Appendix C): Dwell Time

Test Limit

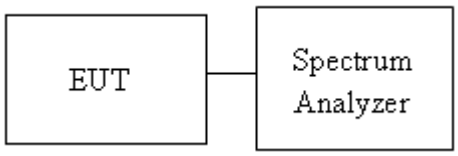
According to §15.247(a)(1)(iii),

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

Test Procedure

1. EUT RF output port connected to the SA by RF cable.
2. Set center frequency of spectrum analyzer = operating frequency.
3. Set the spectrum analyzer as RBW, VBW=1MHz, Sweep = 1 ms

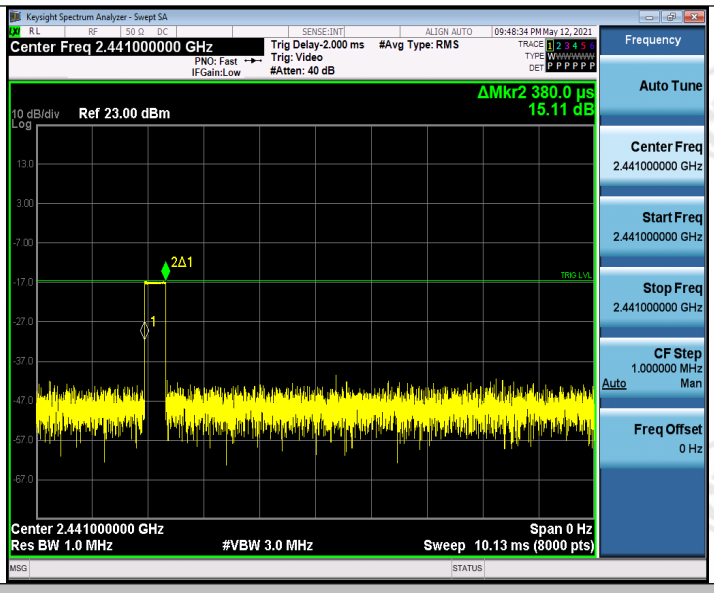
Test Setup



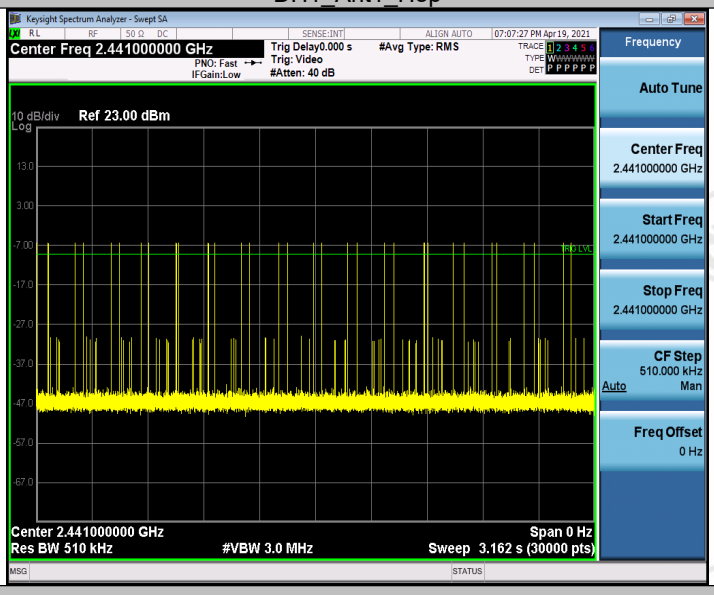
Result Table

TestMode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.38	320	0.122	<=0.4	PASS
DH3	Ant1	Hop	1.64	200	0.328	<=0.4	PASS
DH5	Ant1	Hop	2.89	90	0.26	<=0.4	PASS
2DH1	Ant1	Hop	0.39	320	0.122	<=0.4	PASS
2DH3	Ant1	Hop	1.64	170	0.279	<=0.4	PASS
2DH5	Ant1	Hop	2.89	90	0.26	<=0.4	PASS
3DH1	Ant1	Hop	0.39	320	0.125	<=0.4	PASS
3DH3	Ant1	Hop	1.64	190	0.312	<=0.4	PASS
3DH5	Ant1	Hop	2.89	70	0.202	<=0.4	PASS

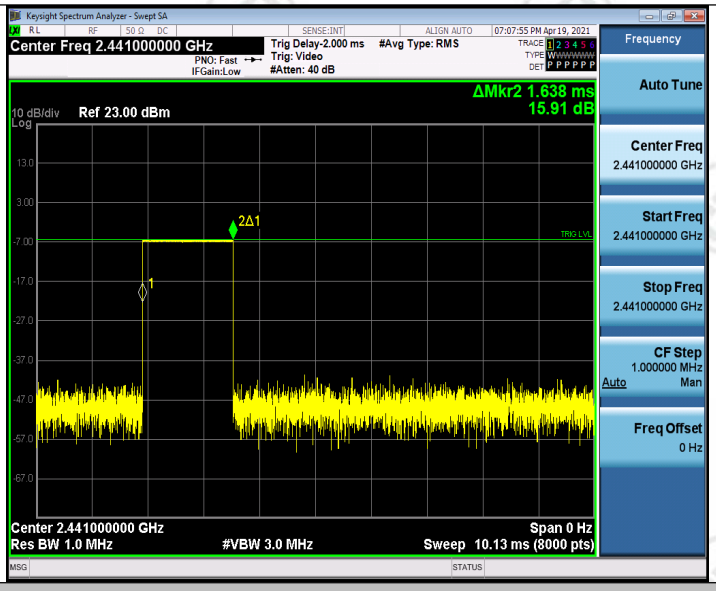
Test Graph



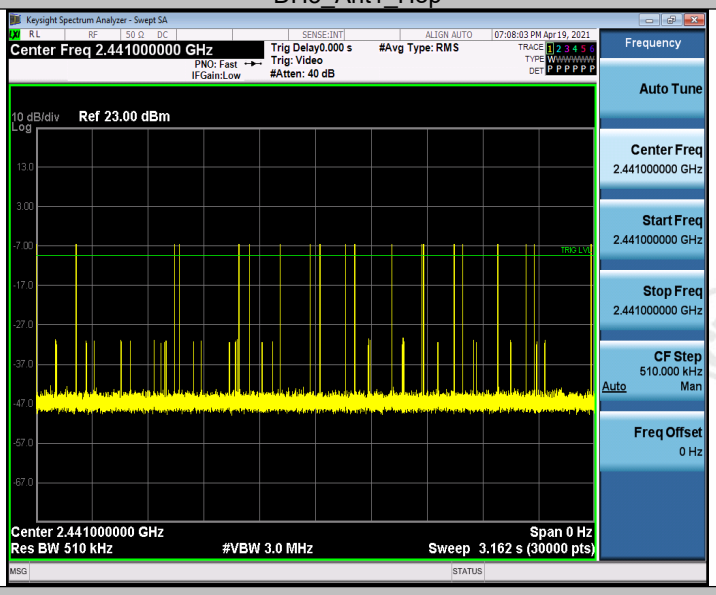
DH1_Ant1_Hop



DH1_Ant1_Hop

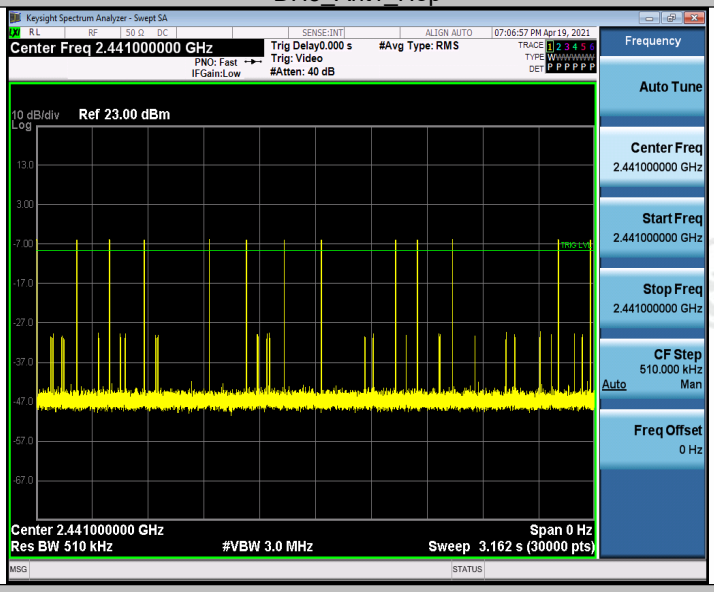


DH3_Ant1_Hop

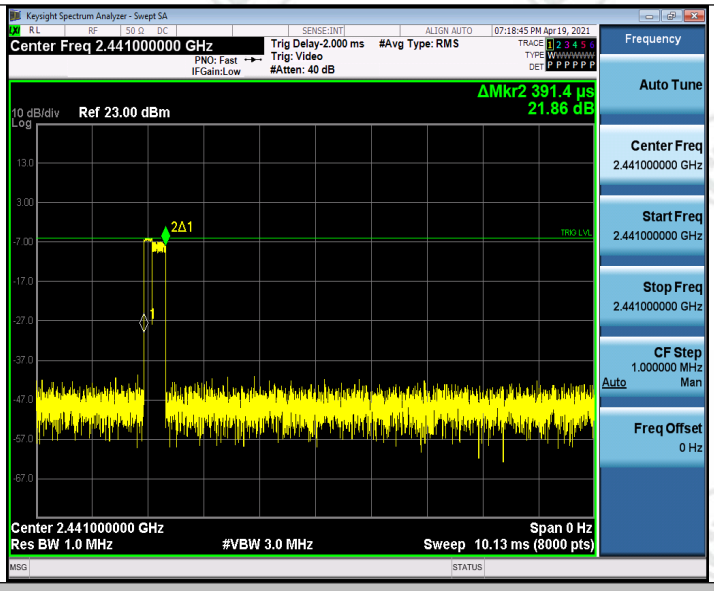


DH3_Ant1_Hop

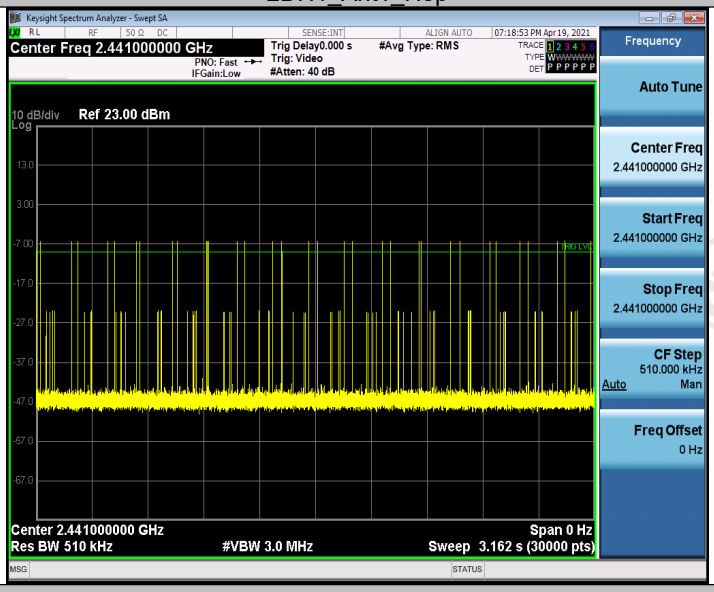
DH5_Ant1_Hop



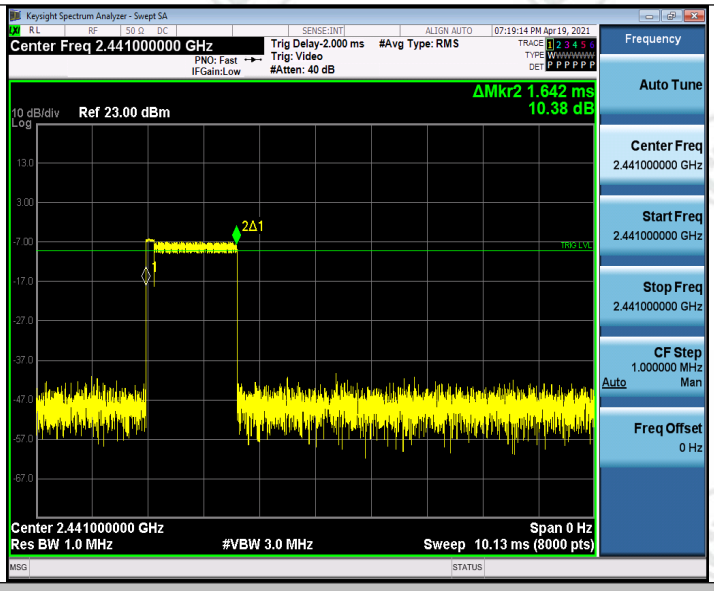
DH5_Ant1_Hop



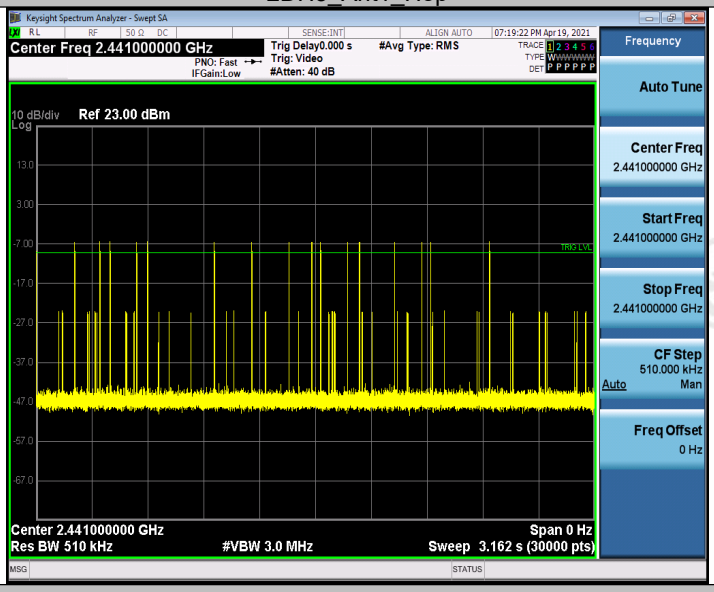
2DH1_Ant1_Hop



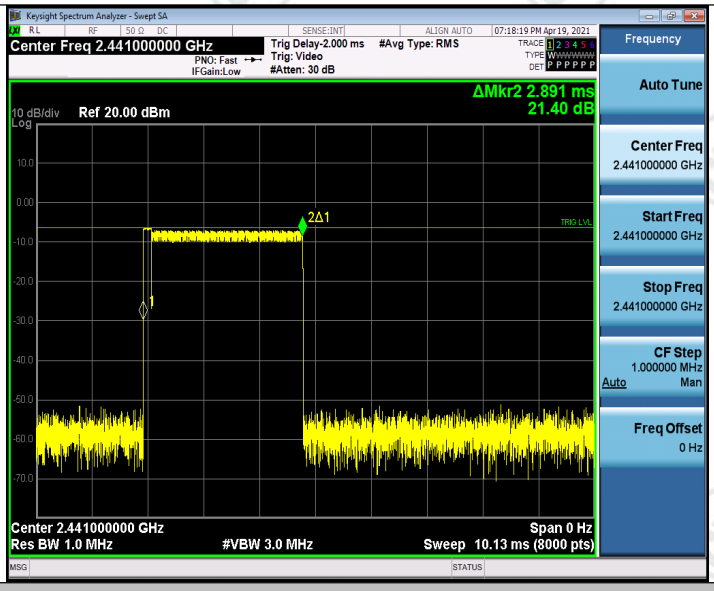
2DH1_Ant1_Hop



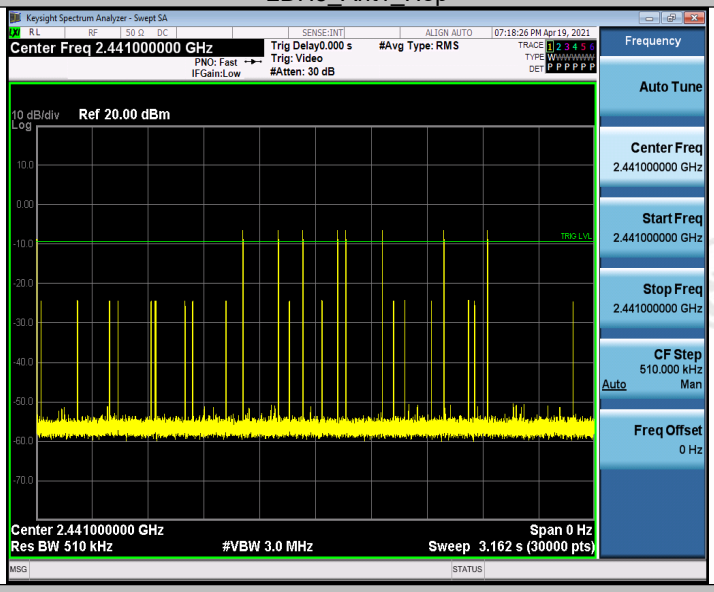
2DH3_Ant1_Hop



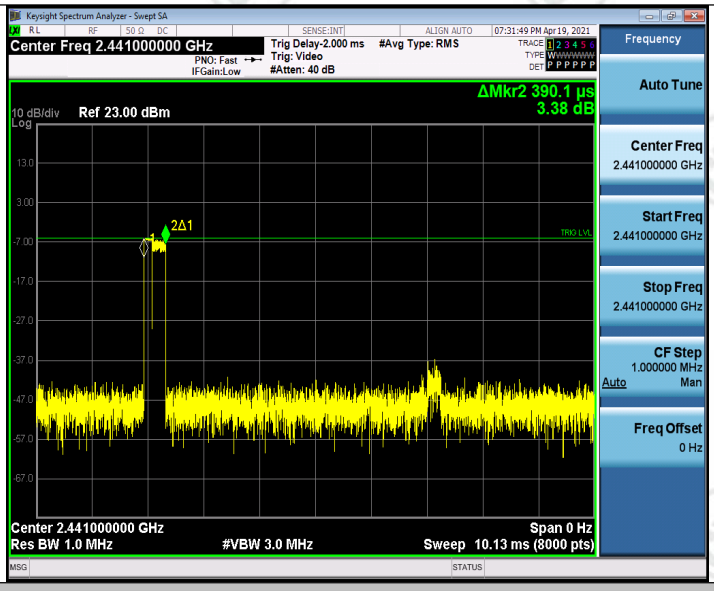
2DH3_Ant1_Hop



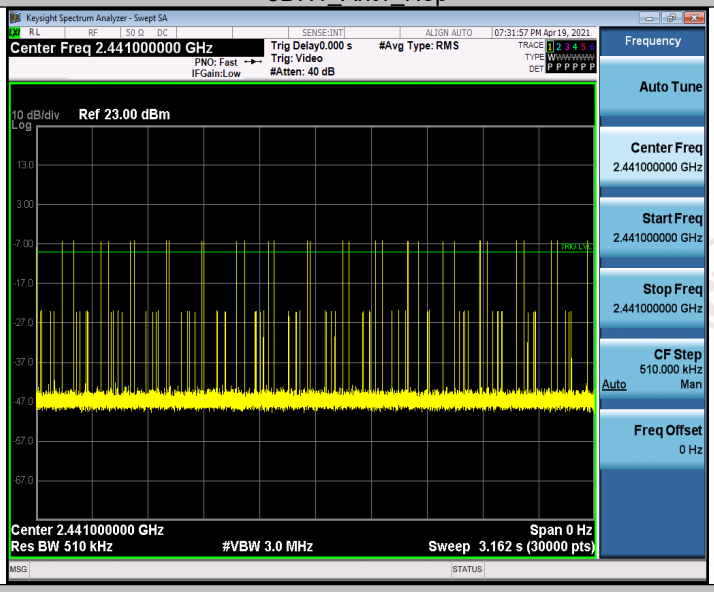
2DH5_Ant1_Hop



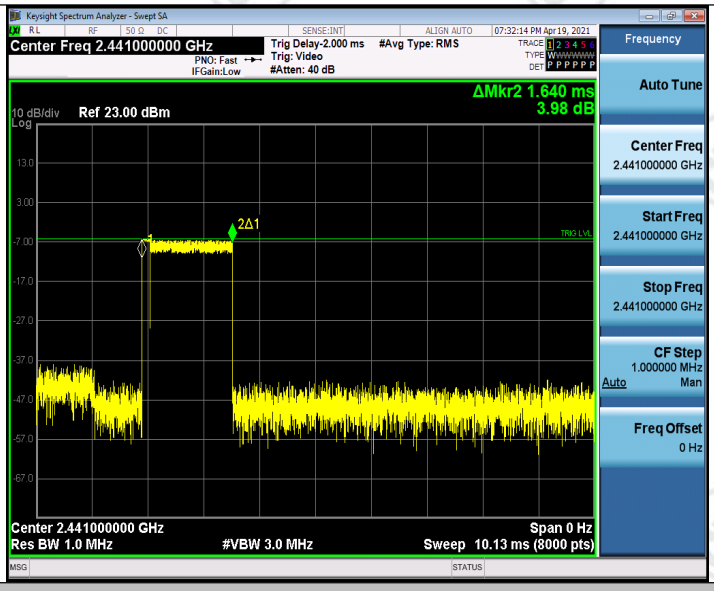
2DH5_Ant1_Hop



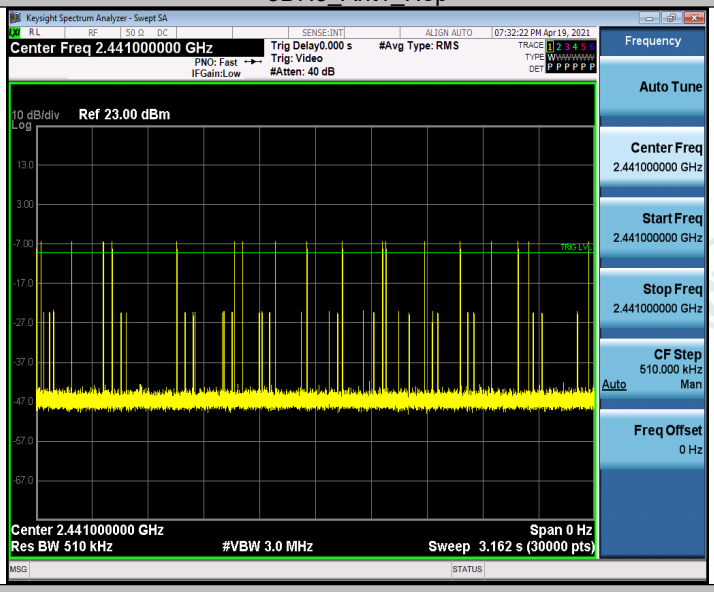
3DH1_Ant1_Hop



3DH1_Ant1_Hop

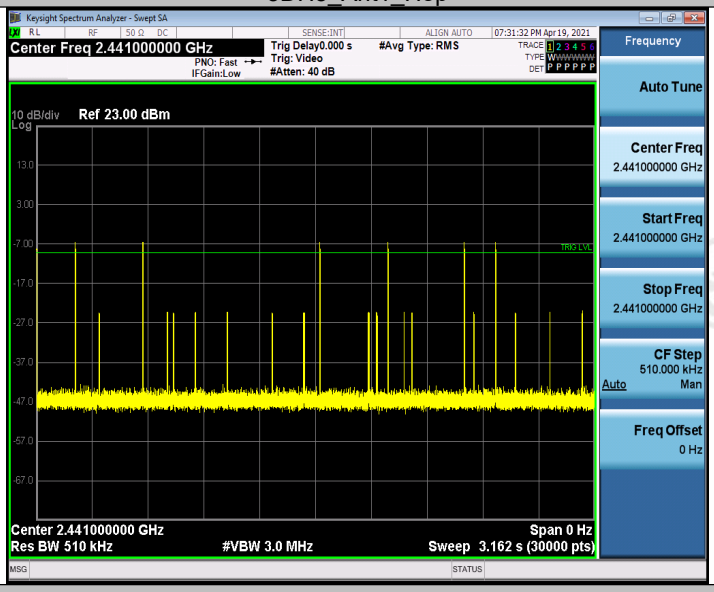


3DH3_Ant1_Hop



3DH3_Ant1_Hop

3DH5_Ant1_Hop



3DH5_Ant1_Hop

Appendix D): Hopping Channel Number

Test Limit

According to §15.247(a)(1)(iii)

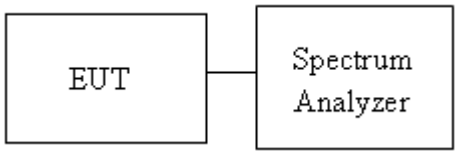
Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

Test Procedure

Test method Refer as ANSI C63.10: 2013 clause 7.8.3

1. Place the EUT on the table and set it in transmitting mode.
2. EUT RF output port connected to the SA by RF cable.
3. Set spectrum analyzer Start Freq. = 2400 MHz, Stop Freq. = 2483.5 MHz, RBW =100KHz, VBW = 300KHz.
4. Max hold, view and count how many channel in the band.

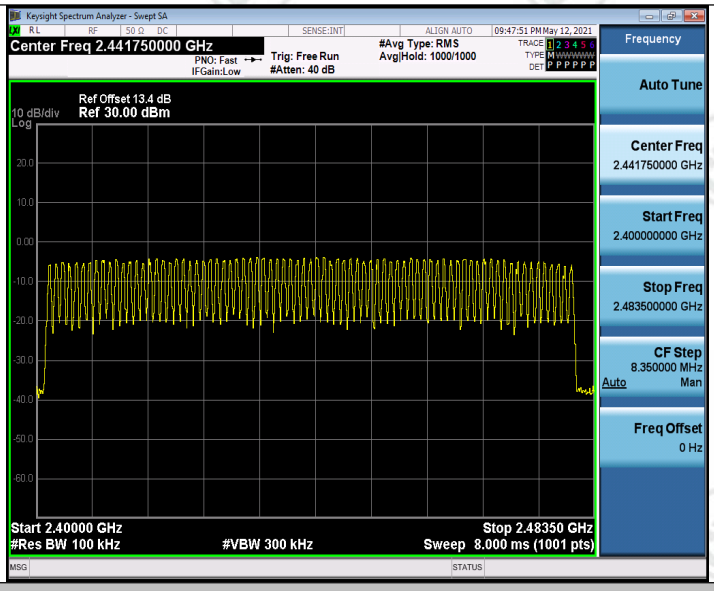
Test Setup



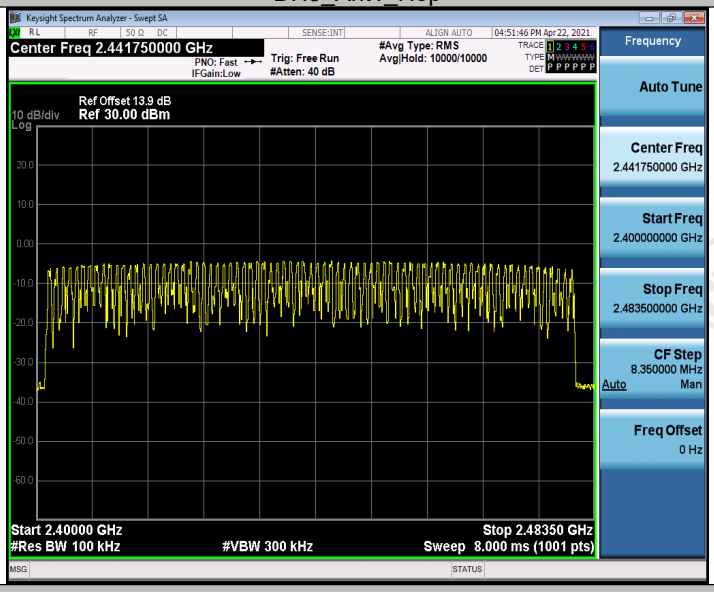
Result Table

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

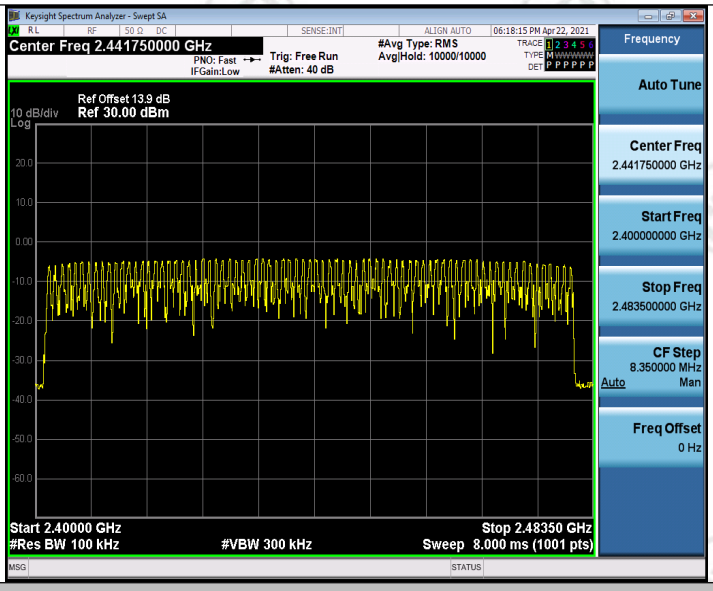
Test Graph



DH5_Ant1_Hop



2DH5_Ant1_Hop



3DH5_Ant1_Hop

Appendix E): Conducted Peak Output Power

Test Limit

According to §15.247(b)(1).

Peak output power：

FCC

Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

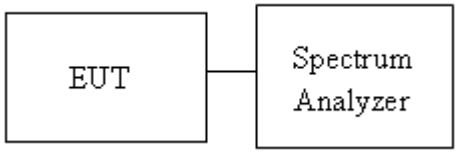
Limit	☒ Antenna not exceed 6 dBi：21dBm ☐ Antenna with DG greater than 6 dBi：21dBm [Limit = 30 – (DG – 6)]

Average output power：For reporting purposes only.

Test Procedure

1. The EUT RF output connected to the power meter by RF cable.
2. Setting maximum power transmit of EUT.
3. The path loss was compensated to the results for each measurement.
4. Measure and record the result of Peak output power and Average output power. in the test report.

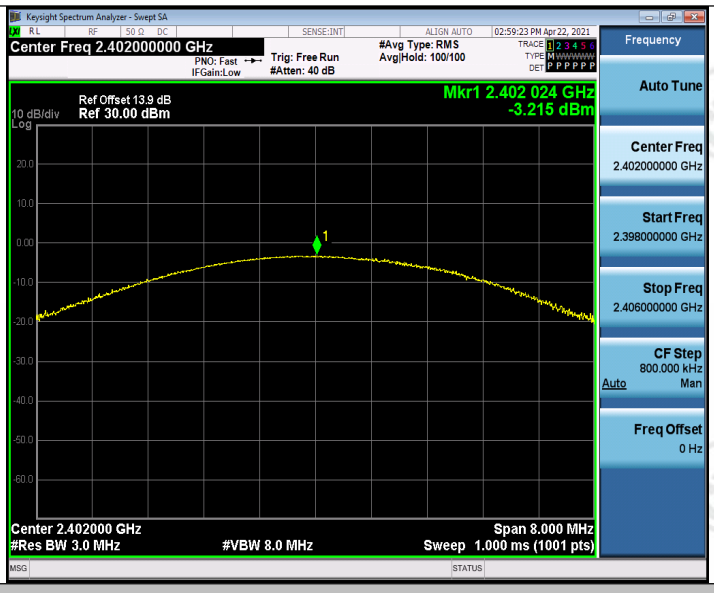
Test Setup



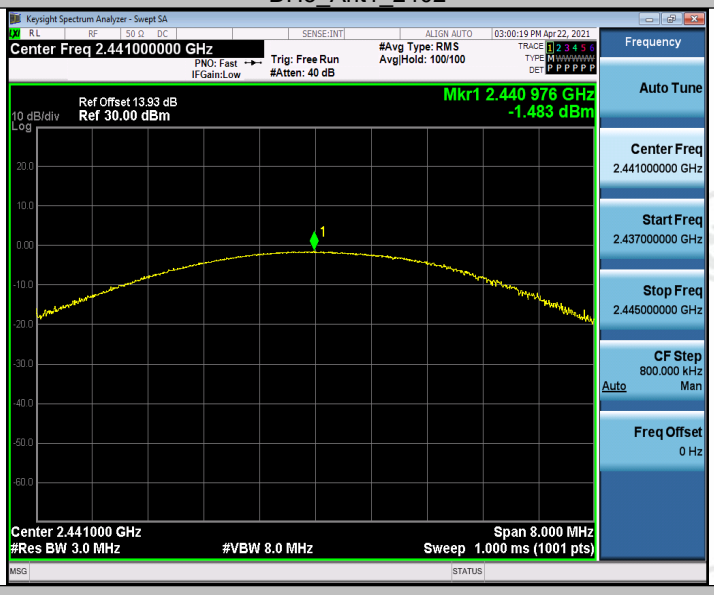
Result Table

TestMode	Antenna	Channel	Result[dBm]	Verdict
DH5	Ant1	2402	-3.22	PASS
		2441	-1.48	PASS
		2480	-3.07	PASS
2DH5	Ant1	2402	-3.39	PASS
		2441	-2.21	PASS
		2480	-3.78	PASS
3DH5	Ant1	2402	-4.27	PASS
		2441	-2.21	PASS
		2480	-3.88	PASS

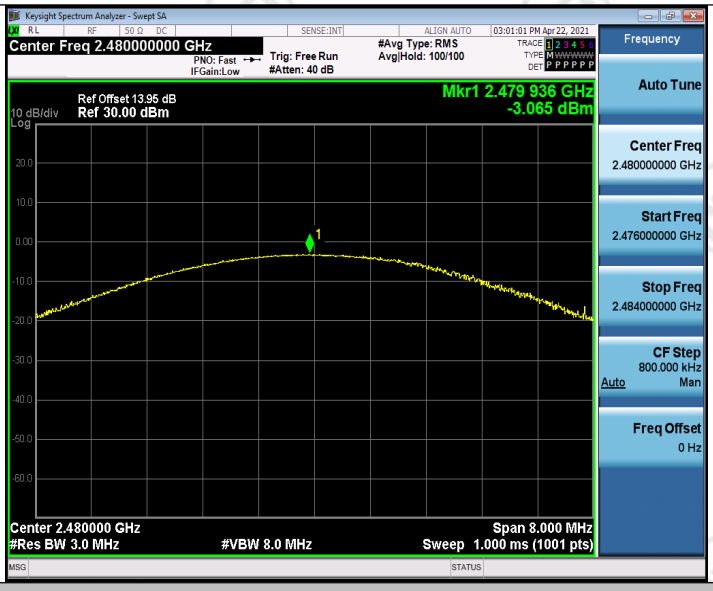
Test Graph



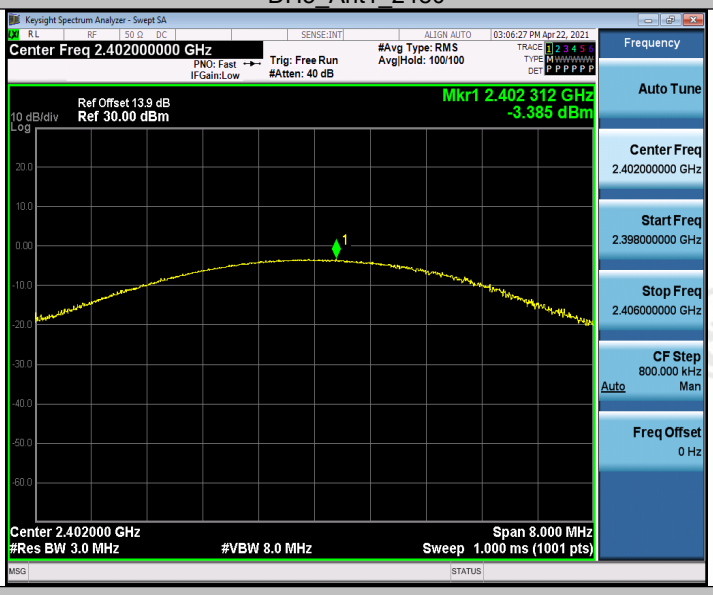
DH5_Ant1_2402



DH5_Ant1_2441



DH5_Ant1_2480

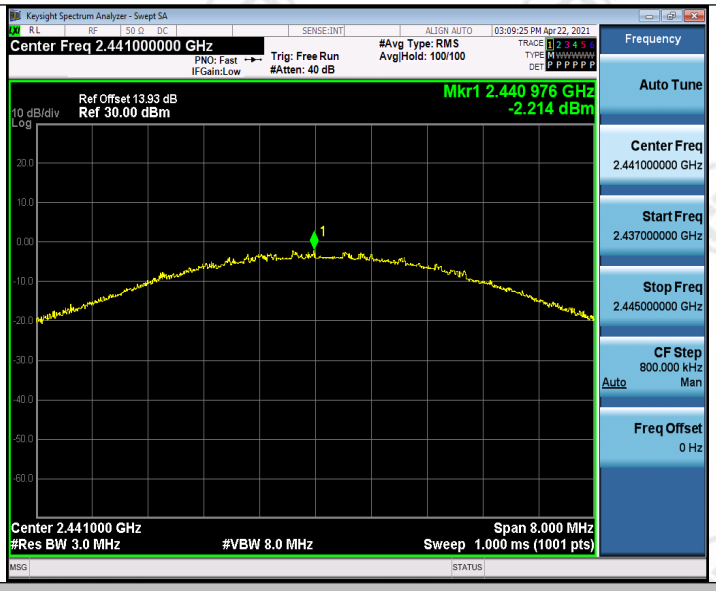


2DH5_Ant1_2402

2DH5_Ant1_2441

2DH5_Ant1_2480

3DH5_Ant1_2402



3DH5_Ant1_2441

3DH5_Ant1_2480

Appendix F): Band-edge for RF Conducted Emissions

Test Limit

According to §15.247(d),

Limit	-20 dBc

.

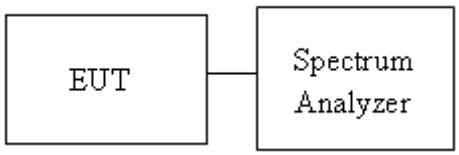
Test Procedure

1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.

2. SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.

3. The Band Edge at 2.4GHz and 2.4835GHz are investigated with normal hopping mode.

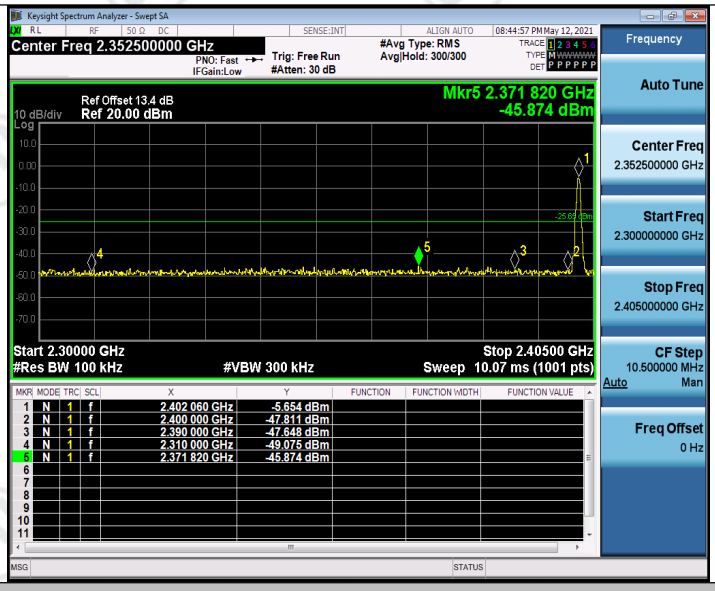
Test Setup



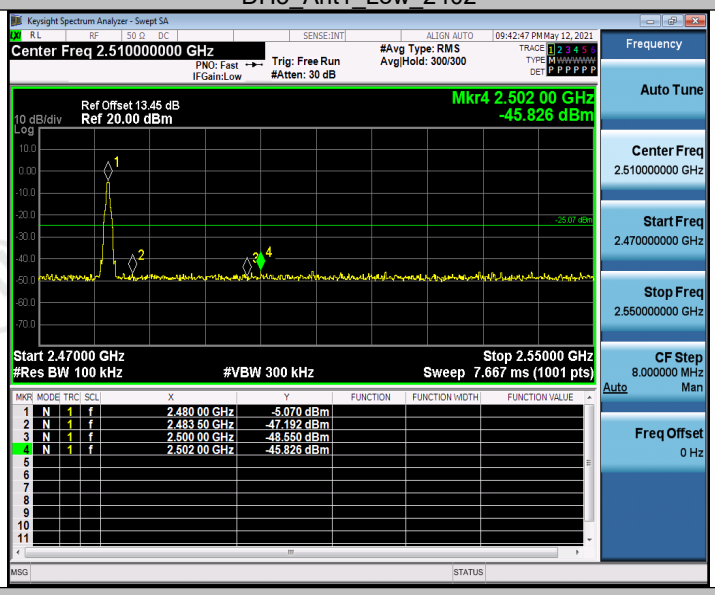
Result Table

TestMode	Antenna	ChName	Channel	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant1	Low	2402	-5.65	-45.87	<=-25.65	PASS
		High	2480	-5.07	-45.83	<=-25.07	PASS
		Low	Hop_2402	-5.66	-45.37	<=-25.66	PASS
		High	Hop_2480	-4.55	-46.52	<=-24.55	PASS
2DH5	Ant1	Low	2402	-8.69	-45.91	<=-28.69	PASS
		High	2480	-7.26	-45.69	<=-27.26	PASS
		Low	Hop_2402	2.37	-46.57	<=-17.64	PASS
		High	Hop_2480	-4.93	-45.2	<=-24.93	PASS
3DH5	Ant1	Low	2402	-7.21	-45.53	<=-27.21	PASS
		High	2480	-7.25	-46.24	<=-27.25	PASS
		Low	Hop_2402	-6.05	-45.87	<=-26.05	PASS
		High	Hop_2480	-5.20	-45.94	<=-25.2	PASS

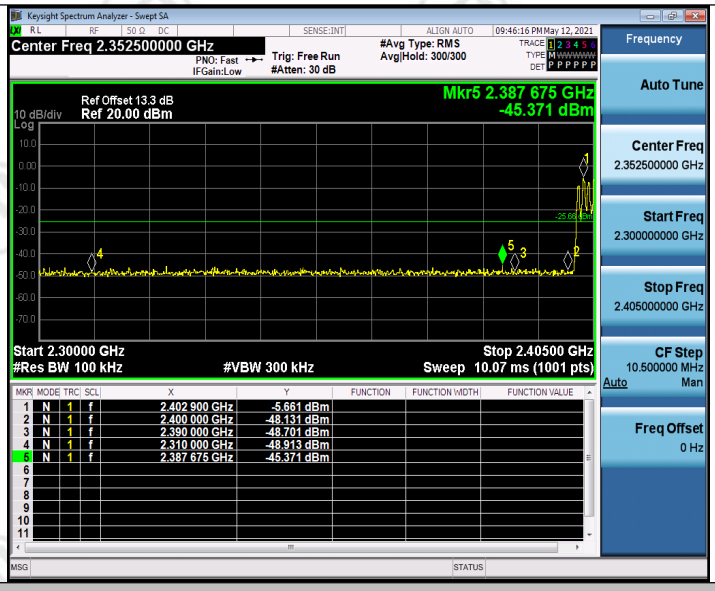
Test Graph



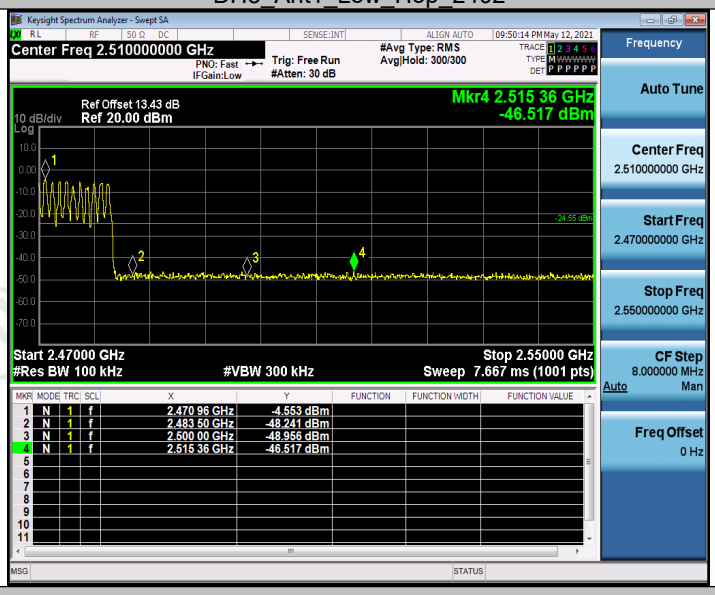
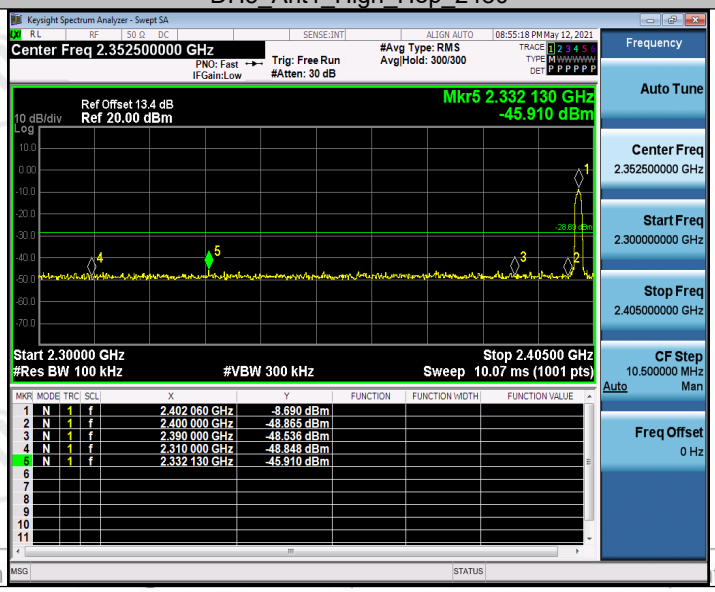
DH5_Ant1_Low_2402



DH5_Ant1_High_2480



DH5_Ant1_Low_Hop_2402



DH5_Ant1_High_Hop_2480