



TEST REPORT

Application No.: SZEM2011012189CR
Applicant: Jwipc Technology Co., Ltd.
Address of Applicant: 13/F, Building B, Haisong Edifice, Tairan 9th Road, Futian District, Shenzhen, China
Manufacturer: Jwipc Technology Co., Ltd.
Address of Manufacturer: 13/F, Building B, Haisong Edifice, Tairan 9th Road, Futian District, Shenzhen, China
Factory: Dongguan Scd Technology Co., Ltd.
Address of Factory: No.1 The 2nd Street, Huihuang Industrial Zone, Xiekeng Village, Qingxi Town, Dongguan, 523000 Guangdong, China
Equipment Under Test (EUT):
EUT Name: OPS PC MODULE
Model No.: H064, S064, TEY21*, S0*****, TEY21*-***** (*=A-Z, 0-9, character or blank) ♣
♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
FCC ID: 2AYLN-S064
Standard(s) : 47 CFR Part 15, Subpart C 15.247
Date of Receipt: 2020-11-27
Date of Test: 2020-12-04 to 2020-12-21
Date of Issue: 2020-12-26

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

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

Kenx. Xu

Kenx Xu
EMC Laboratory Manager



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

Unless otherwise agreed 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.
Attention: To check the authenticity of testing/inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com
No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

| Revision Record | | | | |
|-----------------|---------|------------|----------|----------|
| Version | Chapter | Date | Modifier | Remark |
| 01 | | 2020-12-26 | | Original |
| | | | | |
| | | | | |

| | | | |
|---------------------------------|--|--|--|
| Authorized for issue by: | | | |
| | |  | |
| | | <hr/> Harry Wu/Project Engineer | |
| | |  | |
| | | <hr/> Eric Fu/Reviewer | |

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(b)(4) | Pass |

| Radio Spectrum Matter Part | | | | |
|---|----------------------------------|--|---|--------|
| Item | Standard | Method | Requirement | Result |
| Conducted Peak Output Power | 47 CFR Part 15, Subpart C 15.247 | ANSI C63.10 (2013) Section 11.9.1 | 47 CFR Part 15, Subpart C 15.247(b)(3) | Pass |
| 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 |
| 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 |

| Emission Part | | | | |
|---|----------------------------------|--------------------------------|----------------------------------|--------|
| Item | Standard | Method | Requirement | Result |
| Conducted Emissions at AC Power Line (150kHz-30MHz) | 47 CFR Part 15, Subpart C 15.247 | ANSI C63.10 (2013) Section 6.2 | 47 CFR Part 15, Subpart C 15.207 | Pass |

Declaration of EUT Family Grouping:

Model No.: H064, S064, TEY21*, S0*****, TEY21*-***** (*=A-Z, 0-9, character or blank)

Only the model S064 was tested. According to the declaration from the applicant, the electrical circuit design, layout, components used, internal wiring and functions were identical for the above models, with only difference on model No, memory capacity and hard disk capacity.

| Object / part No. | Manufacturer/trademark | Type / model |
|-------------------|--|-----------------|
| PCB | CHUAN YI COMPUTER(SHENZHEN)CO LTD | Interchangeable |
| Alt. | Interchangeable | Interchangeable |
| Fan motor | Shenzhen Yongyihao Electronic Co., LTD. | YY6010L05B |
| Button Battery | Yichang POWER GLORY BATTERY TECH(HK)CO LTD | CR2032 |
| CPU | INTEL | i5-10210U |
| CPU | INTEL | i3-10110U |
| CPU | INTEL | i7-10510U |
| Memory | Kingston | DDR4-SODIMM |
| Alt. | Samsung | DDR4-SODIMM |
| Alt. | Foresee | DDR4-SODIMM |
| Alt. | TIGO | DDR4-SODIMM |
| SSD | Kingston | SSD |
| Alt. | Samsung | SSD |
| Alt. | Phison | SSD |
| Alt. | Foresee | SSD |



3 Contents

| | Page |
|--|------|
| 1 COVER PAGE | 1 |
| 2 TEST SUMMARY | 3 |
| 3 CONTENTS | 5 |
| 4 GENERAL INFORMATION | 7 |
| 4.1 DETAILS OF E.U.T. | 7 |
| 4.2 DESCRIPTION OF SUPPORT UNITS | 7 |
| 4.3 MEASUREMENT UNCERTAINTY | 7 |
| 4.4 TEST LOCATION | 8 |
| 4.5 TEST FACILITY | 8 |
| 4.6 DEVIATION FROM STANDARDS | 8 |
| 4.7 ABNORMALITIES FROM STANDARD CONDITIONS | 8 |
| 5 EQUIPMENT LIST | 9 |
| 6 RADIO SPECTRUM TECHNICAL REQUIREMENT | 12 |
| 6.1 ANTENNA REQUIREMENT | 12 |
| 6.1.1 Test Requirement: | 12 |
| 7 RADIO SPECTRUM MATTER TEST RESULTS | 13 |
| 7.1 CONDUCTED PEAK OUTPUT POWER | 13 |
| 7.1.1 E.U.T. Operation | 13 |
| 7.1.2 Test Mode Description | 13 |
| 7.1.3 Test Setup Diagram | 14 |
| 7.1.4 Measurement Procedure and Data | 14 |
| 7.2 MINIMUM 6DB BANDWIDTH | 15 |
| 7.2.1 E.U.T. Operation | 15 |
| 7.2.2 Test Mode Description | 15 |
| 7.2.3 Test Setup Diagram | 15 |
| 7.2.4 Measurement Procedure and Data | 15 |
| 7.3 POWER SPECTRUM DENSITY | 16 |
| 7.3.1 E.U.T. Operation | 16 |
| 7.3.2 Test Mode Description | 16 |
| 7.3.3 Test Setup Diagram | 16 |
| 7.3.4 Measurement Procedure and Data | 16 |
| 7.4 CONDUCTED BAND EDGES MEASUREMENT | 17 |
| 7.4.1 E.U.T. Operation | 17 |
| 7.4.2 Test Mode Description | 17 |
| 7.4.3 Test Setup Diagram | 18 |
| 7.4.4 Measurement Procedure and Data | 18 |
| 7.5 CONDUCTED SPURIOUS EMISSIONS | 19 |
| 7.5.1 E.U.T. Operation | 19 |
| 7.5.2 Test Mode Description | 19 |
| 7.5.3 Test Setup Diagram | 20 |
| 7.5.4 Measurement Procedure and Data | 20 |



Unless otherwise agreed 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-Documents.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.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com
No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgs.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

| | | |
|-------|--|----|
| 7.6 | RADIATED EMISSIONS WHICH FALL IN THE RESTRICTED BANDS..... | 21 |
| 7.6.1 | <i>E.U.T. Operation</i> | 21 |
| 7.6.2 | <i>Test Mode Description</i> | 21 |
| 7.6.3 | <i>Test Setup Diagram</i> | 22 |
| 7.6.4 | <i>Measurement Procedure and Data</i> | 22 |
| 7.7 | RADIATED SPURIOUS EMISSIONS | 31 |
| 7.7.1 | <i>E.U.T. Operation</i> | 31 |
| 7.7.2 | <i>Test Mode Description</i> | 31 |
| 7.7.3 | <i>Test Setup Diagram</i> | 32 |
| 7.7.4 | <i>Measurement Procedure and Data</i> | 33 |
| 8 | EMISSION TEST RESULTS | 48 |
| 8.1 | CONDUCTED EMISSIONS AT AC POWER LINE (150KHZ-30MHZ) | 48 |
| 8.1.1 | <i>E.U.T. Operation</i> | 48 |
| 8.1.2 | <i>Test Mode Description</i> | 48 |
| 8.1.3 | <i>Test Setup Diagram</i> | 49 |
| 8.1.4 | <i>Measurement Procedure and Data</i> | 49 |
| 9 | TEST SETUP PHOTO | 52 |
| 10 | EUT CONSTRUCTIONAL DETAILS (EUT PHOTOS) | 52 |
| 11 | APPENDIX | 53 |



Unless otherwise agreed 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-Documents.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.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

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

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
 中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

4 General Information

4.1 Details of E.U.T.

| | |
|----------------------|----------------------|
| Rated voltage: | Input:DC19.0V, 4.74A |
| Operation Frequency: | 2402MHz to 2480MHz |
| Bluetooth Version: | V5.0 BLE |
| Modulation Type: | GFSK |
| Number of Channels: | 40 |
| Channel Spacing: | 2MHz |
| Data Rate: | 1Mb/s, 2Mb/s |
| Antenna Type: | Dipole Antenna |
| Antenna Gain: | Antenna 1&2: 5dBi |

4.2 Description of Support Units

| Description | Manufacturer | Model No. | Serial No. |
|---------------|--------------|------------------|------------|
| AC/DC Adapter | FUJIA | FJ-SW20171205000 | -- |

4.3 Measurement Uncertainty

| Test Item | Measurement Uncertainty |
|---|--|
| Conducted Emissions at AC Power Line (150kHz-30MHz) | $\pm 3.0\text{dB}$ (150kHz to 30MHz) |
| Conducted Peak Output Power | $\pm 0.75\text{dB}$ |
| Minimum 6dB Bandwidth | $\pm 3\%$ |
| Power Spectrum Density | $\pm 2.84\text{dB}$ |
| 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 | $\pm 4.5\text{dB}$ (Below 1GHz); $\pm 4.8\text{dB}$ (Above 1GHz) |
| Radiated Spurious Emissions | $\pm 4.5\text{dB}$ (Below 1GHz); $\pm 4.8\text{dB}$ (Above 1GHz) |

Remark:

The U_{lab} (lab Uncertainty) is less than U_{CISPR} (CISPR Uncertainty), so the test results

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

4.4 Test Location

All tests were performed at:

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

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

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

No tests were sub-contracted.

4.5 Test Facility

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

- **A2LA (Certificate No. 3816.01)**

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

- **VCCI**

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

- **FCC –Designation Number: CN1178**

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

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

- **Innovation, Science and Economic Development Canada**

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

CAB identifier: CN0006.

IC#: 4620C.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



Unless otherwise agreed 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-Documents.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.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

5 Equipment List

| Conducted Emissions at Mains Terminals (150kHz-30MHz) | | | | | |
|---|------------------|-----------------|--------------|------------|--------------|
| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
| Shielding Room | ZhongYu Electron | GB-88 | SEM001-06 | 2019-06-13 | 2022-06-12 |
| EMI Test Receiver | Rohde&Schwarz | ESCI | SEM004-02 | 2020-03-24 | 2021-03-23 |
| Measurement Software | AUDIX | e3 V8.2014-6-27 | N/A | N/A | N/A |
| Coaxial Cable | SGS | N/A | SEM024-01 | 2020-07-10 | 2021-07-09 |
| LISN | Rohde&Schwarz | ENV216 | SEM007-01 | 2020-09-23 | 2021-09-22 |
| LISN | ETS-LINDGREN | 3816/2 | SEM007-02 | 2020-04-01 | 2021-03-31 |

| Conducted Peak Output Power | | | | | |
|-----------------------------|-----------------|-----------------|--------------|------------|--------------|
| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
| Shielding Room | SAEMC | MSR733 | SEM001-09 | 2019-06-13 | 2022-06-12 |
| DC Power Supply | Rohde & Schwarz | NGSM 32/10 | SEM011-04 | 2020-03-24 | 2021-03-23 |
| Spectrum Analyzer | Rohde & Schwarz | FSU43 | SEM004-08 | 2020-04-01 | 2021-03-31 |
| Signal Generator | KEYSIGHT | N5173B | SEM006-05 | 2020-09-23 | 2021-09-22 |
| Measurement Software | TST | TST PASS V1.0.5 | N/A | N/A | N/A |
| Coaxial Cable | SGS | N/A | SEM031-02 | 2020-07-10 | 2021-07-09 |
| Attenuator | Huber+Suhner | 6620_SMA-50-1 | SEM021-09 | 2020-05-21 | 2021-05-20 |

| Minimum 6dB Bandwidth | | | | | |
|-----------------------|-----------------|-----------------|--------------|------------|--------------|
| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
| Shielding Room | SAEMC | MSR733 | SEM001-09 | 2019-06-13 | 2022-06-12 |
| DC Power Supply | Rohde & Schwarz | NGSM 32/10 | SEM011-04 | 2020-03-24 | 2021-03-23 |
| Spectrum Analyzer | Rohde & Schwarz | FSU43 | SEM004-08 | 2020-04-01 | 2021-03-31 |
| Signal Generator | KEYSIGHT | N5173B | SEM006-05 | 2020-09-23 | 2021-09-22 |
| Measurement Software | TST | TST PASS V1.0.5 | N/A | N/A | N/A |
| Coaxial Cable | SGS | N/A | SEM031-02 | 2020-07-10 | 2021-07-09 |
| Attenuator | Huber+Suhner | 6620_SMA-50-1 | SEM021-09 | 2020-05-21 | 2021-05-20 |

| Power Spectrum Density | | | | | |
|------------------------|-----------------|------------|--------------|------------|--------------|
| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
| Shielding Room | SAEMC | MSR733 | SEM001-09 | 2019-06-13 | 2022-06-12 |
| DC Power Supply | Rohde & Schwarz | NGSM 32/10 | SEM011-04 | 2020-03-24 | 2021-03-23 |
| Spectrum Analyzer | Rohde & Schwarz | FSU43 | SEM004-08 | 2020-04-01 | 2021-03-31 |
| Signal Generator | KEYSIGHT | N5173B | SEM006-05 | 2020-09-23 | 2021-09-22 |



Unless otherwise agreed 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-Documents.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.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch, 10/F, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgs.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

| | | | | | |
|----------------------|--------------|--------------------|-----------|------------|------------|
| Measurement Software | TST | TST PASS V1.0.5 | N/A | N/A | N/A |
| Coaxial Cable | SGS | N/A | SEM031-02 | 2020-07-10 | 2021-07-09 |
| Attenuator | Huber+Suhner | 6620_SMA-50-1 | SEM021-09 | 2020-05-21 | 2021-05-20 |

Conducted Band Edges Measurement

| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
|----------------------|-----------------|--------------------|--------------|------------|--------------|
| Shielding Room | SAEMC | MSR733 | SEM001-09 | 2019-06-13 | 2022-06-12 |
| DC Power Supply | Rohde & Schwarz | NGSM 32/10 | SEM011-04 | 2020-03-24 | 2021-03-23 |
| Spectrum Analyzer | Rohde & Schwarz | FSU43 | SEM004-08 | 2020-04-01 | 2021-03-31 |
| Signal Generator | KEYSIGHT | N5173B | SEM006-05 | 2020-09-23 | 2021-09-22 |
| Measurement Software | TST | TST PASS V1.0.5 | N/A | N/A | N/A |
| Coaxial Cable | SGS | N/A | SEM031-02 | 2020-07-10 | 2021-07-09 |
| Attenuator | Huber+Suhner | 6620_SMA-50-1 | SEM021-09 | 2020-05-21 | 2021-05-20 |

Conducted Spurious Emissions

| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
|----------------------|-----------------|--------------------|--------------|------------|--------------|
| Shielding Room | SAEMC | MSR733 | SEM001-09 | 2019-06-13 | 2022-06-12 |
| DC Power Supply | Rohde & Schwarz | NGSM 32/10 | SEM011-04 | 2020-03-24 | 2021-03-23 |
| Spectrum Analyzer | Rohde & Schwarz | FSU43 | SEM004-08 | 2020-04-01 | 2021-03-31 |
| Signal Generator | KEYSIGHT | N5173B | SEM006-05 | 2020-09-23 | 2021-09-22 |
| Measurement Software | TST | TST PASS V1.0.5 | N/A | N/A | N/A |
| Coaxial Cable | SGS | N/A | SEM031-02 | 2020-07-10 | 2021-07-09 |
| Attenuator | Huber+Suhner | 6620_SMA-50-1 | SEM021-09 | 2020-05-21 | 2021-05-20 |

Radiated Emissions which fall in the restricted bands

| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
|--------------------------|------------------------------------|-----------------|--------------|------------|--------------|
| 3m Semi-Anechoic Chamber | AUDIX | N/A | SEM001-02 | 2018-03-13 | 2021-03-12 |
| EXA Signal Analyzer | Agilent Technologies Inc | N9010A | SEM004-12 | 2020-04-09 | 2021-04-08 |
| Horn Antenna | Rohde&Schwarz | HF907 | SEM003-07 | 2018-04-13 | 2021-04-12 |
| Pre-Amplifier | Compliance Directions Systems Inc. | PAP-0126 | SEM004-11 | 2020-09-23 | 2021-09-22 |
| Measurement Software | AUDIX | e3 V8.2014-6-27 | N/A | N/A | N/A |
| Coaxial Cable | SGS | N/A | SEM026-01 | 2020-07-10 | 2021-07-09 |
| Horn Antenna | Schwarzbeck | BBHA 9170 | SEM003-15 | 2020-11-14 | 2023-11-13 |



Unless otherwise agreed 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-Documents.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.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com
 No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
 中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

| | | | | | |
|---------------|--|-------------|-----------|------------|------------|
| Pre-Amplifier | Compliance Directions Systems Inc. | PAP-2640-50 | SEM005-08 | 2020-04-01 | 2021-03-31 |
|---------------|--|-------------|-----------|------------|------------|

Radiated Spurious Emissions

| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
|--------------------------|--|-----------------|--------------|------------|--------------|
| 3m Semi-Anechoic Chamber | AUDIX | N/A | SEM001-02 | 2018-03-13 | 2021-03-12 |
| EXA Signal Analyzer | Agilent Technologies Inc | N9010A | SEM004-12 | 2020-04-09 | 2021-04-08 |
| Horn Antenna | Rohde&Schwarz | HF907 | SEM003-07 | 2018-04-13 | 2021-04-12 |
| Pre-Amplifier | Compliance Directions Systems Inc. | PAP-0126 | SEM004-11 | 2020-09-23 | 2021-09-22 |
| Measurement Software | AUDIX | e3 V8.2014-6-27 | N/A | N/A | N/A |
| Coaxial Cable | SGS | N/A | SEM026-01 | 2020-07-10 | 2021-07-09 |
| Horn Antenna | Schwarzbeck | BBHA 9170 | SEM003-15 | 2020-11-14 | 2023-11-13 |
| Pre-Amplifier | Compliance Directions Systems Inc. | PAP-2640-50 | SEM005-08 | 2020-04-01 | 2021-03-31 |

Radiated Spurious Emissions (30MHz-1GHz)

| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
|--------------------------|----------------------|-----------------|--------------|------------|--------------|
| 3m Semi-Anechoic Chamber | ETS-LINDGREN | N/A | SEM001-01 | 2020-07-19 | 2023-07-18 |
| MXE EMI Receiver | Agilent Technologies | N9038A | SEM004-15 | 2020-11-02 | 2021-11-01 |
| BiConiLog Antenna | ETS-LINDGREN | 3142C | SEM003-02 | 2019-05-24 | 2022-05-23 |
| Pre-Amplifier | Agilent Technologies | 8447D | SEM005-01 | 2020-04-01 | 2021-03-31 |
| Measurement Software | AUDIX | e3 V8.2014-6-27 | N/A | N/A | N/A |
| Coaxial Cable | SGS | N/A | SEM025-01 | 2020-07-10 | 2021-07-09 |

General used equipment

| Equipment | Manufacturer | Model No | Inventory No | Cal Date | Cal Due Date |
|---------------------------------|---|----------|--------------|------------|--------------|
| Humidity/ Temperature Indicator | Shanghai Meteorological Industry Factory | ZJ1-2B | SEM002-04 | 2020-09-15 | 2021-09-14 |
| Humidity/ Temperature Indicator | Mingle | N/A | SEM002-08 | 2020-09-15 | 2021-09-14 |
| Barometer | Changchun Meteorological Industry Factory | DYM3 | SEM002-01 | 2020-04-07 | 2021-04-06 |



Unless otherwise agreed 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-Documents.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.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

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

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com



6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

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

Limit:

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 antennas dipole Antennas. The best case gain of the antennas are 5dBi.

Antenna location: Refer to External photos.



Unless otherwise agreed 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-Documents.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.
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

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

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

7 Radio Spectrum Matter Test Results

7.1 Conducted Peak Output Power

Test Requirement 47 CFR Part 15, Subpart C 15.247(b)(3)

Test Method: ANSI C63.10 (2013) Section 11.9.1

Limit:

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

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 26.5 °C

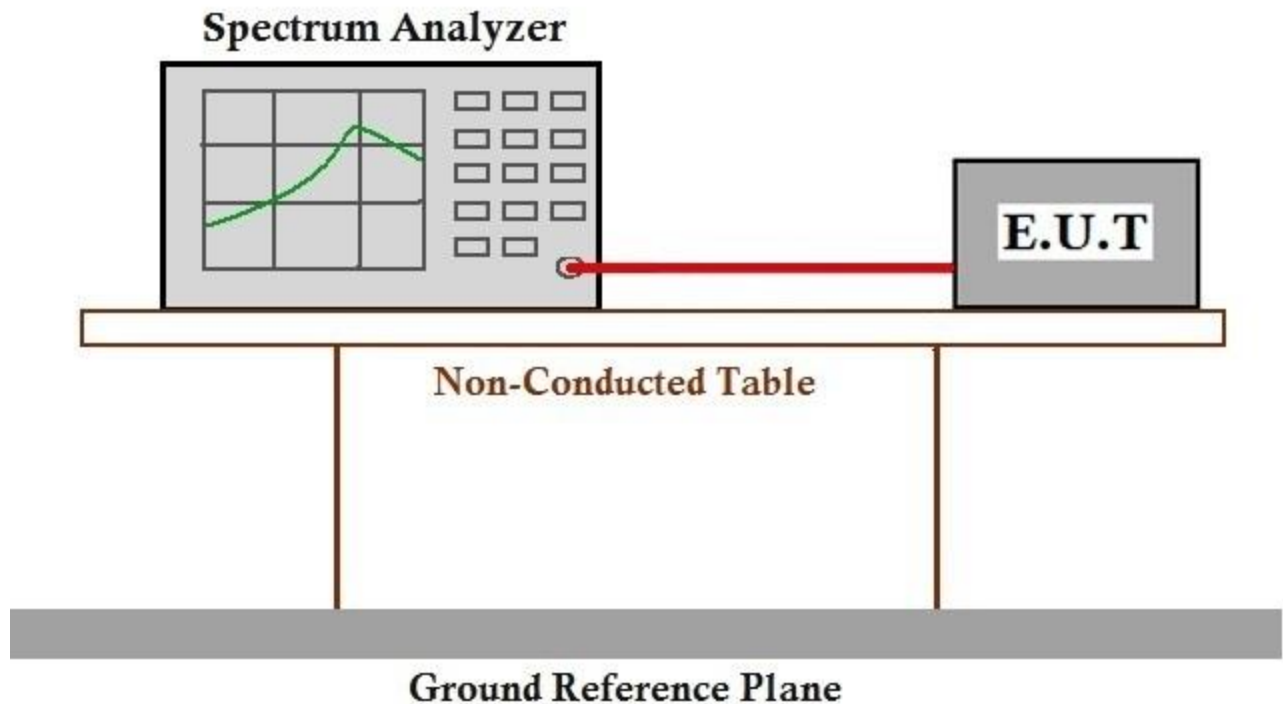
Humidity: 50.2 % RH

Atmospheric Pressure: 1010 mbar

7.1.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|-----------------------|-----------|---|
| Final test | 02 | TX mode(1Mb/s)_Keep the EUT in continuously transmitting mode with GFSK modulation. |
| Final test | 03 | TX mode(2Mb/s)_Keep the EUT in continuously transmitting mode with GFSK modulation. |

7.1.3 Test Setup Diagram



7.1.4 Measurement Procedure and Data

Please Refer To Appendix For Details



7.2 Minimum 6dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.247a(2)
Test Method: ANSI C63.10 (2013) Section 11.8.1
Limit: ≥ 500 kHz

7.2.1 E.U.T. Operation

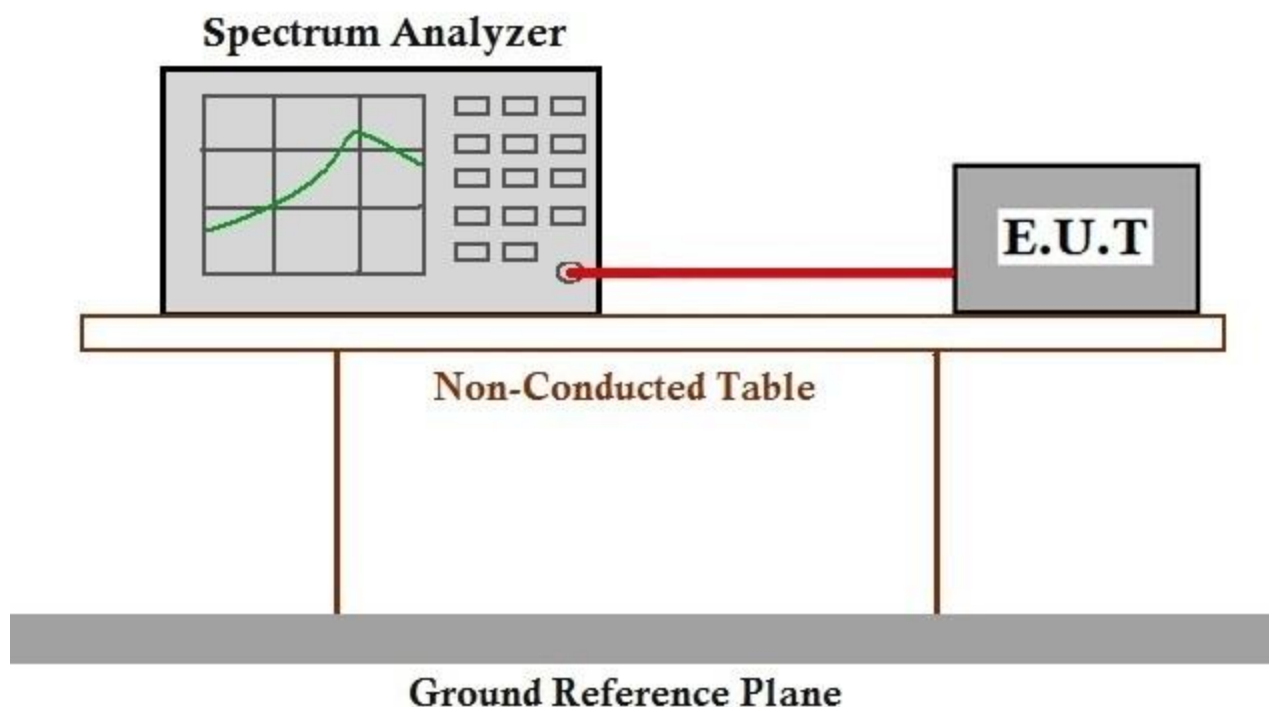
Operating Environment:

Temperature: 26.5 °C Humidity: 50.3 % RH Atmospheric Pressure: 1010 mbar

7.2.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|-----------------------|-----------|---|
| Final test | 02 | TX mode(1Mb/s)_Keep the EUT in continuously transmitting mode with GFSK modulation. |
| Final test | 03 | TX mode(2Mb/s)_Keep the EUT in continuously transmitting mode with GFSK modulation. |

7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data



Unless otherwise agreed 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-Documents.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.
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

Please Refer To Appendix For Details

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

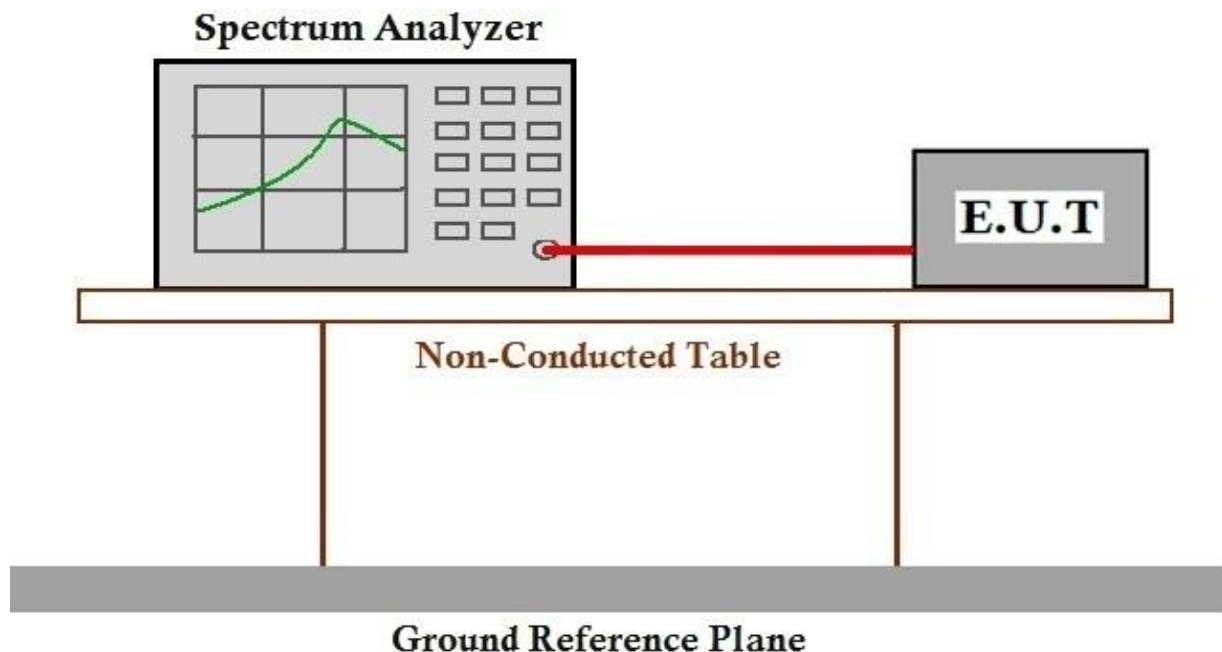
7.3.1 E.U.T. Operation

Operating Environment:
 Temperature: 26.5 °C Humidity: 50.5 % RH Atmospheric Pressure: 1010 mbar

7.3.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|-----------------------|-----------|---|
| Final test | 02 | TX mode(1Mb/s)_Keep the EUT in continuously transmitting mode with GFSK modulation. |
| Final test | 03 | TX mode(2Mb/s)_Keep the EUT in continuously transmitting mode with GFSK modulation. |

7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data



Unless otherwise agreed 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.
 Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com
 No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
 中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com



Please Refer To Appendix For Details

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: 26.5 °C Humidity: 50.5 % RH Atmospheric Pressure: 1010 mbar

7.4.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|-----------------------|-----------|---|
| Final test | 02 | TX mode(1Mb/s)_Keep the EUT in continuously transmitting mode with GFSK modulation. |
| Final test | 03 | TX mode(2Mb/s)_Keep the EUT in continuously transmitting mode with GFSK modulation. |

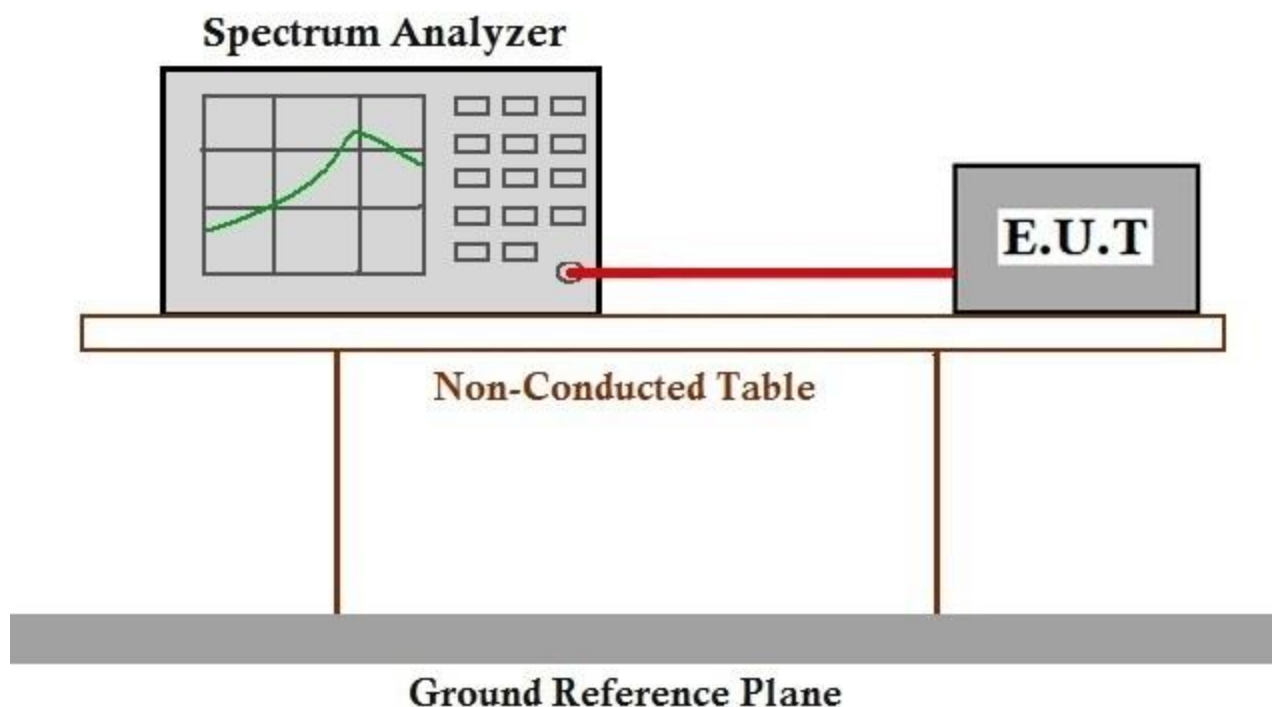


Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.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.
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

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

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

Please Refer To Appendix For Details



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: 26.5 °C

Humidity: 50.6 % RH

Atmospheric Pressure: 1010 mbar

7.5.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|-----------------------|-----------|---|
| Final test | 02 | TX mode(1Mb/s)_Keep the EUT in continuously transmitting mode with GFSK modulation. |
| Final test | 03 | TX mode(2Mb/s)_Keep the EUT in continuously transmitting mode with GFSK modulation. |

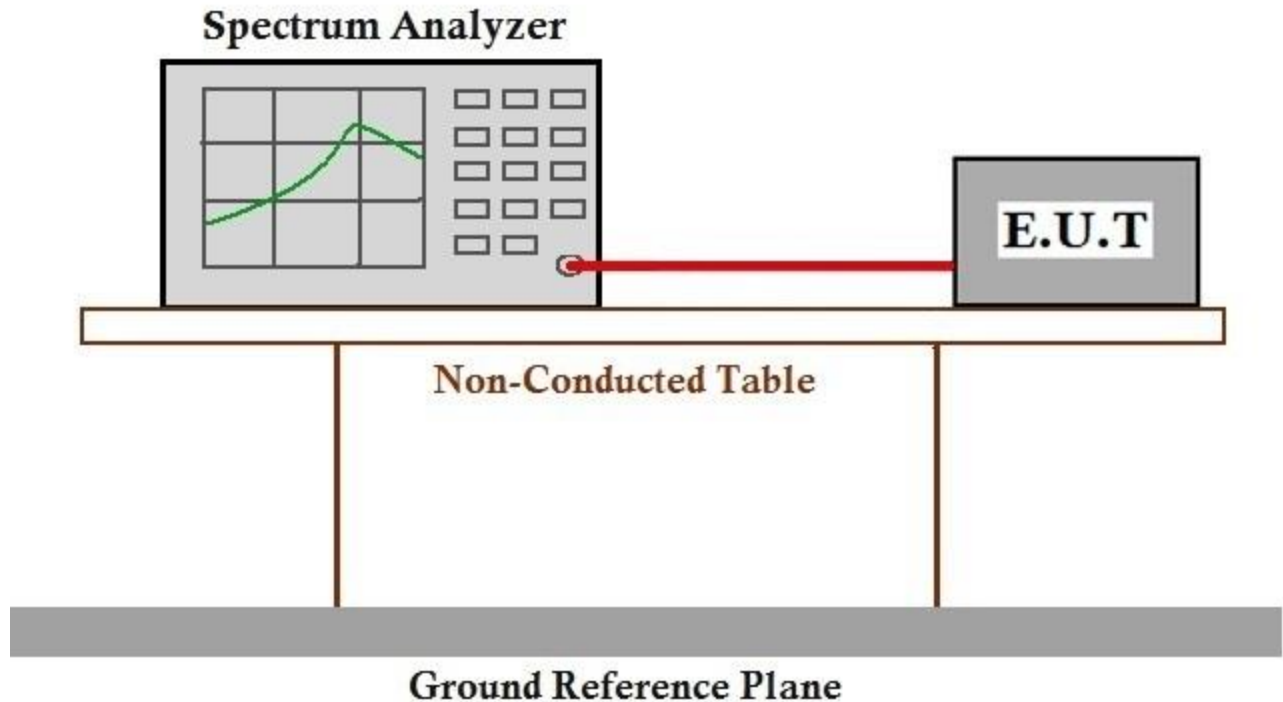


Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.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.
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

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

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.ssgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

Please Refer To Appendix For Details





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

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: 22.9 °C

Humidity: 56.0 % RH

Atmospheric Pressure: 1010 mbar

7.6.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|-----------------------|-----------|---|
| Final test | 02 | TX mode(1Mb/s)_Keep the EUT in continuously transmitting mode with GFSK modulation. |
| Final test | 03 | TX mode(2Mb/s)_Keep the EUT in continuously transmitting mode with GFSK modulation. |

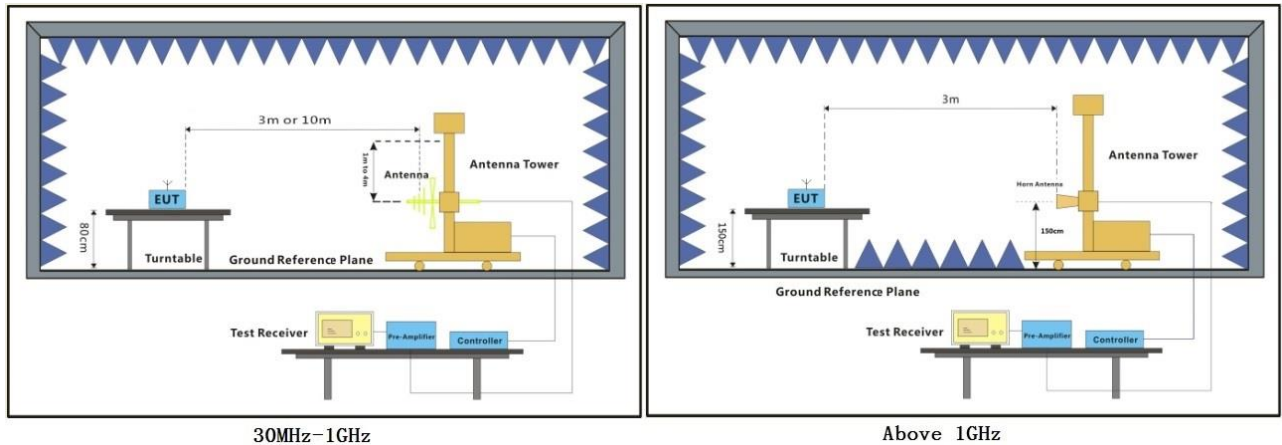


Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.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.
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

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

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

7.6.3 Test Setup Diagram



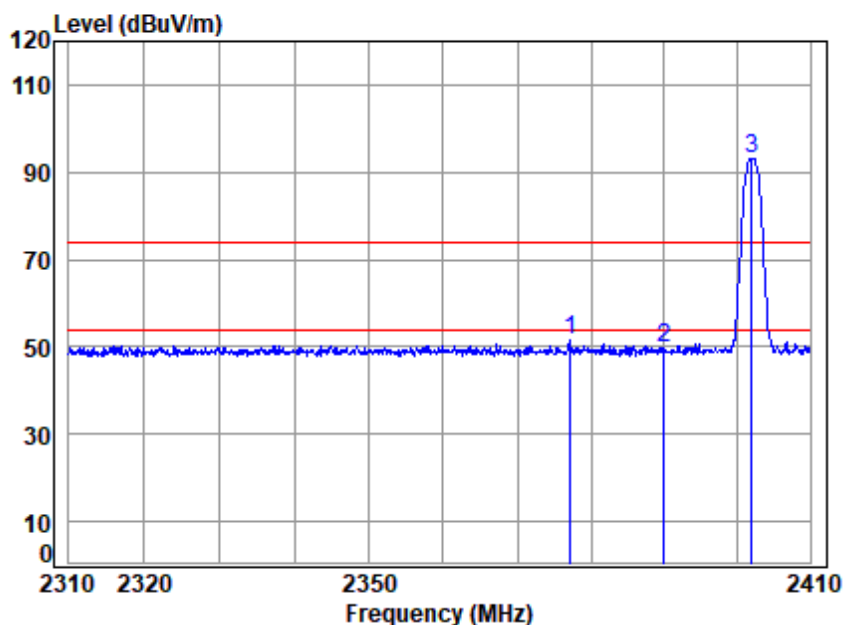
7.6.4 Measurement Procedure and Data

- 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.

Test Mode: 02; Polarity: Horizontal; Modulation:GFSK; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12189CR
Mode : 2402 Band edge
Note : BLE 1M

| | | Cable | Ant | Preamp | Read | | Limit | Over | |
|------|----------|-------|--------|--------|--------|--------|--------|--------|--------|
| Freq | | Loss | Factor | Factor | Level | Level | Line | Limit | Remark |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 2377.236 | 4.32 | 28.50 | 40.41 | 58.99 | 51.40 | 74.00 | -22.60 | peak |
| 2 | 2390.000 | 4.34 | 28.52 | 40.42 | 57.13 | 49.57 | 74.00 | -24.43 | peak |
| 3 * | 2402.000 | 4.36 | 28.54 | 40.43 | 100.48 | 92.95 | 74.00 | 18.95 | peak |

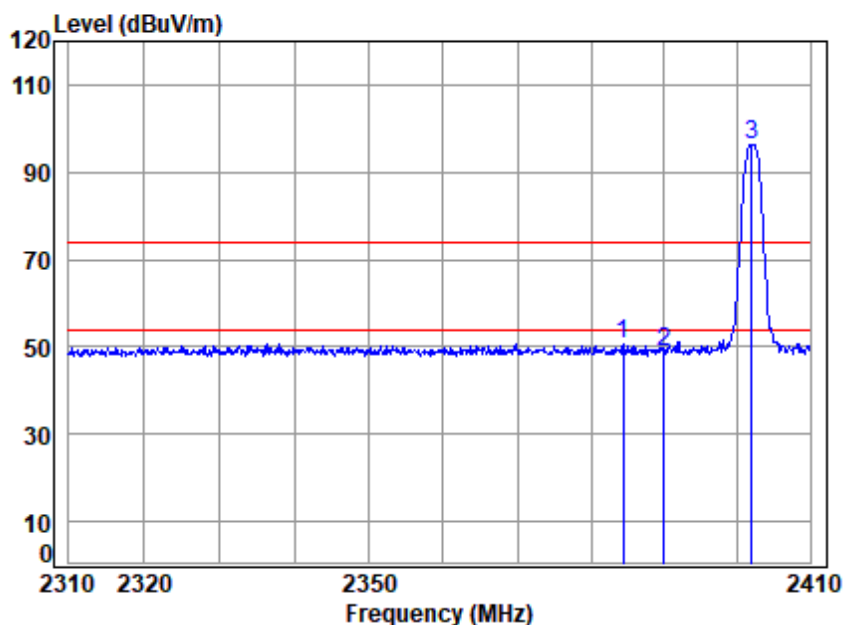


Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.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.
Attention: To check the authenticity of testing / inspection report and certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

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

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgs.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

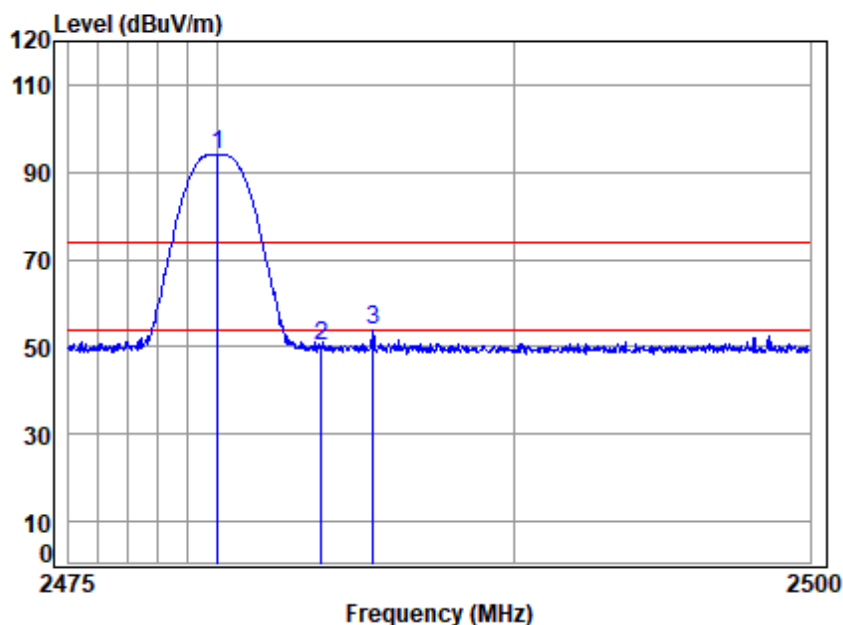
Test Mode: 02; Polarity: Vertical; Modulation:GFSK; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 12189CR
Mode : 2402 Band edge
Note : BLE 1M

| | | Cable | Ant | Preamp | Read | Limit | Over | |
|------|----------|-------|--------|--------|--------|--------|--------|-------------|
| Freq | | Loss | Factor | Factor | Level | Line | Limit | Remark |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 | 2384.399 | 4.34 | 28.51 | 40.42 | 58.16 | 50.59 | 74.00 | -23.41 peak |
| 2 | 2390.000 | 4.34 | 28.52 | 40.42 | 56.40 | 48.84 | 74.00 | -25.16 peak |
| 3 * | 2402.000 | 4.36 | 28.54 | 40.43 | 103.72 | 96.19 | 74.00 | 22.19 peak |

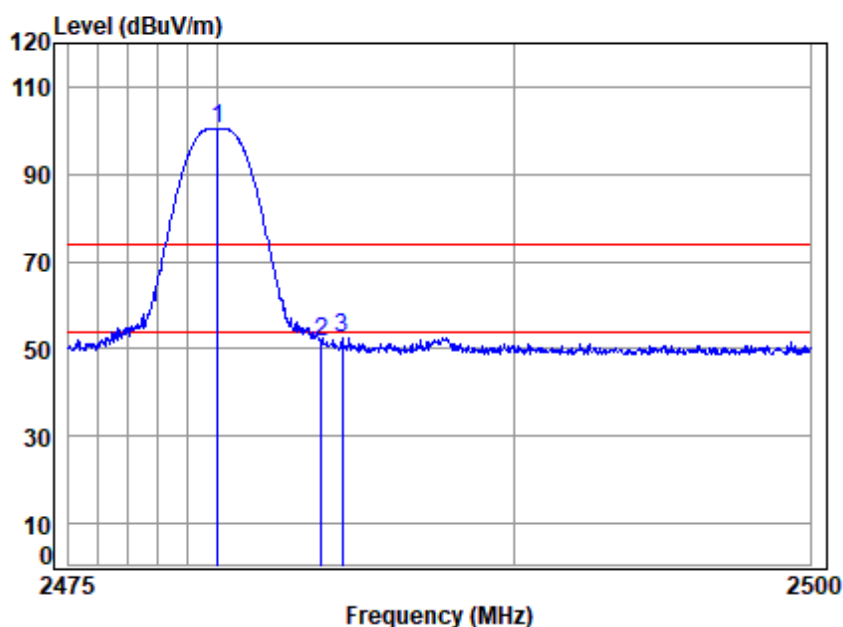
Test Mode: 02; Polarity: Horizontal; Modulation: GFSK; Channel: High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12189CR
Mode : 2480 Band edge
Note : BLE 1M

| | | Cable | Ant | Preamp | Read | | Limit | Over | |
|------|----------|-------|--------|--------|--------|--------|--------|--------|--------|
| Freq | | Loss | Factor | Factor | Level | Level | Line | Limit | Remark |
| MHz | | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 * | 2480.000 | 4.49 | 28.67 | 40.47 | 101.30 | 93.99 | 74.00 | 19.99 | peak |
| 2 | 2483.500 | 4.49 | 28.67 | 40.47 | 57.66 | 50.35 | 74.00 | -23.65 | peak |
| 3 | 2485.245 | 4.50 | 28.68 | 40.47 | 61.25 | 53.96 | 74.00 | -20.04 | peak |

Test Mode: 02; Polarity: Vertical; Modulation:GFSK; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 12189CR
Mode : 2480 Band edge
Note : BLE 1M

| | | Cable | Ant | Preamp | Read | | Limit | Over | |
|------|----------|-------|--------|--------|--------|--------|--------|--------|--------|
| Freq | | Loss | Factor | Factor | Level | Level | Line | Limit | Remark |
| MHz | | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 * | 2480.000 | 4.49 | 28.67 | 40.47 | 107.74 | 100.43 | 74.00 | 26.43 | peak |
| 2 | 2483.500 | 4.49 | 28.67 | 40.47 | 59.07 | 51.76 | 74.00 | -22.24 | peak |
| 3 | 2484.196 | 4.50 | 28.67 | 40.47 | 59.74 | 52.44 | 74.00 | -21.56 | peak |

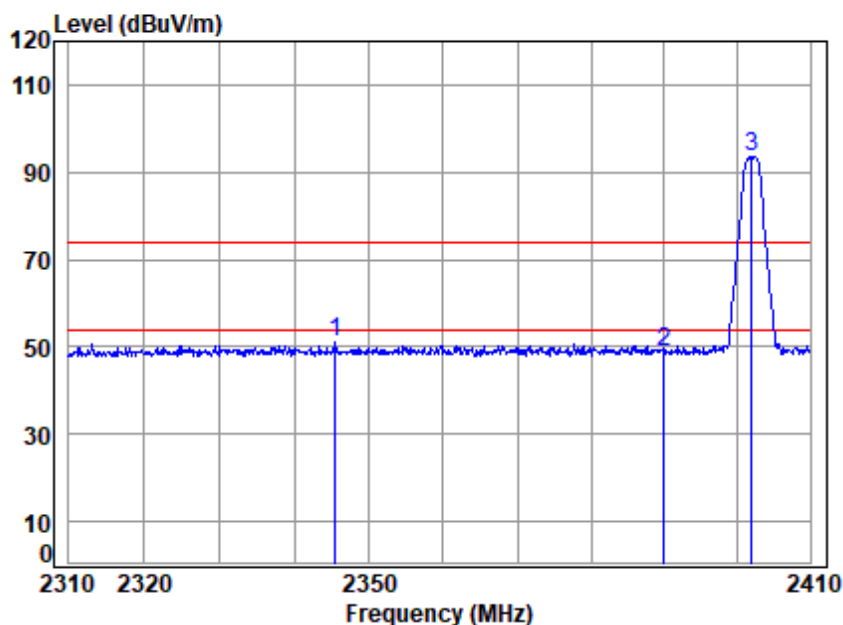


Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.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.
Attention: To check the authenticity of testing / inspection report and certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

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

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgs.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

Test Mode: 03; Polarity: Horizontal; Modulation:GFSK; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12189CR
Mode : 2402 Band edge
Note : BLE 2M

| | | Cable | Ant | Preamp | Read | | Limit | Over | |
|-----|----------|-------|--------|--------|--------|--------|--------|--------|--------|
| | Freq | Loss | Factor | Factor | Level | Level | Line | Limit | Remark |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 2345.413 | 4.27 | 28.44 | 40.40 | 58.57 | 50.88 | 74.00 | -23.12 | peak |
| 2 | 2390.000 | 4.34 | 28.52 | 40.42 | 56.53 | 48.97 | 74.00 | -25.03 | peak |
| 3 * | 2402.000 | 4.36 | 28.54 | 40.43 | 100.94 | 93.41 | 74.00 | 19.41 | peak |



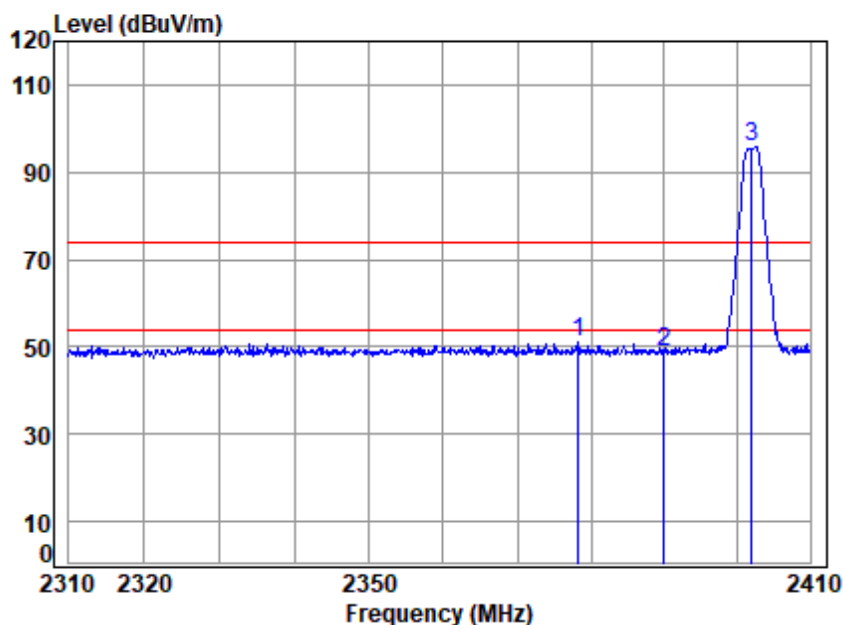
Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.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.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

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

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgs.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

Test Mode: 03; Polarity: Vertical; Modulation:GFSK; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 12189CR
Mode : 2402 Band edge
Note : BLE 2M

| | | Cable | Ant | Preamp | Read | | Limit | Over | |
|-----|----------|-------|--------|--------|--------|--------|--------|--------|--------|
| | Freq | Loss | Factor | Factor | Level | Level | Line | Limit | Remark |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 2378.243 | 4.33 | 28.50 | 40.41 | 58.67 | 51.09 | 74.00 | -22.91 | peak |
| 2 | 2390.000 | 4.34 | 28.52 | 40.42 | 56.60 | 49.04 | 74.00 | -24.96 | peak |
| 3 * | 2402.000 | 4.36 | 28.54 | 40.43 | 103.30 | 95.77 | 74.00 | 21.77 | peak |



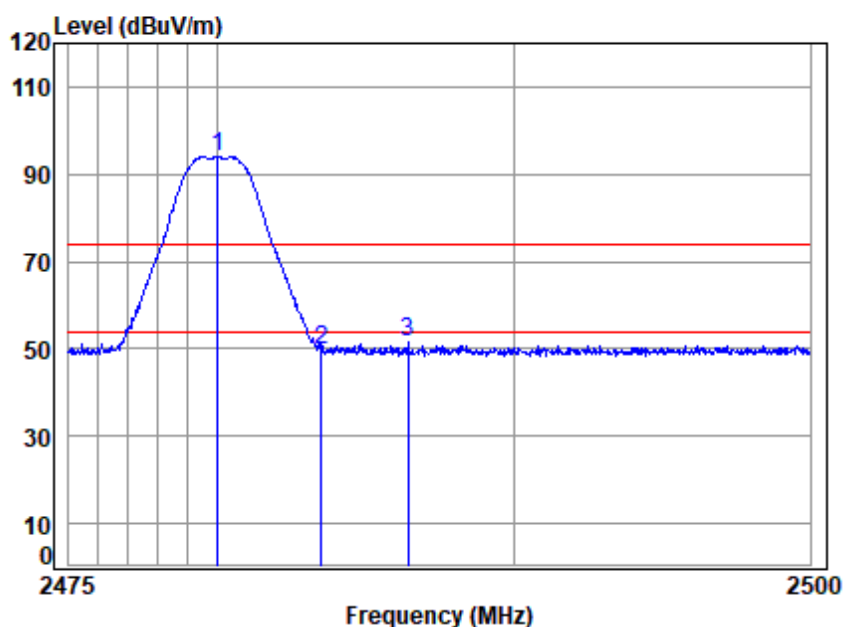
Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.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.

Attention: To check the authenticity of testing / inspection report and certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

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

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgs.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

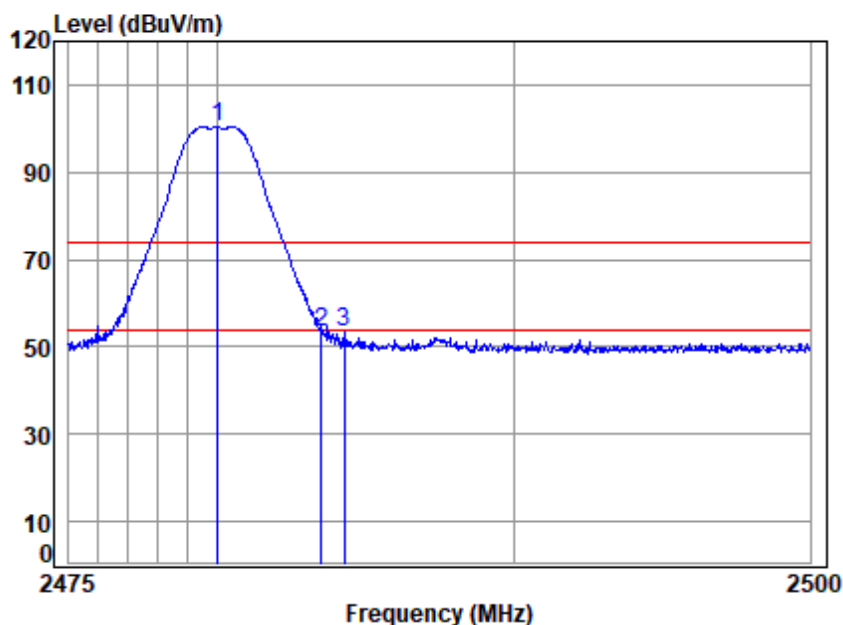
Test Mode: 03; Polarity: Horizontal; Modulation: GFSK; Channel: High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12189CR
Mode : 2480 Band edge
Note : BLE 2M

| | | Cable | Ant | Preamp | Read | | Limit | Over | |
|------|----------|-------|--------|--------|--------|--------|--------|--------|--------|
| Freq | | Loss | Factor | Factor | Level | Level | Line | Limit | Remark |
| MHz | | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 * | 2480.000 | 4.49 | 28.67 | 40.47 | 101.21 | 93.90 | 74.00 | 19.90 | peak |
| 2 | 2483.500 | 4.49 | 28.67 | 40.47 | 56.92 | 49.61 | 74.00 | -24.39 | peak |
| 3 | 2486.419 | 4.50 | 28.68 | 40.47 | 58.71 | 51.42 | 74.00 | -22.58 | peak |

Test Mode: 03; Polarity: Vertical; Modulation:GFSK; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 12189CR
Mode : 2480 Band edge
Note : BLE 2M

| | | Cable | Ant | Preamp | Read | | Limit | Over | |
|-----|----------|-------|--------|--------|--------|--------|--------|--------|--------|
| | Freq | Loss | Factor | Factor | Level | Level | Line | Limit | Remark |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 * | 2480.000 | 4.49 | 28.67 | 40.47 | 107.74 | 100.43 | 74.00 | 26.43 | peak |
| 2 | 2483.500 | 4.49 | 28.67 | 40.47 | 60.78 | 53.47 | 74.00 | -20.53 | peak |
| 3 | 2484.271 | 4.50 | 28.67 | 40.47 | 60.46 | 53.16 | 74.00 | -20.84 | 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 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: 22.5 °C

Humidity: 56.8 % RH

Atmospheric Pressure: 1010 mbar

7.7.2 Test Mode Description

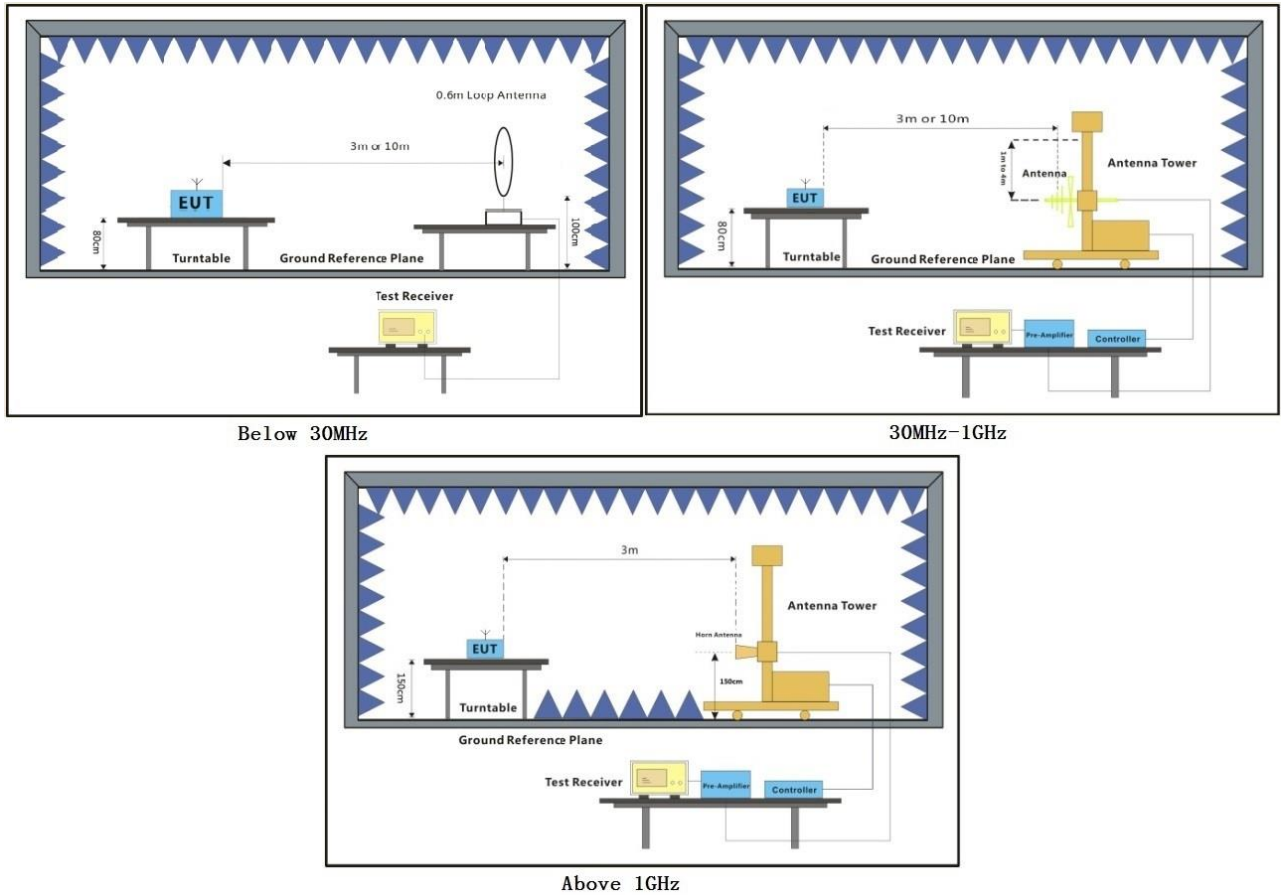
| Pre-scan / Final test | Mode Code | Description |
|-----------------------|-----------|---|
| Final test | 02 | TX mode(1Mb/s)_Keep the EUT in continuously transmitting mode with GFSK modulation. |
| Final test | 03 | TX mode(2Mb/s)_Keep the EUT in continuously transmitting mode with GFSK modulation. |



Unless otherwise agreed 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-Documents.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.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com
No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgs.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

7.7.3 Test Setup Diagram





7.7.4 Measurement Procedure and Data

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

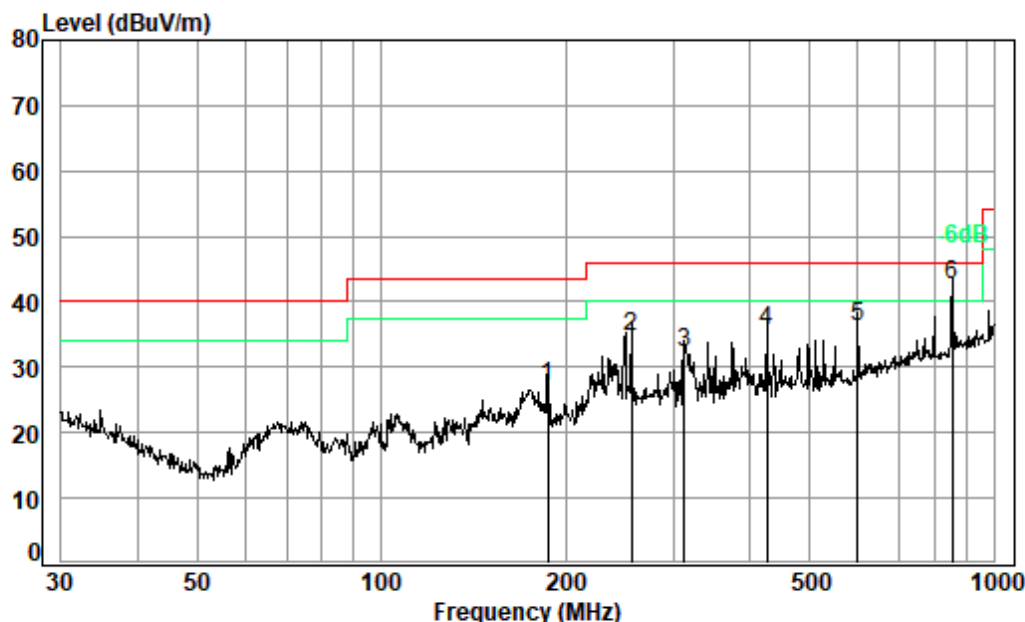
Remark:

- 1) For emission below 1GHz, through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor
- 3) Scan from 9kHz to 25GHz, the disturbance above 18GHz and below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
- 4) For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.



Below 1GHz(Worst case)

Test Mode: 02; Polarity: Horizontal; Modulation:GFSK; Channel:Low



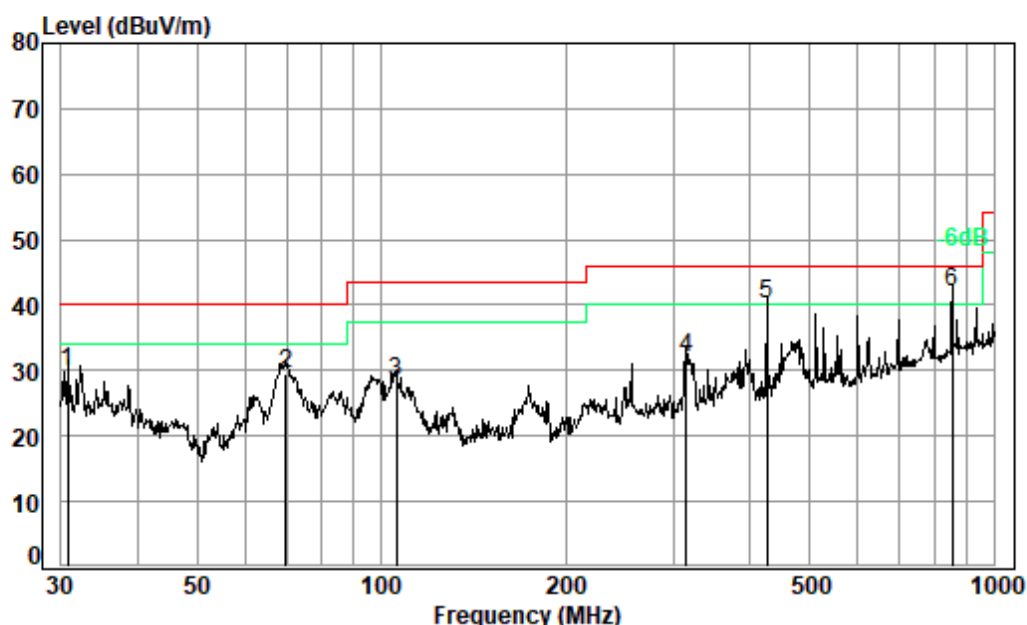
Condition: 3m HORIZONTAL

Job No. : 12189CR

Test Mode: 02

| | Freq | Cable Loss | Ant Factor | Preamp Factor | Read Level | Level | Limit Line | Over Limit | Remark |
|------|--------|------------|------------|---------------|------------|--------|------------|------------|--------|
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 187.10 | 1.19 | 15.47 | 27.19 | 37.50 | 26.97 | 43.50 | -16.53 | QP |
| 2 | 256.52 | 1.69 | 18.13 | 26.98 | 41.91 | 34.75 | 46.00 | -11.25 | QP |
| 3 | 312.18 | 2.04 | 19.49 | 26.94 | 37.50 | 32.09 | 46.00 | -13.91 | QP |
| 4 | 426.52 | 2.36 | 22.13 | 27.51 | 38.46 | 35.44 | 46.00 | -10.56 | QP |
| 5 | 599.32 | 2.70 | 25.79 | 28.13 | 35.96 | 36.32 | 46.00 | -9.68 | QP |
| 6 pp | 854.02 | 3.41 | 28.19 | 27.42 | 38.46 | 42.64 | 46.00 | -3.36 | QP |

Test Mode: 02; Polarity: Vertical; Modulation:GFSK; Channel:Low



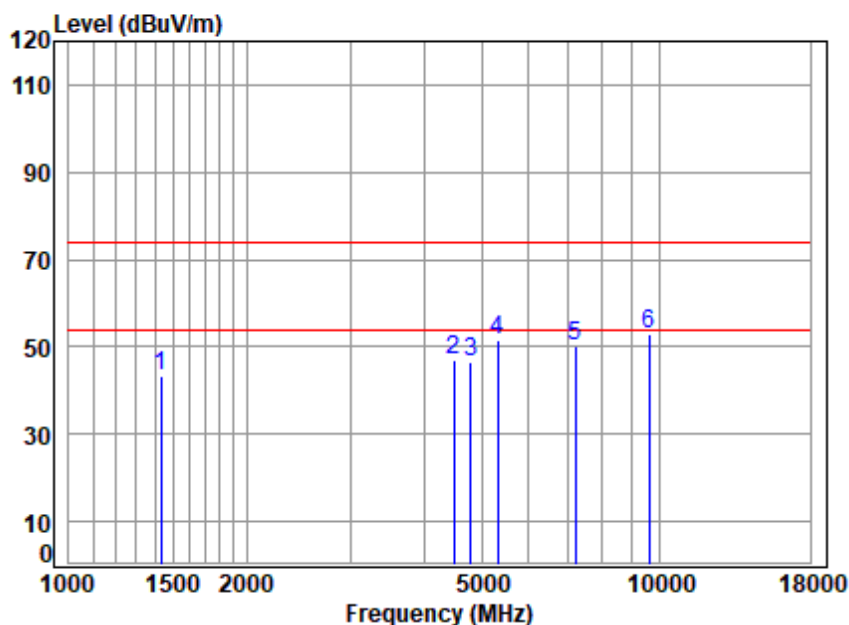
Condition: 3m VERTICAL

Job No. : 12189CR

Test Mode: 02

| | Freq | Cable Loss | Ant Factor | Preamp Factor | Read Level | Level | Limit Line | Over Limit | Remark |
|------|--------|------------|------------|---------------|------------|-------|------------|------------|--------|
| | MHz | dB | | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB |
| 1 | 30.75 | 0.61 | 22.43 | 27.73 | 34.36 | 29.67 | 40.00 | -10.33 | QP |
| 2 | 69.84 | 0.80 | 12.69 | 27.65 | 43.63 | 29.47 | 40.00 | -10.53 | QP |
| 3 | 106.01 | 1.11 | 13.82 | 27.57 | 40.79 | 28.15 | 43.50 | -15.35 | QP |
| 4 | 314.38 | 2.05 | 19.58 | 26.96 | 37.16 | 31.83 | 46.00 | -14.17 | QP |
| 5 | 426.52 | 2.36 | 22.13 | 27.51 | 43.25 | 40.23 | 46.00 | -5.77 | QP |
| 6 pp | 854.02 | 3.41 | 28.19 | 27.42 | 37.92 | 42.10 | 46.00 | -3.90 | QP |

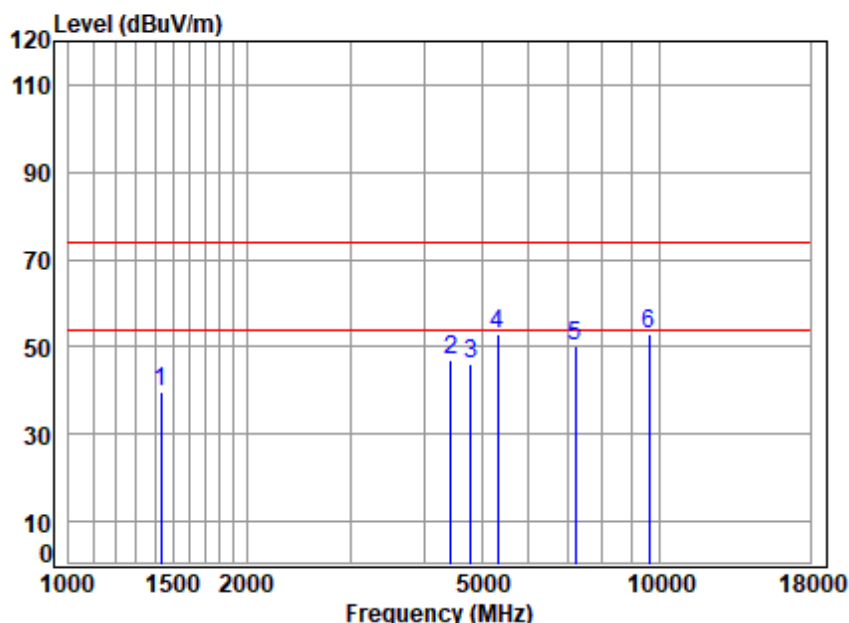
Test Mode: 02; Polarity: Horizontal; Modulation: GFSK; Channel: Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12189CR
Mode : 2402 TX SE
Note : BLE 1M

| | | Cable | Ant | Preamp | Read | | Limit | Over | |
|---|----------|-------|--------|--------|-------|--------|--------|--------|--------|
| | Freq | Loss | Factor | Factor | Level | Level | Line | Limit | Remark |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 1431.047 | 3.16 | 25.54 | 39.91 | 54.38 | 43.17 | 74.00 | -30.83 | peak |
| 2 | 4482.150 | 6.74 | 33.57 | 41.86 | 48.53 | 46.98 | 74.00 | -27.02 | peak |
| 3 | 4804.000 | 7.10 | 33.97 | 42.14 | 47.46 | 46.39 | 74.00 | -27.61 | peak |
| 4 | 5330.928 | 7.89 | 34.47 | 42.34 | 51.55 | 51.57 | 74.00 | -22.43 | peak |
| 5 | 7206.000 | 8.74 | 36.07 | 41.50 | 46.96 | 50.27 | 74.00 | -23.73 | peak |
| 6 | 9608.000 | 10.81 | 37.67 | 37.76 | 42.07 | 52.79 | 74.00 | -21.21 | peak |

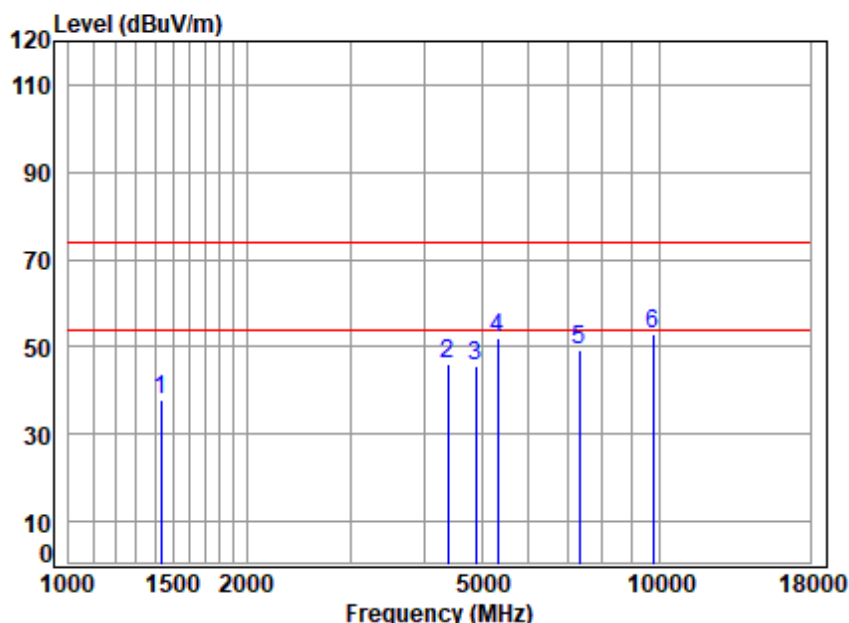
Test Mode: 02; Polarity: Vertical; Modulation:GFSK; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 12189CR
Mode : 2402 TX SE
Note : BLE 1M

| | Freq | Cable Loss | Ant Factor | Preamp Factor | Read Level | Level | Limit | Over | Remark |
|---|----------|------------|------------|---------------|------------|--------|--------|--------|--------|
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 1431.047 | 3.16 | 25.54 | 39.91 | 50.87 | 39.66 | 74.00 | -34.34 | peak |
| 2 | 4430.628 | 6.70 | 33.48 | 41.81 | 48.62 | 46.99 | 74.00 | -27.01 | peak |
| 3 | 4804.000 | 7.10 | 33.97 | 42.14 | 47.33 | 46.26 | 74.00 | -27.74 | peak |
| 4 | 5330.928 | 7.89 | 34.47 | 42.34 | 52.69 | 52.71 | 74.00 | -21.29 | peak |
| 5 | 7206.000 | 8.74 | 36.07 | 41.50 | 46.71 | 50.02 | 74.00 | -23.98 | peak |
| 6 | 9608.000 | 10.81 | 37.67 | 37.76 | 42.32 | 53.04 | 74.00 | -20.96 | peak |

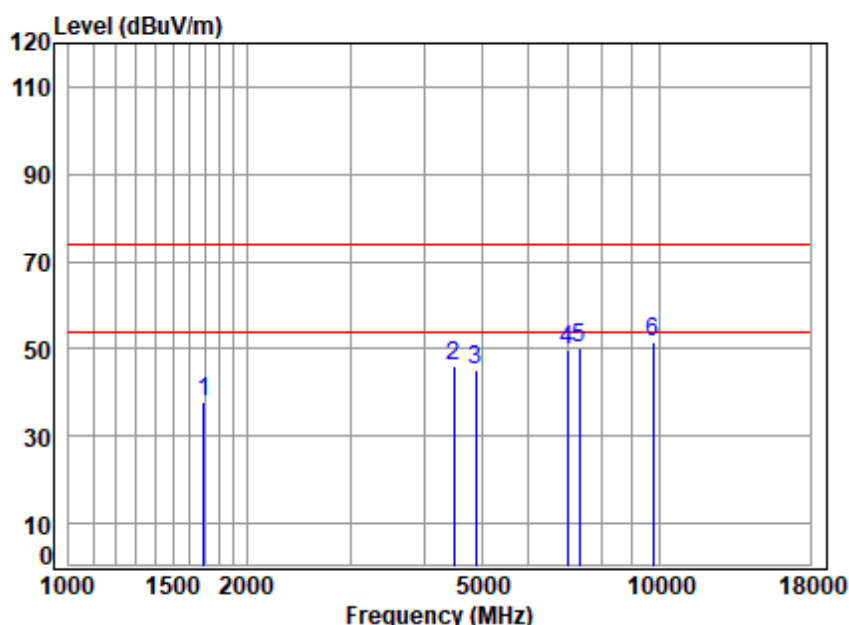
Test Mode: 02; Polarity: Horizontal; Modulation:GFSK; Channel:middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12189CR
Mode : 2402 TX SE
Note : BLE 1M

| | | Cable | Ant | Preamp | Read | | Limit | Over | |
|---|----------|-------|--------|--------|-------|--------|--------|--------|--------|
| | Freq | Loss | Factor | Factor | Level | Level | Line | Limit | Remark |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 1431.047 | 3.16 | 25.54 | 39.91 | 49.24 | 38.03 | 74.00 | -35.97 | peak |
| 2 | 4392.376 | 6.66 | 33.42 | 41.78 | 47.99 | 46.29 | 74.00 | -27.71 | peak |
| 3 | 4880.000 | 7.18 | 34.06 | 42.20 | 46.56 | 45.60 | 74.00 | -28.40 | peak |
| 4 | 5330.928 | 7.89 | 34.47 | 42.34 | 52.00 | 52.02 | 74.00 | -21.98 | peak |
| 5 | 7320.000 | 8.84 | 36.16 | 41.40 | 45.81 | 49.41 | 74.00 | -24.59 | peak |
| 6 | 9760.000 | 10.76 | 37.76 | 37.50 | 42.11 | 53.13 | 74.00 | -20.87 | peak |

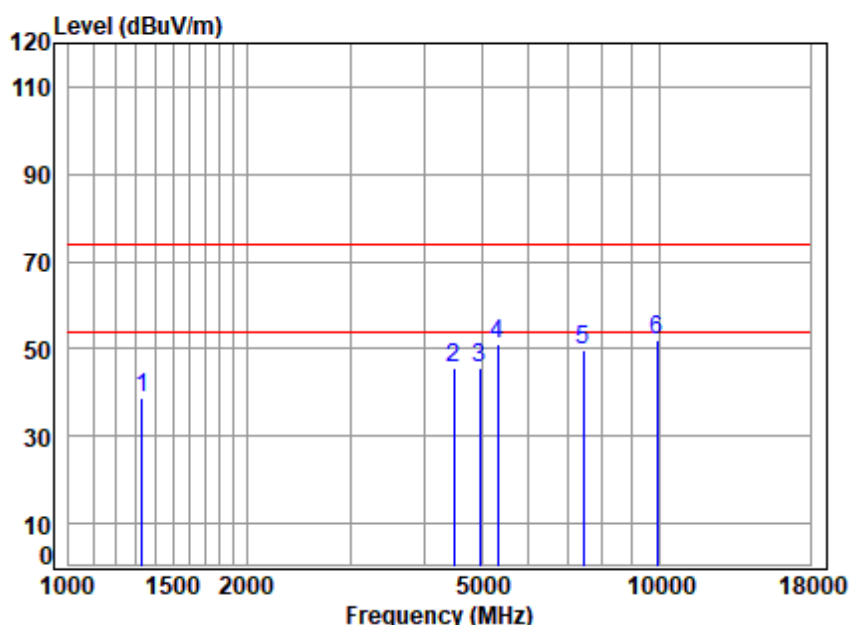
Test Mode: 02; Polarity: Vertical; Modulation:GFSK; Channel:middle



Site : chamber
Condition: 3m VERTICAL
Job No : 12189CR
Mode : 2402 TX SE
Note : BLE 1M

| | Freq | Cable Loss | Ant Factor | Preamp Factor | Read Level | Level | Limit | Over | Remark |
|---|----------|------------|------------|---------------|------------|--------|--------|--------|--------|
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 1692.231 | 3.42 | 26.64 | 40.06 | 47.79 | 37.79 | 74.00 | -36.21 | peak |
| 2 | 4482.150 | 6.74 | 33.57 | 41.86 | 47.48 | 45.93 | 74.00 | -28.07 | peak |
| 3 | 4880.000 | 7.18 | 34.06 | 42.20 | 46.02 | 45.06 | 74.00 | -28.94 | peak |
| 4 | 6974.982 | 8.53 | 35.89 | 41.72 | 47.22 | 49.92 | 74.00 | -24.08 | peak |
| 5 | 7320.000 | 8.84 | 36.16 | 41.40 | 46.42 | 50.02 | 74.00 | -23.98 | peak |
| 6 | 9760.000 | 10.76 | 37.76 | 37.50 | 40.73 | 51.75 | 74.00 | -22.25 | peak |

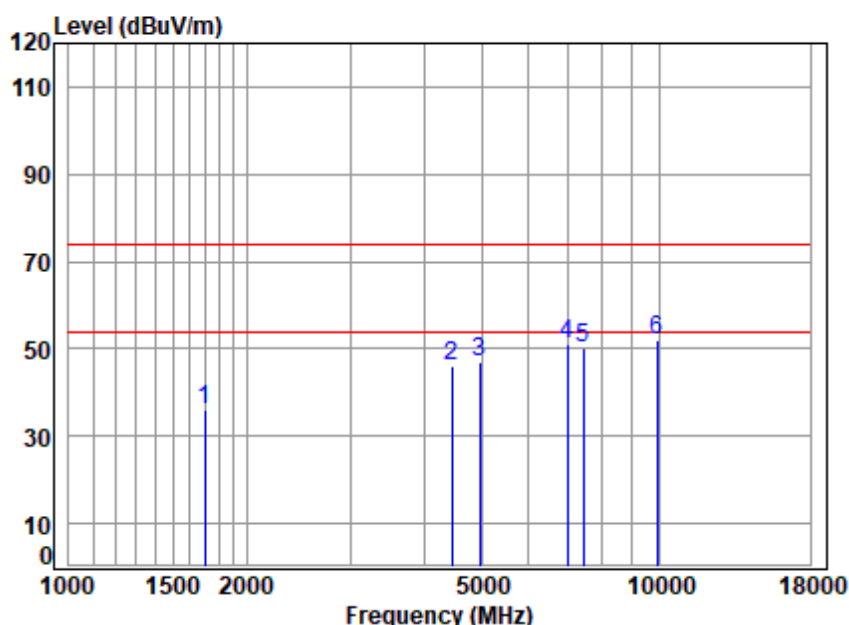
Test Mode: 02; Polarity: Horizontal; Modulation:GFSK; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12189CR
Mode : 2402 TX SE
Note : BLE 1M

| | | Cable | Ant | Preamp | Read | | Limit | Over | |
|---|----------|-------|--------|--------|-------|--------|--------|--------|--------|
| | Freq | Loss | Factor | Factor | Level | Level | Line | Limit | Remark |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 1331.288 | 3.00 | 25.15 | 39.85 | 50.59 | 38.89 | 74.00 | -35.11 | peak |
| 2 | 4482.150 | 6.74 | 33.57 | 41.86 | 47.40 | 45.85 | 74.00 | -28.15 | peak |
| 3 | 4960.000 | 7.26 | 34.15 | 42.27 | 46.41 | 45.55 | 74.00 | -28.45 | peak |
| 4 | 5330.928 | 7.89 | 34.47 | 42.34 | 51.26 | 51.28 | 74.00 | -22.72 | peak |
| 5 | 7440.000 | 8.96 | 36.25 | 41.29 | 45.89 | 49.81 | 74.00 | -24.19 | peak |
| 6 | 9920.000 | 10.71 | 37.85 | 37.23 | 40.66 | 51.99 | 74.00 | -22.01 | peak |

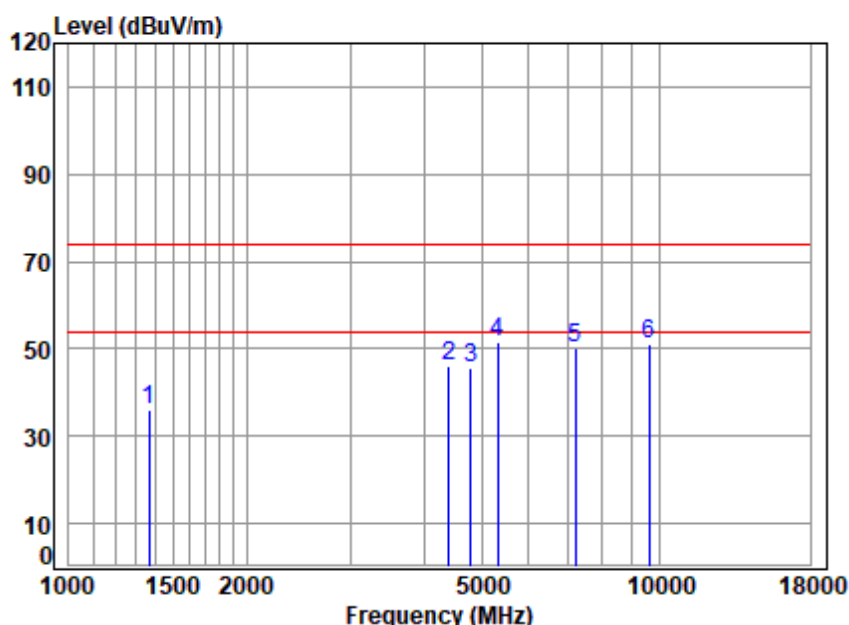
Test Mode: 02; Polarity: Vertical; Modulation:GFSK; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 12189CR
Mode : 2402 TX SE
Note : BLE 1M

| | Freq | Cable Loss | Ant Factor | Preamp Factor | Read Level | Level | Limit | Over | Remark |
|---|----------|------------|------------|---------------|------------|--------|--------|--------|--------|
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 1697.129 | 3.43 | 26.66 | 40.06 | 45.91 | 35.94 | 74.00 | -38.06 | peak |
| 2 | 4456.315 | 6.72 | 33.53 | 41.84 | 47.70 | 46.11 | 74.00 | -27.89 | peak |
| 3 | 4960.000 | 7.26 | 34.15 | 42.27 | 47.68 | 46.82 | 74.00 | -27.18 | peak |
| 4 | 6974.982 | 8.53 | 35.89 | 41.72 | 48.24 | 50.94 | 74.00 | -23.06 | peak |
| 5 | 7440.000 | 8.96 | 36.25 | 41.29 | 46.21 | 50.13 | 74.00 | -23.87 | peak |
| 6 | 9920.000 | 10.71 | 37.85 | 37.23 | 40.88 | 52.21 | 74.00 | -21.79 | peak |

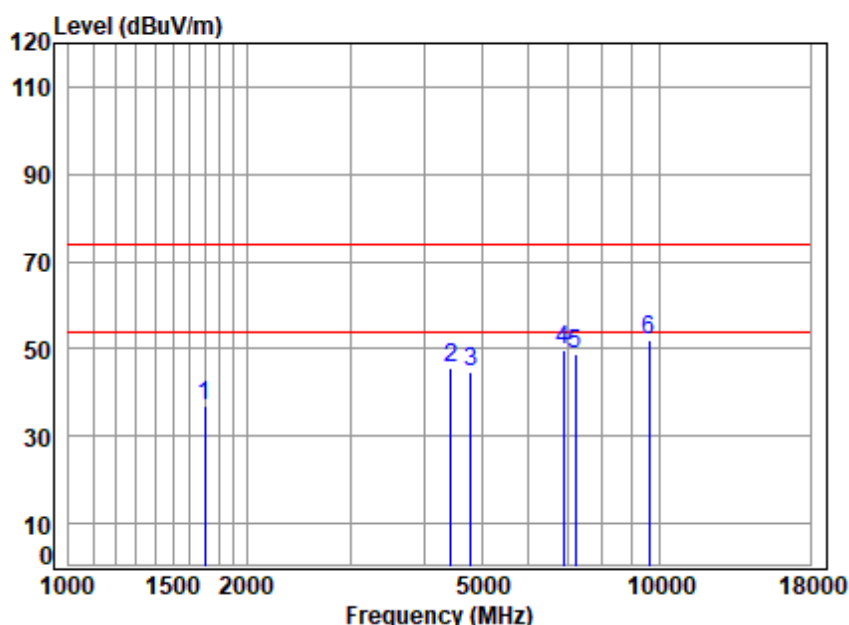
Test Mode: 03; Polarity: Horizontal; Modulation:GFSK; Channel:Low



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12189CR
Mode : 2402 TX SE
Note : BLE 2M

| | Freq | Cable Loss | Ant Factor | Preamp Factor | Read Level | Level | Limit | Over Limit | Remark |
|---|----------|------------|------------|---------------|------------|--------|--------|------------|--------|
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 1366.374 | 3.05 | 25.29 | 39.87 | 47.76 | 36.23 | 74.00 | -37.77 | peak |
| 2 | 4405.090 | 6.67 | 33.44 | 41.79 | 47.89 | 46.21 | 74.00 | -27.79 | peak |
| 3 | 4804.000 | 7.10 | 33.97 | 42.14 | 46.49 | 45.42 | 74.00 | -28.58 | peak |
| 4 | 5330.928 | 7.89 | 34.47 | 42.34 | 51.39 | 51.41 | 74.00 | -22.59 | peak |
| 5 | 7206.000 | 8.74 | 36.07 | 41.50 | 46.77 | 50.08 | 74.00 | -23.92 | peak |
| 6 | 9608.000 | 10.81 | 37.67 | 37.76 | 40.46 | 51.18 | 74.00 | -22.82 | peak |

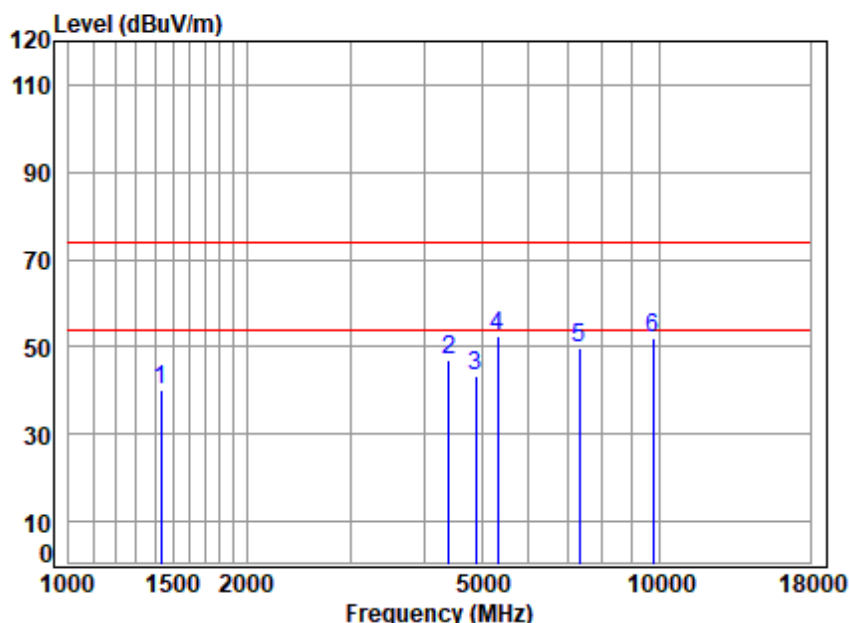
Test Mode: 03; Polarity: Vertical; Modulation:GFSK; Channel:Low



Site : chamber
Condition: 3m VERTICAL
Job No : 12189CR
Mode : 2402 TX SE
Note : BLE 2M

| | | Cable | Ant | Preamp | Read | | Limit | Over | |
|---|----------|-------|--------|--------|-------|--------|--------|--------|--------|
| | Freq | Loss | Factor | Factor | Level | Level | Line | Limit | Remark |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 1697.129 | 3.43 | 26.66 | 40.06 | 47.04 | 37.07 | 74.00 | -36.93 | peak |
| 2 | 4430.628 | 6.70 | 33.48 | 41.81 | 47.05 | 45.42 | 74.00 | -28.58 | peak |
| 3 | 4804.000 | 7.10 | 33.97 | 42.14 | 45.83 | 44.76 | 74.00 | -29.24 | peak |
| 4 | 6874.906 | 8.48 | 35.83 | 41.78 | 46.99 | 49.52 | 74.00 | -24.48 | peak |
| 5 | 7206.000 | 8.74 | 36.07 | 41.50 | 45.41 | 48.72 | 74.00 | -25.28 | peak |
| 6 | 9608.000 | 10.81 | 37.67 | 37.76 | 41.20 | 51.92 | 74.00 | -22.08 | peak |

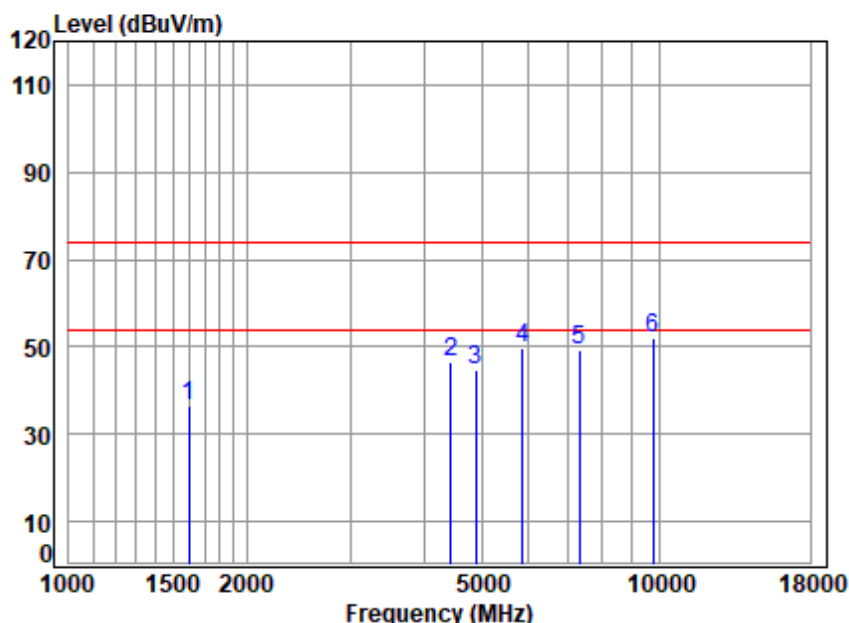
Test Mode: 03; Polarity: Horizontal; Modulation:GFSK; Channel:middle



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12189CR
Mode : 2402 TX SE
Note : BLE 2M

| | | Cable | Ant | Preamp | Read | | Limit | Over | |
|---|----------|-------|--------|--------|-------|--------|--------|--------|--------|
| | Freq | Loss | Factor | Factor | Level | Level | Line | Limit | Remark |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 1435.189 | 3.16 | 25.56 | 39.91 | 51.45 | 40.26 | 74.00 | -33.74 | peak |
| 2 | 4405.090 | 6.67 | 33.44 | 41.79 | 48.53 | 46.85 | 74.00 | -27.15 | peak |
| 3 | 4880.000 | 7.18 | 34.06 | 42.20 | 44.28 | 43.32 | 74.00 | -30.68 | peak |
| 4 | 5330.928 | 7.89 | 34.47 | 42.34 | 52.65 | 52.67 | 74.00 | -21.33 | peak |
| 5 | 7320.000 | 8.84 | 36.16 | 41.40 | 46.28 | 49.88 | 74.00 | -24.12 | peak |
| 6 | 9760.000 | 10.76 | 37.76 | 37.50 | 40.90 | 51.92 | 74.00 | -22.08 | peak |

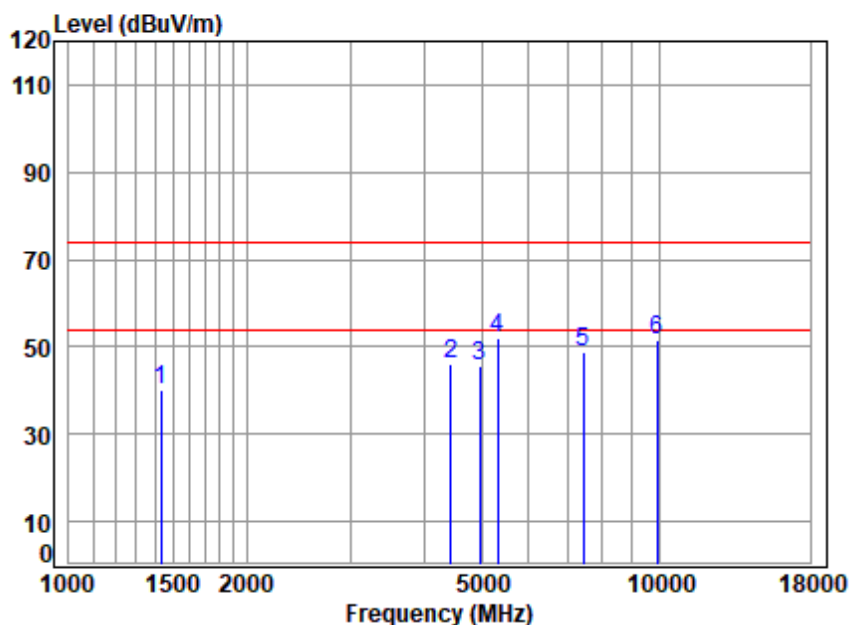
Test Mode: 03; Polarity: Vertical; Modulation: GFSK; Channel: middle



Site : chamber
Condition: 3m VERTICAL
Job No : 12189CR
Mode : 2402 TX SE
Note : BLE 2M

| | Freq | Cable Loss | Ant Factor | Preamp Factor | Read Level | Level | Limit | Over | Remark |
|---|----------|------------|------------|---------------|------------|--------|--------|--------|--------|
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 1597.181 | 3.35 | 26.24 | 40.01 | 46.80 | 36.38 | 74.00 | -37.62 | peak |
| 2 | 4443.453 | 6.71 | 33.50 | 41.82 | 47.92 | 46.31 | 74.00 | -27.69 | peak |
| 3 | 4880.000 | 7.18 | 34.06 | 42.20 | 45.90 | 44.94 | 74.00 | -29.06 | peak |
| 4 | 5864.443 | 8.24 | 34.97 | 42.39 | 48.88 | 49.70 | 74.00 | -24.30 | peak |
| 5 | 7320.000 | 8.84 | 36.16 | 41.40 | 45.50 | 49.10 | 74.00 | -24.90 | peak |
| 6 | 9760.000 | 10.76 | 37.76 | 37.50 | 41.22 | 52.24 | 74.00 | -21.76 | peak |

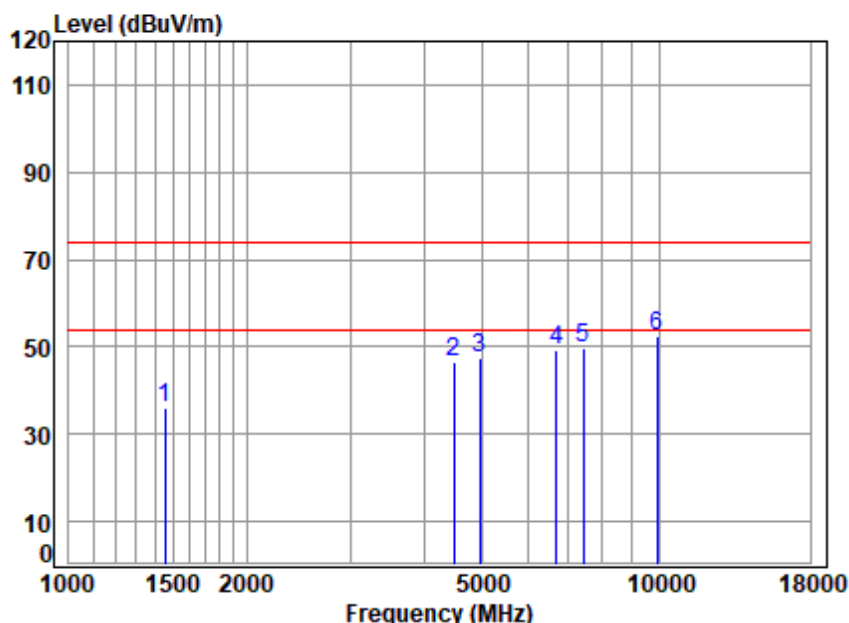
Test Mode: 03; Polarity: Horizontal; Modulation:GFSK; Channel:High



Site : chamber
Condition: 3m HORIZONTAL
Job No : 12189CR
Mode : 2402 TX SE
Note : BLE 2M

| | | Cable | Ant | Preamp | Read | | Limit | Over | |
|---|----------|-------|--------|--------|-------|--------|--------|--------|--------|
| | Freq | Loss | Factor | Factor | Level | Level | Line | Limit | Remark |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 1431.047 | 3.16 | 25.54 | 39.91 | 51.18 | 39.97 | 74.00 | -34.03 | peak |
| 2 | 4430.628 | 6.70 | 33.48 | 41.81 | 47.82 | 46.19 | 74.00 | -27.81 | peak |
| 3 | 4960.000 | 7.26 | 34.15 | 42.27 | 46.62 | 45.76 | 74.00 | -28.24 | peak |
| 4 | 5330.928 | 7.89 | 34.47 | 42.34 | 52.19 | 52.21 | 74.00 | -21.79 | peak |
| 5 | 7440.000 | 8.96 | 36.25 | 41.29 | 44.76 | 48.68 | 74.00 | -25.32 | peak |
| 6 | 9920.000 | 10.71 | 37.85 | 37.23 | 40.28 | 51.61 | 74.00 | -22.39 | peak |

Test Mode: 03; Polarity: Vertical; Modulation:GFSK; Channel:High



Site : chamber
Condition: 3m VERTICAL
Job No : 12189CR
Mode : 2402 TX SE
Note : BLE 2M

| | | Cable | Ant | Preamp | Read | | Limit | Over | |
|---|----------|-------|--------|--------|-------|--------|--------|--------|--------|
| | Freq | Loss | Factor | Factor | Level | Level | Line | Limit | Remark |
| | MHz | dB | dB/m | dB | dBuV | dBuV/m | dBuV/m | dB | |
| 1 | 1456.081 | 3.19 | 25.64 | 39.93 | 47.28 | 36.18 | 74.00 | -37.82 | peak |
| 2 | 4495.125 | 6.76 | 33.59 | 41.87 | 48.22 | 46.70 | 74.00 | -27.30 | peak |
| 3 | 4960.000 | 7.26 | 34.15 | 42.27 | 48.20 | 47.34 | 74.00 | -26.66 | peak |
| 4 | 6698.373 | 8.39 | 35.72 | 41.90 | 47.13 | 49.34 | 74.00 | -24.66 | peak |
| 5 | 7440.000 | 8.96 | 36.25 | 41.29 | 45.82 | 49.74 | 74.00 | -24.26 | peak |
| 6 | 9920.000 | 10.71 | 37.85 | 37.23 | 41.11 | 52.44 | 74.00 | -21.56 | peak |



8 Emission Test Results

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

Test Requirement: 47 CFR Part 15, Subpart C 15.247 , 15.207

Test Method: ANSI C63.10 (2013) Section 6.2

Limit:

0.15M-0.5MHz 66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average

0.5M-5MHz 56dB(μV) quasi-peak, 46dB(μV) average

5M-30MHz 60dB(μV) quasi-peak, 50dB(μV) average

Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

8.1.1 E.U.T. Operation

Operating Environment:

Temperature: 23.6 °C

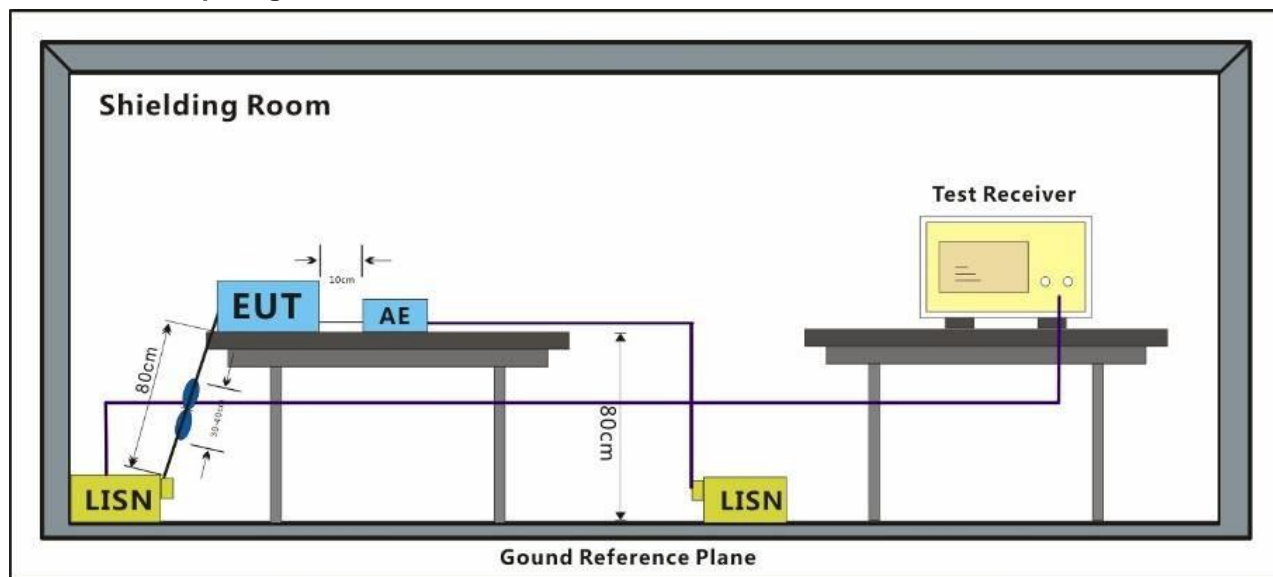
Humidity: 52.9 % RH

Atmospheric Pressure: 1010 mbar

8.1.2 Test Mode Description

| Pre-scan / Final test | Mode Code | Description |
|--------------------------|-----------|---|
| Final test | 02 | TX mode(1Mb/s)_Keep the EUT in continuously transmitting mode with GFSK modulation. |
| Pre-scan | 03 | TX mode(2Mb/s)_Keep the EUT in continuously transmitting mode with GFSK modulation. |

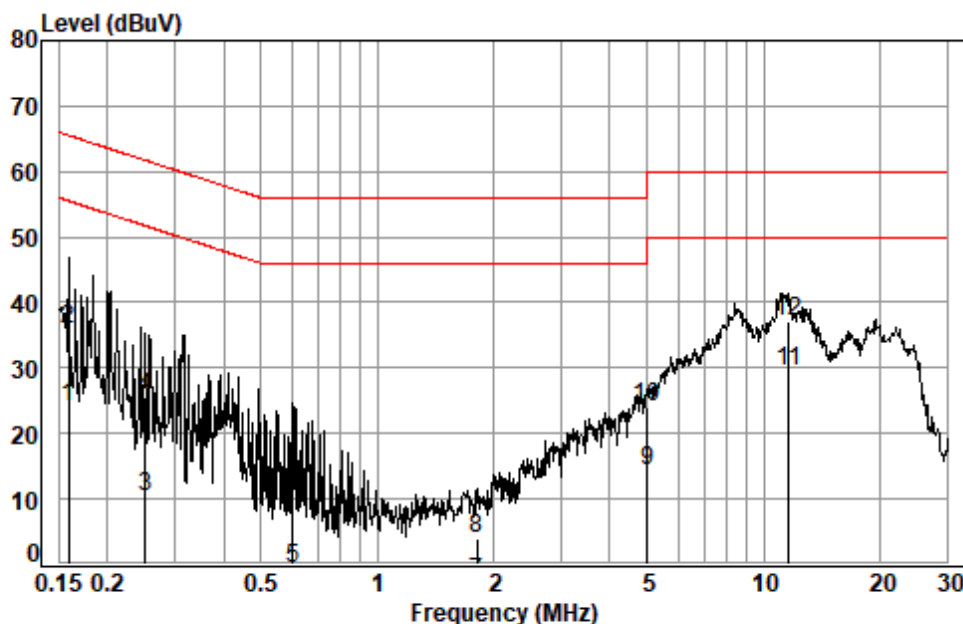
8.1.3 Test Setup Diagram



8.1.4 Measurement Procedure and Data

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.

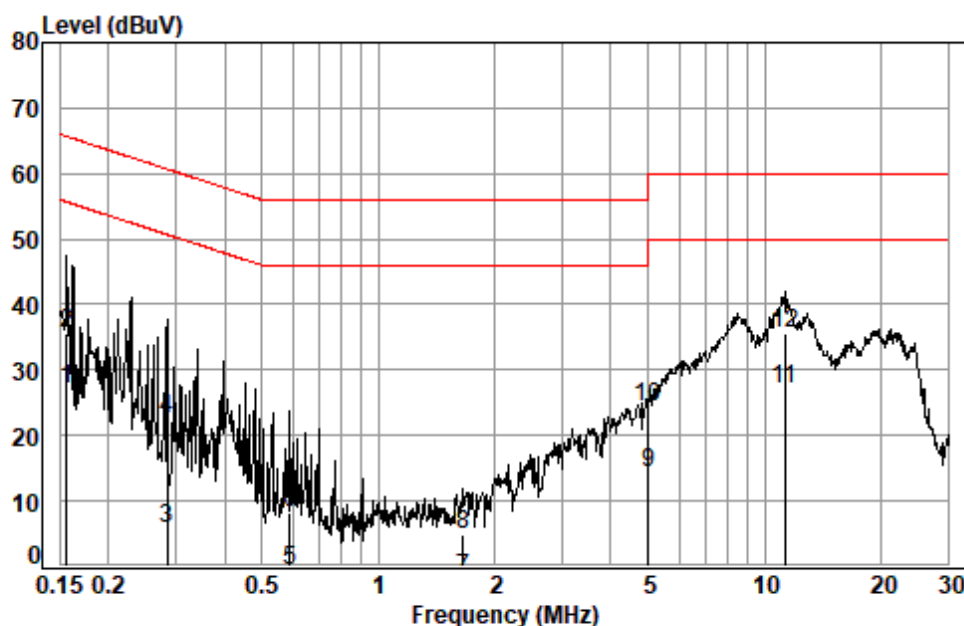
Test Mode: 02; Line: Live line; Modulation: GFSK; Channel: Low



Site : Shielding Room
Condition: Line
Job No. : 12189CR
Test mode: 02

| | Freq | Cable Loss | LISN Factor | Read Level | Limit Line | Over Limit | Remark |
|----|---------|------------|-------------|------------|------------|------------|---------|
| | MHz | dB | dB | dBuV | dBuV | dB | |
| 1 | 0.1590 | 0.03 | 9.70 | 14.22 | 23.95 | 55.52 | Average |
| 2 | 0.1590 | 0.03 | 9.70 | 26.15 | 35.88 | 65.52 | QP |
| 3 | 0.2508 | 0.05 | 9.74 | 0.58 | 10.37 | 51.73 | Average |
| 4 | 0.2508 | 0.05 | 9.74 | 15.66 | 25.45 | 61.73 | QP |
| 5 | 0.6043 | 0.08 | 9.77 | -10.42 | -0.57 | 46.00 | Average |
| 6 | 0.6043 | 0.08 | 9.77 | 0.35 | 10.20 | 56.00 | QP |
| 7 | 1.8096 | 0.12 | 9.81 | -12.61 | -2.68 | 46.00 | Average |
| 8 | 1.8096 | 0.12 | 9.81 | -6.00 | 3.93 | 56.00 | QP |
| 9 | 5.0046 | 0.16 | 9.93 | 4.07 | 14.16 | 50.00 | Average |
| 10 | 5.0046 | 0.16 | 9.93 | 14.05 | 24.14 | 60.00 | QP |
| 11 | 11.6208 | 0.16 | 10.31 | 19.15 | 29.62 | 50.00 | Average |
| 12 | 11.6208 | 0.16 | 10.31 | 26.59 | 37.06 | 60.00 | QP |

Test Mode: 02; Line: Neutral Line; Modulation:GFSK; Channel:Low



Site : Shielding Room
Condition: Neutral
Job No. : 12189CR
Test mode: 02

| | Freq | Cable Loss | LISN Factor | Read Level | Limit Line | Over Limit | Remark |
|----|---------|------------|-------------|------------|------------|------------|---------|
| | MHz | dB | dB | dBuV | dBuV | dB | |
| 1 | 0.1565 | 0.03 | 9.71 | 17.46 | 27.20 | 55.65 | Average |
| 2 | 0.1565 | 0.03 | 9.71 | 25.76 | 35.50 | 65.65 | QP |
| 3 | 0.2848 | 0.05 | 9.74 | -3.87 | 5.92 | 50.68 | Average |
| 4 | 0.2848 | 0.05 | 9.74 | 12.80 | 22.59 | 60.68 | QP |
| 5 | 0.5916 | 0.08 | 9.77 | -10.60 | -0.75 | 46.00 | Average |
| 6 | 0.5916 | 0.08 | 9.77 | -1.70 | 8.15 | 56.00 | QP |
| 7 | 1.6625 | 0.12 | 9.80 | -11.72 | -1.80 | 46.00 | Average |
| 8 | 1.6625 | 0.12 | 9.80 | -4.99 | 4.93 | 56.00 | QP |
| 9 | 5.0046 | 0.16 | 9.93 | 4.32 | 14.41 | 50.00 | Average |
| 10 | 5.0046 | 0.16 | 9.93 | 14.29 | 24.38 | 60.00 | QP |
| 11 | 11.3170 | 0.16 | 10.30 | 16.71 | 27.17 | 50.00 | Average |
| 12 | 11.3170 | 0.16 | 10.30 | 25.06 | 35.52 | 60.00 | QP |



9 Test Setup Photo

Refer to Setup Photos

10 EUT Constructional Details (EUT Photos)

Refer to EUT external and internal photos



Unless otherwise agreed 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-Documents.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.
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

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

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com



11 Appendix

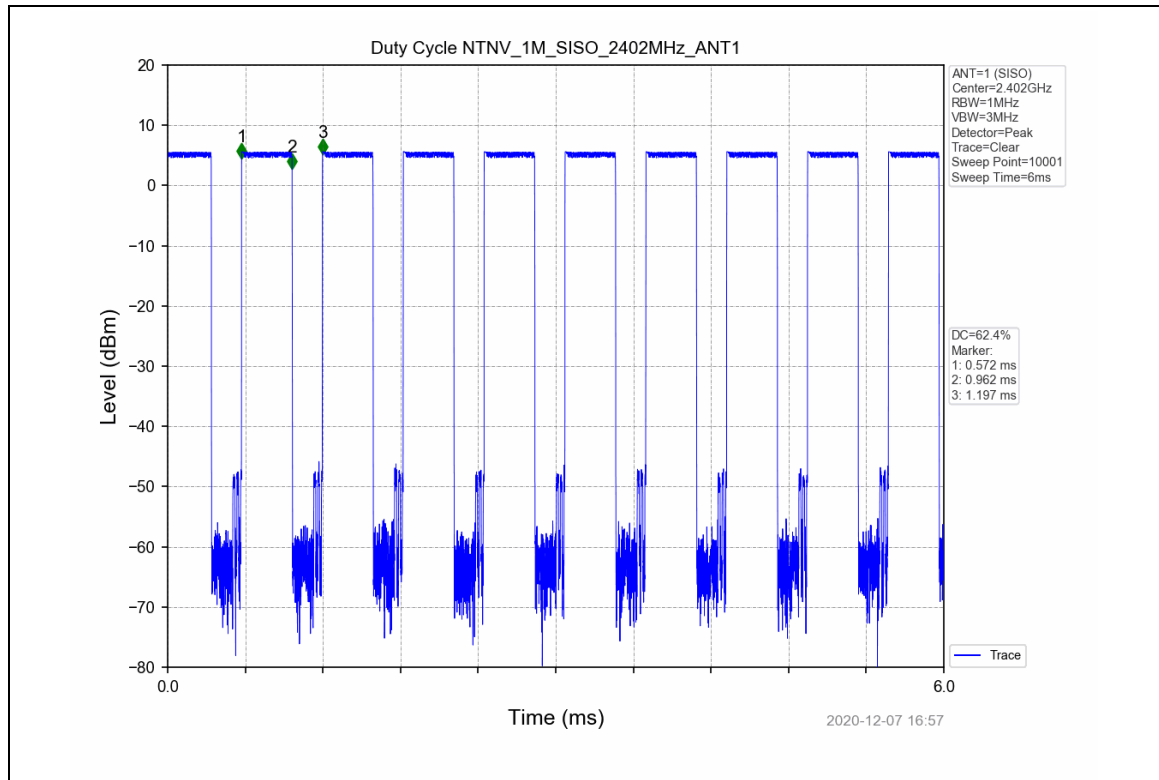
Appendix for 15.247

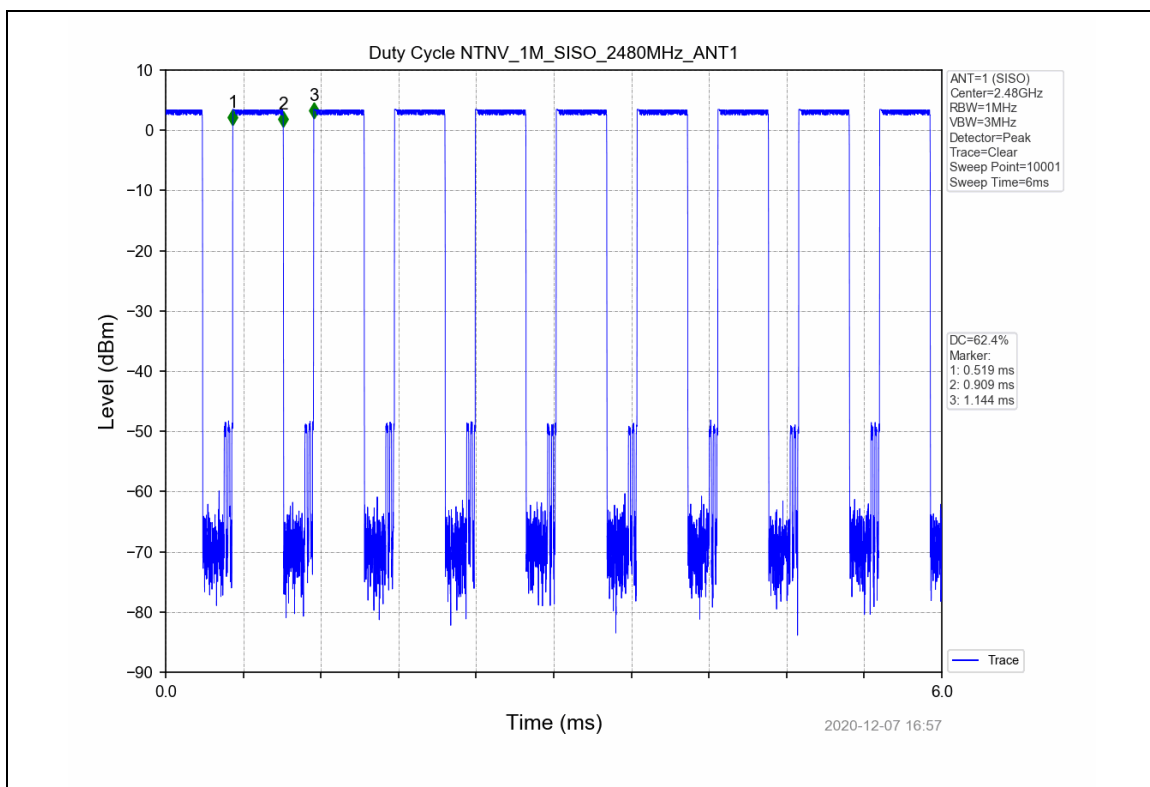
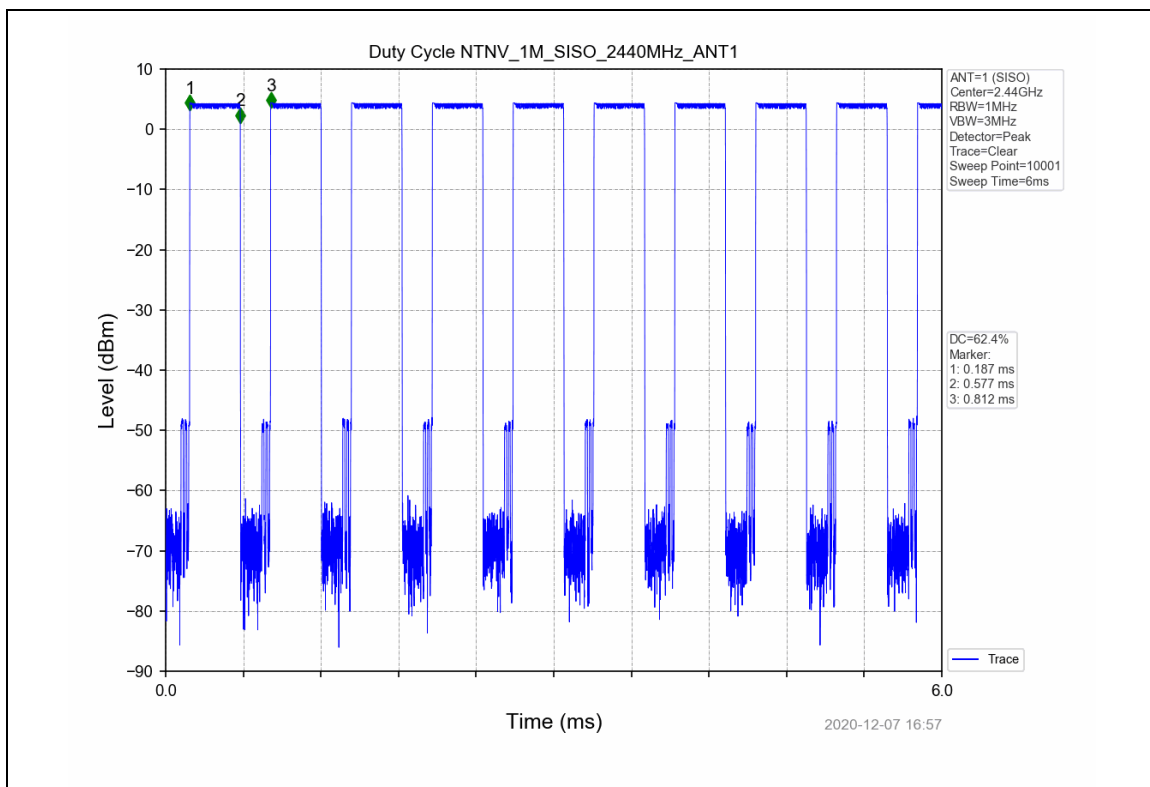
1. Duty Cycle

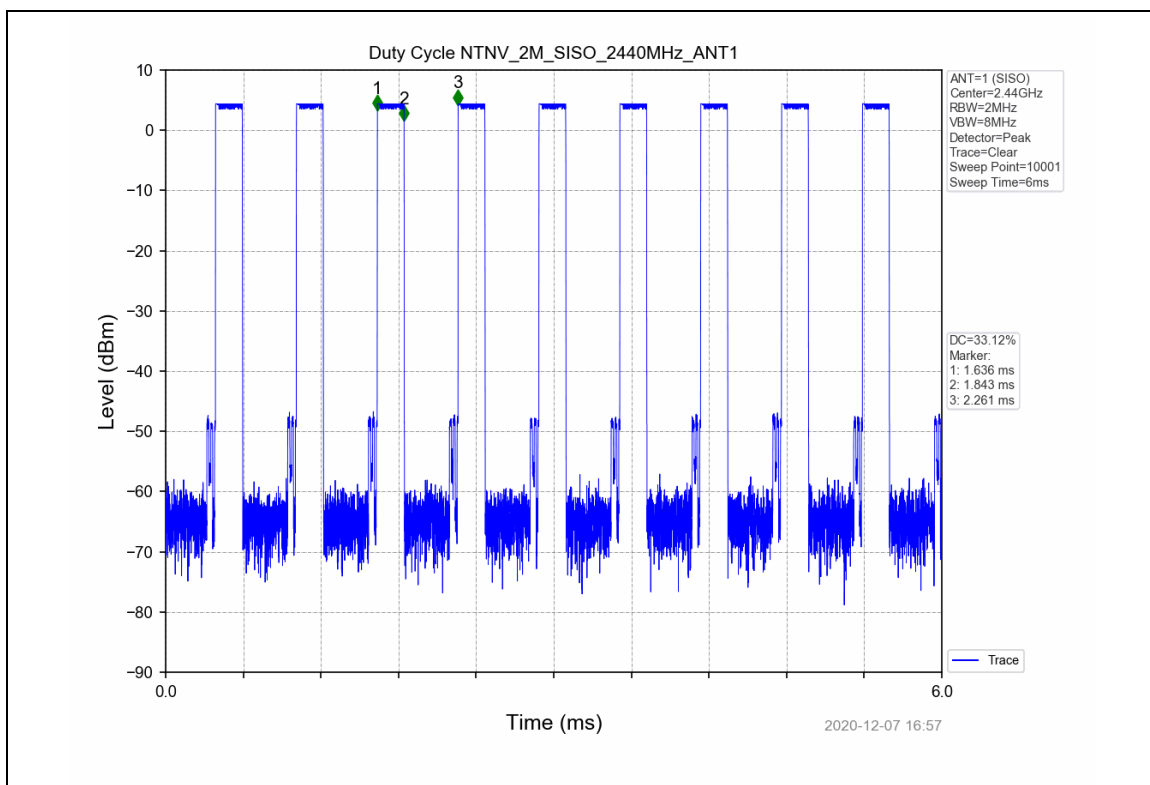
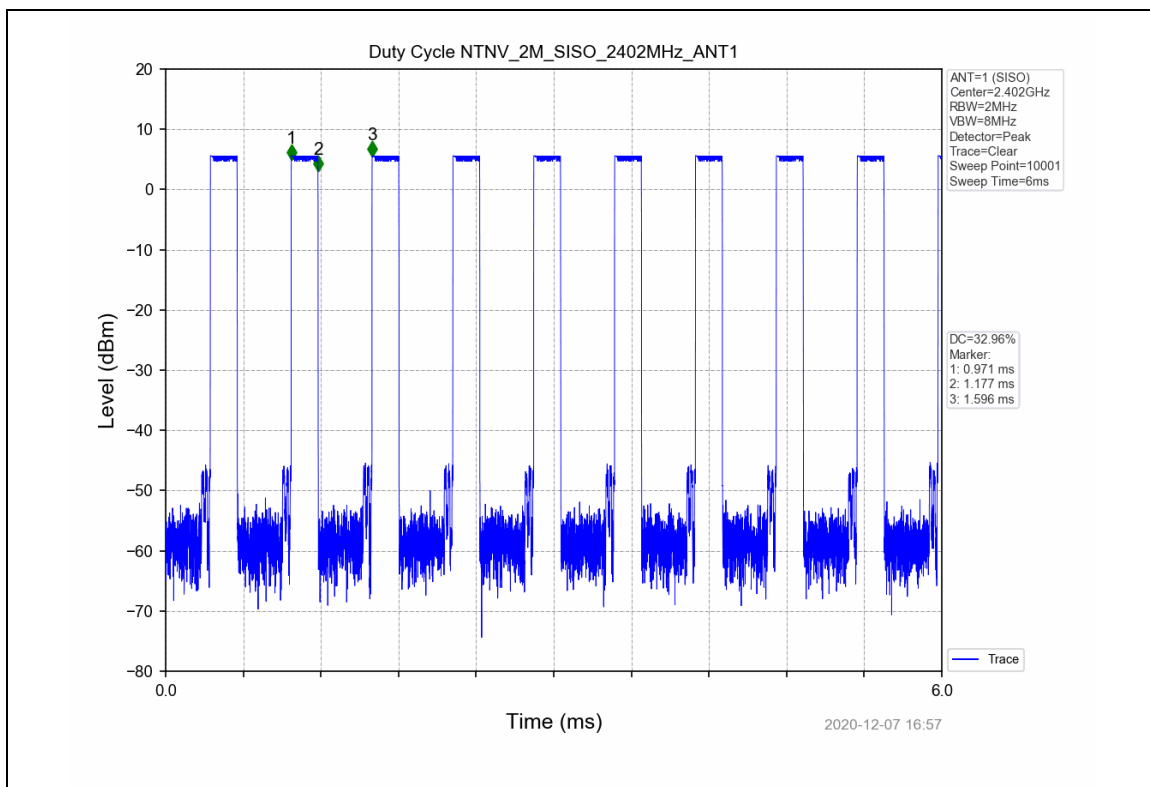
1.1 Test Result

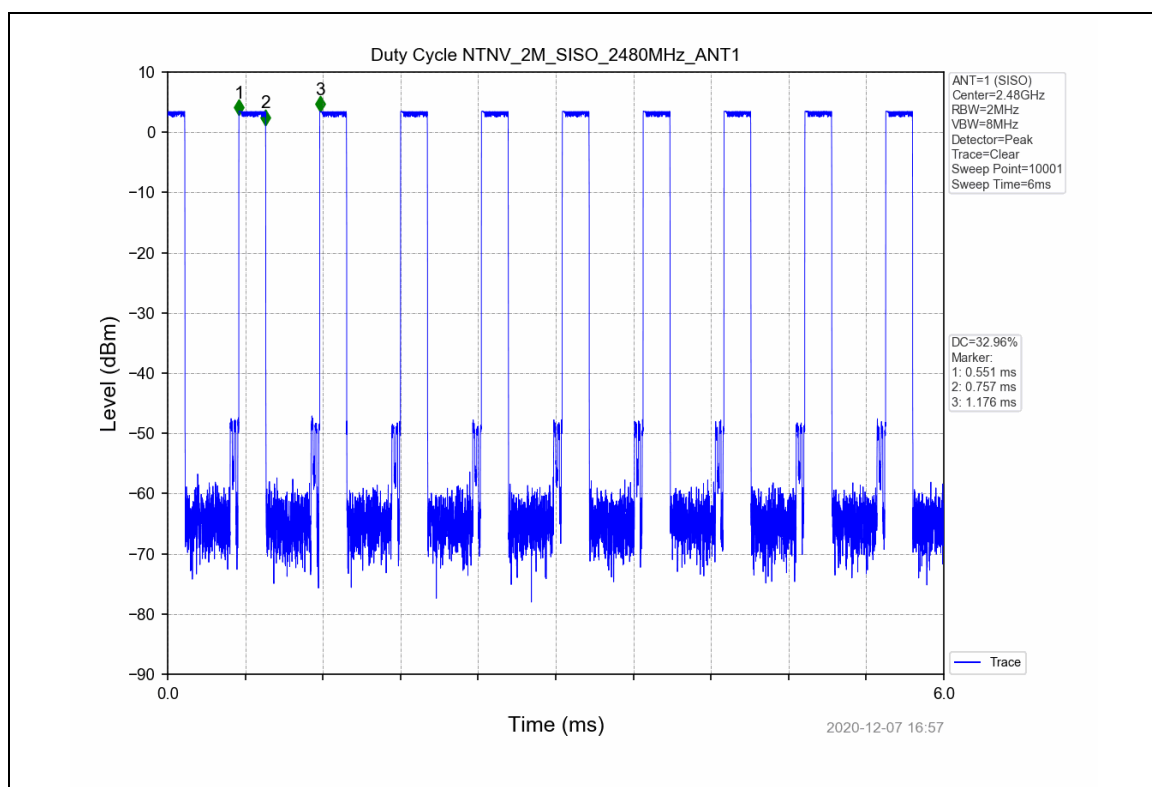
| Test Mode | Channel Frequency(MHz) | TX Type | ANT No. | T_on (ms) | Period (ms) | Duty Cycle (%) | Duty Cycle Correction Factor (dB) |
|-----------|------------------------|---------|---------|-----------|-------------|----------------|-----------------------------------|
| 1M | 2402 | SISO | 1 | 0.390 | 0.625 | 62.40 | 2.05 |
| | 2440 | SISO | 1 | 0.390 | 0.625 | 62.40 | 2.05 |
| | 2480 | SISO | 1 | 0.390 | 0.625 | 62.40 | 2.05 |
| 2M | 2402 | SISO | 1 | 0.206 | 0.625 | 32.96 | 4.82 |
| | 2440 | SISO | 1 | 0.207 | 0.625 | 33.12 | 4.80 |
| | 2480 | SISO | 1 | 0.206 | 0.625 | 32.96 | 4.82 |

1.2 Test Graph









2. Bandwidth

2.1 Test Result

| Test Mode | Frequency (MHz) | TX Type | ANT No. | 6dB Bandwidth | Verdict |
|-----------|-----------------|---------|---------|-------------------|---------|
| | | | | Test Result (MHz) | |
| 1M | 2402 | SISO | 1 | 0.666 | PASS |
| | 2440 | SISO | 1 | 0.677 | PASS |
| | 2480 | SISO | 1 | 0.679 | PASS |
| 2M | 2402 | SISO | 1 | 1.123 | PASS |
| | 2440 | SISO | 1 | 1.121 | PASS |
| | 2480 | SISO | 1 | 1.130 | PASS |

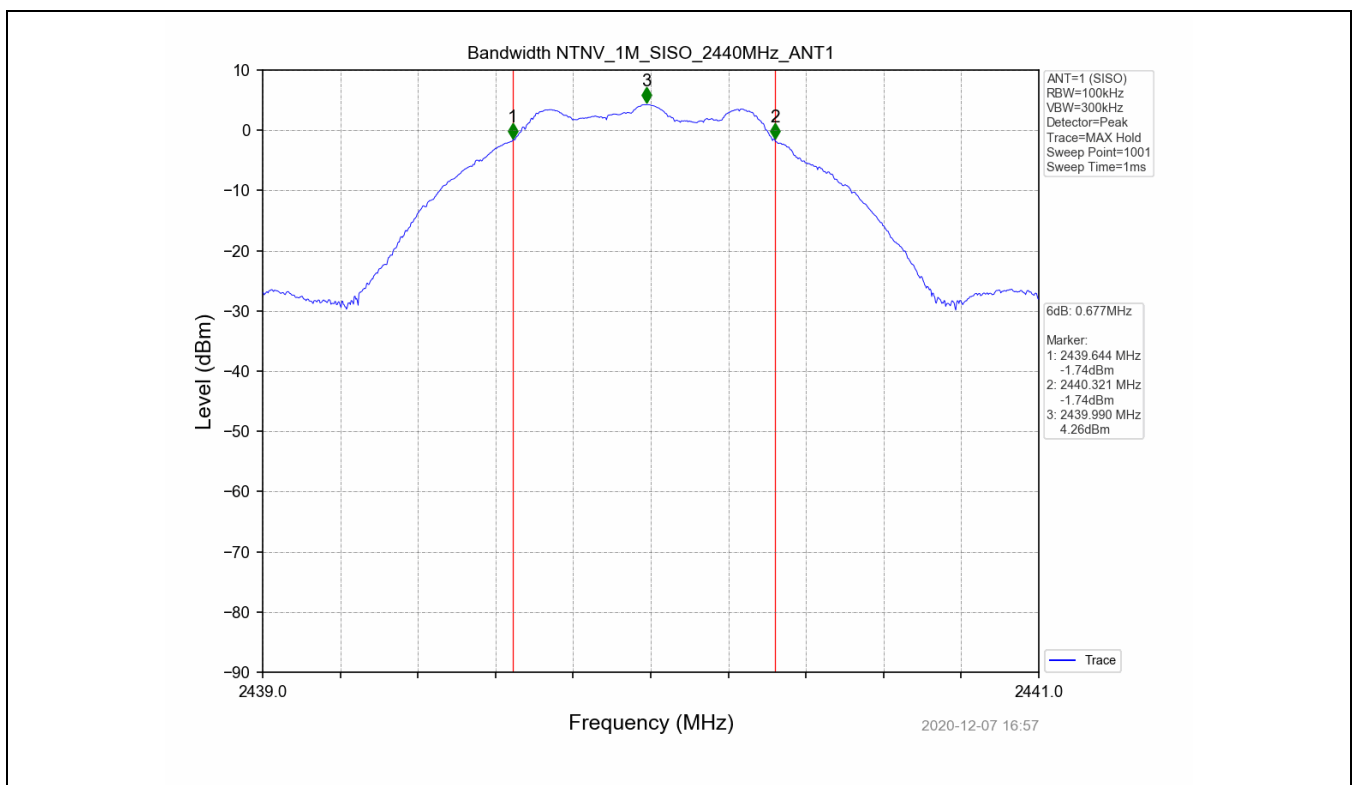
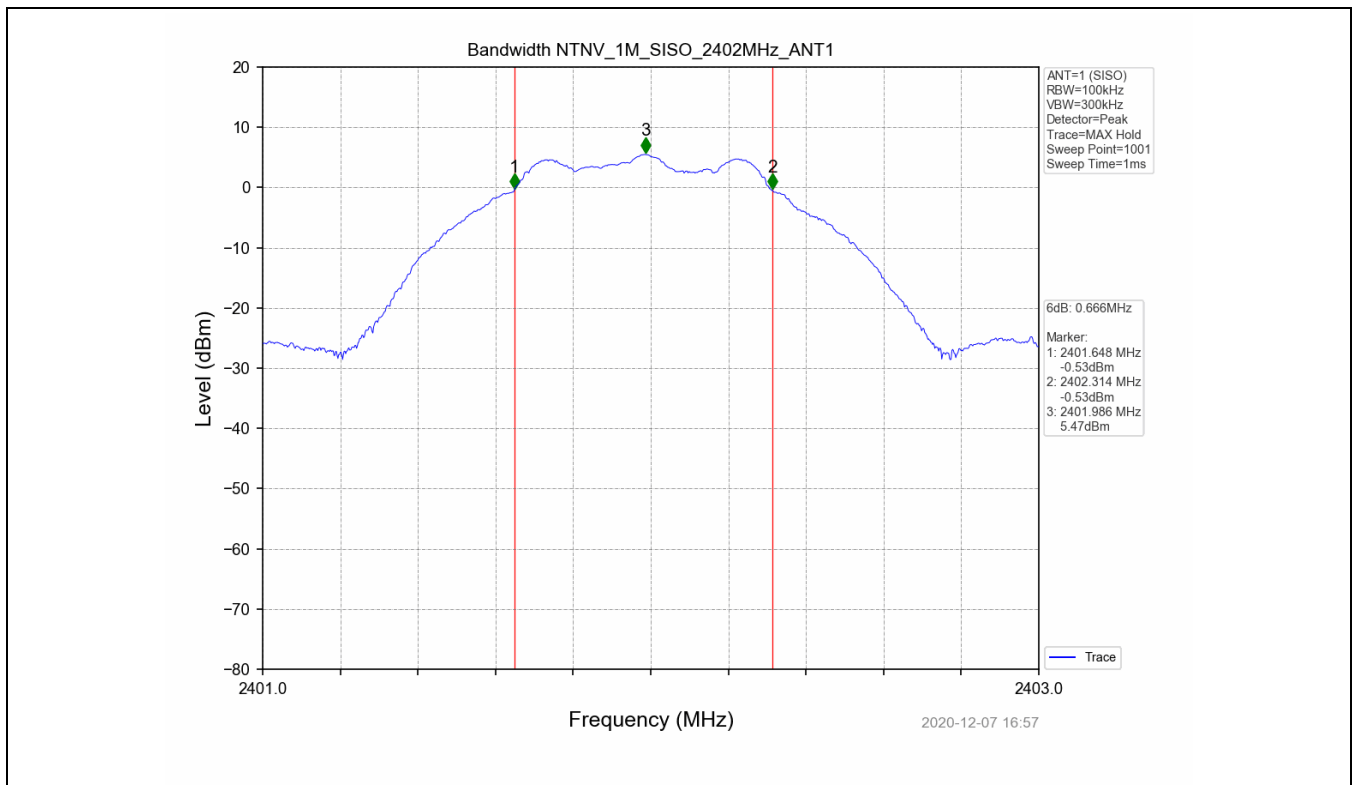
2.2 Test Graph - 6dB Bandwidth



Unless otherwise agreed 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-Documents.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.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 83071443, or email: CN.Doccheck@sgs.com

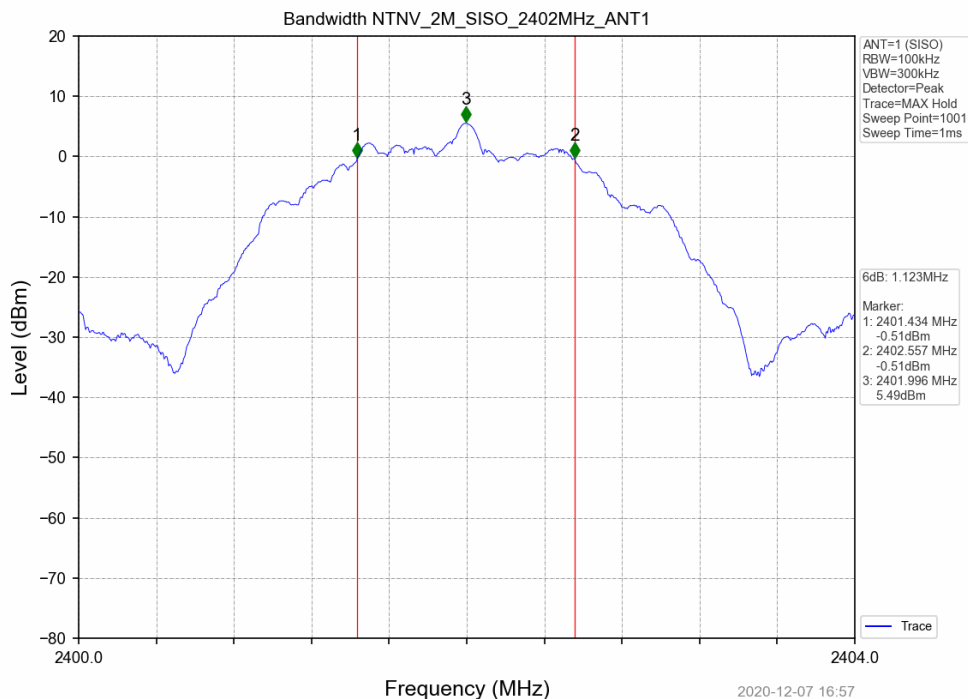
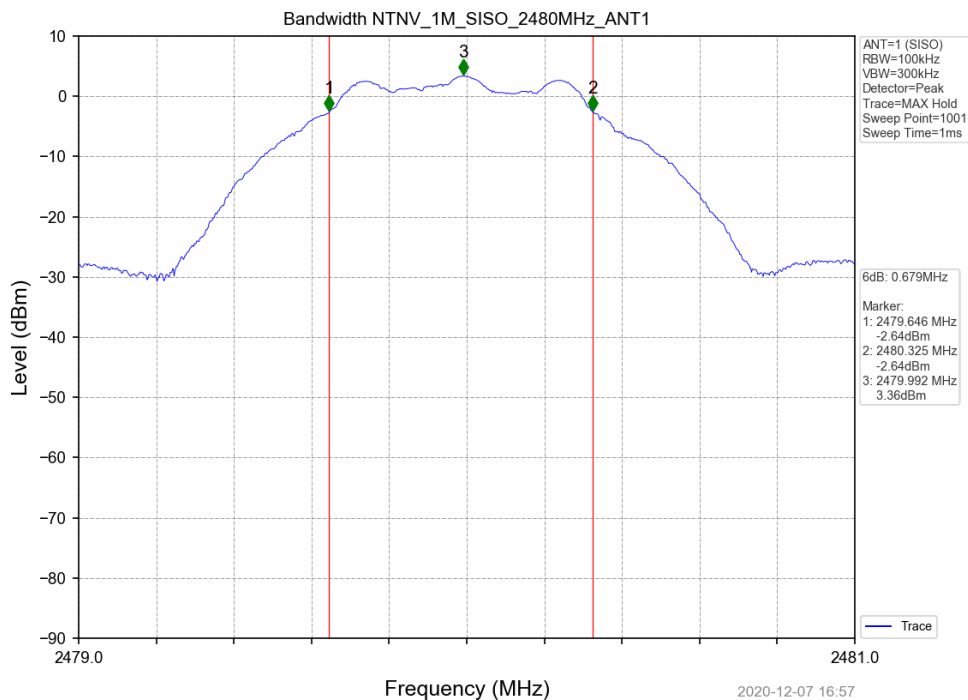
No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgs.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

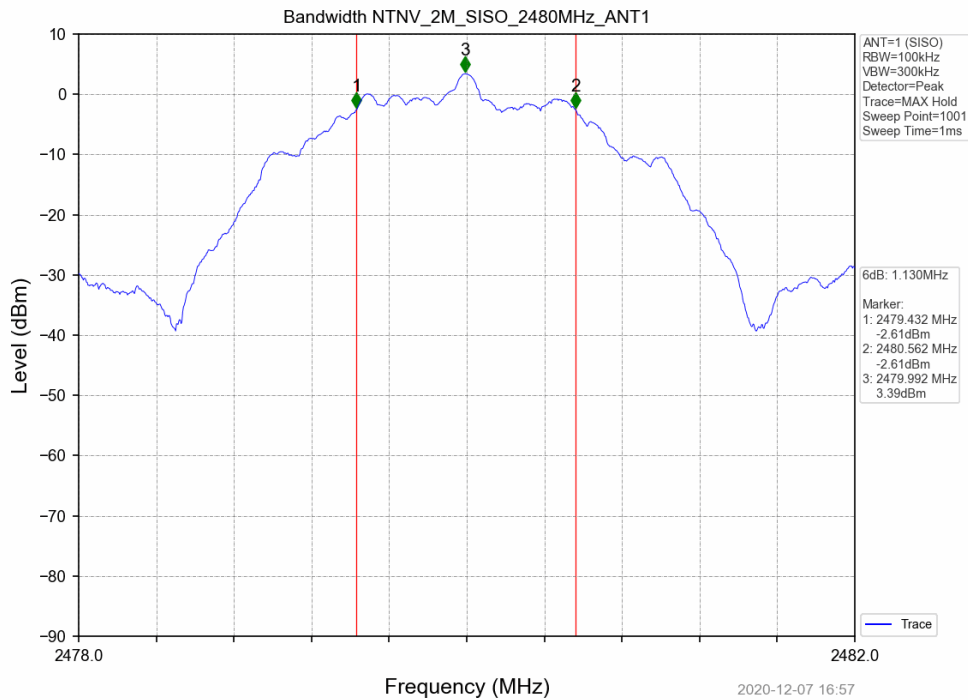
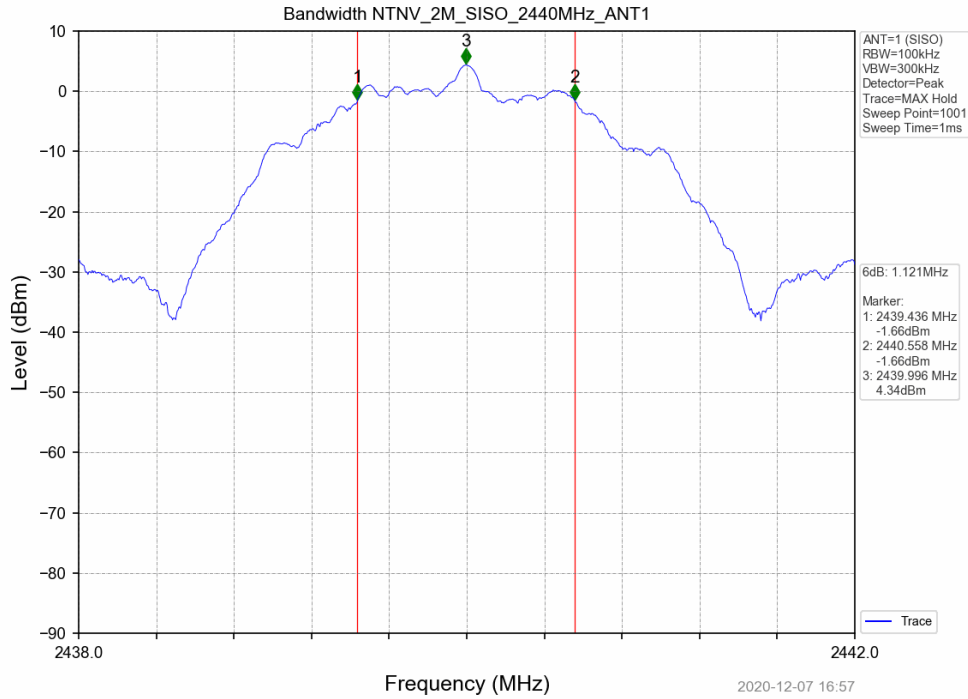


Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.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.

Attention: To check the authenticity of testing / inspection report and certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com





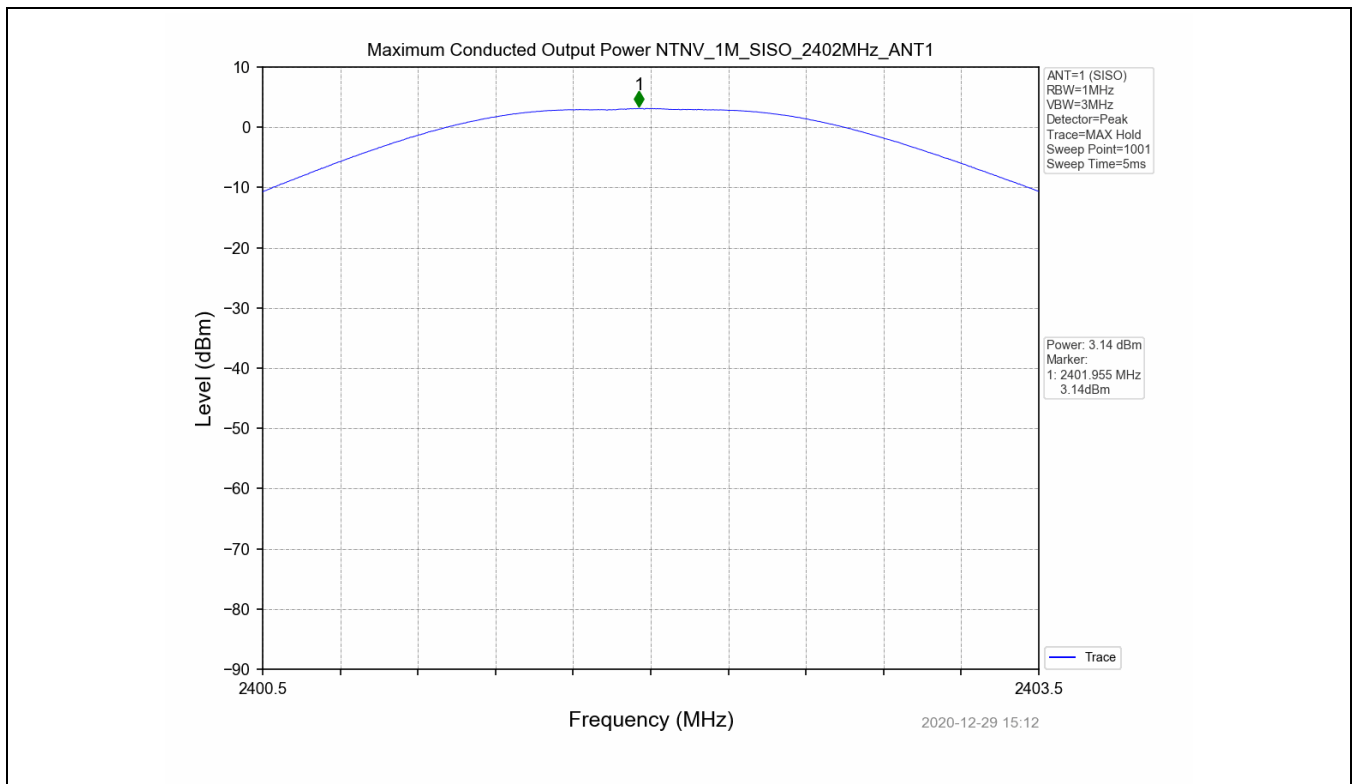


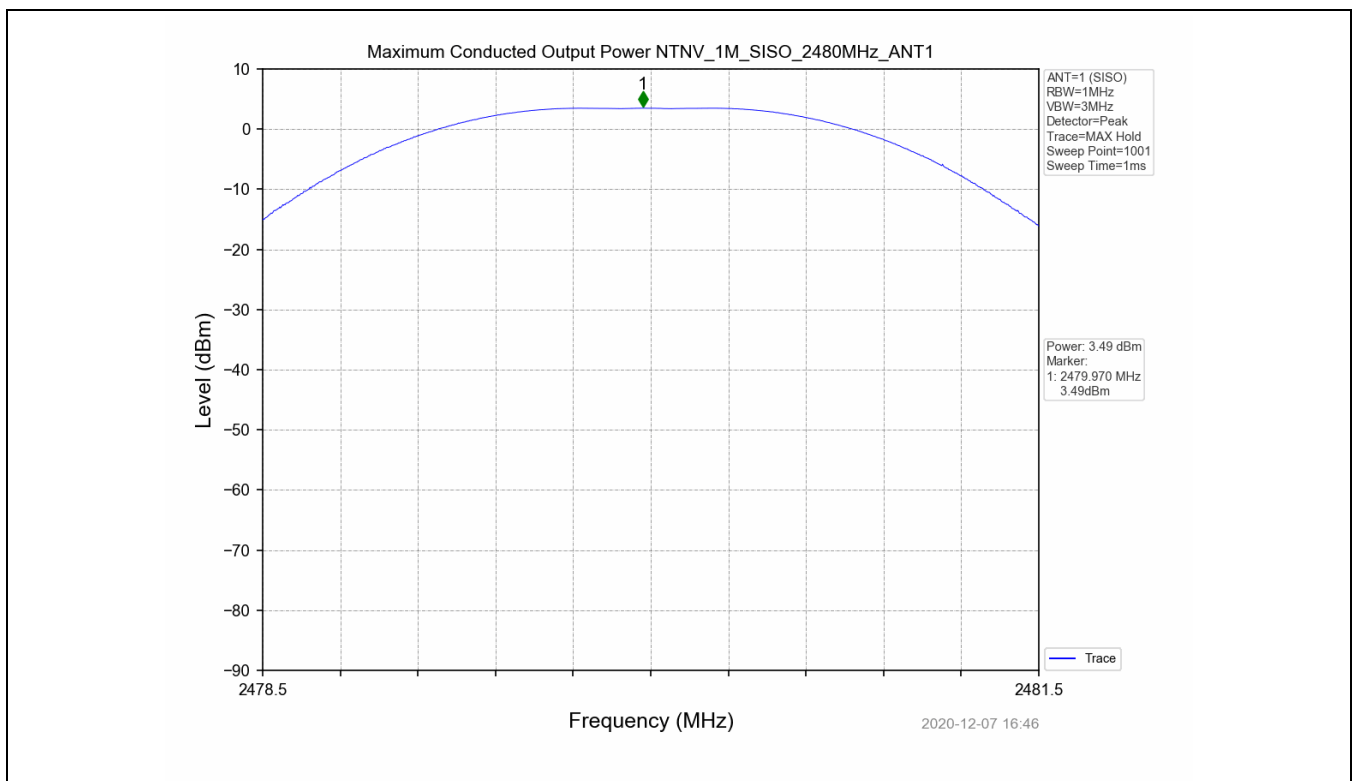
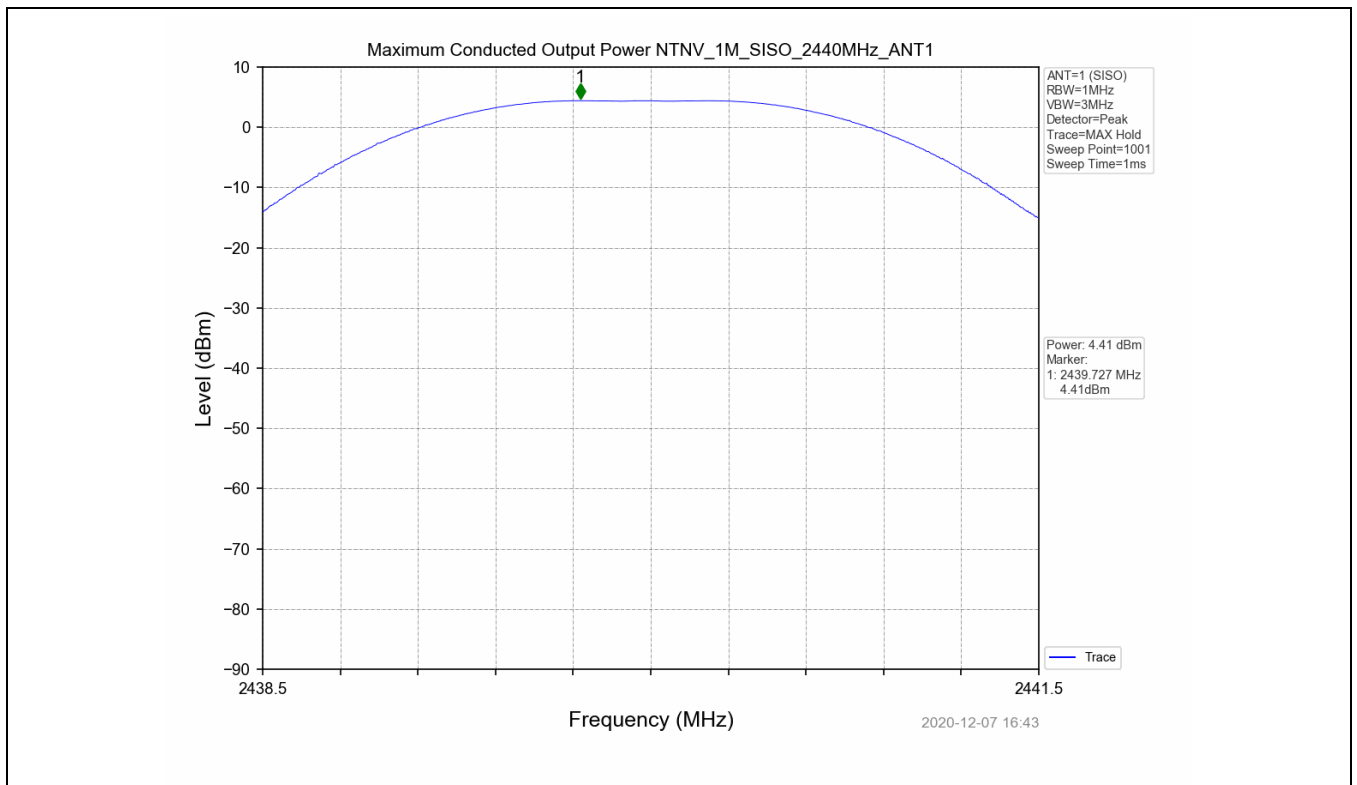
3. Maximum Conducted Output Power

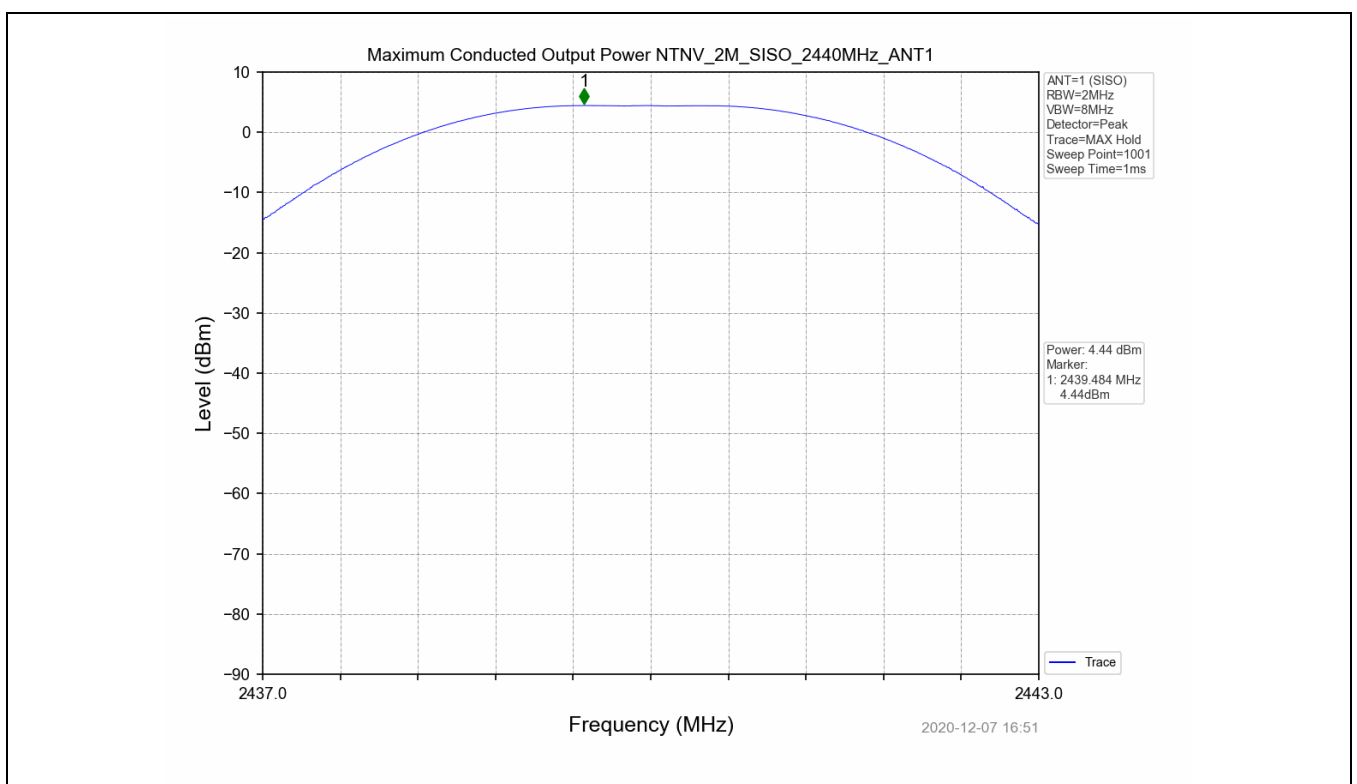
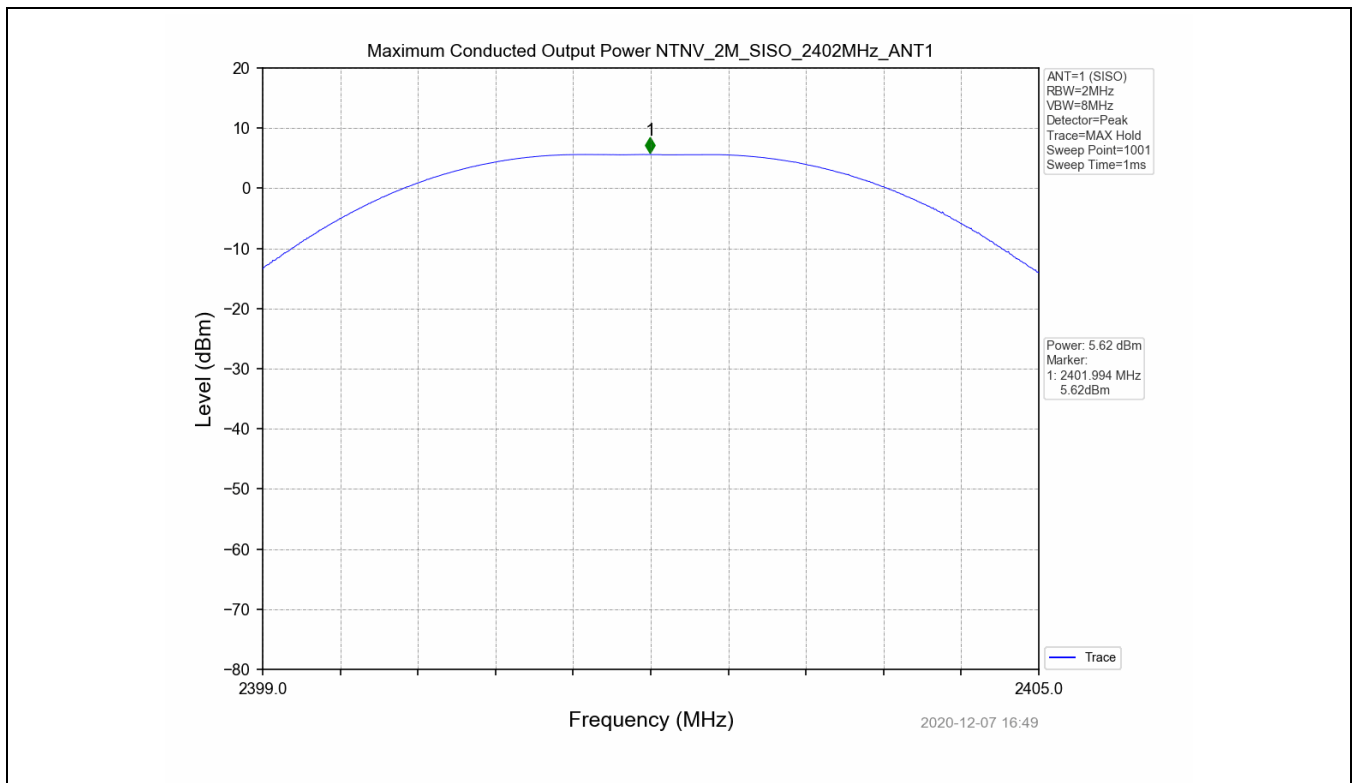
3.1 Test Result

| Test Mode | Frequency (MHz) | Tx Type | Measured Peak Output Power (dBm) | Limits (dBm) | Verdict |
|-----------|-----------------|---------|----------------------------------|--------------|---------|
| | | | Ant 1 | | |
| 1M | 2402 | SISO | 3.14 | 30 | PASS |
| | 2440 | SISO | 4.41 | 30 | PASS |
| | 2480 | SISO | 3.49 | 30 | PASS |
| 2M | 2402 | SISO | 5.62 | 30 | PASS |
| | 2440 | SISO | 4.44 | 30 | PASS |
| | 2480 | SISO | 3.51 | 30 | PASS |

3.2 Test Graph

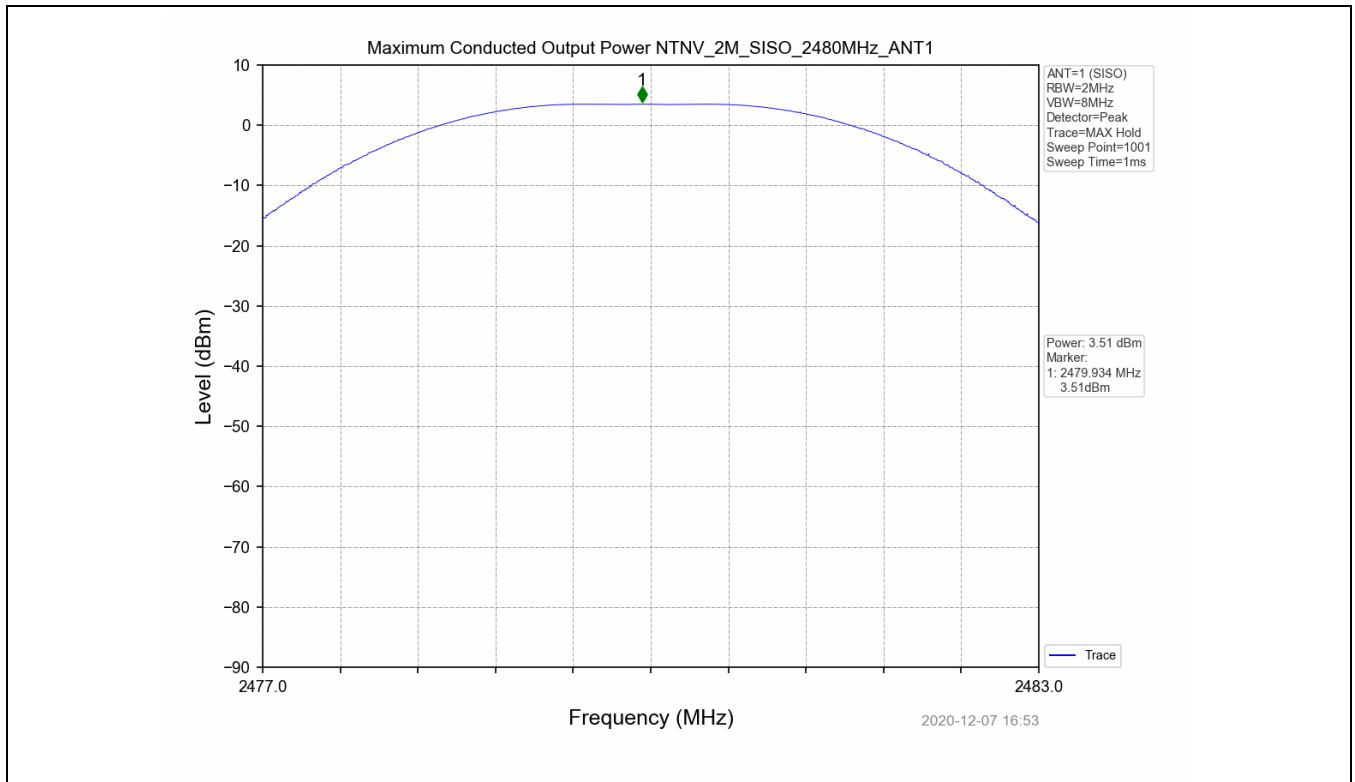






Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.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.

Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com



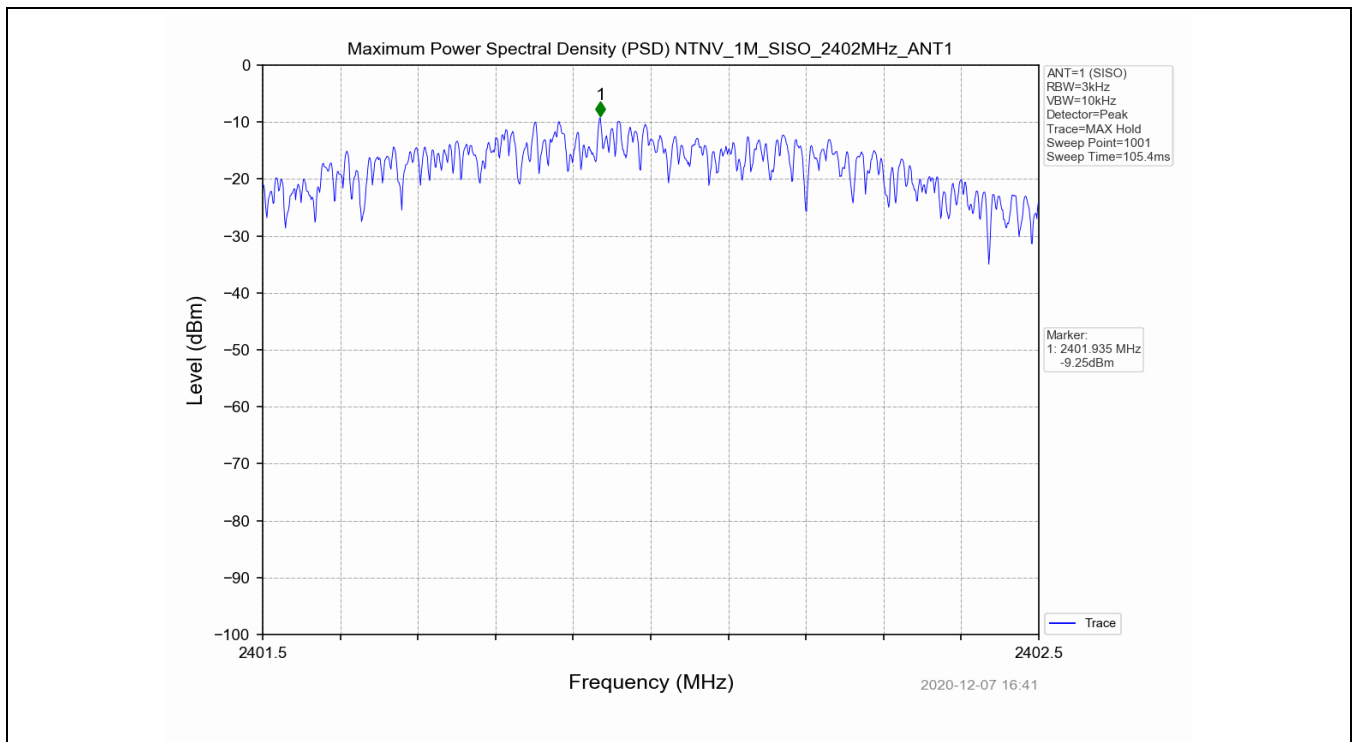
4. Maximum Power Spectral Density (PSD)

4.1 Test Result

| Test Mode | Frequency (MHz) | Tx Type | Maximum Power Spectral Density (dBm/3KHz) | Limits (dBm/3kHz) | Verdict |
|-----------|-----------------|---------|---|-------------------|---------|
| | | | Ant 1 | | |
| 1M | 2402 | SISO | -9.25 | ≤8 | PASS |
| | 2440 | SISO | -11.09 | ≤8 | PASS |
| | 2480 | SISO | -12.27 | ≤8 | PASS |
| 2M | 2402 | SISO | -11.93 | ≤8 | PASS |
| | 2440 | SISO | -13.42 | ≤8 | PASS |
| | 2480 | SISO | -14.42 | ≤8 | PASS |



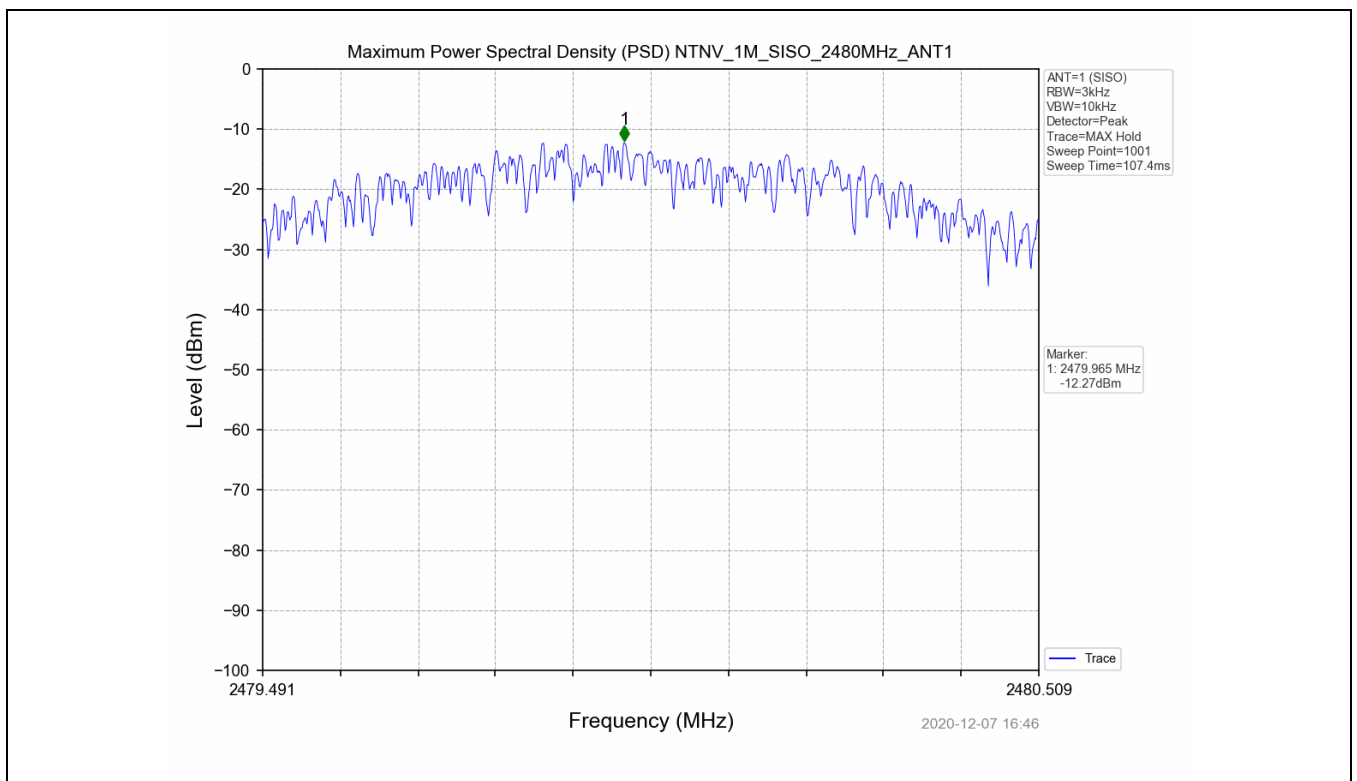
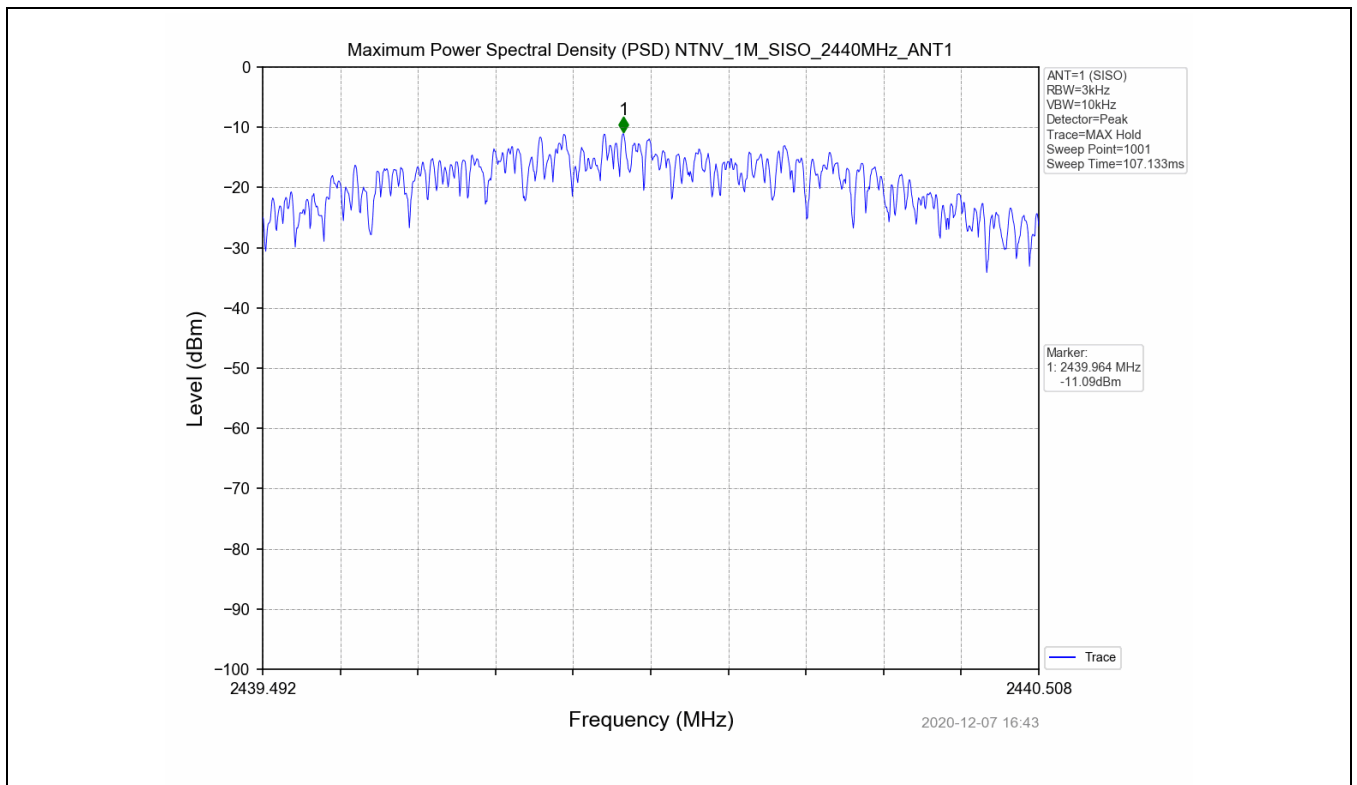
4.2 Test Graph



Unless otherwise agreed 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-Documents.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.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

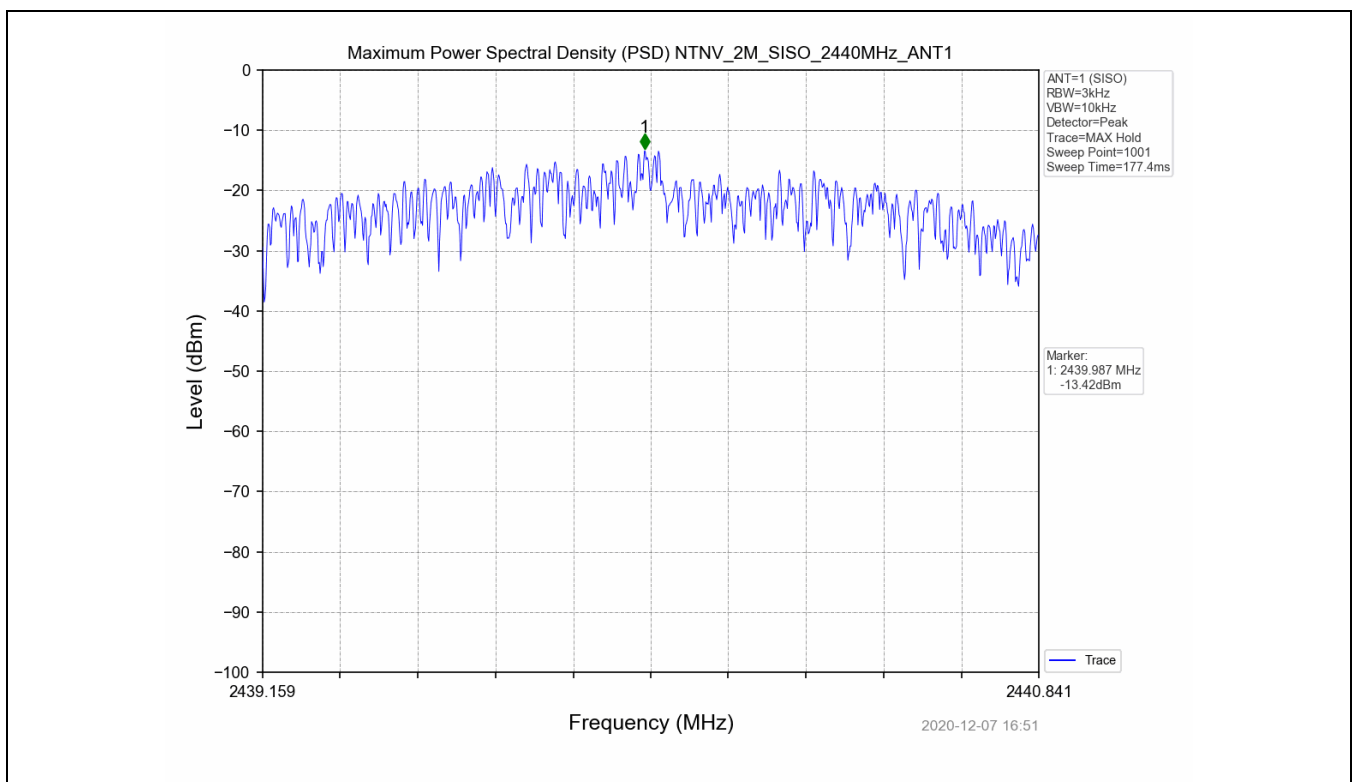
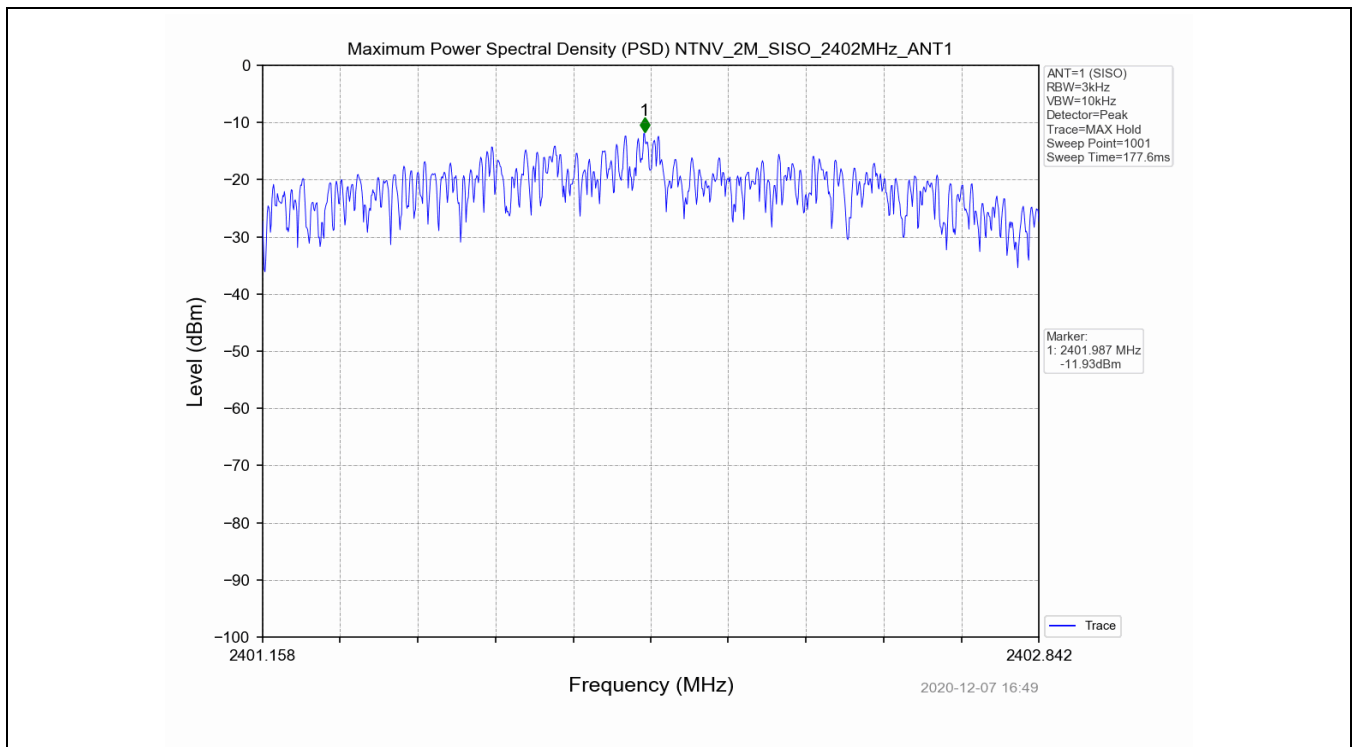


Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.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.

Attention: To check the authenticity of testing / inspection report and certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch (SGS-CSTC) EEC Laboratory

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

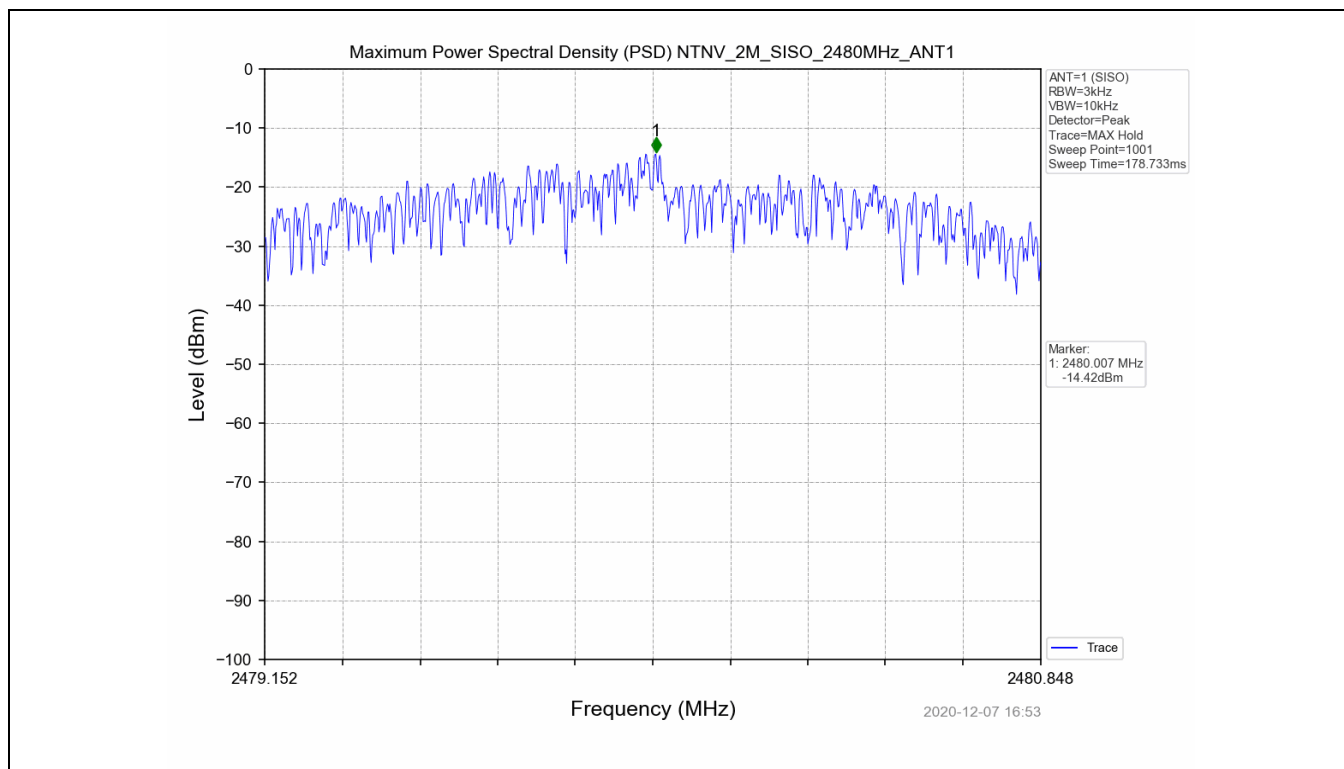


Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.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.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

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

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com



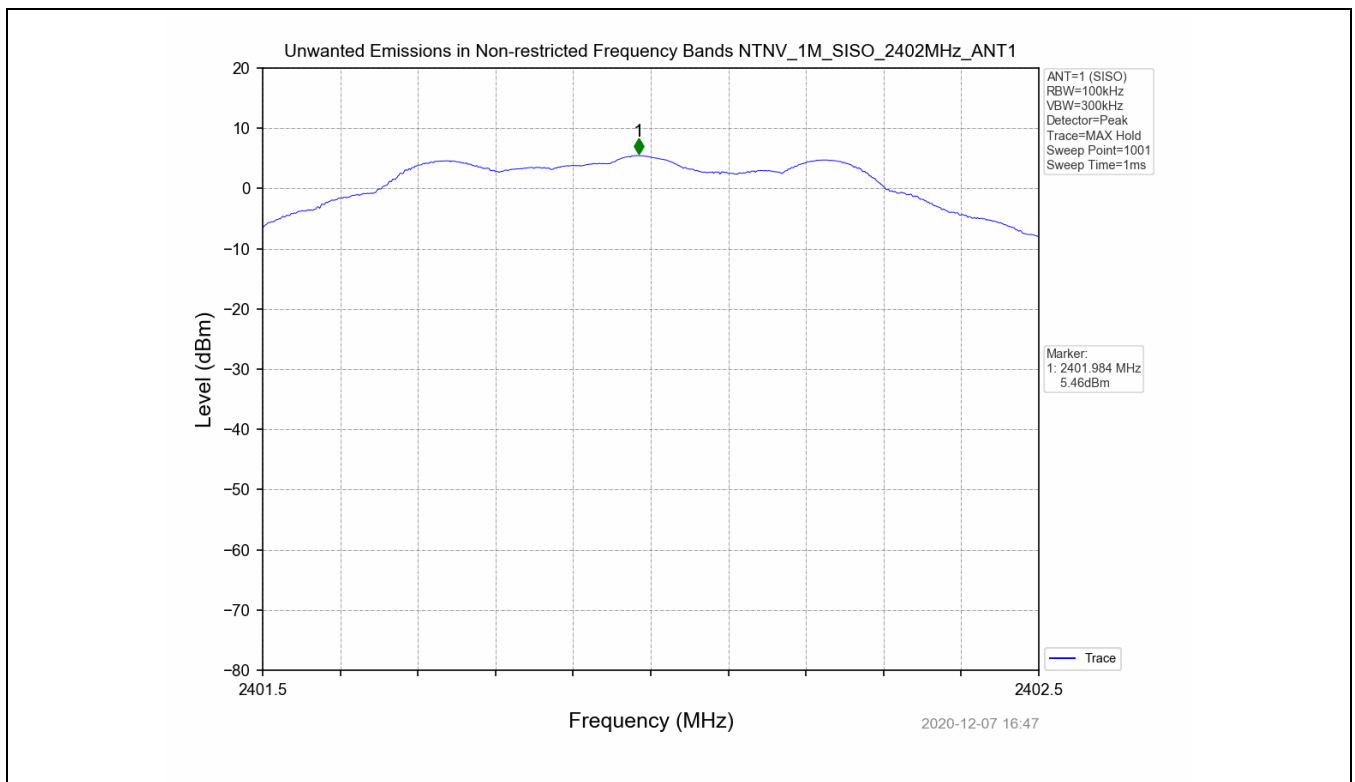


5. Unwanted Emissions in Non-restricted Frequency Bands

5.1 Test Result

| Test Mode | Frequency (MHz) | TX Type | ANT No. | Spurious Conducted Emission (dBm) | Limits (dBm) | Verdict |
|-----------|-----------------|---------|---------|-----------------------------------|--------------|---------|
| 1M | 2402 | SISO | 1 | Refer to test graph | -14.54 | PASS |
| | 2440 | SISO | 1 | Refer to test graph | -14.54 | PASS |
| | 2480 | SISO | 1 | Refer to test graph | -14.54 | PASS |
| 2M | 2402 | SISO | 1 | Refer to test graph | -14.54 | PASS |
| | 2440 | SISO | 1 | Refer to test graph | -14.54 | PASS |
| | 2480 | SISO | 1 | Refer to test graph | -14.54 | PASS |

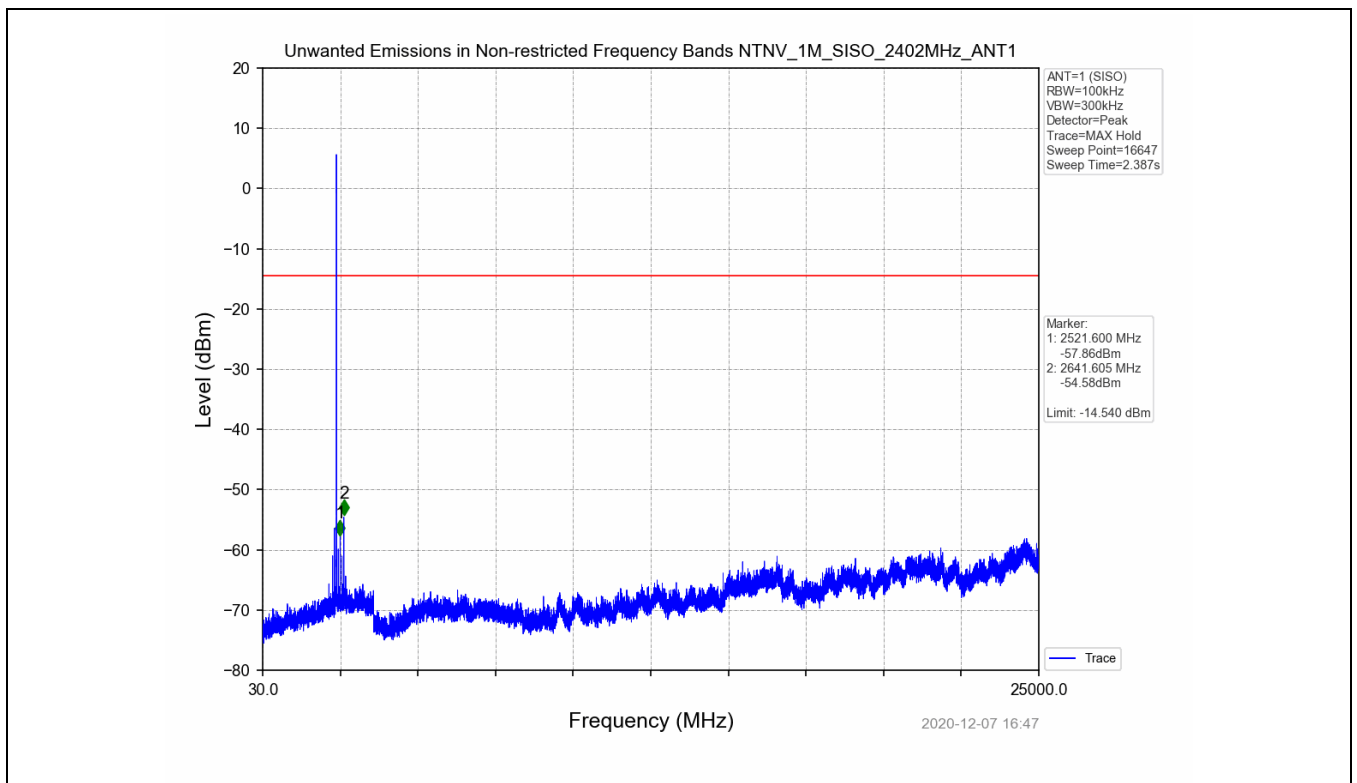
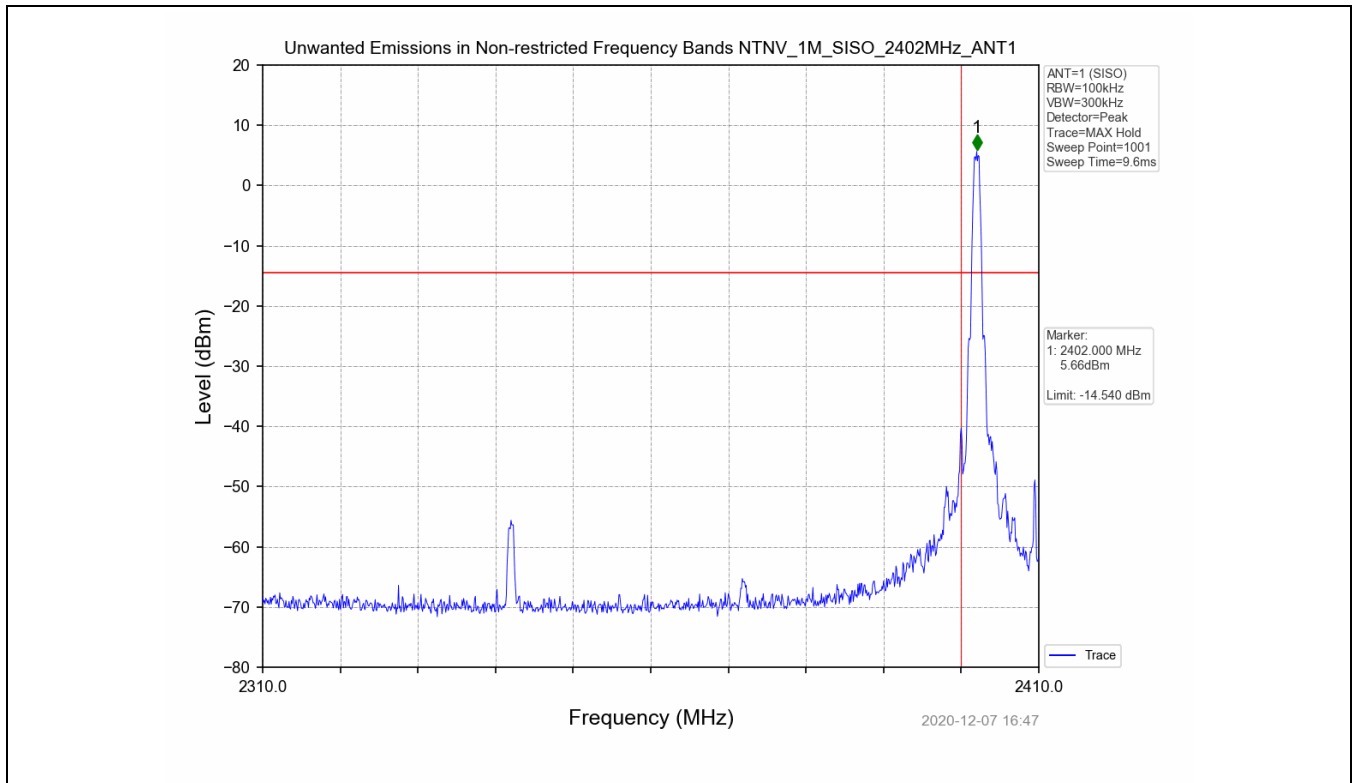
5.2 Test Graph



Unless otherwise agreed 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-Documents.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.

Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

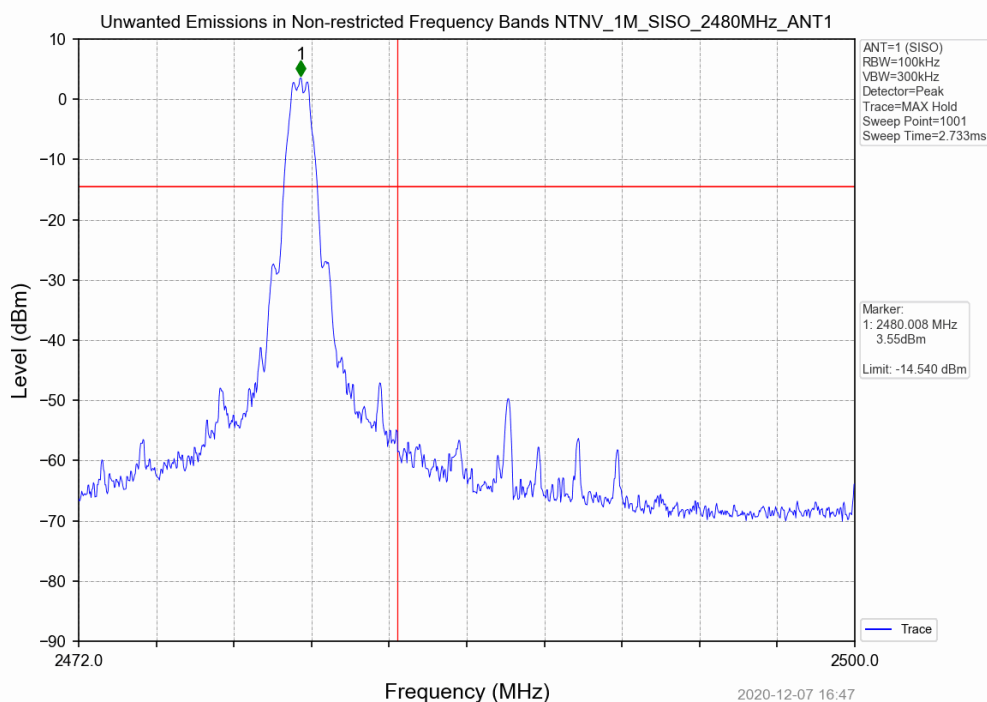
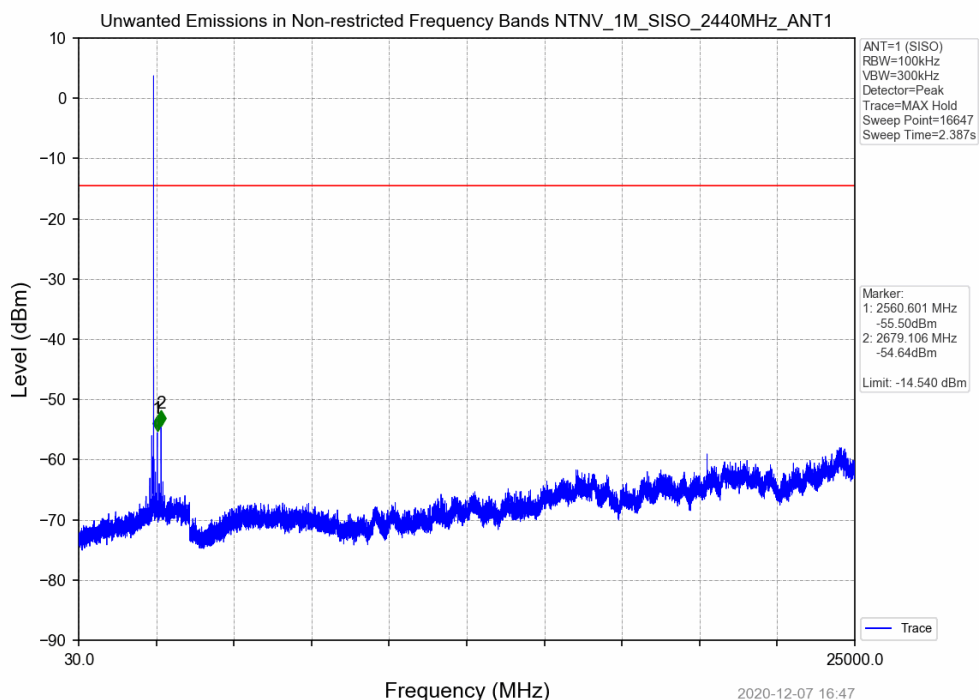


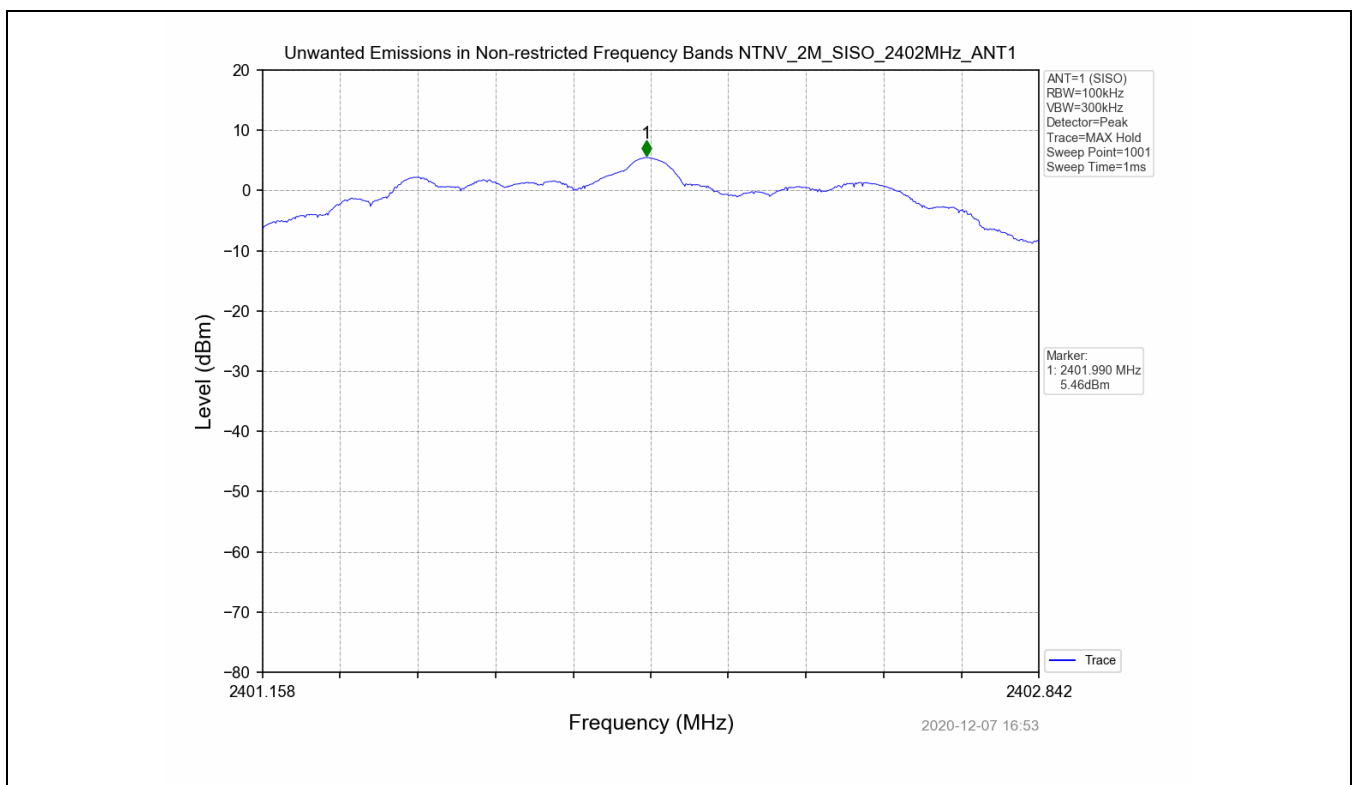
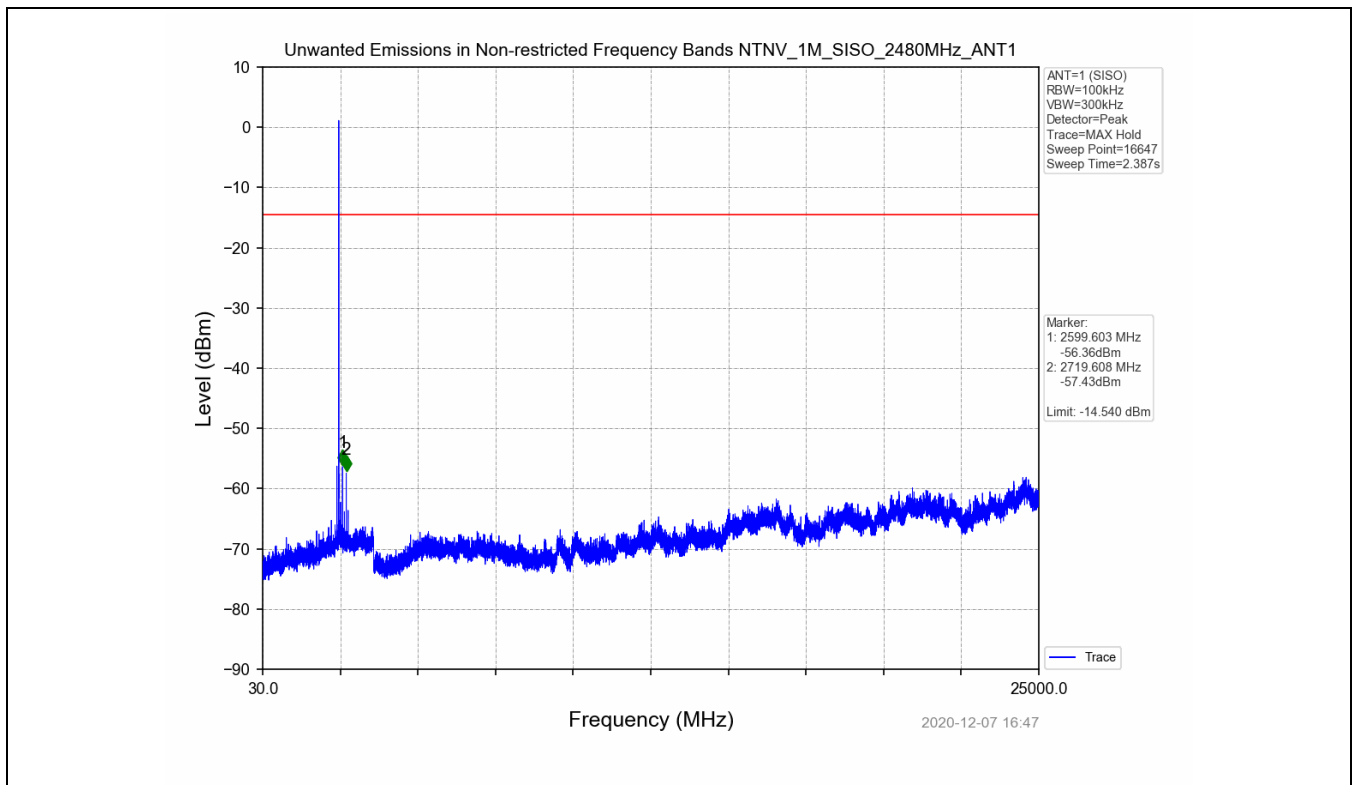
Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/Terms-e-Documents.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.

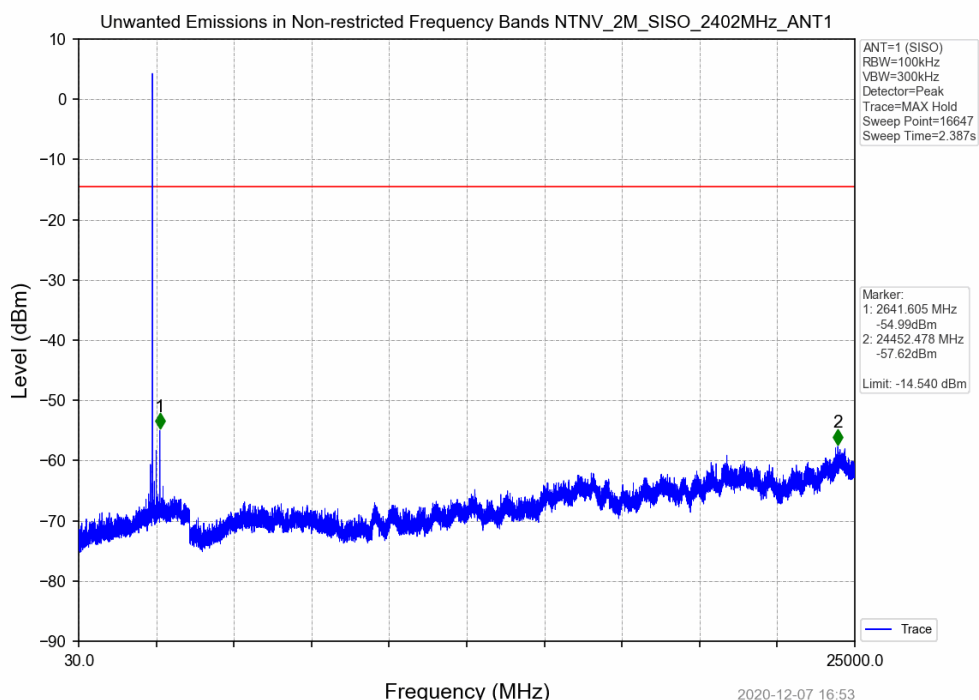
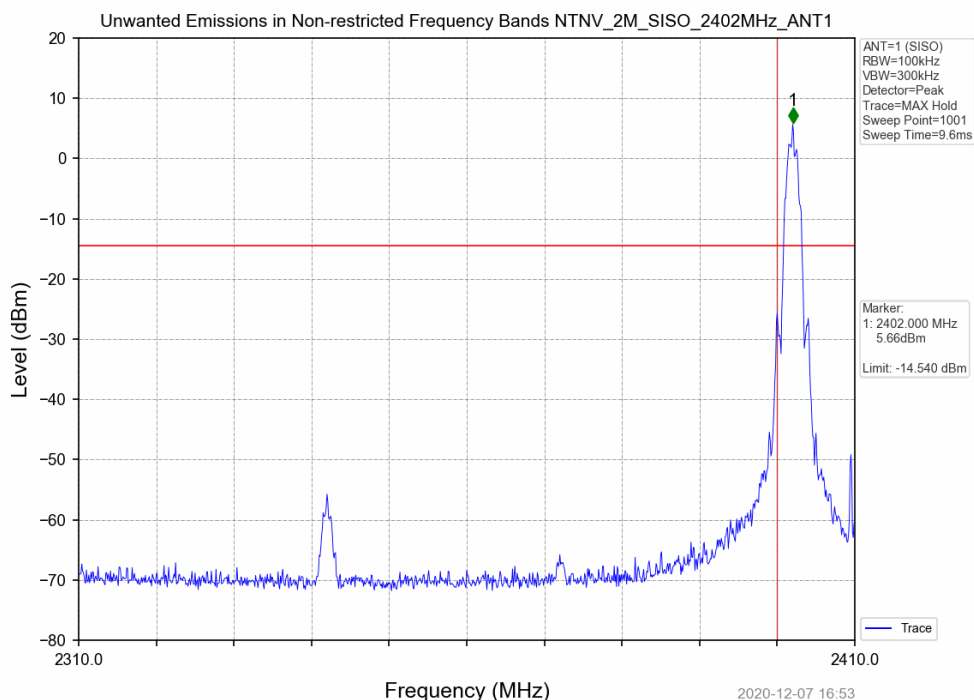
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

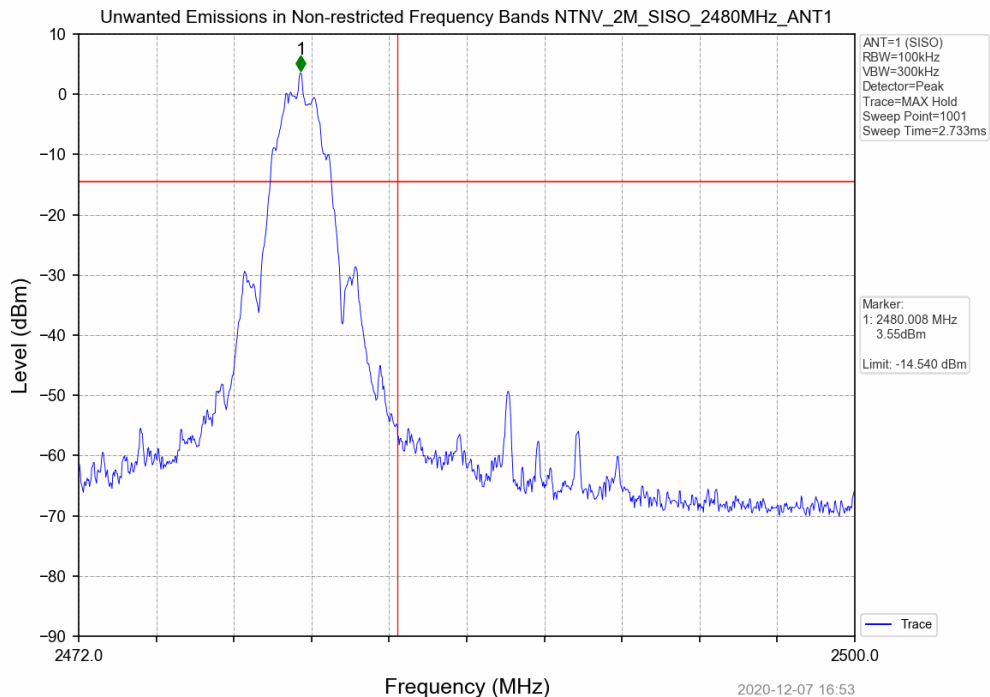
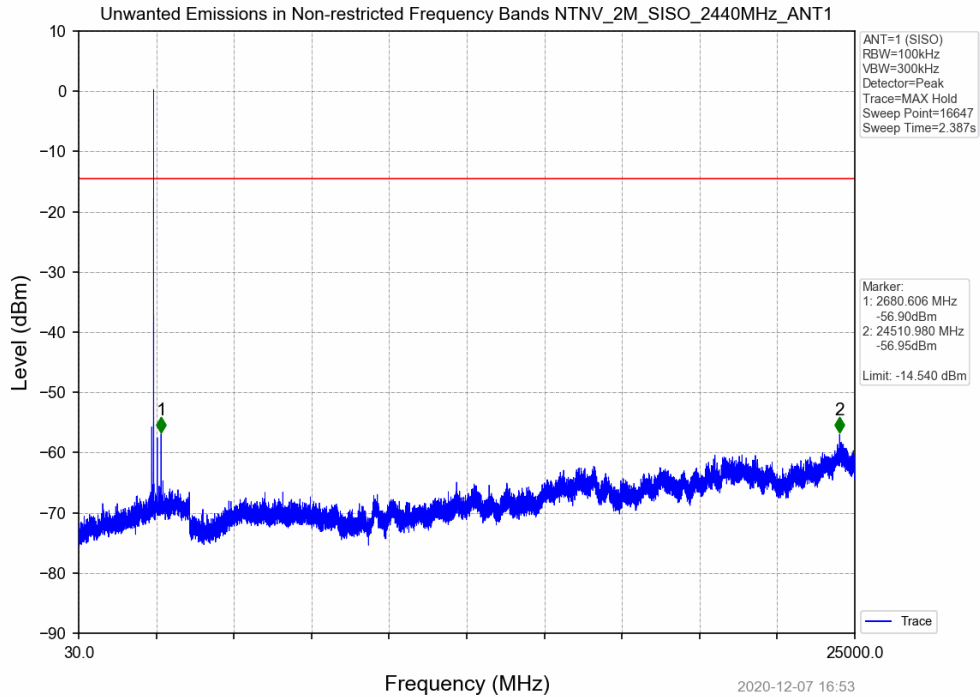
SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch

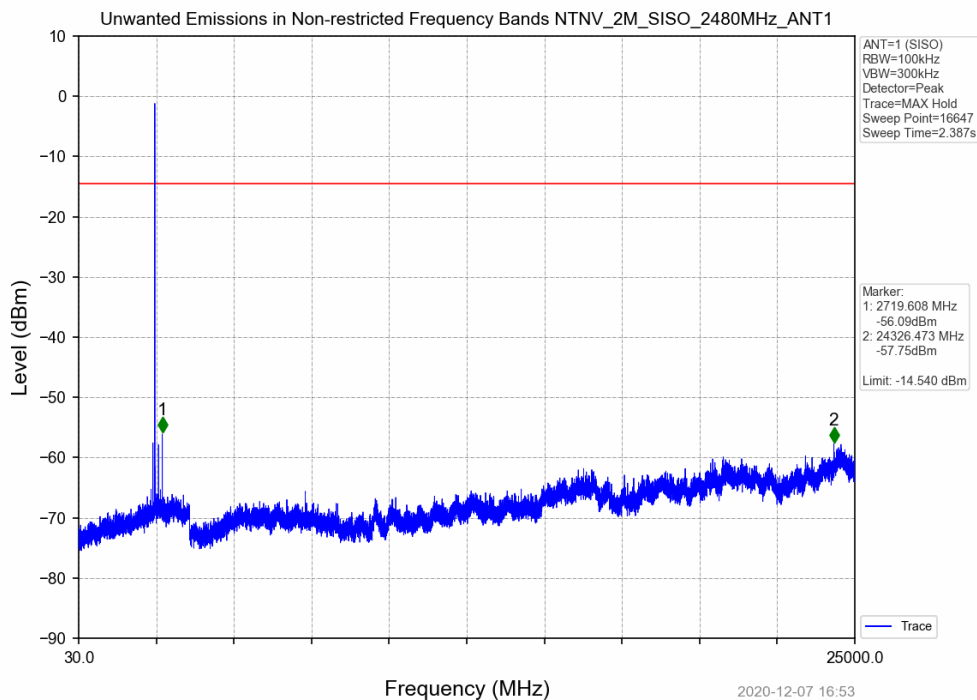
No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com











- End of the Report -