

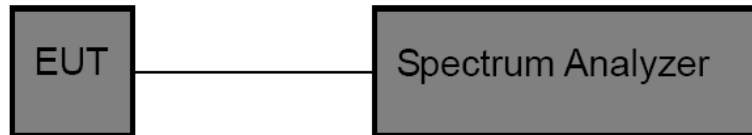


3.5. 20dB Bandwidth

Limit

N/A

Test Configuration



Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. OCB and 20dB Spectrum Setting:
 - (1) Set RBW = 1% ~ 5% occupied bandwidth.
 - (2) Set the video bandwidth (VBW) ≥ 3 RBW.
 - (3) Detector = Peak.
 - (4) Trace mode = Max hold.
 - (5) Sweep = Auto couple.

Note: The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

Test Mode

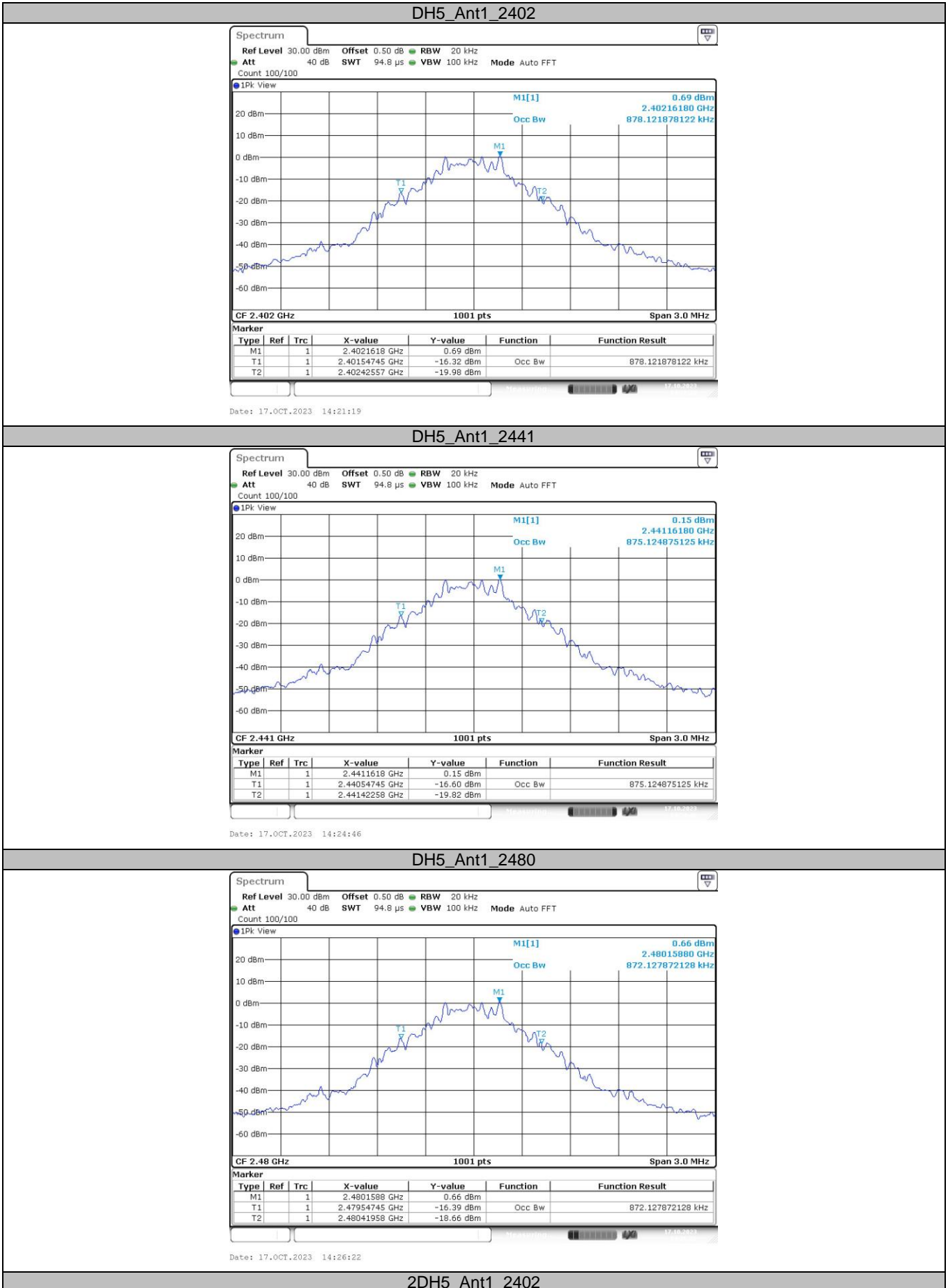
Please refer to the clause 2.4.

Test Result

Test Mode	Antenna	Channel	99% Bandwidth (MHz)	20 dB Bandwidth (MHz)	20dB Bandwidth *2/3 (MHz)
DH5	Ant1	2402	0.878	1.116	0.744
		2441	0.875	1.122	0.748
		2480	0.872	1.125	0.750
2DH5	Ant1	2402	1.190	1.398	0.932
		2441	1.196	1.398	0.932
		2480	1.193	1.395	0.930
3DH5	Ant1	2402	1.190	1.371	0.914
		2441	1.205	1.380	0.920
		2480	1.208	1.389	0.926



99% Bandwidth:

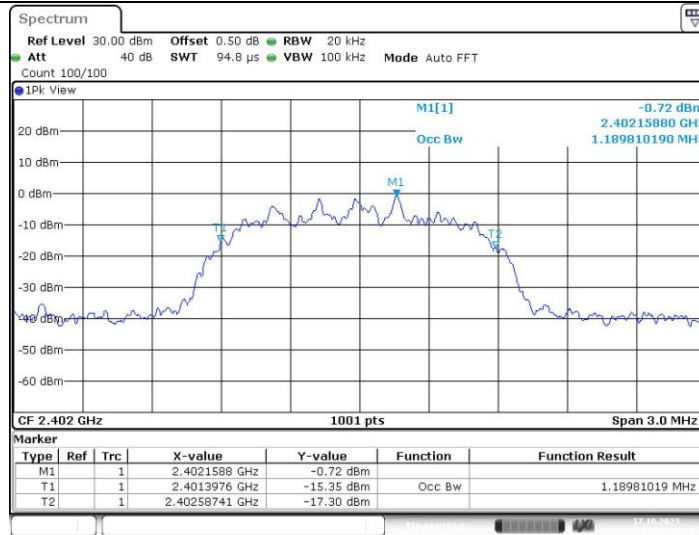


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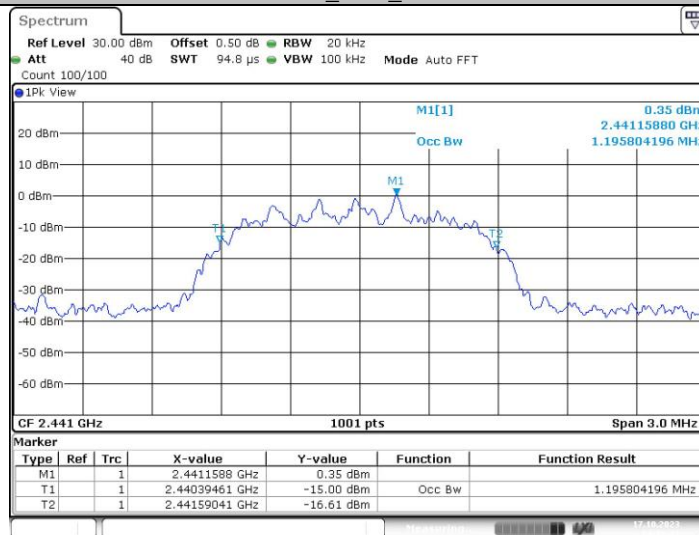


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Date: 17.OCT.2023 14:29:16

2DH5_Ant1_2441



Date: 17.OCT.2023 14:32:30

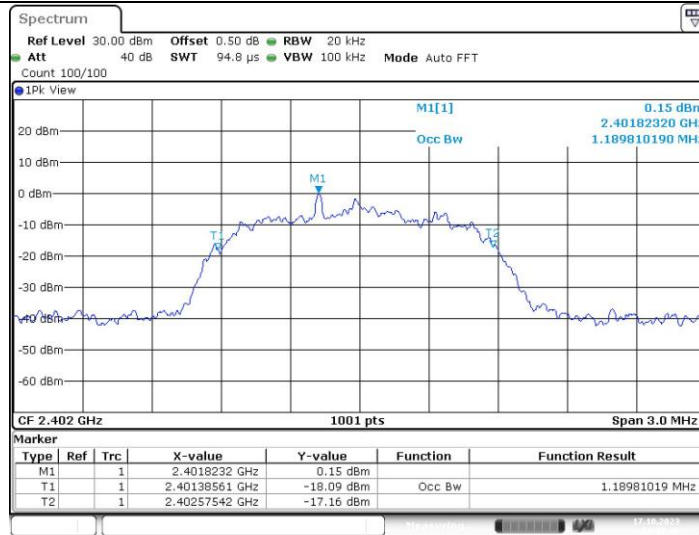
2DH5_Ant1_2480



Date: 17.OCT.2023 14:34:20

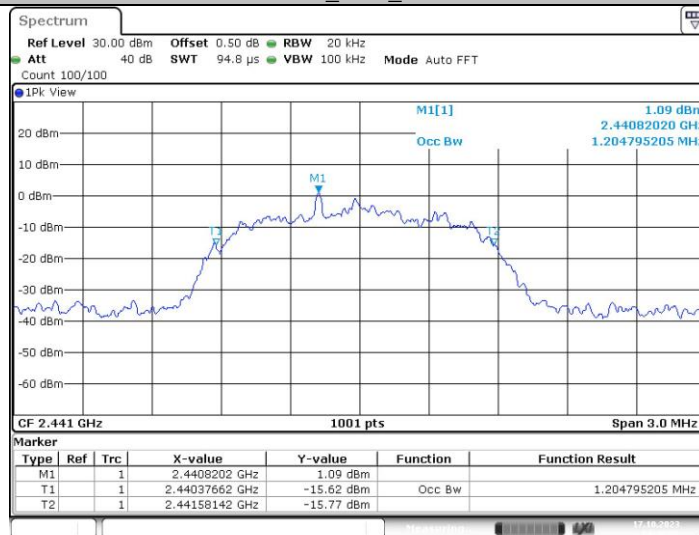
3DH5_Ant1_2402





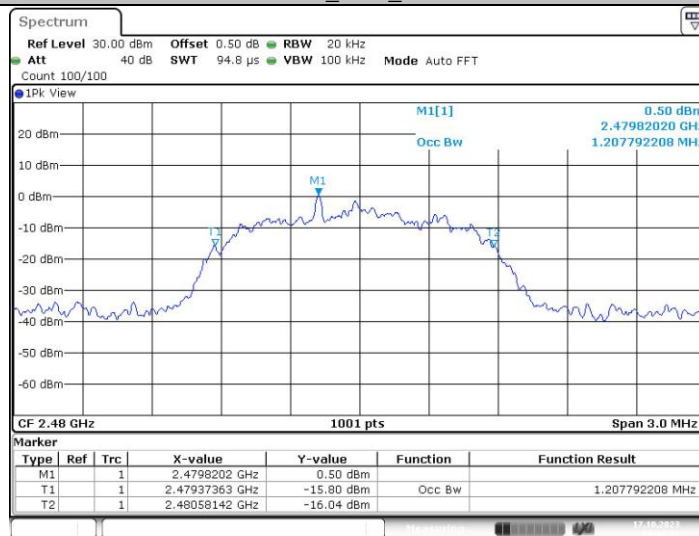
Date: 17.OCT.2023 14:37:46

3DH5_Ant1_2441



Date: 17.OCT.2023 14:40:52

3DH5_Ant1_2480



Date: 17.OCT.2023 14:44:13

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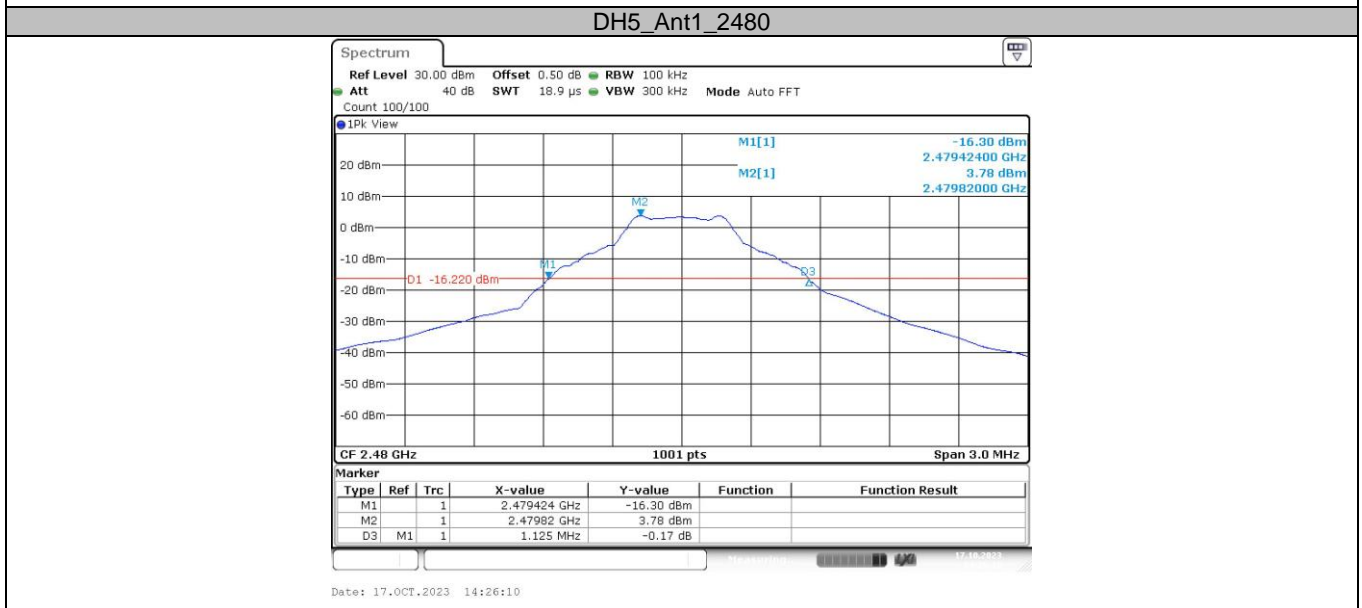
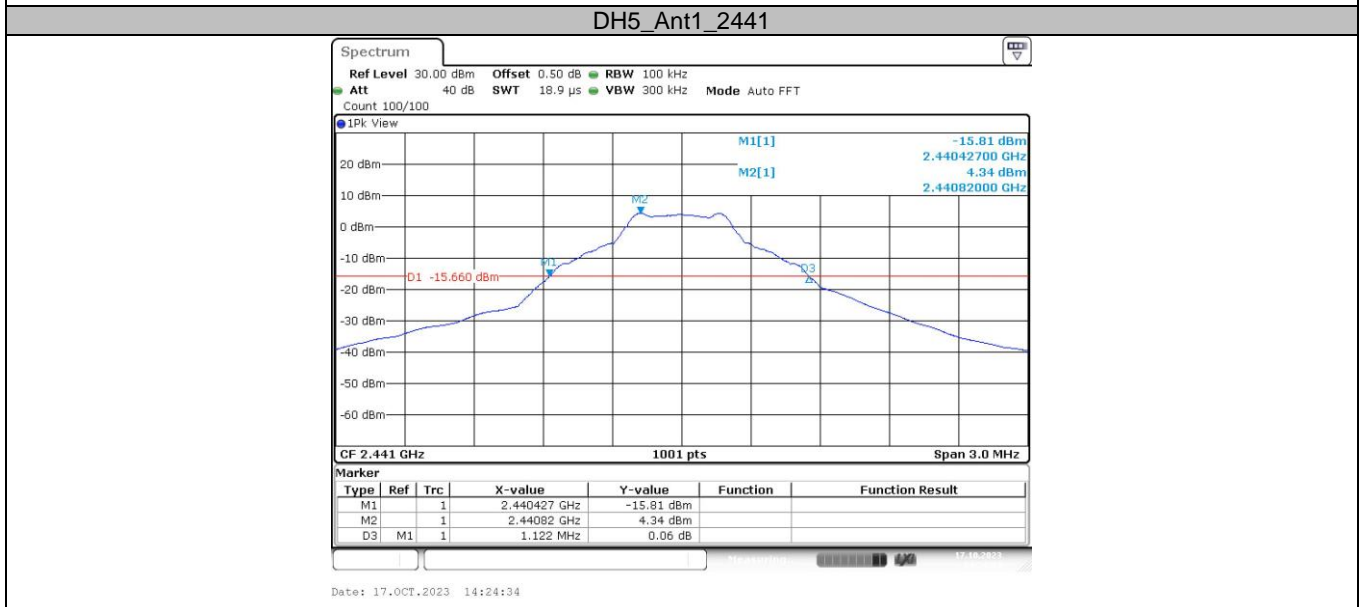
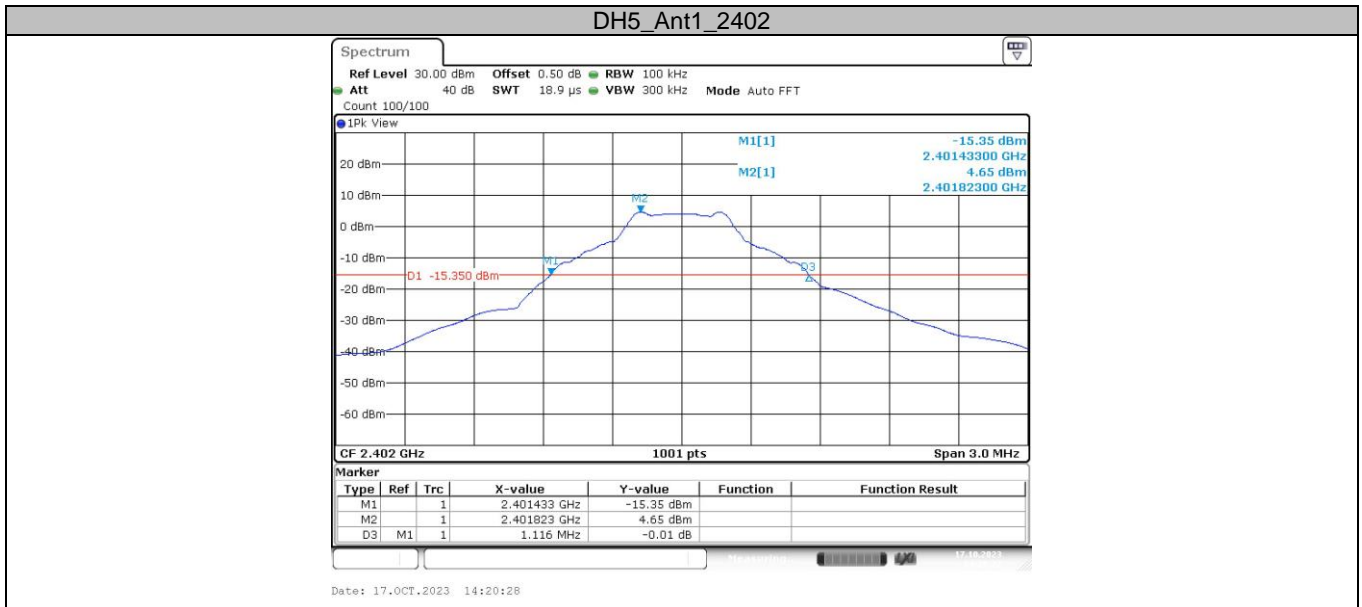
2/F., Building 1 and 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Longhua District, Shenzhen, Guangdong, China
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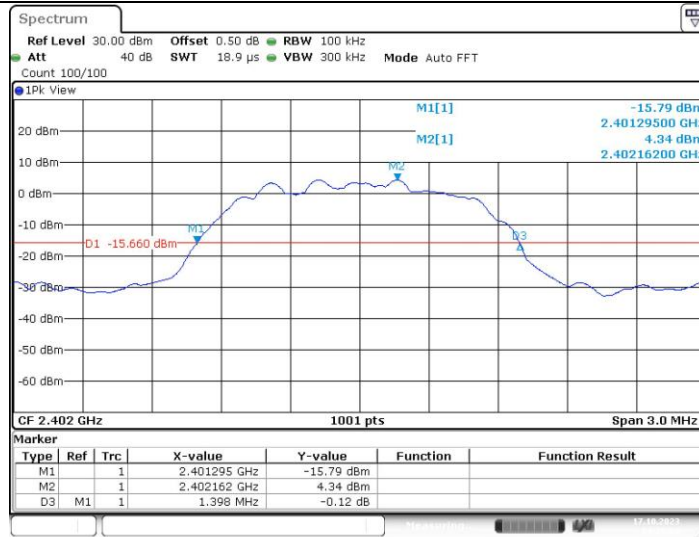


20dB Bandwidth:

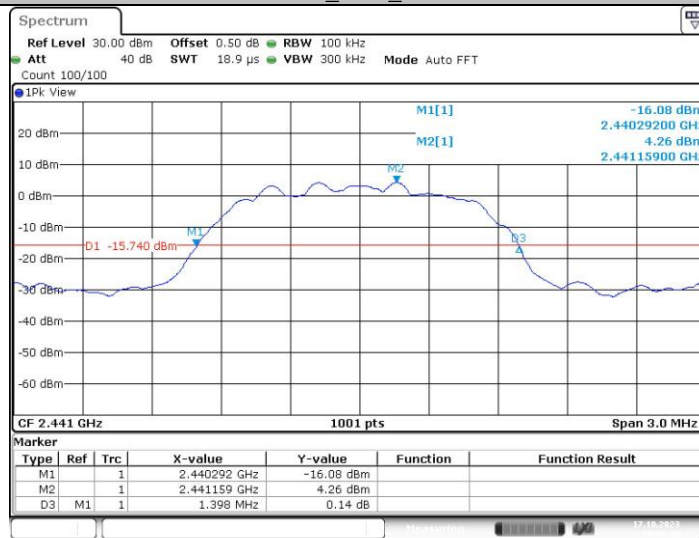


2DH5_Ant1_2402

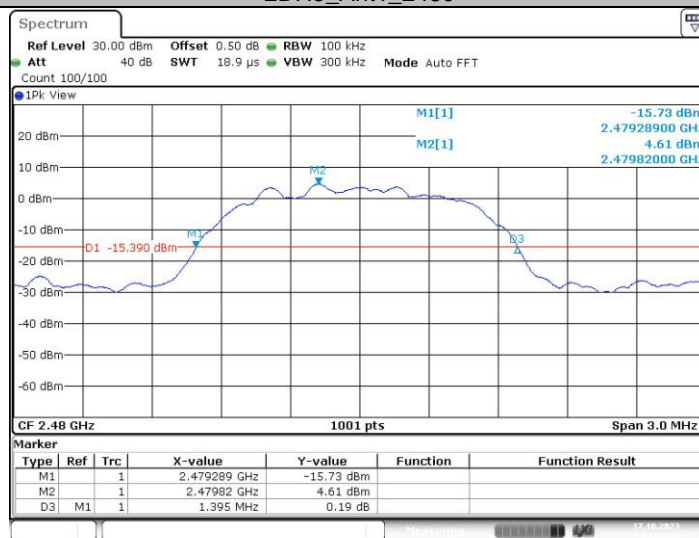




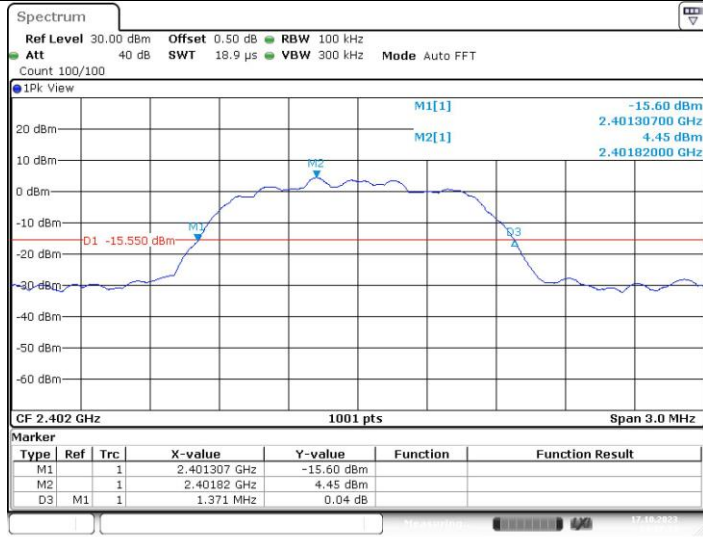
2DH5_Ant1_2441



2DH5_Ant1_2480

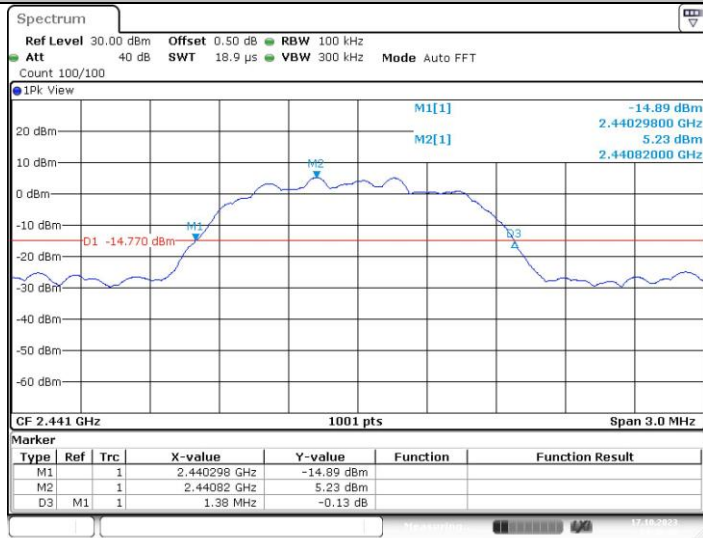


3DH5_Ant1_2402



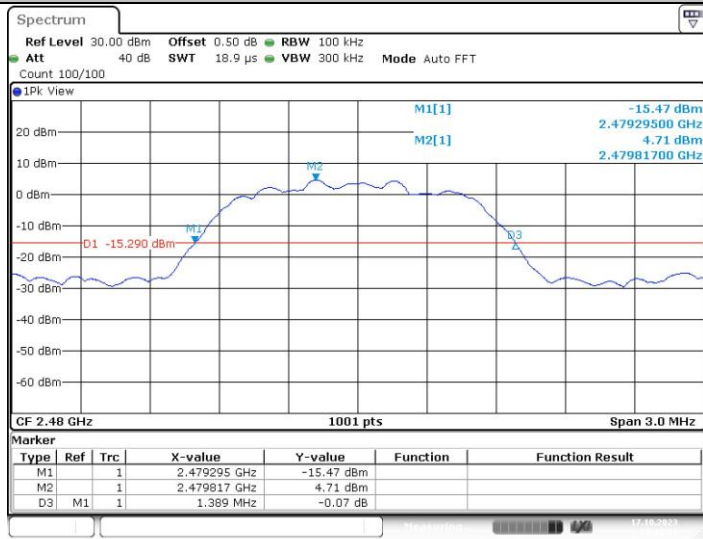
Date: 17.OCT.2023 14:37:34

3DH5_Ant1_2441



Date: 17.OCT.2023 14:40:41

3DH5_Ant1_2480



Date: 17.OCT.2023 14:44:01



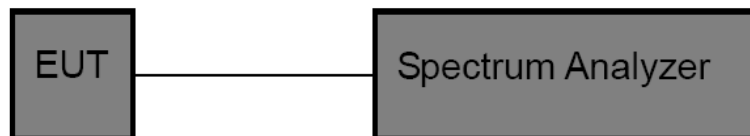
3.6. Channel Separation

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(1) / RSS-247 5.1 b

Test Item	Limit	Frequency Range (MHz)
Channel Separation	>25kHz or >two-thirds of the 20 dB bandwidth Which is greater	2400~2483.5

Test Configuration



Test Procedure

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- Spectrum Setting:
 - Set RBW = 100 kHz.
 - Set the video bandwidth (VBW) ≥ 3 RBW.
 - Detector = Peak.
 - Trace mode = Max hold.
 - Sweep = Auto couple.

Test Mode

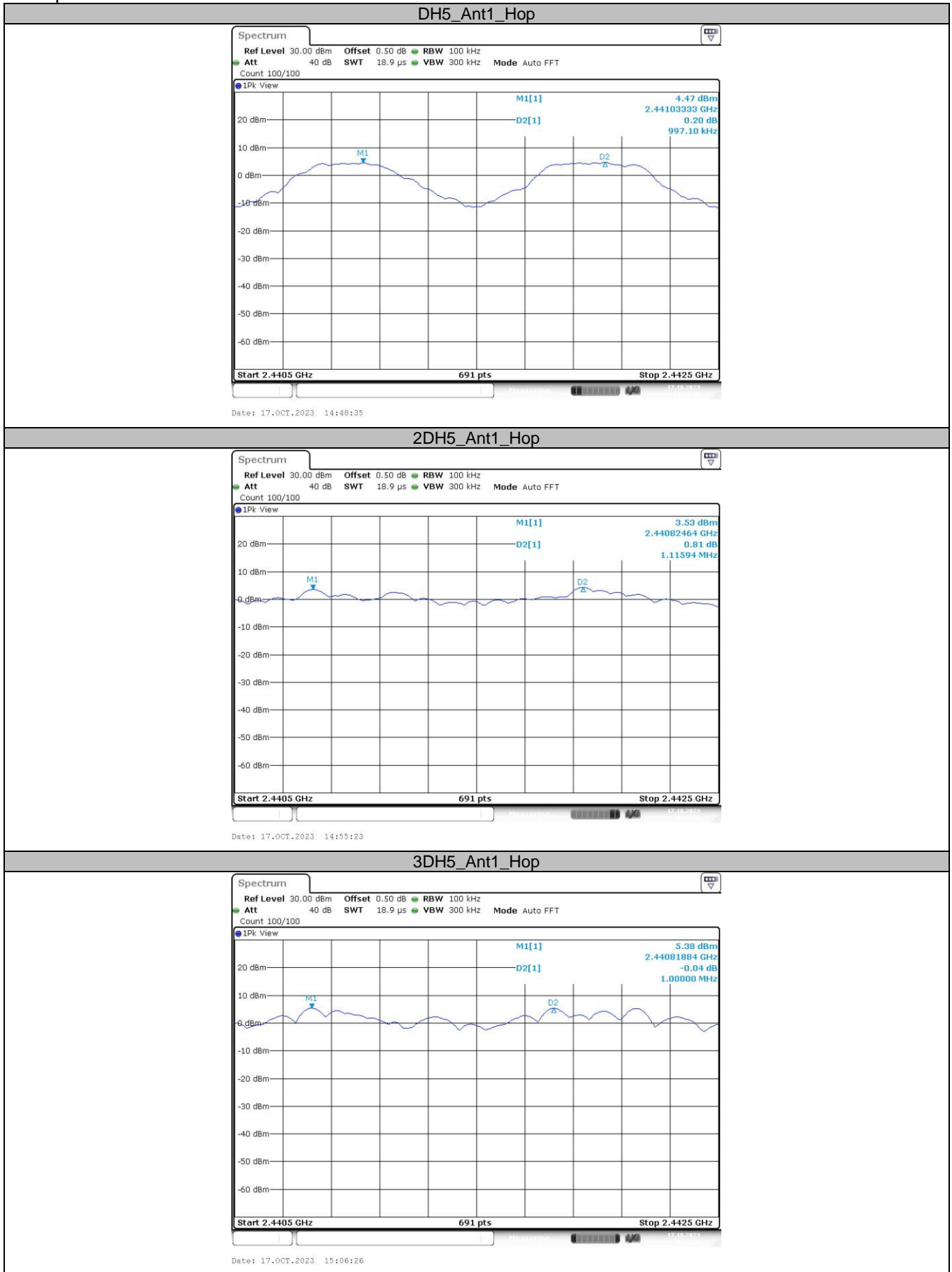
Please refer to the clause 2.4.

Test Result

Test Mode	Antenna	Channel	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant1	Hop	0.997	≥ 0.748	PASS
2DH5	Ant1	Hop	1.116	≥ 0.932	PASS
3DH5	Ant1	Hop	1.000	≥ 0.920	PASS



Test plot as follows:



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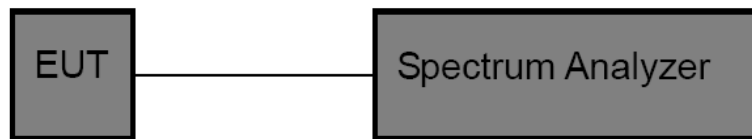
3.7. Number of Hopping Channel

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(iii) / RSS-247 5.1 d

Section	Test Item	Limit
15.247 (a)(iii) RSS-247 5.1 d	Number of Hopping Channel	≥15

Test Configuration



Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. Spectrum Setting:
 - (1) Peak Detector: RBW=100 kHz, VBW ≥RBW, Sweep time= Auto.

Test Mode

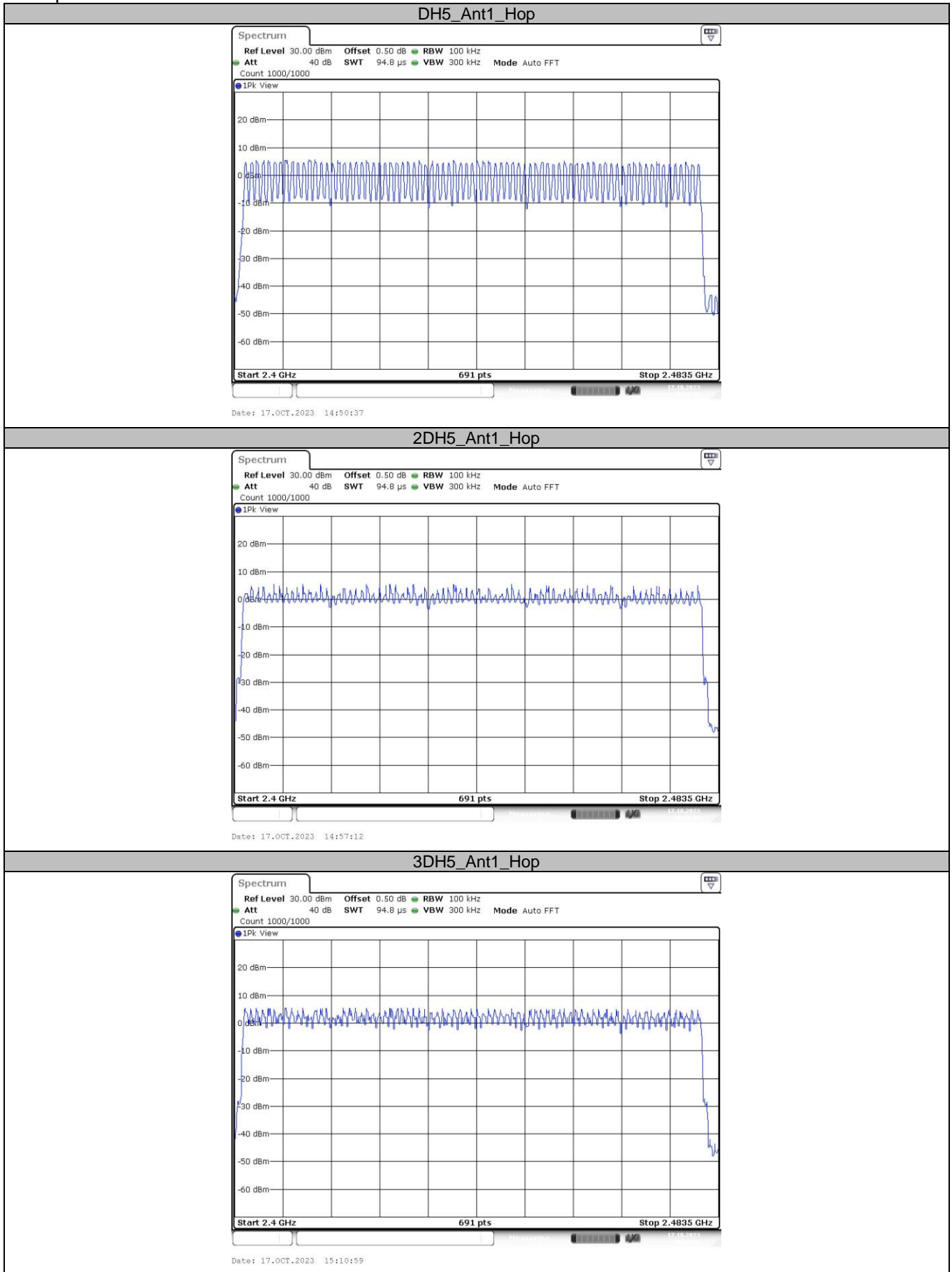
Please refer to the clause 2.4.

Test Result

Test Mode	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 plot as follows:





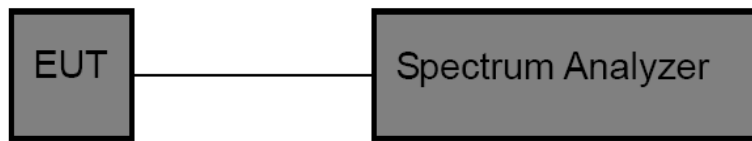
3.8. Dwell Time

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(iii) / RSS-247 5.1 d

Section	Test Item	Limit
15.247 (a)(iii) RSS-247 5.1 d	Average Time of Occupancy	0.4 sec

Test Configuration



Test Procedure

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- Spectrum Setting:
 - Spectrum Setting: RBW=1MHz, VBW ≥ RBW.
 - Use video trigger with the trigger level set to enable triggering only on full pulses.
 - Sweep Time is more than once pulse time.
 - Set the center frequency on any frequency would be measure and set the frequency span to zero.
 - Measure the maximum time duration of one single pulse.
 - Set the EUT for packet transmitting.

Test Mode

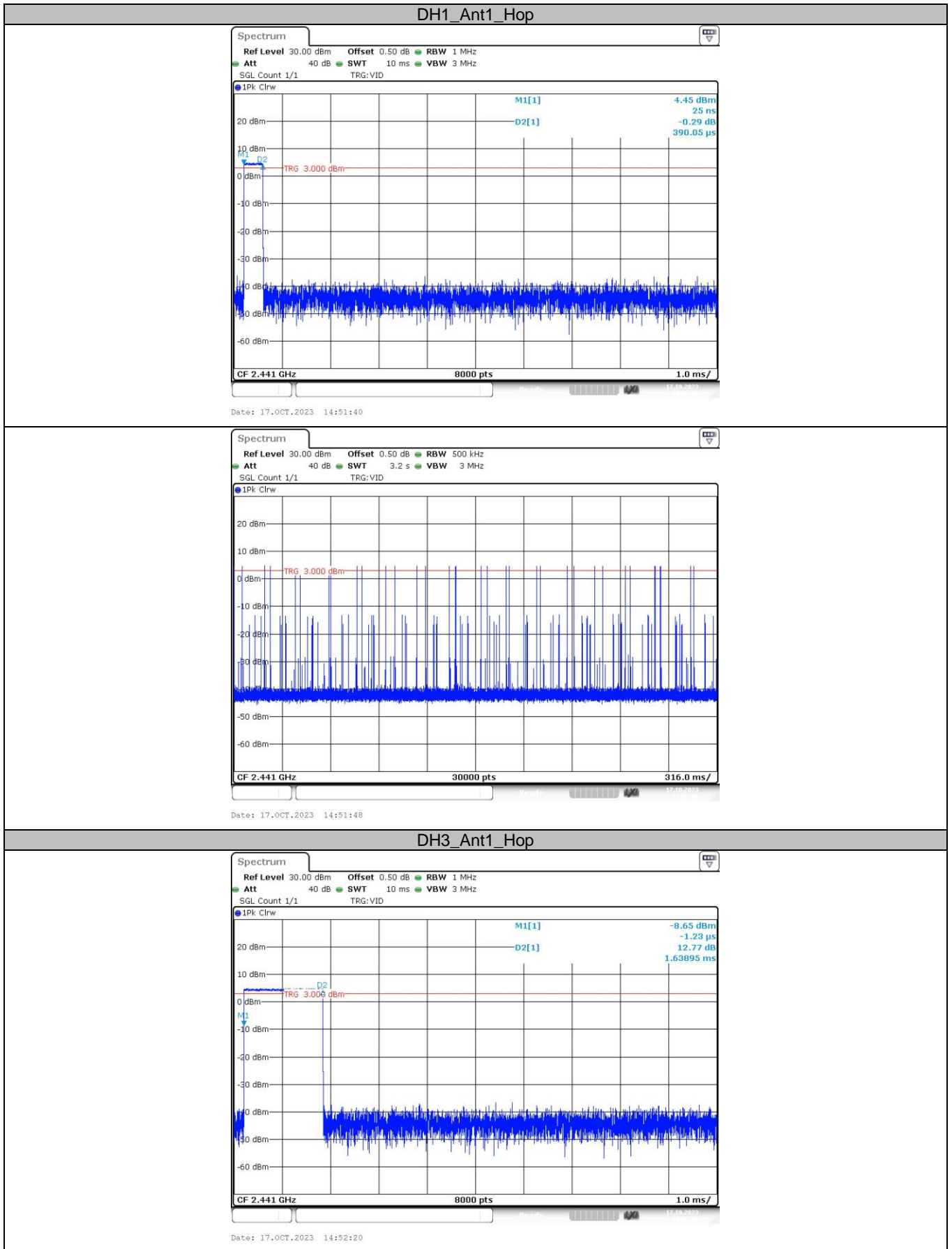
Please refer to the clause 2.4.

Test Result

Test Mode	Antenna	Channel	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Ant1	Hop	0.39	320	0.125	≤0.4	PASS
DH3	Ant1	Hop	1.64	130	0.213	≤0.4	PASS
DH5	Ant1	Hop	2.88	70	0.202	≤0.4	PASS
2DH1	Ant1	Hop	0.40	330	0.132	≤0.4	PASS
2DH3	Ant1	Hop	1.64	190	0.312	≤0.4	PASS
2DH5	Ant1	Hop	2.89	130	0.375	≤0.4	PASS
3DH1	Ant1	Hop	0.40	320	0.128	≤0.4	PASS
3DH3	Ant1	Hop	1.64	180	0.296	≤0.4	PASS
3DH5	Ant1	Hop	2.89	130	0.375	≤0.4	PASS



Test plot as follows:

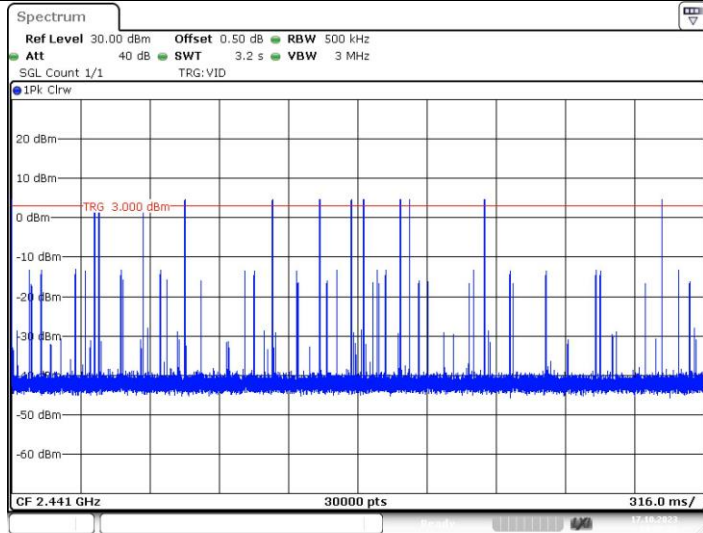


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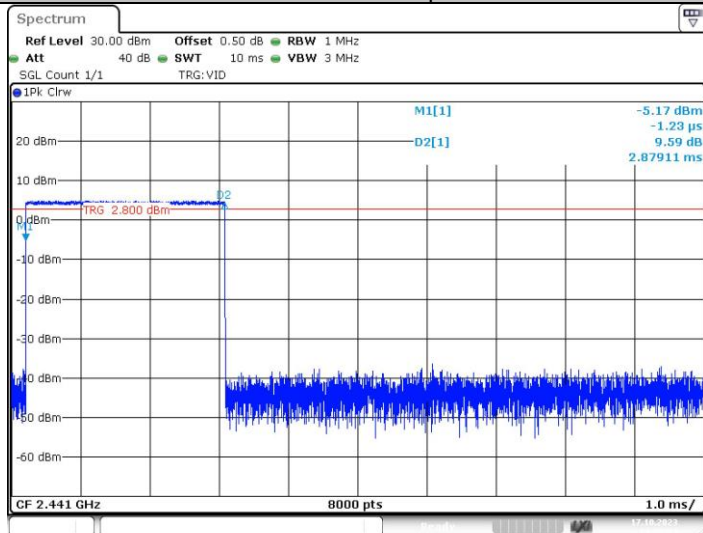


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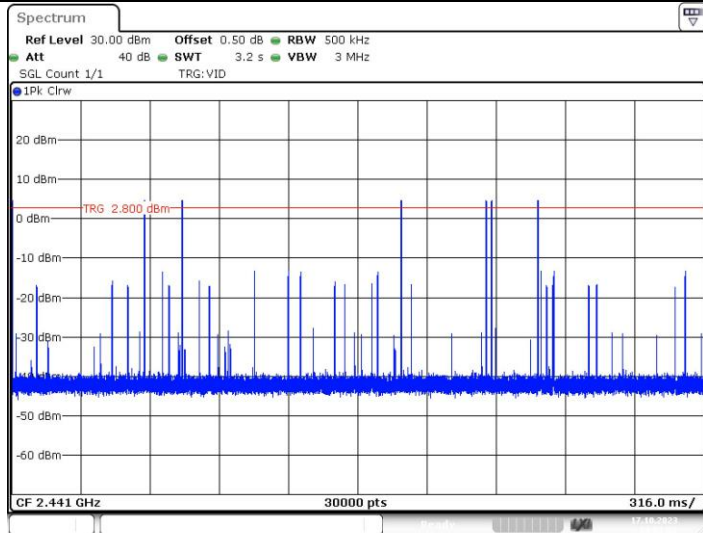


Date: 17.OCT.2023 14:52:28

DH5_Ant1_Hop

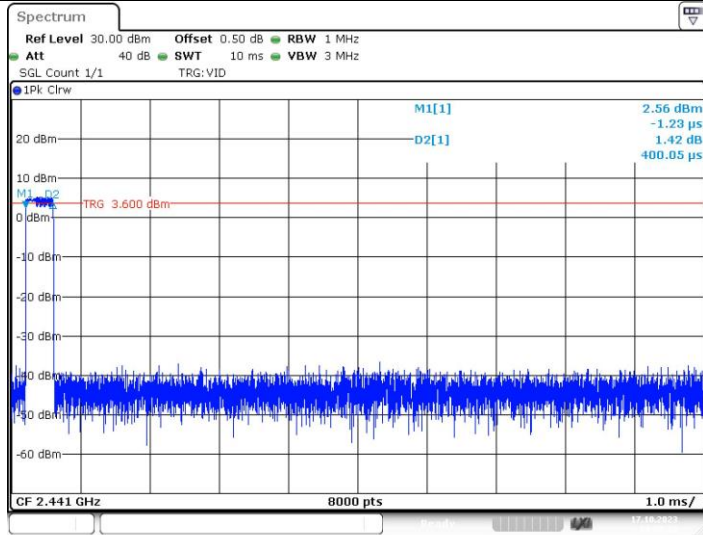


Date: 17.OCT.2023 14:50:54

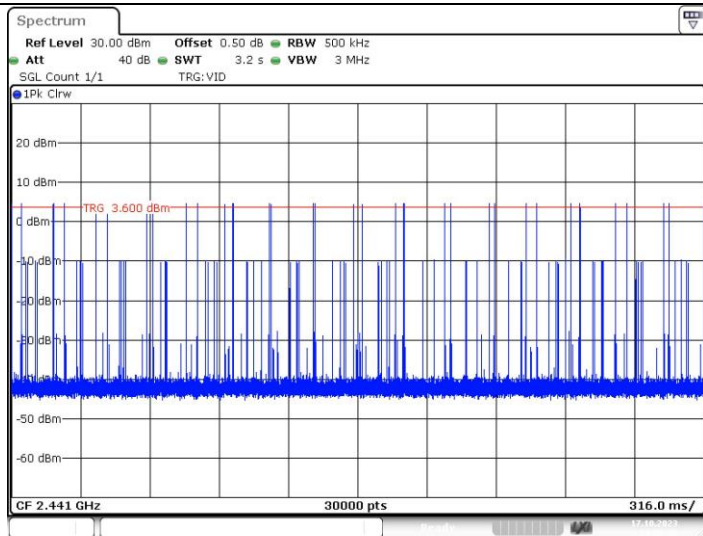


Date: 17.OCT.2023 14:51:02

2DH1_Ant1_Hop

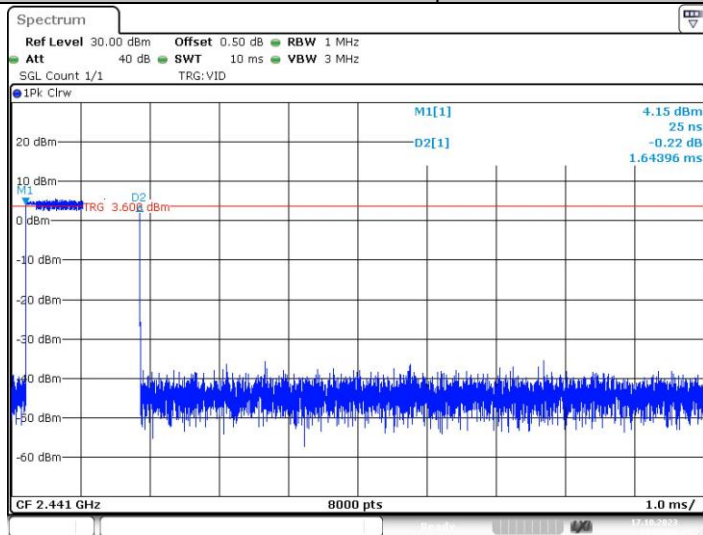


Date: 17.OCT.2023 14:58:28

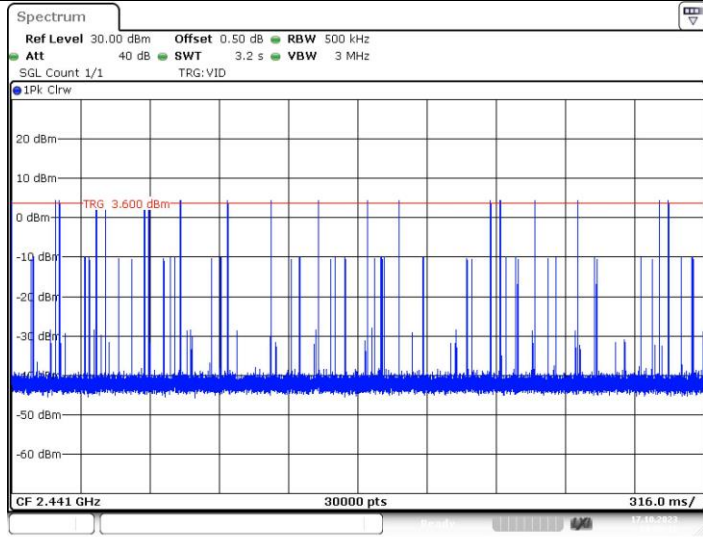


Date: 17.OCT.2023 14:58:36

2DH3_Ant1_Hop

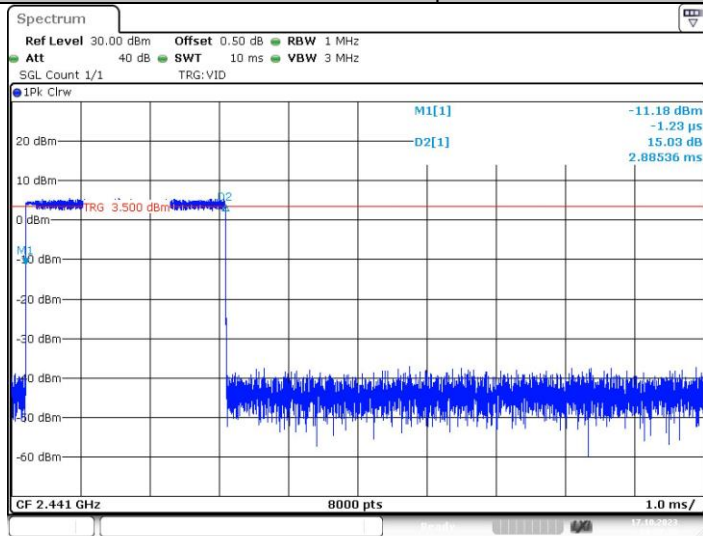


Date: 17.OCT.2023 14:59:07

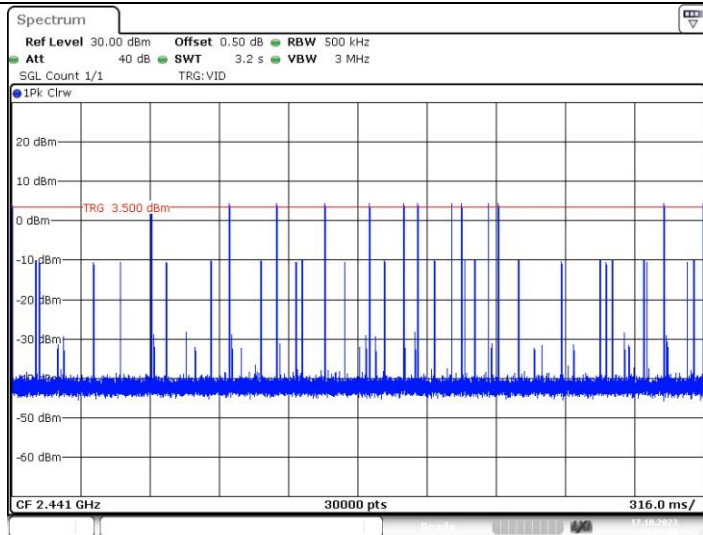


Date: 17.OCT.2023 14:59:15

2DH5_Ant1_Hop

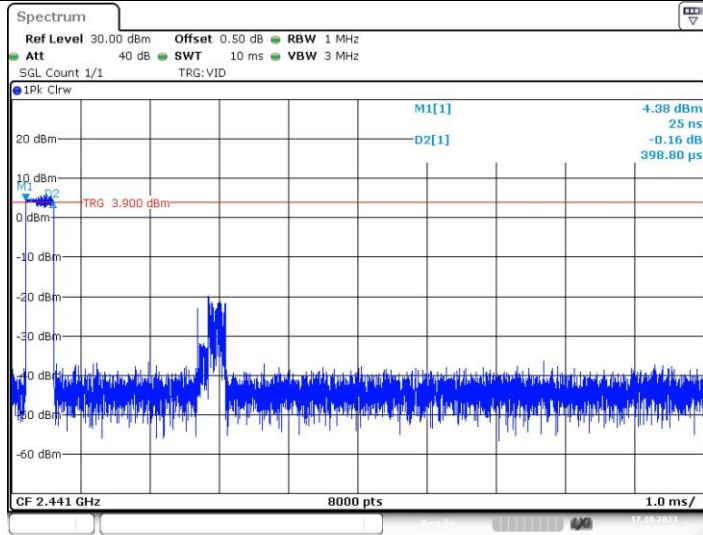


Date: 17.OCT.2023 14:57:29

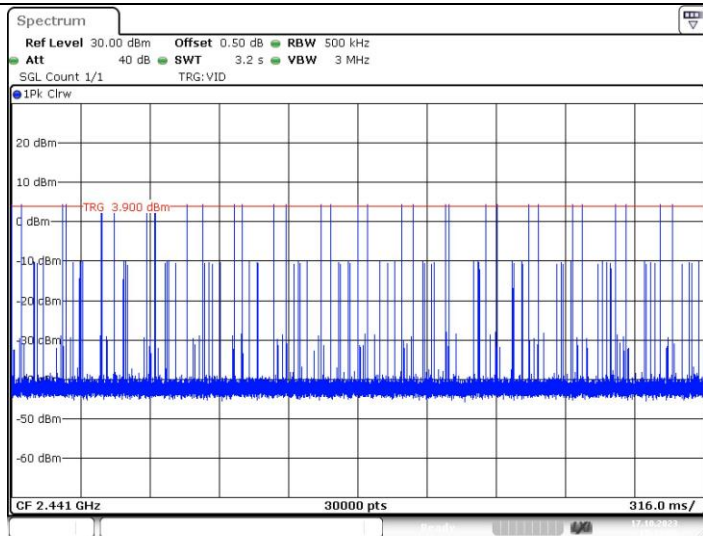


Date: 17.OCT.2023 14:57:38

3DH1_Ant1_Hop

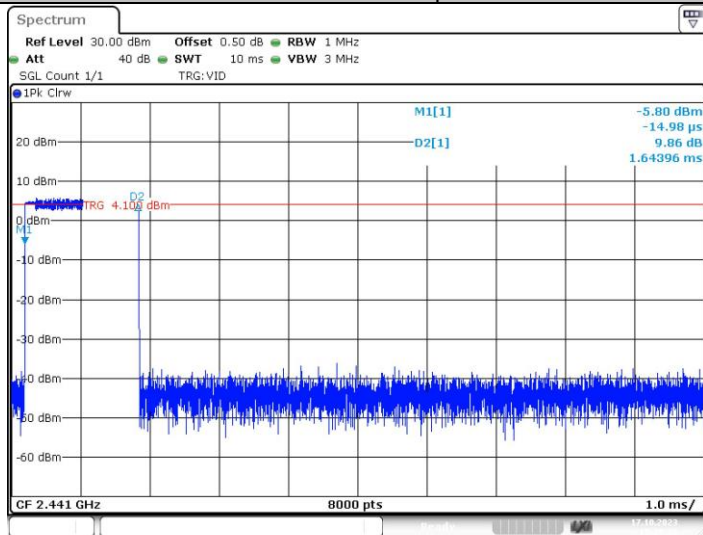


Date: 17.OCT.2023 15:13:50



Date: 17.OCT.2023 15:13:58

3DH3_Ant1_Hop



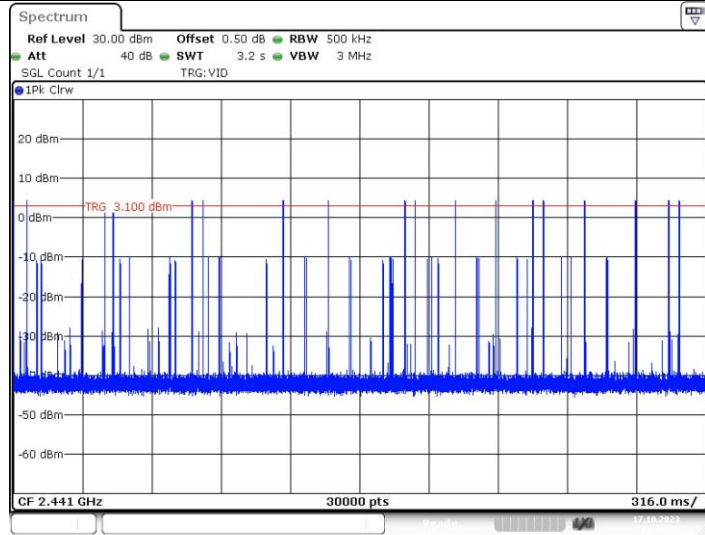
Date: 17.OCT.2023 15:20:23

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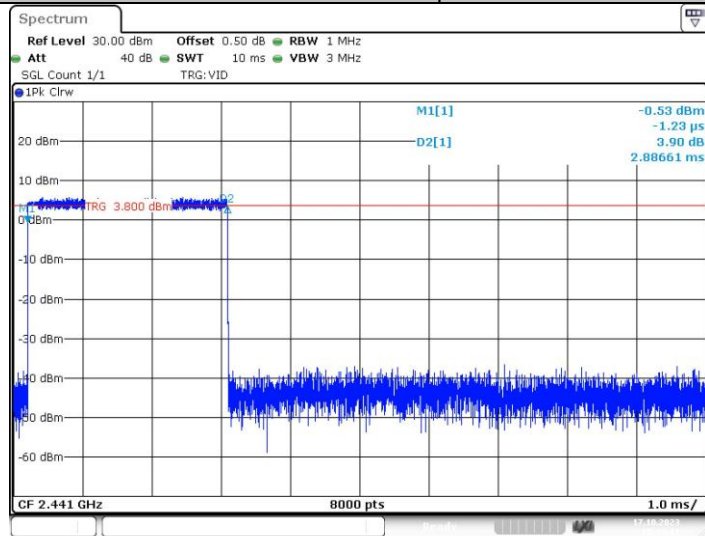


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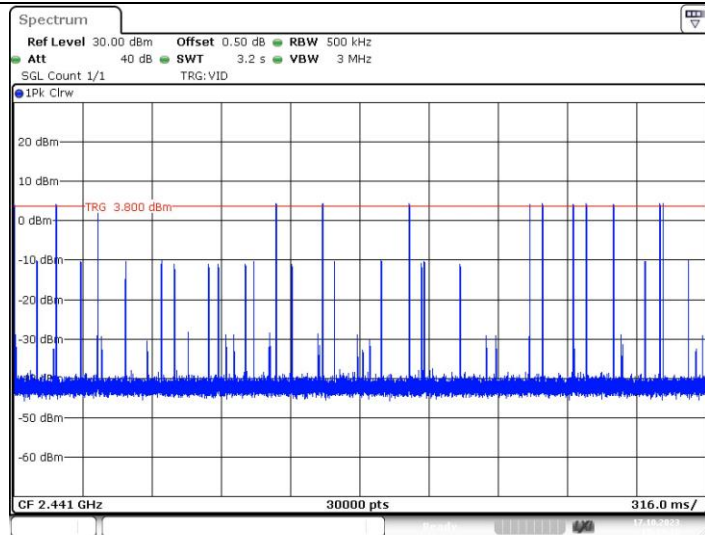


Date: 17.OCT.2023 15:20:37

3DH5_Ant1_Hop



Date: 17.OCT.2023 15:13:11



Date: 17.OCT.2023 15:13:19





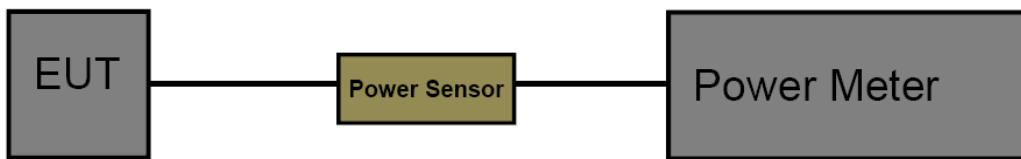
3.9. Peak Output Power

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (b)(1) / RSS-247 5.4 b

Section	Test Item	Limit	Frequency Range (MHz)
FCC CFR 47 Part 15.247 (b)(1)	Maximum Conducted Output Power	Hopping Channels ≥ 75 , Power $< 1W(30dBm)$; Others $< 125mW(21dBm)$	2400~2483.5
ISED RSS-247 5.4 b	EIRP	4 Watt or 36dBm	2400~2483.5

Test Configuration



Test Procedure

1. The maximum conducted output power may be measured using a broadband Peak RF power meter.
2. Peak power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor.
3. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.
Record the measurement data.

Test Mode

Please refer to the clause 2.4.

Test Result

Test Mode	Antenna	Channel	Result[dBm]	Limit[dBm]	Verdict
DH5	Ant1	2402	5.99	≤ 30	PASS
		2441	5.63	≤ 30	PASS
		2480	5.07	≤ 30	PASS
2DH5	Ant1	2402	6.87	≤ 30	PASS
		2441	6.35	≤ 30	PASS
		2480	5.93	≤ 30	PASS
3DH5	Ant1	2402	7.01	≤ 30	PASS
		2441	6.98	≤ 30	PASS
		2480	6.19	≤ 30	PASS

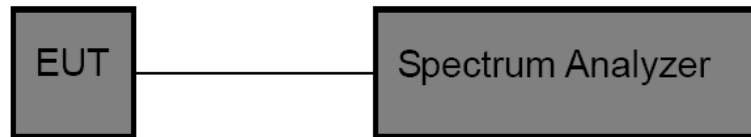


3.10. Duty Cycle

Limit

None, for report purposes only.

Test Configuration



Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
2. The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v05r02.
3. Spectrum Setting:
Set analyzer center frequency to test channel center frequency.
Set the span to 0Hz.
Set the RBW to 10MHz.
Set the VBW to 10MHz.
Detector: Peak.
Sweep time: Auto.
Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

Test Mode

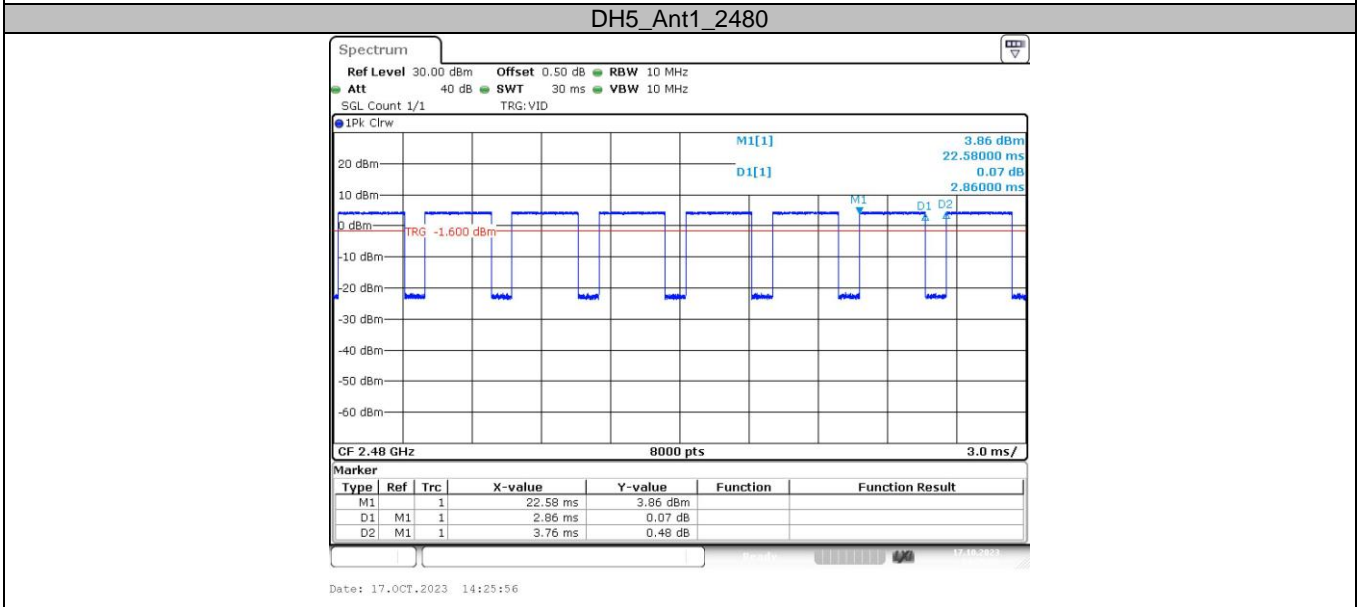
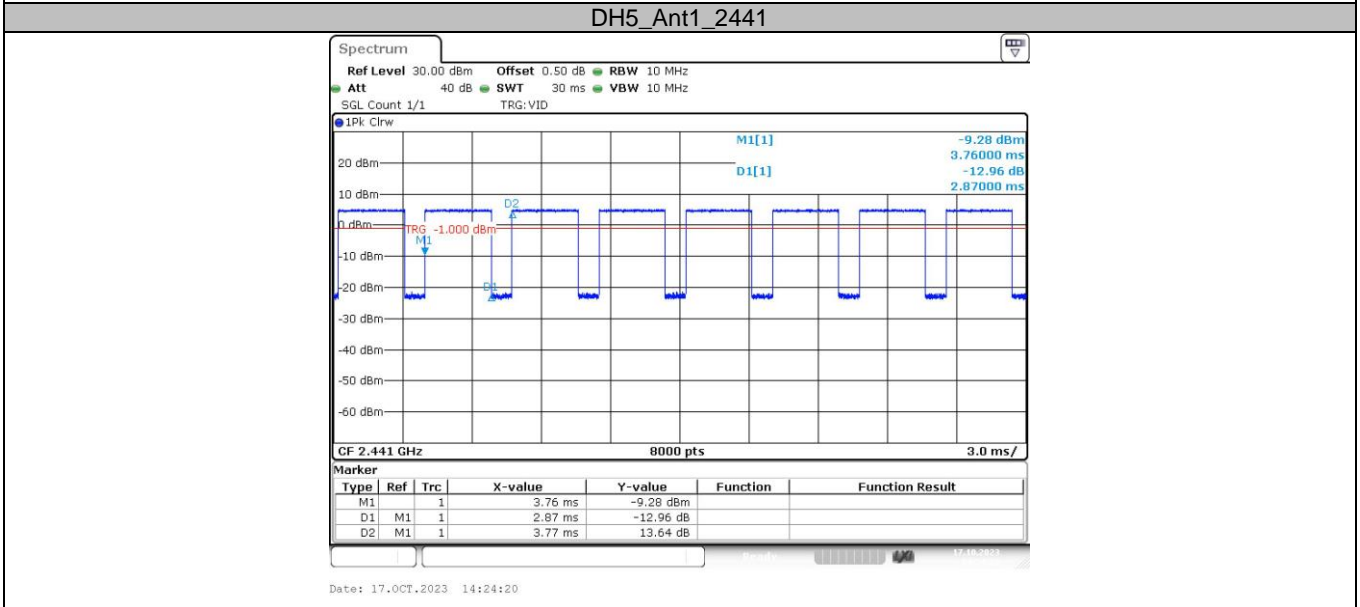
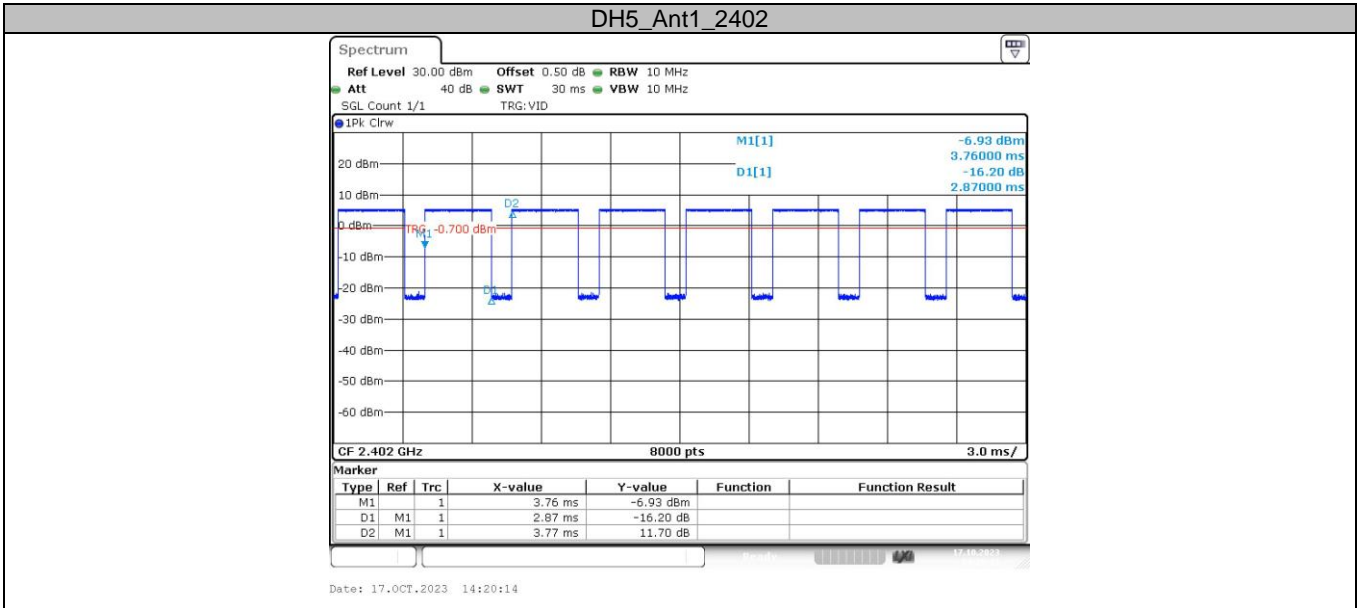
Please refer to the clause 2.4.

Test Result

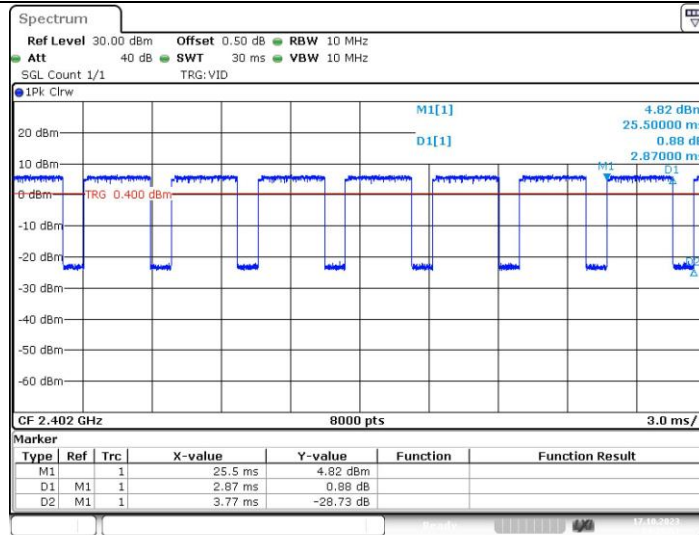
Test Mode	Antenna	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	1/T Minimum VBW (kHz)	Final Setting for VBW (kHz)
DH5	Ant1	2402	2.87	3.77	76.13	0.35	1
		2441	2.87	3.77	76.13	0.35	1
		2480	2.86	3.76	76.06	0.35	1
2DH5	Ant1	2402	2.87	3.77	76.13	0.35	1
		2441	2.87	3.77	76.13	0.35	1
		2480	2.88	3.78	76.19	0.35	1
3DH5	Ant1	2402	2.88	3.78	76.19	0.35	1
		2441	2.88	3.78	76.19	0.35	1
		2480	2.88	3.78	76.19	0.35	1



Test plot as follows:

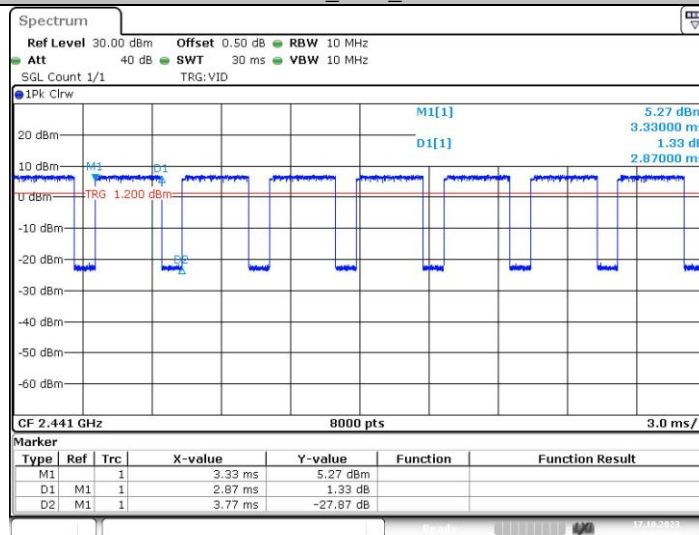


2DH5_Ant1_2402



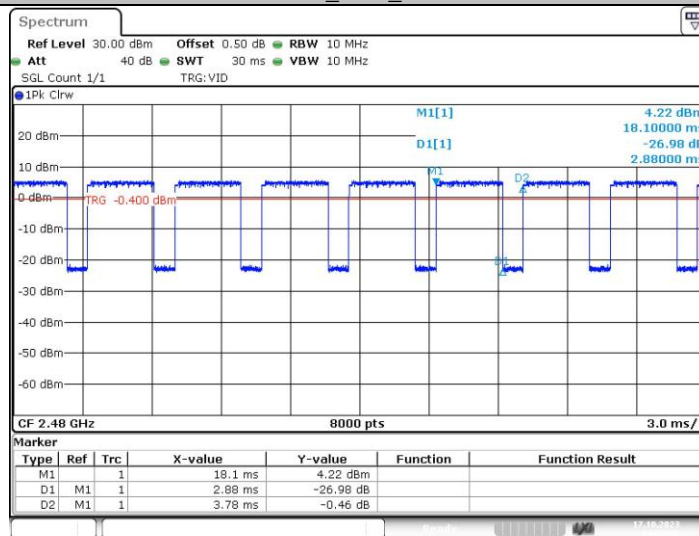
Date: 17.OCT.2023 14:28:50

2DH5_Ant1_2441



Date: 17.OCT.2023 14:32:05

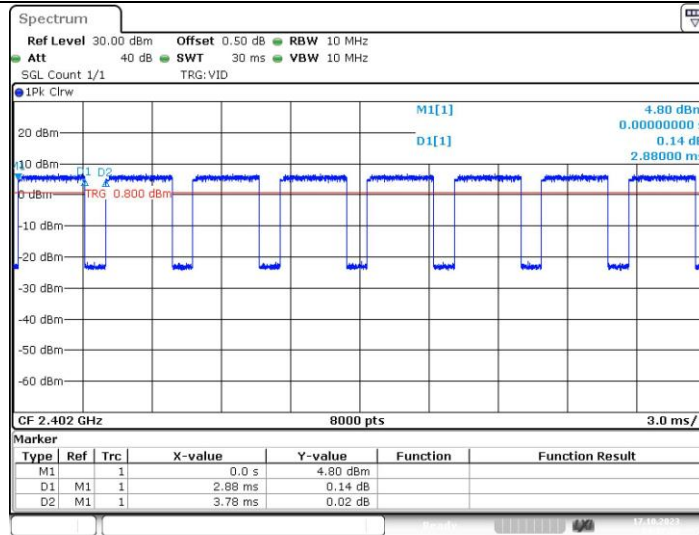
2DH5_Ant1_2480



Date: 17.OCT.2023 14:33:56

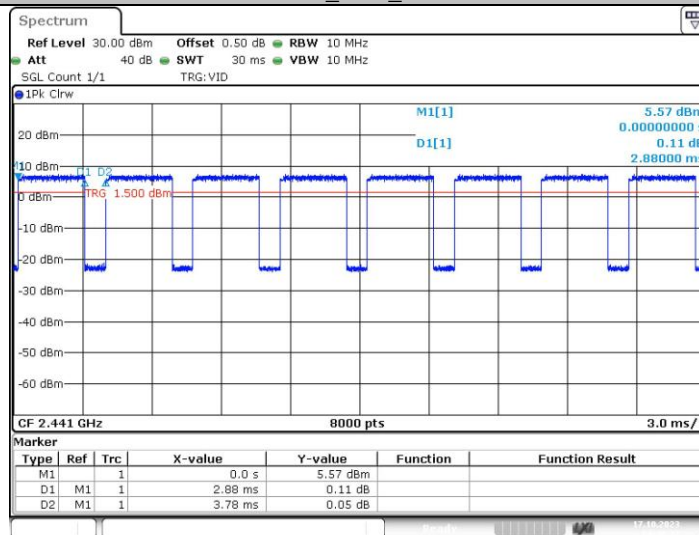
3DH5_Ant1_2402





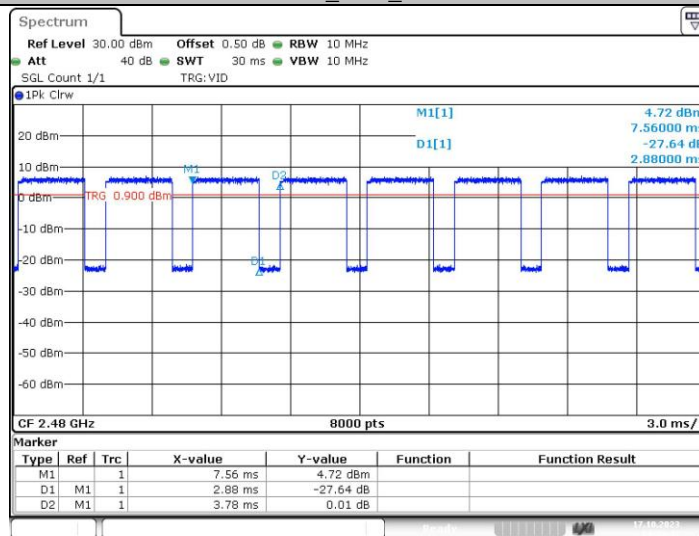
Date: 17.OCT.2023 14:37:20

3DH5_Ant1_2441



Date: 17.OCT.2023 14:40:27

3DH5_Ant1_2480



Date: 17.OCT.2023 14:43:48

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3.11. Antenna Requirement

Requirement

FCC CFR Title 47 Part 15 Subpart C Section 15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1)(i)

(i) Systems operating in the 2400~2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

Test Result

The directional gain of the antenna is less than 6dBi, please refer to the EUT internal photographs antenna photo.

*****THE END*****