Measurement Results

1-0437/20-01-04_log2_conducted

Test logging

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EUT Summary

EUT DEFINITION	
Manufacturer	KUNBUS GmbH
Type	KE2640MODA2
Kind	NI
Serial Number | Setup Number	M1 | 1.0
Version SW | FW | HW	1.2.0 | 1.3 | PR100332R03
Comment 1 | 2	|
Temperature [°C] Min | Nom | Max	-40 | 20 | 85
Voltage [V] Min | Nom | Max @Current Max [A]	5 | 5 | 5 @1

EUT Common Settings BT Low Energy	
Intermodulation Value N	3
Image Freq. Low | Mid | High [MHz]	0 | 0 | 0
Power Class	2
1 Mbps supported	True | TXpayload 255 | RXpayload 255
2 Mbps supported	False | TXpayload 255 | RXpayload 255
Longrange S8 supported	False | TXpayload 255 | RXpayload 255
Longrange S2 supported	False | TXpayload 255 | RXpayload 255
Signaling Settings	None | HCI | 1 | 2400 | None | S1 | None | On
Signaling RF Settings	RF1com | 0 | 0 | On |
User Interaction	No
Switch Matrix & Pathcompensation enabled	Yes

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

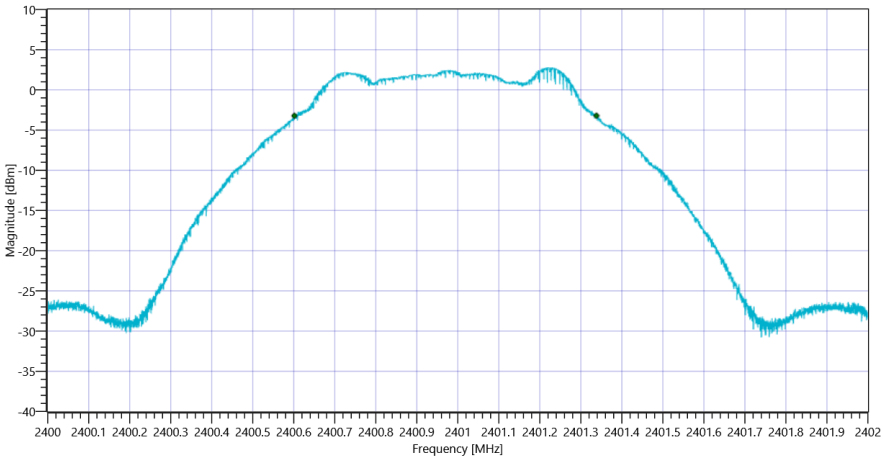
Test References	
TC Start	14.01.2021 10:19:04
Ambit Temp [°C] | Humidity [rel%]	24.0 | 24
System Version	1.9.9.2
Test Specification	FCC Part 15.247
Test Method	DTS: KDB 558074 D01 V05 - Chapter 8.3.1.1 RBW ≥ DTS Bandwidth
TC Version	0.0.1
My Description	FCC 15.247 Maximum Peak Output Power Conducted DTS - BT LE 1 Msps
Add. Information	

Test Parameter	
Technology to test	BT LE 1 Msps
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	True | Freq [MHz] 2401
Frequency mid to test	False | Freq [MHz] 2440
Frequency high to test	False | Freq [MHz] 2480
Auto Control enabled Power Supply | Climatic Box	No | No
Additional Path Loss [dB]	0
Switched Path	IUT - SignalingUnit - SpectrumAnalyzer
Devices in use	| SA: Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.60

Test at TX 2401 MHz

READ SA SETTINGS:	
RefLevel [dBm] | RefLevelOffset [dB] | InpAtt [dB]	8.64 | 15.56 | 10
Start [MHz] | Stop [MHz]	2400.000 | 2402.000
RBW [MHz] | VBW [MHz]	0.100000 | 0.300000
Detector | TraceMode	POS | MAXH
Sweep: Time [ms] | Count | Points per Section | Type	50 | 200 | 10001 | SWE

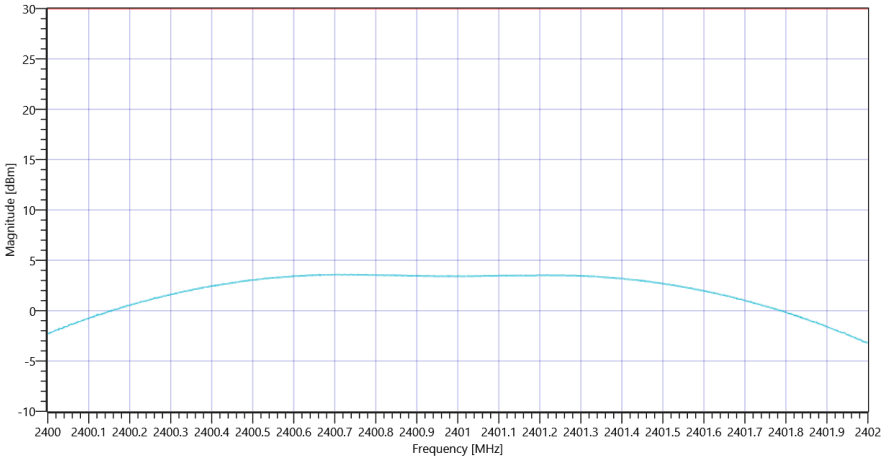
DTS Bandwidth					
Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
DTS Bandwidth (6dB)	---	---	737	kHz	INFO



Plot_FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ BT LE 1 Msps DTS BW_14012021_101935.png

READ SA SETTINGS:	
RefLevel [dBm] | RefLevelOffset [dB] | InpAtt [dB]	13.64 | 15.56 | 15
Start [MHz] | Stop [MHz]	2400.000 | 2402.000
RBW [MHz] | VBW [MHz]	1.000000 | 5.000000
Detector | TraceMode	POS | MAXH
Sweep: Time [ms] | Count | Points per Section | Type	50 | 200 | 1001 | SWE

RESULT					
Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Peak Power	---	30.00	3.6	dBm	PASS
Peak Power	---	1000	2.290868	mW	PASS
Frequency at Peak	---	---	2400.704	MHz	INFO



Plot_FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ BT LE 1 Msps_14012021_101953.png

TEST FINISHED		
General Verdict	14.01.2021 10:19:54 / RT: 50 s	PASS

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

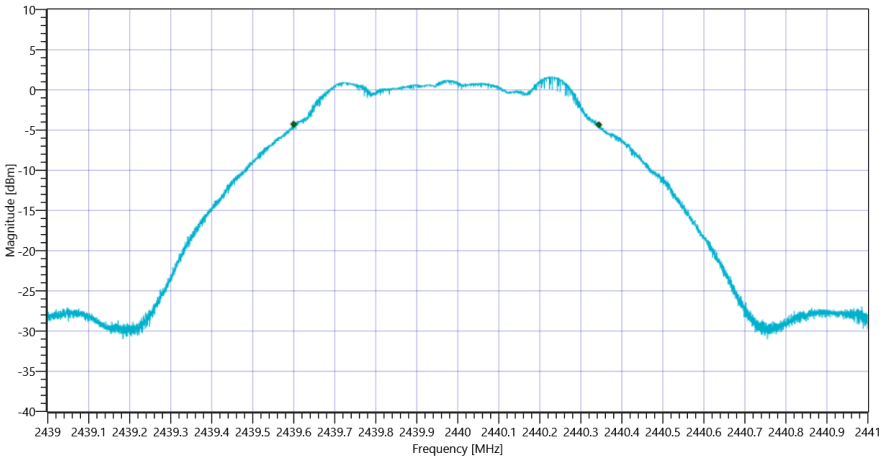
Test References	
TC Start	14.01.2021 10:31:10
Ambit Temp [°C] | Humidity [rel%]	24.1 | 24
System Version	1.9.9.2
Test Specification	FCC Part 15.247
Test Method	DTS: KDB 558074 D01 V05 - Chapter 8.3.1.1 RBW ≥ DTS Bandwidth
TC Version	0.0.1
My Description	FCC 15.247 Maximum Peak Output Power Conducted DTS - BT LE 1 Msps
Add. Information	

Test Parameter	
Technology to test	BT LE 1 Msps
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False | Freq [MHz] 2402
Frequency mid to test	True | Freq [MHz] 2440
Frequency high to test	False | Freq [MHz] 2480
Auto Control enabled Power Supply | Climatic Box	No | No
Additional Path Loss [dB]	0
Switched Path	IUT - SignalingUnit - SpectrumAnalyzer
Devices in use	| SA: Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.60

Test at TX 2440 MHz

READ SA SETTINGS:	
RefLevel [dBm] | RefLevelOffset [dB] | InpAtt [dB]	7.56 | 15.48 | 10
Start [MHz] | Stop [MHz]	2439.000 | 2441.000
RBW [MHz] | VBW [MHz]	0.100000 | 0.300000
Detector | TraceMode	POS | MAXH
Sweep: Time [ms] | Count | Points per Section | Type	50 | 200 | 10001 | SWE

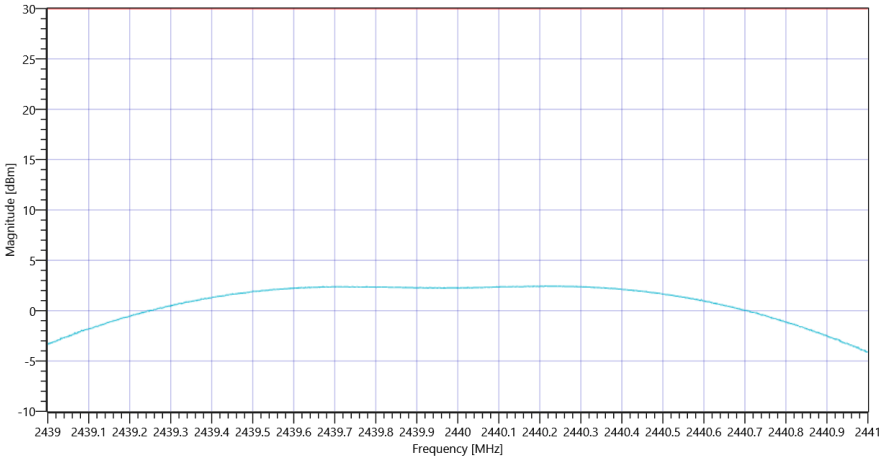
DTS Bandwidth					
Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
DTS Bandwidth (6dB)	---	---	744	kHz	INFO



Plot_FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ BT LE 1 Msps DTS BW_14012021_103141.png

READ SA SETTINGS:	
RefLevel [dBm] | RefLevelOffset [dB] | InpAtt [dB]	12.56 | 15.48 | 15
Start [MHz] | Stop [MHz]	2439.000 | 2441.000
RBW [MHz] | VBW [MHz]	1.000000 | 5.000000
Detector | TraceMode	POS | MAXH
Sweep: Time [ms] | Count | Points per Section | Type	50 | 200 | 1001 | SWE

RESULT					
Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Peak Power	---	30.00	2.44	dBm	PASS
Peak Power	---	1000	1.753881	mW	PASS
Frequency at Peak	---	---	2440.214	MHz	INFO



Plot_FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ BT LE 1 Msps_14012021_103200.png

TEST FINISHED		
General Verdict	14.01.2021 10:32:00 / RT: 50 s	PASS

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

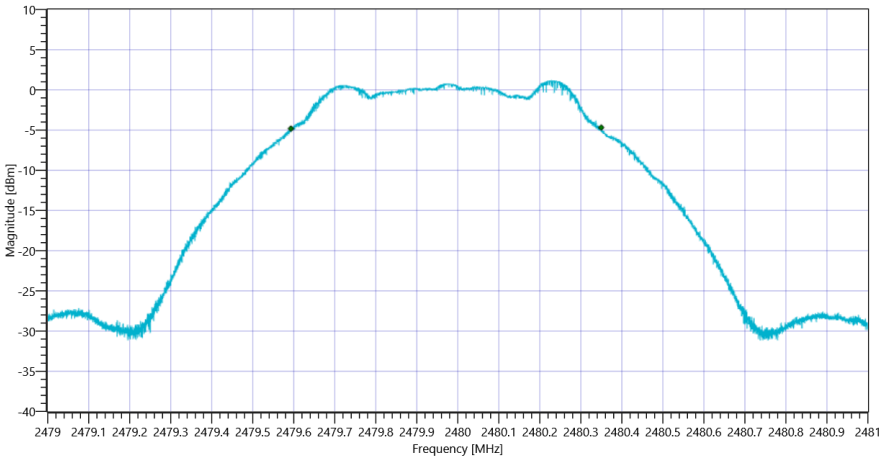
Test References	
TC Start	14.01.2021 10:48:28
Ambit Temp [°C] | Humidity [rel%]	24.2 | 24
System Version	1.9.9.2
Test Specification	FCC Part 15.247
Test Method	DTS: KDB 558074 D01 V05 - Chapter 8.3.1.1 RBW ≥ DTS Bandwidth
TC Version	0.0.1
My Description	FCC 15.247 Maximum Peak Output Power Conducted DTS - BT LE 1 Msps
Add. Information	

Test Parameter	
Technology to test	BT LE 1 Msps
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False | Freq [MHz] 2402
Frequency mid to test	False | Freq [MHz] 2440
Frequency high to test	True | Freq [MHz] 2480
Auto Control enabled Power Supply | Climatic Box	No | No
Additional Path Loss [dB]	0
Switched Path	IUT - SignalingUnit - SpectrumAnalyzer
Devices in use	| SA: Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.60

Test at TX 2480 MHz

READ SA SETTINGS:	
RefLevel [dBm] | RefLevelOffset [dB] | InpAtt [dB]	7.10 | 15.41 | 10
Start [MHz] | Stop [MHz]	2479.000 | 2481.000
RBW [MHz] | VBW [MHz]	0.100000 | 0.300000
Detector | TraceMode	POS | MAXH
Sweep: Time [ms] | Count | Points per Section | Type	50 | 200 | 10001 | SWE

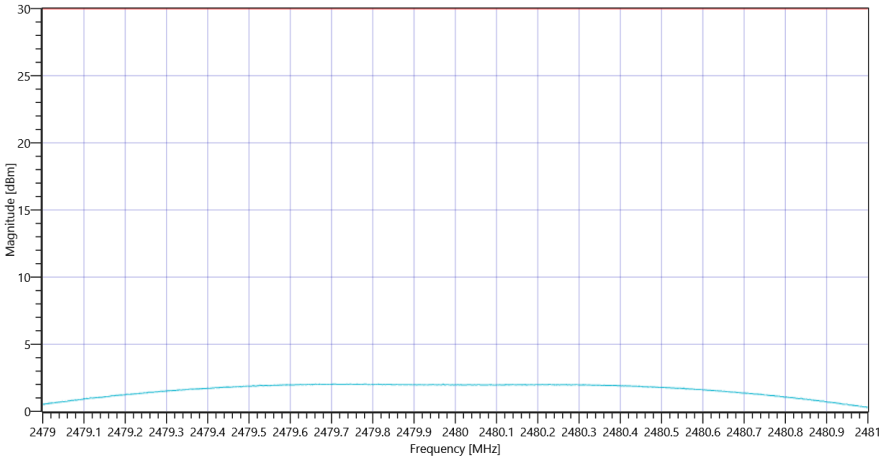
DTS Bandwidth					
Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
DTS Bandwidth (6dB)	---	---	757	kHz	INFO



Plot_FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ BT LE 1 Msps DTS BW_14012021_104859.png

READ SA SETTINGS:	
RefLevel [dBm] | RefLevelOffset [dB] | InpAtt [dB]	12.10 | 15.41 | 15
Start [MHz] | Stop [MHz]	2479.000 | 2481.000
RBW [MHz] | VBW [MHz]	2.000000 | 5.000000
Detector | TraceMode	POS | MAXH
Sweep: Time [ms] | Count | Points per Section | Type	50 | 200 | 1001 | SWE

RESULT					
Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Peak Power	---	30.00	2.03	dBm	PASS
Peak Power	---	1000	1.595879	mW	PASS
Frequency at Peak	---	---	2479.78	MHz	INFO



Plot_FCC Part 15.247 Maximum Peak Conducted Output Power DTS ~ BT LE 1 Msps_14012021_104917.png

TEST FINISHED		
General Verdict	14.01.2021 10:49:17 / RT: 48 s	PASS

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

Test References	
TC Start	14.01.2021 10:19:58
Ambit Temp [°C] | Humidity [rel%]	24.1 | 24
System Version	1.9.9.2
Test Specification	FCC Part 15.247
Test Method	99
TC Version	0.0.1
My Description	FCC 15.247 Bandwidth 6DB DTS - BT LE 1 Msps
Add. Information	

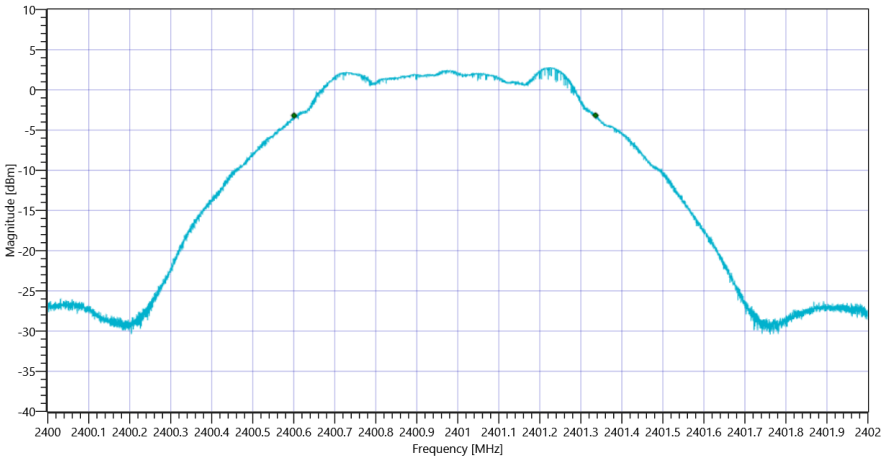
Test Parameter	
Technology to test	BT LE 1 Msps
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	True | Freq [MHz] 2401
Frequency mid to test	False | Freq [MHz] 2440
Frequency high to test	False | Freq [MHz] 2480
Auto Control enabled Power Supply | Climatic Box	No | No
Additional Path Loss [dB]	0
Switched Path	IUT - SignalingUnit - SpectrumAnalyzer
Devices in use	| SA: Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.60

Test at TX 2401 MHz

READ SA SETTINGS:	
RefLevel [dBm] | RefLevelOffset [dB] | InpAtt [dB]	8.65 | 15.56 | 10
Start [MHz] | Stop [MHz]	2400.000 | 2402.000
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	---	735	kHz	PASS



Plot_FCC Part 15.247 Bandwidth 6dB DTS ~ BT LE 1 Msps_14012021_102028.png

TEST FINISHED		
General Verdict	14.01.2021 10:20:29 / RT: 30 s	PASS

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

Test References	
TC Start	14.01.2021 10:32:04
Ambit Temp [°C] | Humidity [rel%]	24.1 | 24
System Version	1.9.9.2
Test Specification	FCC Part 15.247
Test Method	99
TC Version	0.0.1
My Description	FCC 15.247 Bandwidth 6DB DTS - BT LE 1 Msps
Add. Information	

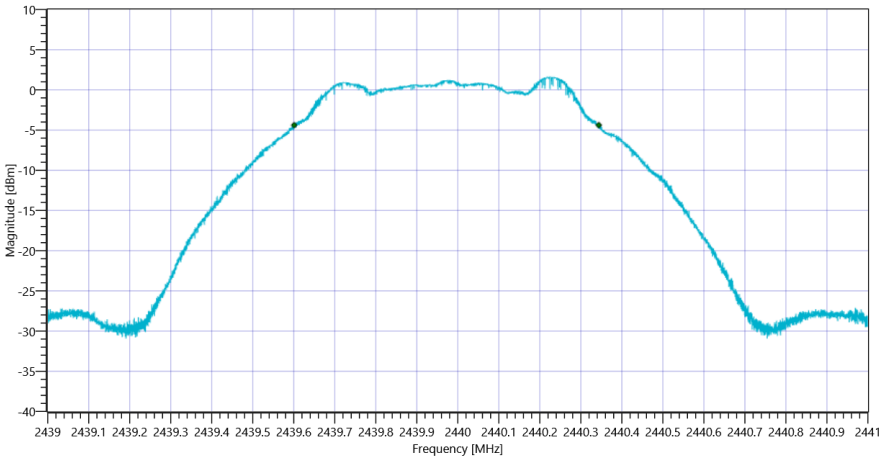
Test Parameter	
Technology to test	BT LE 1 Msps
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False | Freq [MHz] 2402
Frequency mid to test	True | Freq [MHz] 2440
Frequency high to test	False | Freq [MHz] 2480
Auto Control enabled Power Supply | Climatic Box	No | No
Additional Path Loss [dB]	0
Switched Path	IUT - SignalingUnit - SpectrumAnalyzer
Devices in use	| SA: Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.60

Test at TX 2440 MHz

READ SA SETTINGS:	
RefLevel [dBm] | RefLevelOffset [dB] | InpAtt [dB]	7.50 | 15.48 | 10
Start [MHz] | Stop [MHz]	2439.000 | 2441.000
RBW [MHz] | VBW [MHz]	0.100000 | 0.300000
Detector | TraceMode	POS | MAXH
Sweep: Time [ms] | Count | Points per Section | Type	50 | 200 | 10001 | SWE

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
DTS Bandwidth (6dB)	500	---	743	kHz	PASS



Plot_FCC Part 15.247 Bandwidth 6dB DTS ~ BT LE 1 Msps_14012021_103235.png

TEST FINISHED		
General Verdict	14.01.2021 10:32:35 / RT: 30 s	PASS

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

Test References	
TC Start	14.01.2021 10:49:21
Ambit Temp [°C] | Humidity [rel%]	24.2 | 24
System Version	1.9.9.2
Test Specification	FCC Part 15.247
Test Method	99
TC Version	0.0.1
My Description	FCC 15.247 Bandwidth 6DB DTS - BT LE 1 Msps
Add. Information	

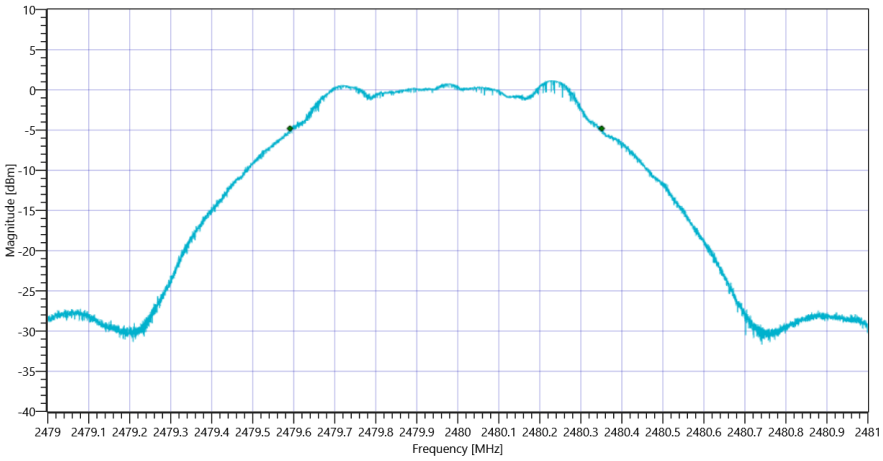
Test Parameter	
Technology to test	BT LE 1 Msps
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False | Freq [MHz] 2402
Frequency mid to test	False | Freq [MHz] 2440
Frequency high to test	True | Freq [MHz] 2480
Auto Control enabled Power Supply | Climatic Box	No | No
Additional Path Loss [dB]	0
Switched Path	IUT - SignalingUnit - SpectrumAnalyzer
Devices in use	| SA: Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.60

Test at TX 2480 MHz

READ SA SETTINGS:	
RefLevel [dBm] | RefLevelOffset [dB] | InpAtt [dB]	7.19 | 15.41 | 10
Start [MHz] | Stop [MHz]	2479.000 | 2481.000
RBW [MHz] | VBW [MHz]	0.100000 | 0.300000
Detector | TraceMode	POS | MAXH
Sweep: Time [ms] | Count | Points per Section | Type	50 | 200 | 10001 | SWE

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
DTS Bandwidth (6dB)	500	---	760	kHz	PASS



Plot_FCC Part 15.247 Bandwidth 6dB DTS ~ BT LE 1 Msps_14012021_104951.png

TEST FINISHED		
General Verdict	14.01.2021 10:49:52 / RT: 30 s	PASS

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

Test References	
TC Start	14.01.2021 10:20:33
Ambit Temp [°C] | Humidity [rel%]	24.0 | 24
System Version	1.9.9.2
Test Specification	FCC Part 15.247
Test Method	DTS: KDB 558074 D01 V05 - Chapter 8.4 DTS maximum power spectral density level in the fundamental emission
TC Version	0.0.1
My Description	FCC 15.247 Peak Power Spectral Density DTS - BT LE 1 Msps
Add. Information	

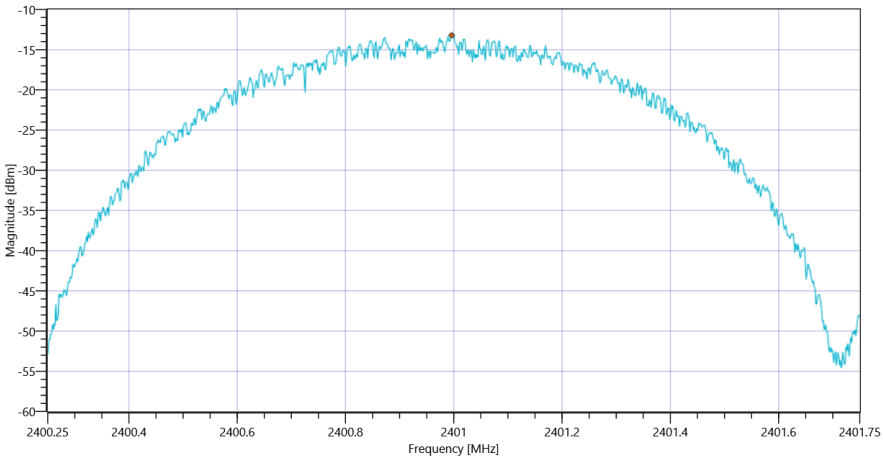
Test Parameter	
Technology to test	BT LE 1 Msps
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	True | Freq [MHz] 2401
Frequency mid to test	False | Freq [MHz] 2440
Frequency high to test	False | Freq [MHz] 2480
Auto Control enabled Power Supply | Climatic Box	No | No
Additional Path Loss [dB]	0
Switched Path	IUT - SignalingUnit - SpectrumAnalyzer
Devices in use	| SA: Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.60

Test at TX 2401 MHz

READ SA SETTINGS:	
RefLevel [dBm] | RefLevelOffset [dB] | InpAtt [dB]	8.58 | 15.56 | 10
Start [MHz] | Stop [MHz]	2400.250 | 2401.750
RBW [MHz] | VBW [MHz]	0.003000 | 0.010000
Detector | TraceMode	POS | MAXH
Sweep: Time [ms] | Count | Points per Section | Type	1000 | 20 | 1001 | SWE

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Max Peak power Density	---	8	-13.2	dBm/3KHz	PASS



Plot_FCC Part 15.247 Peak Power Spectral Density DTS ~ BT LE 1 Msps_14012021_102113.png

TEST FINISHED		
General Verdict	14.01.2021 10:21:14 / RT: 40 s	PASS

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

Test References	
TC Start	14.01.2021 10:32:40
Ambit Temp [°C] | Humidity [rel%]	24.1 | 24
System Version	1.9.9.2
Test Specification	FCC Part 15.247
Test Method	DTS: KDB 558074 D01 V05 - Chapter 8.4 DTS maximum power spectral density level in the fundamental emission
TC Version	0.0.1
My Description	FCC 15.247 Peak Power Spectral Density DTS - BT LE 1 Msps
Add. Information	

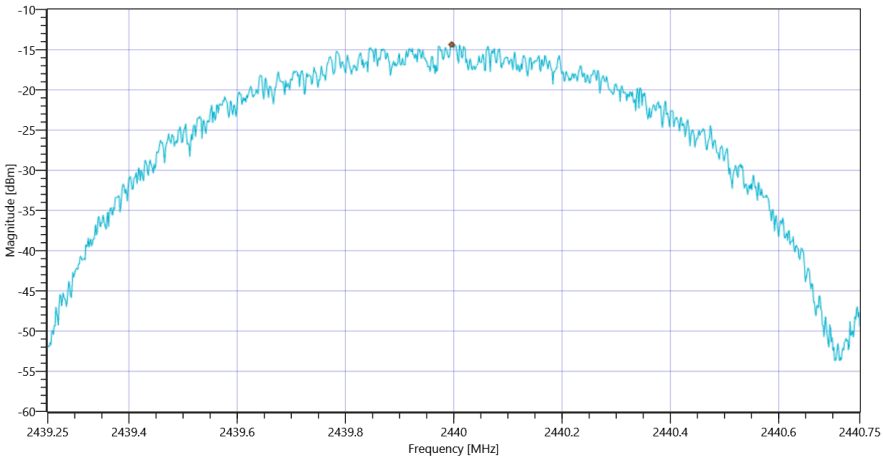
Test Parameter	
Technology to test	BT LE 1 Msps
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False | Freq [MHz] 2402
Frequency mid to test	True | Freq [MHz] 2440
Frequency high to test	False | Freq [MHz] 2480
Auto Control enabled Power Supply | Climatic Box	No | No
Additional Path Loss [dB]	0
Switched Path	IUT - SignalingUnit - SpectrumAnalyzer
Devices in use	| SA: Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.60

Test at TX 2440 MHz

READ SA SETTINGS:	
RefLevel [dBm] | RefLevelOffset [dB] | InpAtt [dB]	7.48 | 15.48 | 10
Start [MHz] | Stop [MHz]	2439.250 | 2440.750
RBW [MHz] | VBW [MHz]	0.003000 | 0.010000
Detector | TraceMode	POS | MAXH
Sweep: Time [ms] | Count | Points per Section | Type	1000 | 20 | 1001 | SWE

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Max Peak power Density	---	8	-14.36	dBm/3KHz	PASS



Plot_FCC Part 15.247 Peak Power Spectral Density DTS ~ BT LE 1 Msps_14012021_103319.png

TEST FINISHED		
General Verdict	14.01.2021 10:33:20 / RT: 40 s	PASS

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

Test References	
TC Start	14.01.2021 10:49:56
Ambit Temp [°C] | Humidity [rel%]	24.2 | 24
System Version	1.9.9.2
Test Specification	FCC Part 15.247
Test Method	DTS: KDB 558074 D01 V05 - Chapter 8.4 DTS maximum power spectral density level in the fundamental emission
TC Version	0.0.1
My Description	FCC 15.247 Peak Power Spectral Density DTS - BT LE 1 Msps
Add. Information	

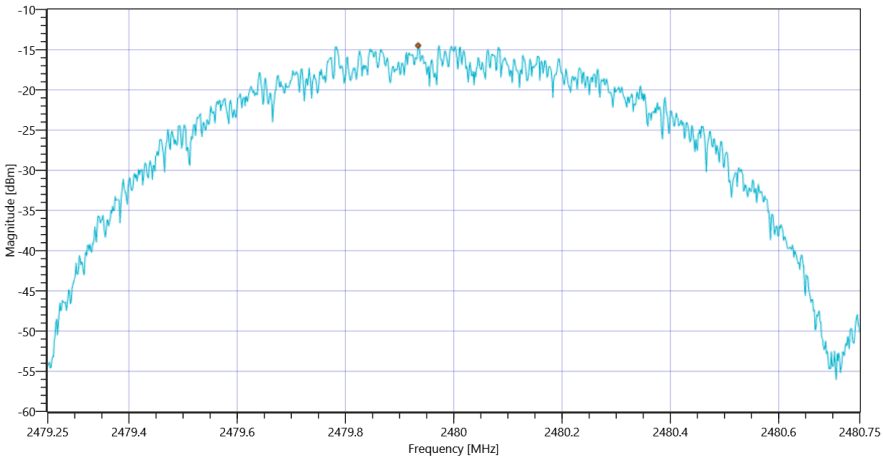
Test Parameter	
Technology to test	BT LE 1 Msps
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False | Freq [MHz] 2402
Frequency mid to test	False | Freq [MHz] 2440
Frequency high to test	True | Freq [MHz] 2480
Auto Control enabled Power Supply | Climatic Box	No | No
Additional Path Loss [dB]	0
Switched Path	IUT - SignalingUnit - SpectrumAnalyzer
Devices in use	| SA: Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.60

Test at TX 2480 MHz

READ SA SETTINGS:	
RefLevel [dBm] | RefLevelOffset [dB] | InpAtt [dB]	7.09 | 15.41 | 10
Start [MHz] | Stop [MHz]	2479.250 | 2480.750
RBW [MHz] | VBW [MHz]	0.003000 | 0.010000
Detector | TraceMode	POS | MAXH
Sweep: Time [ms] | Count | Points per Section | Type	1000 | 20 | 1001 | SWE

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Max Peak power Density	---	8	-14.48	dBm/3KHz	PASS



Plot_FCC Part 15.247 Peak Power Spectral Density DTS ~ BT LE 1 Msps_14012021_105035.png

TEST FINISHED		
General Verdict	14.01.2021 10:50:36 / RT: 39 s	PASS

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

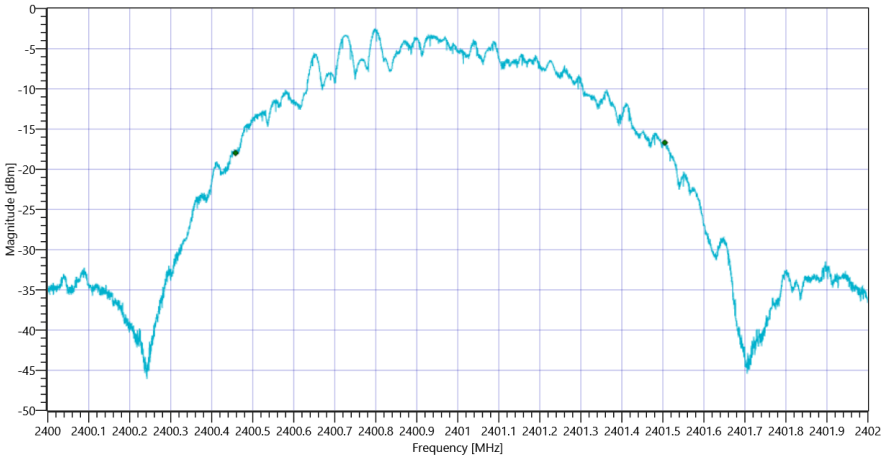
Test References	
TC Start	14.01.2021 10:21:18
Ambit Temp [°C] | Humidity [rel%]	24.1 | 24
System Version	1.9.9.2
Test Specification	FCC Part 15.247
Test Method	
TC Version	0.0.2
My Description	FCC 15.247 Bandwidth 99PCT-20DB DTS - BT LE 1 Msps
Add. Information	

Test Parameter	
Technology to test	BT LE 1 Msps
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	True | Freq [MHz] 2401
Frequency mid to test	False | Freq [MHz] 2440
Frequency high to test	False | Freq [MHz] 2480
Auto Control enabled Power Supply | Climatic Box	No | No
Additional Path Loss [dB]	0
Switched Path	IUT - SignalingUnit - SpectrumAnalyzer
Devices in use	| SA: Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.60

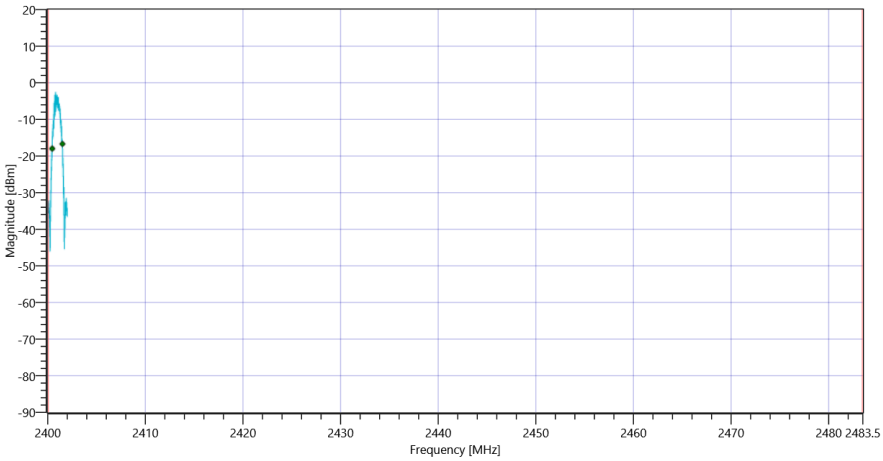
Test at TX 2401 MHz

READ SA SETTINGS:	
RefLevel [dBm] | RefLevelOffset [dB] | InpAtt [dB]	8.60 | 15.56 | 10
Start [MHz] | Stop [MHz]	2400.000 | 2402.000
RBW [MHz] | VBW [MHz]	0.020000 | 0.100000
Detector | TraceMode	POS | MAXH
Sweep: Time [ms] | Count | Points per Section | Type	50 | 200 | 10001 | SWE

RESULT					
Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Bandwidth 99%	---	---	1047	kHz	INFO
T1 99%	2400.000000	---	2400.4579	MHz	PASS
T2 99%	---	2483.500000	2401.5047	MHz	PASS

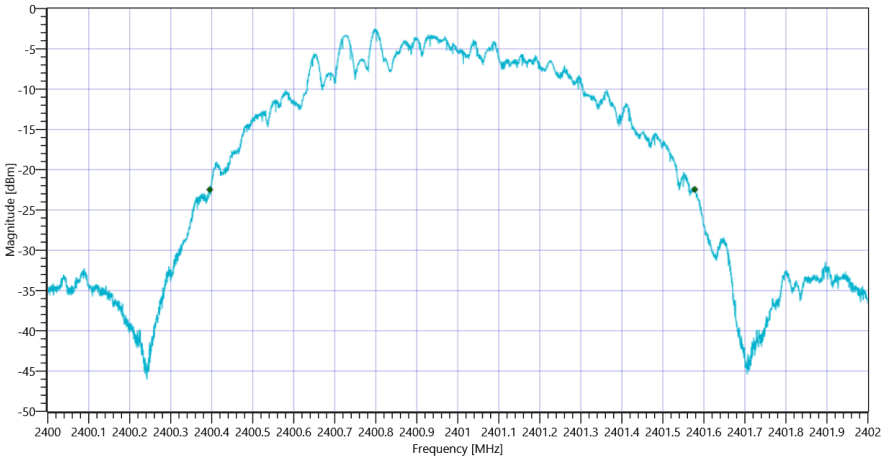


Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ BT LE 1 Msps 99PCT_14012021_102148.png

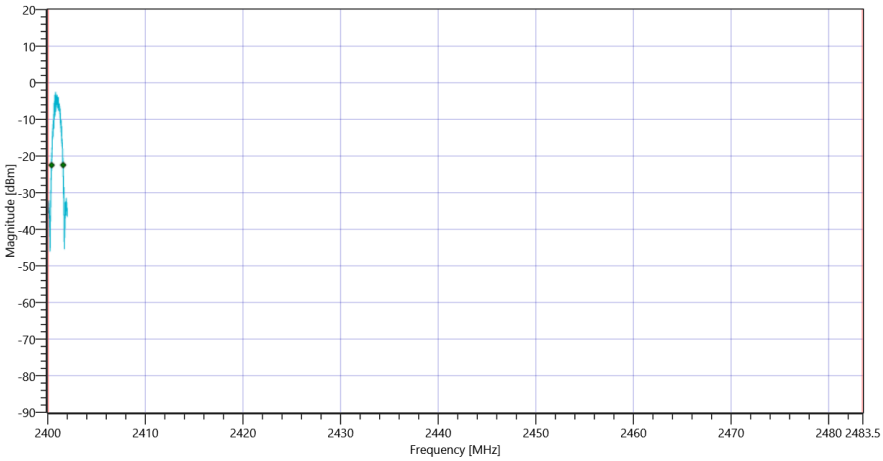


Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ BT LE 1 Msps_14012021_102154.png

RESULT					
Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Bandwidth 20dB	---	---	1182	kHz	INFO
T1 20DB	2400.000000	---	2400.3952	MHz	PASS
T2 20dB	---	2483.500000	2401.5776	MHz	PASS



Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ BT LE 1 Msps 20dB_14012021_102201.png



Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ BT LE 1 Msps_14012021_102206.png

TEST FINISHED		
General Verdict	14.01.2021 10:22:07 / RT: 49 s	PASS

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

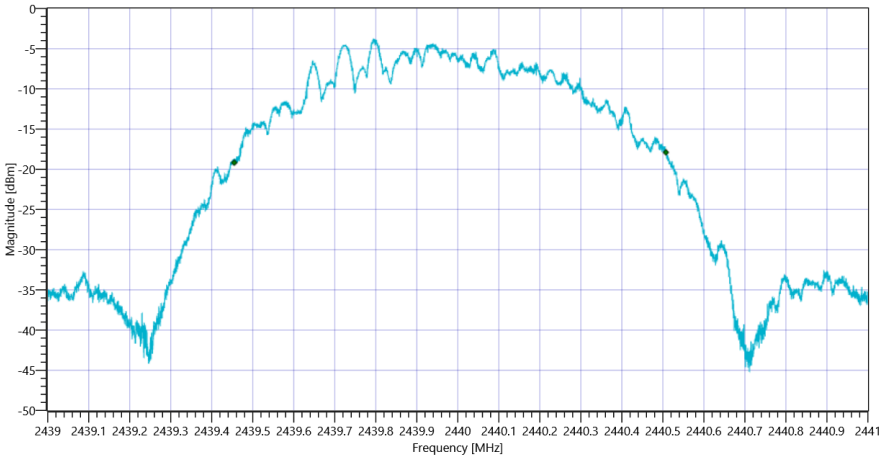
Test References	
TC Start	14.01.2021 10:33:24
Ambit Temp [°C] | Humidity [rel%]	24.1 | 24
System Version	1.9.9.2
Test Specification	FCC Part 15.247
Test Method	
TC Version	0.0.2
My Description	FCC 15.247 Bandwidth 99PCT-20DB DTS - BT LE 1 Msps
Add. Information	

Test Parameter	
Technology to test	BT LE 1 Msps
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False | Freq [MHz] 2402
Frequency mid to test	True | Freq [MHz] 2440
Frequency high to test	False | Freq [MHz] 2480
Auto Control enabled Power Supply | Climatic Box	No | No
Additional Path Loss [dB]	0
Switched Path	IUT - SignalingUnit - SpectrumAnalyzer
Devices in use	| SA: Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.60

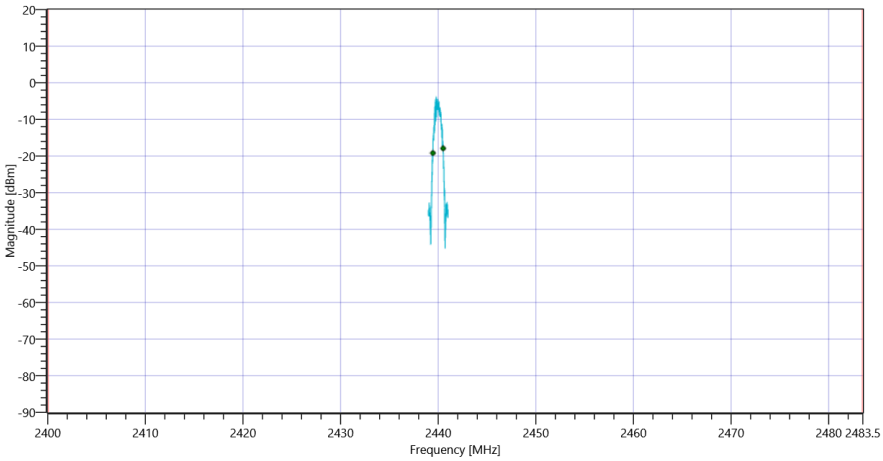
Test at TX 2440 MHz

READ SA SETTINGS:	
RefLevel [dBm] | RefLevelOffset [dB] | InpAtt [dB]	7.46 | 15.48 | 10
Start [MHz] | Stop [MHz]	2439.000 | 2441.000
RBW [MHz] | VBW [MHz]	0.020000 | 0.100000
Detector | TraceMode	POS | MAXH
Sweep: Time [ms] | Count | Points per Section | Type	50 | 200 | 10001 | SWE

RESULT					
Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Bandwidth 99%	---	---	1052	kHz	INFO
T1 99%	2400.000000	---	2439.4549	MHz	PASS
T2 99%	---	2483.500000	2440.5073	MHz	PASS

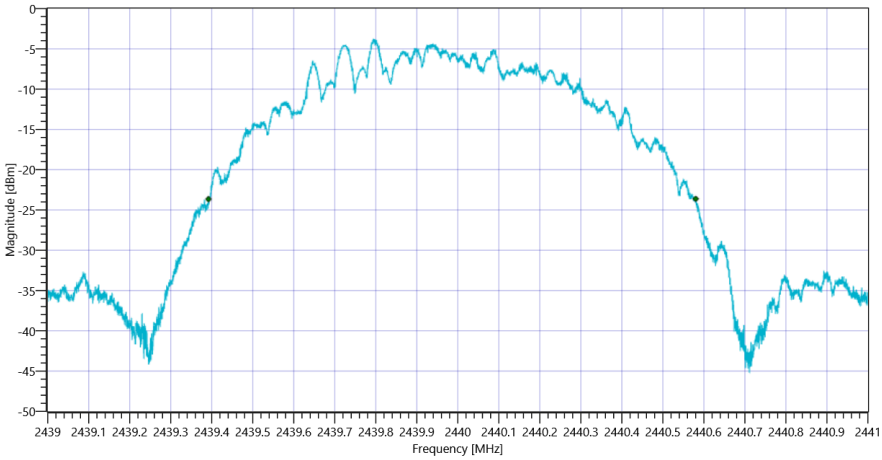


Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ BT LE 1 Msps 99PCT_14012021_103355.png

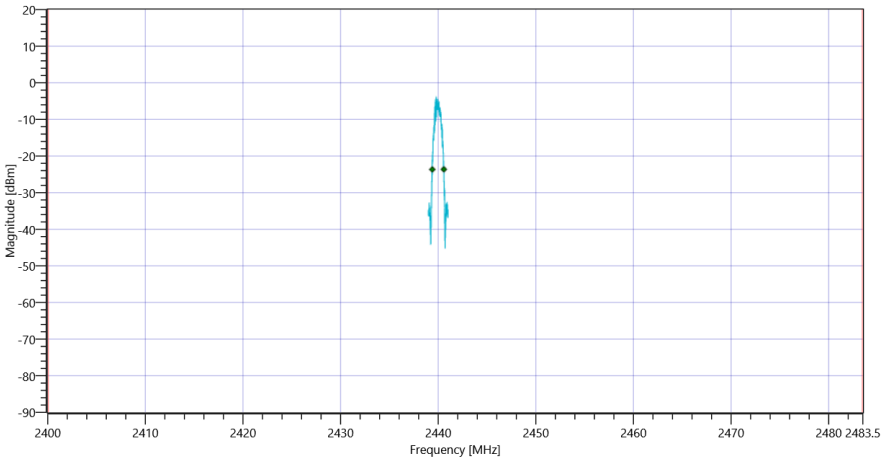


Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ BT LE 1 Msps_14012021_103401.png

RESULT					
Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Bandwidth 20dB	---	---	1188	kHz	INFO
T1 20DB	2400.000000	---	2439.3920	MHz	PASS
T2 20dB	---	2483.500000	2440.5800	MHz	PASS



Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ BT LE 1 Msps 20dB_14012021_103407.png



Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ BT LE 1 Msps_14012021_103413.png

TEST FINISHED		
General Verdict	14.01.2021 10:34:14 / RT: 49 s	PASS

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

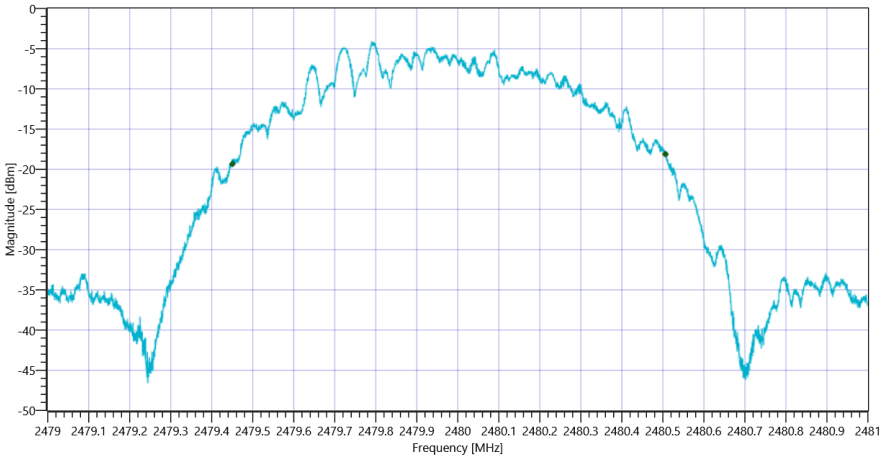
Test References	
TC Start	14.01.2021 10:50:40
Ambit Temp [°C] | Humidity [rel%]	24.2 | 24
System Version	1.9.9.2
Test Specification	FCC Part 15.247
Test Method	
TC Version	0.0.2
My Description	FCC 15.247 Bandwidth 99PCT-20DB DTS - BT LE 1 Msps
Add. Information	

Test Parameter	
Technology to test	BT LE 1 Msps
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False | Freq [MHz] 2402
Frequency mid to test	False | Freq [MHz] 2440
Frequency high to test	True | Freq [MHz] 2480
Auto Control enabled Power Supply | Climatic Box	No | No
Additional Path Loss [dB]	0
Switched Path	IUT - SignalingUnit - SpectrumAnalyzer
Devices in use	| SA: Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.60

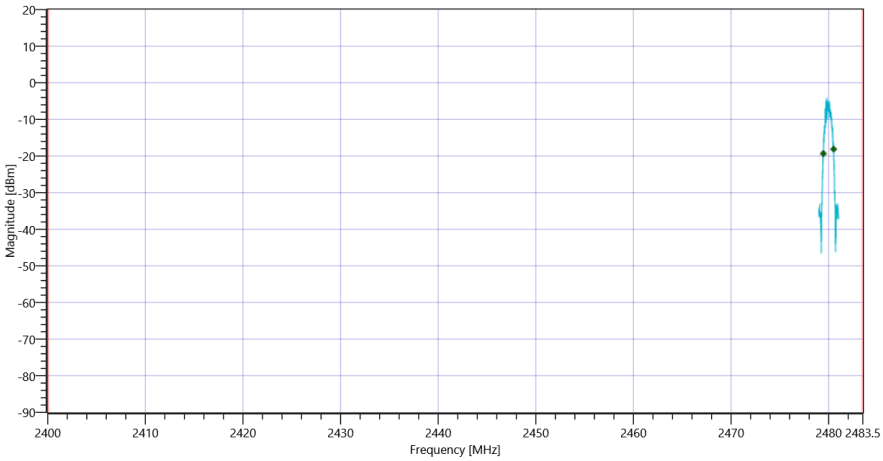
Test at TX 2480 MHz

READ SA SETTINGS:	
RefLevel [dBm] | RefLevelOffset [dB] | InpAtt [dB]	7.10 | 15.41 | 10
Start [MHz] | Stop [MHz]	2479.000 | 2481.000
RBW [MHz] | VBW [MHz]	0.020000 | 0.100000
Detector | TraceMode	POS | MAXH
Sweep: Time [ms] | Count | Points per Section | Type	50 | 200 | 10001 | SWE

RESULT					
Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Bandwidth 99%	---	---	1056	kHz	INFO
T1 99%	2400.000000	---	2479.4507	MHz	PASS
T2 99%	---	2483.500000	2480.5063	MHz	PASS

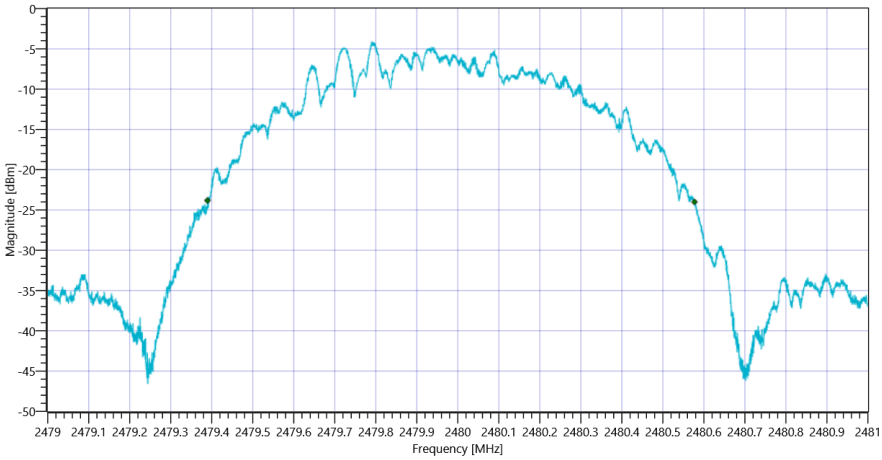


Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ BT LE 1 Msps 99PCT_14012021_105111.png

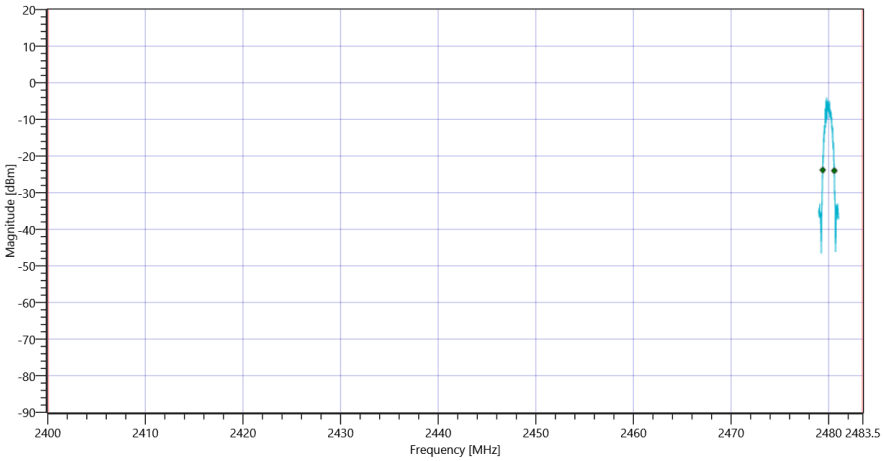


Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ BT LE 1 Msps_14012021_105116.png

RESULT					
Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Bandwidth 20dB	---	---	1187	kHz	INFO
T1 20DB	2400.000000	---	2479.3896	MHz	PASS
T2 20dB	---	2483.500000	2480.5770	MHz	PASS



Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ BT LE 1 Msps 20dB_14012021_105123.png



Plot_FCC Part 15.247 Bandwidth 99PCT-20dB ~ BT LE 1 Msps_14012021_105128.png

TEST FINISHED		
General Verdict	14.01.2021 10:51:29 / RT: 48 s	PASS

13. FCC Part 15.247 TX Spurious Conduced ~ BT LE 1 Msps

Test References	
TC Start	14.01.2021 10:22:11
Ambit Temp [°C] | Humidity [rel%]	24.1 | 24
System Version	1.9.9.2
Test Specification	FCC Part 15.247
Test Method	IF DTS then 8.5 DTS emissions in non-restricted frequency bands: Subclause 11.11 of ANSI C63.10 is applicable.
TC Version	0.0.1
My Description	FCC 15.247 TX Emissions Conducted DTS - BT LE 1 Msps
Add. Information	

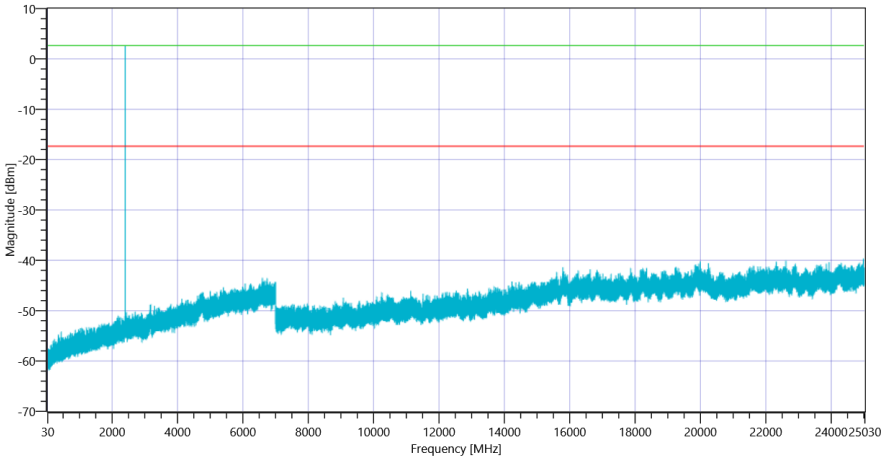
Test Parameter	
Technology to test	BT LE 1 Msps
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	True | Freq [MHz] 2401
Frequency mid to test	False | Freq [MHz] 2440
Frequency high to test	False | Freq [MHz] 2480
Auto Control enabled Power Supply | Climatic Box	No | No
Additional Path Loss [dB]	0
Switched Path	IUT - SignalingUnit - SpectrumAnalyzer
Devices in use	| SA: Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.60

Test at TX 2401 MHz

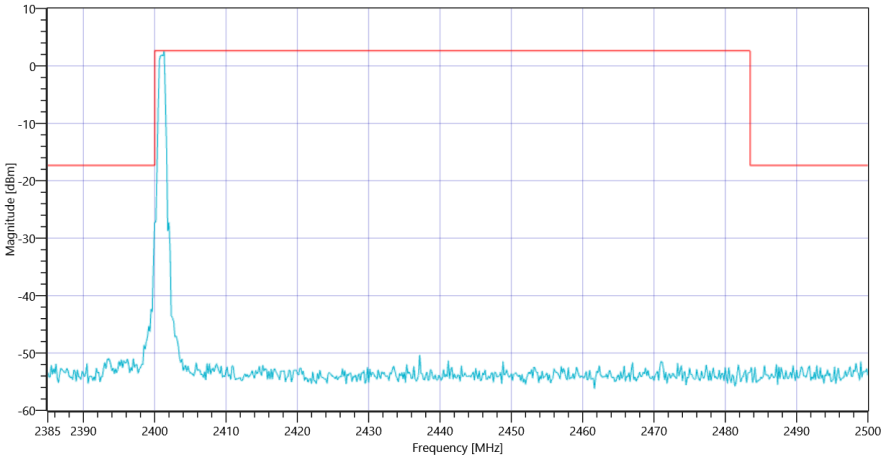
READ SA SETTINGS:	
RefLevel [dBm] | RefLevelOffset [dB] | InpAtt [dB]	3.60 | 0 | 20
Start [MHz] | Stop [MHz]	24530.000 | 25030.000
RBW [MHz] | VBW [MHz]	0.100000 | 0.300000
Detector | TraceMode	POS | MAXH
Sweep: Time [ms] | Count | Points per Section | Type	500 | 8 | 3001 | SWE

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Reference @ 2401.33 MHz	---	---	2.66	dBm	INFO
No peaks detected	---	---			PASS
Lowest margin to limit 2399.833 MHz	0	---	16.62	dB	INFO



Plot_FCC Part 15.247 TX Spurious Conduced ~ BT LE 1 Msps 2401_14012021_102716.png



Plot_FCC Part 15.247 TX Spurious Conduced ~ BT LE 1 Msps 2401_14012021_102720.png

TEST FINISHED		
General Verdict	14.01.2021 10:27:21 / RT: 310 s	PASS

14. FCC Part 15.247 TX Spurious Conduced ~ BT LE 1 Msps

Test References	
TC Start	14.01.2021 10:34:18
Ambit Temp [°C] | Humidity [rel%]	24.1 | 24
System Version	1.9.9.2
Test Specification	FCC Part 15.247
Test Method	IF DTS then 8.5 DTS emissions in non-restricted frequency bands: Subclause 11.11 of ANSI C63.10 is applicable.
TC Version	0.0.1
My Description	FCC 15.247 TX Emissions Conducted DTS - BT LE 1 Msps
Add. Information	

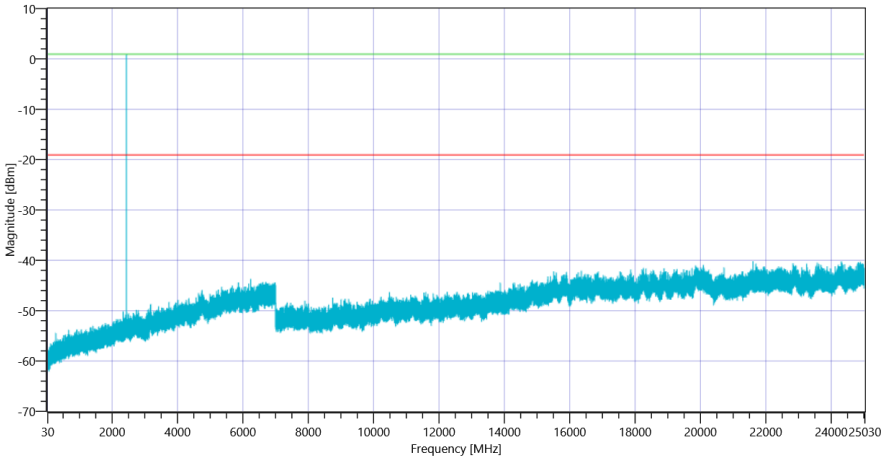
Test Parameter	
Technology to test	BT LE 1 Msps
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False | Freq [MHz] 2402
Frequency mid to test	True | Freq [MHz] 2440
Frequency high to test	False | Freq [MHz] 2480
Auto Control enabled Power Supply | Climatic Box	No | No
Additional Path Loss [dB]	0
Switched Path	IUT - SignalingUnit - SpectrumAnalyzer
Devices in use	| SA: Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.60

Test at TX 2440 MHz

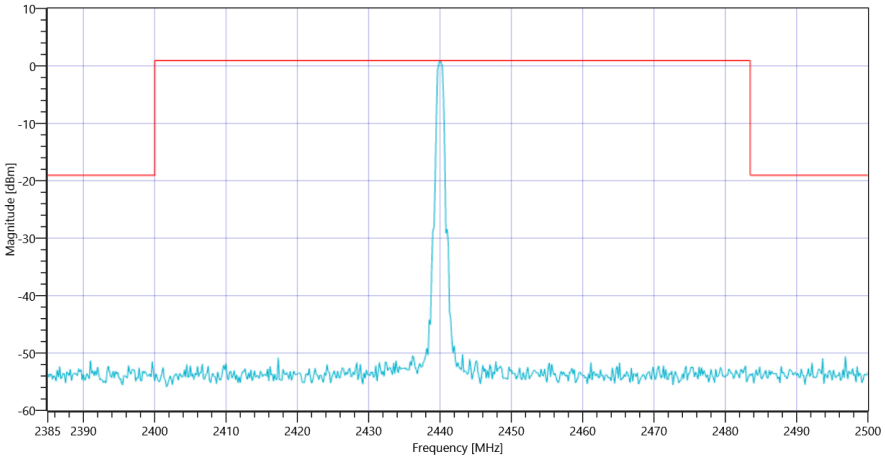
READ SA SETTINGS:	
RefLevel [dBm] | RefLevelOffset [dB] | InpAtt [dB]	2.50 | 0 | 20
Start [MHz] | Stop [MHz]	24530.000 | 25030.000
RBW [MHz] | VBW [MHz]	0.100000 | 0.300000
Detector | TraceMode	POS | MAXH
Sweep: Time [ms] | Count | Points per Section | Type	500 | 8 | 3001 | SWE

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Reference @ 2440.00 MHz	---	---	0.93	dBm	INFO
No peaks detected	---	---			PASS
Lowest margin to limit 21608 MHz	0	---	21.11	dB	INFO



Plot_FCC Part 15.247 TX Spurious Conduced ~ BT LE 1 Msps 2440_14012021_103922.png



Plot_FCC Part 15.247 TX Spurious Conduced ~ BT LE 1 Msps 2440_14012021_103926.png

TEST FINISHED		
General Verdict	14.01.2021 10:39:27 / RT: 309 s	PASS

15. FCC Part 15.247 TX Spurious Conduced ~ BT LE 1 Msps

Test References	
TC Start	14.01.2021 10:51:34
Ambit Temp [°C] | Humidity [rel%]	24.2 | 24
System Version	1.9.9.2
Test Specification	FCC Part 15.247
Test Method	IF DTS then 8.5 DTS emissions in non-restricted frequency bands: Subclause 11.11 of ANSI C63.10 is applicable.
TC Version	0.0.1
My Description	FCC 15.247 TX Emissions Conducted DTS - BT LE 1 Msps
Add. Information	

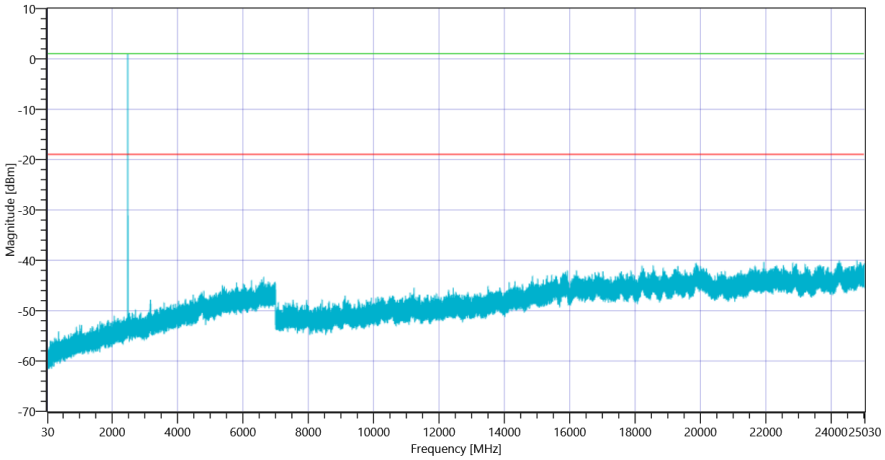
Test Parameter	
Technology to test	BT LE 1 Msps
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False | Freq [MHz] 2402
Frequency mid to test	False | Freq [MHz] 2440
Frequency high to test	True | Freq [MHz] 2480
Auto Control enabled Power Supply | Climatic Box	No | No
Additional Path Loss [dB]	0
Switched Path	IUT - SignalingUnit - SpectrumAnalyzer
Devices in use	| SA: Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.60

Test at TX 2480 MHz

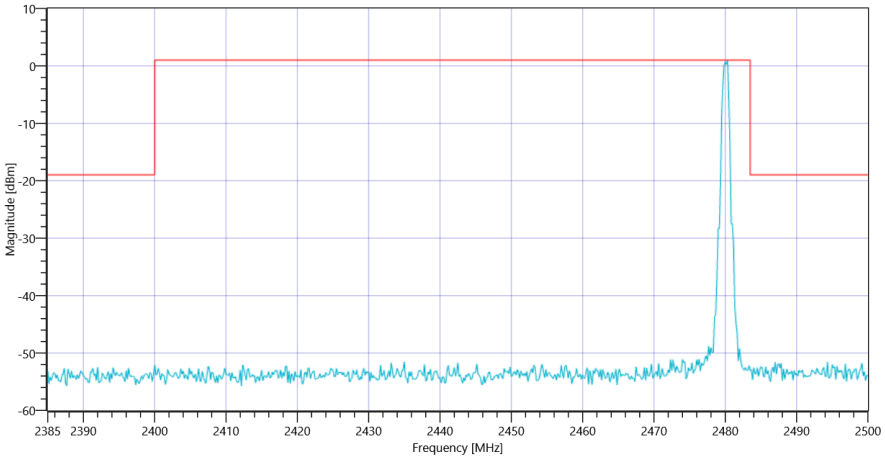
READ SA SETTINGS:	
RefLevel [dBm] | RefLevelOffset [dB] | InpAtt [dB]	2.06 | 0 | 20
Start [MHz] | Stop [MHz]	24530.000 | 25030.000
RBW [MHz] | VBW [MHz]	0.100000 | 0.300000
Detector | TraceMode	POS | MAXH
Sweep: Time [ms] | Count | Points per Section | Type	500 | 8 | 3001 | SWE

RESULT

Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Reference @ 2480.33 MHz	---	---	1.02	dBm	INFO
No peaks detected	---	---			PASS
Lowest margin to limit 24789 MHz	0	---	21.02	dB	INFO



Plot_FCC Part 15.247 TX Spurious Conduced ~ BT LE 1 Msps 2480_14012021_105638.png



Plot_FCC Part 15.247 TX Spurious Conduced ~ BT LE 1 Msps 2480_14012021_105642.png

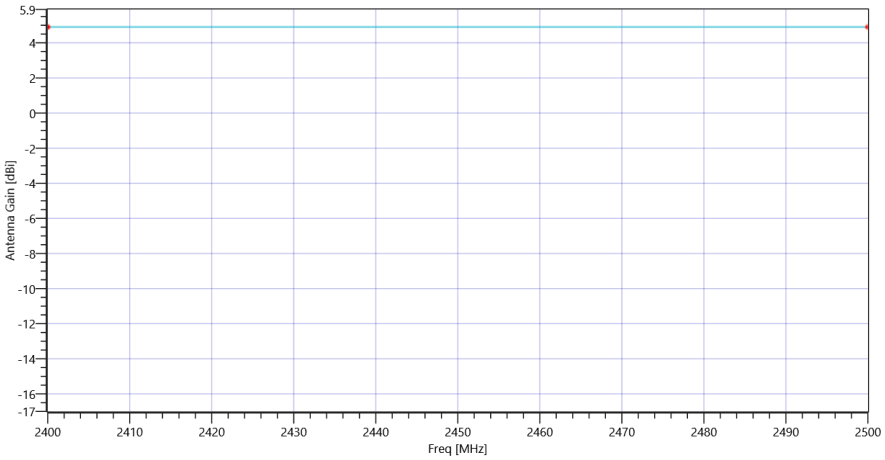
TEST FINISHED		
General Verdict	14.01.2021 10:56:43 / RT: 309 s	PASS

16. FCC Part 15.247 Restricted Band Edge Conducted Avg DC corrected DTS (eirp) ~ BT LE 1 Msps

Test References	
TC Start	14.01.2021 10:27:26
Ambit Temp [°C] | Humidity [rel%]	24.1 | 24
System Version	1.9.9.2
Test Specification	FCC Part 15.247
Test Method	DTS: KDB 558074 D01 V05 - 8.7.3 Integration Method; ANSI C63.10-2013 11.13.3.4 Trace averaging across on- and off-times of the EUT transmissions followed by duty cycle correction
TC Version	0.0.1
My Description	FCC 15.247 Restricted Band Edge Cond. Avg DC corrected DTS - BT LE 1 Msps
Add. Information	

Test Parameter	
Technology to test	BT LE 1 Msps
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	True | Freq [MHz] 2401
Frequency mid to test	False | Freq [MHz] 2440
Frequency high to test	False | Freq [MHz] 2480
Auto Control enabled Power Supply | Climatic Box	No | No
Additional Path Loss [dB]	0
Switched Path	IUT - SignalingUnit - SpectrumAnalyzer
Devices in use	| SA: Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.60

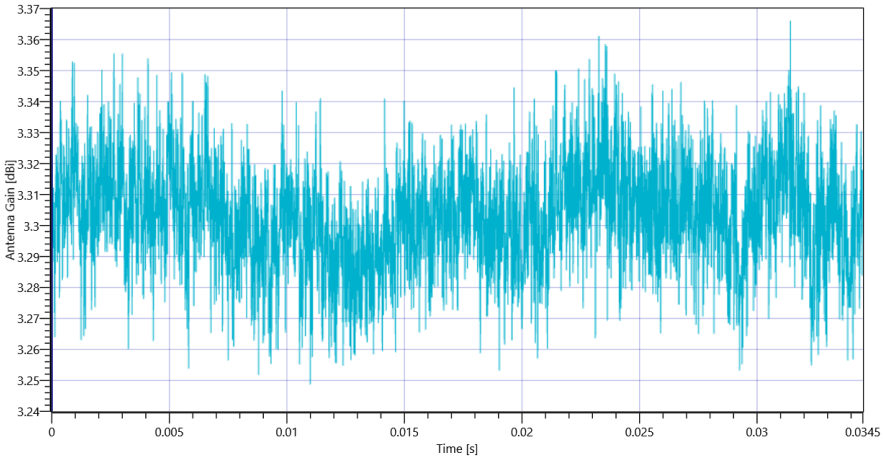
Antenna Gain Table	
Freq [MHz]	Gain [dBi]
2400	4.9
2500	4.9



Plot__GainTable_14012021_102732.png

Test at TX 2401 MHz

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

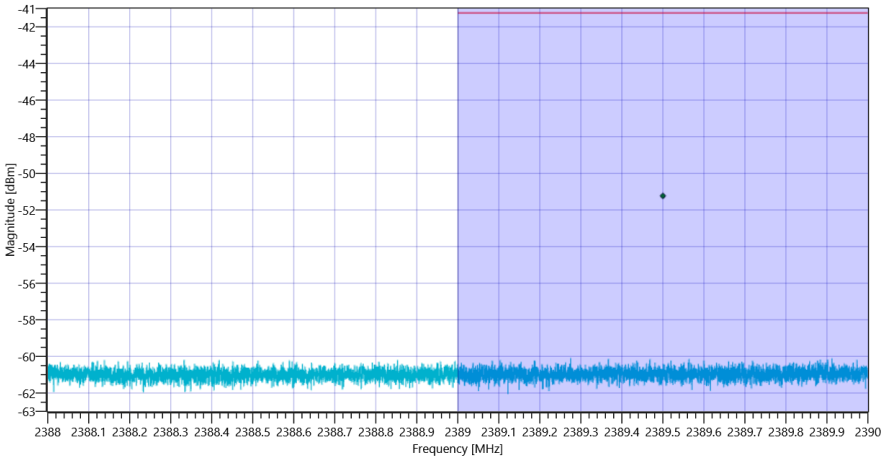


Plot_FCC Part 15.247 Restricted Band Edge Conducted Avg DC corrected DTS (eirp) ~ BT LE 1 Msps 2401 MHz - DutyCycle_14012021_102749.png

READ SA SETTINGS:	
RefLevel [dBm] | RefLevelOffset [dB] | InpAtt [dB]	13.60 | 15.56 | 15
Start [MHz] | Stop [MHz]	2388.000 | 2390.000
RBW [MHz] | VBW [MHz]	0.100000 | 0.500000
Detector | TraceMode	RMS | AVER
Sweep: Time [ms] | Count | Points per Section | Type	32 | 300 | 32000 | SWE

Antenna Gain	
Considered Antenna Gain: [dBi]:	4.9 @ 2389.5MHz

RESULT					
Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Duty Cylce worst case	---	---	0	dB	INFO
Band Power Avg	---	---	-51.23	dBm	INFO
Band Power Avg DC corrected	---	---	-51.23	dBm	PASS



Plot_FCC Part 15.247 Restricted Band Edge Conducted Avg DC corrected DTS (eirp) ~ BT LE 1 Msps_14012021_102815.png

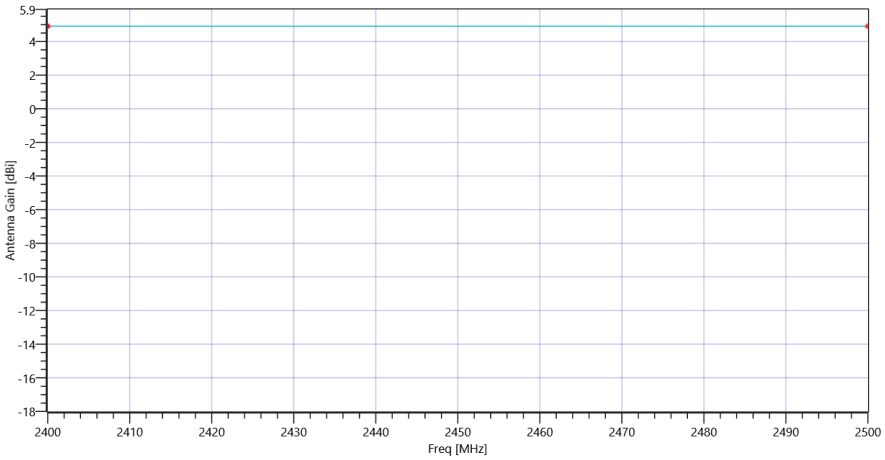
TEST FINISHED		
General Verdict	14.01.2021 10:28:15 / RT: 49 s	PASS

17. FCC Part 15.247 Restricted Band Edge Conducted Avg DC corrected DTS (eirp) ~ BT LE 1 Msps

Test References	
TC Start	14.01.2021 10:56:48
Ambit Temp [°C] | Humidity [rel%]	24.2 | 24
System Version	1.9.9.2
Test Specification	FCC Part 15.247
Test Method	DTS: KDB 558074 D01 V05 - 8.7.3 Integration Method; ANSI C63.10-2013 11.13.3.4 Trace averaging across on- and off-times of the EUT transmissions followed by duty cycle correction
TC Version	0.0.1
My Description	FCC 15.247 Restricted Band Edge Cond. Avg DC corrected DTS - BT LE 1 Msps
Add. Information	

Test Parameter	
Technology to test	BT LE 1 Msps
Antenna Port used	1
Temperature	nom
Voltage	nom
Frequency low to test	False | Freq [MHz] 2402
Frequency mid to test	False | Freq [MHz] 2440
Frequency high to test	True | Freq [MHz] 2480
Auto Control enabled Power Supply | Climatic Box	No | No
Additional Path Loss [dB]	0
Switched Path	IUT - SignalingUnit - SpectrumAnalyzer
Devices in use	| SA: Rohde&Schwarz,FSV-40,1307.9002K40/101042,3.60

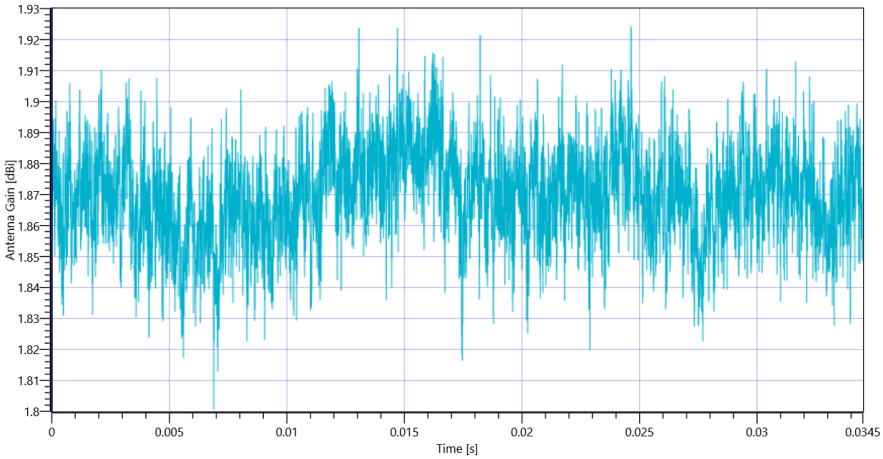
Antenna Gain Table	
Freq [MHz]	Gain [dBi]
2400	4.9
2500	4.9



Plot__GainTable_14012021_105654.png

Test at TX 2480 MHz

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

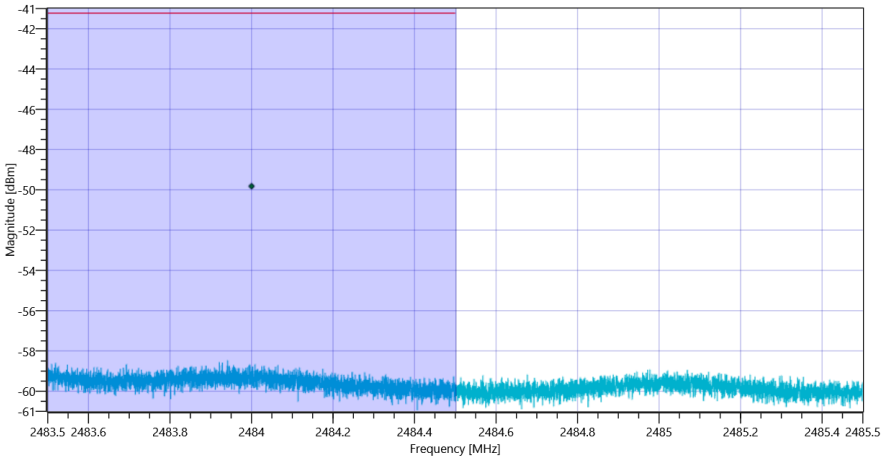


Plot_FCC Part 15.247 Restricted Band Edge Conducted Avg DC corrected DTS (eirp) ~ BT LE 1 Msps 2480 MHz - DutyCycle_14012021_105711.png

READ SA SETTINGS:	
RefLevel [dBm] | RefLevelOffset [dB] | InpAtt [dB]	12.11 | 15.41 | 15
Start [MHz] | Stop [MHz]	2483.500 | 2485.500
RBW [MHz] | VBW [MHz]	0.100000 | 0.500000
Detector | TraceMode	RMS | AVER
Sweep: Time [ms] | Count | Points per Section | Type	32 | 300 | 32000 | SWE

Antenna Gain	
Considered Antenna Gain: [dBi]:	4.9 @ 2484MHz

RESULT					
Test Description	Lower Limit	Upper Limit	Measured	Unit	Verdict
Duty Cylce worst case	---	---	0	dB	INFO
Band Power Avg	---	---	-49.82	dBm	INFO
Band Power Avg DC corrected	---	---	-49.82	dBm	PASS



Plot_FCC Part 15.247 Restricted Band Edge Conducted Avg DC corrected DTS (eirp) ~ BT LE 1 Msps_14012021_105737.png

TEST FINISHED		
General Verdict	14.01.2021 10:57:37 / RT: 49 s	PASS

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