

TEST REPORT

Application No.: GZCR2504000545HS
Applicant: Guangzhou Steel Commodity CO.LTD
Address of Applicant: Room1603, No.166, Huangpu Avenue, Tianhe.District, Guang Zhou, China
Manufacturer: Guangzhou Mastela Commodity Co., Ltd
Address of Manufacturer: Room1603, No.166, Huangpu Avenue, Tianhe.District, Guang Zhou, China
Product Name: Deluxe Multi-motion baby cradle
Model No.: 08911, 08922, 08933, 08955, 08966, 08977, 08988, 77278, 77285, 08001, 08005, 08007, UY12 ♣
♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Standard(s) : 47 CFR Part 15, Subpart C 15.247
Date of Receipt: 2025-04-16
Date of Test: 2025-04-22 to 2025-05-30
Date of Issue: 2025-07-17

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

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

Ricky Liu

Ricky Liu
Manager



Revision Record			
Version	Report No.	Date	Remark
01	GZCR250400054502	2025-07-17	Original

Authorized for issue by			
		Luke Lin	
		Luke Lin/Project Engineer	
		Vico Cui	
		Vico Cui/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
Other requirements Frequency Hopping Spread Spectrum System Hopping Sequence		N/A	47 CFR Part 15, Subpart C 15.247(a)(1),(g),(h)	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass
Radiated Emissions which fall in the restricted bands		ANSI C63.10 (2013) Section 6.10.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions Below 1GHz		ANSI C63.10 (2013) Section 6.4,6.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass**
Radiated Spurious Emissions Above 1GHz		ANSI C63.10 (2013) Section 6.6	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Conducted Peak Output Power		ANSI C63.10 (2013) Section 7.8.5	47 CFR Part 15, Subpart C 15.247(b)(1)	Pass
20dB Bandwidth		ANSI C63.10 (2013) Section 7.8.7	47 CFR Part 15, Subpart C 15.247(a)(1)	Pass
Carrier Frequencies Separation		ANSI C63.10 (2013) Section 7.8.2	47 CFR Part 15, Subpart C 15.247a(1)	Pass
Hopping Channel Number		ANSI C63.10 (2013) Section 7.8.3	47 CFR Part 15, Subpart C 15.247a(1)(iii)	Pass
Dwell Time		ANSI C63.10 (2013) Section 7.8.4	47 CFR Part 15, Subpart C 15.247a(1)(iii)	Pass
Conducted Band Edges Measurement		ANSI C63.10 (2013) Section 7.8.6	47 CFR Part 15, Subpart C 15.247(d)	Pass
Conducted Spurious Emissions		ANSI C63.10 (2013) Section 7.8.8	47 CFR Part 15, Subpart C 15.247(d)	Pass

** : The EUT passed Radiated Spurious Emissions Below 1GHz test after modification.



Note:

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

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

♣ Declaration of EUT Family Grouping:

Model No.: 08911, 08922, 08933, 08955, 08966, 08977, 08988, 77278, 77285, 08001, 08005, 08007, UY12

According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, with only difference on the model name.

Therefore only one model **08977** was tested in this report.



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	8
4.4 Test Location	8
4.5 Test Facility.....	9
4.6 Deviation from Standards.....	9
4.7 Abnormalities from Standard Conditions	9
5 Equipment List	10
6 Radio Spectrum Technical Requirement.....	13
6.1 Antenna Requirement	13
6.1.1 Test Requirement:	13
6.1.2 Conclusion	13
6.2 Other requirements Frequency Hopping Spread Spectrum System Hopping Sequence	14
6.2.1 Test Requirement:	14
6.2.2 Conclusion	14
7 Radio Spectrum Matter Test Results	15
7.1 Conducted Emissions at AC Power Line (150kHz-30MHz)	15
7.1.1 E.U.T. Operation	15
7.1.2 Test Mode Description	15
7.1.3 Test Setup Diagram	16
7.1.4 Measurement Procedure and Data.....	16
7.2 Radiated Emissions which fall in the restricted bands	19
7.2.1 E.U.T. Operation	19
7.2.2 Test Mode Description	19
7.2.3 Test Setup Diagram	20
7.2.4 Measurement Procedure and Data.....	20
7.3 Radiated Spurious Emissions Below 1GHz.....	25
7.3.1 E.U.T. Operation	25
7.3.2 Test Mode Description	25
7.3.3 Test Setup Diagram	25
7.3.4 Measurement Procedure and Data.....	26
7.4 Radiated Spurious Emissions Above 1GHz	31
7.4.1 E.U.T. Operation	31
7.4.2 Test Mode Description	31
7.4.3 Test Setup Diagram	31
7.4.4 Measurement Procedure and Data.....	32
7.5 Conducted Peak Output Power	39



7.5.1	E.U.T. Operation	39
7.5.2	Test Mode Description	39
7.5.3	Test Setup Diagram	39
7.5.4	Measurement Procedure and Data	39
7.6	20dB Bandwidth	40
7.6.1	E.U.T. Operation	40
7.6.2	Test Mode Description	40
7.6.3	Test Setup Diagram	40
7.6.4	Measurement Procedure and Data	40
7.7	Carrier Frequencies Separation	41
7.7.1	E.U.T. Operation	41
7.7.2	Test Mode Description	41
7.7.3	Test Setup Diagram	41
7.7.4	Measurement Procedure and Data	41
7.8	Hopping Channel Number	42
7.8.1	E.U.T. Operation	42
7.8.2	Test Mode Description	42
7.8.3	Test Setup Diagram	42
7.8.4	Measurement Procedure and Data	42
7.9	Dwell Time	43
7.9.1	E.U.T. Operation	43
7.9.2	Test Mode Description	43
7.9.3	Test Setup Diagram	43
7.9.4	Measurement Procedure and Data	43
7.10	Conducted Band Edges Measurement	44
7.10.1	E.U.T. Operation	44
7.10.2	Test Mode Description	44
7.10.3	Test Setup Diagram	44
7.10.4	Measurement Procedure and Data	44
7.11	Conducted Spurious Emissions	45
7.11.1	E.U.T. Operation	45
7.11.2	Test Mode Description	45
7.11.3	Test Setup Diagram	45
7.11.4	Measurement Procedure and Data	45
8	Test Setup Photo	46
9	EUT Constructional Details (EUT Photos)	47
10	Appendix	48



4 General Information

4.1 Details of E.U.T.

Power supply: Model No: HH0024Z-120200-AU
INPUT: AC 100-240V 50/60Hz, 0.8A Max
OUTPUT: DC 12 V 2.0 A

Cable(s): AC mains, 2 wires, 2.0m, unshielded.

Test voltage: AC 120V 60Hz

Operation Frequency: 2402MHz to 2480MHz

Bluetooth Version: V5.1 Dual mode

Modulation Type: GFSK, pi/4DQPSK, 8DPSK

Number of Channels: 79

Channel Spacing: 1MHz

Spectrum Spread Technology: Frequency Hopping Spread Spectrum(FHSS)

Antenna Gain: -0.58 dBi according to antenna specification

Antenna Type: PCB Antenna

Antenna Number: 1

Remark: The information in this section is provided by the applicant or manufacturer, SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
--	--	--	--
The EUT has been tested as an independent unit.			



4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Power Line (150kHz-30MHz)	±3.22dB
Radiated Emissions which fall in the restricted bands	±5.14dB (3m); ±4.90dB (10m); ±4.88dB (1GHz-6GHz); ±5.06dB (6GHz-18GHz); ±5.30dB (18GHz-40GHz)
Radiated Spurious Emissions Below 1GHz	±3.08dB (9kHz to 150kHz); ±3.19dB (150kHz to 30MHz); ±5.14dB (30MHz-1GHz) (3m); ±4.90dB (30MHz-1GHz) (10m)
Radiated Spurious Emissions Above 1GHz	±4.88dB (1GHz-6GHz); ±5.06dB (6GHz-18GHz); ±5.30dB (18GHz-40GHz)
Conducted Peak Output Power	± 0.75dB
20dB Bandwidth	± 0.274%
Carrier Frequencies Separation	± 7.25 x 10 ⁻⁸
Hopping Channel Number	± 7.25 x 10 ⁻⁸
Dwell Time	± 0.029%
Conducted Band Edges Measurement	± 0.75dB
Conducted Spurious Emissions	± 0.75dB
<p>Remark:</p> <p>The U_{lab} (lab Uncertainty) is less than U_{CISPR} (CISPR Uncertainty) or U_{ETSI} (ETSI Uncertainty).</p> <p>Emission decision rule:</p> <ul style="list-style-type: none"> – Compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit, marked as Pass in the report. – Non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit, marked as Fail in the report. 	

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
No.198, Kezhu Road, Science City, Economic & Technological Development Area, Guangzhou,
Guangdong, China 510663

Tel: +86 20 82155555

No tests were sub-contracted.



4.5 Test Facility

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

● ACMA

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian/New Zealand Regulatory Compliance Mark (RCM).

● SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

● FCC Recognized Accredited Test Firm(Registration No.: 486818)

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818.

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

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

● VCCI (Registration No.: R-12460, C-12584, G-20107 and T-11179)

The 10m Semi-anechoic chamber, 966 Anechoic Chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-20107 and T-11179 respectively.

● CBTL (Lab Code: TL129)

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2017, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

**: The EUT passed Radiated Spurious Emissions Below 1GHz test after modification.



5 Equipment List

Conducted Emissions at AC Power Line (150kHz-30MHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Coaxial Cable	HangTianXing	2m	EMC0107	2023-08-24	2025-08-23
Shielding Room	ChangZhou ZhongYu	8m x 3m x 3.8m	EMC0306	2022-10-16	2025-10-15
Two-Line V-Network-GZ	Rohde & Schwarz	ENV216	EMC2135	2024-09-02	2025-09-01
EMI Test Receiver (9kHz-3.6GHz)	Rohde & Schwarz	ESR3	EMC2221	2024-12-04	2025-12-03
Test Software E3r	Audix	Ver.6.191211	GZE100-77	N/A	N/A

Radiated Emissions which fall in the restricted bands					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2024-10-14	2025-10-13
EMI Test Receiver (10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2024-09-02	2025-09-01
Chamber cable (Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2024-08-19	2026-08-18
Horn Antenna (1GHz-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2025-05-13	2027-05-12
Horn Antenna (14-40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2023-06-18	2026-06-17
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2024-08-19	2025-08-18
MXE EMI Receiver (10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2024-10-14	2025-10-13
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2023-12-20	2026-12-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A



Radiated Spurious Emissions Below 1GHz					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2022-10-16	2025-10-15
Coaxial cable	Mirco-COAX UTIFLEX	311A	EMC0540	2024-08-19	2026-08-18
Amplifier (9kHz-1.3GHz)	HP	8447F	EMC2065	2024-12-04	2025-12-03
Active Loop Antenna-RED	ETS-Lindgren	6502	EMC2190	2024-04-08	2026-04-07
EMI Test Receiver (9kHz-7GHz)	Rohde & Schwarz	ESR7	EMC2220	2024-12-04	2025-12-03
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
Trilog Broadband Antenna (25MHz-2GHz)	Schwarzbeck Mess-Elektronik	VULB 9168	EMC2174	2025-04-21	2027-04-20

Radiated Spurious Emissions Above 1GHz					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2024-10-14	2025-10-13
EMI Test Receiver (10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2024-09-02	2025-09-01
Chamber cable (Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2024-08-19	2026-08-18
Horn Antenna (1GHz-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2025-05-13	2027-05-12
Horn Antenna (14-40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2023-06-18	2026-06-17
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2024-10-14	2025-10-13
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2024-08-19	2025-08-18
MXE EMI Receiver (10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2024-10-14	2025-10-13
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2023-12-20	2026-12-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

RF Conducted Test					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
MI CABLE	SGS-EMC	0.8M	EMC2137	2023-11-02	2025-11-01
4X4 Power sensor Unit	TST	TSPS2023R	EMC2226	2024-08-19	2025-08-18
Test Software	TST	V2.0	GZE100-78	N/A	N/A
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2024-08-19	2025-08-18





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

EMC-TRF-01 Rev 1.1

Report No.: GZCR250400054502
Page: 12 of 85

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2024-06-13	2025-06-12



SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou Branch, Testing Center EEC 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 <https://www.sgs.com/en/Terms-and-Conditions>. 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.198, Kazhu Road, Science City, Economic & Technological Development Area, Guangzhou, Guangdong, China 510663 t (86-20) 82155555 www.sgsgroup.com.cn
中国·广东·广州高新技术产业开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 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)

6.1.2 Conclusion

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

15.247(b) (4) requirement: The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement.

The best case gain of the antenna is -0.58 dBi.

Antenna location:

Refer to internal photo.



6.2 Other requirements Frequency Hopping Spread Spectrum System Hopping Sequence

6.2.1 Test Requirement:

47 CFR Part 15, Subpart C 15.247(a)(1),(g),(h)

6.2.2 Conclusion

Standard Requirement: The system shall hop to channel frequencies that are selected at the system hopping rate from a Pseudorandom ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals. Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. However, the system, consisting of both the transmitter and the receiver, must be designed to comply with all of the regulations in this section should the transmitter be presented with a continuous data (or information) stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its transmissions over the minimum number of hopping channels specified in this section. The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hopsets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted. Compliance for section 15.247(a)(1): According to Technical Specification, the pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONES; i.e. the shift register is initialized with nine ones. > Number of shift register stages: 9 > Length of pseudo-random sequence: $2^9 - 1 = 511$ bits > Longest sequence of zeros: 8 (non-inverted signal) Linear Feedback Shift Register for Generation of the PRBS sequence An example of Pseudorandom Frequency Hopping Sequence as follow: Each frequency used equally on the average by each transmitter. According to Technical Specification, the receivers are designed to have input and IF bandwidths that match the hopping channel bandwidths of any transmitters and shift frequencies in synchronization with the transmitted signals. Compliance for section 15.247(g): According to Technical Specification, the system transmits the packet with the pseudorandom hopping frequency with a continuous data and the short burst transmission from the Bluetooth system is also transmitted under the frequency hopping system with the pseudorandom hopping frequency system. Compliance for section 15.247(h): According to Technical specification, the system incorporates with an adaptive system to detect other user within the spectrum band so that it individually and independently to avoid hopping on the occupied channels. The system is designed not have the ability to coordinated with other FHSS System in an effort to avoid the simultaneous occupancy of individual hopping frequencies by multiple transmitter.



7 Radio Spectrum Matter Test Results

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

Test Requirement 47 CFR Part 15, Subpart C 15.207

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

Limit:

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency.		
Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz		

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 24.5 °C

Humidity: 53.3 % RH

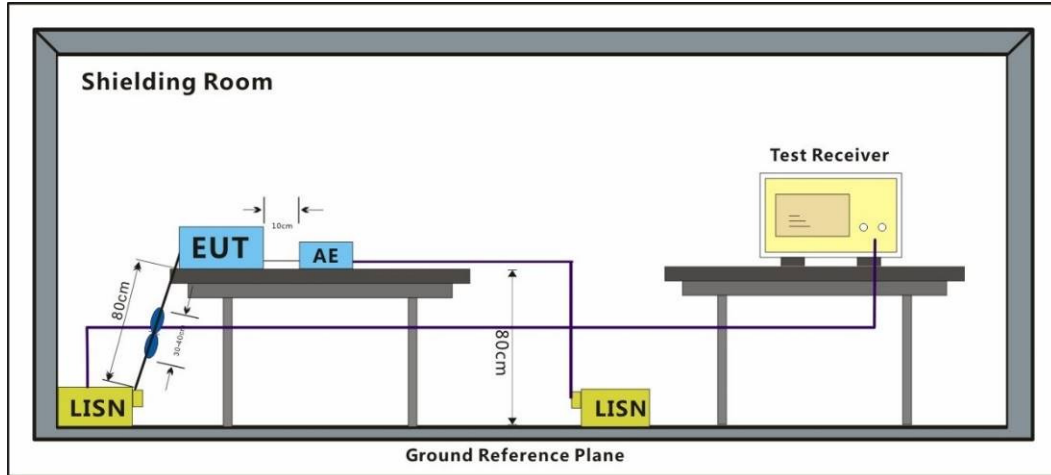
Atmospheric Pressure: 1020 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX_non-Hop mode_Keep the EUT in continuously transmitting mode with GFSK modulation, Pi/4DQPSK modulation, 8DPSK modulation. All modes have been tested and only the data of worst case is recorded in the report.



7.1.3 Test Setup Diagram



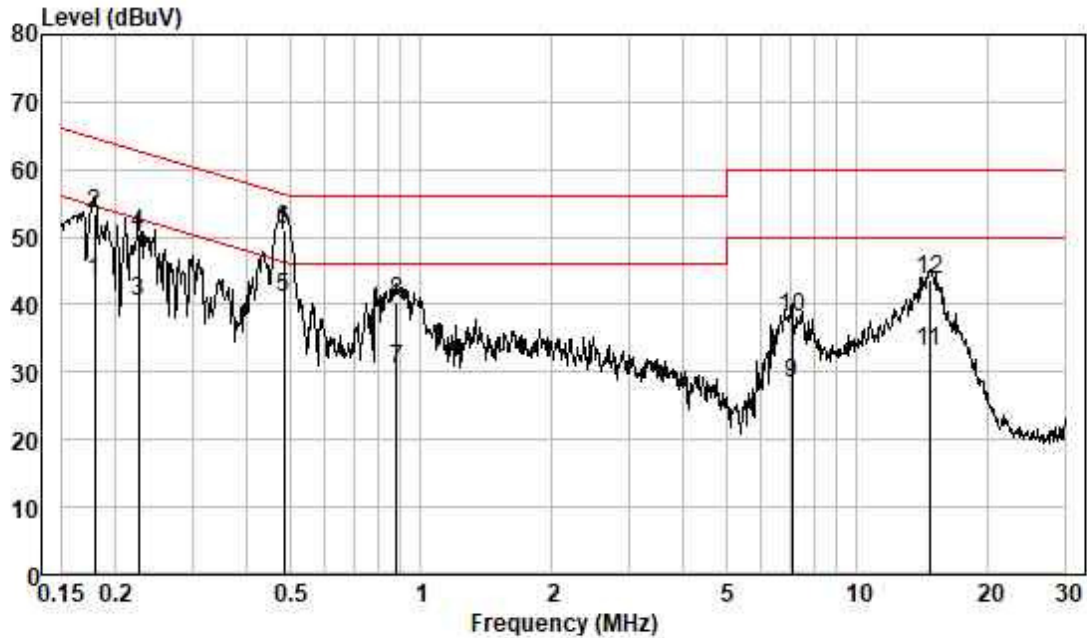
7.1.4 Measurement Procedure and Data

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

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



Test Mode: 00; Line: Live line

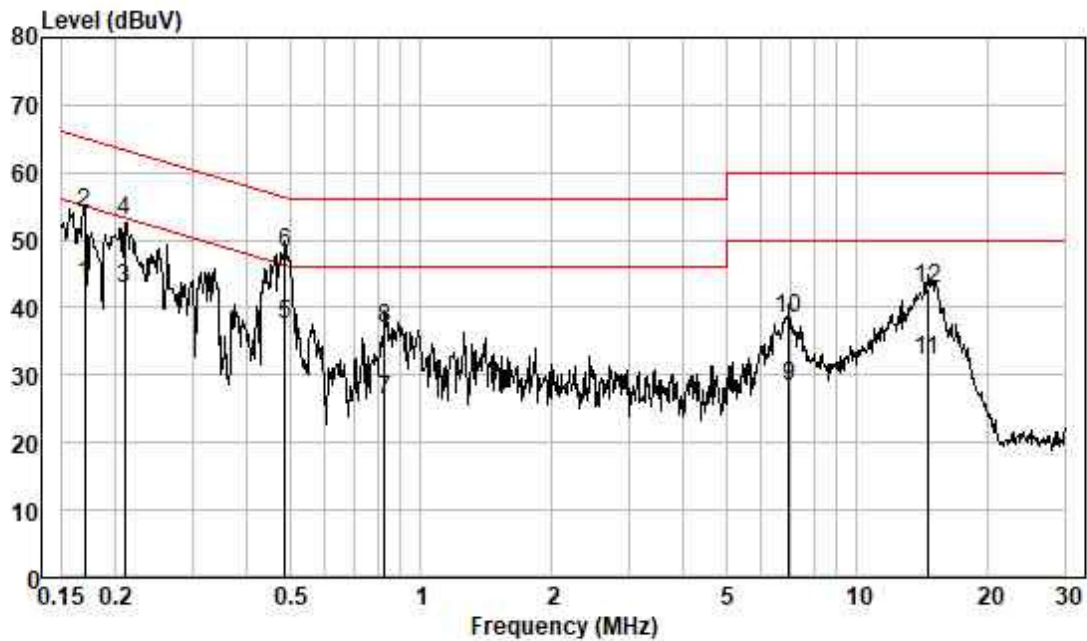


Pol : LINE
Mode :
Model :
Power :

	Freque	Read	Cable	LISN	Measured	Limit	Over	Remark
	MHz	Level	Loss	Factor	Level	Line	Limit	
		dBuV	dB	dB	dBuV	dBuV	dB	
1	0.179	33.69	0.04	9.54	43.27	54.55	-11.28	Average
2	0.179	43.86	0.04	9.54	53.44	64.55	-11.11	QP
3	0.226	30.90	0.04	9.58	40.52	52.61	-12.09	Average
4	0.226	40.80	0.04	9.58	50.42	62.61	-12.19	QP
5	0.486	31.42	0.05	9.58	41.05	46.23	-5.18	Average
6	0.486	41.35	0.05	9.58	50.98	56.23	-5.25	QP
7	0.880	20.77	0.07	9.61	30.45	46.00	-15.55	Average
8	0.880	30.85	0.07	9.61	40.53	56.00	-15.47	QP
9	7.100	18.33	0.22	9.67	28.22	50.00	-21.78	Average
10	7.100	28.19	0.22	9.67	38.08	60.00	-21.92	QP
11	14.672	22.96	0.32	9.84	33.12	50.00	-16.88	Average
12	14.672	33.41	0.32	9.84	43.57	60.00	-16.43	QP



Test Mode: 00; Line: Neutral Line



Pol : NEUTRAL
Mode :
Model :
Power :

	Frequency MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
1	0.169	33.71	0.04	9.54	43.29	54.99	-11.70	Average
2	0.169	44.32	0.04	9.54	53.90	64.99	-11.09	QP
3	0.209	33.33	0.04	9.55	42.92	53.23	-10.31	Average
4	0.209	43.19	0.04	9.55	52.78	63.23	-10.45	QP
5	0.489	27.96	0.05	9.58	37.59	46.19	-8.60	Average
6	0.489	38.38	0.05	9.58	48.01	56.19	-8.18	QP
7	0.826	16.62	0.06	9.53	26.21	46.00	-19.79	Average
8	0.826	27.30	0.06	9.53	36.89	56.00	-19.11	QP
9	6.988	18.47	0.22	9.65	28.34	50.00	-21.66	Average
10	6.988	28.38	0.22	9.65	38.25	60.00	-21.75	QP
11	14.517	21.92	0.32	9.90	32.14	50.00	-17.86	Average
12	14.517	32.62	0.32	9.90	42.84	60.00	-17.16	QP



7.2 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:

Test Distance: 3 m

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.

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 25.0 °C Humidity: 60.2 % RH Atmospheric Pressure: 1020 mbar

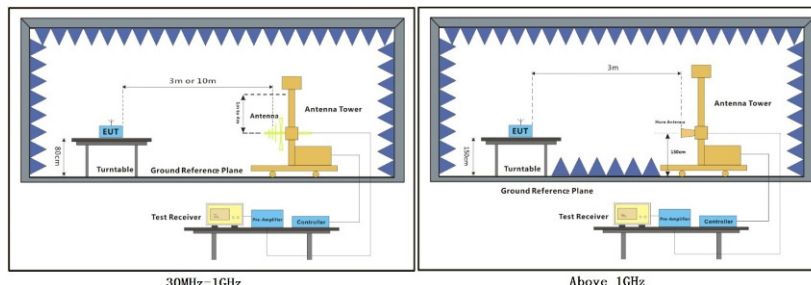
7.2.2 Test Mode Description

Pre-scan / Mode
Final test Code Description

Final test 00 TX_non-Hop mode_Keep the EUT in continuously transmitting mode with GFSK modulation, Pi/4DQPSK modulation, 8DPSK modulation. All modes have been tested and only the data of worst case is recorded in the report.



7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

- 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.
- 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.
- 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.
- 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.
- 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.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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.
- Test the EUT in the lowest channel, the Highest channel.
- 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.
- Repeat above procedures until all frequencies measured was complete.

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

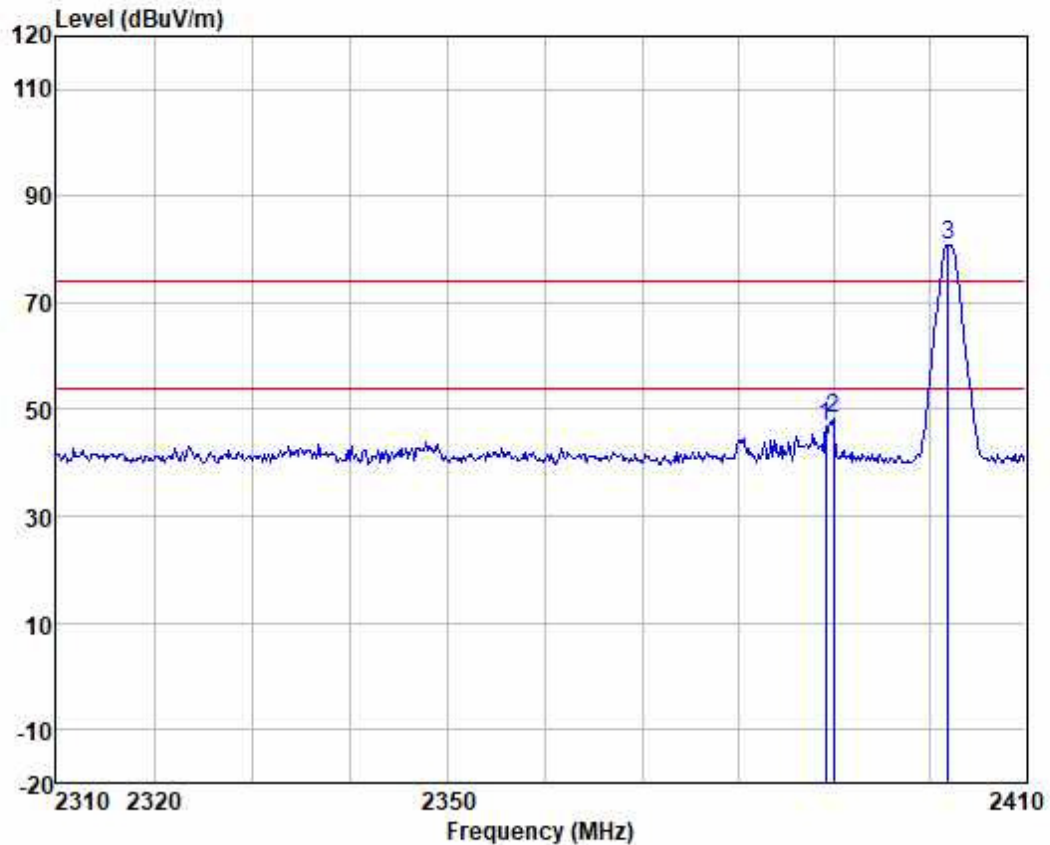
Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level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

Remark 3: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for Peak detection (PK) and Average detection (AV) at frequency above 1GHz.

Remark 4: For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.



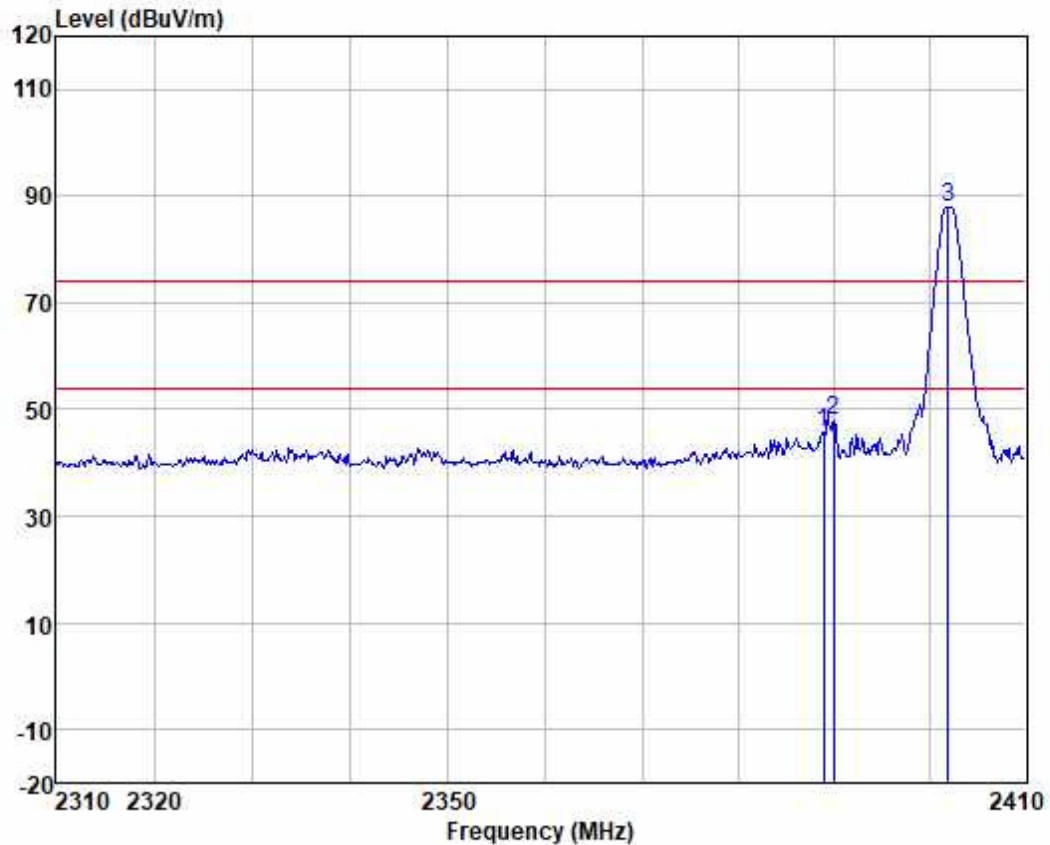
Test Mode: 00; Polarity: Vertical; Modulation: GFSK; Channel: Low



	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
		Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2389.153	53.59	27.68	3.44	37.77	46.94	74.00	-27.06	VERTICAL	peak
2	2390.000	54.82	27.68	3.44	37.77	48.17	74.00	-25.83	VERTICAL	peak
3 *	2402.000	87.39	27.71	3.45	37.77	80.78	74.00	6.78	VERTICAL	peak



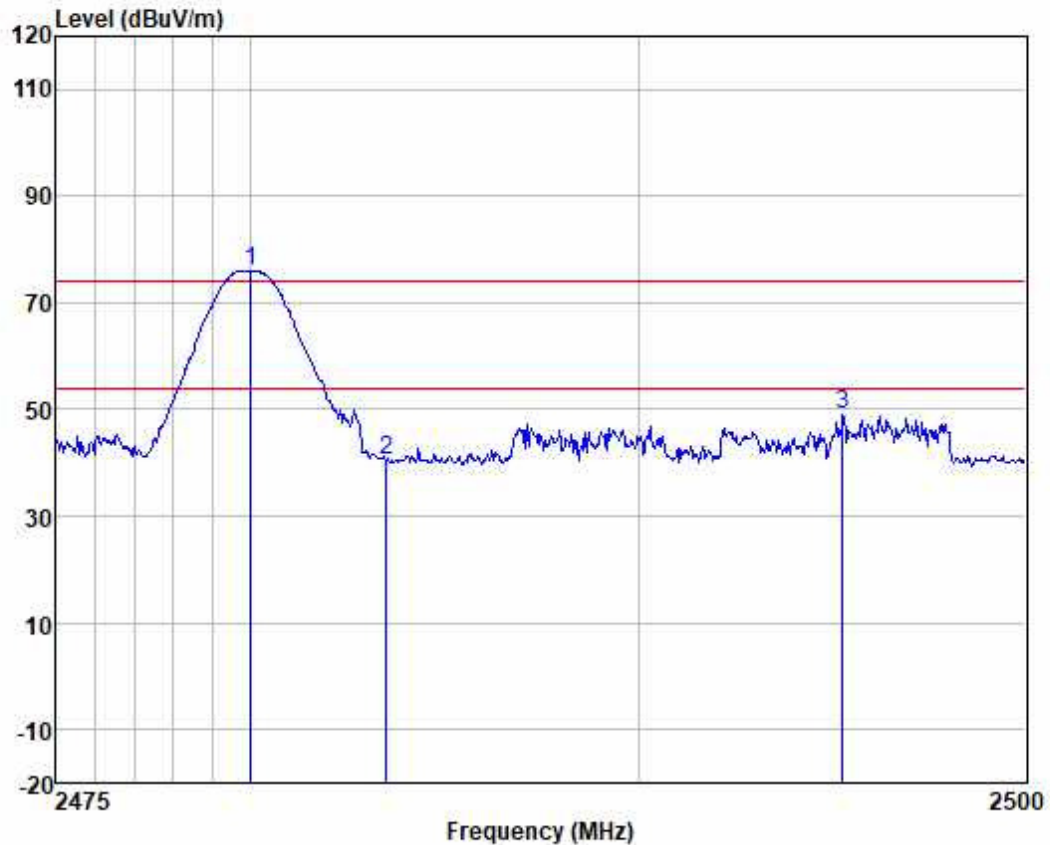
Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; Channel:Low



	Read Freq	Antenna Level	Factor	Cable Loss	Preamplifier Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2388.951	52.45	27.68	3.44	37.77	45.80	74.00	-28.20	HORIZONTAL	peak
2	2390.000	54.71	27.68	3.44	37.77	48.06	74.00	-25.94	HORIZONTAL	peak
3 *	2402.000	94.66	27.71	3.45	37.77	88.05	74.00	14.05	HORIZONTAL	peak



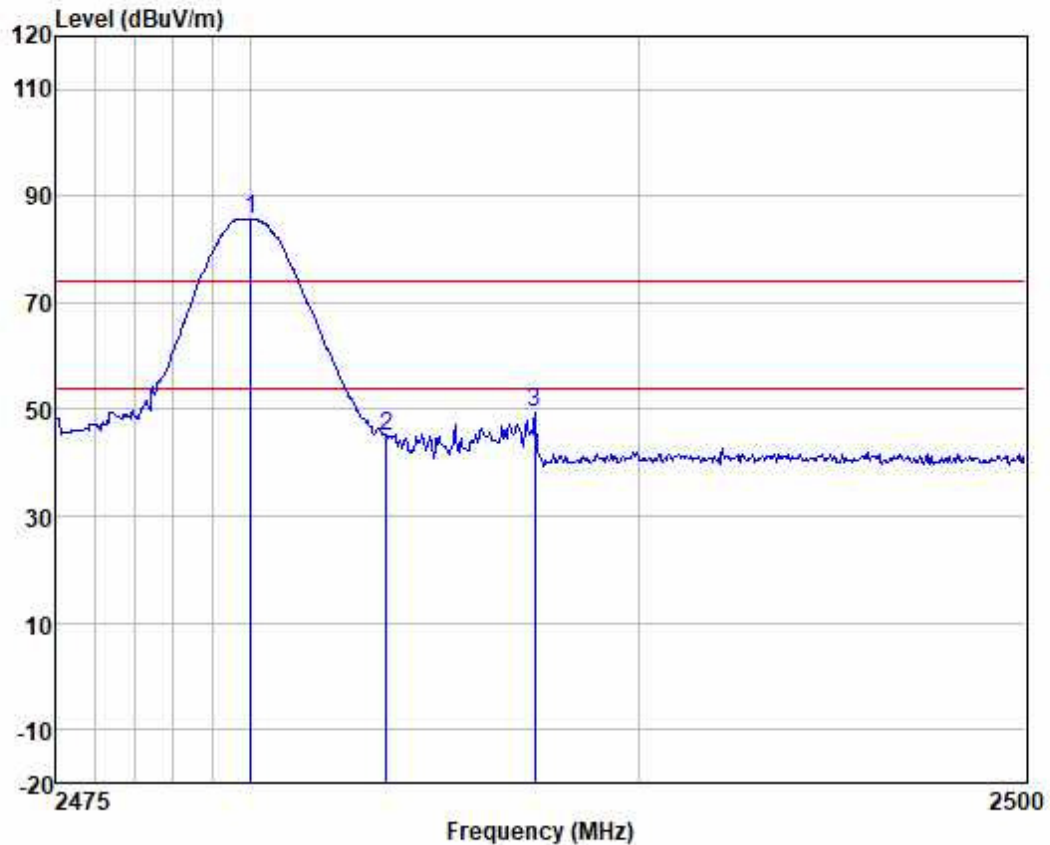
Test Mode: 00; Polarity: Vertical; Modulation:GFSK; Channel:High



	ReadAntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2480.000	82.43	27.84	3.48	37.76	75.99	74.00	1.99	VERTICAL peak
2	2483.500	46.98	27.85	3.49	37.76	40.56	74.00	-33.44	VERTICAL peak
3	2495.281	55.43	27.86	3.49	37.76	49.02	74.00	-24.98	VERTICAL peak



Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; Channel:High



	ReadAntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2480.000	92.06	27.84	3.48	37.76	85.62	74.00	11.62	HORIZONTAL peak
2	2483.500	51.39	27.85	3.49	37.76	44.97	74.00	-29.03	HORIZONTAL peak
3	2487.319	55.73	27.85	3.49	37.76	49.31	74.00	-24.69	HORIZONTAL peak



7.3 Radiated Spurious Emissions Below 1GHz

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

Test Method: ANSI C63.10 (2013) Section 6.4,6.5

Limit:

Test Distance: 3 m below 30 MHz; 10 m above 30 MHz

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
960-1000	500	3

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 23.6 °C

Humidity: 56.1 % RH

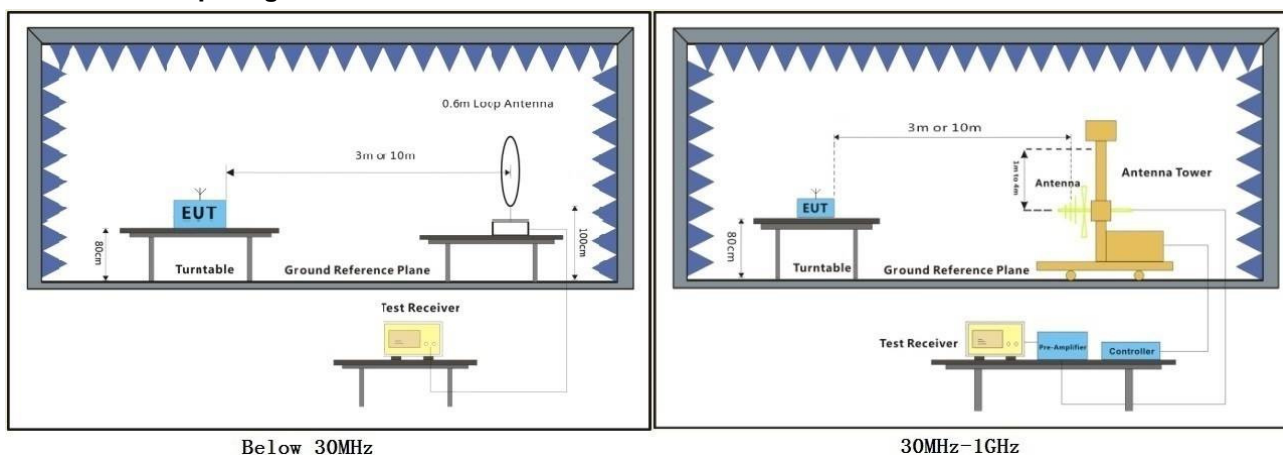
Atmospheric Pressure: 1008 mbar

7.3.2 Test Mode Description

Pre-scan / Mode Description
Final test Code

Final test 00 TX_non-Hop mode Keep the EUT in continuously transmitting mode with GFSK modulation, Pi/4DQPSK modulation, 8DPSK modulation. All modes have been tested and only the data of worst case is recorded in the report.

7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

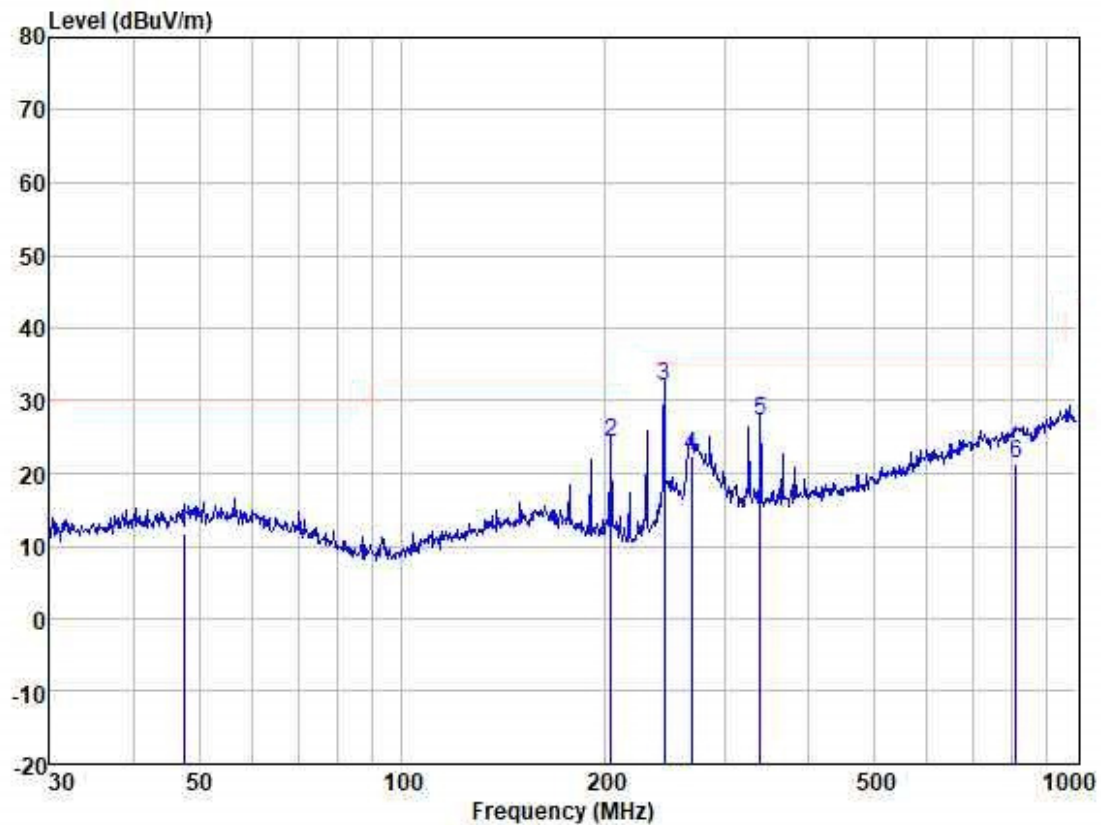
- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. 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.
- d. 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.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. 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 quasi-peak method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. 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.
- i. Repeat above procedures until all frequencies measured was complete.

Remark:

1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. Scan from 9kHz to 30MHz, the disturbance 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.



Test Mode: 00; Polarity: Horizontal



Site : SGS
Job :
Model :
Power :
Test Mode : RT TX_non-Hop

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	47.492	24.99	13.94	0.73	27.97	11.69			HORIZONTAL	QP
2	204.238	40.52	10.02	1.22	27.45	24.31			HORIZONTAL	QP
3	245.090	46.04	11.69	1.51	27.28	31.96			HORIZONTAL	QP
4	268.485	35.62	12.54	1.61	27.24	22.53			HORIZONTAL	QP
5	339.589	38.47	14.32	1.75	27.32	27.22			HORIZONTAL	QP
6	813.112	23.92	23.27	2.54	28.28	21.45			HORIZONTAL	QP



Frequency (MHz)	Level @10m (dBuV/m)	Convert Factor (dB)*	Level @ 3m (dBuV/m)	Limit @3m (dBuV/m)	Over limit (dB)	Remark
47.492	11.69	10.46	22.15	40.00	-17.85	QP
204.238	24.31	10.46	34.77	43.52	-8.75	QP
245.090	31.96	10.46	42.42	46.02	-3.60	QP
268.485	22.53	10.46	32.99	46.02	-13.03	QP
339.589	27.22	10.46	37.68	46.02	-8.34	QP
813.112	21.45	10.46	31.91	46.02	-14.11	QP

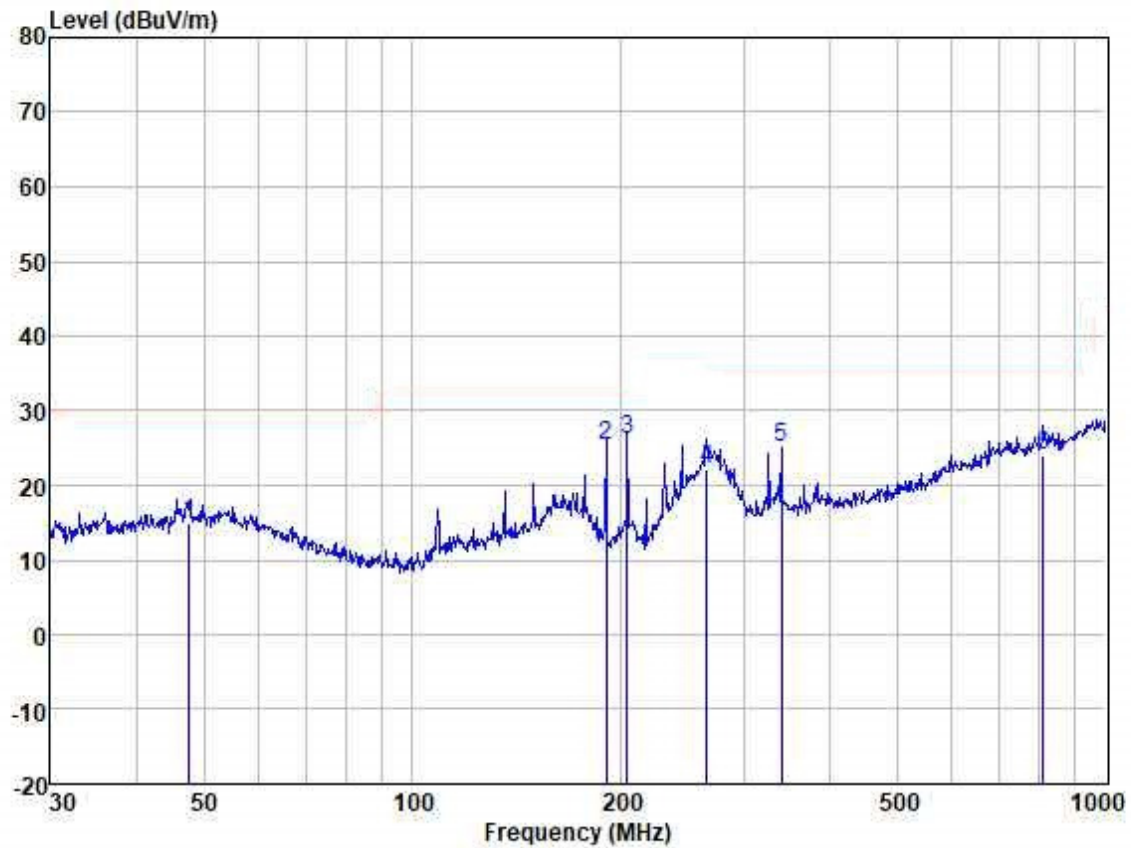
*Remark:

Level (dBuV/m) @3m = Level (dBuV/m) @10m + Convert Factor (dB)

Convert Factor (dB) = $20 \times \log(\text{Measurement Distance} / \text{Specified Distance}) = 20 \times \log(10/3) = 10.46 \text{ dB}$
according to 15.31 (f) (1)



Test Mode: 00; Polarity: Vertical



Site : SGS
Job :
Model :
Power :
Test Mode : RT TX_non-Hop

Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 47.659	28.18	13.94	0.73	27.97	14.88			VERTICAL	QP
2 190.405	40.79	11.09	1.14	27.59	25.43			VERTICAL	QP
3 204.238	42.22	10.02	1.22	27.45	26.01			VERTICAL	QP
4 265.676	35.31	12.36	1.60	27.25	22.02			VERTICAL	QP
5 340.782	36.29	14.33	1.75	27.32	25.05			VERTICAL	QP
6 813.112	26.43	23.27	2.54	28.28	23.96			VERTICAL	QP



Frequency (MHz)	Level @10m (dBuV/m)	Convert Factor (dB)*	Level @ 3m (dBuV/m)	Limit @3m (dBuV/m)	Over limit (dB)	Remark
47.659	14.88	10.46	25.34	40.00	-14.66	QP
190.405	25.43	10.46	35.89	43.52	-7.63	QP
204.238	26.01	10.46	36.47	43.52	-7.05	QP
265.676	22.02	10.46	32.48	46.02	-13.54	QP
340.782	25.05	10.46	35.51	46.02	-10.51	QP
813.112	23.96	10.46	34.42	46.02	-11.60	QP

*Remark:

Level (dBuV/m) @3m = Level (dBuV/m) @10m + Convert Factor (dB)

Convert Factor (dB) = $20 \times \log(\text{Measurement Distance} / \text{Specified Distance}) = 20 \times \log(10/3) =$

10.46 dB according to 15.31 (f) (1)



7.4 Radiated Spurious Emissions Above 1GHz

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

Test Method: ANSI C63.10 (2013) Section 6.6

Limit:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance(meters)
Above 1000	500	3

7.4.1 E.U.T. Operation

Operating Environment:

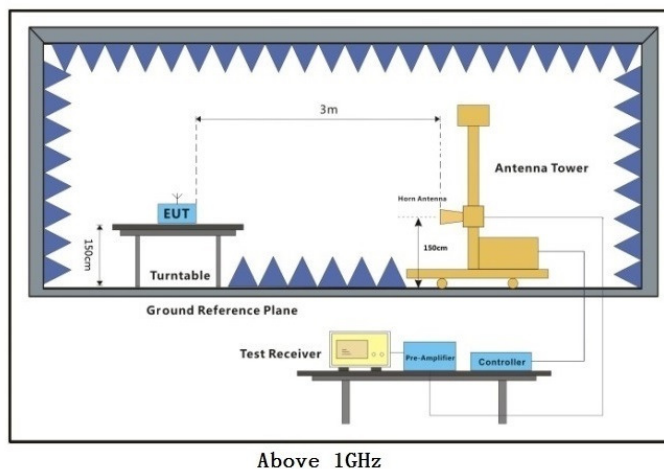
Temperature: 25.0 °C Humidity: 60.2 % RH Atmospheric Pressure: 1020 mbar

7.4.2 Test Mode Description

Pre-scan / Mode Description
Final test Code

Final test 00 TX_non-Hop mode_Keep the EUT in continuously transmitting mode with GFSK modulation, Pi/4DQPSK modulation, 8DPSK modulation. All modes have been tested and only the data of worst case is recorded in the report.

7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

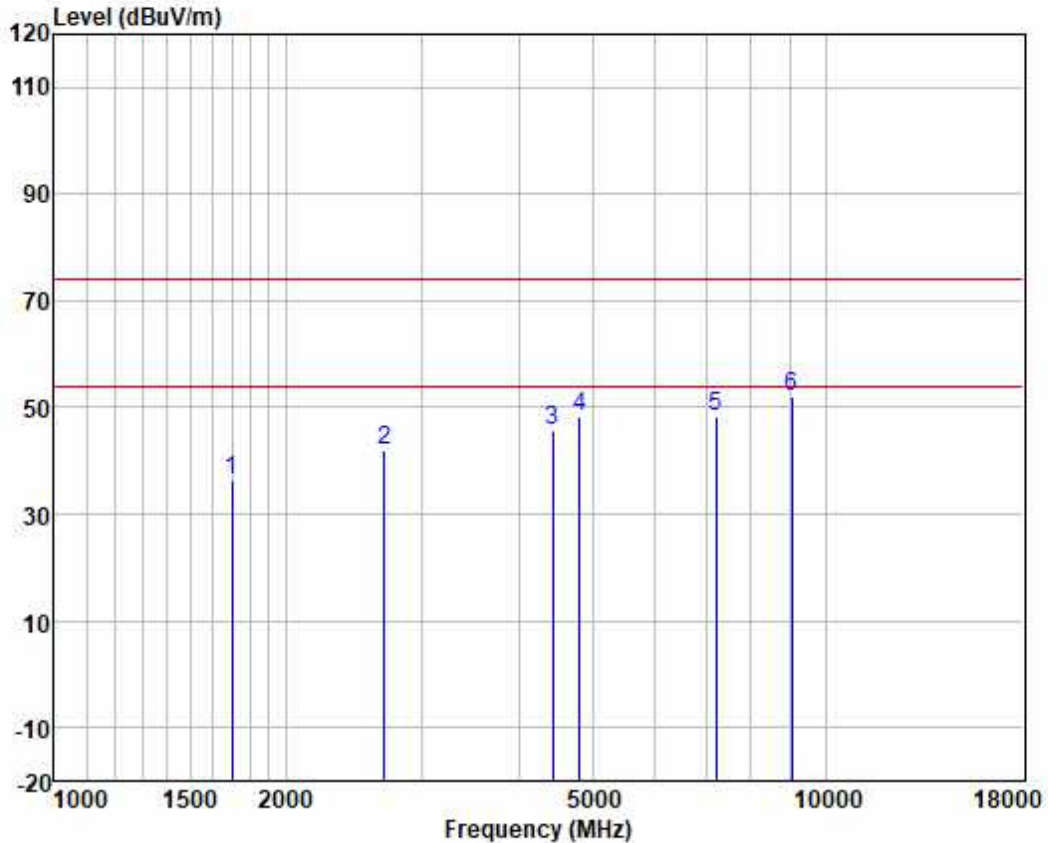
- a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. 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.
- d. 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.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. 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 or average method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. 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.
- i. Repeat above procedures until all frequencies measured was complete.

Remark:

1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. Scan from 1GHz to 25GHz, the disturbance above 18GHz 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.
3. As shown in this section, 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.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for Peak detection (PK) and Average detection (AV) at frequency above 1GHz.
- 5:For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.



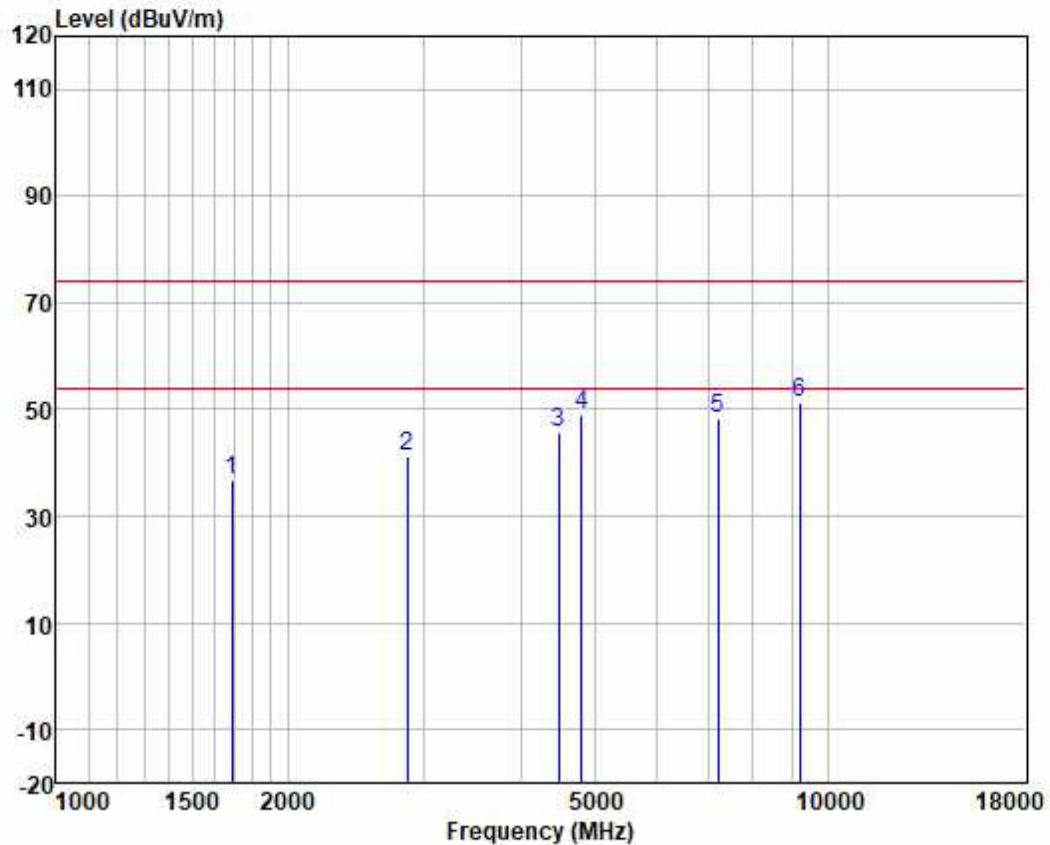
Test Mode: 00; Polarity: Vertical; Modulation: GFSK; Channel: Low



	Freq	ReadAntenna	Cable	Preamp	Limit	Over			
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1702.042	46.34	25.15	2.85	38.03	36.31	74.00	-37.69	VERTICAL peak
2	2679.464	47.90	28.12	3.59	37.73	41.88	74.00	-32.12	VERTICAL peak
3	4430.628	44.73	33.87	4.61	37.45	45.76	74.00	-28.24	VERTICAL peak
4	4804.000	46.68	34.16	4.81	37.38	48.27	74.00	-25.73	VERTICAL peak
5	7206.000	43.85	35.63	5.93	37.17	48.24	74.00	-25.76	VERTICAL peak
6	9047.272	44.74	37.67	6.60	37.14	51.87	74.00	-22.13	VERTICAL peak



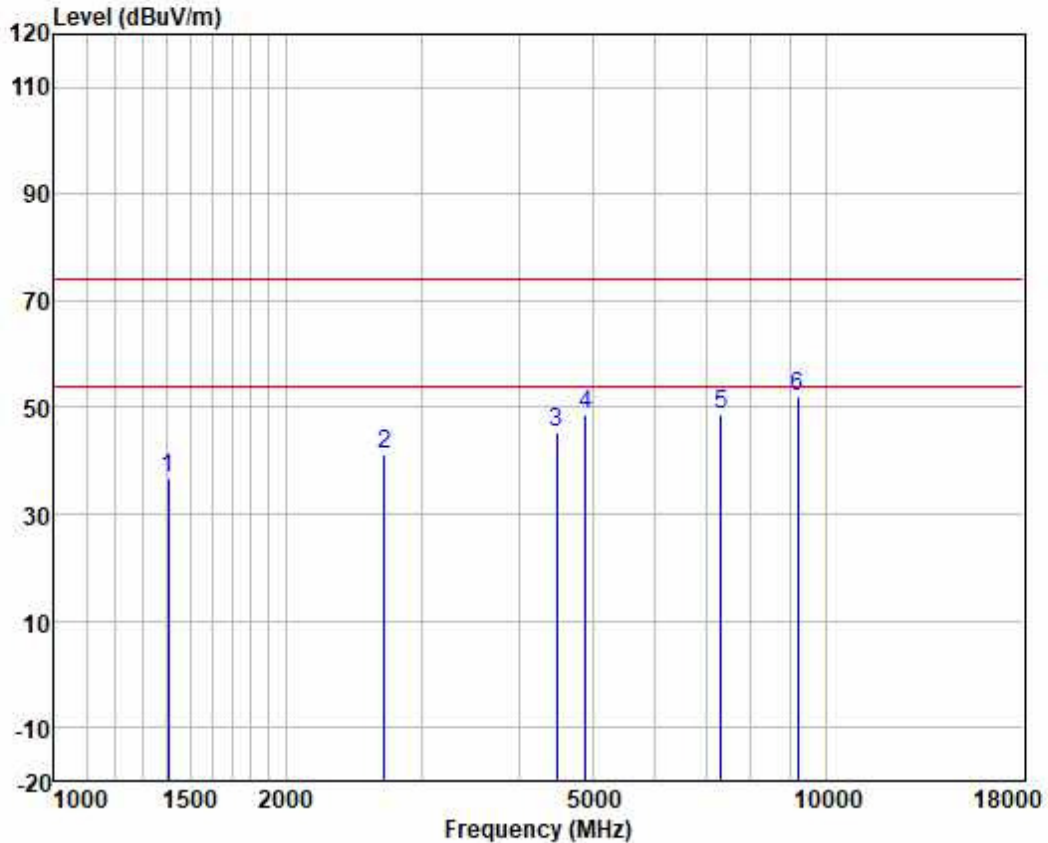
Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; Channel:Low



	ReadAntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1692.231	46.93	25.09	2.84	38.03	36.83	74.00	-37.17	HORIZONTAL peak
2	2855.380	46.54	28.53	3.75	37.70	41.12	74.00	-32.88	HORIZONTAL peak
3	4482.150	44.33	34.12	4.62	37.44	45.63	74.00	-28.37	HORIZONTAL peak
4	4804.000	47.53	34.16	4.81	37.38	49.12	74.00	-24.88	HORIZONTAL peak
5	7206.000	43.86	35.63	5.93	37.17	48.25	74.00	-25.75	HORIZONTAL peak
6	9205.540	43.79	37.97	6.73	37.13	51.36	74.00	-22.64	HORIZONTAL peak



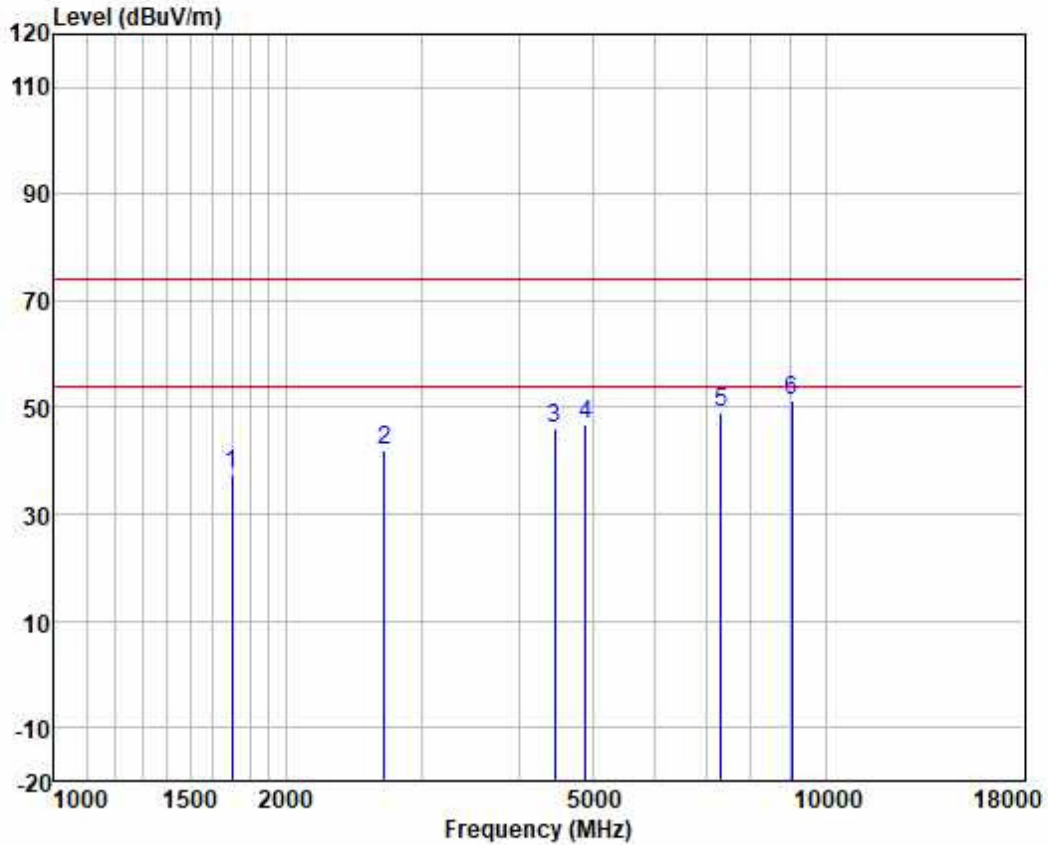
Test Mode: 00; Polarity: Vertical; Modulation:GFSK; Channel:middle



	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1406.443	48.41	24.27	2.66	38.47	36.87	74.00	-37.13	VERTICAL peak
2	2679.464	47.12	28.12	3.59	37.73	41.10	74.00	-32.90	VERTICAL peak
3	4482.150	44.20	34.12	4.62	37.44	45.50	74.00	-28.50	VERTICAL peak
4	4882.000	46.85	34.15	4.86	37.35	48.51	74.00	-25.49	VERTICAL peak
5	7323.000	43.77	36.07	5.98	37.18	48.64	74.00	-25.36	VERTICAL peak
6	9205.540	44.66	37.97	6.73	37.13	52.23	74.00	-21.77	VERTICAL peak



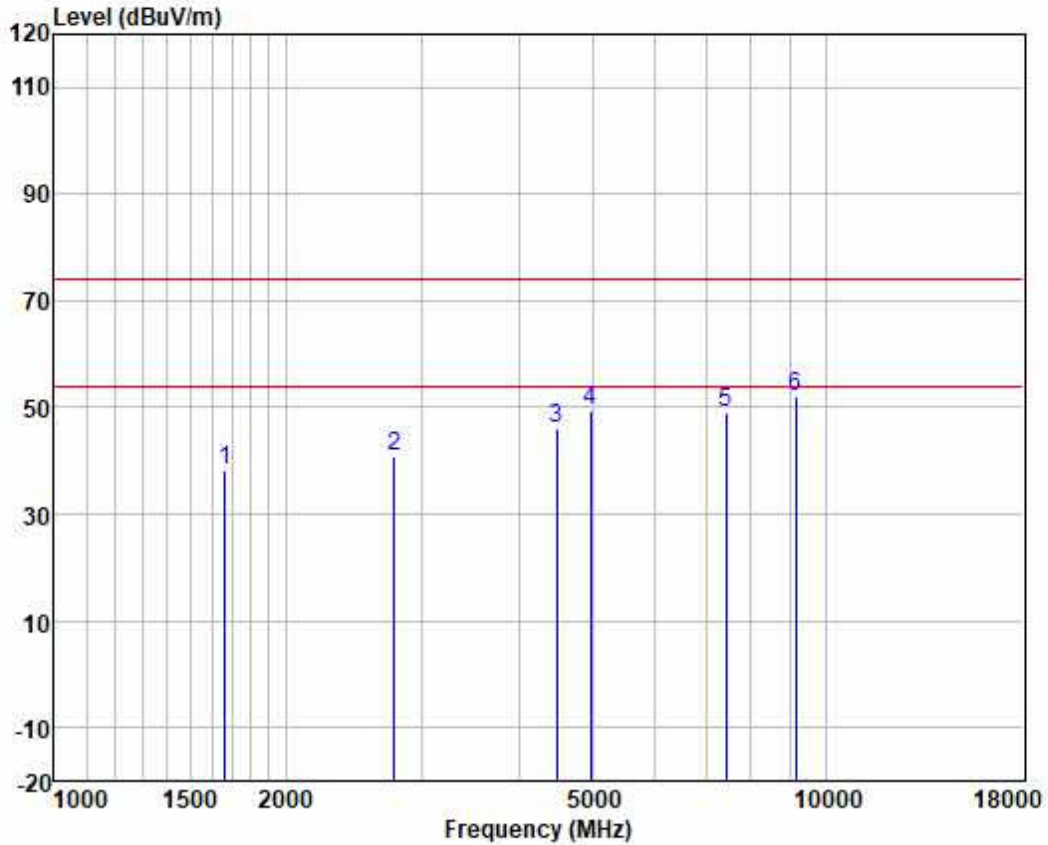
Test Mode: 00; Polarity: Horizontal; Modulation: GFSK; Channel: middle



	Freq	ReadAntenna	Cable	Preamp	Limit	Over			
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1702.042	47.45	25.15	2.85	38.03	37.42	74.00	-36.58	HORIZONTAL peak
2	2679.464	47.91	28.12	3.59	37.73	41.89	74.00	-32.11	HORIZONTAL peak
3	4456.315	45.02	34.00	4.61	37.45	46.18	74.00	-27.82	HORIZONTAL peak
4	4882.000	45.25	34.15	4.86	37.35	46.91	74.00	-27.09	HORIZONTAL peak
5	7323.000	44.34	36.07	5.98	37.18	49.21	74.00	-24.79	HORIZONTAL peak
6	9047.272	44.27	37.67	6.60	37.14	51.40	74.00	-22.60	HORIZONTAL peak



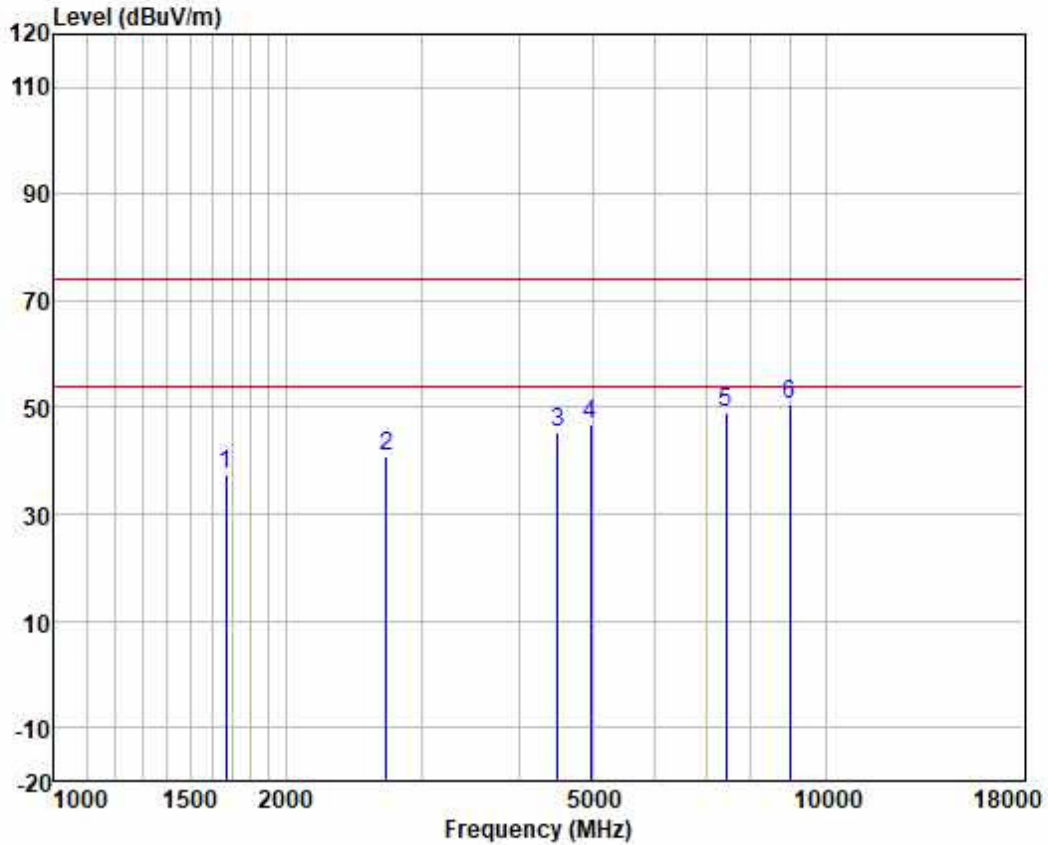
Test Mode: 00; Polarity: Vertical; Modulation: GFSK; Channel: High



	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
		Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1663.137	48.59	24.93	2.81	38.06	38.27	74.00	-35.73	VERTICAL	peak
2	2758.041	46.55	28.35	3.68	37.72	40.86	74.00	-33.14	VERTICAL	peak
3	4482.150	44.77	34.12	4.62	37.44	46.07	74.00	-27.93	VERTICAL	peak
4	4960.000	47.68	34.15	4.89	37.32	49.40	74.00	-24.60	VERTICAL	peak
5	7440.000	43.82	36.33	6.02	37.18	48.99	74.00	-25.01	VERTICAL	peak
6	9152.479	44.76	37.85	6.68	37.13	52.16	74.00	-21.84	VERTICAL	peak



Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; Channel:High



	Freq	ReadAntenna	Cable	Preamp	Limit	Over			
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1672.779	47.68	24.98	2.82	38.05	37.43	74.00	-36.57	HORIZONTAL peak
2	2694.998	46.88	28.16	3.60	37.73	40.91	74.00	-33.09	HORIZONTAL peak
3	4495.125	44.11	34.17	4.62	37.44	45.46	74.00	-28.54	HORIZONTAL peak
4	4960.000	45.09	34.15	4.89	37.32	46.81	74.00	-27.19	HORIZONTAL peak
5	7440.000	44.05	36.33	6.02	37.18	49.22	74.00	-24.78	HORIZONTAL peak
6	8995.123	43.65	37.59	6.57	37.15	50.66	74.00	-23.34	HORIZONTAL peak



7.5 Conducted Peak Output Power

Test Requirement 47 CFR Part 15, Subpart C 15.247(b)(1)

Test Method: ANSI C63.10 (2013) Section 7.8.5

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

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 23.7 °C

Humidity: 58.2 % RH

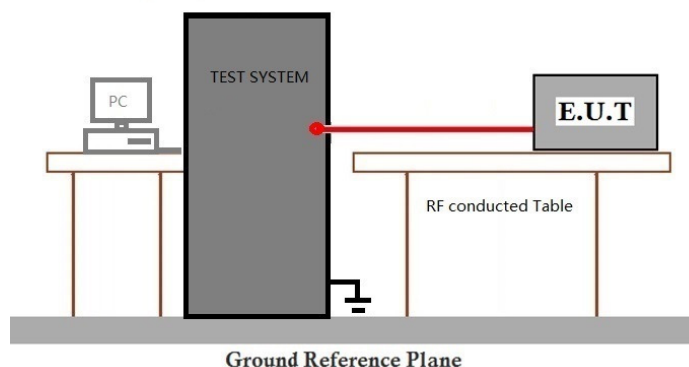
Atmospheric Pressure: 1020 mbar

7.5.2 Test Mode Description

Pre-scan / Mode
Final test Code Description

Final test 00 TX_non-Hop mode_Keep the EUT in continuously transmitting mode with GFSK modulation, Pi/4DQPSK modulation, 8DPSK modulation. All modes have been tested and only the data of worst case is recorded in the report.

7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

Note: Since the verify power the same operating range bandwidth and smaller power can be covered by the higher power.

Please Refer to Appendix for Details



SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou 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 <https://www.sgs.com/en/Terms-and-Conditions>. 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.198, Kezhu Road, Science City, Economic & Technological Development Area, Guangzhou, Guangdong, China 510663 t (86-20) 82155555 www.ssgroup.com.cn
中国·广东·广州高新技术产业开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 sgs.china@sgs.com

7.6 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.247(a)(1)

Test Method: ANSI C63.10 (2013) Section 7.8.7

Limit:

20 dB bandwidth of the hopping channel	Hopping frequencies	Average time of occupancy
less than 250 kHz	least 50 hopping frequencies	shall not be greater than 0.4 seconds within a 20 second period
250 kHz to 500kHz	least 25 hopping frequencies	shall not be greater than 0.4 seconds within a 10 second period

7.6.1 E.U.T. Operation

Operating Environment:

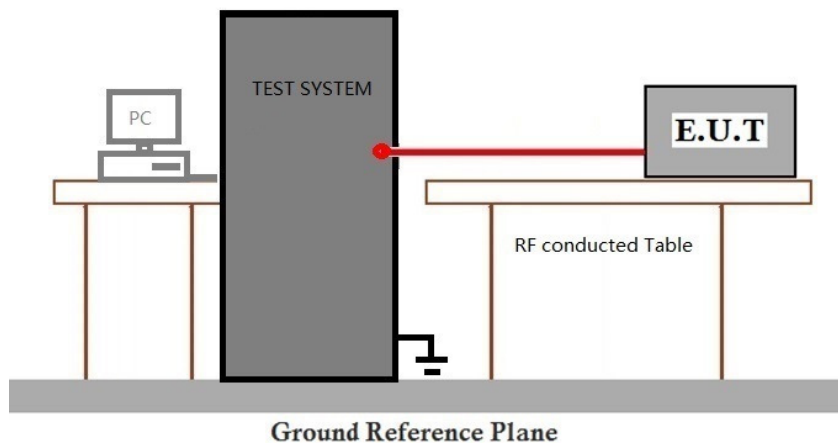
Temperature: 23.7 °C Humidity: 58.2 % RH Atmospheric Pressure: 1020 mbar

7.6.2 Test Mode Description

Pre-scan / Mode
Final test Code Description

Final test 00 TX_non-Hop mode Keep the EUT in continuously transmitting mode with GFSK modulation, Pi/4DQPSK modulation, 8DPSK modulation. All modes have been tested and only the data of worst case is recorded in the report.

7.6.3 Test Setup Diagram



7.6.4 Measurement Procedure and Data

Please Refer to Appendix for Details



7.7 Carrier Frequencies Separation

Test Requirement 47 CFR Part 15, Subpart C 15.247a(1)

Test Method: ANSI C63.10 (2013) Section 7.8.2

Limit:

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

7.7.1 E.U.T. Operation

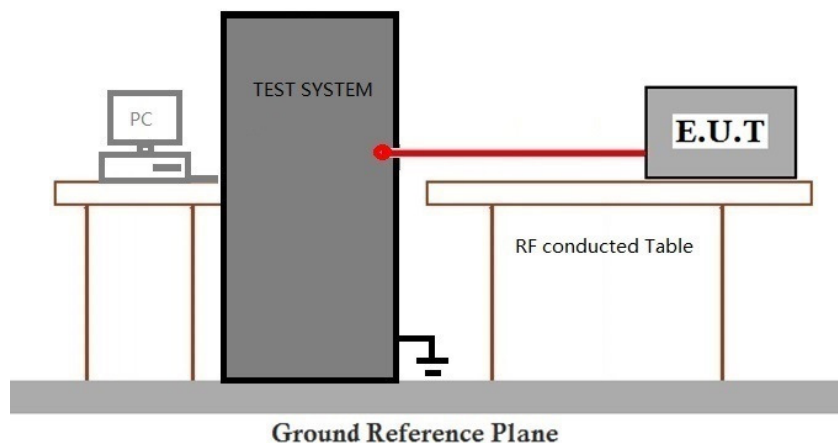
Operating Environment:

Temperature: 23.7 °C Humidity: 58.2 % RH Atmospheric Pressure: 1020 mbar

7.7.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 01	TX_Hop mode_Keep the EUT in frequency hopping mode with GFSK modulation, Pi/4DQPSK modulation, 8DPSK modulation. All modes have been tested and only the data of worst case is recorded in the report.

7.7.3 Test Setup Diagram



7.7.4 Measurement Procedure and Data

Please Refer to Appendix for Details



7.8 Hopping Channel Number

Test Requirement 47 CFR Part 15, Subpart C 15.247a(1)(iii)

Test Method: ANSI C63.10 (2013) Section 7.8.3

Limit:

Frequency range(MHz)	Number of hopping channels (minimum)
902-928	50 for 20dB bandwidth <250kHz
	25 for 20dB bandwidth ≥250kHz
2400-2483.5	15
5725-5850	75

7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 23.7 °C

Humidity: 58.2 % RH

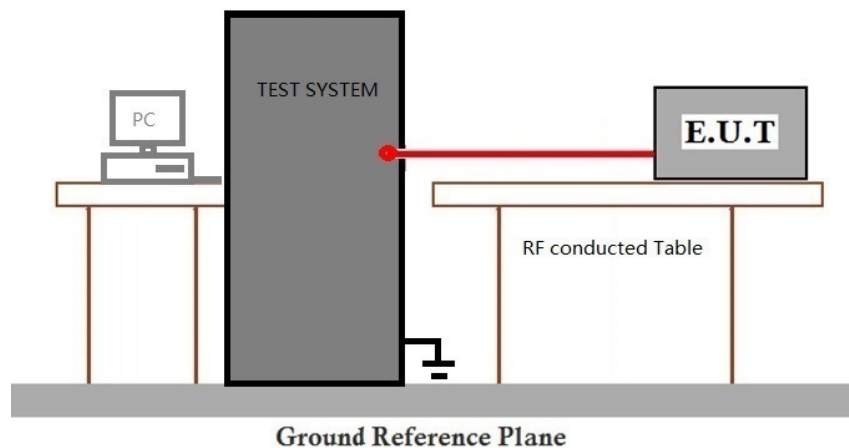
Atmospheric Pressure: 1020 mbar

7.8.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	

Final test	01	TX_Hop mode_Keep the EUT in frequency hopping mode with GFSK modulation, Pi/4DQPSK modulation, 8DPSK modulation. All modes have been tested and only the data of worst case is recorded in the report.
------------	----	--

7.8.3 Test Setup Diagram



7.8.4 Measurement Procedure and Data

Please Refer to Appendix for Details



7.9 Dwell Time

Test Requirement 47 CFR Part 15, Subpart C 15.247a(1)(iii)

Test Method: ANSI C63.10 (2013) Section 7.8.4

Limit:

Frequency(MHz)	Limit
902-928	0.4S within a 20S period(20dB bandwidth<250kHz)
	0.4S within a 10S period(20dB bandwidth≥250kHz)
2400-2483.5	0.4S within a period of 0.4S multiplied by the number of hopping channels
5725-5850	0.4S within a 30S period

7.9.1 E.U.T. Operation

Operating Environment:

Temperature: 23.7 °C

Humidity: 58.2 % RH

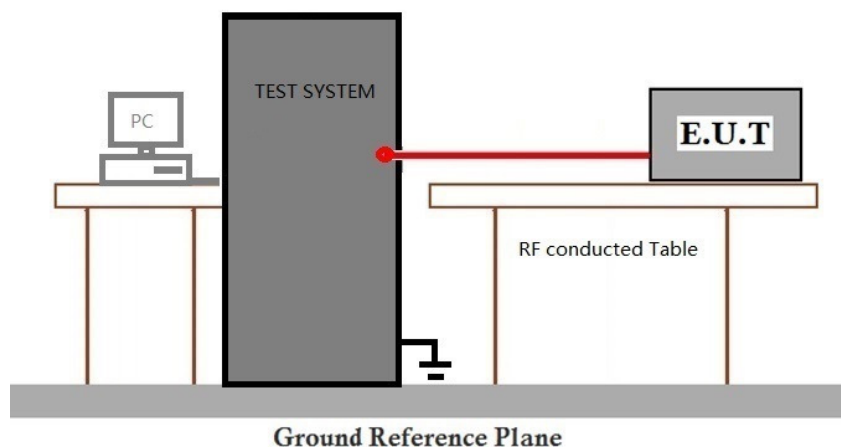
Atmospheric Pressure: 1020 mbar

7.9.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	

Final test	01	TX_Hop mode_Keep the EUT in frequency hopping mode with GFSK modulation, Pi/4DQPSK modulation, 8DPSK modulation. All modes have been tested and only the data of worst case is recorded in the report.
------------	----	--

7.9.3 Test Setup Diagram



7.9.4 Measurement Procedure and Data

Please Refer to Appendix for Details



7.10 Conducted Band Edges Measurement

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

Test Method: ANSI C63.10 (2013) Section 7.8.6

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)).

7.10.1 E.U.T. Operation

Operating Environment:

Temperature: 23.7 °C

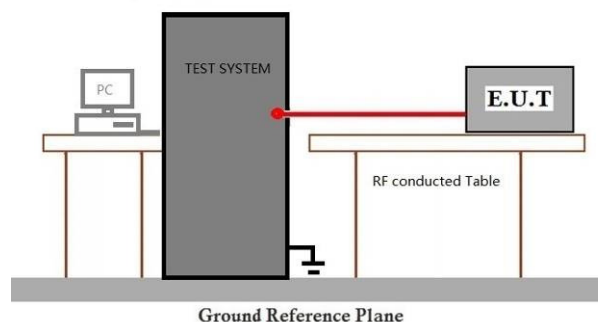
Humidity: 58.2 % RH

Atmospheric Pressure: 1020 mbar

7.10.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX_non-Hop mode_Keep the EUT in continuously transmitting mode with GFSK modulation, Pi/4DQPSK modulation, 8DPSK modulation. All modes have been tested and only the data of worst case is recorded in the report.
Final test	01	TX_Hop mode_Keep the EUT in frequency hopping mode with GFSK modulation, Pi/4DQPSK modulation, 8DPSK modulation. All modes have been tested and only the data of worst case is recorded in the report.

7.10.3 Test Setup Diagram



7.10.4 Measurement Procedure and Data

Please Refer to Appendix for Details



SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou 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 <https://www.sgs.com/en/Terms-and-Conditions>. 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.198, Kazhu Road, Science City, Economic & Technological Development Area, Guangzhou, Guangdong, China 510663
中国·广东·广州高新技术产业开发区科学城科珠路198号 邮编: 510663

t (86-20) 82155555 www.sgsgroup.com.cn
t (86-20) 82155555 sgs.china@sgs.com

7.11 Conducted Spurious Emissions

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

Test Method: ANSI C63.10 (2013) Section 7.8.8

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)).

7.11.1 E.U.T. Operation

Operating Environment:

Temperature: 23.7 °C

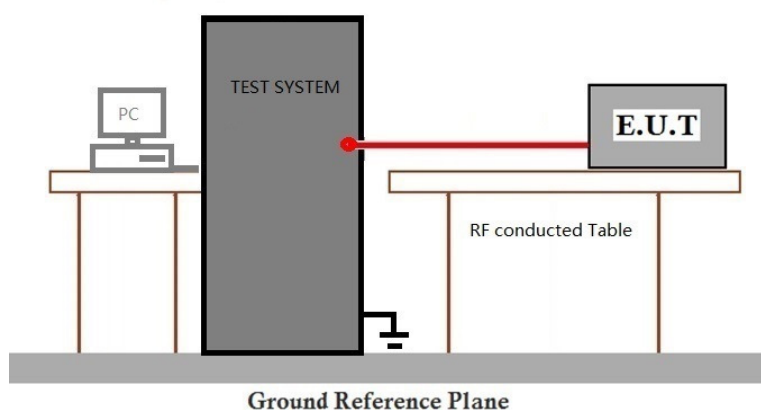
Humidity: 58.2 % RH

Atmospheric Pressure: 1020 mbar

7.11.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX_non-Hop mode_Keep the EUT in continuously transmitting mode with GFSK modulation, Pi/4DQPSK modulation, 8DPSK modulation. All modes have been tested and only the data of worst case is recorded in the report.

7.11.3 Test Setup Diagram



7.11.4 Measurement Procedure and Data

Please Refer to Appendix for Details



SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou Branch, Testing Center EEC 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 <https://www.sgs.com/en/Terms-and-Conditions>. 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.198, Kezhu Road, Science City, Economic & Technological Development Area, Guangzhou, Guangdong, China 510663
中国·广东·广州高新技术产业开发区科学城科珠路198号 邮编: 510663

t (86-20) 82155555 www.sgsgroup.com.cn
t (86-20) 82155555 sgs.china@sgs.com

8 Test Setup Photo

Refer to Appendix - Test Setup Photo for GZCR250400054502



SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou Branch, Testing Center EEC 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 <https://www.sgs.com/en/Terms-and-Conditions>. 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.198, Kezhu Road, Science City, Economic & Technological Development Area, Guangzhou, Guangdong, China 510663
中国·广东·广州高新技术产业开发区科学城科珠路198号 邮编: 510663

t (86-20) 82155555 www.sgsgroup.com.cn
t (86-20) 82155555 sgs.china@sgs.com

9 EUT Constructional Details (EUT Photos)

Refer to External and Internal Photos for GZCR2504000545HS



SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou Branch, Testing Center EEC 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 <https://www.sgs.com/en/Terms-and-Conditions>. 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.198, Kazhu Road, Science City, Economic & Technological Development Area, Guangzhou, Guangdong, China 510663
中国·广东·广州高新技术产业开发区科学城科珠路198号 邮编: 510663

t (86-20) 82155555 www.sgsgroup.com.cn
t (86-20) 82155555 sgs.china@sgs.com

10 Appendix

1. Bandwidth

1.1 Test Result

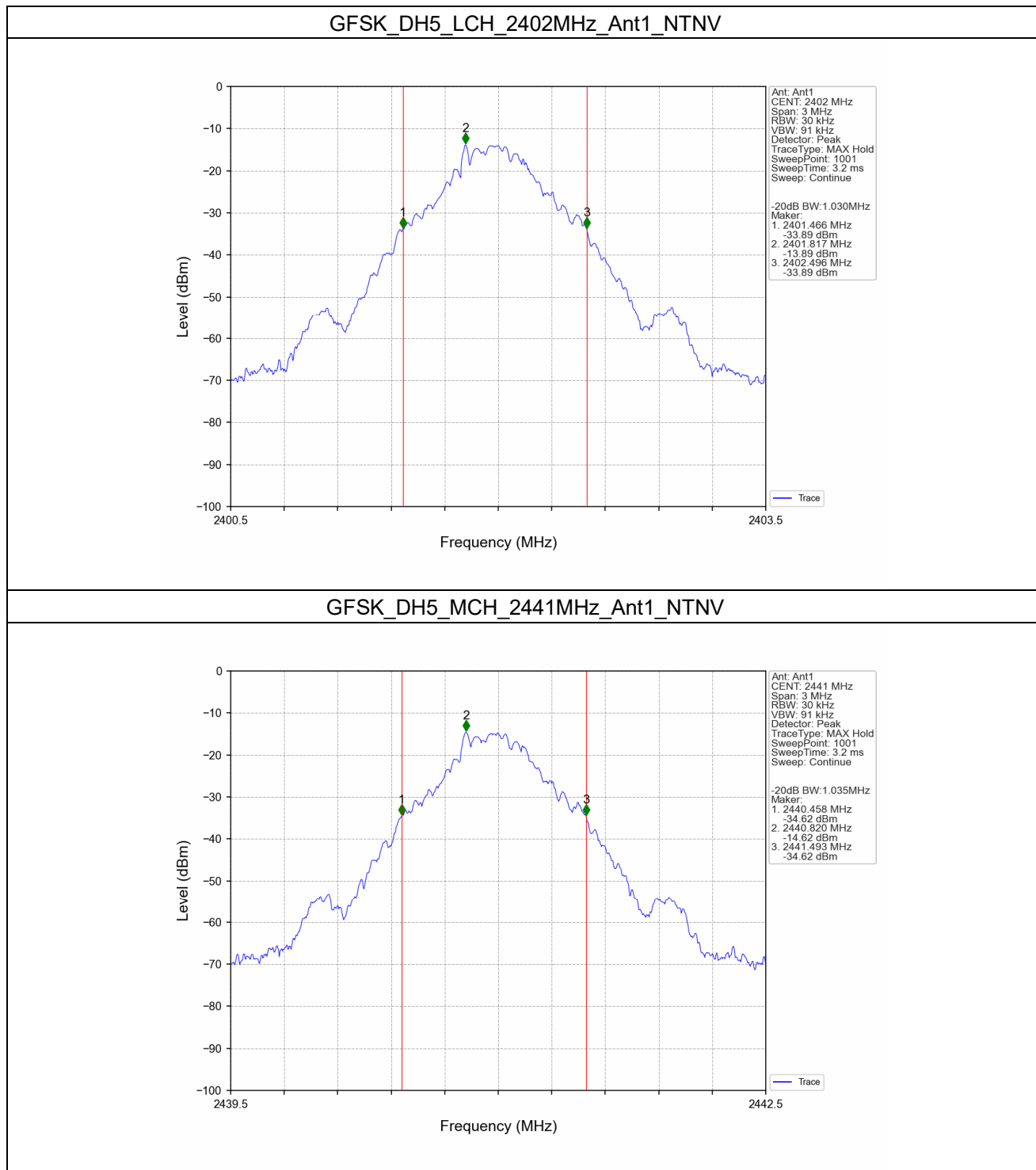
1.1.1 20dB BW

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	20dB Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	1.030	/	Pass
		2441	DH5	1	1.035	/	Pass
		2480	DH5	1	1.028	/	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.324	/	Pass
		2441	2DH5	1	1.297	/	Pass
		2480	2DH5	1	1.313	/	Pass
8DPSK	SISO	2402	3DH5	1	1.305	/	Pass
		2441	3DH5	1	1.302	/	Pass
		2480	3DH5	1	1.304	/	Pass

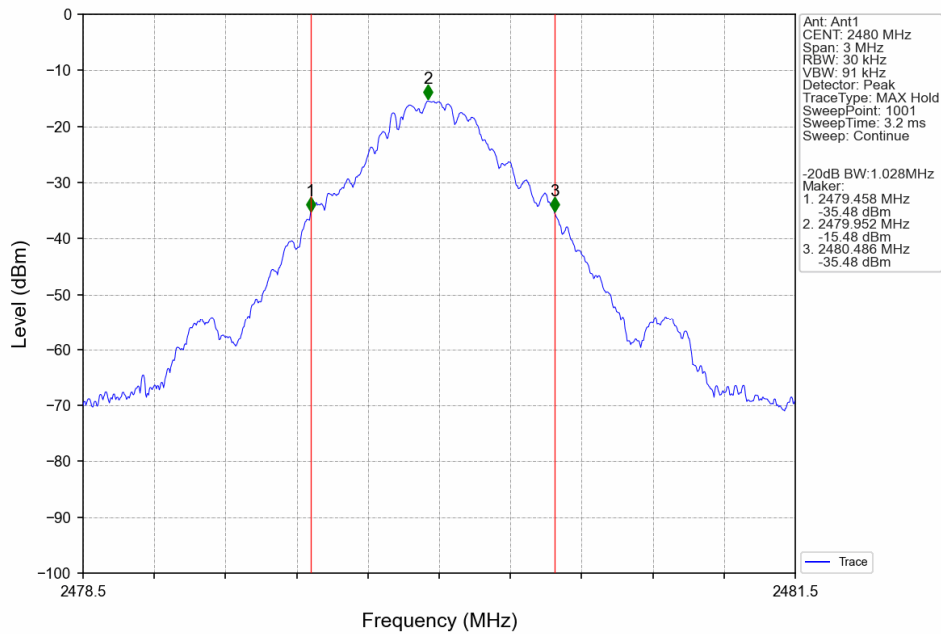


1.2 Test Graph

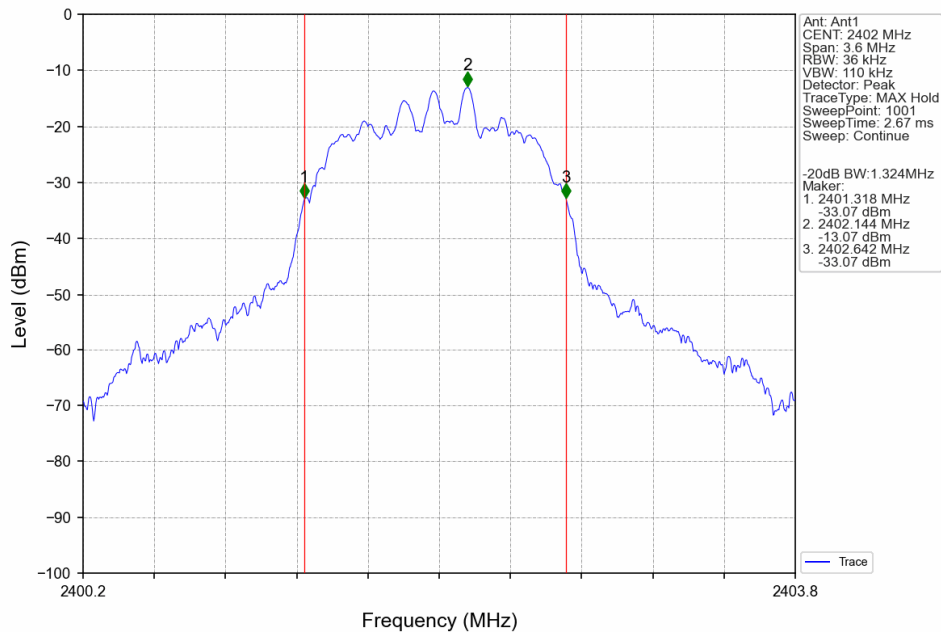
1.2.1 20dB BW



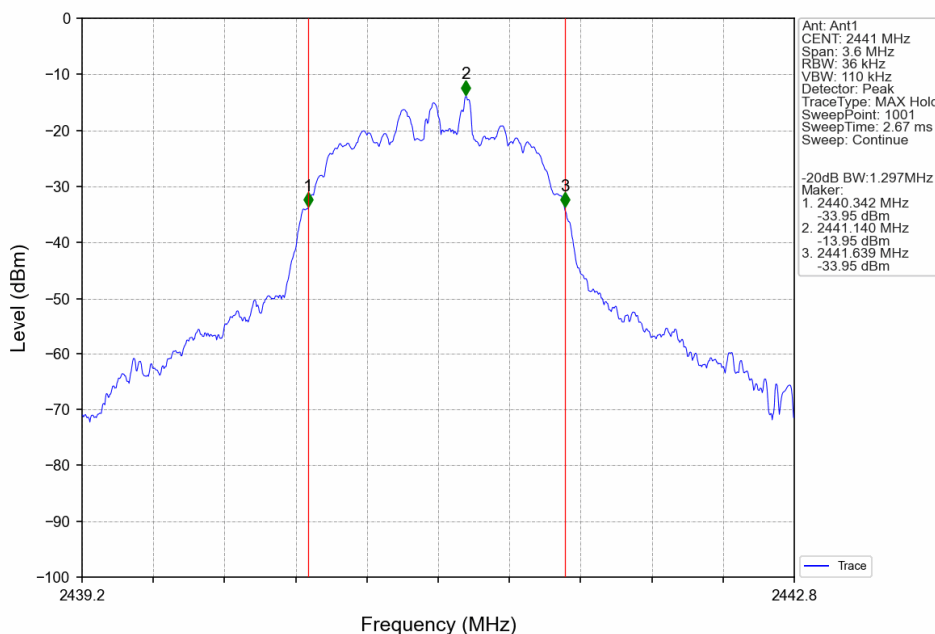
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



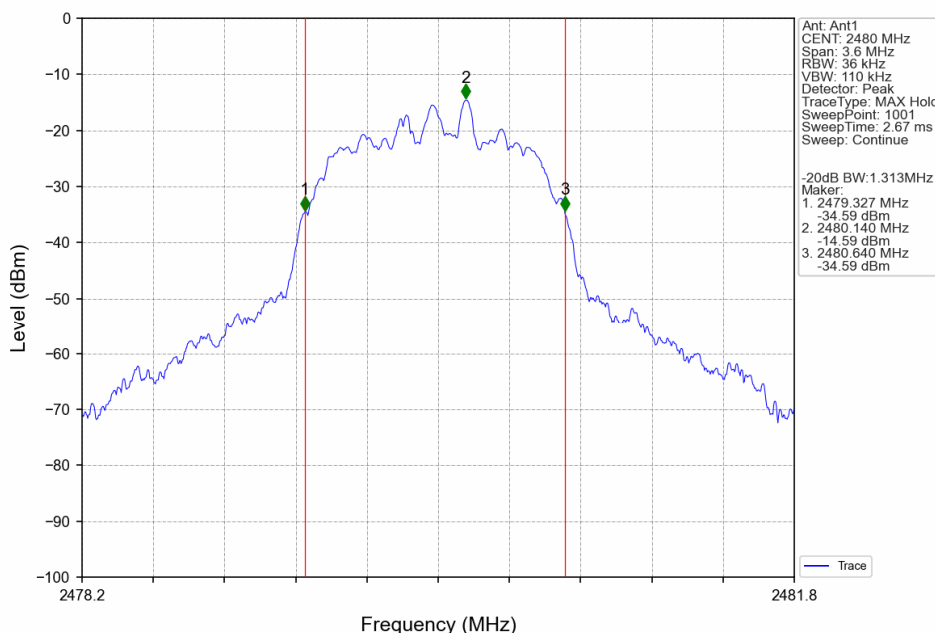
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



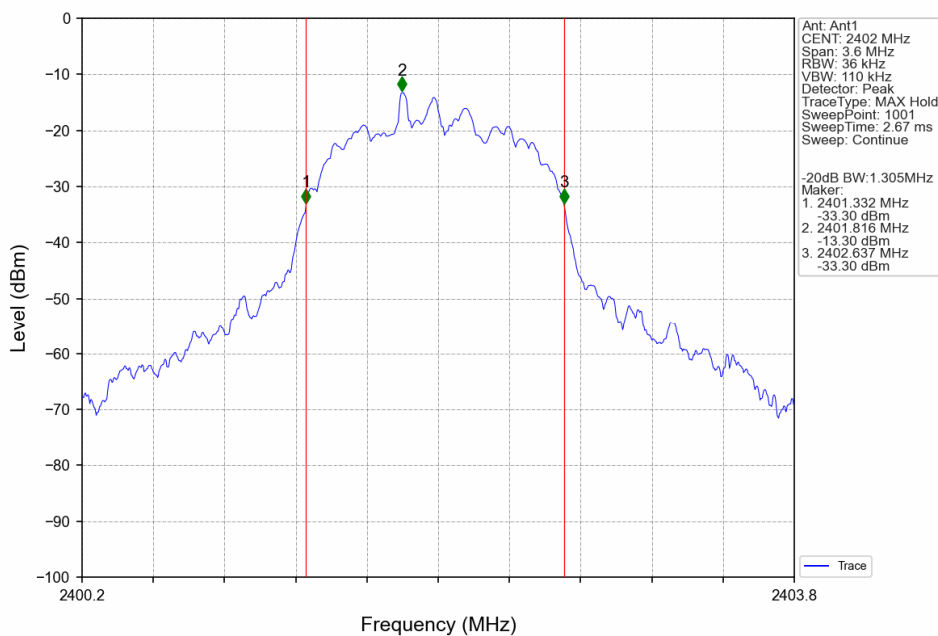
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



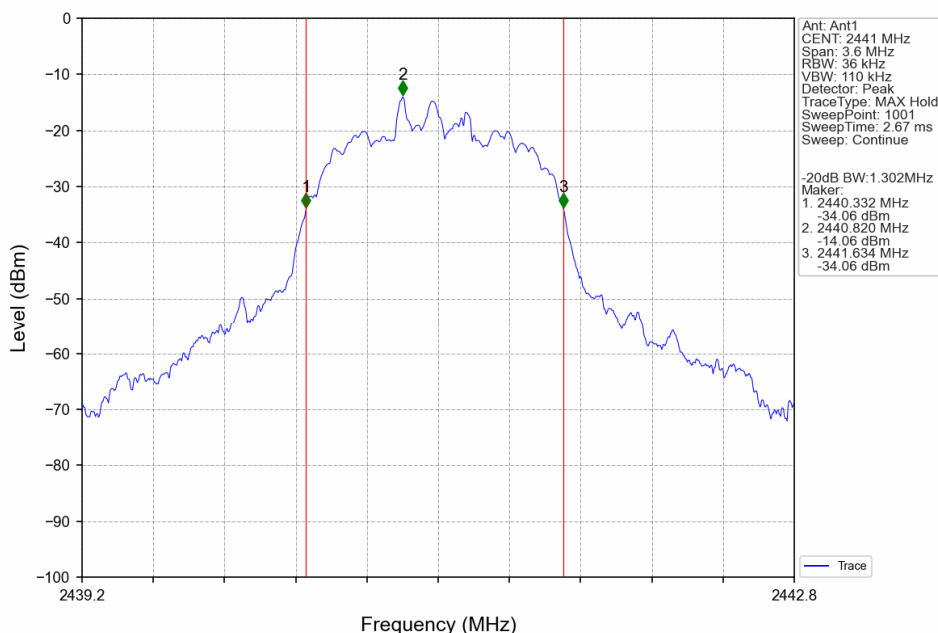
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



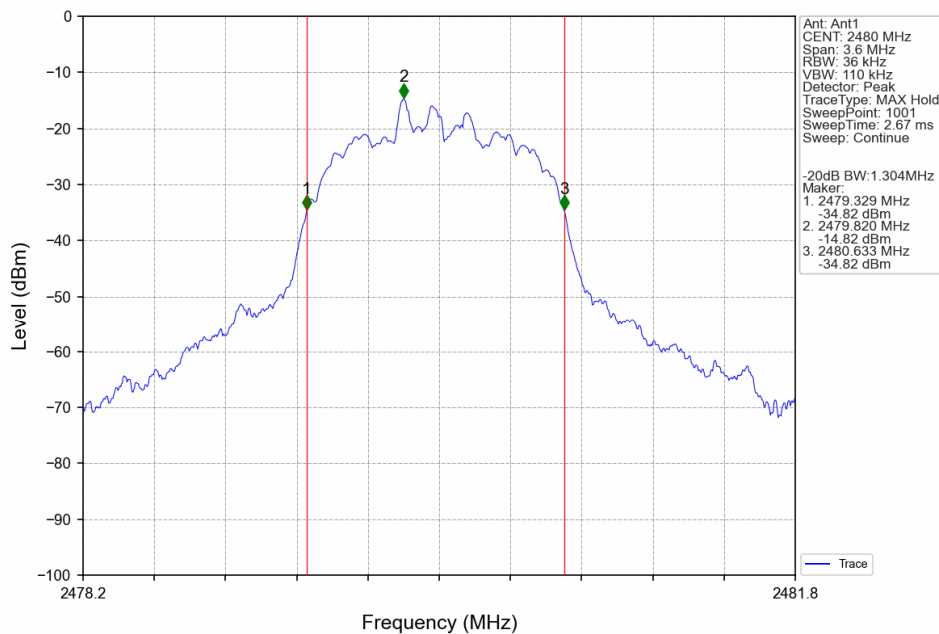
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



2. Maximum Conducted Output Power

2.1 Test Result

2.1.1 Power

Mode	TX Type	Frequency (MHz)	Packet Type	Maximum Peak Conducted Output Power (dBm)		Verdict
				ANT1	Limit	
GFSK	SISO	2402	DH5	-11.49	<=20.97	Pass
		2441	DH5	-12.31	<=20.97	Pass
		2480	DH5	-12.97	<=20.97	Pass
Pi/4DQPSK	SISO	2402	2DH5	-10.63	<=20.97	Pass
		2441	2DH5	-11.48	<=20.97	Pass
		2480	2DH5	-12.14	<=20.97	Pass
8DPSK	SISO	2402	3DH5	-10.24	<=20.97	Pass
		2441	3DH5	-11.06	<=20.97	Pass
		2480	3DH5	-11.71	<=20.97	Pass



3. Carrier Frequency Separation

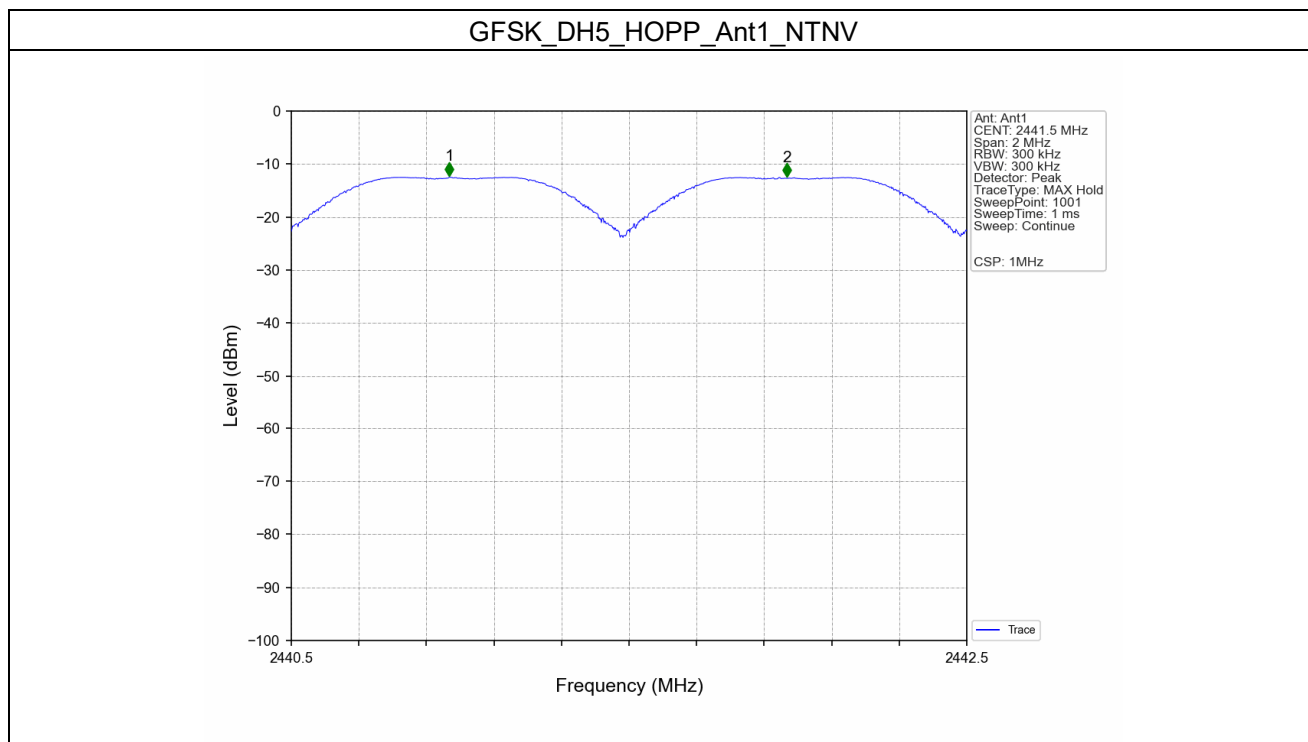
3.1 Test Result

3.1.1 Ant1

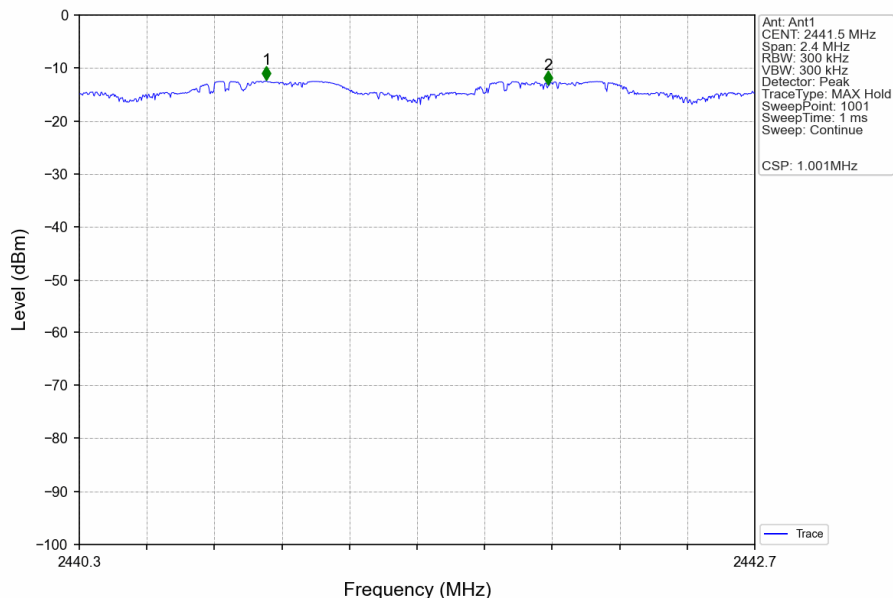
Ant1							
Mode	TX Type	Frequency (MHz)	Packet Type	Channel Separation (MHz)	20dB Bandwidth (MHz)	Limit (MHz)	Verdict
GFSK	SISO	HOPP	DH5	1.000	1.035	≥ 0.69	Pass
Pi/4DQPSK	SISO	HOPP	2DH5	1.001	1.324	≥ 0.883	Pass
8DPSK	SISO	HOPP	3DH5	1.001	1.305	≥ 0.87	Pass

3.2 Test Graph

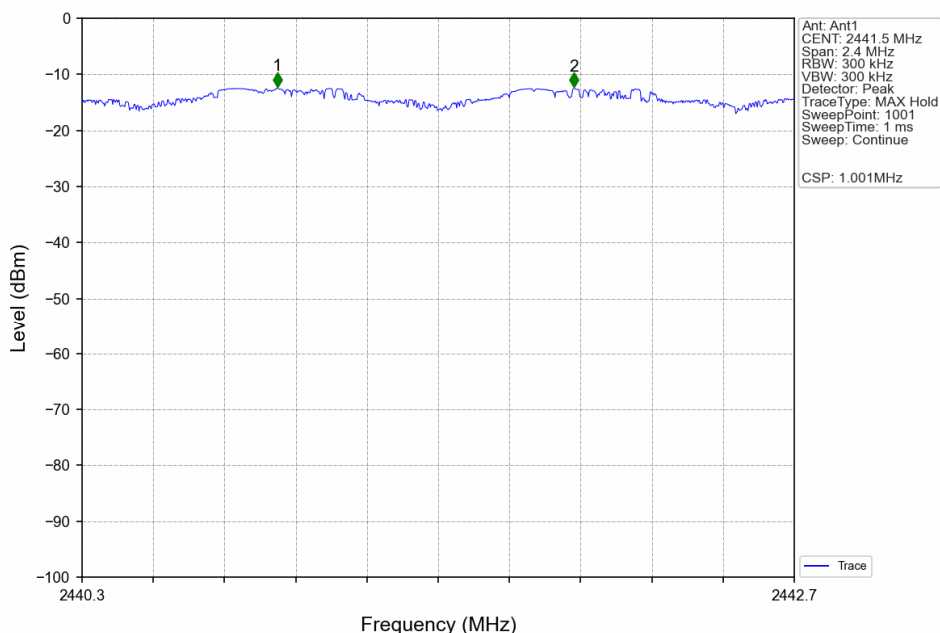
3.2.1 Ant1



Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



4. Number of Hopping Frequencies

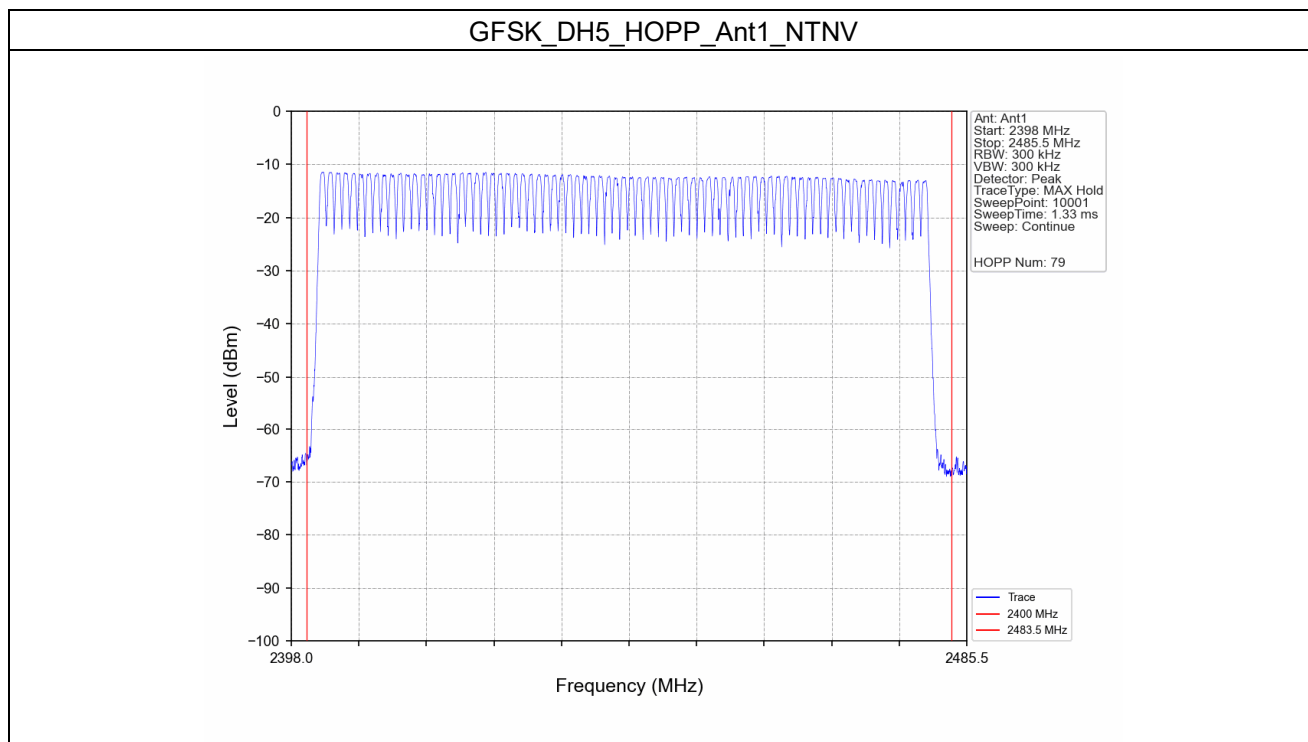
4.1 Test Result

4.1.1 HopNum

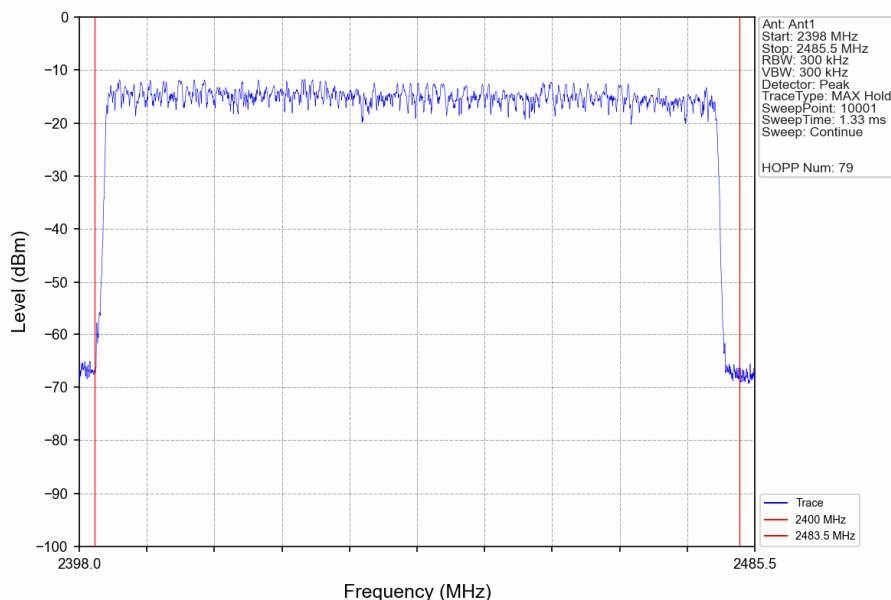
Mode	TX Type	Frequency (MHz)	Packet Type	Num of Hopping Frequencies		Verdict
				ANT1	Limit	
GFSK	SISO	HOPP	DH5	79	≥ 15	Pass
Pi/4DQPSK	SISO	HOPP	2DH5	79	≥ 15	Pass
8DPSK	SISO	HOPP	3DH5	79	≥ 15	Pass

4.2 Test Graph

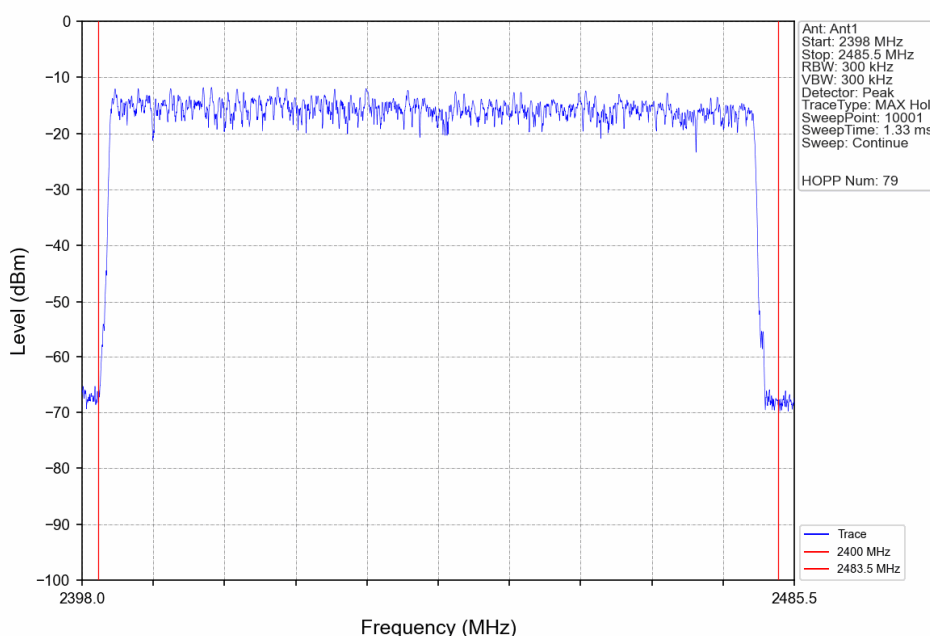
4.2.1 HopNum



Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



5. Time of Occupancy (Dwell Time)

5.1 Test Result

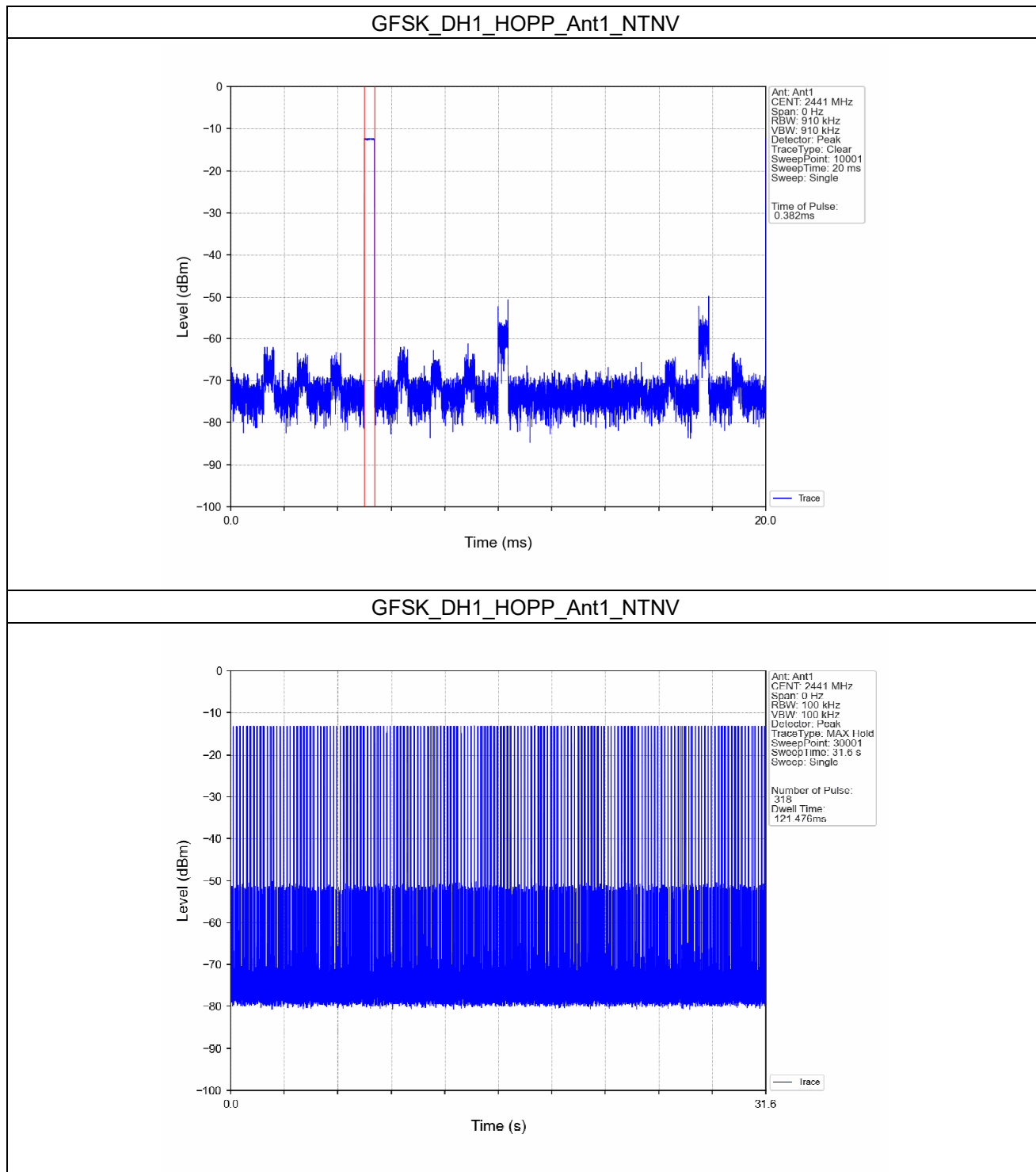
5.1.1 Ant1

Ant1									
Mode	TX Type	Frequency (MHz)	Packet Type	Duration of Single Pulse (ms)	Observation Period (s)	Num of Pulse in Observation Period	Dwell Time (ms)	Limit (ms)	Verdict
GFSK	SISO	HOPP	DH1	0.382	31.600	318	121.476	<=400	Pass
			DH3	1.642	31.600	157	257.794	<=400	Pass
			DH5	2.892	31.600	122	352.824	<=400	Pass
Pi/4DQPSK	SISO	HOPP	2DH1	0.388	31.600	317	122.996	<=400	Pass
			2DH3	1.642	31.600	162	266.004	<=400	Pass
			2DH5	2.896	31.600	117	338.832	<=400	Pass
8DPSK	SISO	HOPP	3DH1	0.390	31.600	317	123.630	<=400	Pass
			3DH3	1.640	31.600	154	252.560	<=400	Pass
			3DH5	2.892	31.600	107	309.444	<=400	Pass

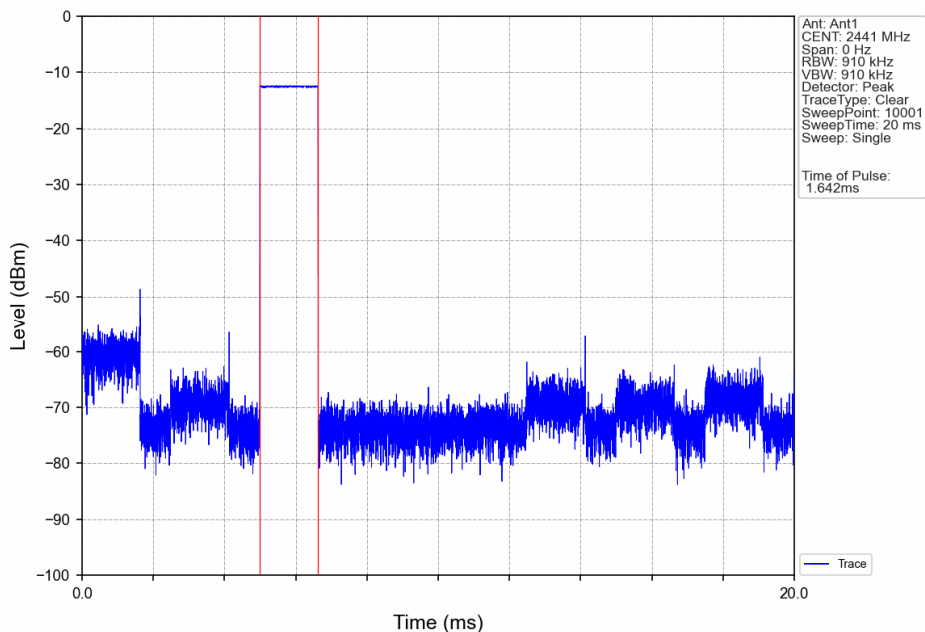


5.2 Test Graph

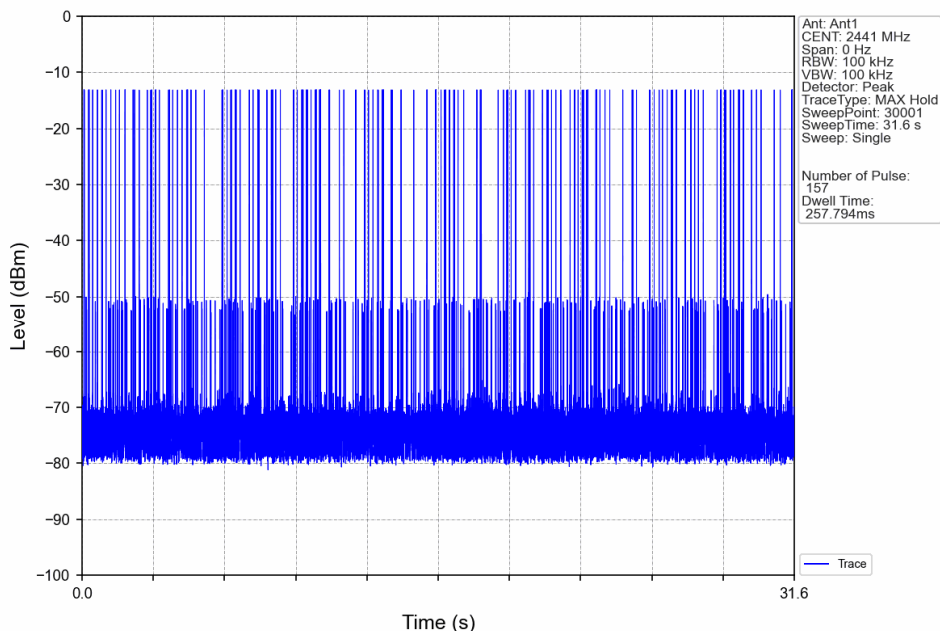
5.2.1 Ant1



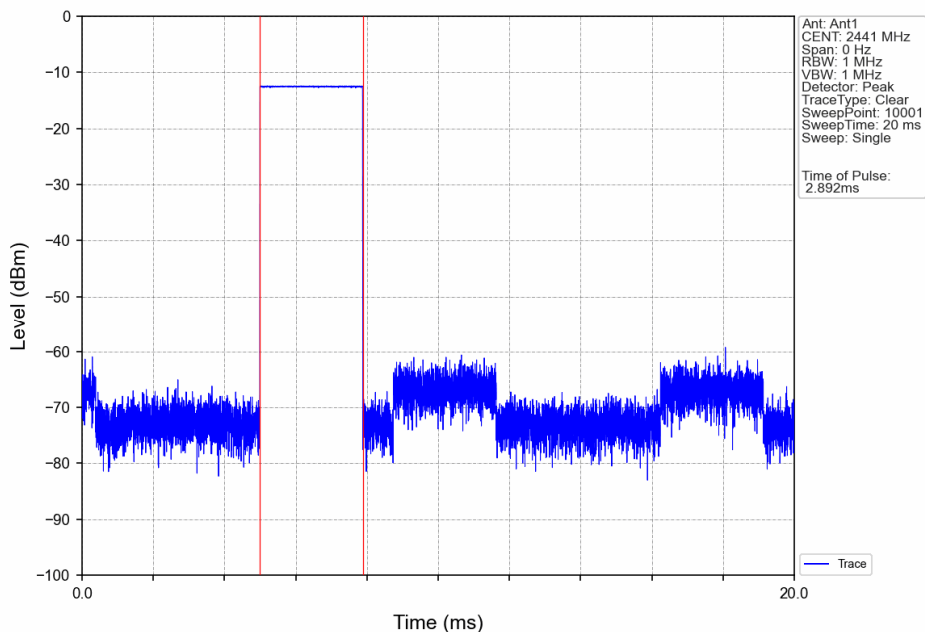
GFSK_DH3_HOPP_Ant1_NTNV



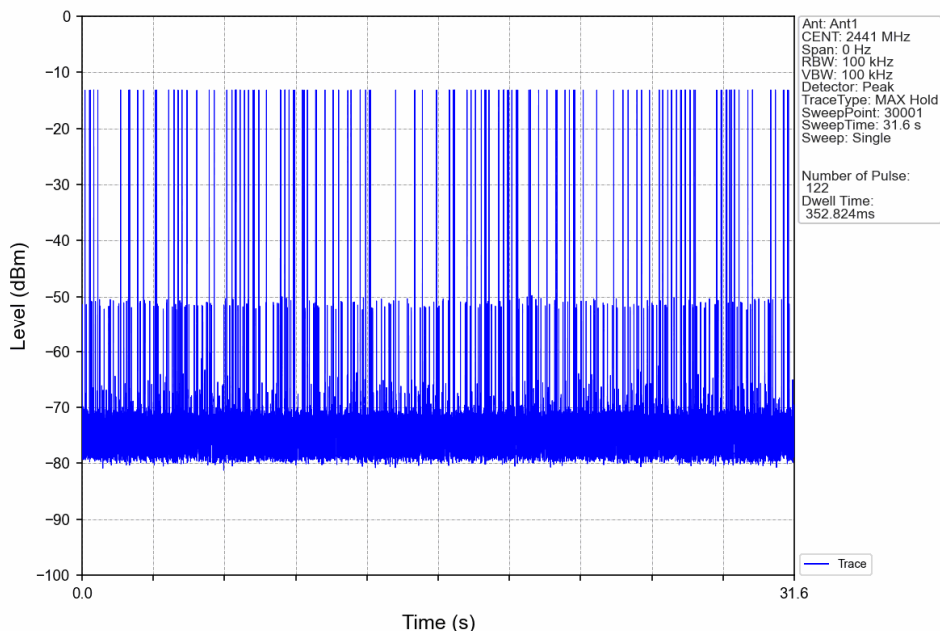
GFSK_DH3_HOPP_Ant1_NTNV



GFSK_DH5_HOPP_Ant1_NTNV



GFSK_DH5_HOPP_Ant1_NTNV



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 <https://www.sgs.com/en/Terms-and-Conditions>. 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.

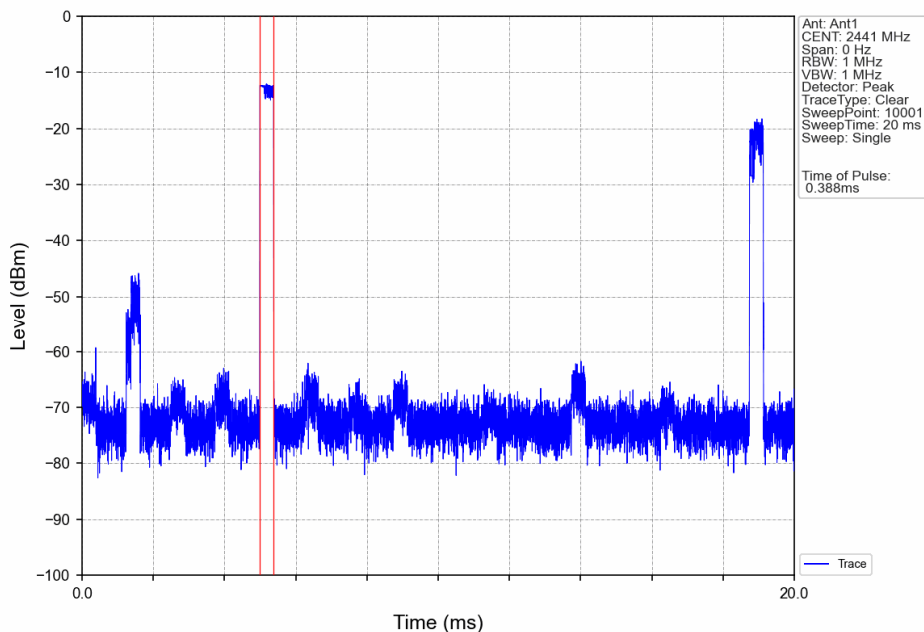
Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

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

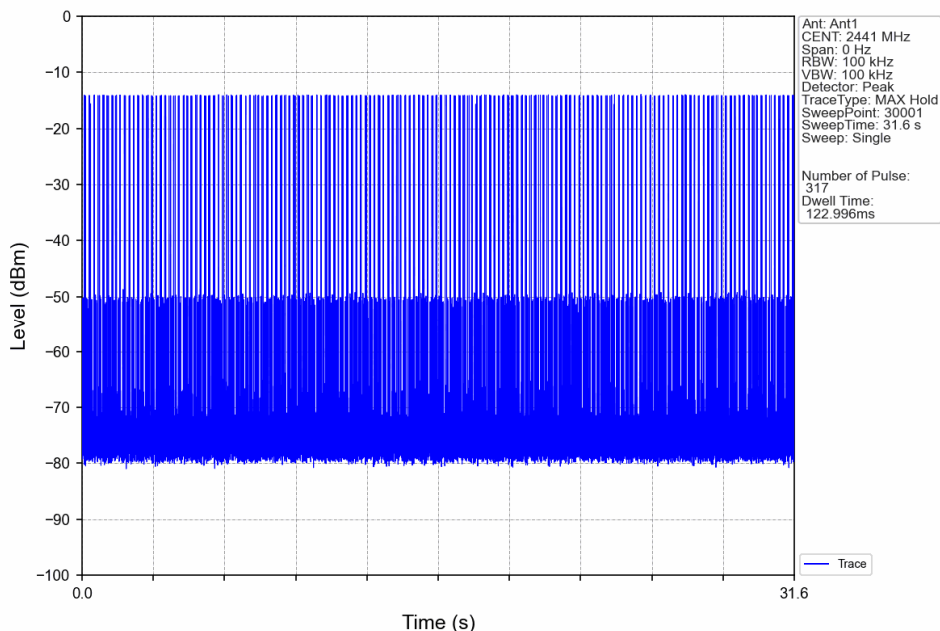
No.198, Kezhu Road, Science City, Economic & Technological Development Area, Guangzhou, Guangdong, China 510663
中国·广东·广州高新技术产业开发区科学城科珠路198号 邮编: 510663

t (86-20) 82155555 www.sgsgroup.com.cn
t (86-20) 82155555 sgs.china@sgs.com

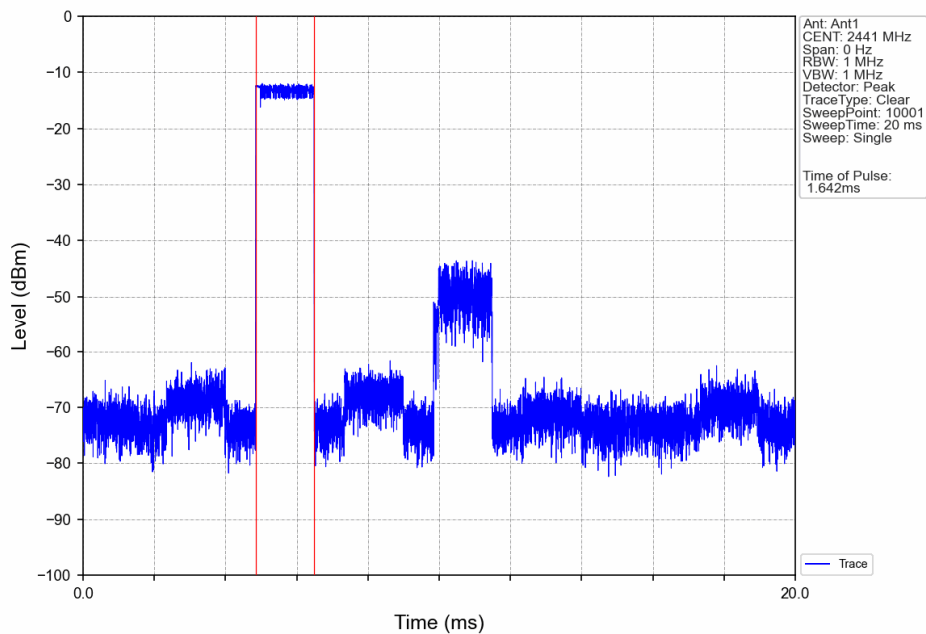
Pi/4DQPSK_2DH1_HOPP_Ant1_NTNV



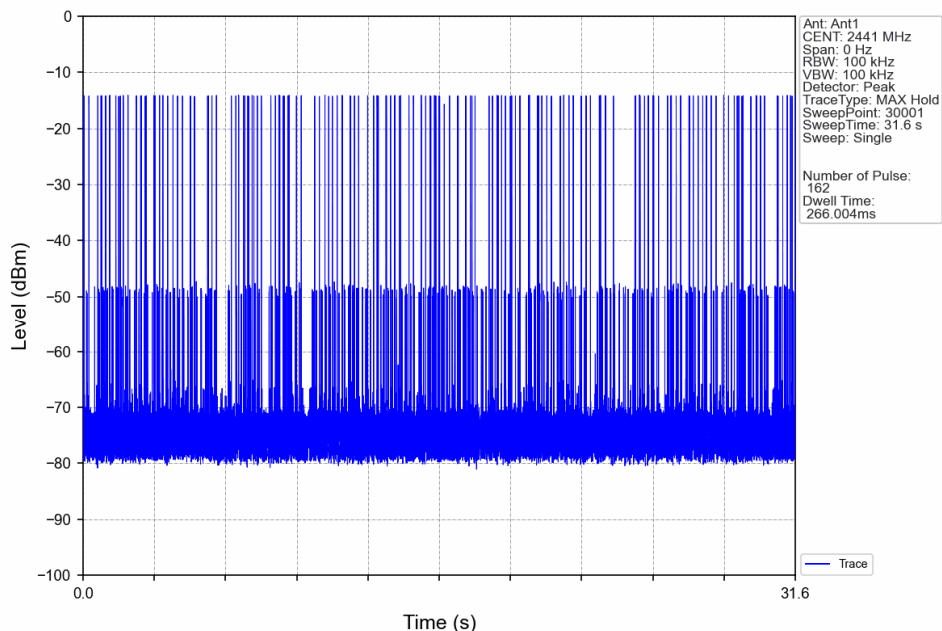
Pi/4DQPSK_2DH1_HOPP_Ant1_NTNV



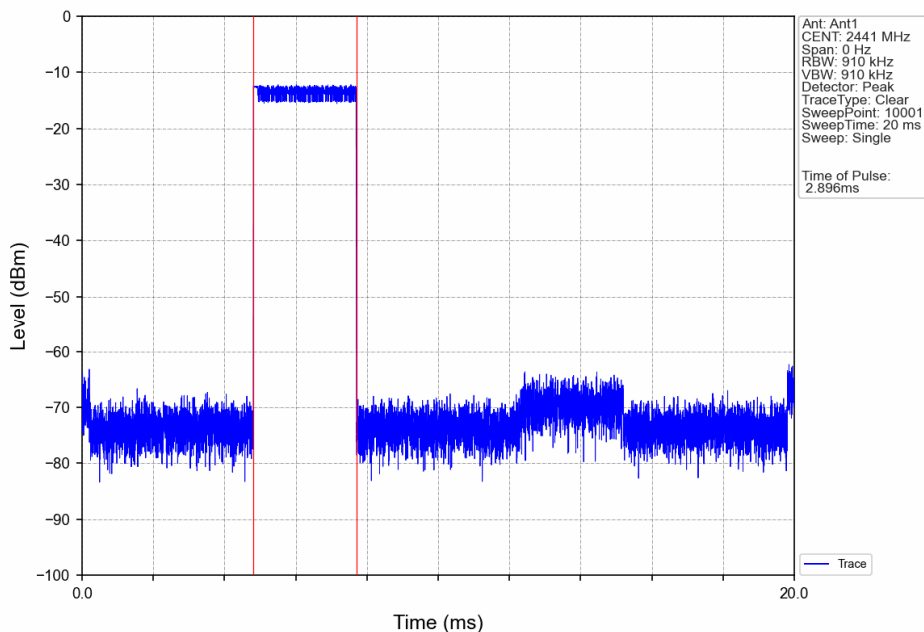
Pi/4DQPSK_2DH3_HOPP_Ant1_NTNV



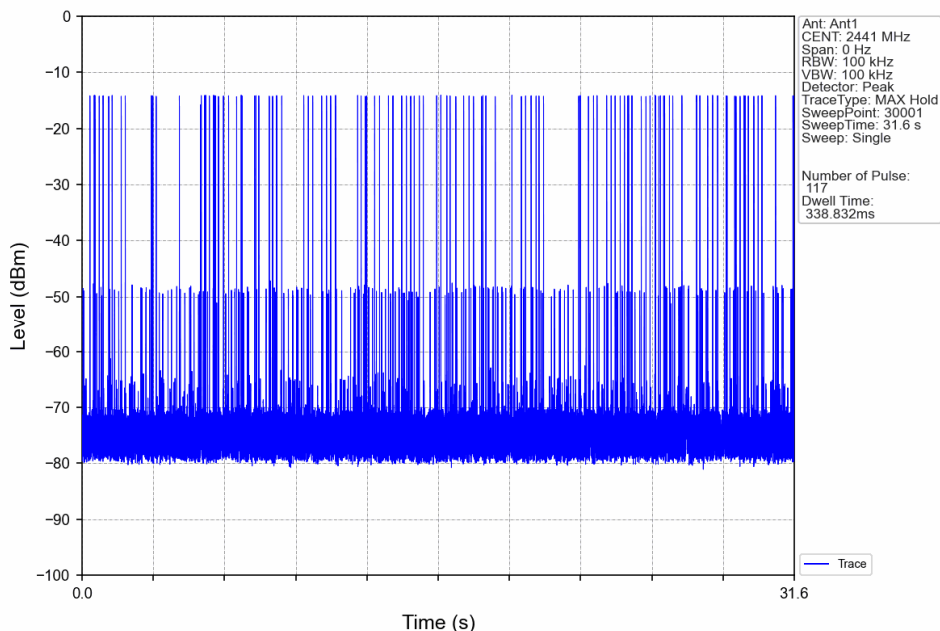
Pi/4DQPSK_2DH3_HOPP_Ant1_NTNV



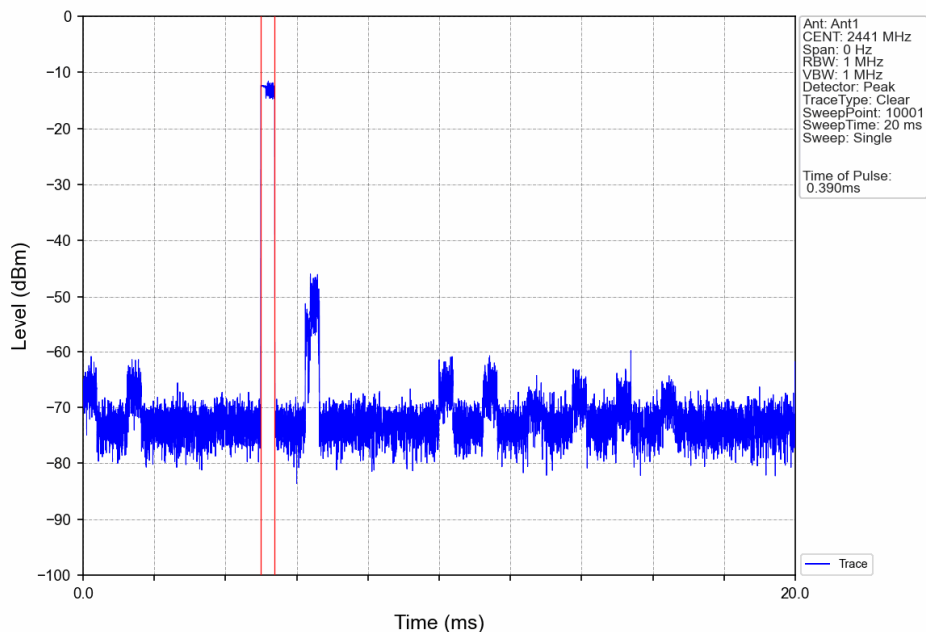
Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



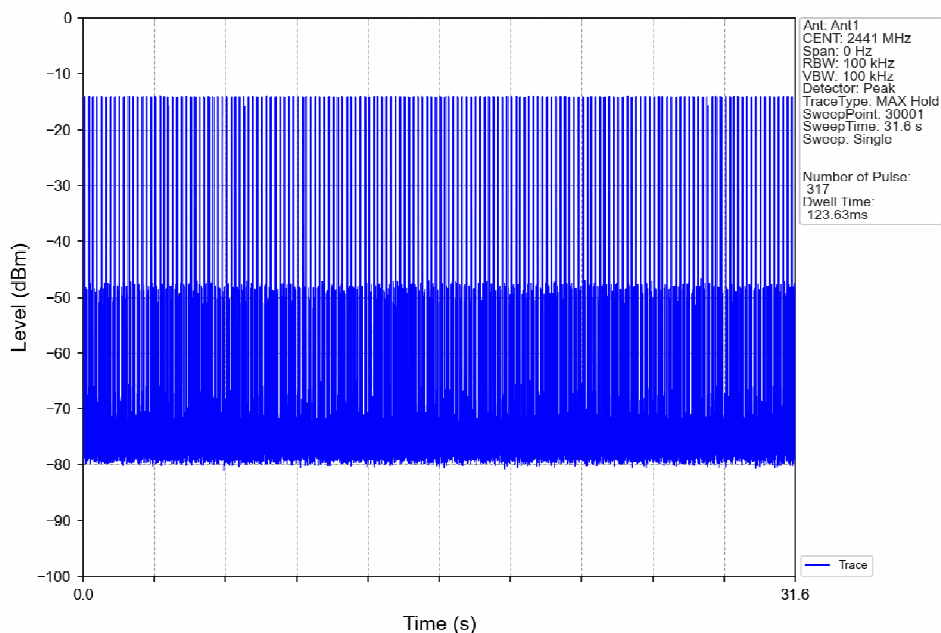
Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



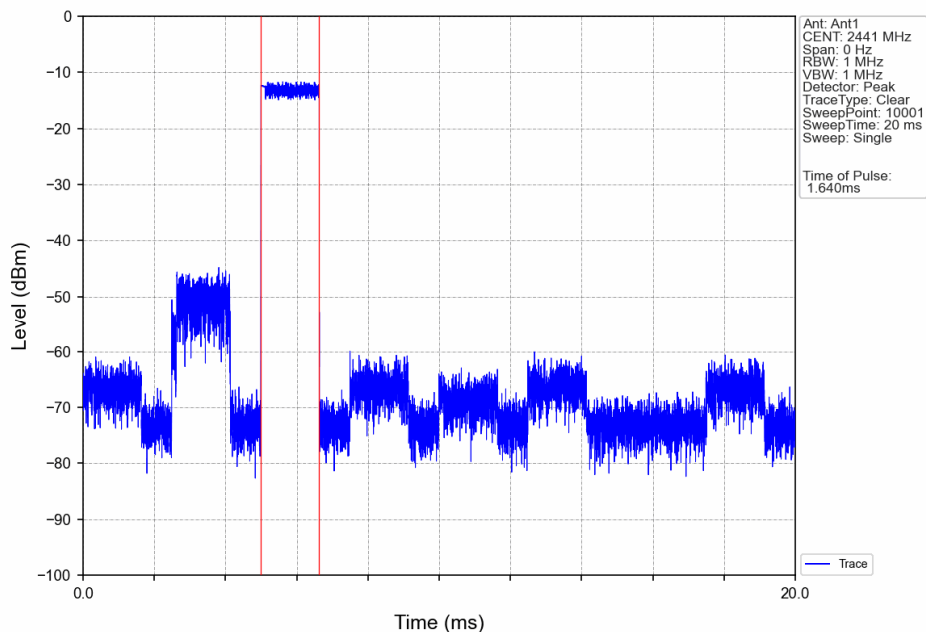
8DPSK_3DH1_HOPP_Ant1_NTNV



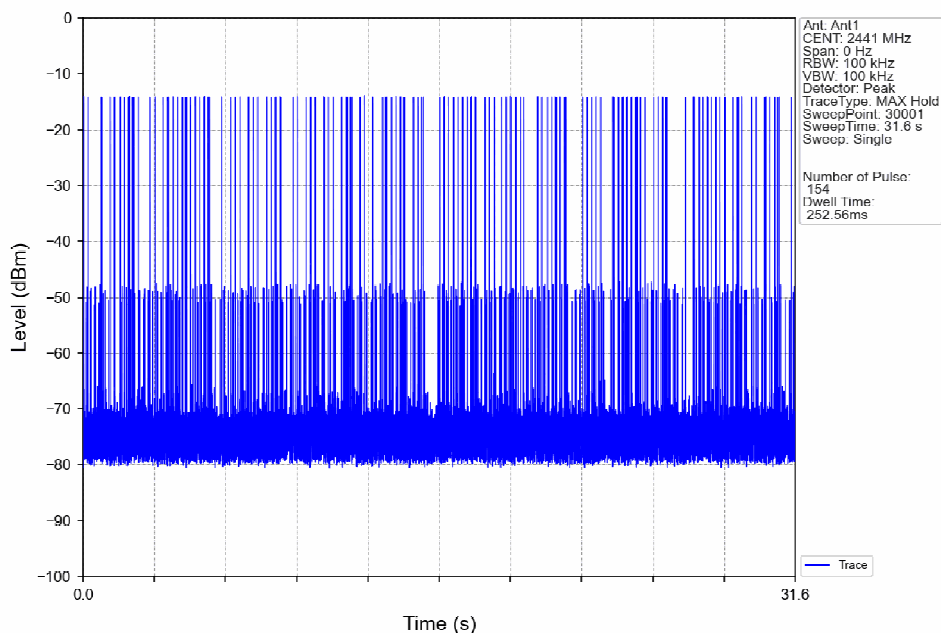
8DPSK_3DH1_HOPP_Ant1_NTNV



8DPSK_3DH3_HOPP_Ant1_NTNV



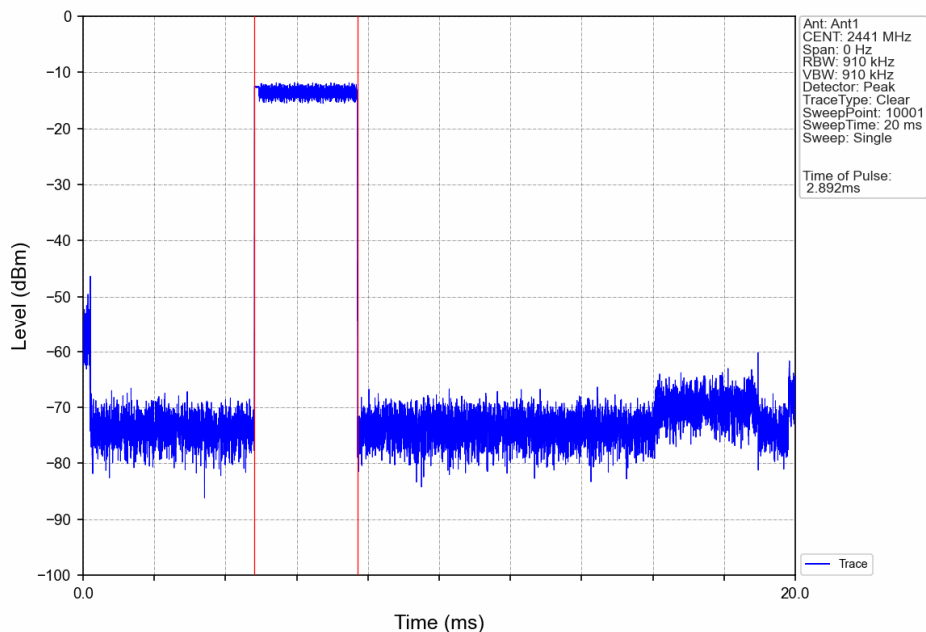
8DPSK_3DH3_HOPP_Ant1_NTNV



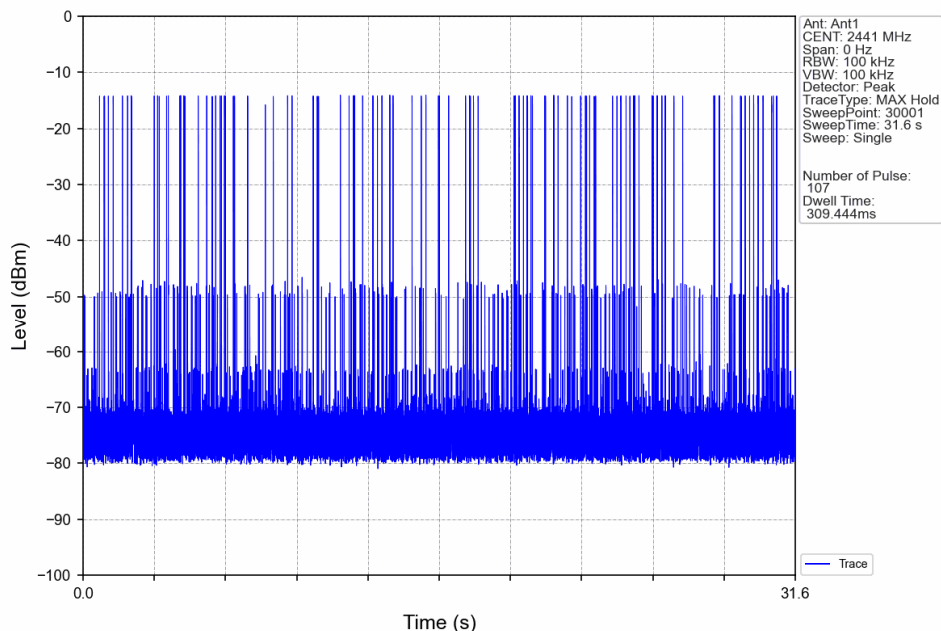
Unless otherwise agreed in writing, this document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <https://www.sgs.com/en/Terms-and-Conditions>. Attention is drawn to the limitation of liability, indemnification and jurisdiction 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

8DPSK_3DH5_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



6. Unwanted Emissions In Non-restricted Frequency Bands

6.1 Test Result

6.1.1 Ref

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)
GFSK	SISO	2402	DH5	1	-11.63
		2441	DH5	1	-12.50
		2480	DH5	1	-13.18
Pi/4DQPSK	SISO	2402	2DH5	1	-11.68
		2441	2DH5	1	-12.48
		2480	2DH5	1	-13.19
8DPSK	SISO	2402	3DH5	1	-11.65
		2441	3DH5	1	-12.51
		2480	3DH5	1	-13.18

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.

6.1.2 CSE and Band Edge

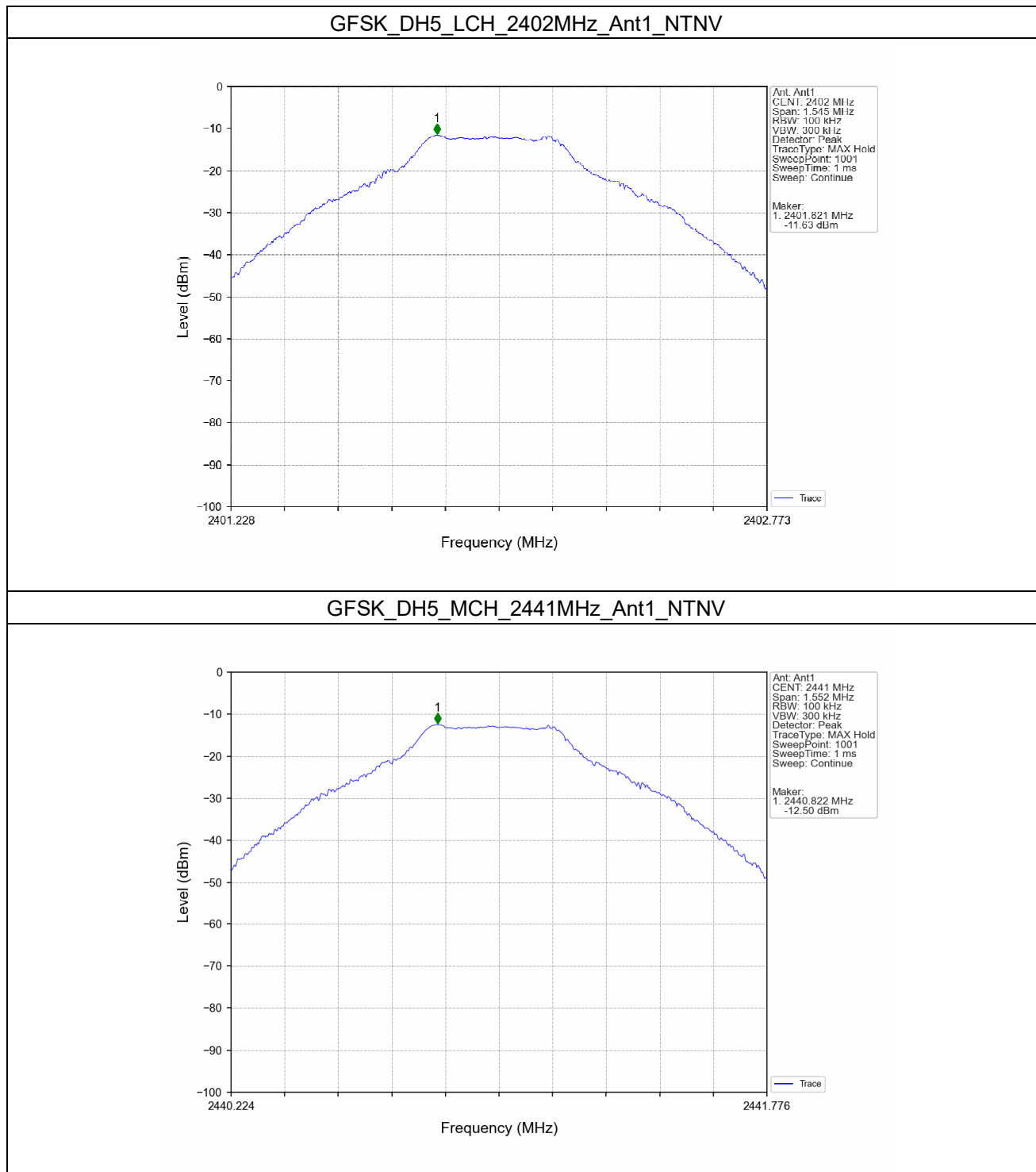
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
GFSK	SISO	2402	DH5	1	-11.63	-31.63	Pass
		2441	DH5	1	-11.63	-31.63	Pass
		2480	DH5	1	-11.63	-31.63	Pass
		HOPP	DH5	1	-11.63	-31.63	Pass
					-11.63	-31.63	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	-11.68	-31.68	Pass
		2441	2DH5	1	-11.68	-31.68	Pass
		2480	2DH5	1	-11.68	-31.68	Pass
		HOPP	2DH5	1	-11.68	-31.68	Pass
					-11.68	-31.68	Pass
8DPSK	SISO	2402	3DH5	1	-11.65	-31.65	Pass
		2441	3DH5	1	-11.65	-31.65	Pass
		2480	3DH5	1	-11.65	-31.65	Pass
		HOPP	3DH5	1	-11.65	-31.65	Pass
					-11.65	-31.65	Pass

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.

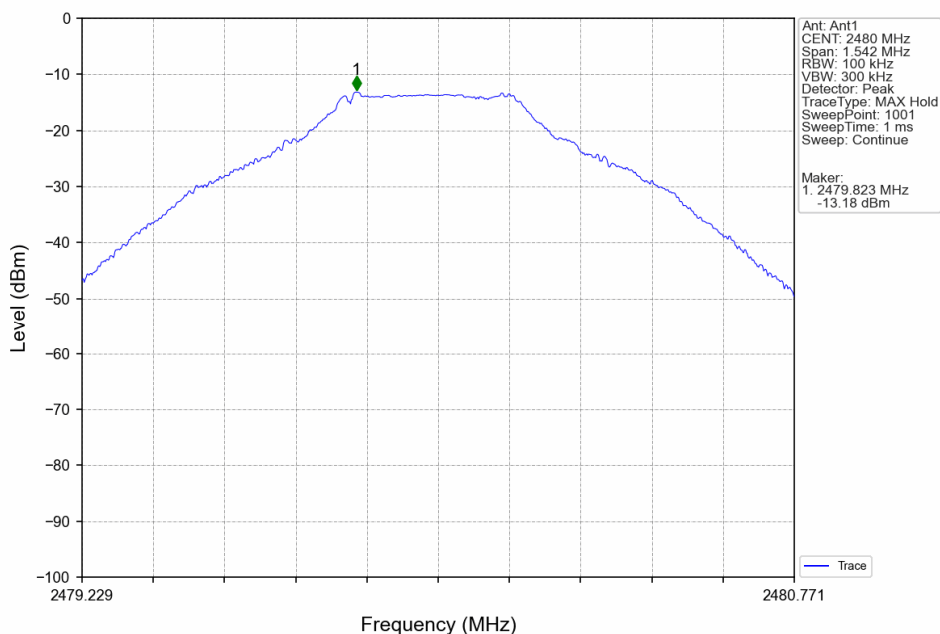


6.2 Test Graph

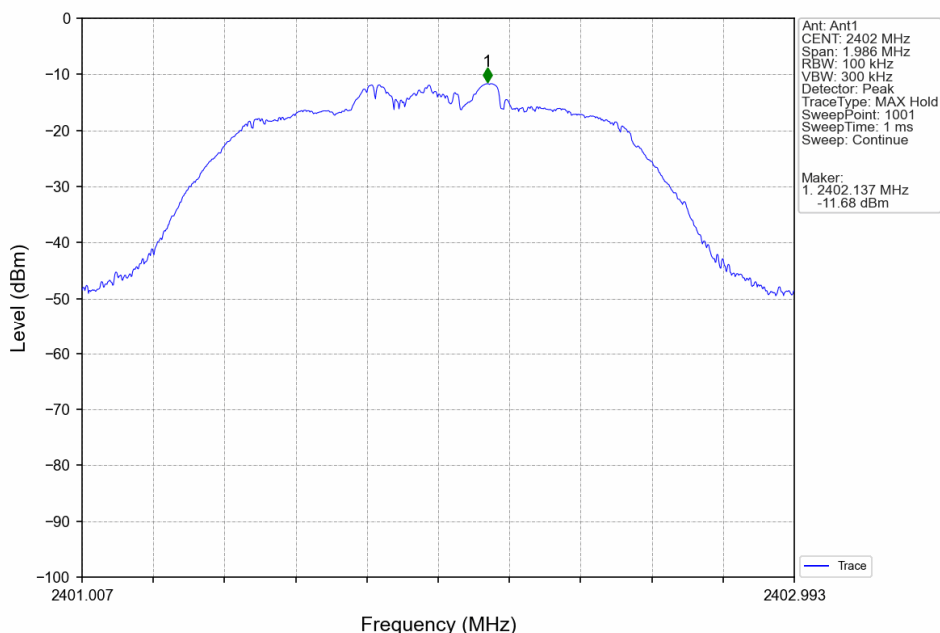
6.2.1 Ref



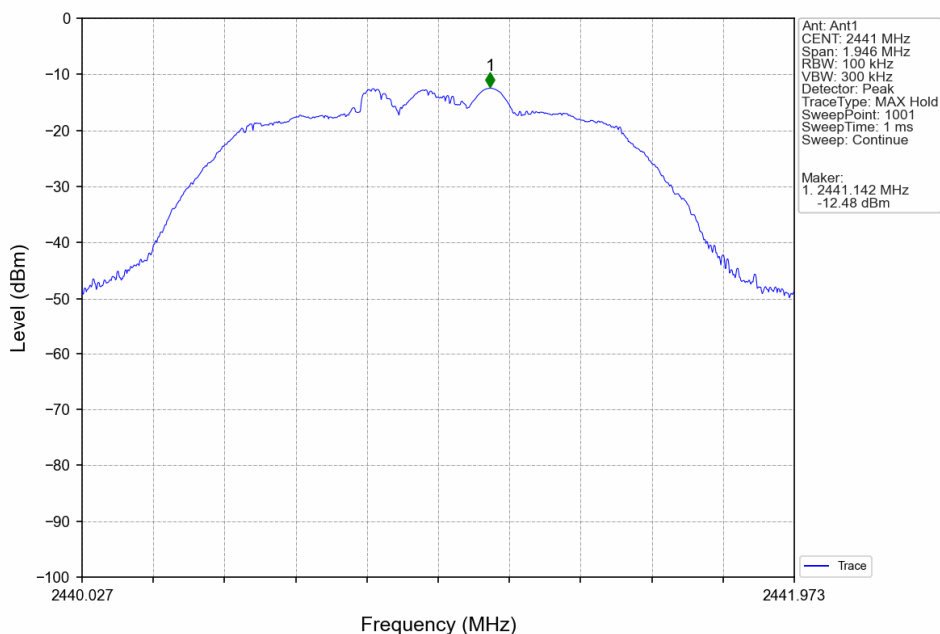
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



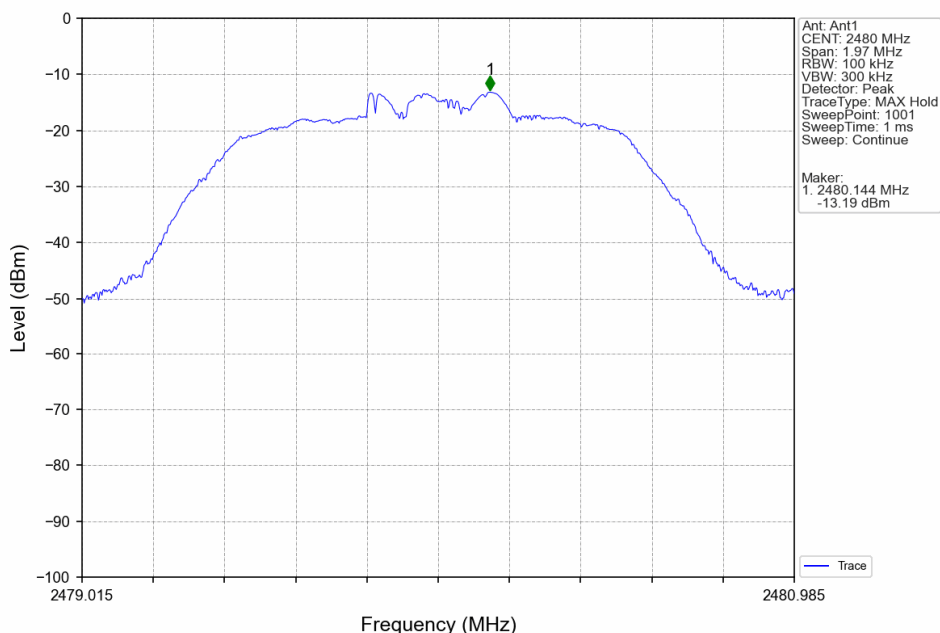
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



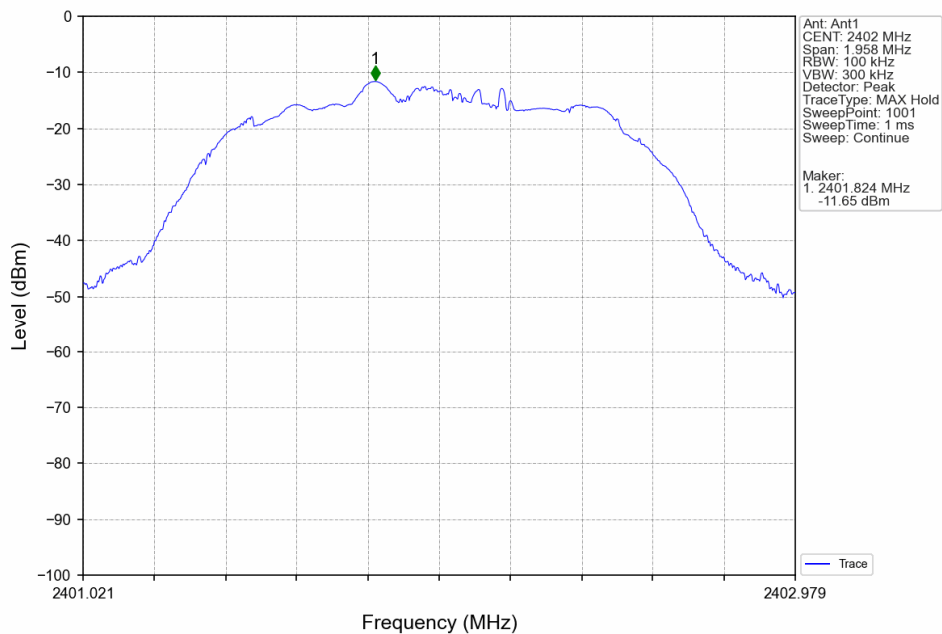
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



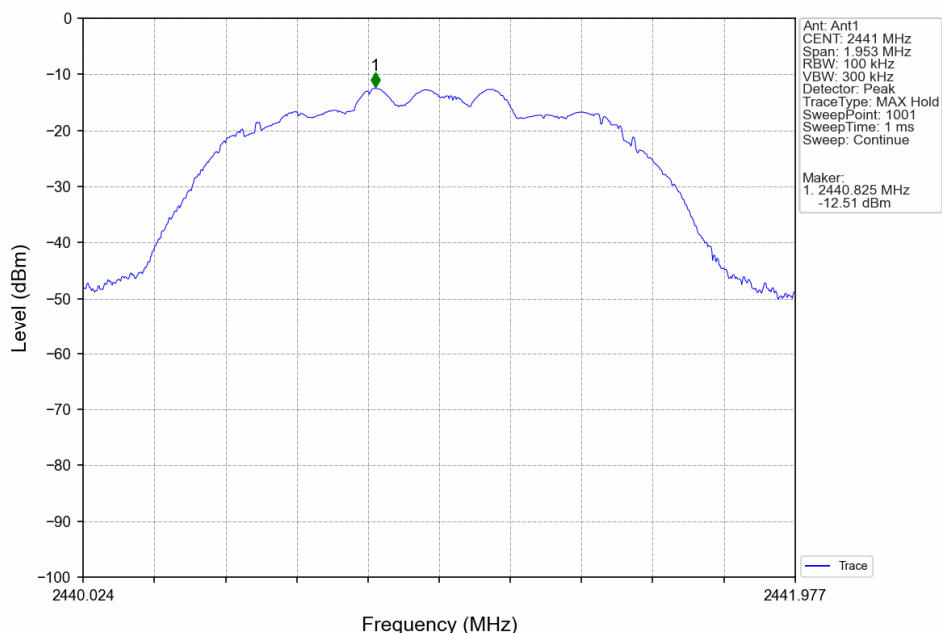
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



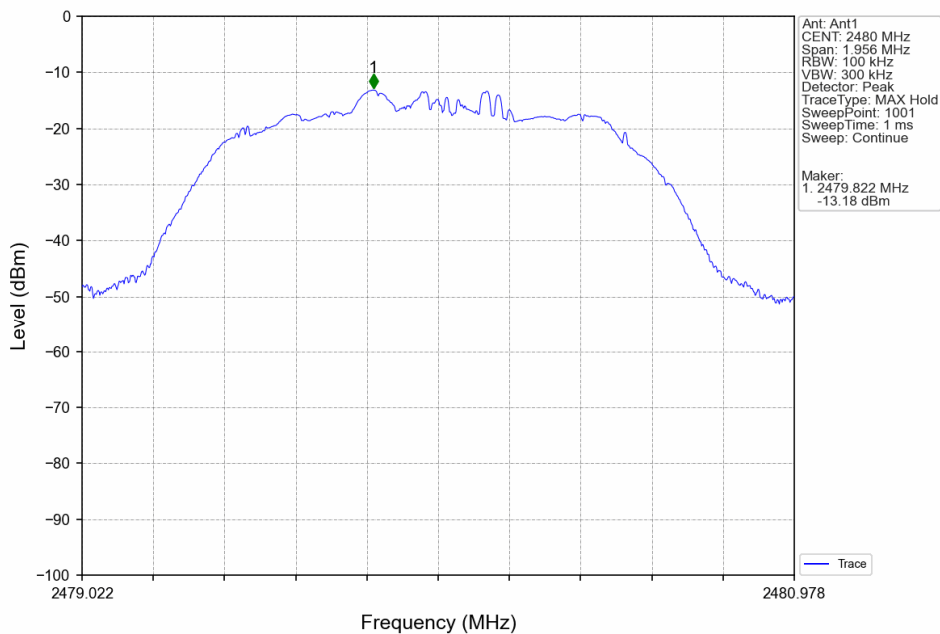
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



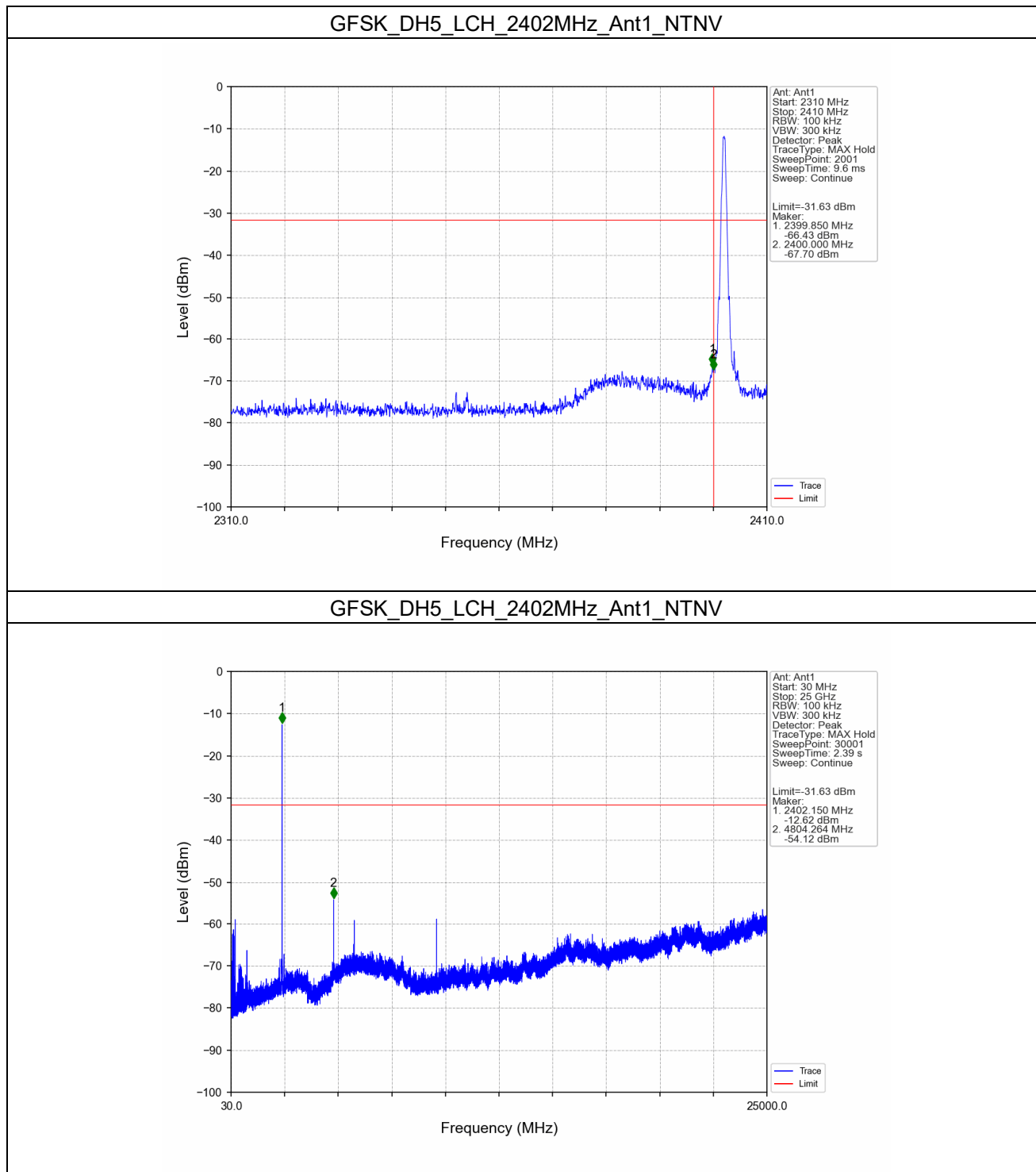
8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



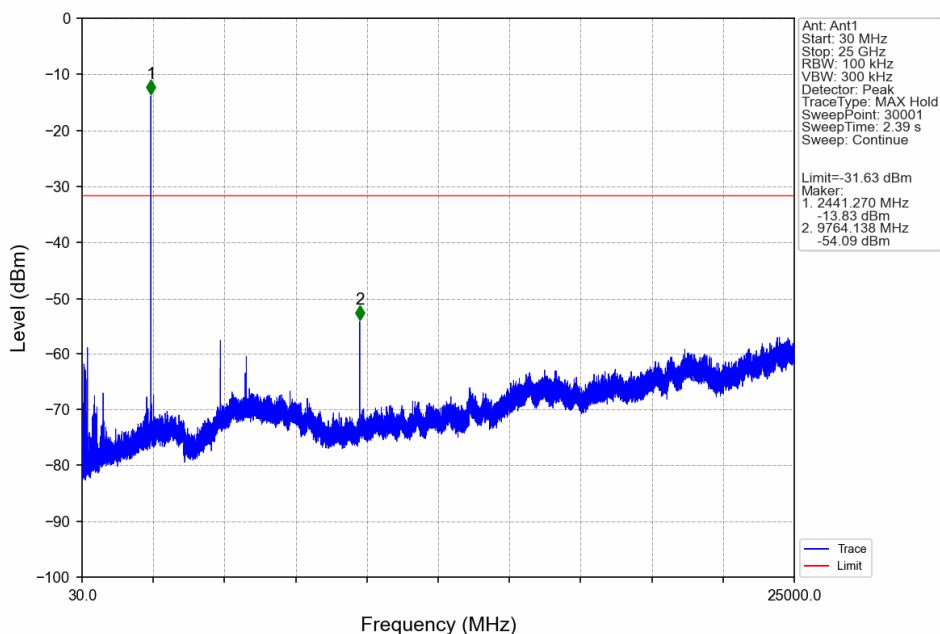
8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



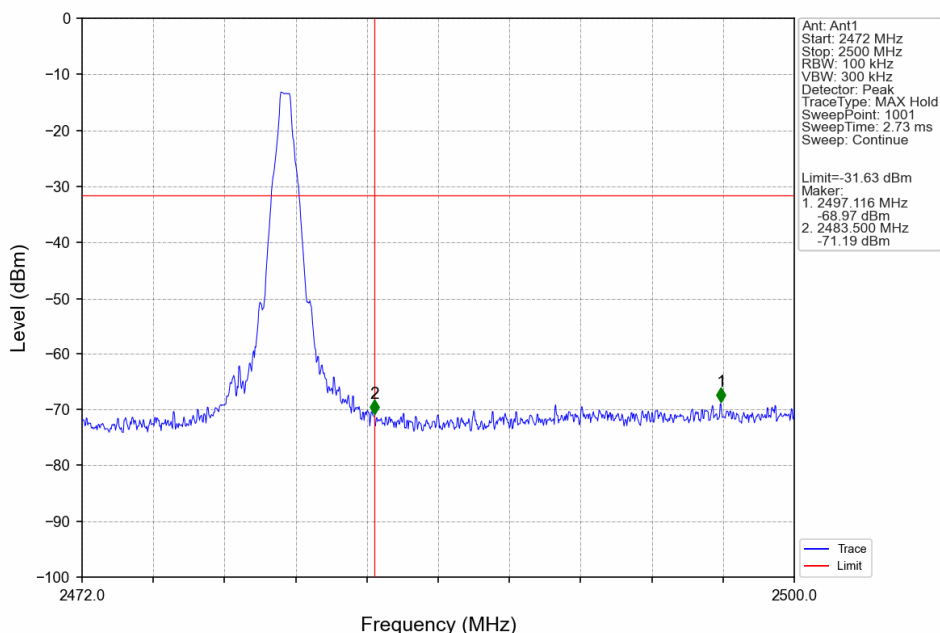
6.2.2 CSE and Band Edge



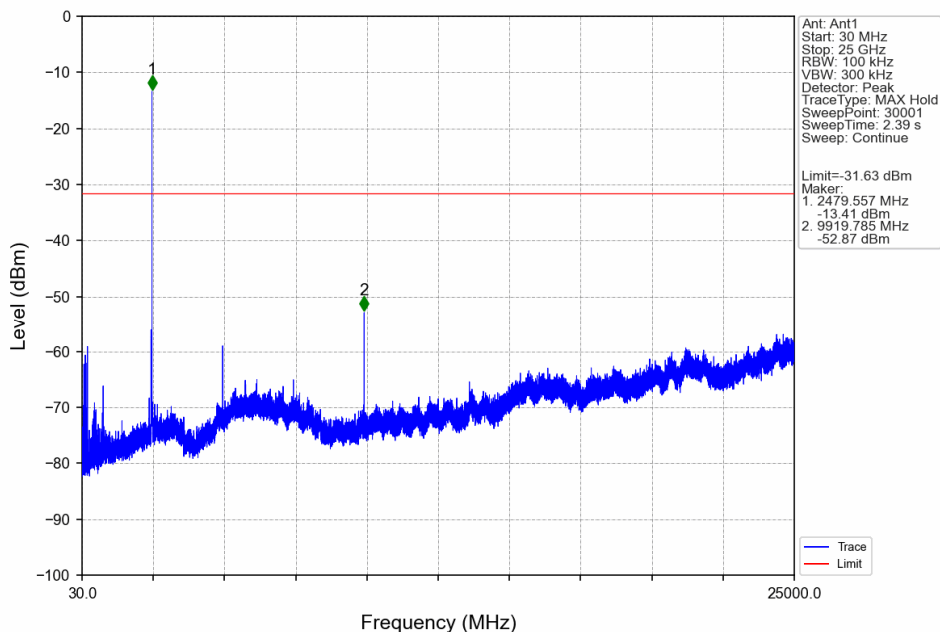
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



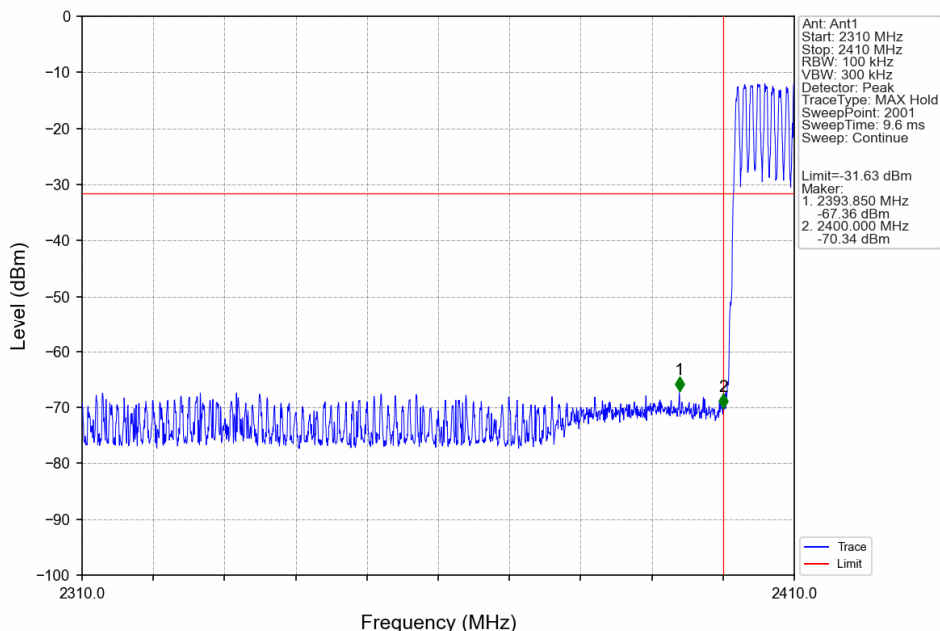
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



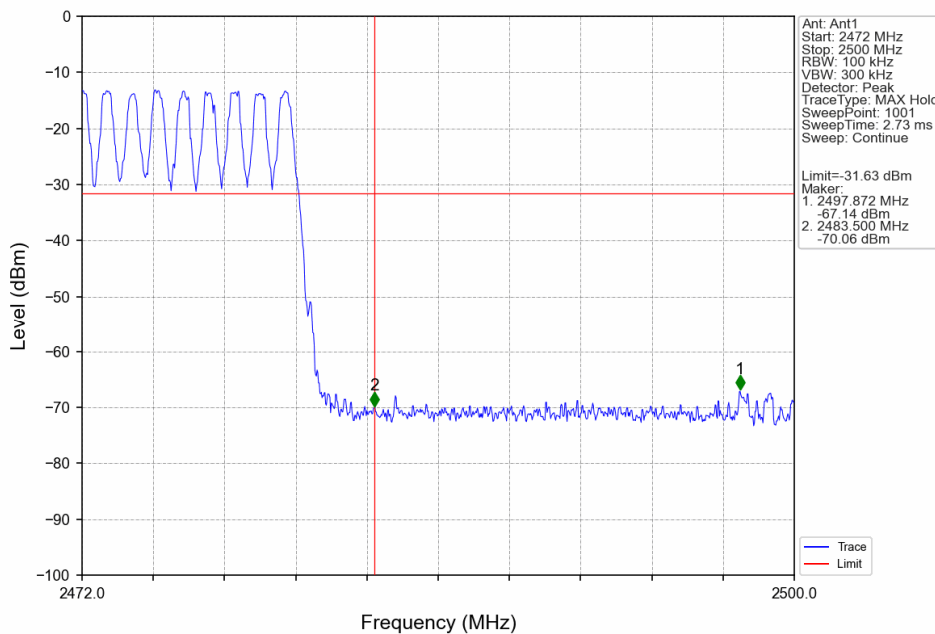
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



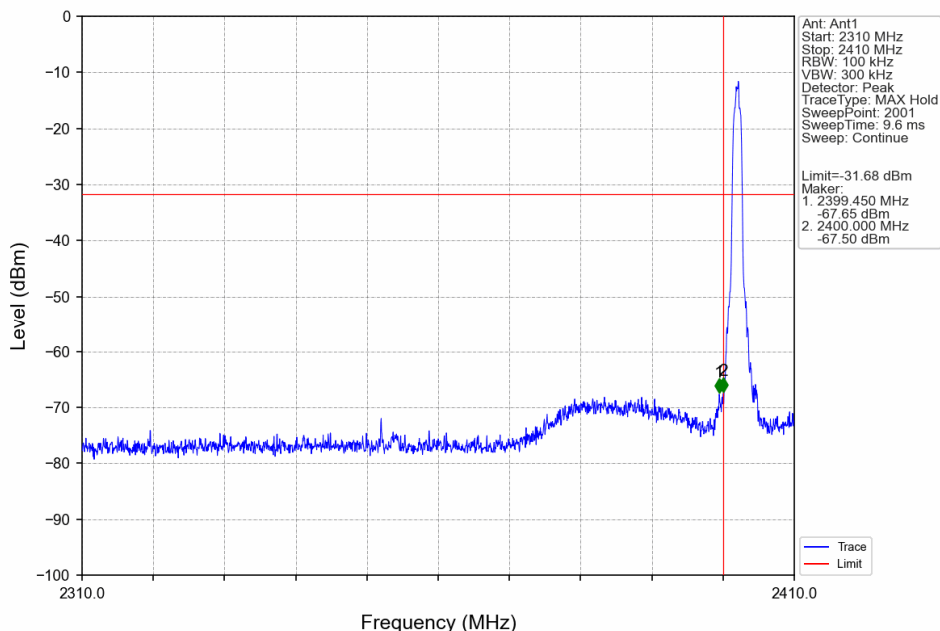
GFSK_DH5_HOPP_2410MHz_Ant1_NTNV



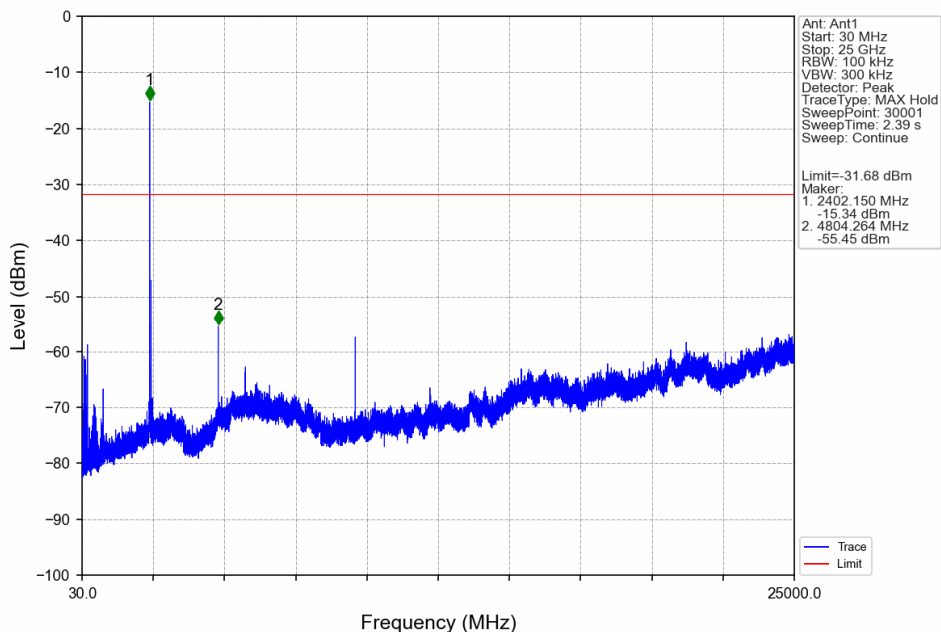
GFSK_DH5_HOPP_Ant1_NTNV



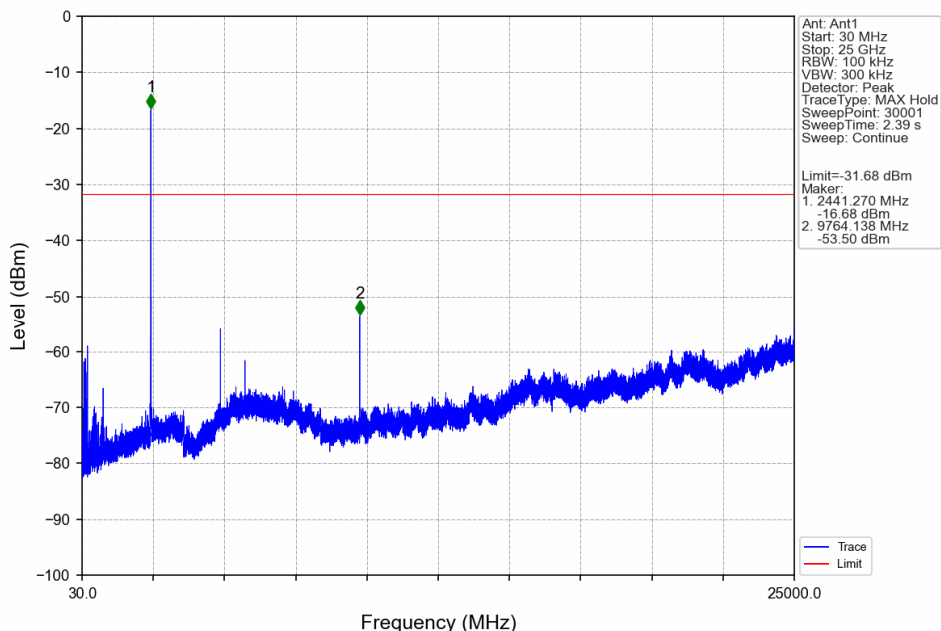
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



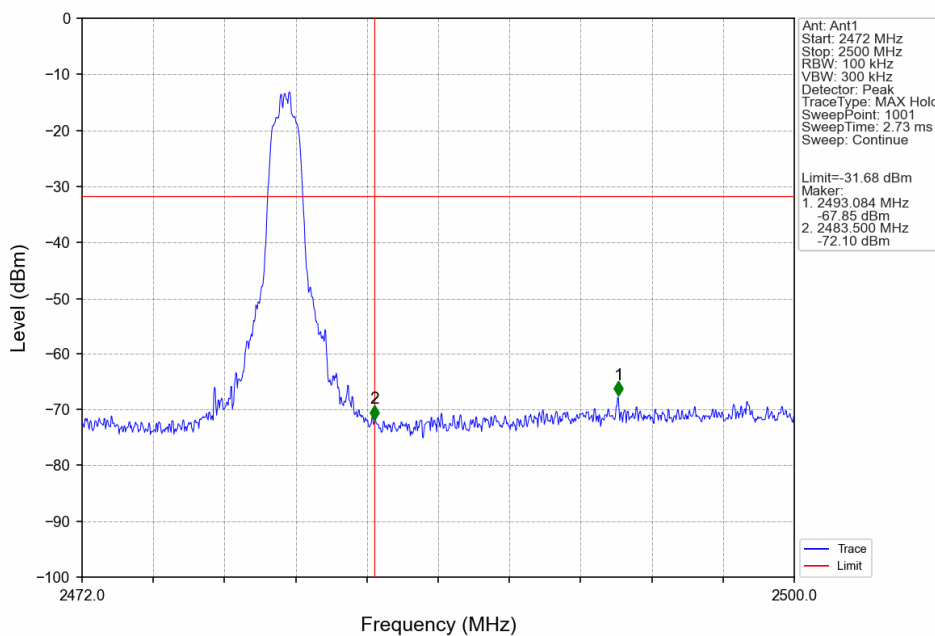
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



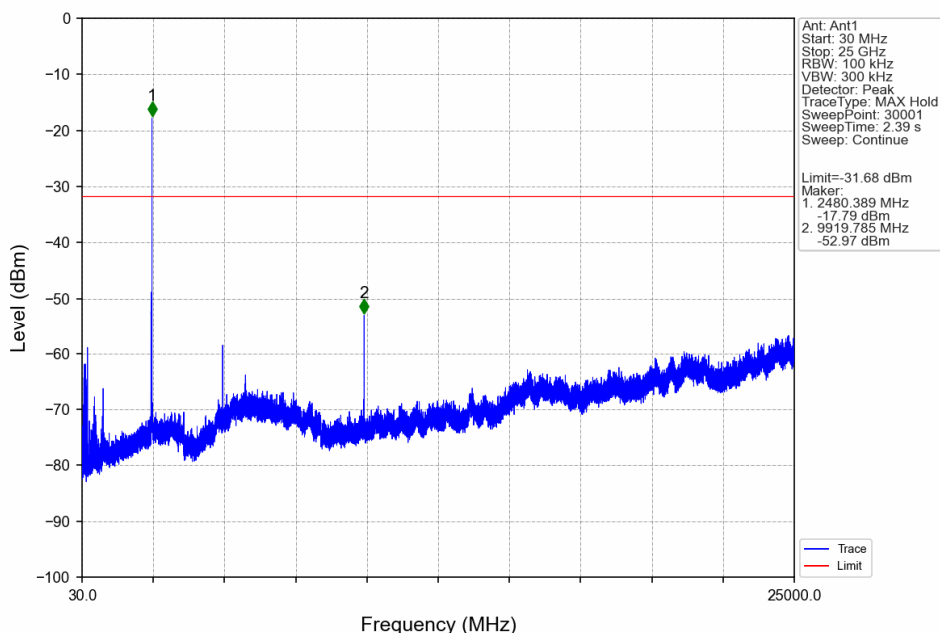
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



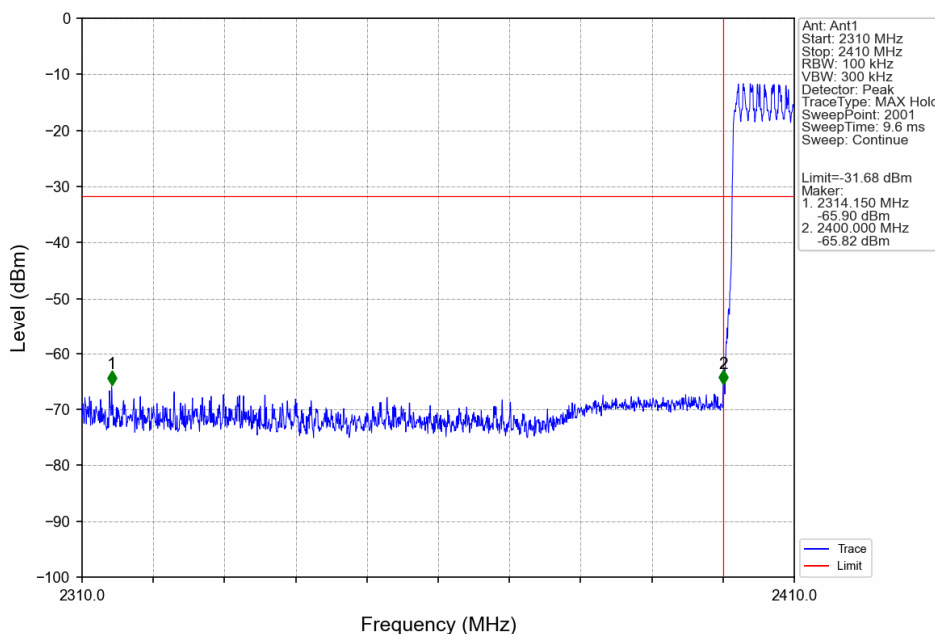
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



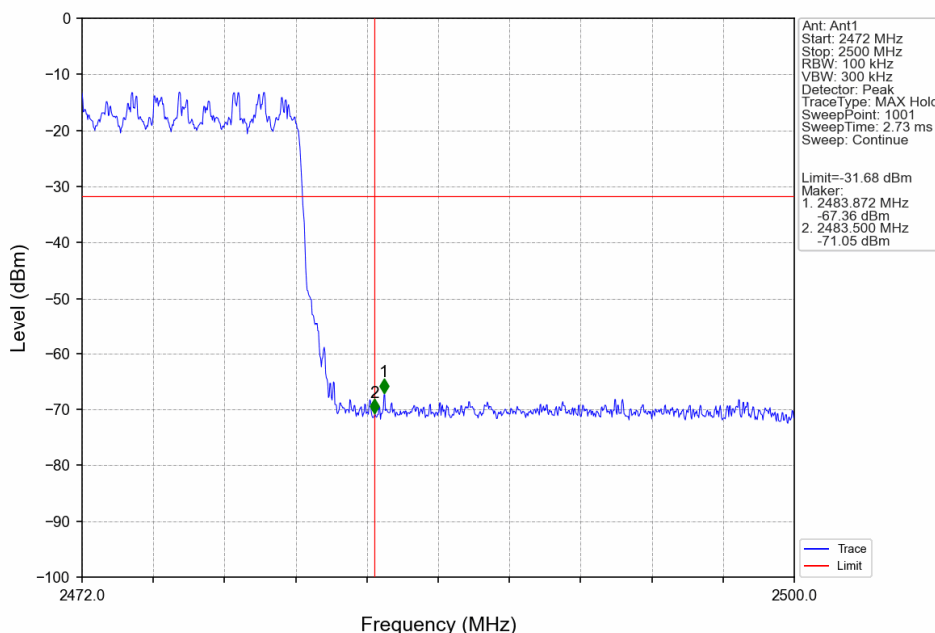
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



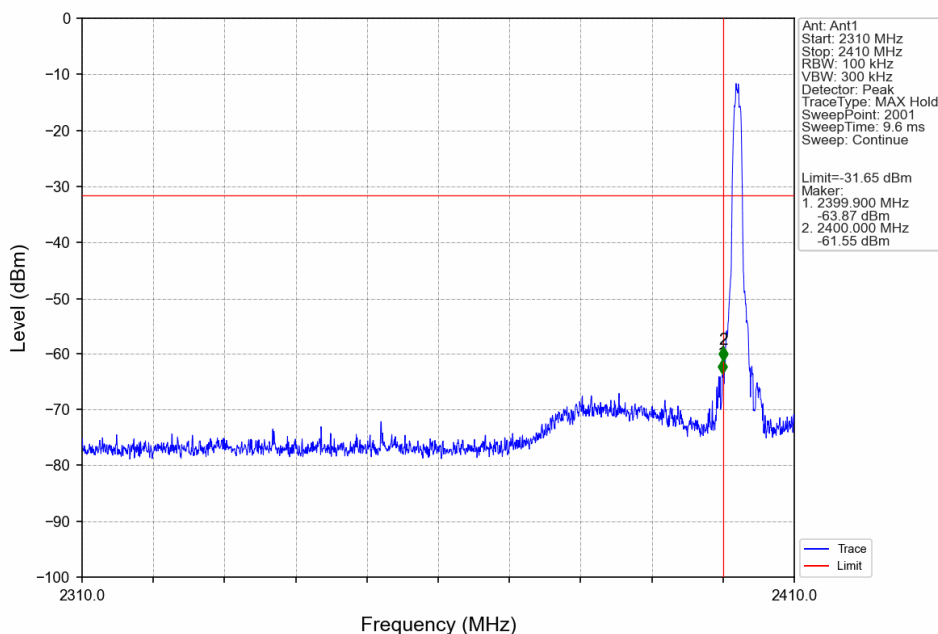
Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



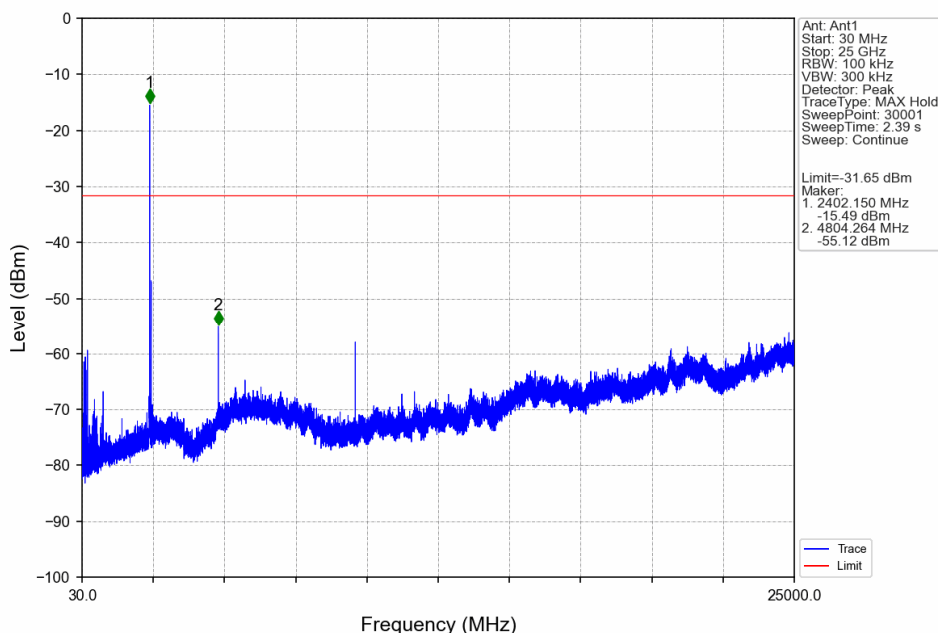
Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



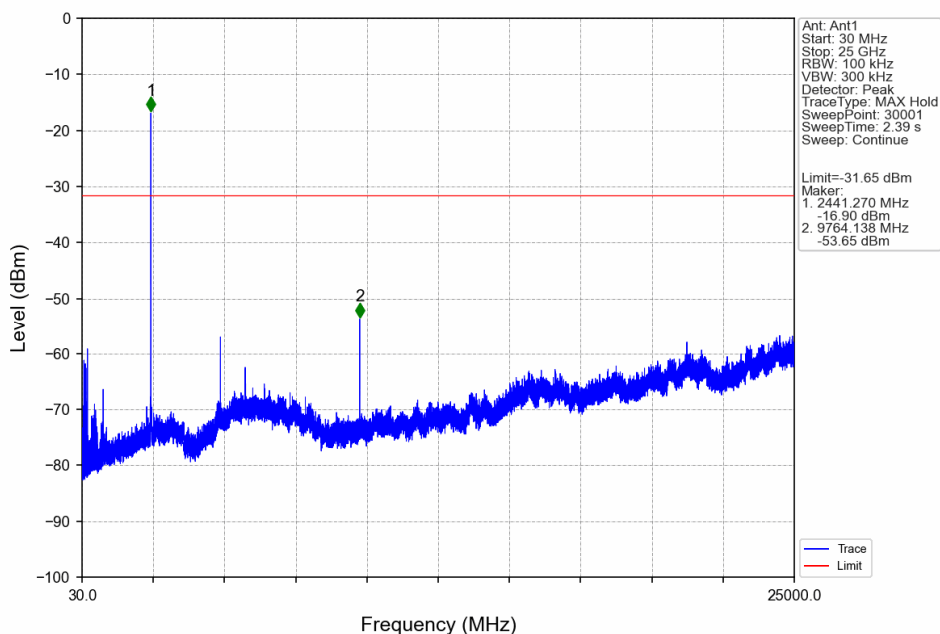
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



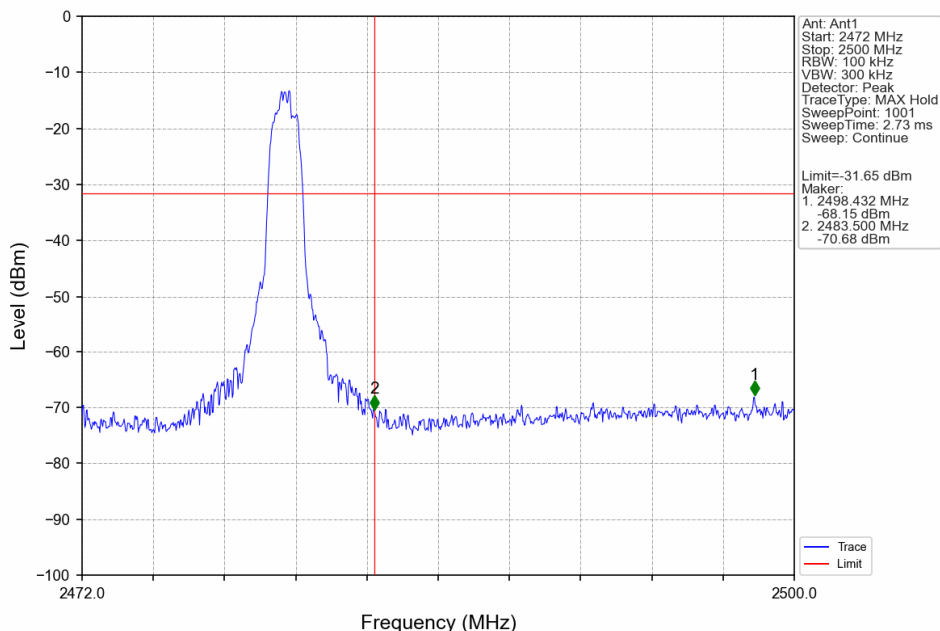
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



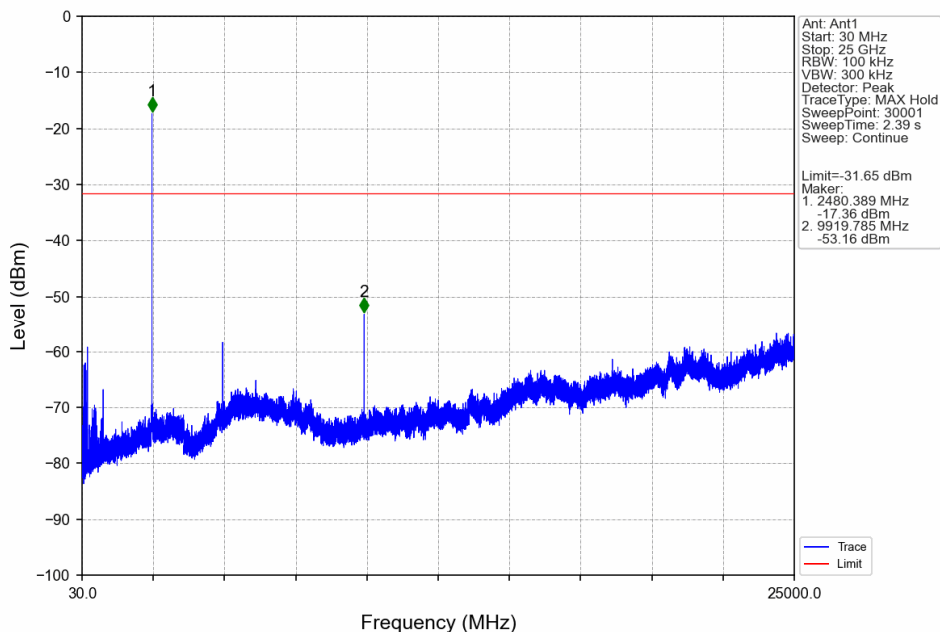
8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



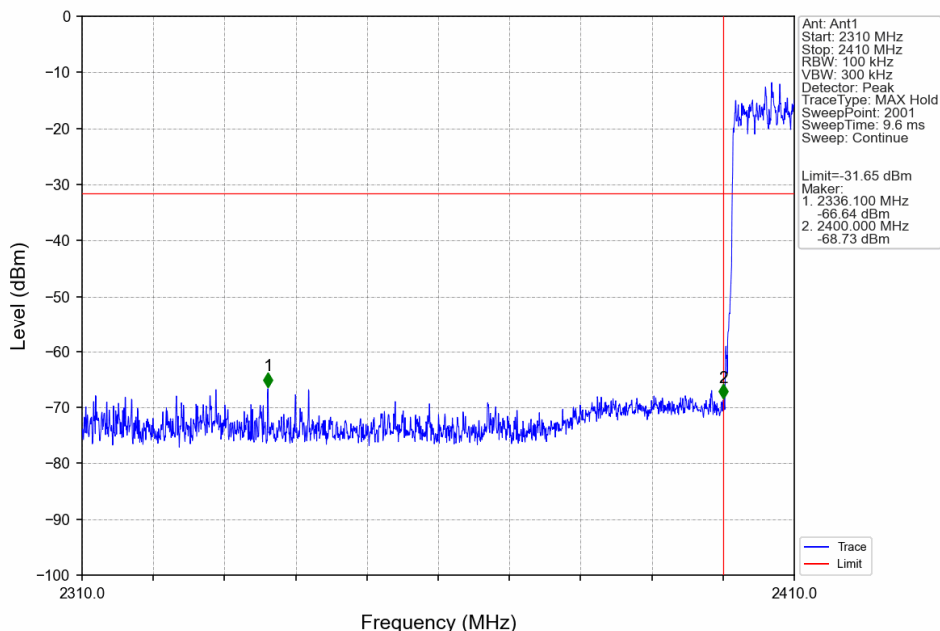
8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV

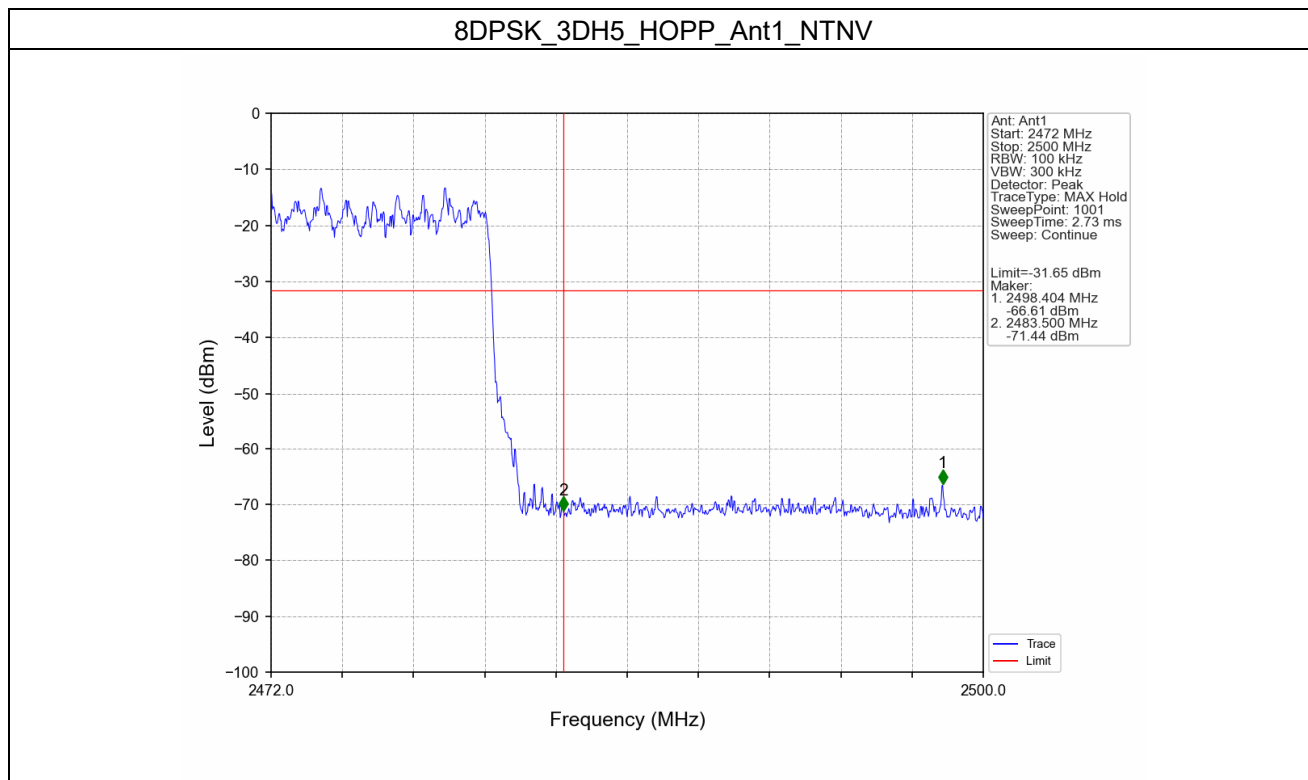


8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV





- End of the Report -

