

Measurement Results

1-7415_18-02-05_log1_conducted

[Test logging](#)

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Document authorized:

Marco Bertolino
Lab Manager
Radio Communications & EMC

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

| Test References | |
|----------------------------|--|
| TC Start | 03.06.2019 13:37:40 |
| System Version | 1.0.0.15 |
| 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 ID | TC_VM_FCC15247_Peak_Power_Spectral_Density_DTS_V01 Version: 0.0.1 TCID_FCC15247_6 |
| My Description | FCC 15.247 Peak Power Spectral Density DTS - Generic 2G4 |
| Add. Information | |

| IUT DEFINITION | |
|----------------|----|
| Manufacturer | NI |
| Type | NI |
| Serial No. | NI |
| Setup No. | NI |
| SW Version | NI |
| HW Version | NI |
| Comment 1 | NI |
| Comment 2 | NI |

| IUT Common Settings | |
|--|---------|
| Tlow [°C] | -20 |
| Tmid [°C] | 20 |
| Thigh [°C] | 55 |
| Vlow [V] | 3.3 |
| Vmid [V] | 3.8 |
| Vhigh [V] | 4.2 |
| Imax [A] | 1 |
| Auto Control enabled Power Supply Climatic Box | No No |
| Antenna Gain [dBi] | 0 |
| Additional Path Loss [dB] | 0 |

| IUT Common Settings 2G4 Init Values from IUT file | |
|---|------|
| Hopping supported | No |
| Frequency low [MHz] | 2402 |
| Frequency mid [MHz] | 2442 |
| Frequency high [MHz] | 2478 |
| Burst length [ms] | 10 |
| Nominal Bandwidth [MHz] | 1.7 |
| User Interaction | Yes |

| Test Parameter | |
|------------------------|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | True Freq [MHz] 2402 |
| Frequency mid to test | False Freq [MHz] 2442 |
| Frequency high to test | False Freq [MHz] 2478 |
| Pattern | PRBS9 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | SigBT: Rohde&Schwarz,CMW,1201.0002k75/100683,3.7.70 SA: Rohde&Schwarz,FSV-30,1321.3008K30/103809,3.40 |

Test at TX 2402 MHz

RESULT: Reference Power

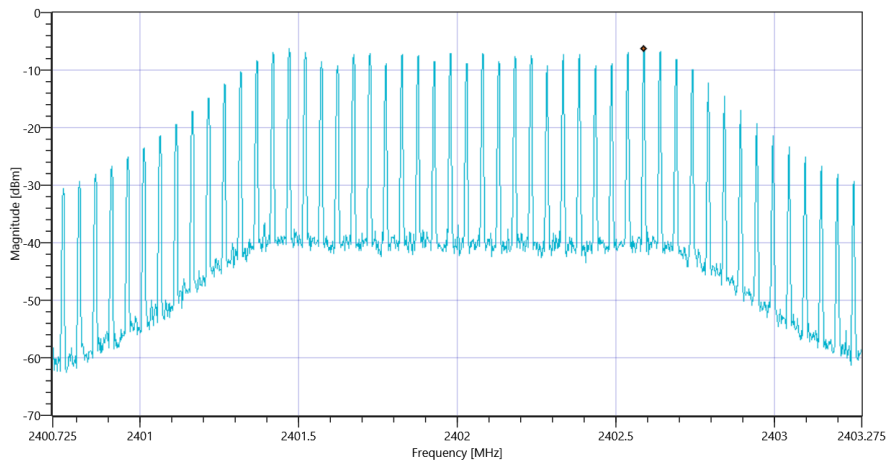
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|----------------------|-------------|-------------|----------|------|-------------|
| Ref. Power 1MHz/1MHz | --- | --- | 7.18 | dBm | Information |
| Ref. Frequency | --- | --- | 2401.650 | MHz | Information |

READ SA SETTINGS:

| | |
|------------------------|----------|
| Ref. Level [dBm] | 12.18 |
| Ref. Lev. offs [dB] | 9.79 |
| Input Attenuation [dB] | 20 |
| Freq. Start [MHz] | 2400.725 |
| Freq. Stop [MHz] | 2403.275 |
| Resolution BW. [MHz] | 0.003000 |
| Video BW. [MHz] | 0.010000 |
| Detector | POS |
| Sweep Time [ms] | 1000 |
| Sweep Points/Section | 1001 |
| Sweep Count | 20 |
| Sweep Mode | MAXH |
| Used Sweep Type | SWE |

RESULT: TC_VM_FCC15247_Peak_Power_Spectral_Density_DTS_V01

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|------------------------|-------------|-------------|----------|----------|---------|
| Max Peak power Density | --- | 8 | -6.31 | dBm/3KHz | PASS |



Plot_FCC Part 15.247 Peak Power Spectral Density DTS ~ Generic 2G4_03062019_133818.png

TEST FINISHED

General Verdict

03.06.2019 13:38:18 / RT: 37 s

PASS

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

| Test References | |
|----------------------------|--|
| TC Start | 03.06.2019 14:58:20 |
| System Version | 1.0.0.15 |
| 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 ID | TC_VM_FCC15247_Peak_Power_Spectral_Density_DTS_V01 Version: 0.0.1 TCID_FCC15247_6 |
| My Description | FCC 15.247 Peak Power Spectral Density DTS - Generic 2G4 |
| Add. Information | |

| IUT DEFINITION | |
|----------------|----|
| Manufacturer | NI |
| Type | NI |
| Serial No. | NI |
| Setup No. | NI |
| SW Version | NI |
| HW Version | NI |
| Comment 1 | NI |
| Comment 2 | NI |

| IUT Common Settings | |
|--|---------|
| Tlow [°C] | -20 |
| Tmid [°C] | 20 |
| Thigh [°C] | 55 |
| Vlow [V] | 3.3 |
| Vmid [V] | 3.8 |
| Vhigh [V] | 4.2 |
| Imax [A] | 1 |
| Auto Control enabled Power Supply Climatic Box | No No |
| Antenna Gain [dBi] | 0 |
| Additional Path Loss [dB] | 0 |

| IUT Common Settings 2G4 Init Values from IUT file | |
|---|------|
| Hopping supported | No |
| Frequency low [MHz] | 2402 |
| Frequency mid [MHz] | 2442 |
| Frequency high [MHz] | 2478 |
| Burst length [ms] | 10 |
| Nominal Bandwidth [MHz] | 1.7 |
| User Interaction | Yes |

| Test Parameter | |
|------------------------|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | False Freq [MHz] 2402 |
| Frequency mid to test | False Freq [MHz] 2442 |
| Frequency high to test | True Freq [MHz] 2478 |
| Pattern | PRBS9 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | SigBT: Rohde&Schwarz,CMW,1201.0002k75/100683,3.7.70 SA: Rohde&Schwarz,FSV-30,1321.3008K30/103809,3.40 |

Test at TX 2478 MHz

RESULT: Reference Power

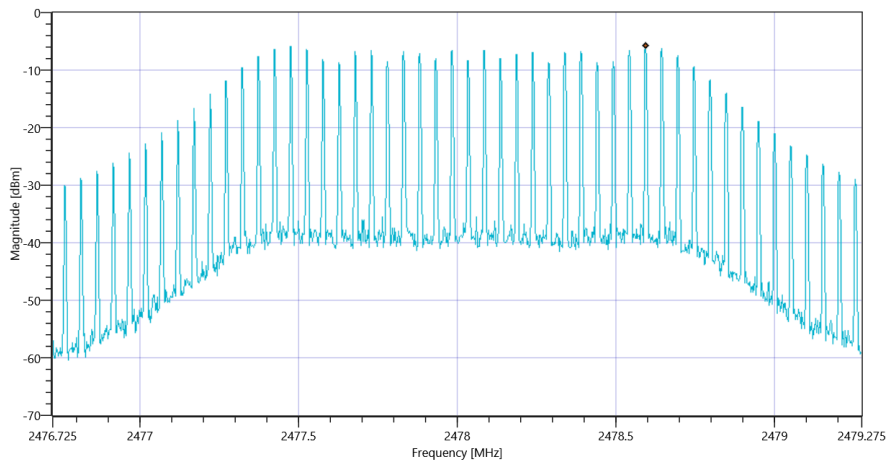
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|----------------------|-------------|-------------|----------|------|-------------|
| Ref. Power 1MHz/1MHz | --- | --- | 7.63 | dBm | Information |
| Ref. Frequency | --- | --- | 2477.470 | MHz | Information |

READ SA SETTINGS:

| | |
|------------------------|----------|
| Ref. Level [dBm] | 12.63 |
| Ref. Lev. offs [dB] | 9.96 |
| Input Attenuation [dB] | 20 |
| Freq. Start [MHz] | 2476.725 |
| Freq. Stop [MHz] | 2479.275 |
| Resolution BW. [MHz] | 0.003000 |
| Video BW. [MHz] | 0.010000 |
| Detector | POS |
| Sweep Time [ms] | 1000 |
| Sweep Points/Section | 1001 |
| Sweep Count | 20 |
| Sweep Mode | MAXH |
| Used Sweep Type | SWE |

RESULT: TC_VM_FCC15247_Peak_Power_Spectral_Density_DTS_V01

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|------------------------|-------------|-------------|----------|----------|---------|
| Max Peak power Density | --- | 8 | -5.77 | dBm/3KHz | PASS |



Plot_FCC Part 15.247 Peak Power Spectral Density DTS ~ Generic 2G4_03062019_145910.png

TEST FINISHED

General Verdict

03.06.2019 14:59:10 / RT: 50 s

PASS

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

| Test References | |
|----------------------------|--|
| TC Start | 03.06.2019 13:57:33 |
| System Version | 1.0.0.15 |
| 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 ID | TC_VM_FCC15247_Peak_Power_Spectral_Density_DTS_V01 Version: 0.0.1 TCID_FCC15247_6 |
| My Description | FCC 15.247 Peak Power Spectral Density DTS - Generic 2G4 |
| Add. Information | |

| IUT DEFINITION | |
|----------------|----|
| Manufacturer | NI |
| Type | NI |
| Serial No. | NI |
| Setup No. | NI |
| SW Version | NI |
| HW Version | NI |
| Comment 1 | NI |
| Comment 2 | NI |

| IUT Common Settings | |
|--|---------|
| Tlow [°C] | -20 |
| Tmid [°C] | 20 |
| Thigh [°C] | 55 |
| Vlow [V] | 3.3 |
| Vmid [V] | 3.8 |
| Vhigh [V] | 4.2 |
| Imax [A] | 1 |
| Auto Control enabled Power Supply Climatic Box | No No |
| Antenna Gain [dBi] | 0 |
| Additional Path Loss [dB] | 0 |

| IUT Common Settings 2G4 Init Values from IUT file | |
|---|------|
| Hopping supported | No |
| Frequency low [MHz] | 2402 |
| Frequency mid [MHz] | 2442 |
| Frequency high [MHz] | 2478 |
| Burst length [ms] | 10 |
| Nominal Bandwidth [MHz] | 1.7 |
| User Interaction | Yes |

| Test Parameter | |
|------------------------|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | False Freq [MHz] 2402 |
| Frequency mid to test | True Freq [MHz] 2442 |
| Frequency high to test | False Freq [MHz] 2478 |
| Pattern | PRBS9 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | SigBT: Rohde&Schwarz,CMW,1201.0002k75/100683,3.7.70 SA: Rohde&Schwarz,FSV-30,1321.3008K30/103809,3.40 |

Test at TX 2442 MHz

RESULT: Reference Power

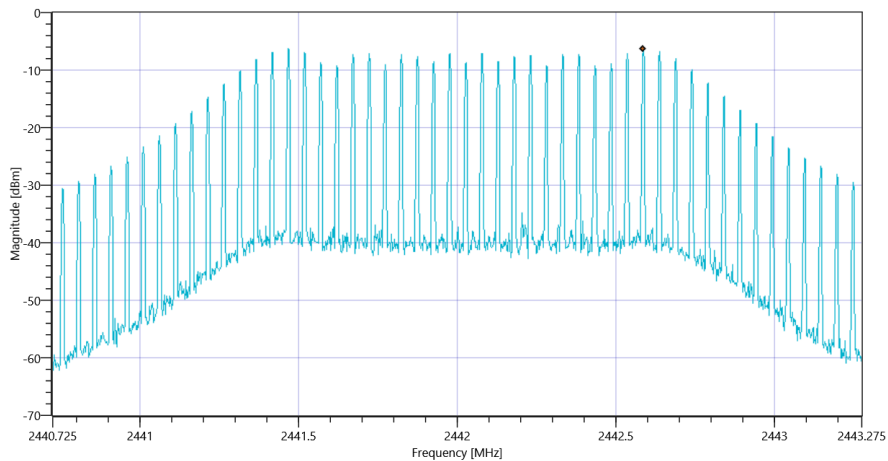
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|----------------------|-------------|-------------|----------|------|-------------|
| Ref. Power 1MHz/1MHz | -- | -- | 7.10 | dBm | Information |
| Ref. Frequency | -- | -- | 2441.510 | MHz | Information |

READ SA SETTINGS:

| | |
|------------------------|----------|
| Ref. Level [dBm] | 12.10 |
| Ref. Lev. offs [dB] | 9.91 |
| Input Attenuation [dB] | 20 |
| Freq. Start [MHz] | 2440.725 |
| Freq. Stop [MHz] | 2443.275 |
| Resolution BW. [MHz] | 0.003000 |
| Video BW. [MHz] | 0.010000 |
| Detector | POS |
| Sweep Time [ms] | 1000 |
| Sweep Points/Section | 1001 |
| Sweep Count | 20 |
| Sweep Mode | MAXH |
| Used Sweep Type | SWE |

RESULT: TC_VM_FCC15247_Peak_Power_Spectral_Density_DTS_V01

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|------------------------|-------------|-------------|----------|----------|---------|
| Max Peak power Density | -- | 8 | -6.3 | dBm/3KHz | PASS |



Plot_FCC Part 15.247 Peak Power Spectral Density DTS ~ Generic 2G4_03062019_135808.png

TEST FINISHED

General Verdict

03.06.2019 13:58:08 / RT: 34 s

PASS

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

| Test References | |
|----------------------------|---|
| TC Start | 03.06.2019 13:37:11 |
| System Version | 1.0.0.15 |
| Test Specification | FCC Part 15.247 |
| Test Method | DTS: KDB 558074 D01 V05 - Chapter 8.2 DTS Bandwidth |
| Class / TC Version / TC ID | TC_VM_FCC15247_Bandwidth_6dB_DTS_V01 Version: 0.0.1 TCID_FCC15247_1 |
| My Description | FCC 15.247 Bandwidth 6dB DTS - Generic 2G4 |
| Add. Information | |

| IUT DEFINITION | |
|----------------|----|
| Manufacturer | NI |
| Type | NI |
| Serial No. | NI |
| Setup No. | NI |
| SW Version | NI |
| HW Version | NI |
| Comment 1 | NI |
| Comment 2 | NI |

| IUT Common Settings | |
|--|---------|
| Tlow [°C] | -20 |
| Tmid [°C] | 20 |
| Thigh [°C] | 55 |
| Vlow [V] | 3.3 |
| Vmid [V] | 3.8 |
| Vhigh [V] | 4.2 |
| Imax [A] | 1 |
| Auto Control enabled Power Supply Climatic Box | No No |
| Antenna Gain [dBi] | 0 |
| Additional Path Loss [dB] | 0 |

| IUT Common Settings 2G4 Init Values from IUT file | |
|---|------|
| Hopping supported | No |
| Frequency low [MHz] | 2402 |
| Frequency mid [MHz] | 2442 |
| Frequency high [MHz] | 2478 |
| Burst length [ms] | 10 |
| Nominal Bandwidth [MHz] | 1.7 |
| User Interaction | Yes |

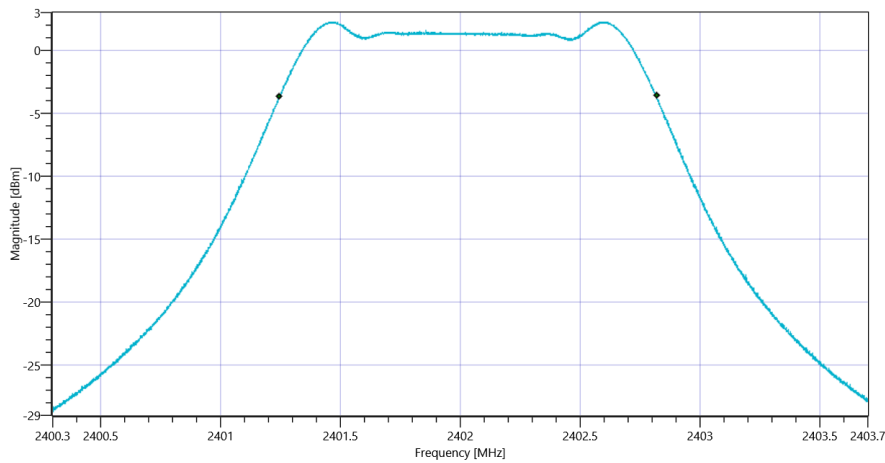
| Test Parameter | |
|------------------------|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | True Freq [MHz] 2402 |
| Frequency mid to test | False Freq [MHz] 2442 |
| Frequency high to test | False Freq [MHz] 2478 |
| Pattern | PRBS9 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | SigBT: Rohde&Schwarz,CMW,1201.0002k75/100683,3.7.70 SA: Rohde&Schwarz,FSV-30,1321.3008K30/103809,3.40 |

Test at TX 2402 MHz

| RESULT: Reference Power | | | | | |
|-------------------------|-------------|-------------|----------|------|-------------|
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
| Ref. Power 1MHz/1MHz | -- | -- | 7.18 | dBm | Information |
| Ref. Frequency | -- | -- | 2402.550 | MHz | Information |

| READ SA SETTINGS: | |
|------------------------|----------|
| Ref. Level [dBm] | 12.18 |
| Ref. Lev. offs [dB] | 9.79 |
| Input Attenuation [dB] | 20 |
| Freq. Start [MHz] | 2400.300 |
| Freq. Stop [MHz] | 2403.700 |
| Resolution BW. [MHz] | 0.100000 |
| Video BW. [MHz] | 0.300000 |
| Detector | POS |
| Sweep Time [ms] | 50 |
| Sweep Points/Section | 10001 |
| Sweep Count | 200 |
| Sweep Mode | MAXH |
| Used Sweep Type | SWE |

| RESULT: TC_VM_FCC15247_Bandwidth_6dB_DTS_V01 | | | | | |
|--|-------------|-------------|----------|------|---------|
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
| DTS Bandwidth (6dB) | 500 | -- | 1575 | kHz | PASS |



Plot_FCC Part 15.247 Bandwidth 6dB DTS ~ Generic 2G4_03062019_133737.png

| TEST FINISHED | | |
|-----------------|--------------------------------|------|
| General Verdict | 03.06.2019 13:37:37 / RT: 25 s | PASS |

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

| Test References | |
|----------------------------|---|
| TC Start | 03.06.2019 13:57:04 |
| System Version | 1.0.0.15 |
| Test Specification | FCC Part 15.247 |
| Test Method | DTS: KDB 558074 D01 V05 - Chapter 8.2 DTS Bandwidth |
| Class / TC Version / TC ID | TC_VM_FCC15247_Bandwidth_6dB_DTS_V01 Version: 0.0.1 TCID_FCC15247_1 |
| My Description | FCC 15.247 Bandwidth 6dB DTS - Generic 2G4 |
| Add. Information | |

| IUT DEFINITION | |
|----------------|----|
| Manufacturer | NI |
| Type | NI |
| Serial No. | NI |
| Setup No. | NI |
| SW Version | NI |
| HW Version | NI |
| Comment 1 | NI |
| Comment 2 | NI |

| IUT Common Settings | |
|--|---------|
| Tlow [°C] | -20 |
| Tmid [°C] | 20 |
| Thigh [°C] | 55 |
| Vlow [V] | 3.3 |
| Vmid [V] | 3.8 |
| Vhigh [V] | 4.2 |
| Imax [A] | 1 |
| Auto Control enabled Power Supply Climatic Box | No No |
| Antenna Gain [dBi] | 0 |
| Additional Path Loss [dB] | 0 |

| IUT Common Settings 2G4 Init Values from IUT file | |
|---|------|
| Hopping supported | No |
| Frequency low [MHz] | 2402 |
| Frequency mid [MHz] | 2442 |
| Frequency high [MHz] | 2478 |
| Burst length [ms] | 10 |
| Nominal Bandwidth [MHz] | 1.7 |
| User Interaction | Yes |

| Test Parameter | |
|------------------------|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | False Freq [MHz] 2402 |
| Frequency mid to test | True Freq [MHz] 2442 |
| Frequency high to test | False Freq [MHz] 2478 |
| Pattern | PRBS9 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | SigBT: Rohde&Schwarz,CMW,1201.0002k75/100683,3.7.70 SA: Rohde&Schwarz,FSV-30,1321.3008K30/103809,3.40 |

Test at TX 2442 MHz

RESULT: Reference Power

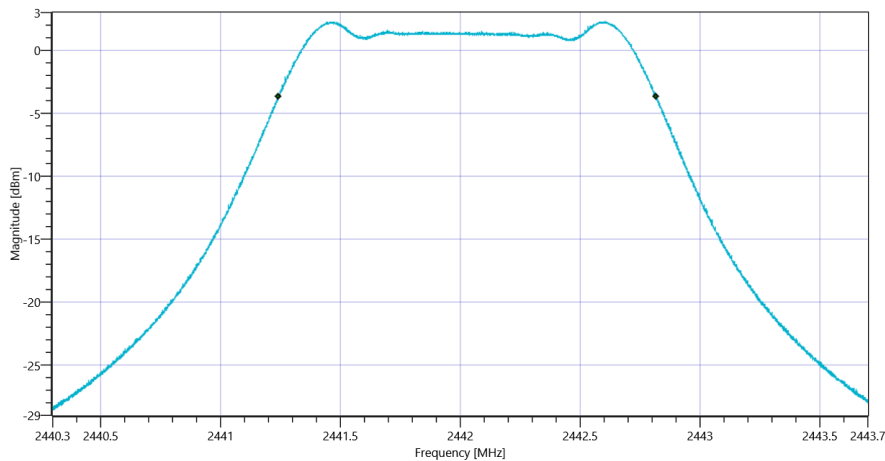
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|----------------------|-------------|-------------|----------|------|-------------|
| Ref. Power 1MHz/1MHz | -- | -- | 7.10 | dBm | Information |
| Ref. Frequency | -- | -- | 2441.410 | MHz | Information |

READ SA SETTINGS:

| | |
|------------------------|----------|
| Ref. Level [dBm] | 12.10 |
| Ref. Lev. offs [dB] | 9.91 |
| Input Attenuation [dB] | 20 |
| Freq. Start [MHz] | 2440.300 |
| Freq. Stop [MHz] | 2443.700 |
| Resolution BW. [MHz] | 0.100000 |
| Video BW. [MHz] | 0.300000 |
| Detector | POS |
| Sweep Time [ms] | 50 |
| Sweep Points/Section | 10001 |
| Sweep Count | 200 |
| Sweep Mode | MAXH |
| Used Sweep Type | SWE |

RESULT: TC_VM_FCC15247_Bandwidth_6dB_DTS_V01

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|---------------------|-------------|-------------|----------|------|---------|
| DTS Bandwidth (6dB) | 500 | -- | 1577 | kHz | PASS |



Plot_FCC Part 15.247 Bandwidth 6dB DTS ~ Generic 2G4_03062019_135729.png

TEST FINISHED

General Verdict

03.06.2019 13:57:29 / RT: 25 s

PASS

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

| Test References | |
|----------------------------|---|
| TC Start | 03.06.2019 14:57:51 |
| System Version | 1.0.0.15 |
| Test Specification | FCC Part 15.247 |
| Test Method | DTS: KDB 558074 D01 V05 - Chapter 8.2 DTS Bandwidth |
| Class / TC Version / TC ID | TC_VM_FCC15247_Bandwidth_6dB_DTS_V01 Version: 0.0.1 TCID_FCC15247_1 |
| My Description | FCC 15.247 Bandwidth 6dB DTS - Generic 2G4 |
| Add. Information | |

| IUT DEFINITION | |
|----------------|----|
| Manufacturer | NI |
| Type | NI |
| Serial No. | NI |
| Setup No. | NI |
| SW Version | NI |
| HW Version | NI |
| Comment 1 | NI |
| Comment 2 | NI |

| IUT Common Settings | |
|--|---------|
| Tlow [°C] | -20 |
| Tmid [°C] | 20 |
| Thigh [°C] | 55 |
| Vlow [V] | 3.3 |
| Vmid [V] | 3.8 |
| Vhigh [V] | 4.2 |
| Imax [A] | 1 |
| Auto Control enabled Power Supply Climatic Box | No No |
| Antenna Gain [dBi] | 0 |
| Additional Path Loss [dB] | 0 |

| IUT Common Settings 2G4 Init Values from IUT file | |
|---|------|
| Hopping supported | No |
| Frequency low [MHz] | 2402 |
| Frequency mid [MHz] | 2442 |
| Frequency high [MHz] | 2478 |
| Burst length [ms] | 10 |
| Nominal Bandwidth [MHz] | 1.7 |
| User Interaction | Yes |

| Test Parameter | |
|------------------------|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | False Freq [MHz] 2402 |
| Frequency mid to test | False Freq [MHz] 2442 |
| Frequency high to test | True Freq [MHz] 2478 |
| Pattern | PRBS9 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | SigBT: Rohde&Schwarz,CMW,1201.0002k75/100683,3.7.70 SA: Rohde&Schwarz,FSV-30,1321.3008K30/103809,3.40 |

Test at TX 2478 MHz

RESULT: Reference Power

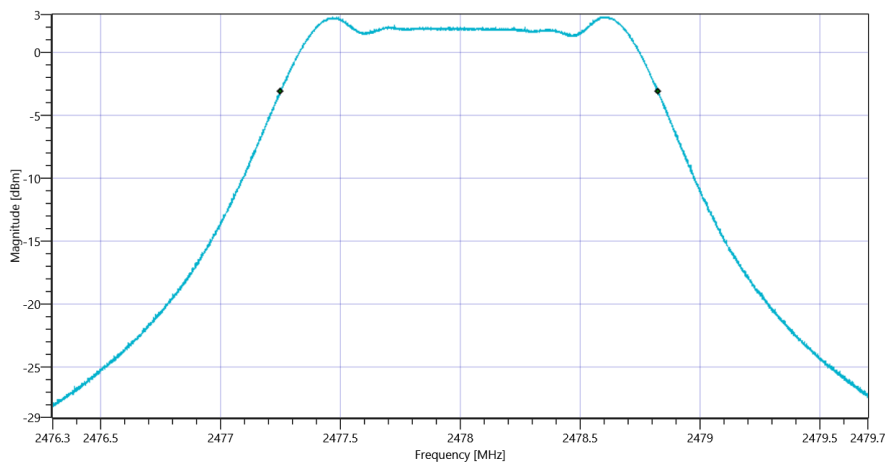
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|----------------------|-------------|-------------|----------|------|-------------|
| Ref. Power 1MHz/1MHz | -- | -- | 7.64 | dBm | Information |
| Ref. Frequency | -- | -- | 2477.470 | MHz | Information |

READ SA SETTINGS:

| | |
|------------------------|----------|
| Ref. Level [dBm] | 12.64 |
| Ref. Lev. offs [dB] | 9.96 |
| Input Attenuation [dB] | 20 |
| Freq. Start [MHz] | 2476.300 |
| Freq. Stop [MHz] | 2479.700 |
| Resolution BW. [MHz] | 0.100000 |
| Video BW. [MHz] | 0.300000 |
| Detector | POS |
| Sweep Time [ms] | 50 |
| Sweep Points/Section | 10001 |
| Sweep Count | 200 |
| Sweep Mode | MAXH |
| Used Sweep Type | SWE |

RESULT: TC_VM_FCC15247_Bandwidth_6dB_DTS_V01

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|---------------------|-------------|-------------|----------|------|---------|
| DTS Bandwidth (6dB) | 500 | -- | 1577 | kHz | PASS |



Plot_FCC Part 15.247 Bandwidth 6dB DTS ~ Generic 2G4_03062019_145816.png

TEST FINISHED

General Verdict

03.06.2019 14:58:16 / RT: 25 s

PASS

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

| Test References | |
|----------------------------|---|
| TC Start | 03.06.2019 13:38:21 |
| System Version | 1.0.0.15 |
| Test Specification | FCC Part 15.247 |
| Test Method | |
| Class / TC Version / TC ID | TC_VM_FCC15247_Bandwidth_99PCT_20dB_DTS_FHSS_V01 Version: 0.0.2 TCID_FCC15247_2 |
| My Description | FCC 15.247 Bandwidth 99PCT-20dB DTS - Generic 2G4 |
| Add. Information | |

| IUT DEFINITION | |
|----------------|----|
| Manufacturer | NI |
| Type | NI |
| Serial No. | NI |
| Setup No. | NI |
| SW Version | NI |
| HW Version | NI |
| Comment 1 | NI |
| Comment 2 | NI |

| IUT Common Settings | |
|--|---------|
| Tlow [°C] | -20 |
| Tmid [°C] | 20 |
| Thigh [°C] | 55 |
| Vlow [V] | 3.3 |
| Vmid [V] | 3.8 |
| Vhigh [V] | 4.2 |
| Imax [A] | 1 |
| Auto Control enabled Power Supply Climatic Box | No No |
| Antenna Gain [dBi] | 0 |
| Additional Path Loss [dB] | 0 |

| IUT Common Settings 2G4 Init Values from IUT file | |
|---|------|
| Hopping supported | No |
| Frequency low [MHz] | 2402 |
| Frequency mid [MHz] | 2442 |
| Frequency high [MHz] | 2478 |
| Burst length [ms] | 10 |
| Nominal Bandwidth [MHz] | 1.7 |
| User Interaction | Yes |

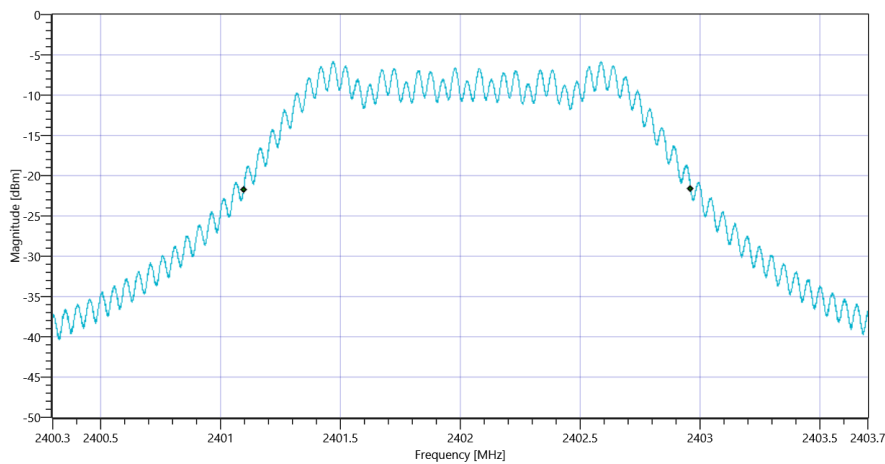
| Test Parameter | |
|------------------------|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | True Freq [MHz] 2402 |
| Frequency mid to test | False Freq [MHz] 2442 |
| Frequency high to test | False Freq [MHz] 2478 |
| Pattern | PRBS9 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | SigBT: Rohde&Schwarz,CMW,1201.0002k75/100683,3.7.70 SA: Rohde&Schwarz,FSV-30,1321.3008K30/103809,3.40 |

Test at TX 2402 MHz

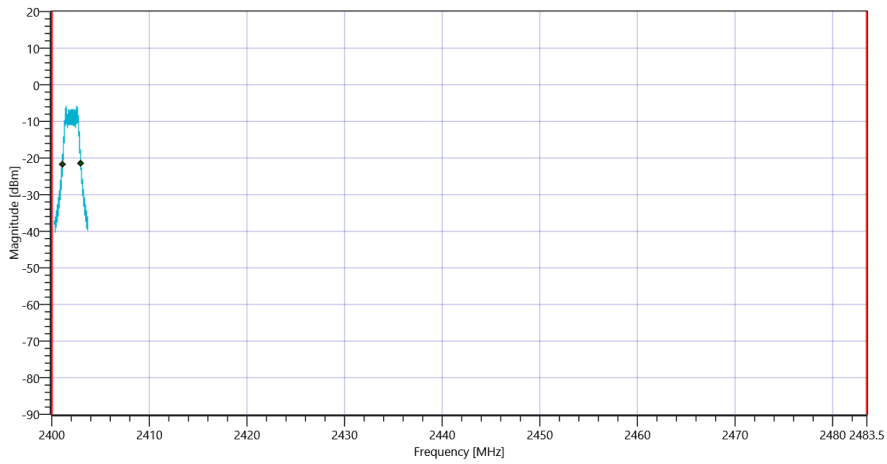
| RESULT: Reference Power | | | | | |
|-------------------------|-------------|-------------|----------|------|-------------|
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
| Ref. Power 1MHz/1MHz | --- | --- | 7.19 | dBm | Information |
| Ref. Frequency | --- | --- | 2401.750 | MHz | Information |

| READ SA SETTINGS: | |
|------------------------|----------|
| Ref. Level [dBm] | 12.19 |
| Ref. Lev. offs [dB] | 9.79 |
| Input Attenuation [dB] | 20 |
| Freq. Start [MHz] | 2400.300 |
| Freq. Stop [MHz] | 2403.700 |
| Resolution BW. [MHz] | 0.030000 |
| Video BW. [MHz] | 0.100000 |
| Detector | POS |
| Sweep Time [ms] | 50 |
| Sweep Points/Section | 10001 |
| Sweep Count | 200 |
| Sweep Mode | MAXH |
| Used Sweep Type | SWE |

| RESULT: TC_VM_FCC15247_Bandwidth_99PCT_20dB_DTS_FHSS_V01 | | | | | |
|--|-------------|-------------|-----------|------|-------------|
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
| Bandwidth 99% | --- | --- | 1865 | kHz | Information |
| T1 99% | 2400.000000 | --- | 2401.0964 | MHz | PASS |
| T2 99% | --- | 2483.500000 | 2402.9614 | MHz | PASS |

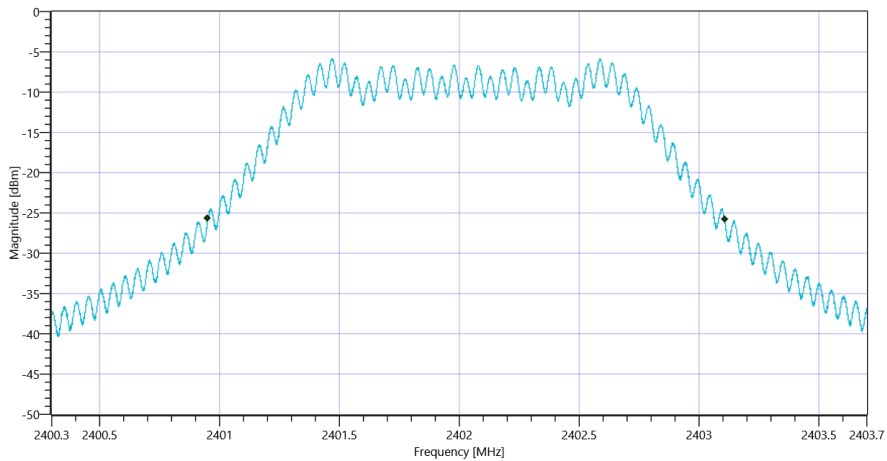


Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4 99PCT_03062019_133847.png

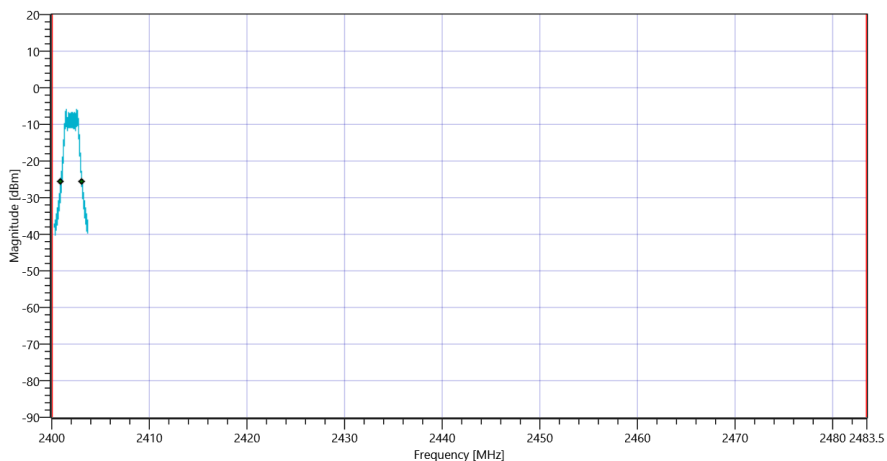


Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4_03062019_133850.png

| RESULT: TC_VM_FCC15247_Bandwidth_99PCT_20dB_DTS_FHSS_V01 | | | | | |
|--|-------------|-------------|-----------|------|-------------|
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
| Bandwidth 20dB | -- | -- | 2155 | kHz | Information |
| T1 20dB | 2400.000000 | -- | 2400.9518 | MHz | PASS |
| T2 20dB | -- | 2483.500000 | 2403.1067 | MHz | PASS |



Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4 20dB_03062019_133854.png



Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4_03062019_133857.png

TEST FINISHED

General Verdict

03.06.2019 13:38:57 / RT: 35 s

PASS

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

| Test References | |
|----------------------------|---|
| TC Start | 03.06.2019 13:58:12 |
| System Version | 1.0.0.15 |
| Test Specification | FCC Part 15.247 |
| Test Method | |
| Class / TC Version / TC ID | TC_VM_FCC15247_Bandwidth_99PCT_20dB_DTS_FHSS_V01 Version: 0.0.2 TCID_FCC15247_2 |
| My Description | FCC 15.247 Bandwidth 99PCT-20dB DTS - Generic 2G4 |
| Add. Information | |

| IUT DEFINITION | |
|----------------|----|
| Manufacturer | NI |
| Type | NI |
| Serial No. | NI |
| Setup No. | NI |
| SW Version | NI |
| HW Version | NI |
| Comment 1 | NI |
| Comment 2 | NI |

| IUT Common Settings | |
|--|---------|
| Tlow [°C] | -20 |
| Tmid [°C] | 20 |
| Thigh [°C] | 55 |
| Vlow [V] | 3.3 |
| Vmid [V] | 3.8 |
| Vhigh [V] | 4.2 |
| Imax [A] | 1 |
| Auto Control enabled Power Supply Climatic Box | No No |
| Antenna Gain [dBi] | 0 |
| Additional Path Loss [dB] | 0 |

| IUT Common Settings 2G4 Init Values from IUT file | |
|---|------|
| Hopping supported | No |
| Frequency low [MHz] | 2402 |
| Frequency mid [MHz] | 2442 |
| Frequency high [MHz] | 2478 |
| Burst length [ms] | 10 |
| Nominal Bandwidth [MHz] | 1.7 |
| User Interaction | Yes |

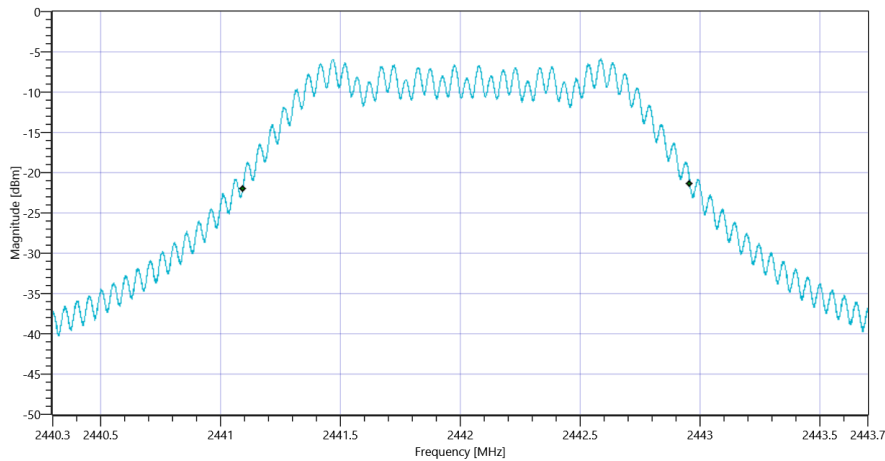
| Test Parameter | |
|------------------------|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | False Freq [MHz] 2402 |
| Frequency mid to test | True Freq [MHz] 2442 |
| Frequency high to test | False Freq [MHz] 2478 |
| Pattern | PRBS9 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | SigBT: Rohde&Schwarz,CMW,1201.0002k75/100683,3.7.70 SA: Rohde&Schwarz,FSV-30,1321.3008K30/103809,3.40 |

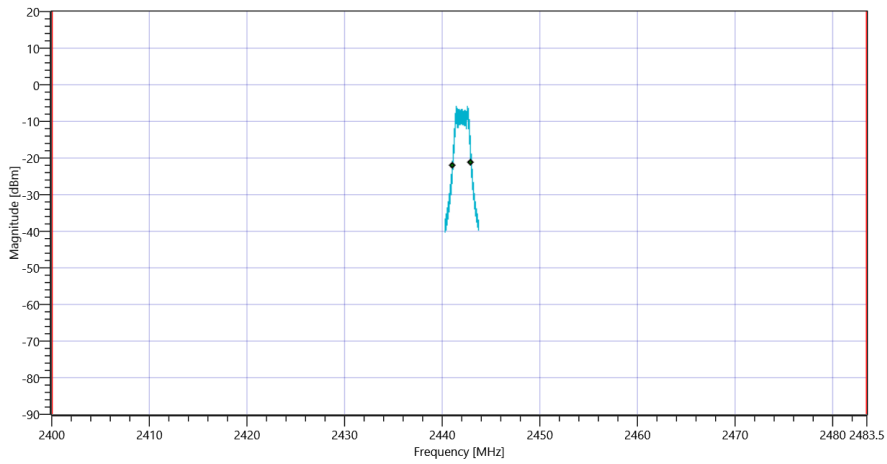
Test at TX 2442 MHz

| RESULT: Reference Power | | | | | |
|-------------------------|-------------|-------------|----------|------|-------------|
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
| Ref. Power 1MHz/1MHz | -- | -- | 7.09 | dBm | Information |
| Ref. Frequency | -- | -- | 2441.410 | MHz | Information |

| READ SA SETTINGS: | |
|------------------------|----------|
| Ref. Level [dBm] | 12.09 |
| Ref. Lev. offs [dB] | 9.91 |
| Input Attenuation [dB] | 20 |
| Freq. Start [MHz] | 2440.300 |
| Freq. Stop [MHz] | 2443.700 |
| Resolution BW. [MHz] | 0.030000 |
| Video BW. [MHz] | 0.100000 |
| Detector | POS |
| Sweep Time [ms] | 50 |
| Sweep Points/Section | 10001 |
| Sweep Count | 200 |
| Sweep Mode | MAXH |
| Used Sweep Type | SWE |

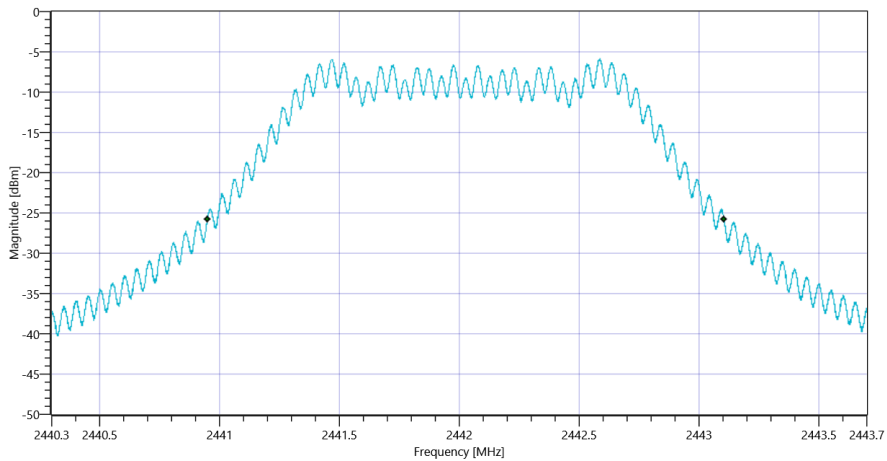
| RESULT: TC_VM_FCC15247_Bandwidth_99PCT_20dB_DTS_FHSS_V01 | | | | | |
|--|-------------|-------------|-----------|------|-------------|
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
| Bandwidth 99% | -- | -- | 1865 | kHz | Information |
| T1 99% | 2400.000000 | -- | 2441.0926 | MHz | PASS |
| T2 99% | -- | 2483.500000 | 2442.9580 | MHz | PASS |



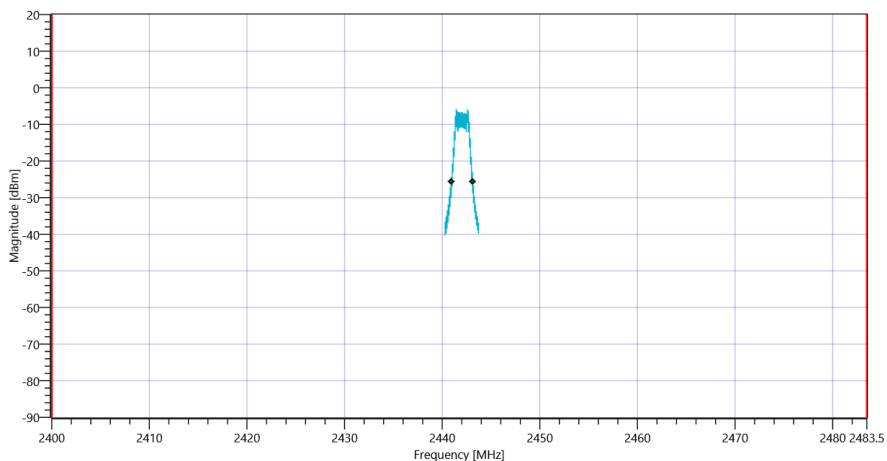


Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4_03062019_135848.png

| RESULT: TC_VM_FCC15247_Bandwidth_99PCT_20dB_DTS_FHSS_V01 | | | | | |
|--|-------------|-------------|-----------|------|-------------|
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
| Bandwidth 20dB | -- | -- | 2156 | kHz | Information |
| T1 20dB | 2400.000000 | -- | 2440.9491 | MHz | PASS |
| T2 20dB | -- | 2483.500000 | 2443.1047 | MHz | PASS |



Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4 20dB_03062019_135852.png



Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4_03062019_135855.png

TEST FINISHED

General Verdict

03.06.2019 13:58:55 / RT: 43 s

PASS

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

| Test References | |
|----------------------------|---|
| TC Start | 03.06.2019 14:59:14 |
| System Version | 1.0.0.15 |
| Test Specification | FCC Part 15.247 |
| Test Method | |
| Class / TC Version / TC ID | TC_VM_FCC15247_Bandwidth_99PCT_20dB_DTS_FHSS_V01 Version: 0.0.2 TCID_FCC15247_2 |
| My Description | FCC 15.247 Bandwidth 99PCT-20dB DTS - Generic 2G4 |
| Add. Information | |

| IUT DEFINITION | |
|----------------|----|
| Manufacturer | NI |
| Type | NI |
| Serial No. | NI |
| Setup No. | NI |
| SW Version | NI |
| HW Version | NI |
| Comment 1 | NI |
| Comment 2 | NI |

| IUT Common Settings | |
|--|---------|
| Tlow [°C] | -20 |
| Tmid [°C] | 20 |
| Thigh [°C] | 55 |
| Vlow [V] | 3.3 |
| Vmid [V] | 3.8 |
| Vhigh [V] | 4.2 |
| Imax [A] | 1 |
| Auto Control enabled Power Supply Climatic Box | No No |
| Antenna Gain [dBi] | 0 |
| Additional Path Loss [dB] | 0 |

| IUT Common Settings 2G4 Init Values from IUT file | |
|---|------|
| Hopping supported | No |
| Frequency low [MHz] | 2402 |
| Frequency mid [MHz] | 2442 |
| Frequency high [MHz] | 2478 |
| Burst length [ms] | 10 |
| Nominal Bandwidth [MHz] | 1.7 |
| User Interaction | Yes |

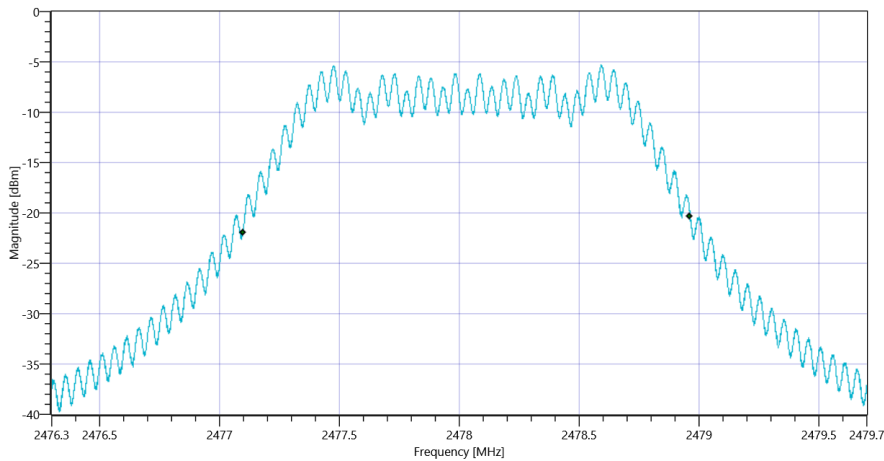
| Test Parameter | |
|------------------------|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | False Freq [MHz] 2402 |
| Frequency mid to test | False Freq [MHz] 2442 |
| Frequency high to test | True Freq [MHz] 2478 |
| Pattern | PRBS9 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | SigBT: Rohde&Schwarz,CMW,1201.0002k75/100683,3.7.70 SA: Rohde&Schwarz,FSV-30,1321.3008K30/103809,3.40 |

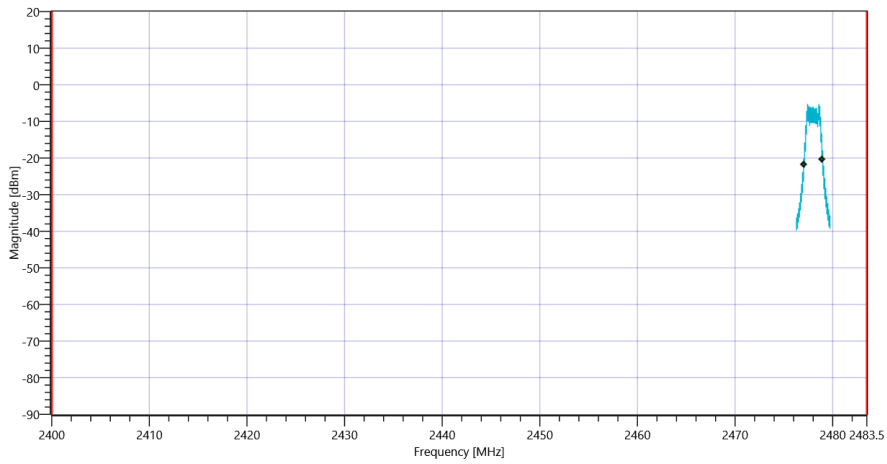
Test at TX 2478 MHz

| RESULT: Reference Power | | | | | |
|-------------------------|-------------|-------------|----------|------|-------------|
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
| Ref. Power 1MHz/1MHz | -- | -- | 7.65 | dBm | Information |
| Ref. Frequency | -- | -- | 2477.470 | MHz | Information |

| READ SA SETTINGS: | |
|------------------------|----------|
| Ref. Level [dBm] | 12.65 |
| Ref. Lev. offs [dB] | 9.96 |
| Input Attenuation [dB] | 20 |
| Freq. Start [MHz] | 2476.300 |
| Freq. Stop [MHz] | 2479.700 |
| Resolution BW. [MHz] | 0.030000 |
| Video BW. [MHz] | 0.100000 |
| Detector | POS |
| Sweep Time [ms] | 50 |
| Sweep Points/Section | 10001 |
| Sweep Count | 200 |
| Sweep Mode | MAXH |
| Used Sweep Type | SWE |

| RESULT: TC_VM_FCC15247_Bandwidth_99PCT_20dB_DTS_FHSS_V01 | | | | | |
|--|-------------|-------------|-----------|------|-------------|
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
| Bandwidth 99% | -- | -- | 1864 | kHz | Information |
| T1 99% | 2400.000000 | -- | 2477.0984 | MHz | PASS |
| T2 99% | -- | 2483.500000 | 2478.9628 | MHz | PASS |

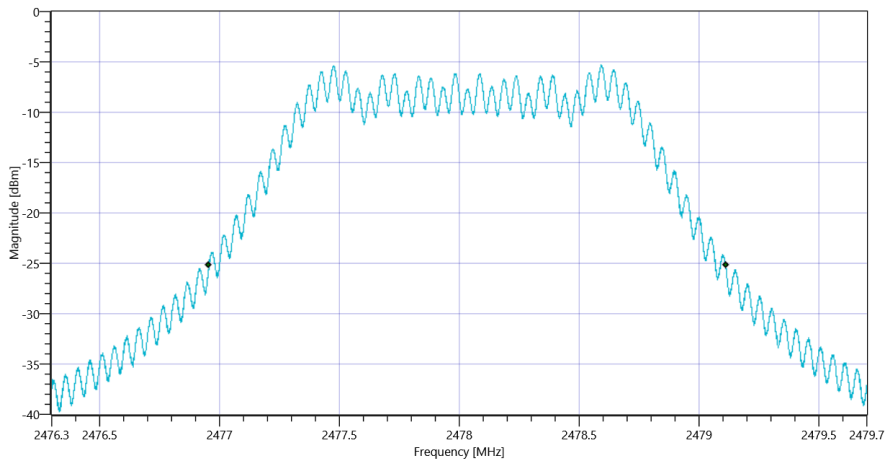




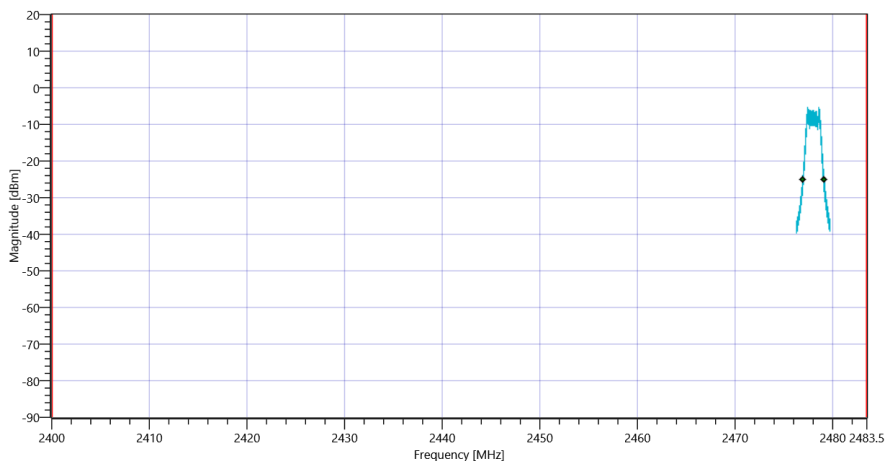
Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4_03062019_145942.png

RESULT: TC_VM_FCC15247_Bandwidth_99PCT_20dB_DTS_FHSS_V01

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|------------------|-------------|-------------|-----------|------|-------------|
| Bandwidth 20dB | -- | -- | 2155 | kHz | Information |
| T1 20dB | 2400.000000 | -- | 2476.9565 | MHz | PASS |
| T2 20dB | -- | 2483.500000 | 2479.1115 | MHz | PASS |



Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4 20dB_03062019_145946.png



Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ Generic 2G4_03062019_145948.png

TEST FINISHED

General Verdict

03.06.2019 14:59:48 / RT: 34 s

PASS

10. FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ Generic 2G4

| Test References | |
|----------------------------|---|
| TC Start | 03.06.2019 13:36:14 |
| System Version | 1.0.0.15 |
| Test Specification | FCC Part 15.247 |
| Test Method | DTS: KDB 558074 D01 V05 - Chapter 8.3.1.1 RBW ≥ DTS Bandwidth |
| Class / TC Version / TC ID | TC_VM_FCC15247_Maximum_Peak_Conducted_Output_Power_DTS_V01 Version: 0.0.1 TCID_FCC15247_3 |
| My Description | FCC 15.247 Maximum Peak Output Power Conducted DTS4 - Generic 2G4 |
| Add. Information | |

| IUT DEFINITION | |
|----------------|----|
| Manufacturer | NI |
| Type | NI |
| Serial No. | NI |
| Setup No. | NI |
| SW Version | NI |
| HW Version | NI |
| Comment 1 | NI |
| Comment 2 | NI |

| IUT Common Settings | |
|--|---------|
| Tlow [°C] | -20 |
| Tmid [°C] | 20 |
| Thigh [°C] | 55 |
| Vlow [V] | 3.3 |
| Vmid [V] | 3.8 |
| Vhigh [V] | 4.2 |
| Imax [A] | 1 |
| Auto Control enabled Power Supply Climatic Box | No No |
| Antenna Gain [dBi] | 0 |
| Additional Path Loss [dB] | 0 |

| IUT Common Settings 2G4 Init Values from IUT file | |
|---|------|
| Hopping supported | No |
| Frequency low [MHz] | 2402 |
| Frequency mid [MHz] | 2442 |
| Frequency high [MHz] | 2478 |
| Burst length [ms] | 10 |
| Nominal Bandwidth [MHz] | 1.7 |
| User Interaction | Yes |

| Test Parameter | |
|------------------------|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | True Freq [MHz] 2402 |
| Frequency mid to test | False Freq [MHz] 2442 |
| Frequency high to test | False Freq [MHz] 2478 |
| Pattern | PRBS9 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | SigBT: Rohde&Schwarz,CMW,1201.0002k75/100683,3.7.70 SA: |

Test at TX 2402 MHz

RESULT: Reference Power

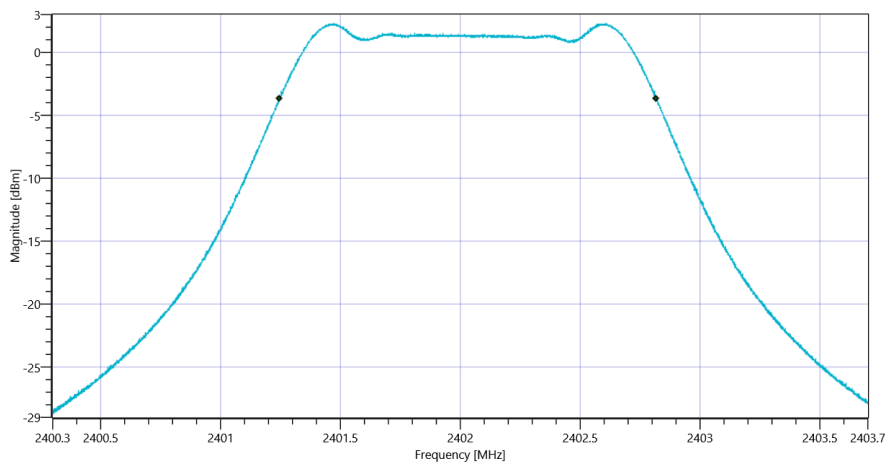
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|----------------------|-------------|-------------|----------|------|-------------|
| Ref. Power 1MHz/1MHz | -- | -- | 7.17 | dBm | Information |
| Ref. Frequency | -- | -- | 2402.050 | MHz | Information |

READ SA SETTINGS:

| | |
|------------------------|----------|
| Ref. Level [dBm] | 12.17 |
| Ref. Lev. offs [dB] | 9.79 |
| Input Attenuation [dB] | 20 |
| Freq. Start [MHz] | 2400.300 |
| Freq. Stop [MHz] | 2403.700 |
| Resolution BW. [MHz] | 0.100000 |
| Video BW. [MHz] | 0.300000 |
| Detector | POS |
| Sweep Time [ms] | 50 |
| Sweep Points/Section | 10001 |
| Sweep Count | 200 |
| Sweep Mode | MAXH |
| Used Sweep Type | SWE |

RESULT: DTS Bandwidth

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|---------------------|-------------|-------------|----------|------|-------------|
| DTS Bandwidth (6dB) | -- | -- | 1572 | kHz | Information |

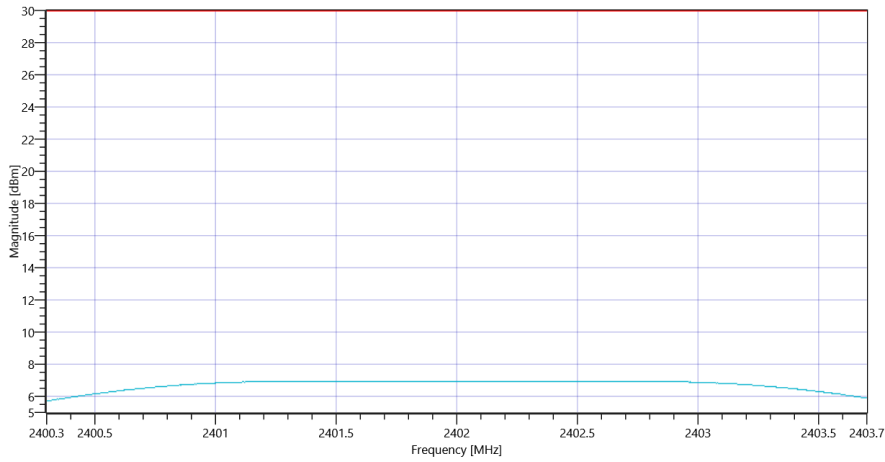


Plot_FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ Generic 2G4 DTS BW _03062019_133640.png

READ SA SETTINGS:

| | |
|------------------------|-----------|
| Ref. Level [dBm] | 17.17 |
| Ref. Lev. offs [dB] | 9.79 |
| Input Attenuation [dB] | 25 |
| Freq. Start [MHz] | 2400.300 |
| Freq. Stop [MHz] | 2403.700 |
| Resolution BW. [MHz] | 3.000000 |
| Video BW. [MHz] | 10.000000 |
| Detector | POS |
| Sweep Time [ms] | 50 |
| Sweep Points/Section | 1001 |
| Sweep Count | 200 |
| Sweep Mode | MAXH |
| Used Sweep Type | SWE |

| RESULT: TC_VM_FCC15247_Maximum_Peak_Conducted_Output_Power_DTS_V01 | | | | | |
|--|-------------|-------------|----------|------|-------------|
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
| Peak Power | -- | 30.00 | 6.93 | dBm | PASS |
| Peak Power | -- | 1000 | 4.931738 | mW | PASS |
| Frequency at Peak | -- | -- | 2401.946 | MHz | Information |



Plot_FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ Generic 2G4_03062019_133655.png

| TEST FINISHED | | |
|-----------------|--------------------------------|------|
| General Verdict | 03.06.2019 13:36:55 / RT: 40 s | PASS |

11. FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ Generic 2G4

| Test References | |
|----------------------------|---|
| TC Start | 03.06.2019 13:55:55 |
| System Version | 1.0.0.15 |
| Test Specification | FCC Part 15.247 |
| Test Method | DTS: KDB 558074 D01 V05 - Chapter 8.3.1.1 RBW ≥ DTS Bandwidth |
| Class / TC Version / TC ID | TC_VM_FCC15247_Maximum_Peak_Conducted_Output_Power_DTS_V01 Version: 0.0.1 TCID_FCC15247_3 |
| My Description | FCC 15.247 Maximum Peak Output Power Conducted DTS4 - Generic 2G4 |
| Add. Information | |

| IUT DEFINITION | |
|----------------|----|
| Manufacturer | NI |
| Type | NI |
| Serial No. | NI |
| Setup No. | NI |
| SW Version | NI |
| HW Version | NI |
| Comment 1 | NI |
| Comment 2 | NI |

| IUT Common Settings | |
|--|---------|
| Tlow [°C] | -20 |
| Tmid [°C] | 20 |
| Thigh [°C] | 55 |
| Vlow [V] | 3.3 |
| Vmid [V] | 3.8 |
| Vhigh [V] | 4.2 |
| Imax [A] | 1 |
| Auto Control enabled Power Supply Climatic Box | No No |
| Antenna Gain [dBi] | 0 |
| Additional Path Loss [dB] | 0 |

| IUT Common Settings 2G4 Init Values from IUT file | |
|---|------|
| Hopping supported | No |
| Frequency low [MHz] | 2402 |
| Frequency mid [MHz] | 2442 |
| Frequency high [MHz] | 2478 |
| Burst length [ms] | 10 |
| Nominal Bandwidth [MHz] | 1.7 |
| User Interaction | Yes |

| Test Parameter | |
|------------------------|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | False Freq [MHz] 2402 |
| Frequency mid to test | True Freq [MHz] 2442 |
| Frequency high to test | False Freq [MHz] 2478 |
| Pattern | PRBS9 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | SigBT: Rohde&Schwarz,CMW,1201.0002k75/100683,3.7.70 SA: |

Test at TX 2442 MHz

RESULT: Reference Power

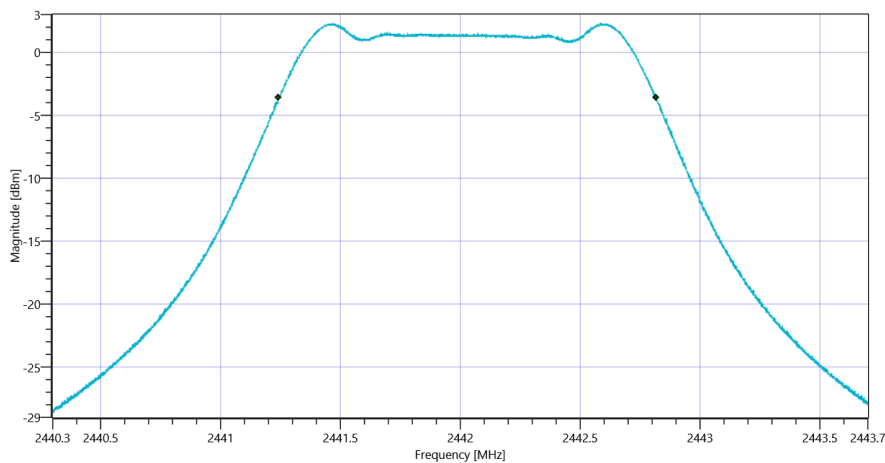
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|----------------------|-------------|-------------|----------|------|-------------|
| Ref. Power 1MHz/1MHz | -- | -- | 7.14 | dBm | Information |
| Ref. Frequency | -- | -- | 2441.510 | MHz | Information |

READ SA SETTINGS:

| | |
|------------------------|----------|
| Ref. Level [dBm] | 12.14 |
| Ref. Lev. offs [dB] | 9.91 |
| Input Attenuation [dB] | 20 |
| Freq. Start [MHz] | 2440.300 |
| Freq. Stop [MHz] | 2443.700 |
| Resolution BW. [MHz] | 0.100000 |
| Video BW. [MHz] | 0.300000 |
| Detector | POS |
| Sweep Time [ms] | 50 |
| Sweep Points/Section | 10001 |
| Sweep Count | 200 |
| Sweep Mode | MAXH |
| Used Sweep Type | SWE |

RESULT: DTS Bandwidth

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|---------------------|-------------|-------------|----------|------|-------------|
| DTS Bandwidth (6dB) | -- | -- | 1576 | kHz | Information |

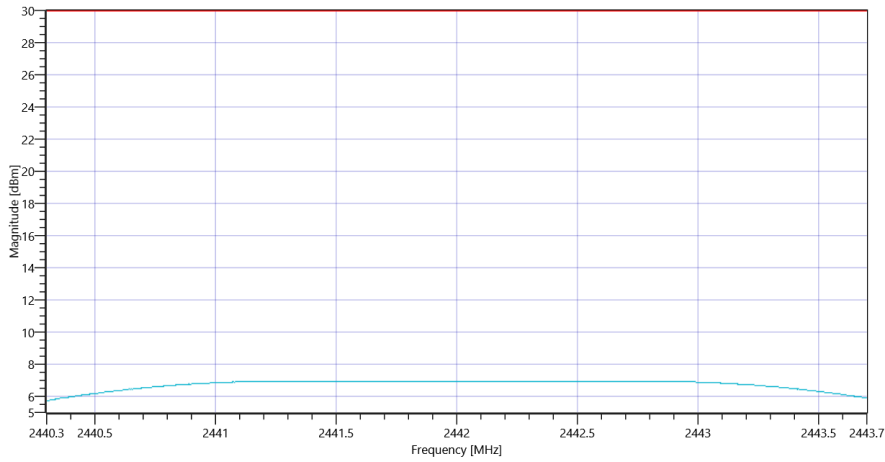


Plot_FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ Generic 2G4 DTS BW _03062019_135620.png

READ SA SETTINGS:

| | |
|------------------------|-----------|
| Ref. Level [dBm] | 17.14 |
| Ref. Lev. offs [dB] | 9.91 |
| Input Attenuation [dB] | 25 |
| Freq. Start [MHz] | 2440.300 |
| Freq. Stop [MHz] | 2443.700 |
| Resolution BW. [MHz] | 3.000000 |
| Video BW. [MHz] | 10.000000 |
| Detector | POS |
| Sweep Time [ms] | 50 |
| Sweep Points/Section | 1001 |
| Sweep Count | 200 |
| Sweep Mode | MAXH |
| Used Sweep Type | SWE |

| RESULT: TC_VM_FCC15247_Maximum_Peak_Conducted_Output_Power_DTS_V01 | | | | | |
|--|-------------|-------------|----------|------|-------------|
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
| Peak Power | -- | 30.00 | 6.95 | dBm | PASS |
| Peak Power | -- | 1000 | 4.954502 | mW | PASS |
| Frequency at Peak | -- | -- | 2442.017 | MHz | Information |



Plot_FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ Generic 2G4_03062019_135635.png

| TEST FINISHED | | |
|-----------------|--------------------------------|------|
| General Verdict | 03.06.2019 13:56:35 / RT: 40 s | PASS |

12. FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ Generic 2G4

| Test References | |
|----------------------------|---|
| TC Start | 03.06.2019 14:56:56 |
| System Version | 1.0.0.15 |
| Test Specification | FCC Part 15.247 |
| Test Method | DTS: KDB 558074 D01 V05 - Chapter 8.3.1.1 RBW ≥ DTS Bandwidth |
| Class / TC Version / TC ID | TC_VM_FCC15247_Maximum_Peak_Conducted_Output_Power_DTS_V01 Version: 0.0.1 TCID_FCC15247_3 |
| My Description | FCC 15.247 Maximum Peak Output Power Conducted DTS4 - Generic 2G4 |
| Add. Information | |

| IUT DEFINITION | |
|----------------|----|
| Manufacturer | NI |
| Type | NI |
| Serial No. | NI |
| Setup No. | NI |
| SW Version | NI |
| HW Version | NI |
| Comment 1 | NI |
| Comment 2 | NI |

| IUT Common Settings | |
|--|---------|
| Tlow [°C] | -20 |
| Tmid [°C] | 20 |
| Thigh [°C] | 55 |
| Vlow [V] | 3.3 |
| Vmid [V] | 3.8 |
| Vhigh [V] | 4.2 |
| Imax [A] | 1 |
| Auto Control enabled Power Supply Climatic Box | No No |
| Antenna Gain [dBi] | 0 |
| Additional Path Loss [dB] | 0 |

| IUT Common Settings 2G4 Init Values from IUT file | |
|---|------|
| Hopping supported | No |
| Frequency low [MHz] | 2402 |
| Frequency mid [MHz] | 2442 |
| Frequency high [MHz] | 2478 |
| Burst length [ms] | 10 |
| Nominal Bandwidth [MHz] | 1.7 |
| User Interaction | Yes |

| Test Parameter | |
|------------------------|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | False Freq [MHz] 2402 |
| Frequency mid to test | False Freq [MHz] 2442 |
| Frequency high to test | True Freq [MHz] 2478 |
| Pattern | PRBS9 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | SigBT: Rohde&Schwarz,CMW,1201.0002k75/100683,3.7.70 SA: |

Test at TX 2478 MHz

RESULT: Reference Power

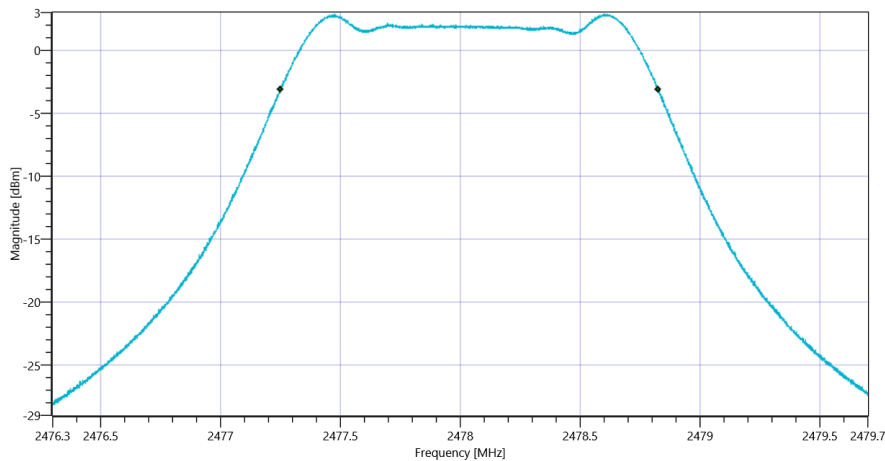
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|----------------------|-------------|-------------|----------|------|-------------|
| Ref. Power 1MHz/1MHz | --- | --- | 7.63 | dBm | Information |
| Ref. Frequency | --- | --- | 2477.370 | MHz | Information |

READ SA SETTINGS:

| | |
|------------------------|----------|
| Ref. Level [dBm] | 12.63 |
| Ref. Lev. offs [dB] | 9.96 |
| Input Attenuation [dB] | 20 |
| Freq. Start [MHz] | 2476.300 |
| Freq. Stop [MHz] | 2479.700 |
| Resolution BW. [MHz] | 0.100000 |
| Video BW. [MHz] | 0.300000 |
| Detector | POS |
| Sweep Time [ms] | 50 |
| Sweep Points/Section | 10001 |
| Sweep Count | 200 |
| Sweep Mode | MAXH |
| Used Sweep Type | SWE |

RESULT: DTS Bandwidth

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|---------------------|-------------|-------------|----------|------|-------------|
| DTS Bandwidth (6dB) | --- | --- | 1574 | kHz | Information |

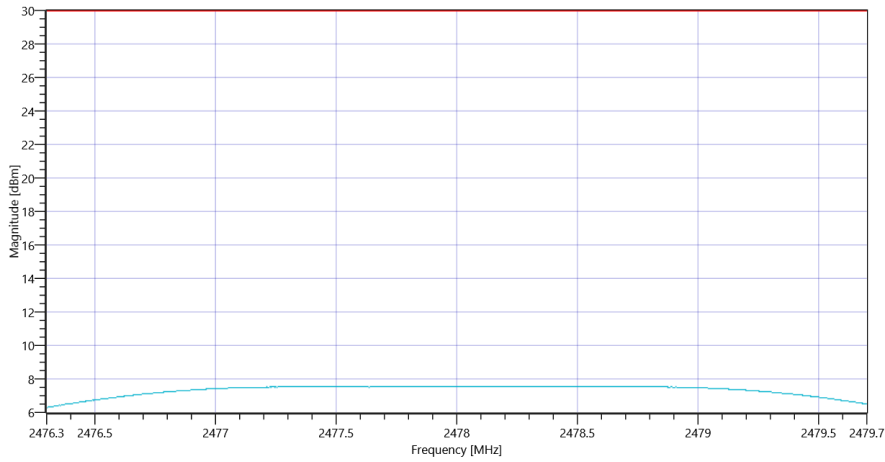


Plot_FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ Generic 2G4 DTS BW _03062019_145721.png

READ SA SETTINGS:

| | |
|------------------------|-----------|
| Ref. Level [dBm] | 17.63 |
| Ref. Lev. offs [dB] | 9.96 |
| Input Attenuation [dB] | 25 |
| Freq. Start [MHz] | 2476.300 |
| Freq. Stop [MHz] | 2479.700 |
| Resolution BW. [MHz] | 3.000000 |
| Video BW. [MHz] | 10.000000 |
| Detector | POS |
| Sweep Time [ms] | 50 |
| Sweep Points/Section | 1001 |
| Sweep Count | 200 |
| Sweep Mode | MAXH |
| Used Sweep Type | SWE |

| RESULT: TC_VM_FCC15247_Maximum_Peak_Conducted_Output_Power_DTS_V01 | | | | | |
|--|-------------|-------------|----------|------|-------------|
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
| Peak Power | -- | 30.00 | 7.53 | dBm | PASS |
| Peak Power | -- | 1000 | 5.662393 | mW | PASS |
| Frequency at Peak | -- | -- | 2478.282 | MHz | Information |



Plot_FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ Generic 2G4_03062019_145735.png

| TEST FINISHED | | |
|-----------------|--------------------------------|------|
| General Verdict | 03.06.2019 14:57:35 / RT: 39 s | PASS |

13. FCC Part 15.247 TX Spurious Conducted ~ Generic 2G4

| Test References | |
|----------------------------|--|
| TC Start | 03.06.2019 13:39:00 |
| System Version | 1.0.0.15 |
| 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 ID | TC_VM_FCC15247_TX_Emissions_Conducted_V01 Version: 0.0.1 TCID_FCC15247_8 |
| My Description | FCC 15.247 TX Emissions Conducted DTS - Generic 2G4 |
| Add. Information | |

| IUT DEFINITION | |
|----------------|----|
| Manufacturer | NI |
| Type | NI |
| Serial No. | NI |
| Setup No. | NI |
| SW Version | NI |
| HW Version | NI |
| Comment 1 | NI |
| Comment 2 | NI |

| IUT Common Settings | |
|--|---------|
| Tlow [°C] | -20 |
| Tmid [°C] | 20 |
| Thigh [°C] | 55 |
| Vlow [V] | 3.3 |
| Vmid [V] | 3.8 |
| Vhigh [V] | 4.2 |
| Imax [A] | 1 |
| Auto Control enabled Power Supply Climatic Box | No No |
| Antenna Gain [dBi] | 0 |
| Additional Path Loss [dB] | 0 |

| IUT Common Settings 2G4 Init Values from IUT file | |
|---|------|
| Hopping supported | No |
| Frequency low [MHz] | 2402 |
| Frequency mid [MHz] | 2442 |
| Frequency high [MHz] | 2478 |
| Burst length [ms] | 10 |
| Nominal Bandwidth [MHz] | 1.7 |
| User Interaction | Yes |

| Test Parameter | |
|------------------------|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | True Freq [MHz] 2402 |
| Frequency mid to test | False Freq [MHz] 2442 |
| Frequency high to test | False Freq [MHz] 2478 |
| Pattern | PRBS9 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | SigBT: Rohde&Schwarz,CMW,1201.0002k75/100683,3.7.70 SA: Rohde&Schwarz,FSV-30,1321.3008K30/103809,3.40 |

Test at TX 2402 MHz

RESULT: Reference Power

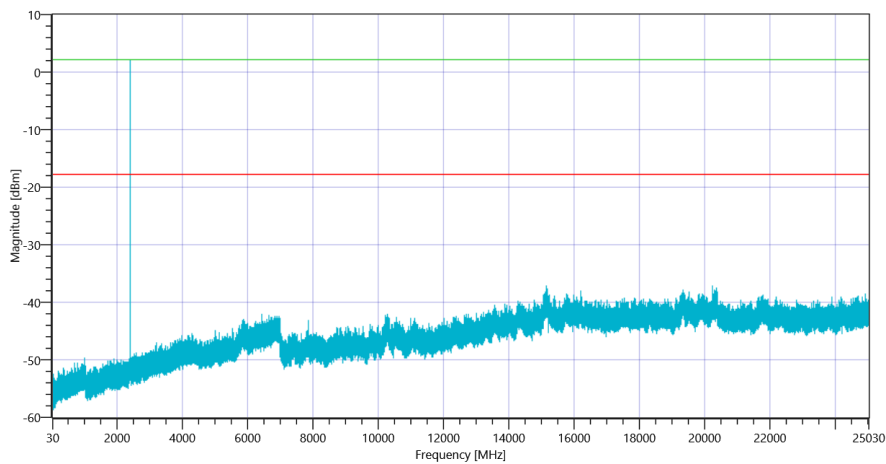
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|----------------------|-------------|-------------|----------|------|-------------|
| Ref. Power 1MHz/1MHz | --- | --- | 7.40 | dBm | Information |
| Ref. Frequency | --- | --- | 2402.750 | MHz | Information |

READ SA SETTINGS:

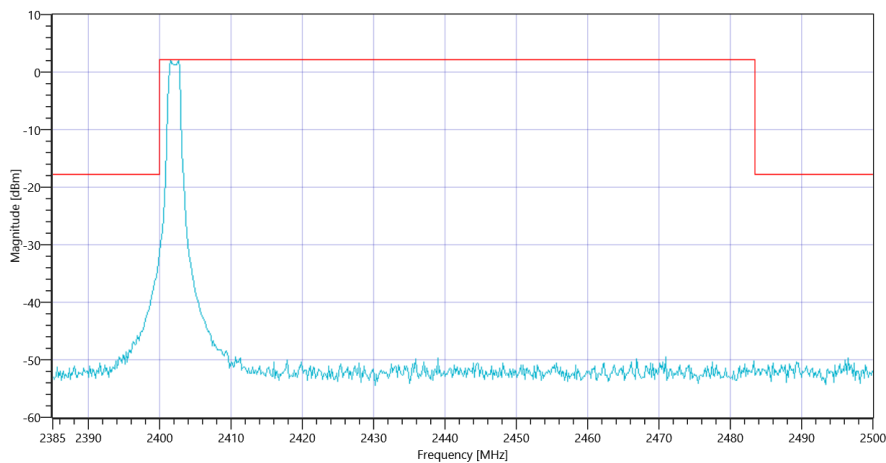
| | |
|----------------------|----------|
| Ref. Level [dBm] | 12.40 |
| Resolution BW. [MHz] | 0.100000 |
| Video BW. [MHz] | 0.300000 |
| Detector | POS |
| Sweep Time [ms] | 500 |
| Sweep Points/Section | 3001 |
| Sweep Count | 8 |
| Sweep Mode | MAXH |
| Used Sweep Type | SWE |

RESULT: TC_VM_FCC15247_TX_Emissions_Conducted_V01

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------------|-------------|-------------|----------|------|-------------|
| Reference @ 2402.67 MHz | --- | --- | 2.20 | dBm | Information |
| No peaks detected | --- | --- | | | PASS |



Plot_FCC Part 15.247 TX Spurious Conducted ~ Generic 2G4 2402_03062019_134349.png



Plot_FCC Part 15.247 TX Spurious Conducted ~ Generic 2G4 2402_03062019_134351.png

TEST FINISHED

General Verdict

03.06.2019 13:43:52 / RT: 291 s

PASS

14. FCC Part 15.247 TX Spurious Conducted ~ Generic 2G4

| Test References | |
|----------------------------|--|
| TC Start | 03.06.2019 13:58:59 |
| System Version | 1.0.0.15 |
| 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 ID | TC_VM_FCC15247_TX_Emissions_Conducted_V01 Version: 0.0.1 TCID_FCC15247_8 |
| My Description | FCC 15.247 TX Emissions Conducted DTS - Generic 2G4 |
| Add. Information | |

| IUT DEFINITION | |
|----------------|----|
| Manufacturer | NI |
| Type | NI |
| Serial No. | NI |
| Setup No. | NI |
| SW Version | NI |
| HW Version | NI |
| Comment 1 | NI |
| Comment 2 | NI |

| IUT Common Settings | |
|--|---------|
| Tlow [°C] | -20 |
| Tmid [°C] | 20 |
| Thigh [°C] | 55 |
| Vlow [V] | 3.3 |
| Vmid [V] | 3.8 |
| Vhigh [V] | 4.2 |
| Imax [A] | 1 |
| Auto Control enabled Power Supply Climatic Box | No No |
| Antenna Gain [dBi] | 0 |
| Additional Path Loss [dB] | 0 |

| IUT Common Settings 2G4 Init Values from IUT file | |
|---|------|
| Hopping supported | No |
| Frequency low [MHz] | 2402 |
| Frequency mid [MHz] | 2442 |
| Frequency high [MHz] | 2478 |
| Burst length [ms] | 10 |
| Nominal Bandwidth [MHz] | 1.7 |
| User Interaction | Yes |

| Test Parameter | |
|------------------------|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | False Freq [MHz] 2402 |
| Frequency mid to test | True Freq [MHz] 2442 |
| Frequency high to test | False Freq [MHz] 2478 |
| Pattern | PRBS9 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | SigBT: Rohde&Schwarz,CMW,1201.0002k75/100683,3.7.70 SA: Rohde&Schwarz,FSV-30,1321.3008K30/103809,3.40 |

Test at TX 2442 MHz

RESULT: Reference Power

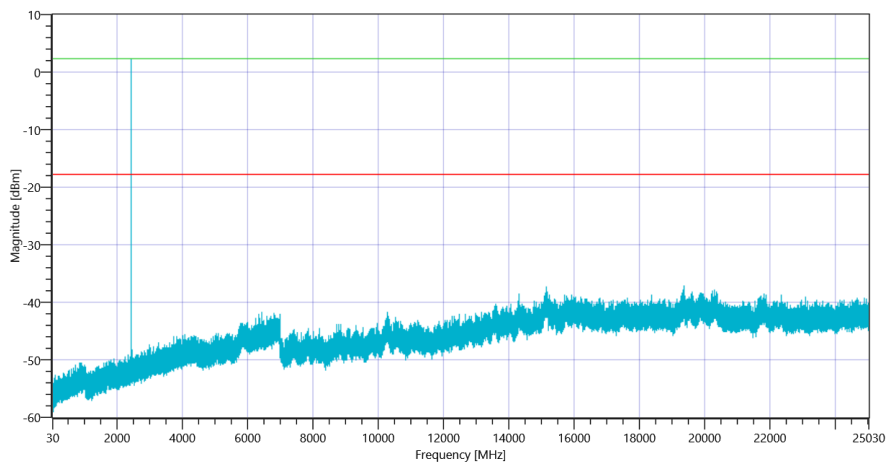
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|----------------------|-------------|-------------|----------|------|-------------|
| Ref. Power 1MHz/1MHz | --- | --- | 7.33 | dBm | Information |
| Ref. Frequency | --- | --- | 2441.510 | MHz | Information |

READ SA SETTINGS:

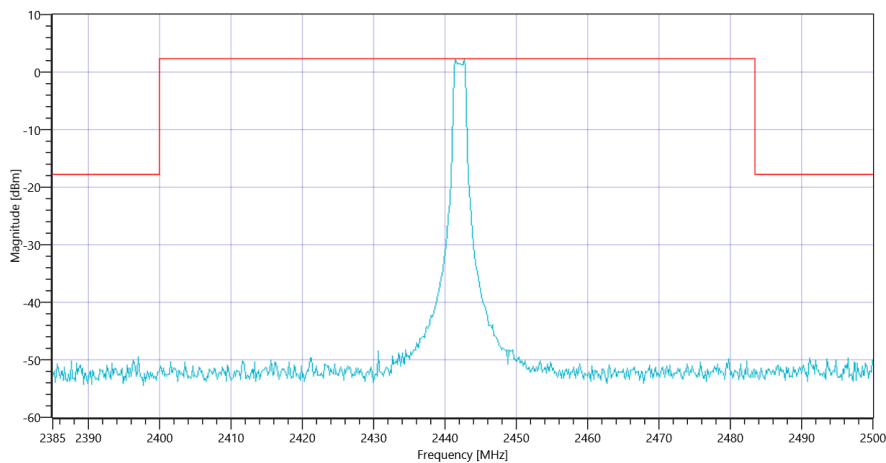
| | |
|----------------------|----------|
| Ref. Level [dBm] | 12.33 |
| Resolution BW. [MHz] | 0.100000 |
| Video BW. [MHz] | 0.300000 |
| Detector | POS |
| Sweep Time [ms] | 500 |
| Sweep Points/Section | 3001 |
| Sweep Count | 8 |
| Sweep Mode | MAXH |
| Used Sweep Type | SWE |

RESULT: TC_VM_FCC15247_TX_Emissions_Conducted_V01

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------------|-------------|-------------|----------|------|-------------|
| Reference @ 2442.67 MHz | --- | --- | 2.26 | dBm | Information |
| No peaks detected | --- | --- | | | PASS |



Plot_FCC Part 15.247 TX Spurious Conducted ~ Generic 2G4 2442_03062019_140348.png



Plot_FCC Part 15.247 TX Spurious Conducted ~ Generic 2G4 2442_03062019_140351.png

TEST FINISHED

General Verdict

03.06.2019 14:03:52 / RT: 293 s

PASS

15. FCC Part 15.247 TX Spurious Conducted ~ Generic 2G4

| Test References | |
|----------------------------|--|
| TC Start | 03.06.2019 14:59:52 |
| System Version | 1.0.0.15 |
| 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 ID | TC_VM_FCC15247_TX_Emissions_Conducted_V01 Version: 0.0.1 TCID_FCC15247_8 |
| My Description | FCC 15.247 TX Emissions Conducted DTS - Generic 2G4 |
| Add. Information | |

| IUT DEFINITION | |
|----------------|----|
| Manufacturer | NI |
| Type | NI |
| Serial No. | NI |
| Setup No. | NI |
| SW Version | NI |
| HW Version | NI |
| Comment 1 | NI |
| Comment 2 | NI |

| IUT Common Settings | |
|--|---------|
| Tlow [°C] | -20 |
| Tmid [°C] | 20 |
| Thigh [°C] | 55 |
| Vlow [V] | 3.3 |
| Vmid [V] | 3.8 |
| Vhigh [V] | 4.2 |
| Imax [A] | 1 |
| Auto Control enabled Power Supply Climatic Box | No No |
| Antenna Gain [dBi] | 0 |
| Additional Path Loss [dB] | 0 |

| IUT Common Settings 2G4 Init Values from IUT file | |
|---|------|
| Hopping supported | No |
| Frequency low [MHz] | 2402 |
| Frequency mid [MHz] | 2442 |
| Frequency high [MHz] | 2478 |
| Burst length [ms] | 10 |
| Nominal Bandwidth [MHz] | 1.7 |
| User Interaction | Yes |

| Test Parameter | |
|------------------------|---|
| Technology to test | Generic 2G4 |
| Antenna Port used | 1 |
| Temperature | mid |
| Voltage | mid |
| Frequency low to test | False Freq [MHz] 2402 |
| Frequency mid to test | False Freq [MHz] 2442 |
| Frequency high to test | True Freq [MHz] 2478 |
| Pattern | PRBS9 |
| Switched Path | IUT - SignalingUnit - SpectrumAnalyzer |
| Devices in use | SigBT: Rohde&Schwarz,CMW,1201.0002k75/100683,3.7.70 SA: Rohde&Schwarz,FSV-30,1321.3008K30/103809,3.40 |

Test at TX 2478 MHz

RESULT: Reference Power

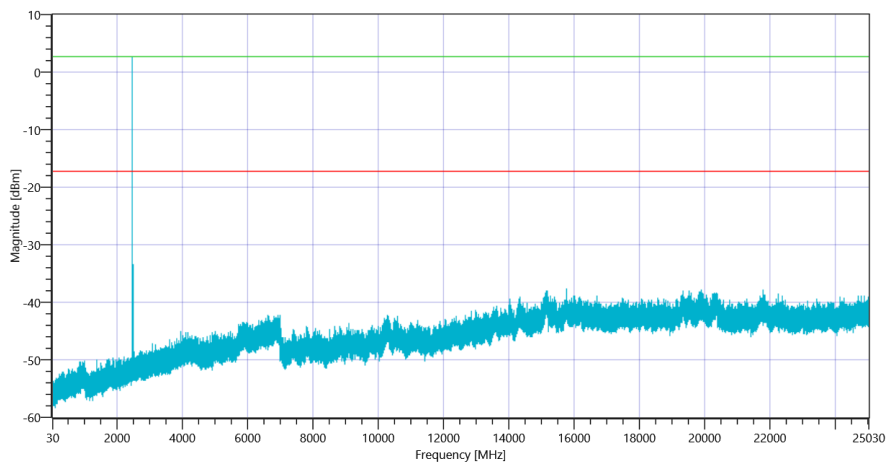
| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|----------------------|-------------|-------------|----------|------|-------------|
| Ref. Power 1MHz/1MHz | --- | --- | 7.75 | dBm | Information |
| Ref. Frequency | --- | --- | 2478.470 | MHz | Information |

READ SA SETTINGS:

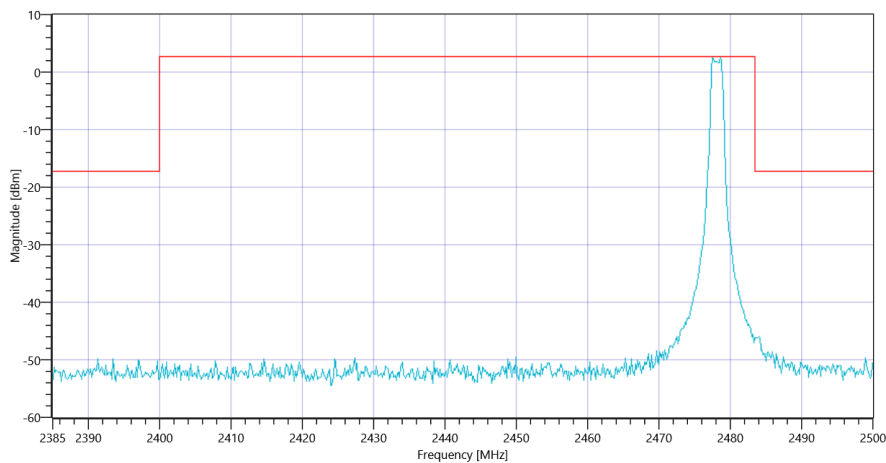
| | |
|----------------------|----------|
| Ref. Level [dBm] | 12.75 |
| Resolution BW. [MHz] | 0.100000 |
| Video BW. [MHz] | 0.300000 |
| Detector | POS |
| Sweep Time [ms] | 500 |
| Sweep Points/Section | 3001 |
| Sweep Count | 8 |
| Sweep Mode | MAXH |
| Used Sweep Type | SWE |

RESULT: TC_VM_FCC15247_TX_Emissions_Conducted_V01

| Test Description | Lower Limit | Upper Limit | Measured | Unit | Verdict |
|-------------------------|-------------|-------------|----------|------|-------------|
| Reference @ 2478.67 MHz | --- | --- | 2.68 | dBm | Information |
| No peaks detected | --- | --- | | | PASS |



Plot_FCC Part 15.247 TX Spurious Conducted ~ Generic 2G4 2478_03062019_150435.png



Plot_FCC Part 15.247 TX Spurious Conducted ~ Generic 2G4 2478_03062019_150438.png

TEST FINISHED

General Verdict

03.06.2019 15:04:39 / RT: 286 s

PASS