



Report No.: SUCR250300016803
Page: 1 of 94

TEST REPORT

Application No.: SUCR2503000168AT
Applicant: Elo Touch Solutions, Inc.
Address of Applicant: 670 N. McCarthy Blvd., Suite 100, Milpitas, CA 95035, USA.
Manufacturer: Elo Touch Solutions, Inc.
Address of Manufacturer: 670 N. McCarthy Blvd., Suite 100, Milpitas, CA 95035, USA.
EUT Description: Handheld Terminal
Model No.: EMC-HRPR1.3
Trade Mark: Elo
FCC ID: RBWEMCHRPR
Standards: FCC 47 CFR Part 2, Subpart J
FCC 47 CFR Part 15, Subpart C
Date of Receipt: 2025-03-11
Date of Test: 2025-04-17 to 2025-10-14
Date of Issue: 2025-10-20

Test Result :	PASS *
----------------------	---------------

* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

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



Version

Revision Record			
Version	Description	Date	Remark
01	Original	2025-10-20	/

Authorized for issue by:			
Tested By		Nature Shen	
		Nature Shen / Project Manager	
Approved By		Cedar cheng	
		Cedar Cheng/Technical Manager	

Contents

Version	2
1 Test Summary.....	4
2 General Information	5
2.1 Details of Client	5
2.2 Test Location	5
2.3 Test Facility	5
2.4 General Description of EUT	6
2.5 Test Environment.....	8
2.6 Description of Support Units	8
3 Equipment List	9
4 Measurement Uncertainty (95% confidence levels, k=2)	11
5 Test results and Measurement Data.....	12
5.1 Antenna Requirement.....	12
5.2 Other requirements Frequency Hopping Spread Spectrum System Hopping Sequence	13
5.3 AC Power Line Conducted Emissions.....	15
5.4 Conducted Output Power.....	19
5.5 20dB Emission Bandwidth & 99% Occupied Bandwidth.....	20
5.6 Carrier Frequencies Separation	21
5.7 Hopping Channel Number	22
5.8 Dwell Time.....	23
5.9 Band-edge for RF Conducted Emissions	24
5.10 Spurious RF Conducted Emissions	25
5.11 Radiated Spurious Emissions	26
5.12 Restricted bands around fundamental frequency.....	29
6 Photographs - Setup Photos	31
7 Appendix.....	32

1 Test Summary

Test Item	FCC Rule No.	Test Method	Test Result	Result
Antenna Requirement	15.203/15.247(b)	--	Clause 5.1	PASS
AC Power Line Conducted Emission	15.207	ANSI C63.10 (2013) Section 6.2	Clause 5.3	PASS
Conducted Peak Output Power	15.247 (b)(1)	ANSI C63.10 (2013) Section 11.9.1.3	Clause 5.4	PASS
20dB Emission Bandwidth & 99% Occupied Bandwidth	15.247 (a)(1)	ANSI C63.10 (2013) Section 6.9.2/6.9.3	Clause 5.5	For Report Purpose
Carrier Frequencies Separation	15.247 (a)(1)	ANSI C63.10 (2013) Section 7.8.2	Clause 5.6	PASS
Hopping Channel Number	15.247 (a)(1)	ANSI C63.10 (2013) Section 7.8.3	Clause 5.7	PASS
Dwell Time	15.247 (a)(1)	ANSI C63.10 (2013) Section 7.8.4	Clause 5.8	PASS
Band-edge for RF Conducted Emissions	15.247(d)	ANSI C63.10 (2013) Section 7.8.6	Clause 5.9	PASS
RF Conducted Spurious Emissions	15.247(d)	ANSI C63.10 (2013) Section 7.8.7.1	Clause 5.10	PASS
Radiated Spurious emissions	15.247(d); 15.205/15.209	ANSI C63.10 (2013) Section 6.4 / 6.5 / 6.6	Clause 5.11	PASS
Restricted bands around fundamental frequency (Radiated Emission)	15.247(d); 15.205/15.209	ANSI C63.10 (2013) Section 6.10.5	Clause 5.12	PASS

2 General Information

2.1 Details of Client

Applicant:	Elo Touch Solutions, Inc.
Address of Applicant:	670 N. McCarthy Blvd., Suite 100, Milpitas, CA 95035, USA.
Manufacturer:	Elo Touch Solutions, Inc.
Address of Manufacturer:	670 N. McCarthy Blvd., Suite 100, Milpitas, CA 95035, USA.

2.2 Test Location

Company:	SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd.
Address:	South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu) Pilot Free Trade Zone
Post code:	215000
Test engineer:	King-p Li, Levi Li

2.3 Test Facility

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

- **A2LA (Certificate No. 6336.01)**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 6336.01.

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

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0120.

IC#: 27594.

- **FCC –Designation Number: CN1312**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized as an accredited testing laboratory.

Designation Number: CN1312.

Test Firm Registration Number: 717327

2.4 General Description of EUT

Hardware Version:	V1.03	
Software Version:	6.000.007.0024+ap	
IMEI:	RF Conducted	352461799002073
	RSE & AC power line	352461799000144
Operation Frequency:	2400MHz~2483.5MHz fc = 2402 MHz + N * 1 MHz, where: -fc = “Operating Frequency” in MHz, -N = “Channel Number” with the range from 0 to 78.	
Bluetooth version:	Bluetooth V5.1	
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)	
Modulation Type:	GFSK, π/4DQPSK, 8DPSK	
Number of Channel:	79	
Hopping Channel Type:	Adaptive Frequency Hopping systems	
Antenna Type:	☐ External, ☒ Integrated	
Antenna Gain:	1.7dBi	
	Note: The antenna gain are derived from the gain information report provided by the manufacturer.	
RF Cable:	1dB	
Note: Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, SGS is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.		

Operation Frequency of each channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	20	2422MHz	40	2442MHz	60	2462MHz
1	2403MHz	21	2423MHz	41	2443MHz	61	2463MHz
2	2404MHz	22	2424MHz	42	2444MHz	62	2464MHz
3	2405MHz	23	2425MHz	43	2445MHz	63	2465MHz
4	2406MHz	24	2426MHz	44	2446MHz	64	2466MHz
5	2407MHz	25	2427MHz	45	2447MHz	65	2467MHz
6	2408MHz	26	2428MHz	46	2448MHz	66	2468MHz
7	2409MHz	27	2429MHz	47	2449MHz	67	2469MHz
8	2410MHz	28	2430MHz	48	2450MHz	68	2470MHz
9	2411MHz	29	2431MHz	49	2451MHz	69	2471MHz
10	2412MHz	30	2432MHz	50	2452MHz	70	2472MHz
11	2413MHz	31	2433MHz	51	2453MHz	71	2473MHz
12	2414MHz	32	2434MHz	52	2454MHz	72	2474MHz
13	2415MHz	33	2435MHz	53	2455MHz	73	2475MHz
14	2416MHz	34	2436MHz	54	2456MHz	74	2476MHz
15	2417MHz	35	2437MHz	55	2457MHz	75	2477MHz
16	2418MHz	36	2438MHz	56	2458MHz	76	2478MHz
17	2419MHz	37	2439MHz	57	2459MHz	77	2479MHz
18	2420MHz	38	2440MHz	58	2460MHz	78	2480MHz
19	2421MHz	39	2441MHz	59	2461MHz		
Remark: In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:							
Channel				Frequency			
The Lowest channel(CH0)				2402MHz			
The Middle channel(CH39)				2441MHz			
The Highest channel(CH78)				2480MHz			

2.5 Test Environment

Environment Parameter	101 kPa Selected Values During Tests	
Relative Humidity	44-46 % RH Ambient	
Value	Temperature(°C)	Voltage(V)
NTNV	22~23	3.8
Remark: NV: Normal Voltage NT: Normal Temperature		

2.6 Description of Support Units

The EUT has been tested as an independent unit.

3 Equipment List

Item	Equipment	Manufacturer	Model	Inventory No	Cal Date	Cal. Due Date
Conducted Emission at Mains Terminals						
1	EMI Test Receive	R&S	ESR7	SUWI-01-10-01	1/15/2025	1/14/2026
2	LISN	R&S	ENV216	SUWI-01-19-03	5/6/2024	5/5/2026
3	LISN	Schwarzbeck	ENV216	SUWI-01-19-04	5/6/2024	5/5/2026
4	Test Software	Tonscend	JS32-CE 4.0.0.2	SUWI-02-09-05	N.C.R	N.C.R
RF Conducted Test						
1	Shielding Room	Brilliant-emc	N/A	SUWI-04-08-01	11/9/2022	11/8/2025
2	Signal Analyzer	ROHDE&SCHWARZ	FSW43	SUWI-01-02-04	1/20/2025	1/19/2026
3	Signal Analyzer	KEYSIGHT	N9020A	SUWI-01-02-15	11/21/2024	11/20/2025
4	MXG Vector signal genitor	KEYSIGHT	N5182B	SUWI-01-38-01	1/15/2025	1/14/2026
5	Signal Generator	ROHDE&SCHWARZ	SMW200A	SUWI-01-07-08	3/27/2025	3/26/2026
6	Signal Generator	ROHDE&SCHWARZ	SMW100A	SUWI-01-8-01	1/16/2025	1/15/2026
7	MXG Vector Signal Generator	ROHDE&SCHWARZ	SMR20	SUWI-01-33-01	3/17/2025	3/16/2026
8	Wideband Radio Communication Tester	ROHDE&SCHWARZ	CMW500	SUWI-01-16-13	5/6/2024	5/7/2026
9	Wideband Radio Communication Test Ststion	Anritsu	MT8000A	SUWI-01-34-02	11/19/2024	11/18/2025
10	Wideband Radio Communication Tester	Anritsu	MT8821C	SUWI-01-26-03	11/19/2024	11/18/2025
11	Power meter	Anritsu	ML2495A	SUWI-01-31-01	11/19/2024	11/18/2025
12	Pulse power sensor	Anritsu	MA2411B	SUWI-01-32-01	11/19/2024	11/18/2025
13	DC Power Supply	HYELEC	HY3005B	SUWI-01-18-01	1/15/2025	1/14/2026
14	Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-07	2/13/2025	2/12/2026
15	Temperature Chamber	GIANT FORCE	ICT-017-40-SP-SD	SUWI-01-13-02	5/9/2024	5/6/2026
16	Measurement Software	TST	TST 272 V2.0	SUWI-03-55-03	NCR	NCR
17	RF Control Unit	Tonscend	JS0806-1	SUWI-02-20-01	NCR	NCR
18	RF Control Unit	TST	TSCB3023R2	SUWI-02-21-01	NCR	NCR
19	RF cables	Tonscend	NA	SUWI-01-03-01	11/19/2024	11/18/2025
RF Radiated Test						
1	Semi-Anechoic Chamber	Brilliant-emc	N/A	SUWI-04-02-01	6/3/2023	6/2/2026
2	Signal Analyzer	ROHDE&SCHWARZ	FSW43	SUWI-01-02-04	1/20/2025	1/19/2026
3	Signal Analyzer	KEYSIGHT	N9020A	SUWI-01-02-09	11/21/2024	11/20/2025
4	Test receiver	ROHDE&SCHWARZ	ESR7	SUWI-01-10-01	1/15/2025	1/14/2026
5	Signal Generator	ROHDE&SCHWARZ	SMW100A	SUWI-01-18-01	1/16/2025	1/15/2026
6	Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	VULB 9168	SUWI-01-11-04	8/22/2024	8/21/2026
7	Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	BBHA 9120D	SUWI-01-11-02	5/13/2023	2025/5/12
					5/7/2025	5/6/2027
8	Receiving antenna	SCHWRZBECK MESS-ELEKTRONIK	BBHA 9170	SUWI-01-11-03	5/13/2023	2025/5/12
					5/7/2025	5/6/2027
9	Active Loop Antenna	SCHWRZBECK MESS-ELEKTRONIK	FMZB 1519B	SUWI-01-21-01	5/13/2023	2025/5/12
					5/7/2025	5/6/2027
10	Amplifier	Tonscend	TAP9K3G40	SUWI-01-14-01	1/16/2025	1/15/2026
11	Amplifier	Tonscend	TAP01018050	SUWI-01-14-02	1/16/2025	1/15/2026
12	Amplifier	Tonscend	TAP18040048	SUWI-01-14-03	1/20/2025	1/19/2026
13	Wideband Radio Communication Tester	Anritsu	MT8820C	SUWI-01-26-01	9/10/2024	9/9/2025
					8/25/2025	8/24/2026
14	Wideband Radio Communication Tester	Anritsu	MT8821C	SUWI-01-26-03	11/19/2024	11/18/2025



15	Wideband Radio Communication Tester	ROHDE&SCHWARZ	CMW500	SUWI-01-16-09	9/10/2024	9/9/2025
					8/26/2025	8/25/2026
16	Radio Communication Analyzer	StarPoint	SP9500E	SUWI-01-28-02	11/19/2024	11/18/2025
17	Signal Generator	ROHDE&SCHWARZ	SMB100A	SUWI-01-08-01	1/16/2025	1/15/2026
18	DC Power Supply	HYELEC	HY3005B	SUWI-01-18-01	1/15/2025	1/14/2026
19	Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-05	2/13/2025	2/12/2026
20	Measurement Software	Tonscend	JS32-RE 4.0.0.0	SUWI-02-09-06	NCR	NCR
21	RF cables	Tonscend	NA	SUWI-01-03-02	11/19/2024	11/18/2025

Remark: NCR=No Calibration Requirement.

4 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Total RF power, conducted	±0.54dB
2	RF power density, conducted	±1.03dB
3	Spurious emissions, conducted	±0.54dB
4	Radio Frequency	±7.25x 10 ⁻⁸
5	Duty Cycle	±0.37%
6	Occupied Bandwidth	±7.25x 10 ⁻⁸
7	Conduction Emission	± 2.90dB (150kHz to 30MHz)
8	Radiated Emission	± 3.13dB (9k -30MHz)
		± 4.80dB (30M -1GHz)
		± 4.80dB (1GHz to 18GHz)
		± 4.80dB (Above 18GHz)
Remark: The U _{lab} (lab Uncertainty) is less than U _{cispr/ETSI} (CISPR/ETSI Uncertainty), so the test results – compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit; – non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.		

5 Test results and Measurement Data

5.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203 /247(b)
15.203 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.	
The antenna is Integrated Antenna and no consideration of replacement. The best case gain of the antenna is 1.7dBi. <i>Note:</i> The antenna gain are derived from the gain information report provided by the manufacturer. <i>Remark:</i> As above information is provided and confirmed by the applicant. SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.	

5.2 Other requirements Frequency Hopping Spread Spectrum System Hopping Sequence

5.2.1 Test Requirement:

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

5.2.2 Conclusion

Standard Requirement:

The system shall hop to channel frequencies that are selected at the system hopping rate from a Pseudo randomly 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 pseudo random 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.

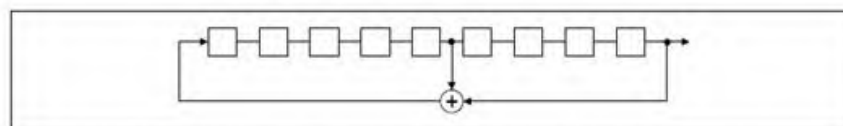
> Number of shift register stages: 9

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

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

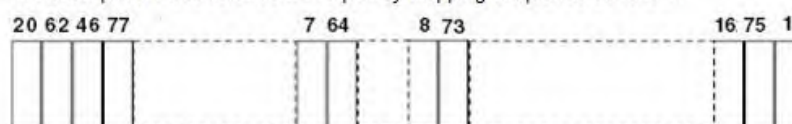
Linear Feedback Shift Register for Generation of the PRBS sequence

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.

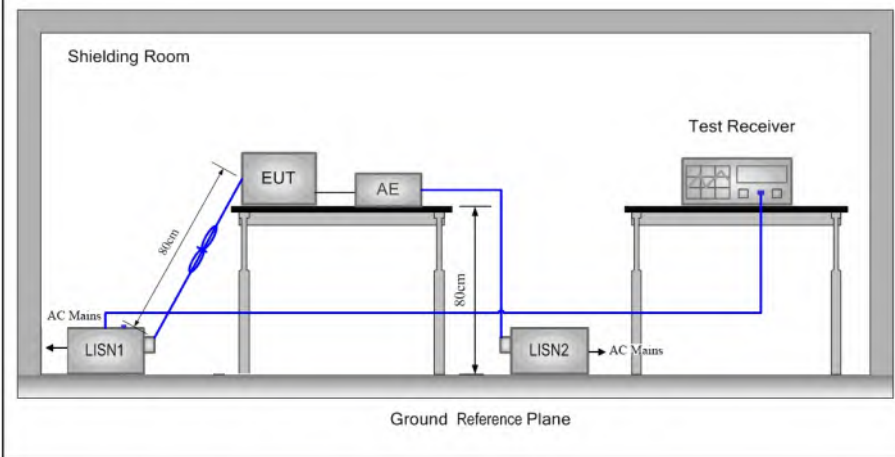
Compliance for section 15.247(g):

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 RF 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.

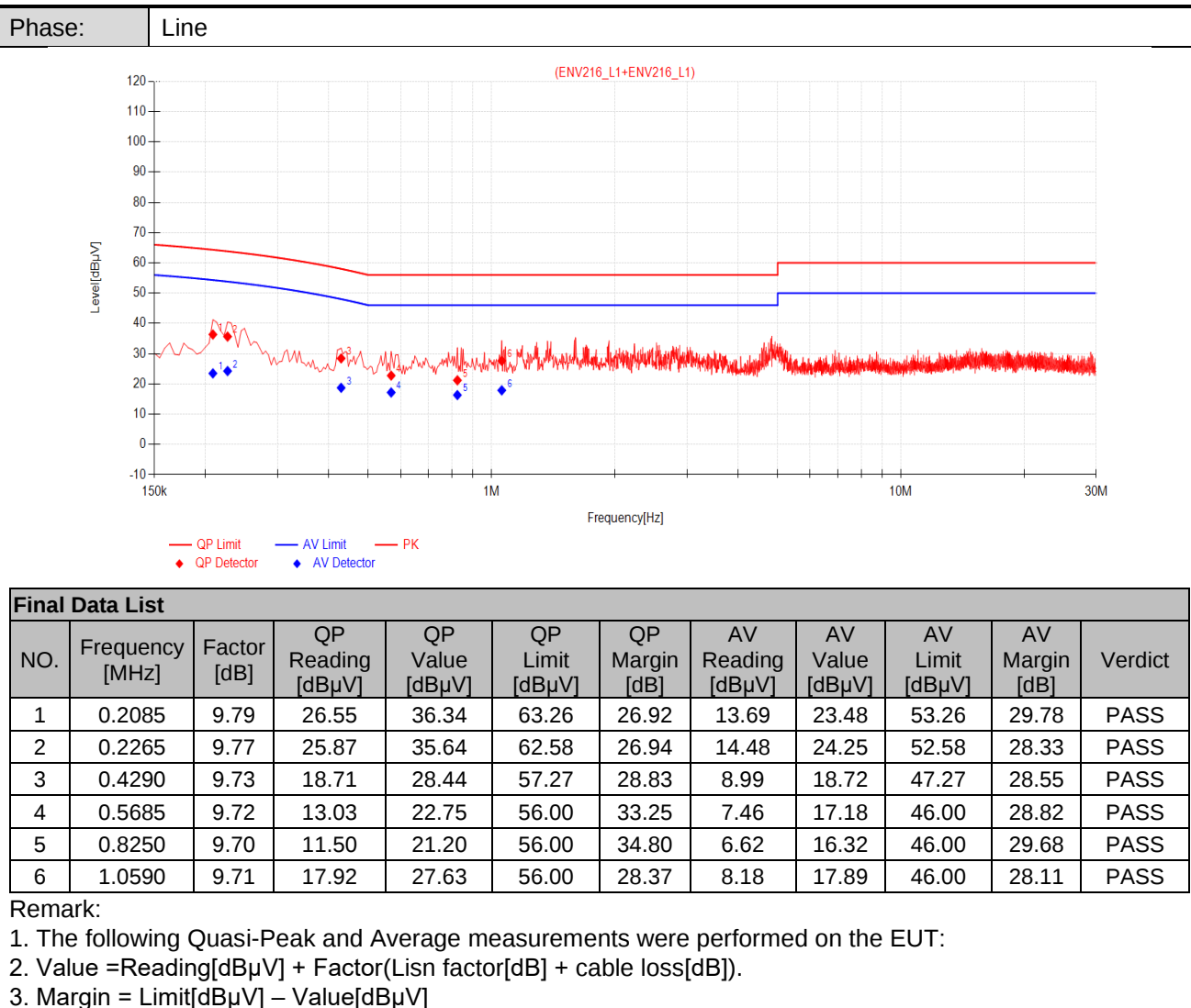
5.3 AC Power Line Conducted Emissions

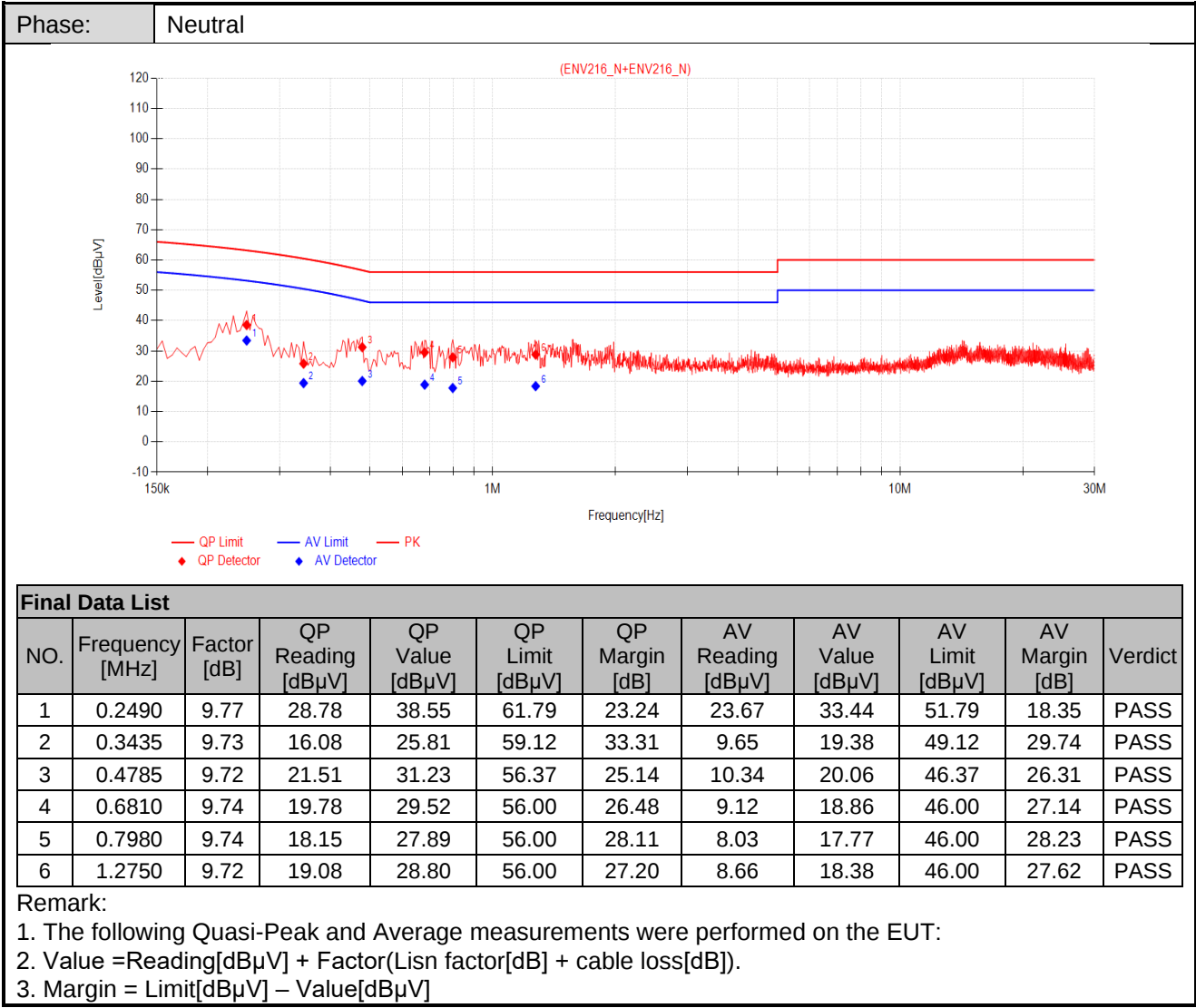
Test Requirement:	47 CFR Part 15C Section 15.207		
Test Method:	ANSI C63.10: 2013 Section 6.2		
Test Frequency Range:	150kHz to 30MHz		
Receiver Setup:	RBW = 9kHz, VBW = 30kHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
* Decreases with the logarithm of the frequency.			
Test Procedure:	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 $50\Omega/50\mu\text{H} + 5\Omega$ 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: 2013 on conducted measurement.		
Test Setup:			
Test Mode:	Non-hopping transmitting mode with all kind of modulation and all kind of		

	data type at the lowest, middle, high channel. Adapter + Transmitting mode.
Final Test Mode:	Through Pre-scan, find the DH5 of data type and GFSK modulation at the lowest channel is the worst case. Adapter + Transmitting mode. Only the worst case is recorded in the report.
Instruments Used:	Refer to section 3 for details.
Test Results:	Pass

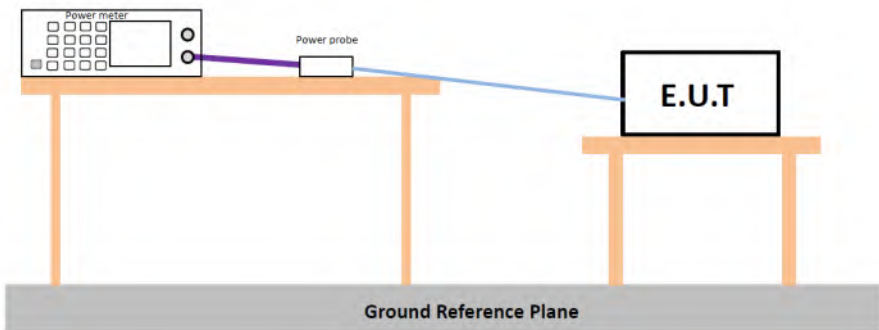
Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

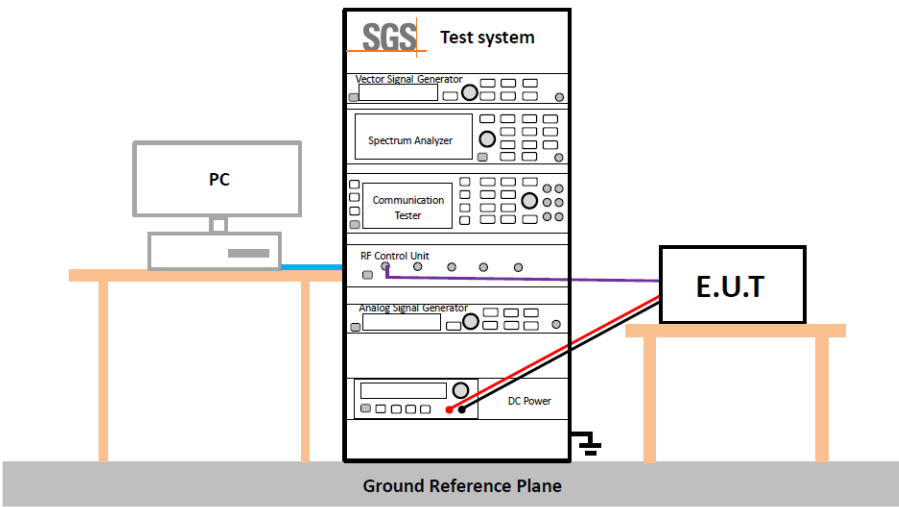




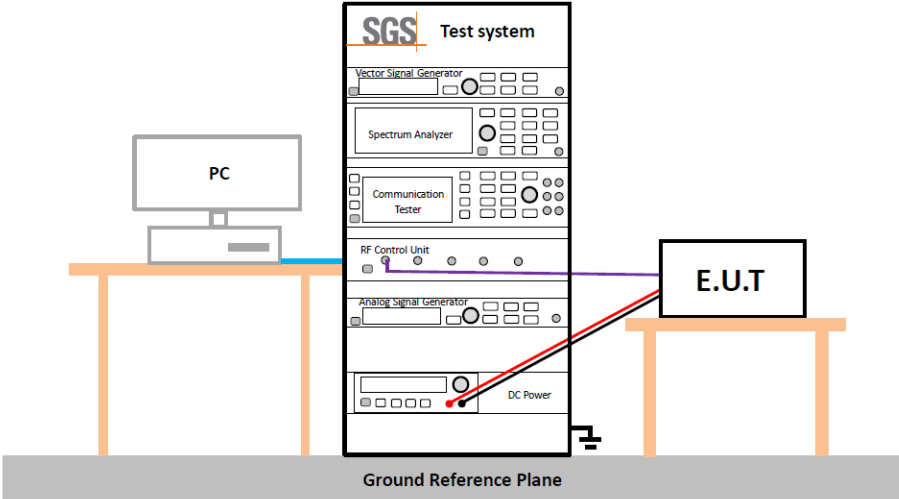
5.4 Conducted Output Power

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)&15.247 (b)(1)
Test Method:	ANSI C63.10:2013 Section 11.9.1.3
Test Setup:	 * Test with power meter (Detector function: Peak)
Test Instruments:	Refer to section 3 for details
Exploratory Test Mode:	Non-hopping transmitting with all kind of modulation and all kind of data type.
Final Test Mode:	Through Pre-scan, find the DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of $\pi/4$ DQPSK modulation type, 3-DH5 of data type is the worst case of 8DPSK modulation type.
Limit:	0.125 watts
Test Results:	Pass
The detailed test data see: Appendix	

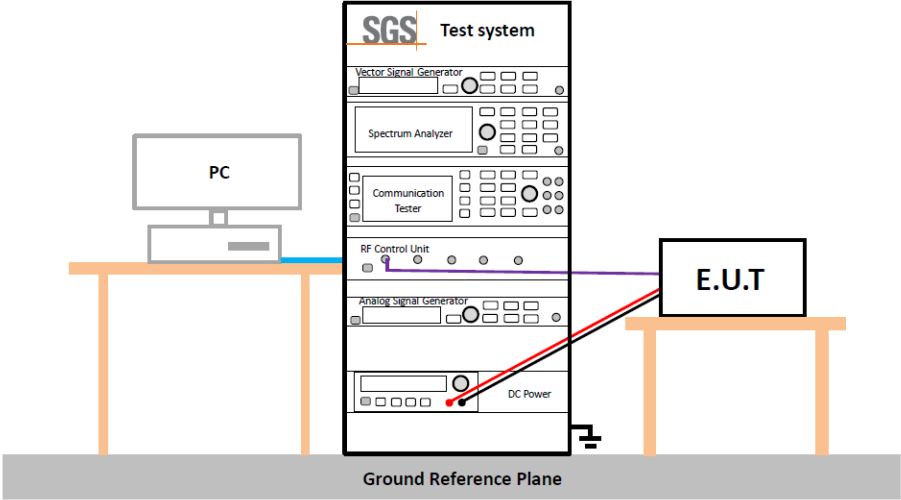
5.5 20dB Emission Bandwidth & 99% Occupied Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013 Section 6.9.2 and 6.9.3
Test Setup:	
Instruments Used:	Refer to section 3 for details
Exploratory Test Mode:	Non-hopping transmitting with all kind of modulation and all kind of data type.
Final Test Mode:	Through Pre-scan, find the DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of $\pi/4$ QPSK modulation type, 3-DH5 of data type is the worst case of 8DPSK modulation type.
Limit:	No restriction limits
Test Results:	For Report Purpose
The detailed test data see: Appendix	

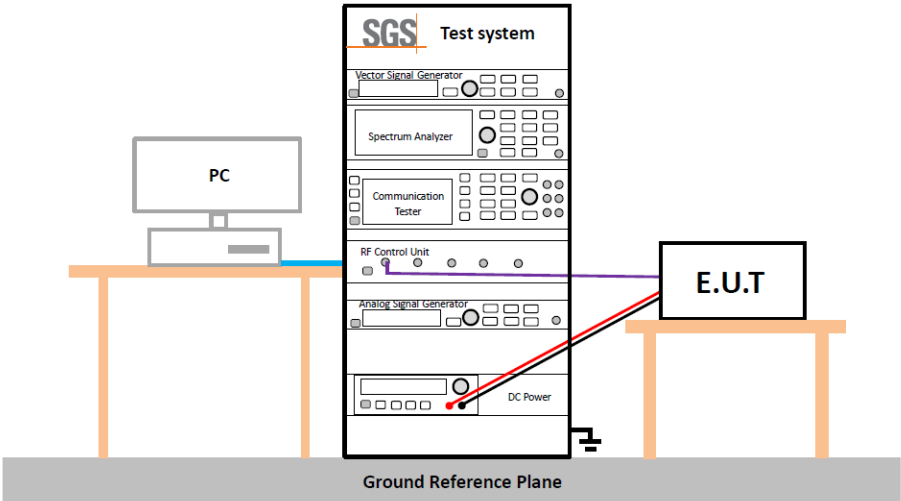
5.6 Carrier Frequencies Separation

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013 Section 7.8.2
Test Setup:	
Test Instruments:	Refer to section 3 for details
Exploratory Test Mode:	Hopping transmitting with all kind of modulation and all kind of data type.
Final Test Mode:	Through Pre-scan, find the DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of $\pi/4$ DQPSK modulation type, 3-DH5 of data type is the worst case of 8DPSK modulation type.
Limit:	2/3 of the 20dB bandwidth Remark: the transmission power is less than 0.125W.
Test Results:	Pass
The detailed test data see: Appendix	

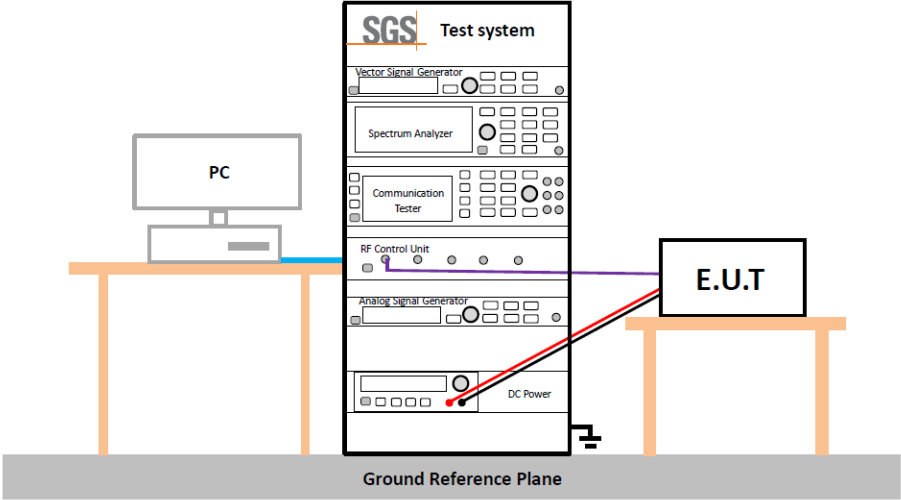
5.7 Hopping Channel Number

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013 Section 7.8.3
Test Setup:	
Instruments Used:	Refer to section 3 for details
Test Mode:	Hopping transmitting with all kind of modulation
Limit:	At least 15 channels
Test Results:	Pass
The detailed test data see: Appendix	

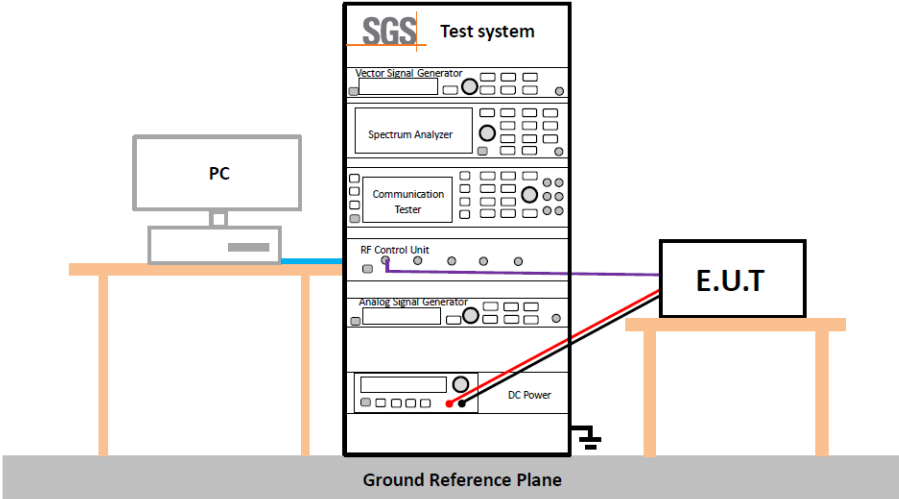
5.8 Dwell Time

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013 Section 7.8.4
Test Setup:	
Instruments Used:	Refer to section 3 for details
Test Mode:	Hopping transmitting with all kind of modulation and all kind of data type.
Limit:	0.4 Second
Test Results:	Pass
The detailed test data see: Appendix	

5.9 Band-edge for RF Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10:2013 Section 7.8.6
Test Setup:	
Instruments Used:	Refer to section 3 for details
Exploratory Test Mode:	Hopping and Non-hopping transmitting with all kind of modulation and all kind of data type.
Final Test Mode:	Through Pre-scan, find the DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of $\pi/4$ DQPSK modulation type, 3-DH5 of data type is the worst case of 8DPSK modulation type.
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.
Test Results:	Pass
The detailed test data see: Appendix	

5.10 Spurious RF Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10:2013 Section 7.8.7.1
Test Setup:	
Instruments Used:	Refer to section 3 for details
Exploratory Test Mode:	Non-hopping transmitting with all kind of modulation and all kind of data type.
Final Test Mode:	Through Pre-scan, find the DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of $\pi/4$ DQPSK modulation type, 3-DH5 of data type is the worst case of 8DPSK modulation type.
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.
Test Results:	Pass
The detailed test data see: Appendix	

5.11 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205				
Test Method:	ANSI C63.10 :2013 Section 6.4 / 6.5 / 6.6				
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Test Frequency:	9kHz ~ 25GHz				
Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz-88MHz	100	40.0	Quasi-peak	3
	88MHz-216MHz	150	43.5	Quasi-peak	3
	216MHz-960MHz	200	46.0	Quasi-peak	3
	960MHz-1GHz	500	54.0	Quasi-peak	3
	Above 1GHz	500	54.0	Average	3
Remark: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.					

Test Setup:

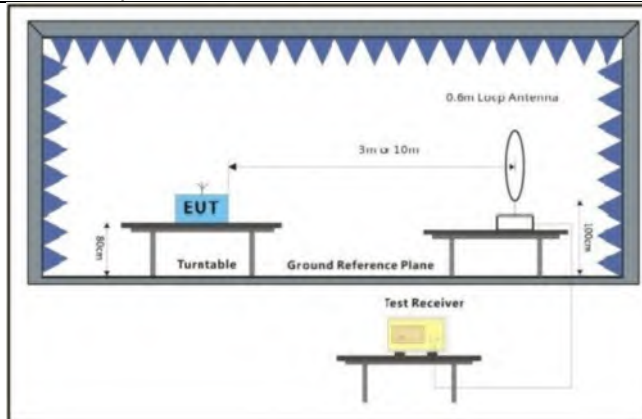


Figure 1. Below 30MHz

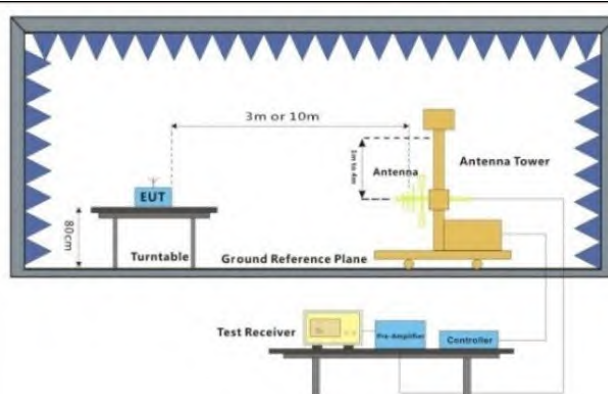


Figure 2. 30MHz to 1GHz

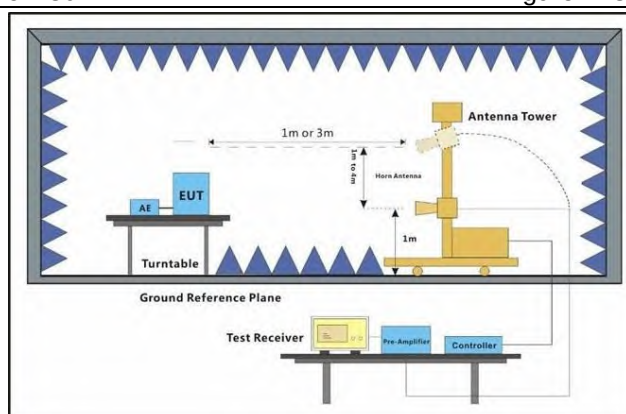


Figure 3. Above 1 GHz

Test Procedure:	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 semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation (Distance from antenna to EUT is 1m for measurements >18GHz). 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. 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 worse case. i. Repeat above procedures until all frequencies measured was complete. j. The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported. k. The disturbance above 18GHz was very low, and the harmonics were the highest point could be found when testing, so only the harmonics had been displayed. l. At a measurement distance of 1 meter the limit line was increased by $20 \cdot \log(3/1) = 9.54$ dB.
Test Configuration:	Measurements below 30MHz • RBW = 10 kHz • VBW = 30 kHz • Detector = Peak & Average & Quasi-peak • Trace mode = max hold Measurements Below 1000MHz • RBW = 120 kHz • VBW = 300 kHz • Detector = Quasi-peak • Trace mode = max hold Peak Measurements Above 1000 MHz • RBW = 1 MHz • VBW $\geq$ 3 MHz • Detector = Peak • Sweep time = auto • Trace mode = max hold Average Measurements Above 1000MHz Use duty cycle correction factor method per 15.35(c). Duty cycle = On time / 100 milliseconds On time = $N_1 \cdot L_1 + N_2 \cdot L_2 \dots + N_{N-1} \cdot L_{N-1} + N_N \cdot L_N$ Where N_1 is number of type 1 pulse, L_1 is length of type 1 pulses, etc. Average Value = Peak Value + $20 \cdot \log(\text{Duty cycle})$.
Exploratory Test	Non-hopping transmitting mode with all kind of modulation and all kind of

Mode:	data type Adapter + Transmitting mode.
Final Test Mode:	Through Pre-scan, find the DH5 of data type and GFSK modulation is the worst case. Pretest the EUT at Adapter + Transmitting mode. For below 1GHz part, through pre-scan all channels, but only the worst case is recorded in the report.
Instruments Used:	Refer to section 3 for details
Test Results:	Pass
The detailed test data see: Appendix	

5.12 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205		
Test Method:	ANSI C63.10: 2013 Section 6.10.5		
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)		
Limit:	Frequency	Limit (dBuV/m)	Remark
	30MHz-88MHz	40.0	Quasi-peak
	88MHz-216MHz	43.5	Quasi-peak
	216MHz-960MHz	46.0	Quasi-peak
	960MHz-1GHz	54.0	Quasi-peak
	Above 1GHz	54.0	Average Value
		74.0	Peak Value

Test Setup:

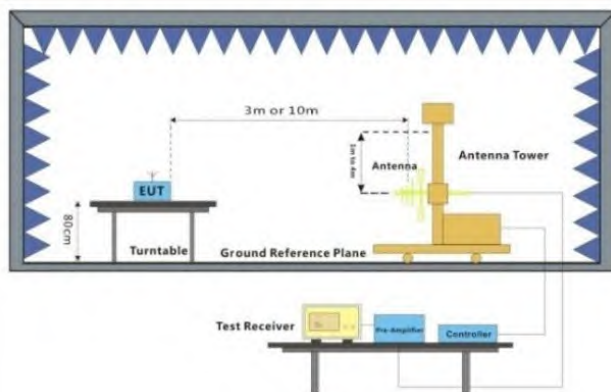


Figure 1. 30MHz to 1GHz

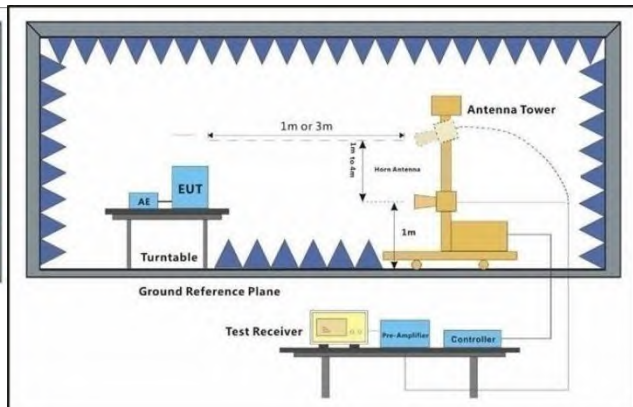


Figure 2. Above 1 GHz

Test Procedure:

- 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 semi-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 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.
- Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel.
- 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 worse case. j. Repeat above procedures until all frequencies measured was complete.
Test Configuration:	Measurements Below 1000MHz • RBW = 120 kHz • VBW = 300 kHz • Detector = Quasi-peak • Trace mode = max hold Peak Measurements Above 1000 MHz • RBW = 1 MHz • VBW $\geq$ 3 MHz • Detector = Peak • Sweep time = auto • Trace mode = max hold Average Measurements Above 1000MHz Use duty cycle correction factor method per 15.35(c). Duty cycle = On time / 100 milliseconds On time = $N_1 \cdot L_1 + N_2 \cdot L_2 \dots + N_{N-1} \cdot L_{N-1} + N_N \cdot L_N$ Where N_1 is number of type 1 pulse, L_1 is length of type 1 pulses, etc. Average Value = Peak Value + $20 \cdot \log(\text{Duty cycle})$.
Exploratory Test Mode:	Non-hopping transmitting mode with all kind of modulation and all kind of data type Adapter + Transmitting mode.
Final Test Mode:	Through Pre-scan, find the DH5 of data type and GFSK modulation is the worst case. Pretest the EUT at Adapter + Transmitting mode. Only the worst case is recorded in the report.
Instruments Used:	Refer to section 3 for details
Test Results:	Pass
The detailed test data see: Appendix	

6 Photographs - Setup Photos

Refer to Appendix A.2 BT&WLAN&NFC Setup Photos.

7 Appendix

1. Duty Cycle

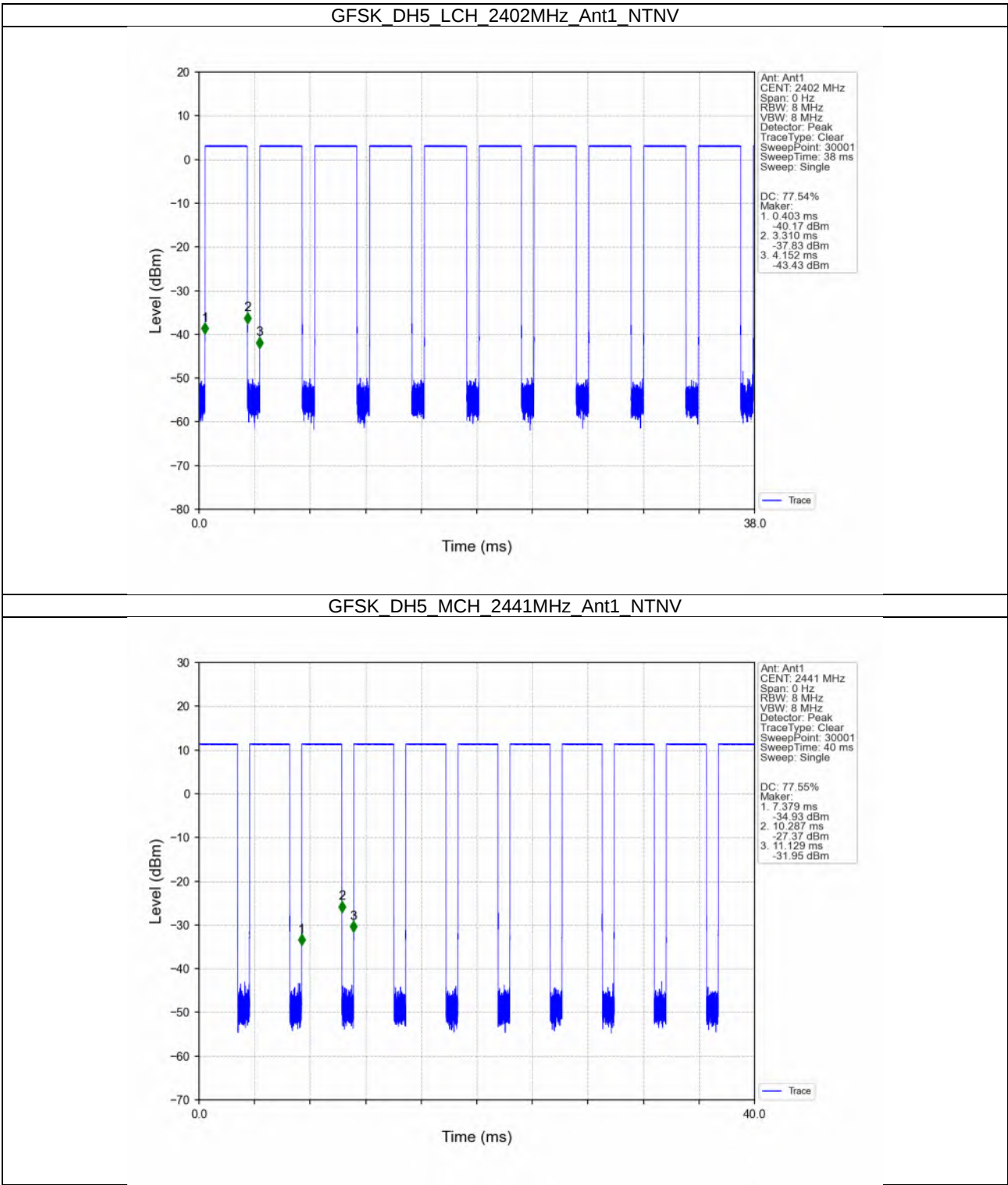
1.1 Test Result

1.1.1 Ant1

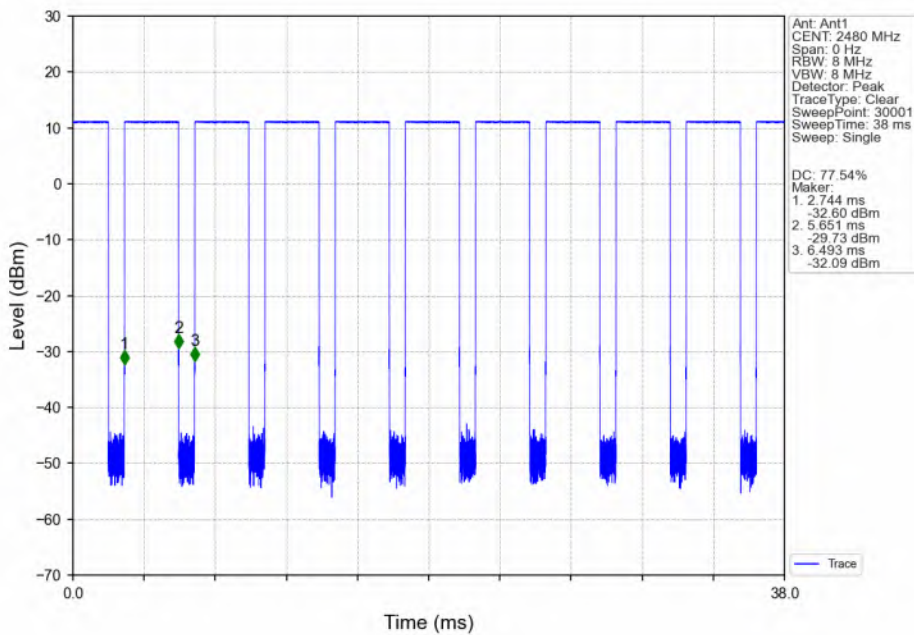
Ant1								
Mode	TX Type	Frequency (MHz)	Packet Type	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
GFSK	SISO	2402	DH5	2.907	3.749	77.54	1.10	0.03
		2441	DH5	2.908	3.750	77.55	1.10	0.03
		2480	DH5	2.907	3.749	77.54	1.10	0.01
Pi/4DQPSK	SISO	2402	2DH5	2.910	3.751	77.58	1.10	0.03
		2441	2DH5	2.909	3.749	77.59	1.10	0.01
		2480	2DH5	2.909	3.750	77.57	1.10	0.03
8DPSK	SISO	2402	3DH5	2.911	3.750	77.63	1.10	0.01
		2441	3DH5	2.910	3.749	77.62	1.10	0.04
		2480	3DH5	2.911	3.749	77.65	1.10	0.03

1.2 Test Graph

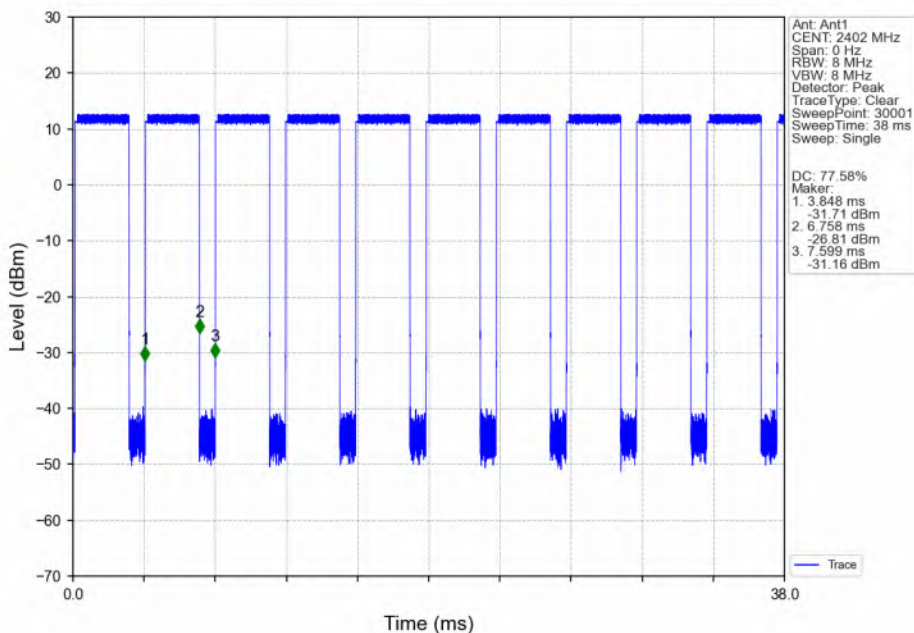
1.2.1 Ant1



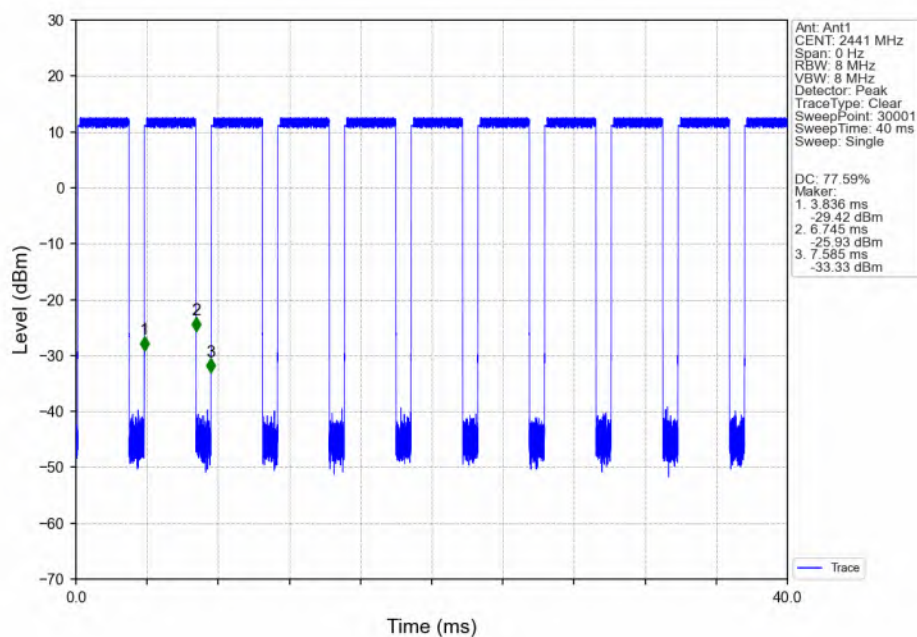
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



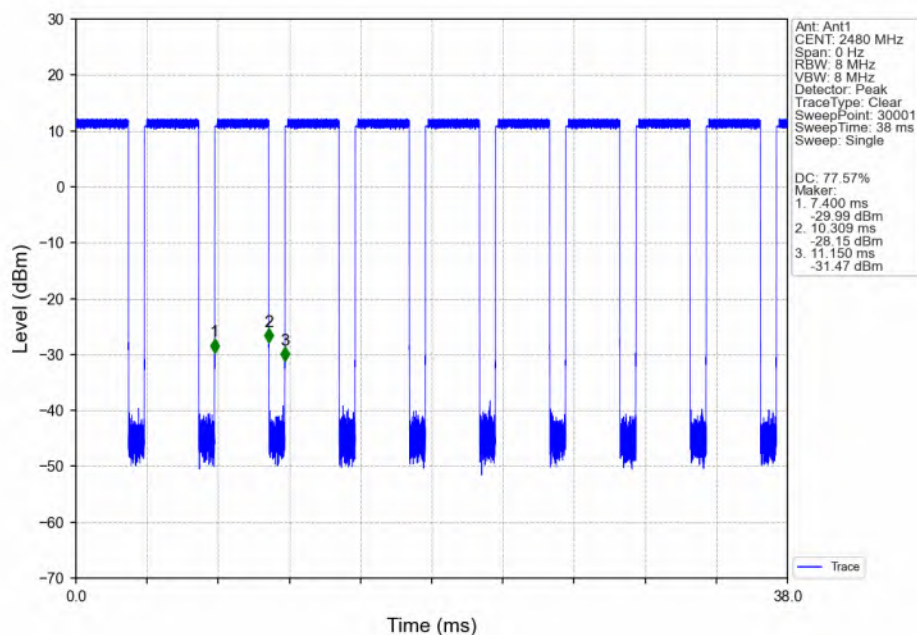
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



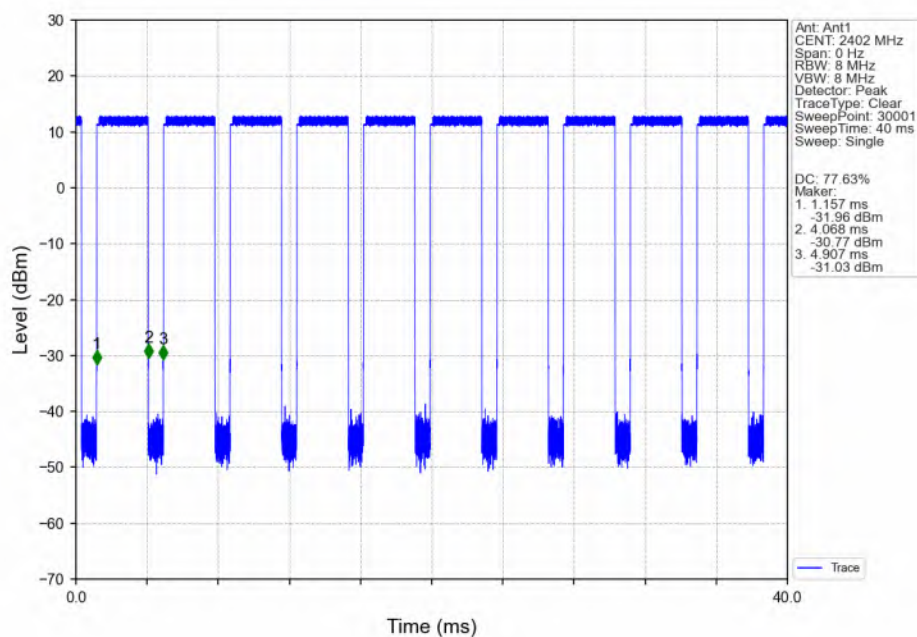
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



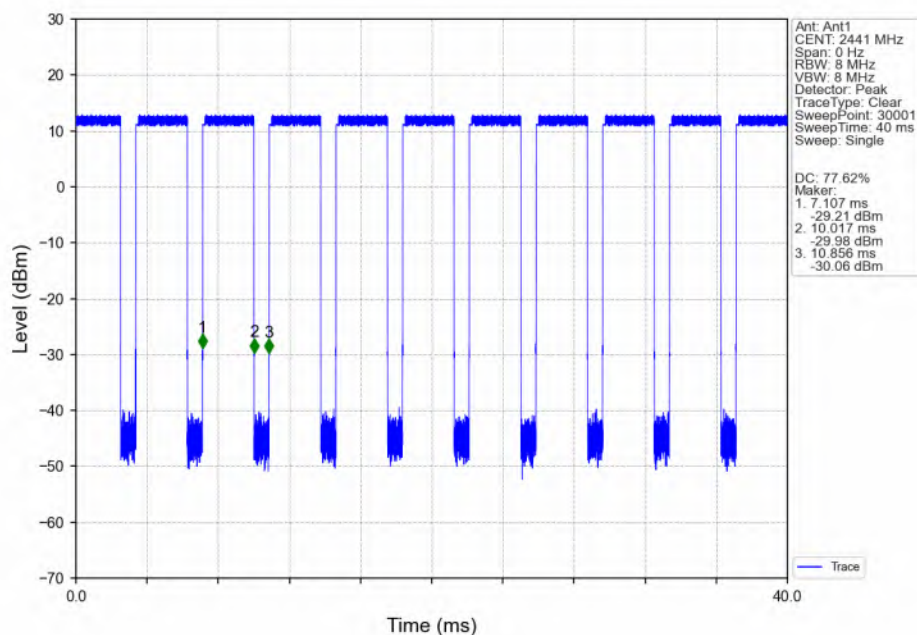
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV

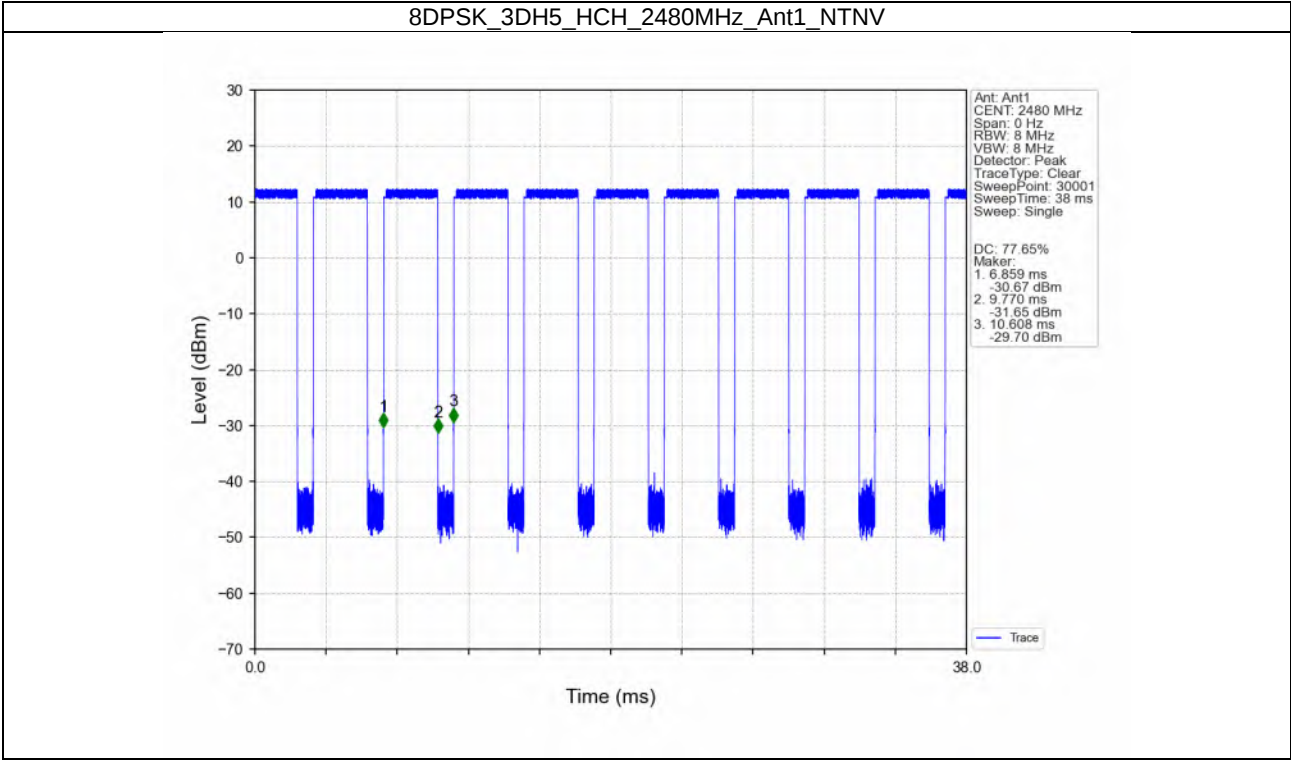


8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV





2. Bandwidth

2.1 Test Result

2.1.1 OBW

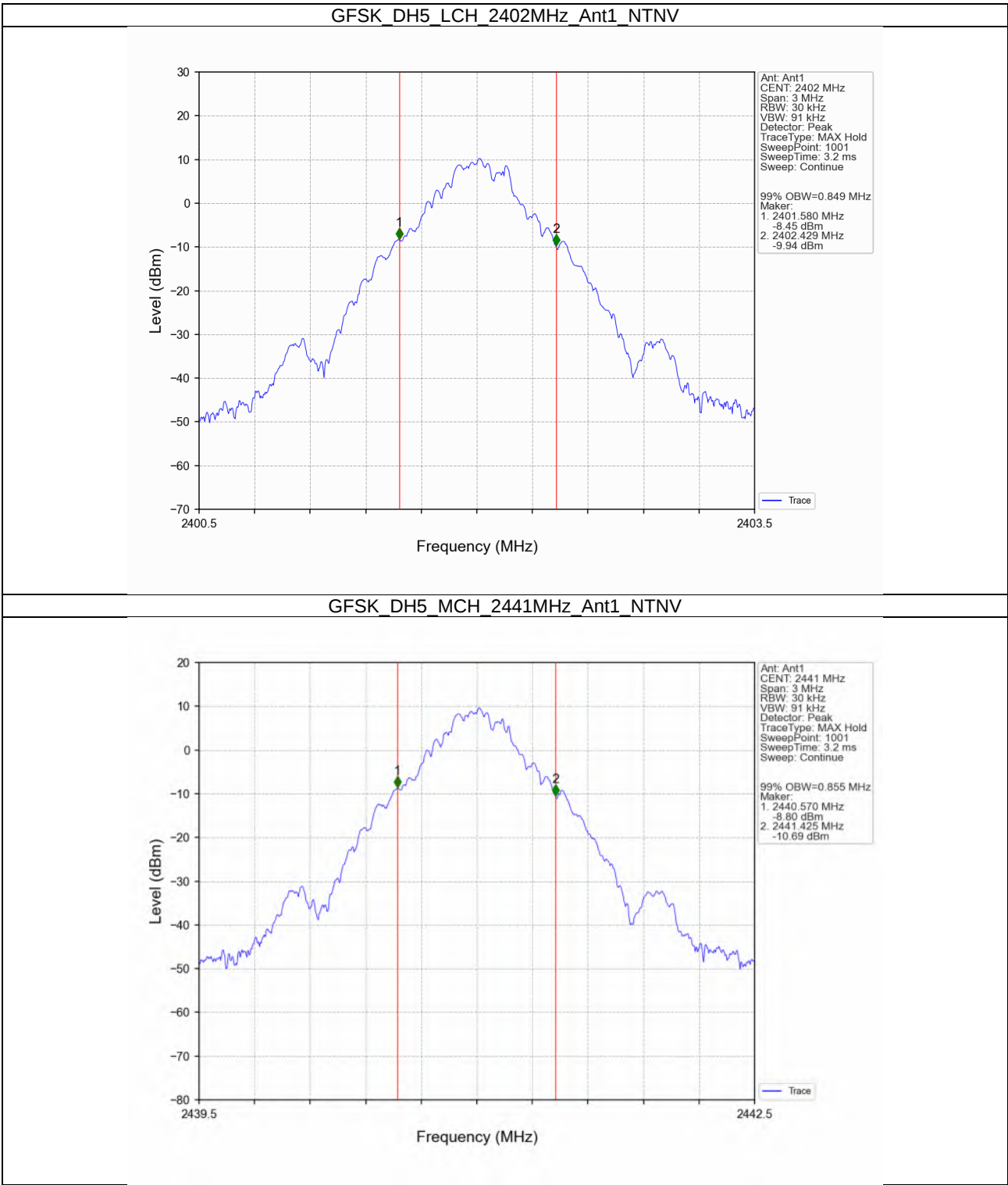
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	99% Occupied Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.849	/	Pass
		2441	DH5	1	0.855	/	Pass
		2480	DH5	1	0.850	/	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.183	/	Pass
		2441	2DH5	1	1.178	/	Pass
		2480	2DH5	1	1.180	/	Pass
8DPSK	SISO	2402	3DH5	1	1.190	/	Pass
		2441	3DH5	1	1.193	/	Pass
		2480	3DH5	1	1.190	/	Pass

2.1.2 20dB BW

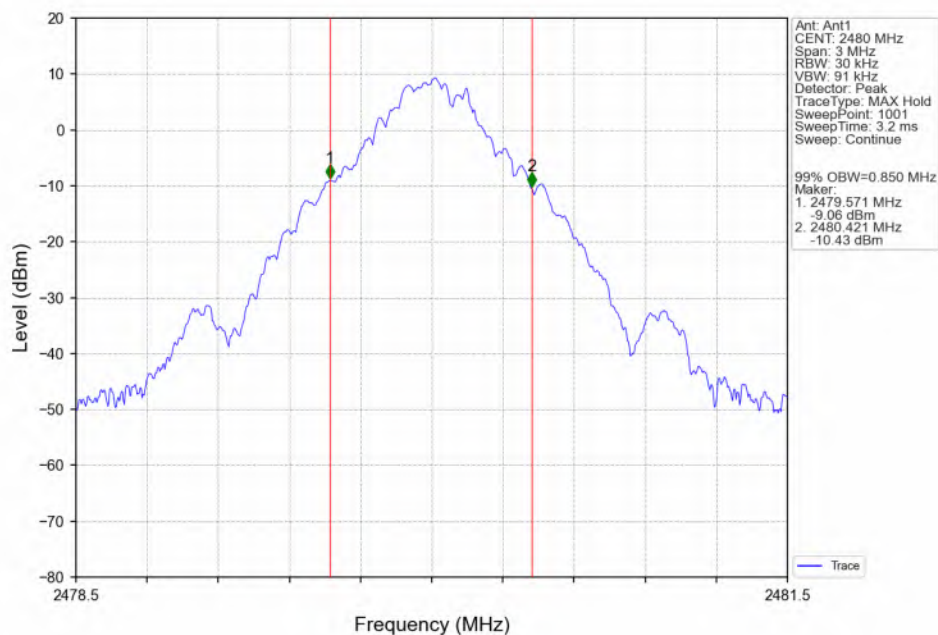
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	20dB Bandwidth (MHz)		Verdict
					Result	Limit	
GFSK	SISO	2402	DH5	1	0.937	/	Pass
		2441	DH5	1	0.935	/	Pass
		2480	DH5	1	0.937	/	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.295	/	Pass
		2441	2DH5	1	1.294	/	Pass
		2480	2DH5	1	1.290	/	Pass
8DPSK	SISO	2402	3DH5	1	1.308	/	Pass
		2441	3DH5	1	1.306	/	Pass
		2480	3DH5	1	1.307	/	Pass

2.2 Test Graph

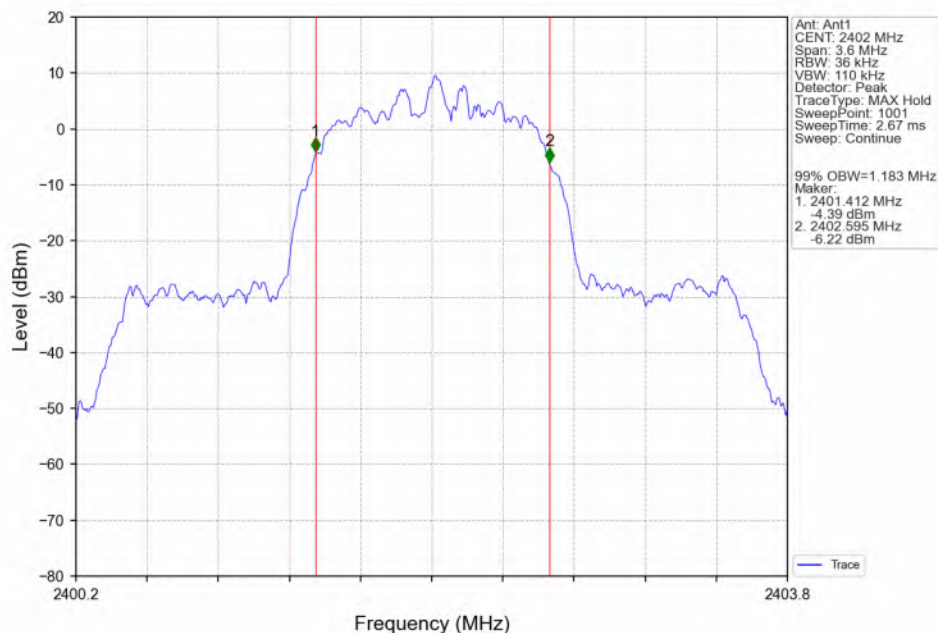
2.2.1 OBW



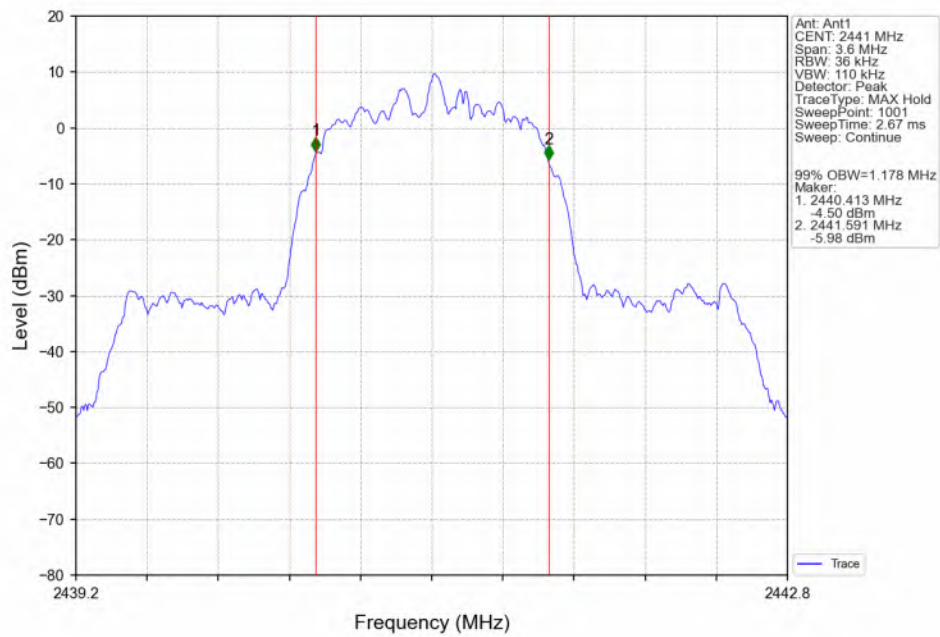
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



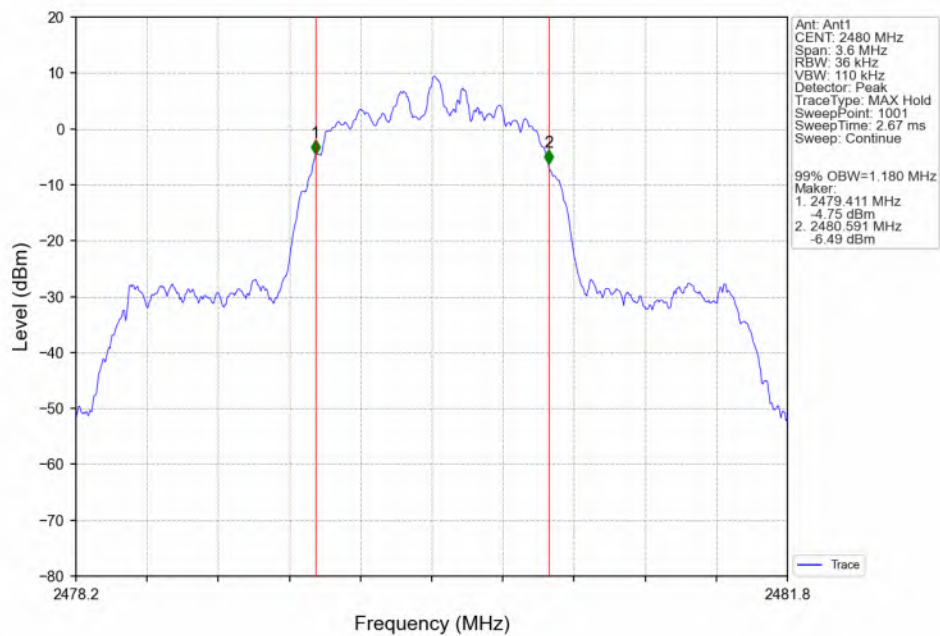
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



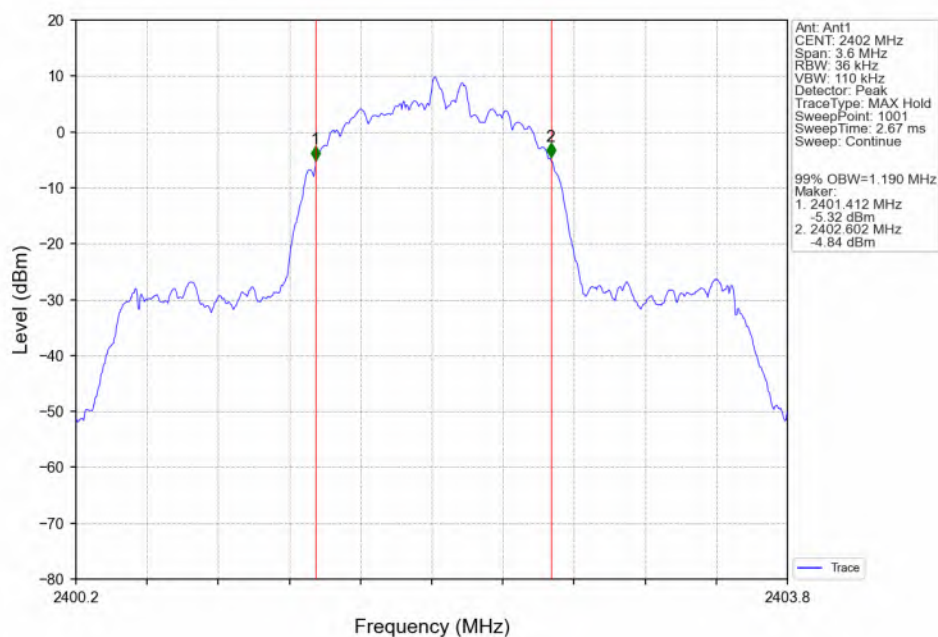
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



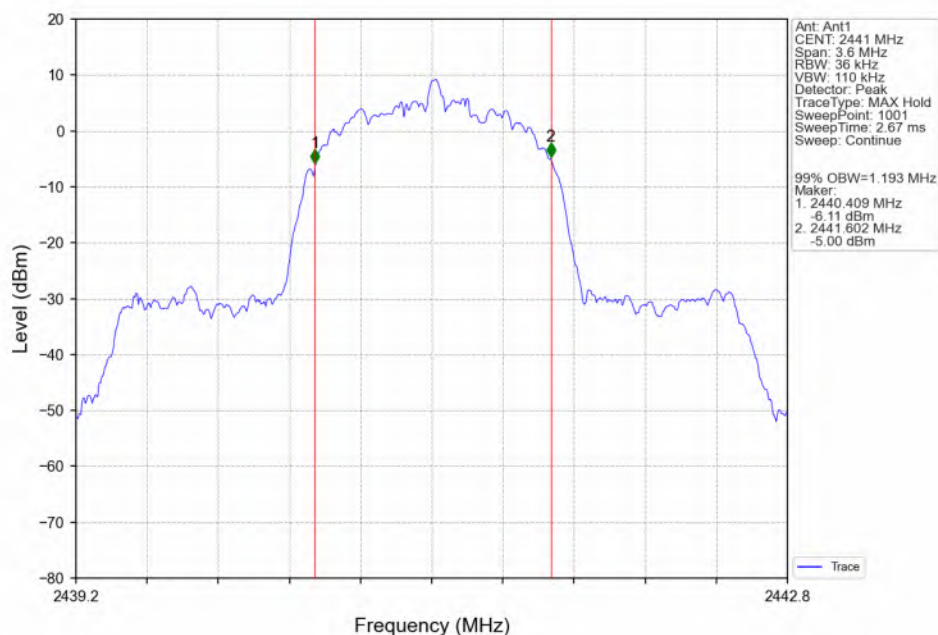
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



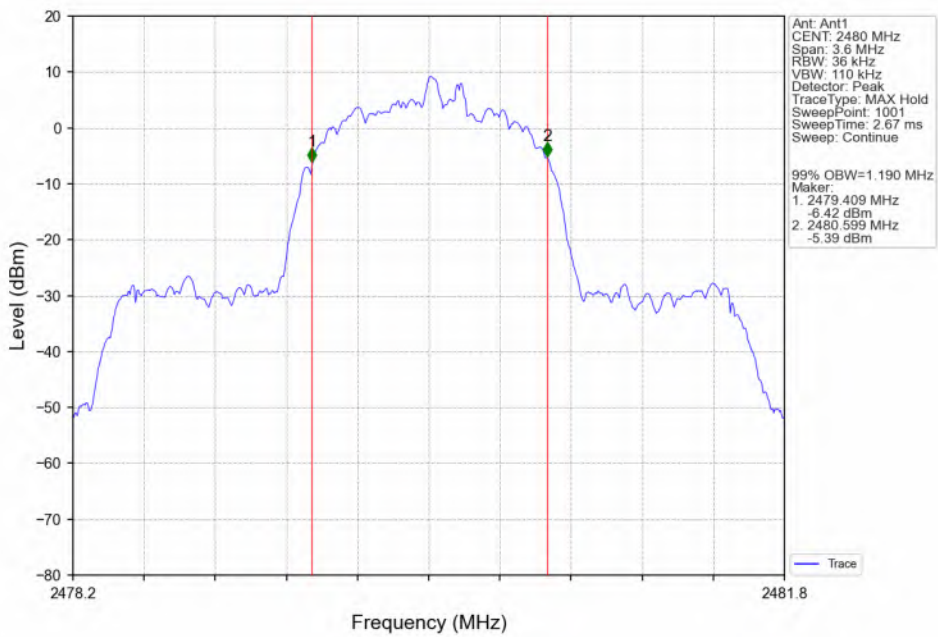
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



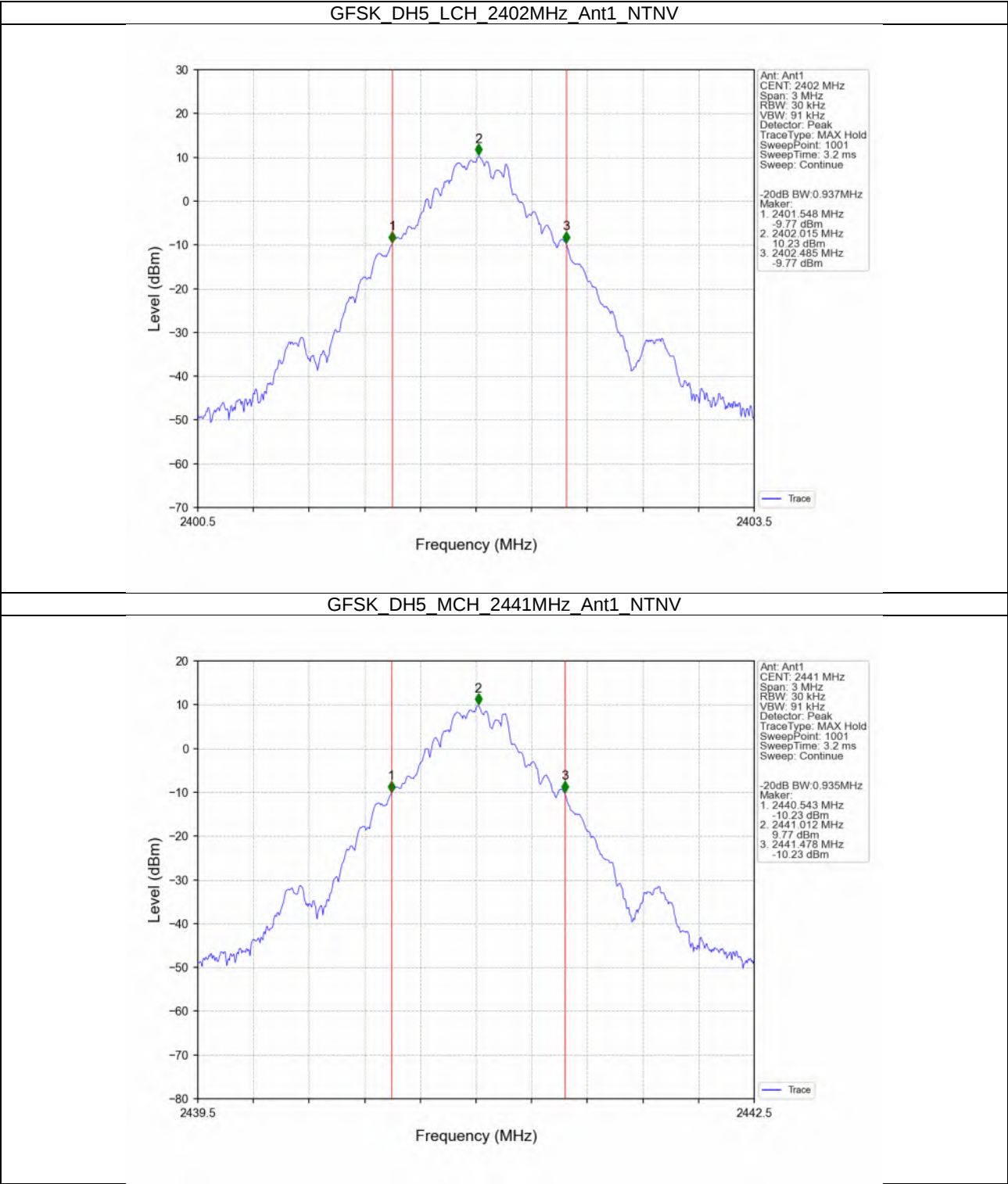
8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



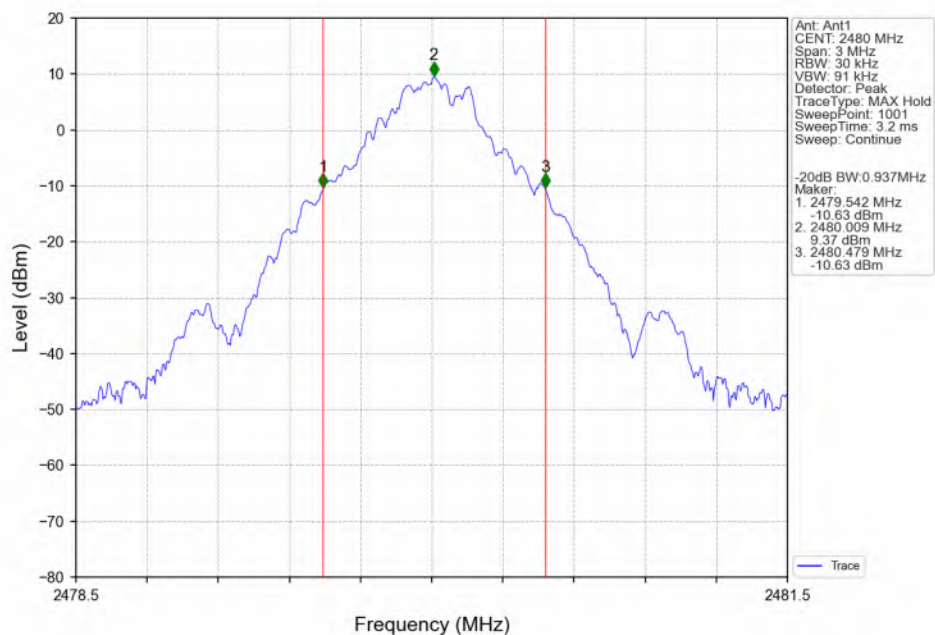
8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



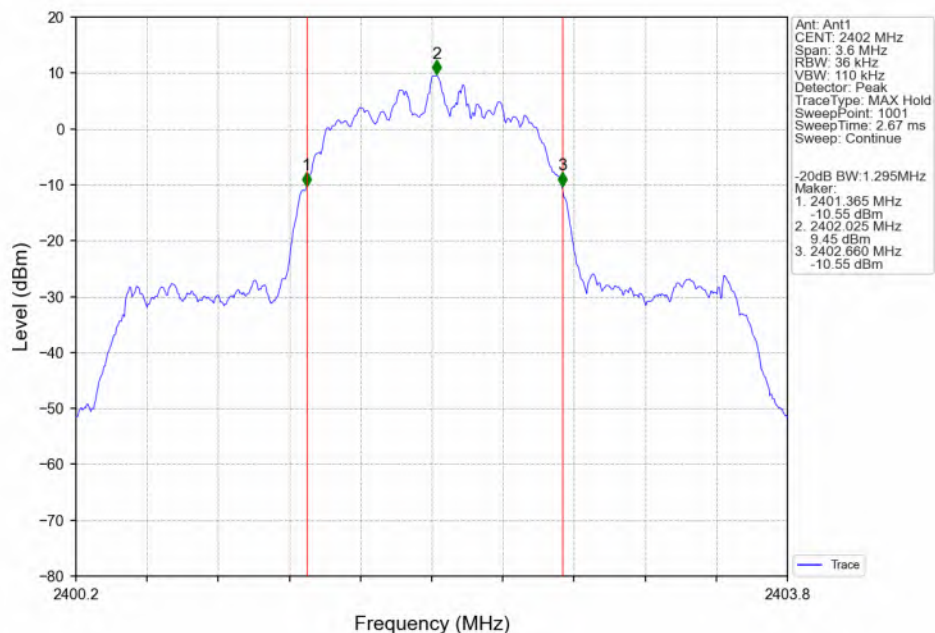
2.2.2 20dB BW



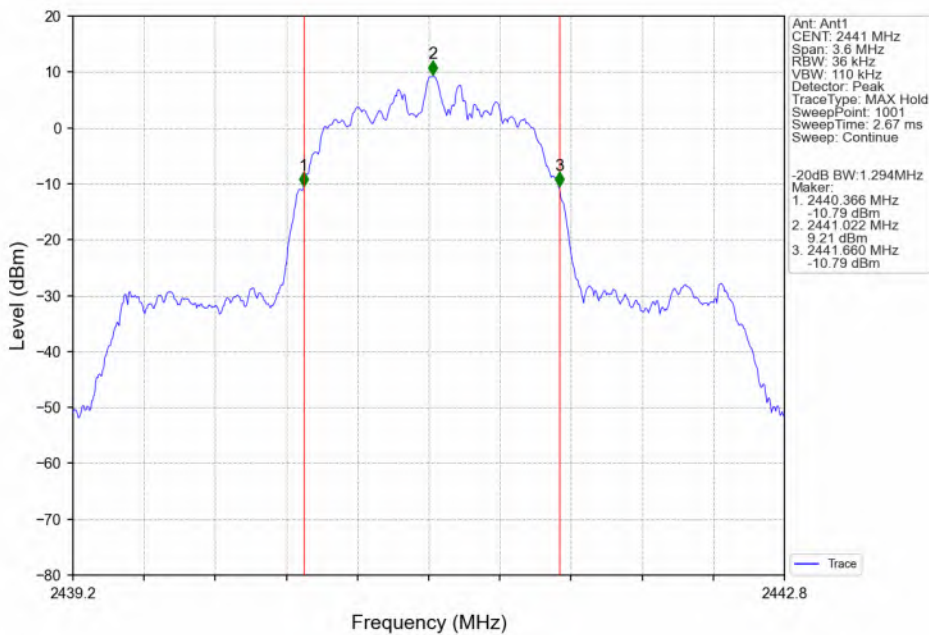
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



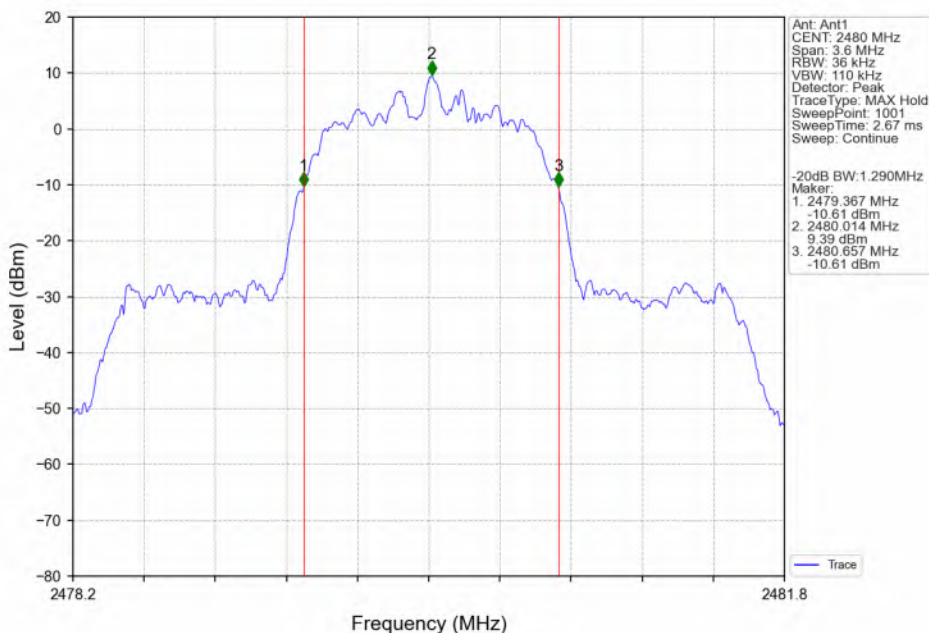
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



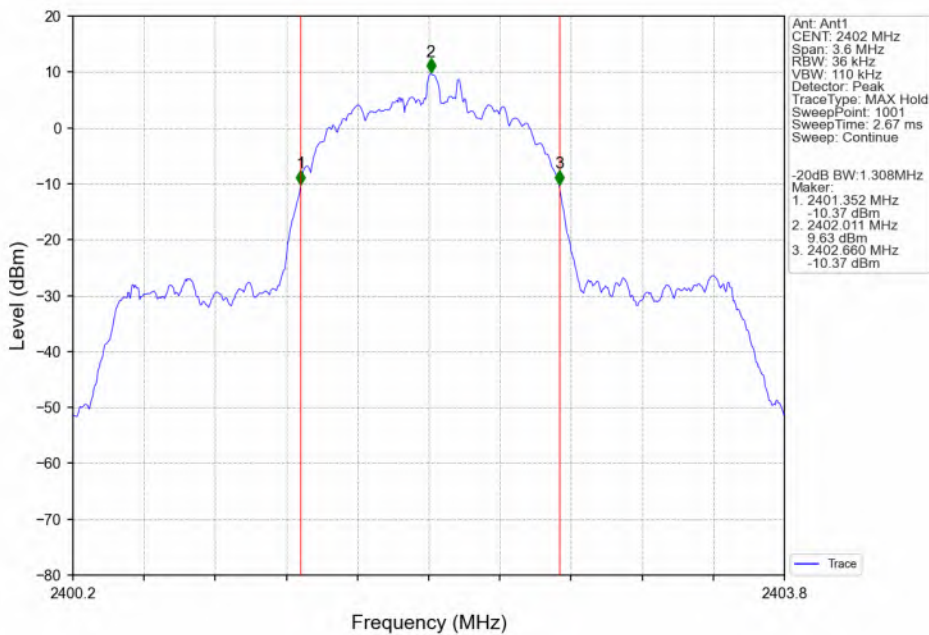
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



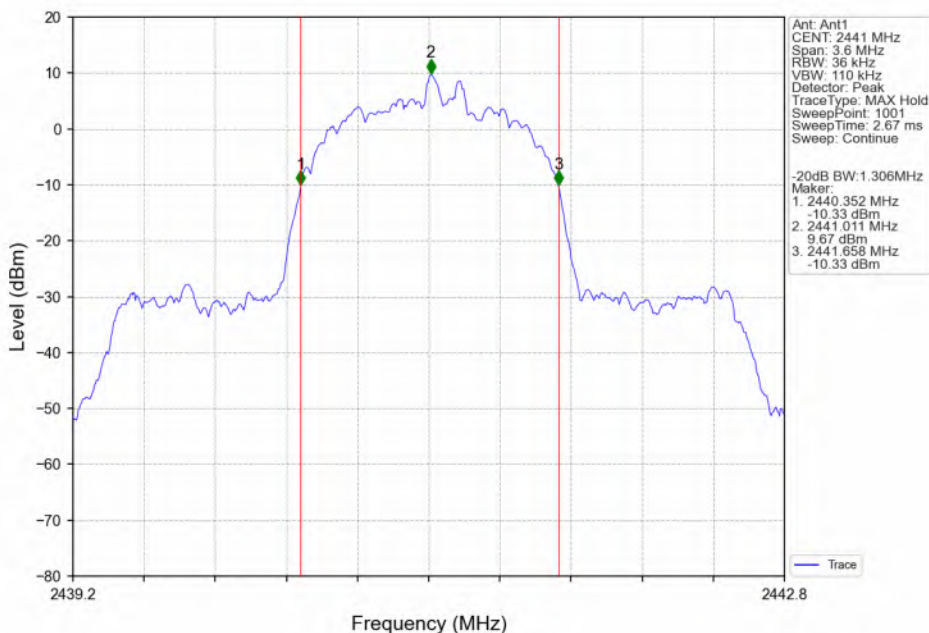
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



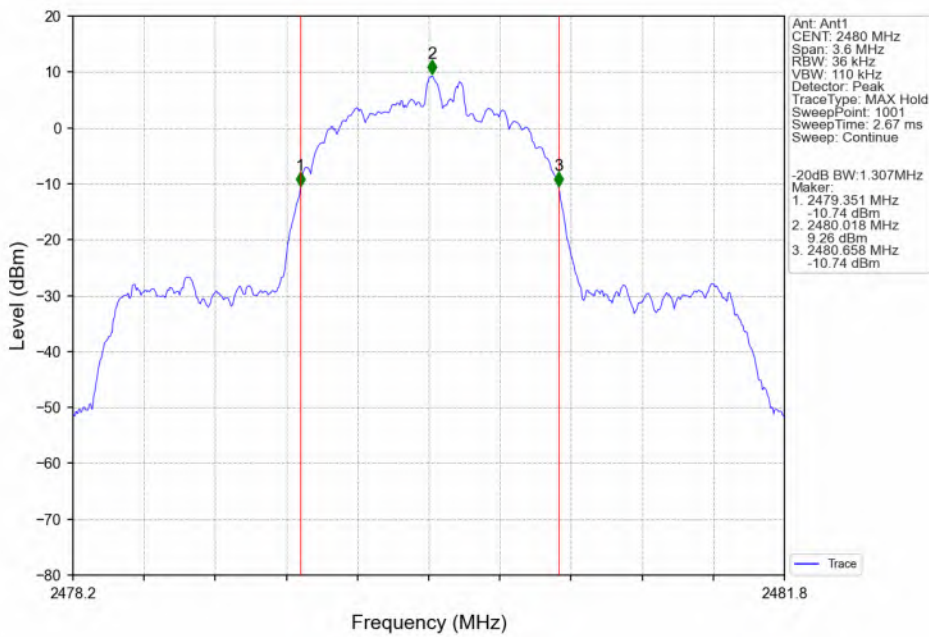
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



3. Maximum Conducted Output Power

3.1 Test Result

3.1.1 Power

Mode	TX Type	Frequency (MHz)	Packet Type	Maximum Peak Conducted Output Power (dBm)		Verdict
				ANT1	Limit	
GFSK	SISO	2402	DH5	11.90	<=30	Pass
		2441	DH5	11.38	<=30	Pass
		2480	DH5	11.11	<=30	Pass
Pi/4DQPSK	SISO	2402	2DH5	12.59	<=20.97	Pass
		2441	2DH5	12.51	<=20.97	Pass
		2480	2DH5	12.09	<=20.97	Pass
8DPSK	SISO	2402	3DH5	12.79	<=20.97	Pass
		2441	3DH5	12.76	<=20.97	Pass
		2480	3DH5	12.26	<=20.97	Pass

Note1: Antenna Gain: Ant1: 1.70dBi;

4. Carrier Frequency Separation

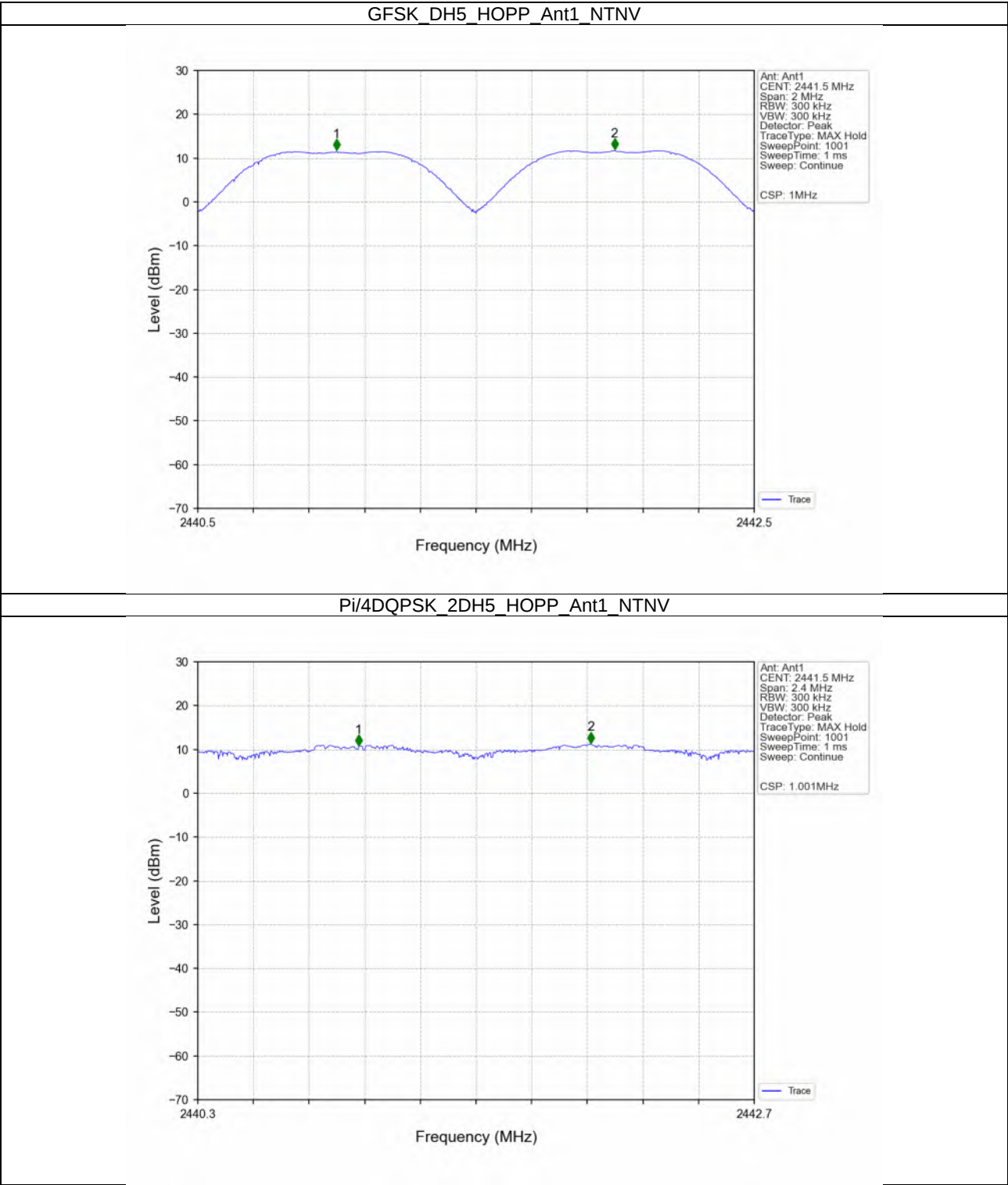
4.1 Test Result

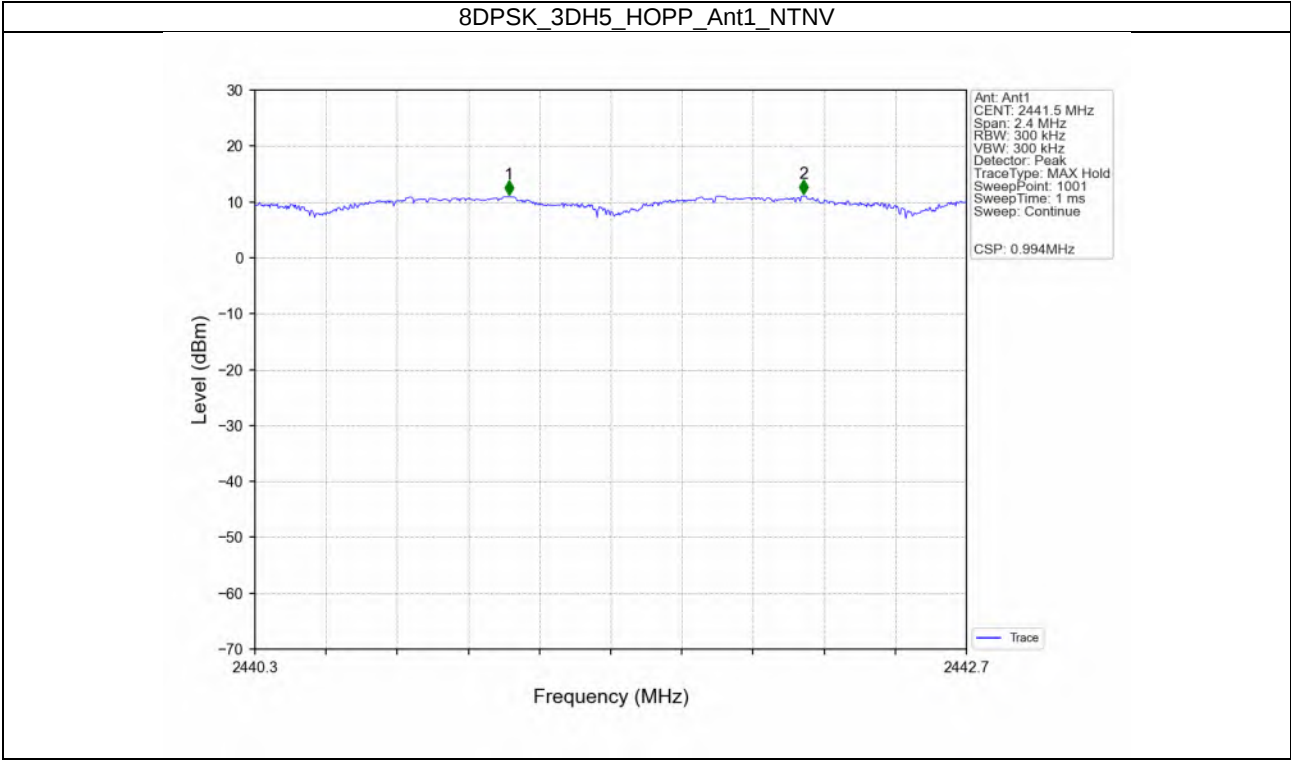
4.1.1 Ant1

Ant1							
Mode	TX Type	Frequency (MHz)	Packet Type	Channel Separation (MHz)	20dB Bandwidth (MHz)	Limit (MHz)	Verdict
GFSK	SISO	HOPP	DH5	1.000	0.937	≥ 0.937	Pass
Pi/4DQPSK	SISO	HOPP	2DH5	1.001	1.295	≥ 0.863	Pass
8DPSK	SISO	HOPP	3DH5	0.994	1.308	≥ 0.872	Pass

4.2 Test Graph

4.2.1 Ant1





5. Number of Hopping Frequencies

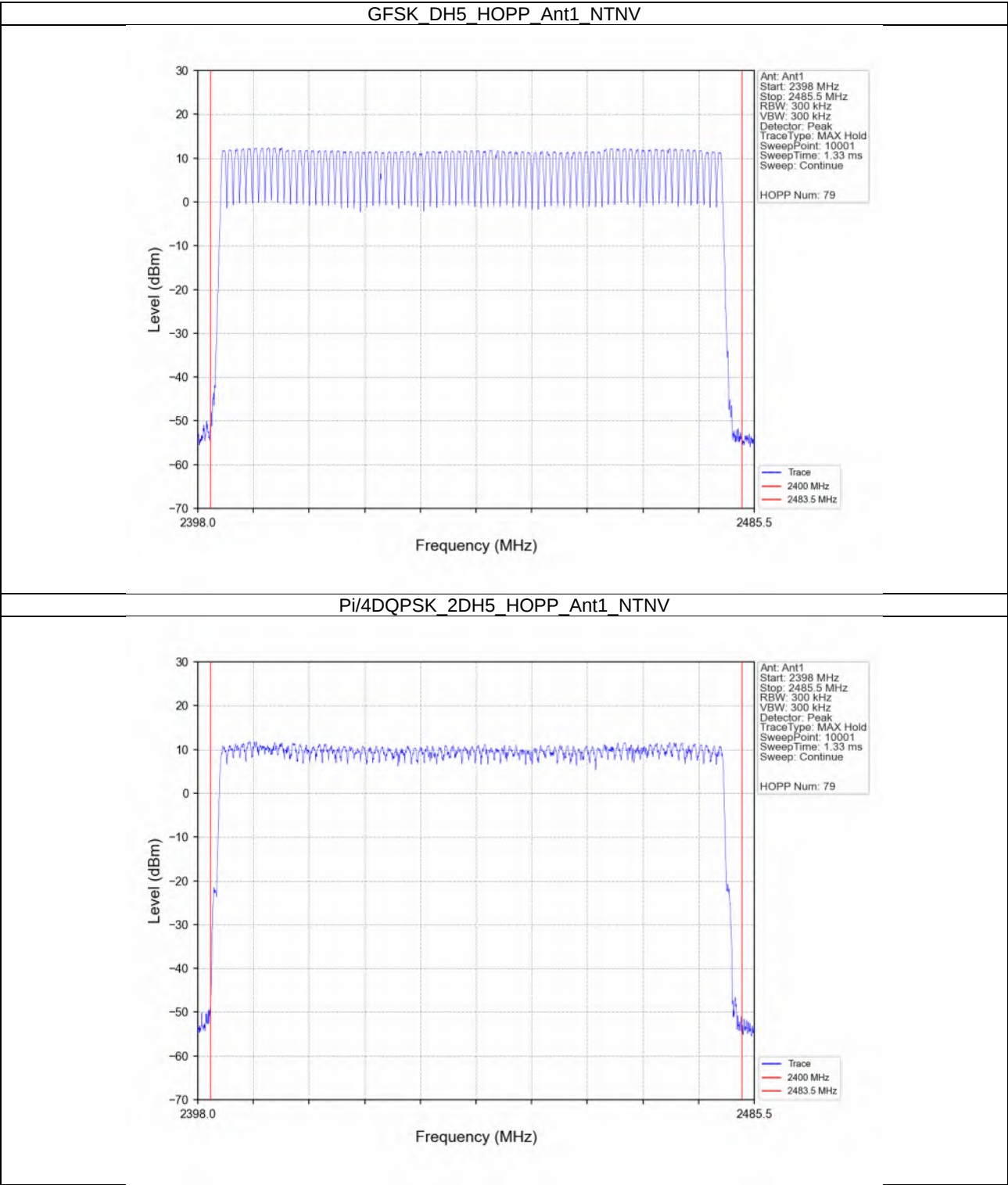
5.1 Test Result

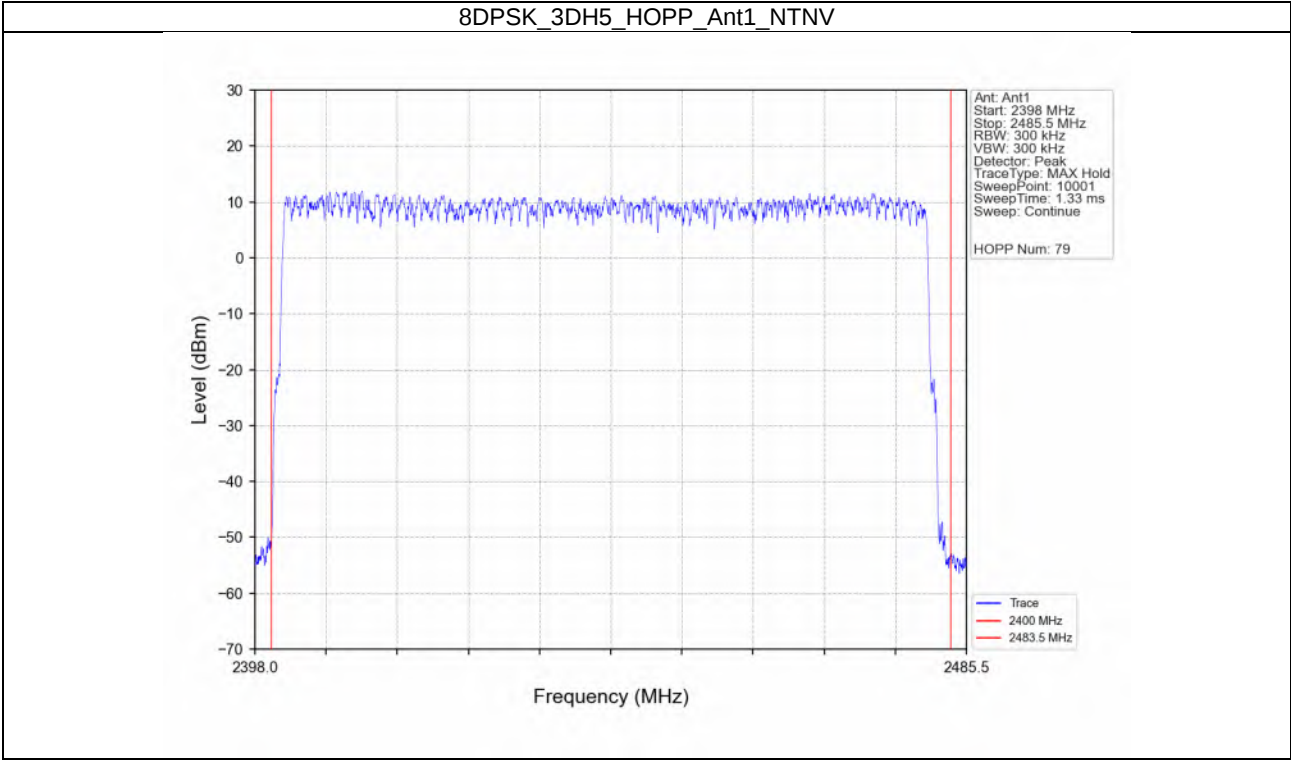
5.1.1 HoppNum

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

5.2 Test Graph

5.2.1 HoppNum





6. Time of Occupancy (Dwell Time)

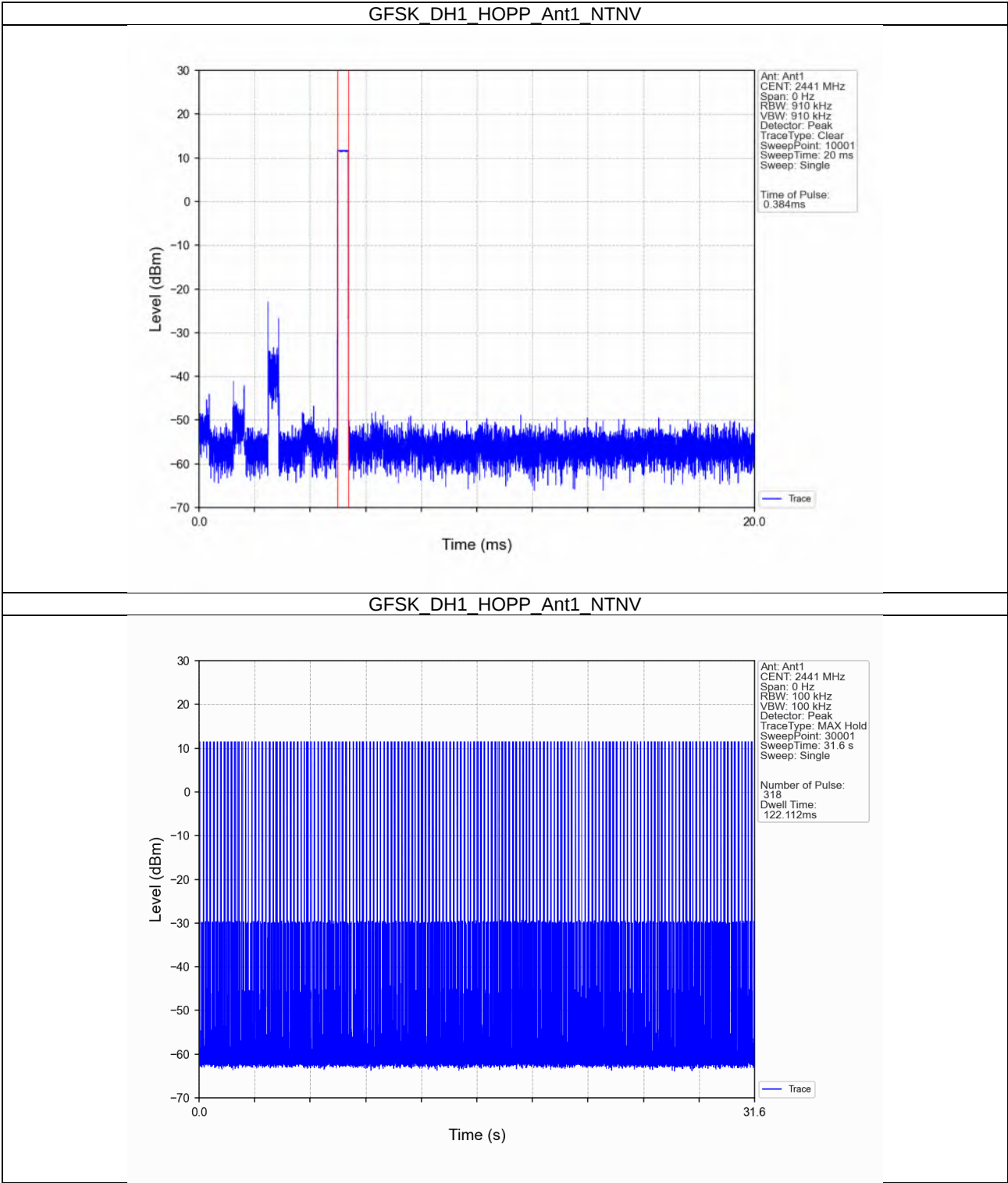
6.1 Test Result

6.1.1 Ant1

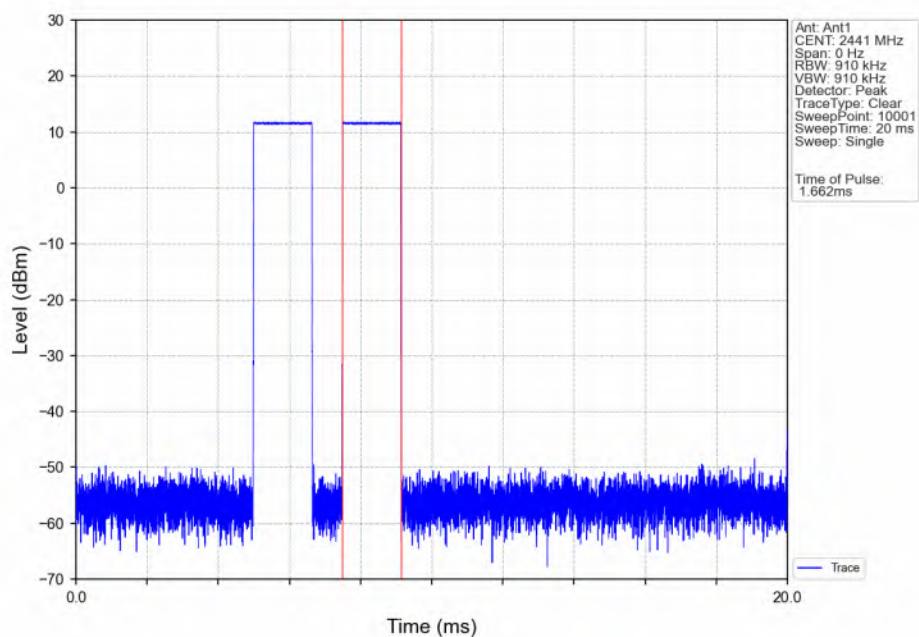
Ant1									
Mode	TX Type	Frequency (MHz)	Packet Type	Duration of Single Pulse (ms)	Observation Period (s)	Num of Pulse in Observation Period	Dwell Time (ms)	Limit (ms)	Verdict
GFSK	SISO	HOPP	DH1	0.384	31.600	318	122.112	<=400	Pass
			DH3	1.662	31.600	157	260.934	<=400	Pass
			DH5	2.890	31.600	112	323.680	<=400	Pass
Pi/4DQPSK	SISO	HOPP	2DH1	0.392	31.600	320	125.440	<=400	Pass
			2DH3	1.644	31.600	161	264.684	<=400	Pass
			2DH5	2.914	31.600	100	291.400	<=400	Pass
8DPSK	SISO	HOPP	3DH1	0.392	31.600	319	125.048	<=400	Pass
			3DH3	1.642	31.600	168	275.856	<=400	Pass
			3DH5	2.914	31.600	106	308.884	<=400	Pass

6.2 Test Graph

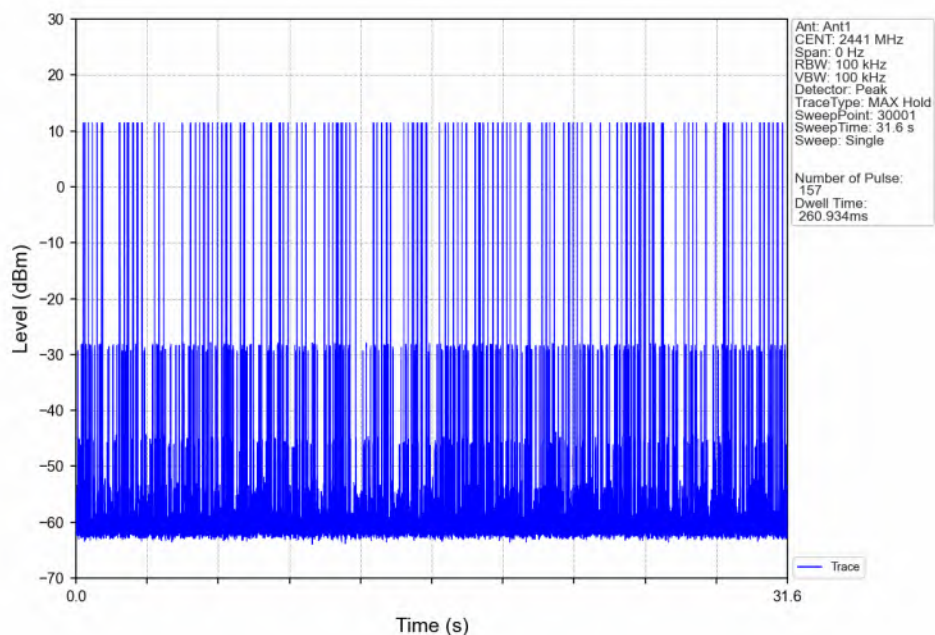
6.2.1 Ant1



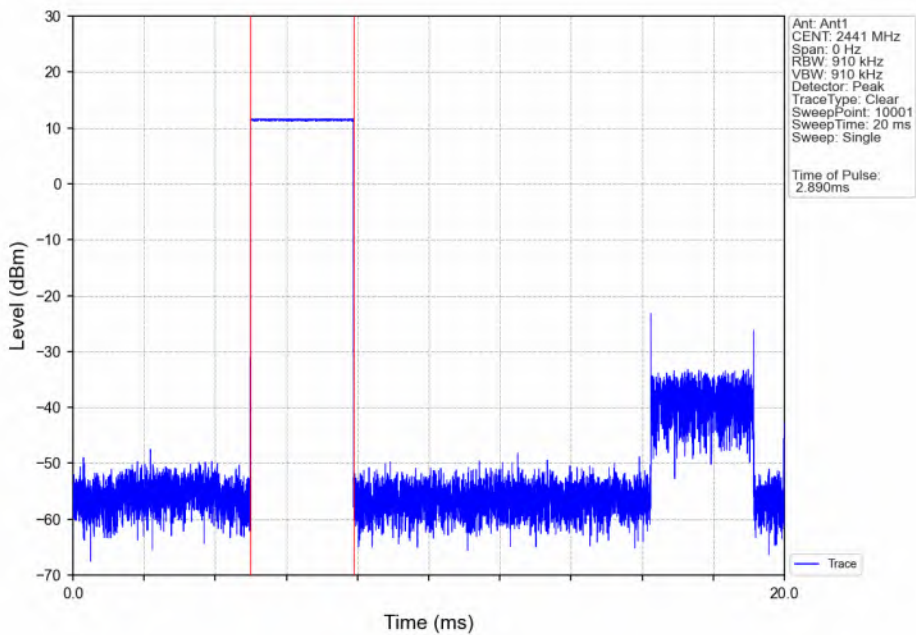
GFSK_DH3_HOPP_Ant1_NTNV



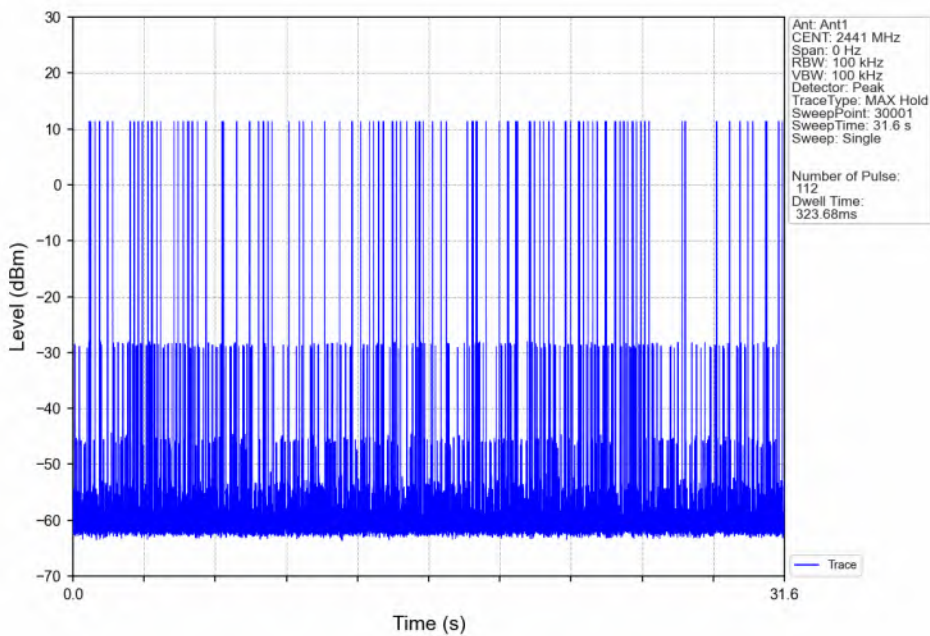
GFSK_DH3_HOPP_Ant1_NTNV

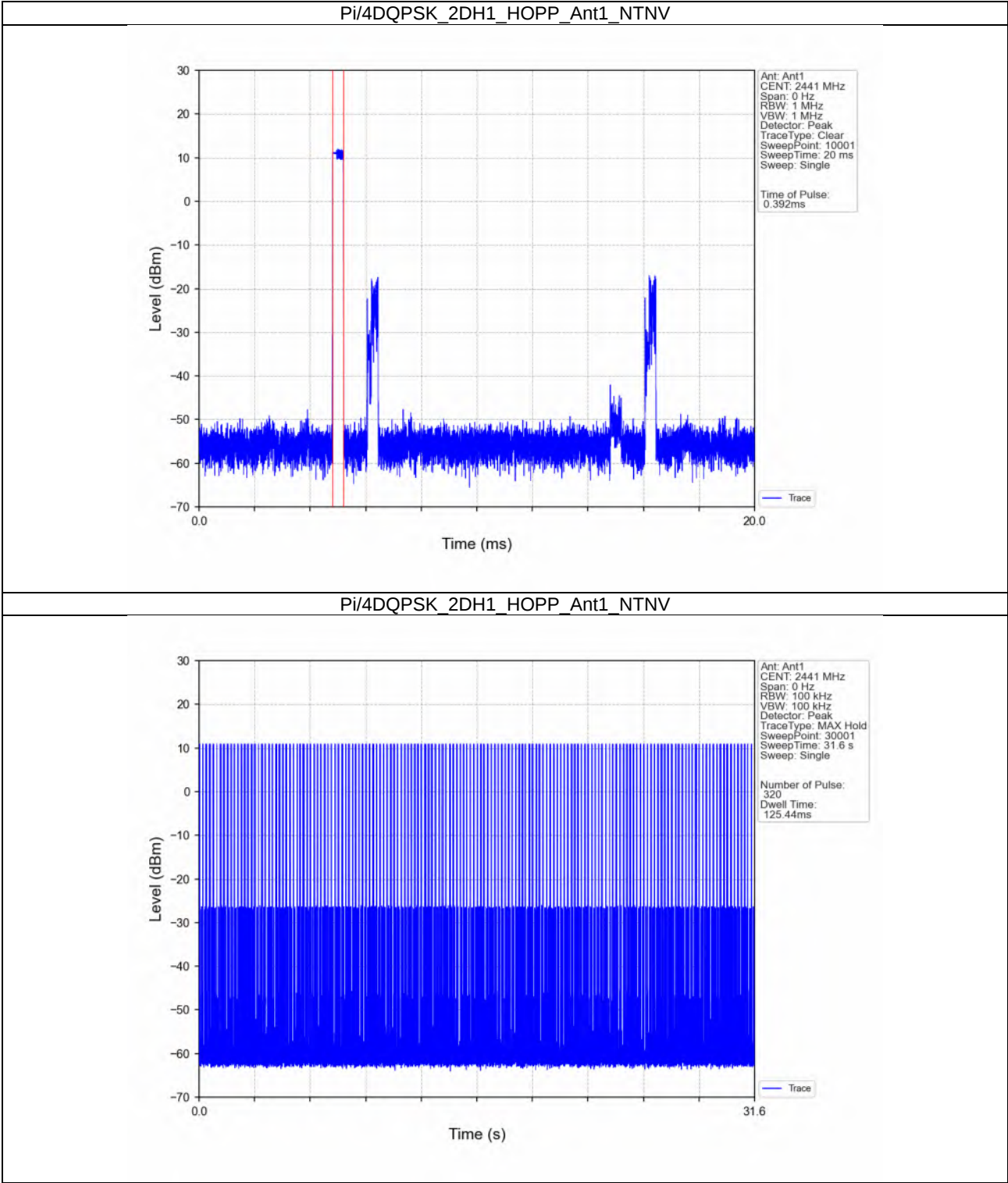


GFSK_DH5_HOPP_Ant1_NTNV

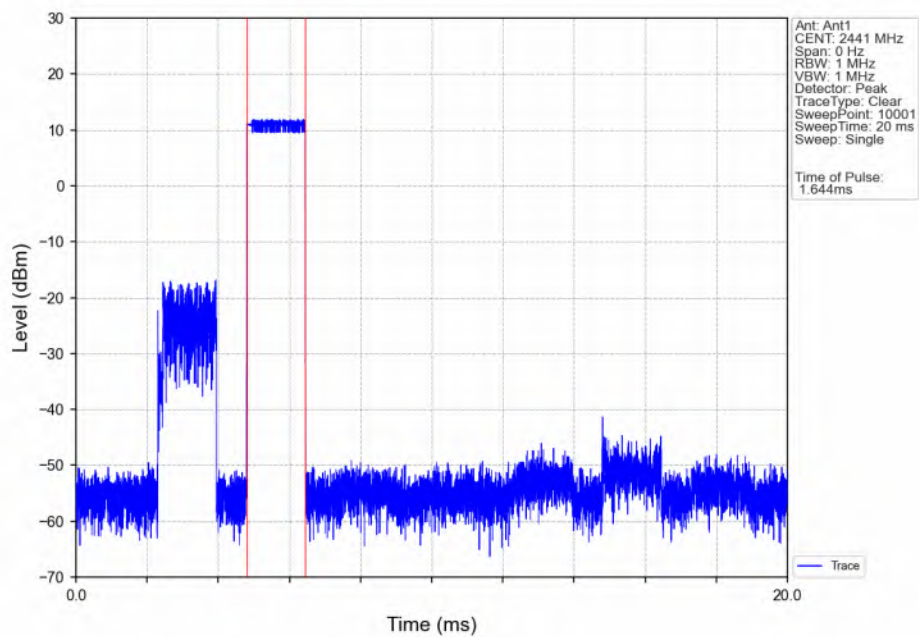


GFSK_DH5_HOPP_Ant1_NTNV

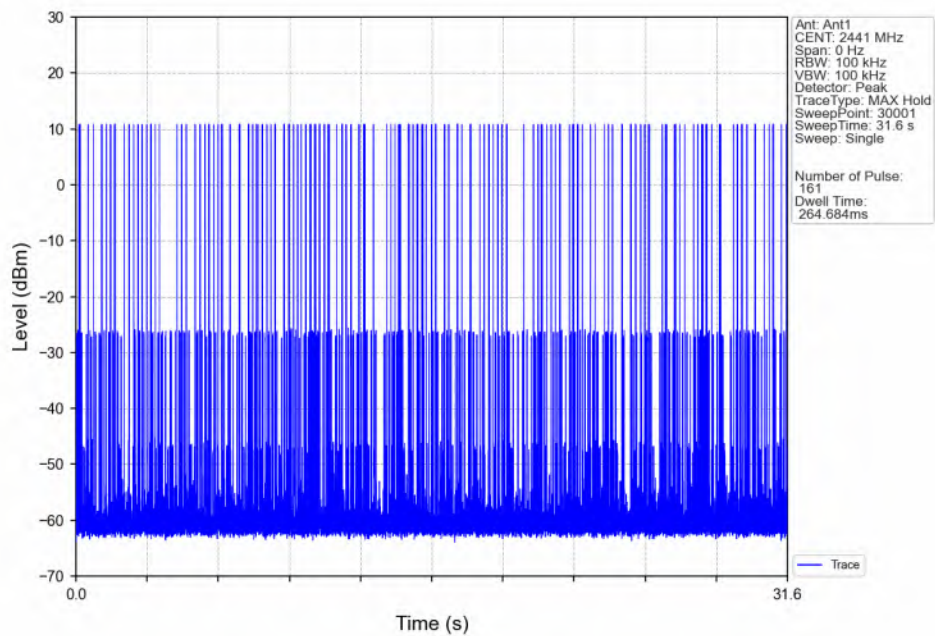


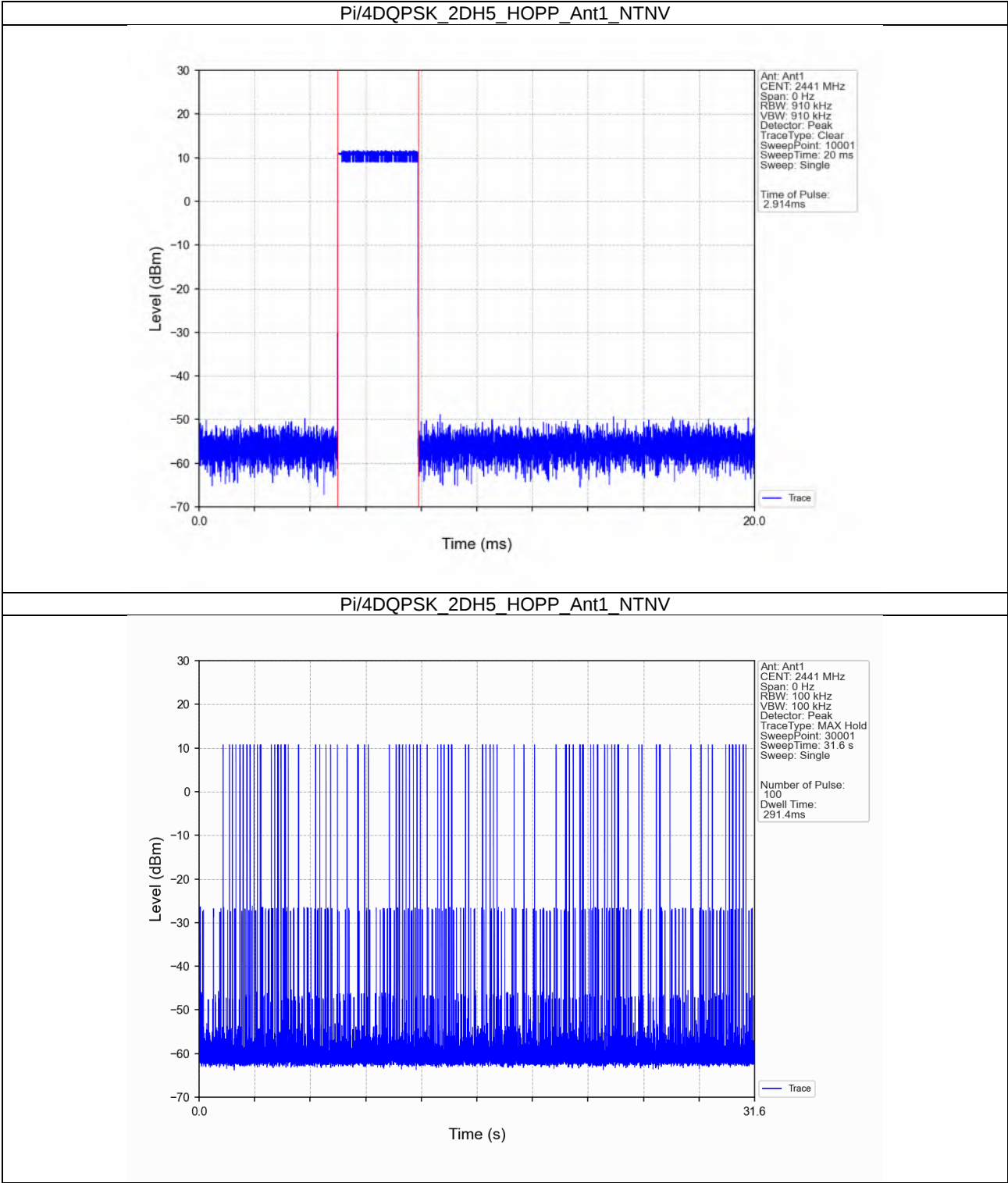


Pi/4DQPSK_2DH3_HOPP_Ant1_NTNV

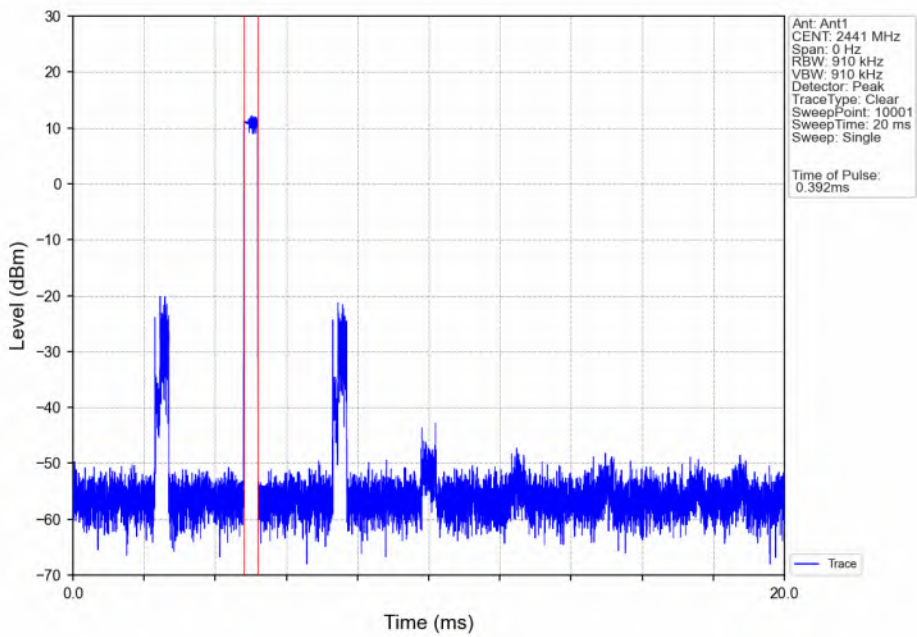


Pi/4DQPSK_2DH3_HOPP_Ant1_NTNV

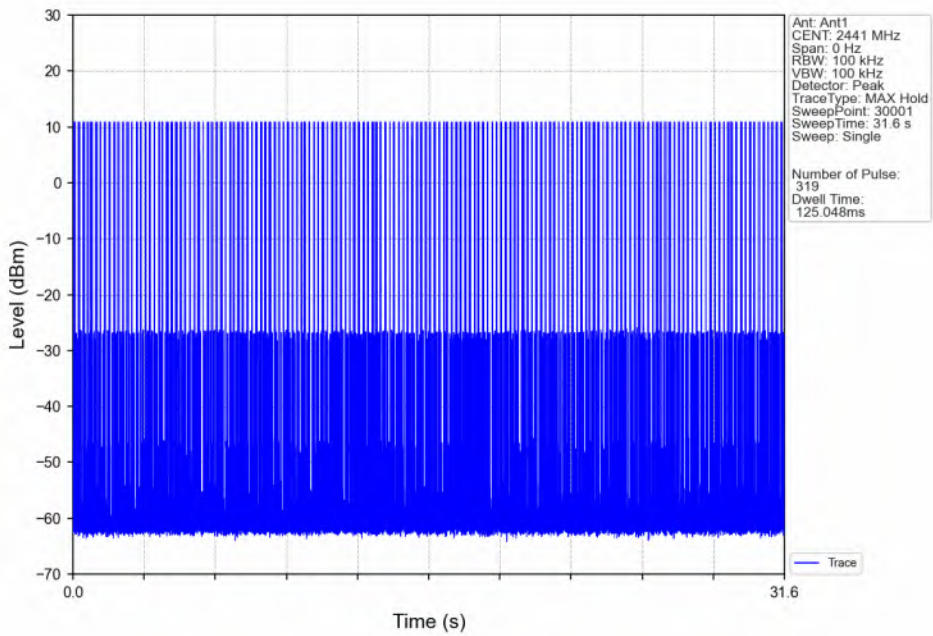




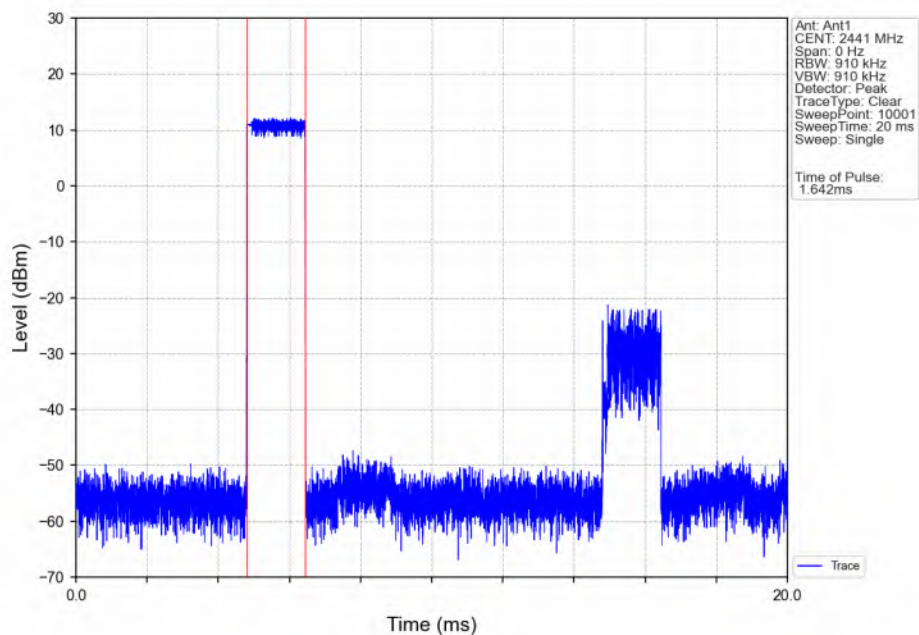
8DPSK_3DH1_HOPP_Ant1_NTNV



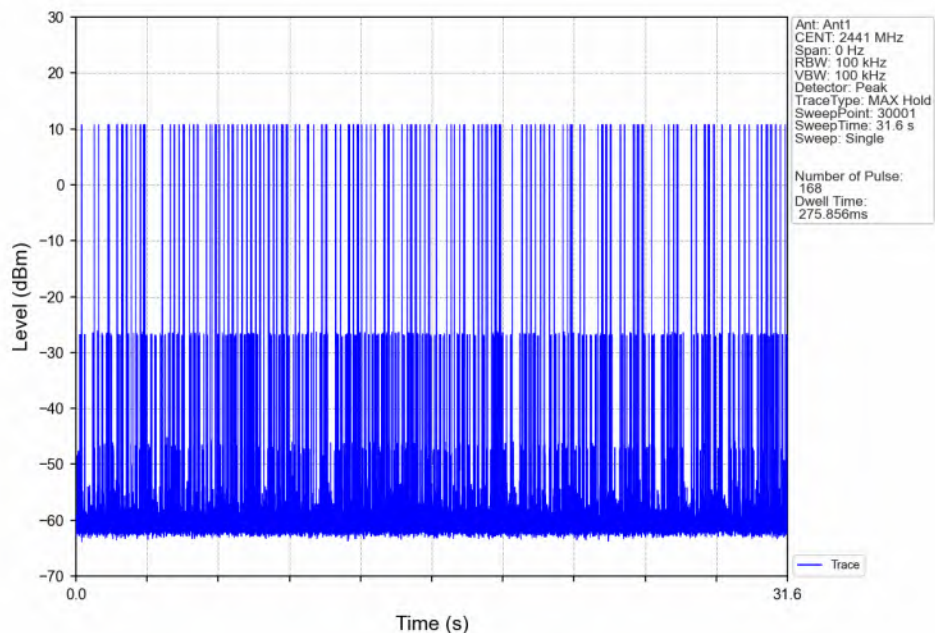
8DPSK_3DH1_HOPP_Ant1_NTNV



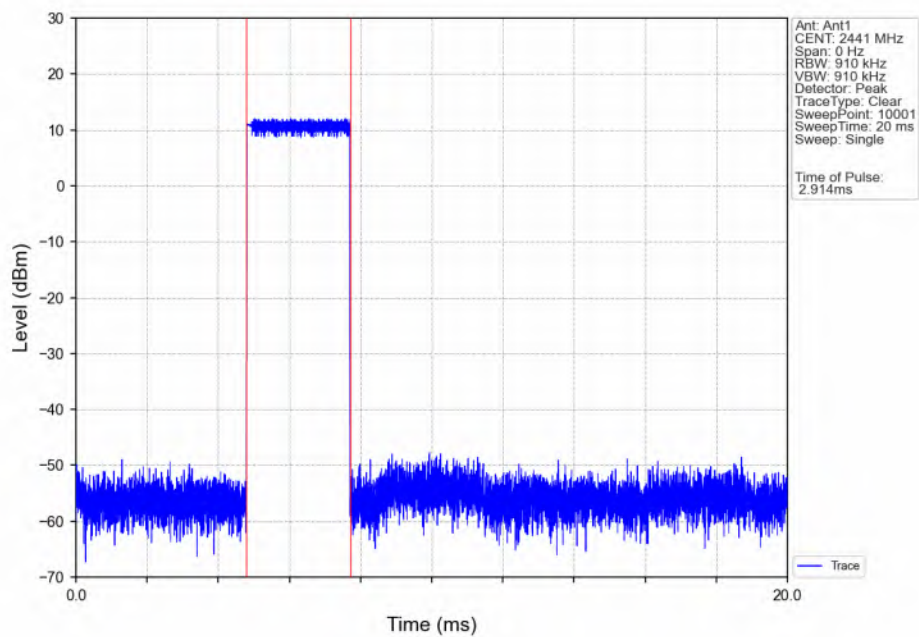
8DPSK_3DH3_HOPP_Ant1_NTNV



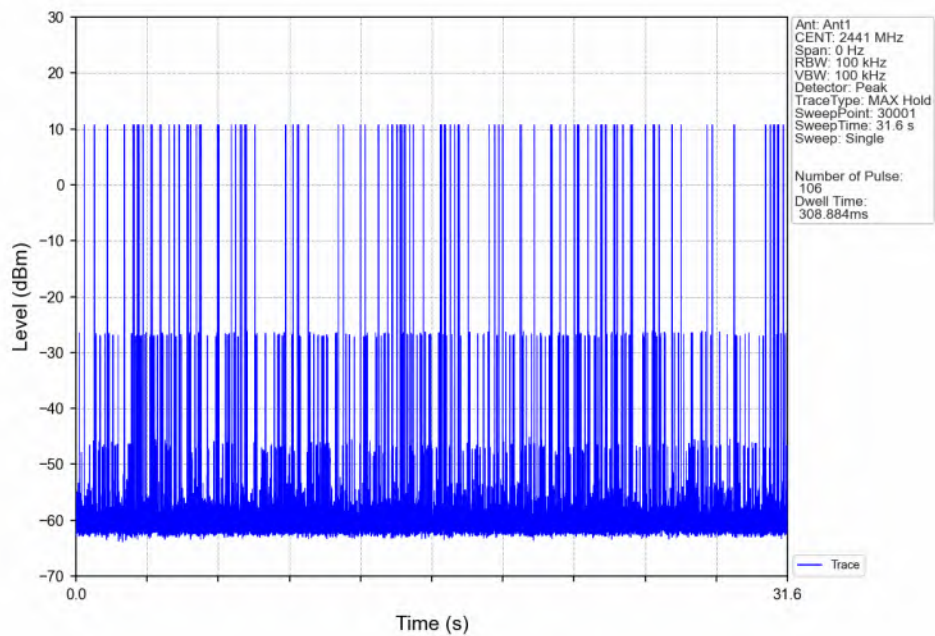
8DPSK_3DH3_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



7. Unwanted Emissions In Non-restricted Frequency Bands

7.1 Test Result

7.1.1 Ref

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)
GFSK	SISO	2402	DH5	1	11.69
		2441	DH5	1	11.16
		2480	DH5	1	10.85
Pi/4DQPSK	SISO	2402	2DH5	1	10.98
		2441	2DH5	1	10.90
		2480	2DH5	1	10.54
8DPSK	SISO	2402	3DH5	1	11.08
		2441	3DH5	1	10.88
		2480	3DH5	1	10.60

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.

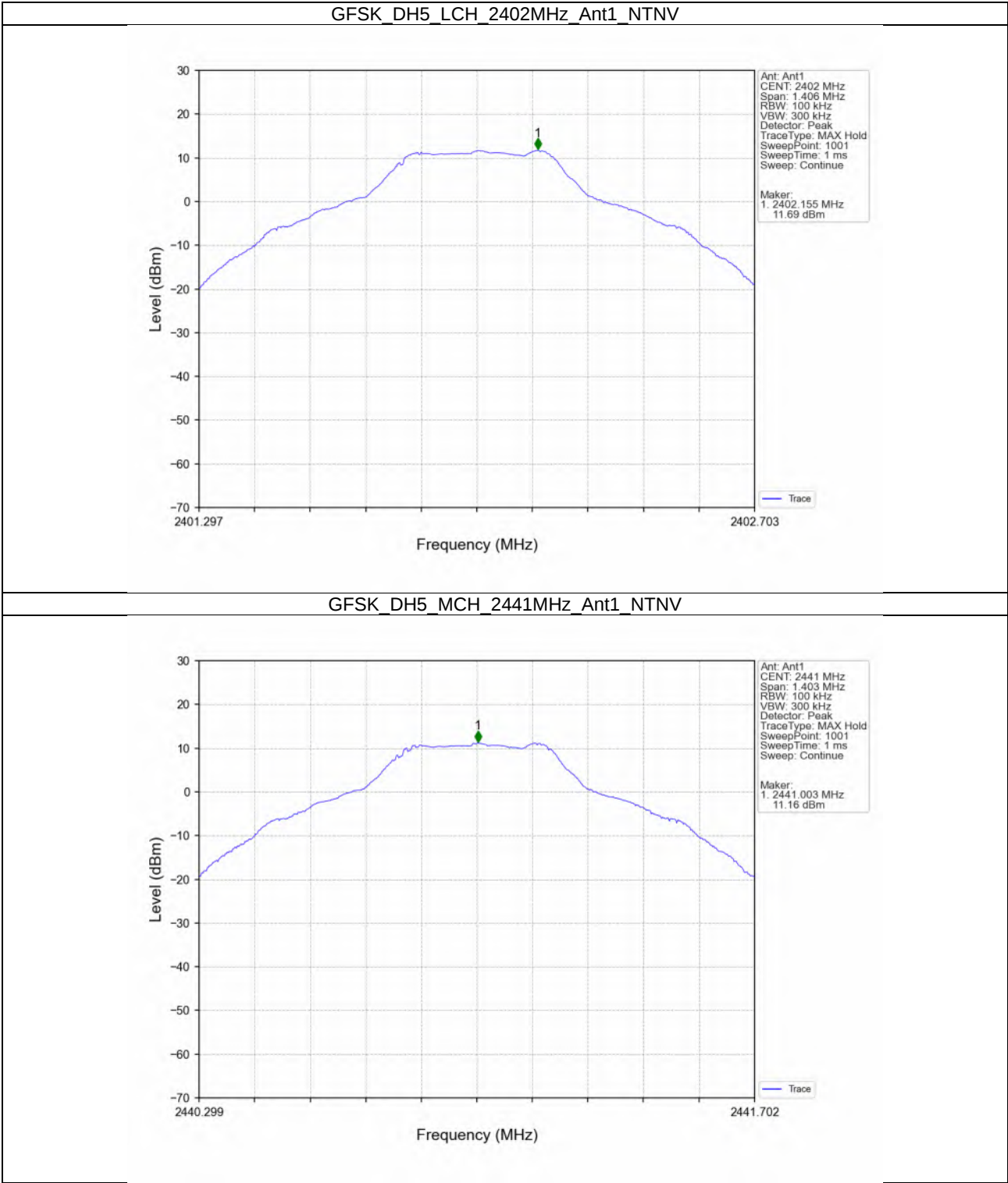
7.1.2 CSE

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
GFSK	SISO	2402	DH5	1	11.69	-8.31	Pass
		2441	DH5	1	11.69	-8.31	Pass
		2480	DH5	1	11.69	-8.31	Pass
		HOPP	DH5	1	11.69	-8.31	Pass
					11.69	-8.31	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	10.98	-9.02	Pass
		2441	2DH5	1	10.98	-9.02	Pass
		2480	2DH5	1	10.98	-9.02	Pass
		HOPP	2DH5	1	10.98	-9.02	Pass
					10.98	-9.02	Pass
8DPSK	SISO	2402	3DH5	1	11.08	-8.92	Pass
		2441	3DH5	1	11.08	-8.92	Pass
		2480	3DH5	1	11.08	-8.92	Pass
		HOPP	3DH5	1	11.08	-8.92	Pass
					11.08	-8.92	Pass

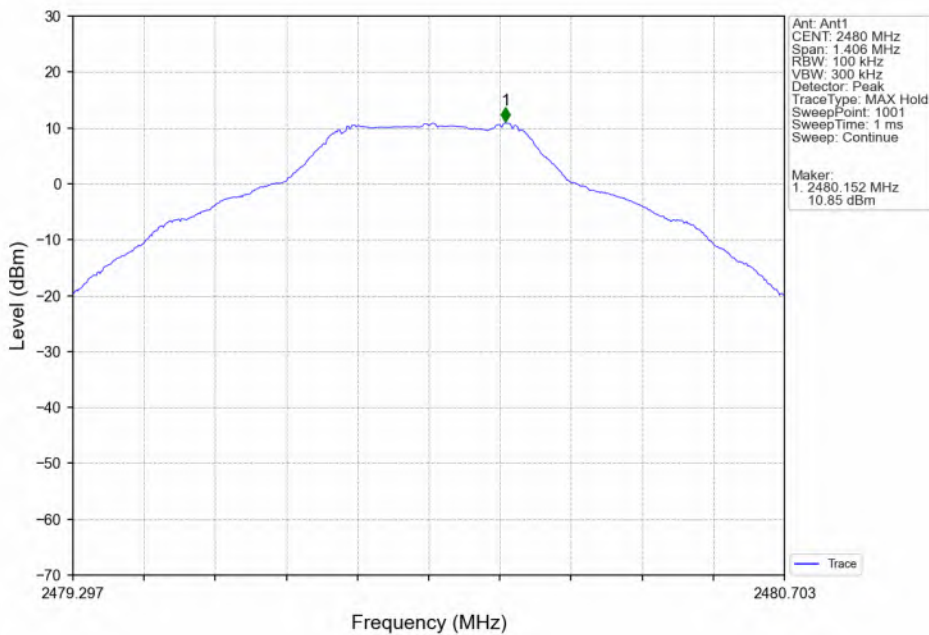
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.

7.2 Test Graph

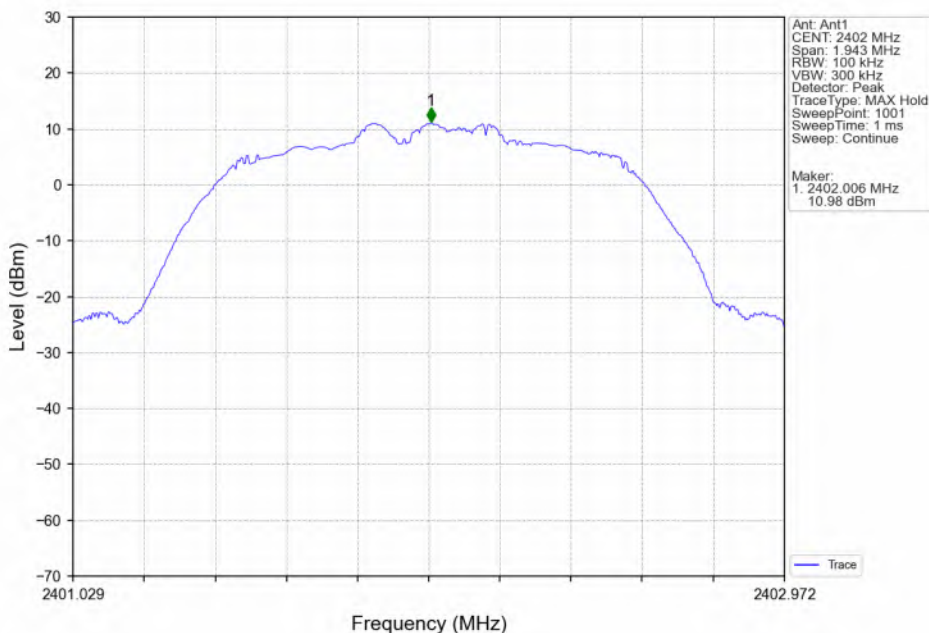
7.2.1 Ref



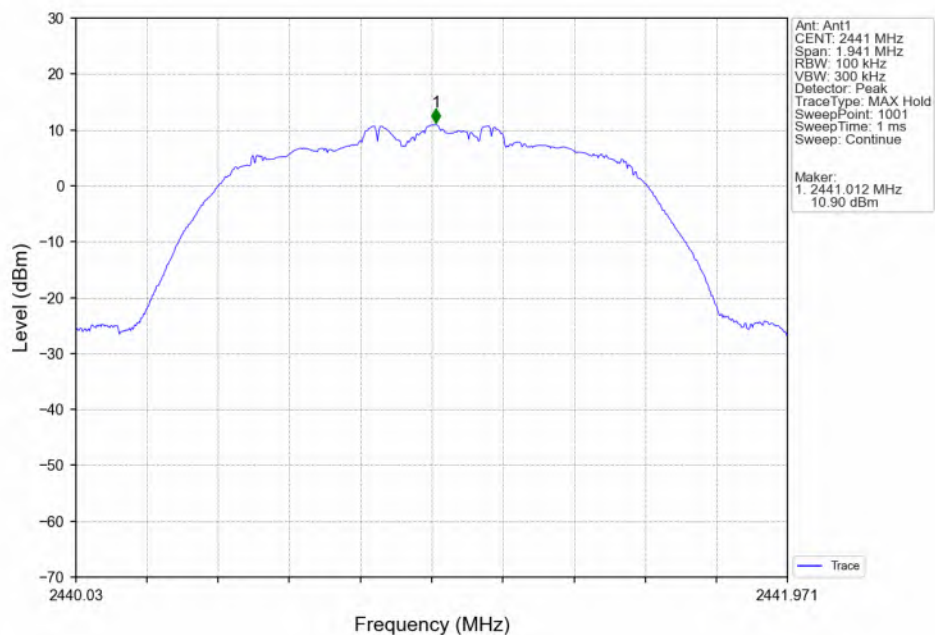
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



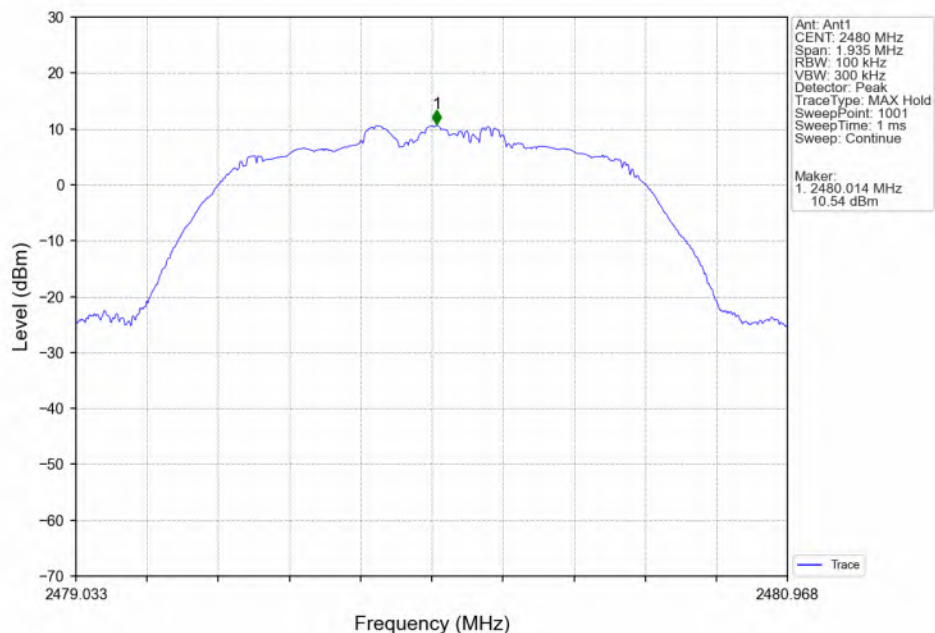
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



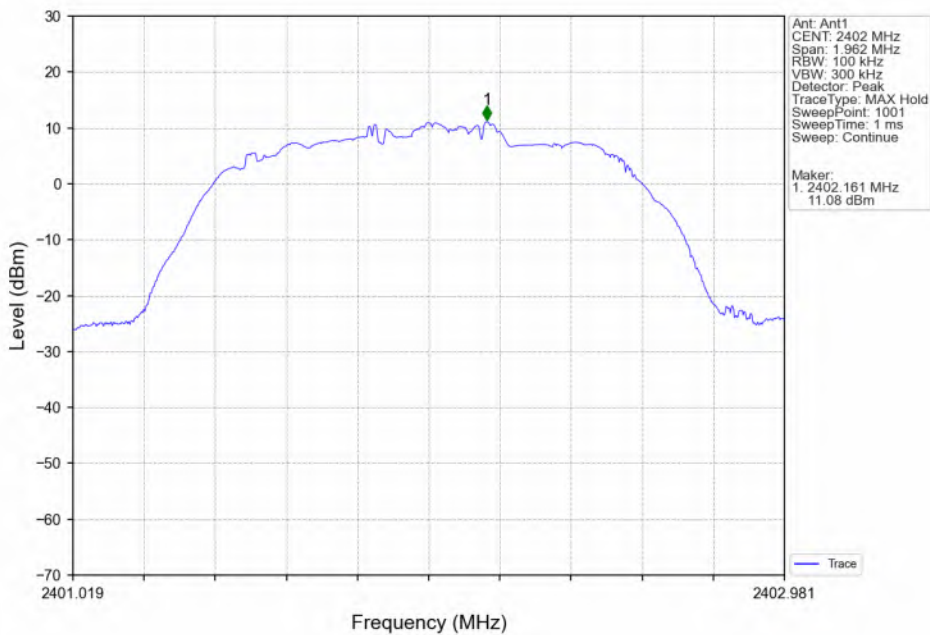
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



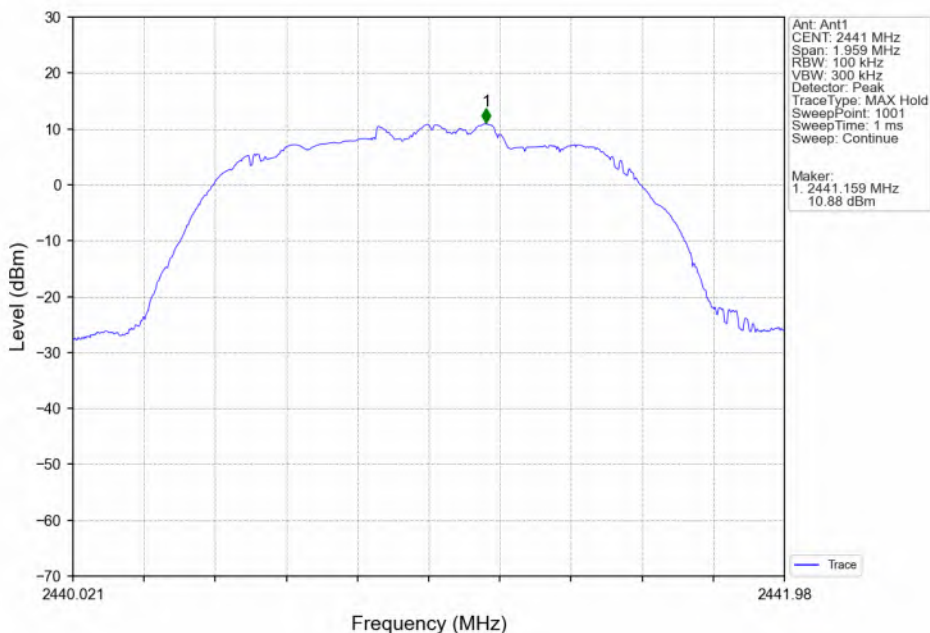
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV

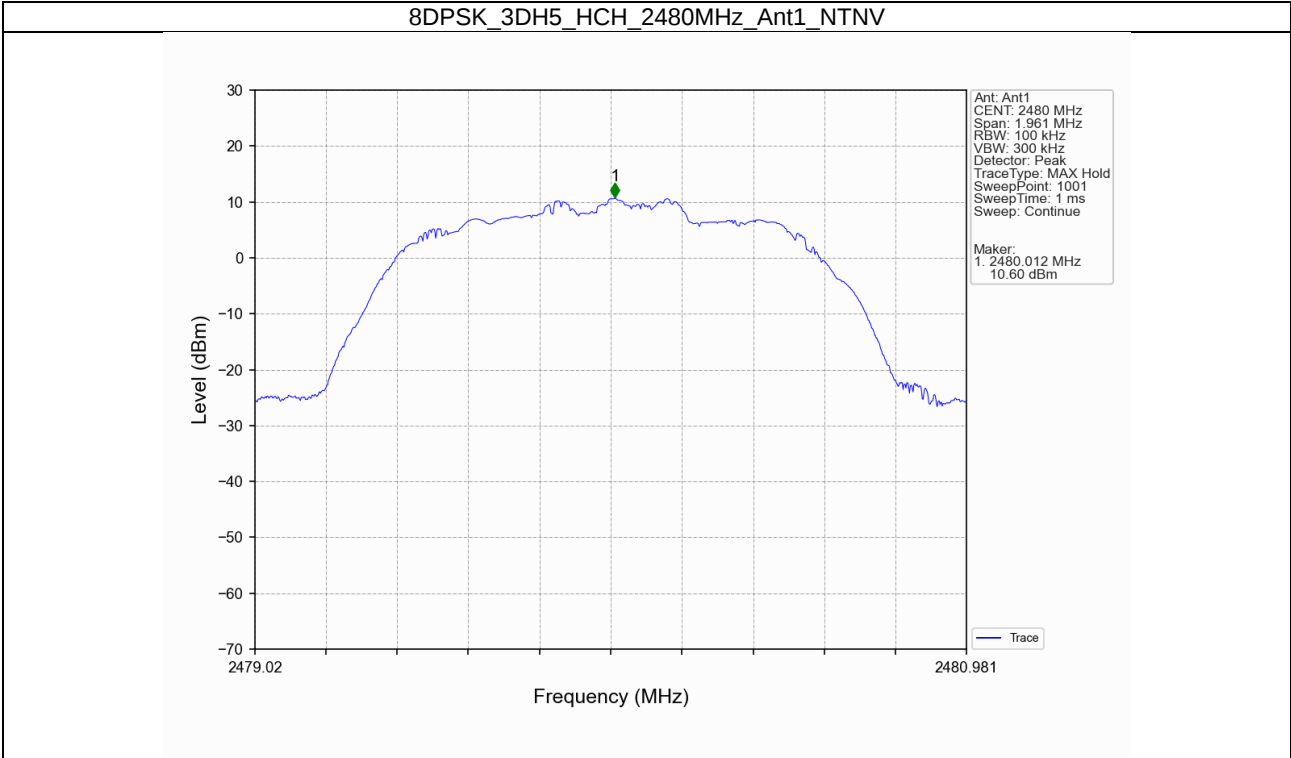


8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV

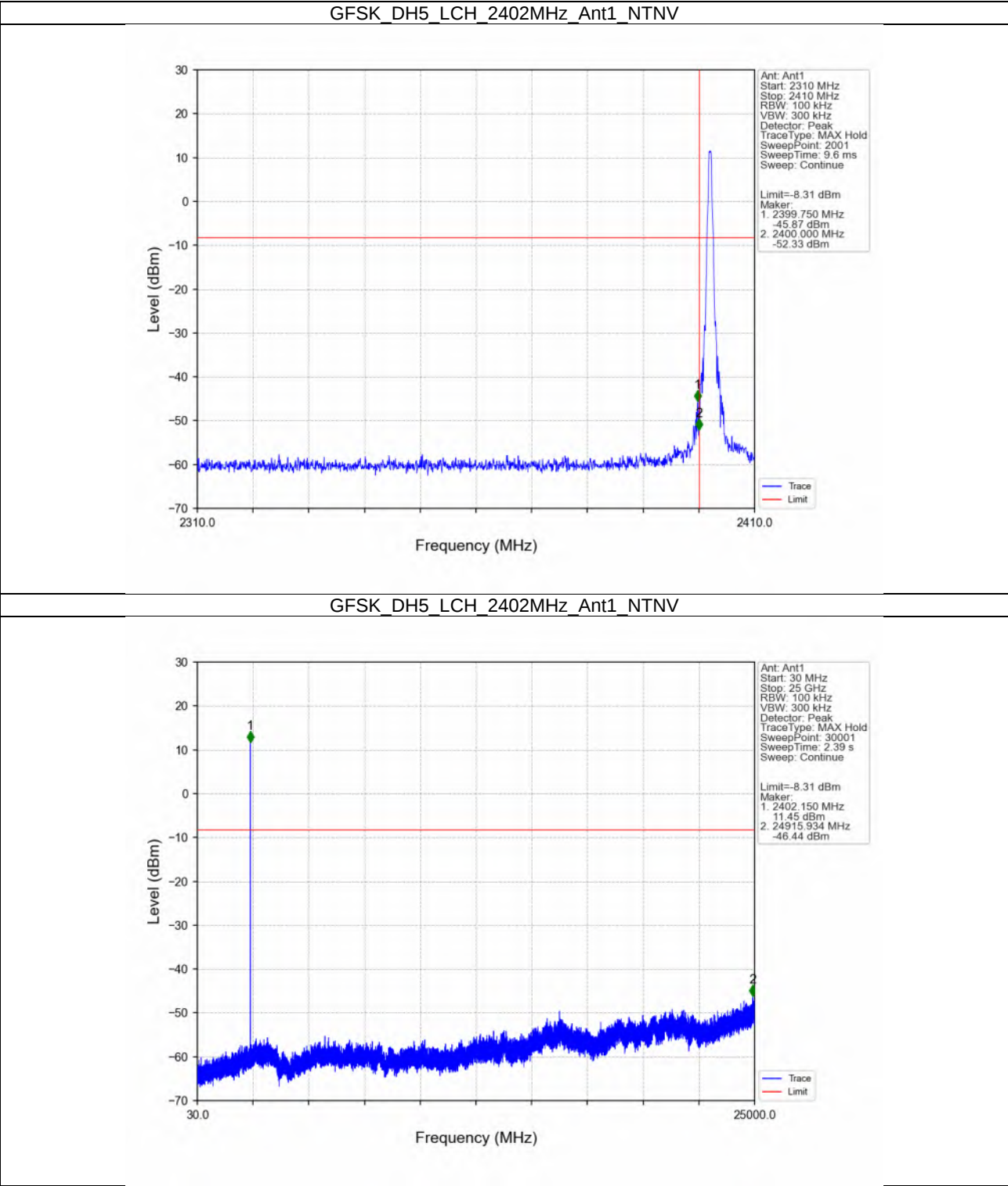


8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV

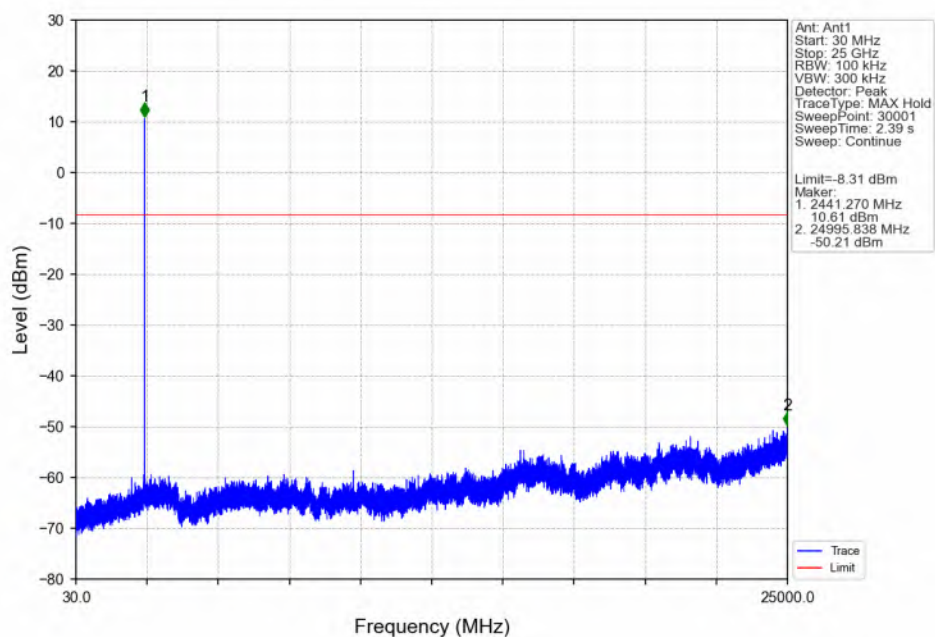




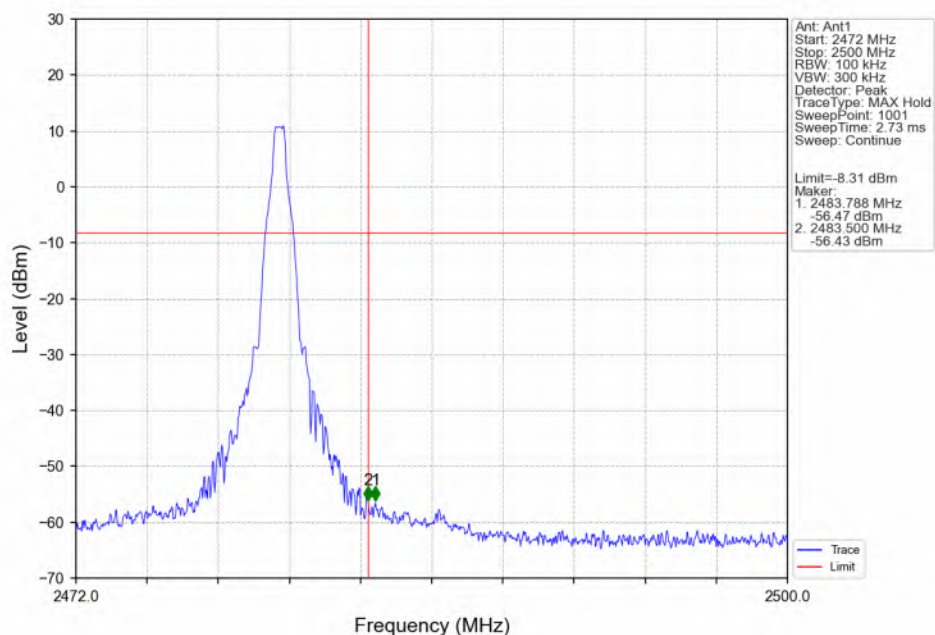
7.2.2 CSE



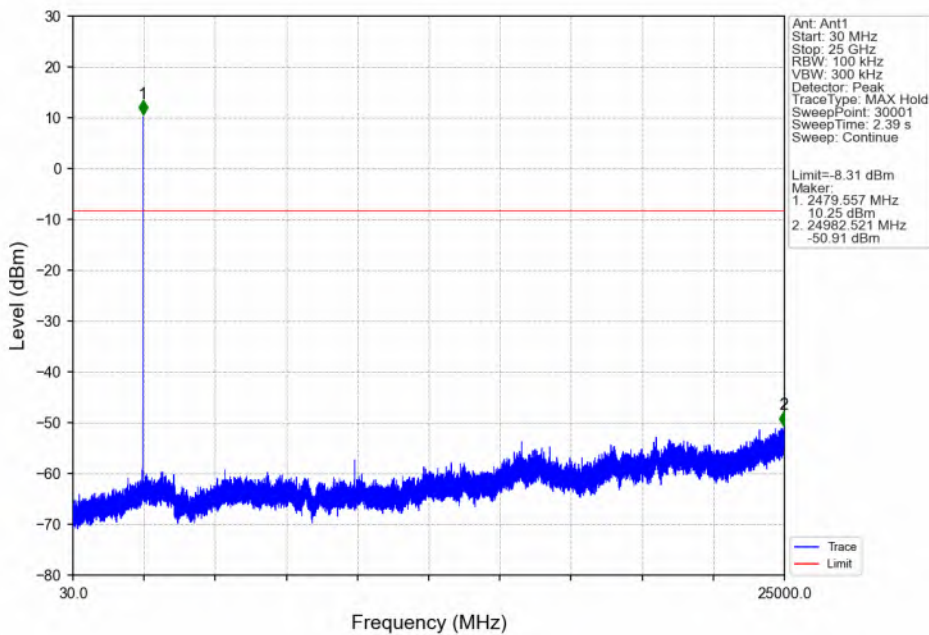
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



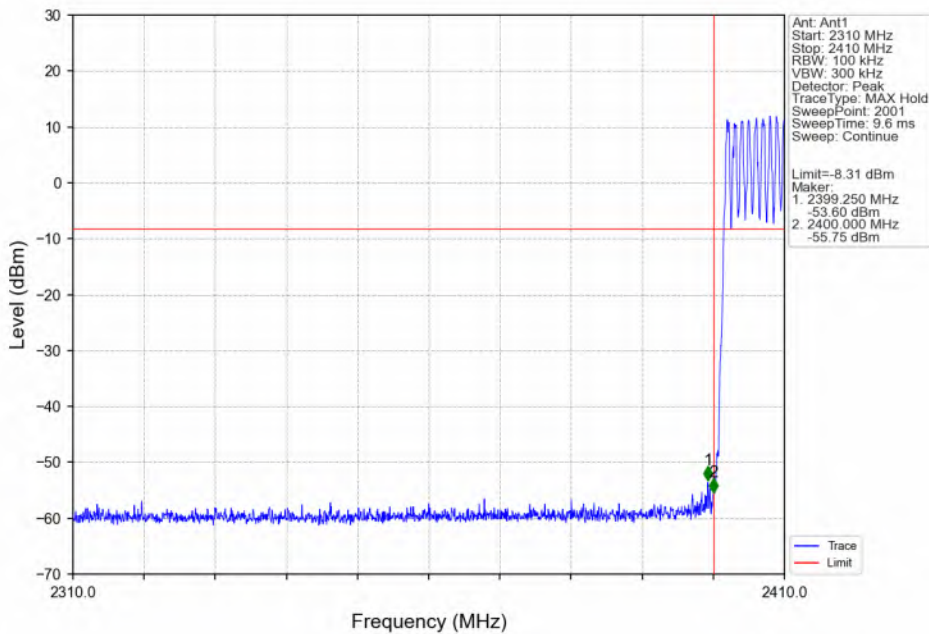
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



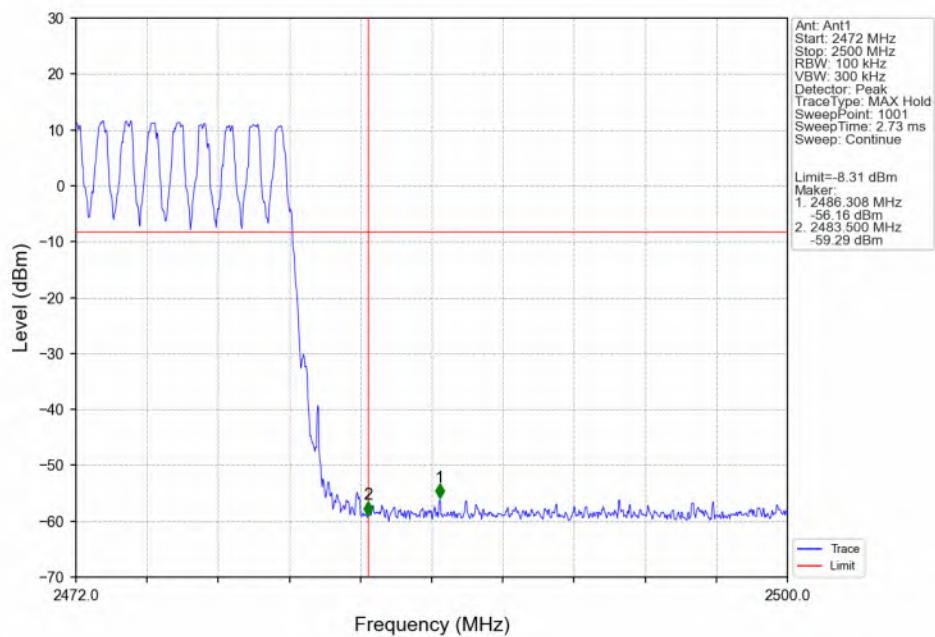
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



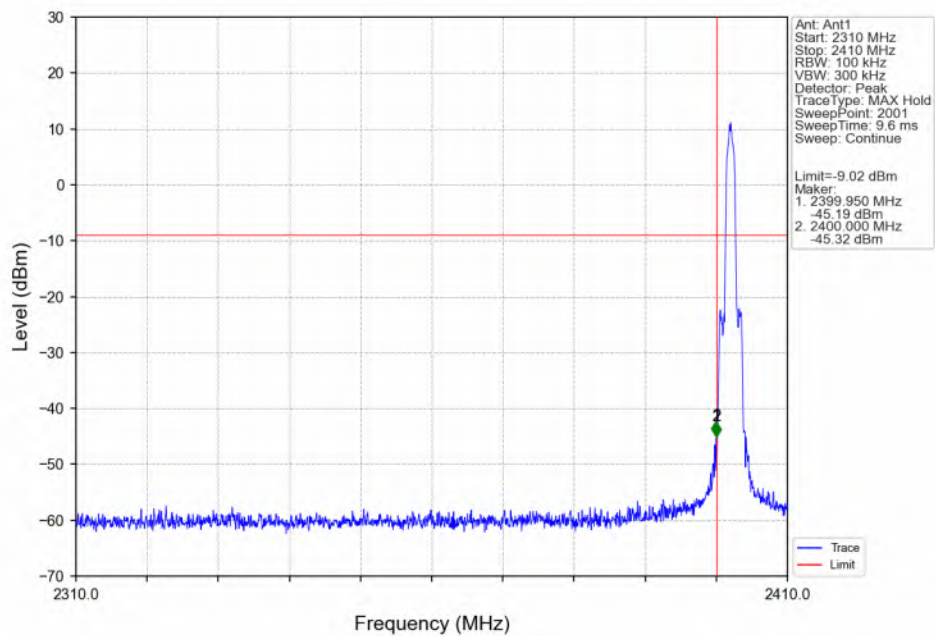
GFSK_DH5_HOPP_Ant1_NTNV



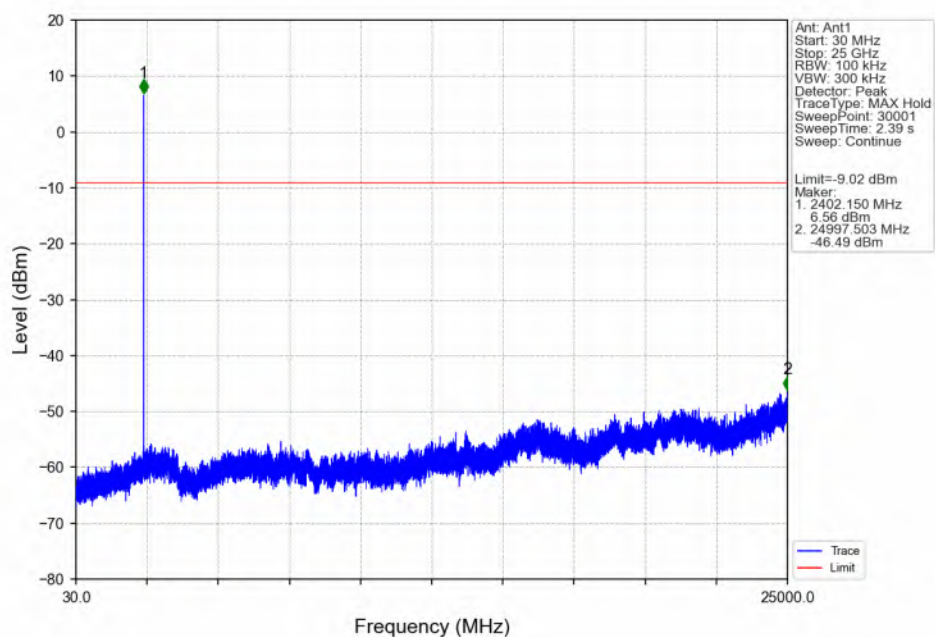
GFSK_DH5_HOPP_Ant1_NTNV



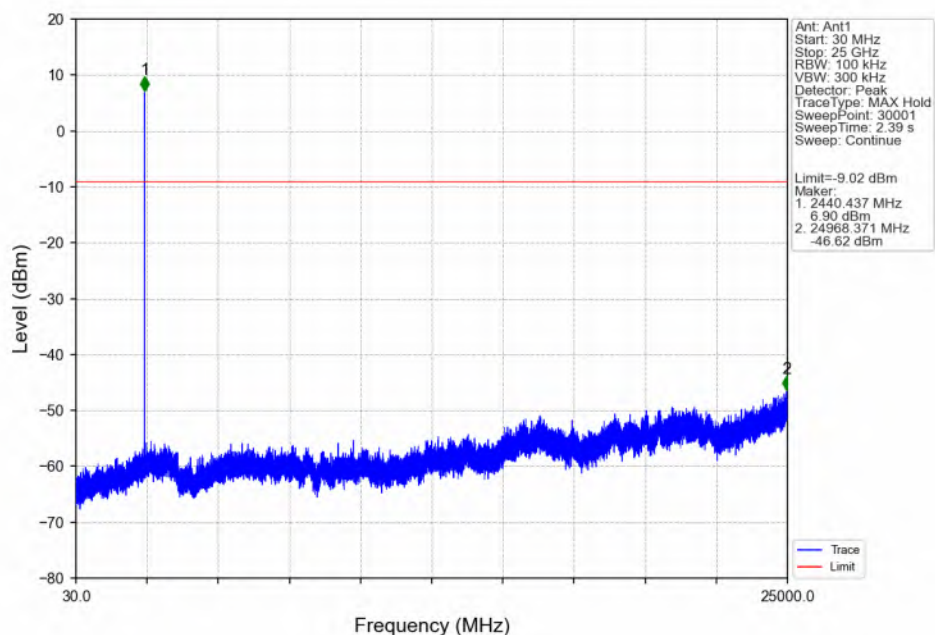
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



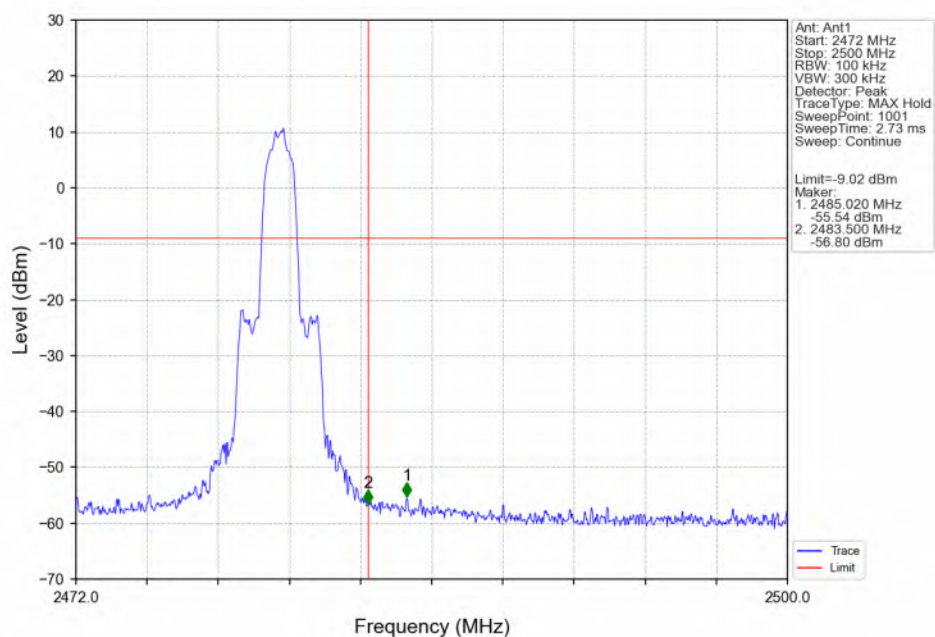
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



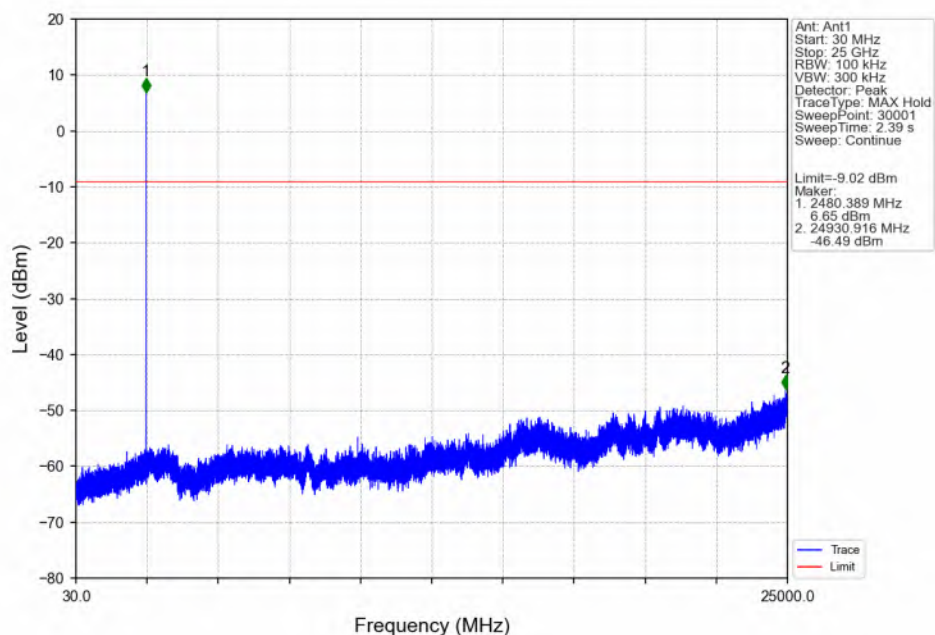
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



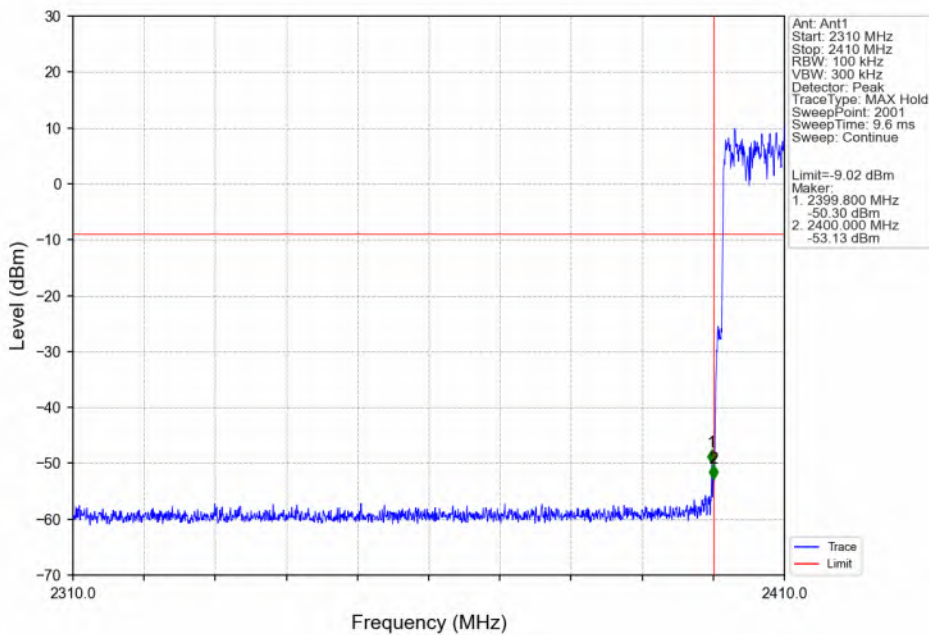
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



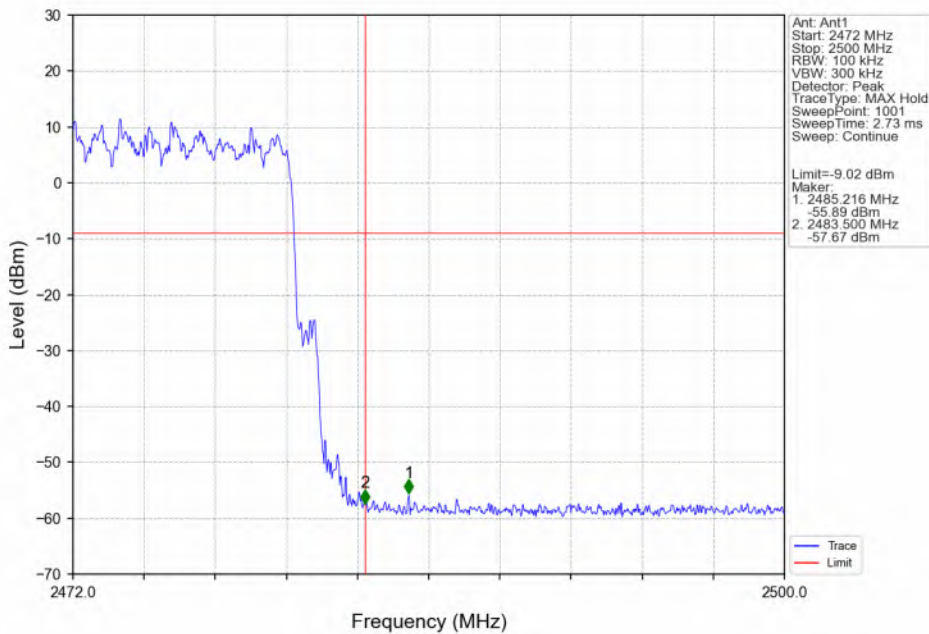
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



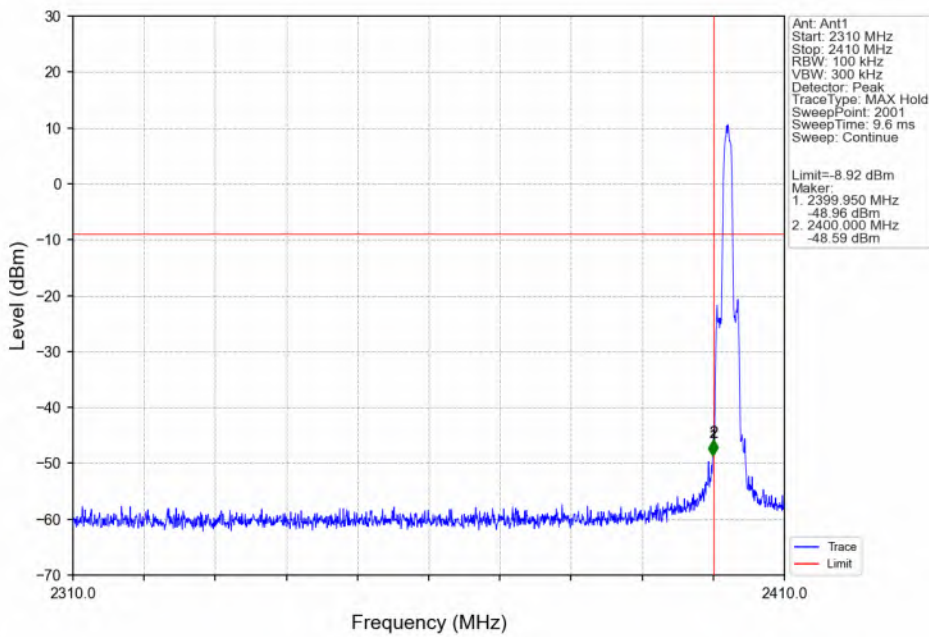
Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



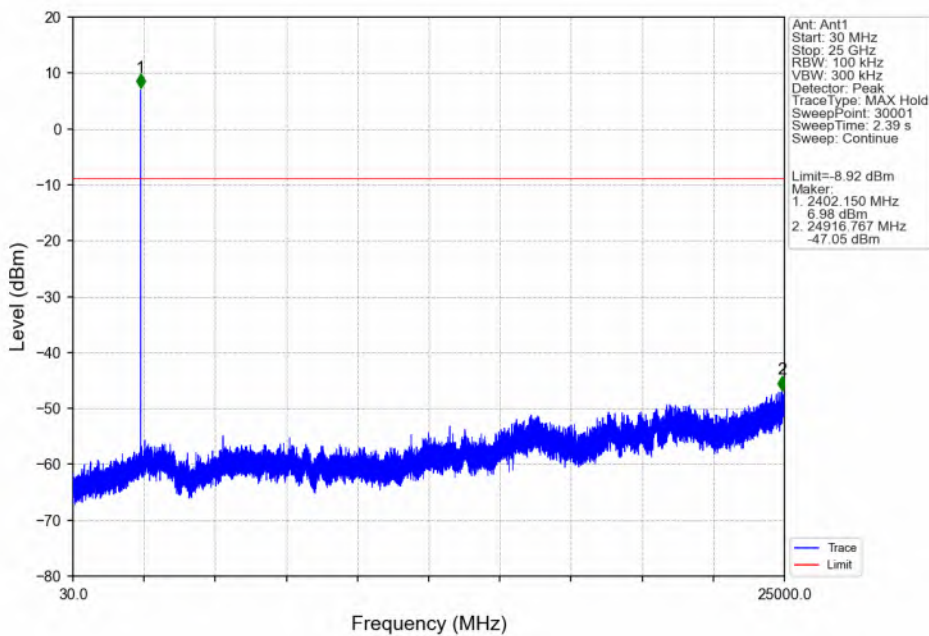
Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



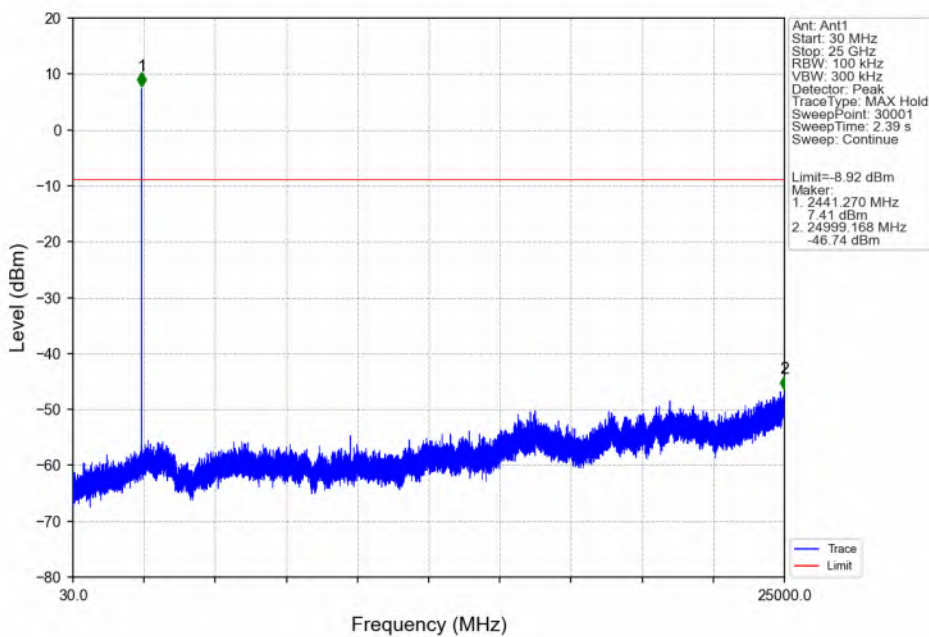
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



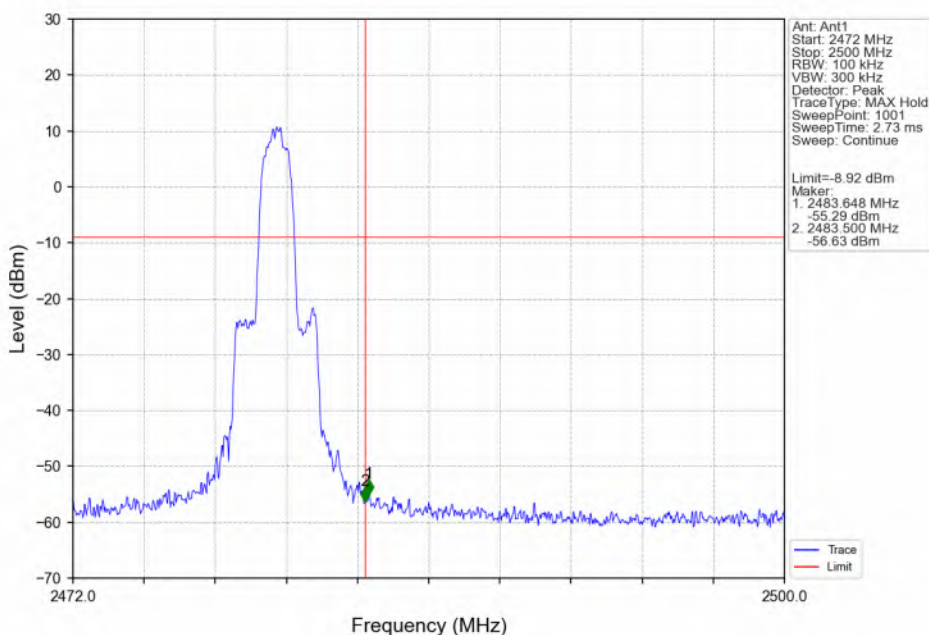
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



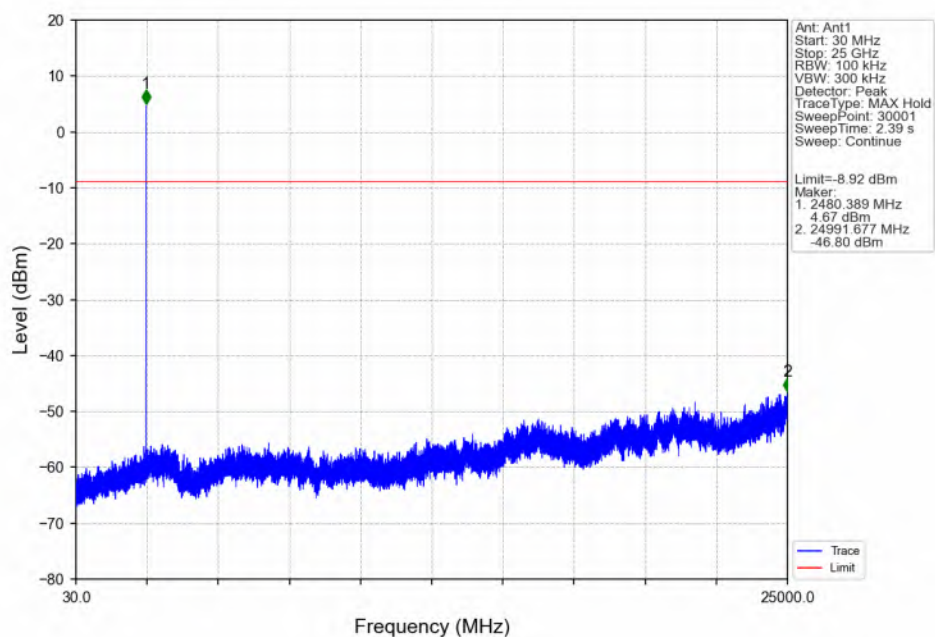
8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



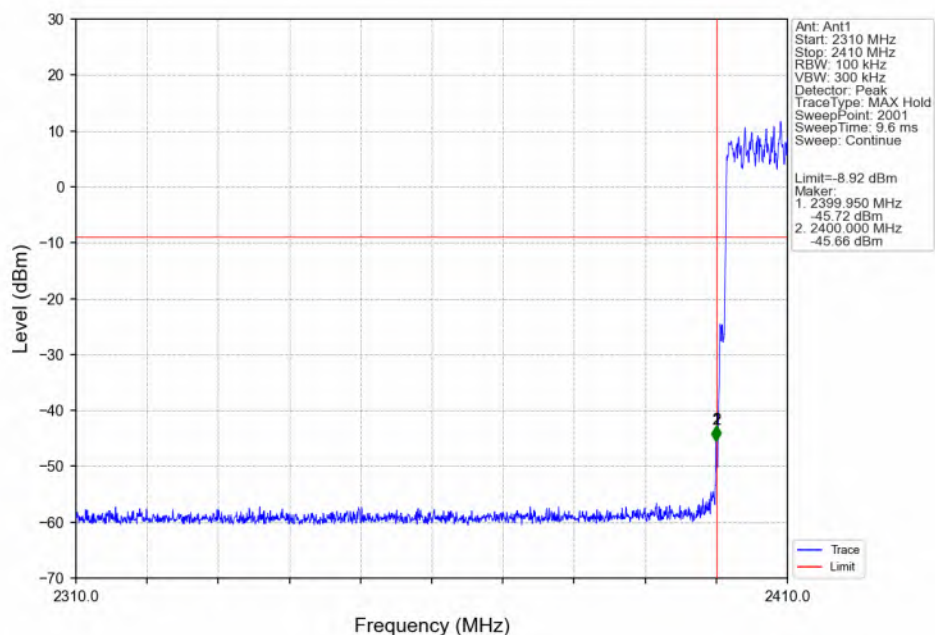
8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV

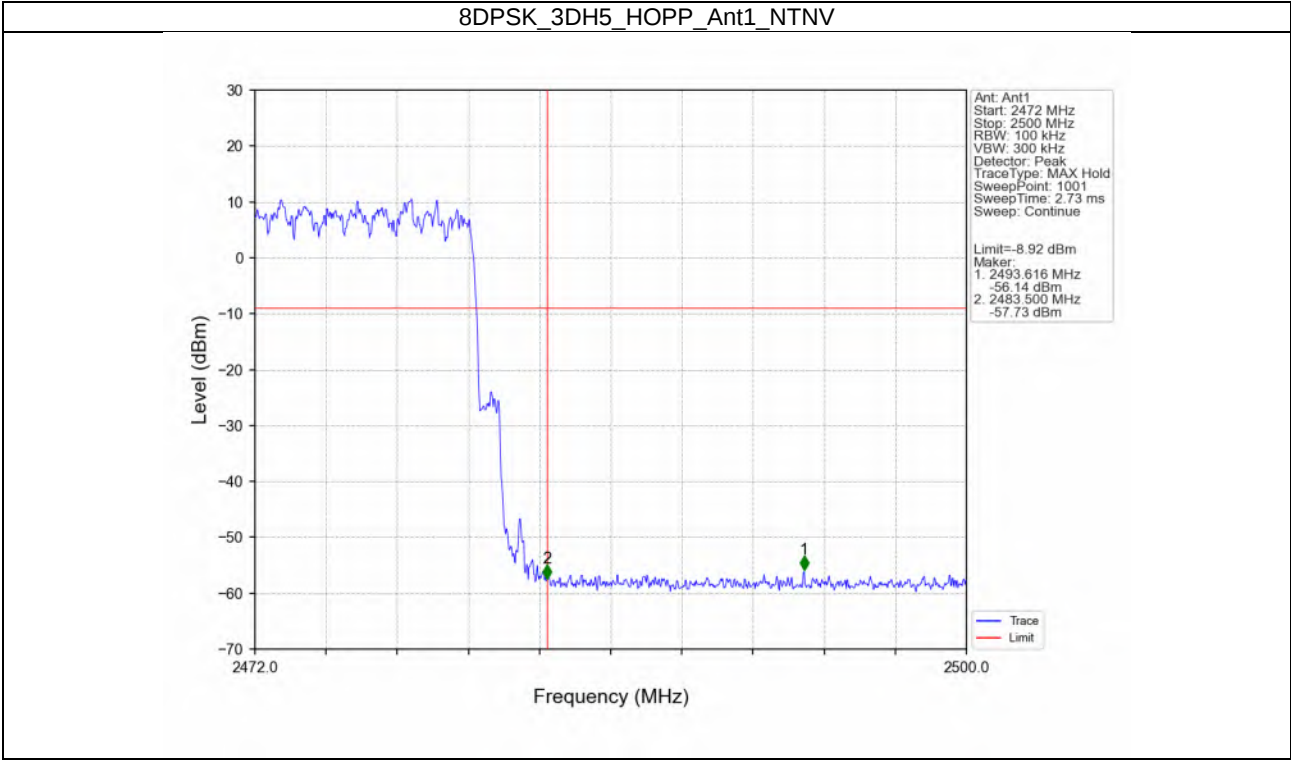


8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV

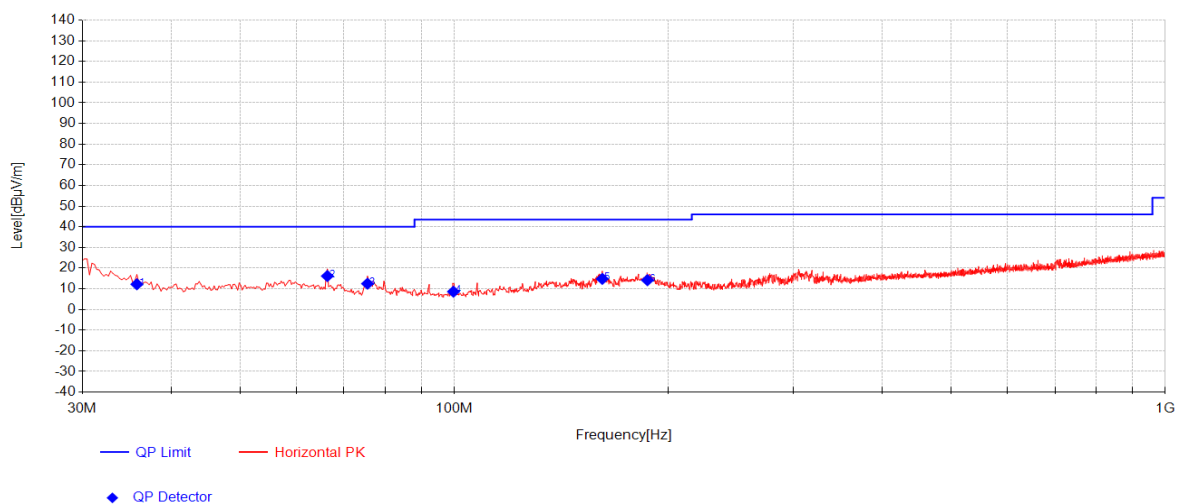




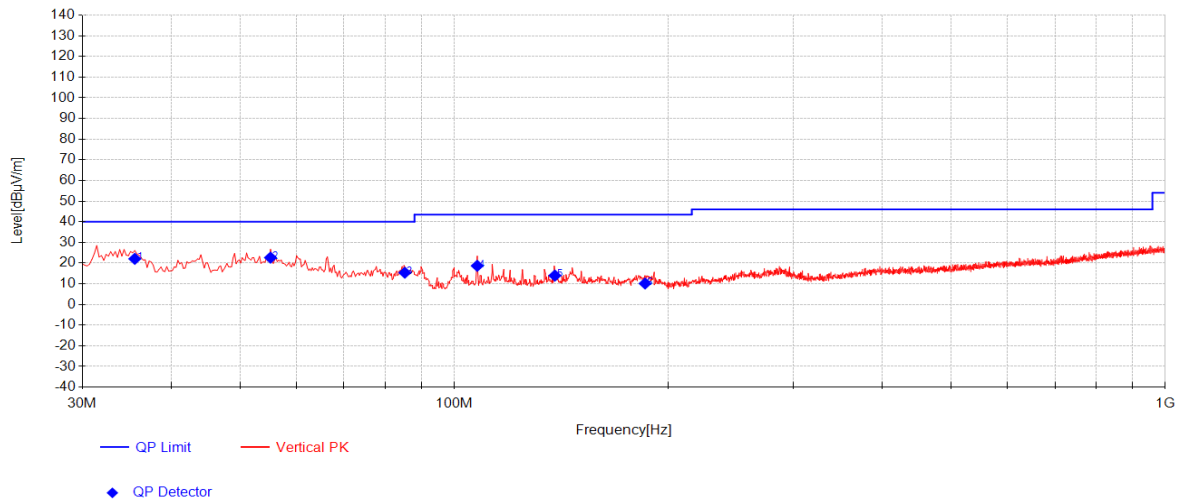
Radiated Spurious Emissions

Radiated emission below 1GHz

Worst case Mode: GFSK_Channel 78



Final Data List										
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	35.82	33.26	12.87	-33.93	12.19	40.00	27.81	154	338	Horizontal
2	66.375	38.69	10.96	-33.47	16.18	40.00	23.82	168	100	Horizontal
3	75.59	36.17	9.70	-33.38	12.49	40.00	27.51	174	318	Horizontal
4	99.84	32.54	9.20	-33.13	8.61	43.50	34.89	133	256	Horizontal
5	161.6775	34.71	12.62	-32.53	14.80	43.50	28.70	147	244	Horizontal
6	187.14	36.14	10.38	-32.34	14.18	43.50	29.32	184	287	Horizontal



Final Data List

NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	35.5775	43.16	12.85	-33.94	22.07	40.00	17.93	124	155	Vertical
2	55.22	43.41	12.87	-33.62	22.66	40.00	17.34	136	21	Vertical
3	85.29	39.58	9.09	-33.30	15.37	40.00	24.63	174	196	Vertical
4	107.8425	41.62	10.10	-33.02	18.70	43.50	24.80	135	310	Vertical
5	138.64	34.13	12.62	-32.78	13.97	43.50	29.53	147	145	Vertical
6	185.685	32.05	10.44	-32.35	10.14	43.50	33.36	122	227	Vertical

Remark:

- The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier gain. The basic equation with a sample calculation is as follows:

$$\text{Value} = \text{Reading}(\text{dB}\mu\text{V}) + \text{AF}(\text{dB}/\text{m}) + \text{Factor}(\text{dB})$$

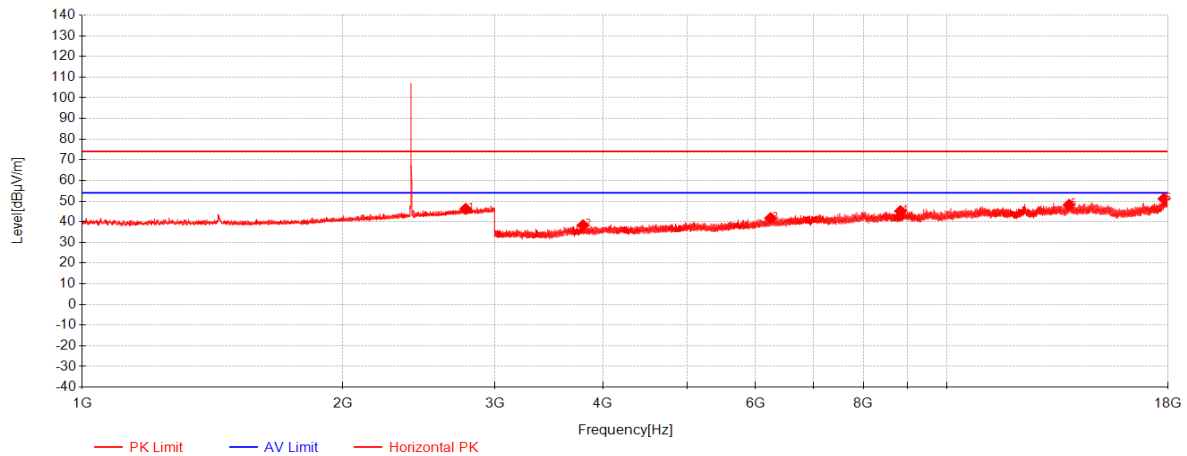
$$\text{AF} = \text{Antenna Factor}(\text{dB}/\text{m})$$

$$\text{Factor} = \text{Cable Factor}(\text{dB}) - \text{Preamplifier gain}(\text{dB})$$

$$\text{Margin} = \text{Limit}(\text{dB}\mu\text{V}/\text{m}) - \text{Value}(\text{dB}\mu\text{V}/\text{m})$$
- All channels have been tested, but only the worst case data displayed in this report.

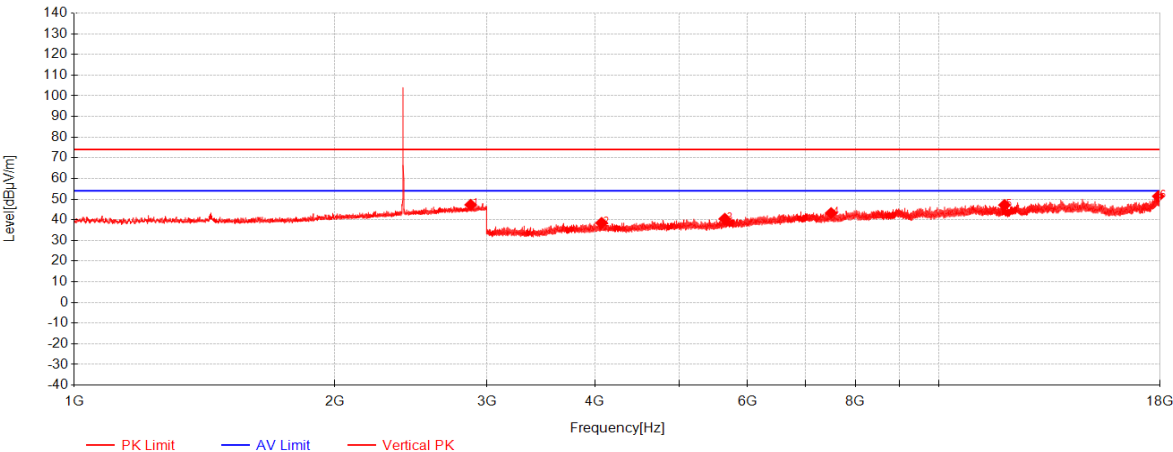
Transmitter emission Above 1GHz

GFSK_Channel 00



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2775	41.72	28.70	-24.16	46.26	74.00	27.74	Horizontal
2	3792.75	52.98	30.35	-44.99	38.34	74.00	35.66	Horizontal
3	6249.75	50.58	35.00	-43.79	41.78	74.00	32.22	Horizontal
4	8830.5	47.15	37.88	-39.84	45.19	74.00	28.81	Horizontal
5	13833	42.99	40.32	-35.09	48.22	74.00	25.78	Horizontal
6	17805.375	40.50	41.14	-30.52	51.11	74.00	22.89	Horizontal

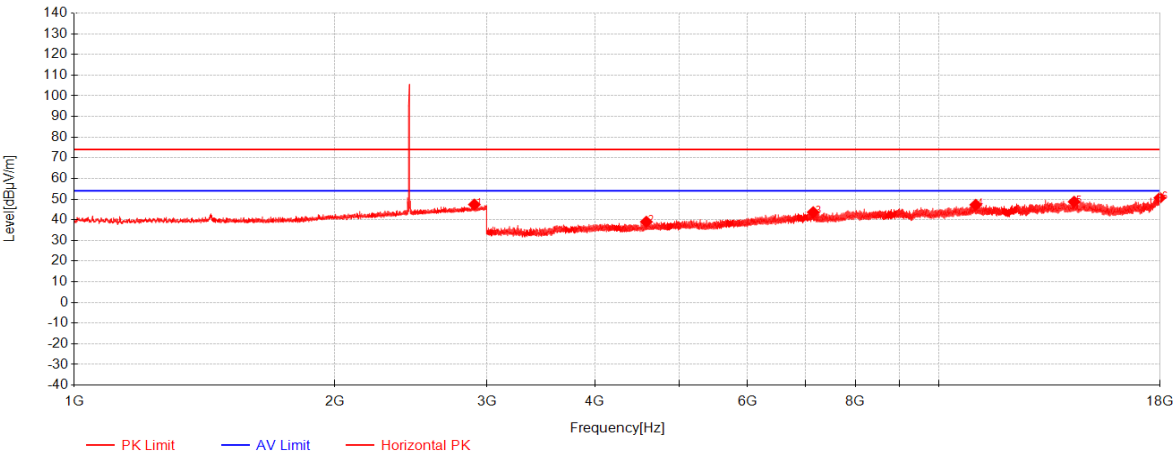
GFSK_Channel 00



Data List

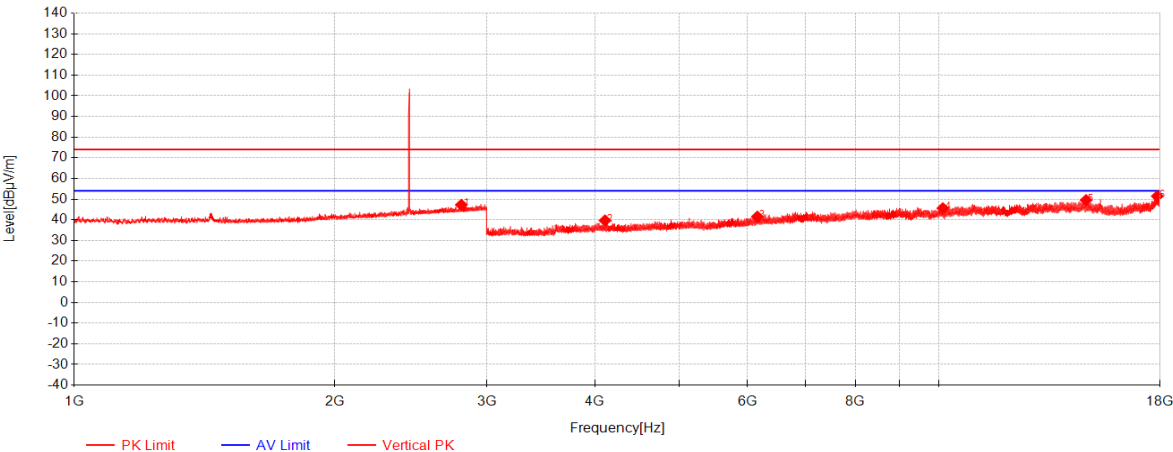
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2872.5	41.84	29.09	-23.69	47.25	74.00	26.75	Vertical
2	4070.625	52.36	31.21	-45.10	38.48	74.00	35.52	Vertical
3	5651.25	51.35	33.45	-44.34	40.46	74.00	33.54	Vertical
4	7499.25	49.19	36.30	-42.28	43.21	74.00	30.79	Vertical
5	11901.375	43.65	38.76	-35.27	47.14	74.00	26.86	Vertical
6	17922.75	40.99	41.48	-31.09	51.38	74.00	22.62	Vertical

GFSK_Channel 39



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2901	41.71	29.20	-23.52	47.39	74.00	26.61	Horizontal
2	4586.25	52.03	32.11	-45.09	39.04	74.00	34.96	Horizontal
3	7150.875	49.94	36.30	-42.59	43.65	74.00	30.35	Horizontal
4	11023.5	43.99	39.29	-36.03	47.25	74.00	26.75	Horizontal
5	14322.75	43.22	40.21	-34.69	48.73	74.00	25.27	Horizontal
6	17998.125	39.95	41.69	-31.02	50.62	74.00	23.38	Horizontal

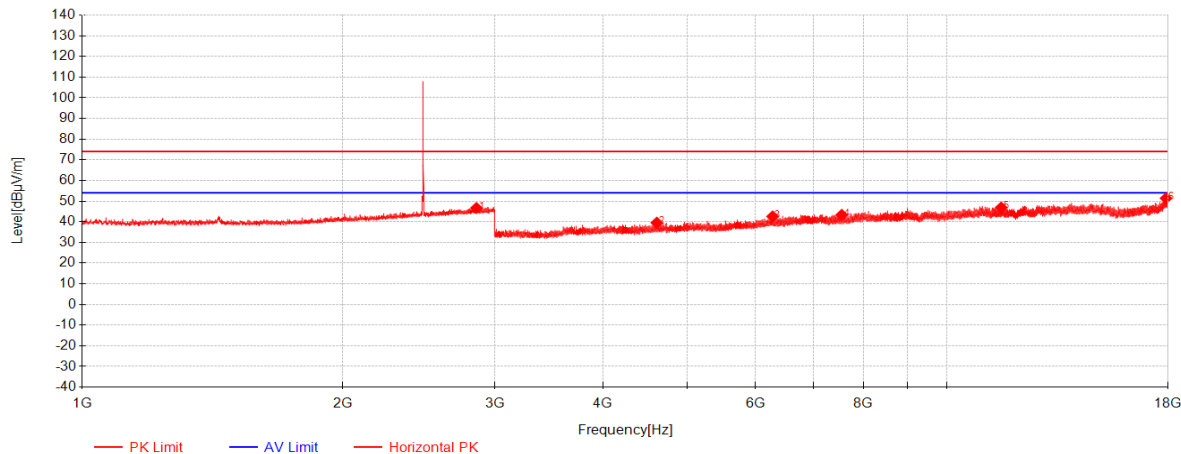
GFSK_Channel 39



Data List

NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2802	42.55	28.81	-24.11	47.25	74.00	26.75	Vertical
2	4107.375	53.47	31.27	-45.06	39.68	74.00	34.32	Vertical
3	6162.375	50.60	34.82	-43.89	41.54	74.00	32.46	Vertical
4	10099.125	44.87	38.22	-37.51	45.58	74.00	28.42	Vertical
5	14785.125	44.01	39.93	-34.42	49.52	74.00	24.48	Vertical
6	17874.75	41.06	41.34	-30.95	51.44	74.00	22.56	Vertical

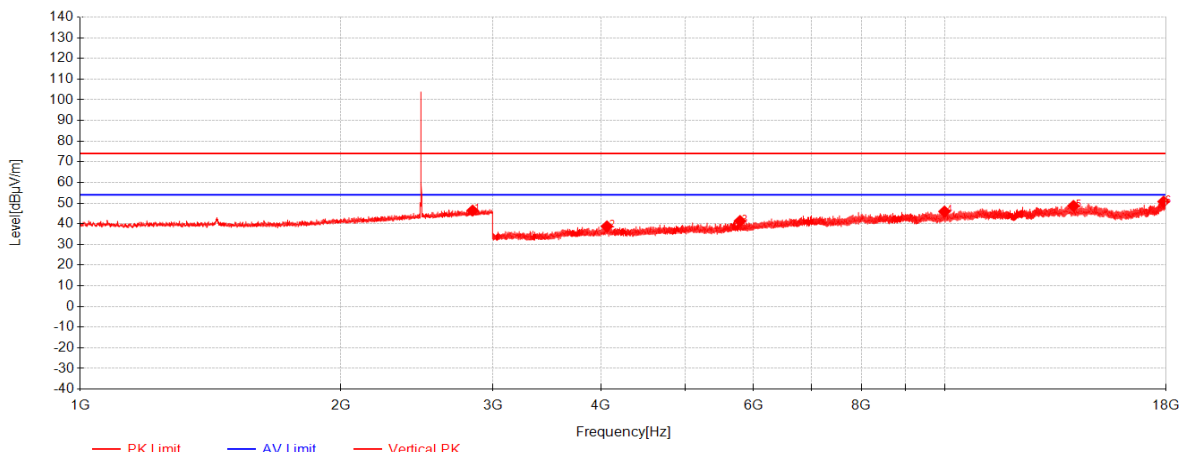
GFSK_Channel 78



Data List

NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2855.5	41.43	29.02	-23.79	46.67	74.00	27.33	Horizontal
2	4615.875	52.40	32.18	-45.03	39.55	74.00	34.45	Horizontal
3	6283.125	51.36	35.07	-43.82	42.60	74.00	31.40	Horizontal
4	7552.5	48.94	36.41	-42.02	43.32	74.00	30.68	Horizontal
5	11548.125	43.66	38.97	-35.74	46.89	74.00	27.11	Horizontal
6	17910.375	41.04	41.44	-31.10	51.38	74.00	22.62	Horizontal

GFSK_Channel 78



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2841.5	41.30	28.97	-23.87	46.40	74.00	27.60	Vertical
2	4063.125	52.64	31.20	-45.10	38.74	74.00	35.26	Vertical
3	5791.5	51.65	33.87	-44.16	41.36	74.00	32.64	Vertical
4	9982.125	45.48	38.10	-37.63	45.95	74.00	28.05	Vertical
5	14073	43.65	40.36	-35.37	48.64	74.00	25.36	Vertical
6	17891.625	40.40	41.39	-31.06	50.73	74.00	23.27	Vertical

Remark:

- The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier gain. The basic equation with a sample calculation is as follows:

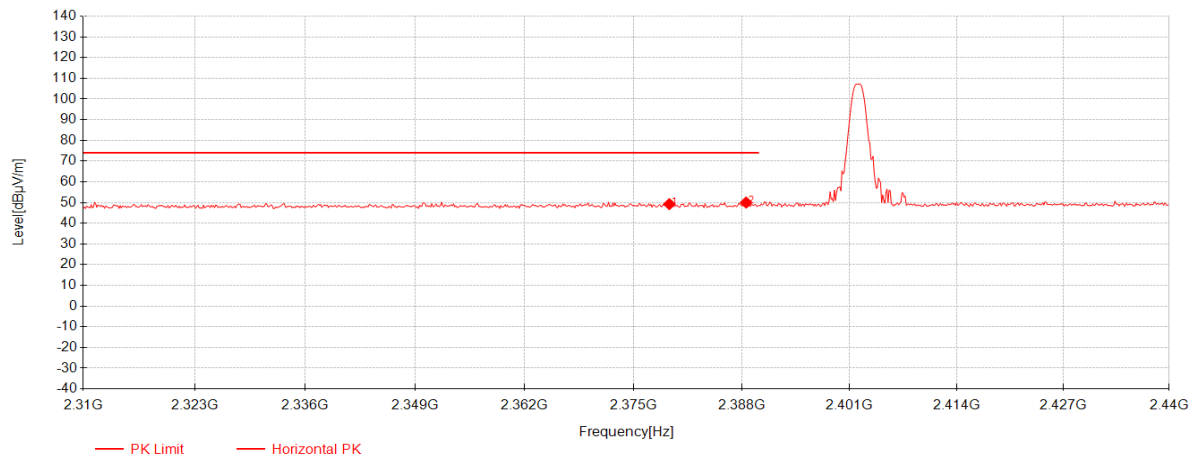
$$\text{Level} = \text{Reading}(\text{dB}\mu\text{V}) + \text{AF}(\text{dB}/\text{m}) + \text{Factor}(\text{dB})$$

$$\text{AF} = \text{Antenna Factor}(\text{dB}/\text{m})$$

$$\text{Factor} = \text{Cable Factor}(\text{dB}) - \text{Preamplifier gain}(\text{dB})$$

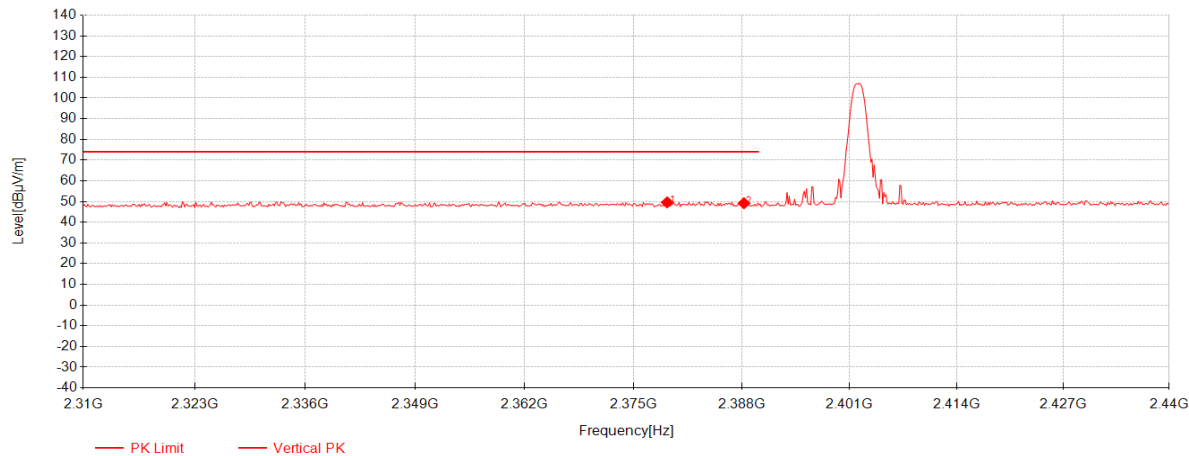
$$\text{Margin} = \text{Limit}(\text{dB}\mu\text{V}/\text{m}) - \text{Level}(\text{dB}\mu\text{V}/\text{m})$$
- All channels have been tested, but only the worst case data displayed in this report.

Restricted bands around fundamental frequency
GFSK_Channel 00



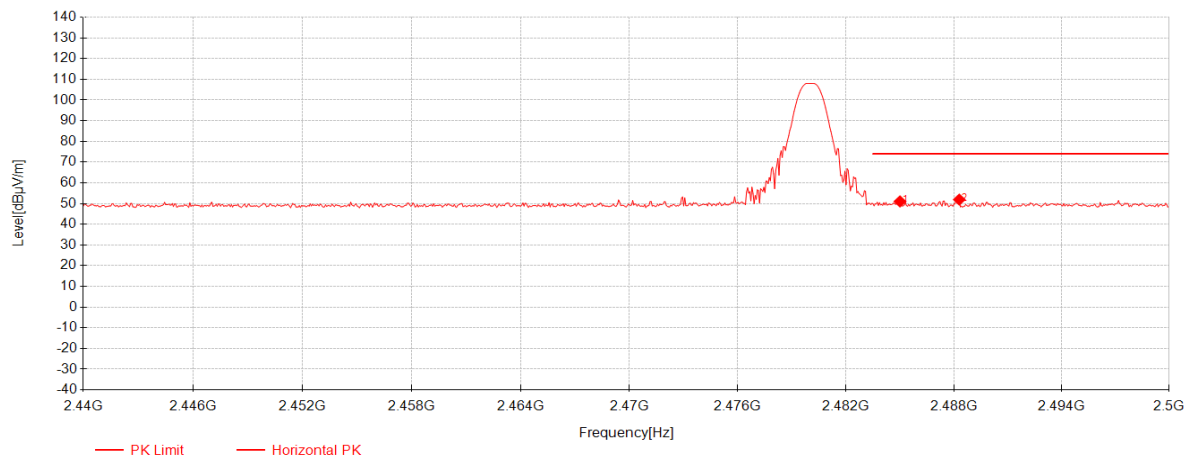
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2379.29	46.80	27.26	-24.82	49.24	74.00	24.76	Horizontal
2	2388.52	47.53	27.29	-24.82	50.00	74.00	24.00	Horizontal

GFSK_Channel 00



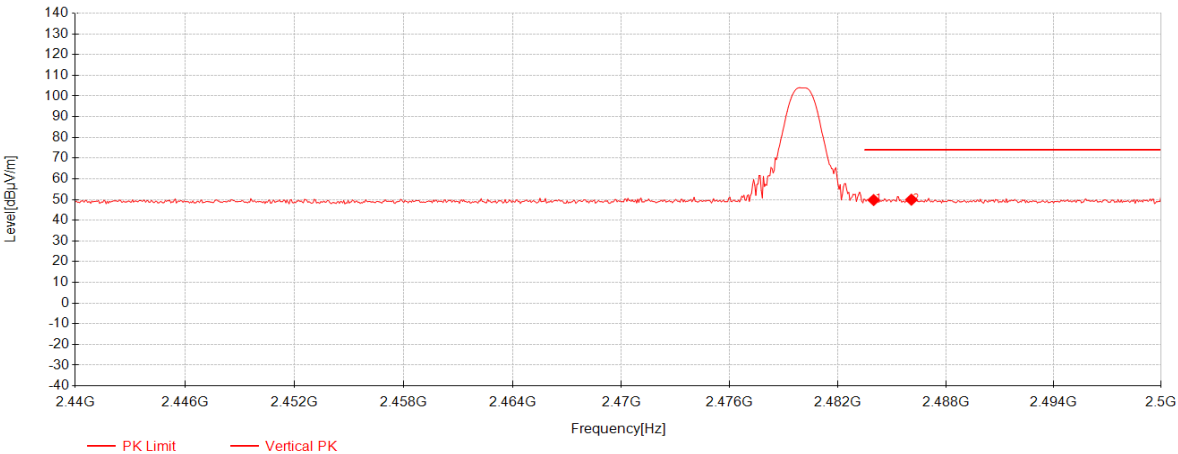
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2379.03	47.18	27.26	-24.82	49.62	74.00	24.38	Vertical
2	2388.26	46.72	27.29	-24.82	49.19	74.00	24.81	Vertical

GFSK_Channel 78



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2485	48.09	27.56	-24.63	51.02	74.00	22.98	Horizontal
2	2488.3	48.97	27.57	-24.62	51.91	74.00	22.09	Horizontal

GFSK_Channel 78



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2483.98	46.84	27.56	-24.63	49.76	74.00	24.24	Vertical
2	2486.08	47.00	27.56	-24.63	49.93	74.00	24.07	Vertical

Remark:

- The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier gain. The basic equation with a sample calculation is as follows:

$$\text{Level} = \text{Reading}(\text{dB}\mu\text{V}) + \text{AF}(\text{dB}/\text{m}) + \text{Factor}(\text{dB})$$

$$\text{AF} = \text{Antenna Factor}(\text{dB}/\text{m})$$

$$\text{Factor} = \text{Cable Factor}(\text{dB}) - \text{Preamplifier gain}(\text{dB})$$

$$\text{Margin} = \text{Limit}(\text{dB}\mu\text{V}/\text{m}) - \text{Level}(\text{dB}\mu\text{V}/\text{m})$$

---End of Report---