

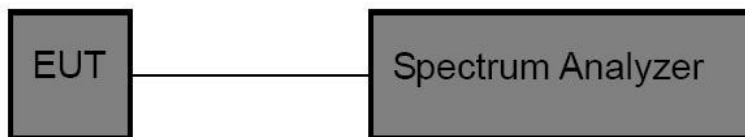


9 20DB Occupy Bandwidth Test

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	:	AC 120V	Temperature	:	24.5°C
Test Result	:	PASS	Humidity	:	55%RH



Ant0:

TestMode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant0	2402	0.963	2401.538	2402.501	---	---
DH5	Ant0	2441	0.942	2440.541	2441.483	---	---
DH5	Ant0	2480	0.960	2479.541	2480.501	---	---
2DH5	Ant0	2402	1.272	2401.379	2402.651	---	---
2DH5	Ant0	2441	1.275	2440.373	2441.648	---	---
2DH5	Ant0	2480	1.272	2479.376	2480.648	---	---
3DH5	Ant0	2402	1.296	2401.361	2402.657	---	---
3DH5	Ant0	2441	1.308	2440.352	2441.660	---	---
3DH5	Ant0	2480	1.314	2479.346	2480.660	---	---

Ant2:

TestMode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant2	2402	0.957	2401.538	2402.495	---	---
DH5	Ant2	2441	0.960	2440.535	2441.495	---	---
DH5	Ant2	2480	0.951	2479.538	2480.489	---	---
2DH5	Ant2	2402	1.284	2401.373	2402.657	---	---
2DH5	Ant2	2441	1.284	2440.370	2441.654	---	---
2DH5	Ant2	2480	1.314	2479.346	2480.660	---	---
3DH5	Ant2	2402	1.314	2401.349	2402.663	---	---
3DH5	Ant2	2441	1.296	2440.355	2441.651	---	---
3DH5	Ant2	2480	1.296	2479.355	2480.651	---	---

Ant4:

TestMode	Antenna	Frequency[MHz]	20db EBW[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
DH5	Ant4	2402	0.954	2401.535	2402.489	---	---
DH5	Ant4	2441	0.963	2440.538	2441.501	---	---
DH5	Ant4	2480	0.954	2479.538	2480.492	---	---
2DH5	Ant4	2402	1.275	2401.373	2402.648	---	---
2DH5	Ant4	2441	1.281	2440.376	2441.657	---	---
2DH5	Ant4	2480	1.314	2479.349	2480.663	---	---
3DH5	Ant4	2402	1.284	2401.361	2402.645	---	---
3DH5	Ant4	2441	1.335	2440.337	2441.672	---	---
3DH5	Ant4	2480	1.299	2479.352	2480.651	---	---



Ant0:

DH5-Ant0-2402



DH5-Ant0-2441



DH5-Ant0-2480



2DH5-Ant0-2402



2DH5-Ant0-2441



2DH5-Ant0-2480



3DH5-Ant0-2402



3DH5-Ant0-2441



3DH5-Ant0-2480



Ant2:

DH5-Ant2-2402



DH5-Ant2-2441



DH5-Ant2-2480



2DH5-Ant2-2402



2DH5-Ant2-2441



2DH5-Ant2-2480



3DH5-Ant2-2402



3DH5-Ant2-2441



3DH5-Ant2-2480





Ant4

DH5-Ant4-2402



DH5-Ant4-2441



DH5-Ant4-2480



2DH5-Ant4-2402



2DH5-Ant4-2441



2DH5-Ant4-2480



3DH5-Ant4-2402



3DH5-Ant4-2441



3DH5-Ant4-2480



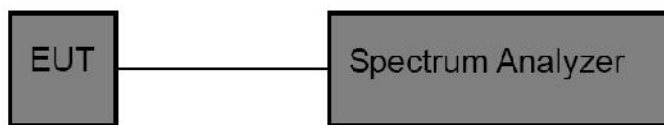


10 Carrier Frequency Separation Test

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	:	AC 120V	Temperature	:	24.5°C
Test Result	:	PASS	Humidity	:	55%RH



Ant0:

TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant0	Hop	0.982	≥ 0.642	PASS
2DH5	Ant0	Hop	1.19	≥ 0.850	PASS
3DH5	Ant0	Hop	0.992	≥ 0.876	PASS

Ant2:

TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant2	Hop	1.17	≥ 0.640	PASS
2DH5	Ant2	Hop	1.19	≥ 0.876	PASS
3DH5	Ant2	Hop	1.014	≥ 0.876	PASS

Ant4:

TestMode	Antenna	Frequency[MHz]	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant4	Hop	1.188	≥ 0.642	PASS
2DH5	Ant4	Hop	0.898	≥ 0.876	PASS
3DH5	Ant4	Hop	1.012	≥ 0.890	PASS



Ant0:

DH5-Ant0-Hop-PASS



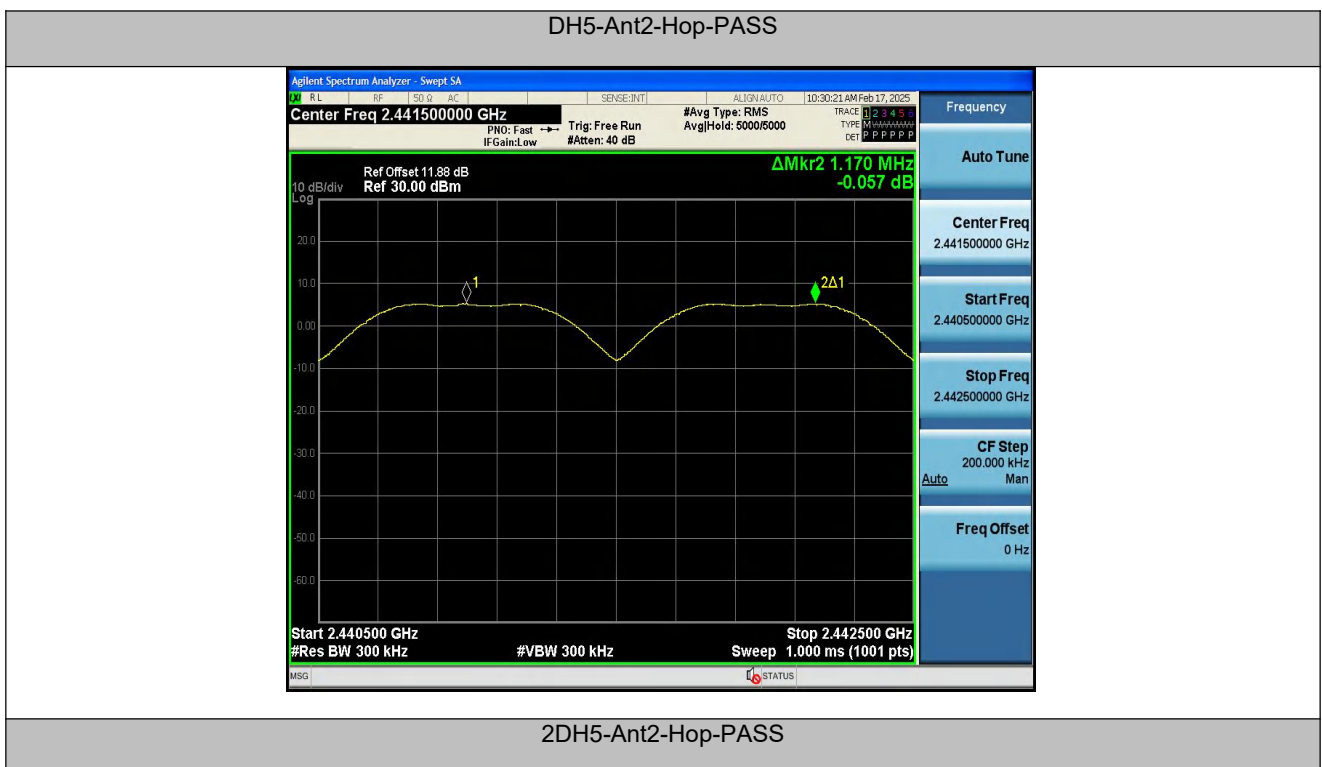
2DH5-Ant0-Hop-PASS



3DH5-Ant0-Hop-PASS



Ant2:





3DH5-Ant2-Hop-PASS





Ant4

DH5-Ant4-Hop-PASS



2DH5-Ant4-Hop-PASS



3DH5-Ant4-Hop-PASS



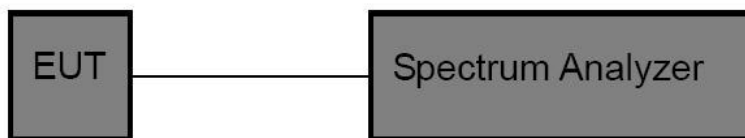


11 Number of Hopping Channel Test

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	: AC 120V	Temperature	: 24.5°C
Test Result	: PASS	Humidity	: 55%RH

Ant0:

TestMode	Antenna	Frequency[MHz]	Result[Num]	Limit[Num]	Verdict
DH5	Ant0	Hop	79	≥15	PASS
2DH5	Ant0	Hop	79	≥15	PASS
3DH5	Ant0	Hop	79	≥15	PASS

Ant2:

TestMode	Antenna	Frequency[MHz]	Result[Num]	Limit[Num]	Verdict
DH5	Ant2	Hop	79	≥15	PASS
2DH5	Ant2	Hop	79	≥15	PASS
3DH5	Ant2	Hop	79	≥15	PASS

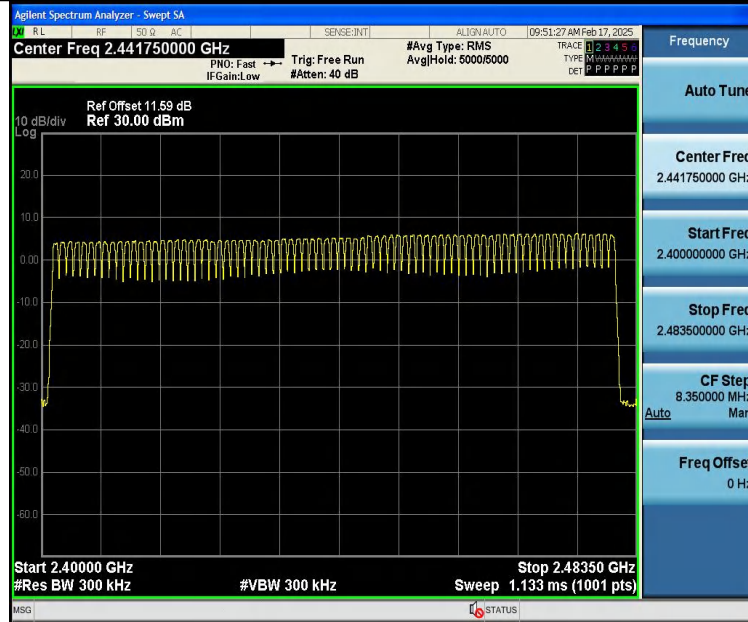
Ant4:

TestMode	Antenna	Frequency[MHz]	Result[Num]	Limit[Num]	Verdict
DH5	Ant4	Hop	79	≥15	PASS
2DH5	Ant4	Hop	79	≥15	PASS
3DH5	Ant4	Hop	79	≥15	PASS

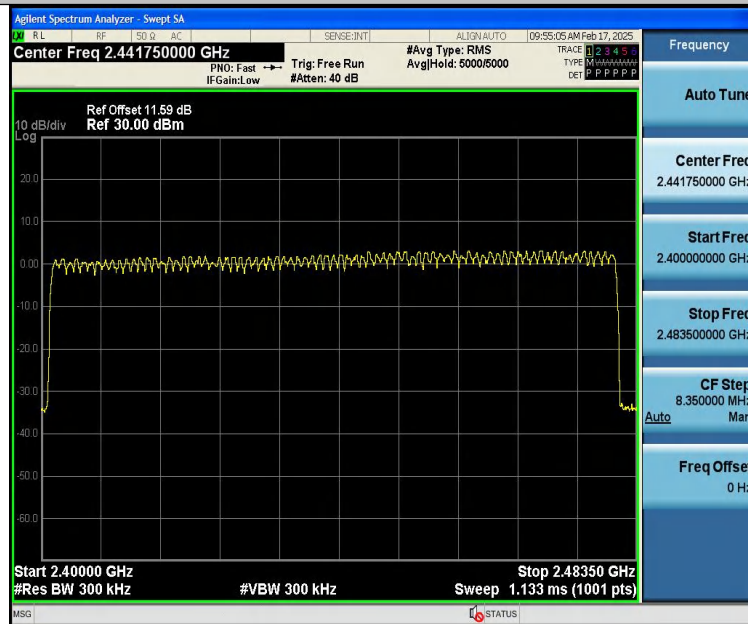


Ant0:

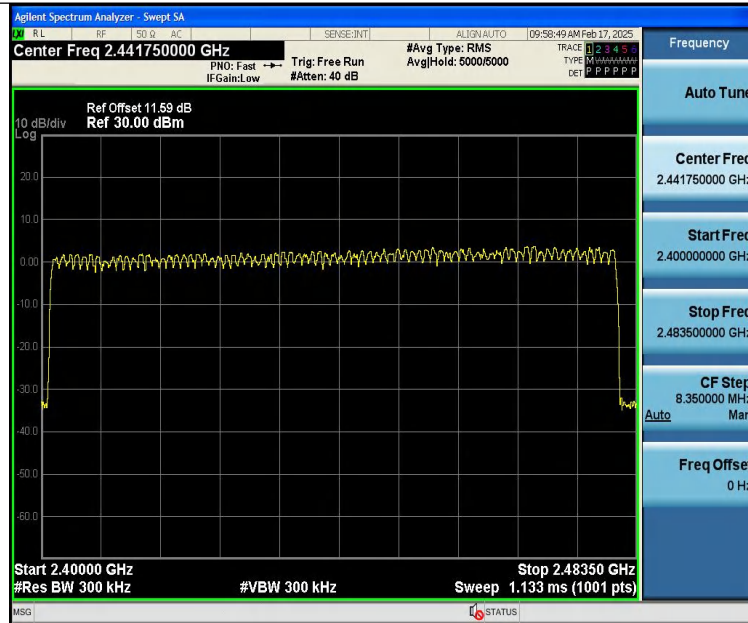
DH5-Ant0-Hop-PASS



2DH5-Ant0-Hop-PASS

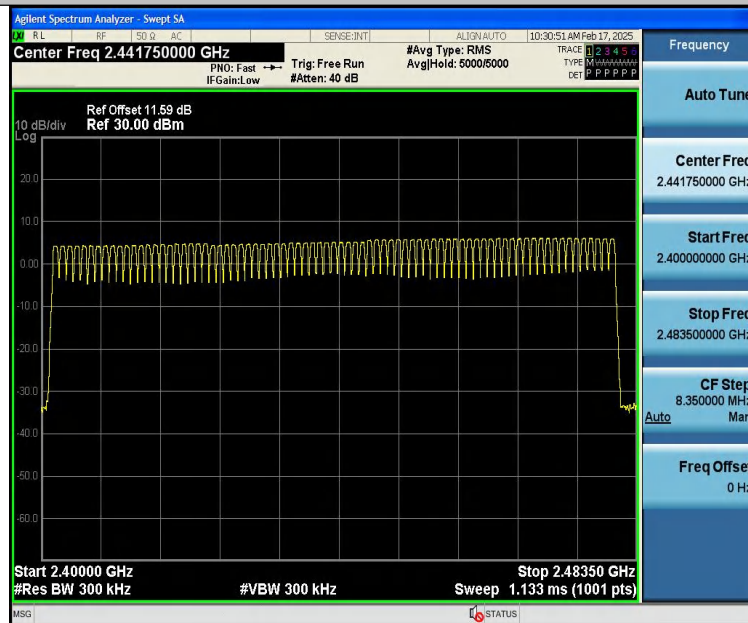


3DH5-Ant0-Hop-PASS

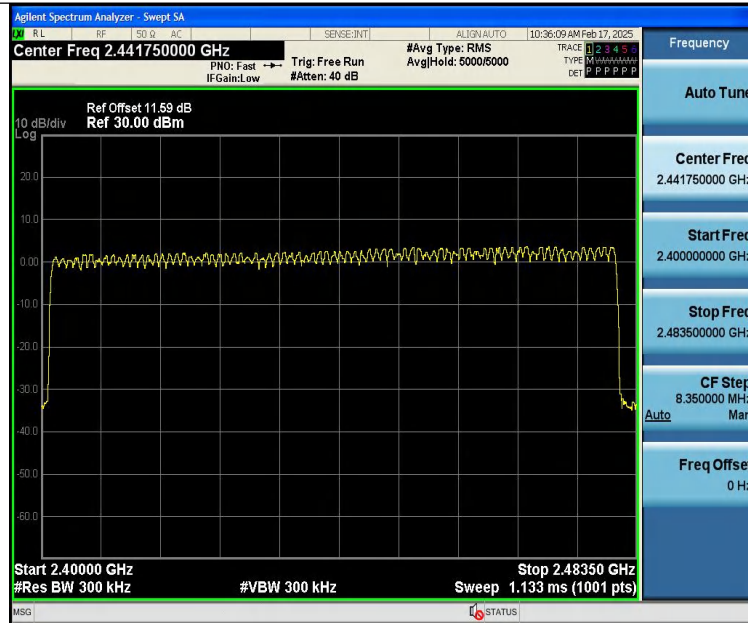


Ant2:

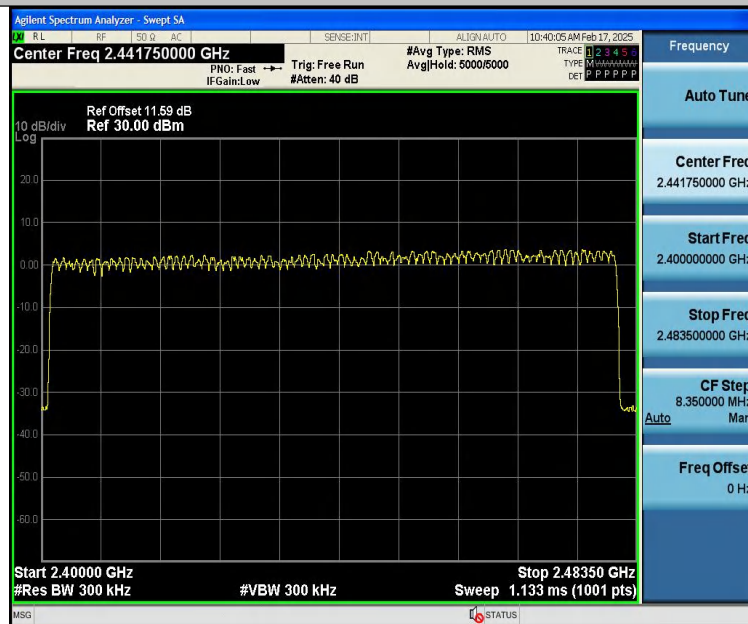
DH5-Ant2-Hop-PASS



2DH5-Ant2-Hop-PASS



3DH5-Ant2-Hop-PASS



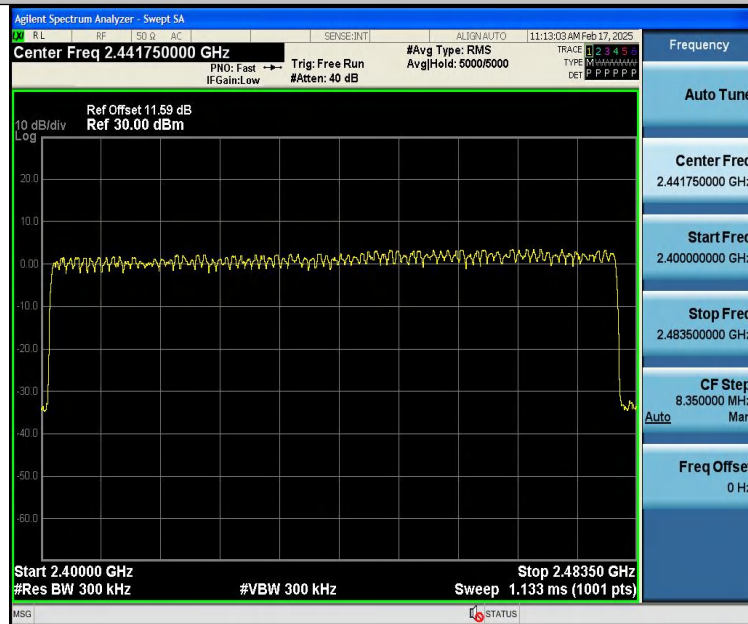


Ant4

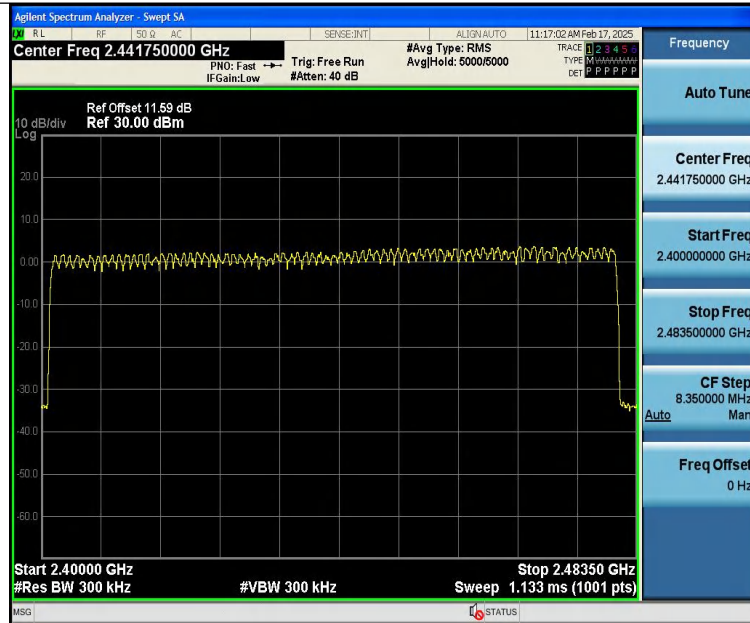
DH5-Ant4-Hop-PASS



2DH5-Ant4-Hop-PASS



3DH5-Ant4-Hop-PASS



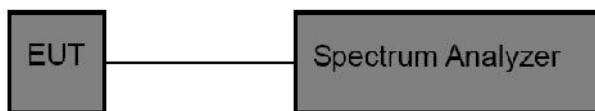


12 Dwell Time Test

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 = max hold.
7. Allow trace to fully stabilize.



12.4 Test Data

Test Item : Time of Occupancy
Test Voltage : AC 120V
Test Result : PASS

Test Mode : CH Low ~ CH High
Temperature : 24.5°C
Humidity : 55%RH

Ant0:

TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant0	Hop	2.885	106.67	0.308	≤0.4	PASS
2DH5	Ant0	Hop	2.891	106.67	0.308	≤0.4	PASS
3DH5	Ant0	Hop	2.892	106.67	0.308	≤0.4	PASS
DH1	Ant0	Hop	0.381	320	0.122	≤0.4	PASS
2DH1	Ant0	Hop	0.390	320	0.125	≤0.4	PASS
3DH1	Ant0	Hop	0.390	320	0.125	≤0.4	PASS
DH3	Ant0	Hop	1.637	160	0.262	≤0.4	PASS
2DH3	Ant0	Hop	1.642	160	0.263	≤0.4	PASS
3DH3	Ant0	Hop	1.642	160	0.263	≤0.4	PASS

Ant2:

TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant2	Hop	2.885	106.67	0.308	≤0.4	PASS
2DH5	Ant2	Hop	2.891	106.67	0.308	≤0.4	PASS
3DH5	Ant2	Hop	2.892	106.67	0.308	≤0.4	PASS
DH1	Ant2	Hop	0.381	320	0.122	≤0.4	PASS
2DH1	Ant2	Hop	0.390	320	0.125	≤0.4	PASS
3DH1	Ant2	Hop	0.390	320	0.125	≤0.4	PASS
DH3	Ant2	Hop	1.637	160	0.262	≤0.4	PASS
2DH3	Ant2	Hop	1.642	160	0.263	≤0.4	PASS
3DH3	Ant2	Hop	1.642	160	0.263	≤0.4	PASS

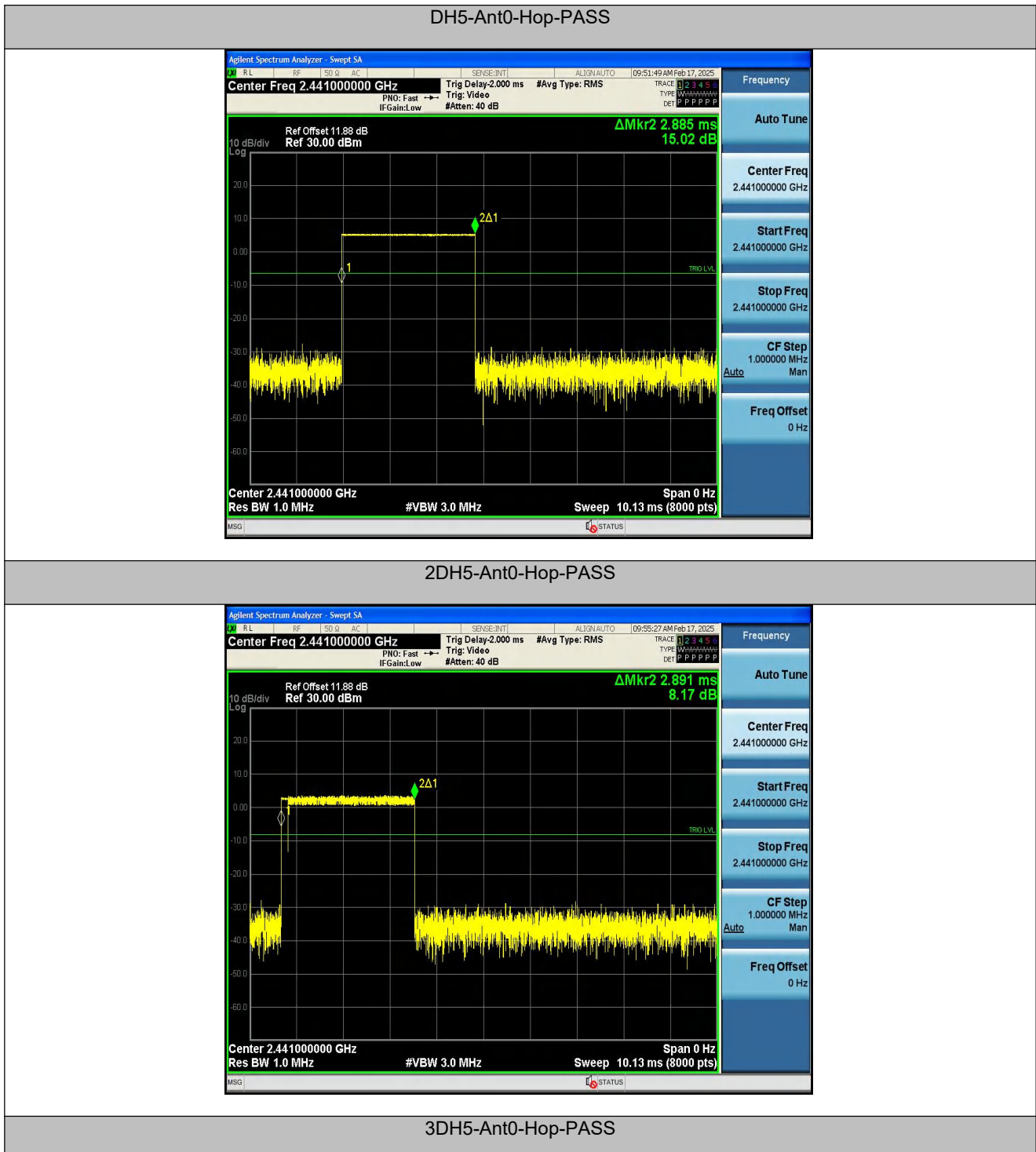
Ant4:

TestMode	Antenna	Frequency[MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH5	Ant4	Hop	2.885	106.67	0.308	≤0.4	PASS
2DH5	Ant4	Hop	2.891	106.67	0.308	≤0.4	PASS
3DH5	Ant4	Hop	2.892	106.67	0.308	≤0.4	PASS
DH1	Ant4	Hop	0.381	320	0.122	≤0.4	PASS
2DH1	Ant4	Hop	0.390	320	0.125	≤0.4	PASS
3DH1	Ant4	Hop	0.389	320	0.124	≤0.4	PASS
DH3	Ant4	Hop	1.637	160	0.262	≤0.4	PASS
2DH3	Ant4	Hop	1.643	160	0.263	≤0.4	PASS
3DH3	Ant4	Hop	1.640	160	0.262	≤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).

Ant0:





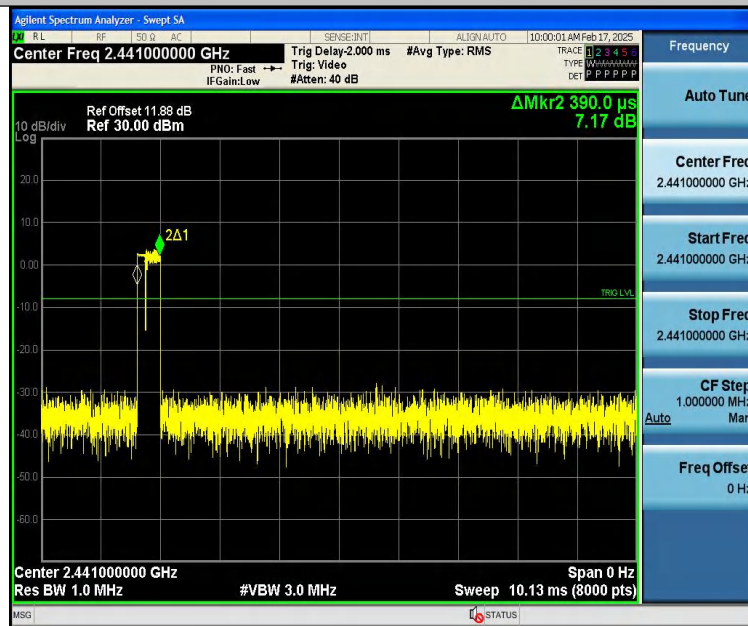
DH1-Ant0-Hop-PASS



2DH1-Ant0-Hop-PASS



3DH1-Ant0-Hop-PASS



DH3-Ant0-Hop-PASS