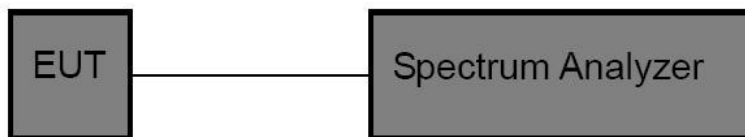


9 20DB Occupy Bandwidth Test

9.1 Test Standard

Test Standard	FCC Part15 C Section 15.247 (a)(1)
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9.2 Test Setup



9.3 Test Procedure

Using the following spectrum analyzer settings:

1. Span= approximately 2 to 3 times the 20dB bandwidth, centered on a hopping channel.
2. Set the RBW = 30 kHz.
3. Set the VBW = 100 kHz.
4. Sweep time = auto couple.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.

9.4 Test Data

Test Item	:	20dB BW	Test Mode	:	CH Low ~ CH High
Test Voltage	:	3.7V	Temperature	:	24.5°C
Test Result	:	PASS	Humidity	:	55%RH



L:

TestMode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.942	2401.508	2402.450	---	---
DH5	Ant1	2441	0.963	2440.496	2441.459	---	---
DH5	Ant1	2480	0.939	2479.505	2480.444	---	---
2DH5	Ant1	2402	1.281	2401.334	2402.615	---	---
2DH5	Ant1	2441	1.278	2440.334	2441.612	---	---
2DH5	Ant1	2480	1.365	2479.280	2480.645	---	---
3DH5	Ant1	2402	1.251	2401.334	2402.585	---	---
3DH5	Ant1	2441	1.260	2440.325	2441.585	---	---
3DH5	Ant1	2480	1.218	2479.361	2480.579	---	---

R:

TestMode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant1	2402	0.960	2401.502	2402.462	---	---
DH5	Ant1	2441	0.933	2440.508	2441.441	---	---
DH5	Ant1	2480	0.939	2479.505	2480.444	---	---
2DH5	Ant1	2402	1.368	2401.280	2402.648	---	---
2DH5	Ant1	2441	1.272	2440.340	2441.612	---	---
2DH5	Ant1	2480	1.272	2479.337	2480.609	---	---
3DH5	Ant1	2402	1.278	2401.328	2402.606	---	---
3DH5	Ant1	2441	1.233	2440.358	2441.591	---	---
3DH5	Ant1	2480	1.296	2479.316	2480.612	---	---

Test Graphs:

L:





2DH5-Ant1-2402



2DH5-Ant1-2441



2DH5-Ant1-2480



3DH5-Ant1-2402



3DH5-Ant1-2441



3DH5-Ant1-2480



R:

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



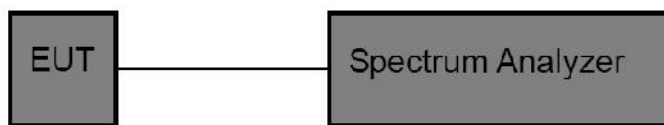


10 Carrier Frequency Separation Test

10.1 Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (a)(1)
Test Limit	>25KHz or >two-thirds of the 20 dB bandwidth

10.2 Test Setup



10.3 Test Procedure

The EUT must have its hopping function enabled. Using the following spectrum analyzer settings:

1. Span= Wide enough to capture the peaks of two adjacent channels
2. Set the RBW = 300 kHz.
3. Set the VBW = 300 kHz.
4. Sweep time = auto couple.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.

10.4 Test Data

Test Item	:	Frequency Separation	Test Mode	:	CH Low ~ CH High
Test Voltage	:	3.7V	Temperature	:	24.5°C
Test Result	:	PASS	Humidity	:	55%RH



L:

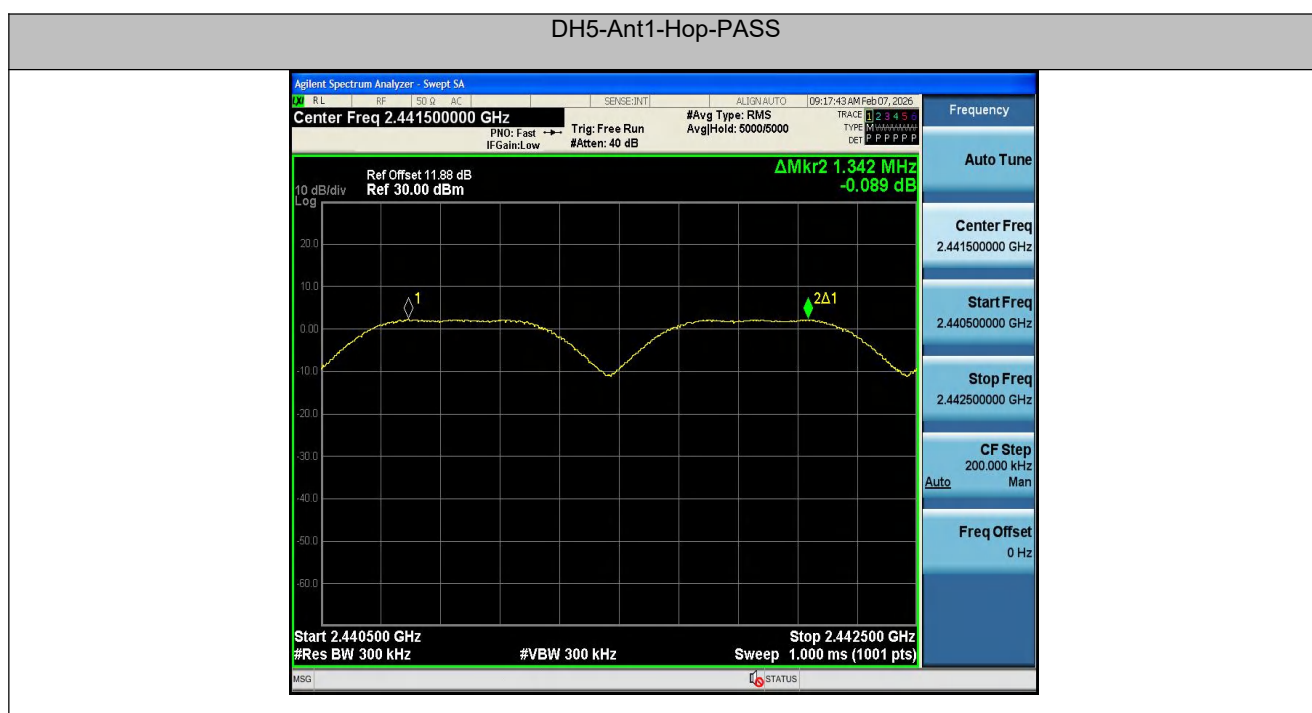
TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	1.342	≥ 0.642	PASS
2DH5	Ant1	Hop	1.312	≥ 0.910	PASS
3DH5	Ant1	Hop	1.014	≥ 0.840	PASS

R:

TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.842	≥ 0.640	PASS
2DH5	Ant1	Hop	0.992	≥ 0.912	PASS
3DH5	Ant1	Hop	1.012	≥ 0.864	PASS

Test Graphs:

L:





2DH5-Ant1-Hop-PASS



3DH5-Ant1-Hop-PASS





R:

DH5-Ant1-Hop-PASS



2DH5-Ant1-Hop-PASS



3DH5-Ant1-Hop-PASS



Report No.: PTC26020212401E-FC01

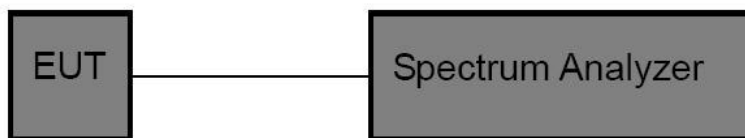


11 Number of Hopping Channel Test

11.1 Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (a)(1)
Test Limit	>15 channels

11.2 Test Setup



11.3 Test Procedure

The EUT must have its hopping function enabled. Using the following spectrum analyzer setting:

1. Span= the frequency band of operation
2. Set the RBW = 300kHz.
3. Set the VBW = 300kHz.
4. Sweep time = auto couple.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.



11.4 Test Data

Test Item	: Number of Hopping Frequency	Test Mode	: CH Low ~ CH High
Test Voltage	: 3.7V	Temperature	: 24.5°C
Test Result	: PASS	Humidity	: 55%RH

L:

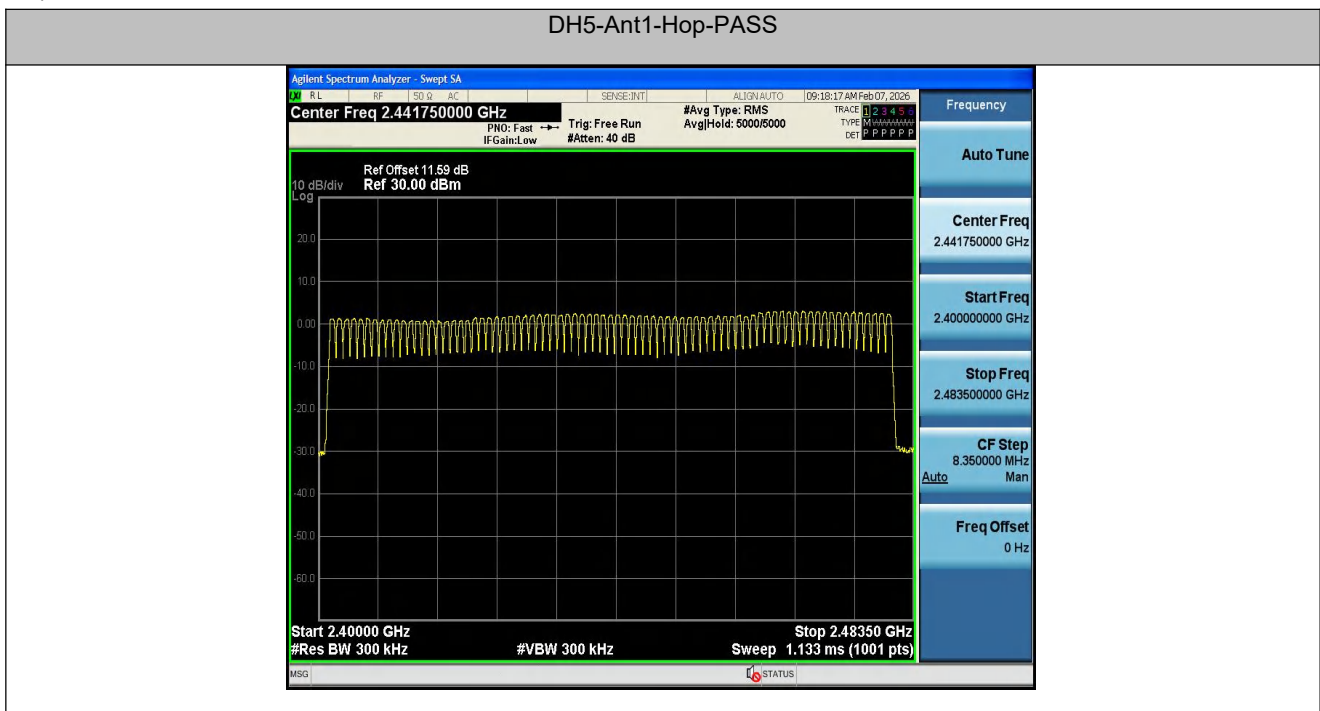
TestMode	Antenna	Frequency[MHz]	Result[Num]	Limit[Num]	Verdict
DH5	Ant1	Hop	79	≥15	PASS
2DH5	Ant1	Hop	79	≥15	PASS
3DH5	Ant1	Hop	79	≥15	PASS

R:

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

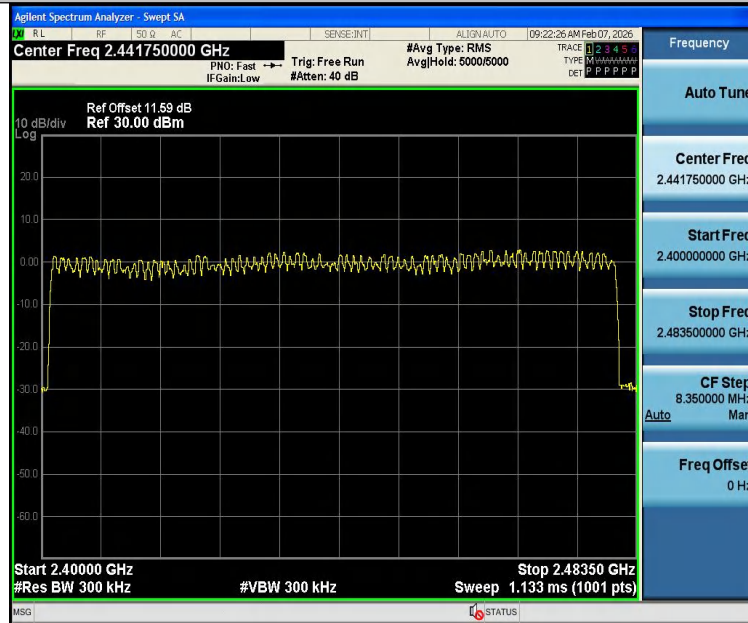
Test Graphs:

L:

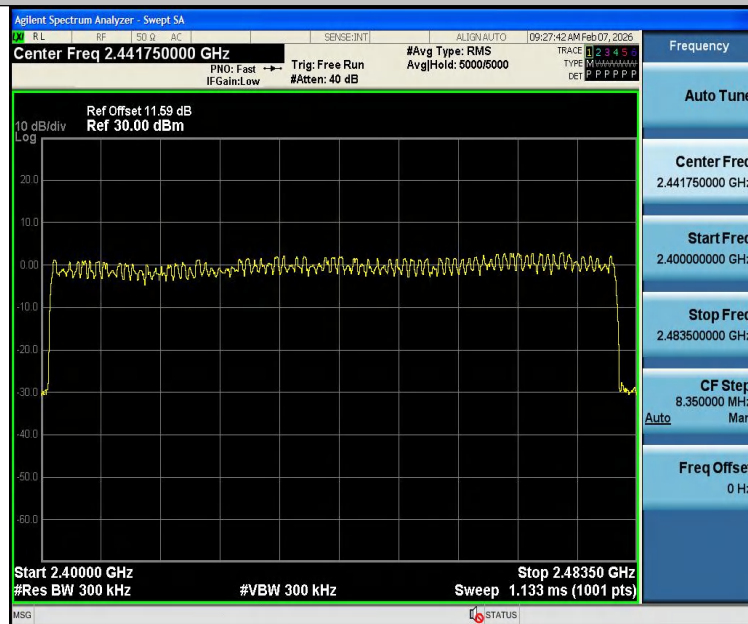




2DH5-Ant1-Hop-PASS



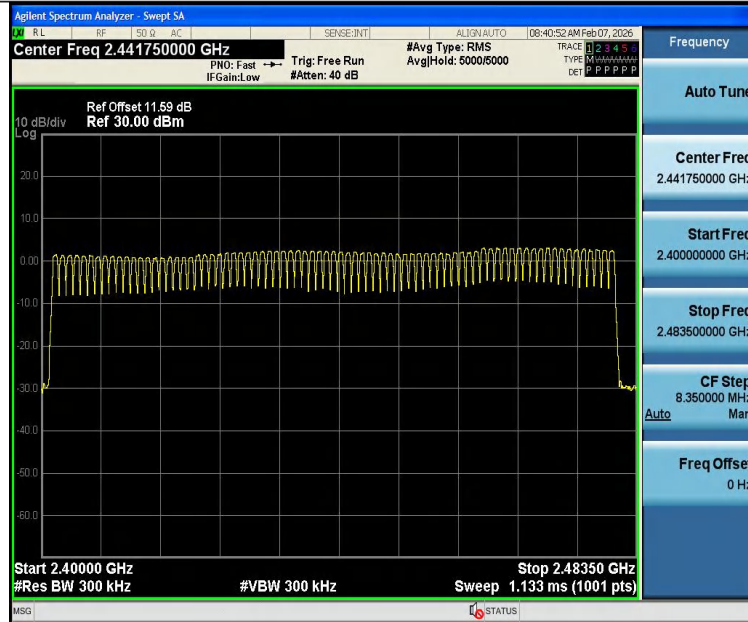
3DH5-Ant1-Hop-PASS



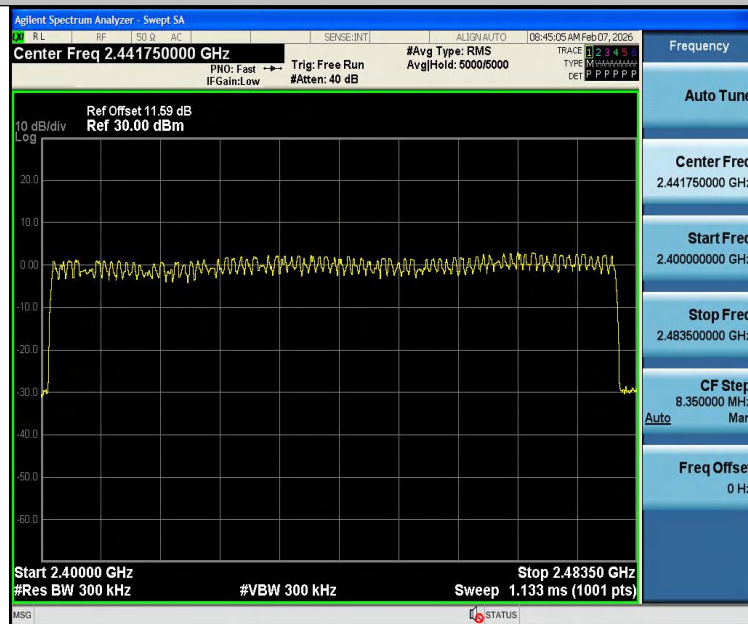


R:

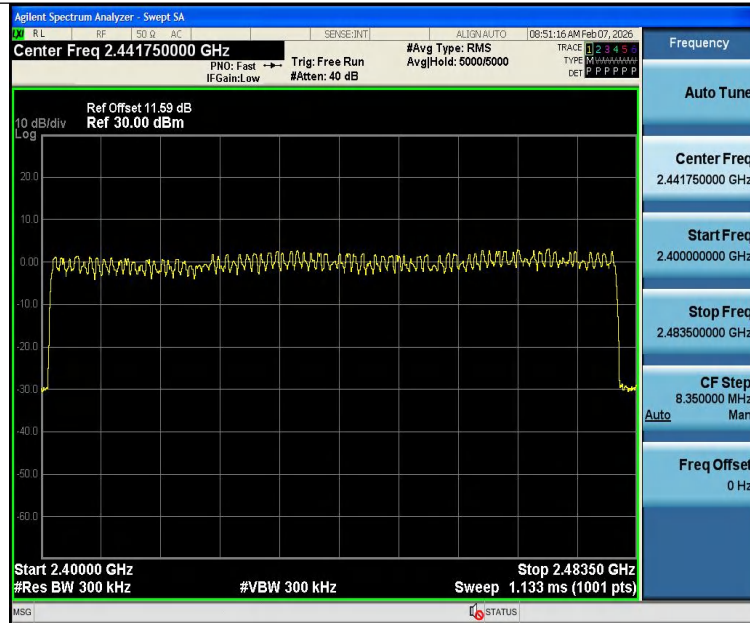
DH5-Ant1-Hop-PASS



2DH5-Ant1-Hop-PASS



3DH5-Ant1-Hop-PASS



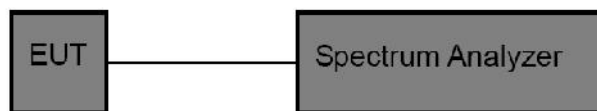


12 Dwell Time Test

12.1 Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (a)(1)
Test Limit	0.4 sec

12.2 Test Setup



12.3 Test Procedure

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

1. Span= zero span, centered on a hopping channel
2. Set the RBW = 1 MHz.
3. Set the VBW = 3 MHz.
4. Sweep time = as necessary to capture the entire dwell time per hopping channel.
5. Detector function = peak.
6. Trace mode = clear write.
7. Allow trace to fully stabilize.

**12.4 Test Data**

Test Item	:	Time of Occupancy	Test Mode	:	CH Low ~ CH High
Test Voltage	:	3.7V	Temperature	:	24.5°C
Test Result	:	PASS	Humidity	:	55%RH

L:

TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.907	106.67	0.31	≤0.4	PASS
2DH5	Ant1	Hop	2.913	106.67	0.311	≤0.4	PASS
3DH5	Ant1	Hop	2.911	106.67	0.311	≤0.4	PASS
DH1	Ant1	Hop	0.404	320	0.129	≤0.4	PASS
2DH1	Ant1	Hop	0.413	320	0.132	≤0.4	PASS
3DH1	Ant1	Hop	0.415	320	0.133	≤0.4	PASS
DH3	Ant1	Hop	1.659	160	0.265	≤0.4	PASS
2DH3	Ant1	Hop	1.664	160	0.266	≤0.4	PASS
3DH3	Ant1	Hop	1.666	160	0.267	≤0.4	PASS

R:

TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant1	Hop	2.907	106.67	0.31	≤0.4	PASS
2DH5	Ant1	Hop	2.913	106.67	0.311	≤0.4	PASS
3DH5	Ant1	Hop	2.914	106.67	0.311	≤0.4	PASS
DH1	Ant1	Hop	0.404	320	0.129	≤0.4	PASS
2DH1	Ant1	Hop	0.413	320	0.132	≤0.4	PASS
3DH1	Ant1	Hop	0.414	320	0.132	≤0.4	PASS
DH3	Ant1	Hop	1.661	160	0.266	≤0.4	PASS
2DH3	Ant1	Hop	1.664	160	0.266	≤0.4	PASS
3DH3	Ant1	Hop	1.666	160	0.267	≤0.4	PASS

Note:

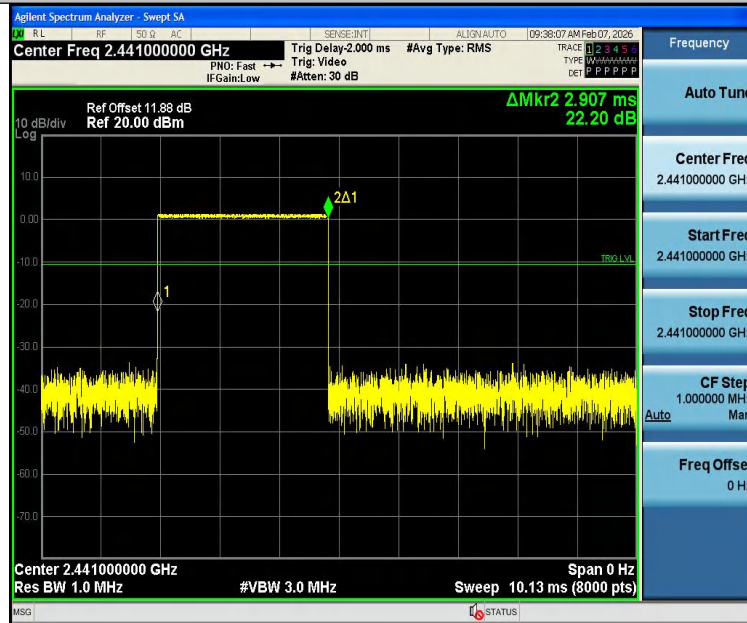
- 1.DH1/2DH1/3DH1 Dwell Time: Reading * (1600/2)*31.6/(channel number).
- 2.DH3/2DH3/3DH3 Dwell Time: Reading * (1600/4)*31.6/(channel number).
- 3.DH5/2DH5/3DH5 Dwell Time: Reading * (1600/6)*31.6/(channel number).



Test Graphs:

L:

DH5-Ant1-Hop-PASS



2DH5-Ant1-Hop-PASS



3DH5-Ant1-Hop-PASS



DH1-Ant1-Hop-PASS



2DH1-Ant1-Hop-PASS