXpayload 255 |
| 2 Mbps supported | True TXpayload 255 RXpayload 255 |
| Longrange S8 supported | False TXpayload 255 RXpayload 255 |
| Longrange S2 supported | False TXpayload 255 RXpayload 255 |
| Signaling Settings | WS_USB_RS232 HCI 27 115200 None S1 None On |
| Signaling RF Settings | RF1com 0 0 On |
| User Interaction | No |
| Switch Matrix & Pathcompensation enabled | Yes |

| Test Parameter | |
|--|--|
| Technology to test | BT LE 1 Msps |
| Antenna Port used | 1 |
| Temperature | nom |
| Voltage | nom |
| Frequency low to test | True Freq [MHz] 2402 |
| Frequency mid to test | True Freq [MHz] 2440 |
| Frequency high to test | True Freq [MHz] 2480 |
| Auto Control enabled Power Supply Climatic Box | No No |
| Additional Path Loss [dB] | 0.7 |
| Switched Path | EUT - SignalingUnit - SpectrumAnalyzer |

| Test Equipment | |
|---|--|
| Signal analyzer,Rohde&Schwarz,FSV-30,1321.3008K30/103809,3.70 | |
| Signaling unit,Rohde&Schwarz,CMW,1201.0002k75/102550,3.8.13 | |
| Switch matrix,CTCadvanced,RSM-1 NI DAQ,29655273,NI | |

Test at TX 2402 MHz

RESULT: Reference Power cond.

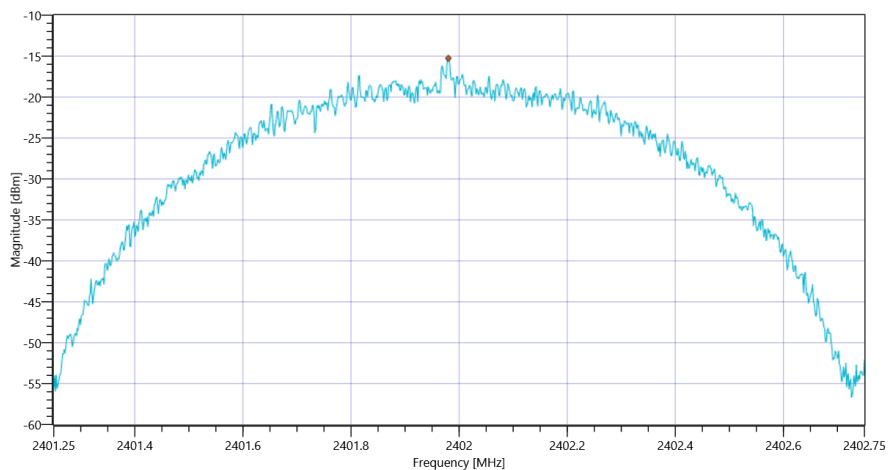
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------------------|-------------|-------------|----------|------|---------|
| Ref. Power 1MHz/1MHz cond. | --- | --- | -0.77 | dBm | INFO |
| Ref. Frequency | --- | --- | 2401.700 | MHz | INFO |

READ SA SETTINGS:

| | |
|--|------------------------|
| RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB] | 4.23 10.79 10 |
| Start [MHz] Stop [MHz] | 2401.250 2402.750 |
| RBW [MHz] VBW [MHz] | 0.003000 0.010000 |
| Detector TraceMode | POS MAXH |
| Sweep: Time [ms] Count Points per Section Type | 1000 20 1001 SWE |

RESULT

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|---------------------------|-------------|-------------|----------|----------|---------|
| Max Peak power Density | --- | 8 | -15.26 | dBm/3KHz | PASS |



FCC Part 15.247 Peak Power Spectral Density DTS ~ BT LE 1 Msp

Test at TX 2440 MHz

RESULT: Reference Power cond.

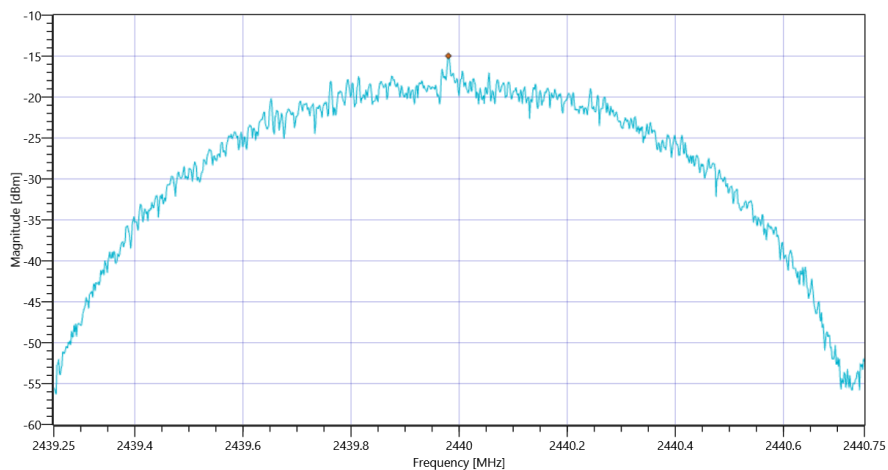
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------------------|-------------|-------------|----------|------|---------|
| Ref. Power 1MHz/1MHz cond. | --- | --- | -0.59 | dBm | INFO |
| Ref. Frequency | --- | --- | 2439.700 | MHz | INFO |

READ SA SETTINGS:

| | |
|--|------------------------|
| RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB] | 4.41 10.8 10 |
| Start [MHz] Stop [MHz] | 2439.250 2440.750 |
| RBW [MHz] VBW [MHz] | 0.003000 0.010000 |
| Detector TraceMode | POS MAXH |
| Sweep: Time [ms] Count Points per Section Type | 1000 20 1001 SWE |

RESULT

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|---------------------------|-------------|-------------|----------|----------|---------|
| Max Peak power Density | --- | 8 | -14.97 | dBm/3KHz | PASS |



FCC Part 15.247 Peak Power Spectral Density DTS ~ BT LE 1 Msp

Test at TX 2480 MHz

RESULT: Reference Power cond.

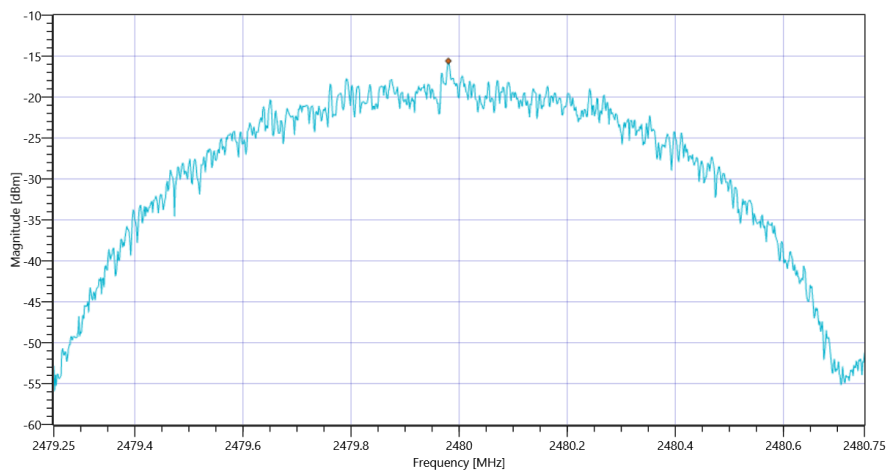
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------------------|-------------|-------------|----------|------|---------|
| Ref. Power 1MHz/1MHz cond. | --- | --- | -1.04 | dBm | INFO |
| Ref. Frequency | --- | --- | 2480.300 | MHz | INFO |

READ SA SETTINGS:

| | |
|--|------------------------|
| RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB] | 3.96 10.85 10 |
| Start [MHz] Stop [MHz] | 2479.250 2480.750 |
| RBW [MHz] VBW [MHz] | 0.003000 0.010000 |
| Detector TraceMode | POS MAXH |
| Sweep: Time [ms] Count Points per Section Type | 1000 20 1001 SWE |

RESULT

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|---------------------------|-------------|-------------|----------|----------|---------|
| Max Peak power Density | --- | 8 | -15.59 | dBm/3KHz | PASS |



FCC Part 15.247 Peak Power Spectral Density DTS ~ BT LE 1 Msp

General verdict

PASS

FCC Part 15.247 Bandwidth 99PCT-20dB ~ BT LE 1 Msp

| Test References | |
|-----------------------------------|---|
| TC Start | 18.10.2021 11:01:04 |
| Ambit Temp [°C] Humidity [rel%] | 23.4 34 |
| System Version | 3.0.2.2 |
| Test Specification | FCC Part 15.247 |
| Test Method | |
| TC Version | 0.0.2 |
| My Description | FCC 15.247 Bandwidth 99PCT-20dB DTS - BT LE 1 Msp |
| Add. Information | |

| EUT Common Settings BT Low Energy | |
|--|--|
| Intermodulation Value N | 3 |
| Image Freq. Low Mid High [MHz] | 0 0 0 |
| Power Class | 2 |
| 1 Mbps supported | True TXpayload 255 RXpayload 255 |
| 2 Mbps supported | True TXpayload 255 RXpayload 255 |
| Longrange S8 supported | False TXpayload 255 RXpayload 255 |
| Longrange S2 supported | False TXpayload 255 RXpayload 255 |
| Signaling Settings | WS_USB_RS232 HCI 27 115200 None S1 None On |
| Signaling RF Settings | RF1com 0 0 On |
| User Interaction | No |
| Switch Matrix & Pathcompensation enabled | Yes |

| Test Parameter | |
|--|--|
| Technology to test | BT LE 1 Msp |
| Antenna Port used | 1 |
| Temperature | nom |
| Voltage | nom |
| Frequency low to test | True Freq [MHz] 2402 |
| Frequency mid to test | True Freq [MHz] 2440 |
| Frequency high to test | True Freq [MHz] 2480 |
| Auto Control enabled Power Supply Climatic Box | No No |
| Additional Path Loss [dB] | 0.7 |
| Switched Path | EUT - SignalingUnit - SpectrumAnalyzer |

| Test Equipment | |
|---|--|
| Signal analyzer,Rohde&Schwarz,FSV-30,1321.3008K30/103809,3.70 | |
| Signaling unit,Rohde&Schwarz,CMW,1201.0002k75/102550,3.8.13 | |
| Switch matrix,CTCadvanced,RSM-1 NI DAQ,29655273,NI | |

Test at TX 2402 MHz

RESULT: Reference Power cond.

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------------------|-------------|-------------|----------|------|---------|
| Ref. Power 1MHz/1MHz cond. | --- | --- | -0.79 | dBm | INFO |
| Ref. Frequency | --- | --- | 2401.700 | MHz | INFO |

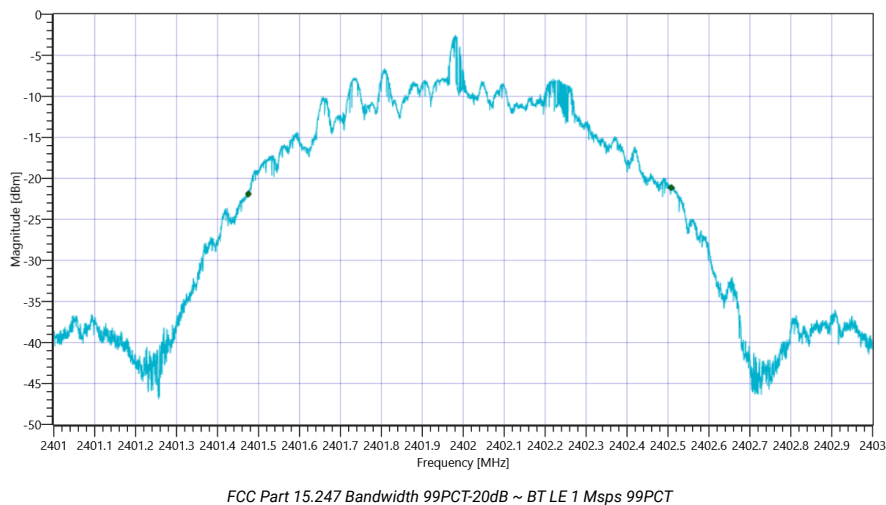
READ SA SETTINGS:

| | |
|--|------------------------|
| RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB] | 4.21 10.79 10 |
| Start [MHz] Stop [MHz] | 2401.000 2403.000 |
| RBW [MHz] VBW [MHz] | 0.020000 0.100000 |
| Detector TraceMode | POS MAXH |
| Sweep: Time [ms] Count Points per Section Type | 50 200 10001 SWE |

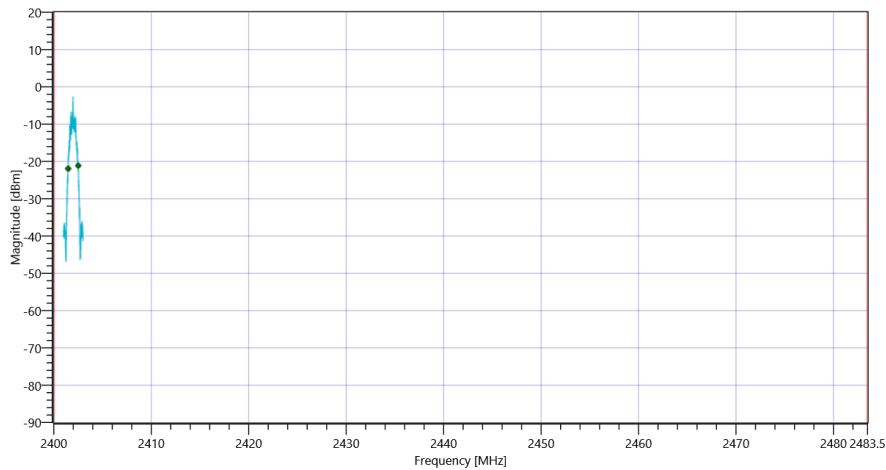
RESULT

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|------------------|-------------|-------------|-----------|------|---------|
| Bandwidth 99% | --- | --- | 1032.897 | kHz | INFO |
| T1 99% | 2400.000000 | --- | 2401.4753 | MHz | PASS |
| T2 99% | --- | 2483.500000 | 2402.5081 | MHz | PASS |

Plot: Bandwidth only



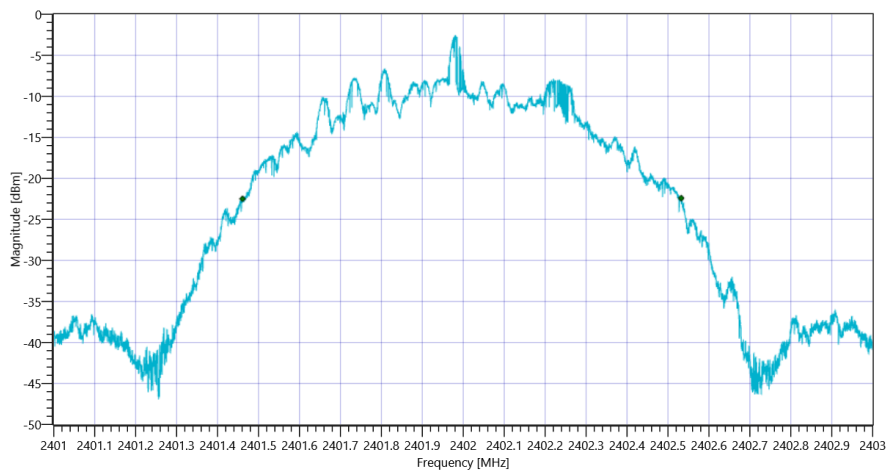
Plot: Bandwidth within Band



FCC Part 15.247 Bandwidth 99PCT-20dB ~ BT LE 1 Msp

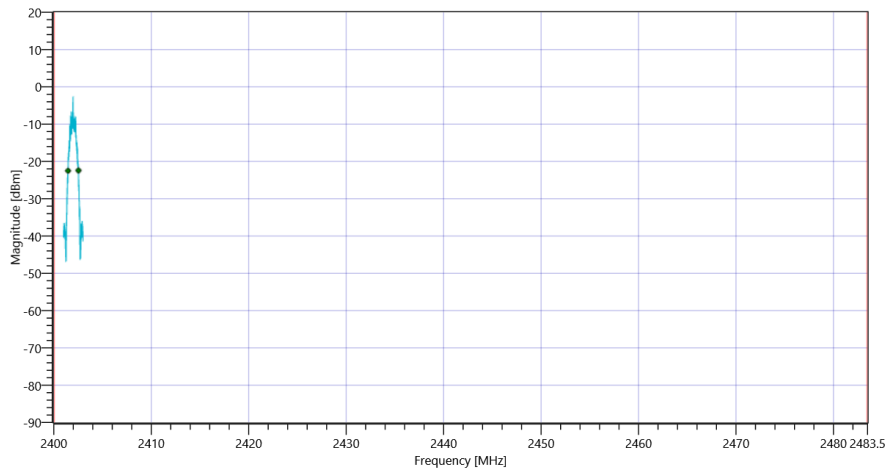
| RESULT | | | | | |
|------------------|-------------|-------------|-----------|------|---------|
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
| Bandwidth 20dB | --- | --- | 1071 | kHz | INFO |
| T1 20dB | 2400.000000 | --- | 2401.4610 | MHz | PASS |
| T2 20dB | --- | 2483.500000 | 2402.5322 | MHz | PASS |

Plot: Bandwidth only



FCC Part 15.247 Bandwidth 99PCT-20dB ~ BT LE 1 Msp 20dB

Plot: Bandwidth within Band



FCC Part 15.247 Bandwidth 99PCT-20dB ~ BT LE 1 Msps

Test at TX 2440 MHz

RESULT: Reference Power cond.

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------------------|-------------|-------------|----------|------|---------|
| Ref. Power 1MHz/1MHz cond. | --- | --- | -0.58 | dBm | INFO |
| Ref. Frequency | --- | --- | 2440.200 | MHz | INFO |

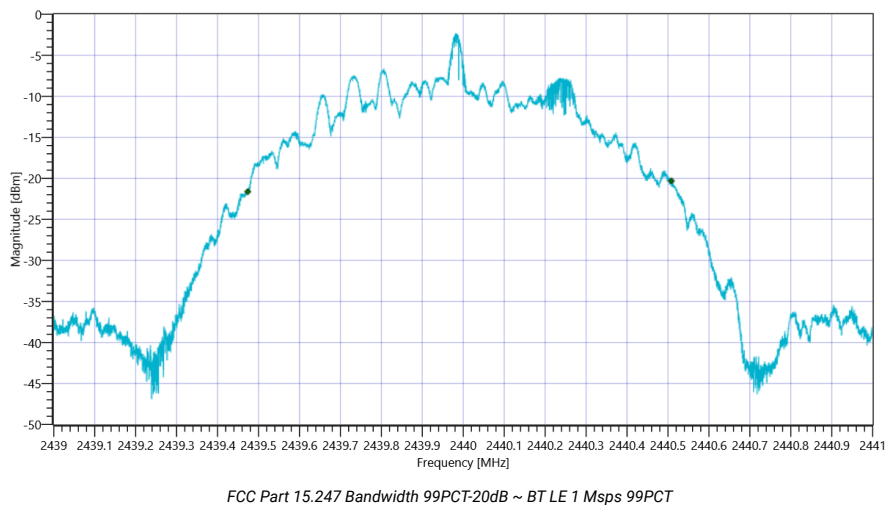
READ SA SETTINGS:

| | |
|--|------------------------|
| RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB] | 4.42 10.8 10 |
| Start [MHz] Stop [MHz] | 2439.000 2441.000 |
| RBW [MHz] VBW [MHz] | 0.020000 0.100000 |
| Detector TraceMode | POS MAXH |
| Sweep: Time [ms] Count Points per Section Type | 50 200 10001 SWE |

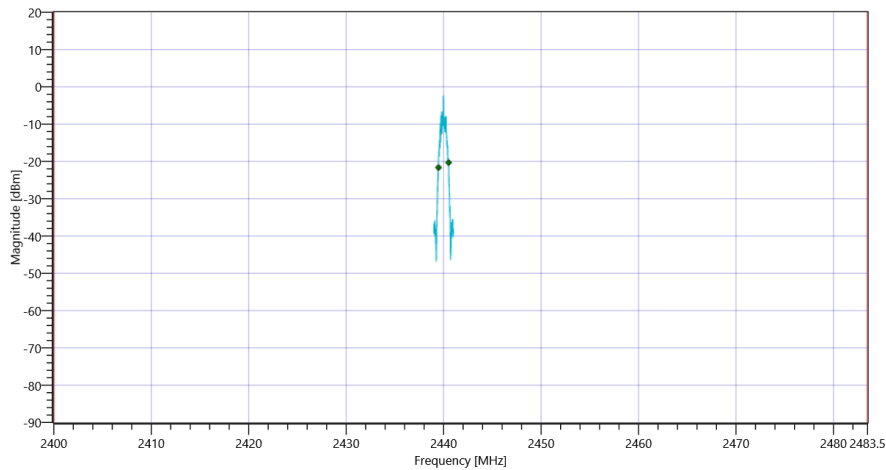
RESULT

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|------------------|-------------|-------------|-----------|------|---------|
| Bandwidth 99% | --- | --- | 1034.697 | kHz | INFO |
| T1 99% | 2400.000000 | --- | 2439.4737 | MHz | PASS |
| T2 99% | --- | 2483.500000 | 2440.5083 | MHz | PASS |

Plot: Bandwidth only



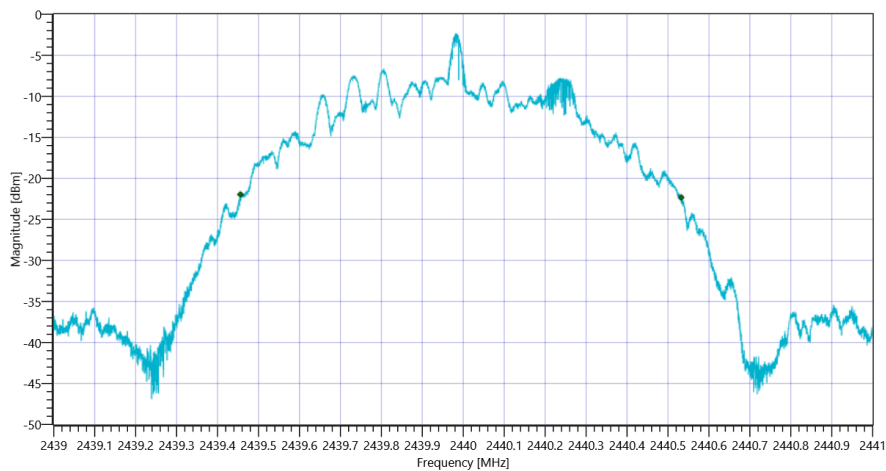
Plot: Bandwidth within Band



FCC Part 15.247 Bandwidth 99PCT-20dB ~ BT LE 1 MspS

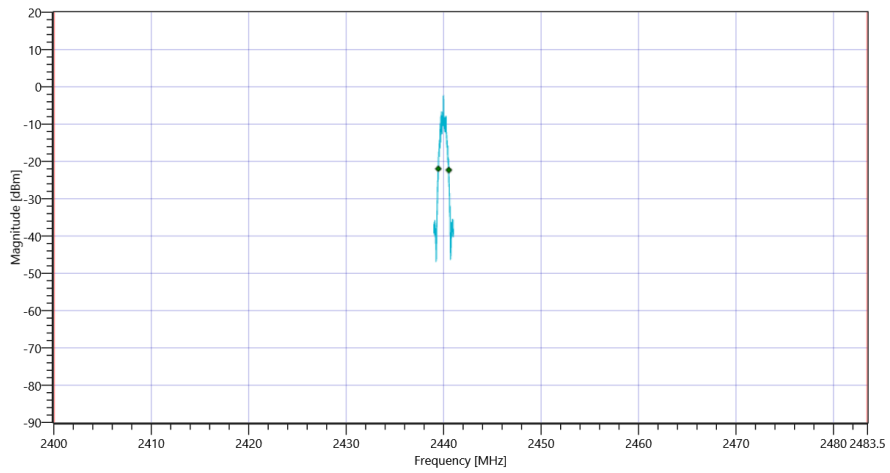
| RESULT | | | | | | |
|------------------|-------------|-------------|-----------|------|---------|--|
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict | |
| Bandwidth 20dB | --- | --- | 1076 | kHz | INFO | |
| T1 20dB | 2400.000000 | --- | 2439.4558 | MHz | PASS | |
| T2 20dB | --- | 2483.500000 | 2440.5322 | MHz | PASS | |

Plot: Bandwidth only



FCC Part 15.247 Bandwidth 99PCT-20dB ~ BT LE 1 MspS 20dB

Plot: Bandwidth within Band



FCC Part 15.247 Bandwidth 99PCT-20dB ~ BT LE 1 Msp

Test at TX 2480 MHz

RESULT: Reference Power cond.

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------------------|-------------|-------------|----------|------|---------|
| Ref. Power 1MHz/1MHz cond. | --- | --- | -0.99 | dBm | INFO |
| Ref. Frequency | --- | --- | 2480.200 | MHz | INFO |

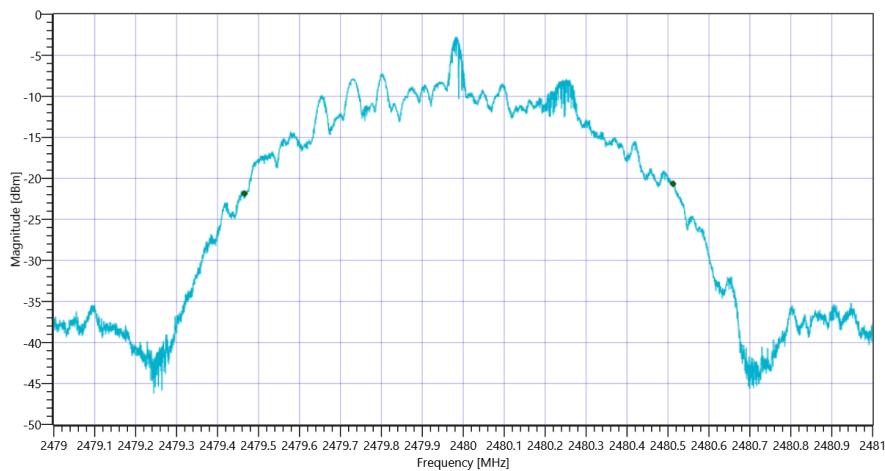
READ SA SETTINGS:

| | |
|--|------------------------|
| RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB] | 4.01 10.85 10 |
| Start [MHz] Stop [MHz] | 2479.000 2481.000 |
| RBW [MHz] VBW [MHz] | 0.020000 0.100000 |
| Detector TraceMode | POS MAXH |
| Sweep: Time [ms] Count Points per Section Type | 50 200 10001 SWE |

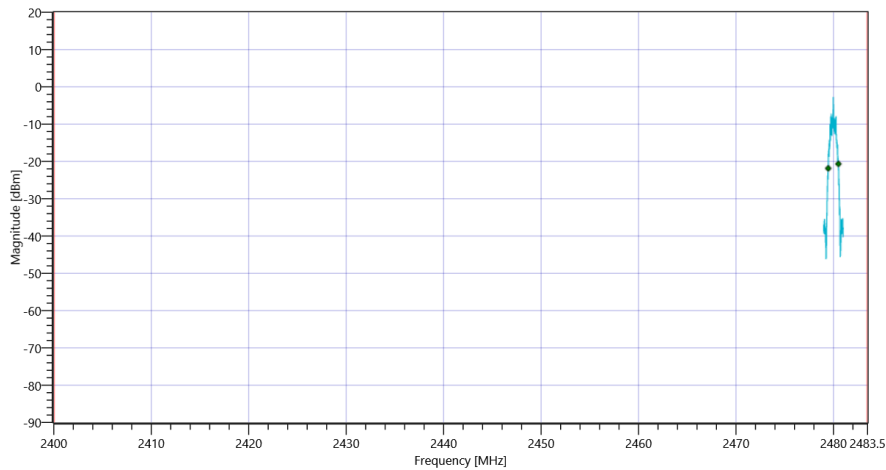
RESULT

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|------------------|-------------|-------------|-----------|------|---------|
| Bandwidth 99% | --- | --- | 1046.895 | kHz | INFO |
| T1 99% | 2400.000000 | --- | 2479.4655 | MHz | PASS |
| T2 99% | --- | 2483.500000 | 2480.5123 | MHz | PASS |

Plot: Bandwidth only



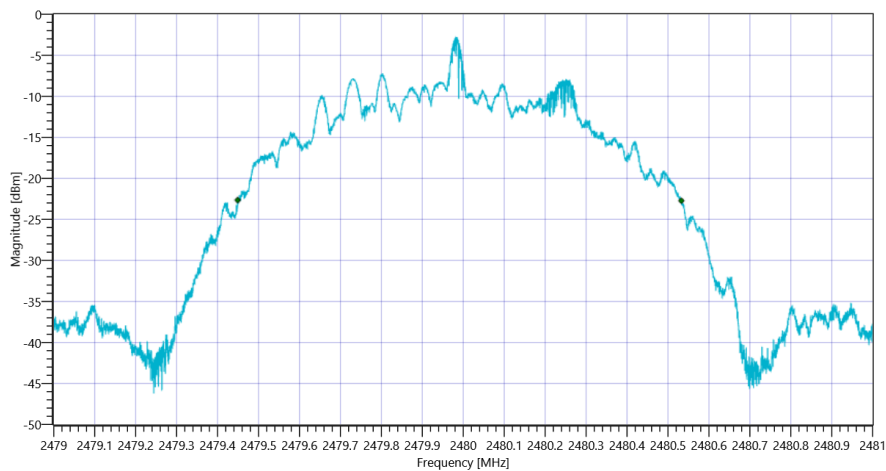
Plot: Bandwidth within Band



FCC Part 15.247 Bandwidth 99PCT-20dB ~ BT LE 1 Msp

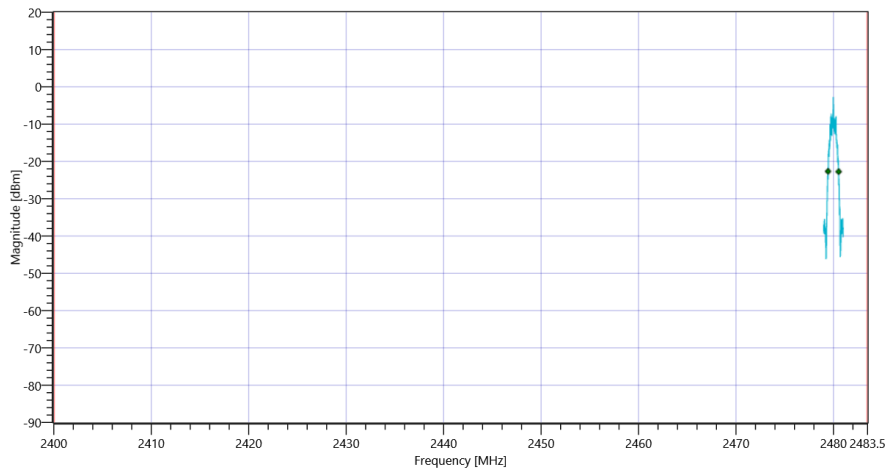
| RESULT | | | | | | |
|------------------|-------------|-------------|-----------|------|---------|--|
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict | |
| Bandwidth 20dB | --- | --- | 1084 | kHz | INFO | |
| T1 20dB | 2400.000000 | --- | 2479.4490 | MHz | PASS | |
| T2 20dB | --- | 2483.500000 | 2480.5326 | MHz | PASS | |

Plot: Bandwidth only



FCC Part 15.247 Bandwidth 99PCT-20dB ~ BT LE 1 Msp 20dB

Plot: Bandwidth within Band



General verdict

PASS

FCC Part 15.247 TX Spurious Conducted ~ BT LE 1 Msps

| Test References | |
|-----------------------------------|--|
| TC Start | 18.10.2021 11:03:40 |
| Ambit Temp [°C] Humidity [rel%] | 23.4 34 |
| System Version | 3.0.2.2 |
| Test Specification | FCC Part 15.247 |
| Test Method | IF DTS then 8.5 DTS emissions in non-restricted frequency bands: Subclause 11.11 of ANSI C63.10 is applicable. |
| TC Version | 0.0.1 |
| My Description | FCC 15.247 TX Emissions Conducted DTS - BT LE 1 Msps |
| Add. Information | |

| EUT Common Settings BT Low Energy | |
|--|--|
| Intermodulation Value N | 3 |
| Image Freq. Low Mid High [MHz] | 0 0 0 |
| Power Class | 2 |
| 1 Mbps supported | True TXpayload 255 RXpayload 255 |
| 2 Mbps supported | True TXpayload 255 RXpayload 255 |
| Longrange S8 supported | False TXpayload 255 RXpayload 255 |
| Longrange S2 supported | False TXpayload 255 RXpayload 255 |
| Signaling Settings | WS_USB_RS232 HCI 27 115200 None S1 None On |
| Signaling RF Settings | RF1com 0 0 On |
| User Interaction | No |
| Switch Matrix & Pathcompensation enabled | Yes |

| Test Parameter | |
|--|--|
| Technology to test | BT LE 1 Msps |
| Antenna Port used | 1 |
| Temperature | nom |
| Voltage | nom |
| Frequency low to test | True Freq [MHz] 2402 |
| Frequency mid to test | True Freq [MHz] 2440 |
| Frequency high to test | True Freq [MHz] 2480 |
| Auto Control enabled Power Supply Climatic Box | No No |
| Additional Path Loss [dB] | 0.7 |
| Switched Path | EUT - SignalingUnit - SpectrumAnalyzer |

| Test Equipment | |
|---|--|
| Signal analyzer,Rohde&Schwarz,FSV-30,1321.3008K30/103809,3.70 | |
| Signaling unit,Rohde&Schwarz,CMW,1201.0002k75/102550,3.8.13 | |
| Switch matrix,CTCadvanced,RSM-1 NI DAQ,29655273,NI | |

Test at TX 2402 MHz

RESULT: Reference Power cond.

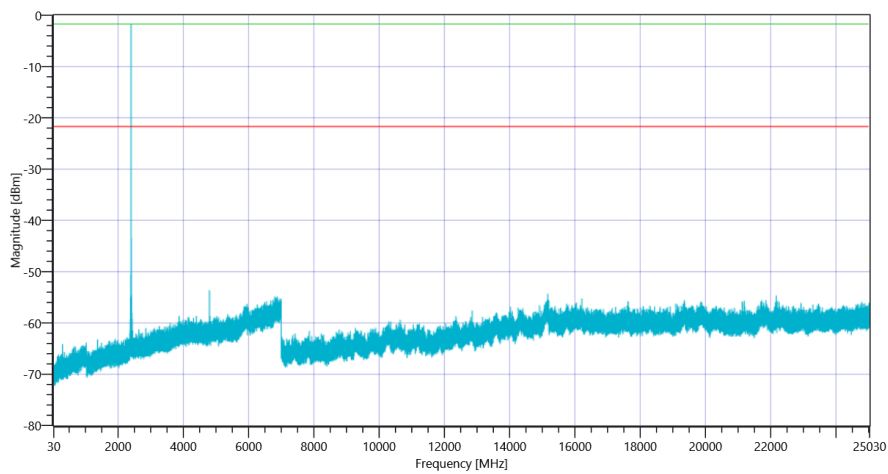
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------------------|-------------|-------------|----------|------|---------|
| Ref. Power 1MHz/1MHz cond. | --- | --- | -0.77 | dBm | INFO |
| Ref. Frequency | --- | --- | 2402.200 | MHz | INFO |

READ SA SETTINGS:

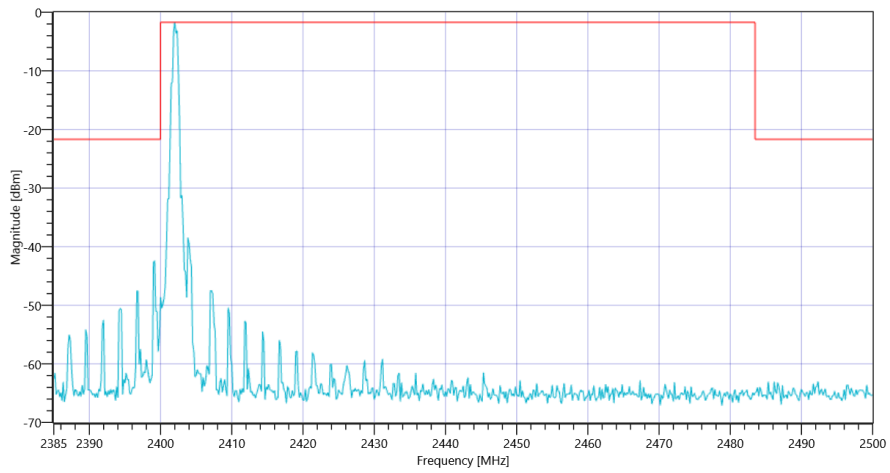
| | |
|--|-----------------------|
| RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB] | -0.77 0 15 |
| Start [MHz] Stop [MHz] | 24530.000 25030.000 |
| RBW [MHz] VBW [MHz] | 0.100000 0.300000 |
| Detector TraceMode | POS MAXH |
| Sweep: Time [ms] Count Points per Section Type | 500 8 3001 SWE |

RESULT

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|--|-------------|-------------|----------|------|---------|
| Reference @ 2402.00 MHz | --- | --- | -1.71 | dBm | INFO |
| No peaks detected | --- | --- | | | PASS |
| Lowest margin to limit 2399.167 MHz | 0 | --- | 20.68 | dB | INFO |



FCC Part 15.247 TX Spurious Conducted ~ BT LE 1 Msps 2402



FCC Part 15.247 TX Spurious Conducted ~ BT LE 1 Msp

Test at TX 2440 MHz

RESULT: Reference Power cond.

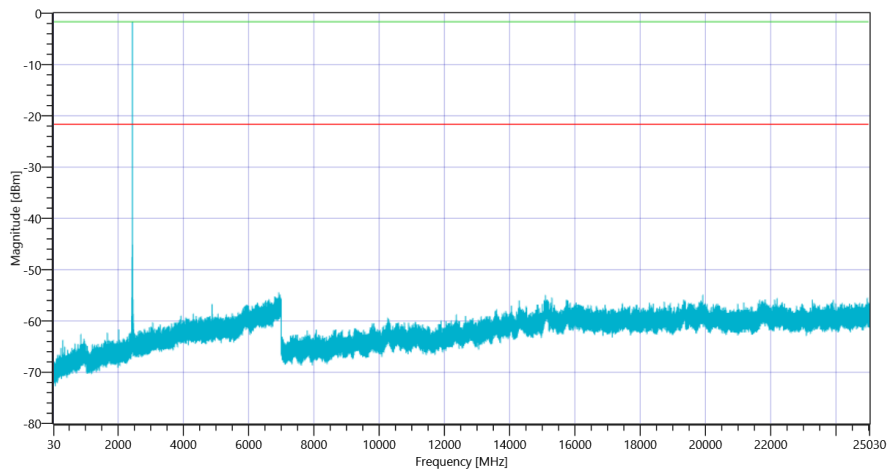
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------------------|-------------|-------------|----------|------|---------|
| Ref. Power 1MHz/1MHz cond. | --- | --- | -0.55 | dBm | INFO |
| Ref. Frequency | --- | --- | 2439.700 | MHz | INFO |

READ SA SETTINGS:

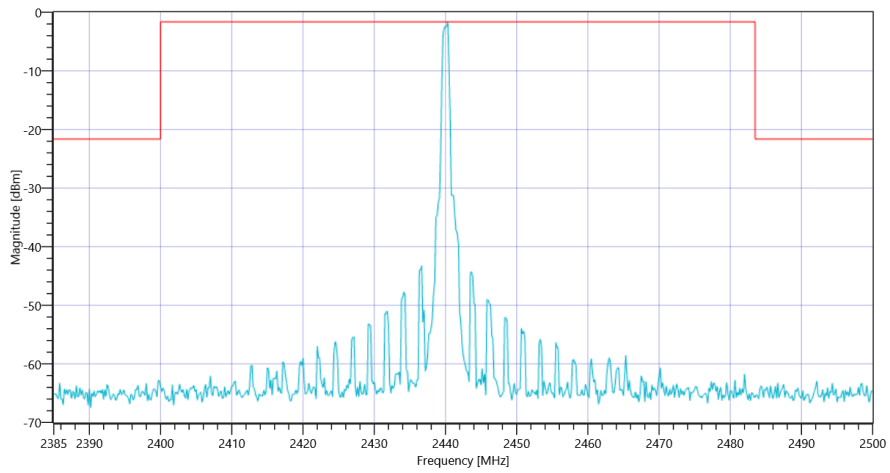
| | |
|--|-----------------------|
| RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB] | -0.55 0 15 |
| Start [MHz] Stop [MHz] | 24530.000 25030.000 |
| RBW [MHz] VBW [MHz] | 0.100000 0.300000 |
| Detector TraceMode | POS MAXH |
| Sweep: Time [ms] Count Points per Section Type | 500 8 3001 SWE |

RESULT

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|--------------------------------------|-------------|-------------|----------|------|---------|
| Reference @ 2440.33 MHz | --- | --- | -1.65 | dBm | INFO |
| No peaks detected | --- | --- | | | PASS |
| Lowest margin to limit 6929.5 MHz | 0 | --- | 32.83 | dB | INFO |



FCC Part 15.247 TX Spurious Conducted ~ BT LE 1 Msps 2440



FCC Part 15.247 TX Spurious Conducted ~ BT LE 1 Msps 2440

Test at TX 2480 MHz

RESULT: Reference Power cond.

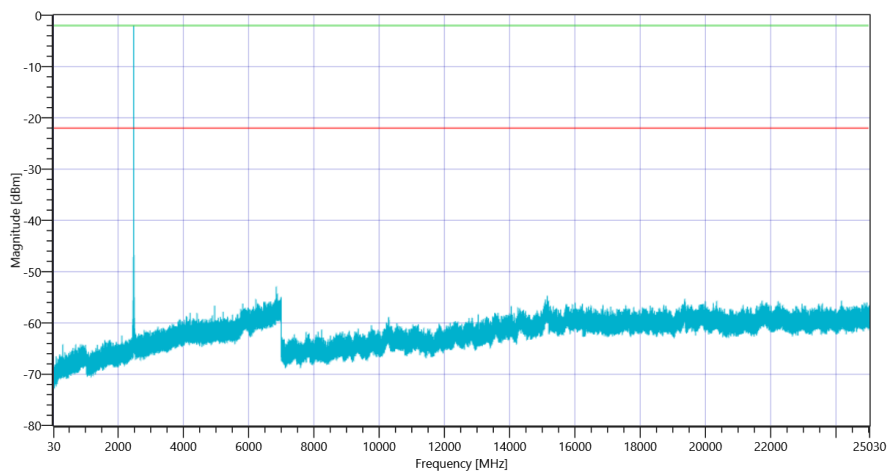
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------------------|-------------|-------------|----------|------|---------|
| Ref. Power 1MHz/1MHz cond. | --- | --- | -0.95 | dBm | INFO |
| Ref. Frequency | --- | --- | 2480.200 | MHz | INFO |

READ SA SETTINGS:

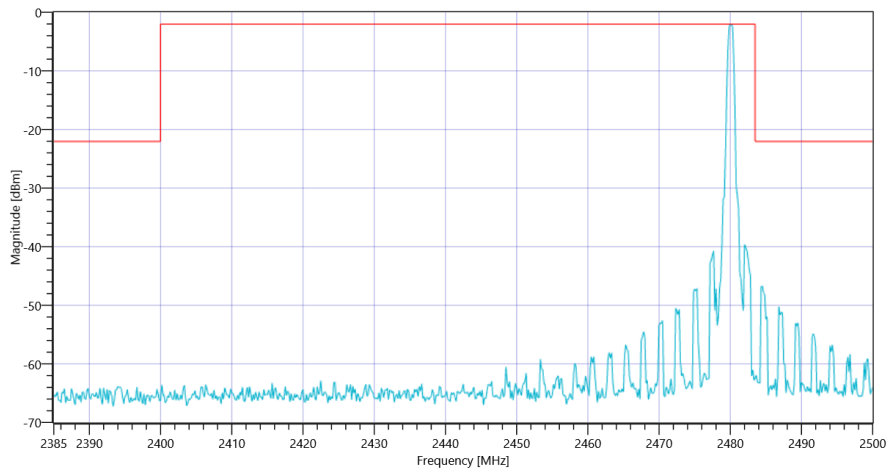
| | |
|--|-----------------------|
| RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB] | -0.95 0 15 |
| Start [MHz] Stop [MHz] | 24530.000 25030.000 |
| RBW [MHz] VBW [MHz] | 0.100000 0.300000 |
| Detector TraceMode | POS MAXH |
| Sweep: Time [ms] Count Points per Section Type | 500 8 3001 SWE |

RESULT

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|--------------------------------------|-------------|-------------|----------|------|---------|
| Reference @ 2480.00 MHz | --- | --- | -2.03 | dBm | INFO |
| No peaks detected | --- | --- | | | PASS |
| Lowest margin to limit 2484.5 MHz | 0 | --- | 24.7 | dB | INFO |



FCC Part 15.247 TX Spurious Conducted ~ BT LE 1 Msps 2480



FCC Part 15.247 TX Spurious Conducted ~ BT LE 1 MspS 2480

General verdict

PASS

- END OF DOCUMENT -