# Measurement Results

1-0596/20-02-10_log1_conducted

Test logging

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2020.12.03 07:58:52 +01'00'

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# Table of Content

# IUT Summary

| IUT DEFINITION & Common settings | |
|---|---|
| Manufacturer | m&h Inprocess Messtechnik GmbH |
| Type | RC-R-100 |
| Serial No. \| Setup No. | 10022 \| 1.0 |
| SW Version \| HW Version | 1.0 \| 0 |
| Comment 1 \| 2 | \| |
| Tlow \| Tmid \| Thigh [°C] | 10 \| 22 \| 50 |
| Vlow \| Vmid \| Vhigh [V] @Imax [A] | -/- \| 24.0 \| -/- @1 |
| Auto Control enabled Power Supply \| Climatic Box | No \| No |
| Additional Path Loss [dB] | 0 |

| IUT Common Settings 2G4 | |
|---|---|
| Hopping supported | No |
| Burst length [ms] | 10 |
| Nominal Bandwidth [MHz] | 2.5 |
| User Interaction | No |

# 1. FCC Part 15.247 Maximum Peak Conducted Output Power FHSS ~ Generic 2G4

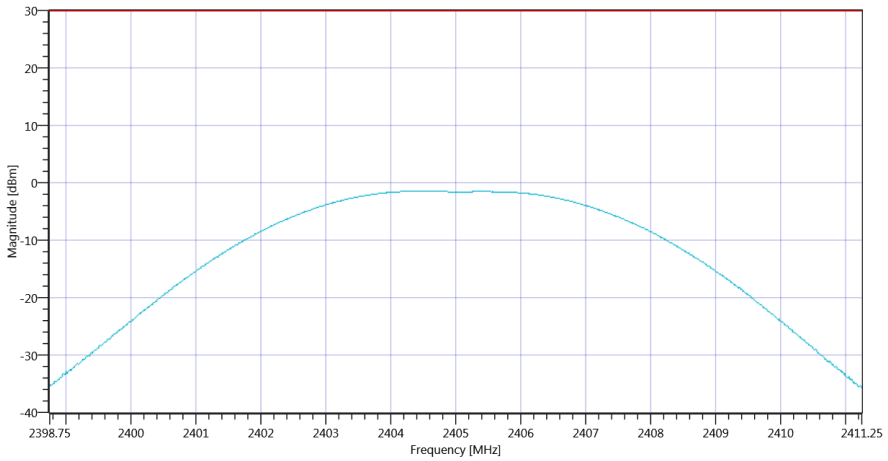
| Test References | |
|---|---|
| TC Start | 16.11.2020 08:40:45 |
| Ambit Temp [°C] \| Humidity [rel%] | 22.2 \| 44 |
| System Version | 1.0.0.55 |
| Test Specification | FCC Part 15.247 |
| Test Method | |
| Class / TC Version | TC_VM_FCC15247_Maximum_Peak_Conducted_Output_Power_FHSS_V01 Version: 0.0.1 |
| My Description | FCC 15.247 Maximum Peak Output Power Conducted FHSS - Generic 2G4 |
| Add. Information | |

| Test Parameter | |
|---|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | True \| Freq [MHz] 2405 |
| Frequency mid to test | False \| Freq [MHz] 2440 |
| Frequency high to test | False \| Freq [MHz] 2480 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | \| SA: Rohde&Schwarz,FSV-40,1321.3008K40/101353,3.60 |

## Test at TX 2405 MHz

| READ SA SETTINGS: | |
|---|---|
| RefLevel [dBm] \| RefLevelOffset [dB] \| InpAtt [dB] | 8.50 \| 2.09 \| 25 |
| Start [MHz] \| Stop [MHz] | 2398.750 \| 2411.250 |
| RBW [MHz] \| VBW [MHz] | 3.000000 \| 10.000000 |
| 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 | --- | 30.00 | -1.49 | dBm | PASS |
| Peak Power | --- | 1000 | 0.709578 | mW | PASS |
| Frequency at Peak | --- | --- | 2404.713 | MHz | Information |




Plot_FCC Part 15.247 Maximum Peak Conducted Output Power FHSS ~ Generic 2G4_16112020_084112.png

| TEST FINISHED | | |
|---|---|---|
| General Verdict | 16.11.2020 08:41:12 / RT: 27 s | PASS |

# 2. FCC Part 15.247 Maximum Peak Conducted Output Power FHSS ~ Generic 2G4

| Test References | |
|---|---|
| TC Start | 16.11.2020 08:50:00 |
| Ambit Temp [°C] \| Humidity [rel%] | 22.6 \| 44 |
| System Version | 1.0.0.55 |
| Test Specification | FCC Part 15.247 |
| Test Method | |
| Class / TC Version | TC_VM_FCC15247_Maximum_Peak_Conducted_Output_Power_FHSS_V01 Version: 0.0.1 |
| My Description | FCC 15.247 Maximum Peak Output Power Conducted FHSS - Generic 2G4 |
| Add. Information | |

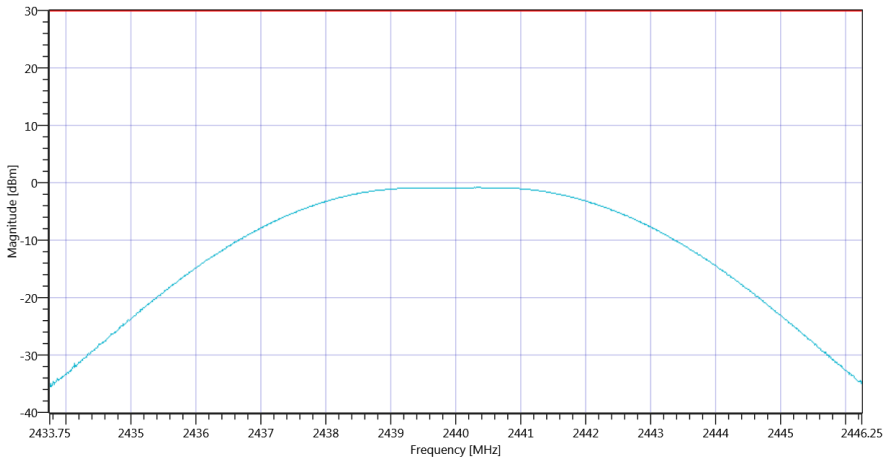
| Test Parameter | |
|---|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | False \| Freq [MHz] 2405 |
| Frequency mid to test | True \| Freq [MHz] 2440 |
| Frequency high to test | False \| Freq [MHz] 2480 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | \| SA: Rohde&Schwarz,FSV-40,1321.3008K40/101353,3.60 |

## Test at TX 2440 MHz

| READ SA SETTINGS: | |
|---|---|
| RefLevel [dBm] \| RefLevelOffset [dB] \| InpAtt [dB] | 8.98 \| 2.1 \| 25 |
| Start [MHz] \| Stop [MHz] | 2433.750 \| 2446.250 |
| RBW [MHz] \| VBW [MHz] | 3.000000 \| 10.000000 |
| 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 | --- | 30.00 | -0.85 | dBm | PASS |
| Peak Power | --- | 1000 | 0.822243 | mW | PASS |
| Frequency at Peak | --- | --- | 2440.287 | MHz | Information |




Plot_FCC Part 15.247 Maximum Peak Conducted Output Power FHSS ~ Generic 2G4_16112020_085027.png

| TEST FINISHED | | |
|---|---|---|
| General Verdict | 16.11.2020 08:50:27 / RT: 27 s | PASS |

# 3. FCC Part 15.247 Maximum Peak Conducted Output Power FHSS ~ Generic 2G4

| Test References | |
|---|---|
| TC Start | 16.11.2020 08:58:46 |
| Ambit Temp [°C] \| Humidity [rel%] | 22.7 \| 44 |
| System Version | 1.0.0.55 |
| Test Specification | FCC Part 15.247 |
| Test Method | |
| Class / TC Version | TC_VM_FCC15247_Maximum_Peak_Conducted_Output_Power_FHSS_V01 Version: 0.0.1 |
| My Description | FCC 15.247 Maximum Peak Output Power Conducted FHSS - Generic 2G4 |
| Add. Information | |

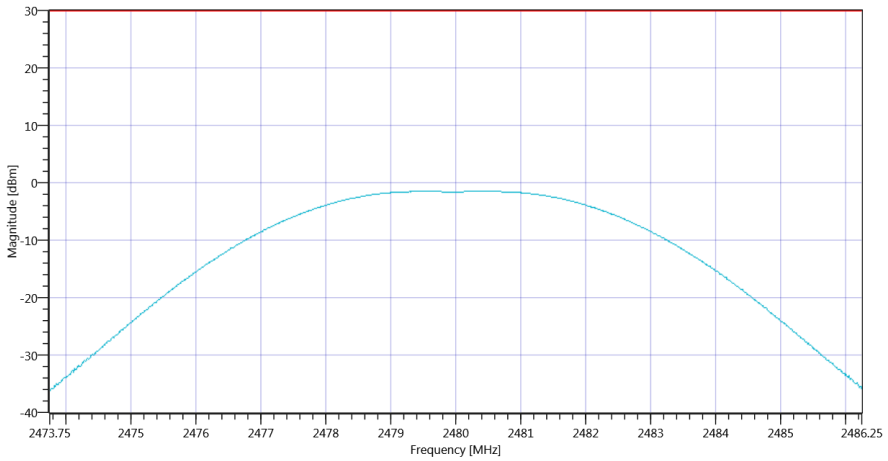
| Test Parameter | |
|---|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | False \| Freq [MHz] 2405 |
| Frequency mid to test | False \| Freq [MHz] 2440 |
| Frequency high to test | True \| Freq [MHz] 2480 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | \| SA: Rohde&Schwarz,FSV-40,1321.3008K40/101353,3.60 |

## Test at TX 2480 MHz

| READ SA SETTINGS: | |
|---|---|
| RefLevel [dBm] \| RefLevelOffset [dB] \| InpAtt [dB] | 8.27 \| 2.1 \| 25 |
| Start [MHz] \| Stop [MHz] | 2473.750 \| 2486.250 |
| RBW [MHz] \| VBW [MHz] | 3.000000 \| 10.000000 |
| 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 | --- | 30.00 | -1.5 | dBm | PASS |
| Peak Power | --- | 1000 | 0.707946 | mW | PASS |
| Frequency at Peak | --- | --- | 2480.4 | MHz | Information |




Plot_FCC Part 15.247 Maximum Peak Conducted Output Power FHSS ~ Generic 2G4_16112020_085912.png

| TEST FINISHED | | |
|---|---|---|
| General Verdict | 16.11.2020 08:59:12 / RT: 26 s | PASS |

# 4. FCC Part 15.247 Peak Power Spectral Density DTS ~ Generic 2G4

| Test References | |
|---|---|
| TC Start | 16.11.2020 08:41:48 |
| Ambit Temp [°C] \| Humidity [rel%] | 22.2 \| 44 |
| System Version | 1.0.0.55 |
| 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 |
| Class / TC Version | TC_VM_FCC15247_Peak_Power_Spectral_Density_DTS_V01 Version: 0.0.1 |
| My Description | FCC 15.247 Peak Power Spectral Density DTS - Generic 2G4 |
| Add. Information | |

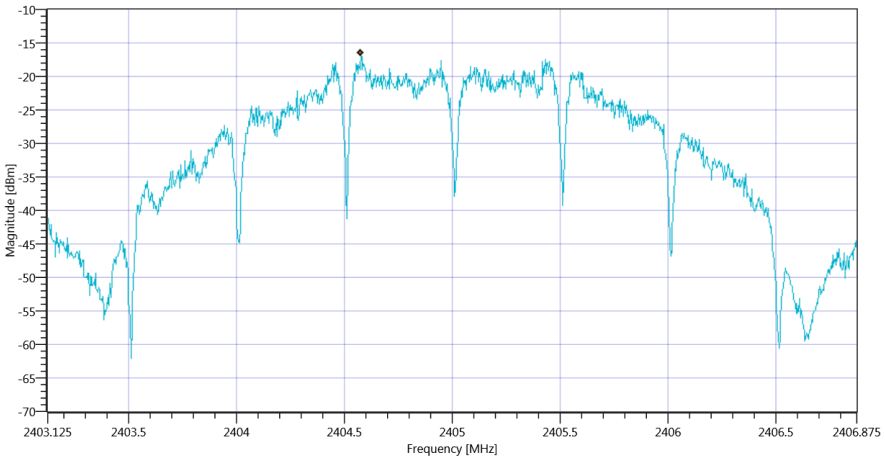
| Test Parameter | |
|---|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | True \| Freq [MHz] 2405 |
| Frequency mid to test | False \| Freq [MHz] 2440 |
| Frequency high to test | False \| Freq [MHz] 2480 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | \| SA: Rohde&Schwarz,FSV-40,1321.3008K40/101353,3.60 |

## Test at TX 2405 MHz

| READ SA SETTINGS: | |
|---|---|
| RefLevel [dBm] \| RefLevelOffset [dB] \| InpAtt [dB] | 3.43 \| 2.09 \| 20 |
| Start [MHz] \| Stop [MHz] | 2403.125 \| 2406.875 |
| 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 | -16.55 | dBm/3KHz | PASS |




Plot_FCC Part 15.247 Peak Power Spectral Density DTS ~ Generic 2G4_16112020_084225.png

| TEST FINISHED | | |
|---|---|---|
| General Verdict | 16.11.2020 08:42:26 / RT: 37 s | PASS |

# 5. FCC Part 15.247 Peak Power Spectral Density DTS ~ Generic 2G4

| Test References | |
|---|---|
| TC Start | 16.11.2020 08:51:03 |
| Ambit Temp [°C] \| Humidity [rel%] | 22.5 \| 44 |
| System Version | 1.0.0.55 |
| 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 |
| Class / TC Version | TC_VM_FCC15247_Peak_Power_Spectral_Density_DTS_V01 Version: 0.0.1 |
| My Description | FCC 15.247 Peak Power Spectral Density DTS - Generic 2G4 |
| Add. Information | |

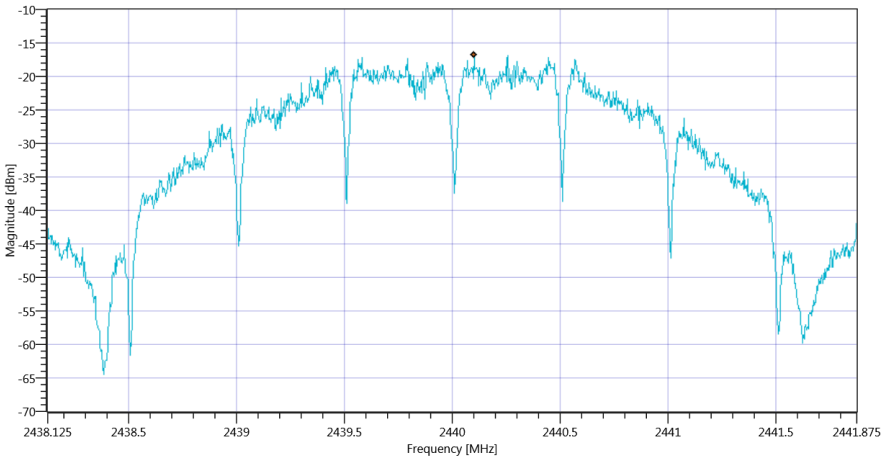
| Test Parameter | |
|---|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | False \| Freq [MHz] 2405 |
| Frequency mid to test | True \| Freq [MHz] 2440 |
| Frequency high to test | False \| Freq [MHz] 2480 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | \| SA: Rohde&Schwarz,FSV-40,1321.3008K40/101353,3.60 |

## Test at TX 2440 MHz

| READ SA SETTINGS: | |
|---|---|
| RefLevel [dBm] \| RefLevelOffset [dB] \| InpAtt [dB] | 4.00 \| 2.1 \| 20 |
| Start [MHz] \| Stop [MHz] | 2438.125 \| 2441.875 |
| 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 | -16.76 | dBm/3KHz | PASS |




Plot_FCC Part 15.247 Peak Power Spectral Density DTS ~ Generic 2G4_16112020_085139.png

| TEST FINISHED | | |
|---|---|---|
| General Verdict | 16.11.2020 08:51:40 / RT: 36 s | PASS |

# 6. FCC Part 15.247 Peak Power Spectral Density DTS ~ Generic 2G4

| Test References | |
|---|---|
| TC Start | 16.11.2020 08:59:48 |
| Ambit Temp [°C] \| Humidity [rel%] | 22.7 \| 43 |
| System Version | 1.0.0.55 |
| 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 |
| Class / TC Version | TC_VM_FCC15247_Peak_Power_Spectral_Density_DTS_V01 Version: 0.0.1 |
| My Description | FCC 15.247 Peak Power Spectral Density DTS - Generic 2G4 |
| Add. Information | |

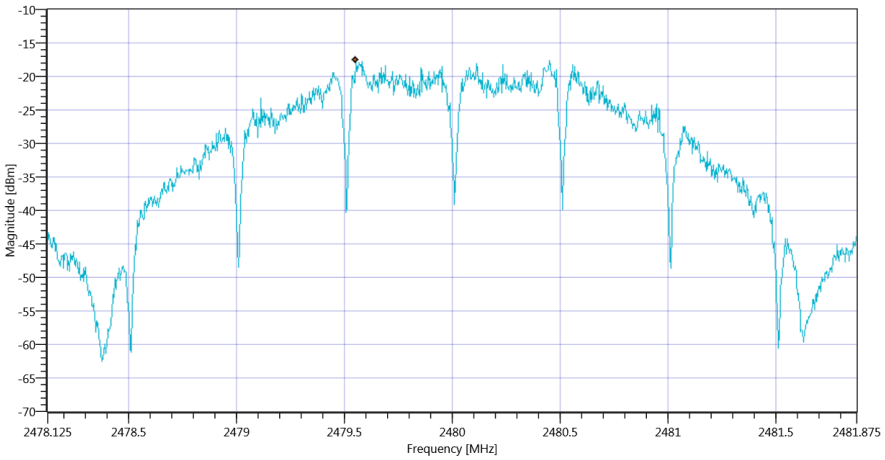
| Test Parameter | |
|---|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | False \| Freq [MHz] 2405 |
| Frequency mid to test | False \| Freq [MHz] 2440 |
| Frequency high to test | True \| Freq [MHz] 2480 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | \| SA: Rohde&Schwarz,FSV-40,1321.3008K40/101353,3.60 |

## Test at TX 2480 MHz

| READ SA SETTINGS: | |
|---|---|
| RefLevel [dBm] \| RefLevelOffset [dB] \| InpAtt [dB] | 3.25 \| 2.1 \| 20 |
| Start [MHz] \| Stop [MHz] | 2478.125 \| 2481.875 |
| 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 | -17.59 | dBm/3KHz | PASS |




Plot_FCC Part 15.247 Peak Power Spectral Density DTS ~ Generic 2G4_16112020_090024.png

| TEST FINISHED | | |
|---|---|---|
| General Verdict | 16.11.2020 09:00:24 / RT: 36 s | PASS |

# 7. FCC Part 15.247 Bandwidth 6dB DTS ~ Generic 2G4

| Test References | |
|---|---|
| TC Start | 16.11.2020 08:41:16 |
| Ambit Temp [°C] \| Humidity [rel%] | 22.2 \| 44 |
| System Version | 1.0.0.55 |
| Test Specification | FCC Part 15.247 |
| Test Method | 99 |
| Class / TC Version | TC_VM_FCC15247_Bandwidth_6dB_DTS_V01 Version: 0.0.1 |
| My Description | FCC 15.247 Bandwidth 6DB DTS - Generic 2G4 |
| Add. Information | |

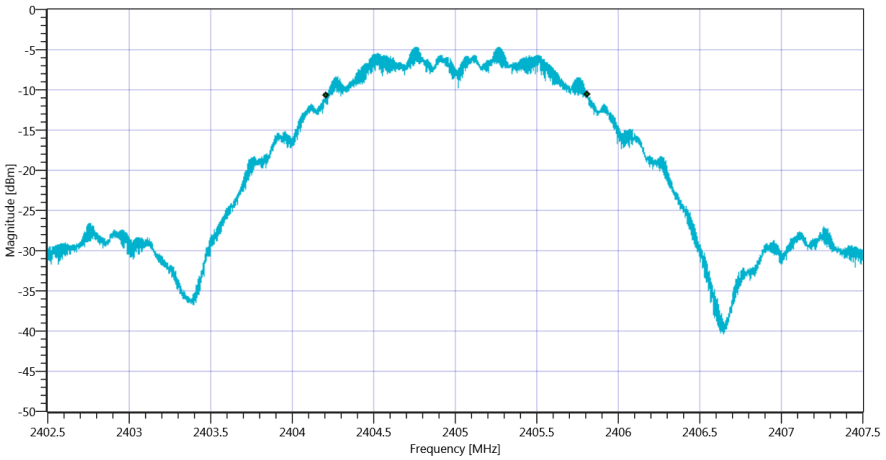
| Test Parameter | |
|---|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | True \| Freq [MHz] 2405 |
| Frequency mid to test | False \| Freq [MHz] 2440 |
| Frequency high to test | False \| Freq [MHz] 2480 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | \| SA: Rohde&Schwarz,FSV-40,1321.3008K40/101353,3.60 |

## Test at TX 2405 MHz

| READ SA SETTINGS: | |
|---|---|
| RefLevel [dBm] \| RefLevelOffset [dB] \| InpAtt [dB] | 3.52 \| 2.09 \| 20 |
| Start [MHz] \| Stop [MHz] | 2402.500 \| 2407.500 |
| 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 | --- | 1599 | kHz | PASS |




Plot_FCC Part 15.247 Bandwidth 6dB DTS ~ Generic 2G4_16112020_084144.png

| TEST FINISHED | | |
|---|---|---|
| General Verdict | 16.11.2020 08:41:44 / RT: 27 s | PASS |

# 8. FCC Part 15.247 Bandwidth 6dB DTS ~ Generic 2G4

| Test References | |
|---|---|
| TC Start | 16.11.2020 08:50:31 |
| Ambit Temp [°C] \| Humidity [rel%] | 22.5 \| 44 |
| System Version | 1.0.0.55 |
| Test Specification | FCC Part 15.247 |
| Test Method | 99 |
| Class / TC Version | TC_VM_FCC15247_Bandwidth_6dB_DTS_V01 Version: 0.0.1 |
| My Description | FCC 15.247 Bandwidth 6DB DTS - Generic 2G4 |
| Add. Information | |

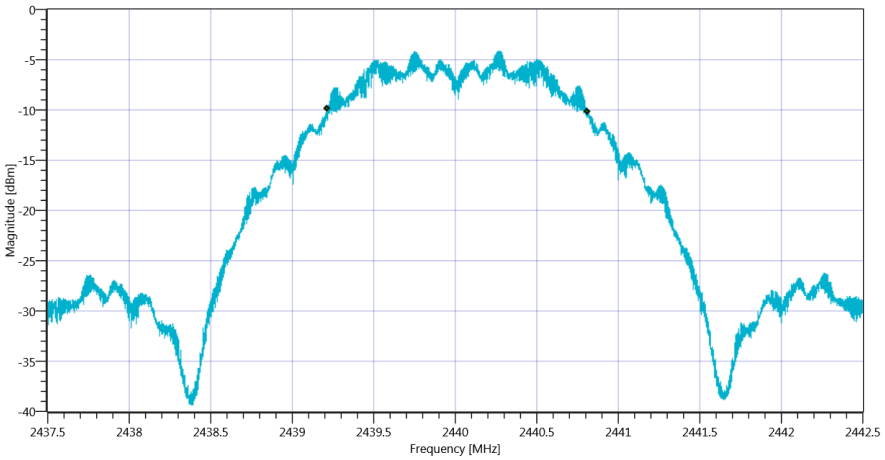
| Test Parameter | |
|---|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | False \| Freq [MHz] 2405 |
| Frequency mid to test | True \| Freq [MHz] 2440 |
| Frequency high to test | False \| Freq [MHz] 2480 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | \| SA: Rohde&Schwarz,FSV-40,1321.3008K40/101353,3.60 |

## Test at TX 2440 MHz

| READ SA SETTINGS: | |
|---|---|
| RefLevel [dBm] \| RefLevelOffset [dB] \| InpAtt [dB] | 3.99 \| 2.1 \| 20 |
| Start [MHz] \| Stop [MHz] | 2437.500 \| 2442.500 |
| 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 | --- | 1596 | kHz | PASS |




Plot_FCC Part 15.247 Bandwidth 6dB DTS ~ Generic 2G4_16112020_085058.png

| TEST FINISHED | | |
|---|---|---|
| General Verdict | 16.11.2020 08:50:59 / RT: 27 s | PASS |

# 9. FCC Part 15.247 Bandwidth 6dB DTS ~ Generic 2G4

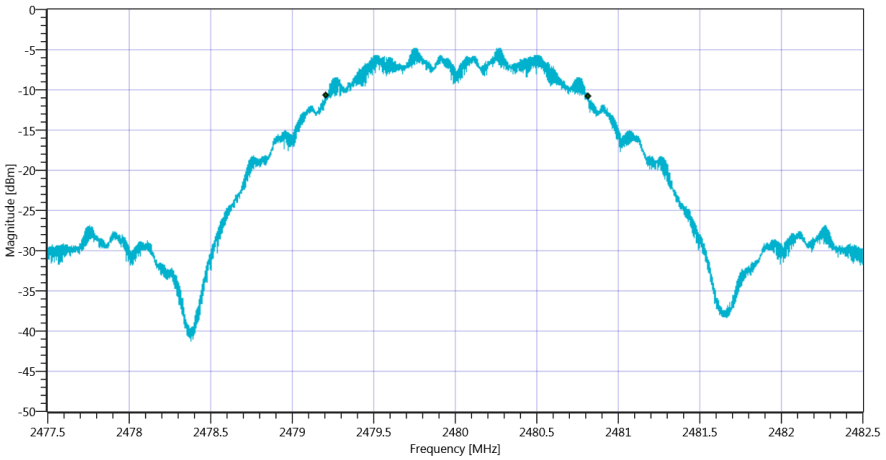
| Test References | |
|---|---|
| TC Start | 16.11.2020 08:59:16 |
| Ambit Temp [°C] \| Humidity [rel%] | 22.8 \| 43 |
| System Version | 1.0.0.55 |
| Test Specification | FCC Part 15.247 |
| Test Method | 99 |
| Class / TC Version | TC_VM_FCC15247_Bandwidth_6dB_DTS_V01 Version: 0.0.1 |
| My Description | FCC 15.247 Bandwidth 6DB DTS - Generic 2G4 |
| Add. Information | |

| Test Parameter | |
|---|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | False \| Freq [MHz] 2405 |
| Frequency mid to test | False \| Freq [MHz] 2440 |
| Frequency high to test | True \| Freq [MHz] 2480 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | \| SA: Rohde&Schwarz,FSV-40,1321.3008K40/101353,3.60 |

## Test at TX 2480 MHz

| READ SA SETTINGS: | |
|---|---|
| RefLevel [dBm] \| RefLevelOffset [dB] \| InpAtt [dB] | 3.27 \| 2.1 \| 20 |
| Start [MHz] \| Stop [MHz] | 2477.500 \| 2482.500 |
| 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 | --- | 1603 | kHz | PASS |




Plot_FCC Part 15.247 Bandwidth 6dB DTS ~ Generic 2G4_16112020_085943.png

| TEST FINISHED | | |
|---|---|---|
| General Verdict | 16.11.2020 08:59:44 / RT: 27 s | PASS |

# 10. FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4

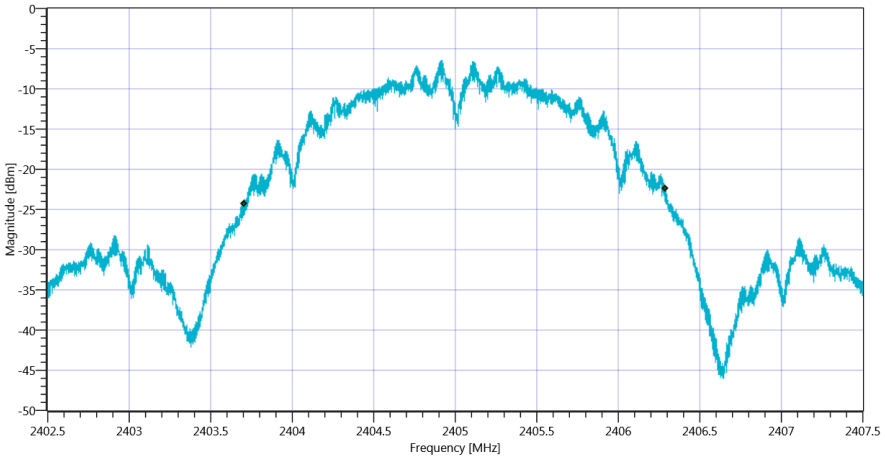
| Test References | |
|---|---|
| TC Start | 16.11.2020 08:42:30 |
| Ambit Temp [°C] \| Humidity [rel%] | 22.2 \| 44 |
| System Version | 1.0.0.55 |
| Test Specification | FCC Part 15.247 |
| Test Method | |
| Class / TC Version | TC_VM_FCC15247_Bandwidth_99PCT_20dB_DTS_FHSS_V01 Version: 0.0.2 |
| My Description | FCC 15.247 Bandwidth 99PCT-20DB DTS - Generic 2G4 |
| Add. Information | |

| Test Parameter | |
|---|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | True \| Freq [MHz] 2405 |
| Frequency mid to test | False \| Freq [MHz] 2440 |
| Frequency high to test | False \| Freq [MHz] 2480 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | \| SA: Rohde&Schwarz,FSV-40,1321.3008K40/101353,3.60 |

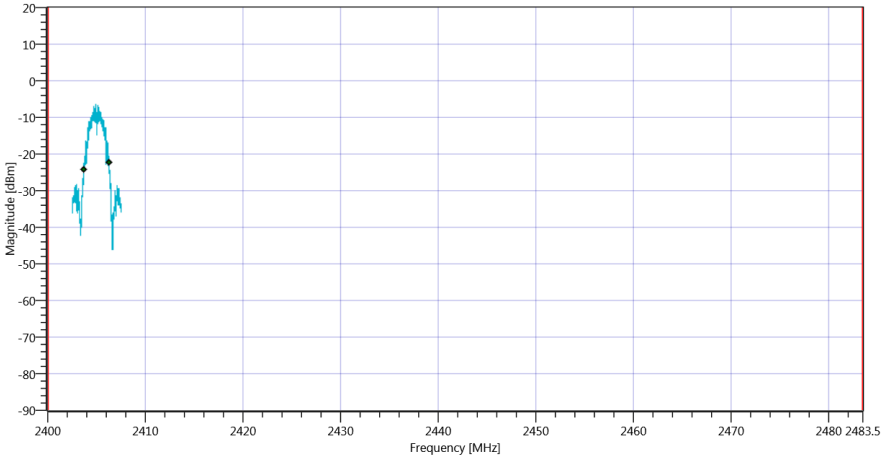
## Test at TX 2405 MHz

| READ SA SETTINGS: | |
|---|---|
| RefLevel [dBm] \| RefLevelOffset [dB] \| InpAtt [dB] | 3.43 \| 2.09 \| 20 |
| Start [MHz] \| Stop [MHz] | 2402.500 \| 2407.500 |
| RBW [MHz] \| VBW [MHz] | 0.050000 \| 0.200000 |
| 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% | --- | --- | 2584 | kHz | INFO |
| T1 99% | 2400.000000 | --- | 2403.7066 | MHz | PASS |
| T2 99% | --- | 2483.500000 | 2406.2904 | MHz | PASS |

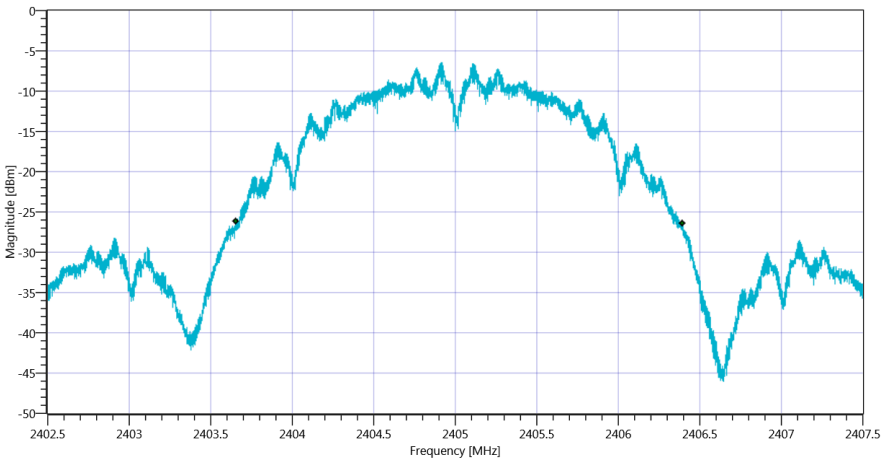



Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4 99PCT_16112020_084257.png

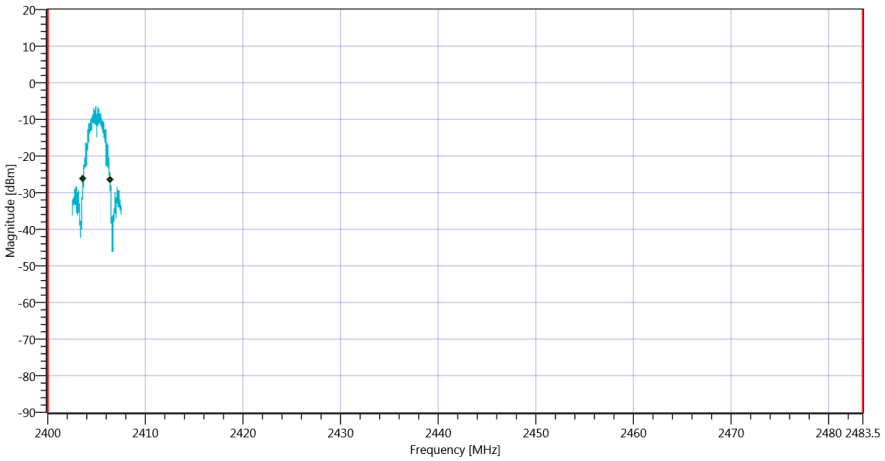



Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4_16112020_084301.png

| RESULT | | | | | |
|---|---|---|---|---|---|
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
| Bandwidth 20dB | --- | --- | 2744 | kHz | INFO |
| T1 20DB | 2400.000000 | --- | 2403.6525 | MHz | PASS |
| T2 20dB | --- | 2483.500000 | 2406.3965 | MHz | PASS |




Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4 20dB_16112020_084306.png




Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4_16112020_084309.png

| TEST FINISHED | | |
|---|---|---|
| General Verdict | 16.11.2020 08:43:10 / RT: 40 s | PASS |

# 11. FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4

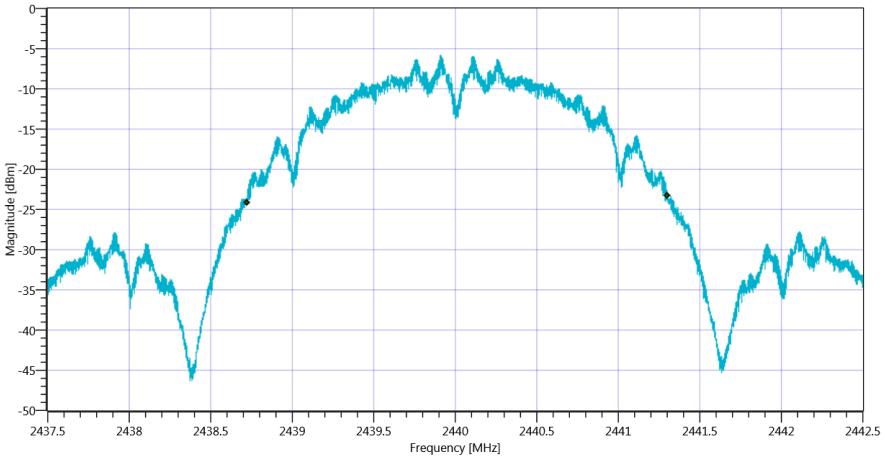
| Test References | |
|---|---|
| TC Start | 16.11.2020 08:51:44 |
| Ambit Temp [°C] \| Humidity [rel%] | 22.6 \| 44 |
| System Version | 1.0.0.55 |
| Test Specification | FCC Part 15.247 |
| Test Method | |
| Class / TC Version | TC_VM_FCC15247_Bandwidth_99PCT_20dB_DTS_FHSS_V01 Version: 0.0.2 |
| My Description | FCC 15.247 Bandwidth 99PCT-20DB DTS - Generic 2G4 |
| Add. Information | |

| Test Parameter | |
|---|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | False \| Freq [MHz] 2405 |
| Frequency mid to test | True \| Freq [MHz] 2440 |
| Frequency high to test | False \| Freq [MHz] 2480 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | \| SA: Rohde&Schwarz,FSV-40,1321.3008K40/101353,3.60 |

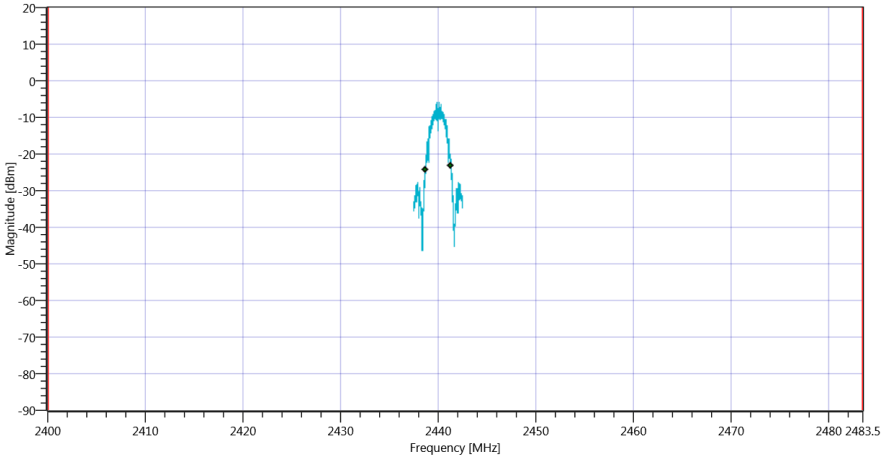
## Test at TX 2440 MHz

| READ SA SETTINGS: | |
|---|---|
| RefLevel [dBm] \| RefLevelOffset [dB] \| InpAtt [dB] | 3.99 \| 2.1 \| 20 |
| Start [MHz] \| Stop [MHz] | 2437.500 \| 2442.500 |
| RBW [MHz] \| VBW [MHz] | 0.050000 \| 0.200000 |
| 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% | --- | --- | 2580 | kHz | INFO |
| T1 99% | 2400.000000 | --- | 2438.7231 | MHz | PASS |
| T2 99% | --- | 2483.500000 | 2441.3034 | MHz | PASS |

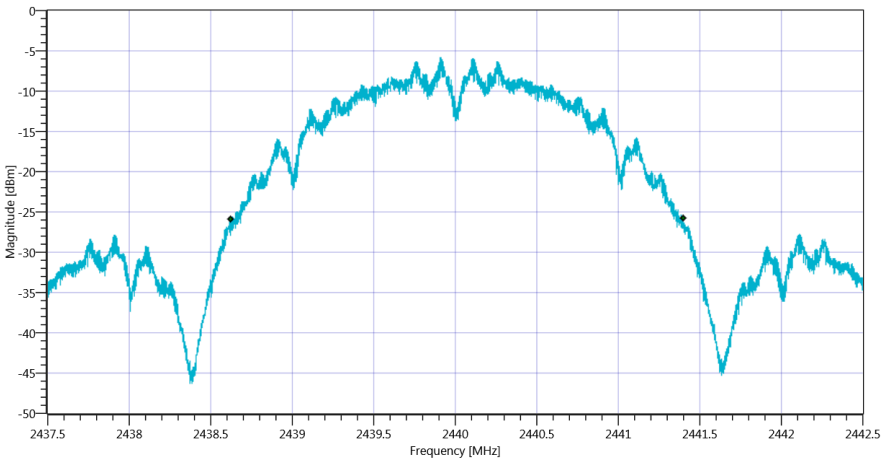



Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4 99PCT_16112020_085212.png

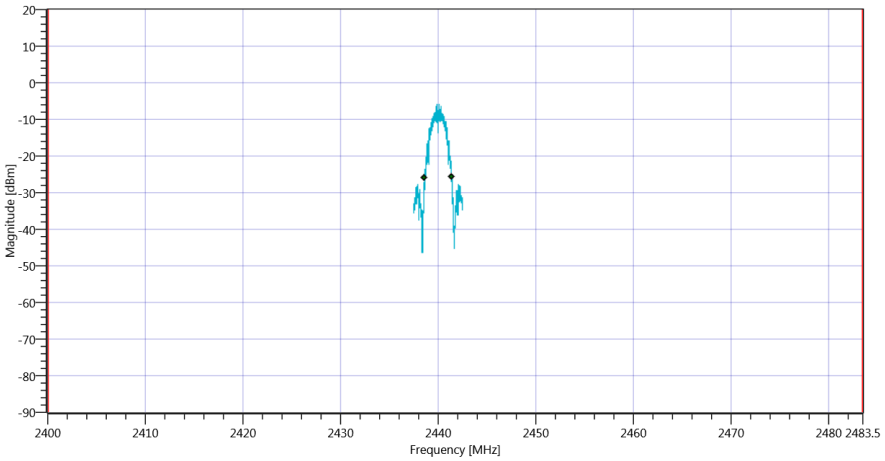



Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4_16112020_085215.png

| RESULT | | | | | |
|---|---|---|---|---|---|
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
| Bandwidth 20dB | --- | --- | 2774 | kHz | INFO |
| T1 20DB | 2400.000000 | --- | 2438.6255 | MHz | PASS |
| T2 20dB | --- | 2483.500000 | 2441.3995 | MHz | PASS |




Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4 20dB_16112020_085220.png




Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4_16112020_085224.png

| TEST FINISHED | | |
|---|---|---|
| General Verdict | 16.11.2020 08:52:24 / RT: 40 s | PASS |

# 12. FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4

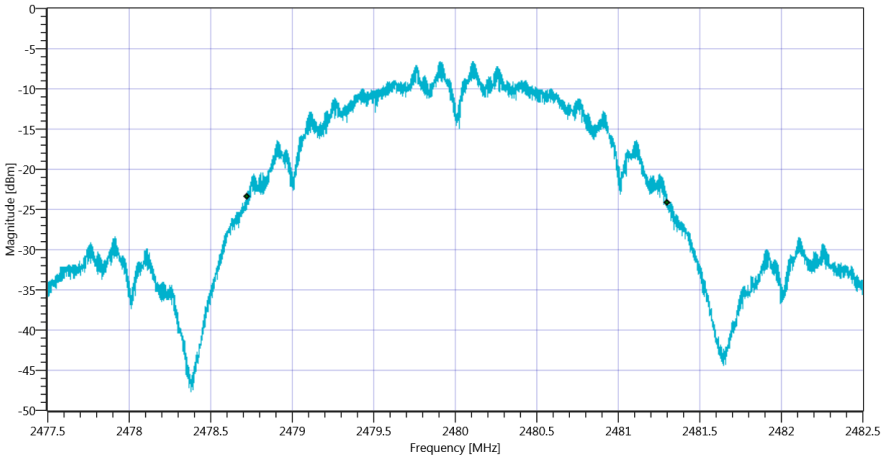
| Test References | |
|---|---|
| TC Start | 16.11.2020 09:00:28 |
| Ambit Temp [°C] \| Humidity [rel%] | 22.8 \| 43 |
| System Version | 1.0.0.55 |
| Test Specification | FCC Part 15.247 |
| Test Method | |
| Class / TC Version | TC_VM_FCC15247_Bandwidth_99PCT_20dB_DTS_FHSS_V01 Version: 0.0.2 |
| My Description | FCC 15.247 Bandwidth 99PCT-20DB DTS - Generic 2G4 |
| Add. Information | |

| Test Parameter | |
|---|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | False \| Freq [MHz] 2405 |
| Frequency mid to test | False \| Freq [MHz] 2440 |
| Frequency high to test | True \| Freq [MHz] 2480 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | \| SA: Rohde&Schwarz,FSV-40,1321.3008K40/101353,3.60 |

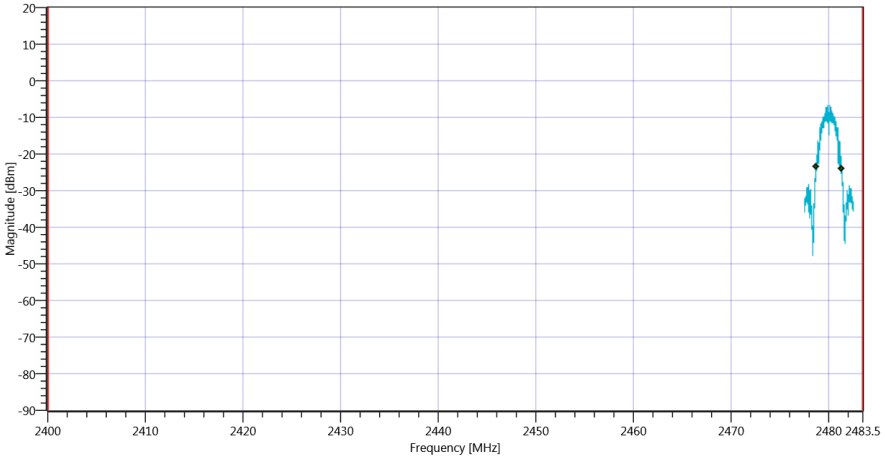
## Test at TX 2480 MHz

| READ SA SETTINGS: | |
|---|---|
| RefLevel [dBm] \| RefLevelOffset [dB] \| InpAtt [dB] | 3.27 \| 2.1 \| 20 |
| Start [MHz] \| Stop [MHz] | 2477.500 \| 2482.500 |
| RBW [MHz] \| VBW [MHz] | 0.050000 \| 0.200000 |
| 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% | --- | --- | 2578 | kHz | INFO |
| T1 99% | 2400.000000 | --- | 2478.7231 | MHz | PASS |
| T2 99% | --- | 2483.500000 | 2481.3009 | MHz | PASS |

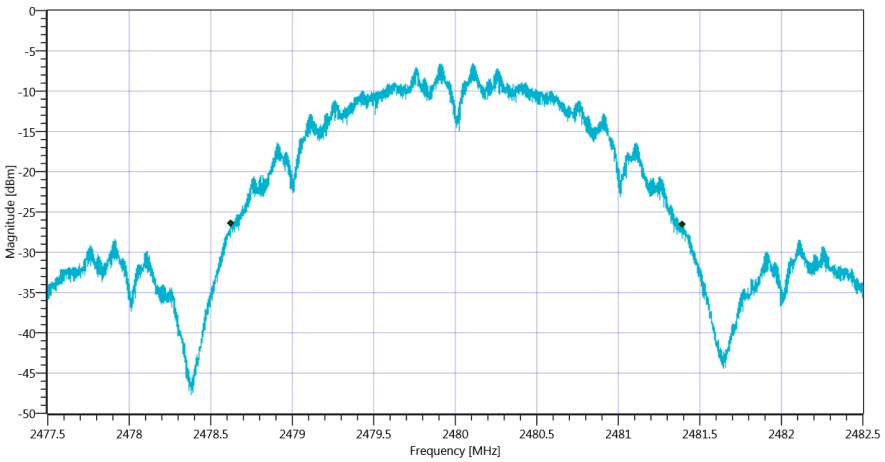



Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4 99PCT_16112020_090055.png

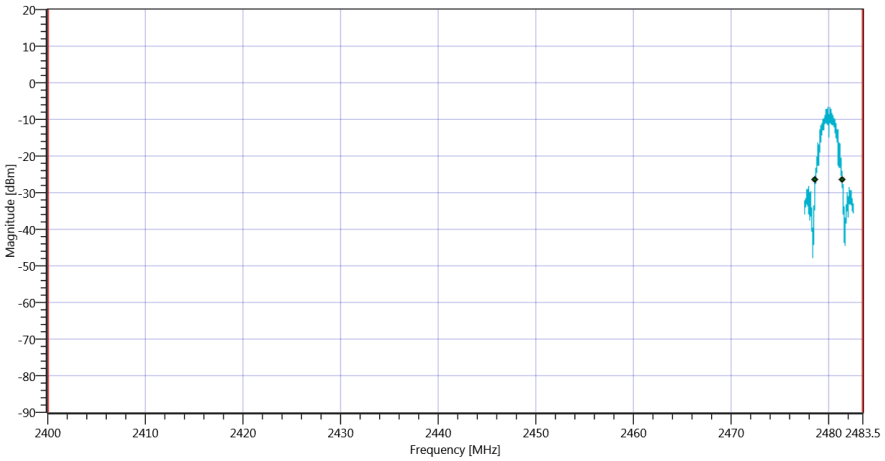



Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4_16112020_090059.png

| RESULT | | | | | |
|---|---|---|---|---|---|
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
| Bandwidth 20dB | --- | --- | 2768 | kHz | INFO |
| T1 20DB | 2400.000000 | --- | 2478.6250 | MHz | PASS |
| T2 20dB | --- | 2483.500000 | 2481.3930 | MHz | PASS |




Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4 20dB_16112020_090104.png




Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4_16112020_090108.png

| TEST FINISHED | | |
|---|---|---|
| General Verdict | 16.11.2020 09:01:08 / RT: 39 s | PASS |

# 13. FCC Part 15.247 TX Spurious Conduced ~ Generic 2G4

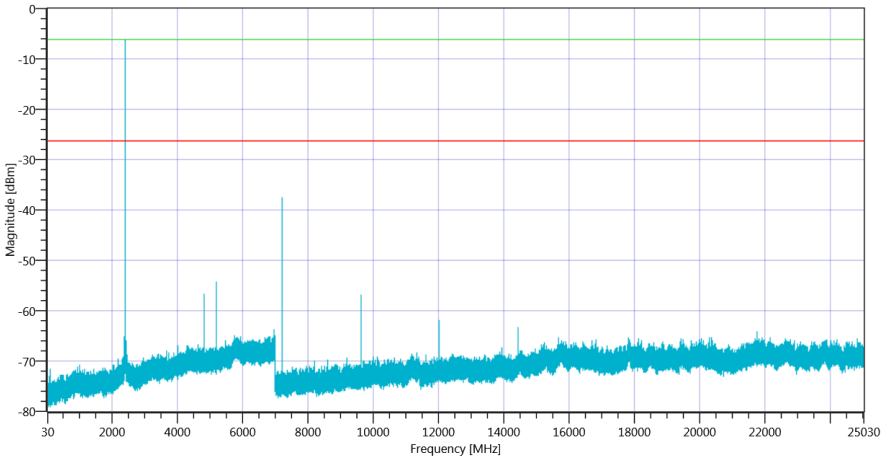
| Test References | |
|---|---|
| TC Start | 16.11.2020 08:43:14 |
| Ambit Temp [°C] \| Humidity [rel%] | 22.3 \| 44 |
| System Version | 1.0.0.55 |
| Test Specification | FCC Part 15.247 |
| Test Method | IF DTS then 8.5 DTS emissions in non-restricted frequency bands: Subclause 11.11 of ANSI C63.10 is applicable. |
| Class / TC Version | TC_VM_FCC15247_TX_Emissions_Conducted_V01 Version: 0.0.1 |
| My Description | FCC 15.247 TX Emissions Conducted DTS - Generic 2G4 |
| Add. Information | |

| Test Parameter | |
|---|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | True \| Freq [MHz] 2405 |
| Frequency mid to test | False \| Freq [MHz] 2440 |
| Frequency high to test | False \| Freq [MHz] 2480 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | \| SA: Rohde&Schwarz,FSV-40,1321.3008K40/101353,3.60 |

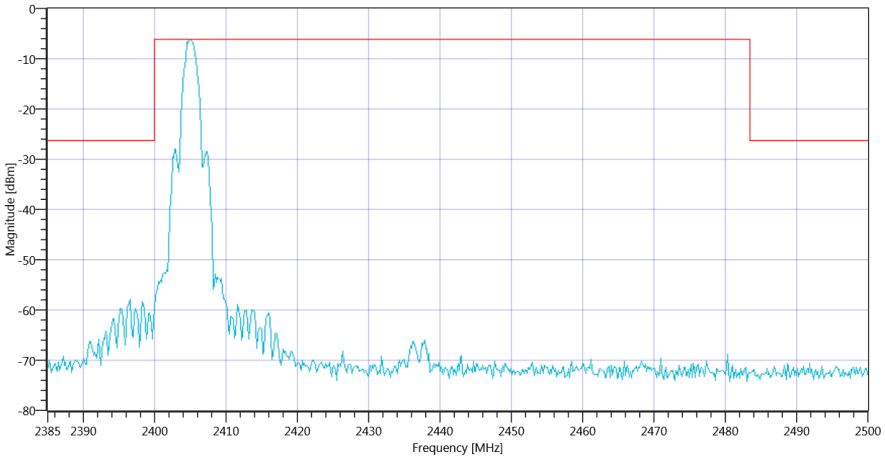
## Test at TX 2405 MHz

| READ SA SETTINGS: | |
|---|---|
| RefLevel [dBm] \| RefLevelOffset [dB] \| InpAtt [dB] | -1.57 \| 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 @ 2405.00 MHz | --- | --- | -6.22 | dBm | INFO |
| No peaks detected | --- | --- | | | PASS |
| Lowest margin to limit 7216.5 MHz | 0 | --- | 11.29 | dB | INFO |




Plot_FCC Part 15.247 TX Spurious Conduced ~ Generic 2G4 2405_16112020_084759.png




Plot_FCC Part 15.247 TX Spurious Conduced ~ Generic 2G4 2405_16112020_084802.png

| TEST FINISHED | | |
|---|---|---|
| General Verdict | 16.11.2020 08:48:04 / RT: 289 s | PASS |

# 14. FCC Part 15.247 TX Spurious Conduced ~ Generic 2G4

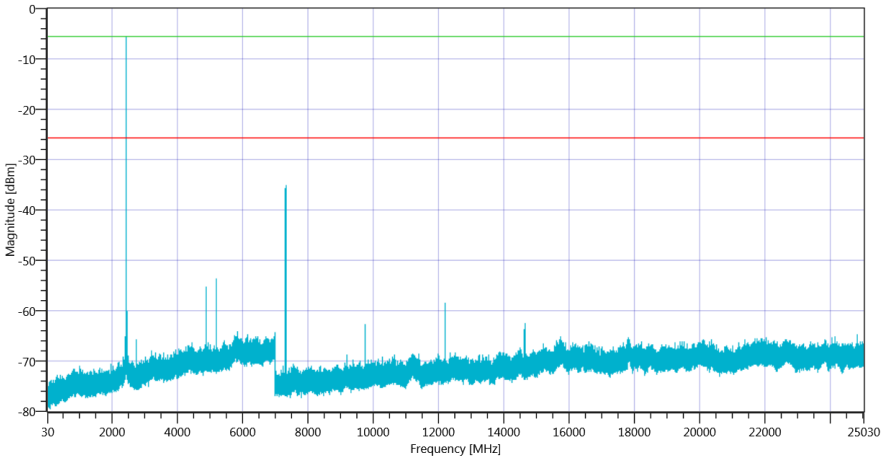
| Test References | |
|---|---|
| TC Start | 16.11.2020 08:52:28 |
| Ambit Temp [°C] \| Humidity [rel%] | 22.6 \| 44 |
| System Version | 1.0.0.55 |
| Test Specification | FCC Part 15.247 |
| Test Method | IF DTS then 8.5 DTS emissions in non-restricted frequency bands: Subclause 11.11 of ANSI C63.10 is applicable. |
| Class / TC Version | TC_VM_FCC15247_TX_Emissions_Conducted_V01 Version: 0.0.1 |
| My Description | FCC 15.247 TX Emissions Conducted DTS - Generic 2G4 |
| Add. Information | |

| Test Parameter | |
|---|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | False \| Freq [MHz] 2405 |
| Frequency mid to test | True \| Freq [MHz] 2440 |
| Frequency high to test | False \| Freq [MHz] 2480 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | \| SA: Rohde&Schwarz,FSV-40,1321.3008K40/101353,3.60 |

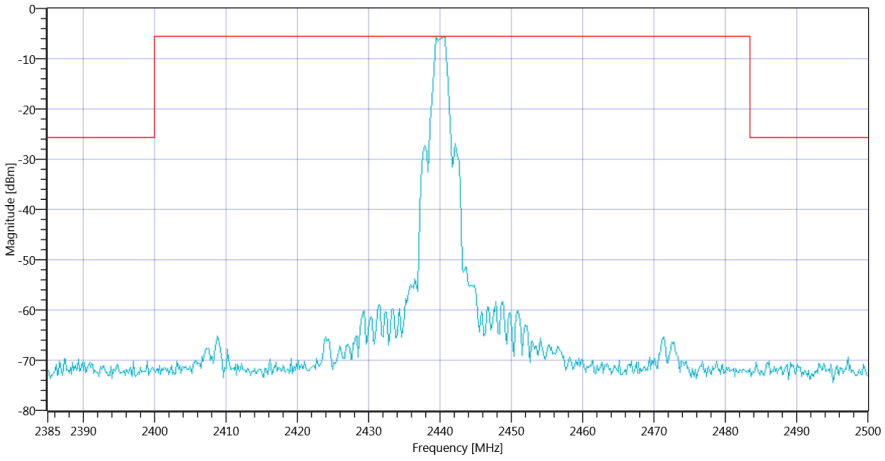
## Test at TX 2440 MHz

| READ SA SETTINGS: | |
|---|---|
| RefLevel [dBm] \| RefLevelOffset [dB] \| InpAtt [dB] | -1.01 \| 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 @ 2440.50 MHz | --- | --- | -5.63 | dBm | INFO |
| No peaks detected | --- | --- | | | PASS |
| Lowest margin to limit 7321.5 MHz | 0 | --- | 9.61 | dB | INFO |




Plot_FCC Part 15.247 TX Spurious Conduced ~ Generic 2G4 2440_16112020_085713.png




Plot_FCC Part 15.247 TX Spurious Conduced ~ Generic 2G4 2440_16112020_085716.png

| TEST FINISHED | | |
|---|---|---|
| General Verdict | 16.11.2020 08:57:17 / RT: 289 s | PASS |

# 15. FCC Part 15.247 TX Spurious Conduced ~ Generic 2G4

| Test References | |
|---|---|
| TC Start | 16.11.2020 09:08:05 |
| Ambit Temp [°C] \| Humidity [rel%] | 23.0 \| 43 |
| System Version | 1.0.0.55 |
| 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. |
| Class / TC Version | TC_VM_FCC15247_TX_Emissions_Conducted_V01 Version: 0.0.1 |
| My Description | FCC 15.247 TX Emissions Conducted DTS - Generic 2G4 |
| Add. Information | |

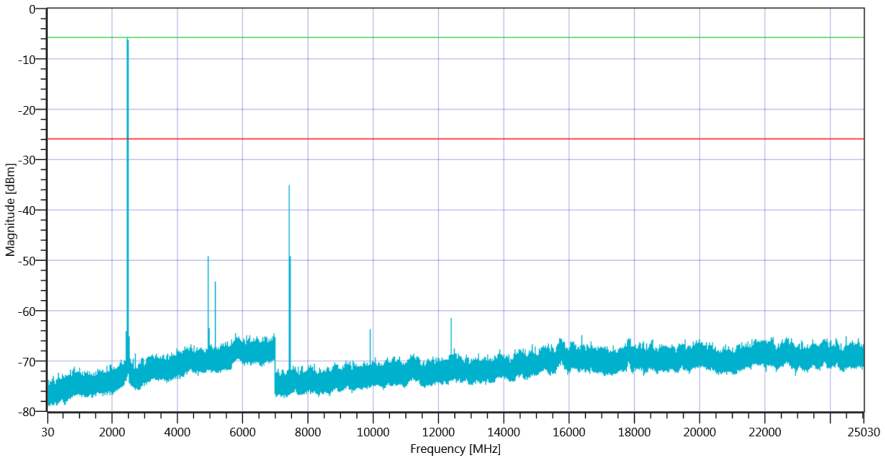
| Test Parameter | |
|---|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | False \| Freq [MHz] 2405 |
| Frequency mid to test | False \| Freq [MHz] 2440 |
| Frequency high to test | True \| Freq [MHz] 2480 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | \| SA: Rohde&Schwarz,FSV-40,1321.3008K40/101353,3.60 |

## Test at TX 2480 MHz

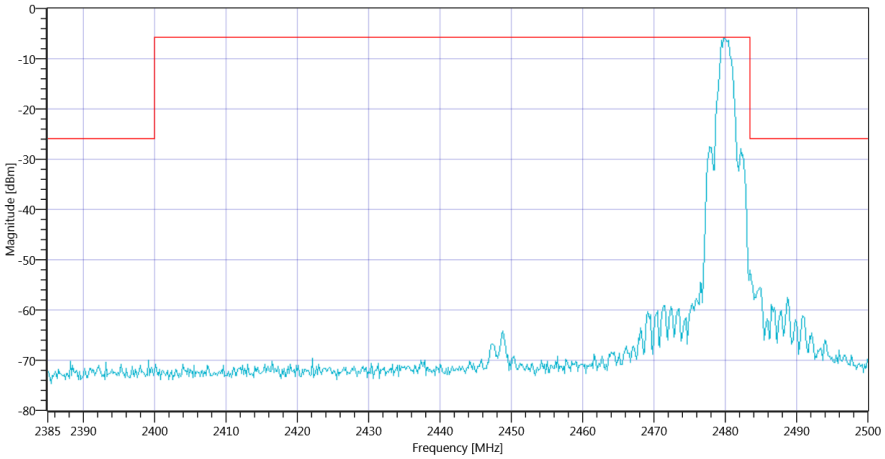
| READ SA SETTINGS: | |
|---|---|
| RefLevel [dBm] \| RefLevelOffset [dB] \| InpAtt [dB] | -1.76 \| 0 \| 15 |
| Start [MHz] \| Stop [MHz] | 24530.000 \| 25030.000 |
| RBW [MHz] \| VBW [MHz] | 0.100000 \| 0.300000 |
| Detector \| TraceMode | POS \| MAXH |
| Sweep: Time [ms] \| Count \| Points per Section \| Type | 500 \| 8 \| 3001 \| SWE |

RESULT

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|---|---|---|---|---|---|
| Reference @ 2479.83 MHz | --- | --- | -5.84 | dBm | INFO |
| No peaks detected | --- | --- | | | PASS |
| Lowest margin to limit 7441.5 MHz | 0 | --- | 9.34 | dB | INFO |




Plot_FCC Part 15.247 TX Spurious Conduced ~ Generic 2G4 2480_16112020_091250.png




Plot_FCC Part 15.247 TX Spurious Conduced ~ Generic 2G4 2480_16112020_091253.png

| TEST FINISHED | | |
|---|---|---|
| General Verdict | 16.11.2020 09:12:54 / RT: 289 s | PASS |

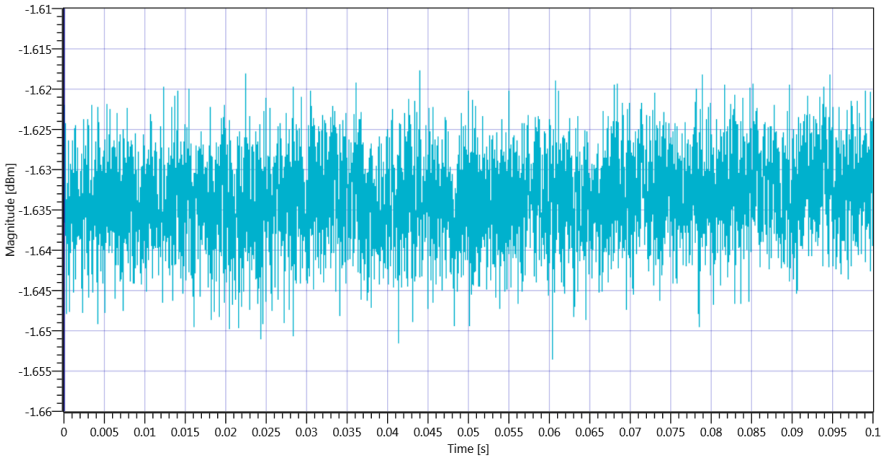
# 16. FCC Part 15.247 Restricted Band Edge Conducted Avg DC corrected DTS (cond) ~ Generic 2G4

| Test References | |
|---|---|
| TC Start | 16.11.2020 08:48:08 |
| Ambit Temp [°C] \| Humidity [rel%] | 22.5 \| 44 |
| System Version | 1.0.0.55 |
| Test Specification | FCC Part 15.247 |
| Test Method | DTS: KDB 558074 D01 V05 - 8.7.3 Integration Method; ANSI C63.10-2013 11.13.3.4 Trace averaging across on- and off-times of the EUT transmissions followed by duty cycle correction |
| Class / TC Version | TC_VM_FCC15247_Restricted_Band_Edge_Conducted_Avg_DC_corrected_V01 Version: 0.0.1 |
| My Description | FCC 15.247 Restricted Band Edge Cond. Avg DC corrected DTS - Generic 2G4 |
| Add. Information | |

| Test Parameter | |
|---|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | True \| Freq [MHz] 2405 |
| Frequency mid to test | False \| Freq [MHz] 2440 |
| Frequency high to test | False \| Freq [MHz] 2480 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | \| SA: Rohde&Schwarz,FSV-40,1321.3008K40/101353,3.60 |

## Test at TX 2405 MHz

| Duty Cycle evaluation | | | | | |
|---|---|---|---|---|---|
| **Test Description** | **Lower Limit** | **Upper Limit** | **Measured** | **Unit** | **Verdict** |
| No enough Bursts detected, Duty Cycle Burst Ratio set to 1 | | | | | |
| Duty Cycle (Burst Ratio) max | --- | --- | 1 | --- | INFO |
| Duty Cycle max | --- | --- | 0 | dB | INFO |
| Duty Cycle (Burst Ratio) min | --- | --- | 1 | --- | INFO |
| Duty Cycle min | --- | --- | 0 | dB | INFO |

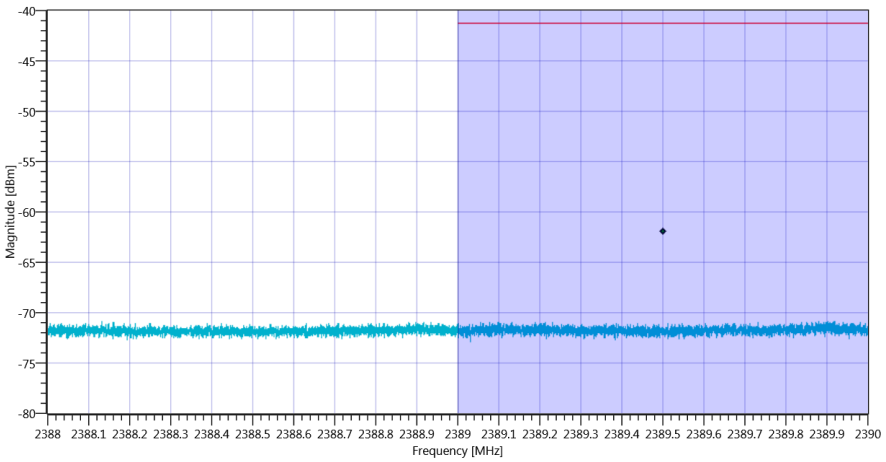



Plot_FCC Part 15.247 Restricted Band Edge Conducted Avg DC corrected DTS (cond) ~ Generic 2G4 2405 MHz - DutyCycle_16112020_084824.png

| READ SA SETTINGS: | |
|---|---|
| RefLevel [dBm] \| RefLevelOffset [dB] \| InpAtt [dB] | 8.41 \| 2.09 \| 25 |
| Start [MHz] \| Stop [MHz] | 2388.000 \| 2390.000 |
| RBW [MHz] \| VBW [MHz] | 0.100000 \| 0.500000 |
| Detector \| TraceMode | RMS \| AVER |
| Sweep: Time [ms] \| Count \| Points per Section \| Type | 32 \| 300 \| 32000 \| SWE |

| Antenna Gain | |
|---|---|
| Considered Antenna Gain: [dBi]: | 0, since no antenna gain available |

| RESULT | | | | | |
|---|---|---|---|---|---|
| **Test Description** | **Lower Limit** | **Upper Limit** | **Measured** | **Unit** | **Verdict** |
| Duty Cylce worst case | --- | --- | 0 | dB | INFO |
| Band Power Avg | --- | --- | -62.01 | dBm | INFO |
| Band Power Avg DC corrected | --- | --- | -62.01 | dBm | INCON |




Plot_FCC Part 15.247 Restricted Band Edge Conducted Avg DC corrected DTS (cond) ~ Generic 2G4_16112020_084847.png

| TEST FINISHED | | |
|---|---|---|
| General Verdict | 16.11.2020 08:48:47 / RT: 39 s | INCON |

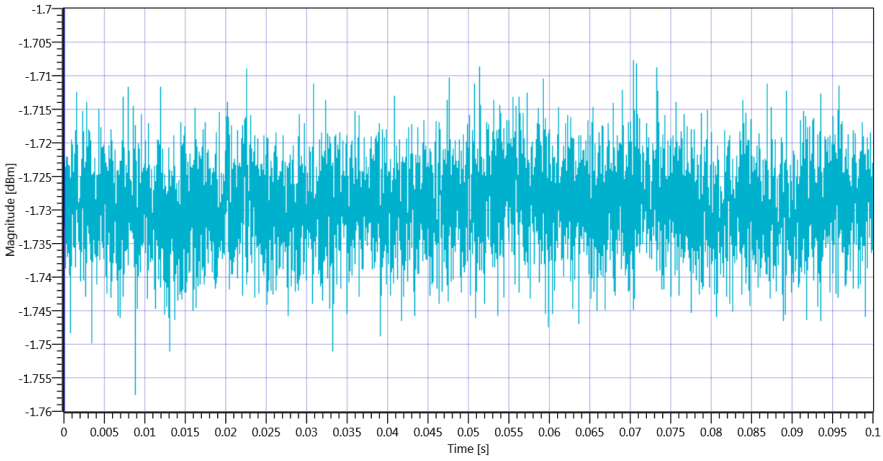
# 17. FCC Part 15.247 Restricted Band Edge Conducted Avg DC corrected DTS (cond) ~ Generic 2G4

| Test References | |
|---|---|
| TC Start | 16.11.2020 09:01:12 |
| Ambit Temp [°C] \| Humidity [rel%] | 22.8 \| 43 |
| System Version | 1.0.0.55 |
| Test Specification | FCC Part 15.247 |
| Test Method | DTS: KDB 558074 D01 V05 - 8.7.3 Integration Method; ANSI C63.10-2013 11.13.3.4 Trace averaging across on- and off-times of the EUT transmissions followed by duty cycle correction |
| Class / TC Version | TC_VM_FCC15247_Restricted_Band_Edge_Conducted_Avg_DC_corrected_V01 Version: 0.0.1 |
| My Description | FCC 15.247 Restricted Band Edge Cond. Avg DC corrected DTS - Generic 2G4 |
| Add. Information | |

| Test Parameter | |
|---|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | False \| Freq [MHz] 2405 |
| Frequency mid to test | False \| Freq [MHz] 2440 |
| Frequency high to test | True \| Freq [MHz] 2480 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | \| SA: Rohde&Schwarz,FSV-40,1321.3008K40/101353,3.60 |

## Test at TX 2480 MHz

| Duty Cycle evaluation | | | | | |
|---|---|---|---|---|---|
| **Test Description** | **Lower Limit** | **Upper Limit** | **Measured** | **Unit** | **Verdict** |
| No enough Bursts detected, Duty Cycle Burst Ratio set to 1 | | | | | |
| Duty Cycle (Burst Ratio) max | --- | --- | 1 | --- | INFO |
| Duty Cycle max | --- | --- | 0 | dB | INFO |
| Duty Cycle (Burst Ratio) min | --- | --- | 1 | --- | INFO |
| Duty Cycle min | --- | --- | 0 | dB | INFO |

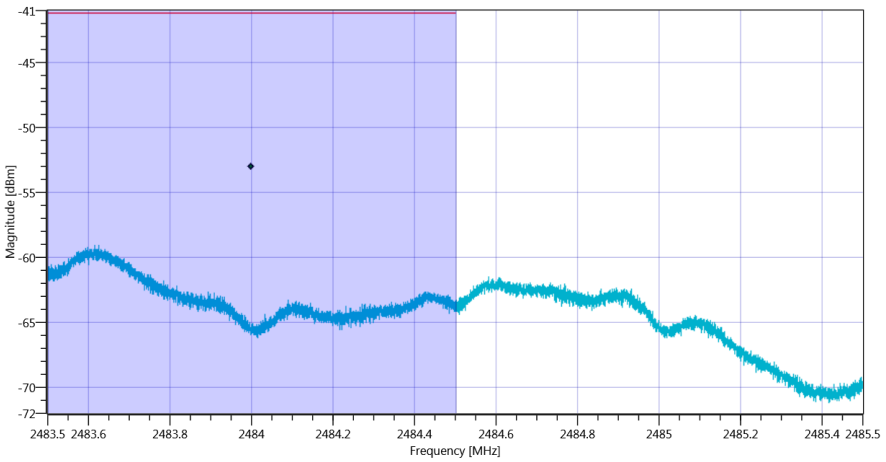



Plot_FCC Part 15.247 Restricted Band Edge Conducted Avg DC corrected DTS (cond) ~ Generic 2G4 2480 MHz - DutyCycle_16112020_090128.png

| READ SA SETTINGS: | |
|---|---|
| RefLevel [dBm] \| RefLevelOffset [dB] \| InpAtt [dB] | 8.25 \| 2.1 \| 25 |
| Start [MHz] \| Stop [MHz] | 2483.500 \| 2485.500 |
| RBW [MHz] \| VBW [MHz] | 0.100000 \| 0.500000 |
| Detector \| TraceMode | RMS \| AVER |
| Sweep: Time [ms] \| Count \| Points per Section \| Type | 32 \| 300 \| 32000 \| SWE |

| Antenna Gain | |
|---|---|
| Considered Antenna Gain: [dBi]: | 0, since no antenna gain available |

| RESULT | | | | | |
|---|---|---|---|---|---|
| **Test Description** | **Lower Limit** | **Upper Limit** | **Measured** | **Unit** | **Verdict** |
| Duty Cylce worst case | --- | --- | 0 | dB | INFO |
| Band Power Avg | --- | --- | -53.05 | dBm | INFO |
| Band Power Avg DC corrected | --- | --- | -53.05 | dBm | INCON |




Plot_FCC Part 15.247 Restricted Band Edge Conducted Avg DC corrected DTS (cond) ~ Generic 2G4_16112020_090151.png

| TEST FINISHED | | |
|---|---|---|
| General Verdict | 16.11.2020 09:01:51 / RT: 38 s | INCON |

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