Appendix Test Data

Report No.:	18220WC20149701	Test Sample No.:	1-2-2
Start Test Date:	2022.7.6	Finish Test Date:	2022.7.15
Test Engineer:	Tony.He	Auditor:	Edward.Pan
Temperature:	23.7℃	Relative Humidity:	55%
Pressure:	1012 hPa		

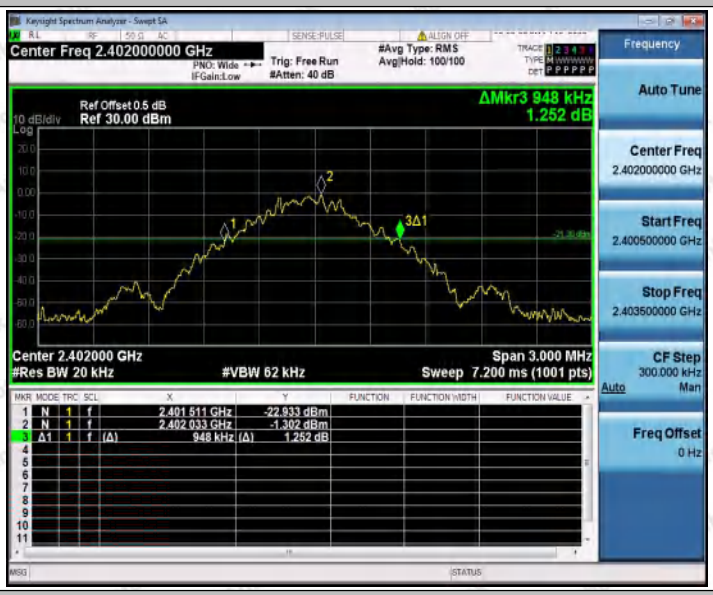
Appendix A: 20dB Emission Bandwidth

Test Result

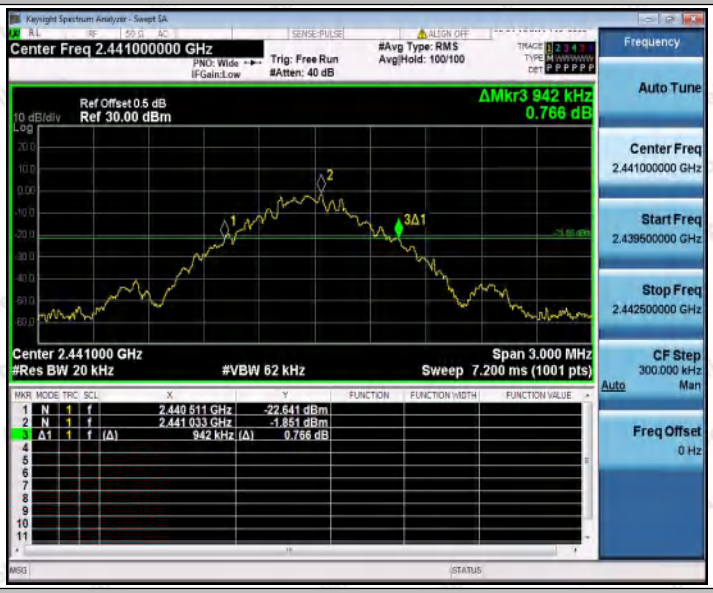
TestMode	Antenna	Channel	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.948	2401.511	2402.459	---	PASS
		2441	0.942	2440.511	2441.453	---	PASS
		2480	0.945	2479.511	2480.456	---	PASS
2DH5	Ant1	2402	1.320	2401.313	2402.633	---	PASS
		2441	1.320	2440.313	2441.633	---	PASS
		2480	1.326	2479.310	2480.636	---	PASS
3DH5	Ant1	2402	1.269	2401.352	2402.621	---	PASS
		2441	1.272	2440.355	2441.627	---	PASS
		2480	1.275	2479.349	2480.624	---	PASS

Test Graphs

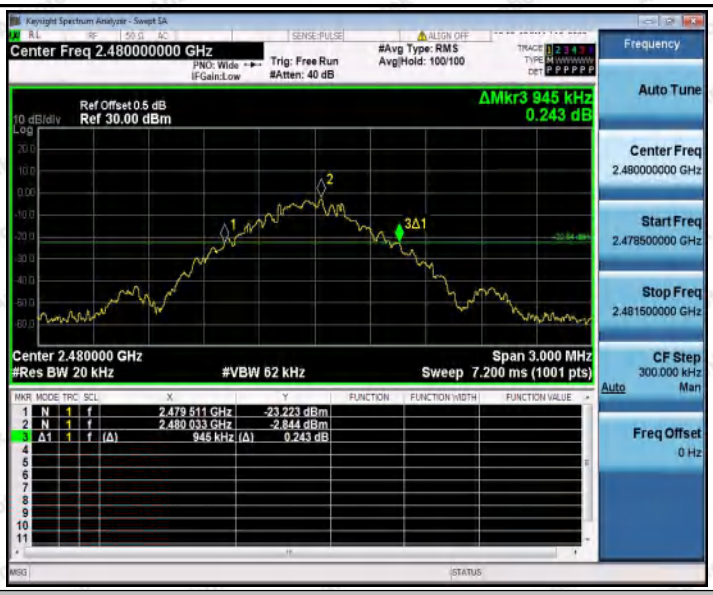
DH5_Ant1_2402



DH5_Ant1_2441

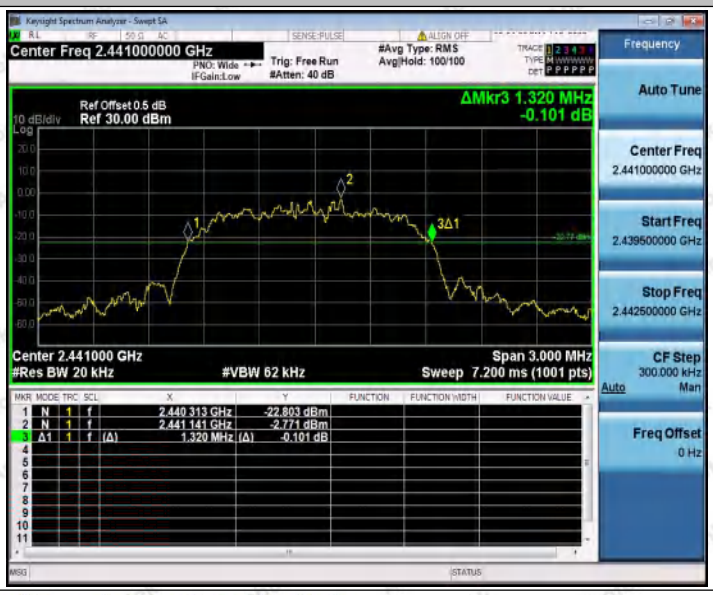


DH5_Ant1_2480



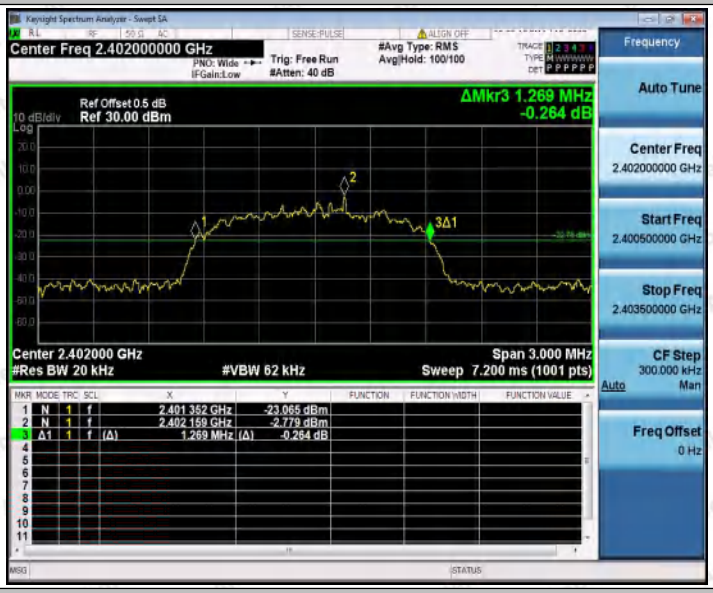
2DH5_Ant1_2402

2DH5_Ant1_2441

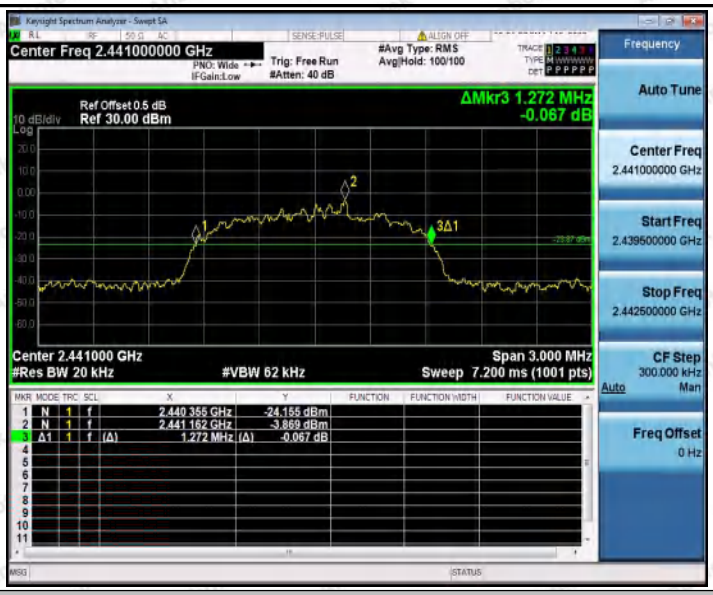


2DH5_Ant1_2480

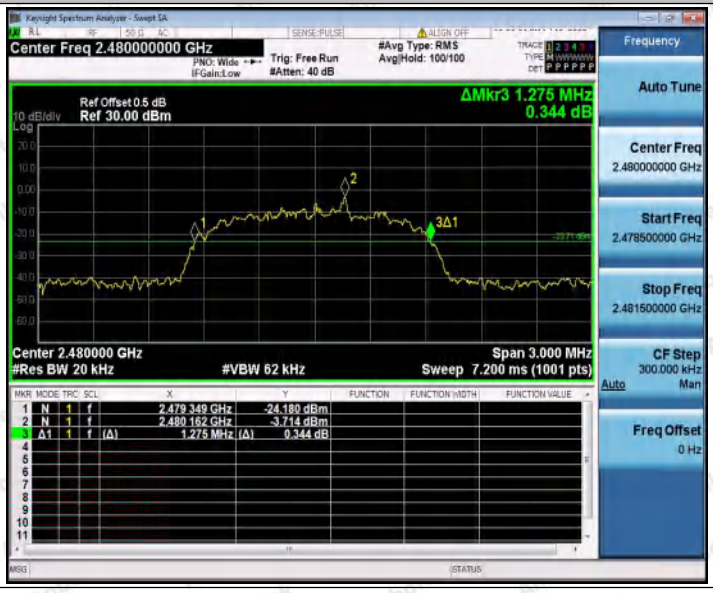
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480



Appendix B: Occupied Channel Bandwidth

Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.85292	2401.544	2402.397	---	PASS
		2441	0.84700	2440.545	2441.392	---	PASS
		2480	0.83952	2479.553	2480.393	---	PASS
2DH5	Ant1	2402	1.1767	2401.385	2402.562	---	PASS
		2441	1.1752	2440.385	2441.561	---	PASS
		2480	1.1817	2479.382	2480.563	---	PASS
3DH5	Ant1	2402	1.1942	2401.395	2402.589	---	PASS
		2441	1.2044	2440.388	2441.593	---	PASS
		2480	1.2065	2479.387	2480.593	---	PASS

Test Graphs

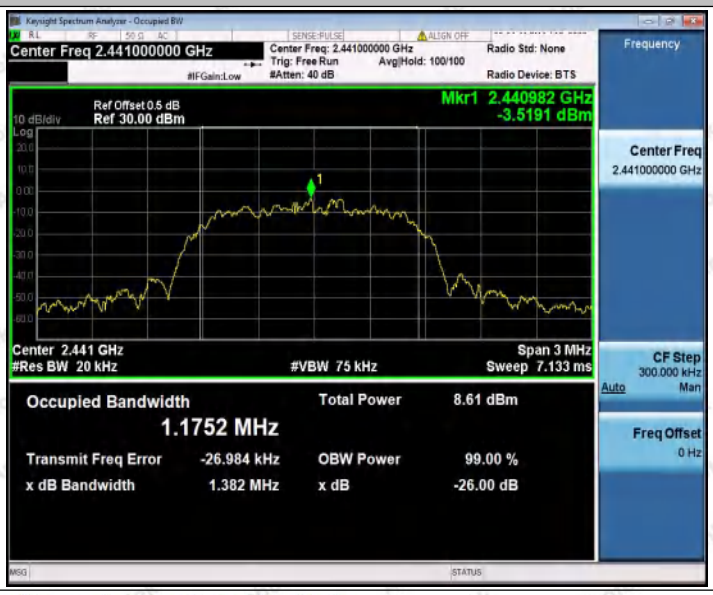
DH5_Ant1_2402

DH5_Ant1_2441

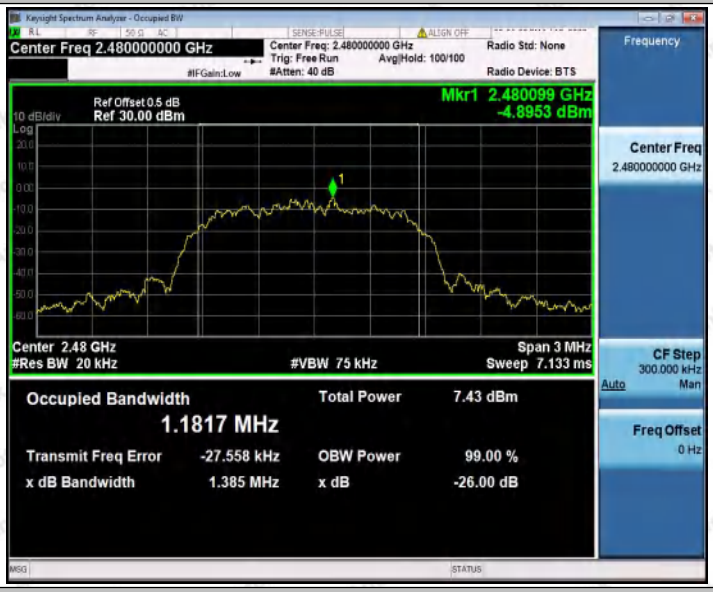
DH5_Ant1_2480

2DH5_Ant1_2402

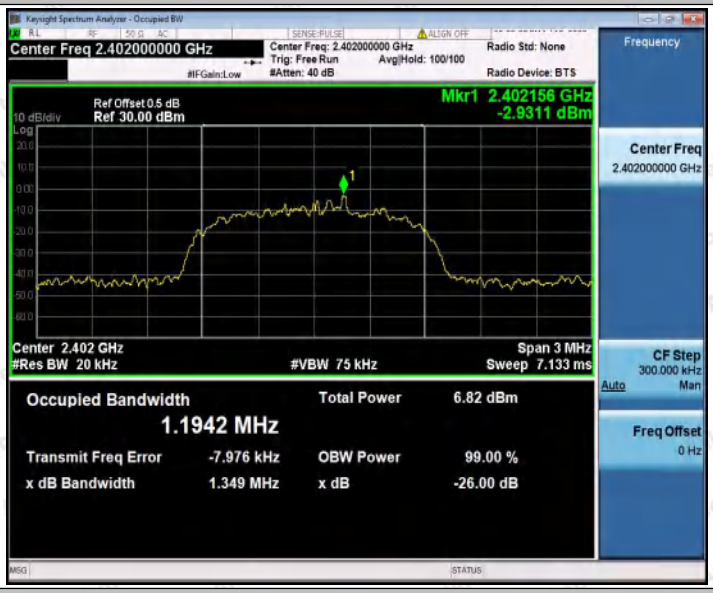
2DH5_Ant1_2441



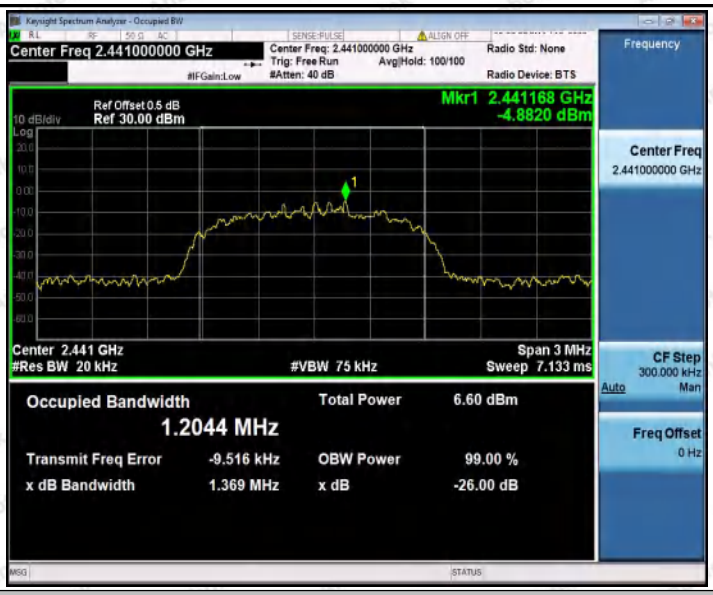
2DH5_Ant1_2480



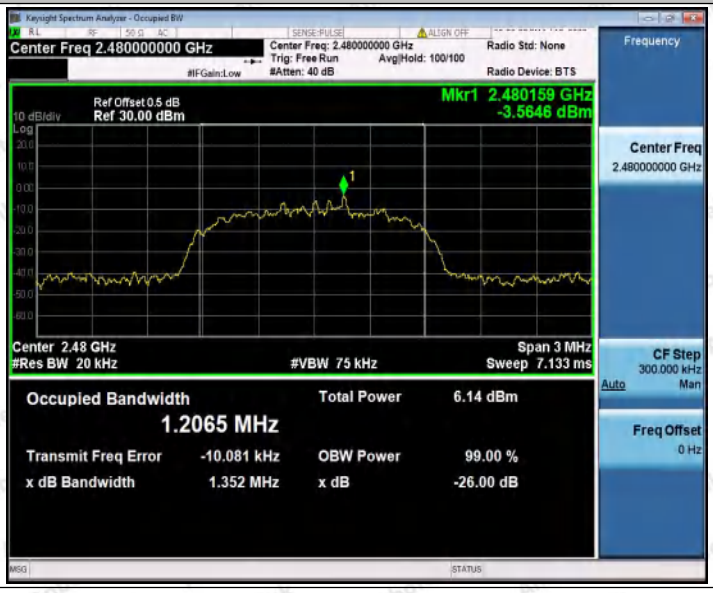
3DH5_Ant1_2402



3DH5_Ant1_2441



3DH5_Ant1_2480



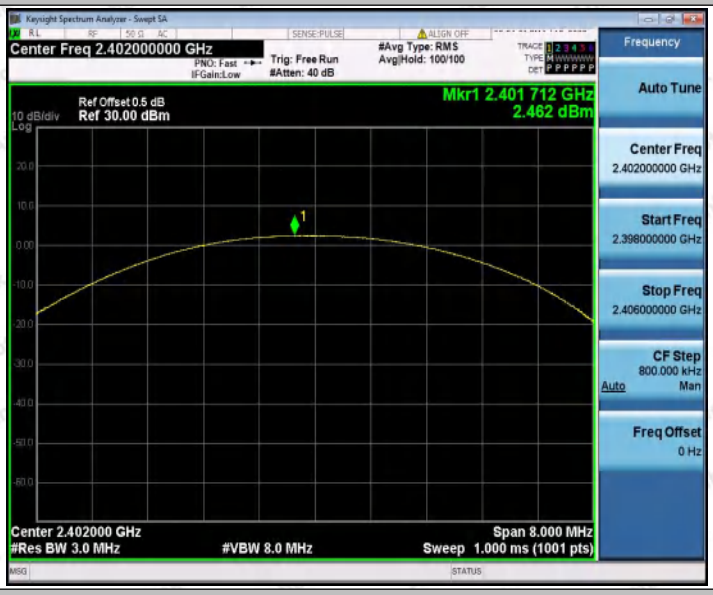
Appendix C: Maximum conducted output power

Test Result

TestMode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	2.46	≤20.97	PASS
		2441	1.92	≤20.97	PASS
		2480	0.91	≤20.97	PASS
2DH5	Ant1	2402	1.62	≤20.97	PASS
		2441	1.39	≤20.97	PASS
		2480	0.68	≤20.97	PASS
3DH5	Ant1	2402	1.69	≤20.97	PASS
		2441	1.36	≤20.97	PASS
		2480	0.74	≤20.97	PASS

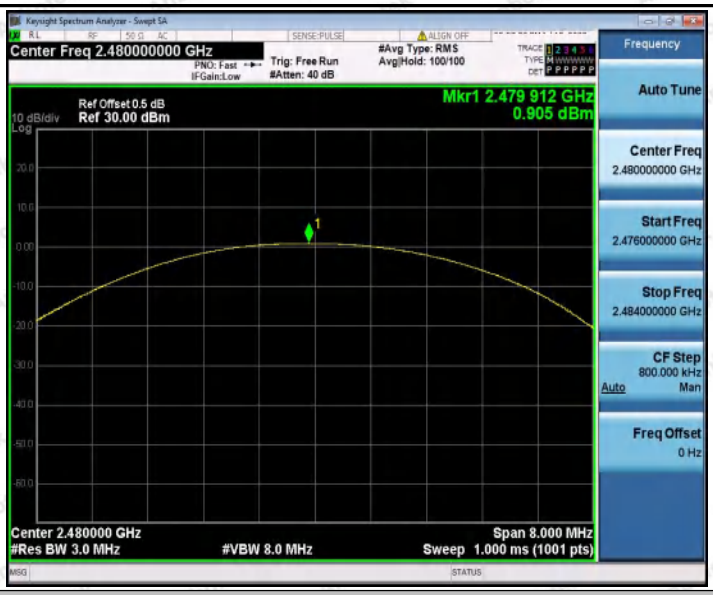
Test Graphs

DH5_Ant1_2402

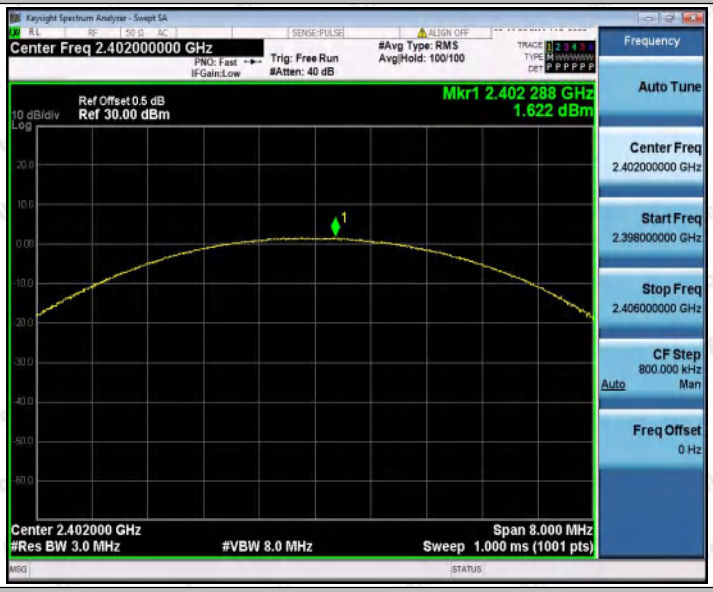


DH5_Ant1_2441

DH5_Ant1_2480

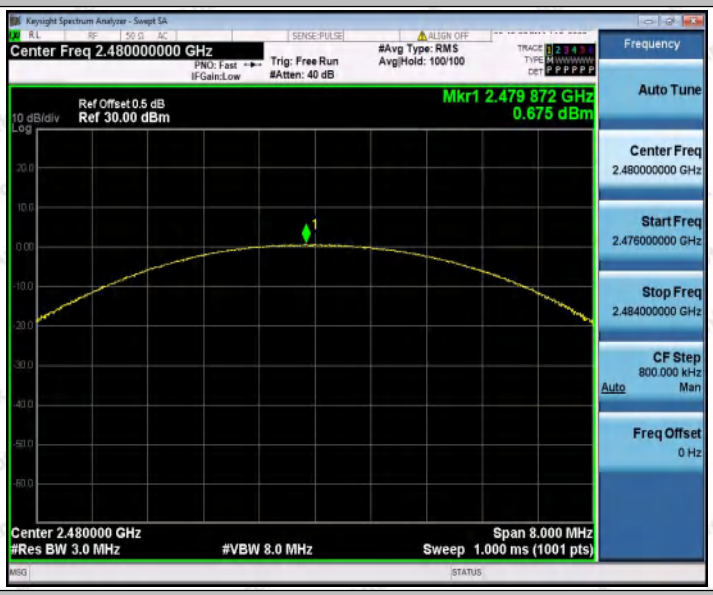


2DH5_Ant1_2402



2DH5_Ant1_2441

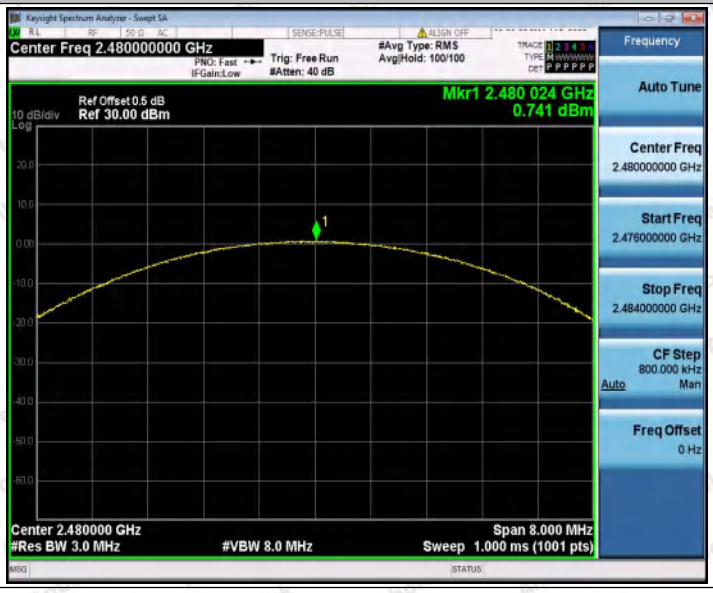
2DH5_Ant1_2480



3DH5_Ant1_2402

3DH5_Ant1_2441

3DH5_Ant1_2480



Appendix D: Carrier frequency separation

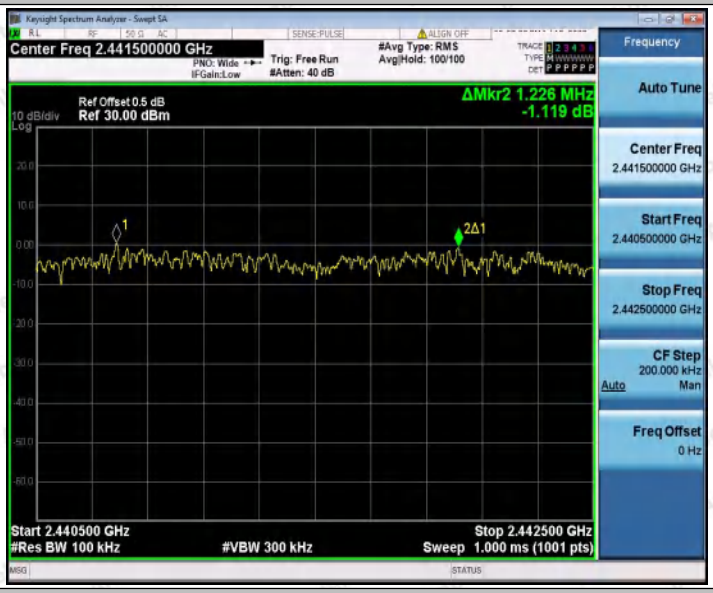
Test Result

TestMode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.144	≥0.948	PASS
2DH5	Ant1	Hop	1.226	≥0.884	PASS
3DH5	Ant1	Hop	1.116	≥0.850	PASS

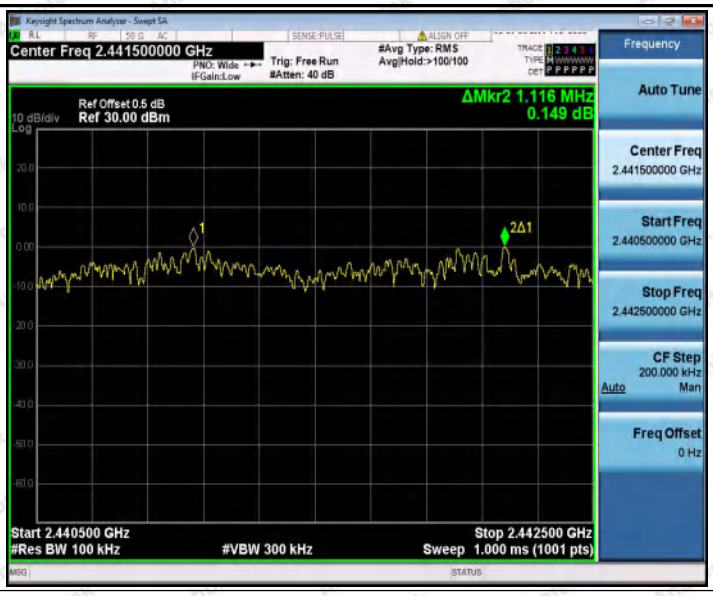
Test Graphs

DH5_Ant1_Hop

2DH5_Ant1_Hop



3DH5_Ant1_Hop


Keysight 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
Frequency
Auto Tune
Ref Offset 0.5 dB
10 dB/div
Ref 30.00 dBm
Log
ΔMkr2 1.116 MHz
0.149 dB
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
Start 2.440500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.442500 GHz
Sweep 1.000 ms (1001 pts)
MSG
STATUS

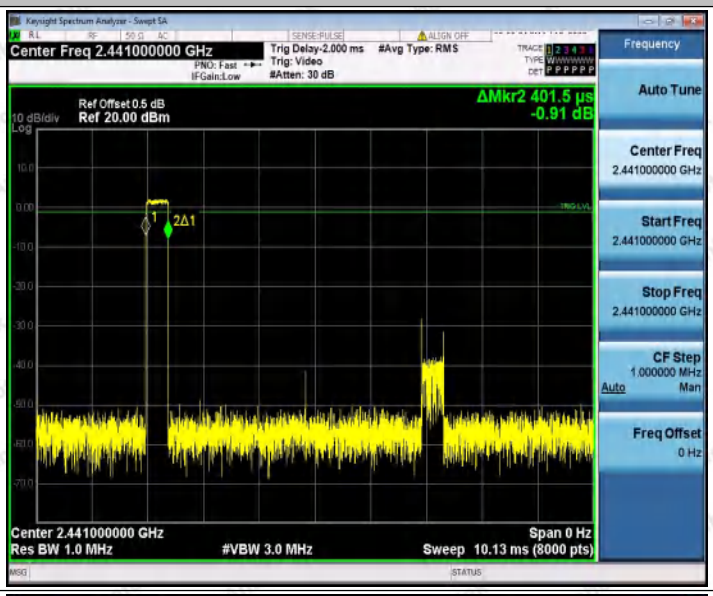
Appendix E: Time of occupancy

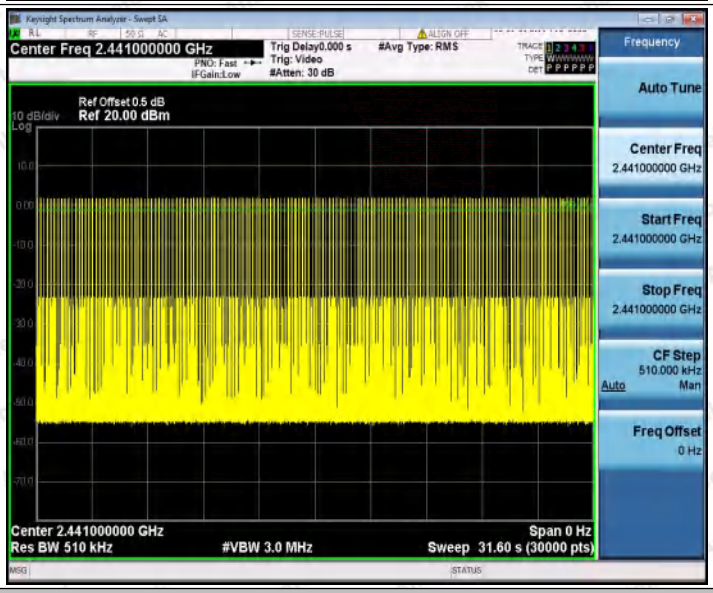
Test Result

TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.40	314	0.126	≤0.4	PASS
DH3	Ant1	Hop	1.66	152	0.252	≤0.4	PASS
DH5	Ant1	Hop	2.90	94	0.273	≤0.4	PASS
2DH1	Ant1	Hop	0.41	313	0.128	≤0.4	PASS
2DH3	Ant1	Hop	1.66	151	0.251	≤0.4	PASS
2DH5	Ant1	Hop	2.91	95	0.277	≤0.4	PASS
3DH1	Ant1	Hop	0.38	312	0.119	≤0.4	PASS
3DH3	Ant1	Hop	1.63	159	0.259	≤0.4	PASS
3DH5	Ant1	Hop	2.88	115	0.331	≤0.4	PASS

Test Graphs

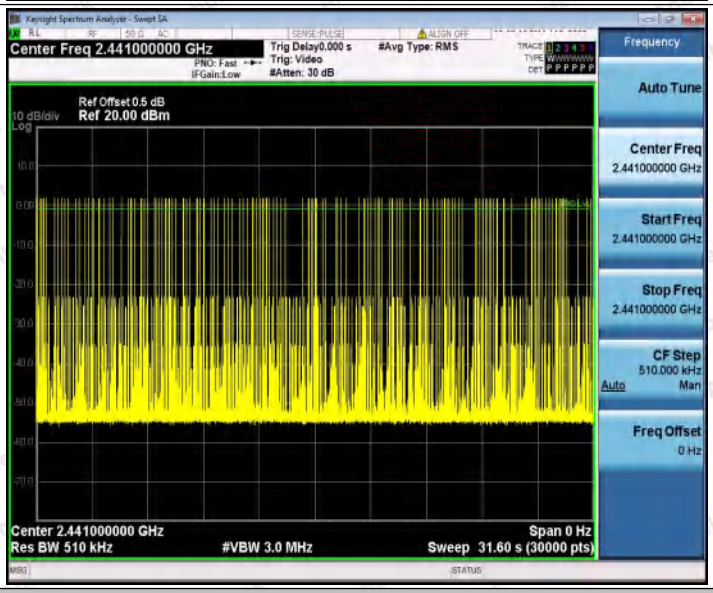
DH1_Ant1_Hop



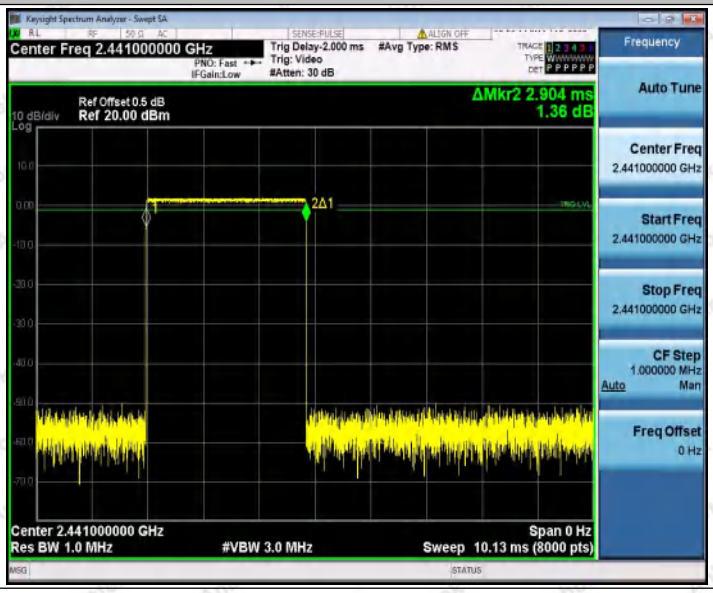


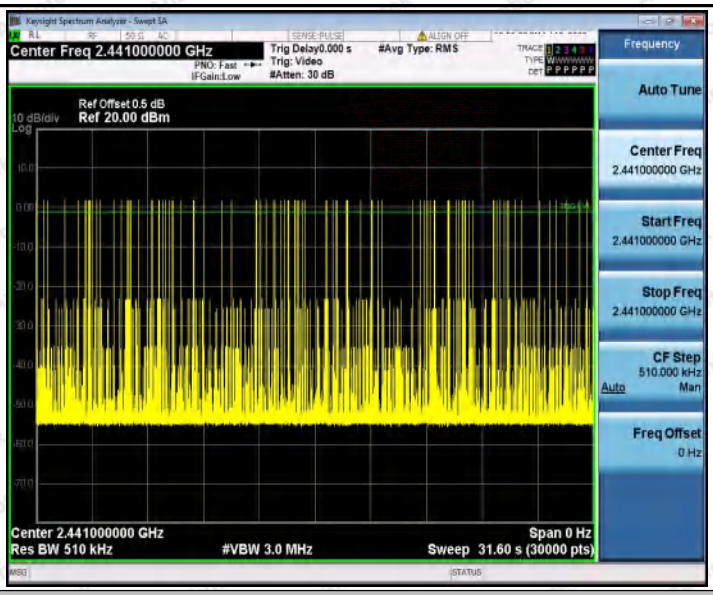
DH3_Ant1_Hop

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
Trig Delay-2.000 ms
Trig: Video
#Atten: 30 dB
#Avg Type: RMS
Ref Offset 0.5 dB
10 dB/div Ref 20.00 dBm
ΔMkr2 1.657 ms
7.46 dB
Center 2.441000000 GHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 10.13 ms (8000 pts)
Frequency
Auto Tune
Center Freq 2.441000000 GHz
Start Freq 2.441000000 GHz
Stop Freq 2.441000000 GHz
CF Step 1.000000 MHz
Freq Offset 0 Hz

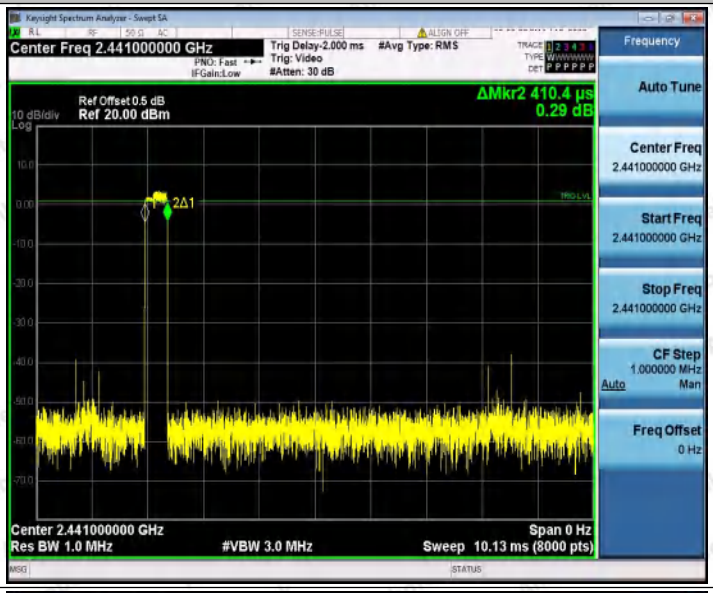

Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
Trig Delay0.000 s
Trig: Video
#Atten: 30 dB
#Avg Type: RMS
Ref Offset 0.5 dB
10 dB/div Ref 20.00 dBm
Center 2.441000000 GHz
Res BW 510 kHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 31.60 s (30000 pts)
Frequency
Auto Tune
Center Freq 2.441000000 GHz
Start Freq 2.441000000 GHz
Stop Freq 2.441000000 GHz
CF Step 510.000 kHz
Freq Offset 0 Hz

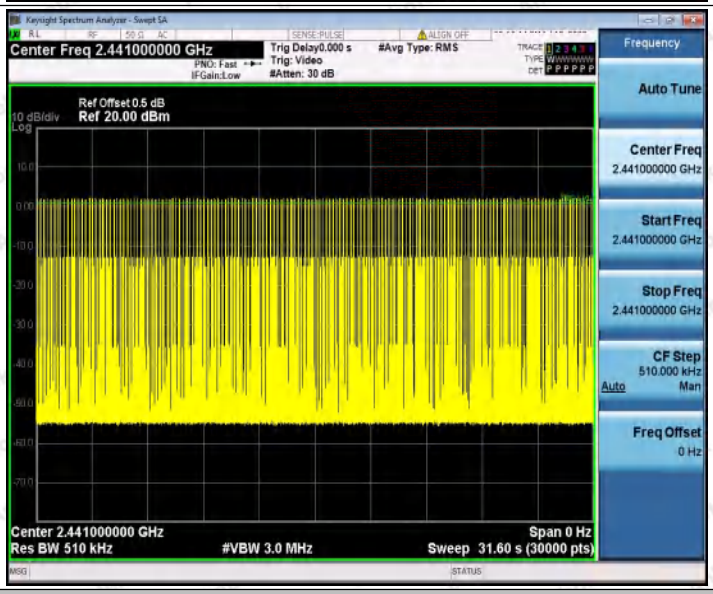
DH5_Ant1_Hop


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
Trig Delay-2.000 ms
Trig: Video
#Atten: 30 dB
#Avg Type: RMS
Ref Offset 0.5 dB
10 dB/div Ref 20.00 dBm
ΔMkr2 2.904 ms
1.36 dB
Center 2.441000000 GHz
Res BW 1.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 10.13 ms (8000 pts)
Frequency
Auto Tune
Center Freq 2.441000000 GHz
Start Freq 2.441000000 GHz
Stop Freq 2.441000000 GHz
CF Step 1.000000 MHz
Freq Offset 0 Hz

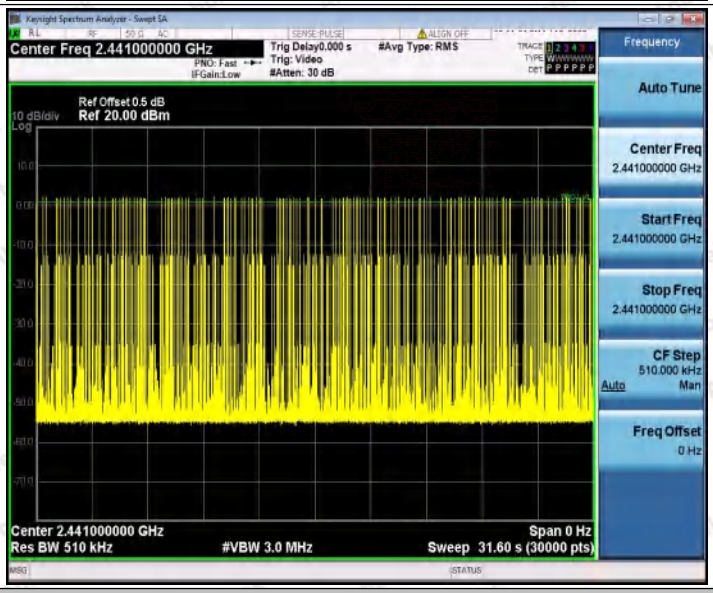


2DH1_Ant1_Hop

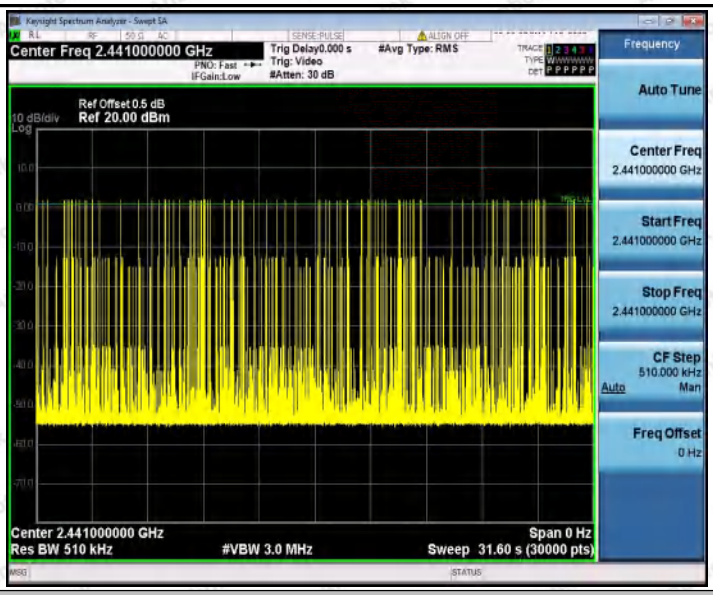




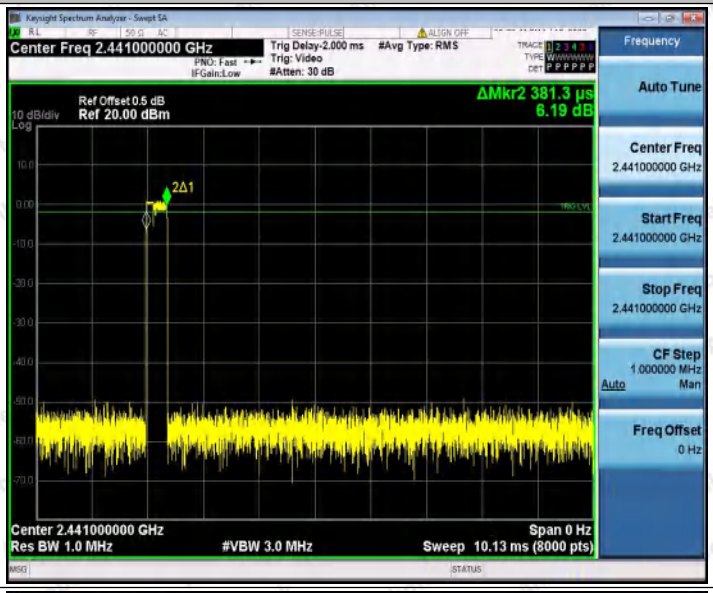
2DH3_Ant1_Hop

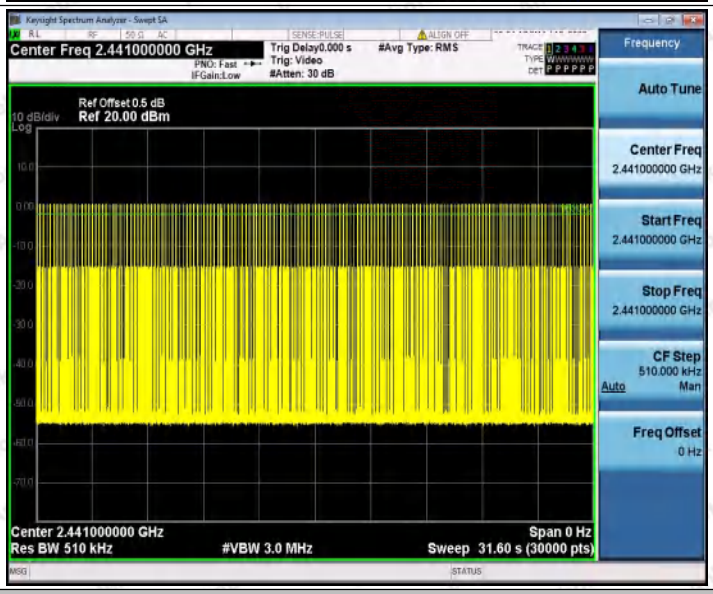


2DH5_Ant1_Hop



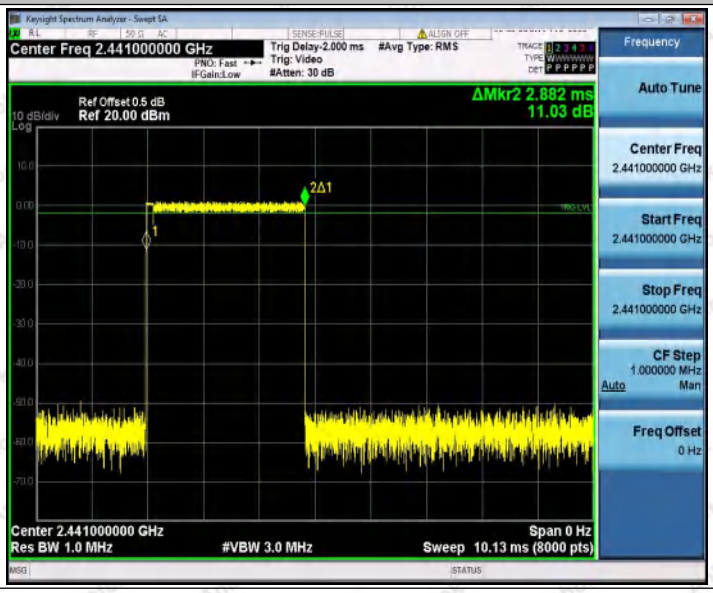
3DH1_Ant1_Hop

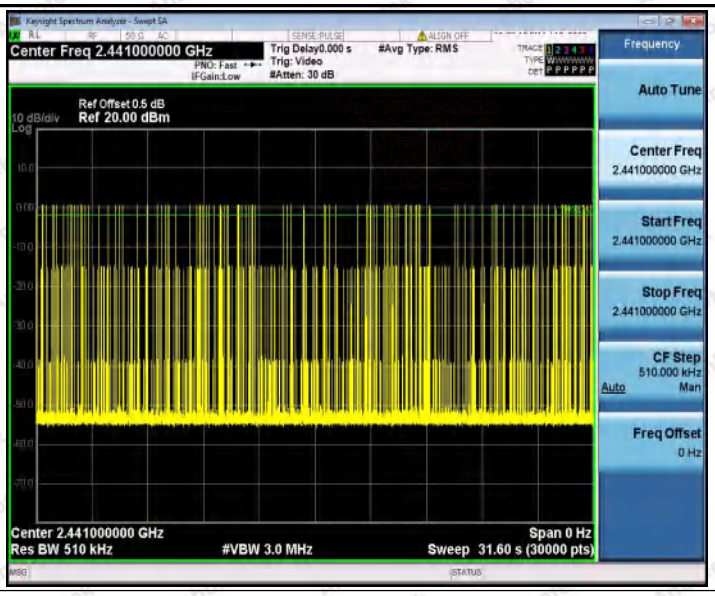




3DH3_Ant1_Hop

3DH5_Ant1_Hop




Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441000000 GHz
PNO: Fast
IFGain:Low
Trig Delay0.000 s
Trig: Video
#Atten: 30 dB
#Avg Type: RMS
Ref Offset 0.5 dB
10 dB/div
Ref 20.00 dBm
Log
Center 2.441000000 GHz
Res BW 510 kHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 31.60 s (30000 pts)
Frequency
Auto Tune
Center Freq
2.441000000 GHz
Start Freq
2.441000000 GHz
Stop Freq
2.441000000 GHz
CF Step
510.000 kHz
Auto
Man
Freq Offset
0 Hz

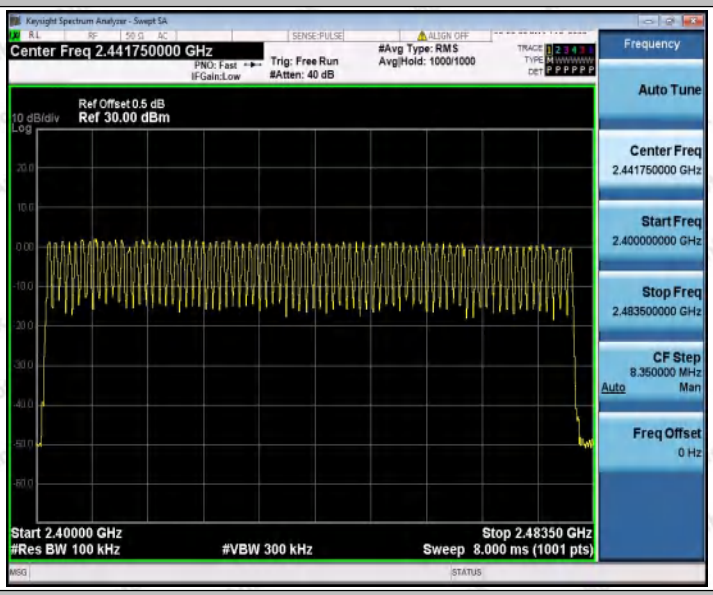
Appendix F: Number of hopping channels

Test Result

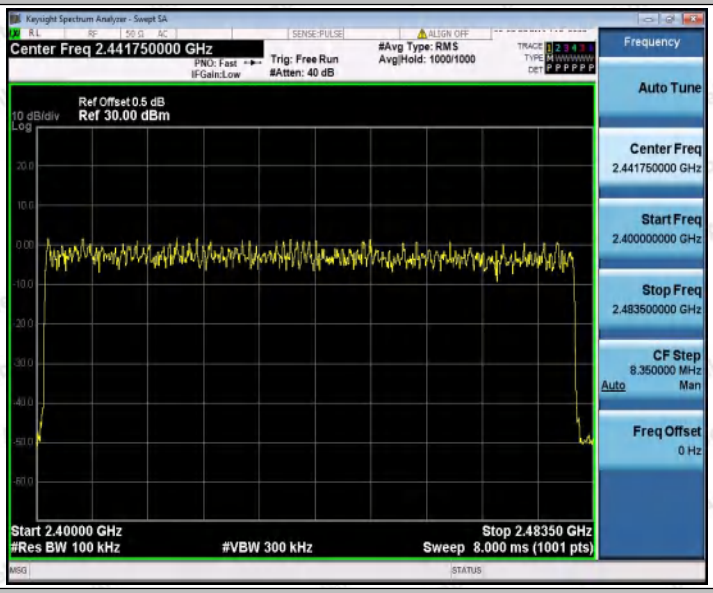
TestMode	Antenna	Channel	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS

Test Graphs

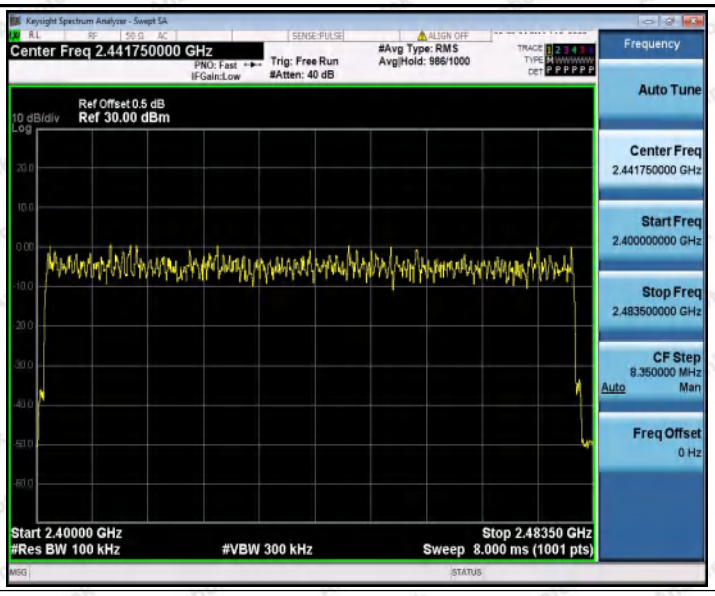
DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.441750000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 40 dB
#Avg Type: RMS
Avg|Hold: 986/1000
Ref Offset 0.5 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

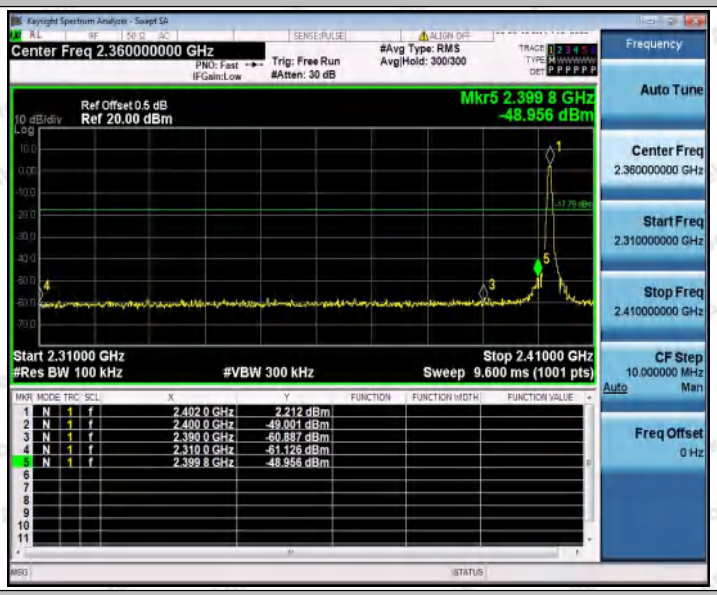
Appendix G: Band edge measurements

Test Result

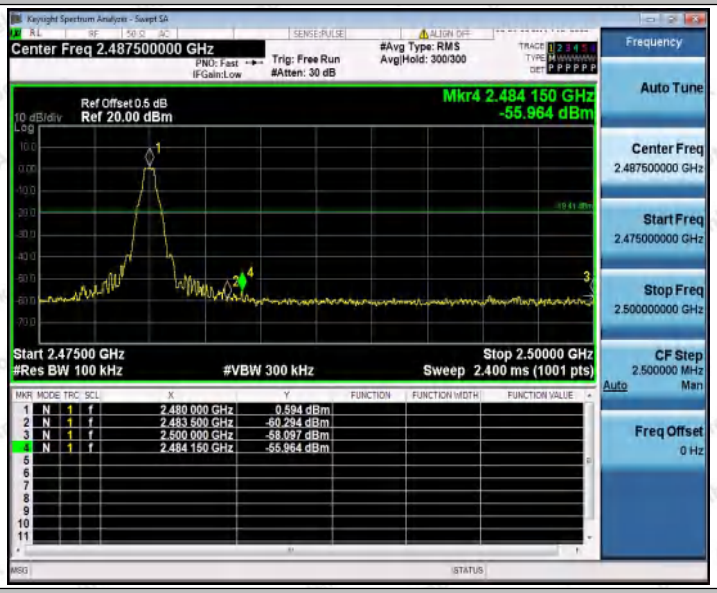
TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	2.21	-48.96	≤-17.79	PASS
		High	2480	0.59	-55.96	≤-19.41	PASS
		Low	Hop	1.96	-58.25	≤-18.05	PASS
		High	Hop	0.45	-60.2	≤-19.55	PASS
2DH5	Ant1	Low	2402	2.01	-49	≤-17.99	PASS
		High	2480	0.28	-56.04	≤-19.72	PASS
		Low	Hop	1.12	-58.44	≤-18.89	PASS
		High	Hop	0.03	-61.5	≤-19.98	PASS
3DH5	Ant1	Low	2402	0.46	-55.56	≤-19.54	PASS
		High	2480	-0.47	-56.86	≤-20.47	PASS
		Low	Hop	-1.78	-50.04	≤-21.78	PASS
		High	Hop	-3.18	-59.84	≤-23.18	PASS

Test Graphs

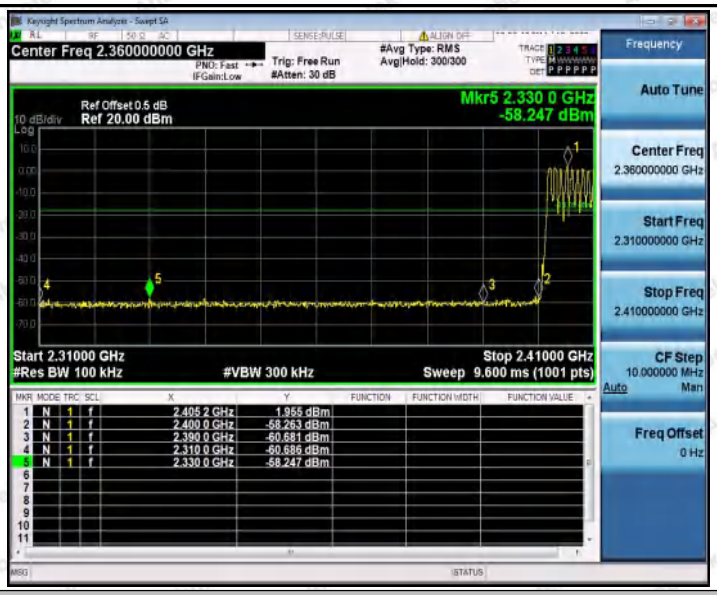
DH5_Ant1_Low_2402



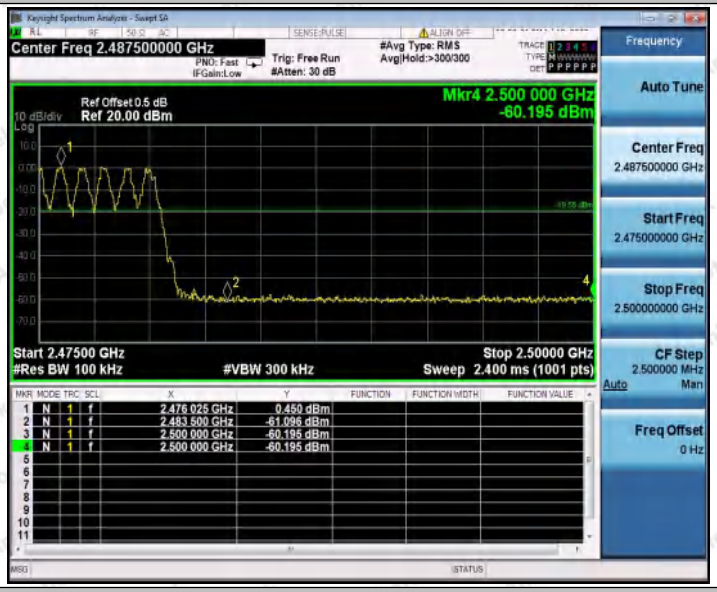
DH5_Ant1_High_2480



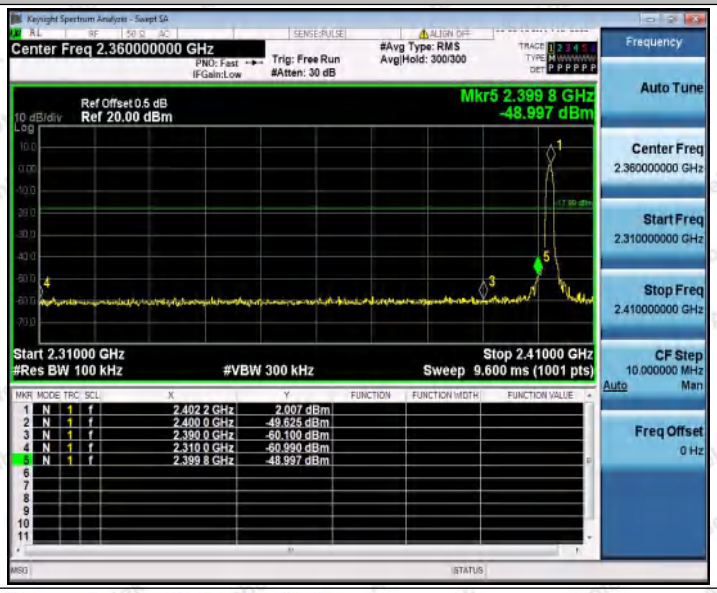
DH5_Ant1_Low_Hop



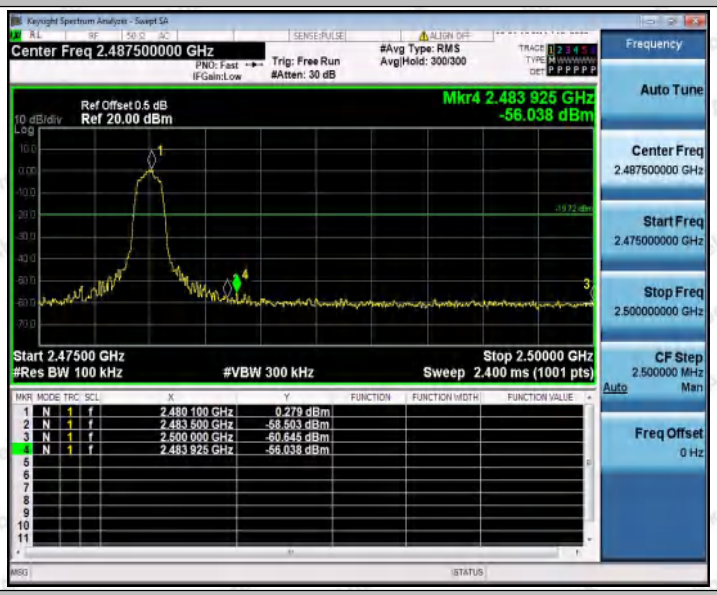
DH5_Ant1_High_Hop



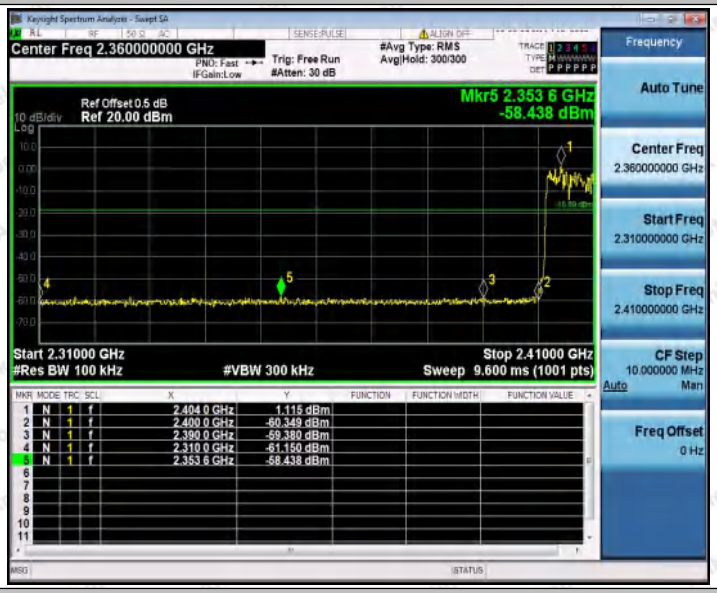
2DH5_Ant1_Low_2402



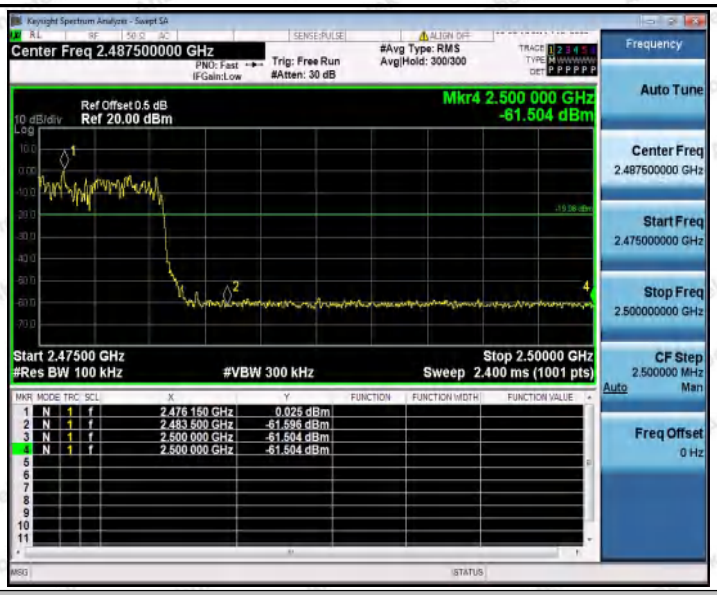
2DH5_Ant1_High_2480



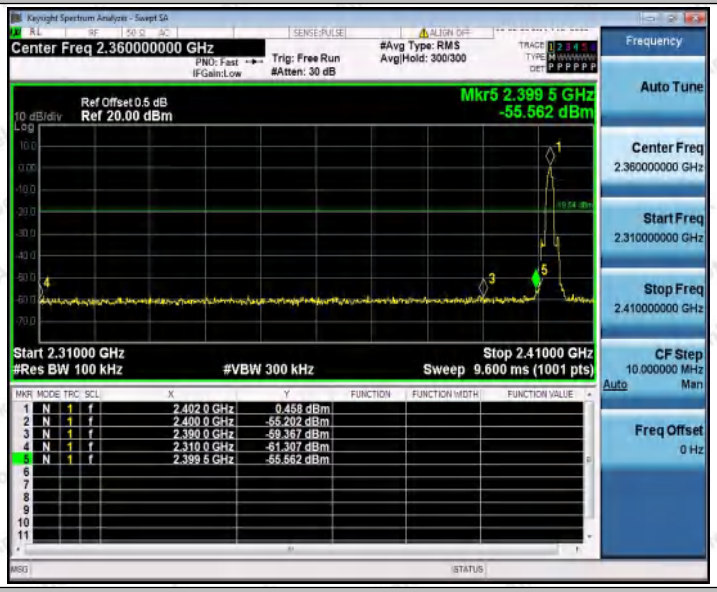
2DH5_Ant1_Low_Hop



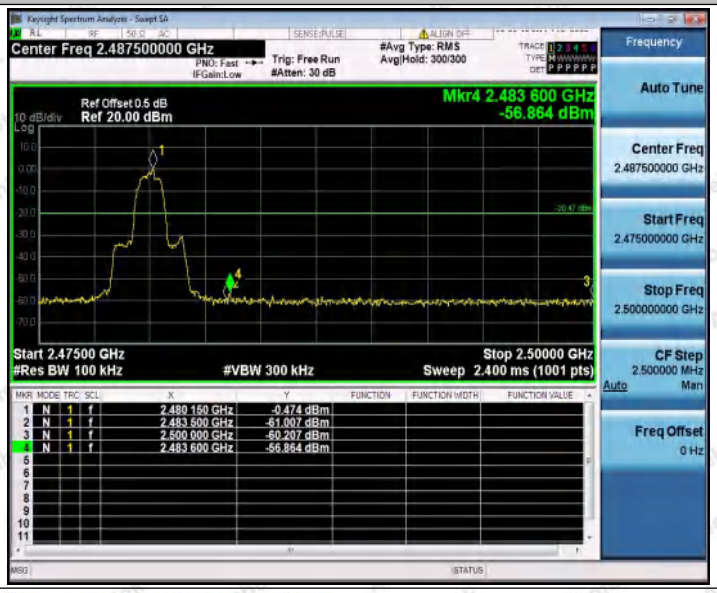
2DH5_Ant1_High_Hop



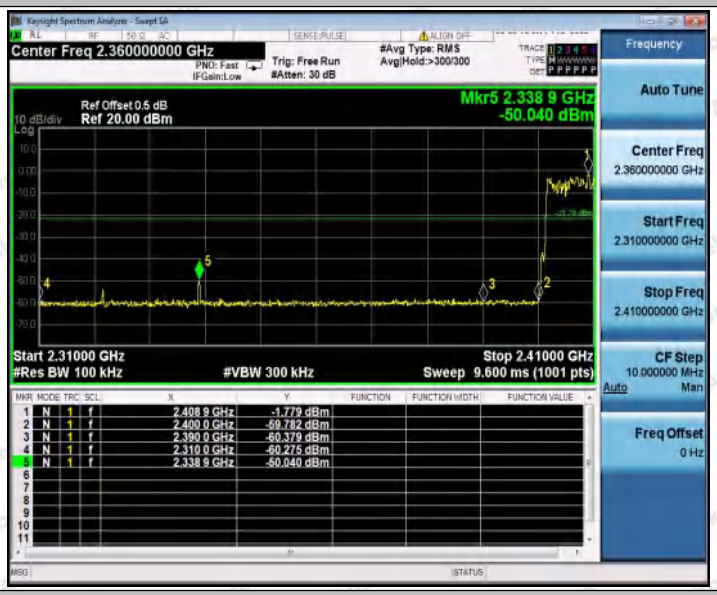
3DH5_Ant1_Low_2402



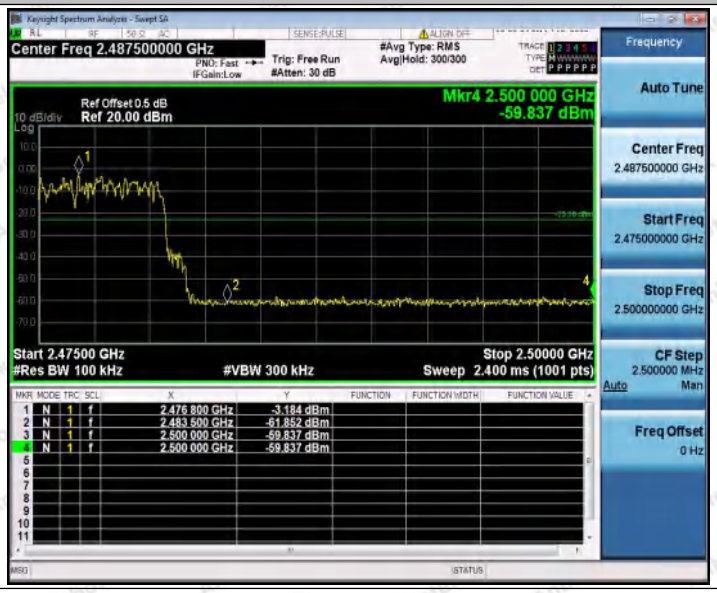
3DH5_Ant1_High_2480



3DH5_Ant1_Low_Hop



3DH5_Ant1_High_Hop



Appendix H: Conducted Spurious Emission

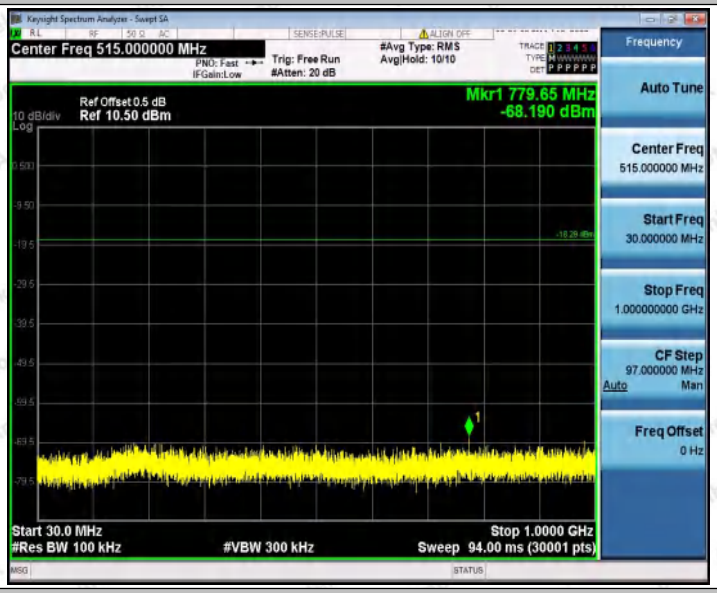
Test Result

TestMode	Antenna	Channel	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	2402	Reference	1.71	1.71	---	PASS
			30~1000	1.71	-68.19	≤-18.29	PASS
			1000~26500	1.71	-54.11	≤-18.29	PASS
		2441	Reference	1.29	1.29	---	PASS
			30~1000	1.29	-68.38	≤-18.71	PASS
			1000~26500	1.29	-53.79	≤-18.71	PASS
		2480	Reference	0.98	0.98	---	PASS
			30~1000	0.98	-69.75	≤-19.02	PASS
			1000~26500	0.98	-53.72	≤-19.02	PASS
2DH5	Ant1	2402	Reference	-0.04	-0.04	---	PASS
			30~1000	-0.04	-68.11	≤-20.04	PASS
			1000~26500	-0.04	-53.71	≤-20.04	PASS
		2441	Reference	0.46	0.46	---	PASS
			30~1000	0.46	-69.44	≤-19.54	PASS
			1000~26500	0.46	-53.48	≤-19.54	PASS
		2480	Reference	-0.90	-0.90	---	PASS
			30~1000	-0.90	-68.94	≤-20.9	PASS
			1000~26500	-0.90	-53.91	≤-20.9	PASS
3DH5	Ant1	2402	Reference	0.71	0.71	---	PASS
			30~1000	0.71	-68.14	≤-19.29	PASS
			1000~26500	0.71	-53.34	≤-19.29	PASS
		2441	Reference	0.54	0.54	---	PASS
			30~1000	0.54	-69.13	≤-19.46	PASS
			1000~26500	0.54	-54.13	≤-19.46	PASS
		2480	Reference	-0.15	-0.15	---	PASS
			30~1000	-0.15	-69.23	≤-20.15	PASS
			1000~26500	-0.15	-53.57	≤-20.15	PASS

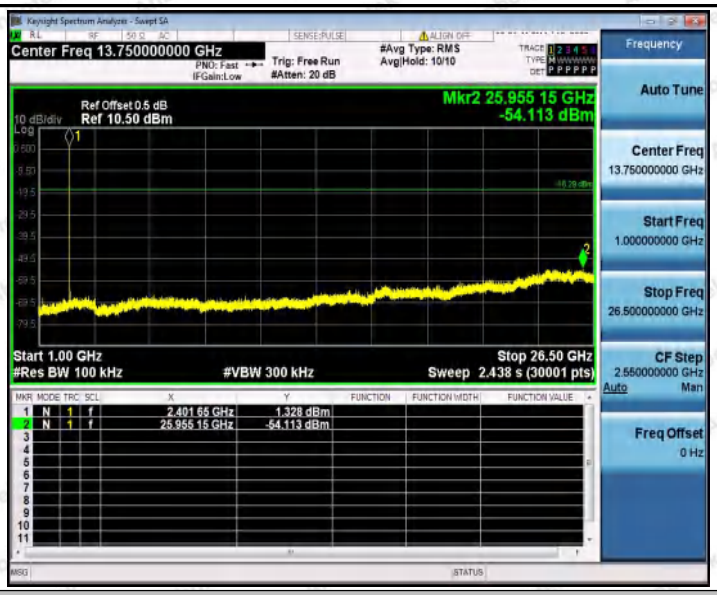
Test Graphs

DH5_Ant1_2402_0~Reference

DH5_Ant1_2402_30~1000

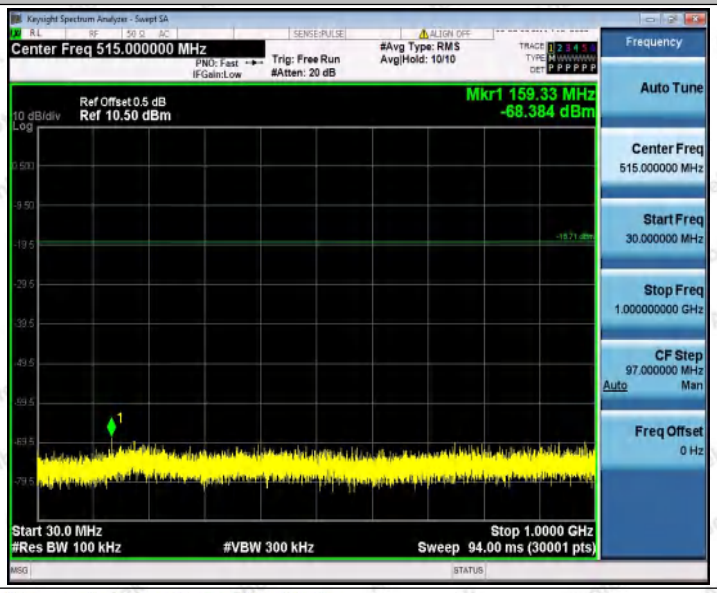


DH5_Ant1_2402_1000~26500

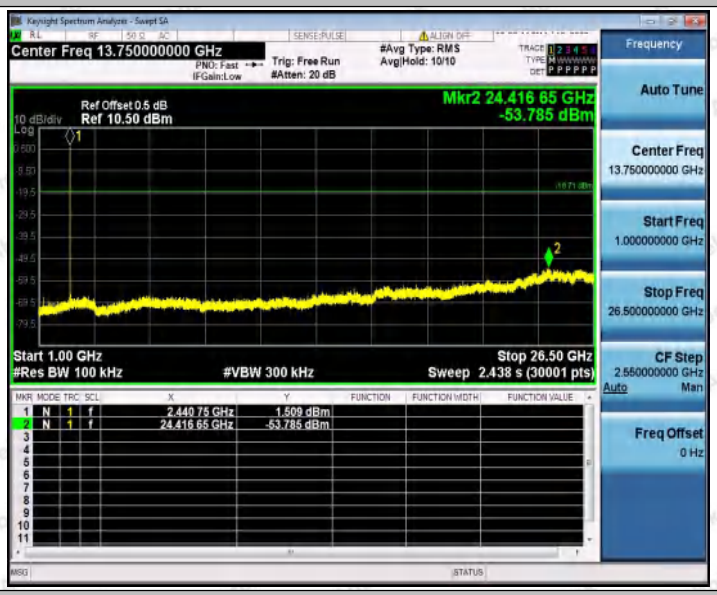


DH5_Ant1_2441_0~Reference

DH5_Ant1_2441_30~1000

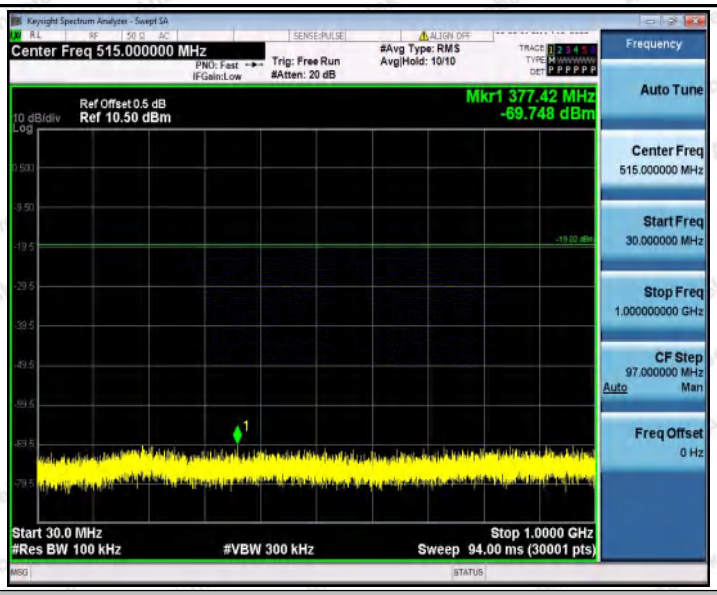


DH5_Ant1_2441_1000~26500

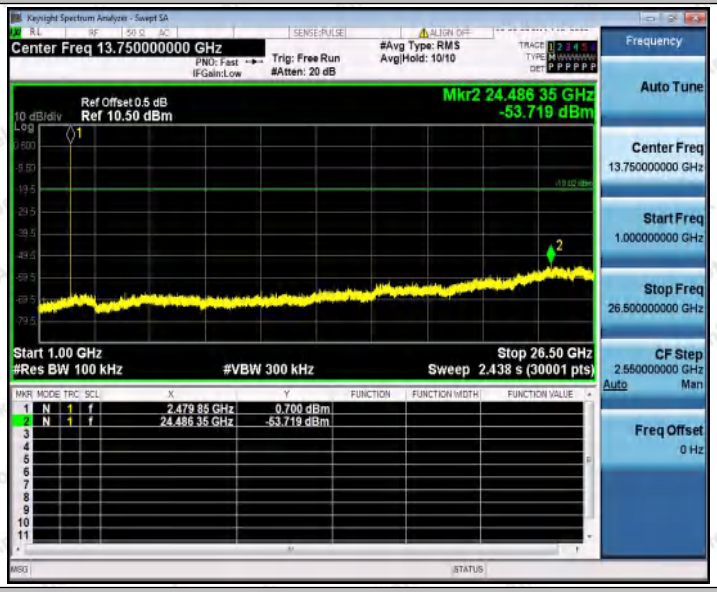


DH5_Ant1_2480_0~Reference

DH5_Ant1_2480_30~1000

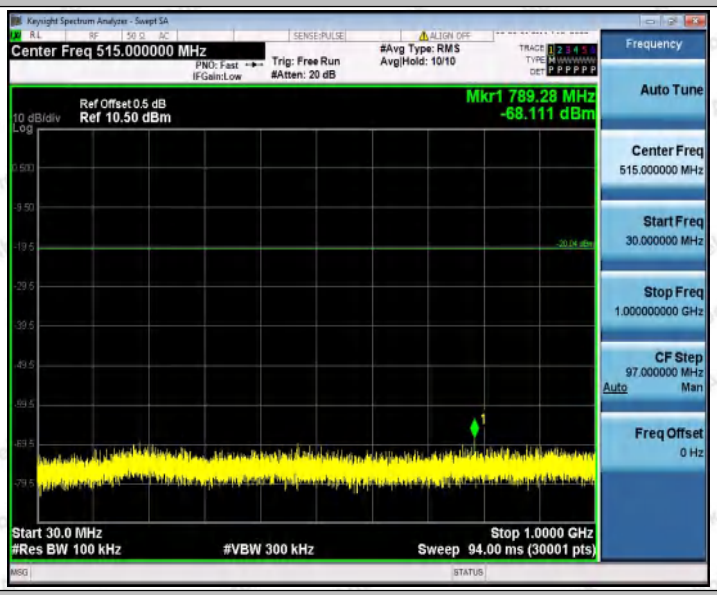


DH5_Ant1_2480_1000~26500

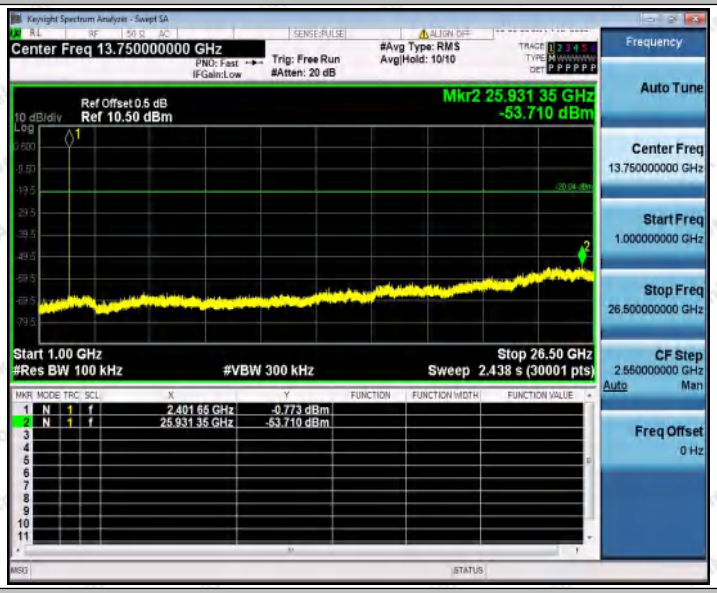


2DH5_Ant1_2402_0~Reference

2DH5_Ant1_2402_30~1000

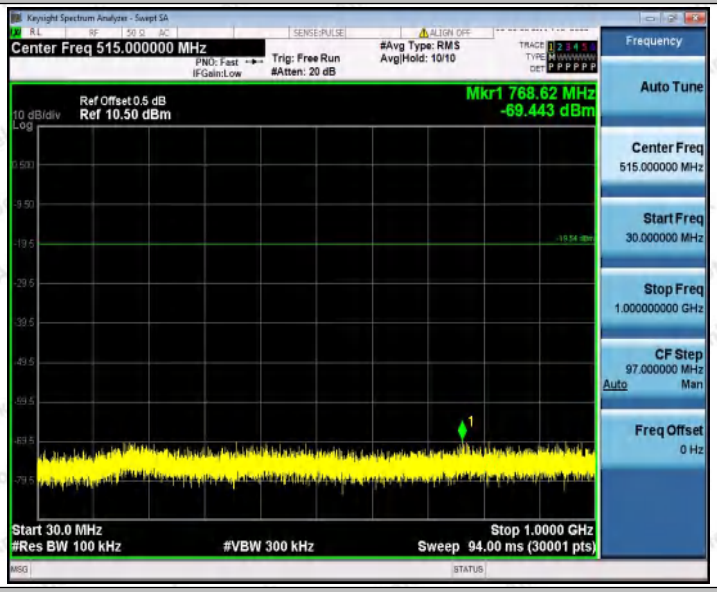


2DH5_Ant1_2402_1000~26500

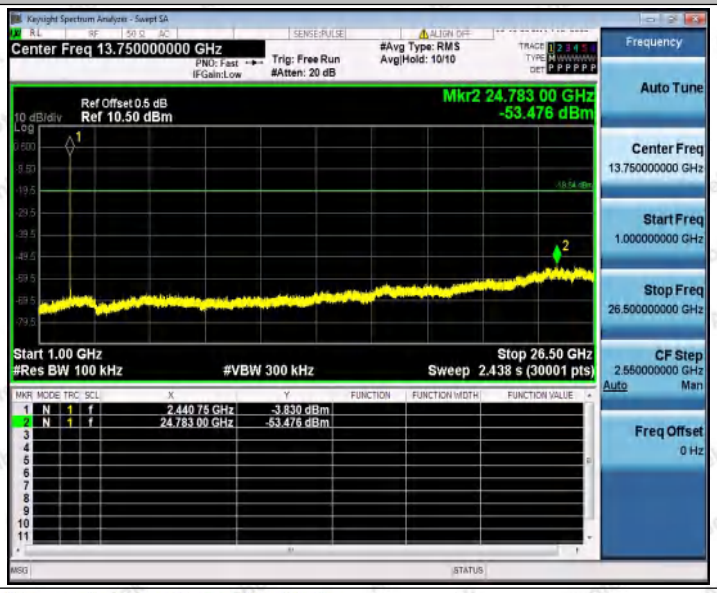


2DH5_Ant1_2441_0~Reference

2DH5_Ant1_2441_30~1000

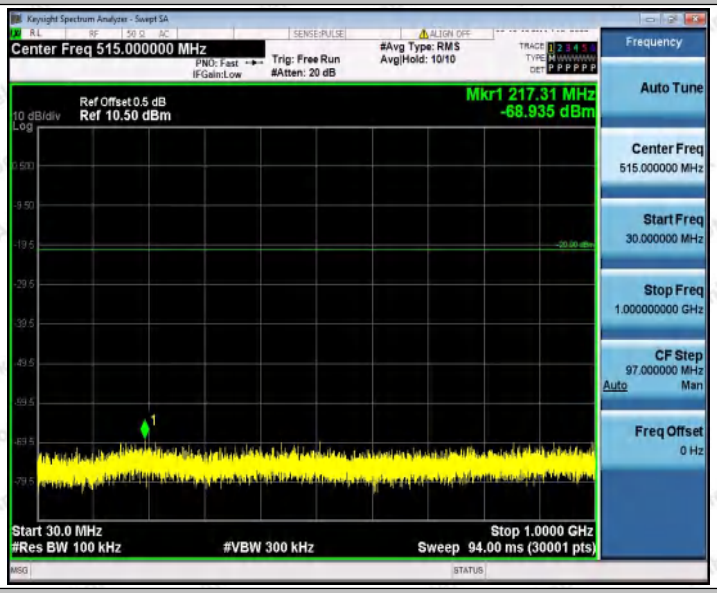


2DH5_Ant1_2441_1000~26500

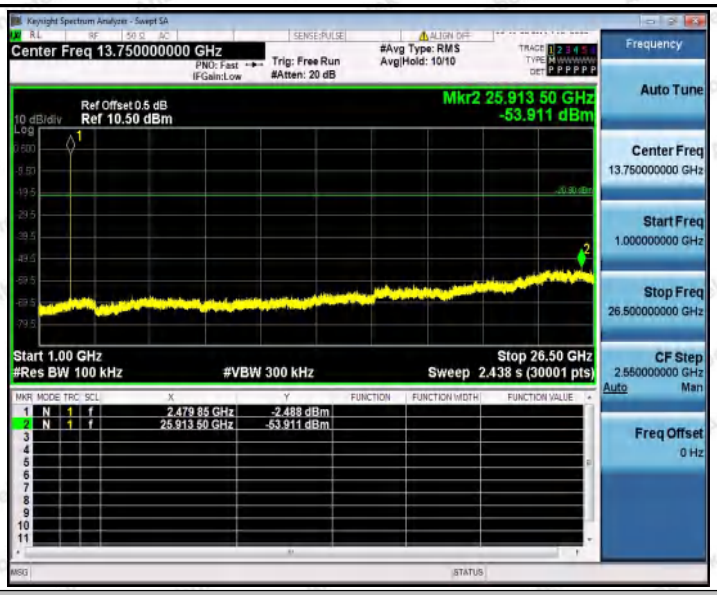


2DH5_Ant1_2480_0~Reference

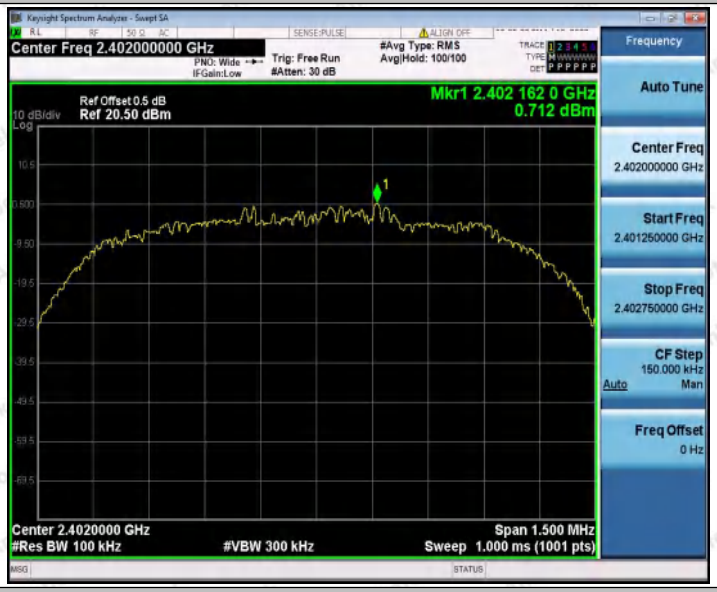
2DH5_Ant1_2480_30~1000



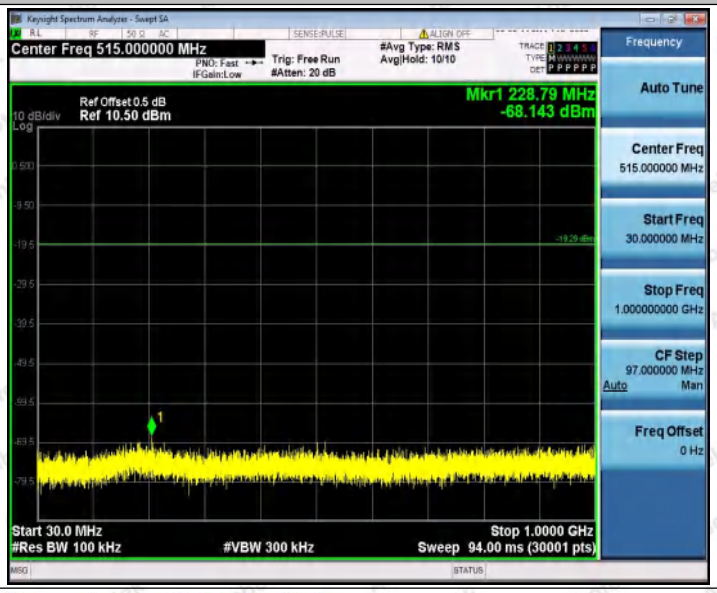
2DH5_Ant1_2480_1000~26500



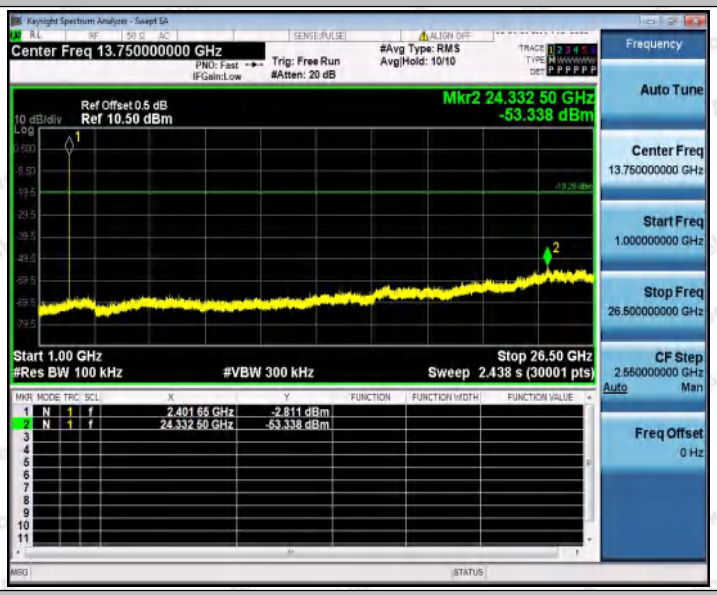
3DH5_Ant1_2402_0~Reference



3DH5_Ant1_2402_30~1000

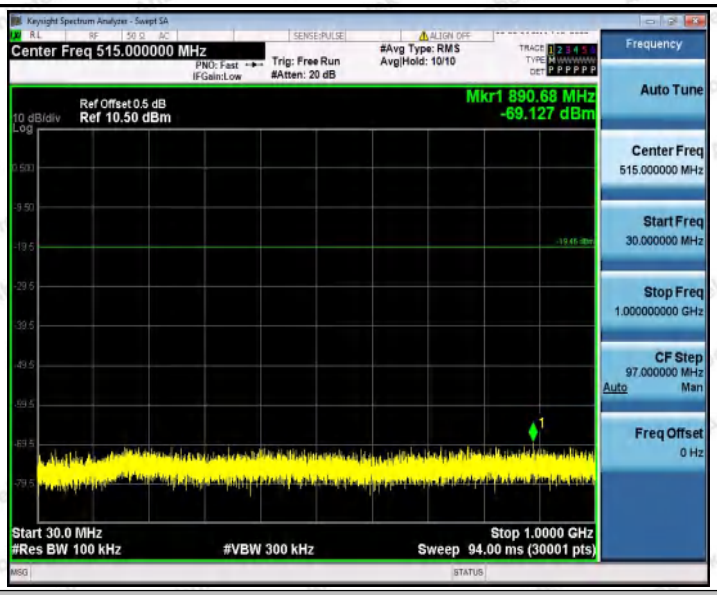


3DH5_Ant1_2402_1000~26500

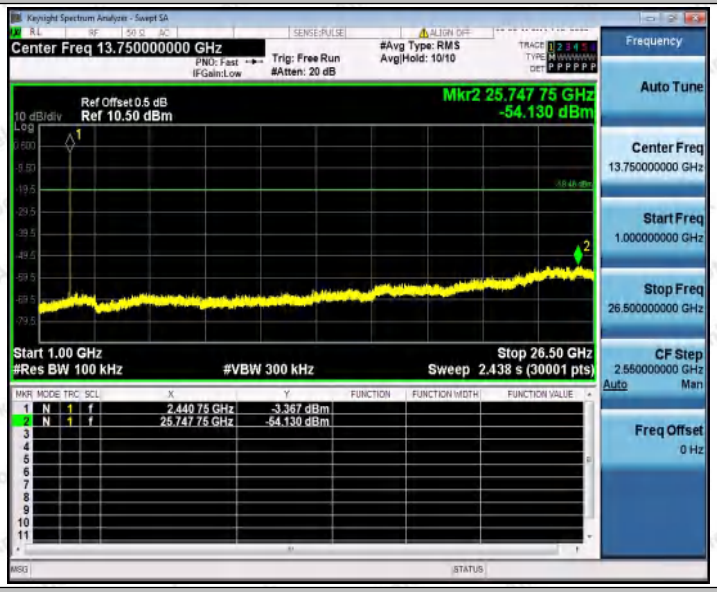


3DH5_Ant1_2441_0~Reference

3DH5_Ant1_2441_30~1000

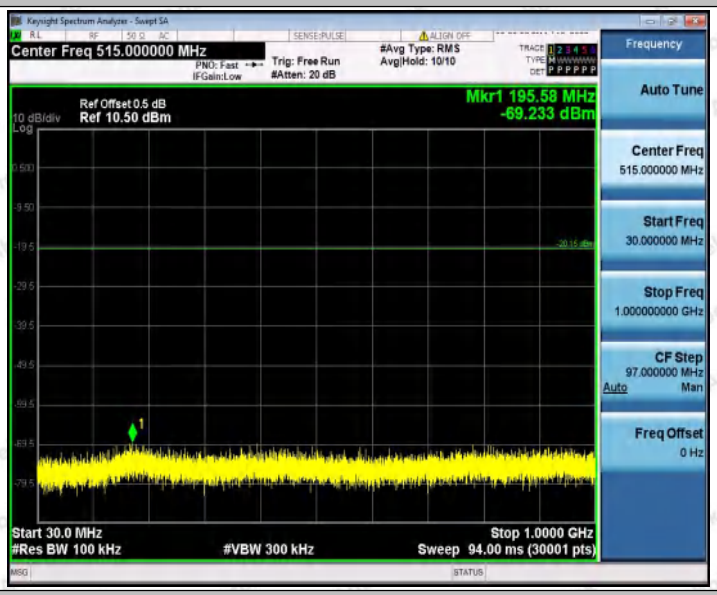


3DH5_Ant1_2441_1000~26500

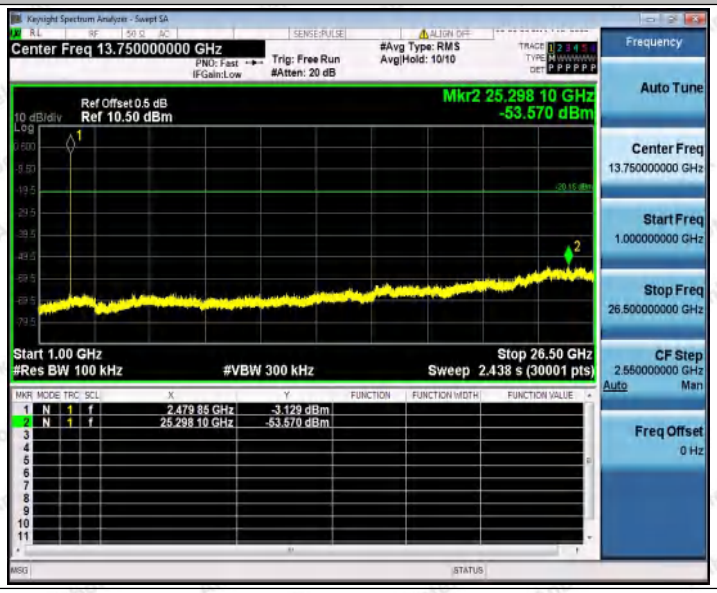


3DH5_Ant1_2480_0~Reference

3DH5_Ant1_2480_30~1000



3DH5_Ant1_2480_1000~26500



Appendix I: Duty Cycle

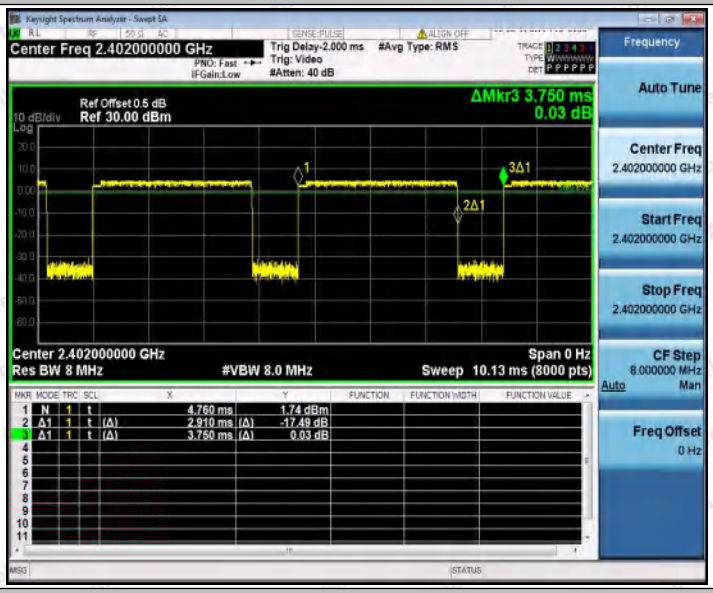
Test Result

TestMode	Antenna	Channel	ON Time [ms]	Period [ms]	X	DC [%]	xFactor	Limit	Verdict
DH5	Ant1	2402	2.90	3.75	0.7733	77.33	1.12	---	PASS
2DH5	Ant1	2402	2.91	3.75	0.7760	77.60	1.10	---	PASS
3DH5	Ant1	2402	2.89	3.75	0.7707	77.07	1.13	---	PASS

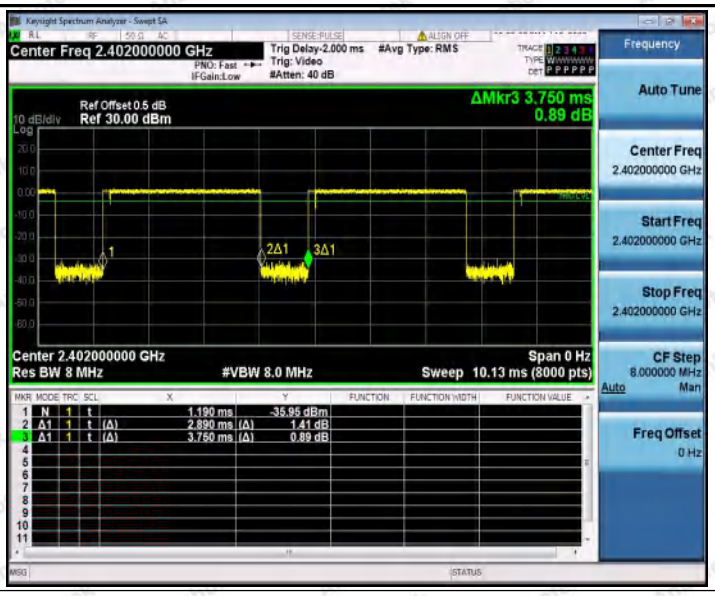
Test Graphs

DH5_Ant1_2402

2DH5_Ant1_2402



3DH5_Ant1_2402


Keysight Spectrum Analyzer - Swept SA
Center Freq 2.402000000 GHz
Trig Delay-2.000 ms
Trig: Video
#Atten: 40 dB
#Avg Type: RMS
Ref Offset 0.5 dB
10 dB/div
Ref 30.00 dBm
ΔMkr3 3.750 ms
0.89 dB
Center 2.402000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 10.13 ms (8000 pts)
1 N 1 t 1.190 ms -35.95 dBm
2 Δ1 1 t (Δ) 2.890 ms (Δ) 1.41 dB
3 Δ1 1 t (Δ) 3.750 ms (Δ) 0.89 dB
Frequency
Auto Tune
Center Freq
2.402000000 GHz
Start Freq
2.402000000 GHz
Stop Freq
2.402000000 GHz
CF Step
8.000000 MHz
Auto Man
Freq Offset
0 Hz

---End---