

Measurement Results

No.1-5761/23-01-04_Annex_MR

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Document authorized:

p.o.

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Radio Communications

FCC 15.247 # Maximum peak conducted output power PM DTS ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 17:10:02
Ambit Temp [°C] Humidity [rel%]	23.8 25
System Version	3.3.4.3
Test Specification	FCC 15.247 -
Test Method	DTS: KDB 558074 D01 V05 - Chapter 8.3.1.3 PKPM1 Peak-reading Power Meter Method
TC Version	0.0.1
My Description	FCC 15.247 Max Peak Output Power Powermeter Conducted DTS - WLAN2G4 b mode

Add. Information

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	2
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	False Freq [MHz] 2437
Frequency high to test	True Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - PowerMeter

Test Equipment

Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

Power sensor,Keysight Technologies,U2021XA,MY59190010,A.04.06

Test at TX 2462 MHz

RESULT

<i>Test Description</i>	<i>Lower Limit</i>	<i>Upper Limit</i>	<i>Measured</i>	<i>Unit</i>	<i>Verdict</i>
Found Peak cond.	--	--	21.17	dBm	PASS

Verdict

PASS

FCC 15.247 # Restricted band edge conducted avg DC corrected DTS (eirp) ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 17:09:23
Ambit Temp [°C] Humidity [rel%]	23.8 25
System Version	3.3.4.3
Test Specification	FCC 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
TC Version	0.0.1
My Description	FCC 15.247 Restricted Band Edge Cond. Avg DC corrected DTS - WLAN2G4 b mode

Add. Information

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	2
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	False Freq [MHz] 2437
Frequency high to test	True Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
 Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

Antenna Gain Table

Freq [MHz]	Gain [dBi]
2400	4.85
2483.5	4.85

Test at TX 2462 MHz

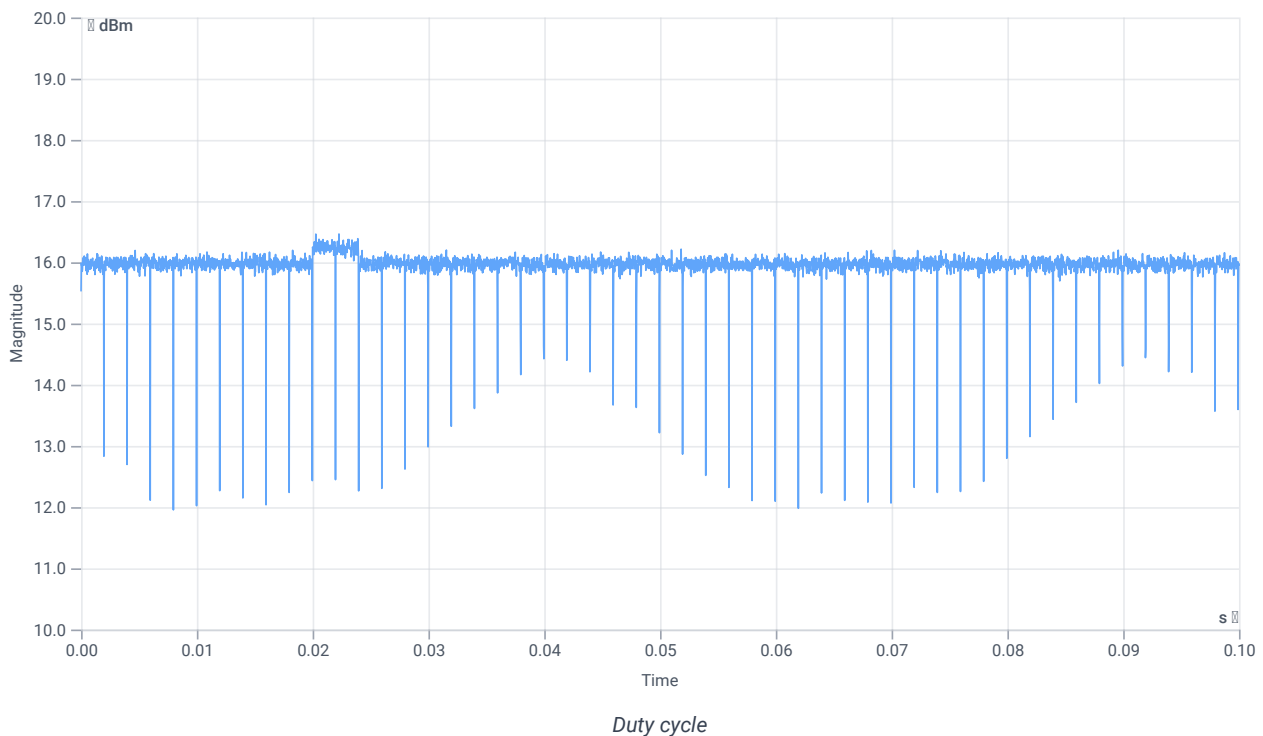
RESULT: Reference Power cond.

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Ref. Power 1MHz/1MHz cond.	--	--	12.06	dBm	INFO
Ref. Frequency	--	--	2460.800	MHz	INFO

Evaluation max. Duty Cycle

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



Band Edge conducted

READ SA SETTINGS:

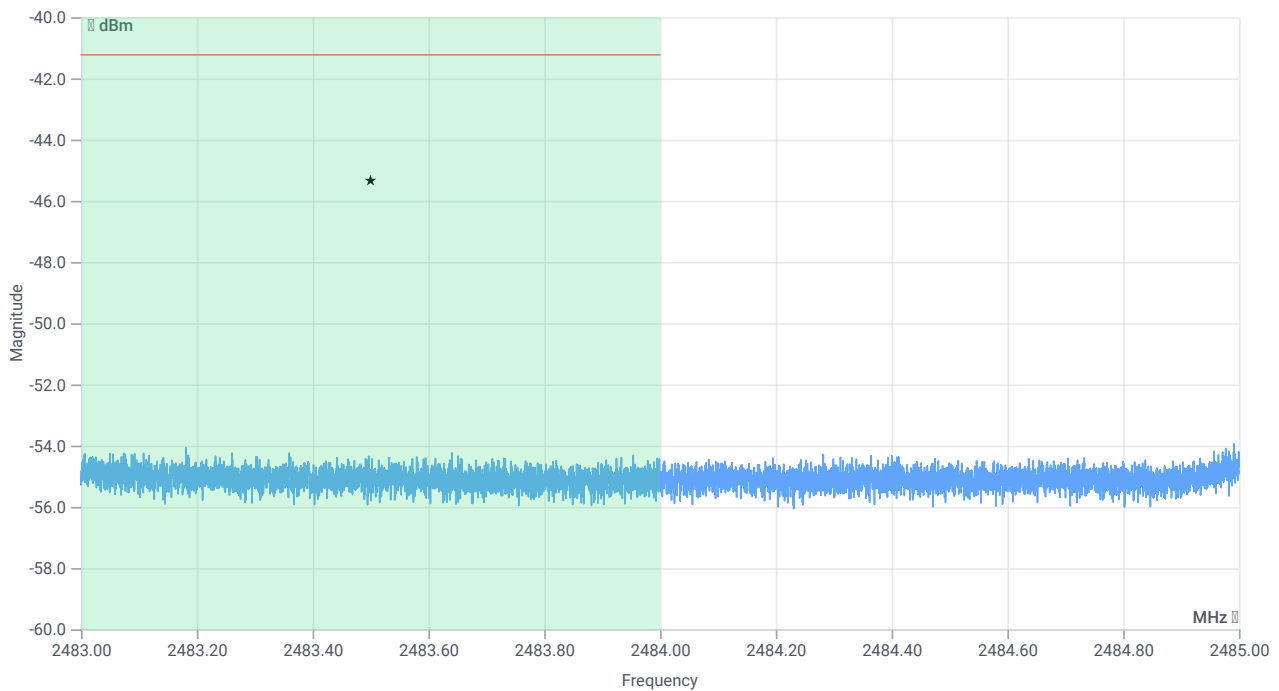
RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB]	22.06 14.04 25
Start [MHz] Stop [MHz]	2483.000 2485.000

READ SA SETTINGS:

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]:	4.85 @ 2483.5MHz
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Restricted band edge
RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Duty Cycle worst case	--	--	0	dB	INFO
Band Power Avg	--	--	-45.34	dBm	INFO
Band Power Avg DC corrected	--	-41.23	-45.34	dBm	PASS

Verdict
PASS

FCC 15.247 # TX spurious conducted 20dBc ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 17:02:43
Ambit Temp [°C] Humidity [rel%]	23.7 25
System Version	3.3.4.3
Test Specification	FCC 15.247 -
Test Method	IF DTS then 8.5 DTS emissions in non-restricted frequency bands: Subclause 11.11 of ANSI C63.10 is applicable
TC Version	0.0.1
My Description	FCC 15.247 TX Emissions Conducted DTS - WLAN2G4 b mode
Add. Information	

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	2
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	False Freq [MHz] 2437
Frequency high to test	True Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

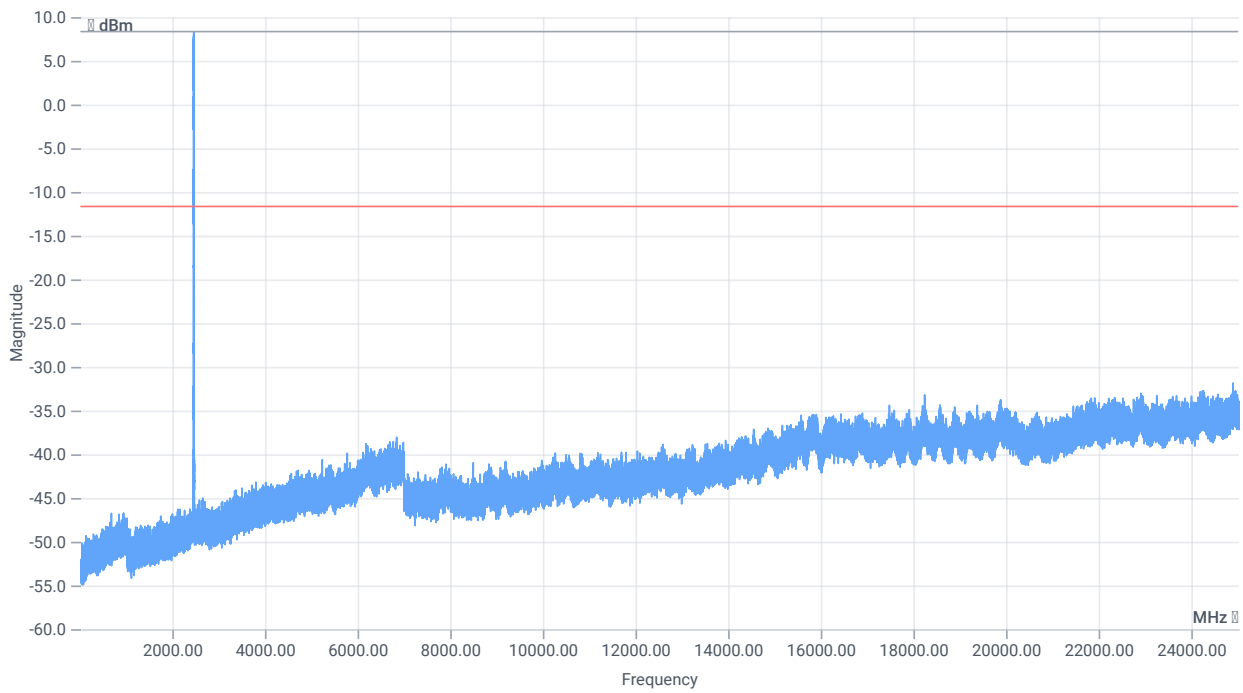
Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

Test at TX 2462 MHz

RESULT: Reference Power cond.

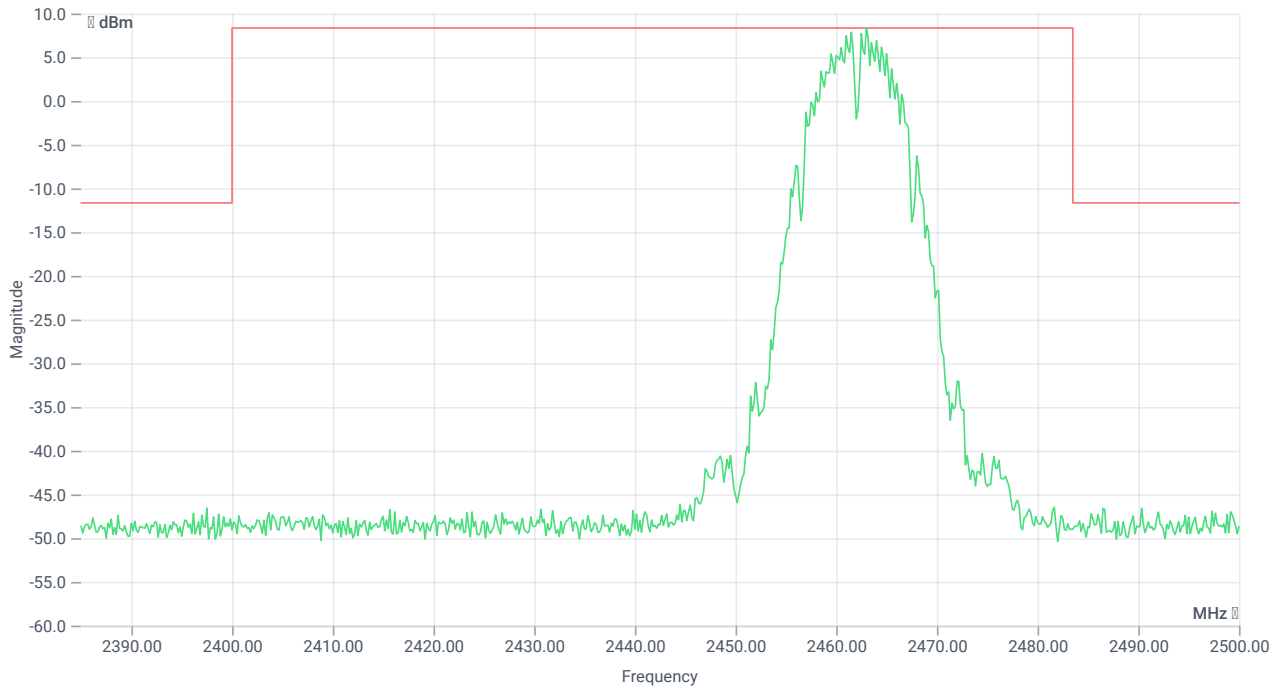
Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Ref. Power 1MHz/1MHz cond.	--	--	12.03	dBm	INFO
Ref. Frequency	--	--	2460.800	MHz	INFO



TX emissions

READ SA SETTINGS:

RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB]	12.03 0 30
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	200 25 3001 SWE



TX emissions band zoomed

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Reference @ 2463.00 MHz	--	--	8.34	dBm	INFO
No peaks detected	--	--			PASS
Lowest margin to limit 24900 MHz	0	--	20.19	dB	INFO

Verdict

PASS

FCC 15.247, ISED RSS247 # Bandwidth 99PCT and 20dB ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 17:02:08
Ambit Temp [°C] Humidity [rel%]	23.7 25
System Version	3.3.4.3
Test Specification	FCC 15.247, ISED RSS247 -
Test Method	
TC Version	0.0.2
My Description	FCC 15.247 Bandwidth 99PCT-20dB DTS - WLAN2G4 b mode
Add. Information	

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	2
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	False Freq [MHz] 2437
Frequency high to test	True Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

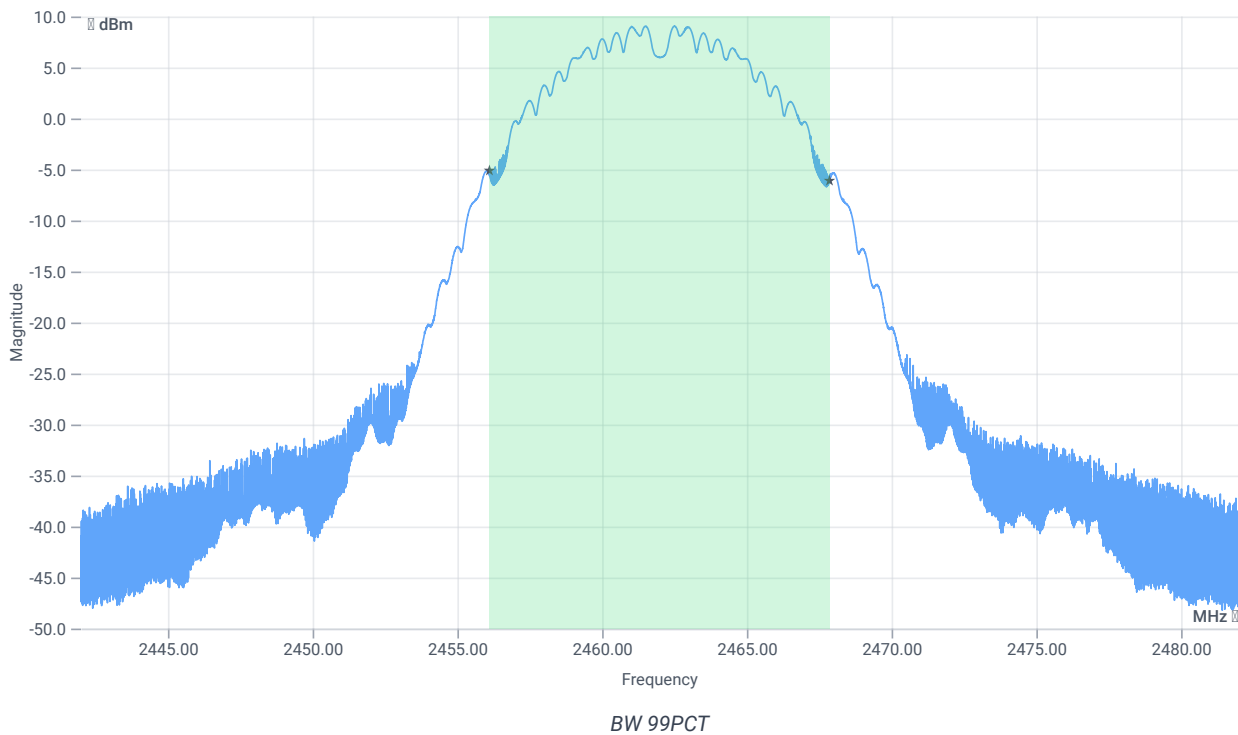
Test at TX 2462 MHz

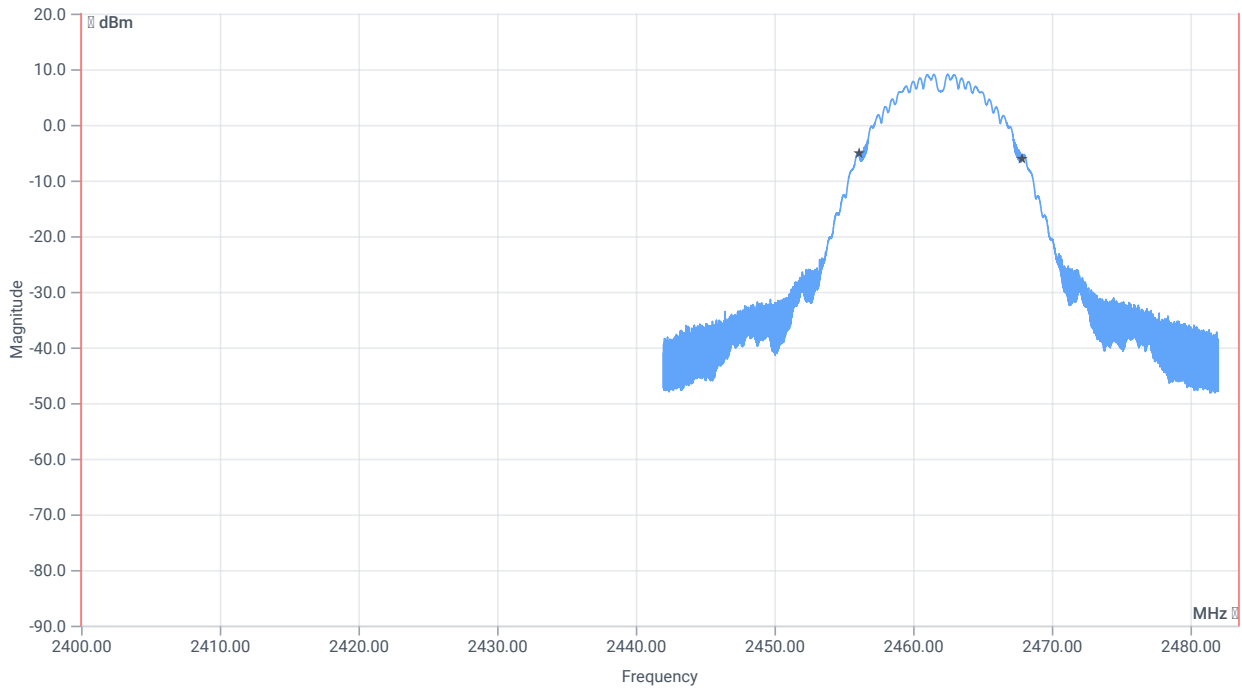
RESULT: Reference Power cond.

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Ref. Power 1MHz/1MHz cond.	--	--	12.08	dBm	INFO
Ref. Frequency	--	--	2460.800	MHz	INFO

READ SA SETTINGS:

RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB]	17.08 14.04 20
Start [MHz] Stop [MHz]	2442.000 2482.000
RBW [MHz] VBW [MHz]	0.500000 2.000000
Detector TraceMode	POS MAXH
Sweep: Time [ms] Count Points per Section Type	50 200 10001 SWE

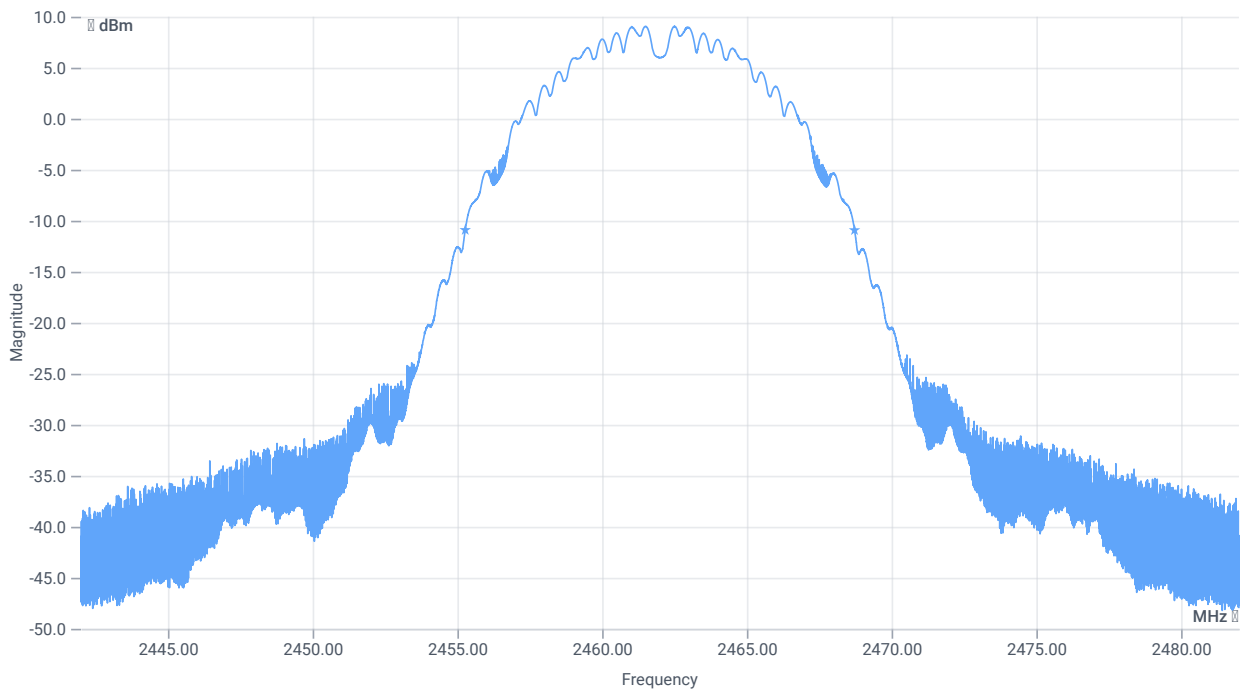




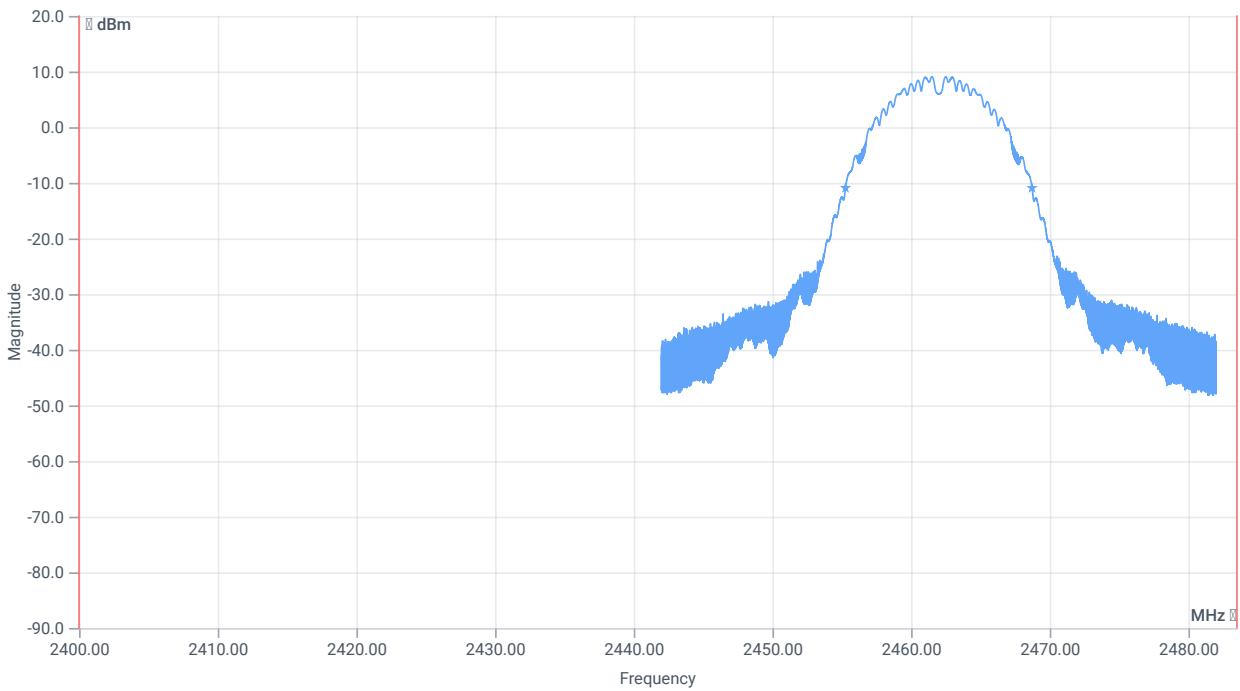
BW within Band 99PCT

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Bandwidth 99%	--	--	11747.000	kHz	INFO
T1 99%	2400.000000	--	2456.1086	MHz	PASS
T2 99%	--	2483.500000	2467.8554	MHz	PASS



BW 20dB



BW within Band 20dB

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Bandwidth 20dB	--	--	13448	kHz	INFO
T1 20DB	2400.000000	--	2455.2720	MHz	PASS
T2 20dB	--	2483.500000	2468.7200	MHz	PASS

Verdict

PASS

FCC 15.247 # Peak power spectral density DTS ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 17:01:27
Ambit Temp [°C] Humidity [rel%]	23.7 25
System Version	3.3.4.3
Test Specification	FCC 15.247 -
Test Method	DTS: KDB 558074 D01 V05 - Chapter 8.4 DTS maximum power spectral density level in the fundamental emission
TC Version	0.0.1
My Description	FCC 15.247 Peak Power Spectral Density DTS - WLAN2G4 b mode
Add. Information	

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	2
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	False Freq [MHz] 2437
Frequency high to test	True Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

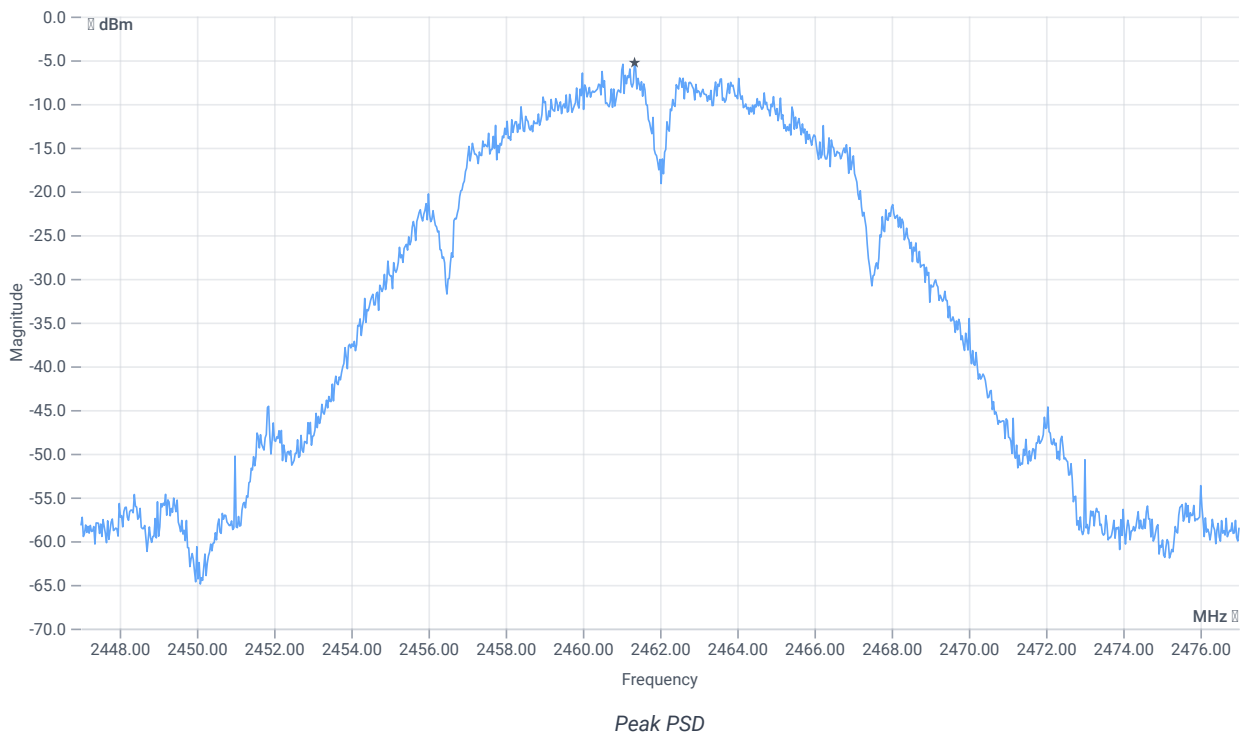
Test at TX 2462 MHz

RESULT: Reference Power cond.

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Ref. Power 1MHz/1MHz cond.	--	--	12.05	dBm	INFO
Ref. Frequency	--	--	2460.800	MHz	INFO

READ SA SETTINGS:

RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB]	17.05 14.04 20
Start [MHz] Stop [MHz]	2447.000 2477.000
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	-5.29	dBm/3KHz	PASS

Verdict

PASS

FCC 15.247 # Bandwidth 6dB DTS ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 17:00:54
Ambit Temp [°C] Humidity [rel%]	23.7 25
System Version	3.3.4.3
Test Specification	FCC 15.247 -
Test Method	
TC Version	0.0.1
My Description	FCC 15.247 Bandwidth 6dB DTS - WLAN2G4 b mode
Add. Information	

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	2
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	False Freq [MHz] 2437
Frequency high to test	True Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

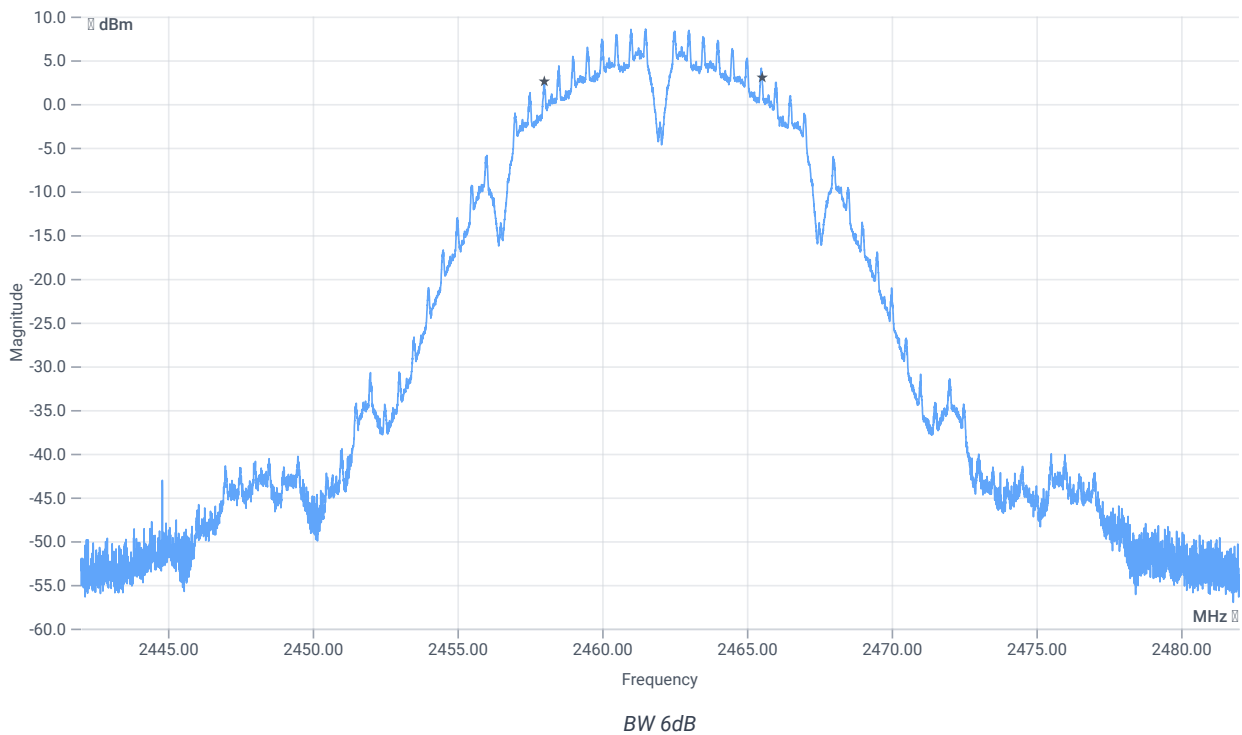
Test at TX 2462 MHz

RESULT: Reference Power cond.

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Ref. Power 1MHz/1MHz cond.	--	--	12.06	dBm	INFO
Ref. Frequency	--	--	2460.800	MHz	INFO

READ SA SETTINGS:

RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB]	17.06 14.04 20
Start [MHz] Stop [MHz]	2442.000 2482.000
RBW [MHz] VBW [MHz]	0.100000 0.300000
Detector TraceMode	POS MAXH
Sweep: Time [ms] Count Points per Section Type	50 200 10001 SWE



RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
DTS Bandwidth (6dB)	500	--	7528	kHz	PASS

Verdict

PASS

FCC 15.247 # Maximum peak conducted output power PM DTS ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 16:59:28
Ambit Temp [°C] Humidity [rel%]	23.7 25
System Version	3.3.4.3
Test Specification	FCC 15.247 -
Test Method	DTS: KDB 558074 D01 V05 - Chapter 8.3.1.3 PKPM1 Peak-reading Power Meter Method
TC Version	0.0.1
My Description	FCC 15.247 Max Peak Output Power Powermeter Conducted DTS - WLAN2G4 b mode

Add. Information

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	False Freq [MHz] 2437
Frequency high to test	True Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - PowerMeter

Test Equipment

Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

Power sensor,Keysight Technologies,U2021XA,MY59190010,A.04.06

Test at TX 2462 MHz

RESULT

<i>Test Description</i>	<i>Lower Limit</i>	<i>Upper Limit</i>	<i>Measured</i>	<i>Unit</i>	<i>Verdict</i>
Found Peak cond.	--	--	21.22	dBm	PASS

Verdict

PASS

FCC 15.247 # Restricted band edge conducted avg DC corrected DTS (eirp) ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 16:58:49
Ambit Temp [°C] Humidity [rel%]	23.7 25
System Version	3.3.4.3
Test Specification	FCC 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
TC Version	0.0.1
My Description	FCC 15.247 Restricted Band Edge Cond. Avg DC corrected DTS - WLAN2G4 b mode

Add. Information

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	False Freq [MHz] 2437
Frequency high to test	True Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

Antenna Gain Table

Freq [MHz]	Gain [dBi]
2400	4.85
2483.5	4.85

Test at TX 2462 MHz

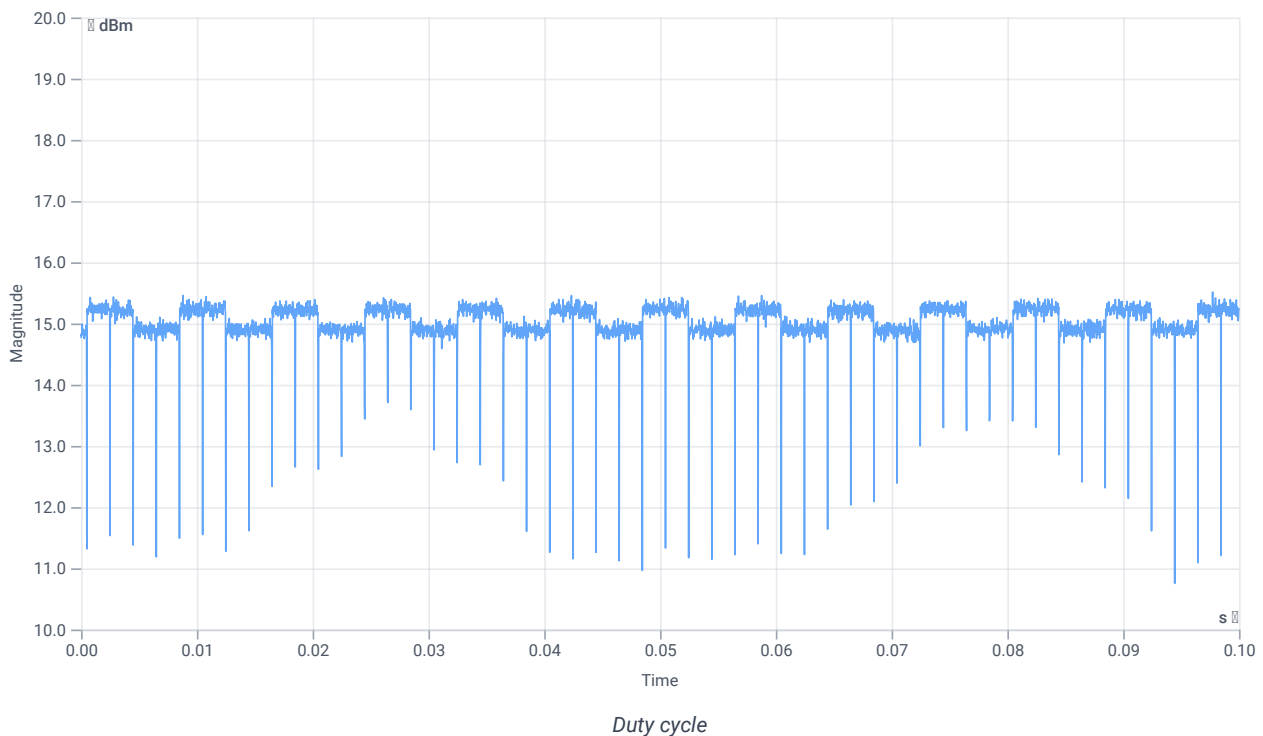
RESULT: Reference Power cond.

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Ref. Power 1MHz/1MHz cond.	--	--	11.30	dBm	INFO
Ref. Frequency	--	--	2460.800	MHz	INFO

Evaluation max. Duty Cycle

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



Band Edge conducted

READ SA SETTINGS:

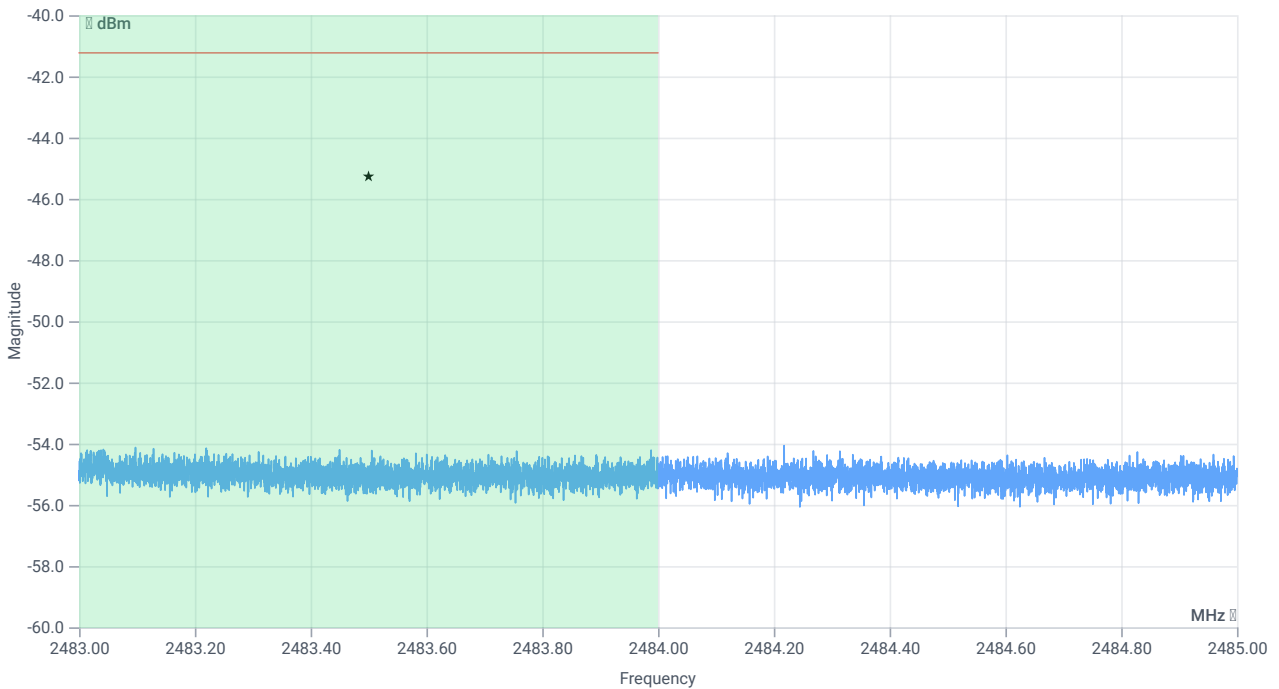
RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB]	21.30 14.04 25
Start [MHz] Stop [MHz]	2483.000 2485.000

READ SA SETTINGS:

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]:	4.85 @ 2483.5MHz
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Restricted band edge

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Duty Cycle worst case	--	--	0	dB	INFO
Band Power Avg	--	--	-45.27	dBm	INFO
Band Power Avg DC corrected	--	-41.23	-45.27	dBm	PASS

Verdict

PASS

FCC 15.247 # TX spurious conducted 20dBc ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 16:52:10
Ambit Temp [°C] Humidity [rel%]	23.7 25
System Version	3.3.4.3
Test Specification	FCC 15.247 -
Test Method	IF DTS then 8.5 DTS emissions in non-restricted frequency bands: Subclause 11.11 of ANSI C63.10 is applicable
TC Version	0.0.1
My Description	FCC 15.247 TX Emissions Conducted DTS - WLAN2G4 b mode
Add. Information	

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	False Freq [MHz] 2437
Frequency high to test	True Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

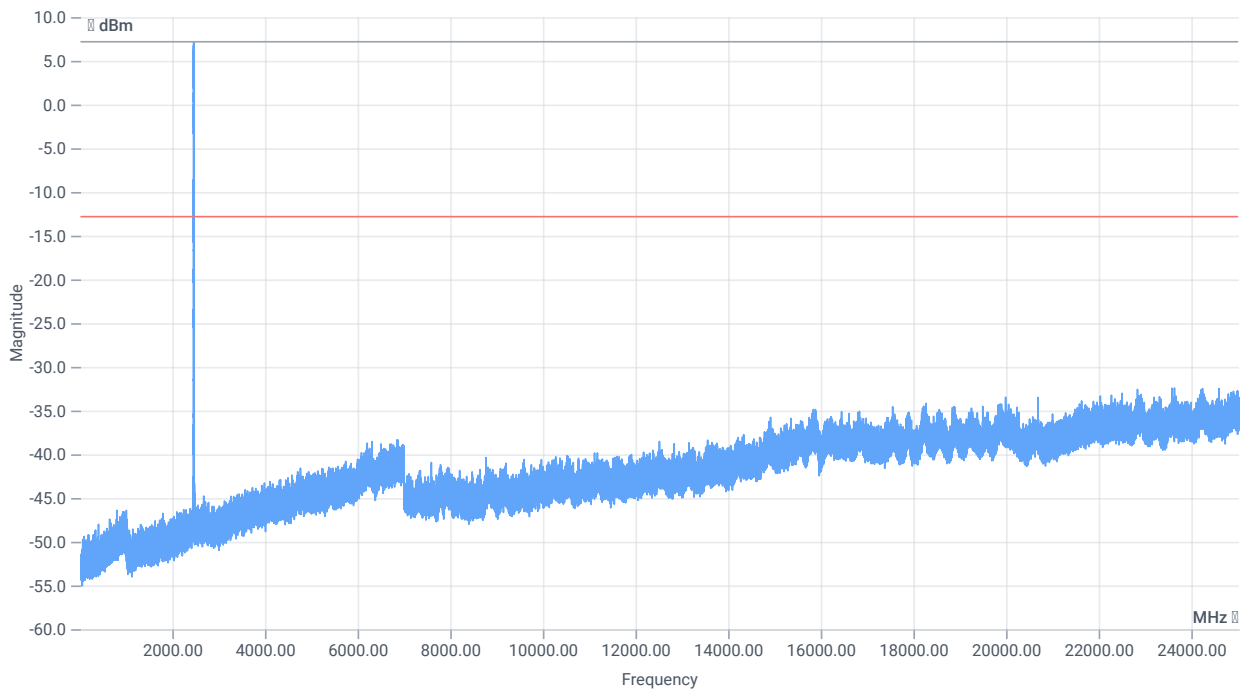
Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

Test at TX 2462 MHz

RESULT: Reference Power cond.

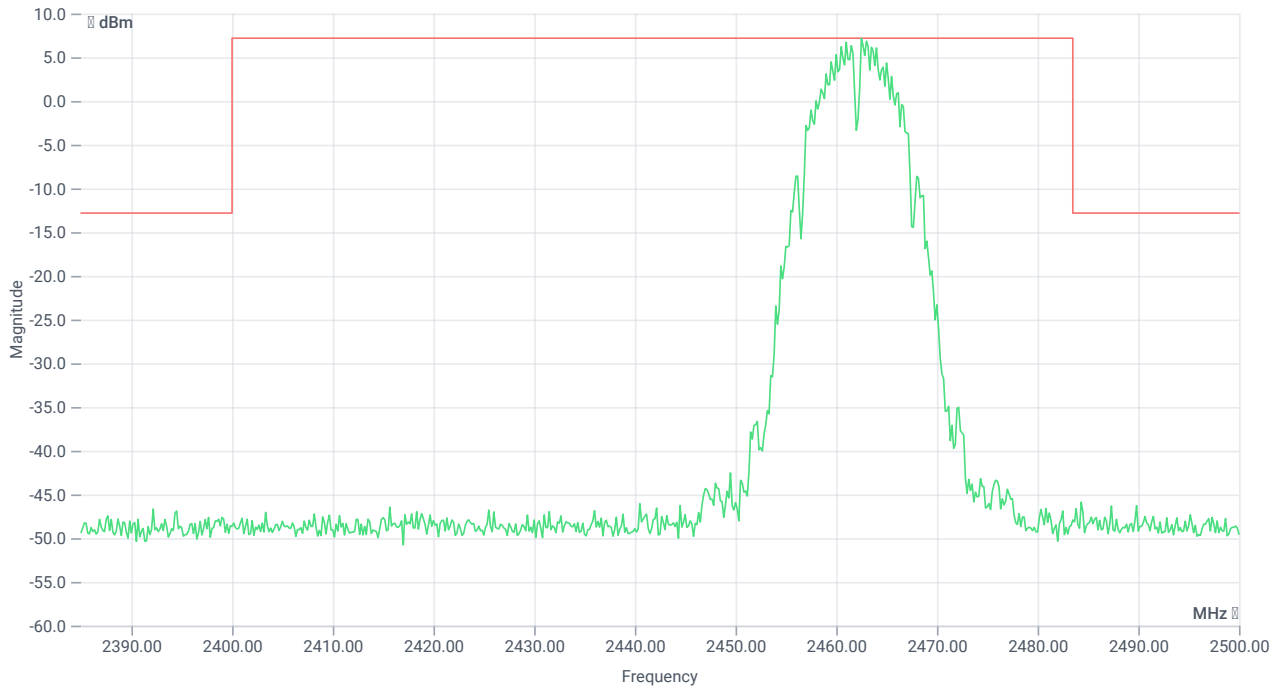
Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Ref. Power 1MHz/1MHz cond.	--	--	11.34	dBm	INFO
Ref. Frequency	--	--	2463.200	MHz	INFO



TX emissions

READ SA SETTINGS:

RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB]	11.34 0 30
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	200 25 3001 SWE



TX emissions band zoomed

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Reference @ 2462.50 MHz	--	--	7.18	dBm	INFO
No peaks detected	--	--			PASS
Lowest margin to limit 23637.5 MHz	0	--	19.61	dB	INFO

Verdict

PASS

FCC 15.247, ISED RSS247 # Bandwidth 99PCT and 20dB ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 16:51:34
Ambit Temp [°C] Humidity [rel%]	23.7 25
System Version	3.3.4.3
Test Specification	FCC 15.247, ISED RSS247 -
Test Method	
TC Version	0.0.2
My Description	FCC 15.247 Bandwidth 99PCT-20dB DTS - WLAN2G4 b mode
Add. Information	

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	False Freq [MHz] 2437
Frequency high to test	True Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

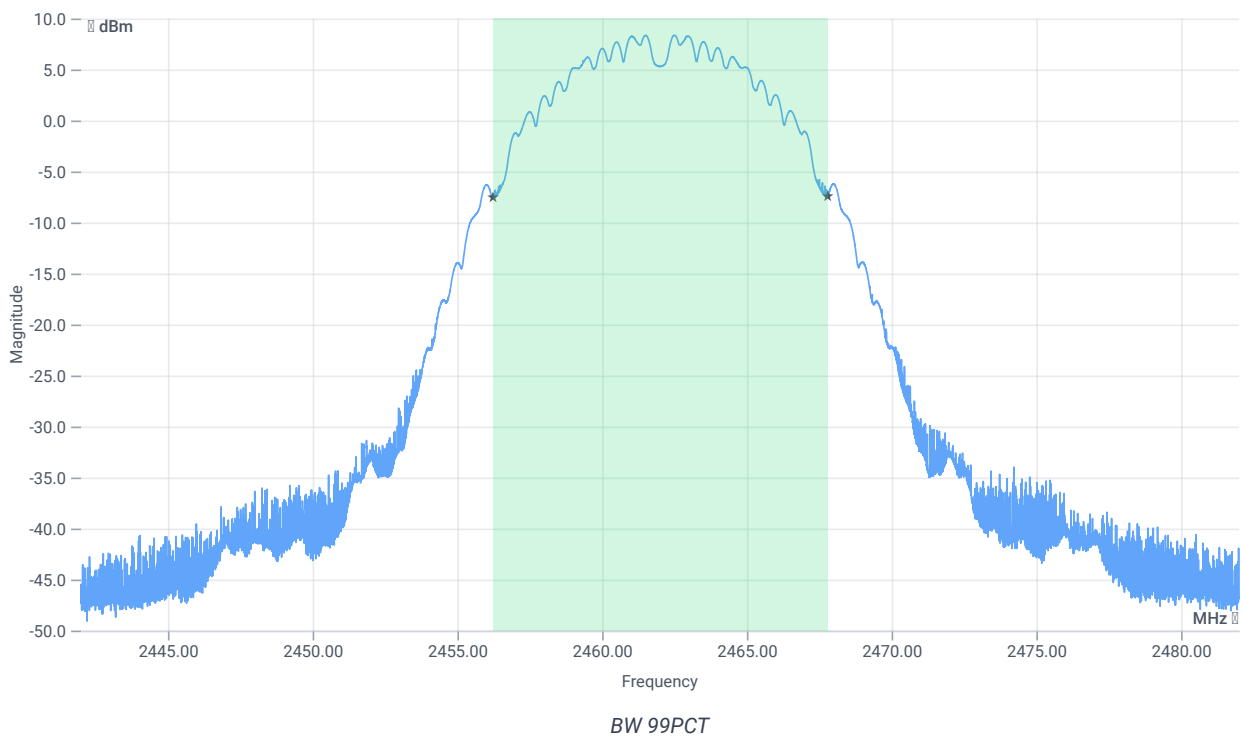
Test at TX 2462 MHz

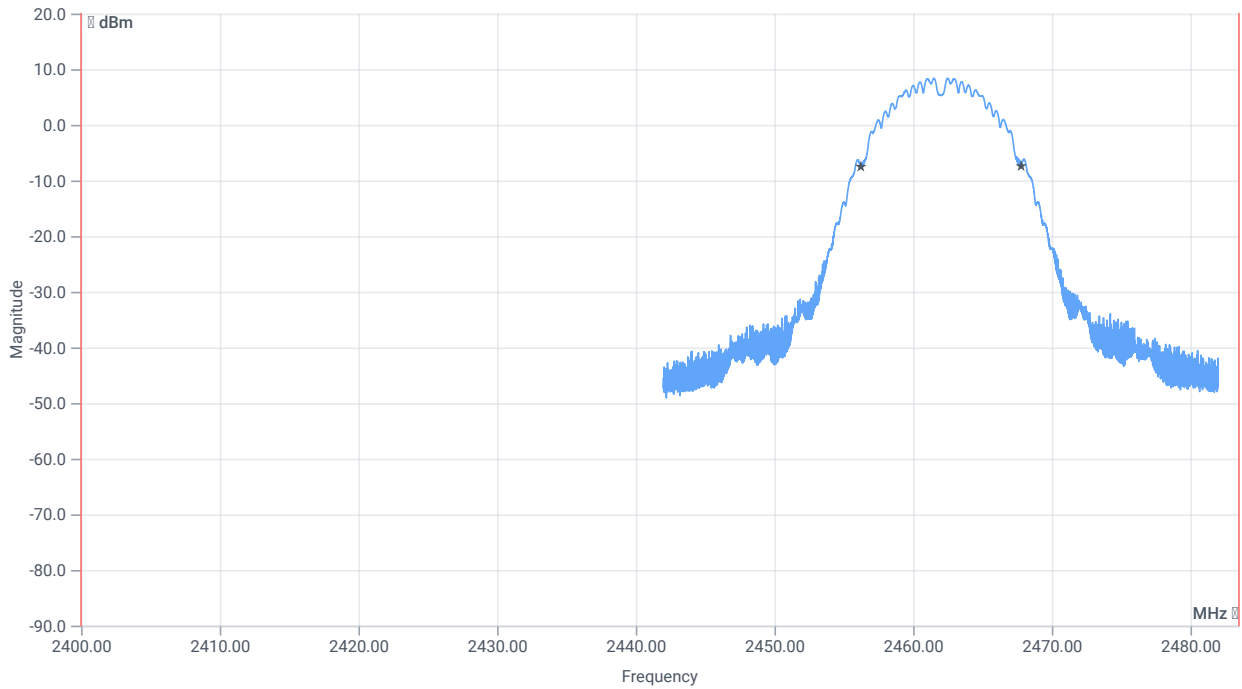
RESULT: Reference Power cond.

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Ref. Power 1MHz/1MHz cond.	--	--	11.35	dBm	INFO
Ref. Frequency	--	--	2463.200	MHz	INFO

READ SA SETTINGS:

RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB]	16.35 14.04 20
Start [MHz] Stop [MHz]	2442.000 2482.000
RBW [MHz] VBW [MHz]	0.500000 2.000000
Detector TraceMode	POS MAXH
Sweep: Time [ms] Count Points per Section Type	50 200 10001 SWE

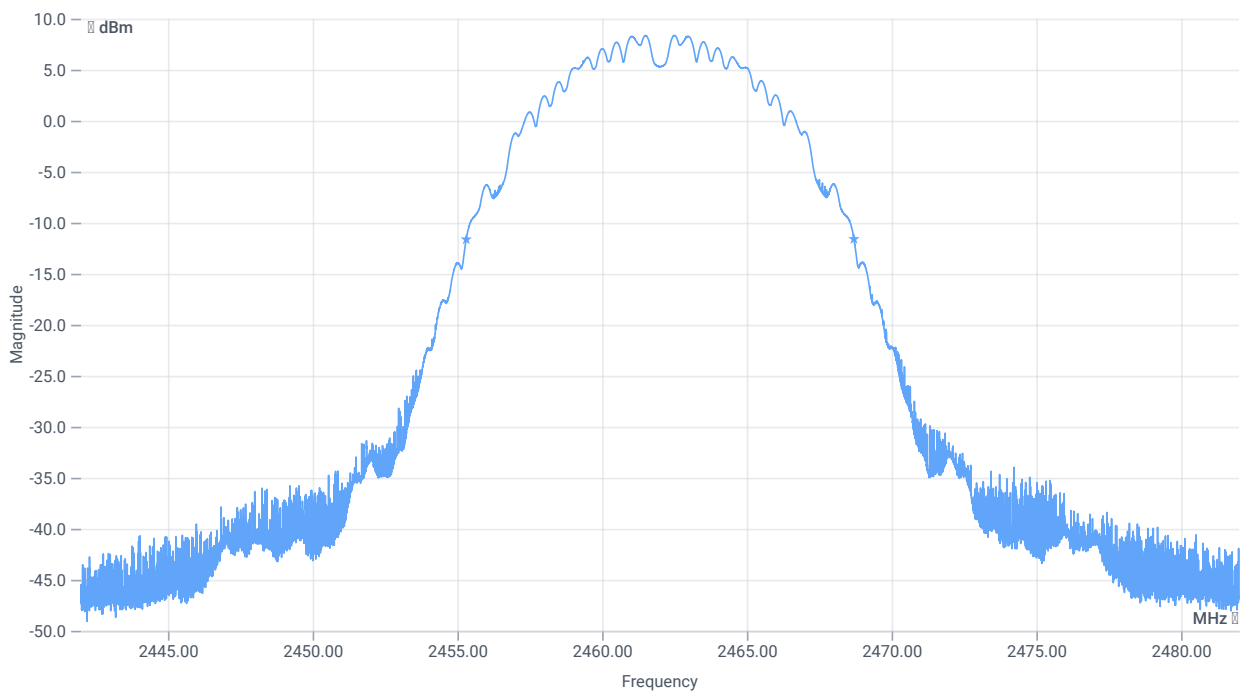




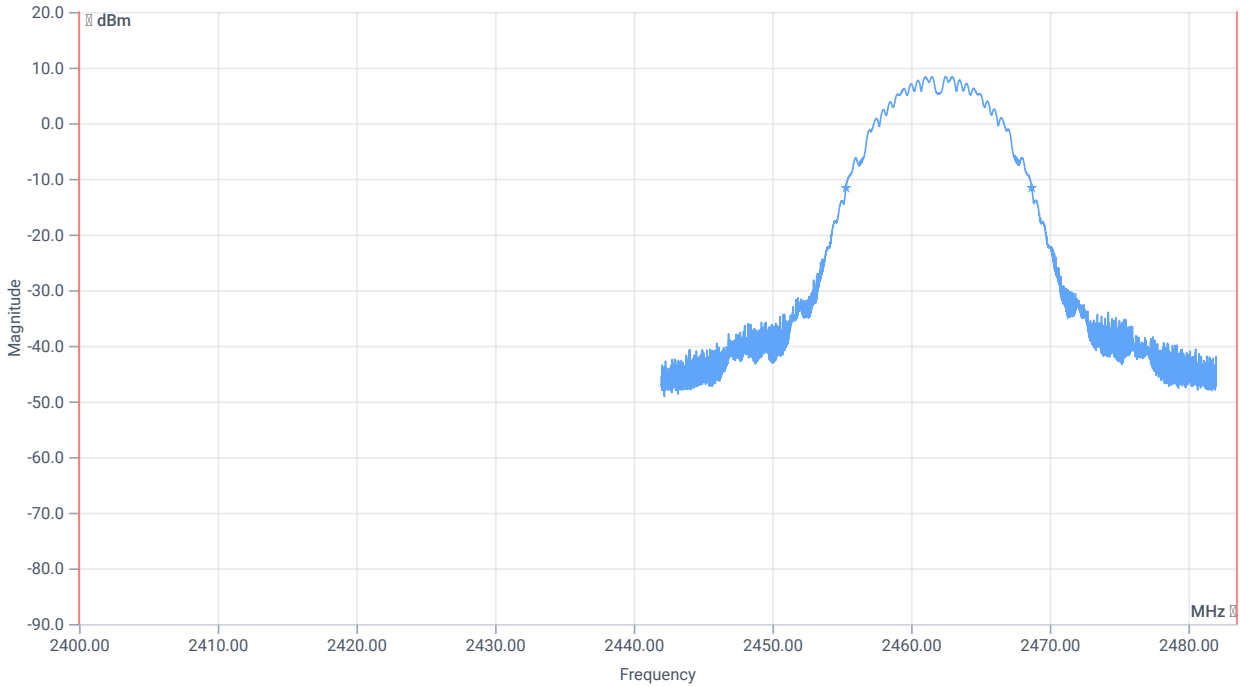
BW within Band 99PCT

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Bandwidth 99%	--	--	11559.000	kHz	INFO
T1 99%	2400.000000	--	2456.2326	MHz	PASS
T2 99%	--	2483.500000	2467.7914	MHz	PASS



BW 20dB



BW within Band 20dB

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Bandwidth 20dB	--	--	13392	kHz	INFO
T1 20DB	2400.000000	--	2455.3080	MHz	PASS
T2 20dB	--	2483.500000	2468.7000	MHz	PASS

Verdict

PASS

FCC 15.247 # Peak power spectral density DTS ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 16:50:53
Ambit Temp [°C] Humidity [rel%]	23.7 25
System Version	3.3.4.3
Test Specification	FCC 15.247 -
Test Method	DTS: KDB 558074 D01 V05 - Chapter 8.4 DTS maximum power spectral density level in the fundamental emission
TC Version	0.0.1
My Description	FCC 15.247 Peak Power Spectral Density DTS - WLAN2G4 b mode
Add. Information	

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	False Freq [MHz] 2437
Frequency high to test	True Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

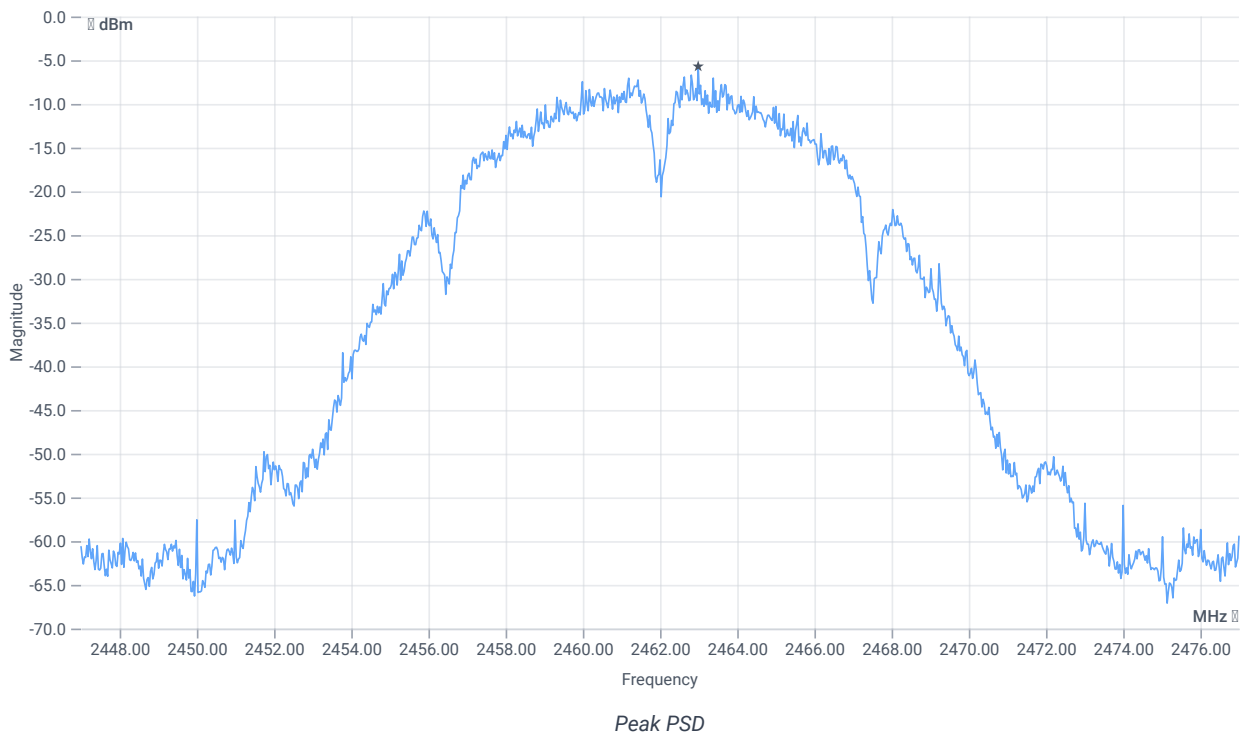
Test at TX 2462 MHz

RESULT: Reference Power cond.

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Ref. Power 1MHz/1MHz cond.	--	--	11.37	dBm	INFO
Ref. Frequency	--	--	2463.200	MHz	INFO

READ SA SETTINGS:

RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB]	16.37 14.04 20
Start [MHz] Stop [MHz]	2447.000 2477.000
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	-5.71	dBm/3KHz	PASS

Verdict

PASS

FCC 15.247 # Bandwidth 6dB DTS ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 16:50:20
Ambit Temp [°C] Humidity [rel%]	23.8 25
System Version	3.3.4.3
Test Specification	FCC 15.247 -
Test Method	
TC Version	0.0.1
My Description	FCC 15.247 Bandwidth 6dB DTS - WLAN2G4 b mode
Add. Information	

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	False Freq [MHz] 2437
Frequency high to test	True Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

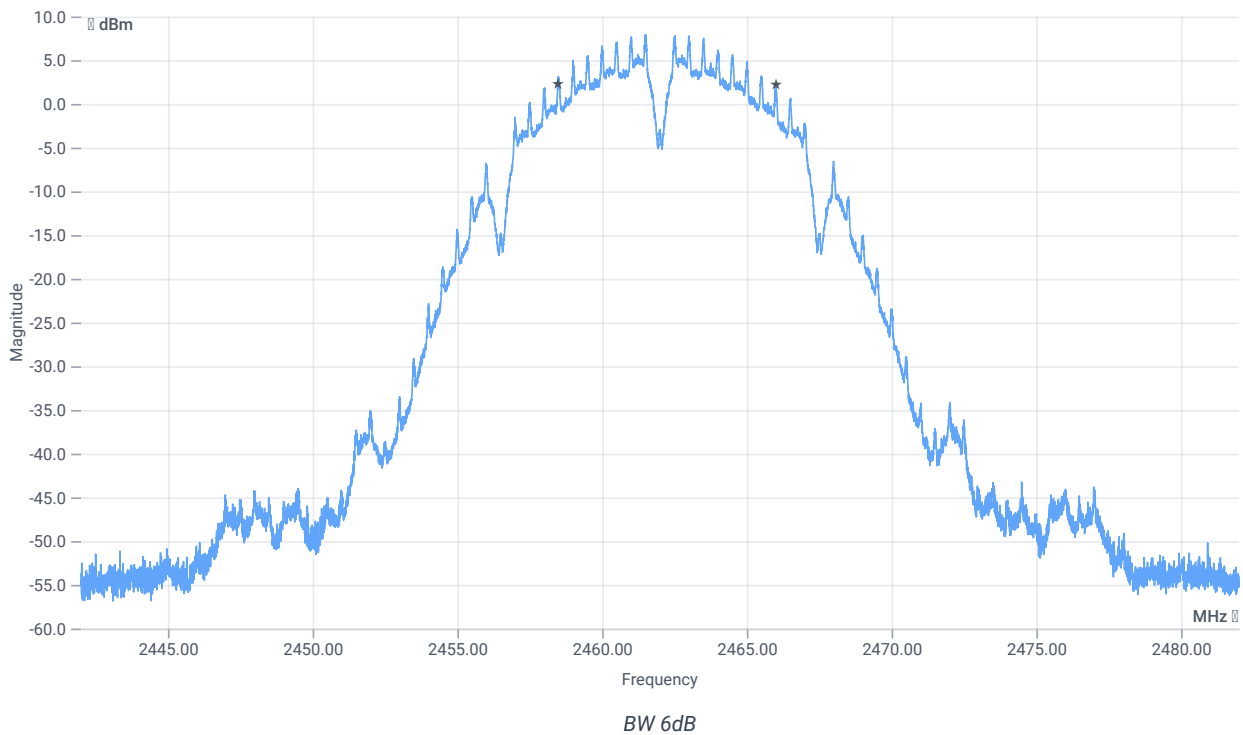
Test at TX 2462 MHz

RESULT: Reference Power cond.

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Ref. Power 1MHz/1MHz cond.	--	--	11.42	dBm	INFO
Ref. Frequency	--	--	2460.800	MHz	INFO

READ SA SETTINGS:

RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB]	16.42 14.04 20
Start [MHz] Stop [MHz]	2442.000 2482.000
RBW [MHz] VBW [MHz]	0.100000 0.300000
Detector TraceMode	POS MAXH
Sweep: Time [ms] Count Points per Section Type	50 200 10001 SWE



RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
DTS Bandwidth (6dB)	500	--	7536	kHz	PASS

Verdict

PASS

FCC 15.247 # Maximum peak conducted output power PM DTS ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 16:48:53
Ambit Temp [°C] Humidity [rel%]	23.7 25
System Version	3.3.4.3
Test Specification	FCC 15.247 -
Test Method	DTS: KDB 558074 D01 V05 - Chapter 8.3.1.3 PKPM1 Peak-reading Power Meter Method
TC Version	0.0.1
My Description	FCC 15.247 Max Peak Output Power Powermeter Conducted DTS - WLAN2G4 b mode

Add. Information

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	2
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	True Freq [MHz] 2437
Frequency high to test	False Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - PowerMeter

Test Equipment

Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

Power sensor,Keysight Technologies,U2021XA,MY59190010,A.04.06

Test at TX 2437 MHz

RESULT

<i>Test Description</i>	<i>Lower Limit</i>	<i>Upper Limit</i>	<i>Measured</i>	<i>Unit</i>	<i>Verdict</i>
Found Peak cond.	--	--	21.39	dBm	PASS

Verdict

PASS

FCC 15.247 # Restricted band edge conducted avg DC corrected DTS (eirp) ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 16:48:13
Ambit Temp [°C] Humidity [rel%]	23.7 25
System Version	3.3.4.3
Test Specification	FCC 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
TC Version	0.0.1
My Description	FCC 15.247 Restricted Band Edge Cond. Avg DC corrected DTS - WLAN2G4 b mode

Add. Information

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	2
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	True Freq [MHz] 2437
Frequency high to test	False Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

Antenna Gain Table

Freq [MHz]	Gain [dBi]
2400	4.85
2483.5	4.85

Test at TX 2437 MHz

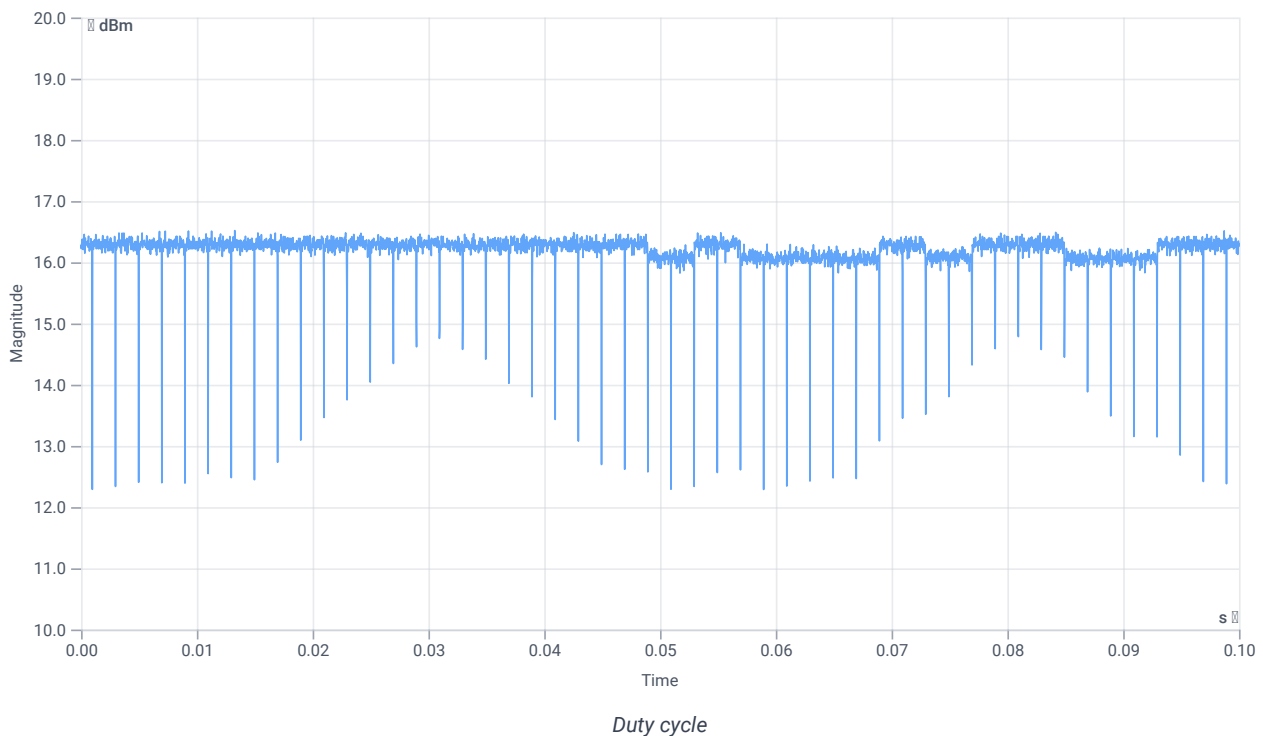
RESULT: Reference Power cond.

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Ref. Power 1MHz/1MHz cond.	--	--	12.30	dBm	INFO
Ref. Frequency	--	--	2438.200	MHz	INFO

Evaluation max. Duty Cycle

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



Band Edge conducted

READ SA SETTINGS:

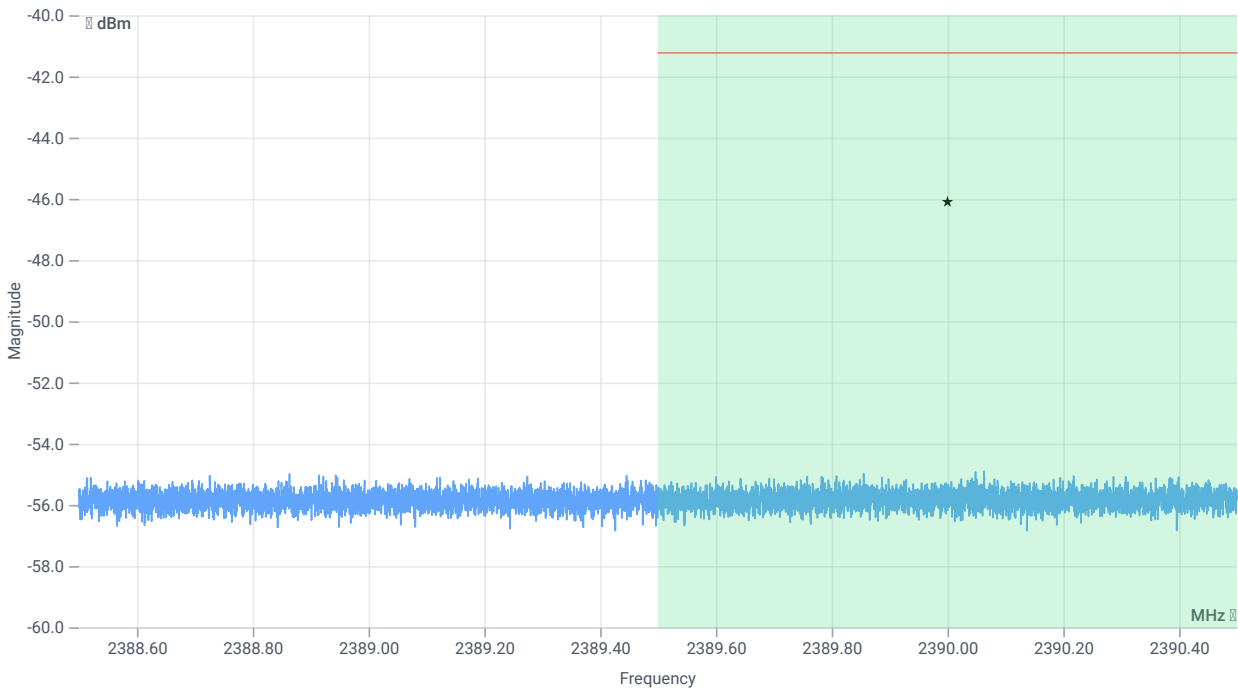
RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB]	22.30 14.2 25
Start [MHz] Stop [MHz]	2388.500 2390.500

READ SA SETTINGS:

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]:	4.85 @ 2390MHz
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Restricted band edge

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Duty Cycle worst case	--	--	0	dB	INFO
Band Power Avg	--	--	-46.1	dBm	INFO
Band Power Avg DC corrected	--	-41.23	-46.1	dBm	PASS

Verdict

PASS

FCC 15.247 # TX spurious conducted 20dBc ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 16:41:33
Ambit Temp [°C] Humidity [rel%]	23.7 25
System Version	3.3.4.3
Test Specification	FCC 15.247 -
Test Method	IF DTS then 8.5 DTS emissions in non-restricted frequency bands: Subclause 11.11 of ANSI C63.10 is applicable
TC Version	0.0.1
My Description	FCC 15.247 TX Emissions Conducted DTS - WLAN2G4 b mode
Add. Information	

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	2
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	True Freq [MHz] 2437
Frequency high to test	False Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

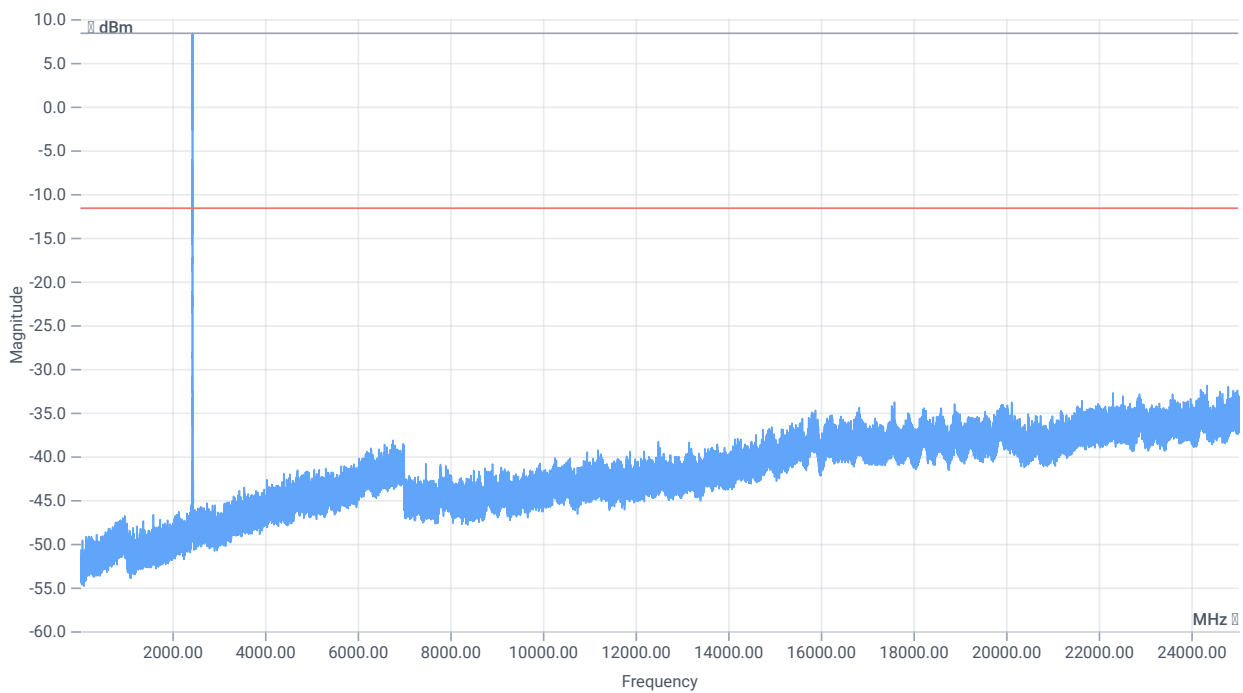
Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

Test at TX 2437 MHz

RESULT: Reference Power cond.

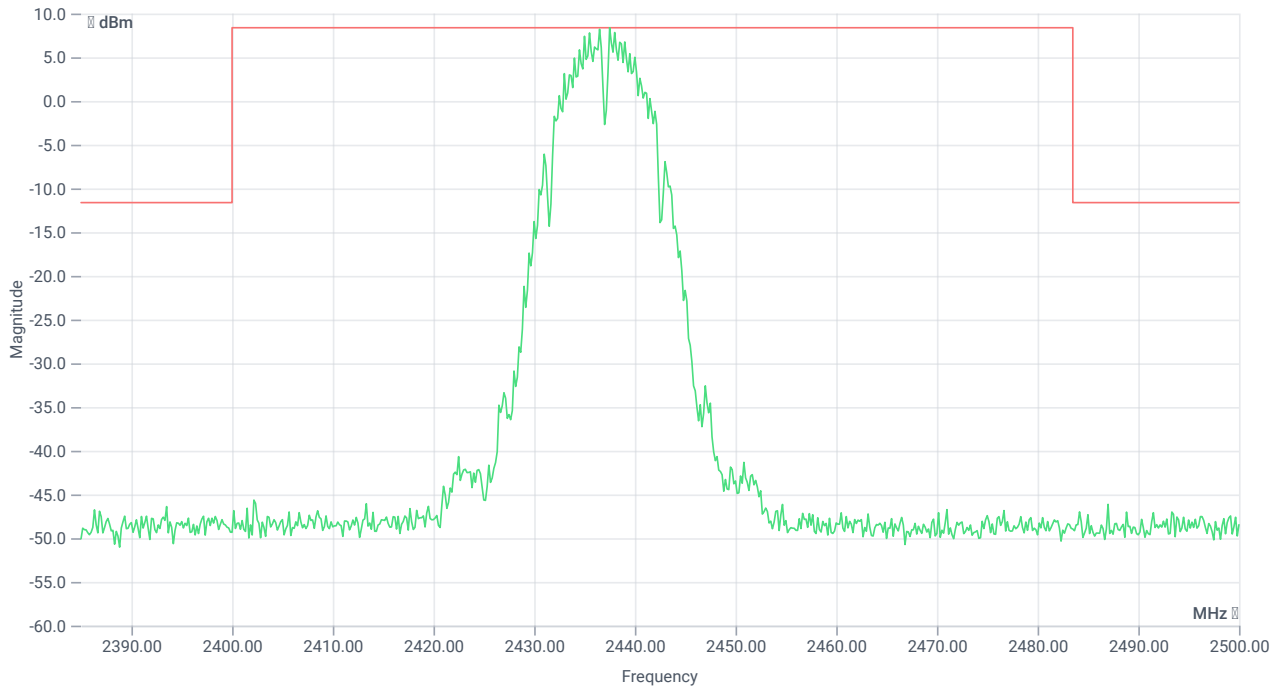
Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Ref. Power 1MHz/1MHz cond.	--	--	12.32	dBm	INFO
Ref. Frequency	--	--	2438.100	MHz	INFO



TX emissions

READ SA SETTINGS:

RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB]	12.32 0 30
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	200 25 3001 SWE



TX emissions band zoomed

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Reference @ 2437.50 MHz	--	--	8.38	dBm	INFO
No peaks detected	--	--			PASS
Lowest margin to limit 24344 MHz	0	--	20.28	dB	INFO

Verdict

PASS

FCC 15.247, ISED RSS247 # Bandwidth 99PCT and 20dB ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 16:40:57
Ambit Temp [°C] Humidity [rel%]	23.7 25
System Version	3.3.4.3
Test Specification	FCC 15.247, ISED RSS247 -
Test Method	
TC Version	0.0.2
My Description	FCC 15.247 Bandwidth 99PCT-20dB DTS - WLAN2G4 b mode
Add. Information	

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	2
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	True Freq [MHz] 2437
Frequency high to test	False Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

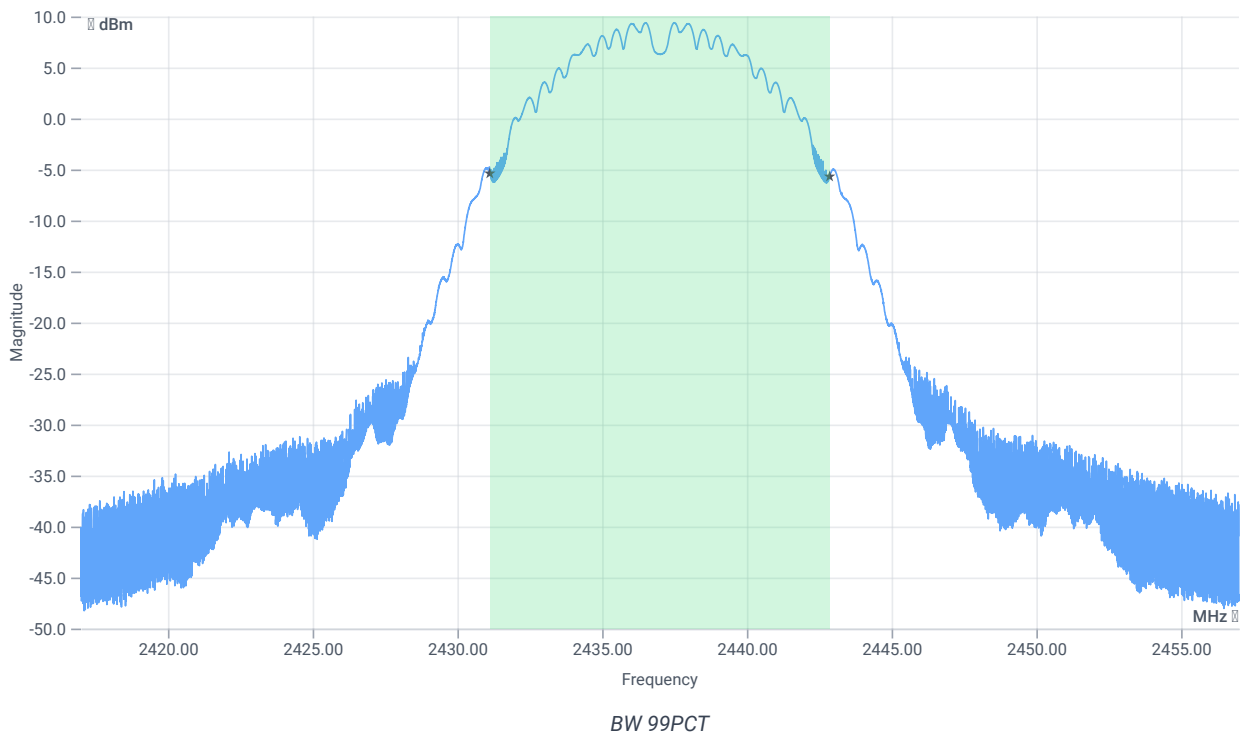
Test at TX 2437 MHz

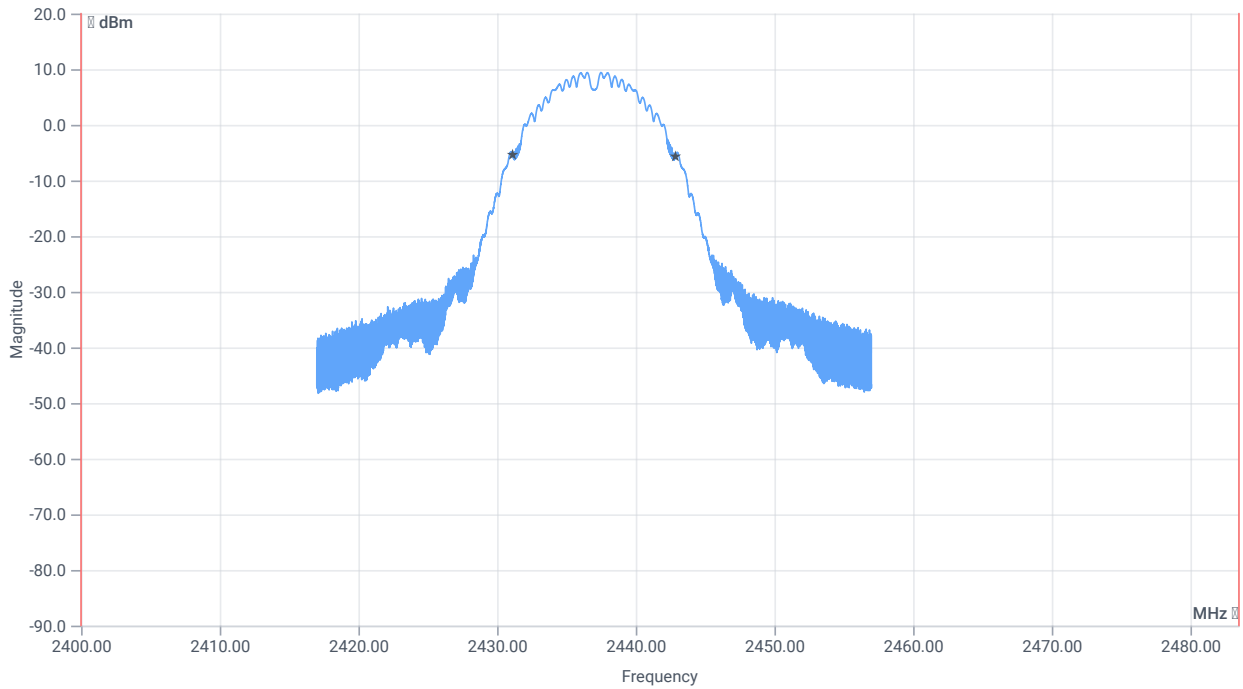
RESULT: Reference Power cond.

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Ref. Power 1MHz/1MHz cond.	--	--	12.32	dBm	INFO
Ref. Frequency	--	--	2438.200	MHz	INFO

READ SA SETTINGS:

RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB]	17.32 14.2 20
Start [MHz] Stop [MHz]	2417.000 2457.000
RBW [MHz] VBW [MHz]	0.500000 2.000000
Detector TraceMode	POS MAXH
Sweep: Time [ms] Count Points per Section Type	50 200 10001 SWE

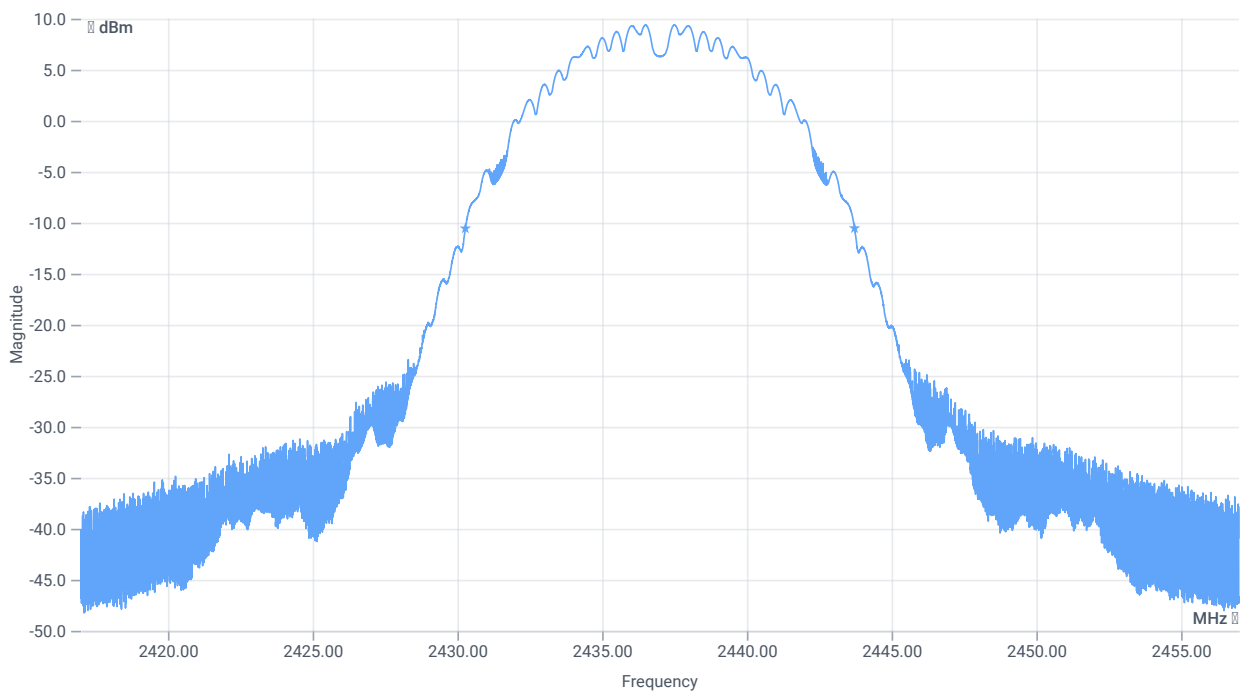




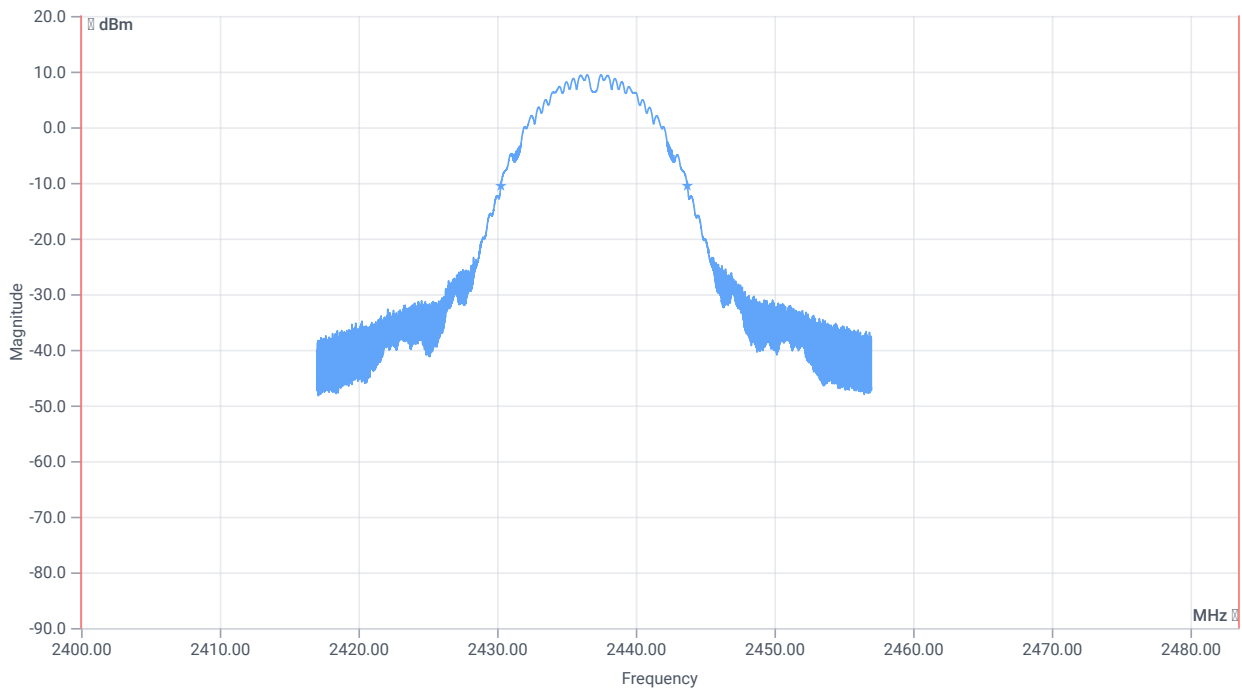
BW within Band 99PCT

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Bandwidth 99%	--	--	11739.000	kHz	INFO
T1 99%	2400.000000	--	2431.1206	MHz	PASS
T2 99%	--	2483.500000	2442.8594	MHz	PASS



BW 20dB



BW within Band 20dB

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Bandwidth 20dB	--	--	13444	kHz	INFO
T1 20dB	2400.000000	--	2430.2760	MHz	PASS
T2 20dB	--	2483.500000	2443.7200	MHz	PASS

Verdict

PASS

FCC 15.247 # Peak power spectral density DTS ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 16:40:17
Ambit Temp [°C] Humidity [rel%]	23.7 25
System Version	3.3.4.3
Test Specification	FCC 15.247 -
Test Method	DTS: KDB 558074 D01 V05 - Chapter 8.4 DTS maximum power spectral density level in the fundamental emission
TC Version	0.0.1
My Description	FCC 15.247 Peak Power Spectral Density DTS - WLAN2G4 b mode
Add. Information	

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	2
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	True Freq [MHz] 2437
Frequency high to test	False Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

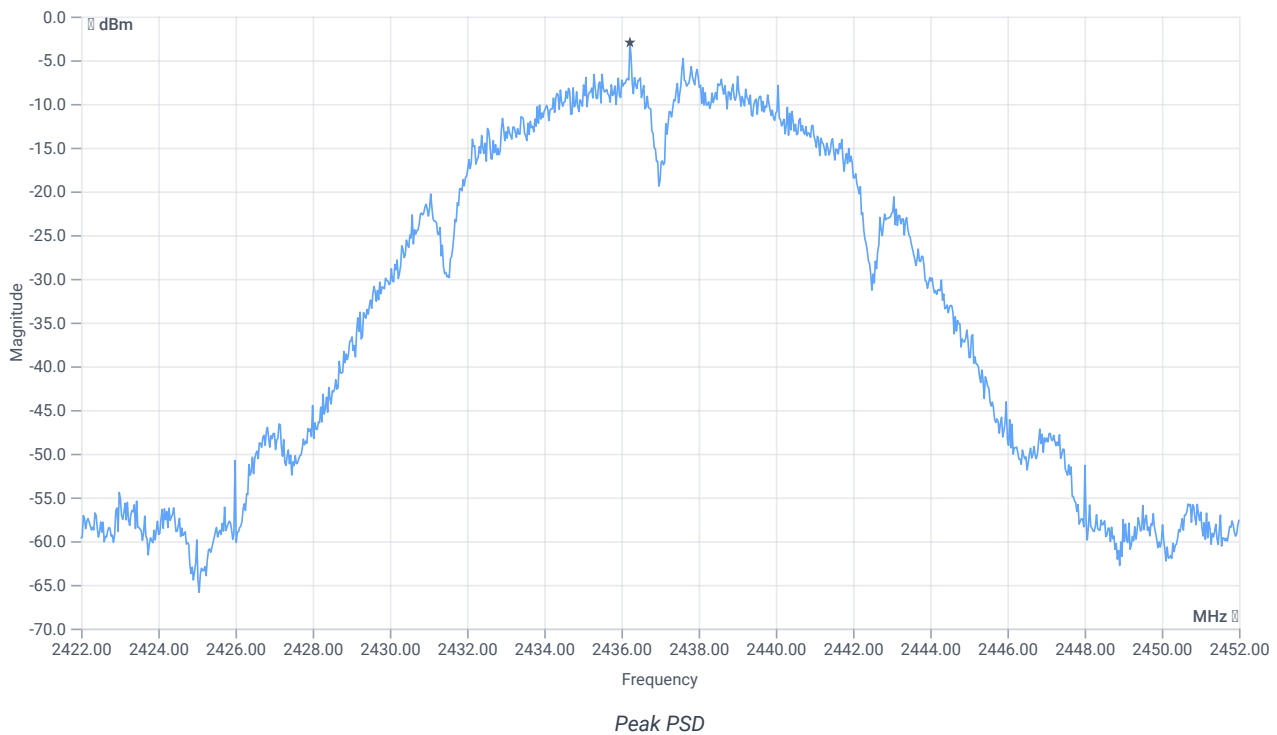
Test at TX 2437 MHz

RESULT: Reference Power cond.

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Ref. Power 1MHz/1MHz cond.	--	--	12.30	dBm	INFO
Ref. Frequency	--	--	2438.200	MHz	INFO

READ SA SETTINGS:

RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB]	17.30 14.2 20
Start [MHz] Stop [MHz]	2422.000 2452.000
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	-2.98	dBm/3KHz	PASS

Verdict

PASS

FCC 15.247 # Bandwidth 6dB DTS ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 16:39:44
Ambit Temp [°C] Humidity [rel%]	23.7 25
System Version	3.3.4.3
Test Specification	FCC 15.247 -
Test Method	
TC Version	0.0.1
My Description	FCC 15.247 Bandwidth 6dB DTS - WLAN2G4 b mode
Add. Information	

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	2
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	True Freq [MHz] 2437
Frequency high to test	False Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

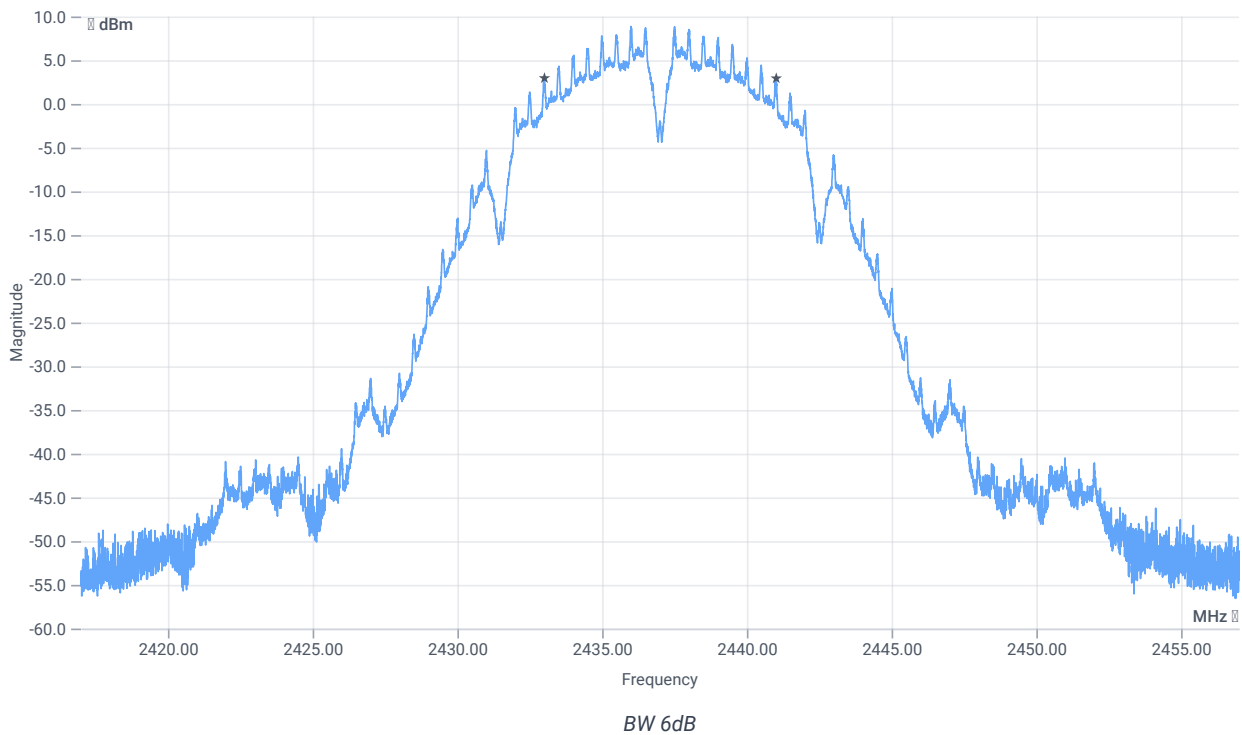
Test at TX 2437 MHz

RESULT: Reference Power cond.

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Ref. Power 1MHz/1MHz cond.	--	--	12.32	dBm	INFO
Ref. Frequency	--	--	2438.200	MHz	INFO

READ SA SETTINGS:

RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB]	17.32 14.2 20
Start [MHz] Stop [MHz]	2417.000 2457.000
RBW [MHz] VBW [MHz]	0.100000 0.300000
Detector TraceMode	POS MAXH
Sweep: Time [ms] Count Points per Section Type	50 200 10001 SWE



RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
DTS Bandwidth (6dB)	500	--	8008	kHz	PASS

Verdict

PASS

FCC 15.247 # Maximum peak conducted output power PM DTS ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 16:39:03
Ambit Temp [°C] Humidity [rel%]	23.7 25
System Version	3.3.4.3
Test Specification	FCC 15.247 -
Test Method	DTS: KDB 558074 D01 V05 - Chapter 8.3.1.3 PKPM1 Peak-reading Power Meter Method
TC Version	0.0.1
My Description	FCC 15.247 Max Peak Output Power Powermeter Conducted DTS - WLAN2G4 b mode

Add. Information

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	True Freq [MHz] 2437
Frequency high to test	False Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - PowerMeter

Test Equipment

Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

Power sensor,Keysight Technologies,U2021XA,MY59190010,A.04.06

Test at TX 2437 MHz

RESULT

<i>Test Description</i>	<i>Lower Limit</i>	<i>Upper Limit</i>	<i>Measured</i>	<i>Unit</i>	<i>Verdict</i>
Found Peak cond.	--	--	21.36	dBm	PASS

Verdict

PASS

FCC 15.247 # Restricted band edge conducted avg DC corrected DTS (eirp) ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 16:38:23
Ambit Temp [°C] Humidity [rel%]	23.7 25
System Version	3.3.4.3
Test Specification	FCC 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
TC Version	0.0.1
My Description	FCC 15.247 Restricted Band Edge Cond. Avg DC corrected DTS - WLAN2G4 b mode

Add. Information

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	True Freq [MHz] 2437
Frequency high to test	False Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
 Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

Antenna Gain Table

Freq [MHz]	Gain [dBi]
2400	4.85
2483.5	4.85

Test at TX 2437 MHz

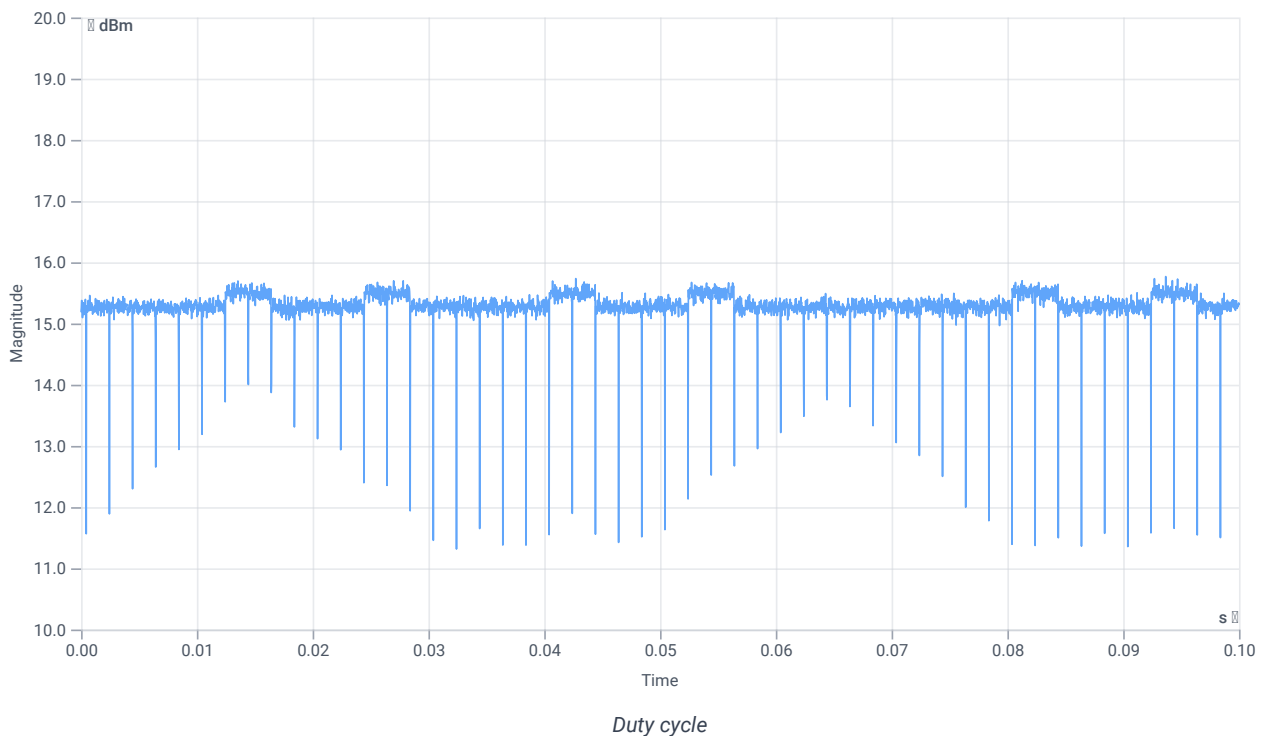
RESULT: Reference Power cond.

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Ref. Power 1MHz/1MHz cond.	--	--	11.55	dBm	INFO
Ref. Frequency	--	--	2438.200	MHz	INFO

Evaluation max. Duty Cycle

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



Band Edge conducted

READ SA SETTINGS:

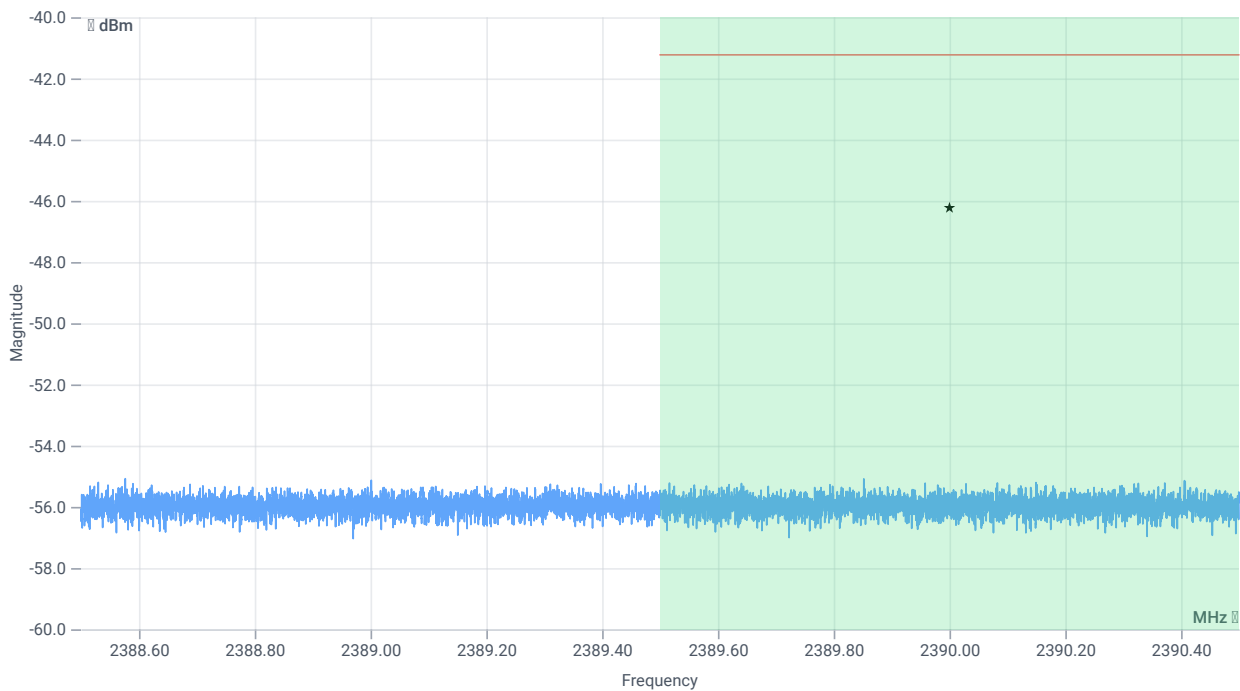
RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB]	21.55 14.2 25
Start [MHz] Stop [MHz]	2388.500 2390.500

READ SA SETTINGS:

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]:	4.85 @ 2390MHz
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Restricted band edge

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Duty Cycle worst case	--	--	0	dB	INFO
Band Power Avg	--	--	-46.23	dBm	INFO
Band Power Avg DC corrected	--	-41.23	-46.23	dBm	PASS

Verdict

PASS

FCC 15.247 # TX spurious conducted 20dBc ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 16:31:43
Ambit Temp [°C] Humidity [rel%]	23.6 25
System Version	3.3.4.3
Test Specification	FCC 15.247 -
Test Method	IF DTS then 8.5 DTS emissions in non-restricted frequency bands: Subclause 11.11 of ANSI C63.10 is applicable
TC Version	0.0.1
My Description	FCC 15.247 TX Emissions Conducted DTS - WLAN2G4 b mode
Add. Information	

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	True Freq [MHz] 2437
Frequency high to test	False Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

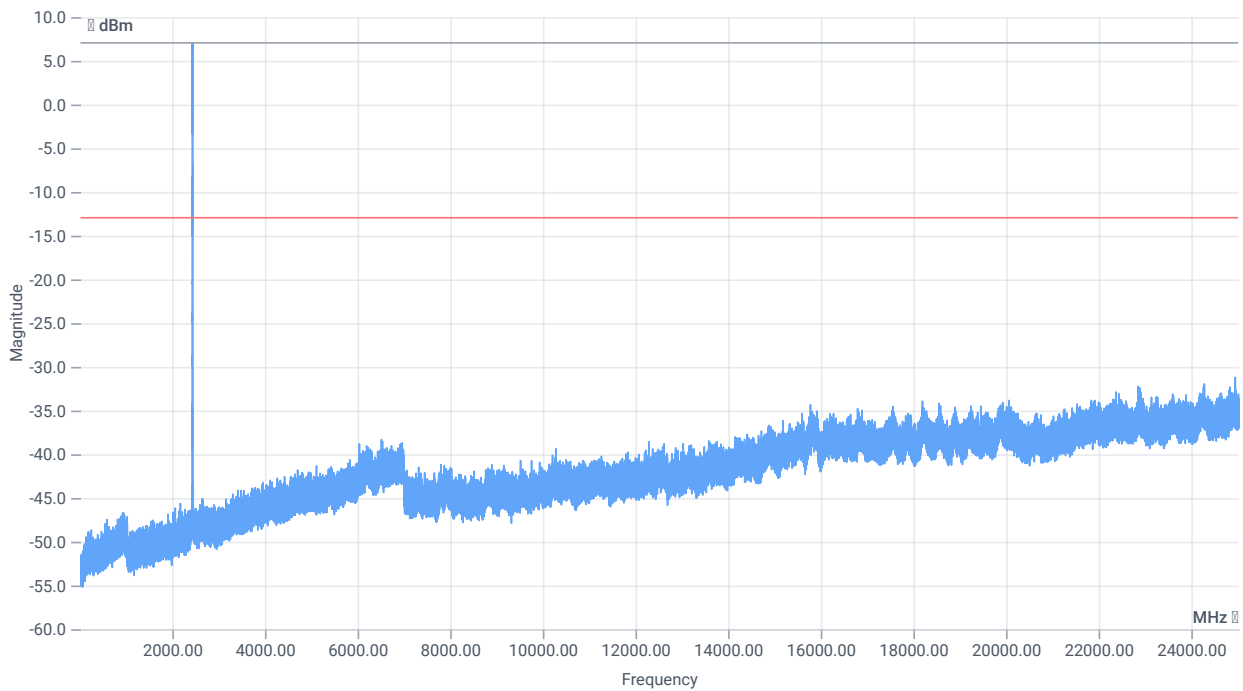
Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

Test at TX 2437 MHz

RESULT: Reference Power cond.

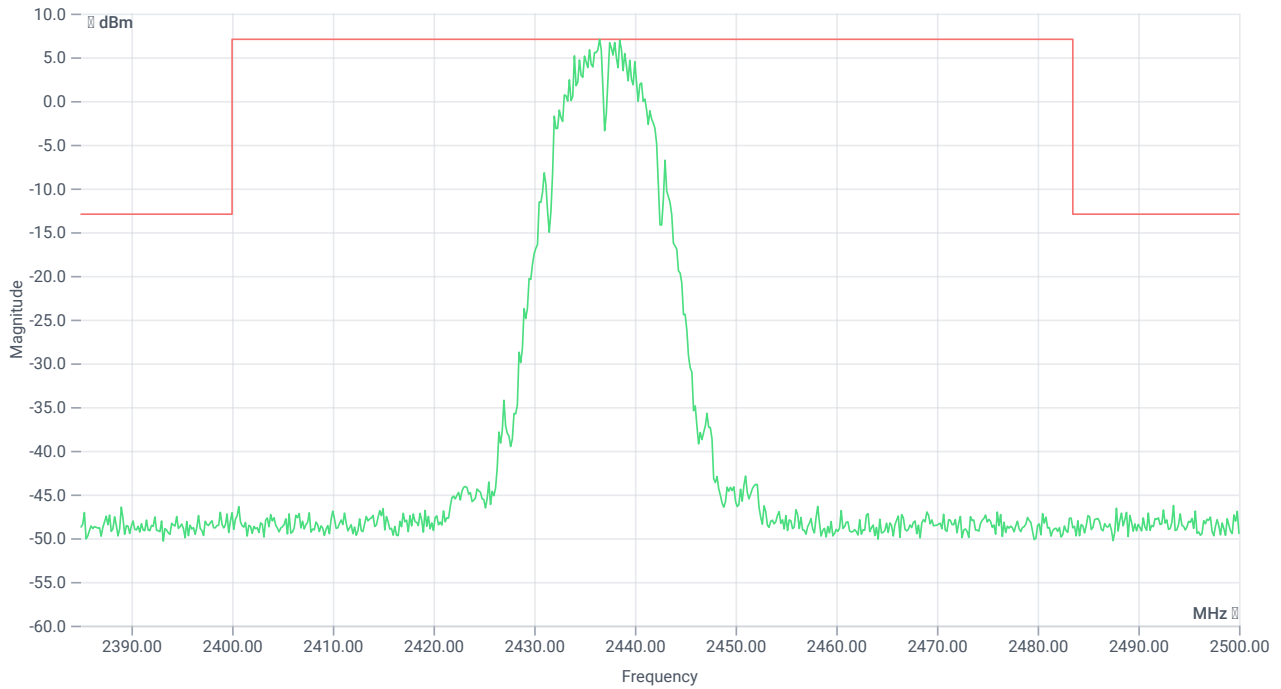
Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Ref. Power 1MHz/1MHz cond.	--	--	11.59	dBm	INFO
Ref. Frequency	--	--	2438.200	MHz	INFO



TX emissions

READ SA SETTINGS:

RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB]	11.59 0 30
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	200 25 3001 SWE



TX emissions band zoomed

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Reference @ 2436.50 MHz	--	--	7.05	dBm	INFO
No peaks detected	--	--			PASS
Lowest margin to limit 24950.667 MHz	0	--	18.25	dB	INFO

Verdict

PASS

FCC 15.247, ISED RSS247 # Bandwidth 99PCT and 20dB ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 16:31:07
Ambit Temp [°C] Humidity [rel%]	23.7 25
System Version	3.3.4.3
Test Specification	FCC 15.247, ISED RSS247 -
Test Method	
TC Version	0.0.2
My Description	FCC 15.247 Bandwidth 99PCT-20dB DTS - WLAN2G4 b mode
Add. Information	

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	True Freq [MHz] 2437
Frequency high to test	False Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

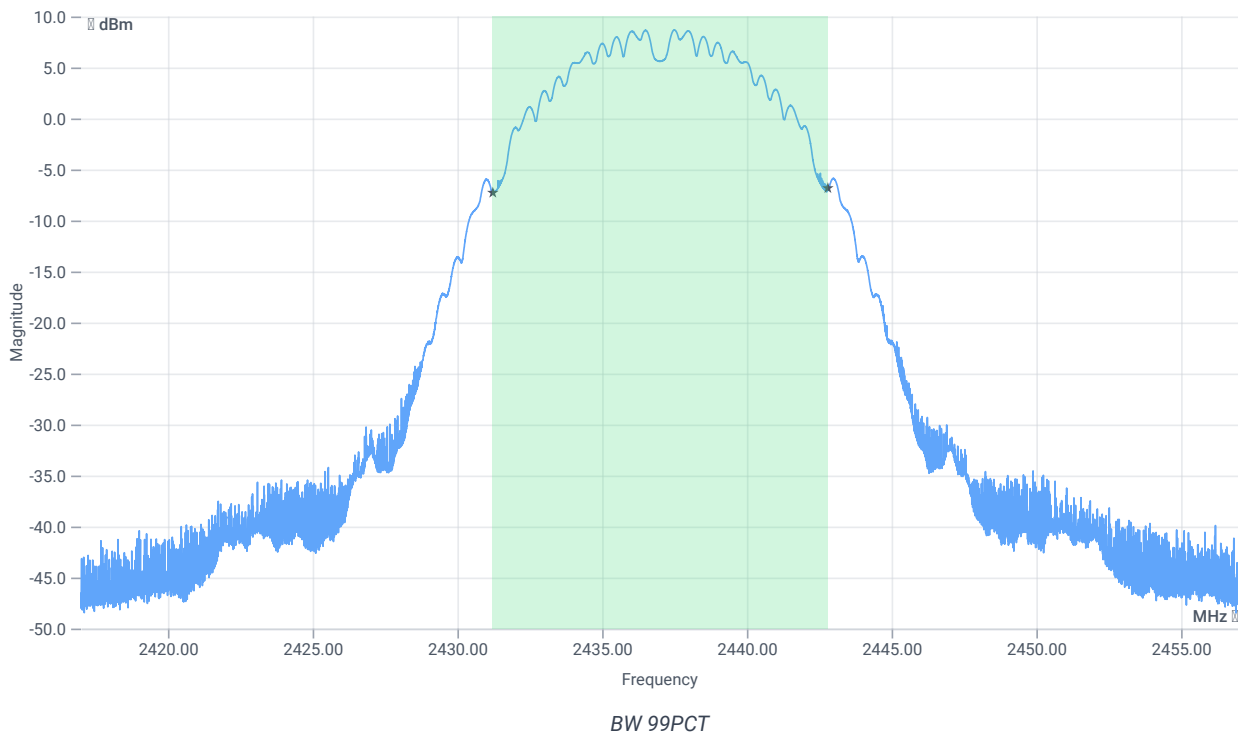
Test at TX 2437 MHz

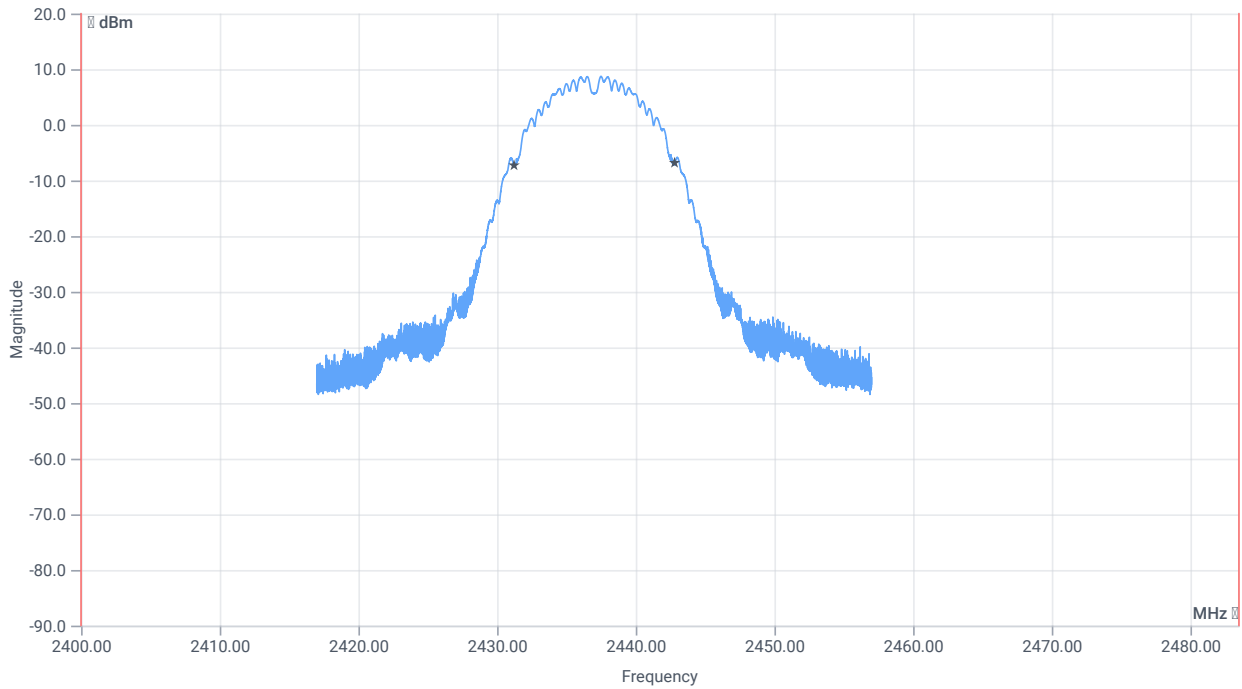
RESULT: Reference Power cond.

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Ref. Power 1MHz/1MHz cond.	--	--	11.58	dBm	INFO
Ref. Frequency	--	--	2438.200	MHz	INFO

READ SA SETTINGS:

RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB]	16.58 14.2 20
Start [MHz] Stop [MHz]	2417.000 2457.000
RBW [MHz] VBW [MHz]	0.500000 2.000000
Detector TraceMode	POS MAXH
Sweep: Time [ms] Count Points per Section Type	50 200 10001 SWE

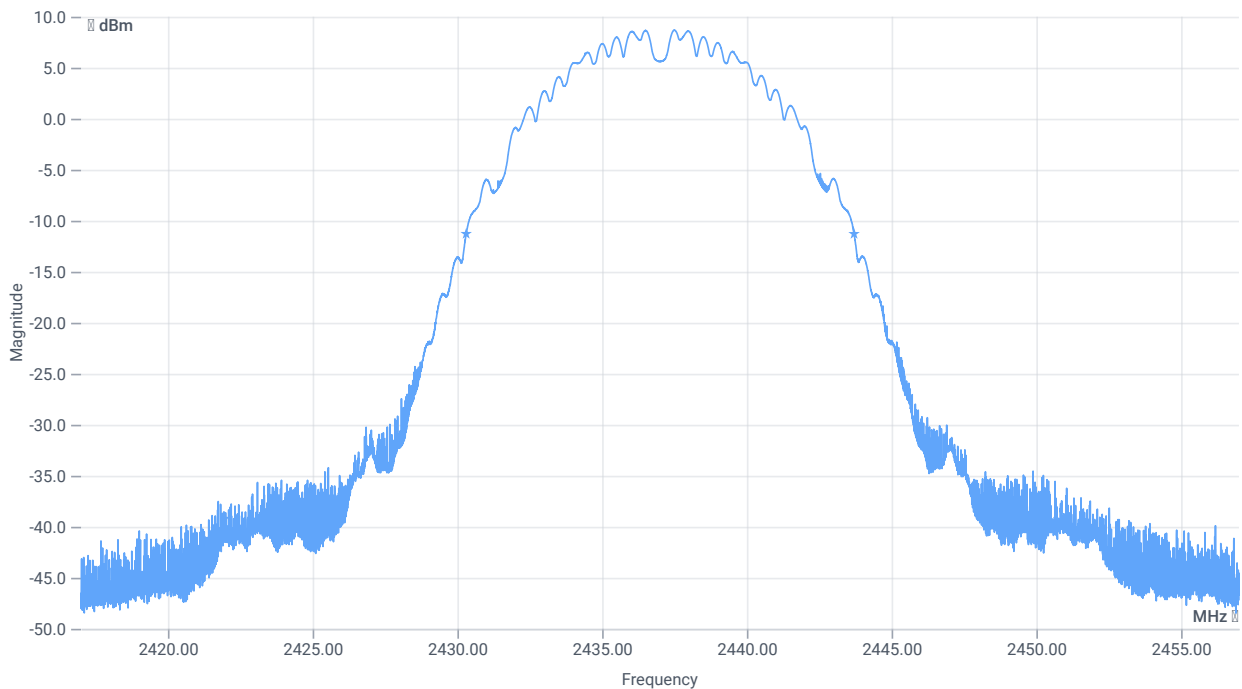




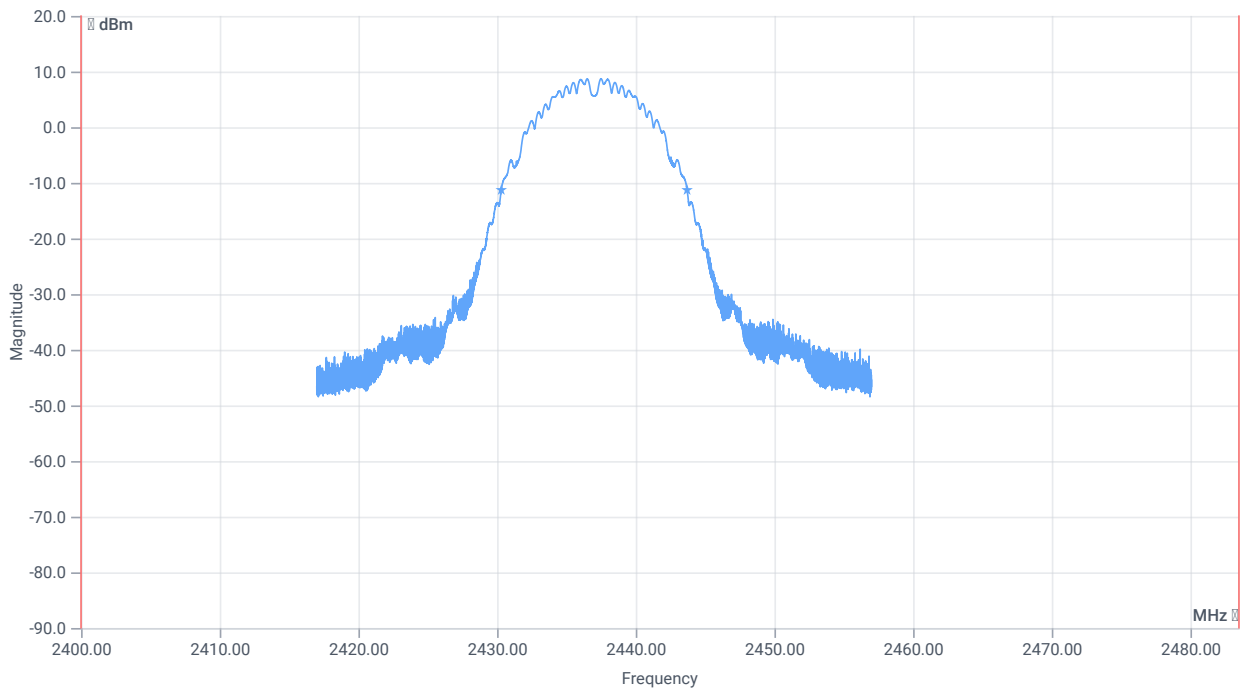
BW within Band 99PCT

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Bandwidth 99%	--	--	11575.000	kHz	INFO
T1 99%	2400.000000	--	2431.2246	MHz	PASS
T2 99%	--	2483.500000	2442.7994	MHz	PASS



BW 20dB



BW within Band 20dB

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Bandwidth 20dB	--	--	13400	kHz	INFO
T1 20DB	2400.000000	--	2430.3040	MHz	PASS
T2 20dB	--	2483.500000	2443.7040	MHz	PASS

Verdict

PASS

FCC 15.247 # Peak power spectral density DTS ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 16:30:27
Ambit Temp [°C] Humidity [rel%]	23.7 25
System Version	3.3.4.3
Test Specification	FCC 15.247 -
Test Method	DTS: KDB 558074 D01 V05 - Chapter 8.4 DTS maximum power spectral density level in the fundamental emission
TC Version	0.0.1
My Description	FCC 15.247 Peak Power Spectral Density DTS - WLAN2G4 b mode
Add. Information	

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	True Freq [MHz] 2437
Frequency high to test	False Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

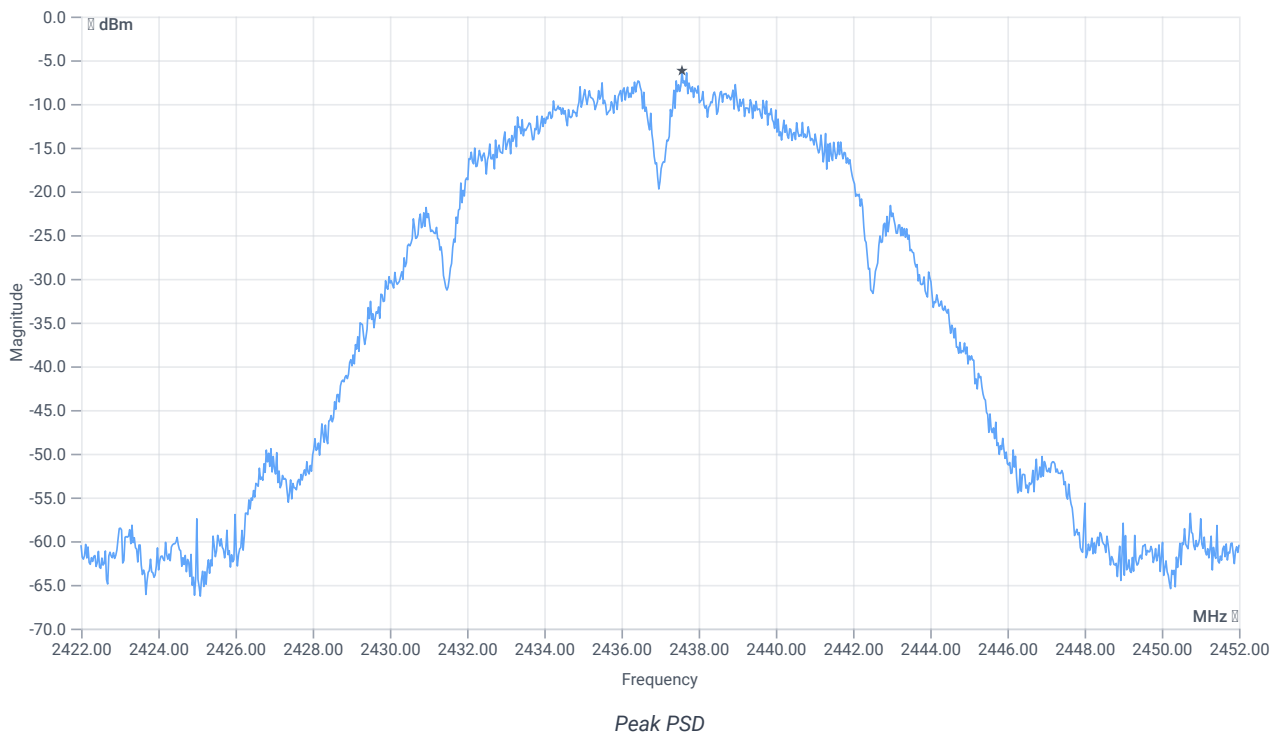
Test at TX 2437 MHz

RESULT: Reference Power cond.

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Ref. Power 1MHz/1MHz cond.	--	--	11.62	dBm	INFO
Ref. Frequency	--	--	2438.200	MHz	INFO

READ SA SETTINGS:

RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB]	16.62 14.2 20
Start [MHz] Stop [MHz]	2422.000 2452.000
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	-6.2	dBm/3KHz	PASS

Verdict

PASS

FCC 15.247 # Bandwidth 6dB DTS ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 16:29:54
Ambit Temp [°C] Humidity [rel%]	23.7 25
System Version	3.3.4.3
Test Specification	FCC 15.247 -
Test Method	
TC Version	0.0.1
My Description	FCC 15.247 Bandwidth 6dB DTS - WLAN2G4 b mode
Add. Information	

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False Freq [MHz] 2412
Frequency mid to test	True Freq [MHz] 2437
Frequency high to test	False Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

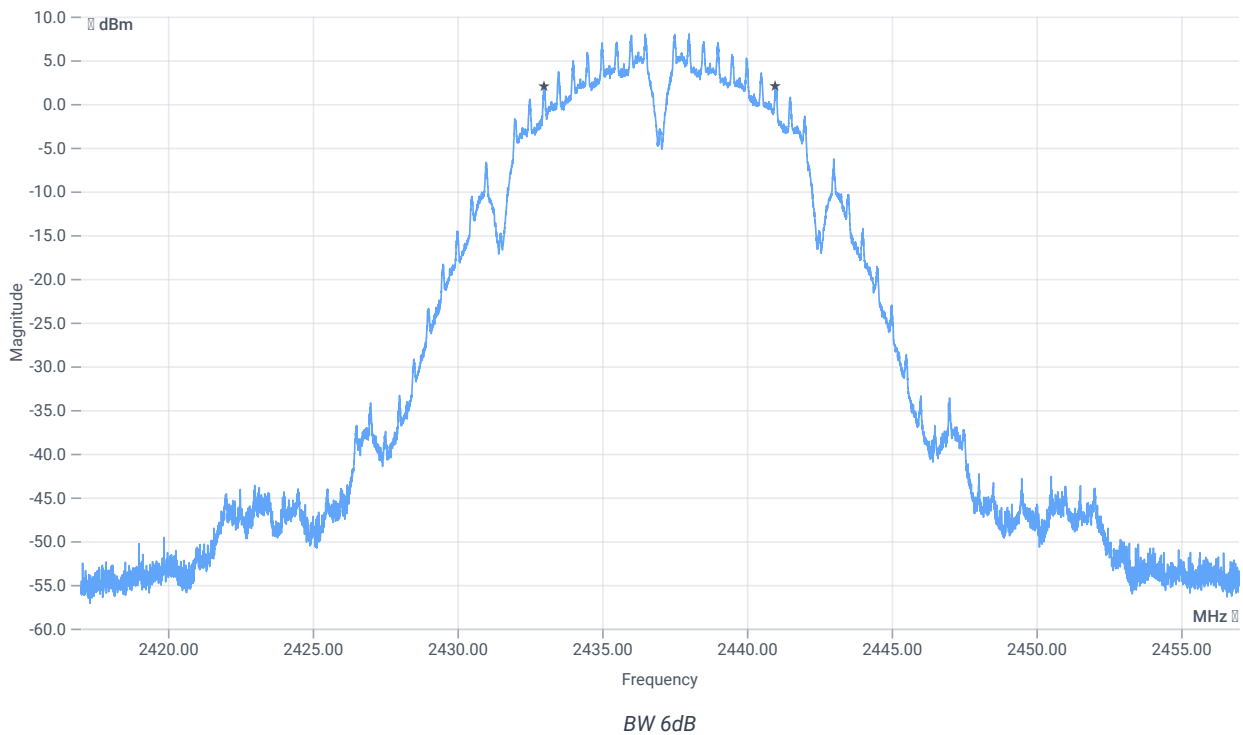
Test at TX 2437 MHz

RESULT: Reference Power cond.

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Ref. Power 1MHz/1MHz cond.	--	--	11.66	dBm	INFO
Ref. Frequency	--	--	2438.200	MHz	INFO

READ SA SETTINGS:

RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB]	16.66 14.2 20
Start [MHz] Stop [MHz]	2417.000 2457.000
RBW [MHz] VBW [MHz]	0.100000 0.300000
Detector TraceMode	POS MAXH
Sweep: Time [ms] Count Points per Section Type	50 200 10001 SWE



RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
DTS Bandwidth (6dB)	500	--	7984	kHz	PASS

Verdict

PASS

FCC 15.247 # Maximum peak conducted output power PM DTS ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 16:28:09
Ambit Temp [°C] Humidity [rel%]	23.7 25
System Version	3.3.4.3
Test Specification	FCC 15.247 -
Test Method	DTS: KDB 558074 D01 V05 - Chapter 8.3.1.3 PKPM1 Peak-reading Power Meter Method
TC Version	0.0.1
My Description	FCC 15.247 Max Peak Output Power Powermeter Conducted DTS - WLAN2G4 b mode

Add. Information

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	2
Temperature	nom
Voltage	nom
Frequency low to test	True Freq [MHz] 2412
Frequency mid to test	False Freq [MHz] 2437
Frequency high to test	False Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - PowerMeter

Test Equipment

Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

Power sensor,Keysight Technologies,U2021XA,MY59190010,A.04.06

Test at TX 2412 MHz

RESULT

<i>Test Description</i>	<i>Lower Limit</i>	<i>Upper Limit</i>	<i>Measured</i>	<i>Unit</i>	<i>Verdict</i>
Found Peak cond.	--	--	21.92	dBm	PASS

Verdict

PASS

FCC 15.247 # Restricted band edge conducted avg DC corrected DTS (eirp) ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 16:27:30
Ambit Temp [°C] Humidity [rel%]	23.6 25
System Version	3.3.4.3
Test Specification	FCC 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
TC Version	0.0.1
My Description	FCC 15.247 Restricted Band Edge Cond. Avg DC corrected DTS - WLAN2G4 b mode

Add. Information

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	2
Temperature	nom
Voltage	nom
Frequency low to test	True Freq [MHz] 2412
Frequency mid to test	False Freq [MHz] 2437
Frequency high to test	False Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
 Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI

Antenna Gain Table

Freq [MHz]	Gain [dBi]
2400	4.85
2483.5	4.85

Test at TX 2412 MHz

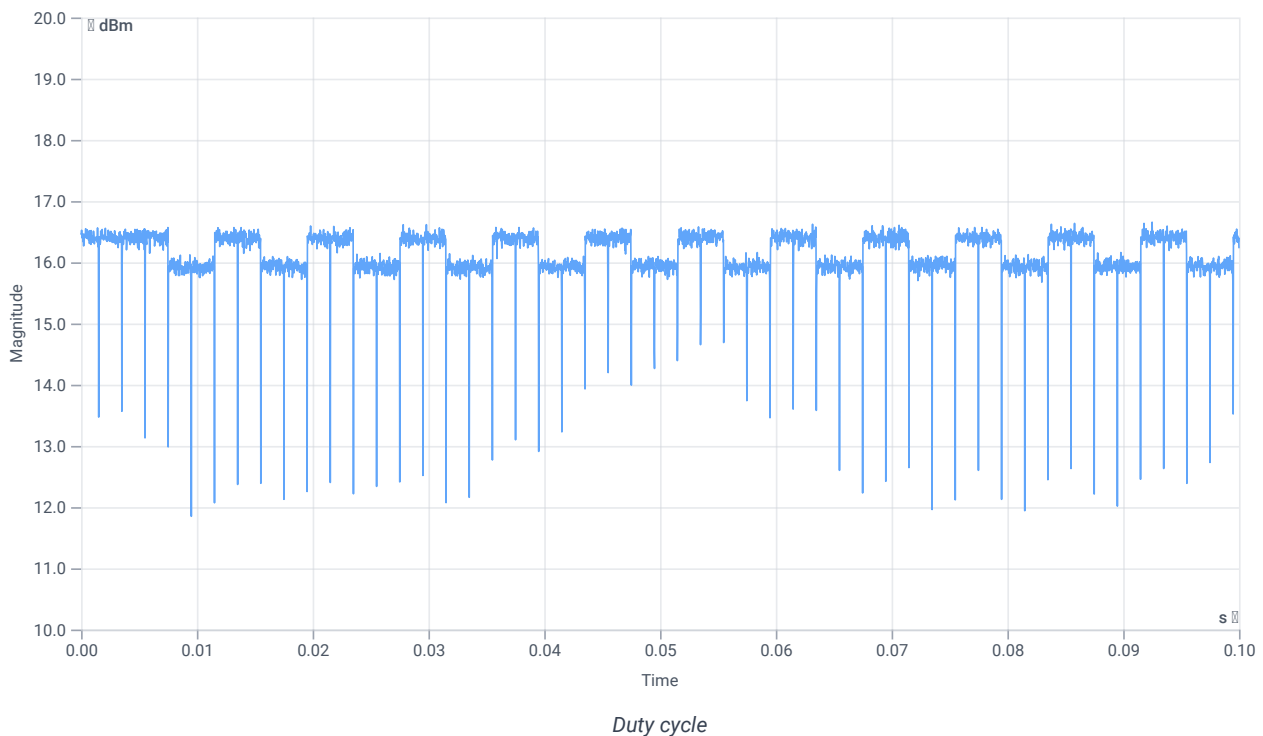
RESULT: Reference Power cond.

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Ref. Power 1MHz/1MHz cond.	--	--	12.47	dBm	INFO
Ref. Frequency	--	--	2413.100	MHz	INFO

Evaluation max. Duty Cycle

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



Band Edge conducted

READ SA SETTINGS:

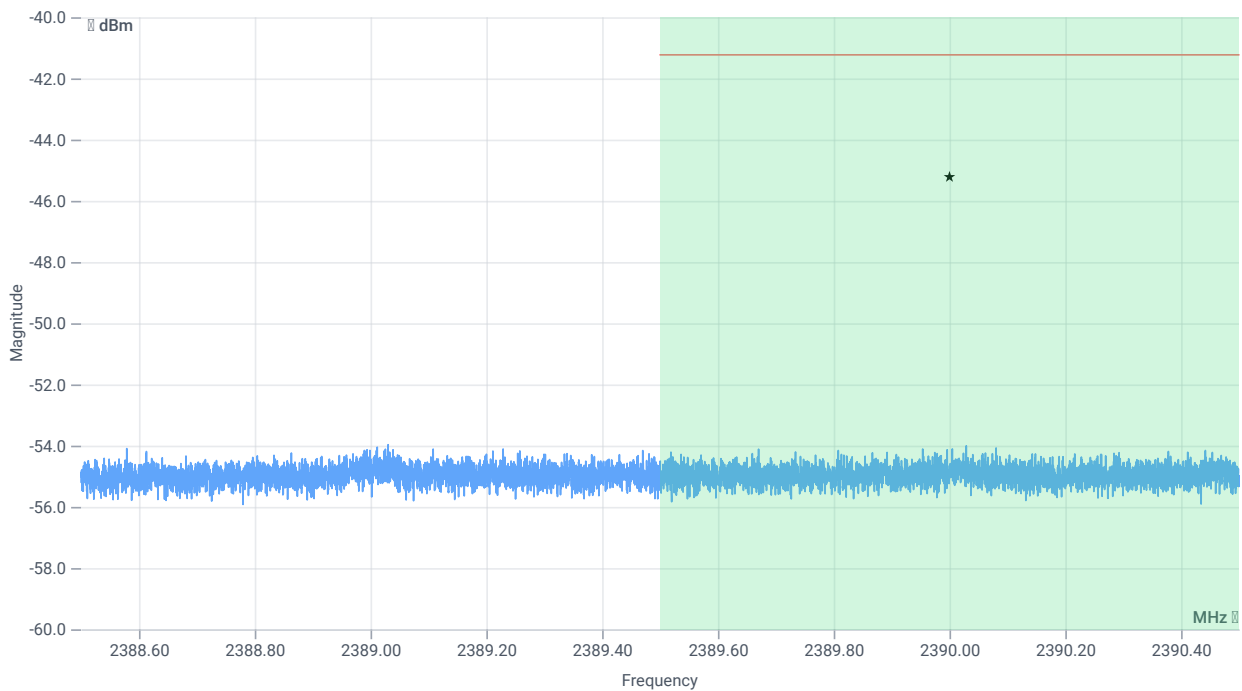
RefLevel [dBm] RefLevelOffset [dB] InpAtt [dB]	22.47 14.43 25
Start [MHz] Stop [MHz]	2388.500 2390.500

READ SA SETTINGS:

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]:	4.85 @ 2390MHz
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Restricted band edge
RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Duty Cycle worst case	--	--	0	dB	INFO
Band Power Avg	--	--	-45.22	dBm	INFO
Band Power Avg DC corrected	--	-41.23	-45.22	dBm	PASS

Verdict
PASS

FCC 15.247 # TX spurious conducted 20dBc ~ WLAN2G4 b mode

Test References

TC Start	07.02.2023 16:20:49
Ambit Temp [°C] Humidity [rel%]	23.6 25
System Version	3.3.4.3
Test Specification	FCC 15.247 -
Test Method	IF DTS then 8.5 DTS emissions in non-restricted frequency bands: Subclause 11.11 of ANSI C63.10 is applicable
TC Version	0.0.1
My Description	FCC 15.247 TX Emissions Conducted DTS - WLAN2G4 b mode
Add. Information	

EUT Common Settings WLAN2G4

Number of Antenna Ports	2
User Interaction	No

Test Parameter

Technology to test	WLAN2G4 b mode
Antenna Port used	2
Temperature	nom
Voltage	nom
Frequency low to test	True Freq [MHz] 2412
Frequency mid to test	False Freq [MHz] 2437
Frequency high to test	False Freq [MHz] 2462
Auto Control enabled Power Supply Climatic Box	No No
Additional Path Loss [dB]	0.7
Switched Path	EUT - SignalingUnit - SpectrumAnalyzer

Test Equipment

Signal analyzer,Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.70
Switch matrix,CTCadvanced,SPM-4 NI DAQ,28016133,NI