TEST REPORT

Application No.:	GZEM2004011830CR
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):	47 CFR Part 15, Subpart C 15.247
Date of Receipt:	2020-04-23
Date of Test:	2020-04-29 to 2020-04-30
Date of Issue:	2019-08-13 (for original report GZEM190701430202) 2020-05-11 (for copy report GGZEM190701430204)
Test Result:	**Pass***

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

Kobe Jian
EMC Laboratory Manager

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2019-08-13		Original
02		2020-05-11		Copy Report: Reduce power and performed new tests

Authorized for issue by:				
Tested By		 **Curry_Wu /Project Engineer**		2020-04-29 to 2020-04-30 **Date**
Checked By		 **Ricky_Liu /Reviewer**		2020-05-11 **Date**

2 Test Summary

Radio Spectrum Matter Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
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
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 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 **

**: The EUT passed Radiated Spurious Emissions test after modification.

¤ Remark for copy report GZEM190701430204

This test report GZEM190701430204 is a partial test report base on and only valid with the original test report GZEM190701430202, since the EUT in this test report and the EUT in original test report were basically the same but reduce the power. Considering the difference between the EUT, Conducted Peak Output Power, Conducted Band Edges Measurement, Conducted Spurious Emissions and Radiated Spurious Emissions tests were retested to confirm whether the original test results were changed or not and recorded the new results in this report GZEM190701430204.

Test results for original EUT please refer to report GZEM190701430202 for details.

3 Contents

Page

1 Cover Page 1

2 Test Summary 3

3 Contents 4

4 General Information 5

4.1 Details of E.U.T. 5
4.2 Description of Support Units 5
4.3 Measurement Uncertainty 5
4.4 Test Location 6
4.5 Test Facility 7
4.6 Deviation from Standards 8
4.7 Abnormalities from Standard Conditions 8

5 Equipment List 9

6 Radio Spectrum Matter Test Results 11

6.1 Conducted Peak Output Power 11
6.1.1 E.U.T. Operation 11
6.1.2 Test Setup Diagram 11
6.1.3 Measurement Procedure and Data 11
6.2 Conducted Band Edges Measurement 12
6.2.1 E.U.T. Operation 12
6.2.2 Test Setup Diagram 12
6.2.3 Measurement Procedure and Data 12
6.3 Conducted Spurious Emissions 13
6.3.1 E.U.T. Operation 13
6.3.2 Test Setup Diagram 13
6.3.3 Measurement Procedure and Data 13
6.4 Radiated Spurious Emissions 14
6.4.1 E.U.T. Operation 14
6.4.2 Test Setup Diagram 15
6.4.3 Measurement Procedure and Data 16

7 Appendix 25

7.1 Appendix 15.247 (Cable loss=0.9 dB) 25

4 General Information

4.1 Details of E.U.T.

Power Supply:	DC 3V =size 'AAA' battery x 2
Test Voltage:	DC 3V
Cable:	N/A
Antenna Gain	0 dBi
Antenna Type	PCB Antenna
Channel Spacing	2MHz
Modulation Type	GFSK
Number of Channels	40
Operation Frequency	2402MHz to 2480MHz
Function	Body scale with BLE function
Duty Cycle (declare by application)	5%
Sample NO.	A1

4.2 Description of Support Units

The EUT has been tested with corresponding accessories as below:

Test software	EMI tools V1.4
Hardware	Rev1

4.3 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%

No.198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075058 www.sgsgroup.com.cn
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075058 sgs.china@sgs.com

4.4 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.

4.5 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.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch, Testing Center
No.198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075058 www.sgsgroup.com.cn
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075058 sgs.china@sgs.com

5 Equipment List

Conducted Peak Output Power					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EXA Signal Analzer	AgilentTechnologies	N9010A	EMC2138	2019-11-18	2020-11-17
6dB Attenuator	HP	8491A	EMC2062	2020-04-15	2022-04-14
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS-EMC	0.8M	EMC2136	2019-11-02	2021-11-01
MI CABLE	SGS-EMC	0.8M	EMC2137	2019-11-02	2021-11-01

Conducted Band Edges Measurement					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
MXA Signal Analyzer	AgilentTechnologies	N9020A	SEM004-10	2020-03-02	2021-03-01
ESG Vector Signal Generator	Keysight	E4438C	SEM006-03	2020-03-31	2021-03-30
EXG Analog Signal Generator	AgilentTechnologies	N5171B	SEM006-04	2017-07-26	2020-07-25
Power Meter	AgilentTechnologies	U2021XA_Ch2	SEM009-02	2019-05-29	2020-05-28
Power Meter	AgilentTechnologies	U2021XA_Ch3	SEM009-03	2019-05-29	2020-05-28
EXA Signal Analzer	AgilentTechnologies	N9010A	EMC2138	2019-11-18	2020-11-17
6dB Attenuator	HP	8491A	EMC2062	2020-04-15	2022-04-14
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS-EMC	0.8M	EMC2136	2019-11-02	2021-11-01
MI CABLE	SGS-EMC	0.8M	EMC2137	2019-11-02	2021-11-01

Conducted Spurious Emissions					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EXA Signal Analzer	AgilentTechnologies	N9010A	EMC2138	2019-11-18	2020-11-17
6dB Attenuator	HP	8491A	EMC2062	2020-04-15	2022-04-14
Test Software JS1120-3	HangTianXing	V2.6	GZE100-69	N/A	N/A
MI CABLE	SGS-EMC	0.8M	EMC2136	2019-11-02	2021-11-01
MI CABLE	SGS-EMC	0.8M	EMC2137	2019-11-02	2021-11-01

Radiated Spurious Emissions					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2020-01-10	2021-01-09
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2020-01-10	2021-01-09
Chamber cable	HangTianXing	N/A	EMC0542	2019-06-28	2021-06-27
Trilog Broadband Antenna 25MHz-1GHz	SCHWARZBECKMESS-ELEKTRONIK	VULB 9168	EMC2174	2018-09-06	2021-09-05
Bi-log Type Antenna	Schaffner Chase	CBL6143	EMC0519	2017-06-01	2020-05-31
Horn Antenna	SCHWARZBECKMESS-ELEKTRONIK	BBHA 9120D	EMC2016	2019-09-25	2022-09-24
Horn Antenna 1GHz-18GHz	Rohde & Schwarz	HF906	EMC0518	2018-09-02	2021-09-01
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2020-01-10	2021-01-09
Amplifier	HP	8447F	EMC2065	2019-05-29	2020-05-28
Pre-Amplifier MH648A	ANRITSU CORP	MH648A	EMC2086	2019-11-18	2020-11-17
Active Loop Antenna	EMCO	6502	EMC0523	2018-03-05	2021-03-04
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2020-01-10	2021-01-09
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2020-01-10	2021-01-09
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2017-12-19	2020-12-18
MXE EMI Receiver	Keysight	N9038A	EMC2139	2019-11-18	2020-11-17
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2019-11-18	2020-11-17
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

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

SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch, EMC Laboratory
No.198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075058 www.sgsgroup.com.cn
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075058 sgs.china@sgs.com

6 Radio Spectrum Matter Test Results

6.1 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)
902-928	1 for ≥50 hopping channels
	0.25 for 25≤ hopping channels <50
	1 for digital modulation
2400-2483.5	1 for ≥75 non-overlapping hopping channels
	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation

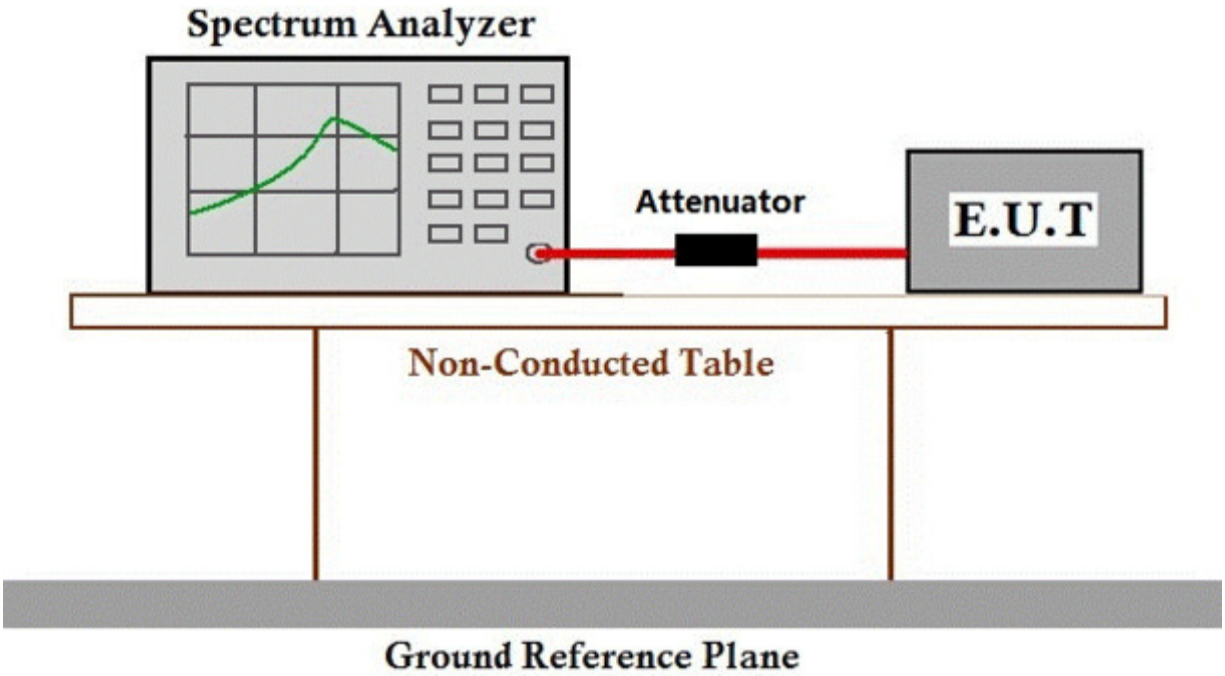
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 24.8 °C Humidity: 49.4 % RH Atmospheric Pressure: 1020 mbar

Test mode a: TX mode_Keep the EUT transmitting contiunally with GFSK modulation in low/middle/high channel.

6.1.2 Test Setup Diagram



6.1.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247

6.2 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)

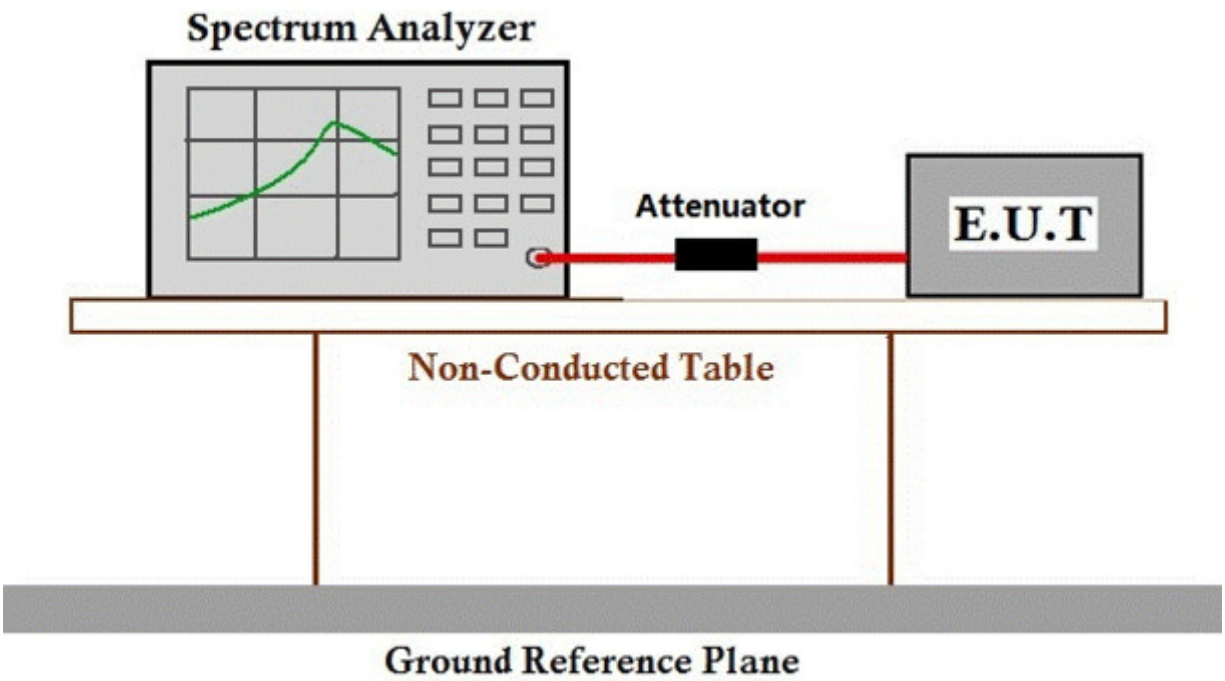
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 24.8 °C Humidity: 49.4 % RH Atmospheric Pressure: 1020 mbar

Test mode: a: TX mode_Keep the EUT transmitting contiunally with GFSK modulation in low/middle/high channel.

6.2.2 Test Setup Diagram



6.2.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247

6.3 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)

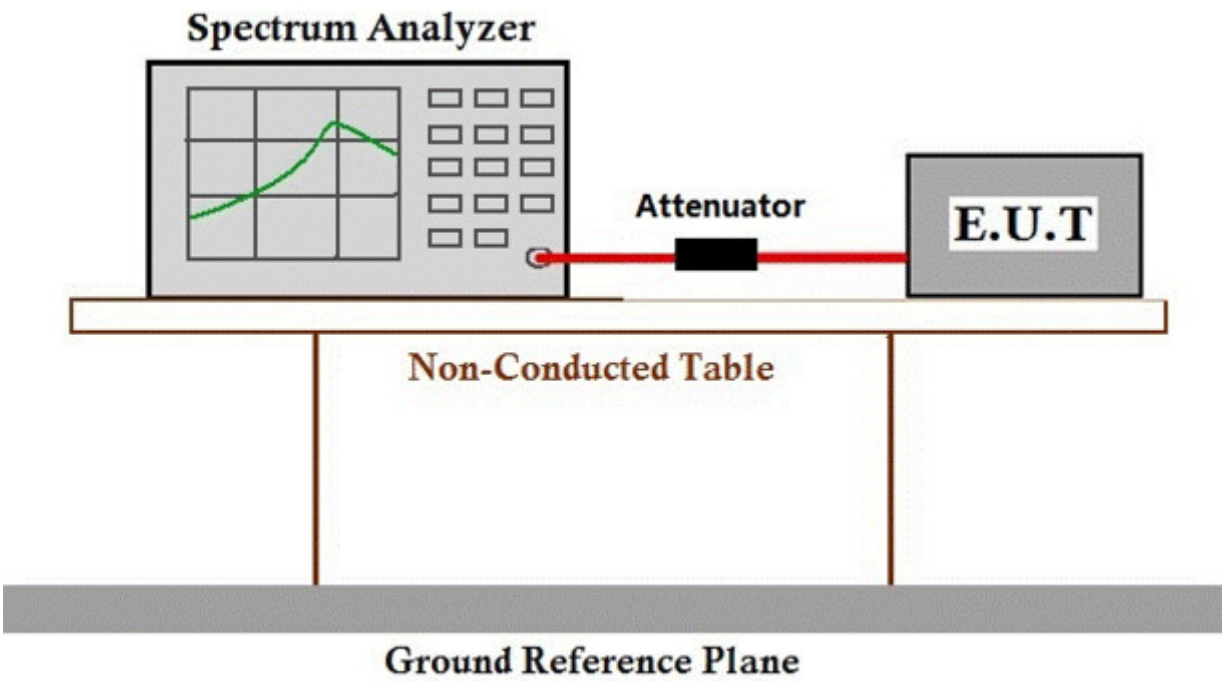
6.3.1 E.U.T. Operation

Operating Environment:

Temperature: 24.8 °C Humidity: 49.4 % RH Atmospheric Pressure: 1020 mbar

Test mode: a: TX mode_Keep the EUT transmitting contiunally with GFSK modulation in low/middle/high channel.

6.3.2 Test Setup Diagram



6.3.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247

6.4 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.		

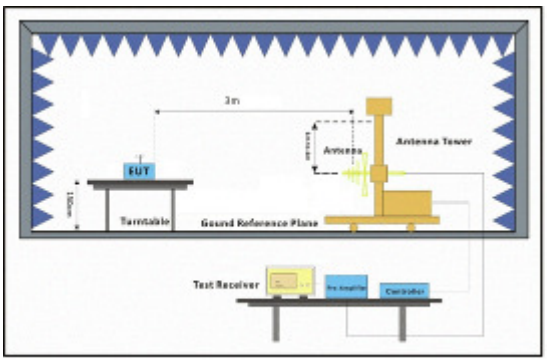
6.4.1 E.U.T. Operation

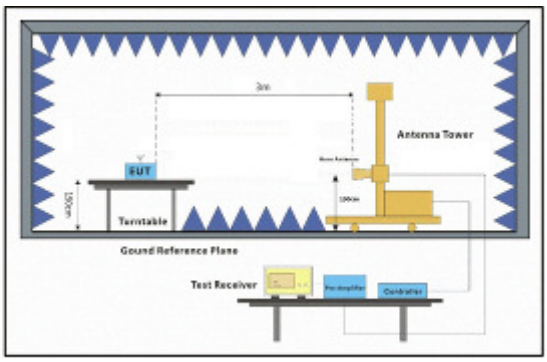
Operating Environment:

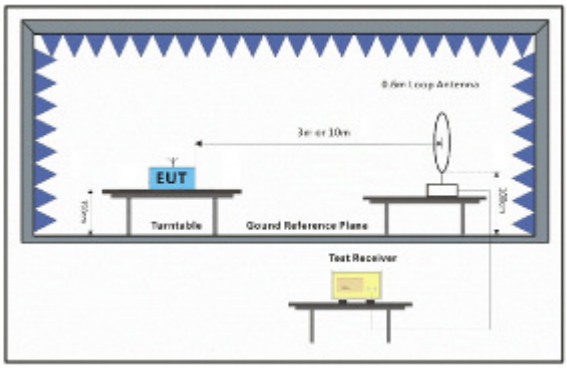
Temperature: 24.6 °C Humidity: 55.5 % RH Atmospheric Pressure: 1020 mbar

Test mode a: TX mode_Keep the EUT transmitting contiunally with GFSK modulation in low/middle/high channel.

6.4.2 Test Setup Diagram







6.4.3 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

Remark :The AV value is calculate according to ANSI C63.10 section 7.5, and the duty cycle(worse case) is 5% in normally use.

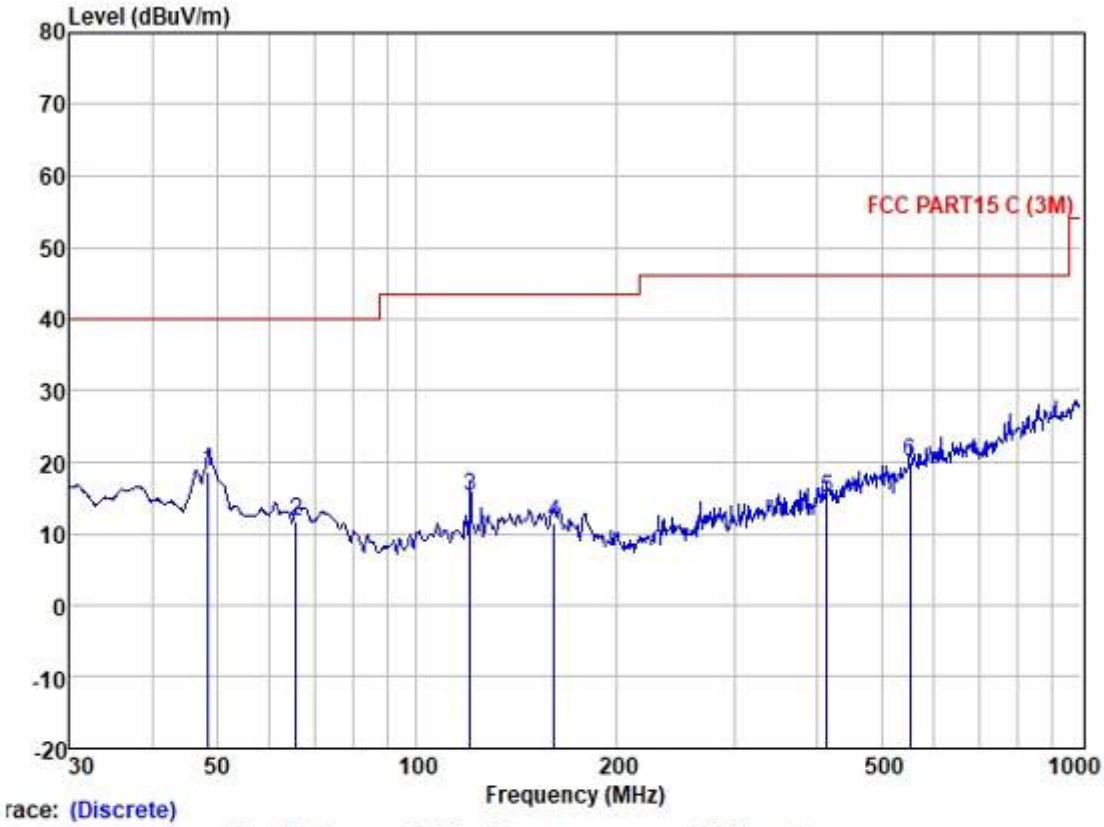
$\delta(dB) = 20\log(\Delta) = 20\log(0.05) = -26.02(dB)$

where

δ is the duty cycle correction factor (dB)

Δ is the duty cycle (dimensionless)

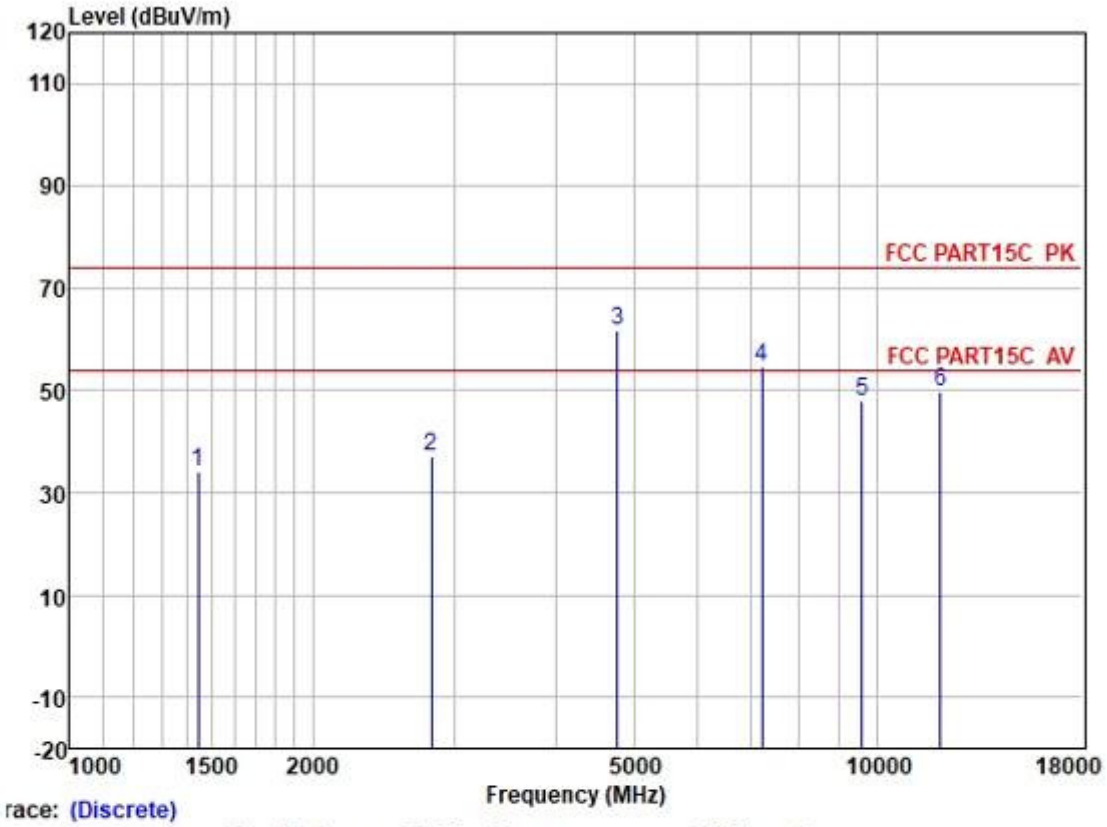
Mode:a; Polarization:Horizontal; Modulation:GFSK; Channel:Low



race: (Discrete)

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	48.502	30.43	12.36	0.78	24.78	18.79	40.00	-21.21	HORIZONTAL	QP
2	65.803	25.14	11.03	0.90	25.42	11.65	40.00	-28.35	HORIZONTAL	QP
3	120.277	30.71	11.52	1.20	28.19	15.24	43.50	-28.26	HORIZONTAL	QP
4	160.909	25.32	12.93	1.43	28.10	11.58	43.50	-31.92	HORIZONTAL	QP
5	414.722	26.60	15.71	2.37	29.64	15.04	46.00	-30.96	HORIZONTAL	QP
6	552.883	27.69	19.05	2.80	29.53	20.01	46.00	-25.99	HORIZONTAL	QP

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



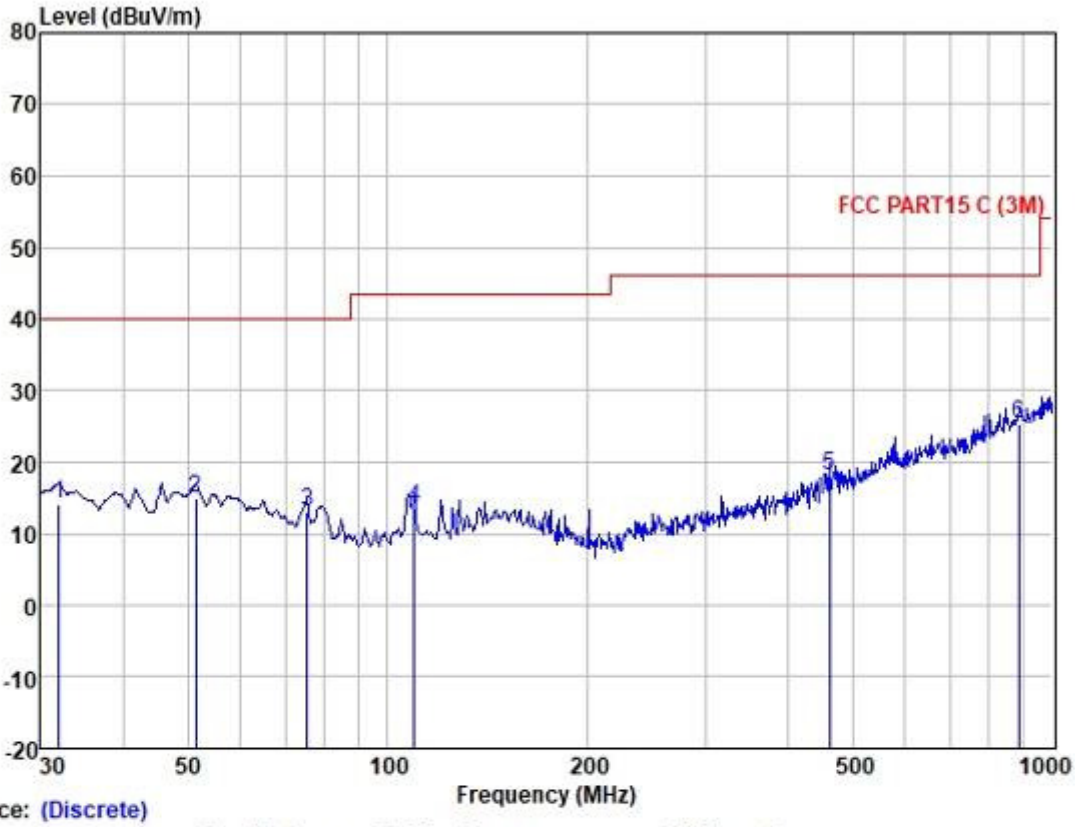
race: (Discrete)

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1443.509	43.01	25.44	2.69	37.16	33.98	74.00	-40.02	HORIZONTAL	Peak
2	2806.288	42.00	28.15	3.70	36.72	37.13	74.00	-36.87	HORIZONTAL	Peak
3	4776.419	61.44	31.36	5.40	36.47	61.73	74.00	-12.27	HORIZONTAL	Peak
4	7205.148	50.08	35.54	5.98	36.75	54.85	74.00	-19.15	HORIZONTAL	Peak
5	9608.880	38.87	38.37	7.07	36.36	47.95	74.00	-26.05	HORIZONTAL	Peak
6	12010.200	39.24	38.90	8.19	36.40	49.93	74.00	-24.07	HORIZONTAL	Peak

Freq(MHz)	Correction factor(dB)	Level(dBuV/m)	Limit(dBuV/m)	Remark
4776.419	-26.02	35.71	54	AV
7205.148	-26.02	28.83	54	AV

No.198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075058 www.sgsgroup.com.cn
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075058 sgs.china@sgs.com

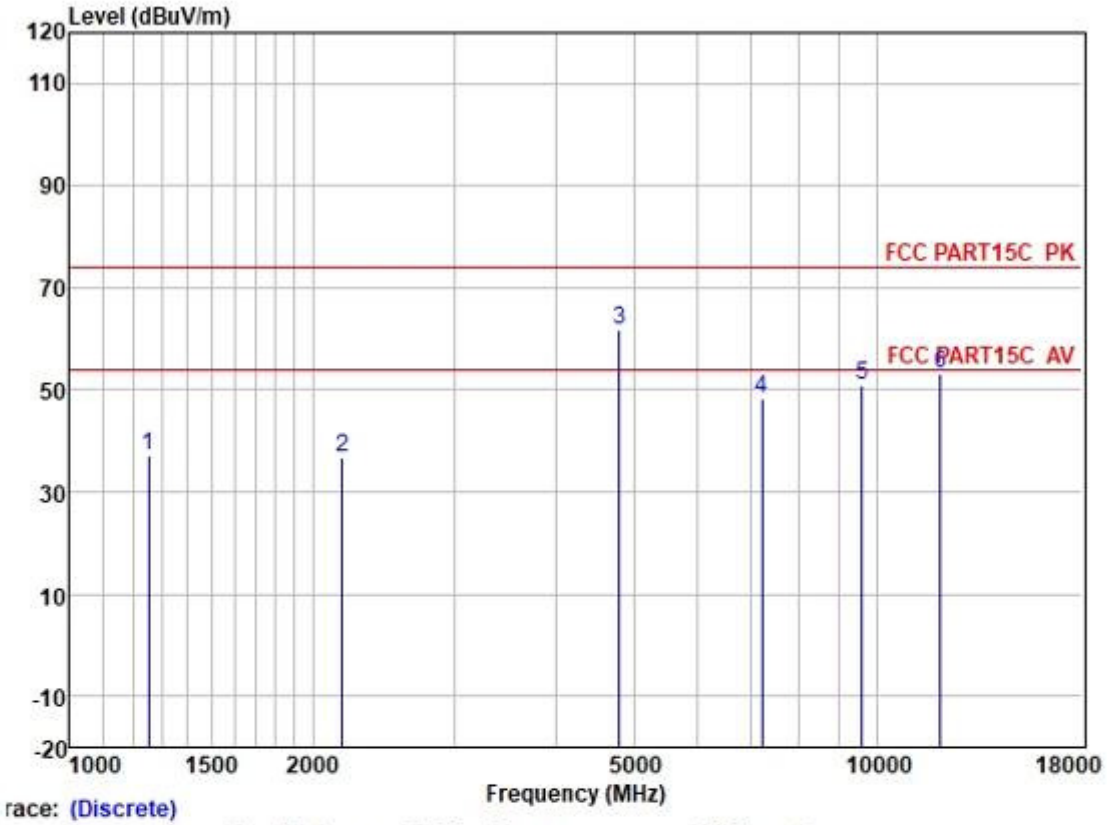
Mode:a; Polarization:Vertical; Modulation:GFSK; Channel:Low



race: (Discrete)

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	31.955	24.17	11.21	0.60	21.90	14.08	40.00	-25.92	VERTICAL	QP
2	51.301	26.76	12.35	0.80	24.90	15.01	40.00	-24.99	VERTICAL	QP
3	75.711	29.00	8.86	1.00	25.83	13.03	40.00	-26.97	VERTICAL	QP
4	109.412	29.81	10.40	1.15	27.66	13.70	43.50	-29.80	VERTICAL	QP
5	462.346	28.03	17.06	2.51	29.47	18.13	46.00	-27.87	VERTICAL	QP
6	890.728	26.30	23.53	3.60	28.01	25.42	46.00	-20.58	VERTICAL	QP

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

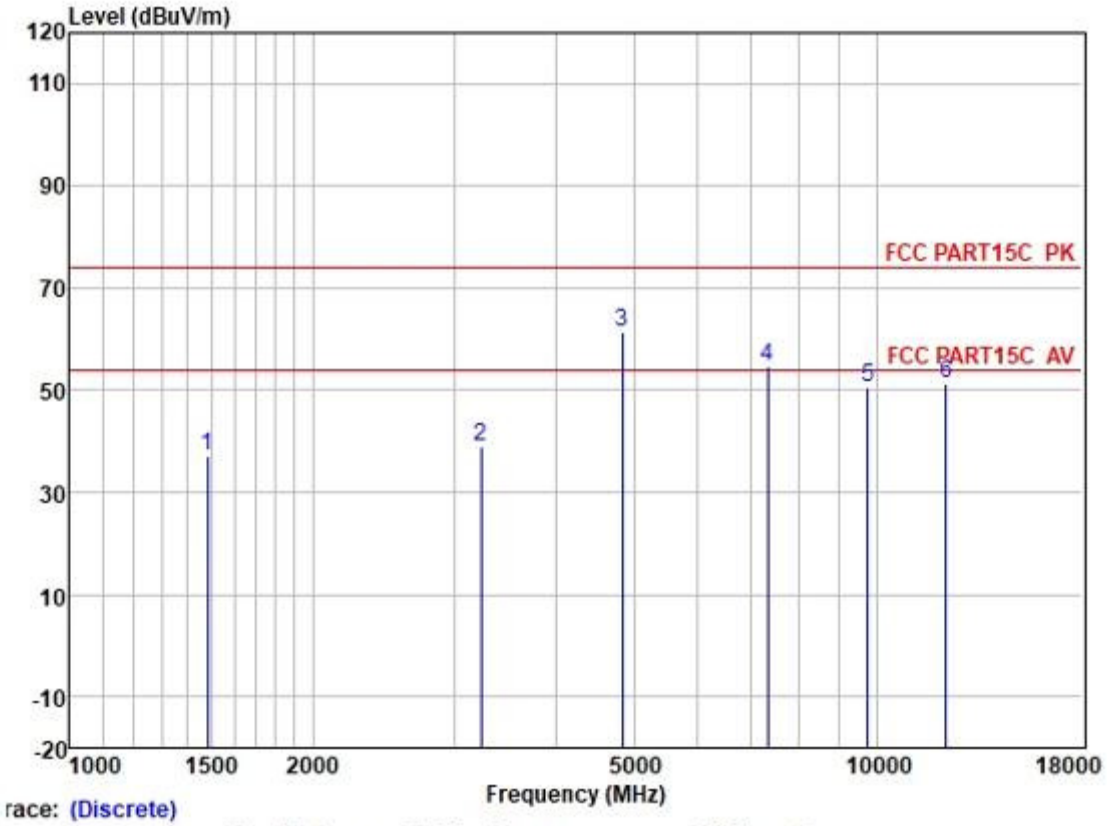


race: (Discrete)

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1252.885	47.01	25.03	2.36	37.33	37.07	74.00	-36.93	VERTICAL	Peak
2	2176.047	44.01	26.51	3.19	36.97	36.74	74.00	-37.26	VERTICAL	Peak
3	4804.600	61.33	31.42	5.40	36.48	61.67	74.00	-12.33	VERTICAL	Peak
4	7206.523	43.68	35.54	5.98	36.75	48.45	74.00	-25.55	VERTICAL	Peak
5	9608.945	41.97	38.37	7.07	36.36	51.05	74.00	-22.95	VERTICAL	Peak
6	12010.130	42.55	38.90	8.19	36.40	53.24	74.00	-20.76	VERTICAL	Peak

Freq(MHz)	Correction factor(dB)	Level(dBuV/m)	Limit(dBuV/m)	Remark
4804.600	-26.02	35.65	54	AV

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

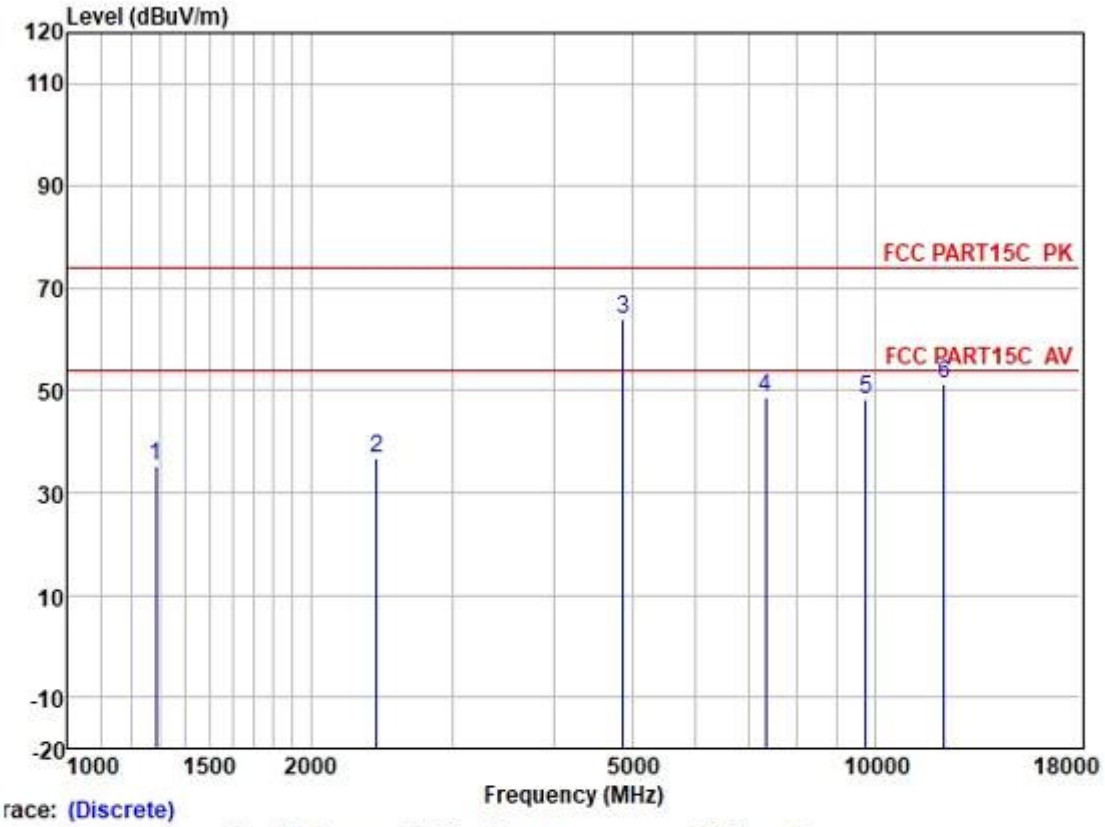


race: (Discrete)

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1481.553	46.01	25.48	2.77	37.13	37.13	74.00	-36.87	HORIZONTAL	Peak
2	3233.260	43.00	28.65	4.02	36.50	39.17	74.00	-34.83	HORIZONTAL	Peak
3	4844.948	61.03	31.50	5.45	36.48	61.50	74.00	-12.50	HORIZONTAL	Peak
4	7326.122	49.11	36.00	6.13	36.76	54.48	74.00	-19.52	HORIZONTAL	Peak
5	9768.450	41.24	38.53	7.01	36.33	50.45	74.00	-23.55	HORIZONTAL	Peak
6	12210.880	40.79	38.74	8.08	36.30	51.31	74.00	-22.69	HORIZONTAL	Peak

Freq(MHz)	Correction factor(dB)	Level(dBuV/m)	Limit(dBuV/m)	Remark
4844.948	-26.02	35.48	54	AV
7326.122	-26.02	28.46	54	AV

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

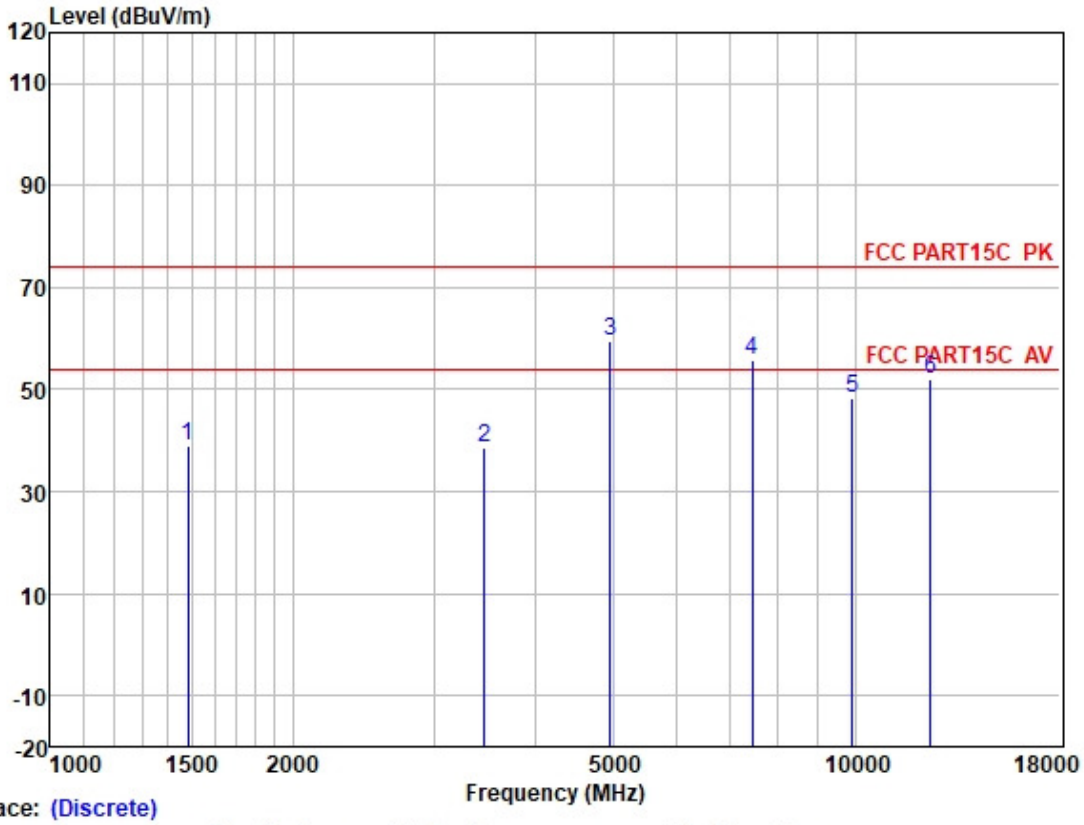


race: (Discrete)

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1285.904	45.00	25.16	2.53	37.31	35.38	74.00	-38.62	VERTICAL	Peak
2	2414.672	43.00	27.38	3.47	36.92	36.93	74.00	-37.07	VERTICAL	Peak
3	4884.948	63.35	31.56	5.52	36.50	63.93	74.00	-10.07	VERTICAL	Peak
4	7326.879	43.44	36.00	6.13	36.76	48.81	74.00	-25.19	VERTICAL	Peak
5	9768.390	39.18	38.53	7.01	36.33	48.39	74.00	-25.61	VERTICAL	Peak
6	12210.880	40.79	38.74	8.08	36.30	51.31	74.00	-22.69	VERTICAL	Peak

Freq(MHz)	Correction factor(dB)	Level(dBuV/m)	Limit(dBuV/m)	Remark
4884.948	-26.02	37.91	54	AV

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

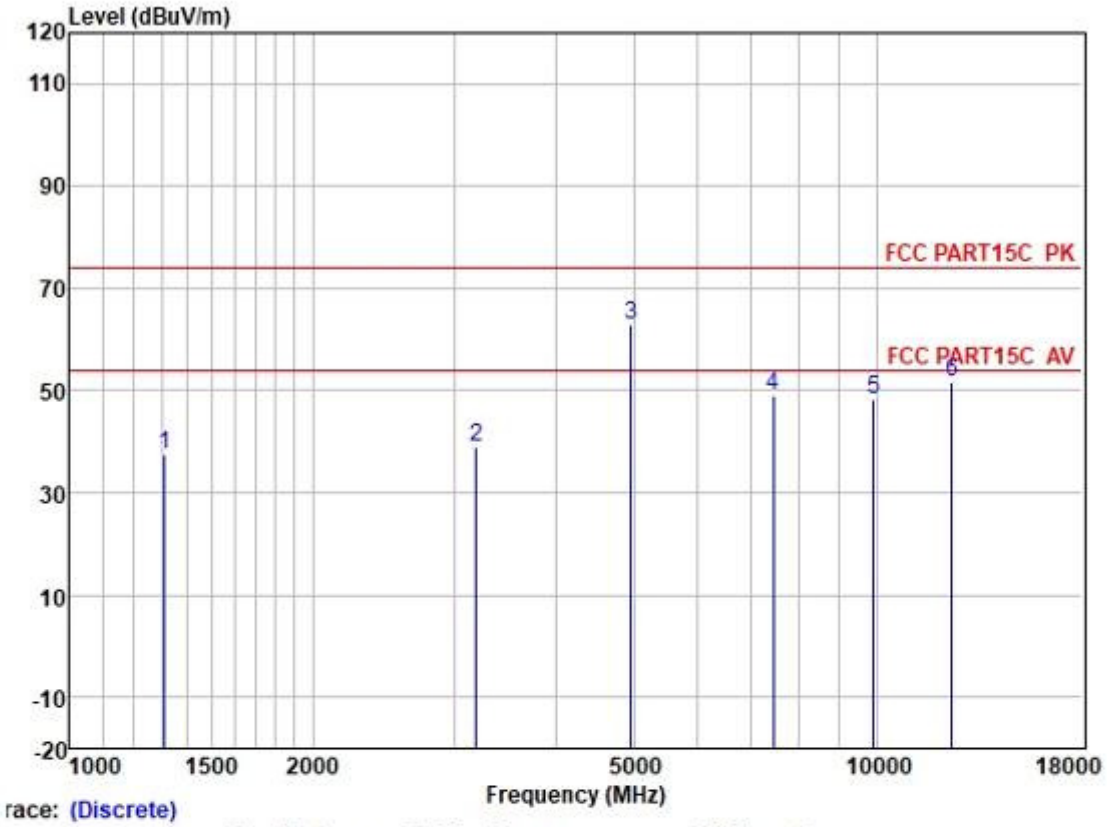


race: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1481.553	48.01	25.48	2.77	37.13	39.13	74.00	-34.87	HORIZONTAL	Peak
2	3465.510	42.01	28.88	4.22	36.46	38.65	74.00	-35.35	HORIZONTAL	Peak
3	4960.993	58.78	31.65	5.65	36.52	59.56	74.00	-14.44	HORIZONTAL	Peak
4	7440.914	50.14	36.27	6.22	36.77	55.86	74.00	-18.14	HORIZONTAL	Peak
5	9920.970	39.18	38.65	6.96	36.31	48.48	74.00	-25.52	HORIZONTAL	Peak
6	12400.070	41.64	38.57	7.97	36.17	52.01	74.00	-21.99	HORIZONTAL	Peak

Freq(MHz)	Correction factor(dB)	Level(dBuV/m)	Limit(dBuV/m)	Remark
4960.993	-26.02	33.54	54	AV
7440.914	-26.02	29.84	54	AV

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



race: (Discrete)

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1312.187	47.01	25.23	2.60	37.30	37.54	74.00	-36.46	VERTICAL	Peak
2	3186.869	43.00	28.57	3.99	36.51	39.05	74.00	-34.95	VERTICAL	Peak
3	4960.993	62.25	31.65	5.65	36.52	63.03	74.00	-10.97	VERTICAL	Peak
4	7440.911	43.49	36.27	6.22	36.77	49.21	74.00	-24.79	VERTICAL	Peak
5	9920.390	39.09	38.65	6.96	36.31	48.39	74.00	-25.61	VERTICAL	Peak
6	12400.090	41.33	38.57	7.97	36.17	51.70	74.00	-22.30	VERTICAL	Peak

Freq(MHz)	Correction factor(dB)	Level(dBuV/m)	Limit(dBuV/m)	Remark
4960.993	-26.02	37.01	54	AV

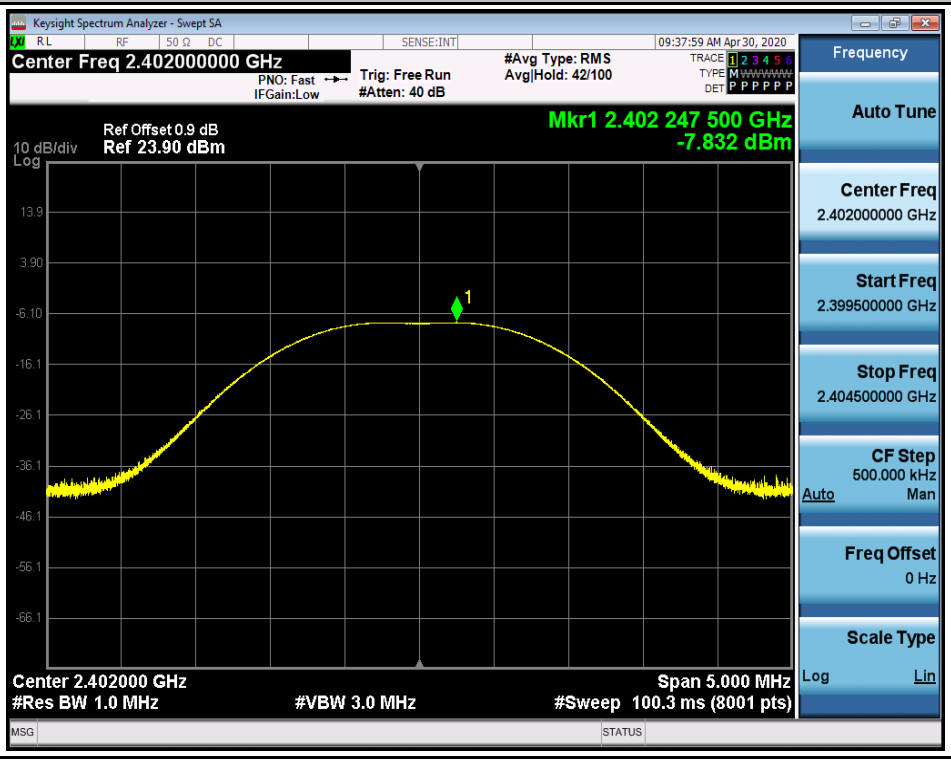
7 Appendix

7.1 Appendix 15.247 (Cable loss=0.9 dB)

1.Maximum peak conducted output power

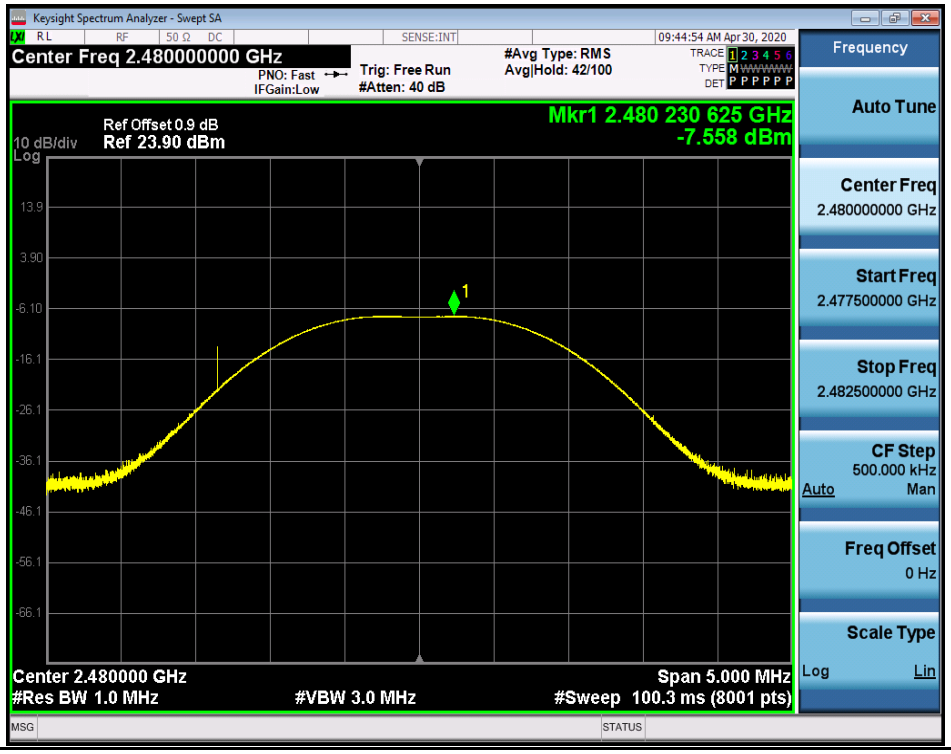
Test Mode	Test Channel	Ant	Power[dBm]	Limit[dBm]	Verdict
BLE	2402	Ant1	-7.832	30	PASS
BLE	2442	Ant1	-7.569	30	PASS
BLE	2480	Ant1	-7.558	30	PASS

TEST PLOT
Maximum peak conducted output power_BLE_2402_Ant1



Maximum peak conducted output power_BLE_2442_Ant1

Maximum peak conducted output power_BLE_2480_Ant1



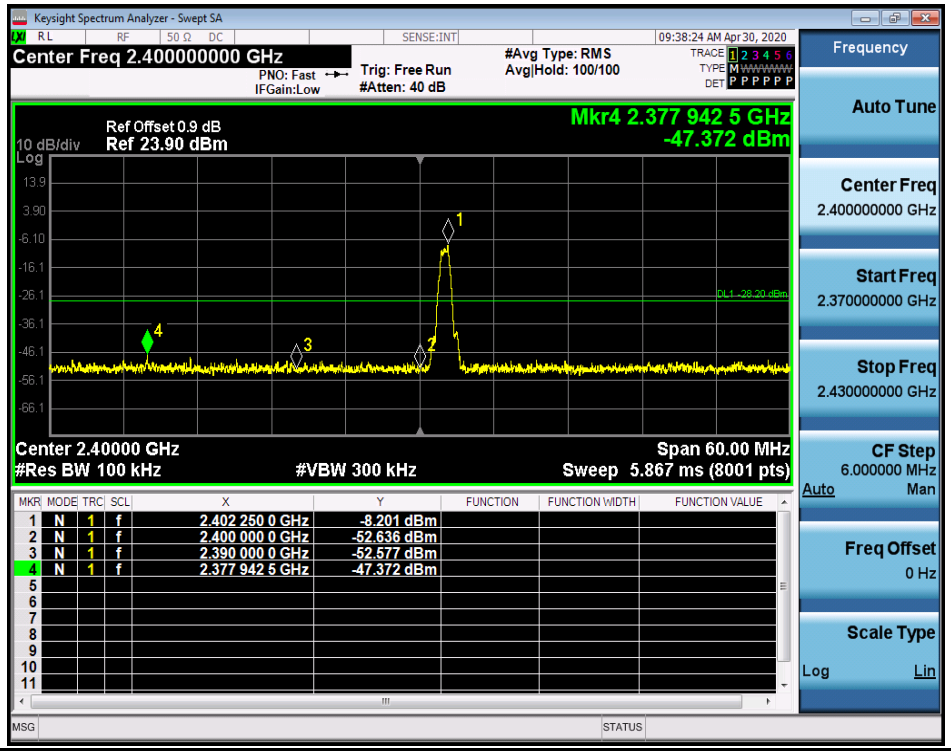
SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch, EEC Laboratory
No.198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075058 www.sgsgroup.com.cn
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075058 sgs.china@sgs.com

2.Band-edge for RF Conducted Emissions

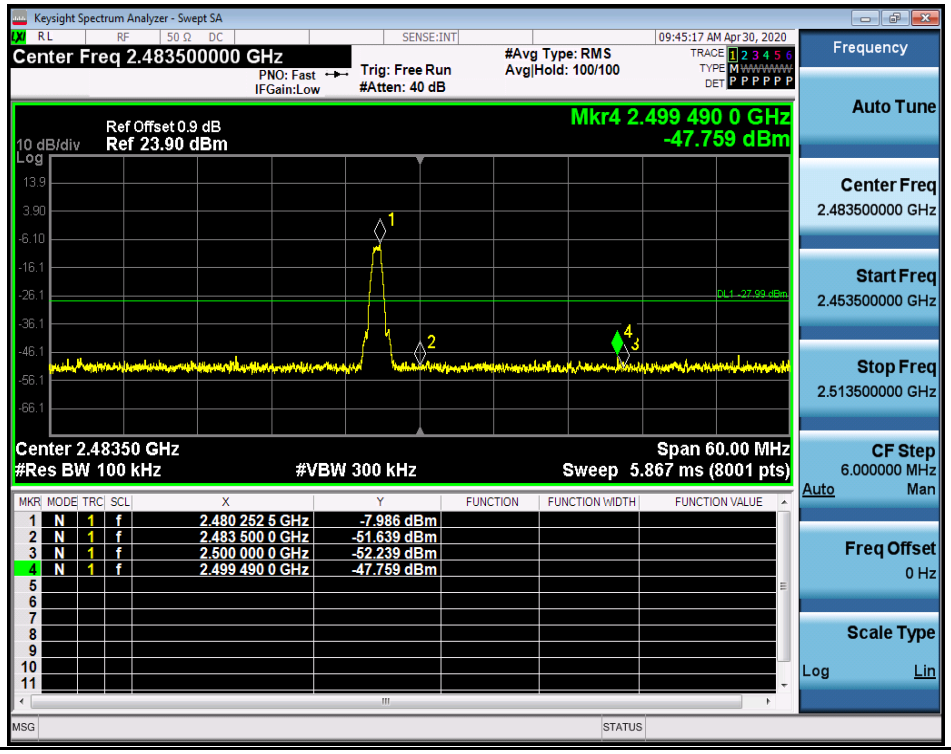
Test Mode	Test Channel	Ant	Carrier Power[dBm]	Max. Spurious Level [dBm]	Limit [dBm]	Verdict
BLE	2402	Ant1	-8.201	-47.372	-28.2	PASS
BLE	2480	Ant1	-7.986	-47.759	-27.99	PASS

TEST PLOT

Band-edge for RF Conducted Emissions_BLE_2402_Ant1

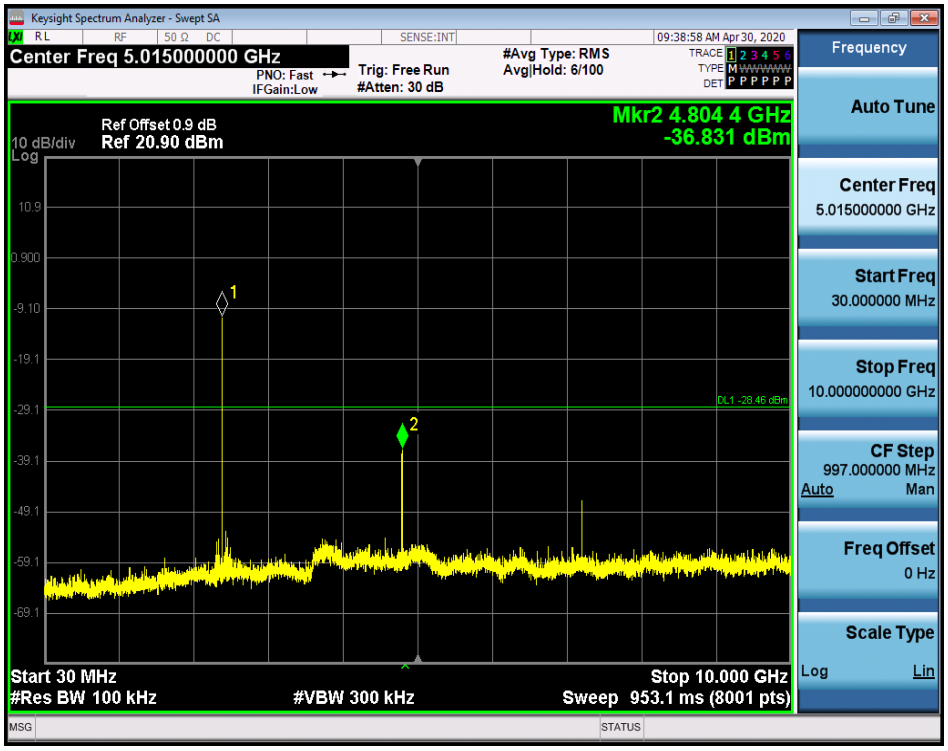


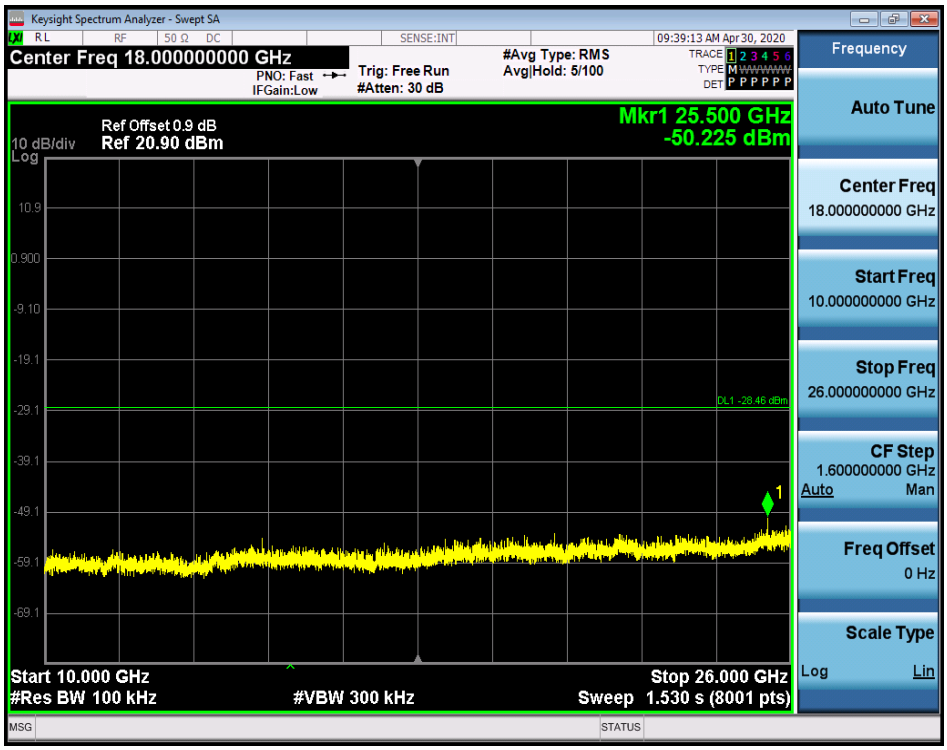
Band-edge for RF Conducted Emissions_BLE_2480_Ant1



3.RF Conducted Spurious Emissions

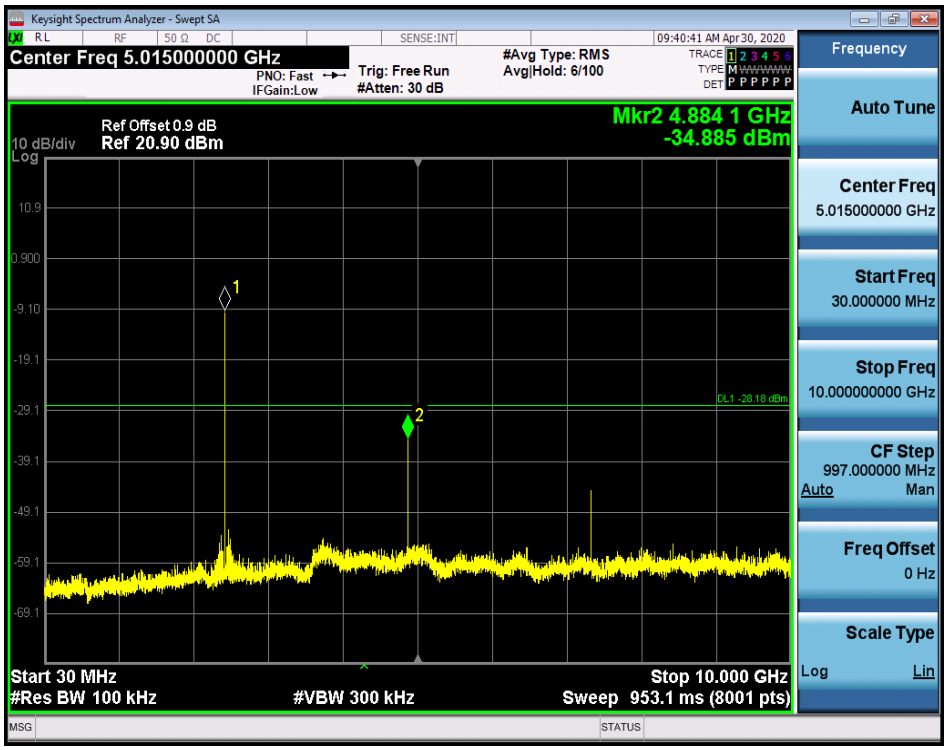
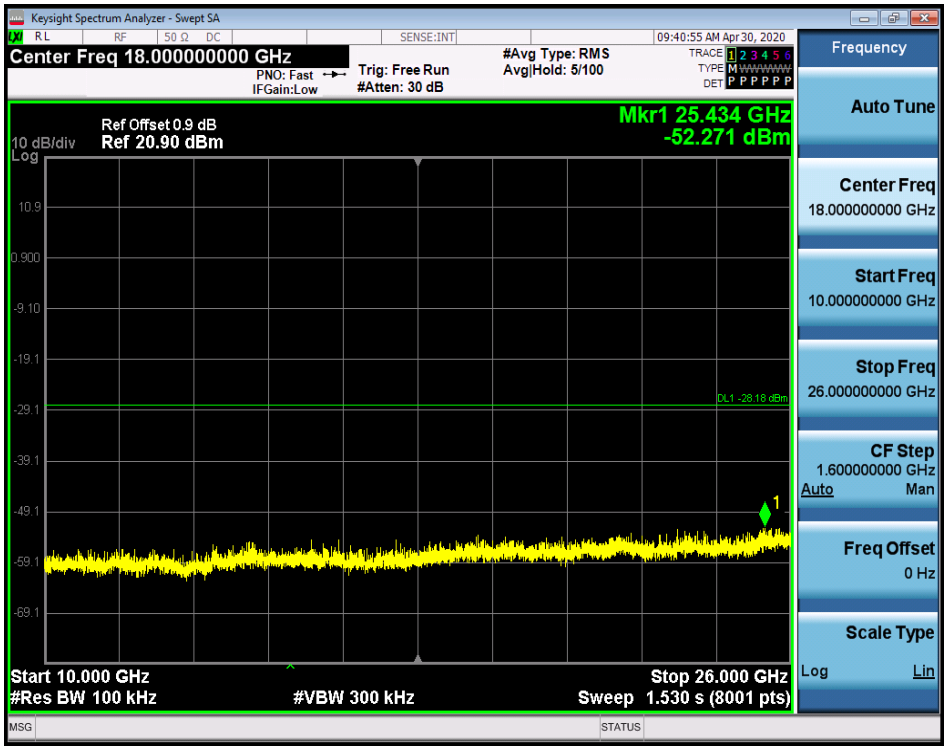
Test Mode	Test Channel	Ant	StartFre [MHz]	StopFre [MHz]	RBW [kHz]	VBW [kHz]	Pref[dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BLE	2402	Ant1	30	10000	100	300	-8.457	-36.831	<-28.457	PASS
BLE	2402	Ant1	10000	26000	100	300	-8.457	-50.225	<-28.457	PASS
BLE	2442	Ant1	30	10000	100	300	-8.182	-34.885	<-28.182	PASS
BLE	2442	Ant1	10000	26000	100	300	-8.182	-52.271	<-28.182	PASS
BLE	2480	Ant1	30	10000	100	300	-8.037	-34.178	<-28.037	PASS
BLE	2480	Ant1	10000	26000	100	300	-8.037	-51.570	<-28.037	PASS

TEST PLOT	
RF Conducted Spurious Emissions_BLE_2402_Ant1	
Pref	
CSE_1	

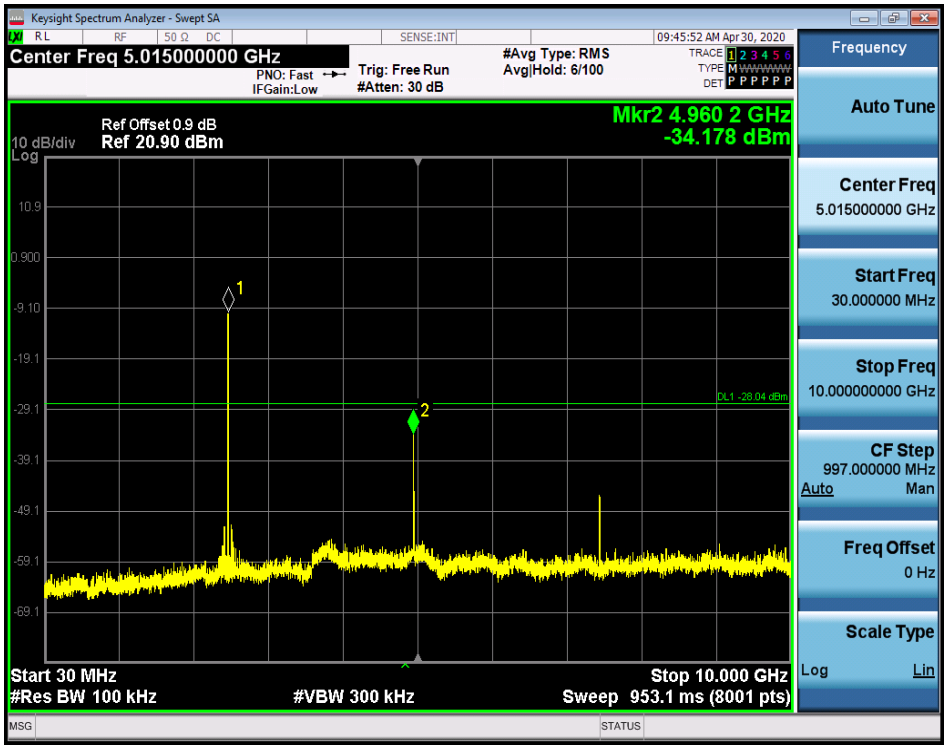
CSE_2	

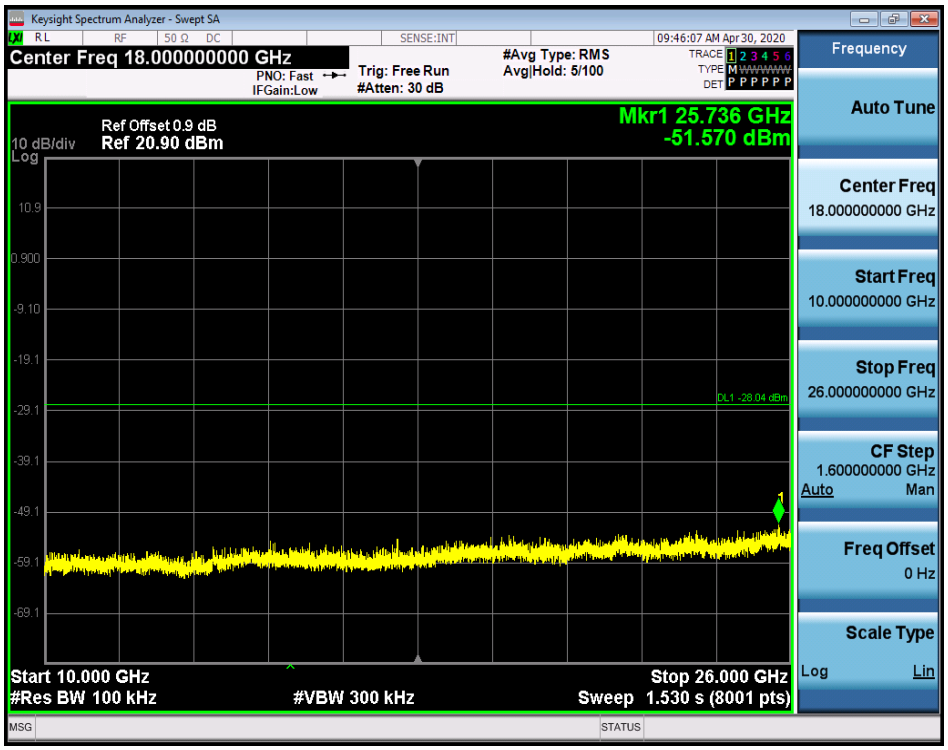
RF Conducted Spurious Emissions_BLE_2442_Ant1

Pref	

CSE_1	
CSE_2	

SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch, EEC Laboratory
No.198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20) 82155555 f (86-20) 82075058 www.sgsgroup.com.cn
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075058 sgs.china@sgs.com

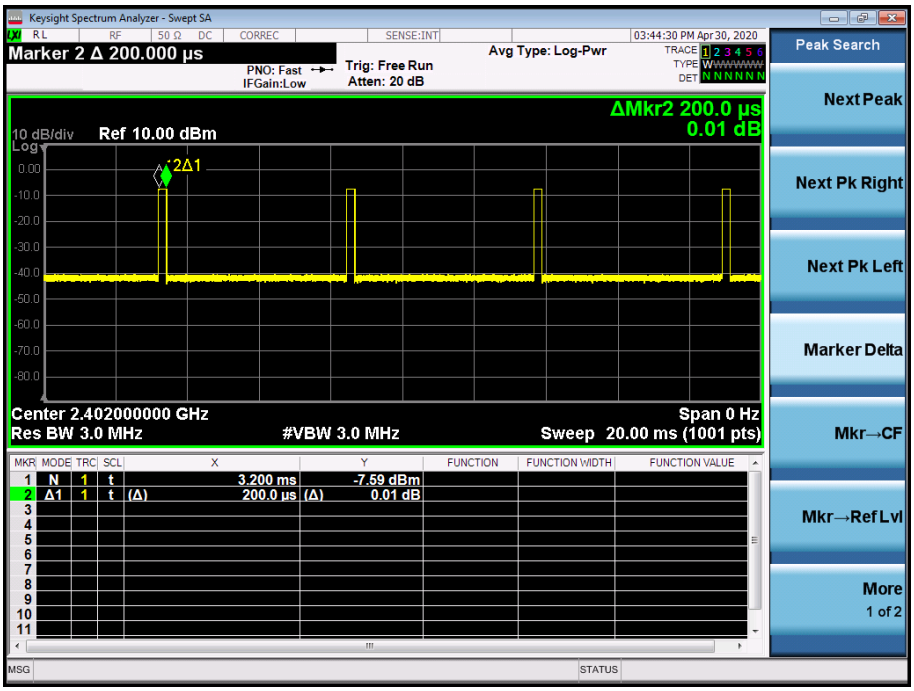
RF Conducted Spurious Emissions_BLE_2480_Ant1	
Pref	
CSE_1	

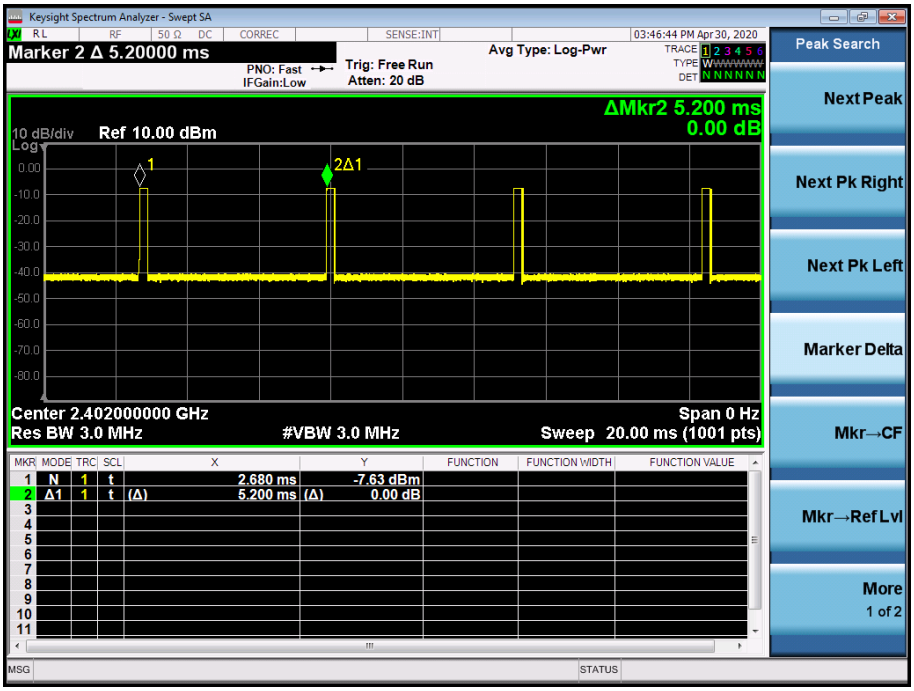
CSE_2	

4.Duty Cycle

Test Mode	Test Channel	Ant	On time[ms]	Cycle time[ms]	Duty cycle[%]
BLE	2402	Ant1	0.2	5.2	3.8%

TEST PLOT
BLE_2402_Ant1





--End of Report--