FCC CERTIFICATION TEST REPORT

Applicant	:	Guangdong Jsoul Technology Co., LTD
Address of Applicant	:	Room 2410, No. 13, Dongguan Avenue, Dongcheng Street, Dongguan City, Guangdong Province
Manufacturer	:	Guangdong Jsoul Technology Co., LTD
Address of Manufacturer	:	Room 2410, No. 13, Dongguan Avenue, Dongcheng Street, Dongguan City, Guangdong Province
Equipment under Test	:	True Wireless Earbuds
Model No.	:	JS05
FCC ID	:	2BKCV-JS05
Test Standard(s)	:	FCC Rules and Regulations Part 15 Subpart C, ANSI C63.10:2013
Report No.	:	DDT-RE24081307-1E01
Issue Date	:	2024/12/12
Issue By	:	Guangdong Dongdian Testing Service Co., Ltd. Unit 2, Building 1, No. 17, Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China, 523808

REPORT

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Test Report Declare

Applicant	:	Guangdong Jsoul Technology Co., LTD
Address of Applicant	:	Room 2410, No. 13, Dongguan Avenue, Dongcheng Street, Dongguan City, Guangdong Province
Equipment under Test	:	True Wireless Earbuds
Model No.	:	JS05
Manufacturer	:	Guangdong Jsoul Technology Co., LTD
Address of Manufacturer	:	Room 2410, No. 13, Dongguan Avenue, Dongcheng Street, Dongguan City, Guangdong Province

Test Standard Used:

FCC Rules and Regulations Part 15 Subpart C,
ANSI C63.10:2013

We Declare:

The equipment described above is tested by Guangdong Dongdian Testing Service Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Guangdong Dongdian Testing Service Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

Report No.:	DDT-RE24081307-1E01		
Date of Receipt:	2024/10/08	**Date of Test:**	2024/10/08 - 2024/12/12

Prepared By:	**Approved By:**
Ziqin Chen	Damon Hu
Ziqin Chen/Engineer	**Damon/EMC Manager**

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Guangdong Dongdian Testing Service Co., Ltd.

Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	2024/12/12	

1. Summary of Test Results

No.	Test Parameter	Clause No.	Condition	Result
1	Maximum Peak Output Power	FCC Part 15: 15.247(b)(1)	/	Pass
2	20 dB Bandwidth	FCC Part 15: 15.247(a)(1)	/	Pass
3	99% Bandwidth	ANSI C63.10:2013	/	Pass
4	Carrier Frequency Separation	FCC Part 15: 15.247(a)(1)	/	Pass
5	Number of Hopping Channel	FCC Part 15: 15.247(a)(1)(iii)	/	Pass
6	Dwell Time	FCC Part 15: 15.247(a)(1)(iii)	/	Pass
7	RF Conducted Spurious Emissions	FCC Part 15: 15.247(d)	/	Pass
8	Radiated Emission	FCC Part 15: 15.205, FCC Part 15: 15.209, FCC Part 15: 15.247(d)	/	Pass
9	Band Edge Compliance	FCC Part 15: 15.205, FCC Part 15: 15.209, FCC Part 15: 15.247(d)	/	Pass
10	Antenna Requirement	FCC Part 15: 15.203	/	Pass
11	Power Line Conducted Emissions	FCC Part 15: 15.207(a)	/	Pass
Note: N/A is an abbreviation for Not Applicable, and means this item is not applicable for this device or no need to test according to standard.				

2. General Test Information

2.1. Description of EUT

EUT Name	:	True Wireless Earbuds
Model Number	:	JS05
Difference of model number	:	/
EUT Function Description	:	Please reference user manual of this device
Power Supply	:	Case: DC 5V from USB cable or DC 3.7V built-in battery; Earbud: DC 5V from external charging case or DC 3.85V built-in battery
Antenna Type	:	FPC Antenna
Max Antenna Gain	:	L: 1.95dBi R: 1.88dBi

Note: This EUT support Bluetooth BR/EDR/LE, this report only for Bluetooth BR/EDR.

Radio Specification	:	Bluetooth BR/EDR
Operation Frequency	:	2402 MHz-2480 MHz
Modulation	:	GFSK, π/4-DQPSK

Channel information					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	27	2429	54	2456
1	2403	28	2430	55	2457
2	2404	29	2431	56	2458
3	2405	30	2432	57	2459
4	2406	31	2433	58	2460
5	2407	32	2434	59	2461
6	2408	33	2435	60	2462
7	2409	34	2436	61	2463
8	2410	35	2437	62	2464
9	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476

21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

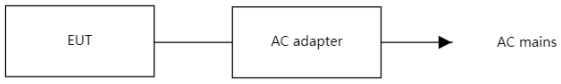
Note: The above EUT information is declared by manufacturer and for more detailed features description please refer to the manufacturer's specifications or User's Manual. The above Antenna information is declared by manufacturer and for more detailed features description please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

"☒" means to be chosen or applicable; "□" means don't to be chosen or not applicable; This note applies to entire report.

2.2. Accessories of EUT

Accessories	Manufacturer	Model number	Description
/	/	/	/

2.3. Block diagram of EUT configuration for test



2.4. Decision of final test mode

According pre-test, the worst test modes were reported as below:

Test software: FCC_assist_1.0.2.2.exe

The test software was used to control EUT work in Continuous Tx mode, and select test channel, wireless mode as below table.

The pathloss of external cable: 0.5 dB (According to the manufacturer's claims)

Tested mode, channel, information			
Mode	Setting Tx Power	Channel	Frequency (MHz)
GFSK hopping on Tx mode	10	CH0 to CH78	2402 to 2480
π/4-DQPSK hopping on Tx mode	10	CH0 to CH78	2402 to 2480
GFSK hopping off Tx mode	10	CH0	2402
	10	CH39	2441
	10	CH78	2480
	10	CH0	2402

π/4-DQPSK hopping off Tx mode	10	CH39	2441
	10	CH78	2480
Worst-case data rates were: GFSK mode: DH5, π/4-DQPSK mode: 2DH5			

2.5. Deviations of test standard

No deviation.

2.6. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature range:	+15℃ to +35 ℃
Humidity range:	20% to 75%
Pressure range:	86 kPa to106 kPa

Note: The specific temperature and humidity information of each test item refers to the temperature and humidity record in the corresponding test data.

2.7. Test laboratory

Guangdong Dongdian Testing Service Co., Ltd.

Add.: Unit 2, Building 1, No. 17, Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China, 523808.

Tel.: +86-0769-38826678, http://www.dgddt.com, Email: ddt@dgddt.com.

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, R-20155, G-20118

2.8. Measurement uncertainty

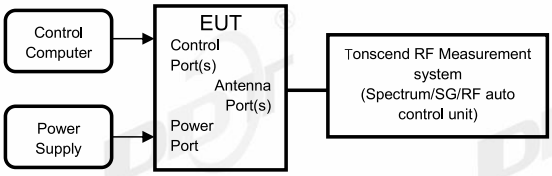
Test Item	Uncertainty
Bandwidth	1.1%
Peak Output Power (Conducted) (Spectrum analyzer)	0.86 dB (10 MHz ≤ f < 3.6 GHz);
	1.38 dB (3.6 GHz ≤ f < 8 GHz)
Peak Output Power (Conducted) (Power Sensor)	0.74 dB
Power Spectral Density	0.74 dB (10 MHz ≤ f < 3.6 GHz);
	1.38 dB (3.6 GHz ≤ f < 8 GHz)
Frequencies Stability	6.7 x 10^{-8} (Antenna couple method)
	5.5 x 10^{-8} (Conducted method)
Conducted spurious emissions	0.86 dB (10 MHz ≤ f < 3.6 GHz);
	1.40 dB (3.6 GHz ≤ f < 8 GHz)
	1.66 dB (8 GHz ≤ f < 26.5 GHz)
Uncertainty for radio frequency (RBW < 20 kHz)	3×10^{-8}
Temperature	0.4 ℃
Humidity	2 %
Uncertainty for Radiation Emission test (9 kHz – 30 MHz)	3.44 dB
Uncertainty for Radiation Emission test (30 MHz - 1 GHz)	4.70 dB (Antenna Polarize: V)
	4.84 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission test (1 GHz - 40 GHz)	4.10 dB (1 - 6 GHz)
	4.40 dB (6 GHz - 18 GHz)
	3.54 dB (18 GHz - 26 GHz)
	4.30 dB (26 GHz - 40 GHz)
Uncertainty for Power line conduction emission test	3.34dB (150KHz-30MHz)
	3.72dB (9KHz-150KHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

3. Equipment Used During Conductive Test

Equipment	Manufacturer	Model No.	Serial Number	Due Date
☒RF Connected Test (RF Measurement System 3#)				
SIGNAL ANALYZER	R&S	FSV40	101407	2025/07/08
Wideband Radio Communication Tester	R&S	CMW500	117491	2025/03/31
EXG Analog Signal Generator	KEYSIGHT	N5173B	MY62153058	2025/07/08
MXG Vector Signal Generator	Agilent	N5182A	MY48180912	2025/03/31
RF Control Unit	Tonscend	JS0806-2	20C8060230	2025/03/31
TEMP&HUMI Programmable Chamber	ZHIXIANG	ZXGDJS-150L	ZX170110-A	2025/04/22
Test Software	Tonscend	JS1120-3	Ver.3.2.22	N/A

4. 20 dB Bandwidth

4.1. Block diagram of test setup



4.2. Limits

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

4.3. Test procedure

(1) The test according to ANSI C63.10-2013 clause 6.9.2.
(2) Connect EUT's antenna output to spectrum analyzer by RF cable, the path loss was compensated to the results
(3) Set the EUT as maximum power setting and enable the EUT transmit continuously
(4) Use the following spectrum analyzer settings for the 20 dB bandwidth measurement:

RBW:	1% to 5% of the OBW
VBW:	approximately three times RBW
Span:	between 2 times and 5 times the OBW
Detector Mode:	Peak
Sweep time:	Auto
Trace mode:	Max hold

(5) Measure and record the results in the report.

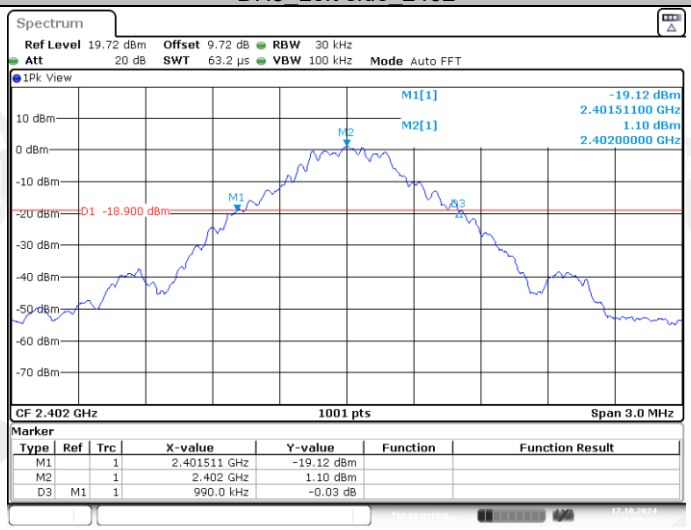
4.4. Test result

Test Engineer:	Zhongyao	Test Site:	RF Measurement System 3#
Ambient Condition:	27.7℃,38.8%RH	Test Date:	2024.10.17
Test Power Supply:	Battery	Sample Number:	S24081307-001

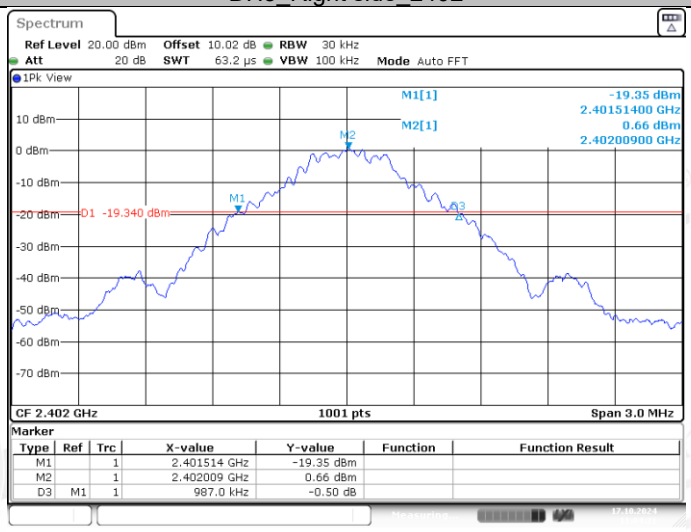
Test Mode	Antenna	Frequency [MHz]	20dB EBW[MHz]
DH5	Left side	2402	0.99
	Right side	2402	0.99
	Left side	2441	0.99
	Right side	2441	0.99
	Left side	2480	0.99
	Right side	2480	0.99
2DH5	Left side	2402	1.29
	Right side	2402	1.29
	Left side	2441	1.29
	Right side	2441	1.29
	Left side	2480	1.29
	Right side	2480	1.29

4.5. Test graphs

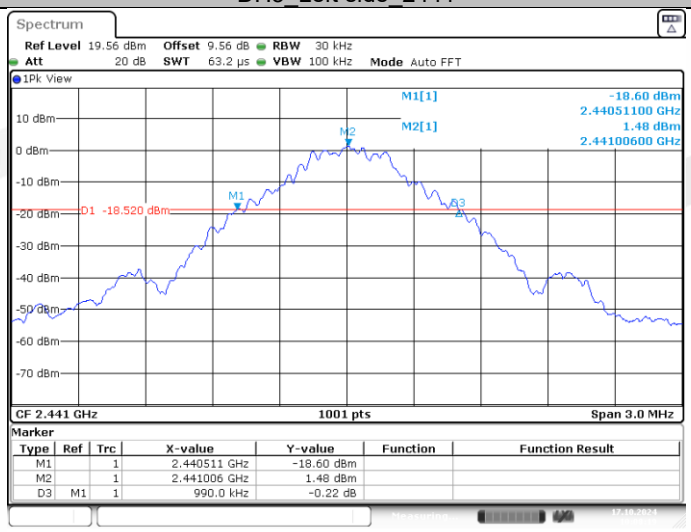
DH5_Left side_2402



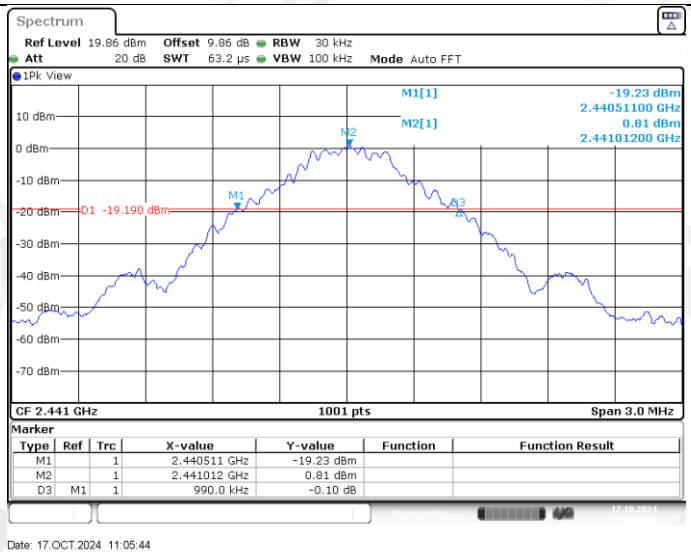
DH5_Right side_2402



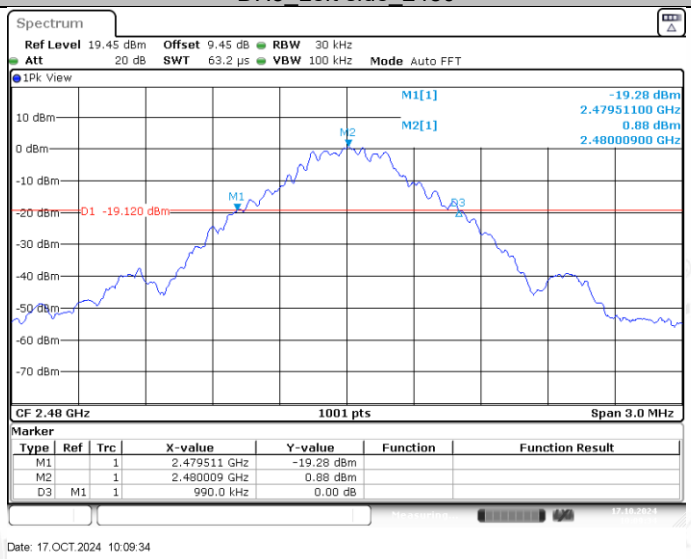
DH5_Left side_2441



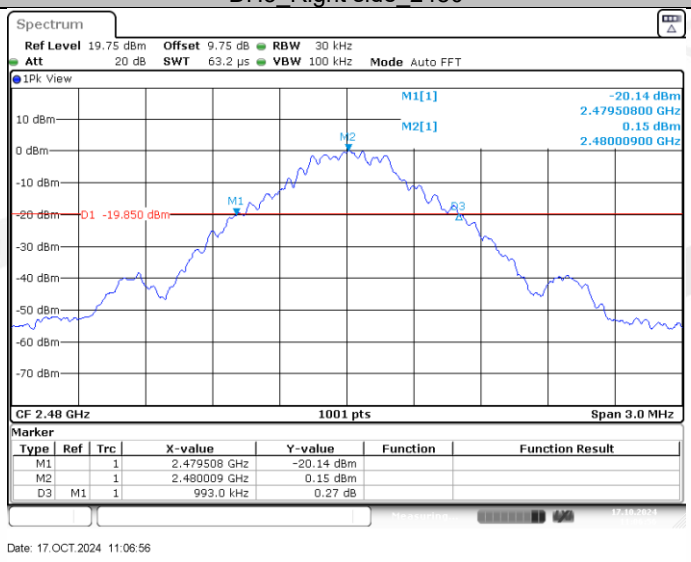
DH5_Right side_2441



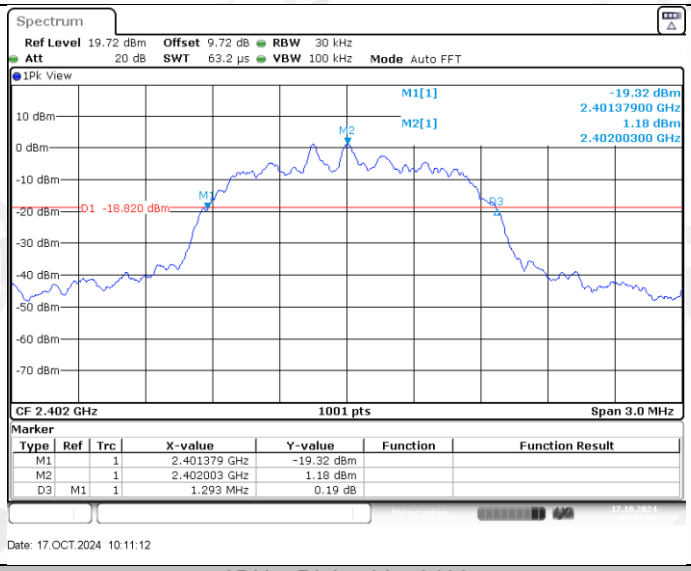
DH5_Left side_2480



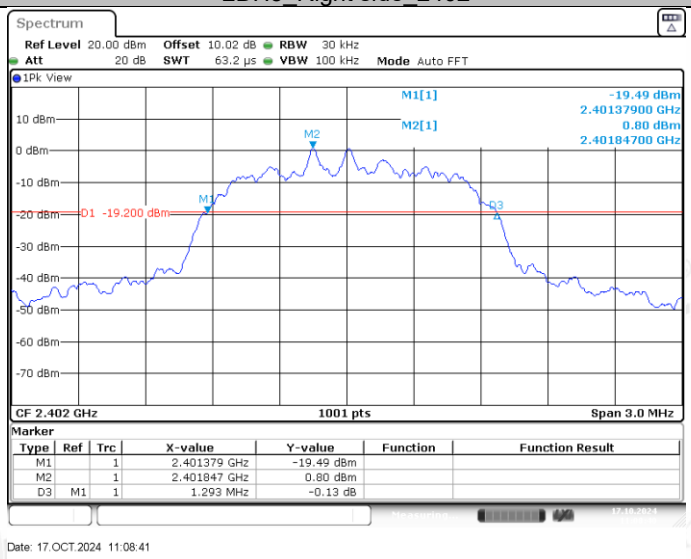
DH5_Right side_2480



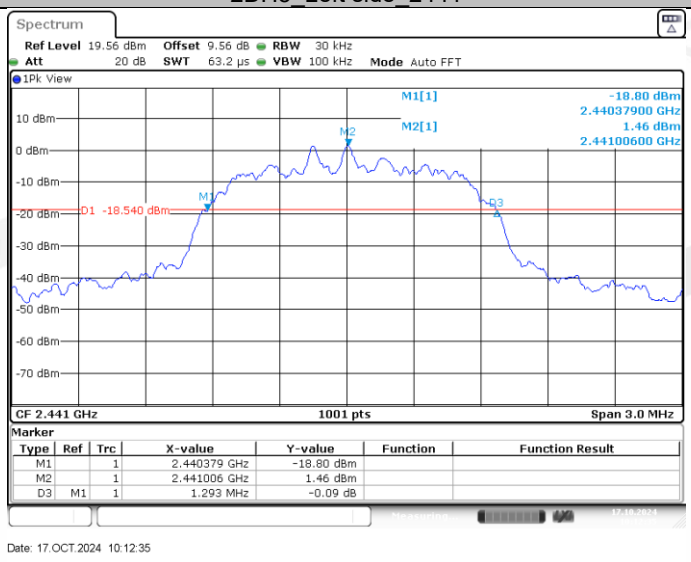
2DH5_Left side_2402



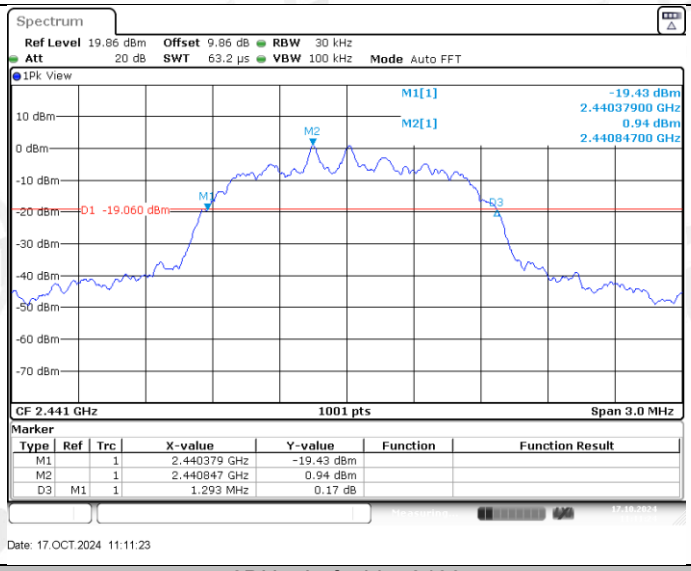
2DH5_Right side_2402



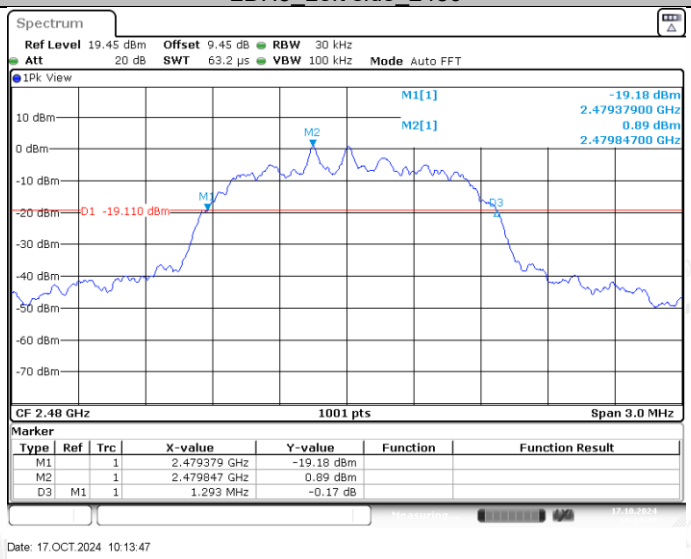
2DH5_Left side_2441



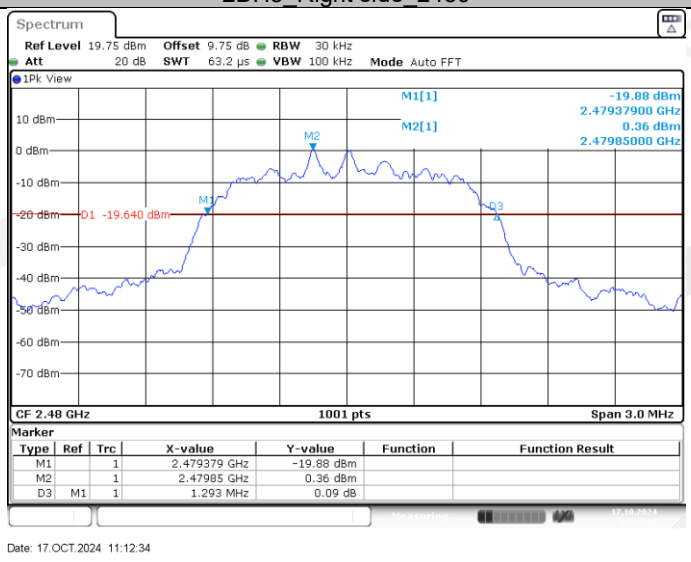
2DH5_Right side_2441



2DH5_Left side_2480

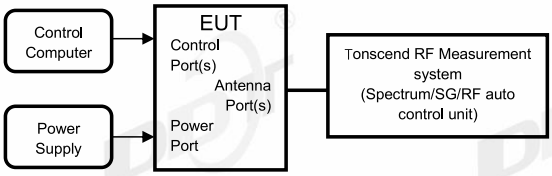


2DH5_Right side_2480



5. 99% Bandwidth

5.1. Block diagram of test setup



5.2. Limits

Just for Report.

5.3. Test procedure

(1) The test according to ANSI C63.10-2013 clause 6.9.3.
(2) Connect EUT's antenna output to spectrum analyzer by RF cable, the path loss was compensated to the results
(3) Set the EUT as maximum power setting and enable the EUT transmit continuously
(4) Use the following spectrum analyzer settings for the 99% bandwidth measurement:

RBW:	1% to 5% of the OBW
VBW:	approximately three times RBW
Span:	between 1.5 times and 5.0 times the OBW
Detector Mode:	Peak
Sweep time:	Auto
Trace mode:	Max hold

(5) Measure and record the results in the report.

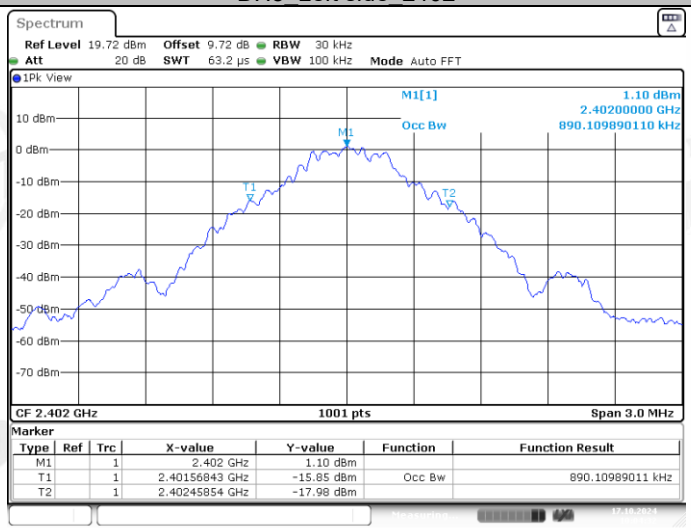
5.4. Test result

Test Engineer:	Zhongyao	Test Site:	RF Measurement System 3#
Ambient Condition:	27.7℃,38.8%RH	Test Date:	2024.10.17
Test Power Supply:	Battery	Sample Number:	S24081307-001

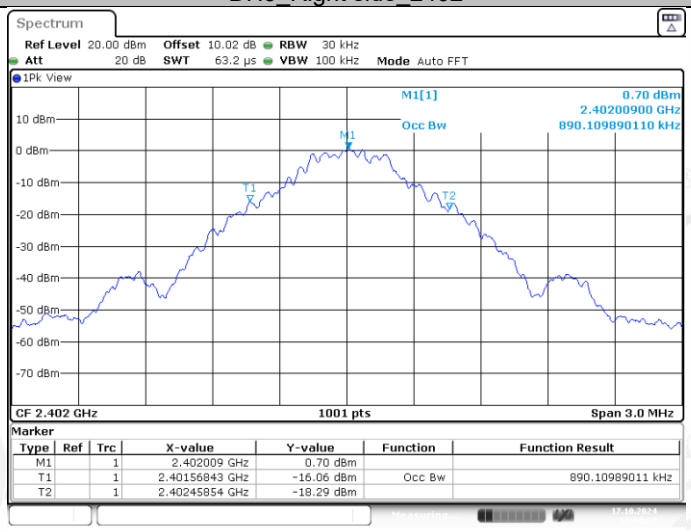
Test Mode	Antenna	Frequency [MHz]	OCB [MHz]	FL[MHz]	FH[MHz]
DH5	Left side	2402	0.89	2401.5684	2402.4585
	Right side	2402	0.89	2401.5684	2402.4585
	Left side	2441	0.893	2440.5654	2441.4585
	Right side	2441	0.893	2440.5654	2441.4585
	Left side	2480	0.893	2479.5654	2480.4585
	Right side	2480	0.89	2479.5654	2480.4555
2DH5	Left side	2402	1.181	2401.4216	2402.6024
	Right side	2402	1.184	2401.4216	2402.6054
	Left side	2441	1.184	2440.4216	2441.6054
	Right side	2441	1.184	2440.4216	2441.6054
	Left side	2480	1.184	2479.4216	2480.6054
	Right side	2480	1.184	2479.4216	2480.6054

5.5. Test graphs

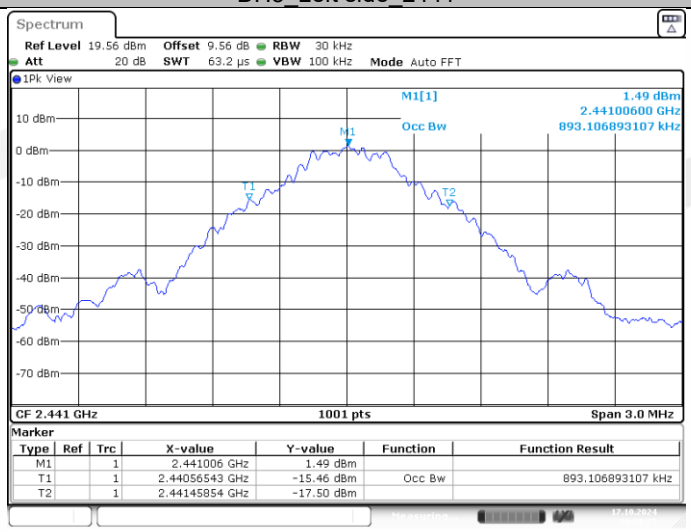
DH5_Left side_2402



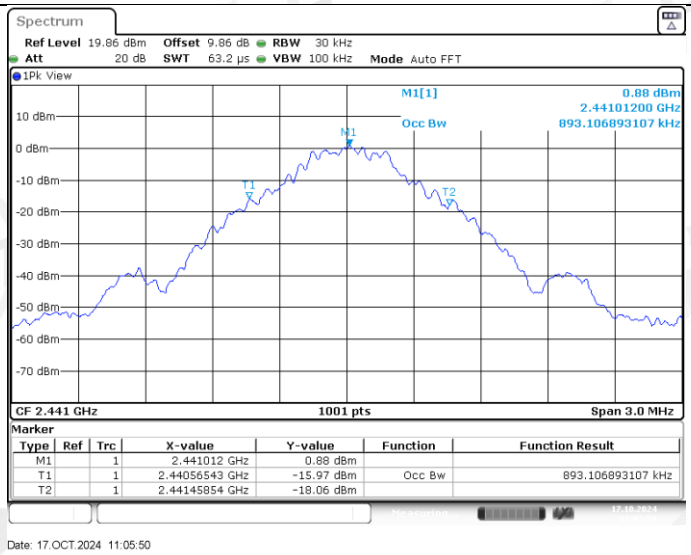
DH5_Right side_2402



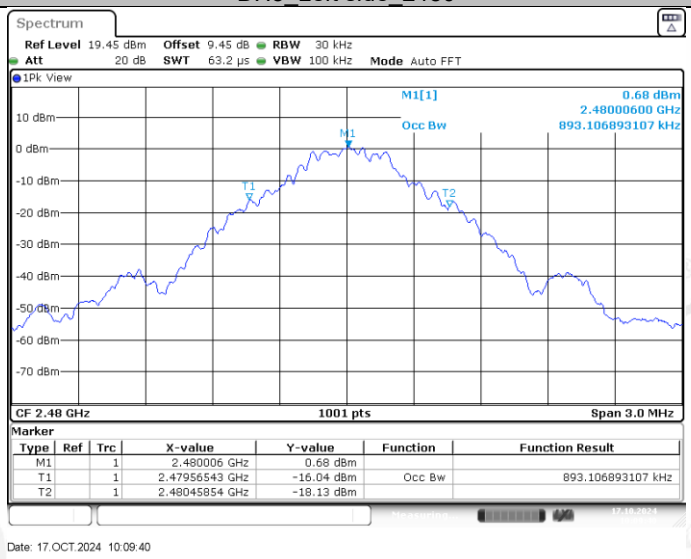
DH5_Left side_2441



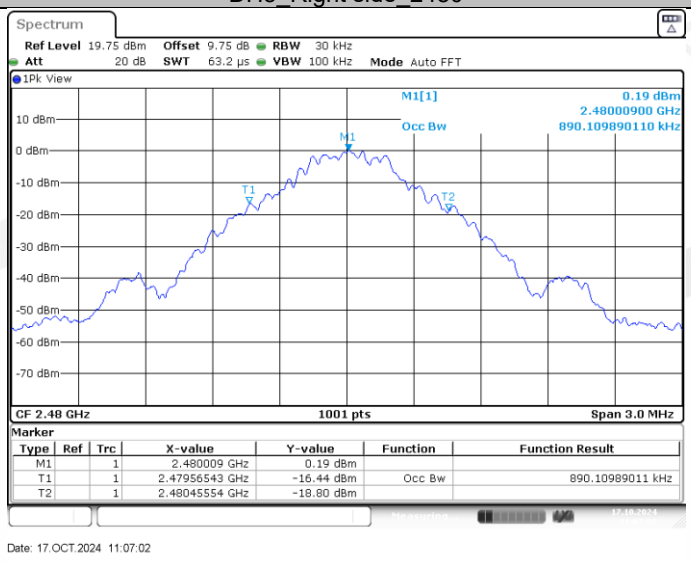
DH5_Right side_2441



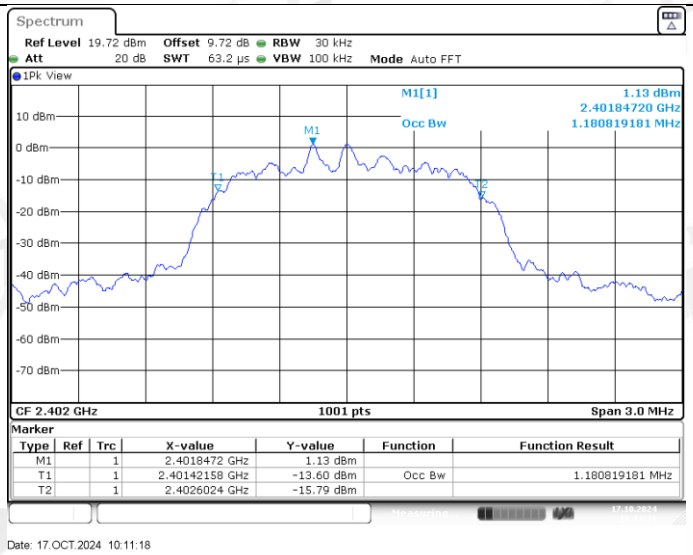
DH5_Left side_2480



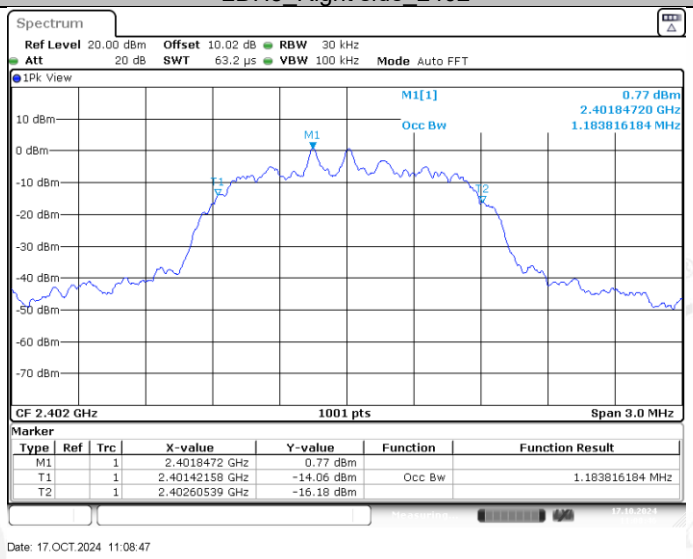
DH5_Right side_2480



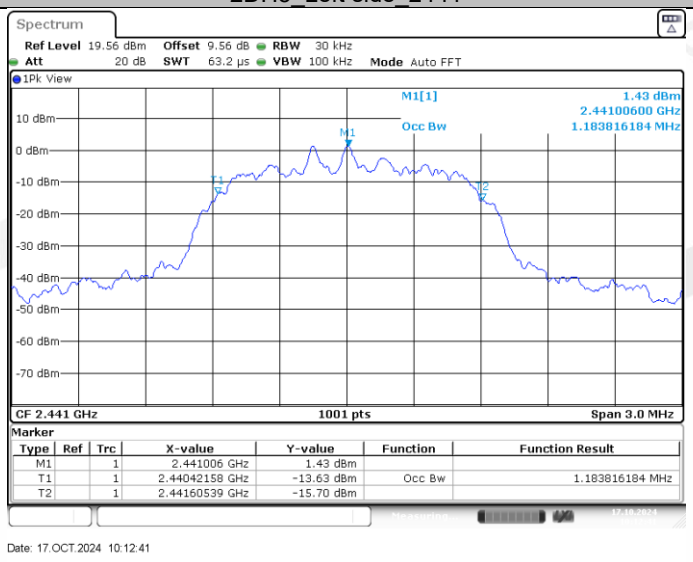
2DH5_Left side_2402



2DH5_Right side_2402



2DH5_Left side_2441



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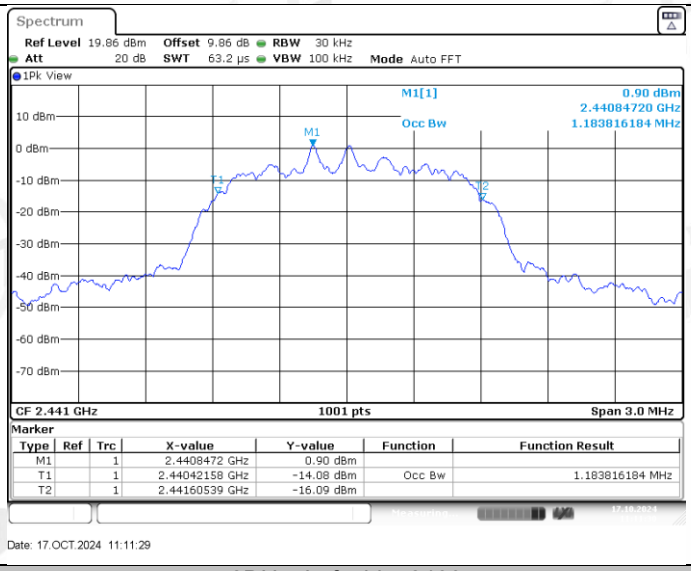
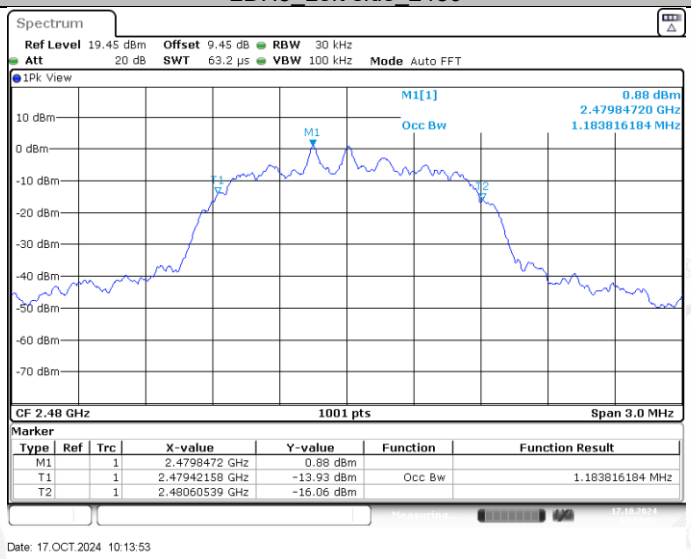
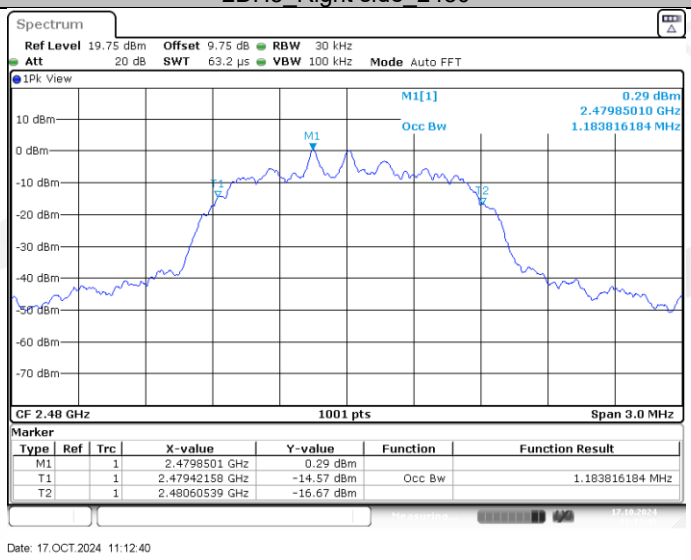


2DH5_Left side_2480

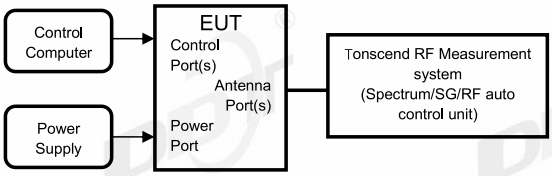


2DH5_Right side_2480



6. Maximum Peak Output Power

6.1. Block diagram of test setup



6.2. Limits

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. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts, the e.i.r.p shall not exceed 4W.

6.3. Test procedure

(1) The test according to ANSI C63.10-2013 clause 7.8.5.
(2) Connect EUT's antenna output to spectrum analyzer by RF cable, the path loss was compensated to the results.
(3) Set the EUT as maximum power setting and enable the EUT transmit continuously.
(4) Use the following spectrum analyzer settings for the maximum peak output power measurement:

RBW:	> 20 dB bandwidth of the emission being measured.
VBW:	VBW ≥ RBW.
Span:	Approximately five times the 20 dB bandwidth, centered on a hopping channel.
Detector Mode:	Peak
Sweep time:	Auto
Trace mode:	Max hold

(5) Use the marker-to-peak function to set the marker to the peak of the emission and record the results in the report.

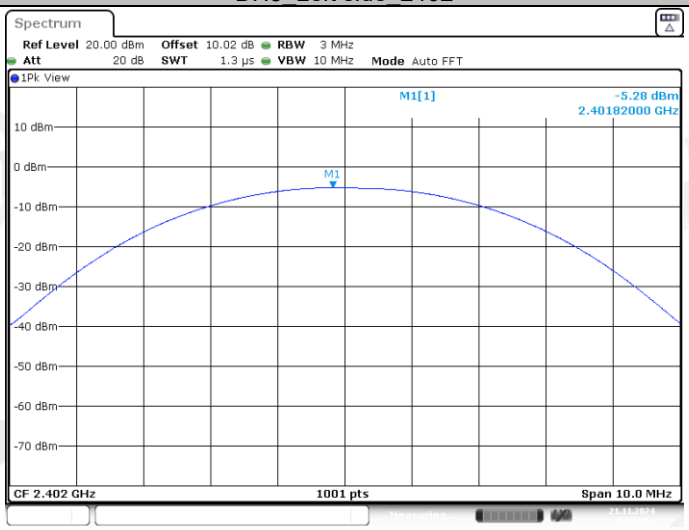
6.4. Test result

Test Engineer:	Zhongyao	Test Site:	RF Measurement System 3#
Ambient Condition:	27.7℃,38.8%RH	Test Date:	2024.10.17
Test Power Supply:	Battery	Sample Number:	S24081307-001

Test Mode	Antenna	Frequency [MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	EIRP [dBm]	EIRP Limit[dBm]	Verdict
DH5	Left side	2402	-5.28	≤20.97	-3.33	≤30	PASS
	Right side	2402	-4.59	≤20.97	-2.71	≤30	PASS
	Left side	2441	-5.43	≤20.97	-3.48	≤30	PASS
	Right side	2441	-4.66	≤20.97	-2.78	≤30	PASS
	Left side	2480	-6.04	≤20.97	-4.09	≤30	PASS
	Right side	2480	-5.19	≤20.97	-3.31	≤30	PASS
2DH5	Left side	2402	-4.47	≤20.97	-2.52	≤30	PASS
	Right side	2402	-3.70	≤20.97	-1.82	≤30	PASS
	Left side	2441	-4.73	≤20.97	-2.78	≤30	PASS
	Right side	2441	-3.69	≤20.97	-1.81	≤30	PASS
	Left side	2480	-5.29	≤20.97	-3.34	≤30	PASS
	Right side	2480	-4.32	≤20.97	-2.44	≤30	PASS

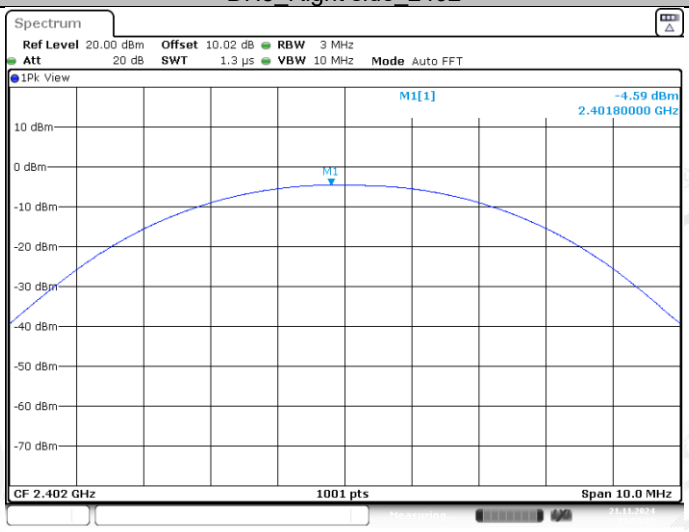
6.5. Test graphs

DH5_Left side_2402



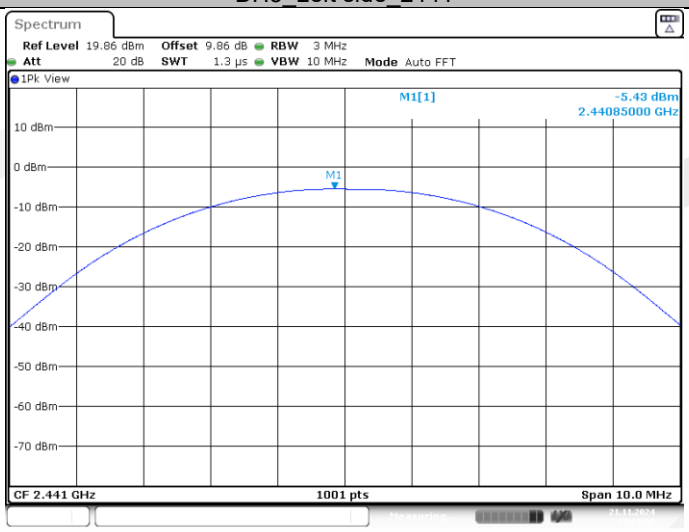
Date: 21.NOV.2024 14:22:51

DH5_Right side_2402



Date: 21.NOV.2024 13:53:18

DH5_Left side_2441



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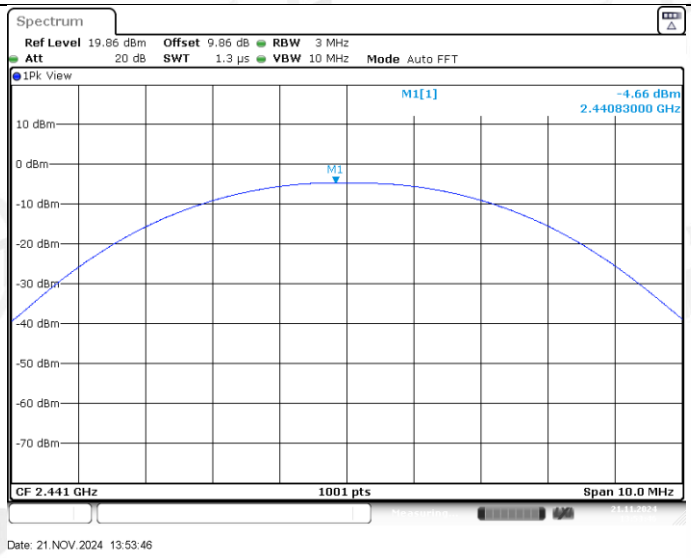
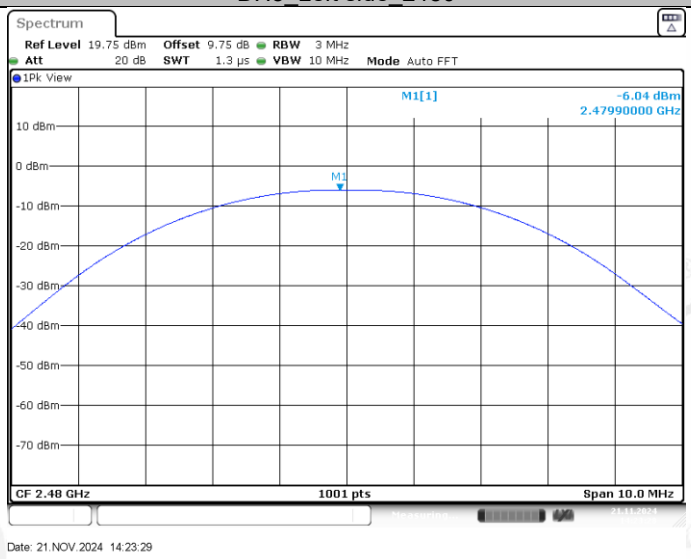
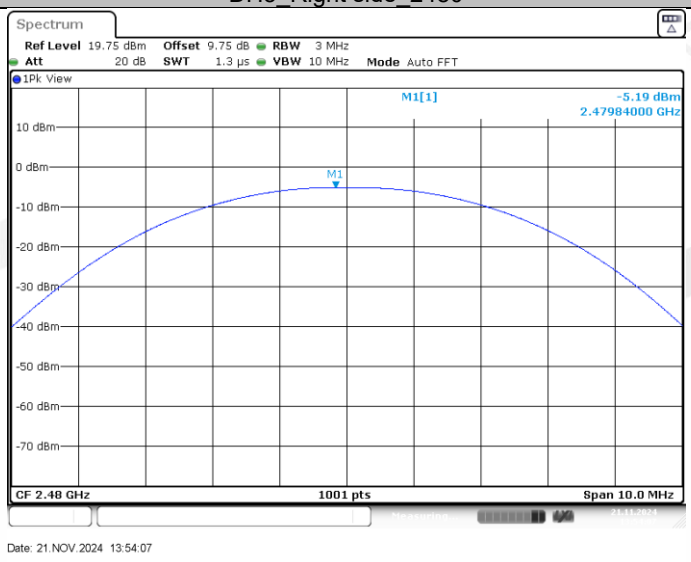
DH5_Right side_2441



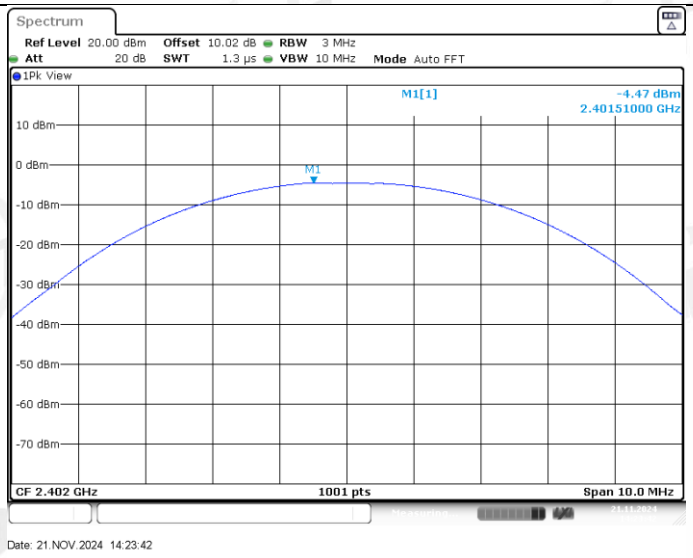
DH5_Left side_2480



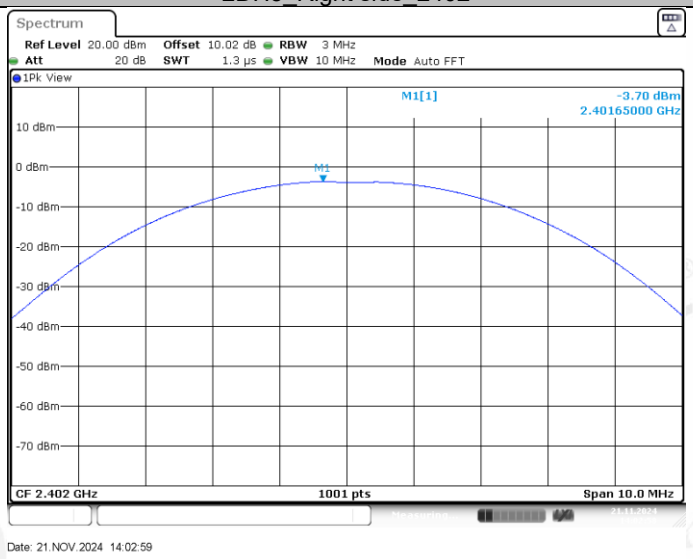
DH5_Right side_2480



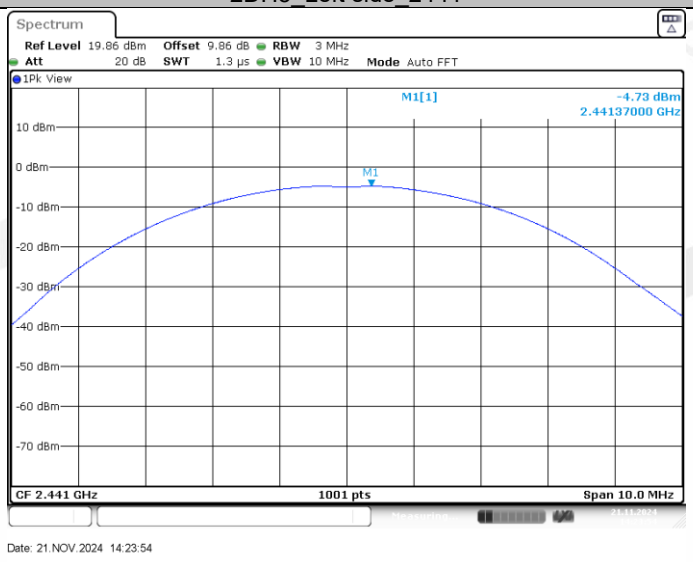
2DH5_Left side_2402



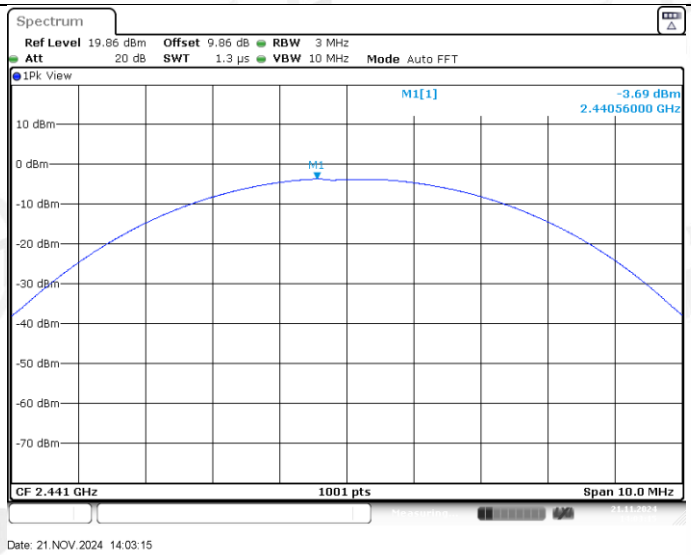
2DH5_Right side_2402



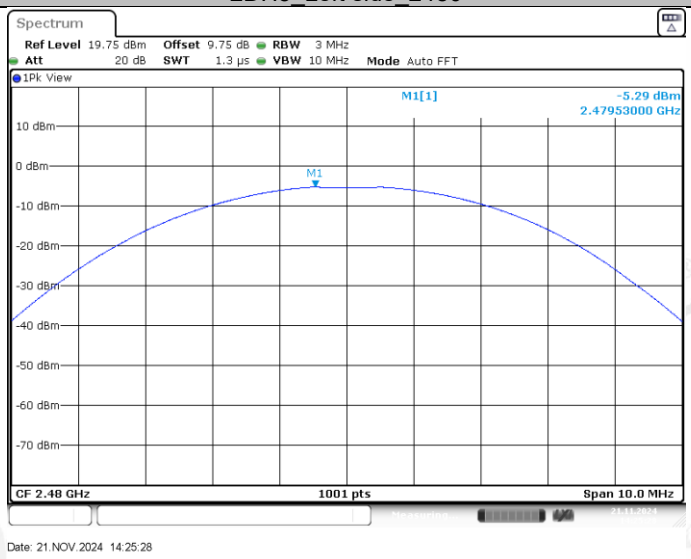
2DH5_Left side_2441



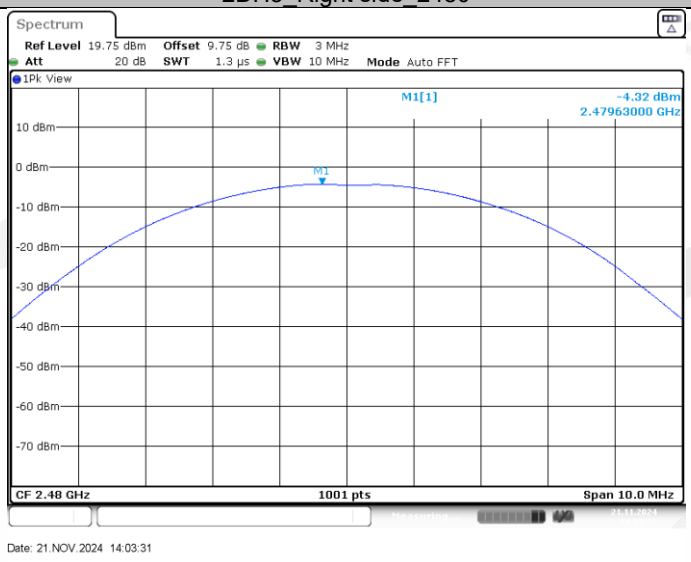
2DH5_Right side_2441



2DH5_Left side_2480

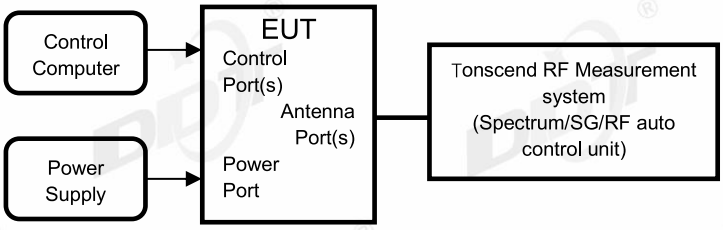


2DH5_Right side_2480



7. Carrier Frequency Separation

7.1. Block diagram of test setup



7.2. Limits

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. 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.

7.3. Test procedure

(1) The test according to ANSI C63.10-2013 clause 7.8.2.
(2) Connect EUT's antenna output to spectrum analyzer by RF cable, the path loss was compensated to the results.
(3) Set the EUT as maximum power setting and enable the EUT transmit continuously.
(4) Use the following spectrum analyzer settings for the maximum peak output power measurement:

RBW:	approximately 30% of the channel spacing
VBW:	VBW ≥ RBW.
Span:	Wide enough to capture the peaks of two adjacent channels.
Detector Mode:	Peak
Sweep time:	Auto
Trace mode:	Max hold

(5) Use the marker-delta function to determine the separation between the peaks of the adjacent channels and record the results in the report.

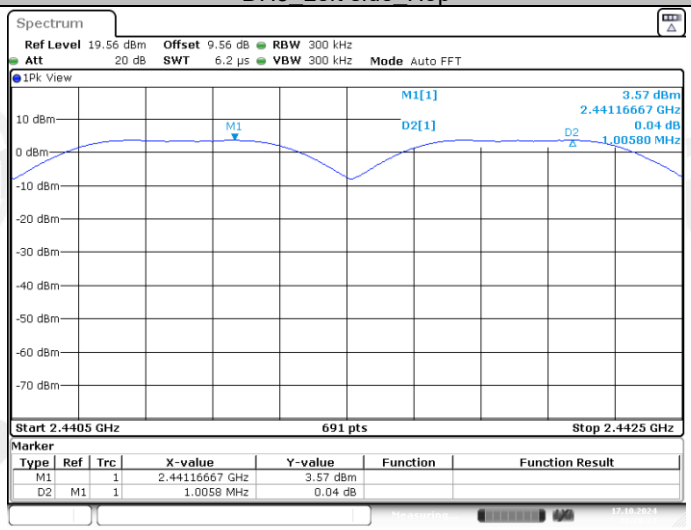
7.4. Test result

Test Engineer:	Zhongyao	Test Site:	RF Measurement System 3#
Ambient Condition:	27.7℃,38.8%RH	Test Date:	2024.10.17
Test Power Supply:	Battery	Sample Number:	S24081307-001

Test Mode	Antenna	Frequency [MHz]	Result [MHz]	Limit [MHz]	Verdict
DH5	Left side	Hop	1.006	≥0.990	PASS
	Right side	Hop	0.994	≥0.990	PASS
2DH5	Left side	Hop	1	≥0.860	PASS
	Right side	Hop	1	≥0.860	PASS

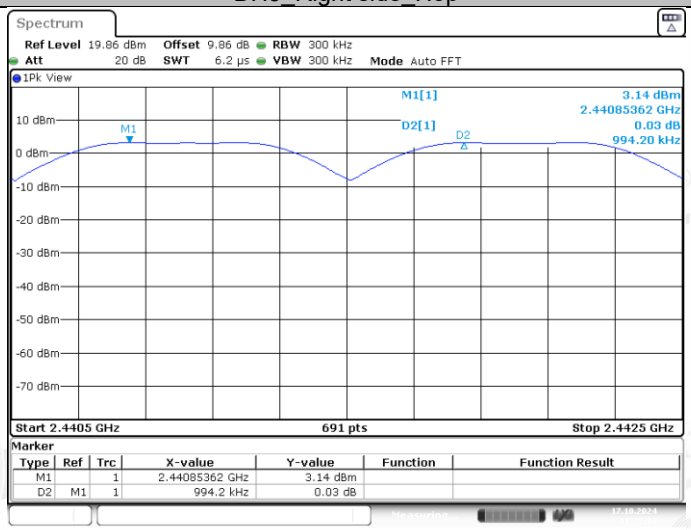
7.5. Test graphs

DH5_Left side_Hop



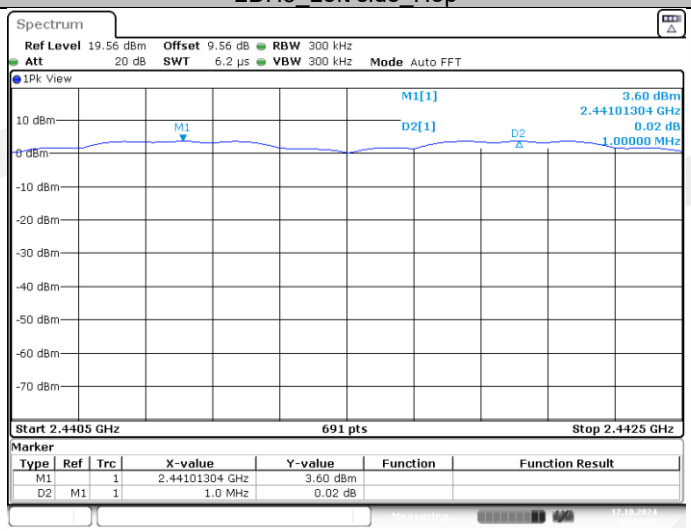
Date: 17.OCT.2024 10:20:24

DH5_Right side_Hop



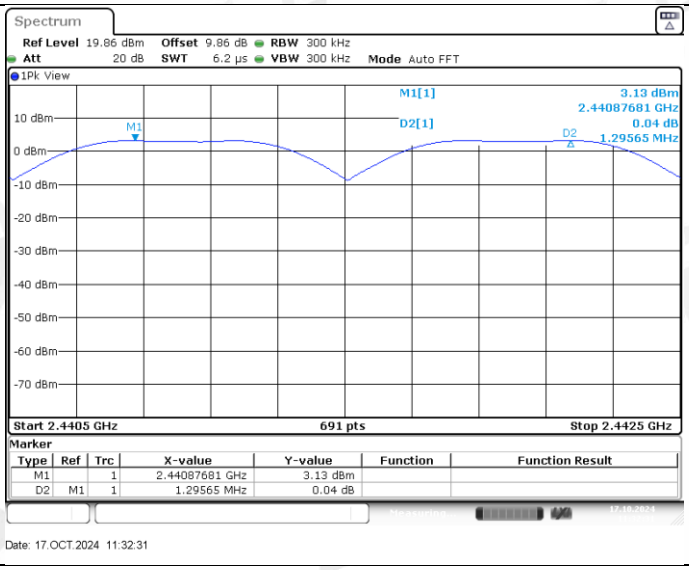
Date: 17.OCT.2024 11:32:12

2DH5_Left side_Hop



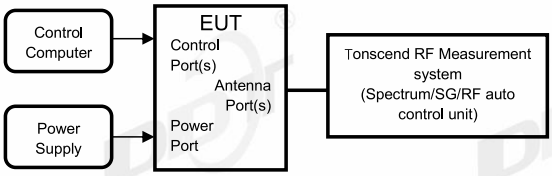
Date: 17.OCT.2024 10:22:21

2DH5_Right side_Hop


Spectrum
Ref Level 19.86 dBm Offset 9.86 dB RBW 300 kHz
Att 20 dB SWT 6.2 µs VBW 300 kHz Mode Auto FFT
1Pk View
M1[1] 3.13 dBm
2.44087681 GHz
D2[1] 0.04 dB
1.29565 MHz
M1
D2
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4405 GHz
691 pts
Stop 2.4425 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.44087681 GHz 3.13 dBm
D2 M1 1 1.29565 MHz 0.04 dB
Date: 17.OCT.2024 11:32:31

8. Dwell Time

8.1. Block diagram of test setup



8.2. Limits

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.

8.3. Test procedure

(1) The test according to ANSI C63.10-2013 clause 7.8.4.
(2) Connect EUT's antenna output to spectrum analyzer by RF cable, the path loss was compensated to the results.
(3) Set the EUT as maximum power setting and enable the EUT transmit continuously.
(4) Use the following spectrum analyzer settings for the maximum peak output power measurement:

RBW:	≤ channel spacing and where possible RBW should be set >>1 / T
VBW:	VBW ≥ RBW.
Span:	Zero span, centered on a hopping channel.
Detector Mode:	Peak
Sweep time:	Auto
Trace mode:	Clear Write.

(5) The test period: T= 0.4 Second/Channel x 79 Channel = 31.6 s
(6) Measure the hopping number and on time of each pulse with spectrum analyzer in zero span set, and calculate dwell time with formula Dwell time = total hops *pulse's on time.
(7) Measure and record the results in the report.

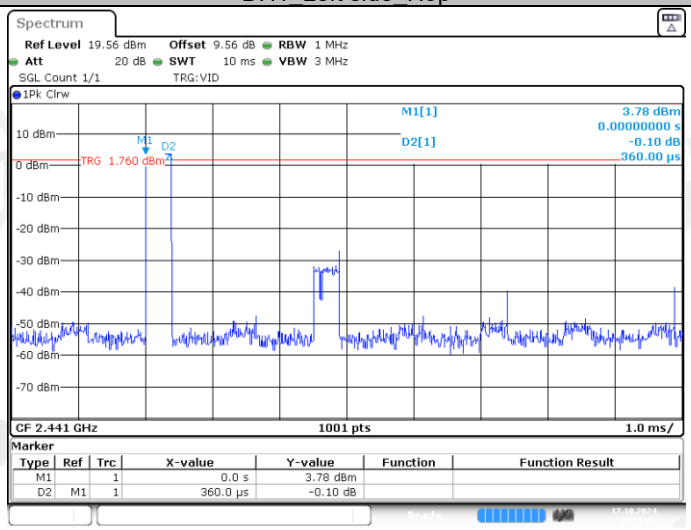
8.4. Test result

Test Engineer:	Zhongyao	Test Site:	RF Measurement System 3#
Ambient Condition:	27.7℃,38.8%RH	Test Date:	2024.10.17
Test Power Supply:	Battery	Sample Number:	S24081307-001

Test Mode	Antenna	Frequency [MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Left side	Hop	0.360	316	0.114	≤0.4	PASS
	Right side	Hop	0.370	319	0.118	≤0.4	PASS
DH3	Left side	Hop	1.620	163	0.264	≤0.4	PASS
	Right side	Hop	1.620	161	0.261	≤0.4	PASS
DH5	Left side	Hop	2.870	114	0.327	≤0.4	PASS
	Right side	Hop	2.870	112	0.321	≤0.4	PASS
2DH1	Left side	Hop	0.370	315	0.117	≤0.4	PASS
	Right side	Hop	0.380	319	0.121	≤0.4	PASS
2DH3	Left side	Hop	1.620	157	0.254	≤0.4	PASS
	Right side	Hop	1.630	170	0.277	≤0.4	PASS
2DH5	Left side	Hop	2.880	120	0.346	≤0.4	PASS
	Right side	Hop	2.880	97	0.279	≤0.4	PASS

8.5. Test graphs

DH1_Left side_Hop



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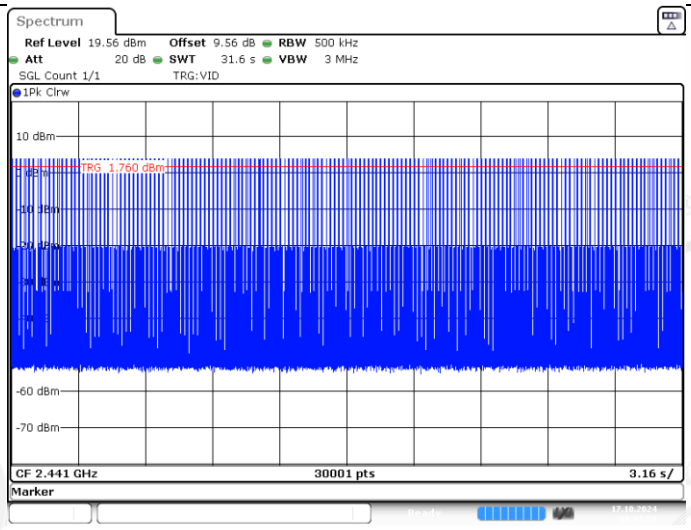
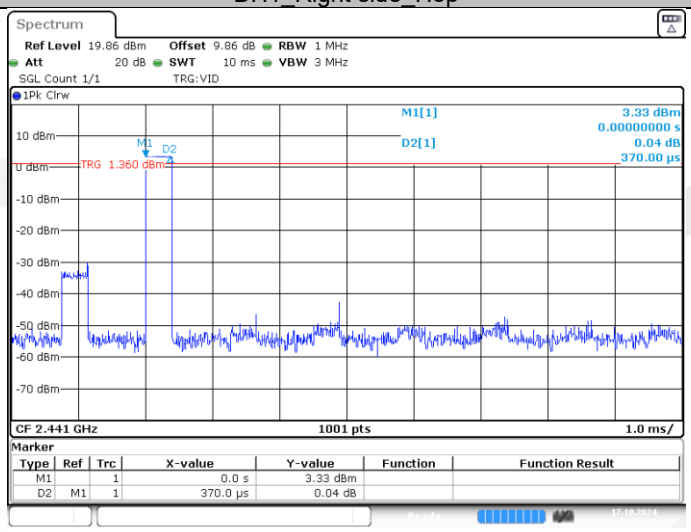
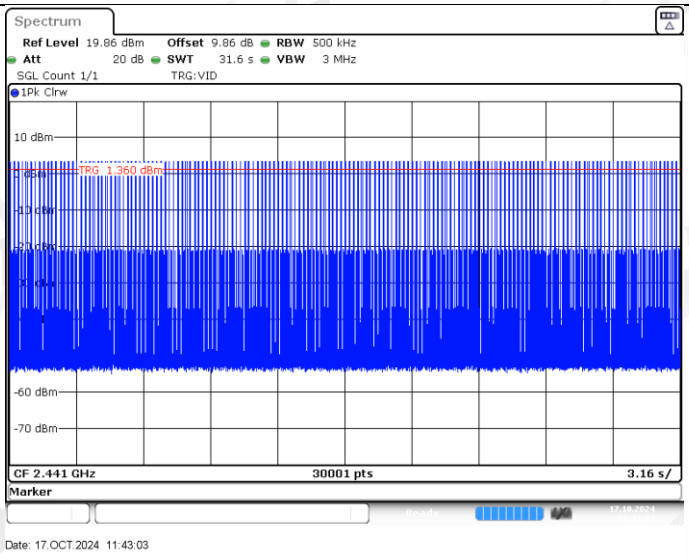


Date: 17.OCT.2024 10:31:58

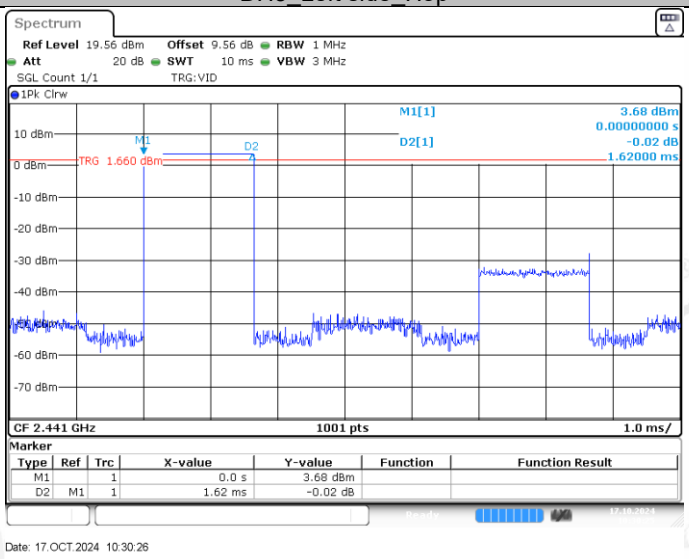
DH1_Right side_Hop

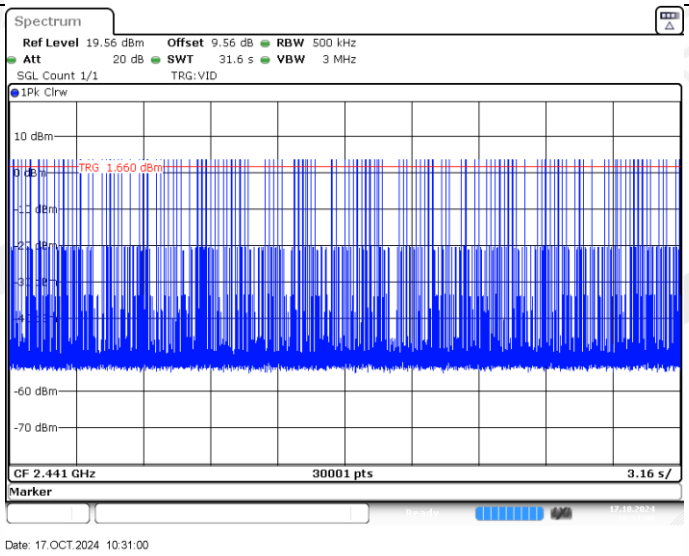


Date: 17.OCT.2024 11:42:29

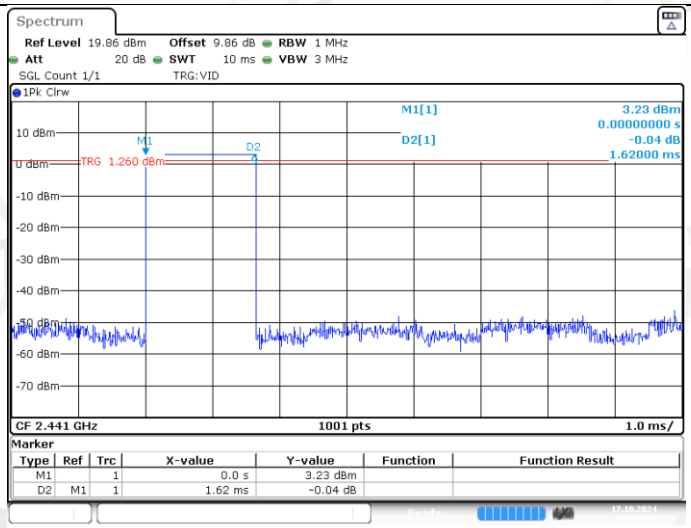


DH3_Left side_Hop





DH3_Right side_Hop



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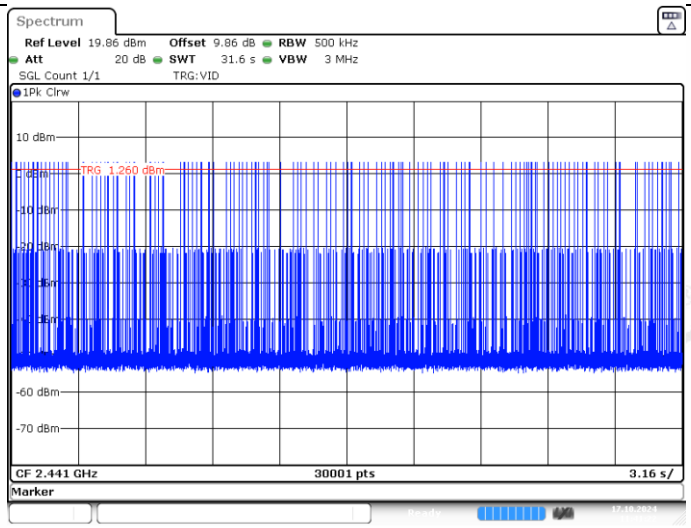
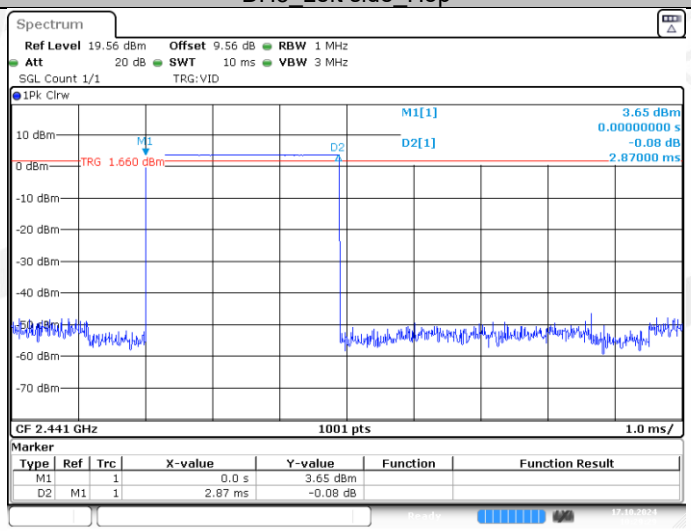


Date: 17.OCT.2024 11:41:22

DH5_Left side_Hop



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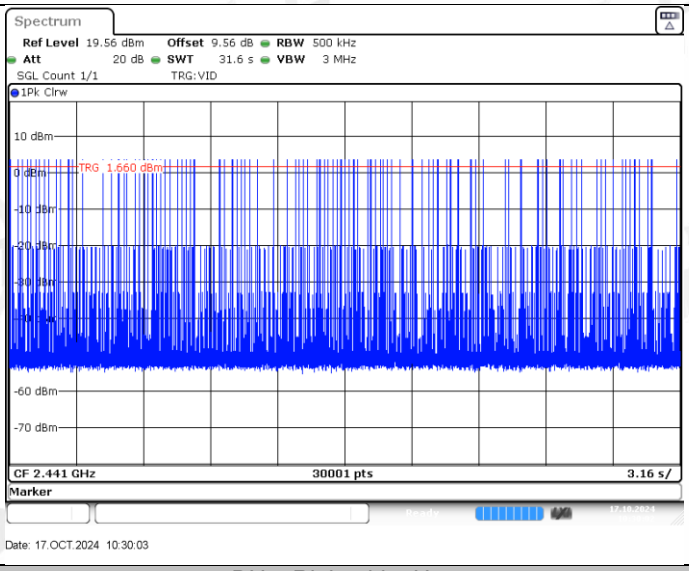
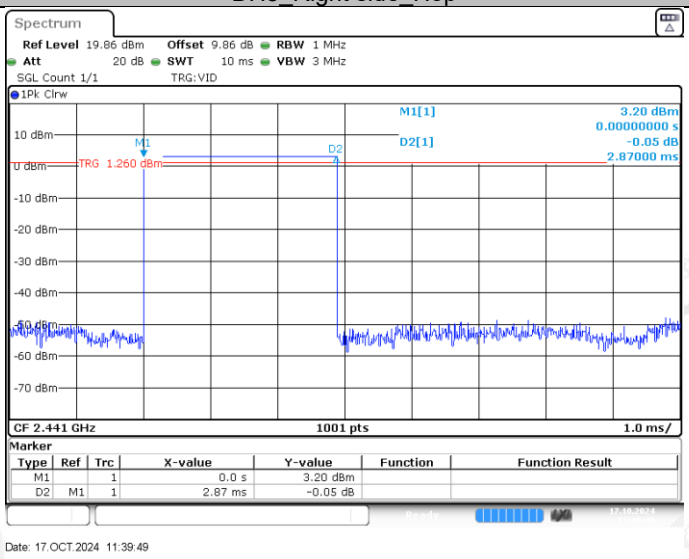
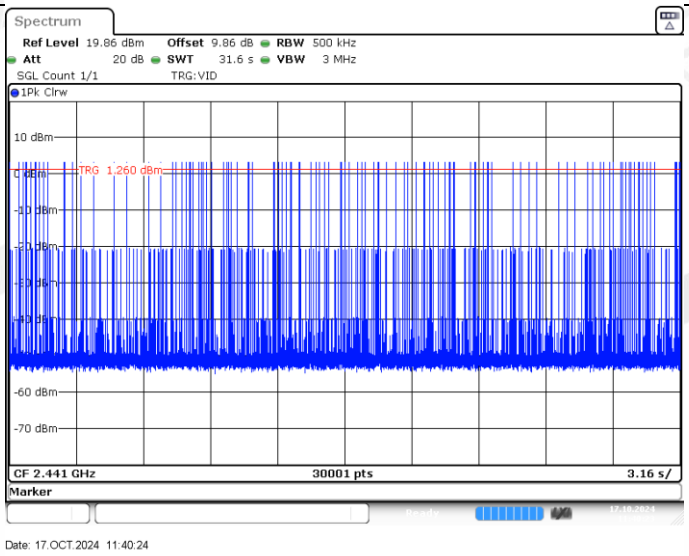
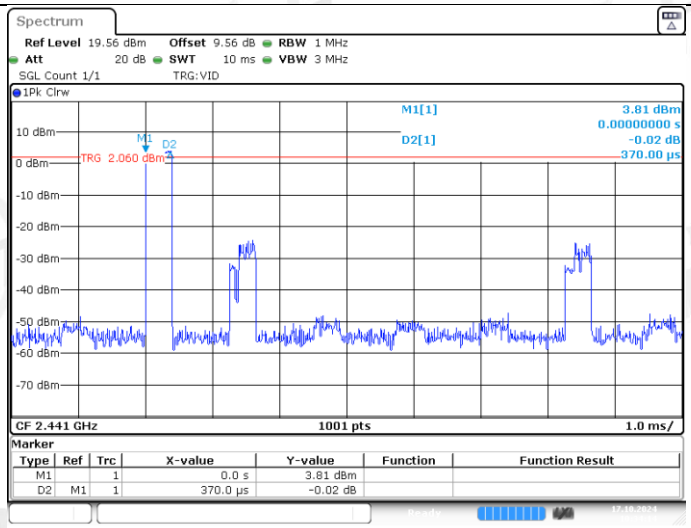


DH5_Right side_Hop

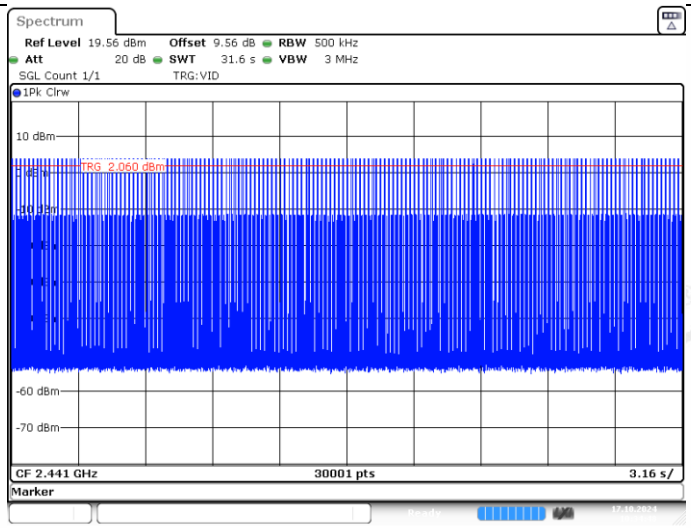




2DH1_Left side_Hop

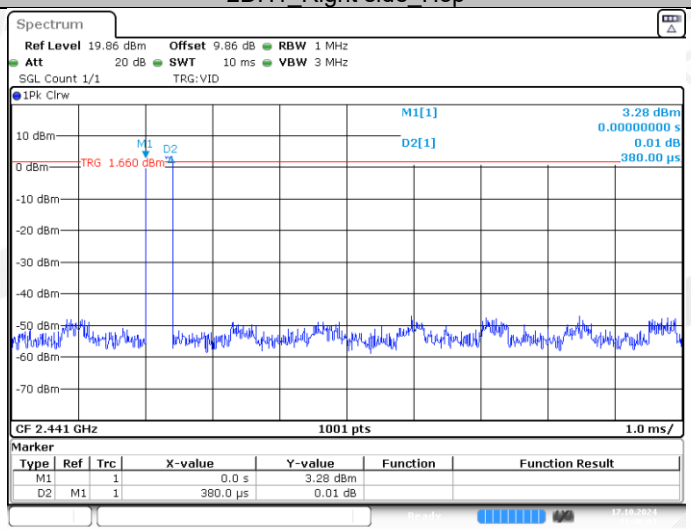


Date: 17.OCT.2024 10:34:14



Date: 17.OCT.2024 10:34:48

2DH1_Right side_Hop



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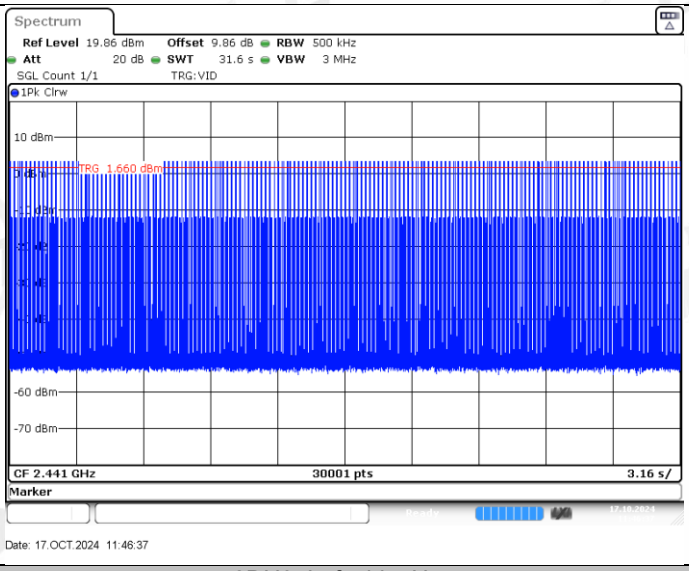
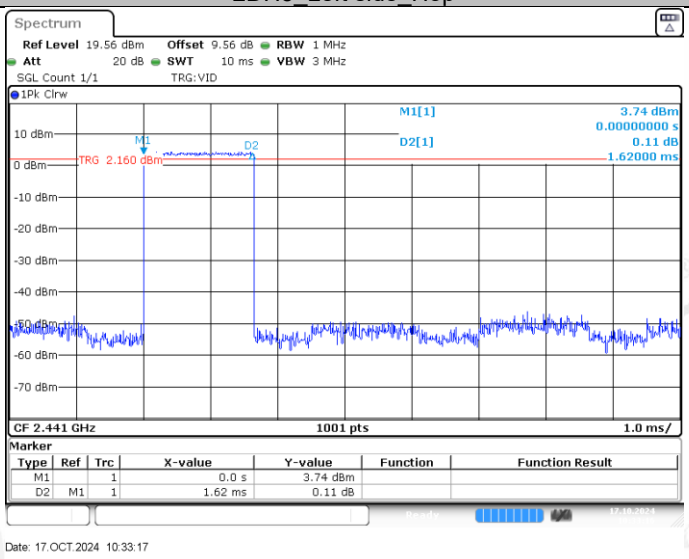
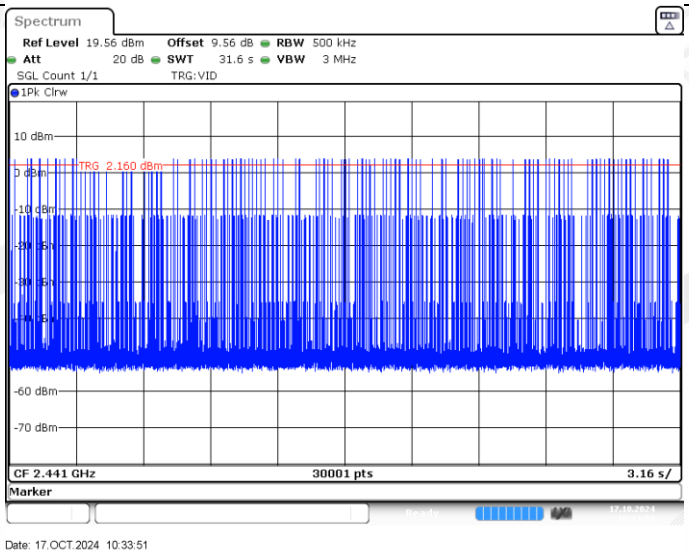
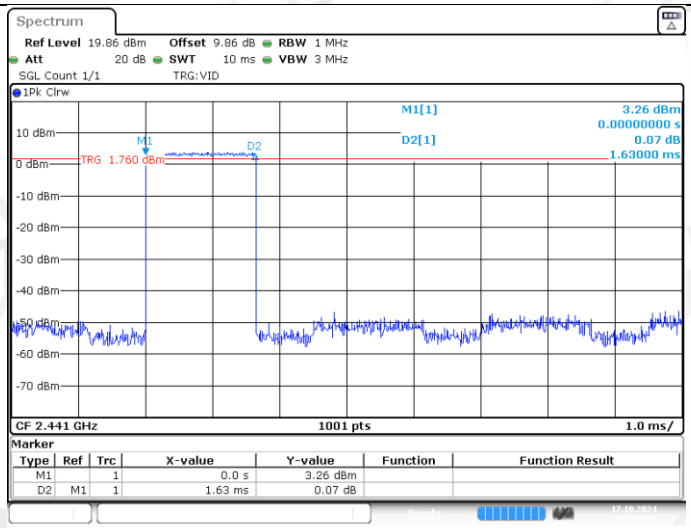


2DH3_Left side_Hop





2DH3_Right side_Hop



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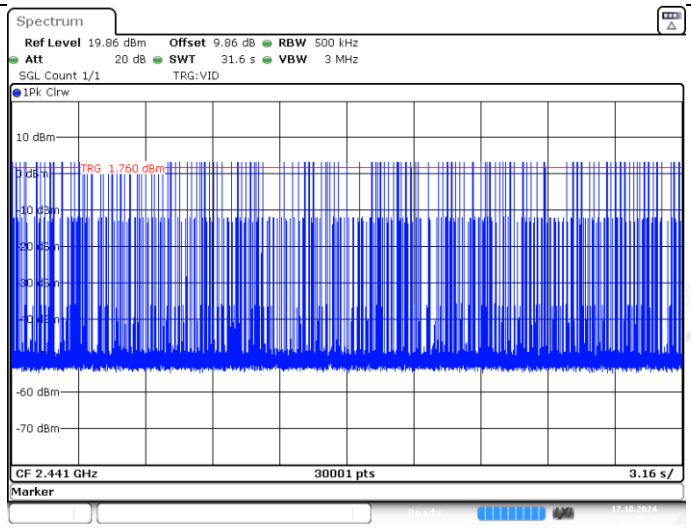
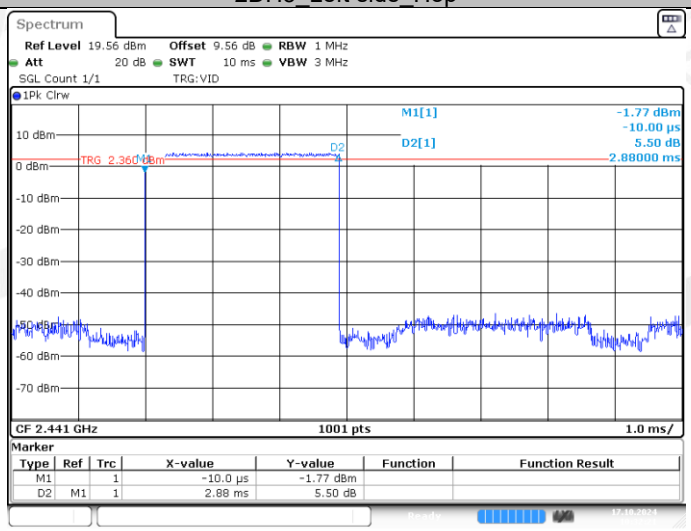


Date: 17.OCT.2024 11:45:40

2DH5_Left side_Hop



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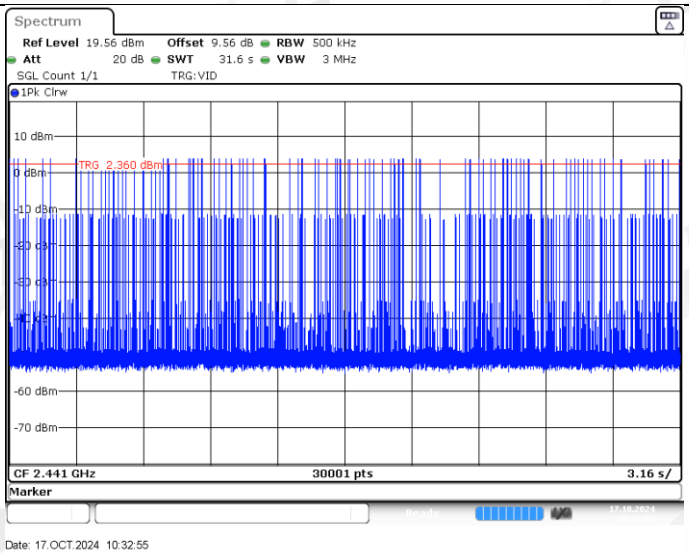
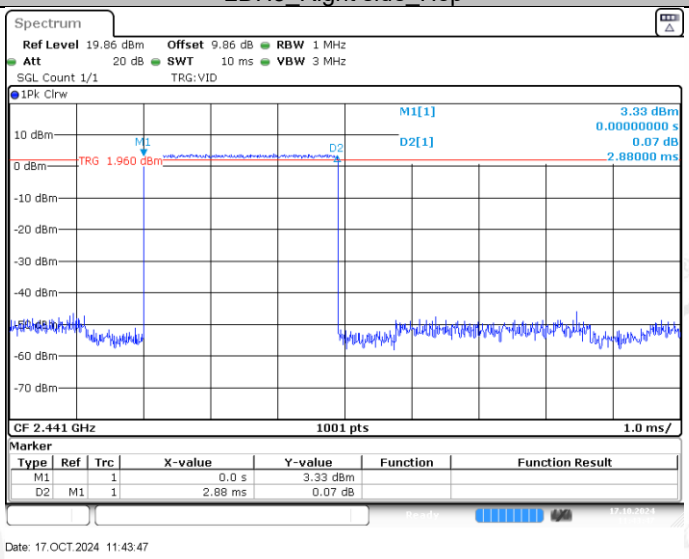
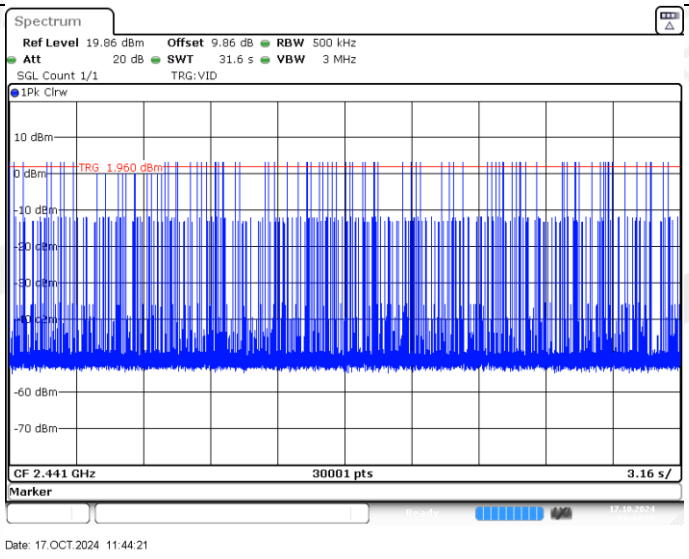


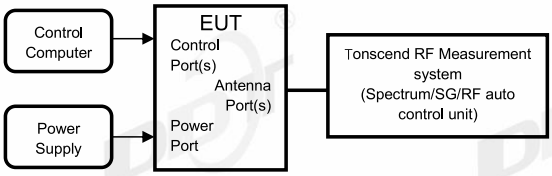
2DH5_Right side_Hop





9. Number of Hopping Channel

9.1. Block diagram of test setup



9.2. Limits

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

9.3. Test procedure

(1) The test according to ANSI C63.10-2013 clause 7.8.3.
(2) Connect EUT's antenna output to spectrum analyzer by RF cable, the path loss was compensated to the results.
(3) Set the EUT as maximum power setting and enable the EUT transmit continuously.
(4) Use the following spectrum analyzer settings for the maximum peak output power measurement:

RBW:	RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
VBW:	VBW ≥ RBW.
Span:	The frequency band of operation
Detector Mode:	Peak
Sweep time:	Auto
Trace mode:	Max hold

(5) Measure the hopping number and record the results in the report.
(6) Measure and record the results in the report.

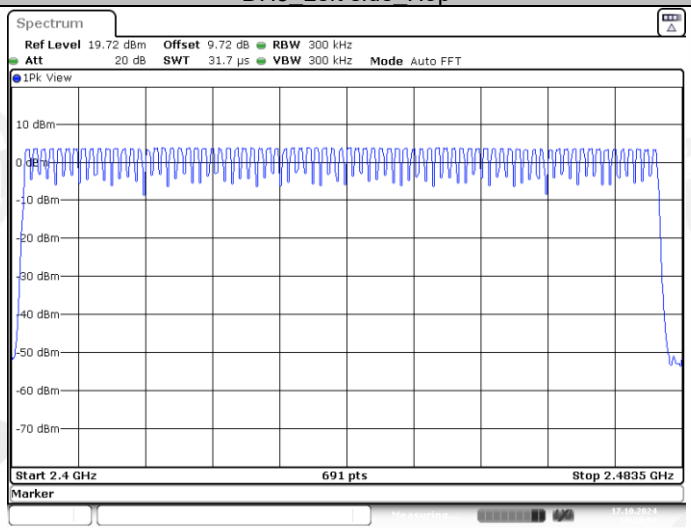
9.4. Test result

Test Engineer:	Zhongyao	Test Site:	RF Measurement System 3#
Ambient Condition:	27.7℃,38.8%RH	Test Date:	2024.10.17
Test Power Supply:	Battery	Sample Number:	S24081307-001

Test Mode	Antenna	Frequency [MHz]	Result [Num]	Limit [Num]	Verdict
DH5	Left side	Hop	79	≥15	PASS
	Right side	Hop	79	≥15	PASS
2DH5	Left side	Hop	79	≥15	PASS
	Right side	Hop	79	≥15	PASS

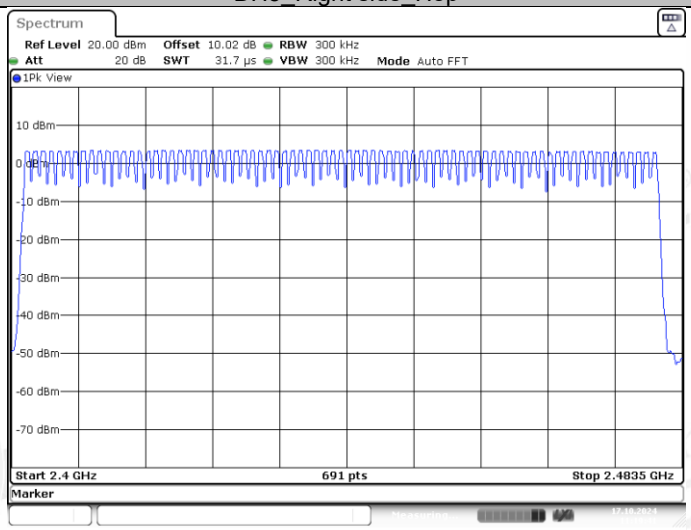
9.5. Test graphs

DH5_Left side_Hop



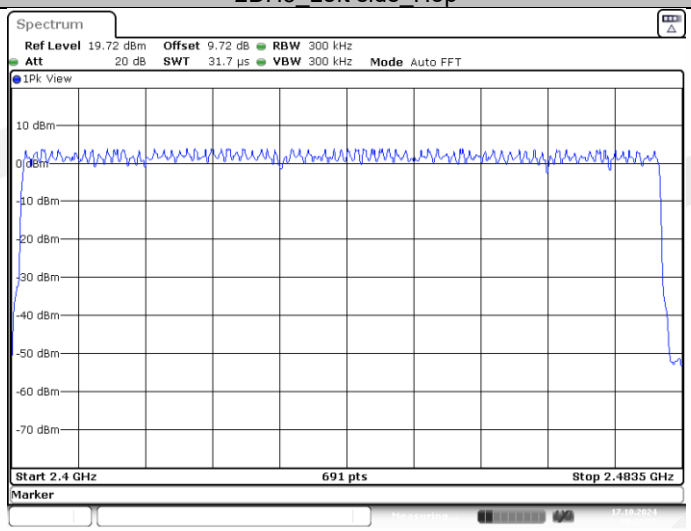
Date: 17.OCT.2024 10:20:50

DH5_Right side_Hop



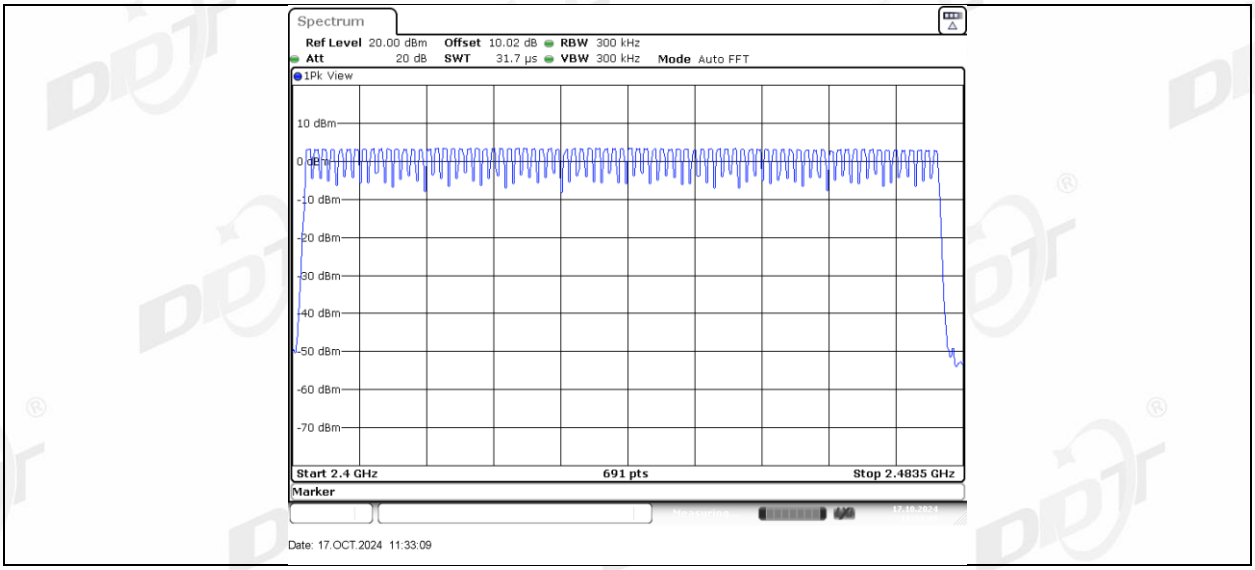
Date: 17.OCT.2024 11:19:41

2DH5_Left side_Hop



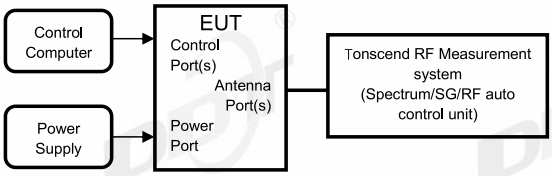
Date: 17.OCT.2024 10:22:52

2DH5_Right side_Hop


Spectrum
Ref Level 20.00 dBm Offset 10.02 dB RBW 300 kHz
Att 20 dB SWT 31.7 µs VBW 300 kHz Mode Auto FFT
1Pk View
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
Start 2.4 GHz
691 pts
Stop 2.4835 GHz
Marker
Date: 17.OCT.2024 11:33:09

10. Band Edge Compliance (Conducted Method)

10.1. Block diagram of test setup



10.2. Limit

All restriction band should comply with 15.209, other emission should be at least 20dB below the fundamental.

10.3. Test procedure

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.
(2) Establish a reference level by using the following procedure:

RBW:	100 kHz
VBW:	300 kHz
Span	Encompass frequency range to be measured
Detector Mode:	Peak
Sweep time:	Auto
Trace mode	Max hold

(3) Allow the trace to stabilize, use the peak marker function to determine the maximum peak power level to establish the reference level.
(4) Then mark the maximum amplitude of all unwanted emissions outside of the authorized frequency band.

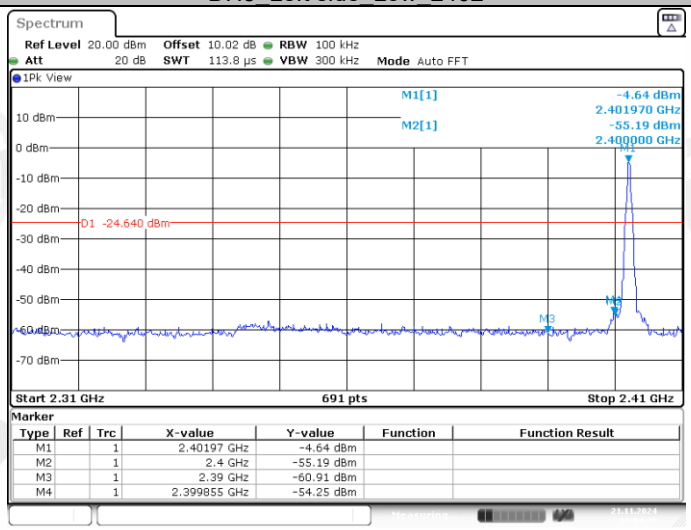
10.4. Test result

Test Engineer:	Zhongyao	Test Site:	RF Measurement System 3#
Ambient Condition:	27.7℃,38.8%RH	Test Date:	2024.10.17
Test Power Supply:	Battery	Sample Number:	S24081307-001

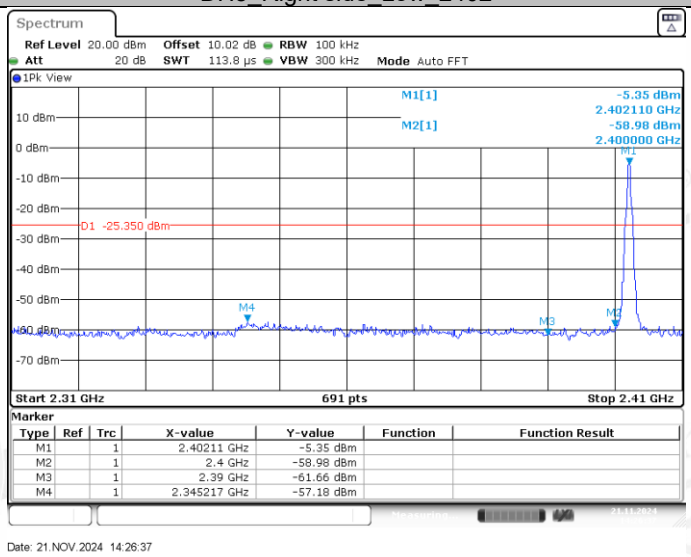
Mode	Freq. (MHz)	Verdict
GFSK	Hopping off 2402	Pass
	Hopping off 2480	Pass
	Hopping on	Pass
π/4-DQPSK	Hopping off 2402	Pass
	Hopping off 2480	Pass
	Hopping on	Pass

10.5. Test graphs

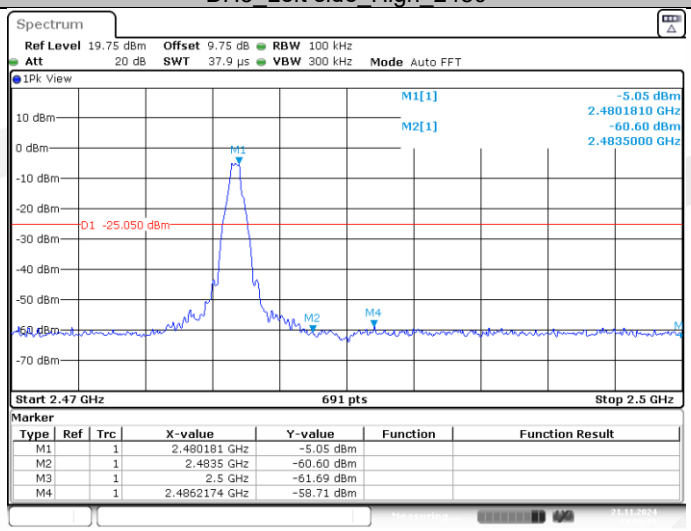
DH5_Left side_Low_2402



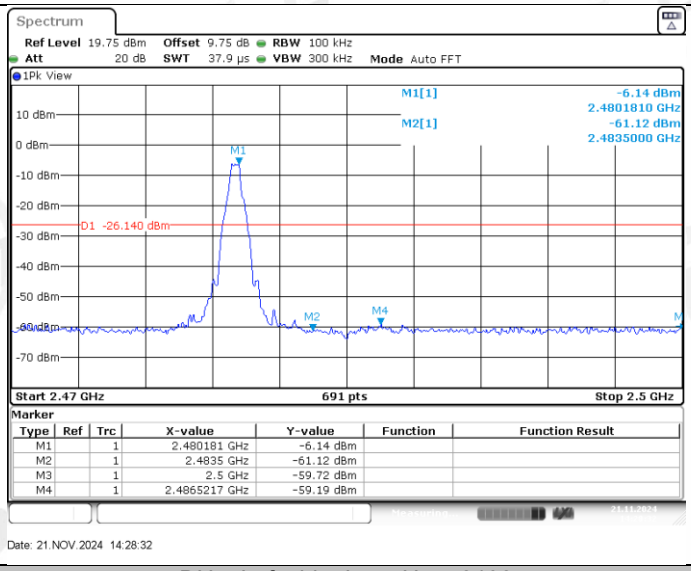
DH5_Right side_Low_2402



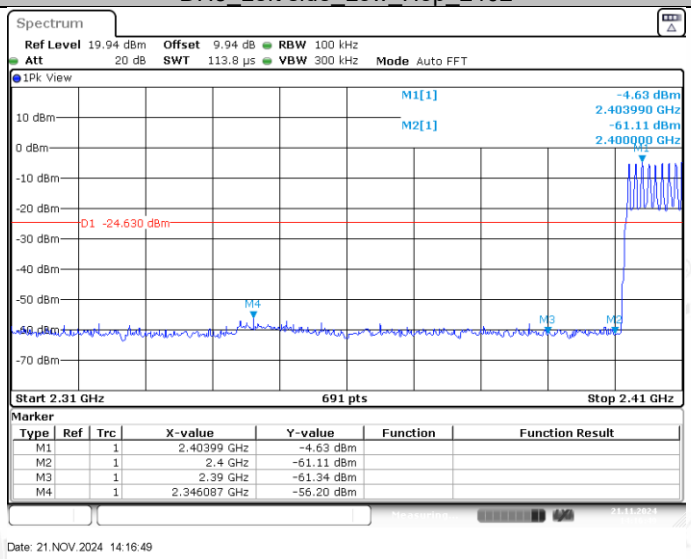
DH5_Left side_High_2480



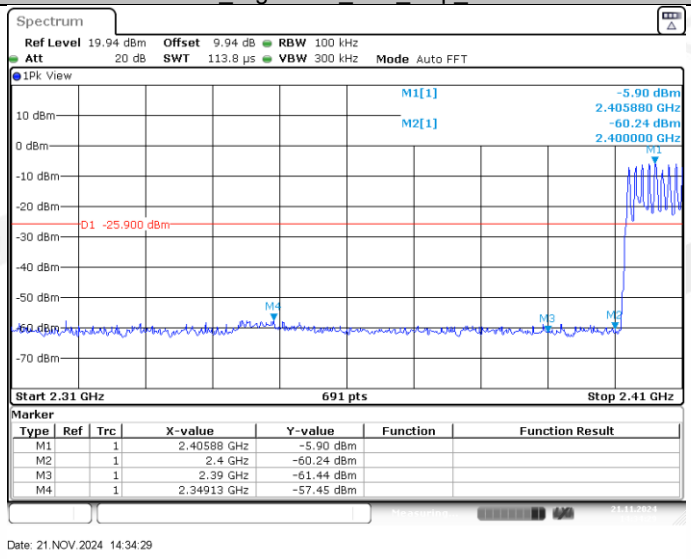
DH5_Right side_High_2480



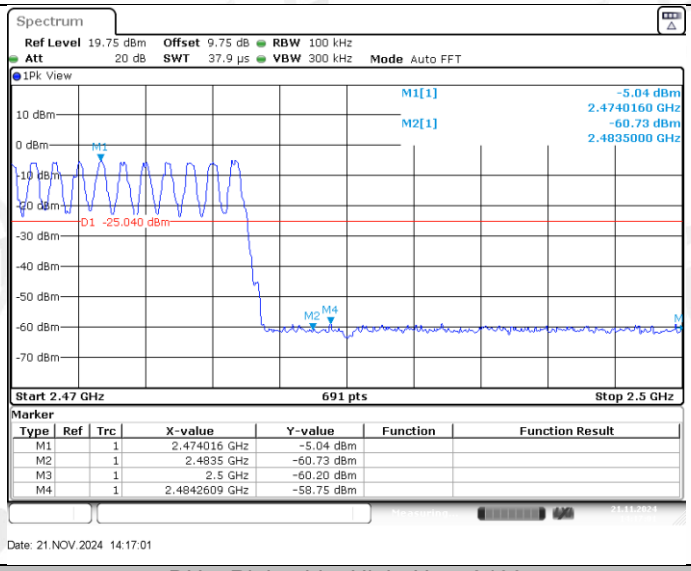
DH5_Left side_Low_Hop_2402



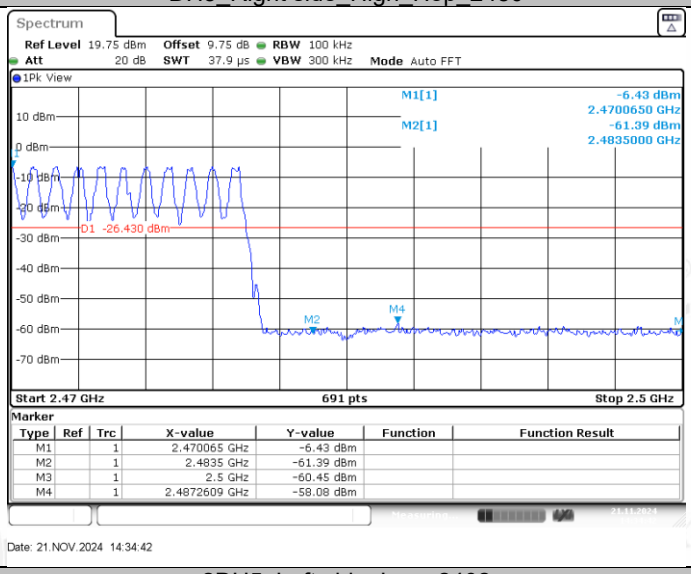
DH5_Right side_Low_Hop_2402



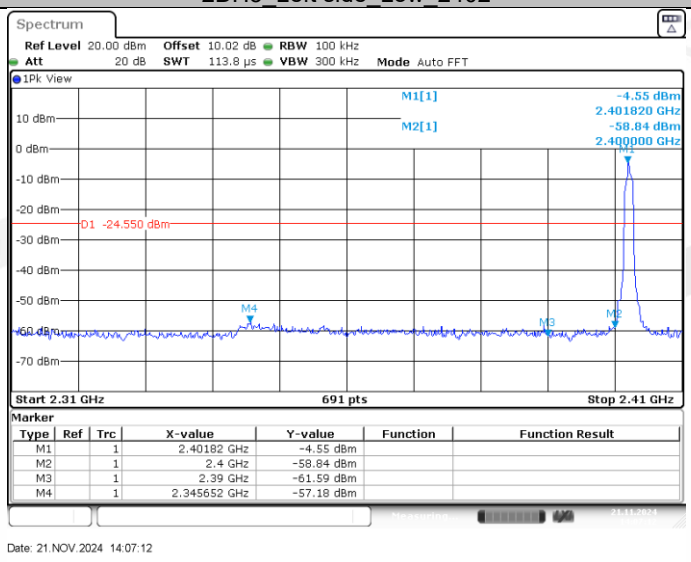
DH5_Left side_High_Hop_2480



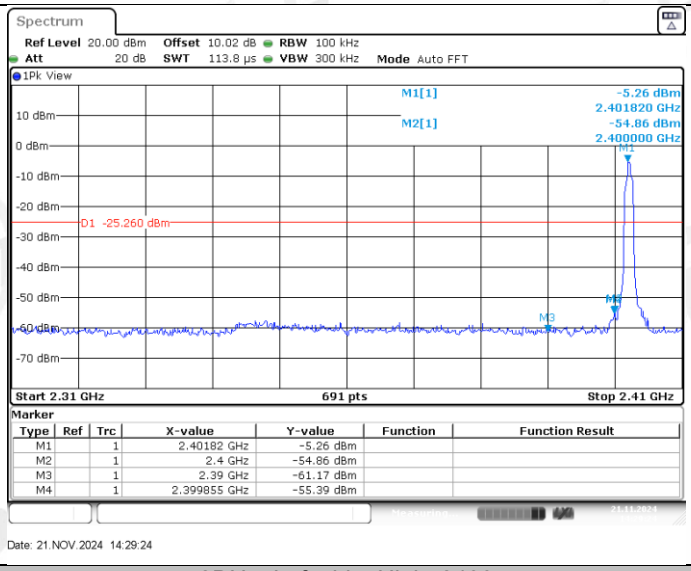
DH5_Right side_High_Hop_2480



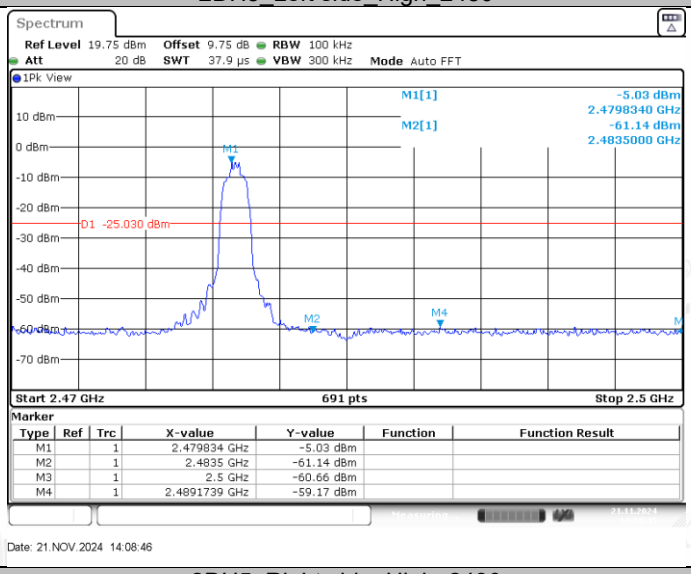
2DH5_Left side_Low_2402



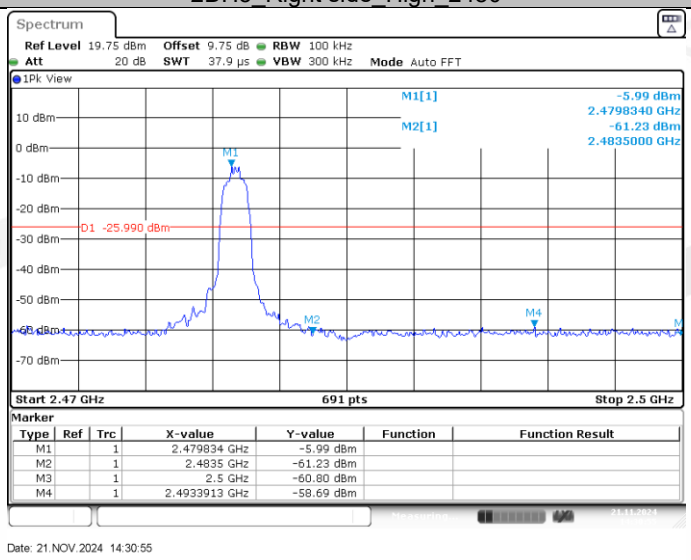
2DH5_Right side_Low_2402



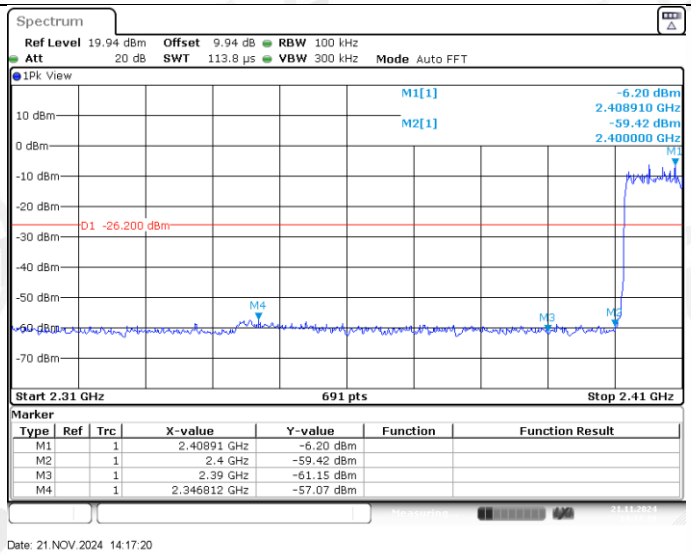
2DH5_Left side_High_2480



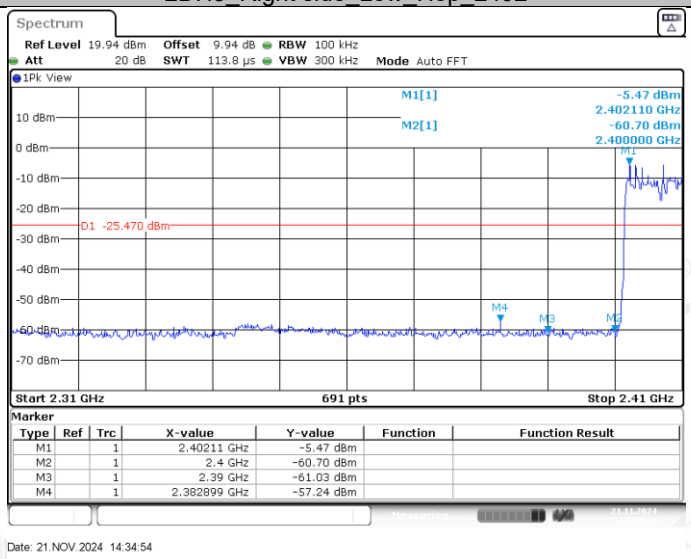
2DH5_Right side_High_2480



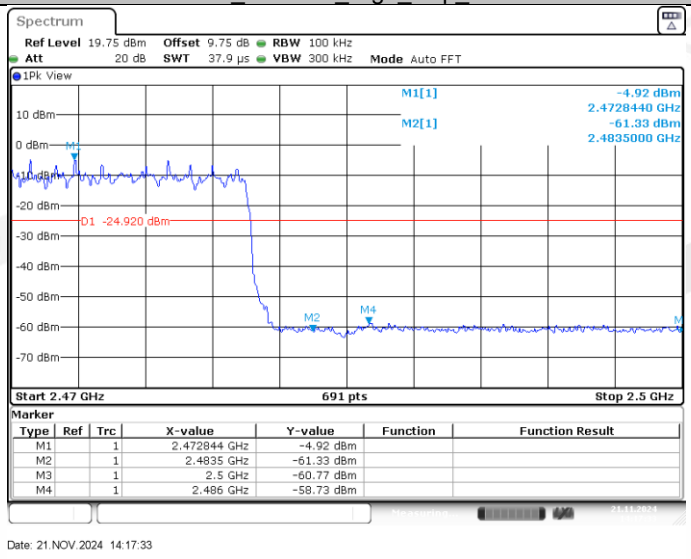
2DH5_Left side_Low_Hop_2402



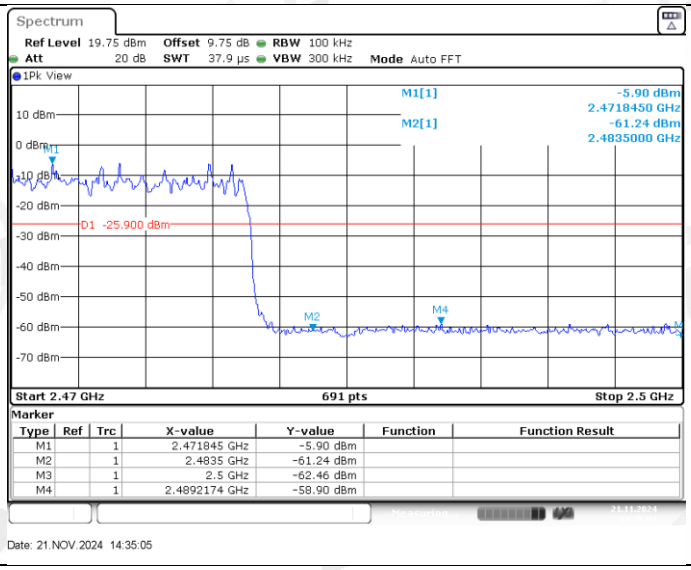
2DH5_Right side_Low_Hop_2402



2DH5_Left side_High_Hop_2480

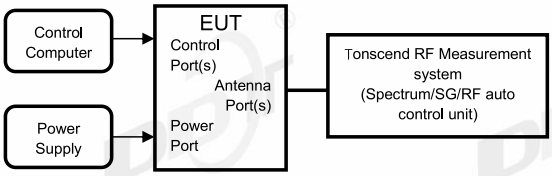


2DH5_Right side_High_Hop_2480


Spectrum
Ref Level 19.75 dBm Offset 9.75 dB RBW 100 kHz
Att 20 dB SWT 37.9 µs VBW 300 kHz Mode Auto FFT
1Pk View
M1[1] -5.90 dBm 2.4718450 GHz
M2[1] -61.24 dBm 2.4835000 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -25.900 dBm
M1
M2
M4
Start 2.47 GHz 691 pts Stop 2.5 GHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.471845 GHz -5.90 dBm
M2 1 2.4835 GHz -61.24 dBm
M3 1 2.5 GHz -62.46 dBm
M4 1 2.4892174 GHz -58.90 dBm
Date: 21.NOV.2024 14:35:05

11. RF Conducted Spurious Emissions

11.1. Block diagram of test setup



11.2. Limits

In any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in 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.

11.3. Test procedure

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.
(2) Establish a reference level by using the following procedure:

Center frequency	Test frequency
RBW:	100 kHz
VBW:	300 kHz
Span	Wide enough to capture the peak level of the in-band emission
Detector Mode:	Peak
Sweep time:	Auto
Trace mode	Max hold

(3) Allow the trace to stabilize, use the peak marker function to determine the maximum peak power level to establish the reference level.
(4) Set the spectrum analyzer as follows:

RBW:	100 kHz
VBW:	300 kHz
Span	Encompass frequency range to be measured
Number of measurement points	≥Span/RBW
Detector Mode:	Peak
Sweep time:	Auto
Trace mode	Max hold

Allow the trace to stabilize, use the peak marker function to determine the maximum amplitude of all unwanted emissions outside of the authorized frequency band

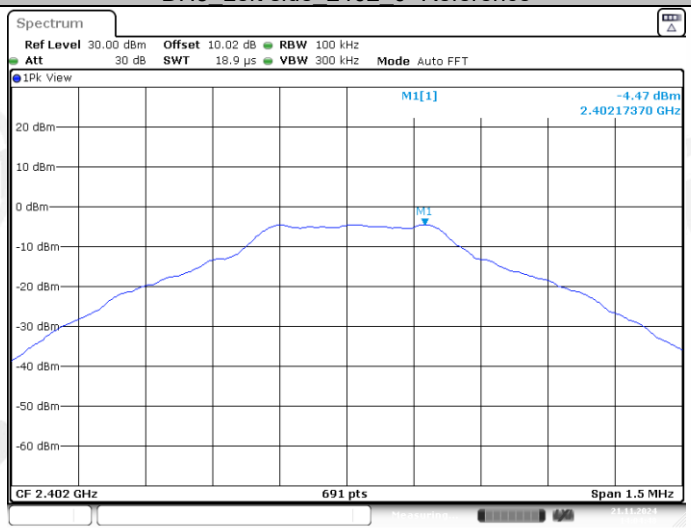
11.4. Test result

Test Engineer:	Zhongyao	Test Site:	RF Measurement System 3#
Ambient Condition:	27.7℃,38.8%RH	Test Date:	2024.10.17
Test Power Supply:	Battery	Sample Number:	S24081307-001

Mode	Freq. (MHz)	Verdict
GFSK	Hopping off 2402	Pass
	Hopping off 2441	Pass
	Hopping off 2480	Pass
π/4-DQPSK	Hopping off 2402	Pass
	Hopping off 2441	Pass
	Hopping off 2480	Pass

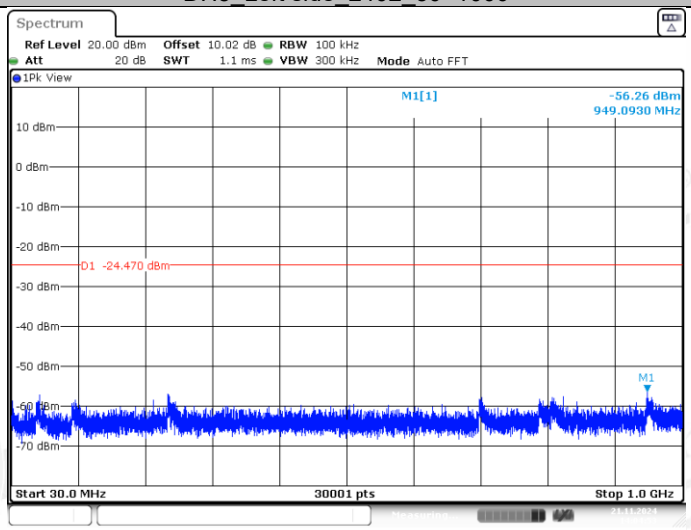
11.5. Test graphs

DH5_Left side_2402_0~Reference



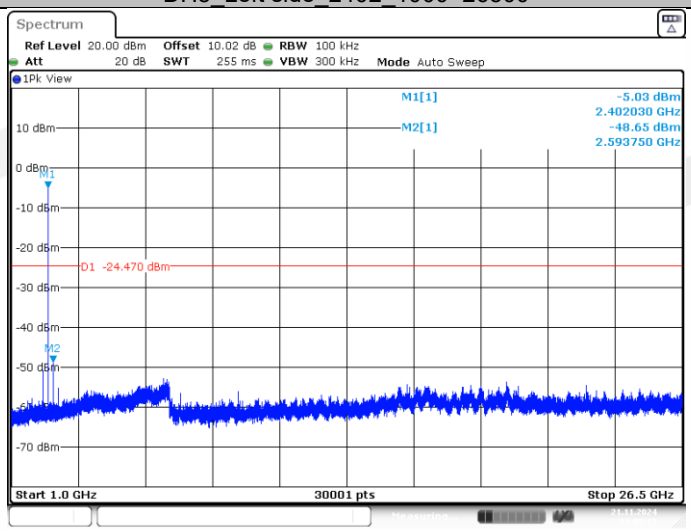
Date: 21.NOV.2024 14:04:48

DH5_Left side_2402_30~1000



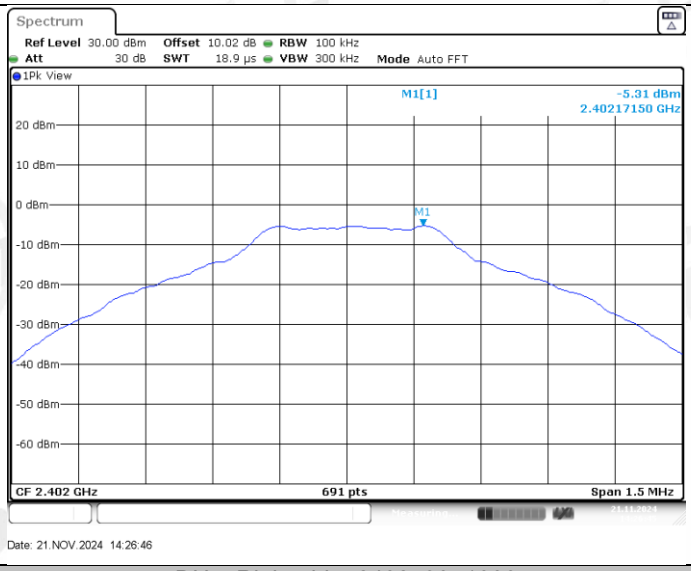
Date: 21.NOV.2024 14:04:53

DH5_Left side_2402_1000~26500

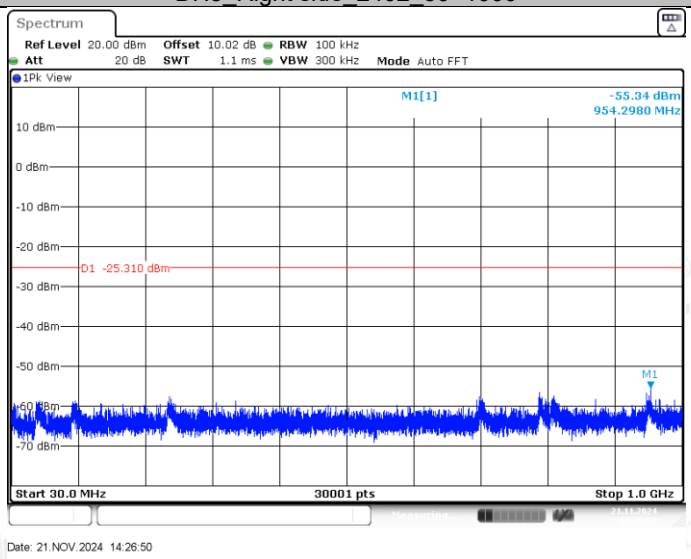


Date: 21.NOV.2024 14:05:15

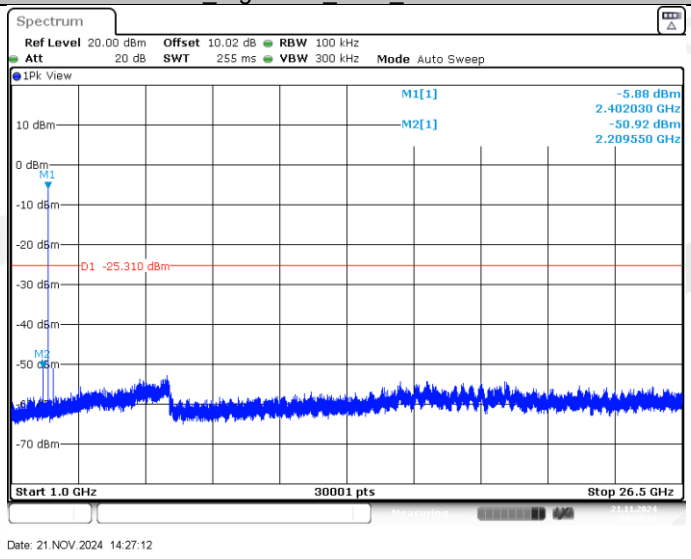
DH5_Right side_2402_0~Reference



DH5_Right side_2402_30~1000



DH5_Right side_2402_1000~26500



DH5_Left side_2441_0~Reference