



## TEST REPORT

**Application No.:** GZCR2108020980AT  
**Applicant:** Bose Corporation  
**Address of Applicant:** 100 The Mountain Rd, Framingham, Massachusetts, 01701, USA  
**Manufacturer:** Bose Corporation  
**Address of Manufacturer:** 100 The Mountain Rd, Framingham, Massachusetts, 01701, USA  
**Factory:** Tymphany Acoustic Technology (Thailand) Co., Ltd.  
**Address of Factory:** NO. 300/88-97 Moo 1, Tambol Tasith, Amphur Pluak Daeng, Rayong Province, Thailand

**Equipment Under Test (EUT):**

**EUT Name:** Bluetooth wireless speaker  
**Model No.:** 435910  
**Sample Version:** C2.5  
**Trade Mark:** Bose  
**Standard(s) :** 47 CFR Part 15, Subpart C 15.247  
**Date of Receipt:** 2021-08-25  
**Date of Test:** 2021-08-26 to 2021-09-03  
**Date of Issue:** 2021-09-06

<b>Test Result:</b>	<b>Pass*</b>
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\* In the configuration tested, the EUT complied with the standards specified above.

Kobe Jian  
EMC Laboratory Manager



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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2021-09-06		Original

Authorized for issue by				
Tested By				
		Curry Wu /Project Engineer		
Reviewed By				
		Ricky Liu/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
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
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		ANSI C63.10 (2013) Section 6.4,6.5,6.6	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass

**Note:**

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

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



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## 4 General Information

### 4.1 Details of E.U.T.

Rated Input (include the voltage tolerance):	-Supplied by USB-Type C: 5VDC, 1.5A, or -Supplied by internal Lithium Battery Pack: 1 <sup>st</sup> Source (LG cell, model: 083289): 3.67VDC, 3100mAh, 11.4Wh 2 <sup>nd</sup> source (Panasonic cell, model: 083763): 3.67VDC, 3200mAh, 11.52Wh
Test Voltage:	AC 120V, 60Hz
Cable(s):	Type C Cable: 50cm, Unshielded
Operation Frequency:	2402MHz to 2480MHz
Bluetooth Version:	V5.0
Modulation Type:	GFSK, pi/4DQPSK, 8DPSK
Number of Channels:	79
Channel Spacing:	1MHz
Spectrum Spread Technology:	Frequency Hopping Spread Spectrum(FHSS)
Antenna Type:	PIFA Antenna
Antenna Gain:	5.39dBi
Remark:	Two Battery Packs were tested, only the worst case model:083289 was recorded in the report

### 4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Adapter	Apple	A1401	N/A

### 4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Power Line (150kHz-30MHz)	±3.12dB
Conducted Peak Output Power	± 0.75dB
20dB Bandwidth	± 3%
Carrier Frequencies Separation	± 7.25 x 10 <sup>-8</sup>
Hopping Channel Number	± 7.25 x 10 <sup>-8</sup>
Dwell Time	± 0.37%
Conducted Band Edges Measurement	± 0.75dB
Conducted Spurious Emissions	± 0.75dB
Radiated Emissions which fall in the restricted bands	±5.08dB (1GHz-6GHz);±5.14dB(above 6GHz)
Radiated Spurious Emissions (Below 1GHz)	±5.06dB (3m); ±4.46dB (10m)
Radiated Spurious Emissions (Above 1GHz)	±5.08dB (1GHz-6GHz);±5.14dB(above 6GHz)

#### 4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,  
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Guangzhou, China 510663

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

No tests were sub-contracted.

#### 4.5 Test Facility

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

- **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

- **ACMA**

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

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

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

- **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

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

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

- **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.



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#### 4.6 Deviation from Standards

None

#### 4.7 Abnormalities from Standard Conditions

None



## 5 Equipment List

Conducted Emissions at AC Power Line (150kHz-30MHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Shielding Room	ChangZhou ZhongYu	8m x 3m x 3.8m	EMC0306	N/A	N/A
Two-Line V-Network	Rohde & Schwarz	ENV216	EMC0118	2021-01-08	2022-01-06
Two-Line V-Network-GZ	Rohde & Schwarz	ENV216	EMC2135	2020-09-25	2021-09-24
Coaxial Cable	HangTianXing	2m	EMC0107	2020-09-09	2022-09-08
Test Software E3c	Audix	Ver. 5.4.1221b	GZE100-62	N/A	N/A
EMI Test Receiver(9kHz-3.6GHz)	Rohde & Schwarz	ESR4	EMC2221	2021/6/1	2022/5/31

Conducted Peak Output Power					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Power Meter (U2021XA_Ch2)	Agilent Technologies	U2021XA_Ch2	SEM009-02	2021-05-19	2022-05-18
6dB Attenuator	HP	8491A	EMC2062	2020-04-15	2022-04-14
MI CABLE	SGS-EMC	0.8M	EMC2136	2019-11-02	2021-11-01

20dB Bandwidth					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2020-09-17	2021-09-16
6dB Attenuator	HP	8491A	EMC2062	2020-04-15	2022-04-14
MI CABLE	SGS-EMC	0.8M	EMC2136	2019-11-02	2021-11-01

Carrier Frequencies Separation					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2020-09-17	2021-09-16
6dB Attenuator	HP	8491A	EMC2062	2020-04-15	2022-04-14
MI CABLE	SGS-EMC	0.8M	EMC2136	2019-11-02	2021-11-01

Hopping Channel Number					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2020-09-17	2021-09-16
6dB Attenuator	HP	8491A	EMC2062	2020-04-15	2022-04-14
MI CABLE	SGS-EMC	0.8M	EMC2136	2019-11-02	2021-11-01

Dwell Time					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2020-09-17	2021-09-16
6dB Attenuator	HP	8491A	EMC2062	2020-04-15	2022-04-14
MI CABLE	SGS-EMC	0.8M	EMC2136	2019-11-02	2021-11-01

Conducted Band Edges Measurement					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2020-09-17	2021-09-16
6dB Attenuator	HP	8491A	EMC2062	2020-04-15	2022-04-14
MI CABLE	SGS-EMC	0.8M	EMC2136	2019-11-02	2021-11-01

Conducted Spurious Emissions					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EXA Signal Analyzer(10Hz-44GHz)	Agilent Technologies	N9010A	EMC2138	2020-09-17	2021-09-16
6dB Attenuator	HP	8491A	EMC2062	2020-04-15	2022-04-14
MI CABLE	SGS-EMC	0.8M	EMC2136	2019-11-02	2021-11-01

Radiated Emissions which fall in the restricted bands					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI Test Receiver(20Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2021-01-08	2022-01-07
Chamber cable(Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2020/9/9	2022/9/8
Horn Antenna(1GHz-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2019-09-25	2022-09-24
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2021-01-08	2022-01-07
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2021-01-08	2022-01-07
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2020-12-20	2023-12-19
MXE EMI Receiver(10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2020-11-13	2021-11-12
EXA Signal Analyzer(10Hz-44GHz)	Keysight	N9010A	EMC2138	2020-09-17	2021-09-16
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
Horn Antenna(14-40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2020-06-28	2023-06-27
Microwave Broadband Preamplifier (18-40GHz)	SCHWARZBECK	BBV 9721	EMC2172	2020-09-09	2021-09-08

Radiated Spurious Emissions (Below 1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Chamber cable	HangTianXing	N/A	EMC0542	2020-09-09	2022-09-08
Trilog Broadband Antenna(25MHz-1GHz)-Lab	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22
Amplifier(9kHz-1.3GHz)	HP	8447F	EMC2065	2021-05-19	2022-05-18
Active Loop Antenna-RED	ETS-Lindgren	6502	EMC2190	2019-12-27	2021-12-26
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
EMI Test Receiver (1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2220	2021-05-26	2022-05-25



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Radiated Spurious Emissions					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Chamber cable (Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2020/9/9	2022-09-08
Horn Antenna(1GHz-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2019-09-25	2022-09-24
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2021-01-08	2022-01-07
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2021-01-08	2022-01-07
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2020-12-20	2023-12-19
MXE EMI Receiver(10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2020-11-13	2021-11-12
EXA Signal Analyzer(10Hz-44GHz)	Keysight	N9010A	EMC2138	2020-09-17	2021-09-16
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
Signal Analyzer (20Hz-26.5GHz)	Rohde & Schwarz	FISQ 26	EMC0069	2020/11/13	2021-11-12

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2021-07-05	2022-07-05
DMM	Fluke	73	EMC0007	2021-07-05	2022-07-05



## 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 5.39dBi.

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)

Limit:

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.

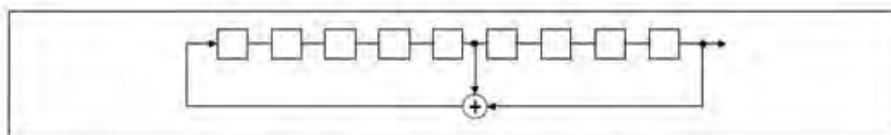
> Number of shift register stages: 9

> Length of pseudo-random sequence:  $2^9 - 1 = 511$  bits

> Longest sequence of zeros: 8 (non-inverted signal)

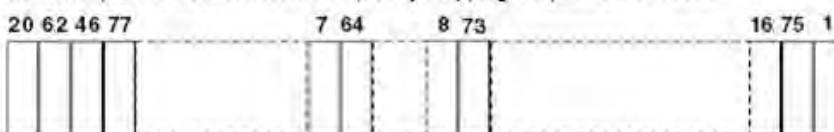
Linear Feedback Shift Register for Generation of the PRBS sequence

An example of Pseudorandom Frequency Hopping Sequence as follow:



*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.

## 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 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.



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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

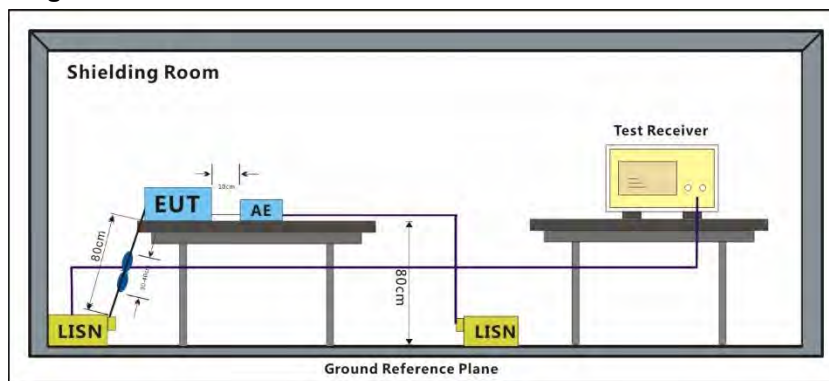
Humidity: 50.4 % RH

Atmospheric Pressure: 1010 mbar

#### 7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	Charge + TX_non-Hop mode_Keep the EUT in charging and 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.

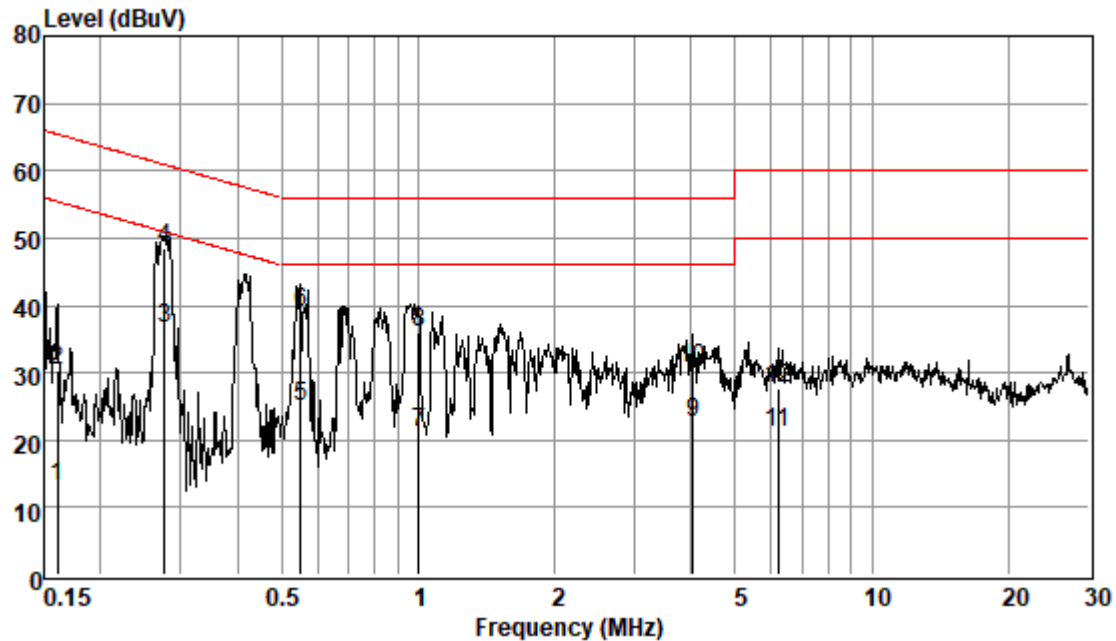
#### 7.1.3 Test Setup Diagram



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

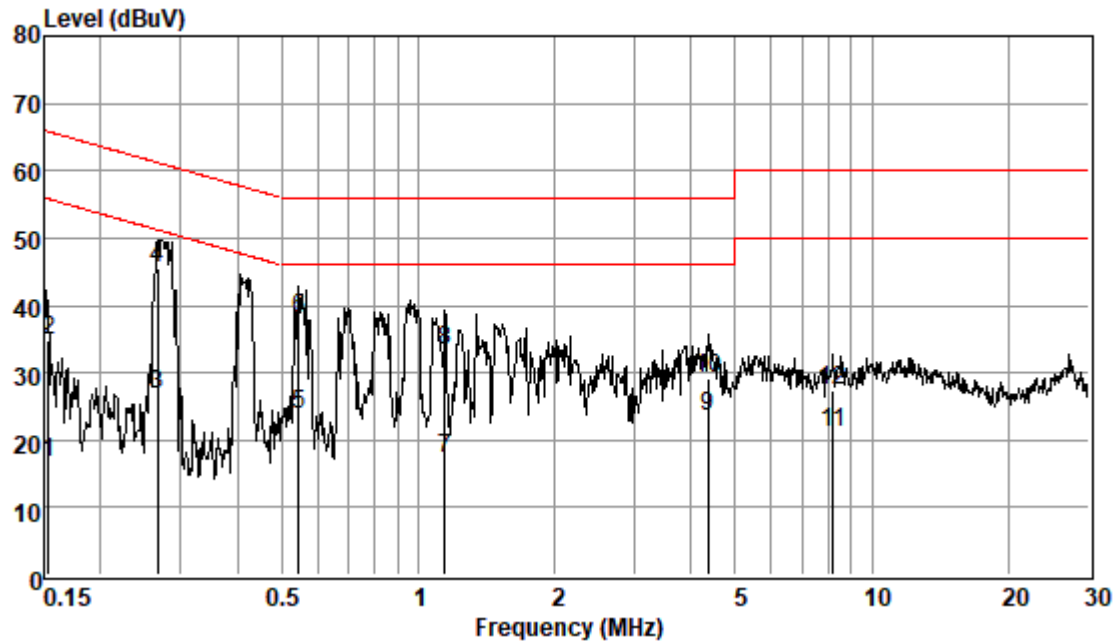
Test Mode: 02; Line: Live line



Pol : LINE  
Mode :  
Model :

Frequency MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.16	3.40	0.06	9.62	13.08	55.43	-42.35	Average
0.16	20.56	0.06	9.62	30.24	65.43	-35.19	QP
0.28	26.89	0.06	9.62	36.57	50.94	-14.37	Average
0.28	38.65	0.06	9.62	48.33	60.94	-12.61	QP
0.55	15.43	0.07	9.63	25.13	46.00	-20.87	Average
0.55	29.30	0.07	9.63	39.00	56.00	-17.00	QP
1.00	11.35	0.07	9.62	21.04	46.00	-24.96	Average
1.00	26.27	0.07	9.62	35.96	56.00	-20.04	QP
4.03	12.67	0.17	9.62	22.46	46.00	-23.54	Average
4.03	20.93	0.17	9.62	30.72	56.00	-25.28	QP
6.22	11.15	0.20	9.67	21.02	50.00	-28.98	Average
6.22	17.85	0.20	9.67	27.72	60.00	-32.28	QP

Test Mode: 02; Line: Neutral Line

Pol : NEUTRAL  
Mode :  
Model :

Frequency MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.15	7.09	0.06	9.55	16.70	55.82	-39.12	Average
0.15	25.26	0.06	9.55	34.87	65.82	-30.95	QP
0.27	17.04	0.06	9.55	26.65	51.20	-24.55	Average
0.27	35.79	0.06	9.55	45.40	61.20	-15.80	QP
0.55	14.10	0.07	9.55	23.72	46.00	-22.28	Average
0.55	28.59	0.07	9.55	38.21	56.00	-17.79	QP
1.15	7.68	0.08	9.55	17.31	46.00	-28.69	Average
1.15	23.60	0.08	9.55	33.23	56.00	-22.77	QP
4.36	13.78	0.17	9.56	23.51	46.00	-22.49	Average
4.36	19.55	0.17	9.56	29.28	56.00	-26.72	QP
8.19	11.35	0.22	9.58	21.15	50.00	-28.85	Average
8.19	17.45	0.22	9.58	27.25	60.00	-32.75	QP



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## 7.2 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 $\geq 50$ hopping channels
	0.25 for $25 \leq$ hopping channels $< 50$
	1 for digital modulation
2400-2483.5	1 for $\geq 75$ non-overlapping hopping channels
	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation

### 7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

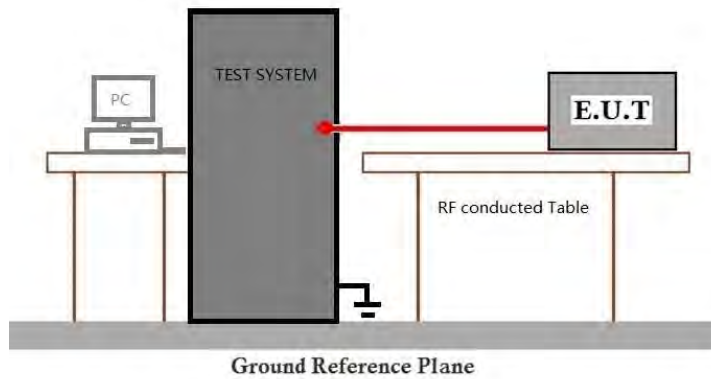
Humidity: 50.1 % RH

Atmospheric Pressure: 1010 mbar

### 7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	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

Please Refer To Appendix For Details

### 7.3 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.247(a)(1)  
Test Method: ANSI C63.10 (2013) Section 7.8.7

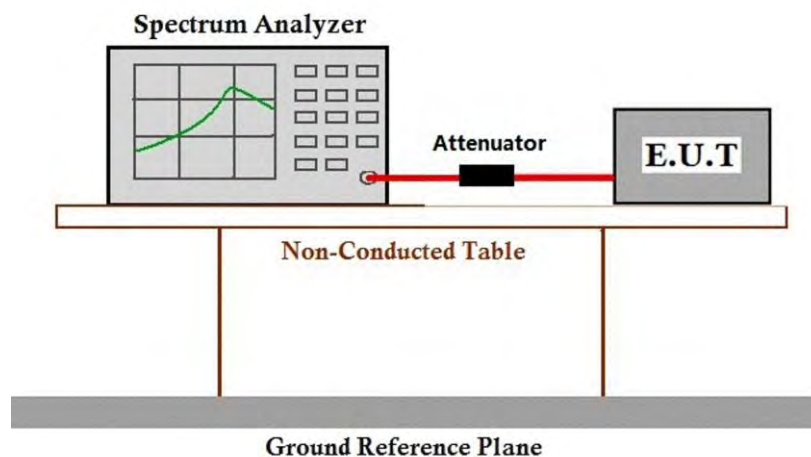
#### 7.3.1 E.U.T. Operation

Operating Environment:  
Temperature: 23.5 °C Humidity: 50.1 % RH Atmospheric Pressure: 1010 mbar

#### 7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	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

Please Refer To Appendix For Details

#### 7.4 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:

2/3 of the 20dB bandwidth base on the transmission power is less than 0.125W.

##### 7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

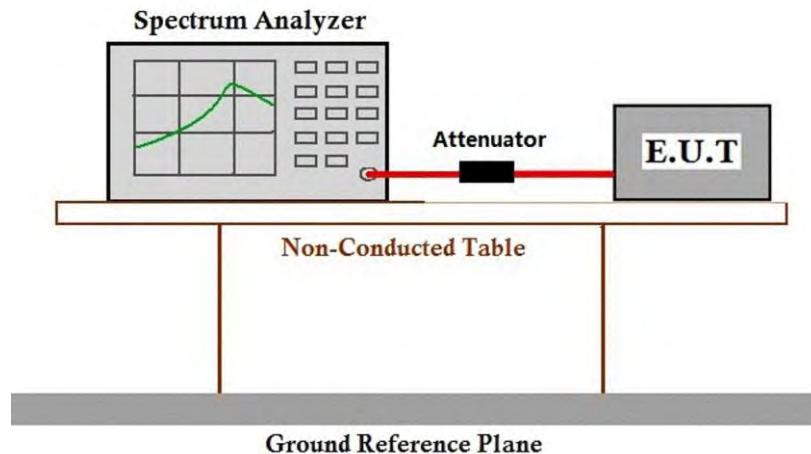
Humidity: 50.1 % RH

Atmospheric Pressure: 1010 mbar

##### 7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	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.

##### 7.4.3 Test Setup Diagram



##### 7.4.4 Measurement Procedure and Data

Please Refer To Appendix For Details



## 7.5 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

### 7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

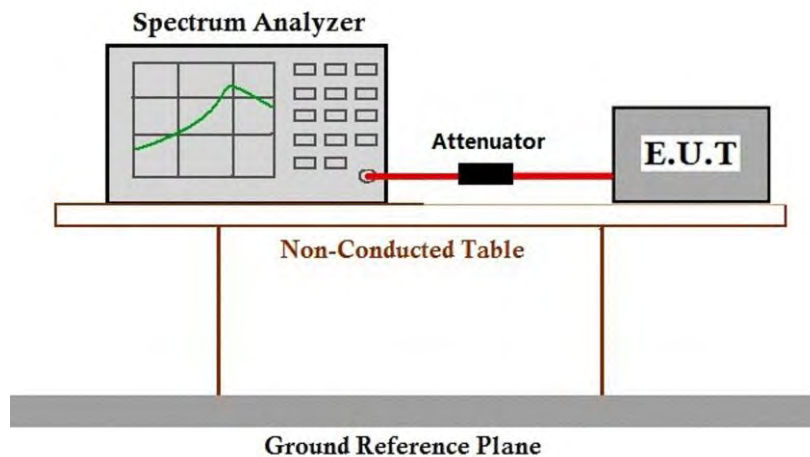
Humidity: 50.1 % RH

Atmospheric Pressure: 1010 mbar

### 7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	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.

### 7.5.3 Test Setup Diagram



### 7.5.4 Measurement Procedure and Data

Please Refer To Appendix For Details

## 7.6 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

### 7.6.1 E.U.T. Operation

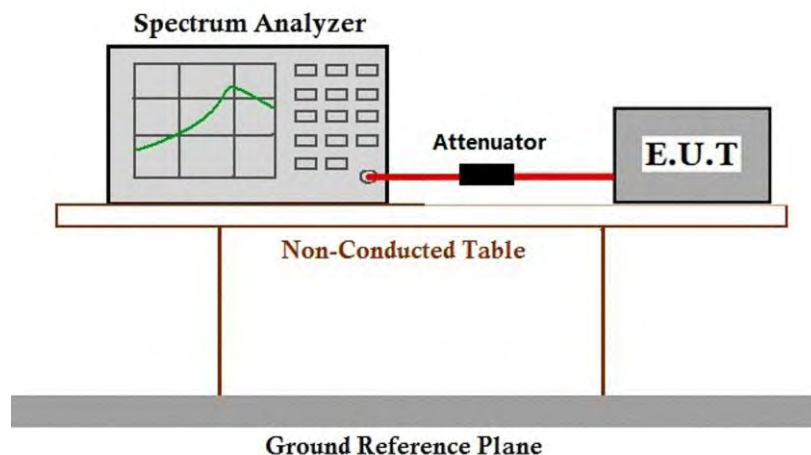
Operating Environment:

Temperature: 23.5 °C Humidity: 50.1 % RH Atmospheric Pressure: 1010 mbar

### 7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	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.

### 7.6.3 Test Setup Diagram



### 7.6.4 Measurement Procedure and Data

Please Refer To Appendix For Details

## 7.7 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)).

### 7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

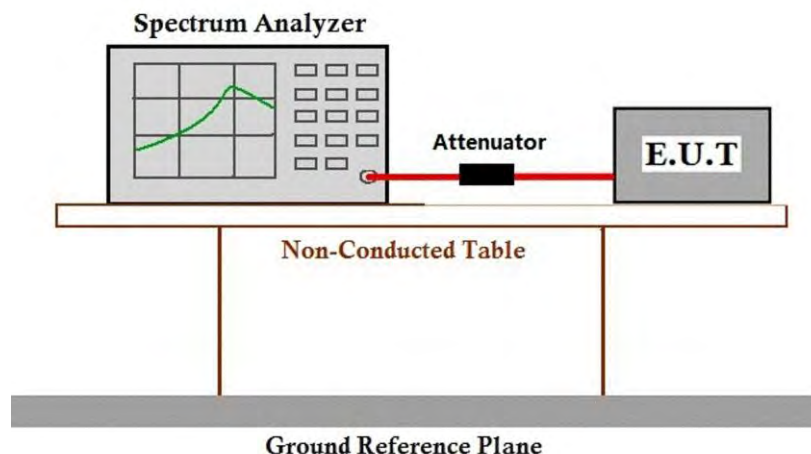
Humidity: 50.1 % RH

Atmospheric Pressure: 1010 mbar

### 7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	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	03	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 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)).

### 7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

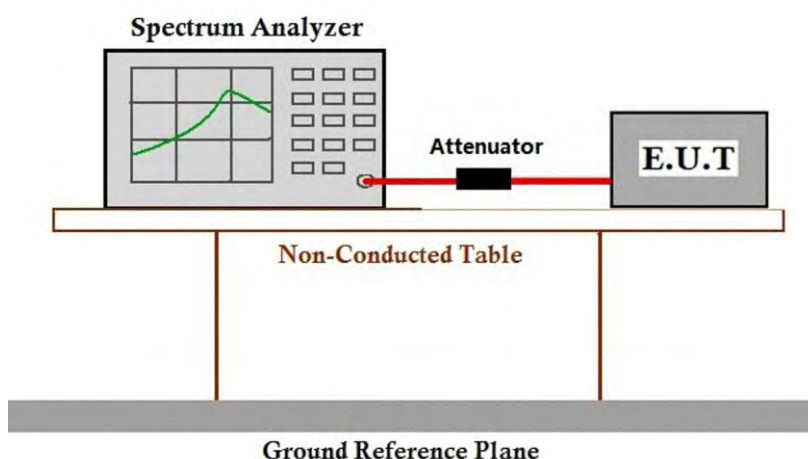
Humidity: 50.1 % RH

Atmospheric Pressure: 1010 mbar

### 7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	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.

### 7.8.3 Test Setup Diagram



### 7.8.4 Measurement Procedure and Data

Please Refer To Appendix For Details



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## 7.9 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.

### 7.9.1 E.U.T. Operation

Operating Environment:

Temperature: 22.7 °C

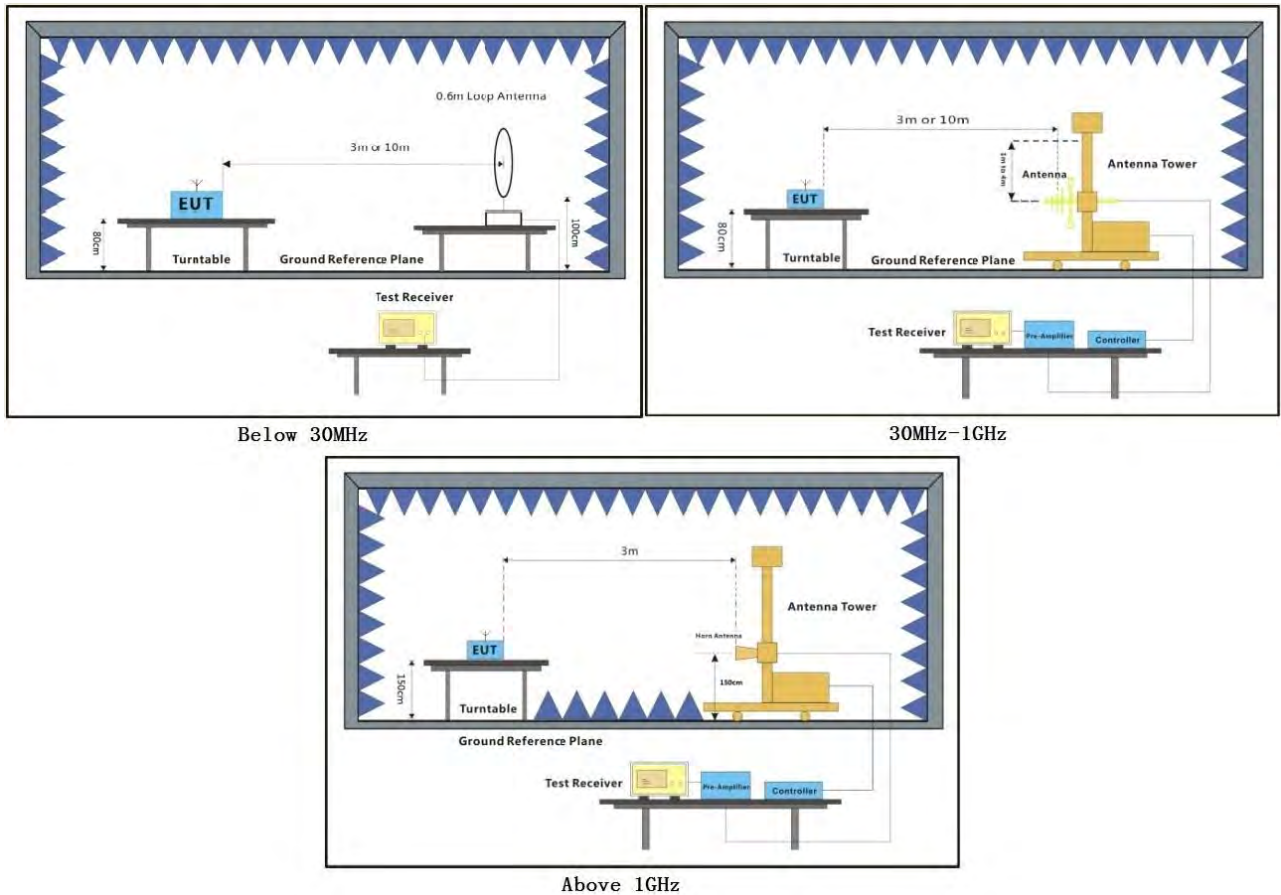
Humidity: 50.9 % RH

Atmospheric Pressure: 1010 mbar

### 7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Pre-scan	01	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	02	Charge + TX_non-Hop mode_Keep the EUT in charging and 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.

### 7.9.3 Test Setup Diagram



#### 7.9.4 Measurement Procedure and Data

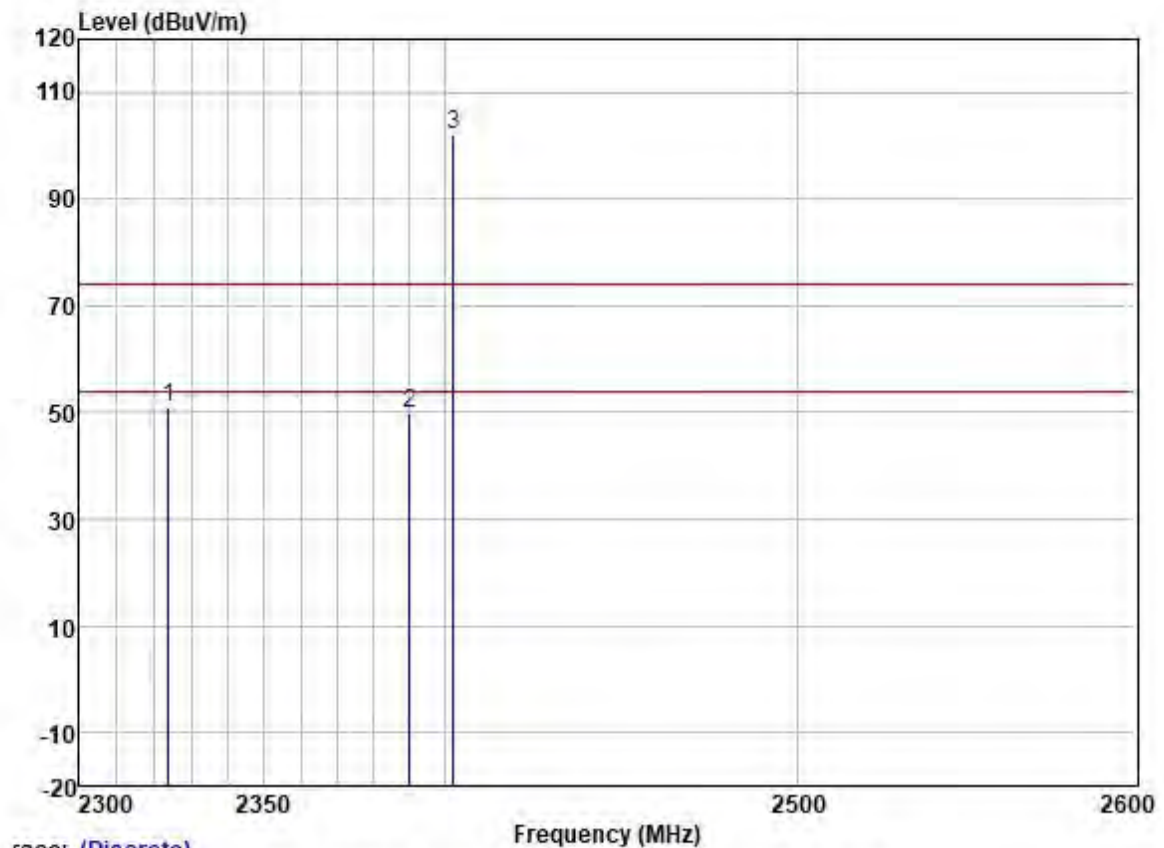
- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 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 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

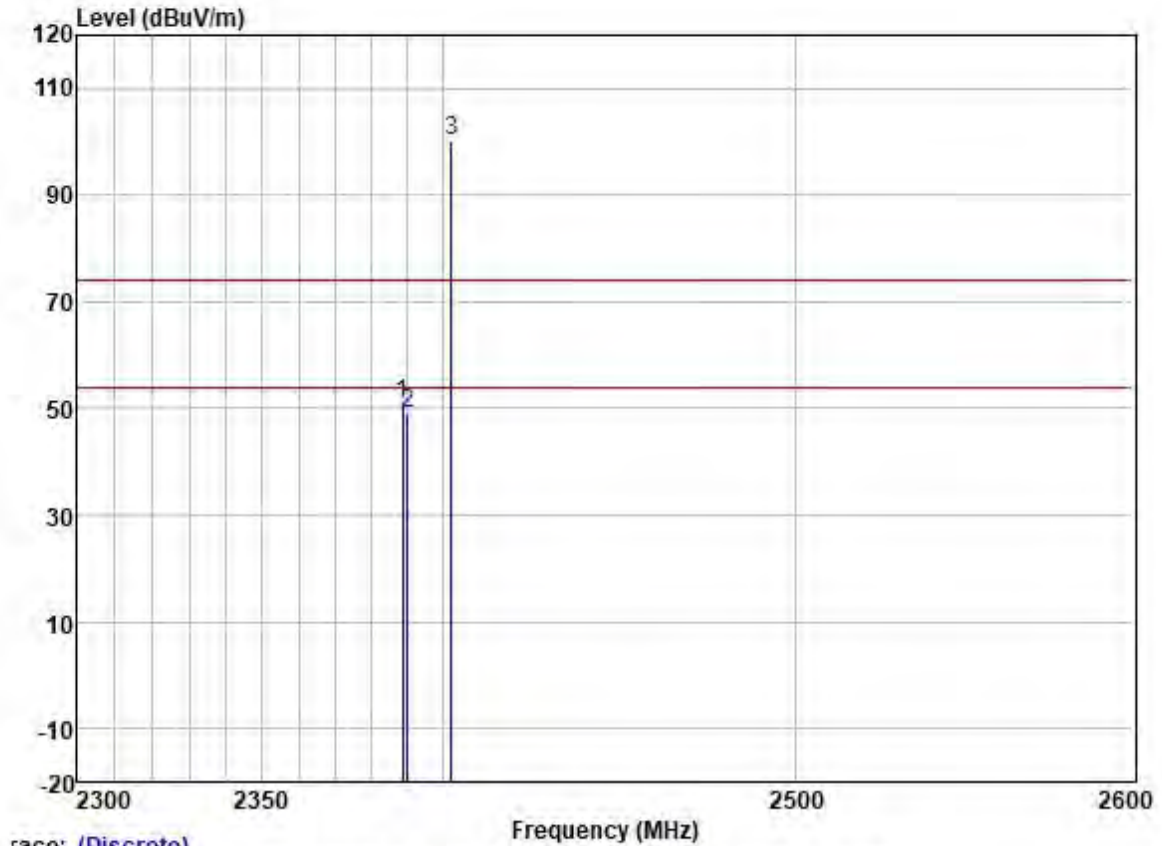


Trace: (Discrete)

		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	2323.845	58.11	27.19	3.34	37.62	51.02	74.00	-22.98	HORIZONTAL	Peak
2	2390.000	56.68	27.33	3.48	37.59	49.90	74.00	-24.10	HORIZONTAL	Peak
3 *	2402.000	108.91	27.35	3.50	37.59	102.17	74.00	28.17	HORIZONTAL	Peak



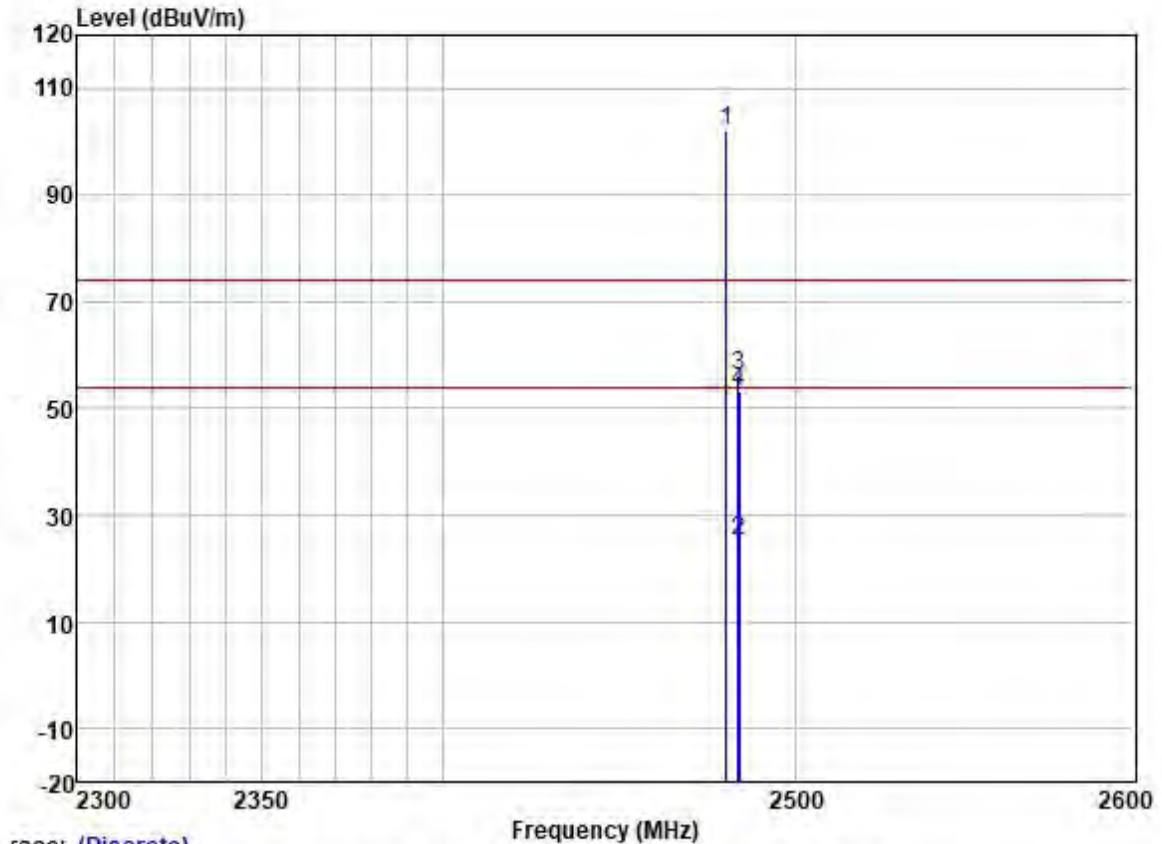
Test Mode: 02; Polarity: Vertical; Modulation:GFSK; Channel:Low



Trace: (Discrete)

	Read	Antenna	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	2388.647	57.79	27.33	3.48	37.59	51.01	74.00	-22.99	VERTICAL Peak
2	2390.000	56.00	27.33	3.48	37.59	49.22	74.00	-24.78	VERTICAL Peak
3 *	2402.000	106.82	27.35	3.50	37.59	100.08	74.00	26.08	VERTICAL Peak

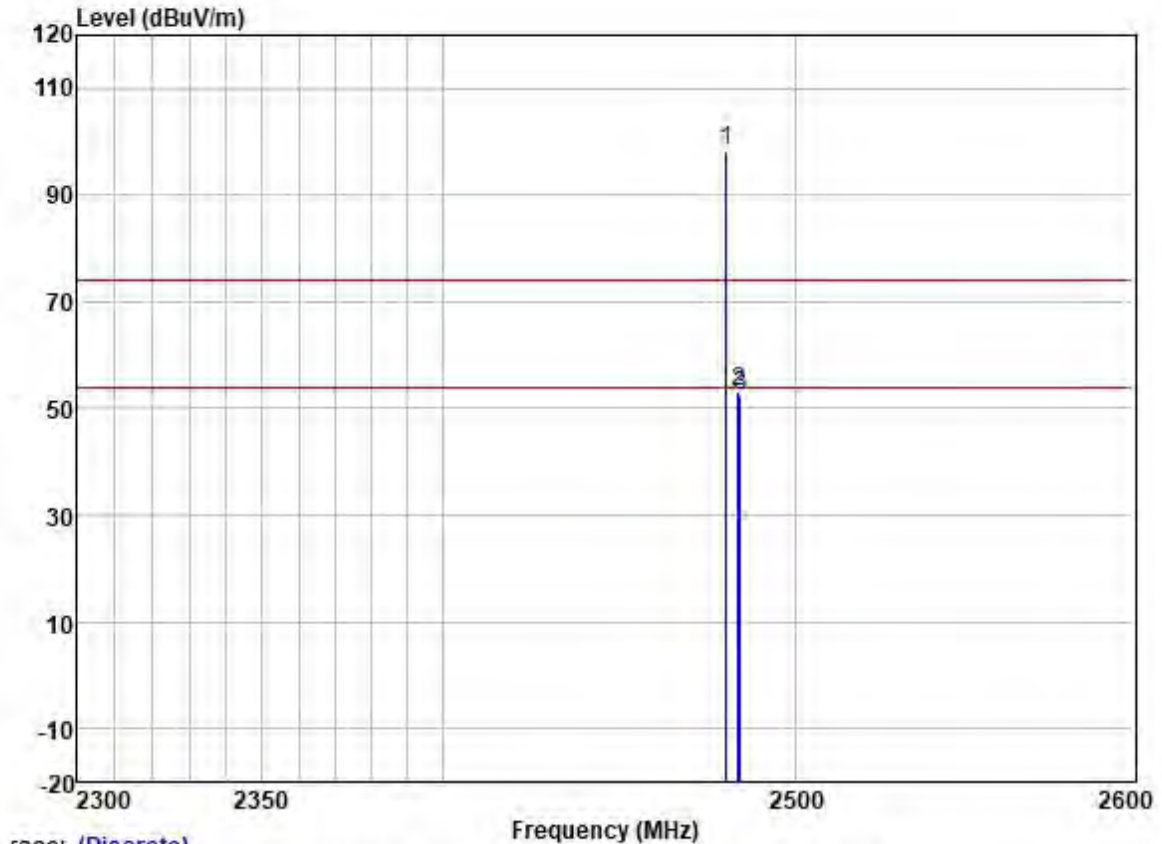
Test Mode: 02; Polarity: Horizontal; Modulation:GFSK; Channel:High



Trace: (Discrete)

	Read	Antenna	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	108.76	27.47	3.60	37.57	102.26	74.00	28.26	HORIZONTAL Peak
2	2483.500	31.85	27.48	3.53	37.57	25.29	54.00	-28.71	HORIZONTAL Average
3	2483.500	62.60	27.48	3.53	37.57	56.04	74.00	-17.96	HORIZONTAL Peak
4	2483.821	59.75	27.48	3.53	37.57	53.19	74.00	-20.81	HORIZONTAL Peak

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

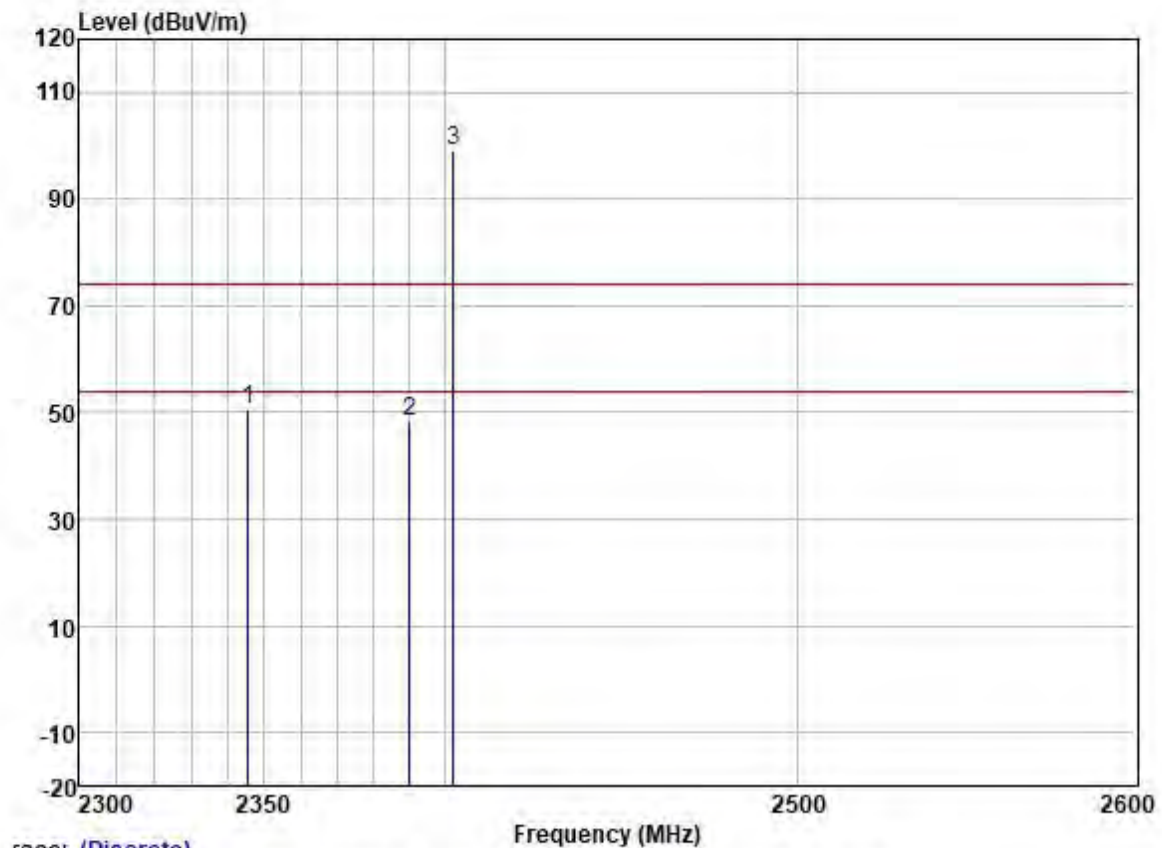


race: (Discrete)

	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2480.000	105.00	27.47	3.60	37.57	98.50	74.00	24.50	VERTICAL	Peak
2	2483.500	59.73	27.48	3.53	37.57	53.17	74.00	-20.83	VERTICAL	Peak
3	2484.021	59.05	27.48	3.53	37.57	52.49	74.00	-21.51	VERTICAL	Peak



Test Mode: 02; Polarity: Horizontal; Modulation: pi/4DQPSK; Channel:Low

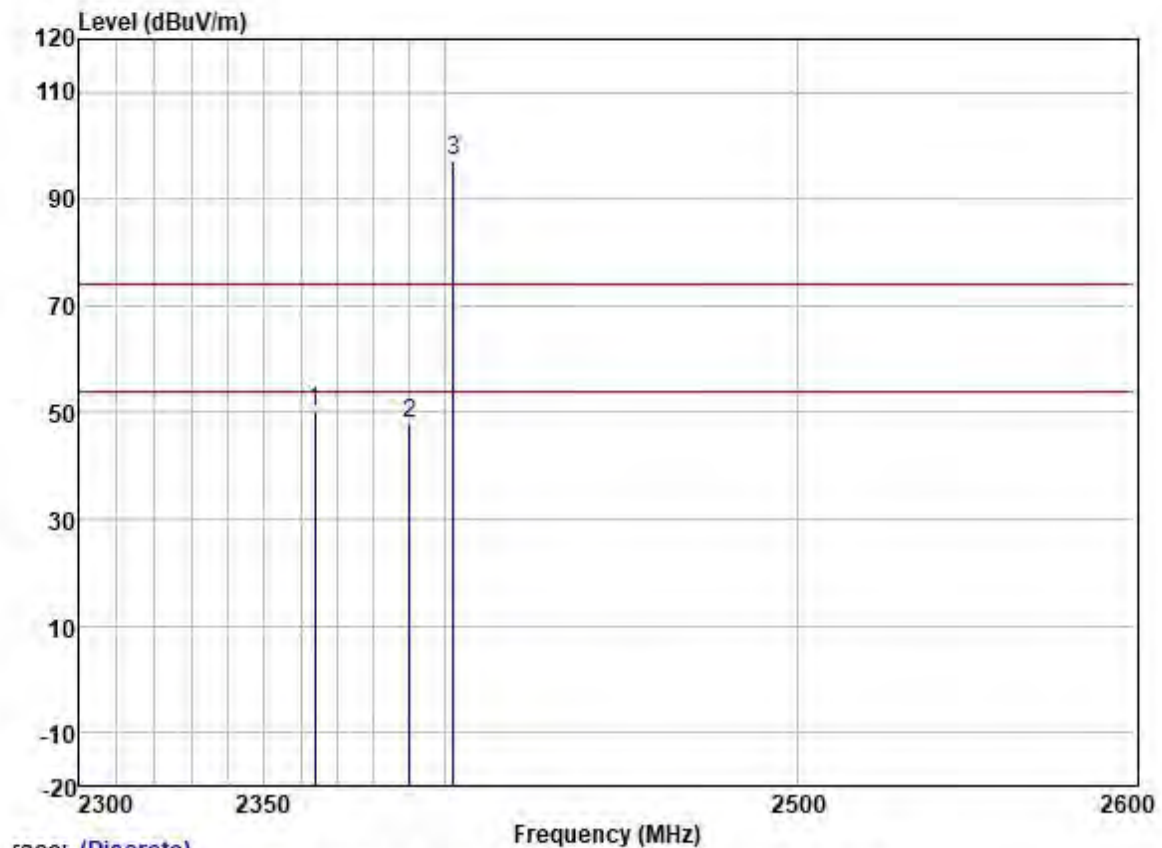


Trace: (Discrete)

	Read	Antenna	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	2345.513	57.67	27.24	3.38	37.61	50.68	74.00	-23.32	HORIZONTAL Peak
2	2390.000	54.93	27.33	3.48	37.59	48.15	74.00	-25.85	HORIZONTAL Peak
3 *	2402.000	105.88	27.35	3.50	37.59	99.14	74.00	25.14	HORIZONTAL Peak

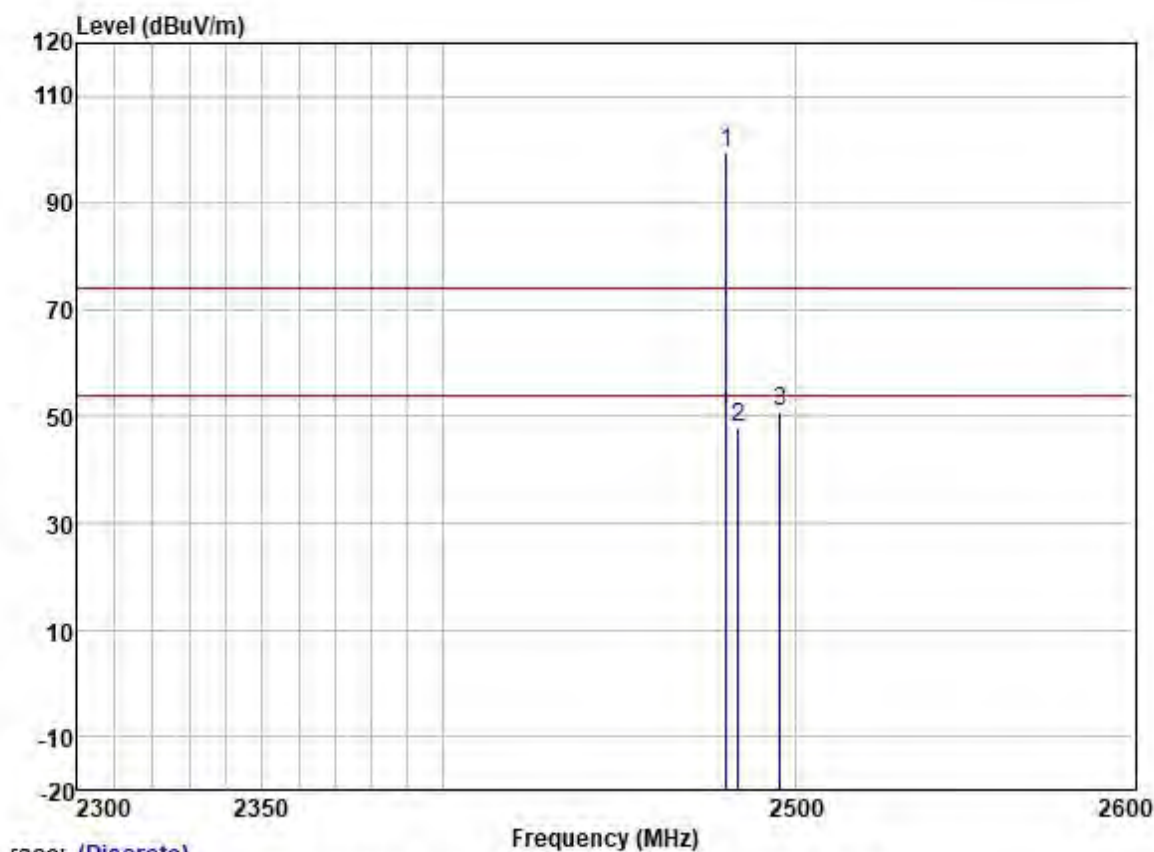


Test Mode: 02; Polarity: Vertical; Modulation: pi/4DQPSK; Channel:Low



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2363.674	56.93	27.28	3.43	37.60	50.04	74.00	-23.96	VERTICAL	Peak
2	2390.000	54.58	27.33	3.48	37.59	47.80	74.00	-26.20	VERTICAL	Peak
3 *	2402.000	103.84	27.35	3.50	37.59	97.10	74.00	23.10	VERTICAL	Peak

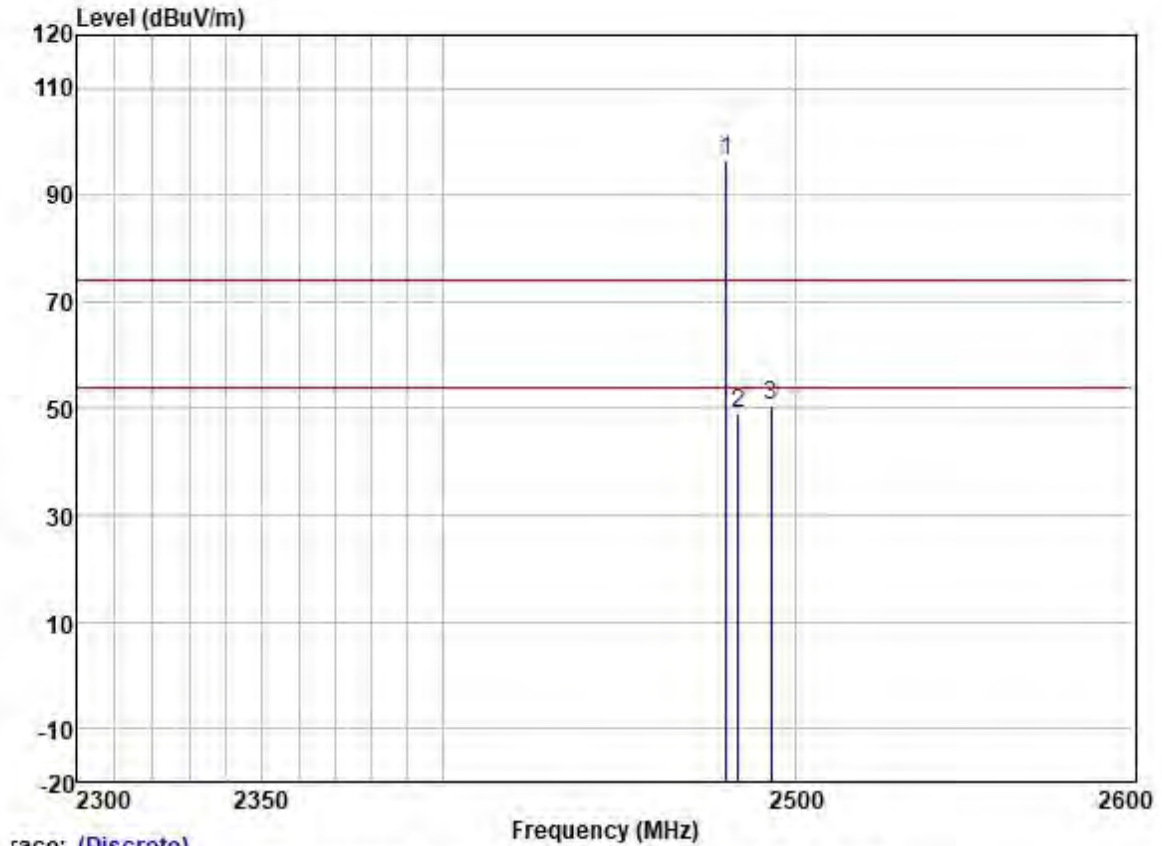
Test Mode: 02; Polarity: Horizontal; Modulation: pi/4DQPSK; Channel: High



Trace: (Discrete)

	Read	Antenna	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	106.04	27.47	3.60	37.57	99.54	74.00	25.54	HORIZONTAL Peak
2	2483.500	54.64	27.48	3.53	37.57	48.08	74.00	-25.92	HORIZONTAL Peak
3	2495.507	57.66	27.49	3.47	37.56	51.06	74.00	-22.94	HORIZONTAL Peak

Test Mode: 02; Polarity: Vertical; Modulation: pi/4DQPSK; Channel: High

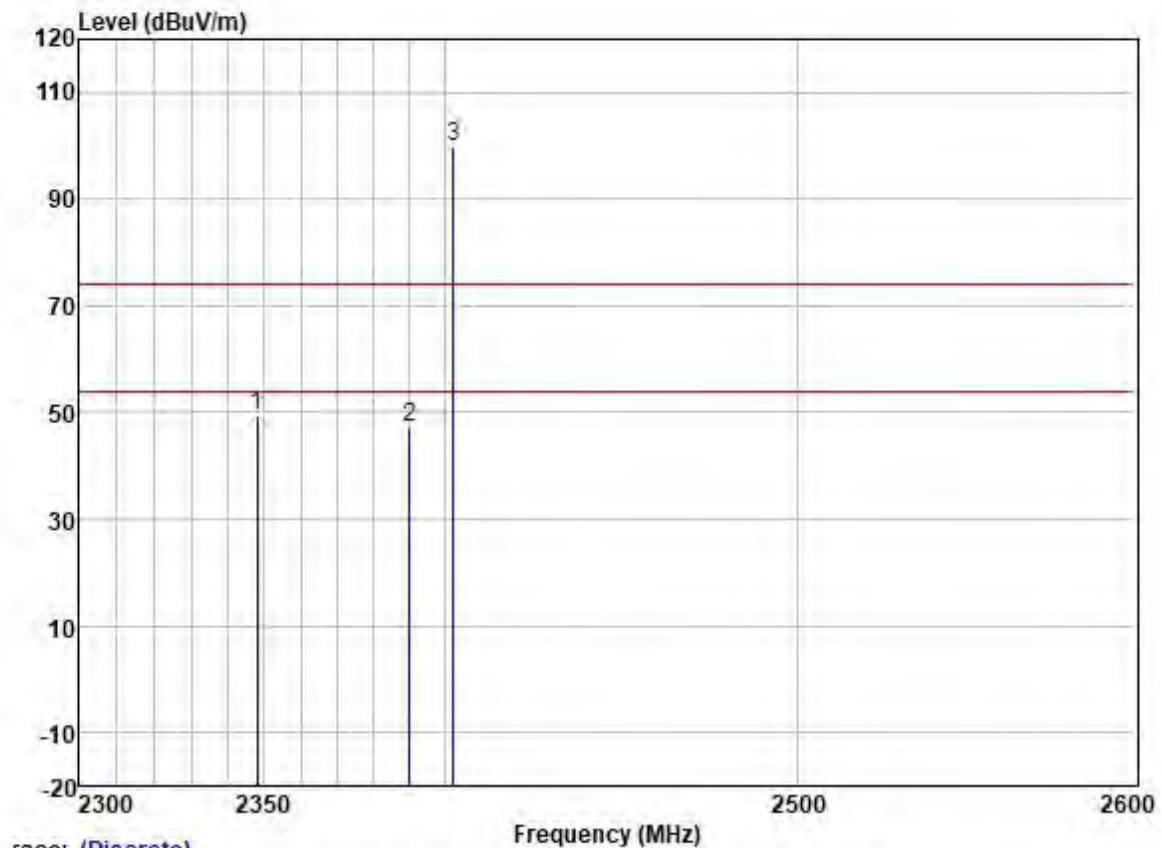


Trace: (Discrete)

		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	103.09	27.47	3.60	37.57	96.59	74.00	22.59	VERTICAL	Peak
2	2483.500	55.51	27.48	3.53	37.57	48.95	74.00	-25.05	VERTICAL	Peak
3	2492.824	57.17	27.49	3.47	37.56	50.57	74.00	-23.43	VERTICAL	Peak



Test Mode: 02; Polarity: Horizontal; Modulation: 8DPSK; Channel:Low

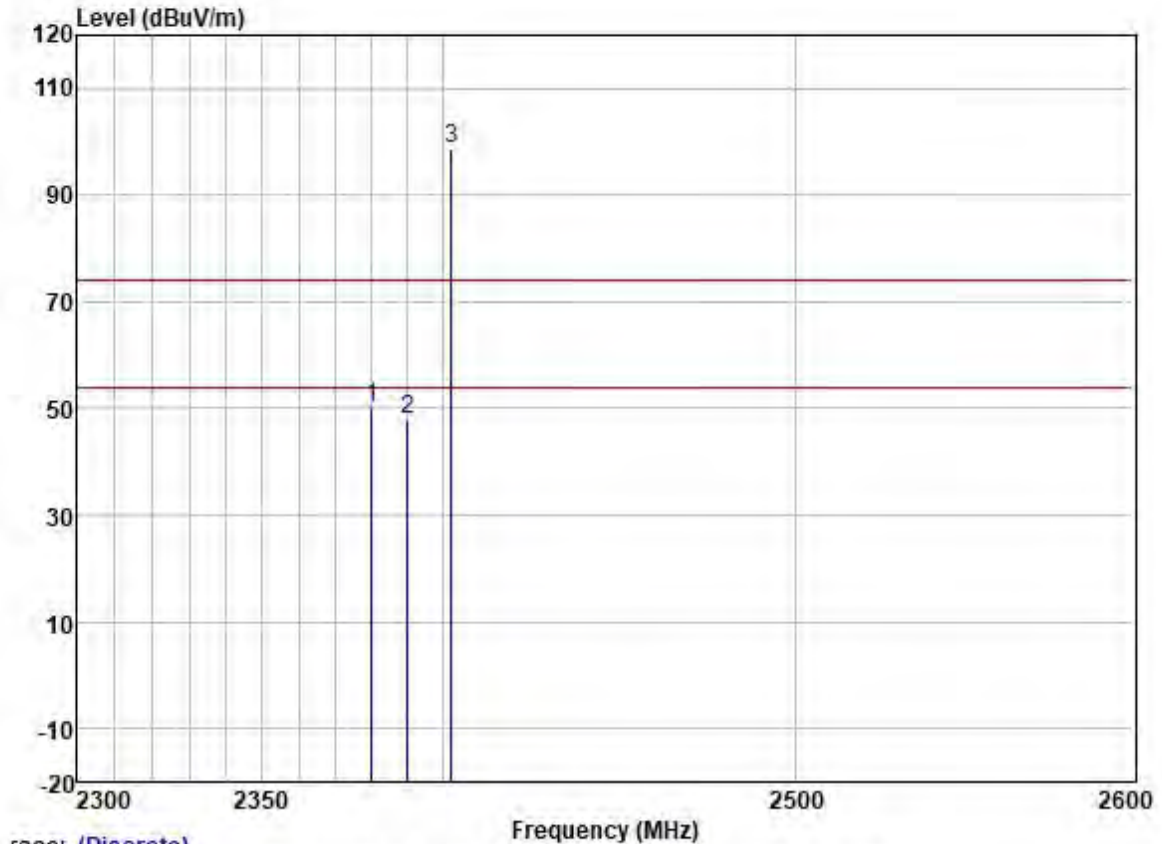


Trace: (Discrete)

		Read	Antenna	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	2347.900	56.60	27.24	3.38	37.61	49.61	74.00	-24.39	HORIZONTAL	Peak
2	2390.000	54.02	27.33	3.48	37.59	47.24	74.00	-26.76	HORIZONTAL	Peak
3 *	2402.000	106.75	27.35	3.50	37.59	100.01	74.00	26.01	HORIZONTAL	Peak



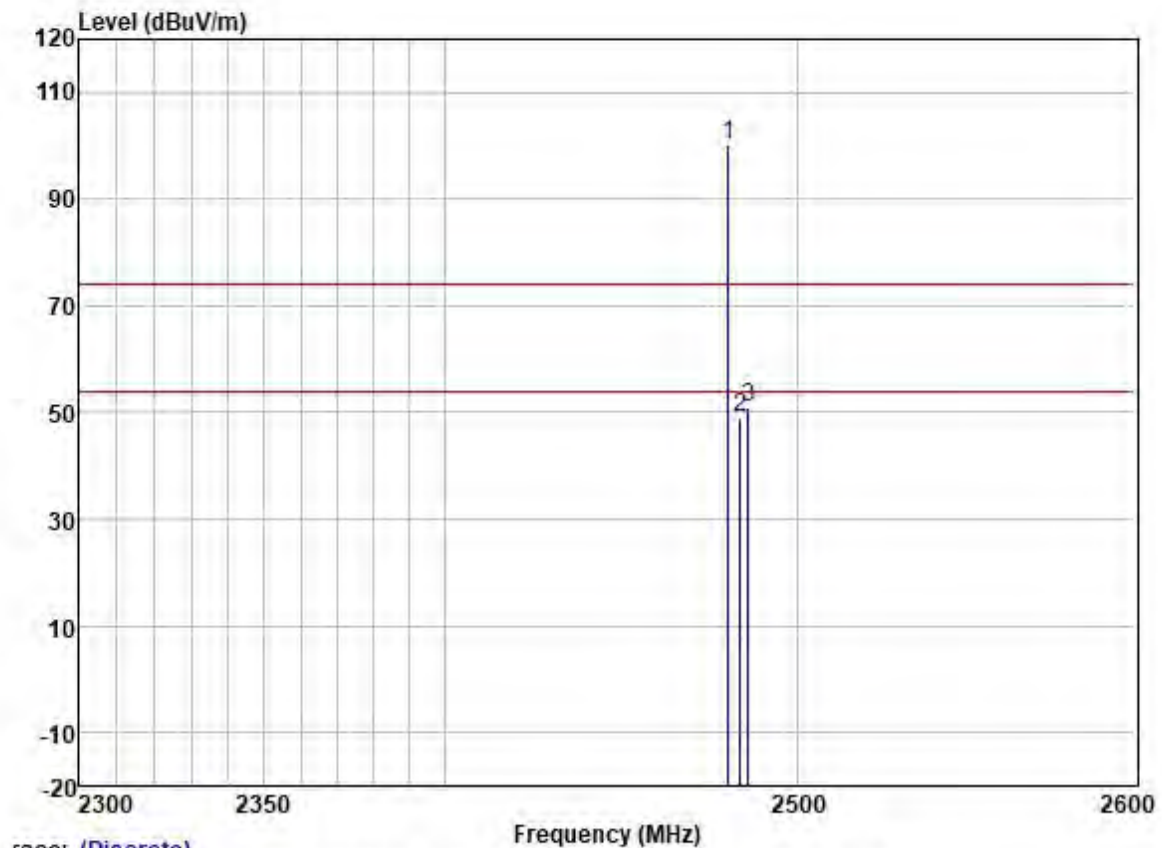
Test Mode: 02; Polarity: Vertical; Modulation: 8DPSK; Channel:Low



Trace: (Discrete)

	Read	Antenna	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	2379.856	56.98	27.31	3.46	37.60	50.15	74.00	-23.85	VERTICAL Peak
2	2390.000	54.55	27.33	3.48	37.59	47.77	74.00	-26.23	VERTICAL Peak
3 *	2402.000	105.29	27.35	3.50	37.59	98.55	74.00	24.55	VERTICAL Peak

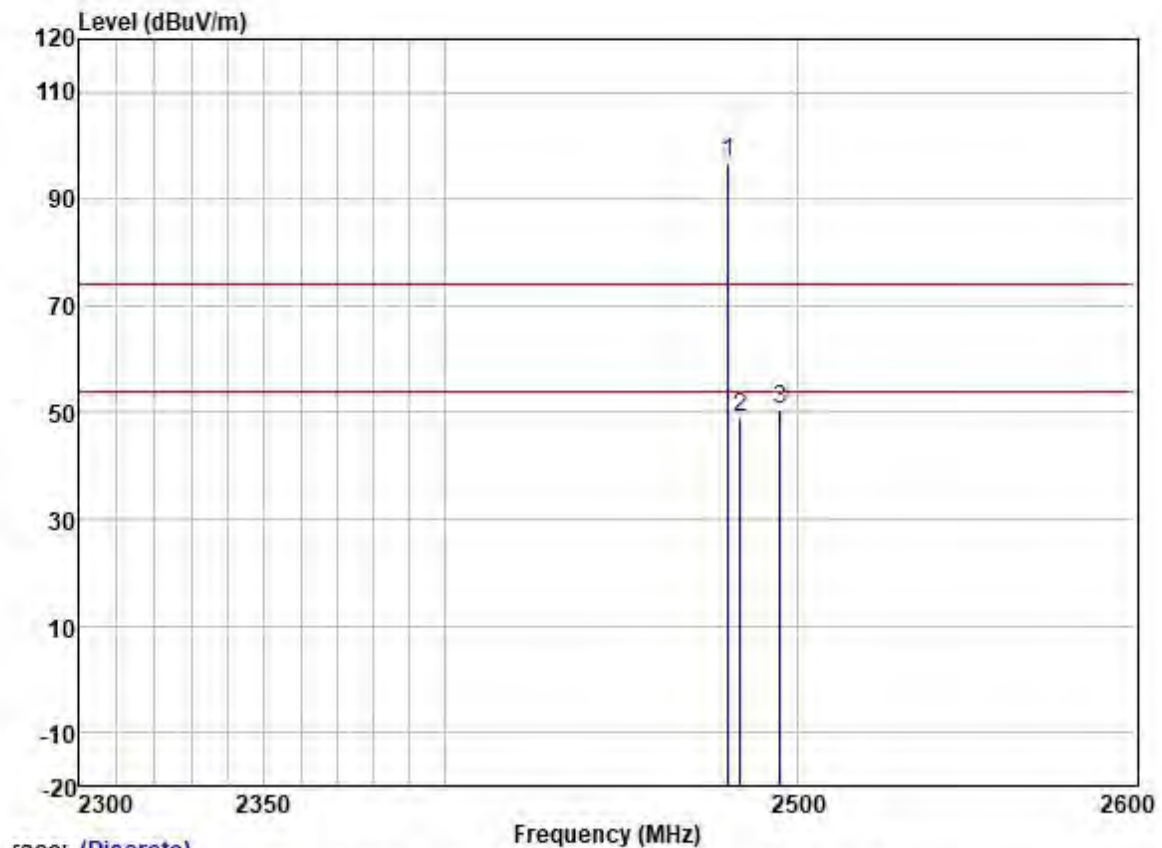
Test Mode: 02; Polarity: Horizontal; Modulation: 8DPSK; Channel: High



Trace: (Discrete)

		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	106.55	27.47	3.60	37.57	100.05	74.00	26.05	HORIZONTAL	Peak
2	2483.500	55.48	27.48	3.53	37.57	48.92	74.00	-25.08	HORIZONTAL	Peak
3	2485.619	57.54	27.48	3.53	37.57	50.98	74.00	-23.02	HORIZONTAL	Peak

Test Mode: 02; Polarity: Vertical; Modulation: 8DPSK; Channel: High



Trace: (Discrete)

	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 *	2480.000	103.31	27.47	3.60	37.57	96.81	74.00	22.81	VERTICAL	Peak
2	2483.500	55.67	27.48	3.53	37.57	49.11	74.00	-24.89	VERTICAL	Peak
3	2494.955	57.10	27.49	3.47	37.56	50.50	74.00	-23.50	VERTICAL	Peak



**7.10 Radiated Spurious Emissions**

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

Test Method: ANSI C63.10 (2013) Section 6.4,6.5,6.6

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.

**7.10.1 E.U.T. Operation**

Operating Environment:

Temperature: 24.2 °C

Humidity: 50.1 % RH

Atmospheric Pressure: 1010 mbar

**7.10.2 Test Mode Description**

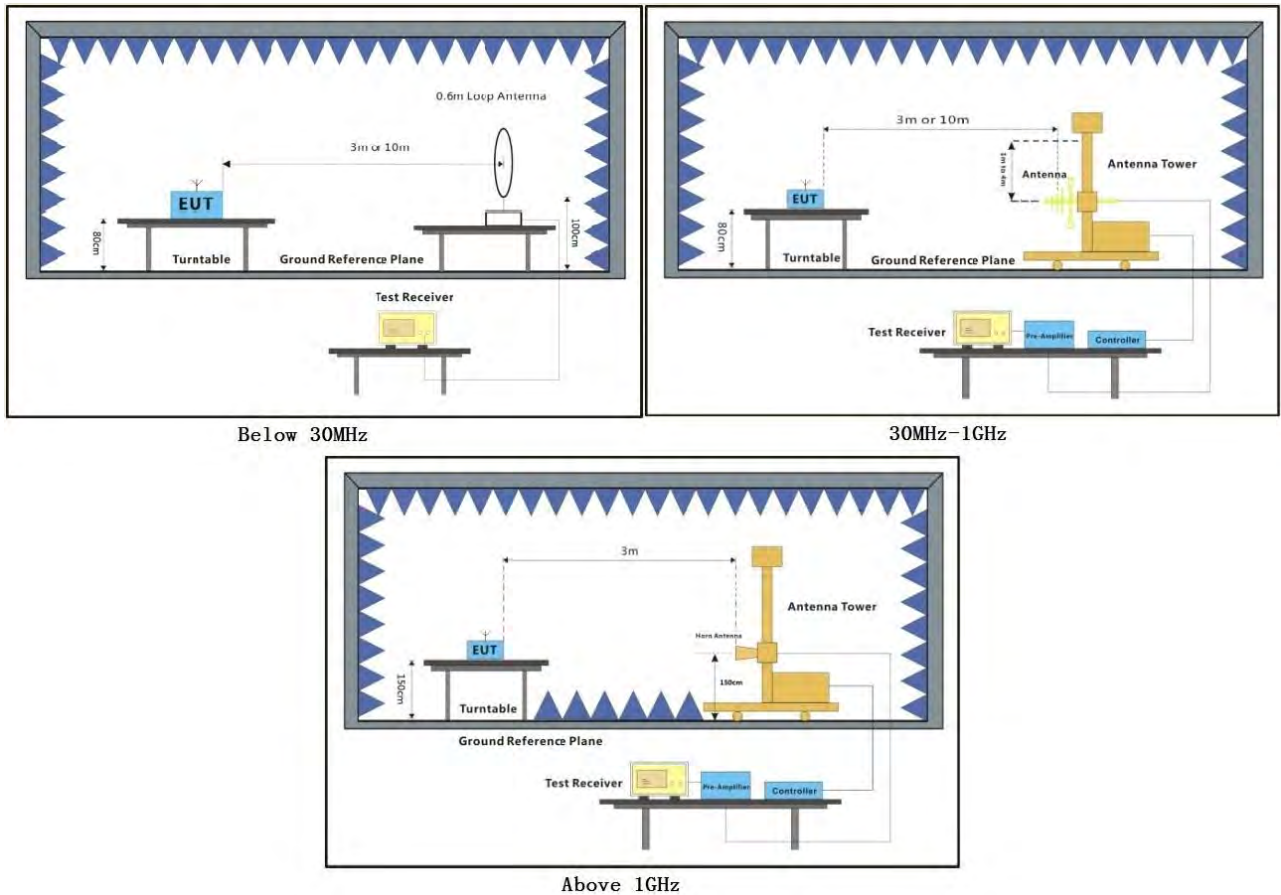
Pre-scan / Final test	Mode Code	Description
Pre-scan	01	TX_non-Hop mode_Keep the EUT in continuously transmitting mode with GFSK modulation, Pi/4DQPSK modulation, 8DPSK modulation. All modes have been tested and only the data of worst case is recorded in the report.
Final test	02	Charge + TX_non-Hop mode_Keep the EUT in charging and 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.



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### 7.10.3 Test Setup Diagram



#### 7.10.4 Measurement Procedure and Data

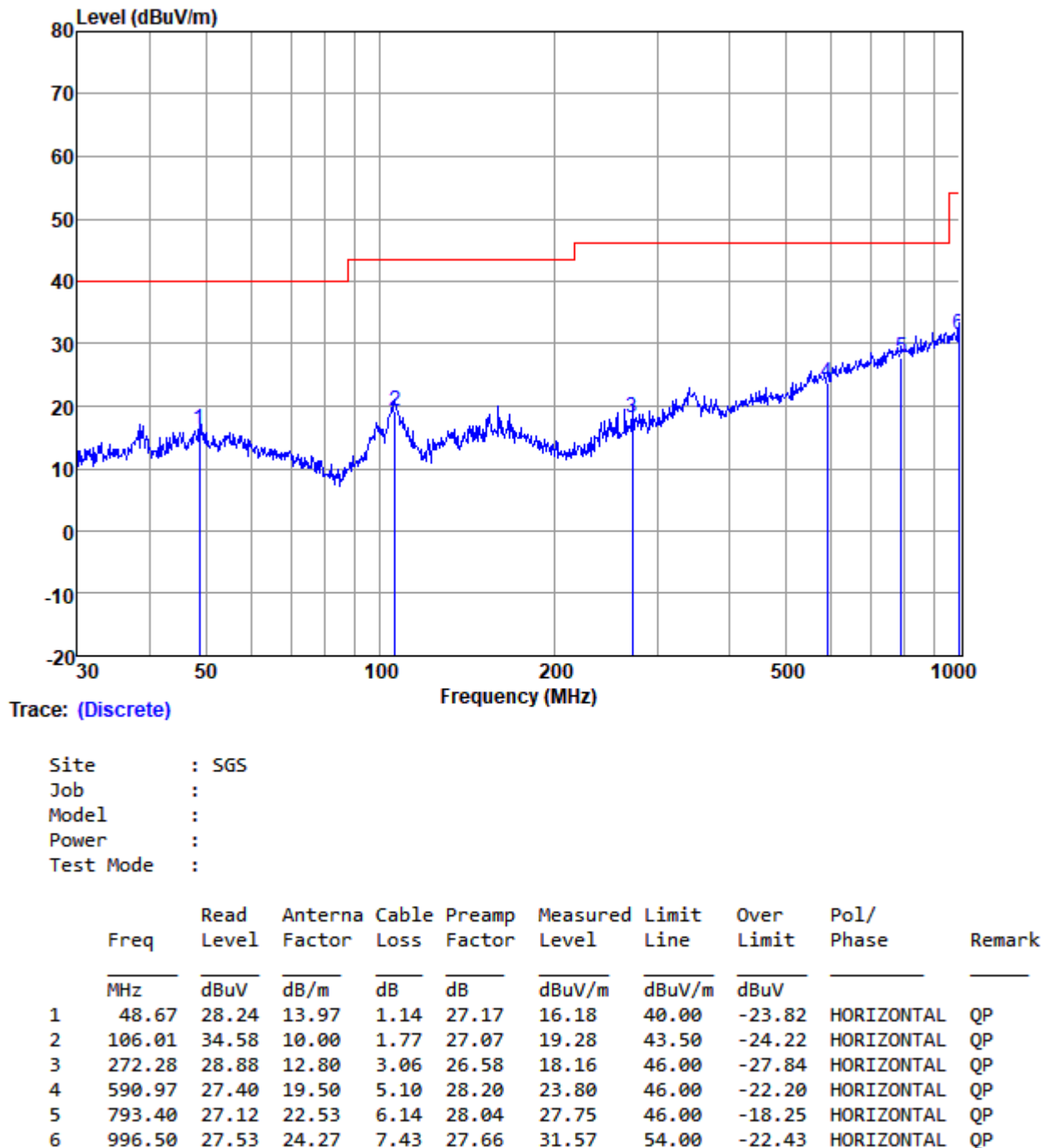
- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 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:

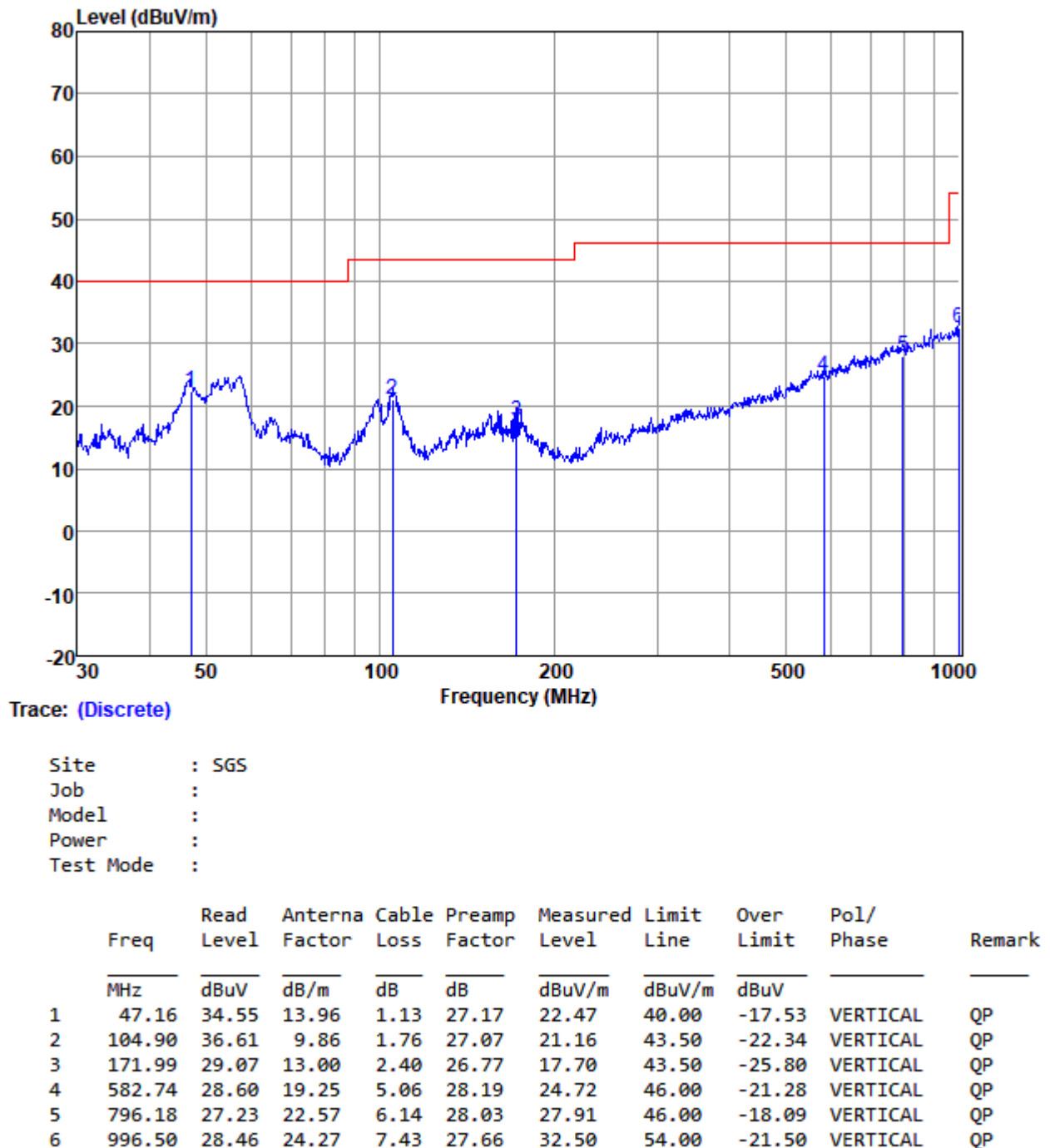
- 1) For emission below 1GHz, through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:  
Final 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, if 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.
- 5) The average emission data was not adding the duty cycle correction factor as the peak emission is below the average emission limit in this report.



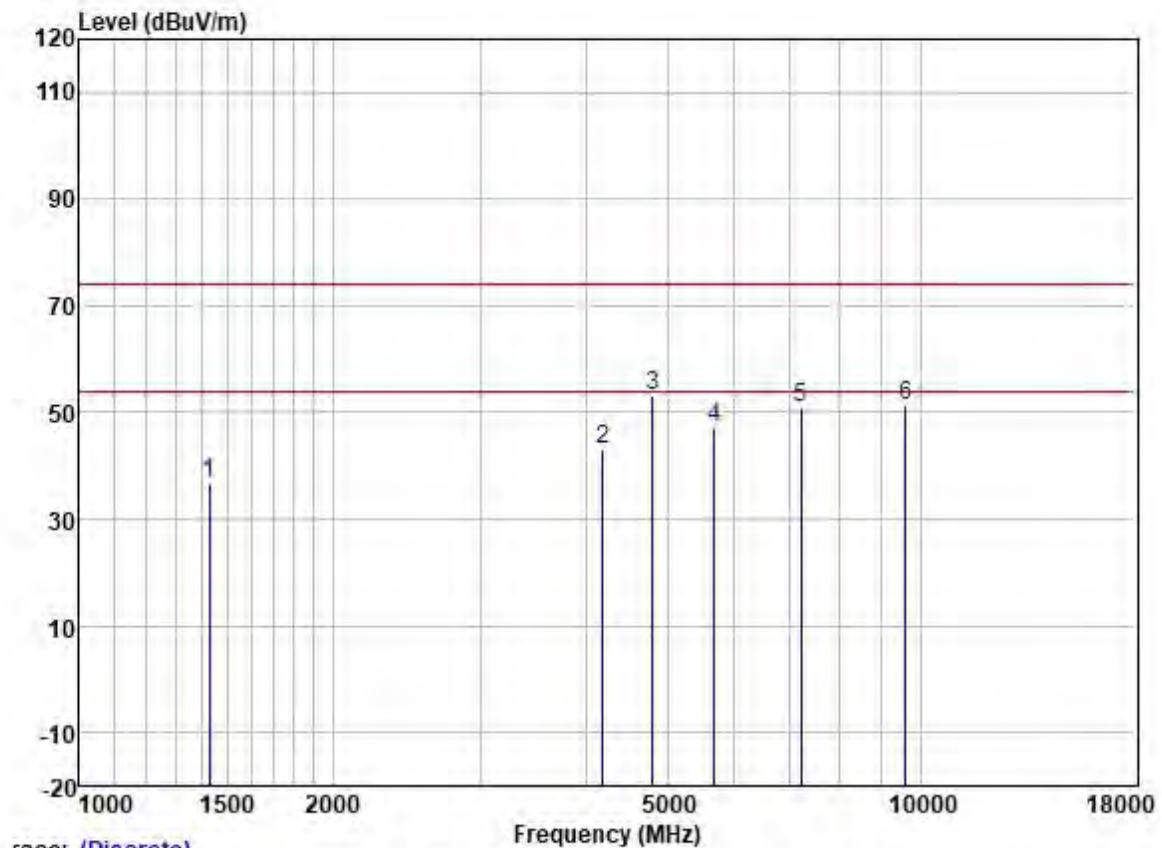
Test Mode: 02; Polarity: Horizontal; Modulation:GFSK; ; Channel:Low;



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



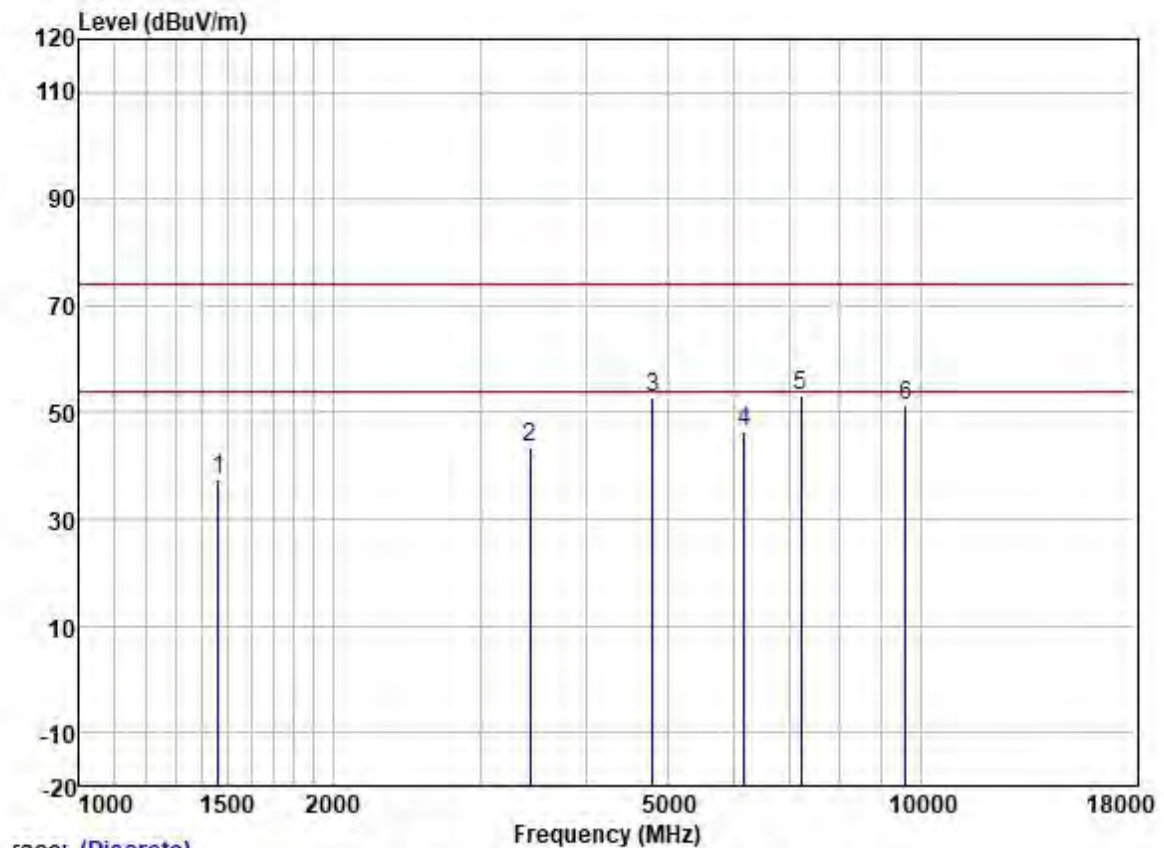
Test Mode: 02; Polarity: Horizontal; Modulation: GFSK; Channel: Low



		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	1426.309	46.72	25.43	2.65	38.20	36.60	74.00	-37.40	HORIZONTAL	Peak
2	4196.486	45.28	30.15	4.60	36.81	43.22	74.00	-30.78	HORIZONTAL	Peak
3	4804.000	53.30	31.42	5.40	36.83	53.29	74.00	-20.71	HORIZONTAL	Peak
4	5691.116	45.77	32.01	6.40	36.89	47.29	74.00	-26.71	HORIZONTAL	Peak
5	7206.000	46.78	35.54	5.98	37.38	50.92	74.00	-23.08	HORIZONTAL	Peak
6	9608.000	43.25	38.37	7.07	37.42	51.27	74.00	-22.73	HORIZONTAL	Peak



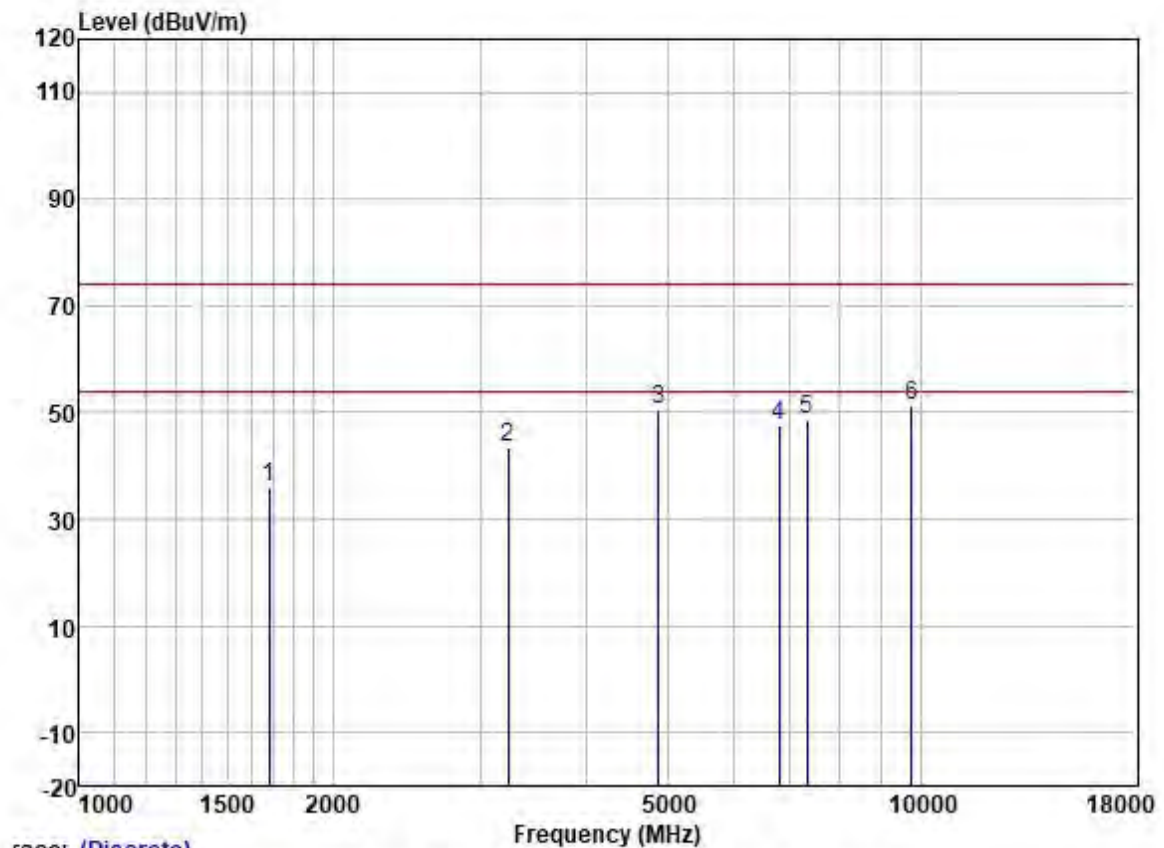
Test Mode: 02; Polarity: Vertical; Modulation:GFSK; Channel:Low



Trace: (Discrete)

		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	1464.045	47.54	25.47	2.74	38.13	37.62	74.00	-36.38	VERTICAL	Peak
2	3432.713	47.51	28.87	4.16	36.97	43.57	74.00	-30.43	VERTICAL	Peak
3	4804.000	52.71	31.42	5.40	36.83	52.70	74.00	-21.30	VERTICAL	Peak
4	6178.693	44.54	32.89	6.09	36.93	46.59	74.00	-27.41	VERTICAL	Peak
5	7206.000	48.93	35.54	5.98	37.38	53.07	74.00	-20.93	VERTICAL	Peak
6	9608.000	43.29	38.37	7.07	37.42	51.31	74.00	-22.69	VERTICAL	Peak

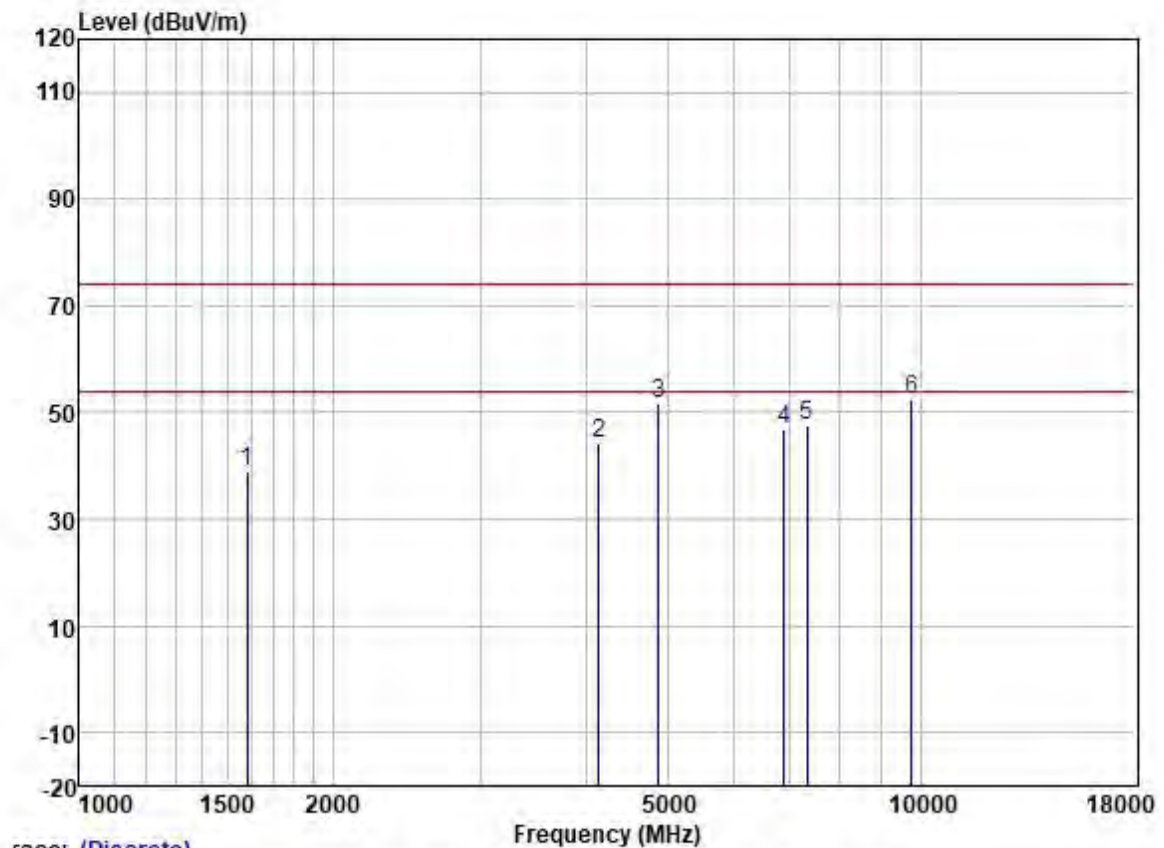
Test Mode: 02; Polarity: Horizontal; Modulation:GFSK; Channel:middle



Trace: (Discrete)

		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	1682.861	45.52	25.68	2.80	37.91	36.09	74.00	-37.91	HORIZONTAL	Peak
2	3230.205	47.90	28.65	4.02	37.07	43.50	74.00	-30.50	HORIZONTAL	Peak
3	4882.000	50.29	31.56	5.52	36.84	50.53	74.00	-23.47	HORIZONTAL	Peak
4	6798.300	44.31	34.66	5.82	37.12	47.67	74.00	-26.33	HORIZONTAL	Peak
5	7323.000	44.07	36.00	6.13	37.43	48.77	74.00	-25.23	HORIZONTAL	Peak
6	9764.000	43.18	38.50	7.02	37.41	51.29	74.00	-22.71	HORIZONTAL	Peak

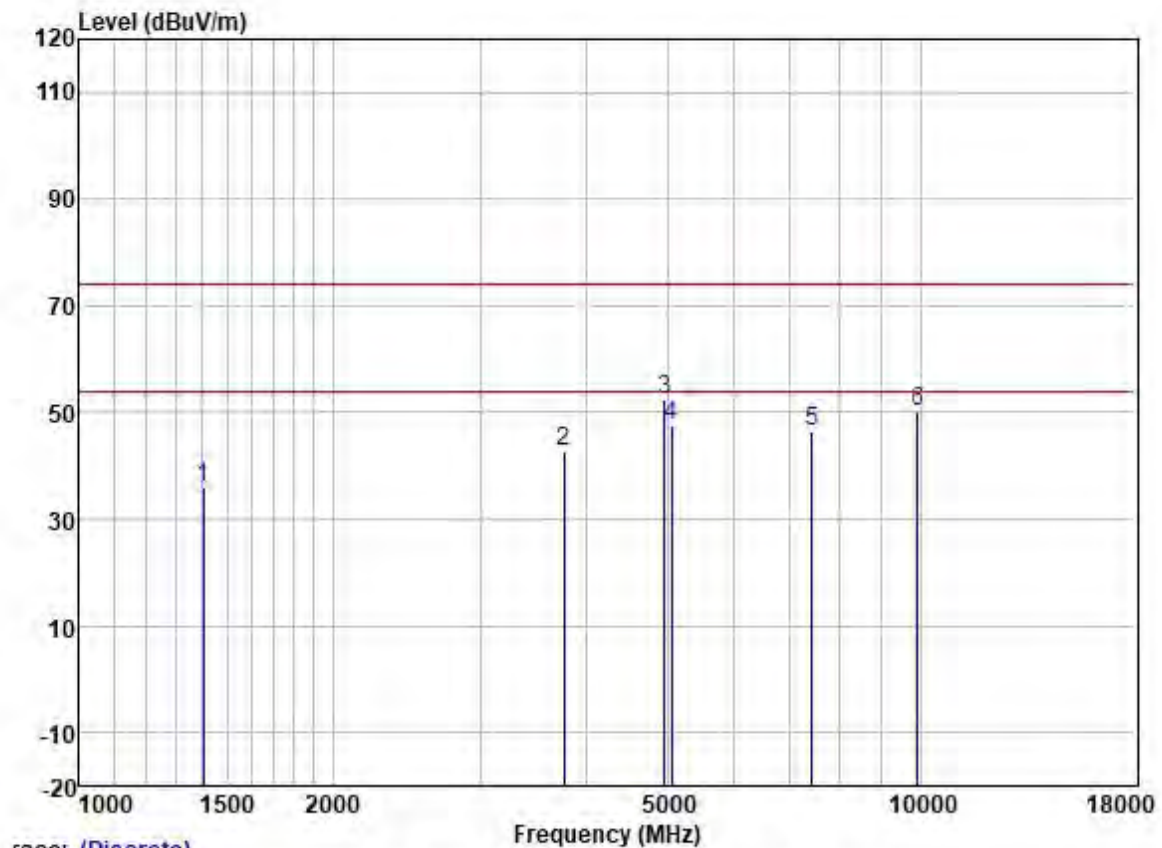
Test Mode: 02; Polarity: Vertical; Modulation: GFSK; Channel: middle



		Read	Antenna	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	1580.903	48.47	25.56	2.80	38.00	38.83	74.00	-35.17	VERTICAL	Peak
2	4149.077	46.53	30.03	4.60	36.80	44.36	74.00	-29.64	VERTICAL	Peak
3	4882.000	51.58	31.56	5.52	36.84	51.82	74.00	-22.18	VERTICAL	Peak
4	6889.800	43.22	34.85	5.81	37.18	46.70	74.00	-27.30	VERTICAL	Peak
5	7323.000	43.01	36.00	6.13	37.43	47.71	74.00	-26.29	VERTICAL	Peak
6	9764.000	44.14	38.50	7.02	37.41	52.25	74.00	-21.75	VERTICAL	Peak

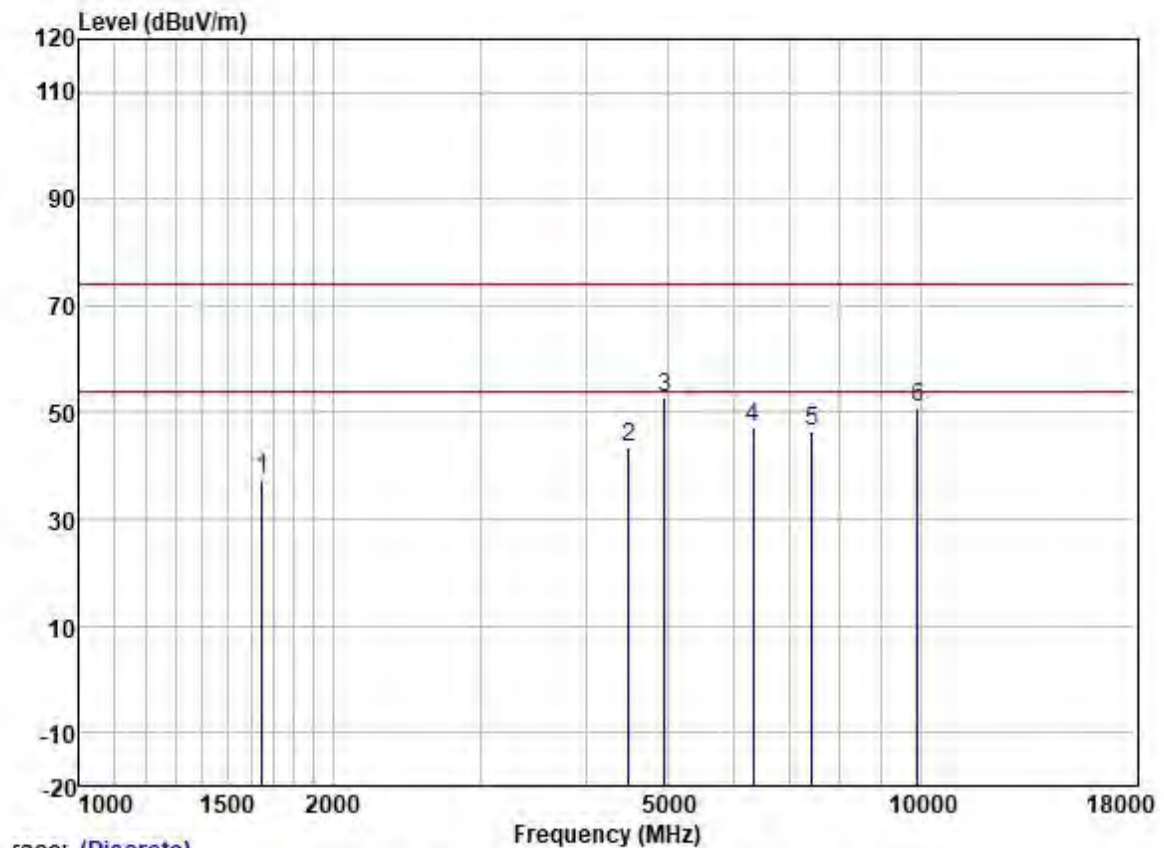


Test Mode: 02; Polarity: Horizontal; Modulation:GFSK; Channel:High



		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	1403.698	46.13	25.39	2.61	38.22	35.91	74.00	-38.09	HORIZONTAL	Peak
2	3769.739	45.40	29.45	4.59	36.86	42.58	74.00	-31.42	HORIZONTAL	Peak
3	4960.000	51.99	31.65	5.65	36.84	52.45	74.00	-21.55	HORIZONTAL	Peak
4	5059.723	46.99	31.71	5.67	36.86	47.51	74.00	-26.49	HORIZONTAL	Peak
5	7440.000	41.45	36.27	6.22	37.47	46.47	74.00	-27.53	HORIZONTAL	Peak
6	9920.000	42.04	38.65	6.96	37.40	50.25	74.00	-23.75	HORIZONTAL	Peak

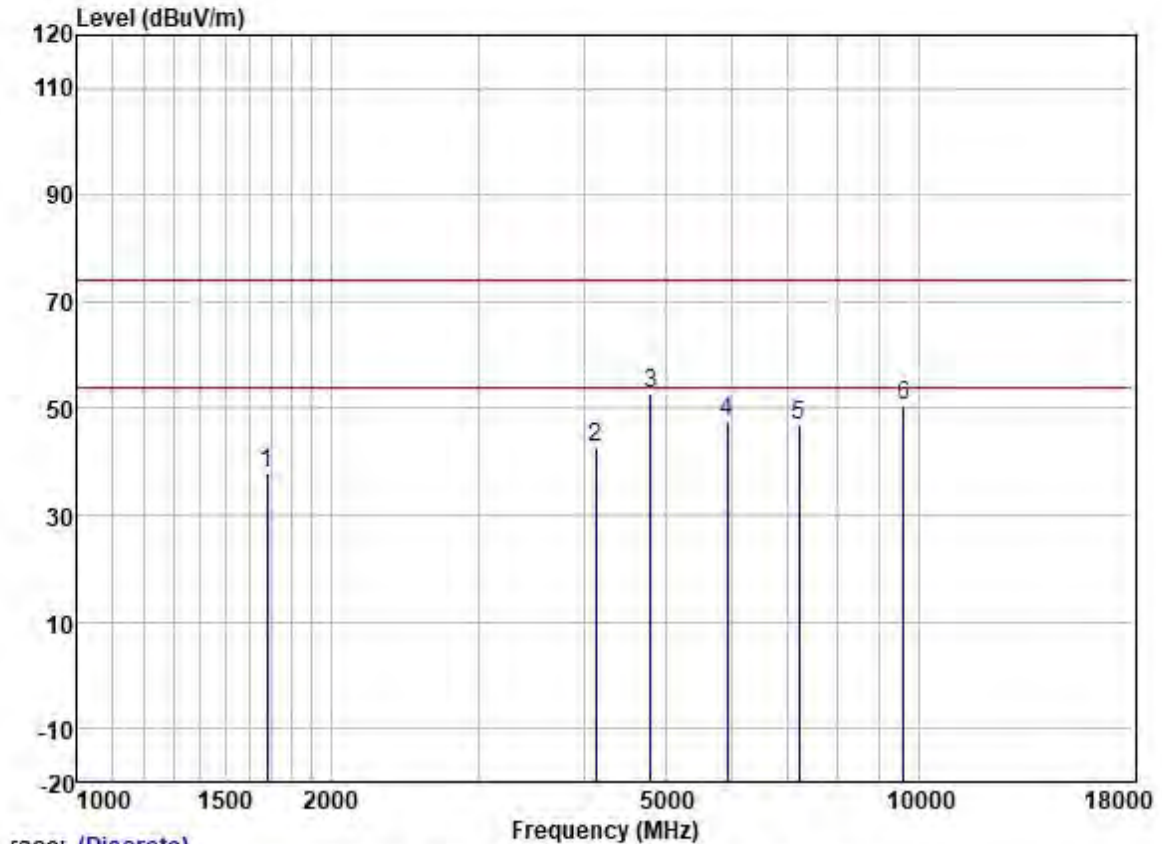
Test Mode: 02; Polarity: Vertical; Modulation:GFSK; Channel:High



Trace: (Discrete)

		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	1648.890	47.05	25.63	2.80	37.93	37.55	74.00	-36.45	VERTICAL	Peak
2	4498.201	44.50	30.80	5.05	36.82	43.53	74.00	-30.47	VERTICAL	Peak
3	4960.000	52.41	31.65	5.65	36.84	52.87	74.00	-21.13	VERTICAL	Peak
4	6330.531	44.54	33.51	5.95	36.97	47.03	74.00	-26.97	VERTICAL	Peak
5	7440.000	41.32	36.27	6.22	37.47	46.34	74.00	-27.66	VERTICAL	Peak
6	9920.000	42.85	38.65	6.96	37.40	51.06	74.00	-22.94	VERTICAL	Peak

Test Mode: 02; Polarity: Horizontal; Modulation: Pi/4DQPSK; Channel:Low

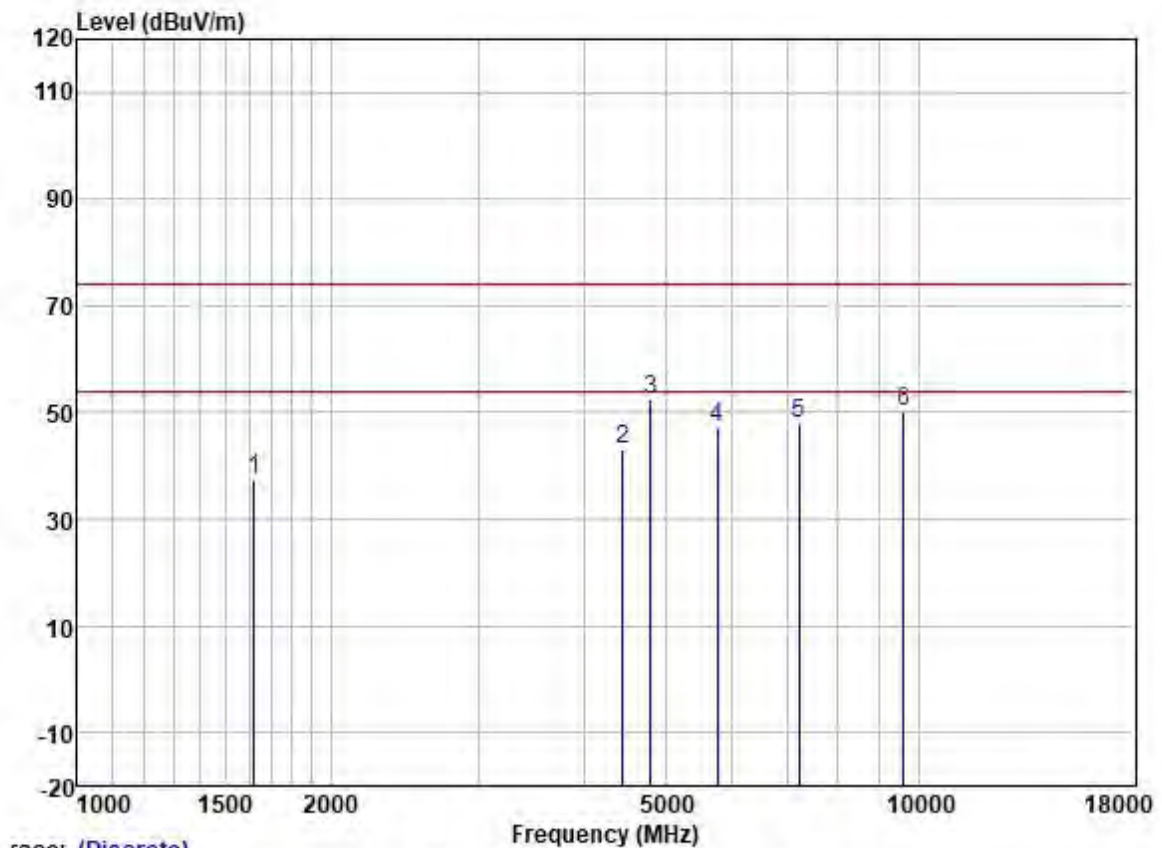


Trace: (Discrete)

		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	1680.067	47.15	25.68	2.80	37.91	37.72	74.00	-36.28	HORIZONTAL	Peak
2	4134.001	44.84	30.01	4.60	36.80	42.65	74.00	-31.35	HORIZONTAL	Peak
3	4804.000	52.71	31.42	5.40	36.83	52.70	74.00	-21.30	HORIZONTAL	Peak
4	5928.529	46.29	32.34	6.00	36.90	47.73	74.00	-26.27	HORIZONTAL	Peak
5	7206.000	42.56	35.54	5.98	37.38	46.70	74.00	-27.30	HORIZONTAL	Peak
6	9608.000	42.46	38.37	7.07	37.42	50.48	74.00	-23.52	HORIZONTAL	Peak



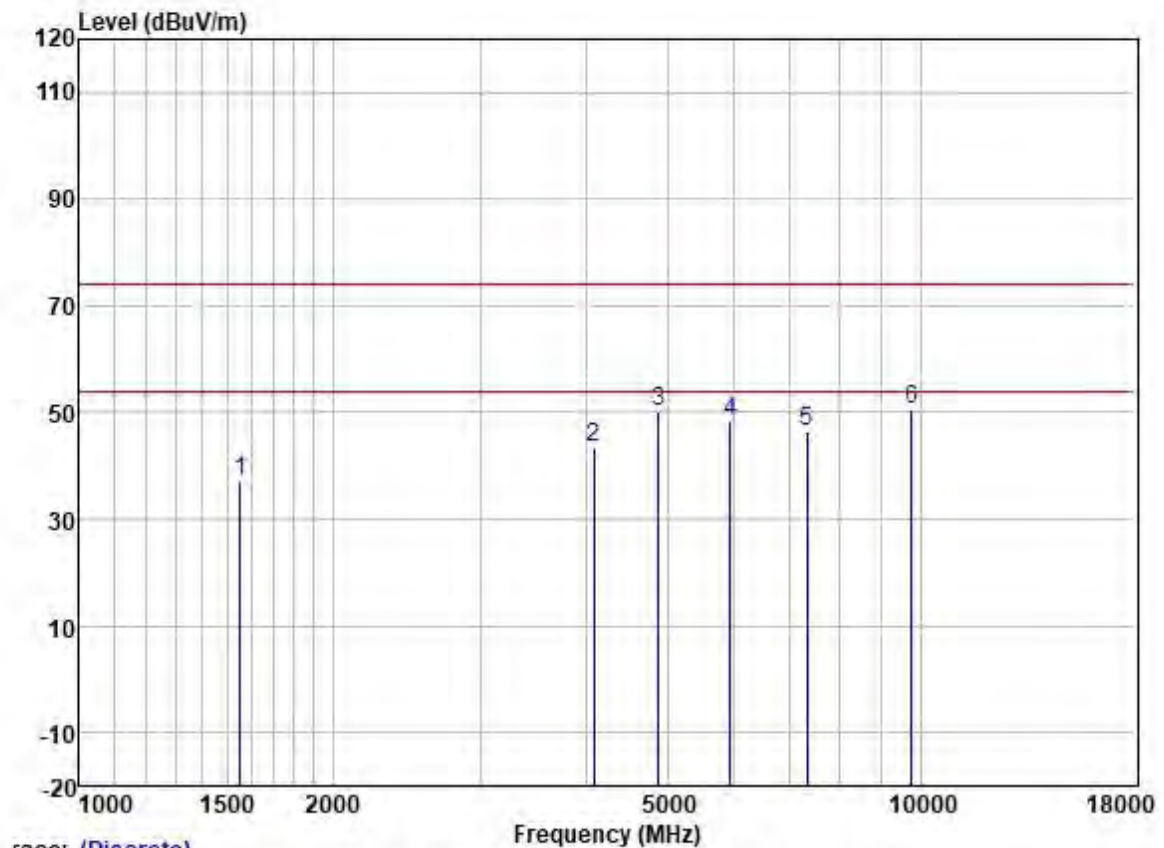
Test Mode: 02; Polarity: Vertical; Modulation: Pi/4DQPSK; Channel:Low



Trace: (Discrete)

		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	1620.793	47.21	25.60	2.80	37.95	37.66	74.00	-36.34	VERTICAL	Peak
2	4450.775	44.28	30.75	4.88	36.81	43.10	74.00	-30.90	VERTICAL	Peak
3	4804.000	52.62	31.42	5.40	36.83	52.61	74.00	-21.39	VERTICAL	Peak
4	5764.975	45.97	32.13	6.15	36.89	47.36	74.00	-26.64	VERTICAL	Peak
5	7206.000	43.92	35.54	5.98	37.38	48.06	74.00	-25.94	VERTICAL	Peak
6	9608.000	41.99	38.37	7.07	37.42	50.01	74.00	-23.99	VERTICAL	Peak

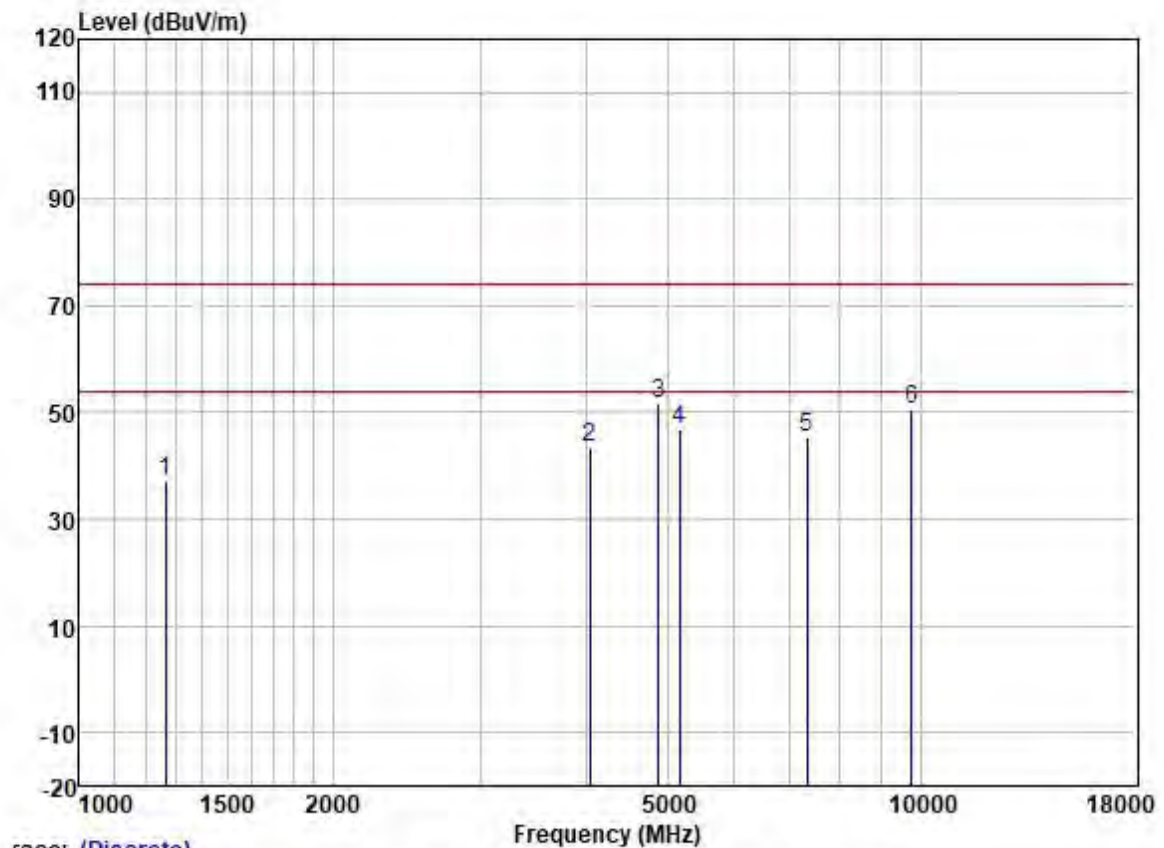
Test Mode: 02; Polarity: Horizontal; Modulation: Pi/4DQPSK; Channel:middle



Trace: (Discrete)

	Freq	ReadAntenna	Cable	Preamp	Limit	Over		
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	1554.242	46.78	25.54	2.80	38.03	37.09	74.00	-36.91
2	4084.034	45.92	29.92	4.60	36.80	43.64	74.00	-30.36
3	4882.000	49.97	31.56	5.52	36.84	50.21	74.00	-23.79
4	5946.818	46.69	32.36	6.05	36.90	48.20	74.00	-25.80
5	7323.000	41.71	36.00	6.13	37.43	46.41	74.00	-27.59
6	9764.000	42.62	38.50	7.02	37.41	50.73	74.00	-23.27

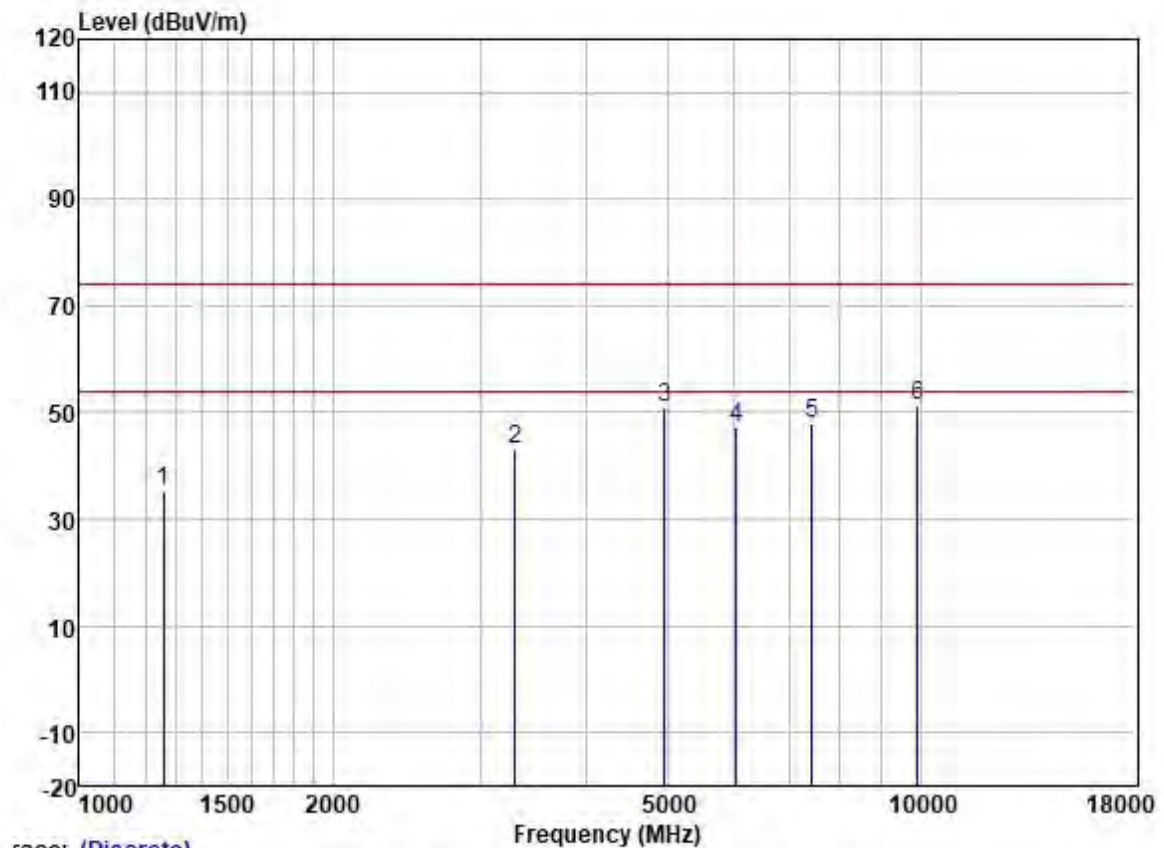
Test Mode: 02; Polarity: Vertical; Modulation: Pi/4DQPSK; Channel:middle



		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	1266.236	47.91	25.10	2.44	38.33	37.12	74.00	-36.88	VERTICAL	Peak
2	4041.740	45.64	29.85	4.60	36.80	43.29	74.00	-30.71	VERTICAL	Peak
3	4882.000	51.43	31.56	5.52	36.84	51.67	74.00	-22.33	VERTICAL	Peak
4	5166.118	46.28	31.73	5.61	36.87	46.75	74.00	-27.25	VERTICAL	Peak
5	7323.000	40.68	36.00	6.13	37.43	45.38	74.00	-28.62	VERTICAL	Peak
6	9764.000	42.42	38.50	7.02	37.41	50.53	74.00	-23.47	VERTICAL	Peak

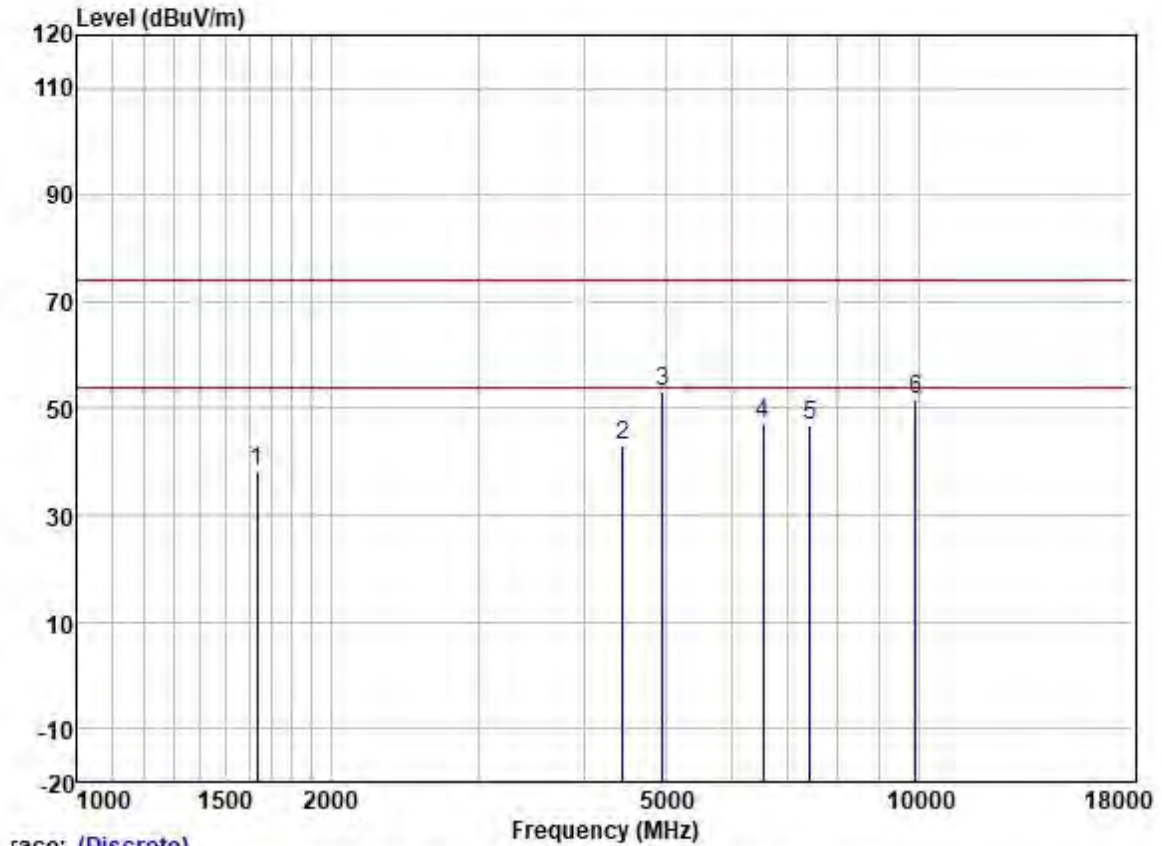


Test Mode: 02; Polarity: Horizontal; Modulation: Pi/4DQPSK; Channel:High



Race: (Discrete)	Frequency (MHz)									
		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	1259.075	46.07	25.07	2.40	38.35	35.19	74.00	-38.81	HORIZONTAL	Peak
2	3299.440	47.31	28.75	4.06	37.03	43.09	74.00	-30.91	HORIZONTAL	Peak
3	4960.000	50.56	31.65	5.65	36.84	51.02	74.00	-22.98	HORIZONTAL	Peak
4	6044.163	45.55	32.48	6.18	36.91	47.30	74.00	-26.70	HORIZONTAL	Peak
5	7440.000	42.88	36.27	6.22	37.47	47.90	74.00	-26.10	HORIZONTAL	Peak
6	9920.000	42.93	38.65	6.96	37.40	51.14	74.00	-22.86	HORIZONTAL	Peak

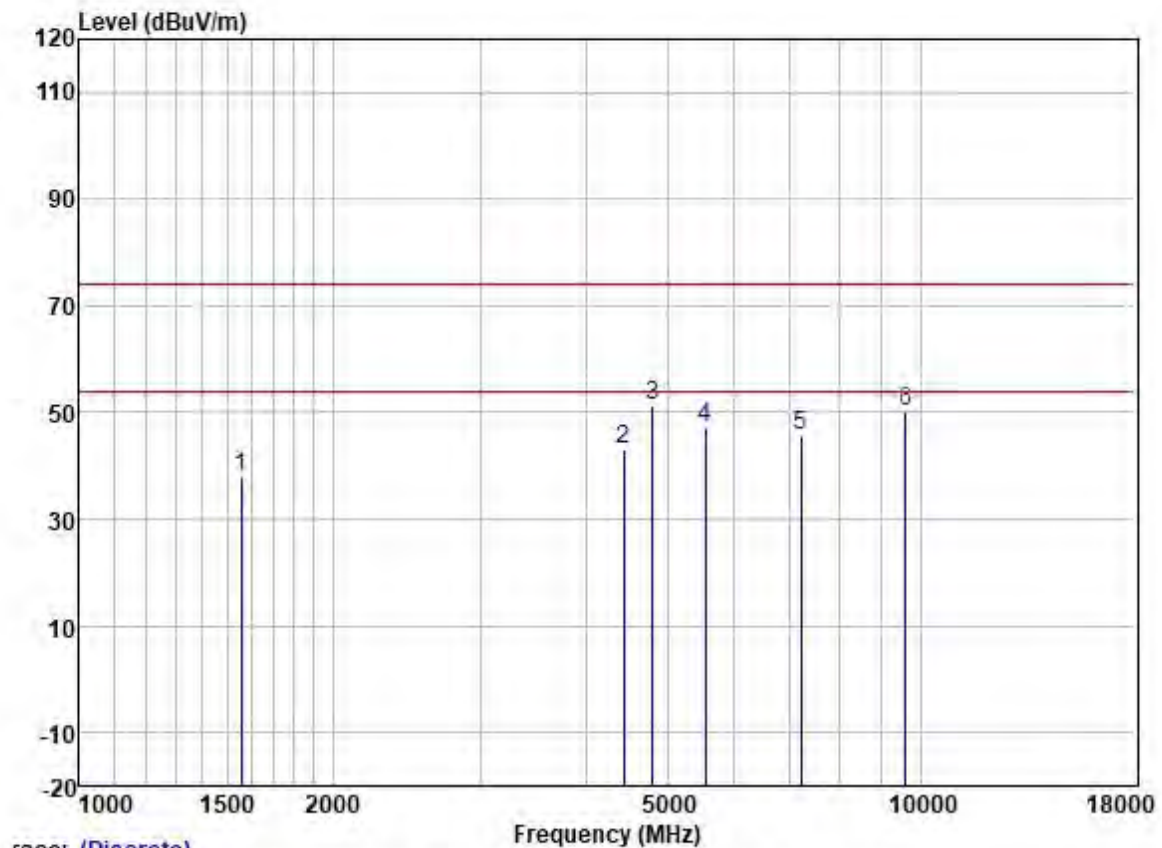
Test Mode: 02; Polarity: Vertical; Modulation: Pi/4DQPSK; Channel: High



Trace: (Discrete)

		Read	Antenna	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	1636.013	47.82	25.62	2.80	37.95	38.29	74.00	-35.71	VERTICAL	Peak
2	4453.618	44.32	30.75	4.88	36.81	43.14	74.00	-30.86	VERTICAL	Peak
3	4960.000	52.61	31.65	5.65	36.84	53.07	74.00	-20.93	VERTICAL	Peak
4	6527.971	44.29	34.03	5.84	37.02	47.14	74.00	-26.86	VERTICAL	Peak
5	7440.000	41.94	36.27	6.22	37.47	46.96	74.00	-27.04	VERTICAL	Peak
6	9920.000	43.51	38.65	6.96	37.40	51.72	74.00	-22.28	VERTICAL	Peak

Test Mode: 02; Polarity: Horizontal; Modulation: 8DPSK; Channel:Low



race: (Discrete)

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1555.814	47.41	25.54	2.80	38.03	37.72	74.00	-36.28	HORIZONTAL	Peak
2	4442.028	44.19	30.73	4.83	36.81	42.94	74.00	-31.06	HORIZONTAL	Peak
3	4804.000	51.46	31.42	5.40	36.83	51.45	74.00	-22.55	HORIZONTAL	Peak
4	5545.415	45.74	31.84	6.35	36.89	47.04	74.00	-26.96	HORIZONTAL	Peak
5	7206.000	41.75	35.54	5.98	37.38	45.89	74.00	-28.11	HORIZONTAL	Peak
6	9608.000	42.12	38.37	7.07	37.42	50.14	74.00	-23.86	HORIZONTAL	Peak



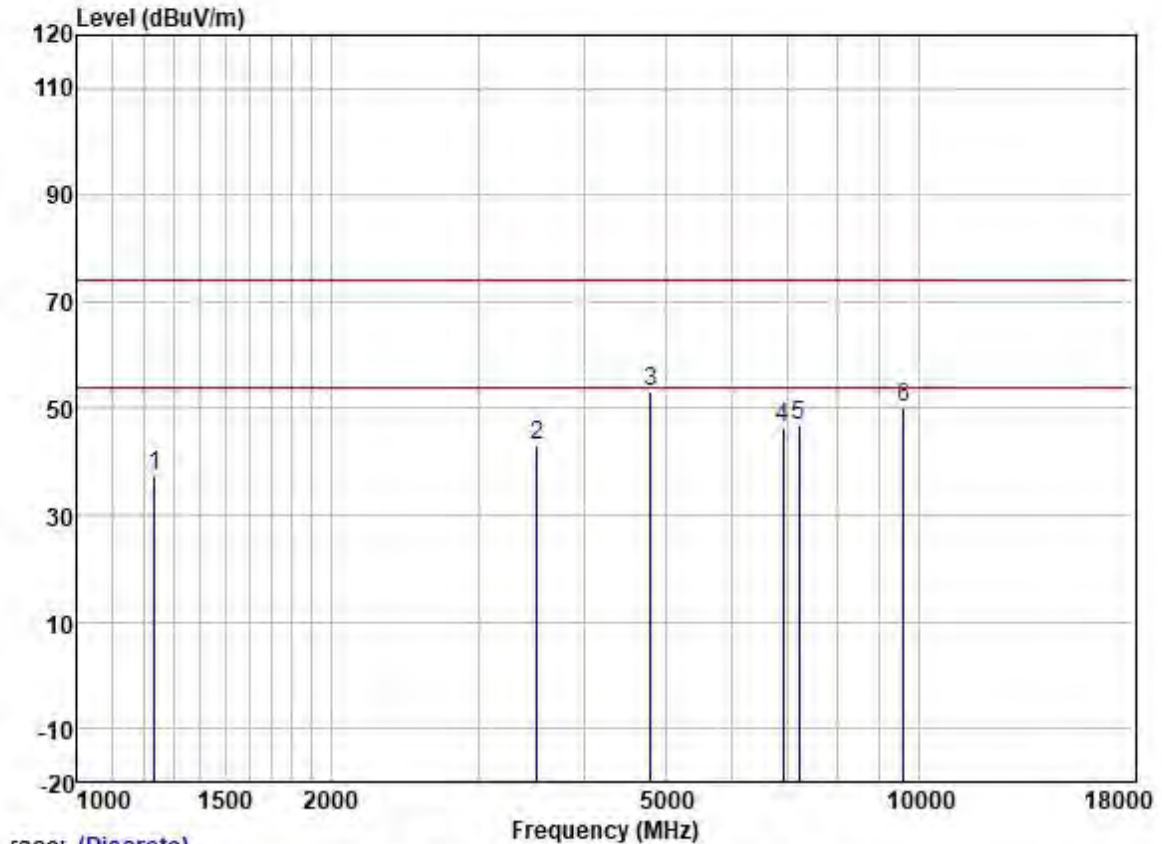
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Guangzhou Branch Testing Center EEC Laboratory

中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20) 82155555 f (86-20) 82075058 sgs.china@sgs.com

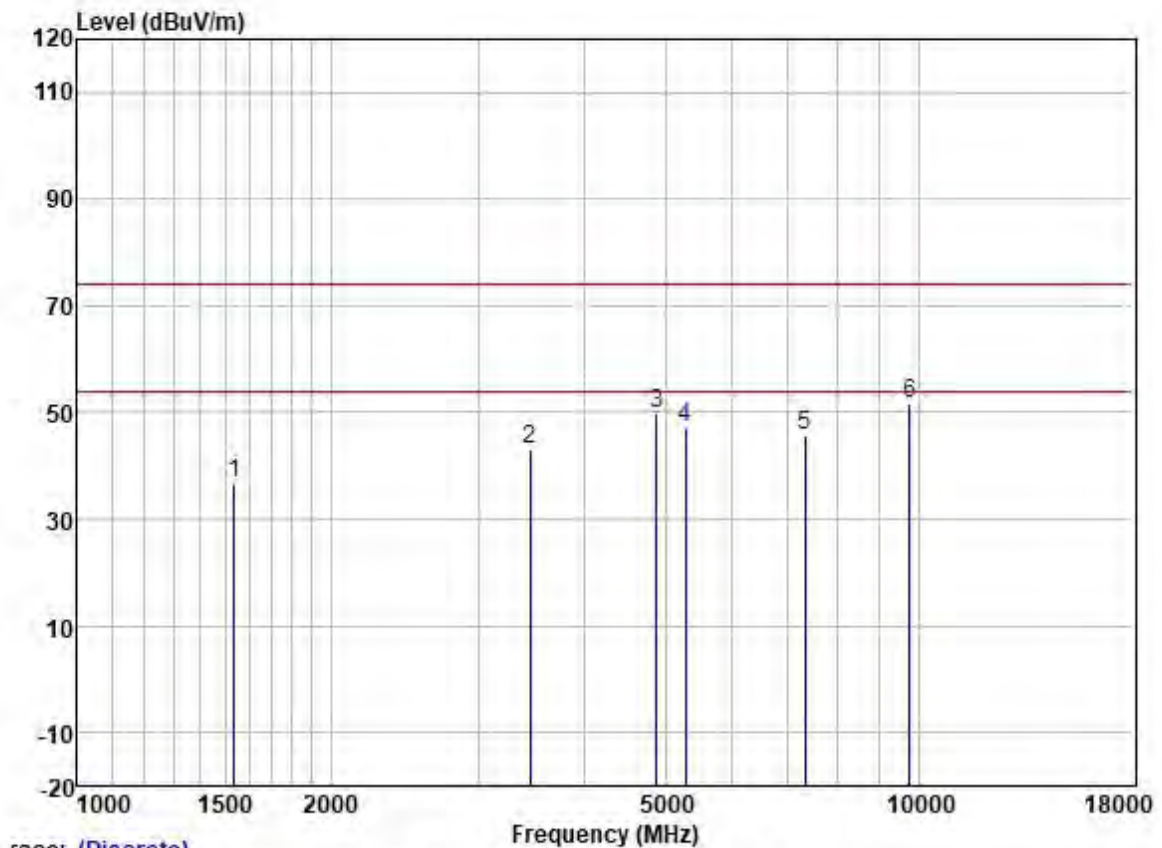


Test Mode: 02; Polarity: Vertical; Modulation: 8DPSK; Channel:Low



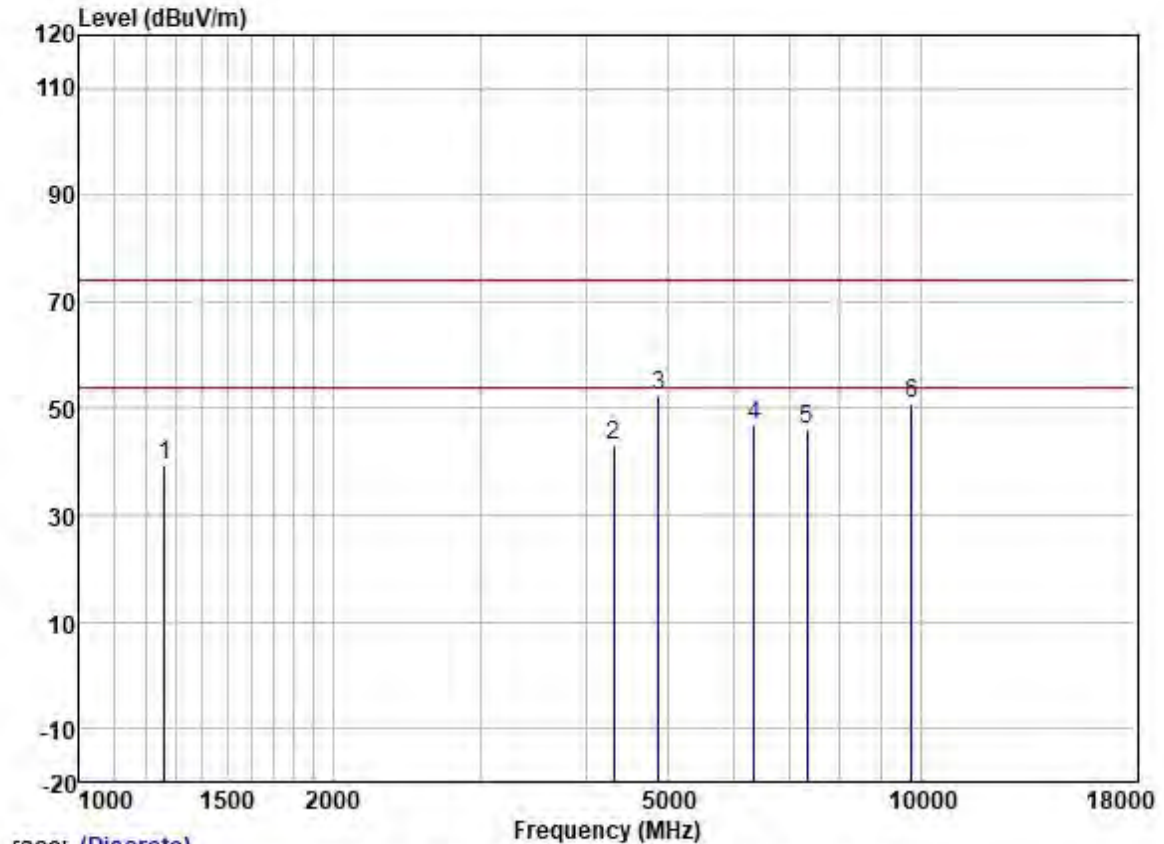
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	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1235.282	48.68	24.93	2.30	38.37	37.54	74.00	-36.46	VERTICAL	Peak
2	3523.589	46.57	28.94	4.38	36.93	42.96	74.00	-31.04	VERTICAL	Peak
3	4804.000	53.11	31.42	5.40	36.83	53.10	74.00	-20.90	VERTICAL	Peak
4	6899.108	43.08	34.85	5.81	37.18	46.56	74.00	-27.44	VERTICAL	Peak
5	7206.000	42.75	35.54	5.98	37.38	46.89	74.00	-27.11	VERTICAL	Peak
6	9608.000	42.33	38.37	7.07	37.42	50.35	74.00	-23.65	VERTICAL	Peak

Test Mode: 02; Polarity: Horizontal; Modulation: 8DPSK; Channel:middle



		Read	Antenna	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	1537.335	46.41	25.53	2.80	38.07	36.67	74.00	-37.33	HORIZONTAL	Peak
2	3450.258	46.91	28.87	4.18	36.96	43.00	74.00	-31.00	HORIZONTAL	Peak
3	4882.000	49.56	31.56	5.52	36.84	49.80	74.00	-24.20	HORIZONTAL	Peak
4	5282.971	46.42	31.76	6.00	36.87	47.31	74.00	-26.69	HORIZONTAL	Peak
5	7323.000	40.97	36.00	6.13	37.43	45.67	74.00	-28.33	HORIZONTAL	Peak
6	9764.000	43.54	38.50	7.02	37.41	51.65	74.00	-22.35	HORIZONTAL	Peak

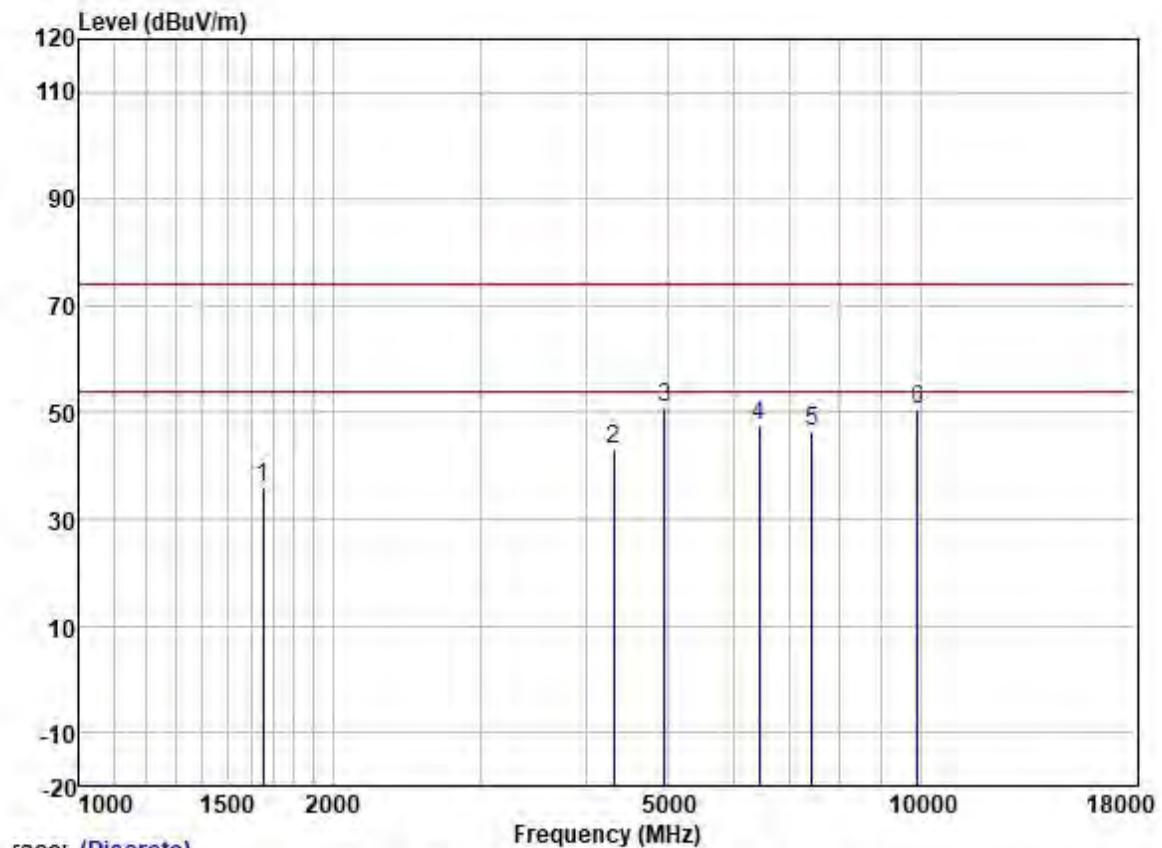
Test Mode: 02; Polarity: Vertical; Modulation: 8DPSK; Channel:middle



		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	1262.497	50.35	25.08	2.42	38.35	39.50	74.00	-34.50	VERTICAL	Peak
2	4321.374	44.91	30.51	4.66	36.81	43.27	74.00	-30.73	VERTICAL	Peak
3	4882.000	52.26	31.56	5.52	36.84	52.50	74.00	-21.50	VERTICAL	Peak
4	6336.765	44.42	33.57	5.94	36.97	46.96	74.00	-27.04	VERTICAL	Peak
5	7323.000	41.34	36.00	6.13	37.43	46.04	74.00	-27.96	VERTICAL	Peak
6	9764.000	42.72	38.50	7.02	37.41	50.83	74.00	-23.17	VERTICAL	Peak

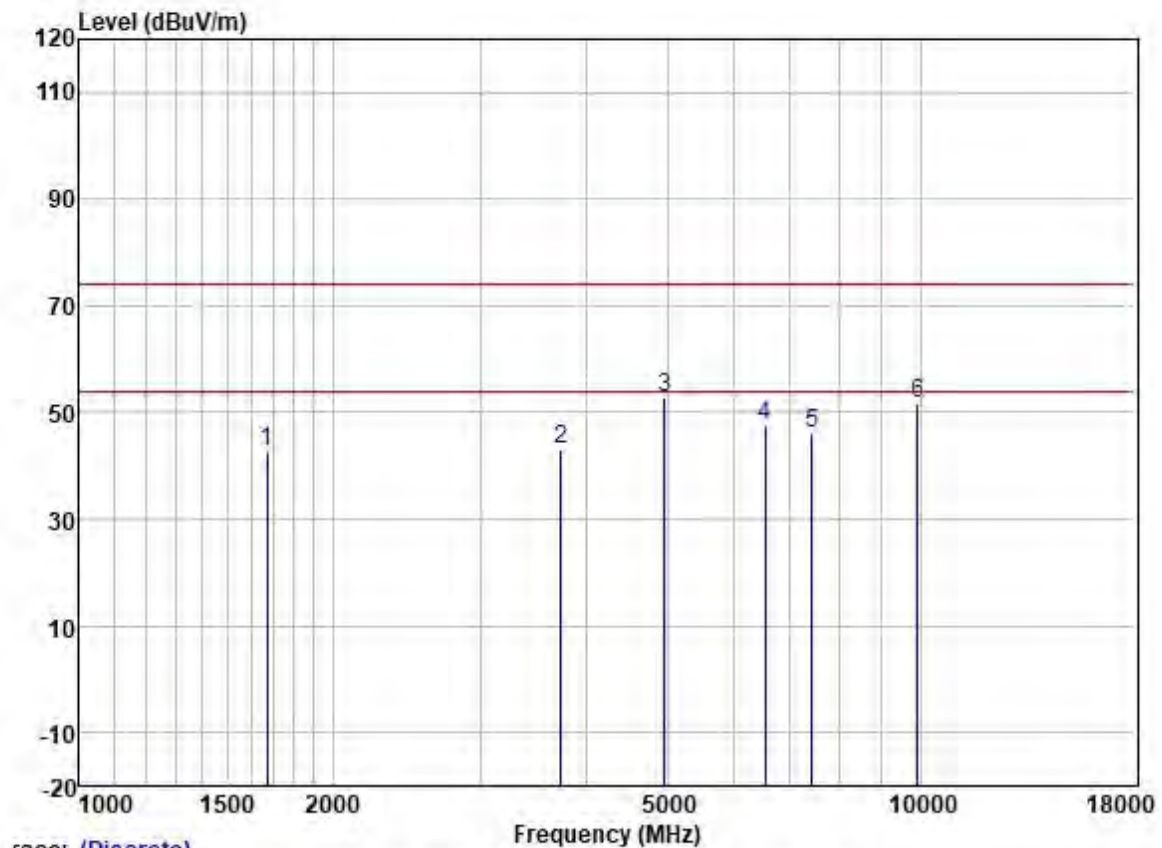


Test Mode: 02; Polarity: Horizontal; Modulation: 8DPSK; Channel: High



	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	1654.317	45.37	25.64	2.80	37.93	35.88	74.00	-38.12	HORIZONTAL	Peak
2	4312.686	44.72	30.51	4.66	36.81	43.08	74.00	-30.92	HORIZONTAL	Peak
3	4960.000	50.48	31.65	5.65	36.84	50.94	74.00	-23.06	HORIZONTAL	Peak
4	6435.379	44.78	33.83	5.88	36.99	47.50	74.00	-26.50	HORIZONTAL	Peak
5	7440.000	41.45	36.27	6.22	37.47	46.47	74.00	-27.53	HORIZONTAL	Peak
6	9920.000	42.48	38.65	6.96	37.40	50.69	74.00	-23.31	HORIZONTAL	Peak

Test Mode: 02; Polarity: Vertical; Modulation: 8DPSK; Channel: High



Trace: (Discrete)

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Limit Level	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dB		
1	1672.267	52.22	25.67	2.80	37.91	42.78	74.00	-31.22	VERTICAL Peak
2	3732.973	46.00	29.35	4.57	36.87	43.05	74.00	-30.95	VERTICAL Peak
3	4960.000	52.22	31.65	5.65	36.84	52.68	74.00	-21.32	VERTICAL Peak
4	6529.142	44.59	34.03	5.84	37.02	47.44	74.00	-26.56	VERTICAL Peak
5	7440.000	40.88	36.27	6.22	37.47	45.90	74.00	-28.10	VERTICAL Peak
6	9920.000	43.44	38.65	6.96	37.40	51.65	74.00	-22.35	VERTICAL Peak

## 8 Test Setup Photo

Refer to Appendix - Test Setup Photo for GZCR2108020980AT



## 9 EUT Constructional Details (EUT Photos)

Refer to Appendix \_ Photographs of EUT Constructional Details for GZCR2108020980AT.

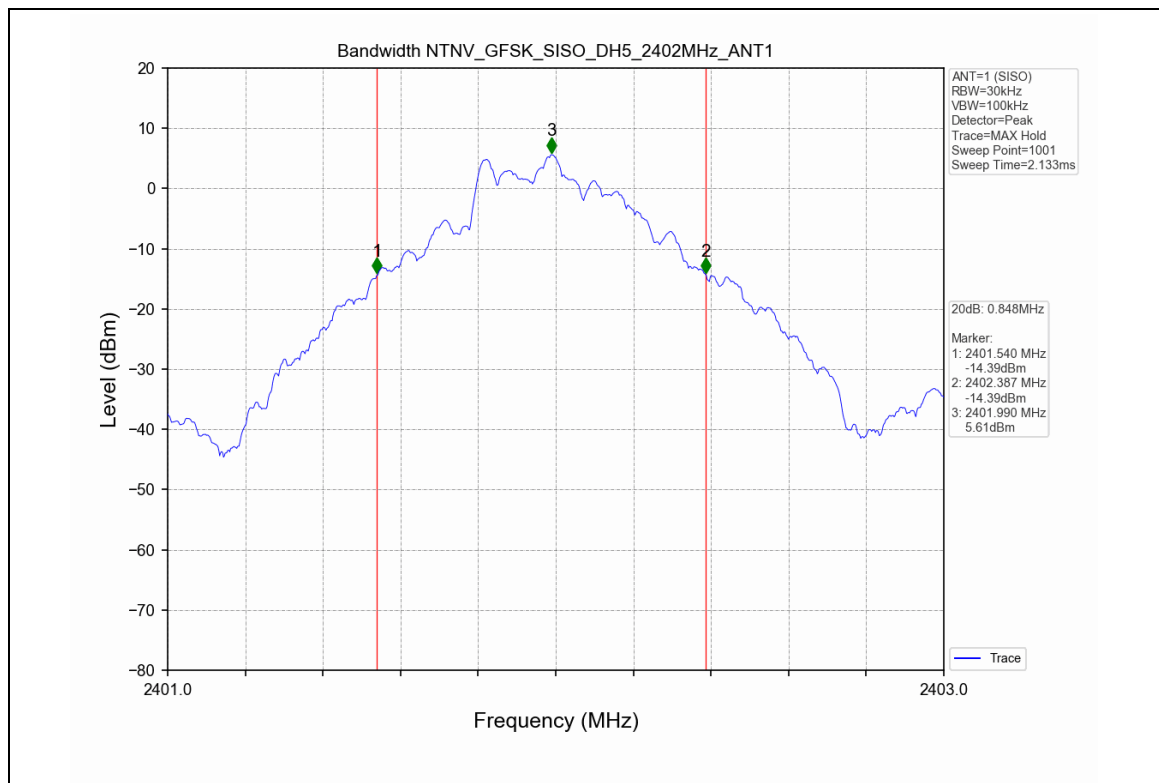
## 10 Appendix

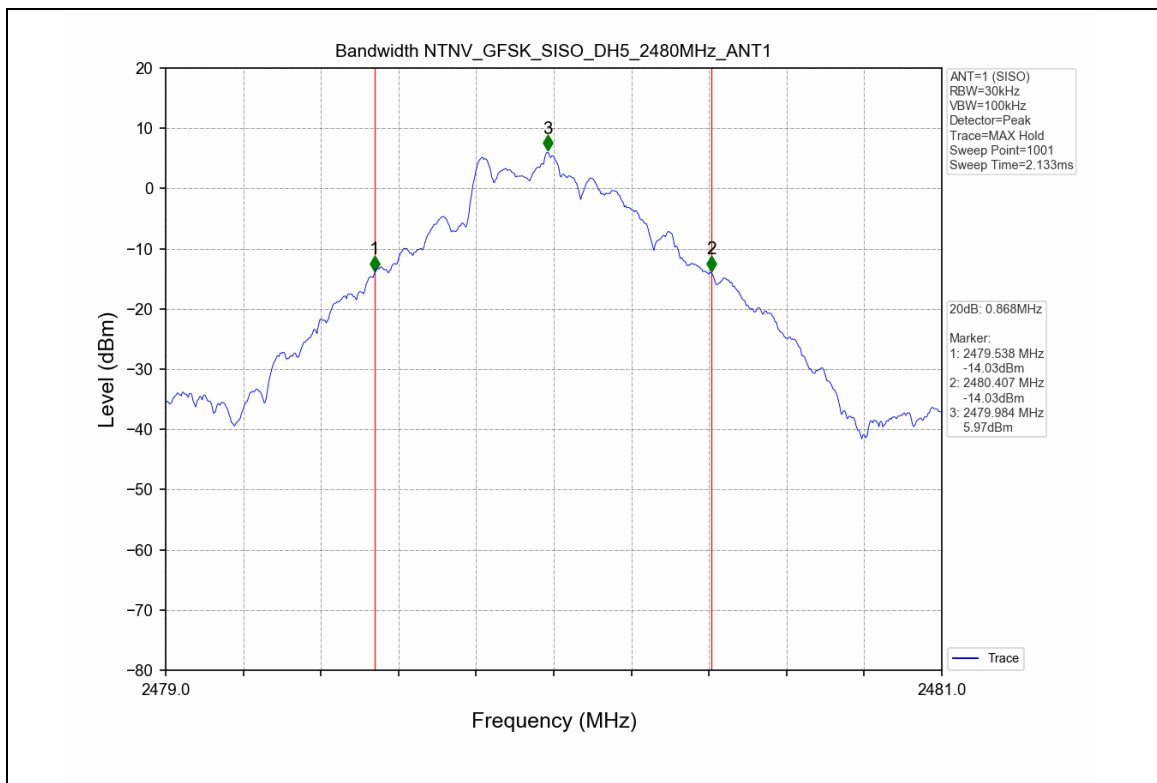
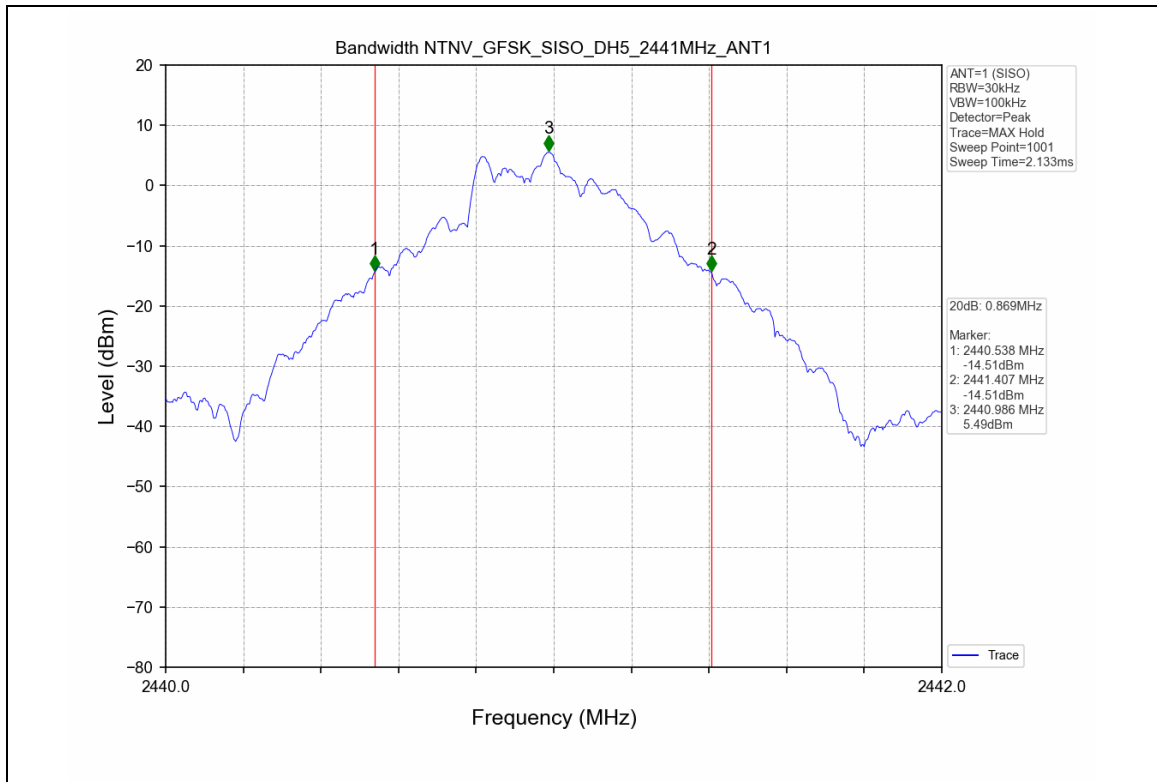
### 1. Bandwidth

#### 1.1 Test Result

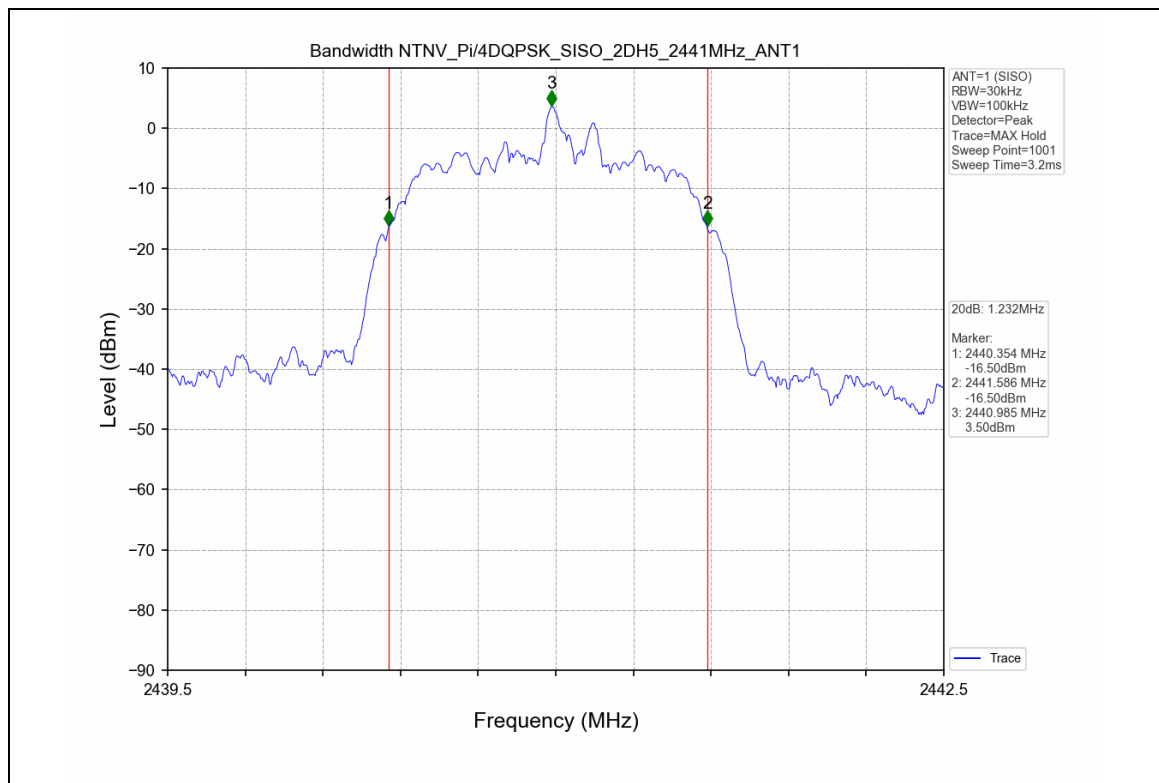
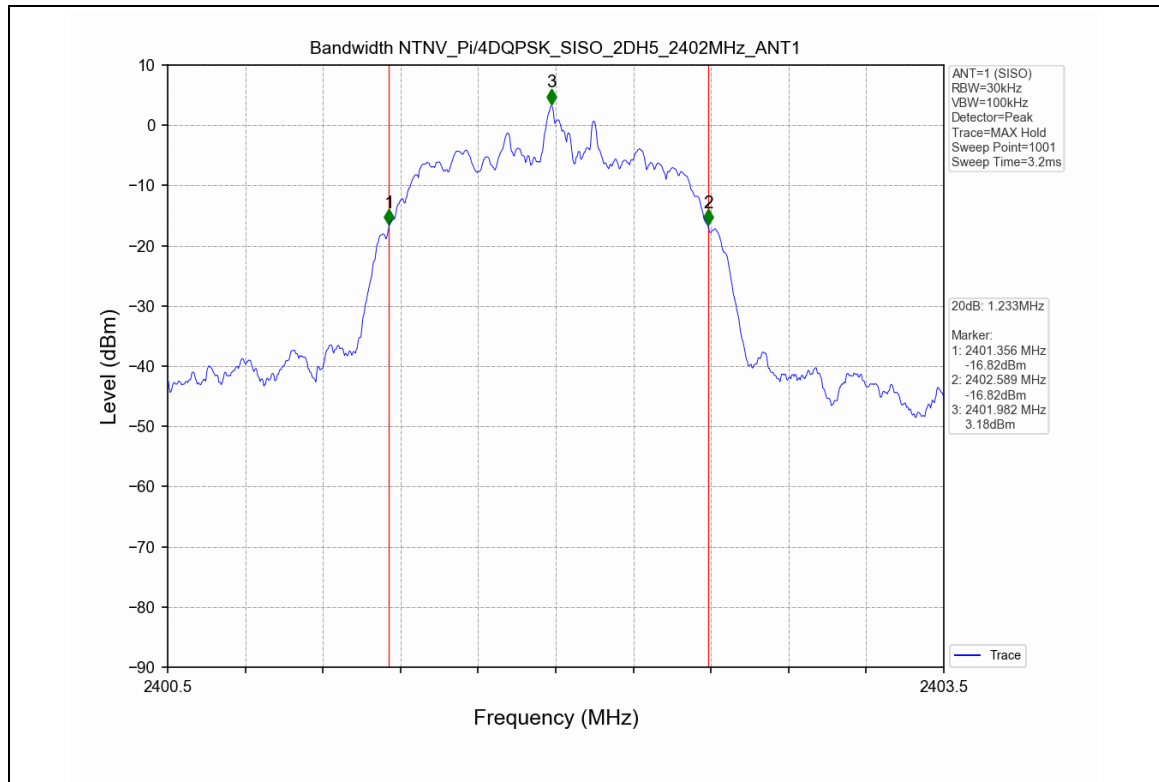
Test Mode	Frequency (MHz)	TX Type	ANT No.	20dB Bandwidth	Verdict
				Test Result (MHz)	
GFSK	2402	SISO	1	0.848	PASS
	2441	SISO	1	0.869	PASS
	2480	SISO	1	0.868	PASS
Pi/4DQPSK	2402	SISO	1	1.233	PASS
	2441	SISO	1	1.232	PASS
	2480	SISO	1	1.232	PASS
8DPSK	2402	SISO	1	1.270	PASS
	2441	SISO	1	1.284	PASS
	2480	SISO	1	1.265	PASS

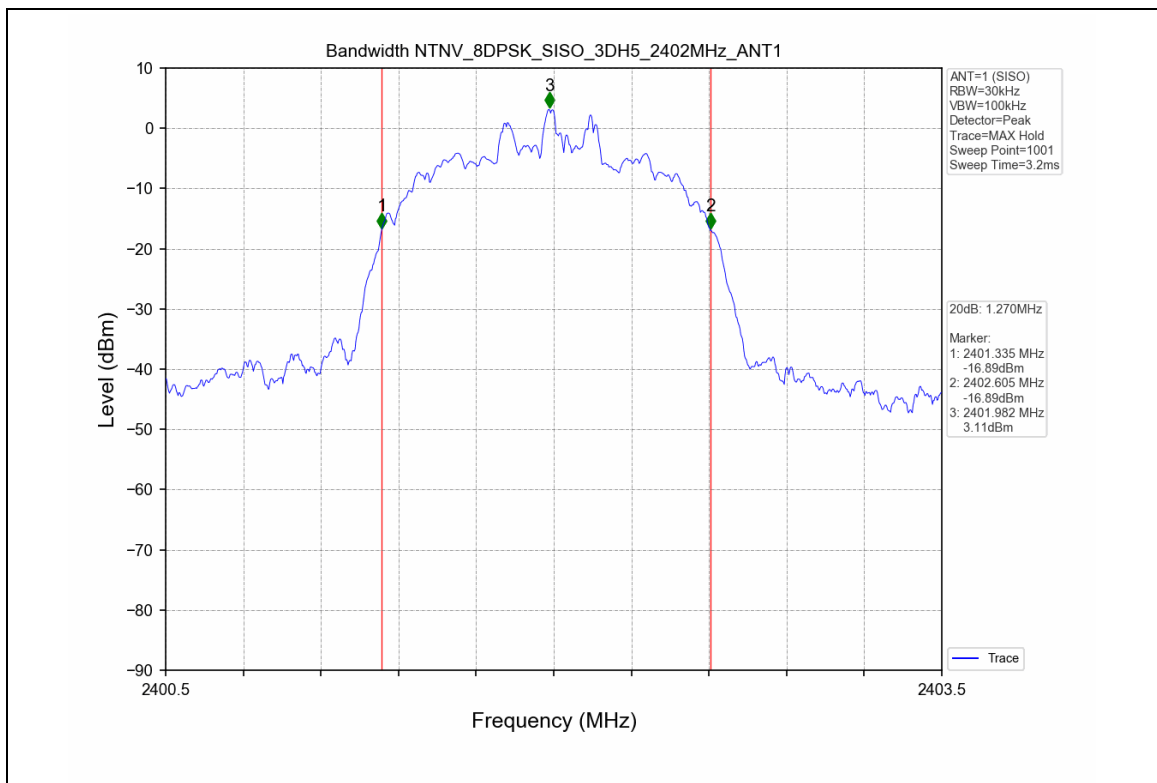
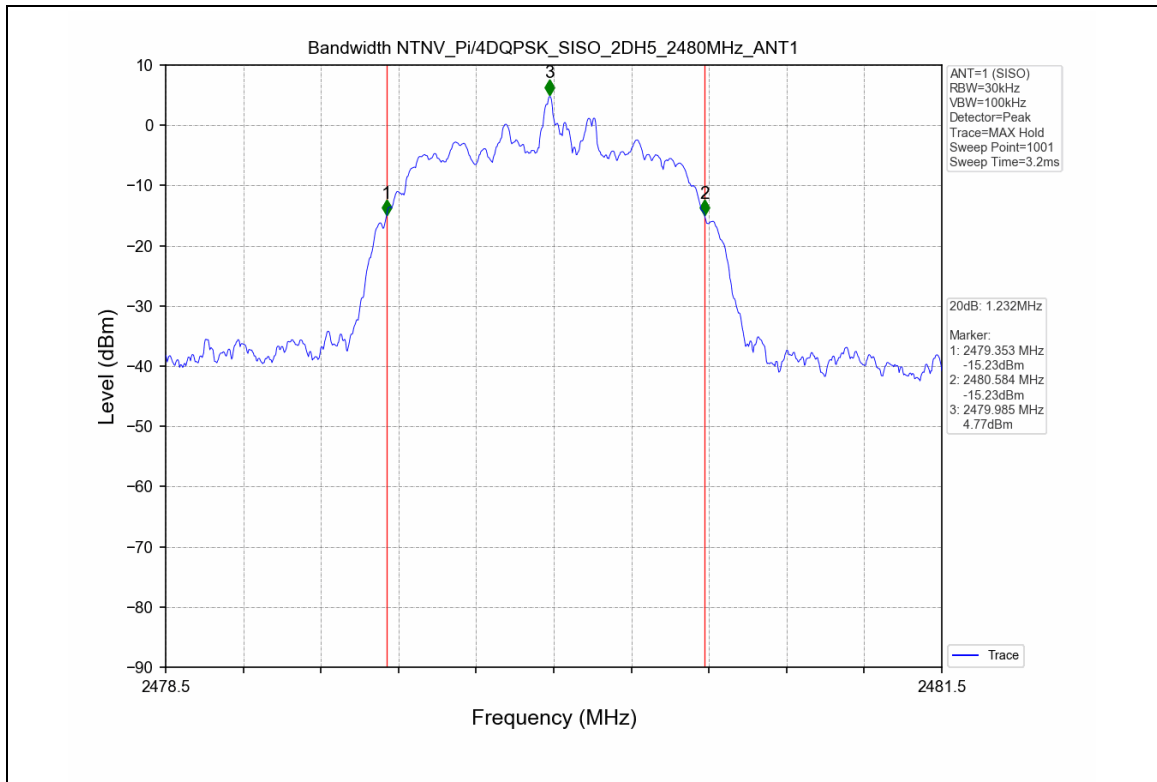
#### 1.2 Test Graph - 20dB Bandwidth

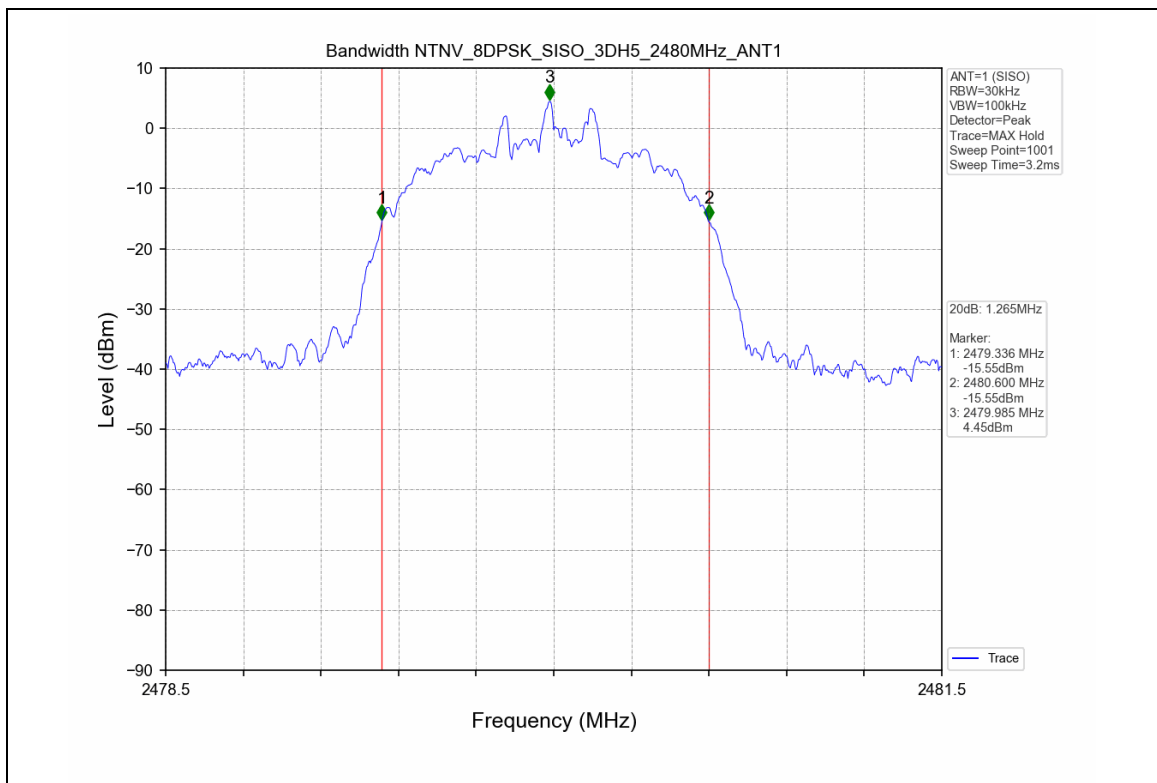
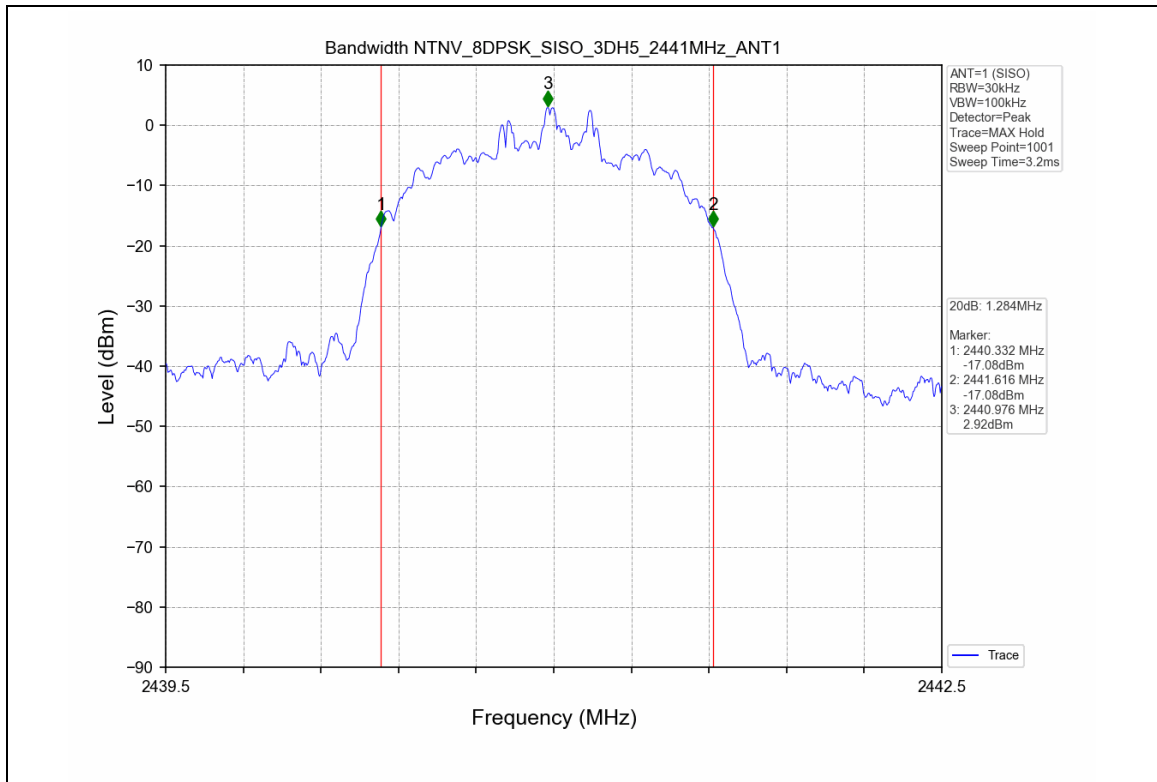














## 2. Maximum Conducted Output Power

### 2.1 Test Result

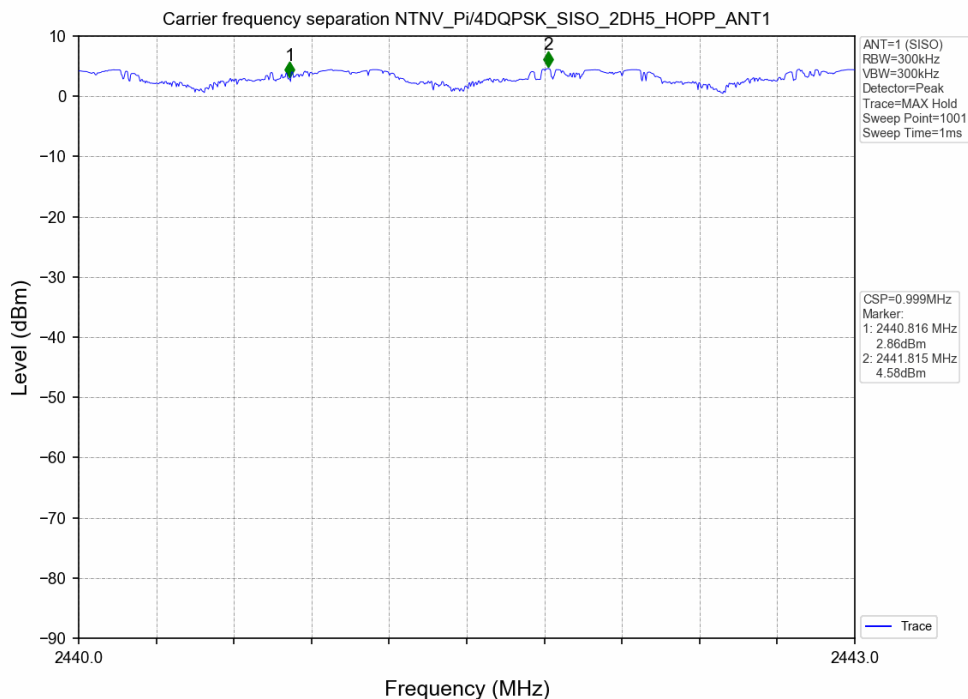
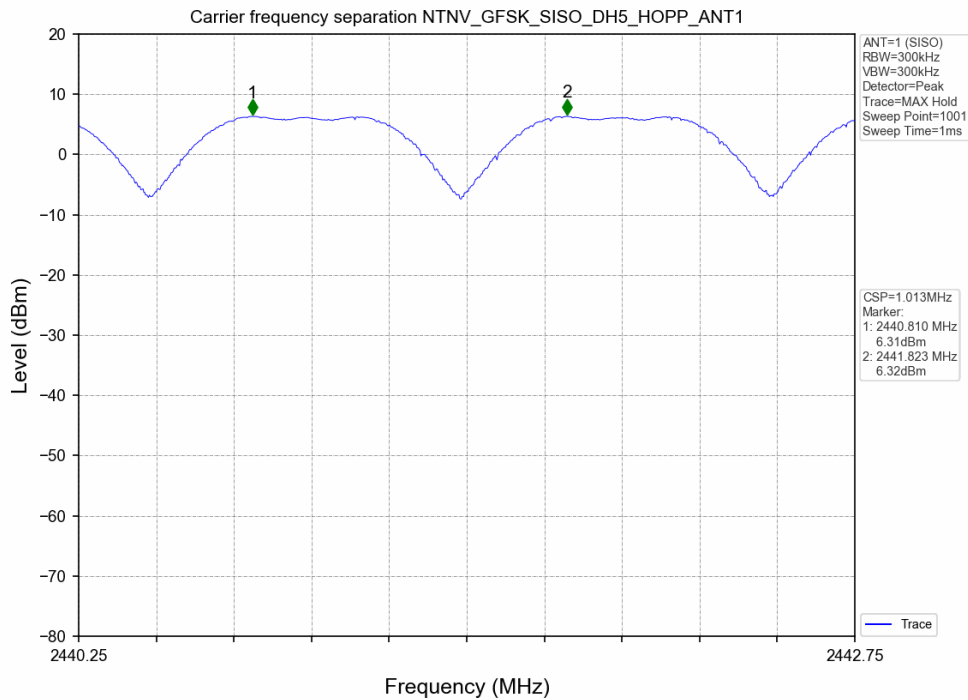
Test Mode	Frequency (MHz)	Tx Type	Measured Peak Output Power (dBm)	Limits (dBm)	Verdict
			Ant 1		
GFSK	2402	SISO	6.62	30	PASS
	2441	SISO	6.46	30	PASS
	2480	SISO	6.87	30	PASS
Pi/4DQPSK	2402	SISO	5.25	20.97	PASS
	2441	SISO	5.32	20.97	PASS
	2480	SISO	6.37	20.97	PASS
8DPSK	2402	SISO	5.41	20.97	PASS
	2441	SISO	5.73	20.97	PASS
	2480	SISO	6.50	20.97	PASS

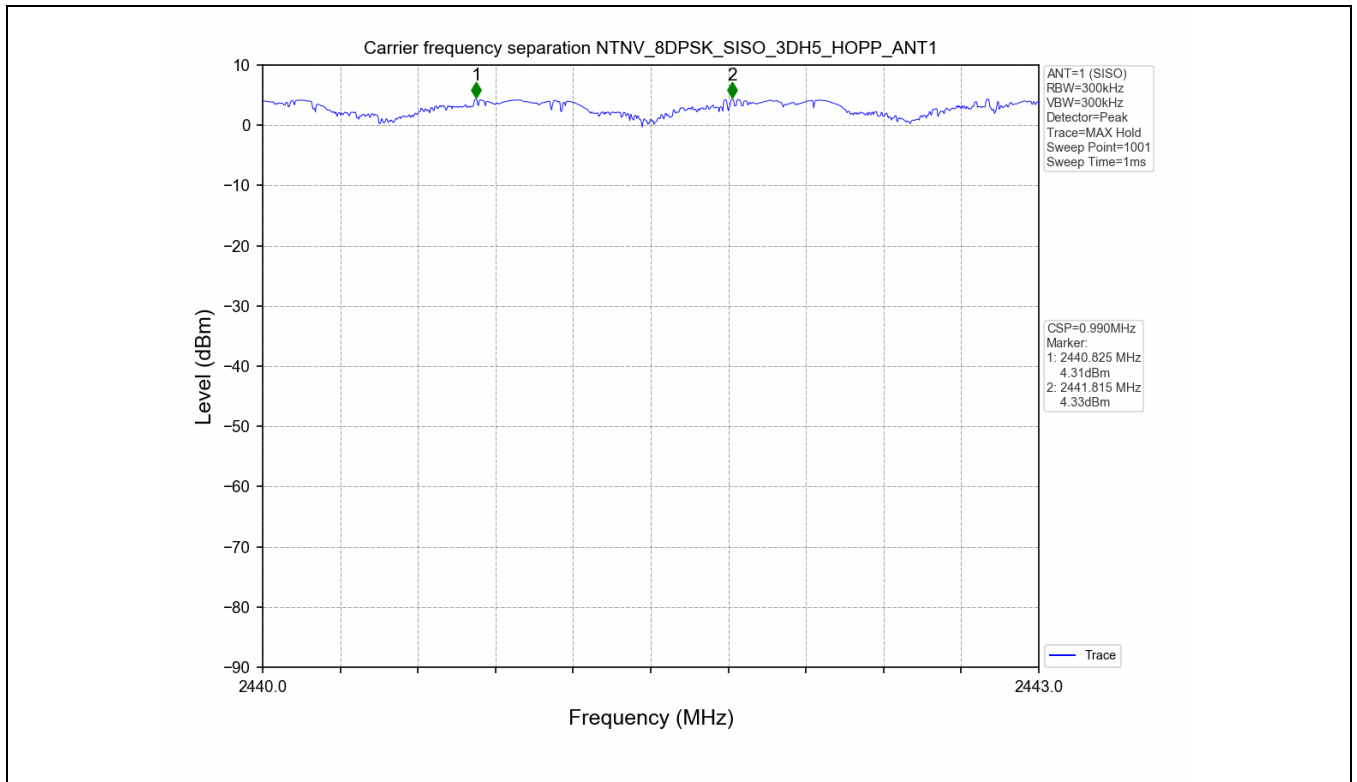
## 3. Carrier frequency separation

### 3.1 Test Result

Test Mode	TX Type	ANT No.	Channel Separation (MHz)	20dB Bandwidth (MHz)	Limits (MHz)	Verdict
GFSK	SISO	1	1.013	0.869	≥0.869	PASS
Pi/4DQPSK	SISO	1	0.999	1.233	≥0.822	PASS
8DPSK	SISO	1	0.990	1.284	≥0.856	PASS

### 3.2 Test Graph





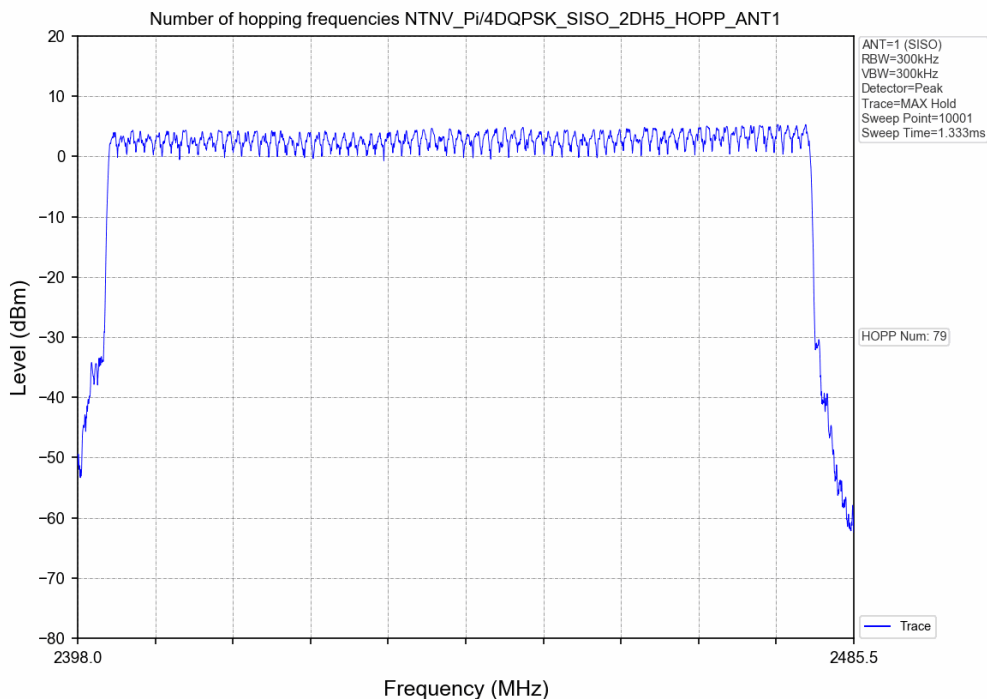
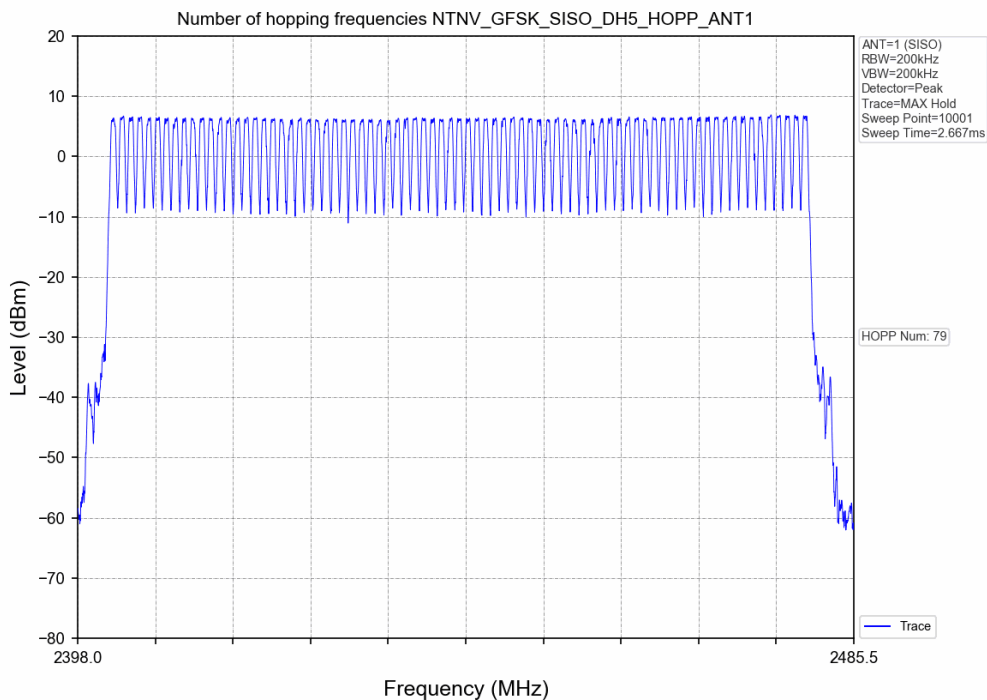
## 4. Number of hopping frequencies

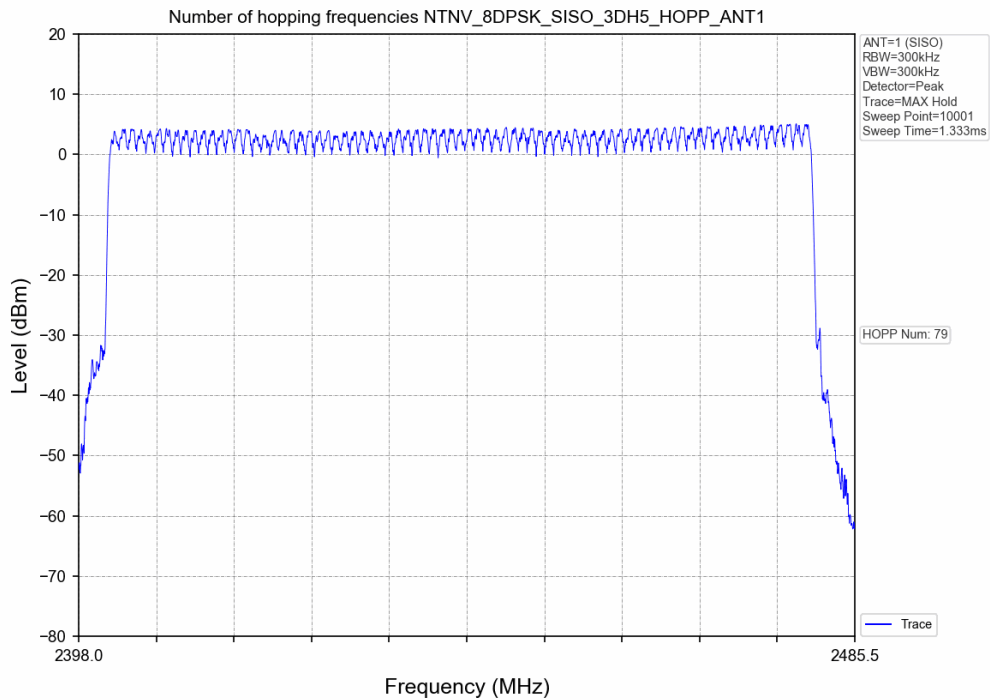
### 4.1 Test Result

Test Mode	TX Type	ANT No.	Num of Hopping Frequencies	Limits	Verdict
GFSK	SISO	1	79	≥15	PASS
Pi/4DQPSK	SISO	1	79	≥15	PASS
8DPSK	SISO	1	79	≥15	PASS

### 4.2 Test Graph





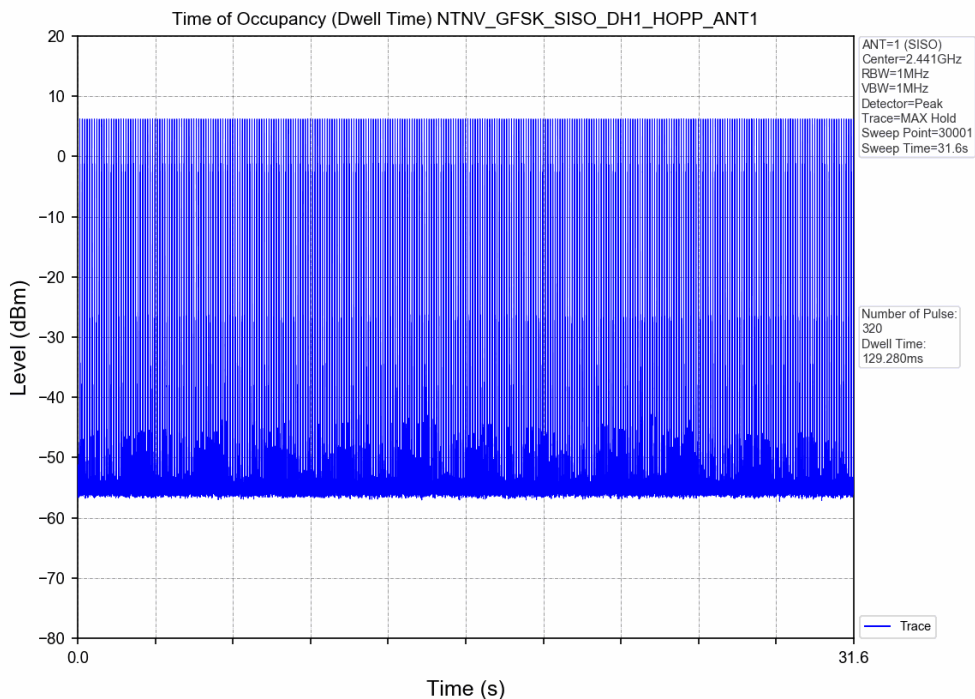
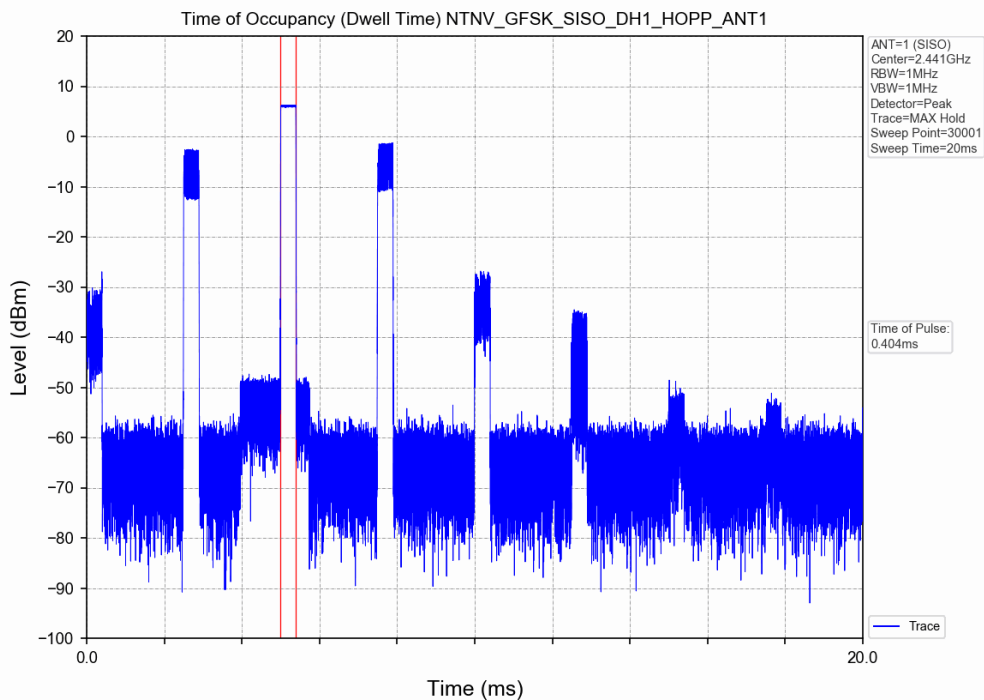


## 5. Time of Occupancy (Dwell Time)

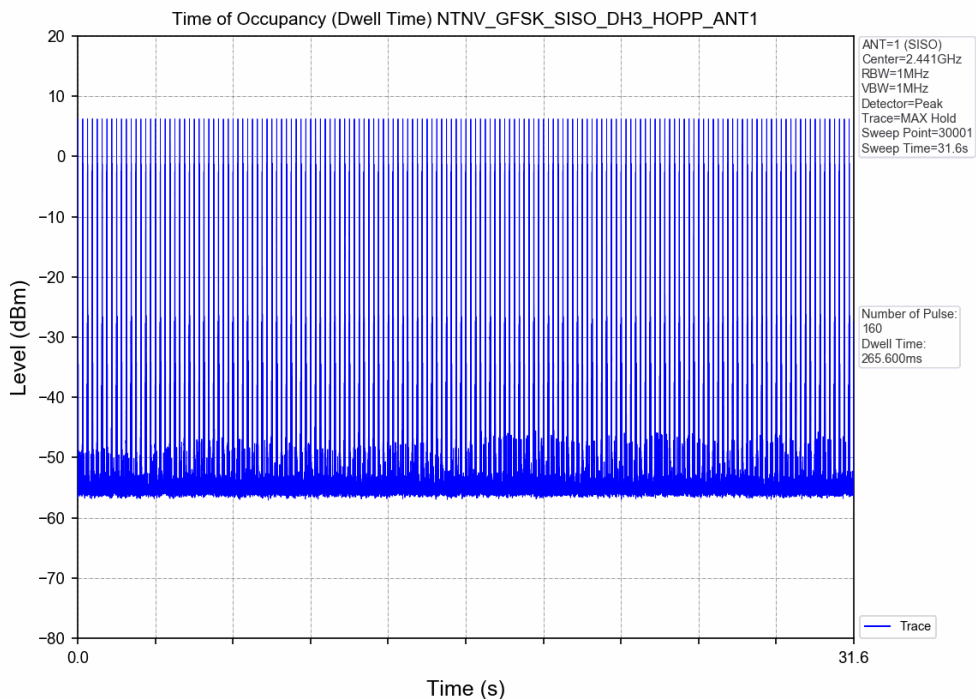
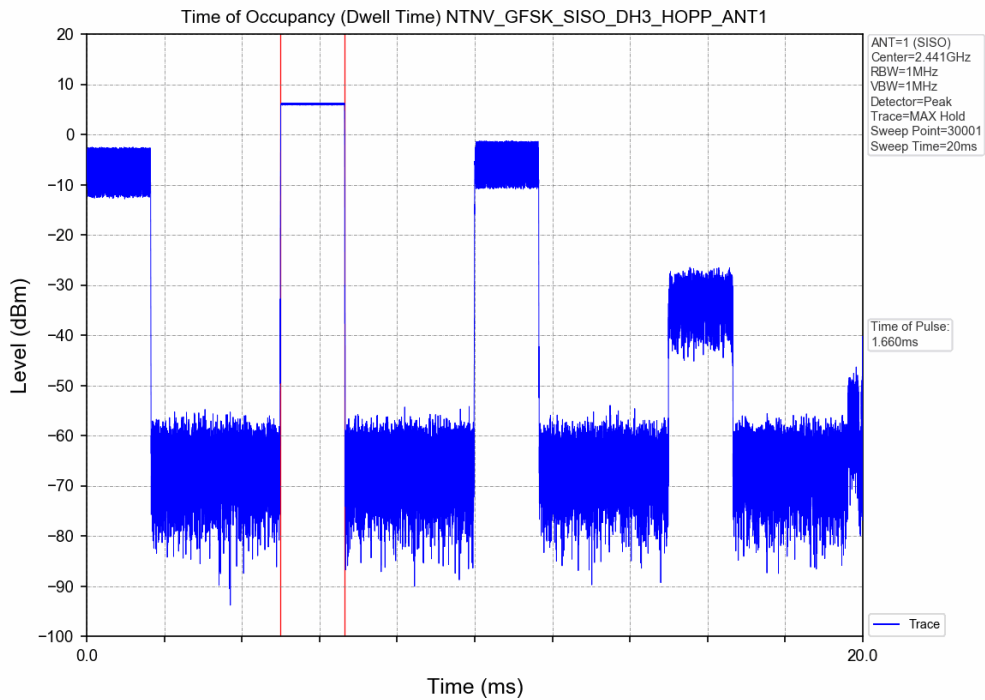
### 5.1 Test Result

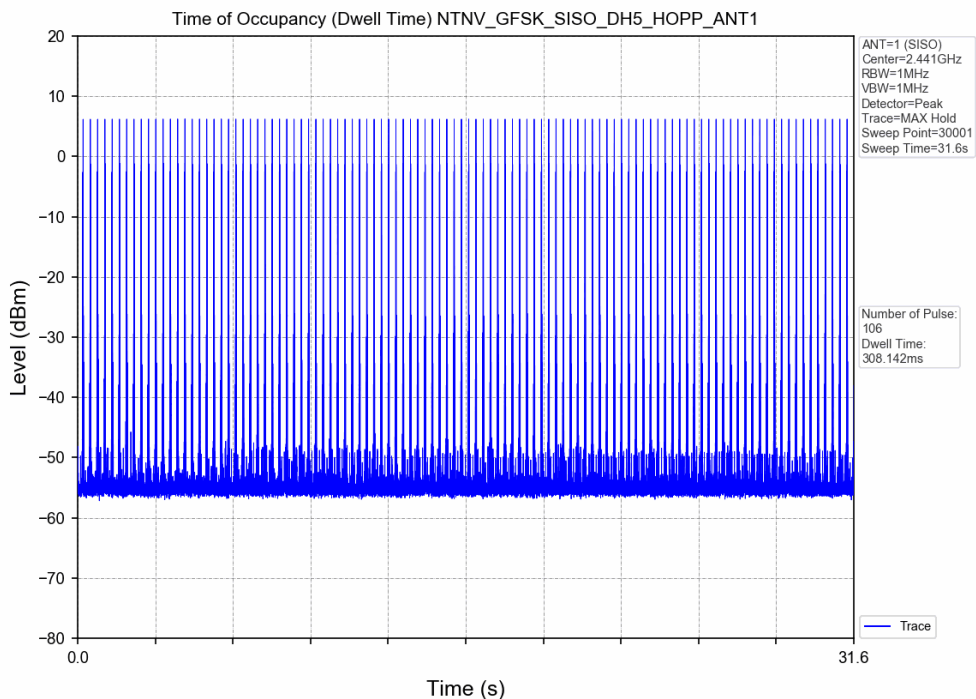
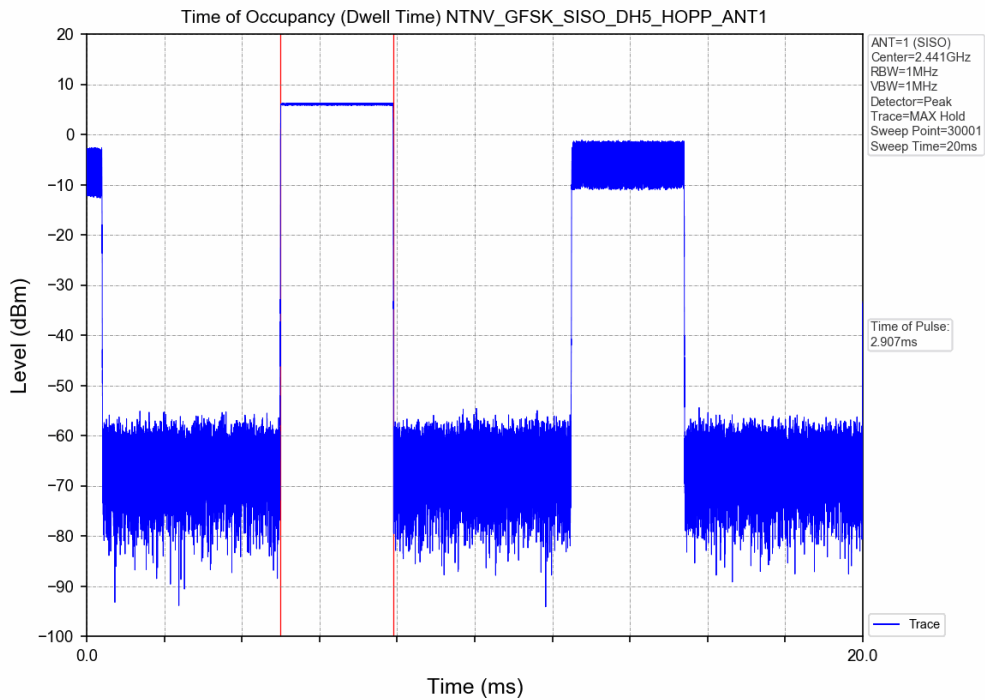
Test Mode	Packet Type	TX Type	ANT No.	Duration of Single Pulse (ms)	Observation Period (s)	Num of Pulse in Observation Period	Dwell Time (ms)	Limits (ms)	Verdict
GFSK	DH1	SISO	1	0.404	31.6	320	129.280	≤400	PASS
	DH3	SISO	1	1.660	31.6	160	265.600	≤400	PASS
	DH5	SISO	1	2.907	31.6	106	308.142	≤400	PASS
Pi/4DQ PSK	2DH1	SISO	1	0.421	31.6	320	134.720	≤400	PASS
	2DH3	SISO	1	1.689	31.6	160	270.240	≤400	PASS
	2DH5	SISO	1	2.933	31.6	107	313.831	≤400	PASS
8DPSK	3DH1	SISO	1	0.418	31.6	320	133.760	≤400	PASS
	3DH3	SISO	1	1.687	31.6	160	269.920	≤400	PASS
	3DH5	SISO	1	2.923	31.6	106	309.838	≤400	PASS

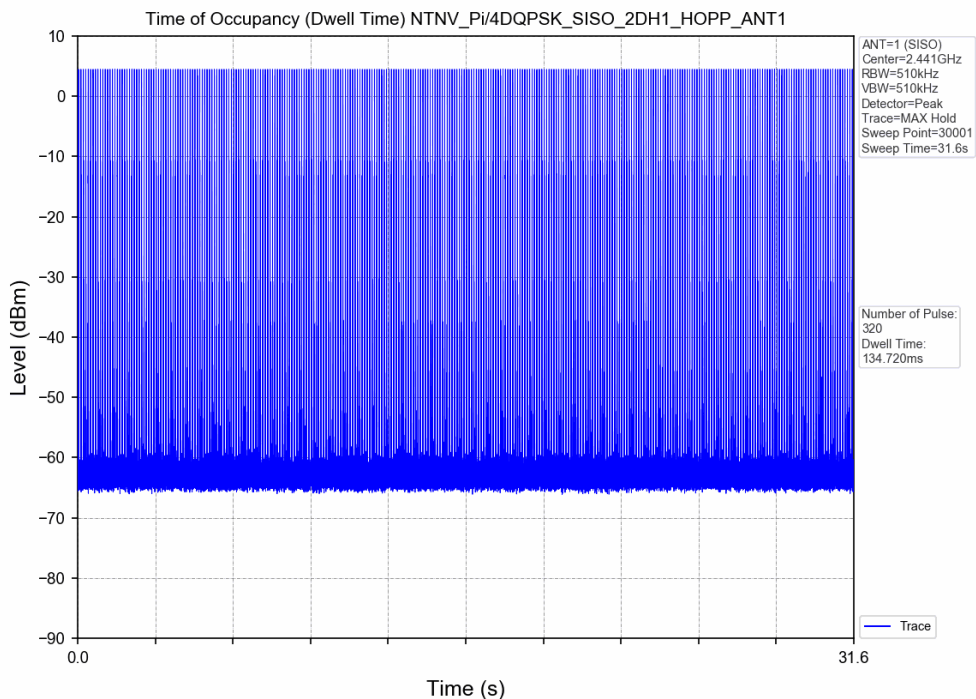
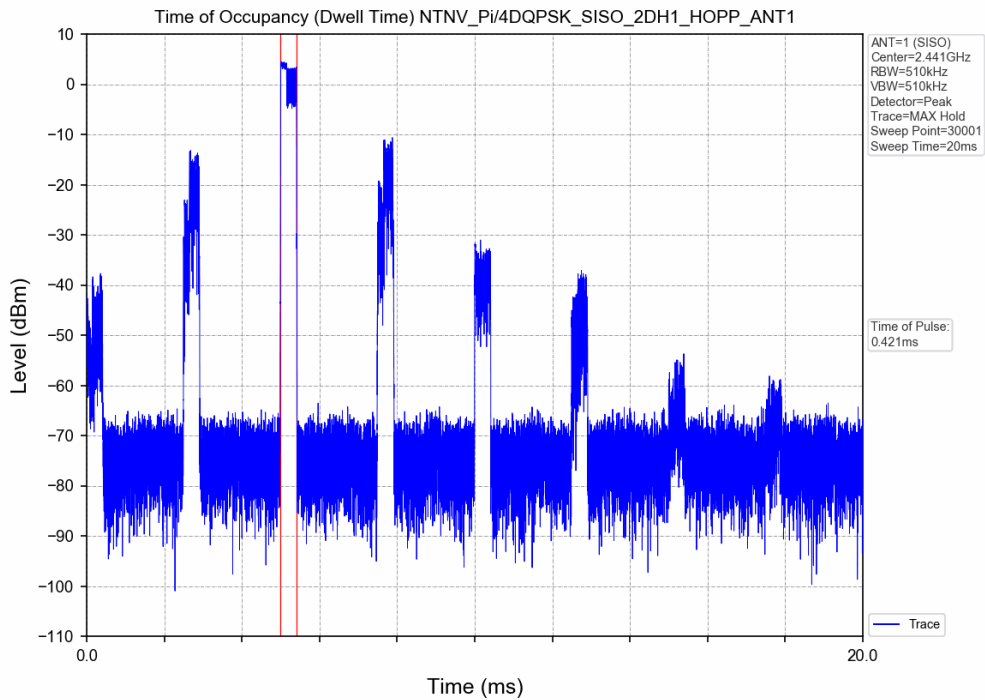
### 5.2 Test Graph



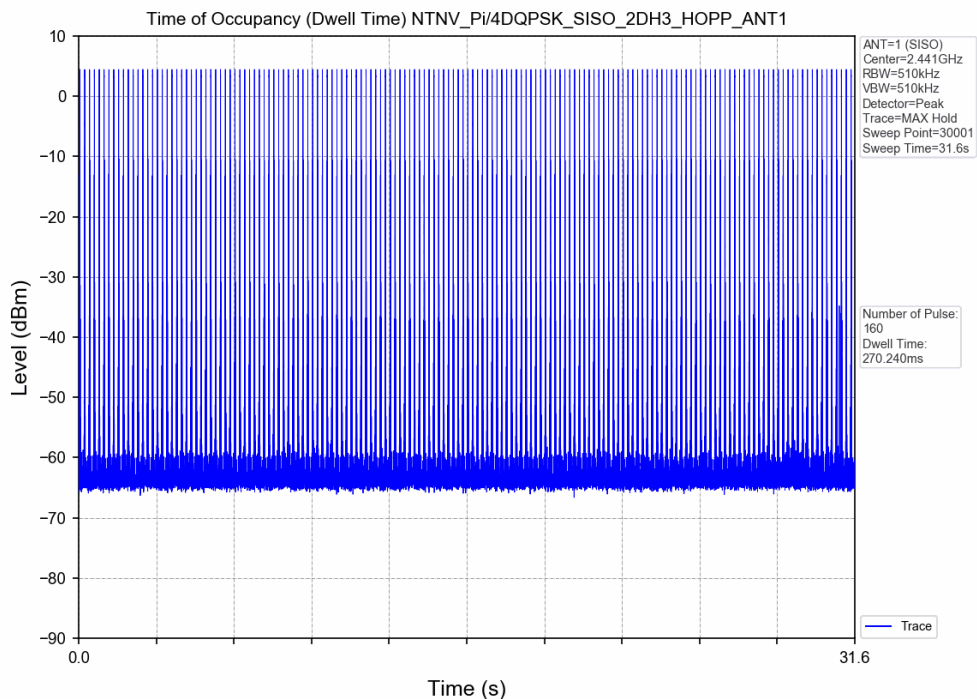
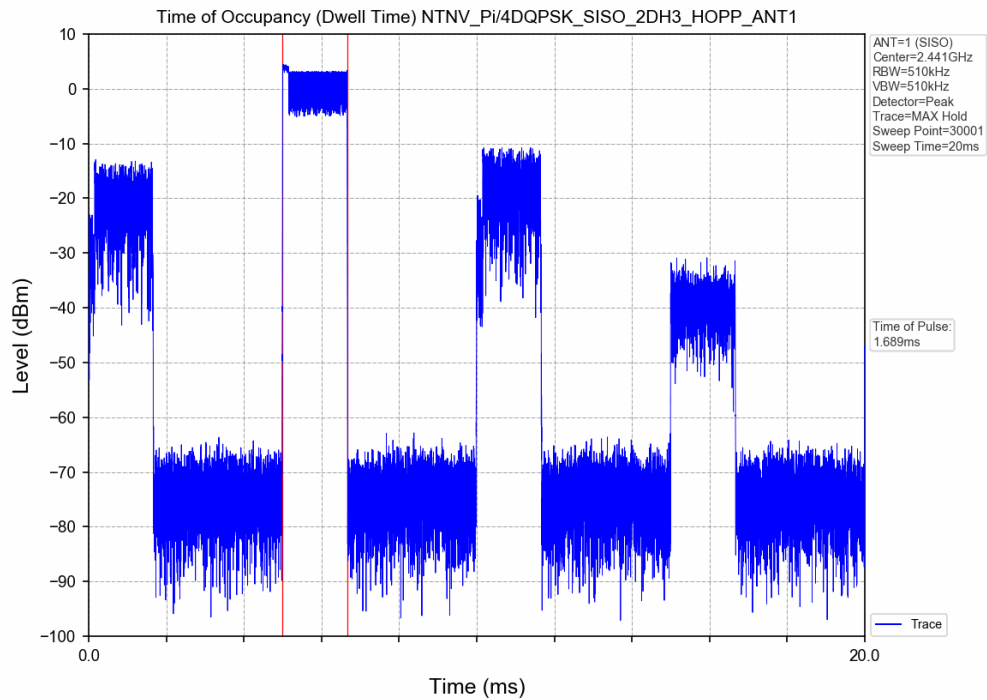


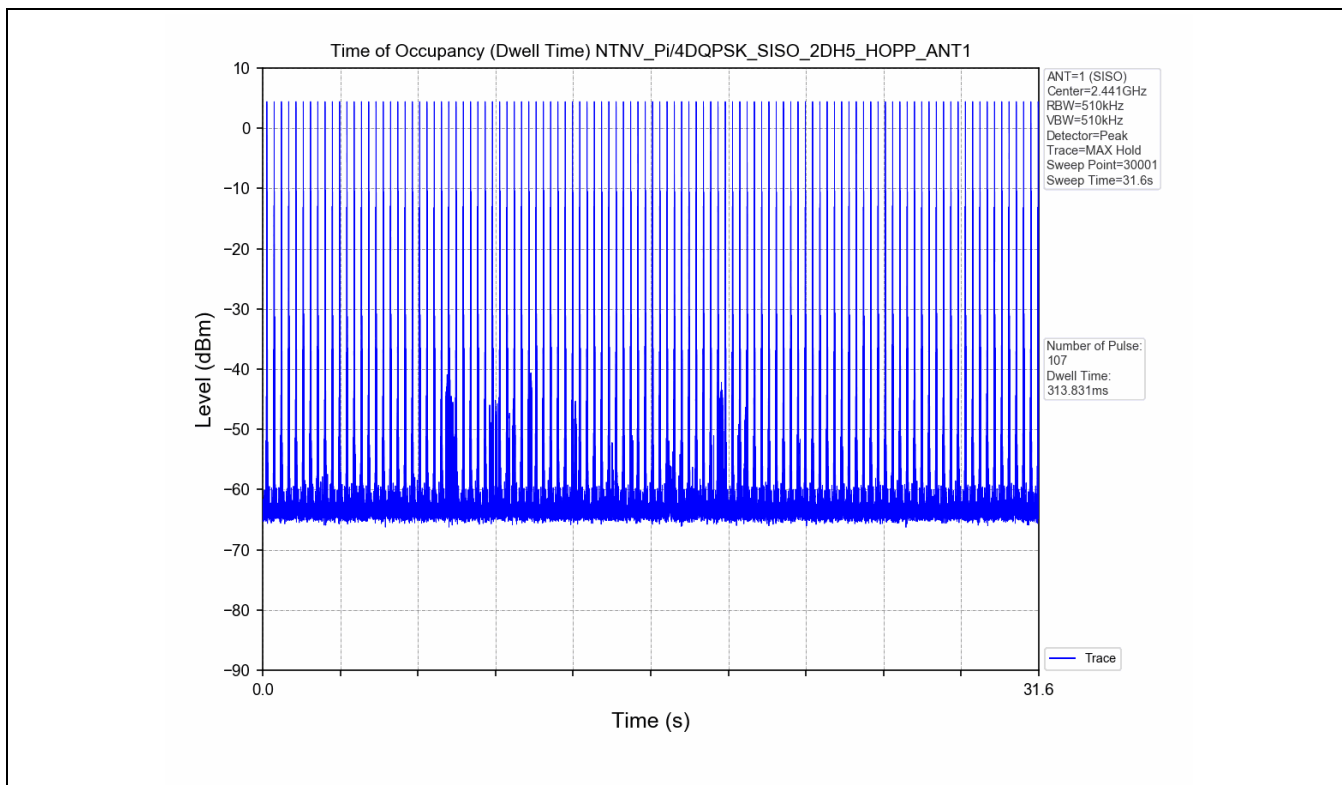
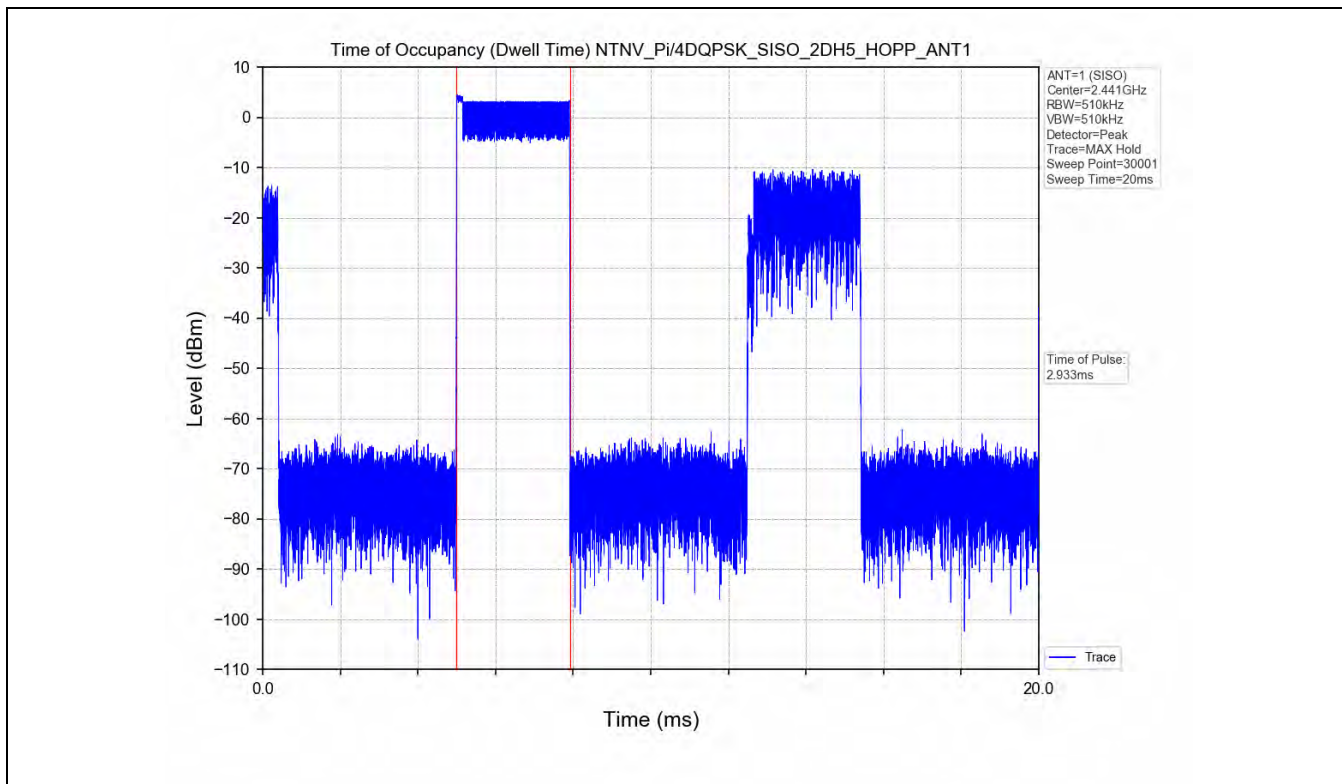


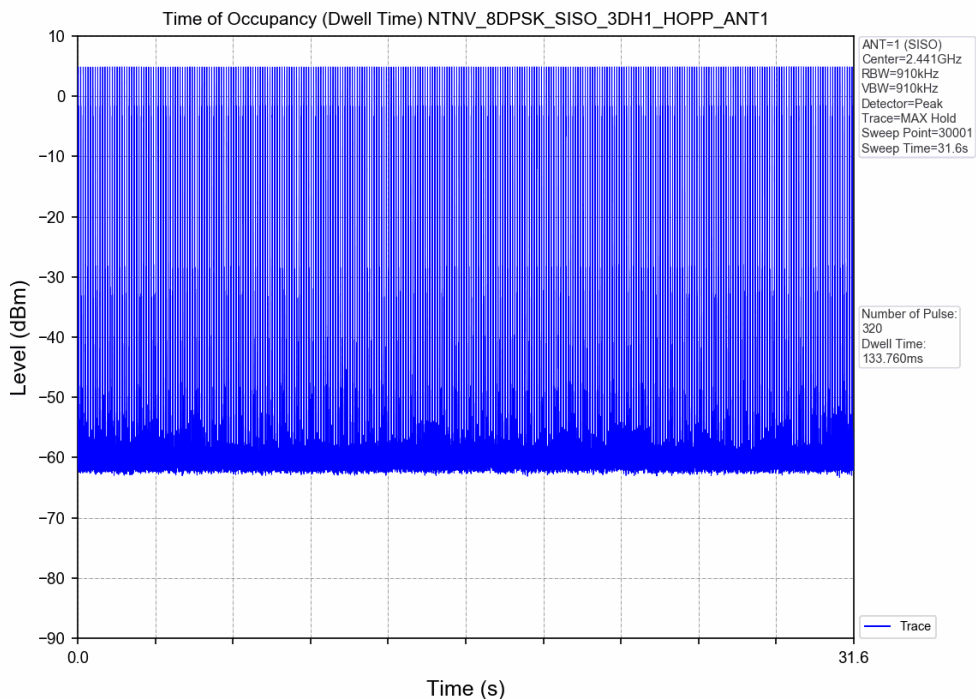
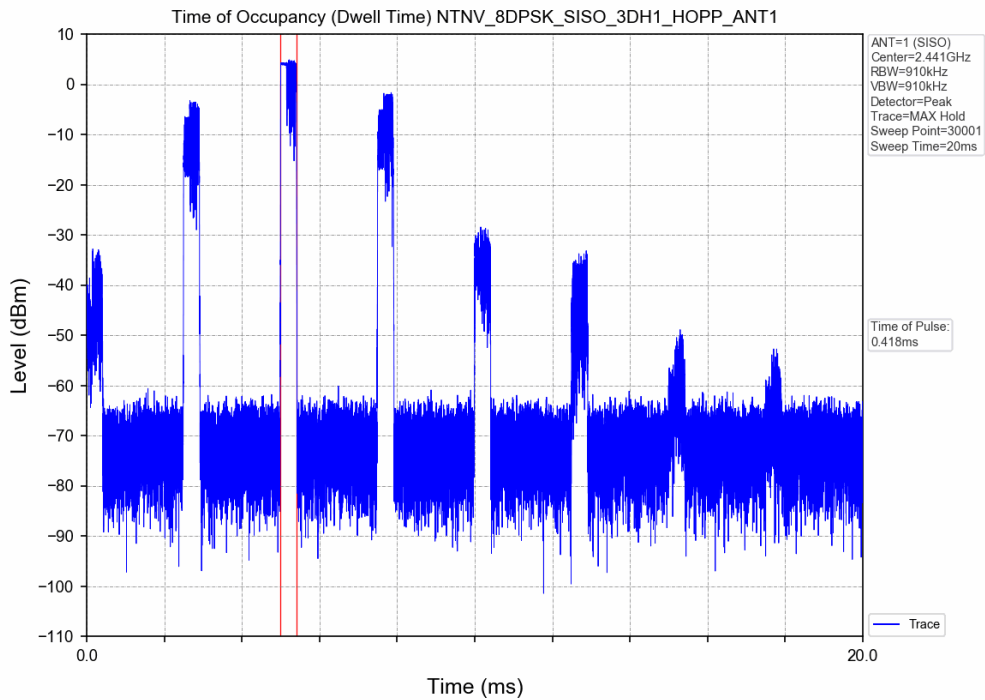




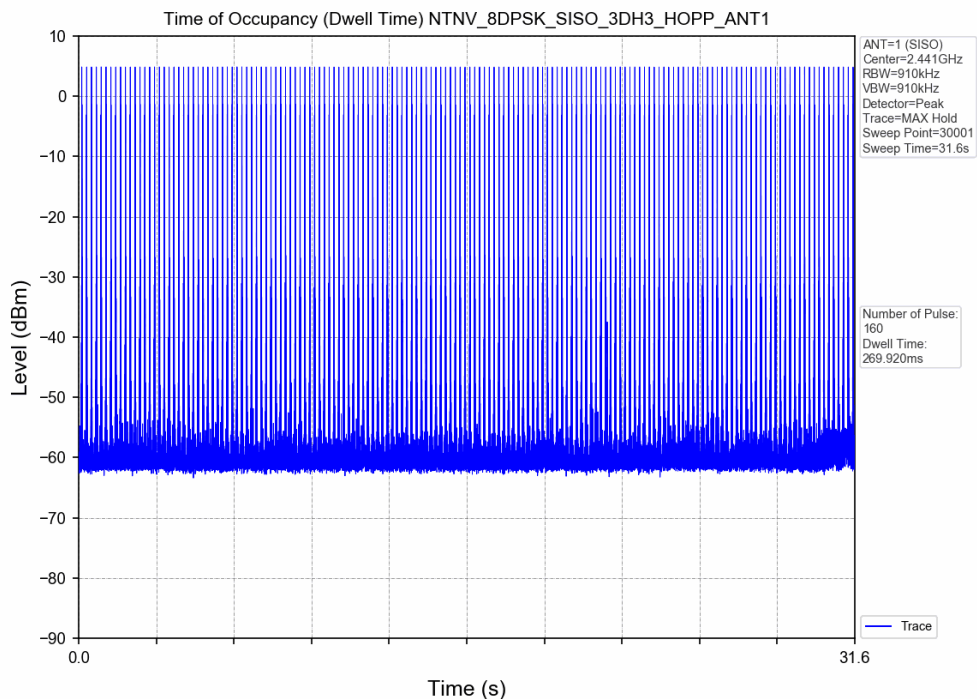
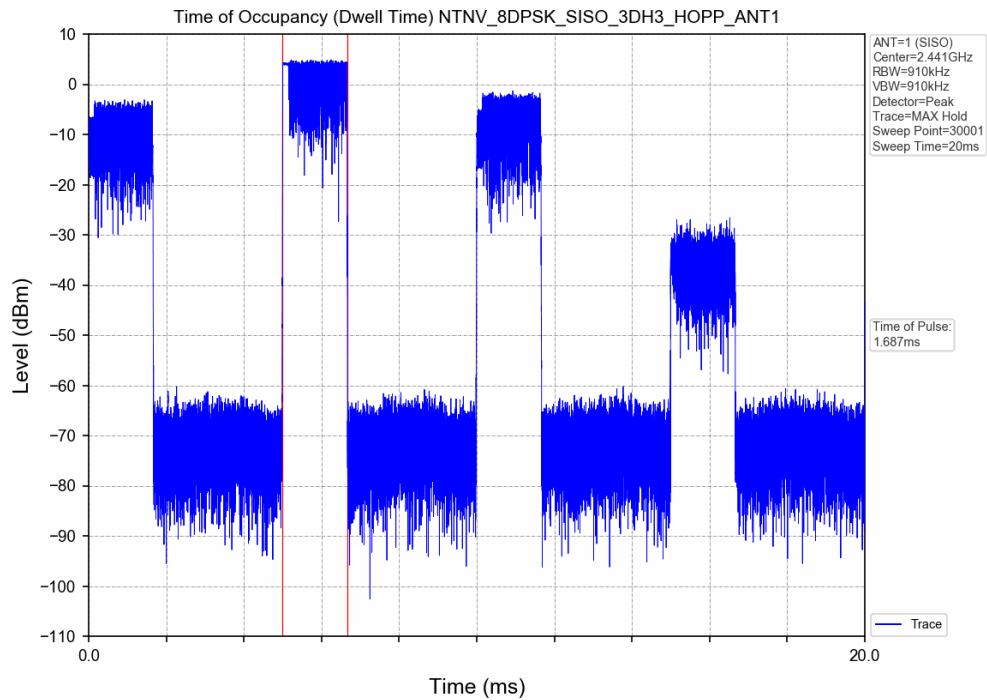


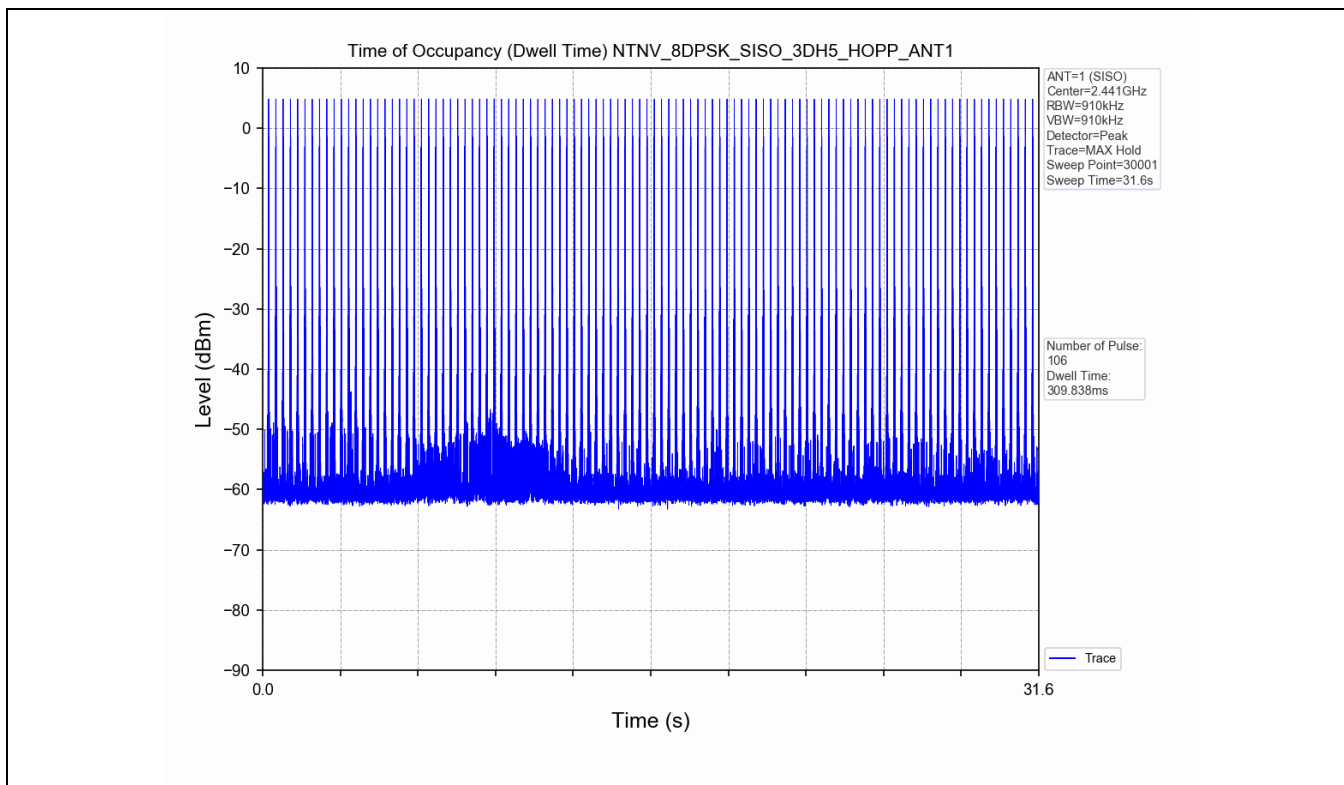
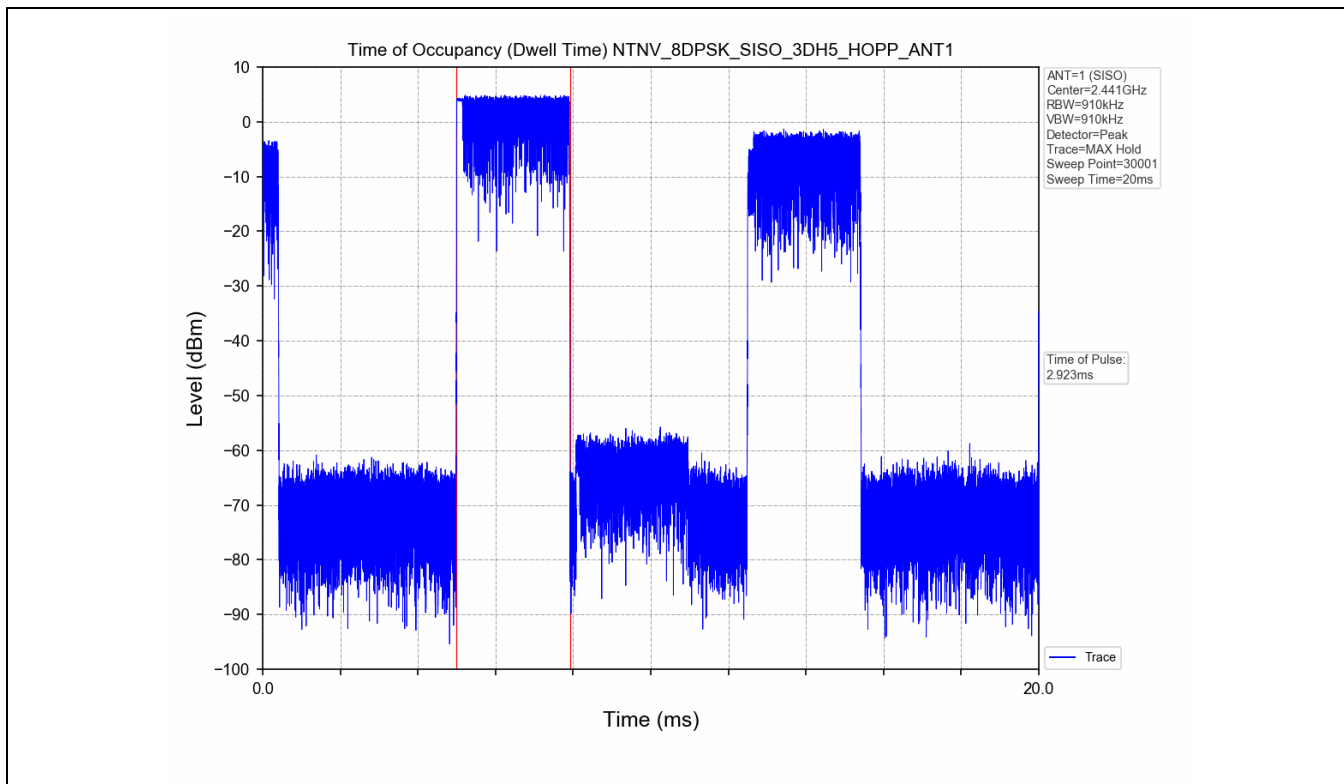












## 6. Unwanted Emissions in Non-restricted Frequency Bands

### 6.1 Test Result

Test Mode	Frequency (MHz)	TX Type	ANT No.	Spurious Conducted Emission (dBm)	Limits (dBm)	Verdict
GFSK	2402	SISO	1	Refer to test graph	-13.35	PASS
	2441	SISO	1	Refer to test graph	-13.35	PASS
	2480	SISO	1	Refer to test graph	-13.35	PASS
	Hopping	SISO	1	Refer to test graph	-13.35	PASS
Pi/4DQPSK	2402	SISO	1	Refer to test graph	-15.33	PASS
	2441	SISO	1	Refer to test graph	-15.33	PASS
	2480	SISO	1	Refer to test graph	-15.33	PASS
	Hopping	SISO	1	Refer to test graph	-15.33	PASS
8DPSK	2402	SISO	1	Refer to test graph	-15.16	PASS
	2441	SISO	1	Refer to test graph	-15.16	PASS
	2480	SISO	1	Refer to test graph	-15.16	PASS
	Hopping	SISO	1	Refer to test graph	-15.16	PASS

### 6.2 Test Graph

