

RF Test Report

For

Applicant Name: Shenzhen KingAnDa Technology Development Co., Ltd.

Address: East Block NO. 2, Shangxue Industrial Zone, Bantian

Street, Longgang District, Shenzhen, China

EUT Name: Bluetooth headset

Brand Name: YYK
Model Number: YYK-Q80
Serial Model Number: N/A

Issued By

Company Name: BTF Testing Lab (Shenzhen) Co., Ltd.

F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park,

Address: Tantou Community, Songgang Street, Bao'an District, Shenzhen,

China

Report Number: BTF240708R01901 Test Standards: 47 CFR Part 15.247

Test Conclusion: Pass

FCC ID: 2AOZMYYK-Q80

Sample receipt date: 2024-07-08

Test Date: 2024-07-09 to 2024-10-12

Date of Issue: 2024-10-17

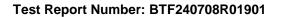
Test by:

Ssxx.guo/ Tester

Approved By:

Chris Liu / Project Engine Ryan.CJ / EMC Manager

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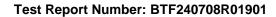


Revision History			
Version	Issue Date	Revisions Content	
R_V0	2024-10-17	Original	
Note: Once the revision has been made, then previous versions reports are invalid.			



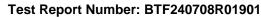
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1 Introduction

1.1 Identification of Testing Laboratory

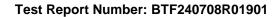
Company Name: BTF Testing Lab (Shenzhen) Co., Ltd.	
Address:	F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China
Phone Number:	+86-0755-23146130
Fax Number:	+86-0755-23146130

1.2 Identification of the Responsible Testing Location

Company Name:	BTF Testing Lab (Shenzhen) Co., Ltd.	
Address:	F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China	
Phone Number:	+86-0755-23146130	
Fax Number:	+86-0755-23146130	
FCC Registration Number:	518915	
Designation Number:	CN1330	

1.3 Announcement

- (1) The test report reference to the report template version v0.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) This document may not be altered or revised in any way unless done so by BTF and all revisions are duly noted in the revisions section.
- (5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
- (6) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.





2 Product Information

2.1 Application Information

Company Name:	Shenzhen KingAnDa Technology Development Co., Ltd.
Address:	East Block NO. 2, Shangxue Industrial Zone, Bantian Street,Longgang District, Shenzhen, China

2.2 Manufacturer Information

Company Name: Shenzhen KingAnDa Technology		Shenzhen KingAnDa Technology Development Co., Ltd.
	Address:	East Block NO. 2, Shangxue Industrial Zone, Bantian Street, Longgang District,
		Shenzhen, China

2.3 Factory Information

Company Name:	Shenzhen KingAnDa Technology Development Co., Ltd.
Address:	East Block NO. 2, Shangxue Industrial Zone, Bantian Street, Longgang District, Shenzhen, China

2.4 General Description of Equipment under Test (EUT)

EUT Name:	Bluetooth headset
Test Model Number:	YYK-Q80
Serial model Number:	N/A
Model difference description	N/A
Hardware version	N/A
Software version	N/A

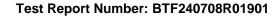
2.5 Technical Information

Power Supply: DC 5V 1A from charging case or 3.7V from battery		
Power Adaptor:	N/A	
Operation Frequency:	2402MHz to 2480MHz	
Number of Channels:	79	
Modulation Type:	GFSK, π/4 DQPSK, 8DPSK	
Antenna Type:	internal antenna	
Antenna Gain [#] :	2.7dBi	
	·	

Note:

#: The antenna gain provided by the applicant, and the laboratory will not be responsible for the accumulated calculation results which covers the information provided by the applicant.

Bluetooth Version: 5.0





3 Summary of Test Results

3.1 Test Standards

The tests were performed according to following standards: 47 CFR Part 15.247: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

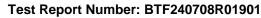
3.2 Uncertainty of Test

Item	Measurement Uncertainty
Conducted Emission (150 kHz-30 MHz)	±2.64dB
Occupied Bandwidth	±69kHz
Transmitter Power, Conducted	±0.87dB
Conducted Spurious Emissions	±0.95dB
Radiated Spurious Emissions (above 1GHz)	1-6GHz: ±3.94dB 6-18GHz: ±4.16dB
Radiated Spurious Emissions (30M - 1GHz)	±4.12dB

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.3 Summary of Test Result

Item	Standard	Requirement	Result
Antenna requirement	47 CFR Part 15.247	47 CFR 15.203	Pass
Conducted Emission at AC power line	47 CFR Part 15.247	47 CFR 15.207(a)	N/A
Occupied Bandwidth	47 CFR Part 15.247	47 CFR 15.215(c)	Pass
Maximum Conducted Output Power	47 CFR Part 15.247	47 CFR 15.247(b)(1)	Pass
Channel Separation	47 CFR Part 15.247	47 CFR 15.247(a)(1)	Pass
Number of Hopping Frequencies	47 CFR Part 15.247	47 CFR 15.247(a)(1)(iii)	Pass
Dwell Time	47 CFR Part 15.247	47 CFR 15.247(a)(1)(iii)	Pass
Emissions in non-restricted frequency bands	47 CFR Part 15.247	47 CFR 15.247(d), 15.209, 15.205	Pass
Band edge emissions (Radiated)	47 CFR Part 15.247	47 CFR 15.247(d), 15.209, 15.205	Pass
Emissions in frequency bands (below 1GHz)	47 CFR Part 15.247	47 CFR 15.247(d), 15.209, 15.205	Pass
Emissions in frequency bands (above 1GHz)	47 CFR Part 15.247	47 CFR 15.247(d), 15.209, 15.205	Pass





4 Test Configuration

4.1 Test Equipment List

Note: All calibration information is from CCIC (Shenzhen) Metrology & Testing Service Co.,Ltd.

Radiated Emission Test						
Test Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	
EMI Receiver	Rohde & Schwarz	ESCI7	101032	2023/11/16	2024/11/15	
Signal Analyzer	Rohde & Schwarz	FSQ40	100010	2023/11/16	2024/11/15	
Log periodic antenna	Schwarzbeck	VULB 9168	01328	2023/11/13	2024/11/12	
Preamplifier (30MHz ~ 1GHz)	Schwarzbeck	BBV9744	00246	2023/11/13	2024/11/12	
Horn Antenna	Schwarzbeck	BBHA9120D	2597	2023/11/13	2024/11/12	
Preamplifier (1GHz ~ 18GHz)	Schwarzbeck	BBV9718D	80000	2023/11/13	2024/11/12	
Test Software	Frad	EZ_EMC	Version: FA-03A2 RE+			

Conducted Emission Test						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	
EMI Receiver	Rohde & Schwarz	ESCI3	101422	2023/11/16	2024/11/15	
V-LISN	Schwarzbeck	NSLK 8127	01073	2023/11/16	2024/11/15	
Coaxial Switcher	Schwarzbeck	CX210	CX210	2023/11/16	2024/11/15	
Pulse Limiter	Schwarzbeck	VTSD 9561-F	00953	2023/11/16	2024/11/15	
Test Software	Frad	EZ_EMC	Version: EMC-CON 3A1.1+			

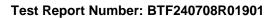
	Conducted test method						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due		
Spectrum Analyzer	Keysight	N9020A	MY50410020	2023/11/16	2024/11/15		
ESG Vector Signal Generator	Agilent	E4438C	MY45094854	2023/11/16	2024/11/15		
MXG Vector Signal Generator	Agilent	N5182A	MY46240163	2023/11/16	2024/11/15		
Wideband Radio Communication Tester	Rohde&Schwarz	CMW500	161997	2023/11/16	2024/11/15		
Temperature Humidity Chamber	ZZCKONG	ZZ-K02A	20210928007	2023/11/16	2024/11/15		
Adjustable Direct Current Regulated Power Supply	Dongguan Tongmen Electronic Technology Co., LTD	etm-6050c	20211026123	2023-11-16	2024/11/15		
RF Control Unit	Techy	TR1029-1	1	2023/11/11	2024/11/12		
RF Sensor Unit	Techy	TR1029-2	1	2023/11/11	2024/11/12		
Test Software	TST Pass	1		Version: 2.0			

4.2 Test Auxiliary Equipment

Title	Manufacturer	Model No.	Serial No.
Adapter	Huawei	HW-059200CHQ	/

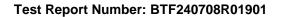
4.3 Test Modes

No.	Test Modes	Description
TM1	TX-GFSK	Keep the EUT in continuously transmitting mode (non-hopping) with
I IVI I	(Non-Hopping)	GFSK modulation.





TM2	TX-Pi/4DQPSK	Keep the EUT in continuously transmitting mode (non-hopping) with
	(Non-Hopping)	Pi/4DQPSK modulation.
TM3	TX-8DPSK	Keep the EUT in continuously transmitting mode (non-hopping) with
TIVIO	(Non-Hopping)	8DPSK modulation.
TM4 TX-GFSK (He	TX-GFSK (Hopping)	Keep the EUT in continuously transmitting mode (hopping) with GFSK
1 101-	TX-Of OR (Hopping)	modulation,.
TM5	TX-Pi/4DQPSK	Keep the EUT in continuously transmitting mode (hopping) with
TIVIO	(Hopping)	Pi/4DQPSK modulation.
TM6	TX-8DPSK (Hopping)	Keep the EUT in continuously transmitting mode (hopping) with 8DPSK
I IVIO	17-00F 3K (Flopping)	modulation.





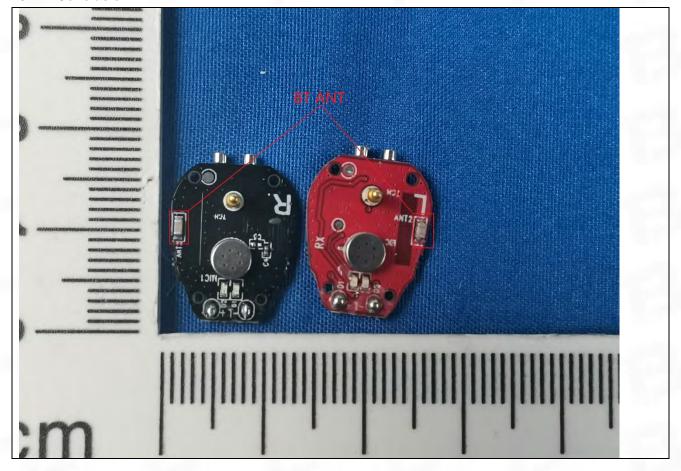
5 Evaluation Results (Evaluation)

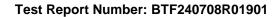
5.1 Antenna requirement

Test Requirement:

Refer to 47 CFR Part 15.203, 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 shall be considered sufficient to comply with the provisions of this section.

5.1.1 Conclusion:







6 Radio Spectrum Matter Test Results (RF)

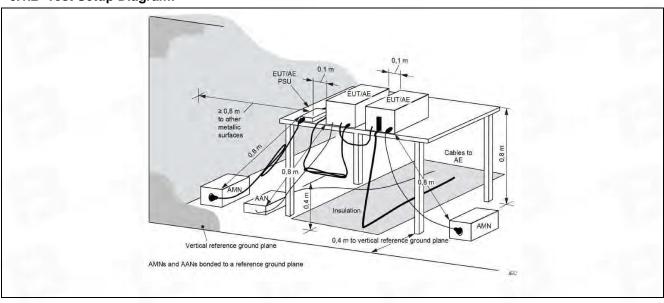
6.1 Conducted Emission at AC power line

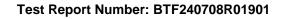
Test Requirement:	Refer to 47 CFR 15.207(a), Except as shown in paragraphs (b)and (c)of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN).						
Test Method:	ANSI C63.10-2020 section 6.2						
	Frequency of emission (MHz)	Conducted limit (dBµV)					
		Quasi-peak	Average				
Test Limit:	0.15-0.5	66 to 56*	56 to 46*				
rest Limit.	0.5-5	56	46				
	5-30	60	50				
	*Decreases with the logarithm of the frequency.						
Procedure:	Refer to ANSI C63.10-2020 section 6.2, standard test method for ac power-line						
Procedure.	conducted emissions from unlicen	sed wireless devices					

6.1.1 E.U.T. Operation:

Operating Environment:		
Temperature:	23 °C	
Humidity:	45.4 %	
Atmospheric Pressure:	1010 mbar	

6.1.2 Test Setup Diagram:



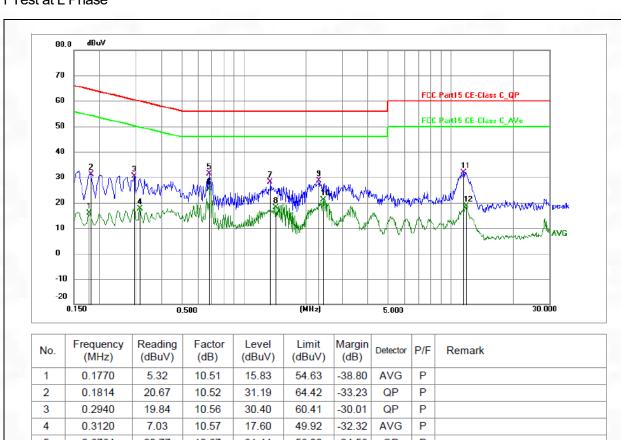




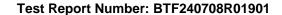
6.1.3 Test Data:

Test Data and Plots

A.2.1 Test at L Phase



No.	(MHz)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)	Detector	P/F	Remark
1	0.1770	5.32	10.51	15.83	54.63	-38.80	AVG	Р	
2	0.1814	20.67	10.52	31.19	64.42	-33.23	QP	Р	
3	0.2940	19.84	10.56	30.40	60.41	-30.01	QP	Р	
4	0.3120	7.03	10.57	17.60	49.92	-32.32	AVG	Р	
5	0.6764	20.77	10.67	31.44	56.00	-24.56	QP	Р	
6 *	0.6809	14.73	10.67	25.40	46.00	-20.60	AVG	Р	
7	1.3425	17.58	10.66	28.24	56.00	-27.76	QP	Р	
8	1.4280	7.51	10.66	18.17	46.00	-27.83	AVG	Р	
9	2.3054	18.06	10.67	28.73	56.00	-27.27	QP	Р	
10	2.4224	10.57	10.67	21.24	46.00	-24.76	AVG	Р	
11	11.5260	21.11	10.86	31.97	60.00	-28.03	QP	Р	
12	11.8950	7.79	10.87	18.66	50.00	-31.34	AVG	Р	





A.2.2 Test at N Phase

9

10

12

3.8580

4.0920

11.7330

11.9984

15.74

-0.11

7.94

19.76

10.67

10.68

10.83

10.83

26.41

10.57

18.77

30.59

56.00

46.00

50.00

60.00

-29.59

-35.43

31.23

29.41

QP

AVG

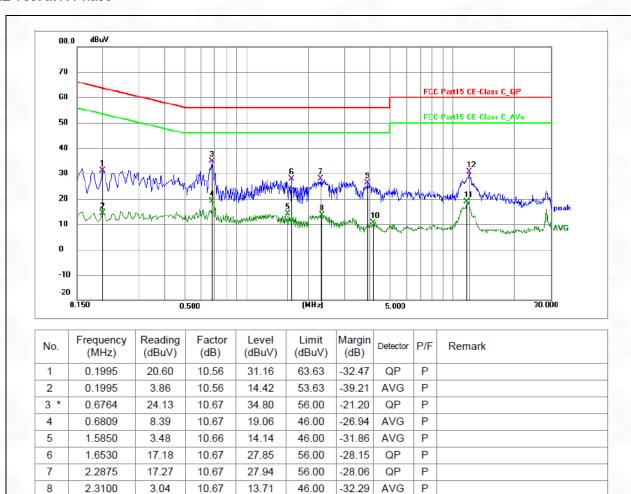
AVG

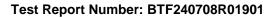
QP

P P

Р

Р

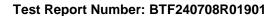






6.2 Occupied Bandwidth

Test Requirement:	47 CFR 15.215(c)
root requirement.	ANSI C63.10-2020, section 7.8.7, For occupied bandwidth measurements, use the
Test Method:	procedure in 6.9.2. KDB 558074 D01 15.247 Meas Guidance v05r02
Test Limit:	Refer to 47 CFR 15.215(c), intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.
	a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW. b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW, unless otherwise specified by the applicable requirement. c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2. d) Steps a) through c) might require iteration to adjust within the specified
	tolerances. e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target "-xx dB down" requirement; that is, if the requirement calls for measuring the -20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value. f) Set detection mode to peak and trace mode to max hold. g) Determine the reference value: Set the EUT to transmit an unmodulated carrier
Procedure:	or modulated signal, as applicable. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value). h) Determine the "-xx dB down amplitude" using [(reference value) - xx]. Alternatively, this calculation may be made by using the marker-delta function of the instrument.
	i) If the reference value is determined by an unmodulated carrier, then turn the EUT modulation ON, and either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise, the trace from step g) shall be used for step j).
	j) Place two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the "-xx dB down amplitude" determined in step h). If a marker is below this "-xx dB down amplitude" value, then it shall be as close as possible to this value. The occupied bandwidth is the frequency difference between the two markers. Alternatively, set a marker at the lowest frequency of the envelope of the
	spectral display, such that the marker is at or slightly below the "-xx dB down amplitude" determined in step h). Reset the marker-delta function and move the marker to the other side of the emission until the delta marker amplitude is at the same level as the reference marker amplitude. The marker-delta frequency reading at this point is the specified emission bandwidth. k) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

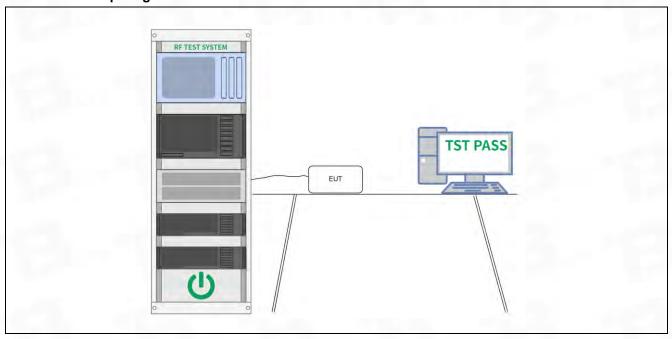




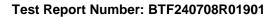
6.2.1 E.U.T. Operation:

Operating Environment:	
Temperature:	22.9 °C
Humidity:	49.6 %
Atmospheric Pressure:	1010 mbar

6.2.2 Test Setup Diagram:



6.2.3 Test Data:





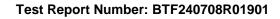
6.3 Maximum Conducted Output Power

Test Requirement:	47 CFR 15.247(b)(1)
Test Method:	ANSI C63.10-2020, section 7.8.5
rest Method.	KDB 558074 D01 15.247 Meas Guidance v05r02
Test Limit:	Refer to 47 CFR 15.247(b)(1), For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.
Procedure:	This is an RF-conducted test to evaluate maximum peak output power. Use a direct connection between the antenna port of the unlicensed wireless device and the spectrum analyzer, through suitable attenuation. The hopping shall be disabled for this test: a) Use the following spectrum analyzer settings: 1) Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel. 2) RBW > 20 dB bandwidth of the emission being measured. 3) VBW >= RBW. 4) Sweep: Auto. 5) Detector function: Peak. 6) Trace: Max hold. b) Allow trace to stabilize. c) Use the marker-to-peak function to set the marker to the peak of the emission. d) The indicated level is the peak output power, after any corrections for external attenuators and cables. e) A plot of the test results and setup description shall be included in the test report. NOTE—A peak responding power meter may be used, where the power meter and sensor system video bandwidth is greater than the occupied bandwidth of the unlicensed wireless device, rather than a spectrum analyzer.

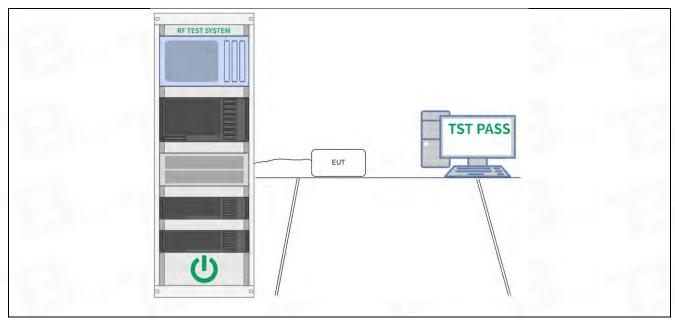
6.3.1 E.U.T. Operation:

Operating Environment:			
Temperature:	22.9 °C		
Humidity:	49.6 %		
Atmospheric Pressure:	1010 mbar		

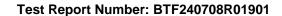
6.3.2 Test Setup Diagram:







6.3.3 Test Data:





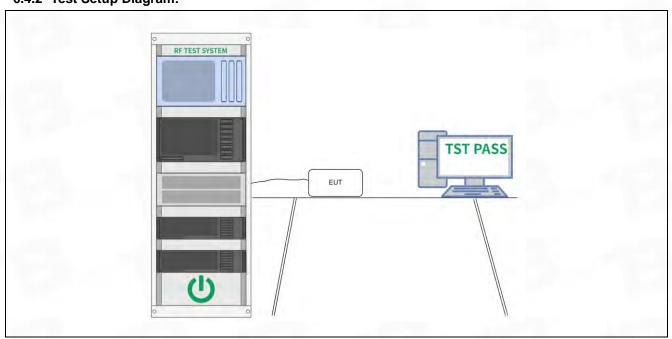
6.4 Channel Separation

Test Requirement:	47 CFR 15.247(a)(1)
Test Method:	ANSI C63.10-2020, section 7.8.2
	KDB 558074 D01 15.247 Meas Guidance v05r02
Test Limit:	Refer to 47 CFR 15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.
Procedure:	The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings: a) Span: Wide enough to capture the peaks of two adjacent channels. b) RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel. c) Video (or average) bandwidth (VBW) ≥ RBW. d) Sweep: Auto. e) Detector function: Peak. f) Trace: Max hold. g) Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. Compliance of an EUT with the appropriate regulatory limit shall be determined. A plot of the data shall be included in the test report.

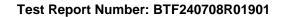
6.4.1 E.U.T. Operation:

Operating Environment:	
Temperature:	22.9 °C
Humidity:	49.6 %
Atmospheric Pressure:	1010 mbar

6.4.2 Test Setup Diagram:



6.4.3 Test Data:





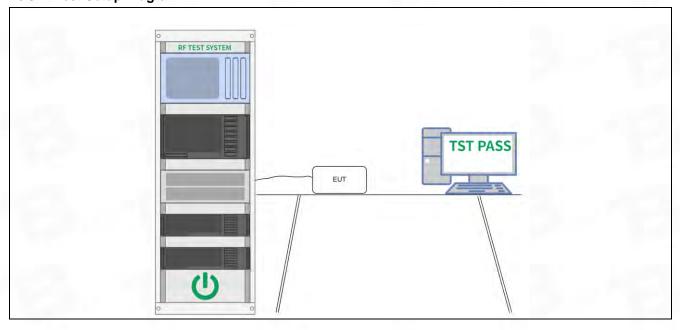
6.5 Number of Hopping Frequencies

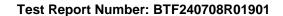
Test Requirement:	47 CFR 15.247(a)(1)(iii)				
Test Method:	ANSI C63.10-2020, section 7.8.3 KDB 558074 D01 15.247 Meas Guidance v05r02				
Test Limit:	Refer to 47 CFR 15.247(a)(1)(iii), Fequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.				
Procedure:	The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings: a) Span: The frequency band of operation. Depending on the number of channels the device supports, it may be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen. b) RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller. c) VBW ≥ RBW. d) Sweep: Auto. e) Detector function: Peak. f) Trace: Max hold. g) Allow the trace to stabilize. It might prove necessary to break the span up into subranges to show clearly all of the hopping frequencies. Compliance of an EUT with the appropriate regulatory limit shall be determined for the number of hopping channels. A plot of the data shall be included in the test report.				

6.5.1 E.U.T. Operation:

Operating Environment:				
Temperature:	22.9 °C			
Humidity:	49.6 %			
Atmospheric Pressure:	1010 mbar			

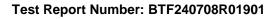
6.5.2 Test Setup Diagram:







6.5.3 Test Data:





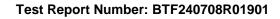
6.6 Dwell Time

Test Requirement:	47 CFR 15.247(a)(1)(iii)
Test Method:	ANSI C63.10-2020, section 7.8.4
Test Method.	KDB 558074 D01 15.247 Meas Guidance v05r02
Test Limit:	Refer to 47 CFR 15.247(a)(1)(iii), Fequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.
Procedure:	The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings: a) Span: Zero span, centered on a hopping channel. b) RBW shall be <= channel spacing and where possible RBW should be set >> 1 / T, where T is the expected dwell time per channel. c) Sweep: As necessary to capture the entire dwell time per hopping channel; where possible use a video trigger and trigger delay so that the transmitted signal starts a little to the right of the start of the plot. The trigger level might need slight adjustment to prevent triggering when the system hops on an adjacent channel; a second plot might be needed with a longer sweep time to show two successive hops on a channel. d) Detector function: Peak. e) Trace: Max hold. Use the marker-delta function to determine the transmit time per hop. If this value varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation in transmit time. Repeat the measurement using a longer sweep time to determine the number of hops over the period specified in the requirements. The sweep time shall be equal to, or less than, the period specified in the requirements. Determine the number of hops over the sweep time and calculate the total number of hops in the period specified in the requirements, using the following equation: (Number of hops in the period specified in the requirements) = (number of hops on spectrum analyzer) × (period specified in the requirements / analyzer sweep time) The average time of occupancy is calculated from the transmit time per hop multiplied by the number of hops in the period specified in the requirements. If the number of hops in a specific time varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation. The measured transmit time and time between hops shall be consistent with the values described in the operational description for the EUT.

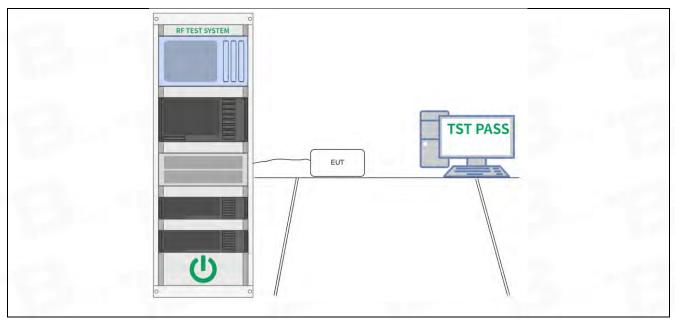
6.6.1 E.U.T. Operation:

Operating Environment:	
Temperature:	22.9 °C
Humidity:	49.6 %
Atmospheric Pressure:	1010 mbar

6.6.2 Test Setup Diagram:







6.6.3 Test Data:





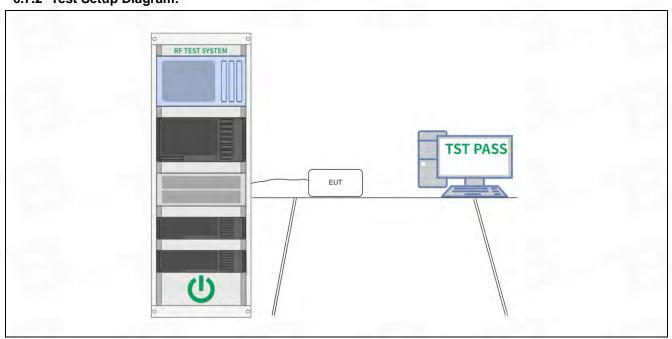
6.7 Emissions in non-restricted frequency bands

Test Requirement:	47 CFR 15.247(d), 15.209, 15.205
Test Method:	ANSI C63.10-2020 section 7.8.8
rest Method.	KDB 558074 D01 15.247 Meas Guidance v05r02
Test Limit:	Refer to 47 CFR 15.247(d), 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.
Procedure:	Conducted spurious emissions shall be measured for the transmit frequency, per 5.5 and 5.6, and at the maximum transmit powers. Connect the primary antenna port through an attenuator to the spectrum analyzer input; in the results, account for all losses between the unlicensed wireless device output and the spectrum analyzer. The instrument shall span 30 MHz to 10 times the operating frequency in GHz, with a resolution bandwidth of 100 kHz, video bandwidth of 300 kHz, and a coupled sweep time with a peak detector. The band 30 MHz to the highest frequency may be split into smaller spans, as long as the entire spectrum is covered.

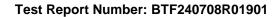
6.7.1 E.U.T. Operation:

·		
Operating Environment:		
Temperature:	22.9 °C	
Humidity:	49.6 %	
Atmospheric Pressure:	1010 mbar	

6.7.2 Test Setup Diagram:



6.7.3 Test Data:





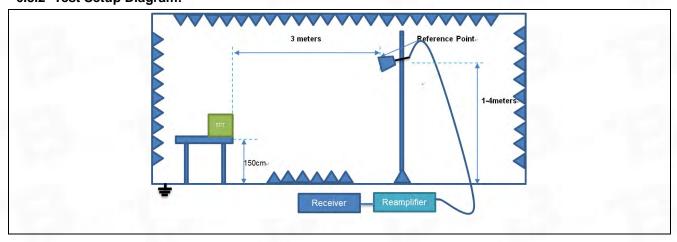
6.8 Band edge emissions (Radiated)

	olo Dalla dago dimociono (realiatoa)					
Test Requirement:	Refer to 47 CFR 15.247(d), In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated					
		in § 15.209(a)(see § 15.205(c))	5.209(a)(see § 15.205(c)).`			
Test Method:	ANSI C63.10-2020 secti	on 6.10				
rest ivietnou.	KDB 558074 D01 15.247	7 Meas Guidance v05r02				
	Frequency (MHz)	Field strength	Measurement			
		(microvolts/meter)	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			
Test Limit:	Above 960	500	3			
	** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.					
Procedure:	ANSI C63.10-2020 secti		00.01.			
1 Toocdare.	A1401 000.10-2020 3ecti	74401 000.10 2020 000001 0.10.0.2				

6.8.1 E.U.T. Operation:

Operating Environment:	
Temperature:	23.1 °C
Humidity:	52.4 %
Atmospheric Pressure:	1010 mbar

6.8.2 Test Setup Diagram:





Test Report Number: BTF240708R01901

6.8.3 Test Data:

Note

All modes are tested, and only the worst mode GFSK is showed in the report The peak value is less than the AV limit 54dBuV/m, and the AV value is not evaluated

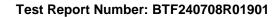
Left:

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: L							
No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2310.00	84.56	-43.68	40.88	74.00	-33.12	peak
2	2390.00	83.99	-43.64	40.35	74.00	-33.65	peak
3	2400.00	85.13	-43.61	41.52	74.00	-32.48	peak

TM1 / Polari	TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: L											
No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector					
1	2310.00	84.88	-43.68	41.20	74.00	-32.80	peak					
2	2390.00	84.31	-43.64	40.67	74.00	-33.33	peak					
3	2400.00	85.45	-43.61	41.84	74.00	-32.16	peak					

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: H											
						Margin (dB)	Detector				
1	2483.50	85.69	-43.58	42.11	74.00	-31.89	peak				
2	2500.00	84.12	-43.58	40.54	74.00	-33.46	peak				

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: H											
No. Frequency Reading Factor Level Limit Margin (MHz) Level(dBuV) (dB) (dBuV/m) (dBuV/m)											
1	2483.50	85.51	-43.58	41.93	74.00	-32.07	peak				
2	2500.00	83.73	-43.58	40.15	74.00	-33.85	peak				





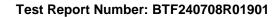
Right:

i tigiit.											
TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: L											
No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector				
1	2310.00	85.06	-43.68	41.38	74.00	-32.62	peak				
2	2390.00	84.49	-43.64	40.85	74.00	-33.15	peak				
3	2400.00	85.63	-43.61	42.02	74.00	-31.98	peak				

TM1 / Pola	TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: L										
No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector				
1	2310.00	85.38	-43.68	41.70	74.00	-32.30	peak				
2	2390.00	84.81	-43.64	41.17	74.00	-32.83	peak				
3	2400.00	85.95	-43.61	42.34	74.00	-31.66	peak				

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: H										
						Margin (dB)	Detector			
1	2483.50	86.19	-43.58	42.61	74.00	-31.39	peak			
2	2500.00	84.62	-43.58	41.04	74.00	-32.96	peak			

TM1 / Polari	TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: H										
No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector				
1	2483.50	86.01	-43.58	42.43	74.00	-31.57	peak				
2	2500.00	84.23	-43.58	40.65	74.00	-33.35	peak				





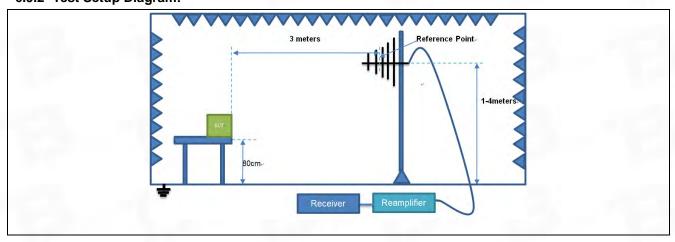
6.9 Emissions in frequency bands (below 1GHz)

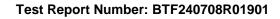
		, In addition, radiated emissions						
Test Requirement:		d in § 15.205(a), must also comp	ly with the radiated					
		§ 15.209(a)(see § 15.205(c)).`						
Test Method:	ANSI C63.10-2020 section 6.6.4							
- Took Mouriou.	KDB 558074 D01 15.247 N							
	Frequency (MHz)	Field strength	Measurement					
		(microvolts/meter)	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					
Test Limit:	Above 960	500	3					
1 oot Emme		ragraph (g), fundamental emission						
	radiators operating under the	nis section shall not be located in	the frequency bands					
		4-216 MHz or 470-806 MHz. Hov						
	these frequency bands is p	ermitted under other sections of	this part, e.g., §§					
	15.231 and 15.241.							
		e, the tighter limit applies at the b						
	The emission limits shown in the above table are based on measurements							
	employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz,							
	110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands							
		ts employing an average detecto	r.					
Procedure:	ANSI C63.10-2020 section	6.6.4						

6.9.1 E.U.T. Operation:

Operating Environment:	
Temperature:	23.1 °C
Humidity:	52.4 %
Atmospheric Pressure:	1010 mbar

6.9.2 Test Setup Diagram:



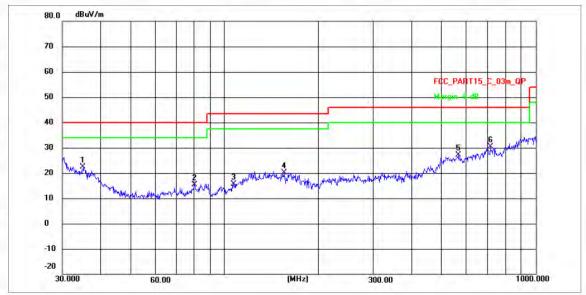




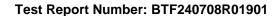
6.9.3 Test Data:

Left:

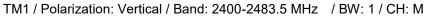
TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: M

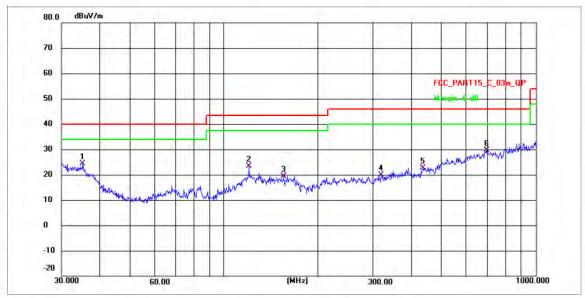


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	35.0661	26.80	-4.31	22.49	40.00	-17.51	QP	Р
2	80.0805	19.62	-4.26	15.36	40.00	-24.64	QP	P
3	107.1337	38.12	-22.41	15.71	43.50	-27.79	QP	Р
4	155.0920	42.09	-21.96	20.13	43.50	-23.37	QP	Р
5	563.6497	45.81	-18.57	27.24	46.00	-18.76	QP	Р
6 *	715,4265	48.01	-17.66	30.35	46.00	-15.65	QP	Р

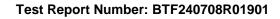






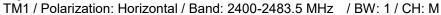


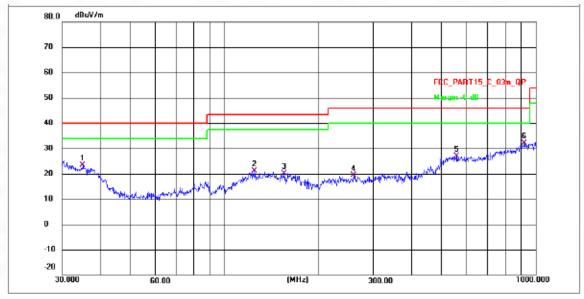
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	35.1893	28.64	-4.31	24.33	40.00	-15.67	QP	Р
2	120.0660	45.55	-22.29	23.26	43.50	-20.24	QP	Р
3	155.6370	41.38	-21.96	19.42	43.50	-24.08	QP	Р
4	321.0605	40.25	-20.45	19.80	46.00	-26.20	QP	Р
5	435.5898	42.25	-19.52	22.73	46.00	-23.27	QP	Р
6	695.6360	47.20	-17.64	29.56	46.00	-16.44	QP	Р





Right:

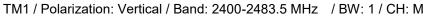


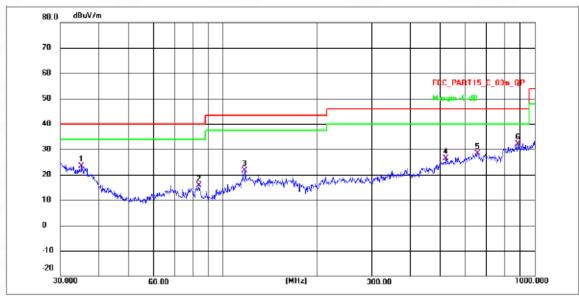


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	35.0661	27.80	-4.31	23.49	40.00	-16.51	QP	Р
2	125.0065	43.39	-22.24	21.15	43.50	-22.35	QP	P
3	155.0920	42.09	-21.96	20.13	43.50	-23.37	QP	P
4	260.1444	40.34	-20.97	19.37	46.00	-26.63	QP	P
5	557.7513	45.39	-18.61	26.78	46.00	-19.22	QP	P
6 *	917.6761	48.34	-16.11	32.23	46.00	-13.77	QP	Р

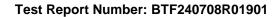








No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	35.1893	27.64	-4.31	23.33	40.00	-16.67	QP	Р
2	83.8155	38.34	-22.72	15.62	40.00	-24.38	QP	Р
3	117.5661	44.02	-22.31	21.71	43.50	-21.79	QP	Р
4	519.9755	45.13	-18.86	26.27	46.00	-19.73	QP	Р
5	654.2318	46.30	-17.94	28.36	46.00	-17.64	QP	Р
6 *	882.9533	48.72	-16.50	32.22	46.00	-13.78	QP	Р





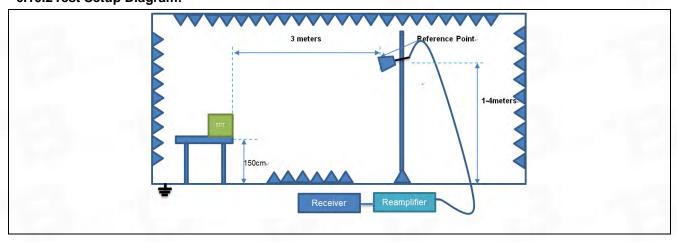
6.10 Emissions in frequency bands (above 1GHz)

	In addition, radiated emiss	ions which fall in the restricted b	pands as defined in 8					
Test Requirement:		ly with the radiated emission lin						
root rodalionioni.	15.209(a)(see § 15.205(c)		into opcomod in 3					
	ANSI C63.10-2020 section 6.6.4							
Test Method:	KDB 558074 D01 15.247 I							
	Frequency (MHz)	Field strength	Measurement					
	Troqueries (ivii 12)	(microvolts/meter)	distance					
		(morevene/meter)	(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					
Test Limit:	Above 960	500	3					
Test Littit.	** Except as provided in pa	aragraph (g), fundamental emiss	sions from intentional					
	radiators operating under	his section shall not be located	in the frequency bands					
		74-216 MHz or 470-806 MHz. H						
	these frequency bands is p	permitted under other sections of	of this part, e.g., §§					
	15.231 and 15.241.							
	In the emission table abov	e, the tighter limit applies at the	band edges.					
	The emission limits shown in the above table are based on measurements							
	employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz,							
	110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands							
	are based on measuremer	nts employing an average detec	tor.					
Procedure:	ANSI C63.10-2020 section	6.6.4						

6.10.1 E.U.T. Operation:

Operating Environment:			
Temperature:	23.1 °C		
Humidity:	52.4 %		
Atmospheric Pressure:	1010 mbar		

6.10.2Test Setup Diagram:





Test Report Number: BTF240708R01901

6.10.3Test Data:

Note:

All modes are tested, and only the worst mode GFSK is showed in the report

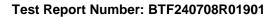
L:

L .											
TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: L											
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector				
1	4804.000	89.36	-48.83	40.53	74.00	-33.47	peak				
2	7206.000	87.93	-46.88	41.05	74.00	-32.95	peak				
3	9608.000	89.36	-45.51	43.85	74.00	-30.15	peak				

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: L												
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector					
1	4804.000	90.60	-48.83	41.77	74.00	-32.23	peak					
2	7206.000	89.07	-46.88	42.19	74.00	-31.81	peak					
3	9608.000	90.93	-45.51	45.42	74.00	-28.58	peak					

TM1 / Polariz	TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: M											
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector					
1	4882.000	89.92	-48.83	41.09	74.00	-32.91	peak					
2	7323.000	88.49	-46.88	41.61	74.00	-32.39	peak					
3	9764.000	89.92	-45.51	44.41	74.00	-29.59	peak					

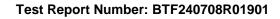
TM1 / Polaria	TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: M												
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector						
1	4882.000	90.04	-48.83	41.21	74.00	-32.79	peak						
2	7323.000	88.51	-46.88	41.63	74.00	-32.37	peak						
3	9764.000	90.37	-45.51	44.86	74.00	-29.14	peak						





TM1 / Polari	TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: H											
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector					
1	4960.000	90.78	-48.71	42.07	74.00	-27.04	peak					
2	7440.000	89.35	-46.76	42.59	74.00	-33.78	peak					
3	9920.000	90.78	-45.39	45.39	74.00	-29.39	peak					

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: H											
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector				
1	4960.000	91.00	-48.71	42.29	74.00	-31.71	peak				
2	7440.000	89.47	-46.76	42.71	74.00	-31.29	peak				
3	9920.000	91.33	-45.39	45.94	74.00	-28.06	peak				





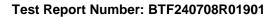
R:

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: L												
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector					
1	4804.000	88.88	-48.83	40.05	74.00	-33.95	peak					
2	7206.000	87.45	-46.88	40.57	74.00	-33.43	peak					
3	9608.000	88.88	-45.51	43.37	74.00	-30.63	peak					

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: L												
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector					
1	4804.000	90.60	-48.83	41.77	74.00	-32.23	peak					
2	7206.000	89.07	-46.88	42.19	74.00	-31.81	peak					
3	9608.000	90.93	-45.51	45.42	74.00	-28.58	peak					

TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: M											
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector				
1	4882.000	89.44	-48.83	40.61	74.00	-33.39	peak				
2	7323.000	88.01	-46.88	41.13	74.00	-32.87	peak				
3	9764.000	89.44	-45.51	43.93	74.00	-30.07	peak				

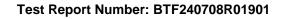
TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: M								
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	
1	4882.000	90.04	-48.83	41.21	74.00	-32.79	peak	
2	7323.000	88.51	-46.88	41.63	74.00	-32.37	peak	
3	9764.000	90.37	-45.51	44.86	74.00	-29.14	peak	





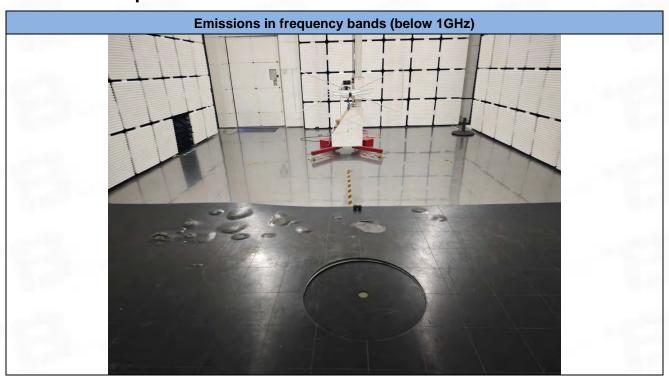
TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: H								
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	
1	4960.000	90.30	-48.71	41.59	74.00	-32.41	peak	
2	7440.000	88.87	-46.76	42.11	74.00	-31.89	peak	
3	9920.000	90.30	-45.39	44.91	74.00	-29.09	peak	

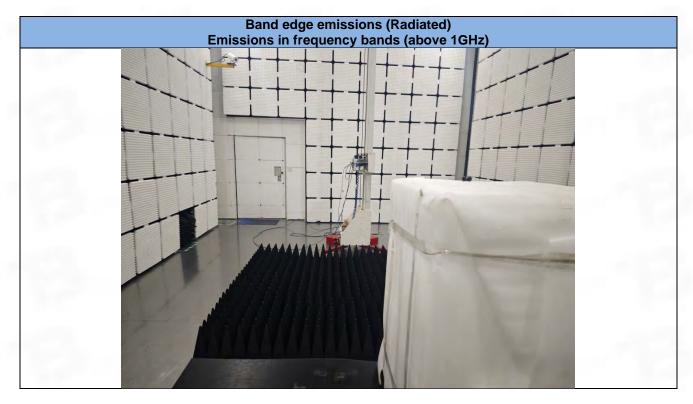
TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: H								
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	
1	4960.000	91.00	-48.71	42.29	74.00	-31.71	peak	
2	7440.000	89.47	-46.76	42.71	74.00	-31.29	peak	
3	9920.000	91.33	-45.39	45.94	74.00	-28.06	peak	

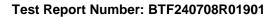




7 Test Setup Photos









Appendix



Test Report Number: BTF240708R01901



The Left one:

1. Bandwidth

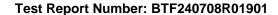
1.1 Test Result

1.1.1 OBW

Mode	TX	Frequency	Packet	ANT	99% Occupied Bandwidth (MHz)		Verdict
T	Type	(MHz)	Type	AINT	Result	Limit	verdict
		2402	DH5	1	0.858	/	Pass
GFSK	SISO	2441	DH5	1	0.861	/	Pass
		2480	DH5	1	0.868	/	Pass
		2402	2DH5	1	1.164	/	Pass
Pi/4DQPSK	SISO	2441	2DH5	1	1.165	/	Pass
		2480	2DH5	1	1.165	/	Pass
		2402	3DH5	1	1.170	/	Pass
8DPSK	SISO	2441	3DH5	1	1.172	1	Pass
		2480	3DH5	1	1.170	1	Pass

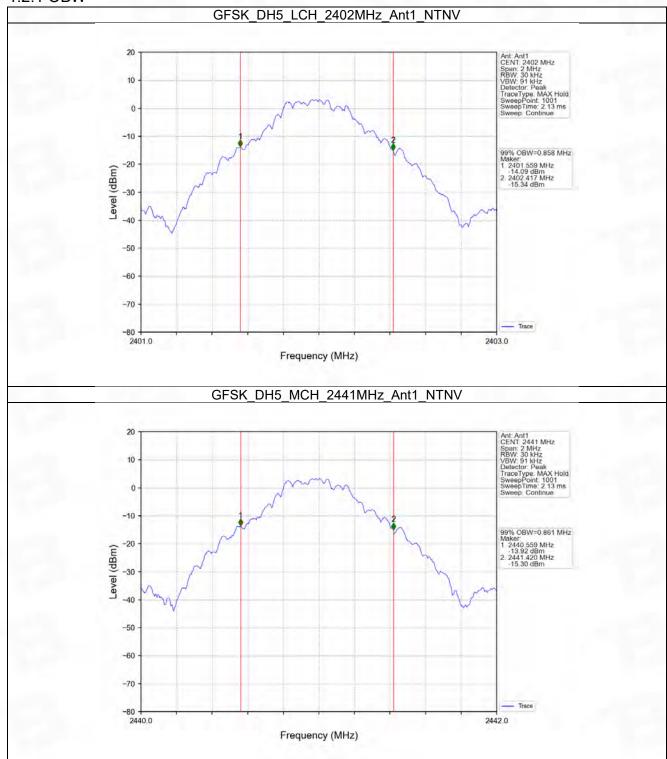
1.1.2 20dB BW

Mode	TX	Frequency	Packet	ANT	20dB Bandwidth (MHz)		Verdict	
Mode	Type	(MHz)	Type	ANI	Result	Limit	verdict	
		2402	DH5	1	0.962	/	Pass	
GFSK	SISO	2441	DH5	1	0.962	/	Pass	
		2480	DH5	1	0.965	/	Pass	
		2402	2DH5	1	1.293	/	Pass	
Pi/4DQPSK	SISO	2441	2DH5	1	1.293	/	Pass	
		2480	2DH5	1	1.293	/	Pass	
		2402	3DH5	1	1.305	/	Pass	
8DPSK	SISO	2441	3DH5	1	1.305	/	Pass	
		2480	3DH5	1	1.305	/	Pass	



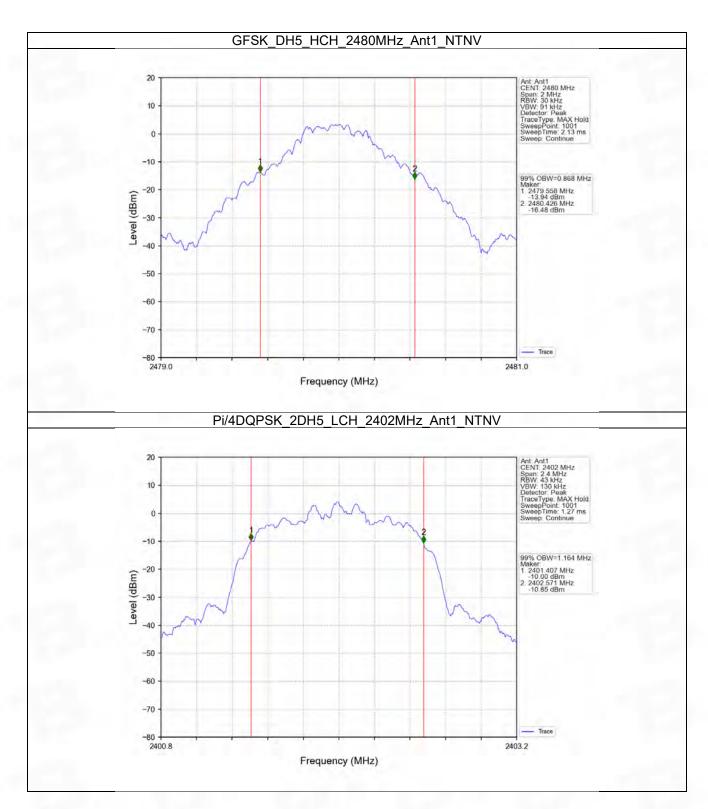


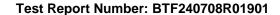
1.2.1 OBW



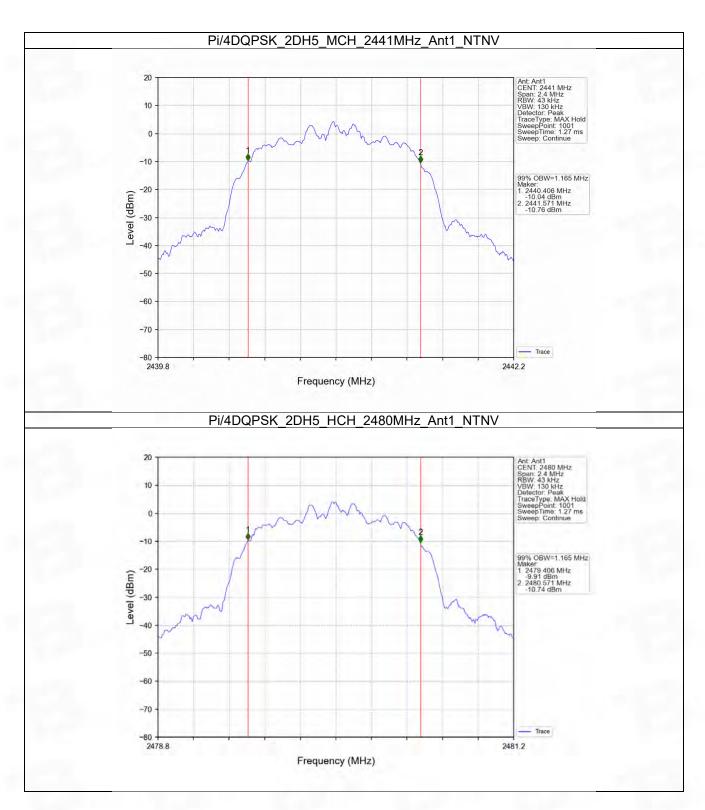


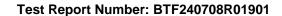




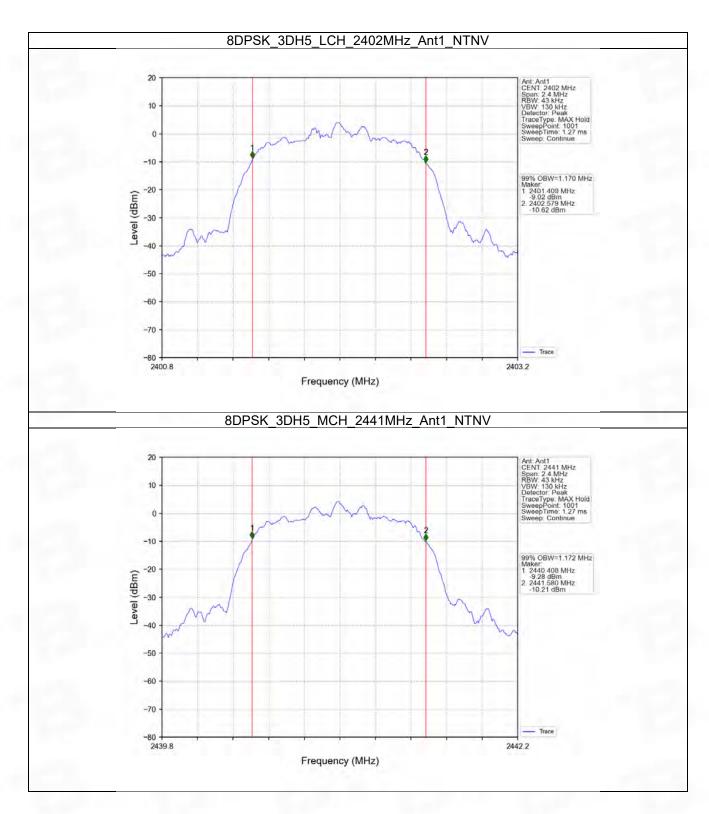






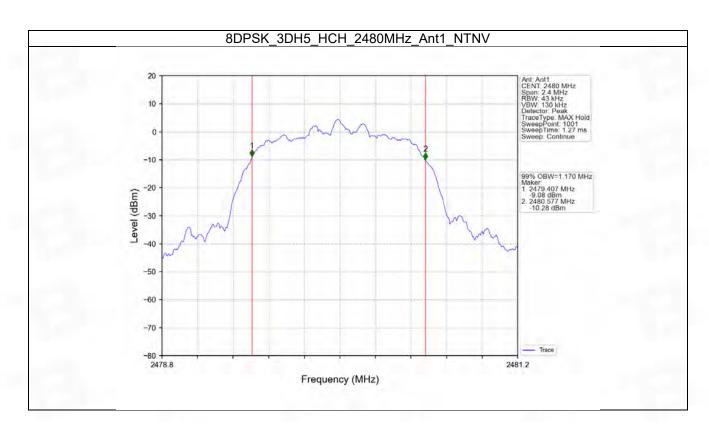


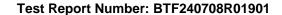






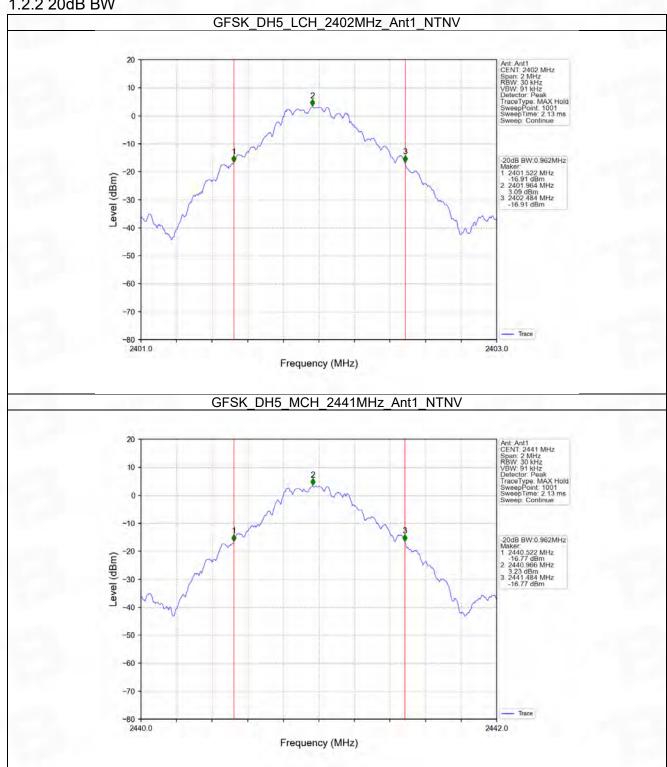


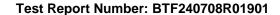




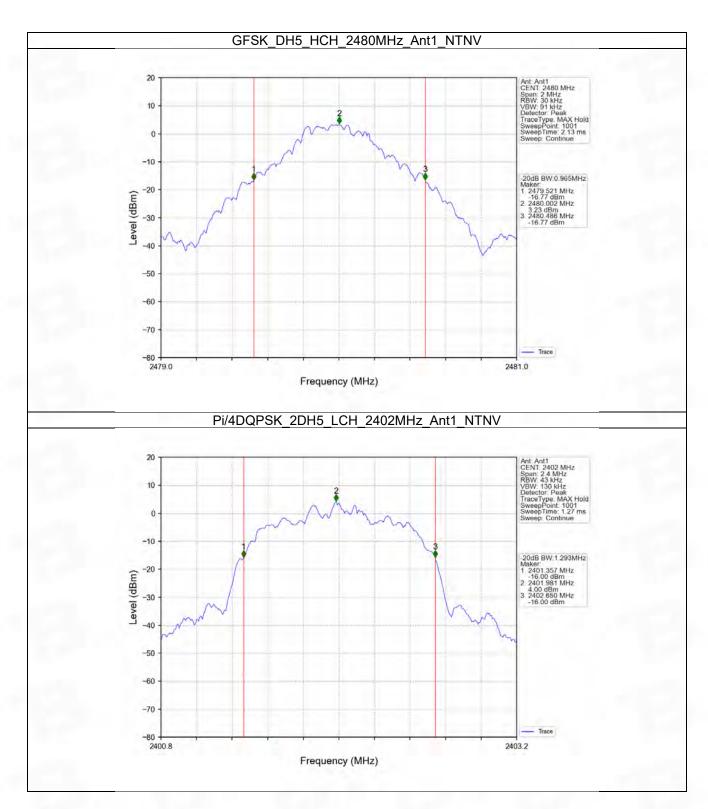


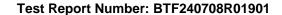
1.2.2 20dB BW



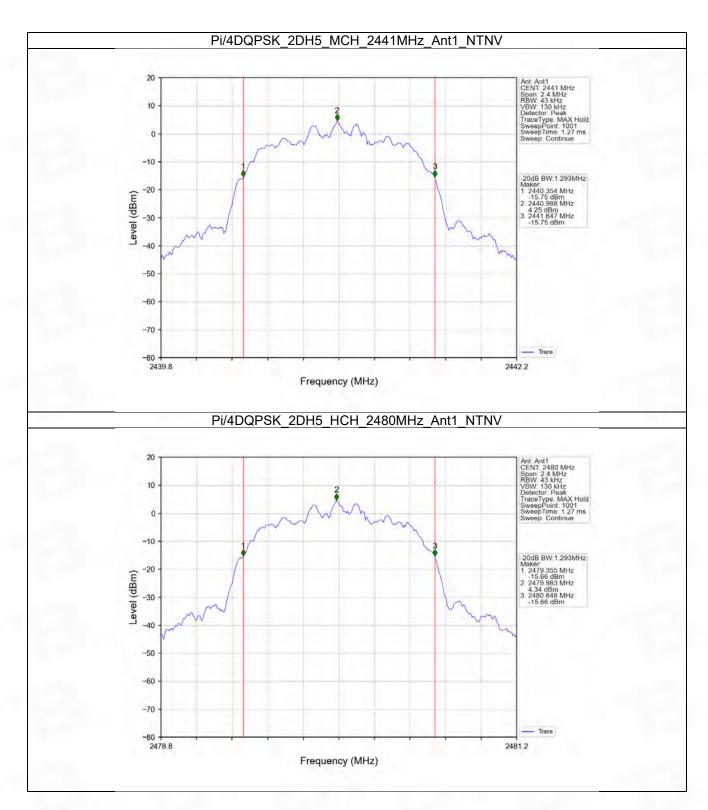


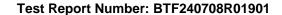




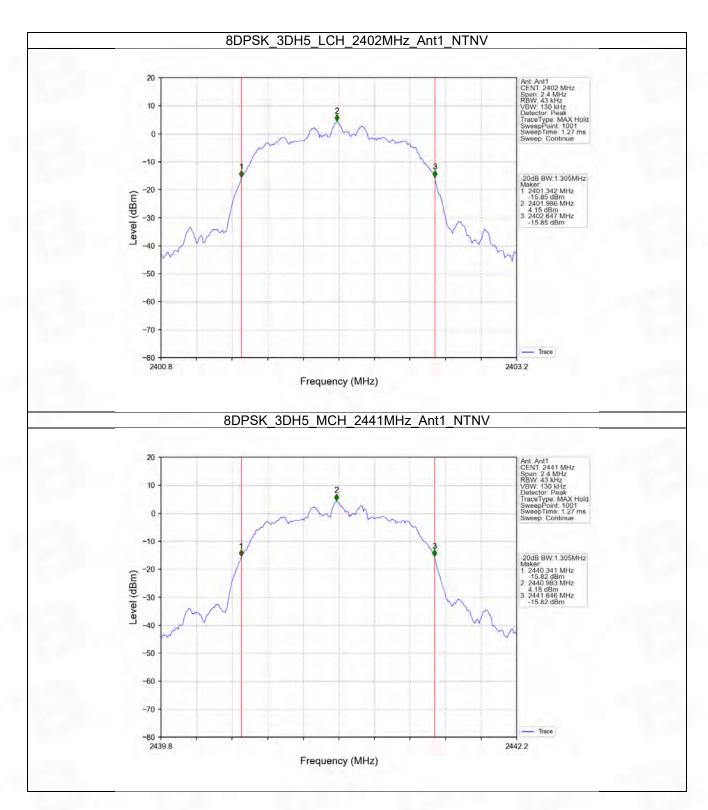






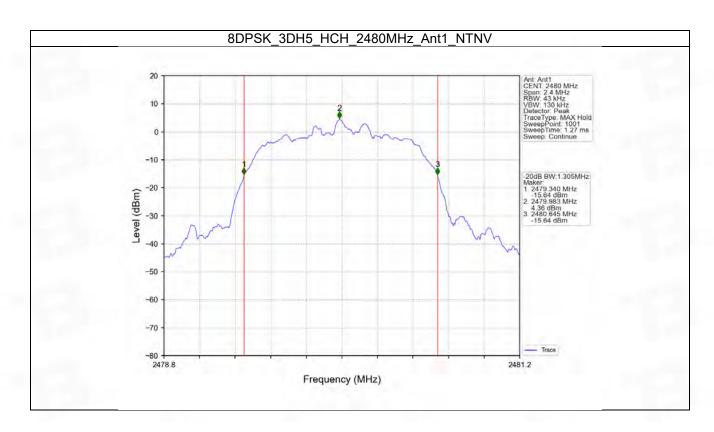


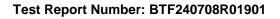












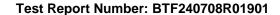


2. Maximum Conducted Output Power

2.1 Test Result

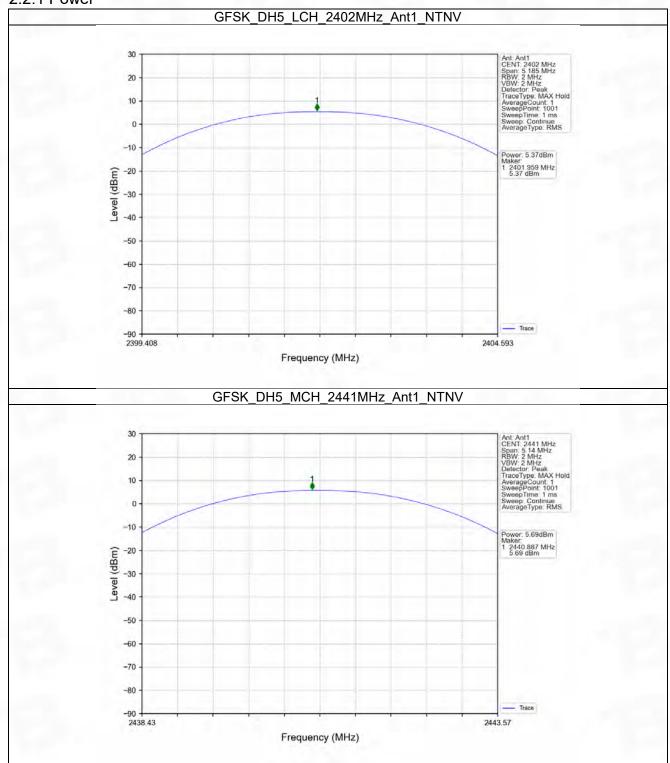
2.1.1 Power

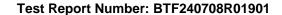
Mode	TX	Frequency	Packet	Maximum Peak Con (dE	Verdict	
	Туре	(MHz)	Туре	ANT1	Limit	
		2402	DH5	5.37	<=20.97	Pass
GFSK	SISO	2441	DH5	5.69	<=20.97	Pass
		2480	DH5	5.94	<=20.97	Pass
		2402	2DH5	4.32	<=20.97	Pass
Pi/4DQPSK	SISO	2441	2DH5	4.51	<=20.97	Pass
		2480	2DH5	4.70	<=20.97	Pass
		2402	3DH5	4.42	<=20.97	Pass
8DPSK SISO	SISO	2441	3DH5	4.62	<=20.97	Pass
		2480	3DH5	4.82	<=20.97	Pass
Note1: Antenn	a Gain: Ar	nt1: 2.70dBi;				



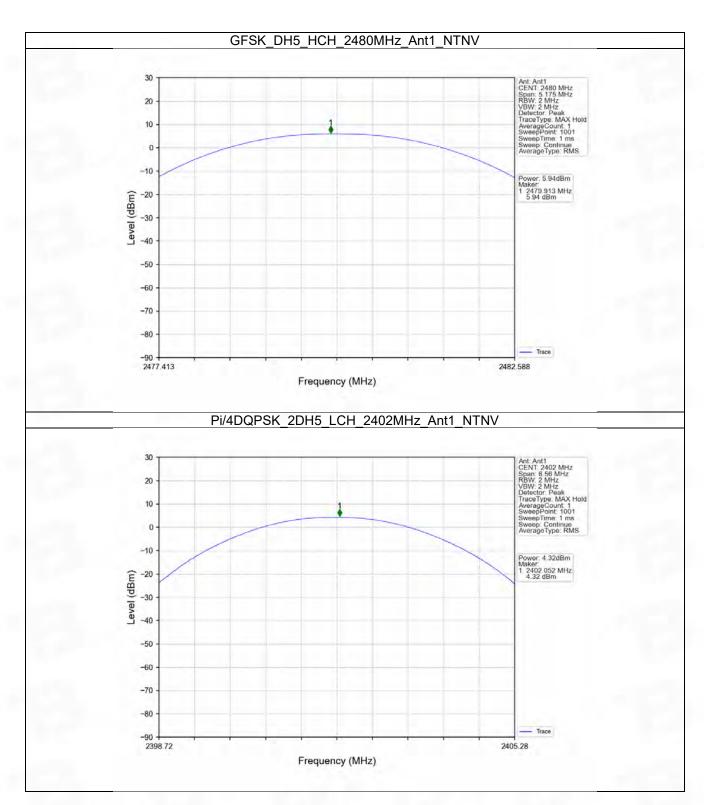


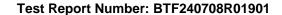
2.2.1 Power



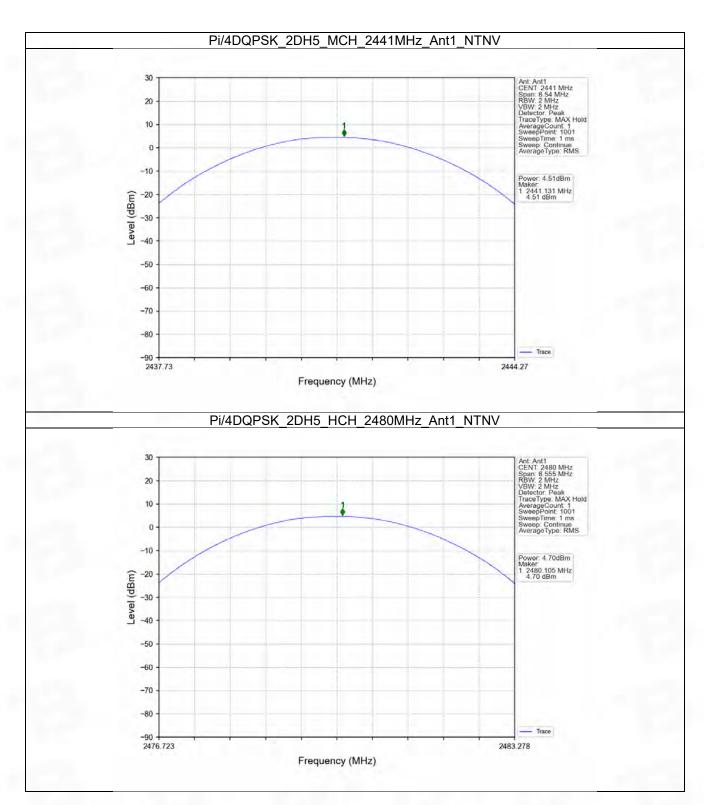


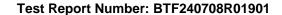




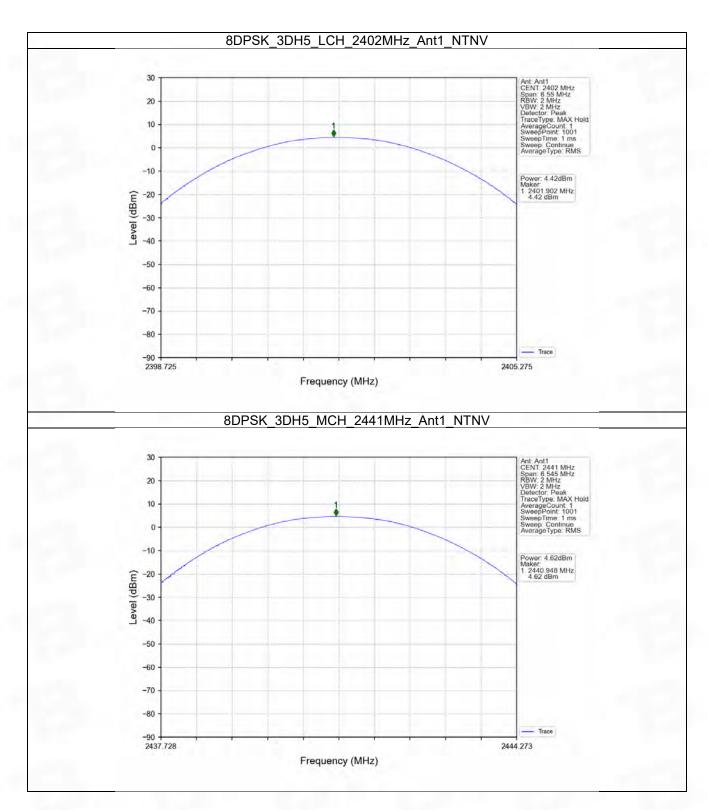






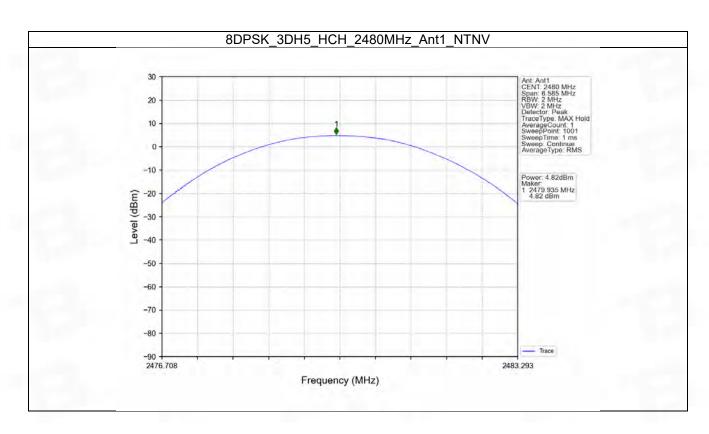


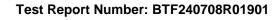












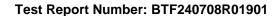


3. Carrier Frequency Separation

3.1 Test Result

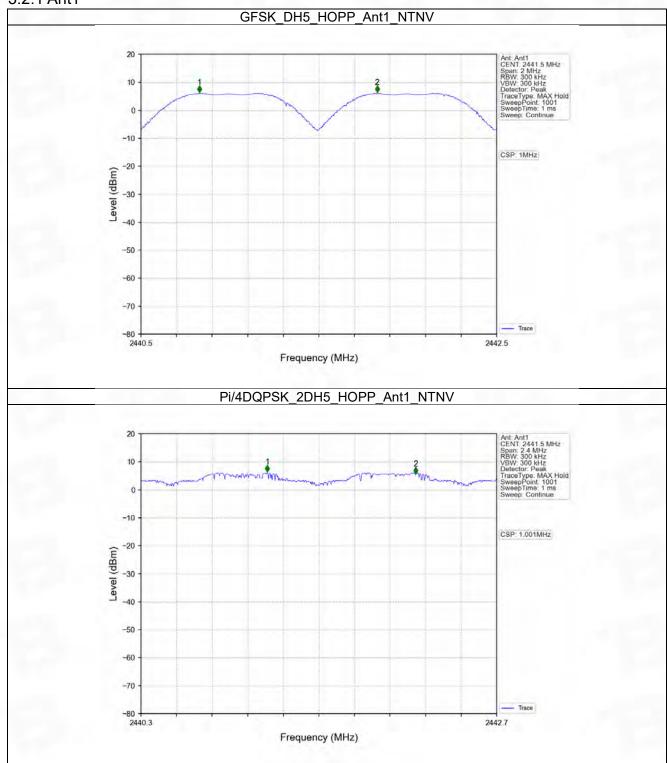
3.1.1 Ant1

	Ant1										
Mode	TX	Frequency	Packet	Channel Separation	20dB Bandwidth	Limit	Verdict				
Mode	Туре	(MHz)	Type	(MHz)	(MHz)	(MHz)	verdict				
GFSK	SISO	HOPP	DH5	1.000	0.965	>=0.965	Pass				
Pi/4DQPSK	SISO	HOPP	2DH5	1.001	1.293	>=0.862	Pass				
8DPSK	SISO	HOPP	3DH5	0.984	1.305	>=0.87	Pass				



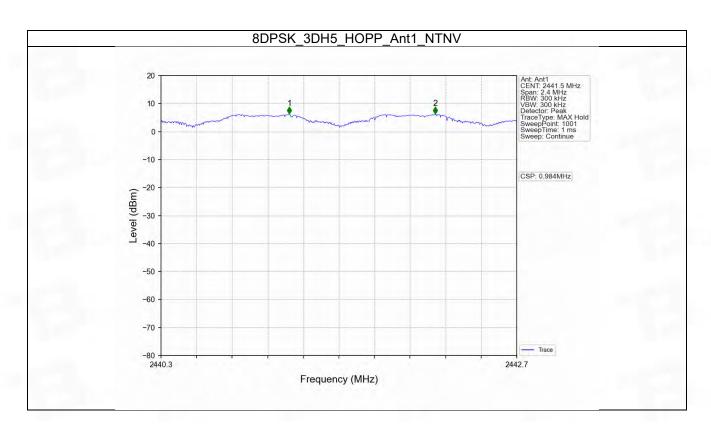


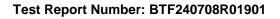
3.2.1 Ant1











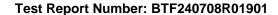


4. Number of Hopping Frequencies

4.1 Test Result

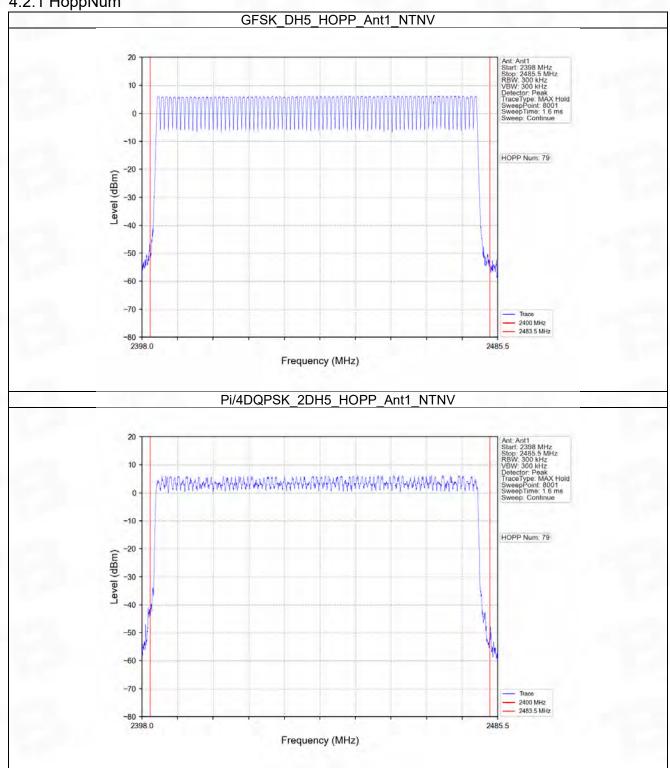
4.1.1 HoppNum

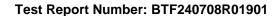
Mode	TX	Frequency	Packet	Num of Hoppir	g Frequencies	Verdict
Mode	Туре	(MHz)	Туре	ANT1	Limit	verdict
GFSK	SISO	HOPP	DH5	79	>=15	Pass
Pi/4DQPSK	SISO	HOPP	2DH5	79	>=15	Pass
8DPSK	SISO	HOPP	3DH5	79	>=15	Pass



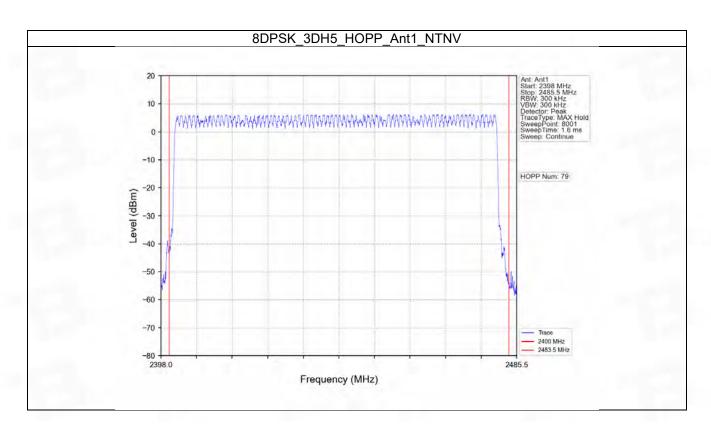


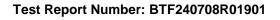
4.2.1 HoppNum











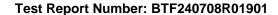


5. Time of Occupancy (Dwell Time)

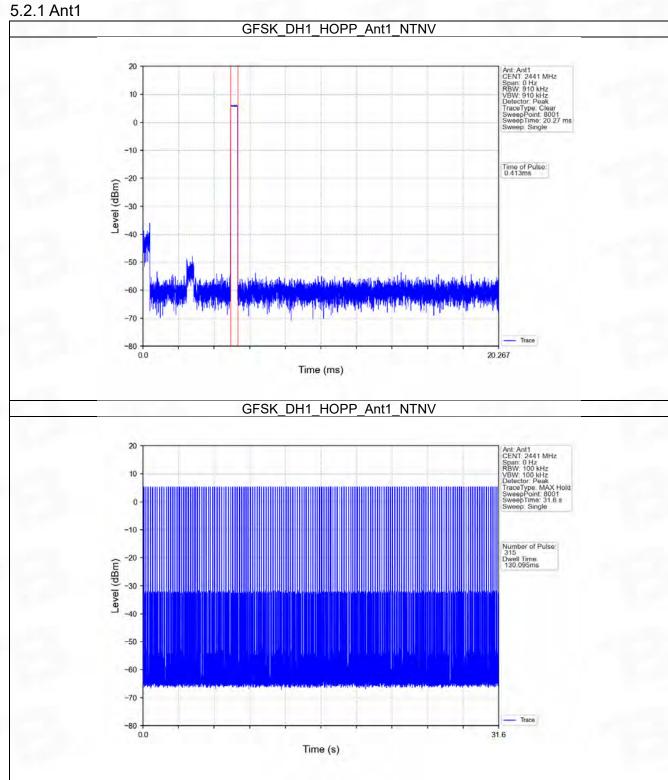
5.1 Test Result

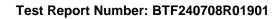
5.1.1 Ant1

					Ant1				
Mode	TX Type	Frequency (MHz)	Packet Type	Duration of Single Pulse (ms)	Observation Period (s)	Num of Pulse in Observation Period	Dwell Time (ms)	Limit (ms)	Verdict
	GFSK SISO HOPP		DH1	0.413	31.600	315	130.095	<=400	Pass
GFSK		HOPP	DH3	1.669	31.600	150	250.350	<=400	Pass
			DH5	2.918	31.600	106	309.308	<=400	Pass
		HOPP	2DH1	0.423	31.600	313	132.399	<=400	Pass
Pi/4DQPSK	SISO		2DH3	1.672	31.600	156	260.832	<=400	Pass
			2DH5	2.923	31.600	110	321.530	<=400	Pass
			3DH1	0.423	31.600	316	133.668	<=400	Pass
8DPSK SISO	O HOPP	3DH3	1.674	31.600	159	266.166	<=400	Pass	
			3DH5	2.926	31.600	111	324.786	<=400	Pass

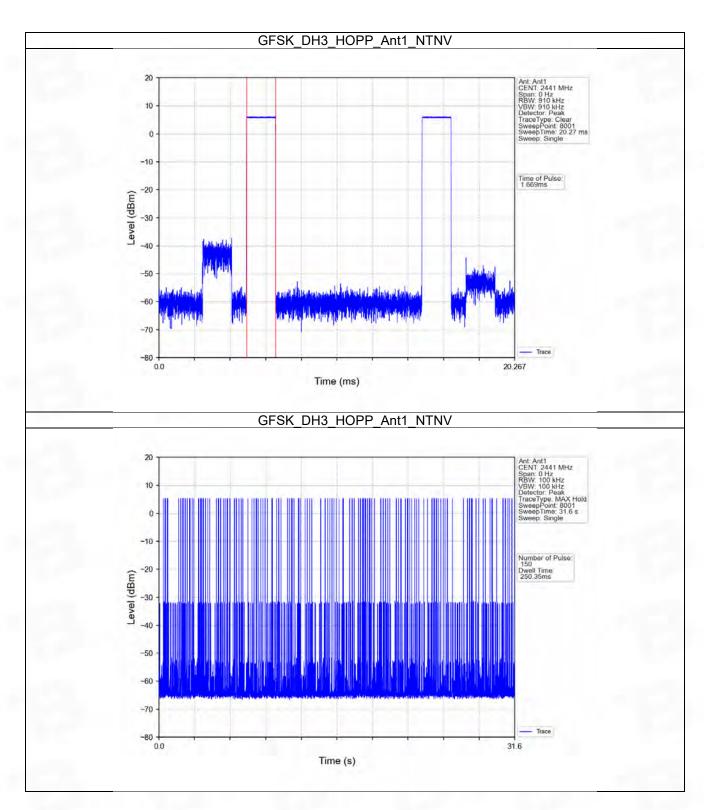


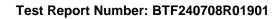




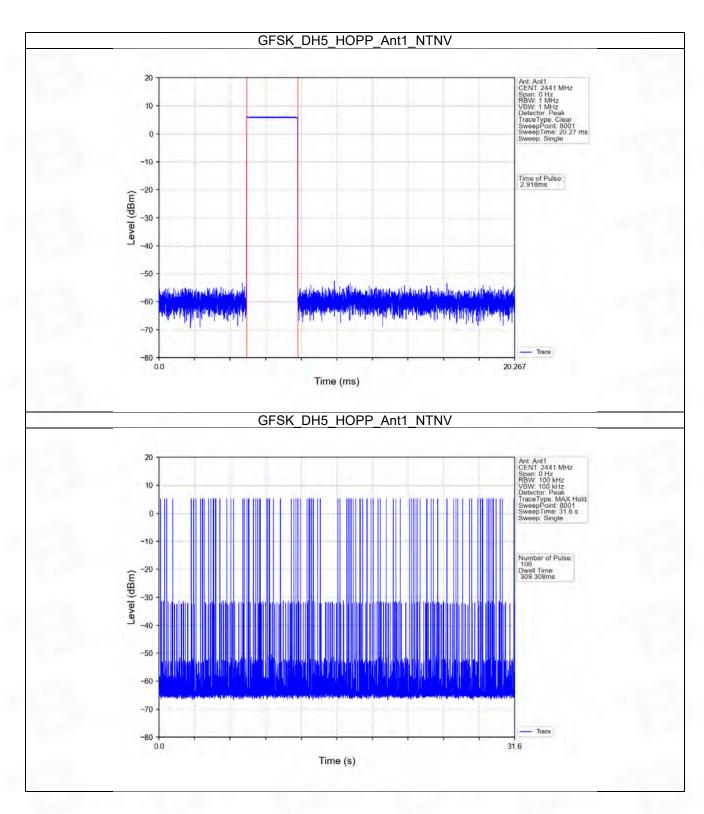


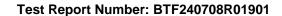




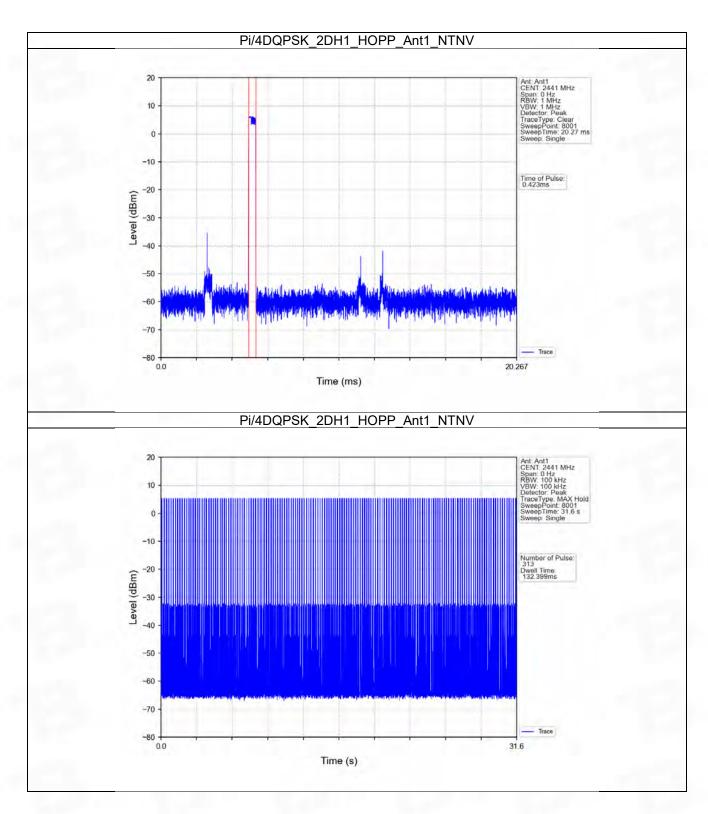


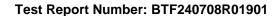




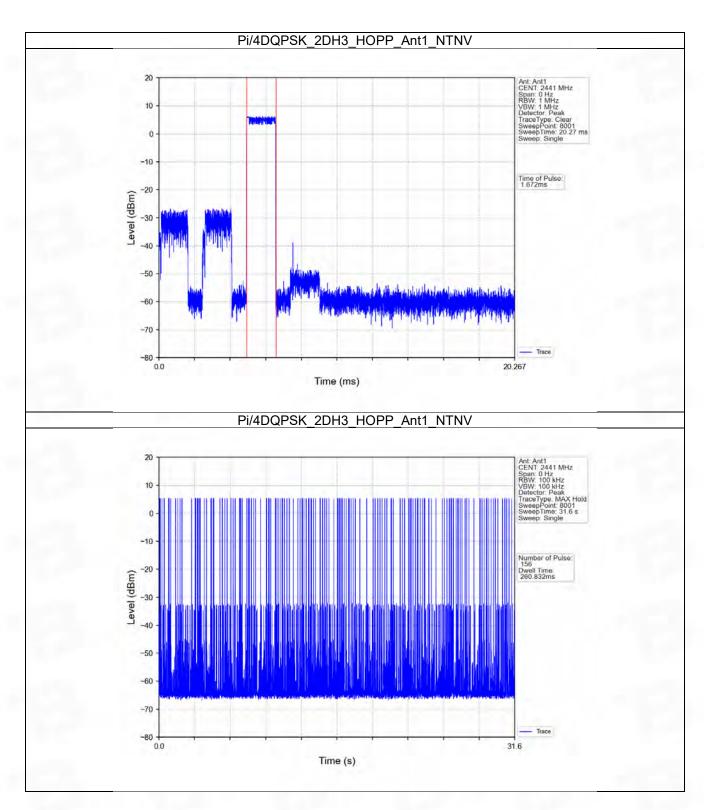






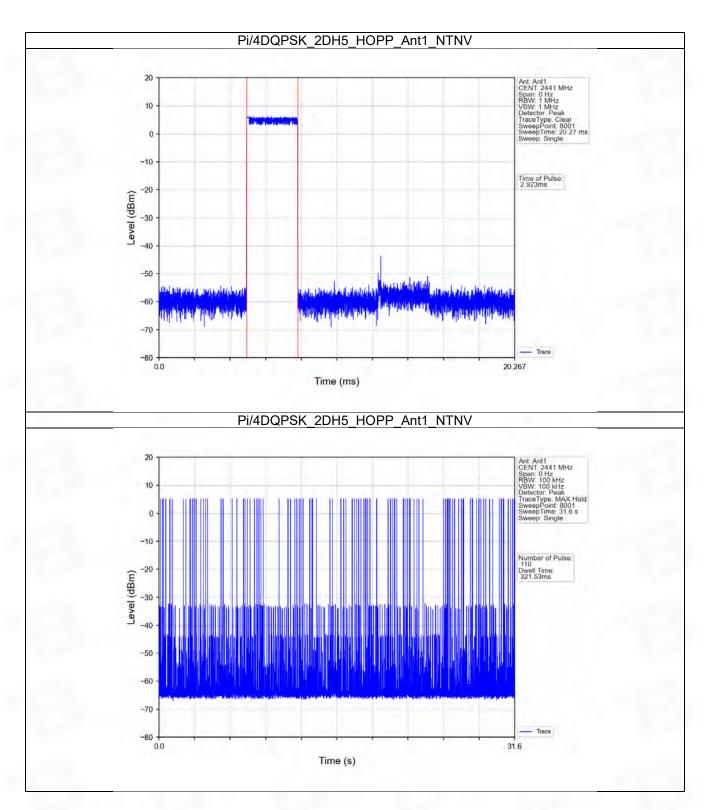






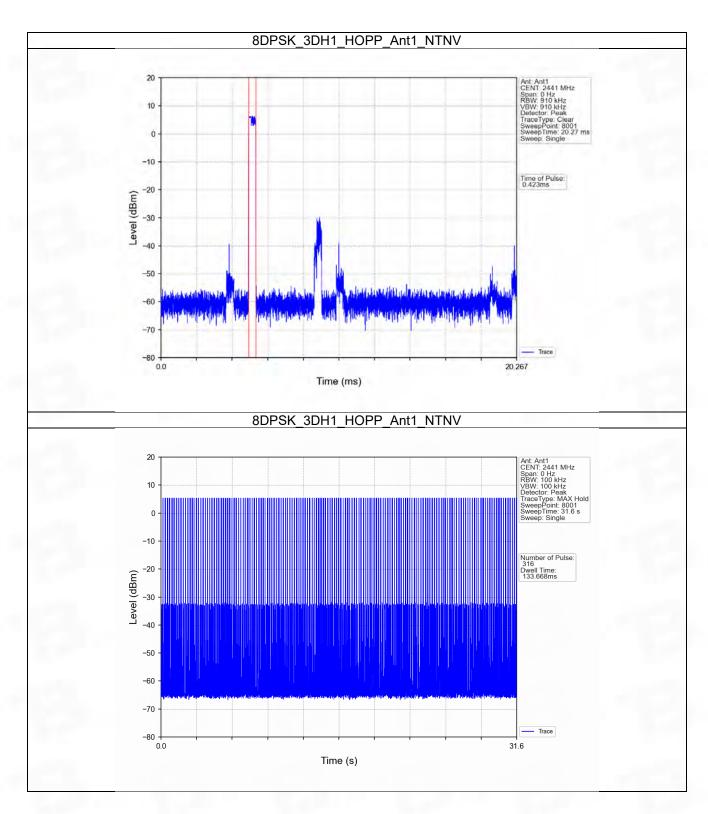


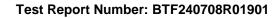




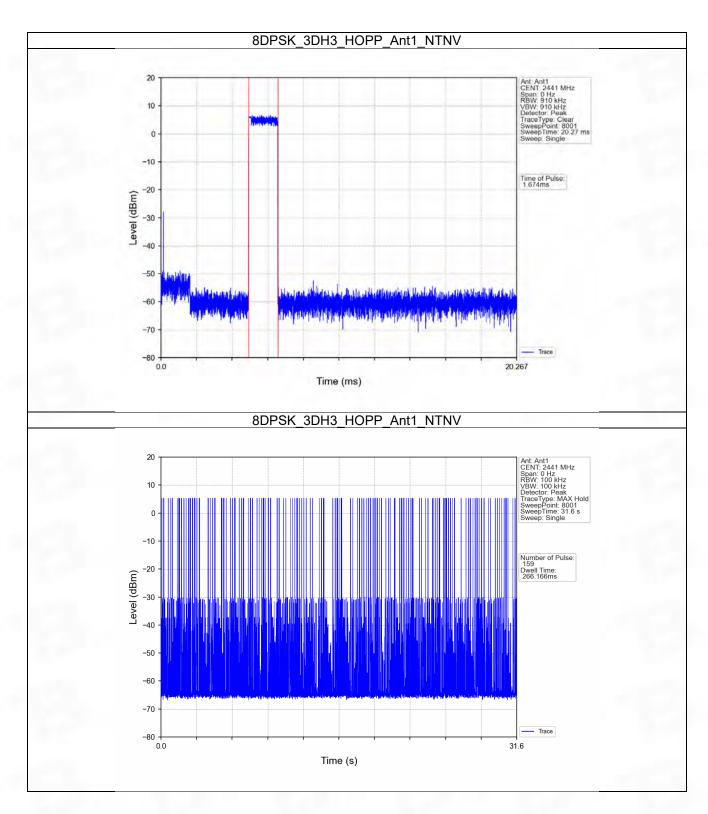


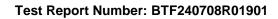




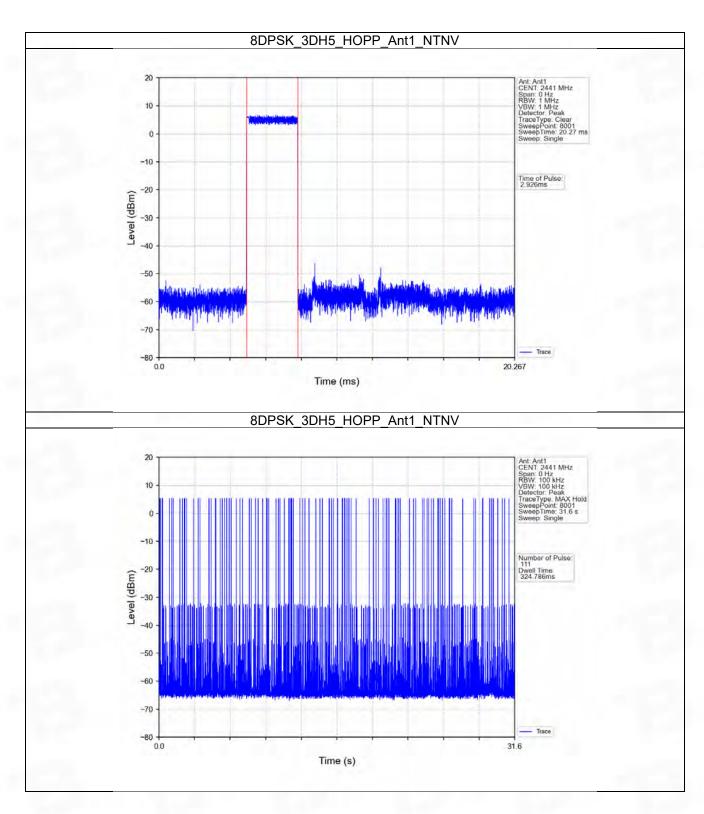














6. Unwanted Emissions In Non-restricted Frequency Bands

6.1 Test Result

6.1.1 Ref

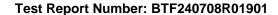
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)
		2402	DH5	1	5.59
GFSK	SISO	2441	DH5	1	5.70
		2480	DH5	1	5.78
		2402	2DH5	1	5.38
Pi/4DQPSK	SISO	2441	2DH5	1	5.54
		2480	2DH5	1	5.65
		2402	3DH5	1	5.48
8DPSK	SISO	2441	3DH5	1	5.56
		2480	3DH5	1	5.70

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

6.1.2 CSE

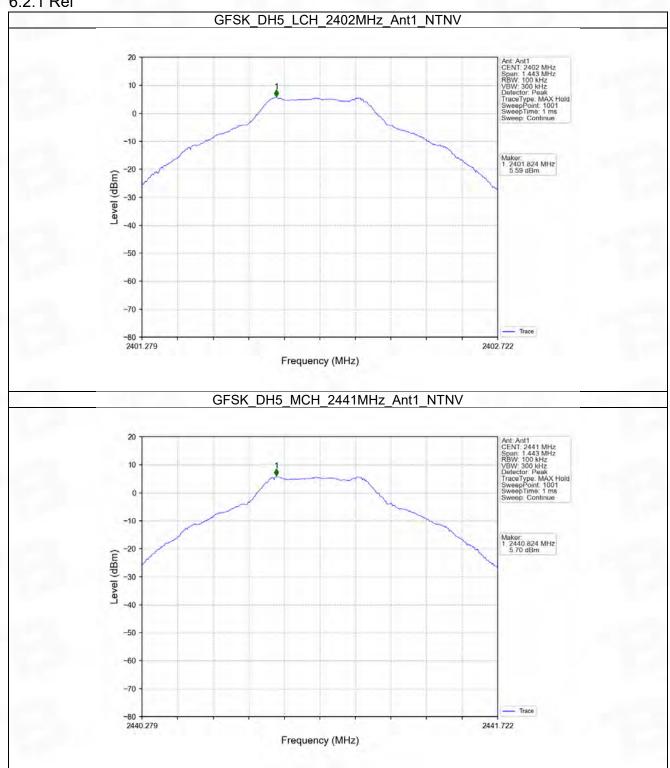
Mode	TX	Frequency	Packet	ANT	Level of Reference	Limit	Verdict	
Wode	Type	(MHz)	туре		(dBm)	(dBm)	Verdict	
		2402	DH5	1	5.59	-14.41	Pass	
		2441	DH5	1	5.70	-14.30	Pass	
GFSK	SISO	2480	DH5	1	5.78	-14.22	Pass	
		HOPP	DH5	1	5.69	-14.31	Pass	
		поее	טחט	l	5.69	-14.31	Pass	
	SISO	2402	2DH5	1	5.38	-14.62	Pass	
		2441	2DH5	1	5.54	-14.46	Pass	
Pi/4DQPSK		2480	2DH5	1	5.65	-14.35	Pass	
		НОРР	2DH5	1	5.20	-14.80	Pass	
					5.20	-14.80	Pass	
		2402	3DH5	1	5.48	-14.52	Pass	
	SISO	2441	3DH5	1	5.56	-14.44	Pass	
8DPSK		2480	3DH5	1	5.70	-14.30	Pass	
		HOPP 3E	20115	1	5.22	-14.78	Pass	
			งบทอ	3DH5 1 -	5.22	-14.78	Pass	

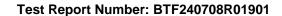
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.



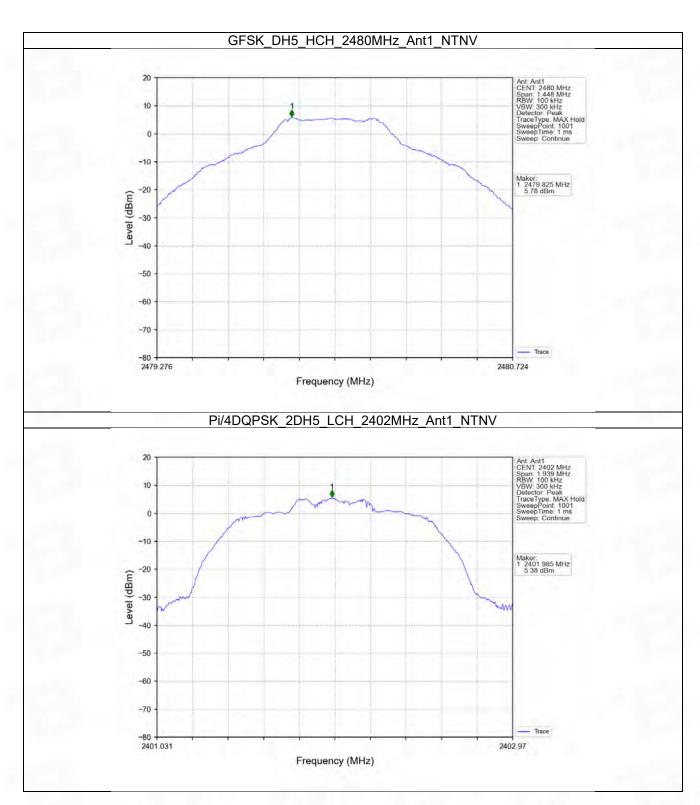


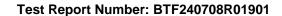
6.2.1 Ref



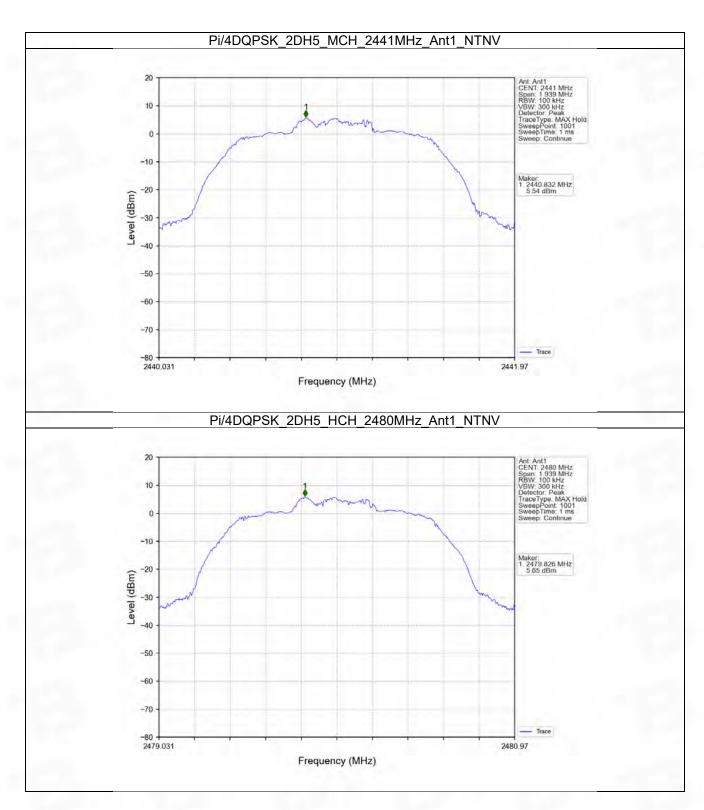


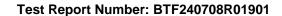




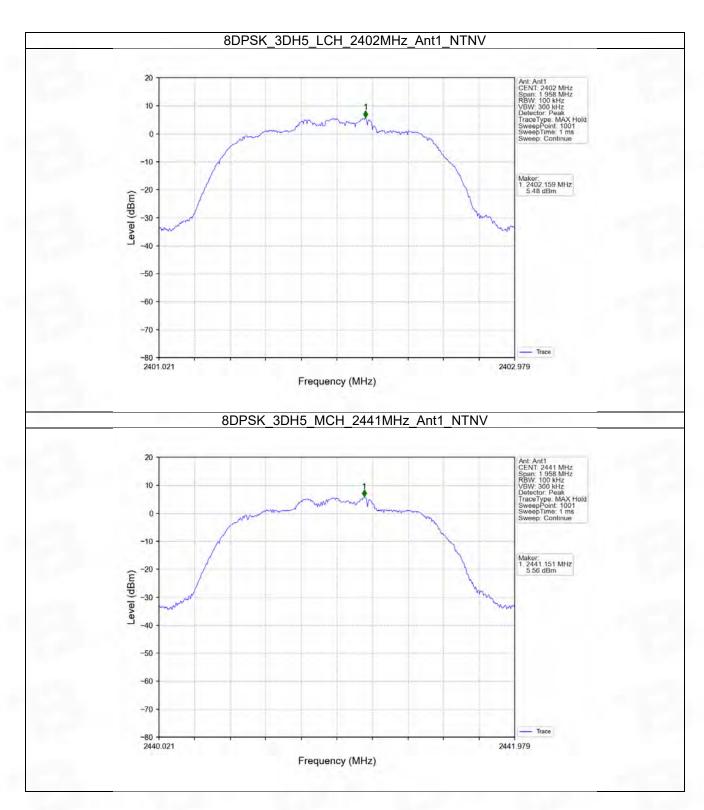






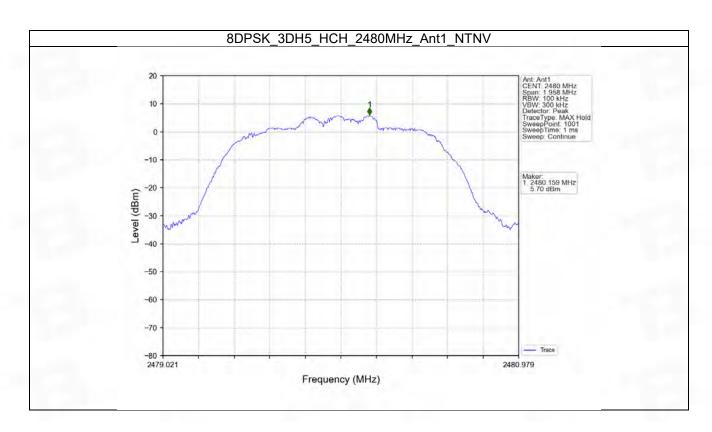


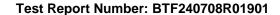






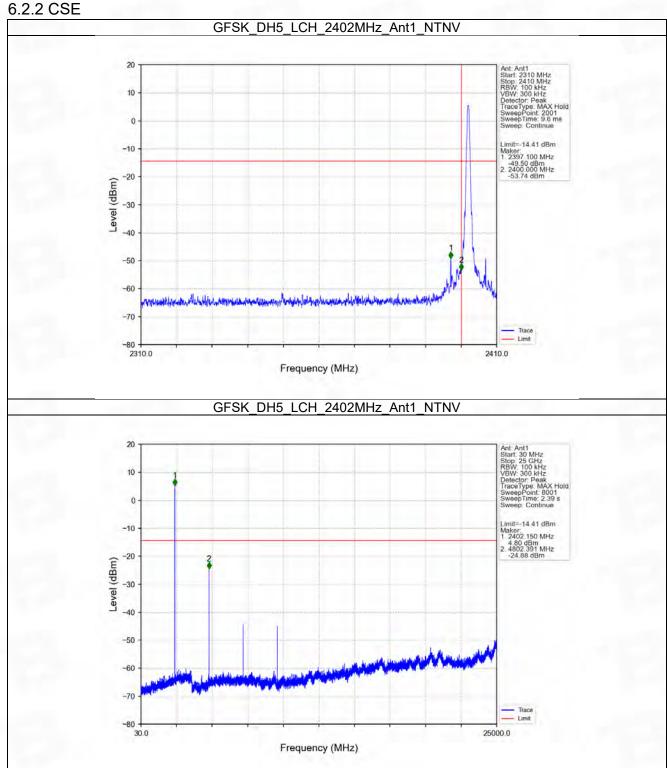






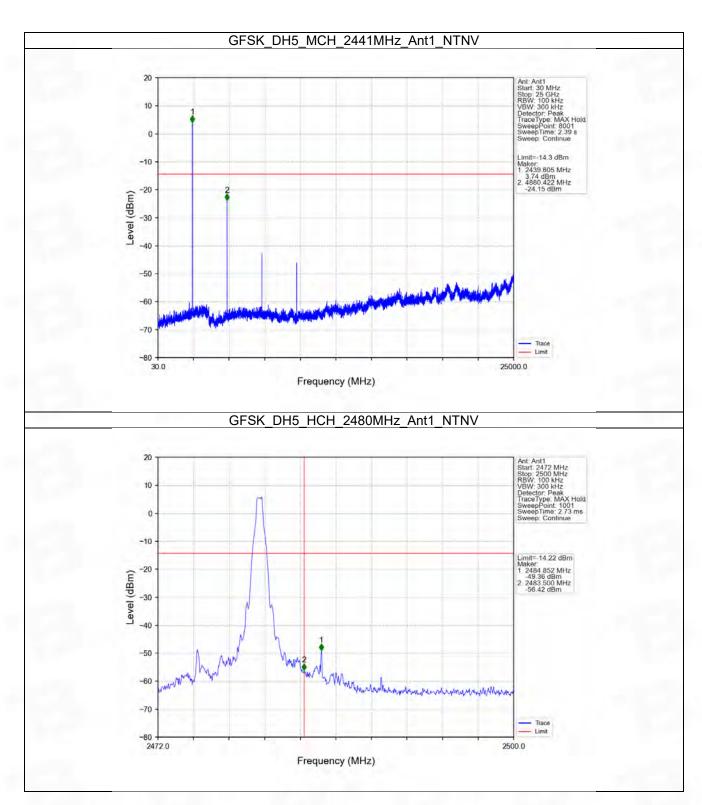






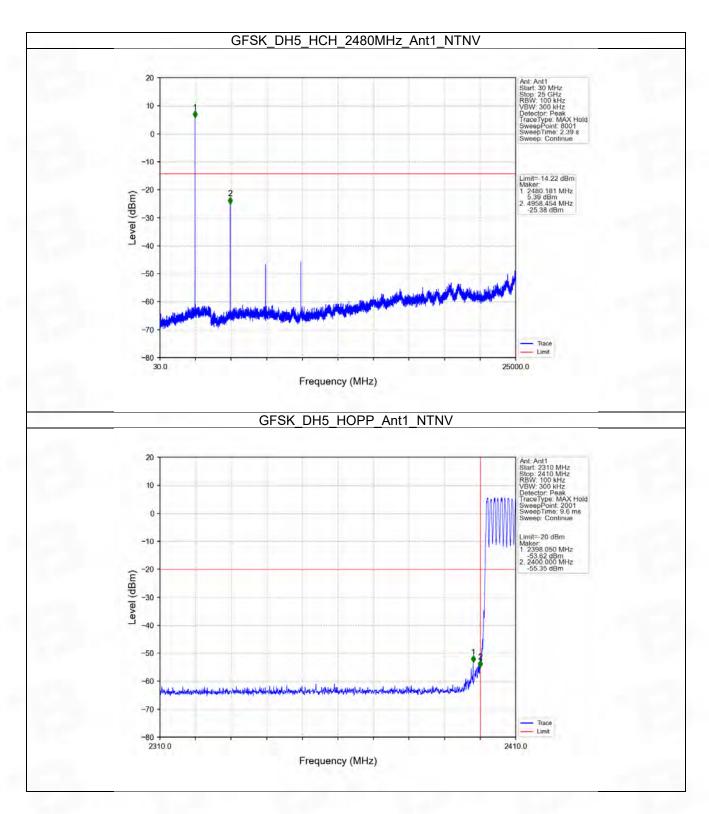






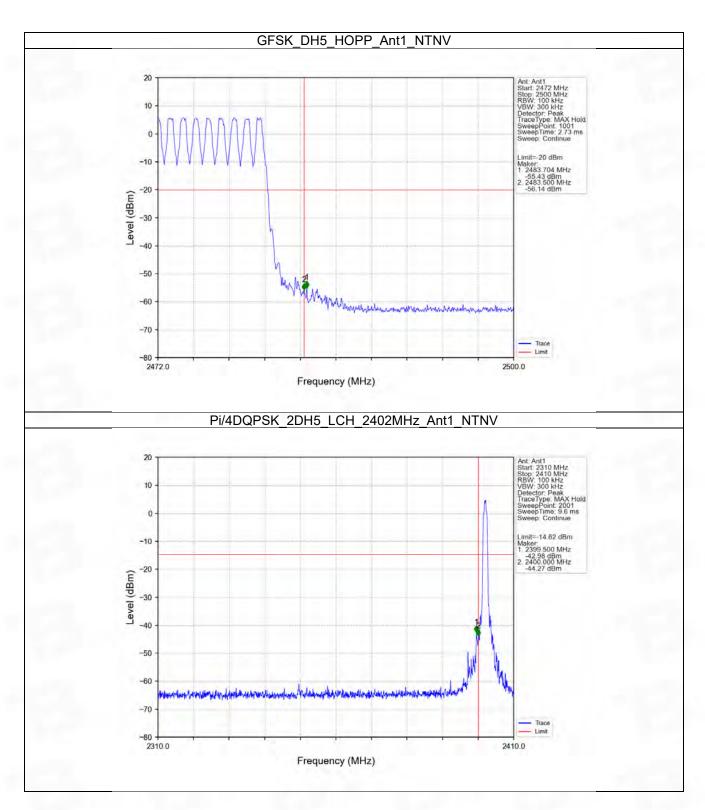






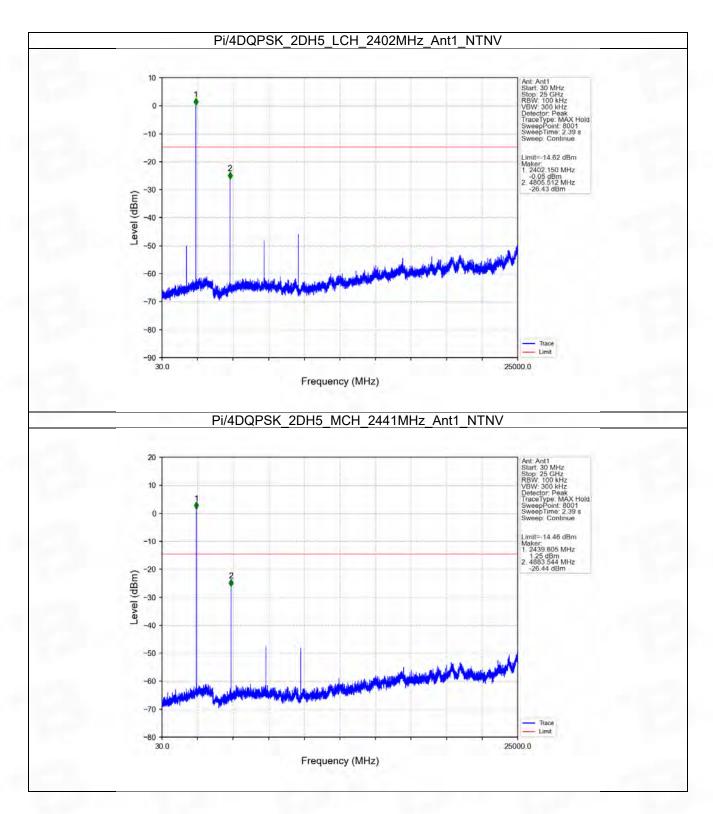






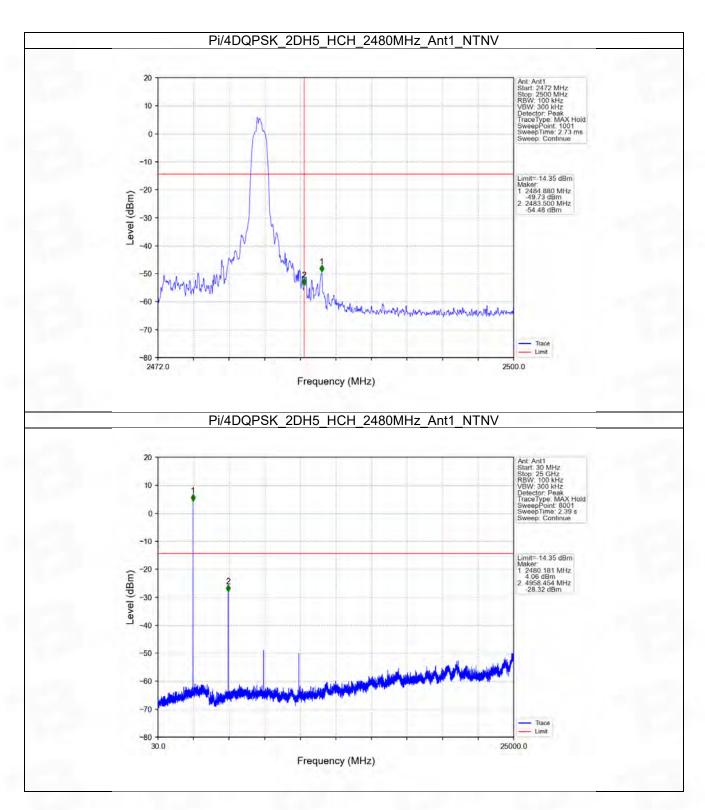


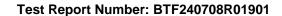




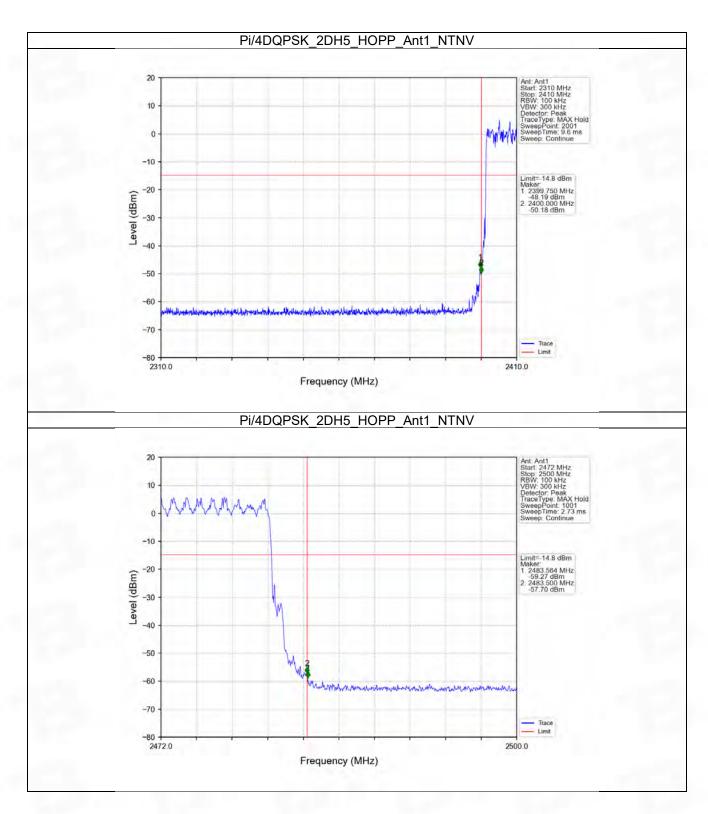


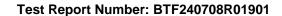




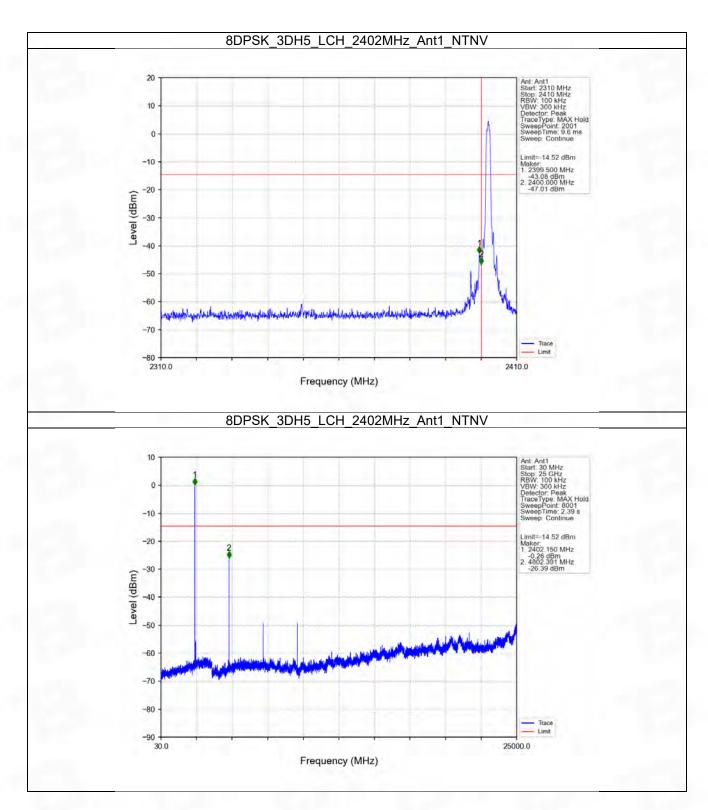






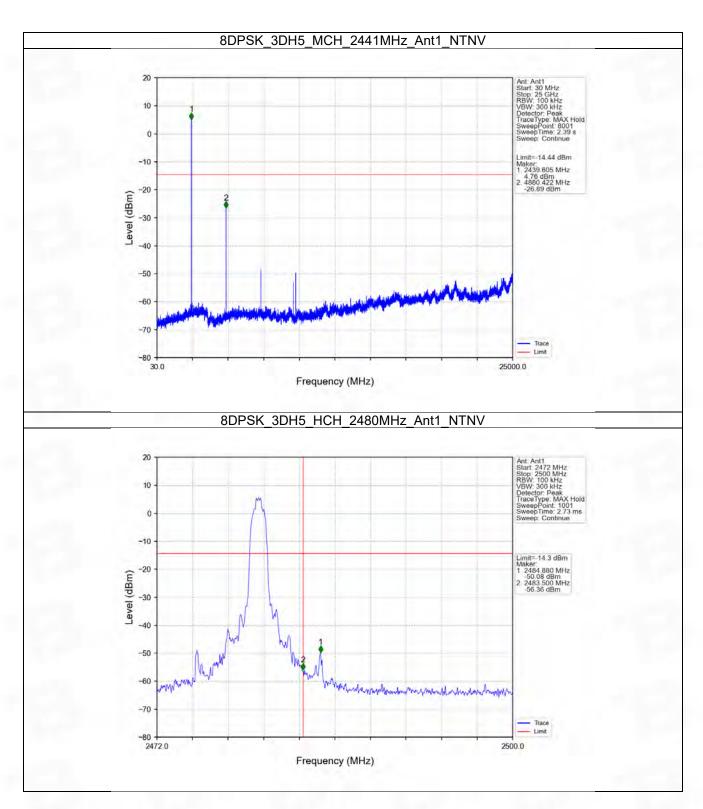




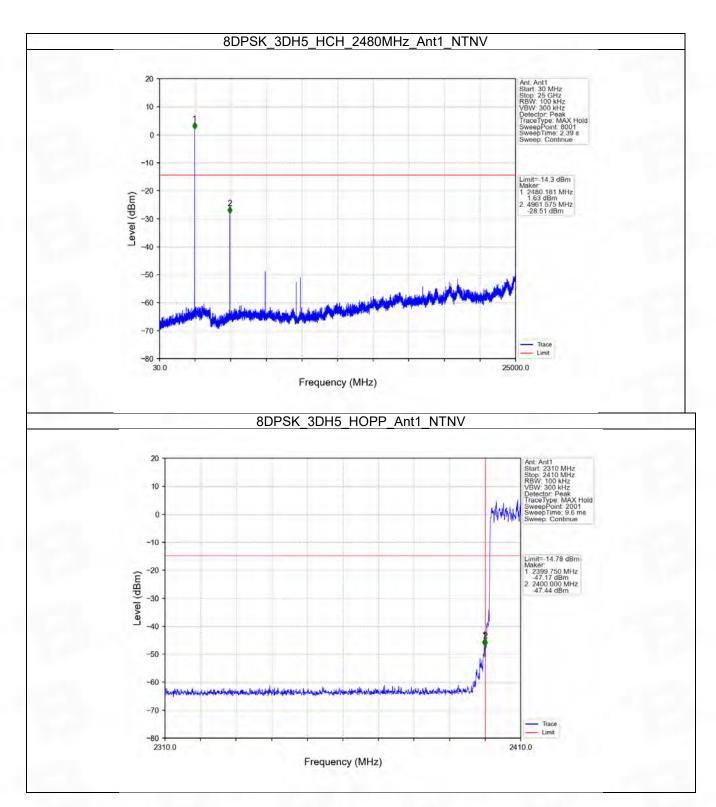






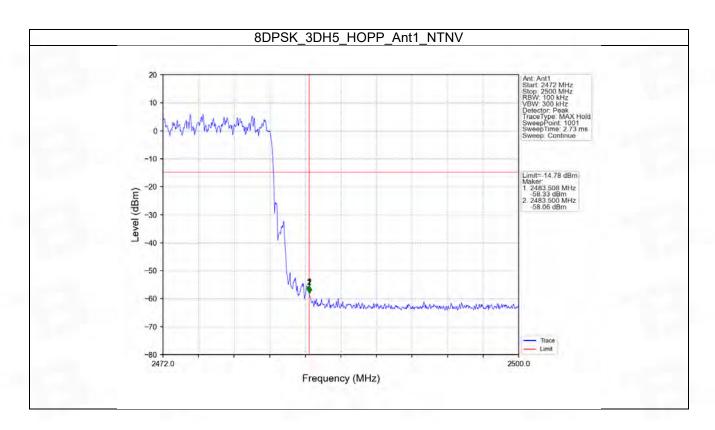


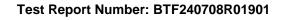














7. Form731

7.1 Test Result

7.1.1 Form731

Lower Freq (MHz)	High Freq (MHz)	MAX Power (W)	MAX Power (dBm)
2402	2480	0.0039	5.94



Test Report Number: BTF240708R01901

The Right one:

1. Bandwidth

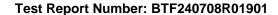
1.1 Test Result

1.1.1 OBW

Mode	TX	Frequency	Packet	ANT	99% Occupied Bandwidth (MHz)		Verdict
	Type	(MHz)	Type		Result	Limit	verdict
		2402	DH5	1	0.871	/	Pass
GFSK SISO	SISO	2441	DH5	1	0.869	/	Pass
		2480	DH5	1	0.876	/	Pass
Pi/4DQPSK		2402	2DH5	1	1.164	/	Pass
	SISO	2441	2DH5	1	1.166	/	Pass
		2480	2DH5	1	1.165	/	Pass
8DPSK		2402	3DH5	1	1.177	/	Pass
	SISO	2441	3DH5	1	1.176	/	Pass
		2480	3DH5	1	1.178	1	Pass

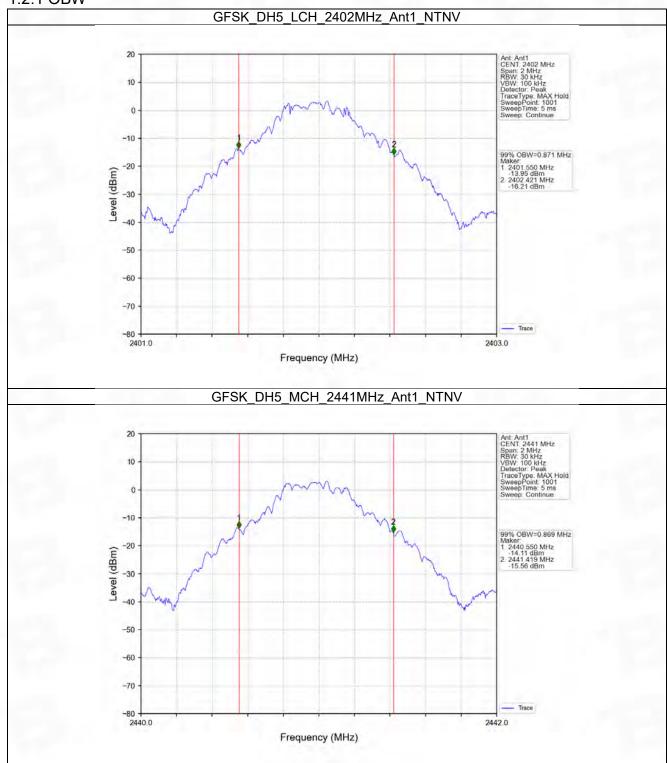
1.1.2 20dB BW

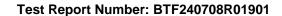
Mode	TX	Frequency	Packet	ANT	20dB Bandwidth (MHz)		Verdict
	Type	(MHz)	Type	AINT	Result	Limit	verdict
		2402	DH5	1	0.968	1	Pass
GFSK	SISO	2441	DH5	1	0.959	1	Pass
		2480	DH5	1	0.957	/	Pass
	SISO	2402	2DH5	1	1.317	/	Pass
Pi/4DQPSK		2441	2DH5	1	1.322	1	Pass
		2480	2DH5	1	1.309	/	Pass
8DPSK	SISO	2402	3DH5	1	1.293	1	Pass
		2441	3DH5	1	1.292	/	Pass
		2480	3DH5	1	1.294	/	Pass



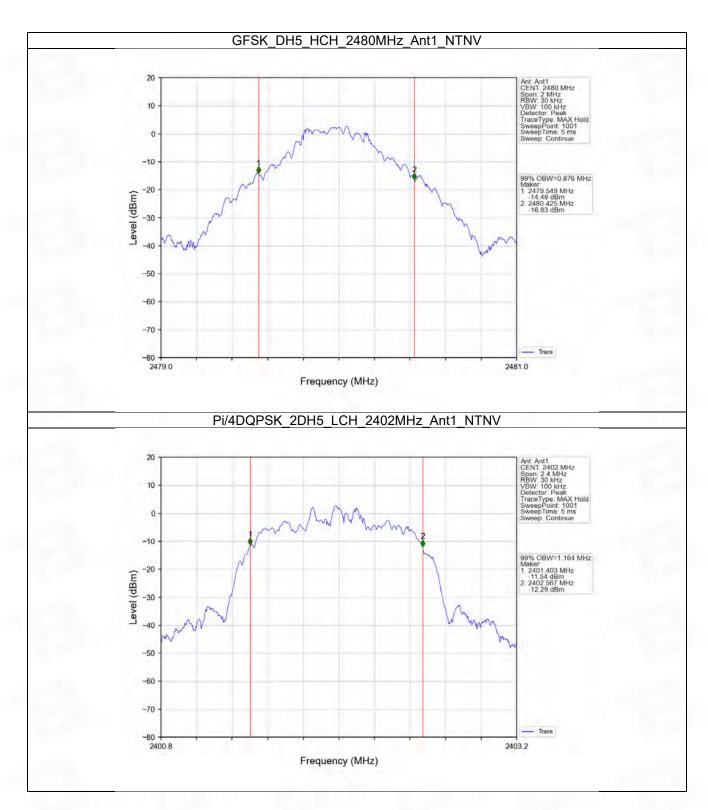


1.2.1 OBW



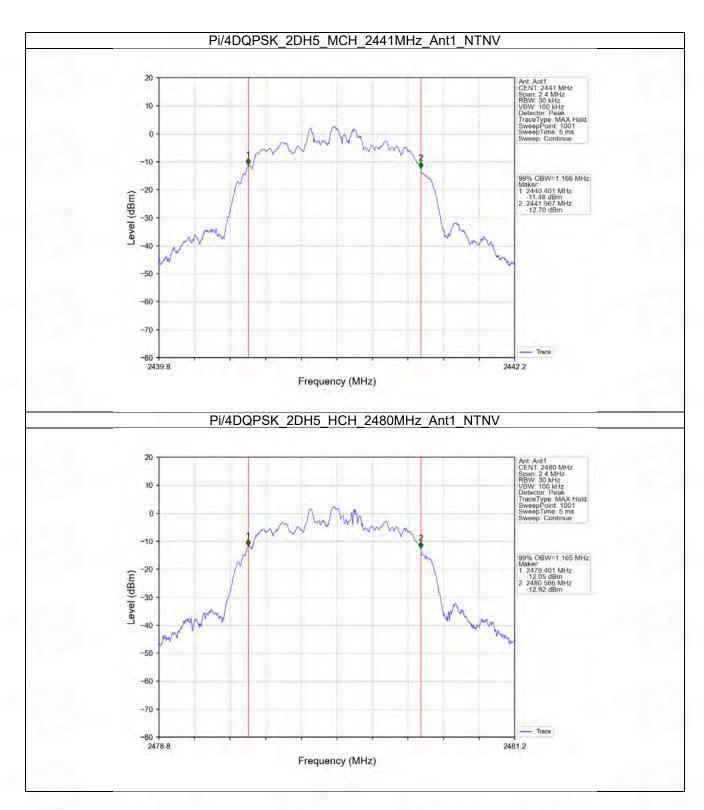




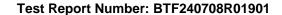




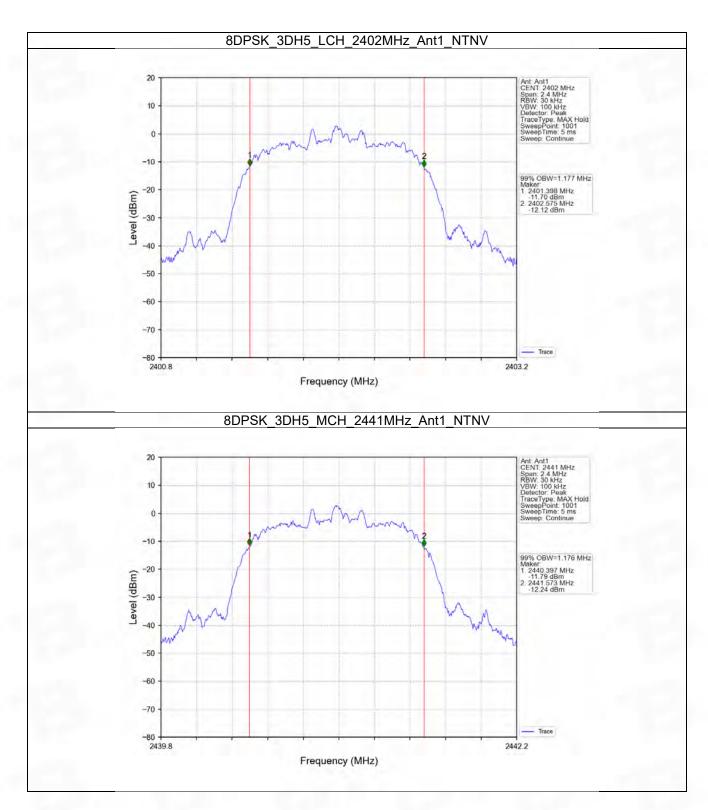




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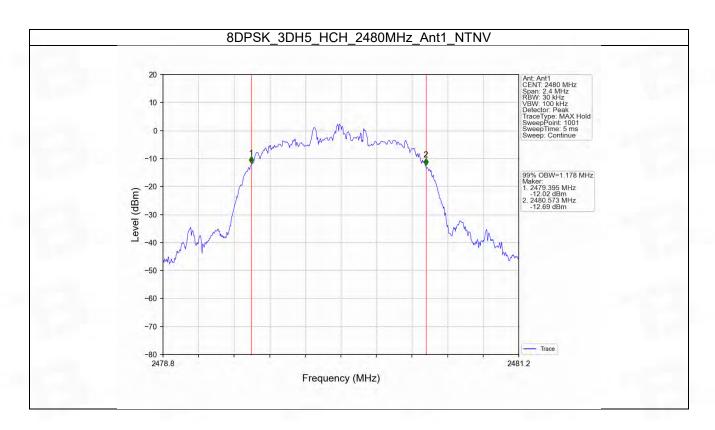


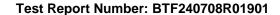






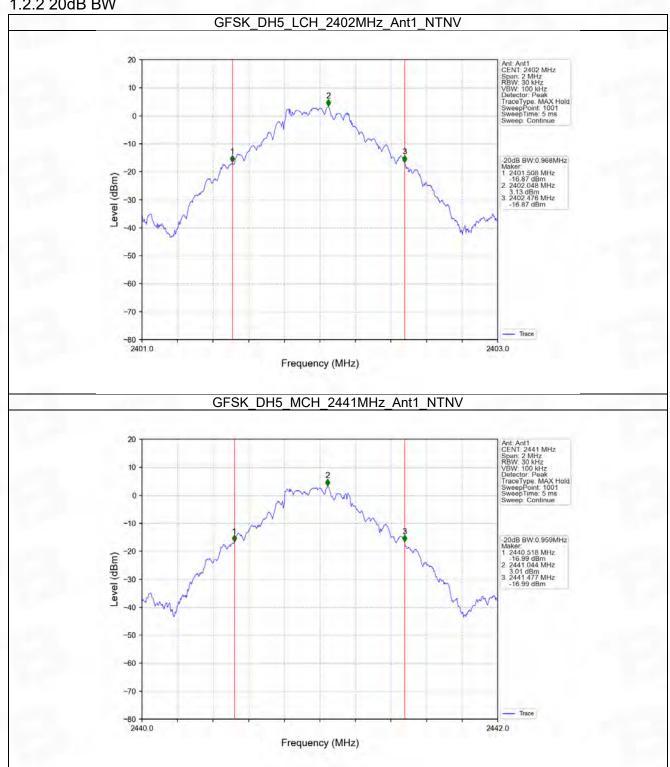






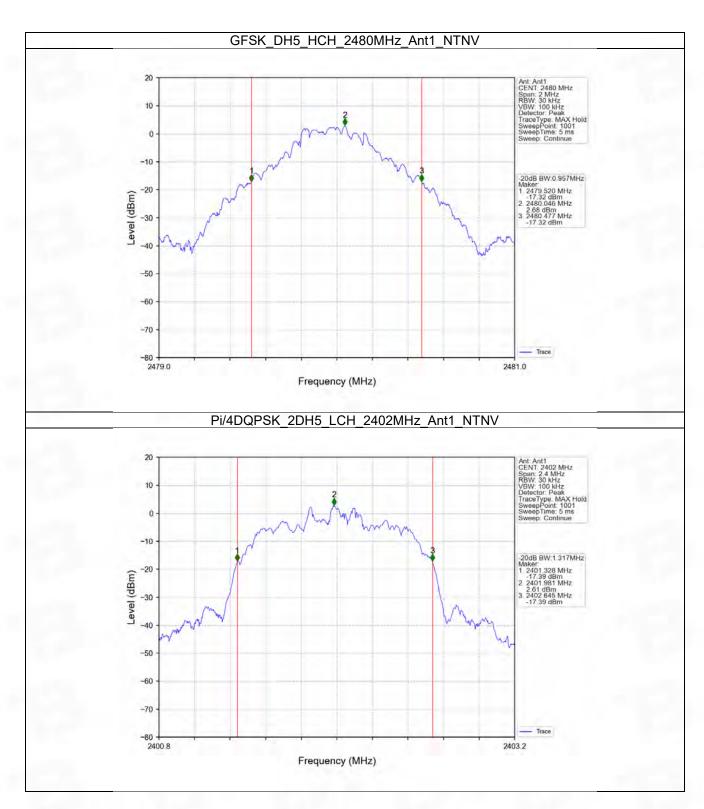


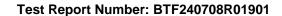
1.2.2 20dB BW



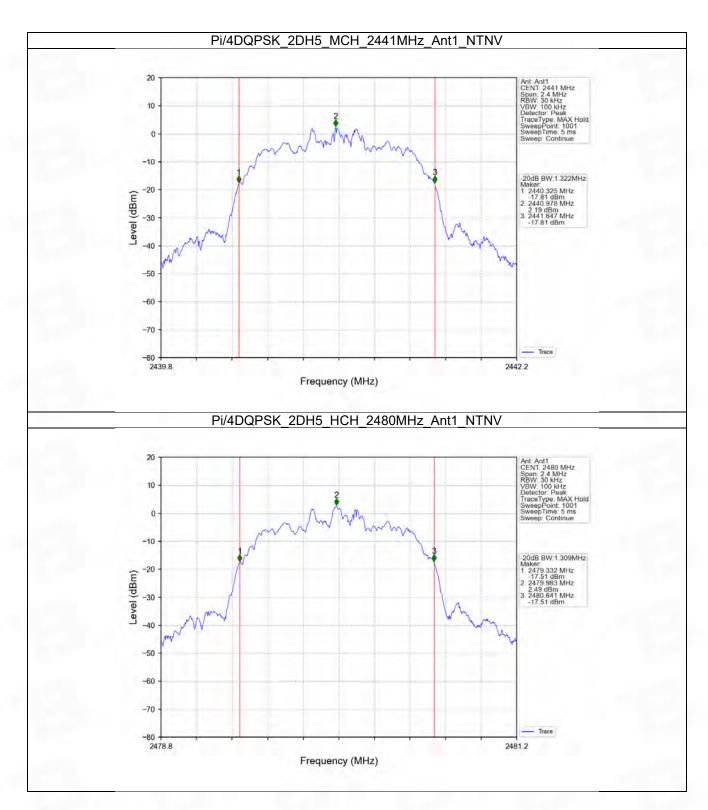


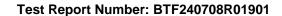




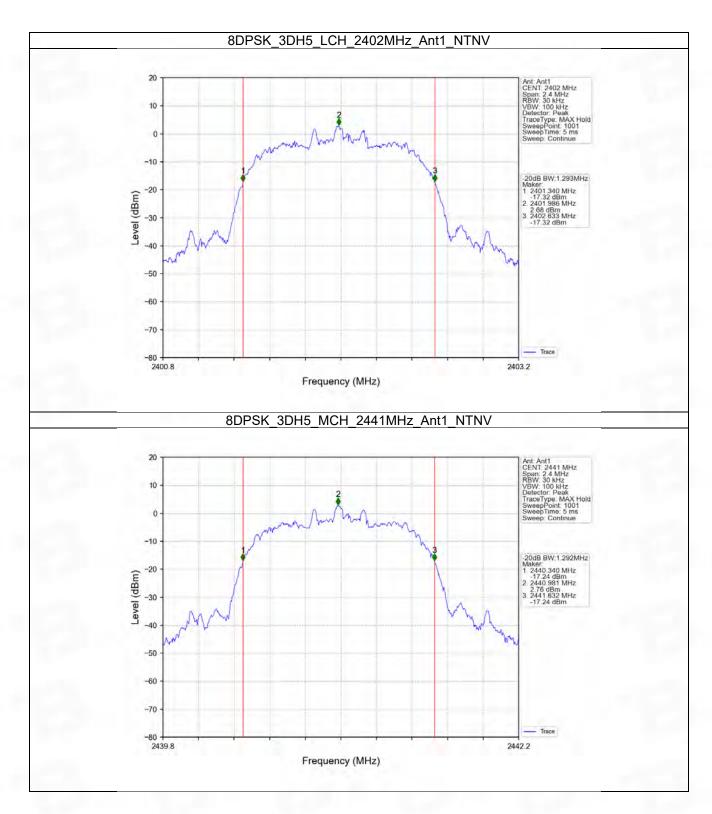






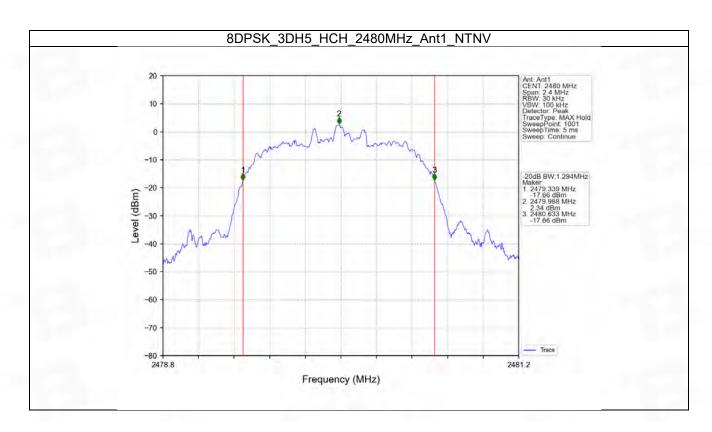


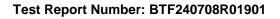












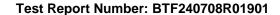


2. Maximum Conducted Output Power

2.1 Test Result

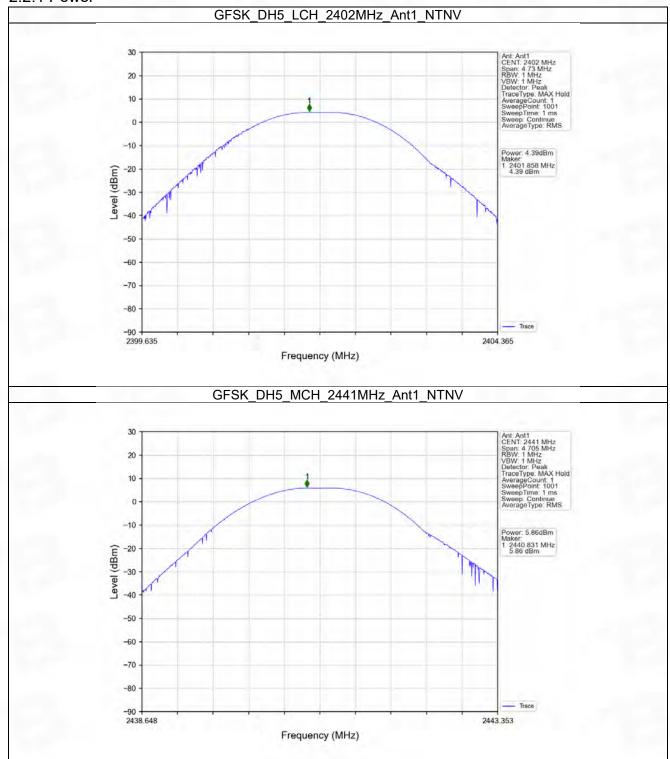
2.1.1 Power

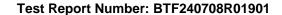
Mode TX Type		Frequency	Packet	Maximum Peak Con (dl	Verdict	
	(MHz)	Type	ANT1	Limit		
GFSK SISO		2402	DH5	4.39	<=30	Pass
	SISO	2441	DH5	5.86	<=30	Pass
		2480	DH5	5.74	<=30	Pass
Pi/4DQPSK SISC		2402	2DH5	4.05	<=20.97	Pass
	SISO	2441	2DH5	5.89	<=20.97	Pass
		2480	2DH5	6.09	<=20.97	Pass
8DPSK SISO		2402	3DH5	4.25	<=20.97	Pass
	SISO	2441	3DH5	6.01	<=20.97	Pass
		2480	3DH5	6.30	<=20.97	Pass
Note1: Antenn	a Gain: Ar	nt1: 2.70dBi;				



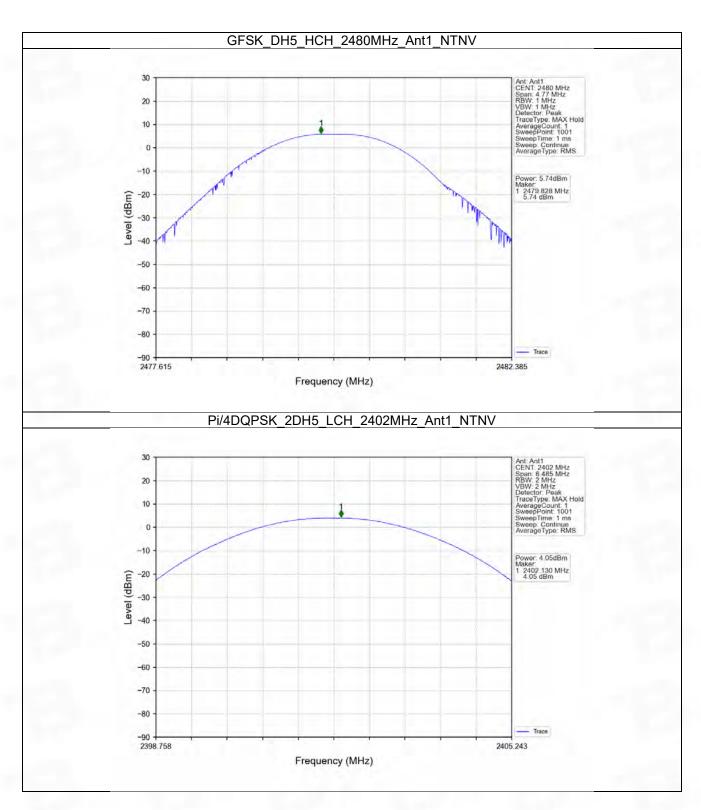


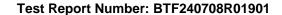
2.2.1 Power



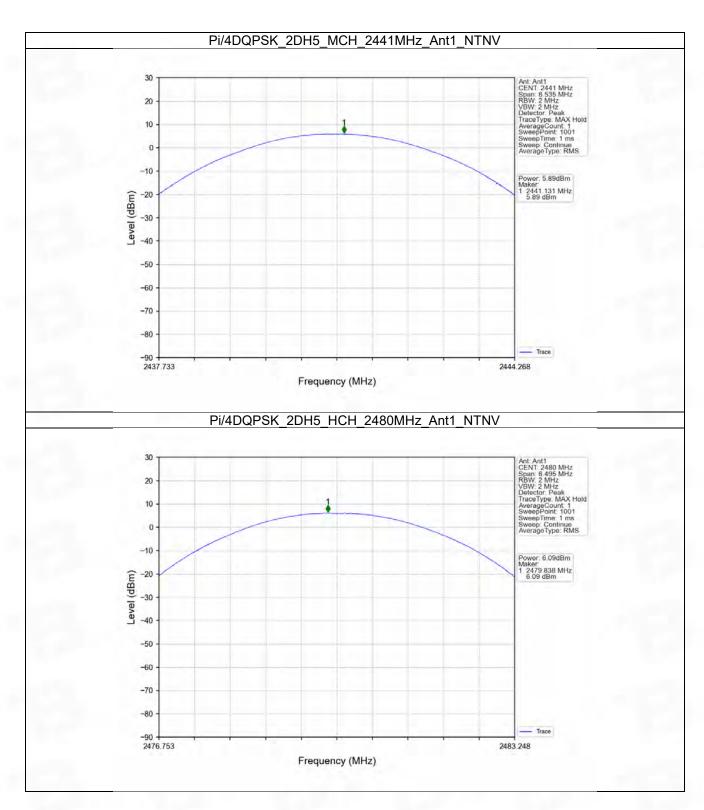


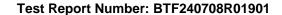




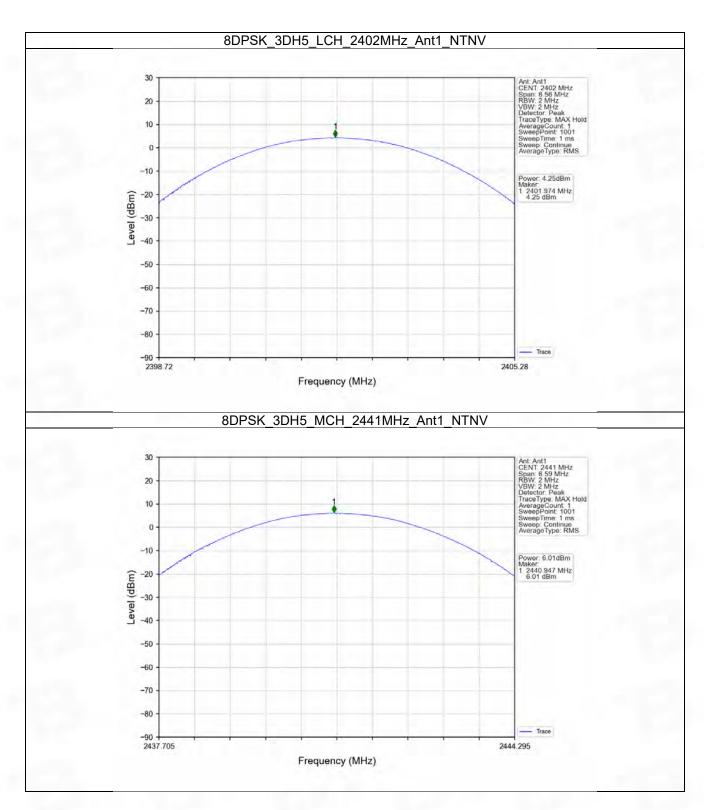








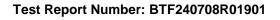












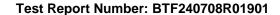


3. Carrier Frequency Separation

3.1 Test Result

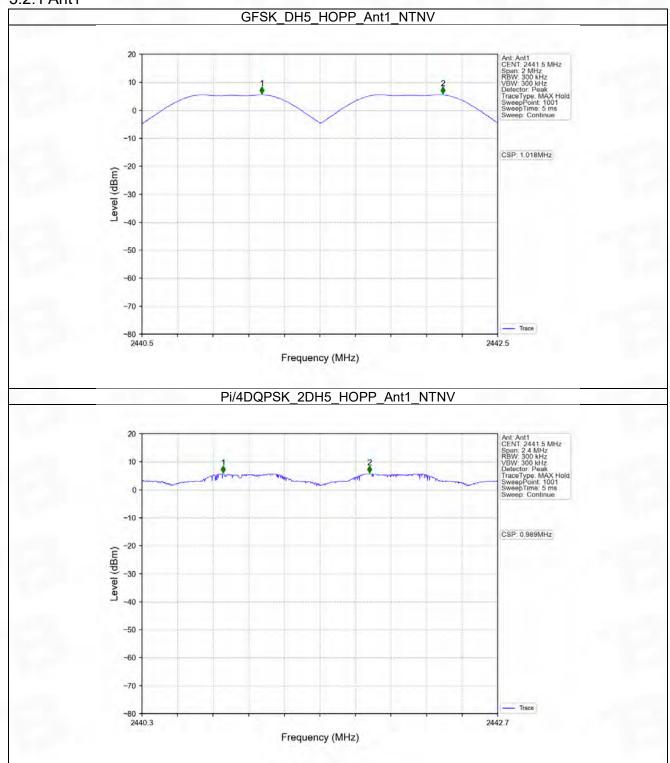
3.1.1 Ant1

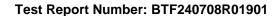
Ant1									
Mode	TX	Frequency	Packet	Channel Separation	20dB Bandwidth	Limit	Verdict		
Mode	Type	(MHz)	Type	(MHz)	(MHz)	(MHz)	verdict		
GFSK	SISO	HOPP	DH5	1.018	0.968	>=0.968	Pass		
Pi/4DQPSK	SISO	HOPP	2DH5	0.989	1.322	>=0.881	Pass		
8DPSK	SISO	HOPP	3DH5	1.008	1.294	>=0.863	Pass		



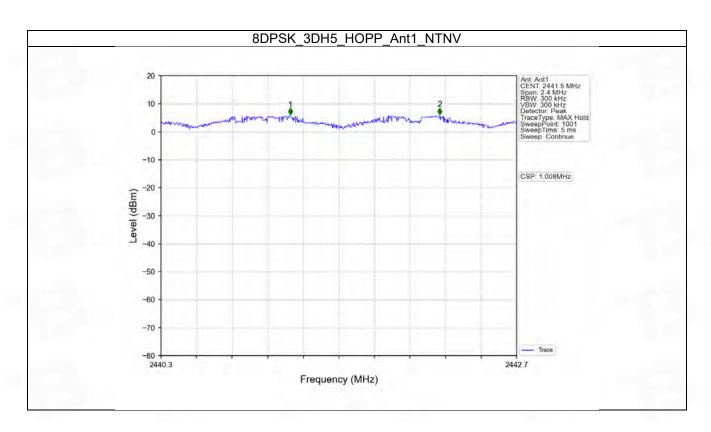


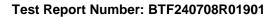
3.2.1 Ant1











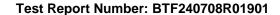


4. Number of Hopping Frequencies

4.1 Test Result

4.1.1 HoppNum

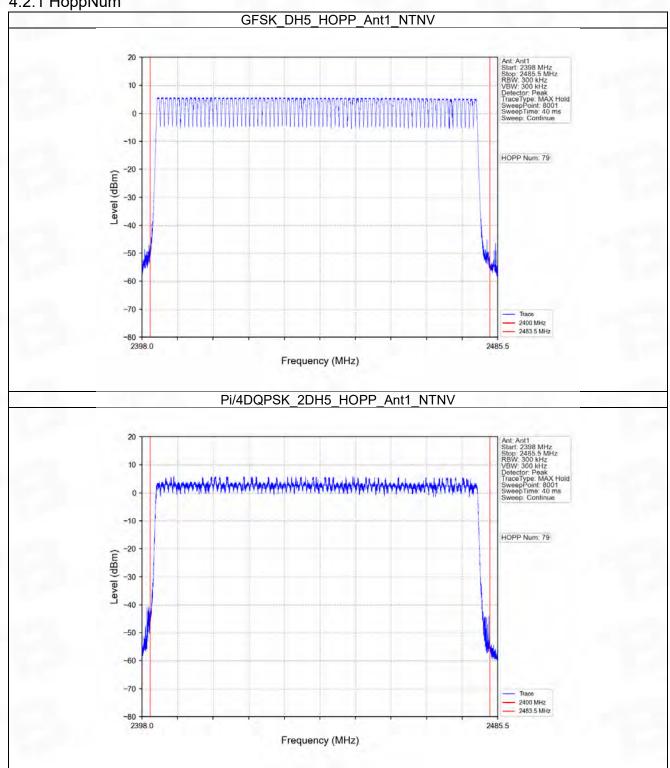
Mode	TX	Frequency	Packet	Num of Hopping Frequencies		Verdict	
Mode	Type	(MHz)	Туре	ANT1	Limit	verdict	
GFSK	SISO	HOPP	DH5	79	>=15	Pass	
Pi/4DQPSK	SISO	HOPP	2DH5	79	>=15	Pass	
8DPSK	SISO	HOPP	3DH5	79	>=15	Pass	

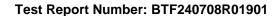




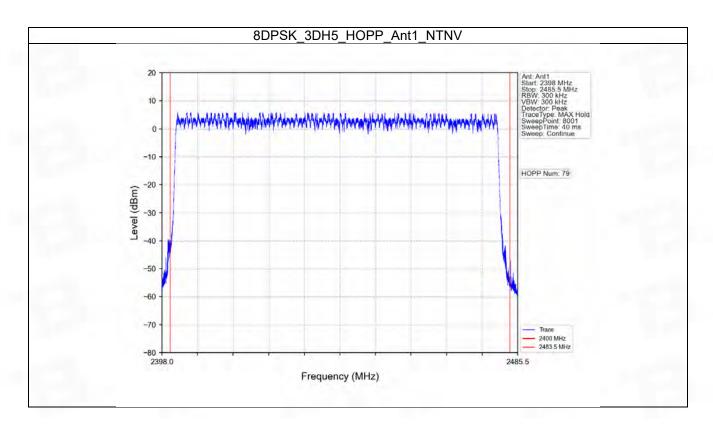
4.2 Test Graph

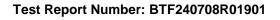
4.2.1 HoppNum











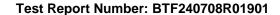


5. Time of Occupancy (Dwell Time)

5.1 Test Result

5.1.1 Ant1

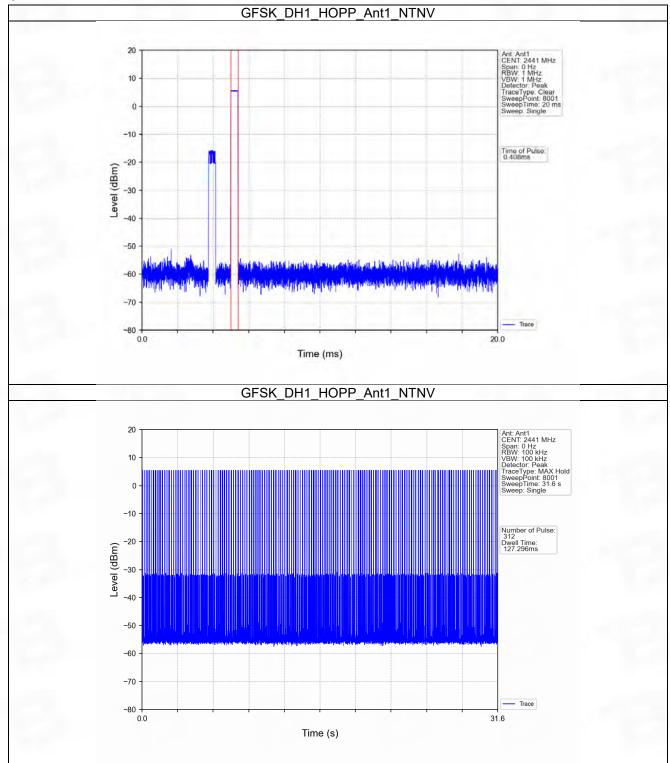
Ant1									
Mode	TX Type	Frequency (MHz)	Packet Type	Duration of Single Pulse (ms)	Observation Period (s)	Num of Pulse in Observation Period	Dwell Time (ms)	Limit (ms)	Verdict
GFSK SISO		DH1	0.408	31.600	312	127.296	<=400	Pass	
	SISO	SO HOPP	DH3	1.668	31.600	162	270.216	<=400	Pass
			DH5	2.913	31.600	94	273.822	<=400	Pass
		60 НОРР	2DH1	0.423	31.600	314	132.822	<=400	Pass
Pi/4DQPSK SISC	SISO		2DH3	1.680	31.600	162	272.160	<=400	Pass
			2DH5	2.928	31.600	114	333.792	<=400	Pass
8DPSK SISC		SISO HOPP	3DH1	0.418	31.600	311	129.998	<=400	Pass
	SISO		3DH3	1.678	31.600	161	270.158	<=400	Pass
			3DH5	2.920	31.600	113	329.960	<=400	Pass





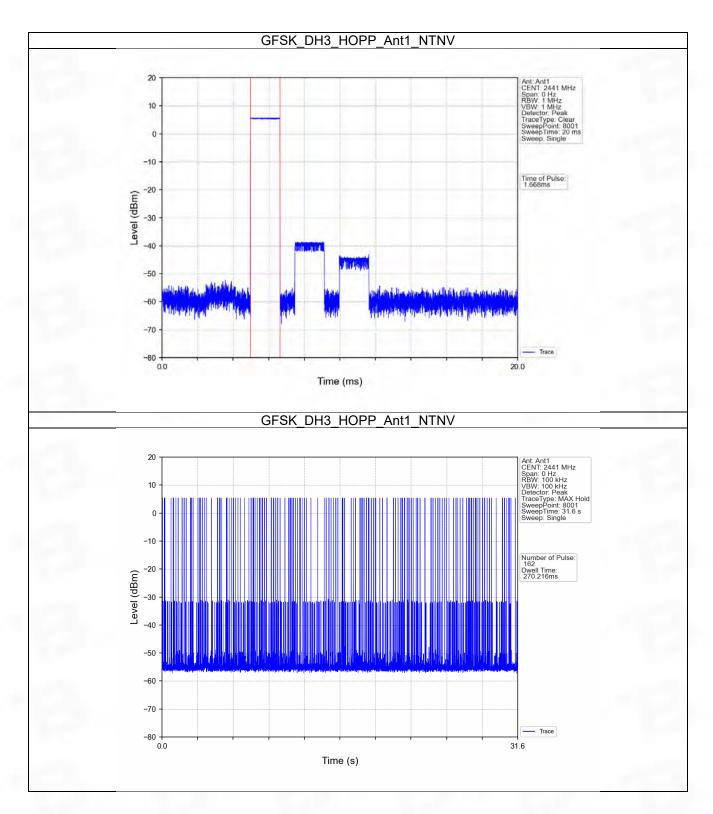
5.2 Test Graph

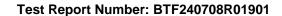
5.2.1 Ant1



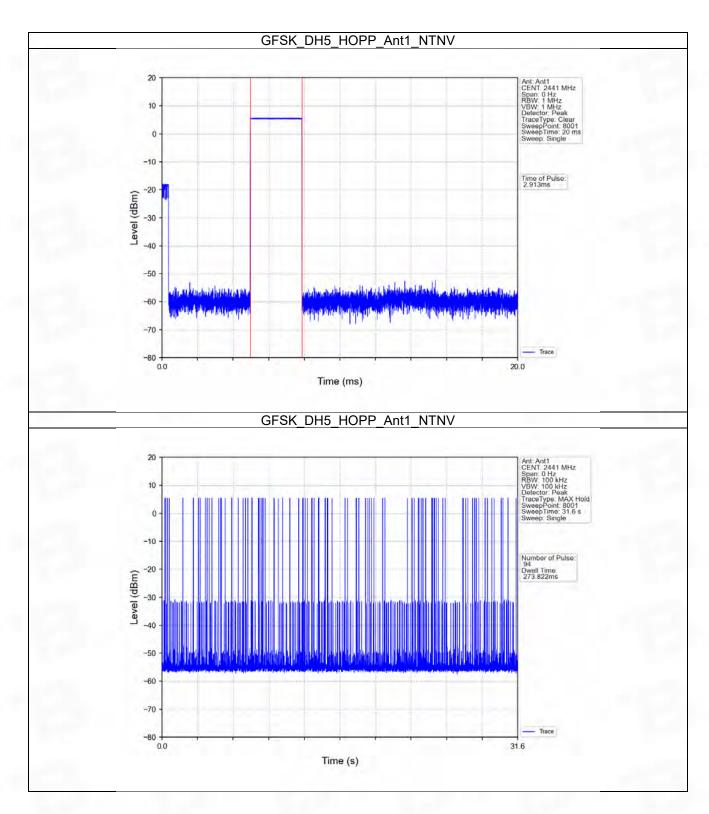


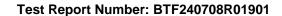




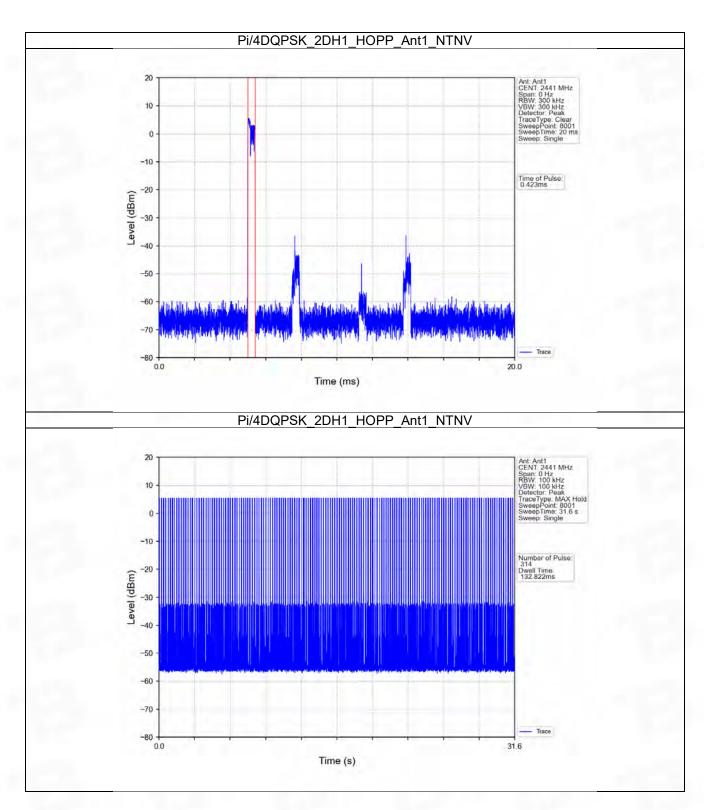






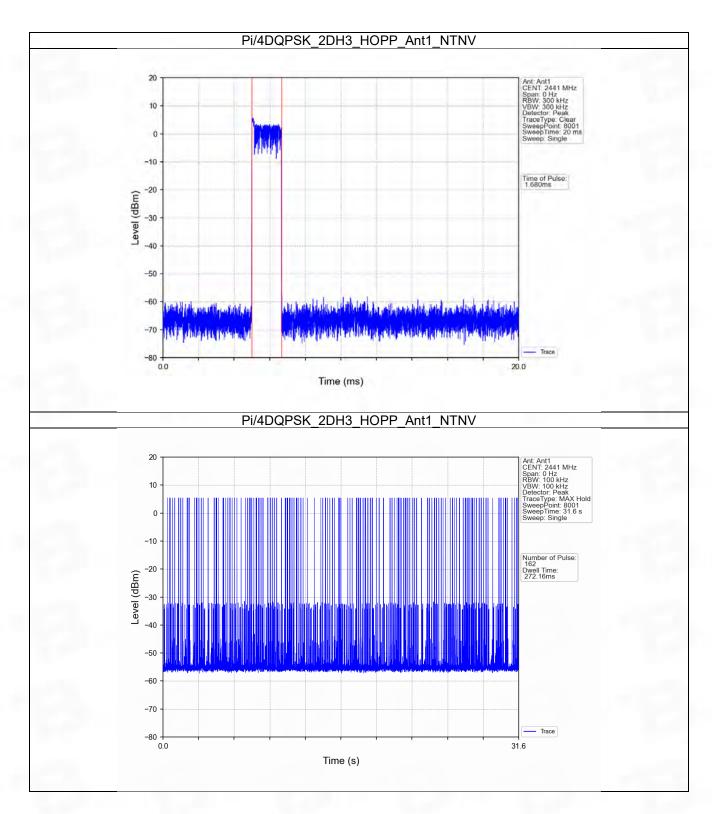


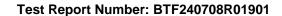




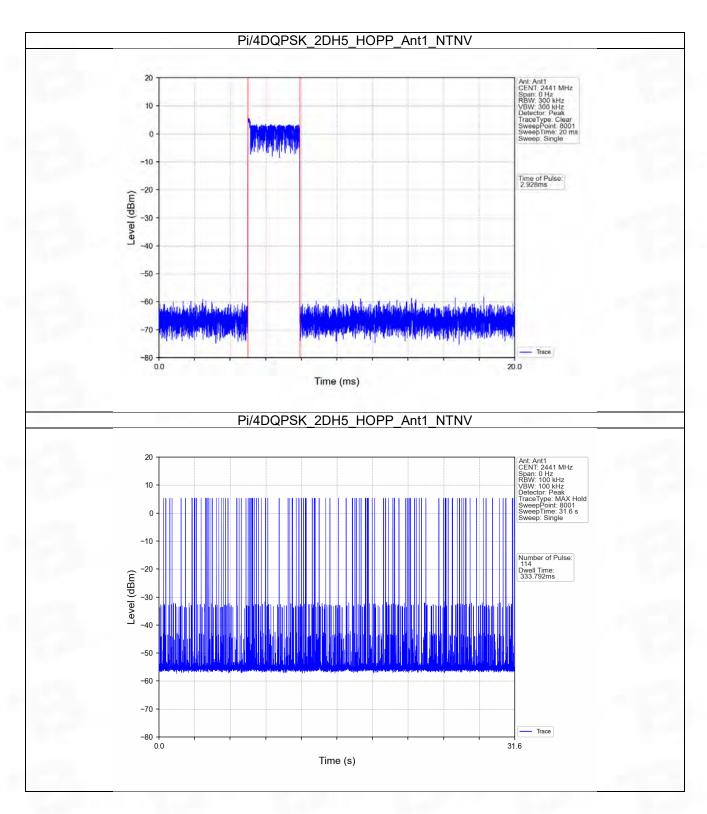


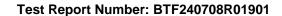




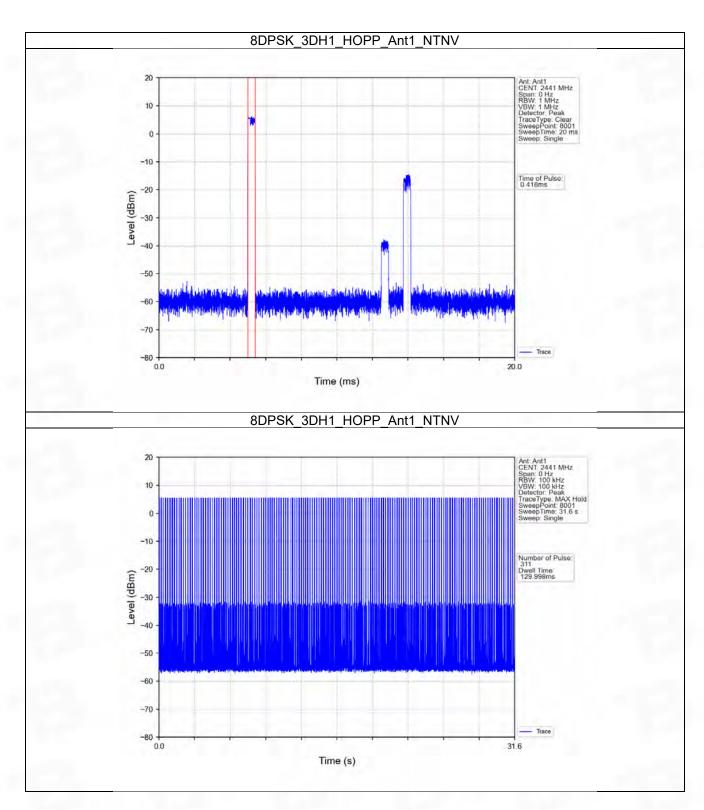


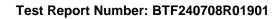




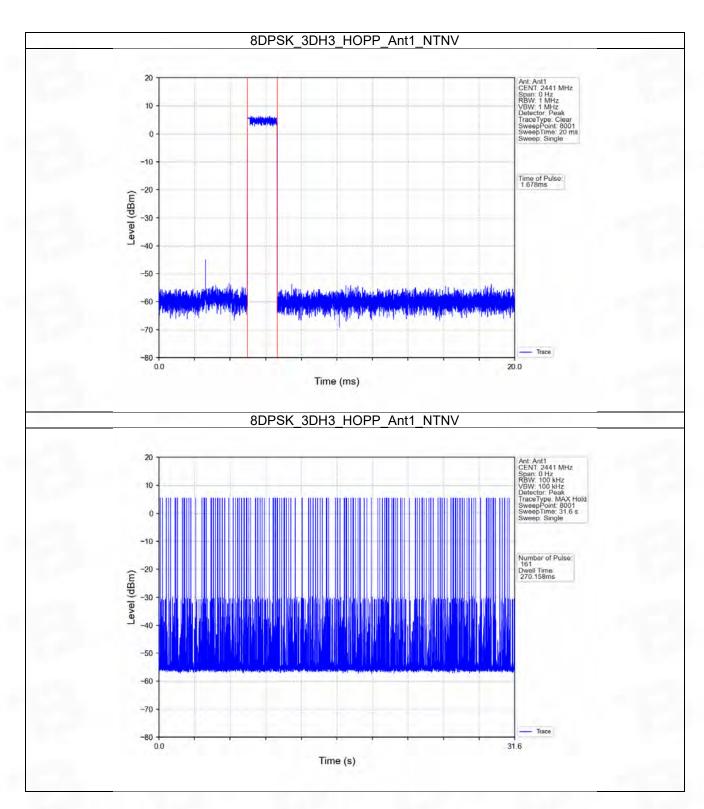


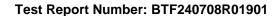




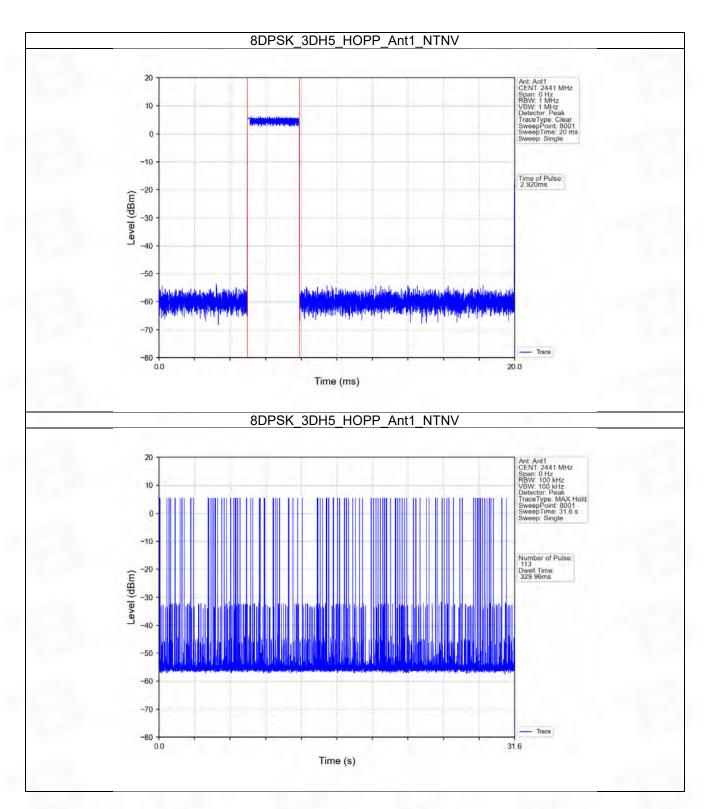














6. Unwanted Emissions In Non-restricted Frequency Bands

6.1 Test Result

6.1.1 Ref

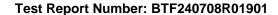
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)
		2402	DH5	1	5.84
GFSK	SISO	2441	DH5	1	5.68
		2480	DH5	1	5.19
	SISO	2402	2DH5	1	5.48
Pi/4DQPSK		2441	2DH5	1	5.53
		2480	2DH5	1	5.33
	SISO	2402	3DH5	1	5.80
8DPSK		2441	3DH5	1	5.67
		2480	3DH5	1	5.39

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

6.1.2 CSE

0.1.2 OOL							
Mode	TX	Frequency	Packet	ANT	Level of Reference	Limit	Verdict
	Type	(MHz)	Type AN1		(dBm)	(dBm)	verdict
		2402	DH5	1	5.84	-14.16	Pass
		2441	DH5	1	5.84	-14.16	Pass
GFSK	SISO	2480	DH5	1	5.84	-14.16	Pass
		HOPP	DH5	1	5.84	-14.16	Pass
					5.84	-14.16	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	5.53	-14.47	Pass
		2441	2DH5	1	5.53	-14.47	Pass
		2480	2DH5	1	5.53	-14.47	Pass
		HOPP	2DH5	1	5.53	-14.47	Pass
					5.53	-14.47	Pass
8DPSK	SISO	2402	3DH5	1	5.80	-14.20	Pass
		2441	3DH5	1	5.80	-14.20	Pass
		2480	3DH5	1	5.80	-14.20	Pass
		HOPP	2DITE	4	5.80	-14.20	Pass
			3DH5	1	5.80	-14.20	Pass

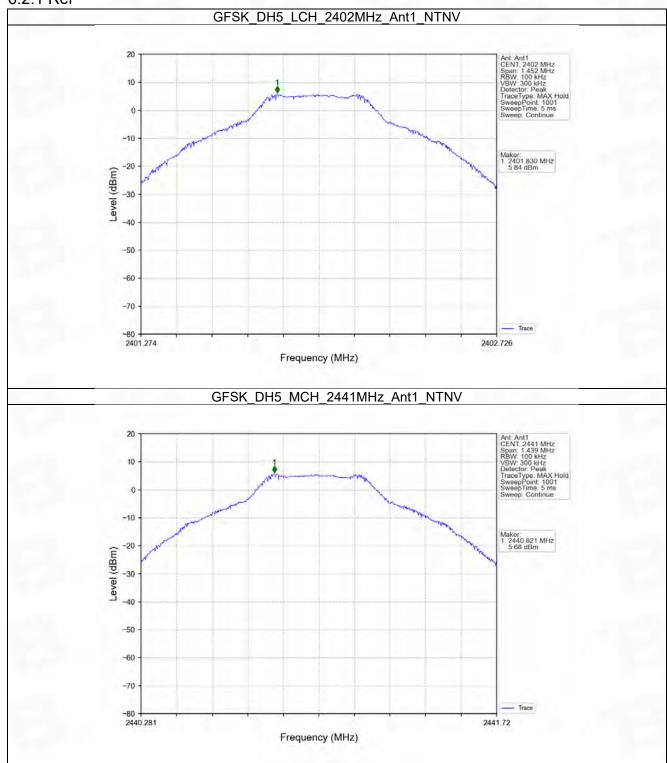
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.

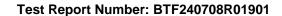




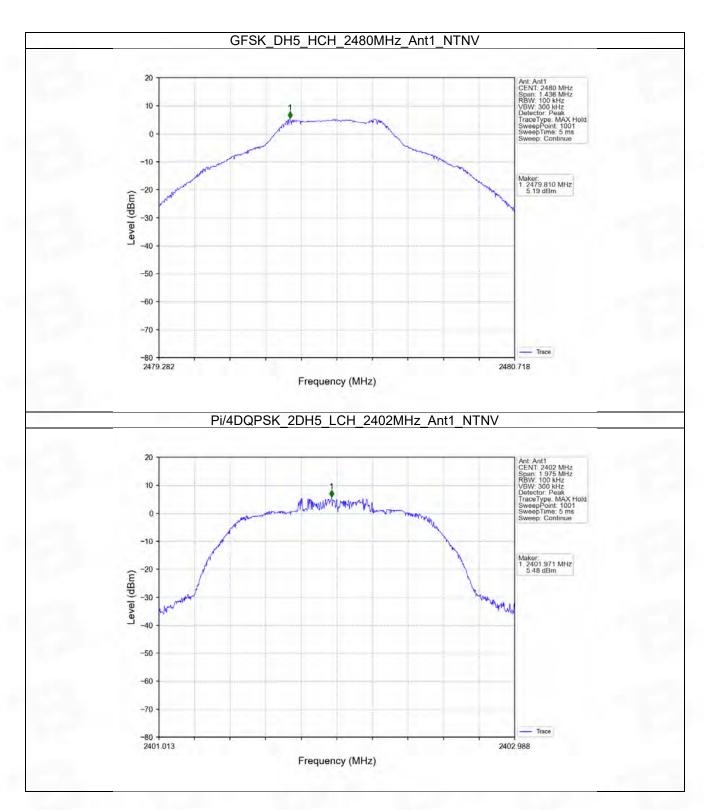
6.2 Test Graph

6.2.1 Ref



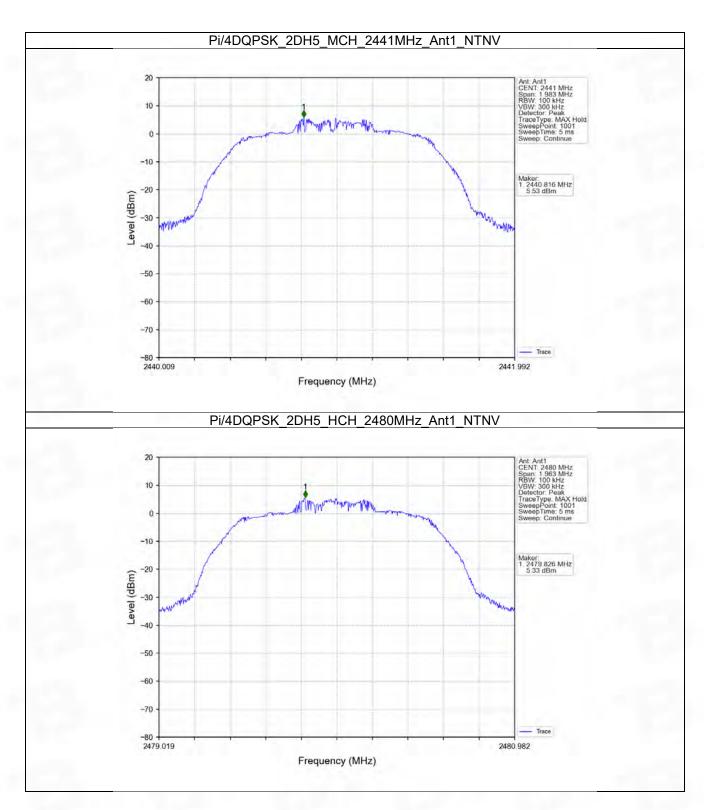


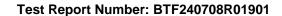




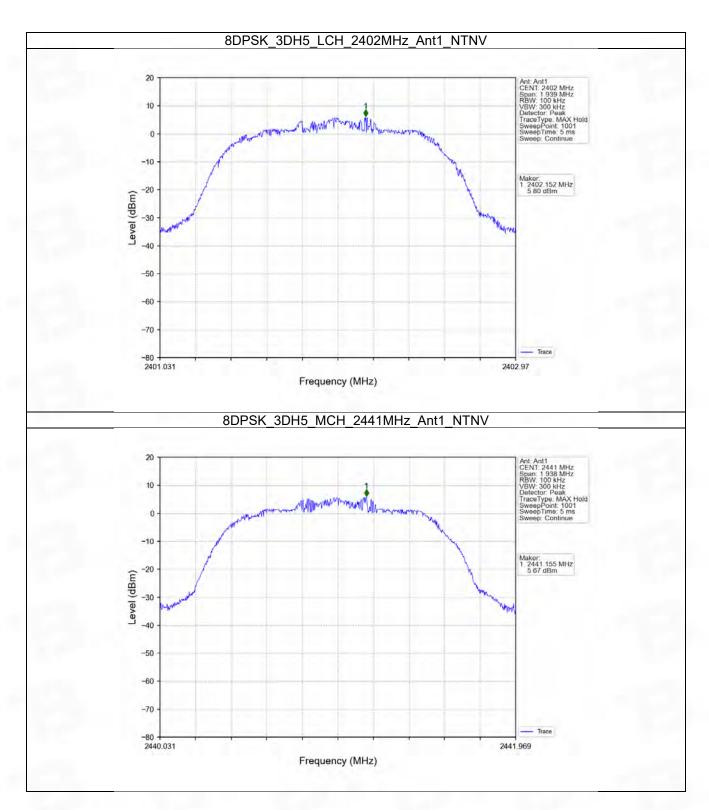






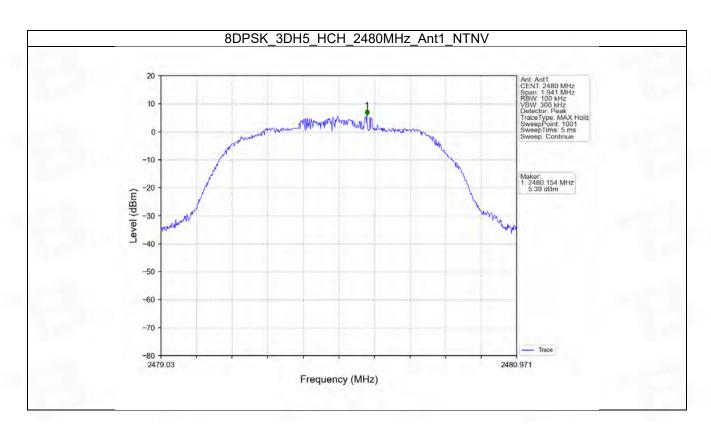


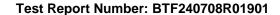




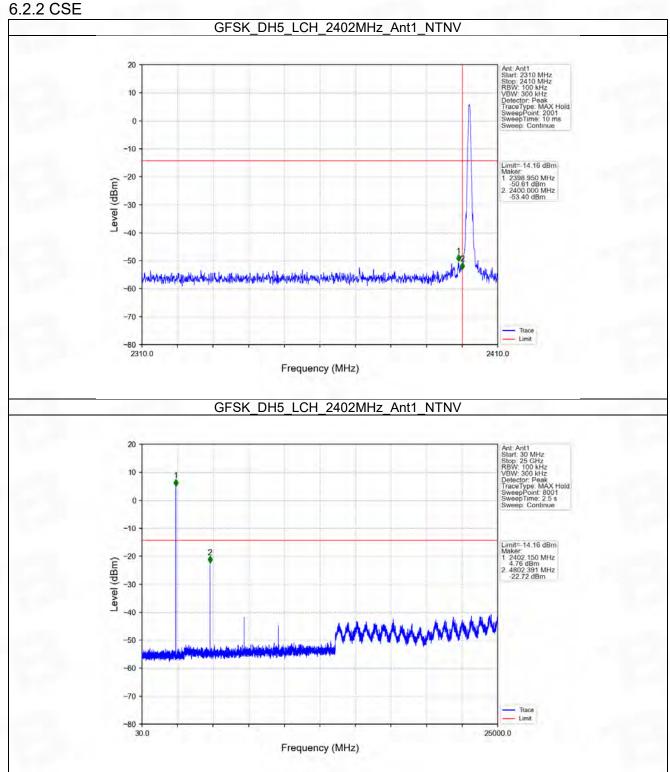


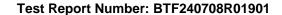




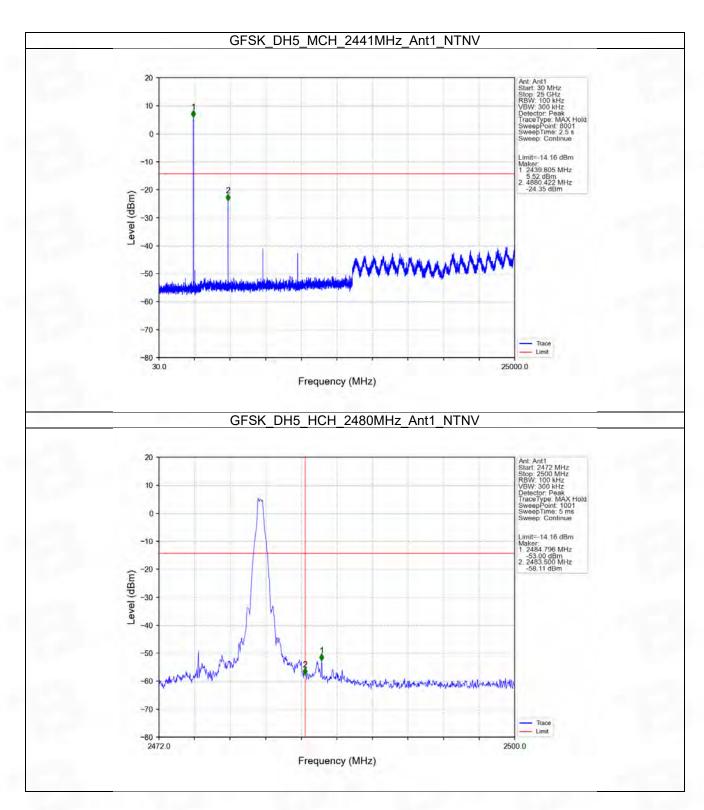


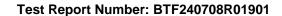




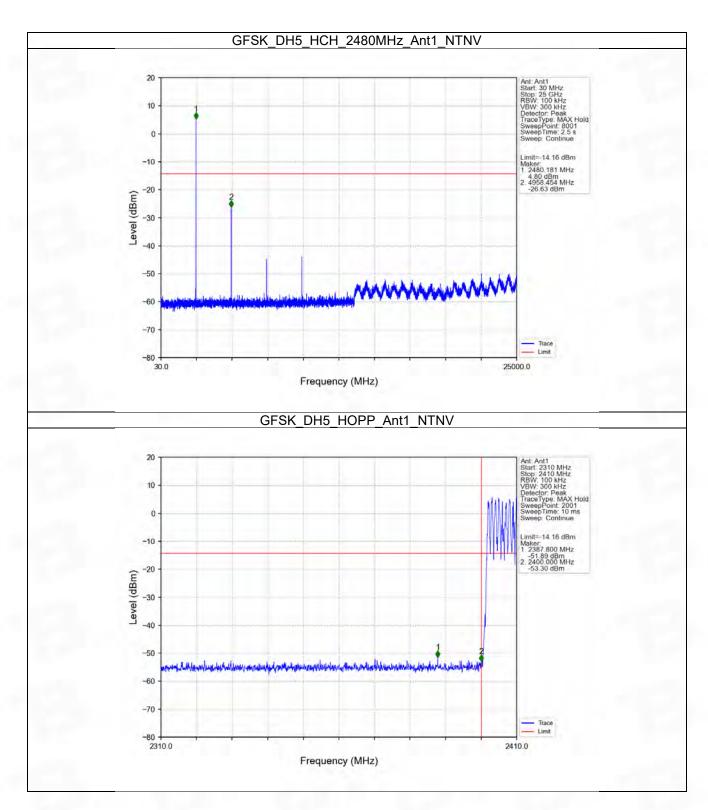


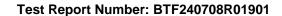




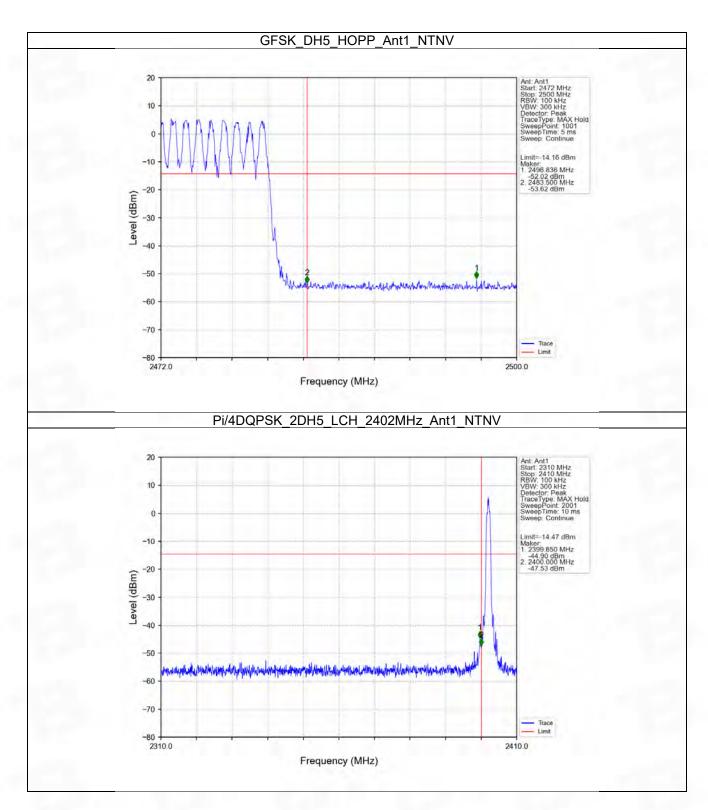


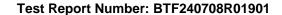




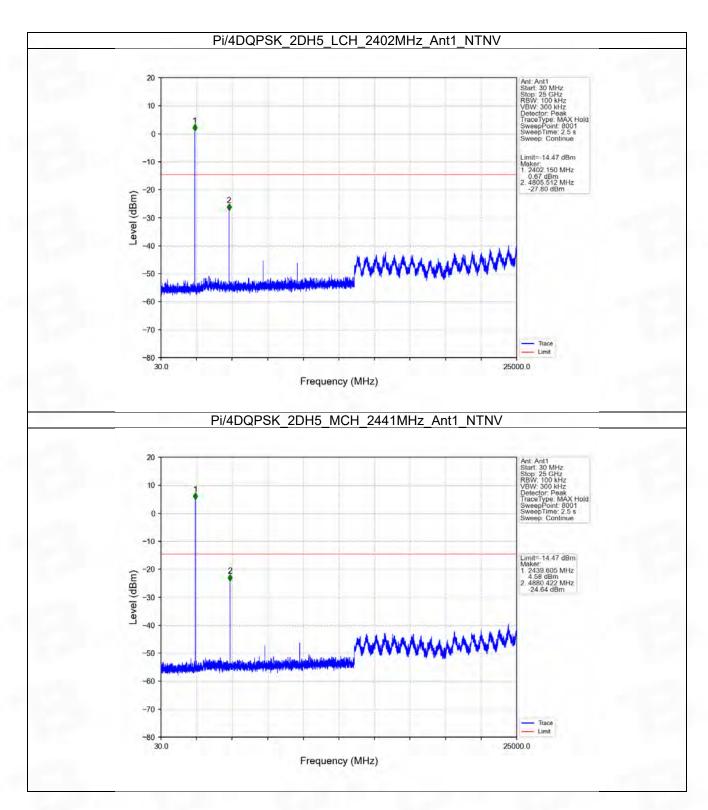


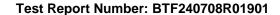




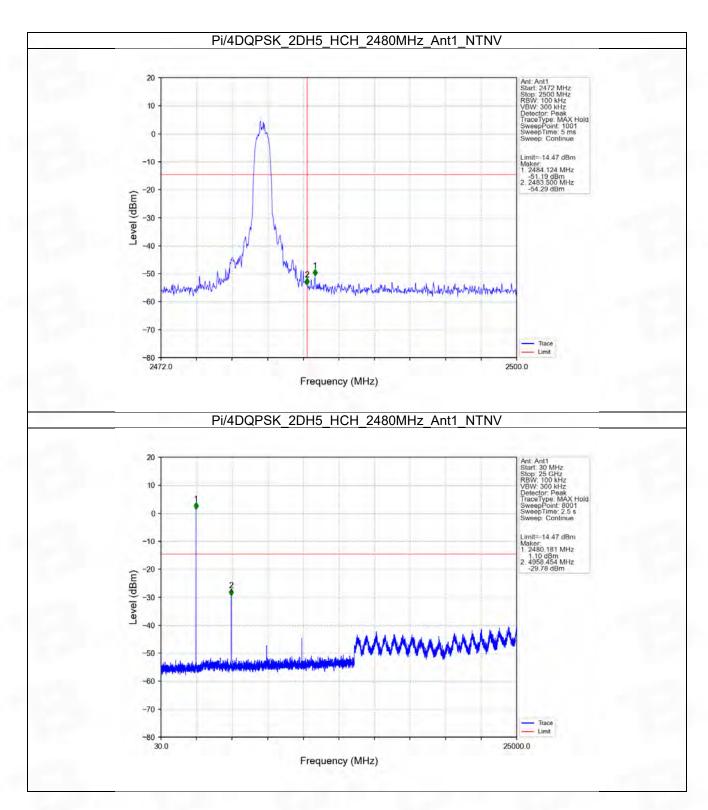


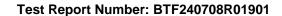




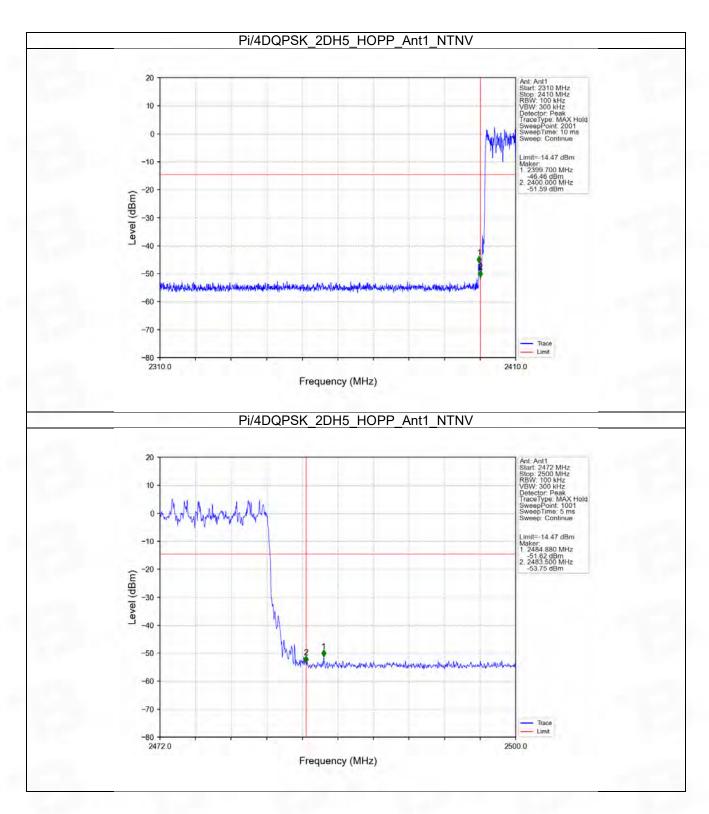


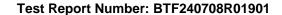




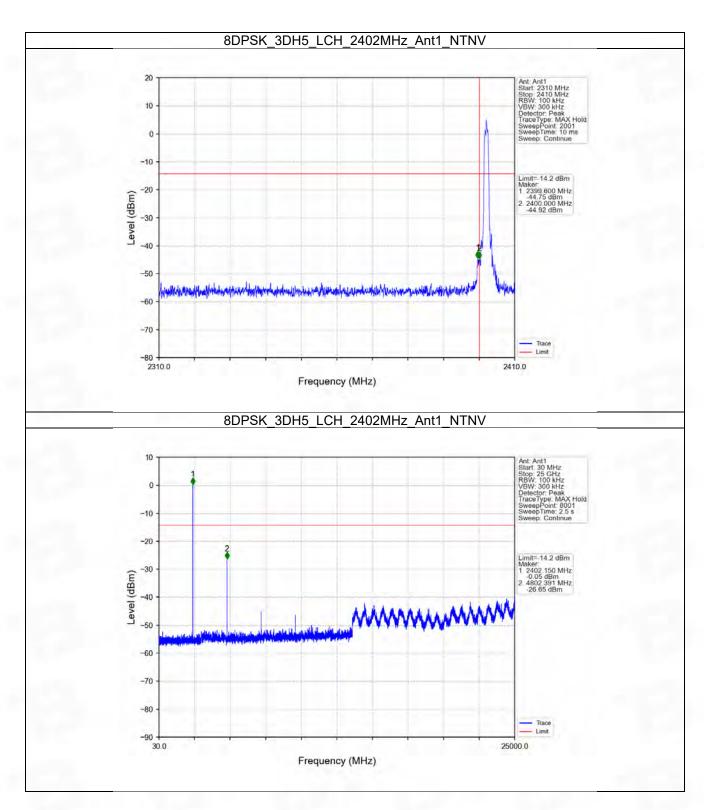


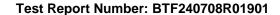




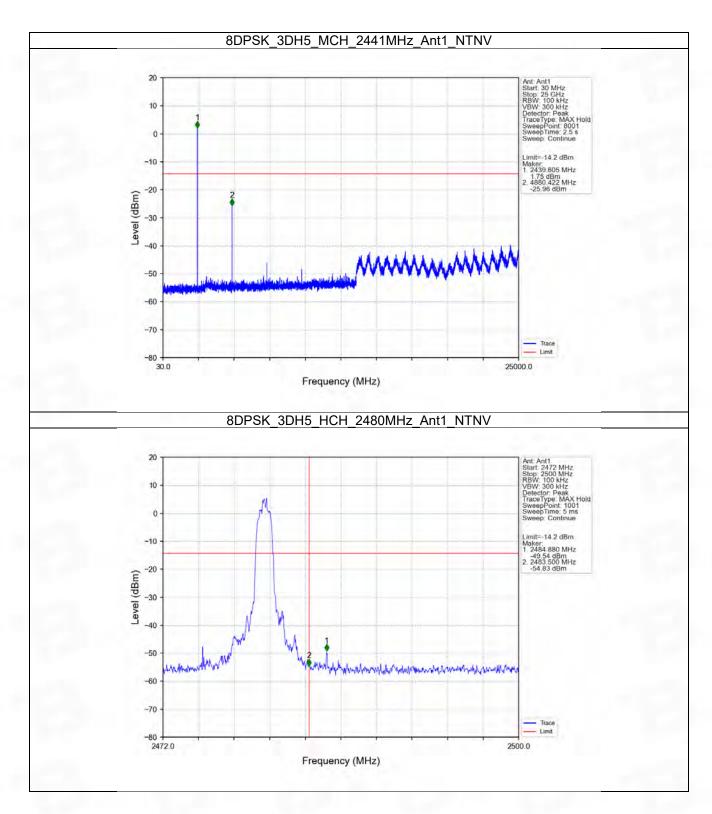






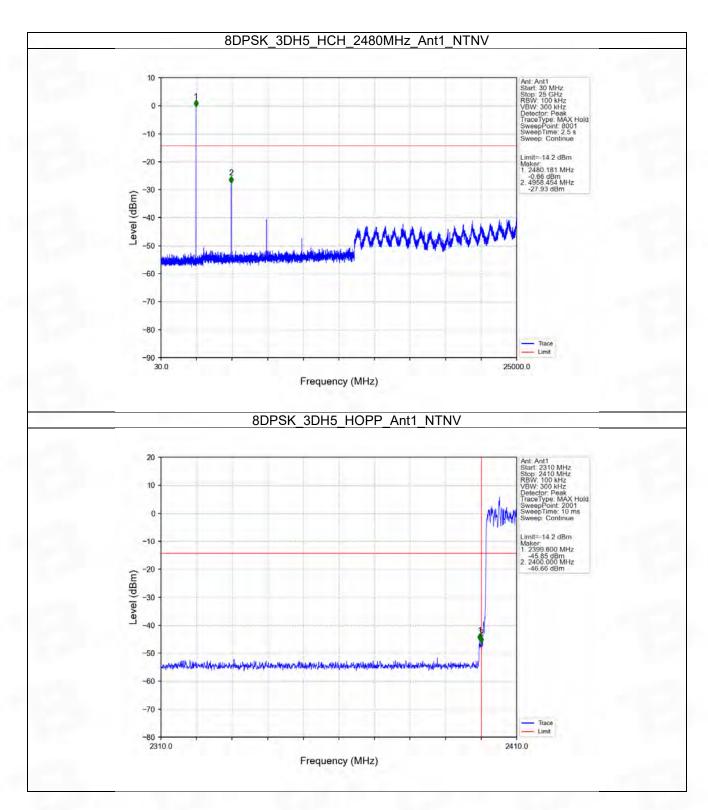


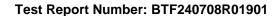




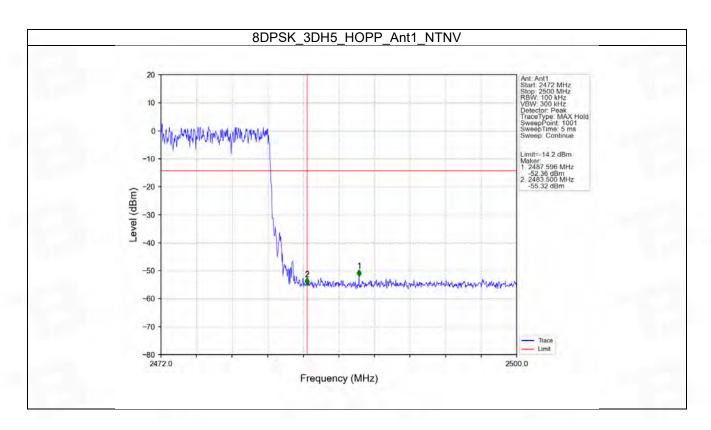


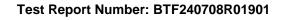












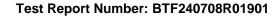


7. Form731

7.1 Test Result

7.1.1 Form731

Lower Freq (MHz)	High Freq (MHz)	MAX Power (W)	MAX Power (dBm)
2402	2480	0.0043	6.30







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-- END OF REPORT --