



TEST REPORT

Application No.: GZCR2111021328AT
Applicant: POGS B.V.
Address of Applicant: Hendrik Andriessenlaan 42 2102CZ Heemstede Netherlands
Manufacturer: POGS B.V.
Address of Manufacturer: Hendrik Andriessenlaan 42 2102CZ Heemstede Netherlands
Factory:
1. Minami Acoustics Limited
2. Minami Acoustics Limited
Address of Factory:
1. Shangou Industrial Park Gongjiang Town, Yudu County Ganzhou City Jiangxi Province, P.R. China
2. No.13. Maonan Road, Torch Development District, Zhongshan, Guangdong, China
Equipment Under Test (EUT):
EUT Name: Bluetooth Headphone
Model No.: The Gecko
Trade Mark: POGS
Standard(s): 47 CFR Part 15, Subpart C 15.247
Date of Receipt: 2020-12-08
Date of Test: 2020-12-16 to 2020-12-31
Date of Issue: 2021-11-05

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

Kobe Jian
EMC Laboratory Manager



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

EMC-TRF-01 Rev 1.0

Report No.: GZCR211102132803

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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2021-11-05		Original

Authorized for issue by:			
Tested By			
	Curry_Wu /Project Engineer		
Checked By			
	Ricky_Liu /Reviewer		



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SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou Branch Testing Center EEC Laboratory

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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 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

Note:

E.U.T./EUT means Equipment Under Test.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.



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4 General Information

4.1 Details of E.U.T.

Power Supply:	DC 5V supply by adaptor DC 3.7V rechargeable battery
Test Voltage:	DC 3.7V
Cable:	About 0.5m unscreened micro USB cable About 1m unscreened AUX in cable About 1.2m unscreened AUX in cable
Antenna Gain:	1.5dBi
Antenna Type:	PCB antenna
Channel Spacing:	2MHz
Modulation Type:	GFSK
Number of Channels:	40
Operation Frequency:	2402MHz to 2480MHz
Testing software	BQB.exe
Firmware version	EPH-TJ-WT230U-Rooky-B-WT230U-1126-V3
Hardware version	V1.0
Sample No	A1

4.2 Description of Support Units

The EUT has been tested as an independent unit.

4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Peak Output Power	$\pm 0.75\text{dB}$
20dB Bandwidth	$\pm 3\%$
Carrier Frequencies Separation	$\pm 7.25 \times 10^{-8}$
Hopping Channel Number	$\pm 7.25 \times 10^{-8}$
Dwell Time	$\pm 0.37\%$
Conducted Band Edges Measurement	$\pm 0.75\text{dB}$
Conducted Spurious Emissions	$\pm 0.75\text{dB}$
Radiated Emissions which fall in the restricted bands	$\pm 5.08\text{dB}$ (1GHz-6GHz); $\pm 5.14\text{dB}$ (above 6GHz)
Radiated Spurious Emissions	$\pm 5.06\text{dB}$ (3m); $\pm 4.46\text{dB}$ (10m)



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4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
 198 Kezhu Road, Sciotech Park, Guangzhou Economic & Technology Development District,
 Guangzhou, China 510663

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

No tests were sub-contracted.



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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/New Zealand Regulatory Compliance Mark (RCM).

● 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 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.

● ISED (Registration No.: 4620B, CAB identifier: CN0052)

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

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

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

● CBTL (Lab Code: TL129)

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



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4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



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5 Equipment List

Minimum 6dB Bandwidth					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2020-09-17	2021-09-16
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 Peak Output Power					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2020-09-17	2021-09-16
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

Power Spectrum Density					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2020-09-17	2021-09-16
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	2020-07-15	2021-07-14
Power Meter	AgilentTechnologies	U2021XA_Ch2	SEM009-02	2020-05-26	2021-05-25
Power Meter	AgilentTechnologies	U2021XA_Ch3	SEM009-03	2020-05-26	2021-05-25
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2020-09-17	2021-09-16
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



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Conducted Spurious Emissions					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer	AgilentTechnologies	N9010A	EMC2138	2020-09-17	2021-09-16
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 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	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	SCHWARZBECKME SS-ELEKTRONIK	VULB 9168	EMC2174	2018-09-06	2021-09-05
Bi-log Type Antenna	Schaffner Chase	CBL6143	EMC0519	2020-06-08	2023-06-07
Horn Antenna	SCHWARZBECKME SS-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	2020-05-26	2021-05-25
Pre-Amplifier MH648A	ANRITSU CORP	MH648A	EMC2086	2020-11-13	2021-11-12
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	2020-12-19	2023-12-18
MXE EMI Receiver	Keysight	N9038A	EMC2139	2020-11-13	2021-11-12
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2020-09-17	2021-09-16
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A



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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	SCHWARZBECKME SS-ELEKTRONIK	VULB 9168	EMC2174	2018-09-06	2021-09-05
Bi-log Type Antenna	Schaffner Chase	CBL6143	EMC0519	2020-06-08	2023-06-07
Horn Antenna	SCHWARZBECKME SS-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	2020-05-26	2021-05-25
Pre-Amplifier MH648A	ANRITSU CORP	MH648A	EMC2086	2020-11-13	2021-11-12
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	2020-12-19	2023-12-18
MXE EMI Receiver	Keysight	N9038A	EMC2139	2020-11-13	2021-11-12
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2020-09-17	2021-09-16
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKME SS-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	2020-07-09	2021-07-08
DMM	Fluke	73	EMC0007	2020-07-09	2021-07-08



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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 1.5dBi.

Antenna photo please refer to Internal photo.



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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

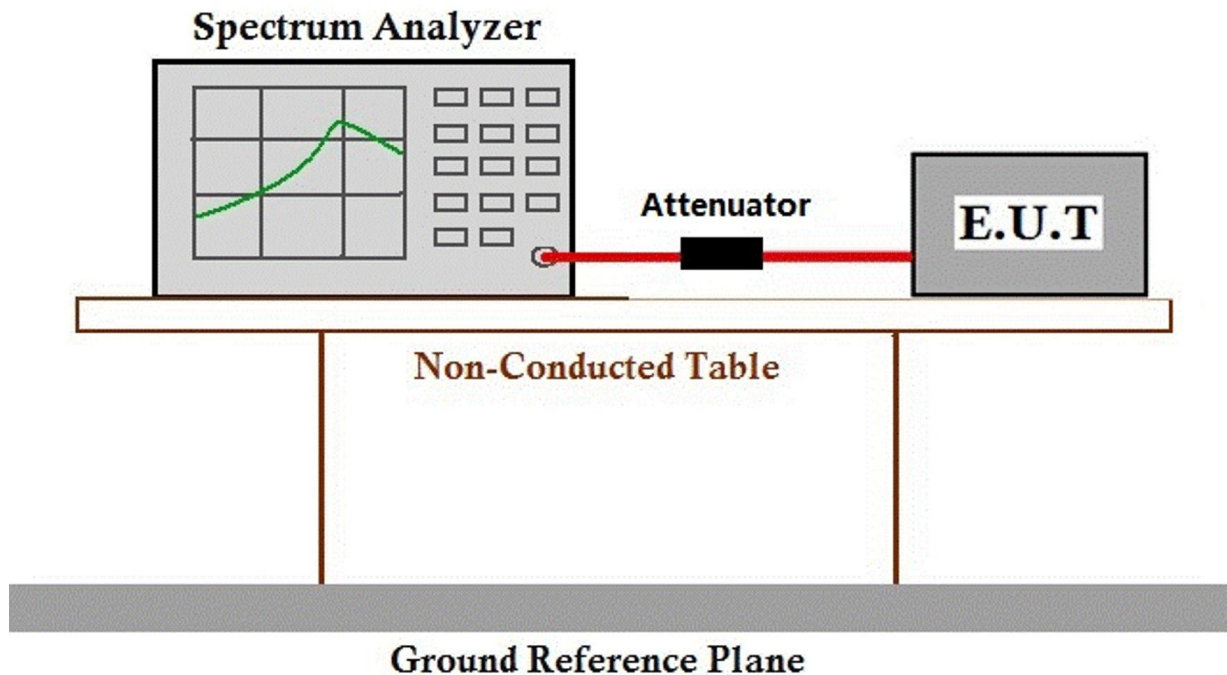
7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 24.6 °C Humidity: 38.8 % RH Atmospheric Pressure: 1020 mbar

Test Mode: d: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



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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:

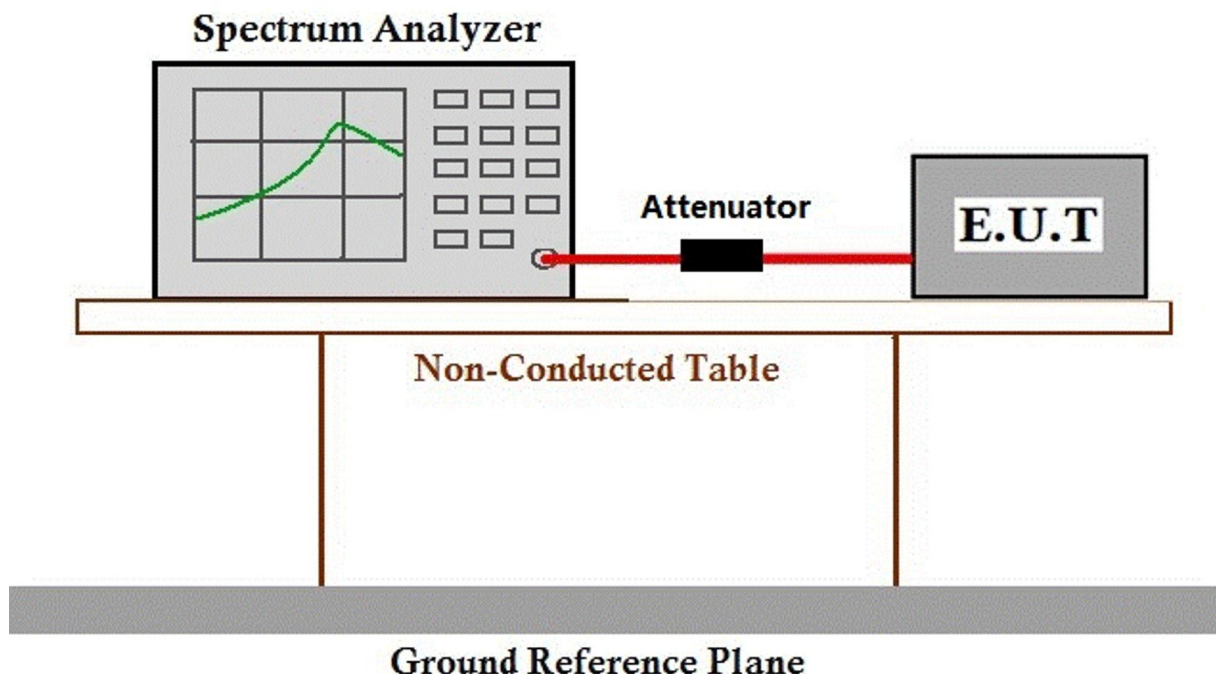
Frequency range(MHz)	Output power of the intentional radiator(watt)
902-928	1 for ≥ 50 hopping channels
	0.25 for $25 \leq$ hopping channels < 50
	1 for digital modulation
2400-2483.5	1 for ≥ 75 non-overlapping hopping channels
	0.125 for all other frequency hopping systems
	1 for digital modulation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

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 24.6 °C Humidity: 38.8 % RH Atmospheric Pressure: 1020 mbar
Test Mode: d: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:	≤8dBm in any 3 kHz band during any time interval of continuous transmission

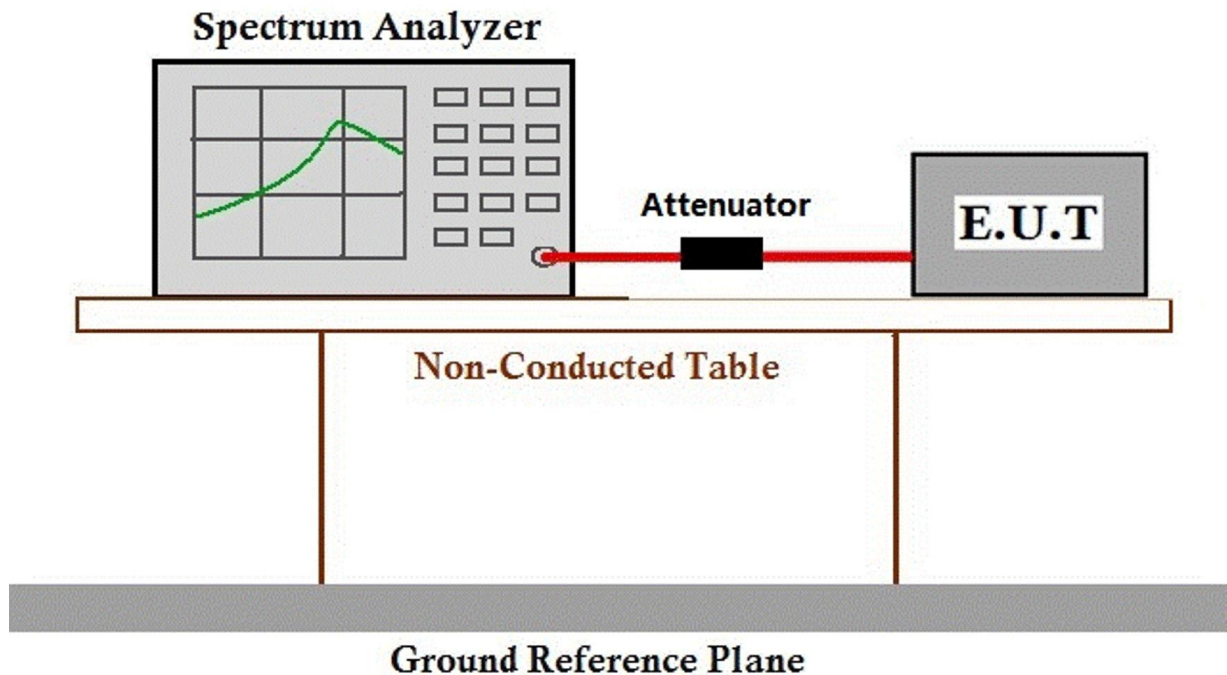
7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 24.6 °C Humidity: 38.8 % RH Atmospheric Pressure: 1020 mbar

Test Mode: d: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:

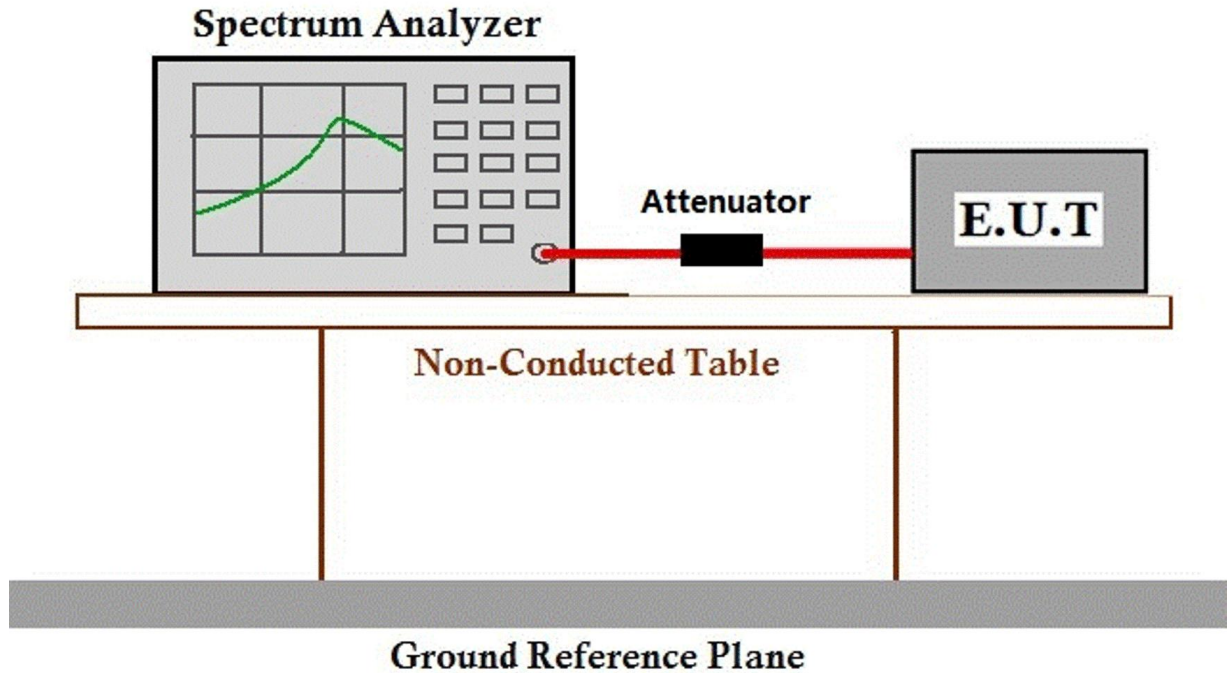
Temperature: 24.6 °C Humidity: 38.7 % RH Atmospheric Pressure: 1020 mbar

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



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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:

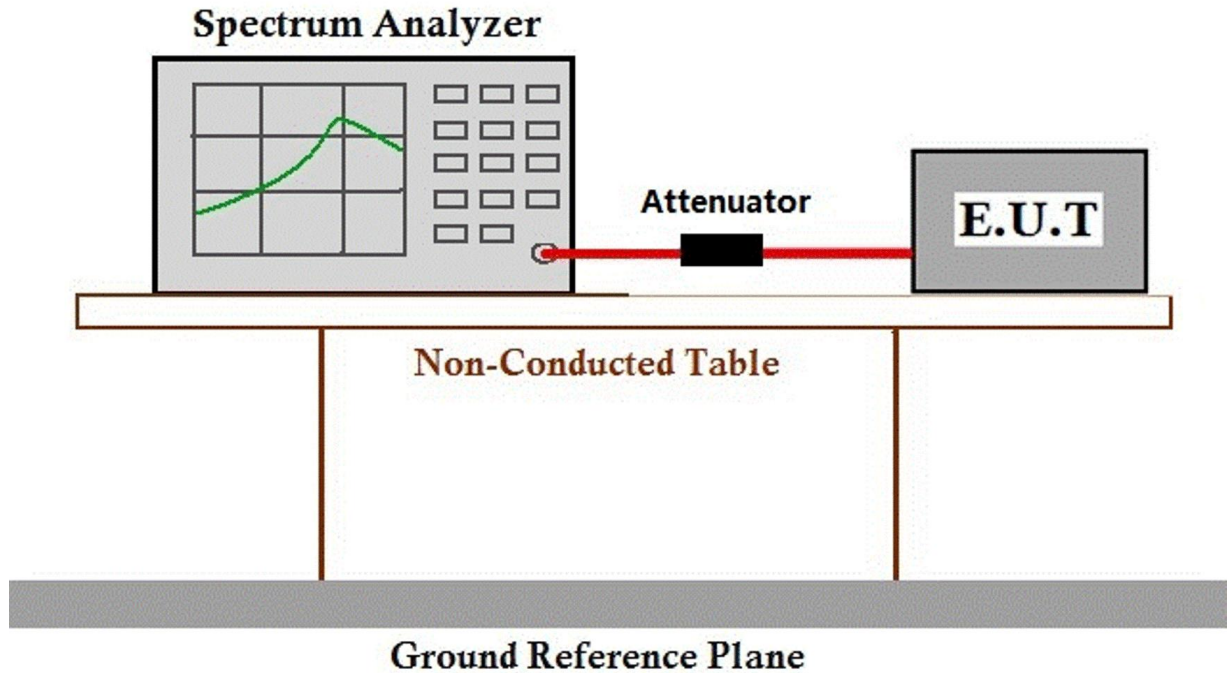
Temperature: 24.6 °C Humidity: 38.7 % RH Atmospheric Pressure: 1020 mbar

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



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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 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.

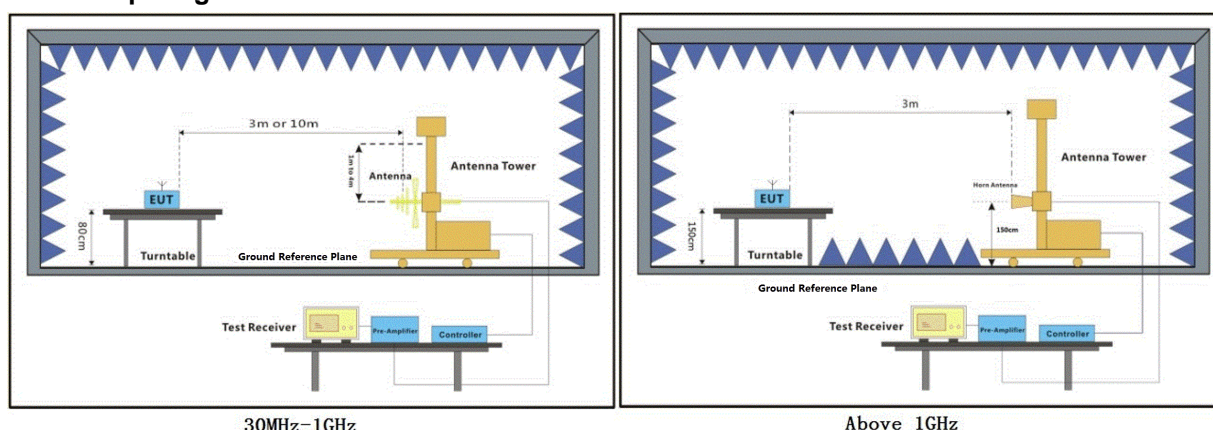
7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 20.8 °C Humidity: 58.8 % RH Atmospheric Pressure: 1020 mbar

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

7.6.2 Test Setup Diagram



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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.

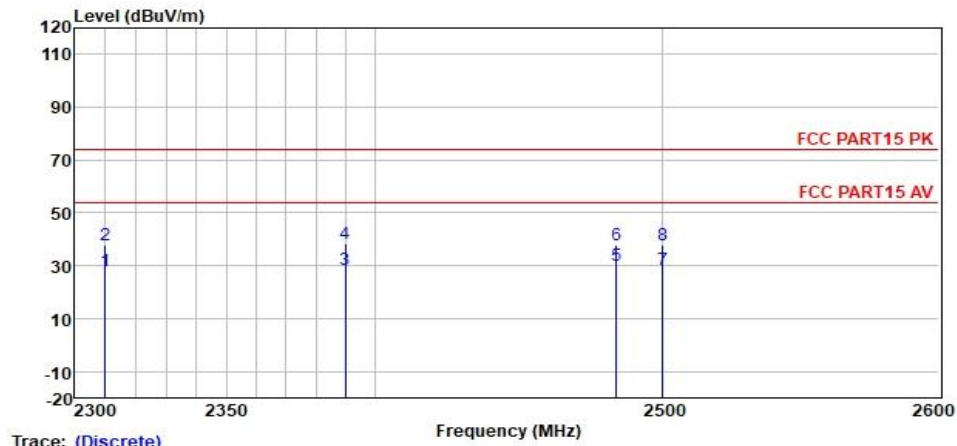
Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

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.

Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor



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



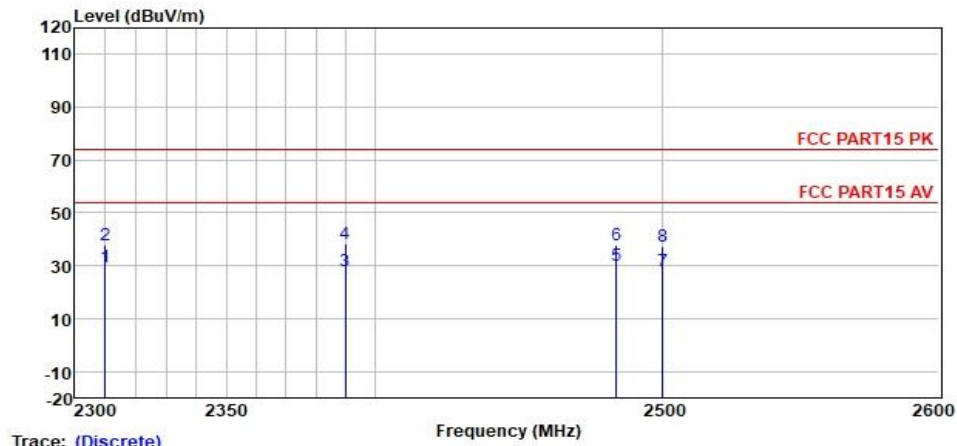
Site : SGS
Condition: FCC PART15 PK
Test Mode: BLE 2402
Product :
Model :
Remark : Level=Read Level + Cable loss
 : + Antenna Factor - Preamp factor

	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	2310.00	35.14	27.15	3.32	37.62	27.99	54.00	-26.01	HORIZONTAL	Average
2	2310.00	44.88	27.15	3.32	37.62	37.73	74.00	-36.27	HORIZONTAL	Peak
3	2390.00	35.29	27.33	3.48	37.59	28.51	54.00	-25.49	HORIZONTAL	Average
4	2390.00	45.11	27.33	3.48	37.59	38.33	74.00	-35.67	HORIZONTAL	Peak
5	2483.50	36.90	27.48	3.53	37.57	30.34	54.00	-23.66	HORIZONTAL	Average
6	2483.50	44.41	27.48	3.53	37.57	37.85	74.00	-36.15	HORIZONTAL	Peak
7	2500.00	35.02	27.50	3.40	37.56	28.36	54.00	-25.64	HORIZONTAL	Average
8	2500.00	44.77	27.50	3.40	37.56	38.11	74.00	-35.89	HORIZONTAL	Peak



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



Site : SGS
Condition: FCC PART15 PK
Test Mode: BLE 2402
Product :
Model :
Remark : Level=Read Level + Cable loss
 : + Antenna Factor - Preamp factor

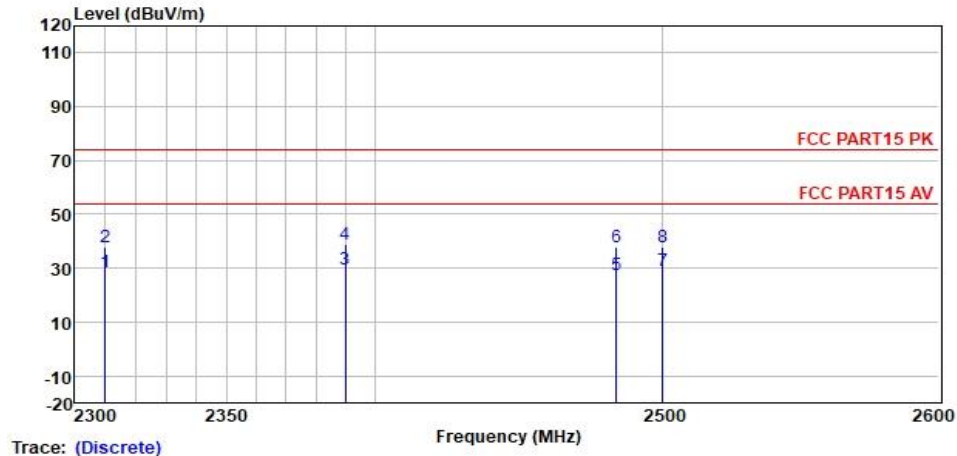
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2310.00	36.91	27.15	3.32	37.62	29.76	54.00	-24.24	VERTICAL	Average
2	2310.00	45.24	27.15	3.32	37.62	38.09	74.00	-35.91	VERTICAL	Peak
3	2390.00	34.95	27.33	3.48	37.59	28.17	54.00	-25.83	VERTICAL	Average
4	2390.00	45.06	27.33	3.48	37.59	38.28	74.00	-35.72	VERTICAL	Peak
5	2483.50	36.62	27.48	3.53	37.57	30.06	54.00	-23.94	VERTICAL	Average
6	2483.50	44.65	27.48	3.53	37.57	38.09	74.00	-35.91	VERTICAL	Peak
7	2500.00	34.79	27.50	3.40	37.56	28.13	54.00	-25.87	VERTICAL	Average
8	2500.00	44.01	27.50	3.40	37.56	37.35	74.00	-36.65	VERTICAL	Peak



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



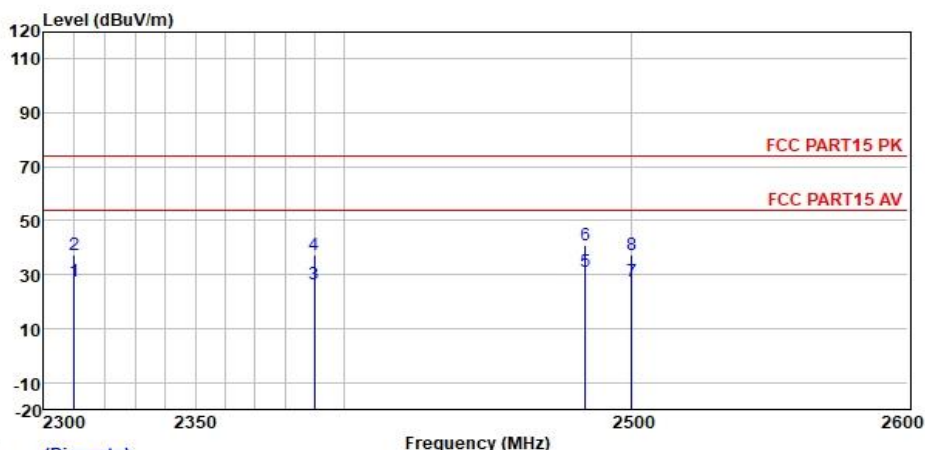
Site : SGS
Condition: FCC PART15 PK
Test Mode: BLE 2480
Product :
Model :
Remark : Level=Read Level + Cable loss
 : + Antenna Factor - Preamp factor

	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	2310.00	35.75	27.15	3.32	37.62	28.60	54.00	-25.40	HORIZONTAL	Average
2	2310.00	45.20	27.15	3.32	37.62	38.05	74.00	-35.95	HORIZONTAL	Peak
3	2390.00	36.21	27.33	3.48	37.59	29.43	54.00	-24.57	HORIZONTAL	Average
4	2390.00	45.71	27.33	3.48	37.59	38.93	74.00	-35.07	HORIZONTAL	Peak
5	2483.50	34.16	27.48	3.53	37.57	27.60	54.00	-26.40	HORIZONTAL	Average
6	2483.50	44.55	27.48	3.53	37.57	37.99	74.00	-36.01	HORIZONTAL	Peak
7	2500.00	35.83	27.50	3.40	37.56	29.17	54.00	-24.83	HORIZONTAL	Average
8	2500.00	44.72	27.50	3.40	37.56	38.06	74.00	-35.94	HORIZONTAL	Peak



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



Trace: (Discrete)

Site : SGS
Condition: FCC PART15 PK
Test Mode: BLE 2480
Product :
Model :
Remark : Level=Read Level + Cable loss
 : + Antenna Factor - Preamp factor

	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	2310.00	34.91	27.15	3.32	37.62	27.76	54.00	-26.24	VERTICAL	Average
2	2310.00	44.33	27.15	3.32	37.62	37.18	74.00	-36.82	VERTICAL	Peak
3	2390.00	33.34	27.33	3.48	37.59	26.56	54.00	-27.44	VERTICAL	Average
4	2390.00	44.13	27.33	3.48	37.59	37.35	74.00	-36.65	VERTICAL	Peak
5	2483.50	37.63	27.48	3.53	37.57	31.07	54.00	-22.93	VERTICAL	Average
6	2483.50	47.59	27.48	3.53	37.57	41.03	74.00	-32.97	VERTICAL	Peak
7	2500.00	34.15	27.50	3.40	37.56	27.49	54.00	-26.51	VERTICAL	Average
8	2500.00	43.92	27.50	3.40	37.56	37.26	74.00	-36.74	VERTICAL	Peak



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7.7 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.

7.7.1 E.U.T. Operation

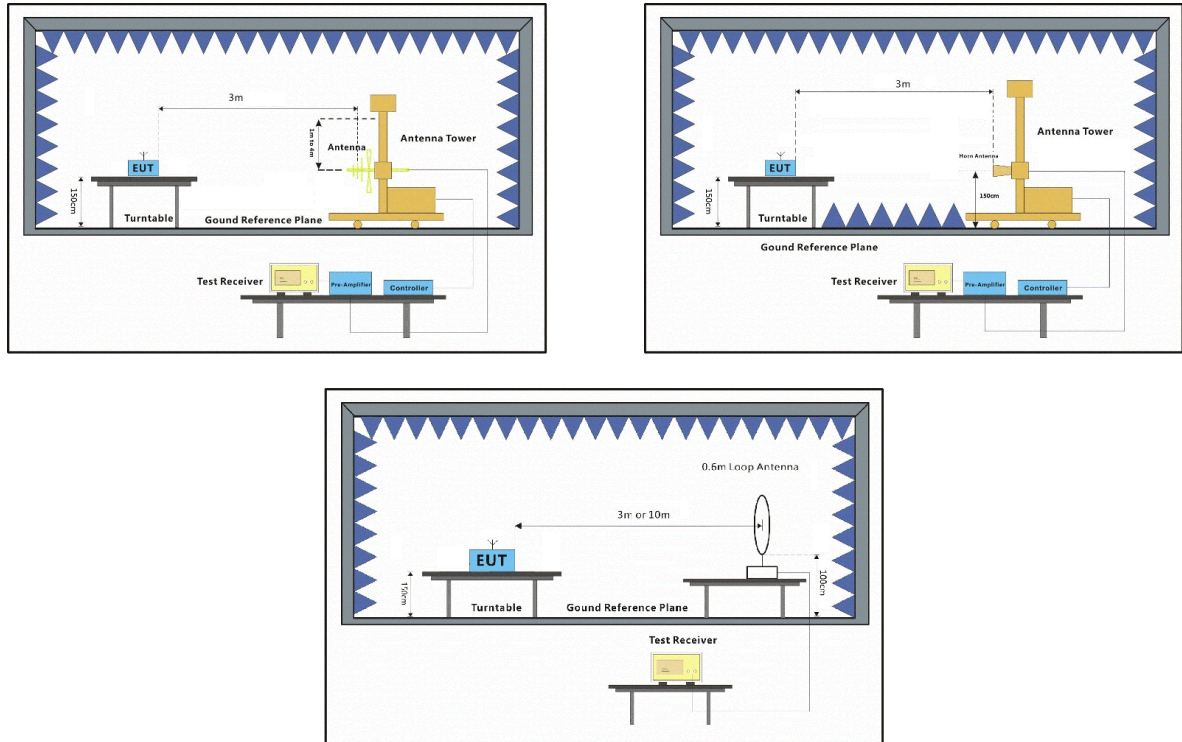
Operating Environment:

Temperature: 20.8 °C Humidity: 58.8 % RH Atmospheric Pressure: 1020 mbar
Test Mode: d:TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation



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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

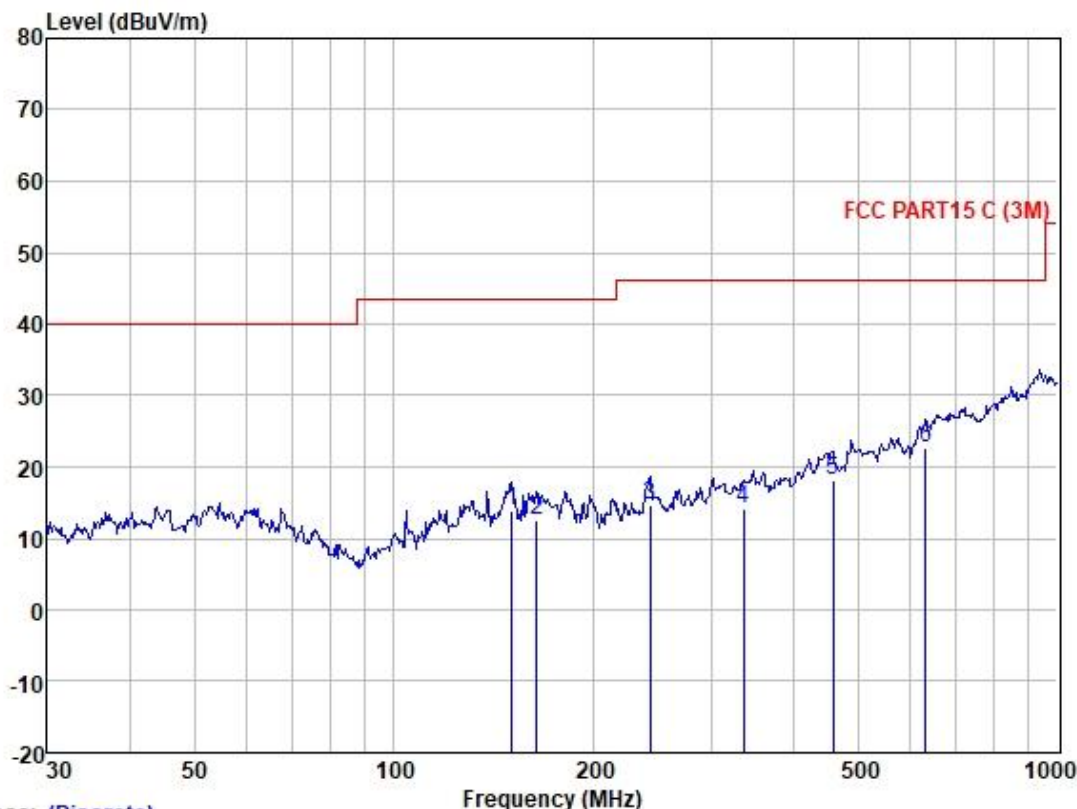
- 3) Scan from 9kHz to 25GHz, the disturbance above 18GHz and below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 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



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



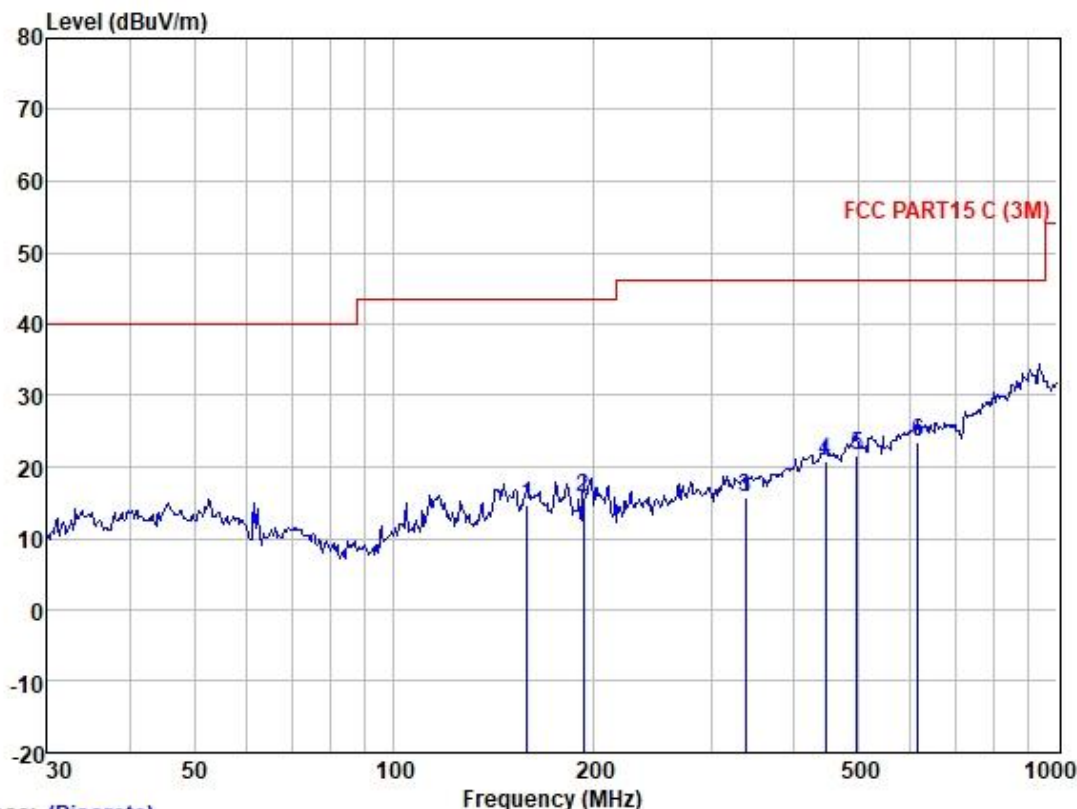
Trace: (Discrete)
Site : SGS
Condition: FCC PART15 C (3M) 3m HORIZONTAL
Job :
Model :
Power :
Test Mode:

	Freq	ReadAntenna	Cable	Preamplifier	Level	Limit	Over	Pol/Phase	Remark
	MHz	Level	Factor	Loss	Factor	Line	Limit		
		dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	150.538	24.59	13.80	2.24	26.83	13.80	43.50	-29.70	HORIZONTAL QP
2	163.755	23.56	13.50	2.35	26.79	12.62	43.50	-30.88	HORIZONTAL QP
3	243.377	26.45	11.97	2.84	26.64	14.62	46.00	-31.38	HORIZONTAL QP
4	336.035	22.92	14.50	3.46	26.79	14.09	46.00	-31.91	HORIZONTAL QP
5	459.114	24.25	17.48	4.25	27.78	18.20	46.00	-27.80	HORIZONTAL QP
6	631.688	25.08	20.40	5.33	28.20	22.61	46.00	-23.39	HORIZONTAL QP



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



Trace: (Discrete)

Site : SGS

Condition: FCC PART15 C (3M) 3m VERTICAL

Job :

Model :

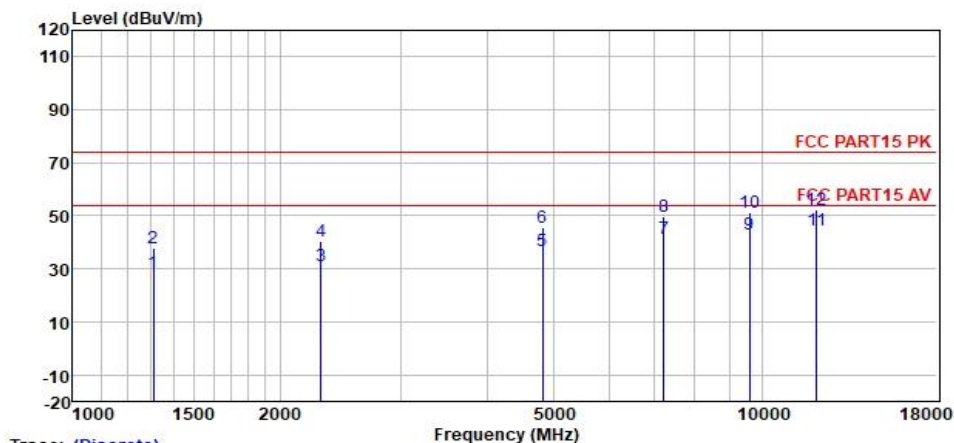
Power :

Test Mode:

	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	158.668	25.43	13.67	2.33	26.80	14.63	43.50	-28.87	VERTICAL	QP
2	193.095	29.19	10.83	2.50	26.74	15.78	43.50	-27.72	VERTICAL	QP
3	338.400	24.60	14.50	3.50	26.82	15.78	46.00	-30.22	VERTICAL	QP
4	446.414	27.04	17.23	4.19	27.65	20.81	46.00	-25.19	VERTICAL	QP
5	497.677	27.36	17.90	4.39	27.97	21.68	46.00	-24.32	VERTICAL	QP
6	616.372	25.99	20.35	5.23	28.20	23.37	46.00	-22.63	VERTICAL	QP



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



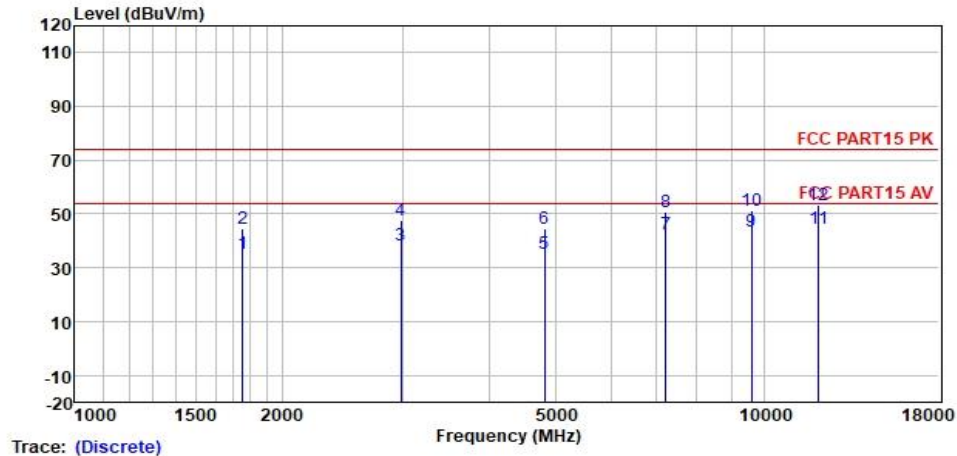
Trace: (Discrete)

Site : SGS
Condition: FCC PART15 PK
Test Mode: BLE 2402
Product :
Model :
Remark : Level=Read Level + Cable loss
 : + Antenna Factor - Preamp factor

	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	1308.40	39.03	25.22	2.60	38.31	28.54	54.00	-25.46	HORIZONTAL	Average
2	1308.40	48.29	25.22	2.60	38.31	37.80	74.00	-36.20	HORIZONTAL	Peak
3	2292.26	38.36	27.08	3.30	37.62	31.12	54.00	-22.88	HORIZONTAL	Average
4	2292.26	47.44	27.08	3.30	37.62	40.20	74.00	-33.80	HORIZONTAL	Peak
5	4804.40	36.72	31.42	5.40	36.83	36.71	54.00	-17.29	HORIZONTAL	Average
6	4804.40	45.84	31.42	5.40	36.83	45.83	74.00	-28.17	HORIZONTAL	Peak
7	7206.79	37.16	35.54	5.98	37.38	41.30	54.00	-12.70	HORIZONTAL	Average
8	7206.79	45.61	35.54	5.98	37.38	49.75	74.00	-24.25	HORIZONTAL	Peak
9	9608.06	35.14	38.37	7.07	37.42	43.16	54.00	-10.84	HORIZONTAL	Average
10	9608.06	43.17	38.37	7.07	37.42	51.19	74.00	-22.81	HORIZONTAL	Peak
11	12010.91	34.57	38.90	8.19	37.10	44.56	54.00	-9.44	HORIZONTAL	Average
12	12010.91	42.31	38.90	8.19	37.10	52.30	74.00	-21.70	HORIZONTAL	Peak



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



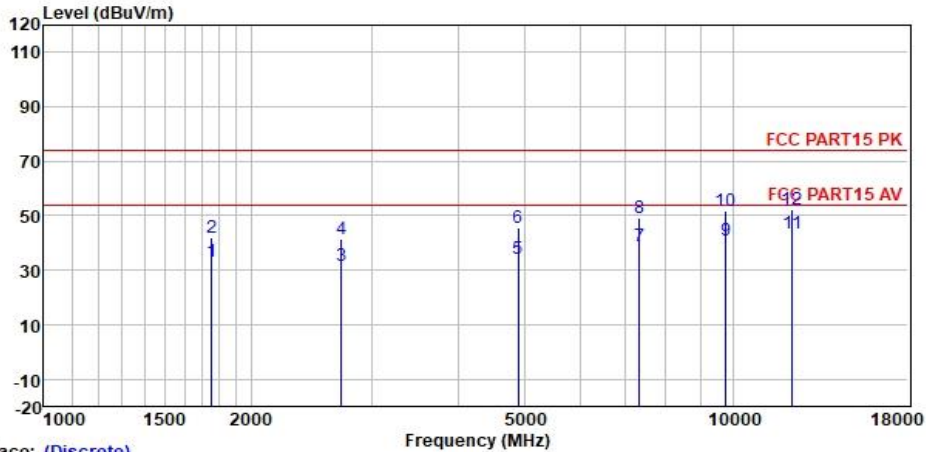
Site : SGS
Condition: FCC PART15 PK
Test Mode: BLE 2402
Product :
Model :
Remark : Level=Read Level + Cable loss
 : + Antenna Factor - Preamp factor

	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	1751.96	44.60	25.86	2.90	37.85	35.51	54.00	-18.49	VERTICAL	Average
2	1751.96	53.79	25.86	2.90	37.85	44.70	74.00	-29.30	VERTICAL	Peak
3	2973.29	43.45	28.38	3.78	37.28	38.33	54.00	-15.67	VERTICAL	Average
4	2973.29	52.75	28.38	3.78	37.28	47.63	74.00	-26.37	VERTICAL	Peak
5	4804.06	35.23	31.42	5.40	36.83	35.22	54.00	-18.78	VERTICAL	Average
6	4804.06	44.72	31.42	5.40	36.83	44.71	74.00	-29.29	VERTICAL	Peak
7	7206.62	38.42	35.54	5.98	37.38	42.56	54.00	-11.44	VERTICAL	Average
8	7206.62	46.42	35.54	5.98	37.38	50.56	74.00	-23.44	VERTICAL	Peak
9	9608.02	35.33	38.37	7.07	37.42	43.35	54.00	-10.65	VERTICAL	Average
10	9608.02	43.35	38.37	7.07	37.42	51.37	74.00	-22.63	VERTICAL	Peak
11	12010.71	34.59	38.90	8.19	37.10	44.58	54.00	-9.42	VERTICAL	Average
12	12010.71	43.36	38.90	8.19	37.10	53.35	74.00	-20.65	VERTICAL	Peak



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



Site : SGS
Condition: FCC PART15 PK
Test Mode: BLE 2442
Product :
Model :
Remark : Level=Read Level + Cable loss
 : + Antenna Factor - Preamp factor

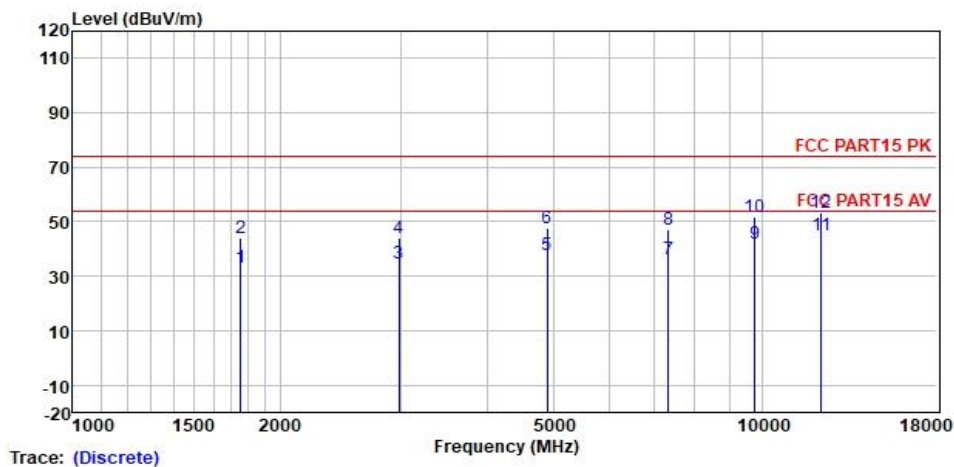
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1751.96	42.13	25.86	2.90	37.85	33.04	54.00	-20.96	HORIZONTAL	Average
2	1751.96	51.34	25.86	2.90	37.85	42.25	74.00	-31.75	HORIZONTAL	Peak
3	2702.80	37.48	27.84	3.60	37.47	31.45	54.00	-22.55	HORIZONTAL	Average
4	2702.80	47.74	27.84	3.60	37.47	41.71	74.00	-32.29	HORIZONTAL	Peak
5	4884.92	34.07	31.56	5.52	36.84	34.31	54.00	-19.69	HORIZONTAL	Average
6	4884.92	45.20	31.56	5.52	36.84	45.44	74.00	-28.56	HORIZONTAL	Peak
7	7326.85	34.03	36.00	6.13	37.43	38.73	54.00	-15.27	HORIZONTAL	Average
8	7326.85	44.30	36.00	6.13	37.43	49.00	74.00	-25.00	HORIZONTAL	Peak
9	9768.23	32.79	38.53	7.01	37.41	40.92	54.00	-13.08	HORIZONTAL	Average
10	9768.23	43.89	38.53	7.01	37.41	52.02	74.00	-21.98	HORIZONTAL	Peak
11	12210.93	33.61	38.74	8.08	37.00	43.43	54.00	-10.57	HORIZONTAL	Average
12	12210.93	42.60	38.74	8.08	37.00	52.42	74.00	-21.58	HORIZONTAL	Peak



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



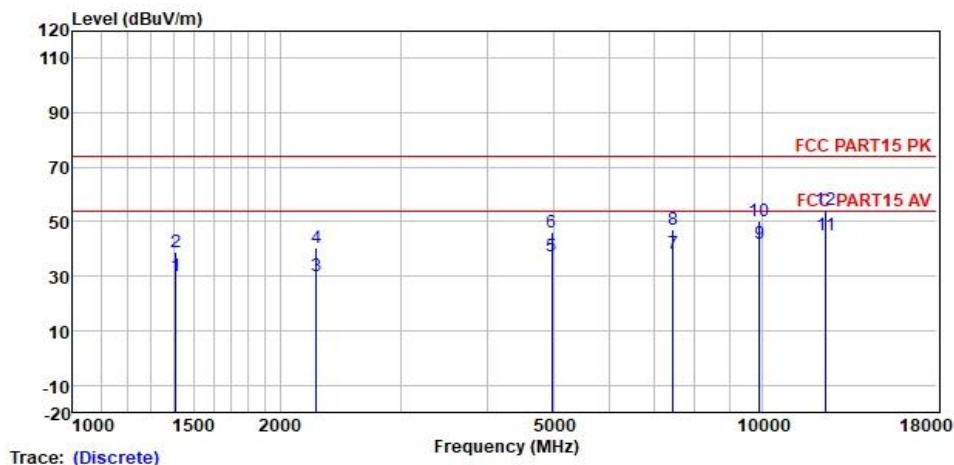
Site : SGS
Condition: FCC PART15 PK
Test Mode: BLE 2442
Product :
Model :
Remark : Level=Read Level + Cable loss
 : + Antenna Factor - Preamp factor

	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	1751.96	42.56	25.86	2.90	37.85	33.47	54.00	-20.53	VERTICAL	Average
2	1751.96	53.16	25.86	2.90	37.85	44.07	74.00	-29.93	VERTICAL	Peak
3	2973.29	39.90	28.38	3.78	37.28	34.78	54.00	-19.22	VERTICAL	Average
4	2973.29	48.93	28.38	3.78	37.28	43.81	74.00	-30.19	VERTICAL	Peak
5	4884.99	37.42	31.56	5.52	36.84	37.66	54.00	-16.34	VERTICAL	Average
6	4884.99	47.52	31.56	5.52	36.84	47.76	74.00	-26.24	VERTICAL	Peak
7	7326.98	31.51	36.00	6.13	37.43	36.21	54.00	-17.79	VERTICAL	Average
8	7326.98	42.33	36.00	6.13	37.43	47.03	74.00	-26.97	VERTICAL	Peak
9	9768.72	34.11	38.53	7.01	37.41	42.24	54.00	-11.76	VERTICAL	Average
10	9768.72	43.45	38.53	7.01	37.41	51.58	74.00	-22.42	VERTICAL	Peak
11	12210.16	35.10	38.74	8.08	37.00	44.92	54.00	-9.08	VERTICAL	Average
12	12210.16	43.78	38.74	8.08	37.00	53.60	74.00	-20.40	VERTICAL	Peak



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



Site : SGS
Condition: FCC PART15 PK
Test Mode: BLE 2480
Product :
Model :
Remark : Level=Read Level + Cable loss
 : + Antenna Factor - Preamp factor

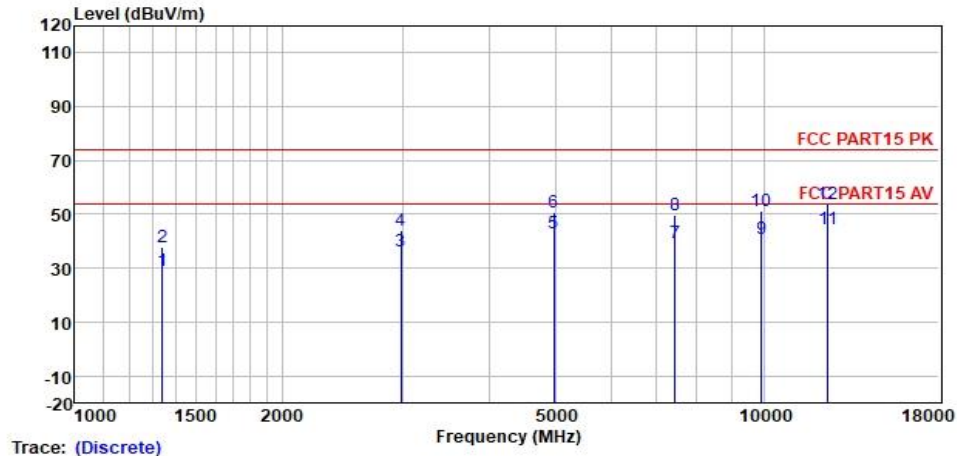
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1410.51	40.11	25.40	2.62	38.22	29.91	54.00	-24.09	HORIZONTAL	Average
2	1410.51	49.21	25.40	2.62	38.22	39.01	74.00	-34.99	HORIZONTAL	Peak
3	2259.37	37.63	26.95	3.27	37.64	30.21	54.00	-23.79	HORIZONTAL	Average
4	2259.37	47.77	26.95	3.27	37.64	40.35	74.00	-33.65	HORIZONTAL	Peak
5	4960.06	36.85	31.65	5.65	36.84	37.31	54.00	-16.69	HORIZONTAL	Average
6	4960.06	45.78	31.65	5.65	36.84	46.24	74.00	-27.76	HORIZONTAL	Peak
7	7440.38	33.30	36.27	6.22	37.47	38.32	54.00	-15.68	HORIZONTAL	Average
8	7440.38	42.18	36.27	6.22	37.47	47.20	74.00	-26.80	HORIZONTAL	Peak
9	9920.84	33.81	38.65	6.96	37.40	42.02	54.00	-11.98	HORIZONTAL	Average
10	9920.84	42.01	38.65	6.96	37.40	50.22	74.00	-23.78	HORIZONTAL	Peak
11	12400.47	35.23	38.57	7.97	36.88	44.89	54.00	-9.11	HORIZONTAL	Average
12	12400.47	44.86	38.57	7.97	36.88	54.52	74.00	-19.48	HORIZONTAL	Peak



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



Site : SGS
Condition: FCC PART15 PK
Test Mode: BLE 2480
Product :
Model :
Remark : Level=Read Level + Cable loss
 : + Antenna Factor - Preamp factor

	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	1339.01	39.68	25.29	2.60	38.27	29.30	54.00	-24.70	VERTICAL	Average
2	1339.01	48.36	25.29	2.60	38.27	37.98	74.00	-36.02	VERTICAL	Peak
3	2973.29	41.24	28.38	3.78	37.28	36.12	54.00	-17.88	VERTICAL	Average
4	2973.29	49.01	28.38	3.78	37.28	43.89	74.00	-30.11	VERTICAL	Peak
5	4960.21	42.62	31.65	5.65	36.84	43.08	54.00	-10.92	VERTICAL	Average
6	4960.21	50.36	31.65	5.65	36.84	50.82	74.00	-23.18	VERTICAL	Peak
7	7440.03	34.19	36.27	6.22	37.47	39.21	54.00	-14.79	VERTICAL	Average
8	7440.03	44.73	36.27	6.22	37.47	49.75	74.00	-24.25	VERTICAL	Peak
9	9920.02	32.54	38.65	6.96	37.40	40.75	54.00	-13.25	VERTICAL	Average
10	9920.02	42.86	38.65	6.96	37.40	51.07	74.00	-22.93	VERTICAL	Peak
11	12400.71	34.96	38.57	7.97	36.88	44.62	54.00	-9.38	VERTICAL	Average
12	12400.71	44.41	38.57	7.97	36.88	54.07	74.00	-19.93	VERTICAL	Peak



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8 Test Setup Photo

Refer to Appendix_ Setup Photo for GZCR211102132803



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9 EUT Constructional Details

Refer to Appendix – External and Internal Photos for GZCR2111021328AT



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10 Appendix

Cable Loss=0.9 dB

10.1 Appendix A: DTS Bandwidth

10.1.1 Test Result

TestMode	Antenna	Channel	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.692	2401.656	2402.348	0.5	PASS
		2442	0.700	2441.648	2442.348	0.5	PASS
		2480	0.692	2479.660	2480.352	0.5	PASS



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Guangzhou Branch Test Center EEC Laboratory. 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

Test Graphs

BLE_1M_Ant1_2402



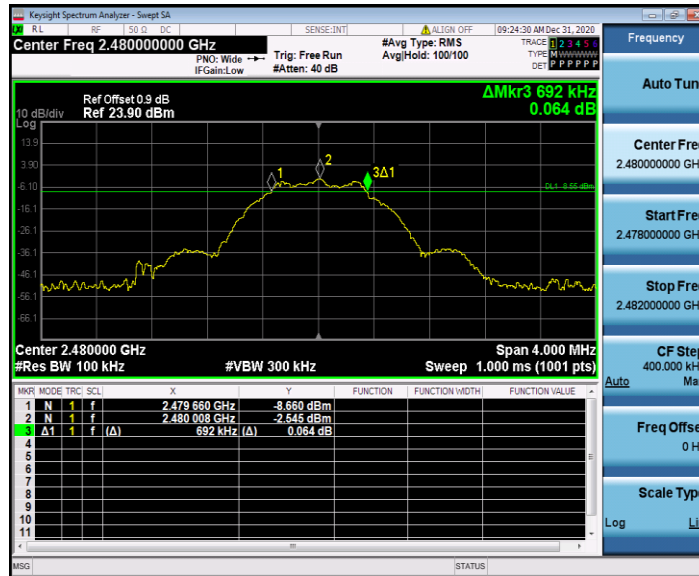
BLE_1M_Ant1_2442



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BLE_1M_Ant1_2480



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Guangzhou Branch, EMC Laboratory

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10.2 Appendix B: Maximum conducted output power

10.2.1 Test Result

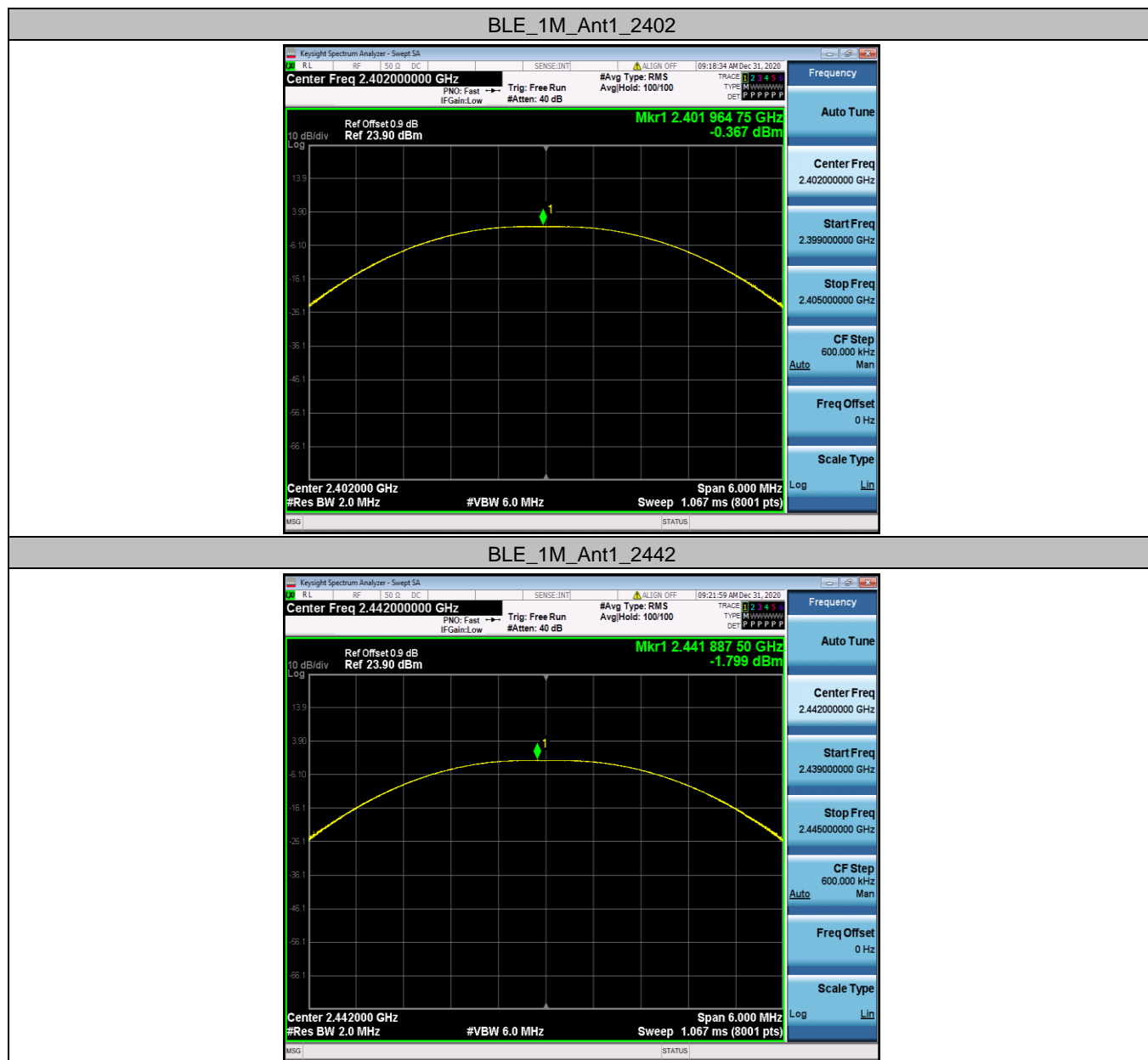
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-0.37	<=30	PASS
		2442	-1.8	<=30	PASS
		2480	-2.28	<=30	PASS



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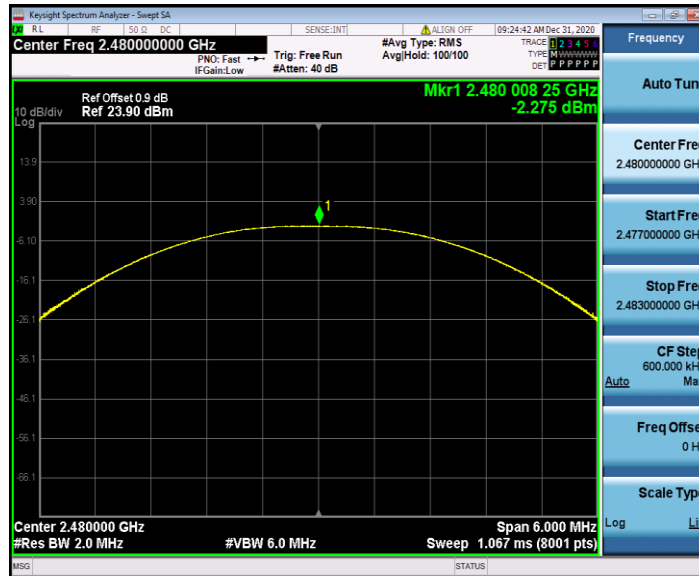
10.2.2 Test Graphs



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Member of the SGS Group (SGS SA)

10.3 Appendix C: Maximum power spectral density

10.3.1 Test Result

TestMode	Antenna	Channel	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-5.48	<=8	PASS
		2442	-6.82	<=8	PASS
		2480	-7.35	<=8	PASS

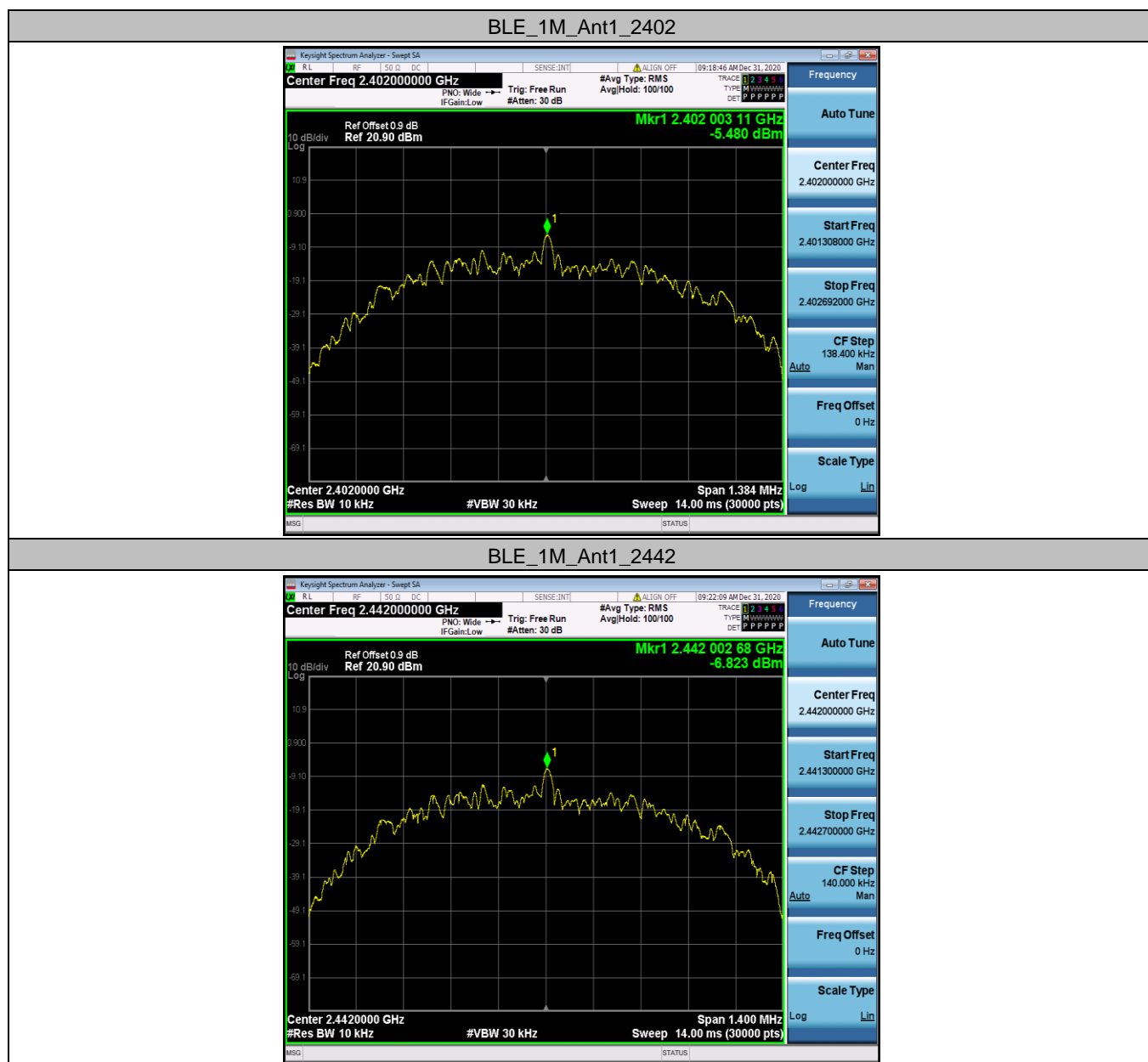


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10.3.2 Test Graphs



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10.4 Appendix D: Band edge measurements

10.4.1 Test Result

TestMode	Antenna	ChName	Channel	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	Low	2402	-0.64	-50.28	<=-20.64	PASS
		High	2480	-2.42	-57.92	<=-22.42	PASS

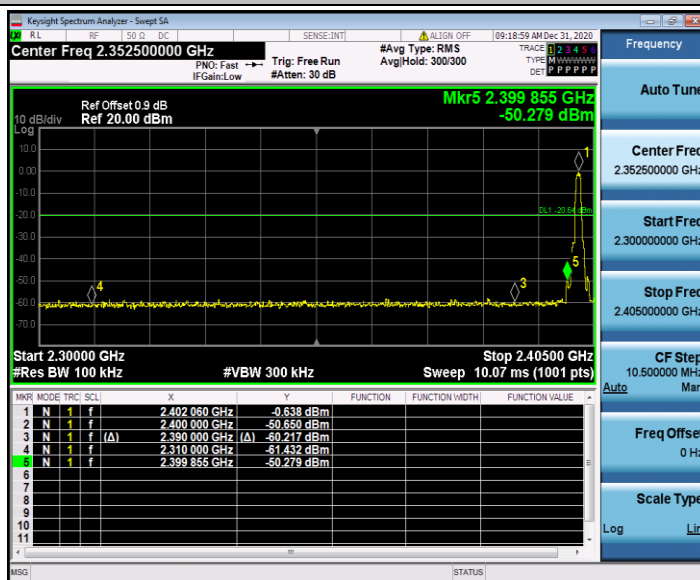


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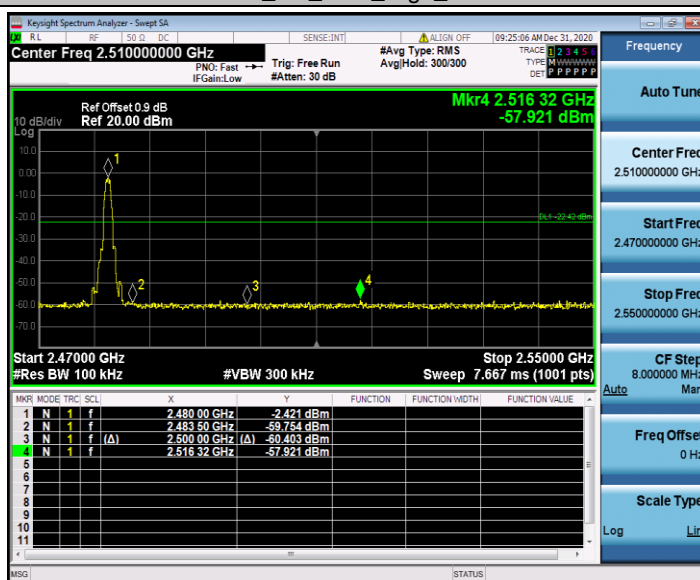
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10.4.2 Test Graphs

BLE_1M_Ant1_Low_2402



BLE_1M_Ant1_High_2480



10.5 Appendix E: Conducted Spurious Emission

10.5.1 Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2402	Reference	-0.67	-0.67	---	PASS
			30~1000	30~1000	-69.549	<=-20.665	PASS
			1000~26500	1000~26500	-50.747	<=-20.665	PASS
		2442	Reference	-2.02	-2.02	---	PASS
			30~1000	30~1000	-70.752	<=-22.015	PASS
			1000~26500	1000~26500	-50.467	<=-22.015	PASS
		2480	Reference	-2.54	-2.54	---	PASS
			30~1000	30~1000	-70.427	<=-22.536	PASS
			1000~26500	1000~26500	-50.048	<=-22.536	PASS



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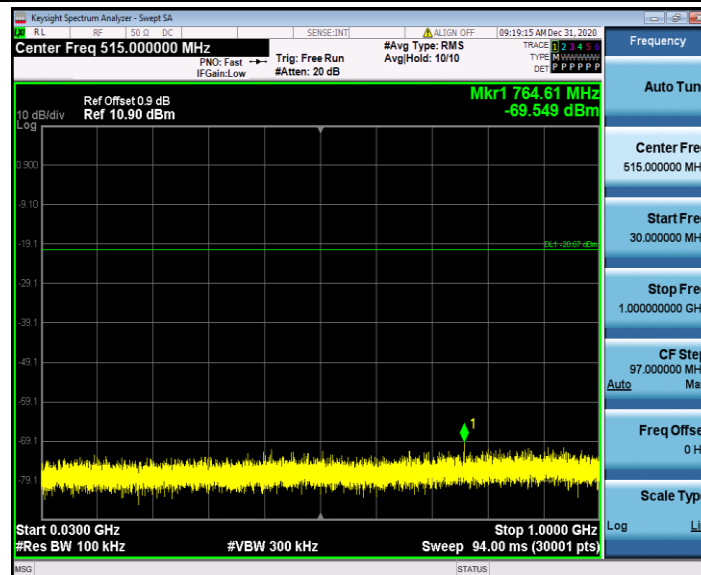
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10.5.2 Test Graphs

BLE_1M_Ant1_2402_0~Reference



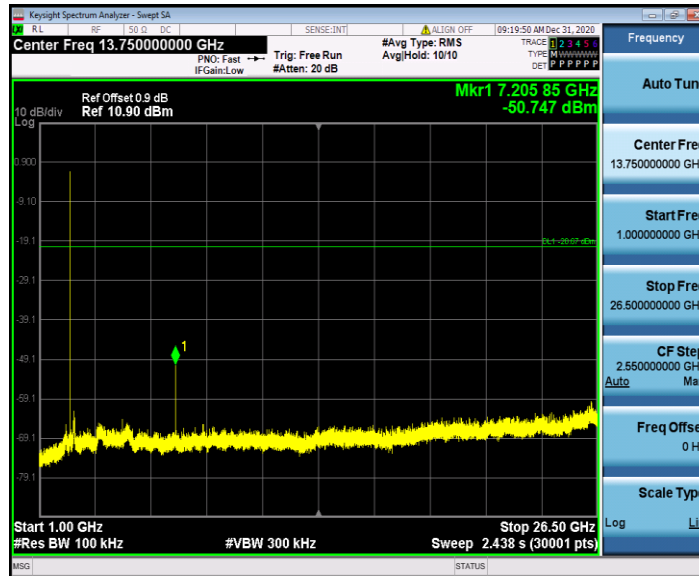
BLE_1M_Ant1_2402_30~1000



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BLE_1M_Ant1_2402_1000~26500



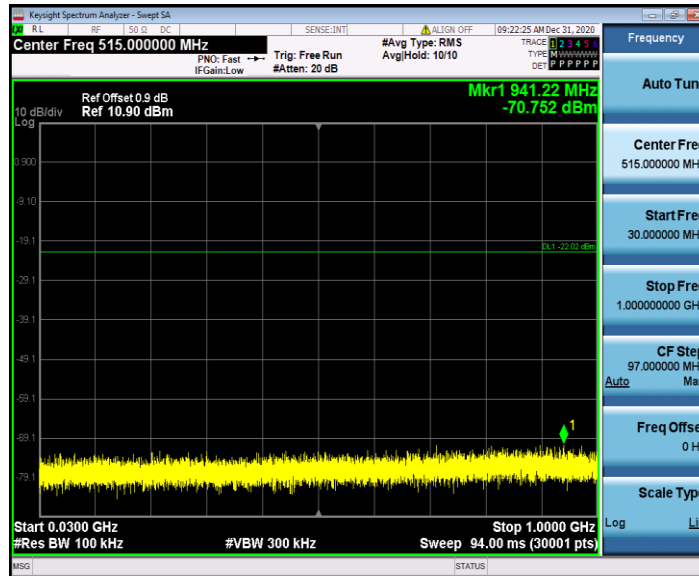
BLE_1M_Ant1_2442_0~Reference



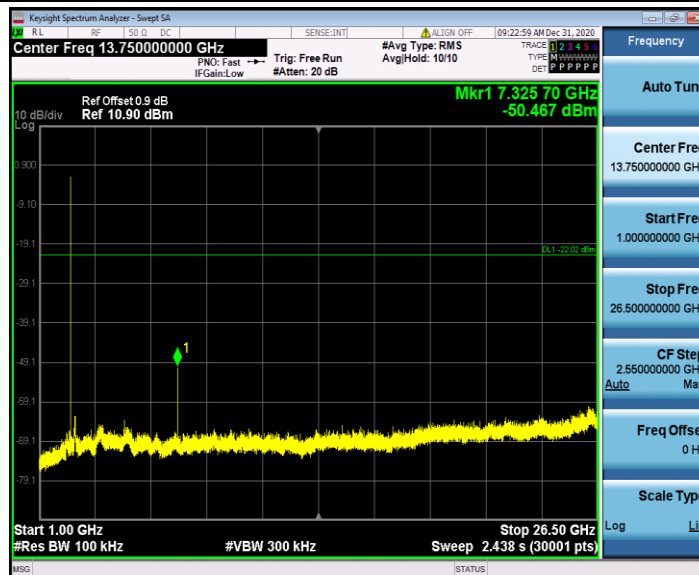
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BLE_1M_Ant1_2442_30~1000



BLE_1M_Ant1_2442_1000~26500



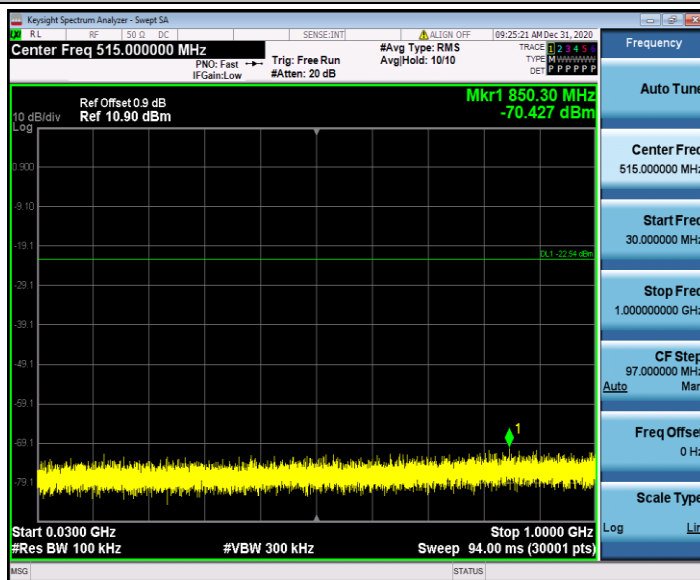
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BLE_1M_Ant1_2480_0-Reference

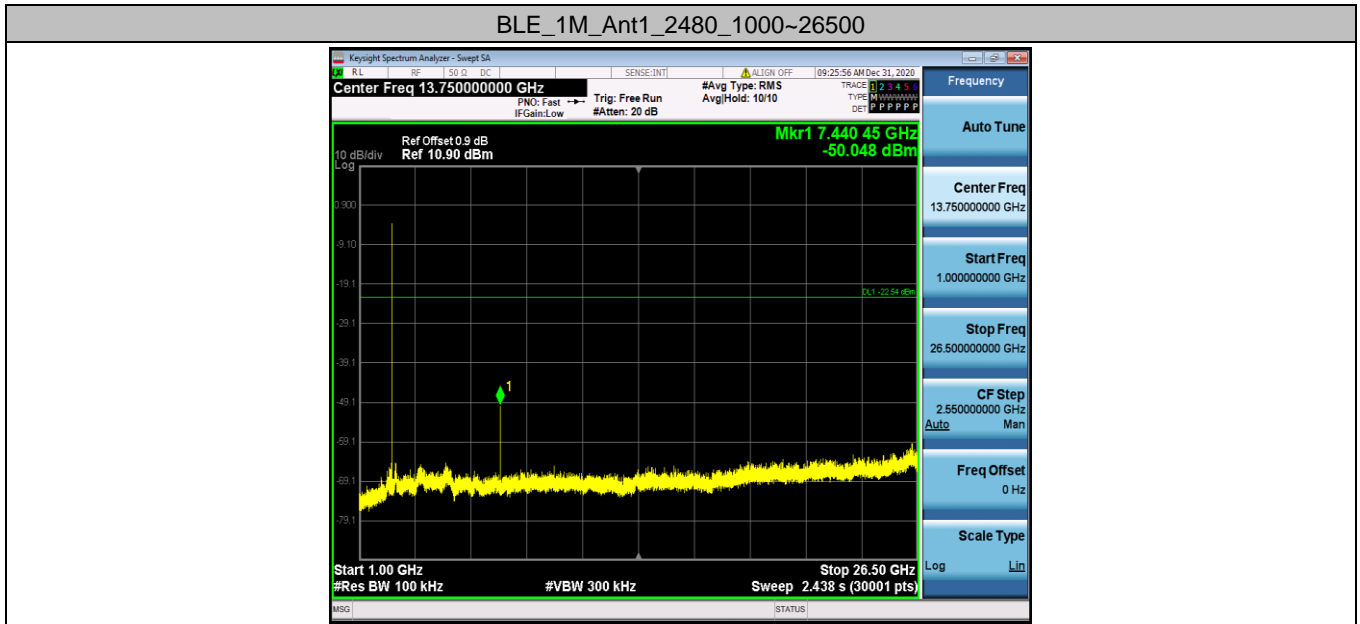


BLE_1M_Ant1_2480_30~1000



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