



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

198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technological
Development District, Guangzhou, China 510663

Telephone: +86 (0) 20 82155555
Fax: +86 (0) 20 82075059
Email: ee.guangzhou@sgs.com

Report No.: GZEM180300131102
Page: 1 of 44
FCC ID: 2AEHI-5060442520035

TEST REPORT

Application No.: GZEM1803001311CR
Applicant: CHIARO TECHNOLOGY
Address of Applicant: 2nd Floor, 63-66 Hatton Garden, London, United Kingdom, EC1N 8LE
Manufacturer: GREEN POINT TECHNOLOGY (SHENZHEN) CO., LTD
Address of Manufacturer: No.2073 Jincheng Road, Shajing Street, Bao'an District, Shenzhen
Factory: GREEN POINT TECHNOLOGY (SHENZHEN) CO., LTD
Address of Factory: No.2073 Jincheng Road, Shajing Street, Bao'an District, Shenzhen
Equipment Under Test (EUT):
FCC ID: 2AEHI-5060442520035
EUT Name: Elvie Pump
Model No.: EP01
Standard(s) : 47 CFR Part 15, Subpart C 15.247
Date of Receipt: 2018-03-20
Date of Test: 2018-04-13 to 2018-05-22
Date of Issue: 2018-07-05

Test Result:	Pass*
---------------------	--------------

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



Kobe Jian

EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Document.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.



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

Report No.: GZEM180300131102
Page: 2 of 44

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2018-07-05		Original

Authorized for issue by:			
Tested By	 Jackson_Yuan /Project Engineer	2018-04-13 to 2018-05-22	Date
Checked By	 Ricky_Liu /Reviewer	2018-05-25	Date



2 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(c)	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
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 11.12	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass①
Radiated Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.11	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass②

Remark:

①②: The EUT passed: Radiated Emissions which fall in the restricted bands, Radiated Spurious Emissions test after modification.



3 Contents

	Page
1 Cover Page	1
2 Test Summary	3
3 Contents	4
4 General Information	6
4.1 Details of E.U.T.....	6
4.2 Description of Support Units	6
4.3 Measurement Uncertainty.....	7
4.4 Test Location	7
4.5 Test Facility.....	8
4.6 Deviation from Standards	9
4.7 Abnormalities from Standard Conditions	9
5 Equipment List	10
6 Radio Spectrum Technical Requirement	13
6.1 Antenna Requirement.....	13
6.1.1 Test Requirement:.....	13
6.1.2 Conclusion.....	13
7 Radio Spectrum Matter Test Results	14
7.1 Minimum 6dB Bandwidth	14
7.1.1 E.U.T. Operation.....	14
7.1.2 Test Setup Diagram.....	14
7.1.3 Measurement Procedure and Data	14
7.2 Conducted Peak Output Power	15
7.2.1 E.U.T. Operation.....	15
7.2.2 Test Setup Diagram.....	15
7.2.3 Measurement Procedure and Data	15
7.3 Power Spectrum Density	16
7.3.1 E.U.T. Operation.....	16
7.3.2 Test Setup Diagram.....	16
7.3.3 Measurement Procedure and Data	16
7.4 Conducted Band Edges Measurement.....	17
7.4.1 E.U.T. Operation.....	17
7.4.2 Test Setup Diagram.....	17
7.4.3 Measurement Procedure and Data	17
7.5 Conducted Spurious Emissions.....	18
7.5.1 E.U.T. Operation.....	18
7.5.2 Test Setup Diagram.....	18
7.5.3 Measurement Procedure and Data	18
7.6 Radiated Emissions which fall in the restricted bands.....	19
7.6.1 E.U.T. Operation.....	20
7.6.2 Test Setup Diagram.....	20
7.6.3 Measurement Procedure and Data	21
7.7 Radiated Spurious Emissions.....	24
7.7.1 E.U.T. Operation.....	25



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

Report No.: GZEM180300131102
Page: 5 of 44

7.7.2	Test Setup Diagram.....	25
7.7.3	Measurement Procedure and Data	26
8	Appendix	31
8.1	Appendix 15.247	31



4 General Information

4.1 Details of E.U.T.

Power Supply:	Powered by built-in battery as below Model: P09O4-LF Rating: 1460mAh 3.7V 5.4Wh
Test Voltage:	DC 3.7V
Cable:	Micro USB power input ports (Unshielded, <3m)
BT Version	V 4.1 for BLE only
Antenna Gain	0 dBi
Antenna Type	PCB Antenna
Channel Spacing	2MHz
Modulation Type	GFSK
Number of Channels	40
Operation Frequency	2402MHz to 2480MHz
Power Class	<10mW

4.2 Description of Support Units

The EUT has been tested as an independent unit.

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	$\pm 7.25 \times 10^{-8}$
2	Timeout	$\pm 2s$
3	Duty cycle	$\pm 0.37\%$
4	Occupied Bandwidth	$\pm 3\%$
5	RF Conducted power	$\pm 0.75dB$
6	RF Power Density	$\pm 2.84dB$
7	Conducted Spurious Emissions	$\pm 0.75dB$
8	RF Radiated Power	$\pm 4.5dB$ (below 1GHz)
		$\pm 4.8dB$ (above 1GHz)
9	Radiated Spurious Emission Test	$\pm 4.5dB$ (30MHz-1GHz)
		$\pm 4.8dB$ (1GHz-18GHz)
10	Temperature	$\pm 0.4^{\circ}C$
11	Humidity	$\pm 1.3\%$
12	Supply Voltages	$\pm 1.5\%$
13	Time	$\pm 3\%$

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
198 Kezhu Road, Sciencetech 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-CL01:2006 accreditation criteria for testing laboratories (identical to

ISO/IEC 17025:2005 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-1)**

The 3m/10m Alternate Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Certification and Engineering of Industry Canada for radio equipment testing with Registration No. 4620B-1.

● **VCCI (Registration No.: R-2460, C-2584, G-449 and T-1179)**

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-2460, C-2584, G-449 and T-1179 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

The EUT passed: Radiated Emissions which fall in the restricted bands, Radiated Spurious Emissions test after modification.



5 Equipment List

Minimum 6dB Bandwidth					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2017-11-15	2018-11-14

Conducted Peak Output Power					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2017-11-15	2018-11-14

Power Spectrum Density					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2017-11-15	2018-11-14

Conducted Band Edges Measurement					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
MXA Signal Analyzer	AgilentTechnologies	N9020A	SEM004-10	2018-03-10	2019-03-09
ESG Vector Signal Generator	Keysight	E4438C	SEM006-03	2018-04-10	2019-04-10
EXG Analog Signal Generator	AgilentTechnologies	N5171B	SEM006-04	2017-07-26	2020-07-25
Power Meter	AgilentTechnologies	U2021XA_C h2	SEM009-02	2017-09-19	2018-09-18
Power Meter	AgilentTechnologies	U2021XA_C h3	SEM009-03	2017-09-19	2018-09-18
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2017-11-15	2018-11-14

Conducted Spurious Emissions					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2017-11-15	2018-11-14



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

Report No.: GZEM180300131102
 Page: 11 of 44

Radiated Emissions which fall in the restricted bands					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2018-01-19	2019-01-18
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2018-01-19	2019-01-18
chamber cable	HangTianXing	N/A	EMC0542	2017-06-30	2019-06-30
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	SCHWARZBECKMESS-ELEKTRONIK	BBHA 9120D	EMC2026	2016-09-09	2019-09-08
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2018-01-08	2019-01-07
Amplifier	HP	8447F	EMC2065	2017-06-19	2018-06-18
Pre-Amplifier MH648A	ANRITSU CORP	MH648A	EMC2086	2017-11-20	2018-11-19
Active Loop Antenna	EMCO	6502	EMC0523	2018-02-24	2019-02-23
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2018-01-19	2019-01-18
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2018-01-08	2019-01-07
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2016-04-30	2018-04-29
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2017-11-29	2018-11-28
MXE EMI Receiver	Keysight	N9038A	EMC2139	2017-11-15	2018-11-14
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2017-11-15	2018-11-14



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

Report No.: GZEM180300131102
Page: 12 of 44

Radiated Spurious Emissions					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2018-01-19	2019-01-18
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2018-01-19	2019-01-18
chamber cable	HangTianXing	N/A	EMC0542	2017-06-30	2019-06-30
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKME SS-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	2018-01-08	2019-01-07
Amplifier	HP	8447F	EMC2065	2017-06-19	2018-06-18
Pre-Amplifier MH648A	ANRITSU CORP	MH648A	EMC2086	2017-11-20	2018-11-19
Active Loop Antenna	EMCO	6502	EMC0523	2018-02-24	2019-02-23
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2018-01-19	2019-01-18
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2018-01-08	2019-01-07
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2016-04-30	2018-04-29
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2017-11-29	2018-11-28
MXE EMI Receiver	Keysight	N9038A	EMC2139	2017-11-15	2018-11-14
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2017-11-15	2018-11-14

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2017-07-26	2018-07-25
DMM	Fluke	73	EMC0007	2017-07-26	2018-07-25

6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

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

6.1.2 Conclusion

Standard Requirement:

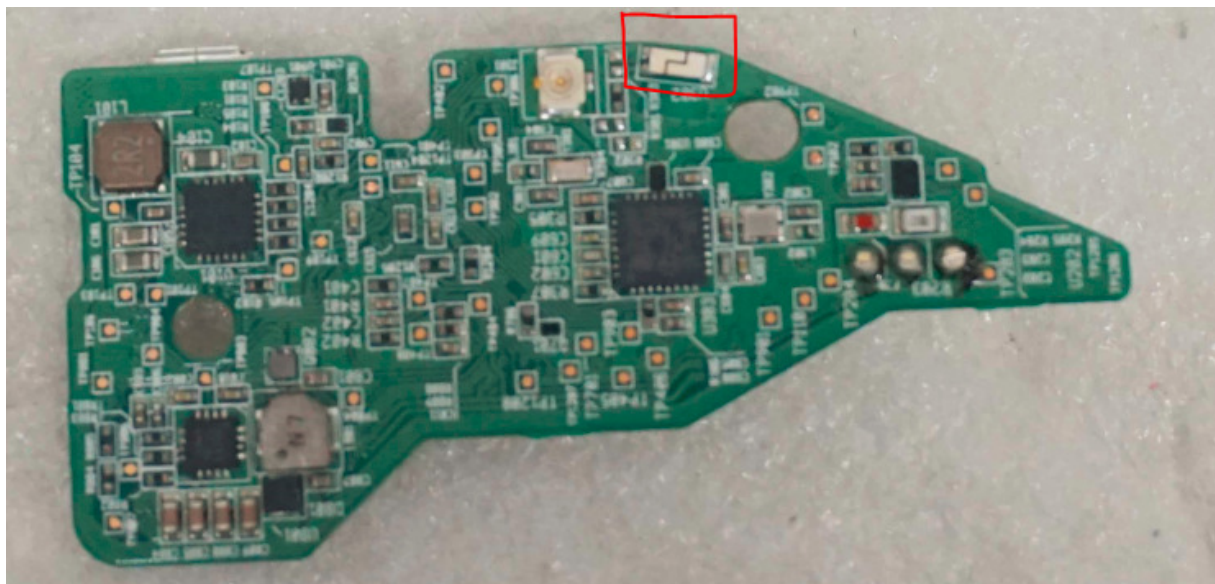
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit 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 0 dBi.



Test result: The unit does meet the FCC requirements.

7 Radio Spectrum Matter Test Results

7.1 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

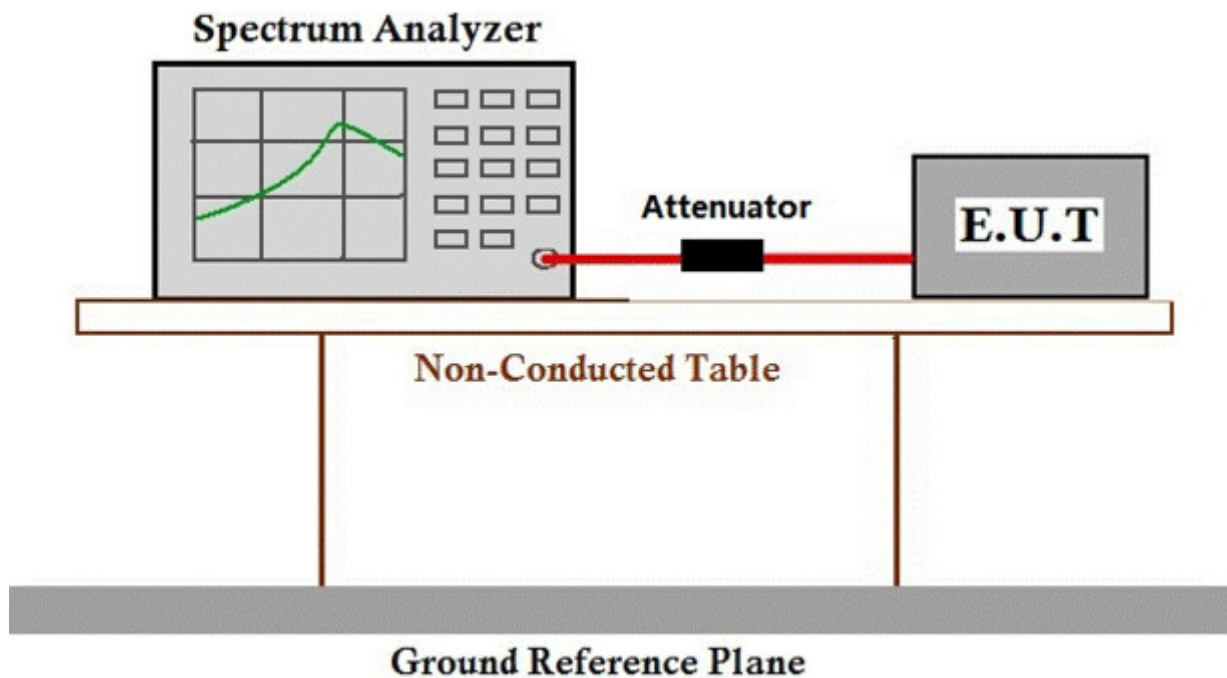
7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 24.8 °C Humidity: 49.6 % RH Atmospheric Pressure: 1020 mbar

Test mode b: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 15.247

7.2 Conducted Peak Output Power

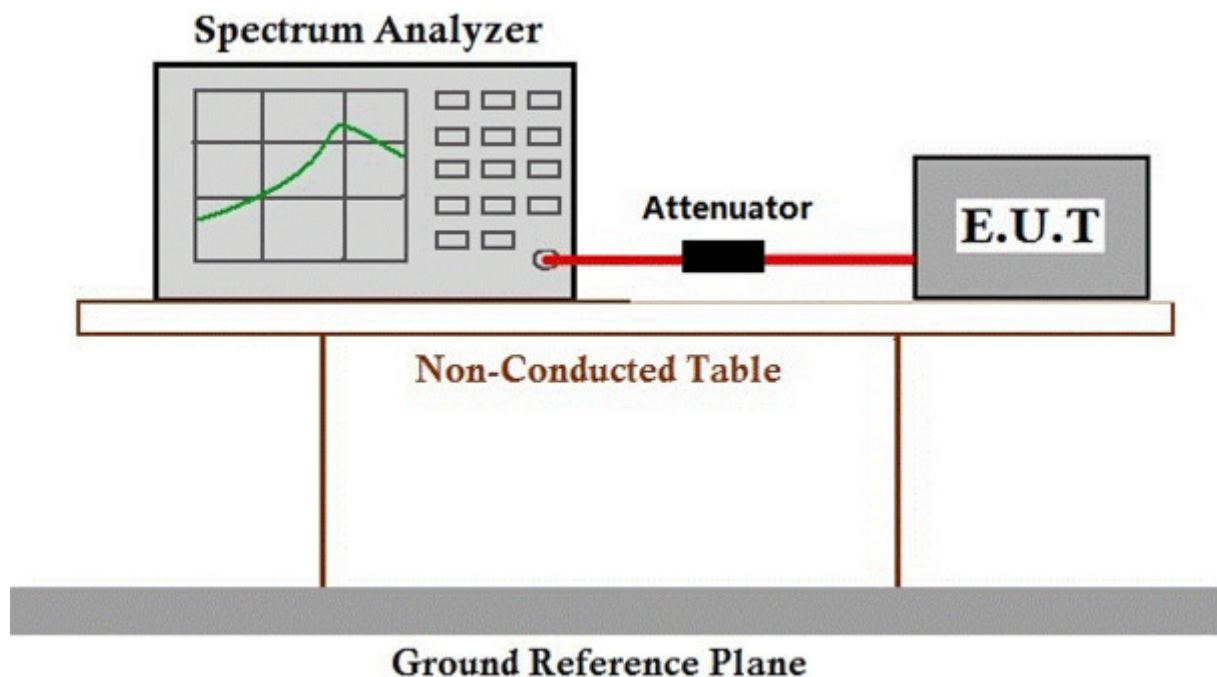
Test Requirement 47 CFR Part 15, Subpart C 15.247(b)(3)
 Test Method: ANSI C63.10 (2013) Section 11.9.1
 Limit:

Frequency range(MHz)	Output power of the intentional radiator(watt)
902-928	1 for ≥ 50 hopping channels
	0.25 for $25 \leq$ 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

7.2.1 E.U.T. Operation

Operating Environment:
 Temperature: 24.8 °C Humidity: 49.6 % RH Atmospheric Pressure: 1020 mbar
 Test mode b: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 15.247

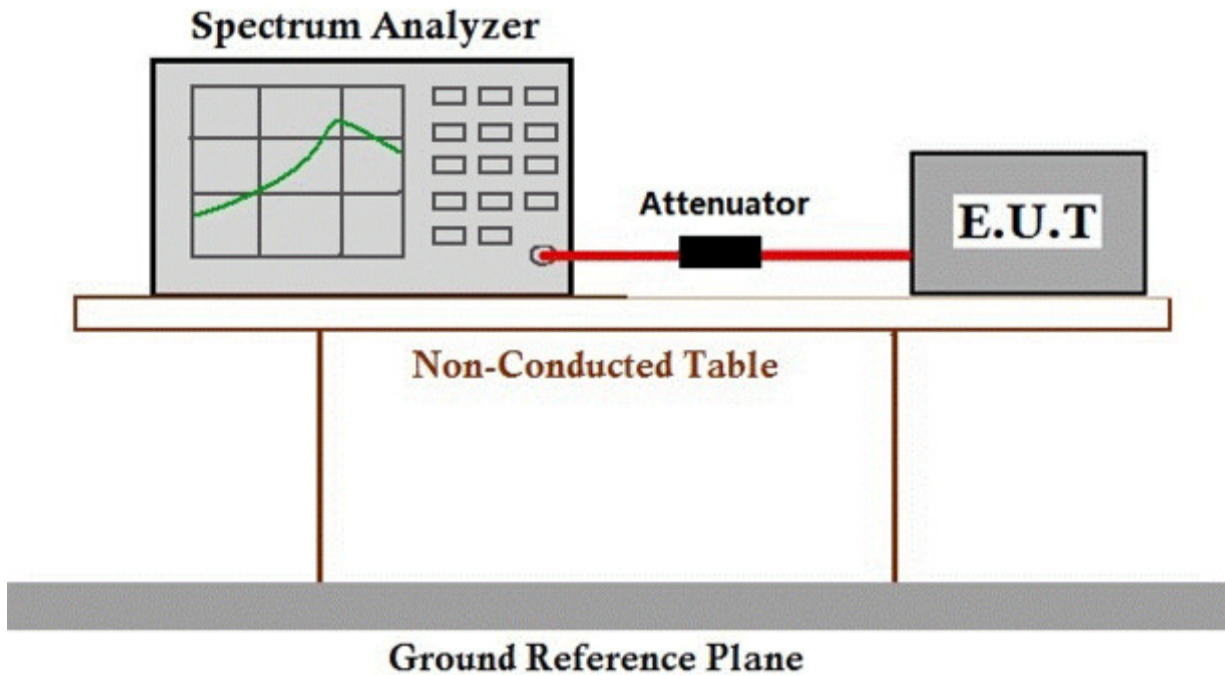
7.3 Power Spectrum Density

Test Requirement: 47 CFR Part 15, Subpart C 15.247(e)
Test Method: ANSI C63.10 (2013) Section 11.10.2
Limit: $\leq 8\text{dBm}$ in any 3 kHz band during any time interval of continuous transmission

7.3.1 E.U.T. Operation

Operating Environment:
Temperature: 24.8 °C Humidity: 49.6 % RH Atmospheric Pressure: 1020 mbar
Test mode: b: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 15.247

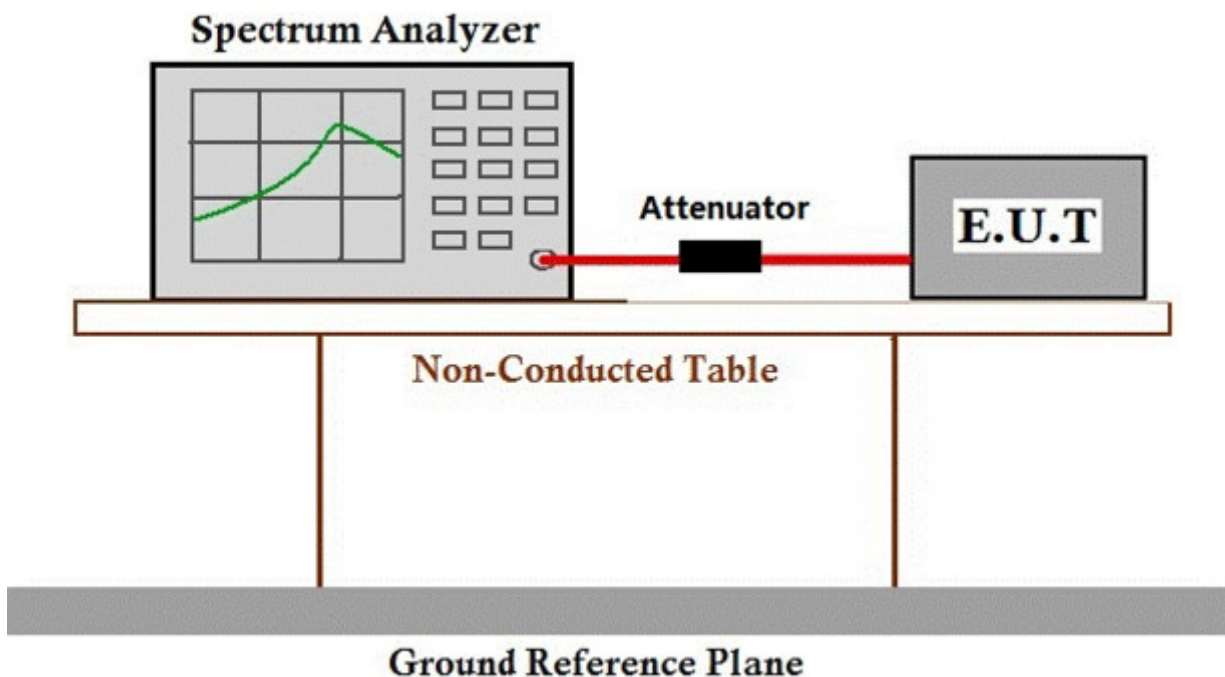
7.4 Conducted Band Edges Measurement

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))

7.4.1 E.U.T. Operation

Operating Environment:				
Temperature:	24.8 °C	Humidity:	49.6 % RH	Atmospheric Pressure: 1020 mbar
Test mode	b: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 15.247

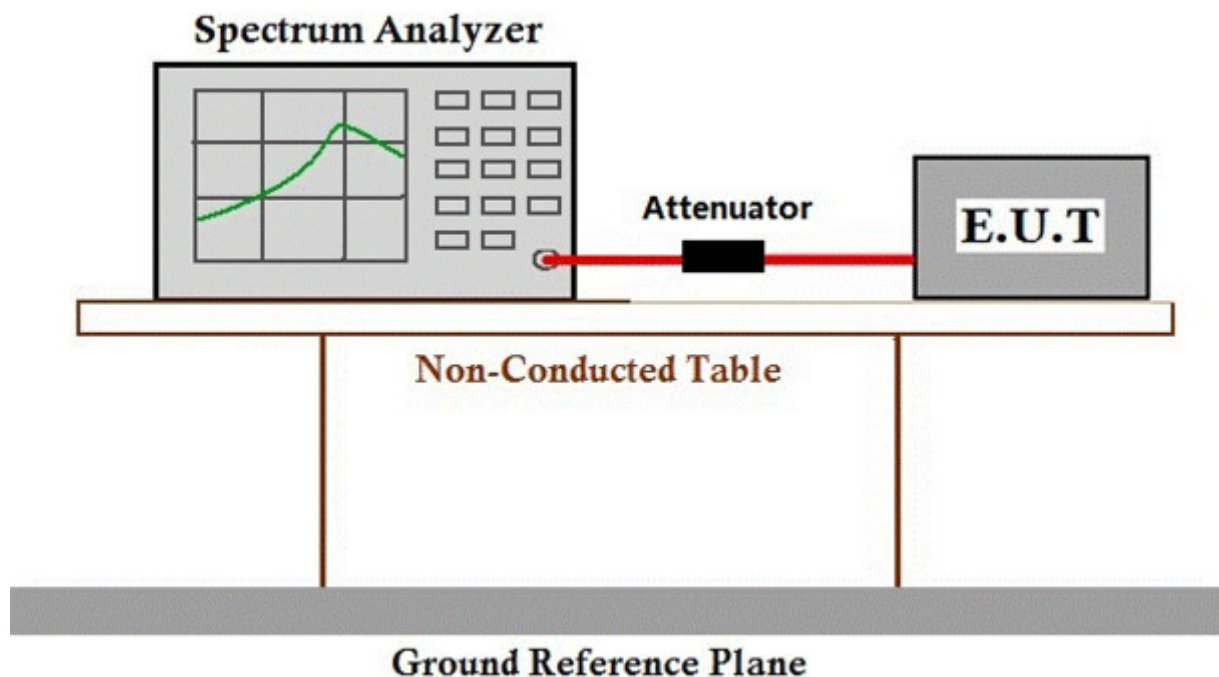
7.5 Conducted Spurious Emissions

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))

7.5.1 E.U.T. Operation

Operating Environment:
 Temperature: 24.8 °C Humidity: 49.6 % RH Atmospheric Pressure: 1020 mbar
 Test mode b:TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation

7.5.2 Test Setup Diagram



7.5.3 Measurement Procedure and Data

The detailed test data see: Appendix 15.247



7.6 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 11.12
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

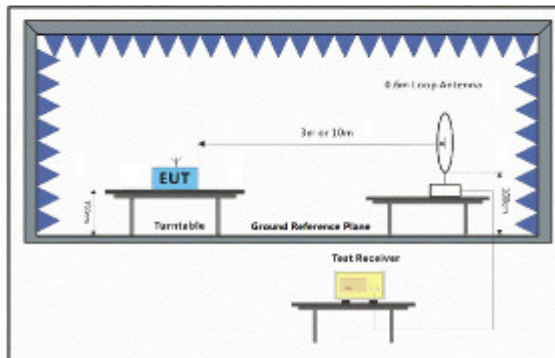
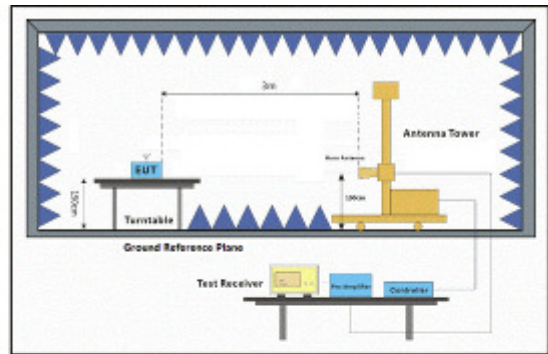
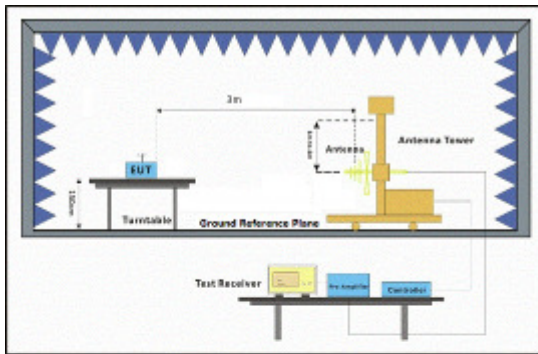
Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field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

7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 23.4 °C Humidity: 58.7 % RH Atmospheric Pressure: 1020 mbar
 Test mode b:TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation

7.6.2 Test Setup Diagram





7.6.3 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: $\text{Level} = \text{Read Level} + \text{Cable Loss} + \text{Antenna Factor} - \text{Preamp Factor}$

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.

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

	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	2310.000	34.24	26.25	5.03	37.44	28.08	54.00	-25.92	HORIZONTAL	Average
2	2310.000	46.14	26.25	5.03	37.44	39.98	74.00	-34.02	HORIZONTAL	Peak
3	2390.000	39.33	26.43	4.88	37.42	33.22	54.00	-20.78	HORIZONTAL	Average
4	2390.000	53.89	26.43	4.88	37.42	47.78	74.00	-26.22	HORIZONTAL	Peak
5	2483.500	33.35	26.58	5.23	37.40	27.76	54.00	-26.24	HORIZONTAL	Average
6	2483.500	43.94	26.58	5.23	37.40	38.35	74.00	-35.65	HORIZONTAL	Peak
7	2500.000	34.01	26.60	4.95	37.39	28.17	54.00	-25.83	HORIZONTAL	Average
8	2500.000	48.32	26.60	4.95	37.39	42.48	74.00	-31.52	HORIZONTAL	Peak

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

	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	2310.000	35.71	26.25	5.03	37.44	29.55	54.00	-24.45	VERTICAL	Average
2	2310.000	47.43	26.25	5.03	37.44	41.27	74.00	-32.73	VERTICAL	Peak
3	2390.000	33.89	26.43	4.88	37.42	27.78	54.00	-26.22	VERTICAL	Average
4	2390.000	46.16	26.43	4.88	37.42	40.05	74.00	-33.95	VERTICAL	Peak
5	2483.500	32.19	26.58	5.23	37.40	26.60	54.00	-27.40	VERTICAL	Average
6	2483.500	44.79	26.58	5.23	37.40	39.20	74.00	-34.80	VERTICAL	Peak
7	2500.000	46.59	26.60	4.95	37.39	40.75	54.00	-13.25	VERTICAL	Average
8	2500.000	33.83	26.60	4.95	37.39	27.99	74.00	-46.01	VERTICAL	Peak



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

Report No.: GZEM180300131102
 Page: 23 of 44

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

	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	2310.000	33.80	26.25	5.03	37.44	27.64	54.00	-26.36	HORIZONTAL	Average
2	2310.000	47.11	26.25	5.03	37.44	40.95	74.00	-33.05	HORIZONTAL	Peak
3	2390.000	30.71	26.43	4.88	37.42	24.60	54.00	-29.40	HORIZONTAL	Average
4	2390.000	45.05	26.43	4.88	37.42	38.94	74.00	-35.06	HORIZONTAL	Peak
5	2483.500	52.37	26.58	5.23	37.40	46.78	54.00	-7.22	HORIZONTAL	Average
6	2483.500	64.77	26.58	5.23	37.40	59.18	74.00	-14.82	HORIZONTAL	Peak
7	2500.000	43.44	26.60	4.95	37.39	37.60	54.00	-16.40	HORIZONTAL	Average
8	2500.000	57.62	26.60	4.95	37.39	51.78	74.00	-22.22	HORIZONTAL	Peak

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

	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	2310.000	33.75	26.25	5.03	37.44	27.59	54.00	-26.41	VERTICAL	Average
2	2310.000	46.87	26.25	5.03	37.44	40.71	74.00	-33.29	VERTICAL	Peak
3	2390.000	30.92	26.43	4.88	37.42	24.81	54.00	-29.19	VERTICAL	Average
4	2390.000	47.85	26.43	4.88	37.42	41.74	74.00	-32.26	VERTICAL	Peak
5	2483.500	50.61	26.58	5.23	37.40	45.02	54.00	-8.98	VERTICAL	Average
6	2483.500	66.20	26.58	5.23	37.40	60.61	74.00	-13.39	VERTICAL	Peak
7	2500.000	41.14	26.60	4.95	37.39	35.30	54.00	-18.70	VERTICAL	Average
8	2500.000	56.10	26.60	4.95	37.39	50.26	74.00	-23.74	VERTICAL	Peak



7.7 Radiated Spurious Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209
Test Method: ANSI C63.10 (2013) Section 11.11
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.

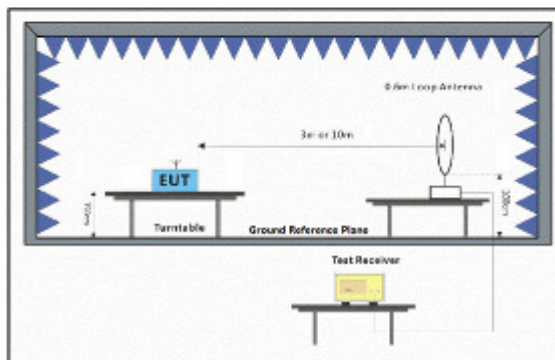
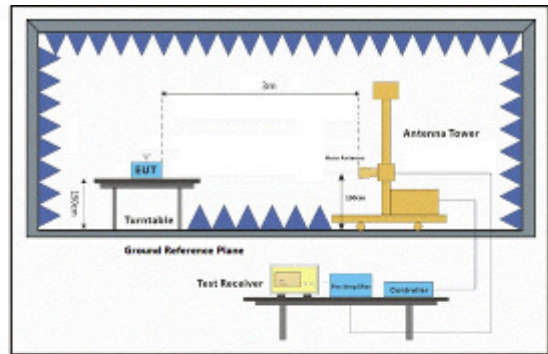
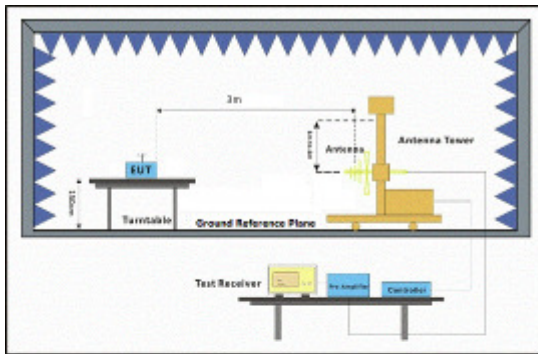
7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 23.4 °C Humidity: 58.7 % RH Atmospheric Pressure: 1020 mbar

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

7.7.2 Test Setup Diagram





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) 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



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

Report No.: GZEM180300131102
 Page: 27 of 44

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

	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	30.962	23.79	12.22	0.07	21.63	14.45	40.00	-25.55	HORIZONTAL QP
2	45.535	23.74	12.86	0.70	24.51	12.79	40.00	-27.21	HORIZONTAL QP
3	61.995	24.04	12.00	0.60	25.27	11.37	40.00	-28.63	HORIZONTAL QP
4	133.619	27.32	12.74	0.99	28.17	12.88	43.50	-30.62	HORIZONTAL QP
5	180.649	29.26	12.67	1.34	28.09	15.18	43.50	-28.32	HORIZONTAL QP
6	916.069	29.80	24.13	3.60	28.35	29.18	46.00	-16.82	HORIZONTAL QP

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

	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	3196.094	36.56	27.90	5.95	37.01	33.40	54.00	-20.60	HORIZONTAL Average
2	3196.094	46.82	27.90	5.95	37.01	43.66	74.00	-30.34	HORIZONTAL Peak
3	4804.110	39.15	30.79	5.87	36.94	38.87	54.00	-15.13	HORIZONTAL Average
4	4804.110	50.41	30.79	5.87	36.94	50.13	74.00	-23.87	HORIZONTAL Peak
5	5780.300	32.89	32.14	7.15	37.00	35.18	54.00	-18.82	HORIZONTAL Average
6	5780.300	44.52	32.14	7.15	37.00	46.81	74.00	-27.19	HORIZONTAL Peak
7	7206.516	32.44	35.45	7.34	36.93	38.30	54.00	-15.70	HORIZONTAL Average
8	7206.516	43.83	35.45	7.34	36.93	49.69	74.00	-24.31	HORIZONTAL Peak
9	9608.123	31.43	37.51	8.15	37.08	40.01	54.00	-13.99	HORIZONTAL Average
10	9608.123	43.04	37.51	8.15	37.08	51.62	74.00	-22.38	HORIZONTAL Peak
11	12010.480	29.43	39.50	10.67	37.20	42.40	54.00	-11.60	HORIZONTAL Average
12	12010.480	40.52	39.50	10.67	37.20	53.49	74.00	-20.51	HORIZONTAL Peak

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

	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	23.69	12.25	0.11	21.90	14.15	40.00	-25.85	VERTICAL	QP
2	45.058	23.36	12.83	0.71	24.48	12.42	40.00	-27.58	VERTICAL	QP
3	60.069	24.81	12.20	0.58	25.23	12.36	40.00	-27.64	VERTICAL	QP
4	130.837	28.11	12.48	0.97	28.18	13.38	43.50	-30.12	VERTICAL	QP
5	180.649	28.46	12.67	1.34	28.09	14.38	43.50	-29.12	VERTICAL	QP
6	912.862	28.44	24.10	3.45	28.26	27.73	46.00	-18.27	VERTICAL	QP

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

	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	3196.094	34.15	27.90	5.95	37.01	30.99	54.00	-23.01	VERTICAL	Average
2	3196.094	46.00	27.90	5.95	37.01	42.84	74.00	-31.16	VERTICAL	Peak
3	4804.110	39.87	30.79	5.87	36.94	39.59	54.00	-14.41	VERTICAL	Average
4	4804.110	50.87	30.79	5.87	36.94	50.59	74.00	-23.41	VERTICAL	Peak
5	6756.708	32.24	34.75	7.19	36.97	37.21	54.00	-16.79	VERTICAL	Average
6	6756.708	44.74	34.75	7.19	36.97	49.71	74.00	-24.29	VERTICAL	Peak
7	7206.832	33.73	35.45	7.34	36.93	39.59	54.00	-14.41	VERTICAL	Average
8	7206.832	43.47	35.45	7.34	36.93	49.33	74.00	-24.67	VERTICAL	Peak
9	9608.530	34.84	37.51	8.15	37.08	43.42	54.00	-10.58	VERTICAL	Average
10	9608.530	44.00	37.51	8.15	37.08	52.58	74.00	-21.42	VERTICAL	Peak
11	12010.610	31.79	39.50	10.67	37.20	44.76	54.00	-9.24	VERTICAL	Average
12	12010.610	44.57	39.50	10.67	37.20	57.54	74.00	-16.46	VERTICAL	Peak

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

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase	Remark	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3890.255	32.96	29.27	7.61	36.91	32.93	54.00	-21.07	HORIZONTAL Average
2	3890.255	44.86	29.27	7.61	36.91	44.83	74.00	-29.17	HORIZONTAL Peak
3	4884.043	37.36	30.95	6.86	36.95	38.22	54.00	-15.78	HORIZONTAL Average
4	4884.043	47.75	30.95	6.86	36.95	48.61	74.00	-25.39	HORIZONTAL Peak
5	7326.664	31.37	35.74	7.39	36.92	37.58	54.00	-16.42	HORIZONTAL Average
6	7326.664	43.47	35.74	7.39	36.92	49.68	74.00	-24.32	HORIZONTAL Peak
7	9312.588	32.18	37.08	8.35	37.06	40.55	54.00	-13.45	HORIZONTAL Average
8	9312.588	45.56	37.08	8.35	37.06	53.93	74.00	-20.07	HORIZONTAL Peak
9	9748.850	32.06	37.70	8.33	37.09	41.00	54.00	-13.00	HORIZONTAL Average
10	9748.850	44.65	37.70	8.33	37.09	53.59	74.00	-20.41	HORIZONTAL Peak
11	12210.560	30.63	39.21	10.98	37.06	43.76	54.00	-10.24	HORIZONTAL Average
12	12210.560	42.68	39.21	10.98	37.06	55.81	74.00	-18.19	HORIZONTAL Peak

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

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase	Remark	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3299.344	35.70	27.90	5.68	36.99	32.29	54.00	-21.71	VERTICAL Average
2	3299.344	46.56	27.90	5.68	36.99	43.15	74.00	-30.85	VERTICAL Peak
3	4884.043	35.62	30.95	6.86	36.95	36.48	54.00	-17.52	VERTICAL Average
4	4884.043	46.81	30.95	6.86	36.95	47.67	74.00	-26.33	VERTICAL Peak
5	6621.375	34.04	34.46	7.14	36.98	38.66	54.00	-15.34	VERTICAL Average
6	6621.375	44.06	34.46	7.14	36.98	48.68	74.00	-25.32	VERTICAL Peak
7	7326.214	33.00	35.74	7.39	36.92	39.21	54.00	-14.79	VERTICAL Average
8	7326.214	43.66	35.74	7.39	36.92	49.87	74.00	-24.13	VERTICAL Peak
9	9768.717	32.23	37.74	8.37	37.09	41.25	54.00	-12.75	VERTICAL Average
10	9768.717	43.63	37.74	8.37	37.09	52.65	74.00	-21.35	VERTICAL Peak
11	12210.540	30.05	39.21	10.98	37.06	43.18	54.00	-10.82	VERTICAL Average
12	12210.540	40.29	39.21	10.98	37.06	53.42	74.00	-20.58	VERTICAL Peak



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

Report No.: GZEM180300131102
 Page: 30 of 44

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

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase	Remark	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3834.438	32.43	29.12	7.80	36.91	32.44	54.00	-21.56	HORIZONTAL Average
2	3834.438	44.80	29.12	7.80	36.91	44.81	74.00	-29.19	HORIZONTAL Peak
3	4960.812	37.69	31.05	7.84	36.96	39.62	54.00	-14.38	HORIZONTAL Average
4	4960.812	48.30	31.05	7.84	36.96	50.23	74.00	-23.77	HORIZONTAL Peak
5	6974.982	32.05	35.08	7.27	36.94	37.46	54.00	-16.54	HORIZONTAL Average
6	6974.982	43.73	35.08	7.27	36.94	49.14	74.00	-24.86	HORIZONTAL Peak
7	7440.149	30.76	35.92	7.43	36.92	37.19	54.00	-16.81	HORIZONTAL Average
8	7440.149	44.01	35.92	7.43	36.92	50.44	74.00	-23.56	HORIZONTAL Peak
9	9920.804	31.15	37.92	8.63	37.10	40.60	54.00	-13.40	HORIZONTAL Average
10	9920.804	42.92	37.92	8.63	37.10	52.37	74.00	-21.63	HORIZONTAL Peak
11	12400.070	30.52	38.93	11.17	36.90	43.72	54.00	-10.28	HORIZONTAL Average
12	12400.070	40.69	38.93	11.17	36.90	53.89	74.00	-20.11	HORIZONTAL Peak

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

	Freq	ReadAntenna Level Factor	Cable Preamp Loss Factor	Level	Limit	Over	Pol/Phase	Remark	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	3935.493	34.56	29.37	7.43	36.90	34.46	54.00	-19.54	VERTICAL Average
2	3935.493	46.67	29.37	7.43	36.90	46.57	74.00	-27.43	VERTICAL Peak
3	4959.307	36.02	31.05	7.84	36.96	37.95	54.00	-16.05	VERTICAL Average
4	4959.307	46.77	31.05	7.84	36.96	48.70	74.00	-25.30	VERTICAL Peak
5	6470.026	32.74	34.20	7.05	36.98	37.01	54.00	-16.99	VERTICAL Average
6	6470.026	44.01	34.20	7.05	36.98	48.28	74.00	-25.72	VERTICAL Peak
7	7439.500	39.53	35.92	7.43	36.92	45.96	54.00	-8.04	VERTICAL Average
8	7439.500	49.62	35.92	7.43	36.92	56.05	74.00	-17.95	VERTICAL Peak
9	9920.292	30.42	37.92	8.63	37.10	39.87	54.00	-14.13	VERTICAL Average
10	9920.292	42.51	37.92	8.63	37.10	51.96	74.00	-22.04	VERTICAL Peak
11	12400.100	32.30	38.93	11.17	36.90	45.50	54.00	-8.50	VERTICAL Average
12	12400.100	44.07	38.93	11.17	36.90	57.27	74.00	-16.73	VERTICAL Peak

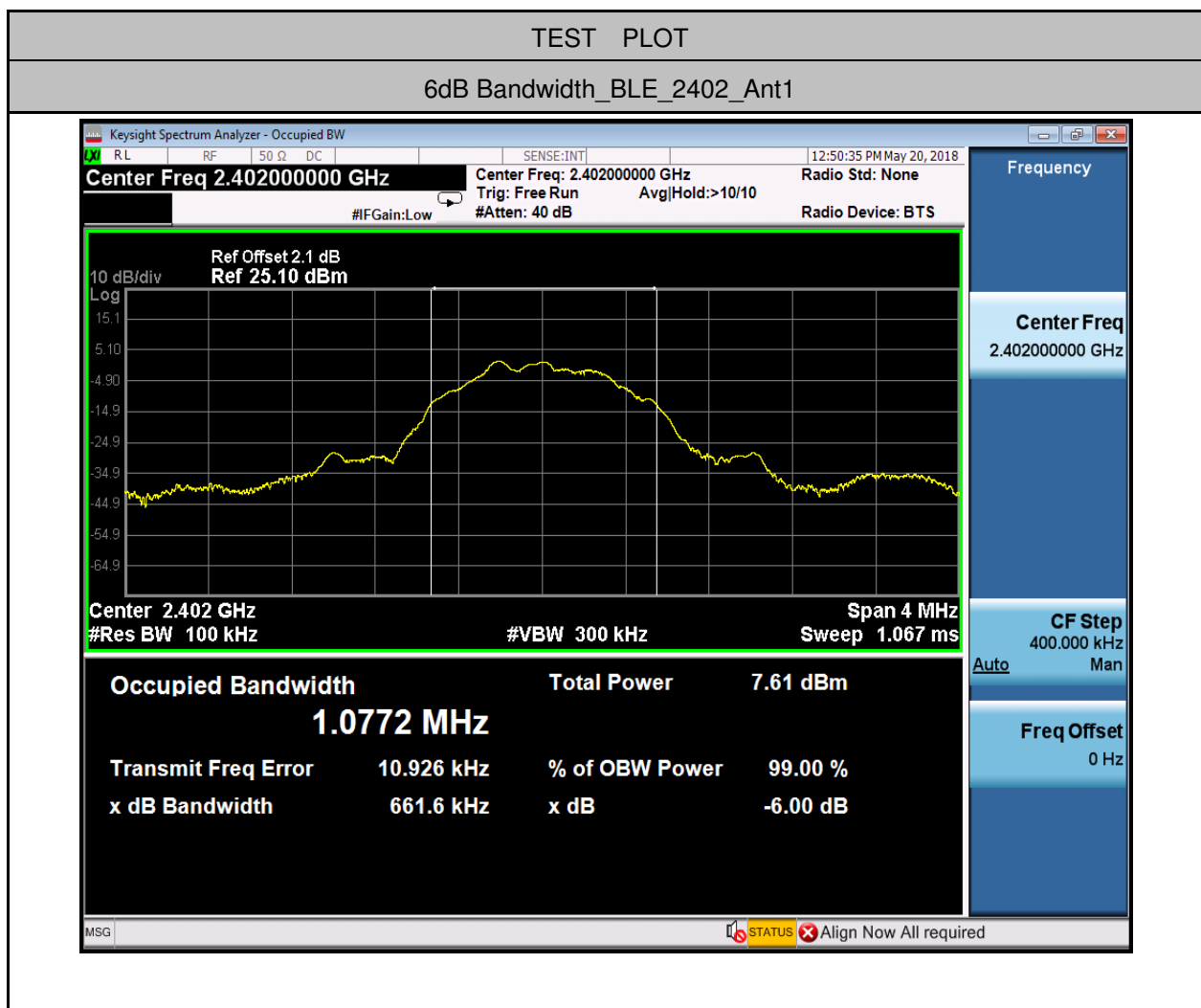


8 Appendix

8.1 Appendix 15.247

1.6dB Bandwidth

Test Mode	Test Channel	Ant	6dB BW[MHz]	Limit	Verdict
BLE	2402	Ant1	0.6616	0.5	PASS
BLE	2442	Ant1	0.6738	0.5	PASS
BLE	2480	Ant1	0.6777	0.5	PASS



6dB Bandwidth_BLE_2442_Ant1



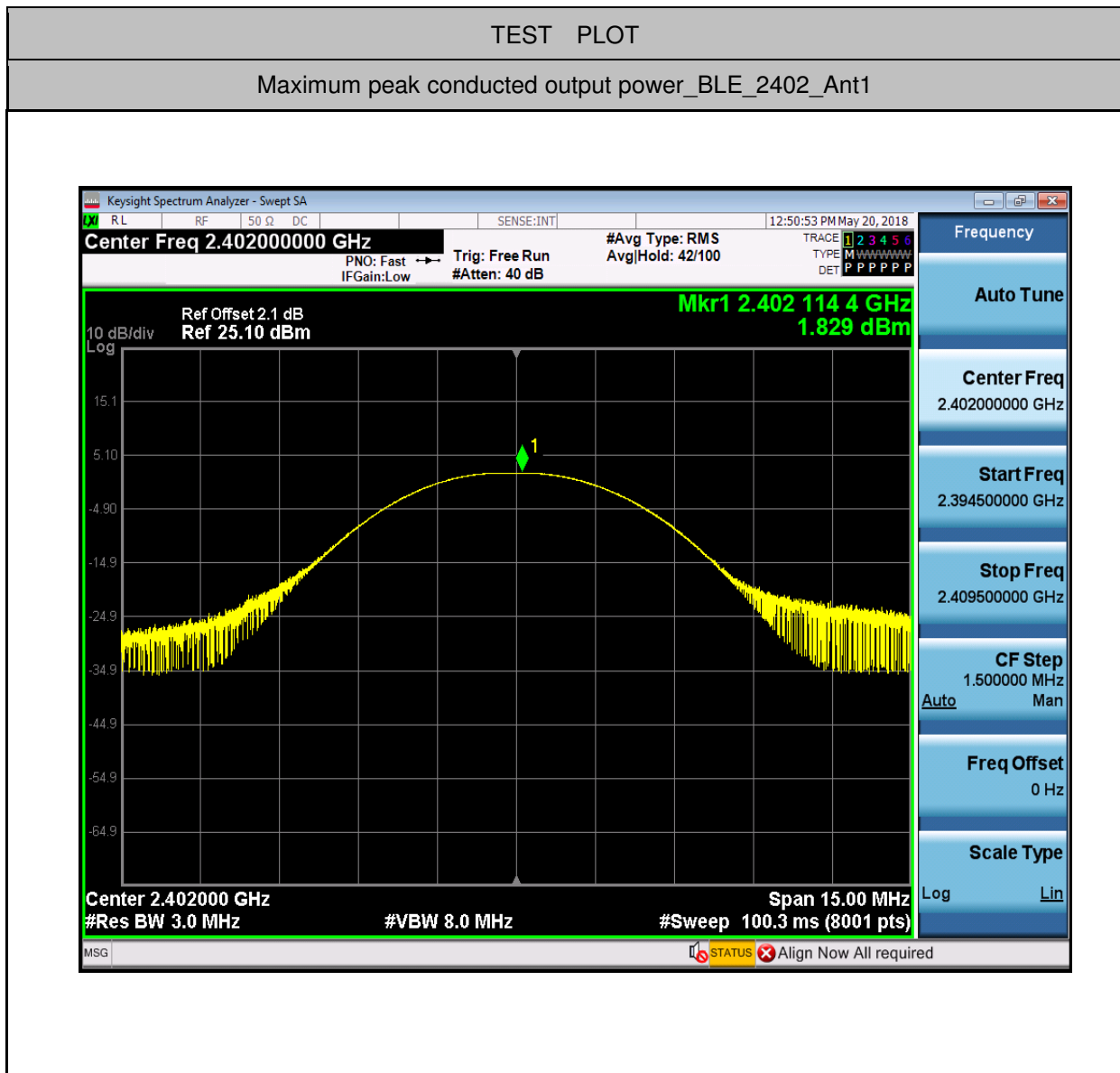
6dB Bandwidth_BLE_2480_Ant1





2. Maximum peak conducted output power

Test Mode	Test Channel	Ant	Power[dBm]	Limit[dBm]	Verdict
BLE	2402	Ant1	1.829	30	PASS
BLE	2442	Ant1	1.815	30	PASS
BLE	2480	Ant1	1.106	30	PASS



3.Maximum Peak power spectral density

Test Mode	Test Channel	Ant	Result	Limit[dBm/3kHz]	Verdict
BLE	2402	Ant1	0.663	8.00	PASS
BLE	2442	Ant1	0.577	8.00	PASS
BLE	2480	Ant1	-0.139	8.00	PASS

TEST PLOT

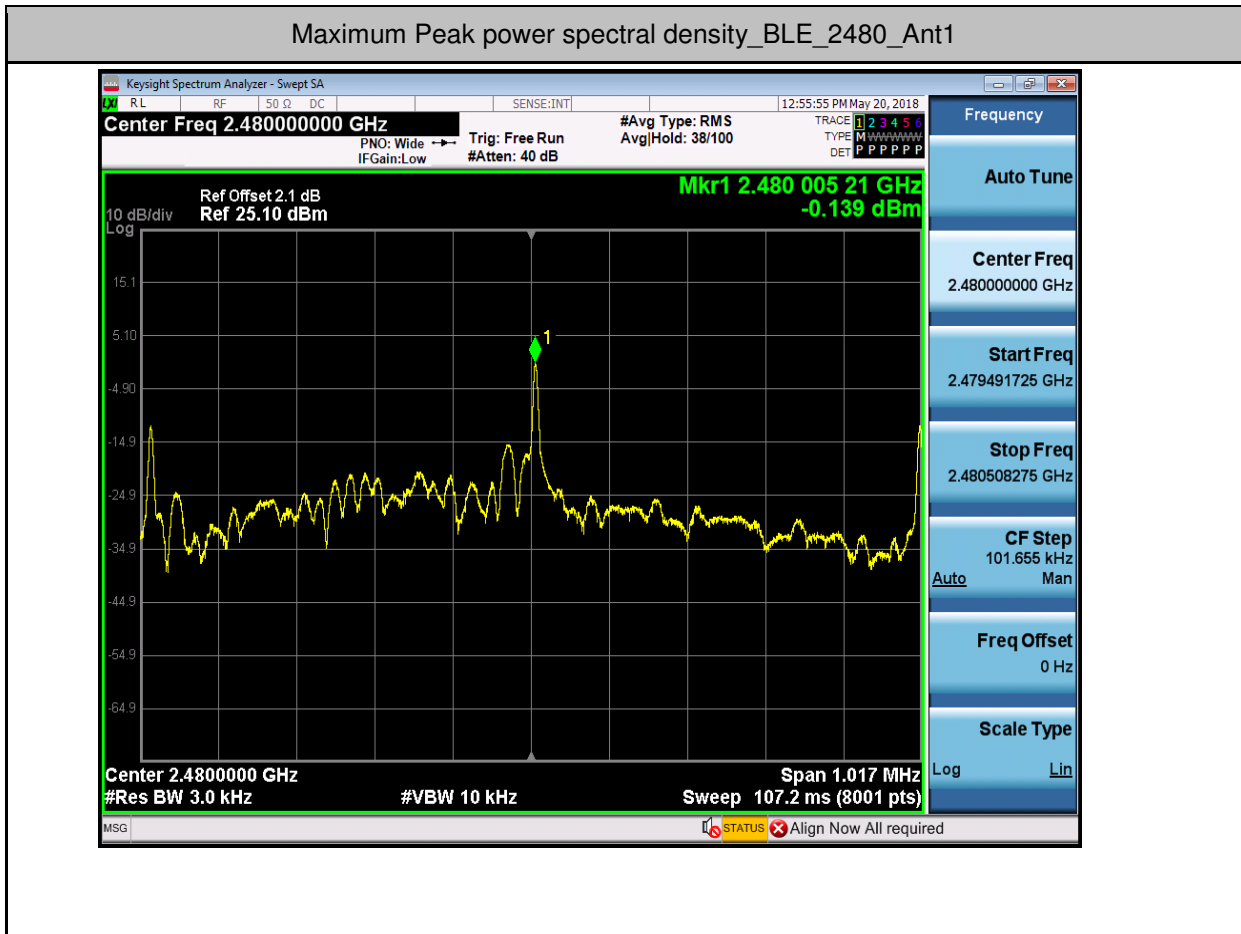
Maximum Peak power spectral density_BLE_2402_Ant1



Maximum Peak power spectral density_BLE_2442_Ant1



Maximum Peak power spectral density_BLE_2480_Ant1

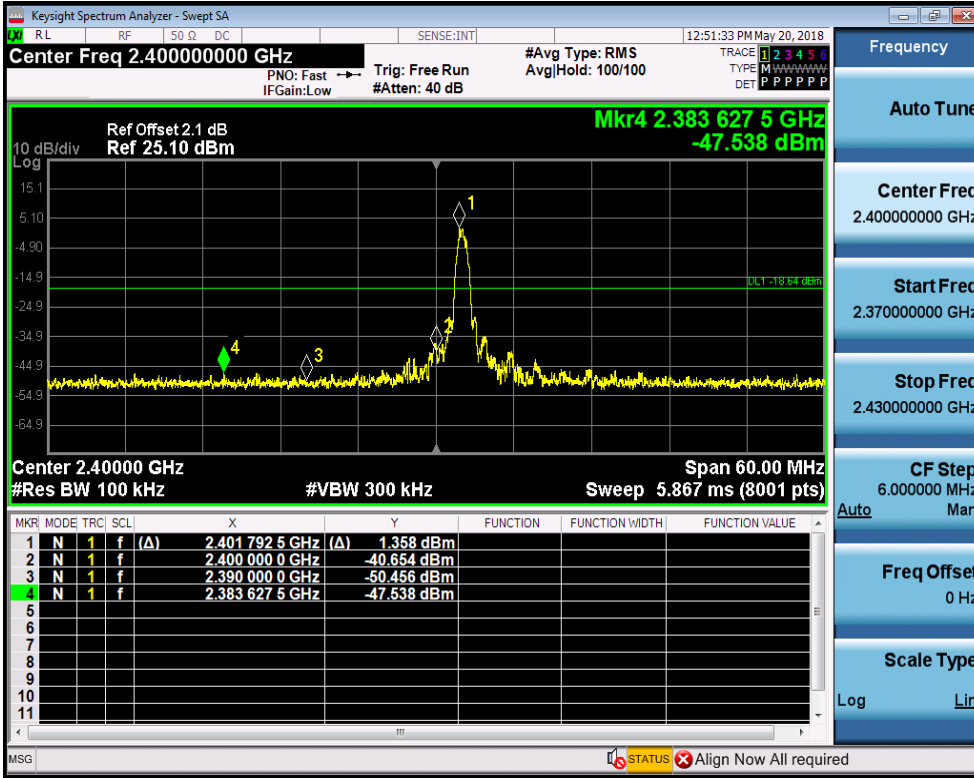


4. Band-edge for RF Conducted Emissions

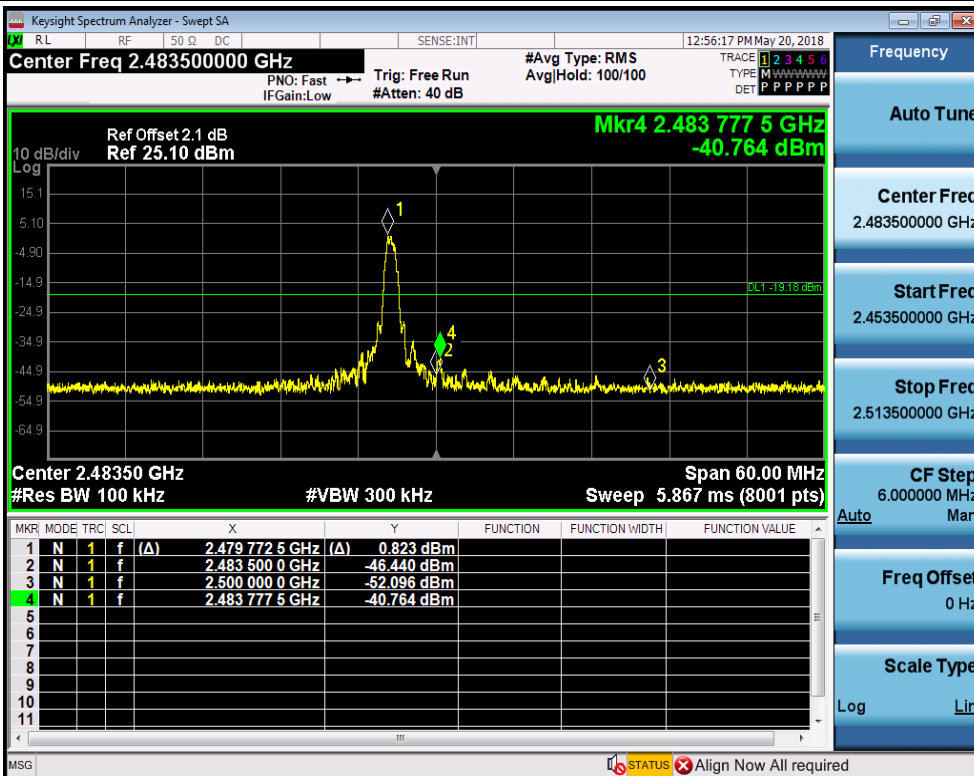
Test Mode	Test Channel	Ant	Carrier Power[dBm]	Max. Spurious Level [dBm]	Limit [dBm]	Verdict
BLE	2402	Ant1	1.358	-47.538	-18.64	PASS
BLE	2480	Ant1	0.823	-40.764	-19.18	PASS

TEST PLOT

Band-edge for RF Conducted Emissions_BLE_2402_Ant1

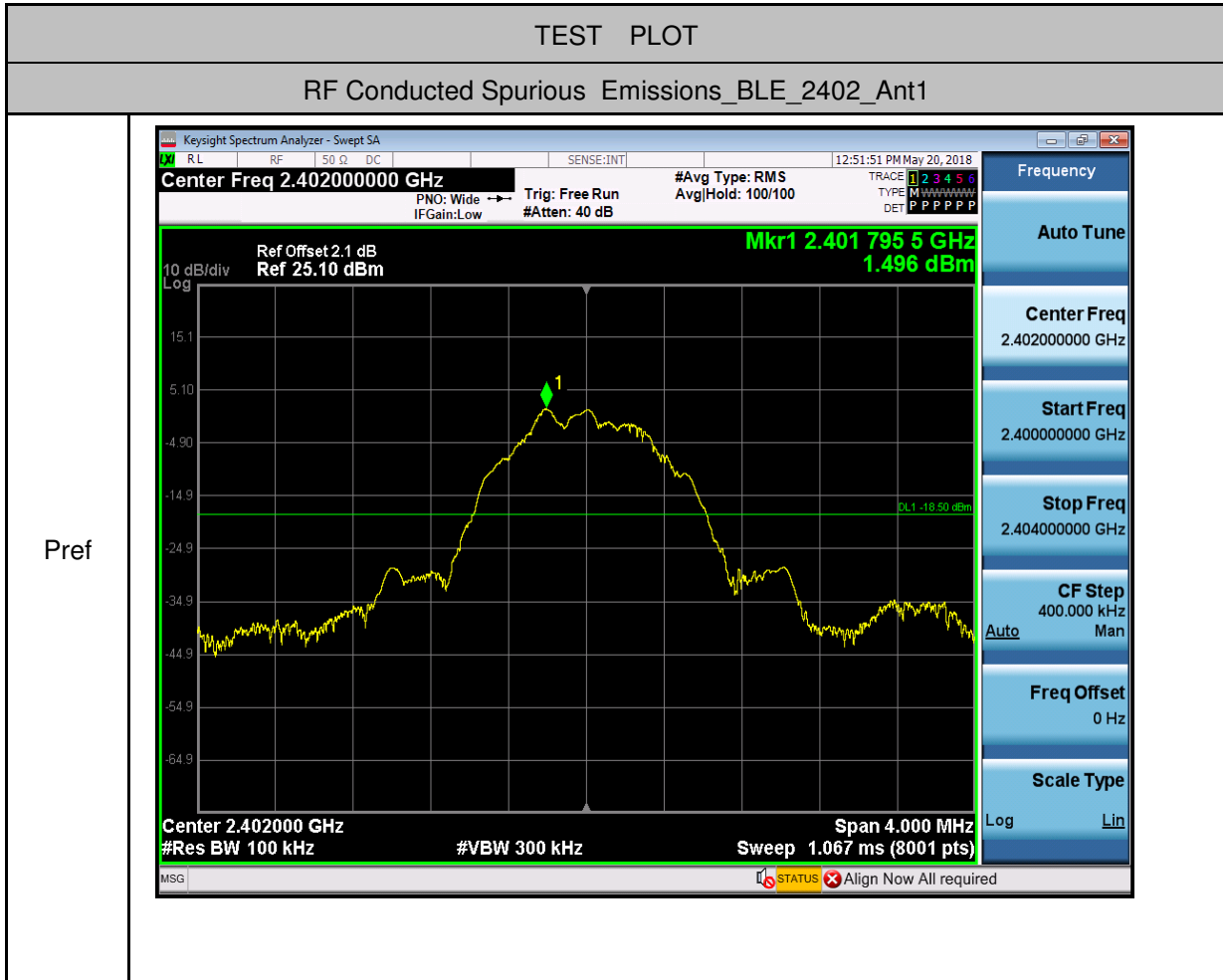


Band-edge for RF Conducted Emissions_BLE_2480_Ant1

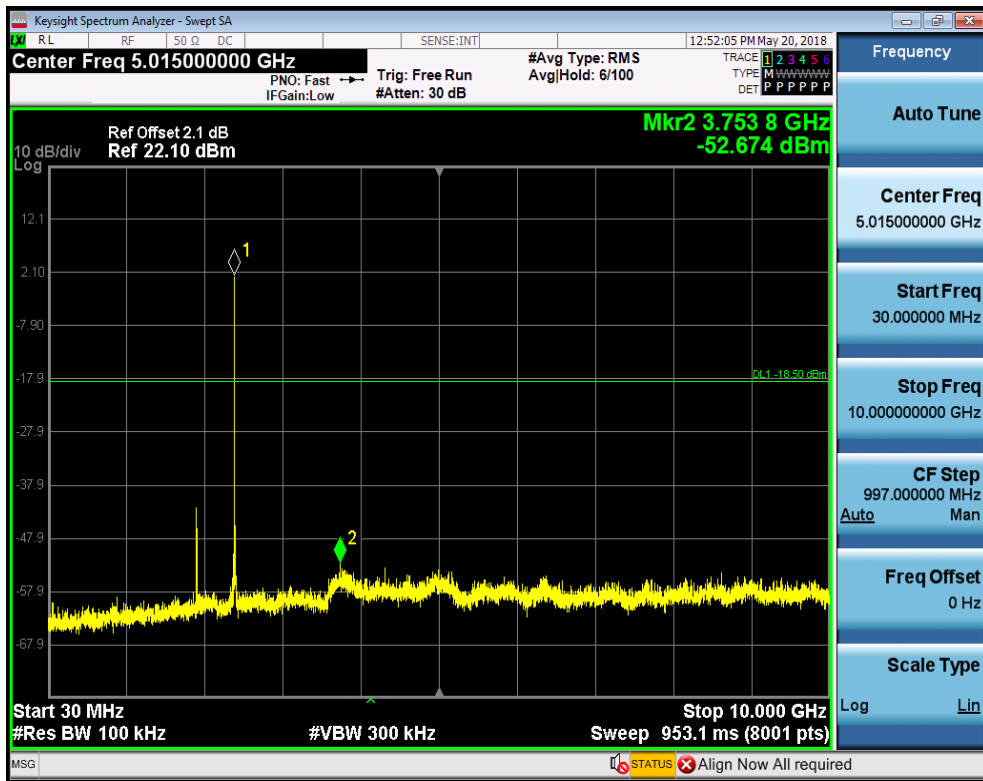


5.RF Conducted Spurious Emissions

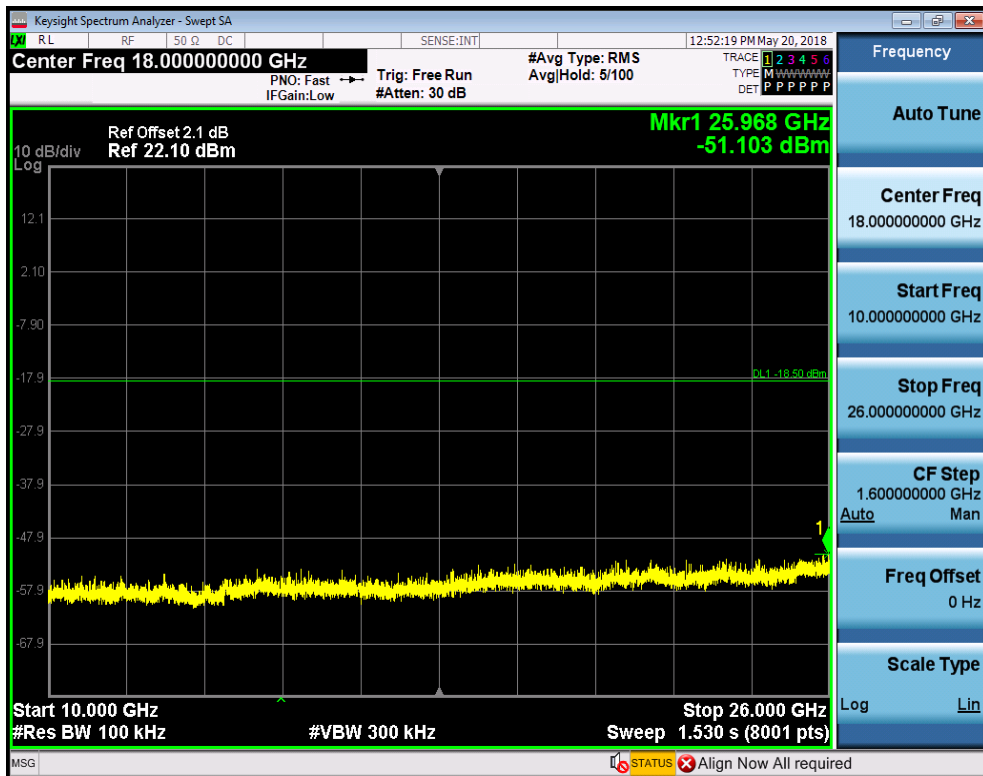
Test Mode	Test Channel	Ant	StartFre [MHz]	StopFre [MHz]	RBW [kHz]	VBW [kHz]	Pref[dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
BLE	2402	Ant1	30	10000	100	300	1.496	-52.674	<-18.504	PASS
BLE	2402	Ant1	10000	26000	100	300	1.496	-51.103	<-18.504	PASS
BLE	2442	Ant1	30	10000	100	300	1.328	-44.714	<-18.672	PASS
BLE	2442	Ant1	10000	26000	100	300	1.328	-50.771	<-18.672	PASS
BLE	2480	Ant1	30	10000	100	300	0.789	-52.396	<-19.211	PASS
BLE	2480	Ant1	10000	26000	100	300	0.789	-50.122	<-19.211	PASS



CSE_1



CSE_2

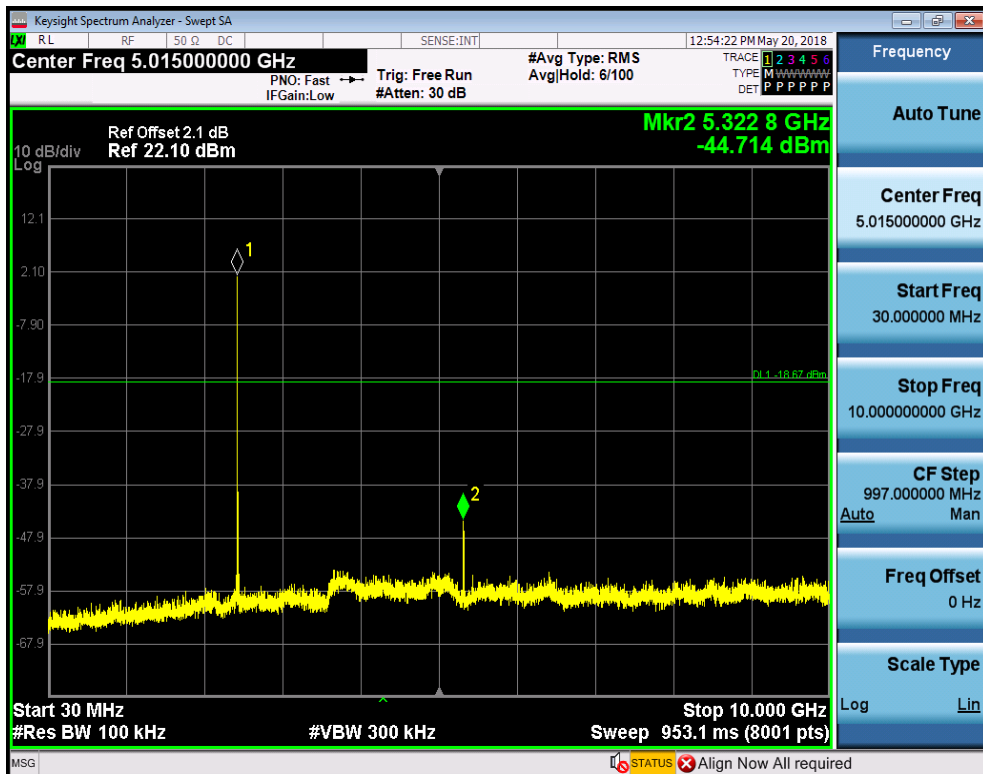


RF Conducted Spurious Emissions_BLE_2442_Ant1

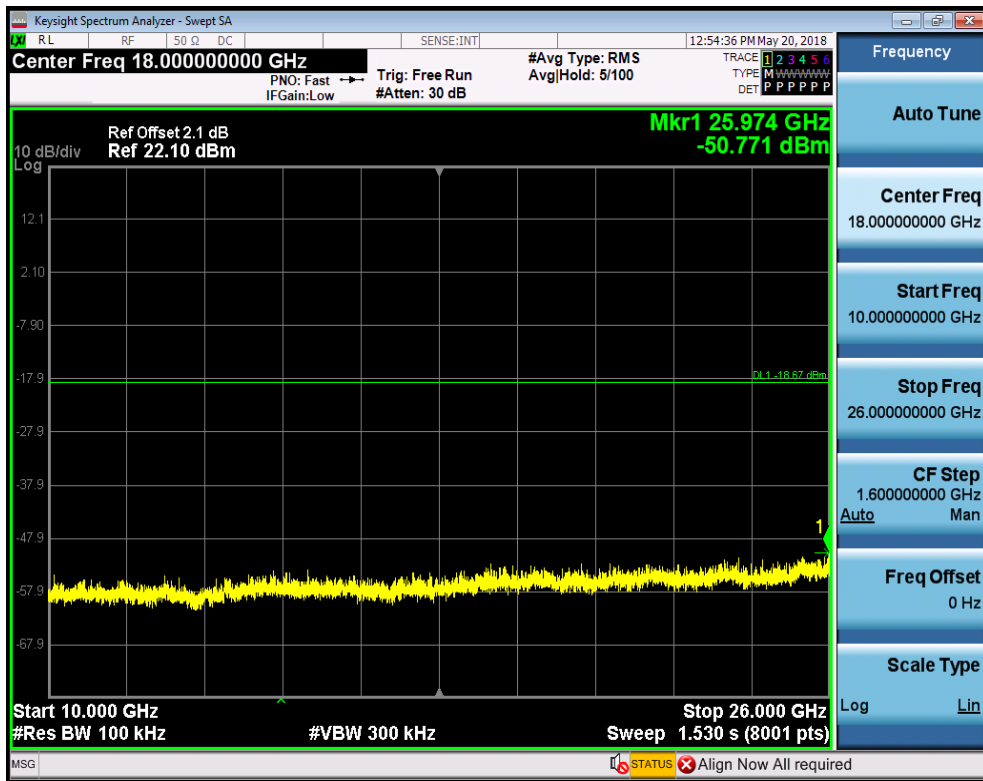
Pref



CSE_1



CSE_2

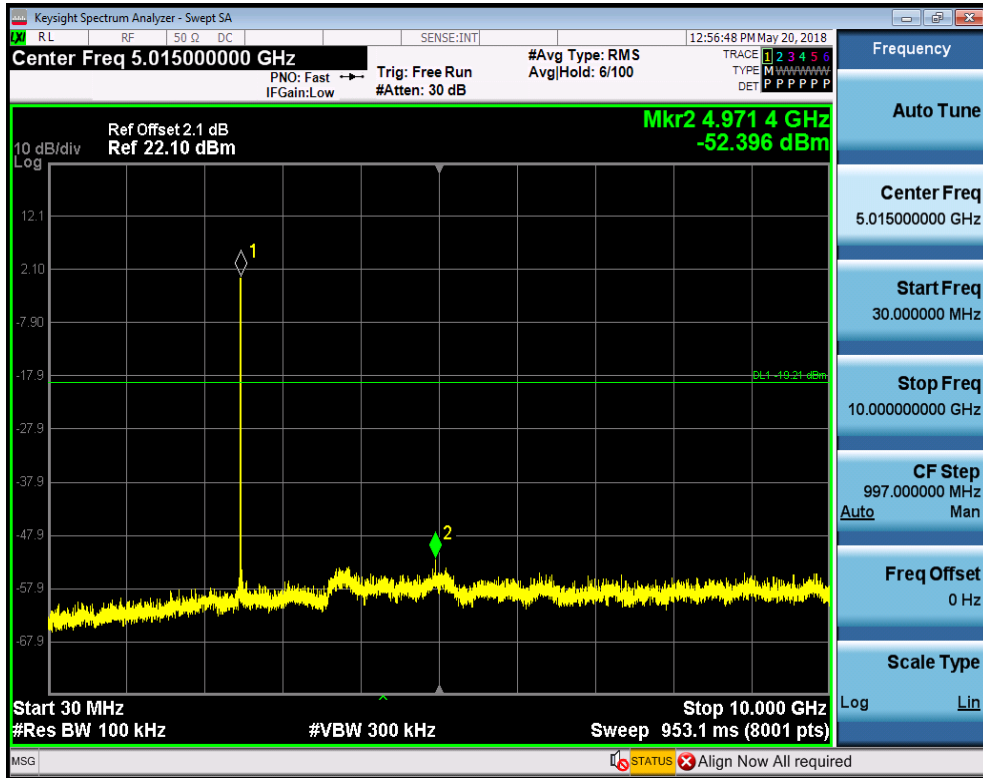


RF Conducted Spurious Emissions_BLE_2480_Ant1

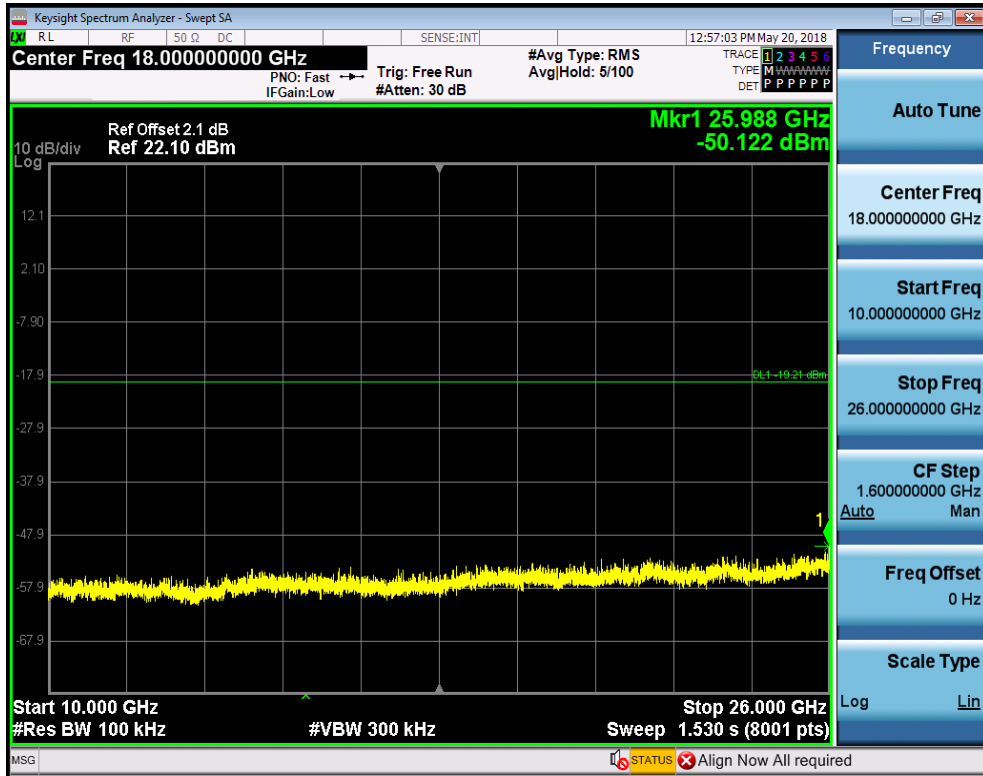
Pref



CSE_1



CSE_2



--End of Report--