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Report Template Version: V03
Revision Issue Date: Mar.1st,2017

Test Report

Report No.: CQASZ20190400303E-02

Applicant:

Address of Applicant:

Manufacturer:

Address of Manufacturer:

Factory:

Address of Factory:

Equipment Under Test (EUT):

EUT Name: Smart Bracelet

All Model No.:

Test Model No.:

Trade mark: N/A

Standards: EN 300 328 V2.1.1 (2016-11)

Date of Test: 2019-04-30 to 2019-05-08

Date of Issue: 2019-05-08

Test Result: **PASS ***

Tested By: Martin Lee

(Martin Lee)

Reviewed By: Aaron Ma

(Aaron Ma)

Approved By:

(Jack Ai)

SHENZHEN HUAXIA TESTING TECHNOLOGY CO., LTD. APPROVED

CE

* In the configuration tested, the EUT complied with the standards specified above.
The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested.

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20190400303E-02	Rev.01	Initial report	2019-05-08

2 Test Summary

Radio Spectrum Matter (RSM) Part				
Transmitter Parameters				
Test Item	**Test Requirement**	**Test Method**	**Limit**	**Result**
RF Output Power	EN 300 328 (2016-11) V2.1.1 Clause 4.3.2.2	EN 300 328 (2016-11) V2.1.1 Clause 5.4.2	Refer clause 4.3.2.2.3	PASS
Power Spectral Density	EN 300 328 (2016-11) V2.1.1 Clause 4.3.2.3	EN 300 328 (2016-11) V2.1.1 Clause 5.4.3	Refer clause 4.3.2.3.3	PASS
Duty Cycle, Tx-sequence, Tx-gap	EN 300 328 (2016-11) V2.1.1 Clause 4.3.2.4	EN 300 328 (2016-11) V2.1.1 Clause 5.4.2	Refer clause 4.3.2.4.3	Only for no-adaptive
Medium Utilisation (MU) factor	EN 300 328 (2016-11) V2.1.1 Clause 4.3.2.5	EN 300 328 (2016-11) V2.1.1 Clause 5.4.2	Refer clause 4.3.2.5.3	Only for no-adaptive
Adaptivity	EN 300 328 (2016-11) V2.1.1 Clause 4.3.2.6	EN 300 328 (2016-11) V2.1.1 Clause 5.4.6	Refer clause 4.3.2.6.3.2 and 4.3.2.6.4.2	Only for≥10dBm and adaptive
Occupied Channel Bandwidth	EN 300 328 (2016-11) V2.1.1 Clause 4.3.2.7	EN 300 328 (2016-11) V2.1.1 Clause 5.4.7	Refer clause 4.3.2.7.3	PASS
Transmitter unwanted emissions in the out-of-band domain	EN 300 328 (2016-11) V2.1.1 Clause 4.3.2.8	EN 300 328 (2016-11) V2.1.1 Clause 5.4.8	Refer clause 4.3.2.8.3	PASS
Transmitter unwanted emissions in the spurious domain	EN 300 328 (2016-11) V2.1.1 Clause 4.3.2.9	EN 300 328 (2016-11) V2.1.1 Clause 5.4.9	Refer clause 4.3.2.9.3	PASS
Receiver Parameters				
Receiver spurious emissions	EN 300 328 (2016-11) V2.1.1 Clause 4.3.2.10	EN 300 328 (2016-11) V2.1.1 Clause 5.4.10	Refer clause 4.3.2.10.3	PASS
Receiver Blocking	EN 300 328 (2016-11) V2.1.1 Clause 4.3.2.11	EN 300 328 (2016-11) V2.1.1 Clause 5.4.11	Refer clause 4.3.2.11.3	PASS
Geo-location capability	EN 300 328 (2016-11) V2.1.1 Clause 4.3.2.12	No need Test	No Limit	Only for equipment with geo-location capability

Remark:

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 meansTemperature.

Humid: In this whole report Humid means humidity.

Press: In this whole report Press means Pressure.

N/A: In this whole report not application.

CONTENTS

3 General Information

3.1 Details of Client

Applicant:	
Address of Applicant:	
Manufacturer:	
Address of Manufacturer:	
Factory:	
Address of Factory:	

3.2 Datasheet of Equipment Under Test

Product Name:	Smart Bracelet
All Model No.:	
Test Model No.:	G20
Trade Mark:	N/A
Software version:	56
Hardware version:	RH122V03
Bluetooth Version:	V4.0
Type of Modulation:	GFSK
Transfer Rate:	1Mbps
Operating Frequency:	2402MHz to 2480MHz
Channel Number:	40
Channels Step:	2MHz
Sample Type:	Portable production
Test Software of EUT:	RTL8762C_RFTestTool_v1.0.1.1 (manufacturer declare)
Antenna Type:	PCB antenna
Antenna Gain:	0dBi
Power Supply:	lithium battery:DC3.7V, Charge by USB

Note:

All model: G18, G20, G20Plus, G21, G22, G26, G28, G29, G30, G30Pro, G100, G100Plus

Only the model G20 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.

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	10	2422MHz	20	2442MHz	30	2462MHz
1	2404MHz	11	2424MHz	21	2444MHz	31	2464MHz
2	2406MHz	12	2426MHz	22	2446MHz	32	2466MHz
3	2408MHz	13	2428MHz	23	2448MHz	33	2468MHz
4	2410MHz	14	2430MHz	24	2450MHz	34	2470MHz
5	2412MHz	15	2432MHz	25	2452MHz	35	2472MHz
6	2414MHz	16	2434MHz	26	2454MHz	36	2474MHz
7	2416MHz	17	2436MHz	27	2456MHz	37	2476MHz
8	2418MHz	18	2438MHz	28	2458MHz	38	2478MHz
9	2420MHz	19	2440MHz	29	2460MHz	39	2480MHz

Using test software was control EUT work in continuous transmitter and receiver mode.and select test channel as below:

Channel	Frequency
The lowest channel (CH0)	2402MHz
The middle channel (CH19)	2440MHz
The highest channel (CH39)	2480MHz

3.3 Test Environment

Environment Parameter	Selected Values During Tests	
Relative Humidity	Ambient	
Value	Temperature(℃)	Voltage(V)
TNVN	25	DC3.7
TLVN	-10	DC3.7
THVN	45	DC3.7

Note:

1) The EUT just work in such extreme temperature of -10℃~+45℃, so here the EUT is tested in the temperature of -10℃~+45℃.

2) VN: Normal Voltage
TN: Normal Temperature
TL: Low Extreme Test Temperature
TH: High Extreme Test Temperature

3.4 Test Location

Company: Shenzhen Huaxia Testing Technology Co., Ltd.

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

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

No.	Item	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	time	0.6 %.
14	Frequency Error	5.5 Hz

4 Equipment List

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Horn Antenna	R&S	HF906	CQA-012	2018/9/26	2020/9/25
Bilog Antenna	R&S	HL562	CQA-011	2018/9/26	2020/9/25
EMI Test Receiver	R&S	ESR7	CQA-005	2018/10/28	2019/10/27
Spectrum analyzer	R&S	FSU26	CQA-038	2018/10/28	2019/10/27
Preamplifier	MITEQ	AFS4-00010300-18-10P-4	CQA-035	2018/9/26	2019/9/25
Preamplifier	MITEQ	AMF-6D-02001800-29-20P	CQA-036	2018/11/2	2019/11/1
Universal Radio Communication Tester	Rohde & Schwarz	CMU200	CQA-015	2018/9/26	2019/9/25
BLUETOOTH TESTER	Rohde & Schwarz	CBT	CQA-023	2018/9/26	2019/9/25
Universal Radio Communication Tester	Rohde & Schwarz	CMW500	CQA-022	2018/9/26	2019/9/25
high-low temperature chamber	Auchno	OJN-9606	CQA-CB2	2018/9/26	2019/9/25
Signal generator	ANRITSU	MG3692B	CQA-019	2018/9/26	2019/9/25
Signal generator	R&S	SME06	CQA-024	2018/9/26	2019/9/25
Vector signal generator	R&S	SMBV100A	CQA-039	2018/9/26	2019/9/25
DC power	KEYSIGHT	E3631A	CQA-028	2018/9/26	2019/9/25
Power probe	KEYSIGHT	U2021XA	CQA-030	2018/9/26	2019/9/25
RF Control Unit	Tonsced	JS0806-2	CQA-57	2018/9/26	2019/9/25
Coaxial Cable (Above 1GHz)	CQA	N/A	C019	2018/9/26	2019/9/25
Coaxial Cable (Below 1GHz)	CQA	N/A	C020	2018/9/26	2019/9/25
RF Cable (9KHz~40GHz)	CQA	N/A	C005	2018/9/26	2019/9/25

5 Radio Technical Specification in EN 300 328 V2.1.1

5.1 Transmitter Requirements

5.1.1 RF Output Power

Test Requirement: EN 300 328 Clause 4.3.2.2

Test Method: EN 300 328 Clause 5.4.2

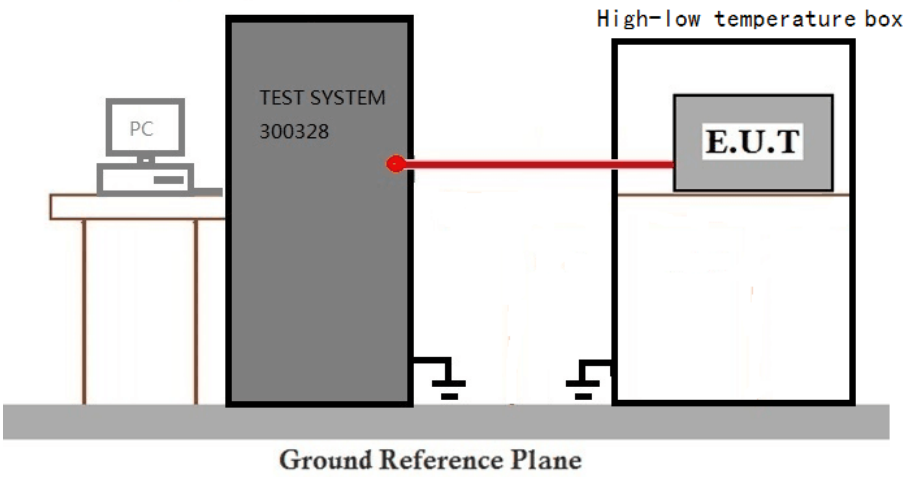
EUT Operation:

Ambient: Temp.: 23.0 °C Humid.: 52 % Press.: 1020 mbar

Test Status: 1) Keep the EUT operating at the lowest, middle and the highest frequencies.

2) The measurements performed at both normalenvironmental conditions and at the extremes of the operating temperature range.

Test Setup:



Limit: 20dBm/(100mw) (e.i.r.p)

Test Data: Refer to Appendix A_RF Output Power

Remark: Cable loss and antenna gain was combined in the calculated result.

5.1.2 Power Spectral Density

Test Requirement: EN 300 328 Clause 4.3.2.3

Test Method: EN 300 328 Clause 5.4.3

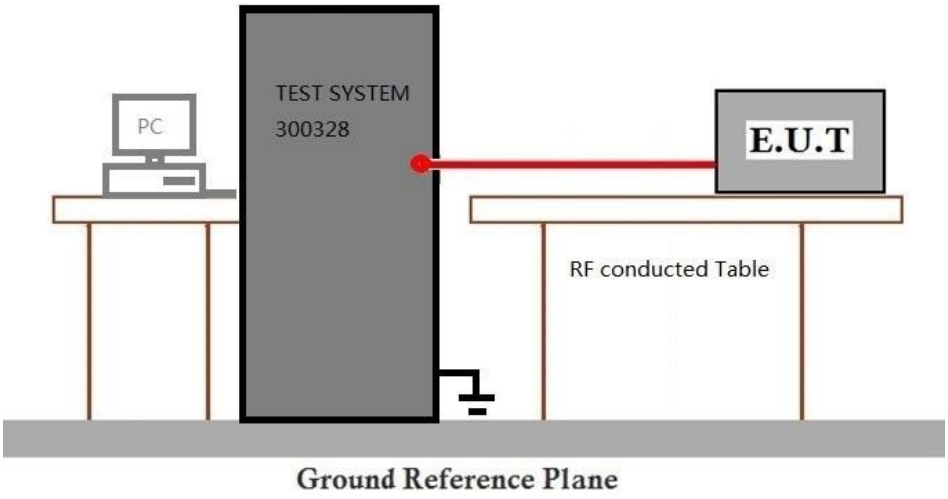
EUT Operation:

Ambient: Temp.: 23.0 °C Humid.: 52 % Press.: 1020 mbar

Test Status: 1) Keep the EUT operating at the lowest, middle and the highest frequencies.

2) Test EUT in normal conditions.

Test Setup:



Limit: ≤10dBm

Test Data: Refer to Appendix A_ Power Spectral Density

Remark: Cable loss and antenna gain was combined in the calculated result.

5.1.3 Occupied Channel Bandwidth

Test Requirement: EN 300 328 Clause 4.3.2.7

Test Method: EN 300 328 Clause 5.4.7

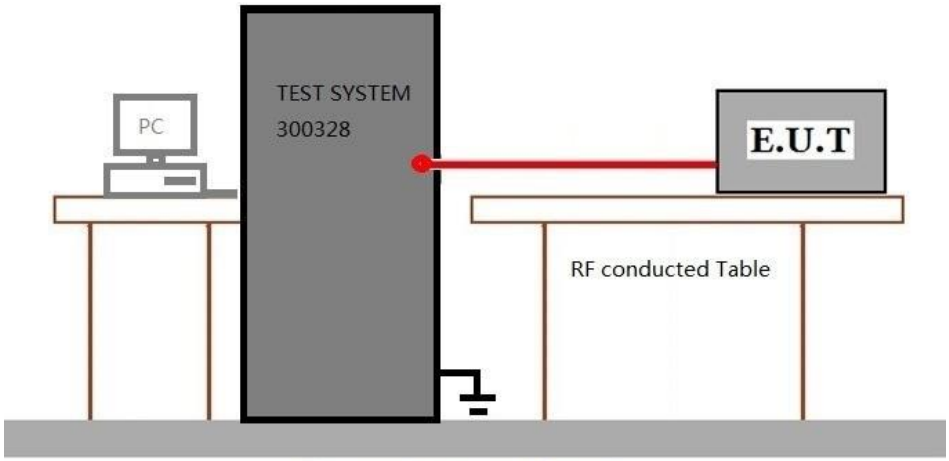
EUT Operation:

Ambient: Temp.: 23.0 °C Humid.: 52 % Press.: 1020 mbar

Test Status: 1) Keep the EUT operating at the lowest and the highest frequencies.

2) Test EUT in normal conditions.

Test Setup :



Limit: The Occupied Channel Bandwidth shall fall completely within the band given in clause 1.

In addition,for non-adaptive systems using wide band modulations other FHSS and with e.i.r.p greater than 10 dBm, the occupied channel bandwidth shall be less than 20MHz.

(99 % of the power of the signal)

Test Data: Refer to Appendix A_ Occupied Channel Bandwidth

Remark: Cable loss and antenna gain was combined in the calculated result.

5.1.4 Transmitter Unwanted Emissions in The Out-of-Band Domain

Test Requirement: EN 300 328 Clause 4.3.2.8

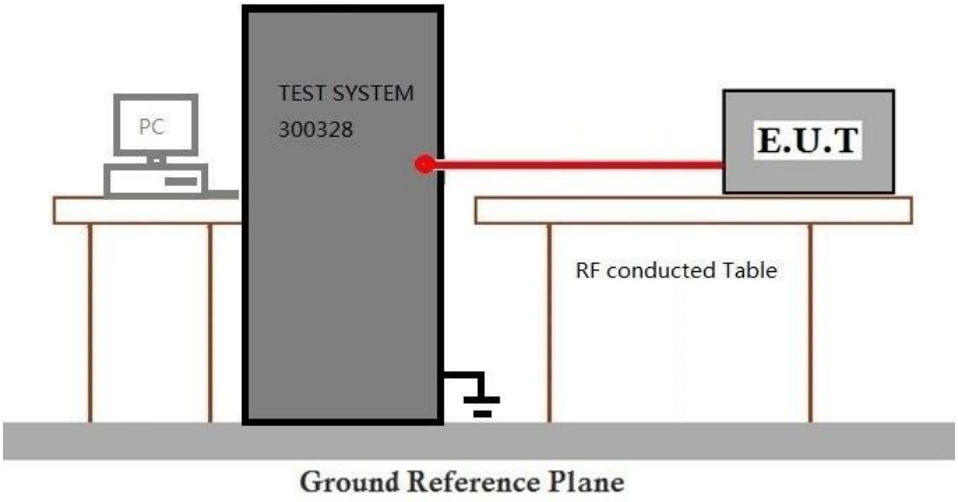
Test Method: EN 300 328 Clause 5.4.8

EUT Operation:

Ambient: Temp.: 23.0 °C Humid.: 52 % Press.: 1020 mbar

Test Status:
1) Keep the EUT operating at the lowest and the highest frequencies.
2) The equipment shall be configured to operate under its worst case situation with respect to output power.
3) Test EUT in normal condition.

Test Setup



Limit:

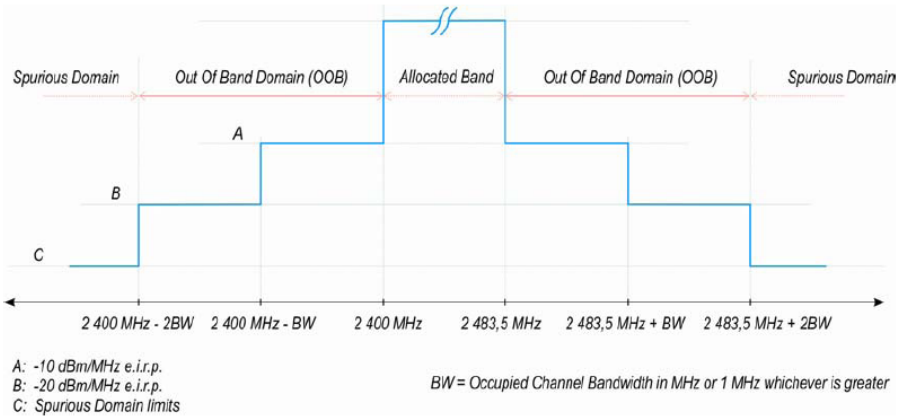


Figure 1: Transmit mask

Test Data: Refer to Appendix A_Transmitter unwanted emissions in the out-of-band domain

Remark: Cable loss and antenna gain was combined in the calculated result.

5.1.5 Transmitter Unwanted Emissions in The Spurious Domain

Test Requirement: EN 300 328 Clause 4.3.2.9

Test Method: EN 300 328 Clause 5.4.9

EUT Operation:

Ambient: Temp.: 23.0 °C Humid.: 52 % Press.: 1020 mbar

Test Status:

1) Through Pre-scan all kinds of modulation and all kinds of rate, the test worst case transmitter rate data mode is recorded in the report .
2) The equipment shall be configured to operate under its worst case situation with respect to output power.
3) Test EUT in normal conditions.

Test Setup

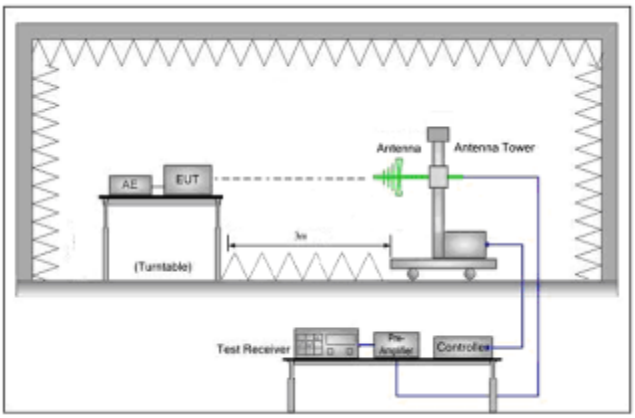


Figure 1. 30MHz to 1GHz

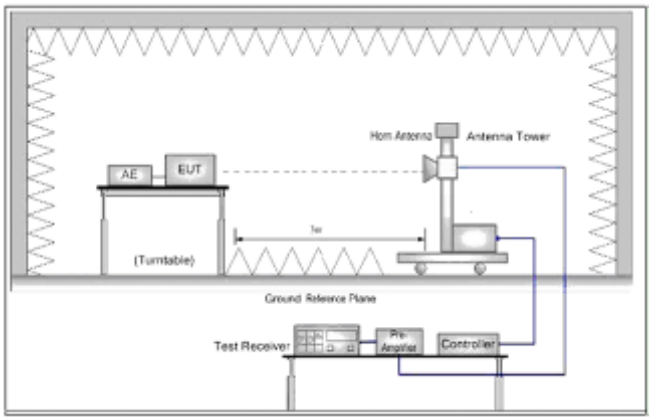


Figure 2. Above 1GHz

Test Procedure:

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.

Below 1GHz test procedure as below:

1) The EUT was powered ON and placed on a table in the 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) Rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.
3) Steps 1) and 2) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.
4) 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.
5) 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 2) is obtained for this set of conditions.
6) The output power into the substitution antenna was then measured.
7) Steps 5) and 6)were repeated with both antennas vertically polarized.
8) Calculate power in dBm by the following formula:

ERP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBd)

where:

Pg is the generator output power into the substitution antenna.

Above 1GHz test procedure as below:

1) Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and receiving antenna is moved from 1m to 2m.
2) Calculate power in dBm by the following formula:

EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi)

EIRP=ERP+2.15dB

where:

Pg is the generator output power into the substitution antenna.

Limit:

Table 1: Transmitter limits for spurious emissions

Frequency range	Maximum power, e.r.p. (≤ 1 GHz) e.i.r.p. (> 1 GHz)	Bandwidth
30 MHz to 47 MHz	-36dBm	100 kHz
47 MHz to 74 MHz	-54 dBm	100 kHz
74 MHz to 87,5 MHz	-36dBm	100 kHz
87,5 MHz to 118 MHz	-54 dBm	100 kHz
118 MHz to 174 MHz	-36dBm	100 kHz
174 MHz to 230 MHz	-54 dBm	100 kHz
230 MHz to 470 MHz	-36dBm	100 kHz
470 MHz to 862 MHz	-54 dBm	100 kHz
862 MHz to 1 GHz	-36dBm	100 kHz
1 GHz to 12,75 GHz	-30dBm	1MHz

Remark: Cable loss and antenna gain was combined in the calculated result.

Test Data

CH Lowest(2402MHz)

Fre. (MHz)	ANT. Pol.	Result (dBm)	Limit	Over	Conclusion
752.26	V	-70.13	-54	-16.13	PASS
744.67	H	-70.93	-54	-16.93	PASS
4804	H	-43.83	-30	-13.83	PASS
4804	V	-42.85	-30	-12.85	PASS
7206	H	-43.57	-30	-13.57	PASS
7206	V	-44.40	-30	-14.40	PASS
9608	H	-44.88	-30	-14.88	PASS
9608	V	-43.36	-30	-13.36	PASS

CH Highest(2480MHz)

Fre. (MHz)	ANT. Pol.	Result (dBm)	Limit	Over	Conclusion
644.41	V	-68.32	-54	-14.32	PASS
642.87	H	-68.21	-54	-14.21	PASS
4960	H	-44.74	-30	-14.74	PASS
4960	V	-42.45	-30	-12.45	PASS
7440	H	-42.44	-30	-12.44	PASS
7440	V	-43.48	-30	-13.48	PASS
9920	H	-44.20	-30	-14.20	PASS
9920	V	-42.71	-30	-12.71	PASS

5.1.6 Receiver Spurious Emissions

Test Requirement: EN 300 328 Clause 4.3.2.10

Test Method: EN 300 328 Clause 5.4.10

EUT Operation:

Ambient: Temp.: 23.0 °C Humid.: 52 % Press.: 1020 mbar

Test Status:

1) Keep the EUT operating at the lowest and the highest frequencies. When this is not possible, the measurement shall be performed during normal operation
2) Testing shall be performed when the equipment is in a receive-only mode.
3) Test EUT in normal conditions.

Test Setup:

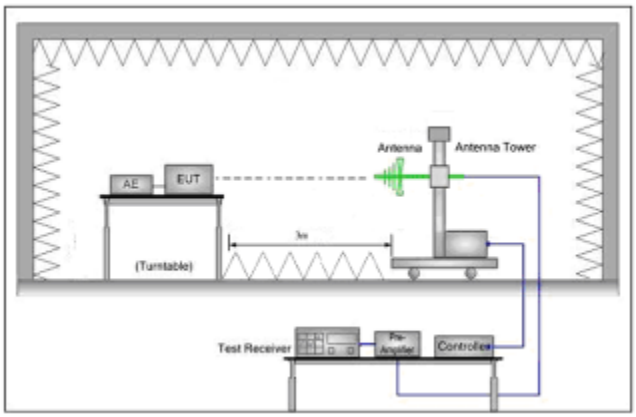


Figure 1. 30MHz to 1GHz

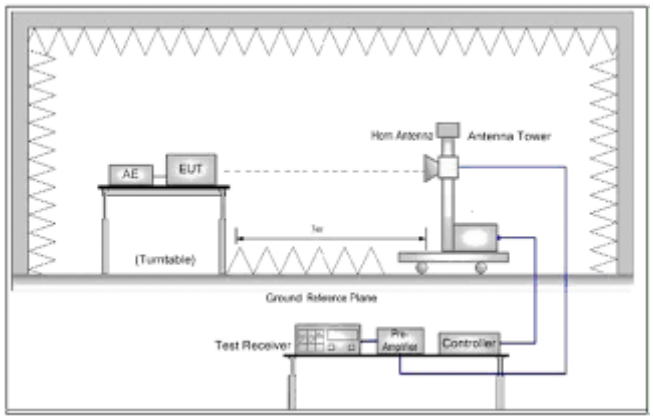


Figure 2. Above 1GHz

Test Procedure:

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.

Below 1GHz test procedure as below:

1) The EUT was powered ON and placed on a table in the chamber. The antenna of the transmitter was extended to its maximum length. Receiver mode and the measuring receiver shall be tuned to the frequency of the transmitter under test.
2) Rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made.
3) Steps 1) and 2) were performed with the EUT and the receive antenna in both vertical and horizontal polarization.
4) 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.
5) 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 2) is obtained for this set of conditions.
6) The output power into the substitution antenna was then measured.
7) Steps 5) and 6) were repeated with both antennas vertically polarized.

8) Calculate power in dBm by the following formula:

ERP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBd)

where:

Pg is the generator output power into the substitution antenna.

Above 1GHz test procedure as below:

1) Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and receiving antenna is moved from 1m to 2m.
2) Calculate power in dBm by the following formula:

EIRP(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dBi)

EIRP=ERP+2.15dB

where:

Pg is the generator output power into the substitution antenna.

Limit:

Table 2: Spurious emission limits for receivers

Frequency range	Maximum power e.r.p. (≤ 1 GHz) e.i.r.p. (> 1 GHz)	Bandwidth
30MHz to 1GHz	-57dBm	100kHz
1GHz to 12.75GHz	-47dBm	1MHz

Remark: Cable loss and antenna gain was combined in the calculated result.

Below 1GHz

Fre. (MHz)	ANT. Pol.	Result (dBm)	Limit	Over	Conclusion
CH Lowest (2402MHz)					
412.66	H	-65.67	-57	-8.67	PASS
412.66	V	-65.35	-57	-8.35	PASS
679.52	H	-64.65	-57	-7.65	PASS
679.52	V	-64.88	-57	-7.88	PASS
CH Highest (2480MHz)					
434.87	H	-64.65	-57	-7.65	PASS
434.87	V	-64.88	-57	-7.88	PASS
669.66	H	-65.44	-57	-8.44	PASS
669.66	V	-65.76	-57	-8.76	PASS

Above 1GHz

Fre. (MHz)	ANT. Pol.	Result (dBm)	Limit	Over	Conclusion
CH Lowest (2402MHz)					
1029.91	H	-56.16	-47	-9.16	PASS
1029.91	V	-55.70	-47	-8.70	PASS
1226.61	H	-55.36	-47	-8.36	PASS
1226.61	V	-55.44	-47	-8.44	PASS
CH Highest (2480MHz)					
1045.19	H	-56.67	-47	-9.67	PASS
1045.19	V	-55.68	-47	-8.68	PASS
1222.04	H	-56.68	-47	-9.68	PASS
1222.04	V	-55.73	-47	-8.73	PASS

5.1.7 Receiver Blocking

Test Requirement: EN 300 328 Clause 4.3.2.11

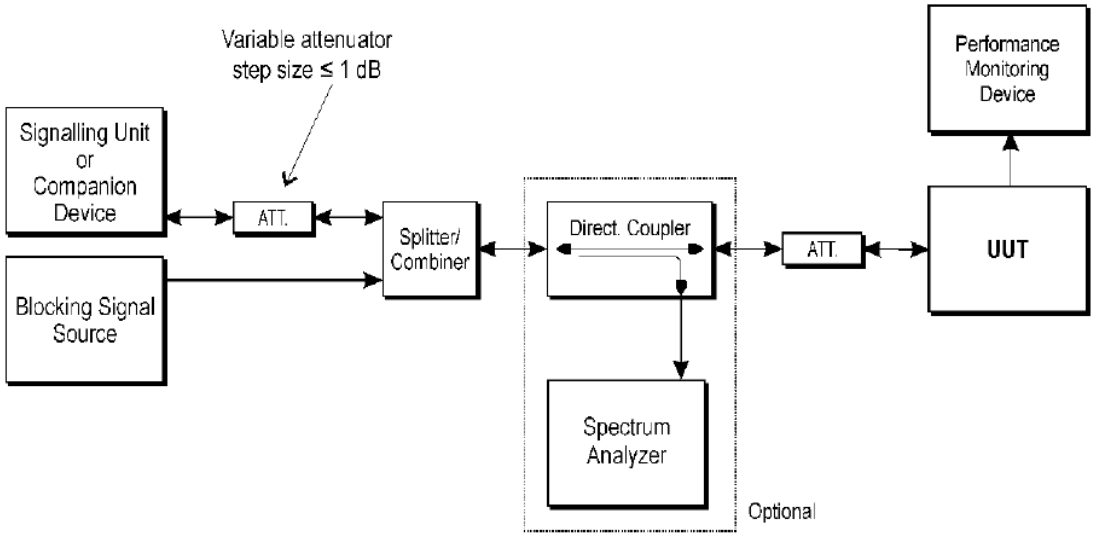
Test Method: EN 300 328 Clause 5.4.11

EUT Operation:

Ambient: Temp.: 23.0 °C Humid.: 52 % Press.: 1020 mbar

Test Status:
1) Keep the EUT operating at the lowest(2402MHz) and the highest (2480MHz) frequencies. The measurement shall be performed during normal operation.
2) Test EUT in normal conditions.

Test Setup:



Test Limit: The minimum performance criterion shall be a PER less than or equal to 10 %.

Receiver Category

☐ Receiver Category 1 (Adaptive equipment with a maximum RF output power greater than 10 dBm e.i.r.p.)

☒ Receiver Category 2 (adaptive equipment with a maximum RF output power of 10 dBm e.i.r.p.)

☐ Receiver Category 3 (adaptive equipment with a maximum RF output power of 0 dBm e.i.r.p.)

Note : Declaration of manufacturer

Test Result: Pass

1) **Receiver Blocking parameters receiver category 1 equipment**

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)	Type of blocking signal
P_{min} + 6 dB	2 380 2 503,5	-53	CW
P_{min} + 6 dB	2 300 2 330 2 360	-47	CW
P_{min} + 6 dB	2 523,5 2 553,5 2 583,5 2 613,5 2 643,5 2 673,5	-47	CW
NOTE 1: P_{min} is the minimum level of wanted signal (in dBm) required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal. NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.			

2) Receiver Blocking parameters receiver category 2 equipment

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)	Type of blocking signal
P_{min} + 6 dB	2 380 2 503,5	-57	CW
P_{min} + 6 dB	2 300 2 583,5	-47	CW
NOTE 1: P_{min} is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal. NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.			

3) Receiver Blocking parameters receiver category 2 equipment

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)	Type of blocking signal
P_{min} + 12 dB	2 380 2 503,5	-57	CW
P_{min} + 12 dB	2 300 2 583,5	-47	CW
NOTE 1: P_{min} is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal. NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.			

Test data

Receiver Category 2

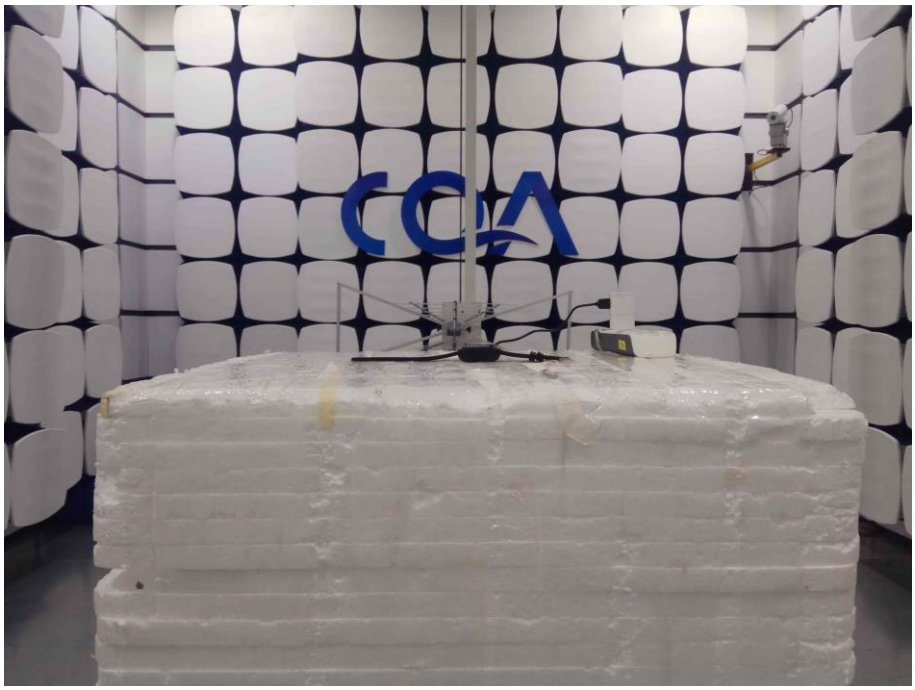
Test channel	P_{min} (dBm)	Test result (PER)	Limit (PER)
lowest(2402MHz)	-83.78	9.50%	≤10 %
highest (2480MHz)	-82.63	9.30%	≤10 %

Test channel	Wanted signal mean power from companion device (dBm)	Blocking signal	Blocking signal power (dBm)	Test result (PER)	Limit (PER)	Result
		Frequency (MHz)				
lowest	P_{min} + 6 dB	2 380	-57	0.99%	≤10 %	PASS
		2 300	-47	1.20%	≤10 %	PASS
highest	P_{min} + 6 dB	2 503.5	-57	0.78%	≤10 %	PASS
		2583.5	-47	0.63%	≤10 %	PASS

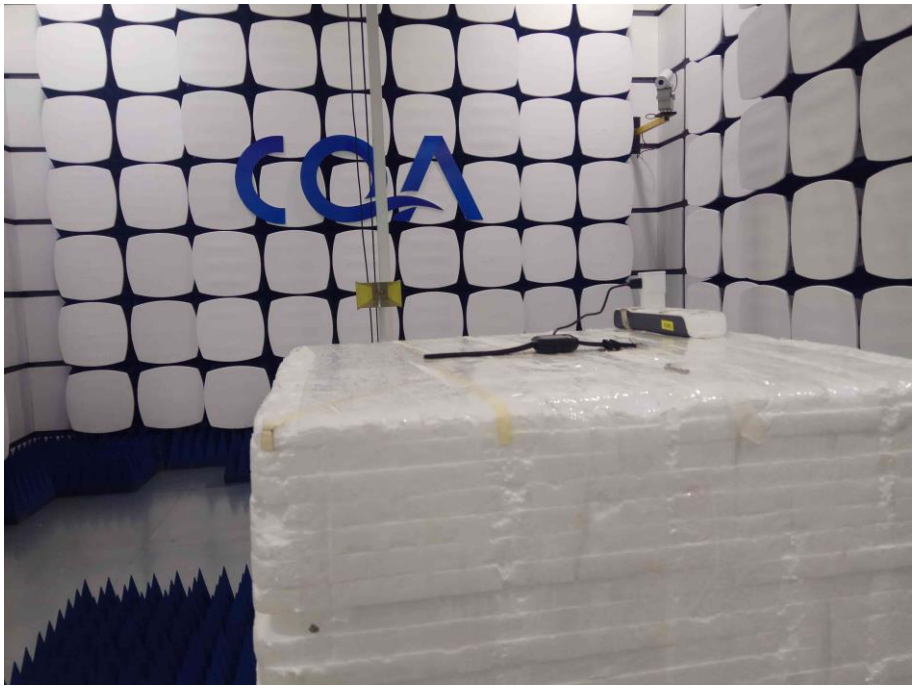
6 Photographs of Equipment Provided by The Applicant

6.1 Test Setup-Radiated Spurious Emissions

Below 1GHz:



Above 1GHz:



6.2 Constructional Details of Equipment Under Test

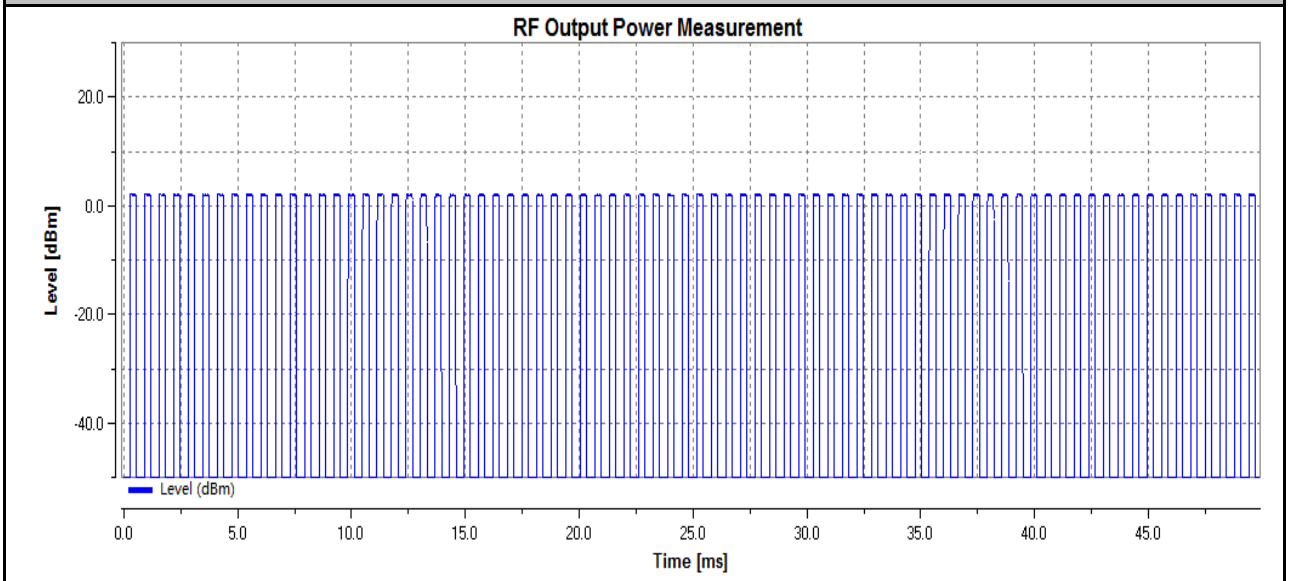
Refer to Photographs of EUT Constructional Details for CQASZ20190400303E-01.

Appendix A: Test Data

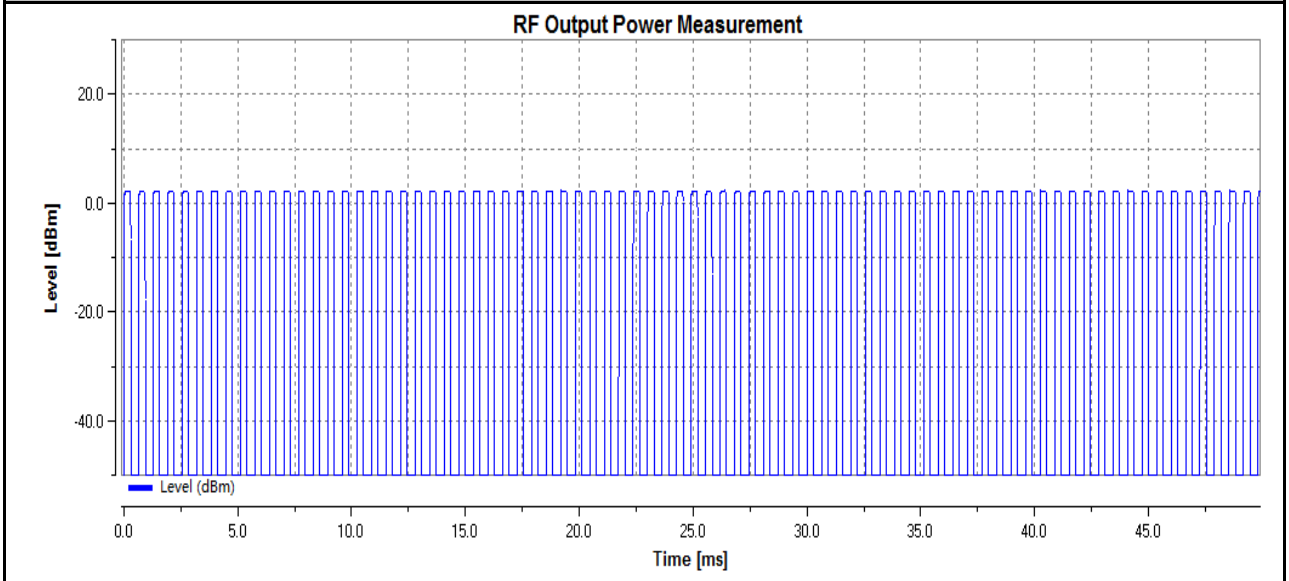
1.RF Output Power

Test Condition	Test Mode	Test Channel	Ant	Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
TNVN	BLE	2402	Ant1	1.93	1.93	<=20	PASS
TNVN	BLE	2440	Ant1	2.11	2.11	<=20	PASS
TNVN	BLE	2480	Ant1	2.37	2.37	<=20	PASS
TLVN	BLE	2402	Ant1	1.93	1.93	<=20	PASS
TLVN	BLE	2440	Ant1	2.12	2.12	<=20	PASS
TLVN	BLE	2480	Ant1	2.38	2.38	<=20	PASS
THVN	BLE	2402	Ant1	1.92	1.92	<=20	PASS
THVN	BLE	2440	Ant1	2.12	2.12	<=20	PASS
THVN	BLE	2480	Ant1	2.38	2.38	<=20	PASS

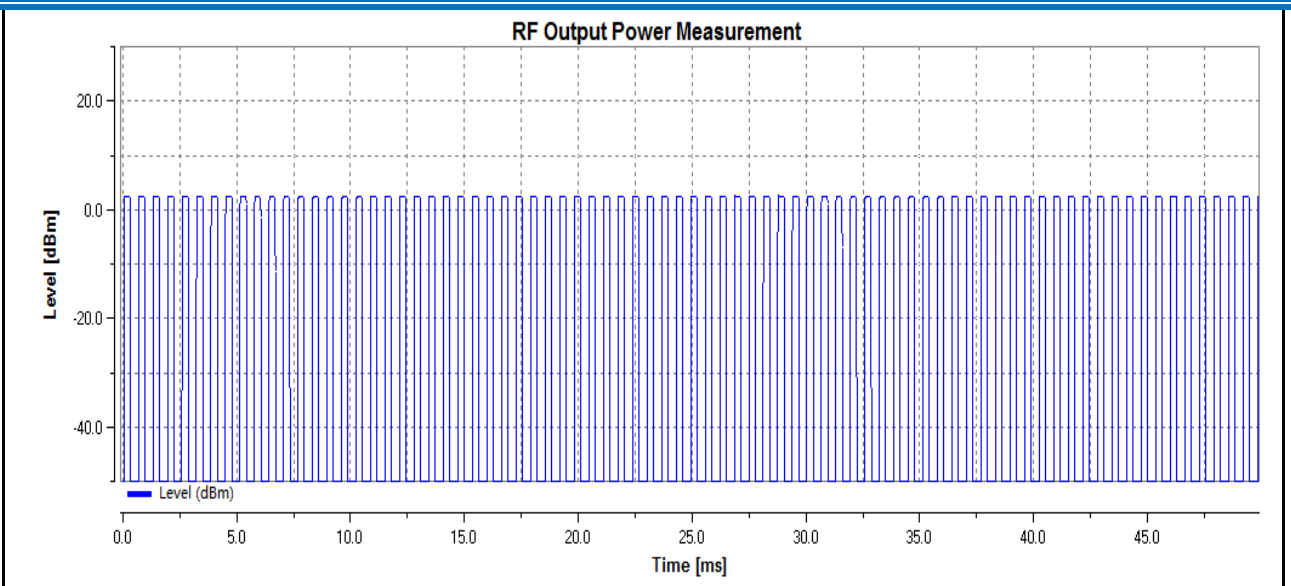
RF Output Power_TNVN_BLE_2402_Ant1



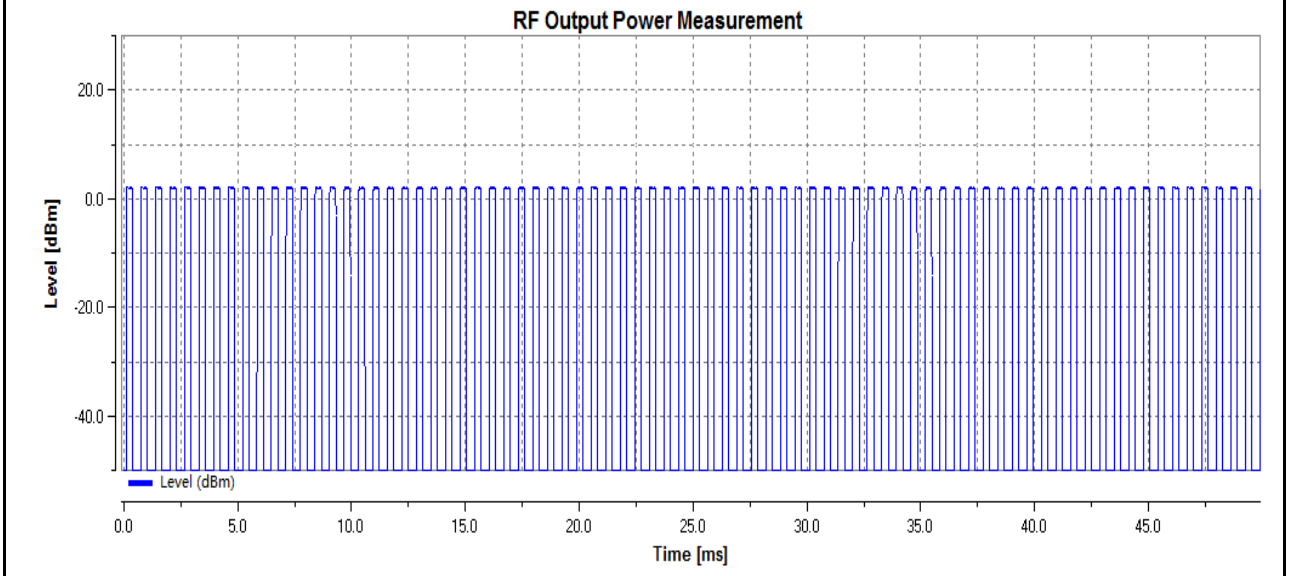
RF Output Power_TNVN_BLE_2440_Ant1



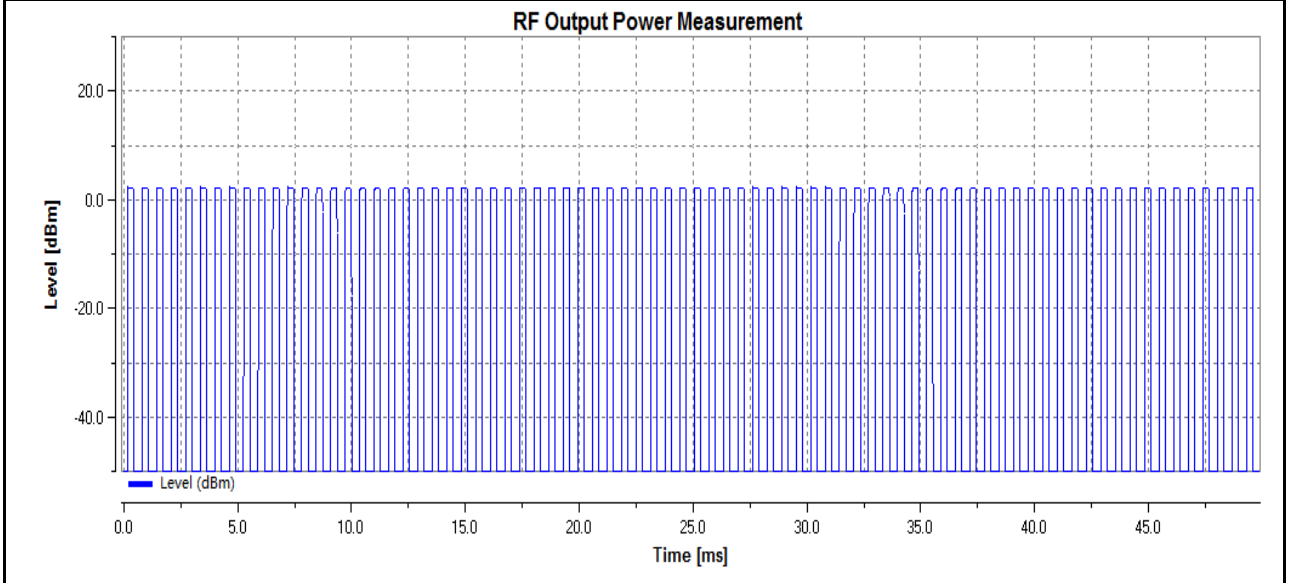
RF Output Power_TNVN_BLE_2480_Ant1



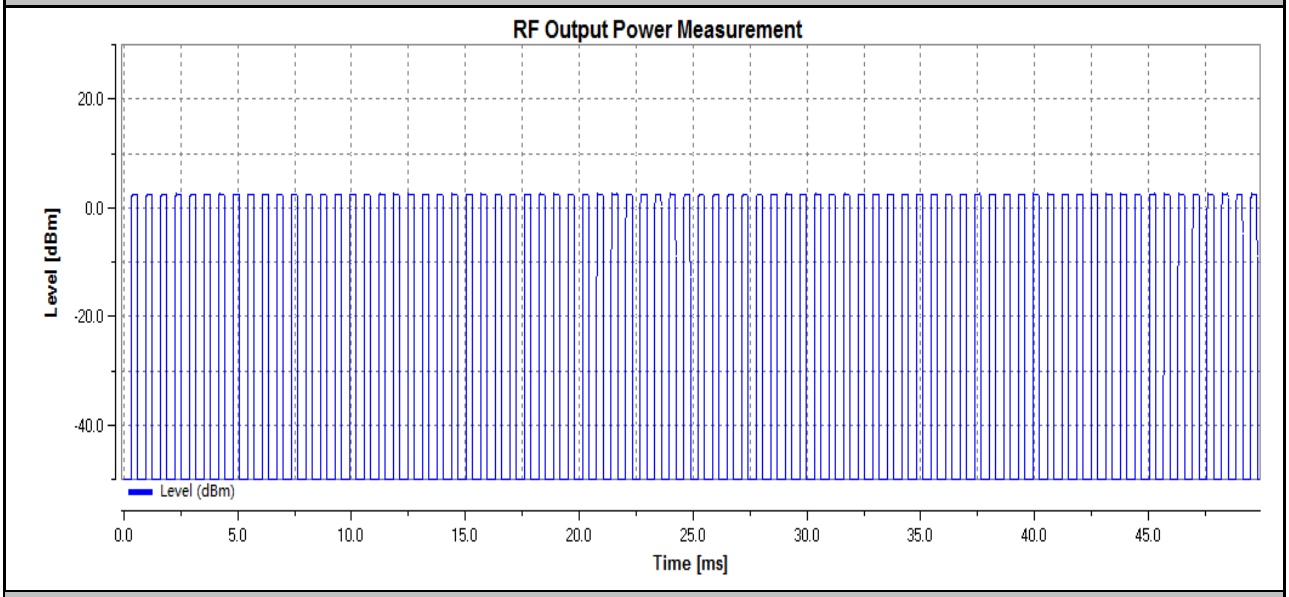
RF Output Power_TLVN_BLE_2402_Ant1



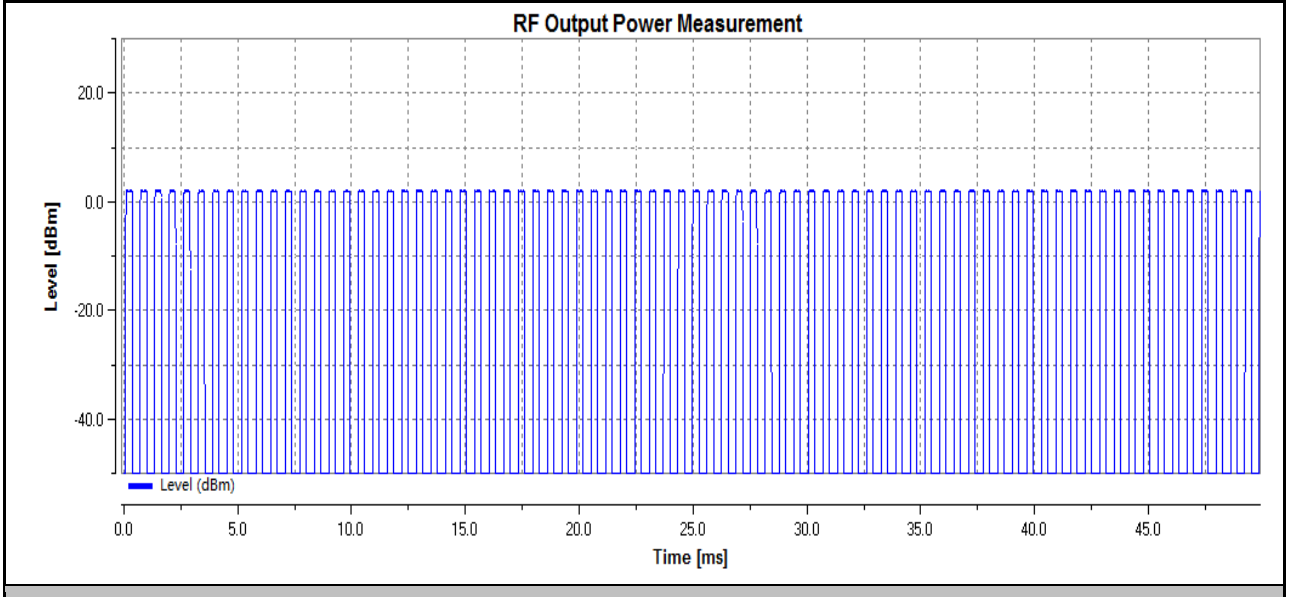
RF Output Power_TLVN_BLE_2440_Ant1



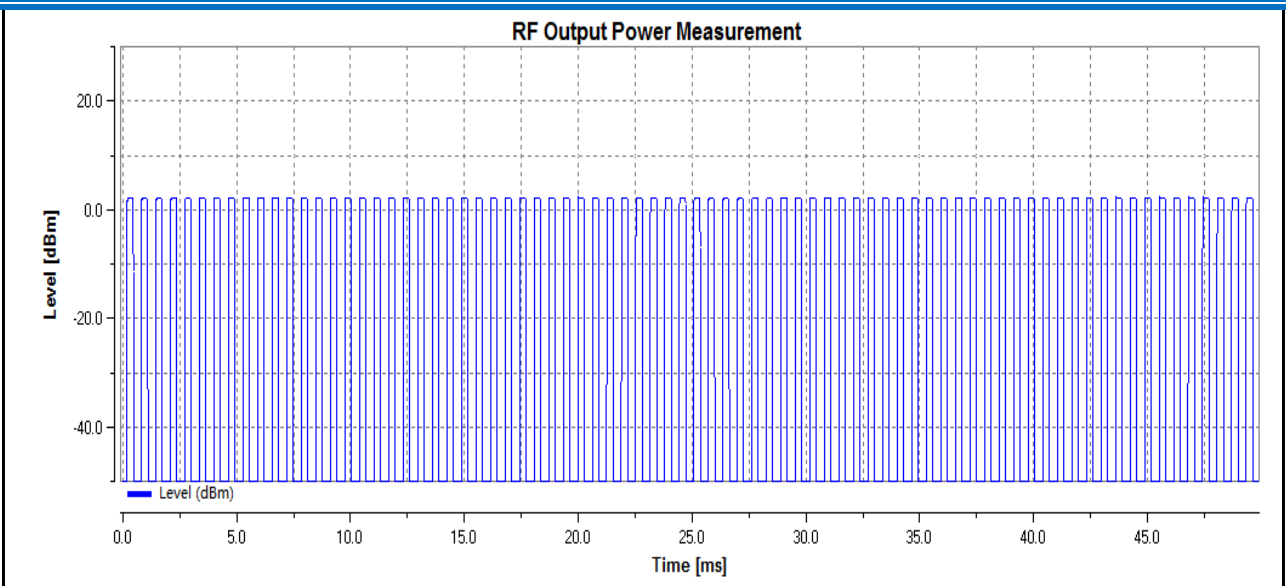
RF Output Power_TLVN_BLE_2480_Ant1



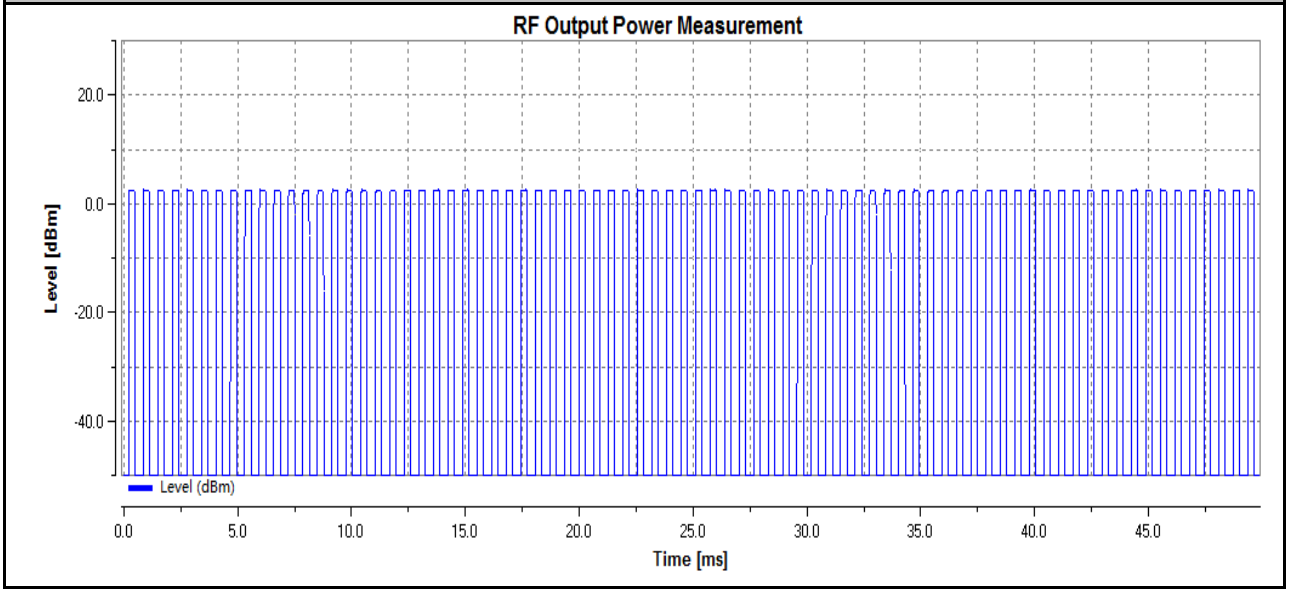
RF Output Power_THVN_BLE_2402_Ant1



RF Output Power_THVN_BLE_2440_Ant1



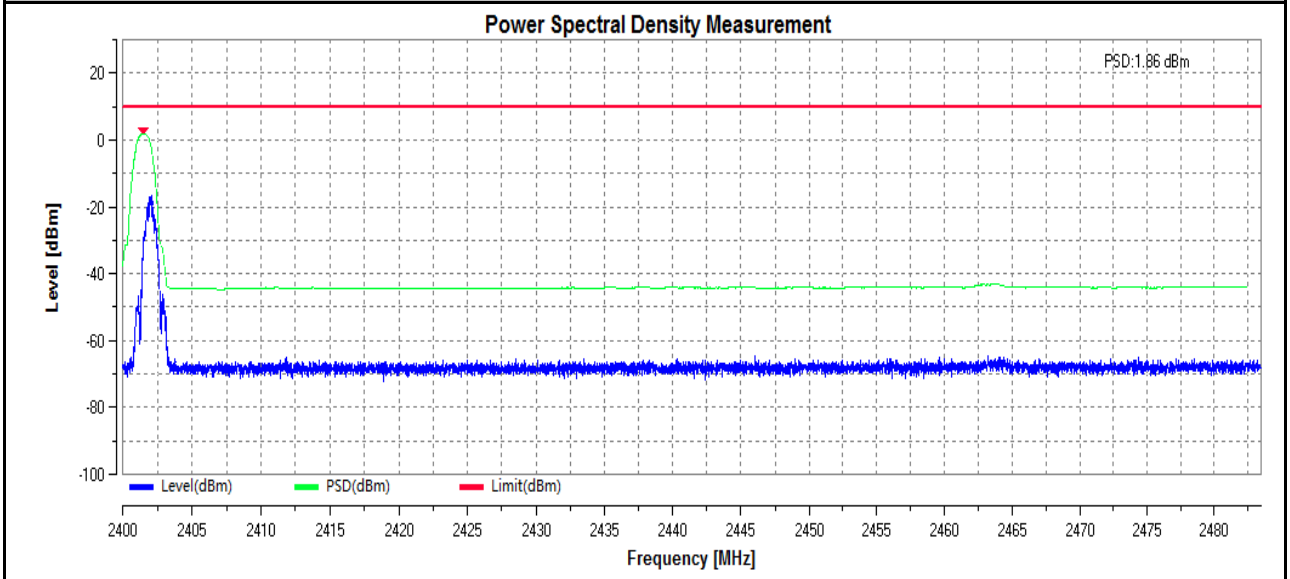
RF Output Power_THVN_BLE_2480_Ant1



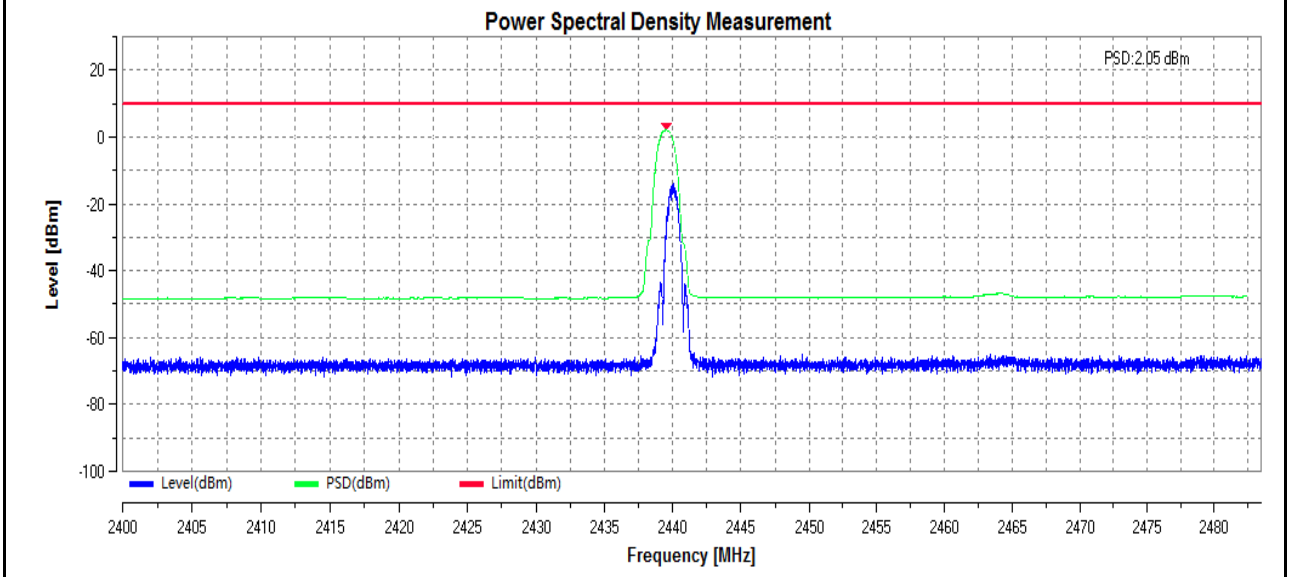
2.Power Spectral Density

Test Condition	Test Mode	Test Channel	Ant	PSD [dBm]	Limit [dBm]	Verdict
TNVN	BLE	2402	Ant1	1.86	<=10	PASS
TNVN	BLE	2440	Ant1	2.05	<=10	PASS
TNVN	BLE	2480	Ant1	2.30	<=10	PASS

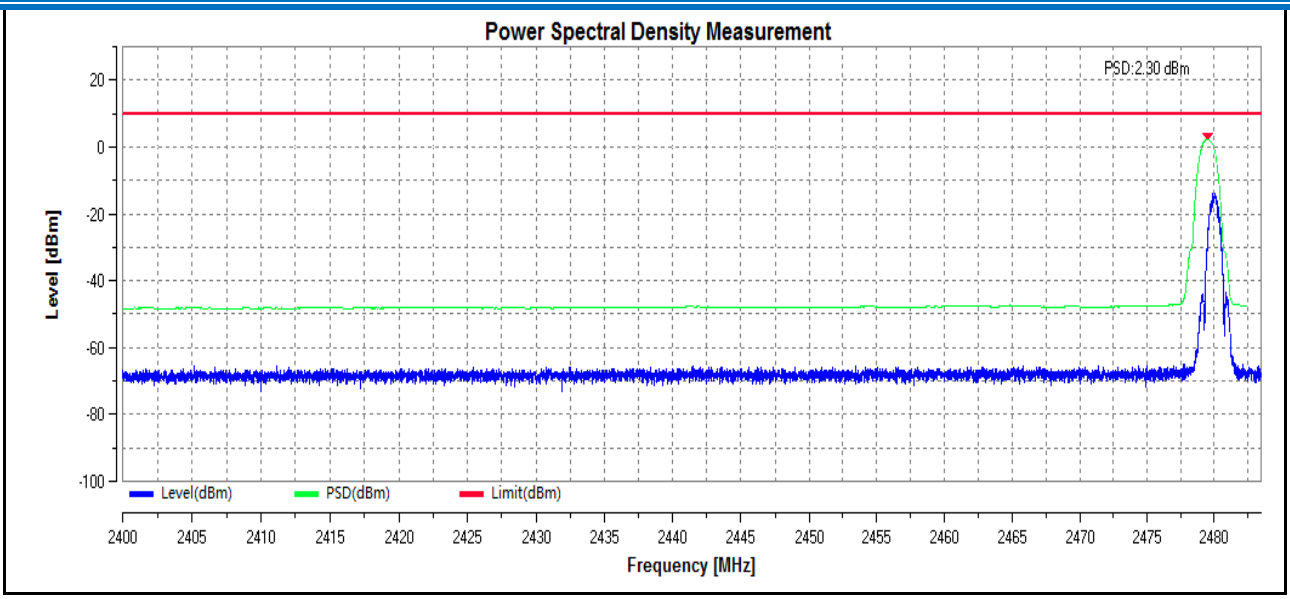
Power Spectral Density_TNVN_BLE_2402_Ant1



Power Spectral Density_TNVN_BLE_2440_Ant1



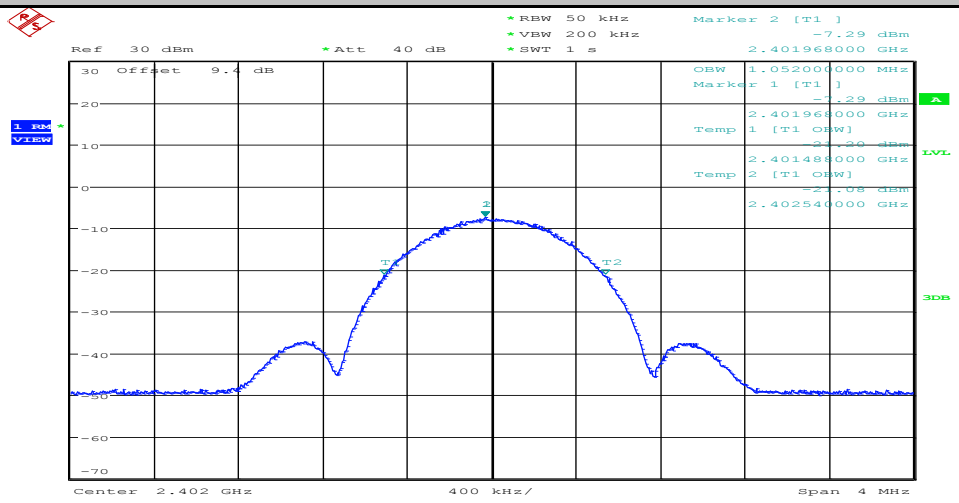
Power Spectral Density_TNVN_BLE_2480_Ant1



3.Occupied Channel Bandwidth

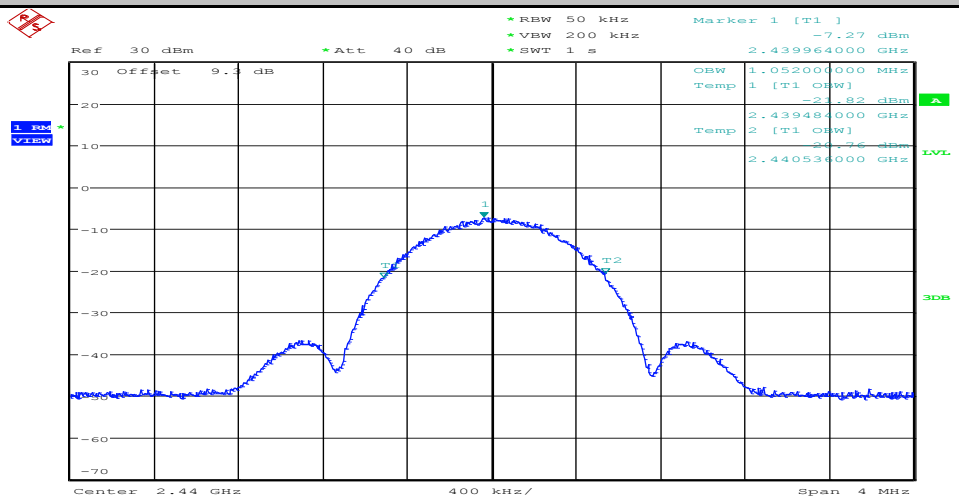
Test Condition	Test Mode	Test Channel	Ant	OBW [MHz]	FL OBW [MHz]	FH OBW [MHz]	Verdict
TNVN	BLE	2402	Ant1	1.052	2401.474	---	PASS
TNVN	BLE	2440	Ant1	1.052	---	---	PASS
TNVN	BLE	2480	Ant1	1.056	---	2480.528	PASS

Occupied Channel Bandwidth_TNVN_BLE_2402_Ant1



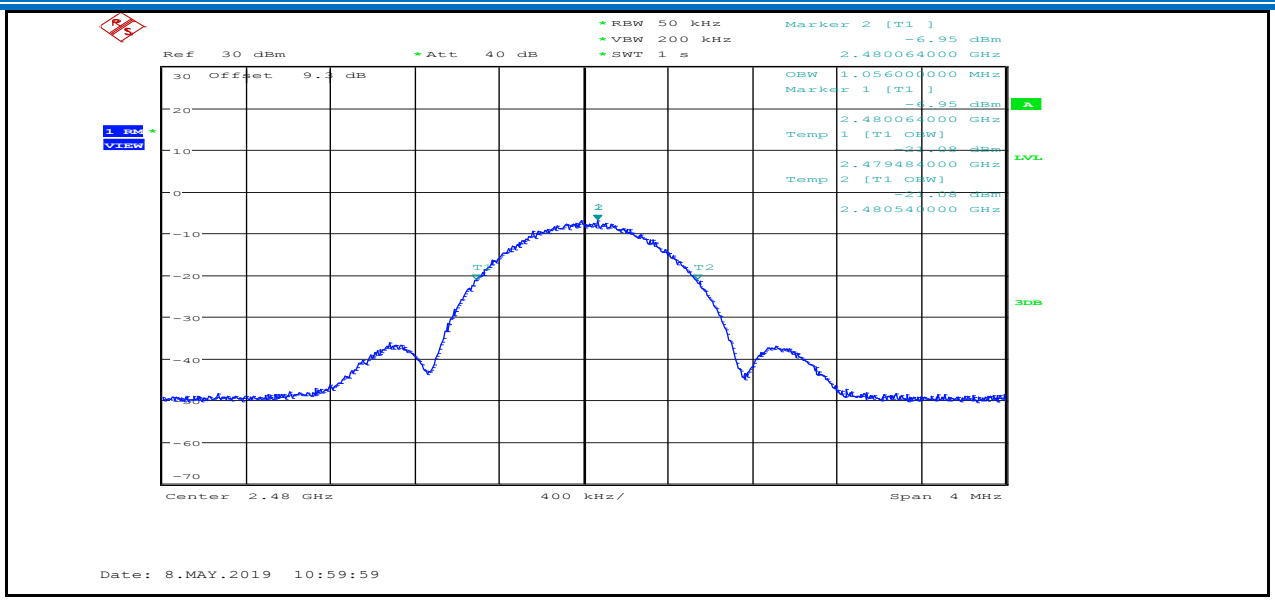
Date: 8.MAY.2019 10:55:54

Occupied Channel Bandwidth_TNVN_BLE_2440_Ant1



Date: 8.MAY.2019 10:58:09

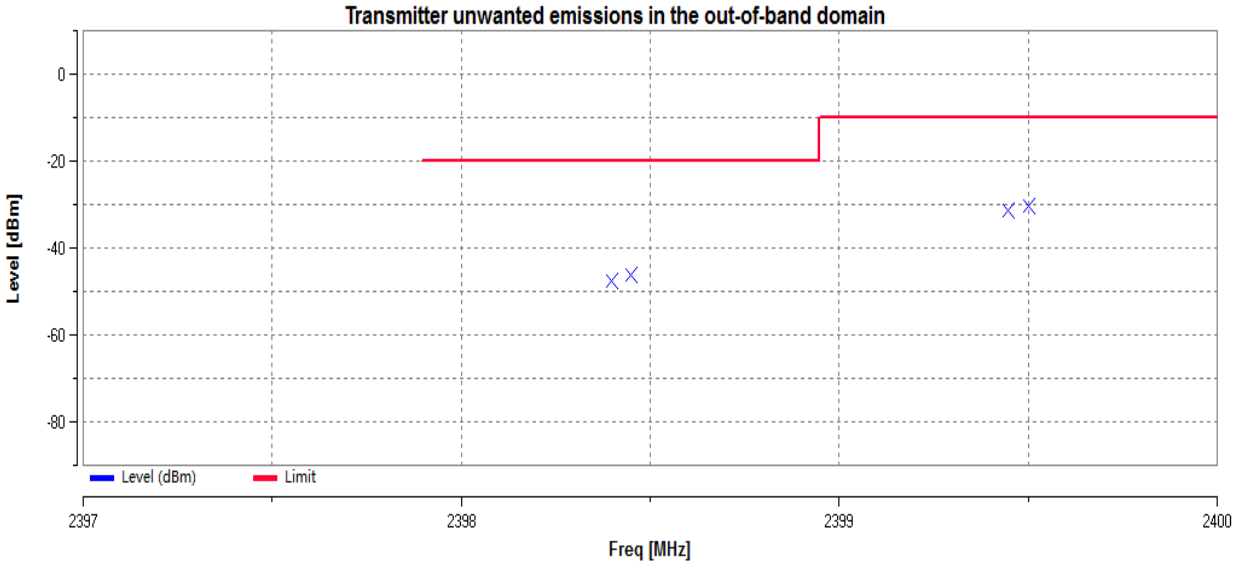
Occupied Channel Bandwidth_TNVN_BLE_2480_Ant1



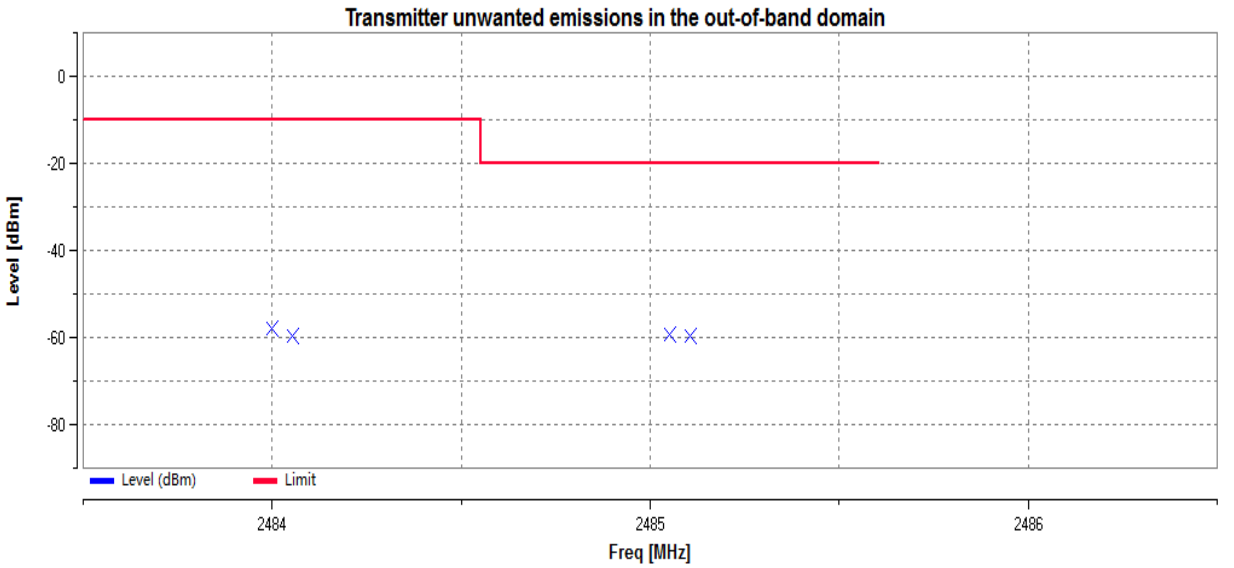
4.Transmitter unwanted emissions in the out-of-band domain

Test Condition	Test Mode	Test Channel	Ant	Freq [MHz]	Result [dBm]	Limit [dBm]	Verdict
TNVN	BLE	2402	Ant1	2398.396	-47.61	<=-20	PASS
TNVN	BLE	2402	Ant1	2398.448	-46.31	<=-20	PASS
TNVN	BLE	2402	Ant1	2399.448	-31.31	<=-10	PASS
TNVN	BLE	2402	Ant1	2399.500	-30.41	<=-10	PASS
TNVN	BLE	2402	Ant1	2484.000	-57.80	<=-10	PASS
TNVN	BLE	2402	Ant1	2484.052	-59.74	<=-10	PASS
TNVN	BLE	2402	Ant1	2485.052	-59.15	<=-20	PASS
TNVN	BLE	2402	Ant1	2485.104	-59.59	<=-20	PASS
TNVN	BLE	2480	Ant1	2398.388	-58.74	<=-20	PASS
TNVN	BLE	2480	Ant1	2398.444	-60.67	<=-20	PASS
TNVN	BLE	2480	Ant1	2399.444	-59.53	<=-10	PASS
TNVN	BLE	2480	Ant1	2399.500	-58.82	<=-10	PASS
TNVN	BLE	2480	Ant1	2484.000	-45.07	<=-10	PASS
TNVN	BLE	2480	Ant1	2484.056	-45.34	<=-10	PASS
TNVN	BLE	2480	Ant1	2485.056	-53.91	<=-20	PASS
TNVN	BLE	2480	Ant1	2485.112	-54.03	<=-20	PASS

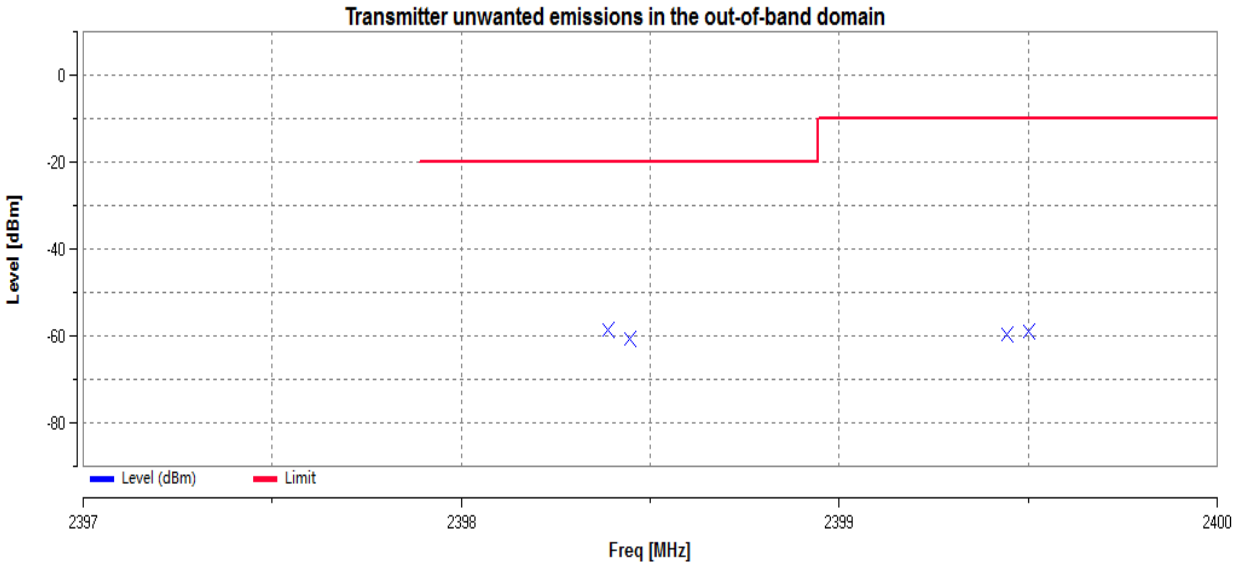
Transmitter unwanted emissions in the out-of-band domain_TNVN_BLE_2402_Ant1_2400MHz-2BW to 2400MHz



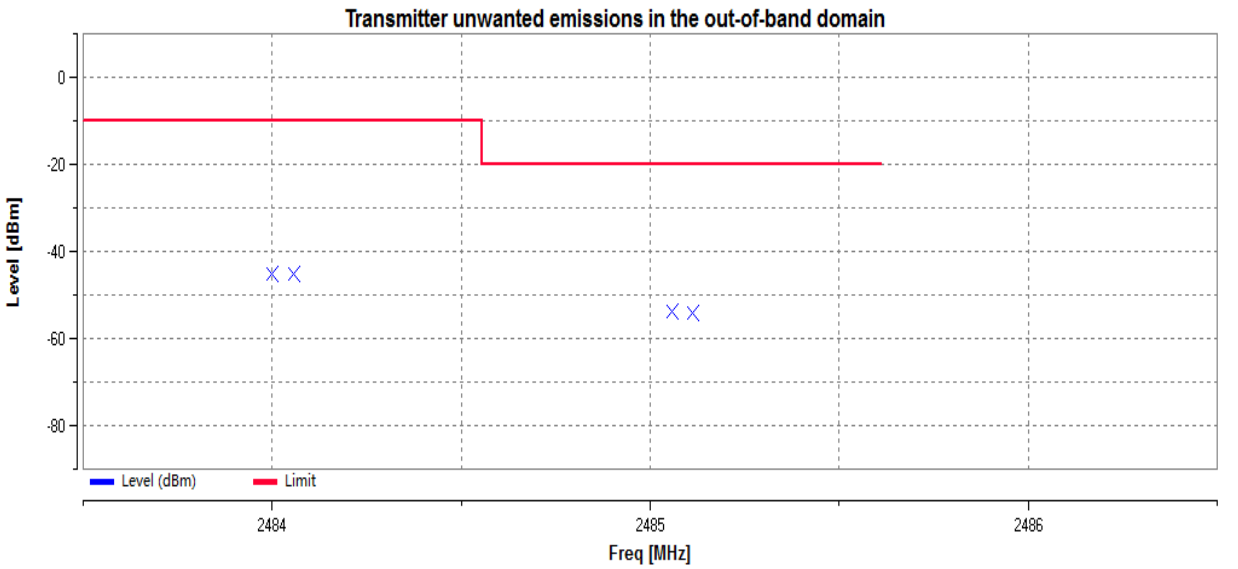
Transmitter unwanted emissions in the out-of-band domain_TNVN_BLE_2402_Ant1_2483.5MHz to 2483.5MHz+2BW



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



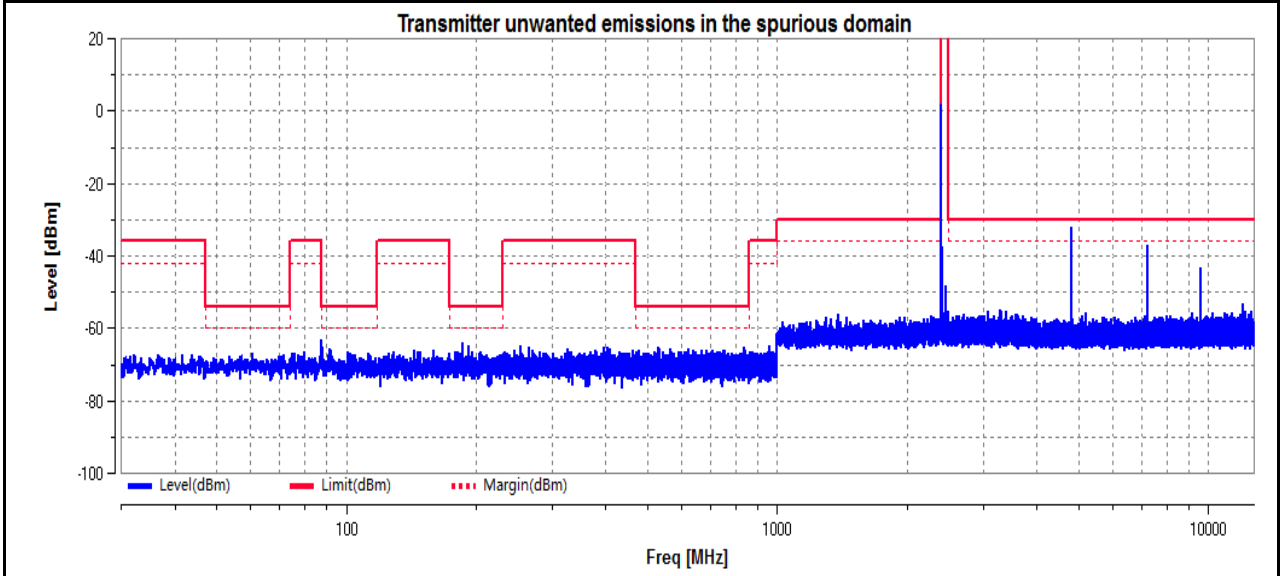
Transmitter unwanted emissions in the out-of-band domain_TNVN_BLE_2480_Ant1_2483.5MHz to 2483.5MHz+2BW



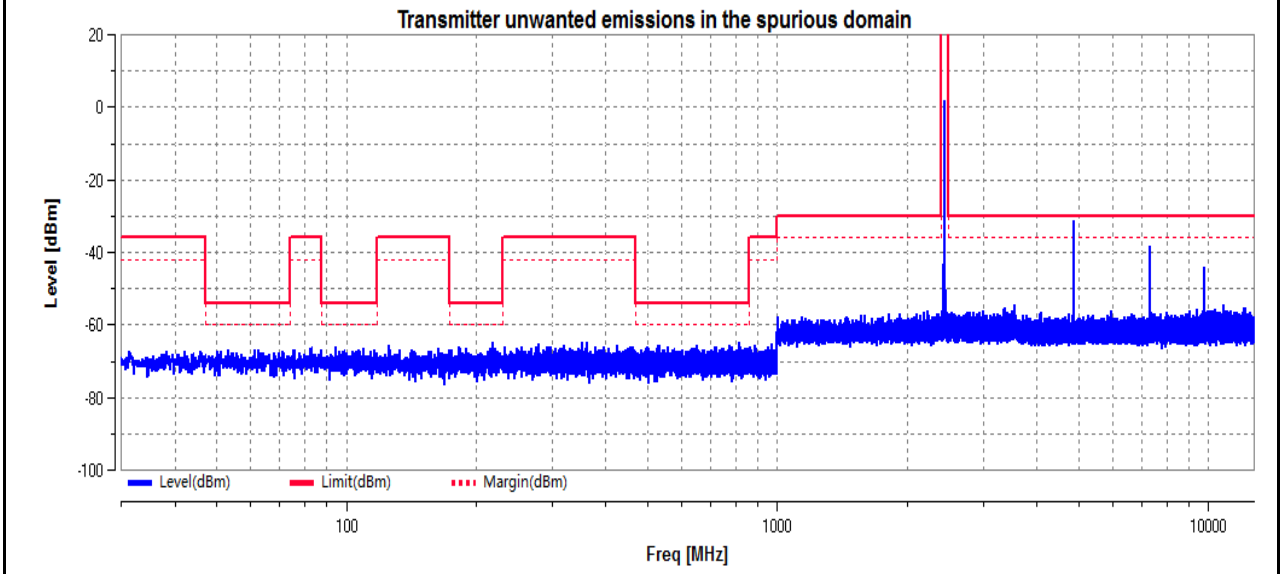
5.Transmitter unwanted emissions in the spurious domain

Test Condition	Test Mode	Test Channel	Ant	Result	Verdict
TNVN	BLE	2402	Ant1	See_test_plot	PASS
TNVN	BLE	2440	Ant1	See_test_plot	PASS
TNVN	BLE	2480	Ant1	See_test_plot	PASS

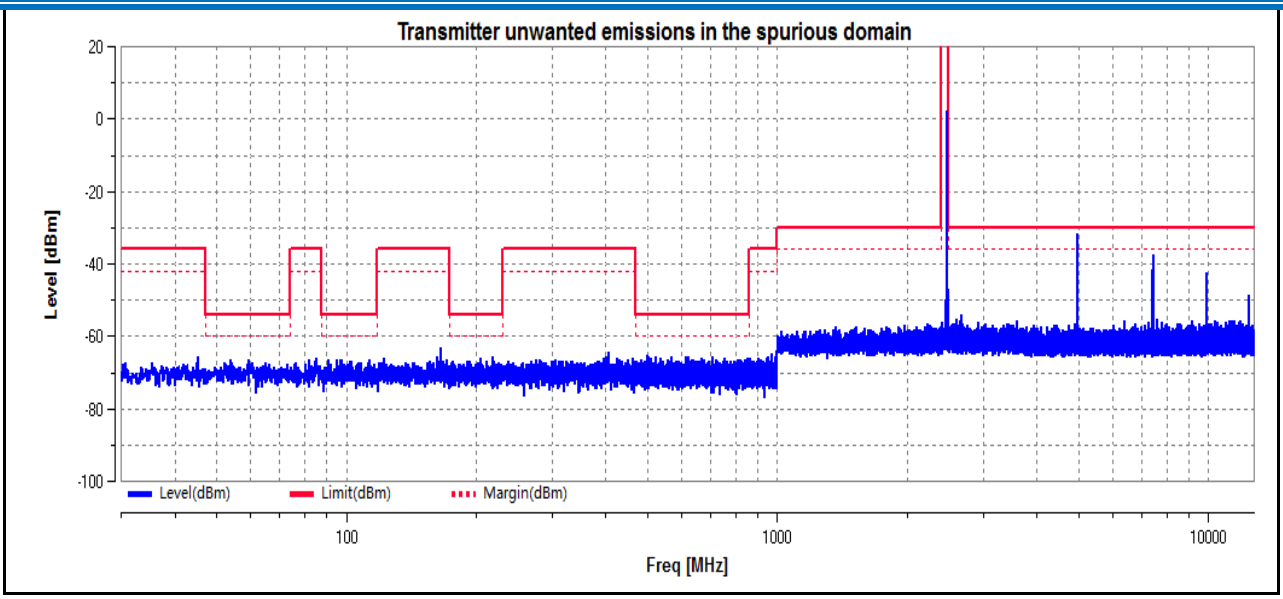
Transmitter unwanted emissions in the spurious domain_TNVN_BLE_2402_Ant1



Transmitter unwanted emissions in the spurious domain_TNVN_BLE_2440_Ant1



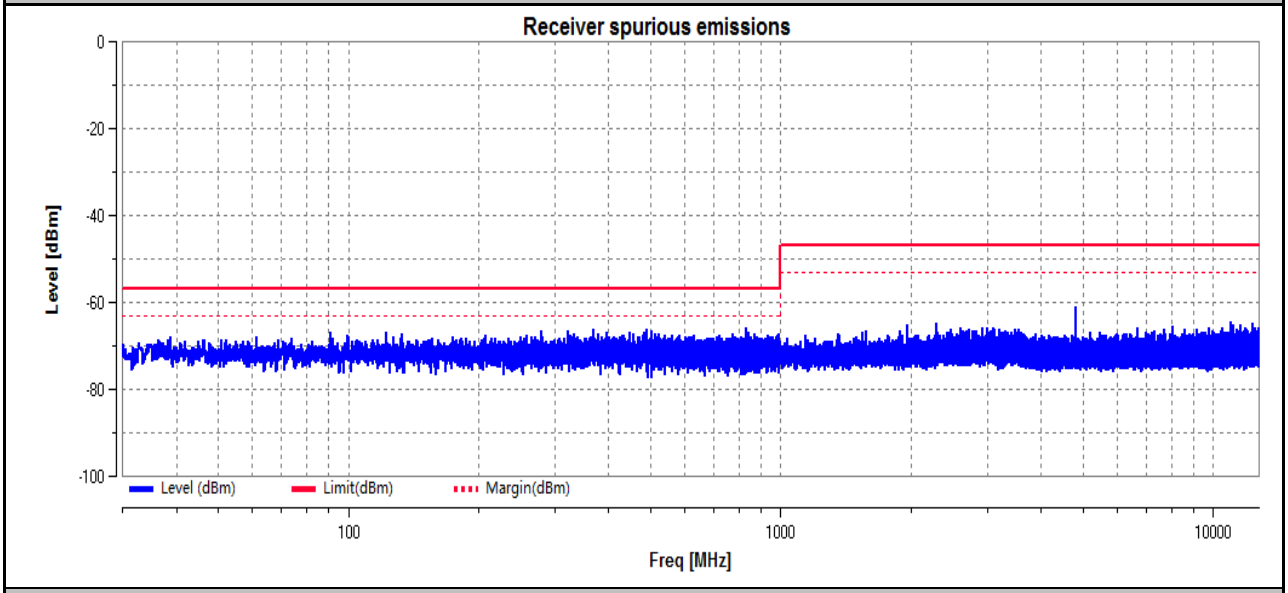
Transmitter unwanted emissions in the spurious domain_TNVN_BLE_2480_Ant1



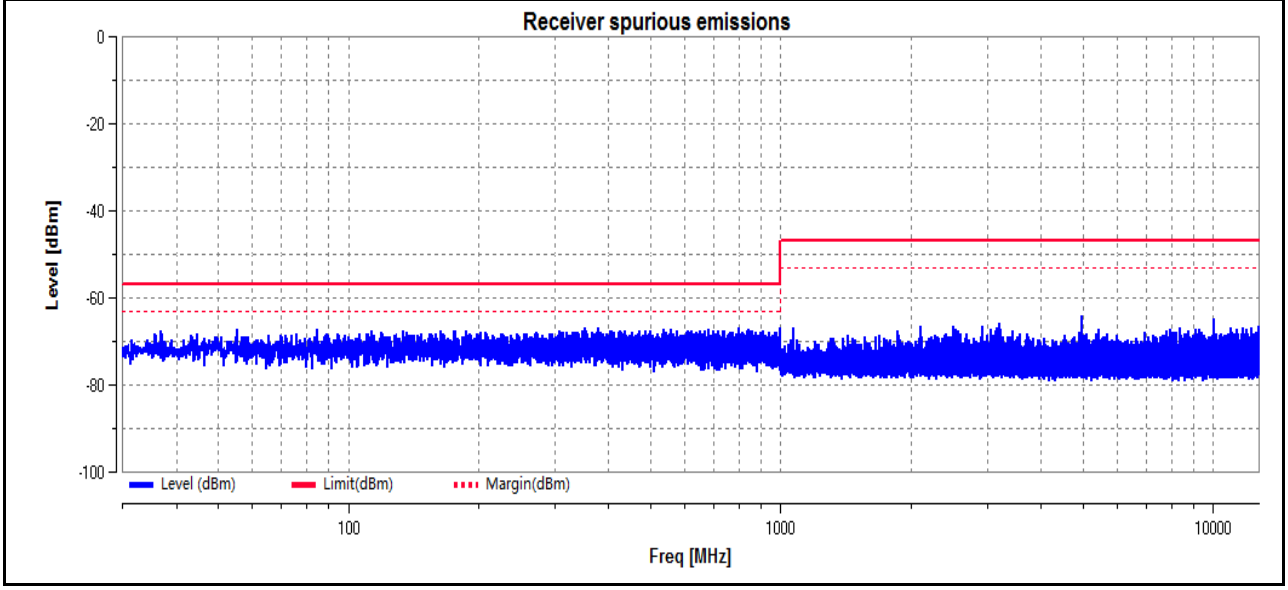
6.Receiver spurious emissions

Test Condition	Test Mode	Test Channel	Ant	Result	Verdict
TNVN	BLE	2402	Ant1	See test plot	PASS
TNVN	BLE	2480	Ant1	See test plot	PASS

Receiver spurious emissions_TNVN_BLE_2402_Ant1



Receiver spurious emissions_TNVN_BLE_2480_Ant1



END OF THE REPORT