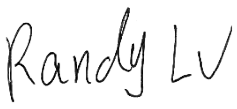
Product Name: Tablet	**Report No: FCC2022-06452RF1**
Product Model: T20	**Security Classification: Open**
Version: V1.0	**Total Page: 108**

TIRT Testing Report

Prepared By:	**Checked By:**	**Approved By:**	
Stone Tang	Randy Lv	Daniel Chen	
			

RF TEST REPORT

FCC ID: 2AX4YT20

According to

47 CFR FCC Part 15, Subpart C(Section 15.247)

Equipment	:	Tablet
Model No.	:	T20, T20Pro, T20S, T20E All models are with same schematic, The only diffrences are model no. T20 is main test model, T20Pro, T20S, T20E, is the adding model. No other differences.
Trademark	:	DOOGEE
Product No.	:	20221220021902
Applicant	:	Shenzhen DOOGEE Hengtong Technology CO.,LTD

- The test result referred exclusively to the presented test model /sample.
- Without written approval of TIRT Inc. the test report shall not reproduced except in full.
- Test Date: 2022.12.13-2023.1.8

Lab: Beijing TIRT Technology Service Co.,Ltd Shenzhen

Add: 101, 3 # Factory Building, Gongjin Electronics Shatin Community, Kengzi Street, Pingshan District, Shenzhen, China

TEL: +86-0755-27087573

Table of Contents

History of this test report

Original Report Issue Date: 2023.01.09

● No additional attachment

○ Additional attachments were issued following record

Attachment No.	Issue Date	Description

1. General Information

1.1 Applicant

Shenzhen DOOGEE Hengtong Technology CO.,LTD

B, 2/F, Building A4, Silicon Valley Power Digital Industrial Park, No.22, Longhua New District, Shenzhen, China

1.2 Manufacturer

Shenzhen DOOGEE Hengtong Technology CO.,LTD

B, 2/F, Building A4, Silicon Valley Power Digital Industrial Park, No.22, Longhua New District, Shenzhen, China

1.3 Basic Description of Equipment Under Test

Items	**Description**	
Equipment Name	Tablet	
Model Number	T20	
Sample ID	20221220021902	
Product Code	N/A	
Power Supply	Input: 100~240V, 50/60Hz	
Adapter /Model /Description	Model: HJ-PD20W-US Input: 100-240V~50/60Hz, 0.6A Output: 5V⎓3A, 9V⎓2.22A, 12V⎓1.67A, 20W Max.	
Operate temperature	0℃-45℃	
EUT Stage	○ Product Unit	● Final-Sample
Operation Frequency	2402~2480MHz	
Channel numbers	79	
Channel separation	1MHz	
Modulation technology	GFSK, π/4-DQPSK, 8-DPSK	
Antenna Type	PIFA Antenna	
Antenna gain	0.32dBi	

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

The test frequencies are below:

Channel	Frequency (MHz)
Lowest:	2402
Middle:	2441
Highest:	2480

1.4 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Gain
1	N/A	N/A	PIFA	N/A	0.32 dBi

2. Summary of Test Results

2.1 Summary of Test Items

47 CFR FCC Part 15, Subpart C (Section 15.247)			
Test item	FCC Clause	Results	Remarks
Antenna Requirement	§15.203/§15.247 (c)	Pass	Meet the requirement of the limit
AC Power Line Conducted Emission	§15.207	Pass	Meet the requirement of the limit
Conducted Peak Output Power	§15.247 (b)(1)	Pass	Meet the requirement of the limit
20dB Occupied Bandwidth	§15.247 (a)(1)	Pass	Meet the requirement of the limit
Carrier Frequencies Separation	§15.247 (a)(1)	Pass	Meet the requirement of the limit
Hopping Channel Number	§15.247 (a)(1)	Pass	Meet the requirement of the limit
Dwell Time	§15.247 (a)(1)	Pass	Meet the requirement of the limit
Radiated Emission	§15.205/§15.209	Pass	Meet the requirement of the limit
Note: NA denotes Not Applicable in this part			

2.2 Application of Standard

47 CFR FCC Part 15, Subpart C (Section 15.247)

KDB 558074 D01 v05r02

ANSI C63.10:2013

2.3 Test Instruments

No.	Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
RF Output Power Test					
1	Power Collection Unit	Tonscend	JS0806-2	188060134	2023/11/08
2	Tonscend Test System	Tonscend	EN300328 V2.2.2	NA	NA
3	Temp&Humidity Chamber	ETOMA	NTH1100-30A	16080628	2023/11/08
4	Temp&Humidity Recorder	Anymetre	JR900	NA	2023/11/08
Accumulated Transmit Time, Frequency Occupation and Hopping Sequence Test					
1	Spectrum Analyzer	Agilent	N9010A	MY52221119	2023/11/08
2	Power Collection Unit	Tonscend	JS0806-2	188060134	2023/11/08
3	Tonscend Test System	Tonscend	EN300328 V2.2.2	NA	NA
4	Temp&Humidity Recorder	Anymetre	JR900	NA	2023/11/08
Hopping Frequency Separation Test					
1	Spectrum Analyzer	Agilent	N9010A	MY52221119	2023/11/08
2	Power Collection Unit	Tonscend	JS0806-2	188060134	2023/11/08
3	Tonscend Test System	Tonscend	EN300328 V2.2.2	NA	NA
4	Temp&Humidity Recorder	Anymetre	JR900	NA	2023/11/08
Occupied Channel Bandwidth Test					
1	Spectrum Analyzer	Agilent	N9010A	MY52221119	2023/11/08
2	Power Collection Unit	Tonscend	JS0806-2	188060134	2023/11/08
3	Tonscend Test System	Tonscend	EN300328 V2.2.2	NA	NA
4	Temp&Humidity Recorder	Anymetre	JR900	NA	2023/11/08
Transmitter Unwanted Emissions In The Out of Band Domain					
1	Spectrum Analyzer	Agilent	N9010A	MY52221119	2023/11/08
2	Power Collection Unit	Tonscend	JS0806-2	188060134	2023/11/08
3	Tonscend Test System	Tonscend	EN300328 V2.2.2	NA	NA
4	Temp&Humidity	Anymetre	JR900	NA	2023/11/08

	Recorder				
Transmitter Emissions In Spurious Domain					
1	Spectrum Analyzer	Rohde & Schwarz	FSV30	103741	2023/11/08
2	Integral antenna	SCHWARZBECK	VULB9163	9163-868	2023/11/08
3	Broadband Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-123	2023/11/08
4	Broadband amplifier	SCHWARZBECK	BBV9745	9745#46	2023/11/08
5	Broadband amplifier	SCHWARZBECK	BBV9718	9718-284	2023/11/08
6	Temp&Humidity Recorder	Anymetre	JR900	NA	2023/11/08

2.4 Test Mode

Test mode:			
Transmitting mode:	Keep the EUT in transmitting mode with modulation.		
Operating Environment:			
Item	Normal condition	Extreme condition	
		HT	LT
Temperature	+15ºC to + 35ºC	+45ºC	0ºC
Humidity	20%-95%		
Atmospheric Pressure:	100.65 kPa		

Setting	Value
Modulation	GFSK, π/4-DQPSK, 8-DPSK
Adaptive	No
Antenna Gain	0.32 dBi
Nominal Channel Bandwidth	0.857MHz(1M),1.179MHz(2M),1.187MHz(3M)
DUT Frequency not configurable	No
Frequency Low	2402MHz
Frequency Mid	2441MHz
Frequency High	2480MHz

2.5 Test Condition

Applicable to	Environmental conditions	Input Power	Tested by
AC Power Line Conducted Emission	24.6°C, 56 % RH	120V AC	Stone Tang
Conducted Peak Output Power	24.2°C, 55 % RH	120V AC	Stone Tang
20dB Occupied Bandwidth	24.6°C, 56 % RH	120V AC	Stone Tang
Carrier Frequencies Separation	24.6°C, 56 % RH	120V AC	Stone Tang
Hopping Channel Number	24.5°C, 56 % RH	120V AC	Stone Tang
Dwell Time	24.4°C, 56 % RH	120V AC	Stone Tang
Radiated Emission	24.4°C, 56 % RH	120V AC	Stone Tang

The applicant declare the operating environment of EUT as below:

Normal conditions: 120V AC ,15~35°C

2.6 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT.
This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Uncertainty	
Parameter	Uncertainty
Occupied Channel Bandwidth	±142.12 KHz
RF power conducted	±0.74 dB
RF power radiated	±3.25dB
Spurious emissions, conducted	±1.78dB
Spurious emissions, radiated (9KHz~30MHz)	±2.56dB
Spurious emissions, radiated (30MHz～1GHz)	±4.6dB
Spurious emissions, radiated (Above 1GHz)	±4.9dB
Conduction Emissions(150kHz~30MHz)	±3.1 dB
Humidity	±4.6%
Temperature	±0.7°C
Time	±1.25%

2.7 Test Location

Company:	Beijing TIRT Technology Service Co.,Ltd Shenzhen
Address:	101, 3 # Factory Building, Gongjin Electronics Shatin Community, Kengzi Street, Pingshan District, Shenzhen, China
CNAS Registration Number:	CNAS L14158
A2LA Registration Number:	6049.01
FCC Designation Number:	CN1309
Test Firm Registration Number:	825524
Telephone:	+86-0755-27087573

2.8 Deviation from Standards

None

2.9 Abnormalities from Standard Conditions

None

3. Test Procedure And Results

3.1 AC Power Line Conducted Emission

3.1.1 Limit

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. * Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

3.1.2 Test Procedure

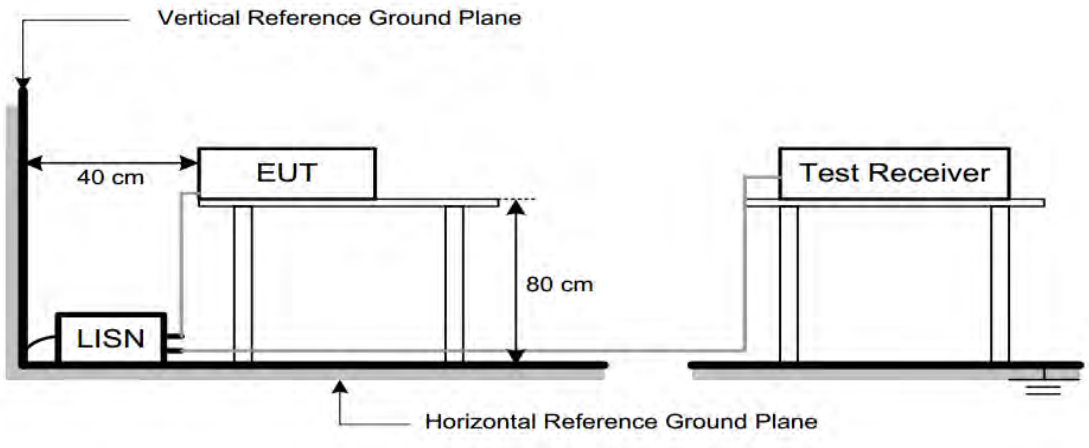
Test Method	
●Conducted Measurement	○Radiated Measurement
Test Channels	
○Lowest, Middle and Highest Channel	○Lowest and Highest Channel
Environmental conditions	
●Normal	○Normal and Extreme
Note:●:Test ○:No Test	

a) The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b) Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c) The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

3.1.3 Test Setup



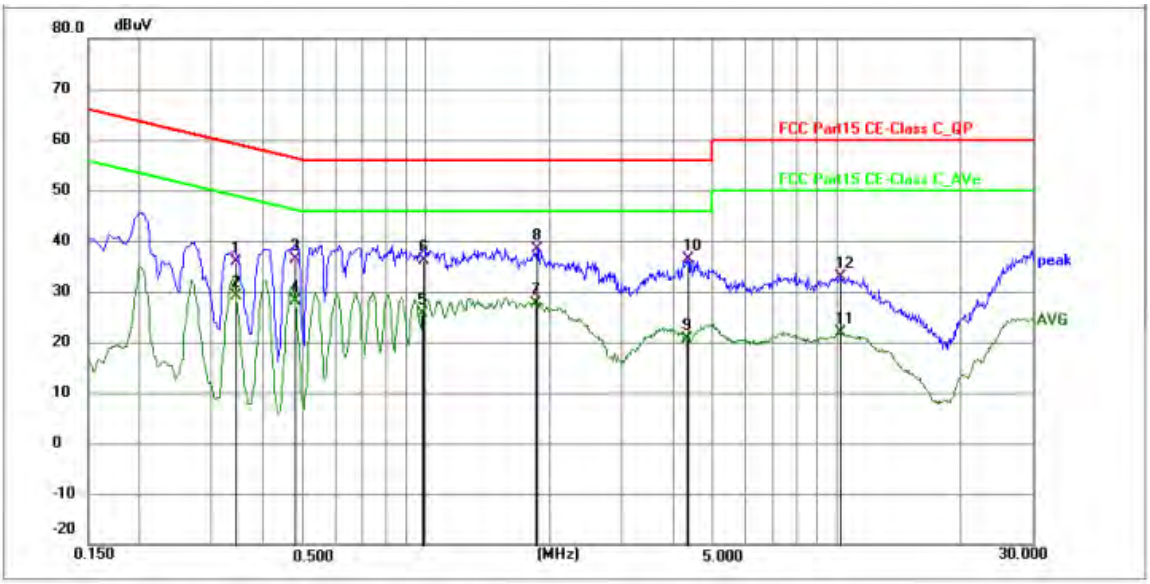
3.1.4 Test Result

Note:

1. Correct Factor = LISN Factor + Cable Loss + Pulse Limiter Factor, the value was added to Original Receiver Reading by the software automatically.
2. Measurement = Reading + Correct Factor.
3. Over = Measurement - Limit

150kHz~30MHz	Worst Case Operating Mode: Simultaneous transmission

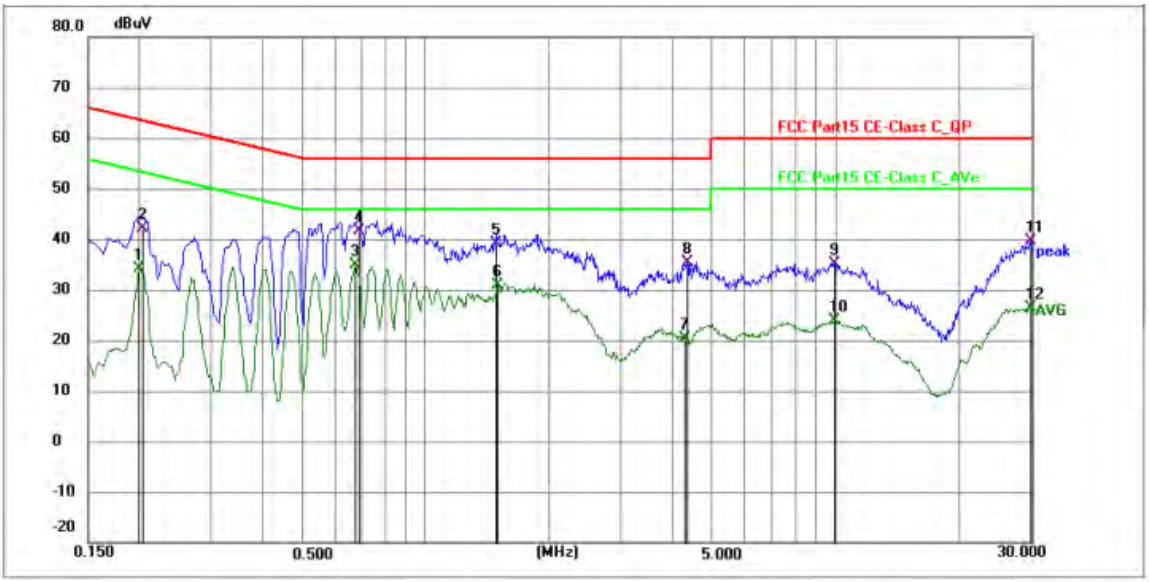
Line



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.3435	25.77	10.18	35.95	59.12	-23.17	QP	P	
2	0.3435	19.02	10.18	29.20	49.12	-19.92	AVG	P	
3	0.4785	26.17	10.25	36.42	56.37	-19.95	QP	P	
4	0.4785	17.81	10.25	28.06	46.37	-18.31	AVG	P	
5	0.9825	15.33	10.26	25.59	46.00	-20.41	AVG	P	
6	0.9870	25.78	10.26	36.04	56.00	-19.96	QP	P	
7	1.8555	17.23	10.29	27.52	46.00	-18.48	AVG	P	
8 *	1.8645	28.07	10.29	38.36	56.00	-17.64	QP	P	
9	4.3305	10.46	10.21	20.67	46.00	-25.33	AVG	P	
10	4.3530	26.23	10.21	36.44	56.00	-19.56	QP	P	
11	10.1850	11.44	10.39	21.83	50.00	-28.17	AVG	P	
12	10.2524	22.61	10.39	33.00	60.00	-27.00	QP	P	

150kHz~30MHz	Worst Case Operating Mode: Simultaneous transmission

Neutral



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1995	23.84	10.20	34.04	53.63	-19.59	AVG	P	
2	0.2040	31.82	10.20	42.02	63.45	-21.43	QP	P	
3 *	0.6720	24.57	10.25	34.82	46.00	-11.18	AVG	P	
4	0.6854	31.40	10.25	41.65	56.00	-14.35	QP	P	
5	1.4910	28.96	10.28	39.24	56.00	-16.76	QP	P	
6	1.4955	20.58	10.28	30.86	46.00	-15.14	AVG	P	
7	4.2765	10.08	10.21	20.29	46.00	-25.71	AVG	P	
8	4.3530	25.23	10.21	35.44	56.00	-20.56	QP	P	
9	9.9642	24.82	10.41	35.23	60.00	-24.77	QP	P	
10	9.9642	13.53	10.41	23.94	50.00	-26.06	AVG	P	
11	29.9940	29.84	9.87	39.71	60.00	-20.29	QP	P	
12	29.9940	16.63	9.87	26.50	50.00	-23.50	AVG	P	

3.2 Radiated Emission and Band Edge

3.2.1 Limit

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

Frequency (MHz)	Distance Meters(m)	Field Strength Limit	
		μV/m	dB(μV)/m
0.009 – 0.49	300	2400/F(kHz)	-
0.490 – 1.705	30	24000/F(kHz)	-
1.705 – 30	30	30	-
30~88	3	100	40.0
88~216	3	150	43.5
216~960	3	200	46.0
960~1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Note: (1) Emission level dBμV = 20 log Emission level μV/m

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

3.2.2 Test Procedure

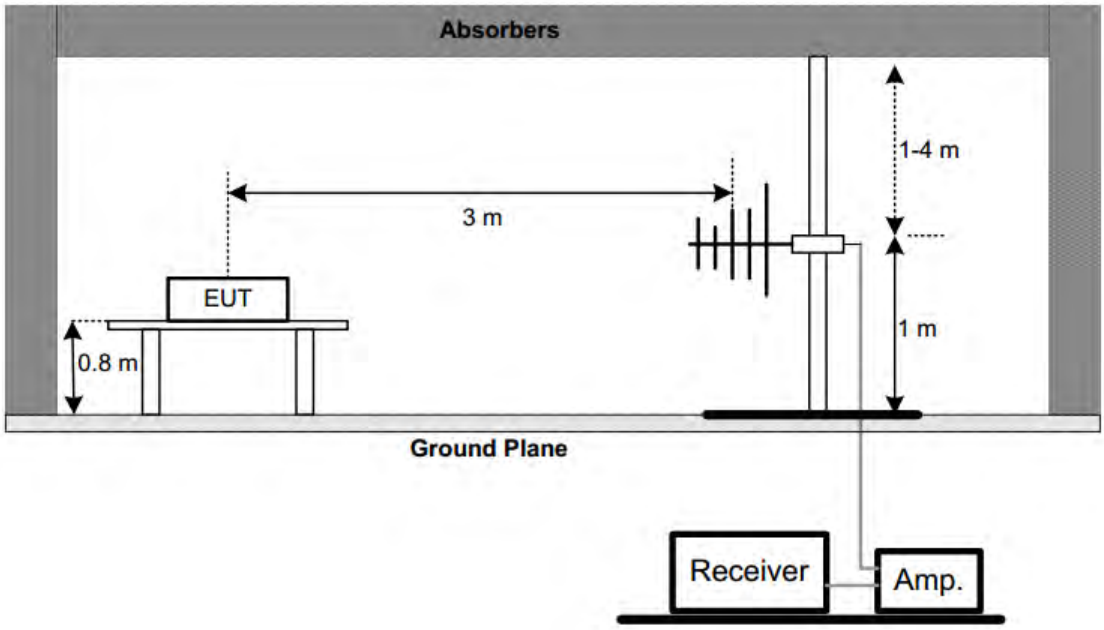
Test Method	
○Conducted Measurement	●Radiated Measurement
Test Channels	
●Lowest, Middle and Highest Channel	○ Lowest and Highest Channel
Environmental conditions	
●Normal	○Normal and Extreme
Note:●:Test ○:No Test	

a) The measuring distance of 3 m shall be used for measurements. The EUT was placed on the
b) top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The
c) table was rotated 360 degrees to determine the position of the highest radiation.(below 1 GHz)
d) The measuring distance of 3 m or 1.5m shall be used for measurements. The EUT was placed
e) on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber.
f) The table was rotated 360 degrees to determine the position of the highest radiation.(above
g) 1GHz)
h) The height of the equipment or of the substitution antenna shall be 0.8m or 1.5m; the height of

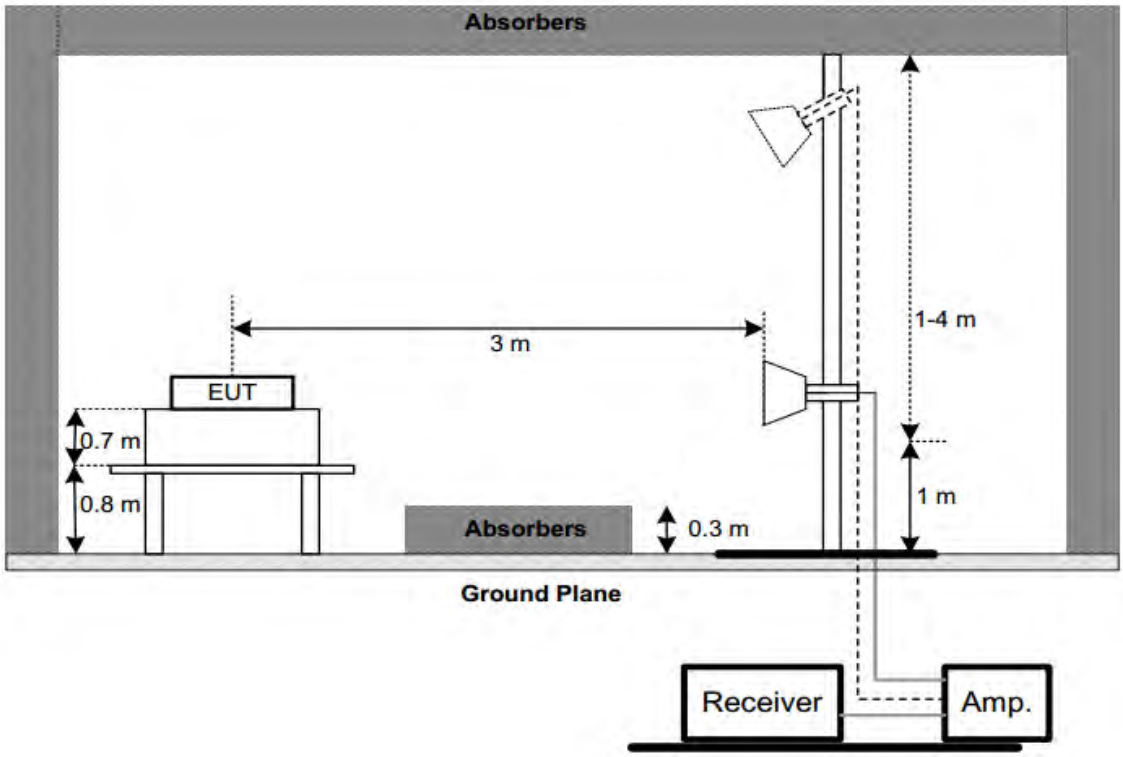
i) the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of
j) the antenna are set to make the measurement.
k) For each suspected emission, the EUT was arranged to its worst case and then the antenna
l) was tuned to heights find the maximum reading (used Bore sight function).
m) The receiver system was set to peak and average detect function and specified bandwidth
n) with maximum hold mode when the test frequency is above 1 GHz.
o) The initial step in collecting radiated emission data is a receiver peak detector mode
p) pre-scanning the measurement frequency range. Significant peaks are then marked and then
q) Quasi Peak detector mode re-measured.
r) All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the
s) Peak reading compliance with the QP Limits and then QP Mode measurement didn‘t perform.
t) (below 1 GHz)
u) All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak
v) Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT
w) shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured,
x) but AVG Mode didn‘t perform. (above 1 GHz)
y) For the actual test configuration, please refer to the related Item -EUT Test Photos.

3.2.3 Test Setup

(A) Radiated Emission Test Set-Up Frequency 30 MHz-1000 MHz



(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



3.2.4 Test Result

1) Radiated emission: 9KHz-30MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

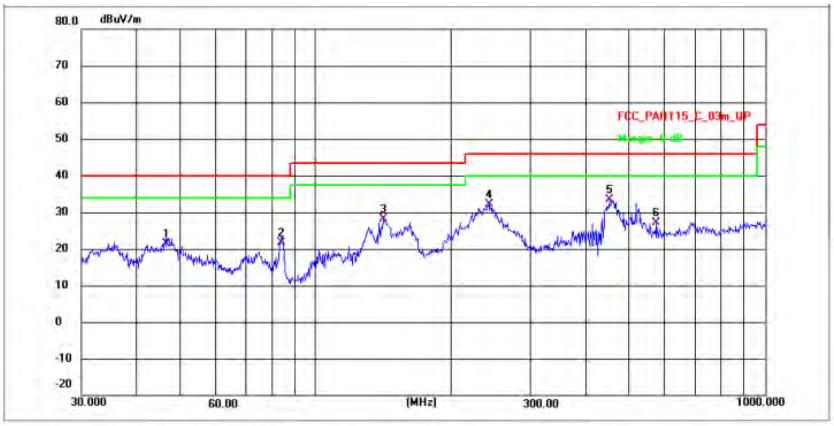
2) Radiated emission: 30MHz-1G

Note:

1. Measurement = Reading + Correct Factor.
2. Over = Measurement - Limit

Below 1G (30MHz~1GHz)	Test mode: GFSK	Test Channel:0

VERTICAL



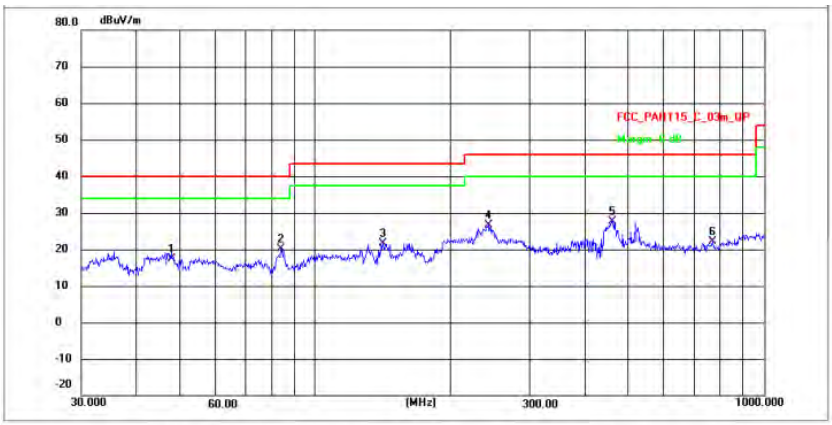
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	46.5846	49.37	-28.08	21.29	40.00	-18.71	QP	P
2	83.5220	49.49	-27.86	21.63	40.00	-18.37	QP	P
3	141.8262	55.41	-27.29	28.12	43.50	-15.38	QP	P
4	242.9507	58.93	-26.75	32.18	46.00	-13.82	QP	P
5 *	450.3446	58.94	-25.60	33.34	46.00	-12.66	QP	P
6	573.6191	52.33	-25.22	27.11	46.00	-18.89	QP	P

HORIZONTAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	38.8196	29.46	-14.21	15.25	40.00	-24.75	QP	P
2	69.8450	43.49	-27.92	15.57	40.00	-24.43	QP	P
3	141.8262	56.91	-27.29	29.62	43.50	-13.88	QP	P
4 *	242.9507	59.43	-26.75	32.68	46.00	-13.32	QP	P
5	464.7837	55.10	-25.56	29.54	46.00	-16.46	QP	P
6	696.8567	50.37	-24.79	25.58	46.00	-20.42	QP	P

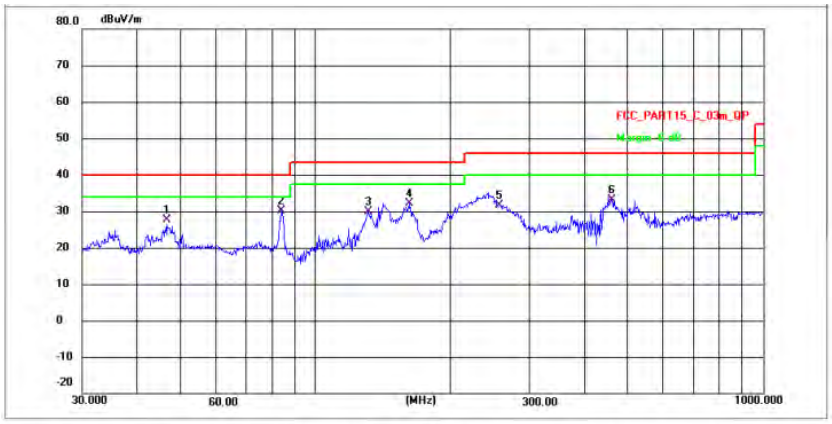
Below 1G (30MHz~1GHz)	Test mode: GFSK	Test Channel:39

VERTICAL



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	47.6584	45.50	-28.07	17.43	40.00	-22.57	QP	P
2	83.5220	47.99	-27.86	20.13	40.00	-19.87	QP	P
3	141.8262	48.91	-27.29	21.62	43.50	-21.88	QP	P
4	242.9507	53.43	-26.75	26.68	46.00	-19.32	QP	P
5 *	460.7271	53.27	-25.57	27.70	46.00	-18.30	QP	P
6	768.7481	47.23	-25.09	22.14	46.00	-23.86	QP	P

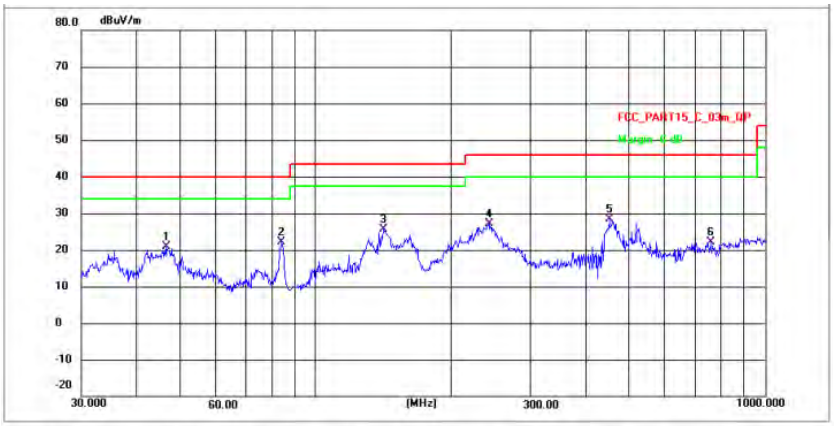
HORIZONTAL



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	46.5846	55.77	-28.08	27.69	40.00	-12.31	QP	P
2 *	83.5220	57.99	-27.86	30.13	40.00	-9.87	QP	P
3	131.2965	57.39	-27.39	30.00	43.50	-13.50	QP	P
4	162.3257	59.20	-27.19	32.01	43.50	-11.49	QP	P
5	258.7795	58.25	-26.65	31.60	46.00	-14.40	QP	P
6	460.7271	58.77	-25.57	33.20	46.00	-12.80	QP	P

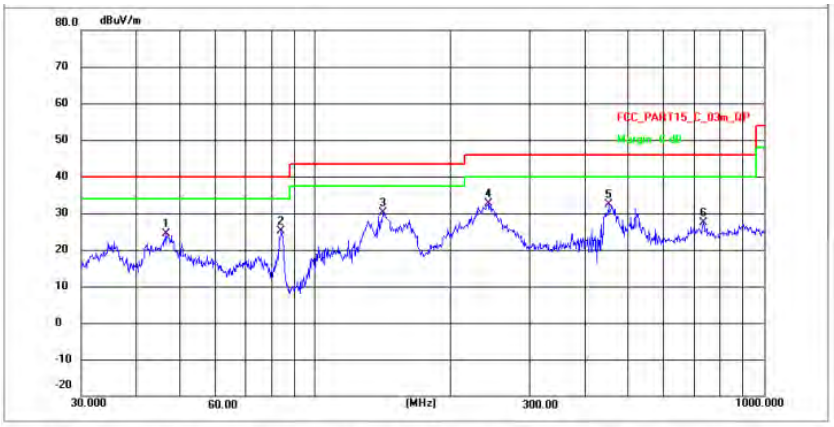
Below 1G (30MHz~1GHz)	Test mode: GFSK	Test Channel:78

VERTICAL



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	46.5846	48.87	-28.08	20.79	40.00	-19.21	QP	P
2	83.5220	49.99	-27.86	22.13	40.00	-17.87	QP	P
3	141.8262	52.91	-27.29	25.62	43.50	-17.88	QP	P
4	242.9507	53.93	-26.75	27.18	46.00	-18.82	QP	P
5 *	450.3446	53.94	-25.60	28.34	46.00	-17.66	QP	P
6	758.0407	47.05	-25.04	22.01	46.00	-23.99	QP	P

HORIZONTAL



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	46.5846	52.37	-28.08	24.29	40.00	-15.71	QP	P
2	83.5220	52.99	-27.86	25.13	40.00	-14.87	QP	P
3	141.8262	57.41	-27.29	30.12	43.50	-13.38	QP	P
4 *	242.9507	59.43	-26.75	32.68	46.00	-13.32	QP	P
5	450.3446	57.94	-25.60	32.34	46.00	-13.66	QP	P
6	731.9202	52.26	-24.93	27.33	46.00	-18.67	QP	P

3) Radiated emission: Above 1G

Note:

1. Measurement = Reading + Correct Factor.
2. Over = Measurement - Limit

Above 1G (1GHz~26.5GHz)	Test mode: GFSK	Test Channel:0

HORIZONTAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2916.268	68.40	-30.08	38.32	74.00	-35.68	peak	P
2	3524.096	66.11	-29.93	36.18	74.00	-37.82	peak	P
3	5076.784	64.85	-28.29	36.56	74.00	-37.44	peak	P
4	6438.313	66.79	-26.16	40.63	74.00	-33.37	peak	P
5	7923.200	68.18	-26.15	42.03	74.00	-31.97	peak	P
6 *	11322.095	68.01	-24.56	43.45	74.00	-30.55	peak	P

VERTICAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2929.786	68.24	-30.06	38.18	74.00	-35.82	peak	P
2	4869.818	65.19	-28.88	36.31	74.00	-37.69	peak	P
3	6657.838	68.15	-25.95	42.20	74.00	-31.80	peak	P
4	9396.405	67.05	-24.67	42.38	74.00	-31.62	peak	P
5	12386.990	70.99	-22.85	48.14	74.00	-25.86	peak	P
6 *	14830.959	72.69	-21.03	51.66	74.00	-22.34	peak	P

Above 1G (1GHz~26.5GHz)	Test mode: GFSK	Test Channel:39

HORIZONTAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	3550.679	64.59	-29.97	34.62	74.00	-39.38	peak	P
2	6320.309	67.02	-26.30	40.72	74.00	-33.28	peak	P
3	8214.697	69.93	-25.98	43.95	74.00	-30.05	peak	P
4	10062.634	69.74	-24.70	45.04	74.00	-28.96	peak	P
5	13184.985	69.93	-21.62	48.31	74.00	-25.69	peak	P
6 *	15358.827	74.18	-22.06	52.12	74.00	-21.88	peak	P

VERTICAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	3268.968	63.54	-29.90	33.64	74.00	-40.36	peak	P
2	3862.246	64.58	-30.38	34.20	74.00	-39.80	peak	P
3	4920.755	63.32	-28.70	34.62	74.00	-39.38	peak	P
4	6138.469	61.49	-26.52	34.97	74.00	-39.03	peak	P
5	7491.148	70.28	-26.28	44.00	74.00	-30.00	peak	P
6 *	11735.245	69.70	-23.89	45.81	74.00	-28.19	peak	P

Above 1G (1GHz~26.5GHz)	Test mode: GFSK	Test Channel:78

HORIZONTAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2916.268	65.40	-30.08	35.32	74.00	-38.68	peak	P
2	3831.115	63.26	-30.34	32.92	74.00	-41.08	peak	P
3	4732.445	60.82	-29.37	31.45	74.00	-42.55	peak	P
4	5487.260	62.65	-27.64	35.01	74.00	-38.99	peak	P
5	7007.314	65.72	-25.66	40.06	74.00	-33.94	peak	P
6 *	13446.694	72.13	-21.09	51.04	74.00	-22.96	peak	P

VERTICAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	3013.089	66.86	-29.89	36.97	74.00	-37.03	peak	P
2	3668.564	67.96	-30.12	37.84	74.00	-36.16	peak	P
3	4287.017	68.00	-30.35	37.65	74.00	-36.35	peak	P
4	5530.250	67.30	-27.56	39.74	74.00	-34.26	peak	P
5	7628.806	70.61	-26.25	44.36	74.00	-29.64	peak	P
6 *	10785.449	72.26	-24.84	47.42	74.00	-26.58	peak	P

Above 1G (1GHz~26.5GHz)	Test mode: Pi/4DQPSK	Test Channel:0

HORIZONTAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2929.786	67.24	-30.06	37.18	74.00	-36.82	peak	P
2	3991.627	64.97	-30.54	34.43	74.00	-39.57	peak	P
3	4885.326	62.51	-28.82	33.69	74.00	-40.31	peak	P
4	6600.357	65.91	-25.99	39.92	74.00	-34.08	peak	P
5	8404.429	69.08	-25.86	43.22	74.00	-30.78	peak	P
6 *	12294.251	71.36	-22.90	48.46	74.00	-25.54	peak	P

VERTICAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2571.716	62.81	-30.90	31.91	74.00	-42.09	peak	P
2	3475.541	67.22	-29.89	37.33	74.00	-36.67	peak	P
3	4353.196	65.31	-30.30	35.01	74.00	-38.99	peak	P
4	5551.069	67.42	-27.53	39.89	74.00	-34.11	peak	P
5	7198.228	69.99	-25.90	44.09	74.00	-29.91	peak	P
6 *	10016.206	71.20	-24.63	46.57	74.00	-27.43	peak	P

Above 1G (1GHz~26.5GHz)	Test mode: Pi/4DQPSK	Test Channel:39

HORIZONTAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	3546.577	65.16	-29.96	35.20	74.00	-38.80	peak	P
2	4462.760	63.69	-30.22	33.47	74.00	-40.53	peak	P
3	5461.942	64.20	-27.68	36.52	74.00	-37.48	peak	P
4	6627.119	67.75	-25.97	41.78	74.00	-32.22	peak	P
5	8653.393	68.79	-25.65	43.14	74.00	-30.86	peak	P
6 *	11130.654	71.16	-24.46	46.70	74.00	-27.30	peak	P

VERTICAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	3567.138	62.86	-29.99	32.87	74.00	-41.13	peak	P
2	5592.942	62.65	-27.45	35.20	74.00	-38.80	peak	P
3	6537.700	66.51	-26.05	40.46	74.00	-33.54	peak	P
4	8167.347	69.60	-26.02	43.58	74.00	-30.42	peak	P
5	10330.817	69.56	-25.15	44.41	74.00	-29.59	peak	P
6 *	13184.985	70.93	-21.62	49.31	74.00	-24.69	peak	P

Above 1G (1GHz~26.5GHz)	Test mode: Pi/4DQPSK	Test Channel:78

HORIZONTAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	3401.993	68.03	-29.90	38.13	74.00	-35.87	peak	P
2	4775.039	66.06	-29.21	36.85	74.00	-37.15	peak	P
3	6156.237	65.24	-26.49	38.75	74.00	-35.25	peak	P
4	7385.800	68.87	-26.14	42.73	74.00	-31.27	peak	P
5	8625.924	69.71	-25.68	44.03	74.00	-29.97	peak	P
6 *	11072.895	72.36	-24.44	47.92	74.00	-26.08	peak	P

VERTICAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	3550.679	65.59	-29.97	35.62	74.00	-38.38	peak	P
2	5347.904	66.09	-27.86	38.23	74.00	-35.77	peak	P
3	7349.598	66.45	-26.10	40.35	74.00	-33.65	peak	P
4	9307.206	67.53	-24.82	42.71	74.00	-31.29	peak	P
5 *	11072.895	72.86	-24.44	48.42	74.00	-25.58	peak	P
6	12846.423	69.49	-22.24	47.25	74.00	-26.75	peak	P

Above 1G (1GHz~26.5GHz)	Test mode: 8DPSK	Test Channel:0

HORIZONTAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	3434.597	63.84	-29.90	33.94	74.00	-40.06	peak	P
2	6336.772	63.12	-26.27	36.85	74.00	-37.15	peak	P
3	8372.909	66.81	-25.88	40.93	74.00	-33.07	peak	P
4	10735.686	69.48	-24.95	44.53	74.00	-29.47	peak	P
5	12386.990	71.49	-22.85	48.64	74.00	-25.36	peak	P
6 *	14947.153	72.64	-20.67	51.97	74.00	-22.03	peak	P

VERTICAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	3627.442	65.37	-30.07	35.30	74.00	-38.70	peak	P
2	5177.553	66.80	-28.13	38.67	74.00	-35.33	peak	P
3	6855.064	69.09	-25.78	43.31	74.00	-30.69	peak	P
4	8551.451	71.03	-25.75	45.28	74.00	-28.72	peak	P
5	11230.835	72.00	-24.51	47.49	74.00	-26.51	peak	P
6 *	13753.291	73.96	-21.37	52.59	74.00	-21.41	peak	P

Above 1G (1GHz~26.5GHz)	Test mode: 8DPSK	Test Channel:39

HORIZONTAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	3490.642	67.03	-29.90	37.13	74.00	-36.87	peak	P
2	4438.319	66.13	-30.24	35.89	74.00	-38.11	peak	P
3	6460.683	64.99	-26.12	38.87	74.00	-35.13	peak	P
4	7191.989	66.63	-25.90	40.73	74.00	-33.27	peak	P
5	8723.710	68.56	-25.60	42.96	74.00	-31.04	peak	P
6 *	12044.524	70.58	-23.02	47.56	74.00	-26.44	peak	P

VERTICAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	3351.244	65.48	-29.90	35.58	74.00	-38.42	peak	P
2	4416.564	63.18	-30.25	32.93	74.00	-41.07	peak	P
3	5872.924	65.35	-26.92	38.43	74.00	-35.57	peak	P
4	7054.052	68.35	-25.72	42.63	74.00	-31.37	peak	P
5	8786.975	69.57	-25.54	44.03	74.00	-29.97	peak	P
6 *	11978.560	73.33	-23.11	50.22	74.00	-23.78	peak	P

Above 1G (1GHz~26.5GHz)	Test mode: 8DPSK	Test Channel:78

HORIZONTAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	3178.590	64.01	-29.89	34.12	74.00	-39.88	peak	P
2	4462.760	62.19	-30.22	31.97	74.00	-42.03	peak	P
3	5953.251	63.43	-26.77	36.66	74.00	-37.34	peak	P
4	7349.598	69.45	-26.10	43.35	74.00	-30.65	peak	P
5	9250.884	68.65	-24.92	43.73	74.00	-30.27	peak	P
6 *	13135.536	71.12	-21.72	49.40	74.00	-24.60	peak	P

VERTICAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	3371.647	66.24	-29.90	36.34	74.00	-37.66	peak	P
2	4653.771	64.06	-29.64	34.42	74.00	-39.58	peak	P
3	6003.361	61.59	-26.67	34.92	74.00	-39.08	peak	P
4	7508.489	66.67	-26.29	40.38	74.00	-33.62	peak	P
5	9307.206	67.53	-24.82	42.71	74.00	-31.29	peak	P
6 *	13269.094	71.62	-21.45	50.17	74.00	-23.83	peak	P

4) Band Edge

Test mode:	GFSK	Test Channel:	0

HORIZONTAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2310.000	66.21	-31.25	34.96	74.00	-39.04	peak	P
2	2390.000	66.29	-31.17	35.12	74.00	-38.88	peak	P
3 *	2400.000	83.87	-31.16	52.71	74.00	-21.29	peak	P

VERTICAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2310.000	37.01	-5.05	31.96	74.00	-42.04	peak	P
2	2390.000	39.09	-4.97	34.12	74.00	-39.88	peak	P
3 *	2400.000	56.67	-4.96	51.71	74.00	-22.29	peak	P

Test mode:	GFSK	Test Channel:	78

HORIZONTAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	2483.500	54.70	-4.89	49.81	74.00	-24.19	peak	P
2	2500.000	39.58	-4.87	34.71	74.00	-39.29	peak	P

VERTICAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	2483.500	78.90	-31.09	47.81	74.00	-26.19	peak	P
2	2500.000	66.28	-31.07	35.21	74.00	-38.79	peak	P

Test mode:	Pi/4DQPSK	Test Channel:	0

HORIZONTAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2310.000	66.91	-31.25	35.66	74.00	-38.34	peak	P
2	2390.000	67.09	-31.17	35.92	74.00	-38.08	peak	P
3 *	2400.000	83.02	-31.16	51.86	74.00	-22.14	peak	P

VERTICAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2310.000	37.71	-5.05	32.66	74.00	-41.34	peak	P
2	2390.000	37.39	-4.97	32.42	74.00	-41.58	peak	P
3 *	2400.000	51.32	-4.96	46.36	74.00	-27.64	peak	P

Test mode:	Pi/4DQPSK	Test Channel:	78

HORIZONTAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	2483.500	81.79	-31.09	50.70	74.00	-23.30	peak	P
2	2500.000	66.91	-31.07	35.84	74.00	-38.16	peak	P

VERTICAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	2483.500	78.79	-31.09	47.70	74.00	-26.30	peak	P
2	2500.000	64.91	-31.07	33.84	74.00	-40.16	peak	P

Test mode:	8DPSK	Test Channel:	0

HORIZONTAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2310.000	66.76	-31.25	35.51	74.00	-38.49	peak	P
2	2390.000	67.12	-31.17	35.95	74.00	-38.05	peak	P
3 *	2400.000	85.05	-31.16	53.89	74.00	-20.11	peak	P

VERTICAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	2310.000	38.06	-5.05	33.01	74.00	-40.99	peak	P
2	2390.000	40.42	-4.97	35.45	74.00	-38.55	peak	P
3 *	2400.000	58.35	-4.96	53.39	74.00	-20.61	peak	P

Test mode:	8DPSK	Test Channel:	78

HORIZONTAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	2483.500	81.57	-31.09	50.48	74.00	-23.52	peak	P
2	2500.000	66.77	-31.07	35.70	74.00	-38.30	peak	P

VERTICAL

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	2483.500	79.07	-31.09	47.98	74.00	-26.02	peak	P
2	2500.000	66.27	-31.07	35.20	74.00	-38.80	peak	P

3.3 Spurious Emission at Antenna Port

3.3.1 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak Output Power limits. If the transmitter complies with the Output 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 Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

3.3.2 Test Procedure

Test Method	
●Conducted Measurement	○Radiated Measurement
Test Channels	
● Lowest, Middle and Highest Channel	○ Lowest and Highest Channel
Environmental conditions	
●Normal	○Normal and Extreme
Note:●:Test ○:No Test	

a) The EUT was directly connected to the spectrum analyzer and antenna output port as show in

b) the block diagram below.

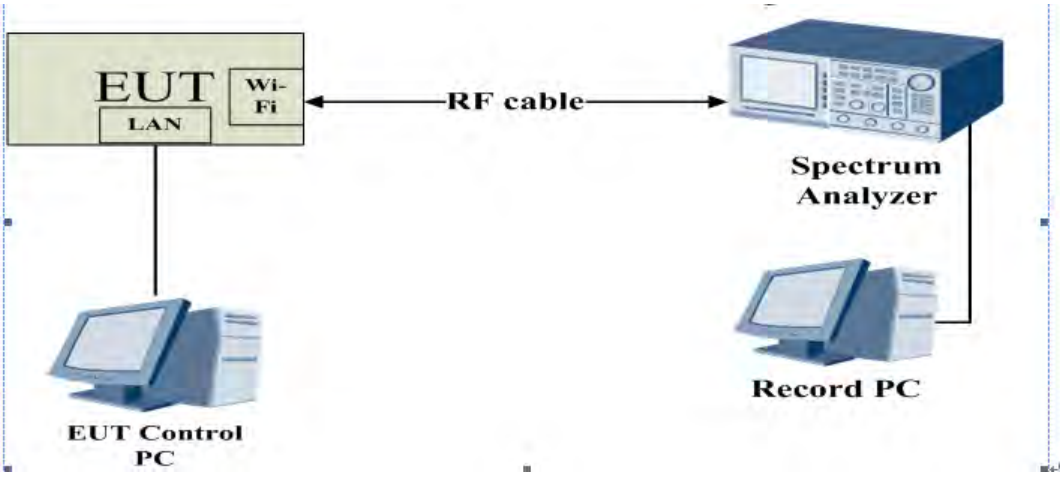
c) Spectrum Setting as below:

Centre Frequency	The centre frequency of the channel under test
RBW	100 kHz
VBW	300 kHz
Frequency span	2 x Nominal Channel Bandwidth
Detector Mode	Peak
Trace Mode	Max Hold
Sweep Time	Auto Couple

d) Allow trace to full stabilize.

e) Use the peak marker function to determine the maximum power level in any 100kHz band segment within the fundamental EBW.

3.3.3 Test Setup


EUT
LAN
Wi-Fi
RF cable
Spectrum Analyzer
Record PC
EUT Control PC

3.3.4 The Result

3.3.4.1 Conducted Spurious Emission

Please Refer to Appendix for Details.

3.3.4.2 Band edge measurements

Please Refer to Appendix for Details.

3.4 20dB Occupy Bandwidth

3.4.1 Limit

N/A

3.4.2 Test Procedure

Test Method	
●Conducted Measurement	○Radiated Measurement
Test Channels	
●Lowest, Middle and Highest Channel	○ Lowest and Highest Channel
Environmental conditions	
●Normal	○Normal and Extreme
Note:●:Test ○:No Test	

a) The EUT shall be connected to the spectrum analyser, and the spectrum analyser is set as follow:

Centre Frequency	The centre frequency of the channel under test
RBW	100kHz
VBW	300kHz
Frequency span	2x Nominal Channel Bandwidth
Detector Mode	Peak
Trace Mode	Max Hold
Sweep Time	Auto Couple

b) The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

c) Set to the maximum power setting and enable the EUT transmit continuously.

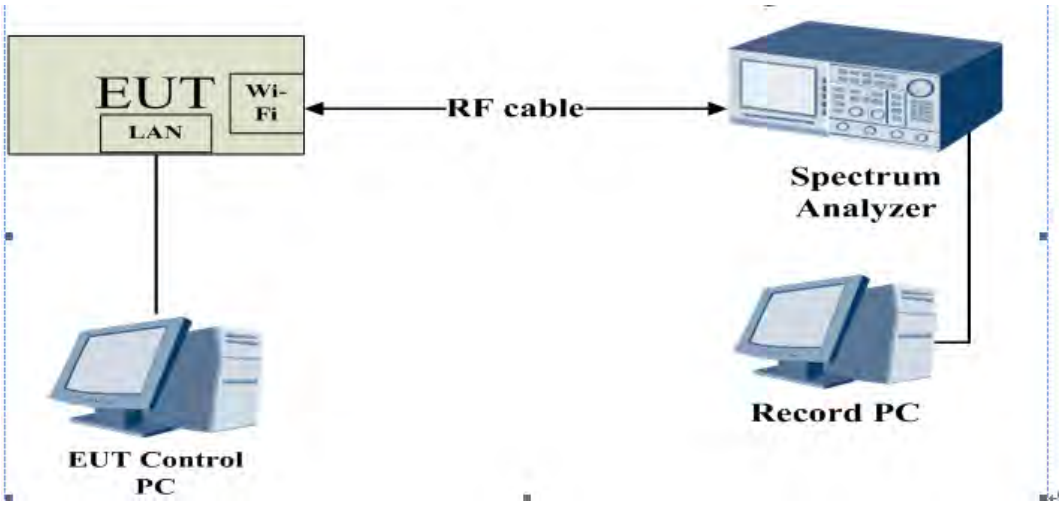
d) Use the following spectrum analyzer settings for 20dB Bandwidth measurement.

Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hopping channel; 1%≤RBW ≤5% of the 20 dB bandwidth; VBW≥3RBW;

Sweep = auto; Detector function = peak; Trace = max hold.

e) Measure and record the results in the test report.

3.4.3 Test Setup



3.4.4 Test Result

Please Refer to Appendix for Details.

3.5 Maximum conducted (average) output power

3.5.1 Limit

For systems using digital modulation in the 2400~2483.5MHz, The Maximum output Power shall not exceed 1W(30dBm)

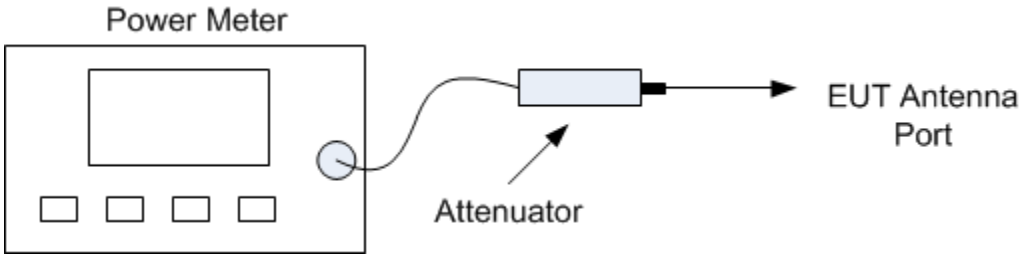
3.5.2 Test Procedure

Test Method	
●Conducted Measurement	○Radiated Measurement
Test Channels	
●Lowest, Middle and Highest Channel	○ Lowest and Highest Channel
Environmental conditions	
●Normal	○Normal and Extreme
Note:●:Test ○:No Test	

a) The EUT was directly connected to the power meter and antenna output port as show in the block diagram below.

b) The maximum output power was performed in accordance with method 11.9.2.3 of ANSI C63.10.

3.5.3 Test Setup



3.5.4 The Result

Please Refer to Appendix for Details.

3.6 Carrier Frequencies Separation

3.6.1 Limit

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.Test Peripherals

3.6.2 Test Procedure

Test Method	
●Conducted Measurement	○Radiated Measurement
Test Channels	
●Lowest, Middle and Highest Channel	○ Lowest and Highest Channel
Environmental conditions	
●Normal	○Normal and Extreme
Note:●:Test ○:No Test	

a) The EUT was directly connected to the spectrum analyzer and antenna output port as show in

b) the block diagram below. Spectrum analyser settings as following:

RBW	30% of the channel space
VBW	VBW≥RBW
Detector Mode	RMS
Trace Mode	Max Hold
Sweep Time	Auto

c) The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

d) Set to the maximum power setting and enable the EUT transmit continuously.

e) Enable the EUT hopping function.

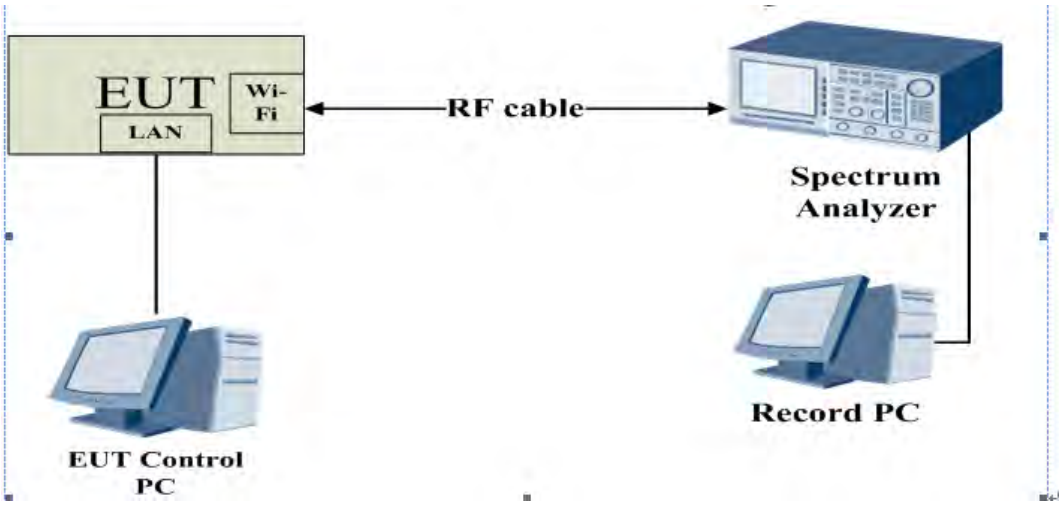
f) Use the following spectrum analyzer settings:

Span = wide enough to capture the peaks of two adjacent channels; RBW is set to approximately 30% of the channel spacing, adjust as necessary to best identify the center of each individual channel; VBW≥RBW; Sweep = auto;

Detector function = peak; Trace = max hold.

g) Use the marker-delta function to determine the separation between the peaks of the adjacent channels. Record the value in report.

3.6.3 Test Setup



3.6.4 The Result

Please Refer to Appendix for Details.

3.7 Hopping Channel Number

3.3.5 Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

3.3.6 Test Procedure

Test Method	
●Conducted Measurement	○Radiated Measurement
Test Channels	
●Lowest, Middle and Highest Channel	○ Lowest and Highest Channel
Environmental conditions	
●Normal	○Normal and Extreme
Note:●:Test ○:No Test	

a) The EUT was directly connected to the spectrum analyzer and antenna output port as show in

b) the block diagram below. Spectrum analyser settings as following:

RBW	30% of the channel space
VBW	VBW≥RBW
Detector Mode	RMS
Trace Mode	Max Hold
Sweep Time	Auto

c) The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

d) Set to the maximum power setting and enable the EUT transmit continuously.

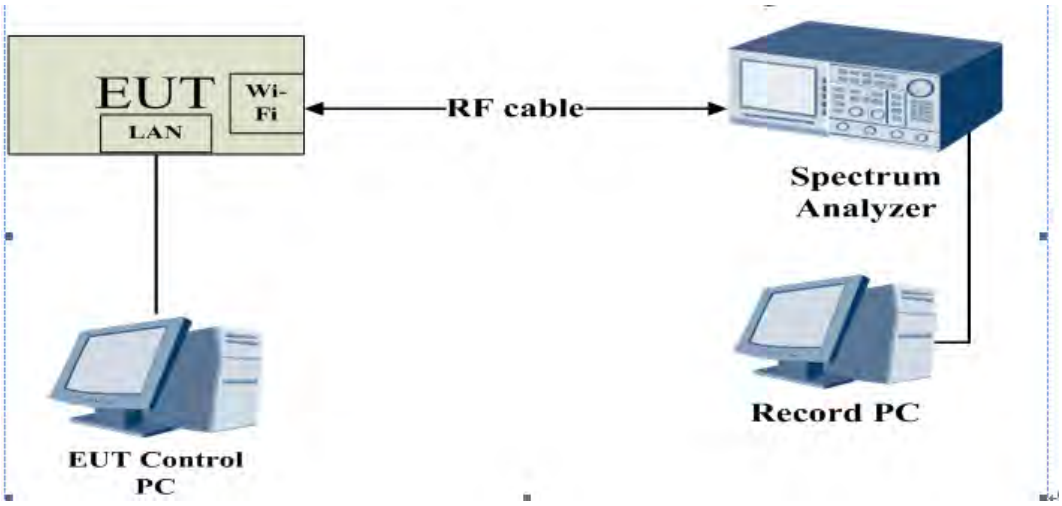
e) Enable the EUT hopping function.

f)Use the following spectrum analyzer settings: Span = the frequency band of operation; set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller; VBW≥RBW; Sweep = auto; Detector function = peak; Trace = max hold.

g) The number of hopping frequency used is defined as the number of total channel.

h) Record the measurement data in report.

3.3.7 Test Setup



3.3.8 The Result

Please Refer to Appendix for Details.

3.8 Dwell Time

3.8.1 Limit

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.

3.8.2 Test Procedure

Test Method	
●Conducted Measurement	○Radiated Measurement
Test Channels	
●Lowest, Middle and Highest Channel	○ Lowest and Highest Channel
Environmental conditions	
●Normal	○Normal and Extreme
Note:●:Test ○:No Test	

a) The EUT was directly connected to the spectrum analyzer and antenna output port as show in

b) the block diagram below. Spectrum analyser settings as following:

RBW	≤ channel spacing and where possible RBW should be set >> 1 / T
VBW	VBW≥RBW
Detector Mode	RMS
Trace Mode	Max Hold
Sweep Time	Auto

c) The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

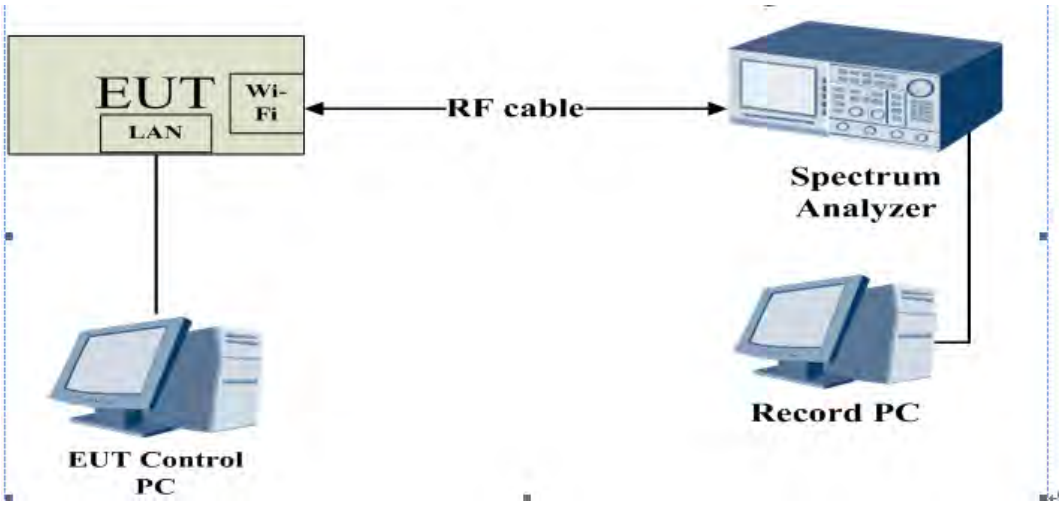
d) Set to the maximum power setting and enable the EUT transmit continuously.

e) Enable the EUT hopping function.

f)Use the following spectrum analyzer settings: Span = zero span, centered on a hopping channel; RBW shall be ≤ channel spacing and where possible RBW should be set >> 1 / T, where T is the expected dwell time per channel; VBW≥RBW; Sweep = as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold.

g) Measure and record the results in the test report.

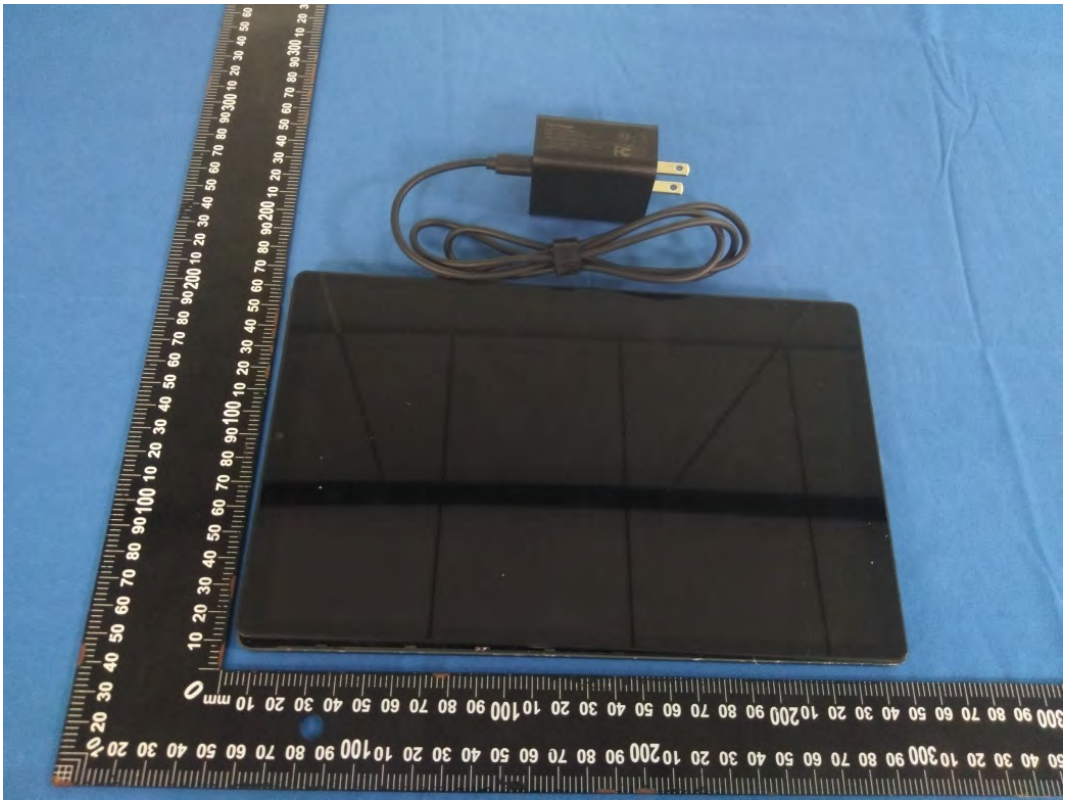
3.8.3 Test Setup



3.8.4 The Result

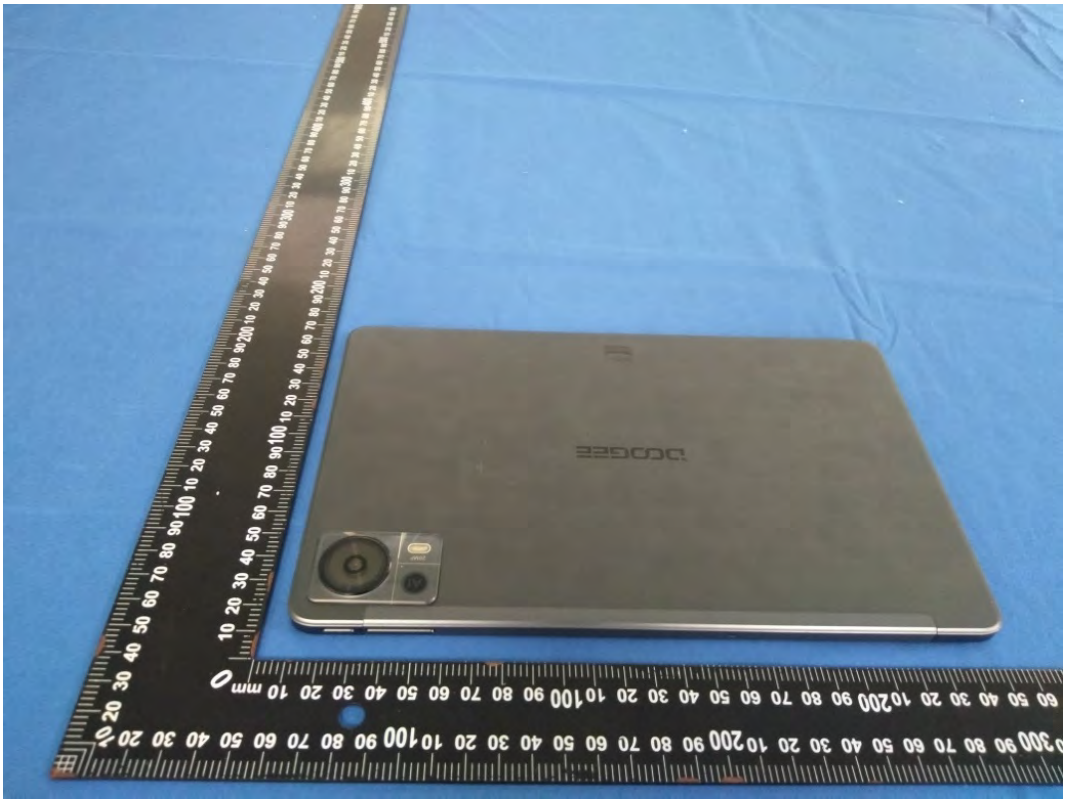
Please Refer to Appendix for Details.

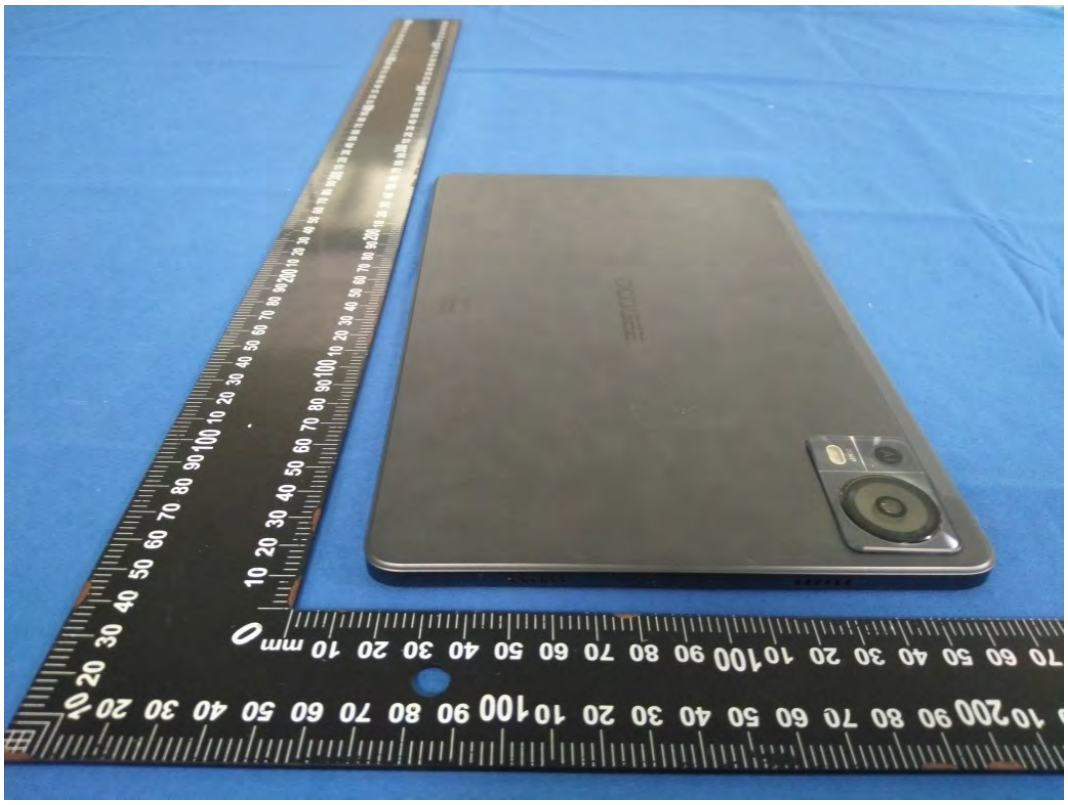
4. Photographs of EUT



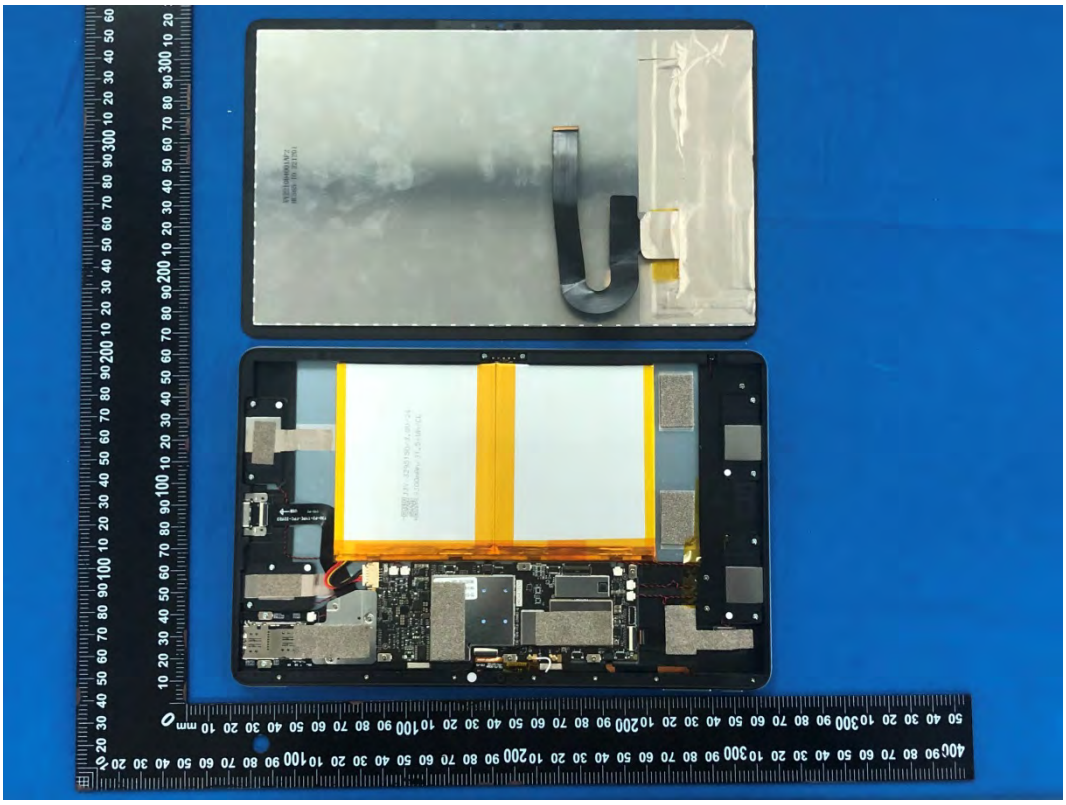

DOOGEE
Hi-Res
Audio

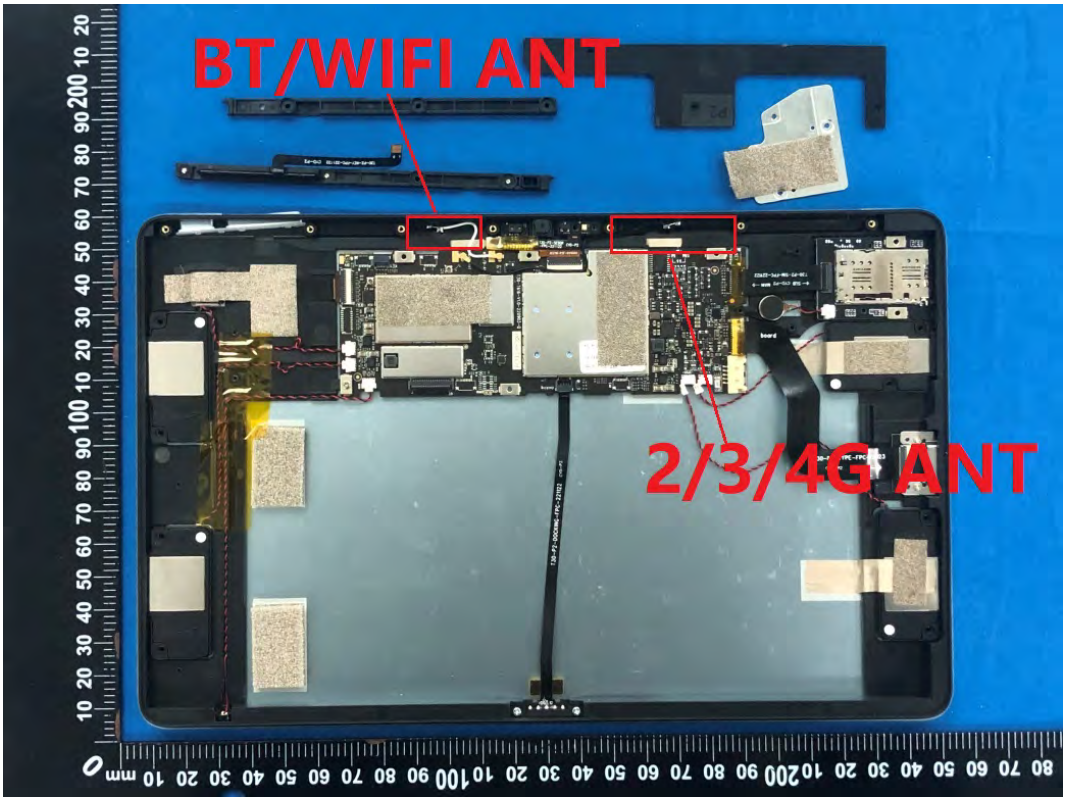

DOOGEE
Hi-Res
AUDIO

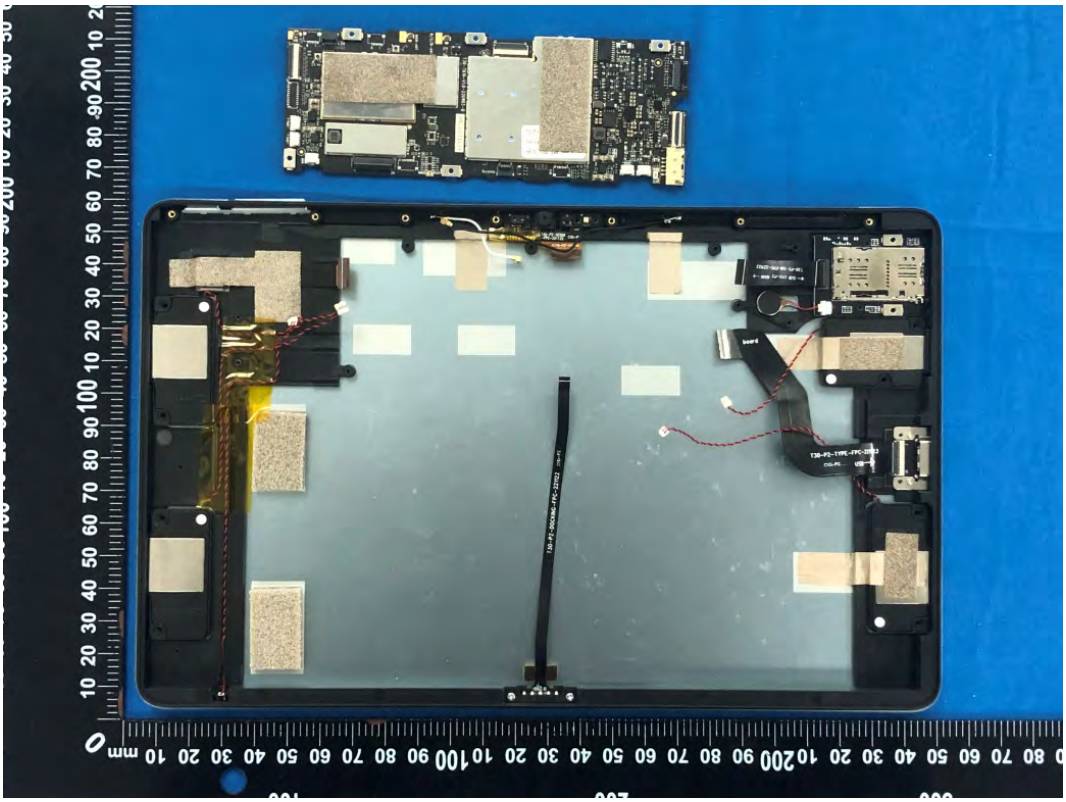


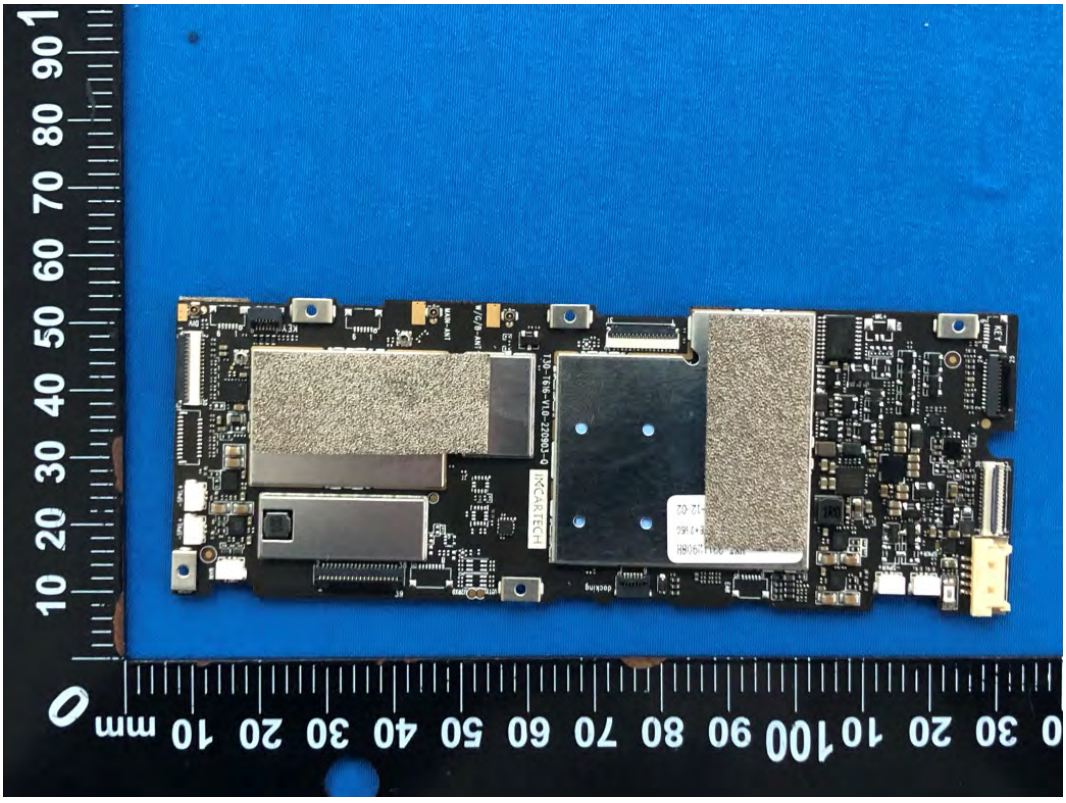


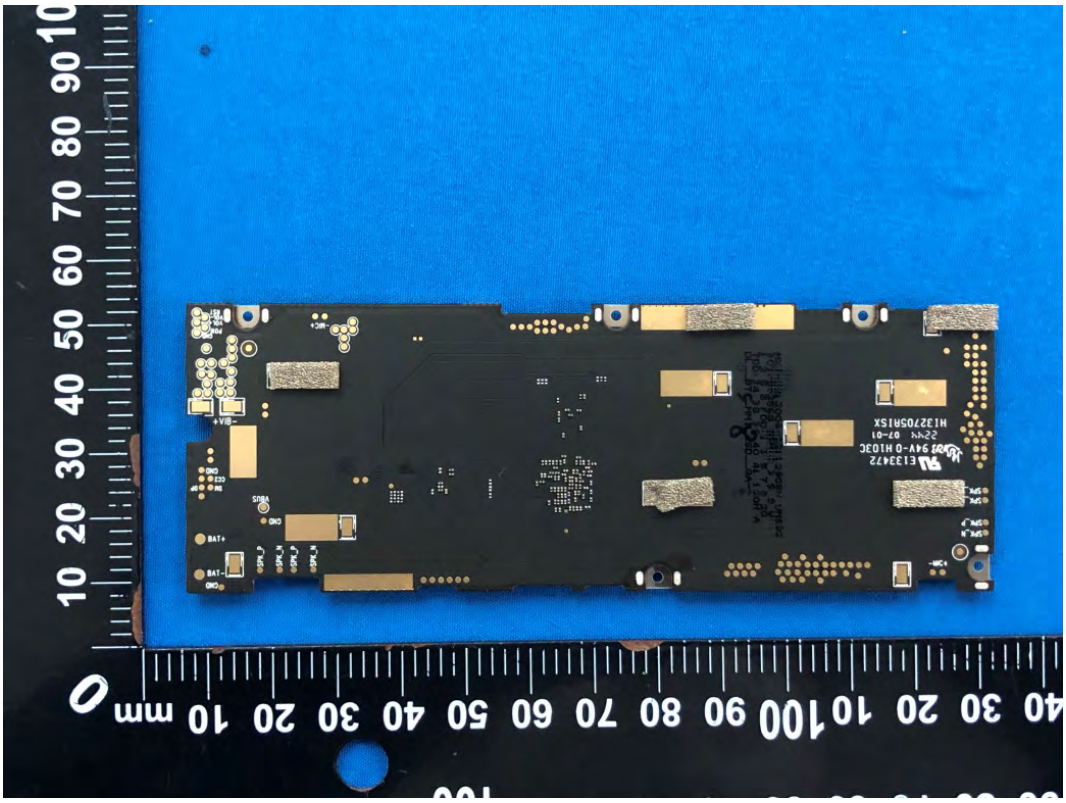

Fast Charger
Model: HJ-PD20W-US
Input: 100-240V~50/60Hz 0.6A
Output: 5.0V⎓3.0A 15.0W OR 9.0V⎓2.22A 19.98W
OR 12.0V⎓1.67A 20.0W MAX
MADE IN CHINA

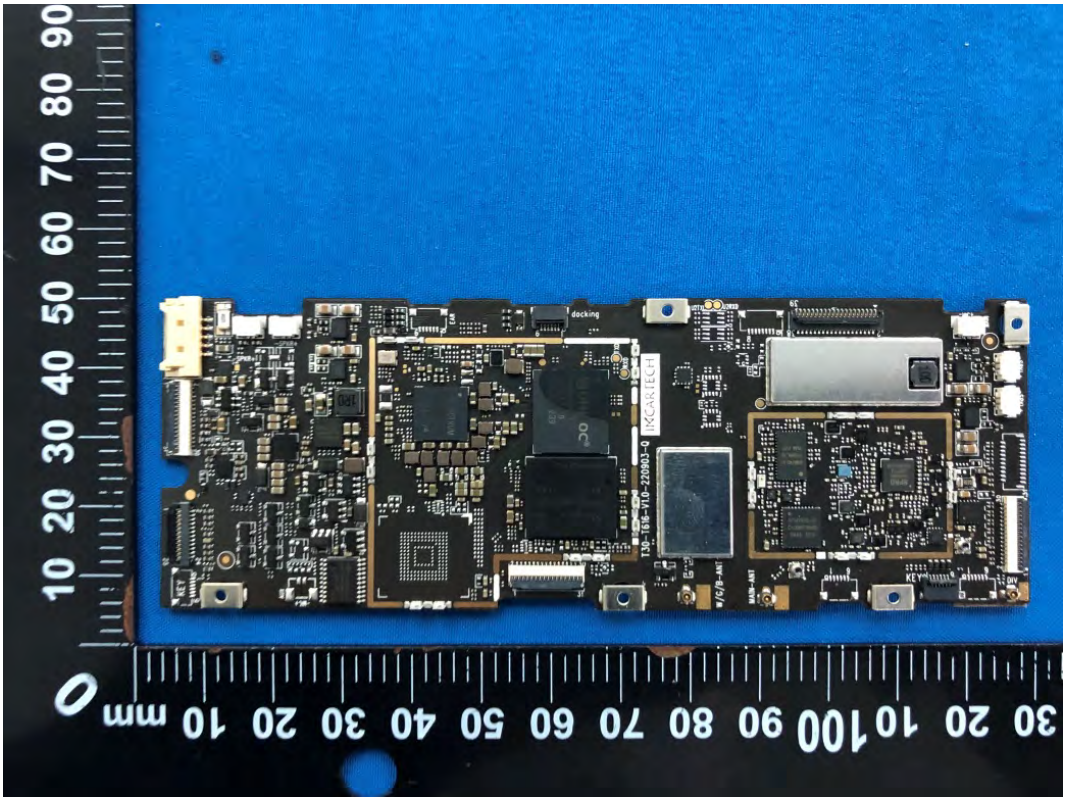



BT/WIFI ANT
2/3/4G ANT

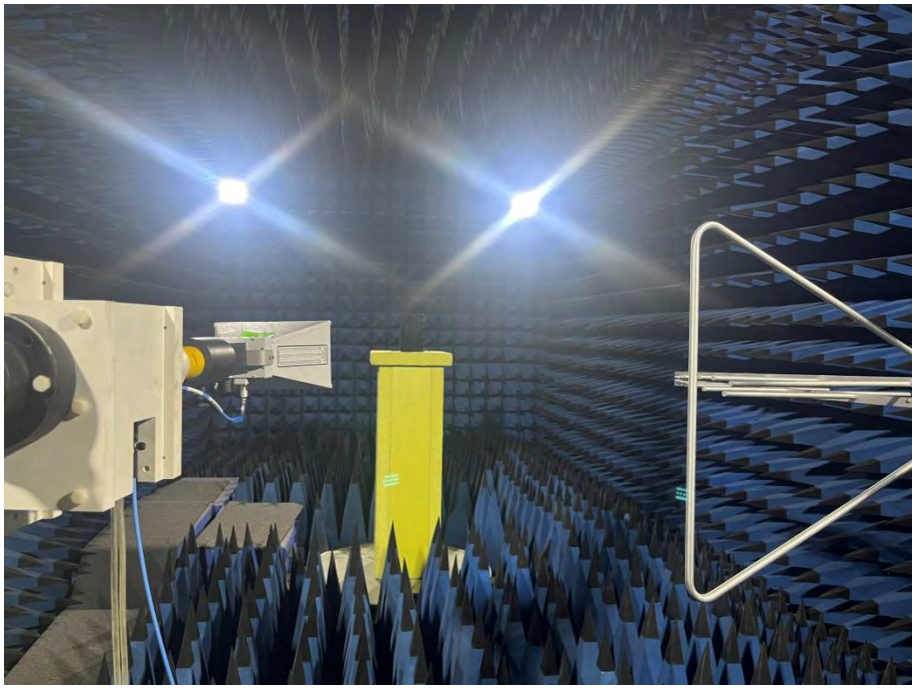
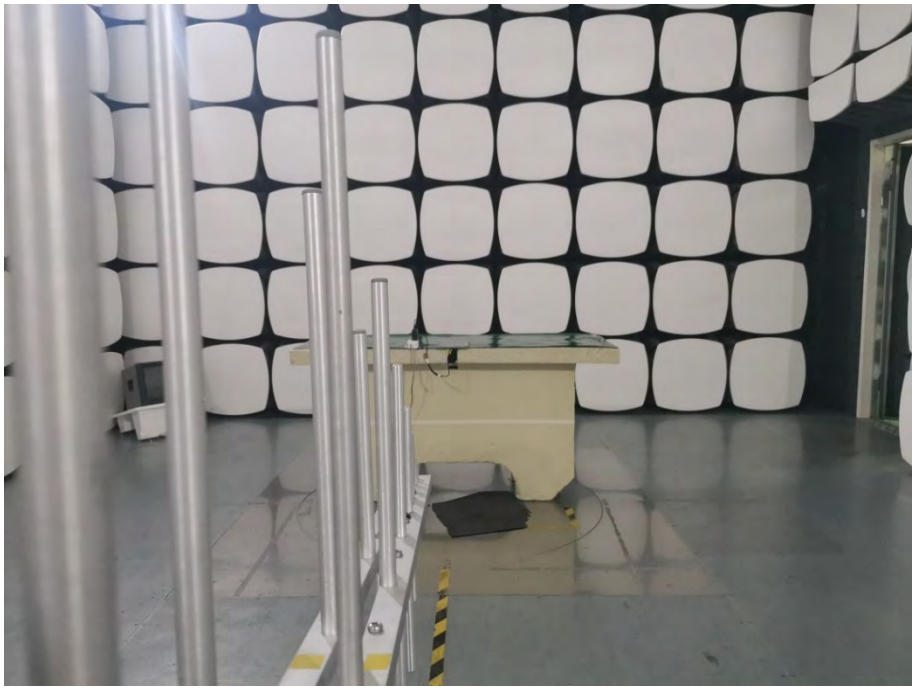


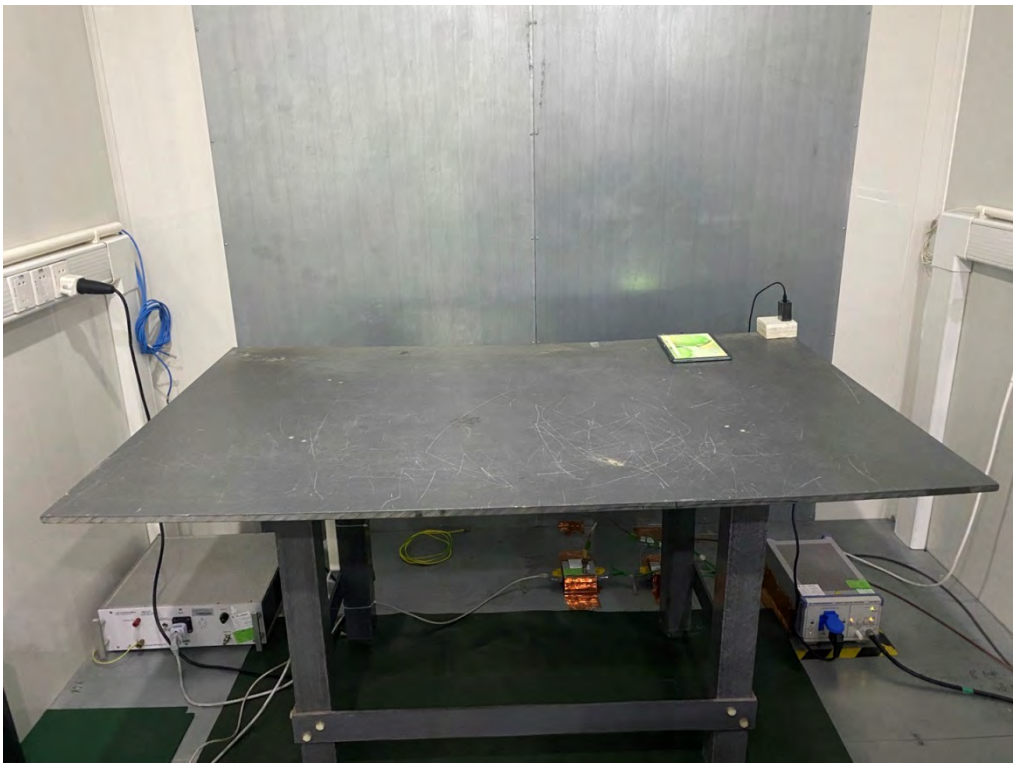






5. Photographs of Test Set-up

Test setup



CE


Appendix

1. Bandwidth

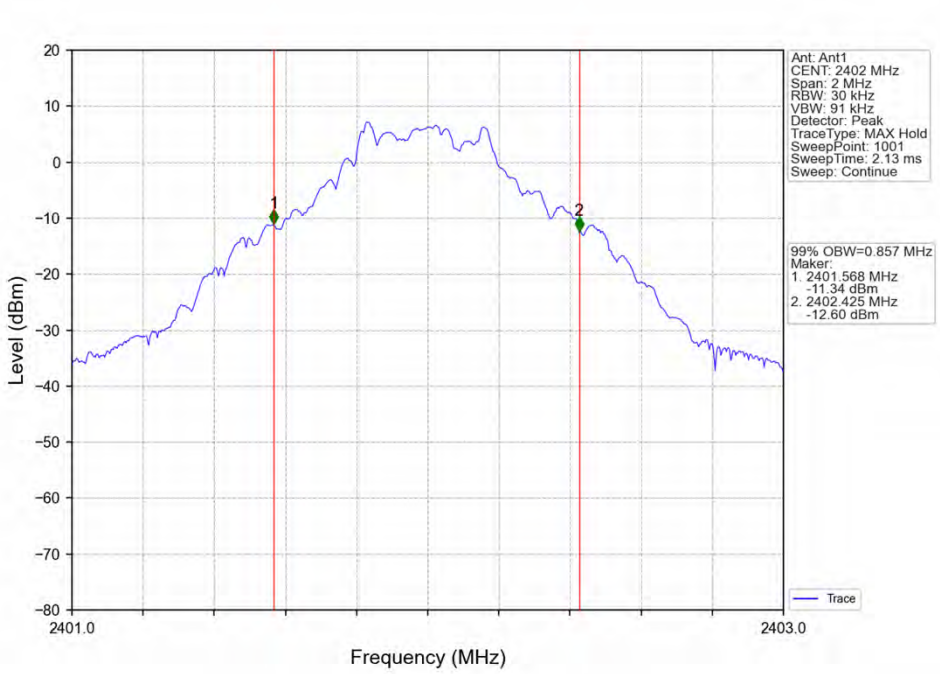
1.1 OBW

1.1.1 Test Result

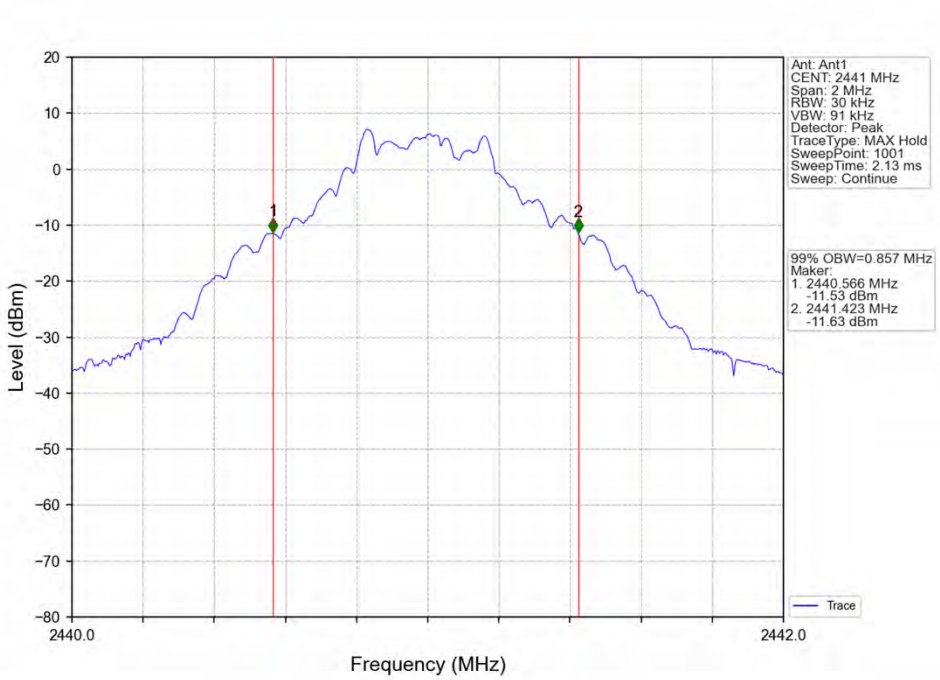
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	99% Occupied Bandwidth (MHz)	Verdict
					Result	
GFSK	SISO	2402	DH5	1	0.857	Pass
		2441	DH5	1	0.857	Pass
		2480	DH5	1	0.857	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.178	Pass
		2441	2DH5	1	1.179	Pass
		2480	2DH5	1	1.177	Pass
8DPSK	SISO	2402	3DH5	1	1.183	Pass
		2441	3DH5	1	1.184	Pass
		2480	3DH5	1	1.187	Pass

1.1.2 Test Graph

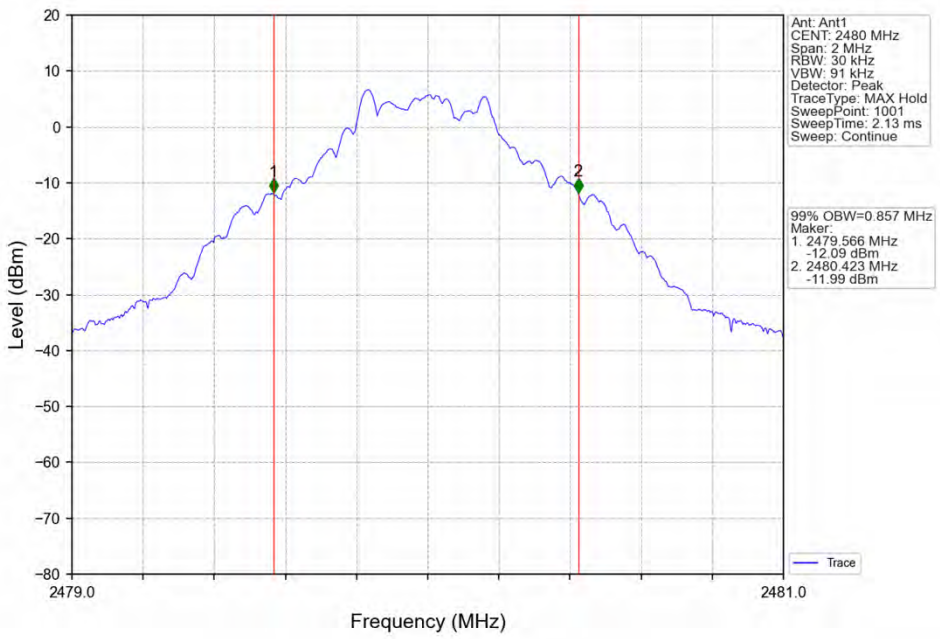
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



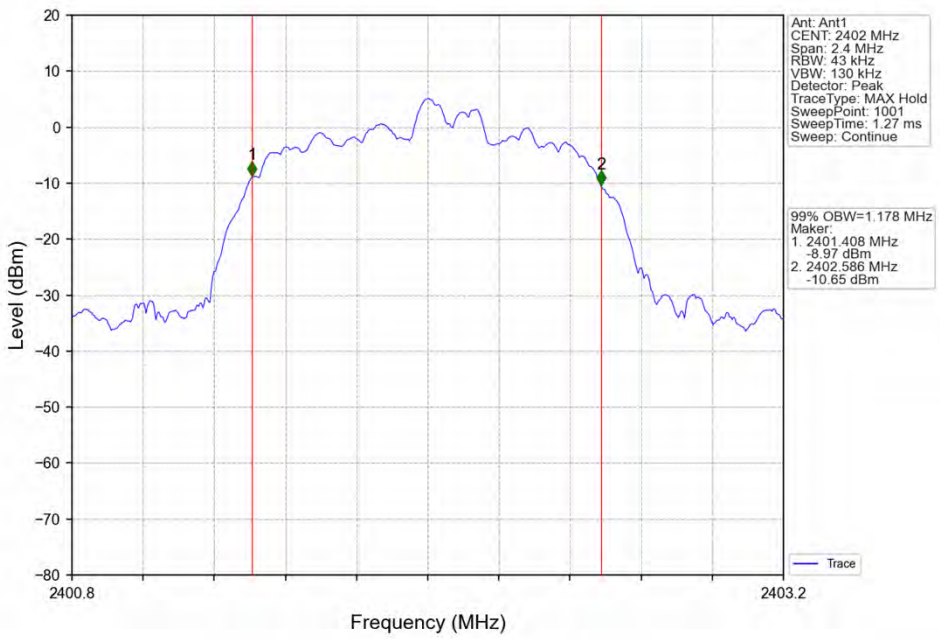
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



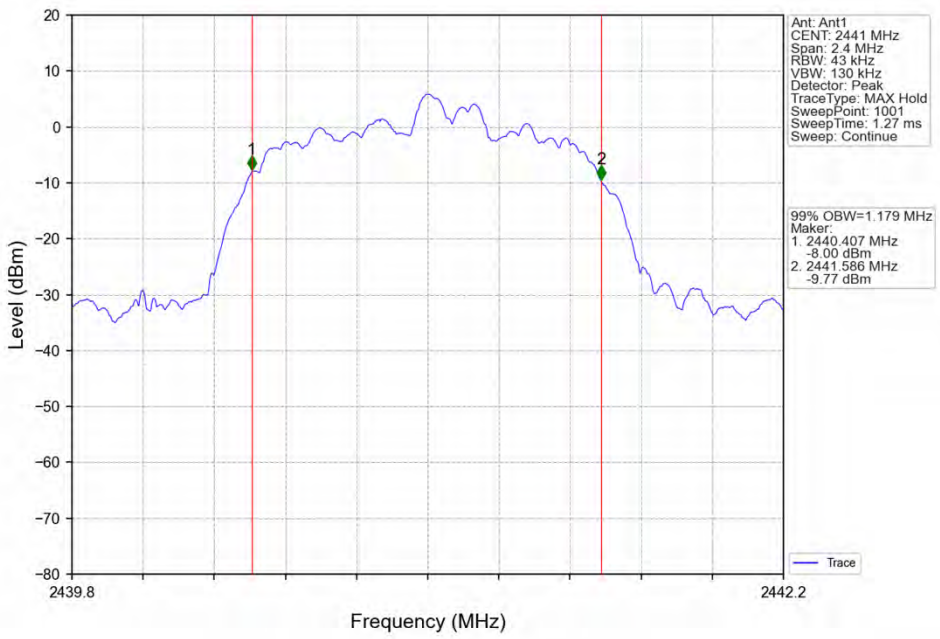
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



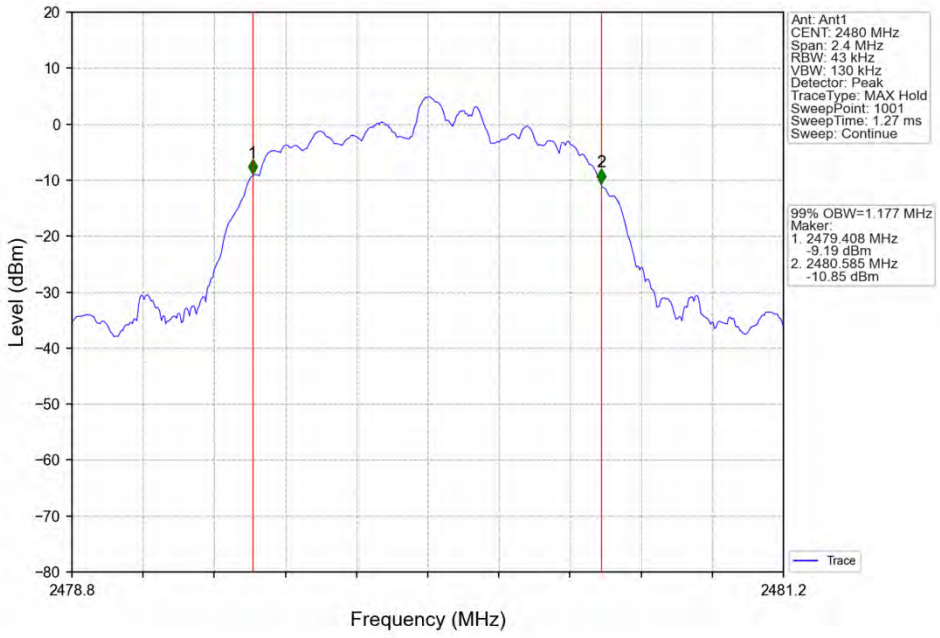
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



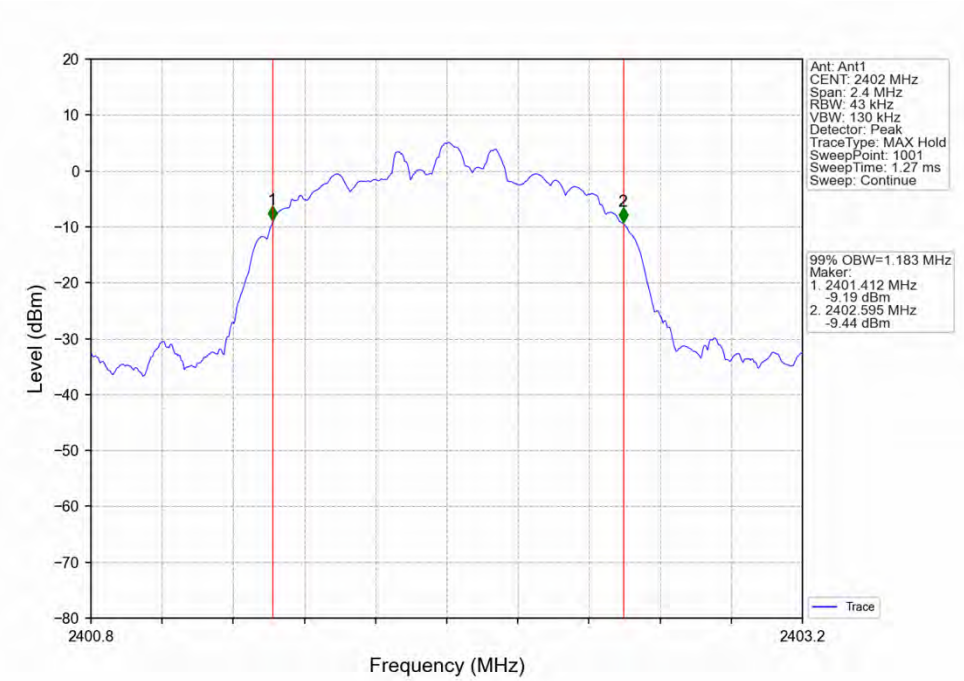
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



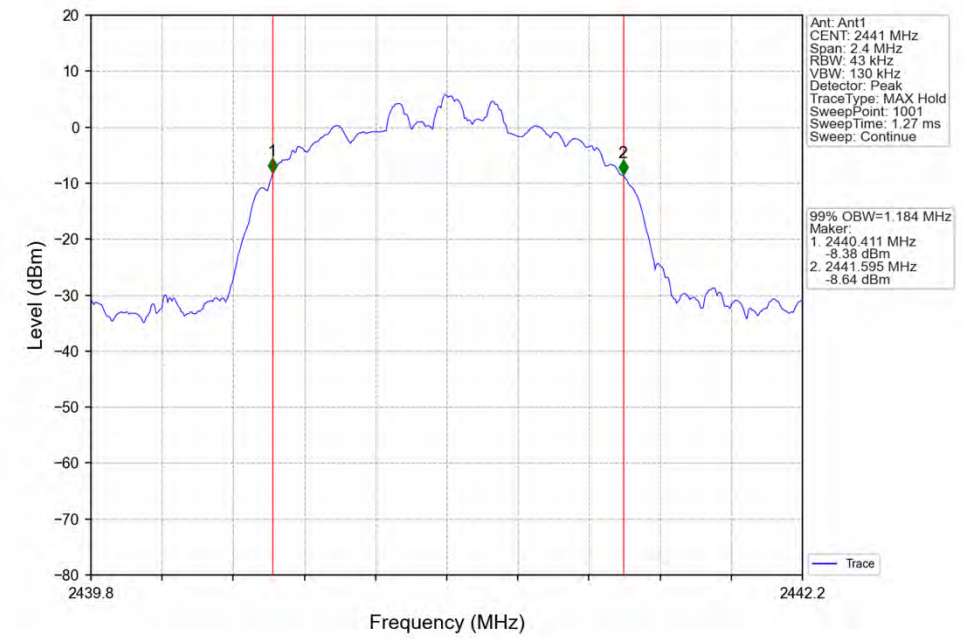
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



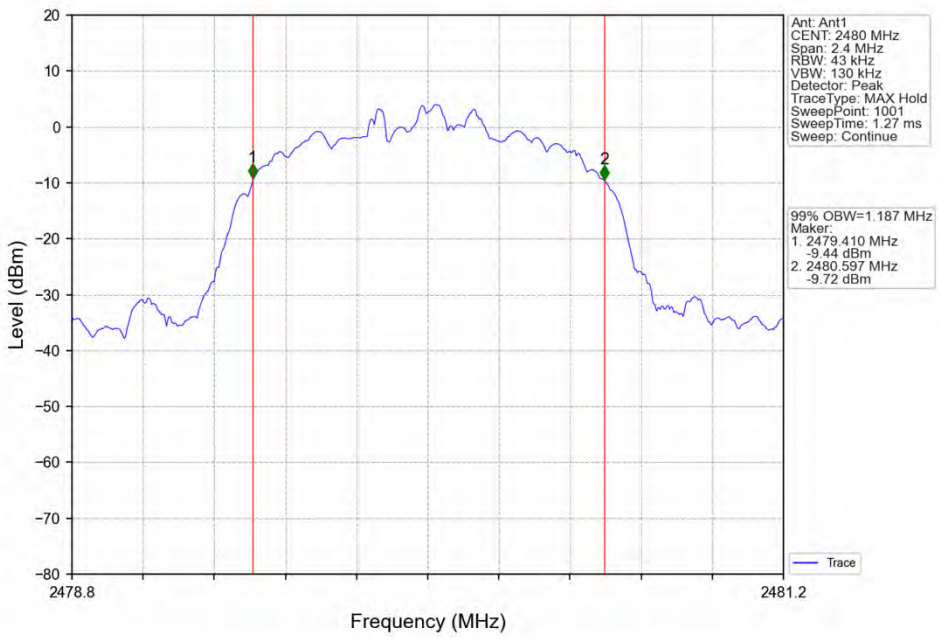
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



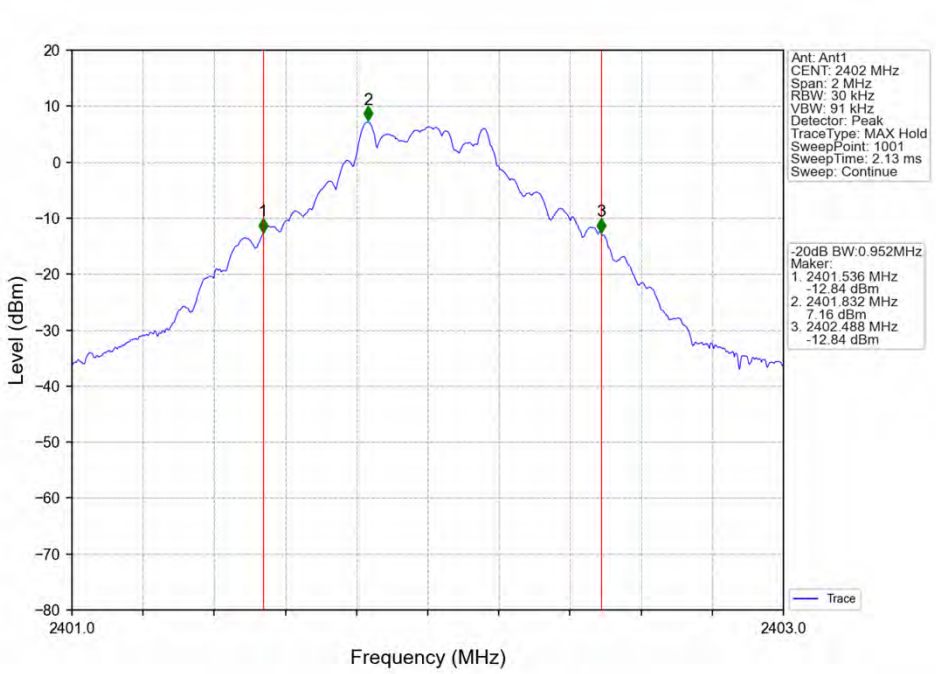
1.2 20dB BW

1.2.1 Test Result

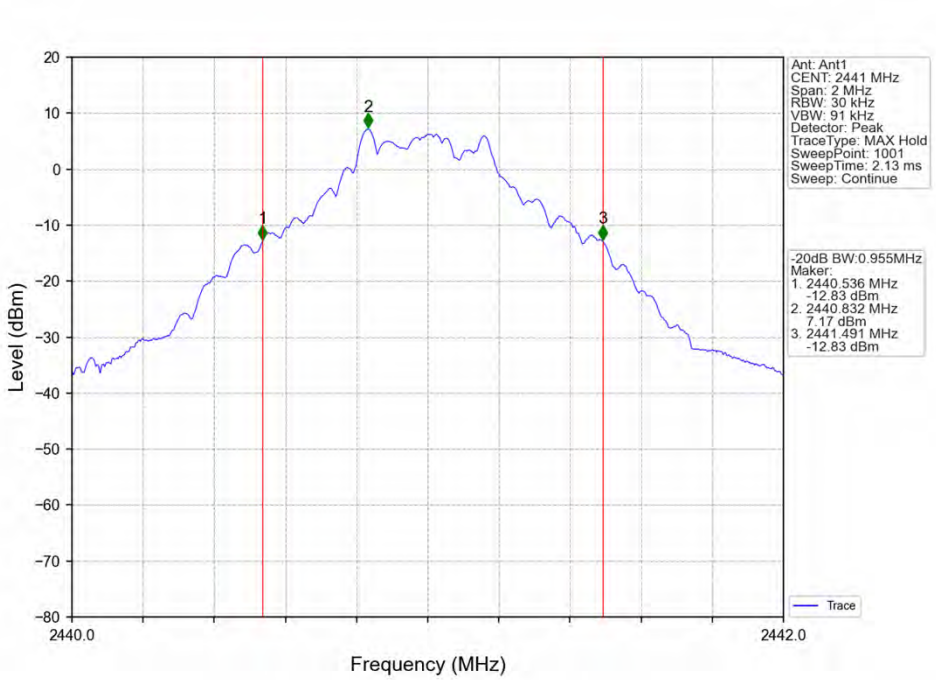
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	20dB Bandwidth (MHz)	Verdict
					Result	
GFSK	SISO	2402	DH5	1	0.952	Pass
		2441	DH5	1	0.955	Pass
		2480	DH5	1	0.953	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	1.294	Pass
		2441	2DH5	1	1.295	Pass
		2480	2DH5	1	1.293	Pass
8DPSK	SISO	2402	3DH5	1	1.309	Pass
		2441	3DH5	1	1.309	Pass
		2480	3DH5	1	1.309	Pass

1.2.2 Test Graph

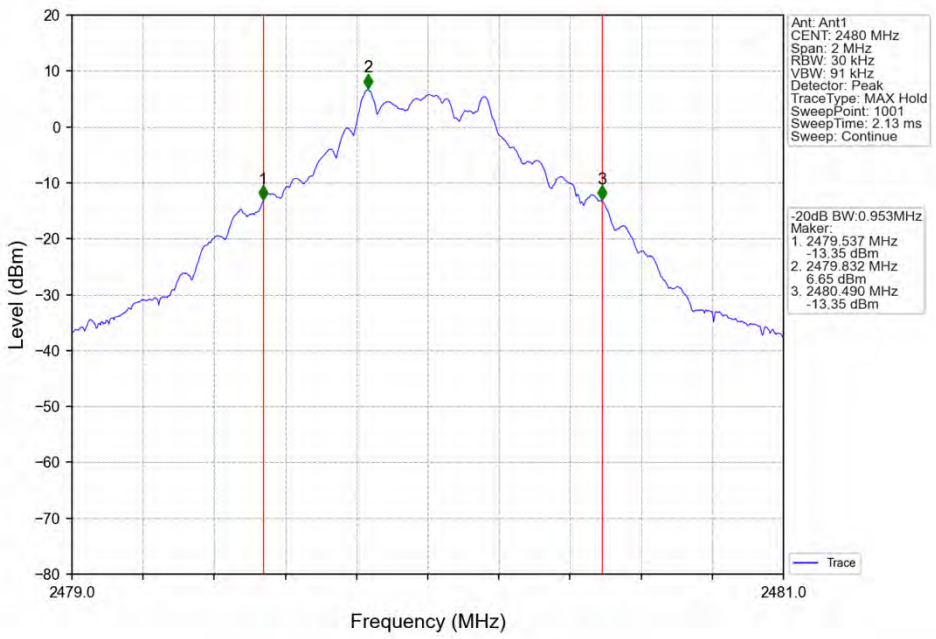
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



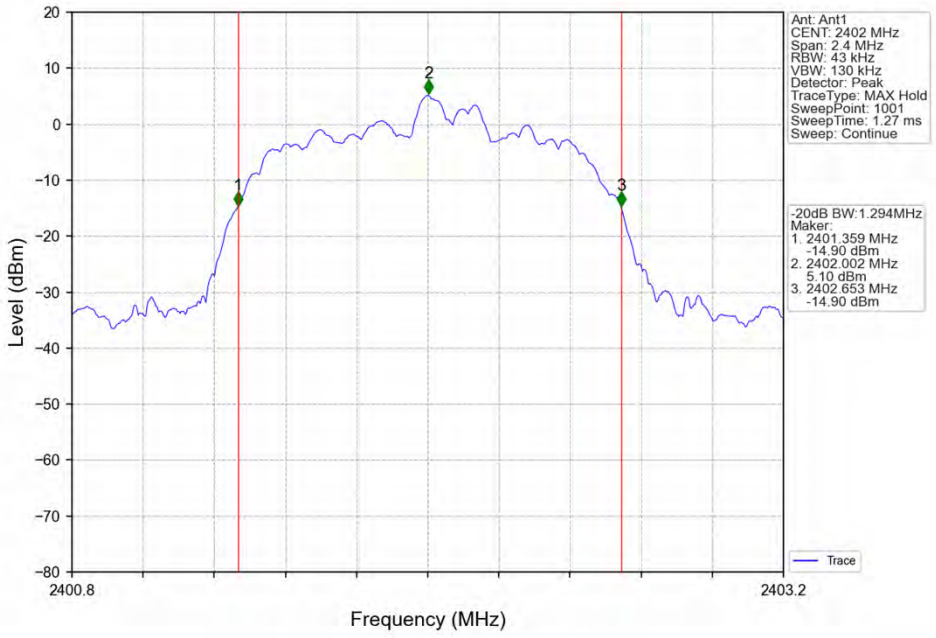
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



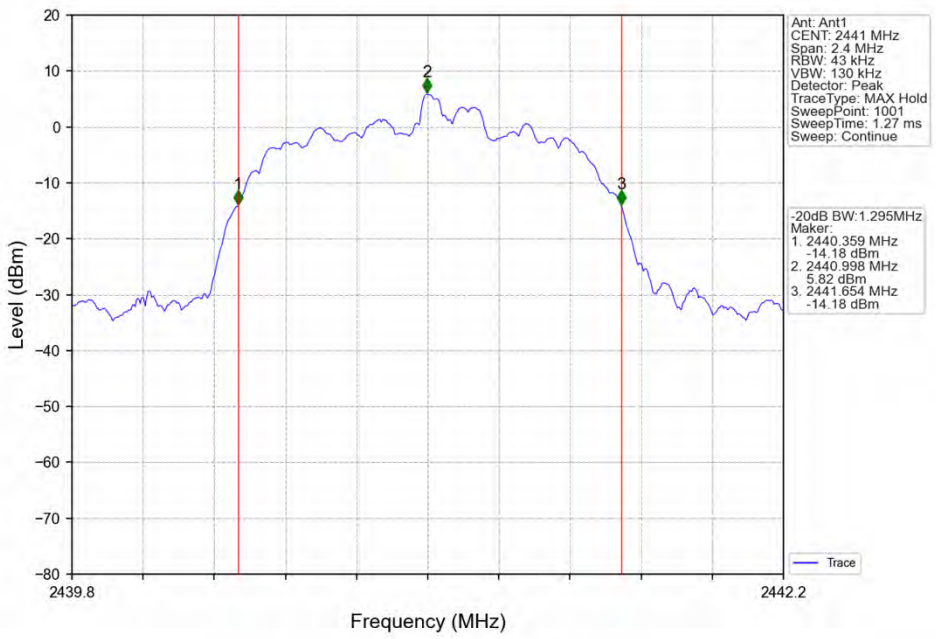
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



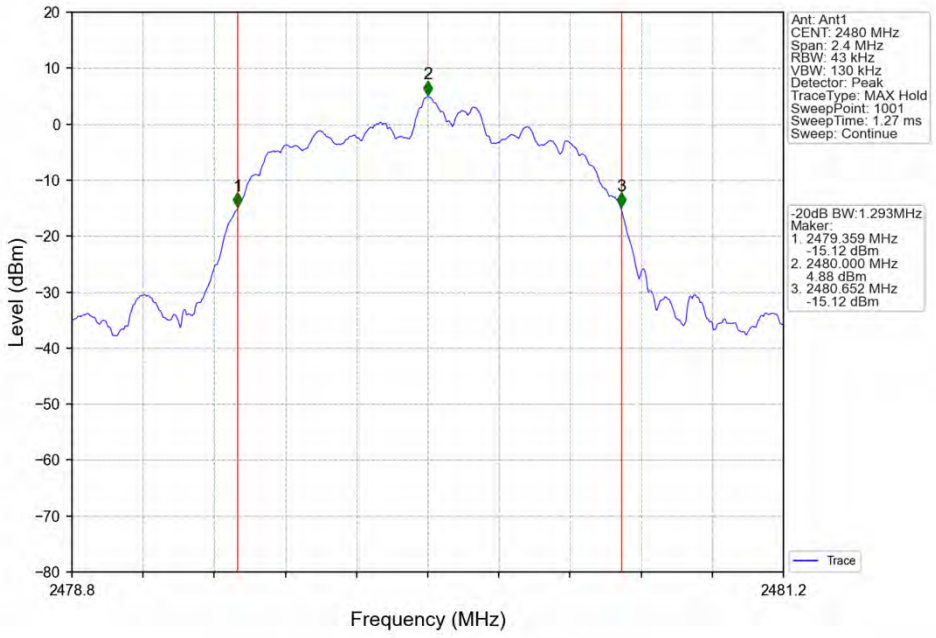
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



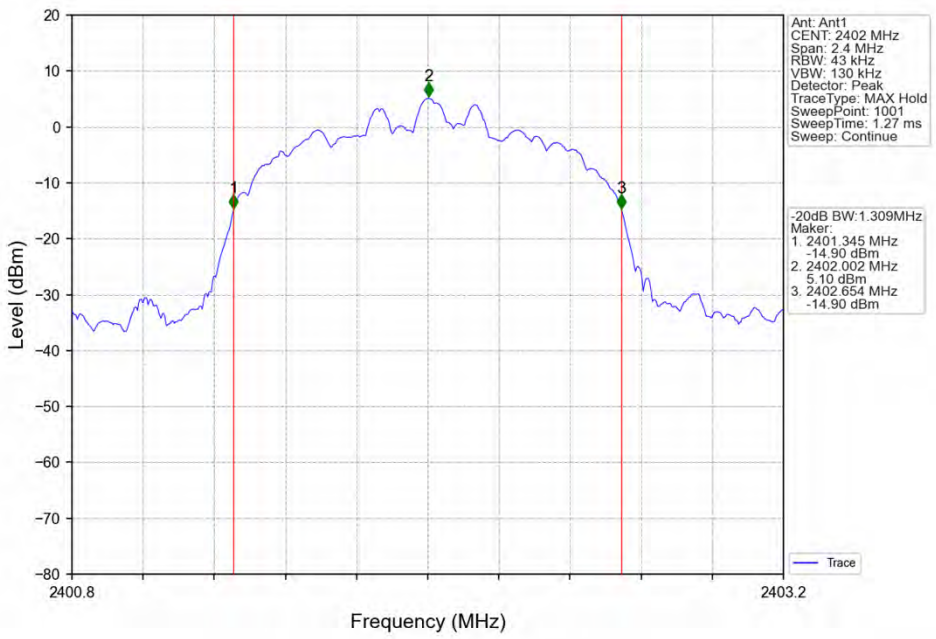
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



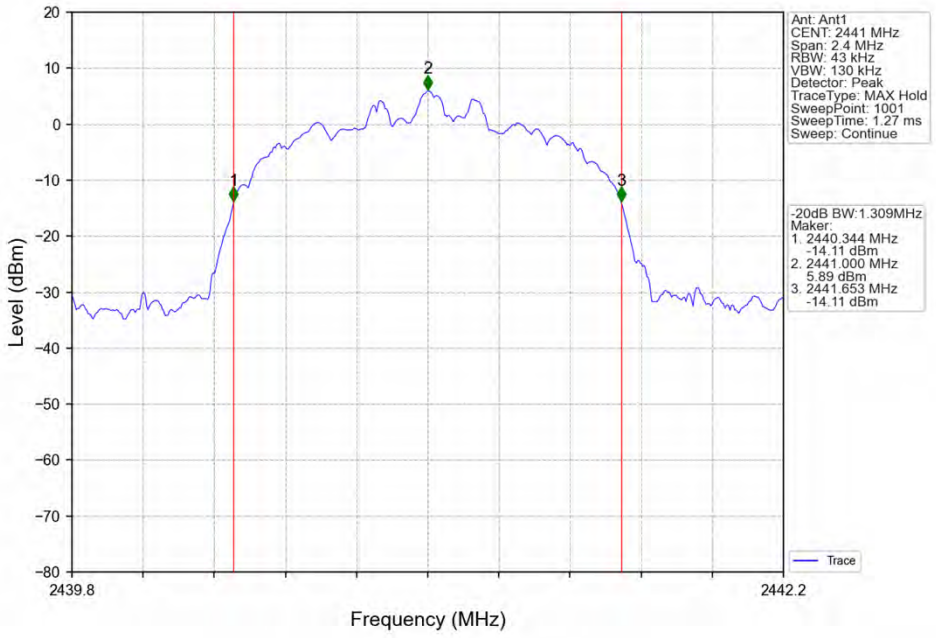
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



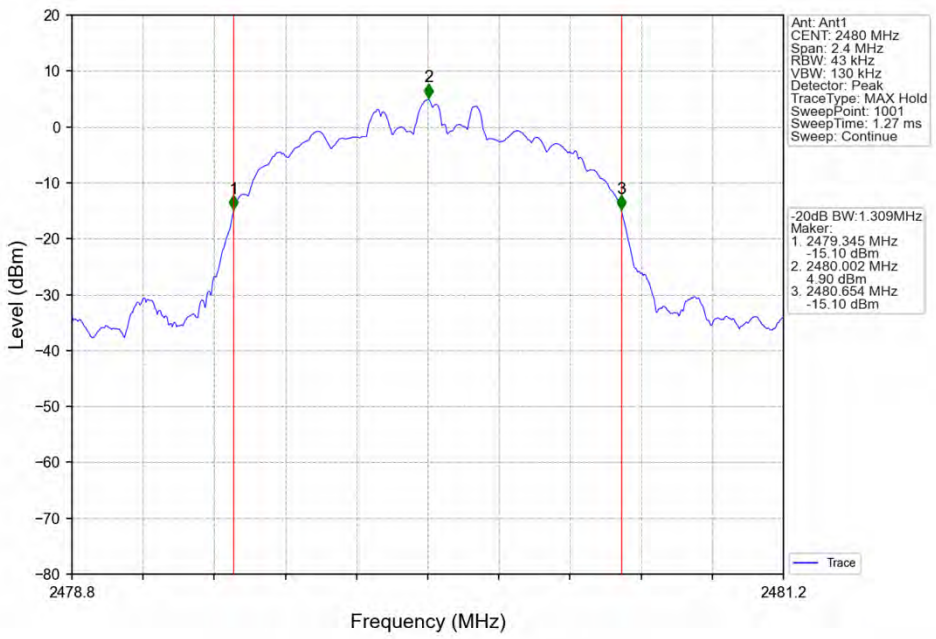
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



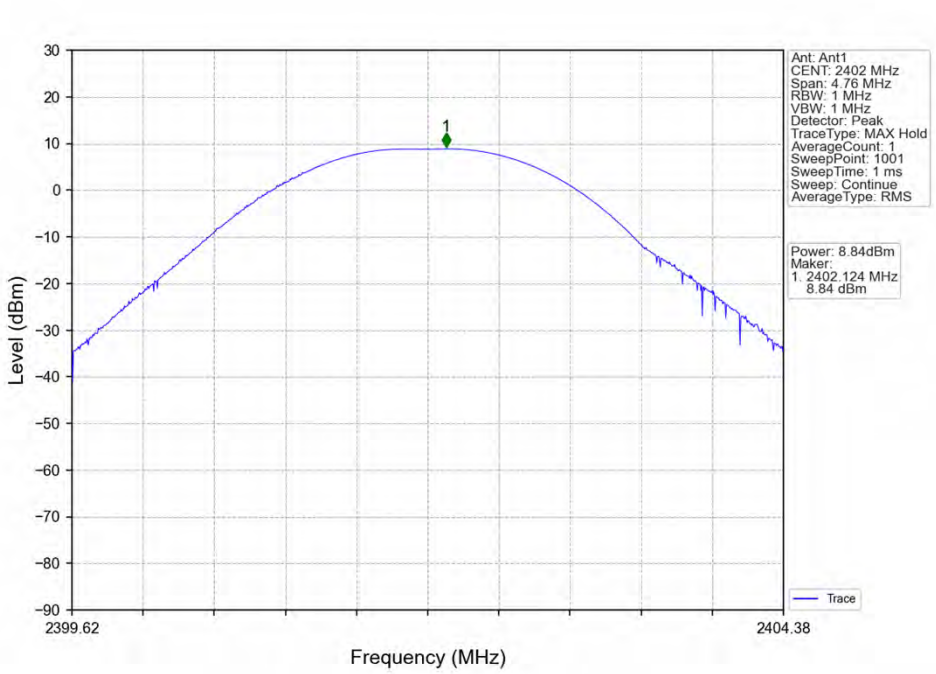
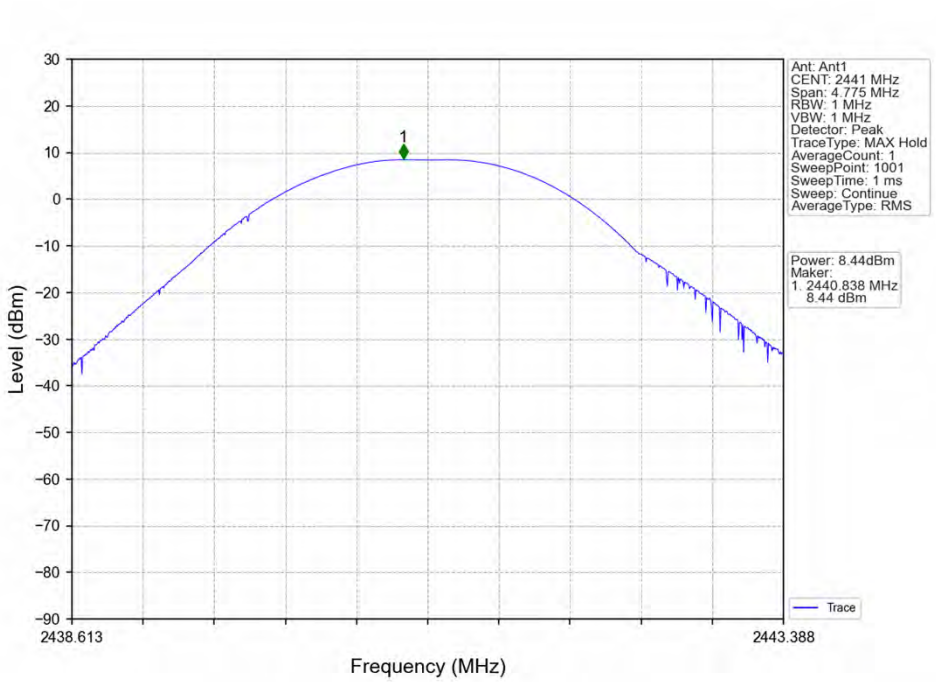
2. Maximum Conducted Output Power

2.1 Power

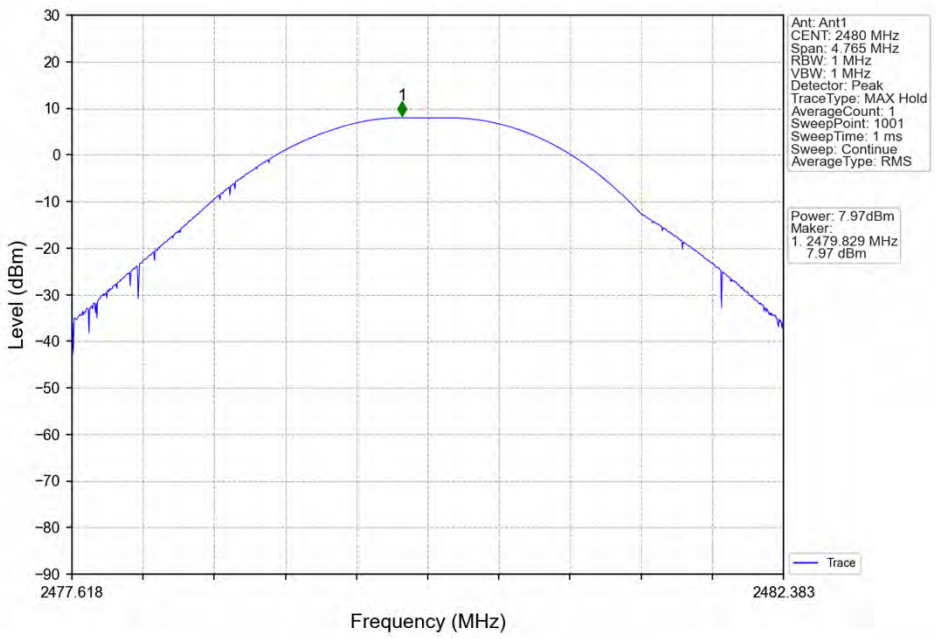
2.1.1 Test Result

Mode	TX Type	Frequency (MHz)	Packet Type	Maximum Peak Conducted Output Power (dBm)		Verdict
				ANT1	Limit	
GFSK	SISO	2402	DH5	8.84	<=30	Pass
		2441	DH5	8.44	<=30	Pass
		2480	DH5	7.97	<=30	Pass
Pi/4DQPSK	SISO	2402	2DH5	7.11	<=20.97	Pass
		2441	2DH5	7.80	<=20.97	Pass
		2480	2DH5	6.97	<=20.97	Pass
8DPSK	SISO	2402	3DH5	7.26	<=20.97	Pass
		2441	3DH5	7.96	<=20.97	Pass
		2480	3DH5	7.12	<=20.97	Pass
Note1: Antenna Gain: Ant1: 0.32dBi;						

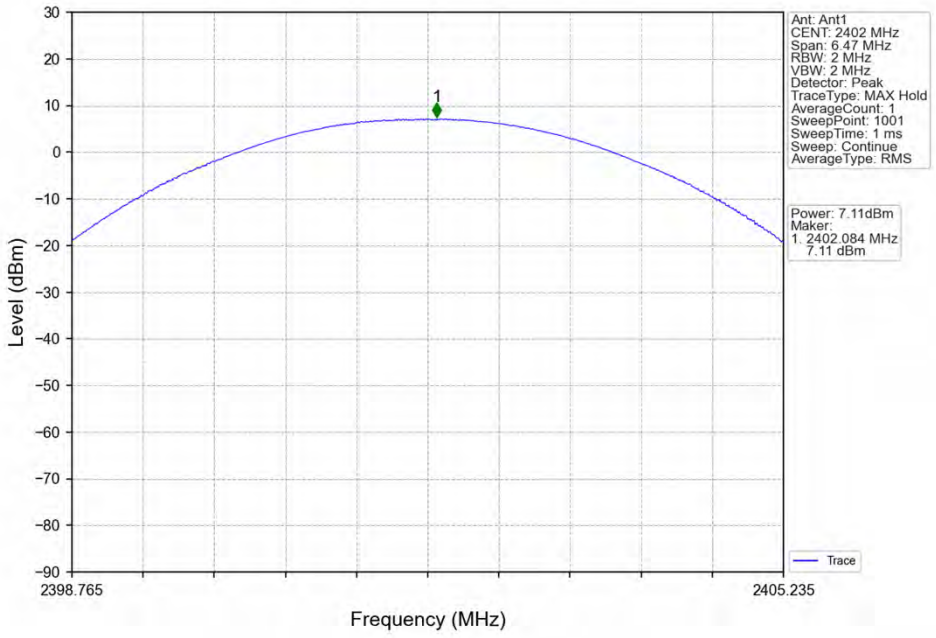
2.1.2 Test Graph

GFSK_DH5_LCH_2402MHz_Ant1_NTNV

GFSK_DH5_MCH_2441MHz_Ant1_NTNV


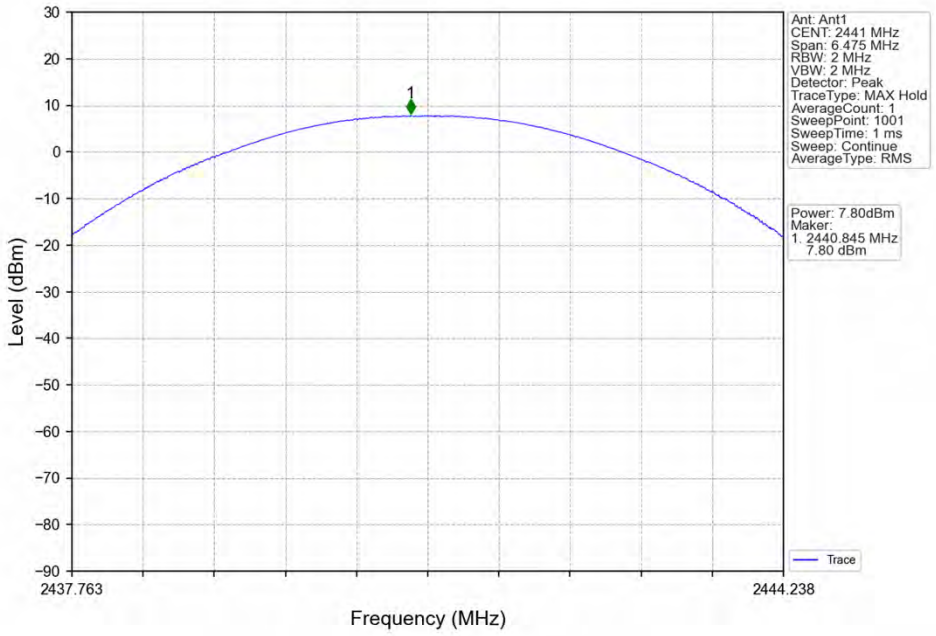
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



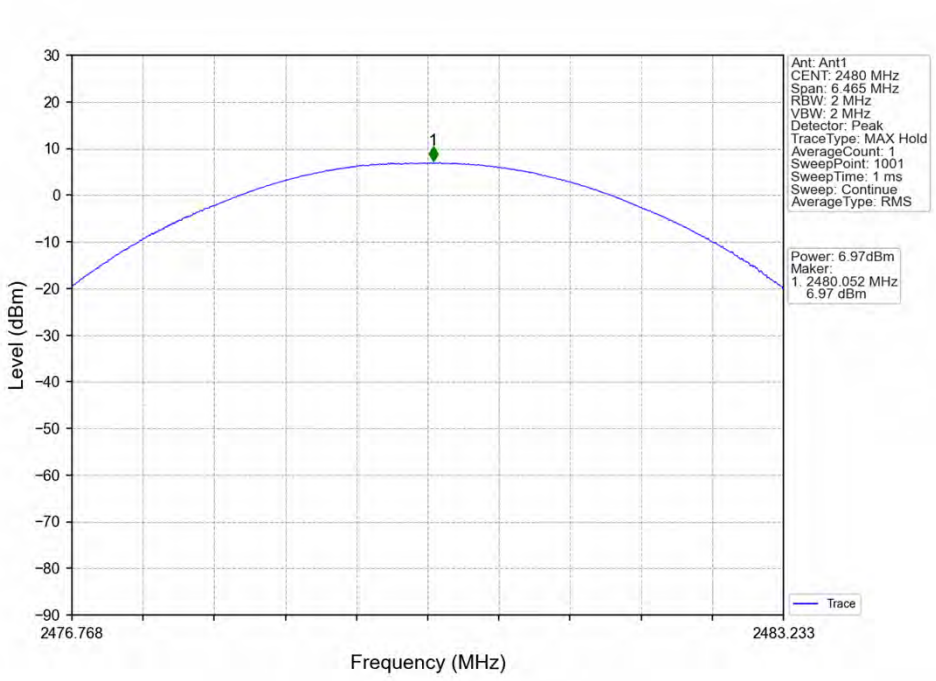
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



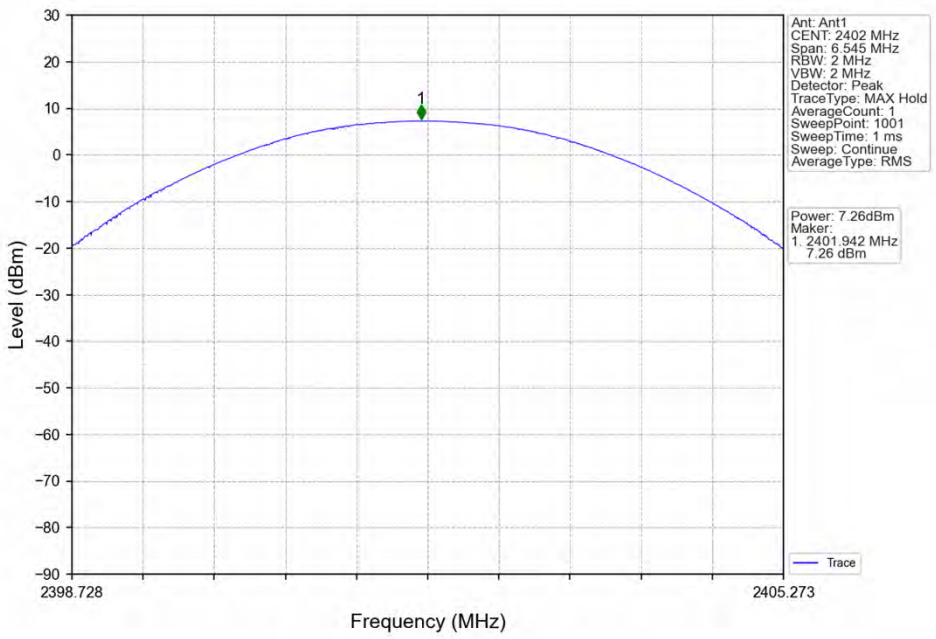
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



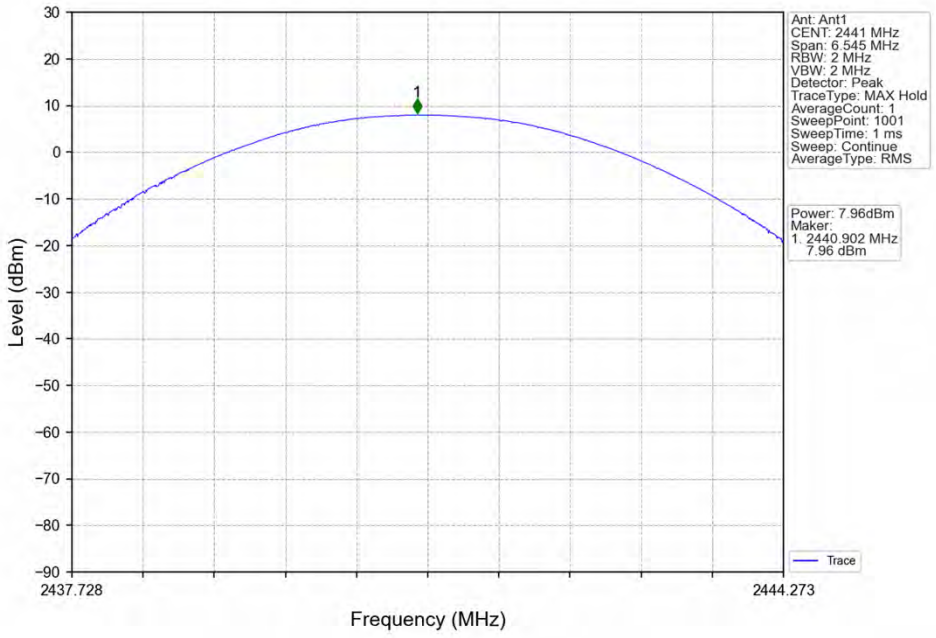
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



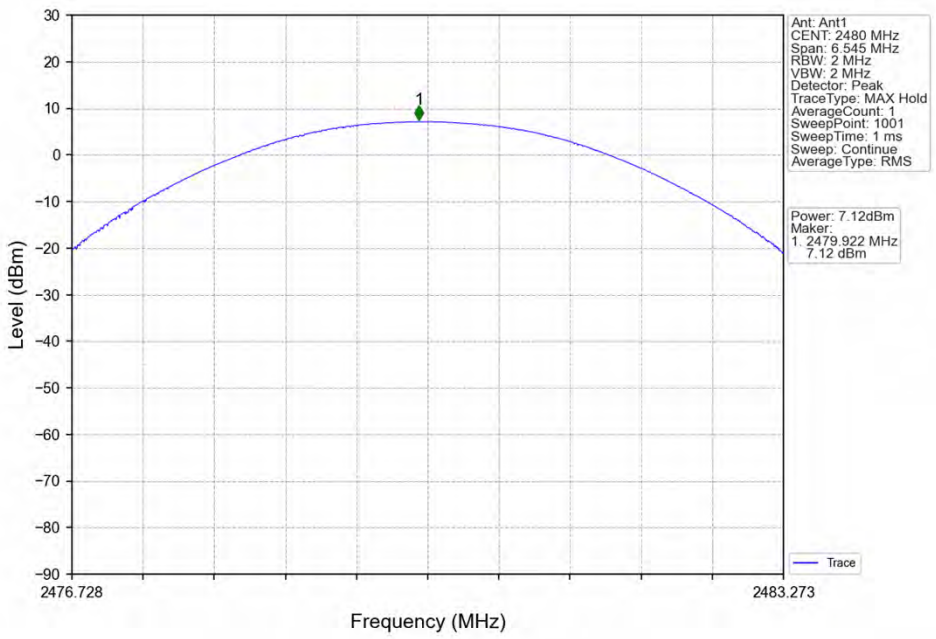
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



3. Carrier Frequency Separation

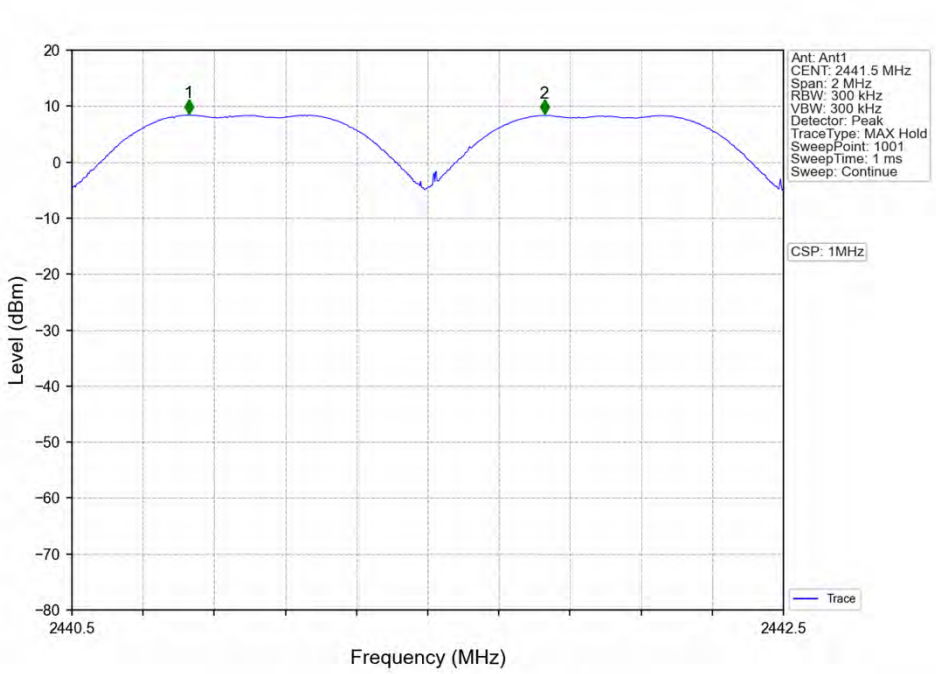
3.1 Ant1

3.1.1 Test Result

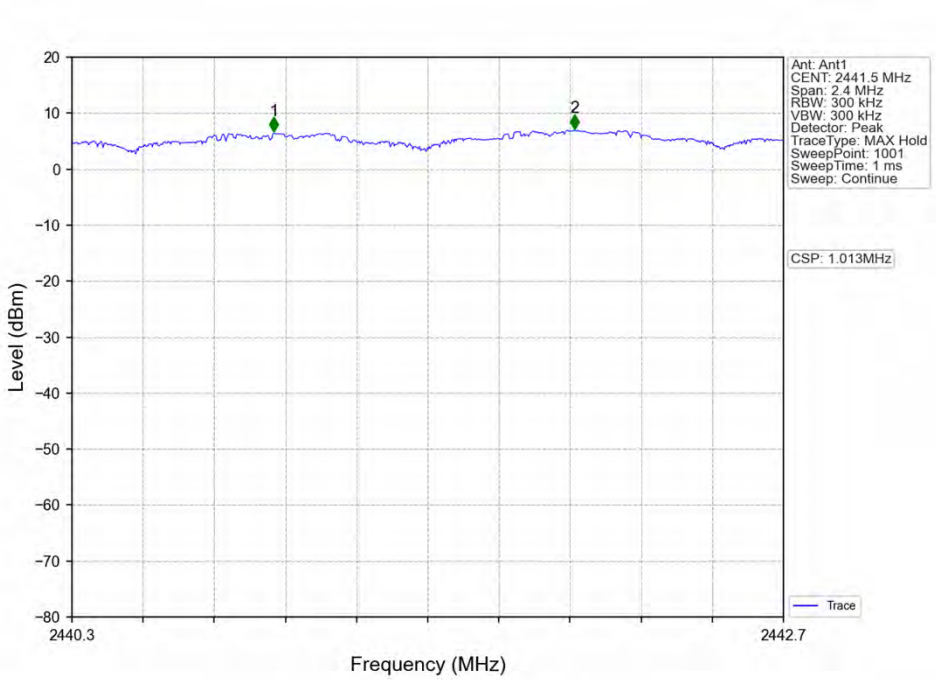
Ant1							
Mode	TX Type	Frequency (MHz)	Packet Type	Channel Separation (MHz)	20dB Bandwidth (MHz)	Limit (MHz)	Verdict
GFSK	SISO	HOPP	DH5	1.000	0.955	>=0.955	Pass
Pi/4DQPSK	SISO	HOPP	2DH5	1.013	1.295	>=0.863	Pass
8DPSK	SISO	HOPP	3DH5	1.001	1.309	>=0.873	Pass

3.1.2 Test Graph

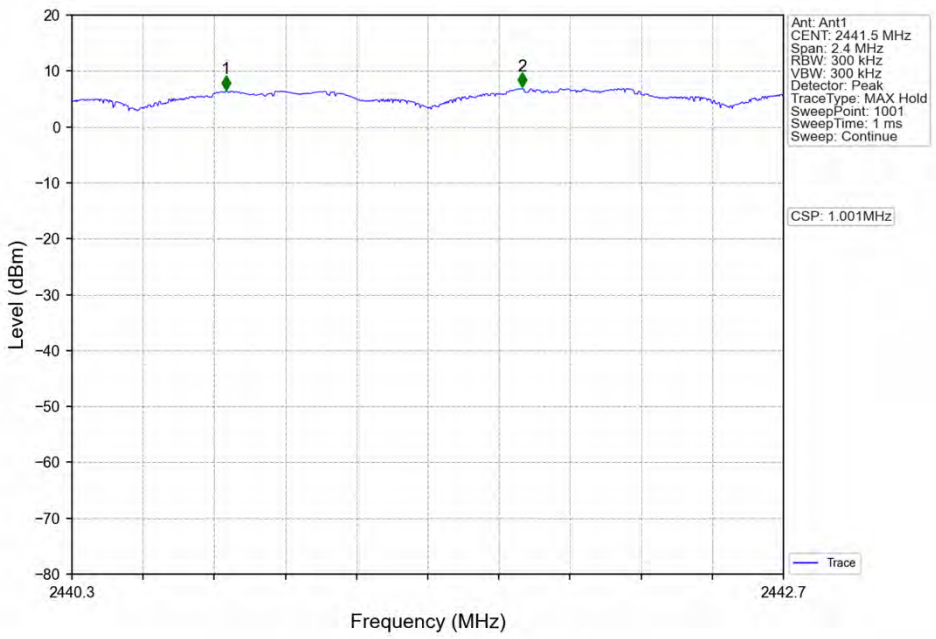
GFSK_DH5_HOPP_Ant1_NTNV



Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



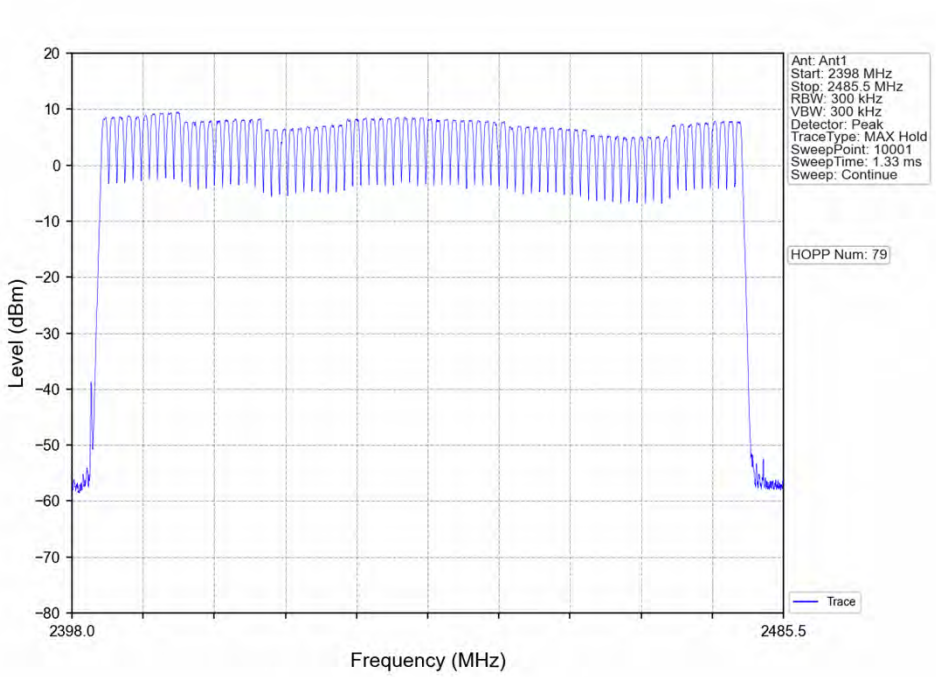
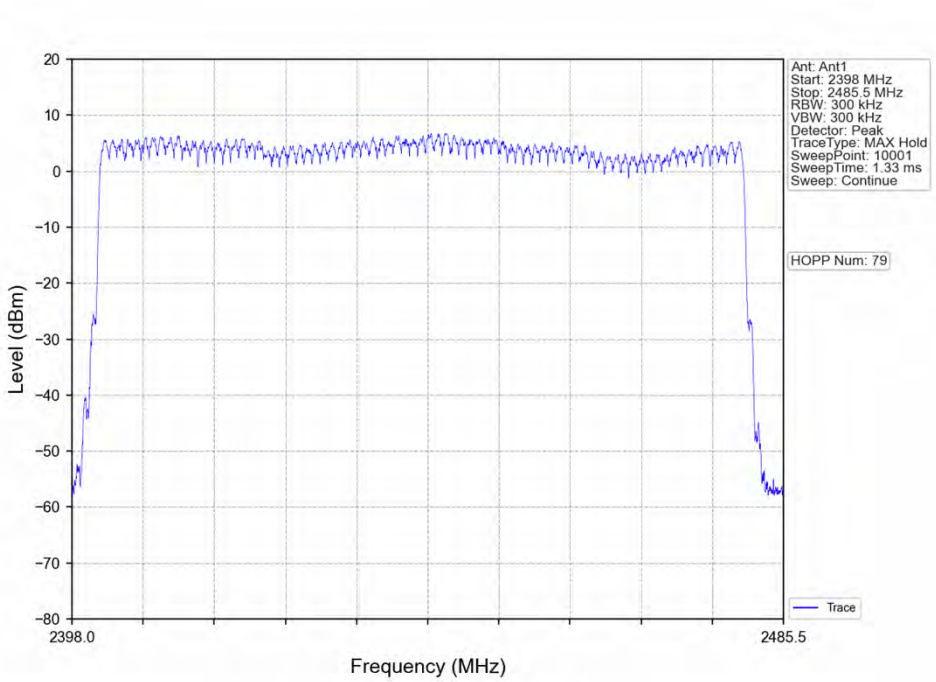
4. Number of Hopping Frequencies

4.1 HoppNum

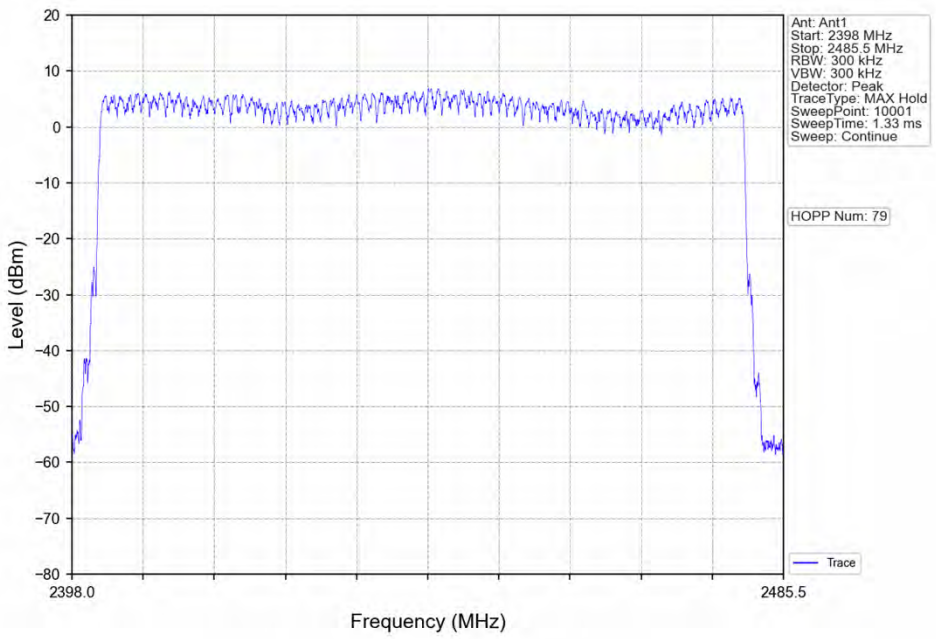
4.1.1 Test Result

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

4.1.2 Test Graph

GFSK_DH5_HOPP_Ant1_NTNV

Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV


8DPSK_3DH5_HOPP_Ant1_NTNV



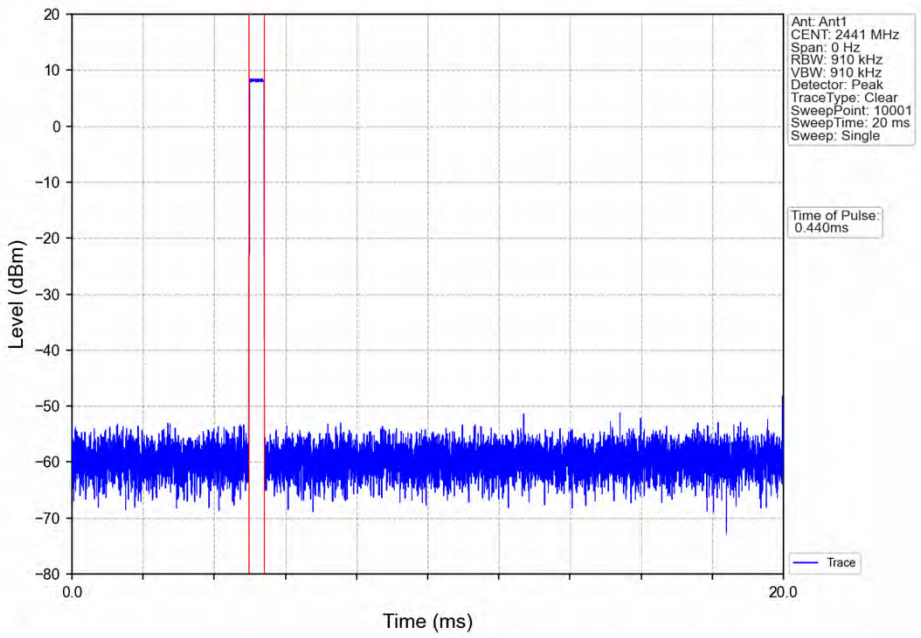
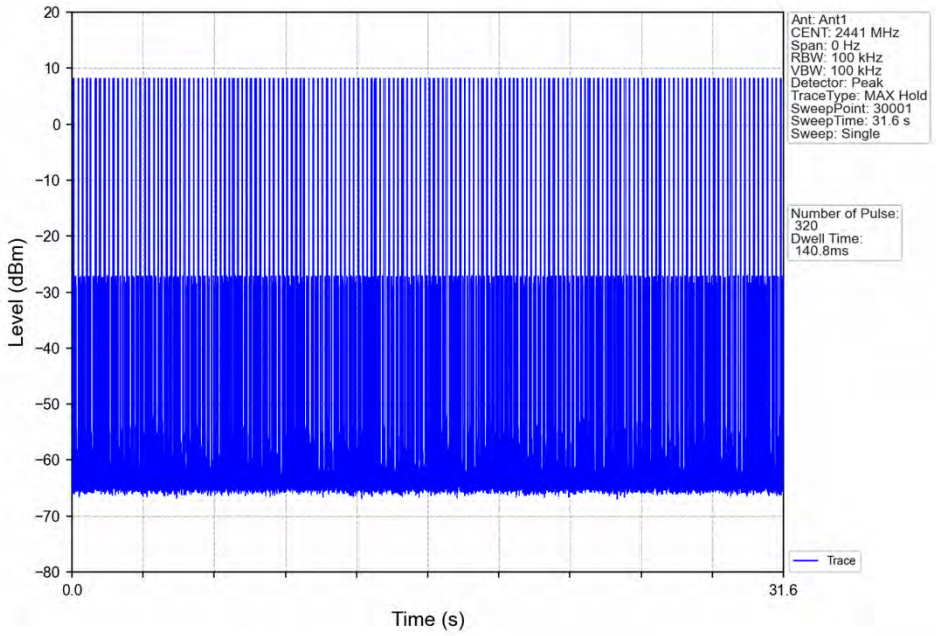
5. Time of Occupancy (Dwell Time)

5.1 Ant1

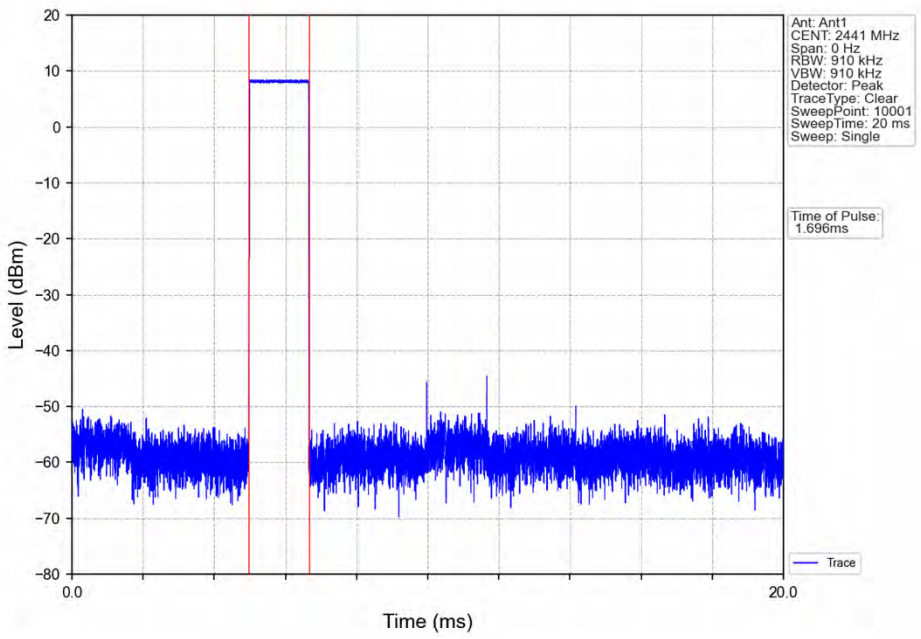
5.1.1 Test Result

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	0.440	31.600	320	140.800	<=400	Pass
			DH3	1.696	31.600	162	274.752	<=400	Pass
			DH5	2.938	31.600	98	287.924	<=400	Pass
Pi/4DQPSK	SISO	HOPP	2DH1	0.402	31.600	320	128.640	<=400	Pass
			2DH3	1.684	31.600	155	261.020	<=400	Pass
			2DH5	2.934	31.600	94	275.796	<=400	Pass
8DPSK	SISO	HOPP	3DH1	0.400	31.600	319	127.600	<=400	Pass
			3DH3	1.680	31.600	152	255.360	<=400	Pass
			3DH5	2.932	31.600	108	316.656	<=400	Pass

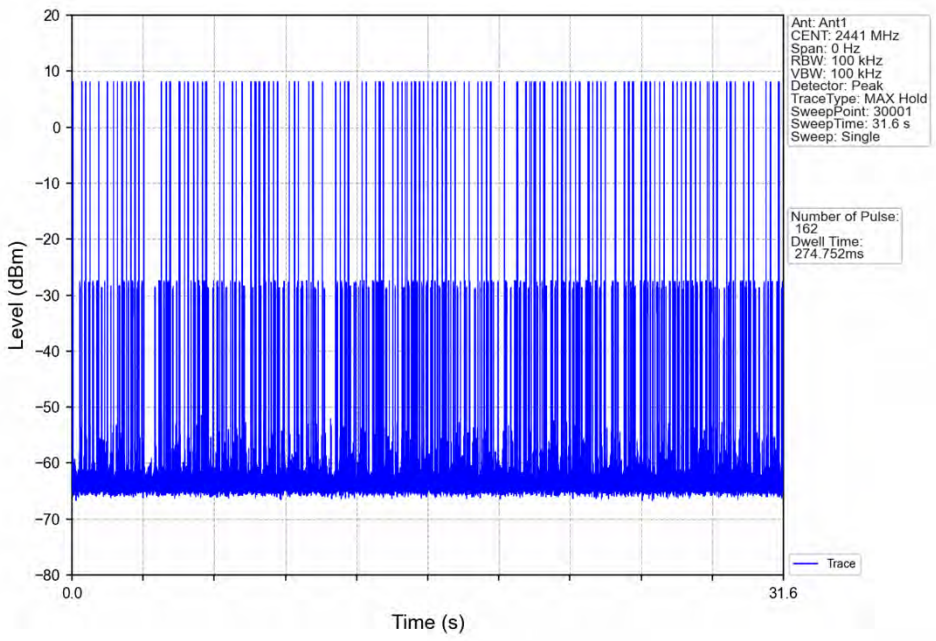
5.1.2 Test Graph

GFSK_DH1_HOPP_Ant1_NTNV

GFSK_DH1_HOPP_Ant1_NTNV


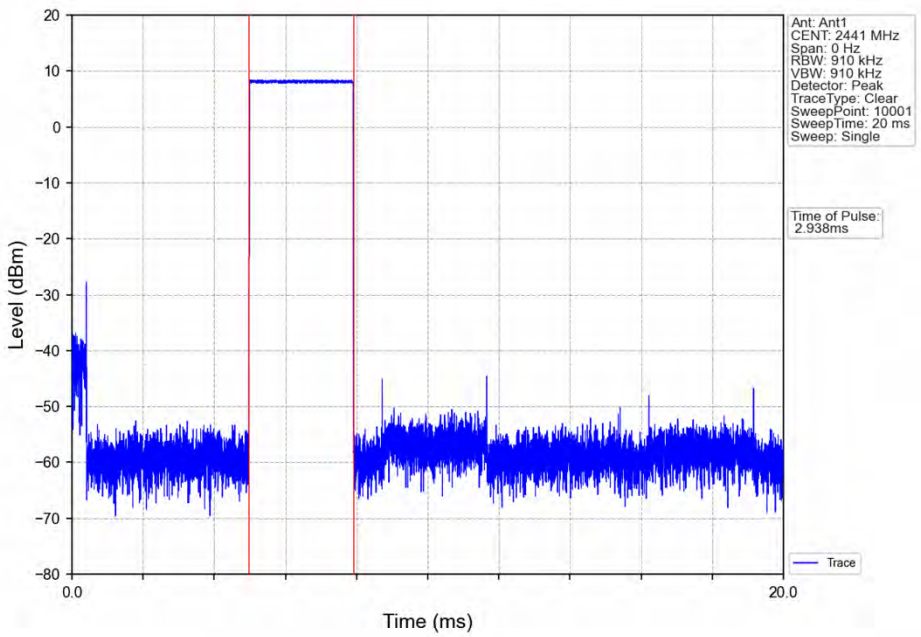
GFSK_DH3_HOPP_Ant1_NTNV



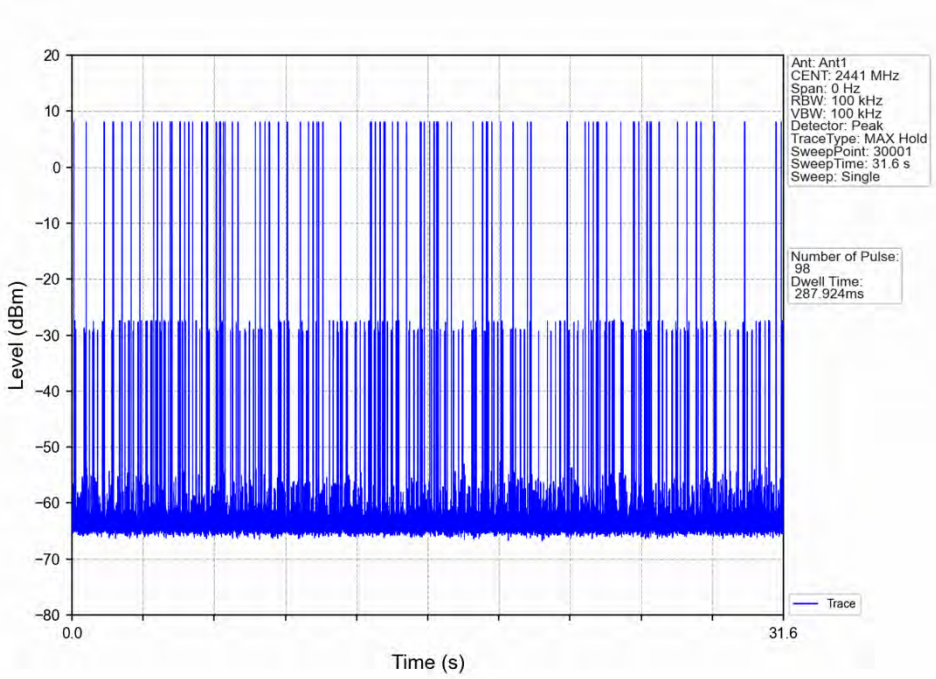
GFSK_DH3_HOPP_Ant1_NTNV



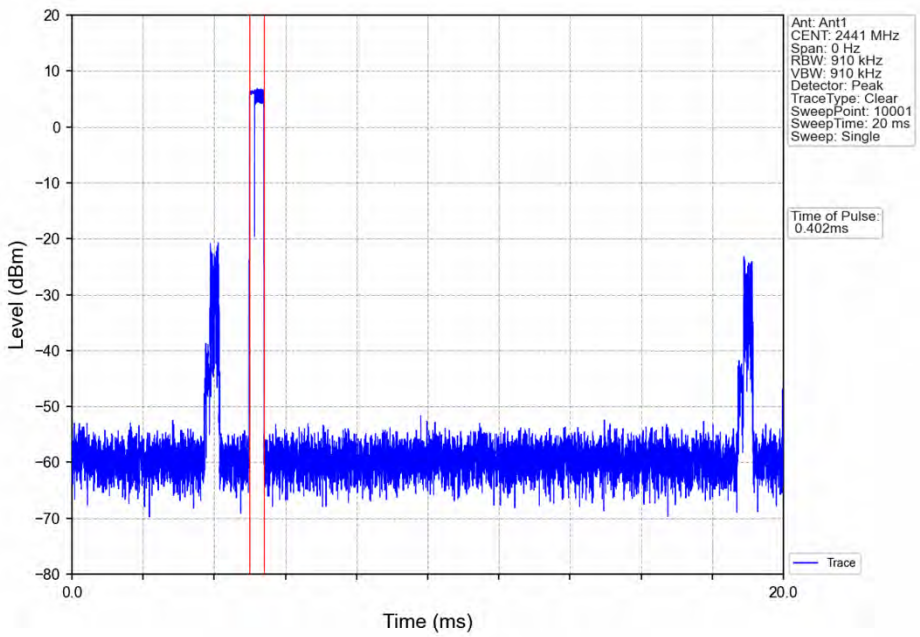
GFSK_DH5_HOPP_Ant1_NTNV



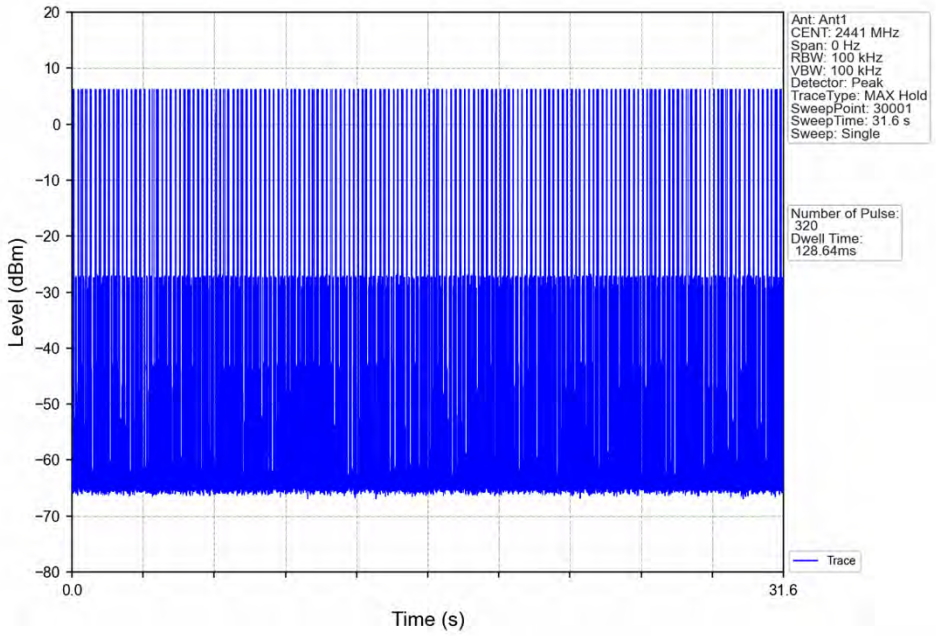
GFSK_DH5_HOPP_Ant1_NTNV



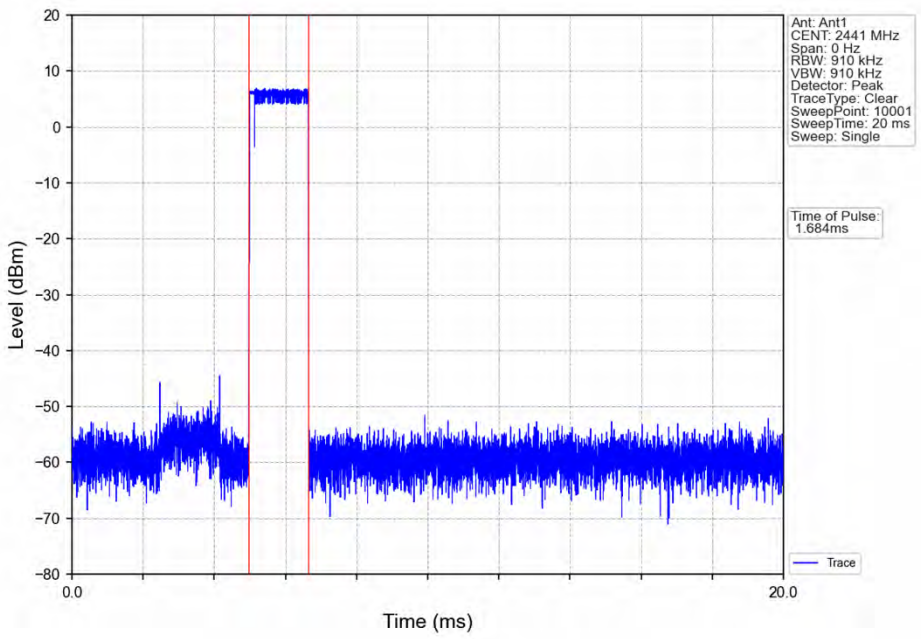
Pi/4DQPSK_2DH1_HOPP_Ant1_NTNV



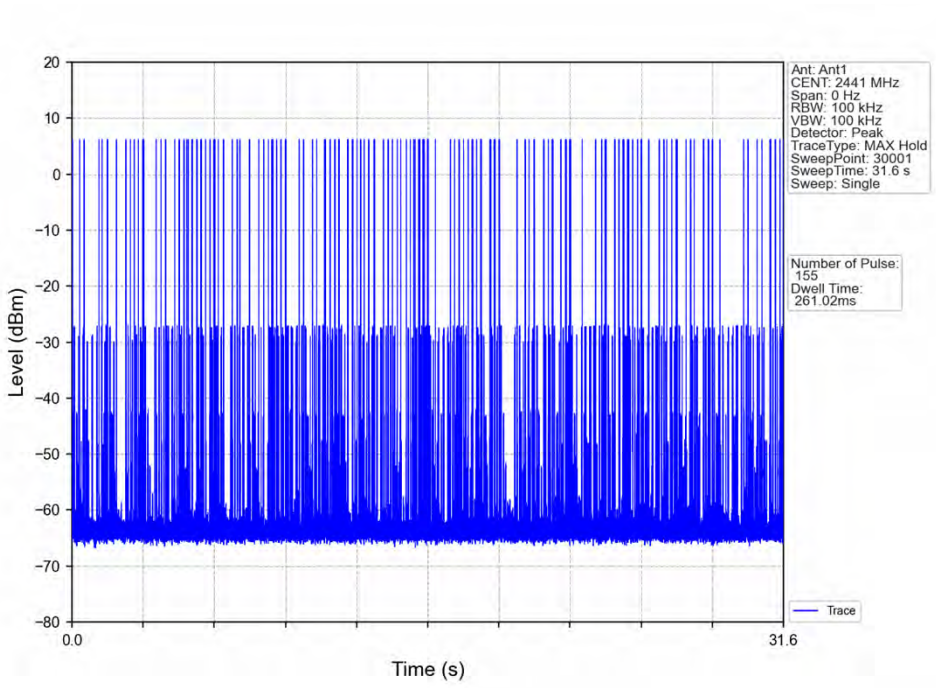
Pi/4DQPSK_2DH1_HOPP_Ant1_NTNV



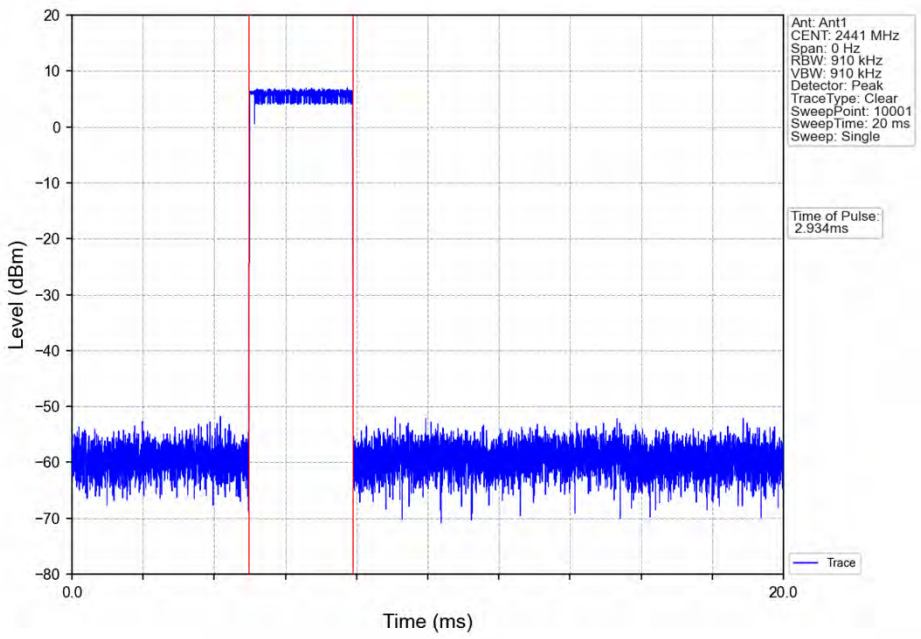
Pi/4DQPSK_2DH3_HOPP_Ant1_NTNV



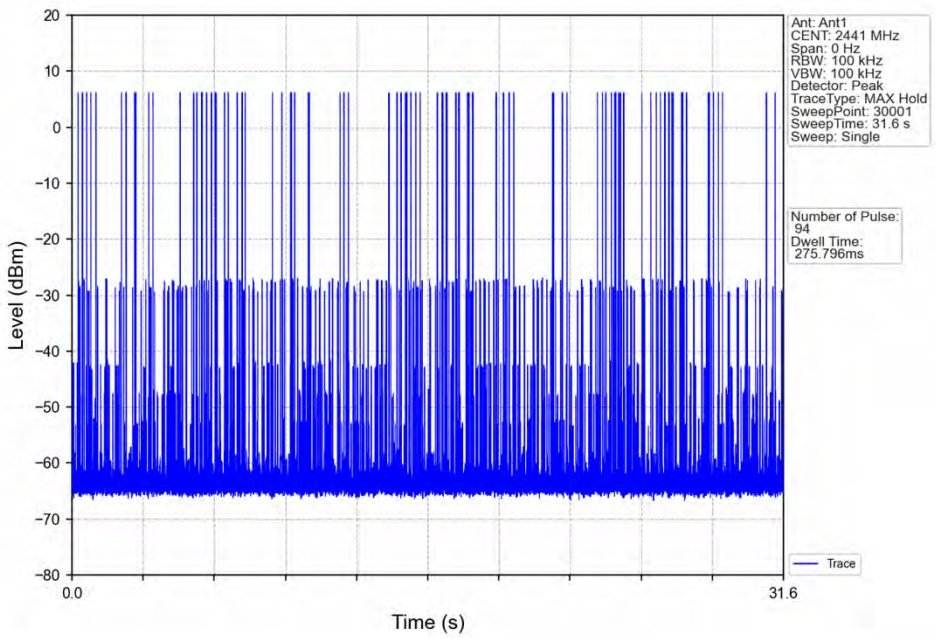
Pi/4DQPSK_2DH3_HOPP_Ant1_NTNV



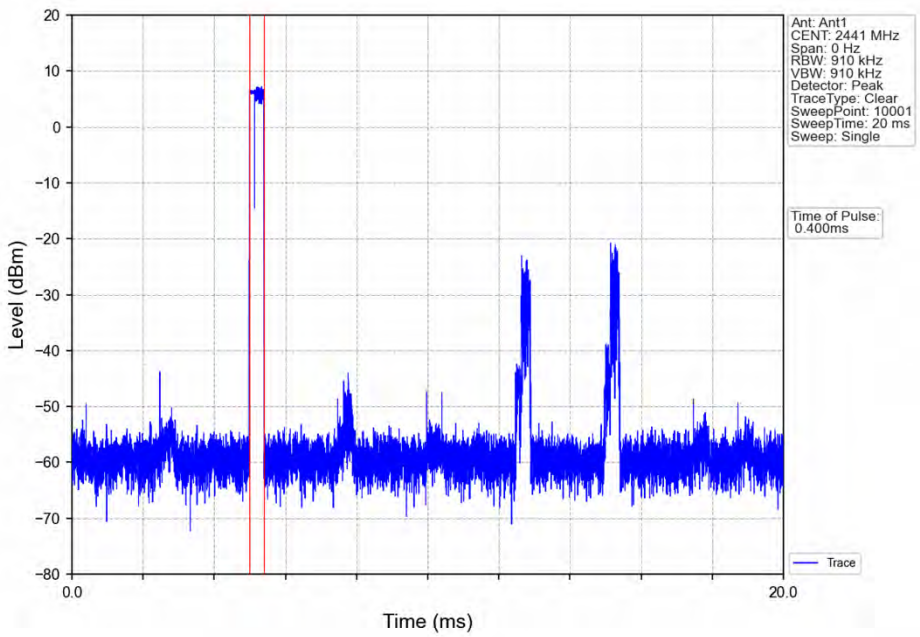
Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



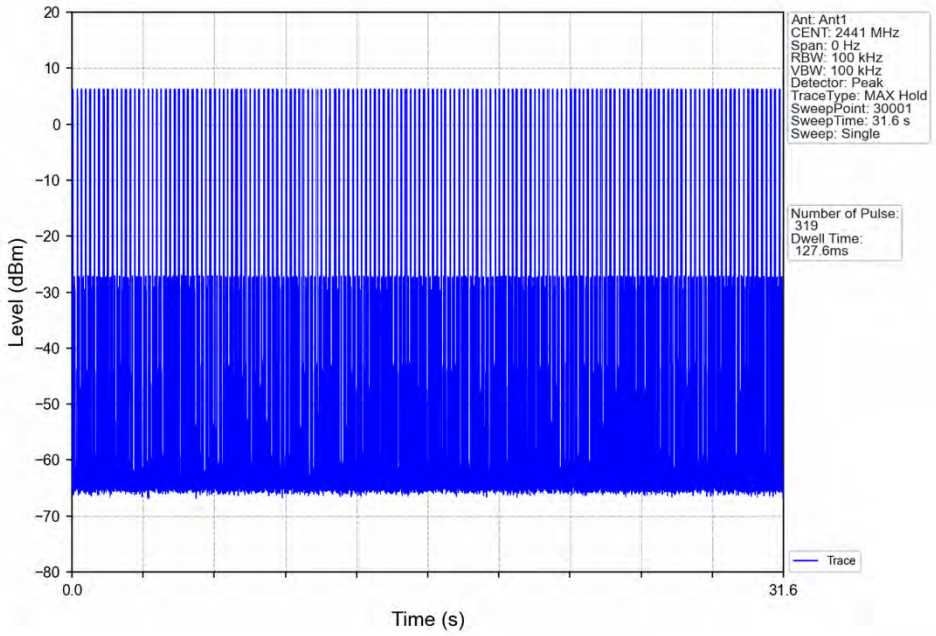
Pi/4DQPSK_2DH5_HOPP_Ant1_NTNV



8DPSK_3DH1_HOPP_Ant1_NTNV



8DPSK_3DH1_HOPP_Ant1_NTNV



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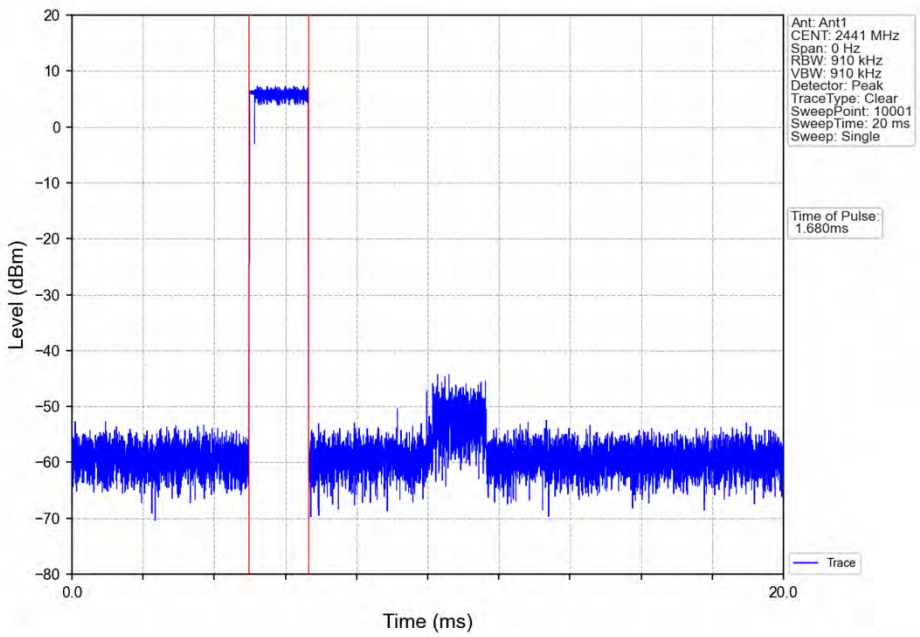
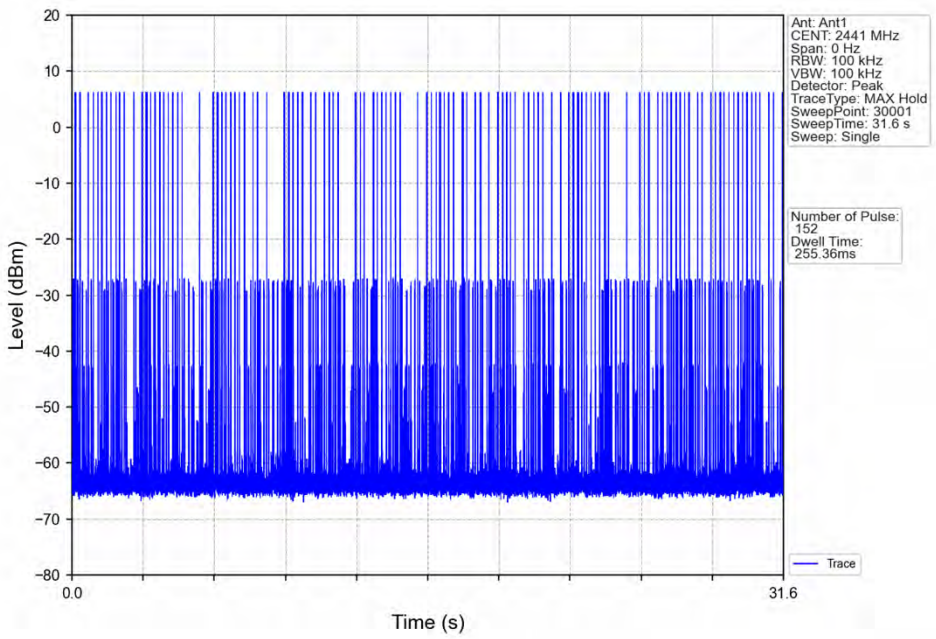
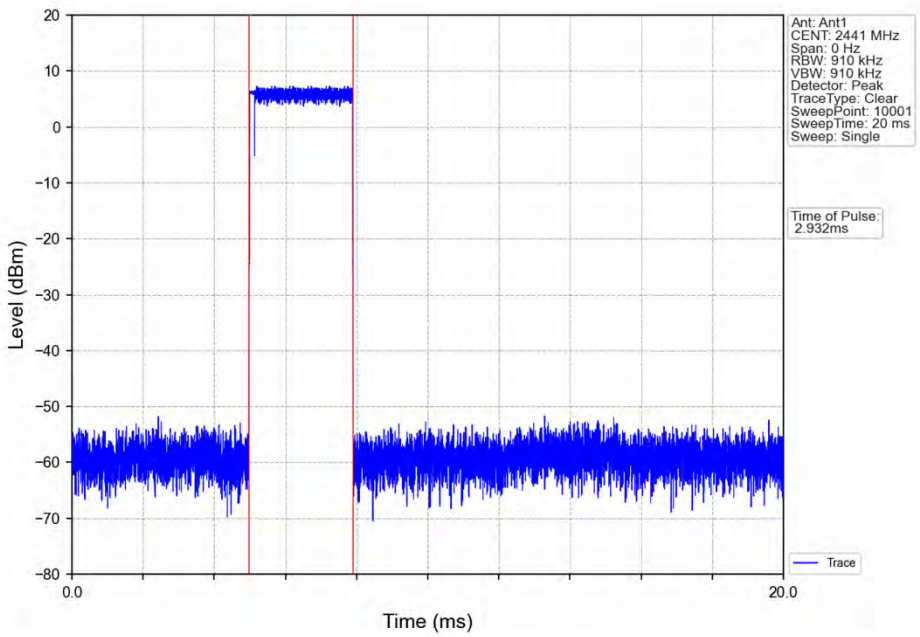


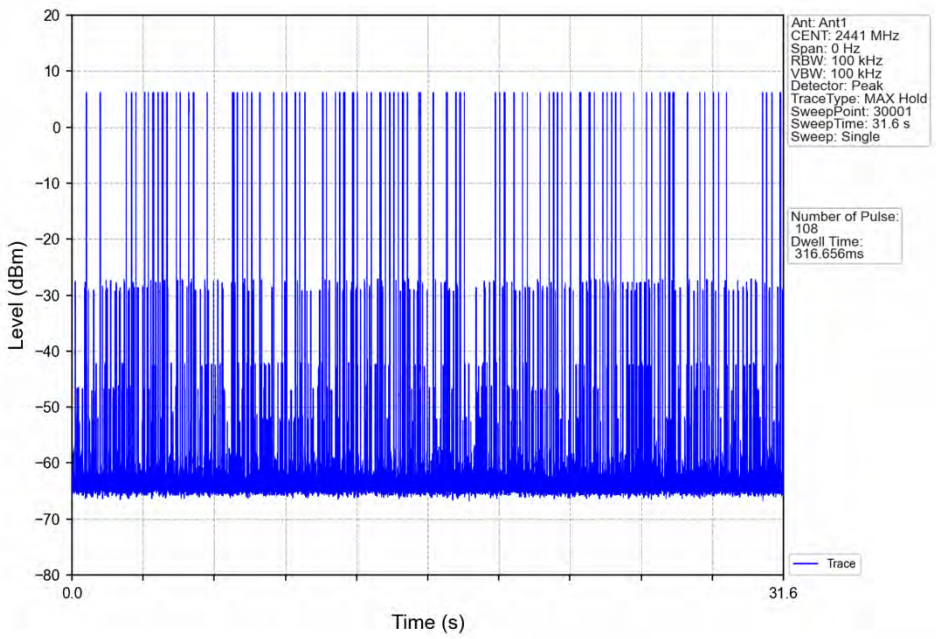
8DPSK_3DH3_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



6. Unwanted Emissions In Non-restricted Frequency Bands

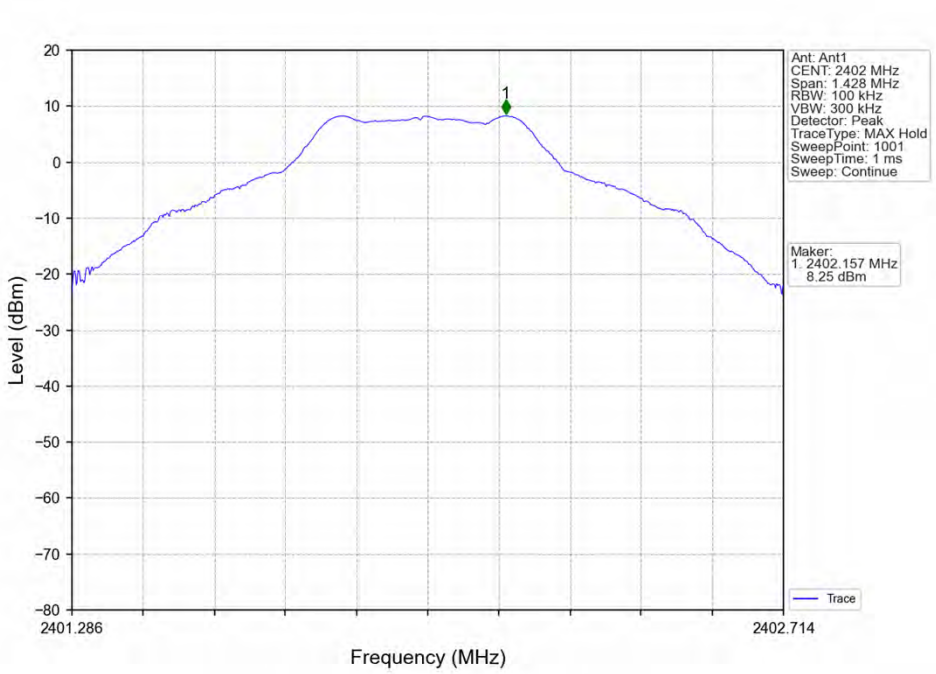
6.1 Ref

6.1.1 Test Result

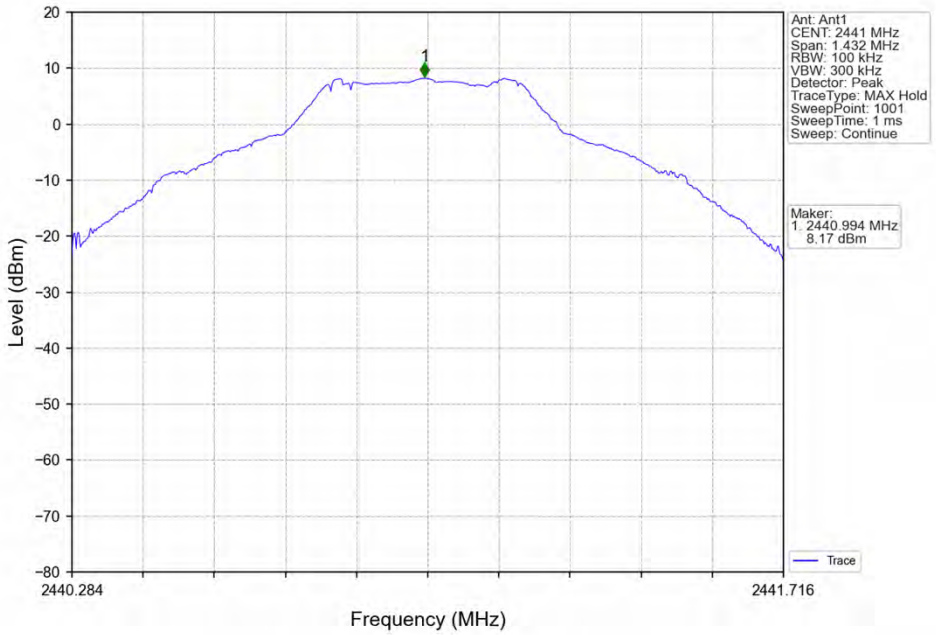
Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)
GFSK	SISO	2402	DH5	1	8.25
		2441	DH5	1	8.17
		2480	DH5	1	7.68
Pi/4DQPSK	SISO	2402	2DH5	1	5.09
		2441	2DH5	1	6.00
		2480	2DH5	1	5.27
8DPSK	SISO	2402	3DH5	1	5.49
		2441	3DH5	1	6.26
		2480	3DH5	1	5.29
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.					

6.1.2 Test Graph

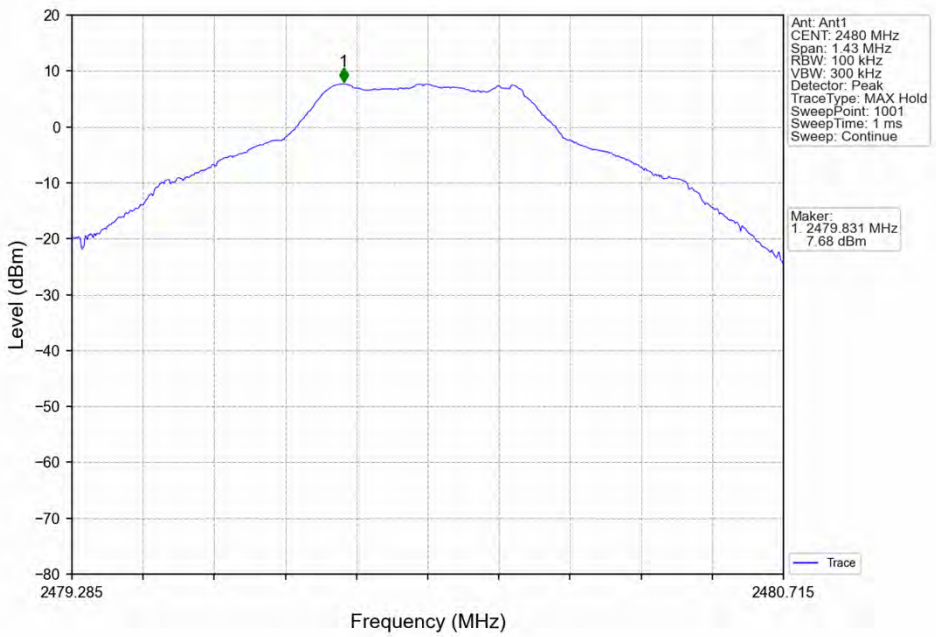
GFSK_DH5_LCH_2402MHz_Ant1_NTNV



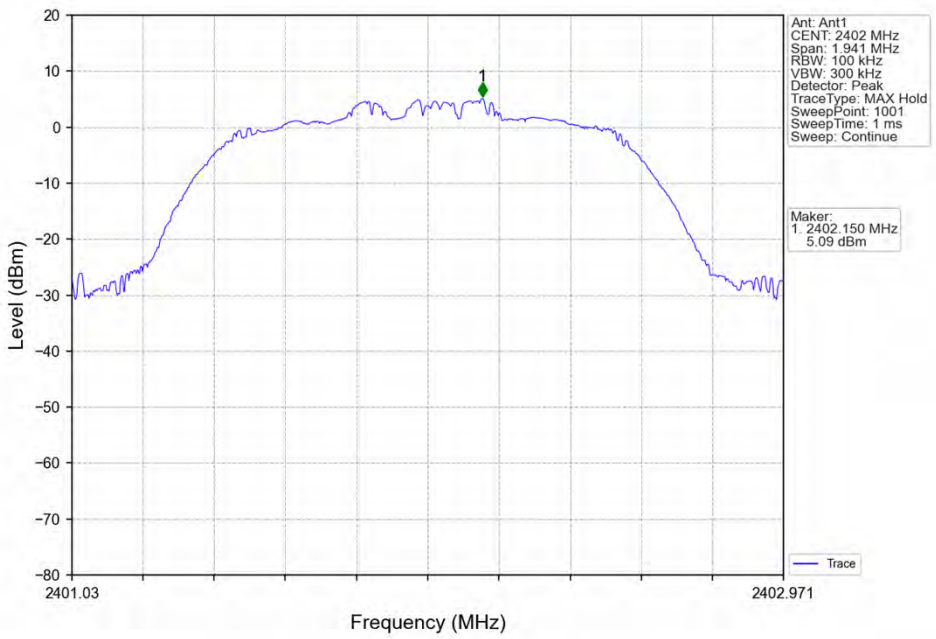
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



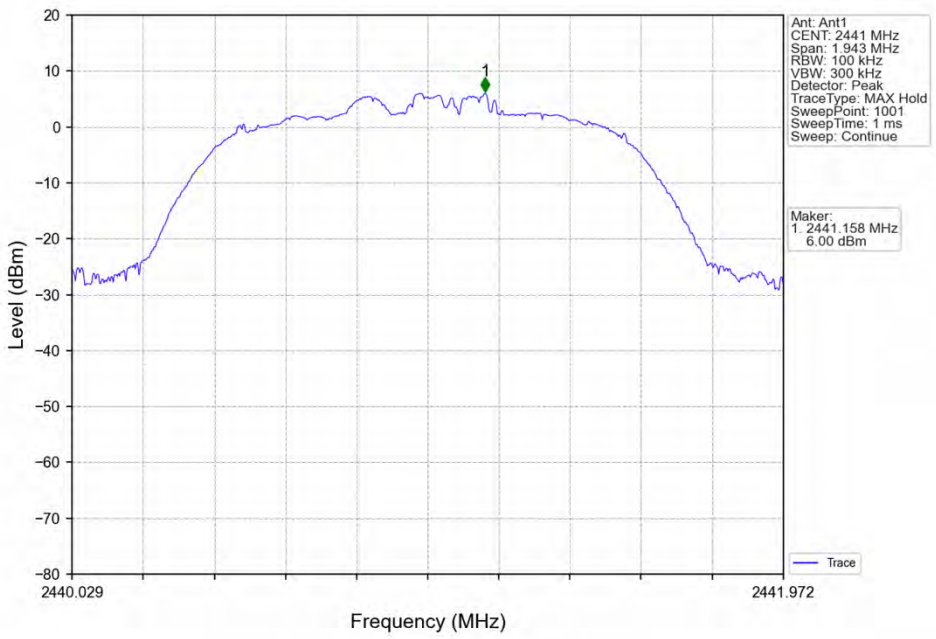
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



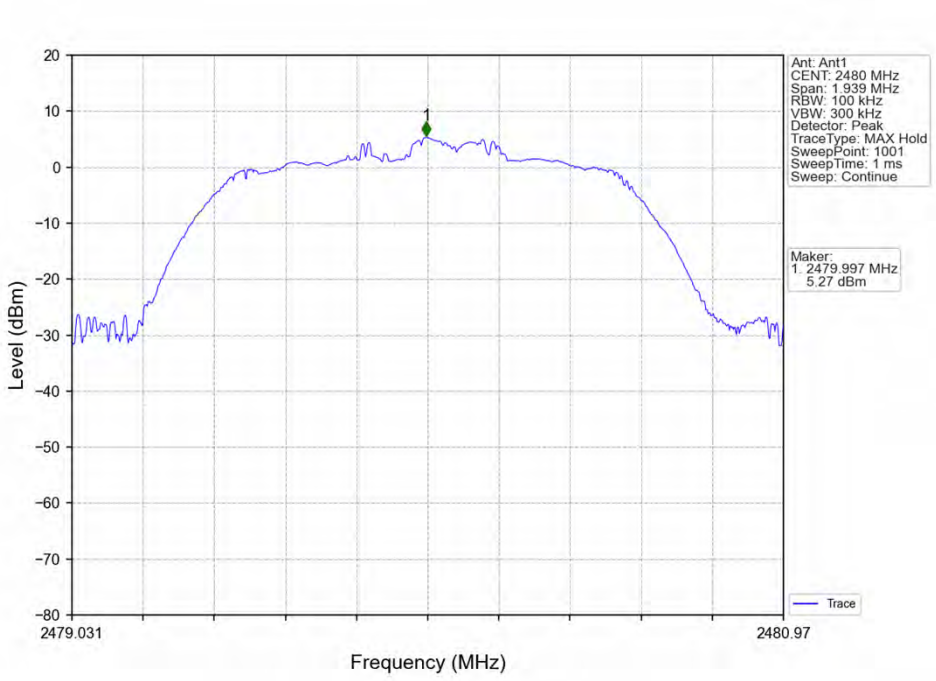
Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



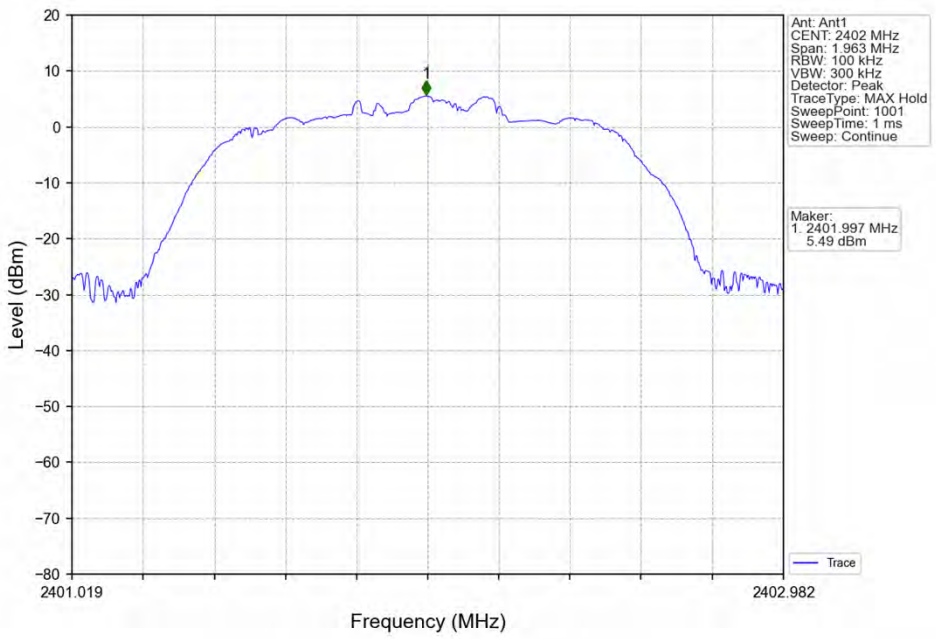
Pi/4DQPSK_2DH5_MCH_2441MHz_Ant1_NTNV



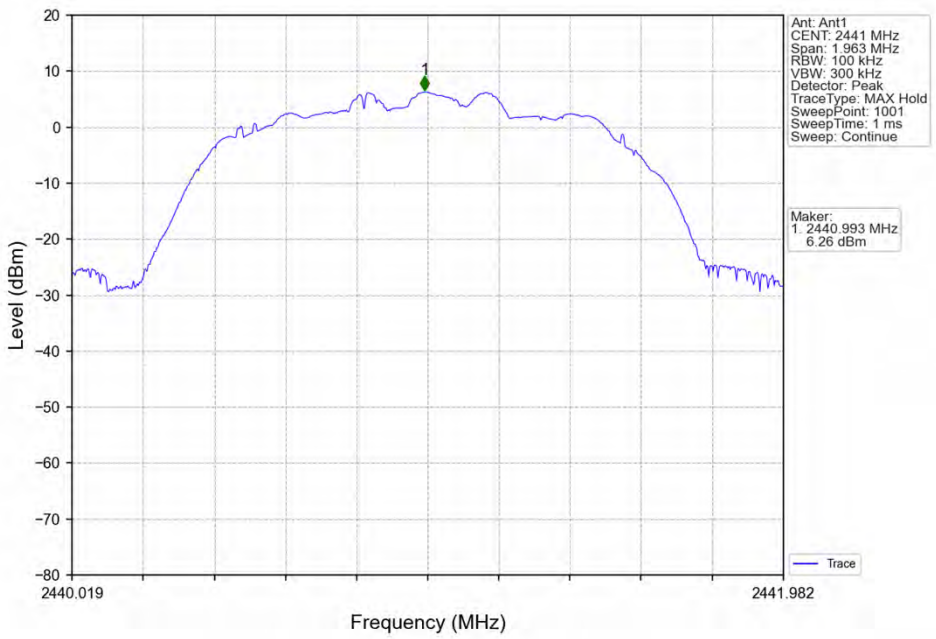
Pi/4DQPSK_2DH5_HCH_2480MHz_Ant1_NTNV



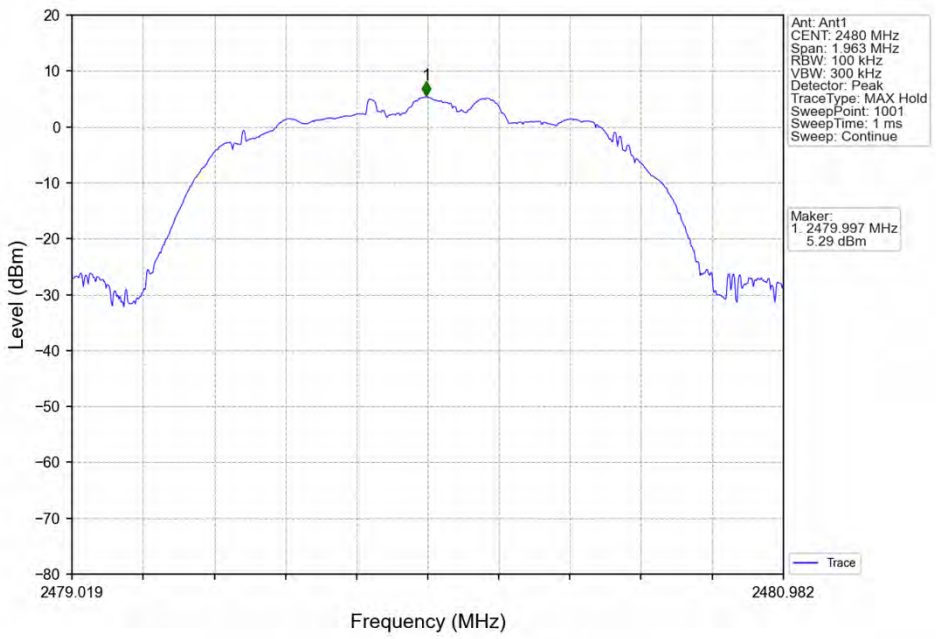
8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV

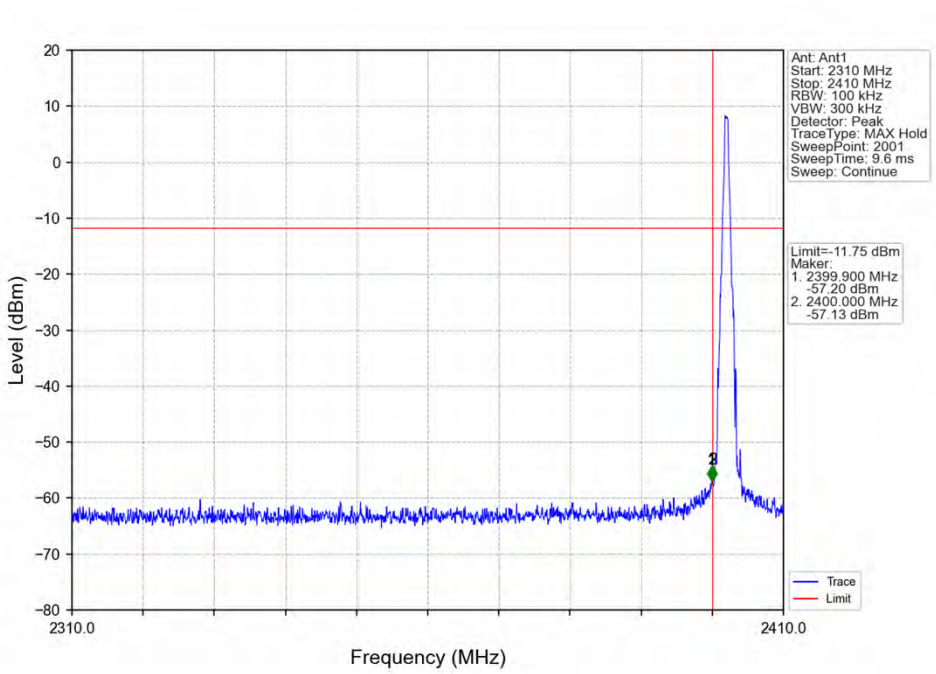
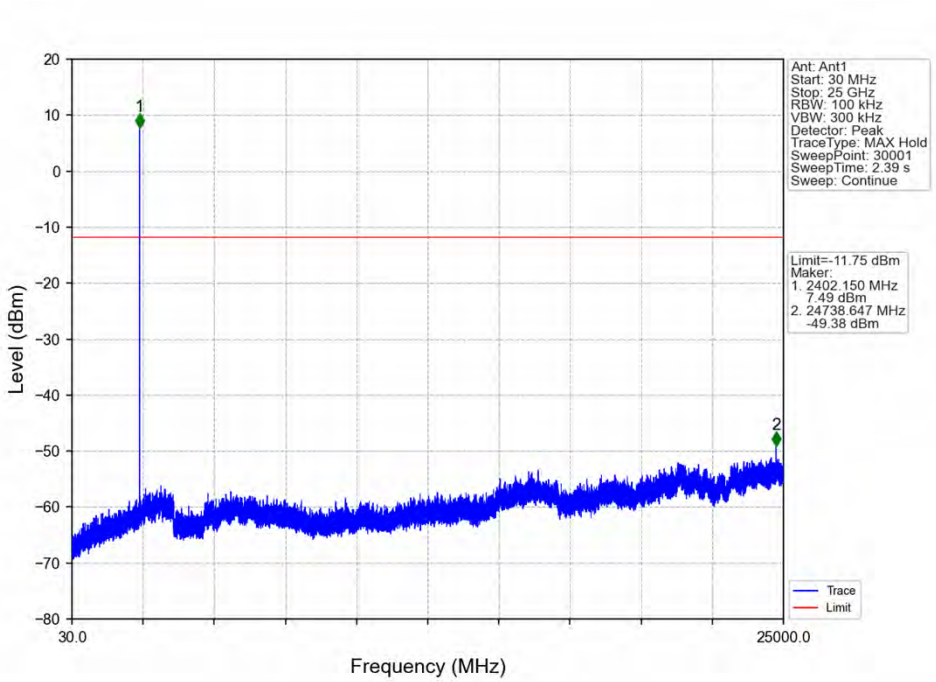


6.2 CSE

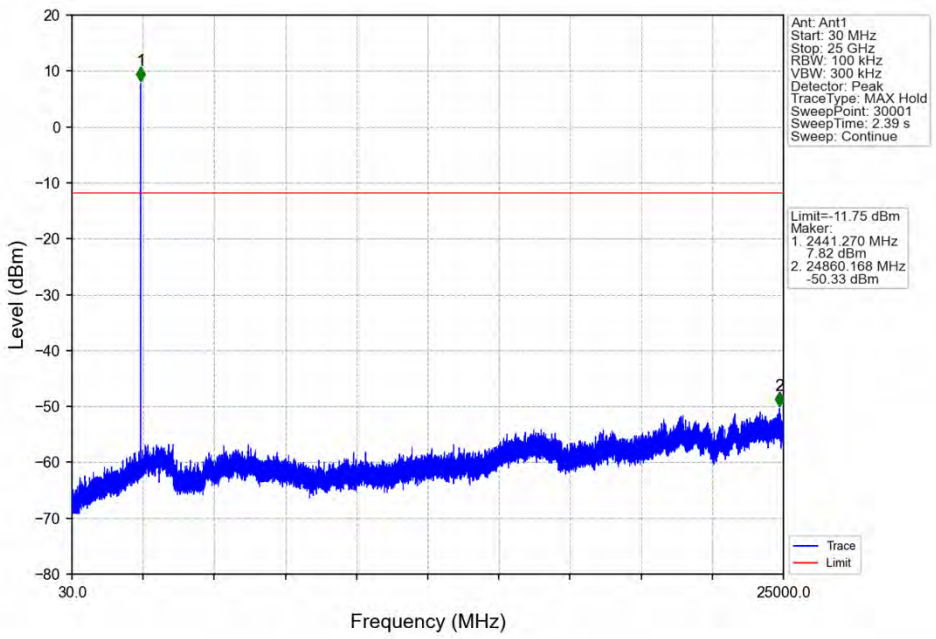
6.2.1 Test Result

Mode	TX Type	Frequency (MHz)	Packet Type	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
GFSK	SISO	2402	DH5	1	8.25	-11.75	Pass
		2441	DH5	1	8.25	-11.75	Pass
		2480	DH5	1	8.25	-11.75	Pass
		HOPP	DH5	1	8.25	-11.75	Pass
Pi/4DQPSK	SISO	2402	2DH5	1	6.00	-14.00	Pass
		2441	2DH5	1	6.00	-14.00	Pass
		2480	2DH5	1	6.00	-14.00	Pass
		HOPP	2DH5	1	6.00	-14.00	Pass
8DPSK	SISO	2402	3DH5	1	6.26	-13.74	Pass
		2441	3DH5	1	6.26	-13.74	Pass
		2480	3DH5	1	6.26	-13.74	Pass
		HOPP	3DH5	1	6.26	-13.74	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.							

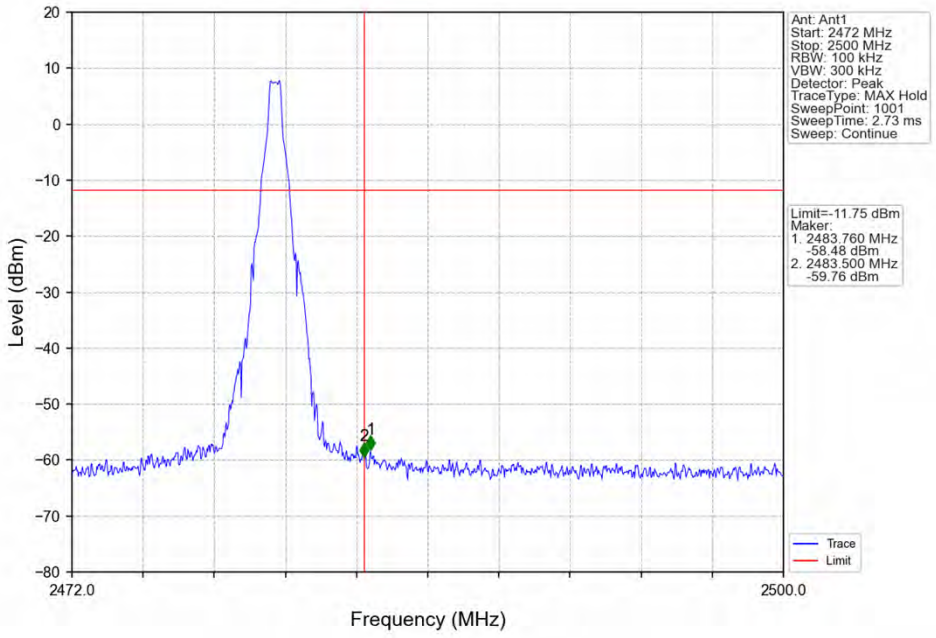
6.2.2 Test Graph

GFSK_DH5_LCH_2402MHz_Ant1_NTNV

GFSK_DH5_LCH_2402MHz_Ant1_NTNV


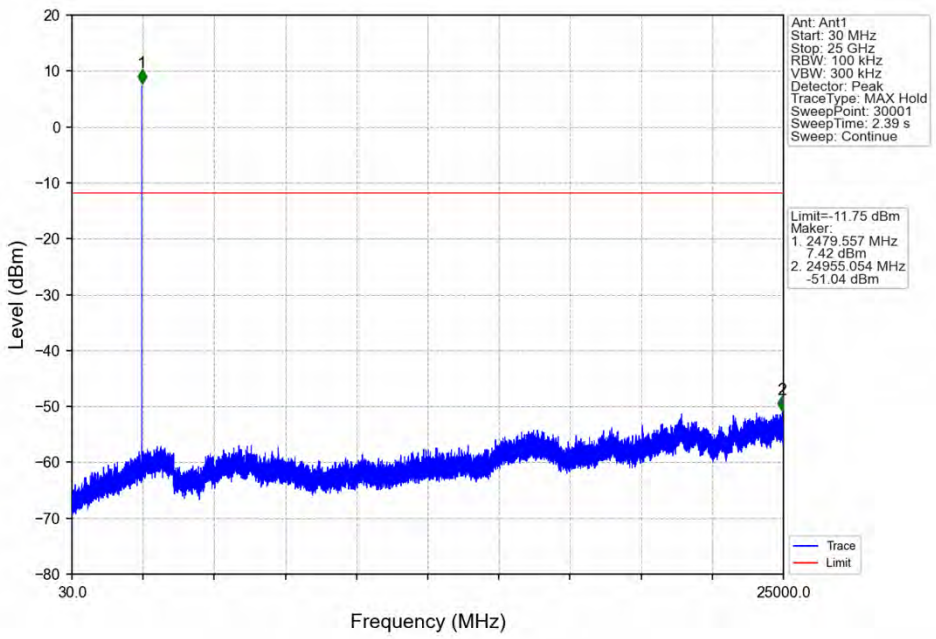
GFSK_DH5_MCH_2441MHz_Ant1_NTNV



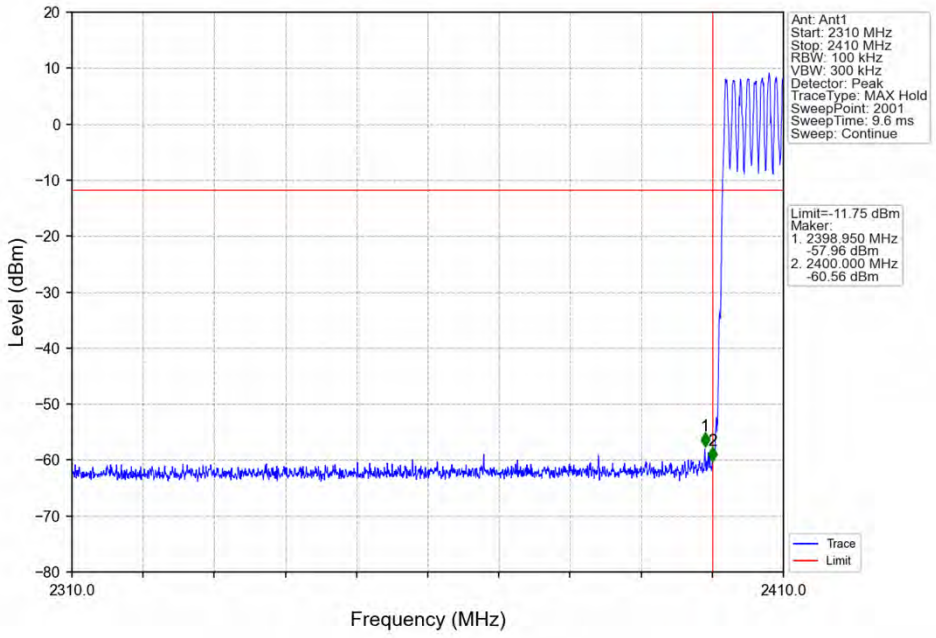
GFSK_DH5_HCH_2480MHz_Ant1_NTNV



GFSK_DH5_HCH_2480MHz_Ant1_NTNV



GFSK_DH5_HOPP_Ant1_NTNV



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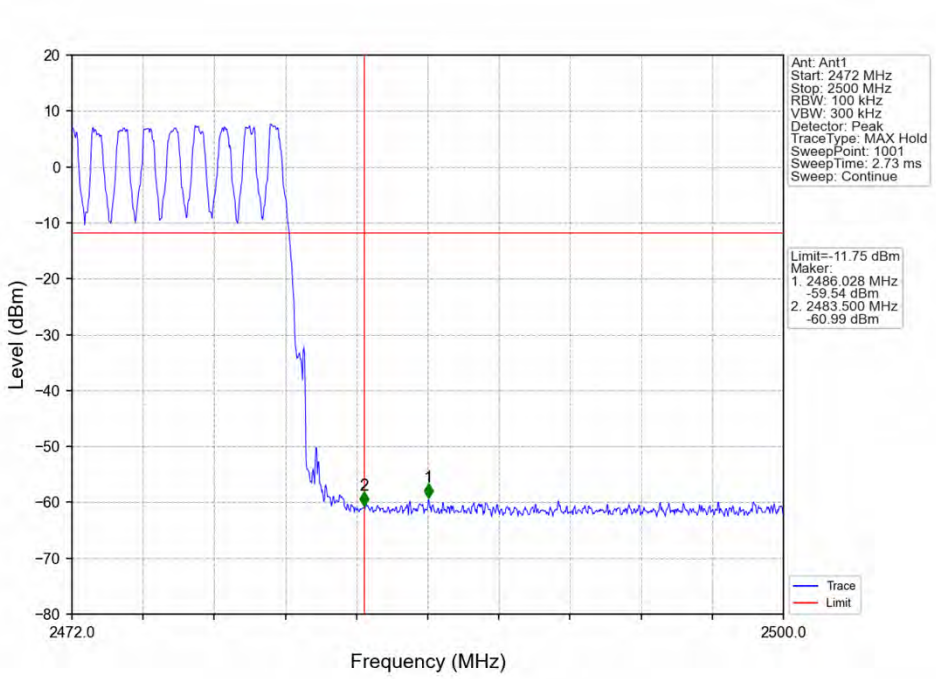
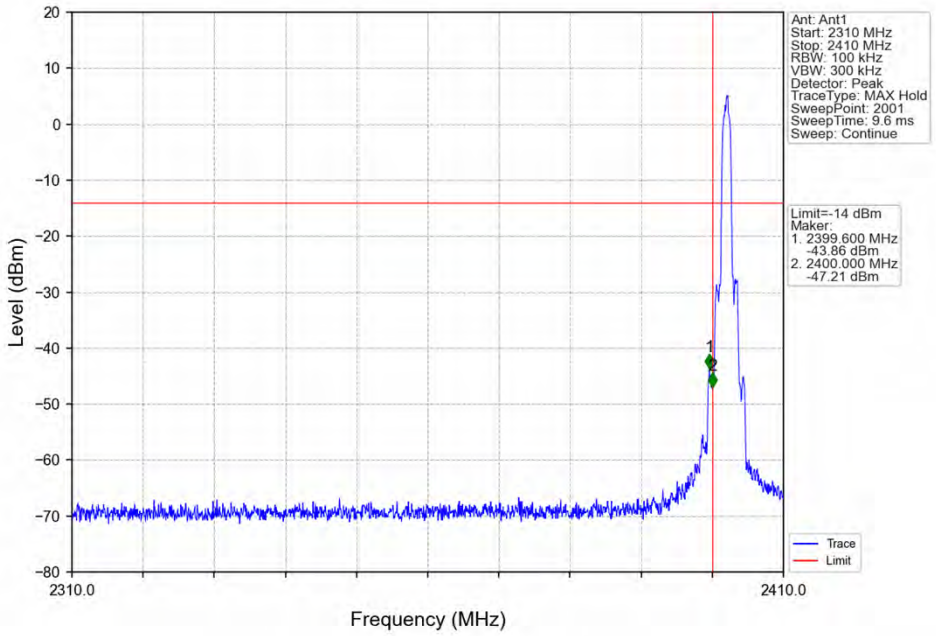


Pi/4DQPSK_2DH5_LCH_2402MHz_Ant1_NTNV



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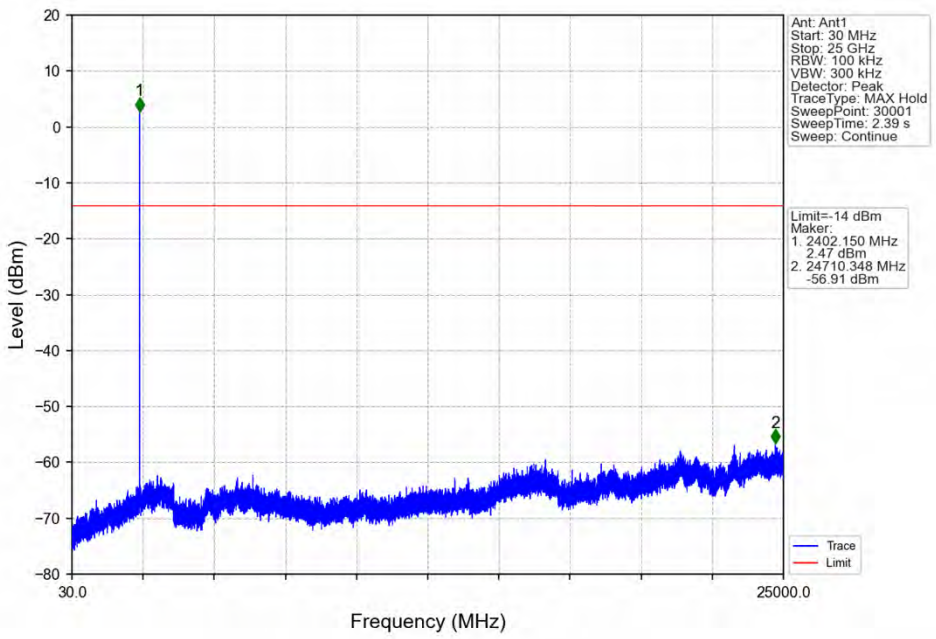

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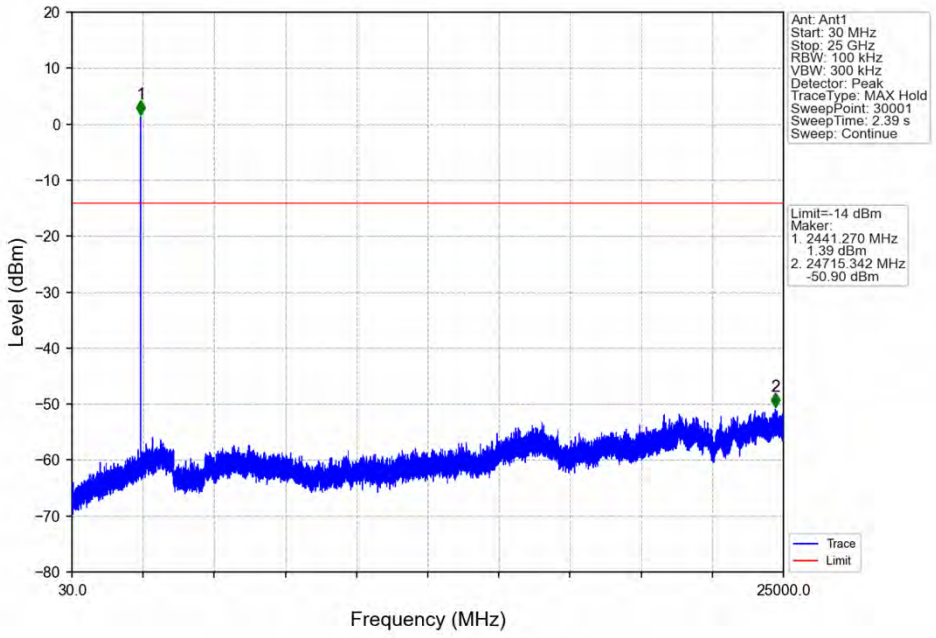

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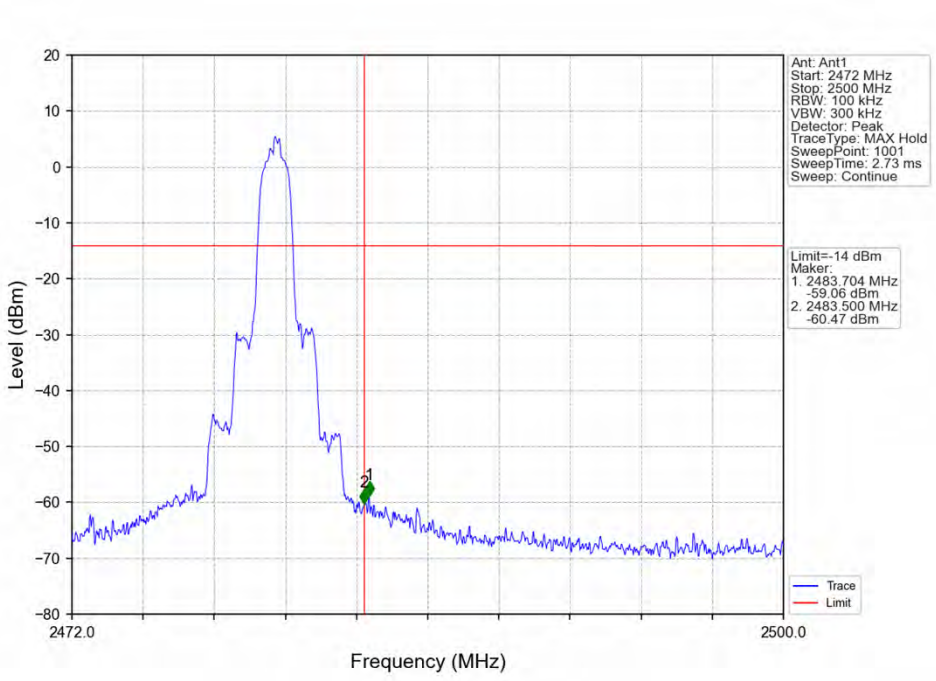

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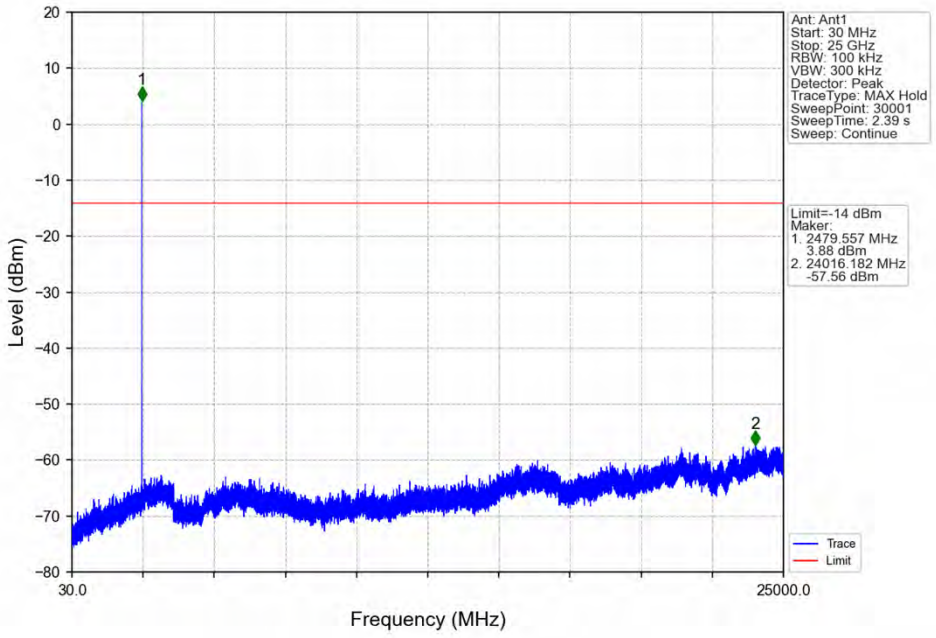

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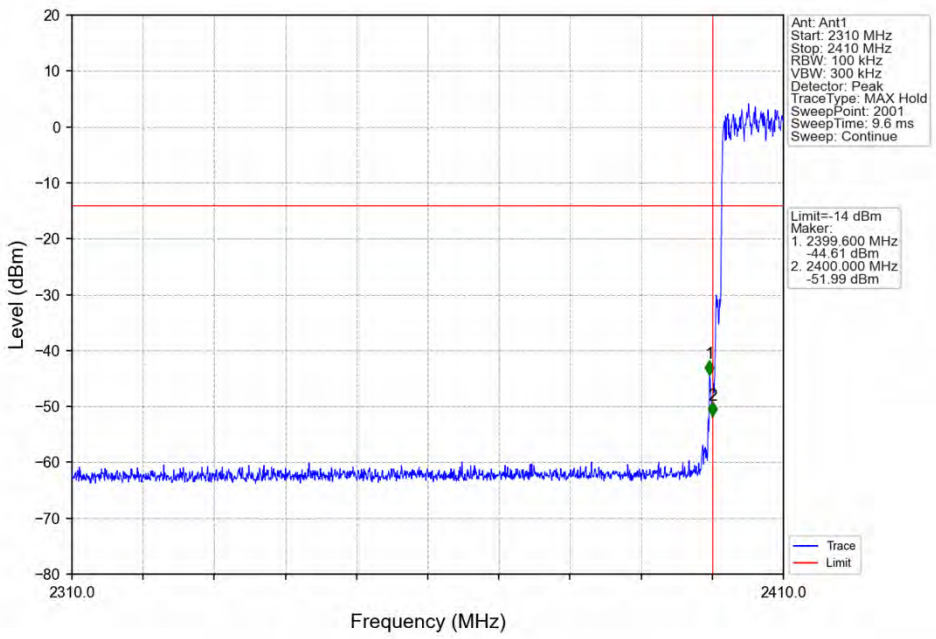

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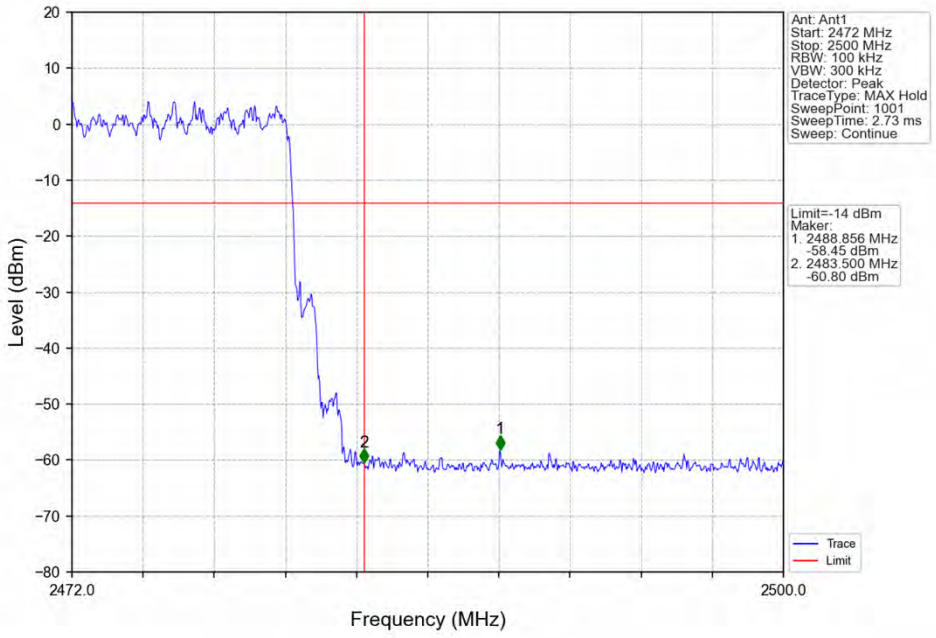
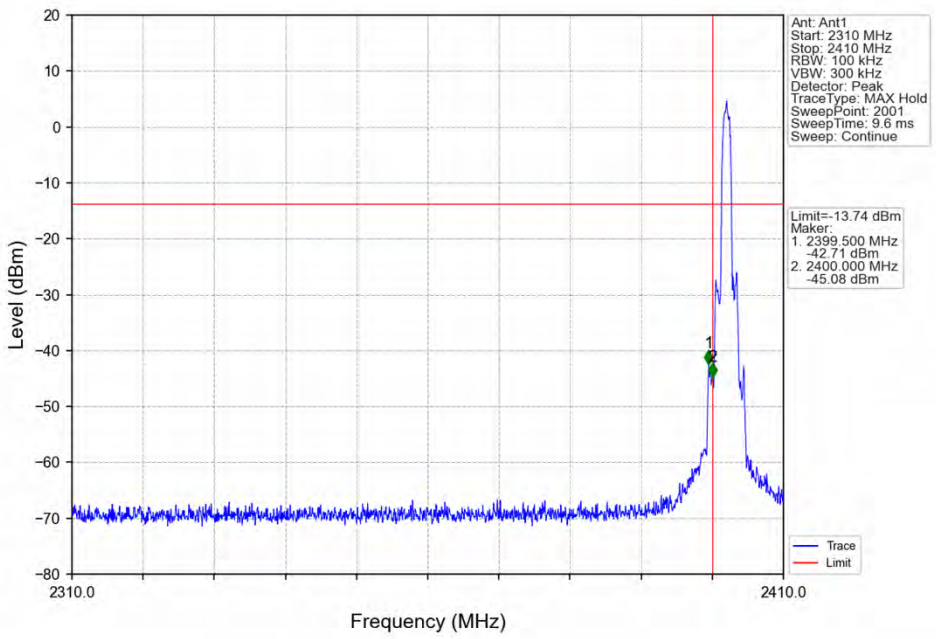


8DPSK_3DH5_LCH_2402MHz_Ant1_NTNV



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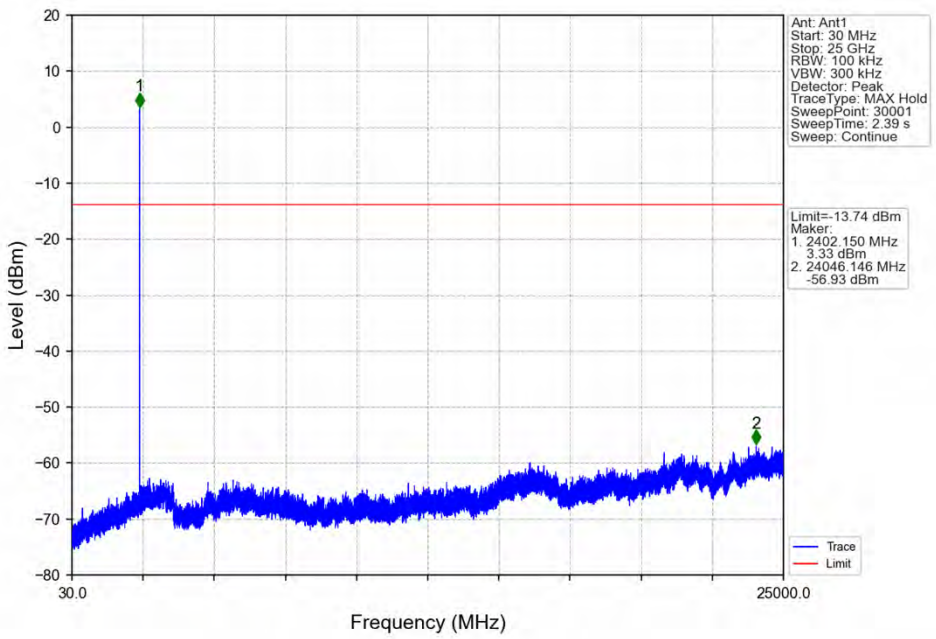
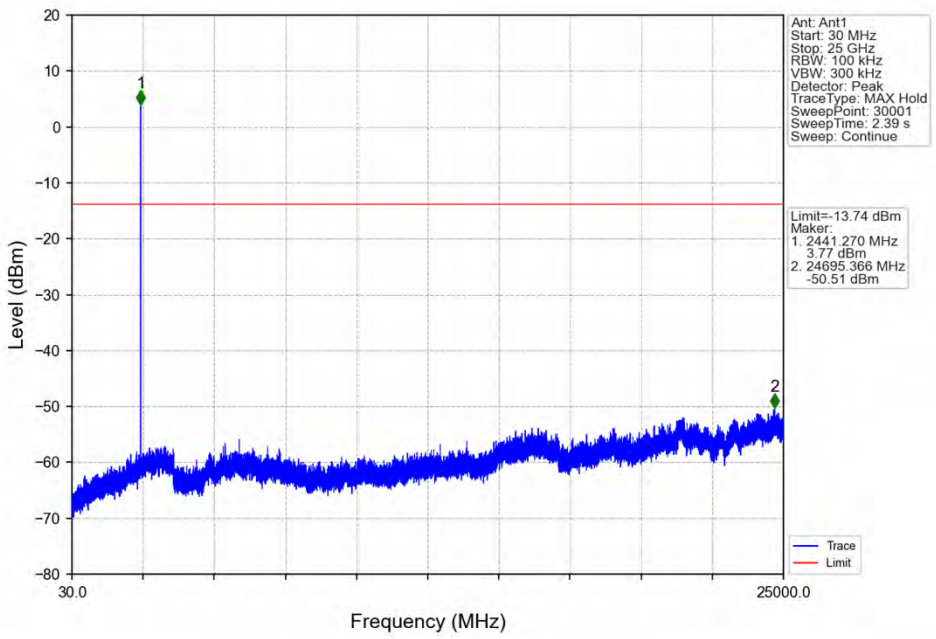
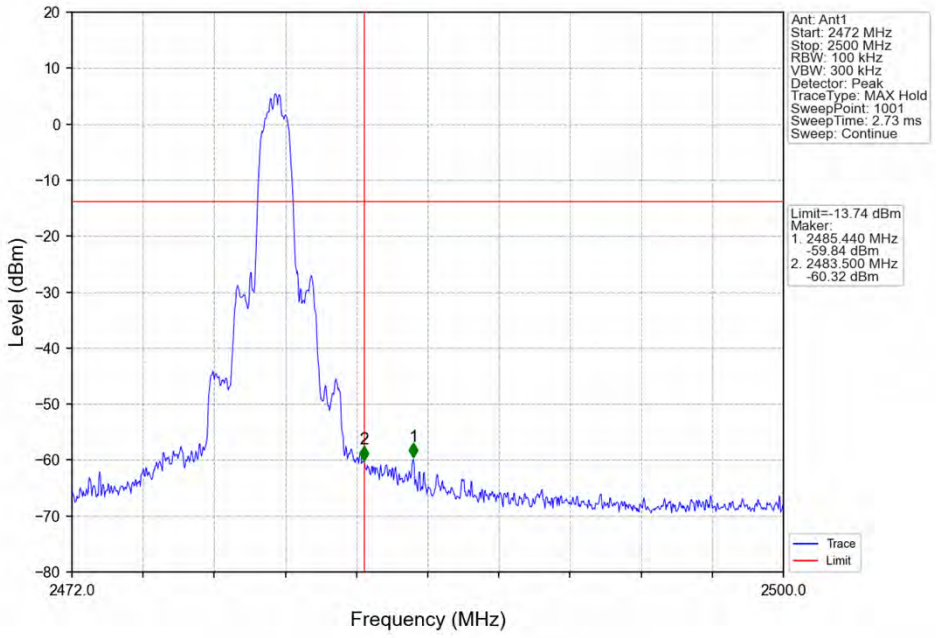


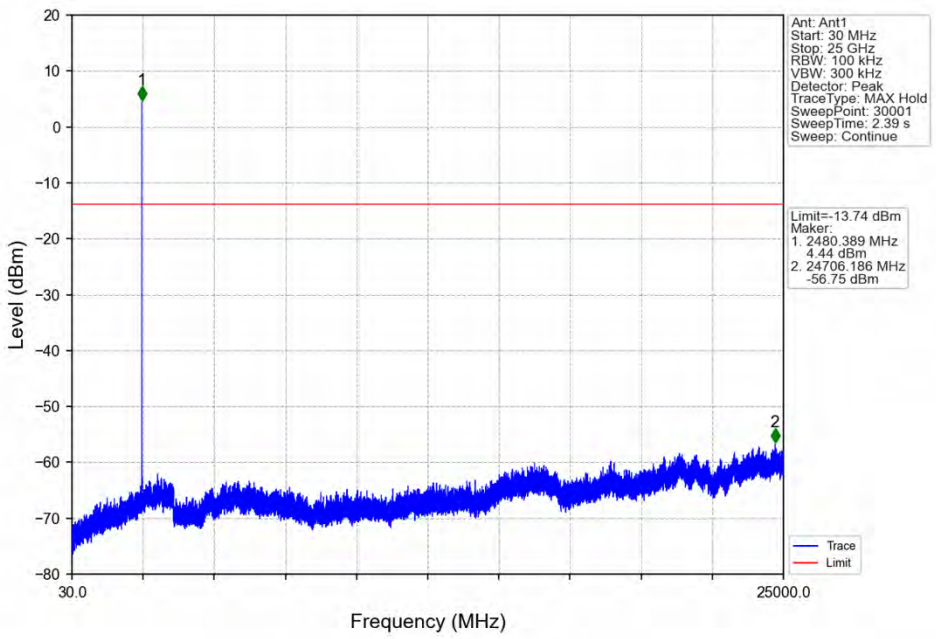
8DPSK_3DH5_MCH_2441MHz_Ant1_NTNV



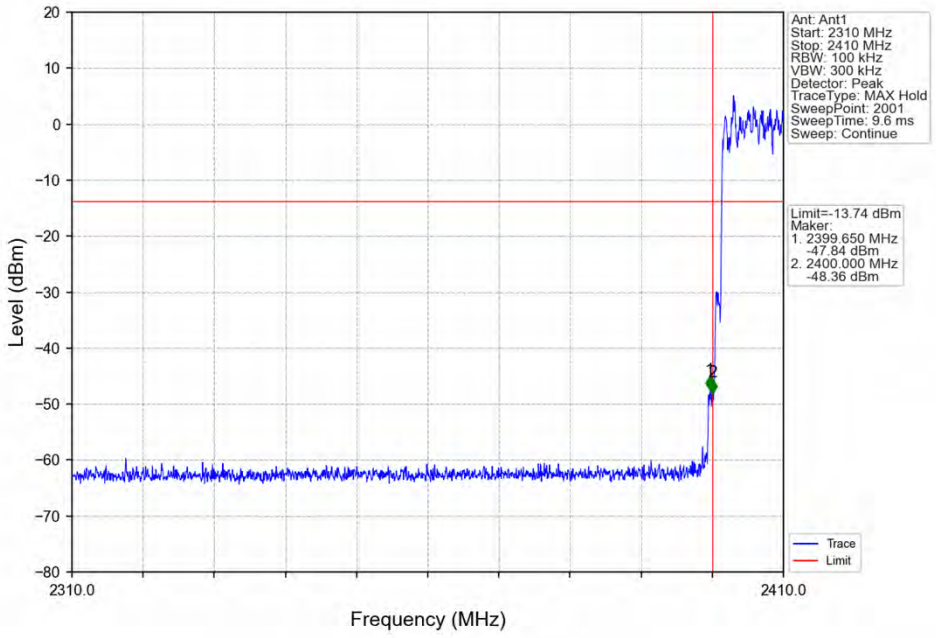
8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



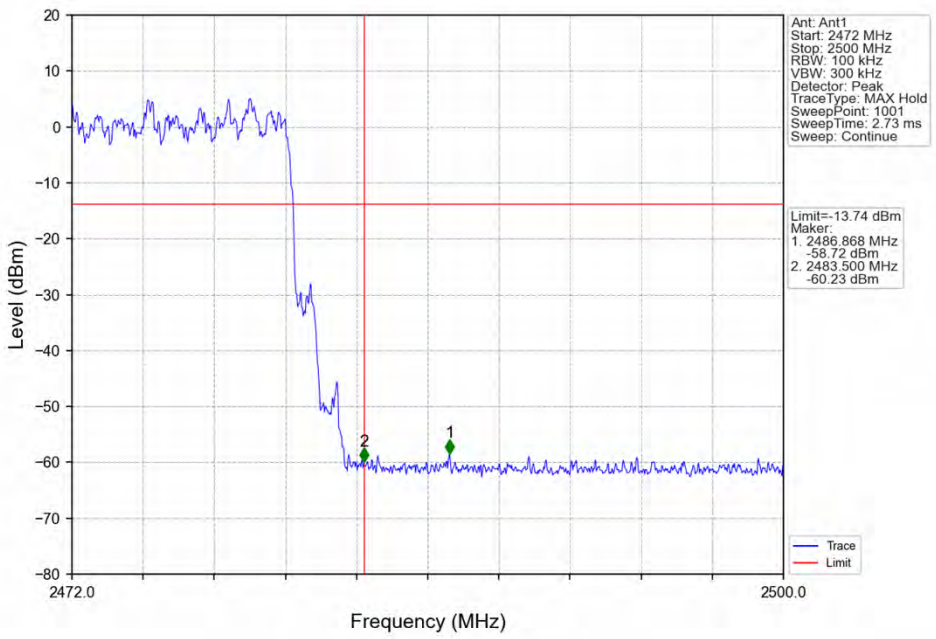
8DPSK_3DH5_HCH_2480MHz_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



8DPSK_3DH5_HOPP_Ant1_NTNV



7. Form731

7.1 Form731

7.1.1 Test Result

Lower Freq (MHz)	High Freq (MHz)	MAX Power (W)	MAX Power (dBm)
2402	2480	0.0077	8.84

（END OF REPORT）