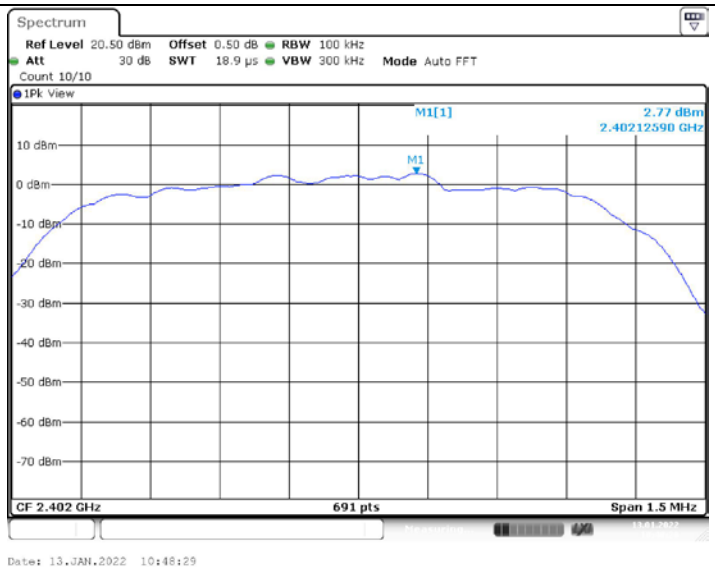
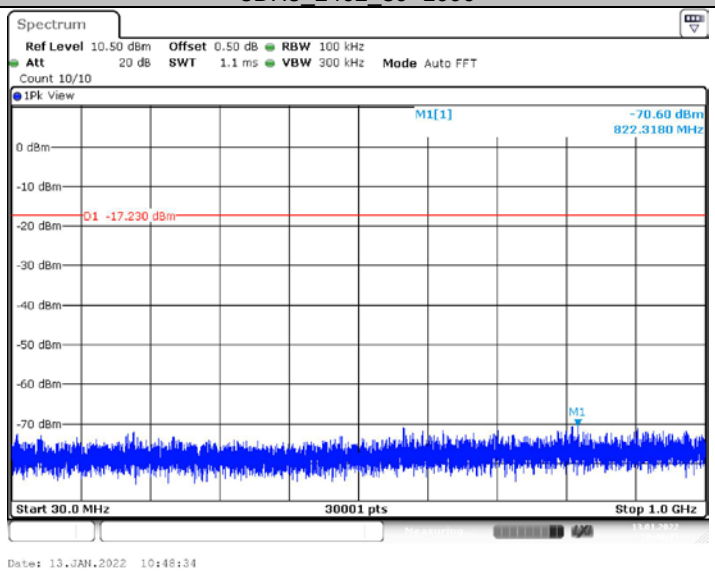
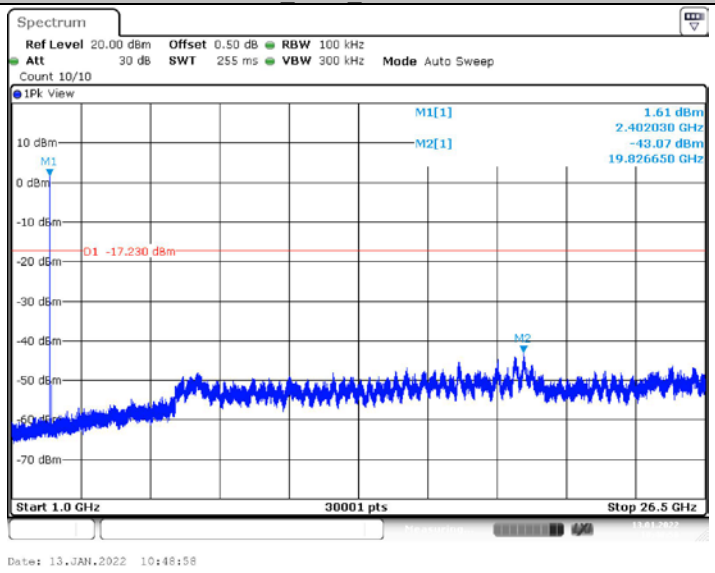


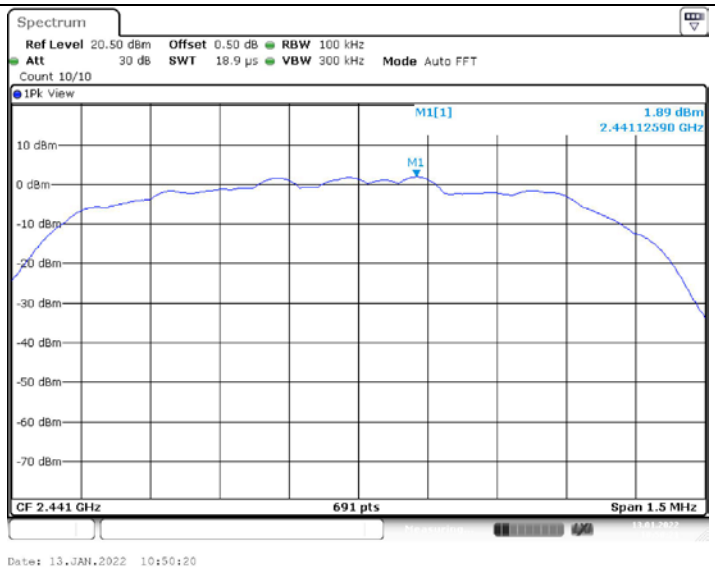
3DH5_2402_30~1000



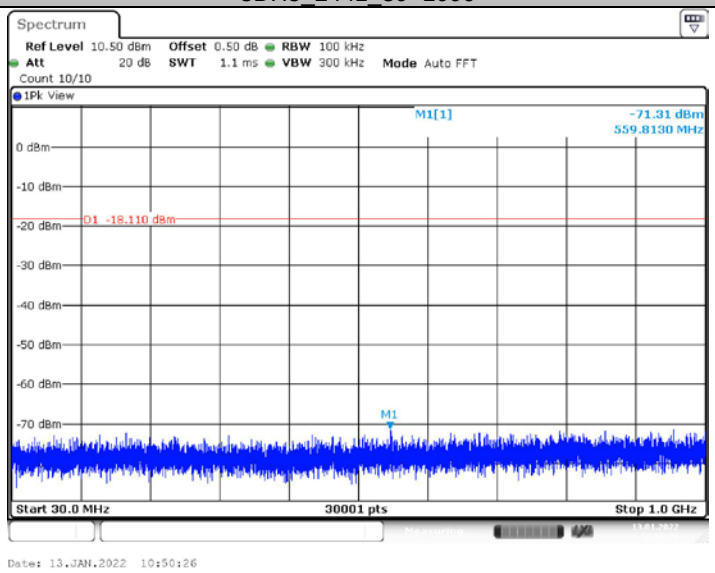
3DH5_2402_1000~26500



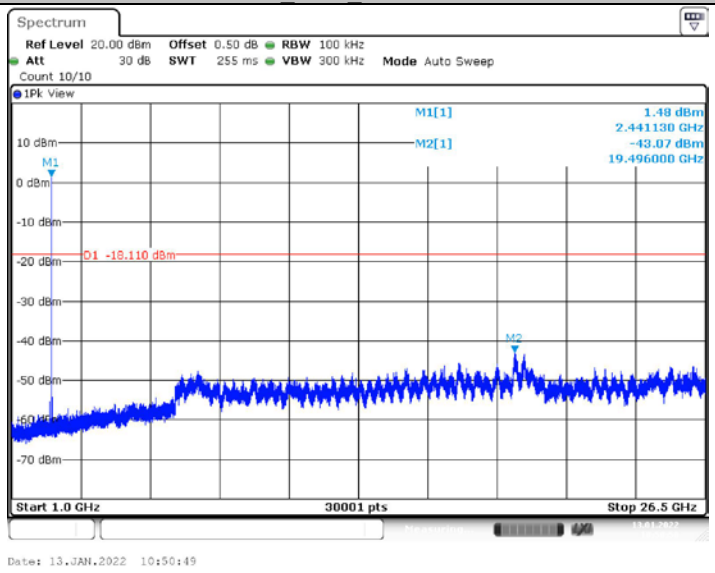
3DH5_2441_0~Reference



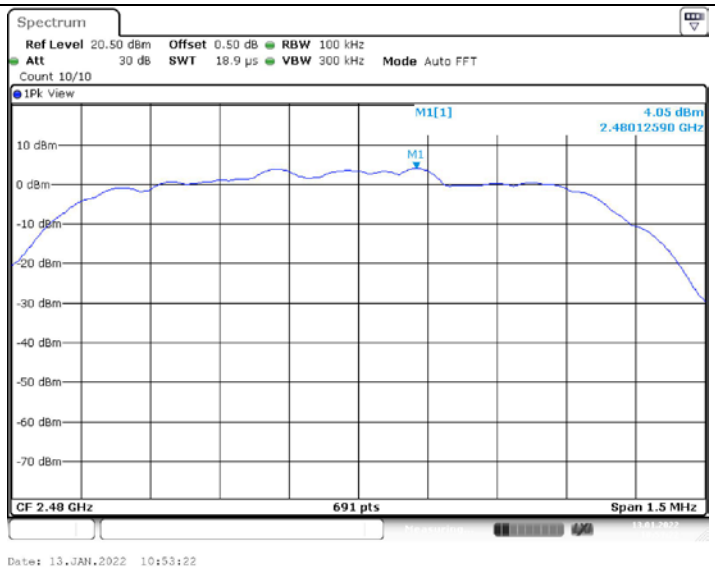
3DH5_2441_30~1000



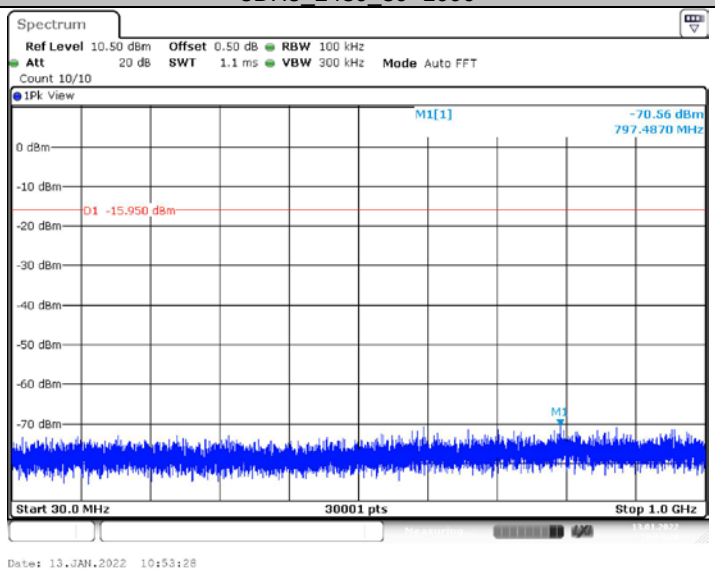
3DH5_2441_1000~26500



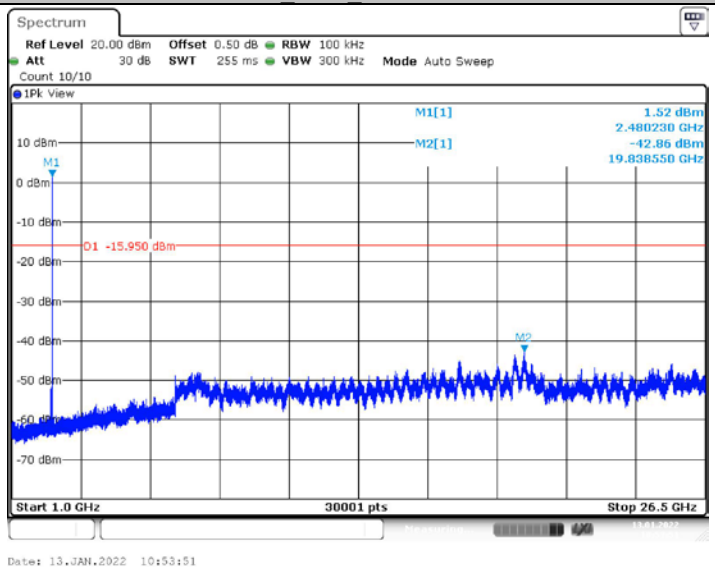
3DH5_2480_0~Reference



3DH5_2480_30~1000



3DH5_2480_1000~26500

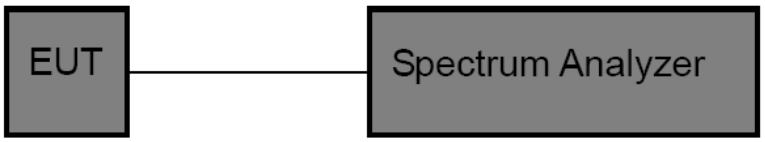


3.5. Bandwidth

Limit

N/A

Test Configuration



Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. OCB and 20dB Spectrum Setting:
   (1) Set RBW = 1% ~ 5% occupied bandwidth.
   (2) Set the video bandwidth (VBW) ≥ 3 RBW.
   (3) Detector = Peak.
   (4) Trace mode = Max hold.
   (5) Sweep = Auto couple.

Note: The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

Test Mode

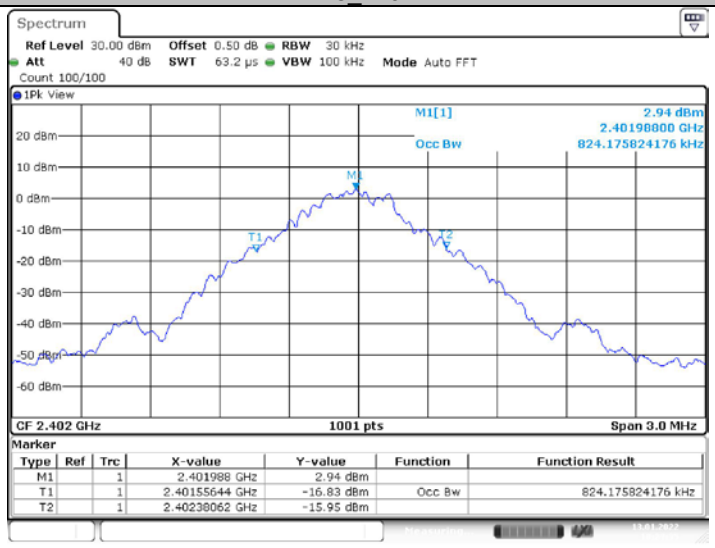
Please refer to the clause 2.4.

Test Results

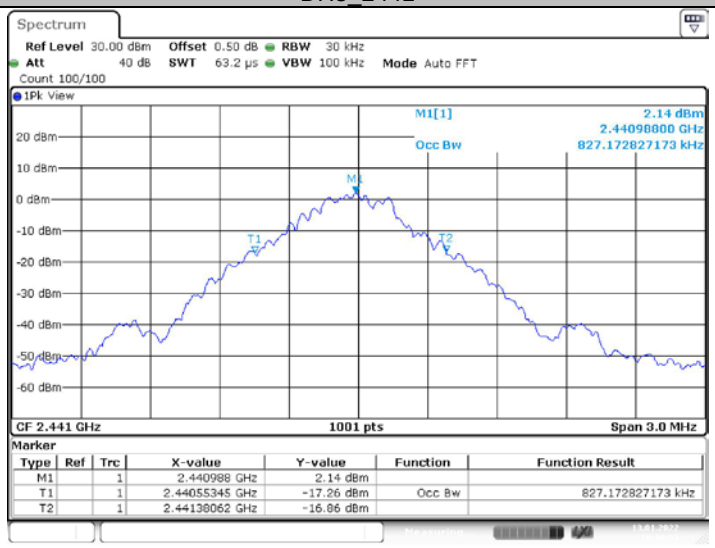
Modulation type	Channel	Occupied Bandwidth (MHz)	20dB Bandwidth (MHz)	20dB Bandwidth *2/3 (MHz)
GFSK	00	0.824	0.94	0.63
	39	0.827	0.94	0.63
	78	0.824	0.93	0.62
π/4-DQPSK	00	1.175	1.29	0.86
	39	1.175	1.28	0.85
	78	1.175	1.28	0.85
8-DPSK	00	1.175	1.29	0.86
	39	1.175	1.29	0.86
	78	1.181	1.29	0.86

Occupied Bandwidth:

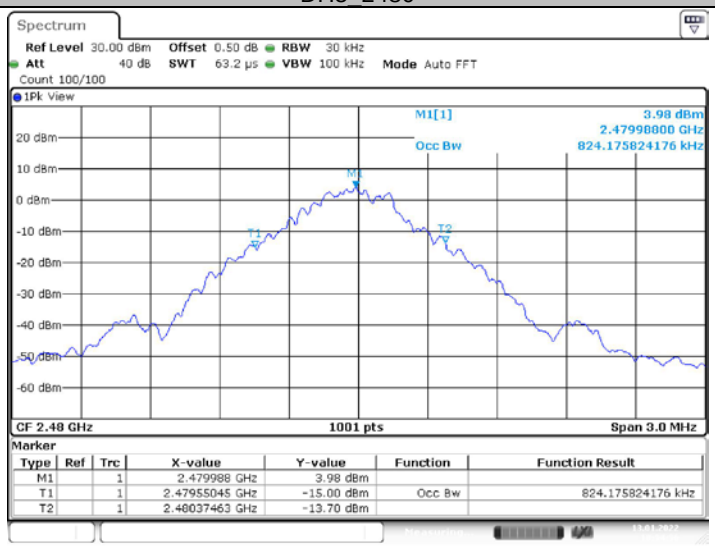
DH5_2402



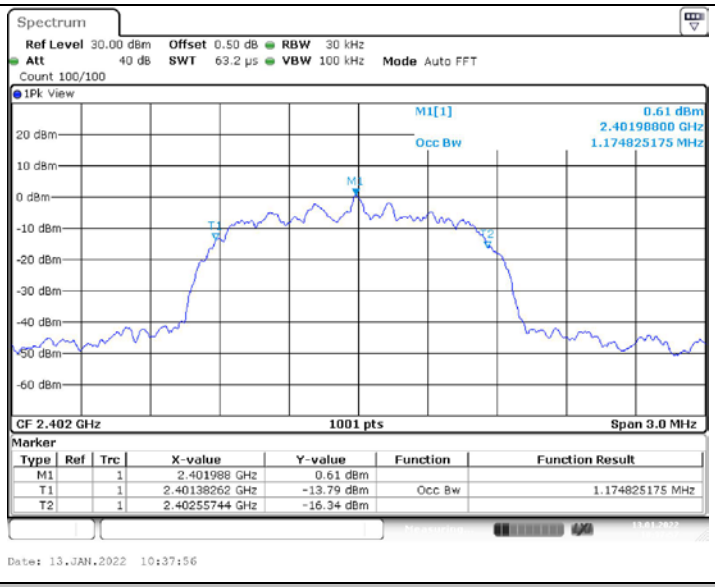
DH5_2441



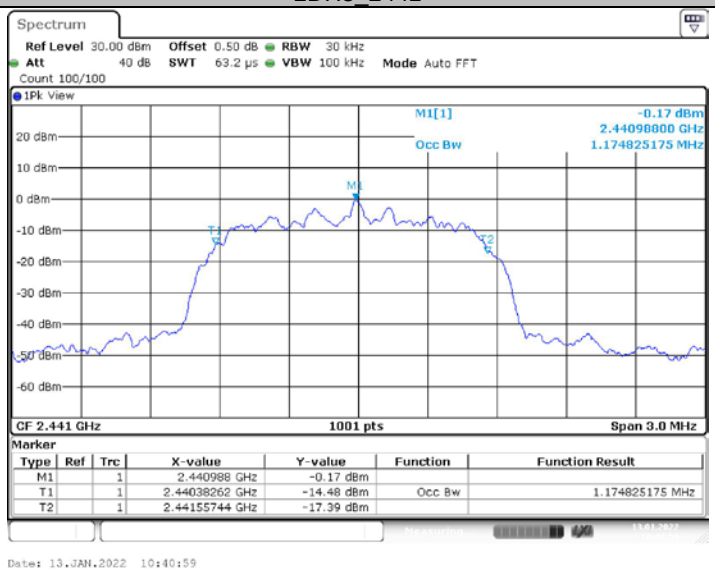
DH5_2480



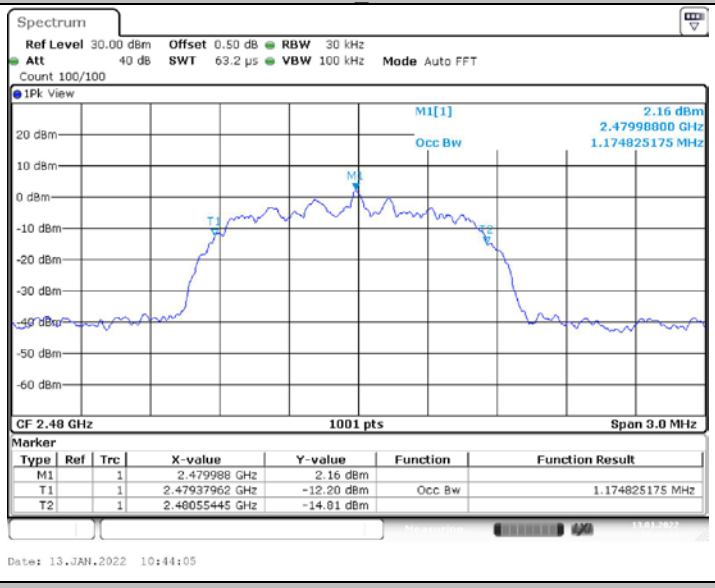
2DH5_2402



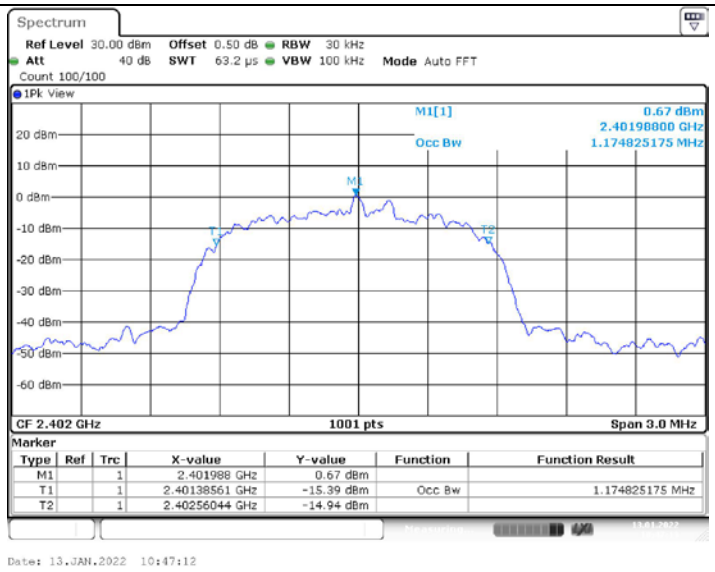
2DH5_2441



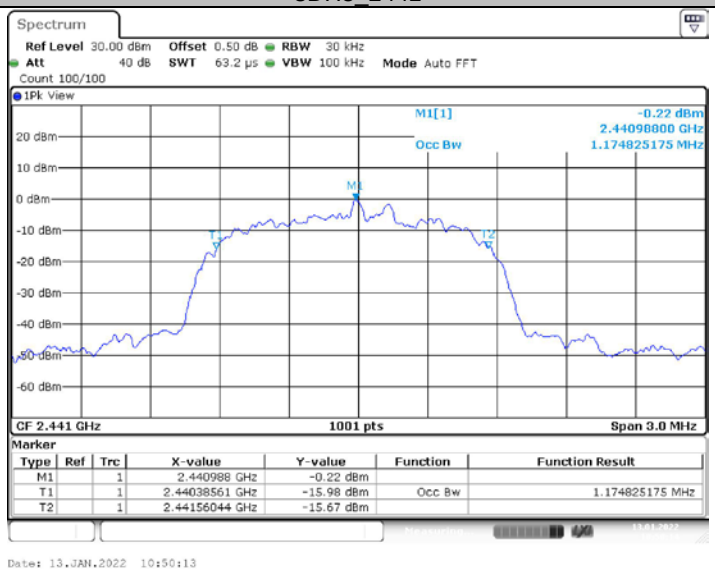
2DH5_2480



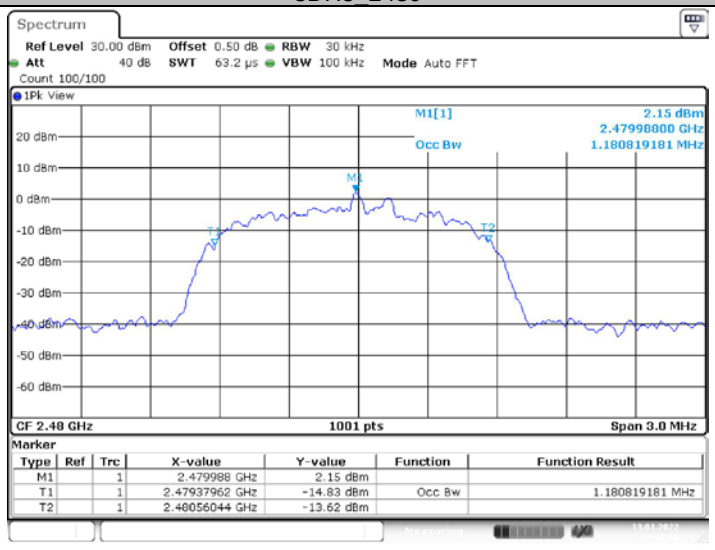
3DH5_2402



3DH5_2441

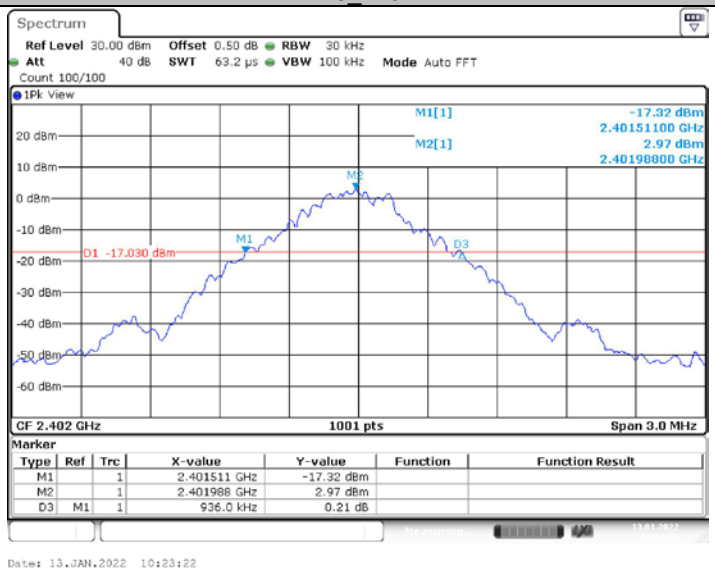


3DH5_2480

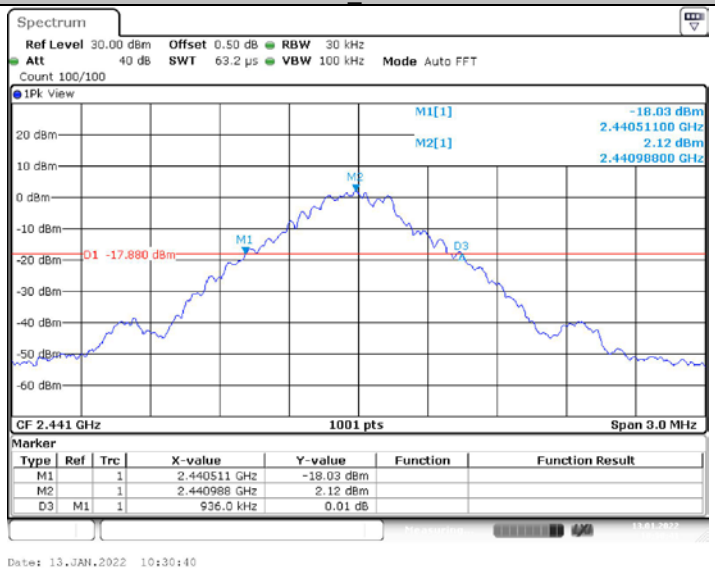


20dB Bandwidth:

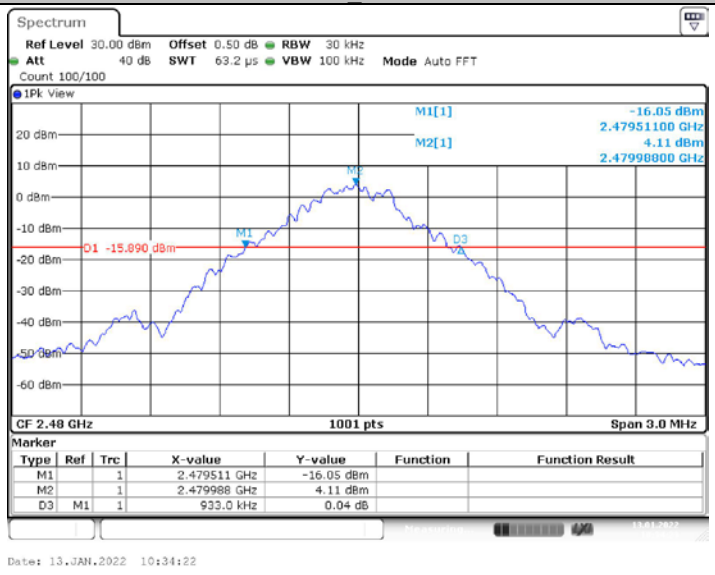
DH5_2402



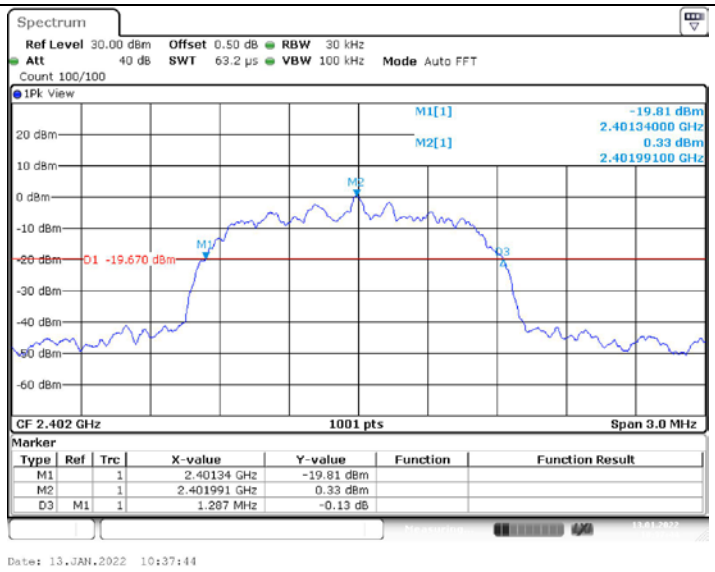
DH5_2441



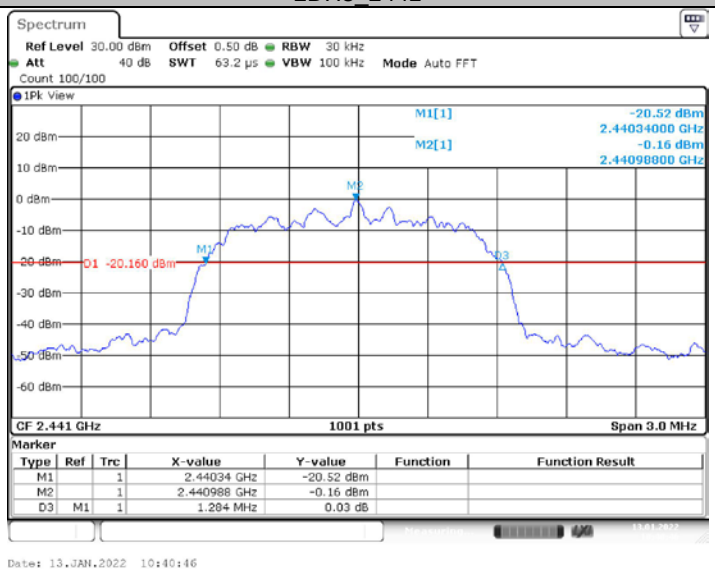
DH5_2480



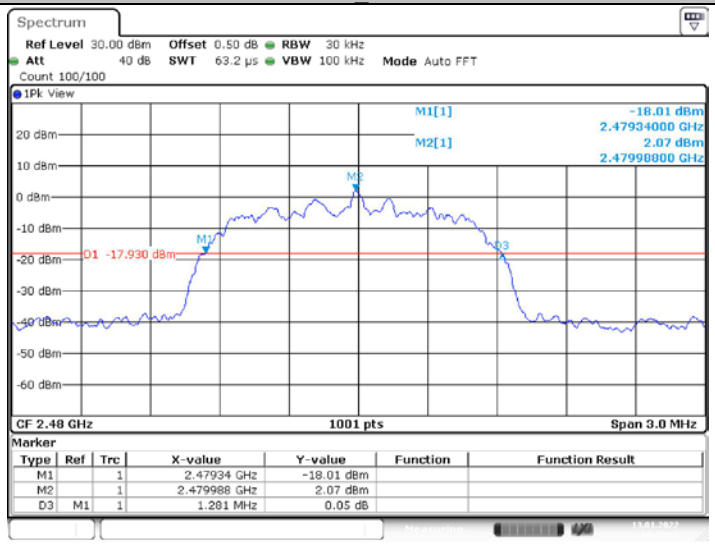
2DH5_2402



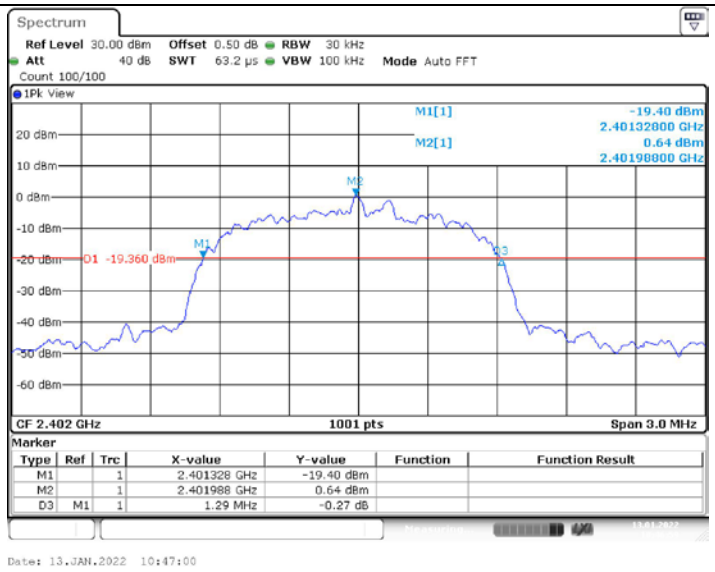
2DH5_2441



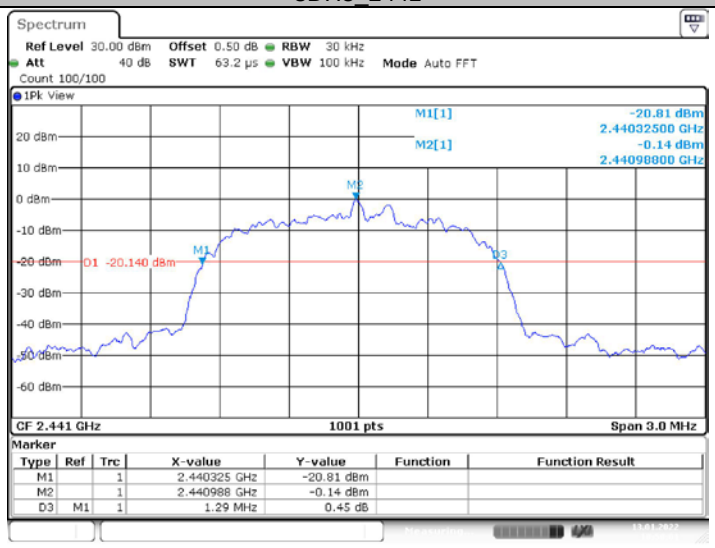
2DH5_2480



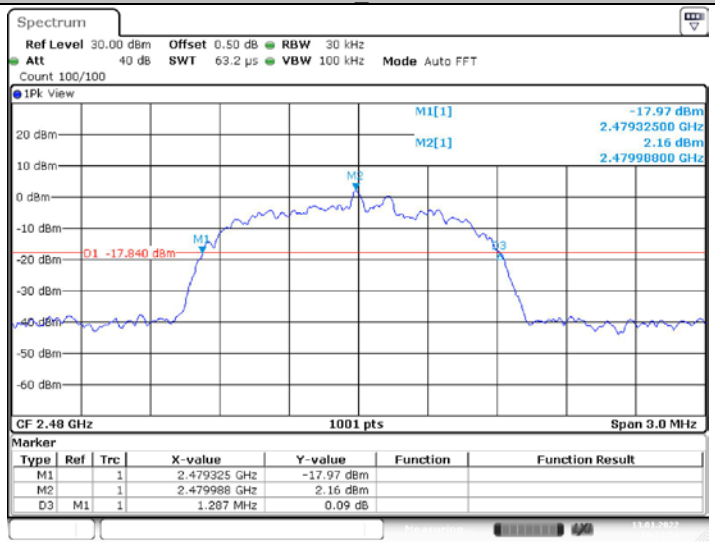
3DH5_2402



3DH5_2441



3DH5_2480



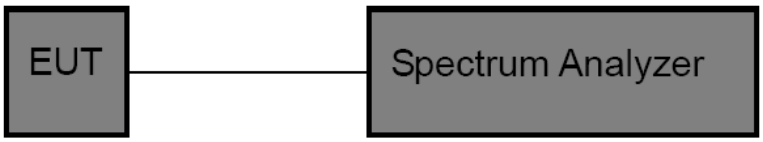
3.6. Channel Separation

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(1)/ RSS-247 5.1 b :

Test Item	Limit	Frequency Range(MHz)
Channel Separation	>25KHz or >two-thirds of the 20 dB bandwidth Which is greater	2400~2483.5

Test Configuration



Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. Spectrum Setting:
   (1) Set RBW = 100 kHz.
   (2) Set the video bandwidth (VBW) ≥ 3 RBW.
   (3) Detector = Peak.
   (4) Trace mode = Max hold.
   (5) Sweep = Auto couple.

Test Mode

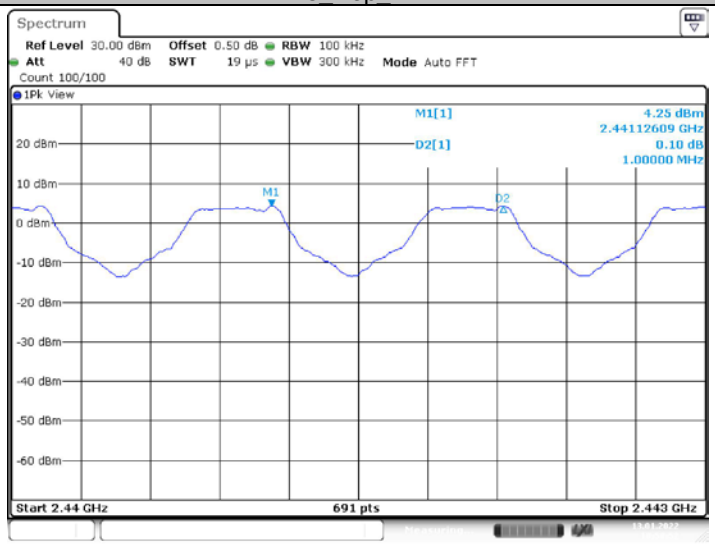
Please refer to the clause 2.4.

Test Results

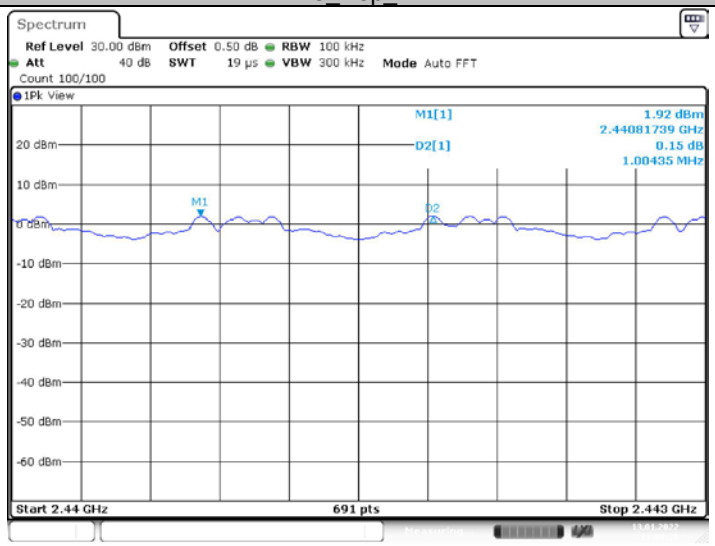
TestMode	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Hop_2441	1.000	≥0.940	PASS
2DH5	Hop_2441	1.004	≥0.860	PASS
3DH5	Hop_2441	1.000	≥0.860	PASS

Test plot as follows:

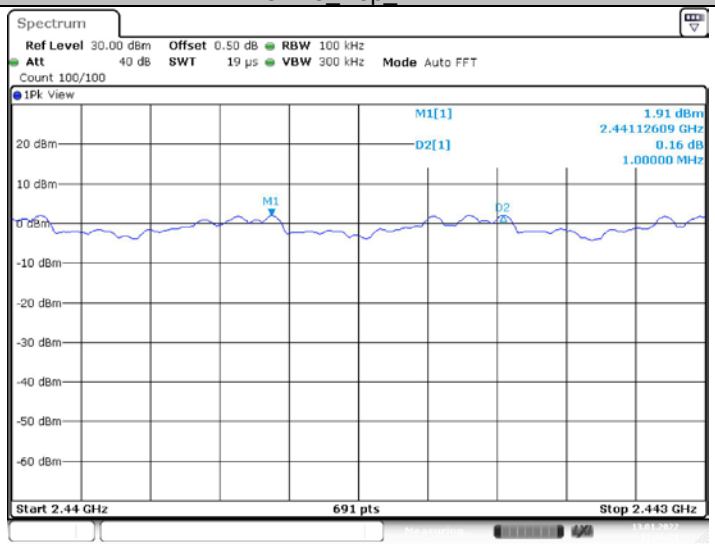
DH5_Hop_2441



2DH5_Hop_2441



3DH5_Hop_2441



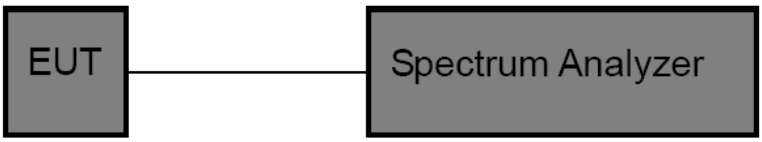
3.7. Number of Hopping Channel

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(iii)/ RSS-247 5.1 d:

Section	Test Item	Limit
15.247 (a)(iii)/ RSS-247 5.1 d:	Number of Hopping Channel	>15

Test Configuration



Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. Spectrum Setting:
   (1) Peak Detector: RBW=100 kHz, VBW□RBW, Sweep time= Auto.

Test Mode

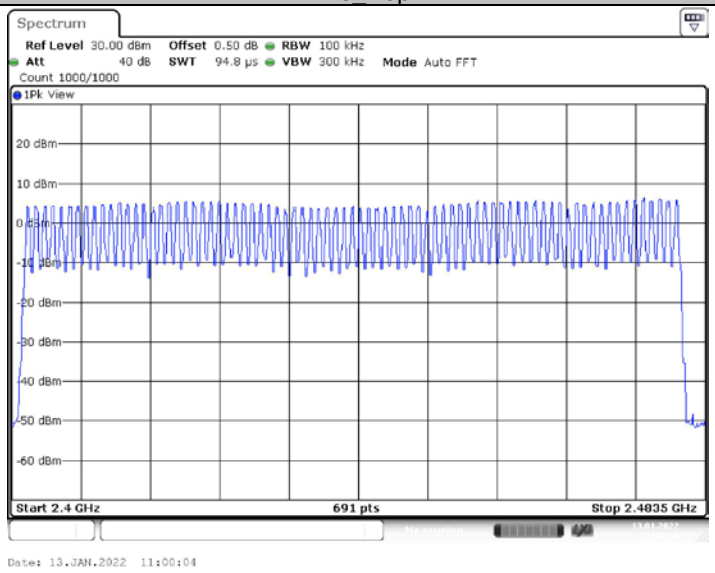
Please refer to the clause 2.4.

Test Result

TestMode	Channel	Result[Num]	Limit[Num]	Verdict
DH5	Hop	79	≥15	PASS
2DH5	Hop	79	≥15	PASS
3DH5	Hop	79	≥15	PASS

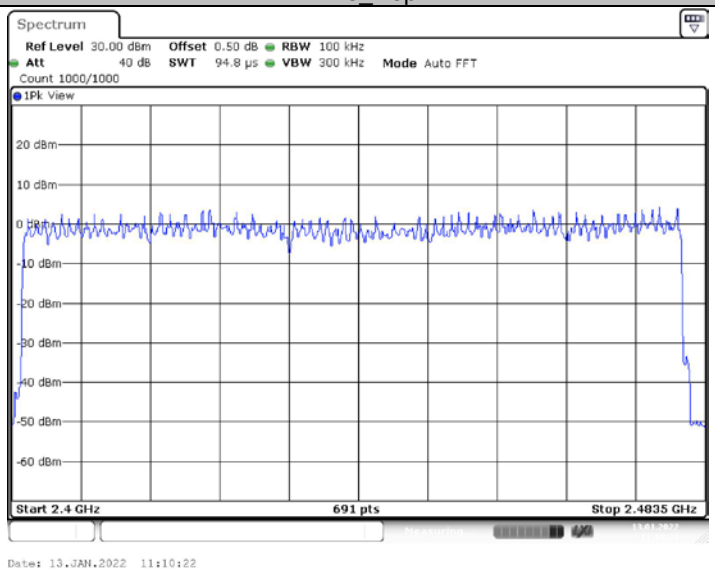
Test plot as follows:

DH5_Hop



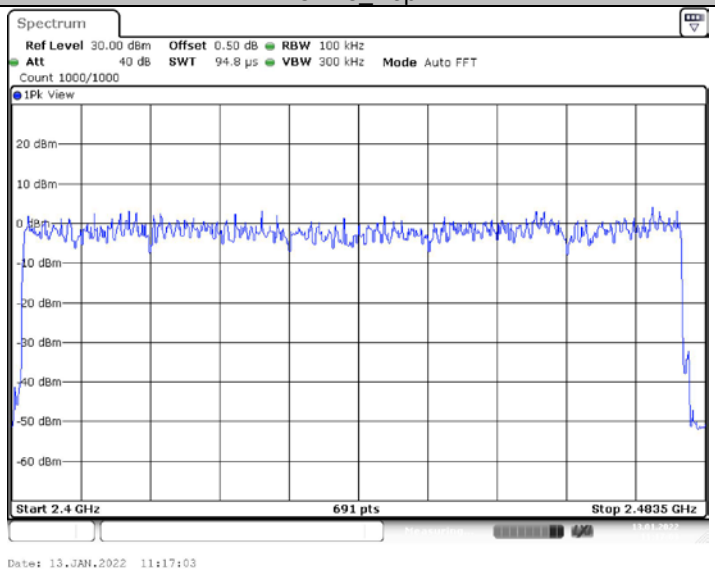
Date: 13.JAN.2022 11:00:04

2DH5_Hop



Date: 13.JAN.2022 11:10:22

3DH5_Hop



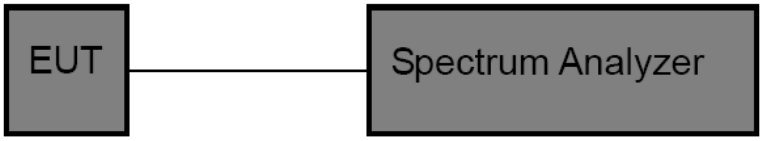
Date: 13.JAN.2022 11:17:03

3.8. Dwell Time

Limit

Section	Test Item	Limit
15.247(a)(iii)/ RSS-247 5.1 d	Average Time of Occupancy	0.4 sec

Test Configuration



Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. Spectrum Setting:
   (1) Spectrum Setting: RBW=1MHz, VBW□RBW.
   (2) Use video trigger with the trigger level set to enable triggering only on full pulses.
   (3) Sweep Time is more than once pulse time.
   (4) Set the center frequency on any frequency would be measure and set the frequency span to zero.
   (5) Measure the maximum time duration of one single pulse.
   (6) Set the EUT for packet transmitting.

Test Mode

Please refer to the clause 2.4.

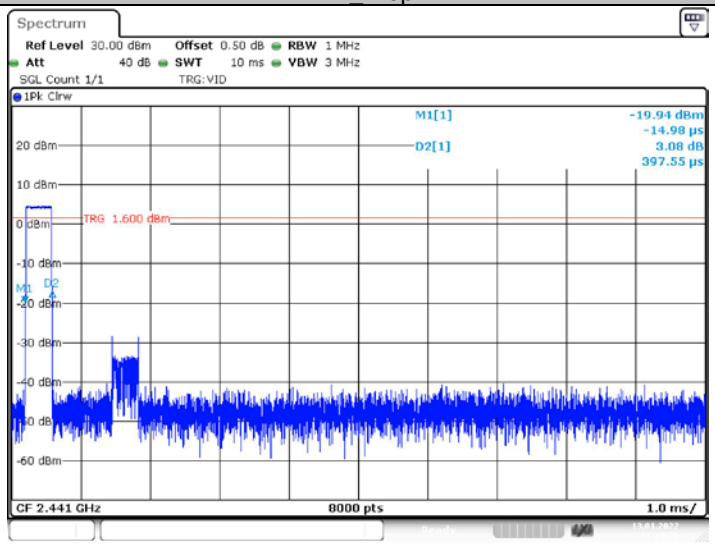
Test Result

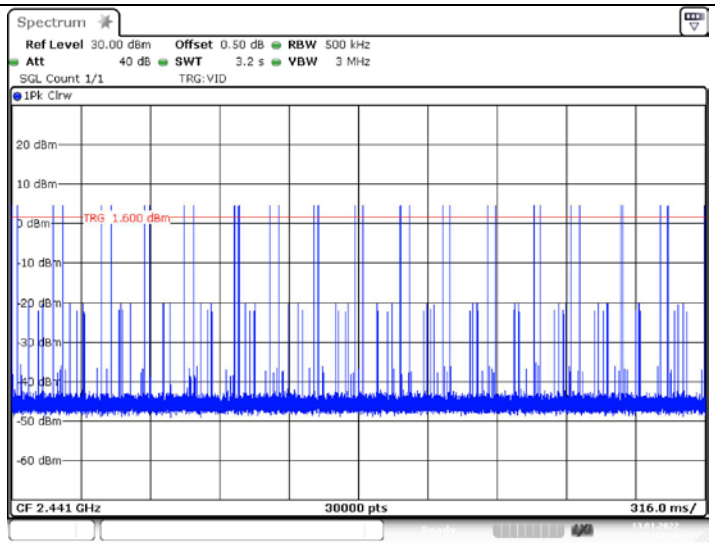
Modulation type	Channel	Channel (MHz)	Pulse Time (ms)	Total of Dwell (ms)	Period Time (ms)	Limit (Second)	Result
GFSK	DH1	2441	0.40	128	31.60	≤ 0.40	Pass
	DH3	2441	1.65	280	31.60		
	DH5	2441	2.89	308	31.60		
π/4-DQPSK	2DH1	2441	0.40	128	31.60	≤ 0.40	Pass
	2DH3	2441	1.65	280	31.60		
	2DH5	2441	2.90	309	31.60		
8-DPSK	3DH1	2441	0.40	128	31.60	≤ 0.40	Pass
	3DH3	2441	1.65	280	31.60		
	3DH5	2441	2.90	309	31.60		

Note: 1DH1/2DH1/3DH1 Total of Dwell = Pulse Time(1600/2)*31.6/79*
1DH3/2DH3/3DH3 Total of Dwell = Pulse Time(1600/4)*31.6/79*
1DH5/2DH5/3DH5 Total of Dwell = Pulse Time(1600/6)*31.6/79*

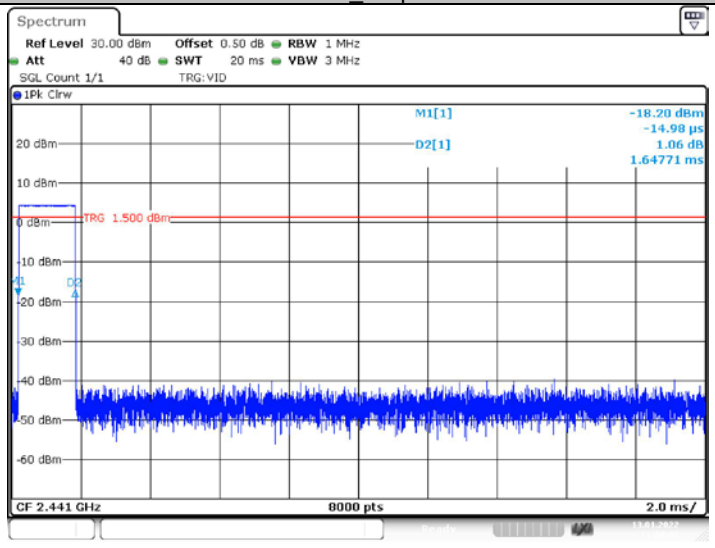
Test plot as follows:

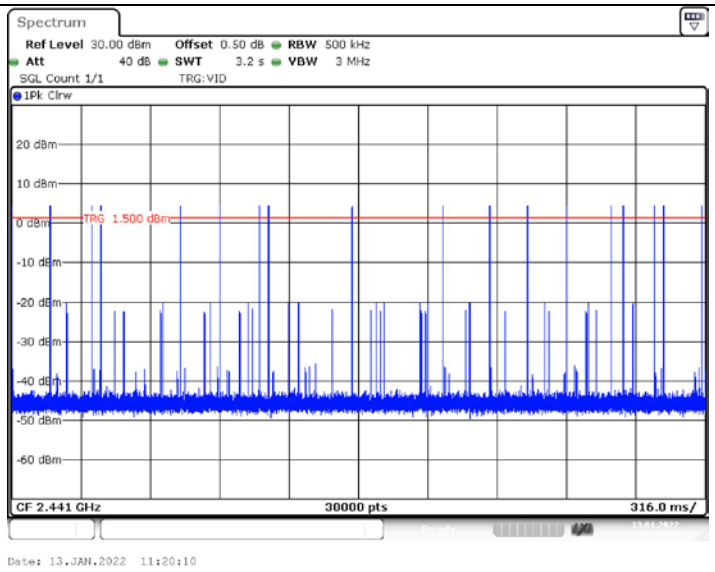
DH1_ Hop



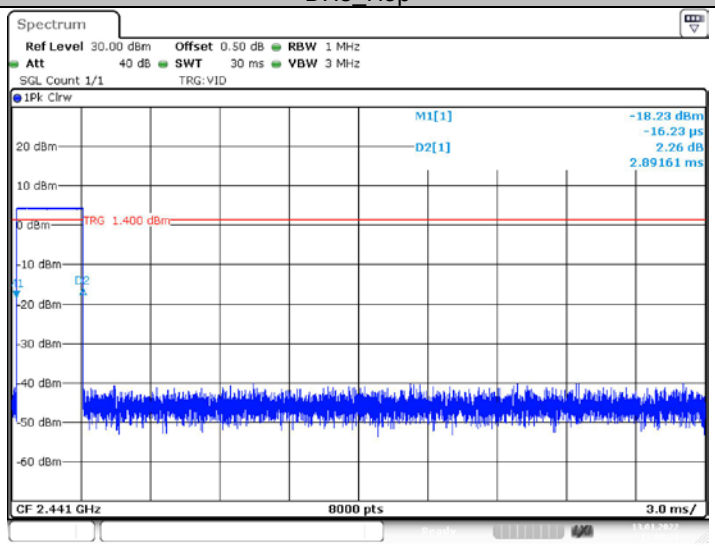


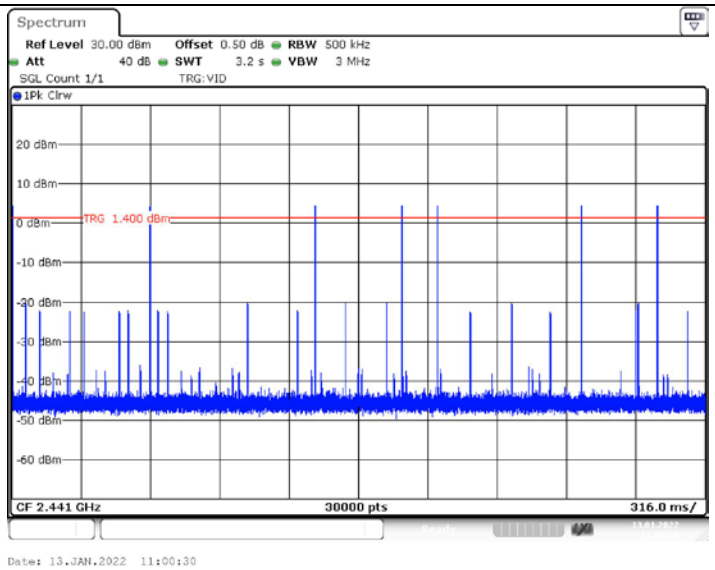
DH3_ Hop



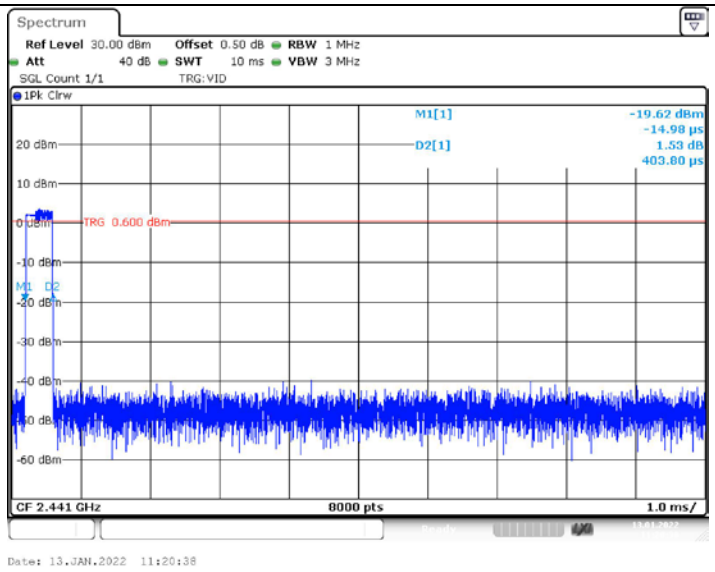


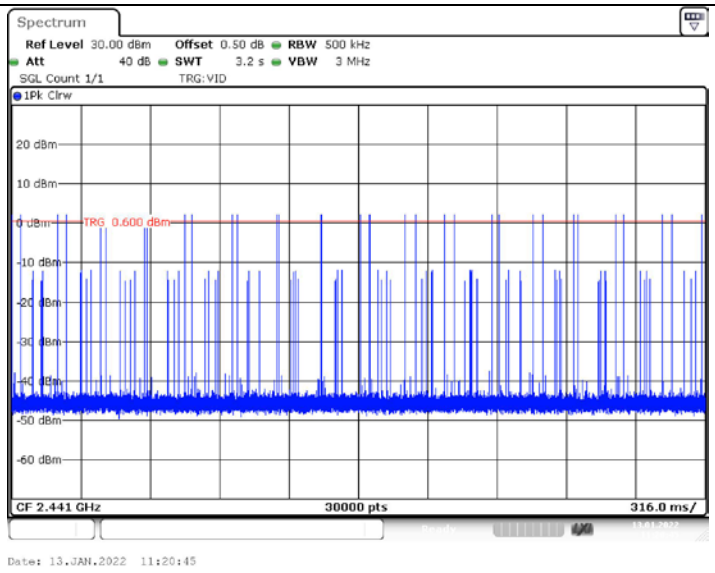
DH5_Hop



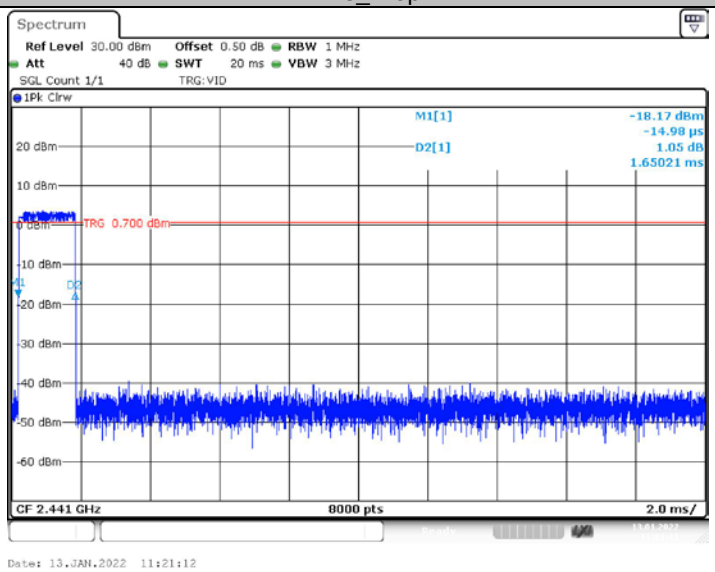


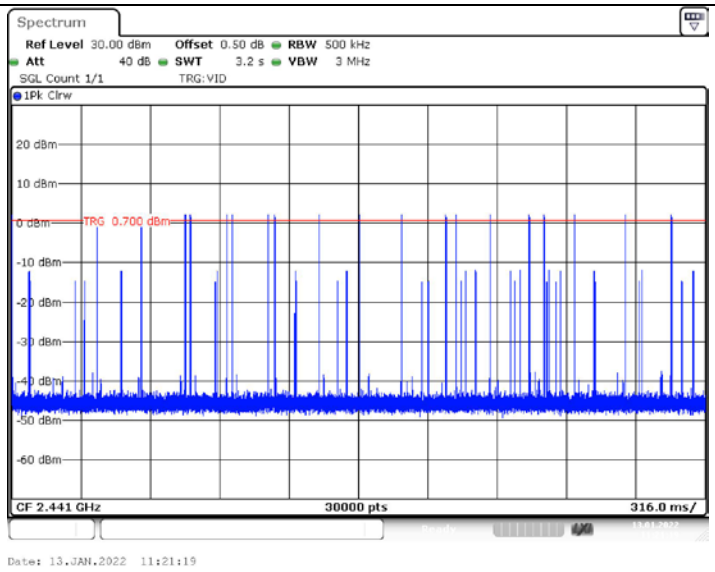
2DH1_ Hop


Spectrum
Ref Level 30.00 dBm Offset 0.50 dB RBW 1 MHz
Att 40 dB SWT 10 ms VBW 3 MHz
SGL Count 1/1 TRG:VID
1Pk Clrw
M1[1] -19.62 dBm
-14.98 µs
D2[1] 1.53 dB
403.80 µs
TRG 0.600 dBm
CF 2.441 GHz 8000 pts 1.0 ms/
Date: 13.JAN.2022 11:20:38

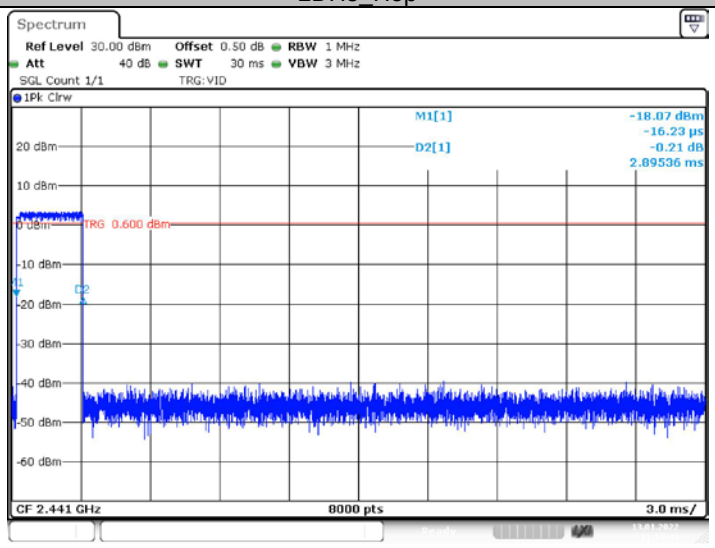

Spectrum
Ref Level 30.00 dBm Offset 0.50 dB RBW 500 kHz
Att 40 dB SWT 3.2 s VBW 3 MHz
SGL Count 1/1 TRG:VID
1Pk Clrw
TRG 0.600 dBm
CF 2.441 GHz 30000 pts 316.0 ms/
Date: 13.JAN.2022 11:20:45

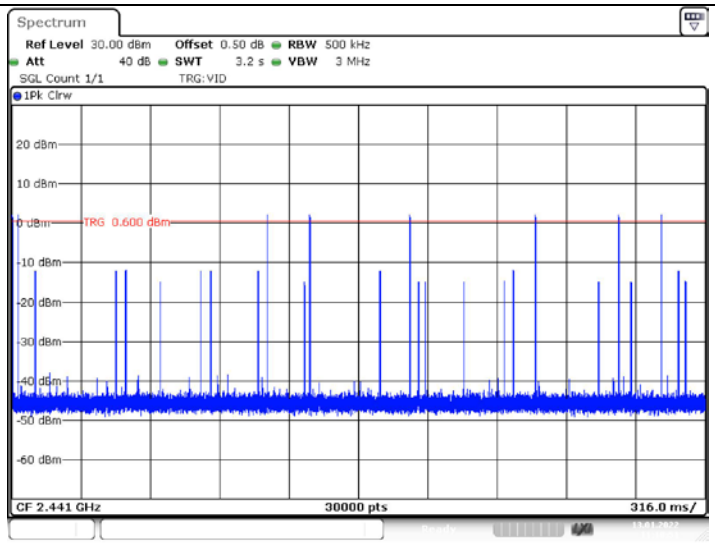
2DH3_ Hop


Spectrum
Ref Level 30.00 dBm Offset 0.50 dB RBW 1 MHz
Att 40 dB SWT 20 ms VBW 3 MHz
SGL Count 1/1 TRG:VID
1Pk Clrw
M1[1] -18.17 dBm
-14.98 µs
D2[1] 1.05 dB
1.65021 ms
TRG 0.700 dBm
CF 2.441 GHz 8000 pts 2.0 ms/
Date: 13.JAN.2022 11:21:12

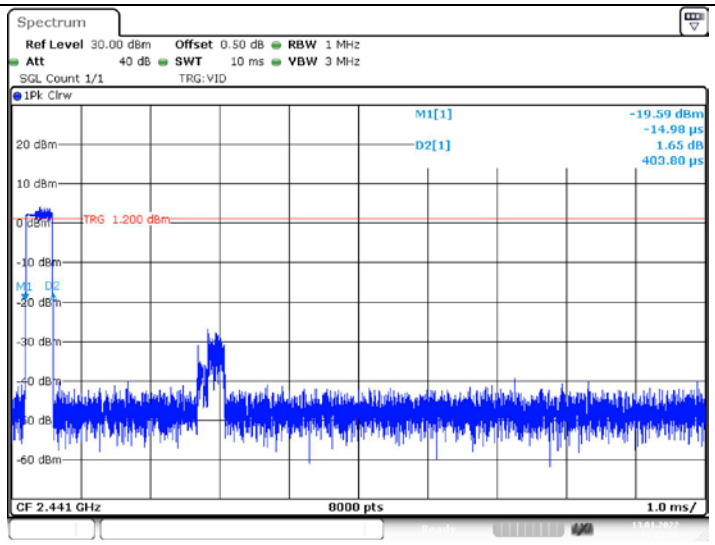


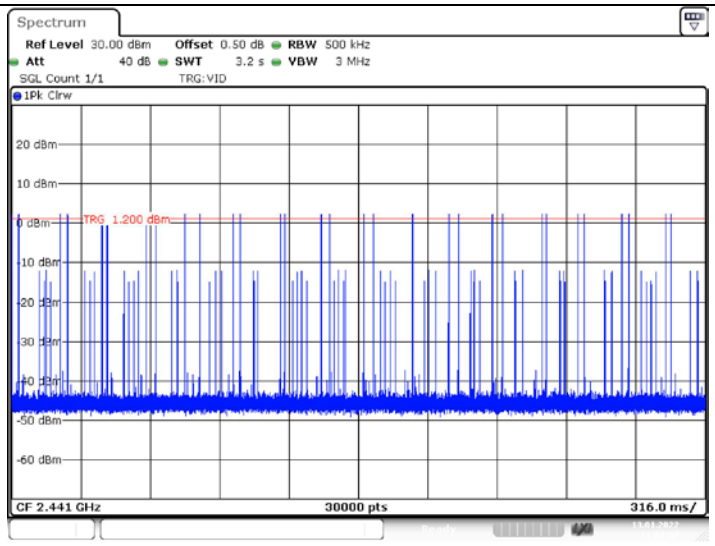
2DH5_Hop



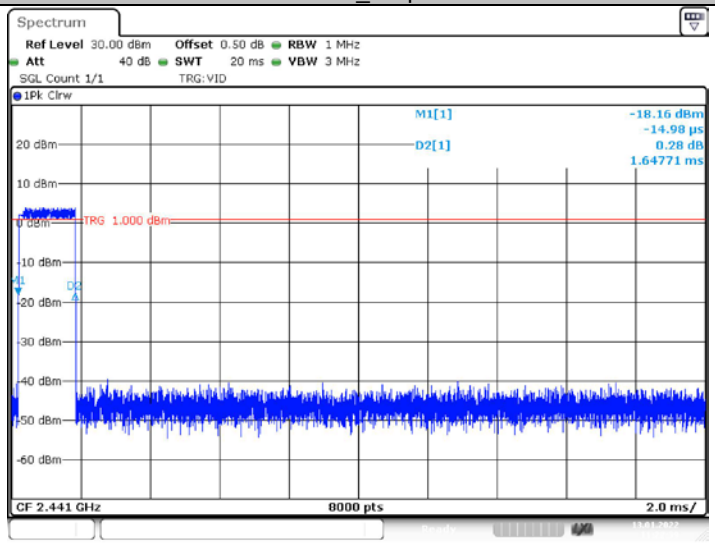


3DH1_ Hop


Spectrum
Ref Level 30.00 dBm Offset 0.50 dB RBW 1 MHz
Att 40 dB SWT 10 ms VBW 3 MHz
SGL Count 1/1 TRG:VID
1Pk Clrw
M1[1] -19.59 dBm
-14.98 µs
D2[1] 1.65 dB
403.80 µs
TRG 1.200 dBm
CF 2.441 GHz 8000 pts 1.0 ms/
Date: 13.JAN.2022 11:22:00


Spectrum
Ref Level 30.00 dBm Offset 0.50 dB RBW 500 kHz
Att 40 dB SWT 3.2 s VBW 3 MHz
SGL Count 1/1 TRG:VID
1Pk Clrw
TRG 1.200 dBm
CF 2.441 GHz 30000 pts 316.0 ms/
Date: 13.JAN.2022 11:22:08

3DH3_ Hop


Spectrum
Ref Level 30.00 dBm Offset 0.50 dB RBW 1 MHz
Att 40 dB SWT 20 ms VBW 3 MHz
SGL Count 1/1 TRG:VID
1Pk Clrw
M1[1] -18.16 dBm
-14.98 µs
D2[1] 0.28 dB
1.64771 ms
TRG 1.000 dBm
CF 2.441 GHz 8000 pts 2.0 ms/
Date: 13.JAN.2022 11:22:39