Report No.: SZEM190701637403
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TEST REPORT

Application No.:	SZEM1907016374CR
Applicant:	Fitbit, Inc.
Address of Applicant:	199 Fremont Street, 14th Floor San Francisco, CA 94105 USA
Manufacturer:	Fitbit, Inc.
Address of Manufacturer:	199 Fremont Street, 14th Floor San Francisco, CA 94105 USA
Factory:	Zhongshan Transtek Electronics Co.,Ltd
Address of Factory:	No. 23,Jin'an Road, Minzhong, Zhongshan ,Guangdong, China
Equipment Under Test (EUT):	
EUT Name:	Body Scale
Model No.:	FB203
Trade Mark:	
Standard(s) :	EN 300 328 V2.1.1
Date of Receipt:	2019-07-12
Date of Test:	2019-07-16 to 2019-08-12
Date of Issue:	2019-09-02
Test Result:	**Pass***

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

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.

Keny Xu
EMC Laboratory Manager

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Laboratory

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2019-09-02		Original

Authorized for issue by:				
Tested By		 **Harry Wu /Project Engineer**		2019-07-16 to 2019-08-12 **Date**
Checked By		 **Eric Fu /Reviewer**		2019-09-02 **Date**

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2 Test Summary

Radio Spectrum Technical Requirement				
Item	**Standard**	**Method**	**Requirement**	**Result**
Geo-location capability	EN 300 328 V2.1.1	EN 300 328 V2.1.1	EN 300 328 Clause 4.3.2.12	Pass

Radio Spectrum Matter Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
RF Output Power	EN 300 328 V2.1.1	EN 300 328 V2.1.1 clause 5.4.2.2.1.2	EN 300 328 Clause 4.3.2.2	Pass
Power Spectral Density	EN 300 328 V2.1.1	EN 300 328 V2.1.1 clause 5.4.3.2.1	EN 300 328 Clause 4.3.2.3	Pass
Adaptivity	EN 300 328 V2.1.1	EN 300 328 V2.1.1 clause 5.4.6.2	EN 300 328 Clause 4.3.1.7	Only for Pmax≥ 10dBm
Occupied Channel Bandwidth	EN 300 328 V2.1.1	EN 300 328 V2.1.1 clause 5.4.7.2.1	EN 300 328 Clause 4.3.2.7	Pass
Transmitter unwanted emissions in the out-of-band domain	EN 300 328 V2.1.1	EN 300 328 V2.1.1 clause 5.4.8.2.1	EN 300 328 Clause 4.3.2.8	Pass
Transmitter unwanted emissions in the spurious domain	EN 300 328 V2.1.1	EN 300 328 V2.1.1 clause 5.4.9.2	EN 300 328 Clause 4.3.2.9	Pass**
Receiver spurious emissions	EN 300 328 V2.1.1	EN 300 328 V2.1.1 clause 5.4.10.2	EN 300 328 Clause 4.3.2.10	Pass
Receiver Blocking	EN 300 328 V2.1.1	EN 300 328 V2.1.1 clause 5.4.11.2	EN 300 328 Clause 4.3.2.11	Pass

Remark:

**: The EUT passed: Transmitter unwanted emissions in the spurious domain test after modification.

3 Contents

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4 General Information

4.1 Details of E.U.T.

Power Supply:	DC4.5V= 3 x DC1.5V size of "AAA" batteries
Antenna Gain	0 dBi
Antenna Type	PCB Antenna
Channel Spacing	2MHz
Modulation Type	GFSK
Number of Channels	40
Operation Frequency	2402MHz to 2480MHz
Receiver Category	2

4.2 Environment Parameter

Environment Parameter	Selected Values During Tests	
Relative Humidity	Ambient	
Value	Temperature(℃)	Voltage(V)
TNVN	25	4.5
TLVN	-10	4.5
THVN	45	4.5

Note:

1) VN: Normal Voltage

TN: Normal Temperature

TL: Low Extreme Test Temperature

TH: High Extreme Test Temperature

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Operation Frequency each of channel							
Channel	Frequency	Channe	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

4.3 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Notebook	IBM	T30	S/N78-3VMLX 06/01

4.4 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	±5.5 x 10-8
2	Duty cycle	±0.57%
3	Occupied Bandwidth	±3%
4	RF Conducted power	±0.68dB
5	RF Power Density	±1.50dB
6	Conducted Spurious Emissions	±1.04dB
7	RF Radiated Power	±4.5dB (below 1GHz)
		±4.8dB (above 1GHz)
8	Radiated Spurious Emission Test	±4.5dB (30MHz-1GHz)
		±4.8dB (1GHz-18GHz)
9	Temperature	±0.4℃
10	Humidity	±1.3%
11	Supply Voltages	±1.5%
12	Time	±3%

4.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,

198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663

Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.

4.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

- **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to

ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

- **FCC Recognized 2.948 Listed Test Firm(Registration No.: 282399)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 282399, May 31, 2002.

- **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818, Jul 13, 2017.

- **Industry Canada (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

- **VCCI (Registration No.: R-12460, C-12584, G-10449 and T-11179)**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584，G-10449 and T-11179 respectively.

- **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2005, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

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4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Conditions

The EUT passed: Transmitter unwanted emissions in the spurious domain test after modification.

5 Equipment List

RF Output Power					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
MXA Signal Analyzer	AgilentTechnologies	N9020A	SEM004-10	2019-02-24	2020-02-23
ESG Vector Signal Generator	Keysight	E4438C	SEM006-03	2019-04-05	2020-04-04
EXG Analog Signal Generator	AgilentTechnologies	N5171B	SEM006-04	2017-07-26	2020-07-25
Power Meter	AgilentTechnologies	U2021XA_Ch2	SEM009-02	2018-09-20	2019-09-19
Power Meter	AgilentTechnologies	U2021XA_Ch3	SEM009-03	2018-09-20	2019-09-19
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS	0.8M	EMC2136	2017-11-02	2019-11-01
MI CABLE	SGS	0.8M	EMC2137	2017-11-02	2019-11-01

Power Spectral Density					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
MXA Signal Analyzer	AgilentTechnologies	N9020A	SEM004-10	2019-02-24	2020-02-23
ESG Vector Signal Generator	Keysight	E4438C	SEM006-03	2019-04-05	2020-04-04
EXG Analog Signal Generator	AgilentTechnologies	N5171B	SEM006-04	2017-07-26	2020-07-25
Power Meter	AgilentTechnologies	U2021XA_Ch2	SEM009-02	2018-09-20	2019-09-19
Power Meter	AgilentTechnologies	U2021XA_Ch3	SEM009-03	2018-09-20	2019-09-19
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS	0.8M	EMC2136	2017-11-02	2019-11-01
MI CABLE	SGS	0.8M	EMC2137	2017-11-02	2019-11-01

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Occupied Channel Bandwidth					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
MXA Signal Analyzer	AgilentTechnologies	N9020A	SEM004-10	2019-02-24	2020-02-23
ESG Vector Signal Generator	Keysight	E4438C	SEM006-03	2019-04-05	2020-04-04
EXG Analog Signal Generator	AgilentTechnologies	N5171B	SEM006-04	2017-07-26	2020-07-25
Power Meter	AgilentTechnologies	U2021XA_Ch2	SEM009-02	2018-09-20	2019-09-19
Power Meter	AgilentTechnologies	U2021XA_Ch3	SEM009-03	2018-09-20	2019-09-19
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS	0.8M	EMC2136	2017-11-02	2019-11-01
MI CABLE	SGS	0.8M	EMC2137	2017-11-02	2019-11-01

Transmitter unwanted emissions in the out-of-band domain					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
MXA Signal Analyzer	AgilentTechnologies	N9020A	SEM004-10	2019-02-24	2020-02-23
ESG Vector Signal Generator	Keysight	E4438C	SEM006-03	2019-04-05	2020-04-04
EXG Analog Signal Generator	AgilentTechnologies	N5171B	SEM006-04	2017-07-26	2020-07-25
Power Meter	AgilentTechnologies	U2021XA_Ch2	SEM009-02	2018-09-20	2019-09-19
Power Meter	AgilentTechnologies	U2021XA_Ch3	SEM009-03	2018-09-20	2019-09-19
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS	0.8M	EMC2136	2017-11-02	2019-11-01
MI CABLE	SGS	0.8M	EMC2137	2017-11-02	2019-11-01

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Transmitter unwanted emissions in the spurious domain					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2019-01-20	2020-01-19
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2019-01-20	2020-01-19
Chamber cable	HangTianXing	N/A	EMC0542	2019-06-28	2021-06-27
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKMESS-ELEKTRONIK	VULB 9160	EMC2025	2016-09-08	2019-09-07
Bi-log Type Antenna	Schaffner -Chase	CBL6112B	EMC0524	2016-09-08	2019-09-07
Bi-log Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2017-05-04	2020-05-03
Horn Antenna 1GHz-18GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2016-09-09	2019-09-08
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2019-01-07	2020-01-08
Amplifier	HP	8447F	EMC2065	2019-05-29	2020-05-28
Pre-Amplifier MH648A	ANRITSU CORP	MH648A	EMC2086	2018-11-19	2019-11-18
Active Loop Antenna	EMCO	6502	EMC0523	2018-03-05	2020-03-04
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2019-01-11	2020-01-10
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2019-01-11	2020-01-10
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2018-12-08	2019-12-07
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2017-12-19	2019-12-18
MXE EMI Receiver	Keysight	N9038A	EMC2139	2018-11-19	2019-11-18
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2018-11-19	2019-11-18
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKMESS-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

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Receiver spurious emissions					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2019-01-20	2020-01-19
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2019-01-20	2020-01-19
Chamber cable	HangTianXing	N/A	EMC0542	2019-06-28	2021-06-27
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKMESS-ELEKTRONIK	VULB 9160	EMC2025	2016-09-08	2019-09-07
Bi-log Type Antenna	Schaffner -Chase	CBL6112B	EMC0524	2016-09-08	2019-09-07
Bi-log Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2017-05-04	2020-05-03
Horn Antenna 1GHz-18GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2016-09-09	2019-09-08
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2019-01-07	2020-01-08
Amplifier	HP	8447F	EMC2065	2019-05-29	2020-05-28
Pre-Amplifier MH648A	ANRITSU CORP	MH648A	EMC2086	2018-11-19	2019-11-18
Active Loop Antenna	EMCO	6502	EMC0523	2018-03-05	2020-03-04
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2019-01-11	2020-01-10
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2019-01-11	2020-01-10
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2018-12-08	2019-12-07
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2017-12-19	2019-12-18
MXE EMI Receiver	Keysight	N9038A	EMC2139	2018-11-19	2019-11-18
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2018-11-19	2019-11-18
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKMESS-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

Receiver Blocking					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
MXA Signal Analyzer	AgilentTechnologies	N9020A	SEM004-10	2019-02-24	2020-02-23
ESG Vector Signal Generator	Keysight	E4438C	SEM006-03	2019-04-05	2020-04-04
EXG Analog Signal Generator	AgilentTechnologies	N5171B	SEM006-04	2017-07-26	2020-07-25
Power Meter	AgilentTechnologies	U2021XA_Ch2	SEM009-02	2018-09-20	2019-09-19
Power Meter	AgilentTechnologies	U2021XA_Ch3	SEM009-03	2018-09-20	2019-09-19
6dB Attenuator	HP	8491A	EMC2062	2018-04-04	2020-04-03
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS	0.8M	EMC2136	2017-11-02	2019-11-01
MI CABLE	SGS	0.8M	EMC2137	2017-11-02	2019-11-01

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General used equipment					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
DMM	Fluke	73	EMC0006	2019-07-16	2020-07-15
DMM	Fluke	73	EMC0007	2019-07-16	2020-07-15

6 Radio Spectrum Technical Requirement

6.1 Geo-location capability

6.1.1 Test Requirement:

EN 300 328 Clause 4.3.2.12

Limit: This requirement only applies to equipment with geo-location capability as defined in clause 4.3.1.12.2.

6.1.2 Conclusion

Standard Requirement:

The geographical location determined by the equipment as defined in clause below shall not be accessible to the user.

Geo-location capability is a feature of the equipment to determine its geographical location with the purpose to configure itself according to the regulatory requirements applicable at the geographical location where it operates.

The geo-location capability may be present in the equipment or in an external device (temporary) associated with the equipment operating at the same geographical location during the initial power up of the equipment. The geographical location may also be available in equipment already installed and operating at the same geographical location.

The applicant declares:

The product does not have the geo-location function.

7 Radio Spectrum Matter Test Results

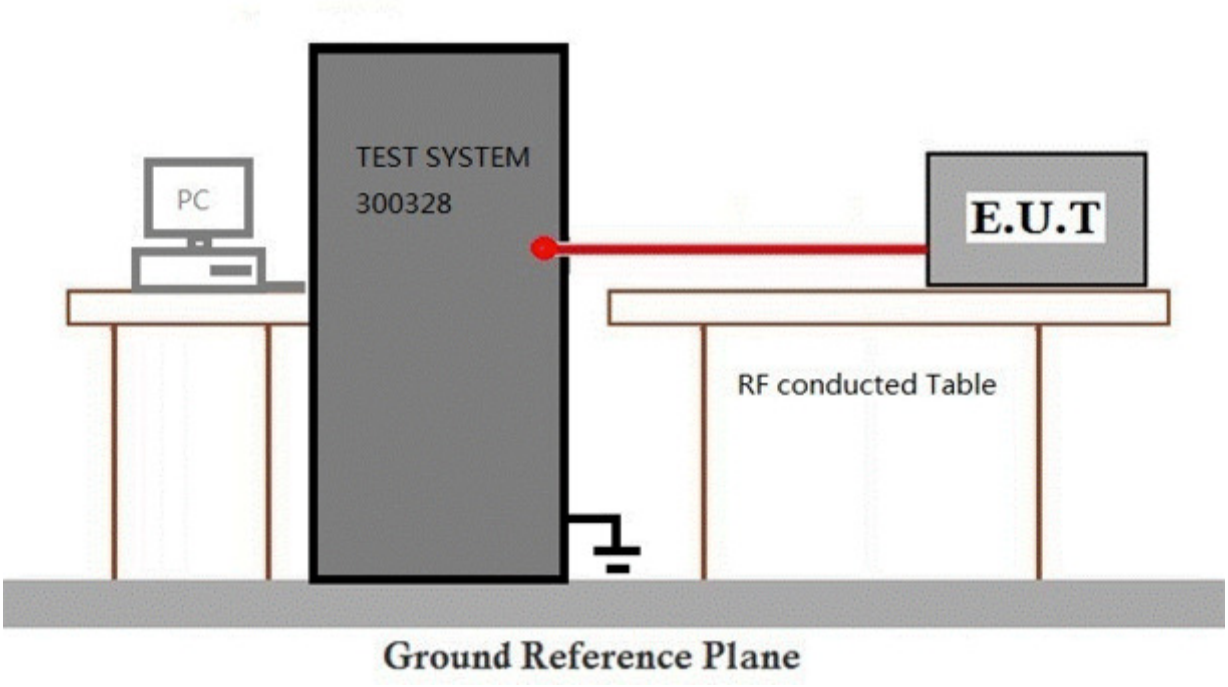
7.1 RF Output Power

Test Requirement EN 300 328 Clause 4.3.2.2
Test Method: EN 300 328 V2.1.1 clause 5.4.2.2.1.2
Limit: 20dBm/(100mw) (e.i.r.p)

7.1.1 E.U.T. Operation

Operating Environment:
Temperature: 24 °C Humidity: 53.8 % RH Atmospheric Pressure: 1020 mbar
Test mode a:TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation

7.1.2 Test Setup Diagram



7.1.3 Measurement Procedure and Data

The detailed test data see: Appendix 300328

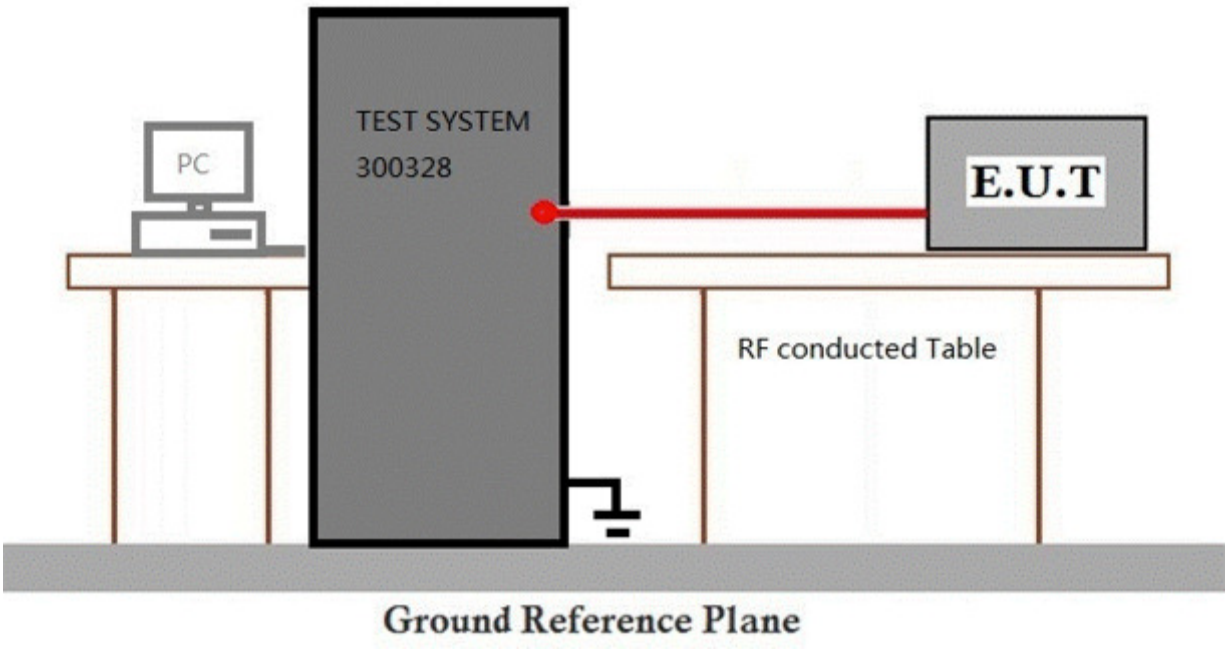
7.2 Power Spectral Density

Test Requirement EN 300 328 Clause 4.3.2.3
Test Method: EN 300 328 V2.1.1 clause 5.4.3.2.1
Limit: ≤10dBm per MHz

7.2.1 E.U.T. Operation

Operating Environment:
Temperature: 24 °C Humidity: 53.8 % RH Atmospheric Pressure: 1020 mbar
Test mode a:TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation

7.2.2 Test Setup Diagram



7.2.3 Measurement Procedure and Data

The detailed test data see: Appendix 300328

7.3 Occupied Channel Bandwidth

Test Requirement: EN 300 328 Clause 4.3.2.7

Test Method: EN 300 328 V2.1.1 clause 5.4.7.2.1

Limit: The Occupied Channel Bandwidth shall fall completely within the band given in clause 1. For non-adaptive Frequency Hopping equipment with e.i.r.p. greater than 10 dBm, the Occupied Channel Bandwidth for every occupied hopping frequency shall be equal to or less than the Nominal Channel Bandwidth declared by the manufacturer. See clause 5.4.1 j). This declared value shall not be greater than 5 MHz.

The Occupied Channel Bandwidth shall fall completely within the band given in table 1. In addition, for non-adaptive equipment using wide band modulations other than FHSS and with e.i.r.p. greater than 10 dBm, the occupied channel bandwidth shall be less than 20 MHz.

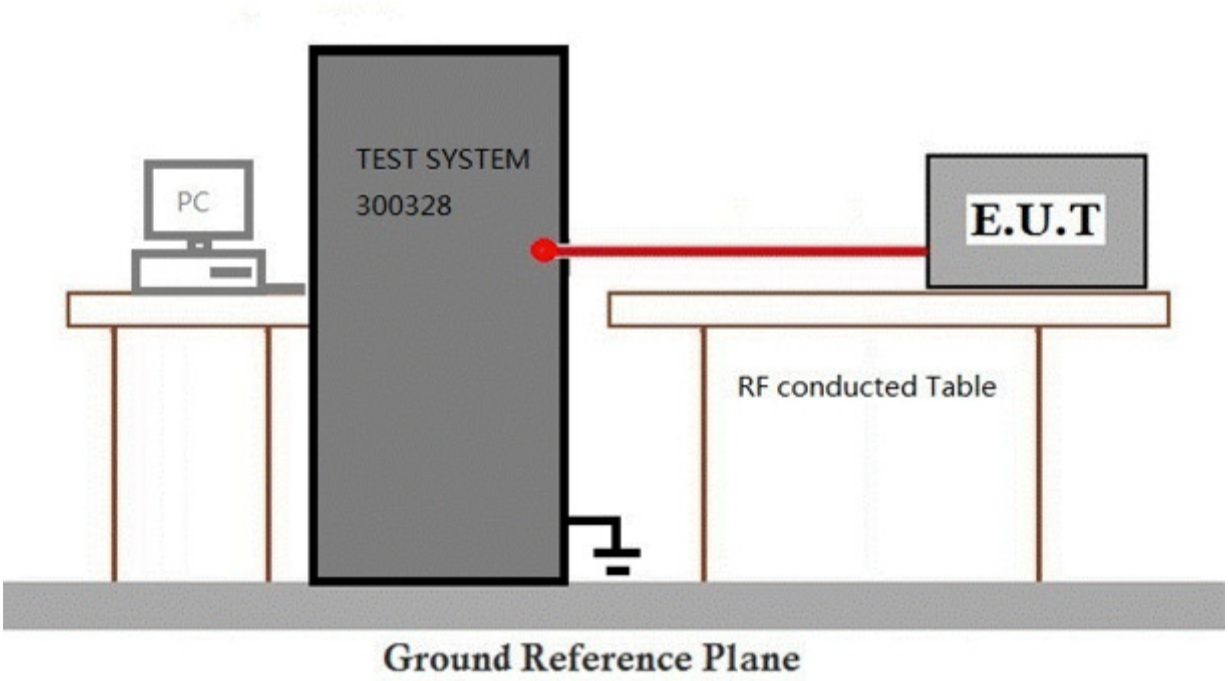
7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 53.8 % RH Atmospheric Pressure: 1020 mbar

Test mode a:TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation

7.3.2 Test Setup Diagram



7.3.3 Measurement Procedure and Data

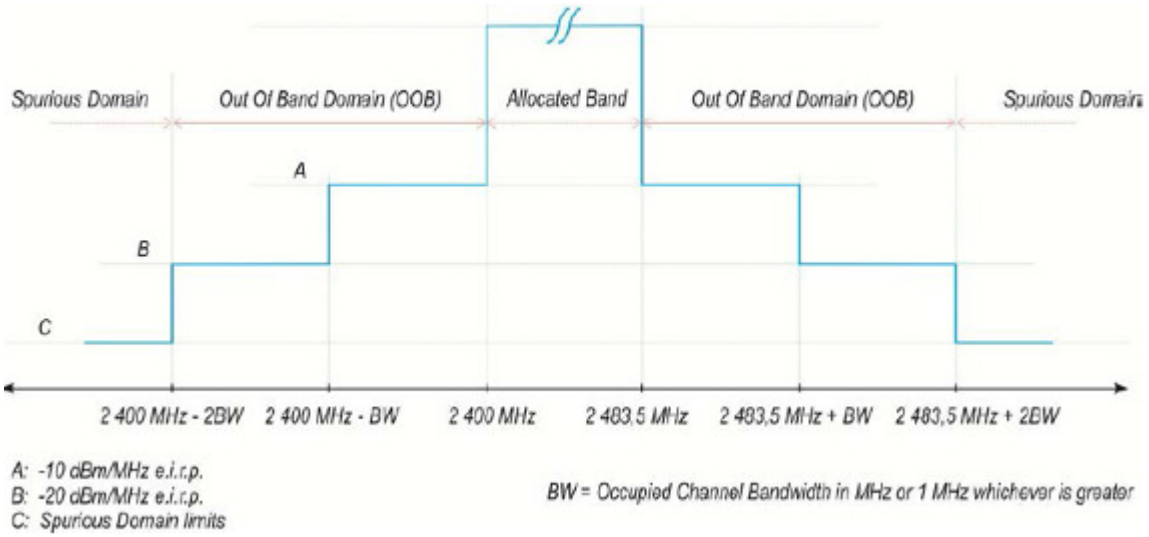
The detailed test data see: Appendix 300328

7.4 Transmitter unwanted emissions in the out-of-band domain

Test Requirement EN 300 328 Clause 4.3.2.8

Test Method: EN 300 328 V2.1.1 clause 5.4.8.2.1

Limit:



A: -10 dBm/MHz e.i.r.p.
B: -20 dBm/MHz e.i.r.p.
C: Spurious Domain limits

BW = Occupied Channel Bandwidth in MHz or 1 MHz whichever is greater

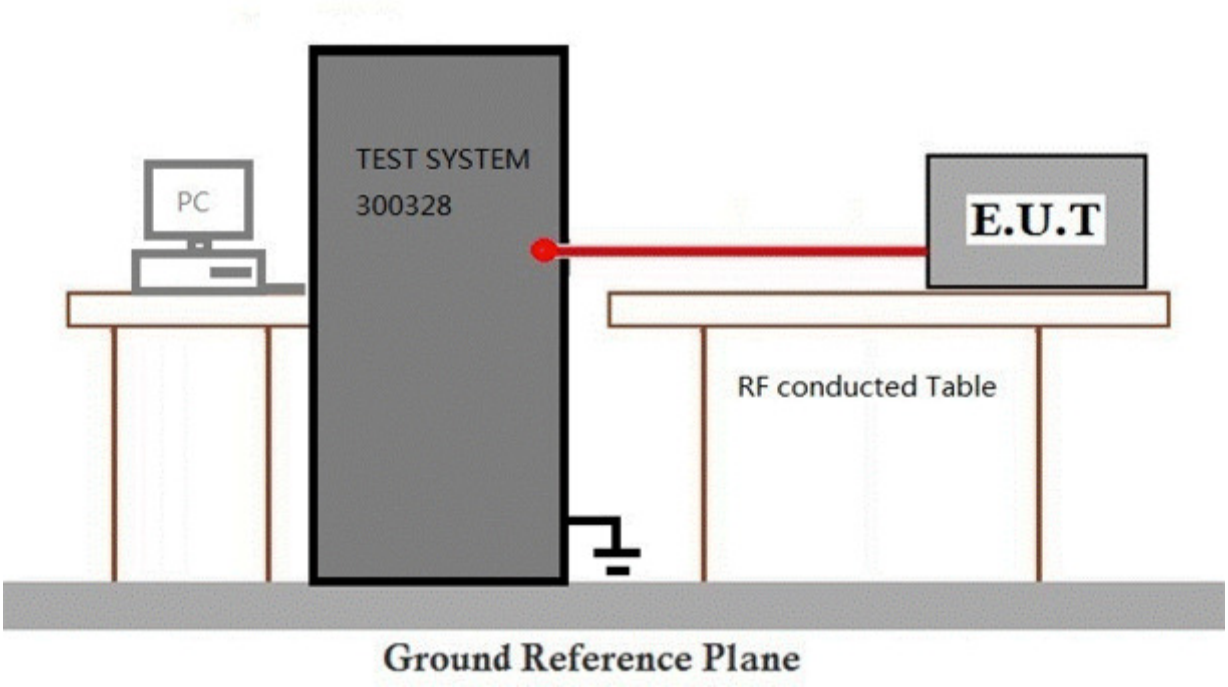
7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 53.8 % RH Atmospheric Pressure: 1020 mbar

Test mode a:TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation

7.4.2 Test Setup Diagram



7.4.3 Measurement Procedure and Data

The detailed test data see: Appendix 300328

7.5 Transmitter unwanted emissions in the spurious domain

Test Requirement EN 300 328 Clause 4.3.2.9
Test Method: EN 300 328 V2.1.1 clause 5.4.9.2
Measurement Distance: 3m
Limit:

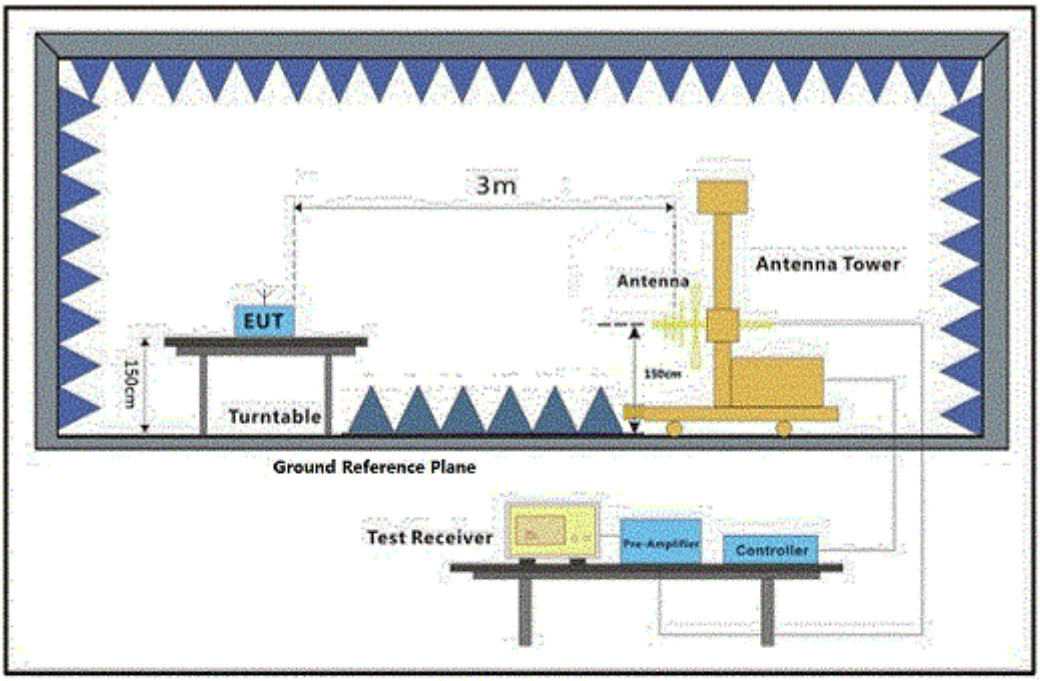
Table 1: Transmitter limits for spurious emissions

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	-54dBm	100 kHz
74 MHz to 87,5 MHz	-36dBm	100 kHz
87,5 MHz to 118 MHz	-54dBm	100 kHz
118 MHz to 174 MHz	-36dBm	100 kHz
174 MHz to 230 MHz	-54dBm	100 kHz
230 MHz to 470 MHz	-36dBm	100 kHz
470 MHz to 862 MHz	-54dBm	100 kHz
862 MHz to 1 GHz	-36dBm	100 kHz
1 GHz to 12,75 GHz	-30dBm	1MHz

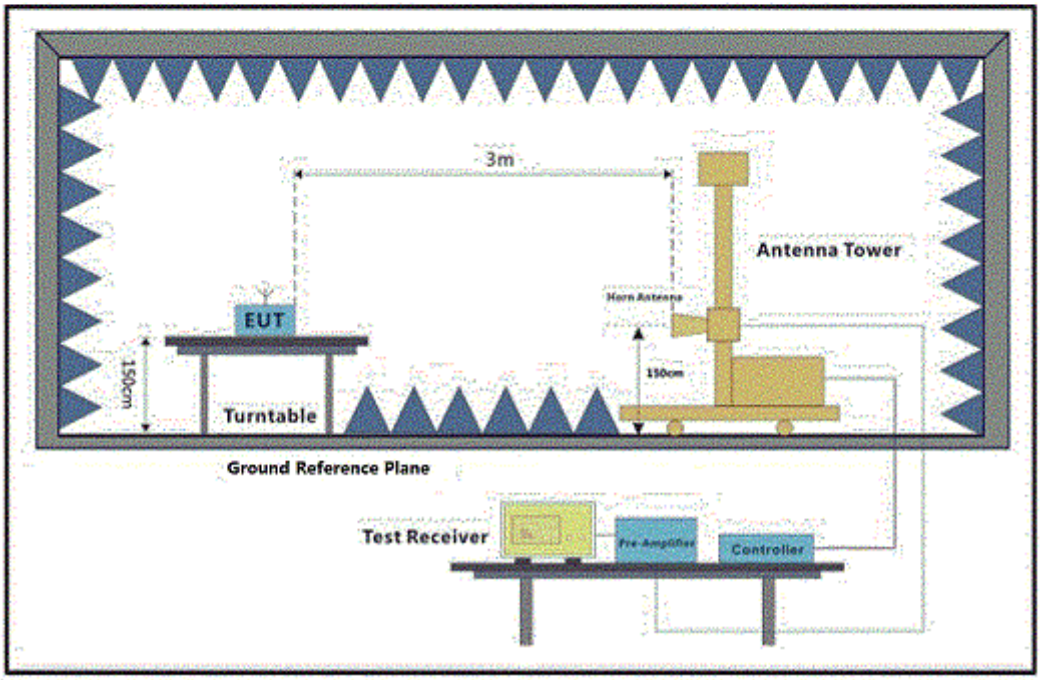
7.5.1 E.U.T. Operation

Operating Environment:
Temperature: 21 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar
Test mode a:TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation

7.5.2 Test Setup Diagram



30MHz-1GHz



Above 1GHz

7.5.3 Measurement Procedure and Data

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 (dBi)

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.

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.

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Mode:a; Polarization:Horizontal; Modulation:GFSK; ; Channel:Low

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	52.39	-84.74	-1.48	0.00	0.00	-86.22	-54.00	-32.22	HORIZONTAL
2	61.35	-84.66	-2.87	0.00	0.00	-87.53	-54.00	-33.53	HORIZONTAL
3	96.77	-81.15	-9.66	0.00	0.00	-90.81	-54.00	-36.81	HORIZONTAL
4	201.39	-74.56	-6.90	0.00	0.00	-81.46	-54.00	-27.46	HORIZONTAL
5	499.42	-75.76	0.39	0.00	0.00	-75.37	-54.00	-21.37	HORIZONTAL
6	663.47	-74.26	3.91	0.00	0.00	-70.35	-54.00	-16.35	HORIZONTAL

Mode:a; Polarization:Horizontal; Modulation:GFSK; ; Channel:Low

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	4098.01	-61.27	3.40	0.00	0.00	-57.87	-30.00	-27.87	HORIZONTAL
2	4804.02	-60.86	8.29	0.00	0.00	-52.57	-30.00	-22.57	HORIZONTAL
3	6071.42	-62.39	19.14	0.00	0.00	-43.25	-30.00	-13.25	HORIZONTAL
4	7206.31	-62.92	18.41	0.00	0.00	-44.51	-30.00	-14.51	HORIZONTAL
5	9608.43	-61.02	17.78	0.00	0.00	-43.24	-30.00	-13.24	HORIZONTAL
6	12010.61	-62.32	21.47	0.00	0.00	-40.85	-30.00	-10.85	HORIZONTAL

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Mode:a; Polarization:Vertical; Modulation:GFSK; ; Channel:Low

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	50.41	-83.93	-6.70	0.00	0.00	-90.63	-54.00	-36.63	VERTICAL
2	61.13	-84.44	-2.57	0.00	0.00	-87.01	-54.00	-33.01	VERTICAL
3	102.72	-81.48	-5.02	0.00	0.00	-86.50	-54.00	-32.50	VERTICAL
4	201.39	-74.37	-5.13	0.00	0.00	-79.50	-54.00	-25.50	VERTICAL
5	499.42	-76.95	1.79	0.00	0.00	-75.16	-54.00	-21.16	VERTICAL
6	663.47	-74.28	4.82	0.00	0.00	-69.46	-54.00	-15.46	VERTICAL

Mode:a; Polarization:Vertical; Modulation:GFSK; ; Channel:Low

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	3587.82	-62.39	4.79	0.00	0.00	-57.60	-30.00	-27.60	VERTICAL
2	4804.02	-62.00	9.05	0.00	0.00	-52.95	-30.00	-22.95	VERTICAL
3	5664.53	-61.61	15.10	0.00	0.00	-46.51	-30.00	-16.51	VERTICAL
4	7206.31	-61.32	19.04	0.00	0.00	-42.28	-30.00	-12.28	VERTICAL
5	9608.43	-57.48	17.91	0.00	0.00	-39.57	-30.00	-9.57	VERTICAL
6	12010.47	-60.40	21.86	0.00	0.00	-38.54	-30.00	-8.54	VERTICAL

Mode:a; Polarization:Horizontal; Modulation:GFSK; ; Channel:High

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	51.30	-84.13	-1.37	0.00	0.00	-85.50	-54.00	-31.50	HORIZONTAL
2	56.20	-85.10	-2.15	0.00	0.00	-87.25	-54.00	-33.25	HORIZONTAL
3	98.14	-82.13	-9.65	0.00	0.00	-91.78	-54.00	-37.78	HORIZONTAL
4	195.14	-75.13	-6.49	0.00	0.00	-81.62	-54.00	-27.62	HORIZONTAL
5	663.47	-74.54	3.91	0.00	0.00	-70.63	-54.00	-16.63	HORIZONTAL
6	774.16	-76.90	5.91	0.00	0.00	-70.99	-54.00	-16.99	HORIZONTAL

Mode:a; Polarization:Horizontal; Modulation:GFSK; ; Channel:High

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	3693.03	-61.34	3.82	0.00	0.00	-57.52	-30.00	-27.52	HORIZONTAL
2	4960.99	-59.13	10.69	0.00	0.00	-48.44	-30.00	-18.44	HORIZONTAL
3	6071.42	-62.93	19.14	0.00	0.00	-43.79	-30.00	-13.79	HORIZONTAL
4	7440.91	-60.65	16.27	0.00	0.00	-44.38	-30.00	-14.38	HORIZONTAL
5	9920.99	-58.83	19.62	0.00	0.00	-39.21	-30.00	-9.21	HORIZONTAL
6	12400.13	-61.00	23.01	0.00	0.00	-37.99	-30.00	-7.99	HORIZONTAL

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Mode:a; Polarization:Vertical; Modulation:GFSK; ; Channel:High

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	53.32	-84.20	-5.54	0.00	0.00	-89.74	-54.00	-35.74	VERTICAL
2	60.07	-85.74	-2.10	0.00	0.00	-87.84	-54.00	-33.84	VERTICAL
3	104.54	-80.61	-4.93	0.00	0.00	-85.54	-54.00	-31.54	VERTICAL
4	207.85	-76.42	-5.52	0.00	0.00	-81.94	-54.00	-27.94	VERTICAL
5	492.47	-78.09	1.96	0.00	0.00	-76.13	-54.00	-22.13	VERTICAL
6	744.87	-77.38	5.73	0.00	0.00	-71.65	-54.00	-17.65	VERTICAL

Mode:a; Polarization:Vertical; Modulation:GFSK; ; Channel:High

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	4960.99	-57.95	9.86	0.00	0.00	-48.09	-30.00	-18.09	VERTICAL
2	5797.03	-62.37	15.97	0.00	0.00	-46.40	-30.00	-16.40	VERTICAL
3	6954.85	-63.06	20.29	0.00	0.00	-42.77	-30.00	-12.77	VERTICAL
4	7440.91	-62.60	16.74	0.00	0.00	-45.86	-30.00	-15.86	VERTICAL
5	9920.99	-62.70	19.82	0.00	0.00	-42.88	-30.00	-12.88	VERTICAL
6	12400.54	-62.43	22.79	0.00	0.00	-39.64	-30.00	-9.64	VERTICAL

7.6 Receiver spurious emissions

Test Requirement EN 300 328 Clause 4.3.2.10
Test Method: EN 300 328 V2.1.1 clause 5.4.10.2
Measurement Distance: 3m
Limit:

The spurious emissions of the receiver shall not exceed the values in tables in the indicated bands:

Frequency Range	Limit
25MHz to 1GHz	2nw(-57dBm)
Above 1GHz	20nw(-47dBm)

7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 21 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

Test mode b:RX_Keep the EUT in receiving mode with GFSK modulation.

7.6.2 Measurement Procedure and Data

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 (dBi)

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.

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.

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Mode:b; Polarization:Horizontal; Modulation:GFSK; ; Channel:Low

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	32.86	-82.83	3.11	0.00	0.00	-79.72	-57.00	-22.72	HORIZONTAL
2	54.26	-83.99	-1.76	0.00	0.00	-85.75	-57.00	-28.75	HORIZONTAL
3	182.56	-72.77	-6.07	0.00	0.00	-78.84	-57.00	-21.84	HORIZONTAL
4	272.28	-70.75	-2.88	0.00	0.00	-73.63	-57.00	-16.63	HORIZONTAL
5	394.85	-66.84	-1.05	0.00	0.00	-67.89	-57.00	-10.89	HORIZONTAL
6	696.86	-72.06	4.32	0.00	0.00	-67.74	-57.00	-10.74	HORIZONTAL

Mode:b; Polarization:Horizontal; Modulation:GFSK; ; Channel:Low

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	1135.62	-58.65	3.92	0.00	0.00	-54.73	-47.00	-7.73	HORIZONTAL
2	1374.30	-60.51	4.46	0.00	0.00	-56.05	-47.00	-9.05	HORIZONTAL
3	1746.90	-61.07	6.08	0.00	0.00	-54.99	-47.00	-7.99	HORIZONTAL
4	2734.23	-60.54	4.21	0.00	0.00	-56.33	-47.00	-9.33	HORIZONTAL
5	3536.34	-62.75	3.84	0.00	0.00	-58.91	-47.00	-11.91	HORIZONTAL
6	4508.14	-63.02	6.13	0.00	0.00	-56.89	-47.00	-9.89	HORIZONTAL

Mode:b; Polarization:Vertical; Modulation:GFSK; ; Channel:Low

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	58.20	-85.43	-2.63	0.00	0.00	-88.06	-57.00	-31.06	VERTICAL
2	103.81	-81.69	-4.97	0.00	0.00	-86.66	-57.00	-29.66	VERTICAL
3	181.28	-80.94	-3.98	0.00	0.00	-84.92	-57.00	-27.92	VERTICAL
4	340.78	-78.84	-2.23	0.00	0.00	-81.07	-57.00	-24.07	VERTICAL
5	566.62	-77.96	2.75	0.00	0.00	-75.21	-57.00	-18.21	VERTICAL
6	796.18	-78.00	7.33	0.00	0.00	-70.67	-57.00	-13.67	VERTICAL

Mode:b; Polarization:Vertical; Modulation:GFSK; ; Channel:Low

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	1020.44	-60.41	3.75	0.00	0.00	-56.66	-47.00	-9.66	VERTICAL
2	1339.01	-60.38	4.18	0.00	0.00	-56.20	-47.00	-9.20	VERTICAL
3	1736.83	-61.28	5.68	0.00	0.00	-55.60	-47.00	-8.60	VERTICAL
4	2896.95	-61.85	4.92	0.00	0.00	-56.93	-47.00	-9.93	VERTICAL
5	3114.03	-61.62	2.73	0.00	0.00	-58.89	-47.00	-11.89	VERTICAL
6	4341.89	-61.11	4.67	0.00	0.00	-56.44	-47.00	-9.44	VERTICAL

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Mode:b; Polarization:Horizontal; Modulation:GFSK; ; Channel:High

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	62.87	-83.39	-3.40	0.00	0.00	-86.79	-57.00	-29.79	HORIZONTAL
2	160.91	-76.36	-6.42	0.00	0.00	-82.78	-57.00	-25.78	HORIZONTAL
3	272.28	-74.09	-2.88	0.00	0.00	-76.97	-57.00	-19.97	HORIZONTAL
4	393.47	-66.69	-1.06	0.00	0.00	-67.75	-57.00	-10.75	HORIZONTAL
5	515.44	-69.00	0.44	0.00	0.00	-68.56	-57.00	-11.56	HORIZONTAL
6	696.86	-73.69	4.32	0.00	0.00	-69.37	-57.00	-12.37	HORIZONTAL

Mode:b; Polarization:Horizontal; Modulation:GFSK; ; Channel:High

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	1047.33	-58.99	1.73	0.00	0.00	-57.26	-47.00	-10.26	HORIZONTAL
2	1300.86	-60.08	3.91	0.00	0.00	-56.17	-47.00	-9.17	HORIZONTAL
3	1711.91	-61.48	6.34	0.00	0.00	-55.14	-47.00	-8.14	HORIZONTAL
4	1921.73	-60.49	7.07	0.00	0.00	-53.42	-47.00	-6.42	HORIZONTAL
5	3196.09	-62.61	2.23	0.00	0.00	-60.38	-47.00	-13.38	HORIZONTAL
6	4267.24	-63.36	4.23	0.00	0.00	-59.13	-47.00	-12.13	HORIZONTAL

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Mode:b; Polarization:Vertical; Modulation:GFSK; ; Channel:High

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	57.19	-85.24	-3.01	0.00	0.00	-88.25	-57.00	-31.25	VERTICAL
2	125.89	-81.76	-3.93	0.00	0.00	-85.69	-57.00	-28.69	VERTICAL
3	272.28	-77.35	-3.20	0.00	0.00	-80.55	-57.00	-23.55	VERTICAL
4	422.06	-78.55	0.96	0.00	0.00	-77.59	-57.00	-20.59	VERTICAL
5	687.15	-78.06	5.07	0.00	0.00	-72.99	-57.00	-15.99	VERTICAL
6	884.50	-78.12	9.56	0.00	0.00	-68.56	-57.00	-11.56	VERTICAL

Mode:b; Polarization:Vertical; Modulation:GFSK; ; Channel:High

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase
	MHz	dBm	dB/m	dB	dB	dBm	dBm	dB	
1	1100.08	-59.94	4.84	0.00	0.00	-55.10	-47.00	-8.10	VERTICAL
2	1308.40	-58.29	4.24	0.00	0.00	-54.05	-47.00	-7.05	VERTICAL
3	1556.17	-60.21	5.76	0.00	0.00	-54.45	-47.00	-7.45	VERTICAL
4	1782.60	-60.75	5.75	0.00	0.00	-55.00	-47.00	-8.00	VERTICAL
5	2871.93	-61.41	4.73	0.00	0.00	-56.68	-47.00	-9.68	VERTICAL
6	3587.82	-61.36	4.79	0.00	0.00	-56.57	-47.00	-9.57	VERTICAL

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7.7 Receiver Blocking

Test Requirement EN 300 328 Clause 4.3.2.11

Test Method: EN 300 328 V2.1.1 clause 5.4.11.2

Limit:

While maintaining the minimum performance criteria as, the blocking levels at specified frequency offsets shall be equal to or greater than the limits defined for the applicable receiver category provided in below table.

Receiver Blocking parameters for 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**
Pmin + 6 dB	2380 2503.5	-53	CW
Pmin + 6 dB	2300 2330 2360	-47	CW
Pmin + 6 dB	2523.5 2553.5 2583.5 2613.5 2643.5 2673.5	-47	CW
NOTE 1: Pmin is the minimum level of wanted signal (in dBm) required to meet the minimum performance criteria 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.			

Receiver Blocking parameters for 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**
Pmin + 6 dB	2380 2503.5	-57	CW
Pmin + 6 dB	2300 2583.5	-47	CW
NOTE 1: Pmin is the minimum level of wanted signal (in dBm) required to meet the minimum performance criteria as defined 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.			

Receiver Blocking parameters for Receiver Category 3 equipment			
Wanted signal mean power from companion device (dBm)	**Blocking signal frequency (MHz)**	**Blocking signal power (dBm) (see note 2)**	**Type of blocking signal**
Pmin + 12 dB	2380 2503.5	-57	CW
Pmin + 12 dB	2300 2583.5	-47	CW
NOTE 1: Pmin is the minimum level of wanted signal (in dBm) required to meet the minimum performance criteria as defined 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.			

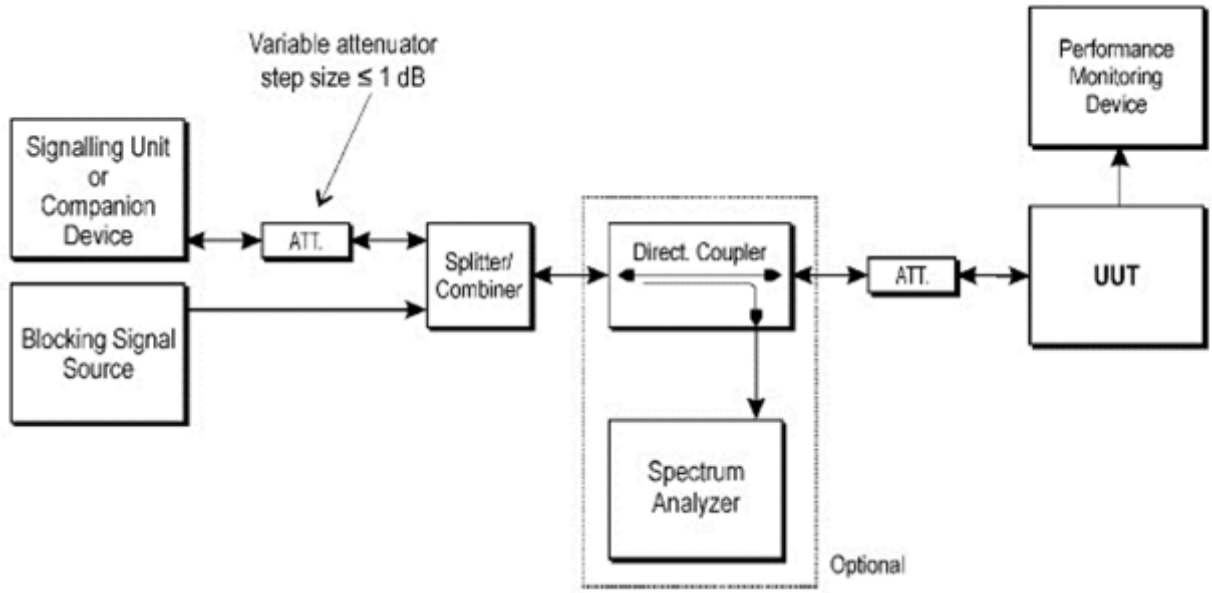
7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 53.8 % RH Atmospheric Pressure: 1020 mbar

Test mode b:RX_Keep the EUT in receiving mode with GFSK modulation.

7.7.2 Test Setup Diagram

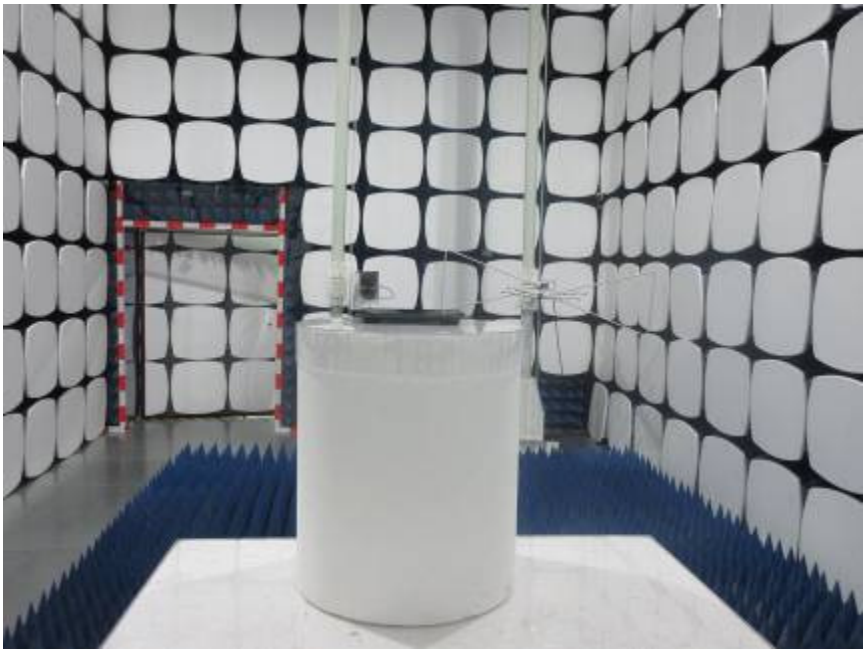


7.7.3 Measurement Procedure and Data

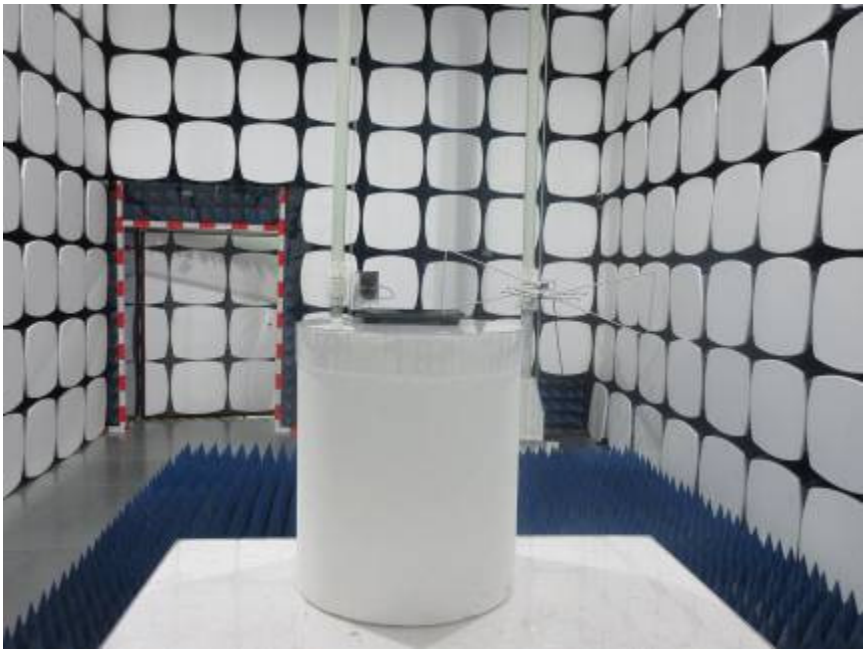
The detailed test data see: Appendix 300328

8 Photographs

8.1 Transmitter unwanted emissions in the spurious domain Test Setup



8.2 Receiver spurious emissions Test Setup



8.3 EUT Constructional Details

Please refer to Appendix A - Photographs of EUT Constructional Details for SZEM1907016374CR

9 Appendix

9.1 Appendix 300328

1.RF Output Power

Test Condition	Test Mode	Test Channel	Ant	Power [dBm]	EIRP [dBm]	Limit [dBm]	Verdict
TNVN	BLE	2402	Ant1	1.74	1.74	<=20	PASS
TNVN	BLE	2440	Ant1	1.64	1.64	<=20	PASS
TNVN	BLE	2480	Ant1	1.7	1.7	<=20	PASS
TLVN	BLE	2402	Ant1	1.73	1.73	<=20	PASS
TLVN	BLE	2440	Ant1	1.62	1.62	<=20	PASS
TLVN	BLE	2480	Ant1	1.8	1.8	<=20	PASS
THVN	BLE	2402	Ant1	1.74	1.74	<=20	PASS
THVN	BLE	2440	Ant1	1.62	1.62	<=20	PASS
THVN	BLE	2480	Ant1	1.79	1.79	<=20	PASS

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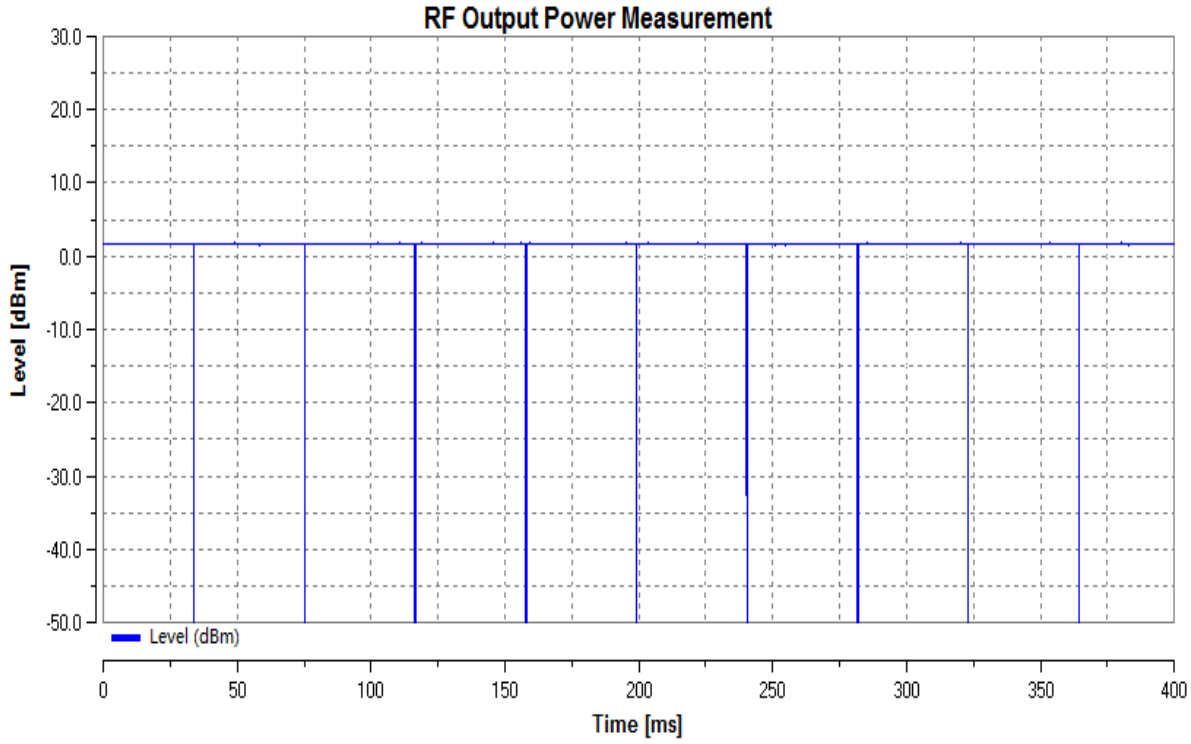
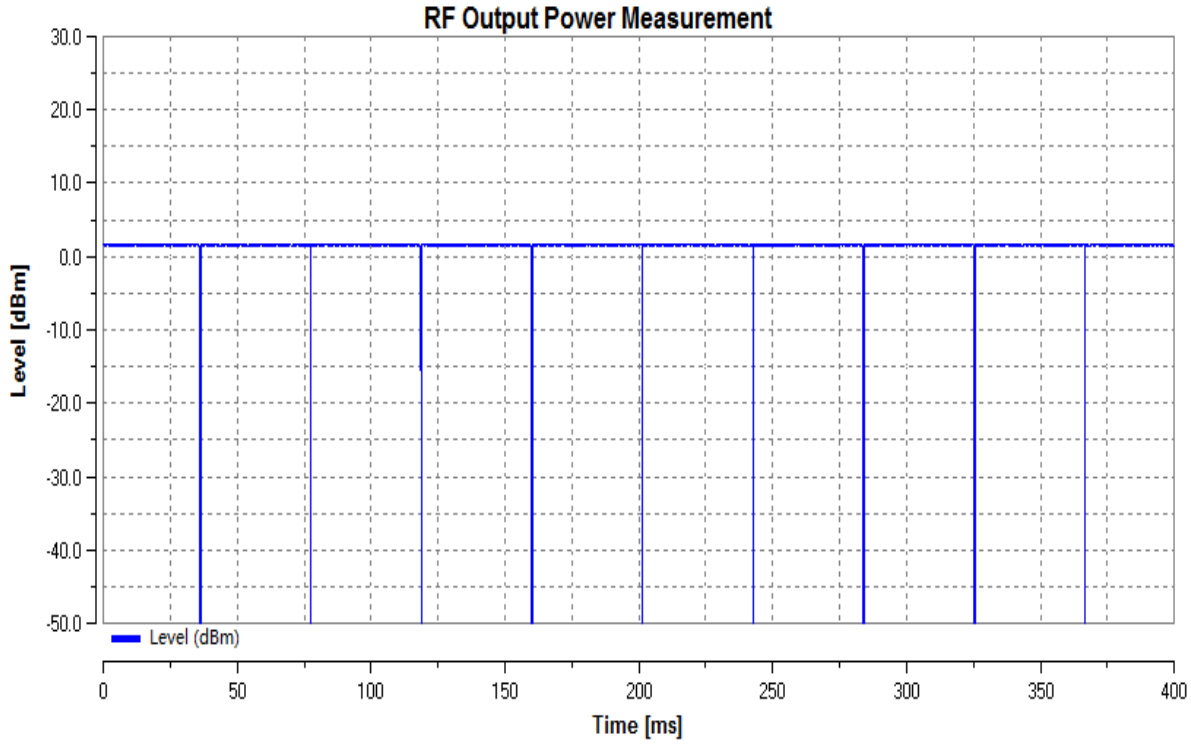
RF Output Power_TNVN_BLE_2402_Ant1



RF Output Power_TNVN_BLE_2440_Ant1



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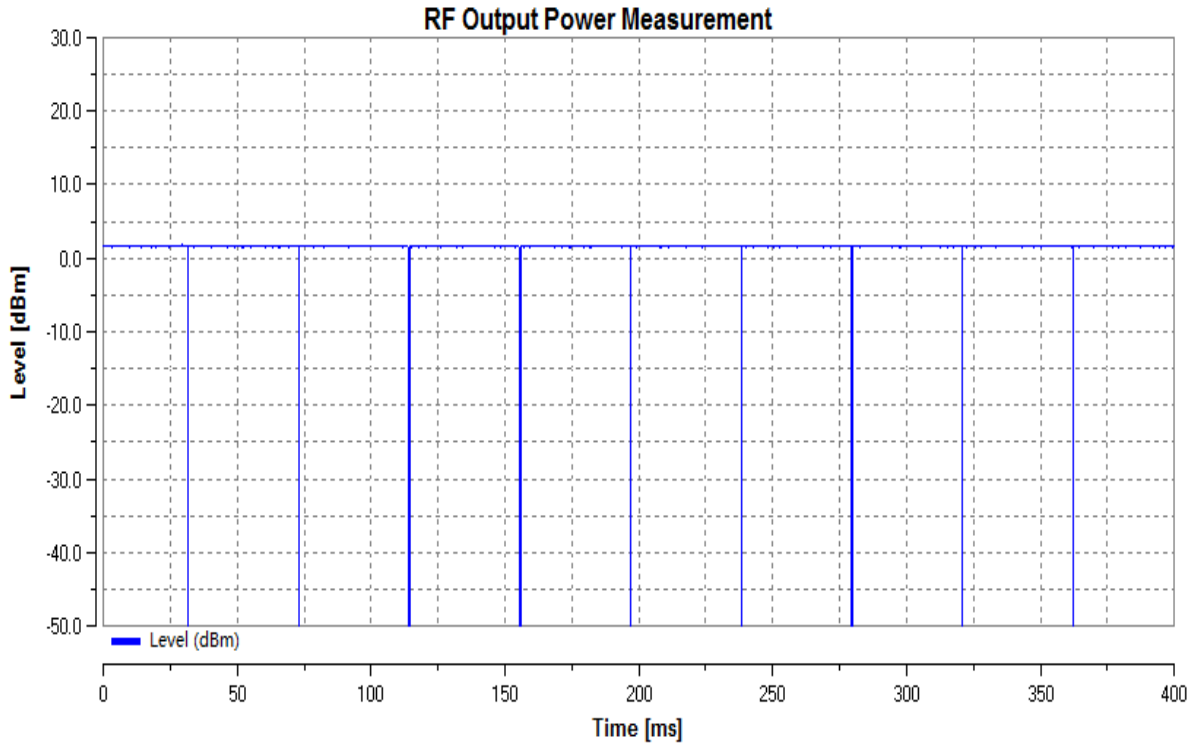
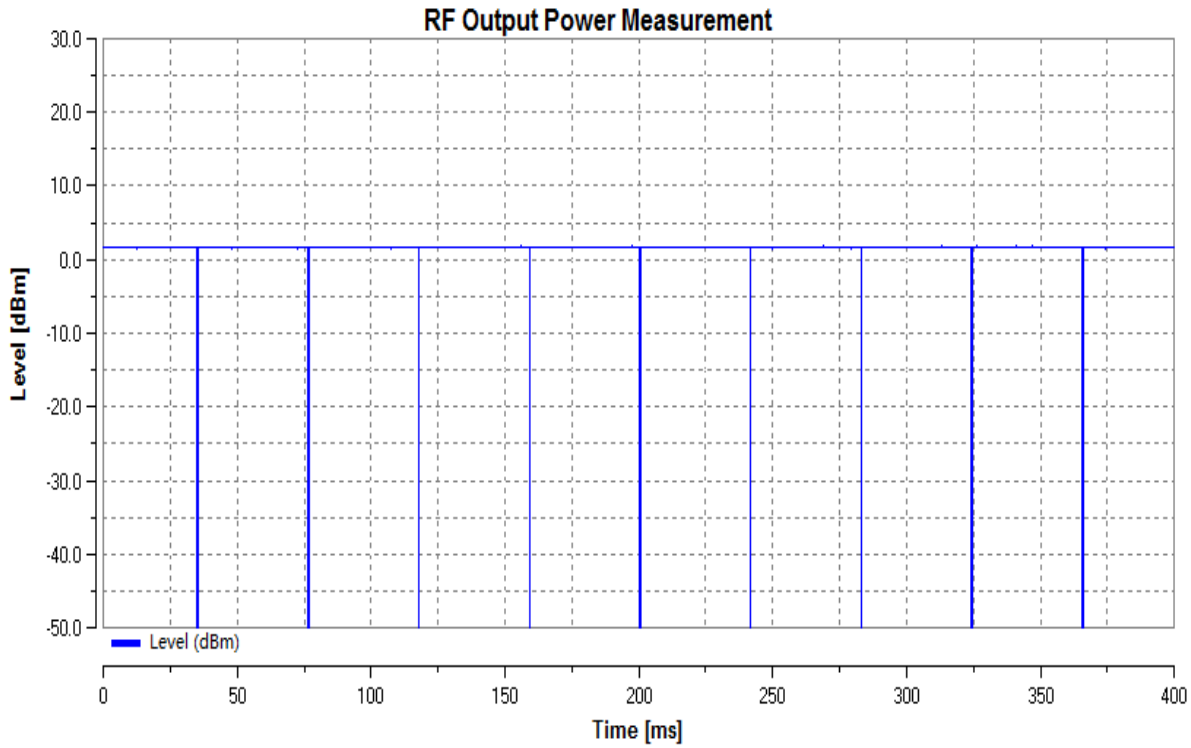
RF Output Power_TNVN_BLE_2480_Ant1



RF Output Power_TLVN_BLE_2402_Ant1



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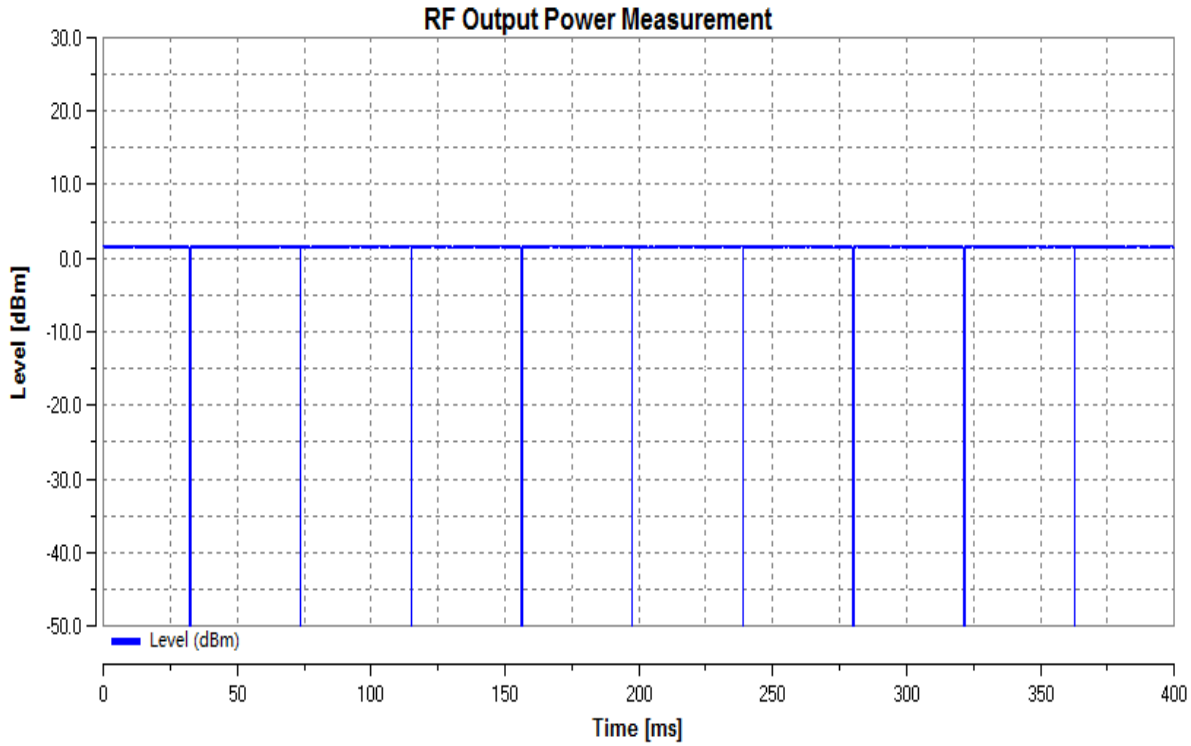
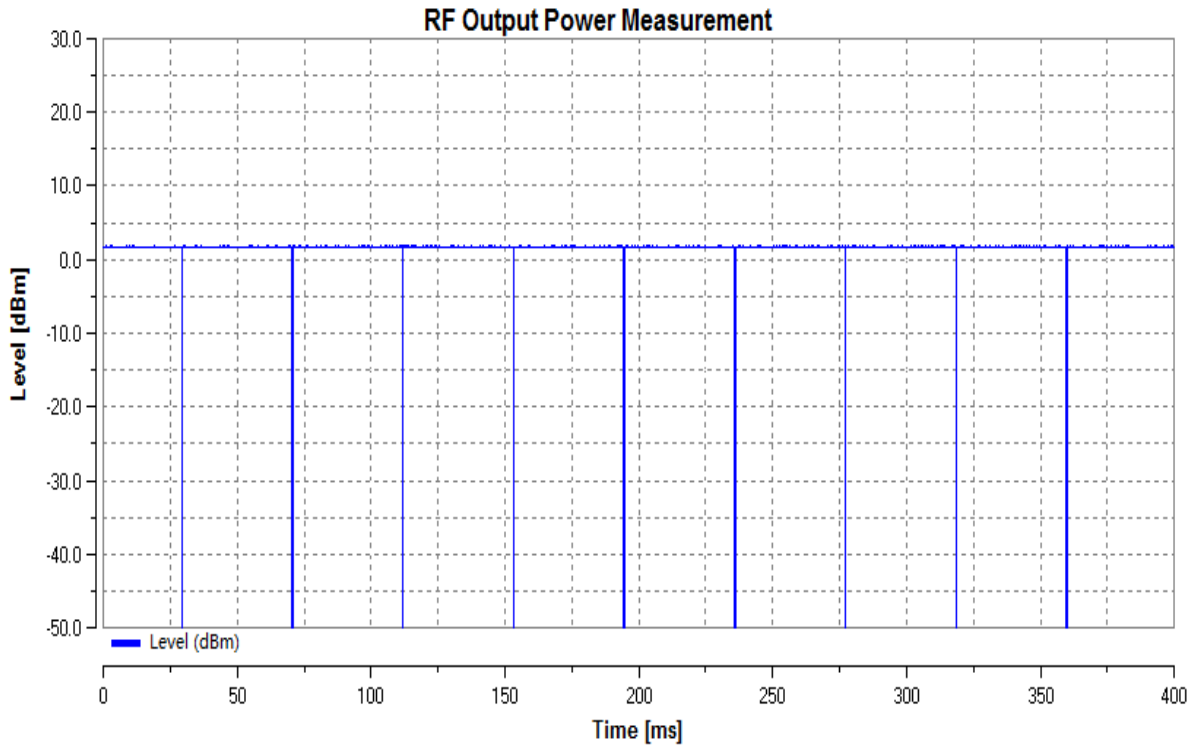
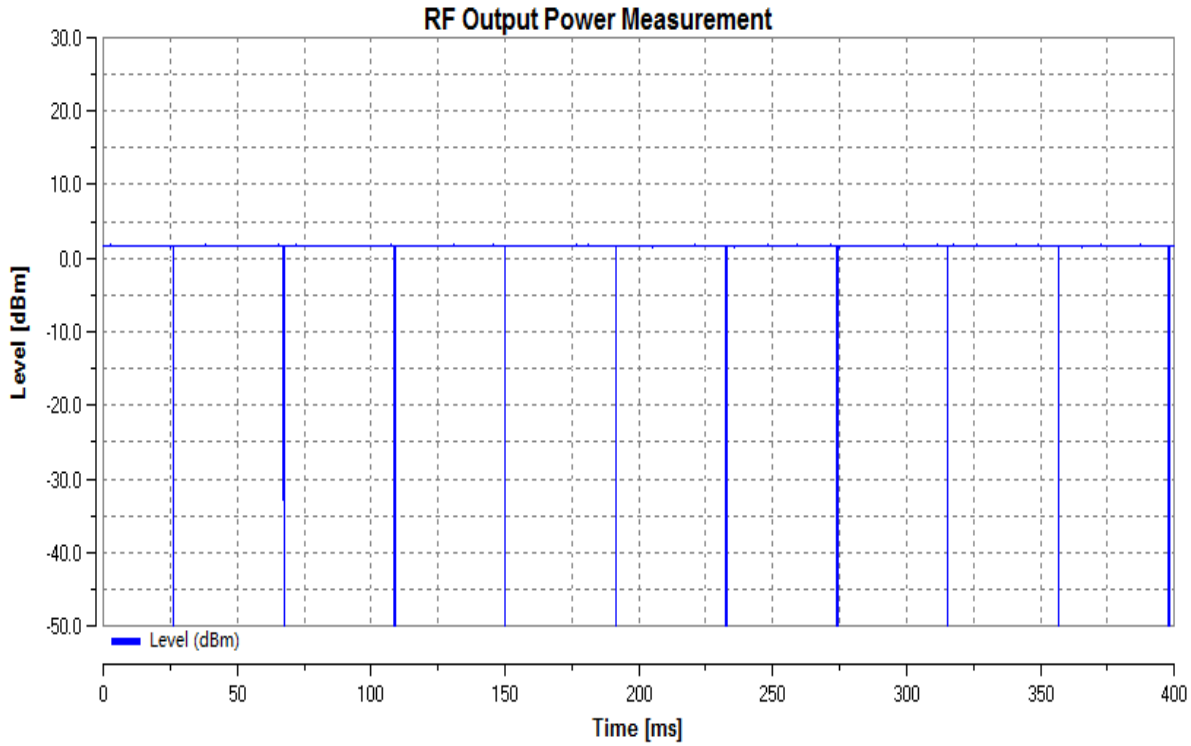
RF Output Power_TLVN_BLE_2440_Ant1



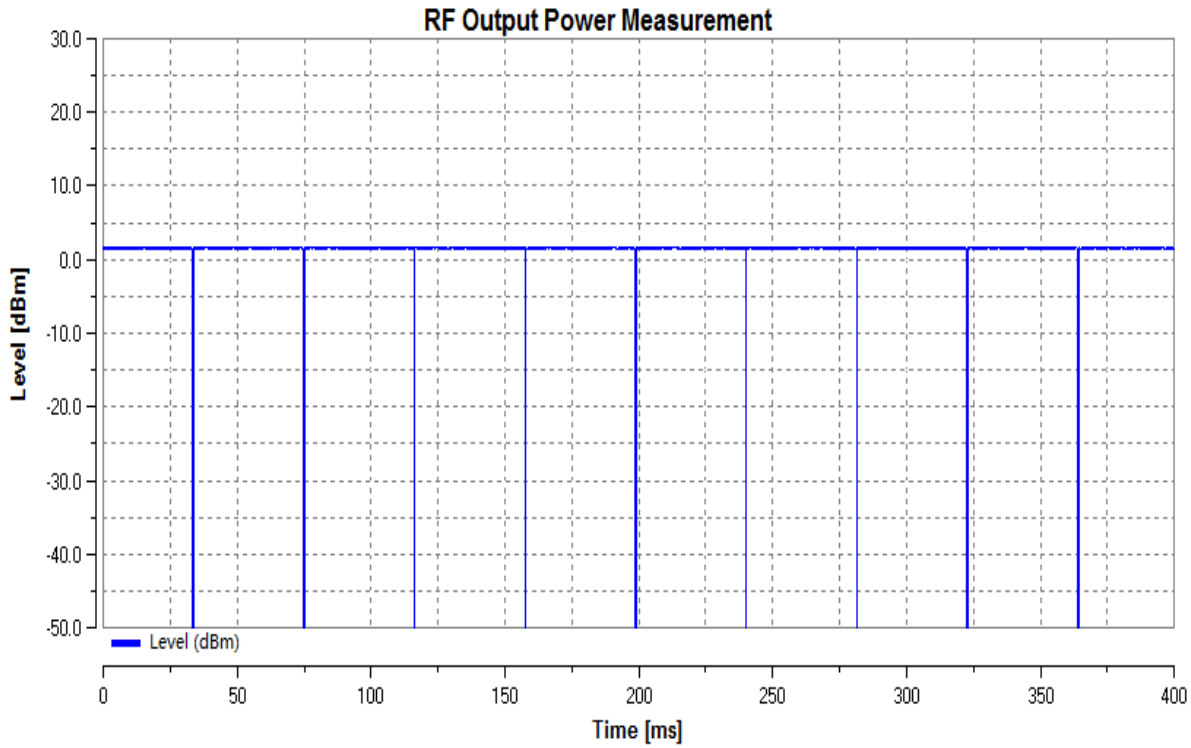
RF Output Power_TLVN_BLE_2480_Ant1



RF Output Power_THVN_BLE_2402_Ant1



RF Output Power_THVN_BLE_2440_Ant1



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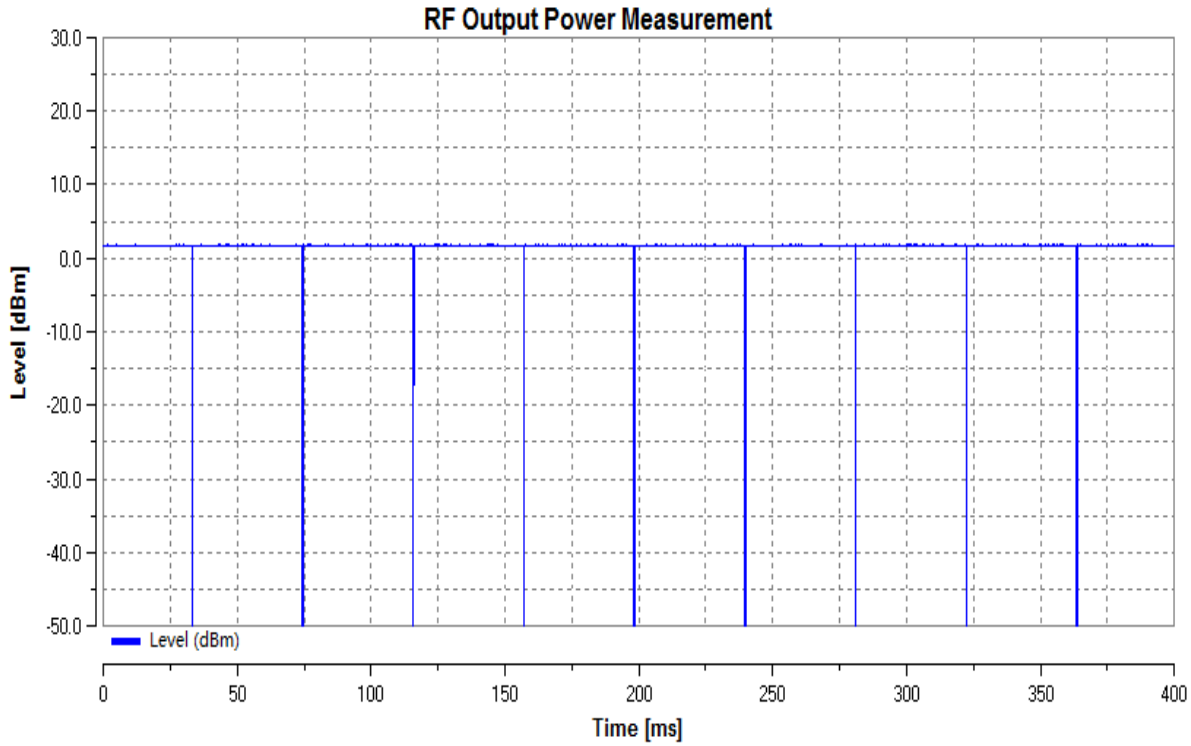
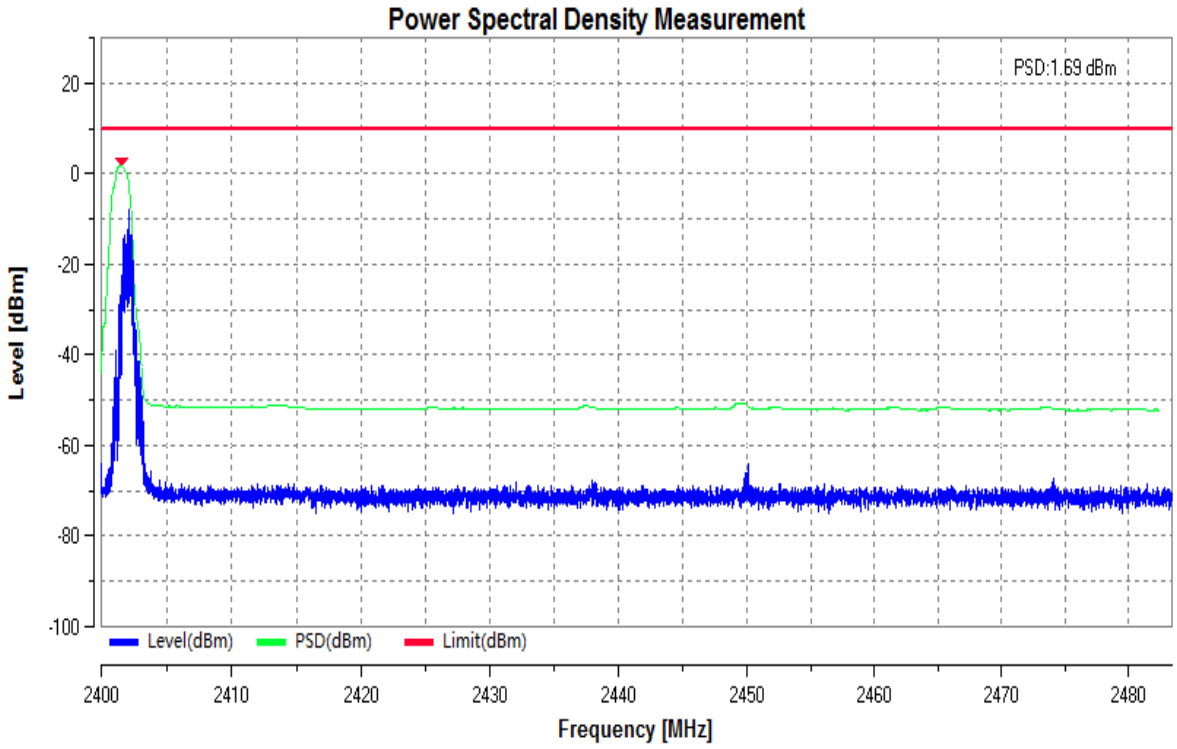
RF Output Power_THVN_BLE_2480_Ant1



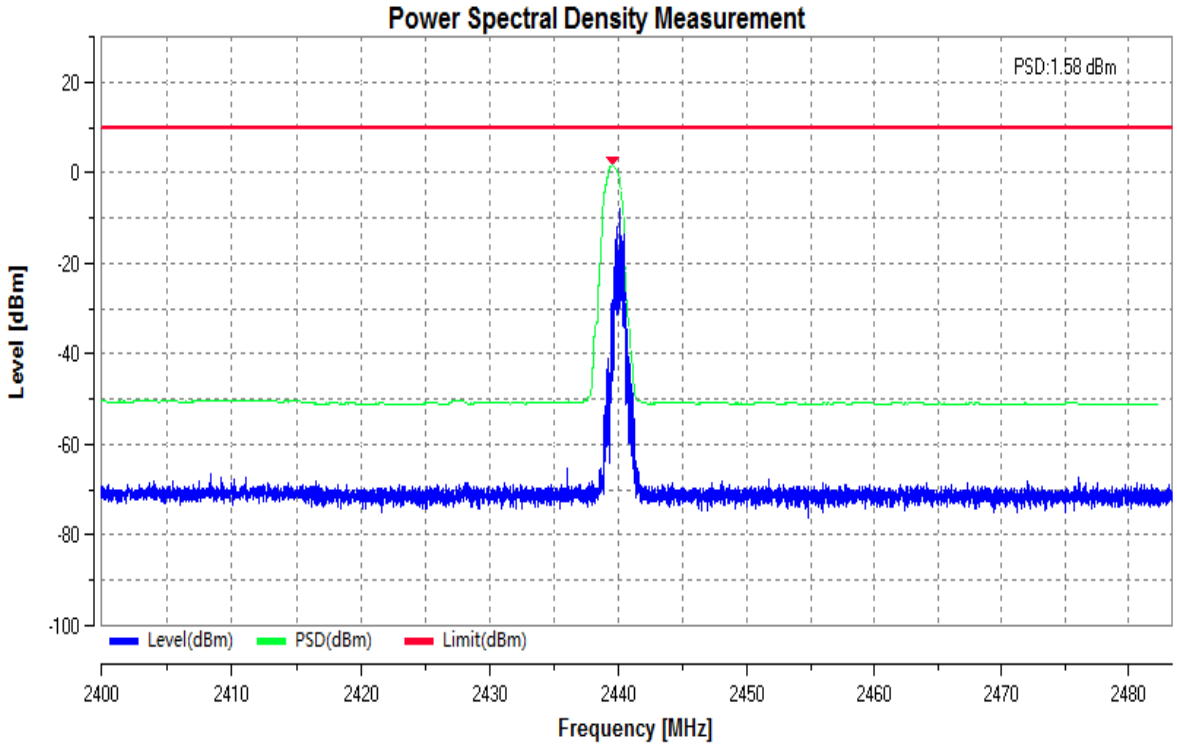
2.Power Spectral Density

Test Condition	Test Mode	Test Channel	Ant	PSD [dBm]	Limit [dBm]	Verdict
TNVN	BLE	2402	Ant1	1.69	<=10	PASS
TNVN	BLE	2440	Ant1	1.58	<=10	PASS
TNVN	BLE	2480	Ant1	1.76	<=10	PASS

Power Spectral Density_TNVN_BLE_2402_Ant1



Power Spectral Density_TNVN_BLE_2440_Ant1



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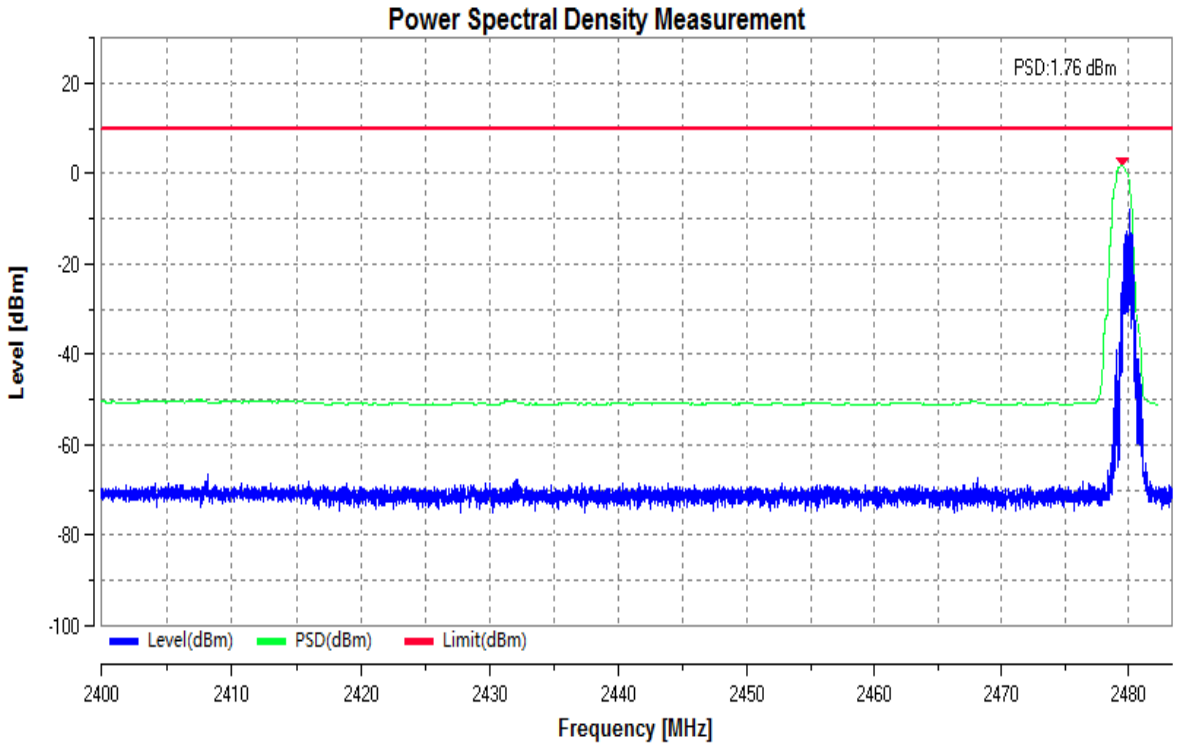
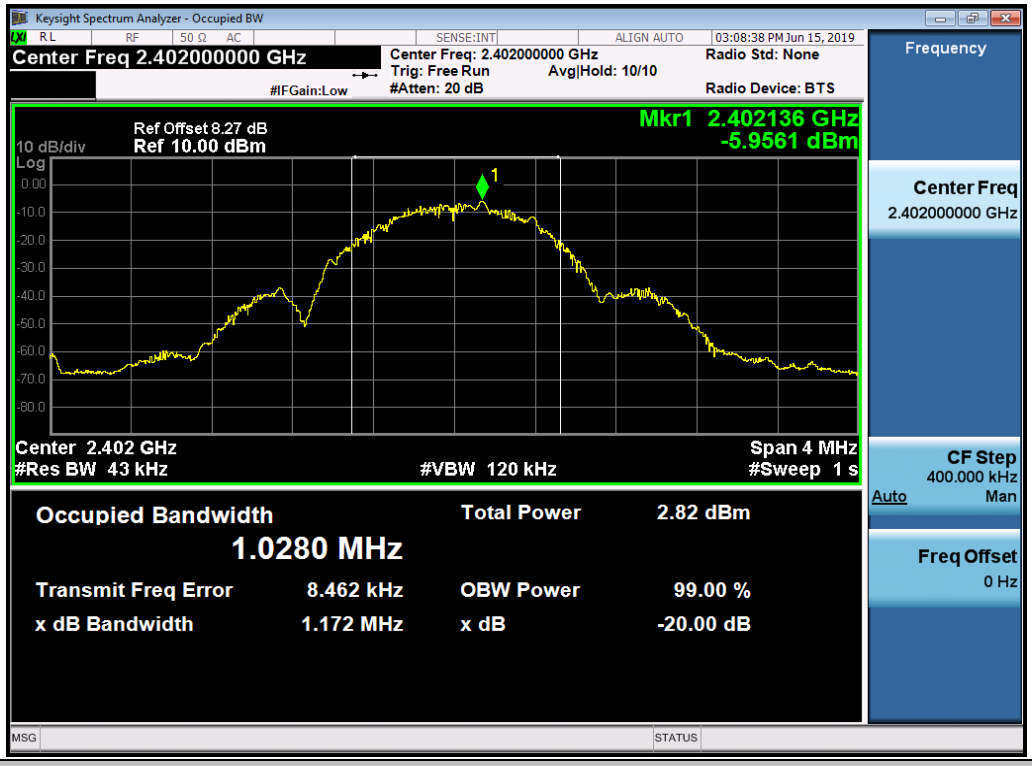
Power Spectral Density_TNVN_BLE_2480_Ant1



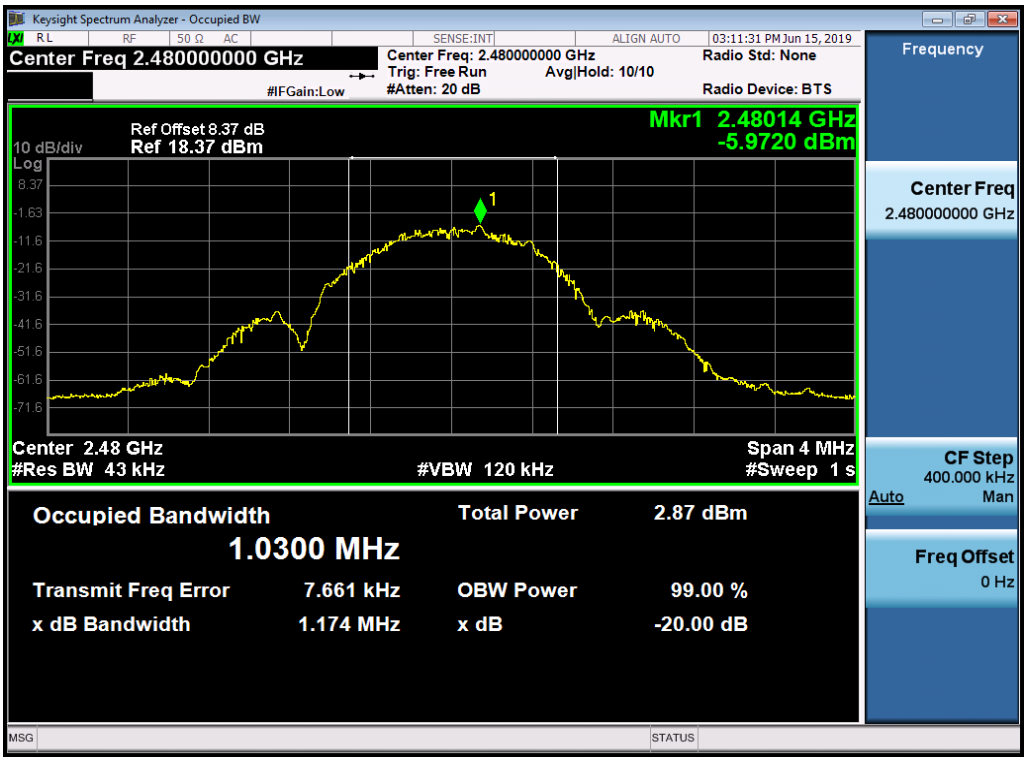
3.Occupied Channel Bandwidth

Test Condition	Test Mode	Test Channel	Ant	OBW [MHz]	FL OBW [MHz]	FH OBW [MHz]	Verdict
TNVN	BLE	2402	Ant1	1.0280	2401.49446	---	PASS
TNVN	BLE	2480	Ant1	1.0300	---	2480.52266	PASS

Occupied Channel Bandwidth_TNVN_BLE_2402_Ant1



Occupied Channel Bandwidth_TNVN_BLE_2480_Ant1



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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	2398.444	-60.46	<=-20	PASS
TNVN	BLE	2402	Ant1	2398.472	-61.01	<=-20	PASS
TNVN	BLE	2402	Ant1	2399.472	-55.16	<=-10	PASS
TNVN	BLE	2402	Ant1	2399.500	-54.52	<=-10	PASS
TNVN	BLE	2480	Ant1	2484.000	-60.11	<=-10	PASS
TNVN	BLE	2480	Ant1	2484.030	-59.89	<=-10	PASS
TNVN	BLE	2480	Ant1	2485.030	-63.22	<=-20	PASS
TNVN	BLE	2480	Ant1	2485.060	-61.90	<=-20	PASS

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5.Receiver Blocking

Receiver Category	Test Channel	Pmin (dBm)	Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)	PER (%)	Limit (%)	Result
2	Lowest	-79	Pmin + 6 dB	2380	-57	6.2	10	Pass
				2300	-47	5.9	10	Pass
	Highest	-81	Pmin + 6 dB	2503.5	-57	6.3	10	Pass
				2583.5	-47	6.5	10	Pass

--End of Report--

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