

# RF Test Data for Bluetooth (BDR+EDR) (Conducted Measurements)

General Description of EUT	
<b>Product Name:</b>	Heltec WiFi Kit LoRa Node
<b>Test Model:</b>	HTIT-WS
<b>Sample ID:</b>	RW-C-202202-0173-1-2#
Environmental Conditions	
<b>Temperature:</b>	23.8°C
<b>Relative Humidity:</b>	48%
<b>Test Voltage:</b>	DC 5V
<b>Test Engineer:</b>	Huang jian ping
Note: For a more detailed features description, please refer to the report TBR-C-202202-0173-12	

## Contents

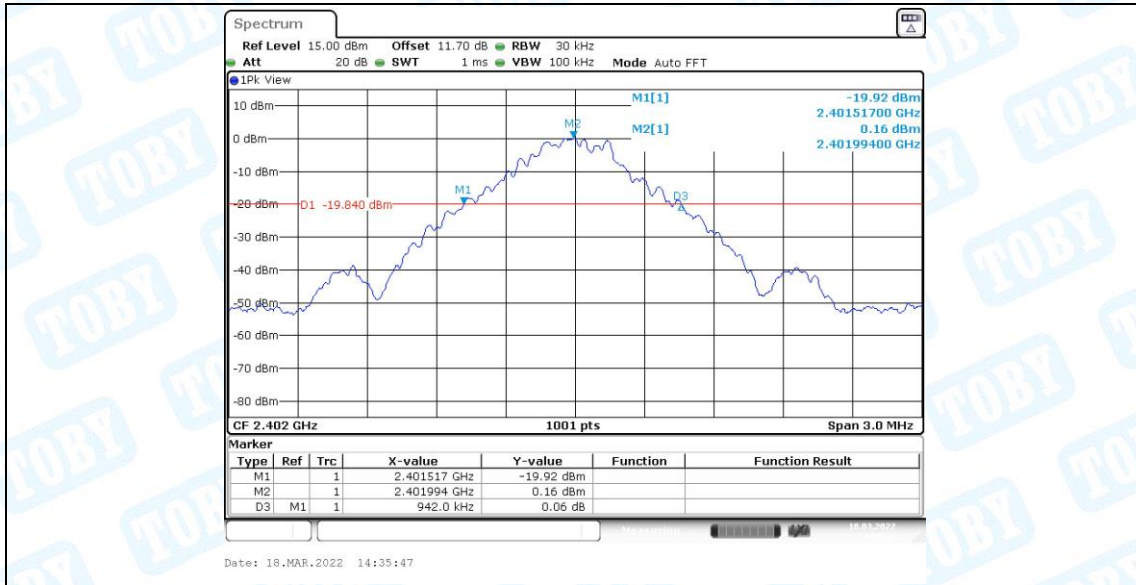
1. 20dB Emission Bandwidth.....	3
1.1. Test Result .....	3
1.2. Test Graphs .....	4
2. Occupied Channel Bandwidth.....	7
2.1. Test Result .....	7
2.2. Test Graphs .....	8
3. Maximum conducted output power.....	11
3.1. Test Result .....	11
3.2. Test Graphs .....	12
4. Carrier frequency separation .....	15
4.1. Test Result .....	15
4.2. Test Graphs .....	16
5. Time of occupancy .....	17
5.1. Test Result .....	17
5.2. Test Graphs .....	18
6. Number of hopping channels.....	21
6.1. Test Result .....	21
6.2. Test Graphs .....	22
7. Band edge measurements .....	23
7.1. Test Result .....	23
7.2. Test Graphs .....	24
8. Conducted Spurious Emission.....	28
8.1. Test Result .....	28
8.2. Test Graphs .....	29
9. Emissions in Restricted Bands.....	38
9.1. Test Result .....	38
9.2. Test Graphs .....	39

## 1. 20dB Emission Bandwidth

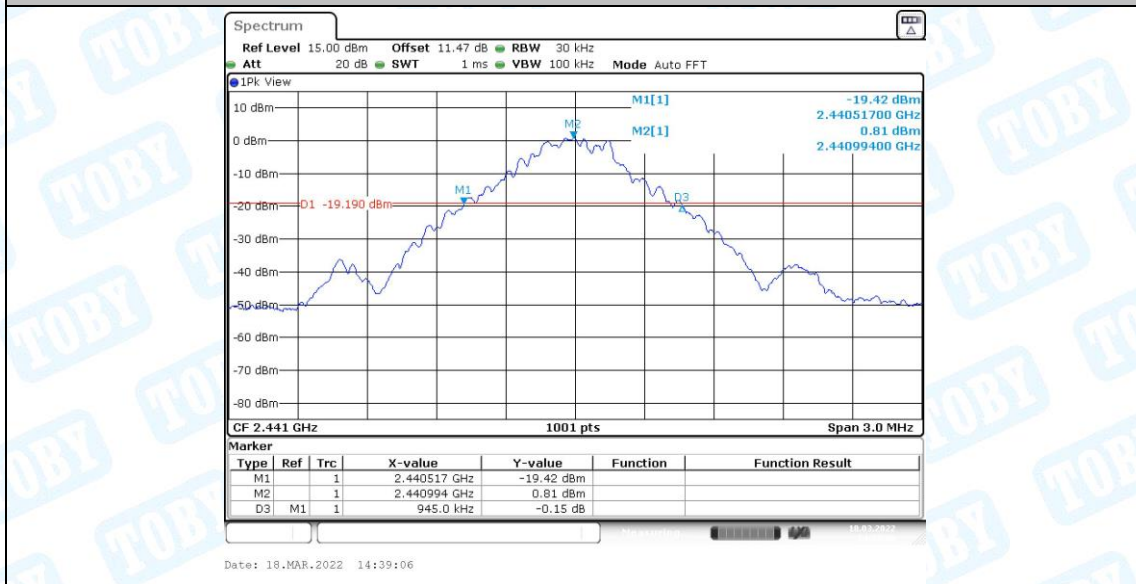
### 1.1. Test Result

TestMode	Antenna	Channel	20db EBW[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.94	---	---
		2441	0.95	---	---
		2480	0.94	---	---
2DH5	Ant1	2402	1.32	---	---
		2441	1.32	---	---
		2480	1.32	---	---
3DH5	Ant1	2402	1.31	---	---
		2441	1.30	---	---
		2480	1.31	---	---

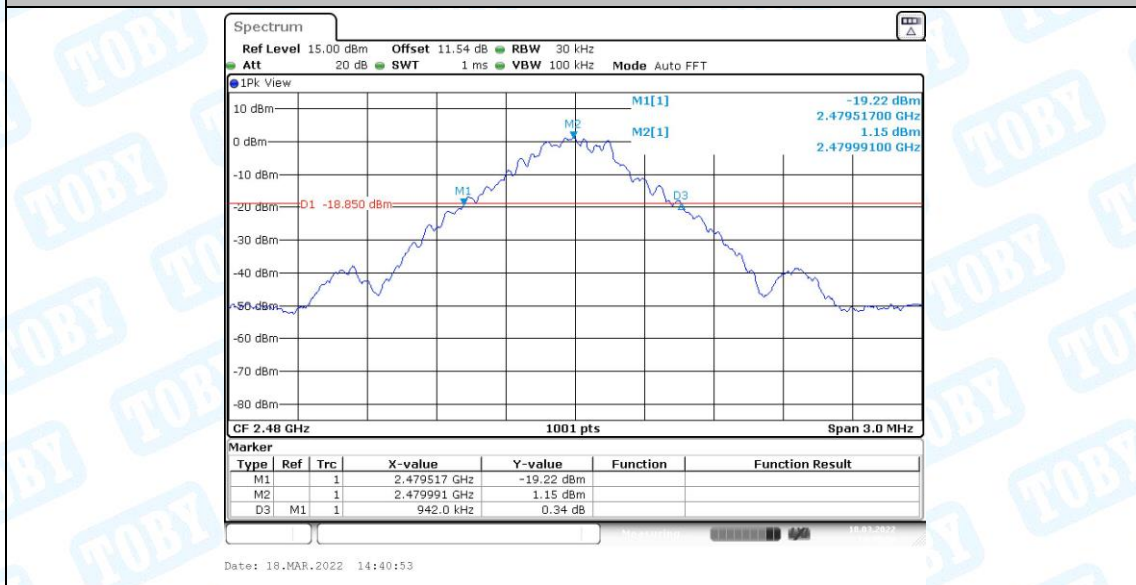
## 1.2. Test Graphs



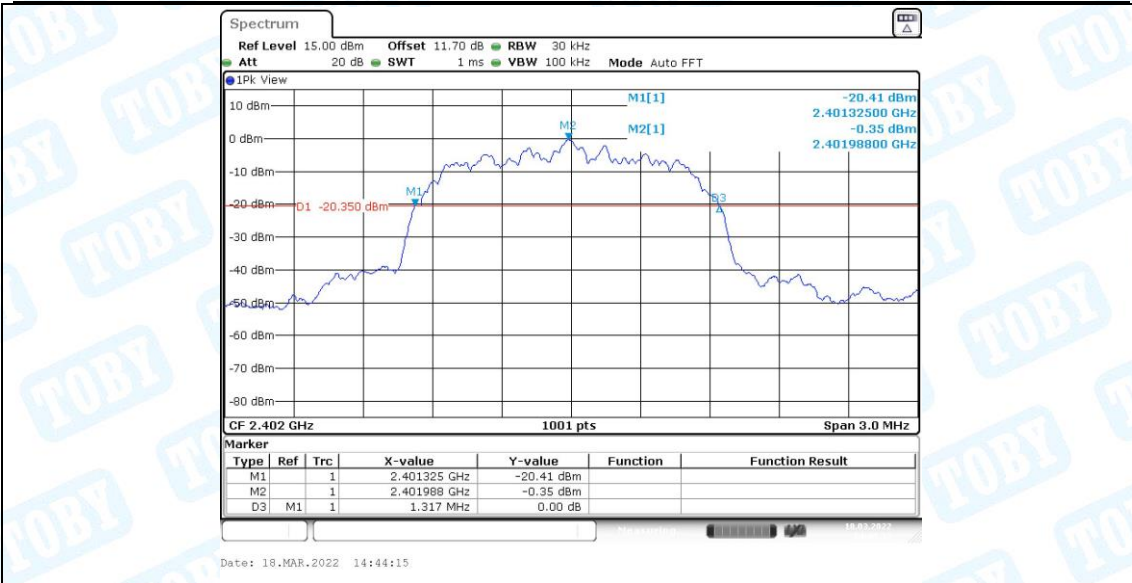
DH5\_Ant1\_2402



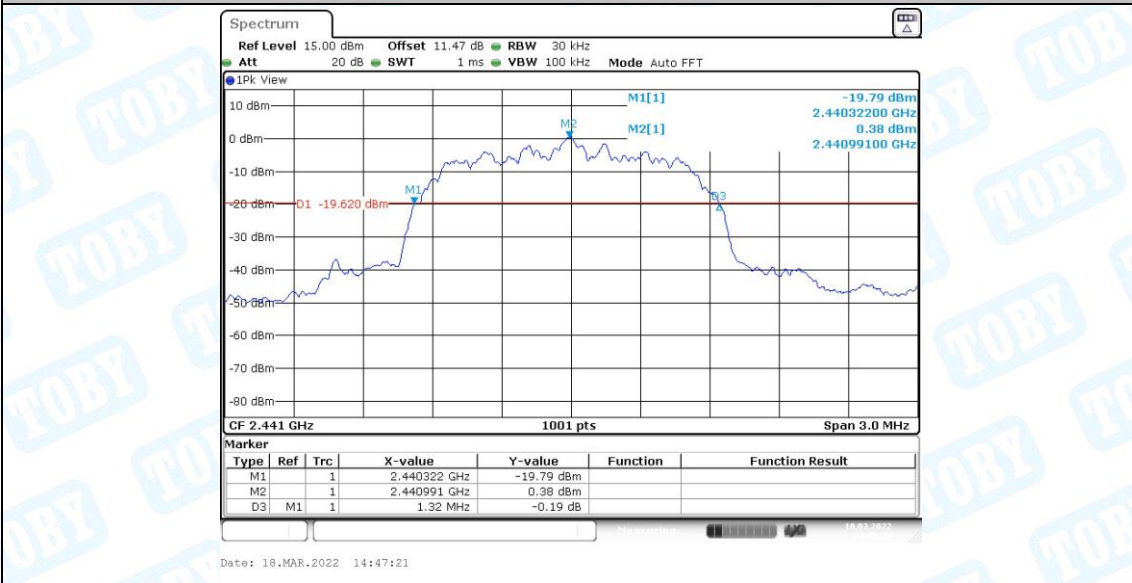
DH5\_Ant1\_2441



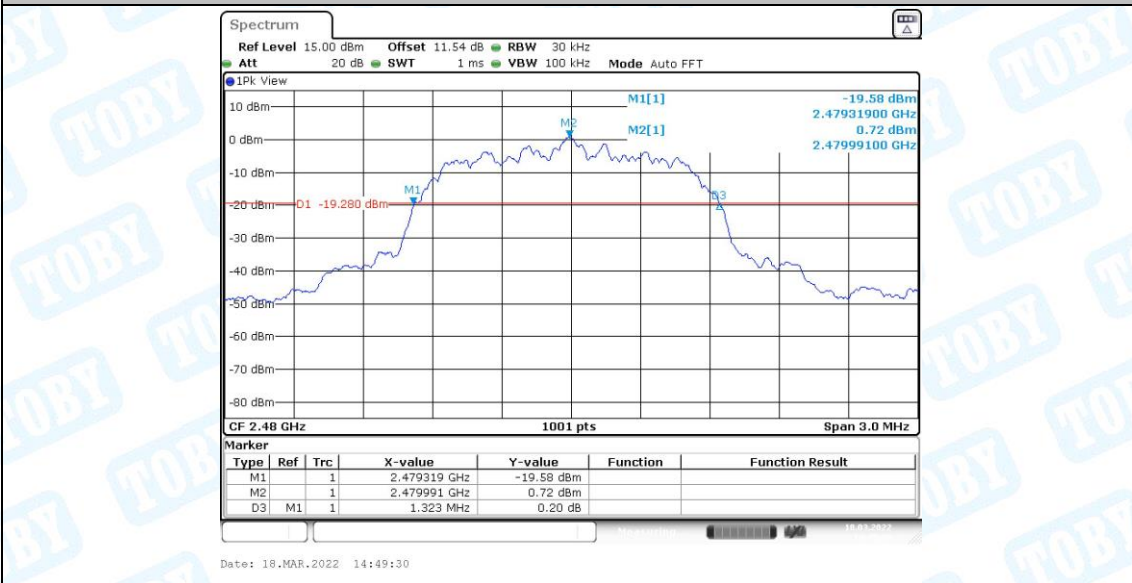
DH5\_Ant1\_2480



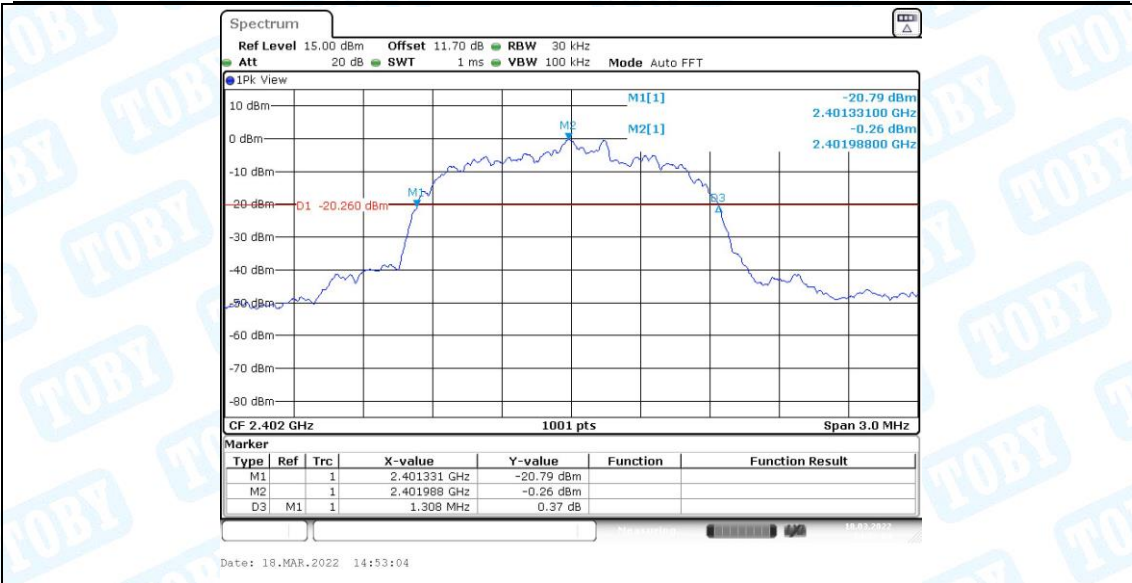
2DH5\_Ant1\_2402



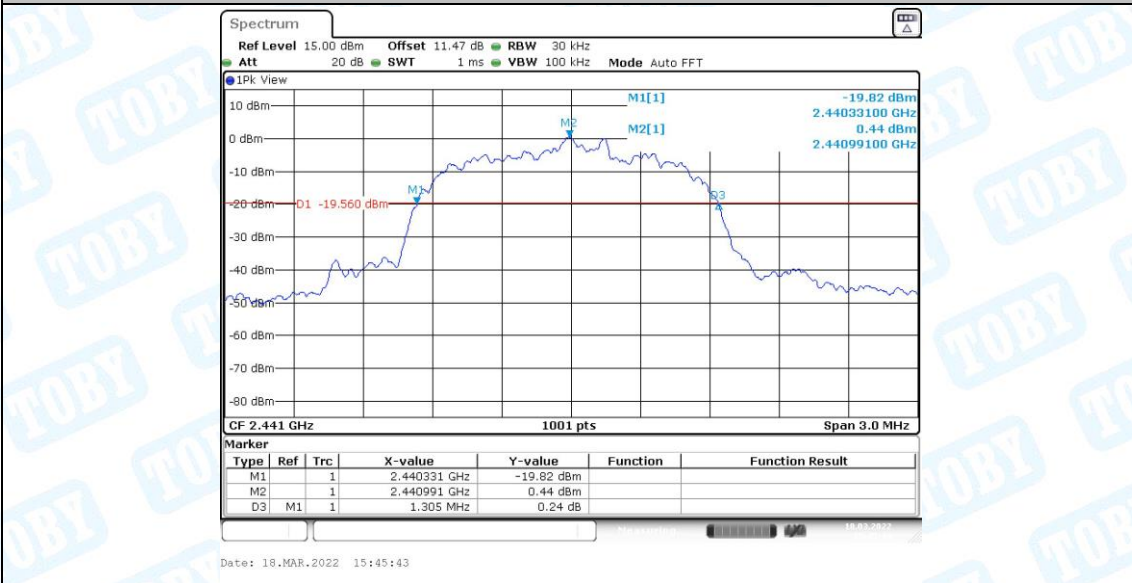
2DH5\_Ant1\_2441



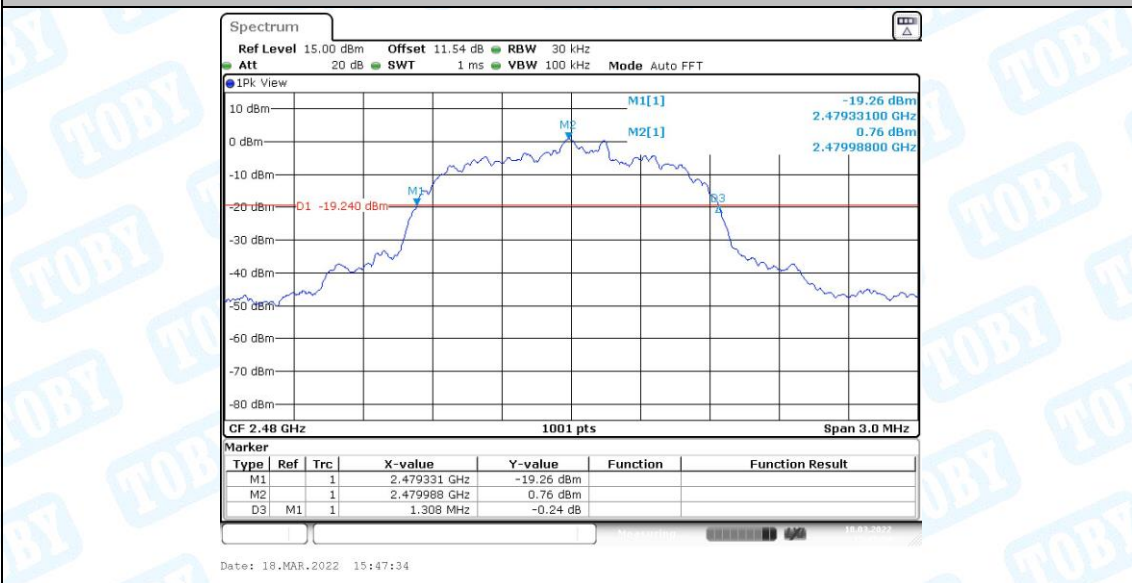
2DH5\_Ant1\_2480



### 3DH5\_Ant1\_2402



### 3DH5\_Ant1\_2441



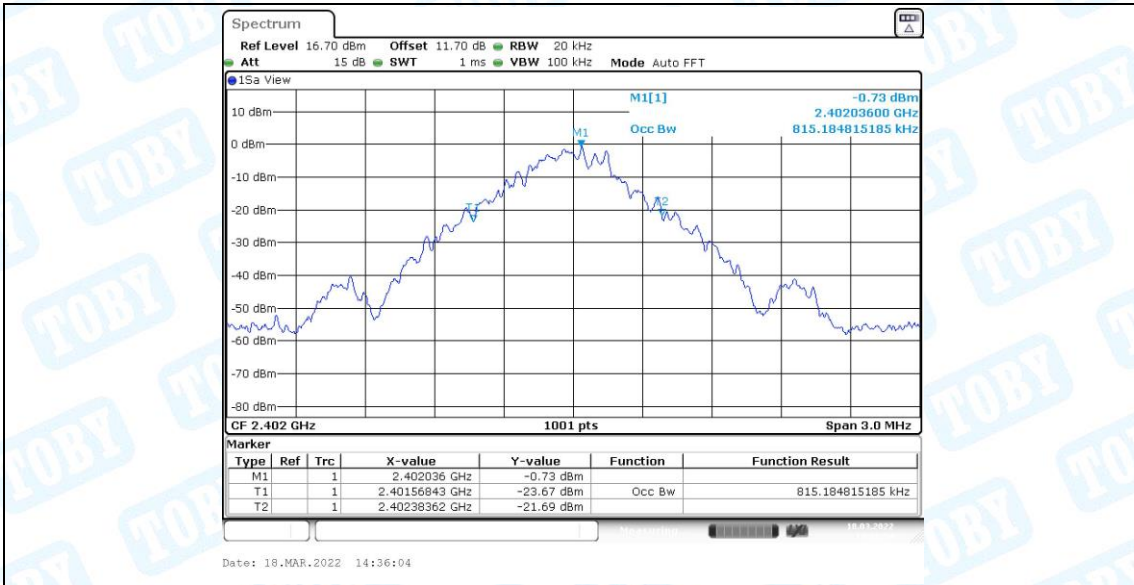
### 3DH5\_Ant1\_2480

## 2. Occupied Channel Bandwidth

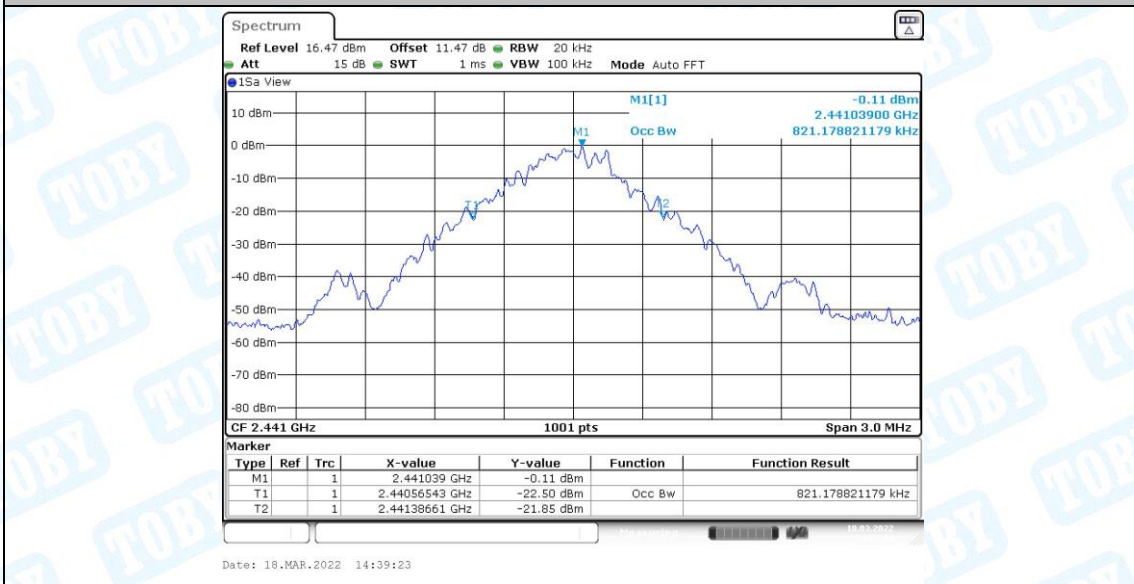
### 2.1. Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.815	2401.568	2402.384	---	---
		2441	0.821	2440.565	2441.387	---	---
		2480	0.824	2479.562	2480.387	---	---
2DH5	Ant1	2402	1.178	2401.392	2402.569	---	---
		2441	1.178	2440.392	2441.569	---	---
		2480	1.184	2479.389	2480.572	---	---
3DH5	Ant1	2402	1.178	2401.392	2402.569	---	---
		2441	1.178	2440.392	2441.569	---	---
		2480	1.187	2479.386	2480.572	---	---

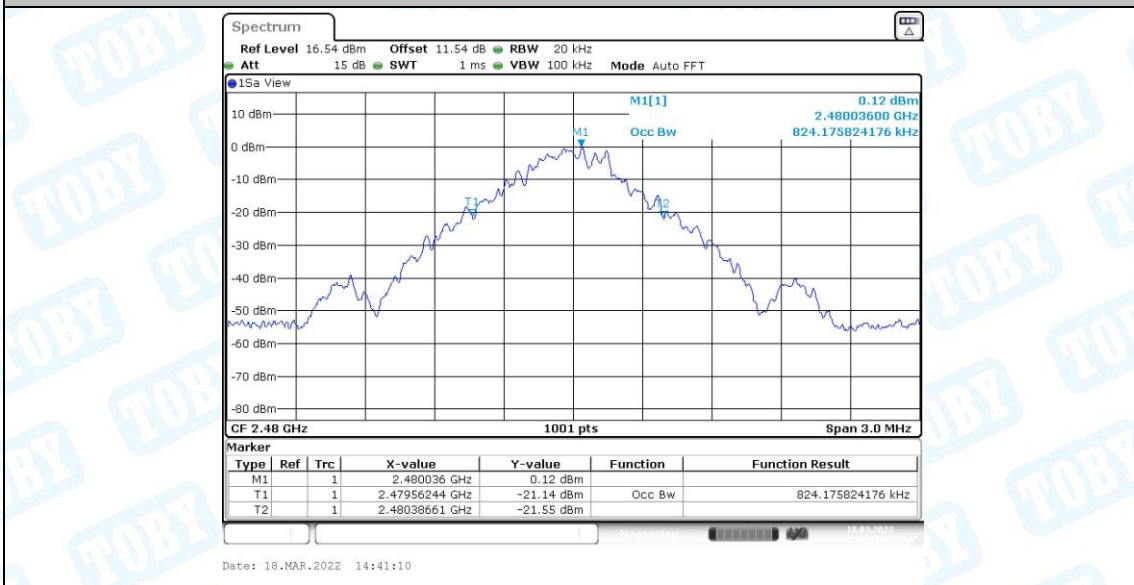
## 2.2. Test Graphs



DH5\_Ant1\_2402

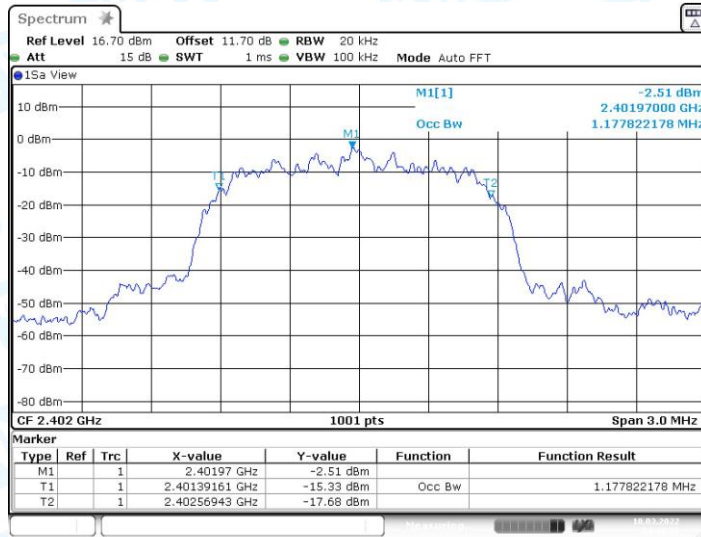


DH5\_Ant1\_2441

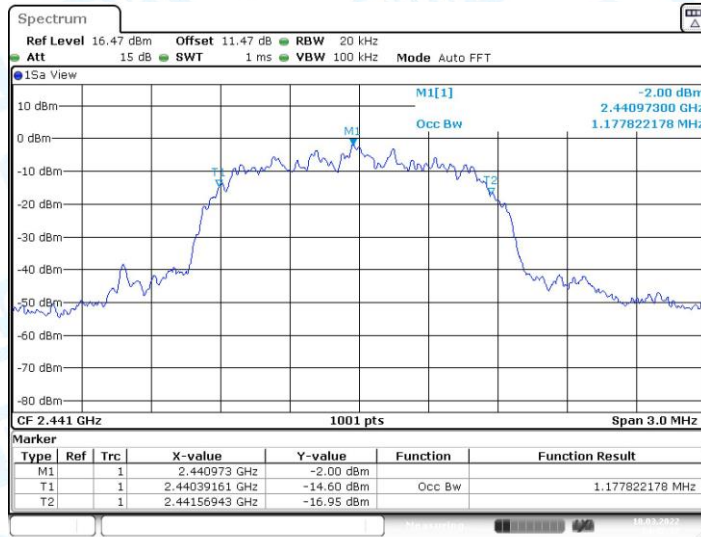


DH5\_Ant1\_2480





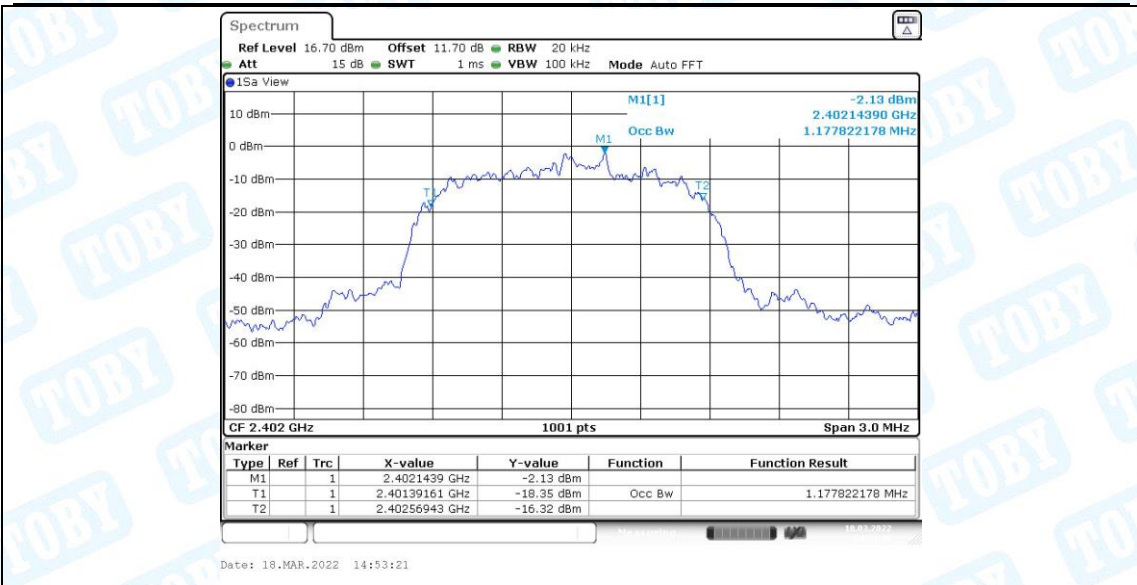
### 2DH5\_Ant1\_2402



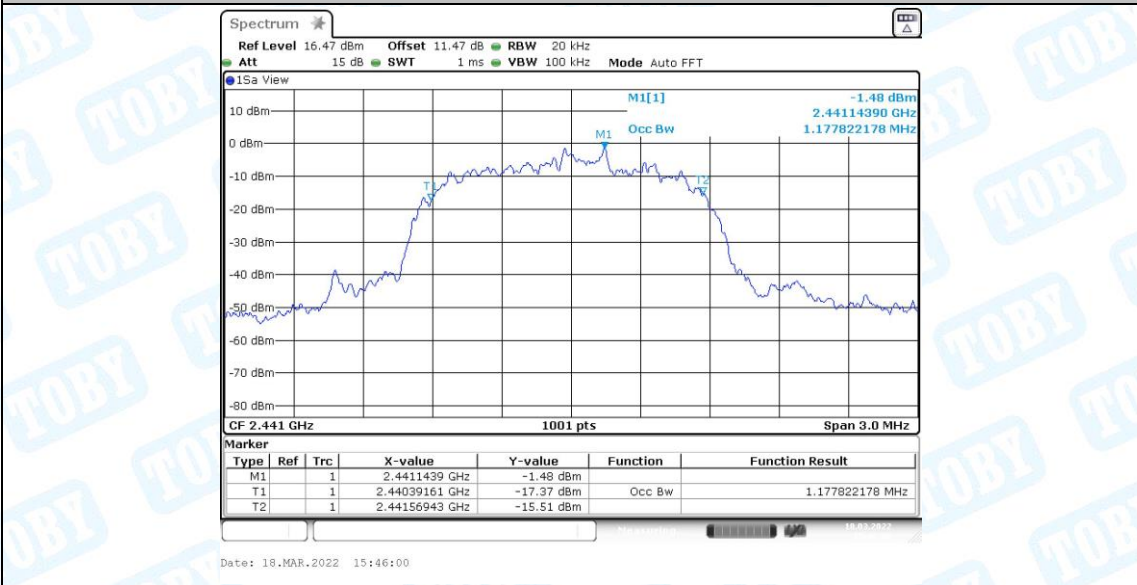
### 2DH5\_Ant1\_2441



### 2DH5\_Ant1\_2480



### 3DH5\_Ant1\_2402



### 3DH5\_Ant1\_2441



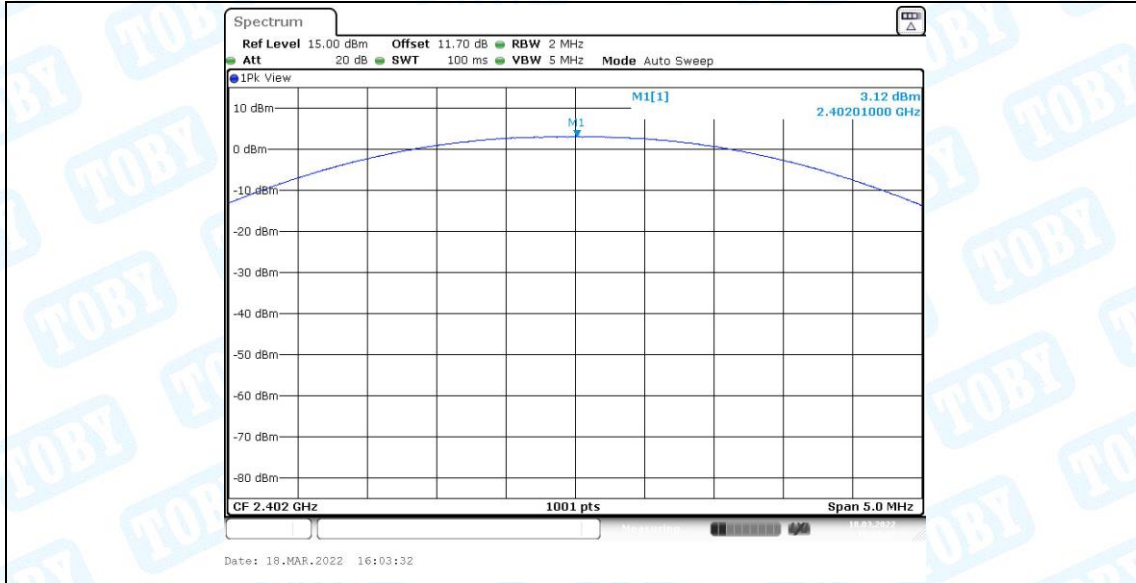
### 3DH5\_Ant1\_2480

### 3. Maximum conducted output power

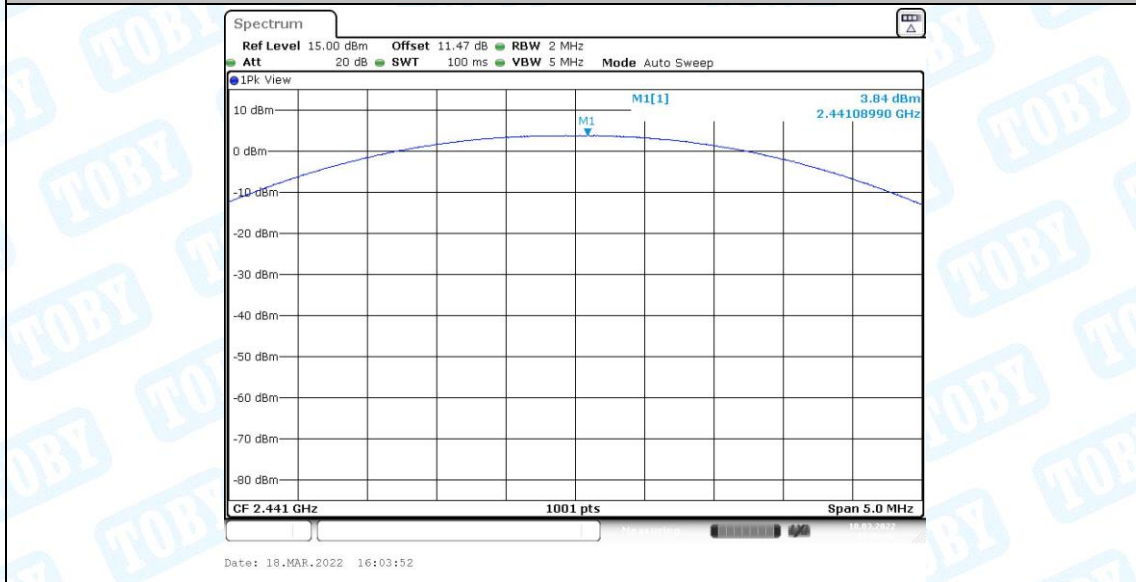
#### 3.1. Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	3.12	≤21	PASS
		2441	3.84	≤21	PASS
		2480	4.09	≤21	PASS
2DH5	Ant1	2402	5.2	≤21	PASS
		2441	5.89	≤21	PASS
		2480	6.14	≤21	PASS
3DH5	Ant1	2402	5.61	≤21	PASS
		2441	6.31	≤21	PASS
		2480	6.52	≤21	PASS

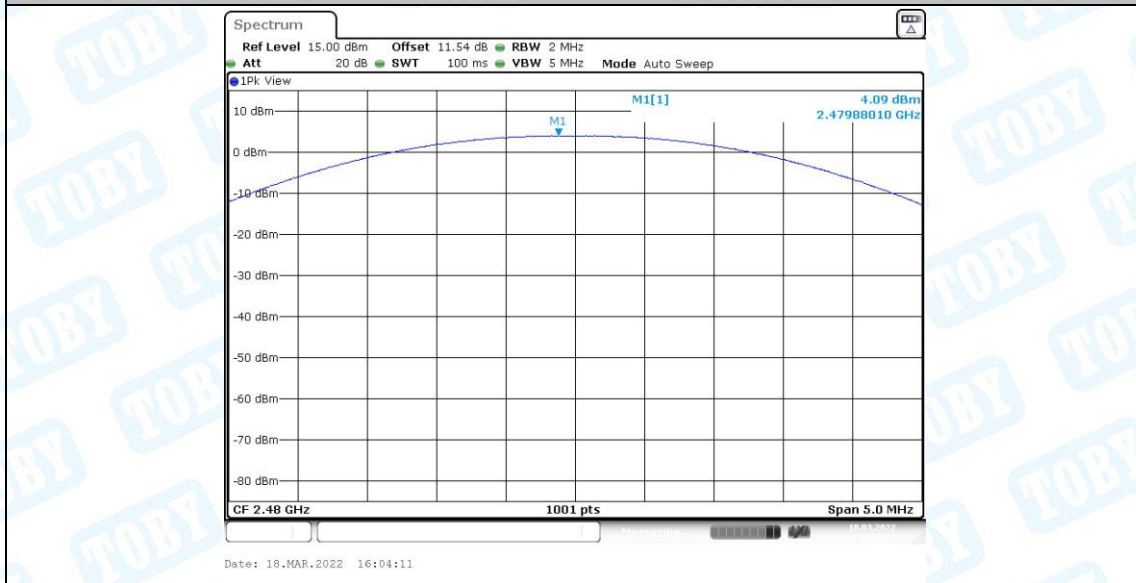
### 3.2. Test Graphs



DH5\_Ant1\_2402



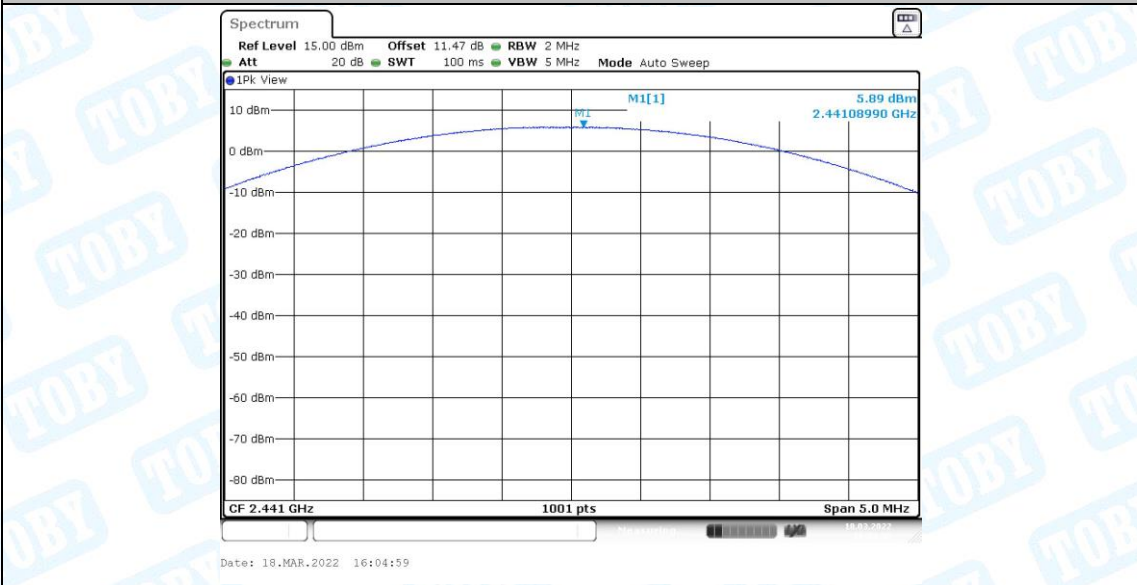
DH5\_Ant1\_2441



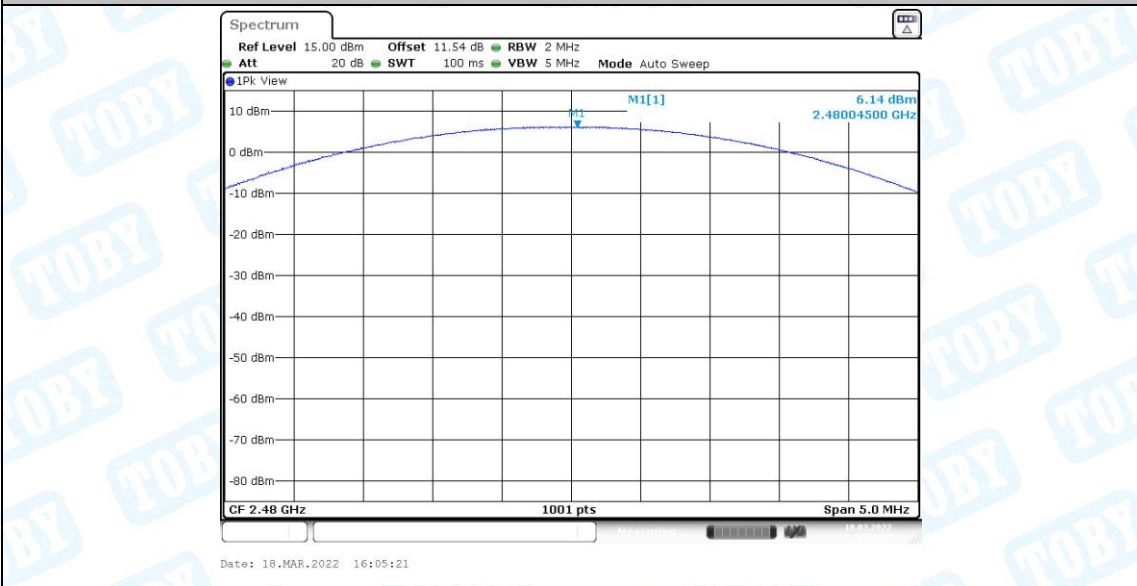
DH5\_Ant1\_2480



2DH5\_Ant1\_2402



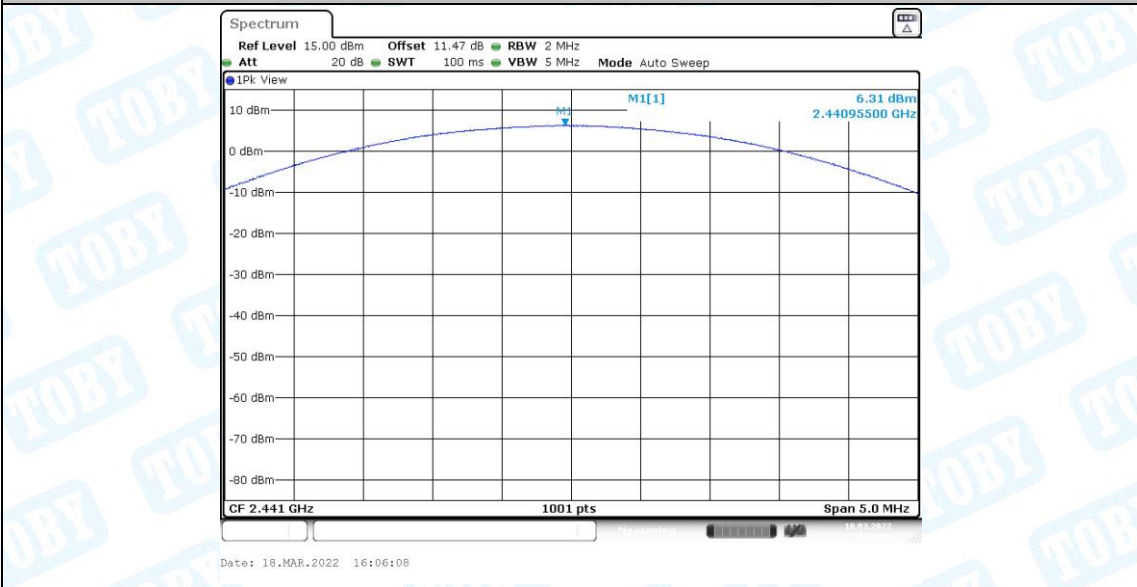
2DH5\_Ant1\_2441



2DH5\_Ant1\_2480



3DH5\_Ant1\_2402



3DH5\_Ant1\_2441



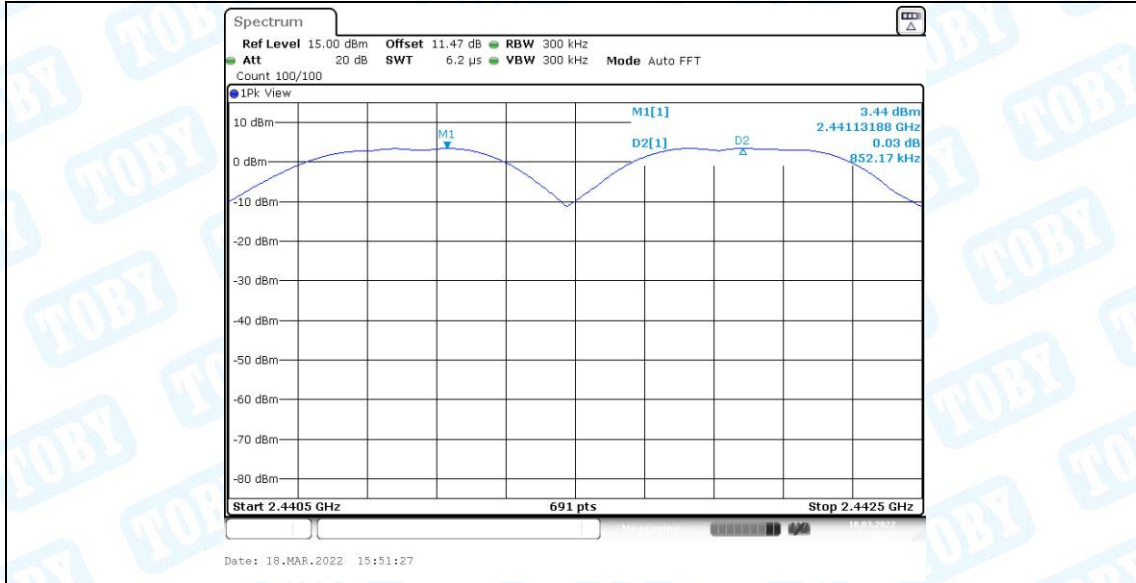
3DH5\_Ant1\_2480

## 4. Carrier frequency separation

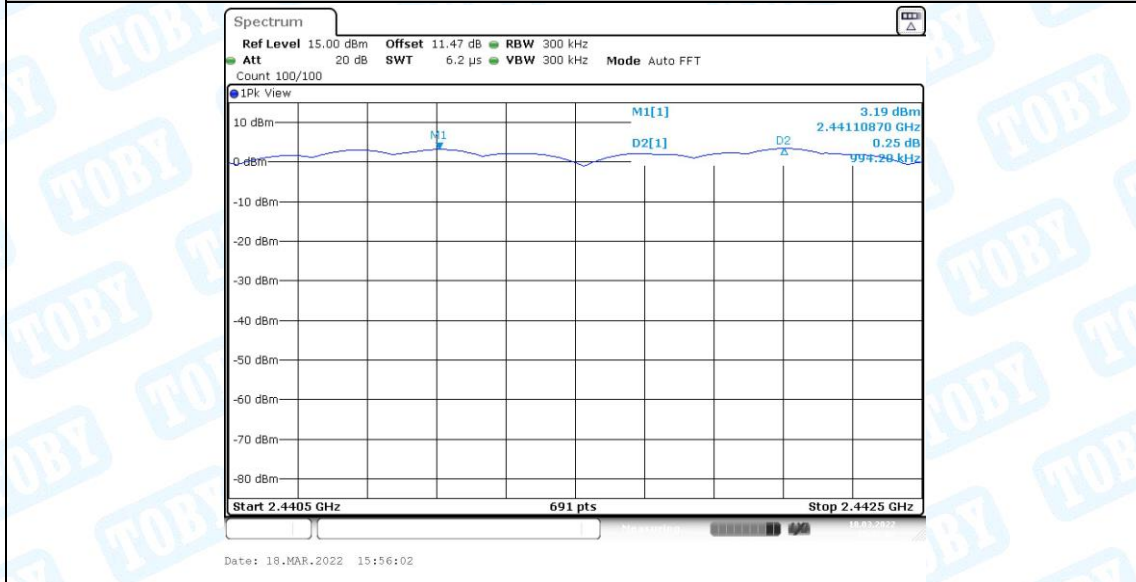
### 4.1. Test Result

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.852	≥0.633	PASS
2DH5	Ant1	Hop	0.994	≥0.880	PASS
3DH5	Ant1	Hop	0.93	≥0.873	PASS

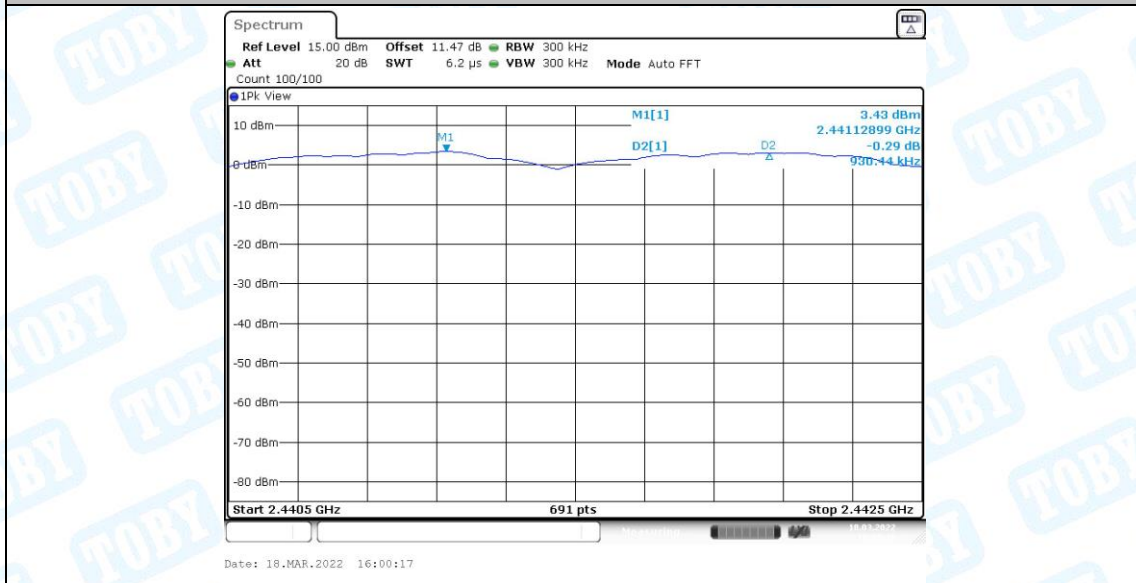
### 4.2. Test Graphs



DH5\_Ant1\_Hop



2DH5\_Ant1\_Hop



3DH5\_Ant1\_Hop

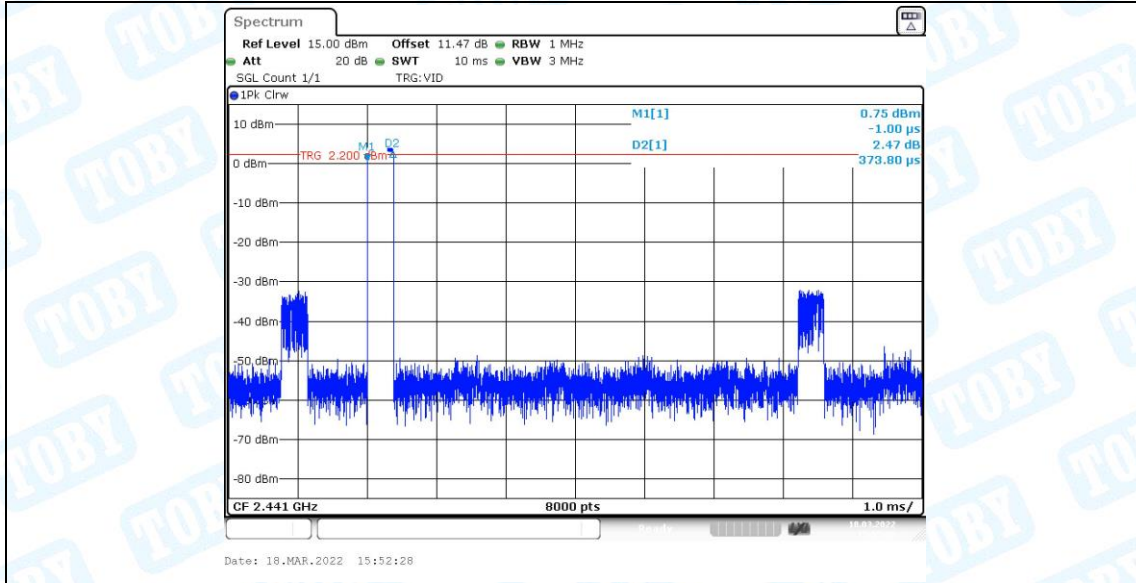


## 5. Time of occupancy

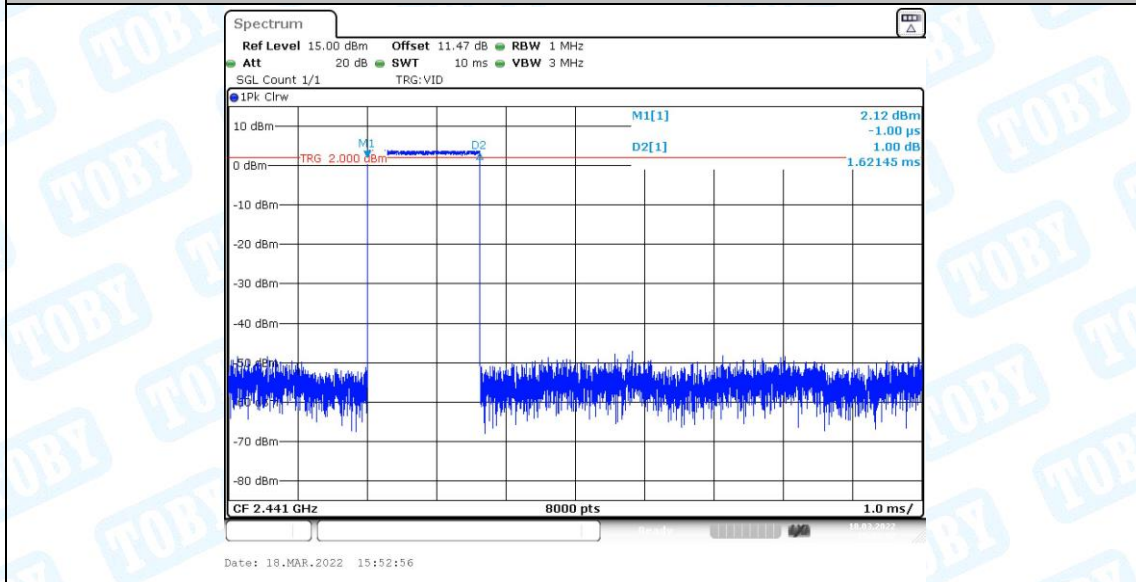
### 5.1. Test Result

TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.37	320	0.12	≤0.4	PASS
DH3	Ant1	Hop	1.62	160	0.259	≤0.4	PASS
DH5	Ant1	Hop	2.86	106.67	0.305	≤0.4	PASS
2DH1	Ant1	Hop	0.39	320	0.124	≤0.4	PASS
2DH3	Ant1	Hop	1.63	160	0.261	≤0.4	PASS
2DH5	Ant1	Hop	2.87	106.67	0.306	≤0.4	PASS
3DH1	Ant1	Hop	0.39	320	0.123	≤0.4	PASS
3DH3	Ant1	Hop	1.63	160	0.261	≤0.4	PASS
3DH5	Ant1	Hop	2.87	106.67	0.306	≤0.4	PASS

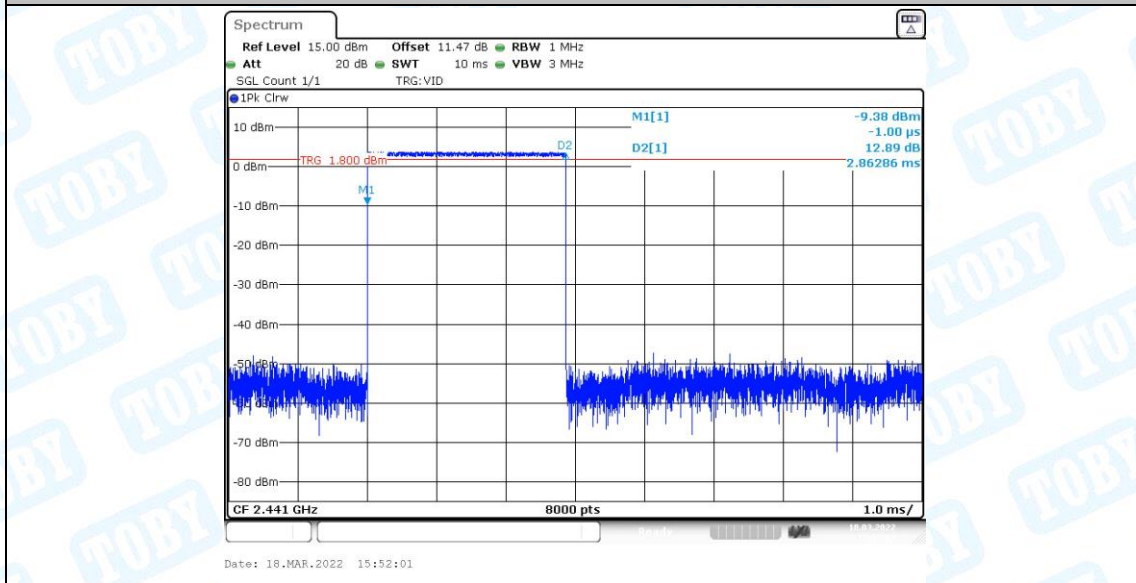
### 5.2. Test Graphs



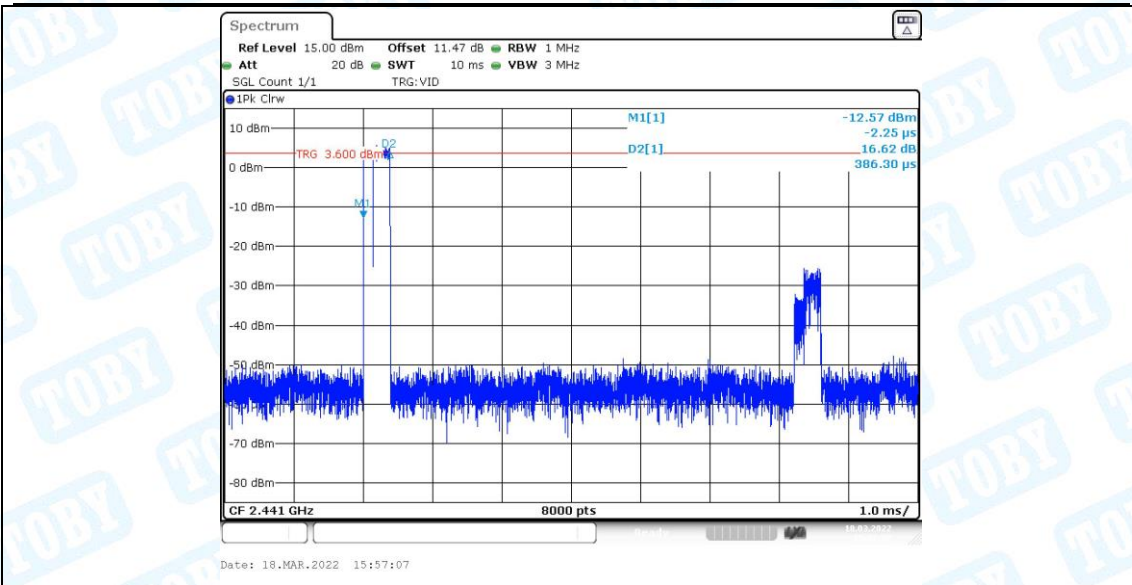
DH1\_Ant1\_Hop



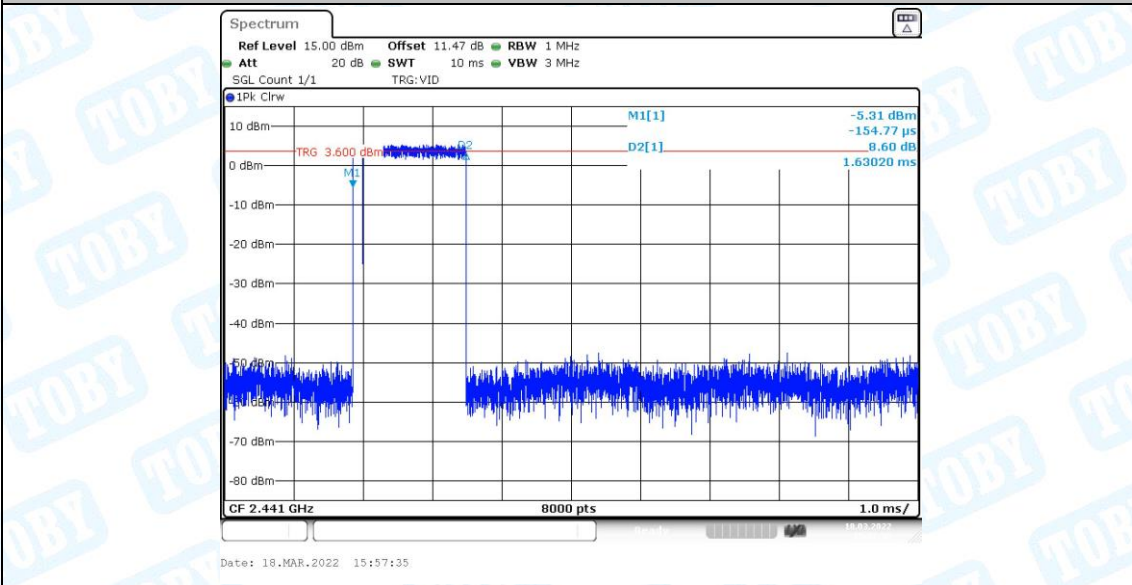
DH3\_Ant1\_Hop



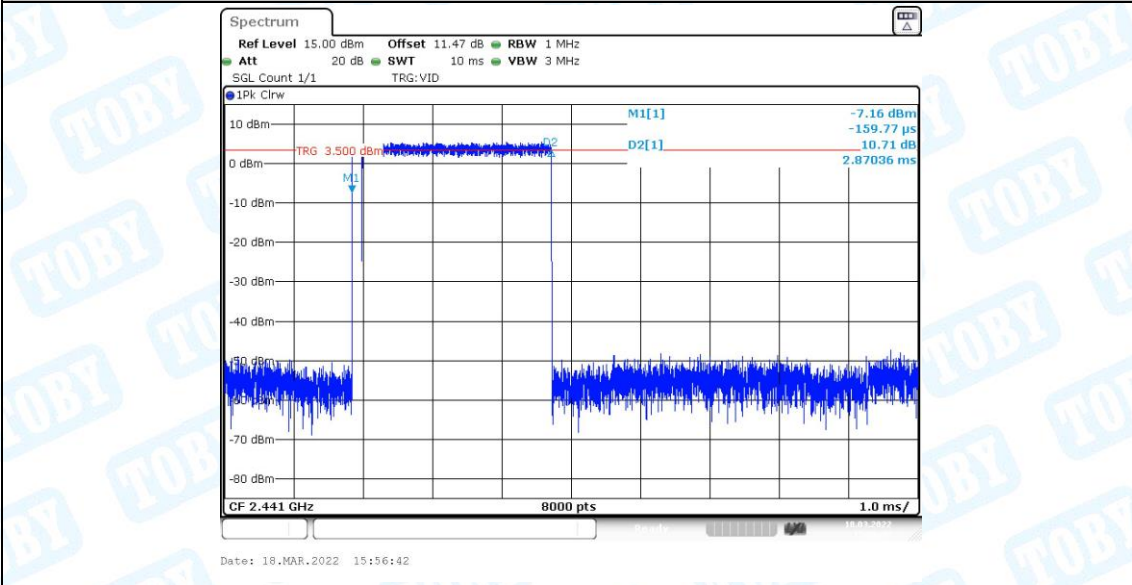
DH5\_Ant1\_Hop



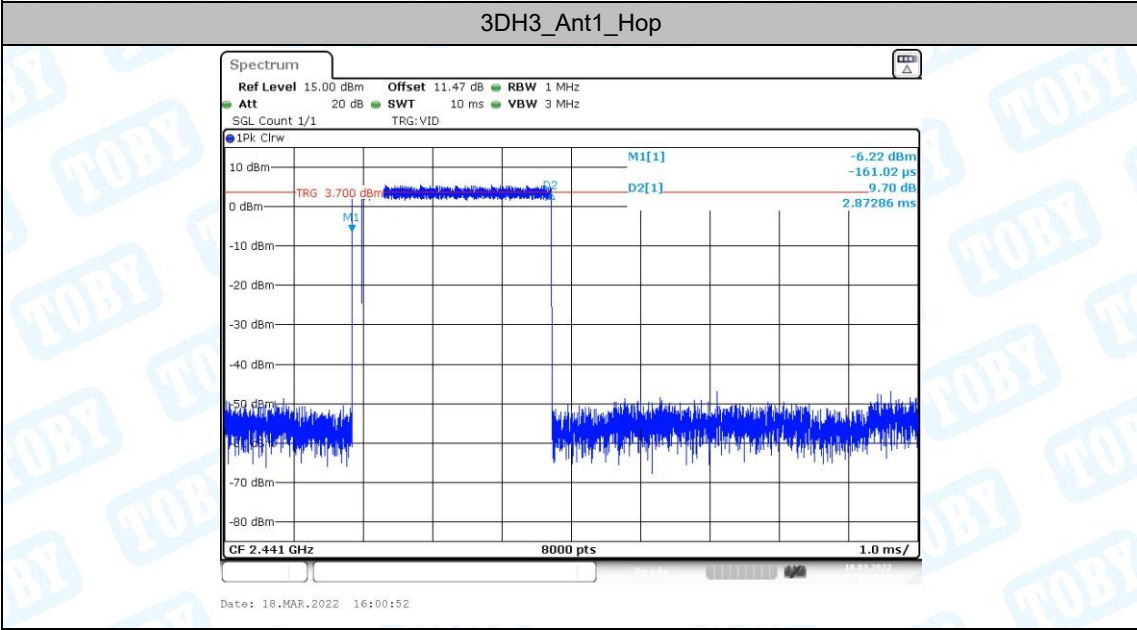
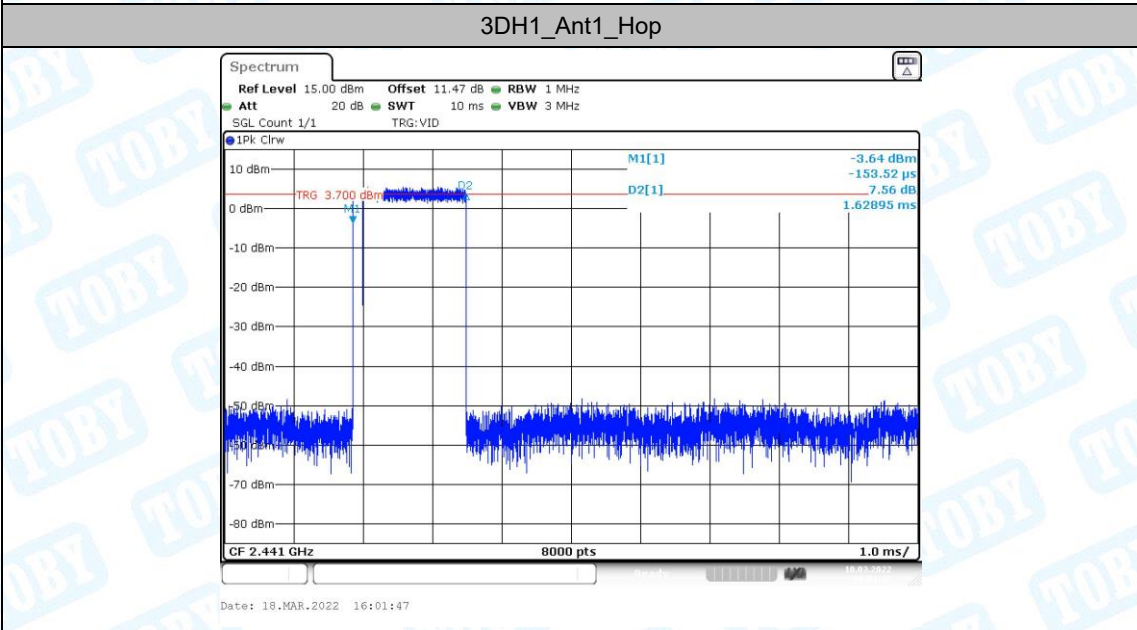
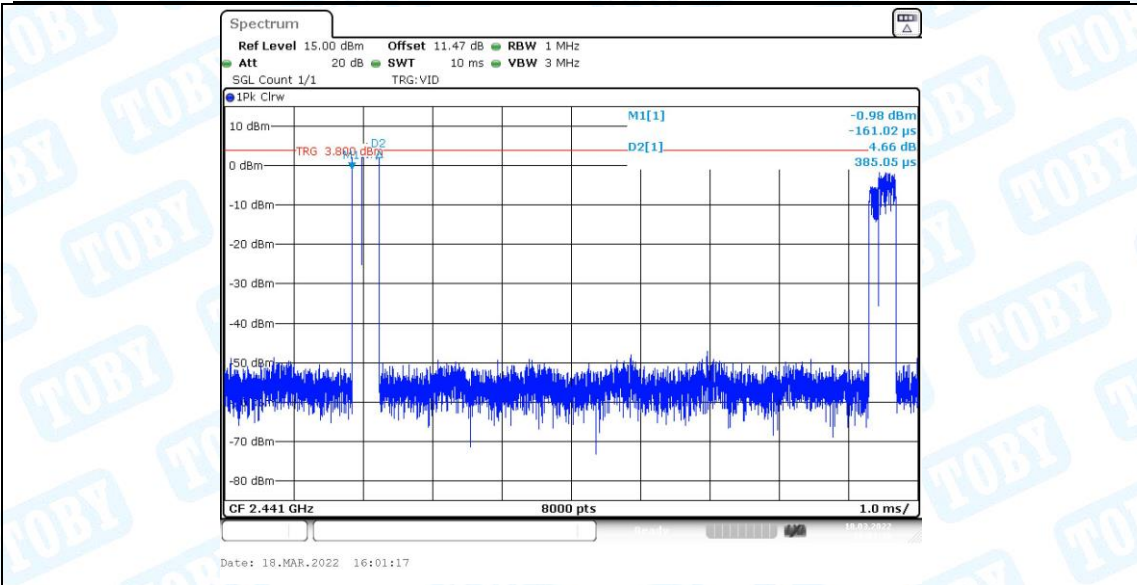
2DH1\_Ant1\_Hop



2DH3\_Ant1\_Hop



2DH5\_Ant1\_Hop

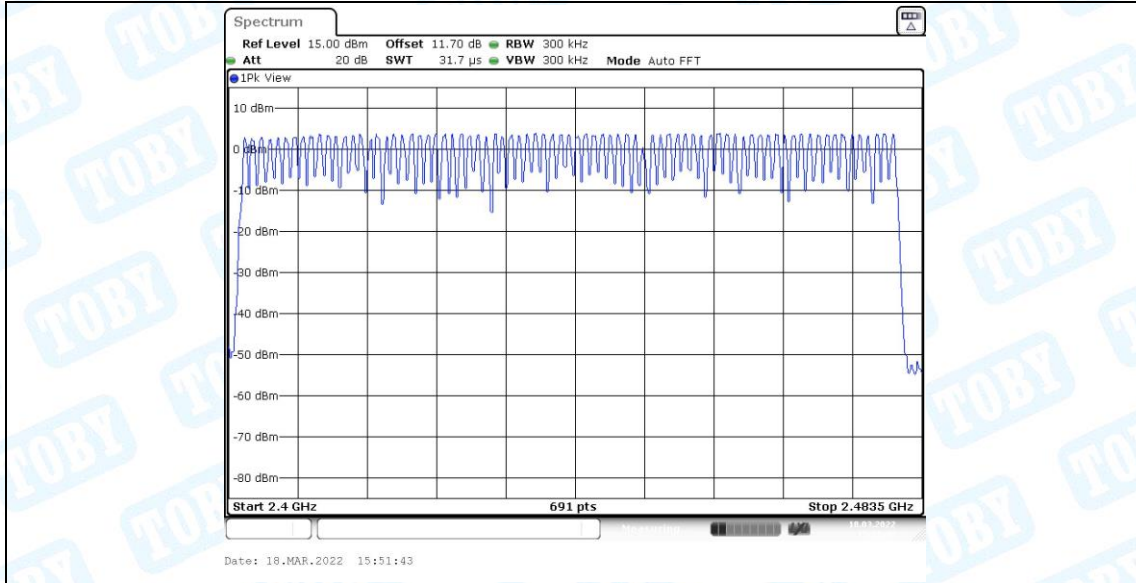


## 6. Number of hopping channels

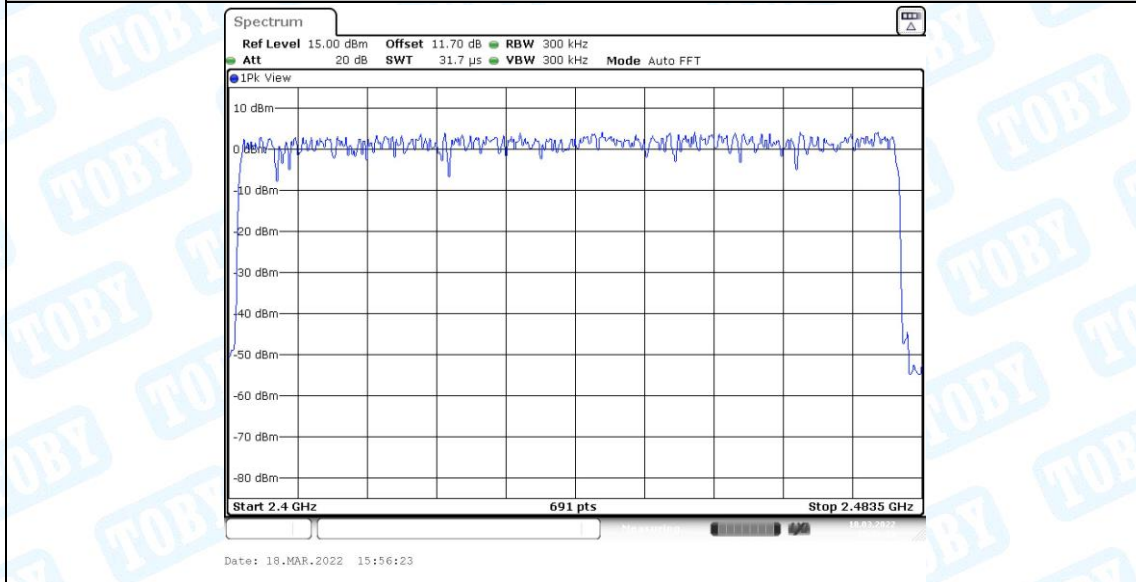
### 6.1. Test Result

TestMode	Antenna	Channel	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS

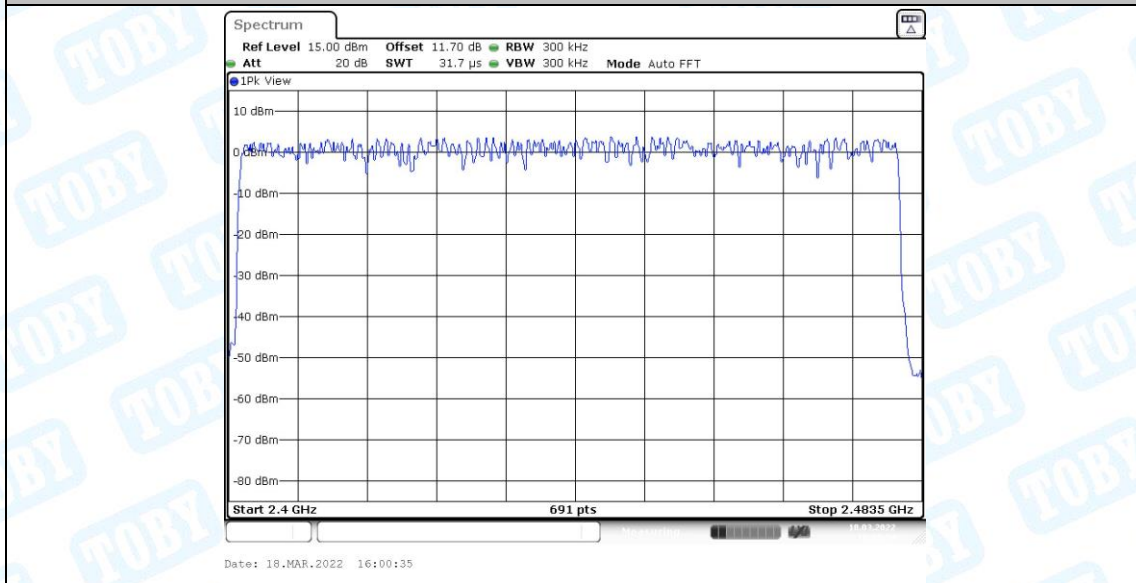
### 6.2. Test Graphs



DH5\_Ant1\_Hop



2DH5\_Ant1\_Hop



3DH5\_Ant1\_Hop