FCC §15.247(a) (1) (iii) - TIME OF OCCUPANCY (DWELL TIME)

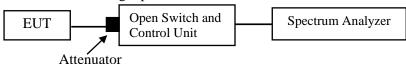
Applicable Standard

Frequency hopping systems in the 2400-2483.5 MHz shall use at least 15 channels. 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. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Test Procedure

According to ANSI C63.10-2013, section 7.8.4

- 1. The EUT was worked in channel hopping.
- 2. Set the RBW to: 1MHz.
- 3. Set the VBW $> 3 \times RBW$.
- 4. Set the span to 0Hz.
- 5. Detector = peak.
- 6. Sweep time = auto couple.
- 7. Trace mode = max hold.
- 8. Allow trace to fully stabilize.
- 9. Recorded the time of single pulses



Test Data

Environmental Conditions

Temperature:	25°C
Relative Humidity:	49%
ATM Pressure:	101.0kPa

The testing was performed by Matt Liang on 2023-06-08.

EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the below table and plots:

Test Mode	Antenna	Channel	Burst Width [ms]	Total Hops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Нор	0.409	320	0.131	≤0.4	PASS
DH3	Ant1	Hop	1.656	150	0.248	≤0.4	PASS
DH5	Ant1	Нор	2.897	80	0.232	≤0.4	PASS
2DH1	Ant1	Нор	0.418	320	0.134	≤0.4	PASS
2DH3	Ant1	Нор	1.661	180	0.299	≤0.4	PASS
2DH5	Ant1	Нор	2.903	90	0.261	≤0.4	PASS
3DH1	Ant1	Нор	0.419	320	0.134	≤0.4	PASS
3DH3	Ant1	Нор	1.663	180	0.299	≤0.4	PASS
3DH5	Ant1	Нор	2.905	80	0.232	≤0.4	PASS

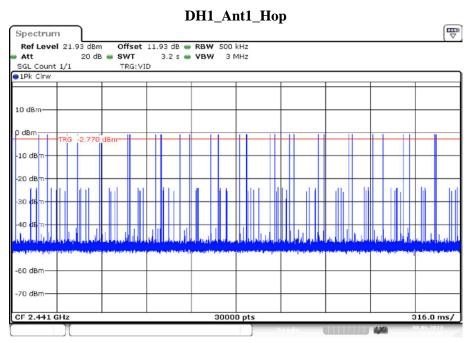
Note 1: A period time=0.4*79=31.6(s), Result=Burst Width*Total Hops

Note 2: Total Hops = Hopping Number in 3.16s*10

Note 3: Hoping Number in 3.16s=Total of highest signals in 3.16s (Second high signals were other channel)

DH1_Ant1_Hop Spectrum Offset 11.93 dB - RBW 1 MHz Ref Level 21.93 dBm Att 20 dB 🖷 SWT 10 ms - VBW 3 MHz TRG: VID -4.75 µs D2[1] 19.30 dB 10 dBm-409.00 µs 0 dBm TRG -2.770 -10 dBm -20 dBm -30 dBm to provide which the displaced providents with ships bring invarious of the fig field of providing from the figure of the bold for -70 dBm CF 2.441 GHz 8000 pts 1.0 ms/

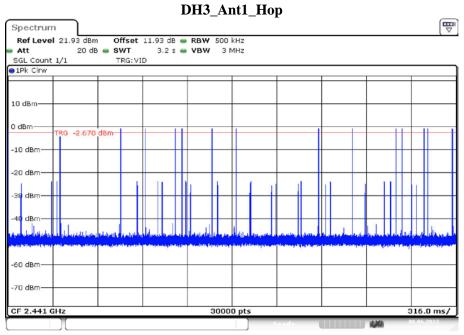
Date: 8.JUN.2023 13:54:40



Date: 8.JUN.2023 13:54:45

DH3_Ant1_Hop Spectrum Ref Level 21.93 dBm Offset 11.93 dB - RBW 1 MHz 10 ms 👄 VBW 3 MHz Att 20 dB 🎃 SWT SGL Count 1/1 TRG: VID 1Pk Clrw M1[1] 17.77 dBn 4.75 µs 16.78 dB 1.65600 ms D2[1] 10 dBm 0 dBm-TRG -2.670 dBm -20 dBm -40 dBm and contained provide property and all the collection to a few sections of a second second CF 2.441 GHz 8000 pts 1.0 ms/

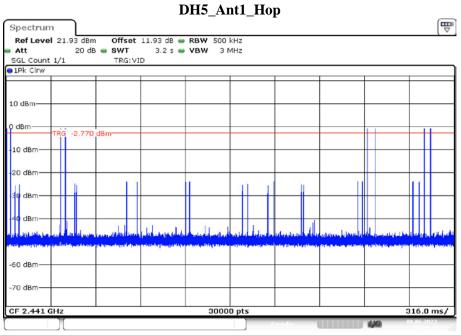
Date: 8.JUN.2023 13:55:11



Date: 8.JUN.2023 13:55:16

DH5_Ant1_Hop Spectrum Ref Level 21.93 dBm Offset 11.93 dB - RBW 1 MHz 10 ms 👄 VBW 3 MHz Att 20 dB 🎃 SWT SGL Count 1/1 TRG: VID 1Pk Clrw M1[1] 18.59 dBn -4.75 µs 17.55 dB 2.89700 ms D2[1] 10 dBm 0 dBm-TRG -2.770 dBm--20 dBm -40 dBm Degrees and by the body like it house and buy trade in his and the bubble CF 2.441 GHz 8000 pts 1.0 ms/

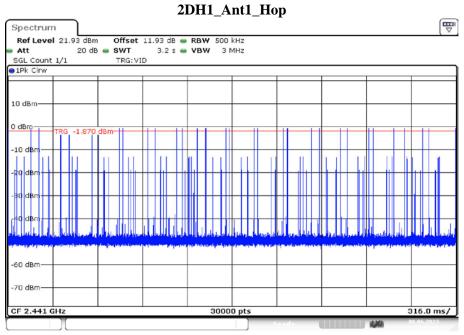
Date: 8.JUN.2023 13:54:05



Date: 8.JUN.2023 13:54:10

2DH1_Ant1_Hop Spectrum Ref Level 21.93 dBm Offset 11.93 dB - RBW 1 MHz 10 ms 👄 VBW 3 MHz Att 20 dB 🖷 SWT SGL Count 1/1 TRG: VID 1Pk Clrw M1[1] -16.99 dBn D2[1] 15.50 de 10 dBm 418.00 µs 0 dBm-TRG -0.870 d -20 dBm -40 dBr CF 2.441 GHz 8000 pts 1.0 ms/

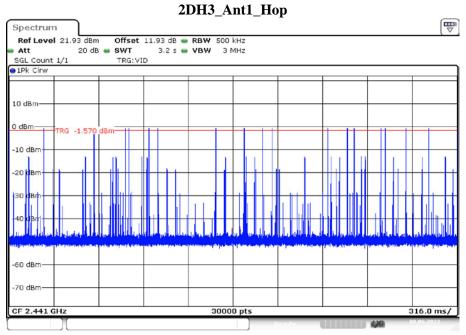
Date: 8.JUN.2023 13:56:31



Date: 8.JUN.2023 13:56:42

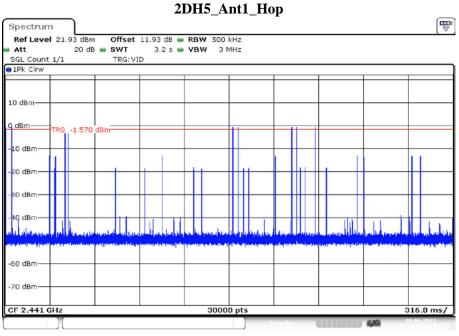
2DH3_Ant1_Hop Spectrum Ref Level 21.93 dBm Offset 11.93 dB - RBW 1 MHz 10 ms 👄 VBW 3 MHz Att 20 dB 🎃 SWT SGL Count 1/1 TRG: VID 1Pk Clrw M1[1] -157.27 µs 16.25 dB 1.66100 ms D2[1] 10 dBm -20 dBm -40 dBm CF 2.441 GHz 8000 pts 1.0 ms/

Date: 8.JUN.2023 13:57:33



2DH5_Ant1_Hop Spectrum Ref Level 21.93 dBm Offset 11.93 dB - RBW 1 MHz 10 ms 👄 VBW 3 MHz Att 20 dB 🎃 SWT SGL Count 1/1 TRG: VID 1Pk Clrw M1[1] 19.21 dBn 17.72 dB 2.90300 ms D2[1] 10 dBm TRG -0.570 -20 dBm -40 dBmas principal extended in the language of the engine in a control of the control of CF 2.441 GHz 8000 pts 1.0 ms/

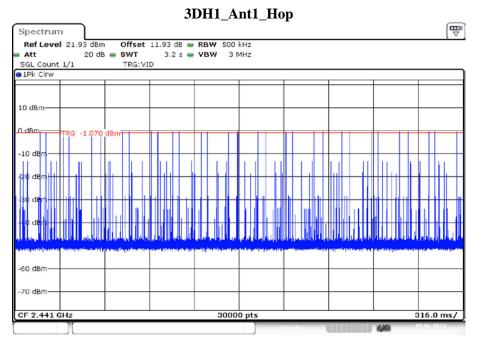
Date: 8.JUN.2023 13:55:57



Date: 8.JUN.2023 13:56:09

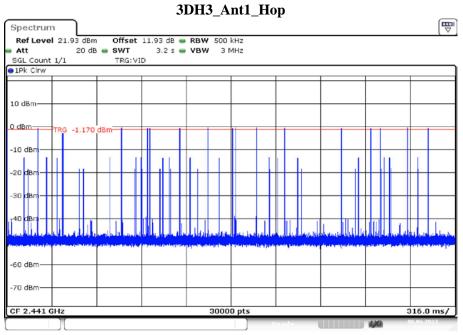
3DH1_Ant1_Hop Spectrum Ref Level 21.93 dBm Offset 11.93 dB - RBW 1 MHz 10 ms 👄 VBW 3 MHz Att 20 dB 🖷 SWT SGL Count 1/1 TRG: VID 1Pk Clrw M1[1] 16.01 dBn -181.02 µs D2[1] 15.08 dE 10 dBm-0 dBm TRG -0.070 dBg -20 dBm -40 dBm CF 2.441 GHz 8000 pts 1.0 ms/

Date: 8.JUN.2023 14:02:22



3DH3_Ant1_Hop Spectrum Ref Level 21.93 dBm Offset 11.93 dB - RBW 1 MHz 10 ms 👄 VBW 3 MHz Att 20 dB 🎃 SWT SGL Count 1/1 TRG: VID 1Pk Clrw M1[1] 20.16 dBm -158.52 µs 19.30 dB 1.66300 ms D2[1] 10 dBm 0 dBm TRG -0.170 d8m -20 dBm -40 dBm-CF 2.441 GHz 8000 pts 1.0 ms/

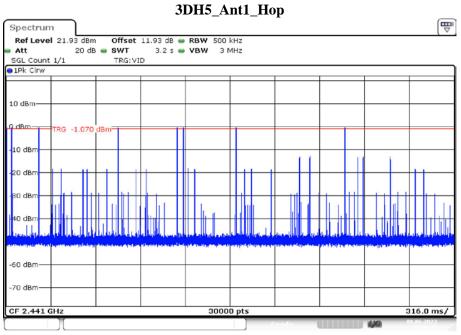
Date: 8.JUN.2023 13:59:33



Date: 8.JUN.2023 13:59:44

3DH5_Ant1_Hop Spectrum Ref Level 21.93 dBm Offset 11.93 dB - RBW 1 MHz 10 ms 👄 VBW 3 MHz Att 20 dB 🎃 SWT SGL Count 1/1 TRG: VID 1Pk Clrw M1[1] 16.60 dBn D2[1] 15.16 dB 2.90500 ms 10 dBm 0 dBm TRG -0.070 -20 dBm -40 dBm CF 2.441 GHz 8000 pts 1.0 ms/

Date: 8.JUN.2023 14:00:36



Date: 8.JUN.2023 14:00:47

FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT

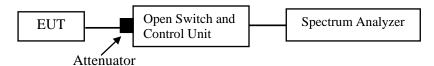
Applicable Standard

According to §15.247(b) (1), for frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. And for all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts.

Test Procedure

According to ANSI C63.10-2013, section 7.8.5

- 1. Place the EUT on a bench and set in TX mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to one test equipment.
- 3. Add a correction factor to the display.



Test Data

Environmental Conditions

Temperature:	25℃
Relative Humidity:	49%
ATM Pressure:	101.0kPa

The testing was performed by Matt Liang on 2023-06-08.

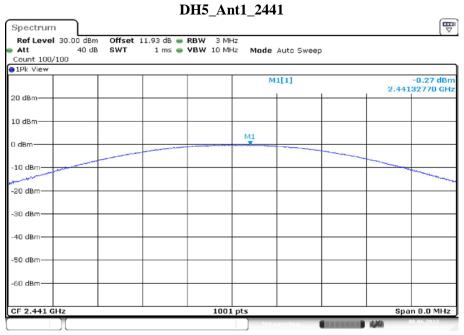
EUT operation mode: Transmitting

Test Result: Compliant. Please refer to the below table and plots:

Test Mode	Antenna	Channel	Conducted Peak Output Power [dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	-0.44	≤20.97	PASS
		2441	-0.27	≤20.97	PASS
		2480	-0.47	≤20.97	PASS
2DH5	Ant1	2402	2.03	≤20.97	PASS
		2441	2.15	≤20.97	PASS
		2480	1.88	≤20.97	PASS
3DH5	Ant1	2402	2.63	≤20.97	PASS
		2441	2.86	≤20.97	PASS
		2480	2.47	≤20.97	PASS

DH5_Ant1_2402 Spectrum Offset 11.93 dB ■ RBW 3 MHz SWT 1 ms ■ VBW 10 MHz Ref Level 30.00 dBm Mode Auto Sweep Att Count 100/100 40 dB ●1Pk View -0.44 dBm 2.40190410 GHz M1[1] 20 dBm-10 dBm 0 dBm -20 dBm--30 dBm 40 dBm -50 dBm-Span 8.0 MHz CF 2.402 GHz 1001 pts

Date: 8.JUN.2023 13:48:50

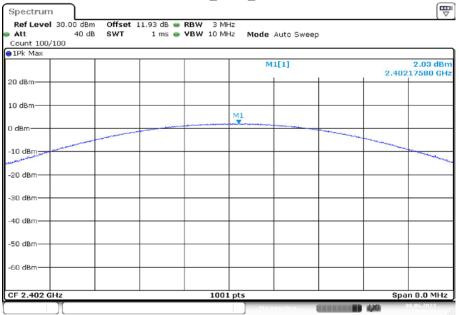


Date: 8.JUN.2023 13:49:06

DH5_Ant1_2480 Spectrum Offset 11.93 dB • RBW 3 MHz SWT 1 ms • VBW 10 MHz Ref Level 30.00 dBm 40 dB Mode Auto Sweep Count 100/100 1Pk View -0.47 dBm 2.47997600 GHz M1[1] 20 dBm-10 dBm-0 dBm -10 dBm -20 dBm -30 dBm 40 dBm--50 dBm -60 dBm 1001 pts CF 2.48 GHz Span 8.0 MHz

Date: 8.JUN.2023 13:49:25

2DH5_Ant1_2402



Date: 8.JUN.2023 13:50:25

Span 8.0 MHz

2DH5_Ant1_2441 Spectrum Offset 11.93 dB • RBW 3 MHz SWT 1 ms • VBW 10 MHz Ref Level 30.00 dBm Mode Auto Sweep Att Count 100/100 40 dB ●1Pk View M1[1] 2.15 dBm 2.44107990 GHz 20 dBm-10 dBm 0 dBm -20 dBm -30 dBm 40 dBm -50 dBm-

1001 pts

Date: 8.JUN.2023 13:50:43

CF 2.441 GHz

2DH5_Ant1_2480 Spectrum Ref Level 30.00 dBm **Offset** 11.93 dB **● RBW** 3 MHz **SWT** 1 ms **● VBW** 10 MHz Att 40 dB Mode Auto Sweep Count 100/100 1Pk View M1[1] 1.88 dBm 2.48006390 GHz 20 dBm-10 dBm--10 dBm -20 dBm -30 dBm 40 dBm -50 dBm--60 dBm Span 8.0 MHz CF 2.48 GHz 1001 pts

Date: 8.JUN.2023 13:50:57

3DH5_Ant1_2402 Spectrum Offset 11.93 dB ■ RBW 3 MHz SWT 1 ms ■ VBW 10 MHz Ref Level 30.00 dBm Mode Auto Sweep Att Count 100/100 40 dB ●1Pk View 2.63 dBm 2.40193610 GHz M1[1] 20 dBm-10 dBm 0 dBm -20 dBm--30 dBm 40 dBm -50 dBm-Span 8.0 MHz CF 2.402 GHz 1001 pts

Date: 8.JUN.2023 13:51:18

3DH5_Ant1_2441 Spectrum Ref Level 30.00 dBm **Offset** 11.93 dB **● RBW** 3 MHz **SWT** 1 ms **● VBW** 10 MHz Att 40 dB Mode Auto Sweep Count 100/100 1Pk View 2.86 dBm 2.44099200 GHz M1[1] 20 dBm-10 dBm--10 dBm--20 dBm -30 dBm 40 dBm--50 dBm--60 dBm Span 8.0 MHz CF 2.441 GHz 1001 pts

Date: 8.JUN.2023 13:51:34

-40 dBm-

CF 2.48 GHz

Span 8.0 MHz

3DH5_Ant1_2480 Spectrum Ref Level 30.00 dBm Att 40 dB Att Count 100/100 Mode Auto Sweep ●1Pk View 2.47 dBm 2.47999200 GHz M1[1] 20 dBm-10 dBm 0 dBm--10 dBm--20 dBm--30 dBm

1001 pts

Date: 8.JUN.2023 13:51:47

FCC §15.247(d) - BAND EDGES TESTING

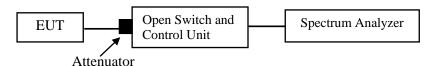
Applicable Standard

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Test Procedure

According to ANSI C63.10-2013, section 7.8.6 and section 6.10

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Remove the antenna from the EUT and then connect to a low loss RF cable from the antenna port to a EMI test receiver, then turn on the EUT and make it operate in TX mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
- 3. Set RBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
- 4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
- 5. Repeat above procedures until all measured frequencies were complete.



Test Data

Environmental Conditions

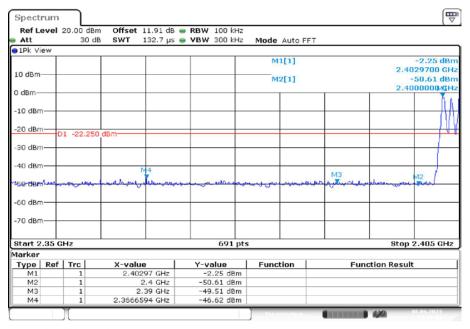
Temperature:	25°C	
Relative Humidity:	49%	
ATM Pressure:	101.0kPa	

The testing was performed by Matt Liang on 2023-06-08.

EUT operation mode: Transmitting

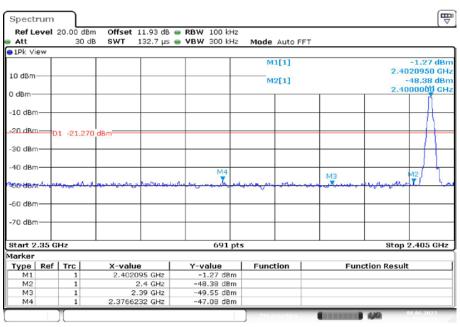
Test Result: Compliant. Please refer to the below plots:

DH5: Band Edge-Left Side Hopping



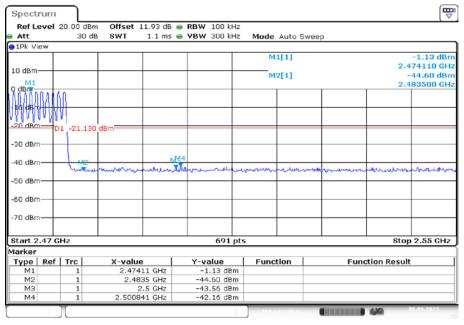
Date: 8.JUN.2023 13:39:06

Single



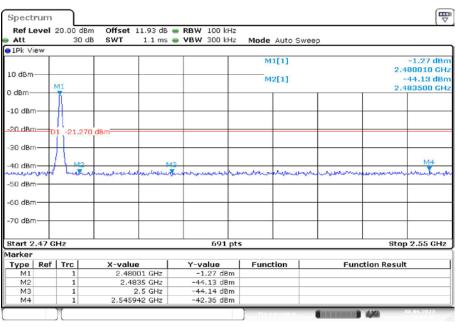
Date: 8.JUN.2023 13:33:13

DH5: Band Edge- Right Side Hopping



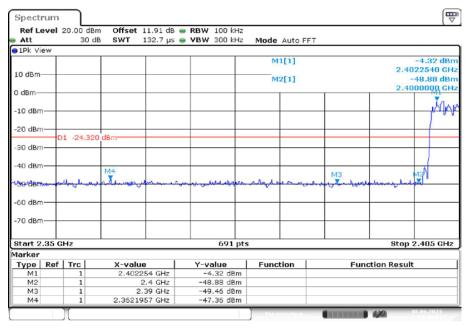
Date: 8.JUN.2023 13:41:39

Single



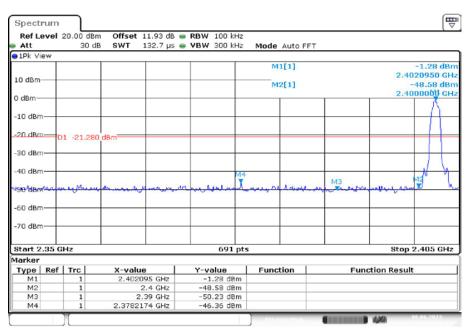
Date: 8.JUN.2023 13:34:07

2DH5: Band Edge-Left Side Hopping



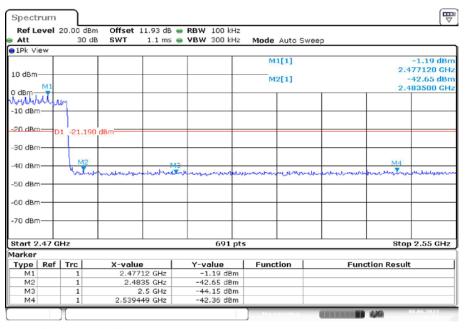
Date: 8.JUN.2023 13:42:01

Single



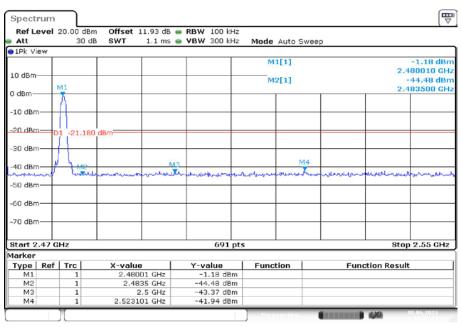
Date: 8.JUN.2023 13:34:59

2DH5: Band Edge- Right Side Hopping



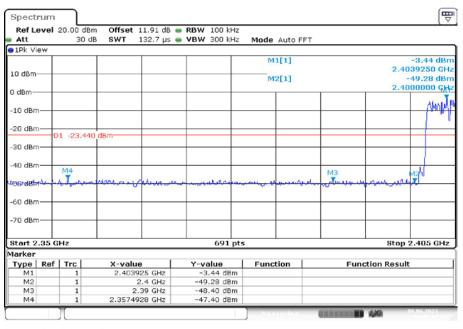
Date: 8.JUN.2023 13:45:08

Single



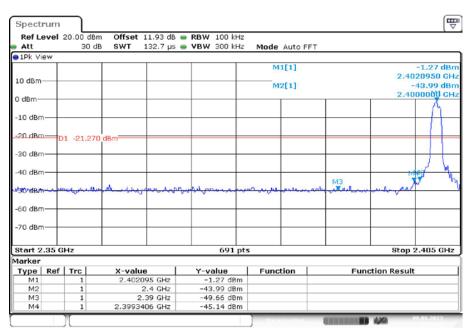
Date: 8.JUN.2023 13:36:11

3DH5: Band Edge-Left Side Hopping



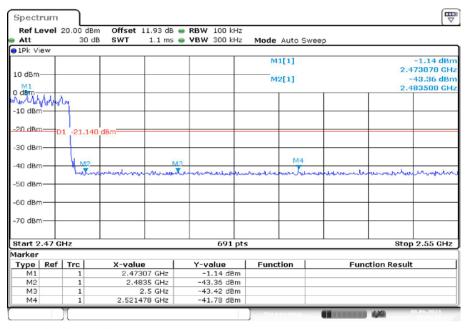
Date: 8.JUN.2023 13:45:35

Single



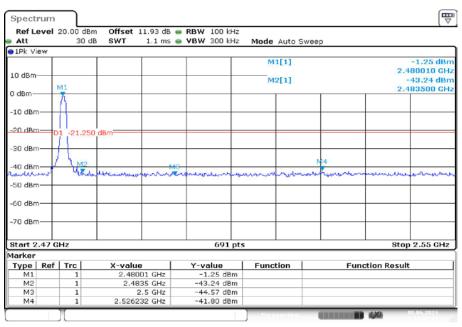
Date: 8.JUN.2023 13:36:47

3DH5: Band Edge- Right Side Hopping



Date: 8.JUN.2023 13:48:16

Single



Date: 8.JUN.2023 13:38:09

***** END OF REPORT *****