Appendix A

RF Test Data for BT (Conducted Measurement)

Product Name: Portable Mood Light Speaker

Test Model: OTS172

Environmental Conditions

Temperature:	23.5℃
Relative Humidity:	52.2%
ATM Pressure:	100.0 kPa
Test Engineer:	monkey.Li Monkey Li
Supervised by:	Lihu Li Huan

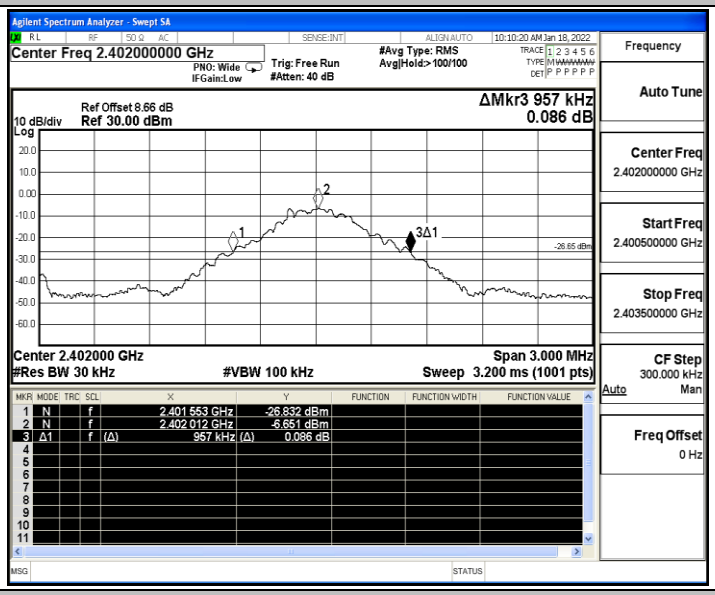
A.1 20dB Emission Bandwidth

Test Result

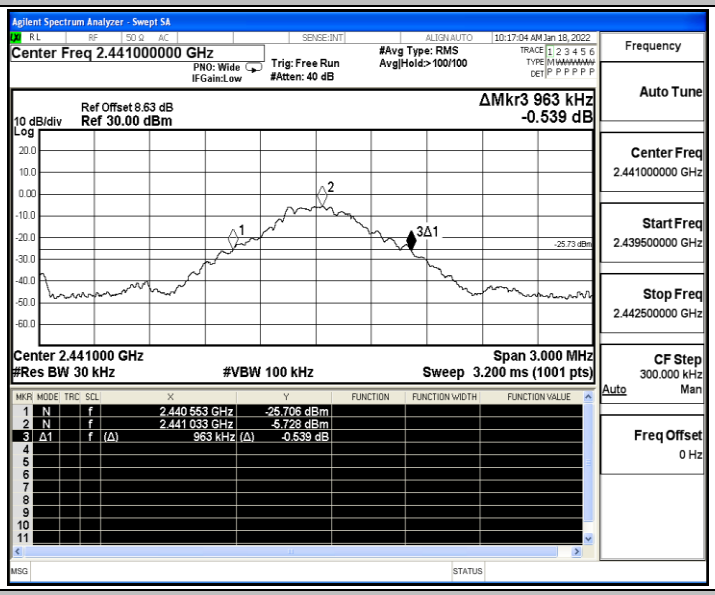
TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.957	2401.553	2402.510	---	---
		2441	0.963	2440.553	2441.516	---	---
		2480	0.960	2479.556	2480.516	---	---
2DH5	Ant1	2402	1.305	2401.367	2402.672	---	---
		2441	1.290	2440.385	2441.675	---	---
		2480	1.317	2479.361	2480.678	---	---
3DH5	Ant1	2402	1.305	2401.370	2402.675	---	---
		2441	1.302	2440.370	2441.672	---	---
		2480	1.311	2479.367	2480.678	---	---

Test Graphs

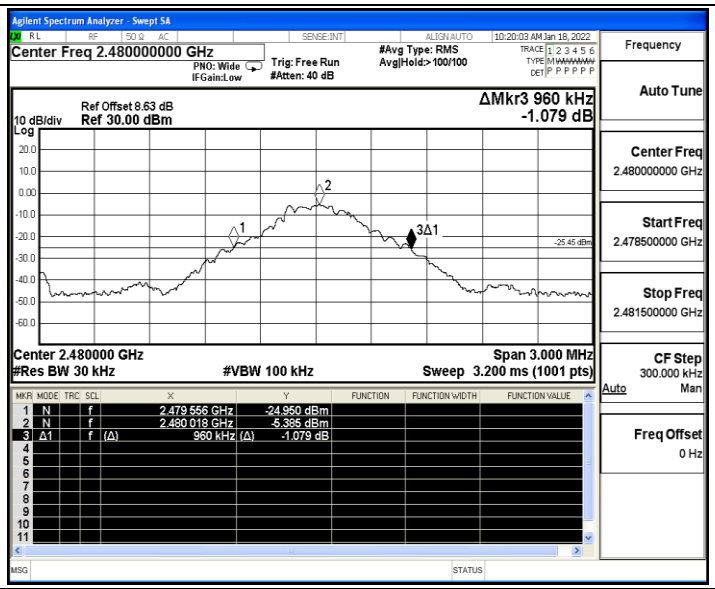
DH5_Ant1_2402



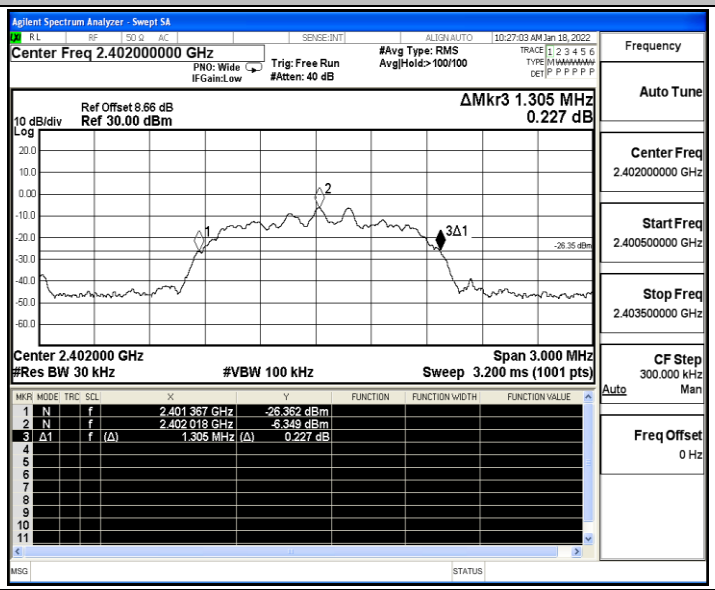
DH5_Ant1_2441



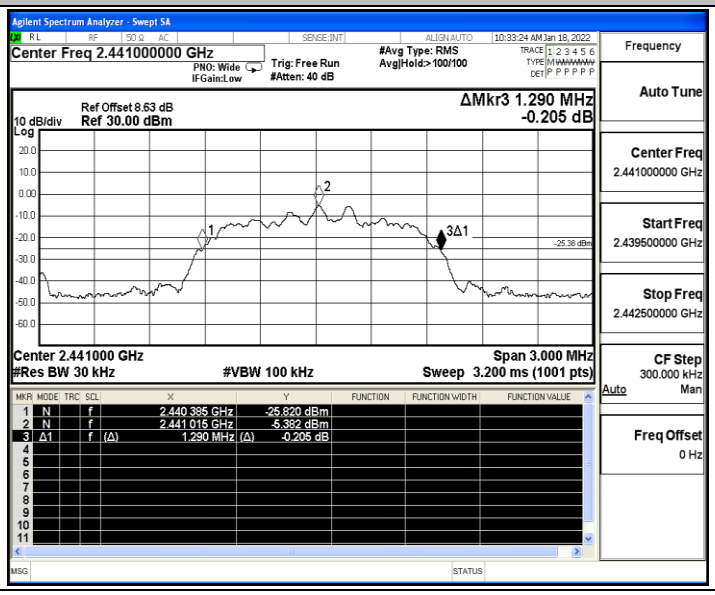
DH5_Ant1_2480



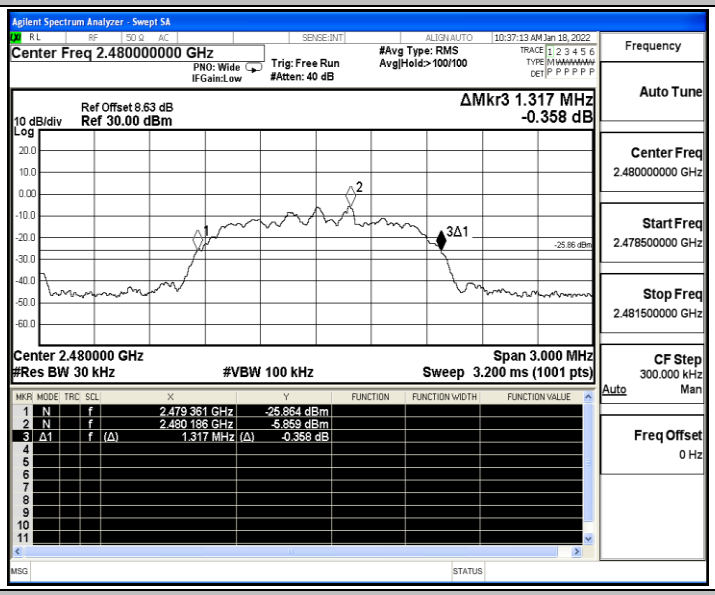
2DH5_Ant1_2402



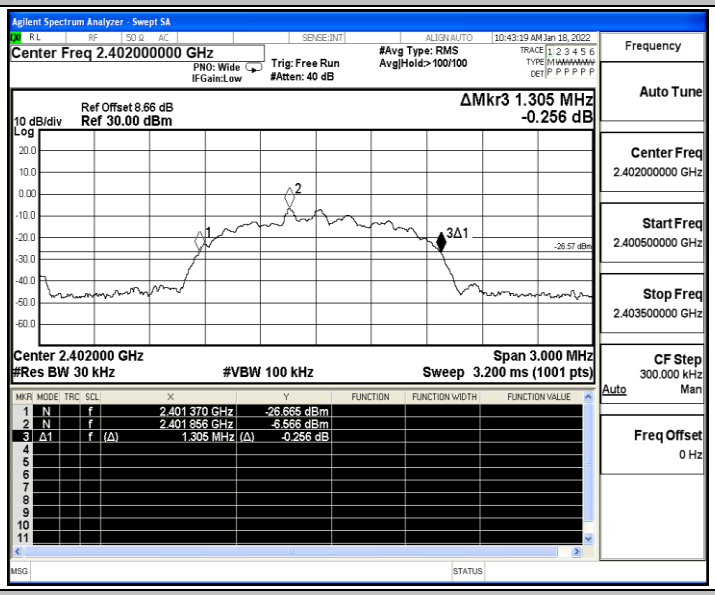
2DH5_Ant1_2441



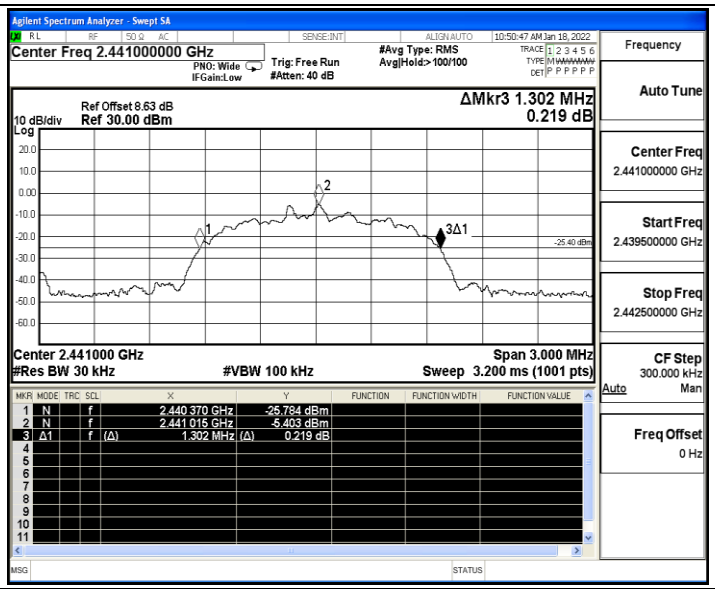
2DH5_Ant1_2480



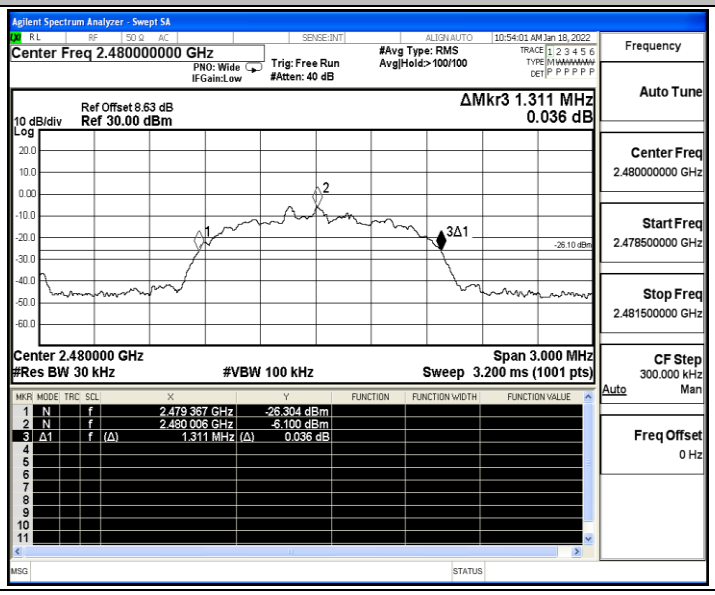
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480



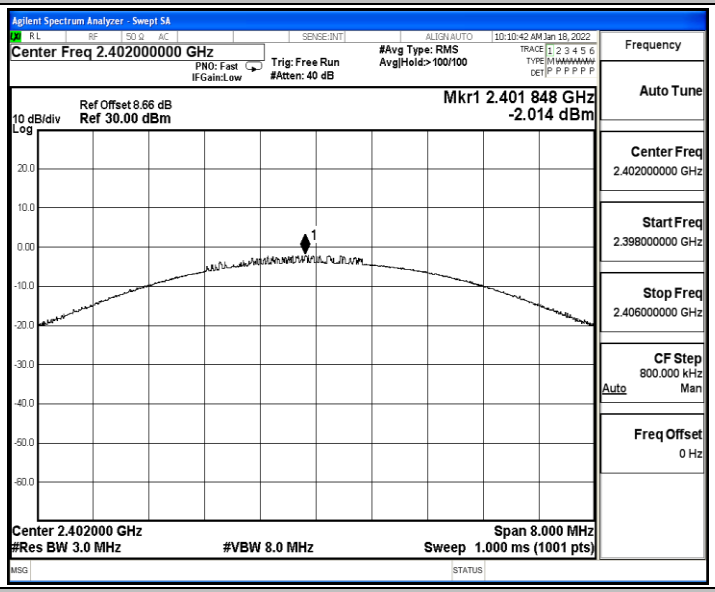
A.2 Maximum peak conducted output power

Test Result

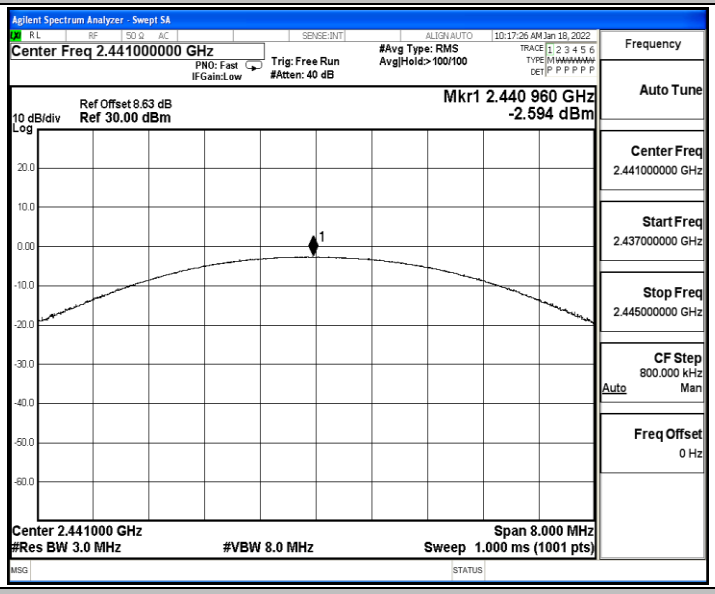
TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	-2.01	≤20.97	PASS
		2441	-2.59	≤20.97	PASS
		2480	-2.57	≤20.97	PASS
2DH5	Ant1	2402	-2.65	≤20.97	PASS
		2441	-1.89	≤20.97	PASS
		2480	-1.78	≤20.97	PASS
3DH5	Ant1	2402	-2.26	≤20.97	PASS
		2441	-1.44	≤20.97	PASS
		2480	-1.36	≤20.97	PASS

Test Graphs

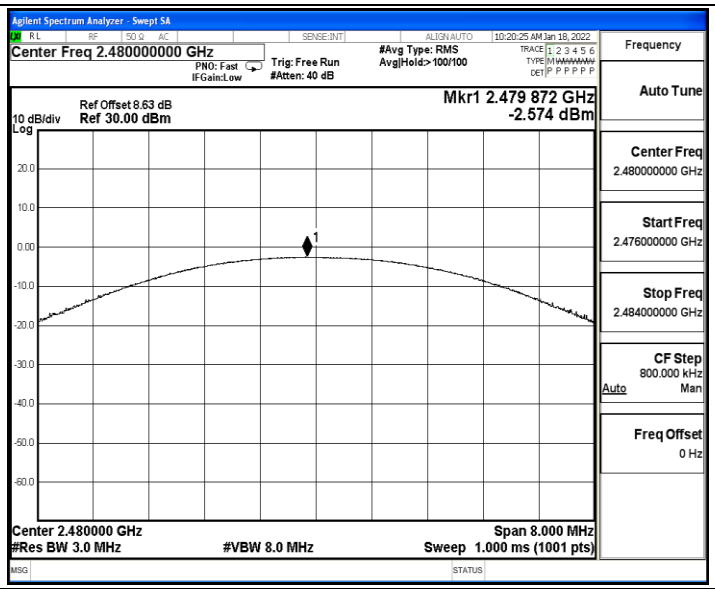
DH5_Ant1_2402



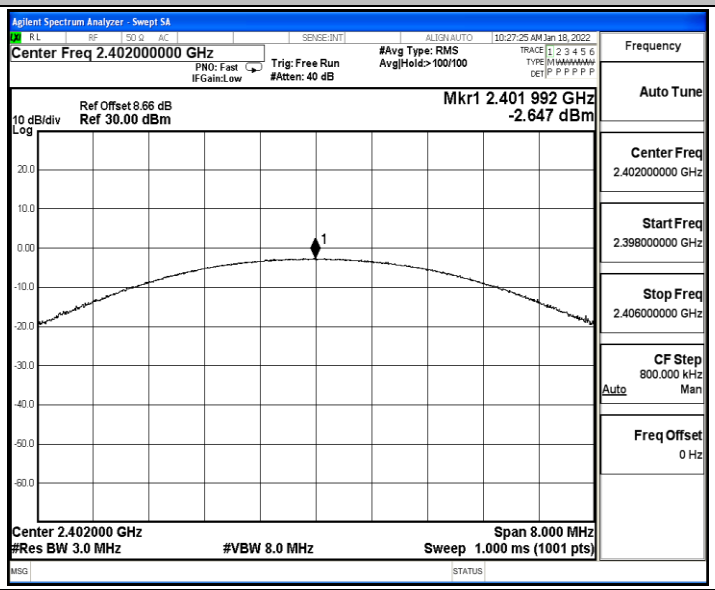
DH5_Ant1_2441



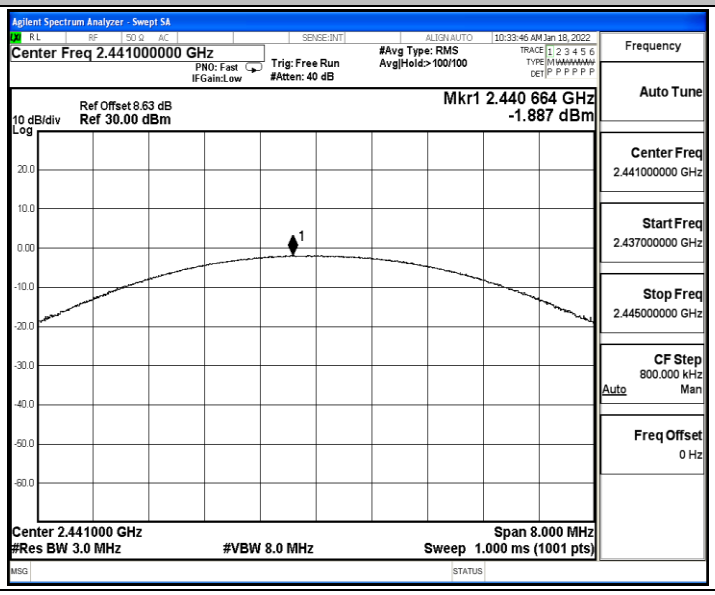
DH5_Ant1_2480



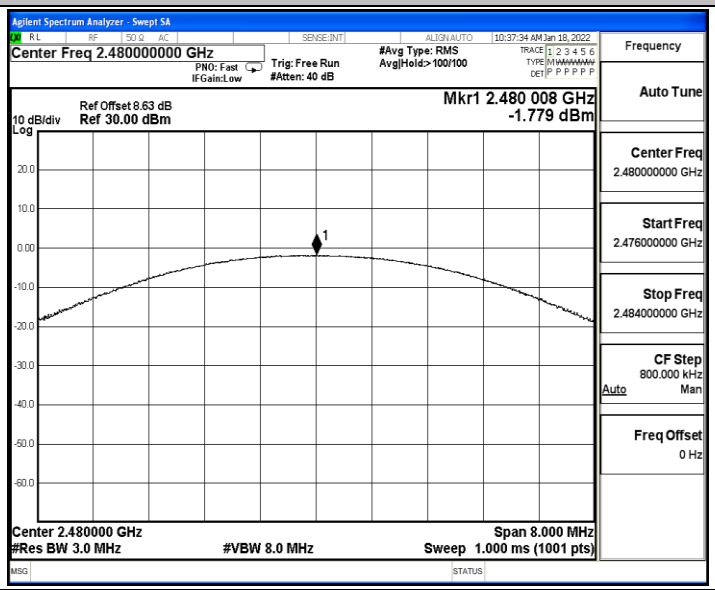
2DH5_Ant1_2402



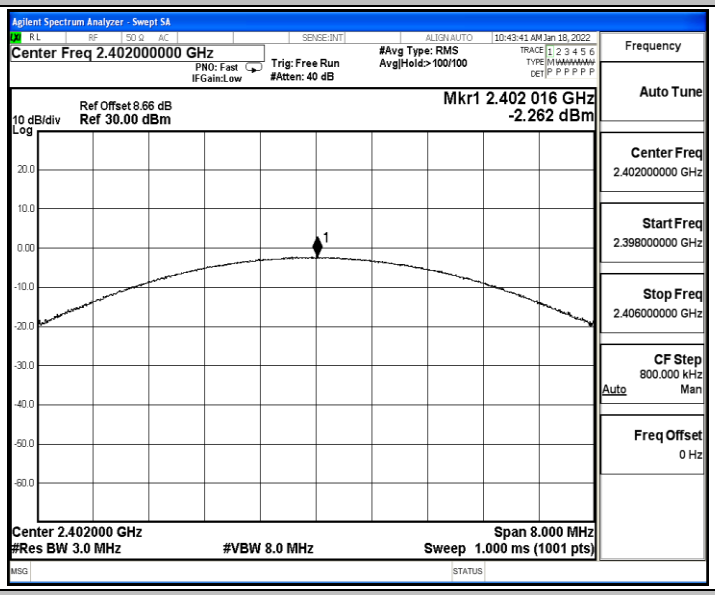
2DH5_Ant1_2441



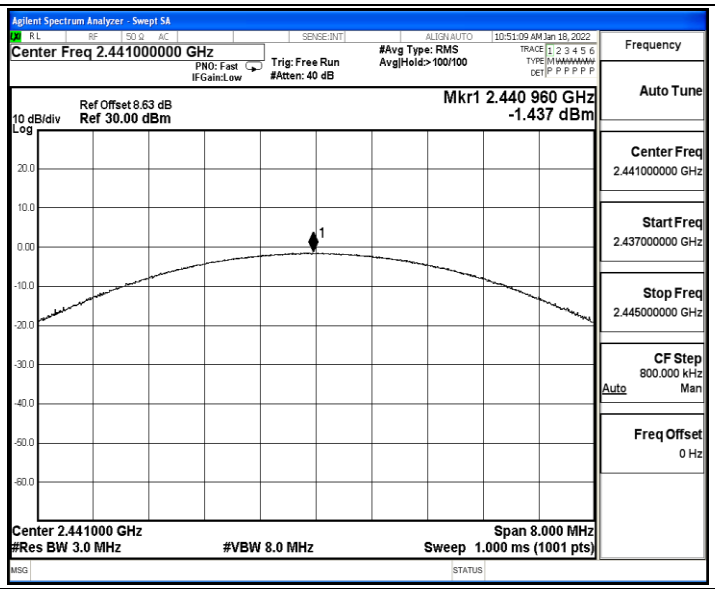
2DH5_Ant1_2480



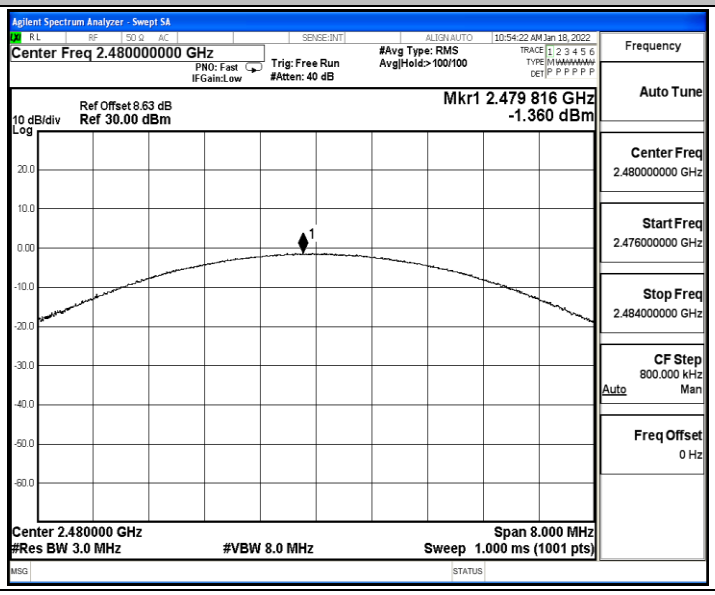
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480

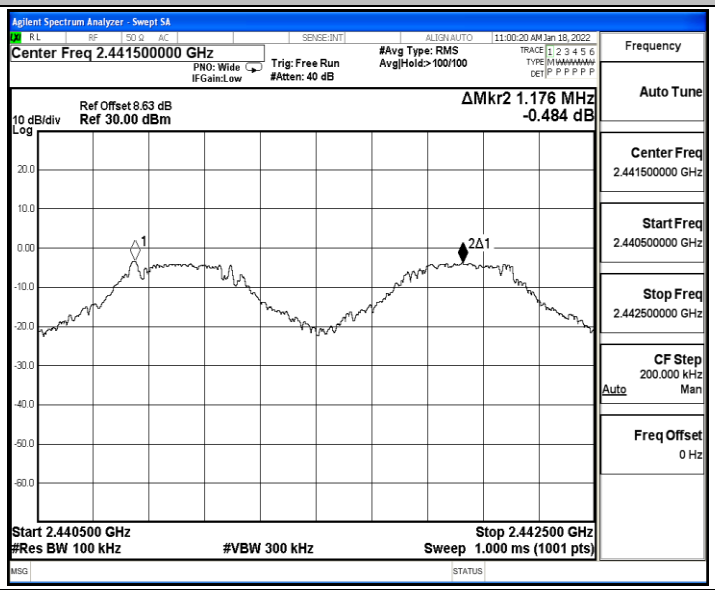


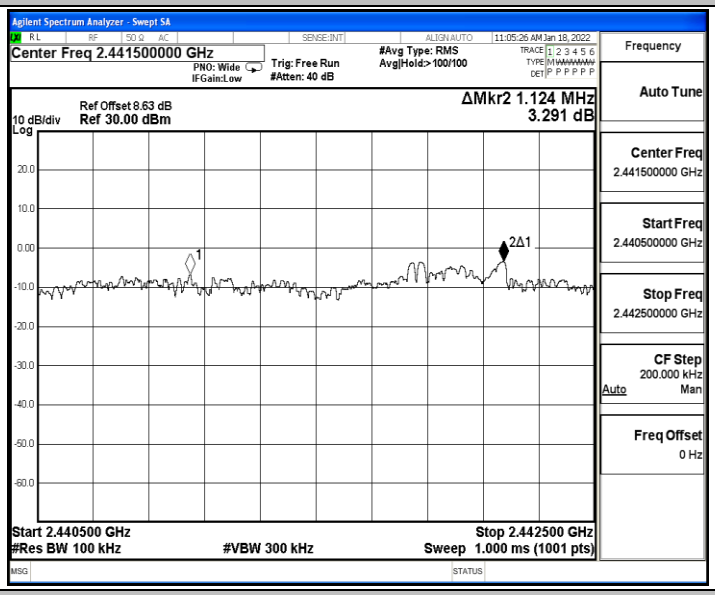
A.3 Carrier frequency separation

Test Result

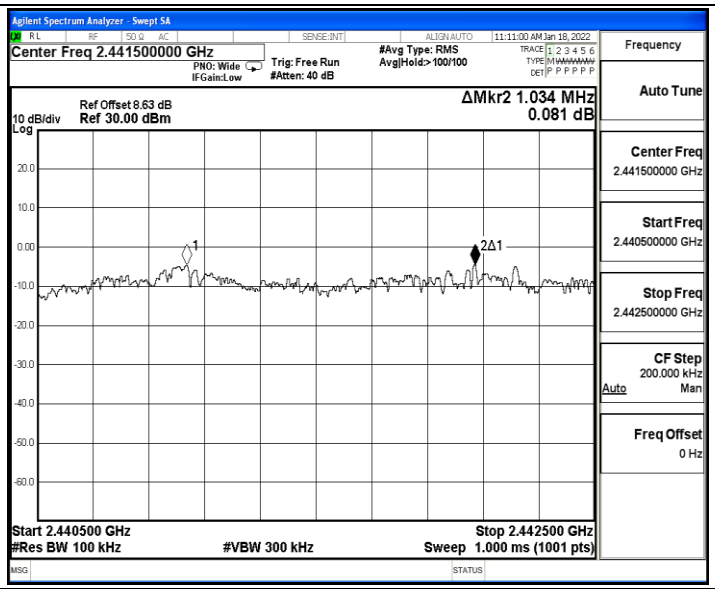
TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.176	≥0.963	PASS
2DH5	Ant1	Hop	1.124	≥0.878	PASS
3DH5	Ant1	Hop	1.034	≥0.874	PASS

Test Graphs

DH5_Ant1_Hop


2DH5_Ant1_Hop


3DH5_Ant1_Hop

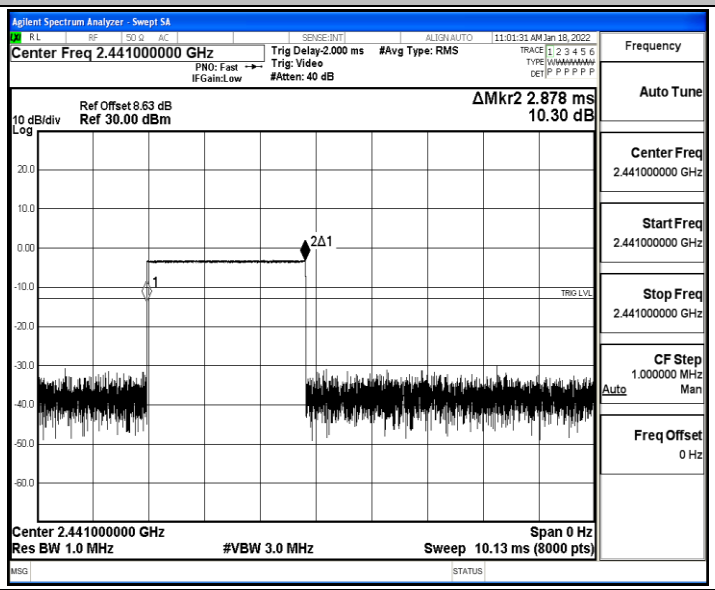

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.441500000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold:>100/100
11:11:00 AM Jan 18, 2022
Ref Offset 8.63 dB
10 dB/div Ref 30.00 dBm
Log
ΔMkr2 1.034 MHz
0.081 dB
Start 2.440500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.442500 GHz
Sweep 1.000 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.441500000 GHz
Start Freq
2.440500000 GHz
Stop Freq
2.442500000 GHz
CF Step
200.000 kHz
Auto Man
Freq Offset
0 Hz

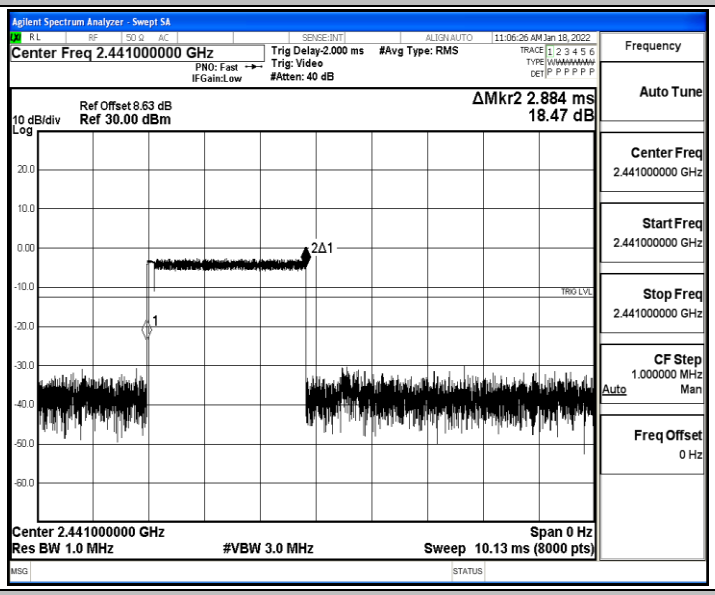
A.4 Time of occupancy

Test Result

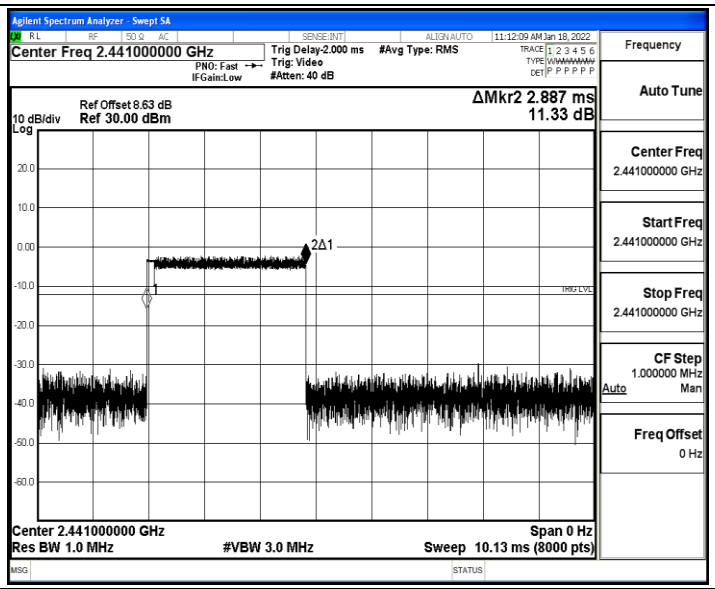
TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.88	106.67	0.307	≤0.4	PASS
2DH5	Ant1	Hop	2.88	106.67	0.308	≤0.4	PASS
3DH5	Ant1	Hop	2.89	106.67	0.308	≤0.4	PASS

Test Graphs

DH5_Ant1_Hop


2DH5_Ant1_Hop


3DH5_Ant1_Hop

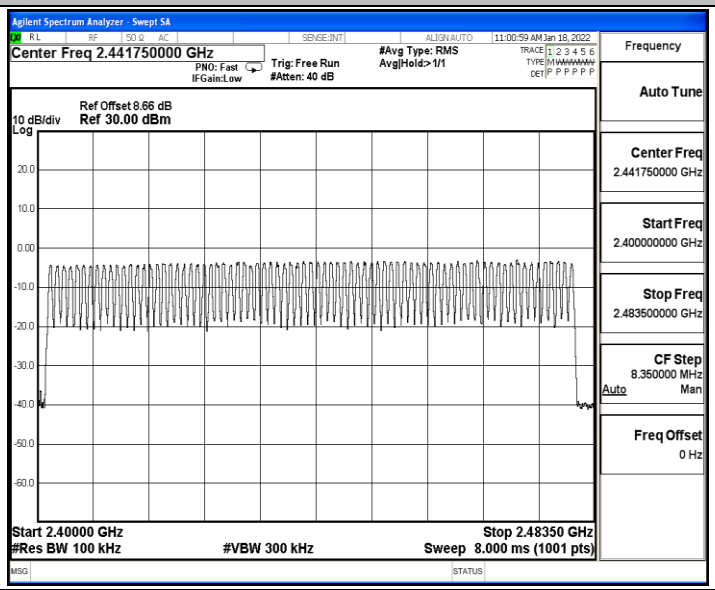
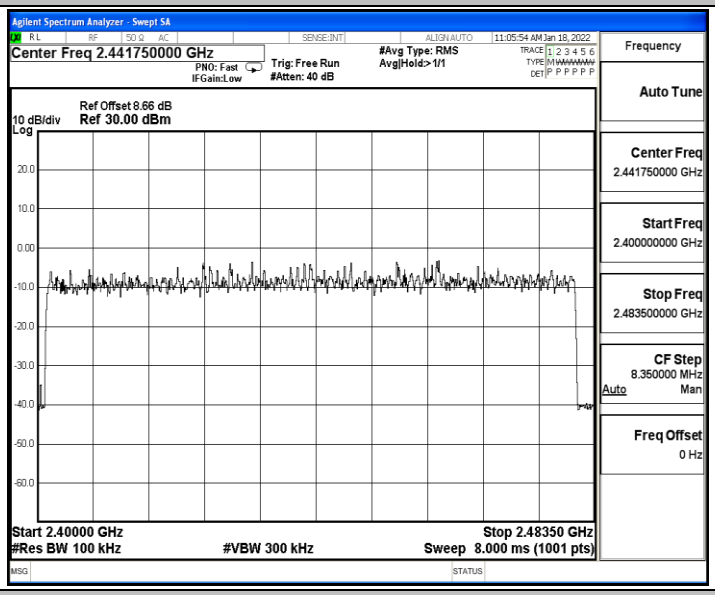

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
Trig Delay-2.000 ms
Trig: Video
#Atten: 40 dB
#Avg Type: RMS
11:12:09 AM Jan 18, 2022
Frequency
Auto Tune
Ref Offset 8.63 dB
10 dB/div Ref 30.00 dBm
Log
ΔMkr2 2.887 ms
11.33 dB
2Δ1
Center Freq
2.441000000 GHz
Start Freq
2.441000000 GHz
Stop Freq
2.441000000 GHz
CF Step
1.000000 MHz
Auto Man
Freq Offset
0 Hz
Center 2.441000000 GHz
Span 0 Hz
Res BW 1.0 MHz
#VBW 3.0 MHz
Sweep 10.13 ms (8000 pts)

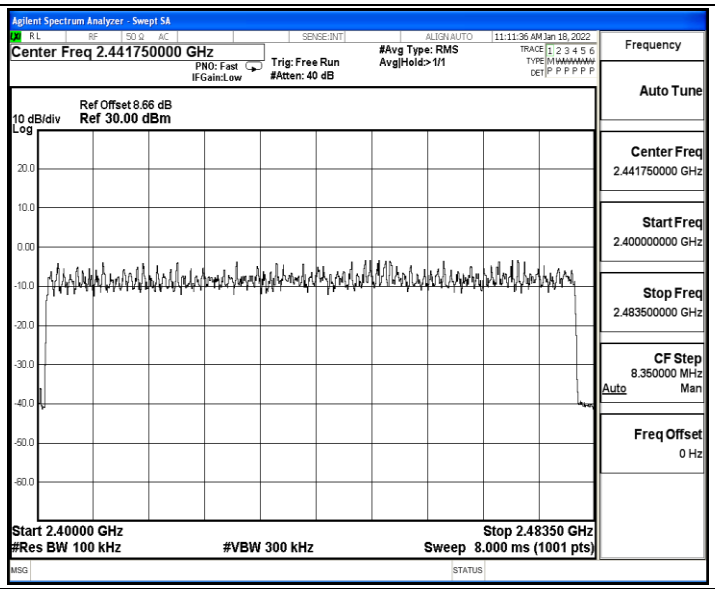
A.5 Number of hopping channels

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

Test Graphs

DH5_Ant1_Hop

2DH5_Ant1_Hop

3DH5_Ant1_Hop


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.441750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold:> 1/1
11:11:36 AM Jan 18, 2022
Ref Offset 8.66 dB
10 dB/div
Ref 30.00 dBm
Log
Start 2.40000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.48350 GHz
Sweep 8.000 ms (1001 pts)
Frequency
Auto Tune
Center Freq
2.441750000 GHz
Start Freq
2.400000000 GHz
Stop Freq
2.483500000 GHz
CF Step
8.350000 MHz
Auto
Man
Freq Offset
0 Hz

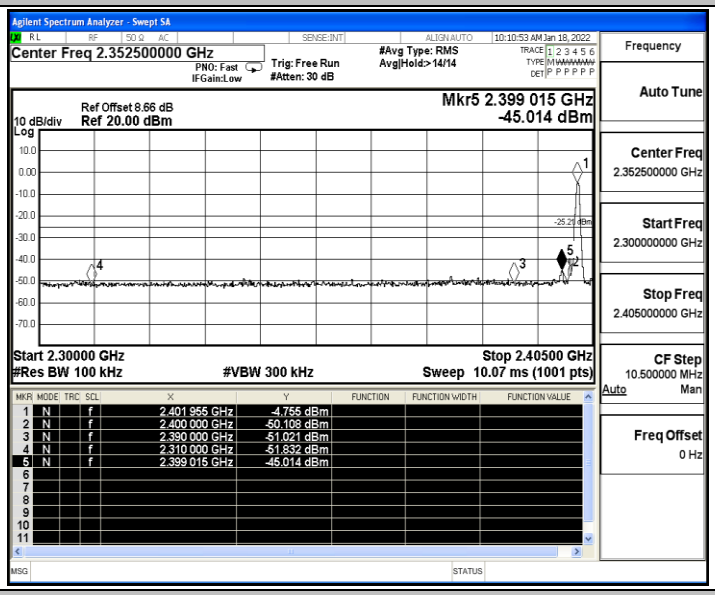
A.6 Band edge measurements

Test Result

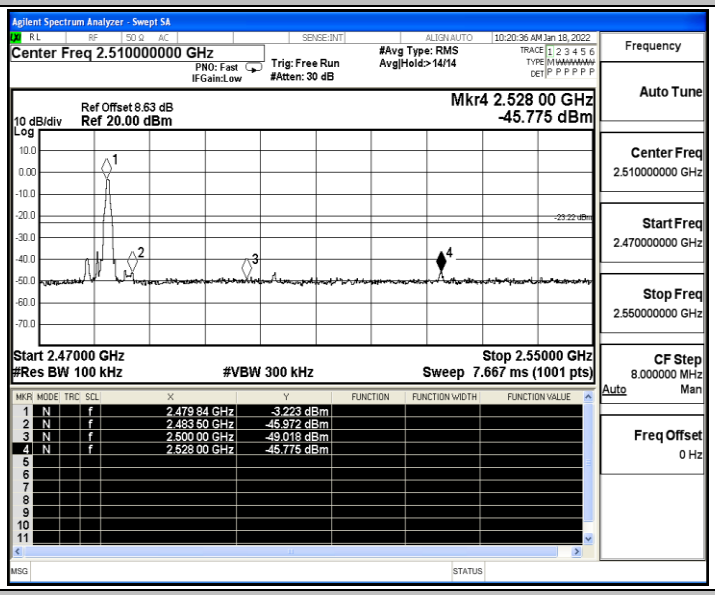
TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-5.21	-45.01	≤-25.21	PASS
		High	2480	-3.22	-45.78	≤-23.22	PASS
		Low	Hop_2402	-4.57	-48.52	≤-24.57	PASS
		High	Hop_2480	-3.43	-46.38	≤-23.43	PASS
2DH5	Ant1	Low	2402	-4.22	-46.96	≤-24.22	PASS
		High	2480	-3.18	-47.07	≤-23.18	PASS
		Low	Hop_2402	-8.32	-49.18	≤-28.32	PASS
		High	Hop_2480	-3.87	-47.45	≤-23.87	PASS
3DH5	Ant1	Low	2402	-4.30	-46.28	≤-24.3	PASS
		High	2480	-3.21	-46.78	≤-23.21	PASS
		Low	Hop_2402	-8.22	-48.78	≤-28.22	PASS
		High	Hop_2480	-5.22	-47.68	≤-25.22	PASS

Test Graphs

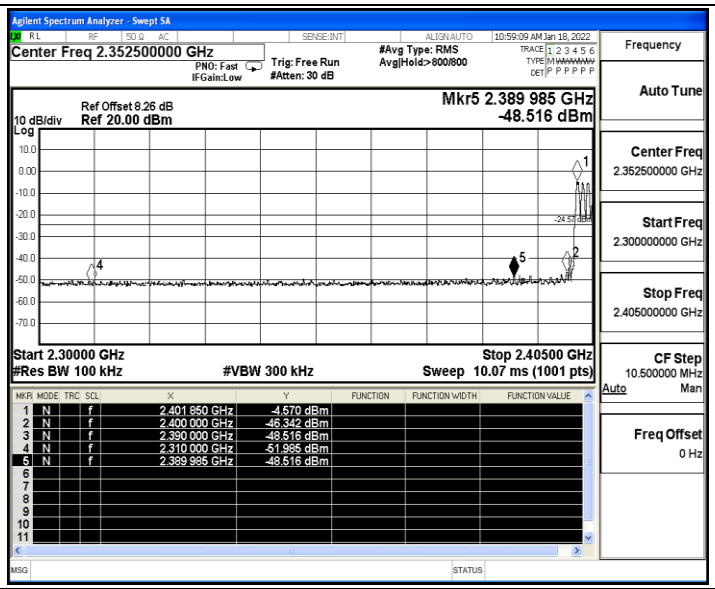
DH5_Ant1_Low_2402



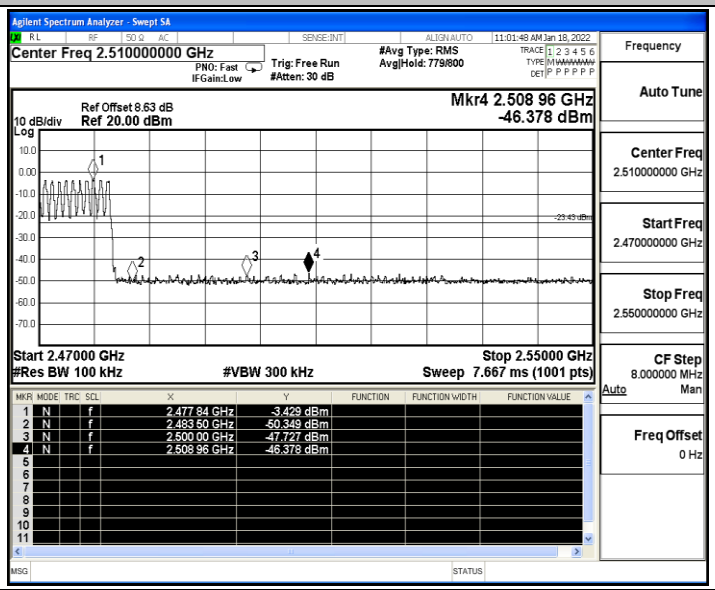
DH5_Ant1_High_2480



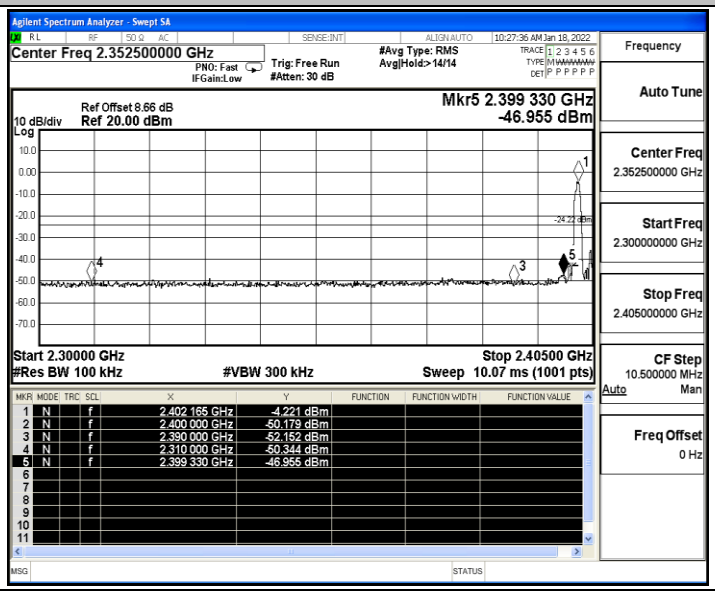
DH5_Ant1_Low_Hop_2402



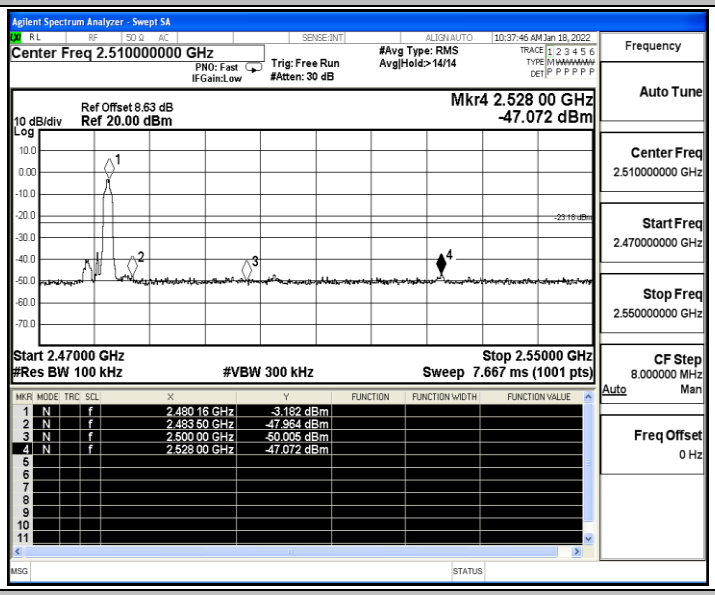
DH5_Ant1_High_Hop_2480



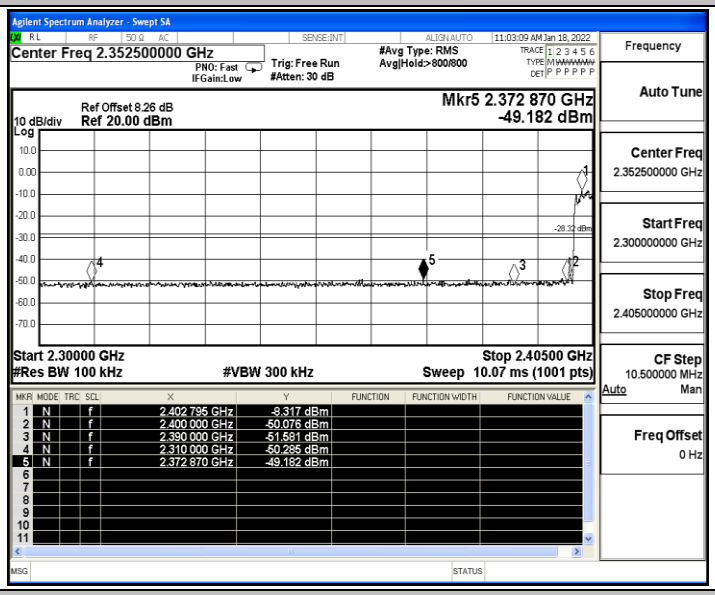
2DH5_Ant1_Low_2402



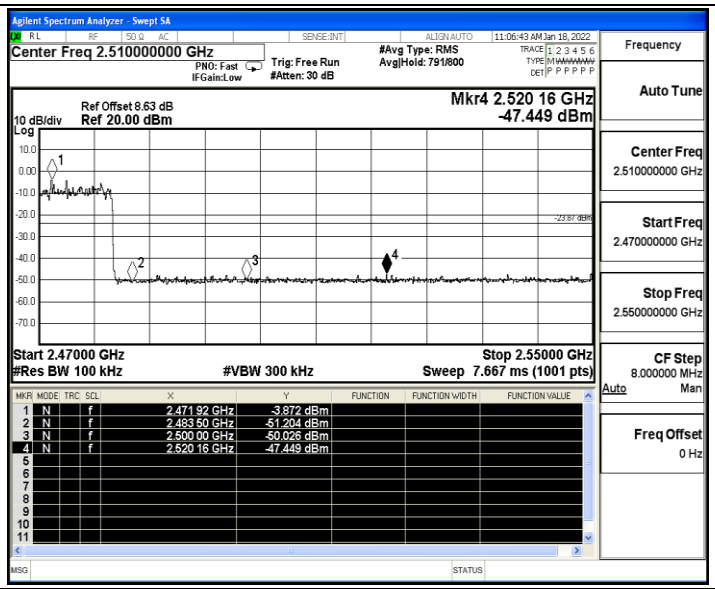
2DH5_Ant1_High_2480



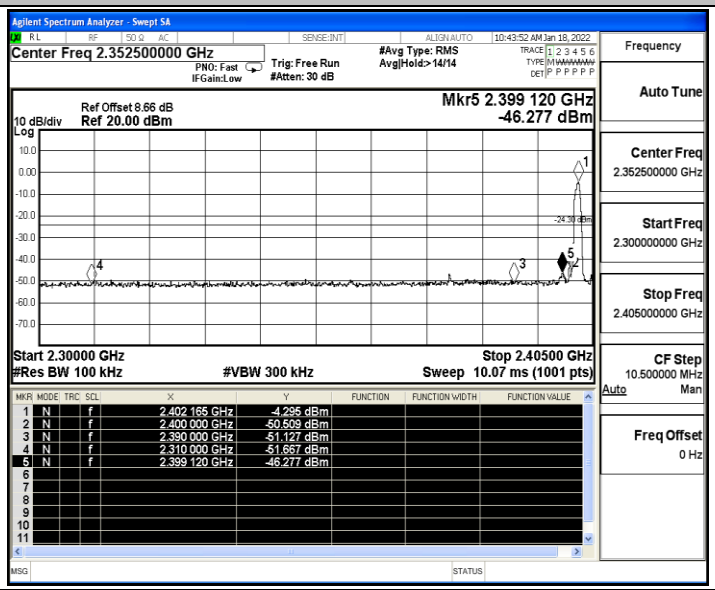
2DH5_Ant1_Low_Hop_2402



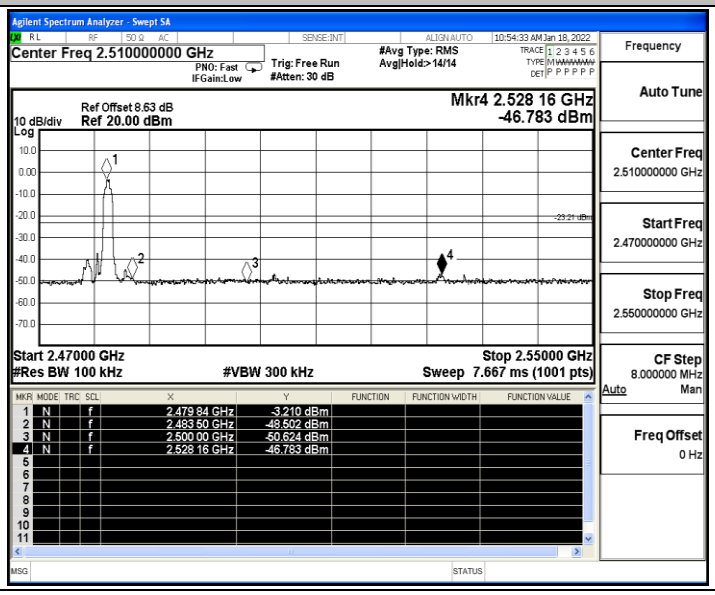
2DH5_Ant1_High_Hop_2480



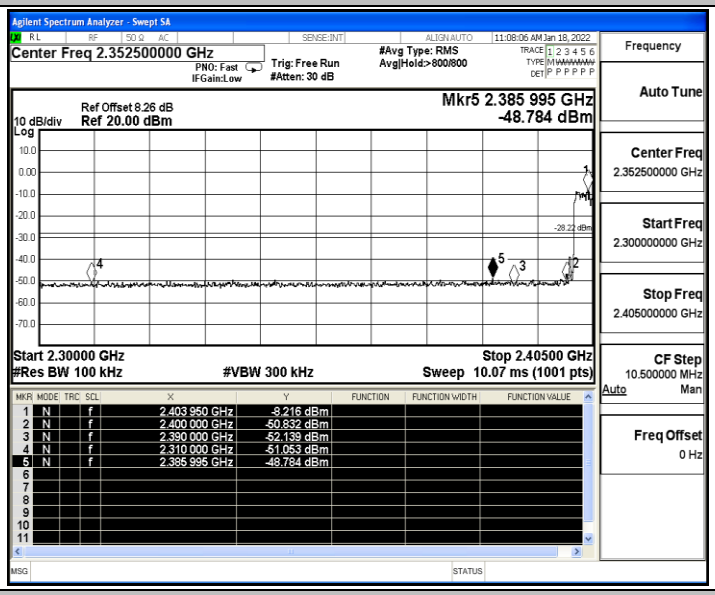
3DH5_Ant1_Low_2402



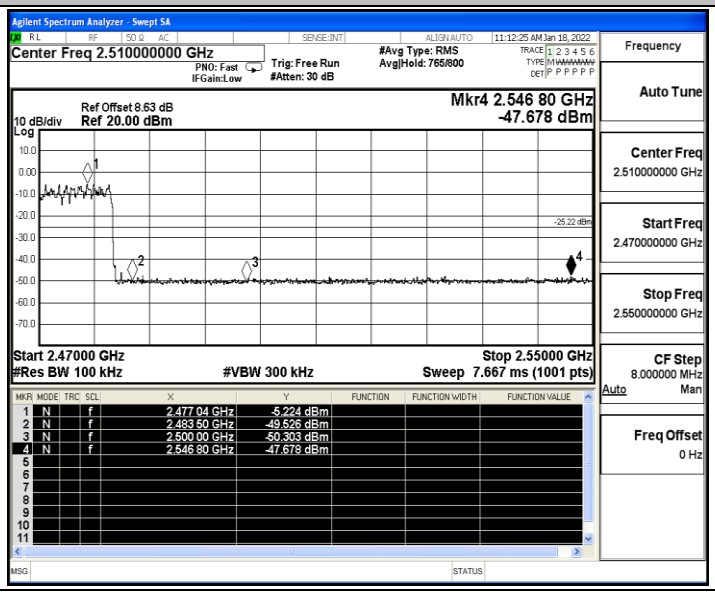
3DH5_Ant1_High_2480



3DH5_Ant1_Low_Hop_2402



3DH5_Ant1_High_Hop_2480



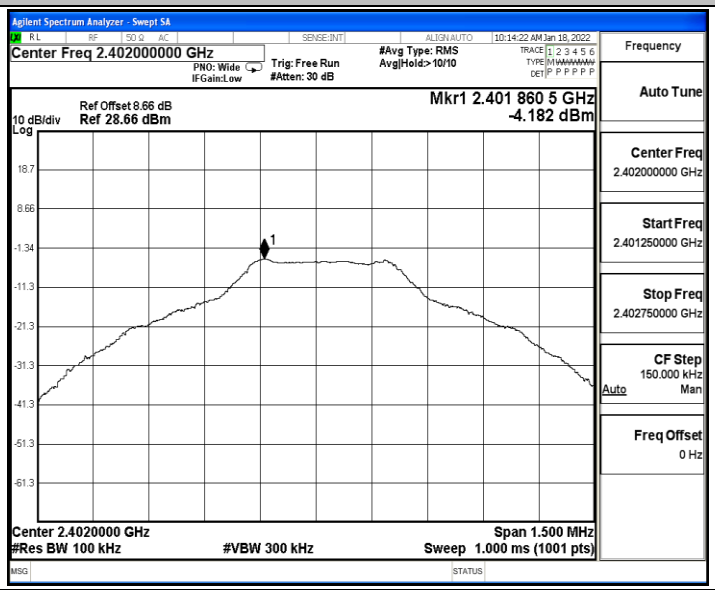
A.7 Conducted Spurious Emission

Test Result

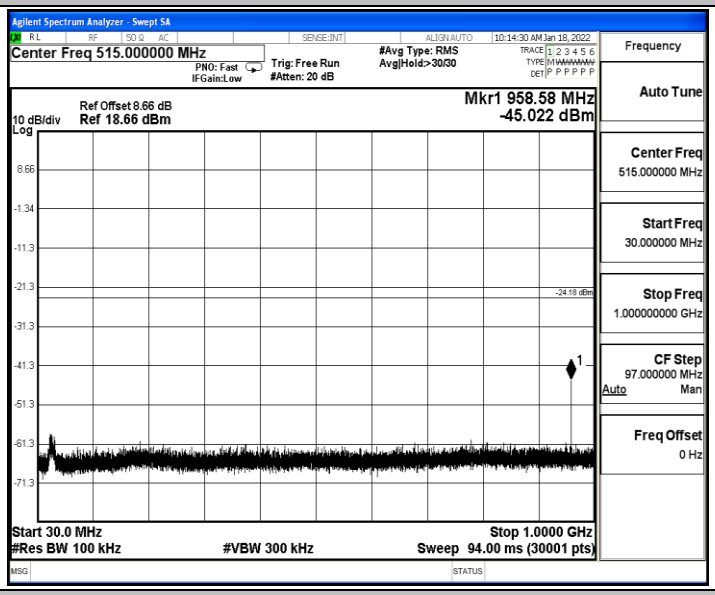
TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	-4.18	-4.18	---	PASS
			30~1000	-4.18	-45.02	≤-24.18	PASS
			1000~26500	-4.18	-45.8	≤-24.18	PASS
		2441	Reference	-3.34	-3.34	---	PASS
			30~1000	-3.34	-44.8	≤-23.34	PASS
			1000~26500	-3.34	-42.83	≤-23.34	PASS
		2480	Reference	-3.41	-3.41	---	PASS
			30~1000	-3.41	-47.57	≤-23.41	PASS
			1000~26500	-3.41	-46.35	≤-23.41	PASS
2DH5	Ant1	2402	Reference	-4.19	-4.19	---	PASS
			30~1000	-4.19	-57.73	≤-24.19	PASS
			1000~26500	-4.19	-45.83	≤-24.19	PASS
		2441	Reference	-3.41	-3.41	---	PASS
			30~1000	-3.41	-57.1	≤-23.41	PASS
			1000~26500	-3.41	-46.58	≤-23.41	PASS
		2480	Reference	-3.26	-3.26	---	PASS
			30~1000	-3.26	-49.87	≤-23.26	PASS
			1000~26500	-3.26	-45.1	≤-23.26	PASS
3DH5	Ant1	2402	Reference	-4.15	-4.15	---	PASS
			30~1000	-4.15	-53.41	≤-24.15	PASS
			1000~26500	-4.15	-46.55	≤-24.15	PASS
		2441	Reference	-3.33	-3.33	---	PASS
			30~1000	-3.33	-58.01	≤-23.33	PASS
			1000~26500	-3.33	-46.02	≤-23.33	PASS
		2480	Reference	-3.21	-3.21	---	PASS
			30~1000	-3.21	-58.42	≤-23.21	PASS
			1000~26500	-3.21	-46.2	≤-23.21	PASS

Test Graphs

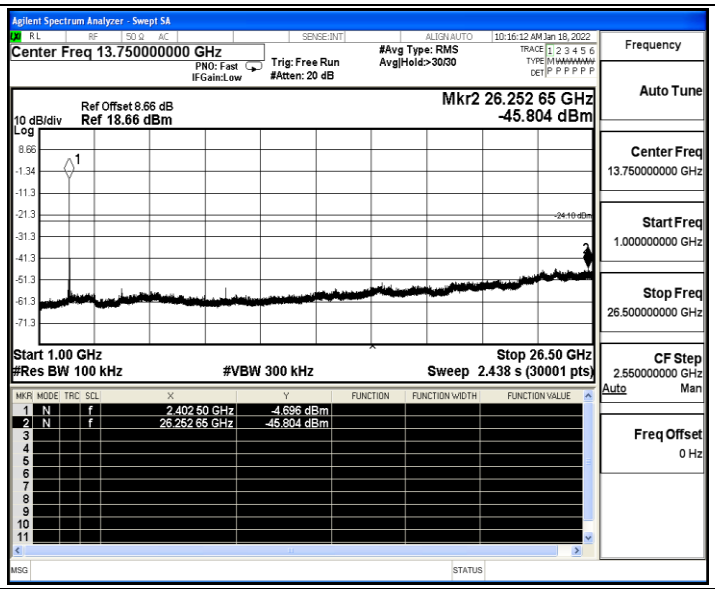
DH5_Ant1_2402_0~Reference



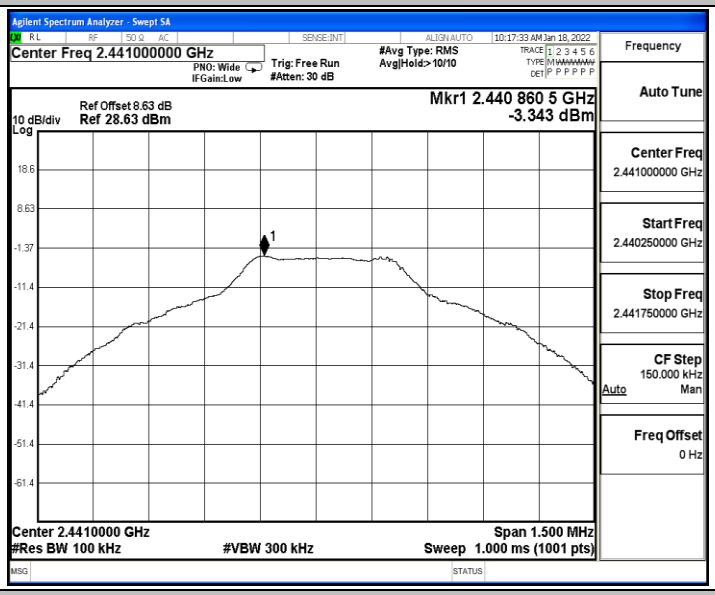
DH5_Ant1_2402_30~1000



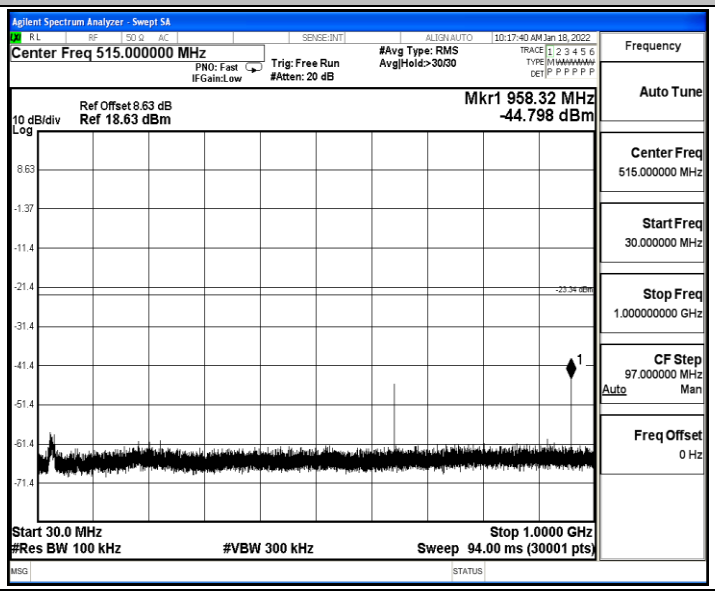
DH5_Ant1_2402_1000~26500



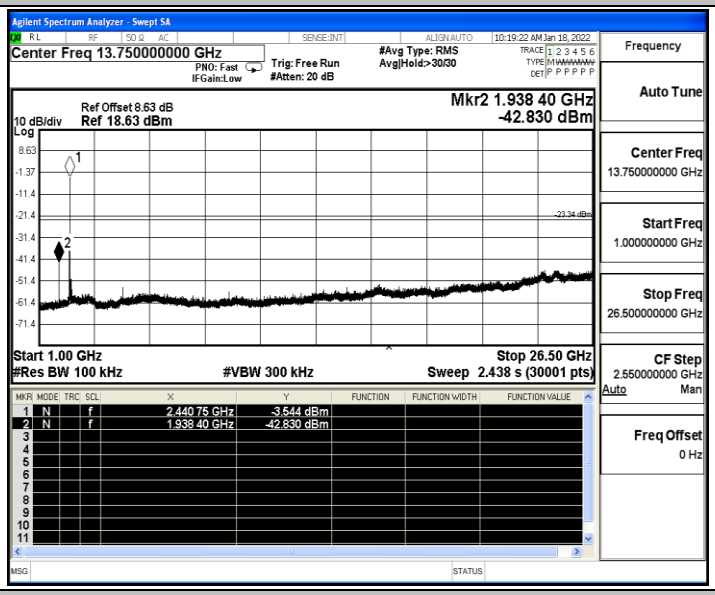
DH5_Ant1_2441_0~Reference



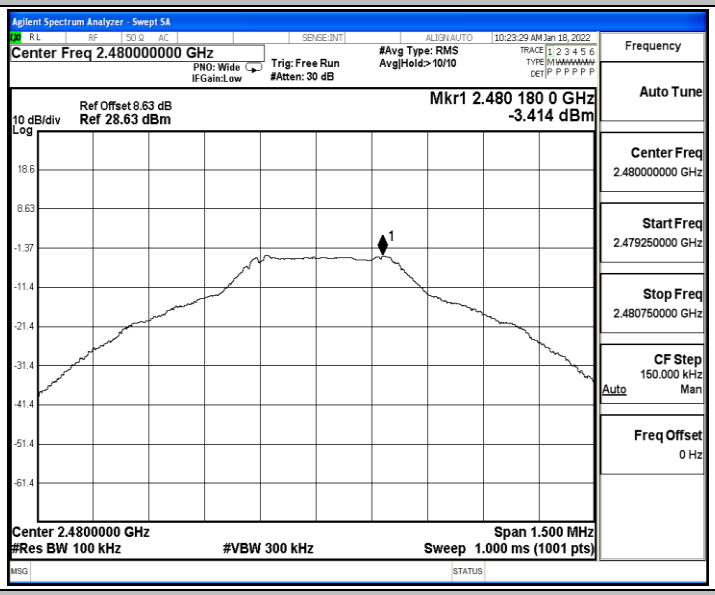
DH5_Ant1_2441_30~1000



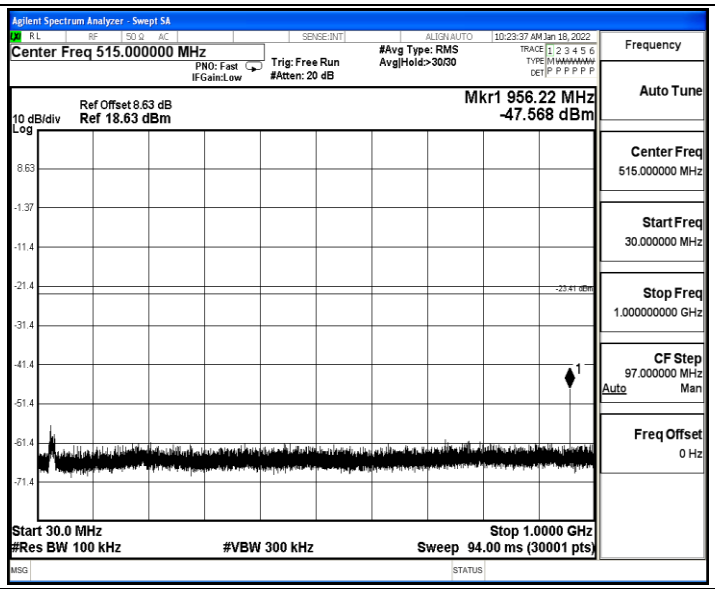
DH5_Ant1_2441_1000~26500



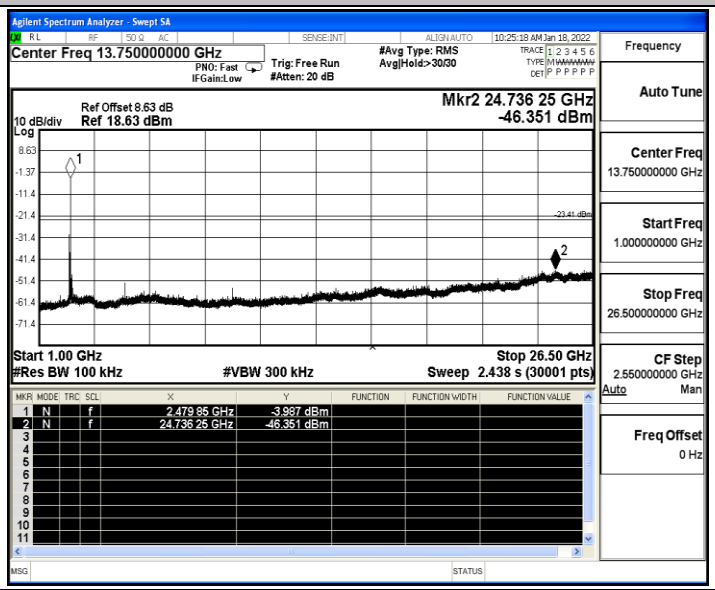
DH5_Ant1_2480_0~Reference



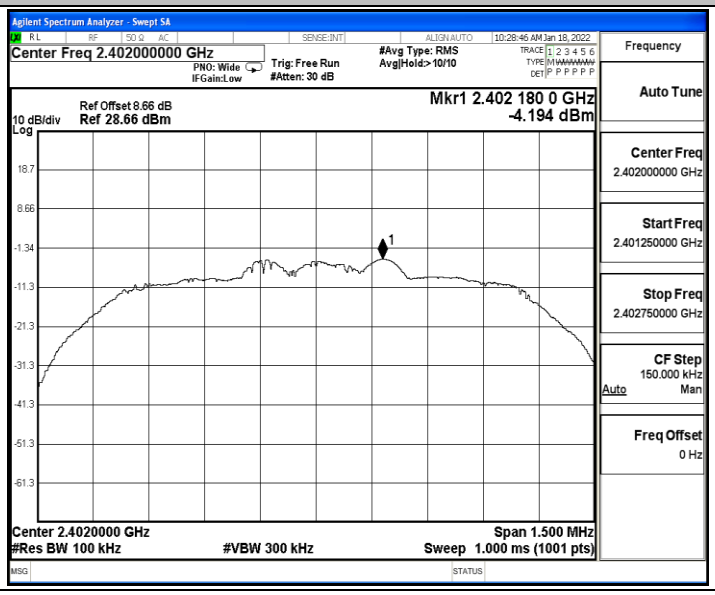
DH5_Ant1_2480_30~1000



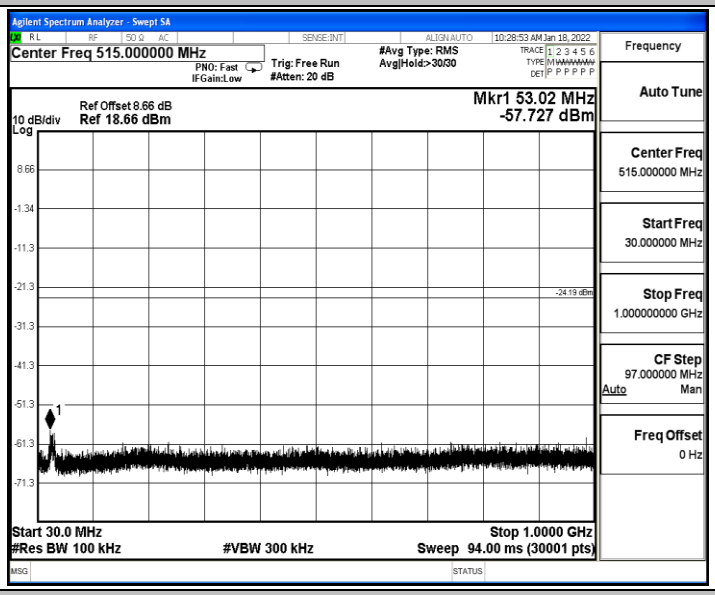
DH5_Ant1_2480_1000~26500



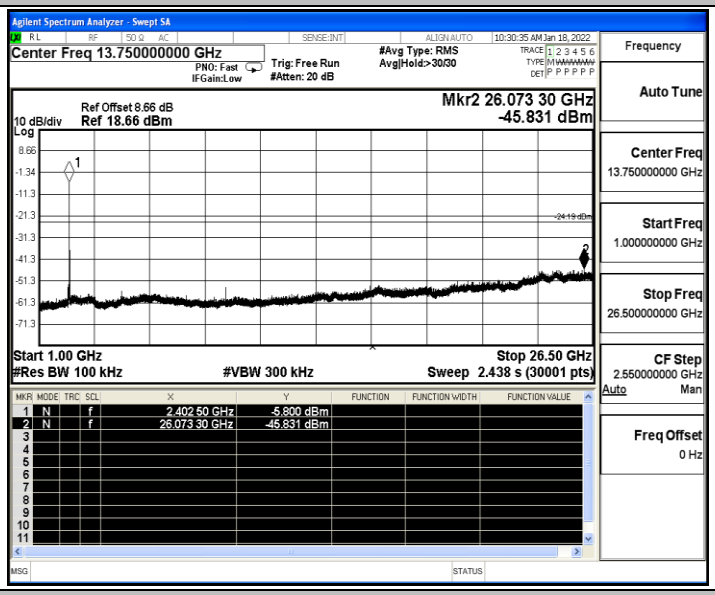
2DH5_Ant1_2402_0~Reference



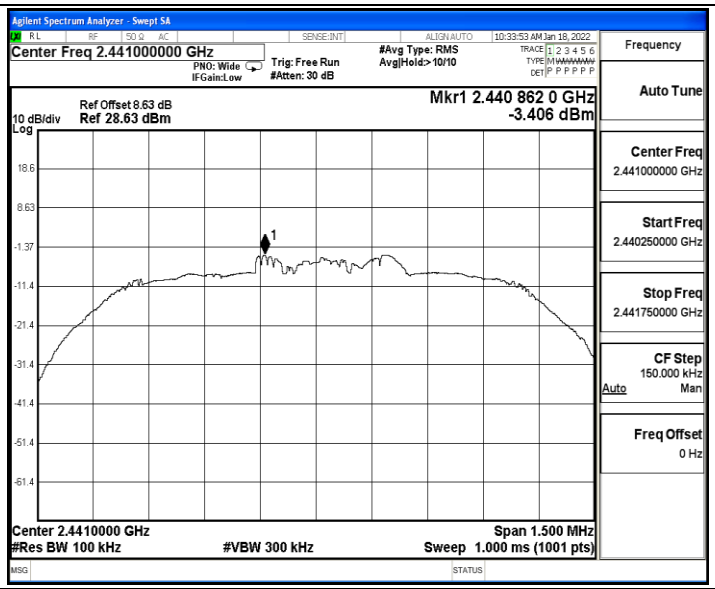
2DH5_Ant1_2402_30~1000



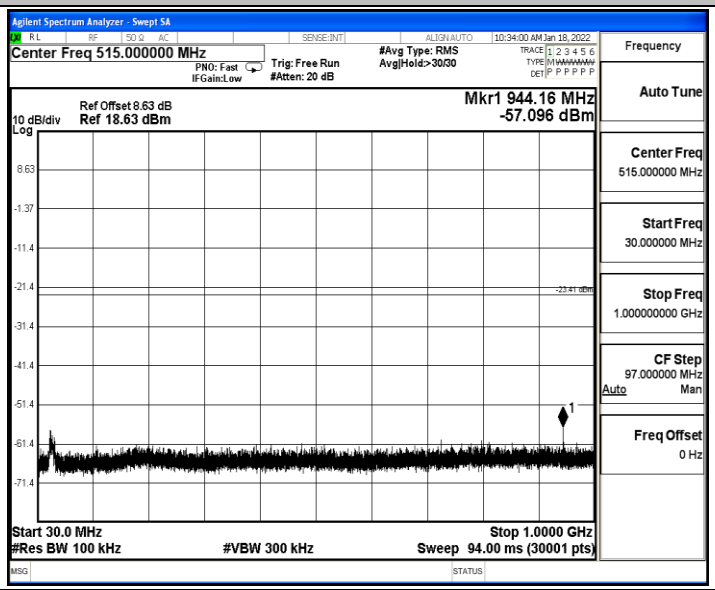
2DH5_Ant1_2402_1000~26500



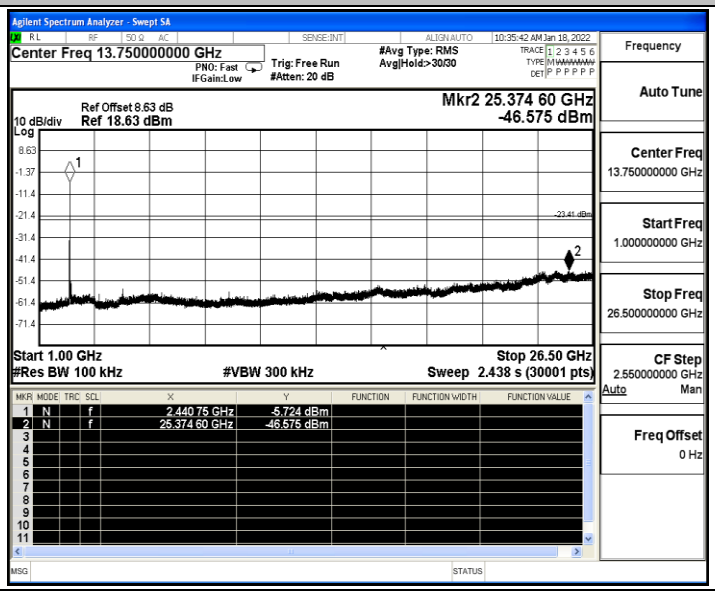
2DH5_Ant1_2441_0~Reference



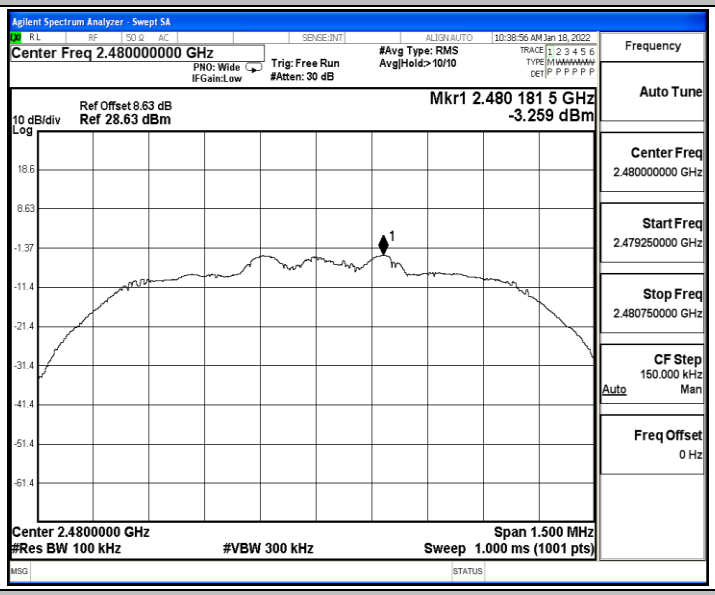
2DH5_Ant1_2441_30~1000



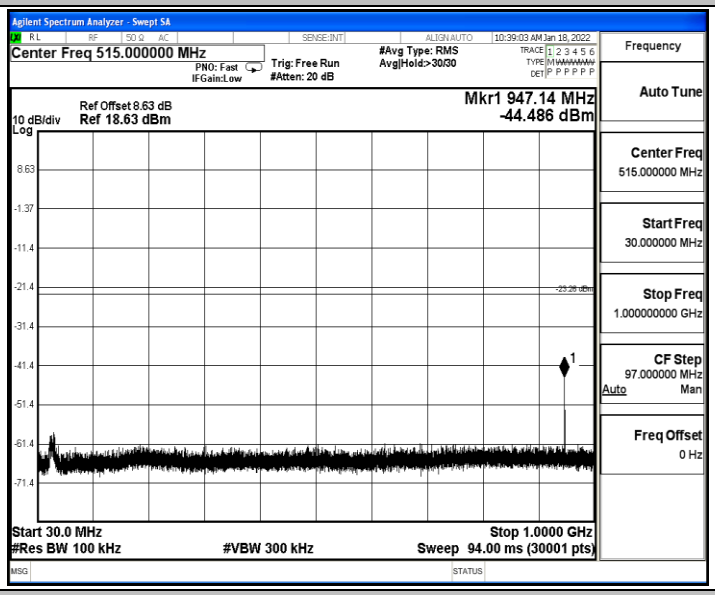
2DH5_Ant1_2441_1000~26500



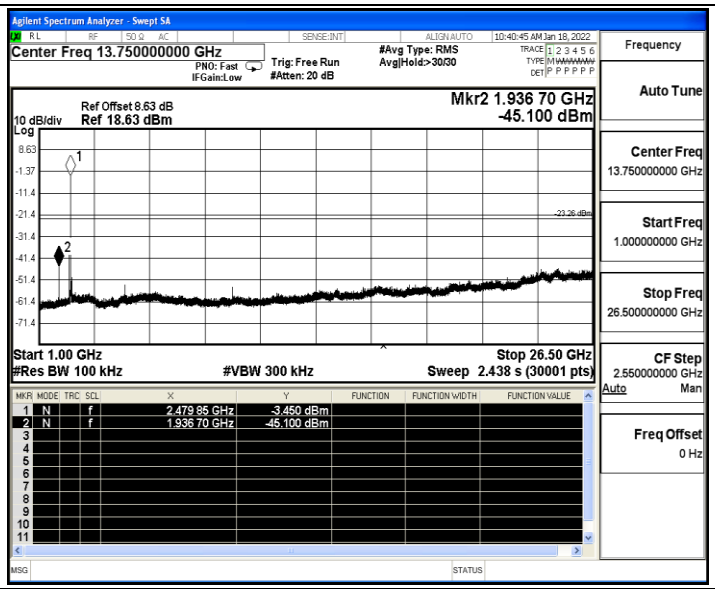
2DH5_Ant1_2480_0~Reference



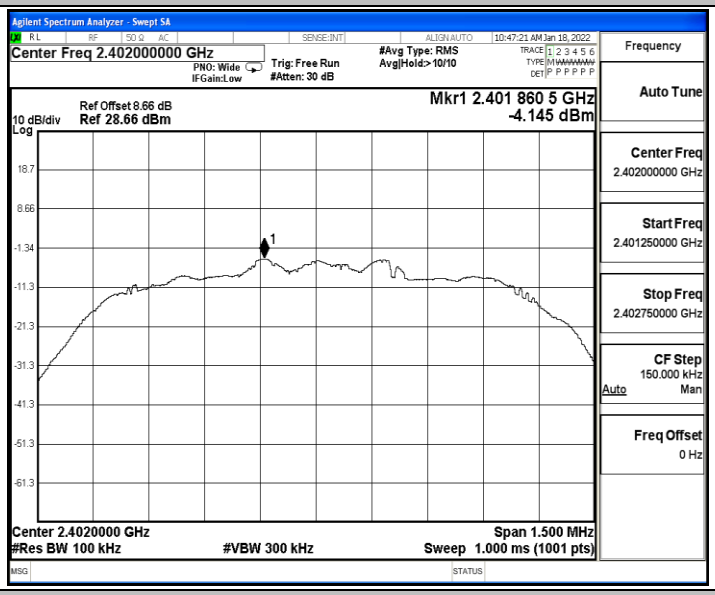
2DH5_Ant1_2480_30~1000



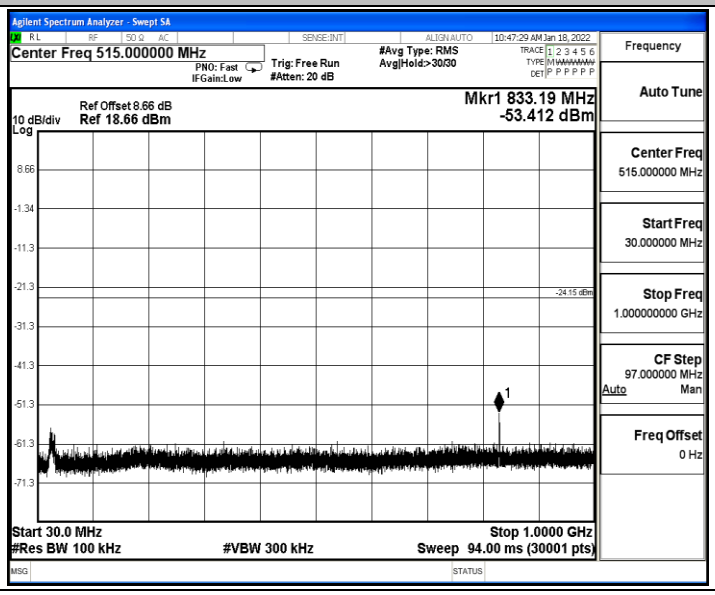
2DH5_Ant1_2480_1000~26500



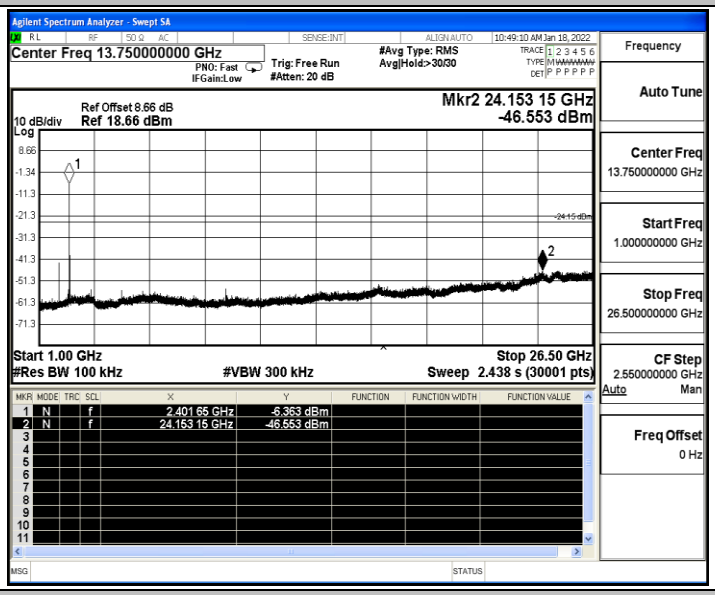
3DH5_Ant1_2402_0~Reference



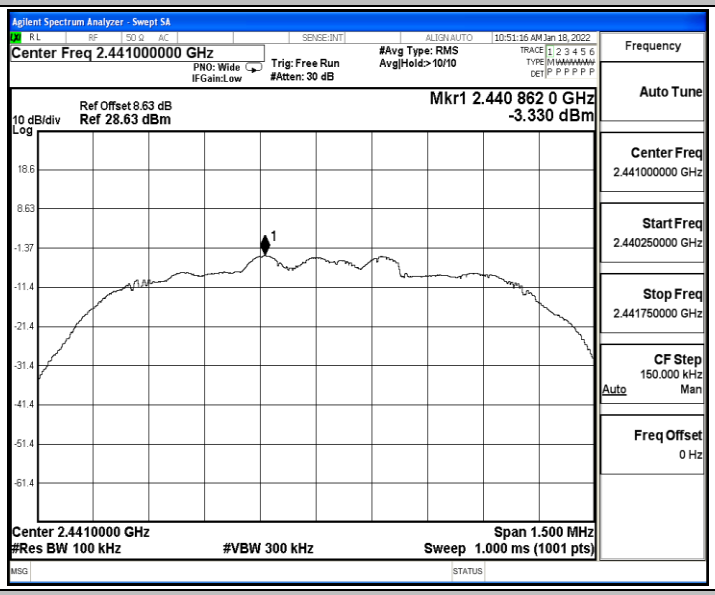
3DH5_Ant1_2402_30~1000



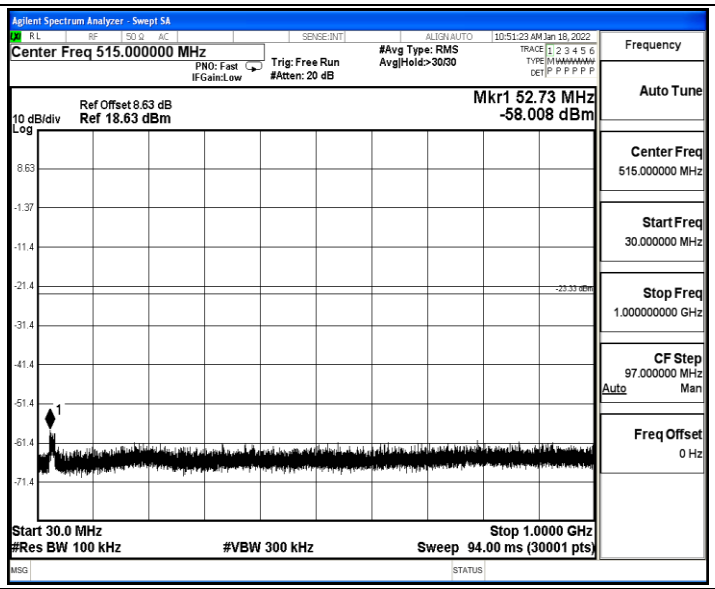
3DH5_Ant1_2402_1000~26500



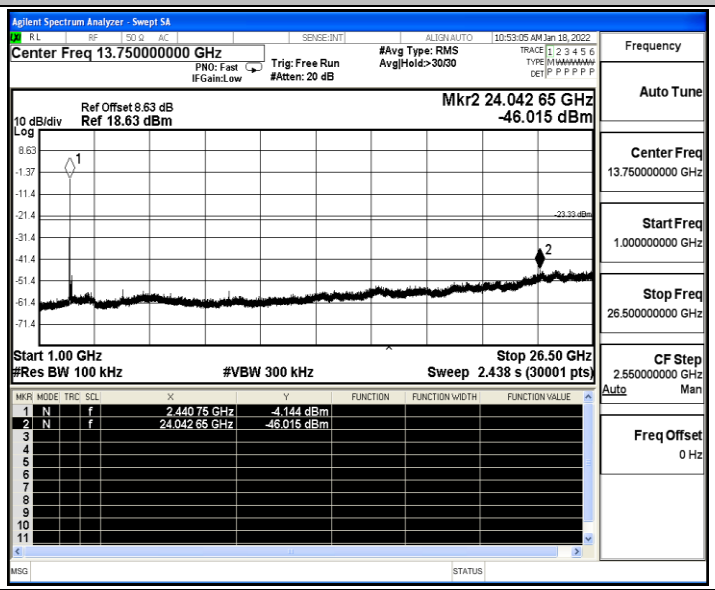
3DH5_Ant1_2441_0~Reference



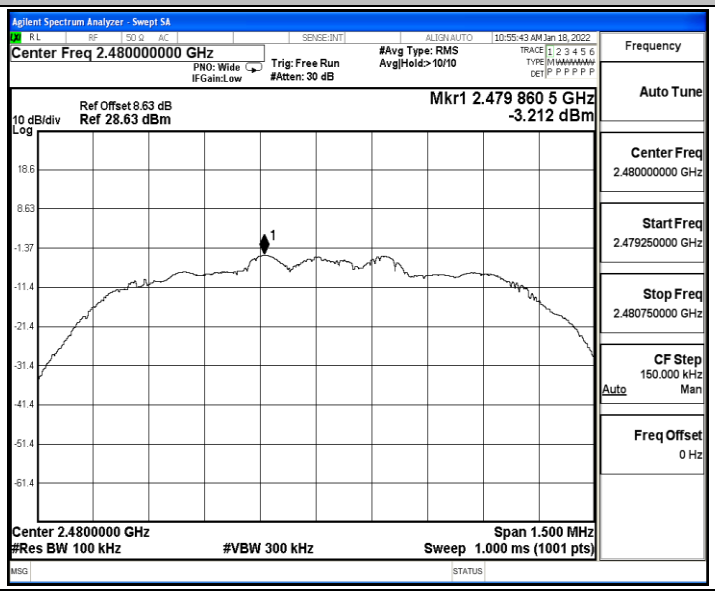
3DH5_Ant1_2441_30~1000



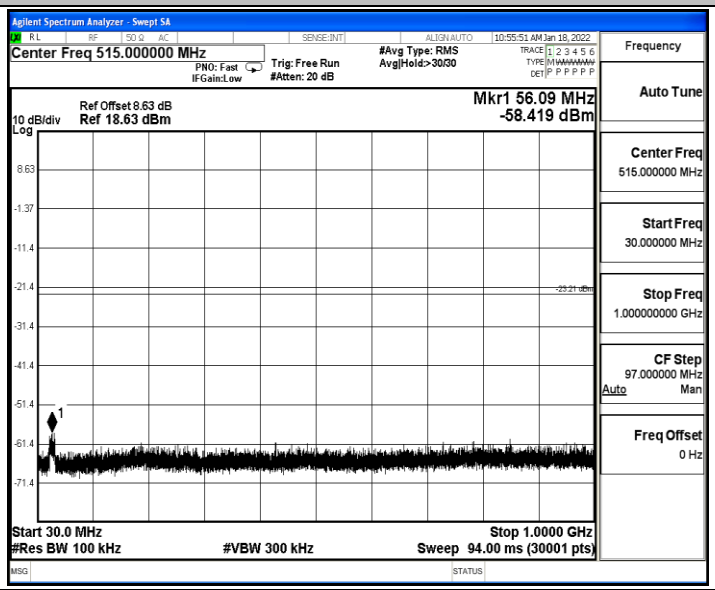
3DH5_Ant1_2441_1000~26500



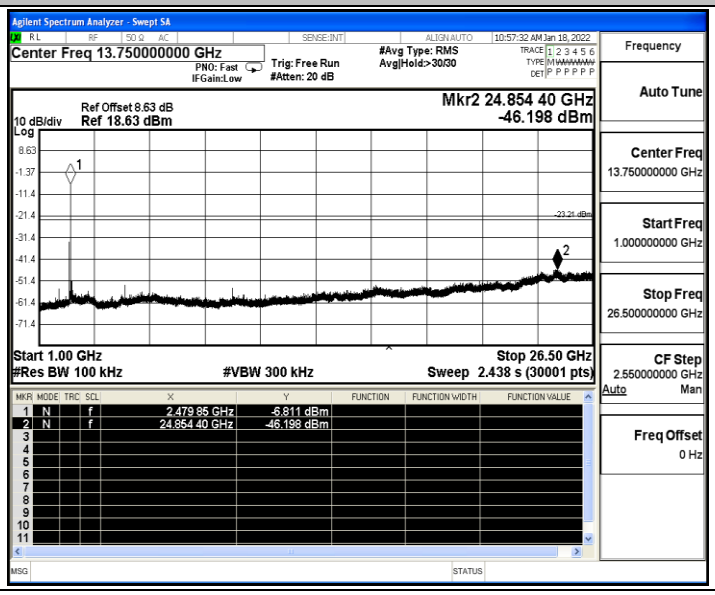
3DH5_Ant1_2480_0~Reference



3DH5_Ant1_2480_30~1000



3DH5_Ant1_2480_1000~26500



A.8 Emissions in Restricted Bands

Test Result

TestMode	Antenna	ChName	Channel	Detector	Freq. [MHz]	Result [dBm]	Limit [dBm]	Result [dBuV/m]	Limit [dBuV/m]	Verdict
DH5	Ant1	Low	2402	AV	2310.000	-48.69	≤-41.20	46.51	≤54	PASS
				AV	2378.120	-46.5	≤-41.20	48.70	≤54	PASS
				AV	2390.000	-48.05	≤-41.20	47.15	≤54	PASS
				Peak	2310.000	-38.58	≤-21.20	56.62	≤74	PASS
				Peak	2342.525	-36.2	≤-21.20	59.00	≤74	PASS
				Peak	2390.000	-37.97	≤-21.20	57.23	≤74	PASS
		High	2480	AV	2483.500	-45.35	≤-41.20	49.85	≤54	PASS
				AV	2483.520	-45.35	≤-41.20	49.85	≤54	PASS
				AV	2500.000	-47.19	≤-41.20	48.01	≤54	PASS
				Peak	2483.500	-36.04	≤-21.20	59.16	≤74	PASS
				Peak	2496.080	-35.1	≤-21.20	60.10	≤74	PASS
				Peak	2500.000	-36.41	≤-21.20	58.79	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-39.57	≤-21.20	55.63	≤74	PASS
				Peak	2319.950	-36.92	≤-21.20	58.28	≤74	PASS
				Peak	2390.000	-38.6	≤-21.20	56.60	≤74	PASS
		High	Hop_2480	Peak	2483.500	-37.85	≤-21.20	57.35	≤74	PASS
				Peak	2491.280	-35.58	≤-21.20	59.62	≤74	PASS
				Peak	2500.000	-37.37	≤-21.20	57.83	≤74	PASS
2DH5	Ant1	Low	2402	AV	2310.000	-48.27	≤-41.20	46.93	≤54	PASS
				AV	2378.015	-46.47	≤-41.20	48.73	≤54	PASS
				AV	2390.000	-47.65	≤-41.20	47.55	≤54	PASS
				Peak	2310.000	-38.26	≤-21.20	56.94	≤74	PASS
				Peak	2378.750	-36.48	≤-21.20	58.72	≤74	PASS
				Peak	2390.000	-38.71	≤-21.20	56.49	≤74	PASS
		High	2480	AV	2483.500	-45.98	≤-41.20	49.22	≤54	PASS
				AV	2483.520	-46.06	≤-41.20	49.14	≤54	PASS
				AV	2500.000	-46.72	≤-41.20	48.48	≤54	PASS
				Peak	2483.500	-36.2	≤-21.20	59.00	≤74	PASS
				Peak	2483.760	-35.57	≤-21.20	59.63	≤74	PASS
				Peak	2500.000	-36.75	≤-21.20	58.45	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-39.04	≤-21.20	56.16	≤74	PASS
				Peak	2383.055	-36.1	≤-21.20	59.10	≤74	PASS
				Peak	2390.000	-38.76	≤-21.20	56.44	≤74	PASS
		High	Hop_2480	Peak	2483.500	-37.67	≤-21.20	57.53	≤74	PASS
				Peak	2499.520	-35.94	≤-21.20	59.26	≤74	PASS
				Peak	2500.000	-38.16	≤-21.20	57.04	≤74	PASS
3DH5	Ant1	Low	2402	AV	2310.000	-48.67	≤-41.20	46.53	≤54	PASS

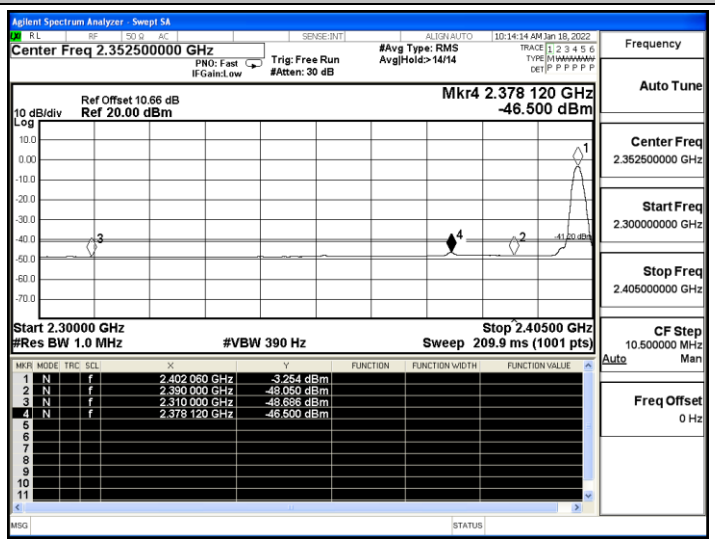
				AV	2378.015	-46.97	≤-41.20	48.23	≤54	PASS
				AV	2390.000	-48.01	≤-41.20	47.19	≤54	PASS
				Peak	2310.000	-39.08	≤-21.20	56.12	≤74	PASS
				Peak	2377.280	-36.19	≤-21.20	59.01	≤74	PASS
				Peak	2390.000	-38.08	≤-21.20	57.12	≤74	PASS
		High	2480	AV	2483.500	-45.79	≤-41.20	49.41	≤54	PASS
				AV	2483.520	-45.79	≤-41.20	49.41	≤54	PASS
				AV	2500.000	-46.68	≤-41.20	48.52	≤54	PASS
				Peak	2483.500	-35.74	≤-21.20	59.46	≤74	PASS
				Peak	2483.600	-35.27	≤-21.20	59.93	≤74	PASS
				Peak	2500.000	-36.61	≤-21.20	58.59	≤74	PASS
		Low	Hop_2402	Peak	2310.000	-38.49	≤-21.20	56.71	≤74	PASS
				Peak	2364.890	-37.18	≤-21.20	58.02	≤74	PASS
				Peak	2390.000	-38.98	≤-21.20	56.22	≤74	PASS
		High	Hop_2480	Peak	2483.500	-37.42	≤-21.20	57.78	≤74	PASS
				Peak	2496.320	-35.93	≤-21.20	59.27	≤74	PASS
				Peak	2500.000	-37.61	≤-21.20	57.59	≤74	PASS

Note：

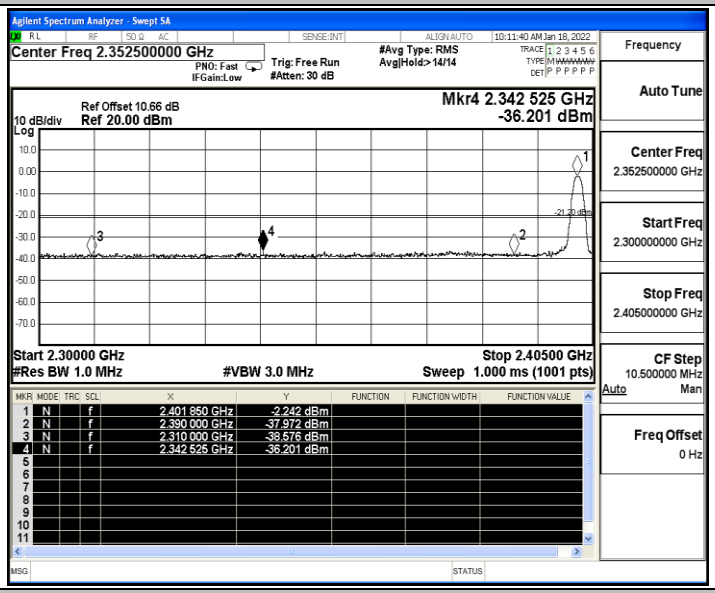
1. The Antenna Gain is compensated in the graph.
2. The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

Test Graphs

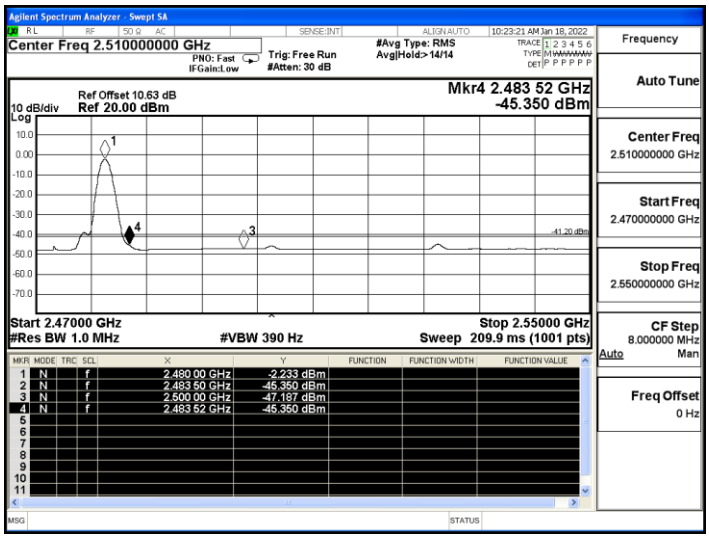
DH5_Ant1_Low_2402_AV



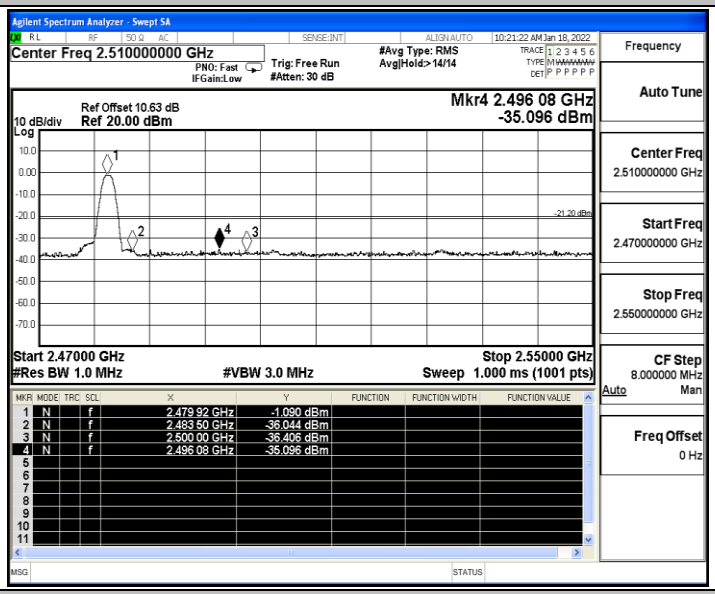
DH5_Ant1_Low_2402_Peak



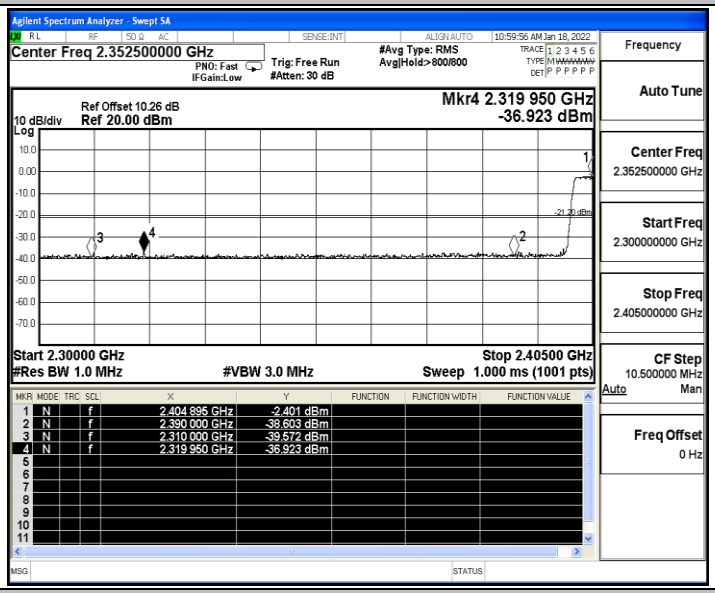
DH5_Ant1_High_2480_AV



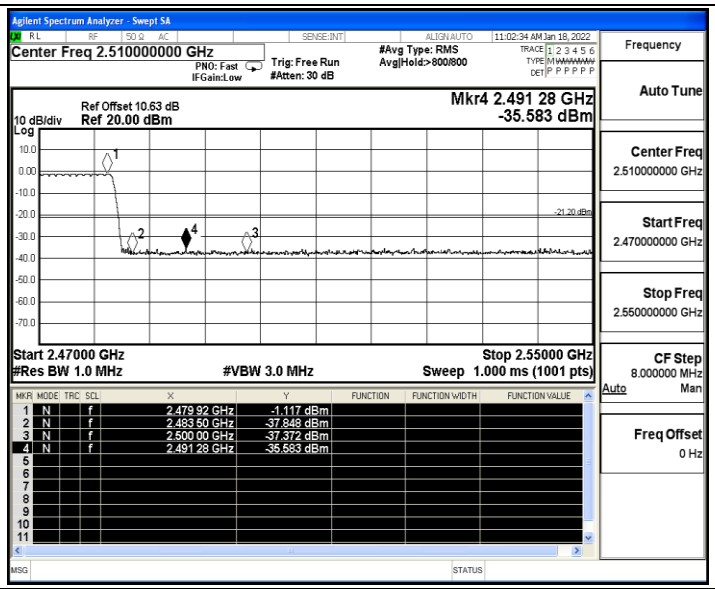
DH5_Ant1_High_2480_Peak



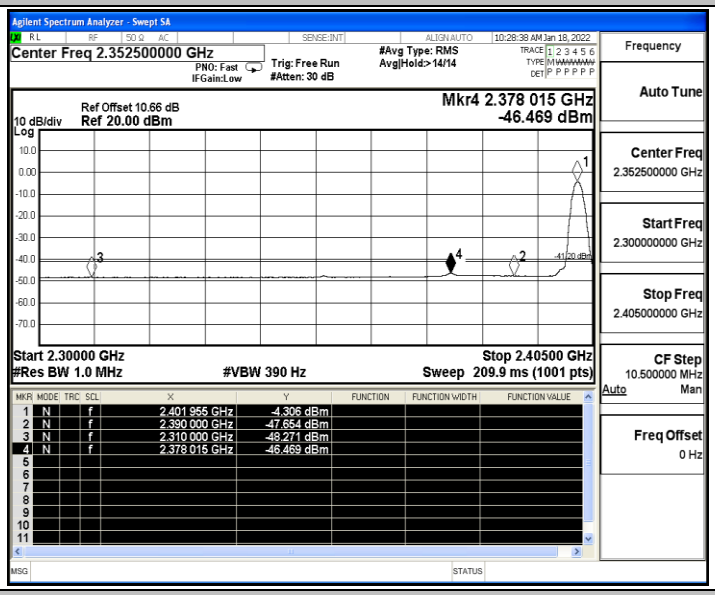
DH5_Ant1_Low_Hop_2402_Peak



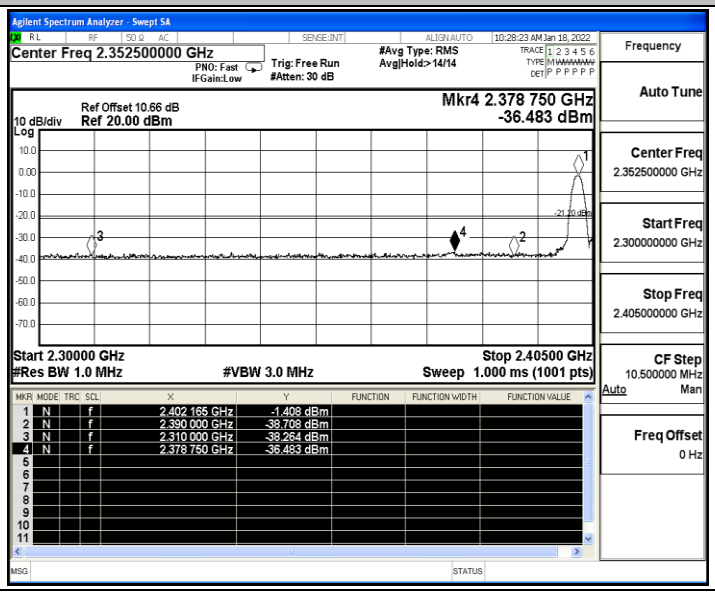
DH5_Ant1_High_Hop_2480_Peak



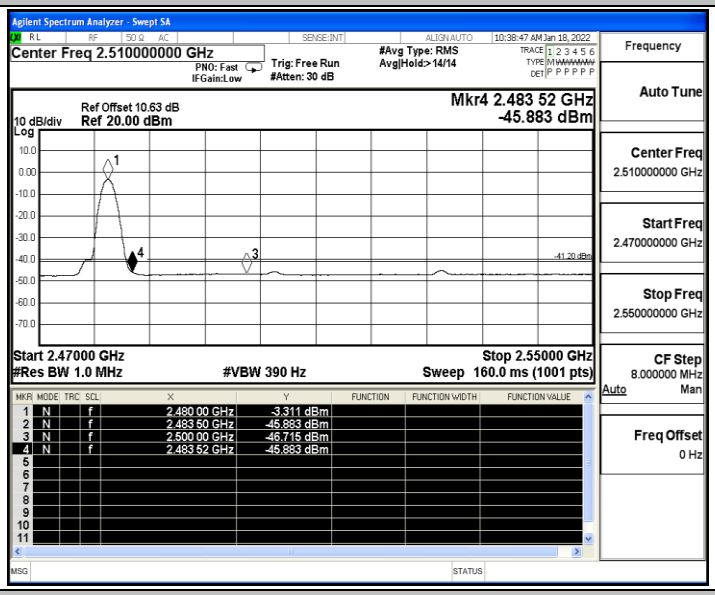
2DH5_Ant1_Low_2402_AV



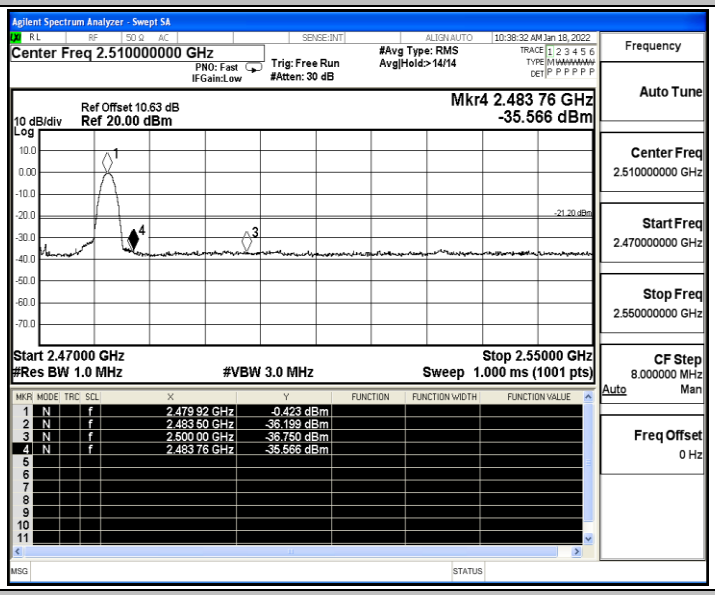
2DH5_Ant1_Low_2402_Peak



2DH5_Ant1_High_2480_AV



2DH5_Ant1_High_2480_Peak



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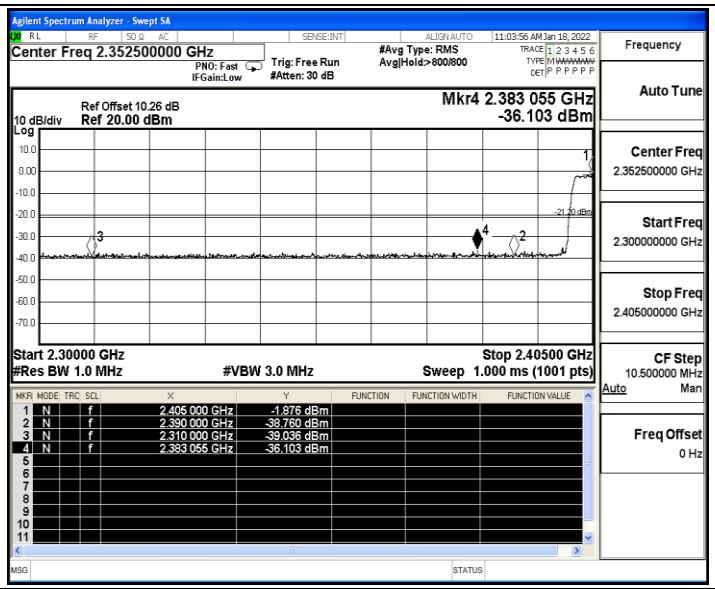

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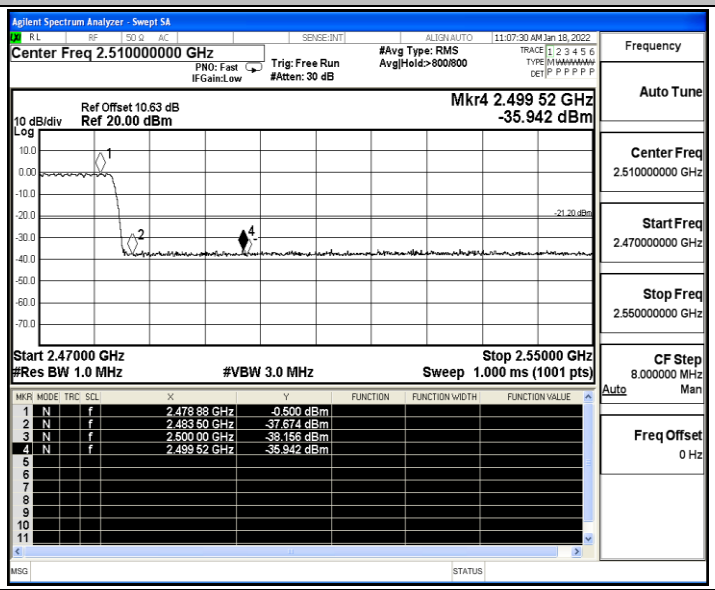

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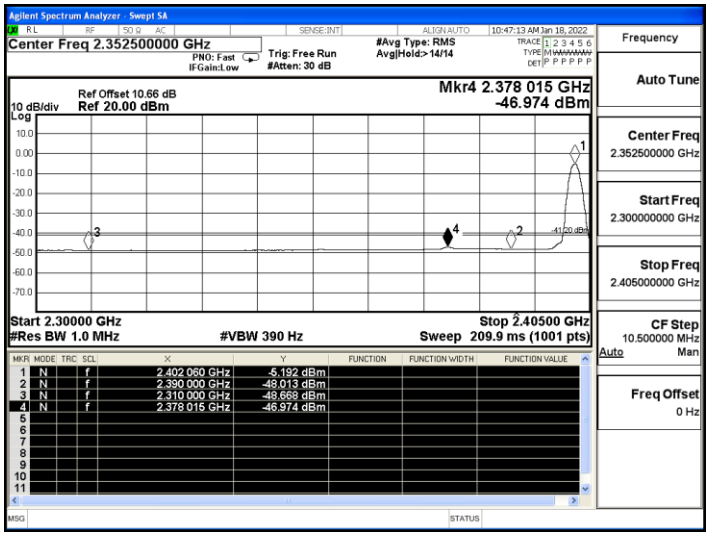

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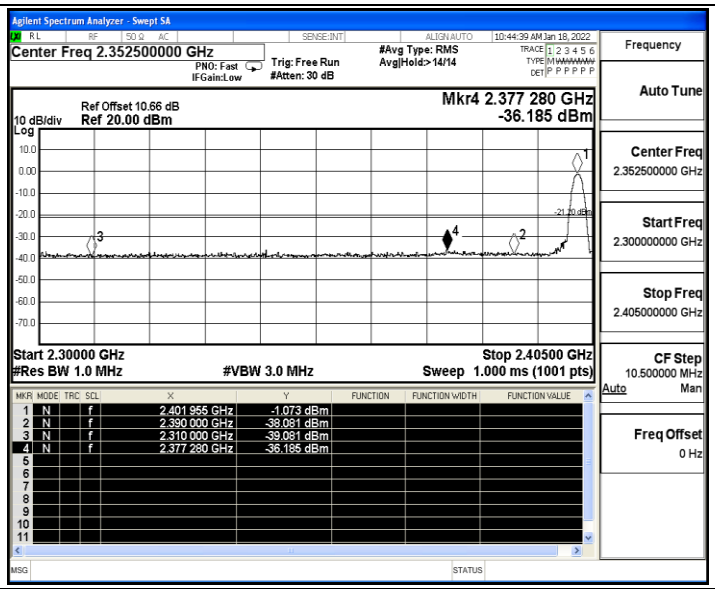

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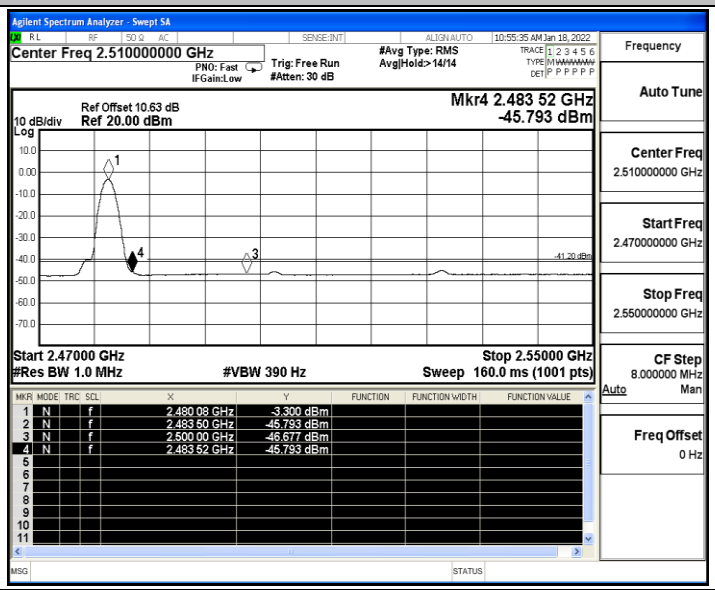

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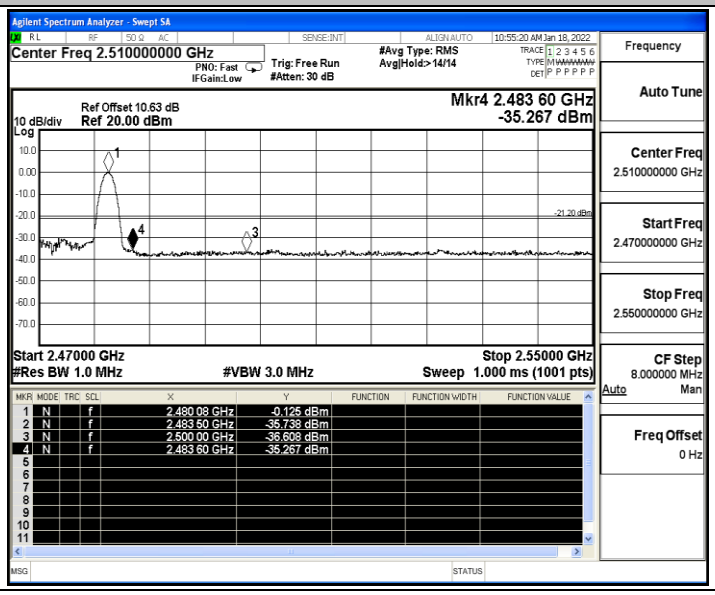

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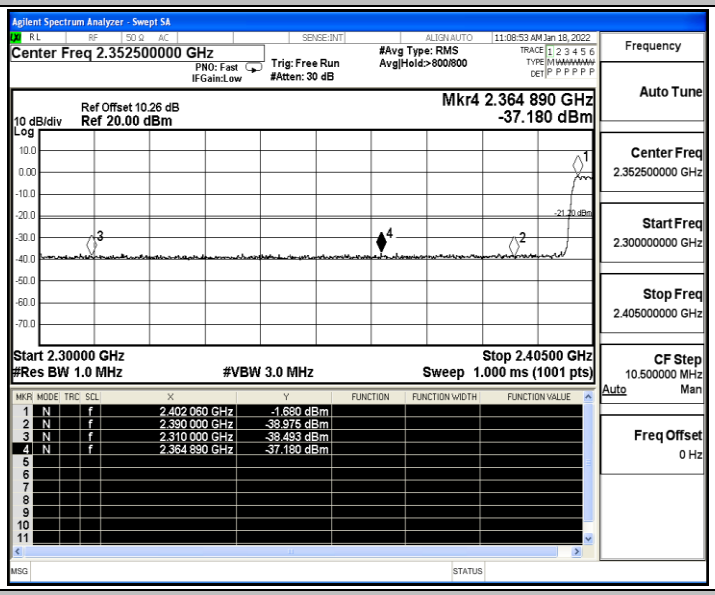
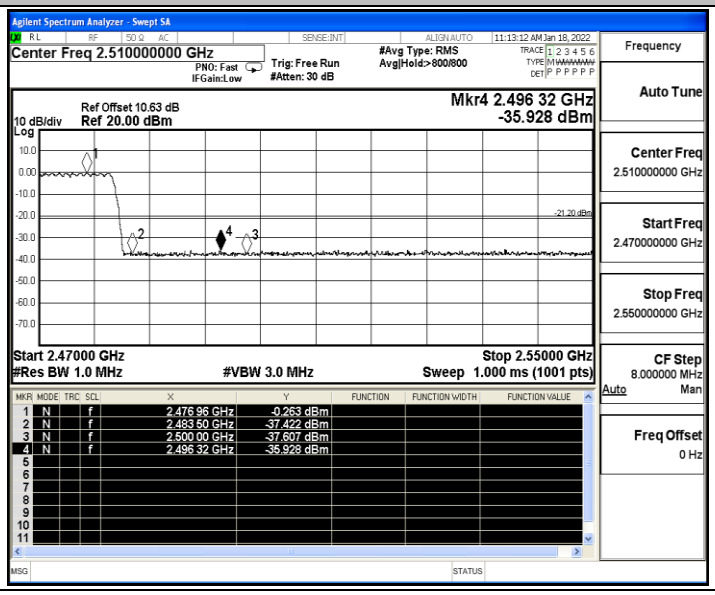
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