

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

General Description of EUT	
<b>Product Name:</b>	Heltec Indoor Hotspot
<b>Test Model:</b>	HT-M2808
<b>Sample ID:</b>	20210603-15-2#
Environmental Conditions	
<b>Temperature:</b>	24.3°C
<b>Relative Humidity:</b>	52%
<b>Test Voltage:</b>	DC 12V
<b>Test Engineer:</b>	Huang jianping
Note: For a more detailed features description, please refer to the report TB-RF183068.	



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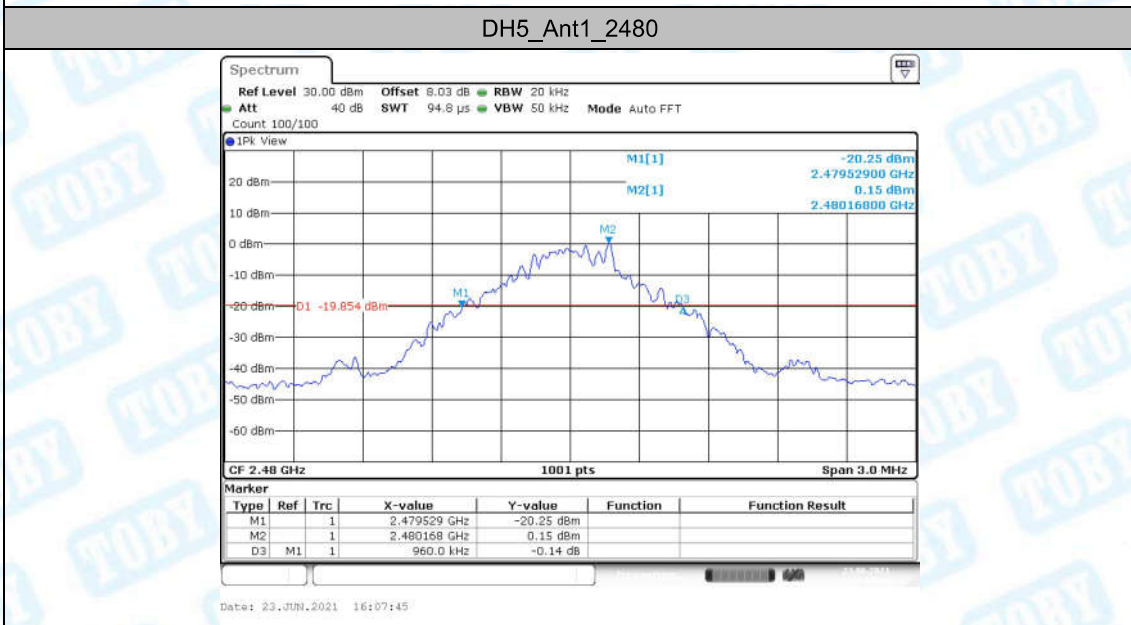
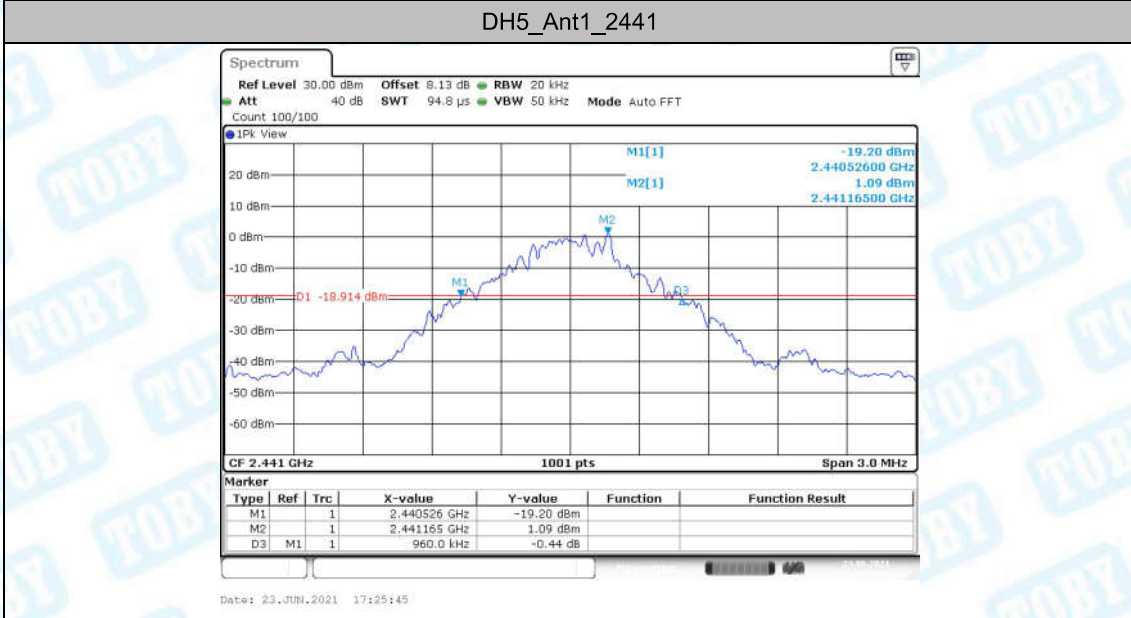
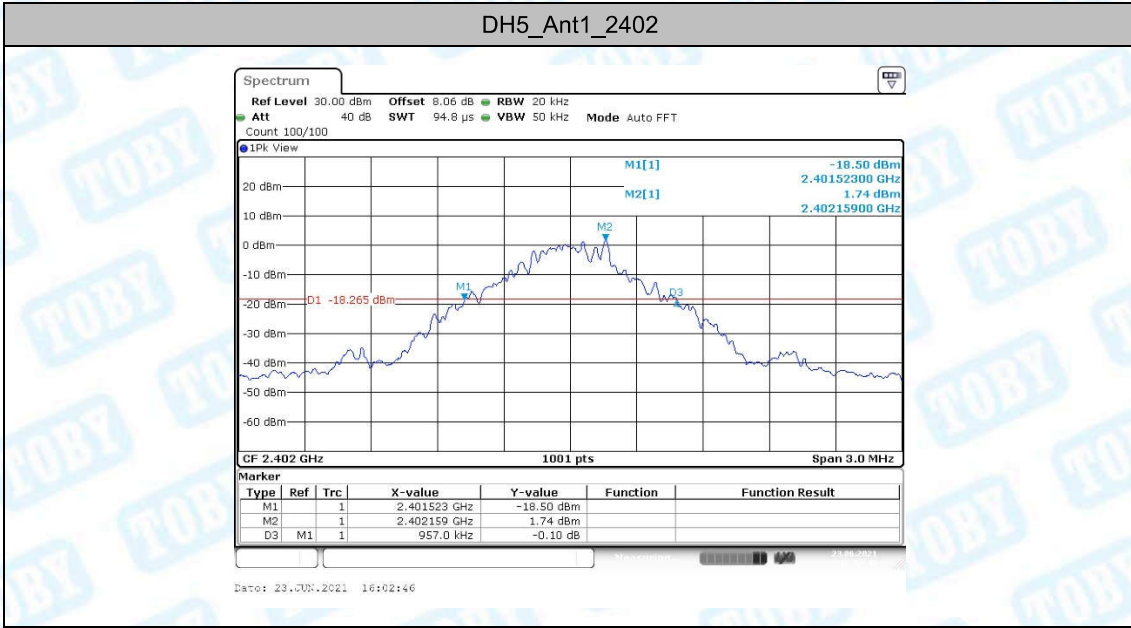
## 1. 20dB Emission Bandwidth

### 1.1. Test Result

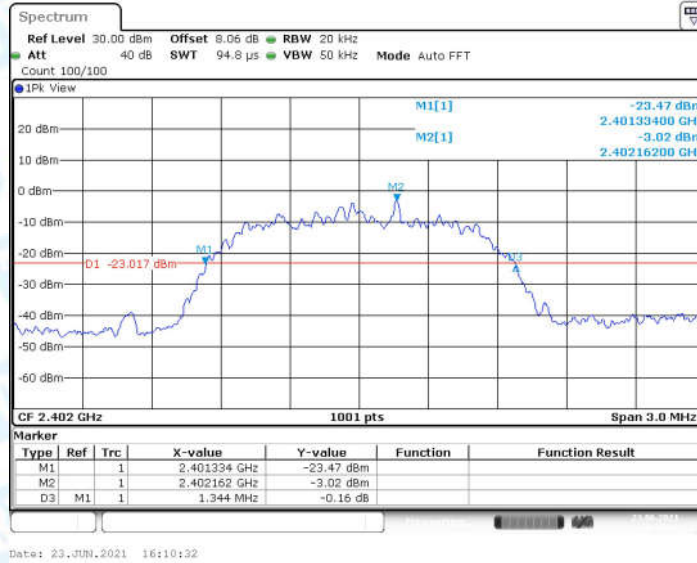
TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.957	2401.523	2402.159	---	PASS
		2441	0.960	2440.526	2441.486	---	PASS
		2480	0.960	2479.529	2480.489	---	PASS
2DH5	Ant1	2402	1.344	2401.334	2402.678	---	PASS
		2441	1.347	2440.337	2441.684	---	PASS
		2480	1.344	2479.343	2480.687	---	PASS
3DH5	Ant1	2402	1.320	2401.331	2402.651	---	PASS
		2441	1.302	2440.352	2441.654	---	PASS
		2480	1.305	2479.358	2480.663	---	PASS



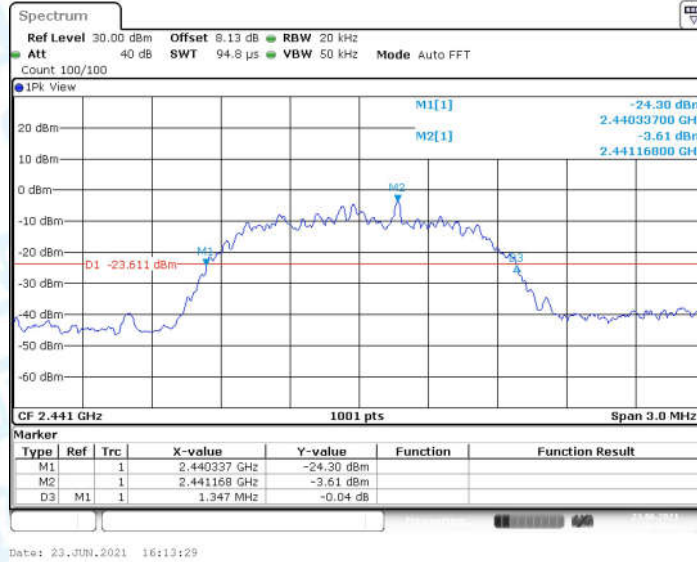
**1.2. Test Graphs**



## 2DH5\_Ant1\_2402



## 2DH5\_Ant1\_2441

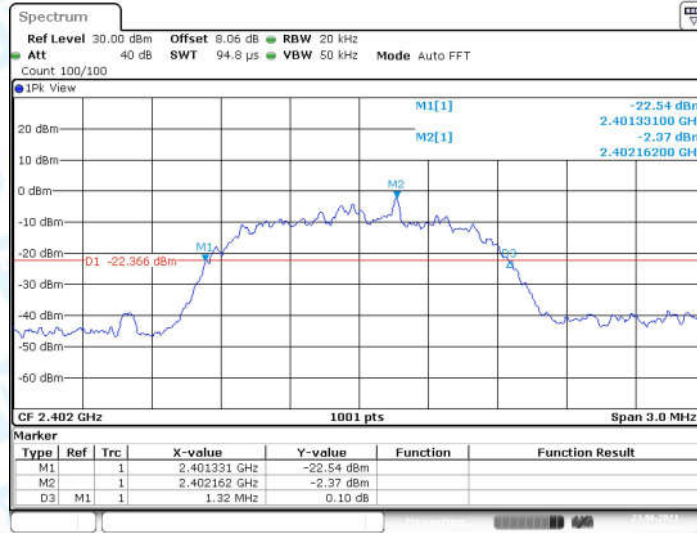


## 2DH5\_Ant1\_2480



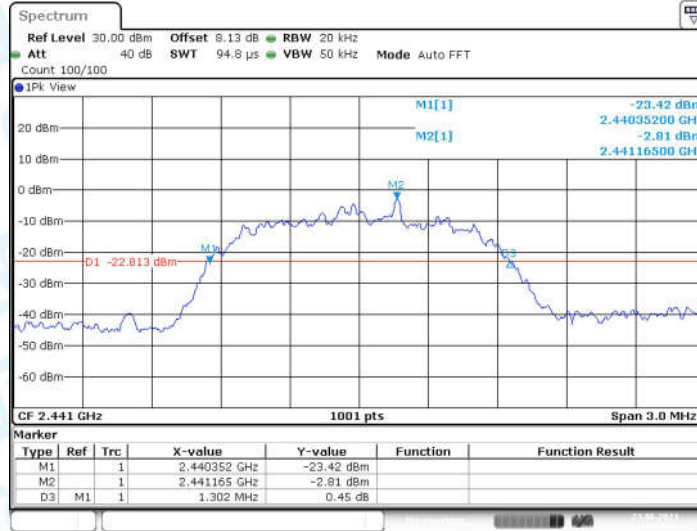


### 3DH5\_Ant1\_2402



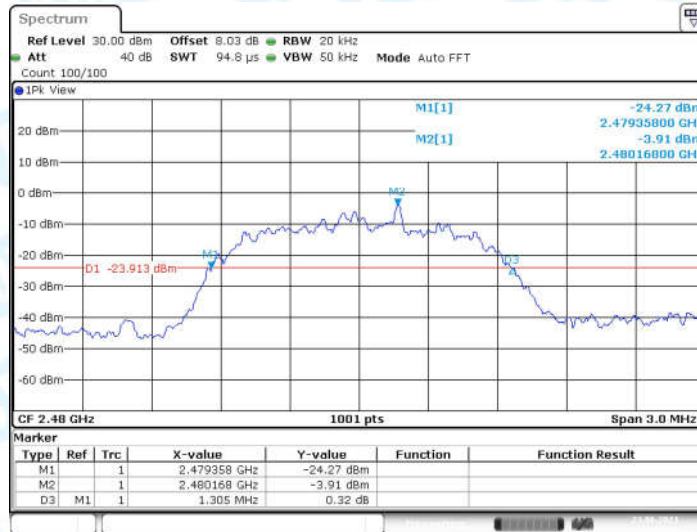
Date: 23 JUN, 2021 16:27:19

### 3DH5\_Ant1\_2441



Date: 23 JUN, 2021 16:30:59

### 3DH5\_Ant1\_2480



Date: 23 JUN, 2021 16:32:36

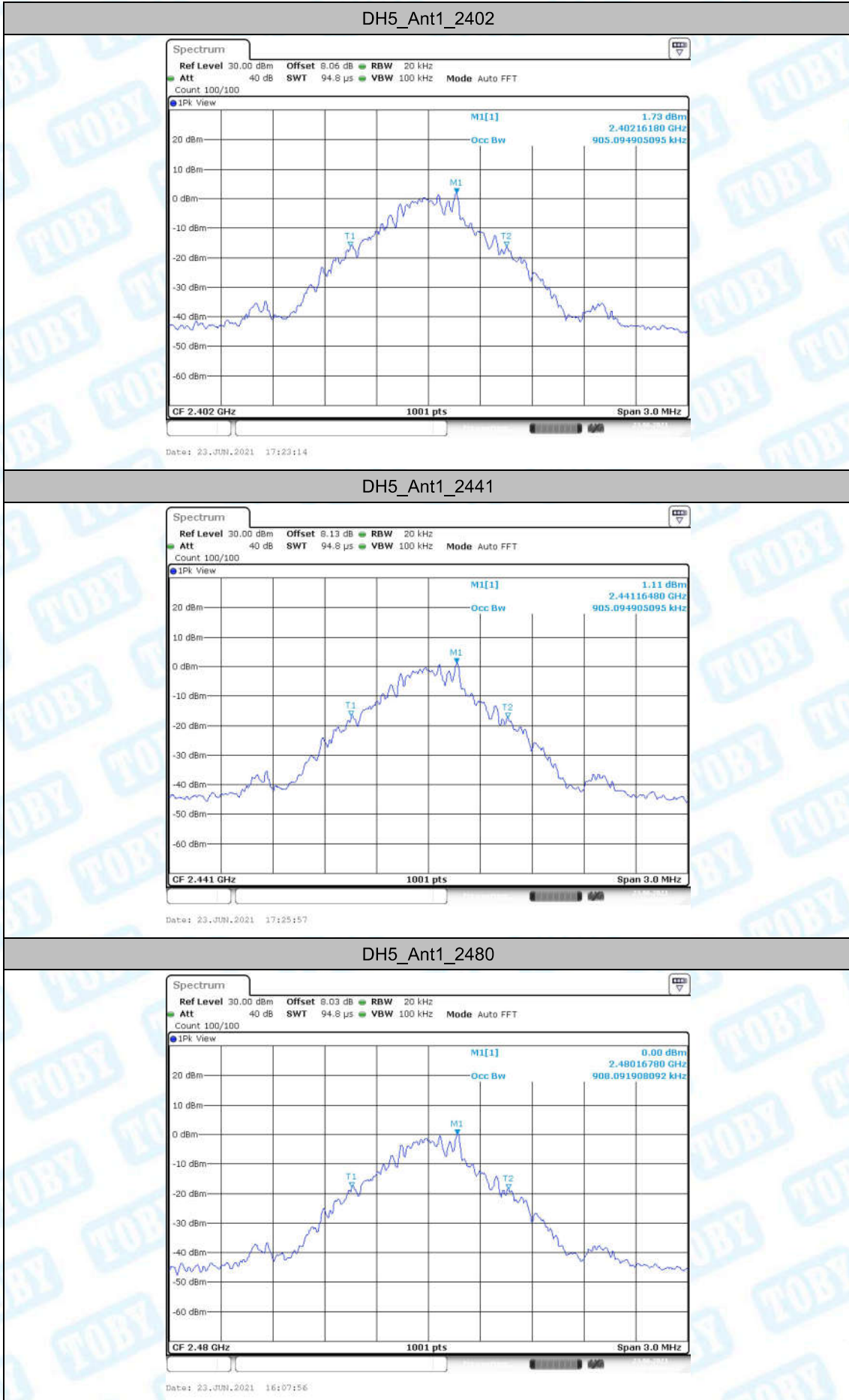
## 2. Occupied Channel Bandwidth

### 2.1. Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.905	2401.547	2402.453	---	PASS
		2441	0.905	2440.553	2441.459	---	PASS
		2480	0.908	2479.556	2480.465	---	PASS
2DH5	Ant1	2402	1.217	2401.398	2402.614	---	PASS
		2441	1.223	2440.401	2441.623	---	PASS
		2480	1.226	2479.404	2480.629	---	PASS
3DH5	Ant1	2402	1.217	2401.389	2402.605	---	PASS
		2441	1.22	2440.392	2441.611	---	PASS
		2480	1.223	2479.395	2480.617	---	PASS

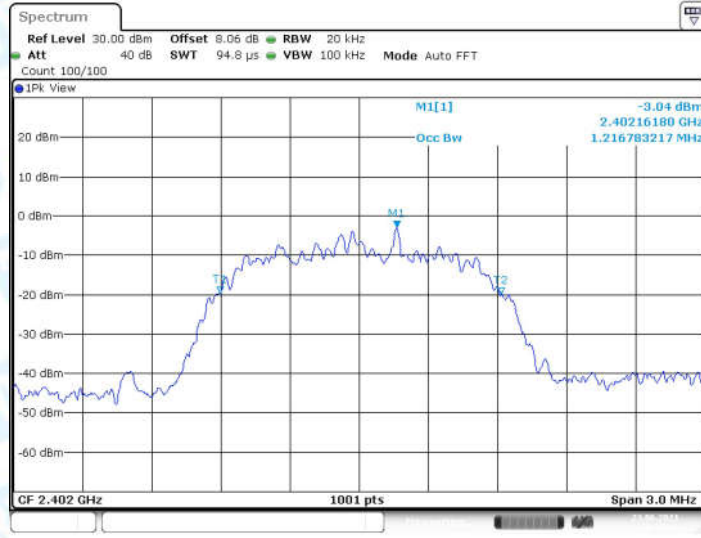


### 2.2. Test Graphs



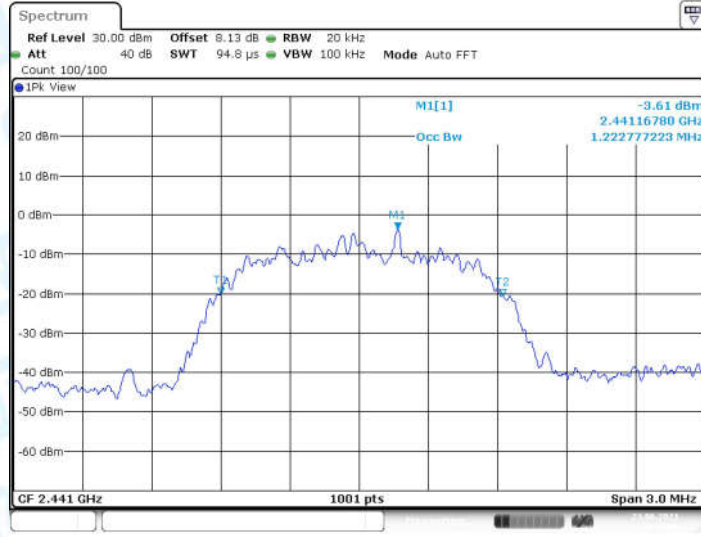


2DH5\_Ant1\_2402



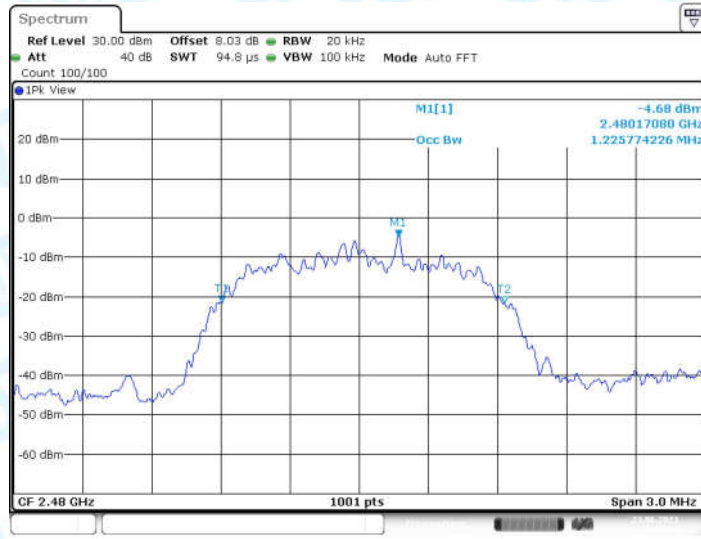
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2DH5\_Ant1\_2441



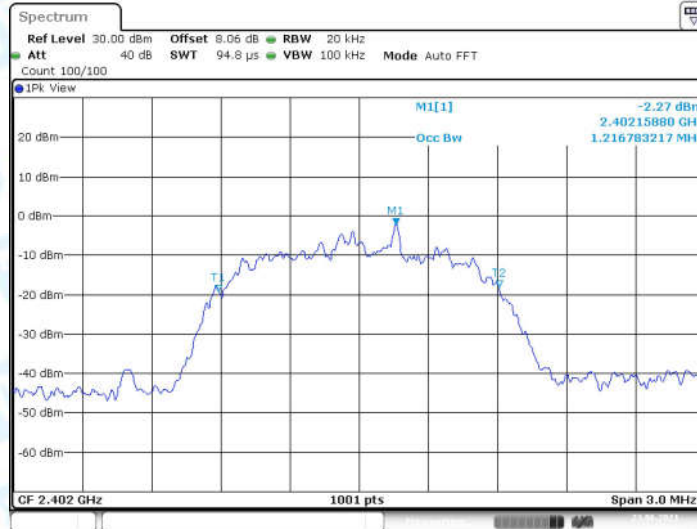
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2DH5\_Ant1\_2480



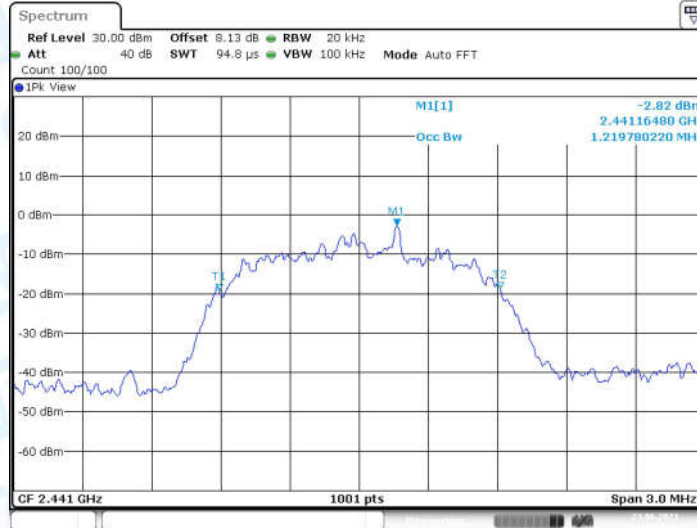
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3DH5\_Ant1\_2402



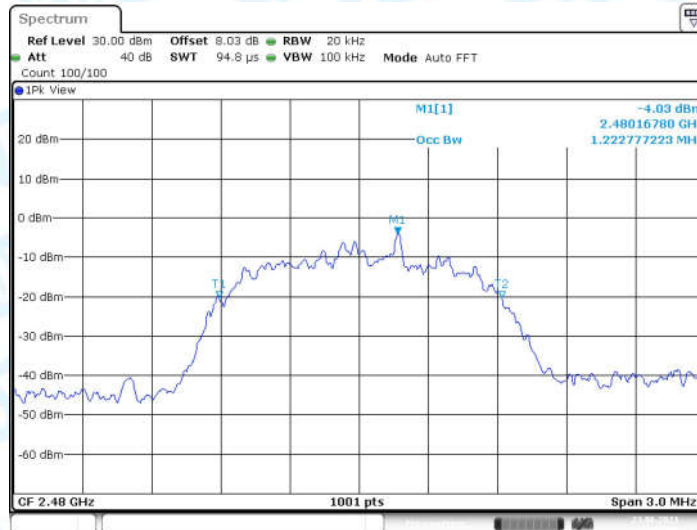
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3DH5\_Ant1\_2441



Date: 23 JUN, 2021 16:31:11

3DH5\_Ant1\_2480



Date: 23 JUN, 2021 16:32:48

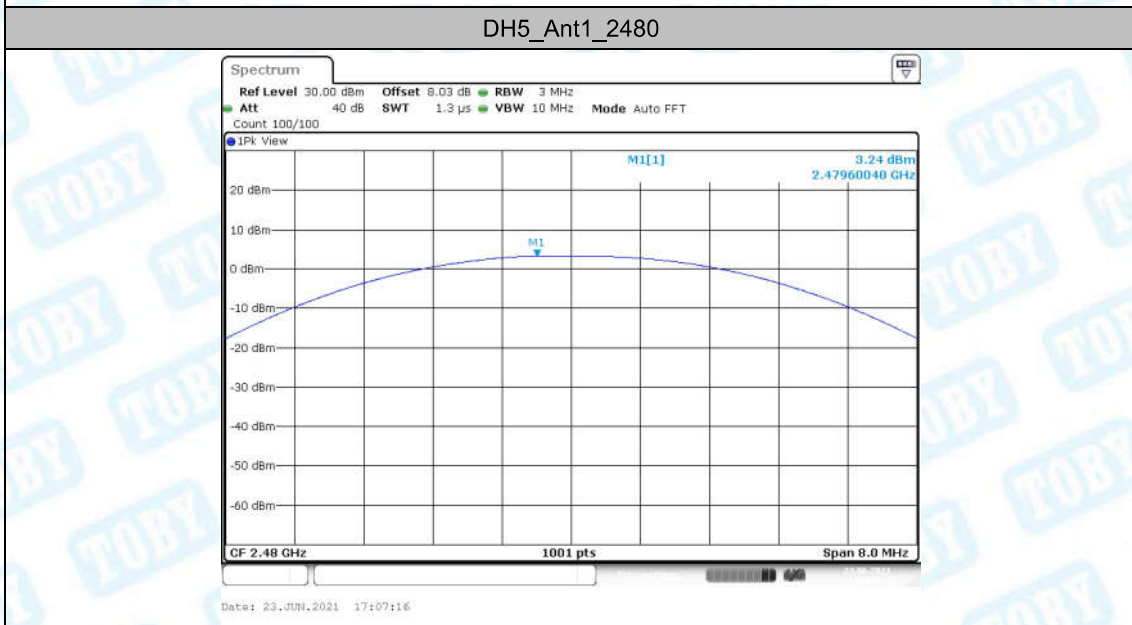
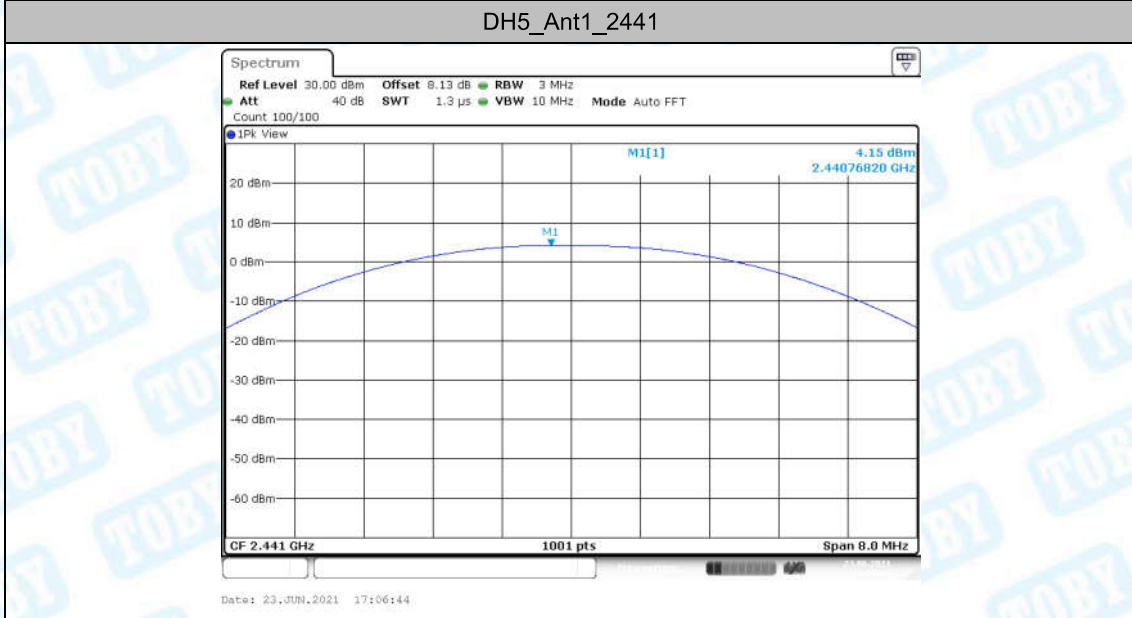
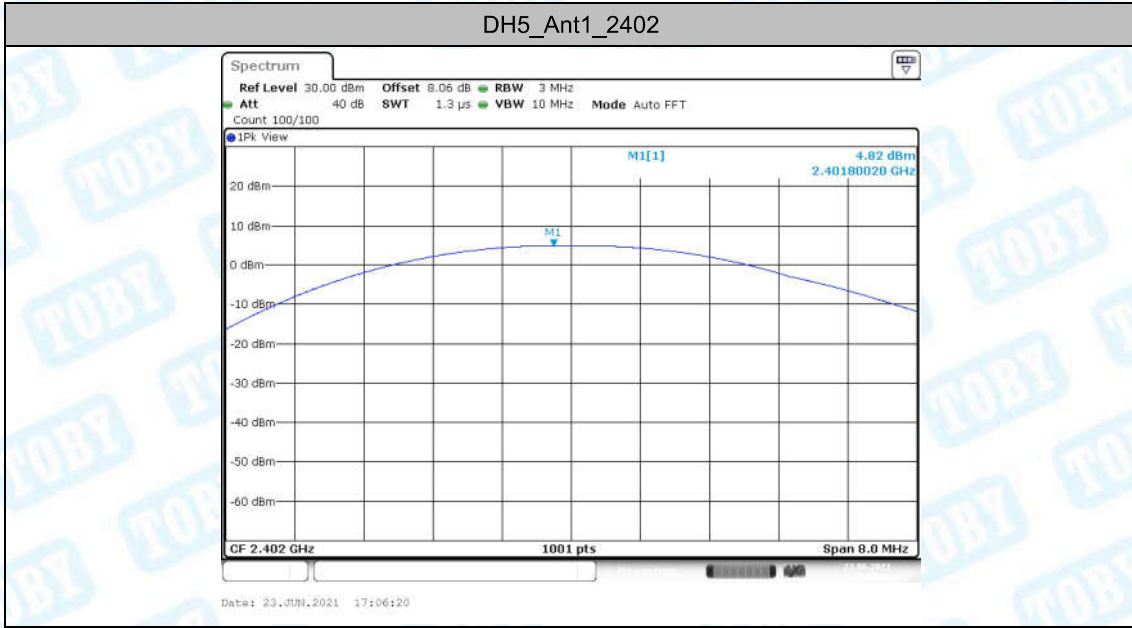


### 3. Maximum conducted output power

#### 3.1. Test Result

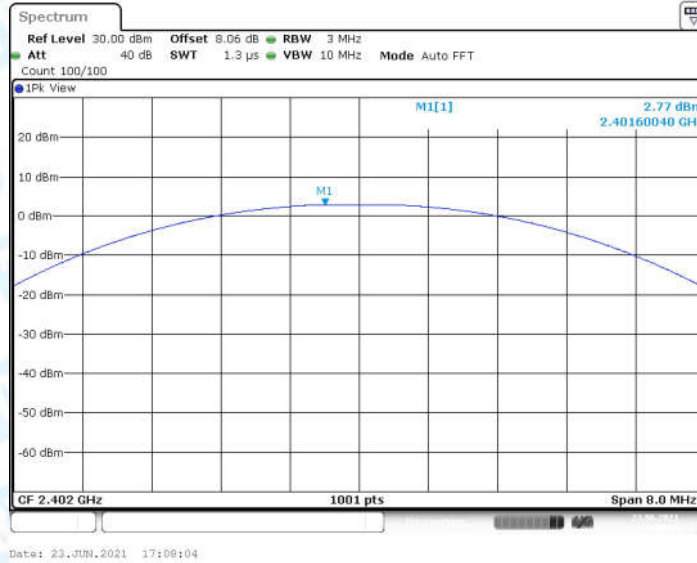
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	4.82	<=20.97	PASS
		2441	4.15	<=20.97	PASS
		2480	3.24	<=20.97	PASS
2DH5	Ant1	2402	2.77	<=20.97	PASS
		2441	2.1	<=20.97	PASS
		2480	0.99	<=20.97	PASS
3DH5	Ant1	2402	3.05	<=20.97	PASS
		2441	2.28	<=20.97	PASS
		2480	1.07	<=20.97	PASS

**3.2. Test Graphs**

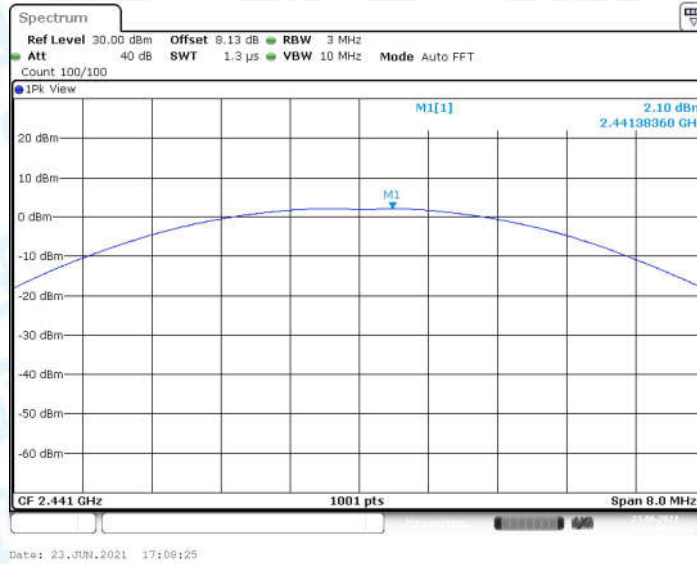




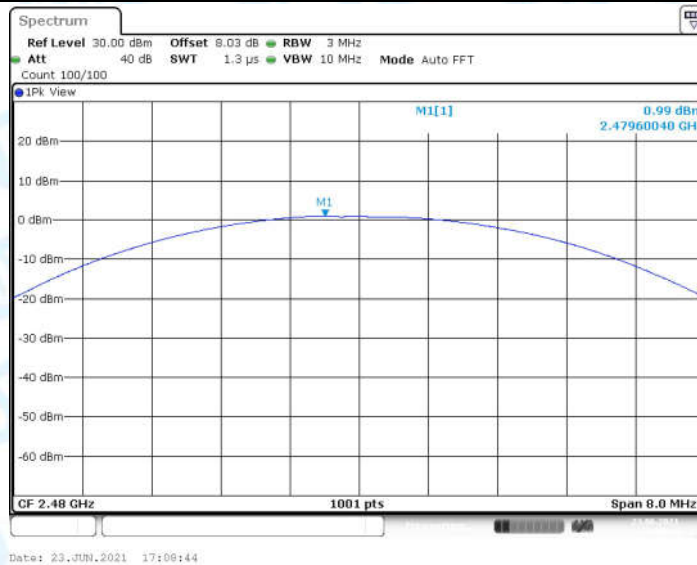
2DH5\_Ant1\_2402



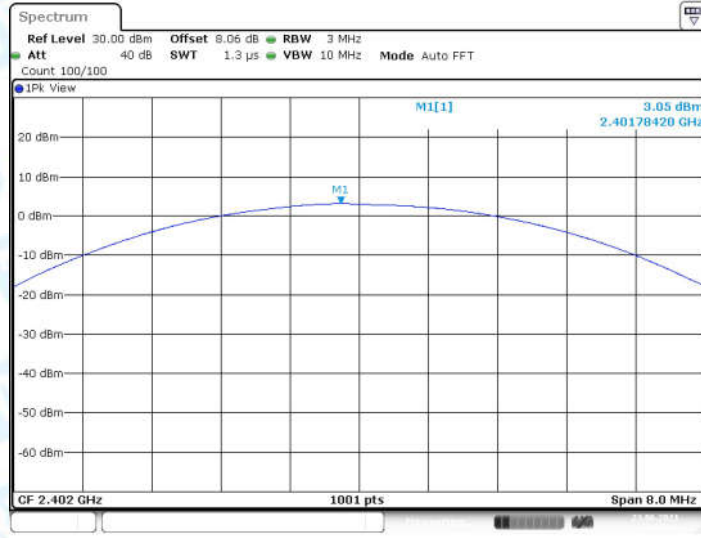
2DH5\_Ant1\_2441



2DH5\_Ant1\_2480

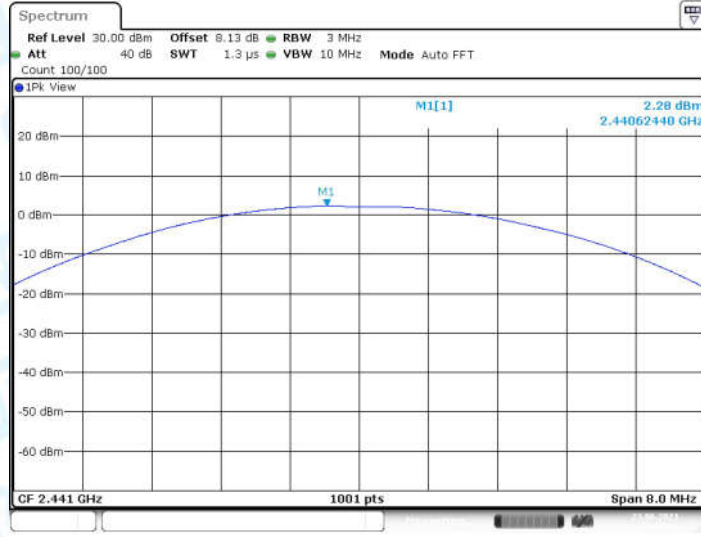


3DH5\_Ant1\_2402



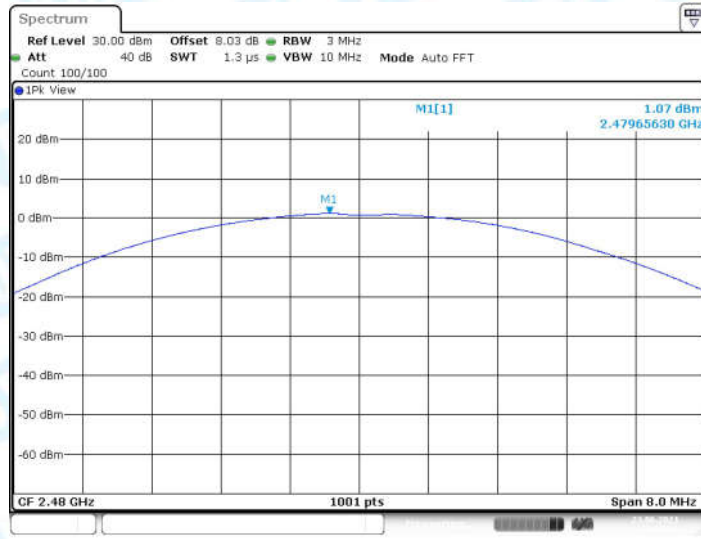
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3DH5\_Ant1\_2441



Date: 23 JUN, 2021 17:09:38

3DH5\_Ant1\_2480



Date: 23 JUN, 2021 17:09:58

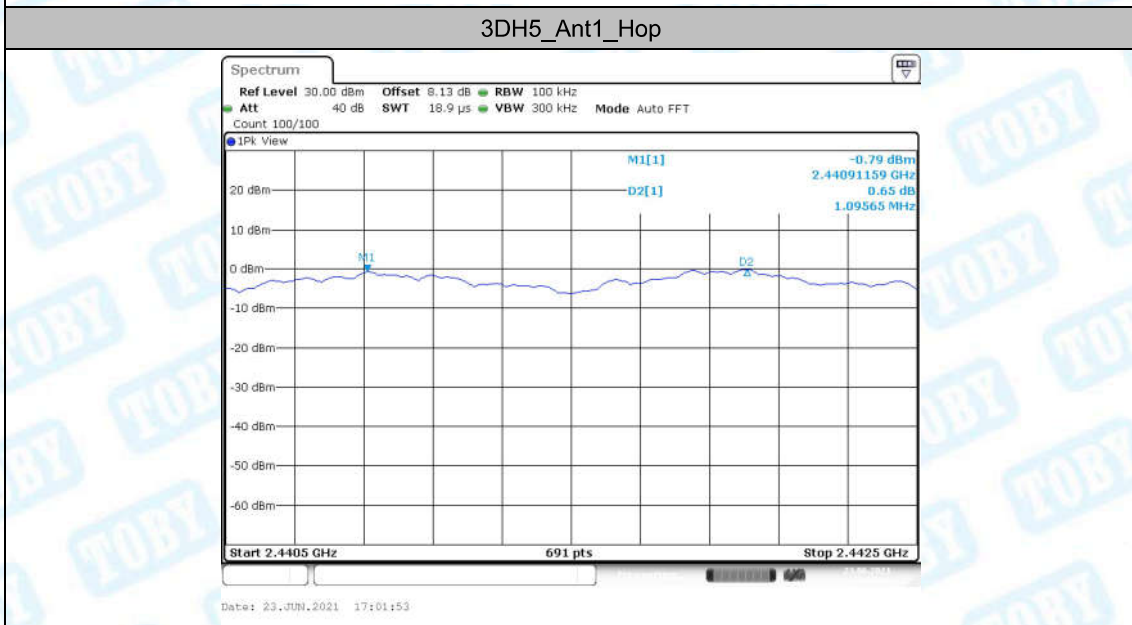
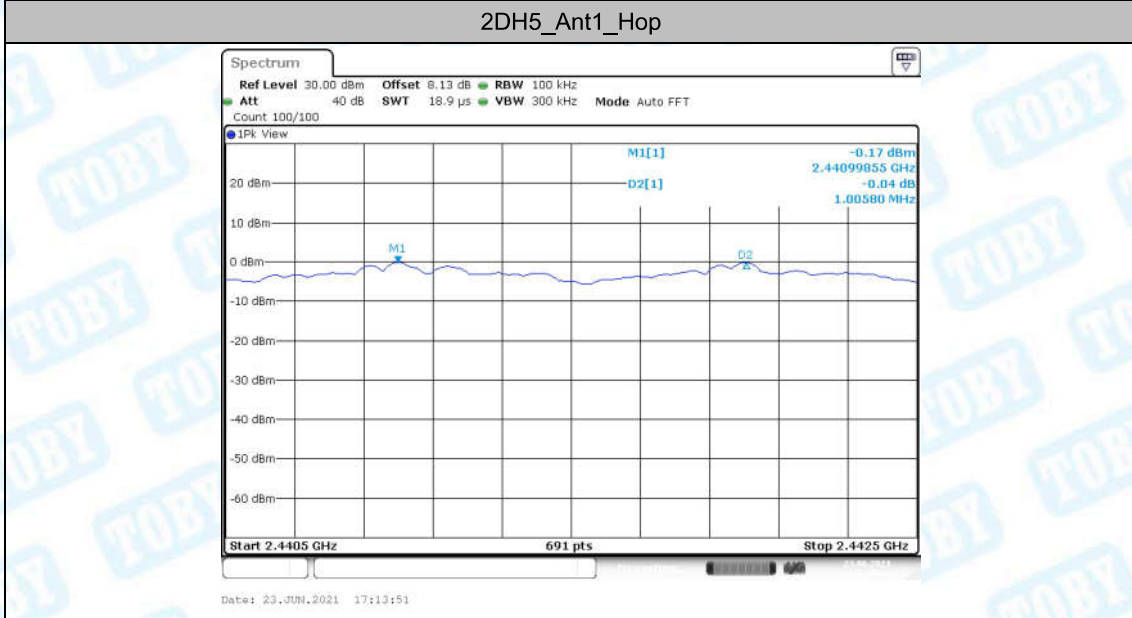
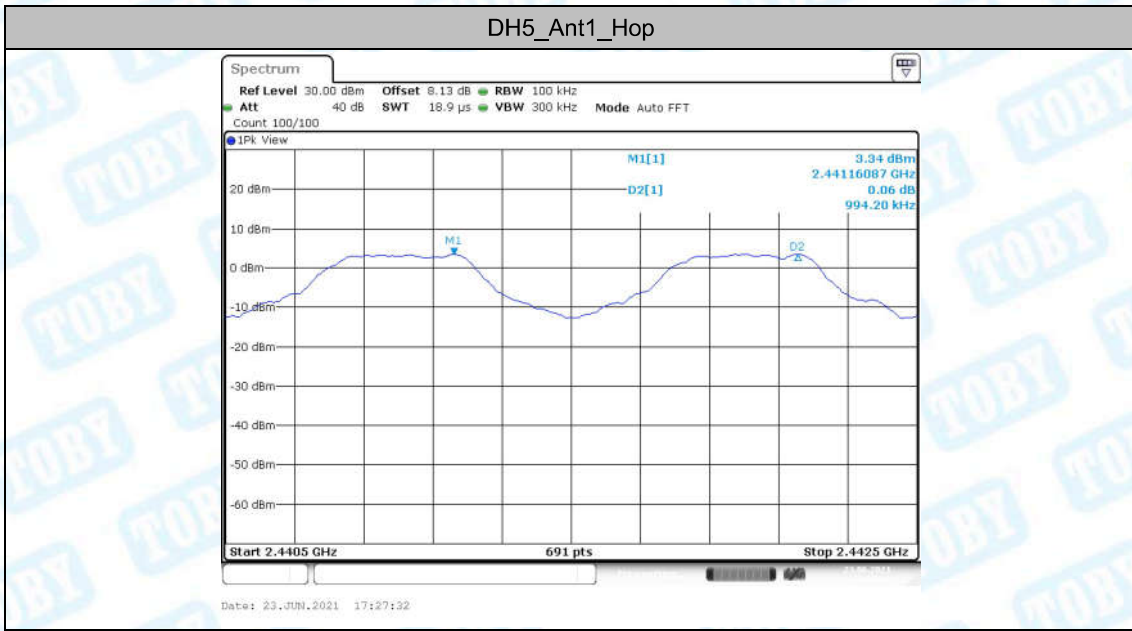


## 4. Carrier frequency separation

### 4.1. Test Result

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.994	$\geq 0.960$	PASS
2DH5	Ant1	Hop	1.006	$\geq 0.898$	PASS
3DH5	Ant1	Hop	1.096	$\geq 0.880$	PASS

### 4.2. Test Graphs



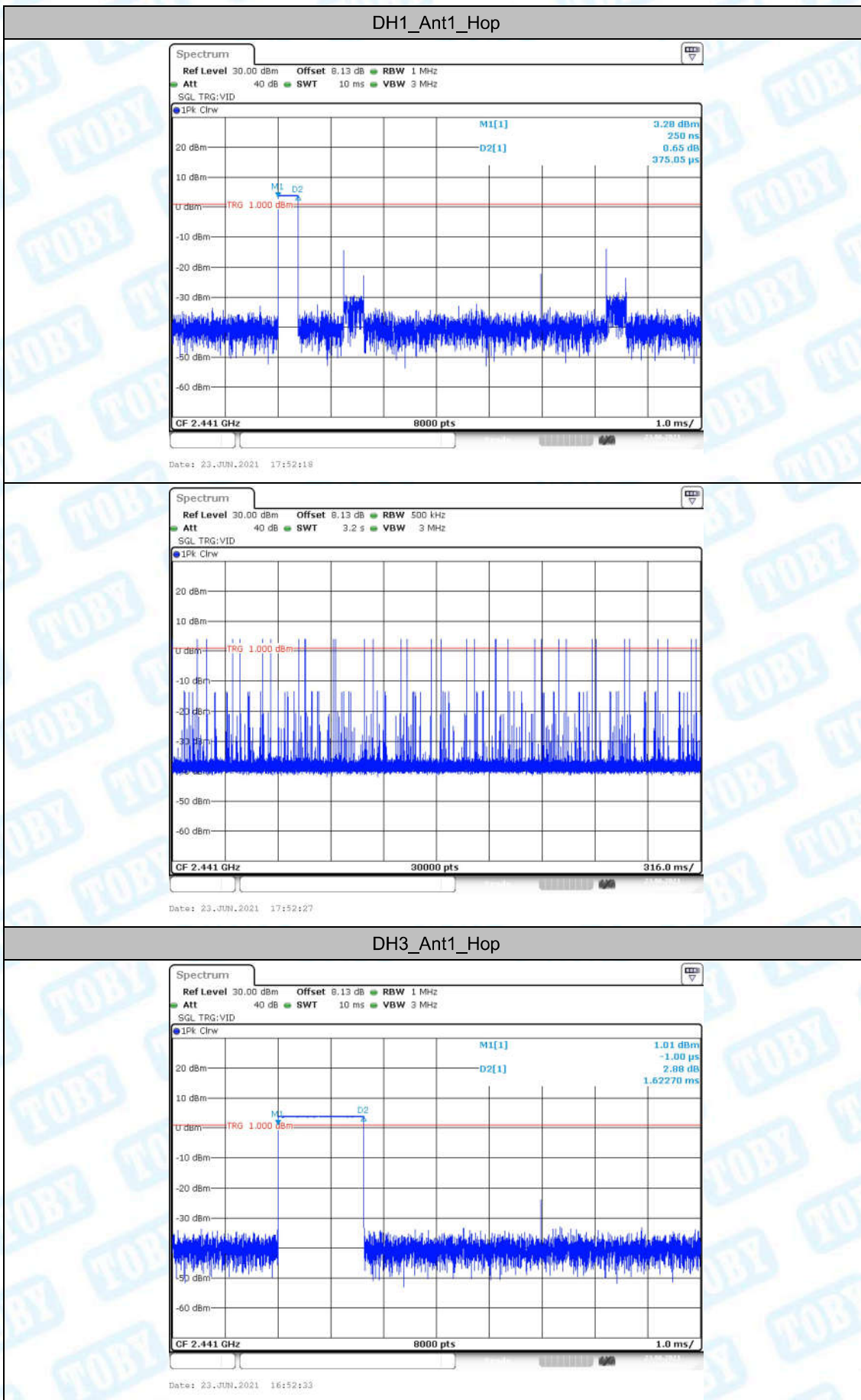


## 5. Time of occupancy

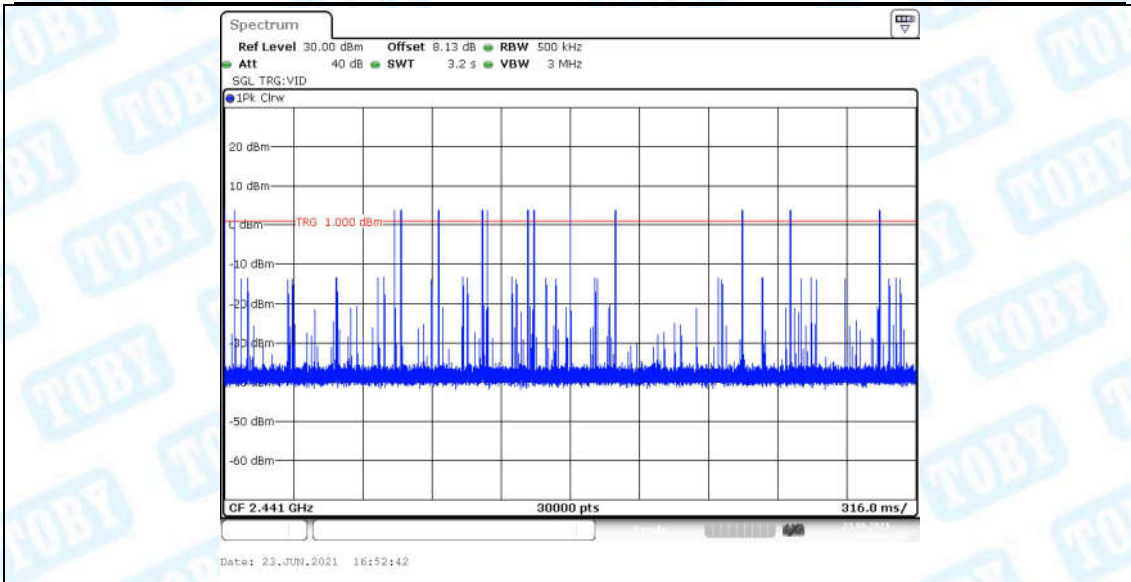
### 5.1. Test Result

TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.38	330	0.124	<=0.4	PASS
DH3	Ant1	Hop	1.62	140	0.227	<=0.4	PASS
DH5	Ant1	Hop	2.86	130	0.372	<=0.4	PASS
2DH1	Ant1	Hop	0.38	330	0.126	<=0.4	PASS
2DH3	Ant1	Hop	1.63	160	0.26	<=0.4	PASS
2DH5	Ant1	Hop	2.87	110	0.315	<=0.4	PASS
3DH1	Ant1	Hop	0.38	330	0.126	<=0.4	PASS
3DH3	Ant1	Hop	1.63	160	0.26	<=0.4	PASS
3DH5	Ant1	Hop	2.87	130	0.373	<=0.4	PASS

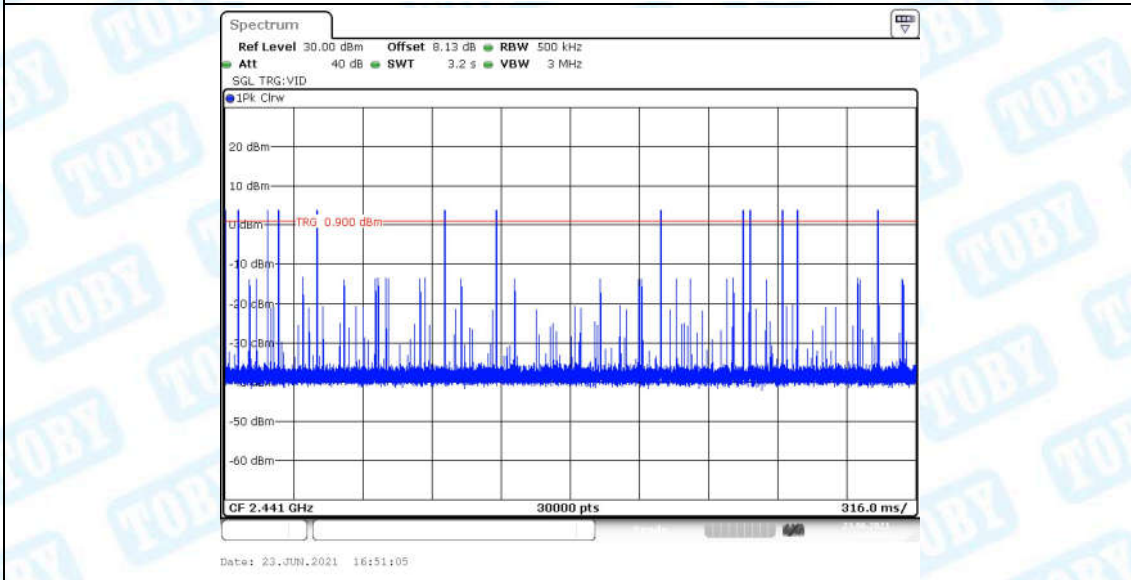
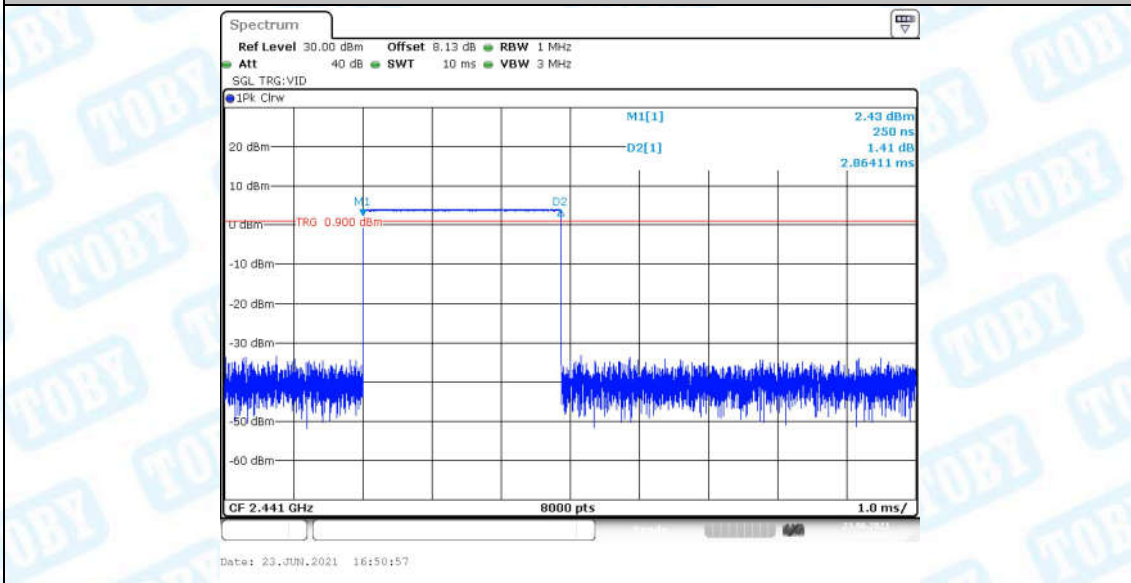
**5.2. Test Graphs**



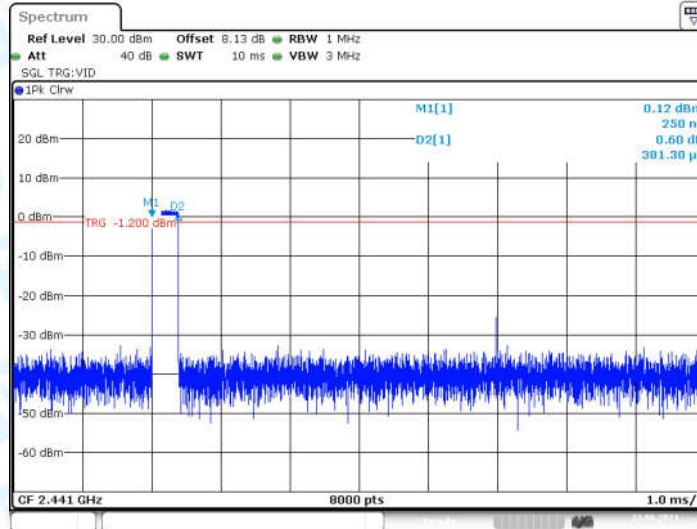




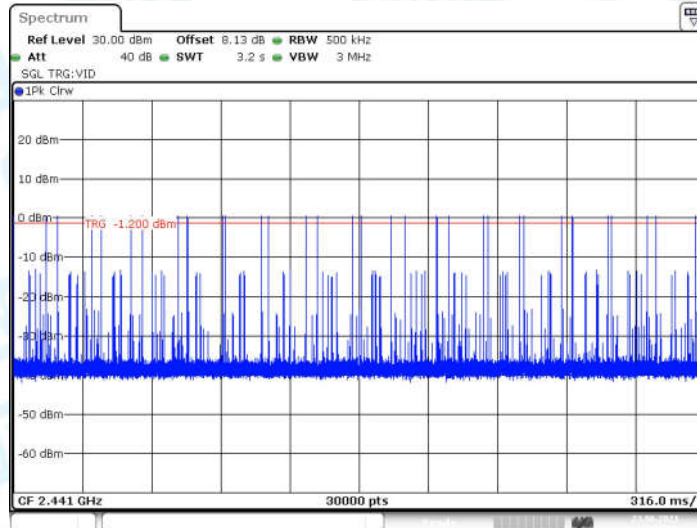
### DH5\_Ant1\_Hop



2DH1\_Ant1\_Hop

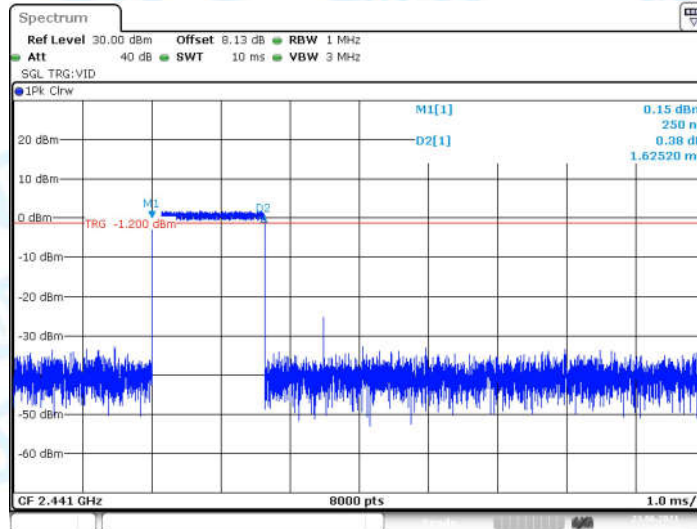


Date: 23 JUN, 2021 16:57:32



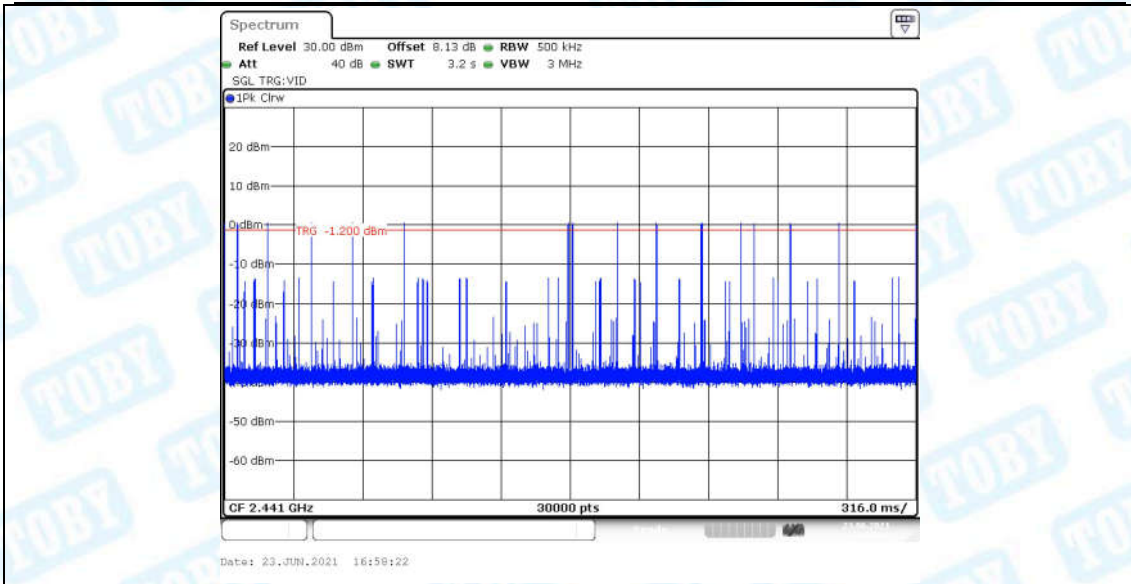
Date: 23 JUN, 2021 16:57:40

2DH3\_Ant1\_Hop

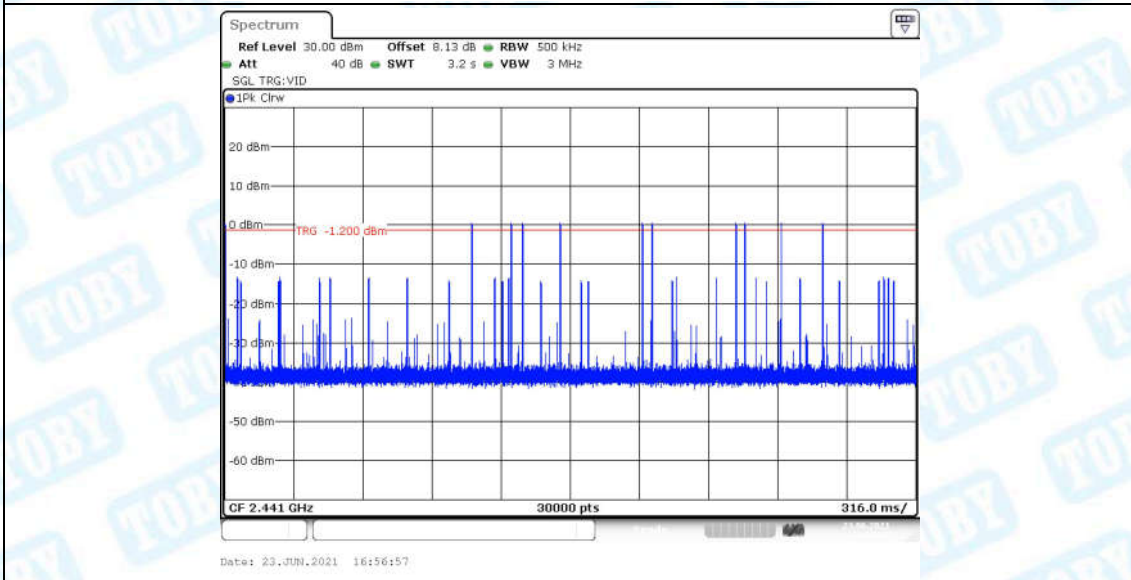
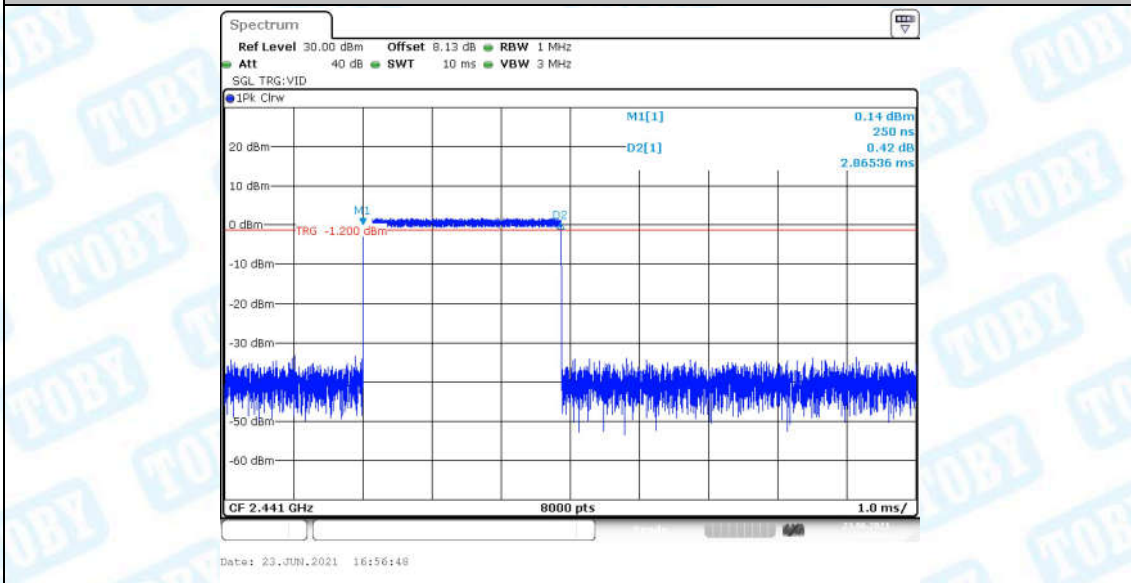


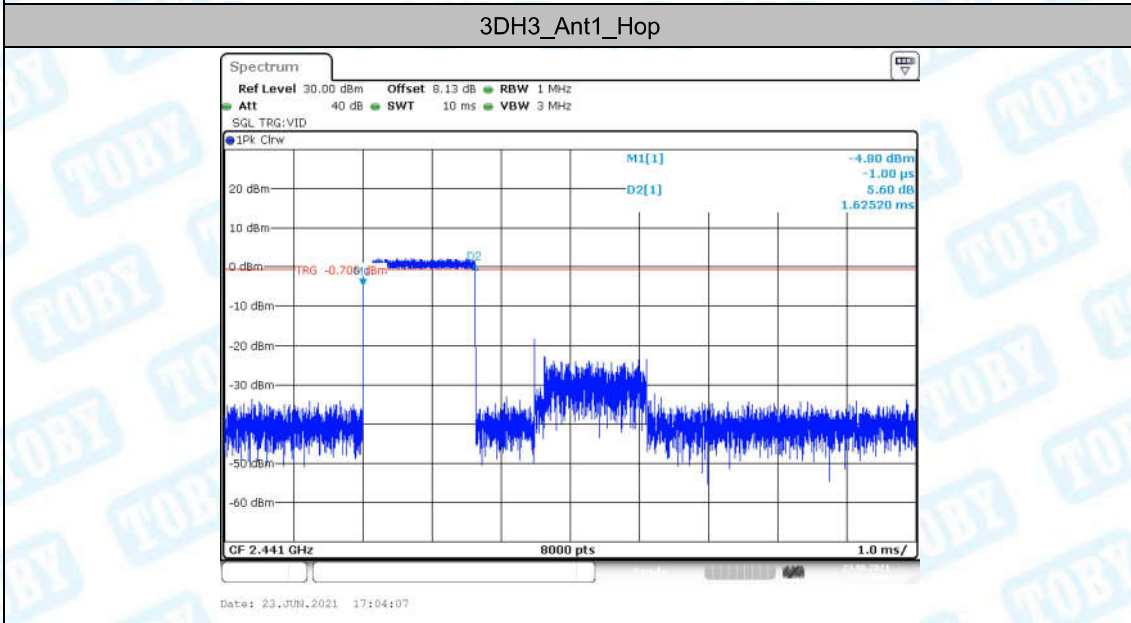
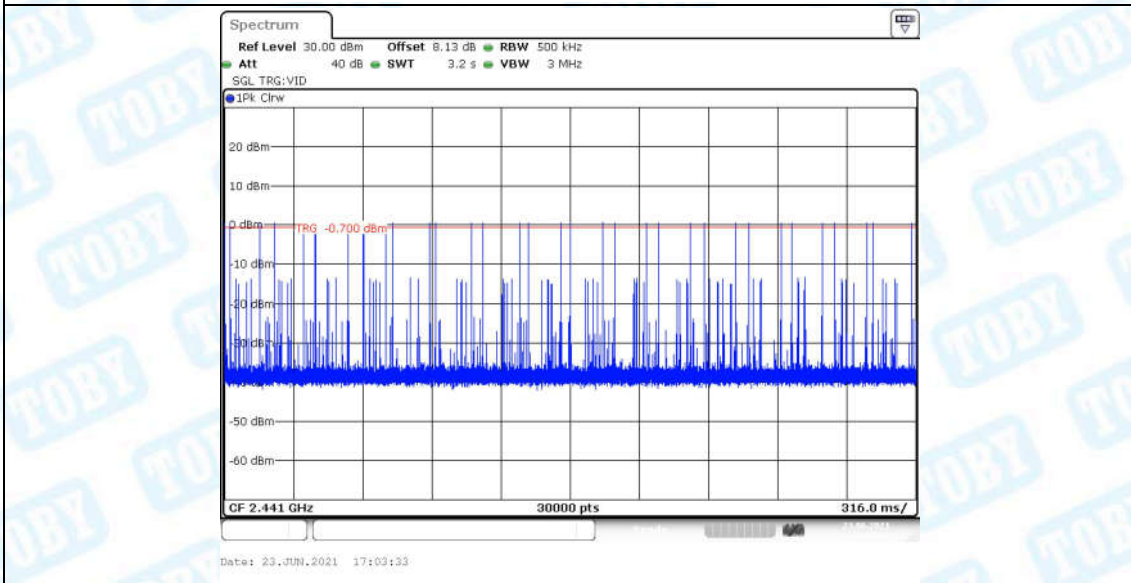
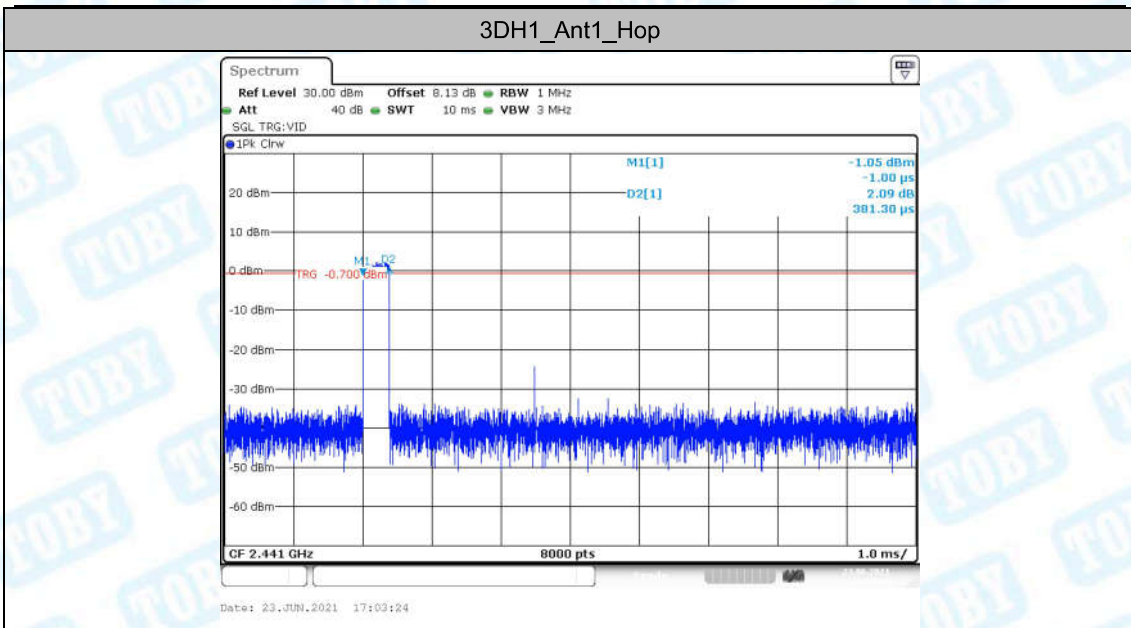
Date: 23 JUN, 2021 16:58:14



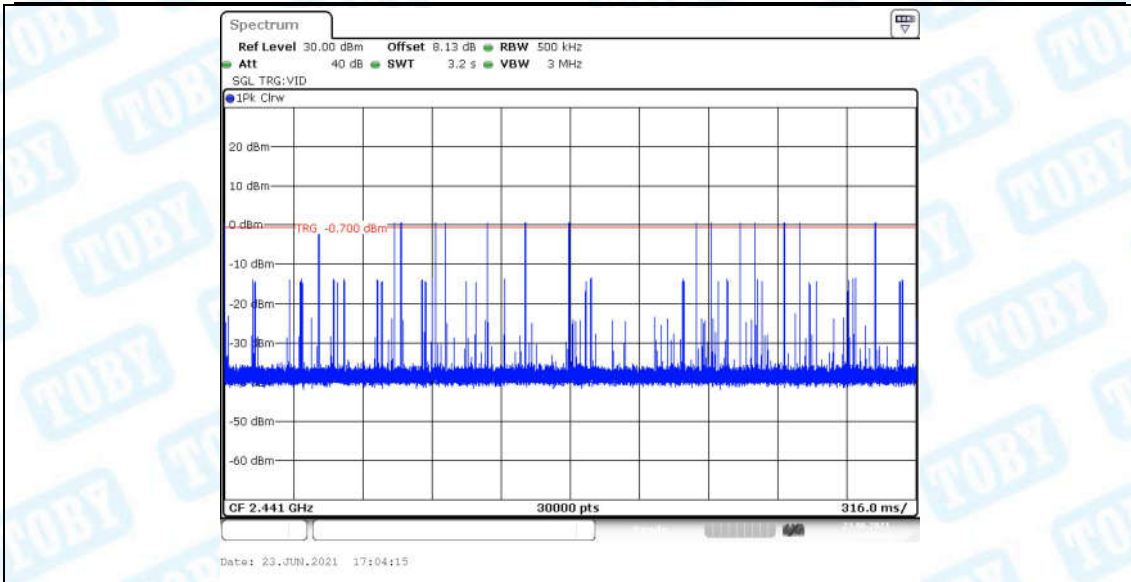


2DH5\_Ant1\_Hop

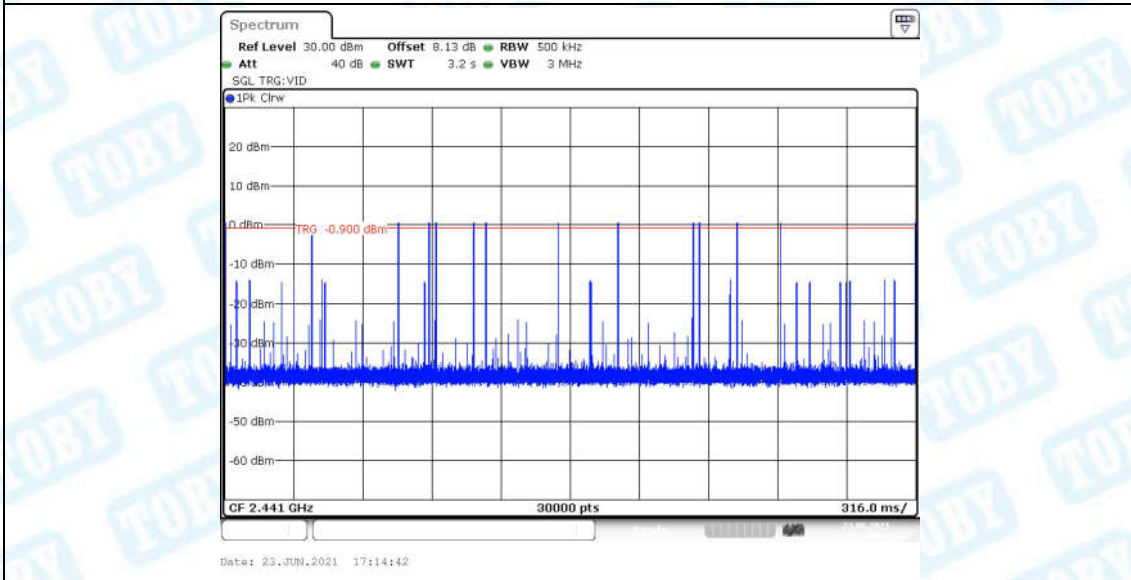
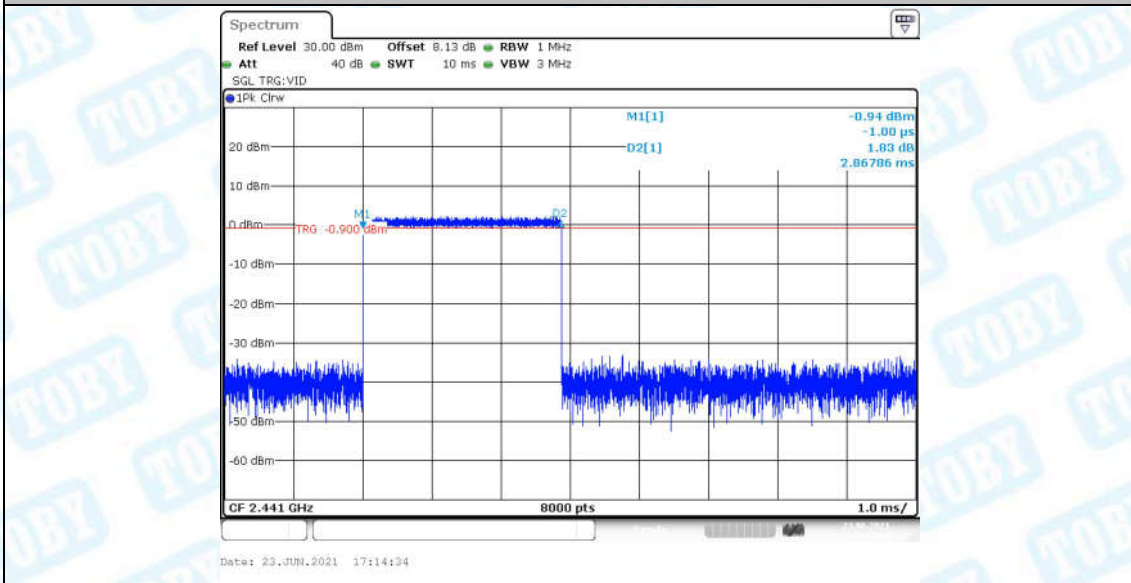








3DH5\_Ant1\_Hop



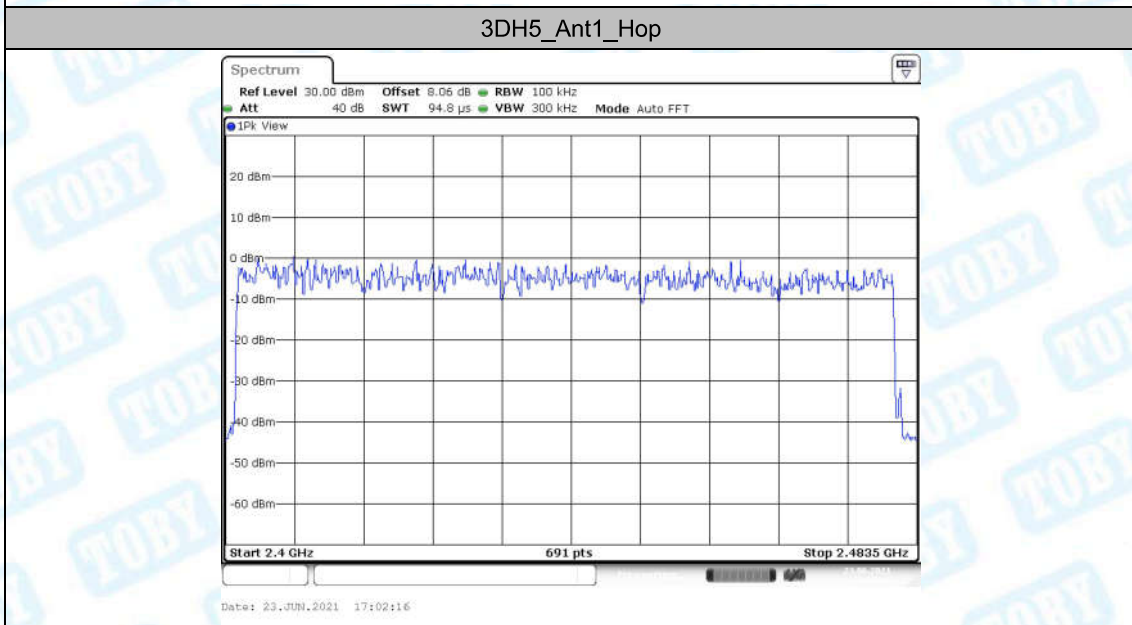
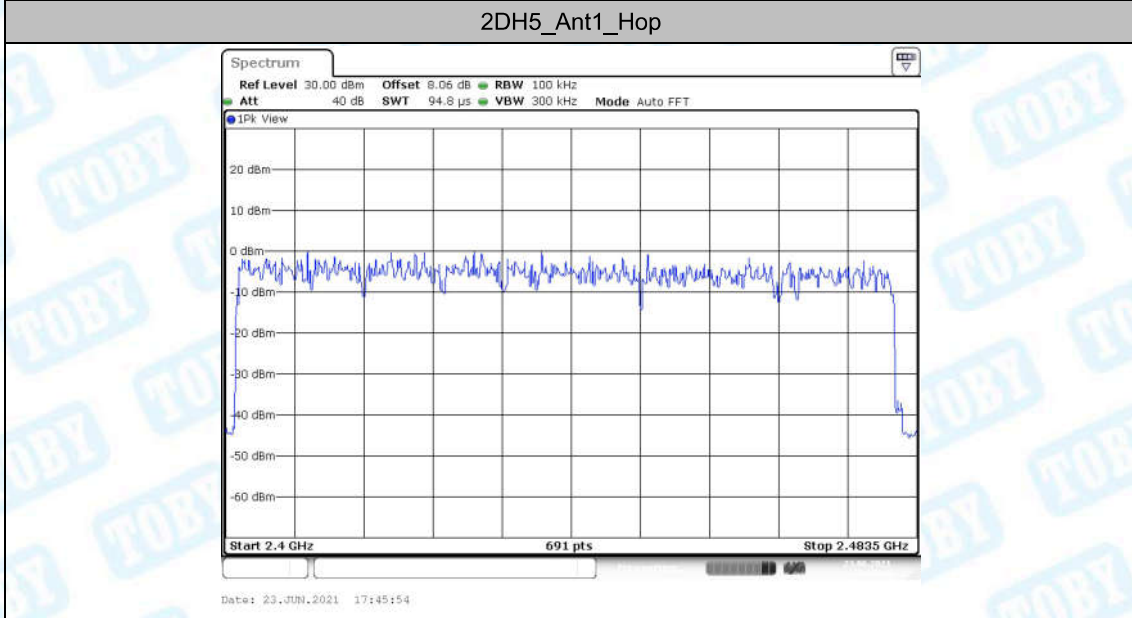
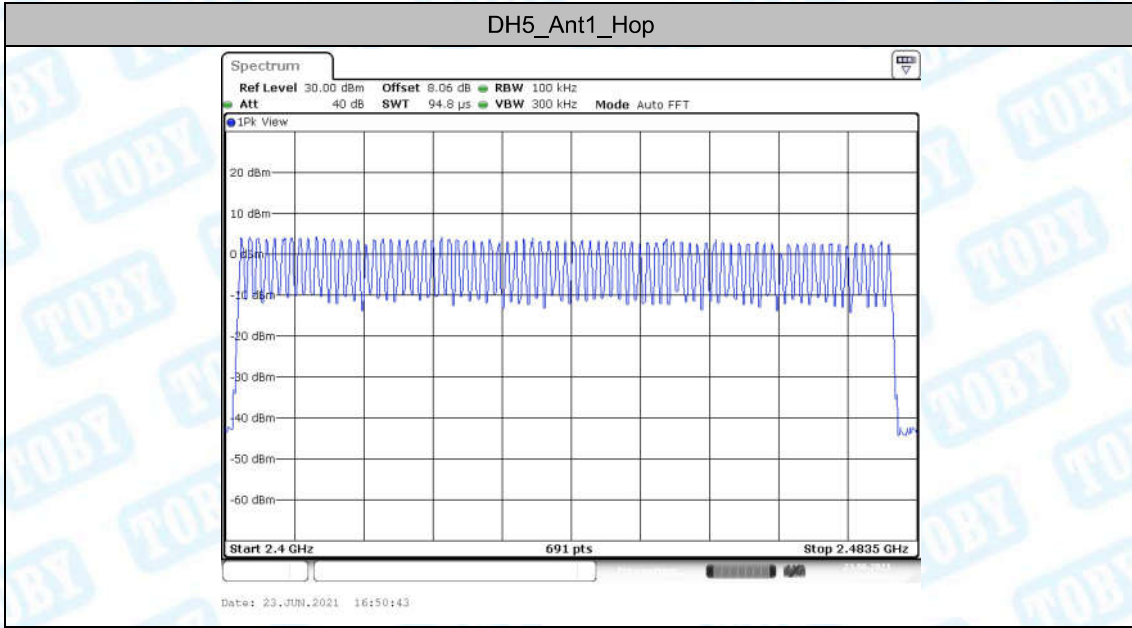
## 6. Number of hopping channels

### 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



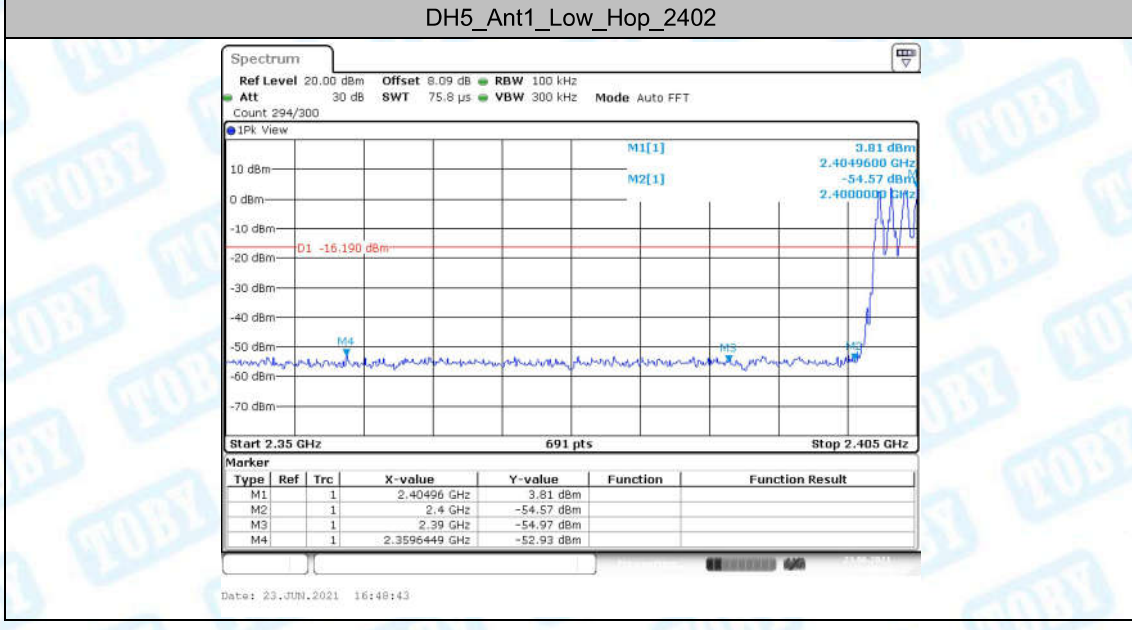
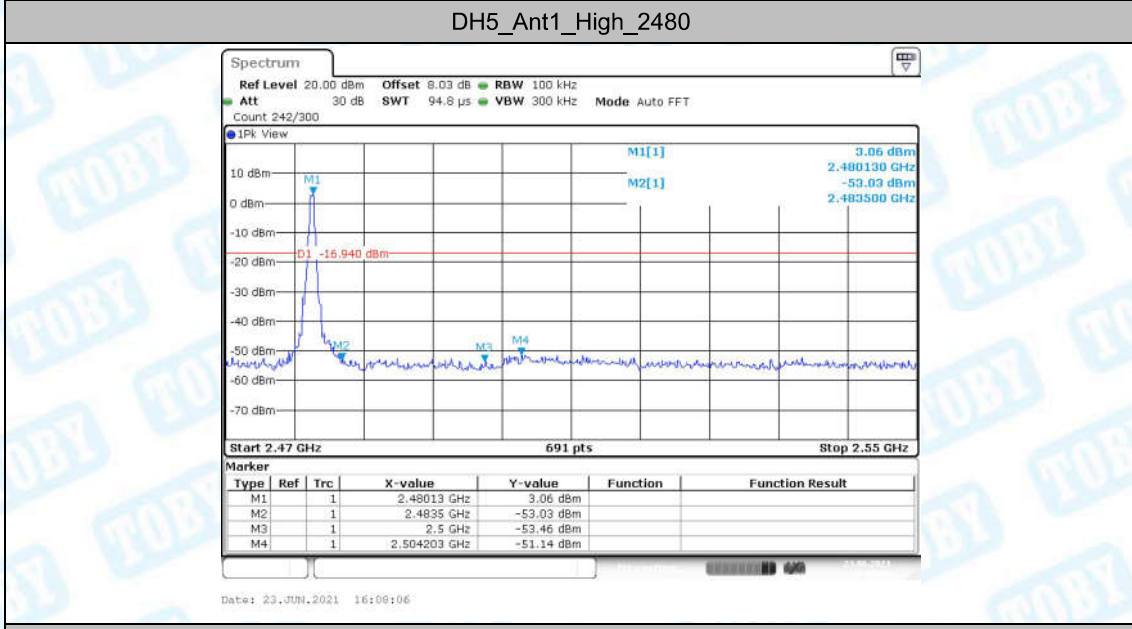
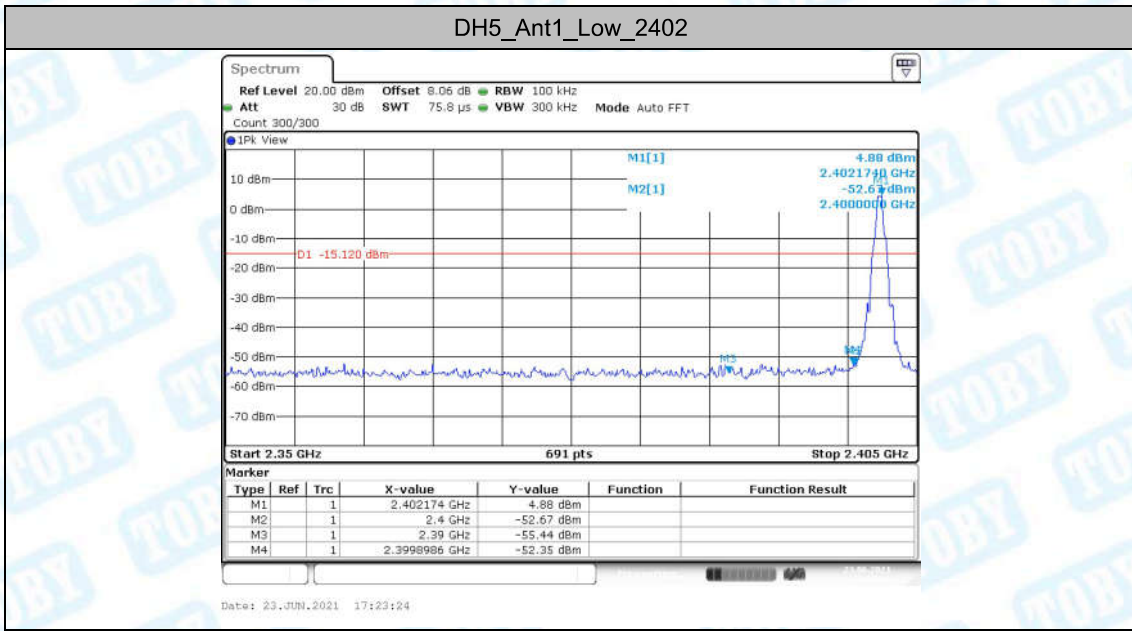
## 7. Band edge measurements

### 7.1. Test Result

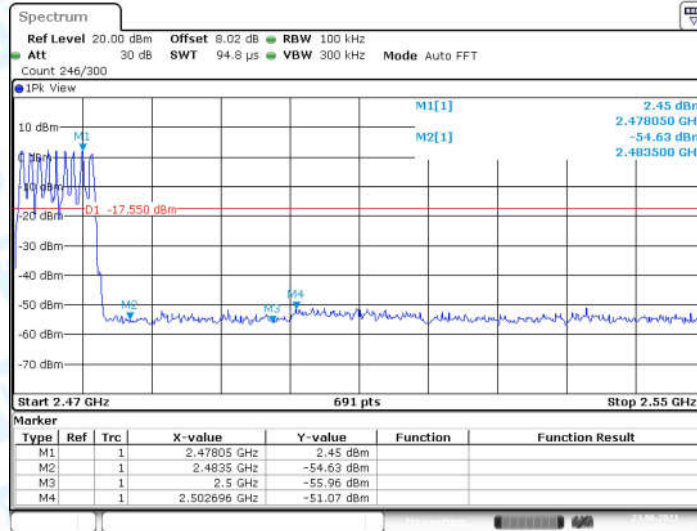
TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	4.88	-52.35	<=-15.12	PASS
		High	2480	3.06	-51.14	<=-16.94	PASS
		Low	Hop_2402	3.81	-52.93	<=-16.19	PASS
		High	Hop_2480	2.45	-51.07	<=-17.55	PASS
2DH5	Ant1	Low	2402	0.25	-40.88	<=-19.75	PASS
		High	2480	-2.55	-50.63	<=-22.55	PASS
		Low	Hop_2402	-1.99	-52.71	<=-21.99	PASS
		High	Hop_2480	-1.40	-51.17	<=-21.4	PASS
3DH5	Ant1	Low	2402	0.84	-51.74	<=-19.16	PASS
		High	2480	-2.53	-51.31	<=-22.53	PASS
		Low	Hop_2402	-2.76	-53.15	<=-22.76	PASS
		High	Hop_2480	-2.68	-51.72	<=-22.68	PASS



**7.2. Test Graphs**

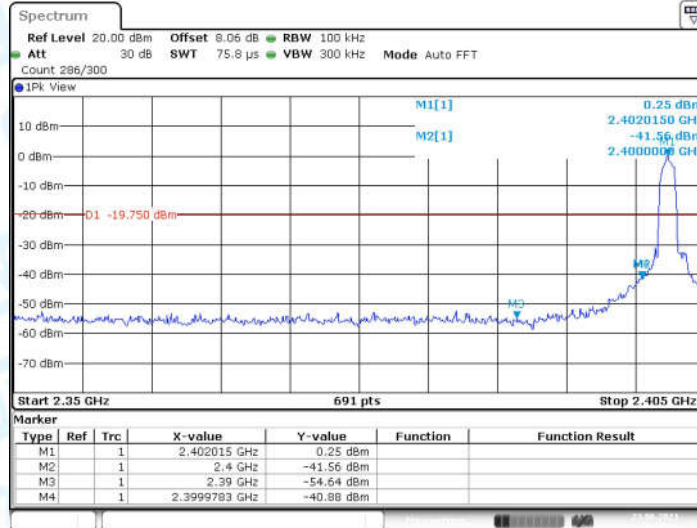


## DH5\_Ant1\_High\_Hop\_2480



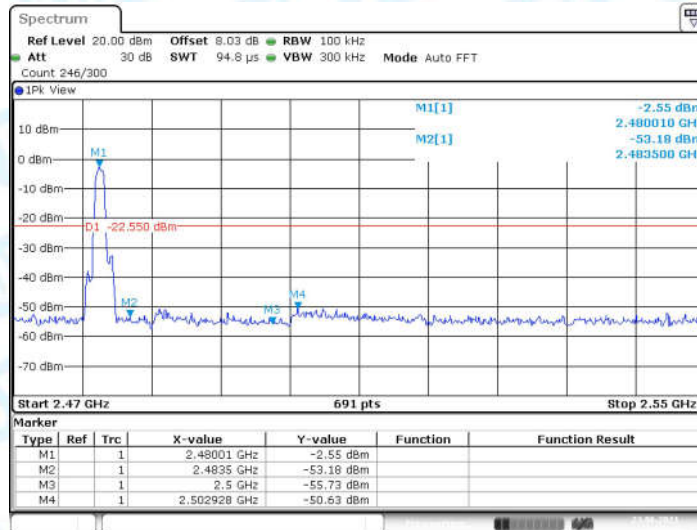
Date: 23 JUN, 2021 16:53:14

## 2DH5\_Ant1\_Low\_2402



Date: 23 JUN, 2021 16:10:53

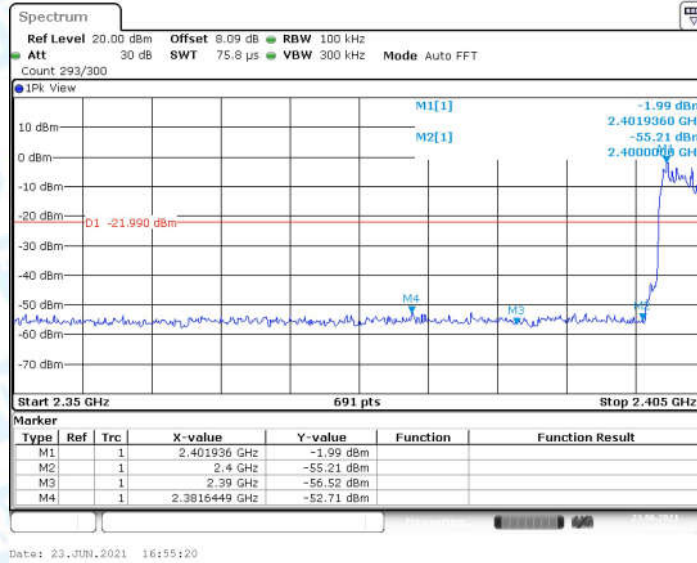
## 2DH5\_Ant1\_High\_2480



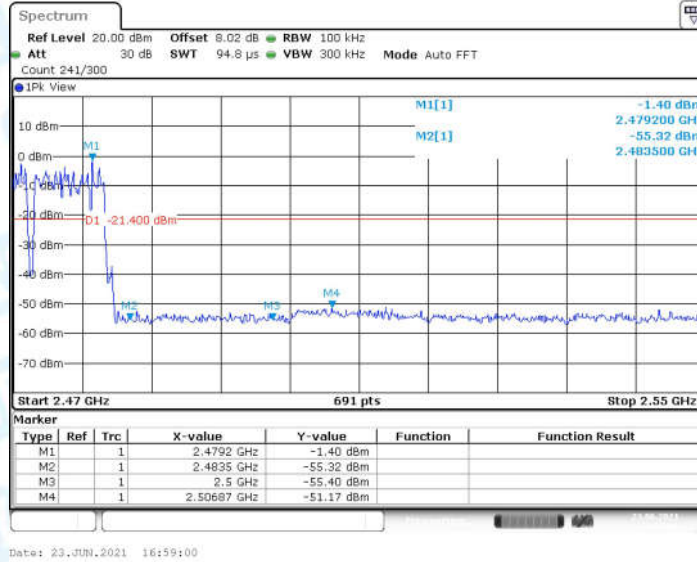
Date: 23 JUN, 2021 16:25:14



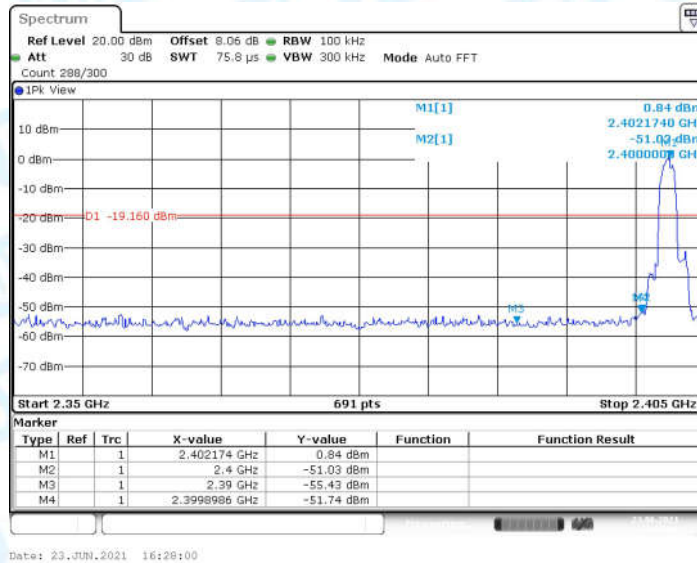
### 2DH5\_Ant1\_Low\_Hop\_2402



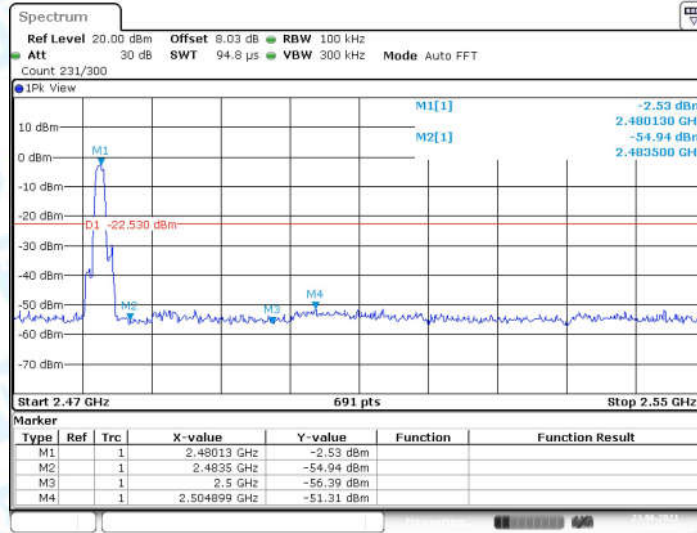
### 2DH5\_Ant1\_High\_Hop\_2480



### 3DH5\_Ant1\_Low\_2402

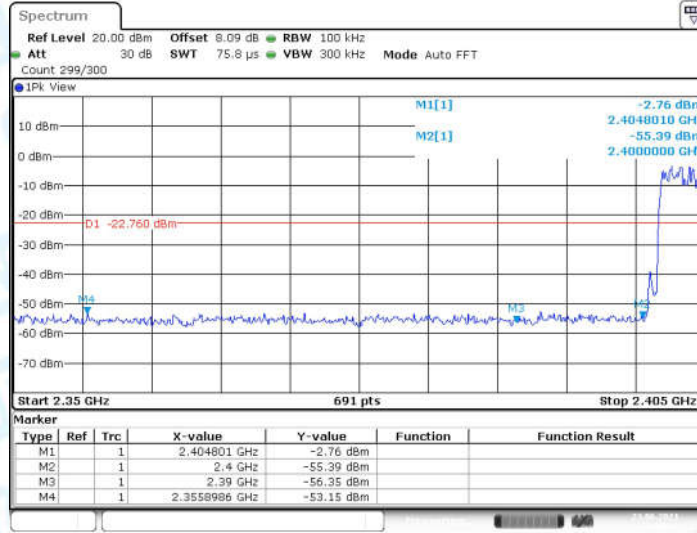


### 3DH5\_Ant1\_High\_2480



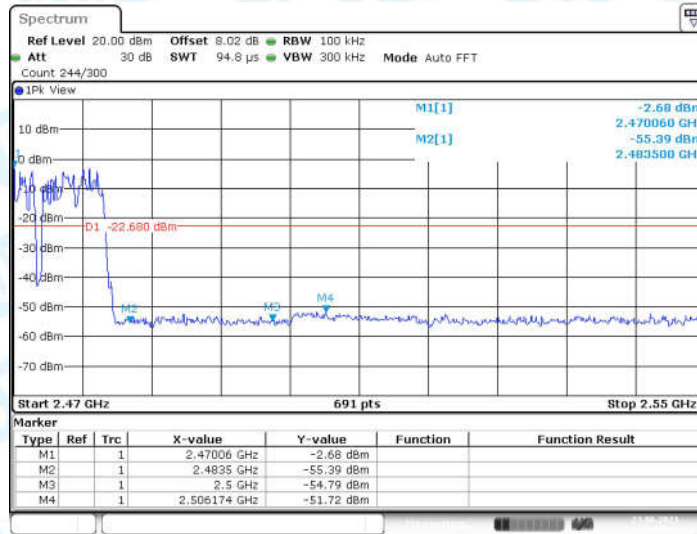
Date: 23 JUN, 2021 16:32:57

### 3DH5\_Ant1\_Low\_Hop\_2402



Date: 23 JUN, 2021 17:00:21

### 3DH5\_Ant1\_High\_Hop\_2480



Date: 23 JUN, 2021 17:04:43



## 8. Conducted Spurious Emission

### 8.1. Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	4.77	4.77	---	PASS
			30~1000	4.77	-63.84	<=-15.23	PASS
			1000~26500	4.77	-52.79	<=-15.23	PASS
		2441	Reference	4.01	4.01	---	PASS
			30~1000	4.01	-62.87	<=-15.99	PASS
			1000~26500	4.01	-53.36	<=-15.99	PASS
		2480	Reference	3.00	3.00	---	PASS
			30~1000	3.00	-62.41	<=-17	PASS
			1000~26500	3.00	-53.99	<=-17	PASS
2DH5	Ant1	2402	Reference	0.59	0.59	---	PASS
			30~1000	0.59	-61.75	<=-19.41	PASS
			1000~26500	0.59	-52.42	<=-19.41	PASS
		2441	Reference	-0.06	-0.06	---	PASS
			30~1000	-0.06	-63.1	<=-20.06	PASS
			1000~26500	-0.06	-53.58	<=-20.06	PASS
		2480	Reference	-1.21	-1.21	---	PASS
			30~1000	-1.21	-63.59	<=-21.21	PASS
			1000~26500	-1.21	-52.94	<=-21.21	PASS
3DH5	Ant1	2402	Reference	0.74	0.74	---	PASS
			30~1000	0.74	-61.92	<=-19.26	PASS
			1000~26500	0.74	-53.68	<=-19.26	PASS
		2441	Reference	0.16	0.16	---	PASS
			30~1000	0.16	-63.44	<=-19.84	PASS
			1000~26500	0.16	-53.96	<=-19.84	PASS
		2480	Reference	-1.31	-1.31	---	PASS
			30~1000	-1.31	-62.06	<=-21.31	PASS
			1000~26500	-1.31	-52.35	<=-21.31	PASS

**8.2. Test Graphs**

