



RADIO TEST REPORT

Applicant	:	Harman International Industries, Inc.
Address of Applicant	:	8500 Balboa Boulevard, Northridge, CA 91325, UNITED STATES
Manufacturer	:	Harman International Industries, Inc.
Address of Manufacturer	:	8500 Balboa Boulevard, Northridge, CA 91325, UNITED STATES
Trade mark	:	JBL
Equipment under Test	:	BLUETOOTH HEADSET
Model No.	:	LIVE BEAM 4
FCC ID	:	APILIVEBEAM4
IC	:	6132A-LIVEBEAM4
Test Standard(s)	:	FCC Rules and Regulations Part 15 Subpart C, RSS-247 Issue 4 July 24, 2025, RSS-Gen Issue 5, Apr. 2018, Amendment 2 (February 2021), ANSI C63.10-2020+Cor.1-2023+C63.10a- 2024+Errata to C63.10a-2024
Report No.	:	DDT-RE26081111-1E01
Issue Date	:	2026/09/28
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

Table of Contents

1.	Summary of Test Results	7
2.	General Test Information.....	8
2.1.	Description of EUT	8
2.2.	Accessories of EUT	9
2.3.	Block diagram of EUT configuration for test.....	9
2.4.	Decision of final test mode	9
2.5.	Deviations of test standard	10
2.6.	Test environment conditions	10
2.7.	Test laboratory	10
2.8.	Measurement uncertainty	11
3.	Equipment Used During Conductive Test	12
4.	20 dB Bandwidth	13
4.1.	Block diagram of test setup	13
4.2.	Limits	13
4.3.	Test procedure	13
4.4.	Test result.....	14
4.5.	Test graphs	15
5.	99% Bandwidth	20
5.1.	Block diagram of test setup	20
5.2.	Limits	20
5.3.	Test procedure	20
5.4.	Test result.....	21
5.5.	Test graphs	22
6.	Maximum Peak Output Power.....	27
6.1.	Block diagram of test setup	27
6.2.	Limits	27
6.3.	Test procedure	27
6.4.	Test result.....	28
6.5.	Test graphs	29
7.	Carrier Frequency Separation	34
7.1.	Block diagram of test setup	34
7.2.	Limits	34
7.3.	Test procedure	34
7.4.	Test result.....	35
7.5.	Test graphs	36
8.	Dwell Time.....	38

8.1.	Block diagram of test setup	38
8.2.	Limits	38
8.3.	Test procedure	38
8.4.	Test result.....	39
8.5.	Test graphs	40
9.	Number of Hopping Channel.....	48
9.1.	Block diagram of test setup	48
9.2.	Limits	48
9.3.	Test procedure	48
9.4.	Test result.....	49
9.5.	Test graphs	50
10.	Band Edge Compliance (Conducted Method).....	52
10.1.	Block diagram of test setup	52
10.2.	Limit.....	52
10.3.	Test procedure	52
10.4.	Test result.....	53
10.5.	Test graphs	54
11.	RF Conducted Spurious Emissions.....	60
11.1.	Block diagram of test setup	60
11.2.	Limits	60
11.3.	Test procedure	60
11.4.	Test result.....	61
11.5.	Test graphs	62
12.	Duty cycle.....	75
12.1.	Block diagram of test setup	75
12.2.	Limit.....	75
12.3.	Test procedure	75
12.4.	Test result.....	76
12.5.	Test graphs	77
13.	Antenna Requirements.....	82
13.1.	Limit.....	82
13.2.	Result	82
14.	Radiated Emission	83
14.1.	Test equipment.....	83
14.2.	Block diagram of test setup	84
14.3.	Limits	85
14.4.	Assistant equipment used for test	87
14.5.	Test procedure	87

14.6.	Test result.....	88
14.7.	Test data	89
15.	Band Edge Compliance.....	117
15.1.	Test equipment.....	117
15.2.	Block diagram of test setup	117
15.3.	Limits	118
15.4.	Assistant equipment used for test	118
15.5.	Test procedure	118
15.6.	Test result.....	118
15.7.	Test data	119
16.	Power Line Conducted Emissions.....	135
16.1.	Test equipment.....	135
16.2.	Block diagram of test setup	135
16.3.	Limits	135
16.4.	Assistant equipment used for test	136
16.5.	Test procedure	136
16.6.	Test result.....	136
16.7.	Test data	137
17.	Test Setup Photograph	139
18.	Photos of the EUT	143

Test Report Declare

Applicant	:	Harman International Industries, Inc.
Address of Applicant	:	8500 Balboa Boulevard, Northridge, CA 91325, UNITED STATES
Equipment under Test	:	BLUETOOTH HEADSET
Model No.	:	LIVE BEAM 4
Manufacturer	:	Harman International Industries, Inc.
Address of Manufacturer	:	8500 Balboa Boulevard, Northridge, CA 91325, UNITED STATES

Test Standard Used:
FCC Rules and Regulations Part 15 Subpart C,
RSS-247 Issue 4 July 24, 2025,
RSS-Gen Issue 5, Apr. 2018, Amendment 2 (February 2021),
ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024

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-RE26081111-1E01		
Date of Receipt:	2026/08/11	Date of Test:	2026/08/11 - 2026/09/11

Created: Zoe Peng	Reviewed: Chen Ziqin	Approved: Damon Hu
		
2026/09/28	2026/09/28	2026/09/28

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

Version	Revision Content	Issue Date	Approved
V0	Initial issue	2026/09/28	Damon Hu

1. Summary of Test Results

No.	Test Parameter	Clause No.	Condition	Result
1	Maximum Peak Output Power	47 CFR Part 15 15.247(b)(1), RSS-247 clause 6.2.3.2(a)	/	Pass
2	20 dB Bandwidth	47 CFR Part 15 15.247(a)(1), RSS-247 clause 6.2.3.1(a)	/	Pass
3	99% Bandwidth	RSS-Gen clause 6.7	/	Pass
4	Carrier Frequency Separation	47 CFR Part 15 15.247(a)(1), RSS-247 clause 6.2.3.1(a)	/	Pass
5	Number of Hopping Channel	47 CFR Part 15 15.247(a)(1)(iii), RSS-247 clause 6.2.3.1(b)	/	Pass
6	Dwell Time	47 CFR Part 15 15.247(a)(1)(iii), RSS-247 clause 6.2.3.1(b)	/	Pass
7	RF Conducted Spurious Emissions	47 CFR Part 15 15.247(d), RSS-247 clause 6.6	/	Pass
8	Radiated Emission	47 CFR Part 15 15.205, 47 CFR Part 15 15.209, 47 CFR Part 15 15.247(d), RSS-247 clause 6.6, RSS-Gen clause 8.9, RSS-Gen clause 8.10	/	Pass
9	Band Edge Compliance	47 CFR Part 15 15.205, 47 CFR Part 15 15.209, 47 CFR Part 15 15.247(d), RSS-247 clause 6.6, RSS-Gen clause 8.9, RSS-Gen clause 8.10	/	Pass
10	Antenna Requirement	47 CFR Part 15 15.203, RSS-Gen clause 6.8	/	Pass
11	Power Line Conducted Emissions	47 CFR Part 15 15.207(a), RSS-Gen clause 8.8	/	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	: BLUETOOTH HEADSET
Model Number	: LIVE BEAM 4
Difference of model number	: /
EUT Function Description	: Please reference user manual of this device
Power Supply	: CHARGING CASE: DC 5V from USB cable or Wireless charger EARBUDS: DC 5V from external charging case CHARGING CASE: DC 3.8V Lithium-ion built-in battery EARBUDS: DC 3.85V Lithium-ion built-in battery
Antenna Type	: LDS Antenna
Max Antenna Gain(dBi)	: Left: -0.65dBi, Right: -1.63dBi

Radio Specification	: Bluetooth BR/EDR
Operation Frequency	: 2402 MHz to 2480 MHz
Modulation	: GFSK, $\pi/4$ -DQPSK

Bluetooth BR/EDR 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	/	

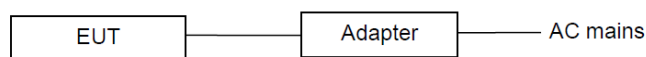
Note: The above EUT information is declared by manufacturer and for more detailed features description please refer to the manufacturer's specifications or User's Manual. The above Antenna information is declared by manufacturer and for more detailed features description please refer to the manufacturer's 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
HEADSET CHARGING CASE	Harman	LIVE BEAM 4C	CHARGING CASE: DC 5V from USB cable or Wireless charger CHARGING CASE: DC 3.8V Lithium-ion built-in battery

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: BQB.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, Tx Power Setting, Channel, and Frequency			
Tested mode	Tx Power Setting	Channel	Frequency (MHz)
GFSK hopping on Tx mode	2	CH0 to CH78	2402 to 2480
$\pi/4$ -DQPSK hopping on Tx mode	2	CH0 to CH78	2402 to 2480
GFSK hopping off Tx mode	2	CH0	2402
	2	CH39	2441
	2	CH78	2480

$\pi/4$ -DQPSK hopping off Tx mode	2	CH0	2402
	2	CH39	2441
	2	CH78	2480
Note: According exploratory test, EUT will have maximum output power in those data rate, worst-case data rates were: GFSK mode: DH5, $\pi/4$ -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°C to +35 °C
Humidity range:	20% to 75%
Pressure range:	86 kPa to 106 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-20240, G-20118

2.8. Measurement uncertainty

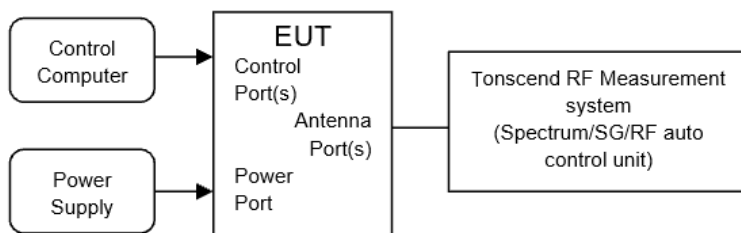
Test Item	Uncertainty
Bandwidth	1.9%
Peak Output Power (Conducted) (Spectrum analyzer)	0.98 dB
Peak Output Power (Conducted) (Power Sensor)	1.18 dB
Power Spectral Density (Base EIRP)	1.51 dB
Power Spectral Density (Spectrum analyzer)	0.98 dB
Frequencies Stability	1.9 kHz
Conducted spurious emissions	1.21 dB ($9\text{ kHz} \leq f < 7\text{ GHz}$);
	3.31 dB ($7\text{ GHz} \leq f < 40\text{ GHz}$)
Uncertainty for radio frequency (RBW < 20 kHz)	5.5×10^{-8}
Time	0.11%
Temperature	0.3 °C
Humidity	2 %
Uncertainty for Radiation Emission test (9 kHz – 30 MHz)	3.44 dB
Uncertainty for Radiation Emission test (30 MHz - 1 GHz)	4.28 dB (Antenna Polarize: V)
	4.14 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission test (1 GHz - 40 GHz)	4.22 dB (1 - 6 GHz)
	4.52 dB (6 GHz - 18 GHz)
	4.58 dB (18 GHz - 40 GHz)
Uncertainty for Power line conduction emission test	3.32dB (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	2027/07/10
Wideband Radio Communication Tester	R&S	CMW500	120259	2027/07/10
EXG Analog Signal Generator	KEYSIGHT	N5173B	MY62153058	2027/06/21
MXG Vector Signal Generator	Agilent	N5182A	MY48180912	2027/02/27
RF Control Unit	Tonscend	JS0806-2	20C8060230	2027/03/17
TEMP&HUMI Programmable Chamber	ZHIXIANG	ZXGDJS-150L	ZX170110-A	2027/02/27
Test Software	Tonscend	JS1120-3	V3.6.21	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 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.

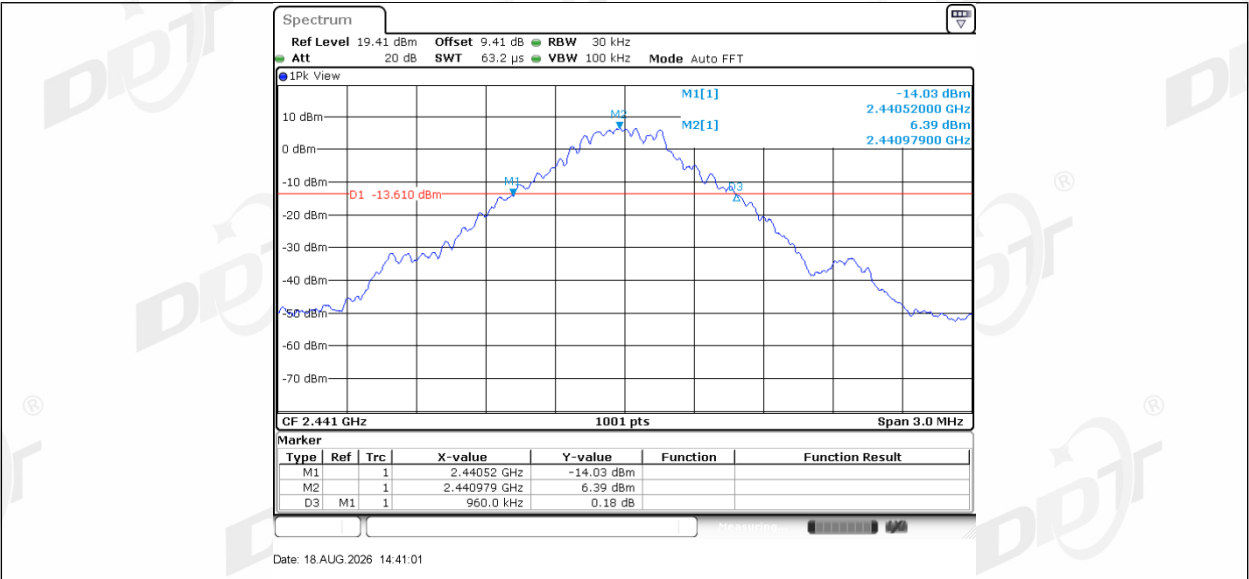
4.4. Test result

Test Engineer:	Zora Zhang	Test Site:	RF Measurement System 3#
Ambient Condition:	24℃,46%RH	Test Date:	2026.8.18-2026.8.20
Test Power Supply:	Battery	Sample Number:	S26081111-004/005

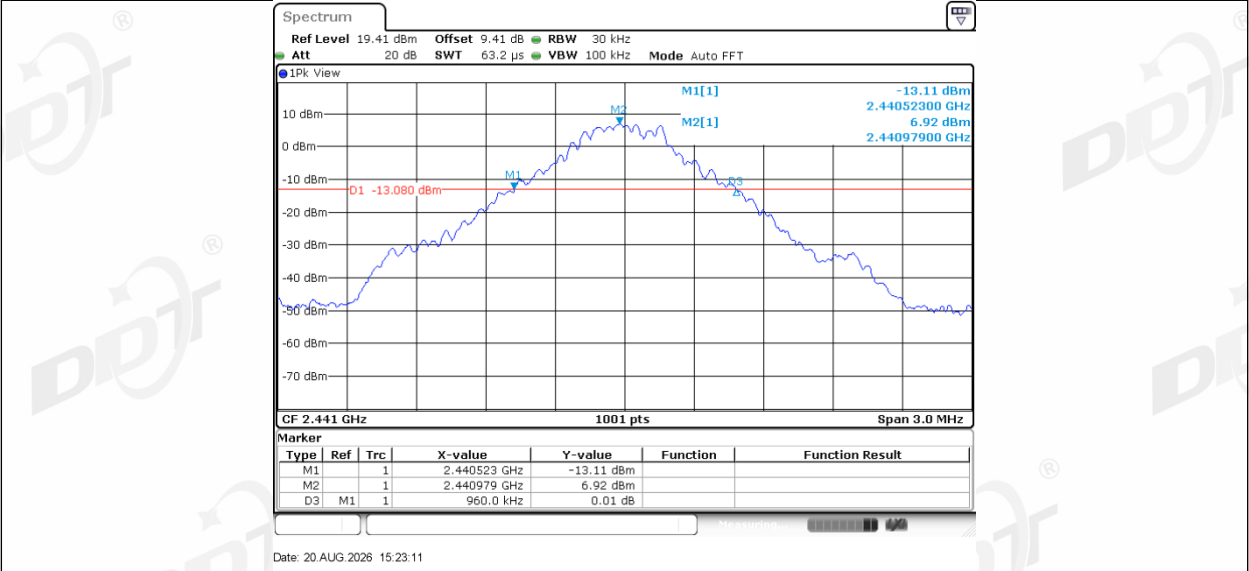
Test Mode	Antenna	Frequency [MHz]	20dB EBW[MHz]
DH5	Left	2402	0.96
	Right	2402	0.97
	Left	2441	0.96
	Right	2441	0.96
	Left	2480	0.96
	Right	2480	0.98
2DH5	Left	2402	1.34
	Right	2402	1.34
	Left	2441	1.34
	Right	2441	1.34
	Left	2480	1.34
	Right	2480	1.34

4.5. Test graphs

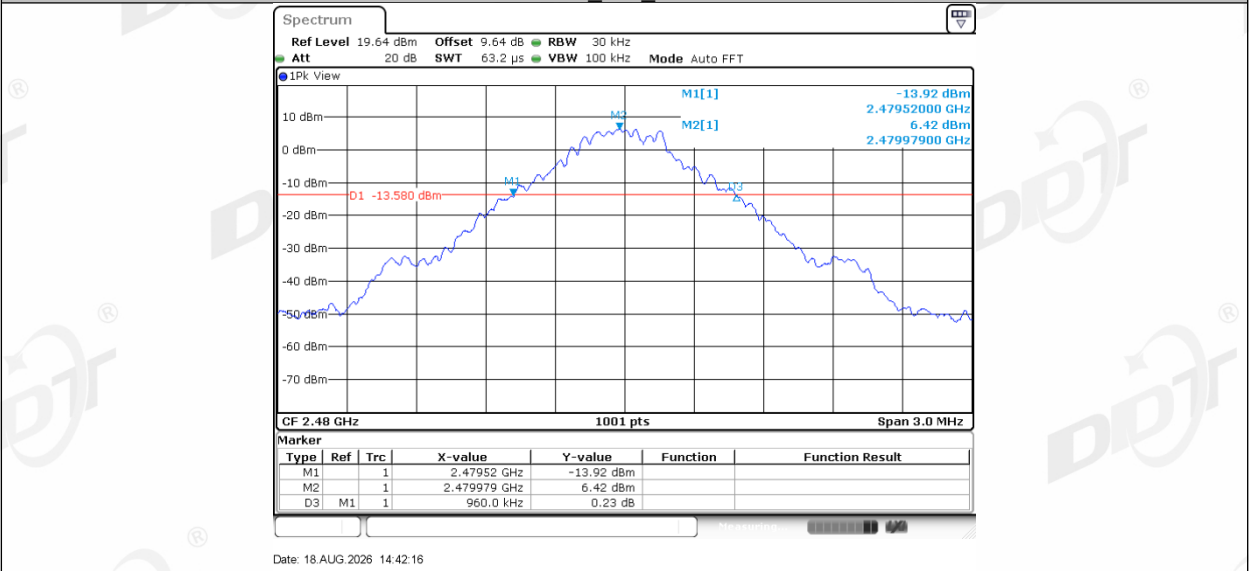




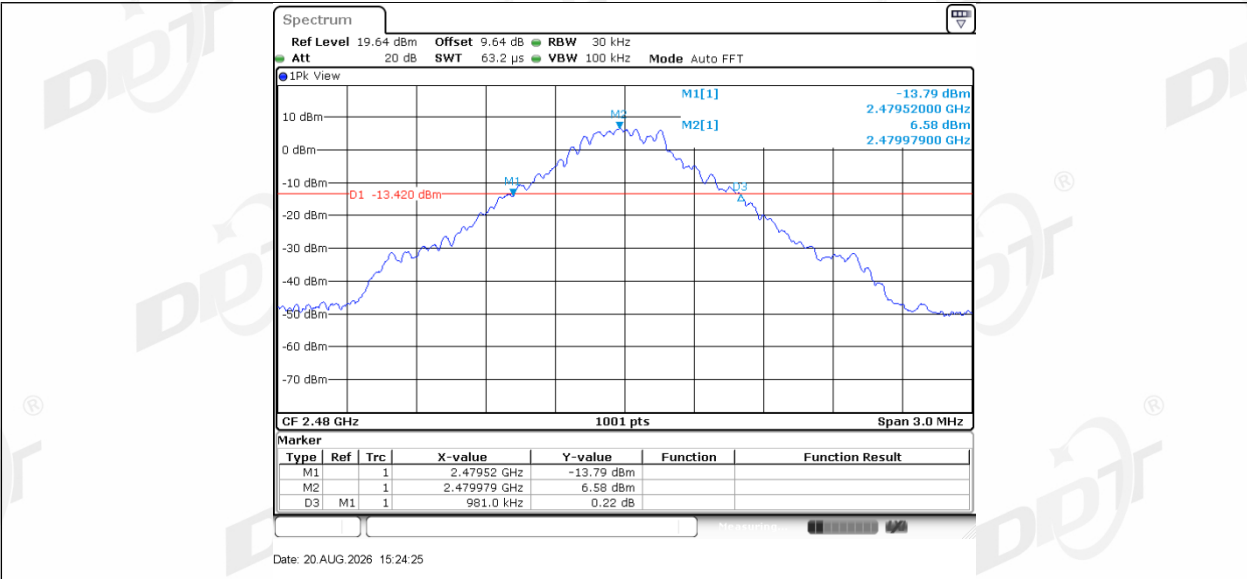
DH5 Right 2441



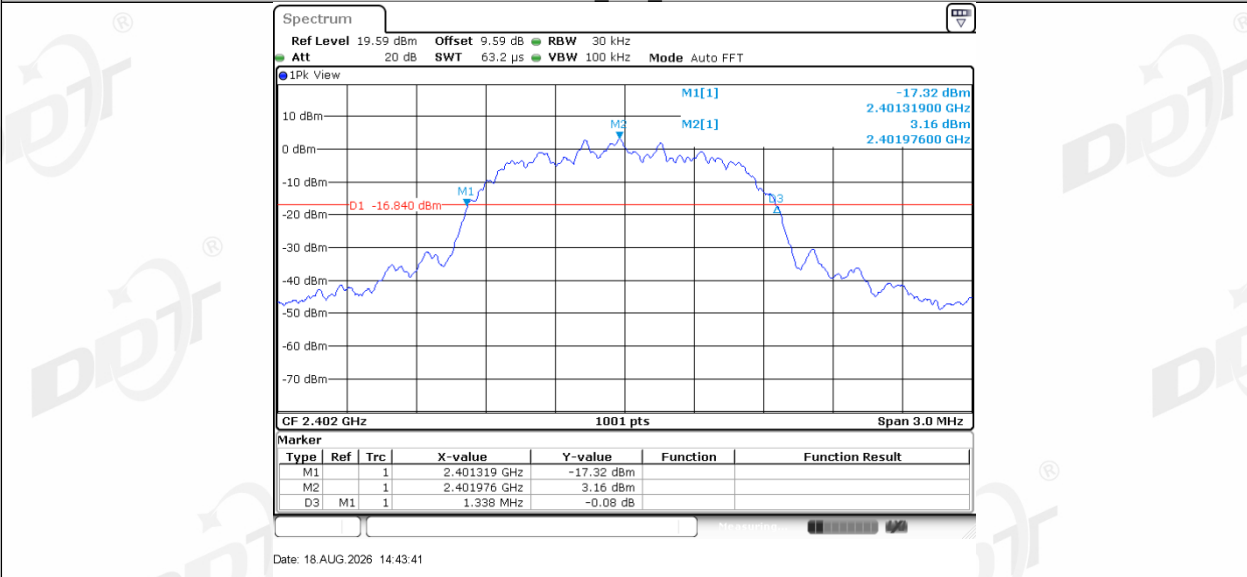
DH5 Left 2480



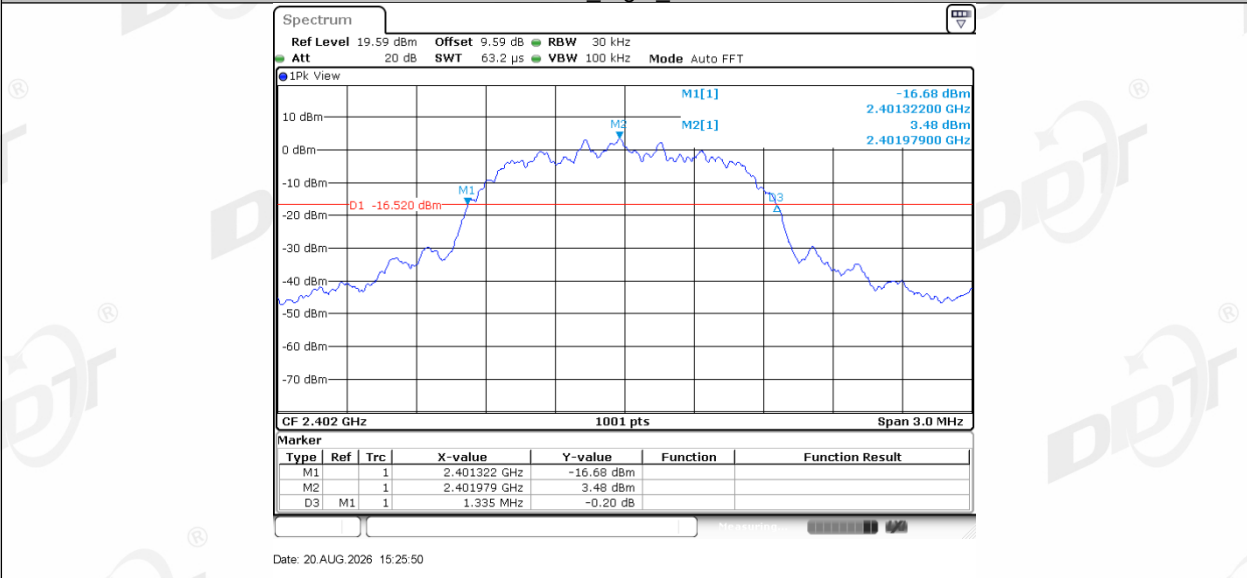
DH5 Right 2480



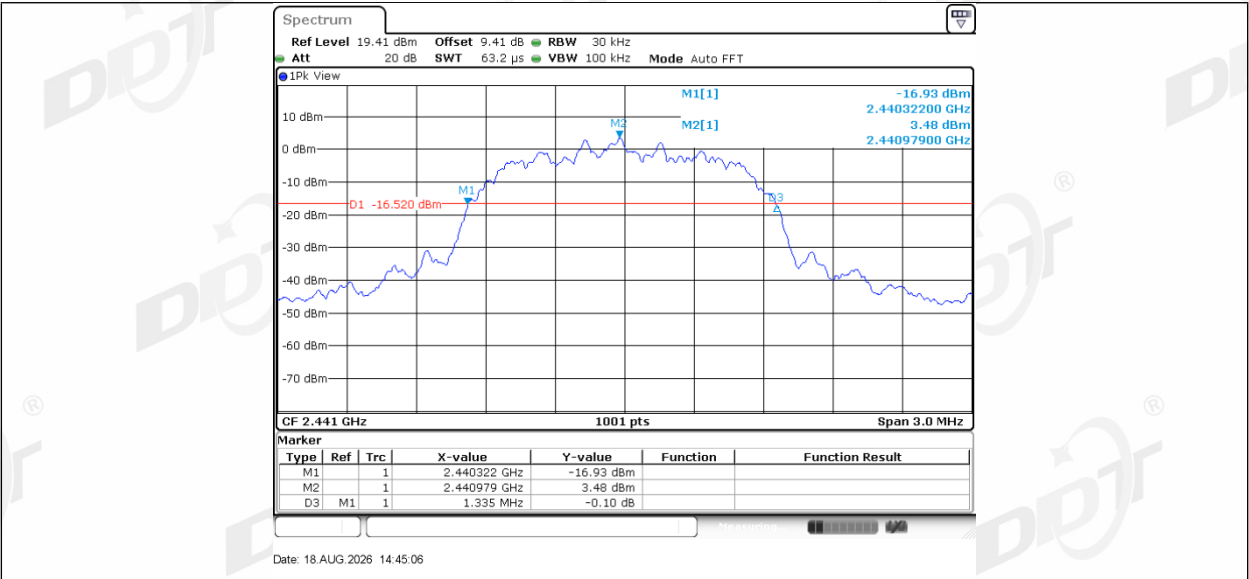
2DH5 Left 2402



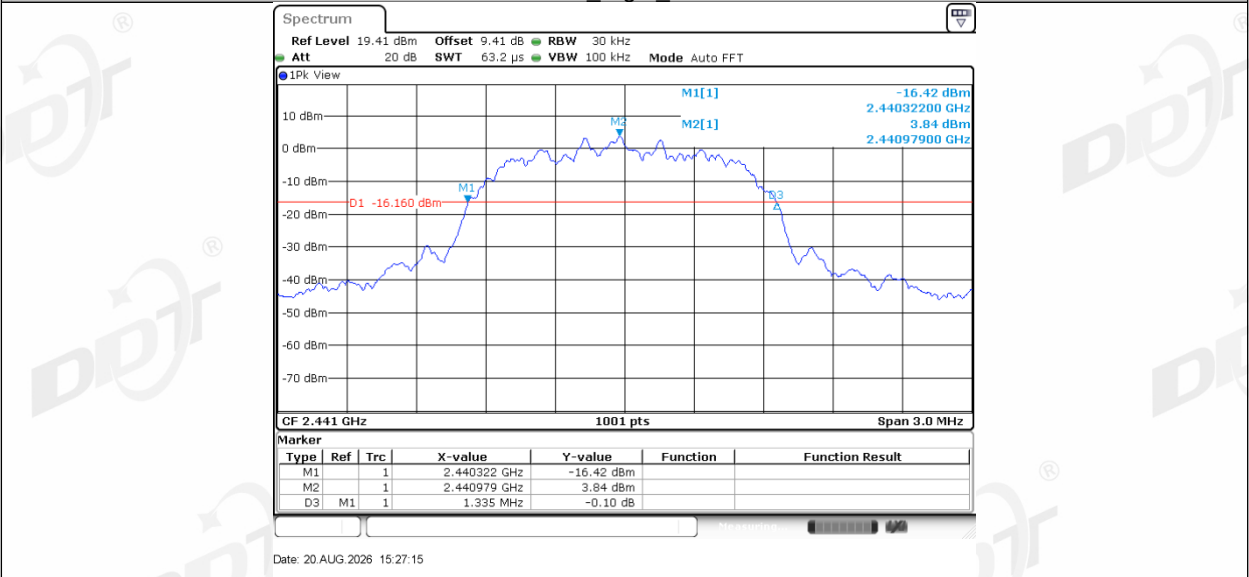
2DH5 Right 2402



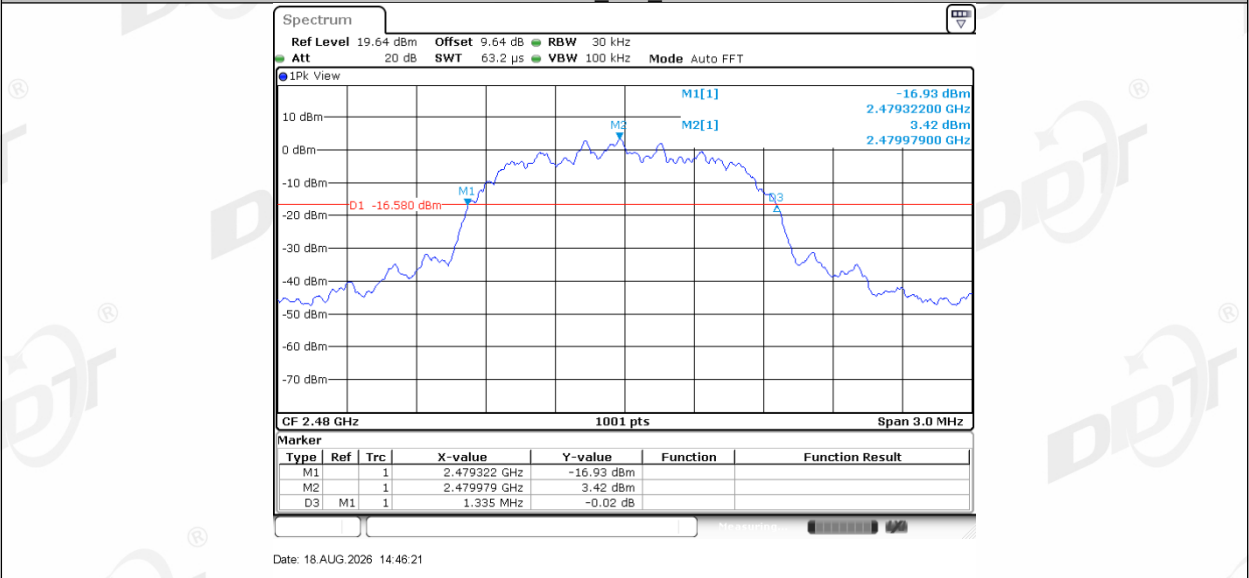
2DH5 Left 2441



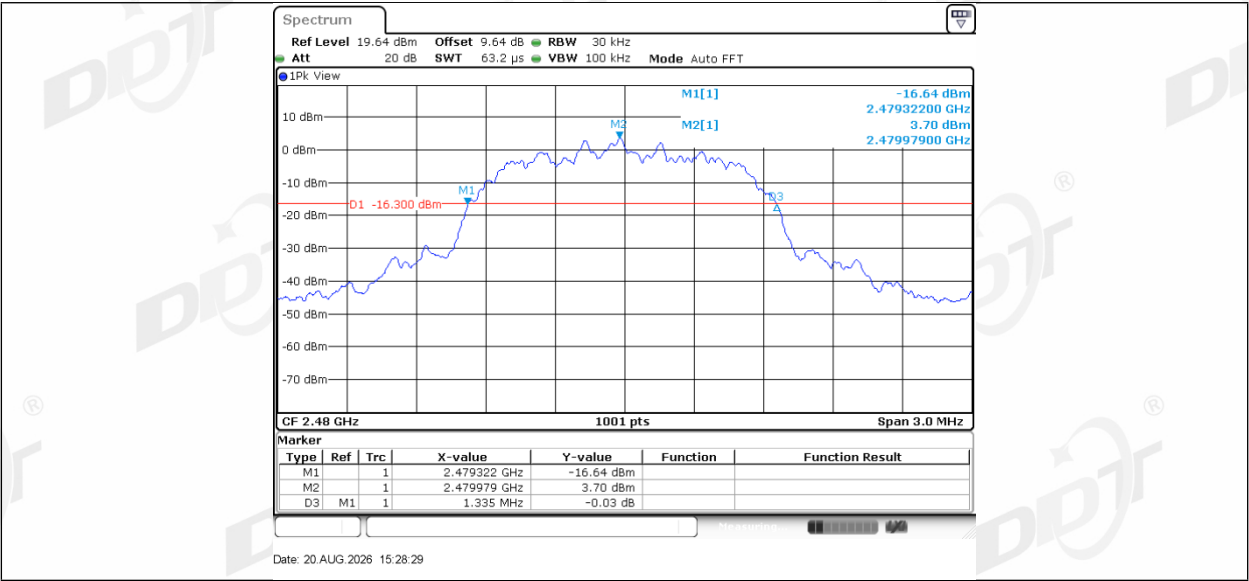
2DH5_Right_2441



2DH5_Left_2480

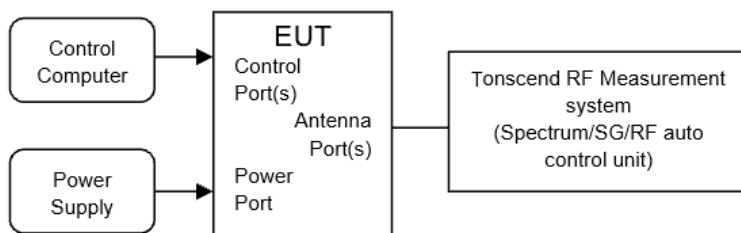


2DH5_Right_2480



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 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.

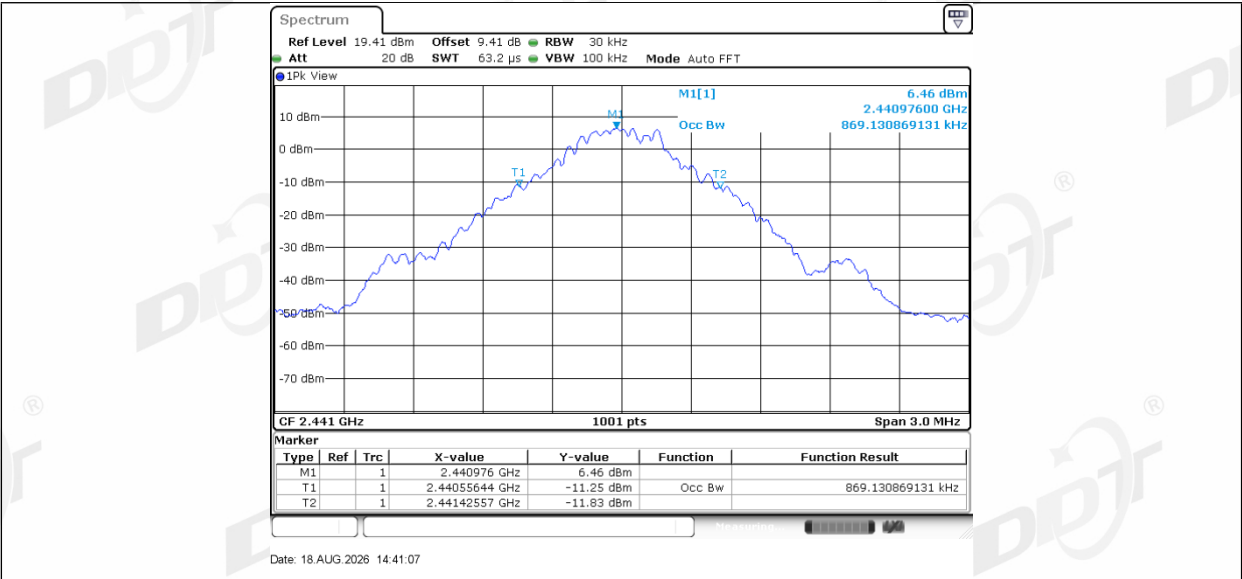
5.4. Test result

Test Engineer:	Zora Zhang	Test Site:	RF Measurement System 3#
Ambient Condition:	24℃,46%RH	Test Date:	2026.8.18-2026.8.20
Test Power Supply:	Battery	Sample Number:	S26081111-004/005

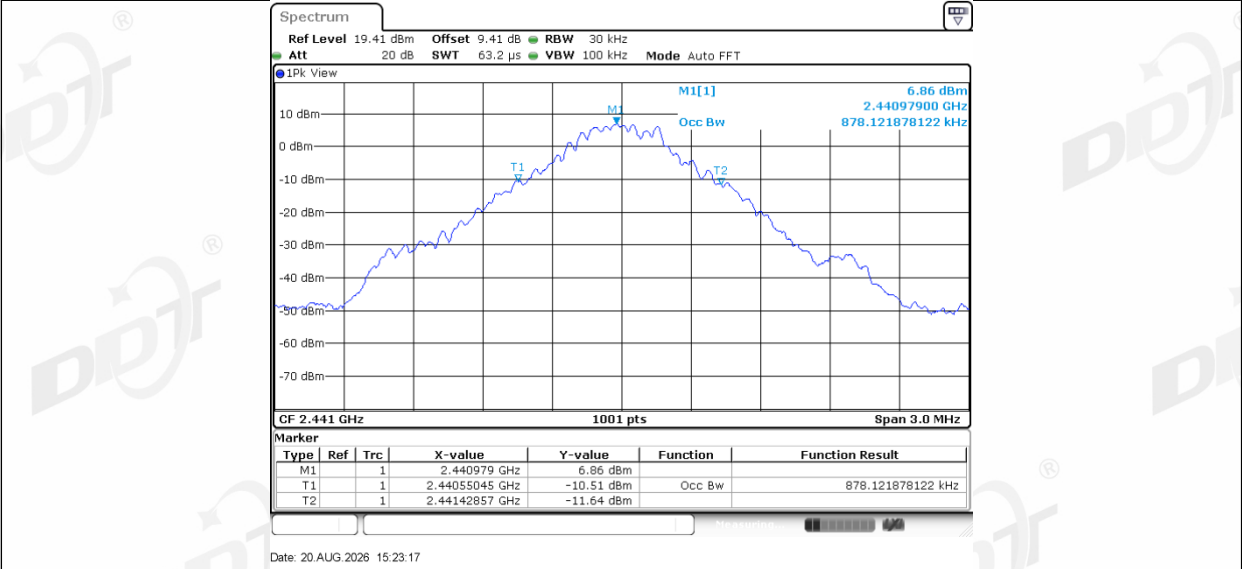
Test Mode	Antenna	Frequency [MHz]	OCB [MHz]	FL[MHz]	FH[MHz]
DH5	Left	2402	0.86913	2401.5564	2402.4256
	Right	2402	0.87512	2401.5564	2402.4316
	Left	2441	0.86913	2440.5564	2441.4256
	Right	2441	0.87812	2440.5504	2441.4286
	Left	2480	0.87213	2479.5534	2480.4256
	Right	2480	0.89011	2479.5475	2480.4376
2DH5	Left	2402	1.1838	2401.3976	2402.5814
	Right	2402	1.1868	2401.3976	2402.5844
	Left	2441	1.1868	2440.3976	2441.5844
	Right	2441	1.1868	2440.3976	2441.5844
	Left	2480	1.1868	2479.3976	2480.5844
	Right	2480	1.1868	2479.3976	2480.5844

5.5. Test graphs

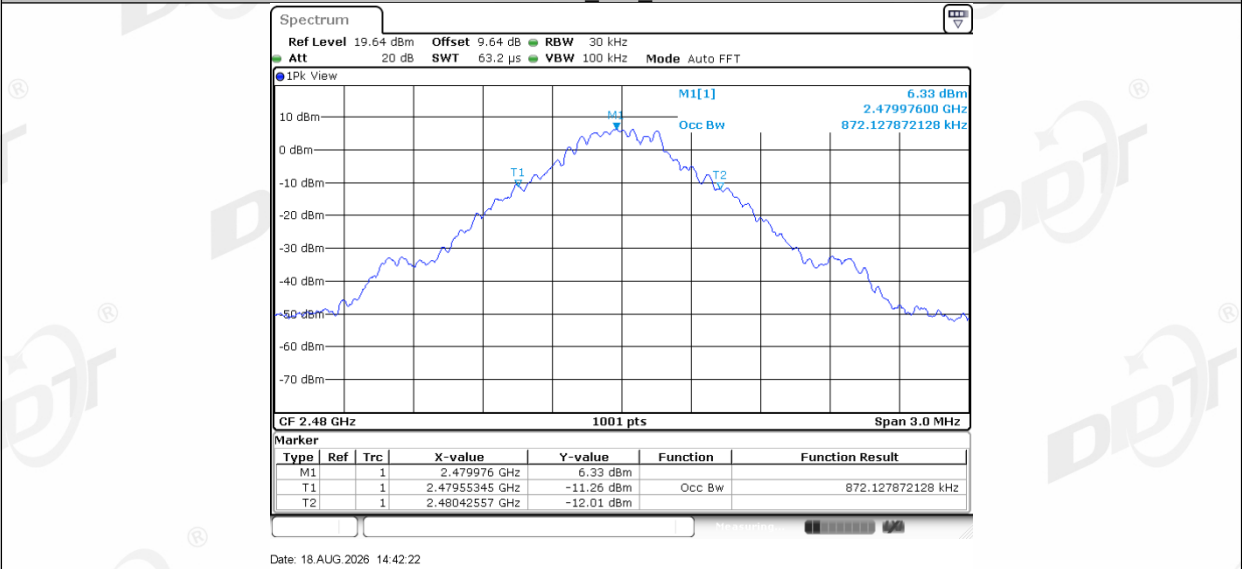




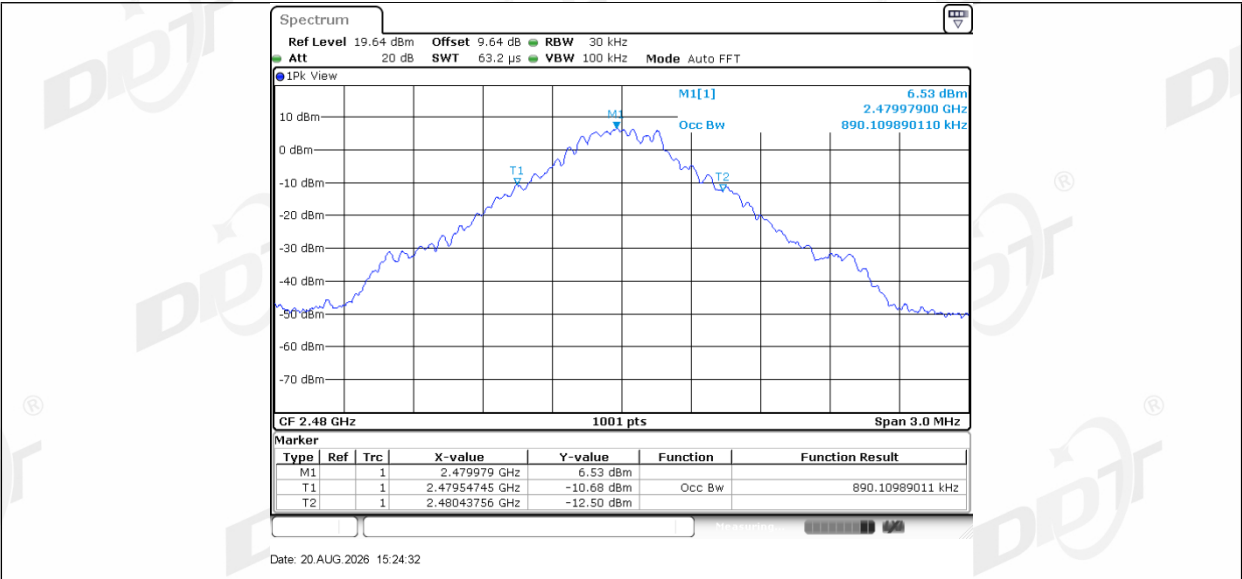
DH5_Right_2441



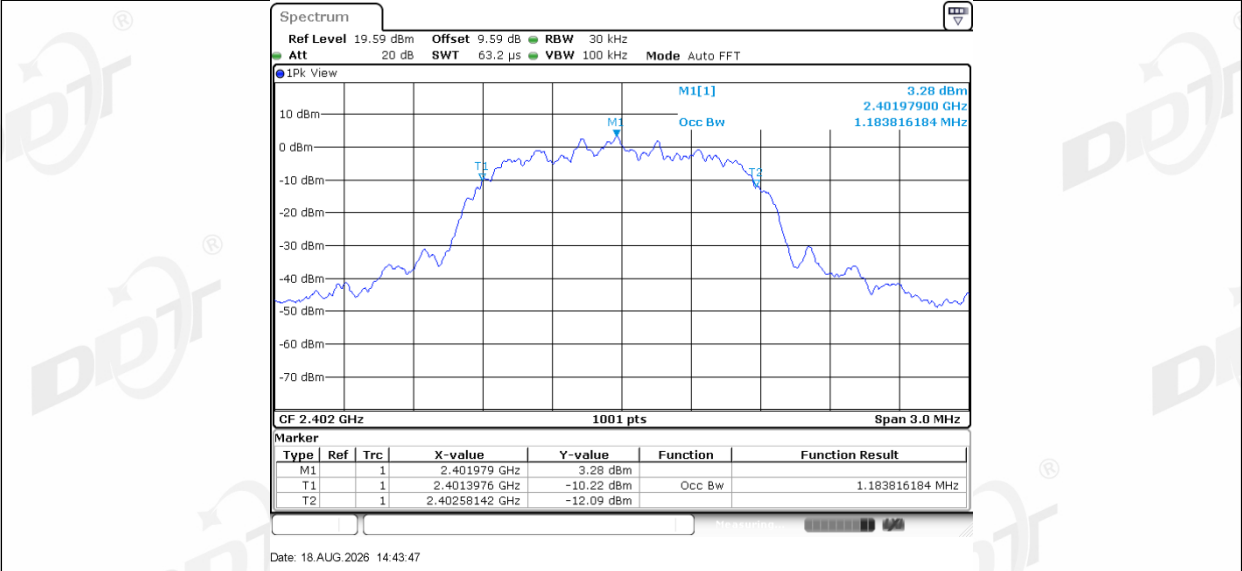
DH5_Left_2480



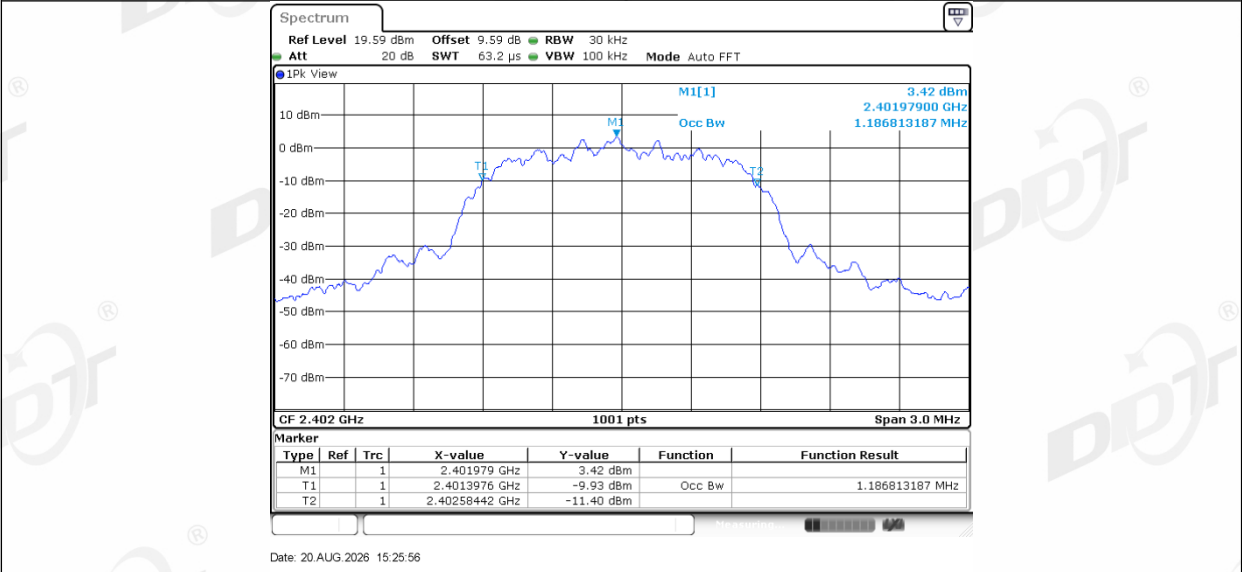
DH5_Right_2480



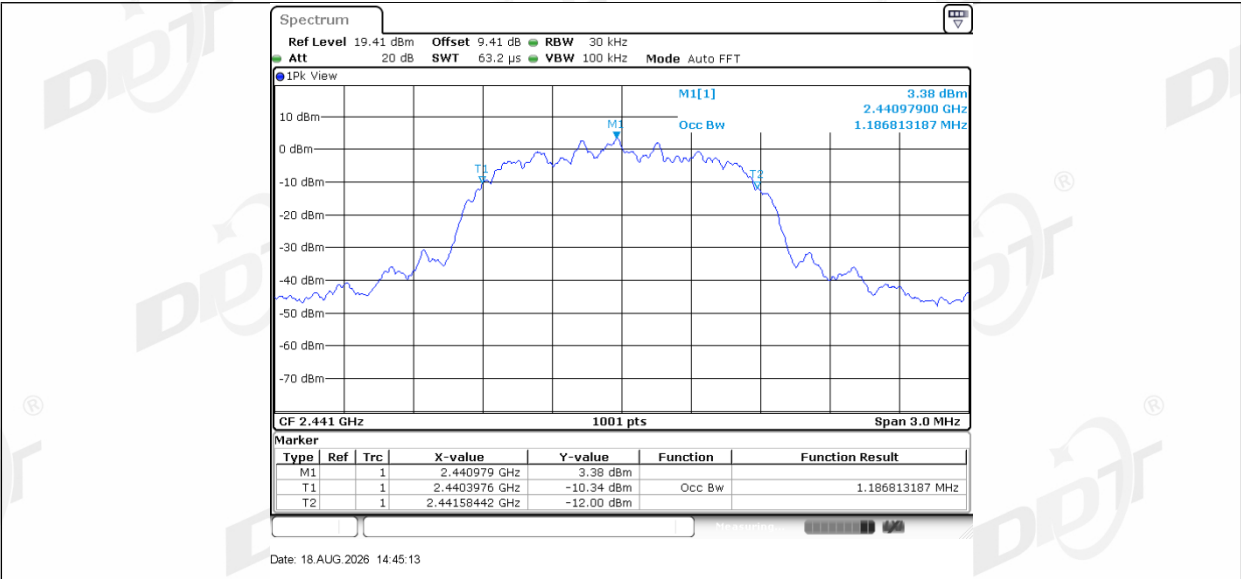
2DH5 Left 2402



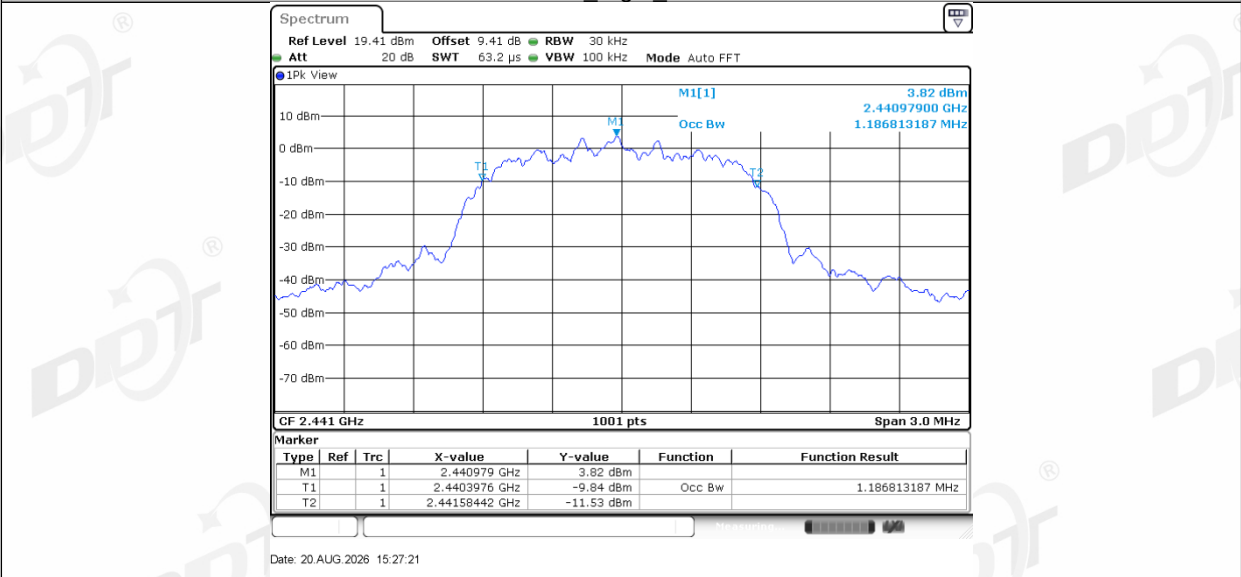
2DH5 Right 2402



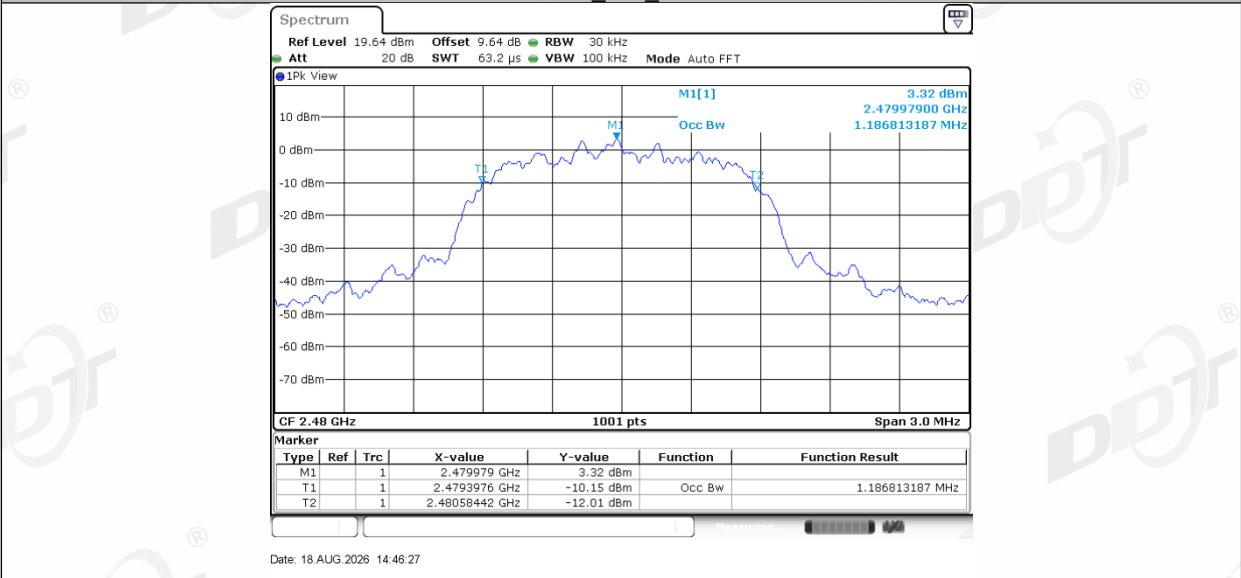
2DH5 Left 2441



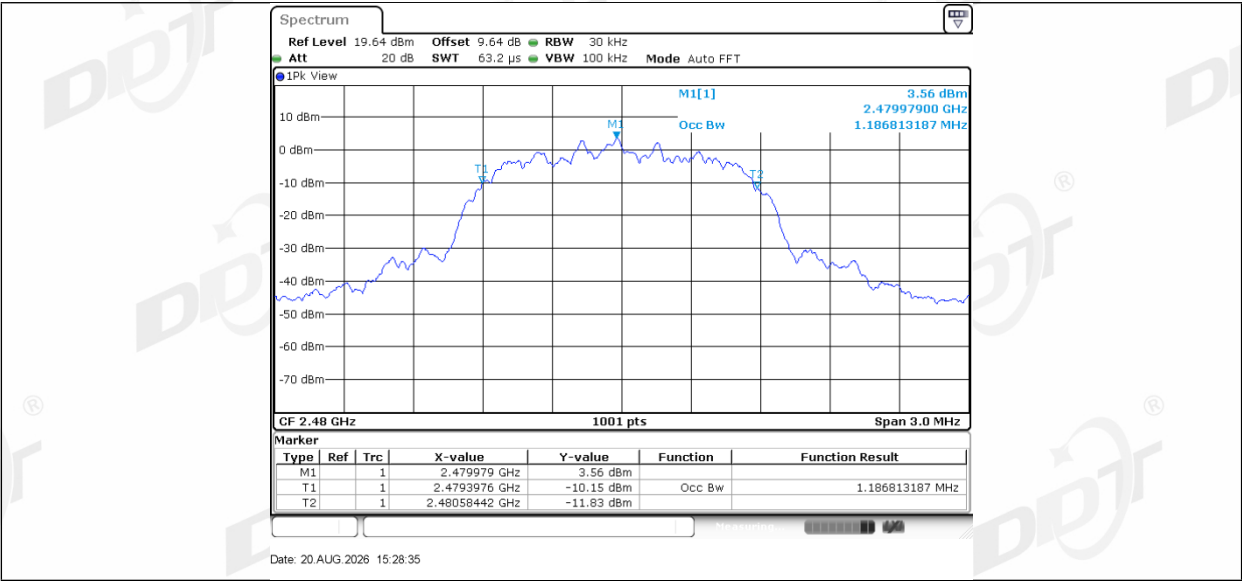
2DH5 Right 2441



2DH5 Left 2480

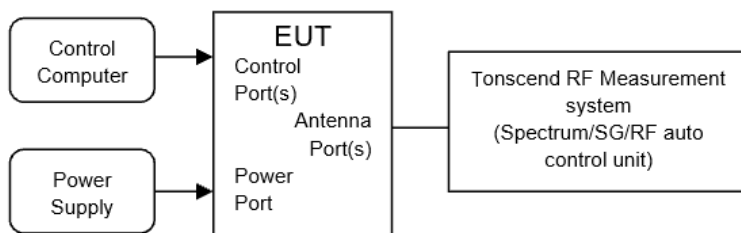


2DH5 Right 2480



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 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 $\geq$ 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.

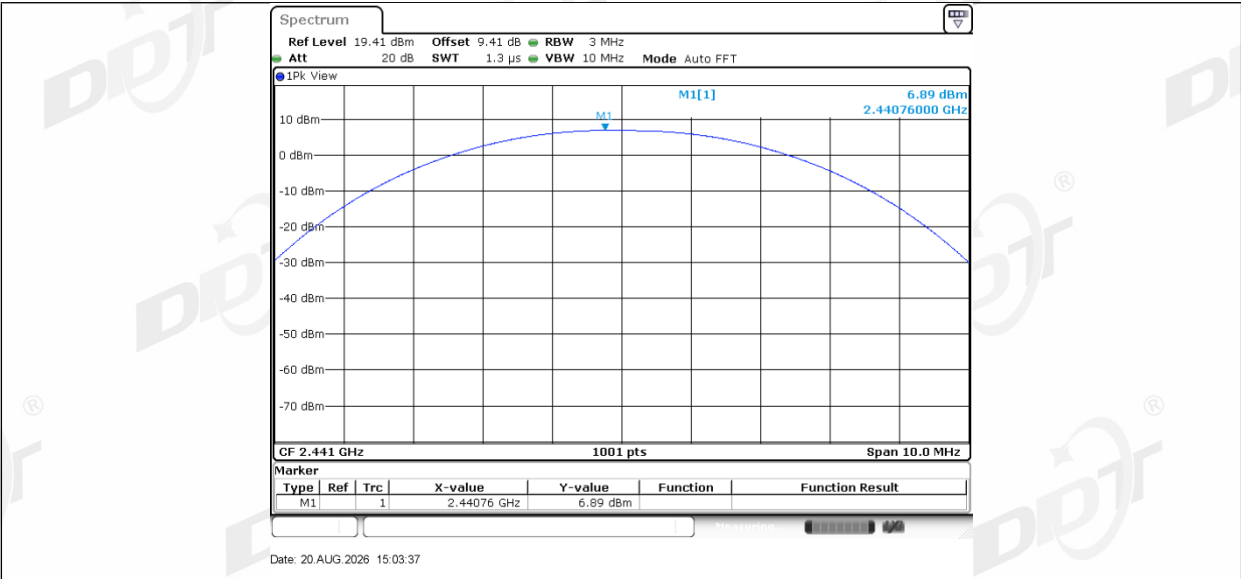
6.4. Test result

Test Engineer:	Zora Zhang	Test Site:	RF Measurement System 3#
Ambient Condition:	24℃,46%RH	Test Date:	2026.8.18-2026.8.20
Test Power Supply:	Battery	Sample Number:	S26081111-004/005

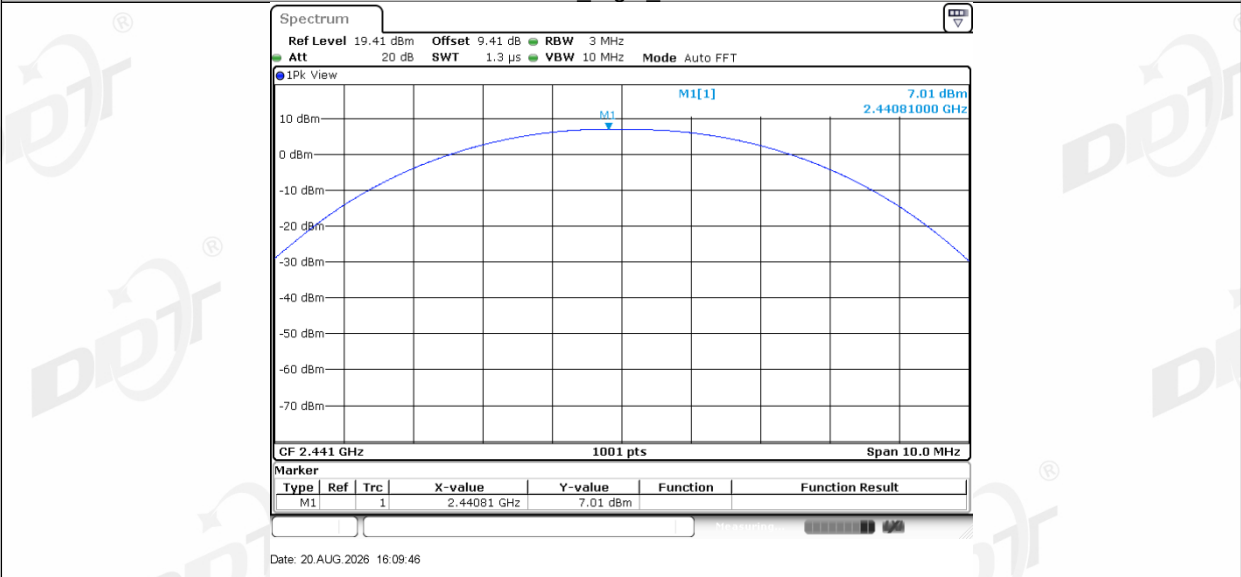
Test Mode	Antenna	Frequency [MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	EIRP[dBm]	EIRP Limit[dBm]	Verdict
DH5	Left	2402	6.62	≤20.97	5.97	≤30	PASS
	Right	2402	6.89	≤20.97	5.26	≤30	PASS
	Left	2441	6.89	≤20.97	6.24	≤30	PASS
	Right	2441	7.01	≤20.97	5.38	≤30	PASS
	Left	2480	7.00	≤20.97	6.35	≤30	PASS
	Right	2480	6.77	≤20.97	5.14	≤30	PASS
2DH5	Left	2402	3.84	≤20.97	3.19	≤30	PASS
	Right	2402	3.89	≤20.97	2.26	≤30	PASS
	Left	2441	4.11	≤20.97	3.46	≤30	PASS
	Right	2441	4.03	≤20.97	2.4	≤30	PASS
	Left	2480	4.08	≤20.97	3.43	≤30	PASS
	Right	2480	3.76	≤20.97	2.13	≤30	PASS

6.5. Test graphs

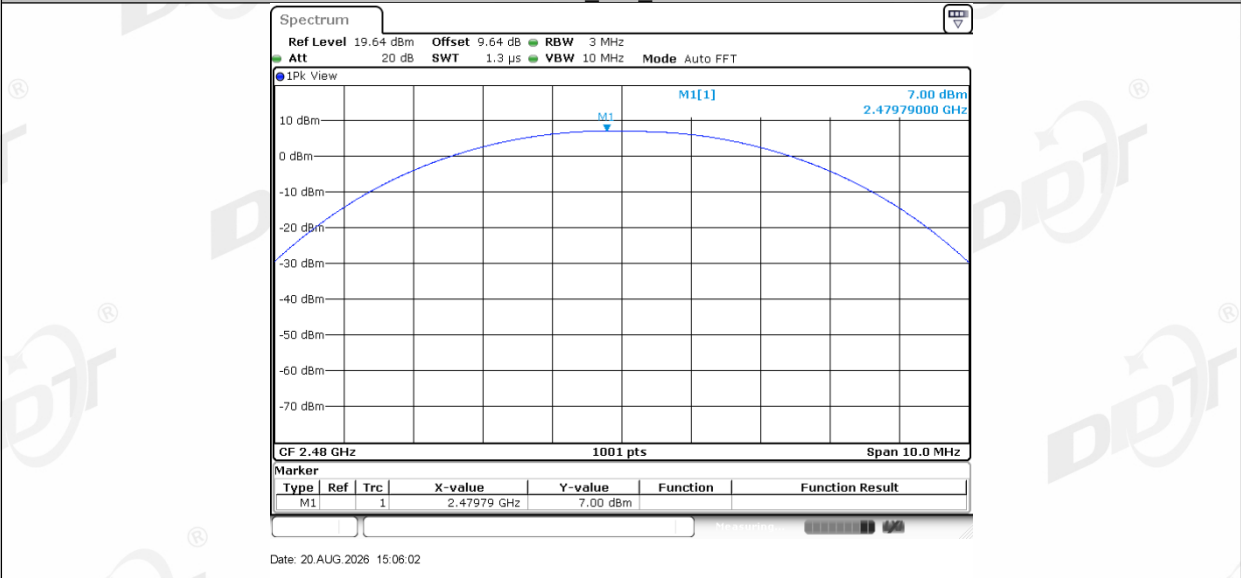




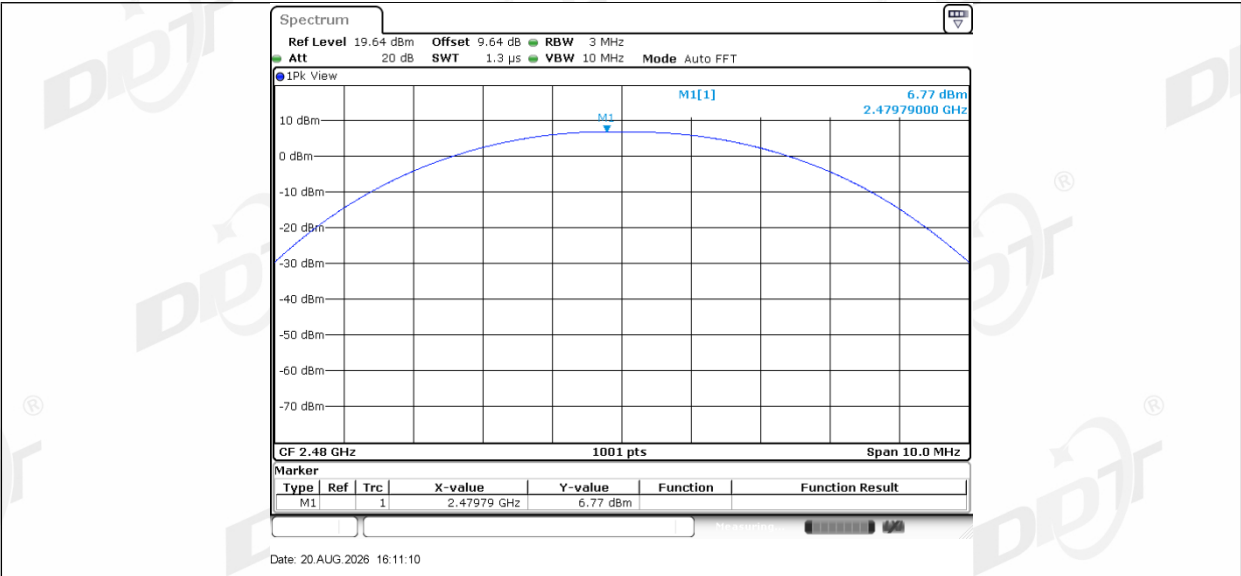
DH5_Right_2441



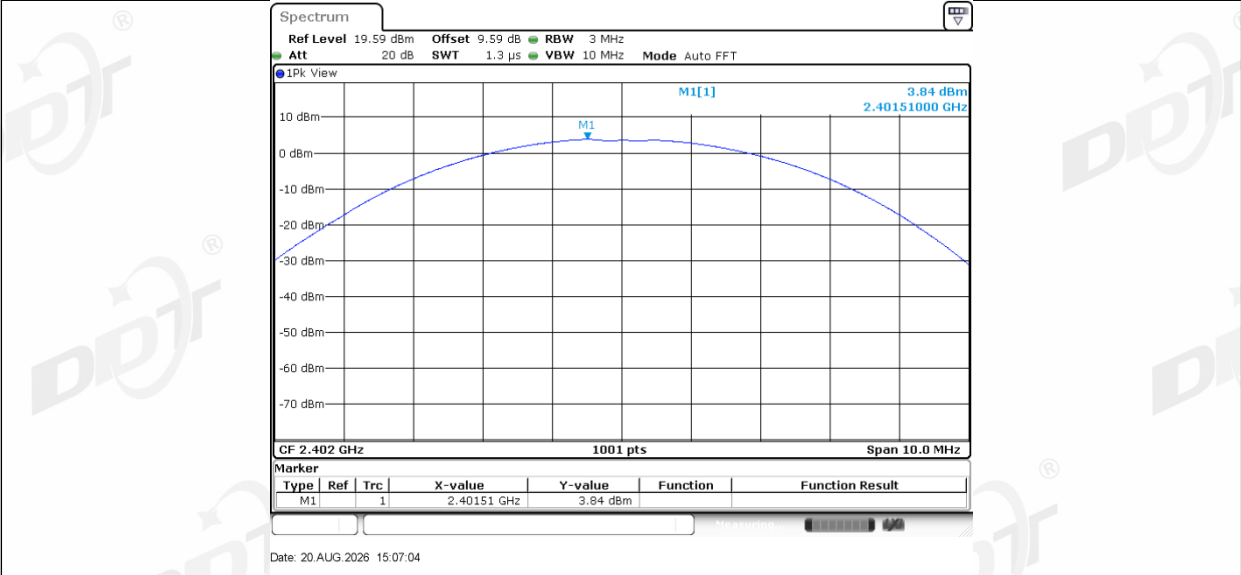
DH5_Left_2480



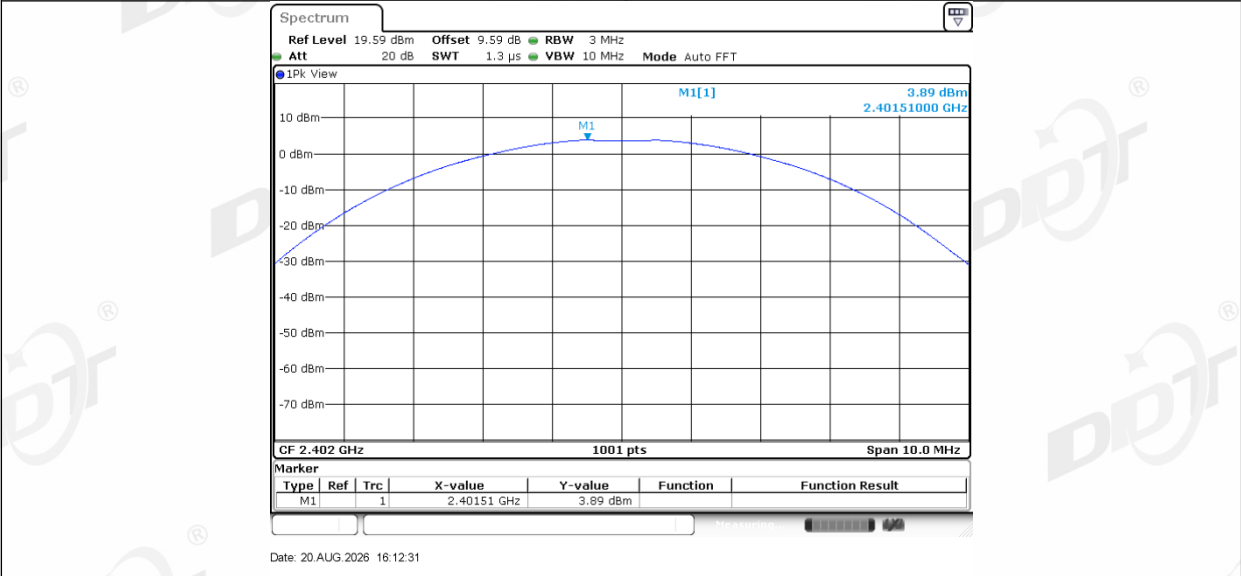
DH5_Right_2480



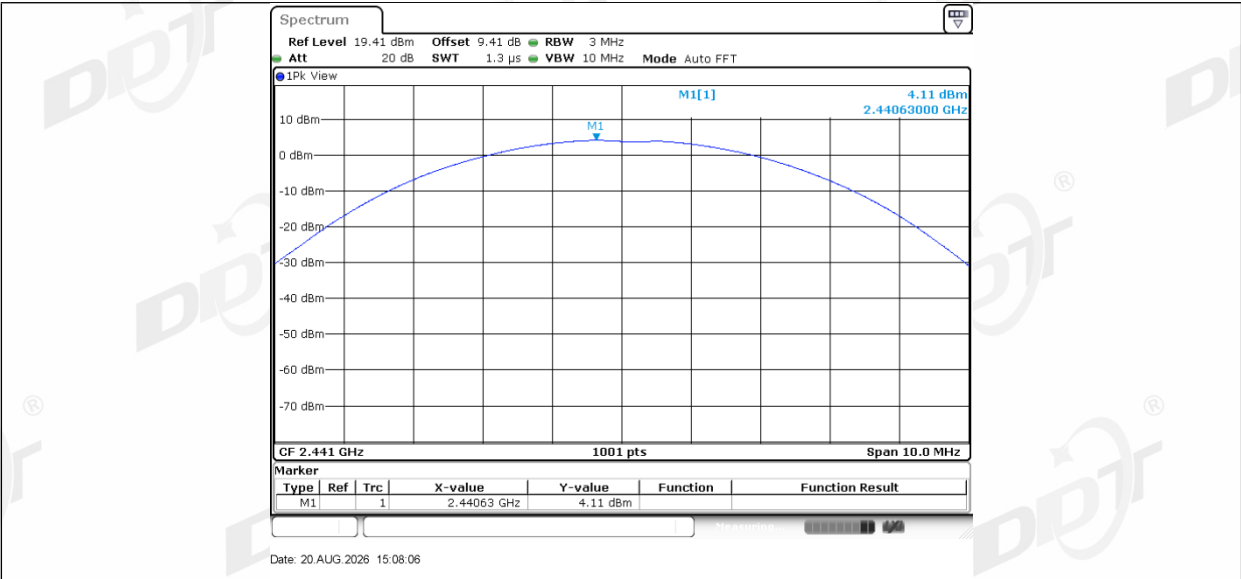
2DH5_Left_2402



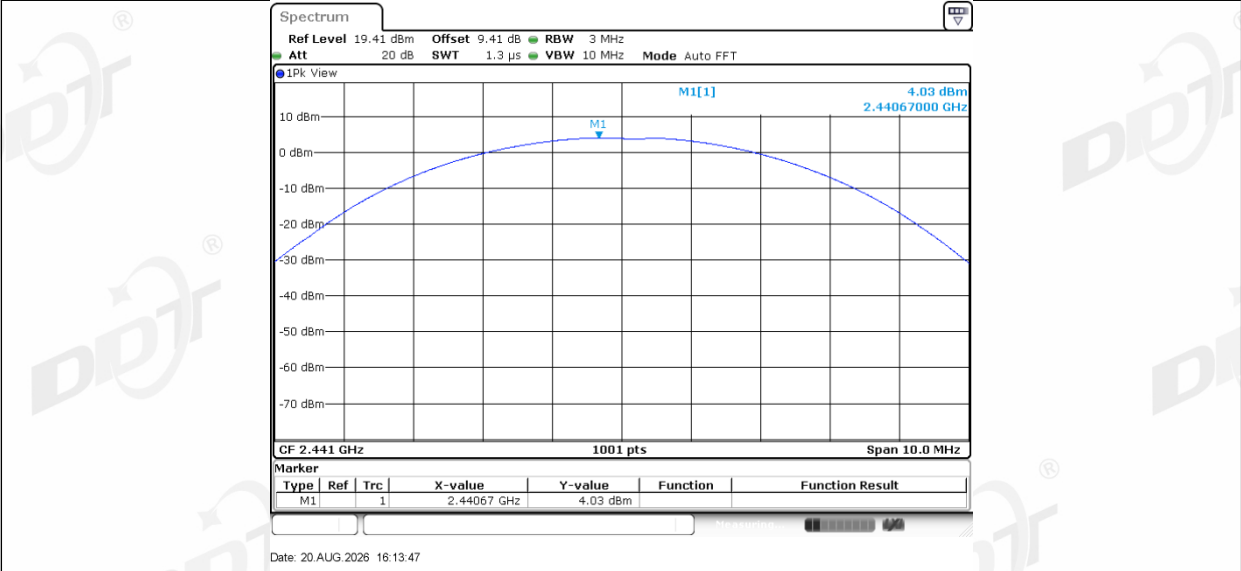
2DH5_Right_2402



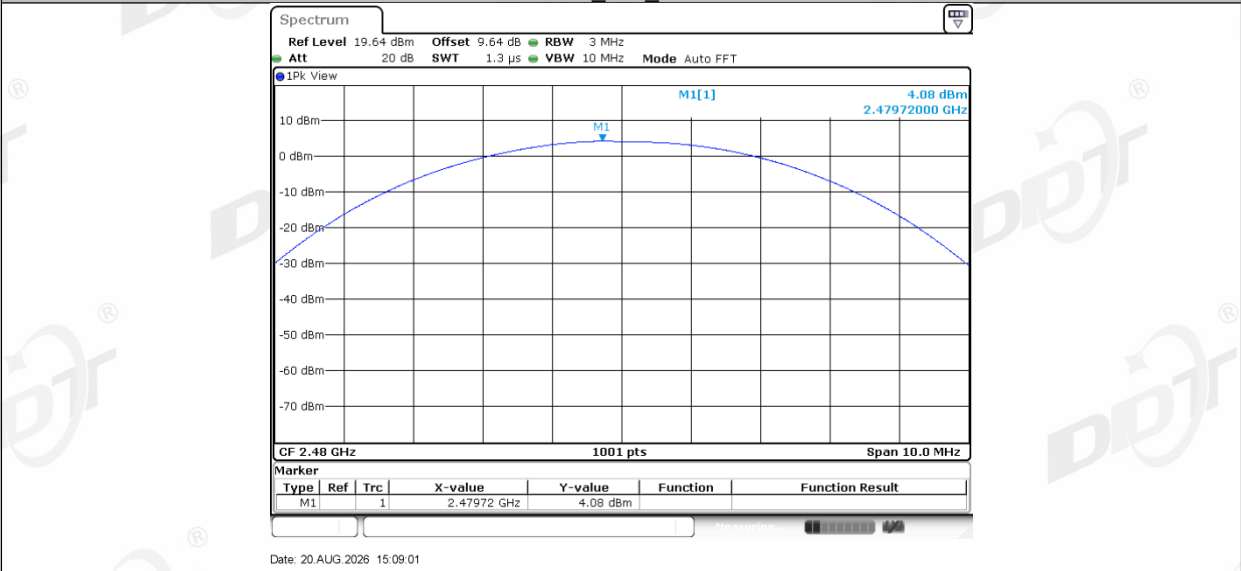
2DH5_Left_2441



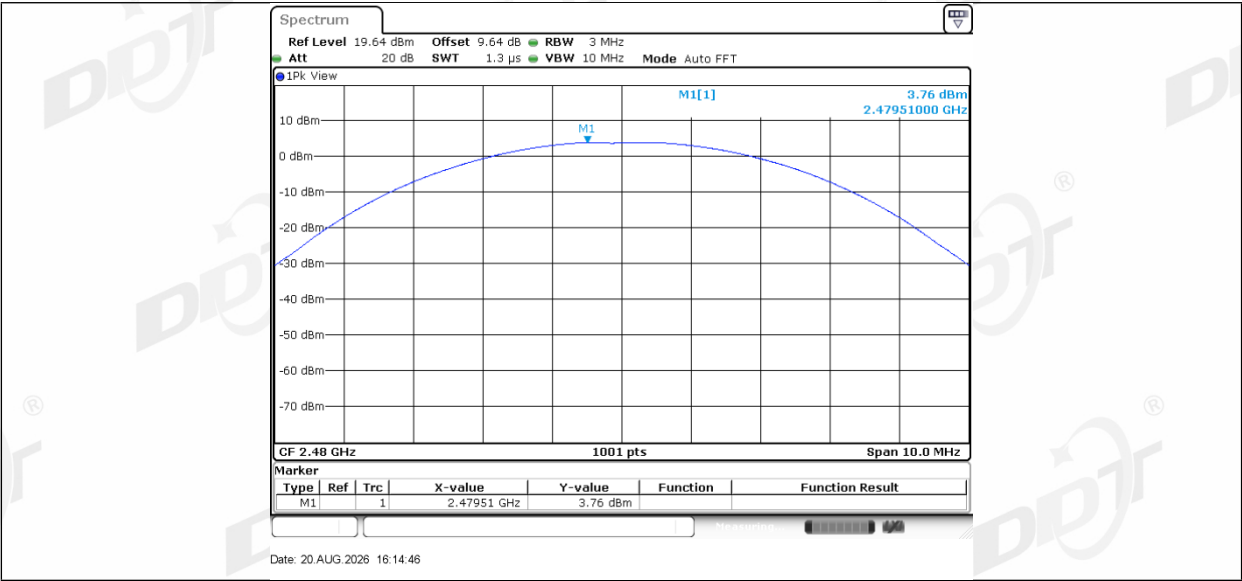
2DH5_Right_2441



2DH5_Left_2480

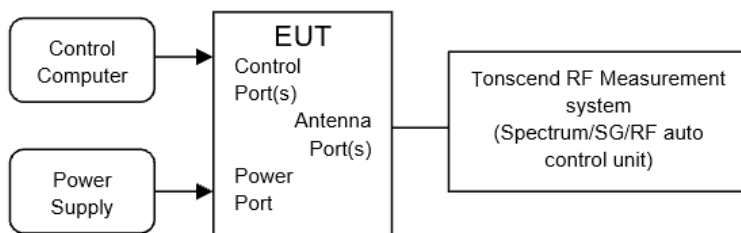


2DH5_Right_2480



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 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:

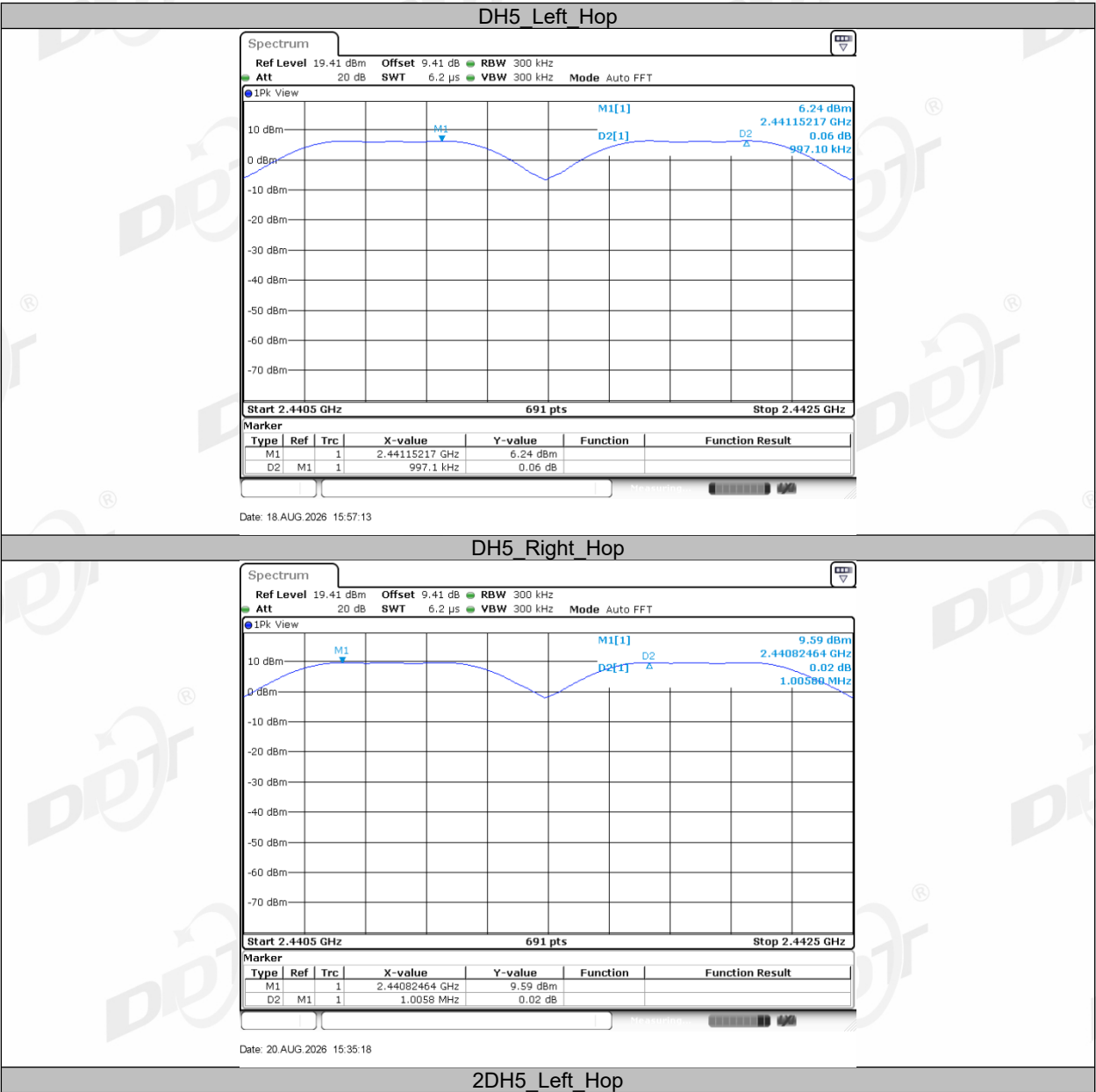
RBW:	approximately 30% of the channel spacing
VBW:	$VBW \geq RBW$.
Span:	Wide enough to capture the peaks of two adjacent channels.
Detector Mode:	Peak
Sweep time:	Auto
Trace mode:	Max hold
- (5) Use the marker-delta function to determine the separation between the peaks of the adjacent channels and record the results in the report.

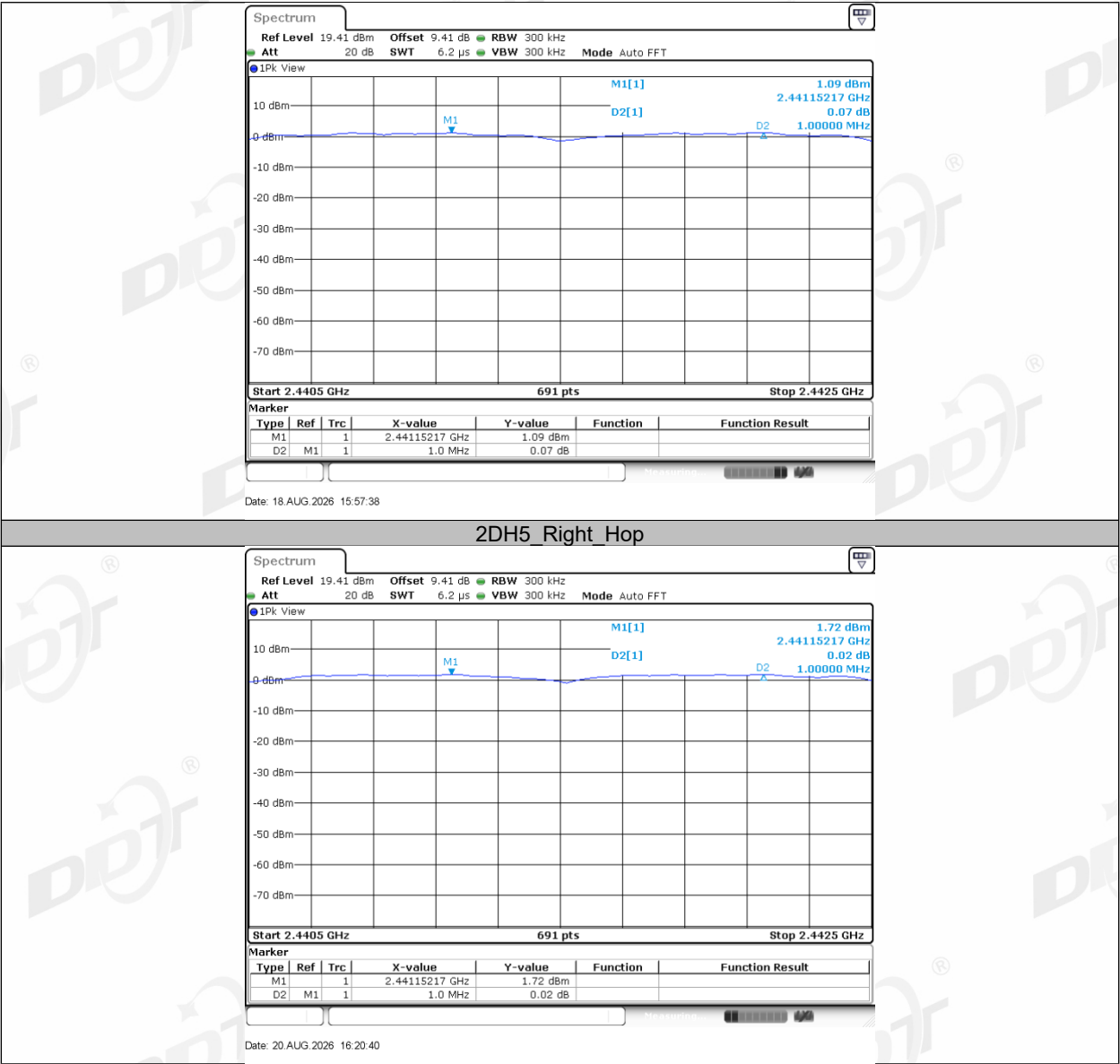
7.4. Test result

Test Engineer:	Zora Zhang	Test Site:	RF Measurement System 3#
Ambient Condition:	24℃,46%RH	Test Date:	2026.8.18-2026.8.20
Test Power Supply:	Battery	Sample Number:	S26081111-004/005

Test Mode	Antenna	Frequency [MHz]	Result [MHz]	Limit [MHz]	Verdict
DH5	Left	Hop	0.997	≥0.960	PASS
	Right	Hop	1.006	≥0.980	PASS
2DH5	Left	Hop	1	≥0.893	PASS
	Right	Hop	1	≥0.893	PASS

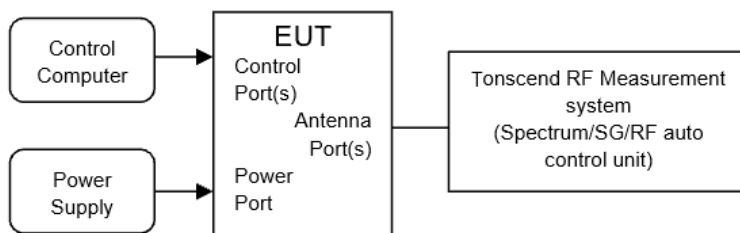
7.5. Test graphs





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 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:

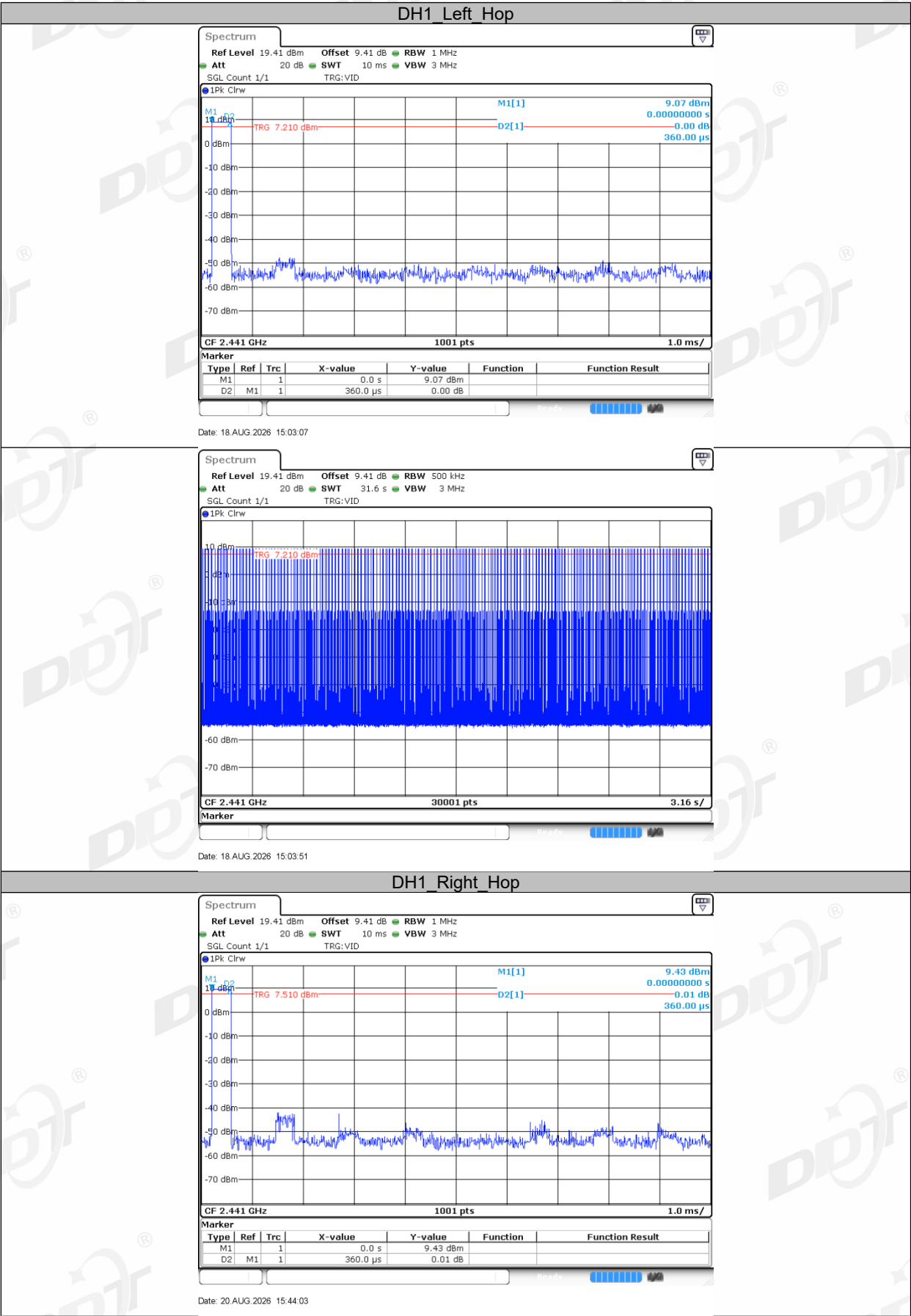
RBW:	≤ channel spacing and where possible RBW should be set $\gg 1 / T$
VBW:	$VBW \geq RBW$.
Span:	Zero span, centered on a hopping channel.
Detector Mode:	Peak
Sweep time:	Auto
Trace mode:	Clear Write.
- (5) The test period: $T = 0.4 \text{ Second/Channel} \times 79 \text{ Channel} = 31.6 \text{ s}$
- (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.

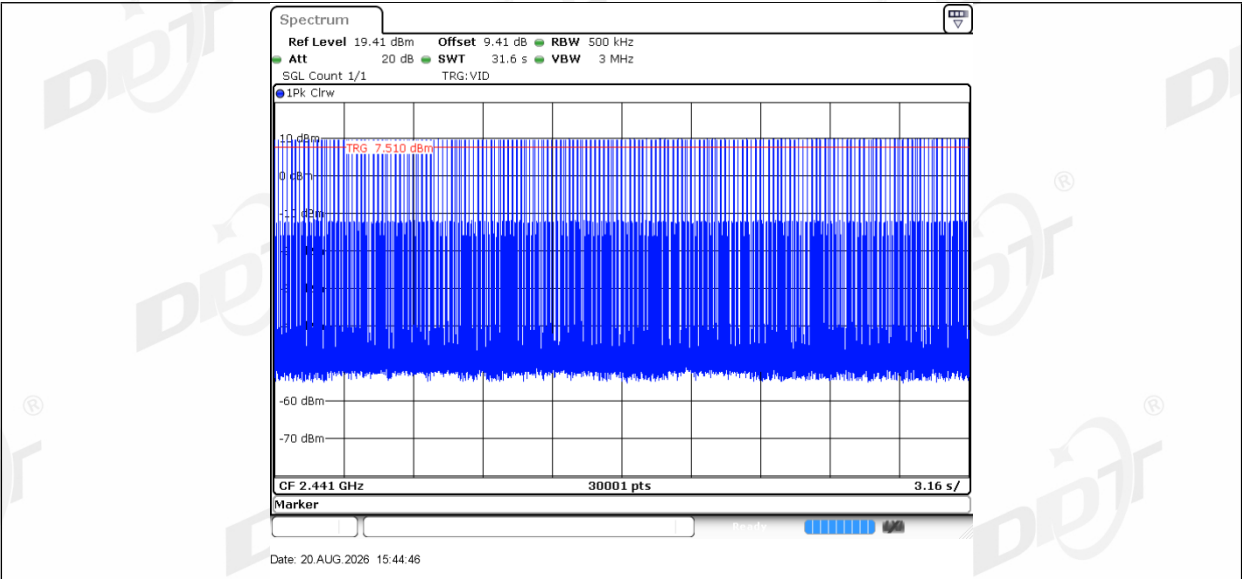
8.4. Test result

Test Engineer:	Zora Zhang	Test Site:	RF Measurement System 3#
Ambient Condition:	24℃,46%RH	Test Date:	2026.8.18-2026.8.20
Test Power Supply:	Battery	Sample Number:	S26081111-004/005

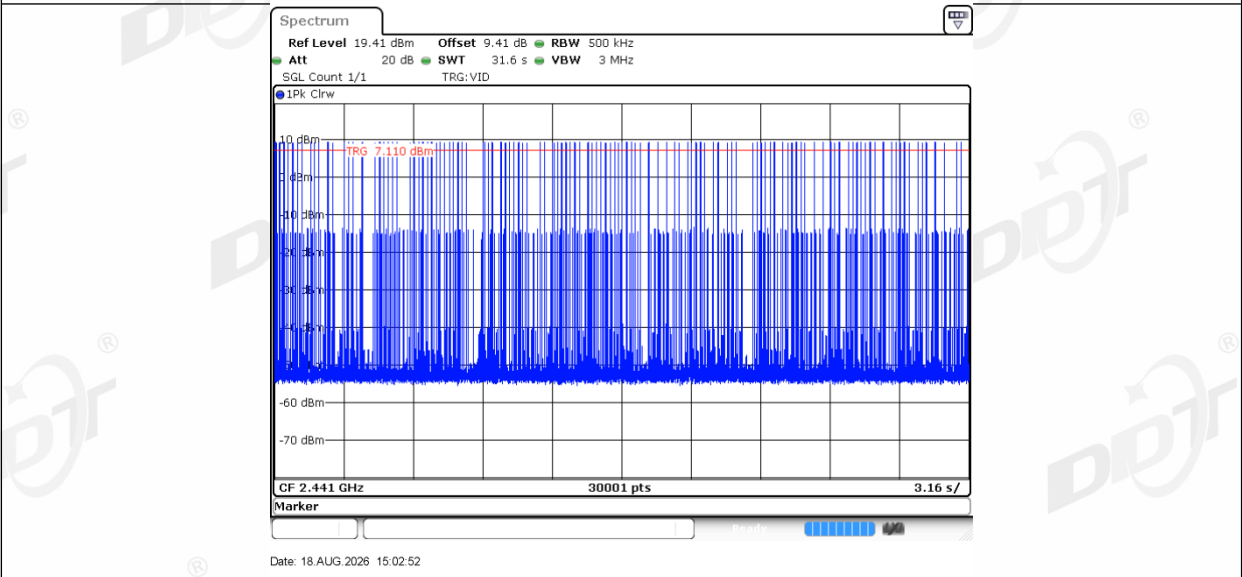
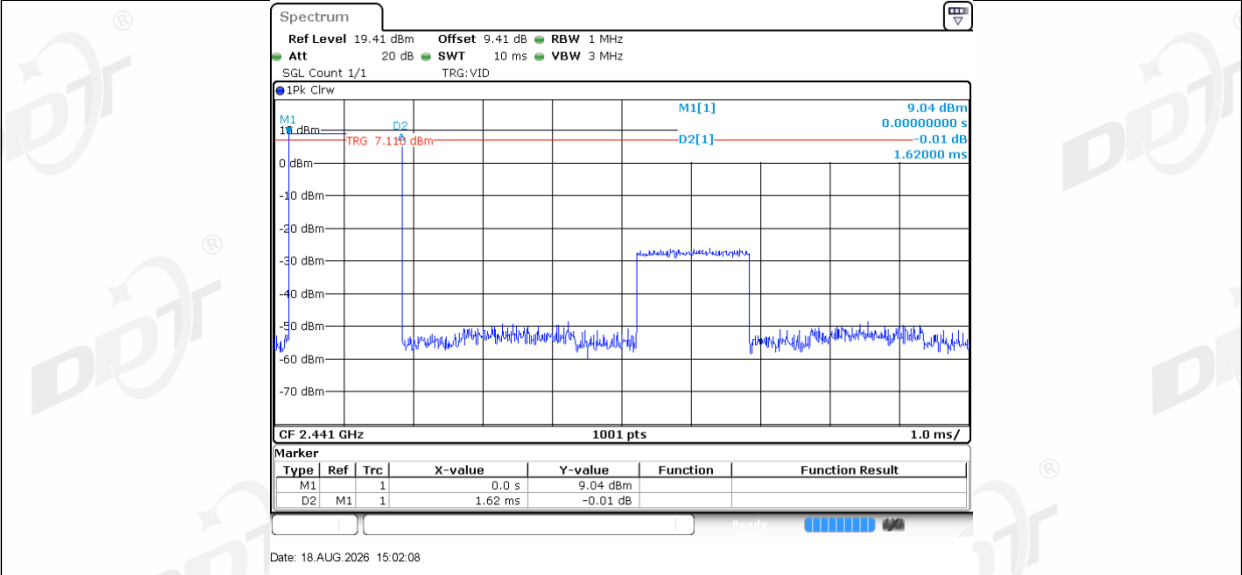
Test Mode	Antenna	Frequency [MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Left	Hop	0.360	317	0.114	≤0.4	PASS
	Right	Hop	0.360	310	0.112	≤0.4	PASS
DH3	Left	Hop	1.620	162	0.262	≤0.4	PASS
	Right	Hop	1.620	152	0.246	≤0.4	PASS
DH5	Left	Hop	2.870	101	0.29	≤0.4	PASS
	Right	Hop	2.870	91	0.261	≤0.4	PASS
2DH1	Left	Hop	0.380	318	0.121	≤0.4	PASS
	Right	Hop	0.370	315	0.117	≤0.4	PASS
2DH3	Left	Hop	1.620	163	0.264	≤0.4	PASS
	Right	Hop	1.630	169	0.275	≤0.4	PASS
2DH5	Left	Hop	2.870	109	0.313	≤0.4	PASS
	Right	Hop	2.870	104	0.298	≤0.4	PASS

8.5. Test graphs

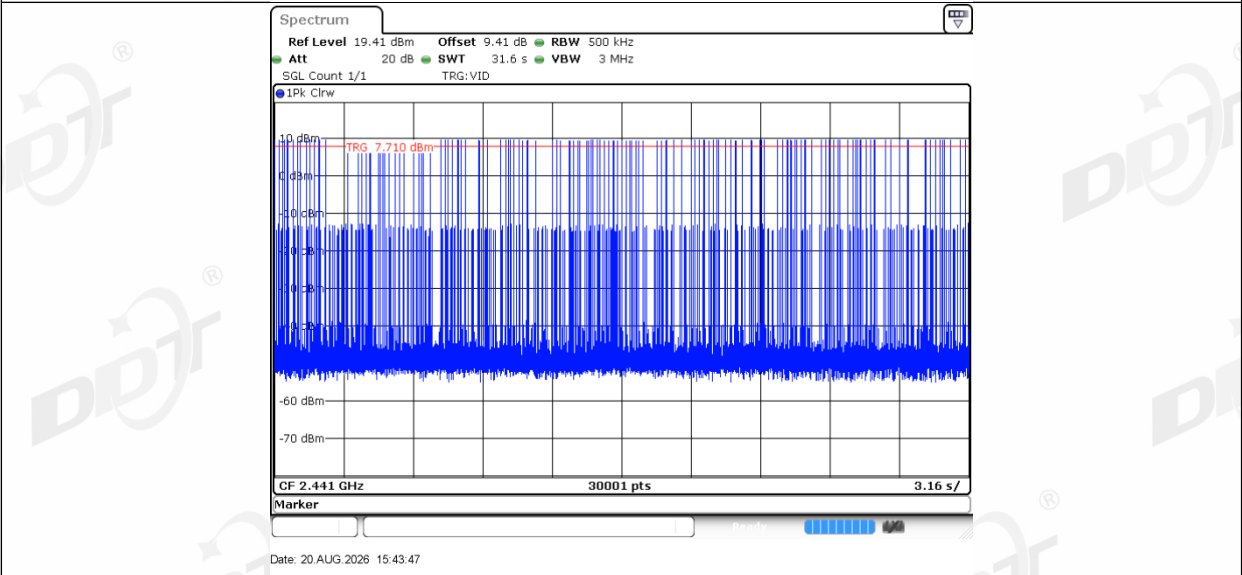
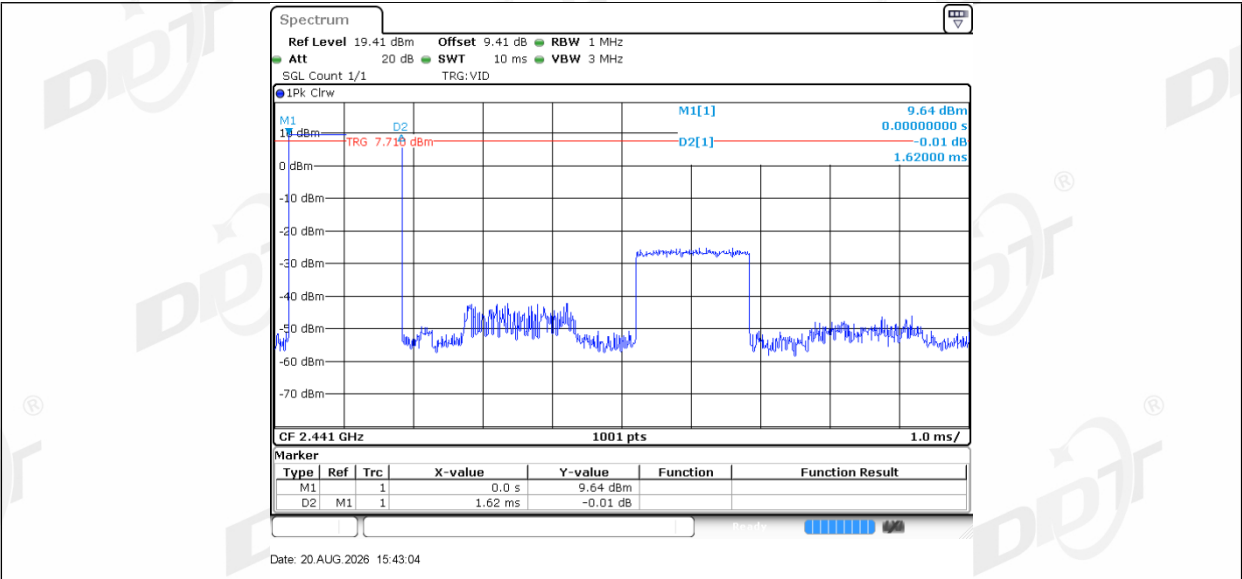




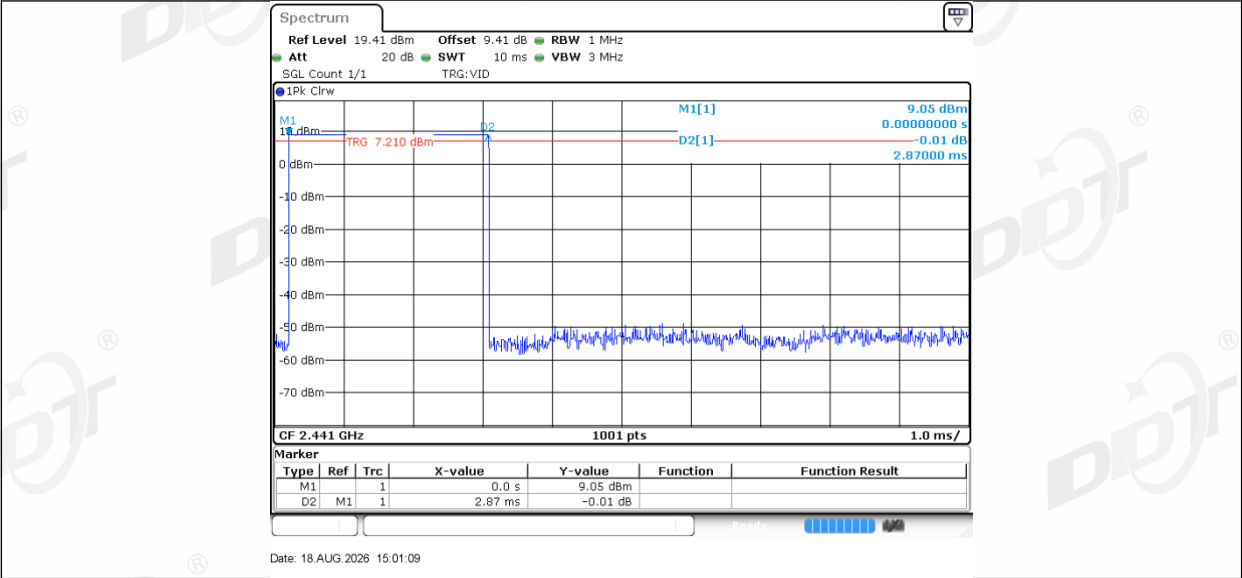
DH3_Left Hop

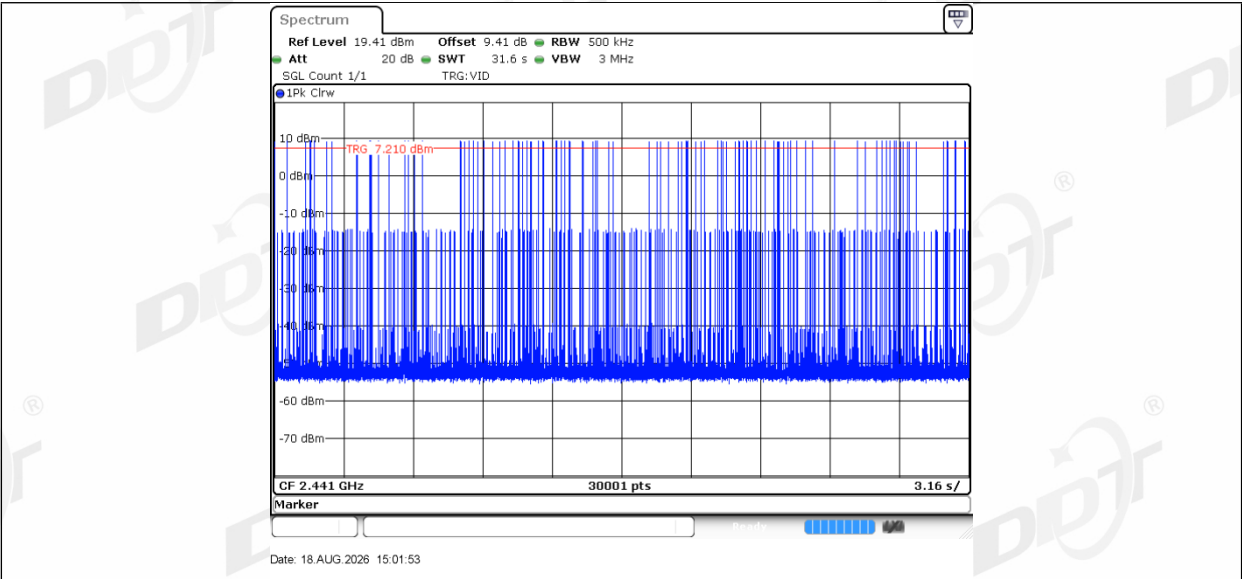


DH3_Right Hop

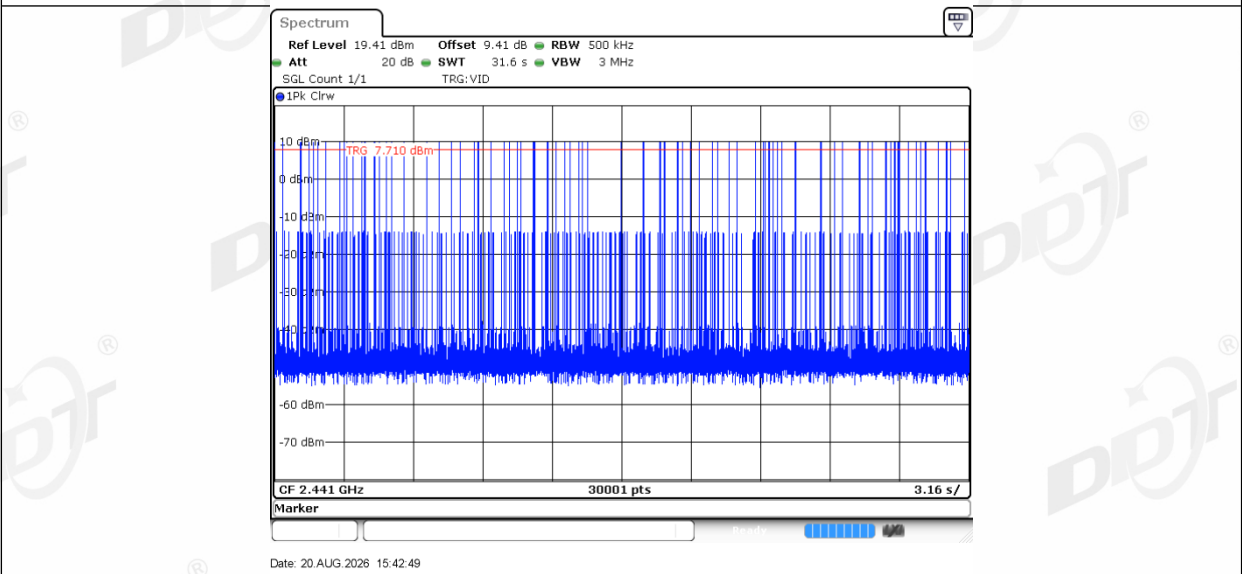
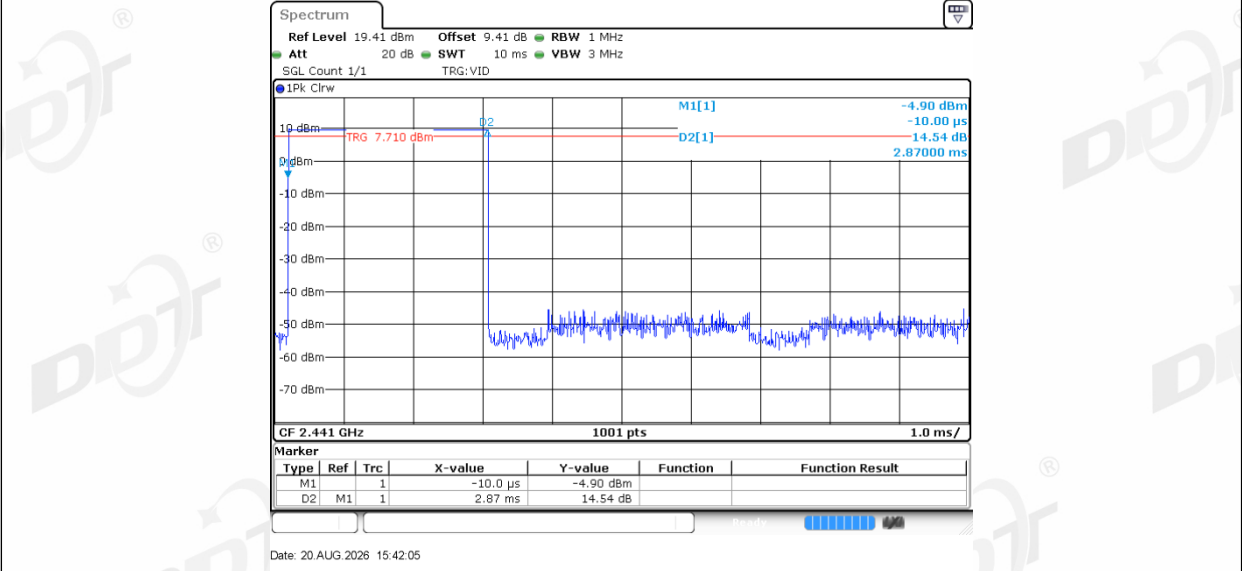


DH5_Left_Hop

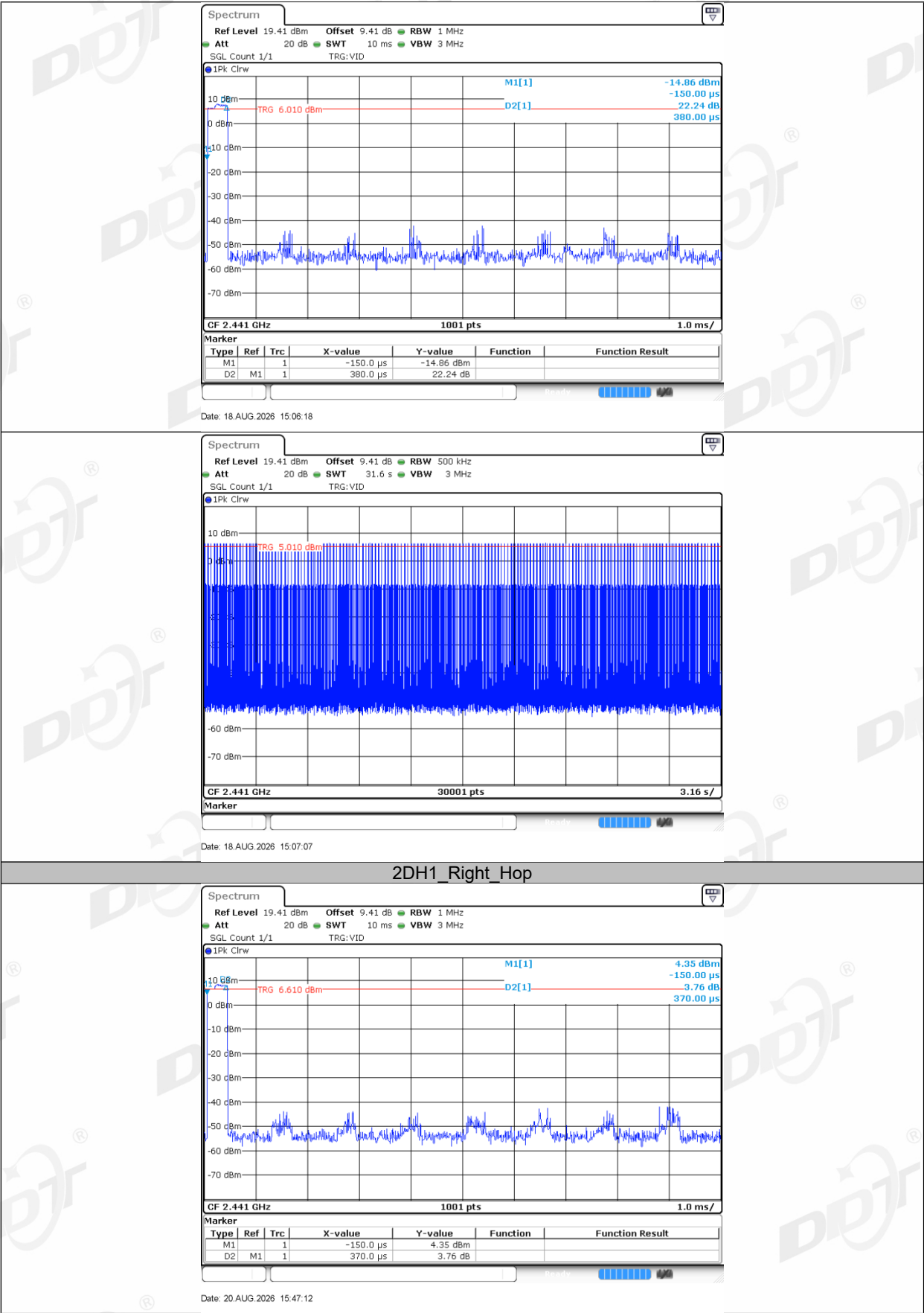


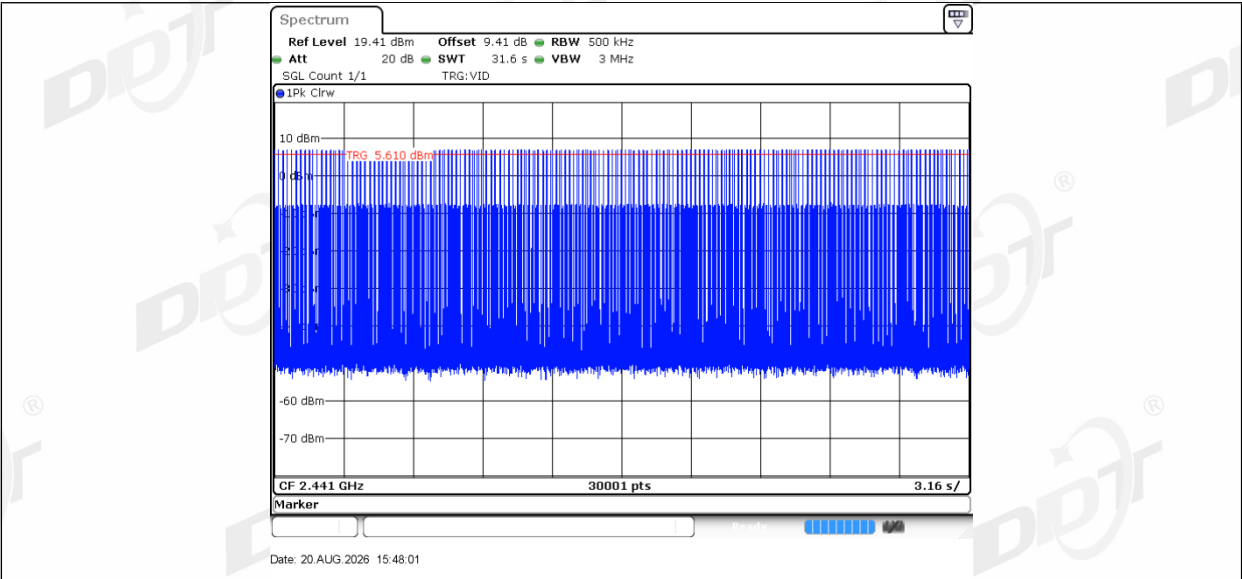


DH5 Right Hop

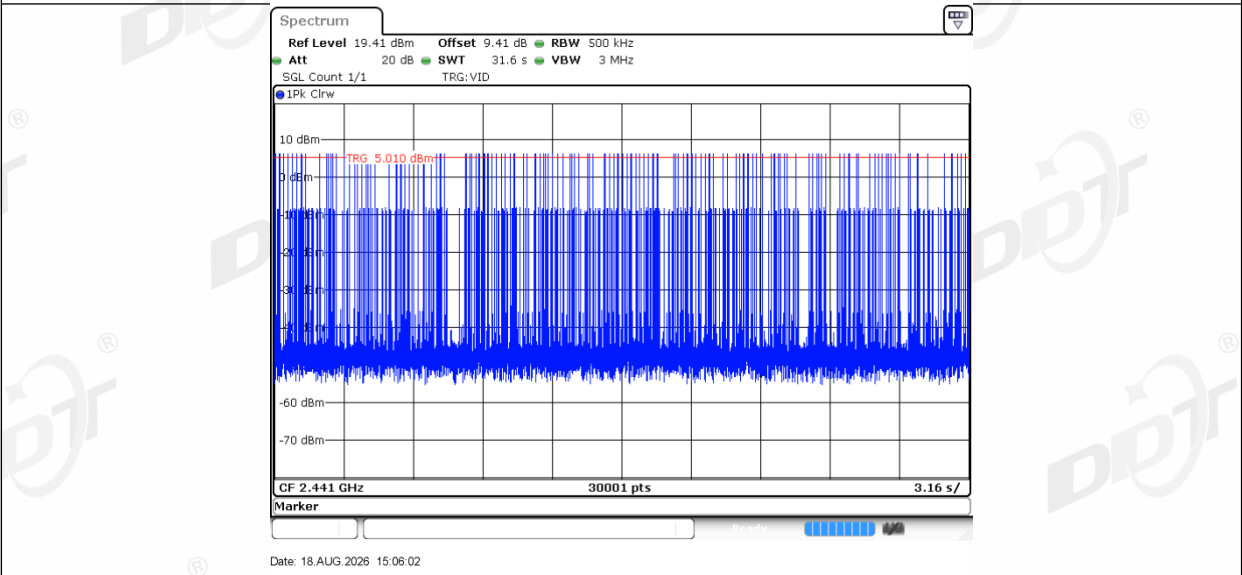
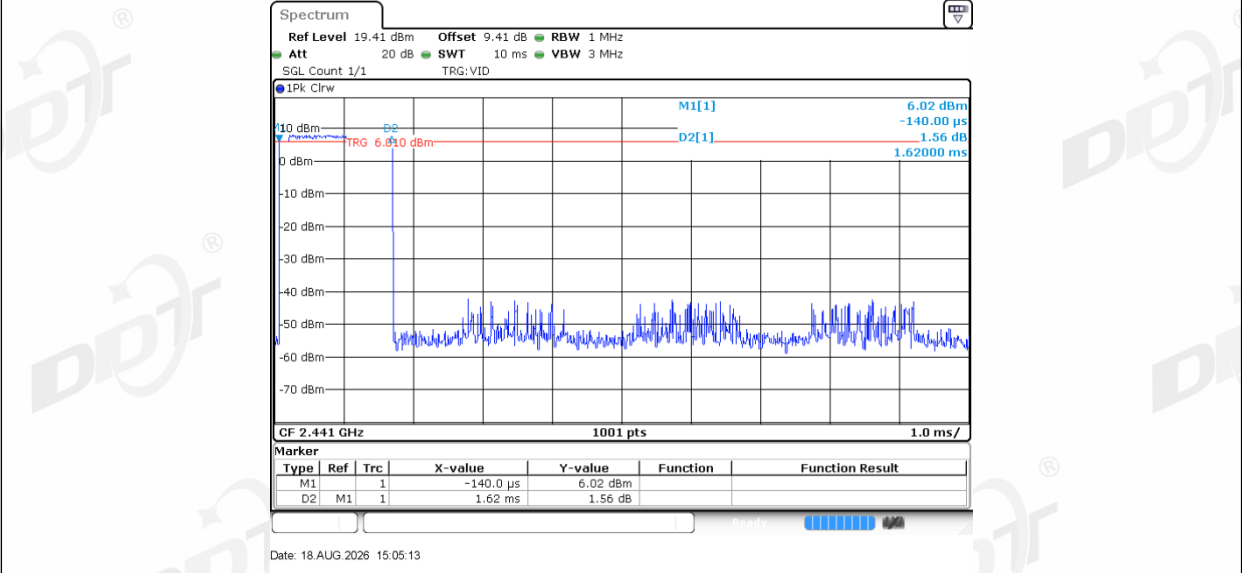


2DH1 Left Hop

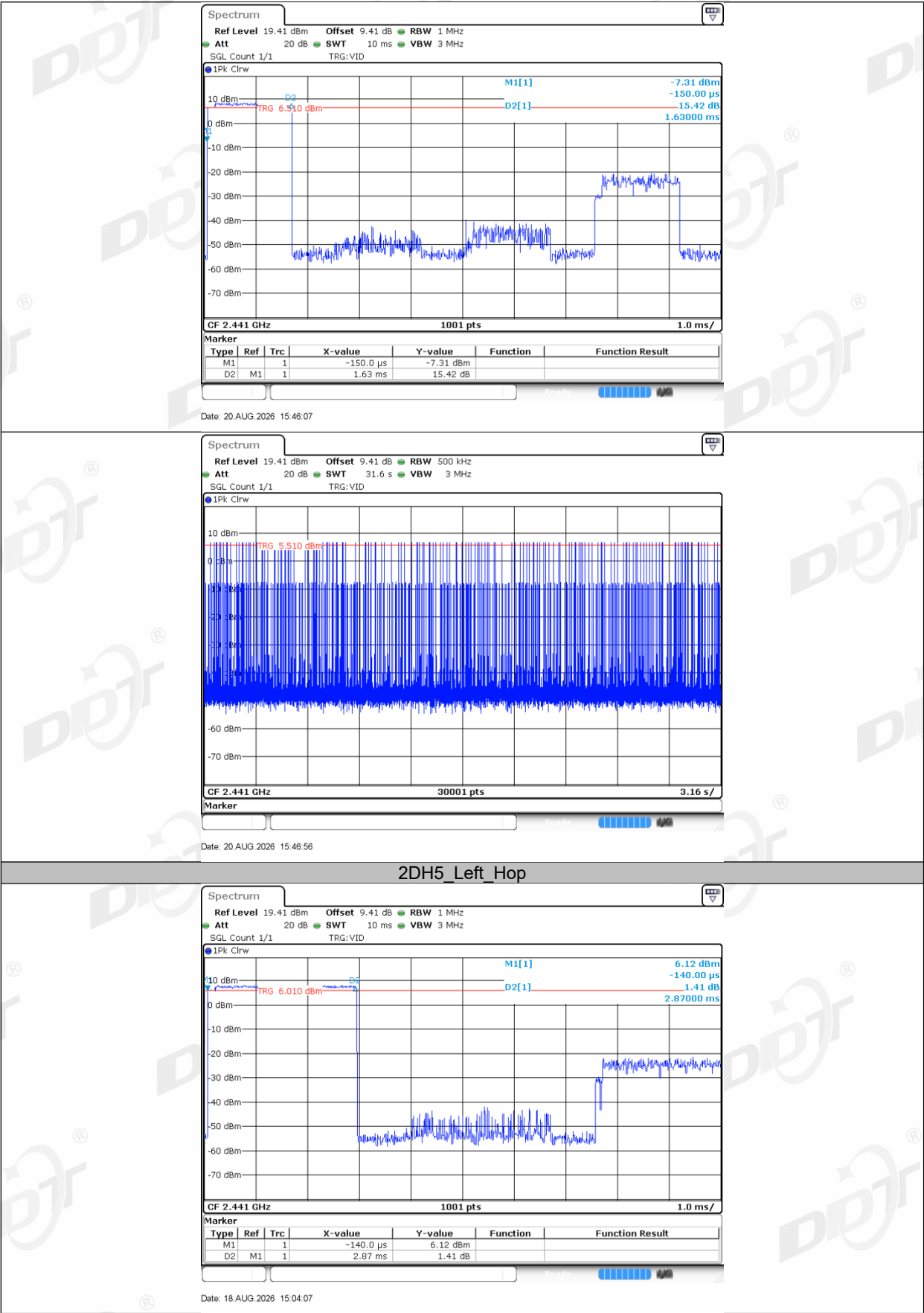


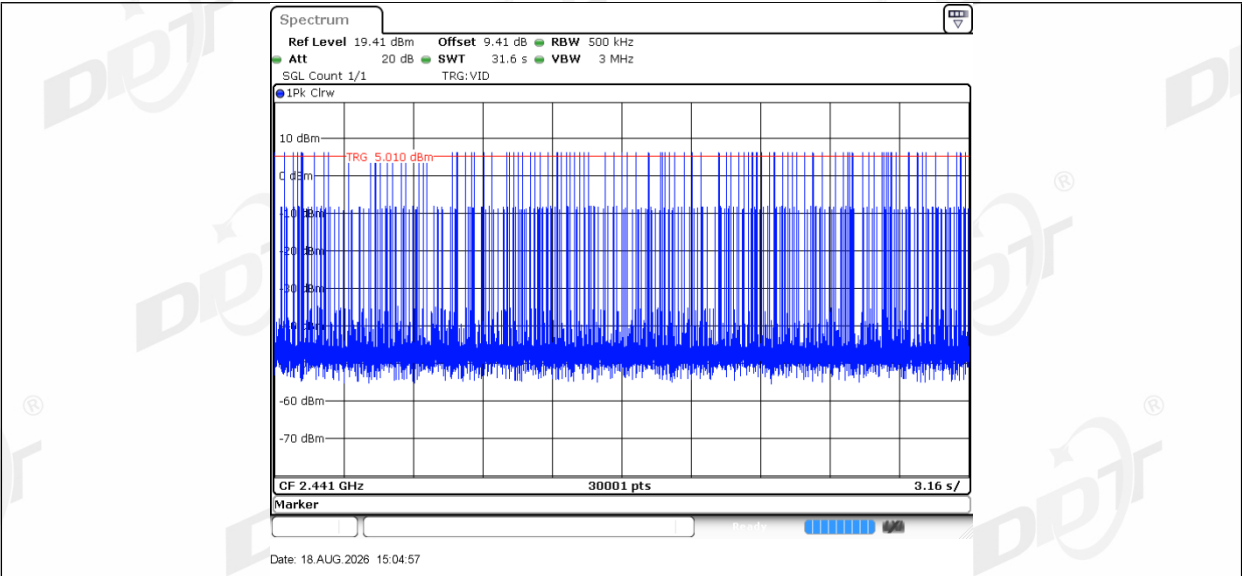


2DH3 Left Hop

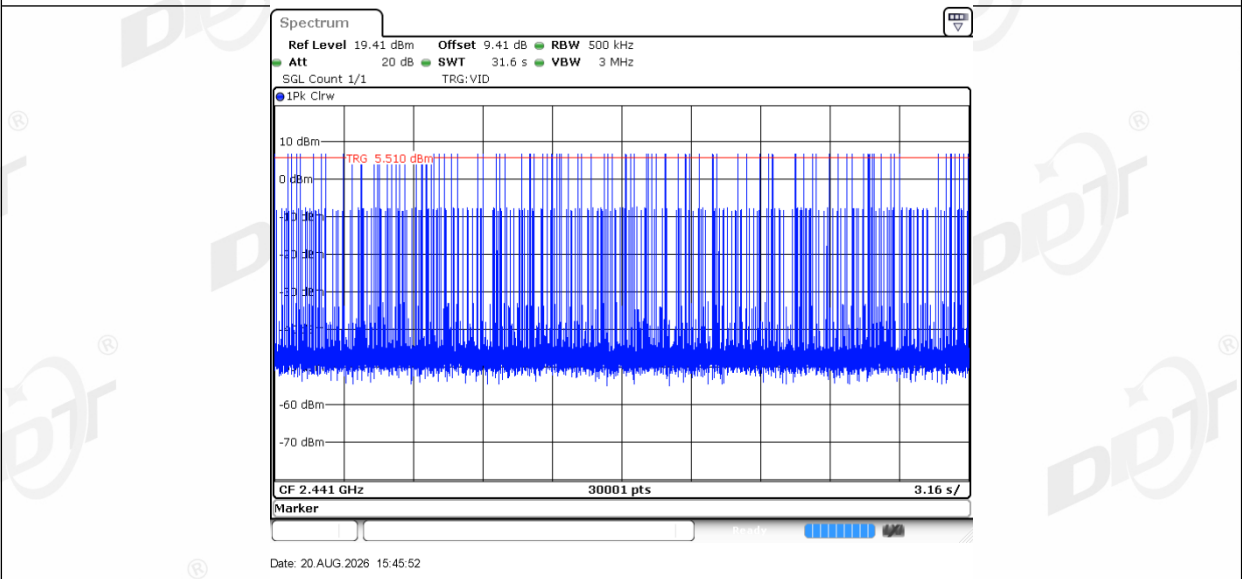
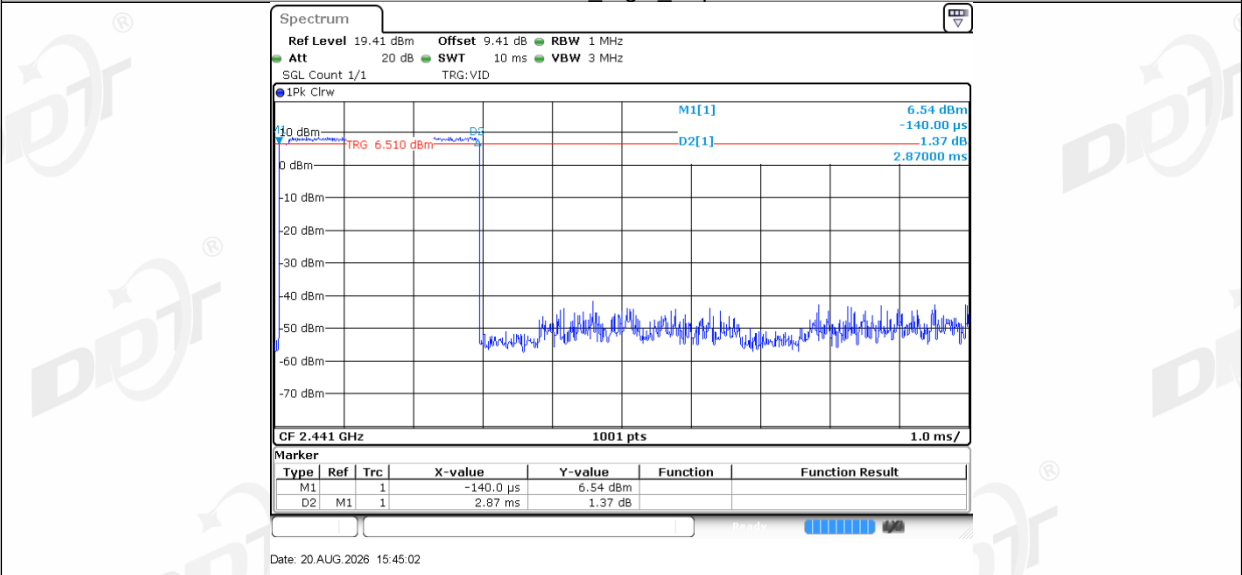


2DH3 Right Hop



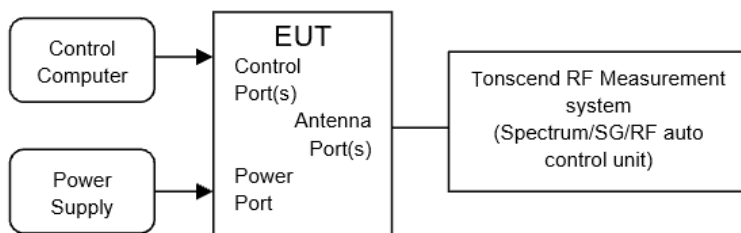


2DH5 Right Hop



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 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 $\geq$ 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:	Zora Zhang	Test Site:	RF Measurement System 3#
Ambient Condition:	24℃,46%RH	Test Date:	2026.8.18-2026.8.20
Test Power Supply:	Battery	Sample Number:	S26081111-004/005

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

9.5. Test graphs

