

TEST REPORT

Report No.: CQASZ20201001270E-02
Applicant: Shenzhen Minew Technologies Co., Ltd
Address of Applicant: 3rd Floor, I Bulding, Gangzhilong Science Park, Qinglong Road, Longhua District, Shenzhen City, China
Equipment Under Test (EUT):
EUT Name: Electronic price tag
Model No.: STag42, STag42R, STag42B, STag42Y
Test Model No.: STag42
Brand Name: MINEW
Standards: EN 300 328 V2.2.2 (2019-07)
Date of Receipt: 2020-10-26
Date of Test: 2020-10-26 to 2020-10-30
Date of Issue: 2020-10-30
Test Result: **PASS***

*In the configuration tested, the EUT complied with the standards specified above

Tested By: _____

Martin Lee

(Martin Lee)

Reviewed By: _____

Sheek Luo

(Sheek Luo)

Approved By: _____

Jack Ai

(Jack Ai)



1 Version

Revision History of Report

Report No.	Version	Description	Issue Date
CQASZ20201001270E-02	Rev.01	Initial report	2020-10-30

2 Test Summary

Test Item	Test Requirement	Test Method	Limit	Result
RF output power	EN 300 328 V2.2.2 (2019-07)Clause 4.3.2.2	EN 300 328 V2.2.2 (2019-07)Clause 5.4.2	Refer clause 4.3.2.2.3	PASS
Power Spectral Density	EN 300 328 V2.2.2 (2019-07)Clause 4.3.2.3	EN 300 328 V2.2.2 (2019-07)Clause 5.4.3	Refer clause 4.3.2.3.3	PASS
Duty Cycle, Tx-sequence, Tx-gap	EN 300 328 V2.2.2 (2019-07)Clause 4.3.2.4	EN 300 328 V2.2.2 (2019-07)Clause 5.4.2	Refer clause 4.3.2.4.3	N/A ¹
Medium Utilization (MU) factor	EN 300 328 V2.2.2 (2019-07)Clause 4.3.2.5	EN 300 328 V2.2.2 (2019-07)Clause 5.4.2	Refer clause 4.3.2.5.3	N/A ²
Adaptivity (Adaptive Frequency Hopping)	EN 300 328 V2.2.2 (2019-07)Clause 4.3.2.6	EN 300 328 V2.2.2 (2019-07)Clause 5.4.6	Refer clause 4.3.2.6.3.2	N/A ³
Occupied Channel Bandwidth	EN 300 328 V2.2.2 (2019-07)Clause 4.3.2.7	EN 300 328 V2.2.2 (2019-07)Clause 5.4.7	Refer clause 4.3.2.7.3	PASS
Transmitter unwanted emissions in the out-of- band domain	EN 300 328 V2.2.2 (2019-07)Clause 4.3.2.8	EN 300 328 V2.2.2 (2019-07)Clause 5.4.8	Refer clause 4.3.2.8.3	PASS
Transmitter unwanted emissions in the spurious domain	EN 300 328 V2.2.2 (2019-07)Clause 4.3.2.9	EN 300 328 V2.2.2 (2019-07)Clause 5.4.9	Refer clause 4.3.2.9.3	PASS
Receiver spurious emissions	EN 300 328 V2.2.2 (2019-07)Clause 4.3.2.10	EN 300 328 V2.2.2 (2019-07)Clause 5.4.10	Refer clause 4.3.2.10.3	PASS
Receiver Blocking	EN 300 328 V2.2.2 (2019-07)Clause 4.3.2.11	EN 300 328 V2.2.2 (2019-07)Clause 5.4.11	Refer clause 4.3.2.11.4	PASS
Geo-location capability	EN 300 328 V2.2.2 (2019-07)Clause 4.3.1.13	EN 300 328 V2.2.2 (2019-07)Clause 4.3.1.13	Refer Clause 4.3.1.13.3	N/A ⁴

Remark:

N/A¹: Because these requirements apply to non-adaptive frequency hopping equipment mode and RF output power of greater than or equal to 10 dBm.

N/A²: Because these requirements apply to non-adaptive frequency hopping equipment mode and RF output power of greater than or equal to 10 dBm.

N/A³: Because these requirements apply to adaptive equipment mode and RF output power of greater than or equal to 10 dBm.

N/A⁴: Because these requirements apply to equipment with geo-location capability

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radiated Frequency.

CH: In this whole report CH means channel.

Volt: In this whole report Volt means Voltage.

Temp: In this whole report Temp means Temperature.

Humid: In this whole report Humid means humidity.

Press: In this whole report Press means Pressure.

N/A: In this whole report not application.

The tested sample(s) and the sample information are provided by the client.

Model No.: STag42, STag42R, STag42B, STag42Y

Only the model STag42 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being color of appearance and model name.

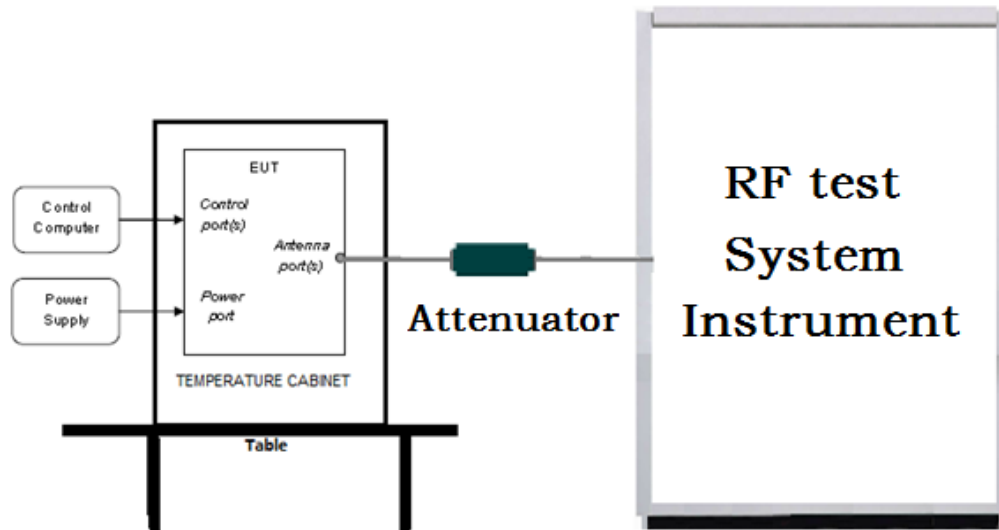
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4 Test Requirement

4.1 Test setup

4.1.1 For Conducted test setup



4.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

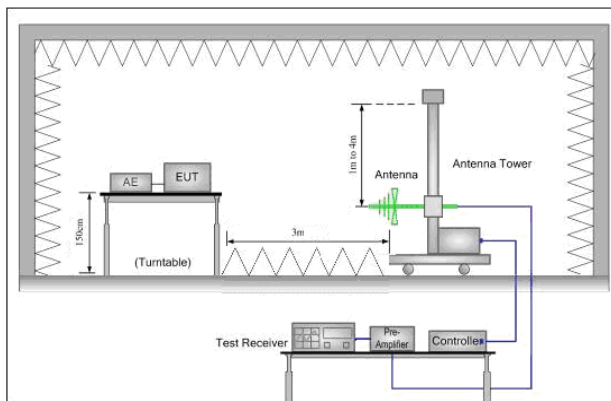


Figure 1. 30MHz to 1GHz

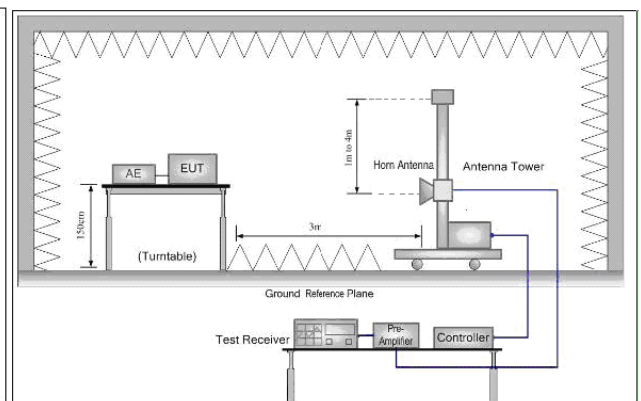


Figure 2. Above 1GHz

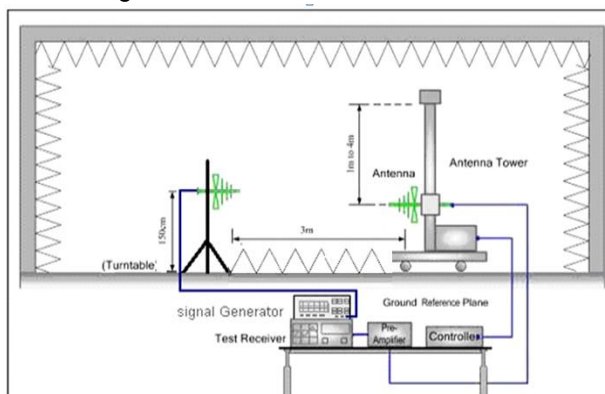


Figure 1. 30MHz to 1GHz

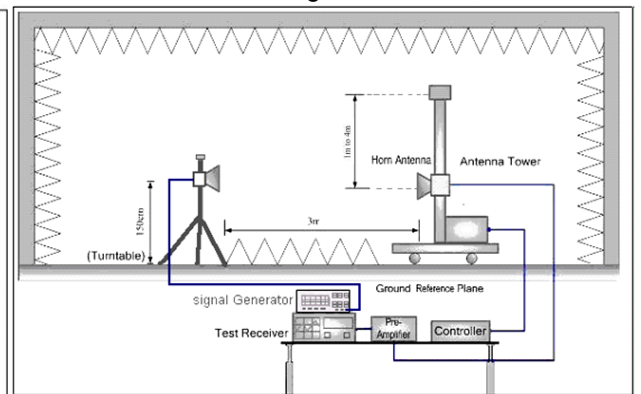


Figure 2. Above 1GHz

4.2 Test Environment

Environment Parameter	Selected Values During Tests		
Test condition	Ambient		
	Temperature(°C)	Voltage(V)	Relative Humidity(%)
TN/VN	25.4	3.0	55
TL/VN	-10	3.0	55
TH/VN	55	3.0	55

Note:

- 1) The EUT just work in such extreme temperature of -10°C~+55°C, so here the EUT is tested in the temperature of -10°C~+55°C
- 2) VN: Normal Voltage TN:Normal Temperature
TL: Low Extreme Test Temperature TH: High Extreme Test Temperature

4.3 Test Condition

Test channel

Test Mode	Tx/Rx	RF Channel		
		Low(L)	Middle(M)	High(H)
GFSK	2402MHz ~2480 MHz	Channel 1	Channel 20	Channel40
		2402MHz	2440MHz	2480MHz

5 General Information

5.1 Client Information

Applicant:	Shenzhen Minew Technologies Co., Ltd
Address of Applicant:	3rd Floor, I Bulding, Gangzhilong Science Park, Qinglong Road, Longhua District, Shenzhen City, China
Manufacturer:	Shenzhen Minew Technologies Co., Ltd
Address of Manufacturer:	3rd Floor, I Bulding, Gangzhilong Science Park, Qinglong Road, Longhua District, Shenzhen City, China
Factory:	Shenzhen Minew Technologies Co., Ltd
Address of Factory:	Building 3, Instrument World Industrial Park, No. 306, Guanlan Guiyue Road, Longhua District, Shenzhen

5.2 General Description of EUT

Product Name:	Electronic price tag
Mode No.:	STag42, STag42R, STag42B, STag42Y
Test Model No.:	STag42
Trade Mark:	MINEW
EUT Supports Radios application:	Bluetooth 2402-2480MHz
Hardware Version:	V1.X
Software Version:	V1.X.X
Power Supply:	Lithium Battery: DC 3V

5.3 Product Specification subjective to this standard

Frequency Range:	2402MHz to 2480MHz
Bluetooth Version:	V5.0
Modulation Type:	GFSK
Transfer Rate:	1Mbps, 2Mbps
Number of Channels:	40
Sample Type:	Portable production
Test Software of EUT:	Direct Test Mode Tool (manufacturer declare)
Antenna Type:	PCB antenna
Antenna Gain:	1.78dBi
Test voltage:	DC 3V

5.4 Other Information

RED Directive:			2014/53/EU				
Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402MHz	11	2422MHz	21	2442MHz	31	2462MHz
2	2404MHz	12	2424MHz	22	2444MHz	32	2464MHz
3	2406MHz	13	2426MHz	23	2446MHz	33	2466MHz
4	2408MHz	14	2428MHz	24	2448MHz	34	2468MHz
5	2410MHz	15	2430MHz	25	2450MHz	35	2470MHz
6	2412MHz	16	2432MHz	26	2452MHz	36	2472MHz
7	2414MHz	17	2434MHz	27	2454MHz	37	2474MHz
8	2416MHz	18	2436MHz	28	2456MHz	38	2476MHz
9	2418MHz	19	2438MHz	29	2458MHz	39	2478MHz
10	2420MHz	20	2440MHz	30	2460MHz	40	2480MHz

5.5 Description of Support Units

The EUT has been tested with associated equipment below.

1) support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
/	/	/	/	/

2) Cable

Cable No.	Description	Manufacturer	Cable Type/Length	Supplied by
/	/	/	/	/

5.6 Test Location

All tests were performed at:

Shenzhen Huaxia Testing Technology Co., Ltd.,

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

No tests were sub-contracted.

5.7 Deviation from Standards

None.

5.8 Abnormalities from Standard Conditions

None.

5.9 Other Information Requested by the Customer

None.

5.10 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radiated Emission (Below 1GHz)	5.12dB
2	Radiated Emission (Above 1GHz)	4.60dB
3	Conducted Disturbance (0.15~30MHz)	3.34dB
4	Radio Frequency	3×10^{-8}
5	Duty cycle	0.6 %.
6	Occupied Bandwidth	1.1%
7	RF conducted power	0.86dB
8	RF power density	0.74
9	Conducted Spurious emissions	0.86dB
10	Temperature test	0.8℃
11	Humidity test	2.0%
12	Supply voltages	0.5 %.
13	Frequency Error	5.5 Hz

6 Equipment List

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Horn Antenna	R&S	HF906	CQA-012	2020/9/26	2021/9/25
Bilog Antenna	R&S	HL562	CQA-011	2020/9/26	2021/9/25
EMI Test Receiver	R&S	ESR7	CQA-005	2020/10/25	2021/10/24
Spectrum analyzer	R&S	FSU26	CQA-038	2020/10/25	2021/10/24
Preamplifier	MITEQ	AMF-6D-02001800-29-20P	CQA-036	2020/10/25	2021/10/24
high-low temperature chamber	Auchno	OJN-9606	CQA-CB2	2020/9/25	2021/9/24
Signal generator	ANRITSU	MG3692B	CQA-019	2020/9/26	2021/9/25
Signal generator	R&S	SME06	CQA-024	2020/9/26	2021/9/25
Vector signal generator	R&S	SMBV100A	CQA-039	2020/9/25	2021/9/24
DC power	KEYSIGHT	E3631A	CQA-028	2020/9/26	2021/9/25
Power probe	KEYSIGHT	U2021XA	CQA-030	2020/9/26	2021/9/25
Coaxial Cable (Above 1GHz)	CQA	N/A	C019	2020/9/26	2021/9/25
Coaxial Cable (Below 1GHz)	CQA	N/A	C020	2020/9/26	2021/9/25
RF Cable (9KHz~40GHz)	CQA	N/A	C005	2020/9/26	2021/9/25

7 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	EN 300 328 V2.2.2 (2019-07)	Wideband transmission systems;Data transmission equipment operating in the 2.4 GHz ISM band and using wide band modulation techniques; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU

Test Results List:

EN300328V2.2.2		Test Descriptions & Test Conditions	Verdict	Note
Test Requirement	Test Method			
Clause 4.3.2.2	Clause 5.4.2	RF output power,		Appendix B)
		TN/VN	PASS	
		TL/VN	PASS	
		TH/VN	PASS	
Clause 4.3.2.3	Clause 5.4.3	Power Spectral Density		Appendix B)
		TN/VN	PASS	
Clause 4.3.2.4	Clause 5.4.2	Duty Cycle, Tx-sequence, Tx-gap		N/A
		TN/VN	N/A	
Clause 4.3.2.5	Clause 5.4.2	Medium Utilisation (MU) factor		N/A
		TN/VN	N/A	
Clause 4.3.2.6	Clause 5.4.6	Adaptivity (adaptive equipment using modulations other than FHSS)		N/A
		TN/VN	N/A	
Clause 4.3.2.7	Clause 5.4.7	Occupied Channel Bandwidth		Appendix B)
		TN/VN	PASS	
Clause 4.3.2.8	Clause 5.4.8	Transmitter unwanted emissions in the out-of-band domain		Appendix B)
		TN/VN	PASS	
Clause 4.3.2.11	Clause 5.4.11	Receiver Blocking		Appendix B)
		TN/VN	PASS	
Clause 4.3.2.9	Clause 5.4.9	Transmitter unwanted emissions in the spurious domain		Appendix A)
		TN/VN	PASS	
Clause 4.3.2.10	Clause 5.4.10	Receiver spurious emissions		Appendix A)
		TN/VN	PASS	

Appendix A: Spurious emissions

Test Procedure:		
<ol style="list-style-type: none"> 1. Scan from 30MHz to 12.75GHz; find the maximum radiation frequency to measure. 2. The technique used to find the Spurious Emissions of the transmitter was the antenna substitution method. Substitution method was performed to determine the actual ERP/EIRP emission levels of the EUT. <p>Test procedure as below:</p> <ol style="list-style-type: none"> 1) The EUT was powered ON and placed on a 1.5m high table at a 3 meter fully Anechoic Chamber. The antenna of the transmitter was extended to its maximum length. Modulation mode and the measuring receiver shall be tuned to the frequency of the transmitter under test. 2) The EUT was set 3 meters (above 18GHz the distance is 1 meter) away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3) The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made. 4) Steps 1) to 3) were performed with the EUT and the receive antenna in both vertical and horizontal polarization. 5) The transmitter was then removed and replaced with another antenna. The center of the antenna was approximately at the same location as the center of the transmitter. 6) A signal at the disturbance was fed to the substitution antenna by means of a non-radiating cable. With both the substitution and the receive antennas horizontally polarized, the receive antenna was raised and lowered to obtain a maximum reading at the test receiver. The level of the signal generator was adjusted until the measured field strength level in step 3) is obtained for this set of conditions. 7) The output power into the substitution antenna was then measured. 8) Steps 6) and 7) were repeated with both antennas polarized. 9) Calculate power in dBm by the following formula: $\text{ERP(dBm)} = \text{Pg(dBm)} - \text{cable loss (dB)} + \text{antenna gain (dBi)}$ $\text{EIRP(dBm)} = \text{Pg(dBm)} - \text{cable loss (dB)} + \text{antenna gain (dBi)}$ $\text{EIRP} = \text{ERP} + 2.15\text{dB}$ <p>where: Pg is the generator output power into the substitution antenna.</p> 10) Test the EUT in the lowest channel, the Highest channel 11) Repeat above procedures until all frequencies measured was complete. 		
Limit:	Transmitter limits for spurious emissions	
	Frequency range	Maximum power, e.r.p. (≤ 1 GHz) e.i.r.p. (> 1 GHz)
	30 MHz to 47 MHz	-36dBm
	47 MHz to 74 MHz	-54 dBm
	74 MHz to 87,5 MHz	-36dBm
	87,5 MHz to 118 MHz	-54 dBm
	118 MHz to 174 MHz	-36dBm
	174 MHz to 230 MHz	-54 dBm
	230 MHz to 470 MHz	-36dBm
	470 MHz to 694 MHz	-54 dBm
	694 MHz to 1 GHz	-36dBm
	1 GHz to 12.75 GHz	-30dBm
	Spurious emission limits for receivers	
	Frequency range	Maximum power e.r.p. (≤ 1 GHz) e.i.r.p. (> 1 GHz)
	30MHz to 1GHz	-57dBm
	1GHz to 12.75GHz	-47dBm
	bandwidth	
	100kHz	
	1MHz	

Radiated Spurious Emissions test Data:

1) Transmitter unwanted emissions in the spurious domain

Transmitting with modulation Mode at 2402MHz(1Mbps)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4804	110	81	-44.83	-30	-14.83	Pass	H
4804	191	221	-43.94	-30	-13.94	Pass	V
7206	101	191	-43.89	-30	-13.89	Pass	H
7206	162	58	-44.17	-30	-14.17	Pass	V
9608	171	133	-43.61	-30	-13.61	Pass	H
9608	151	347	-43.24	-30	-13.24	Pass	V

Transmitting with modulation Mode at 2480MHz(1Mbps)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4960	111	139	-42.83	-30	-12.83	Pass	H
4960	198	203	-42.38	-30	-12.38	Pass	V
7440	183	336	-42.46	-30	-12.46	Pass	H
7440	109	142	-43.07	-30	-13.07	Pass	V
9920	156	242	-42.39	-30	-12.39	Pass	H
9920	178	100	-45	-30	-15	Pass	V
Remark: 1. The disturbance below 1GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.							

Transmitting with modulation Mode at 2402MHz(2Mbps)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4804	146	204	-42.57	-30	-12.57	Pass	H
4804	146	259	-43.38	-30	-13.38	Pass	V
7206	167	3	-42.33	-30	-12.33	Pass	H
7206	198	91	-43.92	-30	-13.92	Pass	V
9608	131	223	-42.23	-30	-12.23	Pass	H
9608	116	132	-44.79	-30	-14.79	Pass	V

Transmitting with modulation Mode at 2480MHz(2Mbps)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4960	115	258	-43.23	-30	-13.23	Pass	H
4960	124	252	-42.83	-30	-12.83	Pass	V
7440	184	229	-44.93	-30	-14.93	Pass	H
7440	159	233	-42.78	-30	-12.78	Pass	V
9920	146	238	-42.98	-30	-12.98	Pass	H
9920	138	178	-43.22	-30	-13.22	Pass	V
Remark: 1. The disturbance below 1GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.							

2) Receiver spurious emissions test data

Receiving mode at 2402MHz(1Mbps)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4808.78	174	41	-55.69	-47	-8.69	Pass	H
4806.97	134	310	-56.45	-47	-9.45	Pass	V
7200.79	103	223	-56.64	-47	-9.64	Pass	H
7211.32	134	314	-56.4	-47	-9.4	Pass	V
9615.22	158	347	-55.6	-47	-8.6	Pass	H
9609.46	176	158	-56.84	-47	-9.84	Pass	V

Receiving mode at 2480MHz(1Mbps)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4956.95	189	325	-57.44	-47	-10.44	Pass	H
4956.42	115	81	-55.66	-47	-8.66	Pass	V
7430.79	109	115	-55.18	-47	-8.18	Pass	H
7439.8	144	249	-57.96	-47	-10.96	Pass	V
9911.84	184	129	-57.87	-47	-10.87	Pass	H
9927.27	107	100	-55.46	-47	-8.46	Pass	V

Remark: 1. The disturbance below 1GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

Receiving mode at 2402MHz(2Mbps)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4805.07	132	59	-56.68	-47	-9.68	Pass	H
4804.71	137	111	-55.68	-47	-8.68	Pass	V
7210.21	110	133	-55.71	-47	-8.71	Pass	H
7208.14	161	25	-56.94	-47	-9.94	Pass	V
9611.82	143	93	-57.77	-47	-10.77	Pass	H
9600.82	121	153	-56.98	-47	-9.98	Pass	V

Receiving mode at 2480MHz(2Mbps)							
Frequency (MHz)	Height (cm)	Azimuth (deg)	Spurious Emission Level (dBm)	Limit (dBm)	Over Limit (dB)	Result	Antenna Polaxis.
4964.14	116	212	-57.39	-47	-10.39	Pass	H
4967.89	198	240	-55.04	-47	-8.04	Pass	V
7438.86	136	149	-56.27	-47	-9.27	Pass	H
7439.06	151	326	-55.5	-47	-8.5	Pass	V
9900.42	145	154	-55.26	-47	-8.26	Pass	H
9926.45	142	164	-57.19	-47	-10.19	Pass	V

Remark: 1. The disturbance below 1GHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

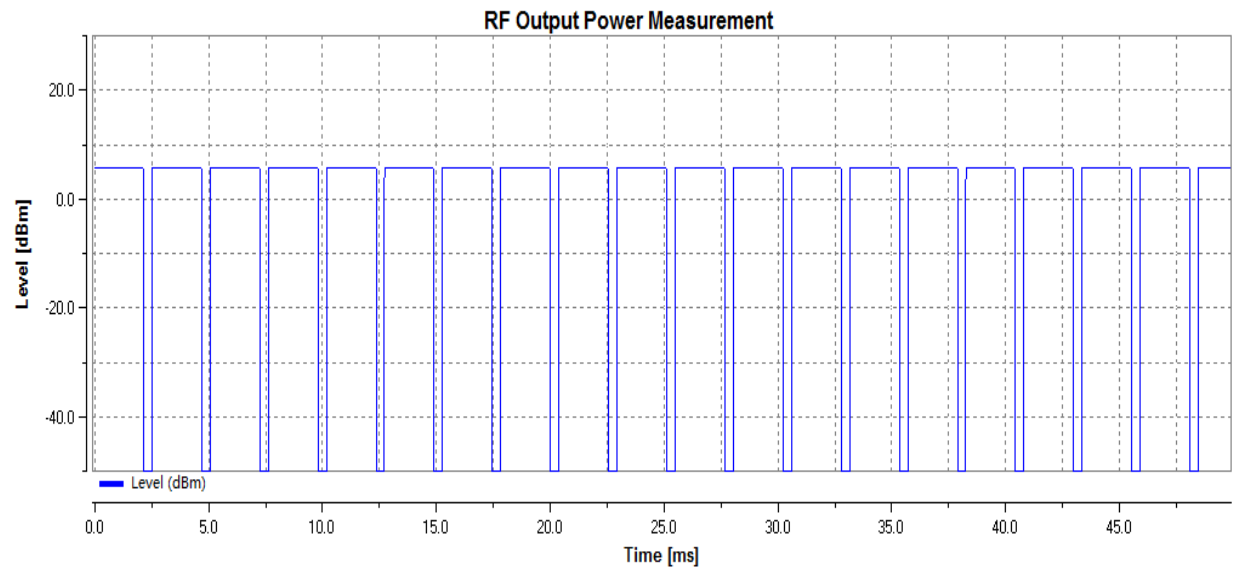
Appendix B: Test Data

GFSK(1Mbps)

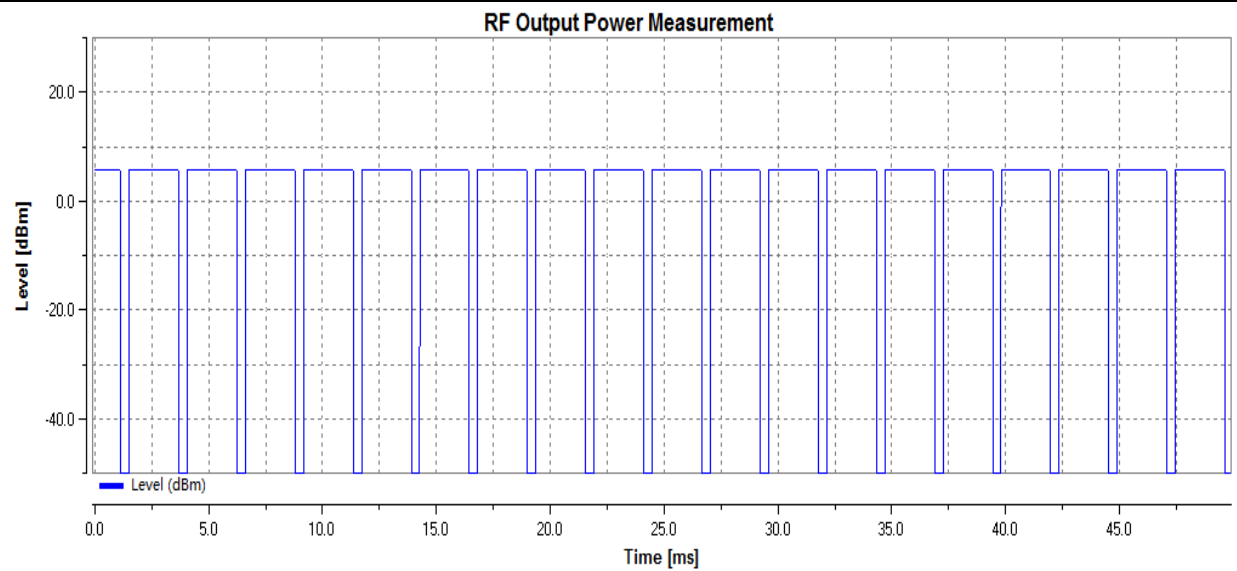
1.RF Output Power

Test Condition	Test Mode	Test Channel	Ant	Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
TLVN	BLE	2402	Ant1	5.76	7.54	<=20	PASS
THVN	BLE	2402	Ant1	5.77	7.55	<=20	PASS
TLVN	BLE	2440	Ant1	5.75	7.53	<=20	PASS
THVN	BLE	2440	Ant1	5.76	7.54	<=20	PASS
TLVN	BLE	2480	Ant1	5.83	7.61	<=20	PASS
THVN	BLE	2480	Ant1	5.83	7.61	<=20	PASS
TNVN	BLE	2402	Ant1	5.76	7.54	<=20	PASS
TNVN	BLE	2440	Ant1	5.75	7.53	<=20	PASS
TNVN	BLE	2480	Ant1	5.85	7.63	<=20	PASS

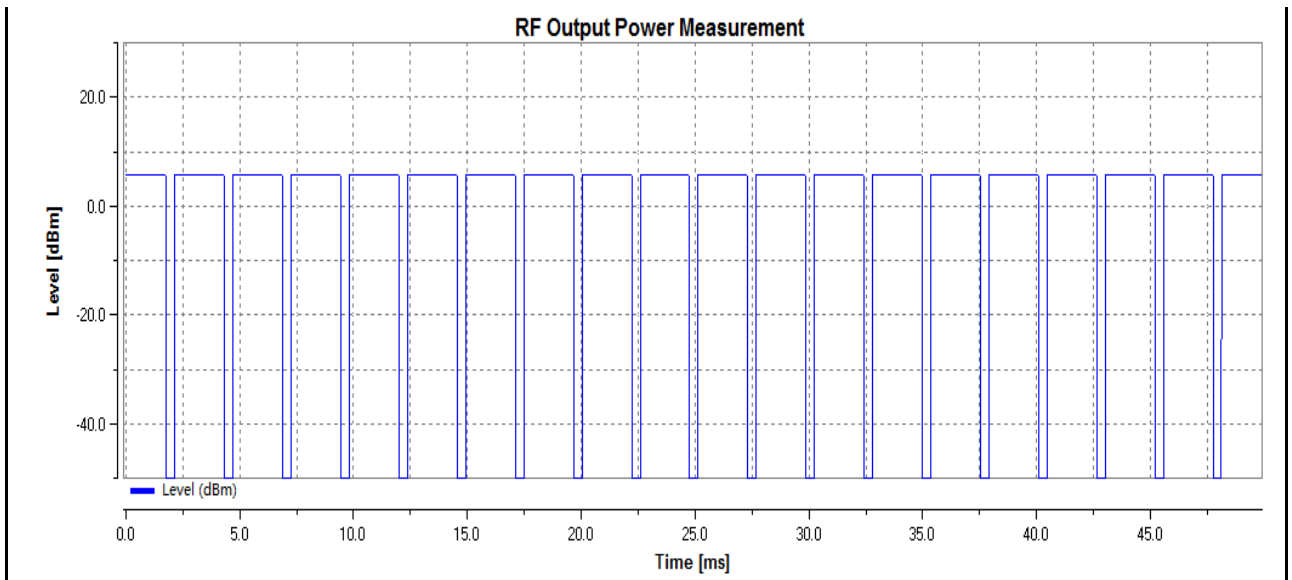
RF Output Power_TLVN_BLE_2402_Ant1



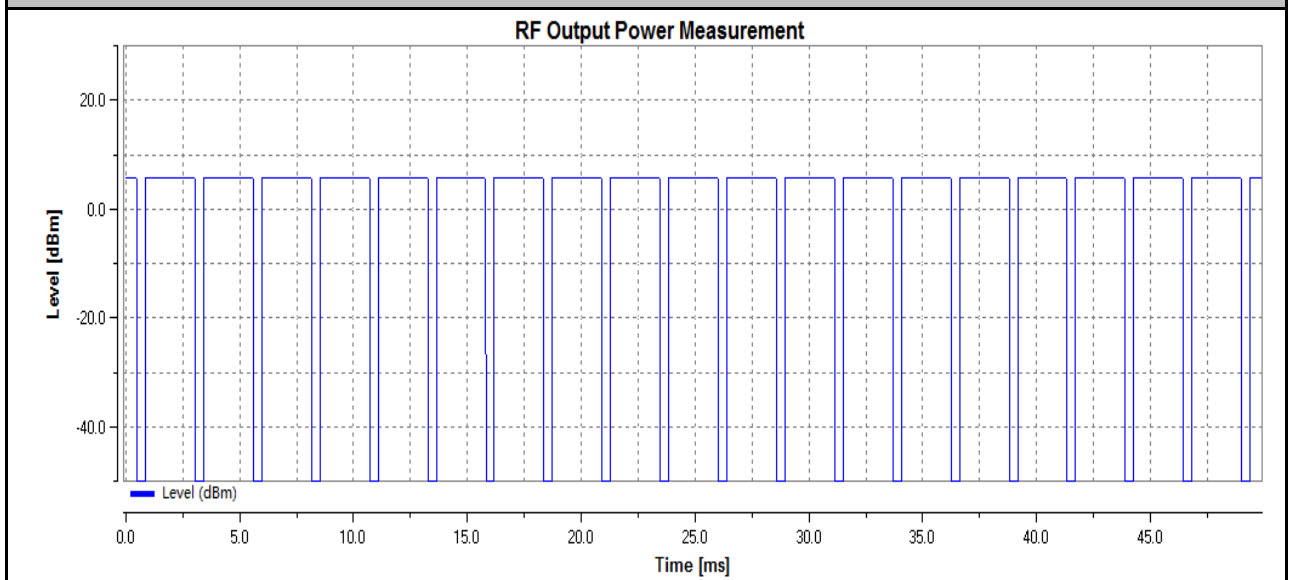
RF Output Power_THVN_BLE_2402_Ant1



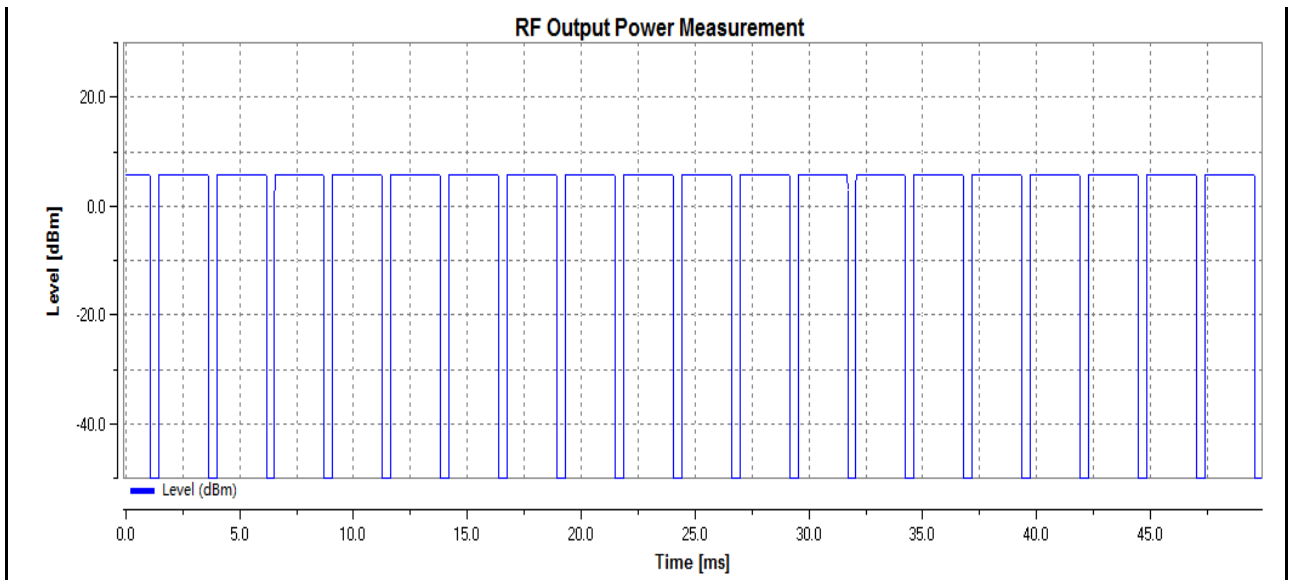
RF Output Power_TLVN_BLE_2440_Ant1



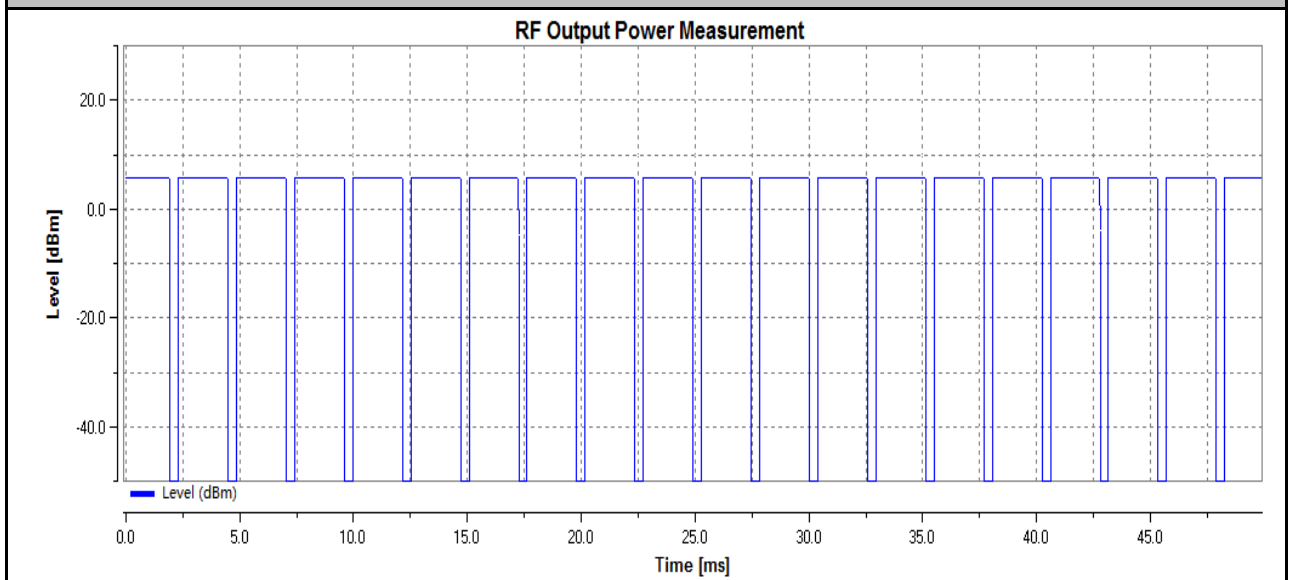
RF Output Power_THVN_BLE_2440_Ant1



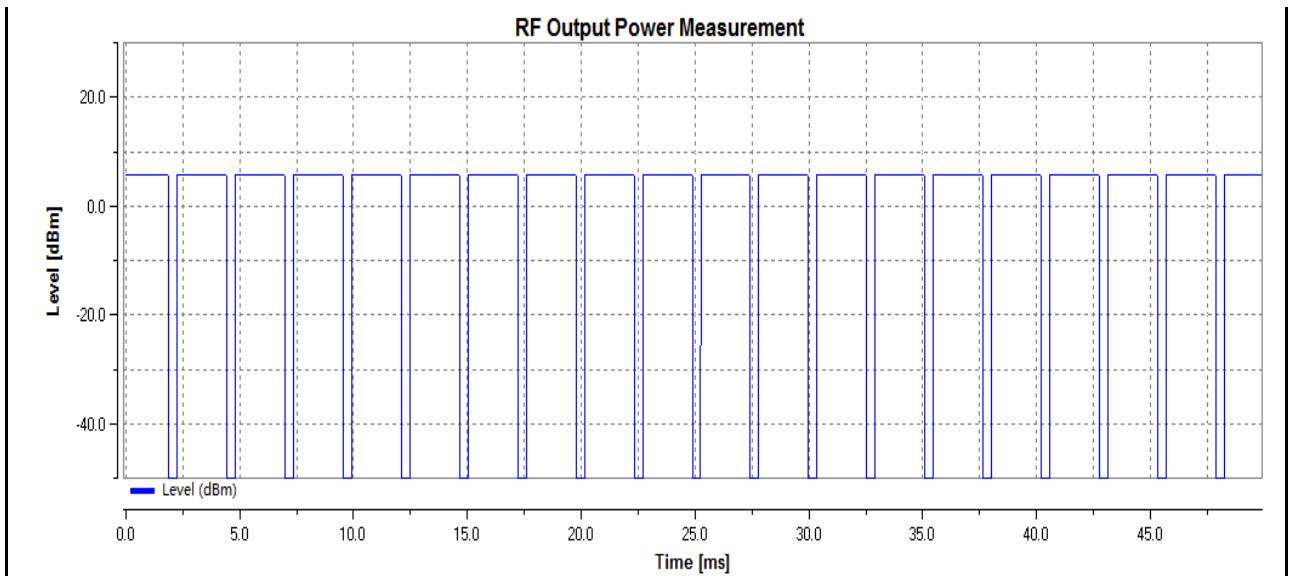
RF Output Power_TLVN_BLE_2480_Ant1



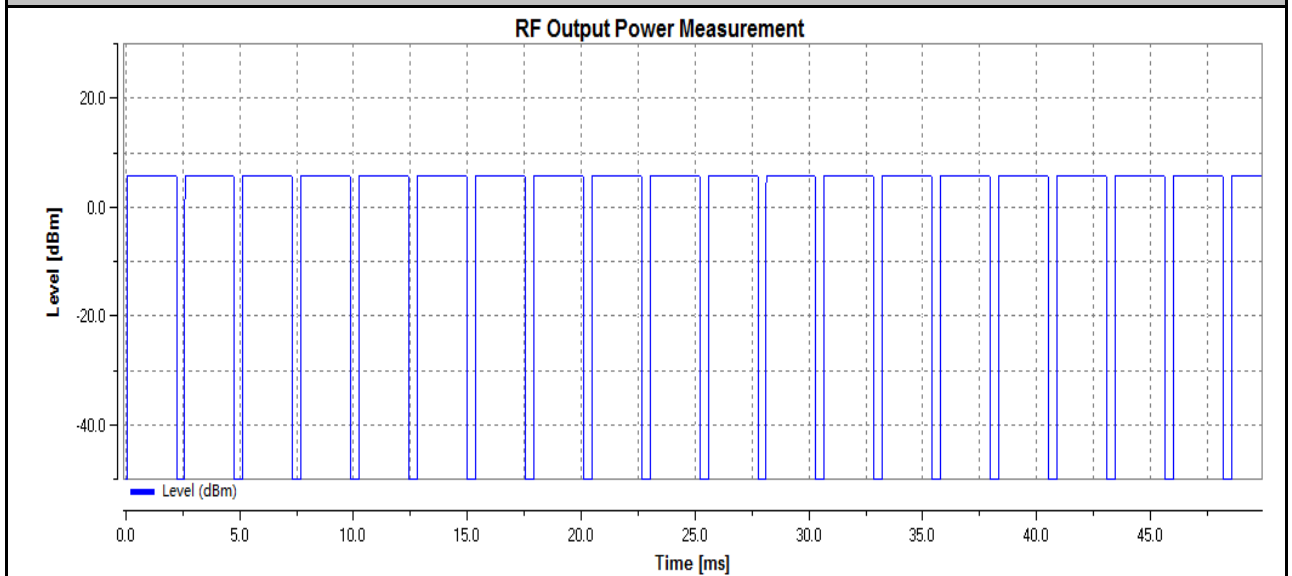
RF Output Power_THVN_BLE_2480_Ant1



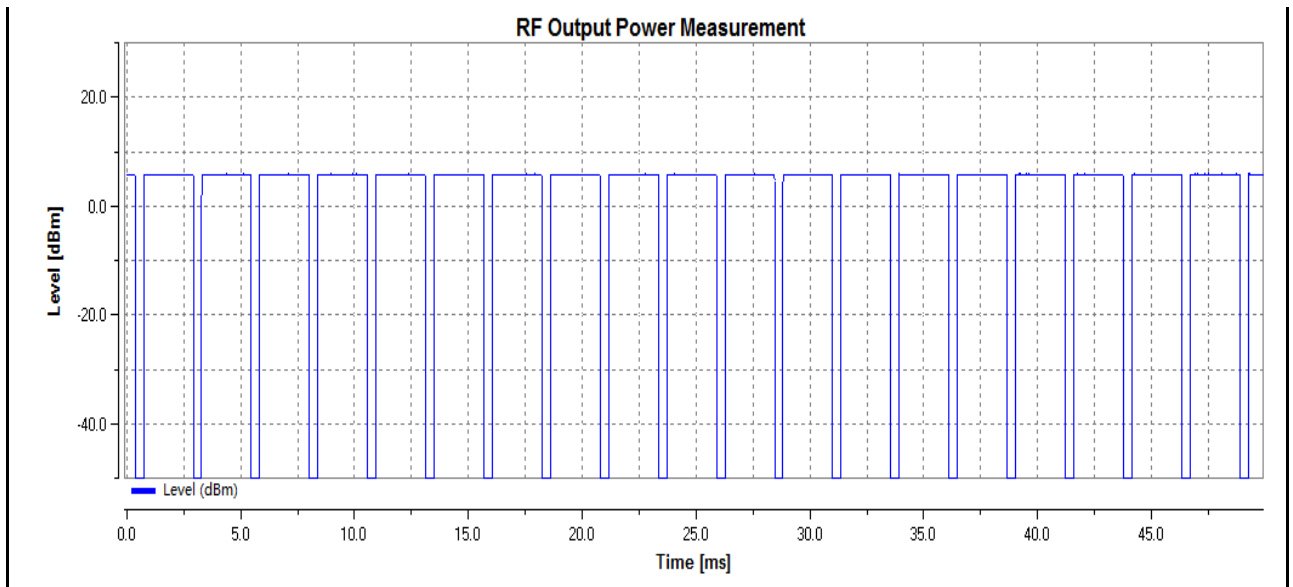
RF Output Power_TNVN_BLE_2402_Ant1



RF Output Power_TNVN_BLE_2440_Ant1



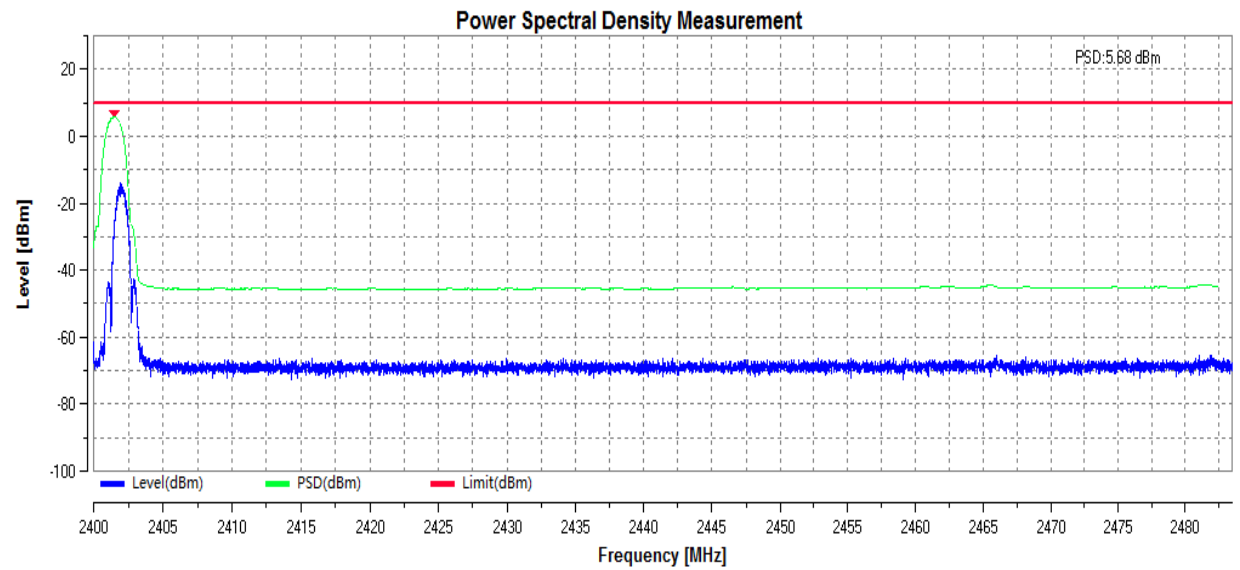
RF Output Power_TNVN_BLE_2480_Ant1



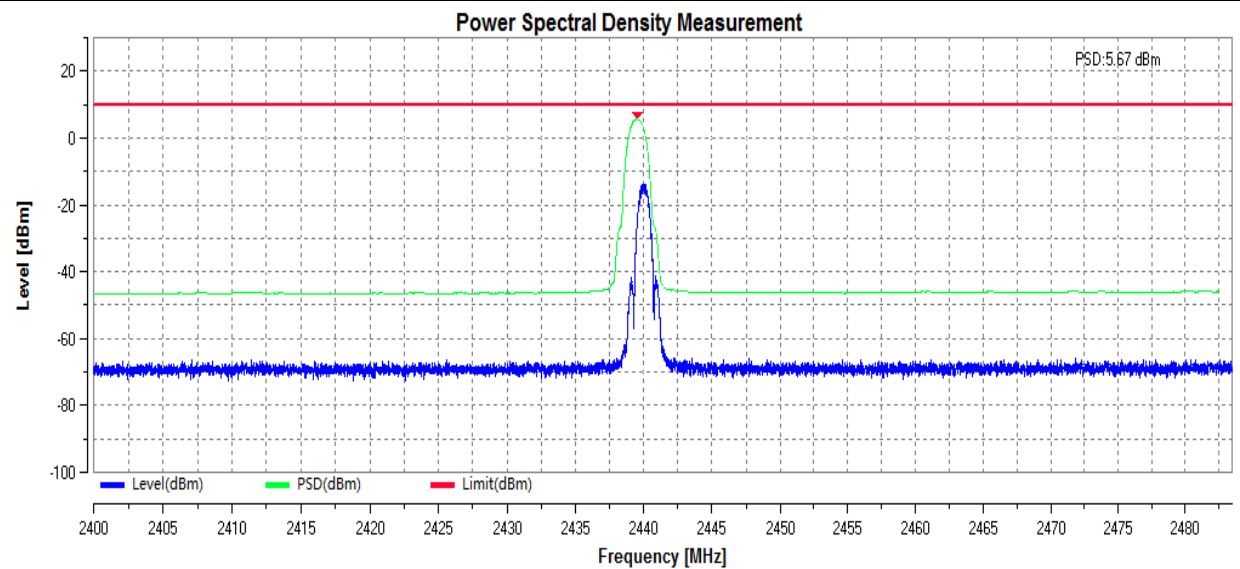
2.Power Spectral Density

Test Condition	Test Mode	Test Channel	Ant	PSD [dBm]	Limit [dBm]	Verdict
TNVN	BLE	2402	Ant1	5.68	≤ 10	PASS
TNVN	BLE	2440	Ant1	5.67	≤ 10	PASS
TNVN	BLE	2480	Ant1	5.77	≤ 10	PASS

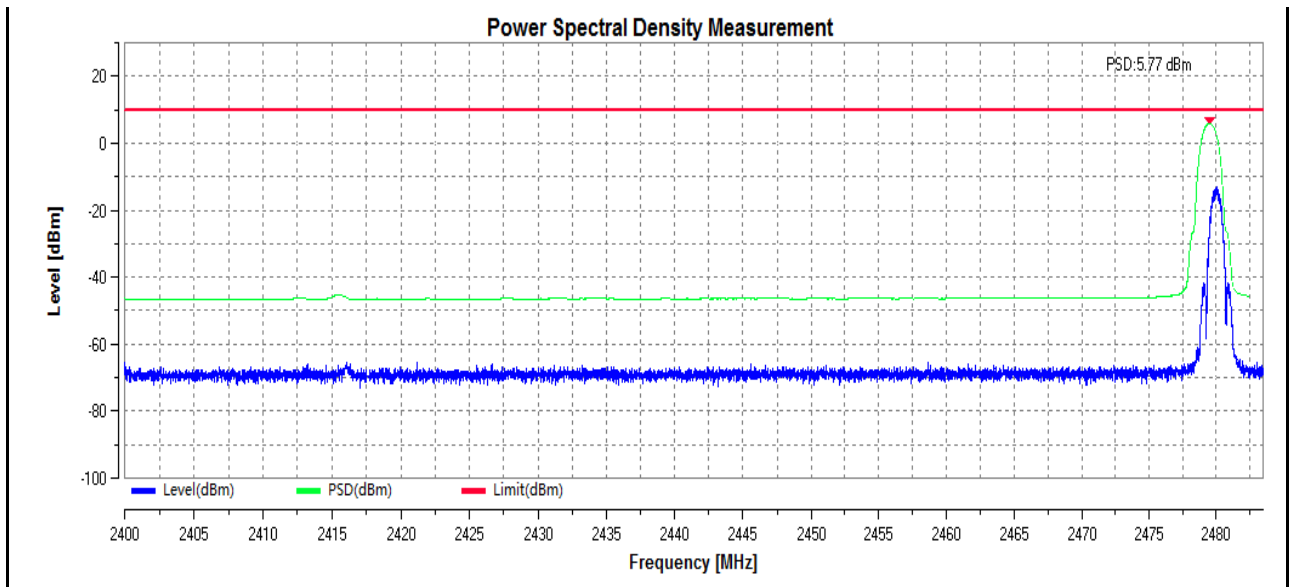
Power Spectral Density_TNVN_BLE_2402_Ant1



Power Spectral Density_TNVN_BLE_2440_Ant1

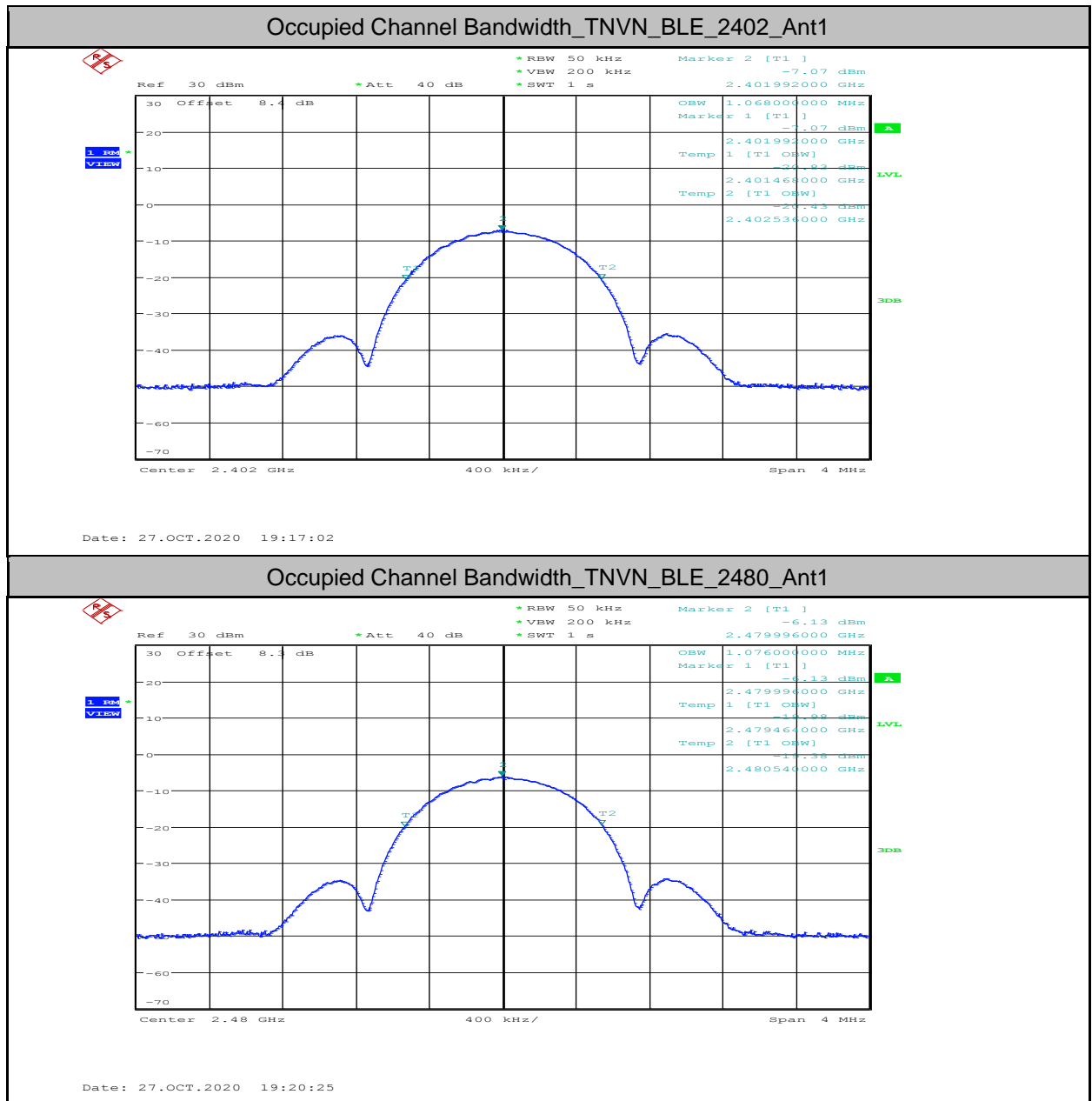


Power Spectral Density_TNVN_BLE_2480_Ant1



3.Occupied Channel Bandwidth

Test Condition	Test Mode	Test Channel	Ant	OBW [MHz]	FL OBW [MHz]	FH OBW [MHz]	Verdict
TNVN	BLE	2402	Ant1	1.068	2401.466	---	PASS
TNVN	BLE	2480	Ant1	1.076	---	2480.538	PASS

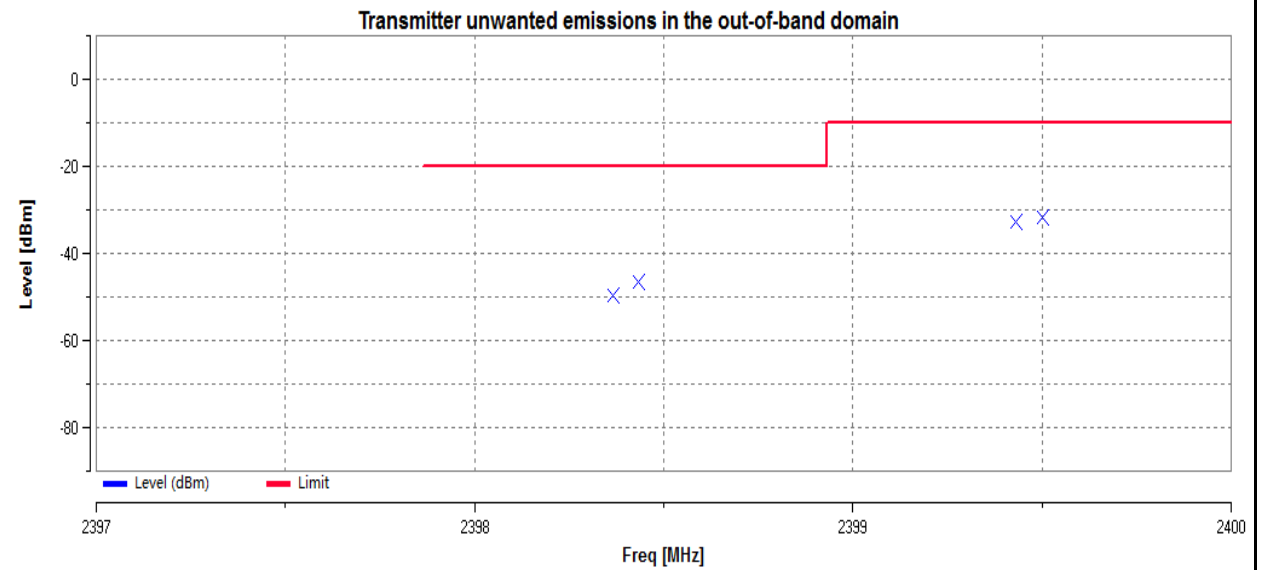


4.Transmitter unwanted emissions in the out-of-band domain

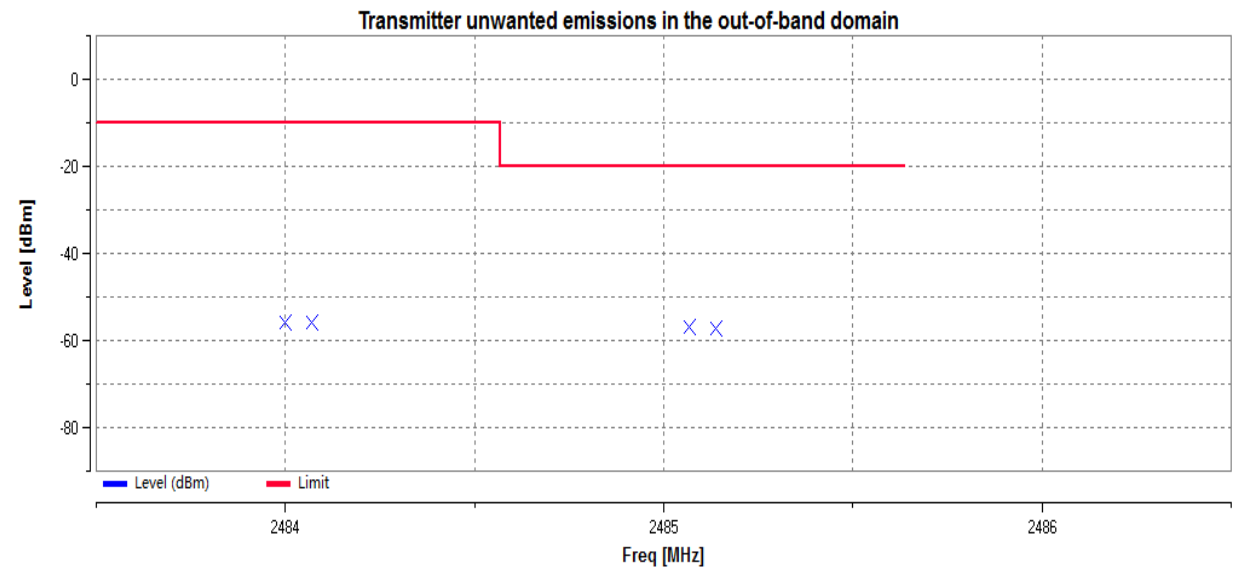
Test Condition	Test Mode	Test Channel	Ant	Freq [MHz]	Result [dBm]	Limit [dBm]	Verdict
TNVN	BLE	2402	Ant1	2398.364	-49.81	<=-20	PASS
TNVN	BLE	2402	Ant1	2398.432	-46.68	<=-20	PASS
TNVN	BLE	2402	Ant1	2399.432	-32.86	<=-10	PASS
TNVN	BLE	2402	Ant1	2399.500	-31.70	<=-10	PASS
TNVN	BLE	2402	Ant1	2484.000	-55.83	<=-10	PASS
TNVN	BLE	2402	Ant1	2484.068	-56.01	<=-10	PASS
TNVN	BLE	2402	Ant1	2485.068	-57.05	<=-20	PASS

TNVN	BLE	2402	Ant1	2485.136	-57.30	<=-20	PASS
TNVN	BLE	2480	Ant1	2398.348	-56.79	<=-20	PASS
TNVN	BLE	2480	Ant1	2398.424	-54.61	<=-20	PASS
TNVN	BLE	2480	Ant1	2399.424	-54.80	<=-10	PASS
TNVN	BLE	2480	Ant1	2399.500	-55.29	<=-10	PASS
TNVN	BLE	2480	Ant1	2484.000	-47.20	<=-10	PASS
TNVN	BLE	2480	Ant1	2484.076	-47.66	<=-10	PASS
TNVN	BLE	2480	Ant1	2485.076	-45.55	<=-20	PASS
TNVN	BLE	2480	Ant1	2485.152	-37.53	<=-20	PASS

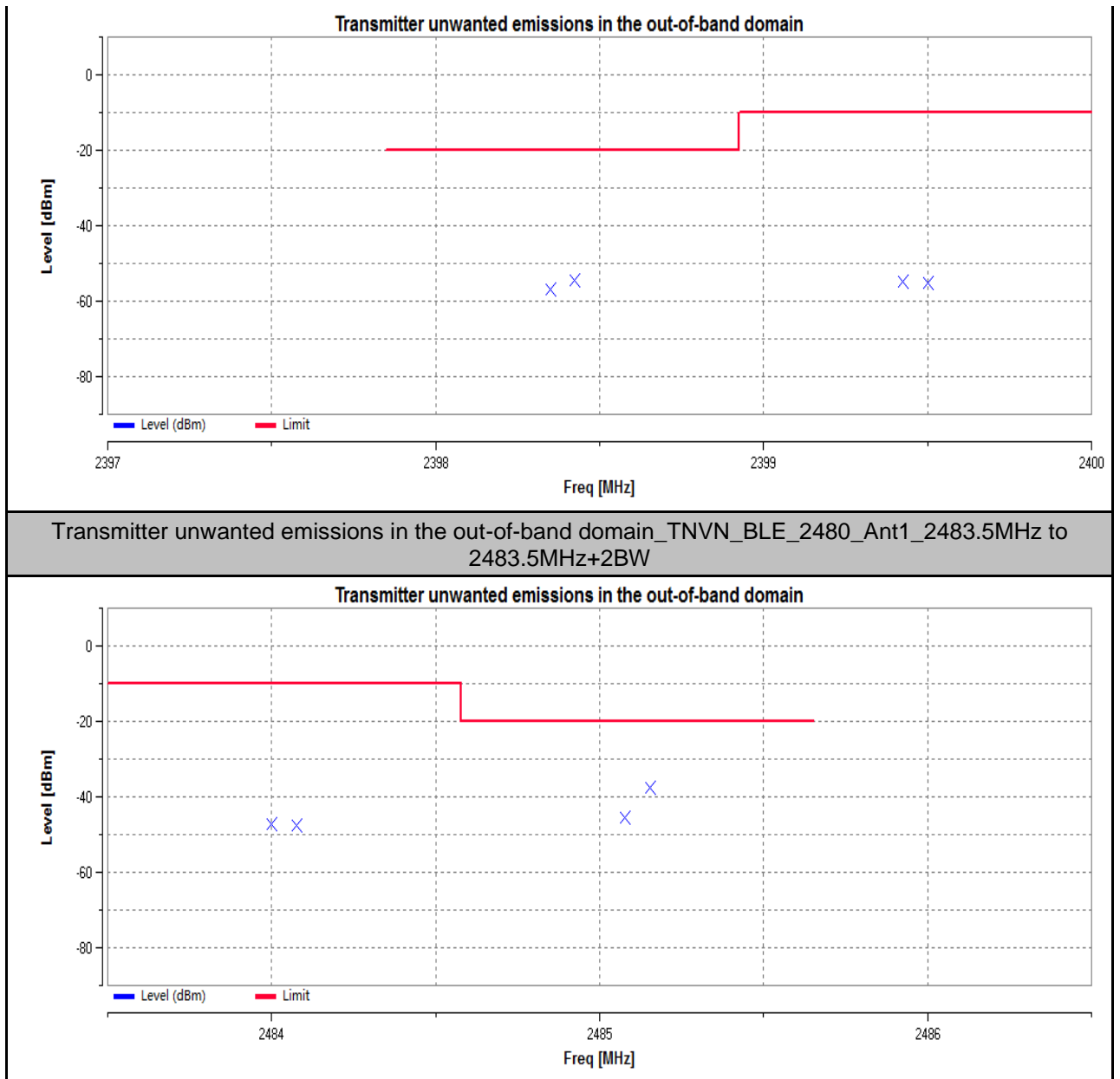
Transmitter unwanted emissions in the out-of-band domain_TNVN_BLE_2402_Ant1_2400MHz-2BW to 2400MHz



Transmitter unwanted emissions in the out-of-band domain_TNVN_BLE_2402_Ant1_2483.5MHz to 2483.5MHz+2BW



Transmitter unwanted emissions in the out-of-band domain_TNVN_BLE_2480_Ant1_2400MHz-2BW to 2400MHz

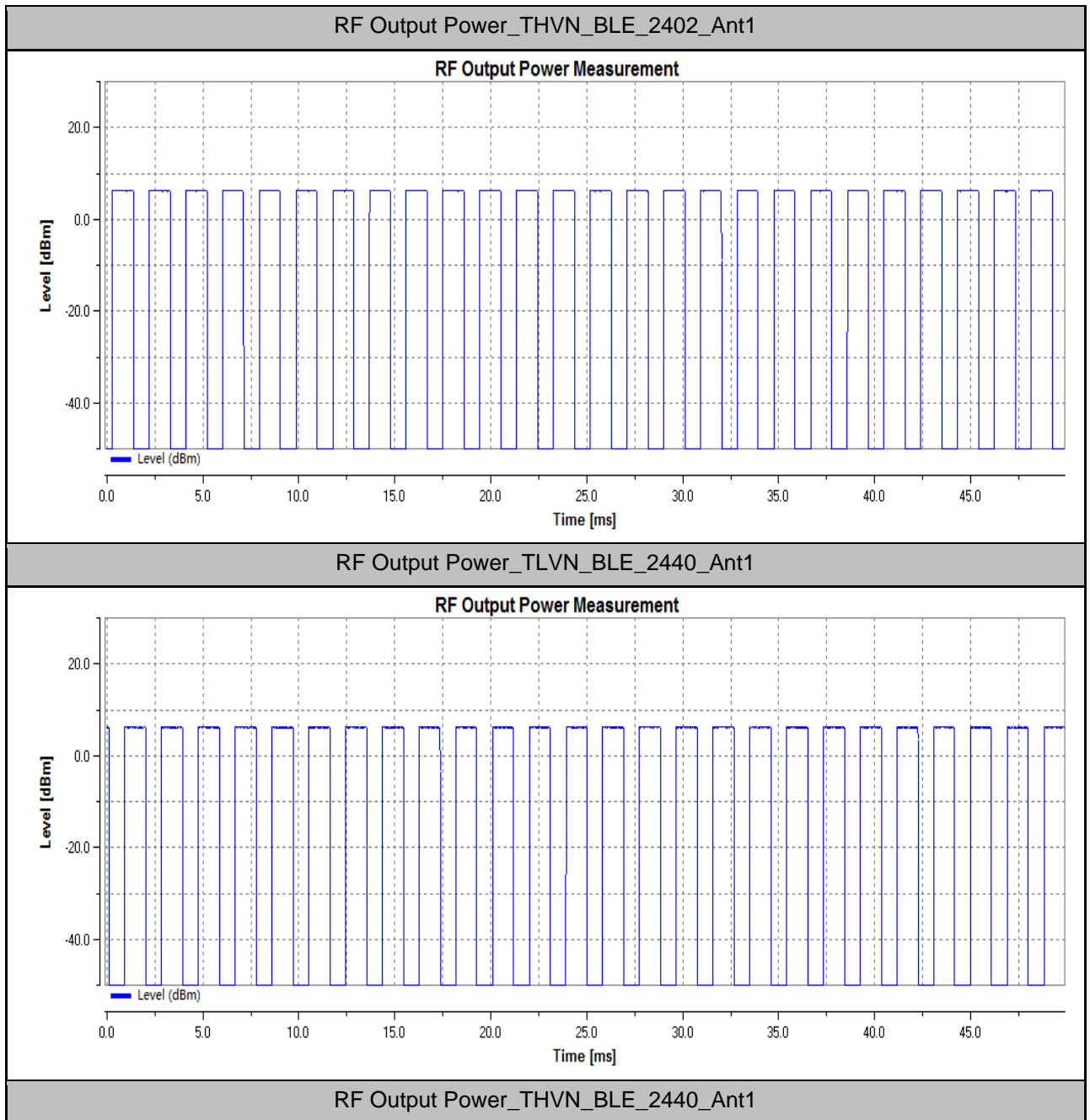


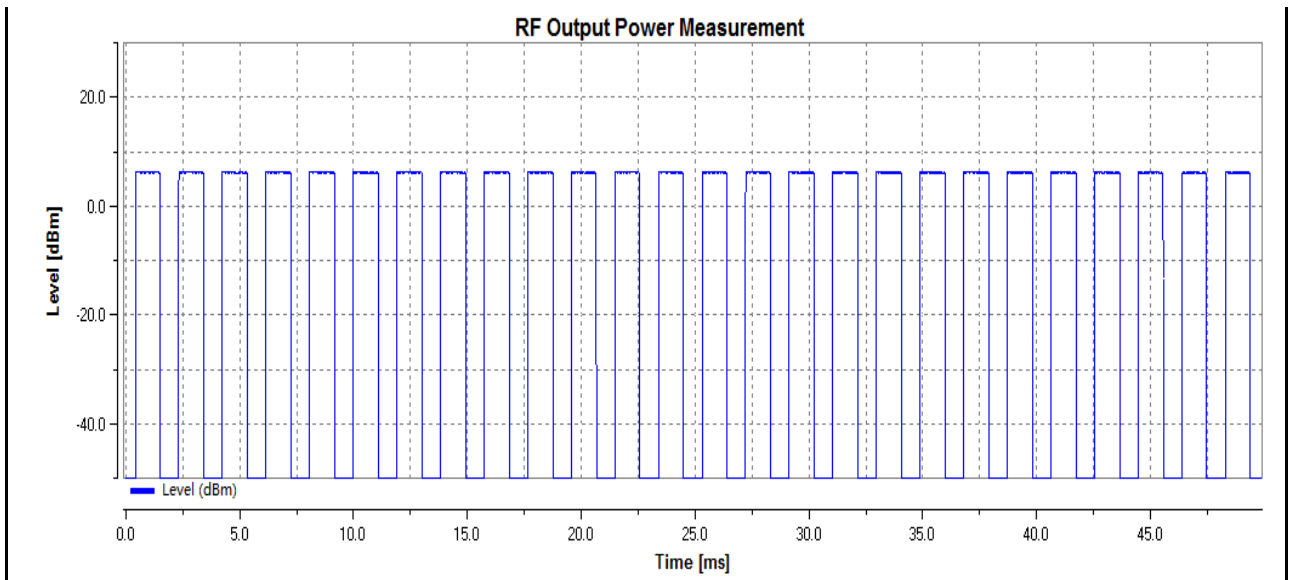
5. Receiver Blocking

Test Condition	Test Mode	Test Channel	Ant	Wanted signal Level[dBm]	Freq [MHz]	CW Level [dBm]	PER	Limit [%]	Verdict
TNVN	BLE	2402	Ant1	-68.71	2380	-34	0.25%	<=10	PASS
TNVN	BLE	2402	Ant1	-68.71	2504	-34	1.20%	<=10	PASS
TNVN	BLE	2402	Ant1	-68.71	2300	-34	1.20%	<=10	PASS
TNVN	BLE	2402	Ant1	-68.71	2584	-34	0.41%	<=10	PASS
TNVN	BLE	2480	Ant1	-68.68	2380	-34	1.15%	<=10	PASS
TNVN	BLE	2480	Ant1	-68.68	2504	-34	0.38%	<=10	PASS
TNVN	BLE	2480	Ant1	-68.68	2300	-34	0.33%	<=10	PASS
TNVN	BLE	2480	Ant1	-68.68	2584	-34	0.64%	<=10	PASS

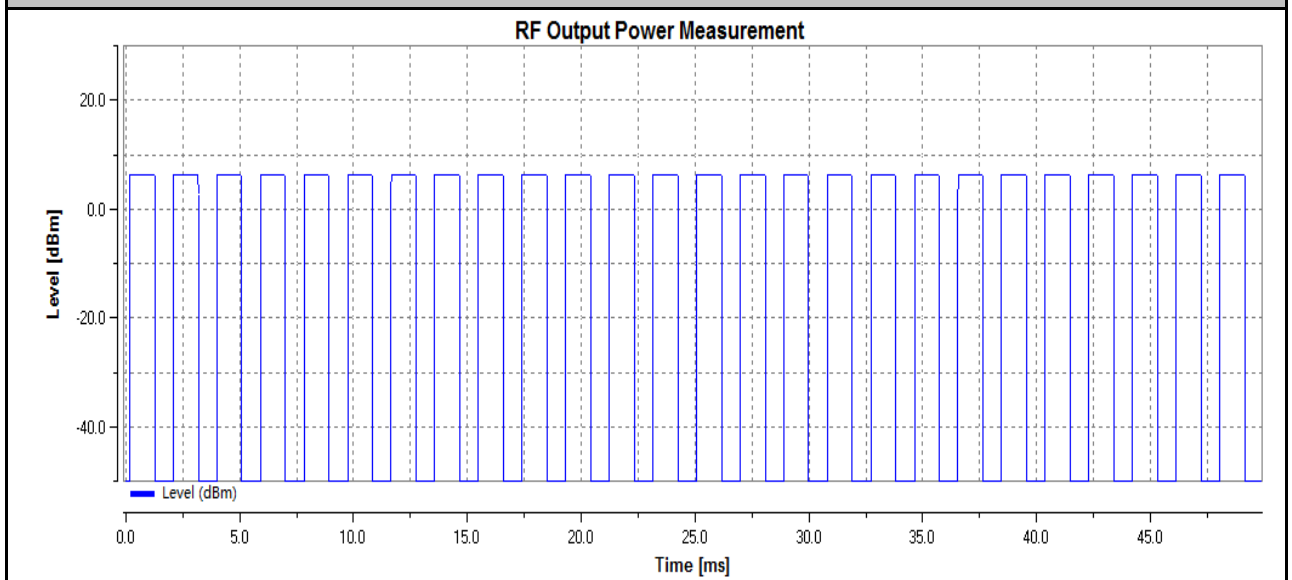
GFSK(2Mbps)**1.RF Output Power**

Test Condition	Test Mode	Test Channel	Ant	Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
THVN	BLE	2402	Ant1	6.15	7.93	<=20	PASS
TLVN	BLE	2440	Ant1	6.14	7.92	<=20	PASS
THVN	BLE	2440	Ant1	6.14	7.92	<=20	PASS
TLVN	BLE	2480	Ant1	6.21	7.99	<=20	PASS
TLVN	BLE	2402	Ant1	6.15	7.93	<=20	PASS
THVN	BLE	2480	Ant1	6.21	7.99	<=20	PASS
TNVN	BLE	2402	Ant1	6.14	7.92	<=20	PASS
TNVN	BLE	2440	Ant1	6.13	7.91	<=20	PASS
TNVN	BLE	2480	Ant1	6.21	7.99	<=20	PASS

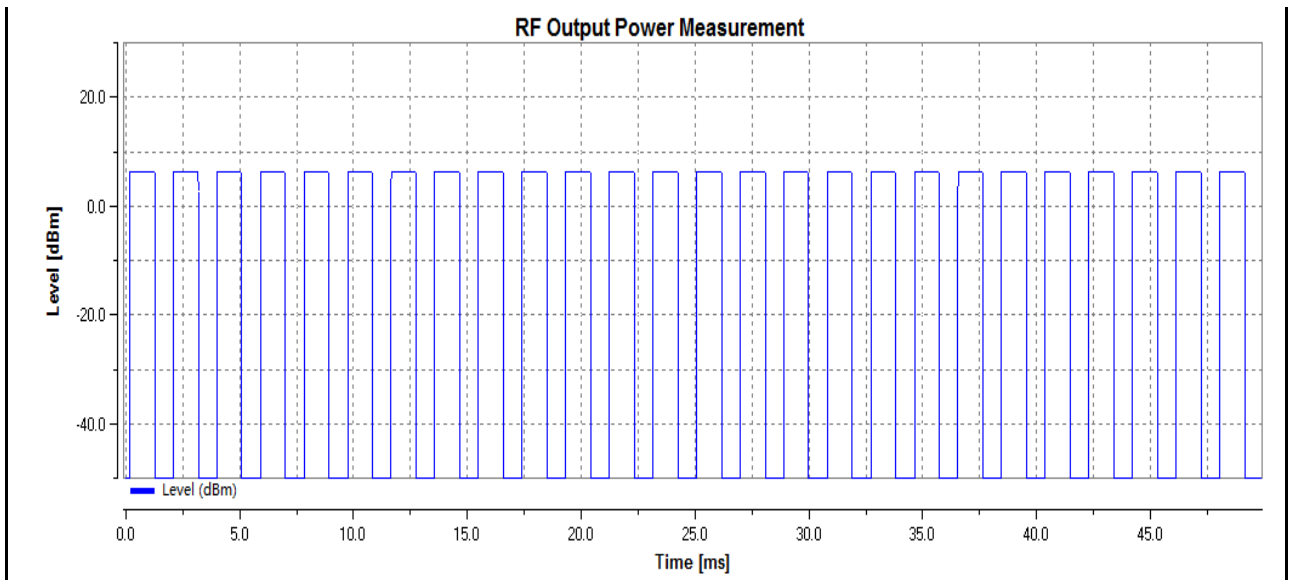




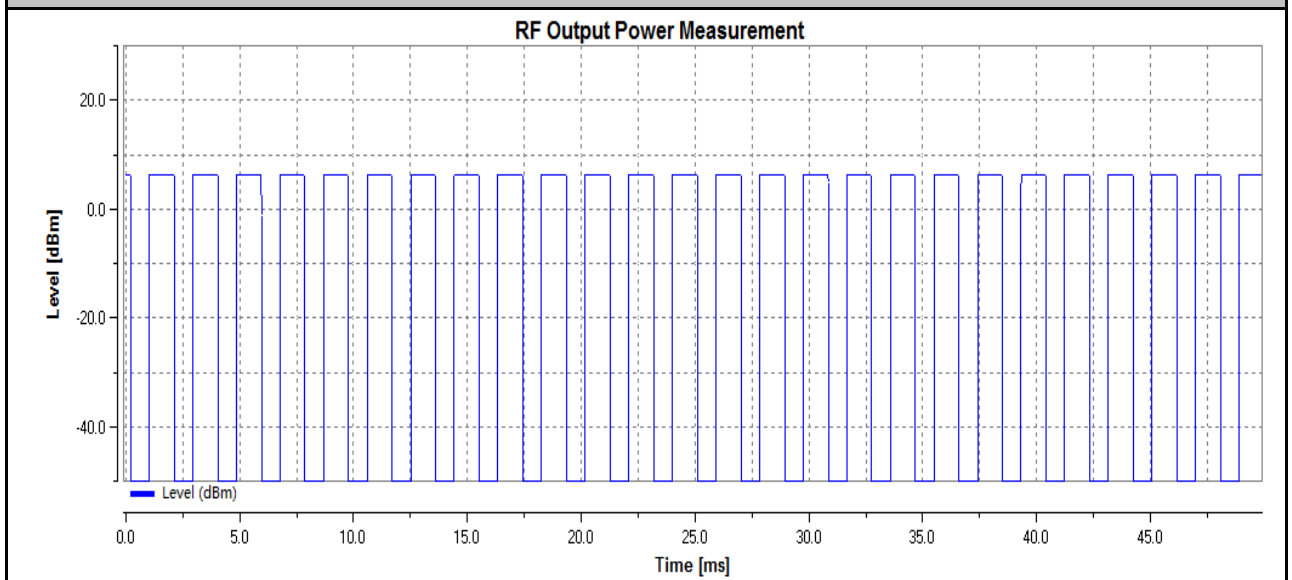
RF Output Power_TLVN_BLE_2480_Ant1



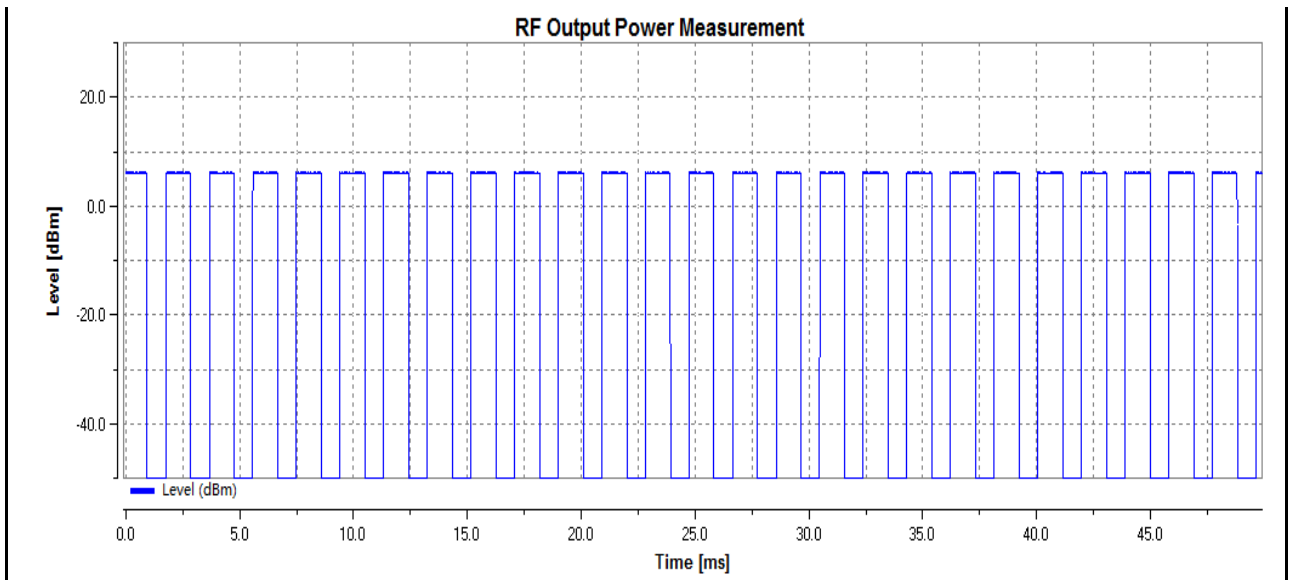
RF Output Power_TLVN_BLE_2402_Ant1



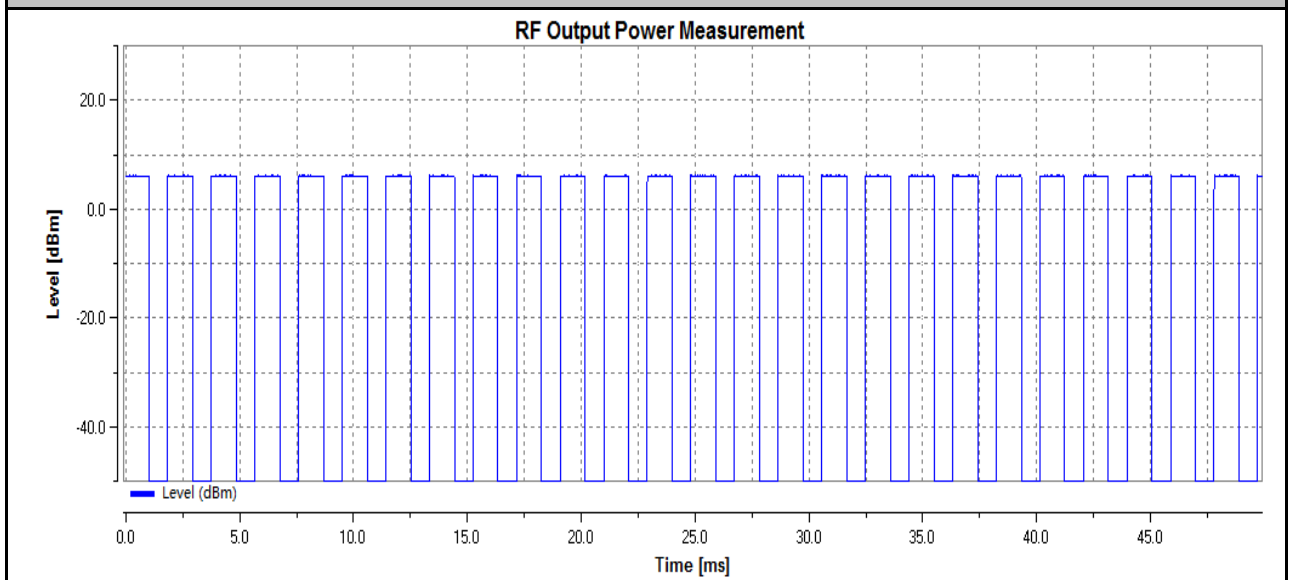
RF Output Power_THVN_BLE_2480_Ant1



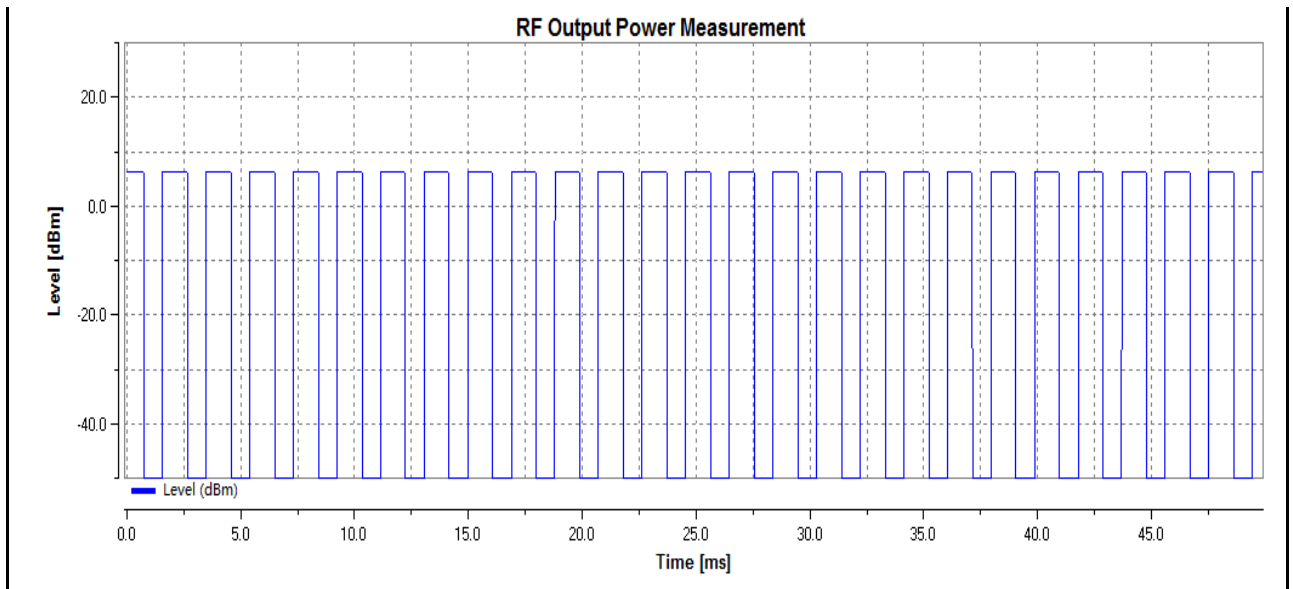
RF Output Power_TNVN_BLE_2402_Ant1



RF Output Power_TNVN_BLE_2440_Ant1



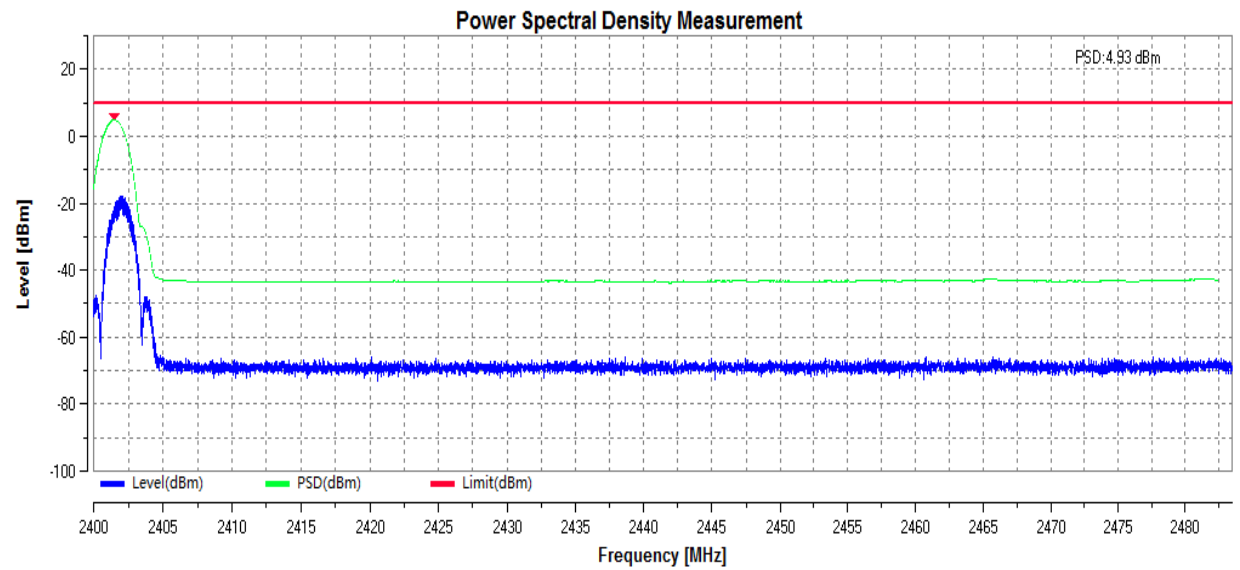
RF Output Power_TNVN_BLE_2480_Ant1



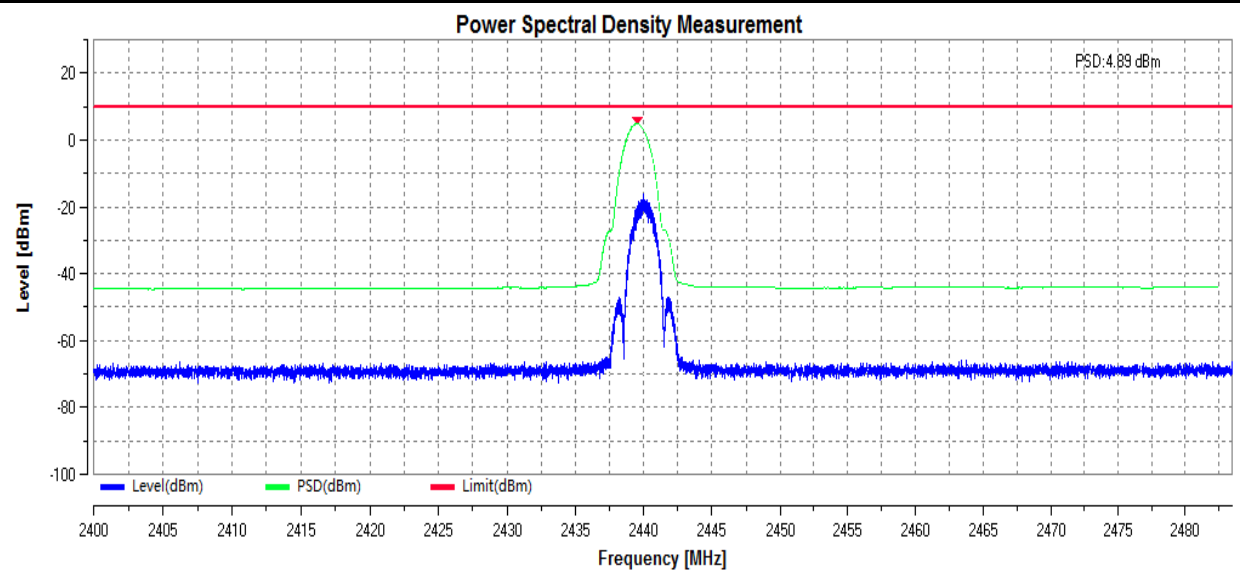
2.Power Spectral Density

Test Condition	Test Mode	Test Channel	Ant	PSD [dBm]	Limit [dBm]	Verdict
TNVN	BLE	2402	Ant1	4.93	≤ 10	PASS
TNVN	BLE	2440	Ant1	4.89	≤ 10	PASS
TNVN	BLE	2480	Ant1	4.96	≤ 10	PASS

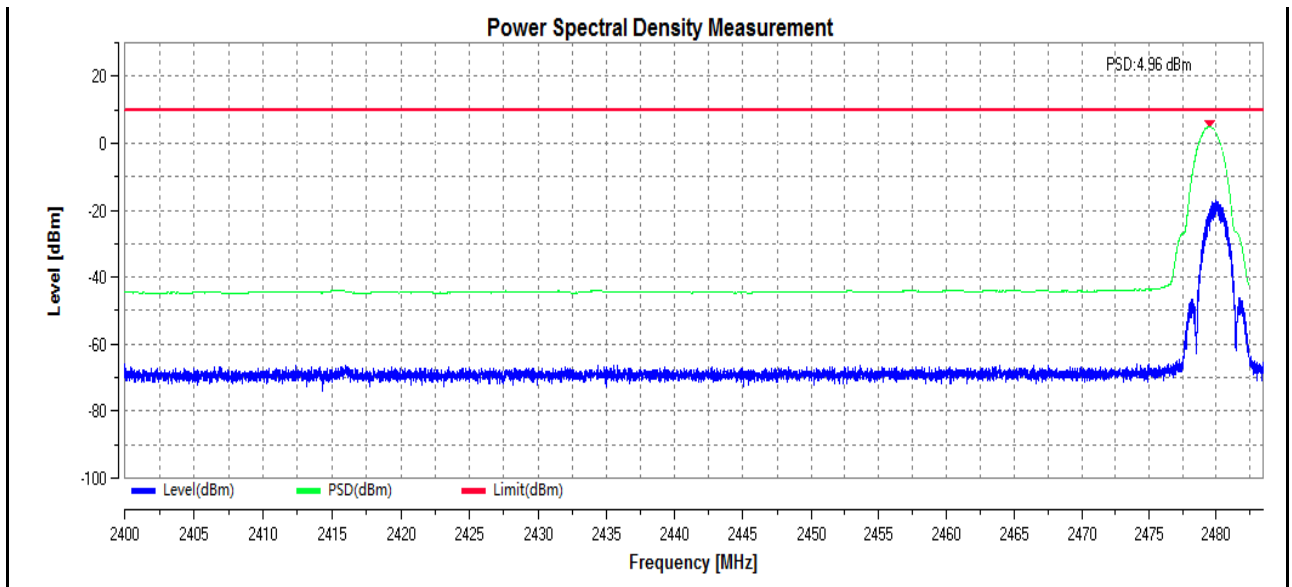
Power Spectral Density_TNVN_BLE_2402_Ant1



Power Spectral Density_TNVN_BLE_2440_Ant1

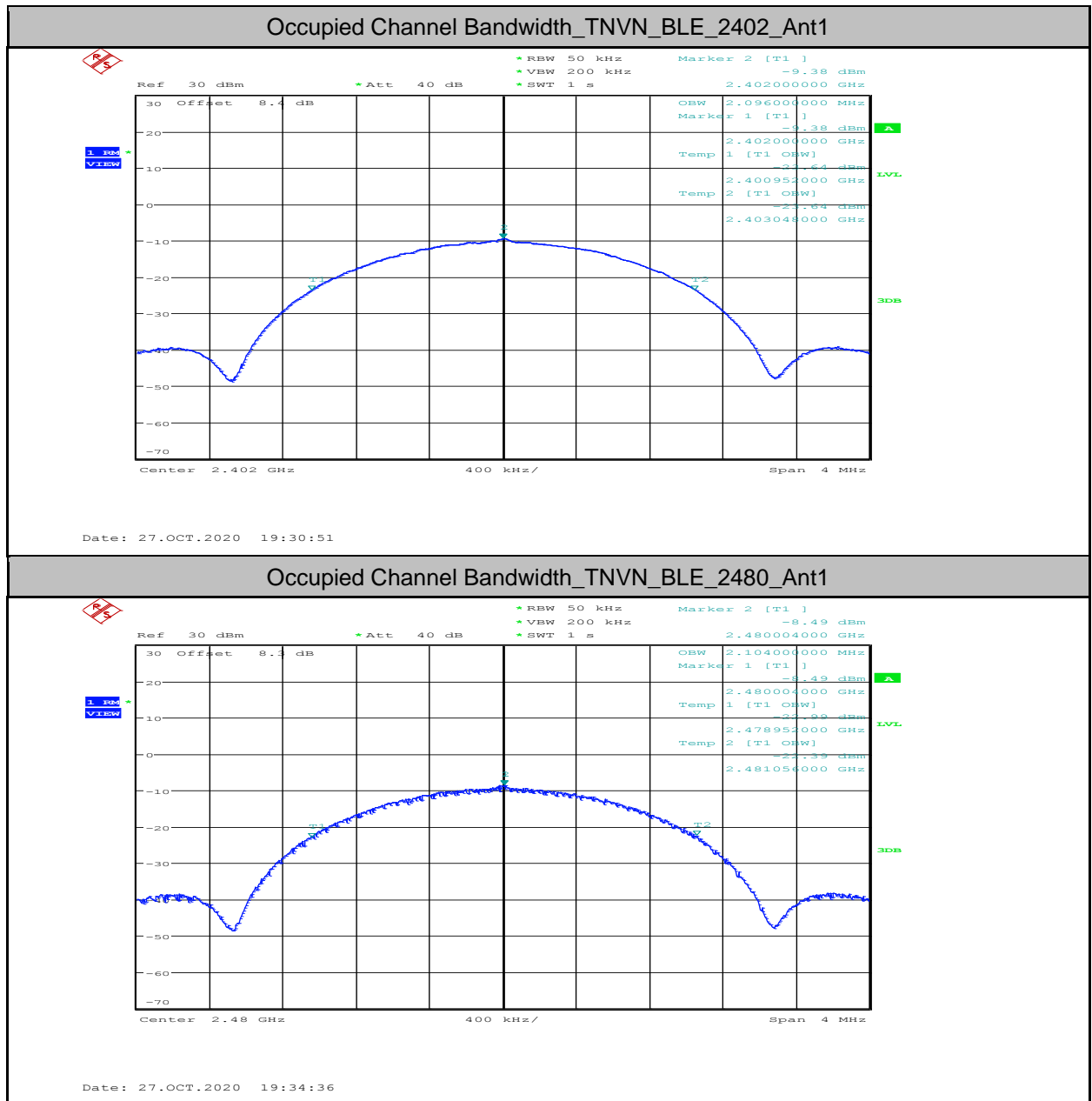


Power Spectral Density_TNVN_BLE_2480_Ant1



3.Occupied Channel Bandwidth

Test Condition	Test Mode	Test Channel	Ant	OBW [MHz]	FL OBW [MHz]	FH OBW [MHz]	Verdict
TNVN	BLE	2402	Ant1	2.096	2400.952	---	PASS
TNVN	BLE	2480	Ant1	2.104	---	2481.052	PASS

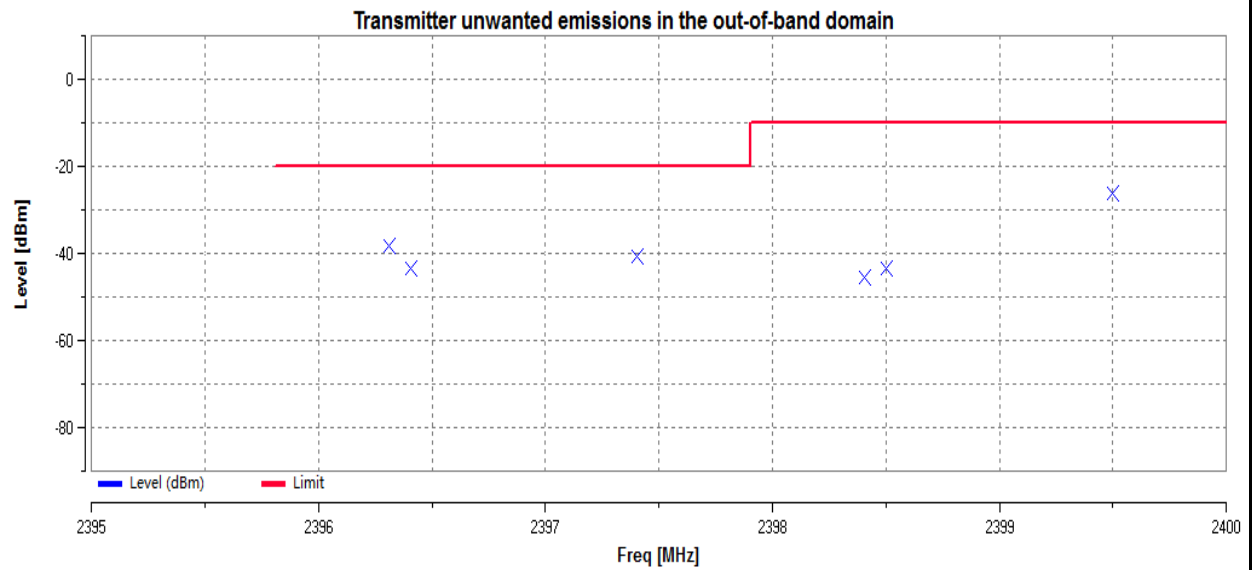


4.Transmitter unwanted emissions in the out-of-band domain

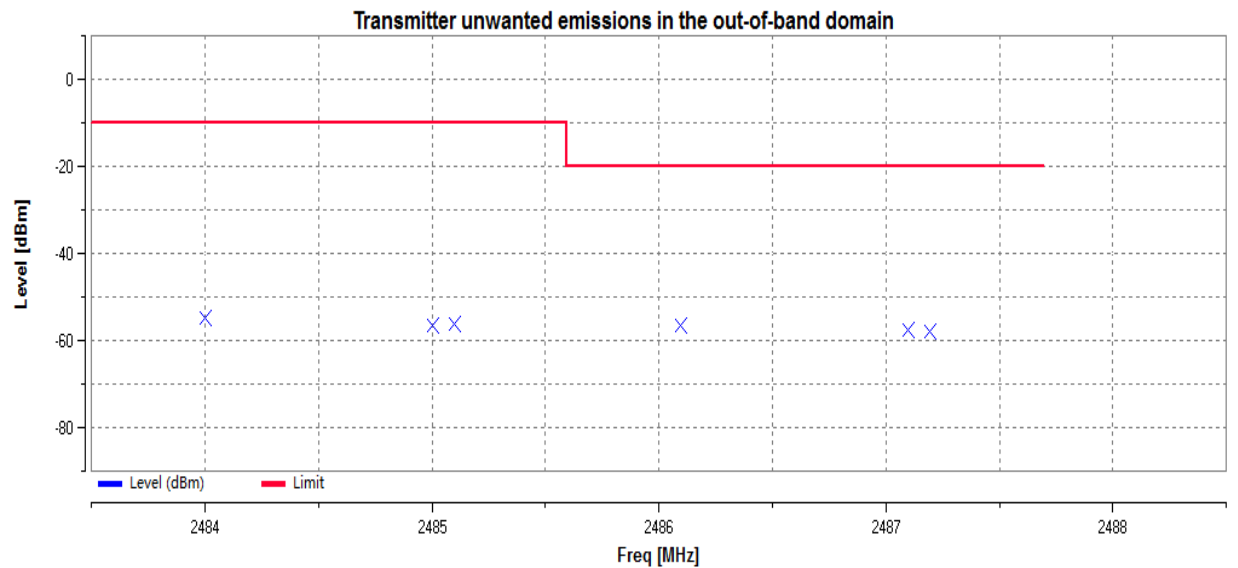
Test Condition	Test Mode	Test Channel	Ant	Freq [MHz]	Result [dBm]	Limit [dBm]	Verdict
TNVN	BLE	2402	Ant1	2396.308	-38.38	<=-20	PASS
TNVN	BLE	2402	Ant1	2396.404	-43.33	<=-20	PASS
TNVN	BLE	2402	Ant1	2397.404	-40.62	<=-20	PASS
TNVN	BLE	2402	Ant1	2398.404	-45.50	<=-10	PASS
TNVN	BLE	2402	Ant1	2398.500	-43.55	<=-10	PASS
TNVN	BLE	2402	Ant1	2399.500	-26.27	<=-10	PASS
TNVN	BLE	2402	Ant1	2484.000	-54.87	<=-10	PASS

TNVN	BLE	2402	Ant1	2485.000	-56.61	<=-10	PASS
TNVN	BLE	2402	Ant1	2485.096	-56.25	<=-10	PASS
TNVN	BLE	2402	Ant1	2486.096	-56.48	<=-20	PASS
TNVN	BLE	2402	Ant1	2487.096	-57.42	<=-20	PASS
TNVN	BLE	2402	Ant1	2487.192	-58.03	<=-20	PASS
TNVN	BLE	2480	Ant1	2396.292	-55.14	<=-20	PASS
TNVN	BLE	2480	Ant1	2396.396	-54.05	<=-20	PASS
TNVN	BLE	2480	Ant1	2397.396	-56.68	<=-20	PASS
TNVN	BLE	2480	Ant1	2398.396	-57.83	<=-10	PASS
TNVN	BLE	2480	Ant1	2398.500	-55.60	<=-10	PASS
TNVN	BLE	2480	Ant1	2399.500	-55.22	<=-10	PASS
TNVN	BLE	2480	Ant1	2484.000	-43.88	<=-10	PASS
TNVN	BLE	2480	Ant1	2485.000	-41.52	<=-10	PASS
TNVN	BLE	2480	Ant1	2485.104	-41.22	<=-10	PASS
TNVN	BLE	2480	Ant1	2486.104	-46.29	<=-20	PASS
TNVN	BLE	2480	Ant1	2487.104	-45.41	<=-20	PASS
TNVN	BLE	2480	Ant1	2487.208	-39.73	<=-20	PASS

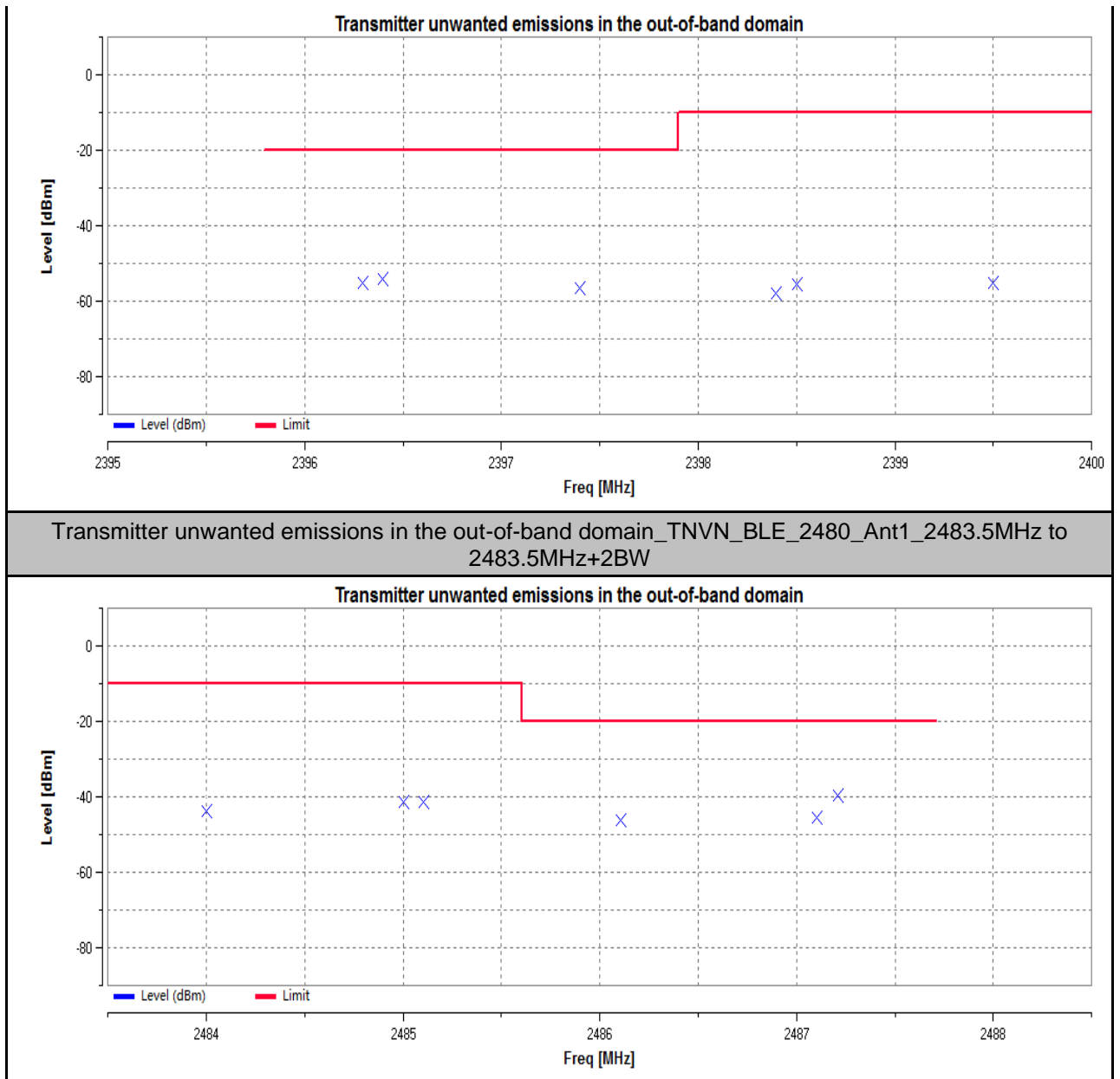
Transmitter unwanted emissions in the out-of-band domain_TNVN_BLE_2402_Ant1_2400MHz-2BW to 2400MHz



Transmitter unwanted emissions in the out-of-band domain_TNVN_BLE_2402_Ant1_2483.5MHz to 2483.5MHz+2BW



Transmitter unwanted emissions in the out-of-band domain_TNVN_BLE_2480_Ant1_2400MHz-2BW to 2400MHz



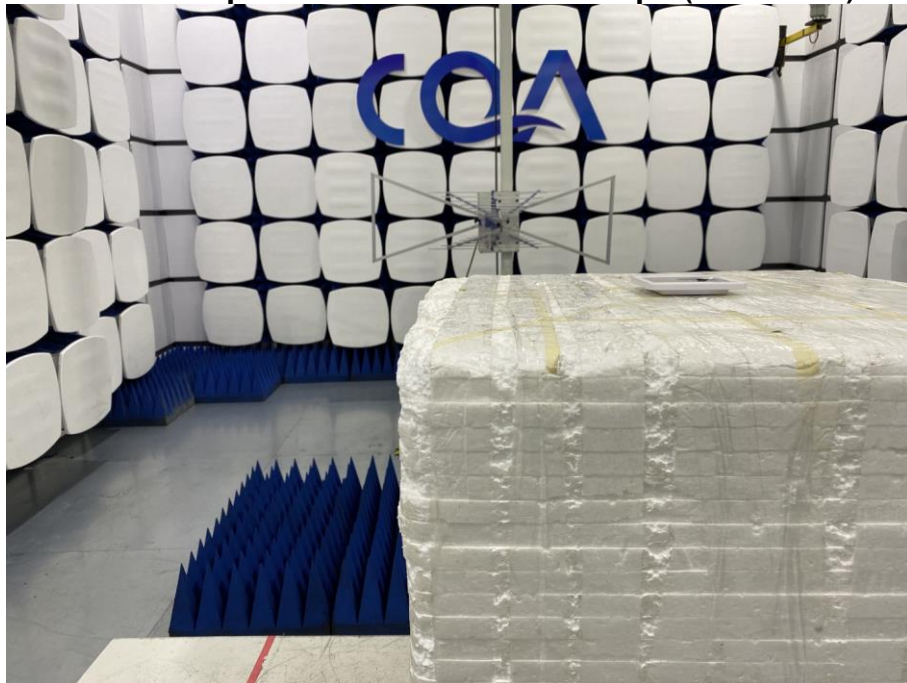
5. Receiver Blocking

Test Condition	Test Mode	Test Channel	Ant	Wanted signal Level[dBm]	Freq [MHz]	CW Level [dBm]	PER	Limit [%]	Verdict
TNVN	BLE	2402	Ant1	-65.79	2380	-34	0.50%	<=10	PASS
TNVN	BLE	2402	Ant1	-65.79	2504	-34	0.20%	<=10	PASS
TNVN	BLE	2402	Ant1	-65.79	2300	-34	0.42%	<=10	PASS
TNVN	BLE	2402	Ant1	-65.79	2584	-34	0.46%	<=10	PASS
TNVN	BLE	2480	Ant1	-65.77	2380	-34	0.90%	<=10	PASS
TNVN	BLE	2480	Ant1	-65.77	2504	-34	1.14%	<=10	PASS
TNVN	BLE	2480	Ant1	-65.77	2300	-34	0.57%	<=10	PASS
TNVN	BLE	2480	Ant1	-65.77	2584	-34	0.42%	<=10	PASS

PHOTOGRAPHS OF TEST SETUP

Test Model No.: STag42

Radiated spurious emission Test Setup-1(Below 1GHz)



Radiated spurious emission Test Setup-2(Above 1GHz)



PHOTOGRAPHS OF EUT Constructional Details

Refer to APPENDIX 2 PHOTOGRAPHS OF EUT for CQASZ20201001270E-01.

*** End of Report ***