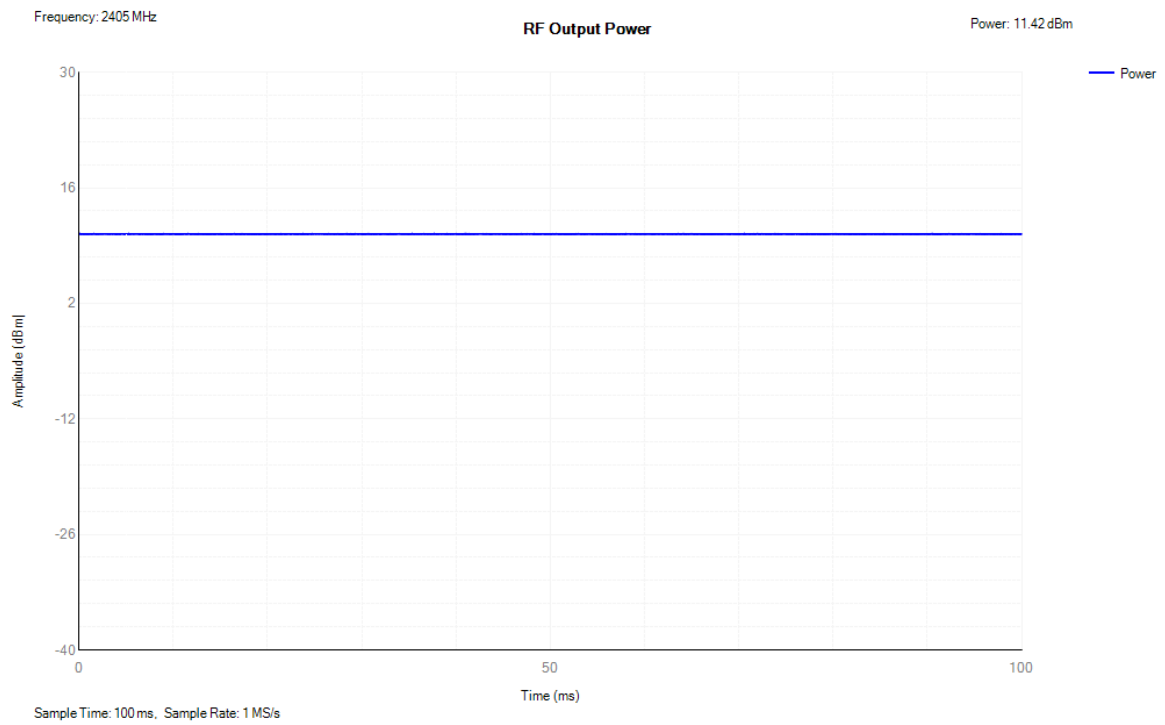# Appendix B

RF Output Power
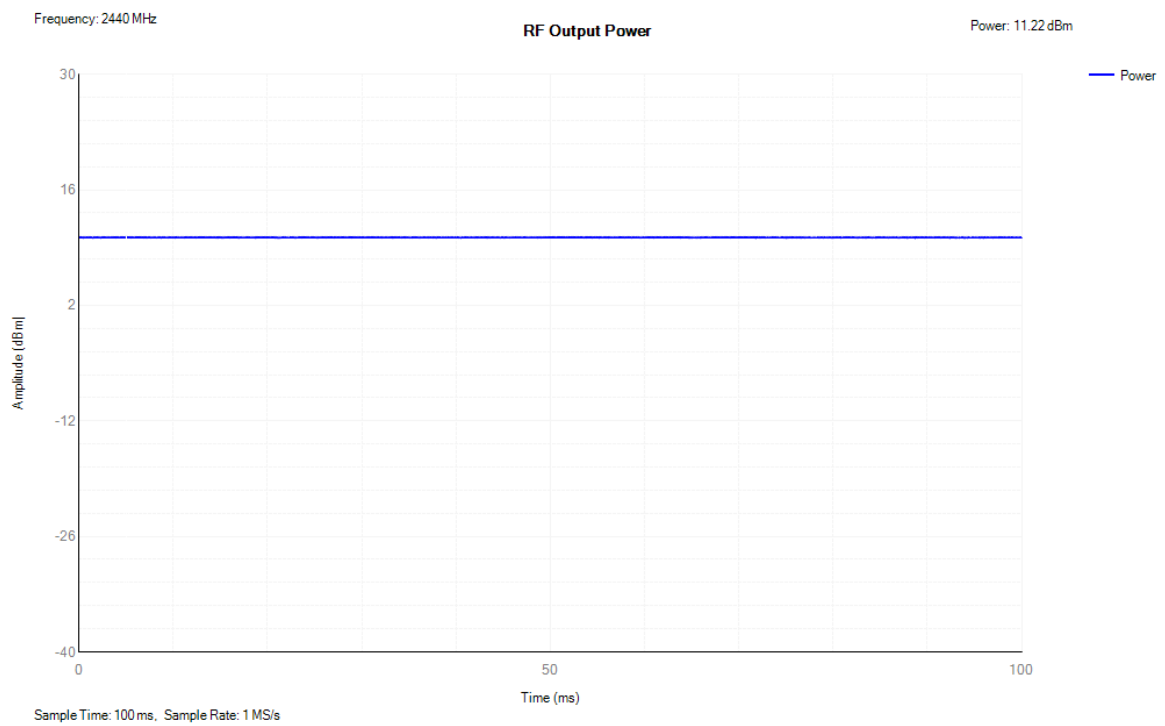
Condition	Mode	Frequency (MHz)	Antenna	Max Burst RMS Power (dBm)	Gain (dB)	Max EIRP (dBm)	Limit (dBm)	Verdict
NVNT	802.15.4	2405	Ant1	10.42	1	11.42	20	Pass
NVNT	802.15.4	2440	Ant1	10.22	1	11.22	20	Pass
NVNT	802.15.4	2480	Ant1	10.82	1	11.82	20	Pass
NVLT	802.15.4	2405	Ant1	10.41	1	11.41	20	Pass
NVLT	802.15.4	2440	Ant1	10.22	1	11.22	20	Pass
NVLT	802.15.4	2480	Ant1	10.67	1	11.67	20	Pass
NVHT	802.15.4	2405	Ant1	10.39	1	11.39	20	Pass
NVHT	802.15.4	2440	Ant1	10.21	1	11.21	20	Pass
NVHT	802.15.4	2480	Ant1	10.74	1	11.74	20	Pass

Test Graphs
Power NVNT 802.15.4 2405MHz Ant1

Frequency: 2405 MHz

RF Output Power

Power: 11.42 dBm

— Power

Sample Time: 100 ms, Sample Rate: 1 MS/s

Power NVNT 802.15.4 2440MHz Ant1

Frequency: 2440 MHz

RF Output Power

Power: 11.22 dBm

— Power

Sample Time: 100 ms, Sample Rate: 1 MS/s

Power NVNT 802.15.4 2480MHz Ant1

Frequency: 2480 MHz

RF Output Power

Power: 11.82 dBm

— Power

Amplitude (dBm)

30

16

2

-12

-26

-40

0   50   100

Time (ms)

Sample Time: 100 ms, Sample Rate: 1 MS/s
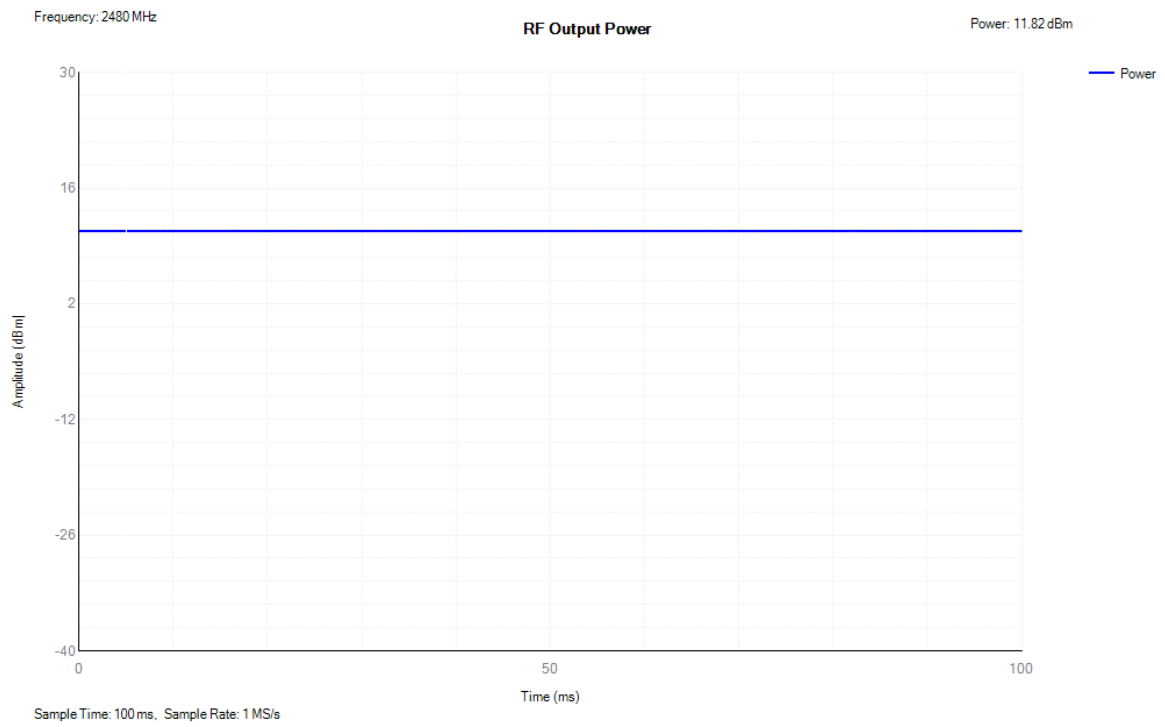
Power NVLT 802.15.4 2405MHz Ant1

Frequency: 2405 MHz

RF Output Power

Power: 11.41 dBm

— Power

Amplitude (dBm)

30

16

2

-12

-26

-40

0   50   100

Time (ms)

Sample Time: 100 ms, Sample Rate: 1 MS/s
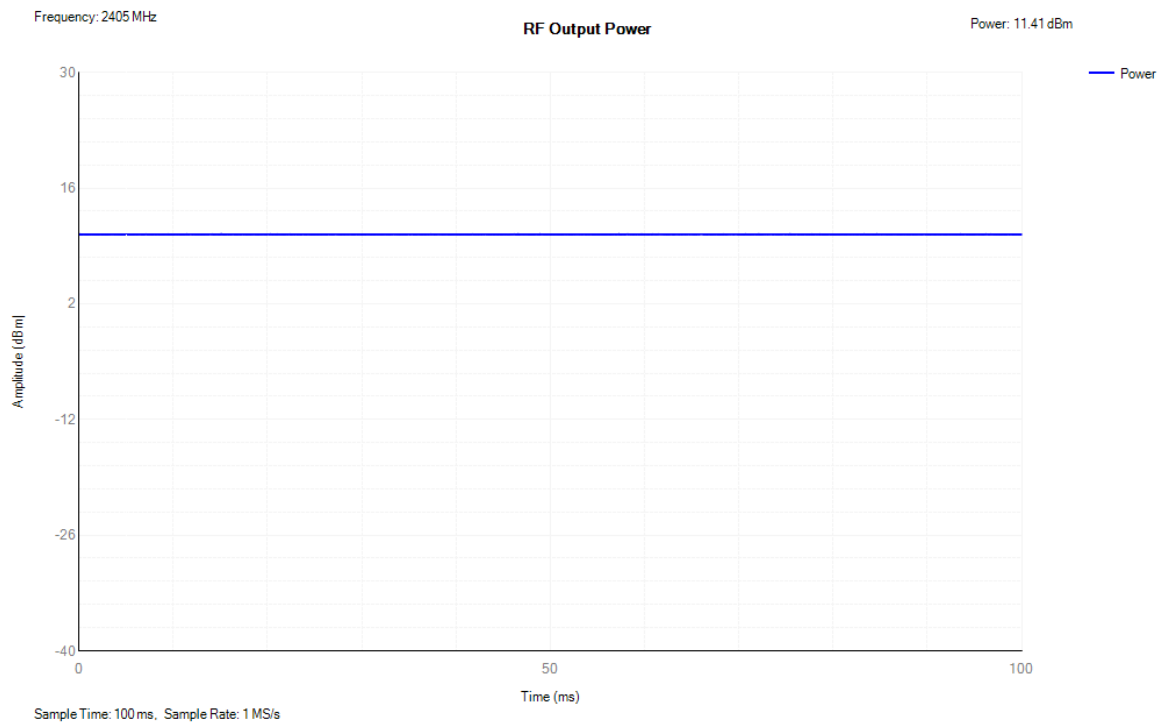
Power NVLT 802.15.4 2440MHz Ant1

Frequency: 2440 MHz

RF Output Power

Power: 11.22 dBm

— Power

Amplitude (dBm)

30

16

2

-12

-26

-40

0   50   100

Time (ms)

Sample Time: 100 ms, Sample Rate: 1 MS/s
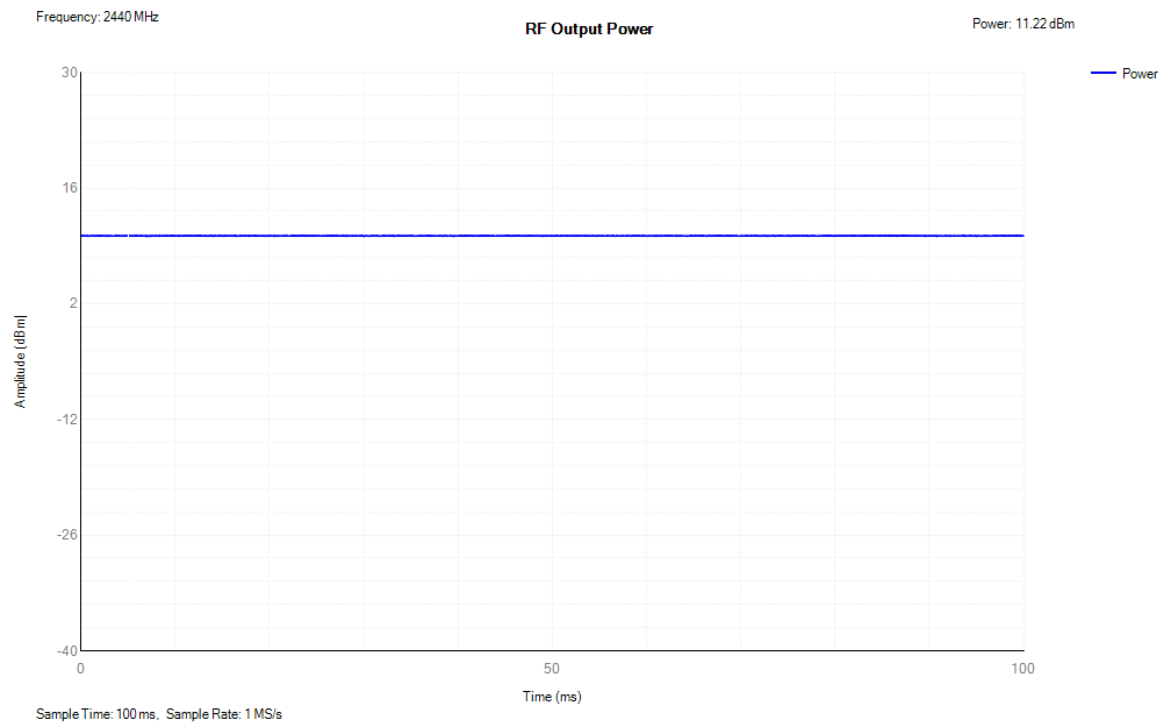
Power NVLT 802.15.4 2480MHz Ant1

Frequency: 2480 MHz

RF Output Power

Power: 11.67 dBm

— Power

Amplitude (dBm)

30

16

2

-12

-26

-40

0   50   100

Time (ms)

Sample Time: 100 ms, Sample Rate: 1 MS/s
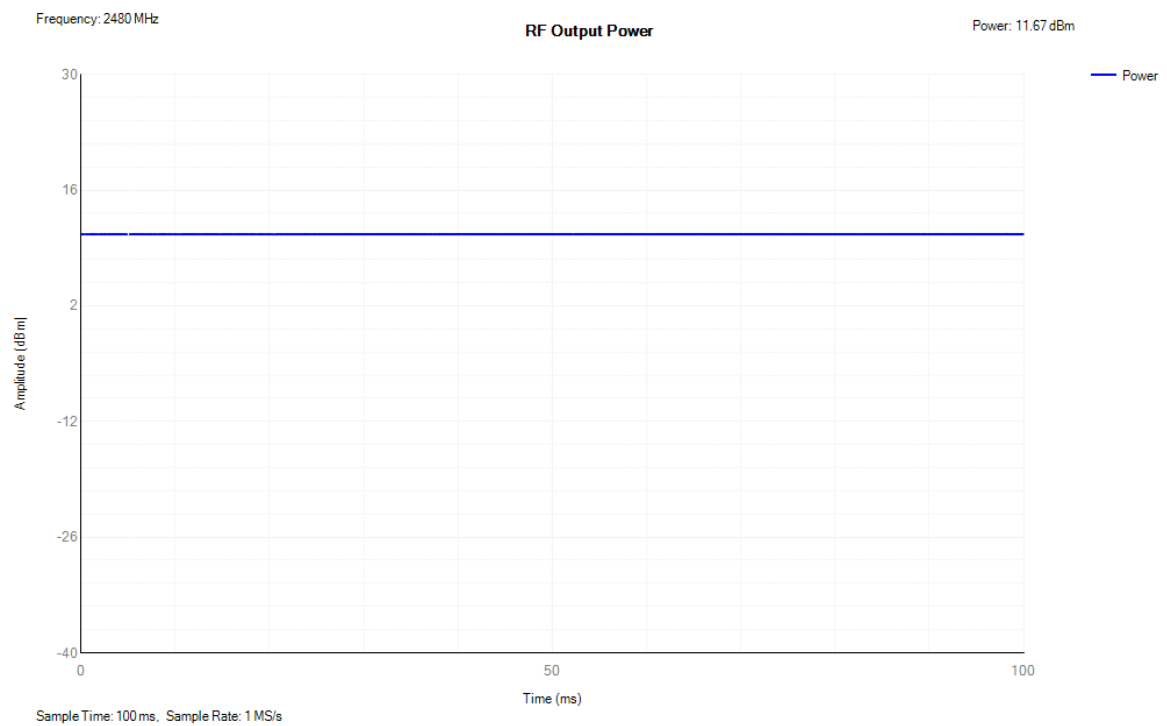
Power NVHT 802.15.4 2405MHz Ant1

Frequency: 2405 MHz

RF Output Power

Power: 11.39 dBm

Sample Time: 100 ms, Sample Rate: 1 MS/s
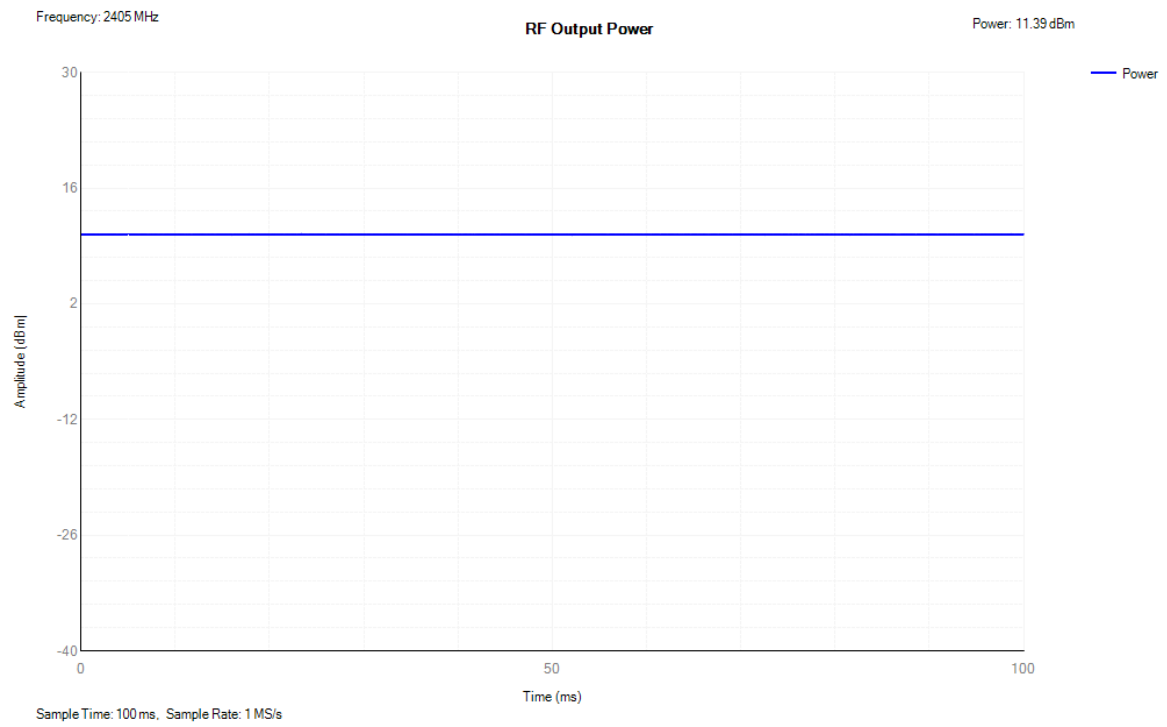
Power NVHT 802.15.4 2440MHz Ant1

Frequency: 2440 MHz

RF Output Power

Power: 11.21 dBm

Sample Time: 100 ms, Sample Rate: 1 MS/s

Frequency: 2480 MHz

RF Output Power

Power: 11.74 dBm

Sample Time: 100 ms, Sample Rate: 1 MS/s
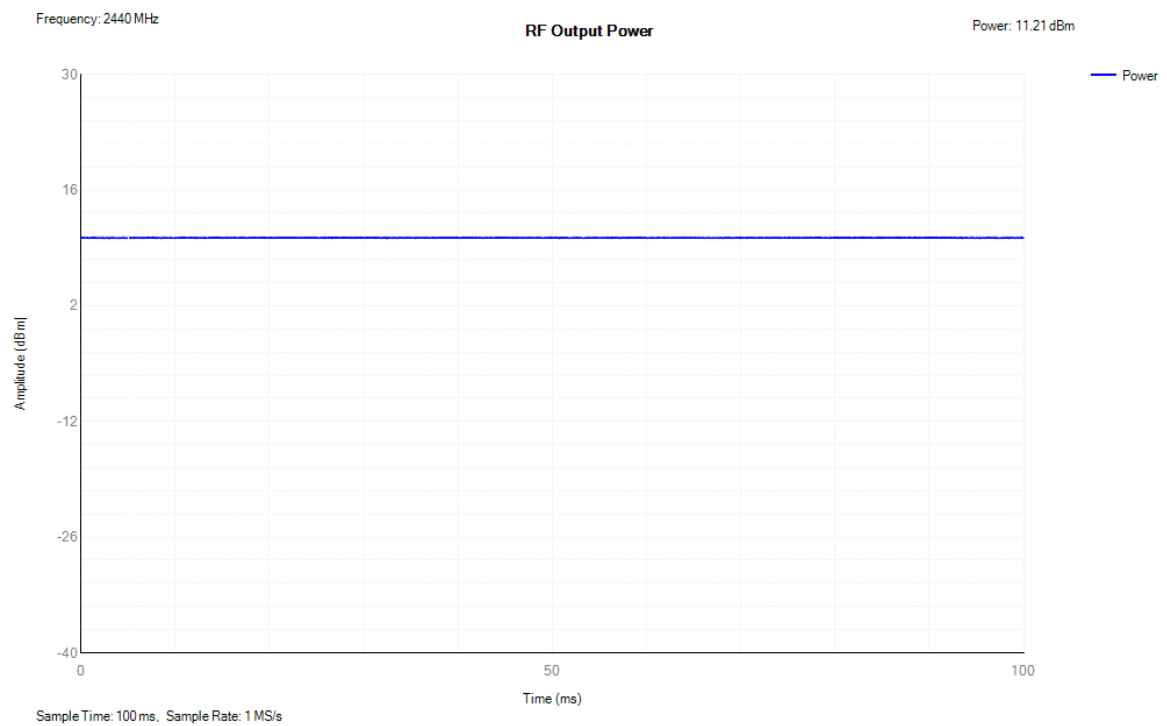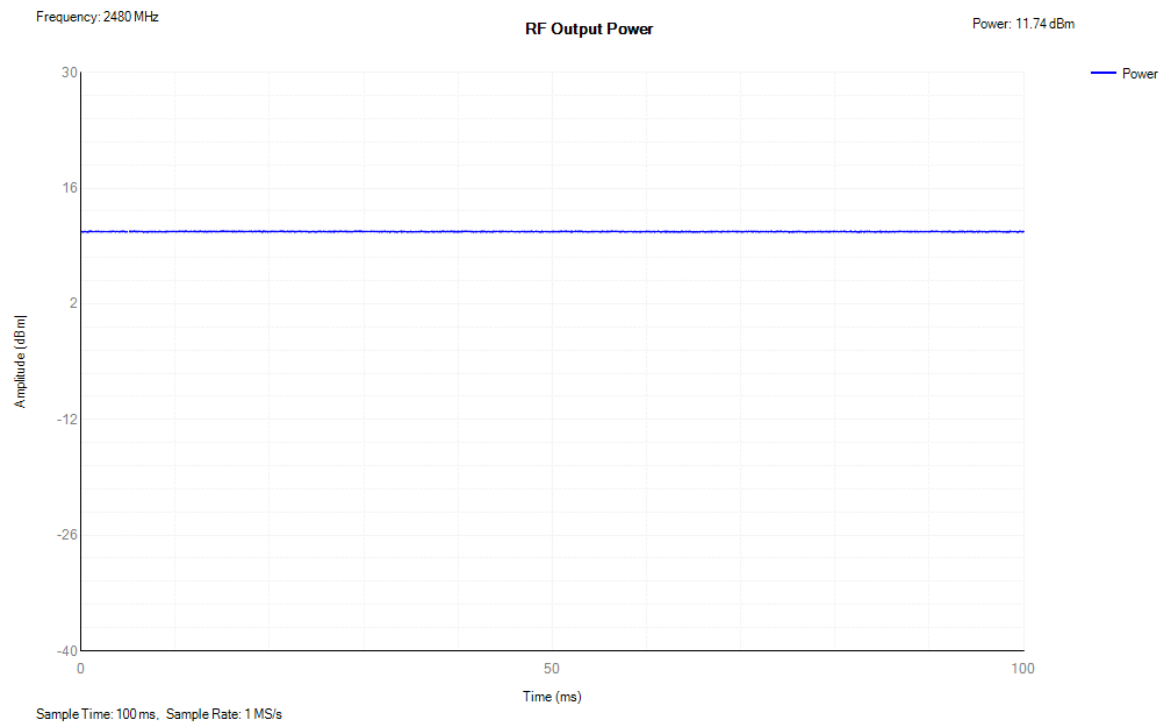
Power Spectral Density

Condition	Mode	Frequency (MHz)	Antenna	Max PSD (dBm/MHz)	Limit (dBm/MHz)	Verdict
NVNT	802.15.4	2405	Ant1	9.36	10	Pass
NVNT	802.15.4	2440	Ant1	9.2	10	Pass
NVNT	802.15.4	2480	Ant1	9.83	10	Pass

Test Graphs
PSD NVNT 802.15.4 2405MHz Ant1

Frequency: 2405 MHz　　　　　　　　　　**Power Spectral Density**　　　　　　　　　　PSD: 9.36 dBm/MHz

— PSD(dBm/10KHz)
— PSD(dBm/MHz)
♦ Max Point

9.36 dBm

RBW: 10 KHz, VBW: 30 KHz, Sweep Points: 8351

PSD NVNT 802.15.4 2440MHz Ant1

Frequency: 2440 MHz　　　　　　　　　　**Power Spectral Density**　　　　　　　　　　PSD: 9.20 dBm/MHz

— PSD(dBm/10KHz)
— PSD(dBm/MHz)
♦ Max Point

9.2 dBm

RBW: 10 KHz, VBW: 30 KHz, Sweep Points: 8351

Power Spectral Density

Frequency: 2480 MHz

PSD: 9.83 dBm/MHz
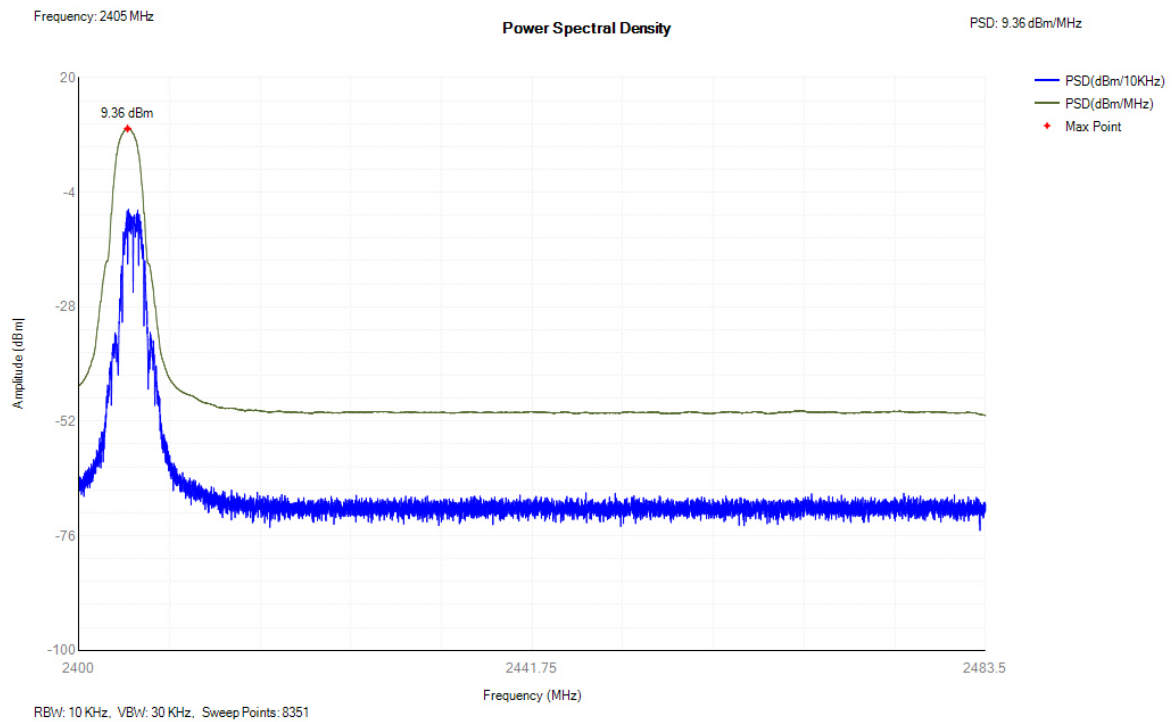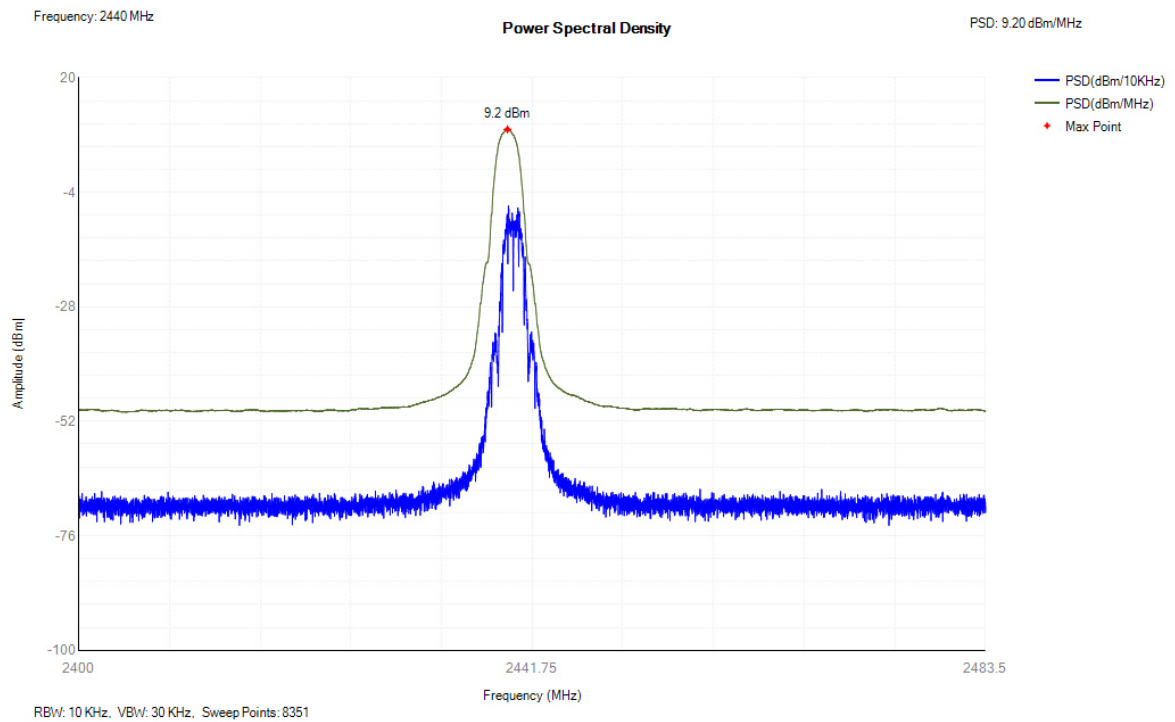
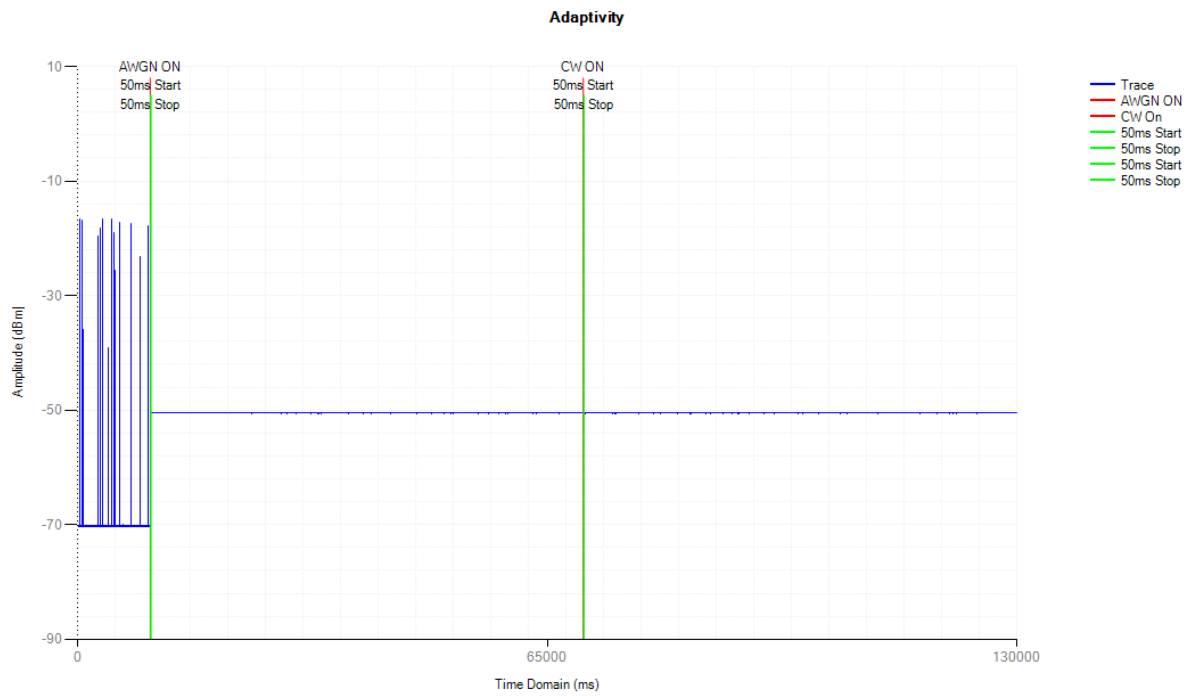RBW: 10 KHz, VBW: 30 KHz, Sweep Points: 8351
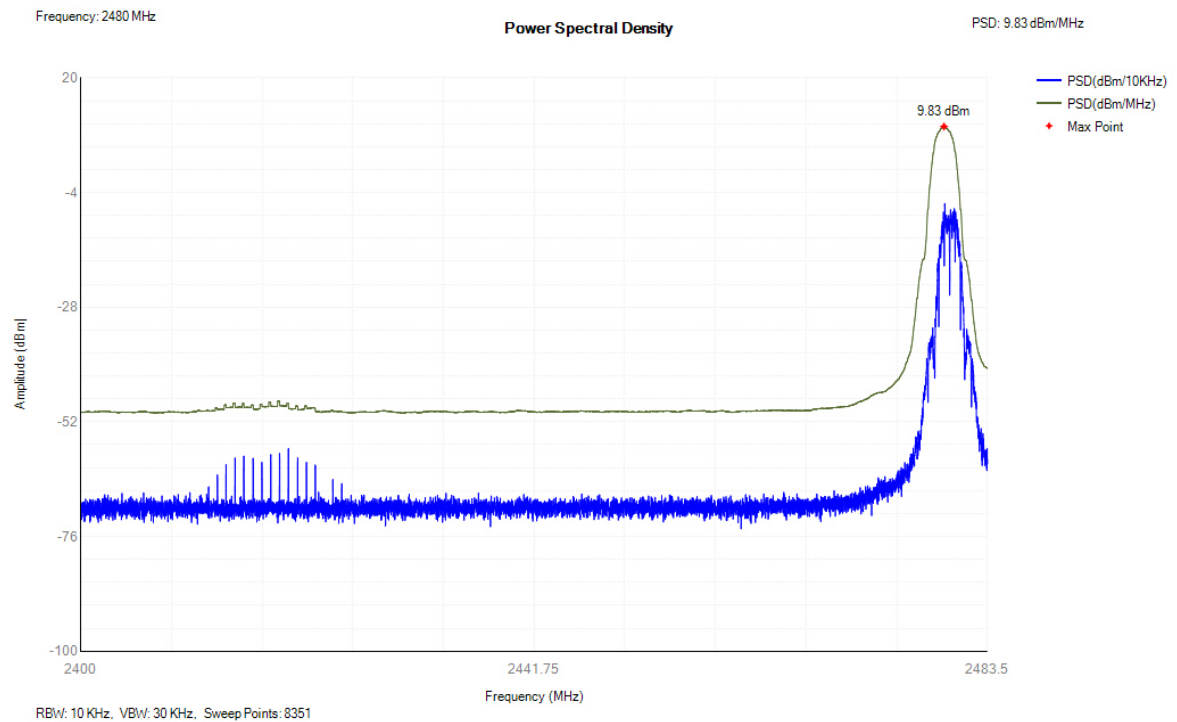
Adaptivity

Condition	Mode	Frequency (MHz)	Antenna	AWGN Level (dBm)	CW Level (dBm)	AWGN Short Control(%)	CW Short Control(%)	Limit (%)	Verdict
NVNT	802.15.4	2405	Ant1	-61.39	-35	0	0	<=10	Pass
NVNT	802.15.4	2480	Ant1	-61.74	-35	0	0	<=10	Pass

Test Graphs
Adaptivity NVNT 802.15.4 2405MHz

Adaptivity

Control Signal AWGN NVNT 802.15.4 2405MHz

Short Control Signal (AWGN On)

Short Signal: 0.00 ms
Short Signal: 0.00 %
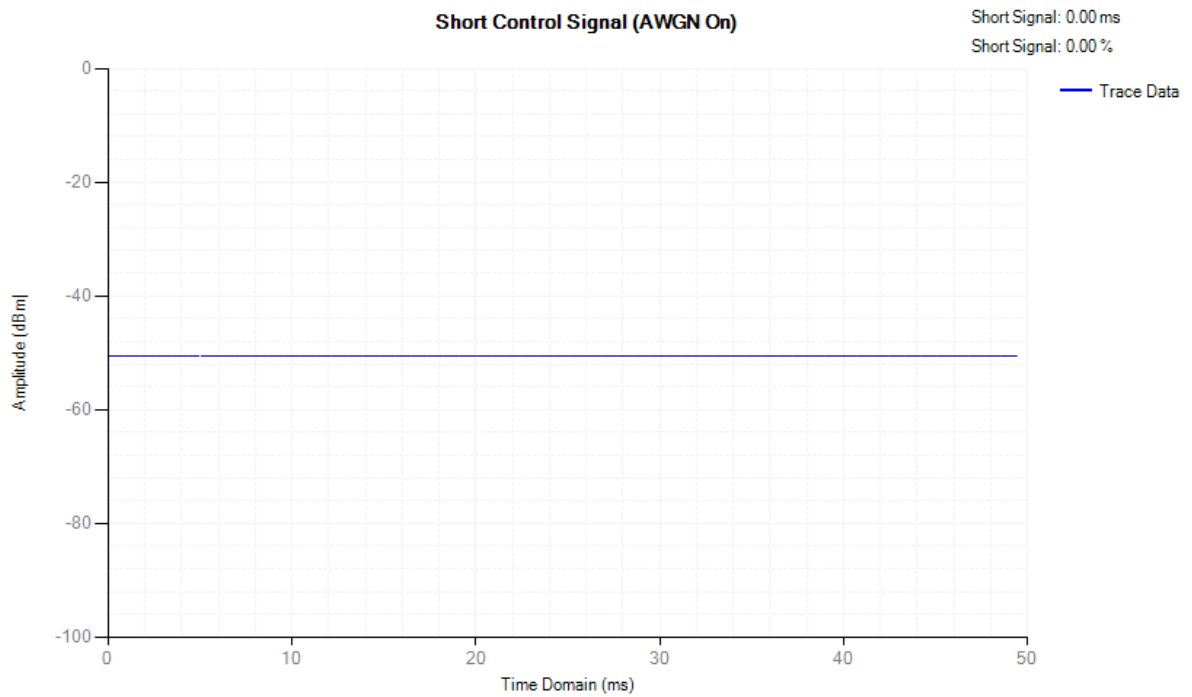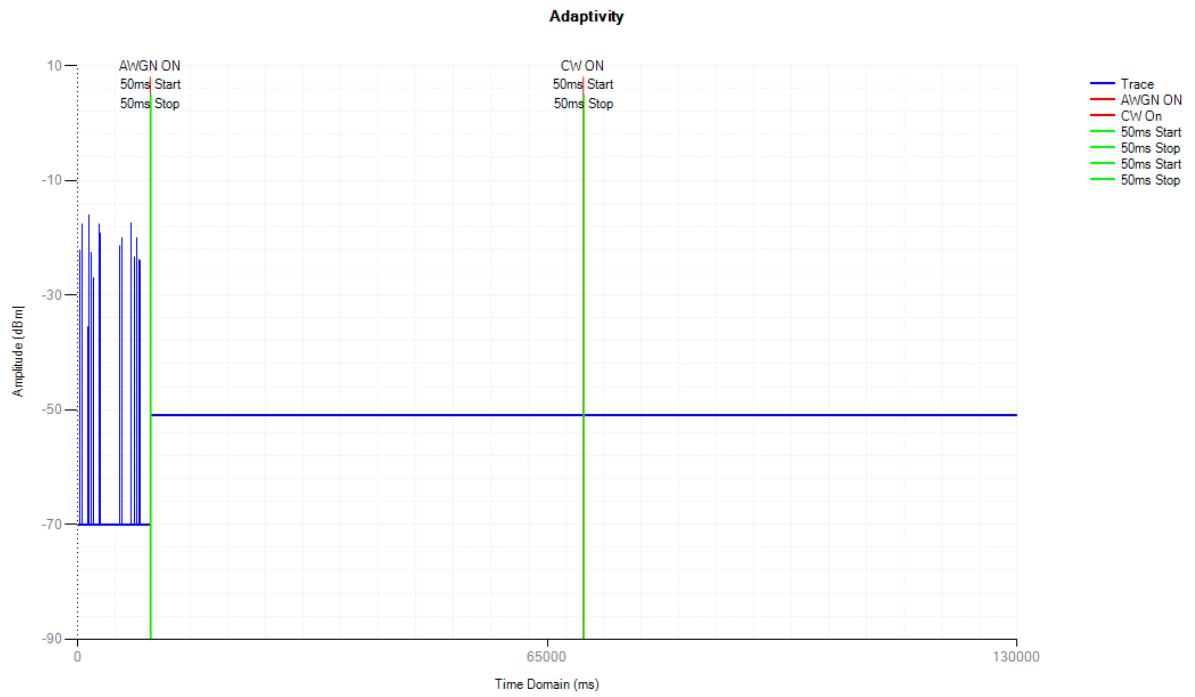
Adaptivity NVNT 802.15.4 2480MHz

Adaptivity

Control Signal AWGN NVNT 802.15.4 2480MHz

Short Control Signal (AWGN On)

Short Signal: 0.00 ms
Short Signal: 0.00 %
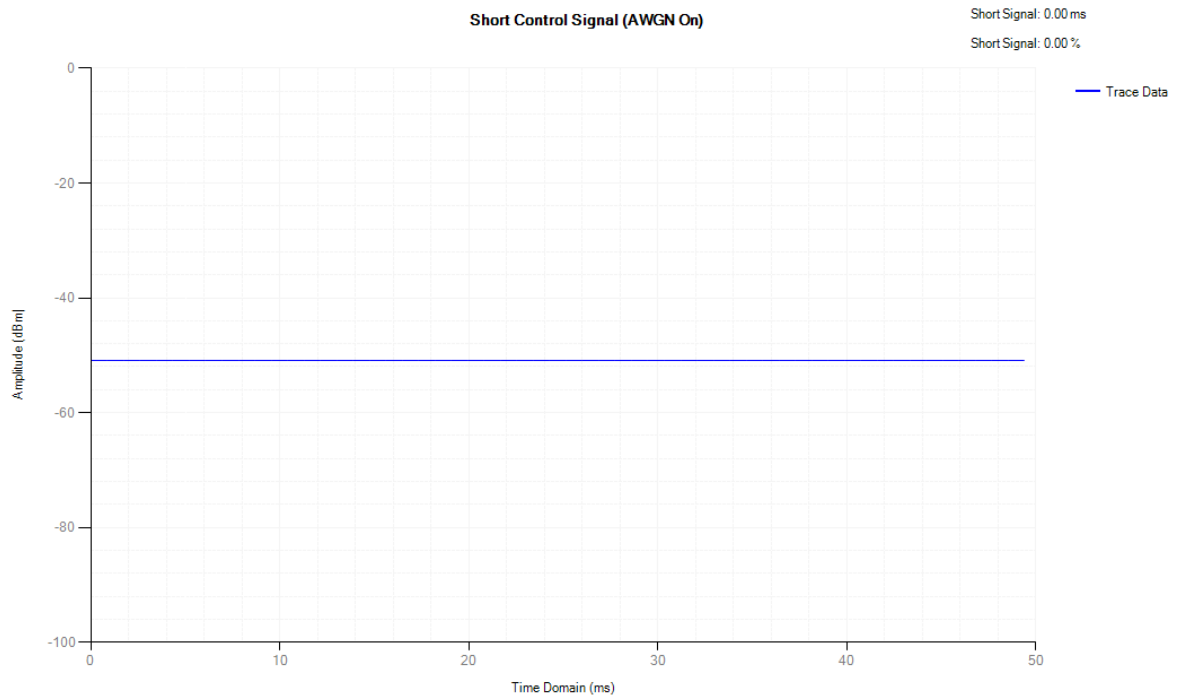
Adaptivity COT

Condition	Mode	Frequency (MHz)	Antenna	Payload	Max COT (ms)	Limit COT (ms)	Min Idle Time (ms)	Limit Idle Time (ms)	Verdict
NVNT	802.15.4	2405	Ant1	24.09	4.1	<=13	258.433	>0.018	Pass
NVNT	802.15.4	2480	Ant1	40.9	4.1	<=13	258.433	>0.018	Pass

Test Graphs
Payload NVNT 802.15.4 2405MHz
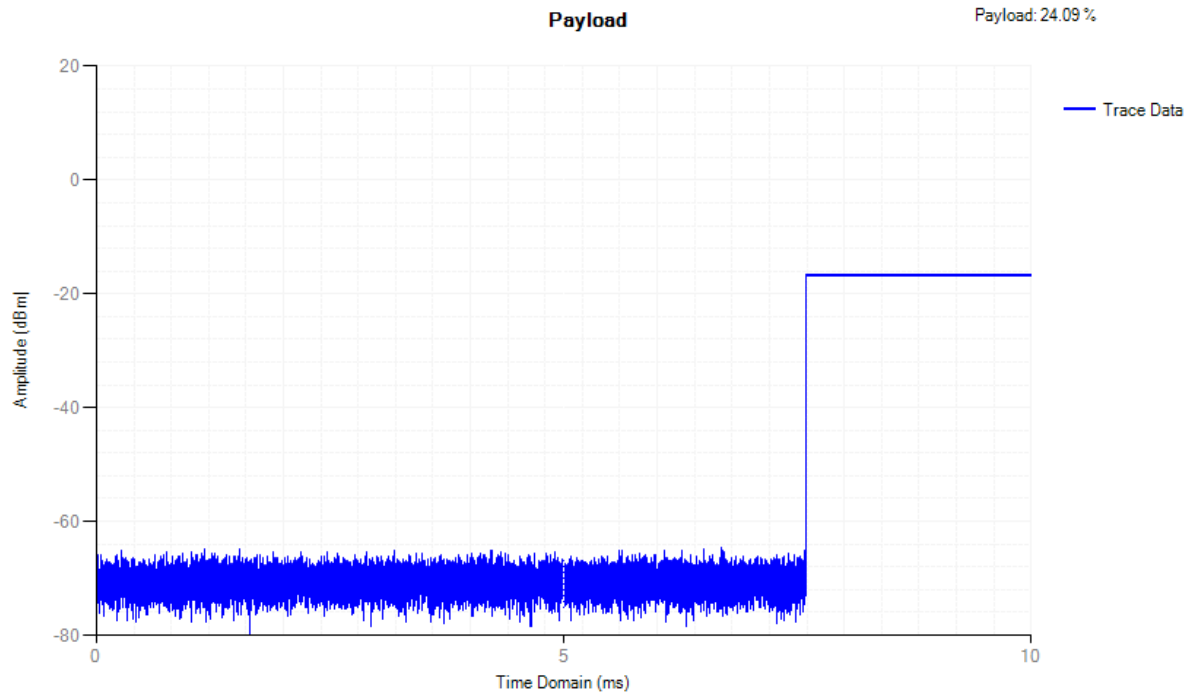
Payload

Payload: 24.09 %

COT NVNT 802.15.4 2405MHz

Channel Occupation Time

Max COT: 4.10 ms

Idle NVNT 802.15.4 2405MHz

Channel Occupation Time

Min Idle Time: 258.43 ms
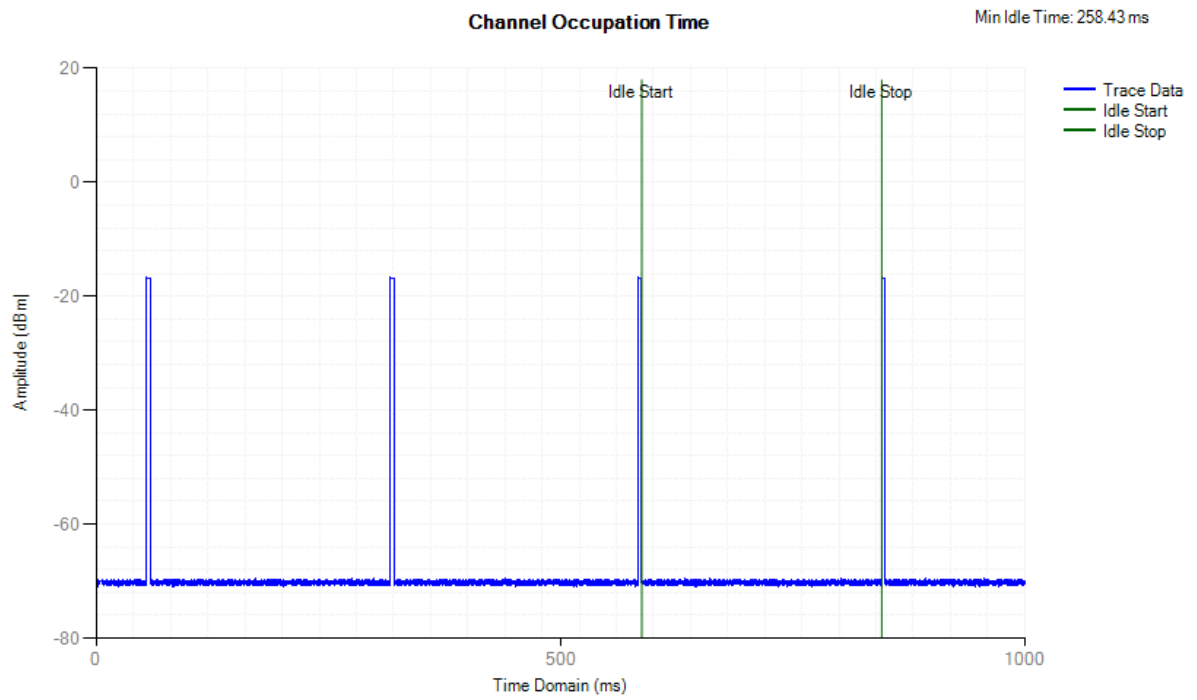
Payload NVNT 802.15.4 2480MHz

Payload

Payload: 40.90 %

COT NVNT 802.15.4 2480MHz

Channel Occupation Time

Max COT: 4.10 ms

Idle NVNT 802.15.4 2480MHz

Channel Occupation Time

Min Idle Time: 258.43 ms
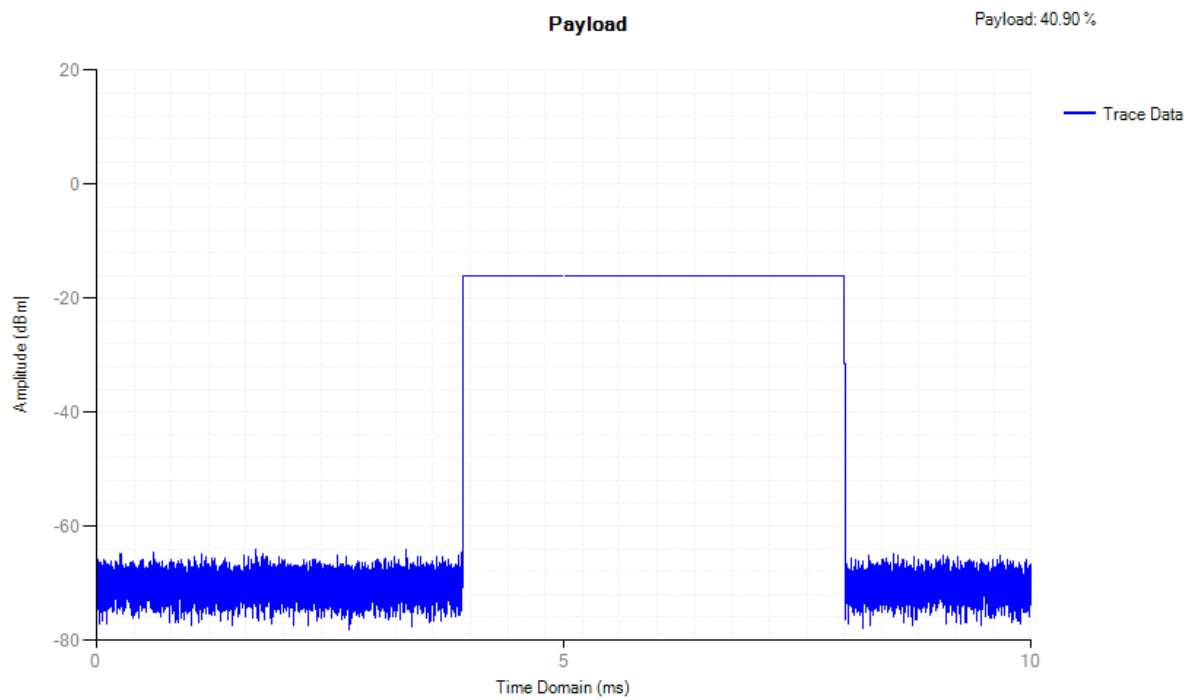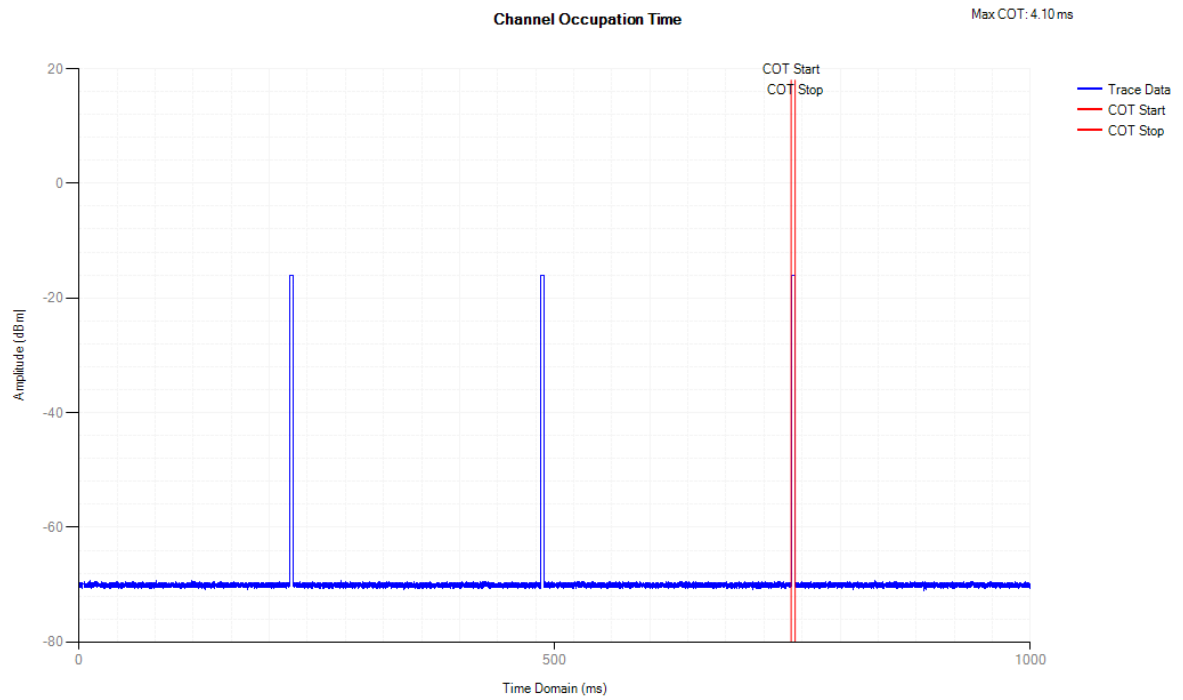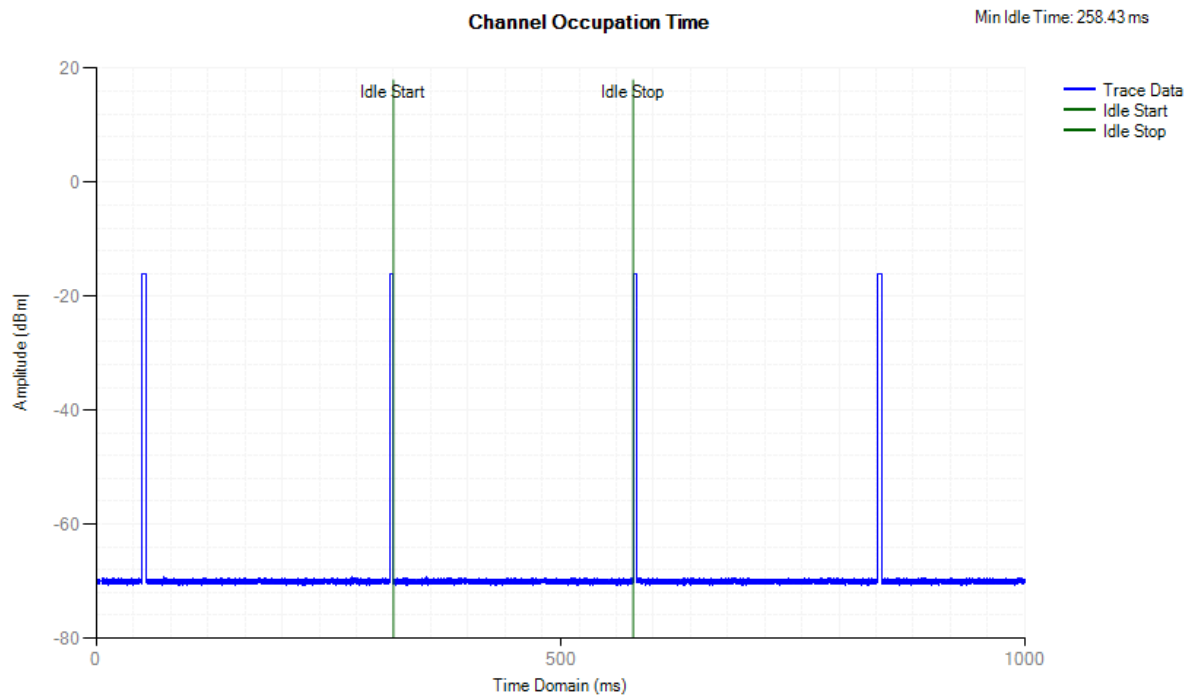
Occupied Channel Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	Center Frequency (MHz)	OBW (MHz)	Lower Edge (MHz)	Upper Edge (MHz)	Limit OBW (MHz)	Verdict
NVNT	802.15.4	2405	Ant1	1201.953	2.21	2403.906	2406.118	2400 - 2483.5MHz	Pass
NVNT	802.15.4	2440	Ant1	1219.451	2.22	2438.901	2441.121	2400 - 2483.5MHz	Pass
NVNT	802.15.4	2480	Ant1	1239.448	2.23	2478.896	2481.126	2400 - 2483.5MHz	Pass

Test Graphs

OBW NVNT 802.15.4 2405MHz Ant1

Spectrum

Ref Level 20.00 dBm   Offset 2.52 dB   ● RBW   50 kHz
● Att   30 dB   ● SWT   1 s   ● VBW 200 kHz   Mode Sweep
SGL Count 10/10

● 1Rm Max

M1[1]   −45.22 dBm
          2.40250000 GHz
Occ Bw   2.212787213 MHz

CF 2.405 GHz   1001 pts   Span 5.0 MHz

Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4025 GHz	−45.22 dBm		
T1		1	2.40390609 GHz	−14.96 dBm	Occ Bw	2.212787213 MHz
T2		1	2.40611888 GHz	−14.47 dBm		

Ready   11.03.2024

Date: 11.MAR.2024 07:43:16

OBW NVNT 802.15.4 2440MHz Ant1

Spectrum

Ref Level 20.00 dBm   Offset 2.53 dB   ● RBW   50 kHz
● Att   30 dB   ● SWT   1 s   ● VBW 200 kHz   Mode Sweep
SGL Count 10/10

● 1Rm Max

M1[1]   −45.29 dBm
          2.43750000 GHz
Occ Bw   2.217782218 MHz

CF 2.44 GHz   1001 pts   Span 5.0 MHz

Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4375 GHz	−45.29 dBm		
T1		1	2.4389011 GHz	−14.85 dBm	Occ Bw	2.217782218 MHz
T2		1	2.44111888 GHz	−14.22 dBm		

Ready   11.03.2024

Date: 11.MAR.2024 07:46:11

OBW NVNT 802.15.4 2480MHz Ant1

Spectrum

Ref Level 20.00 dBm   Offset 2.55 dB   RBW   50 kHz
Att   30 dB   SWT   1 s   VBW 200 kHz   Mode Sweep
SGL Count 10/10
1Rm Max

M1[1]   -45.21 dBm
                                   2.47750000 GHz
Occ Bw   2.227772228 MHz

CF 2.48 GHz   1001 pts   Span 5.0 MHz

Marker

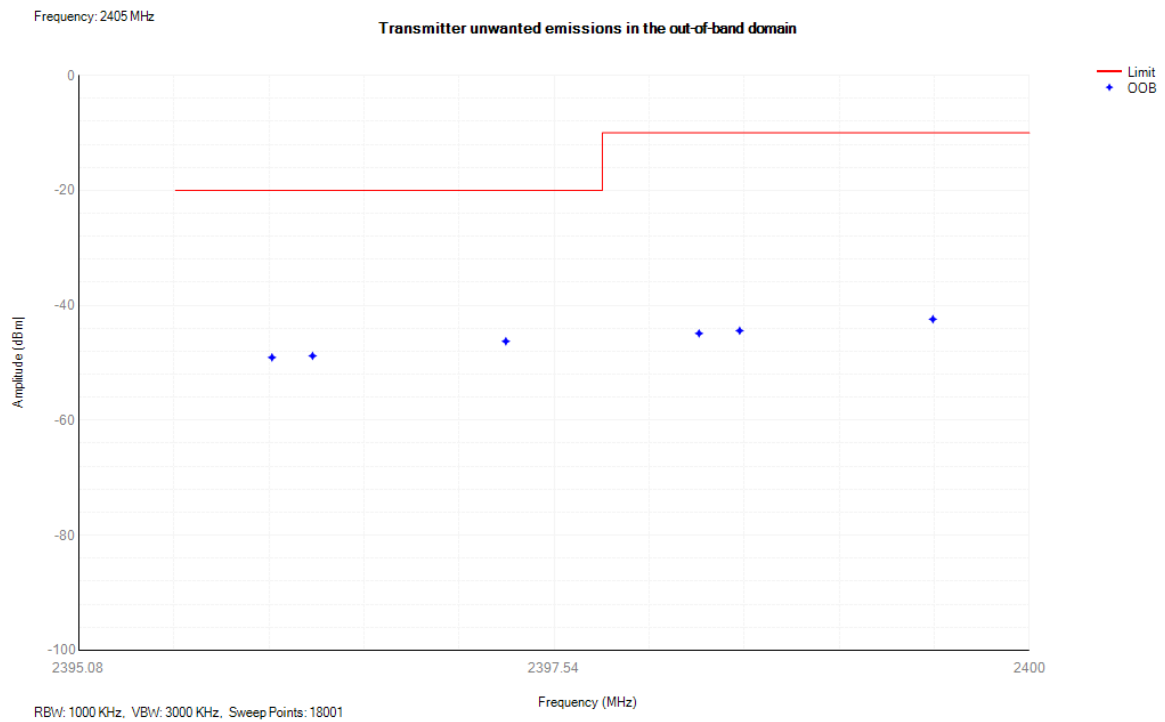| Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.4775 GHz	-45.21 dBm		
T1		1	2.4788961 GHz	-15.28 dBm	Occ Bw	2.227772228 MHz
T2		1	2.48112388 GHz	-15.12 dBm		

Ready

Date: 11.MAR.2024   07:53:24

Transmitter unwanted emissions in the out-of-band domain

Condition	Mode	Frequency (MHz)	Antenna	OOB Frequency (MHz)	Level (dBm/MHz)	Limit (dBm/MHz)	Verdict
NVNT	802.15.4	2405	Ant1	2399.5	-42.41	-10	Pass
NVNT	802.15.4	2405	Ant1	2398.5	-44.41	-10	Pass
NVNT	802.15.4	2405	Ant1	2398.29	-44.88	-10	Pass
NVNT	802.15.4	2405	Ant1	2397.29	-46.25	-20	Pass
NVNT	802.15.4	2405	Ant1	2396.29	-48.79	-20	Pass
NVNT	802.15.4	2405	Ant1	2396.08	-49.06	-20	Pass
NVNT	802.15.4	2480	Ant1	2484	-37.8	-10	Pass
NVNT	802.15.4	2480	Ant1	2485	-41.08	-10	Pass
NVNT	802.15.4	2480	Ant1	2485.23	-41.75	-10	Pass
NVNT	802.15.4	2480	Ant1	2486.23	-43.74	-20	Pass
NVNT	802.15.4	2480	Ant1	2487.23	-45.37	-20	Pass
NVNT	802.15.4	2480	Ant1	2487.46	-45.32	-20	Pass

Test Graphs
Tx. Emissions OOB NVNT 802.15.4 2405MHz Ant1

Frequency: 2405 MHz

Transmitter unwanted emissions in the out-of-band domain

RBW: 1000 KHz, VBW: 3000 KHz, Sweep Points: 18001

Tx. Emissions OOB NVNT 802.15.4 2480MHz Ant1

Frequency: 2480 MHz

Transmitter unwanted emissions in the out-of-band domain

RBW: 1000 KHz, VBW: 3000 KHz, Sweep Points: 18001
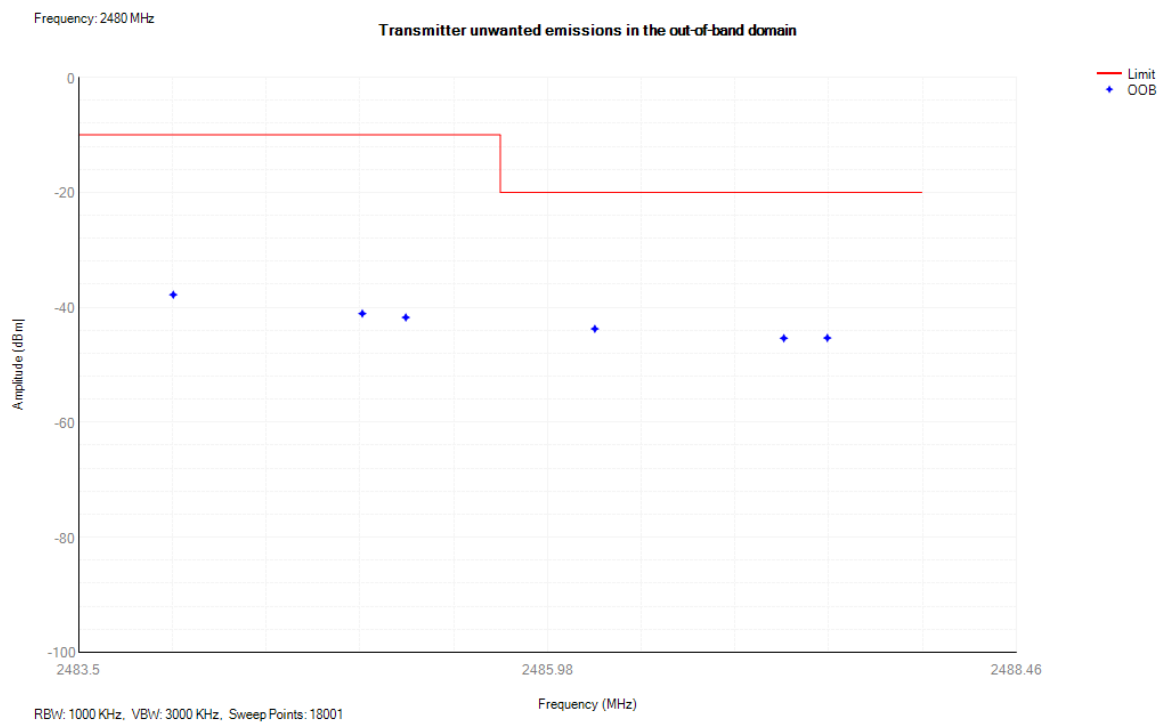
Transmitter unwanted emissions in the spurious domain

Condition	Mode	Frequency (MHz)	Antenna	Range (MHz)	Spur Freq (MHz)	Peak (dBm)	RMS (dBm)	Limit (dBm)	Verdict
NVNT	802.15.4	2405	Ant1	30 -47	46.65	-59.04	NA	-36	Pass
NVNT	802.15.4	2405	Ant1	47 -74	67.60	-59.44	-67.98	-54	Pass
NVNT	802.15.4	2405	Ant1	74 -87.5	84.15	-58.84	NA	-36	Pass
NVNT	802.15.4	2405	Ant1	87.5 -118	96.55	-59.10	-67.83	-54	Pass
NVNT	802.15.4	2405	Ant1	118 -174	126.95	-58.43	NA	-36	Pass
NVNT	802.15.4	2405	Ant1	174 -230	197.85	-56.99	-66.51	-54	Pass
NVNT	802.15.4	2405	Ant1	230 -470	439.95	-57.50	NA	-36	Pass
NVNT	802.15.4	2405	Ant1	470 -694	586.05	-56.82	-65.55	-54	Pass
NVNT	802.15.4	2405	Ant1	694 -1000	992.15	-56.20	NA	-36	Pass
NVNT	802.15.4	2405	Ant1	1000 -2398	2397.00	-41.95	NA	-30	Pass
NVNT	802.15.4	2405	Ant1	2485.5 -12750	6962.00	-37.93	NA	-30	Pass
NVNT	802.15.4	2440	Ant1	30 -47	40.05	-58.44	NA	-36	Pass
NVNT	802.15.4	2440	Ant1	47 -74	51.80	-59.71	-67.93	-54	Pass
NVNT	802.15.4	2440	Ant1	74 -87.5	74.55	-59.19	NA	-36	Pass
NVNT	802.15.4	2440	Ant1	87.5 -118	102.00	-57.94	-68.91	-54	Pass
NVNT	802.15.4	2440	Ant1	118 -174	162.85	-58.33	NA	-36	Pass
NVNT	802.15.4	2440	Ant1	174 -230	219.15	-58.32	-66.27	-54	Pass
NVNT	802.15.4	2440	Ant1	230 -470	349.10	-57.65	NA	-36	Pass
NVNT	802.15.4	2440	Ant1	470 -694	644.75	-56.68	-65.63	-54	Pass
NVNT	802.15.4	2440	Ant1	694 -1000	809.60	-55.70	NA	-36	Pass
NVNT	802.15.4	2440	Ant1	1000 -2398	2239.00	-46.12	NA	-30	Pass
NVNT	802.15.4	2440	Ant1	2485.5 -12750	6975.00	-38.68	NA	-30	Pass
NVNT	802.15.4	2480	Ant1	30 -47	38.90	-59.18	NA	-36	Pass
NVNT	802.15.4	2480	Ant1	47 -74	70.65	-59.35	-67.47	-54	Pass
NVNT	802.15.4	2480	Ant1	74 -87.5	77.05	-58.55	NA	-36	Pass
NVNT	802.15.4	2480	Ant1	87.5 -118	113.75	-58.69	-66.68	-54	Pass
NVNT	802.15.4	2480	Ant1	118 -174	147.50	-59.07	NA	-36	Pass
NVNT	802.15.4	2480	Ant1	174 -230	215.85	-57.72	-67.26	-54	Pass
NVNT	802.15.4	2480	Ant1	230 -470	306.80	-56.94	NA	-36	Pass
NVNT	802.15.4	2480	Ant1	470 -694	664.80	-56.77	-66.32	-54	Pass
NVNT	802.15.4	2480	Ant1	694 -1000	875.35	-56.42	NA	-36	Pass
NVNT	802.15.4	2480	Ant1	1000 -2398	1953.50	-45.63	NA	-30	Pass
NVNT	802.15.4	2480	Ant1	2485.5 -12750	6988.50	-38.43	NA	-30	Pass

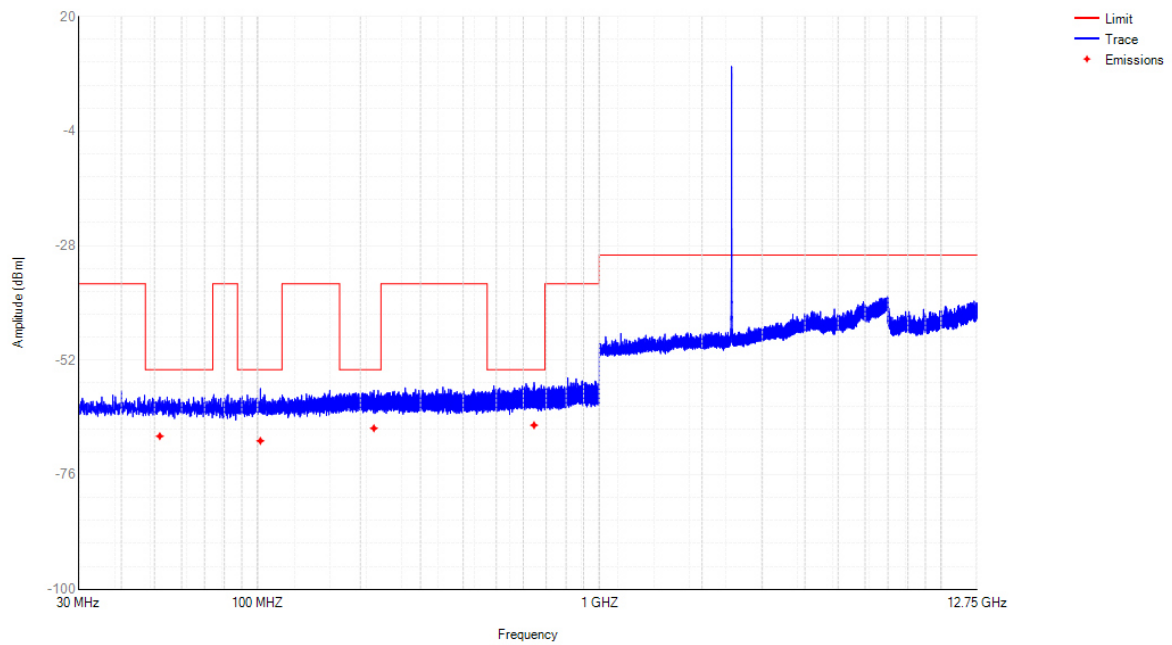| Test Graphs |
|---|
| Tx. Spurious NVNT 802.15.4 2405MHz Ant1 |

Frequency: 2405 MHz

Transmitter unwanted emissions in the spurious domain
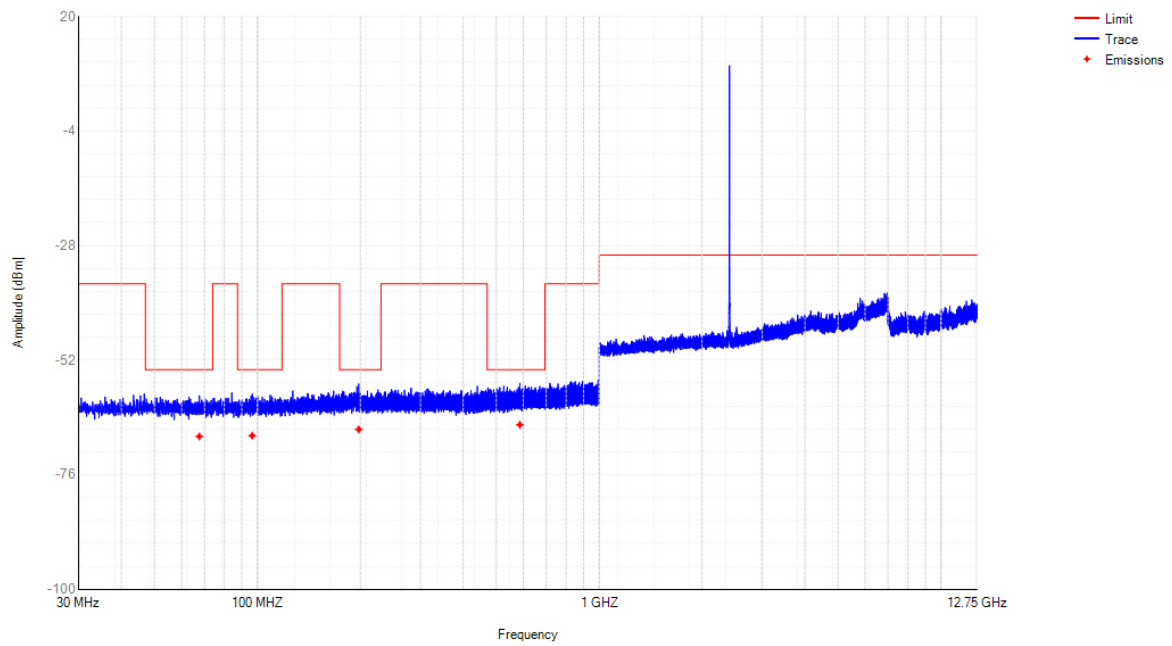
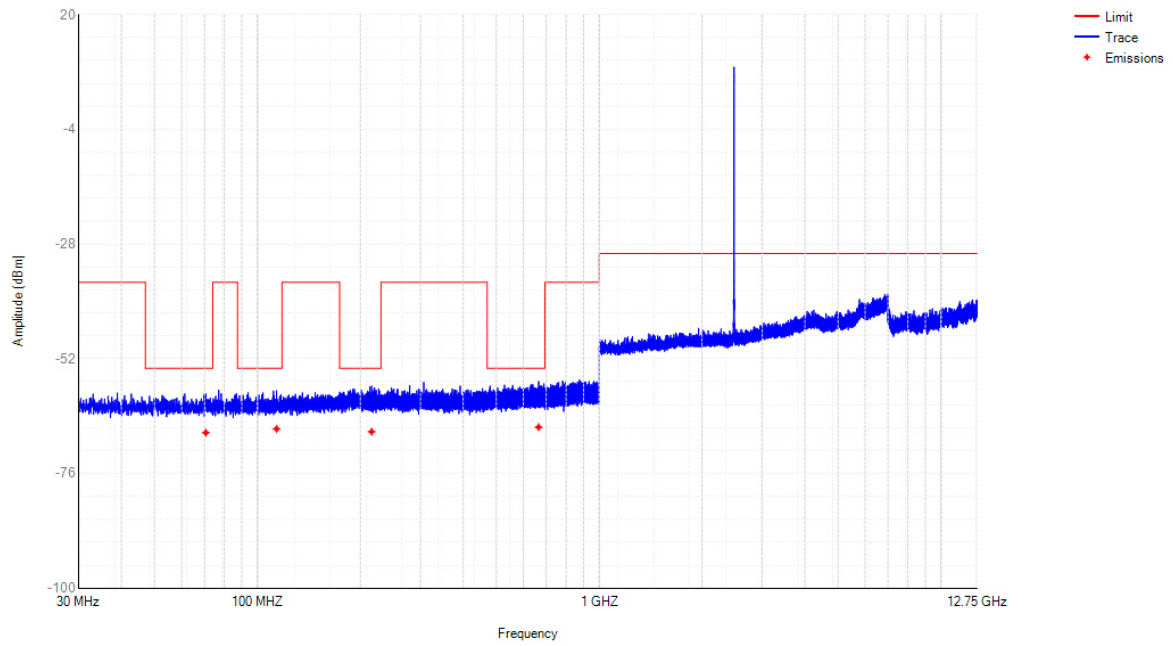| Tx. Spurious NVNT 802.15.4 2440MHz Ant1 |
|---|

Frequency: 2440 MHz
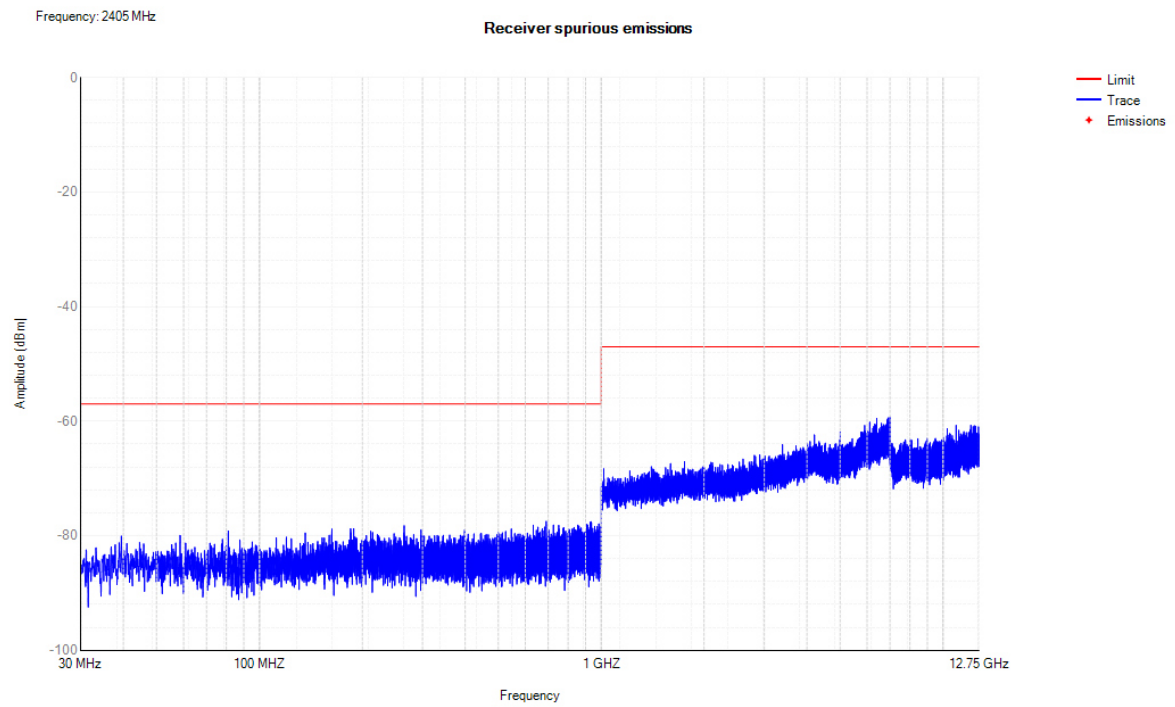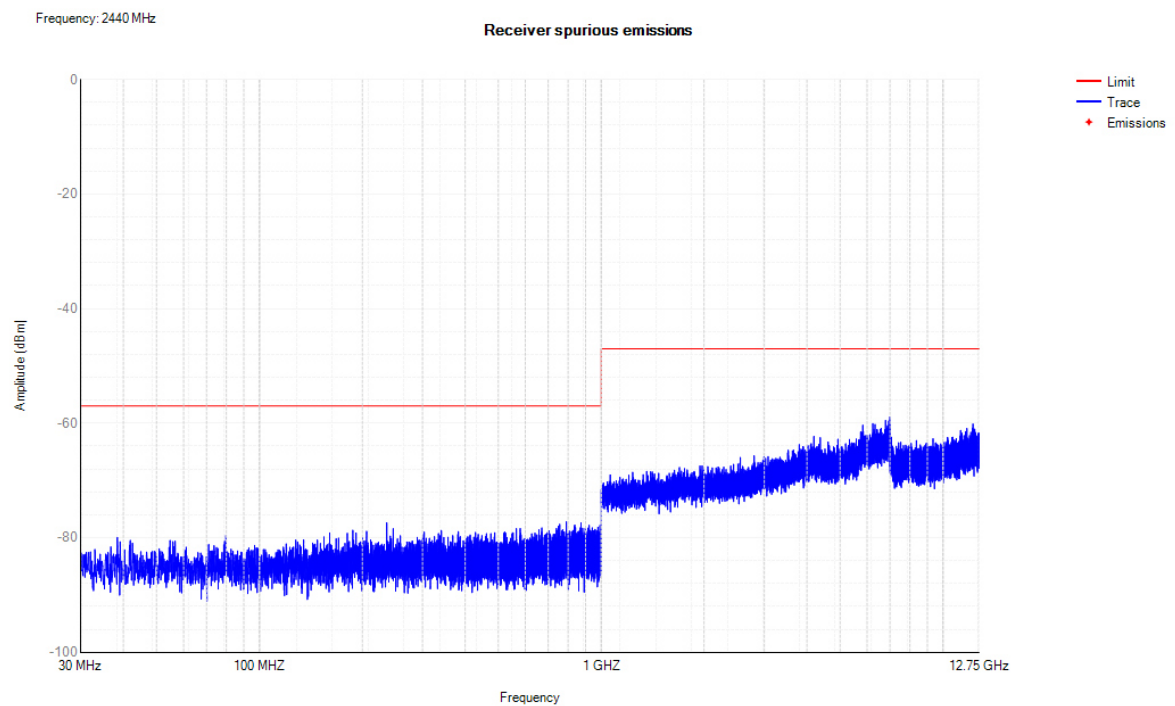
Transmitter unwanted emissions in the spurious domain

Transmitter unwanted emissions in the spurious domain

Frequency: 2480 MHz

Receiver spurious emissions

Condition	Mode	Frequency (MHz)	Antenna	Range (MHz)	Spur Freq (MHz)	Peak (dBm)	RMS (dBm)	Limit (dBm)	Verdict
NVNT	802.15.4	2405	Ant1	30 -1000	690.6	-77.49	NA	-57	Pass
NVNT	802.15.4	2405	Ant1	1000 -12750	6999.5	-59.28	NA	-47	Pass
NVNT	802.15.4	2440	Ant1	30 -1000	790.95	-77.22	NA	-57	Pass
NVNT	802.15.4	2440	Ant1	1000 -12750	6984	-58.91	NA	-47	Pass
NVNT	802.15.4	2480	Ant1	30 -1000	918.95	-75.64	NA	-57	Pass
NVNT	802.15.4	2480	Ant1	1000 -12750	6995	-59.43	NA	-47	Pass

Test Graphs
Rx. Spurious NVNT 802.15.4 2405MHz Ant1

Frequency: 2405 MHz

Receiver spurious emissions

Rx. Spurious NVNT 802.15.4 2440MHz Ant1

Frequency: 2440 MHz

Receiver spurious emissions

Frequency: 2480 MHz
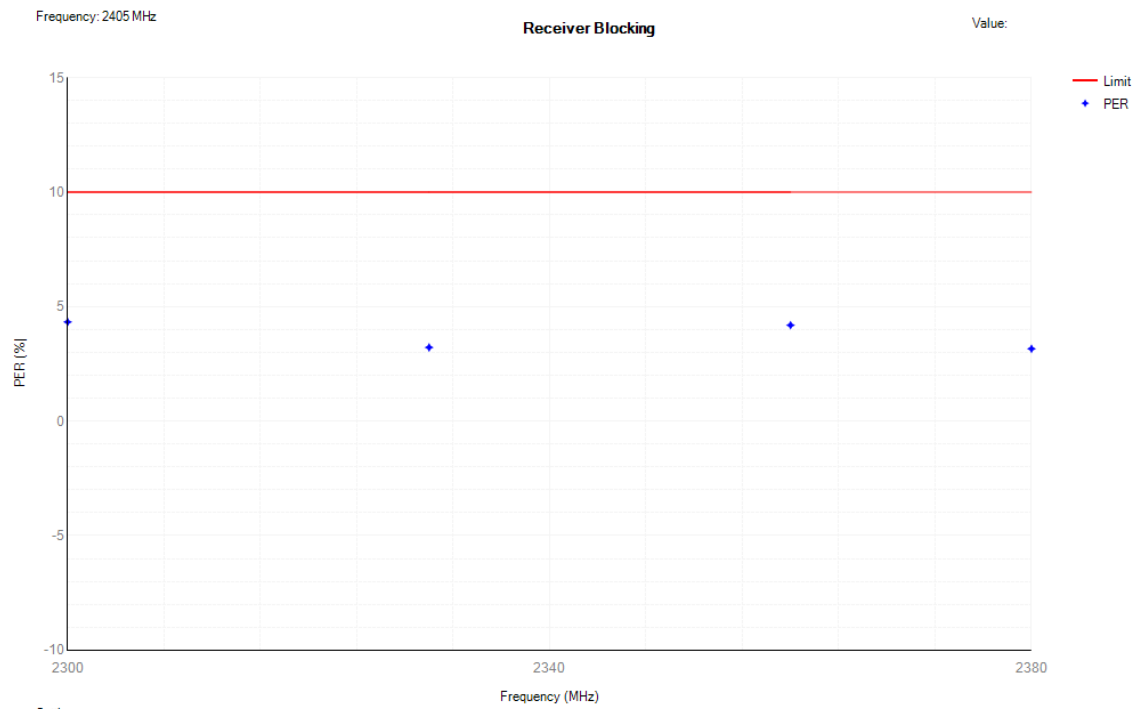
Receiver spurious emissions
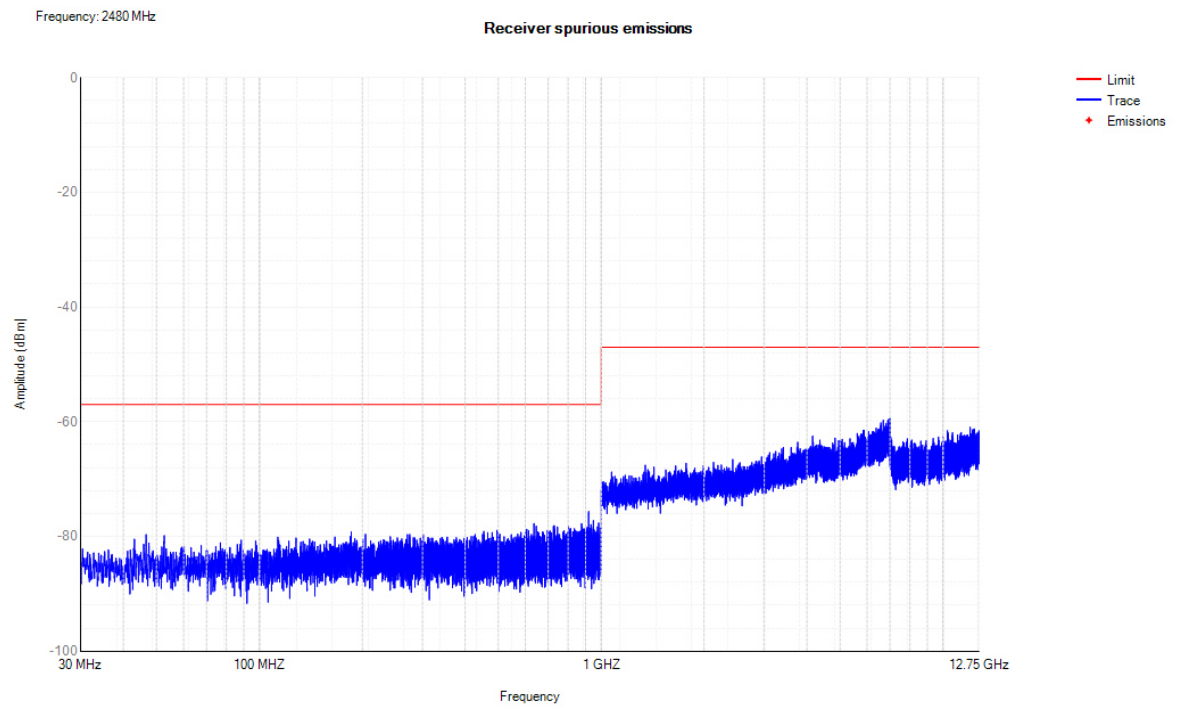
Receiver Blocking

Condition	Mode	Frequency (MHz)	Antenna	Wanted Power (dBm)	Blocking Frequency (MHz)	Blocking Power (dBm)	PER (%)	Limit (%)	Verdict
NVNT	802.15.4	2405	Ant1	-68.56	2380	-33	3.16	10	Pass
NVNT	802.15.4	2405	Ant1	-74.56	2300	-33	4.33	10	Pass
NVNT	802.15.4	2405	Ant1	-74.56	2330	-33	3.22	10	Pass
NVNT	802.15.4	2405	Ant1	-74.56	2360	-33	4.19	10	Pass
NVNT	802.15.4	2480	Ant1	-68.52	2504	-33	5.63	10	Pass
NVNT	802.15.4	2480	Ant1	-74.52	2524	-33	3.52	10	Pass
NVNT	802.15.4	2480	Ant1	-74.52	2584	-33	4.28	10	Pass
NVNT	802.15.4	2480	Ant1	-74.52	2674	-33	3.38	10	Pass

Test Graphs
Rx. Blockings NVNT 802.15.4 2405MHz Ant1

Frequency: 2405 MHz

Receiver Blocking

Value:

— Limit
♦ PER

PER [%]

Frequency (MHz)

Settings:

Rx. Blockings NVNT 802.15.4 2480MHz Ant1

Frequency: 2480 MHz

Receiver Blocking

Value:

— Limit
♦ PER

PER [%]

Frequency (MHz)

Settings: