

Report No.: SZEM191102013001

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TEST REPORT

Application No.: SZEM1911020130CR

Applicant: Shenzhen DO Intelligent Technology Co., Ltd.

Address of Applicant: 11th Floor, 3# Building, Guole Tech Park, Lirong Road, Dalang, Longhua

District, Shenzhen, China.

Manufacturer: Shenzhen DO Intelligent Technology Co., Ltd.

Address of Manufacturer: 11th Floor, 3# Building, Guole Tech Park, Lirong Road, Dalang, Longhua

District, Shenzhen, China.

Factory: Shenzhen DO Intelligent Technology Co., Ltd.

Address of Factory: 11th Floor, 3# Building, Guole Tech Park, Lirong Road, Dalang, Longhua

District, Shenzhen, China.

Equipment Under Test (EUT):

EUT Name: Smart Watch

Model No.: ID216, YG-SW01, Uwatch GT, GizFit 910, SW90, GSW2

Please refer to section 2 of this report which indicates which model was

actually tested and which were electrically identical.

Trade mark: IDO

FCC ID: 2AHFT308

Standard(s): 47 CFR Part 15, Subpart C 15.247

Date of Receipt: 2019-11-13

Date of Test: 2019-11-14 to 2019-11-18

Date of Issue: 2019-11-26

Test Result: Pass*

Keny Xu EMC Laboratory Manager

Ceny. Ku



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



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	Revision Record						
Version	Version Chapter Date Modifier						
01		2019-11-26		Original			

Authorized for issue by:		
	Hary Ul	
	Harry Wu /Project Engineer	
	EvicFu	
	Eric Fu /Reviewer	



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Test Summary

Radio Spectrum Technical Requirement						
Item	Standard	Method	Requirement	Result		
Antenna Requirement	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)	Pass		

Radio Spectrum Matter Part					
Item	Standard	Method	Requirement	Result	
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass	
Minimum 6dB Bandwidth	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.8.1	47 CFR Part 15, Subpart C 15.247a(2)	Pass	
Conducted Peak Output Power	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.9.1	47 CFR Part 15, Subpart C 15.247(b)(3)	Pass	
Power Spectrum Density	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.10.2	47 CFR Part 15, Subpart C 15.247(e)	Pass	
Conducted Band Edges Measurement	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.13.3.2	47 CFR Part 15, Subpart C 15.247(d)	Pass	
Conducted Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.11	47 CFR Part 15, Subpart C 15.247(d)	Pass	
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.10.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass	
Radiated Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.4,6.5,6.6	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass	

Remark:

Model No.: ID216, YG-SW01, Uwatch GT, GizFit 910, SW90, GSW2

Only the model ID216 was tested, since the electrical circuit design, layout, components used, internal wiring and functions were identical for the above models, with only difference on model No..



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General Information

4.1 Details of E.U.T.

Power Supply:	DC 3.8V by rechargeable battery which charged from USB port
Cable:	USB cable: 60cm, Unshielded
Operation Frequency:	2402MHz to 2480MHz
Bluetooth Version:	V4.2
Modulation Type:	GFSK
Number of Channels:	40
Channel Spacing:	2MHz
Antenna Type:	PIFA Antenna
Antenna Gain:	-2.42dBi

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Adapter	Apple	A1357 W010A051	REF. No.SEA0500

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	± 7.25 x 10 ⁻⁸
2	Duty cycle	± 0.37%
3	Occupied Bandwidth	± 3%
4	Conduction emission	± 3.0dB (150kHz to 30MHz)
5	RF conducted power	± 0.75dB
6	RF power density	± 2.84dB
7	Conducted Spurious emissions	± 0.75dB
8	DE Dadiated news	± 4.5dB (Below 1GHz)
0	RF Radiated power	± 4.8dB (Above 1GHz)
9	Dedicted Courieus emission test	± 4.5dB (Below 1GHz)
9	Radiated Spurious emission test	± 4.8dB (Above 1GHz)
10	Temperature test	± 1 ℃
11	Humidity test	± 3%
12	Supply voltages	± 1.5%
13	Time	± 3%



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4.4 Test Location

All tests were performed at:

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

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Fax: +86 755 2671 0594 Tel: +86 755 2601 2053

No tests were sub-contracted.

4.5 Test Facility

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

· A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

VCCI

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

FCC –Designation Number: CN1178

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

· Innovation, Science and Economic Development Canada

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

4.6 Deviation from Standards

4.7 **Abnormalities from Standard Conditions**

None



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Equipment List

Conducted Emissions at AC Power Line (150kHz-30MHz)						
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date	
Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2019-06-13	2022-06-12	
Measurement Software	AUDIX	e3 V8.2014-6- 27	N/A	N/A	N/A	
Coaxial Cable	SGS	N/A	SEM024-01	2019-07-11	2020-07-10	
LISN	Rohde & Schwarz	ENV216	SEM007-01	2019-09-24	2020-09-23	
LISN	ETS-LINDGREN	3816/2	SEM007-02	2019-04-01	2020-03-31	
EMI Test Receiver	Rohde & Schwarz	ESCI	SEM004-02	2019-04-01	2020-03-31	

Minimum 6dB Bandwidth					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
DC Power Supply	Zhao Xin	KXN-6020D	SEM011-08	2019-09-24	2020-09-23
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2019-09-24	2020-09-23
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-02	2019-07-11	2020-07-10
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2019-09-24	2020-09-23
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2019-09-24	2020-09-23
Electric and Magnetic Field Analyzer	Narda	NBM- 550/EHP-50F	EMC2143	2018-02-07	2020-02-06
Electric Field Probe(100KHz-3GHz)	WANDEL & GOLTERMANN	EMR-20	EMC0907	2019-05-21	2020-05-20
EMF Tester	Narda	ELT-400	SZE039-4	2019-07-08	2020-07-07

Conducted Peak Output Power					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12
DC Power Supply	Zhao Xin	KXN-6020D	SEM011-08	2019-09-24	2020-09-23
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2019-09-24	2020-09-23
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-02	2019-07-11	2020-07-10
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2019-09-24	2020-09-23
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2019-09-24	2020-09-23
Electric and Magnetic Field Analyzer	Narda	NBM- 550/EHP-50F	EMC2143	2018-02-07	2020-02-06



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Electric Field Probe(100KHz-3GHz)	WANDEL & GOLTERMANN	EMR-20	EMC0907	2019-05-21	2020-05-20
EMF Tester	Narda	ELT-400	SZE039-4	2019-07-08	2020-07-07

Power Spectrum Density										
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date					
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12					
DC Power Supply	Zhao Xin	KXN-6020D	SEM011-08	2019-09-24	2020-09-23					
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2019-09-24	2020-09-23					
Measurement Software	Measurement Software JS Tonscend		N/A	N/A	N/A					
Coaxial Cable	SGS	N/A	SEM031-02	2019-07-11	2020-07-10					
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A					
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2019-09-24	2020-09-23					
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2019-09-24	2020-09-23					
Electric and Magnetic Field Analyzer	o I Narga		EMC2143	2018-02-07	2020-02-06					
Electric Field Probe (100KHz-3GHz)	WANDEL & GOLTERMANN	EMR-20	EMC0907	2019-05-21	2020-05-20					
EMF Tester	Narda	ELT-400	SZE039-4	2019-07-08	2020-07-07					

Conducted Band Edges Measurement										
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date					
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12					
DC Power Supply	Zhao Xin	KXN-6020D	SEM011-08	2019-09-24	2020-09-23					
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2019-09-24	2020-09-23					
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A					
Coaxial Cable	SGS	N/A	SEM031-02	2019-07-11	2020-07-10					
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A					
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2019-09-24	2020-09-23					
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2019-09-24	2020-09-23					
Electric and Magnetic Field Analyzer	Narda	NBM- 550/EHP-50F	EMC2143	2018-02-07	2020-02-06					
Electric Field Probe	WANDEL &	EMR-20	EMC0907	2019-05-21	2020-05-20					
(100KHz-3GHz)	GOLTERMANN	LIVIN-20	EIVIGU907	2019-05-21	2020-05-20					
EMF Tester	Narda	ELT-400	SZE039-4	2019-07-08	2020-07-07					

Conducted Spurious Emissions									
Equipment Manufacturer Model No Inventory No Cal Date Ca									
Shielding Room	SAEMC	MSR733	SEM001-09	2019-06-13	2022-06-12				
DC Power Supply	Zhao Xin	KXN-6020D	SEM011-08	2019-09-24	2020-09-23				



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Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2019-09-24	2020-09-23
Measurement Software	JS Tonscend	JS1120-2 BT/WIFI V2.	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-02	2019-07-11	2020-07-10
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2019-09-24	2020-09-23
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2019-09-24	2020-09-23
Electric and Magnetic Field Analyzer	Narda	NBM- 550/EHP-50F	EMC2143	2018-02-07	2020-02-06
Electric Field Probe (100KHz-3GHz)	WANDEL & GOLTERMANN	EMR-20	EMC0907	2019-05-21	2020-05-20
EMF Tester	Narda	ELT-400	SZE039-4	2019-07-08	2020-07-07

Radiated Emissions which fall in the restricted bands									
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date				
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2018-03-13	2021-03-12				
Measurement Software	AUDIX	e3 V8.2014-6- 27	N/A	N/A	N/A				
Coaxial Cable	SGS	N/A	SEM026-01	2019-07-11	2020-07-10				
EXA Spectrum Analyzer	AgilentTechnologies Inc	N9010A	SEM004-12	2019-04-12	2020-04-11				
Horn Antenna (1-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2018-04-13	2021-04-12				
Horn Antenna (15GHz-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2017-10-17	2020-10-16				
Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2019-09-24	2020-09-23				
Pre-amplifier(18-26GHz)	Rohde & Schwarz	CH14-H052	SEM005-17	2019-04-01	2020-03-31				
Pre-amplifier (26GHz-40GHz) Compliance Directions Systems Inc.		PAP-2640-50	SEM005-08	2019-04-01	2020-03-31				
DC Power Supply	Zhao Xin	KXN-6020D	SEM011-08	2019-09-24	2020-09-23				
Active Loop Antenna	ETS-Lindgren	6502	SEM003-08	2017-08-22	2020-08-21				



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Radiated Spurious Emissions									
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date				
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2018-03-13	2021-03-12				
Measurement Software	AUDIX	e3 V8.2014-6- 27	N/A	N/A	N/A				
Coaxial Cable	SGS	N/A	SEM026-01	2019-07-11	2020-07-10				
EXA Spectrum Analyzer	AgilentTechnologies Inc	N9010A	SEM004-12	2019-04-12	2020-04-11				
Horn Antenna (1-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2018-04-13	2021-04-12				
Horn Antenna (15GHz-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2017-10-17	2020-10-16				
Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2019-09-24	2020-09-23				
Pre-amplifier(18-26GHz)	Rohde & Schwarz	CH14-H052	SEM005-17	2019-04-01	2020-03-31				
Pre-amplifier (26GHz-40GHz)	Directions Systems		SEM005-08	2019-04-01	2020-03-31				
DC Power Supply	Zhao Xin	KXN-6020D	SEM011-08	2019-09-24	2020-09-23				
Active Loop Antenna ETS-Lindgren		6502	SEM003-08	2017-08-22	2020-08-21				

Radiated Emissions										
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date					
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2017-08-05	2020-08-04					
Measurement Software	AUDIX	e3 V8.2014-6- 27	N/A	N/A	N/A					
Coaxial Cable	SGS	N/A	SEM025-01	2019-07-11	2020-07-10					
EMI Test Receiver	Agilent Technologies	N9038A	SEM004-05	2019-09-24	2020-09-23					
BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEM003-01	2017-06-27	2020-06-26					
Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEM005-01	2019-04-01	2020-03-31					



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General used equipment									
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date				
Humidity/ Temperature Indicator	ZJ1-2B	SEM002-03	2019-09-26	2020-09-25					
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2019-09-26	2020-09-25				
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2019-09-26	2020-09-25				
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2019-04-04	2020-04-03				



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Radio Spectrum Technical Requirement 6

Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)

6.1.2 Conclusion

Standard Requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is -2.42dBi.

Antenna location: Refer to Appendix(Internal photos)



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7 **Radio Spectrum Matter Test Results**

Conducted Emissions at AC Power Line (150kHz-30MHz)

47 CFR Part 15, Subpart C 15.207 Test Requirement Test Method: ANSI C63.10 (2013) Section 6.2

Limit:

Francisco (BALLE)	Conducted limit(dBµV)						
Frequency of emission(MHz)	Quasi-peak	Average					
0.15-0.5	66 to 56*	56 to 46*					
0.5-5	56	46					
5-30	60	50					
*Decreases with the logarithm of the frequency.							



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7.1.1 E.U.T. Operation

Operating Environment:

Atmospheric Pressure: 1015 mbar Temperature: Humidity: 56.8 % RH

b:Charge + TX mode Keep the EUT in charging and continuously transmitting Pretest these

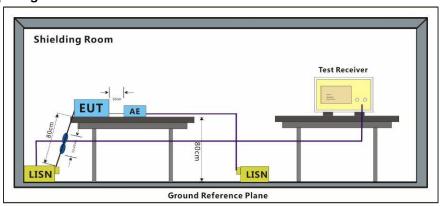
mode with GFSK modulation. modes to find

the worst case:

b:Charge + TX mode Keep the EUT in charging and continuously transmitting The worst case

mode with GFSK modulation. for final test:

7.1.2 Test Setup Diagram



7.1.3 Measurement Procedure and Data

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50µH + 50hm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Remark: LISN=Read Level+ Cable Loss+ LISN Factor



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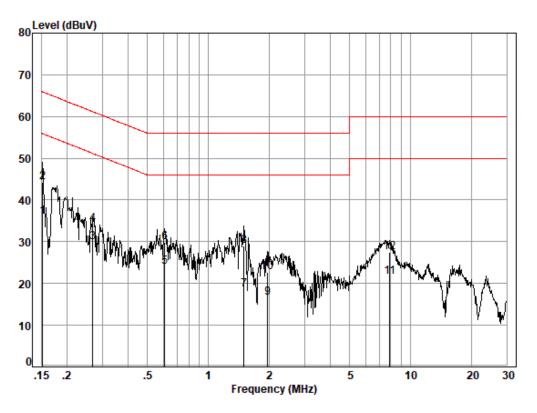
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Mode:b; Line:Live Line



: Shielding Room

Condition: Line Job No. : 20130CR

Test mode: b

	Cable	LISN	Read		Limit	0ver	
Freq	Loss	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB	dBuV	dBuV	dBuV	dB	
0.15	0.01	9.48	26.58	36.07	55.91	-19.84	Average
0.15	0.01	9.48	34.66	44.15	65.91	-21.76	QP
0.27	0.03	9.54	20.39	29.96	51.16	-21.20	Average
0.27	0.03	9.54	24.66	34.23	61.16	-26.93	QP
0.61	0.07	9.62	14.30	23.99	46.00	-22.01	Average
0.61	0.07	9.62	20.24	29.93	56.00	-26.07	QP
1.50	0.13	9.64	8.67	18.44	46.00	-27.56	Average
1.50	0.13	9.64	19.26	29.03	56.00	-26.97	QP
1.97	0.16	9.64	6.76	16.56	46.00	-29.44	Average
1.97	0.16	9.64	12.76	22.56	56.00	-33.44	QP
7.89	0.17	9.74	11.62	21.53	50.00	-28.47	Average
7.89	0.17	9.74	17.64	27.55	60.00	-32.45	QP
	MHz 0.15 0.15 0.27 0.27 0.61 0.61 1.50 1.50 1.97 7.89	MHz dB 0.15 0.01 0.15 0.01 0.27 0.03 0.27 0.03 0.61 0.07 0.61 0.07 1.50 0.13 1.50 0.13 1.97 0.16 1.97 0.16 7.89 0.17	MHz dB dB 0.15 0.01 9.48 0.15 0.01 9.48 0.15 0.01 9.48 0.27 0.03 9.54 0.27 0.03 9.54 0.61 0.07 9.62 0.61 0.07 9.62 1.50 0.13 9.64 1.50 0.13 9.64 1.97 0.16 9.64 1.97 0.16 9.64 7.89 0.17 9.74	MHz dB dB dBuV 0.15 0.01 9.48 26.58 0.15 0.01 9.48 34.66 0.27 0.03 9.54 20.39 0.27 0.03 9.54 24.66 0.61 0.07 9.62 14.30 0.61 0.07 9.62 20.24 1.50 0.13 9.64 8.67 1.50 0.13 9.64 19.26 1.97 0.16 9.64 6.76 1.97 0.16 9.64 12.76 7.89 0.17 9.74 11.62	MHz dB dB dBuV dBuV 0.15 0.01 9.48 26.58 36.07 0.15 0.01 9.48 34.66 44.15 0.27 0.03 9.54 20.39 29.96 0.27 0.03 9.54 24.66 34.23 0.61 0.07 9.62 14.30 23.99 0.61 0.07 9.62 20.24 29.93 1.50 0.13 9.64 8.67 18.44 1.50 0.13 9.64 19.26 29.03 1.97 0.16 9.64 6.76 16.56 1.97 0.16 9.64 12.76 22.56 7.89 0.17 9.74 11.62 21.53	MHz dB dB dBuV dBuV dBuV dBuV 0.15 0.01 9.48 26.58 36.07 55.91 0.15 0.01 9.48 34.66 44.15 65.91 0.27 0.03 9.54 20.39 29.96 51.16 0.27 0.03 9.54 24.66 34.23 61.16 0.61 0.07 9.62 14.30 23.99 46.00 0.61 0.07 9.62 20.24 29.93 56.00 1.50 0.13 9.64 8.67 18.44 46.00 1.50 0.13 9.64 19.26 29.03 56.00 1.97 0.16 9.64 6.76 16.56 46.00 1.97 0.16 9.64 12.76 22.56 56.00 7.89 0.17 9.74 11.62 21.53 50.00	MHz dB dB dBuV dBuV



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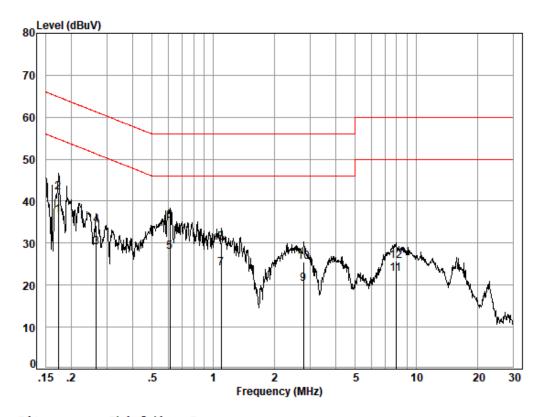
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Mode:b; Line:Neutral Line



: Shielding Room

Condition: Neutral Job No. : 20130CR

Test mode: b

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.17	0.02	9.43	27.25	36.70	54.81	-18.11	Average
2	0.17	0.02	9.43	32.71	42.16	64.81	-22.65	QP
3	0.27	0.03	9.48	19.44	28.95	51.25	-22.30	Average
4	0.27	0.03	9.48	24.82	34.33	61.25	-26.92	QP
5	0.61	0.07	9.60	18.26	27.93	46.00	-18.07	Average
6	0.61	0.07	9.60	25.55	35.22	56.00	-20.78	QP
7	1.09	0.10	9.66	14.13	23.89	46.00	-22.11	Average
8	1.09	0.10	9.66	20.41	30.17	56.00	-25.83	QP
9	2.78	0.16	9.72	10.43	20.31	46.00	-25.69	Average
10	2.78	0.16	9.72	15.54	25.42	56.00	-30.58	QP
11	7.94	0.17	9.83	12.64	22.64	50.00	-27.36	Average
12	7.94	0.17	9.83	15.61	25.61	60.00	-34.39	QP



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7.2 Minimum 6dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.247a(2) Test Method: ANSI C63.10 (2013) Section 11.8.1

Limit: ≥500 kHz

7.2.1 E.U.T. Operation

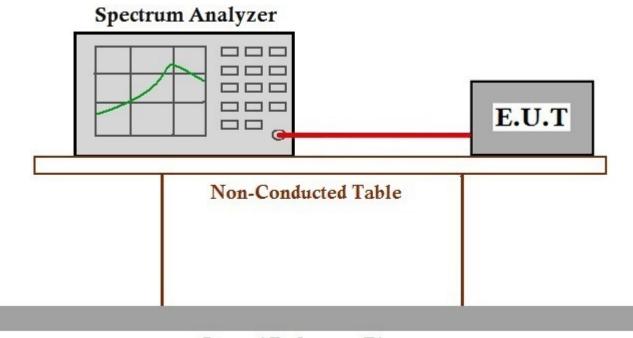
Operating Environment:

Temperature: Humidity: 51.6 % RH Atmospheric Pressure: 1015 mbar

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

modulation

7.2.2 Test Setup Diagram



Ground Reference Plane

7.2.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247



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7.3 Conducted Peak Output Power

Test Requirement 47 CFR Part 15, Subpart C 15.247(b)(3) Test Method: ANSI C63.10 (2013) Section 11.9.1

Limit:

Frequency range(MHz)	Output power of the intentional radiator(watt)
	1 for ≥50 hopping channels
902-928	0.25 for 25≤ hopping channels <50
	1 for digital modulation
	1 for ≥75 non-overlapping hopping channels
2400-2483.5	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation



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7.3.1 E.U.T. Operation

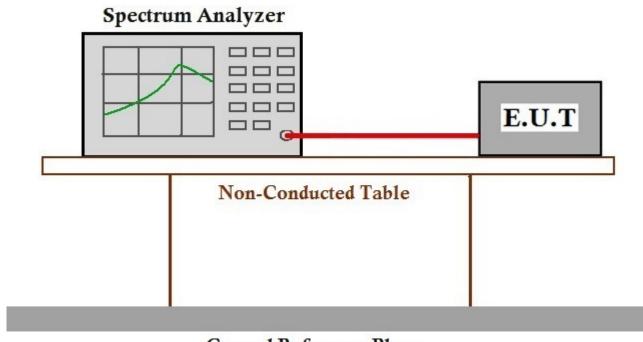
Operating Environment:

Temperature: Humidity: 51.6 % RH Atmospheric Pressure: 1015 mbar

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

modulation

7.3.2 Test Setup Diagram



Ground Reference Plane

7.3.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247



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7.4 Power Spectrum Density

Test Requirement 47 CFR Part 15, Subpart C 15.247(e) Test Method: ANSI C63.10 (2013) Section 11.10.2

Limit: ≤8dBm in any 3 kHz band during any time interval of continuous

transmission

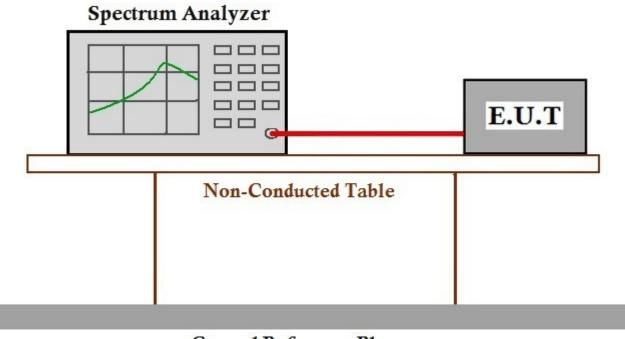
7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 22.4 °C Humidity: 51.6 % RH Atmospheric Pressure: 1015 mbar

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

7.4.2 Test Setup Diagram



Ground Reference Plane

7.4.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247



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7.5 Conducted Band Edges Measurement

Test Requirement 47 CFR Part 15, Subpart C 15.247(d) Test Method: ANSI C63.10 (2013) Section 11.13.3.2

Limit:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)



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7.5.1 E.U.T. Operation

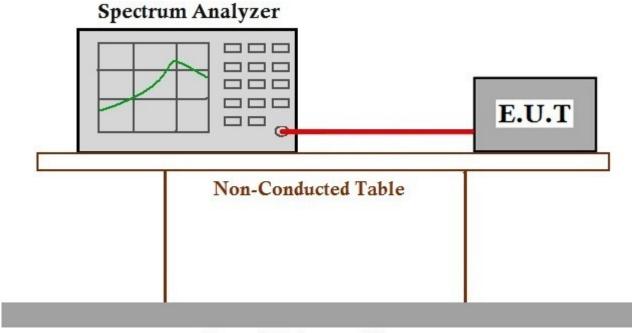
Operating Environment:

Temperature: Humidity: 51.8 % RH Atmospheric Pressure: 1015 mbar

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

modulation

7.5.2 Test Setup Diagram



Ground Reference Plane

7.5.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247



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7.6 Conducted Spurious Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.247(d) Test Method: ANSI C63.10 (2013) Section 11.11

Limit: In any 100 kHz bandwidth outside the frequency band in which the spread

spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in

§15.205(a), must also comply with the radiated emission limits specified in

§15.209(a) (see §15.205(c)



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7.6.1 E.U.T. Operation

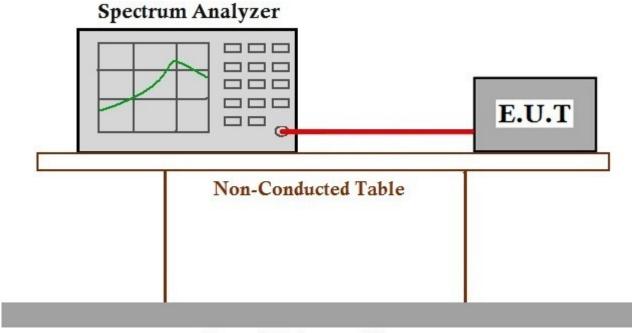
Operating Environment:

Temperature: Humidity: 51.8 % RH Atmospheric Pressure: 1015 mbar

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

modulation

7.6.2 Test Setup Diagram



Ground Reference Plane

7.6.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247



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7.7 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2013) Section 6.10.5

Measurement Distance: 3m

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 22.9 °C Humidity: 59.7 % RH Atmospheric Pressure: 1015 mbar

a:TX mode Keep the EUT in continuously transmitting mode with GFSK Pretest these

modes to find modulation

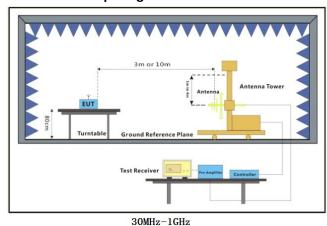
the worst case: b:Charge + TX mode Keep the EUT in charging and continuously transmitting

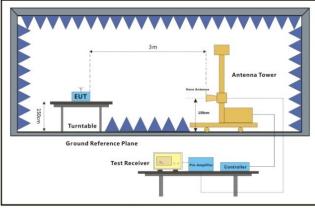
mode with GFSK modulation.

The worst case b:Charge + TX mode_Keep the EUT in charging and continuously transmitting

mode with GFSK modulation. for final test:

7.7.2 Test Setup Diagram





Above 1GHz



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7.7.3 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.



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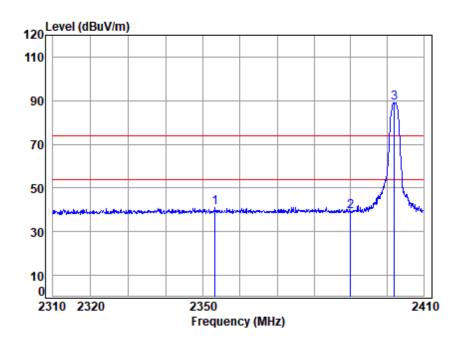
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Mode:b; Polarization:Horizontal; Modulation:π/4 DQPSK; ; Channel:Low



Site : chamber

Condition: 3m HORIZONTAL

: 20130CR Job No

Mode : 2402 Band edge

Note : BLE

1

Freq			Preamp Factor					
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
2353.179 2390.000 * 2402.000	5.47	28.52	40.97	46.04	39.06	74.00	-34.94	peak



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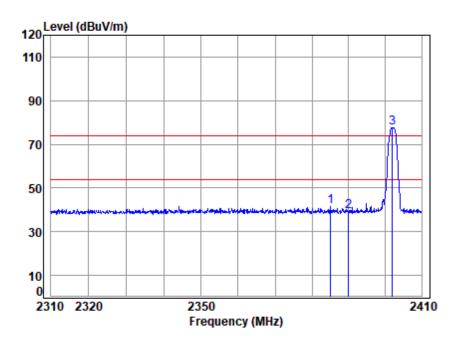
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Mode:b; Polarization:Vertical; Modulation:π/4 DQPSK; ; Channel:Low



Site : chamber Condition: 3m VERTICAL : 20130CR Job No

Mode : 2402 Band edge

Note : BLE

> 1 2 3

Freq			Preamp Factor					Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
2385.107 2390.000 * 2402.000	5.47	28.52	40.97	46.11	39.13	74.00	-34.87	peak



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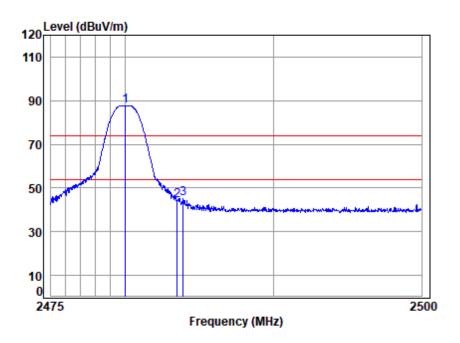
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Mode:b; Polarization:Horizontal; Modulation:π/4 DQPSK; ; Channel:High



Site : chamber

Condition: 3m HORIZONTAL

: 20130CR Job No

Mode : 2480 Band edge

Note : BLE

> 1 2 3

Freq			Preamp Factor					
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
* 2480.000 2483.500 2483.896	5.60	28.67	41.01	50.87	44.13	74.00	-29.87	peak



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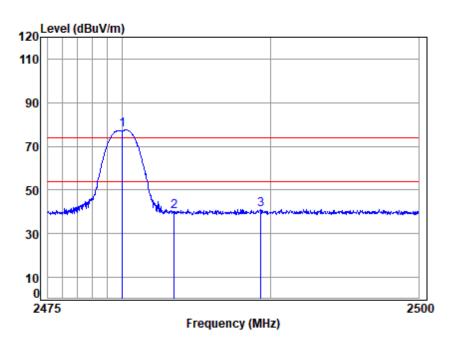
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Mode:b; Polarization:Vertical; Modulation:π/4 DQPSK; ; Channel:High



Site : chamber Condition: 3m VERTICAL : 20130CR Job No

Mode : 2480 Band edge

Note : BLE

> 1 2 3

Freq			Preamp Factor					
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
* 2480.000 2483.500 2489.344	5.60	28.67	41.01	46.76	40.02	74.00	-33.98	peak



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7.8 Radiated Spurious Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209 Test Method: ANSI C63.10 (2013) Section 6.4,6.5,6.6

Measurement Distance: 3m

Limit:

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.



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7.8.1 E.U.T. Operation

Operating Environment:

Temperature: % RH Atmospheric Pressure: 1015 mbar 25 °C Humidity: 51

a:TX mode_Keep the EUT in continuously transmitting mode with GFSK Pretest these

modes to find modulation

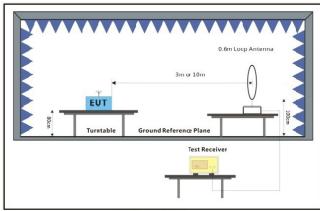
the worst case: b:Charge + TX mode Keep the EUT in charging and continuously transmitting

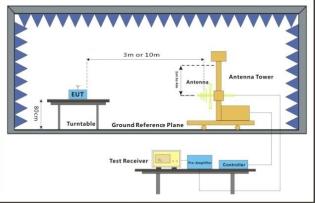
mode with GFSK modulation.

The worst case b:Charge + TX mode_Keep the EUT in charging and continuously transmitting

mode with GFSK modulation. for final test:

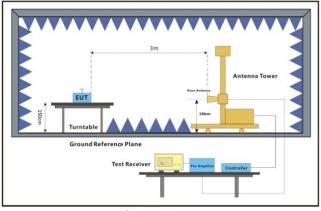
7.8.2 Test Setup Diagram





Below 30MHz

30MHz-1GHz



Above 1GHz



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7.8.3 Measurement Procedure and Data

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

Remark:

- 1) For emission below 1GHz, through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor

- 3) Scan from 9kHz to 25GHz, the disturbance above 18GHz and below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
- 4) For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.



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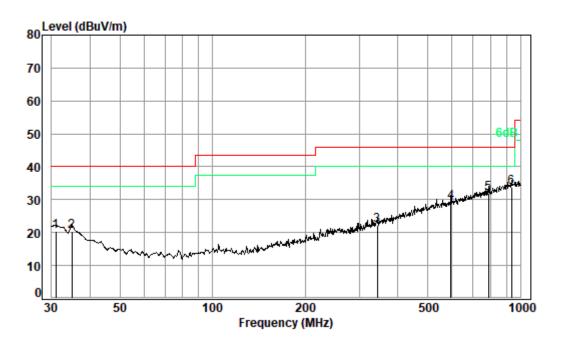
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30MHz~1GHz

QP value:

Mode: b; Polarization: Horizontal;



Condition: 3m HORIZONTAL

Job No. : 20130CR

Test mode: b

		Cable	Ant	Preamp	Read		Limit	0ver
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit
-	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	30.96	0.60	21.95	27.73	25.50	20.32	40.00	-19.68
2	34.88	0.60	19.88	27.72	27.71	20.47	40.00	-19.53
3	343.18	2.04	20.91	27.14	26.48	22.29	46.00	-23.71
4	595.13	2.70	26.51	28.15	28.21	29.27	46.00	-16.73
5	787.85	3.17	28.43	27.74	28.21	32.07	46.00	-13.93
6 pp	935.55	3.64	29.98	27.15	27.33	33.80	46.00	-12.20



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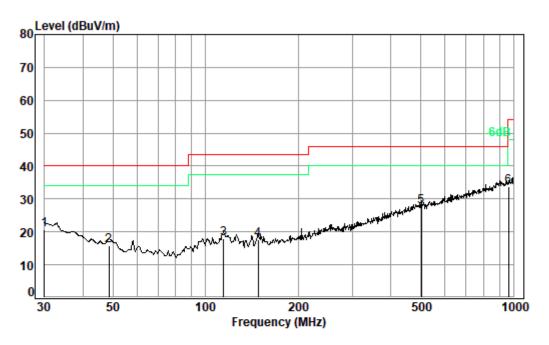
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Mode :b; Polarization: Vertical



Condition: 3m VERTICAL Job No. : 20130CR

Test mode: b

	Freq			Preamp Factor				Over Limit
_	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	30.00	0.60	22.50	27.73	25.41	20.78	40.00	-19.22
2	48.50	0.77	14.65	27.69	28.24	15.97	40.00	-24.03
3	114.51	1.24	13.33	27.55	31.06	18.08	43.50	-25.42
4	148.44	1.31	14.49	27.37	29.11	17.54	43.50	-25.96
5 pp	502.94	2.60	24.66	27.84	28.18	27.60	46.00	-18.40
6	965.54	3.67	30.13	27.04	26.96	33.72	54.00	-20.28



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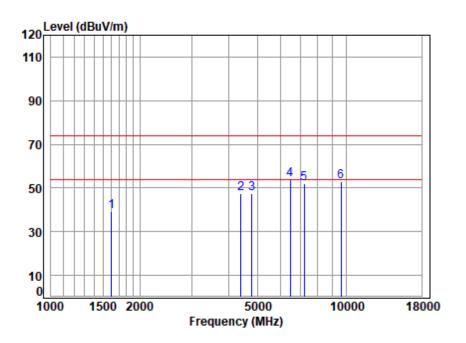


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Above 1GHz

Mode:b; Polarization:Horizontal; Modulation:π/4 DQPSK; ; Channel:Low



Site : chamber

Condition: 3m HORIZONTAL

: 20130CR Job No

Mode : 2402 TX RSE

Note : BLE

		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1601.804	5.35	26.26	40.57	48.16	39.20	74.00	-34.80	peak
2	4405.090	7.46	33.44	42.48	48.97	47.39	74.00	-26.61	peak
3	4804.000	7.89	33.97	42.77	48.37	47.46	74.00	-26.54	peak
4	6470.026	11.48	35.57	41.97	48.86	53.94	74.00	-20.06	peak
5	7206.000	10.08	36.07	41.58	47.35	51.92	74.00	-22.08	peak
6	9608,000	10.75	37.67	38.57	43.09	52.94	74.00	-21.06	peak



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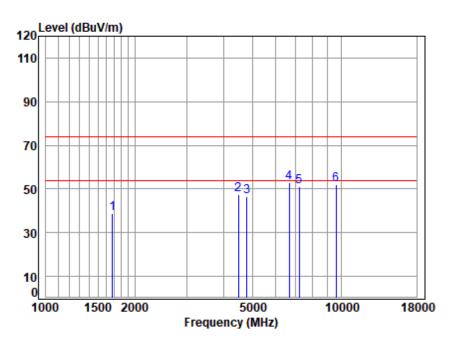
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Mode:b; Polarization:Vertical; Modulation:π/4 DQPSK; ; Channel:Low



Site : chamber Condition: 3m VERTICAL : 20130CR Job No

Mode : 2402 TX RSE

Note : BLE

		_							
		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1682.477	5.25	26.60	40.62	47.59	38.82	74.00	-35.18	peak
2	4482.150	7.54	33.57	42.54	49.00	47.57	74.00	-26.43	peak
3	4804.000	7.89	33.97	42.77	47.38	46.47	74.00	-27.53	peak
4	6679.040	11.02	35.71	41.85	47.94	52.82	74.00	-21.18	peak
5	7206.000	10.08	36.07	41.58	46.57	51.14	74.00	-22.86	peak
6	9608.000	10.75	37.67	38.57	42.32	52.17	74.00	-21.83	peak



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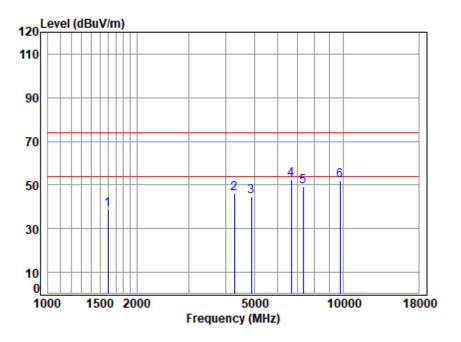
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Mode:b; Polarization:Horizontal; Modulation:π/4 DQPSK; ; Channel:middle



Site : chamber

Condition: 3m HORIZONTAL

: 20130CR Job No

Mode : 2440 TX RSE

Note : BLE

		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1597.181	5.35	26.24	40.57	47.73	38.75	74.00	-35.25	peak
2	4291.977	7.33	33.60	42.39	47.38	45.92	74.00	-28.08	peak
3	4882.000	7.97	34.30	42.82	45.21	44.66	74.00	-29.34	peak
4	6679.040	11.02	35.61	41.85	47.46	52.24	74.00	-21.76	peak
5	7323.000	10.05	36.37	41.52	44.23	49.13	74.00	-24.87	peak
6	9764.000	10.82	37.55	38.34	41.86	51.89	74.00	-22.11	peak



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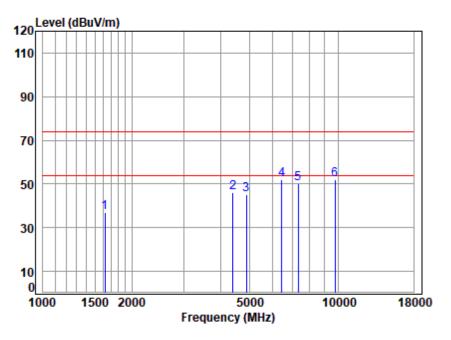
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Mode:b; Polarization:Vertical; Modulation:π/4 DQPSK; ; Channel:middle



Site : chamber Condition: 3m VERTICAL : 20130CR Job No

Mode : 2440 TX RSE

Note : BLE

		_							
		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1620.431	5.32	26.34	40.58	45.92	37.00	74.00	-37.00	peak
2	4405.090	7.46	33.60	42.48	47.43	46.01	74.00	-27.99	peak
3	4882.000	7.97	34.30	42.82	45.72	45.17	74.00	-28.83	peak
4	6451.353	11.45	35.06	41.98	47.63	52.16	74.00	-21.84	peak
5	7323.000	10.05	36.37	41.52	45.45	50.35	74.00	-23.65	peak
6	9764.000	10.82	37.55	38.34	42.00	52.03	74.00	-21.97	peak



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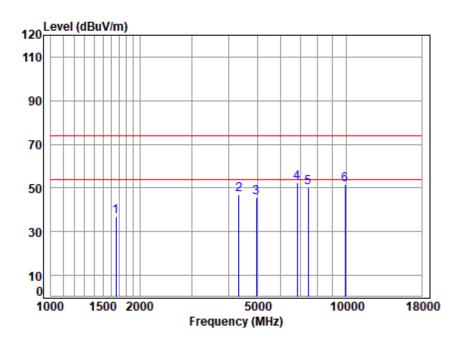
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Mode:b; Polarization:Horizontal; Modulation:π/4 DQPSK; ; Channel:High



Site : chamber

Condition: 3m HORIZONTAL

: 20130CR Job No

Mode : 2480 TX RSE

Note : BLE

				Preamp						
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark	
		dB		——dB	40.4/	dD: M/m	dD: M/m			-
	MHz	ub	ub/m	ub	abuv	ubuv/m	ubuv/m	dB		
1	1658.337	5.28	26.50	40.61	46.02	37.19	74.00	-36.81	peak	
2	4329.354	7.37	33.60	42.42	48.31	46.86	74.00	-27.14	peak	
3	4960.000	8.05	34.43	42.87	46.18	45.79	74.00	-28.21	peak	
4	6835.278	10.58	36.05	41.77	47.65	52.51	74.00	-21.49	peak	
5	7440.000	10.02	36.32	41.46	45.39	50.27	74.00	-23.73	peak	
6	9920,000	10.90	37.58	38.12	41.19	51.55	74.00	-22.45	neak	



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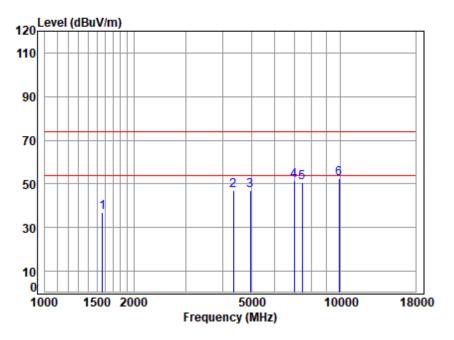
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Mode:b; Polarization:Vertical; Modulation:π/4 DQPSK; ; Channel:High



Site : chamber Condition: 3m VERTICAL : 20130CR Job No

Mode : 2480 TX RSE

Note : BLE

		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1565.191	5.39	26.10	40.55	46.06	37.00	74.00	-37.00	peak
2	4354.454	7.40	33.60	42.44	48.28	46.84	74.00	-27.16	peak
3	4960.000	8.05	34.43	42.87	47.23	46.84	74.00	-27.16	peak
4	6995.172	10.14	36.49	41.69	46.76	51.70	74.00	-22.30	peak
5	7440.000	10.02	36.32	41.46	45.86	50.74	74.00	-23.26	peak
6	9920.000	10.90	37.58	38.12	41.90	52.26	74.00	-21.74	peak



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Photographs 8

Test Setup 8.1

Please refer to setup photos.

8.2 EUT Constructional Details (EUT Photos)

Please refer to external and internal photos for details.



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Appendix 9

9.1 Appendix 15.247

1.6dB Bandwidth

Test Mode	Test	Ant	EBW[MHz]	Limit[MHz]	Verdict
BLE	2402	Ant1	0.693	>=0.5	PASS
BLE	2440	Ant1	0.708	>=0.5	PASS
BLE	2480	Ant1	0.696	>=0.5	PASS



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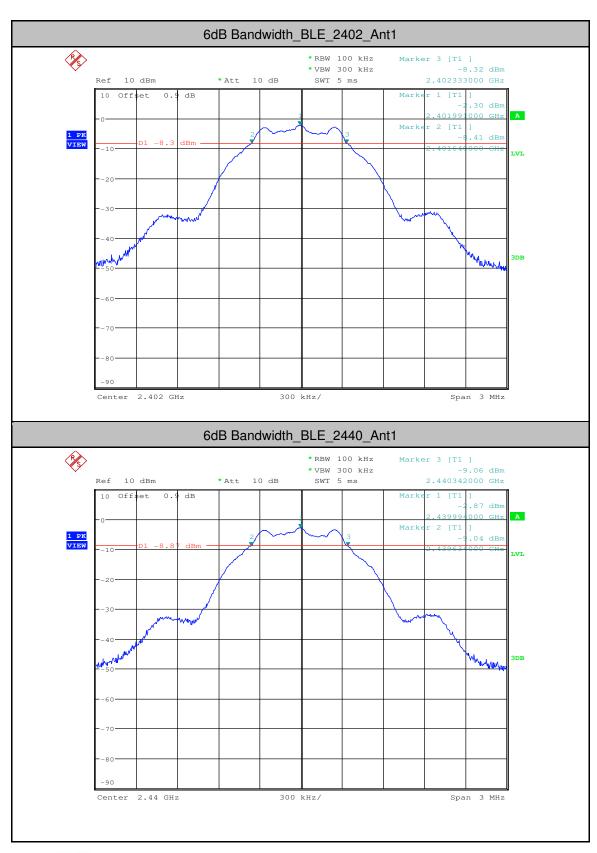
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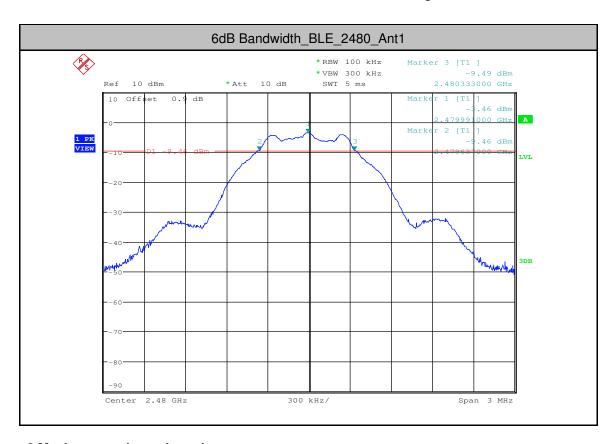
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2.Maximum peak conducted output power

Test Mode	Test Channel	Ant	Power[dBm]	Limit[dBm]	Verdict
BLE	2402	Ant1	-1.45	<30	PASS
BLE	2440	Ant1	-2.05	<30	PASS
BLE	2480	Ant1	-2.64	<30	PASS



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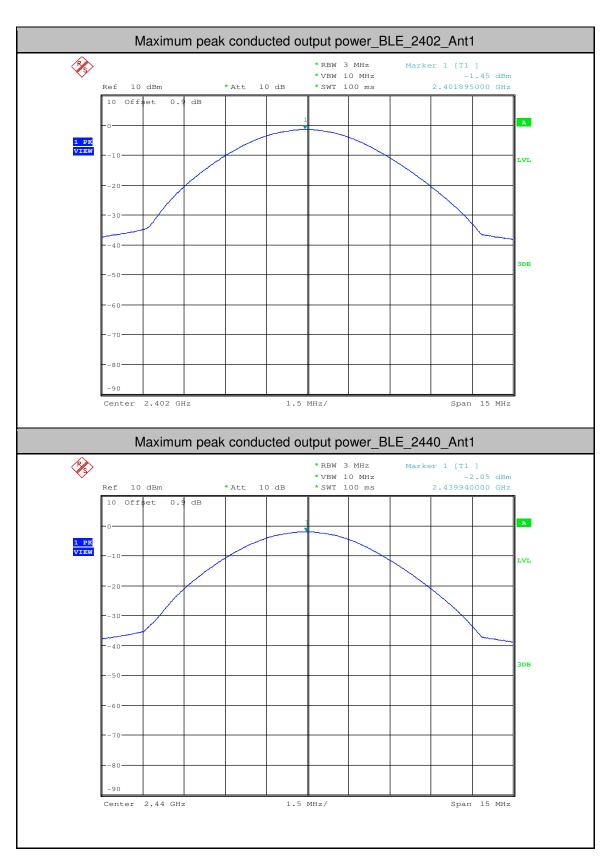
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3. Maximum Peak power spectral density

Test Mode	Test Channel	Ant	PSD[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE	2402	Ant1	-17.76	<8.00	PASS
BLE	2440	Ant1	-18.31	<8.00	PASS
BLE	2480	Ant1	-18.9	<8.00	PASS



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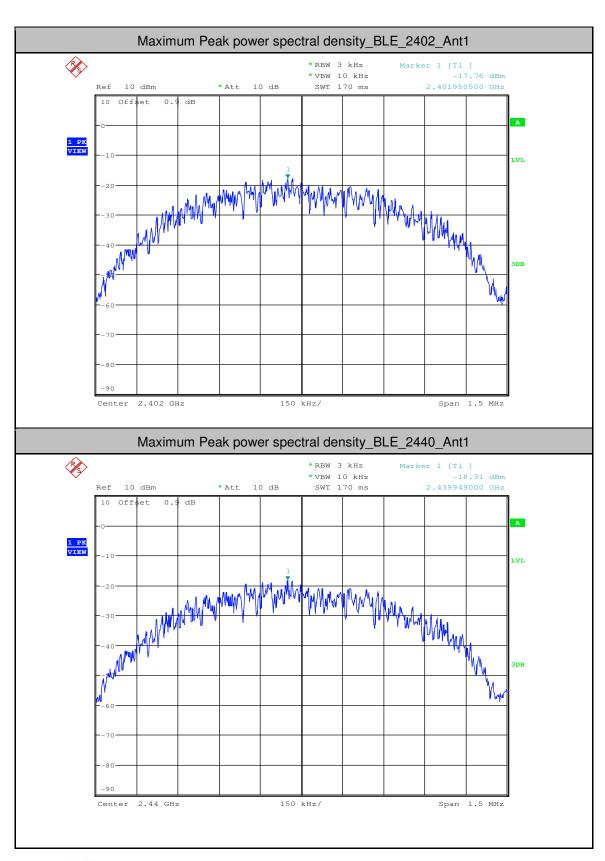
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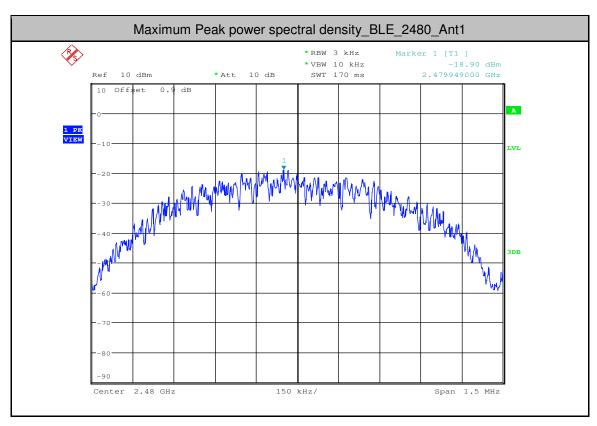
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4.Band-edge for RF Conducted Emissions

Test Mode	Test Channel	Ant	Carrier Power[dBm]	Max. Spurious Level [dBm]	Limit [dBm]	Verdict
BLE	2402	Ant1	-2.130	-61.701	<-22.13	PASS
BLE	2480	Ant1	-3.470	-58.189	<-23.47	PASS



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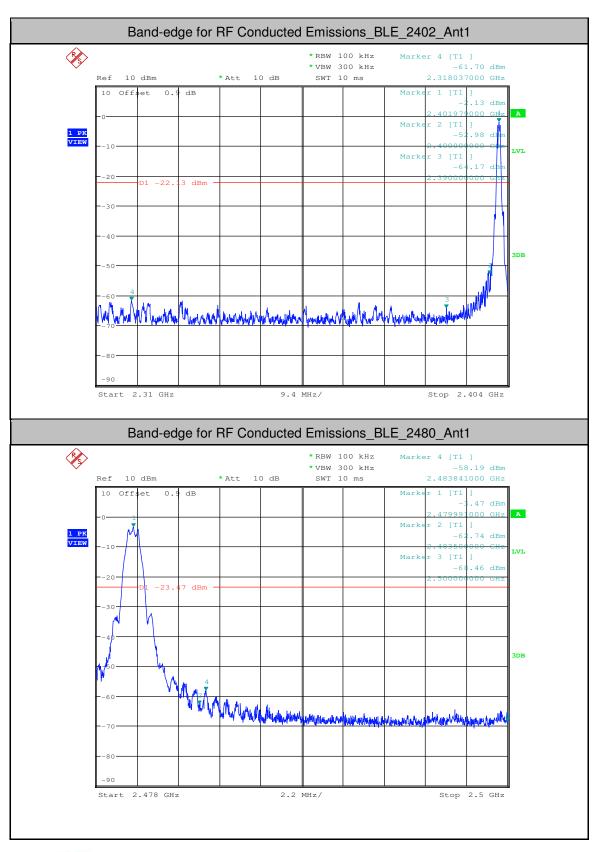
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5.RF Conducted Spurious Emissions

Test Mode	Test Channel	StartFre [MHz]	StopFre [MHz]	RBW [kHz]	VBW [kHz]	Pref[dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BLE	2402	30	10000	100	300	-2.14	-60.300	<-22.14	PASS
BLE	2402	10000	25000	100	300	-2.14	-65.760	<-22.14	PASS
BLE	2440	30	10000	100	300	-2.78	-60.140	<-22.78	PASS
BLE	2440	10000	25000	100	300	-2.78	-65.460	<-22.78	PASS
BLE	2480	30	10000	100	300	-3.27	-60.870	<-23.27	PASS
BLE	2480	10000	25000	100	300	-3.27	-65.880	<-23.27	PASS



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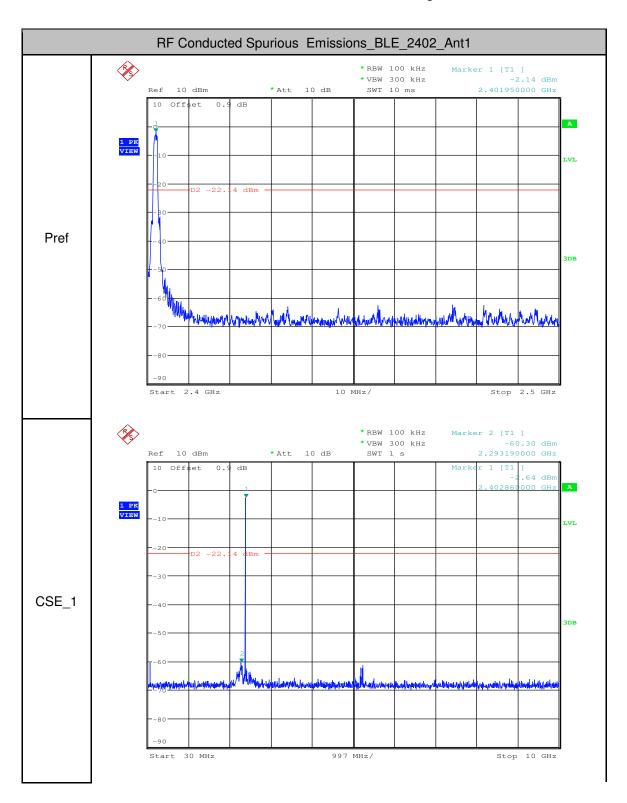
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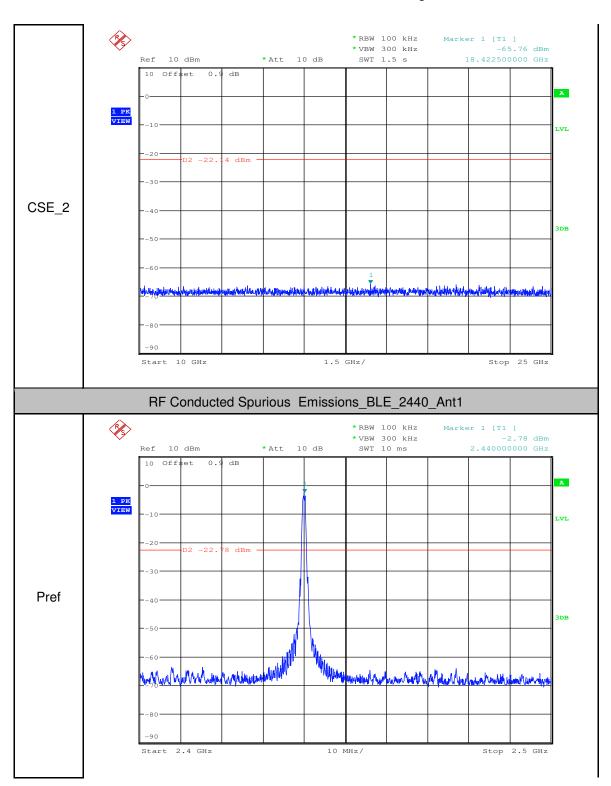
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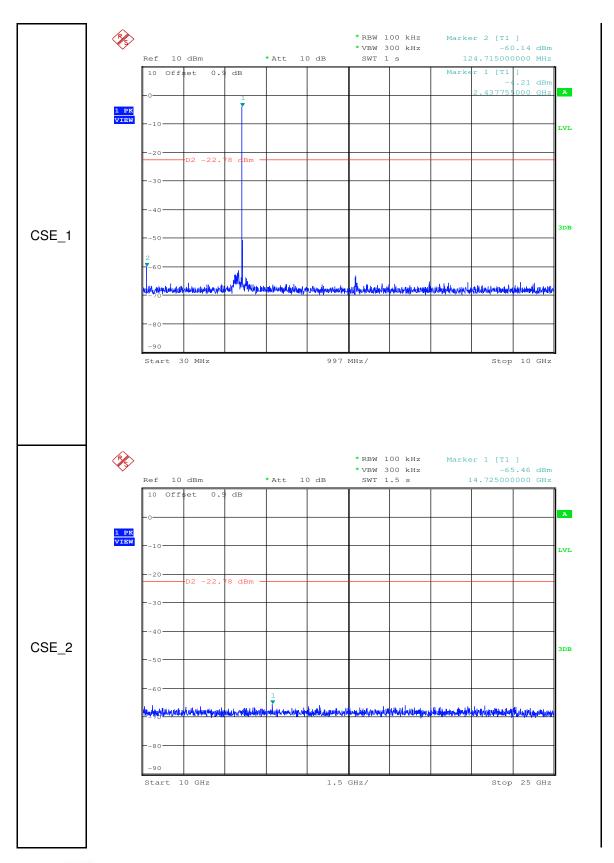
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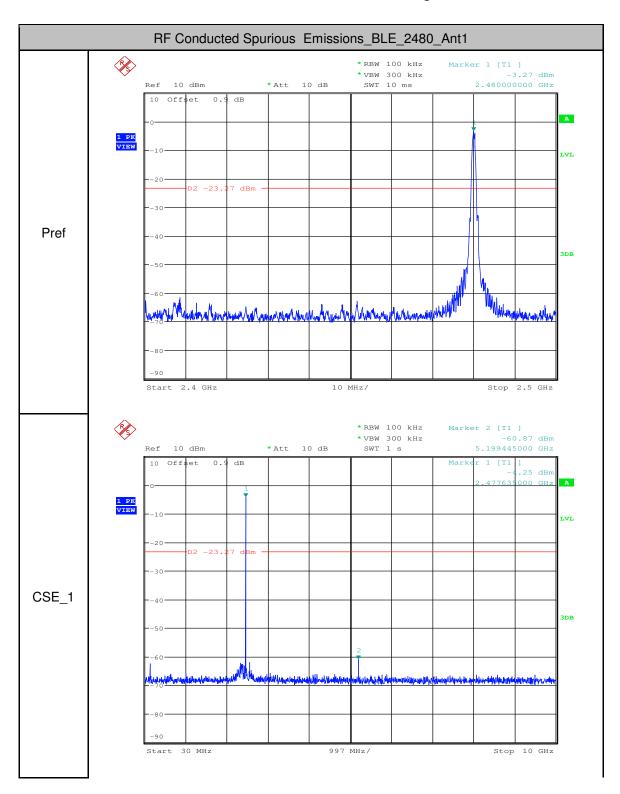
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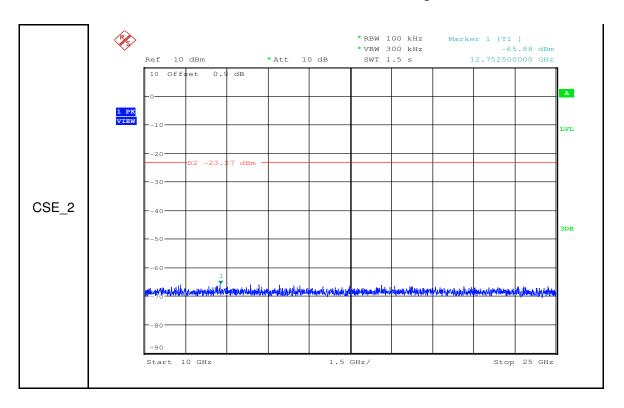
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