



RADIO TEST REPORT

Applicant	:	Cosonic Intelligent Technologies Co., Ltd.
Address of Applicant	:	NO. 3 Keyuan Road, Songshan Lake District, Dongguan City, Guangdong Province 523808
Manufacturer	:	Cosonic Intelligent Technologies Co., Ltd.
Address of Manufacturer	:	NO. 3 Keyuan Road, Songshan Lake District, Dongguan City, Guangdong Province 523808
Equipment under Test	:	WIRELESS HEADPHONES
Model No.	:	HA-A31T
FCC ID	:	2ALVK-HAA31T
IC	:	11136A-HAA31T
Test Standard(s)	:	FCC Rules and Regulations Part 15 Subpart C, ANSI C63.10-2020+Cor.1-2023, 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-RE26070611-2E01
Issue Date	:	2026/08/17
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	:	Cosonic Intelligent Technologies Co., Ltd.
Address of Applicant	:	NO. 3 Keyuan Road, Songshan Lake District, Dongguan City, Guangdong Province 523808
Equipment under Test	:	WIRELESS HEADPHONES
Model No.	:	HA-A31T
Manufacturer	:	Cosonic Intelligent Technologies Co., Ltd.
Address of Manufacturer	:	NO. 3 Keyuan Road, Songshan Lake District, Dongguan City, Guangdong Province 523808

Test Standard Used:
FCC Rules and Regulations Part 15 Subpart C,
ANSI C63.10-2020+Cor.1-2023,
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-RE26070611-2E01		
Date of Receipt:	2026/07/07	Date of Test:	2026/07/07 - 2026/07/28

Created: Bobo Chen	Reviewed: Tiger Mo	Approved: Ella Gong
		
2026/07/29	2026/08/17	2026/08/17

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	2026/08/17	Ella Gong

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	: WIRELESS HEADPHONES
Model Number	: HA-A31T
EUT Function Description	: Please reference user manual of this device
Power Supply	: CHARGING CASE: DC 5V from USB cable HEADSET: DC 5V from external charging case CHARGING CASE: DC 3.7V Lithium-ion built-in battery HEADSET: DC 3.85V Lithium-ion built-in battery
Antenna Type	: PIFA
Max Antenna Gain(dBi)	: Left side: -1.4dBi Right side: -1.5dBi

Radio Specification	: Bluetooth BR/EDR
Operation Frequency	: 2402 MHz to 2480 MHz
Modulation	: GFSK, $\pi/4$ -DQPSK, 8DPSK

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	/	

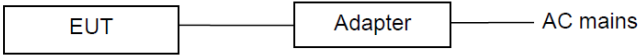
Note: The above EUT information is declared by manufacturer and for more detailed features description please refer to the manufacturer's specifications or User's Manual. The above Antenna information is declared by manufacturer and for more detailed features description please refer to the manufacturer's 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
/	/	/	/

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.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	10	CH0 to CH78	2402 to 2480
$\pi/4$ -DQPSK hopping on Tx mode	10	CH0 to CH78	2402 to 2480
8DPSK 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
$\pi/4$ -DQPSK hopping off Tx mode	10	CH0	2402
	10	CH39	2441
	10	CH78	2480
8DPSK hopping off Tx mode	10	CH0	2402
	10	CH39	2441
	10	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, 8DPSK mode: 3DH5

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

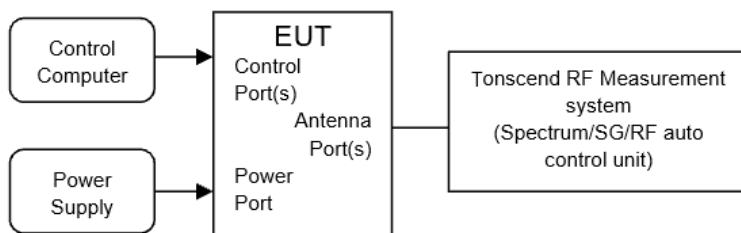
Test Item	Uncertainty
Bandwidth	1.9%
Peak Output Power (Conducted) (Spectrum analyzer)	0.98 dB
Peak Output Power (Conducted) (Power Sensor)	1.18 dB
Power Spectral Density (Base EIRP)	1.51 dB
Power Spectral Density (Spectrum analyzer)	0.98 dB
Frequencies Stability	1.9 kHz
Conducted spurious emissions	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 1#)				
SIGNAL ANALYZER	R&S	FSQ26	101272	2027/02/27
Wideband Radio Communication Tester	R&S	CMW500	117491	2027/02/27
MXG Vector Signal Generator	KEYSIGHT	N5182B	MY59100192	2027/02/27
MXG Vector Signal Generator	Agilent	N5182A	MY47420658	2027/02/27
RF Control Unit	Tonscend	JS0806-2	158060010	2027/02/27
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

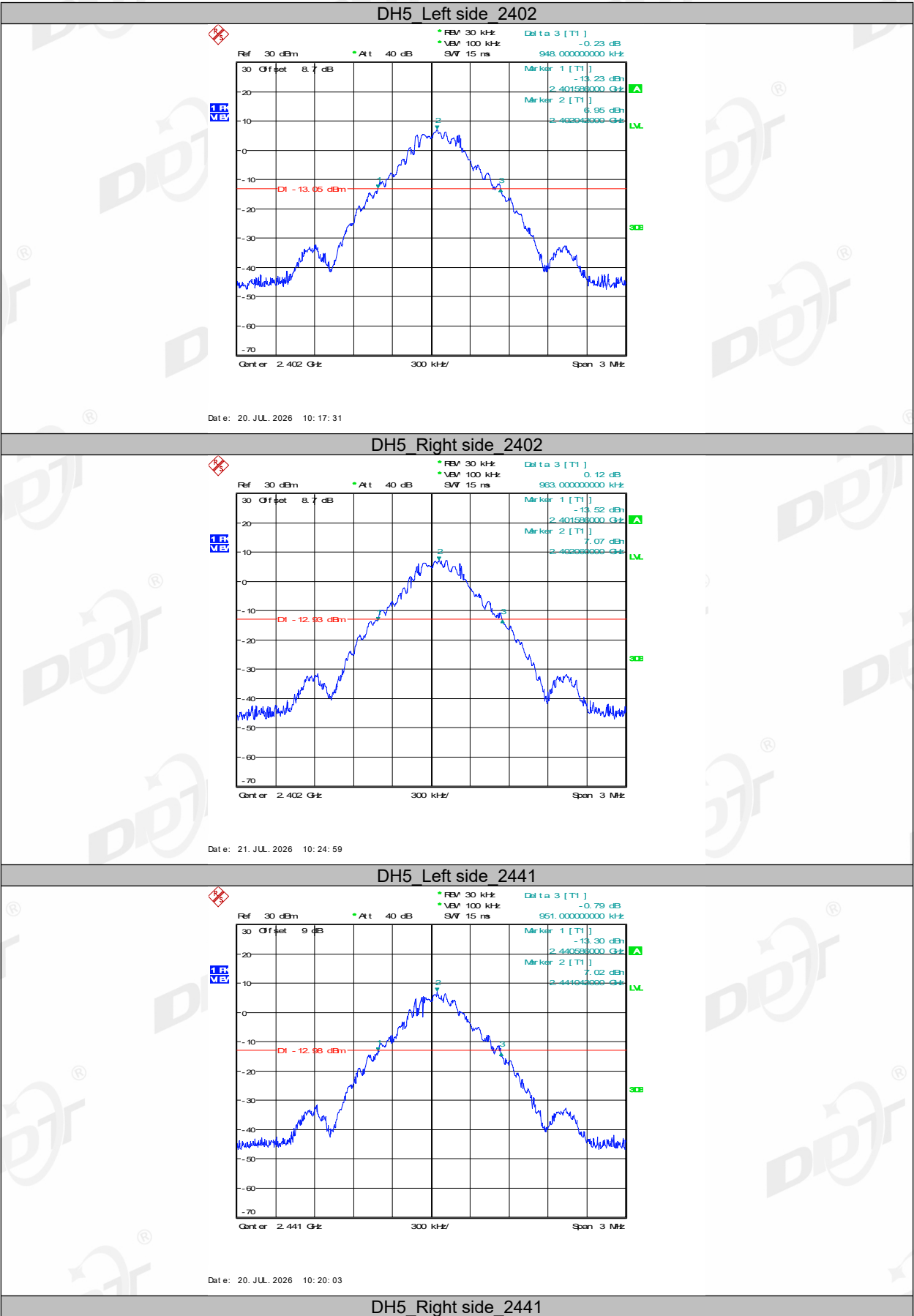
- (5) Measure and record the results in the report.

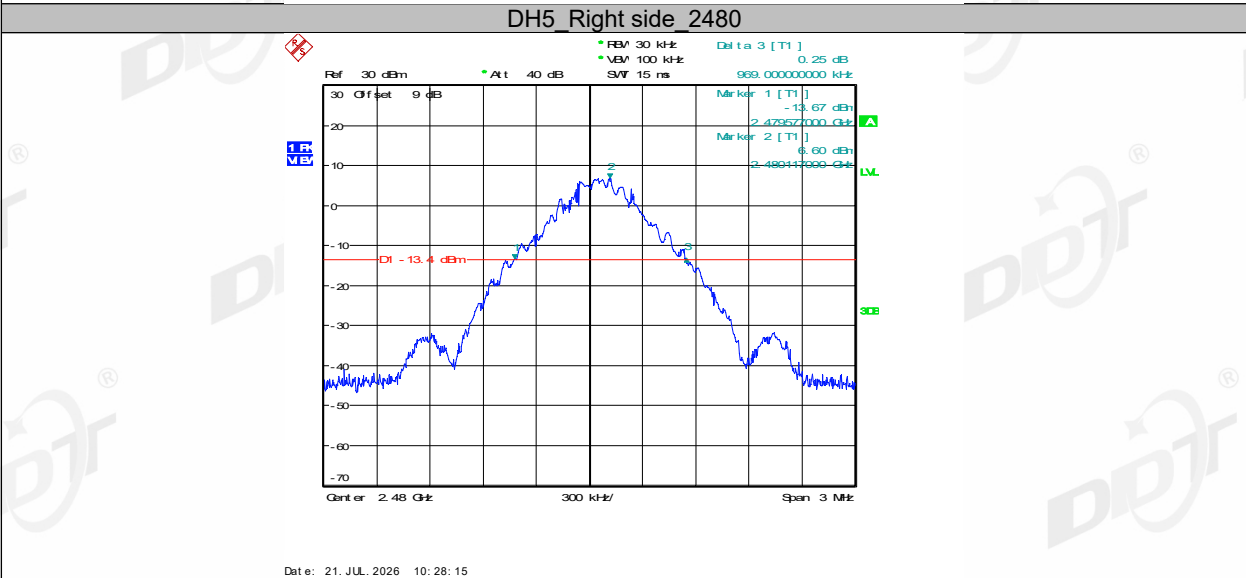
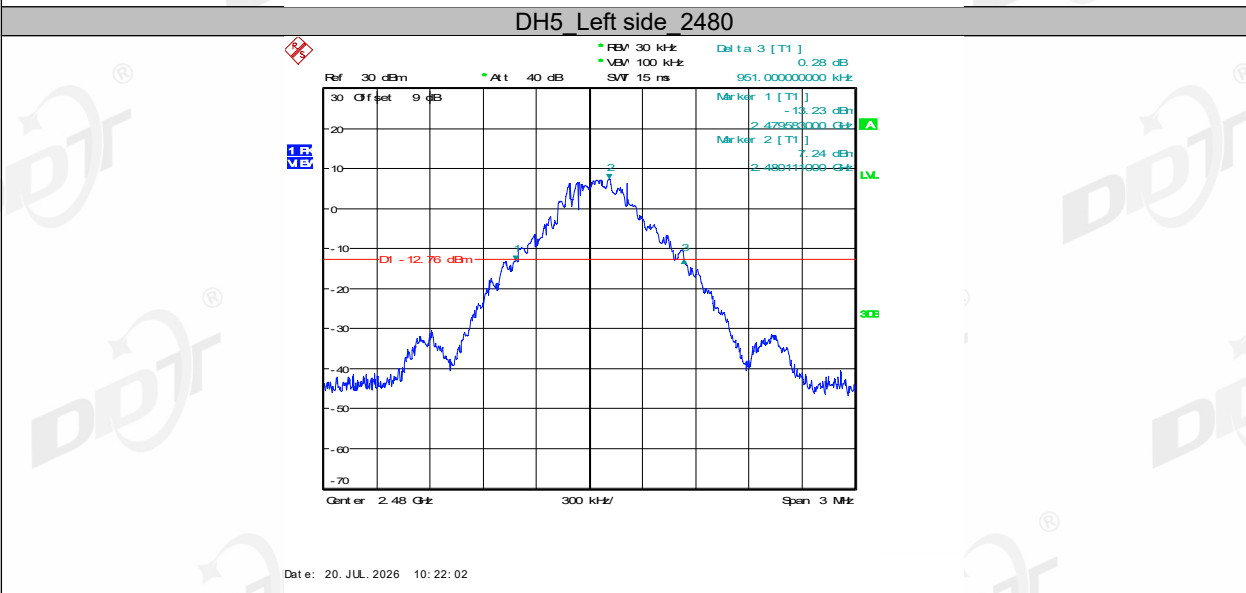
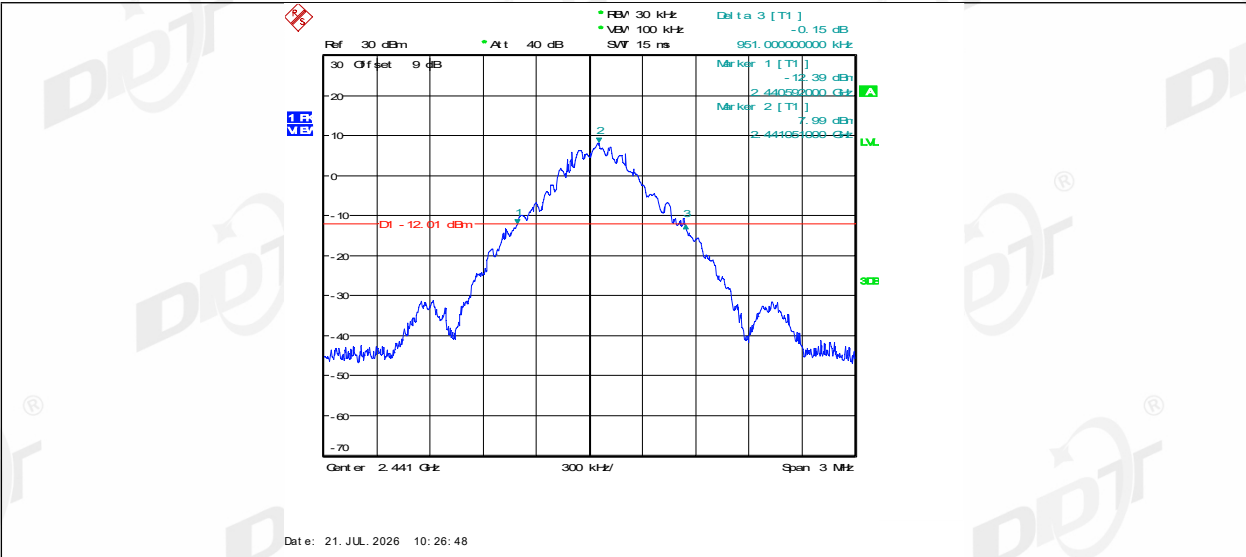
4.4. Test result

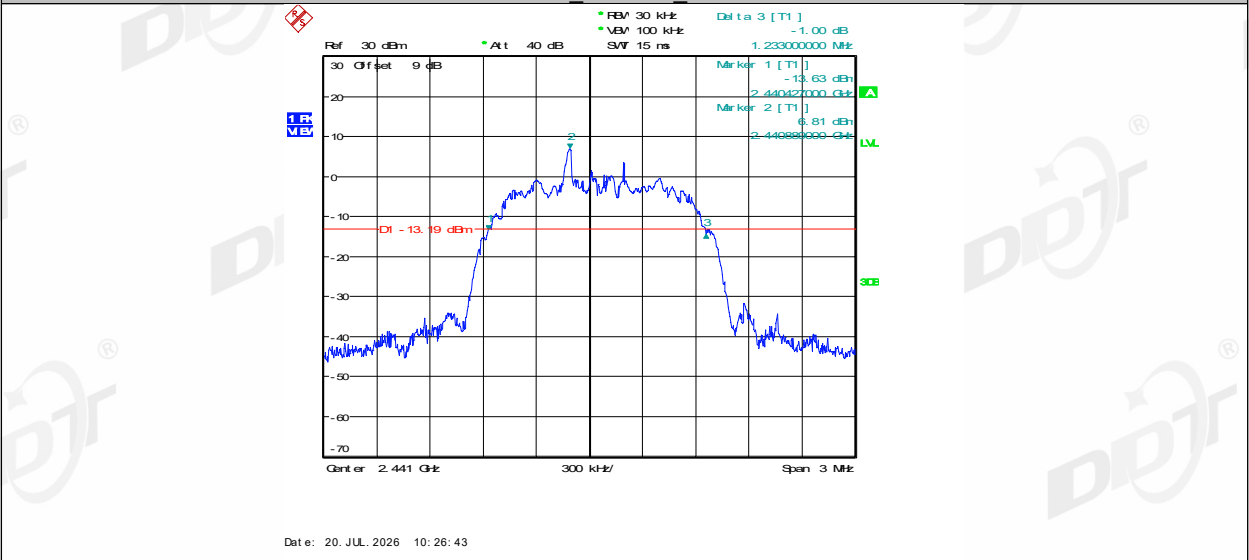
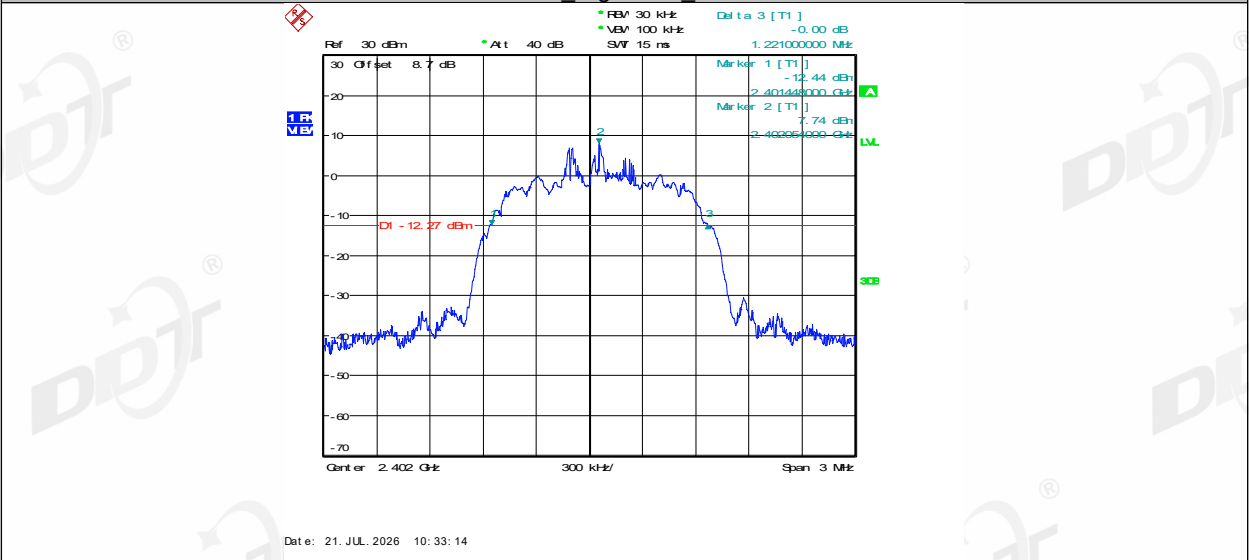
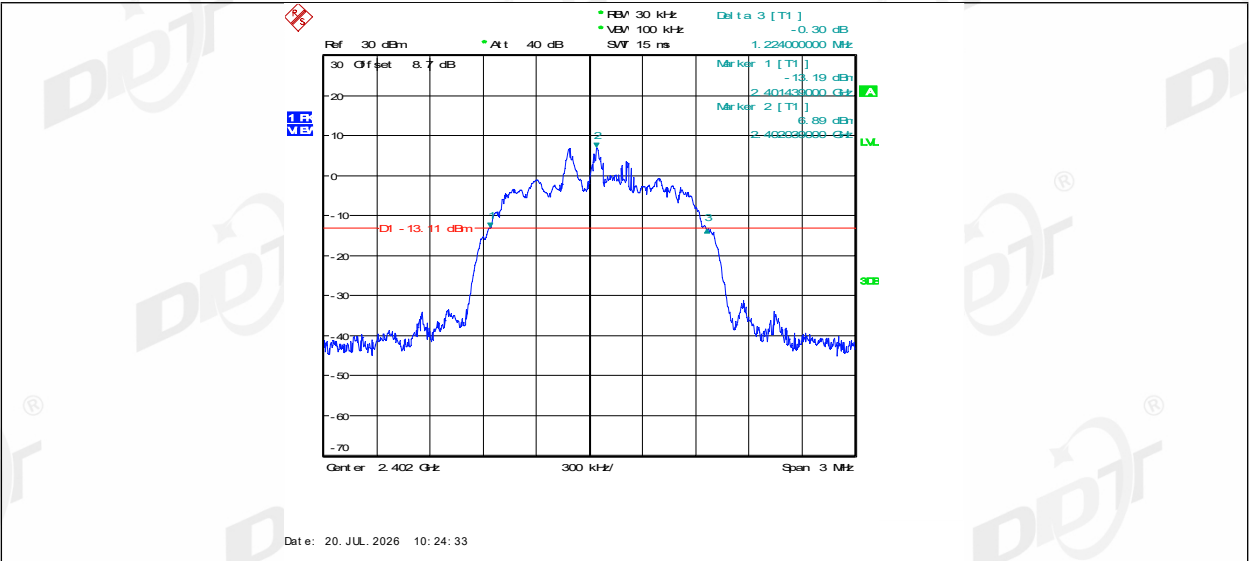
Test Engineer:	Zora Zhang	Test Site:	RF Measurement System 1#
Ambient Condition:	27.3-28.2℃,35-53.6%RH	Test Date:	2026.7.13-2026.7.28
Test Power Supply:	Battery	Sample Number:	S26070611-009

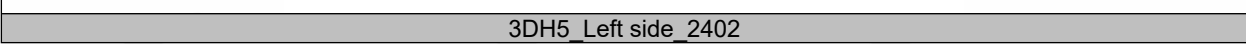
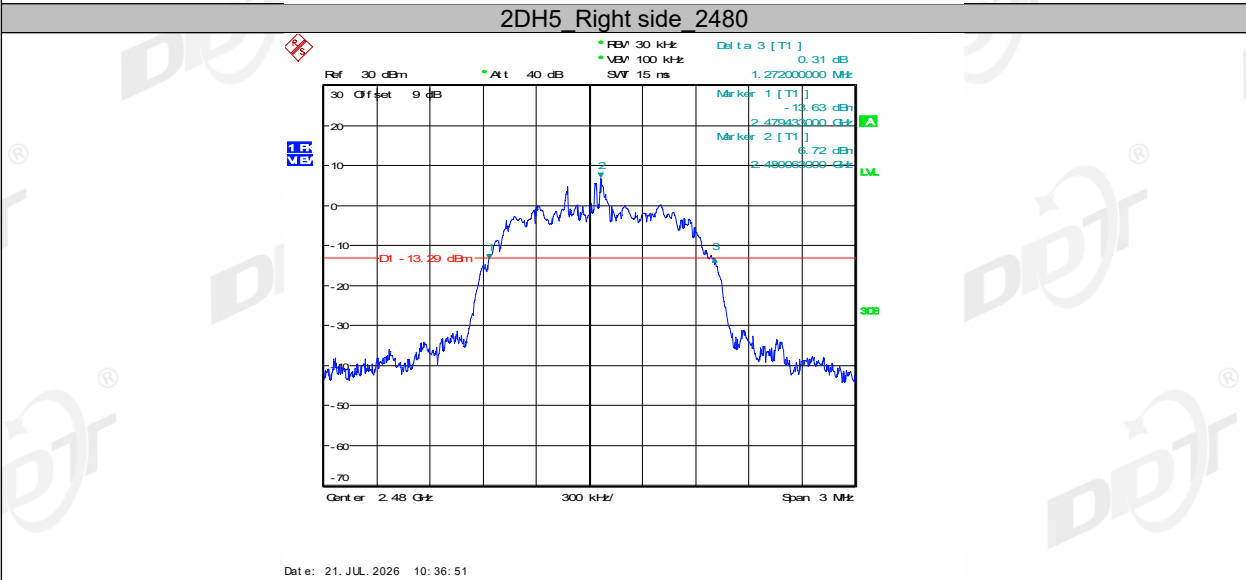
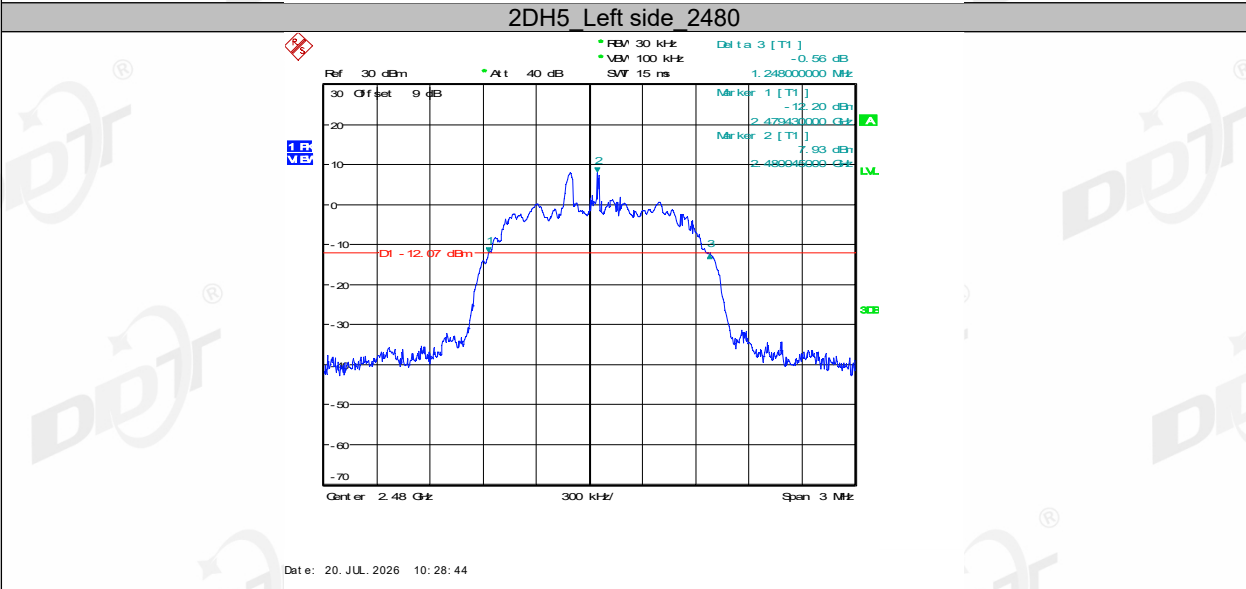
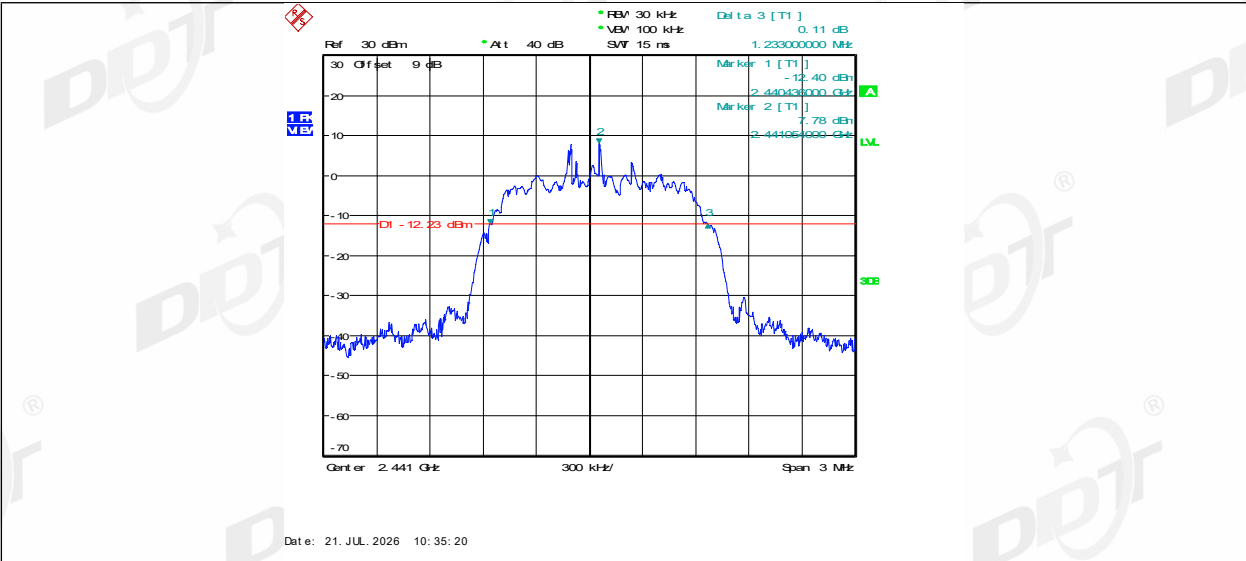
Test Mode	Antenna	Frequency [MHz]	20dB EBW[MHz]
DH5	Left side	2402	0.95
	Right side	2402	0.96
	Left side	2441	0.95
	Right side	2441	0.95
	Left side	2480	0.95
	Right side	2480	0.97
2DH5	Left side	2402	1.22
	Right side	2402	1.22
	Left side	2441	1.23
	Right side	2441	1.23
	Left side	2480	1.25
	Right side	2480	1.27
3DH5	Left side	2402	1.30
	Right side	2402	1.25
	Left side	2441	1.30
	Right side	2441	1.29
	Left side	2480	1.30
	Right side	2480	1.30

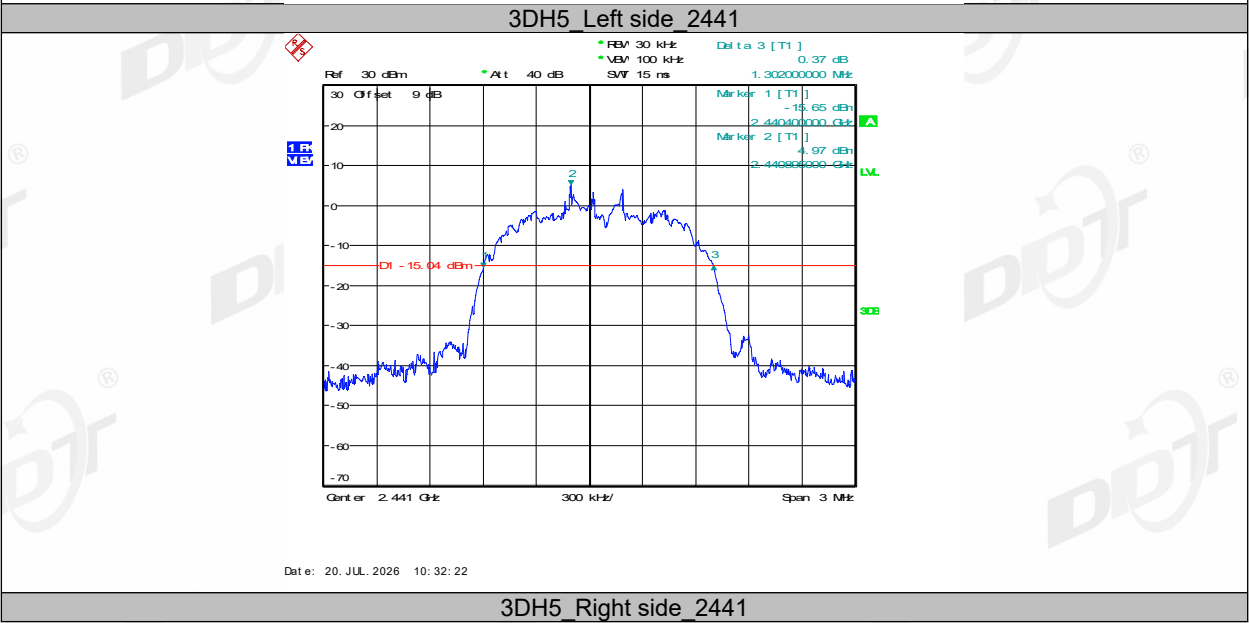
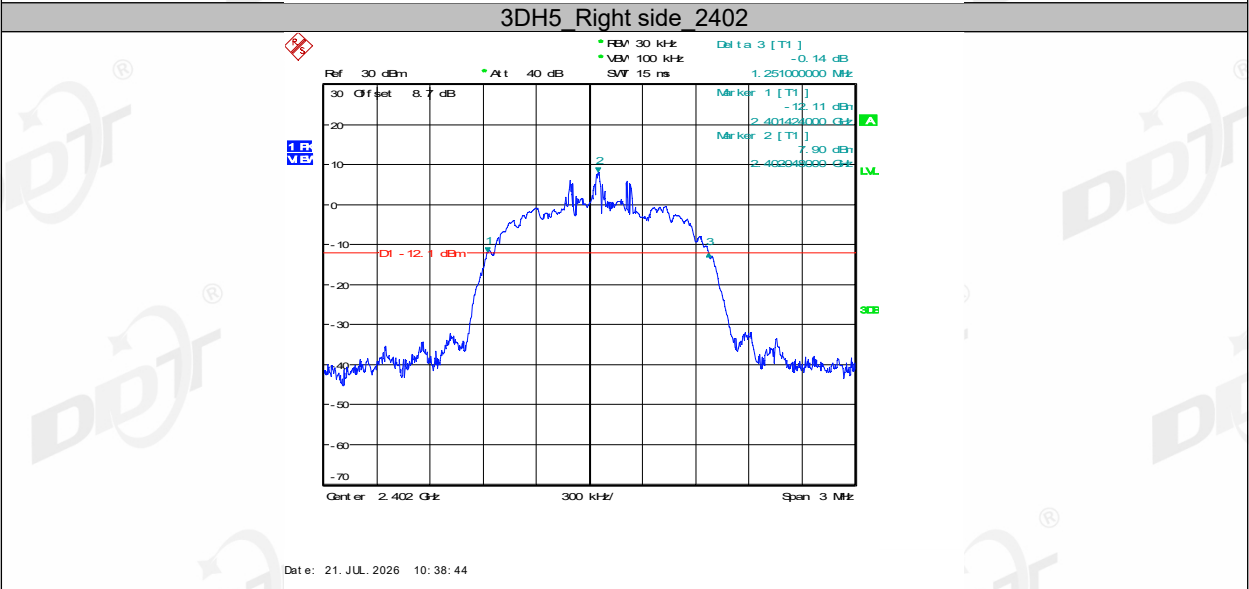
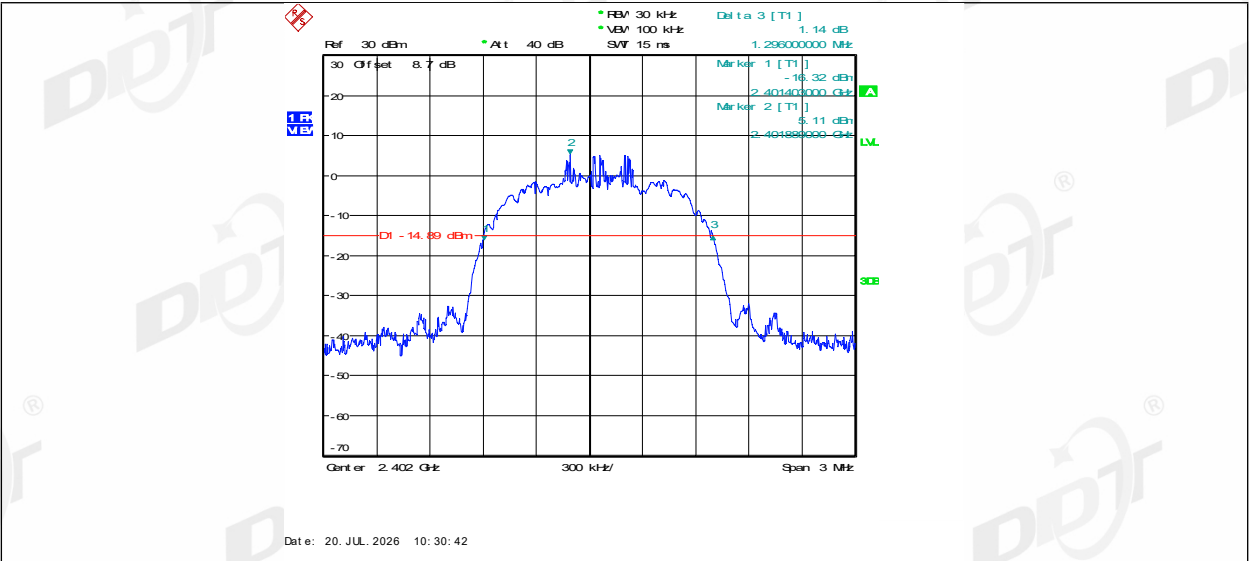
4.5. Test graphs

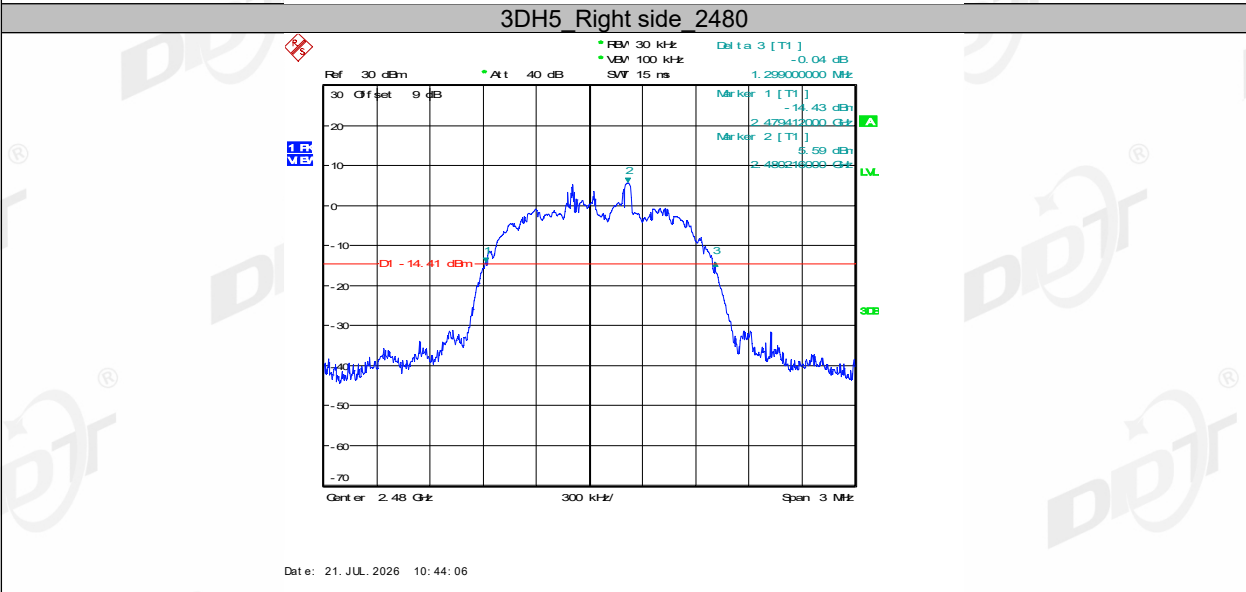
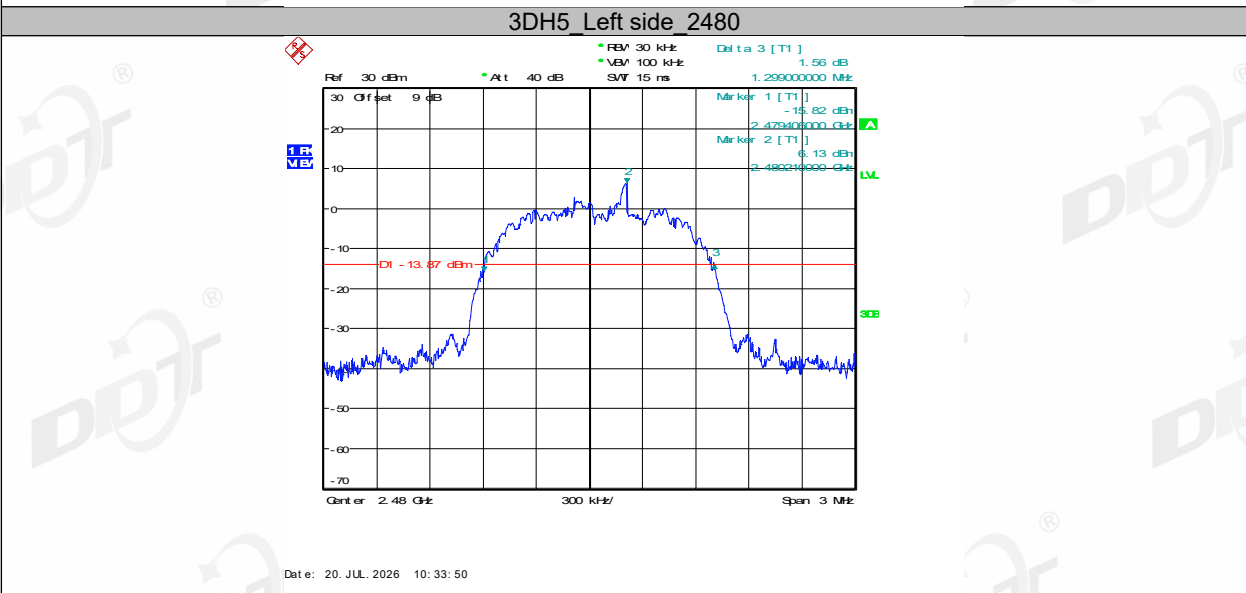
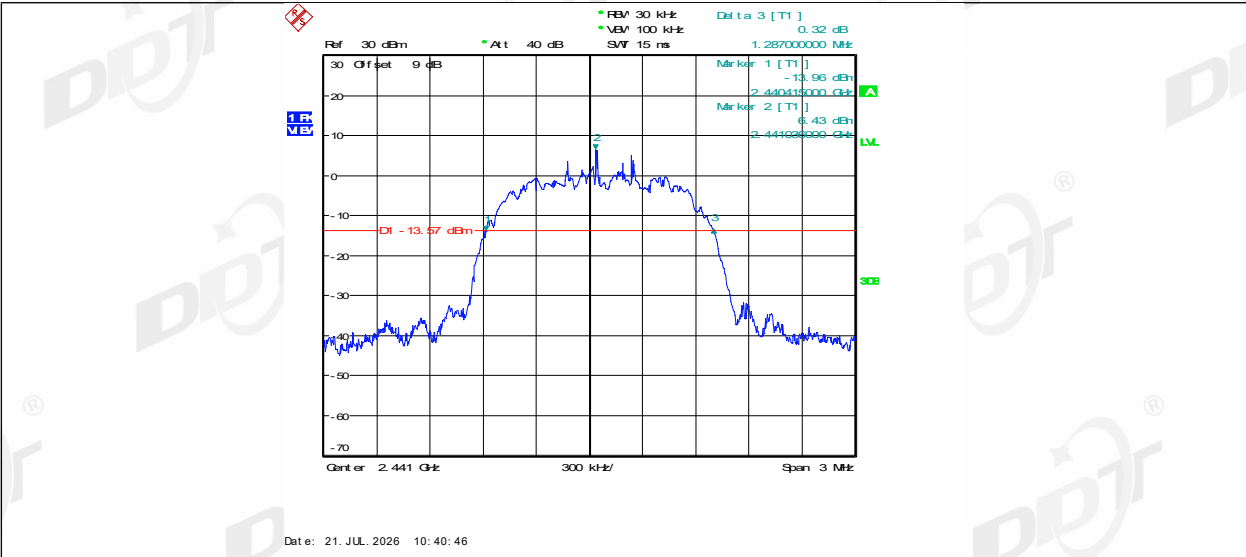






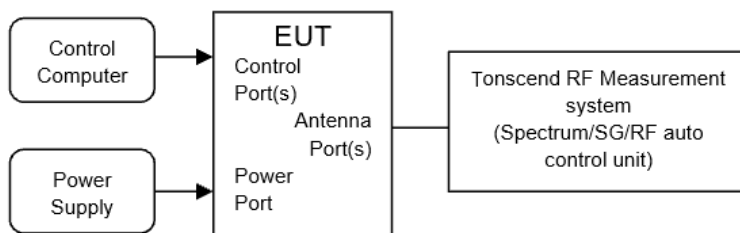






5. 99% Bandwidth

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:

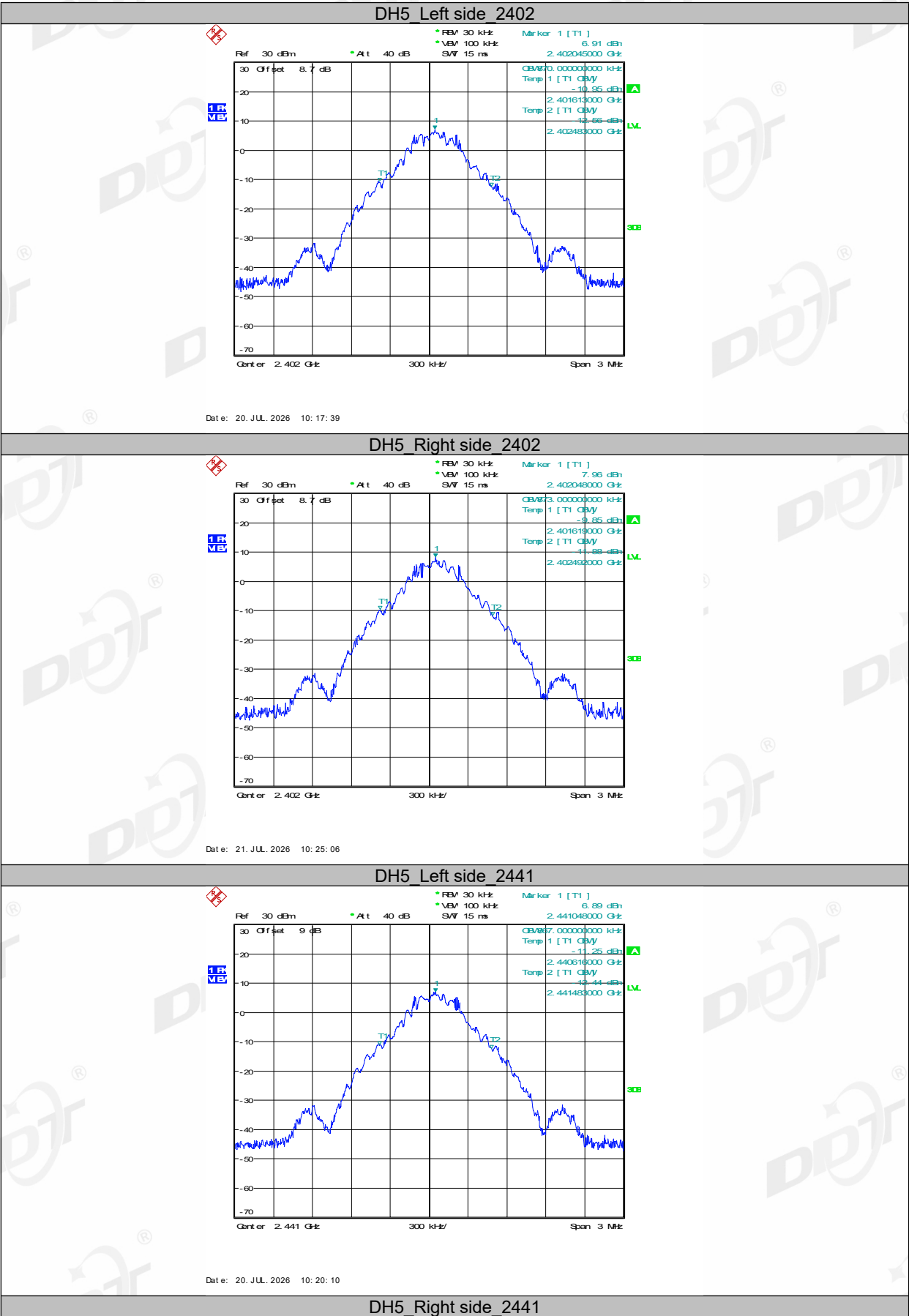
RBW:	1% to 5% of the OBW
VBW:	approximately three times RBW
Span:	between 1.5 times and 5.0 times the OBW
Detector Mode:	Peak
Sweep time:	Auto
Trace mode:	Max hold
- (5) Measure and record the results in the report.

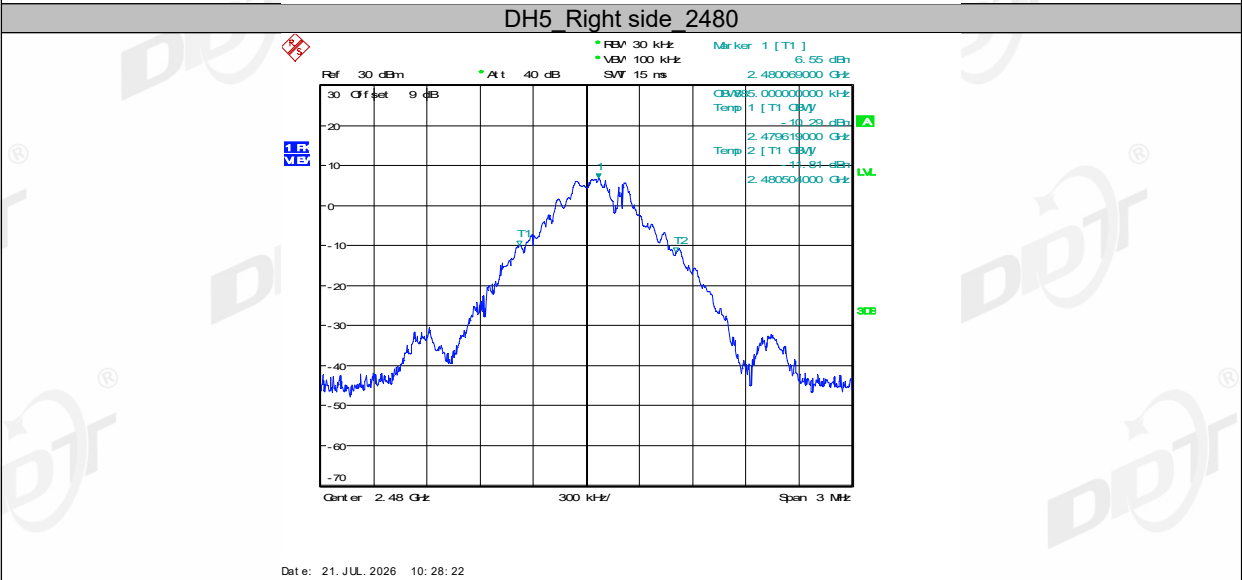
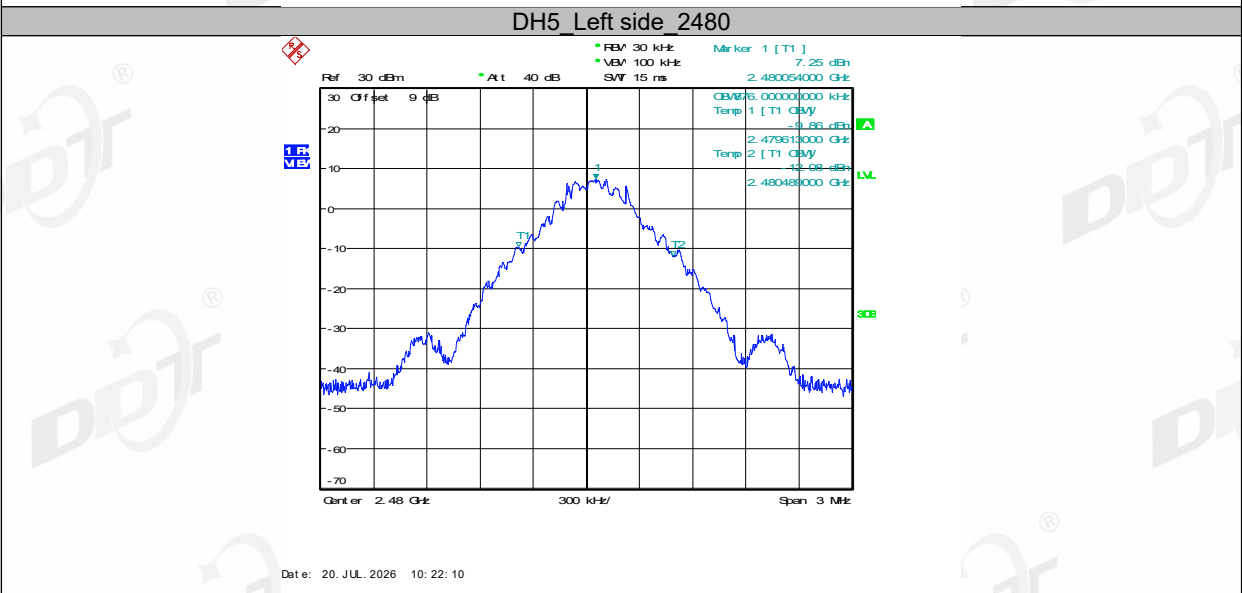
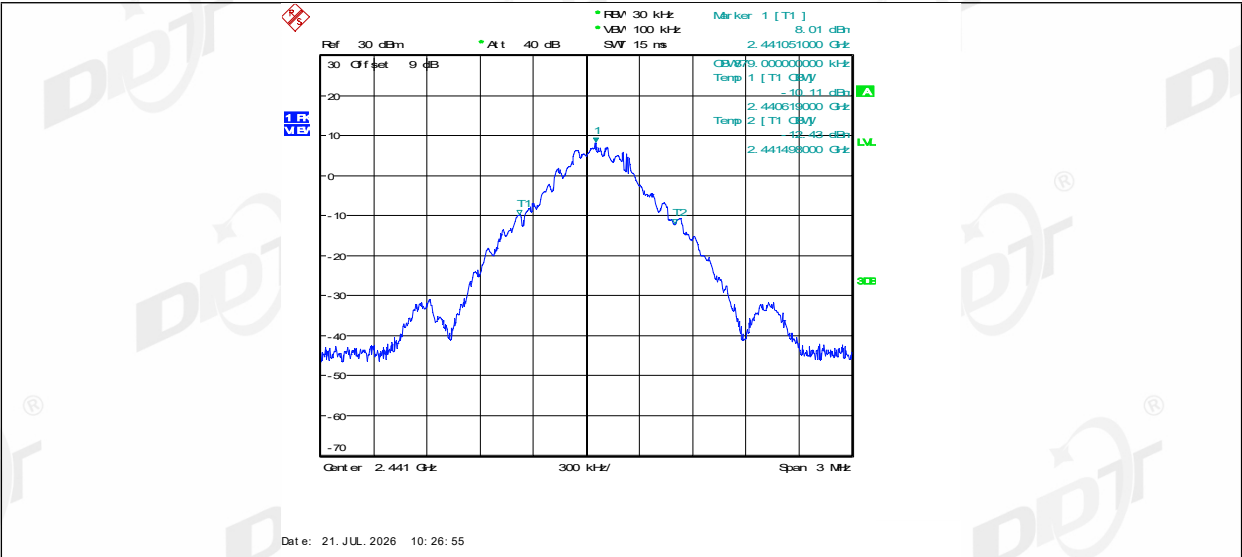
5.4. Test result

Test Engineer:	Zora Zhang	Test Site:	RF Measurement System 1#
Ambient Condition:	27.3-28.2℃,35-53.6%RH	Test Date:	2026.7.13-2026.7.28
Test Power Supply:	Battery	Sample Number:	S26070611-009

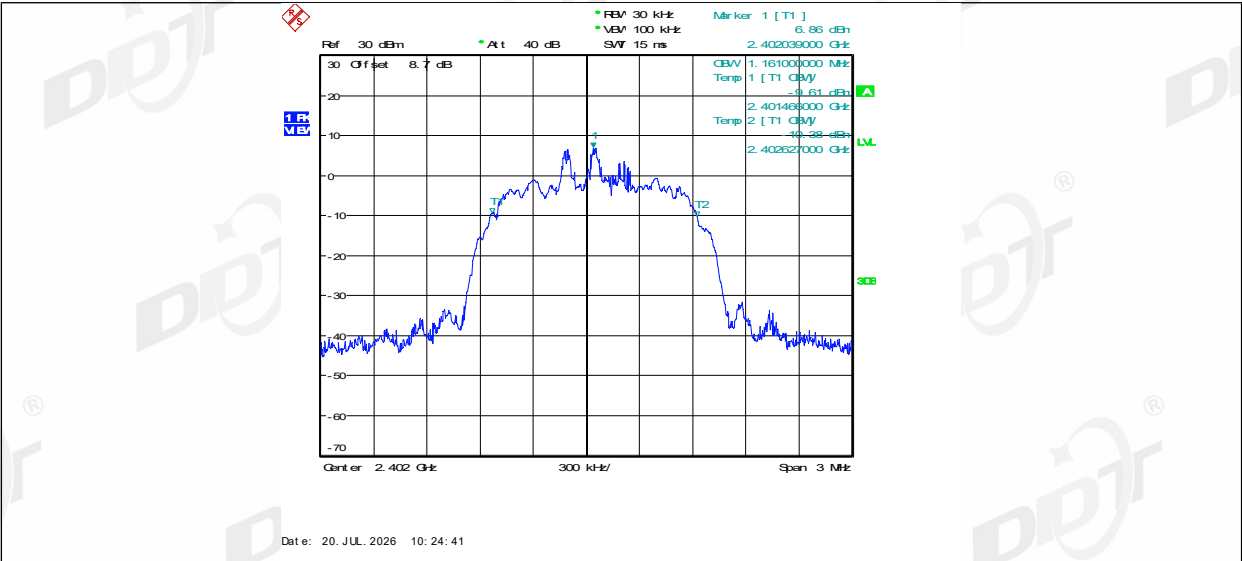
Test Mode	Antenna	Frequency [MHz]	OCB [MHz]	FL[MHz]	FH[MHz]
DH5	Left side	2402	0.87000	2401.6130	2402.4830
	Right side	2402	0.87300	2401.6190	2402.4920
	Left side	2441	0.86700	2440.6160	2441.4830
	Right side	2441	0.87900	2440.6190	2441.4980
	Left side	2480	0.87600	2479.6130	2480.4890
	Right side	2480	0.88500	2479.6190	2480.5040
2DH5	Left side	2402	1.1610	2401.4660	2402.6270
	Right side	2402	1.1640	2401.4720	2402.6360
	Left side	2441	1.1640	2440.4660	2441.6300
	Right side	2441	1.1550	2440.4780	2441.6330
	Left side	2480	1.1970	2479.4570	2480.6540
	Right side	2480	1.1610	2479.4750	2480.6360
3DH5	Left side	2402	1.1700	2401.4660	2402.6360
	Right side	2402	1.1670	2401.4750	2402.6420
	Left side	2441	1.1790	2440.4630	2441.6420
	Right side	2441	1.1670	2440.4750	2441.6420
	Left side	2480	1.2000	2479.4540	2480.6540
	Right side	2480	1.1670	2479.4750	2480.6420

5.5. Test graphs

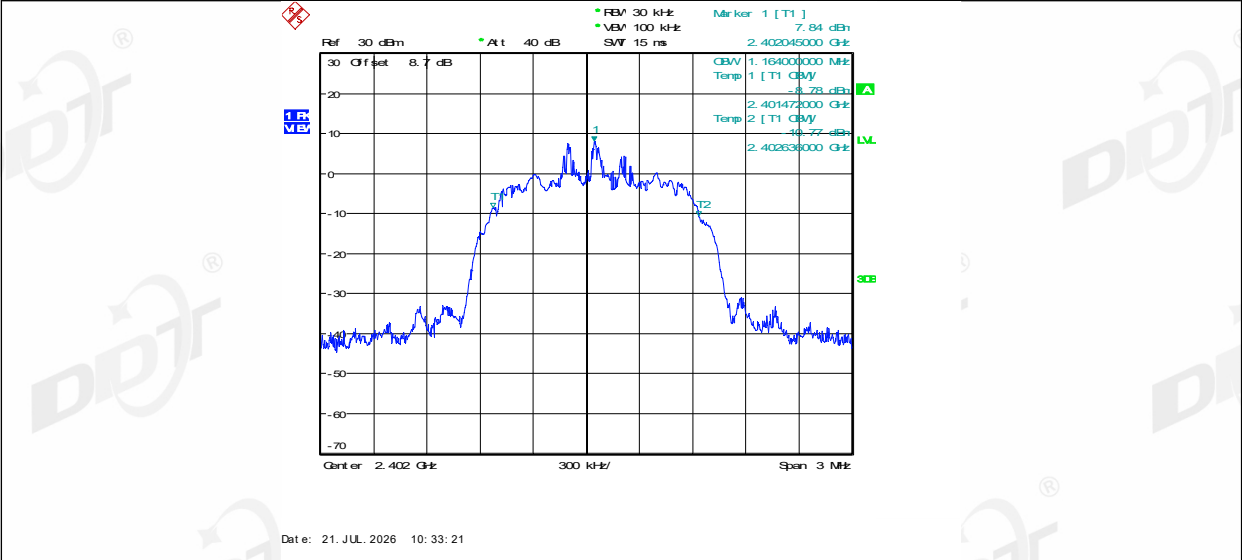




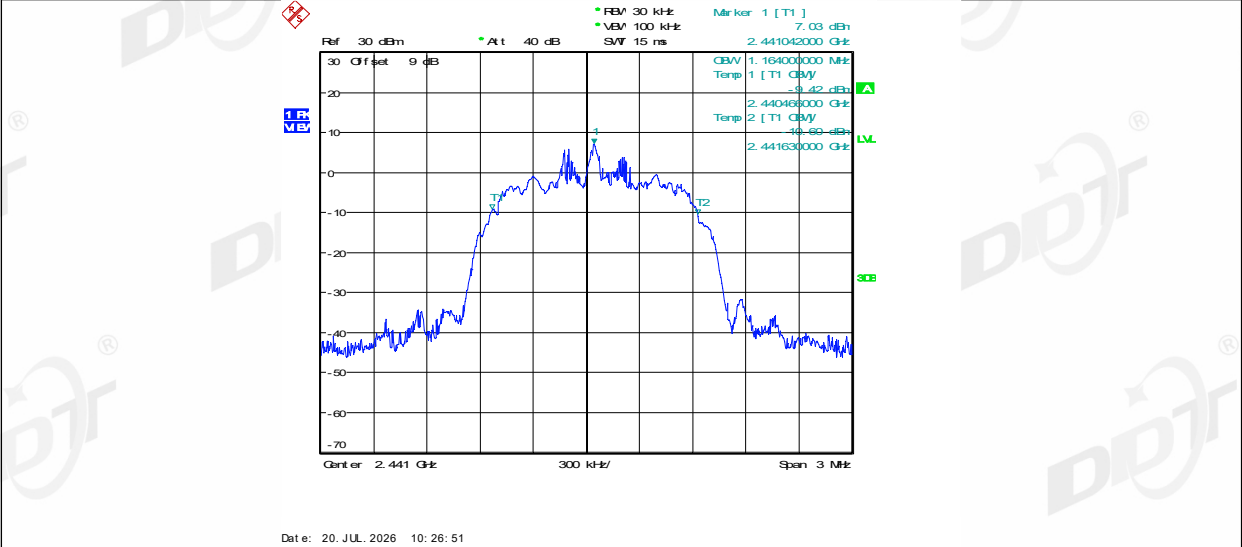
2DH5 Left side 2402



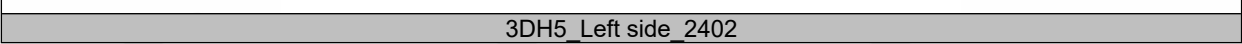
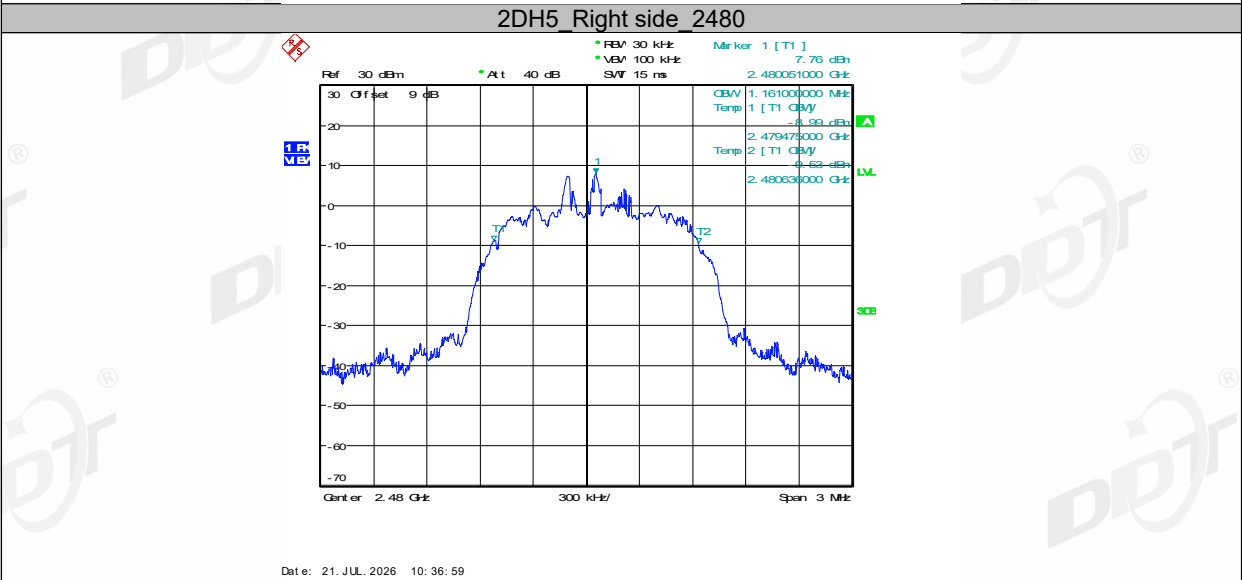
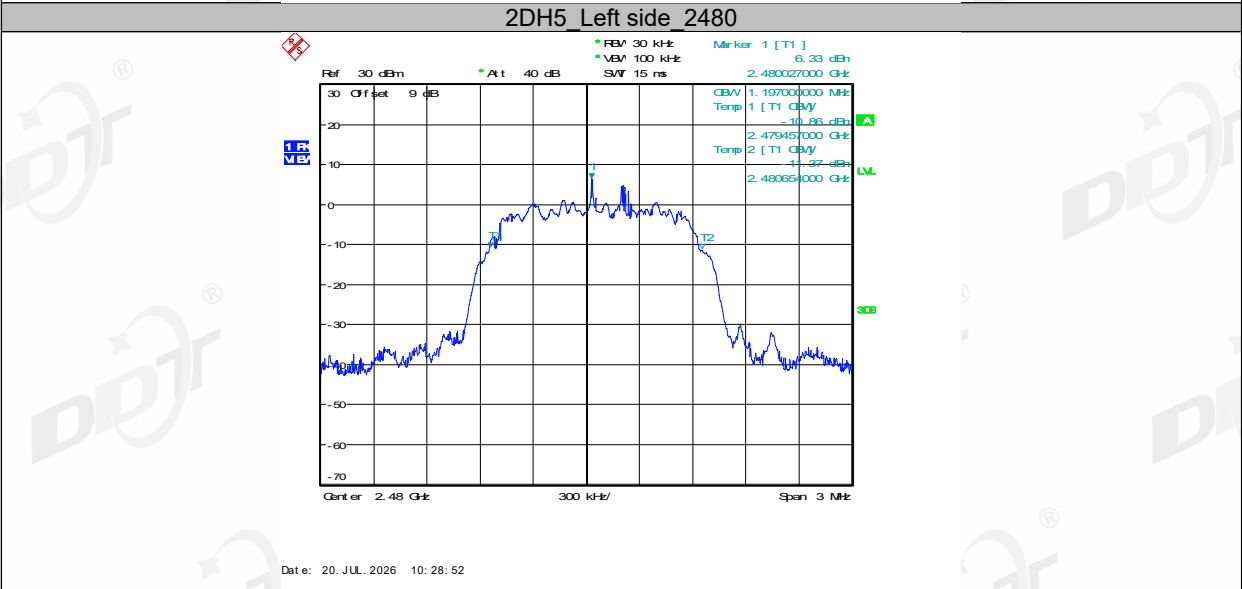
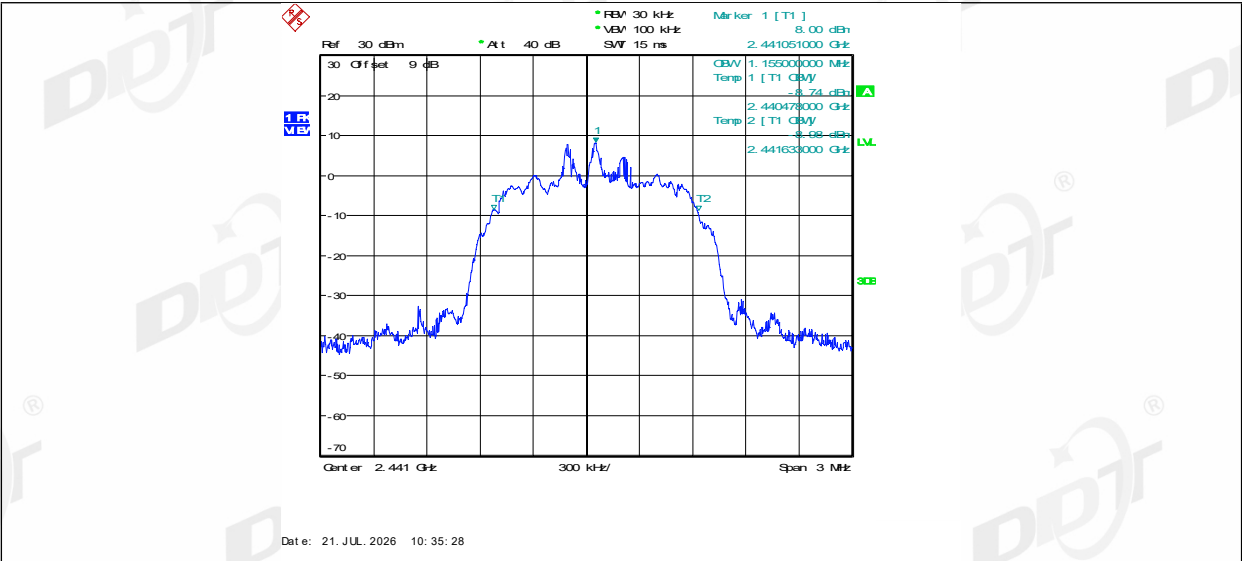
2DH5_Right side_2402

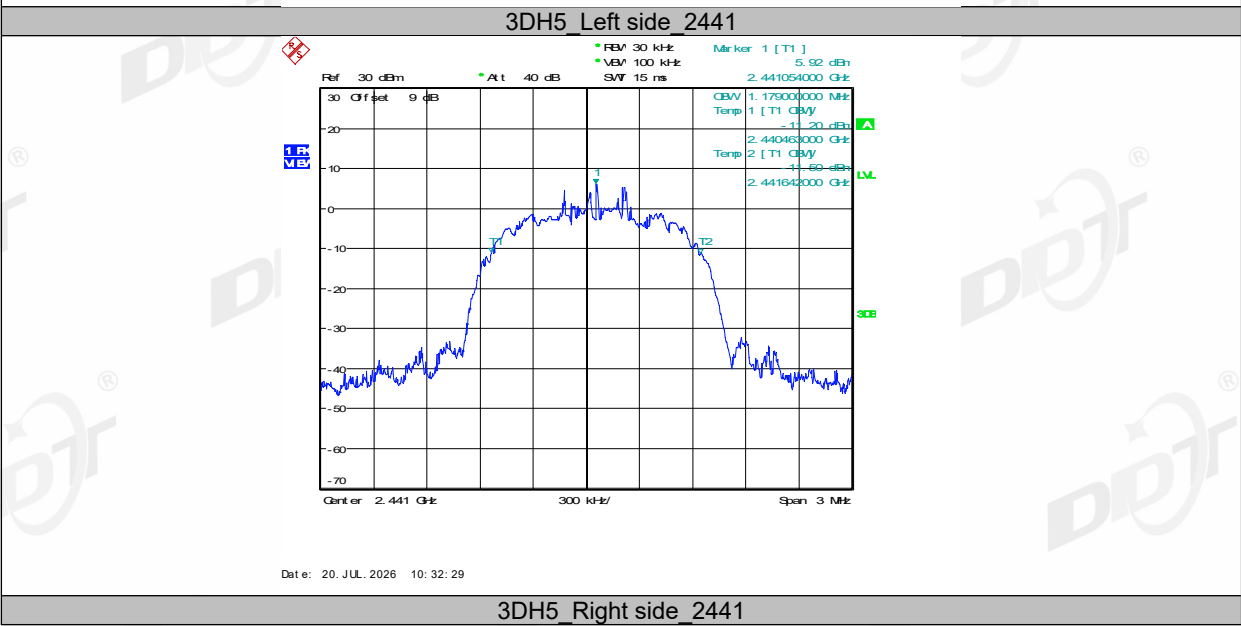
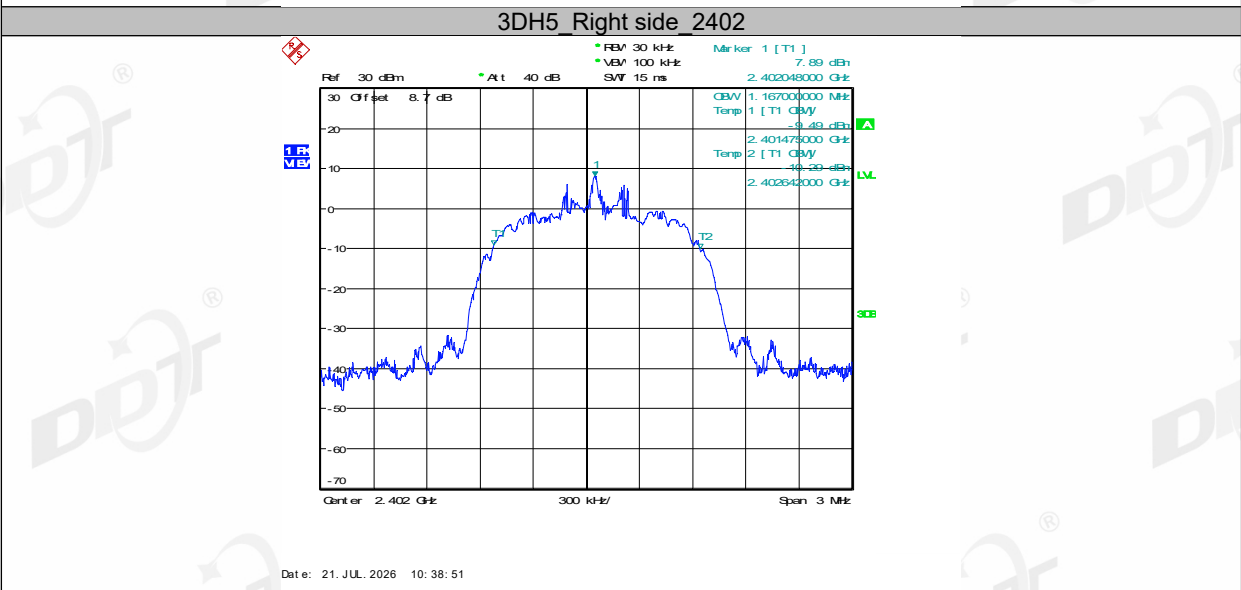
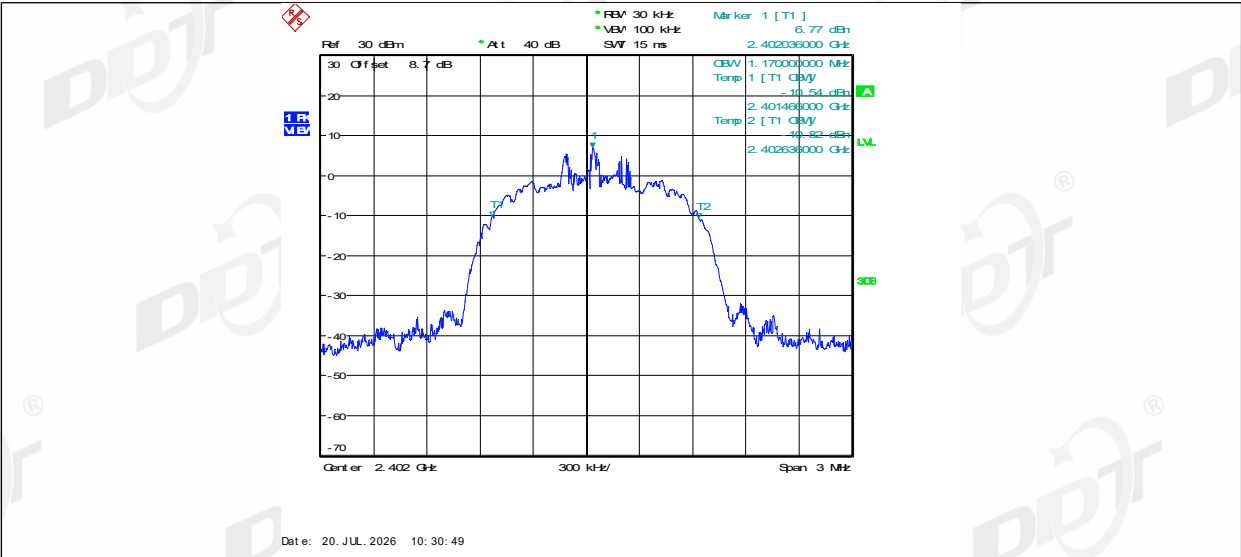


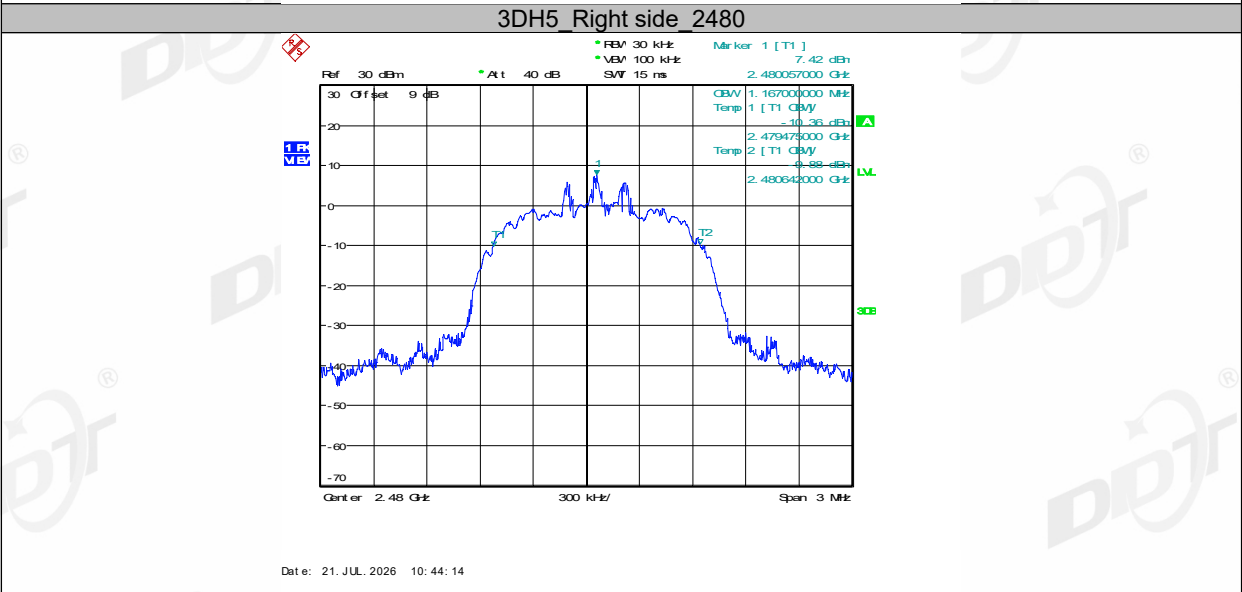
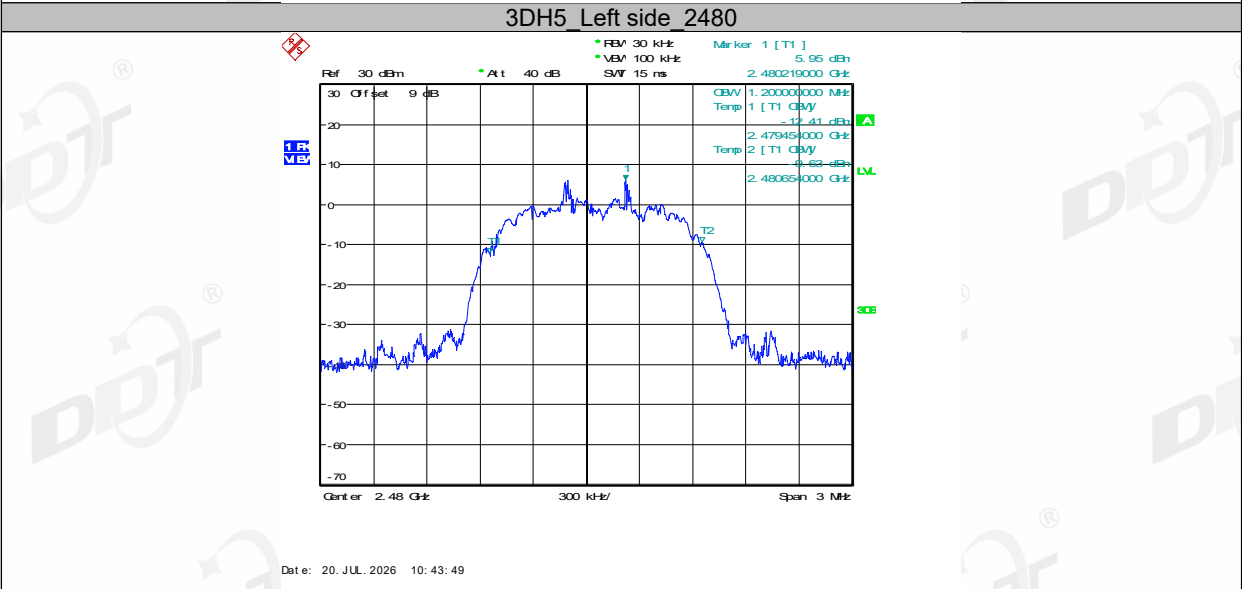
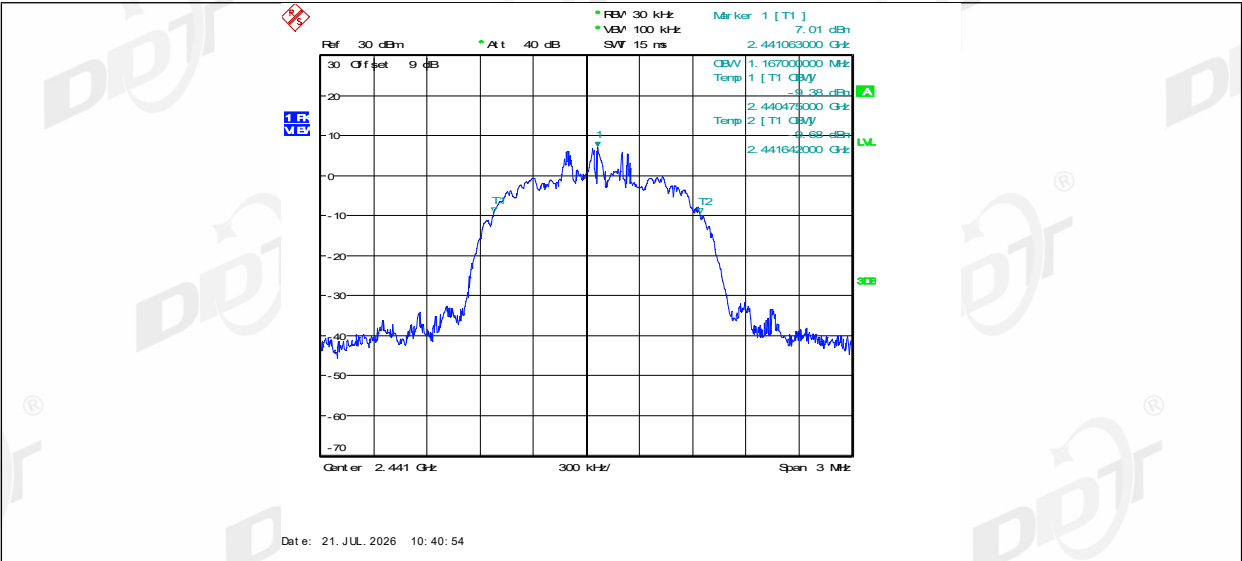
2DH5_Left side_2441



2DH5_Right side_2441

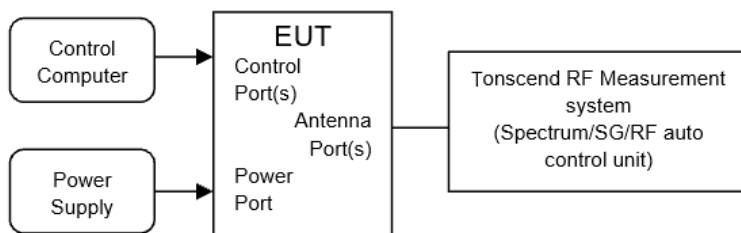






6. Maximum Peak Output Power

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:

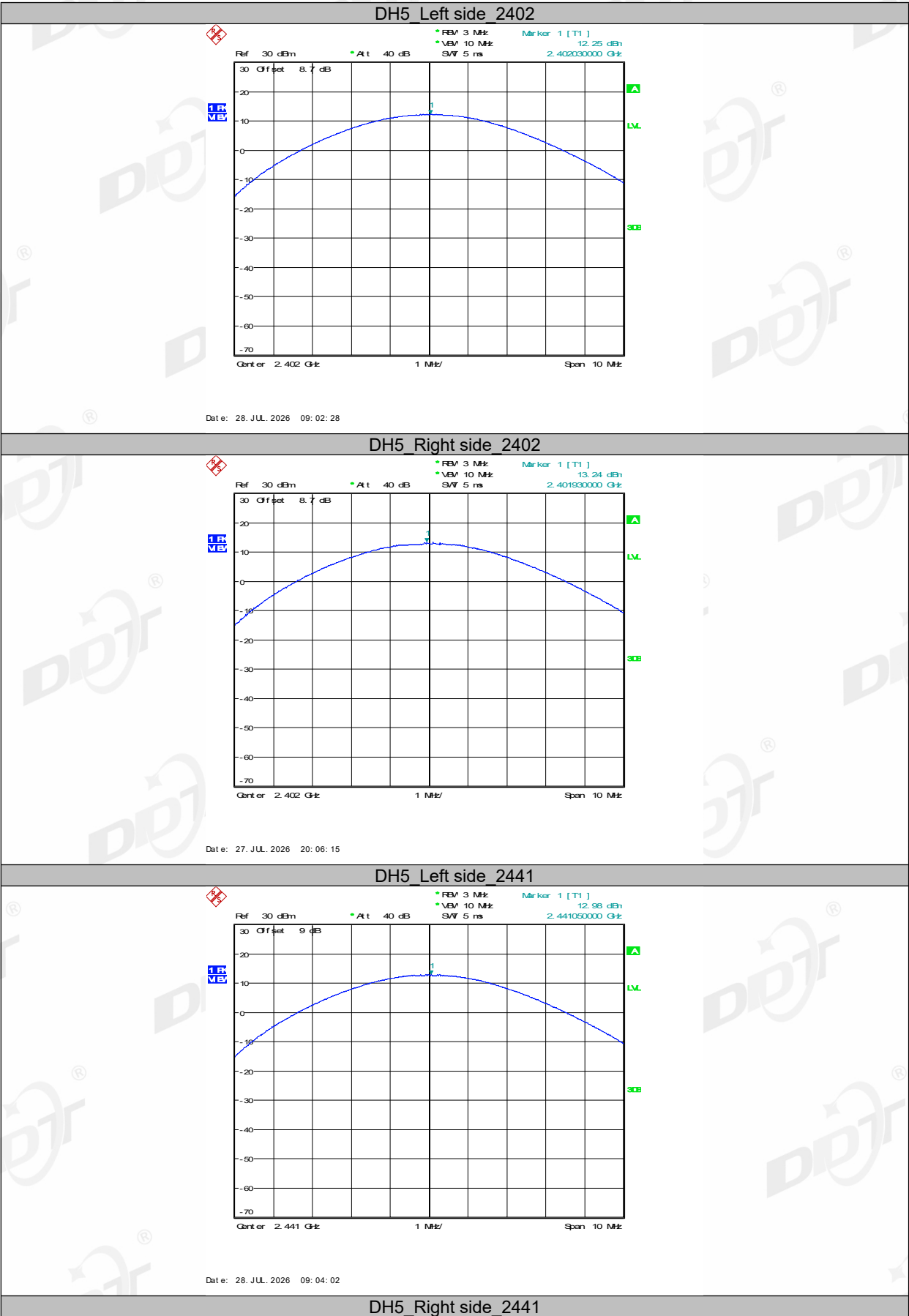
RBW:	> 20 dB bandwidth of the emission being measured.
VBW:	VBW $\geq$ RBW.
Span:	Approximately five times the 20 dB bandwidth, centered on a hopping channel.
Detector Mode:	Peak
Sweep time:	Auto
Trace mode:	Max hold
- (5) Use the marker-to-peak function to set the marker to the peak of the emission and record the results in the report.

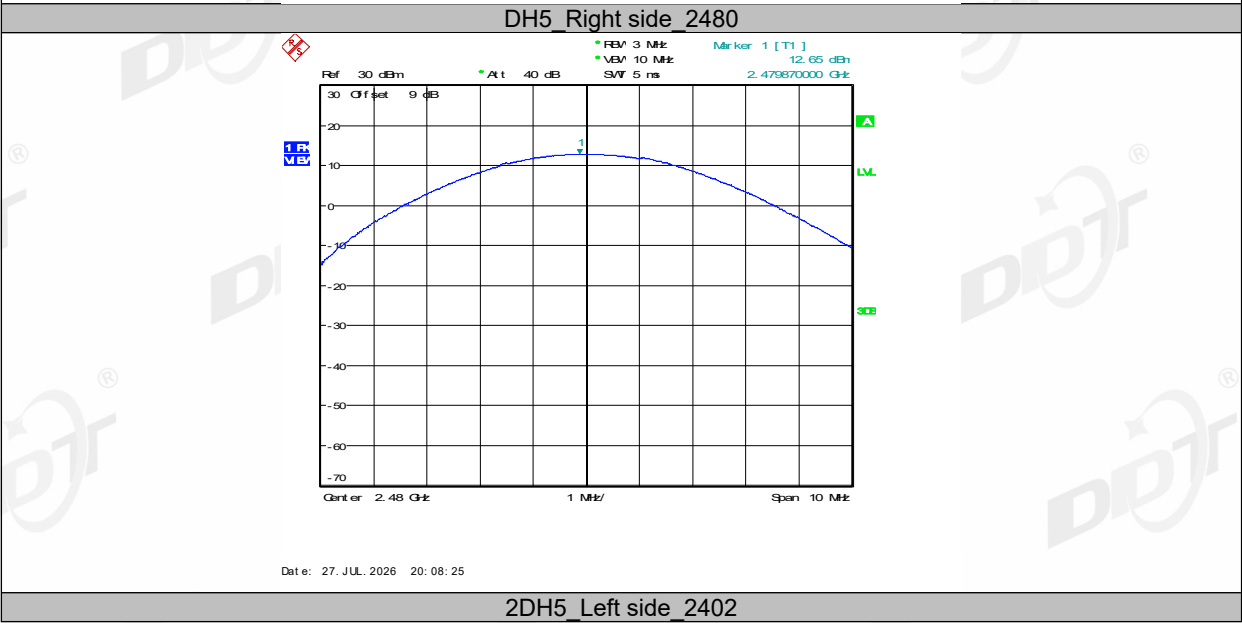
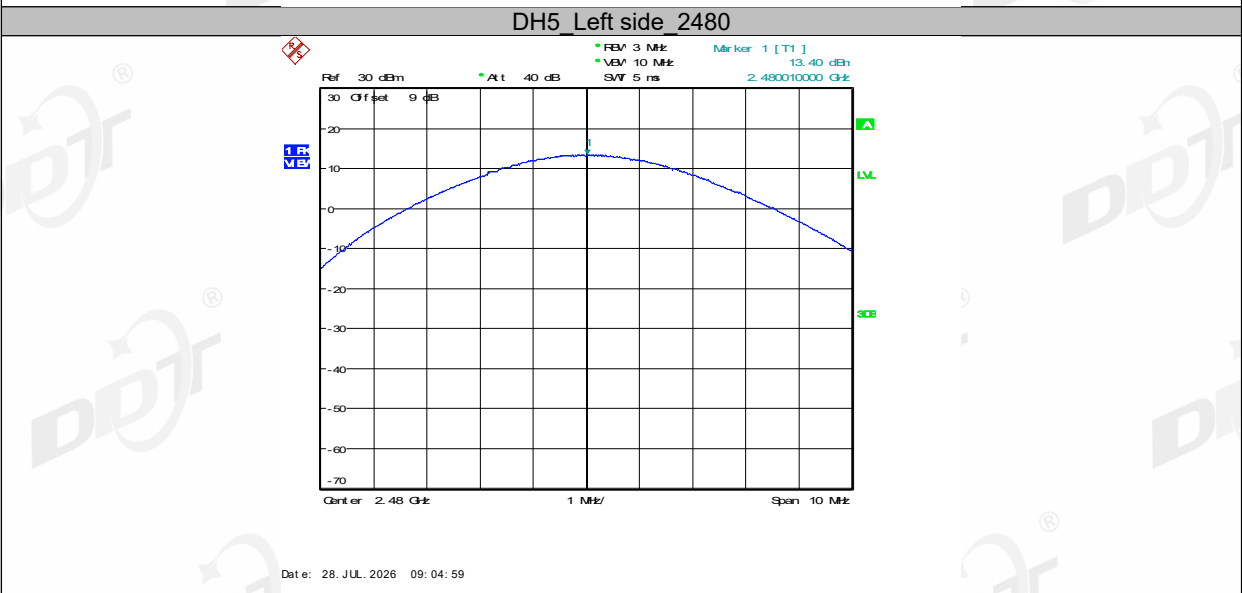
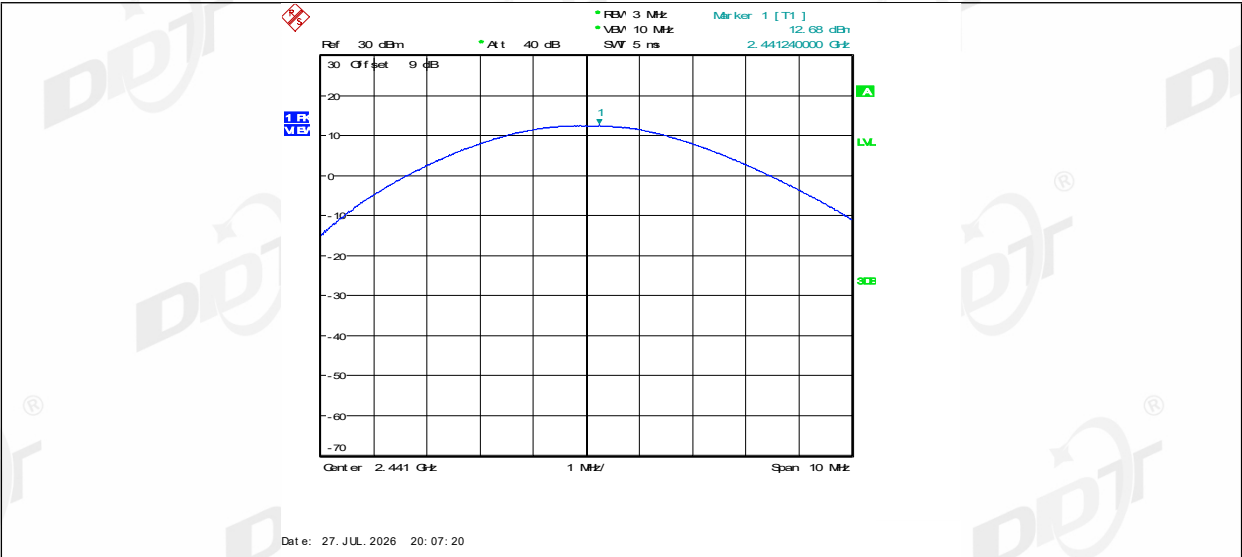
6.4. Test result

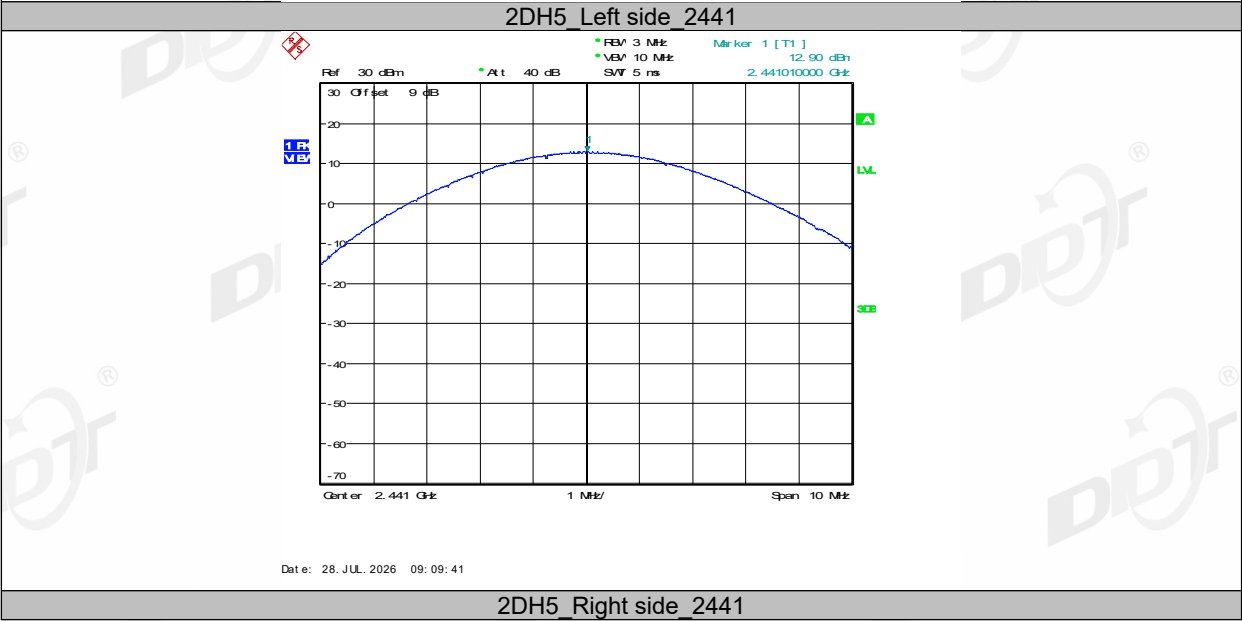
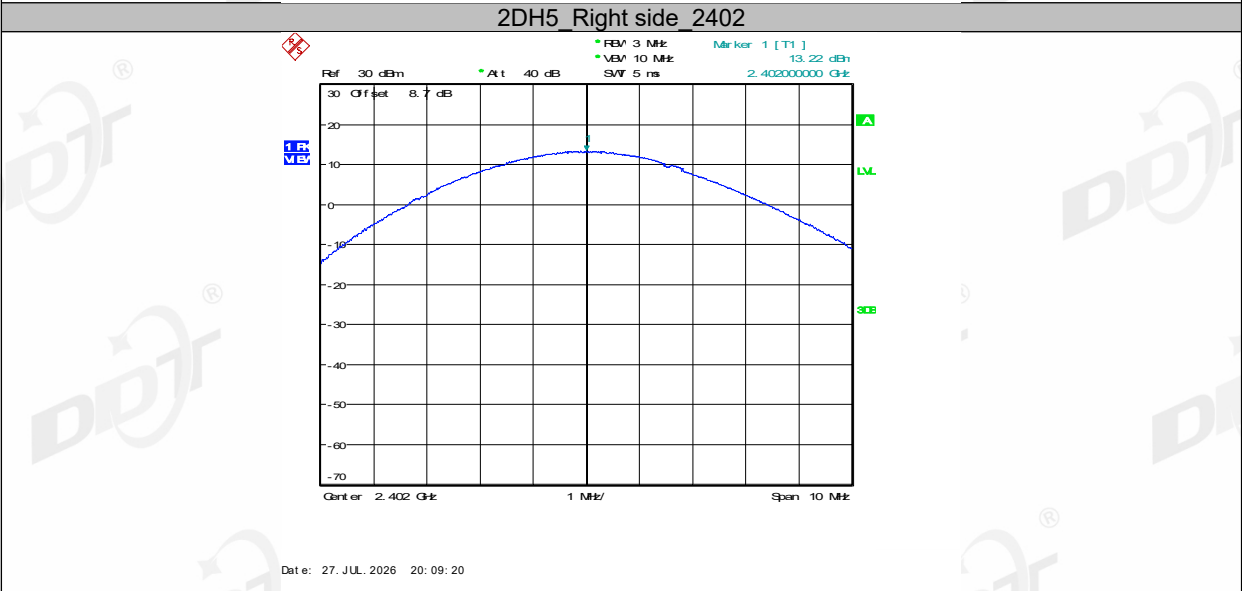
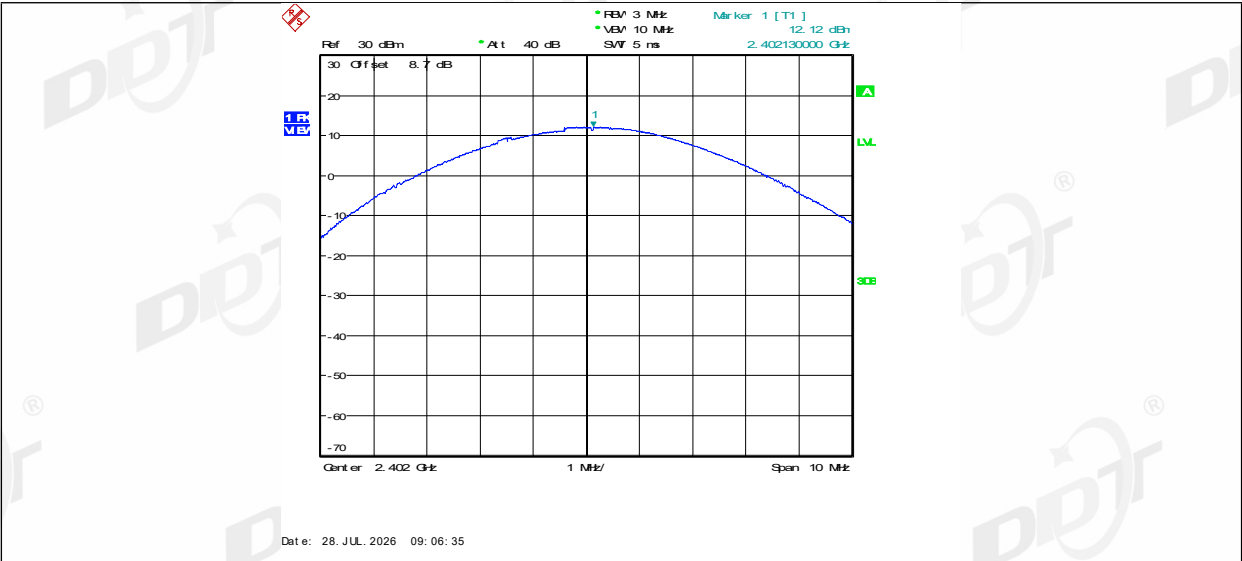
Test Engineer:	Zora Zhang	Test Site:	RF Measurement System 1#
Ambient Condition:	27.3-28.2℃,35-53.6%RH	Test Date:	2026.7.13-2026.7.28
Test Power Supply:	Battery	Sample Number:	S26070611-009

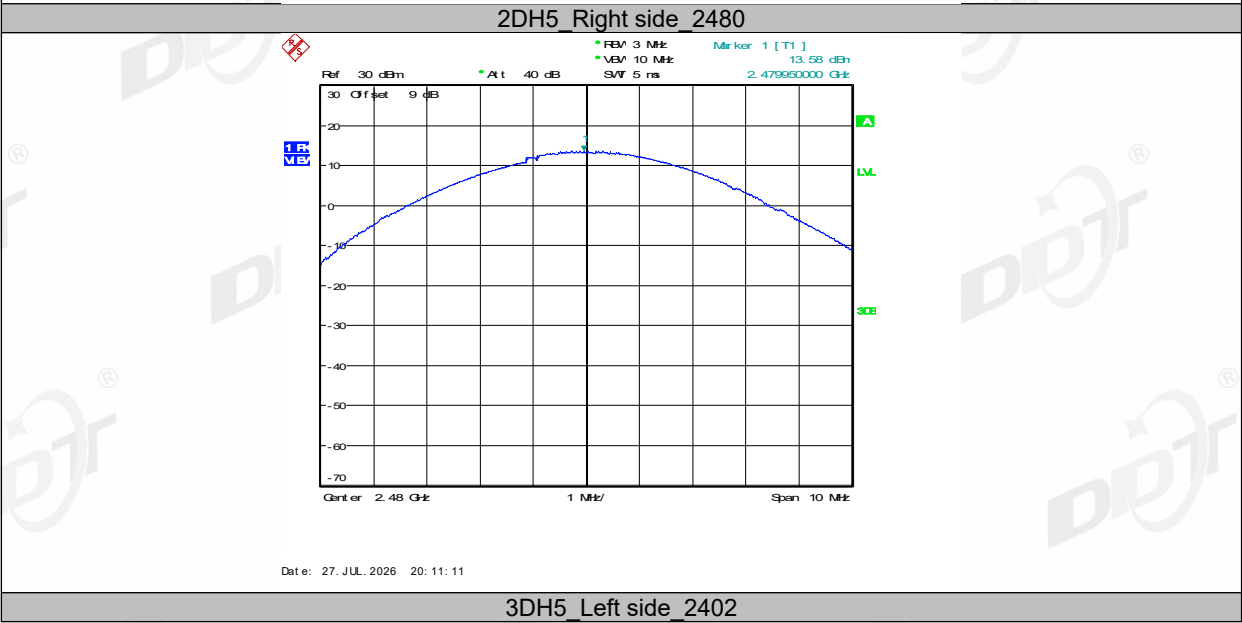
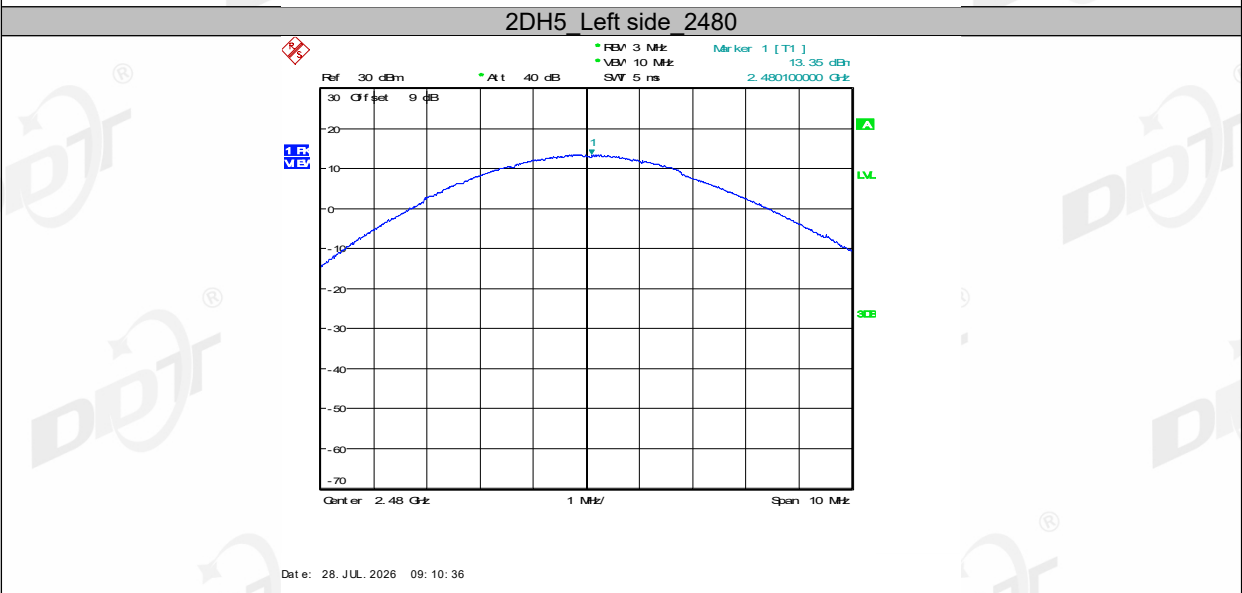
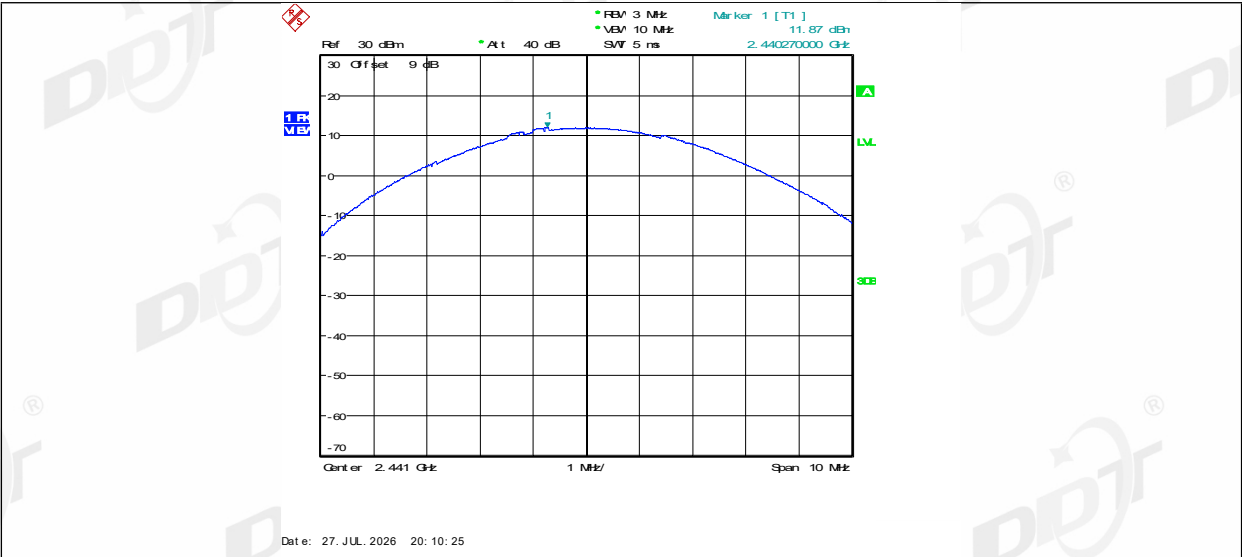
Test Mode	Antenna	Frequency [MHz]	Conducted Peak Power[dBm]	Conducted Limit[dBm]	EIRP[dBm]	EIRP Limit[dBm]	Verdict
DH5	Left side	2402	12.25	≤20.97	10.85	≤36	PASS
	Right side	2402	13.24	≤20.97	11.74	≤36	PASS
	Left side	2441	12.98	≤20.97	11.58	≤36	PASS
	Right side	2441	12.68	≤20.97	11.18	≤36	PASS
	Left side	2480	13.40	≤20.97	12.00	≤36	PASS
	Right side	2480	12.65	≤20.97	11.15	≤36	PASS
2DH5	Left side	2402	12.12	≤20.97	10.72	≤36	PASS
	Right side	2402	13.22	≤20.97	11.72	≤36	PASS
	Left side	2441	12.90	≤20.97	11.50	≤36	PASS
	Right side	2441	11.87	≤20.97	10.37	≤36	PASS
	Left side	2480	13.35	≤20.97	11.95	≤36	PASS
	Right side	2480	13.58	≤20.97	12.08	≤36	PASS
3DH5	Left side	2402	12.13	≤20.97	10.73	≤36	PASS
	Right side	2402	13.22	≤20.97	11.72	≤36	PASS
	Left side	2441	12.92	≤20.97	11.52	≤36	PASS
	Right side	2441	12.86	≤20.97	11.36	≤36	PASS
	Left side	2480	13.38	≤20.97	11.98	≤36	PASS
	Right side	2480	13.43	≤20.97	11.93	≤36	PASS

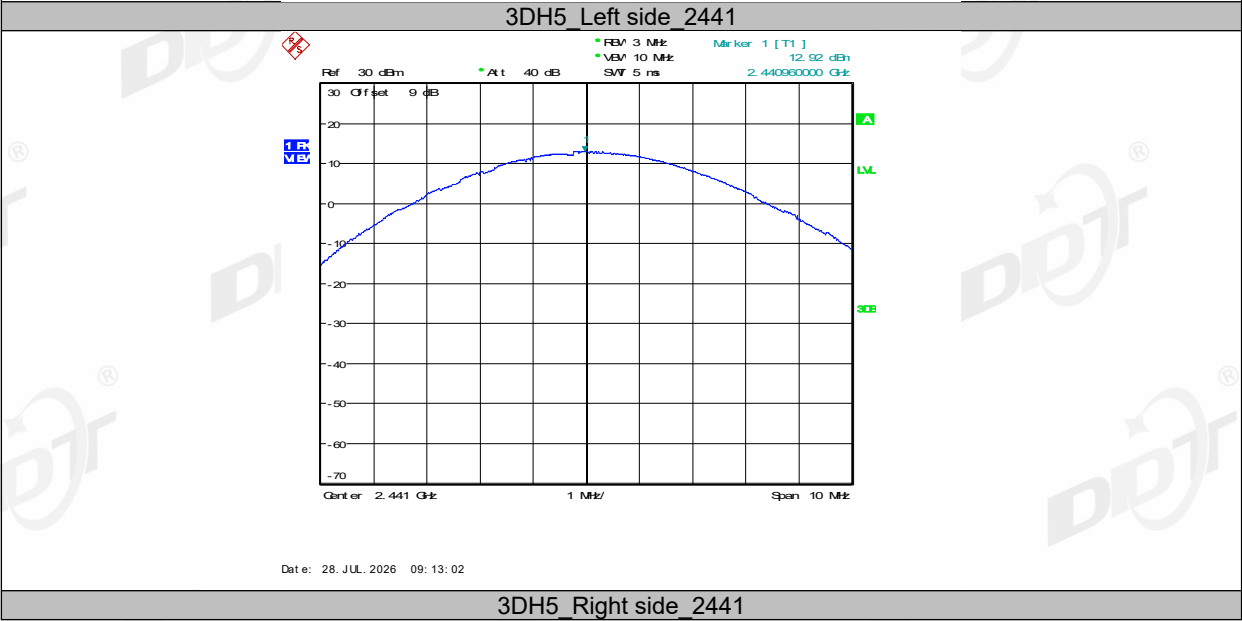
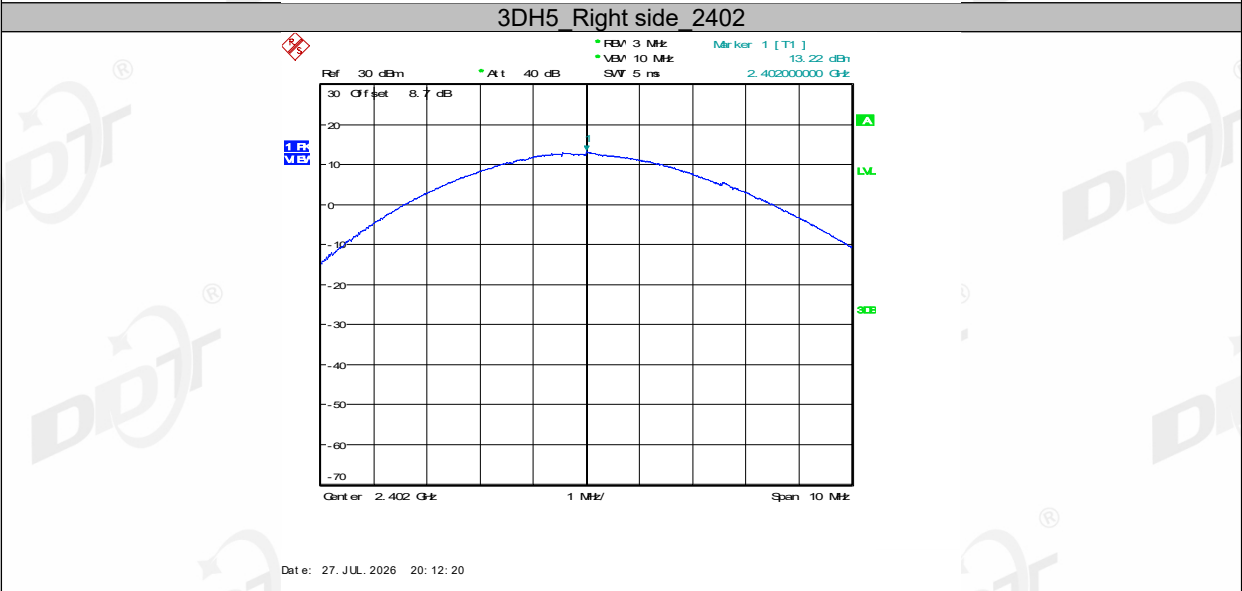
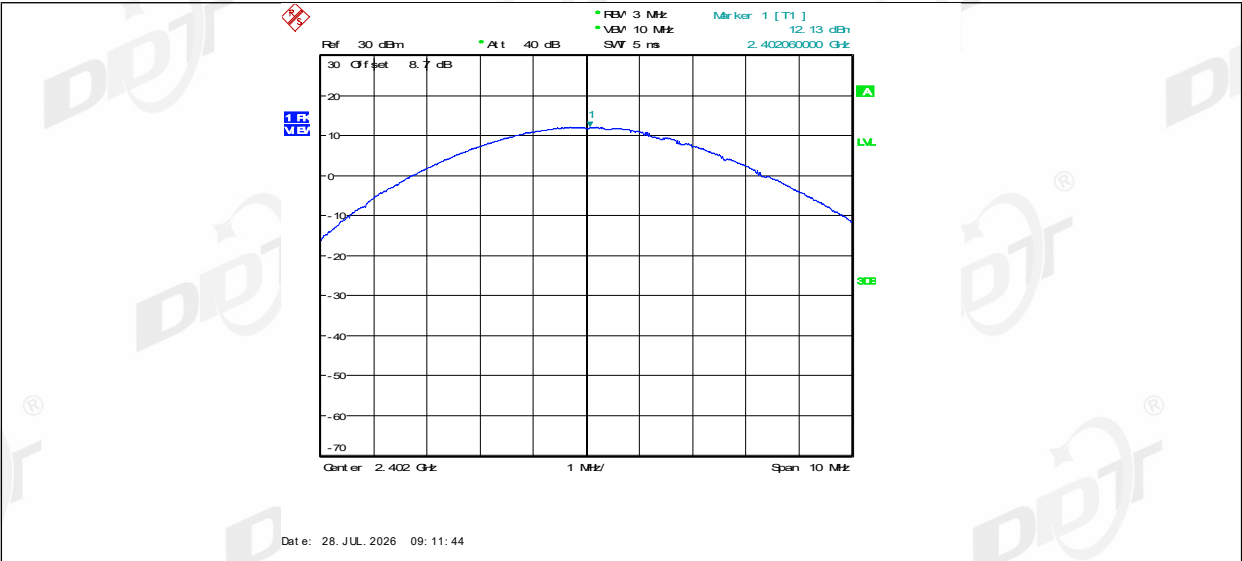
6.5. Test graphs

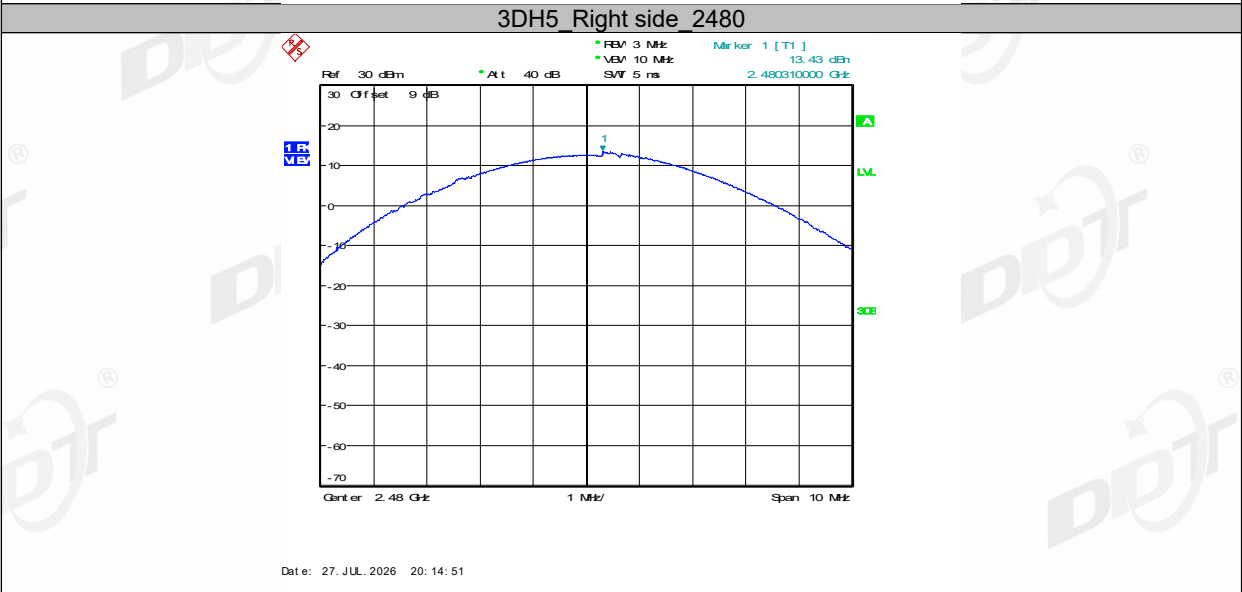
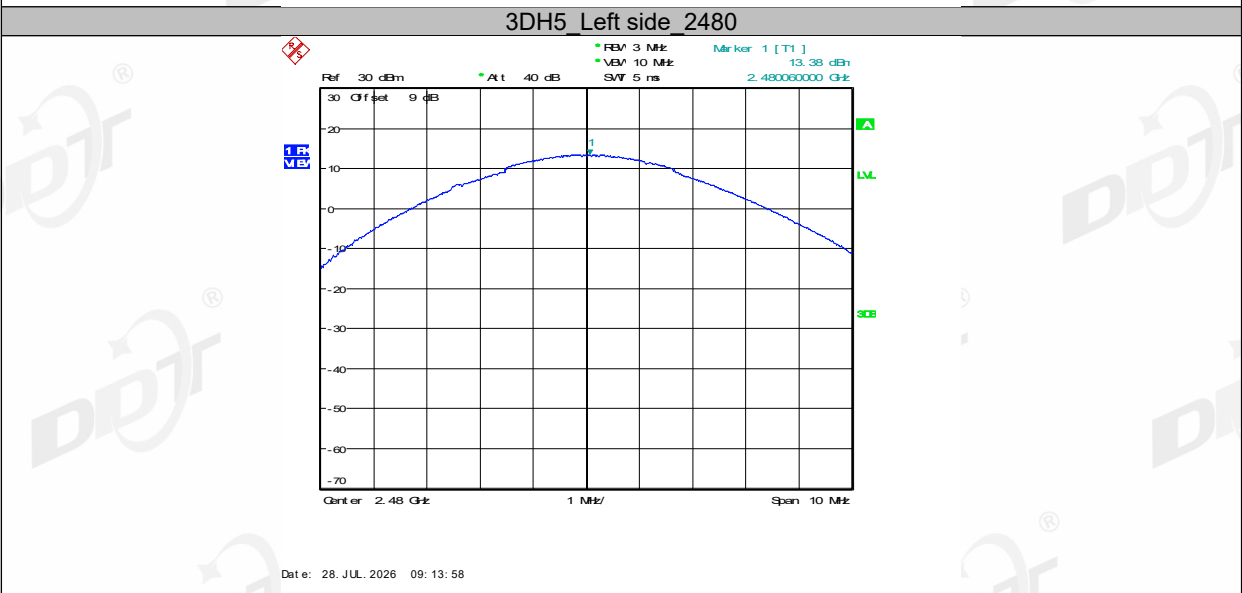
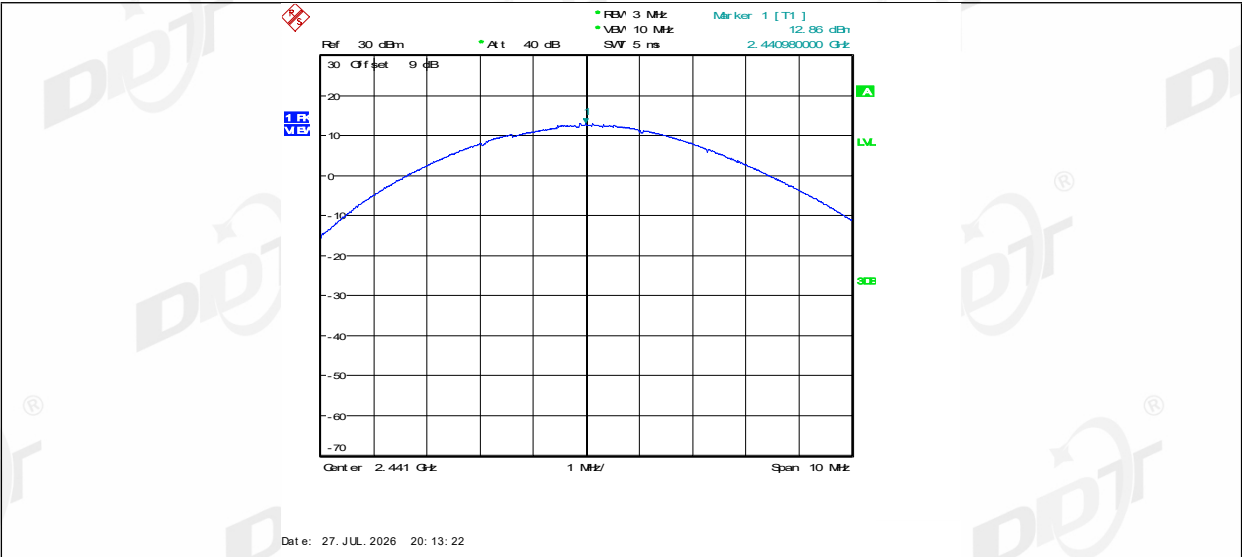






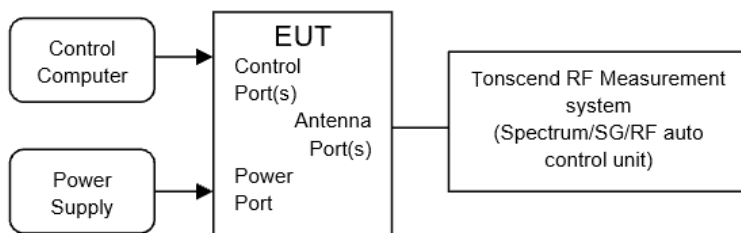






7. Carrier Frequency Separation

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:

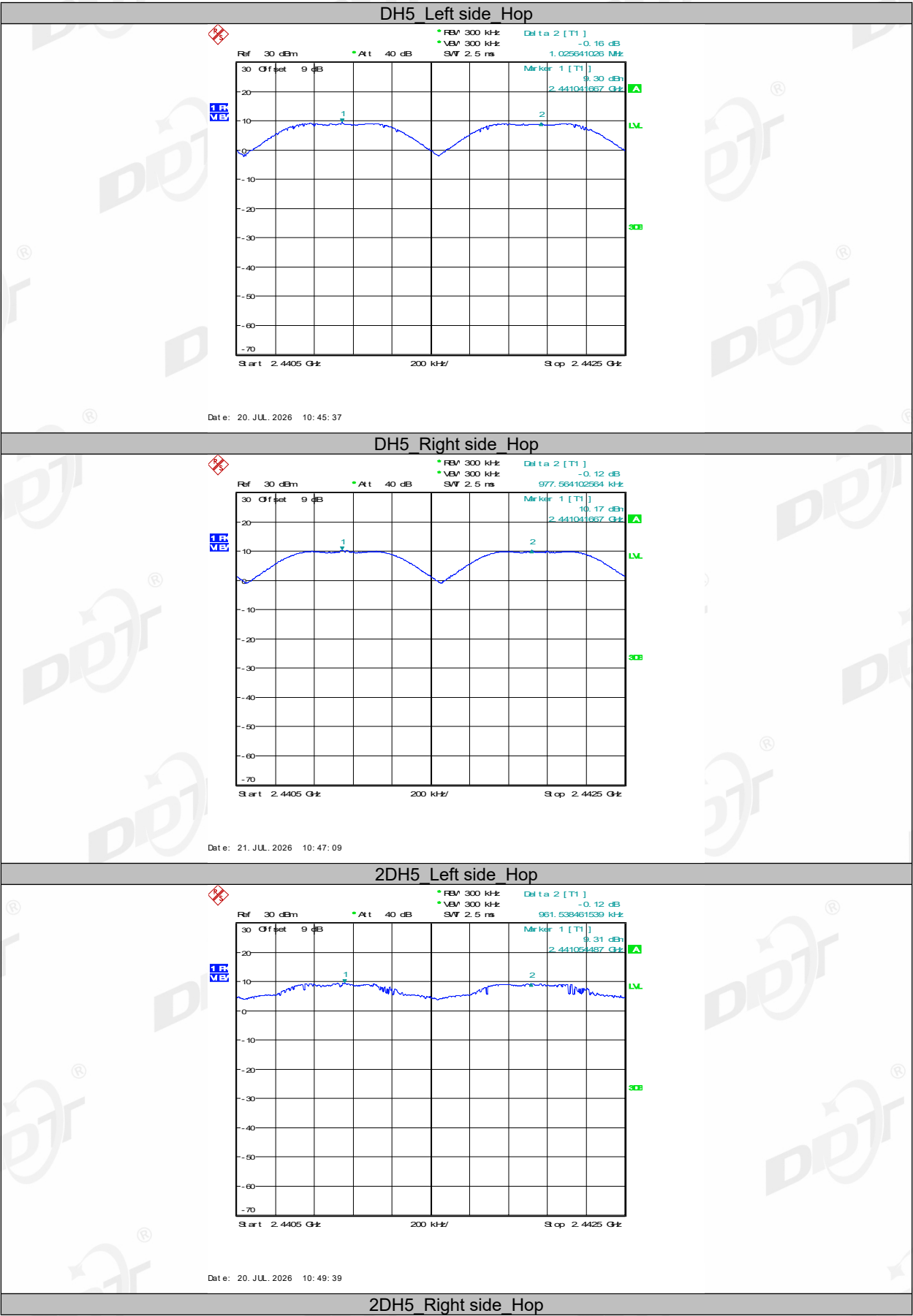
RBW:	approximately 30% of the channel spacing
VBW:	$VBW \geq RBW$.
Span:	Wide enough to capture the peaks of two adjacent channels.
Detector Mode:	Peak
Sweep time:	Auto
Trace mode:	Max hold
- (5) Use the marker-delta function to determine the separation between the peaks of the adjacent channels and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

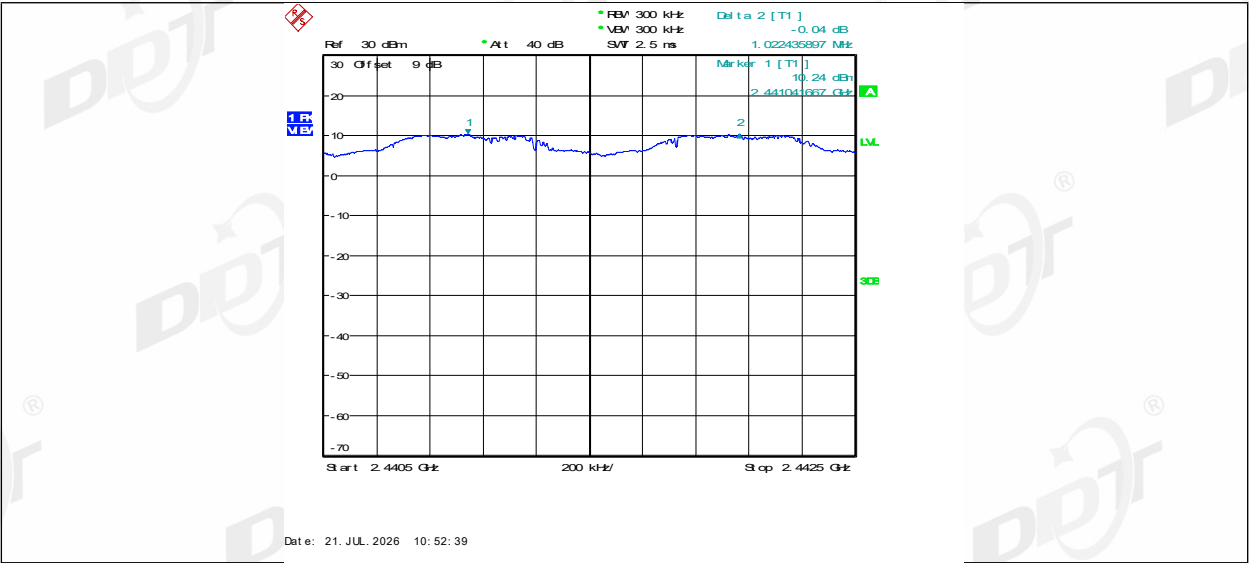
7.4. Test result

Test Engineer:	Zora Zhang	Test Site:	RF Measurement System 1#		
Ambient Condition:	27.3-28.2℃,35-53.6%RH	Test Date:	2026.7.13-2026.7.28		
Test Power Supply:	Battery	Sample Number:	S26070611-009		

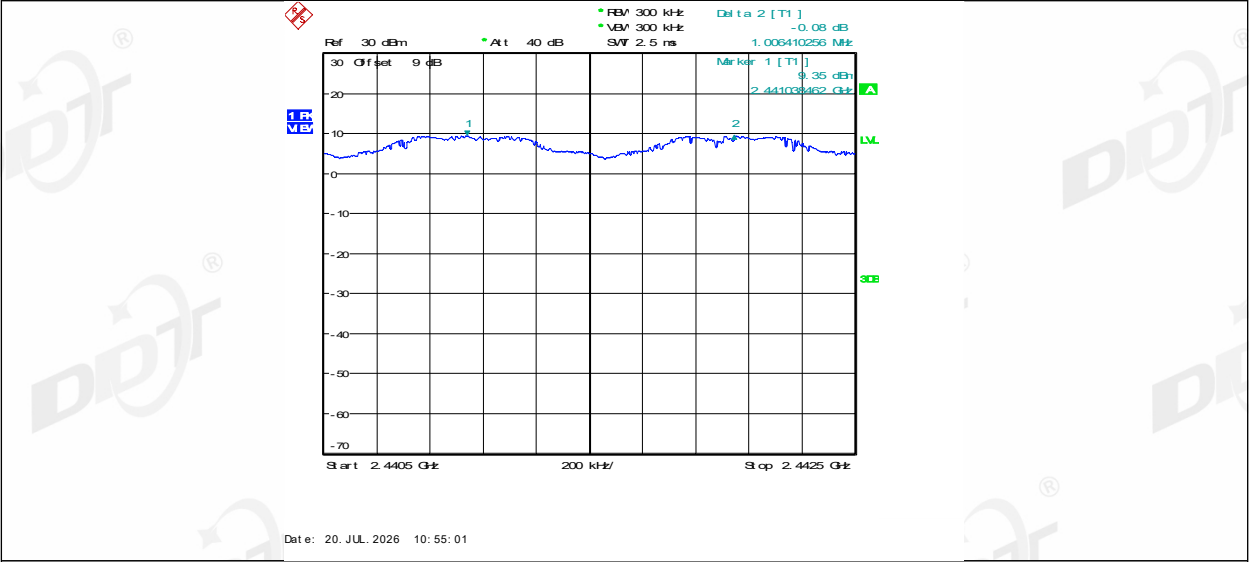
Test Mode	Antenna	Frequency [MHz]	Result [MHz]	Limit [MHz]	Verdict
DH5	Left side	Hop	1.026	≥0.633	PASS
	Right side	Hop	0.978	≥0.647	PASS
2DH5	Left side	Hop	0.962	≥0.833	PASS
	Right side	Hop	1.022	≥0.847	PASS
3DH5	Left side	Hop	1.006	≥0.867	PASS
	Right side	Hop	0.984	≥0.867	PASS

7.5. Test graphs

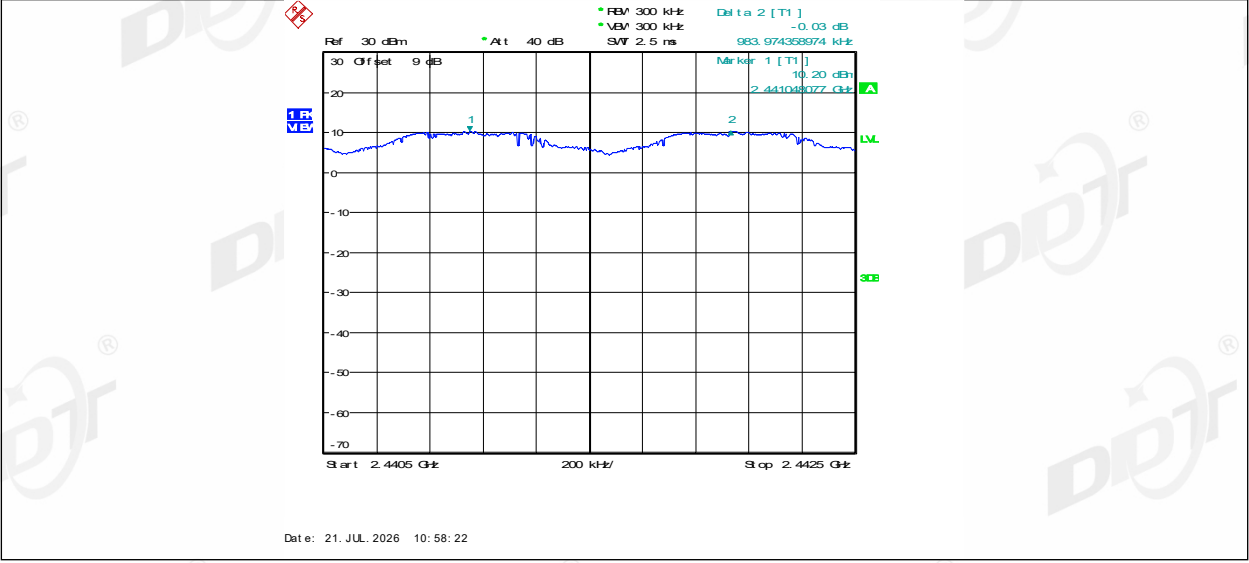




3DH5_Left side_Hop

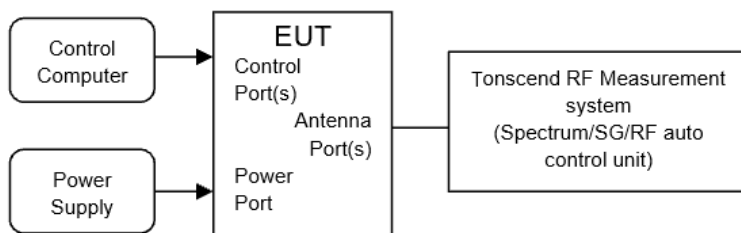


3DH5_Right side_Hop



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 1#
Ambient Condition:	27.3-28.2℃,35-53.6%RH	Test Date:	2026.7.13-2026.7.28
Test Power Supply:	Battery	Sample Number:	S26070611-009

Test Mode	Antenna	Frequency [MHz]	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
DH1	Left side	Hop	0.370	321	0.119	≤0.4	PASS
	Right side	Hop	1.630	161	0.262	≤0.4	PASS
DH3	Left side	Hop	1.630	165	0.269	≤0.4	PASS
	Right side	Hop	1.620	155	0.251	≤0.4	PASS
DH5	Left side	Hop	2.870	101	0.29	≤0.4	PASS
	Right side	Hop	2.880	102	0.294	≤0.4	PASS
2DH1	Left side	Hop	0.380	318	0.121	≤0.4	PASS
	Right side	Hop	0.380	317	0.12	≤0.4	PASS
2DH3	Left side	Hop	1.640	164	0.269	≤0.4	PASS
	Right side	Hop	1.630	168	0.274	≤0.4	PASS
2DH5	Left side	Hop	2.880	124	0.357	≤0.4	PASS
	Right side	Hop	2.880	116	0.334	≤0.4	PASS
3DH1	Left side	Hop	0.370	316	0.117	≤0.4	PASS
	Right side	Hop	0.380	319	0.121	≤0.4	PASS
3DH3	Left side	Hop	1.630	154	0.251	≤0.4	PASS
	Right side	Hop	1.630	159	0.259	≤0.4	PASS
3DH5	Left side	Hop	2.880	96	0.276	≤0.4	PASS
	Right side	Hop	2.890	86	0.249	≤0.4	PASS

DH1_Left side_Hop

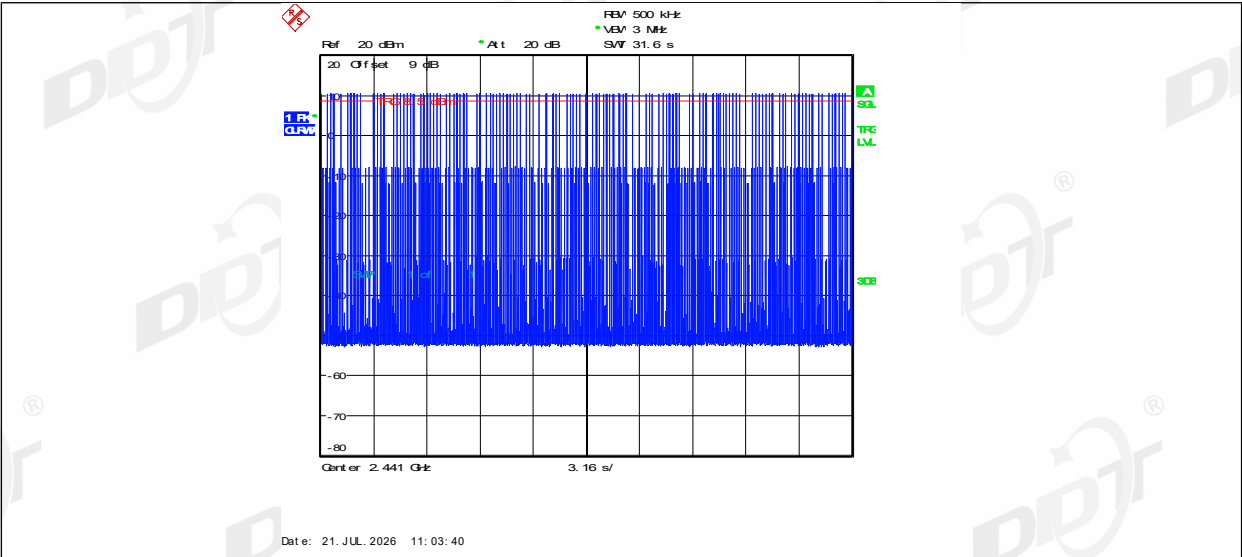
Ref: 20 dBm, Offset: 9 dB, Att: 20 dB, RBW: 1 MHz, VBW: 3 MHz, SWF: 10 ns, Delta 2 [T1]: 11.51 dB, 370.000000 ns, TFG: -10.000000 dBm, S/V: -2.25 dBm, Marker 1 [T1]: 11.51 dB, 370.000000 ns, Center: 2.441 GHz, 1 ns/

Date: 20. JUL. 2026 11:00:21

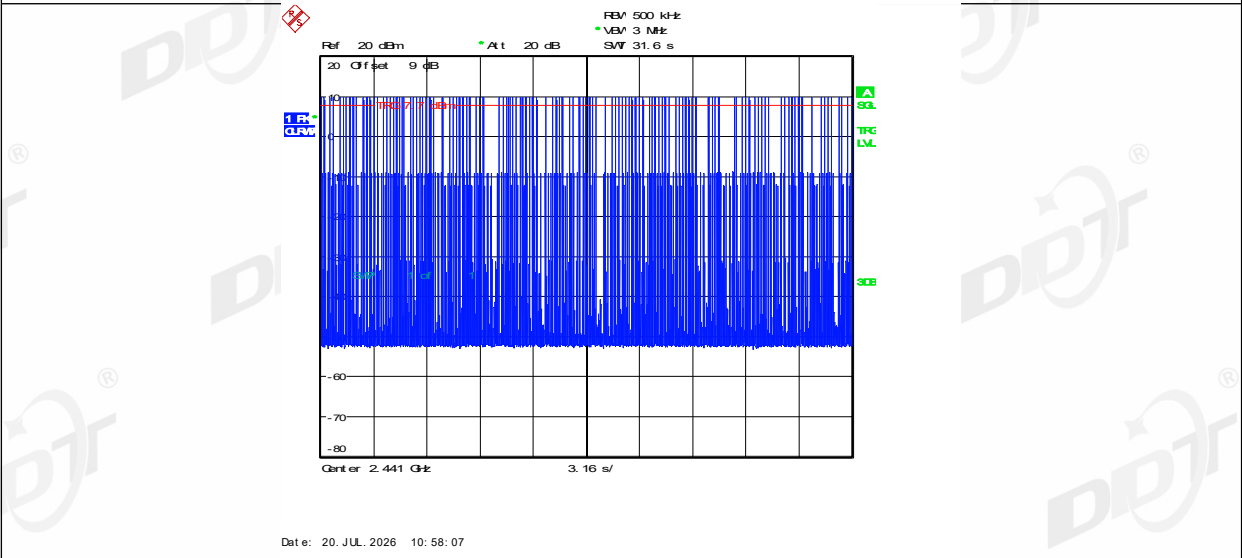
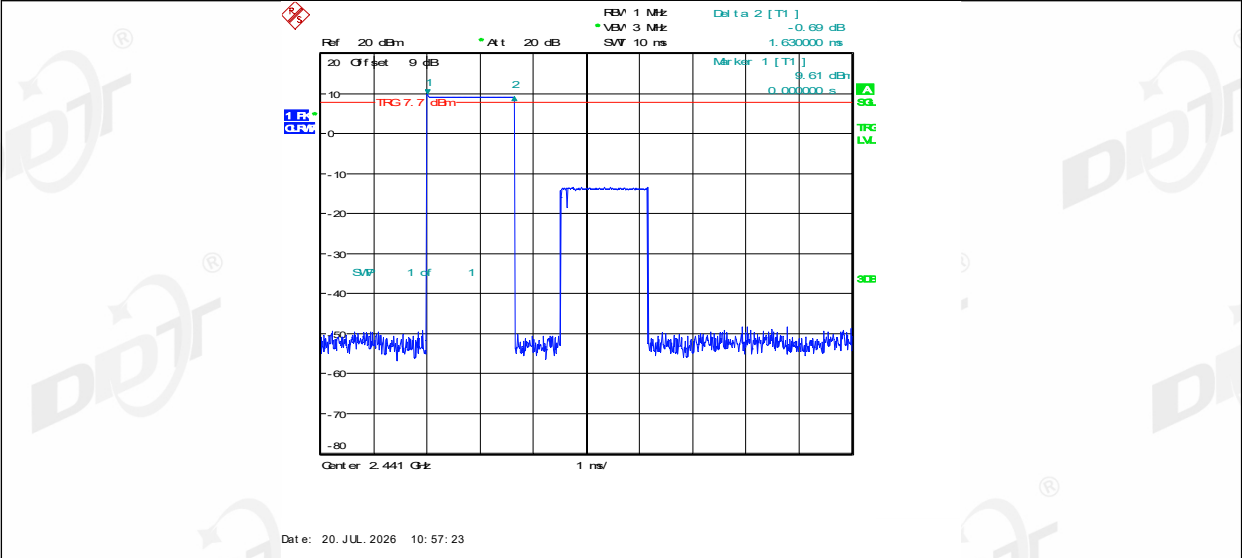
DH1_Right side_Hop

Ref: 20 dBm, Offset: 9 dB, Att: 20 dB, RBW: 1 MHz, VBW: 3 MHz, SWF: 10 ns, Delta 2 [T1]: -0.75 dB, 1.630000 ns, TFG: -10.000000 dBm, S/V: -0.75 dBm, Marker 1 [T1]: 10.49 dB, 1.630000 ns, Center: 2.441 GHz, 1 ns/

Date: 21. JUL. 2026 11:02:57

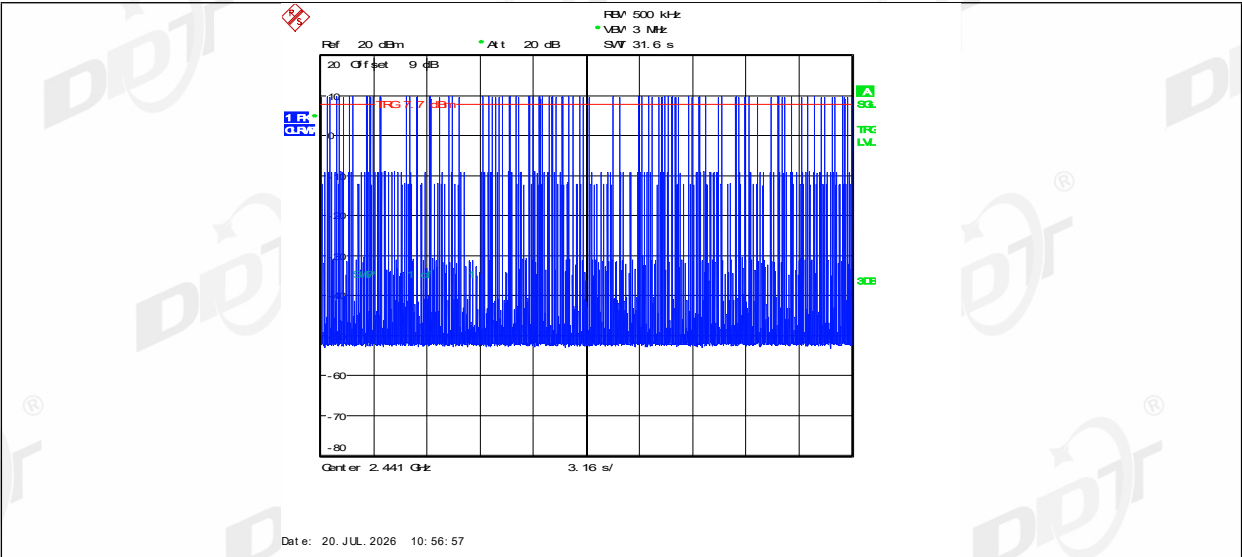


DH3_Left side_Hop

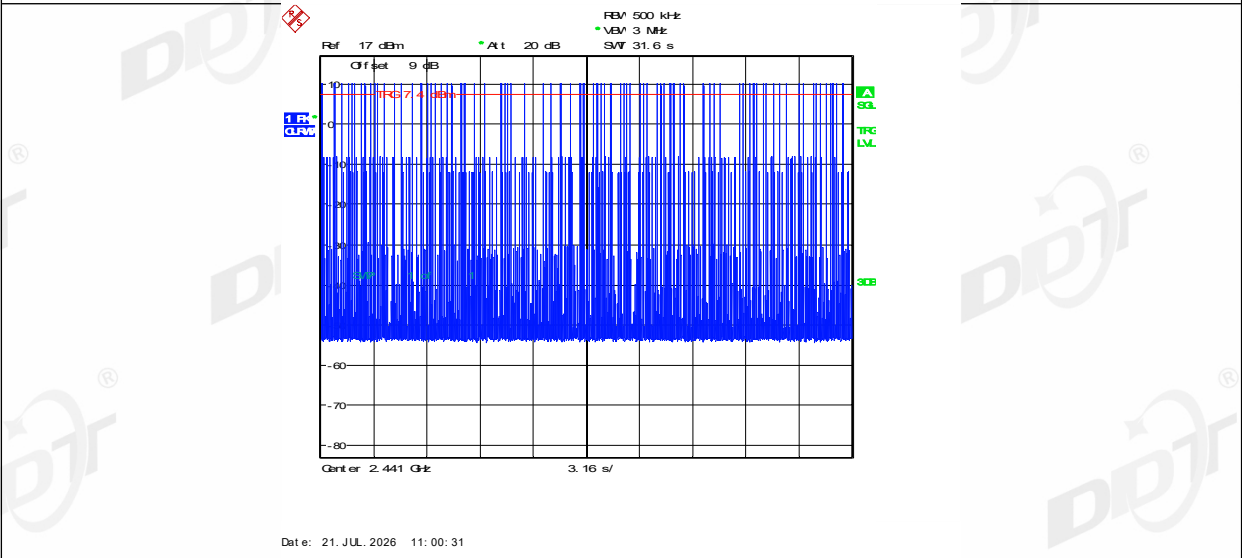
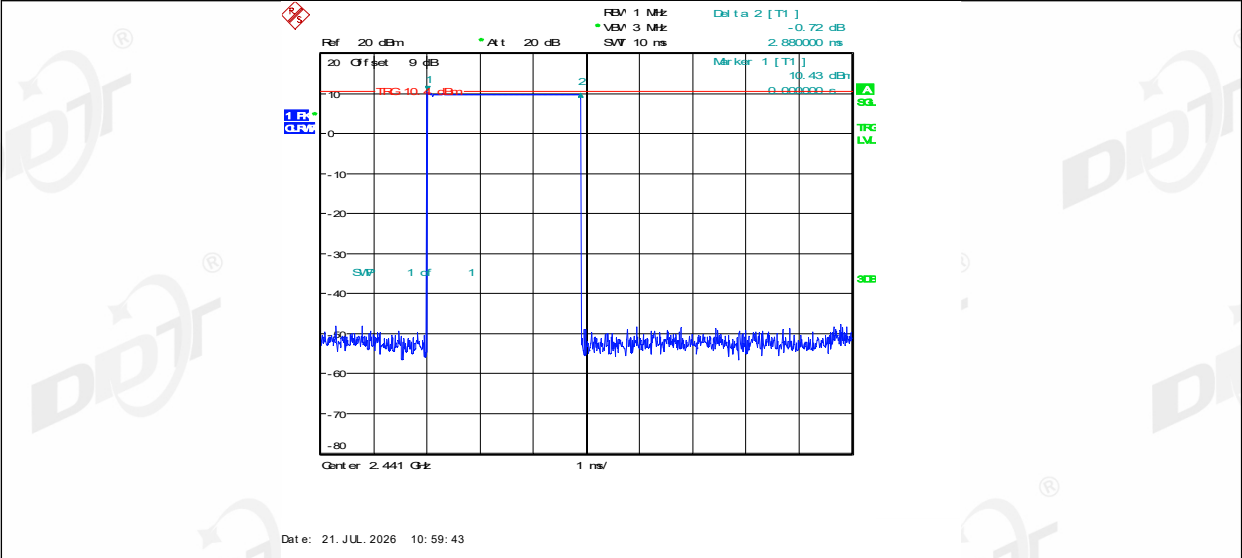


DH3_Right side_Hop

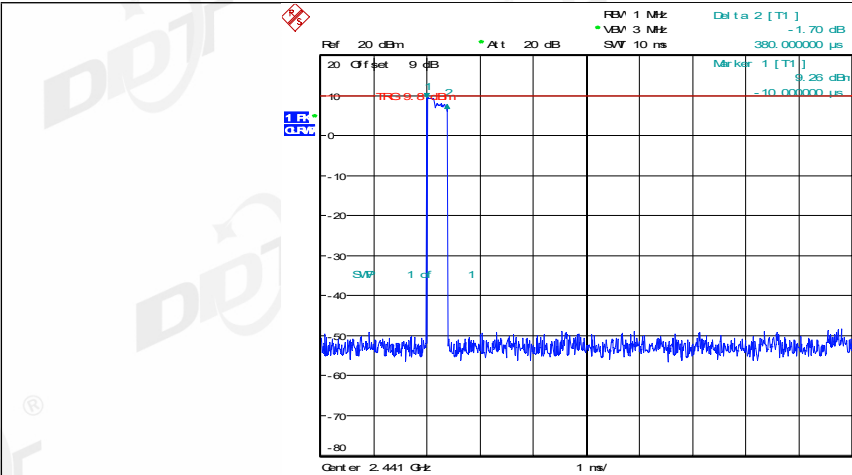




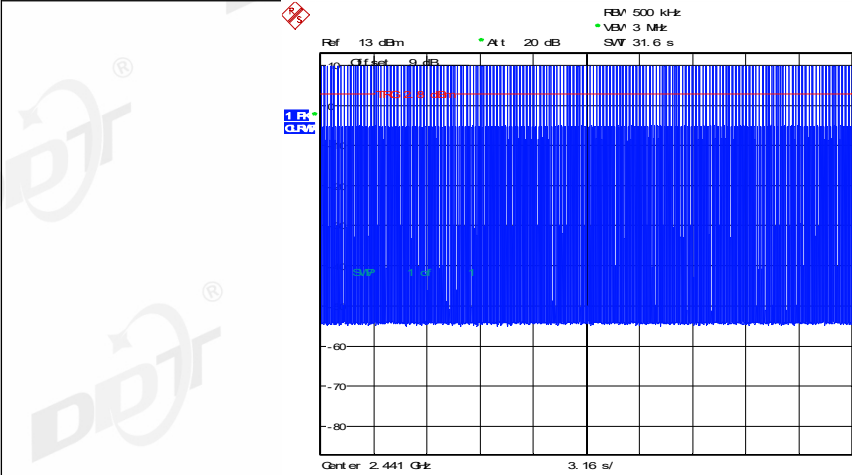
DH5_Right side_Hop



2DH1_Left side_Hop

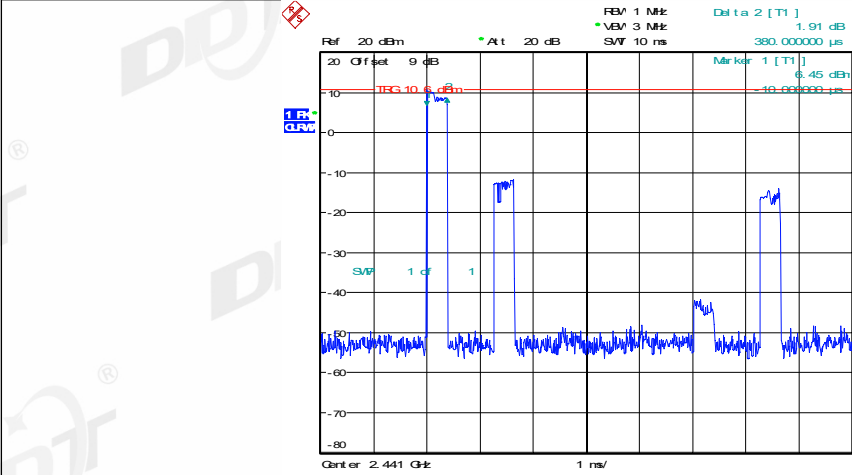


Date: 20. JUL. 2026 11:03:40

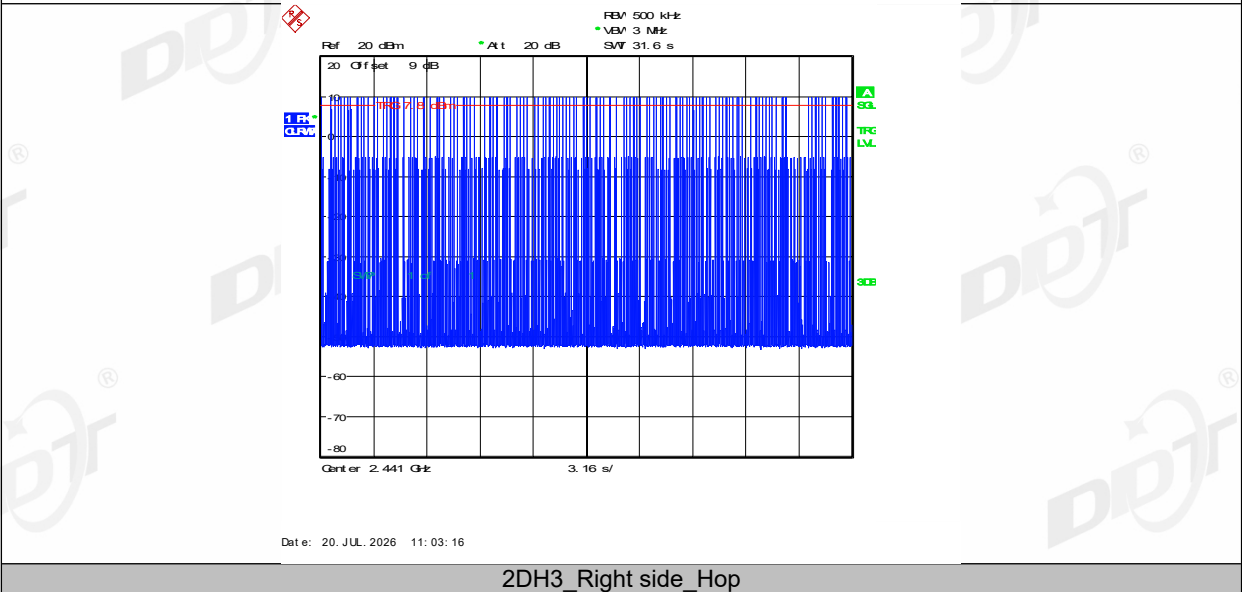
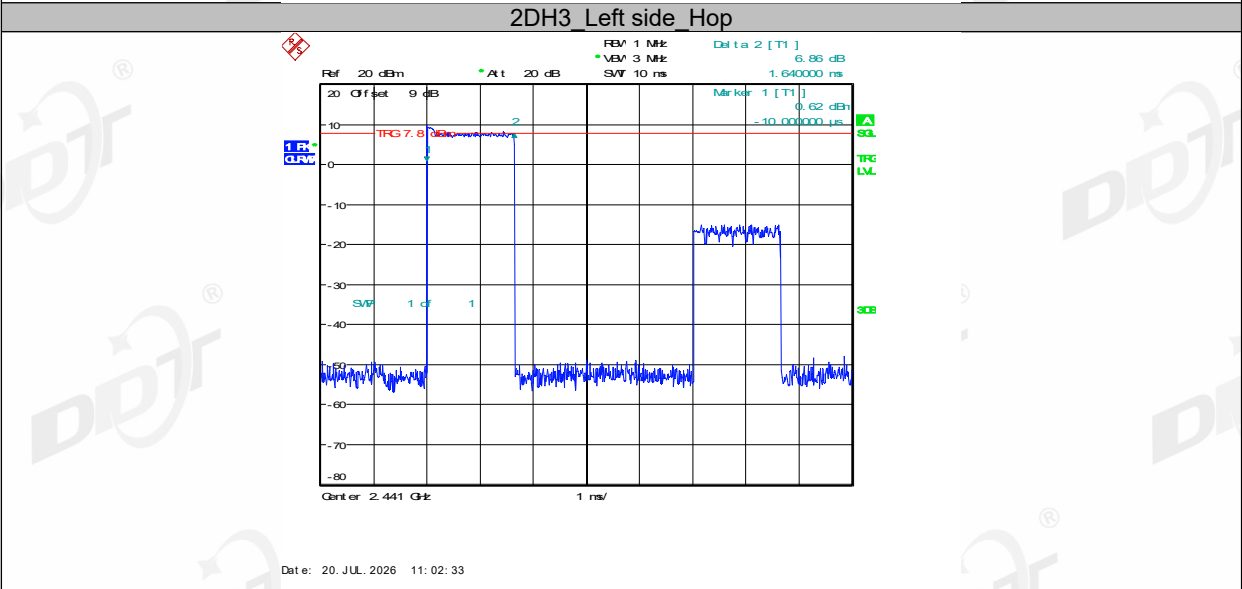
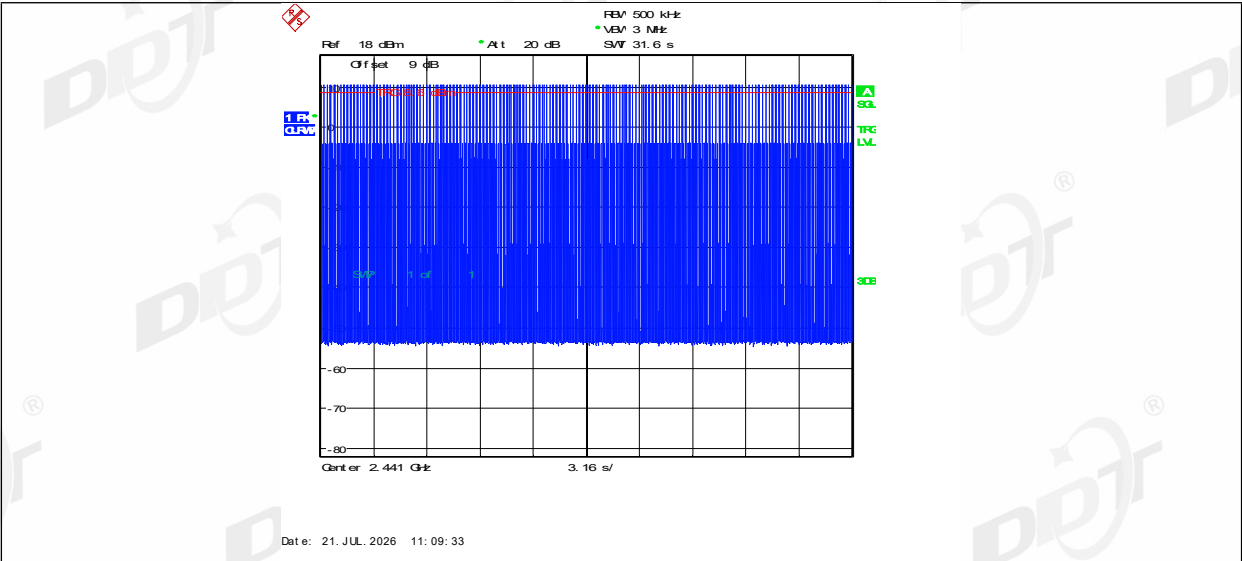


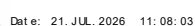
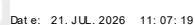
Date: 20. JUL. 2026 11:05:42

2DH1_Right side_Hop

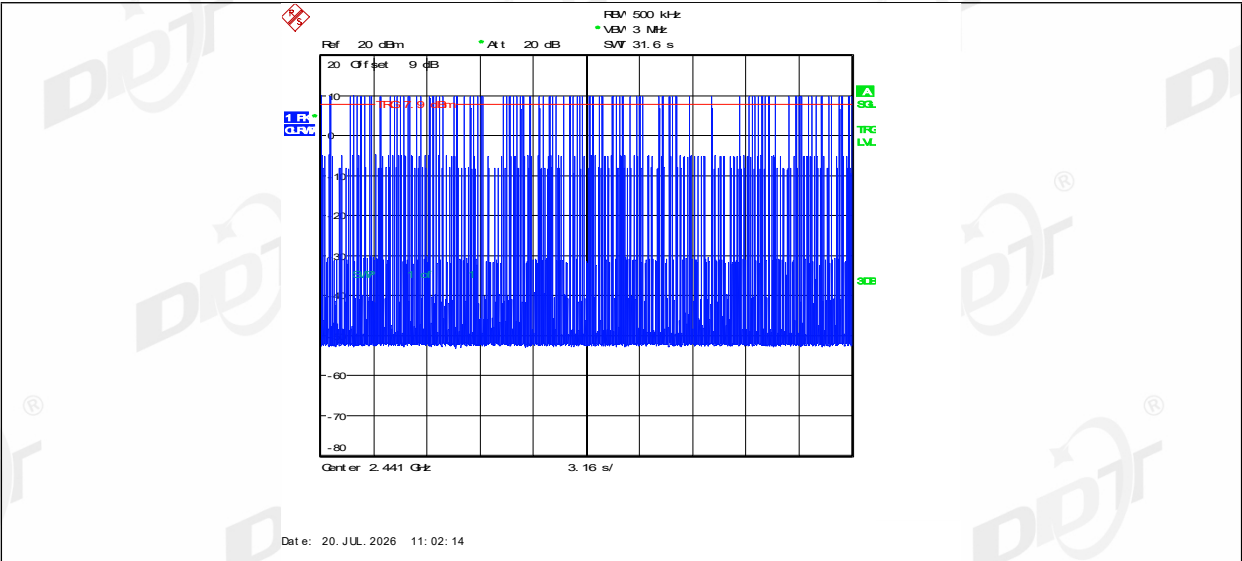


Date: 21. JUL. 2026 11:08:47

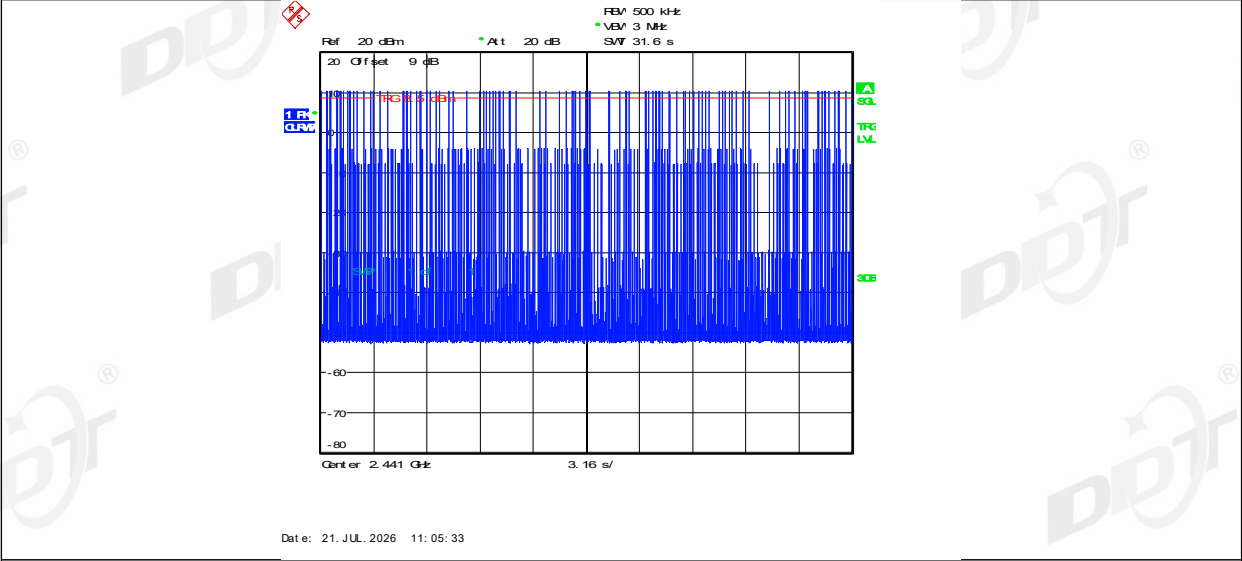
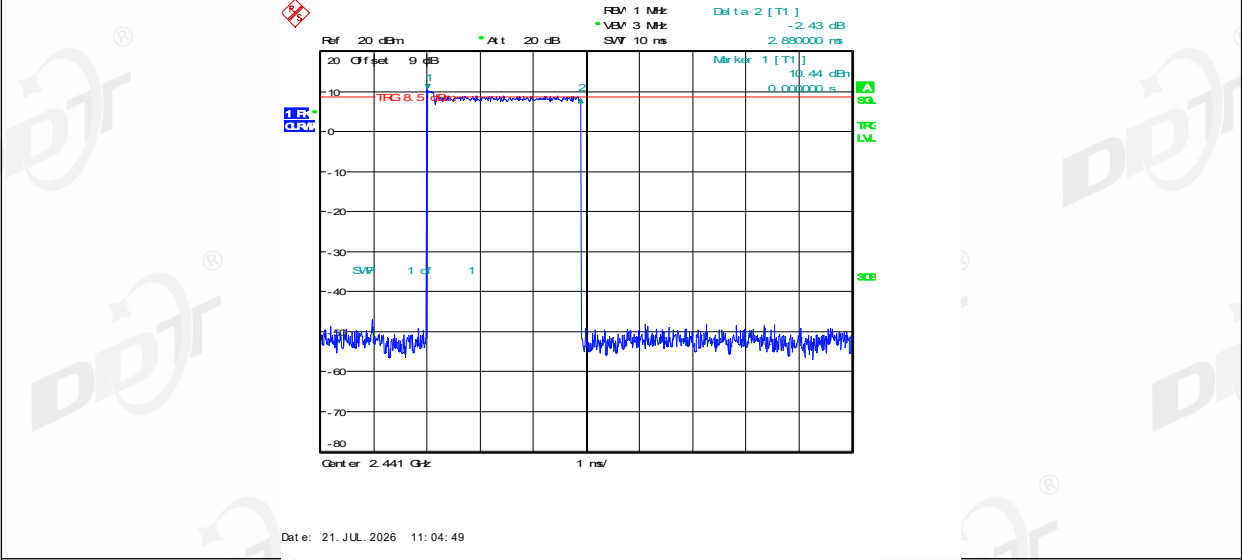




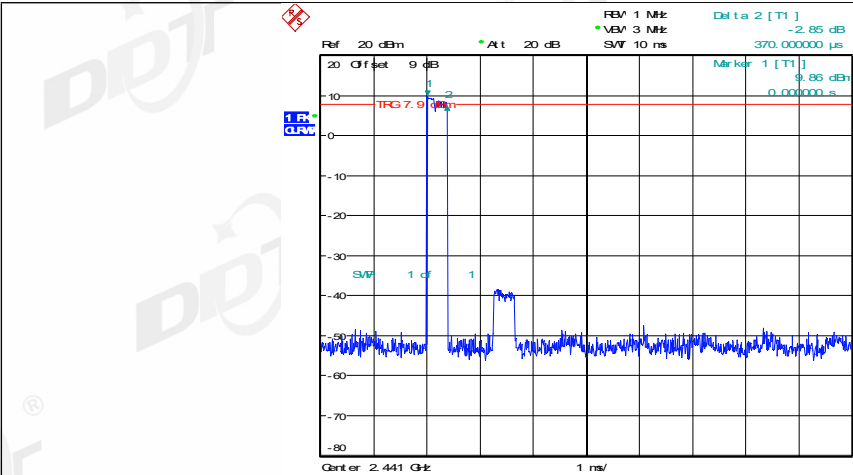
Date: 20. JUL. 2026 11:01:30



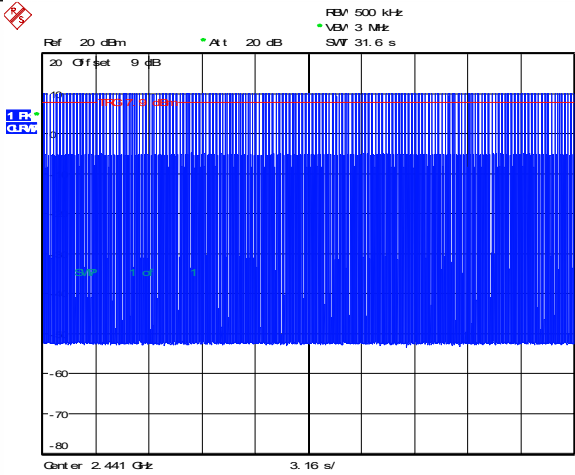
2DH5_Right side_Hop



3DH1_Left side_Hop

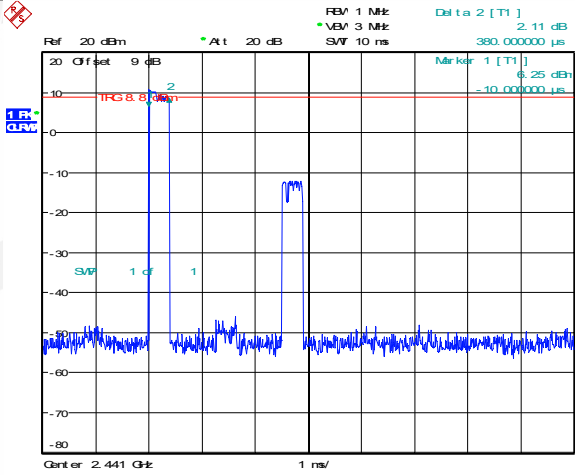


Date: 20. JUL. 2026 11:10:31

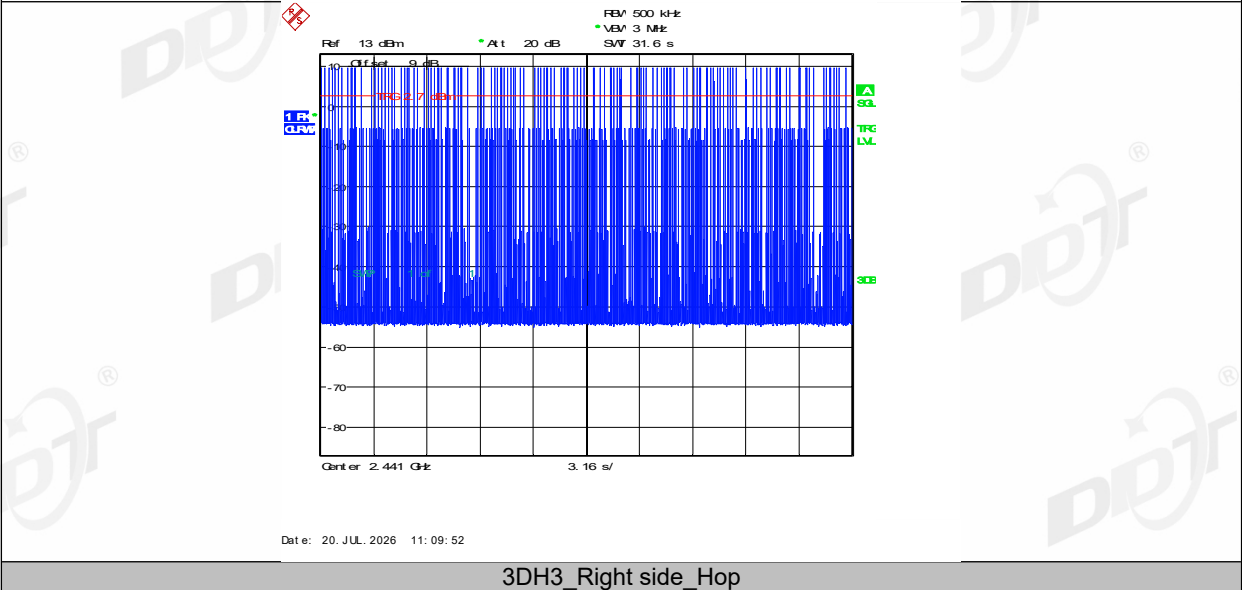
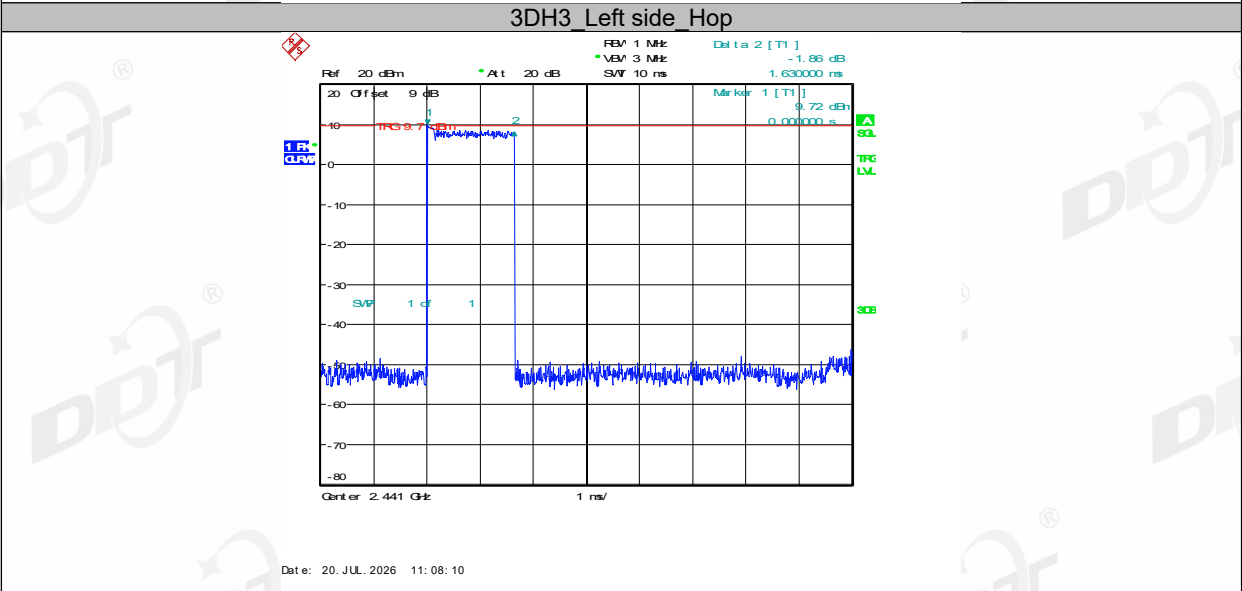
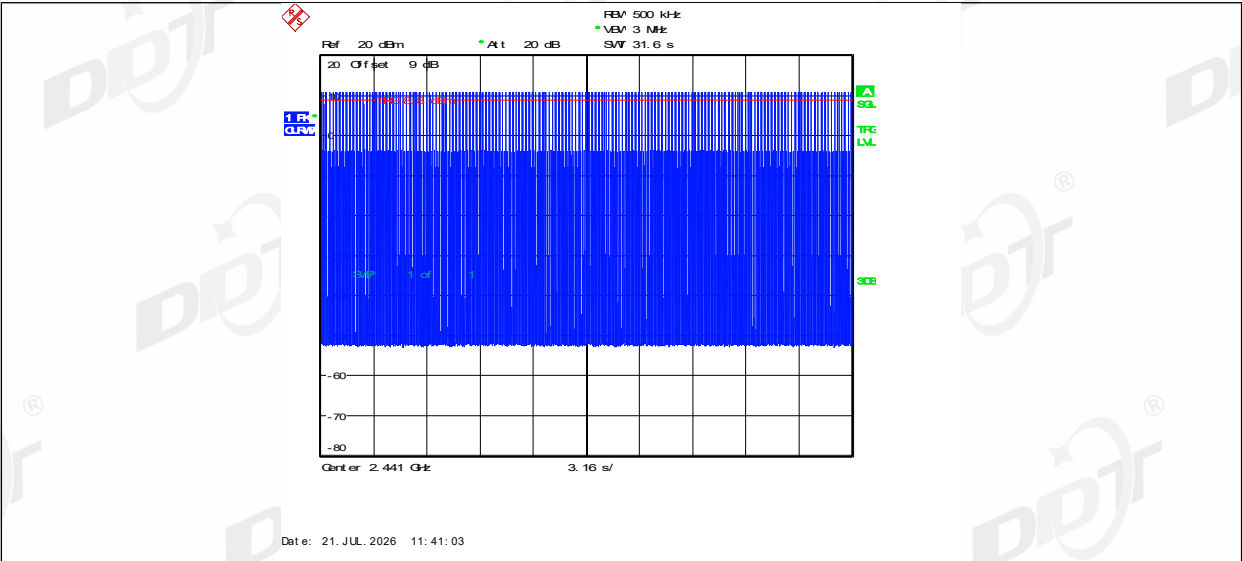


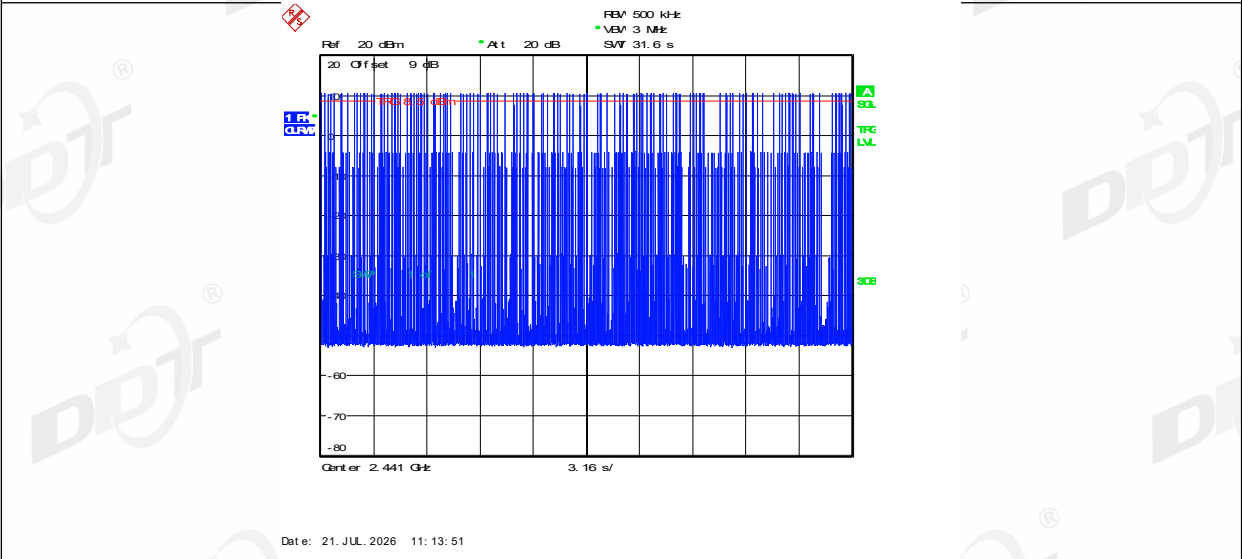
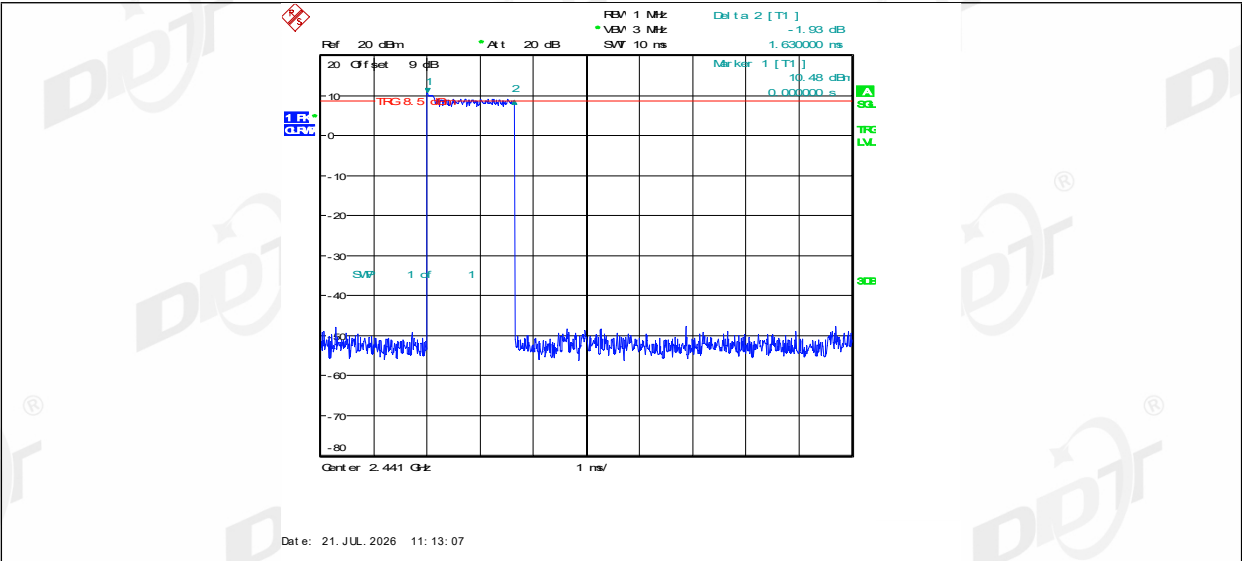
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3DH1_Right side_Hop

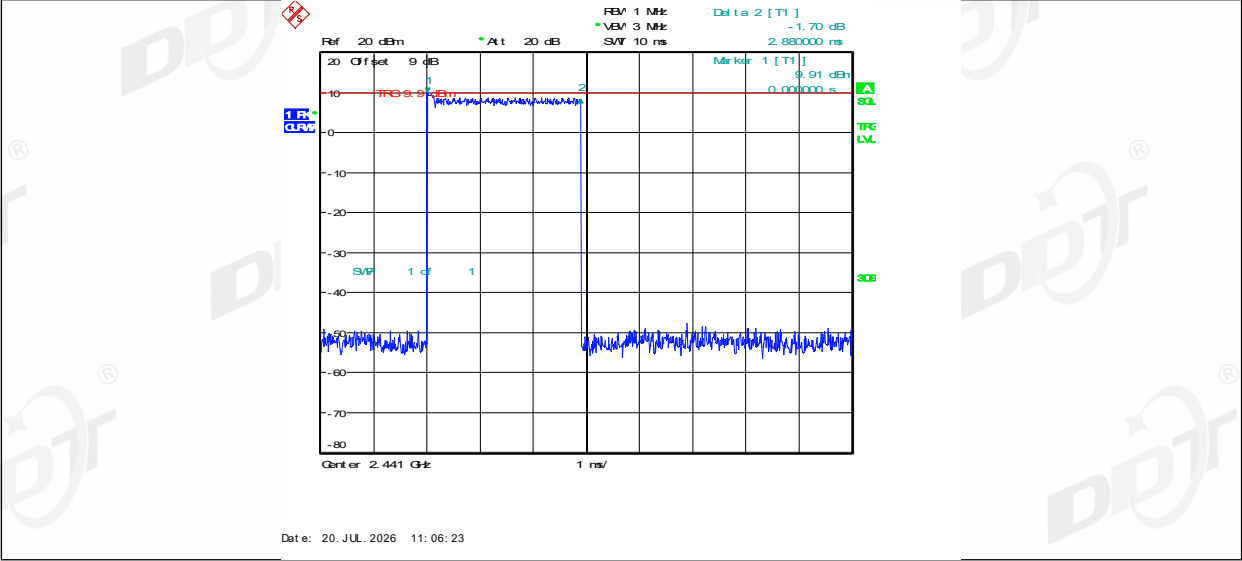


Date: 21. JUL. 2026 11:40:20





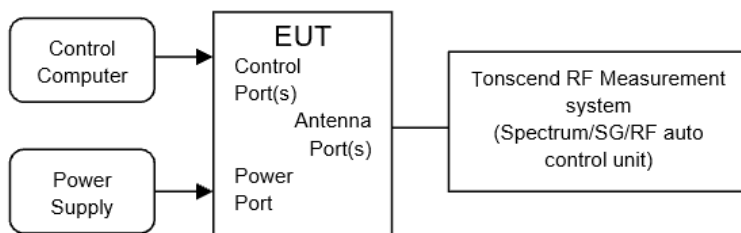
3DH5 Left side Hop





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 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:

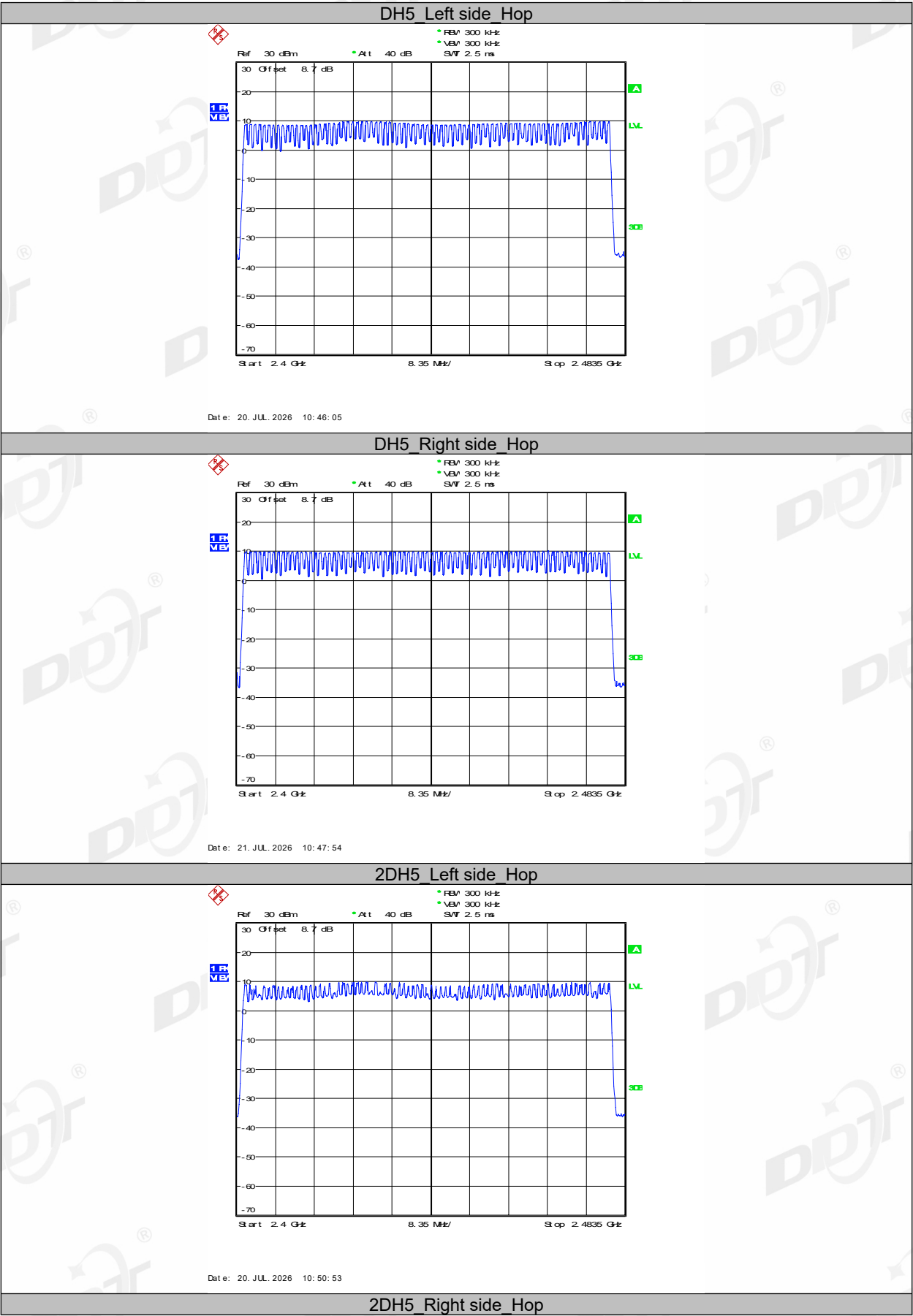
RBW:	RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
VBW:	VBW $\geq$ RBW.
Span:	The frequency band of operation
Detector Mode:	Peak
Sweep time:	Auto
Trace mode:	Max hold
- (5) Measure the hopping number and record the results in the report.
- (6) Measure and record the results in the report.

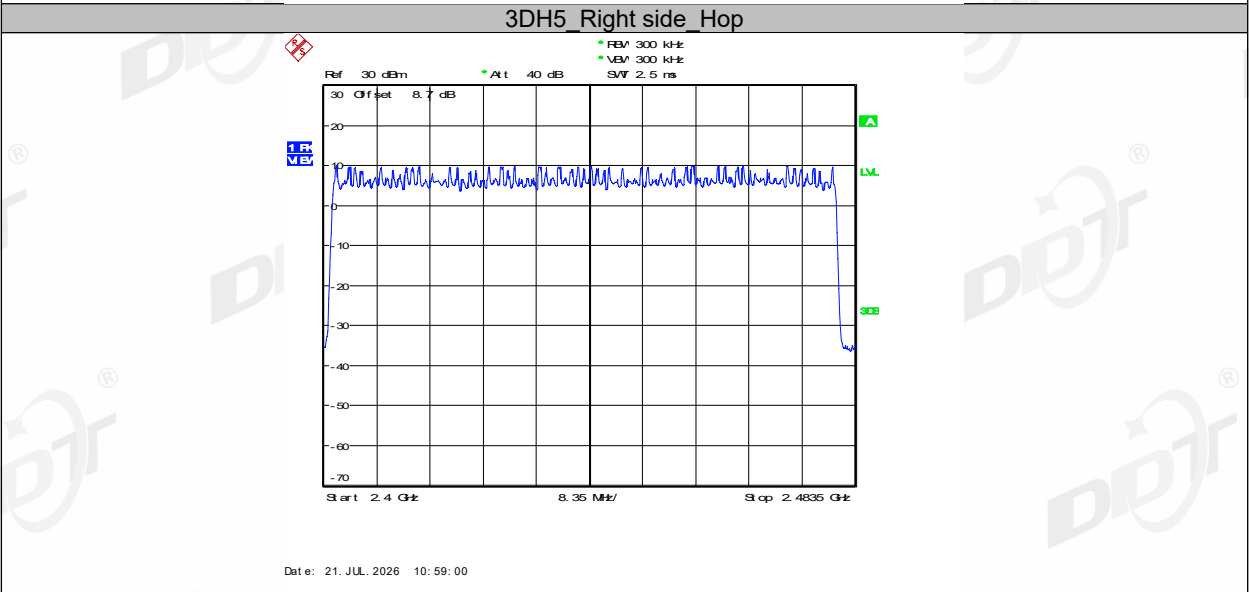
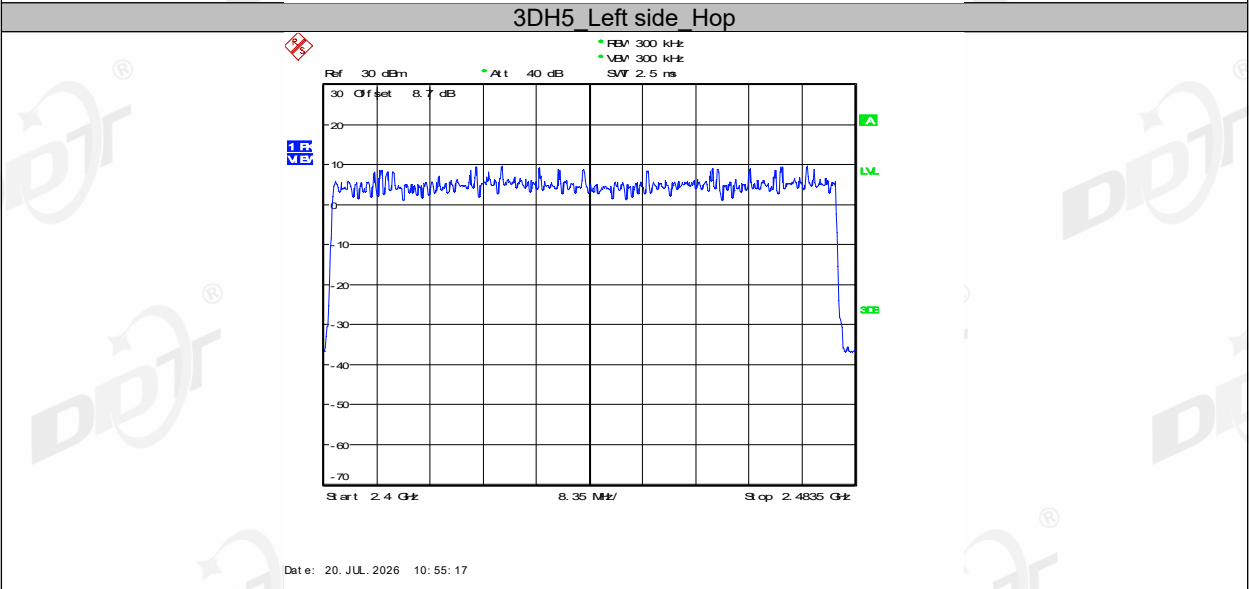
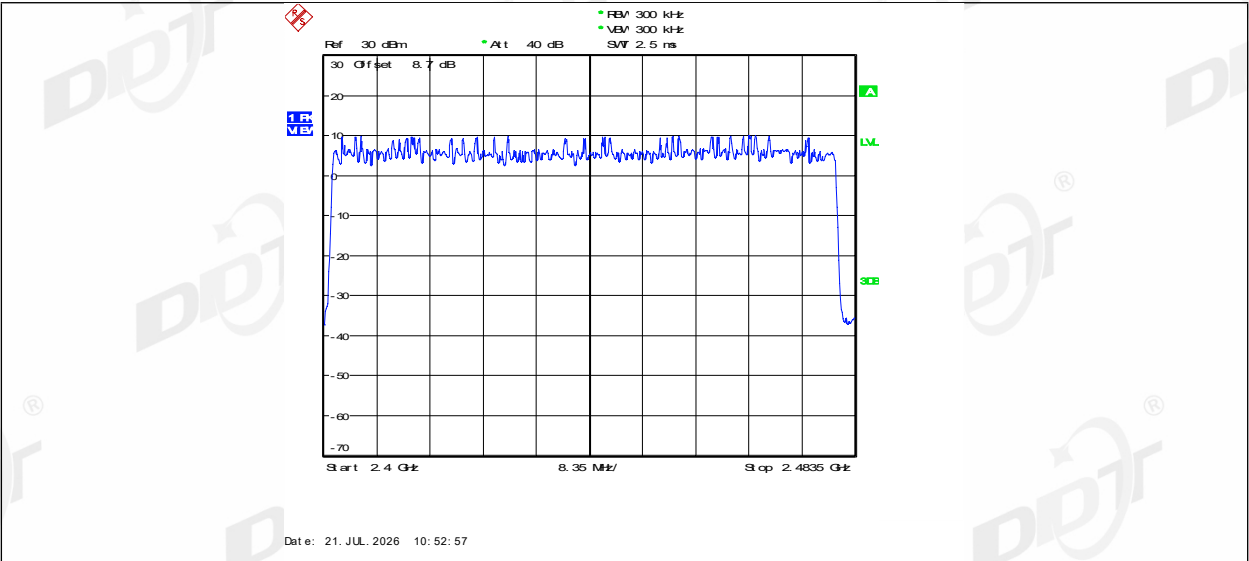
9.4. Test result

Test Engineer:	Zora Zhang	Test Site:	RF Measurement System 1#
Ambient Condition:	27.3-28.2℃,35-53.6%RH	Test Date:	2026.7.13-2026.7.28
Test Power Supply:	Battery	Sample Number:	S26070611-009

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
3DH5	Left side	Hop	79	≥15	PASS
	Right side	Hop	79	≥15	PASS

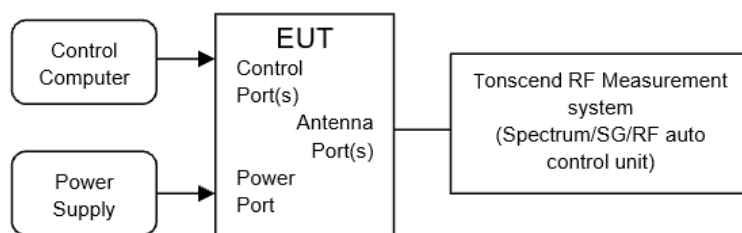
9.5. Test graphs





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:

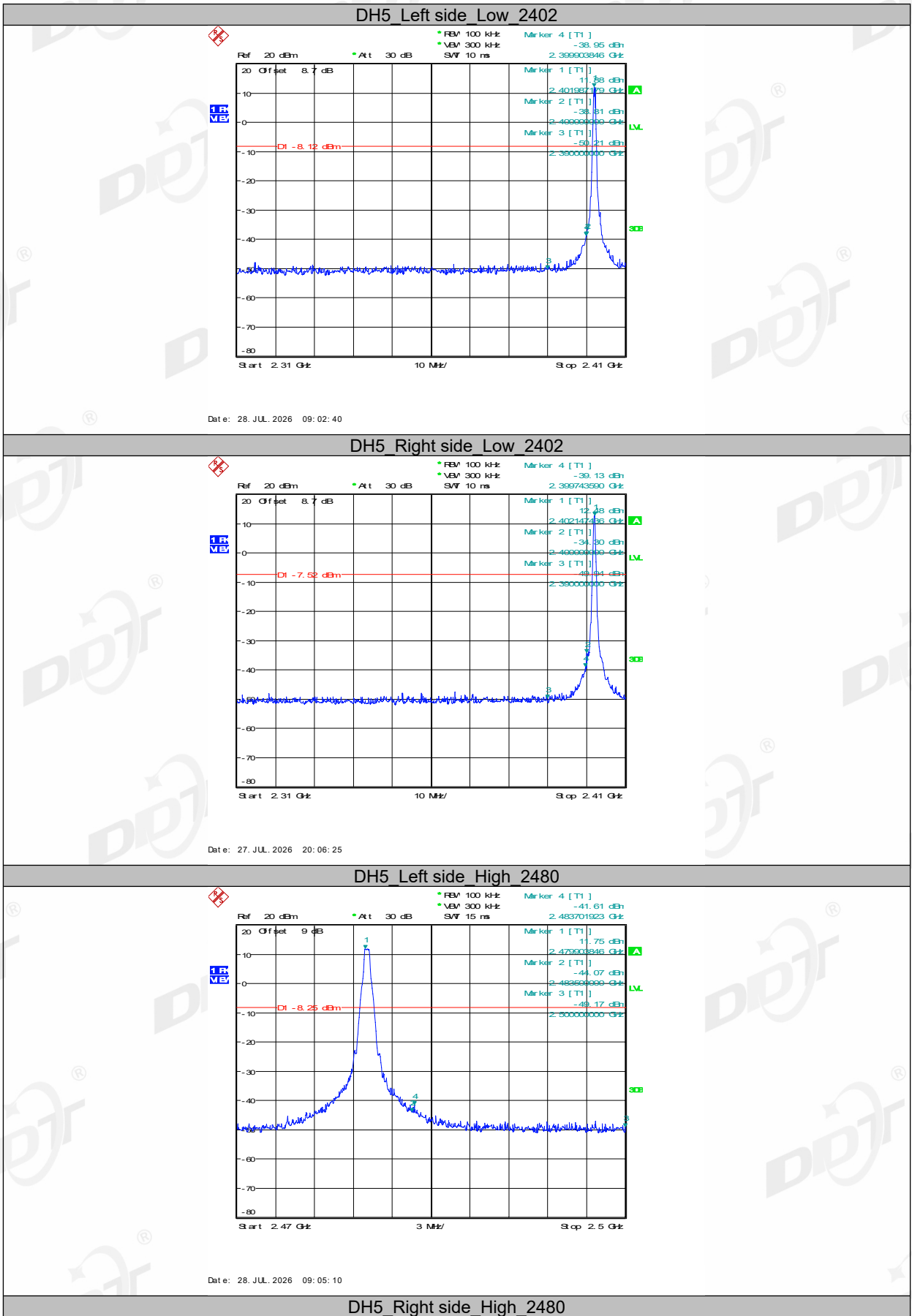
RBW:	100 kHz
VBW:	300 kHz
Span	Encompass frequency range to be measured
Detector Mode:	Peak
Sweep time:	Auto
Trace mode	Max hold
- (3) Allow the trace to stabilize, use the peak marker function to determine the maximum peak power level to establish the reference level.
- (4) Then mark the maximum amplitude of all unwanted emissions outside of the authorized frequency band.

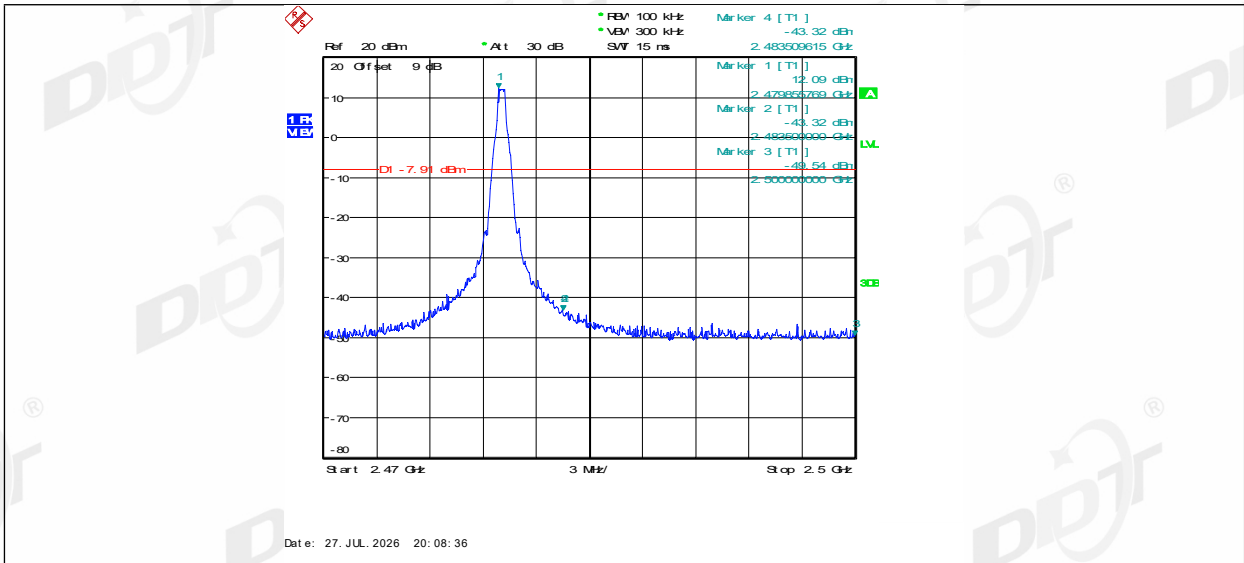
10.4. Test result

Test Engineer:	Zora Zhang	Test Site:	RF Measurement System 1#
Ambient Condition:	27.3-28.2℃,35-53.6%RH	Test Date:	2026.7.13-2026.7.28
Test Power Supply:	Battery	Sample Number:	S26070611-009

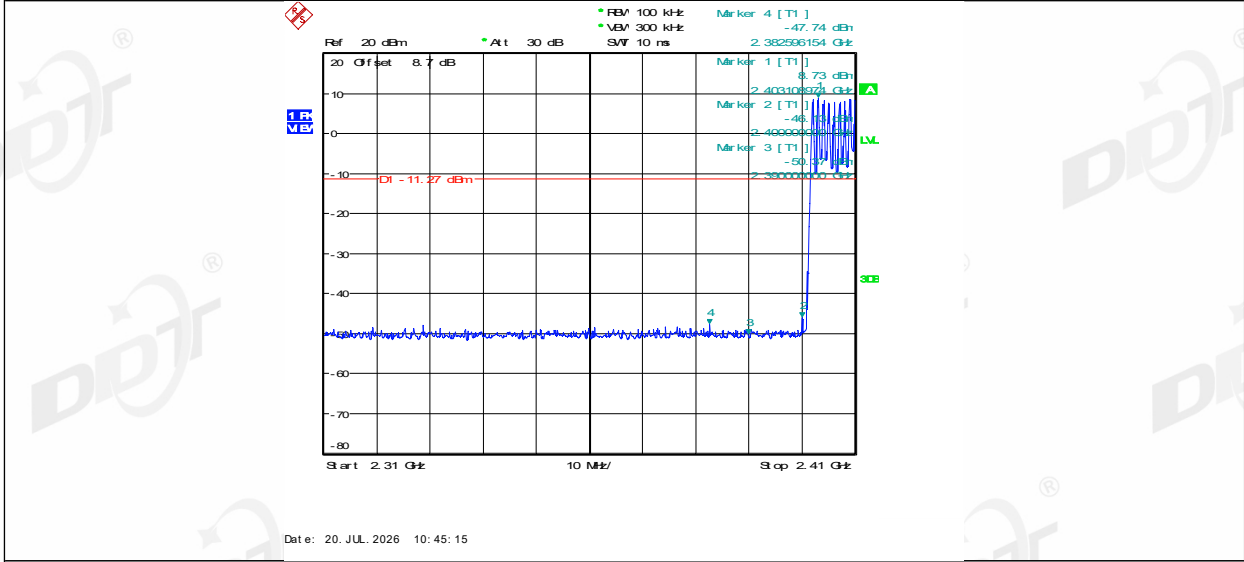
Mode	Freq. (MHz)	Verdict
GFSK	Hopping off 2402	Pass
	Hopping off 2480	Pass
	Hopping on	Pass
$\pi/4$ -DQPSK	Hopping off 2402	Pass
	Hopping off 2480	Pass
	Hopping on	Pass
8DPSK	Hopping off 2402	Pass
	Hopping off 2480	Pass
	Hopping on	Pass

10.5. Test graphs

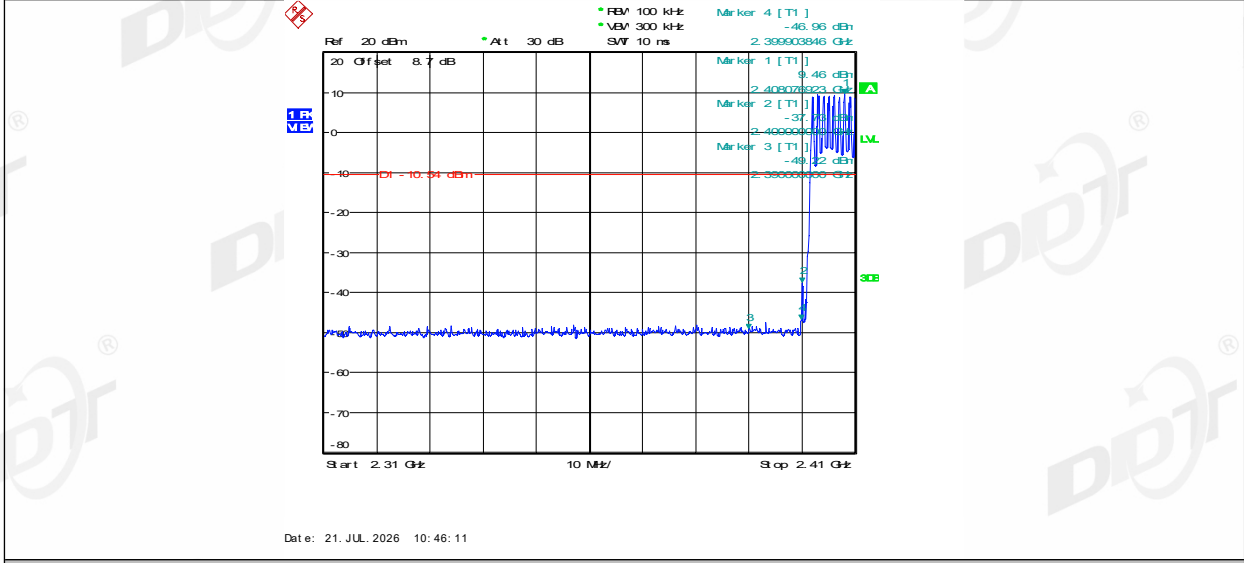




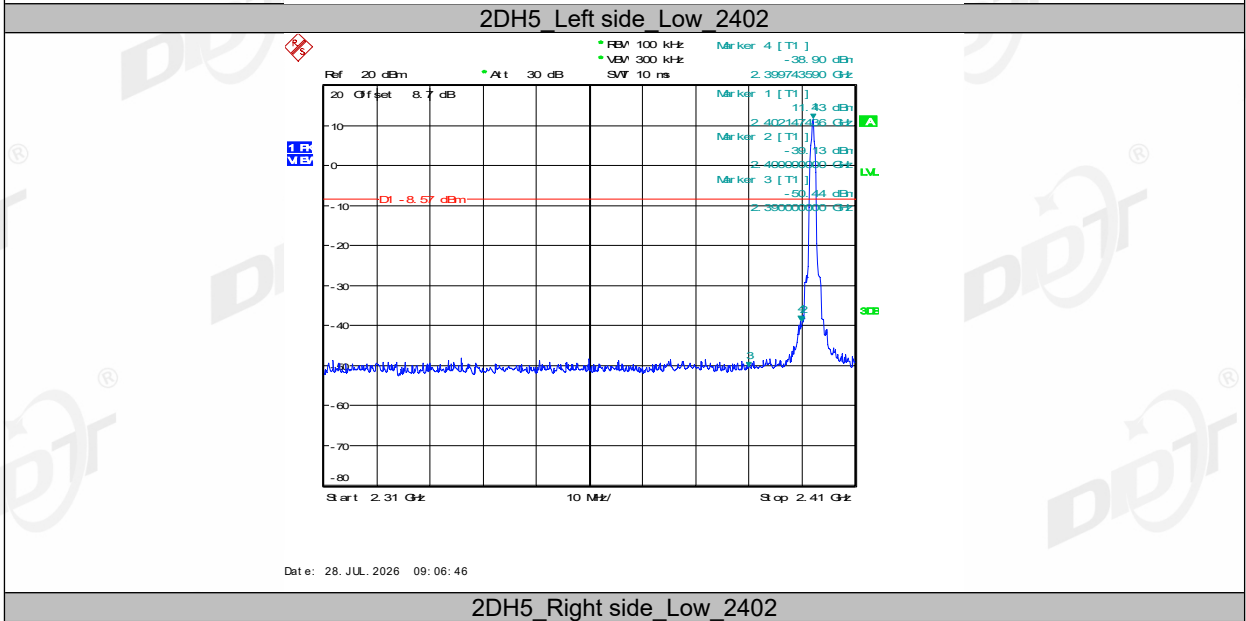
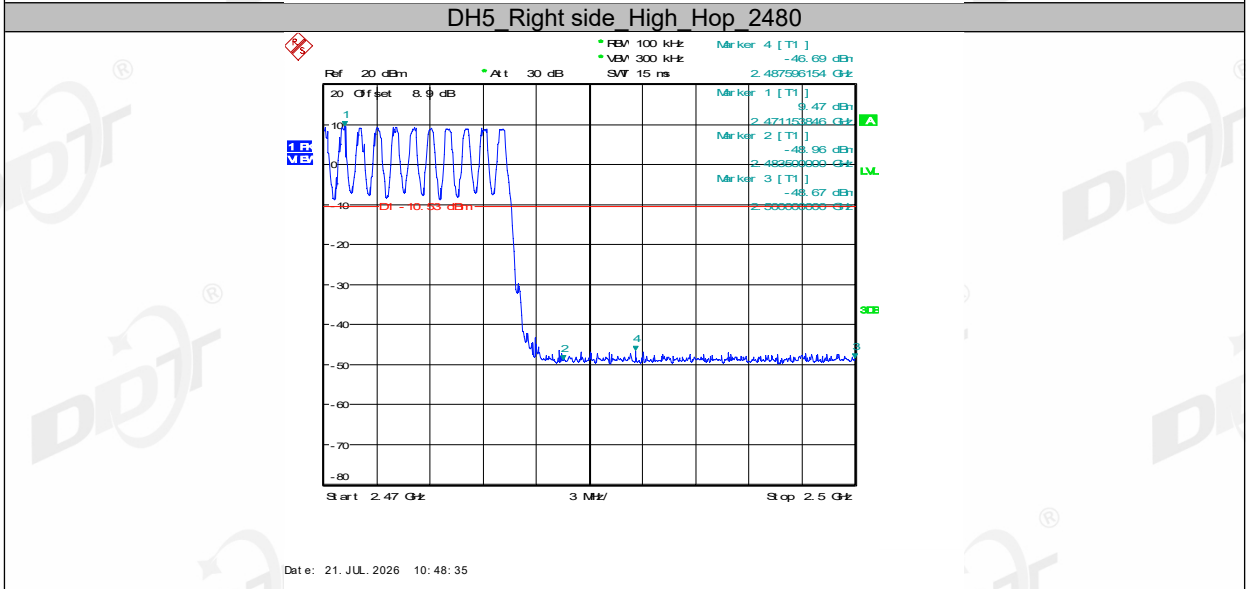
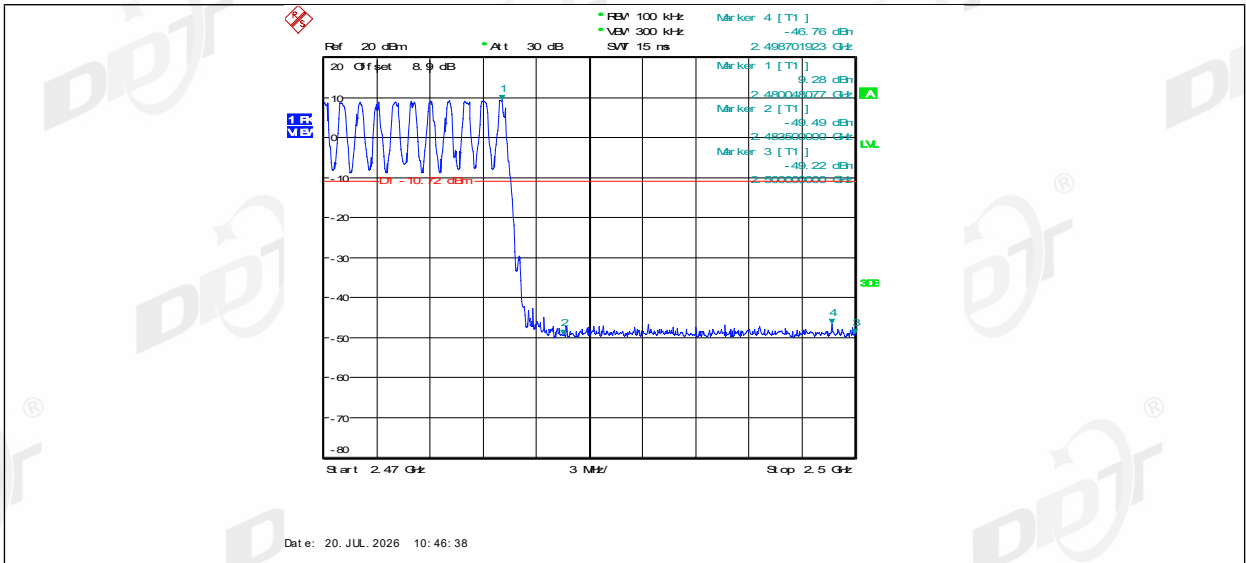
DH5 Left side Low Hop 2402

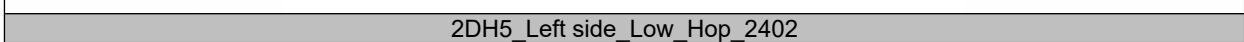
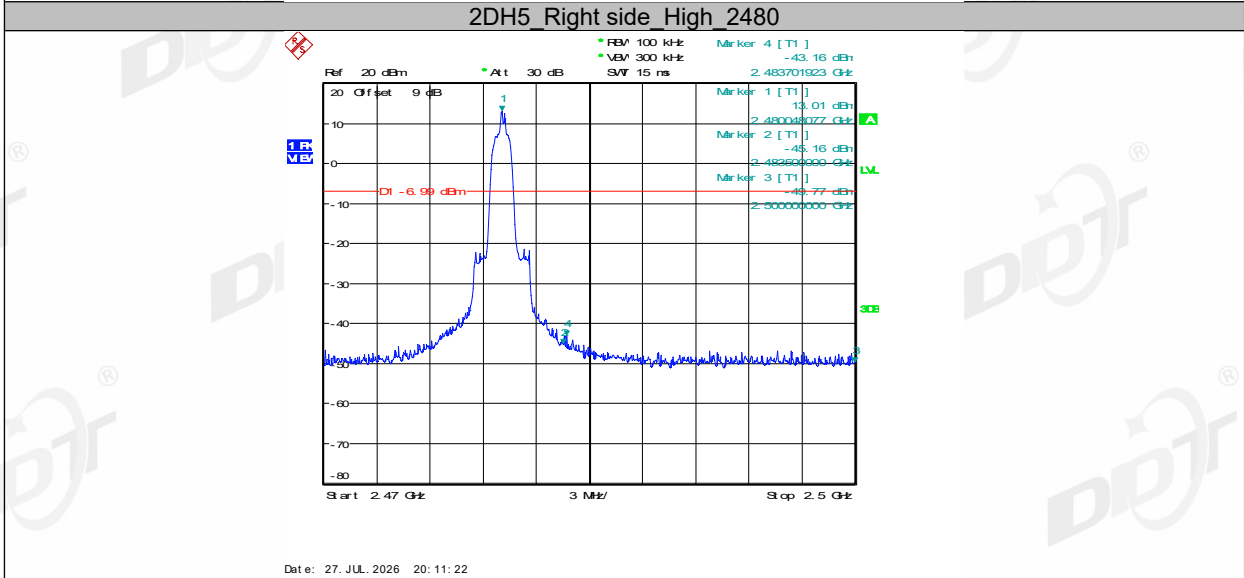
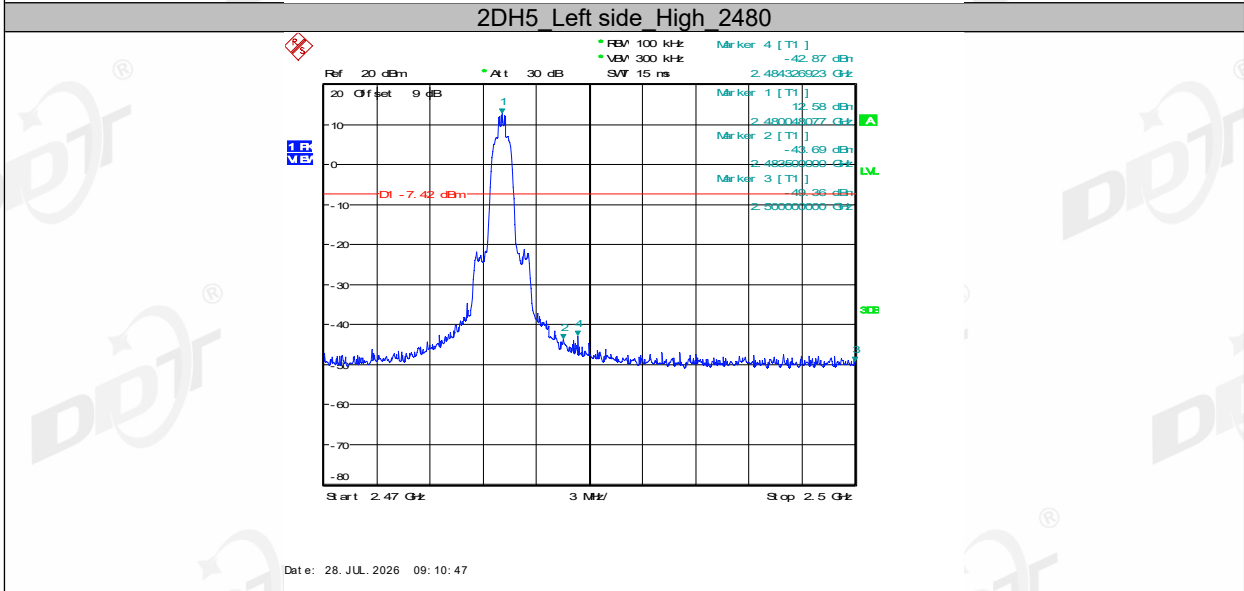
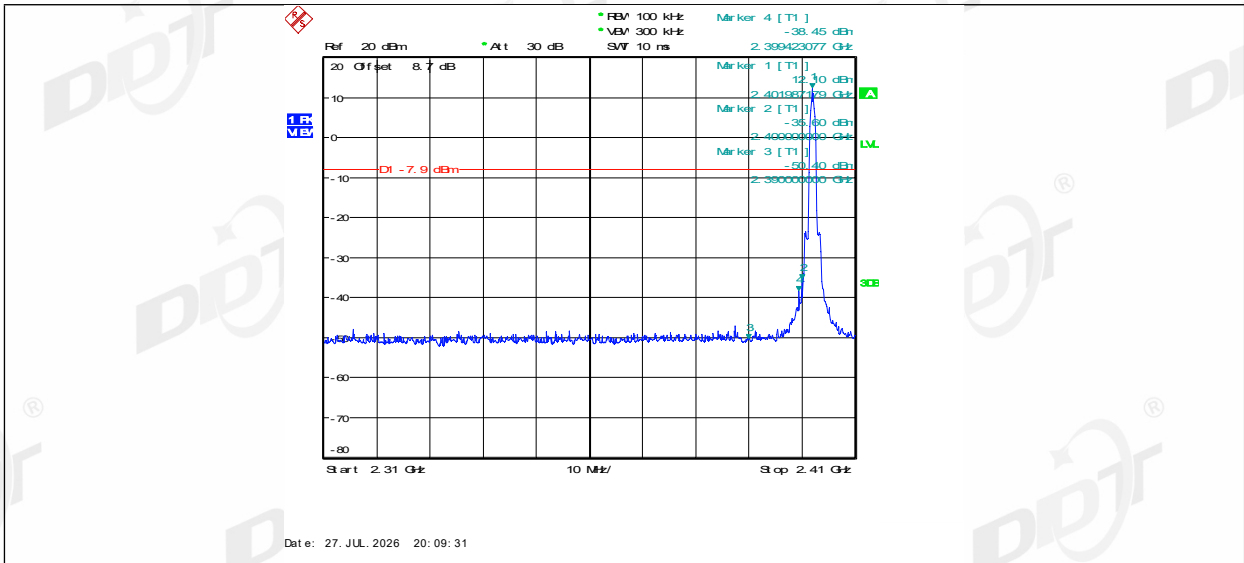


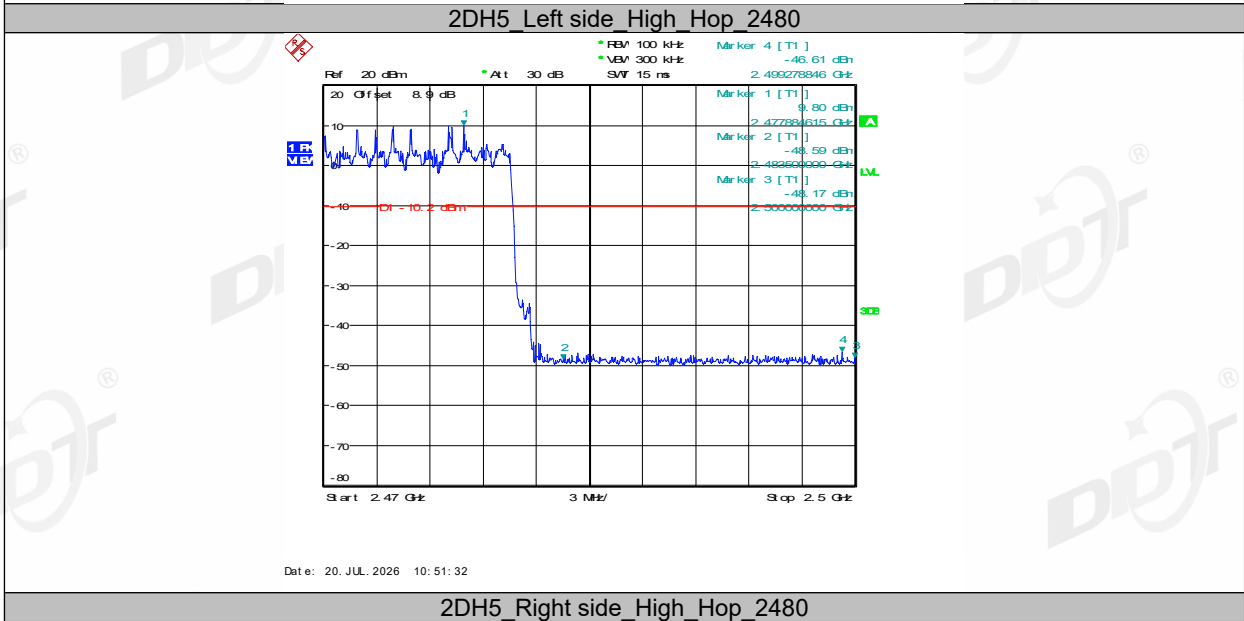
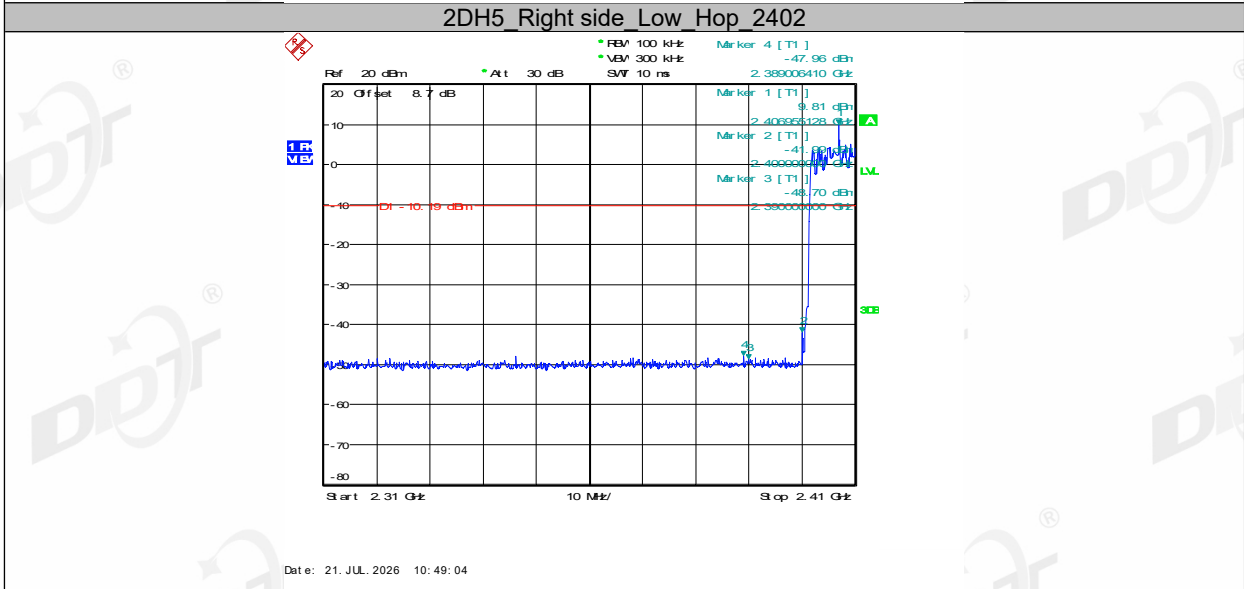
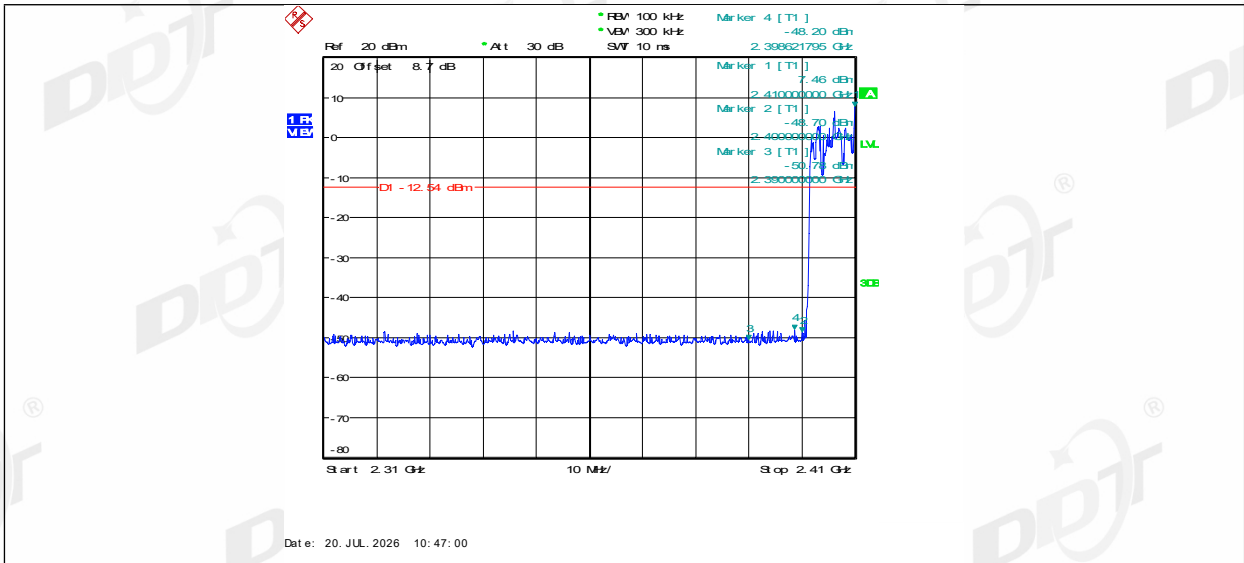
DH5 Right side Low Hop 2402

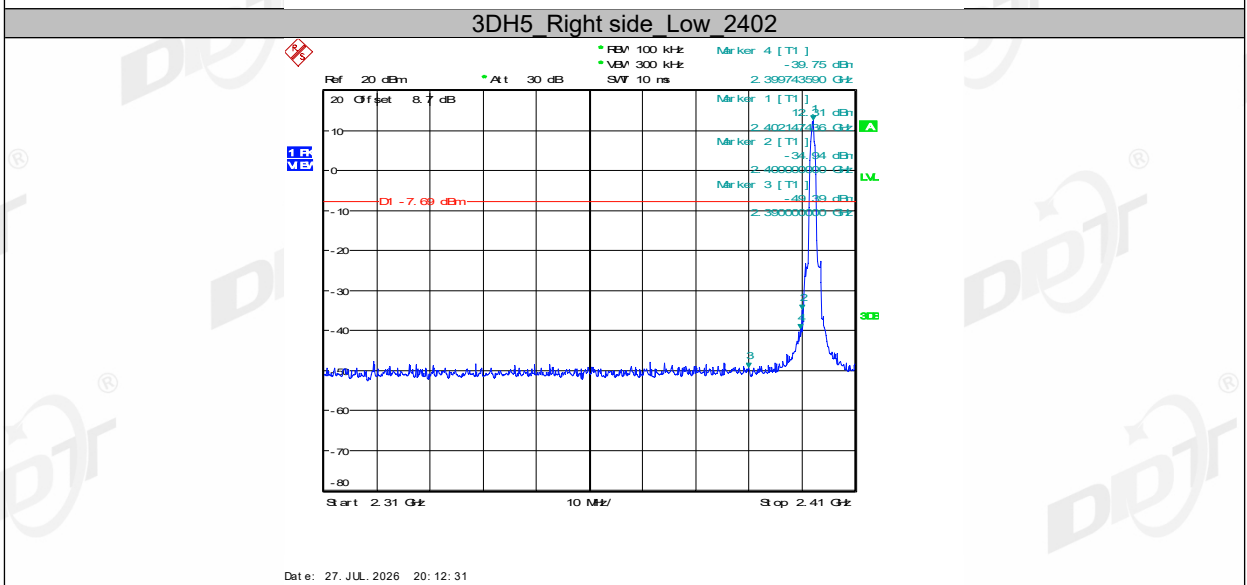
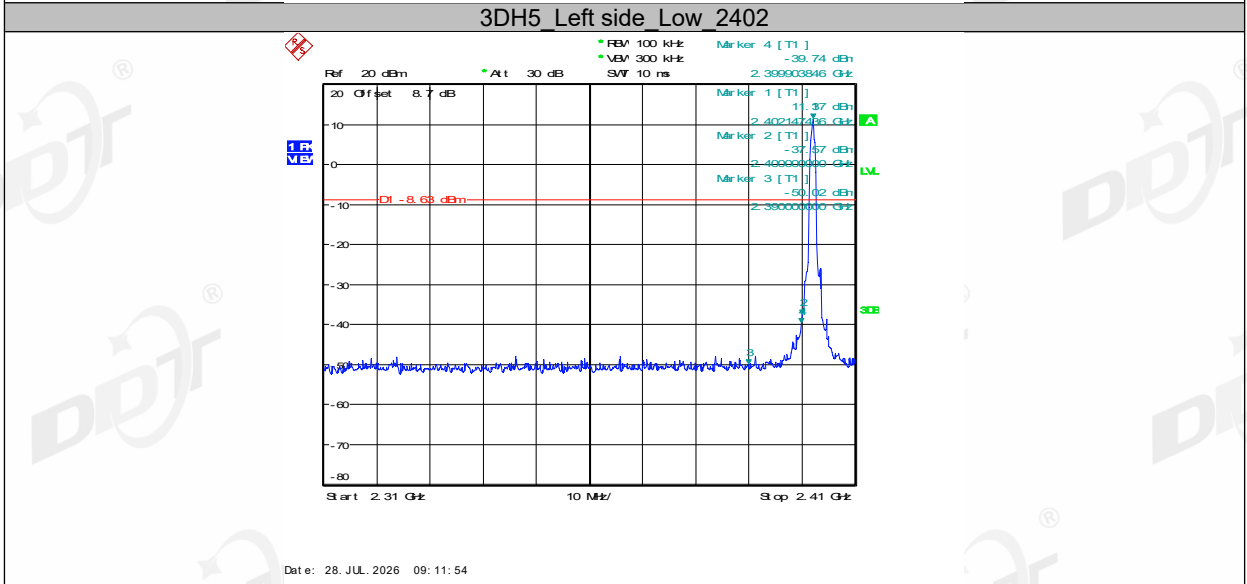
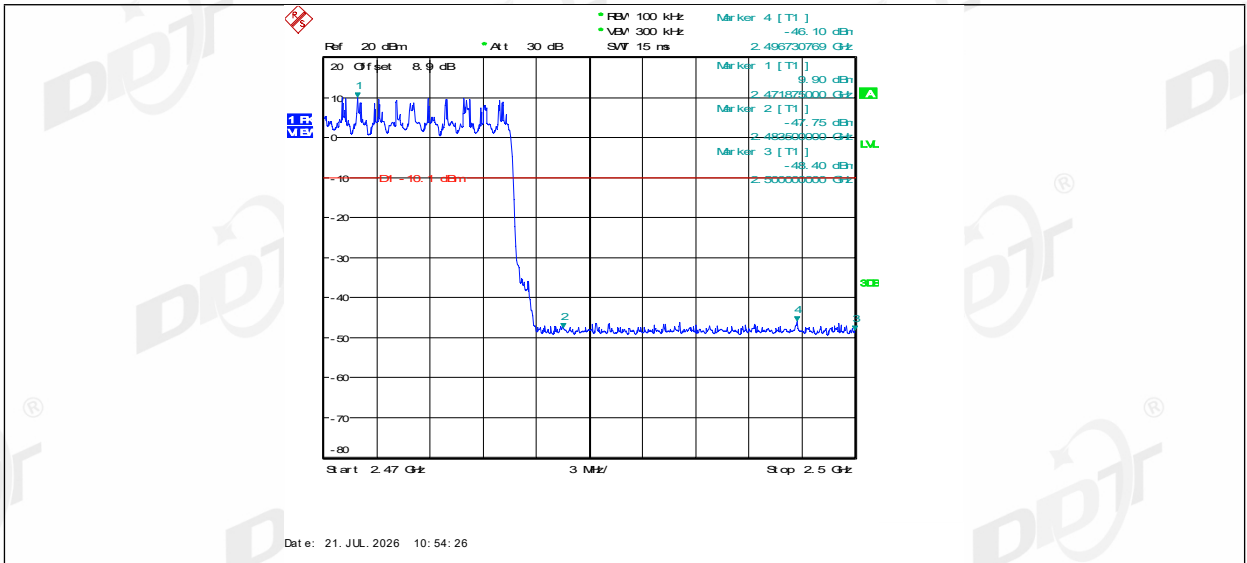


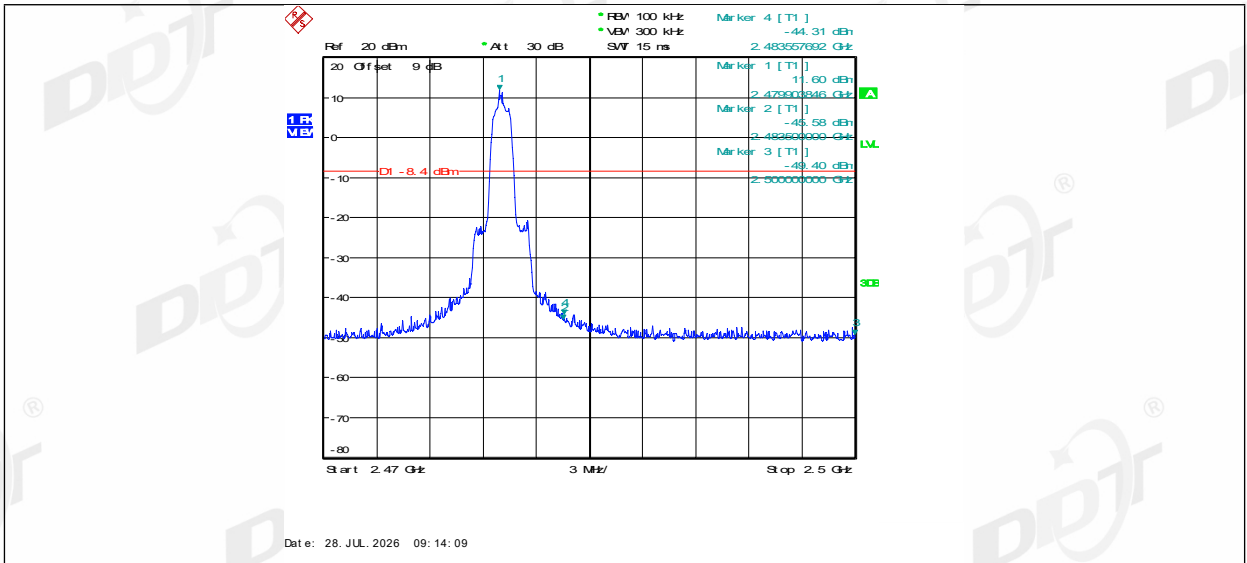
DH5 Left side High Hop 2480



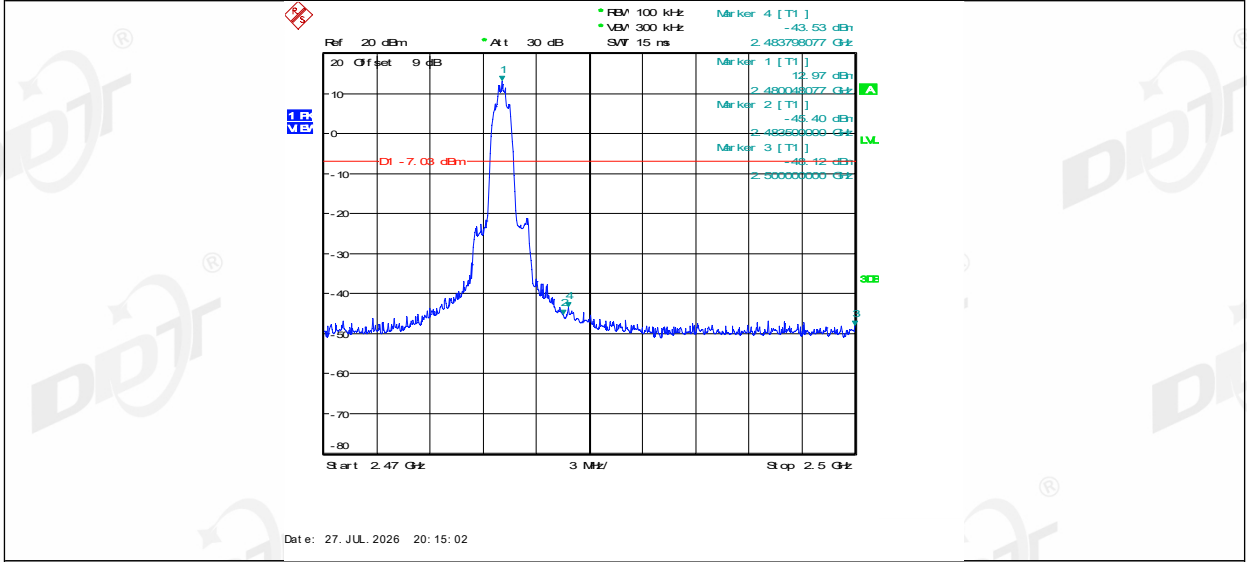




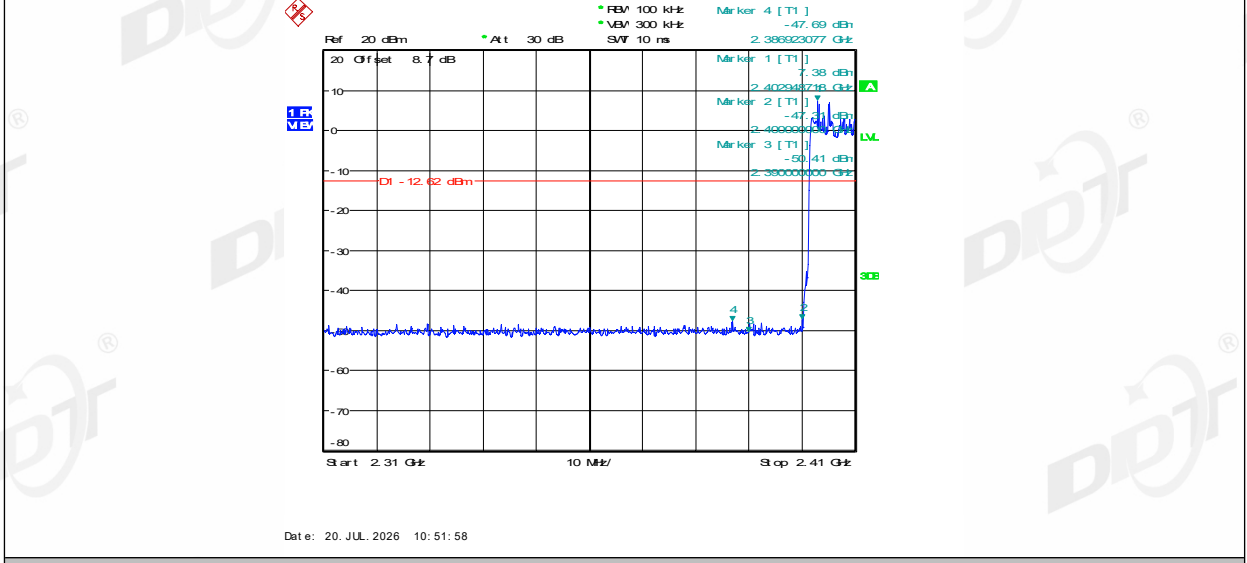




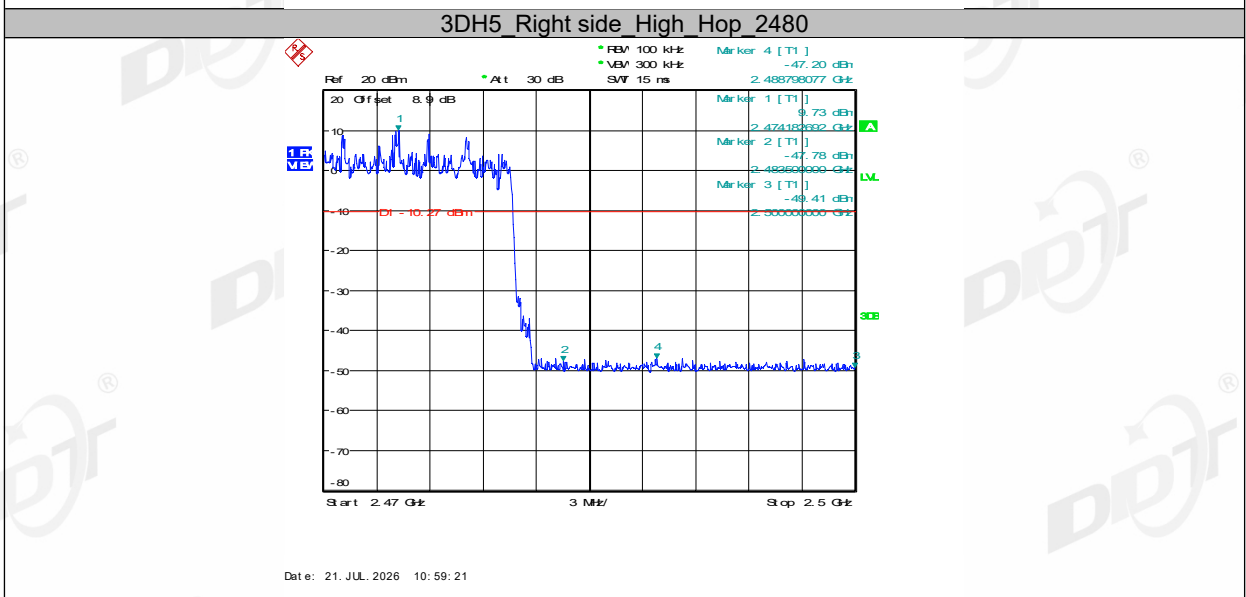
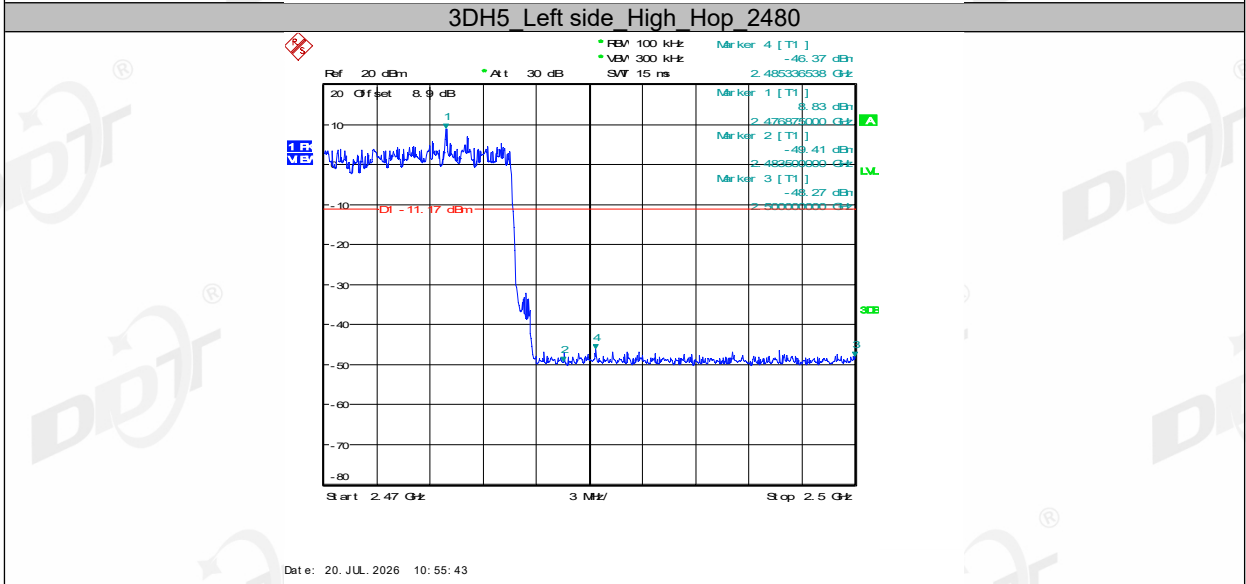
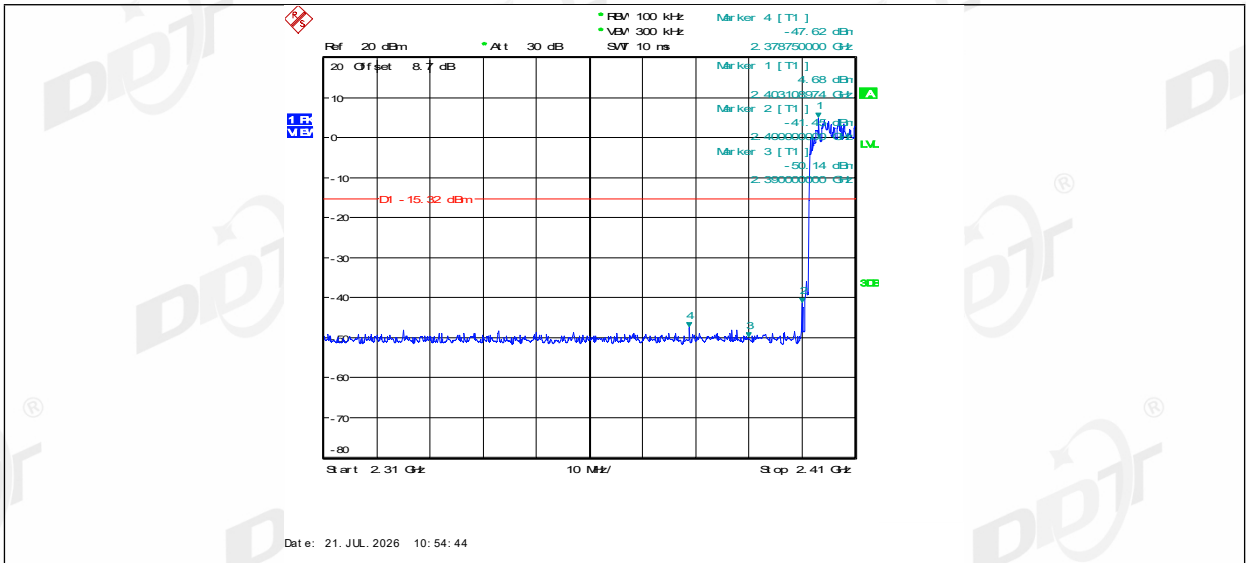
3DH5 Right side High 2480



3DH5 Left side Low Hop 2402

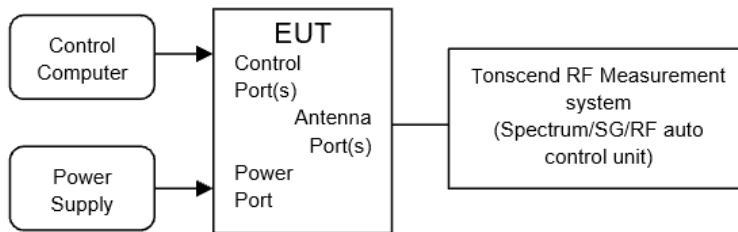


3DH5 Right side Low Hop 2402



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 is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

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	$\geq \text{Span}/\text{RBW}$
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

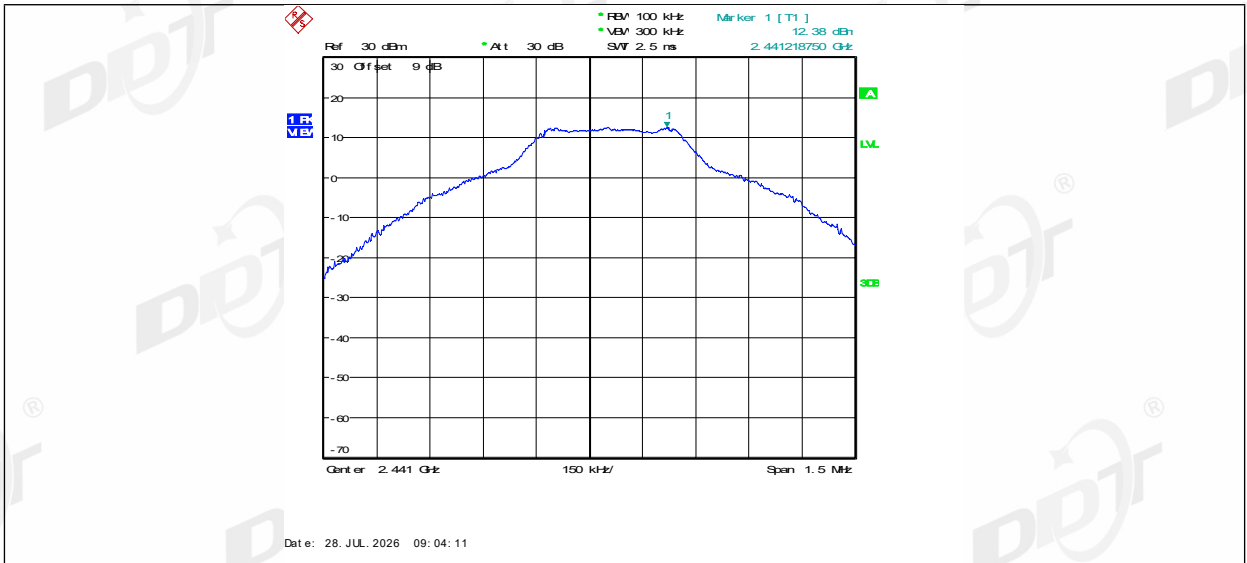
Test Engineer:	Zora Zhang	Test Site:	RF Measurement System 1#
Ambient Condition:	27.3-28.2℃,35-53.6%RH	Test Date:	2026.7.13-2026.7.28
Test Power Supply:	Battery	Sample Number:	S26070611-009

Mode	Freq. (MHz)	Verdict
GFSK	Hopping off 2402	Pass
	Hopping off 2441	Pass
	Hopping off 2480	Pass
$\pi/4$ -DQPSK	Hopping off 2402	Pass
	Hopping off 2441	Pass
	Hopping off 2480	Pass
8DPSK	Hopping off 2402	Pass
	Hopping off 2441	Pass
	Hopping off 2480	Pass

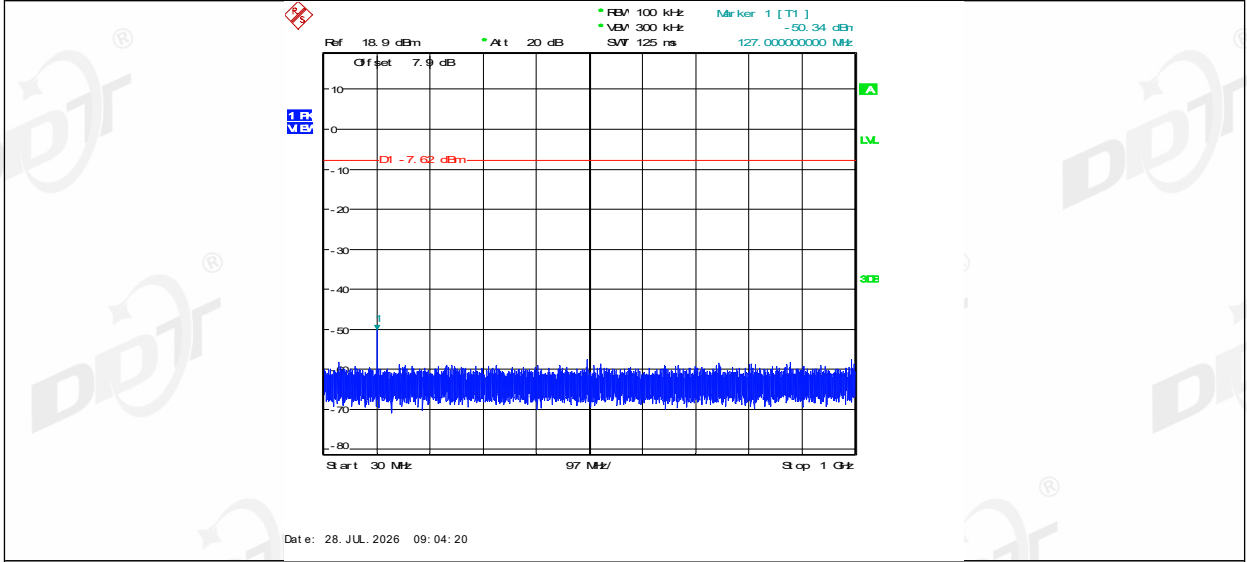
11.5. Test graphs



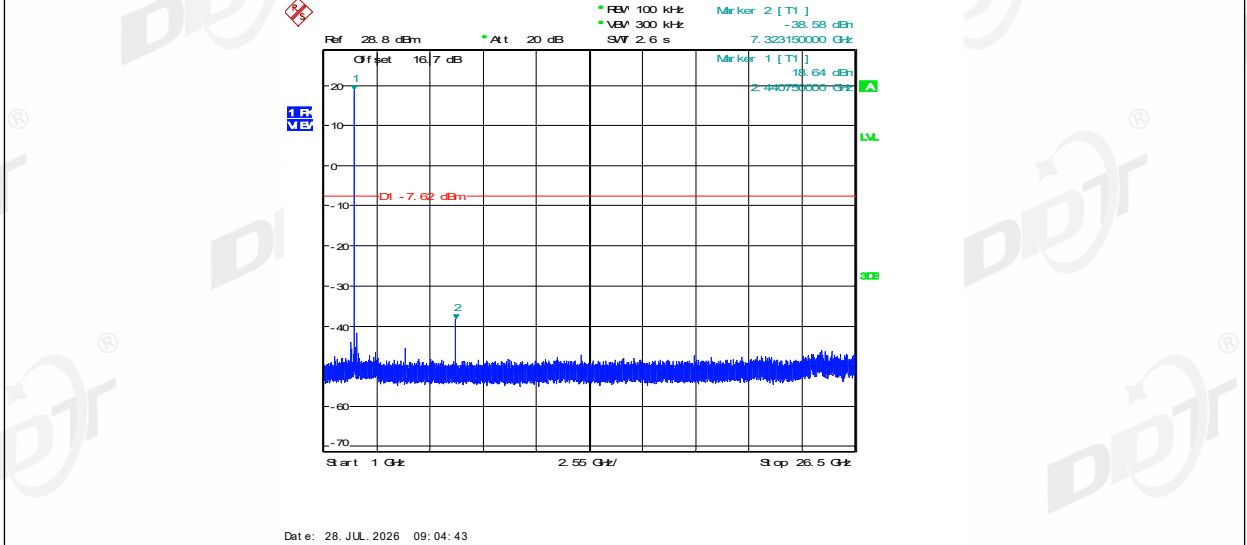




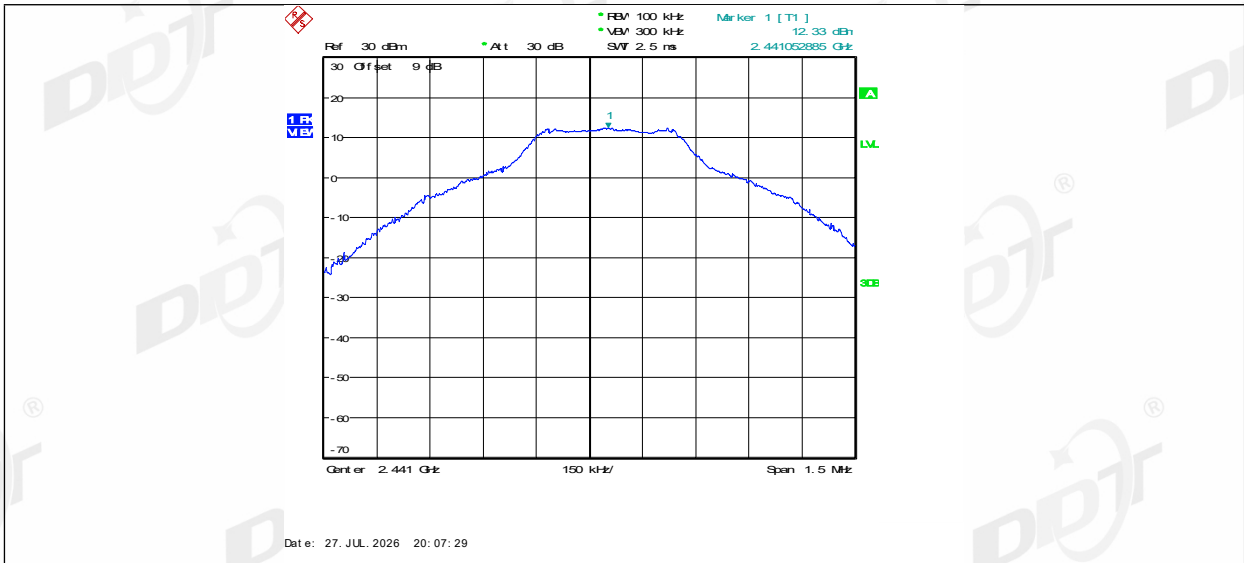
DH5_Left side_2441_30~1000



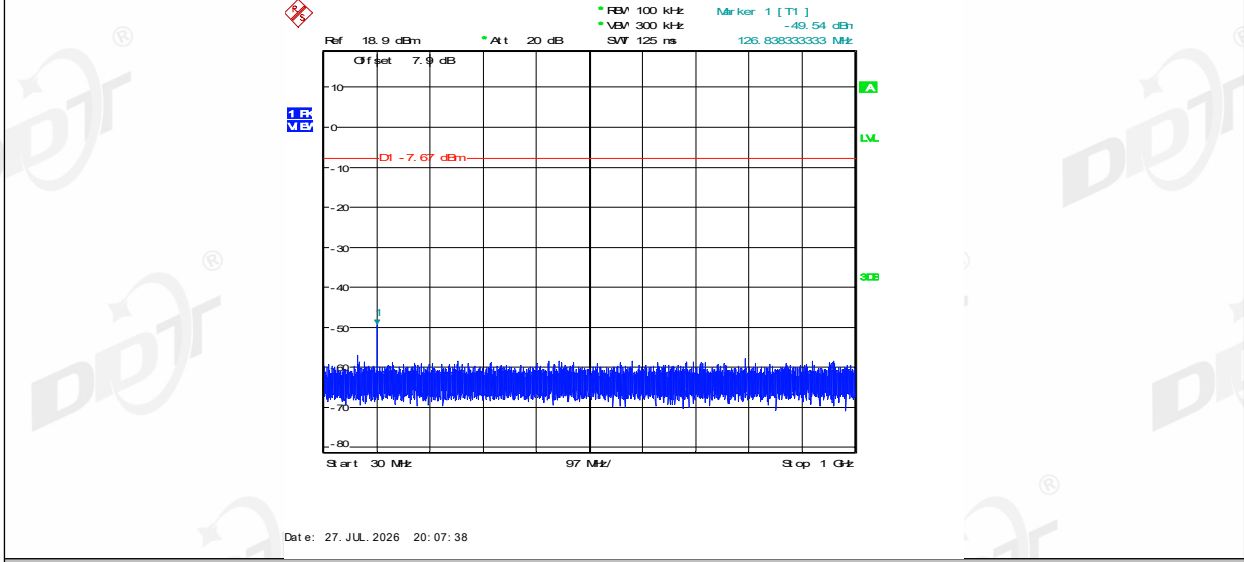
DH5_Left side_2441_1000~26500



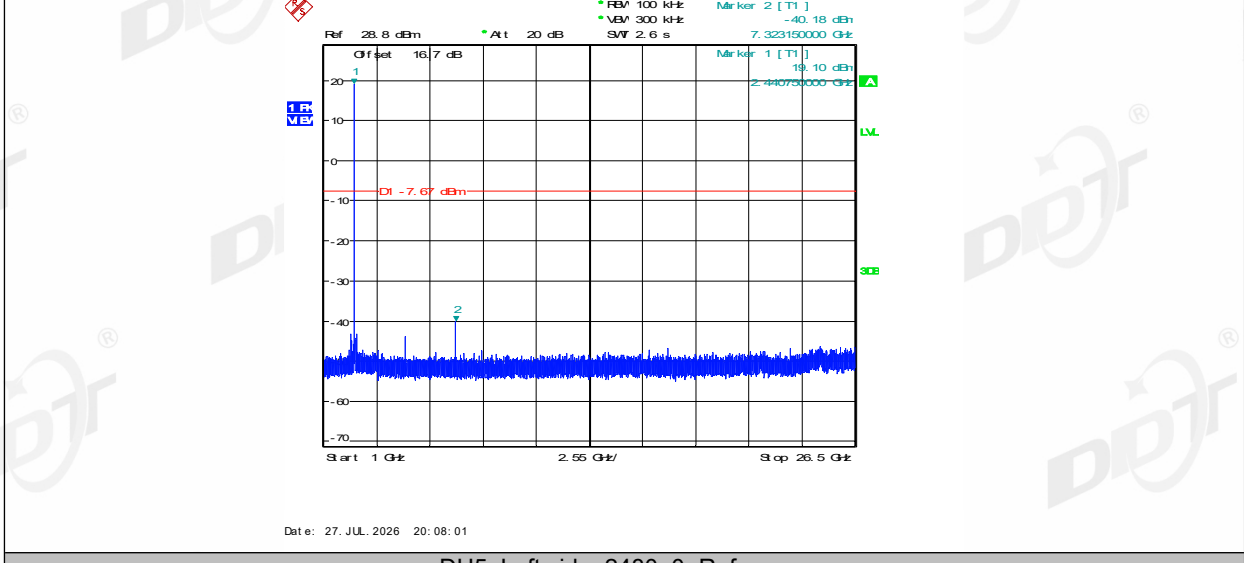
DH5_Right side_2441_0~Reference



DH5_Right side_2441_30~1000

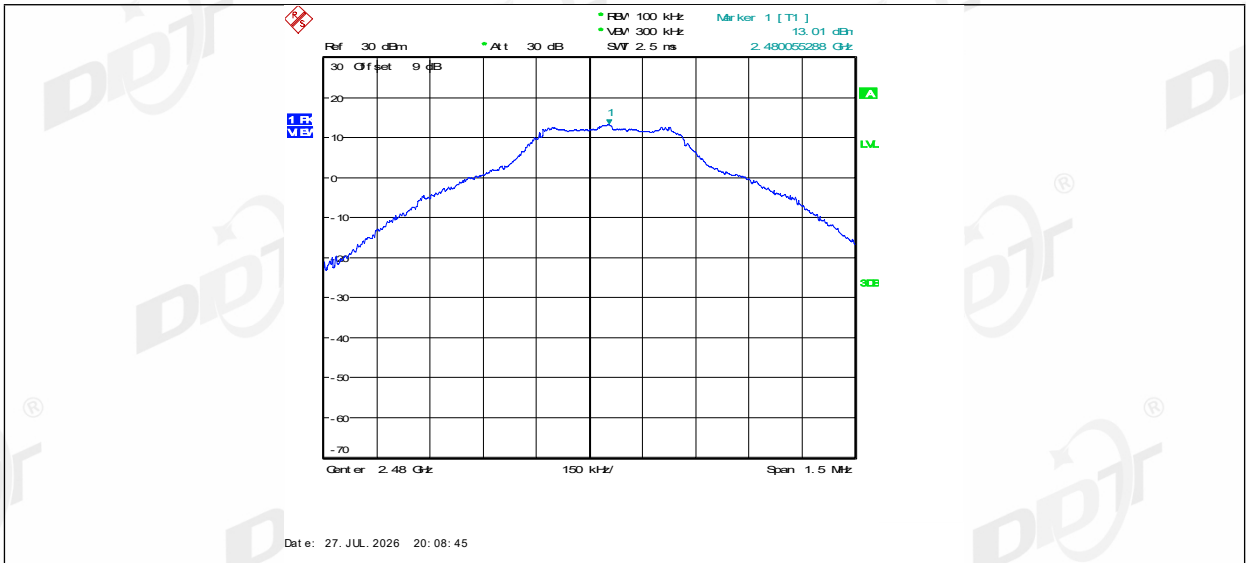


DH5_Right side_2441_1000~26500

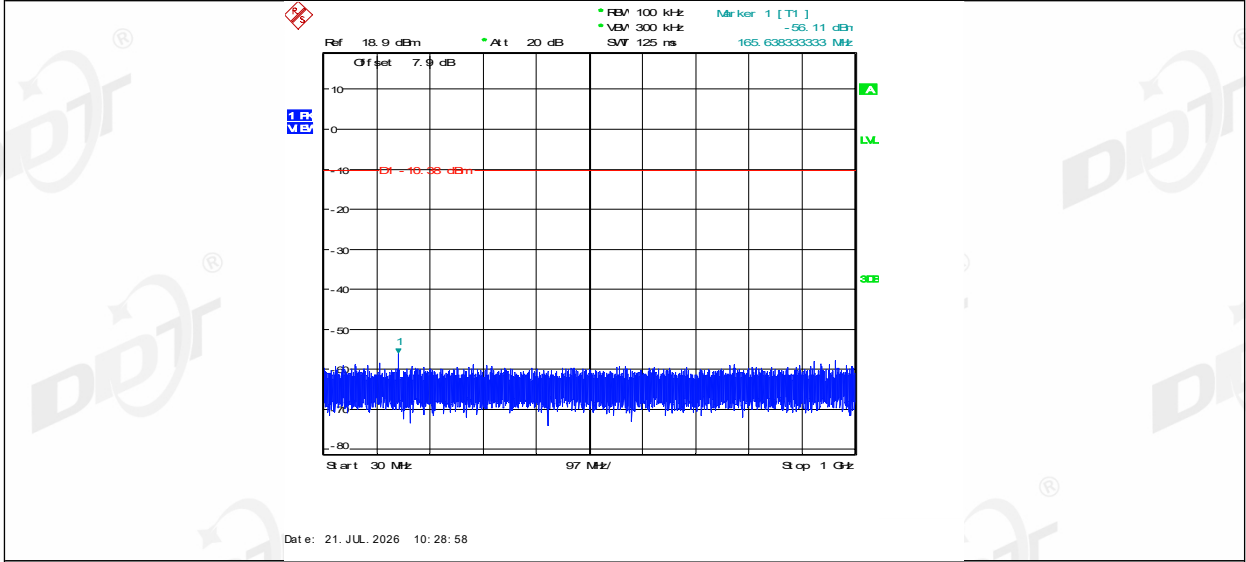


DH5_Left side_2480_0~Reference

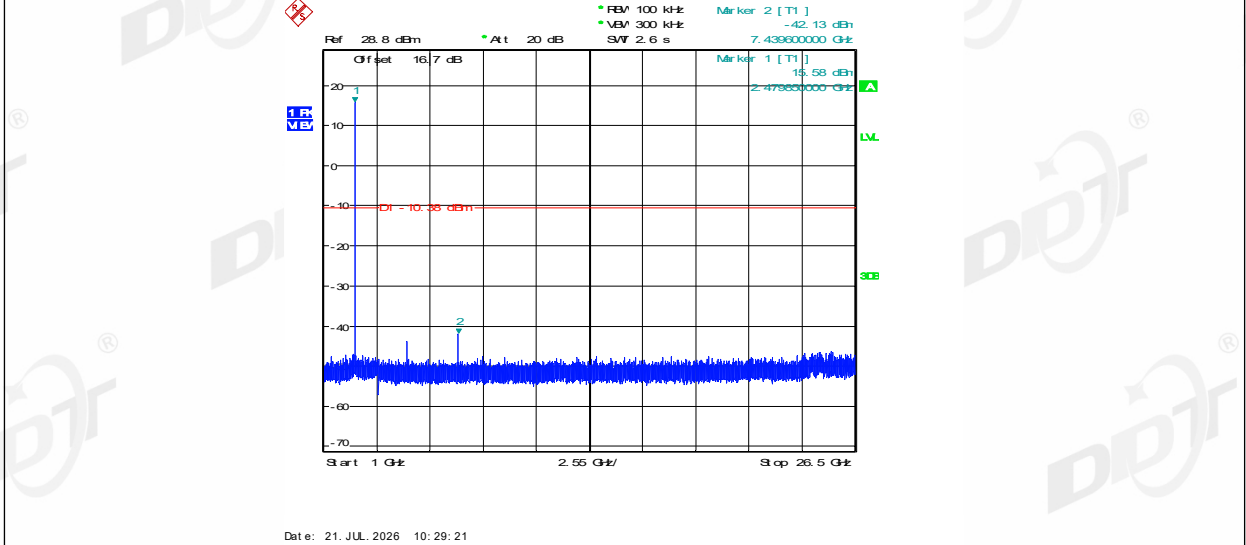




DH5_Right side_2480_30~1000

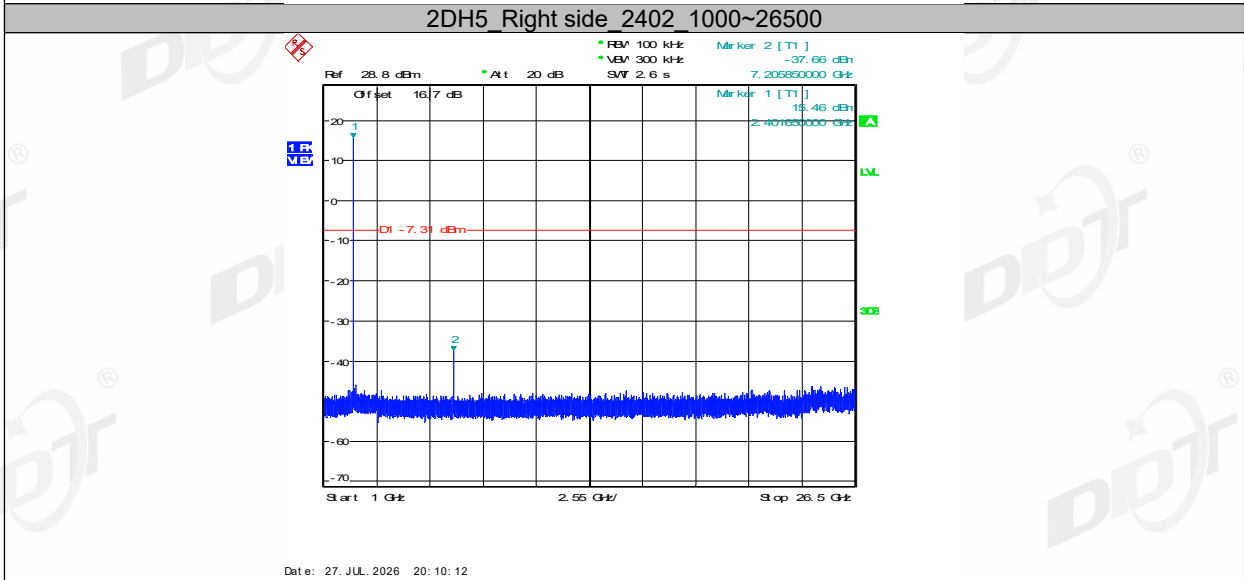
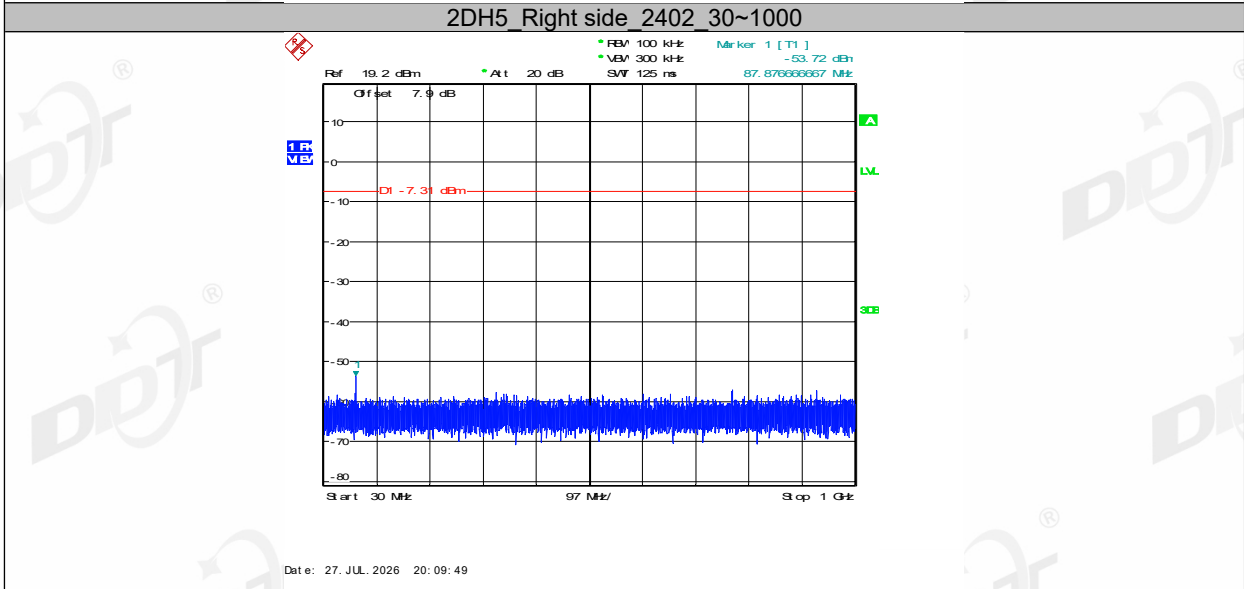
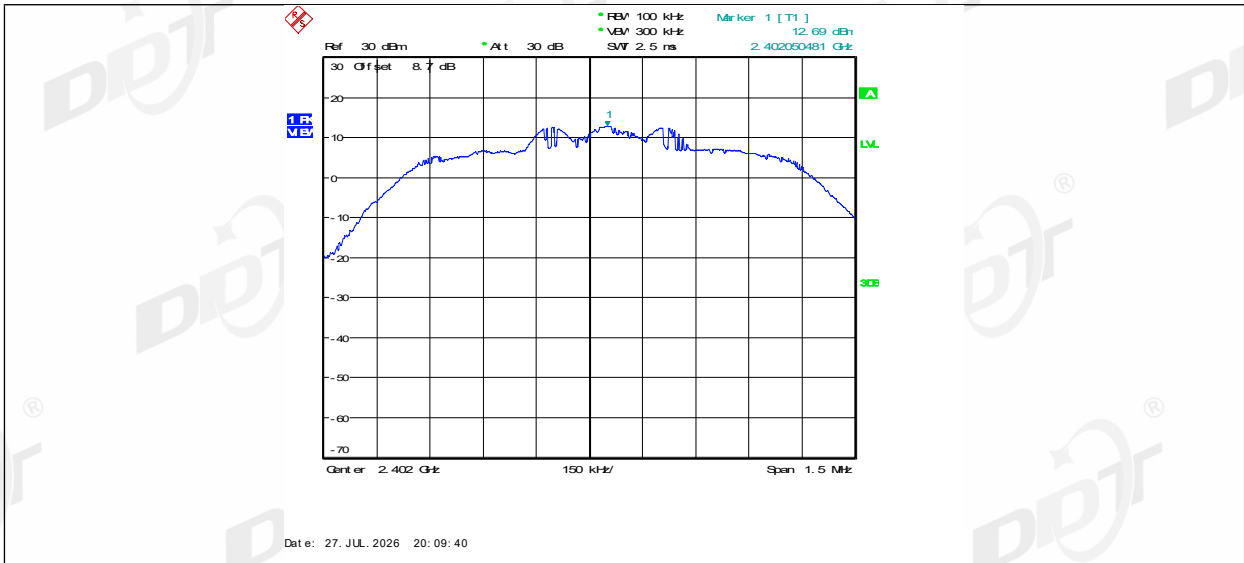


DH5_Right side_2480_1000~26500



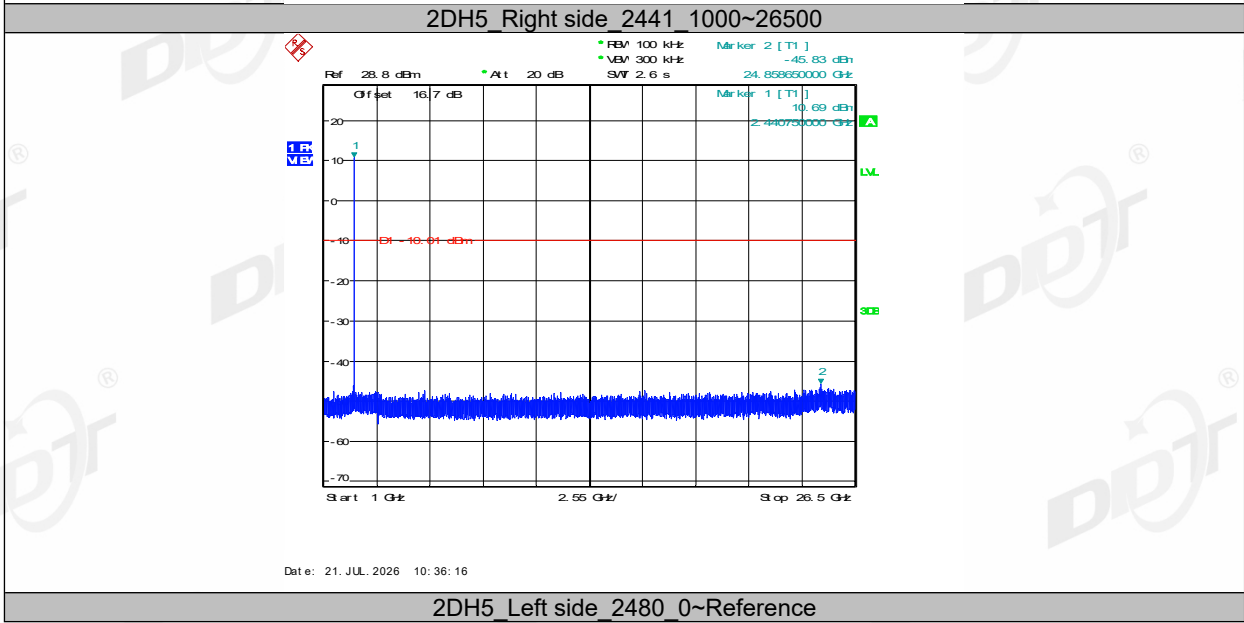
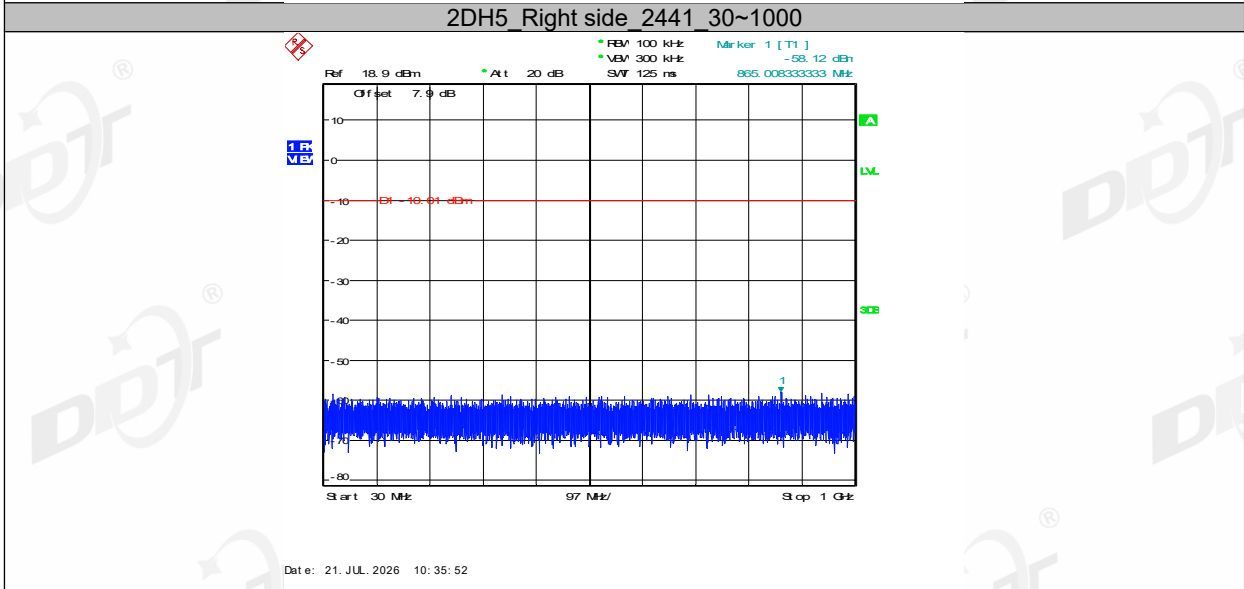
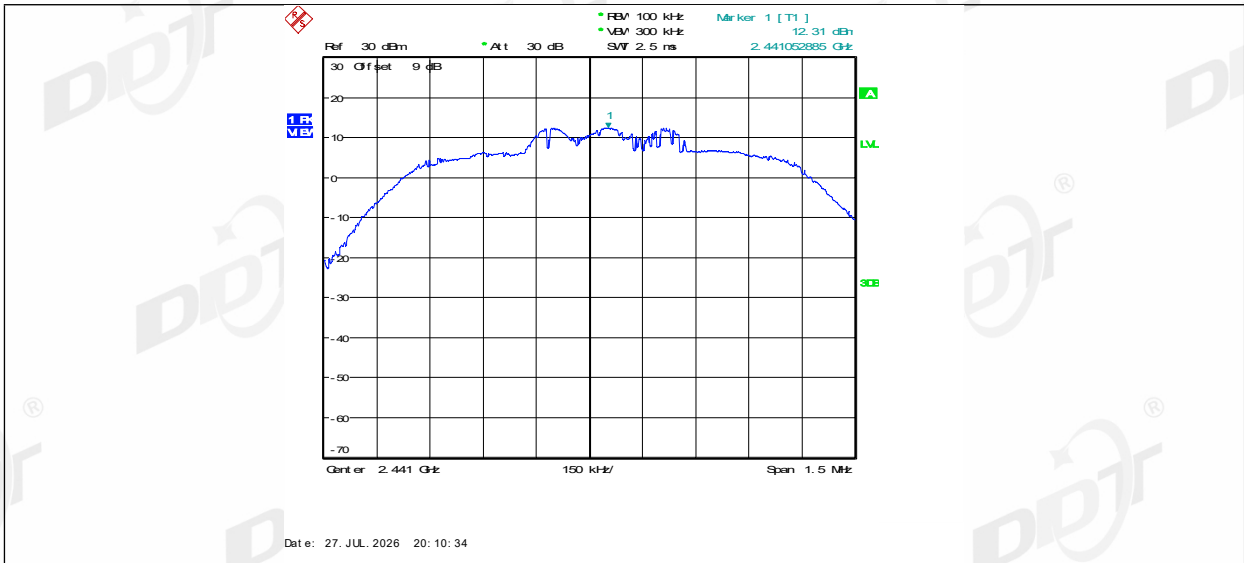
2DH5_Left side_2402_0~Reference

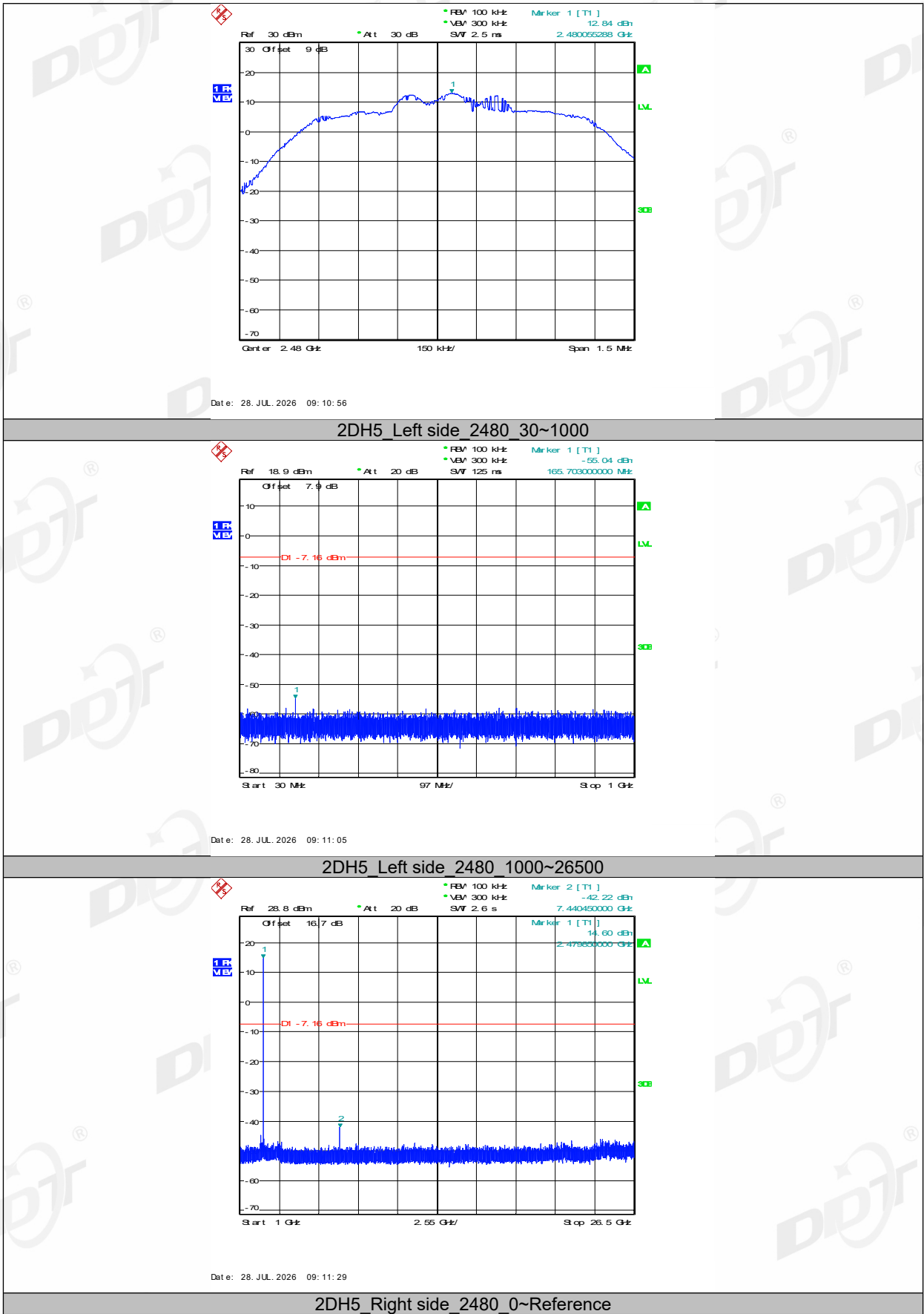


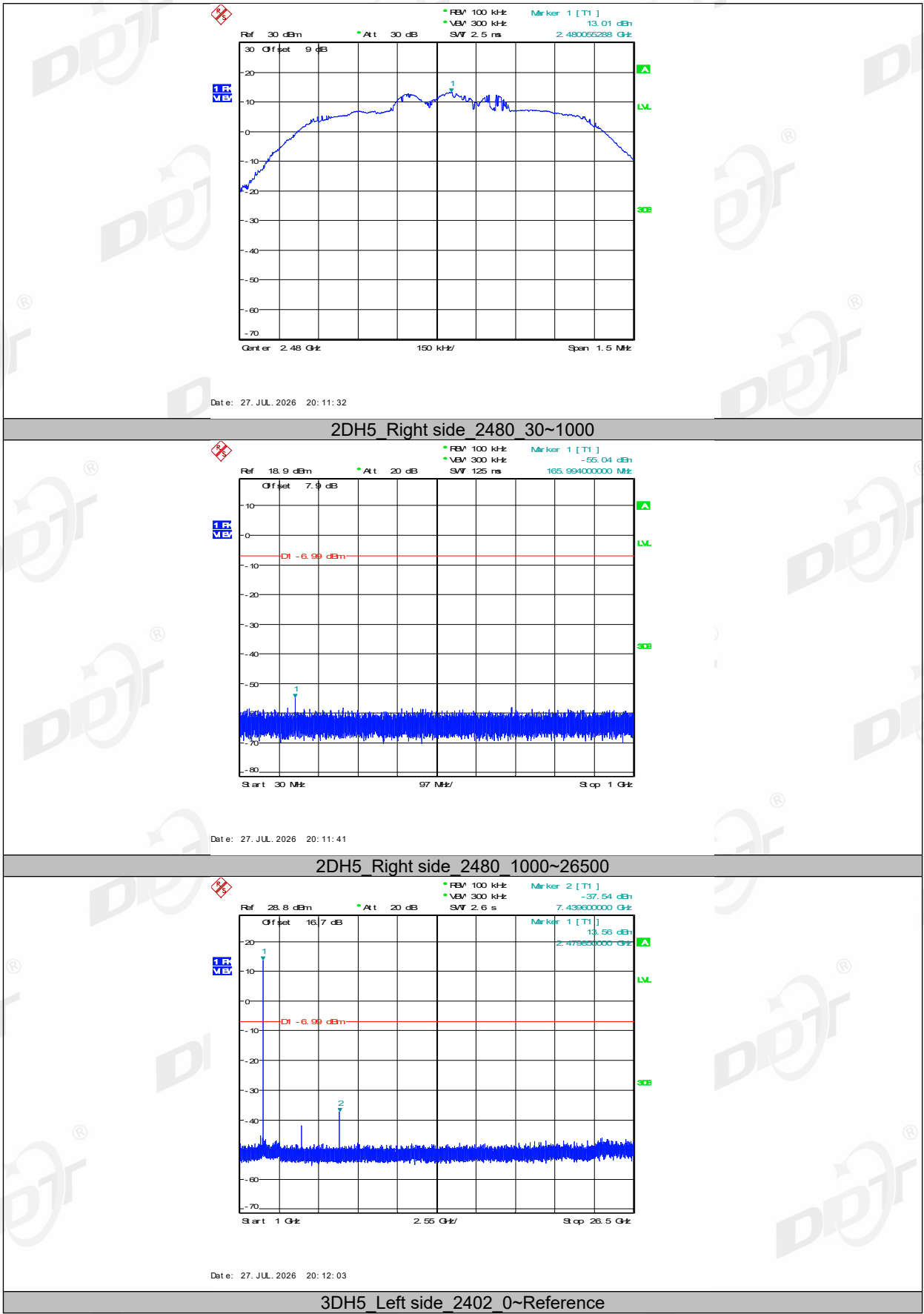


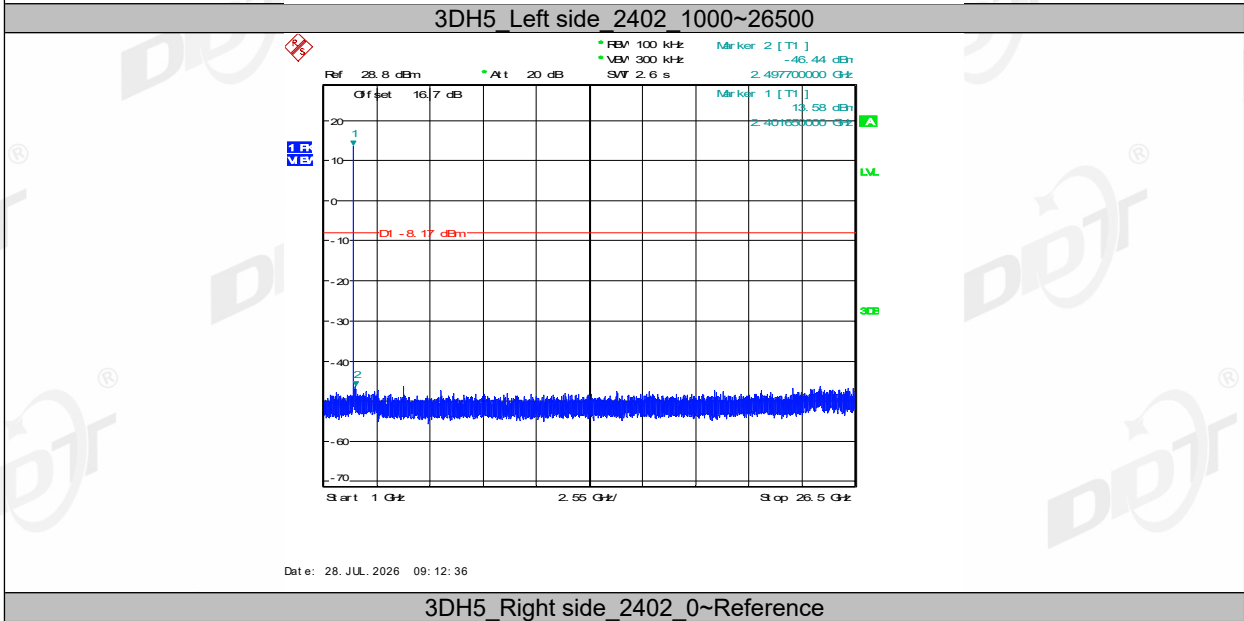
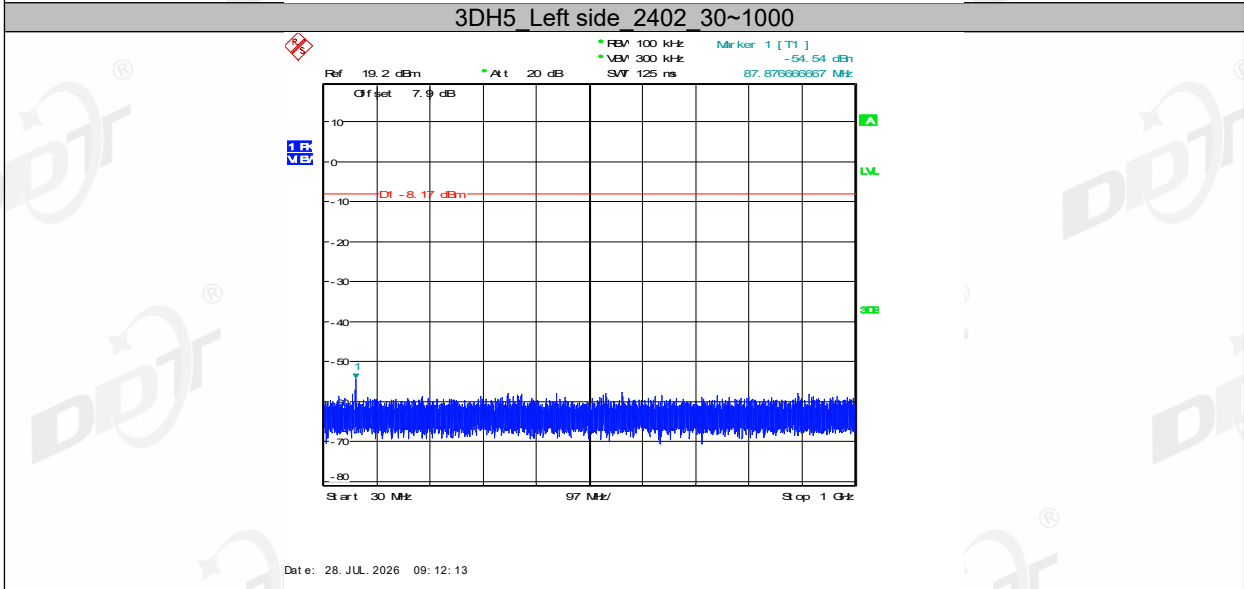
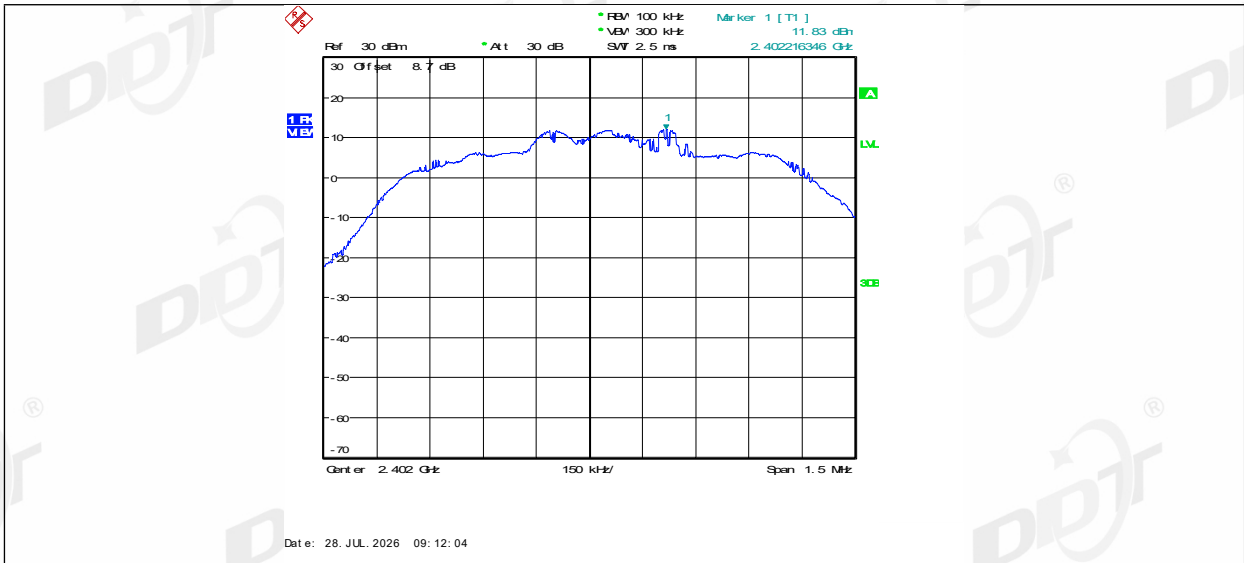
2DH5 Left side 2441 0~Reference

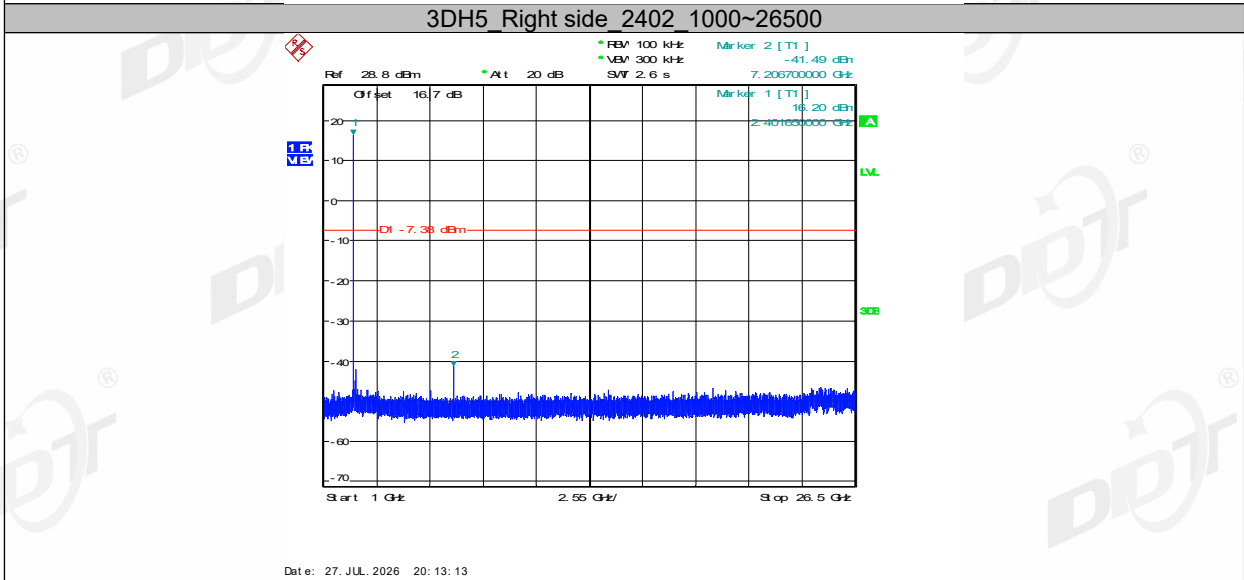
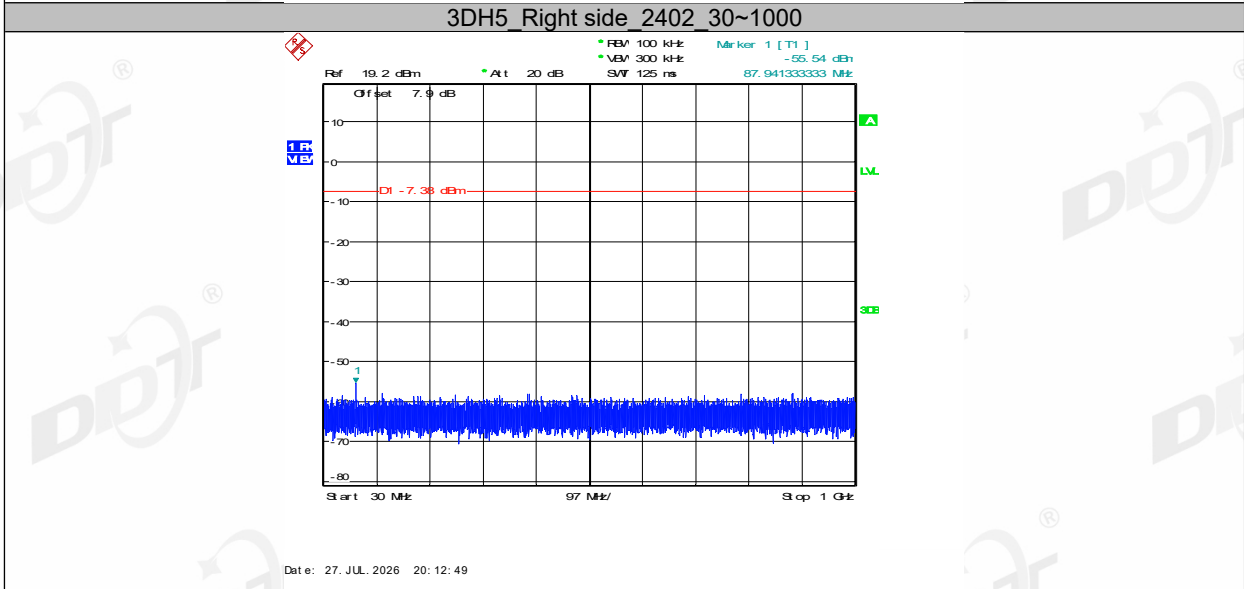
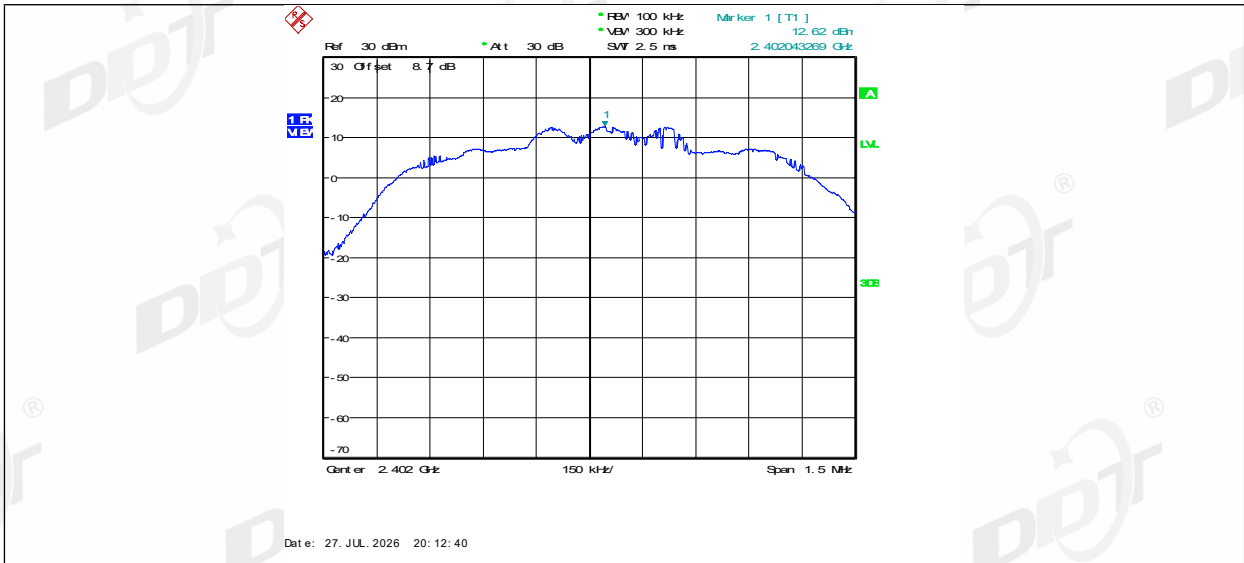








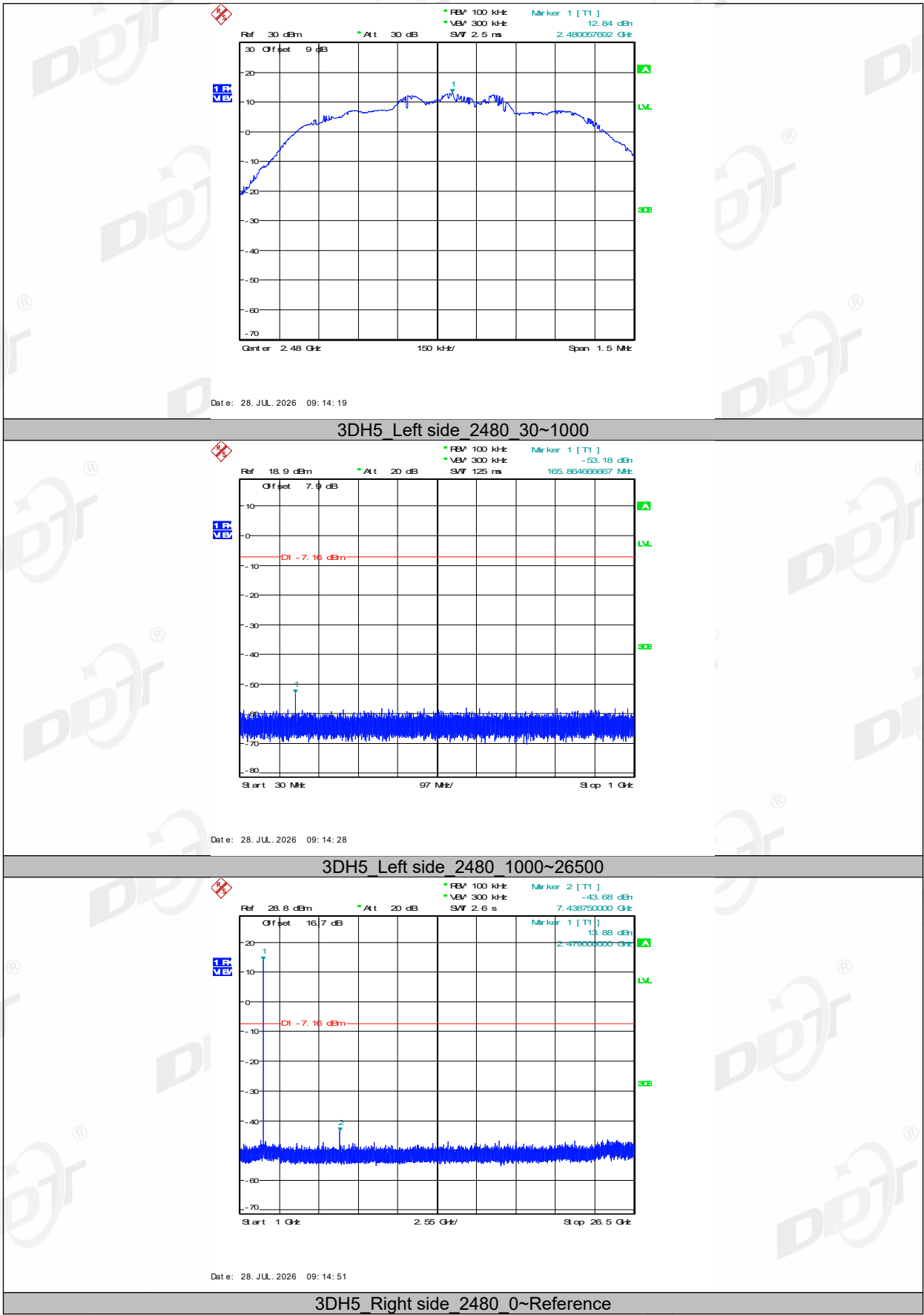


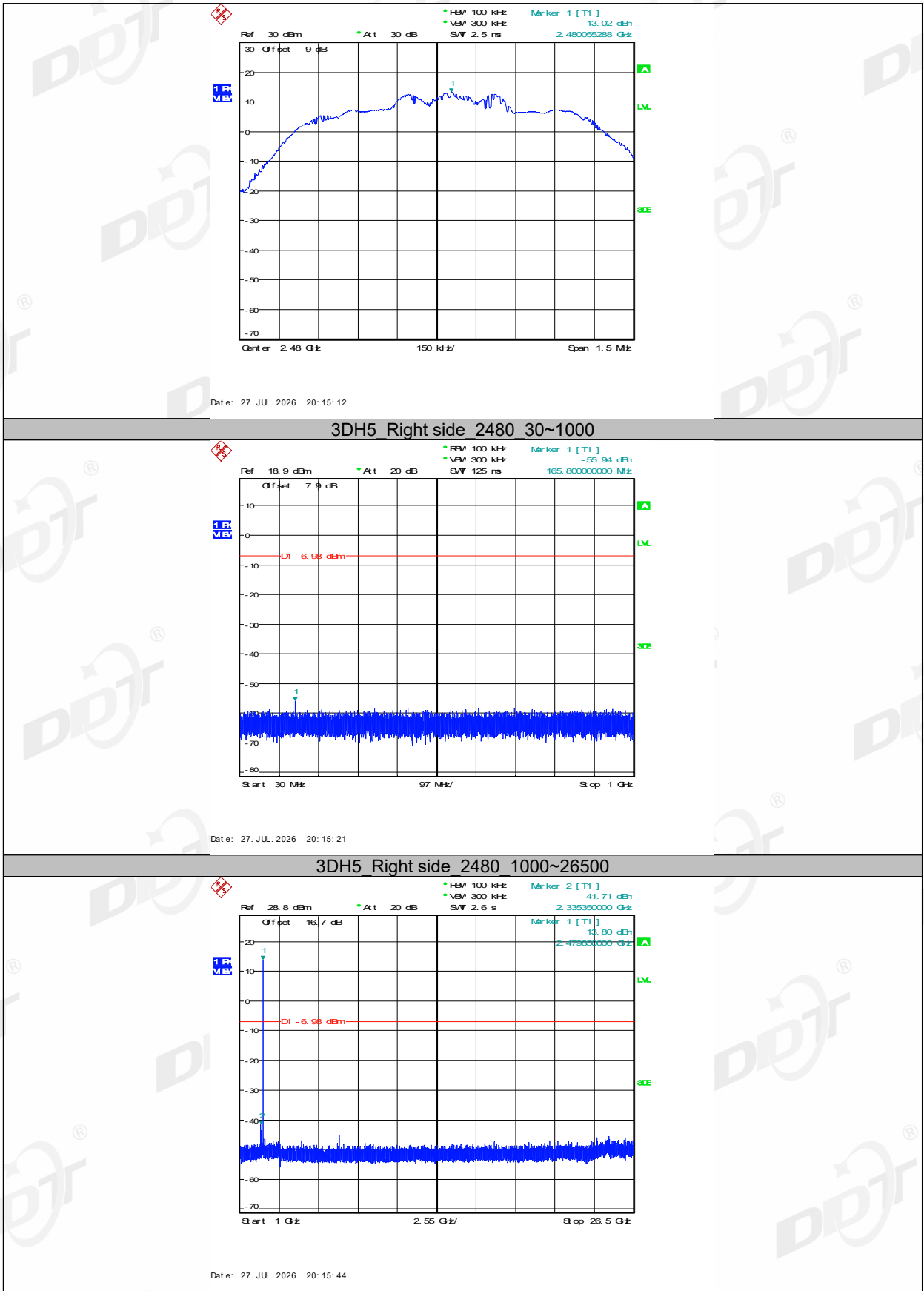


3DH5 Left side 2441 0~Reference



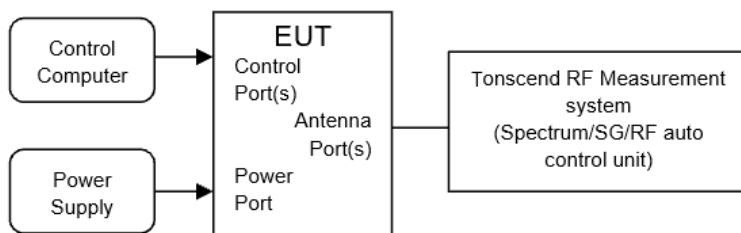






12. Duty cycle

12.1. Block diagram of test setup



12.2. Limit

Just for Report.

12.3. Test procedure

- (1) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, The cable loss and attenuator loss have been put into spectrum analyzer as amplitude offset.
set the Spectrum Analyzer as below:

Centre Frequency: The centre frequency of the middle hopping channel.

Resolution BW: 10 MHz.

Video BW: 10 MHz.

Span: Zero span.

Detector: Peak.

Trace Mode: Clear Write.

Sweep: Video Trigger

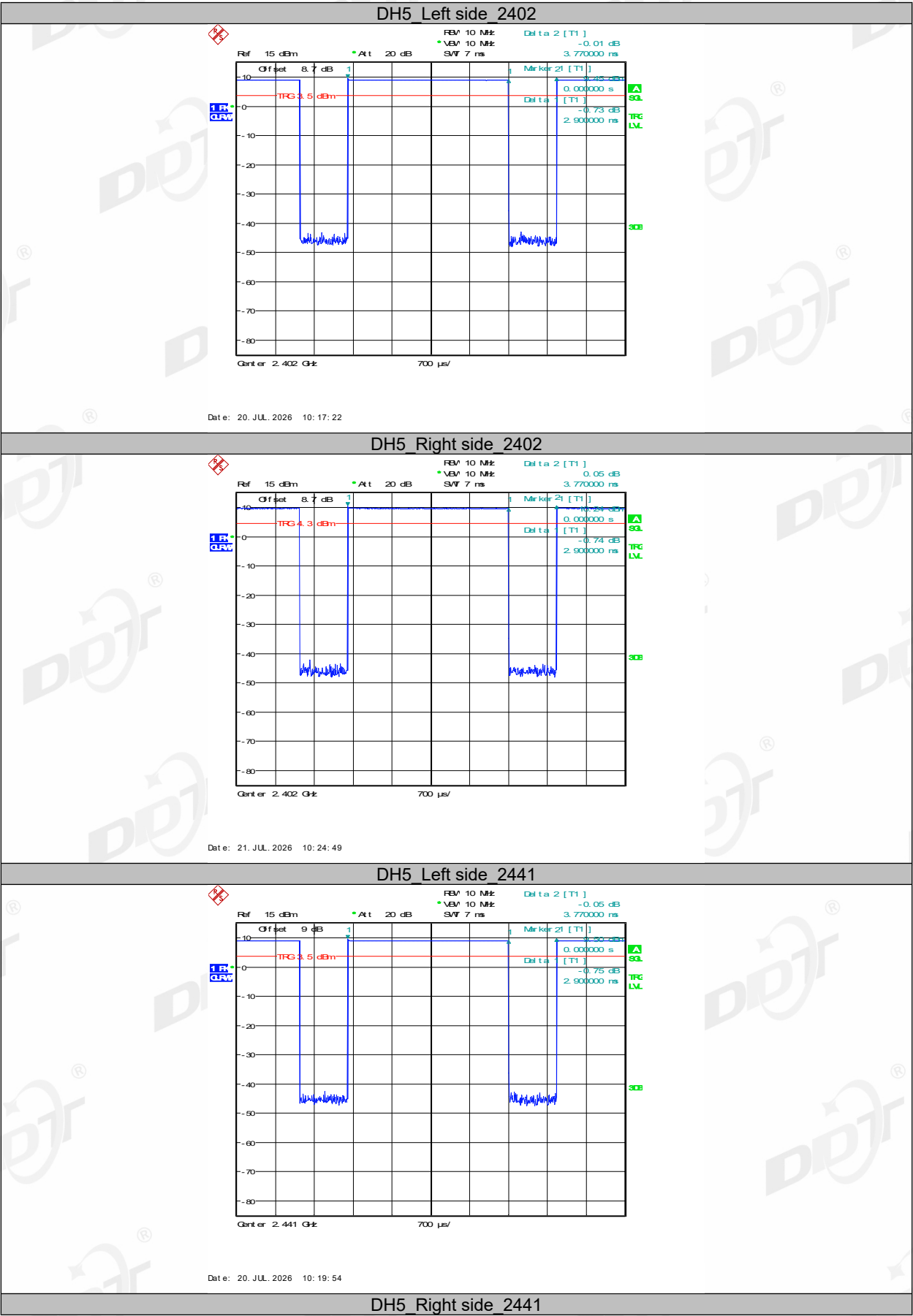
- (2) When the trace is complete, measure the sending time of 1 burst and the duty cycle of 1 burst cycle.
- (3) Calculate dwell time follow below formula:
$$\text{Duty cycle} = \text{Pulse's on time} / \text{Burst cycle}$$

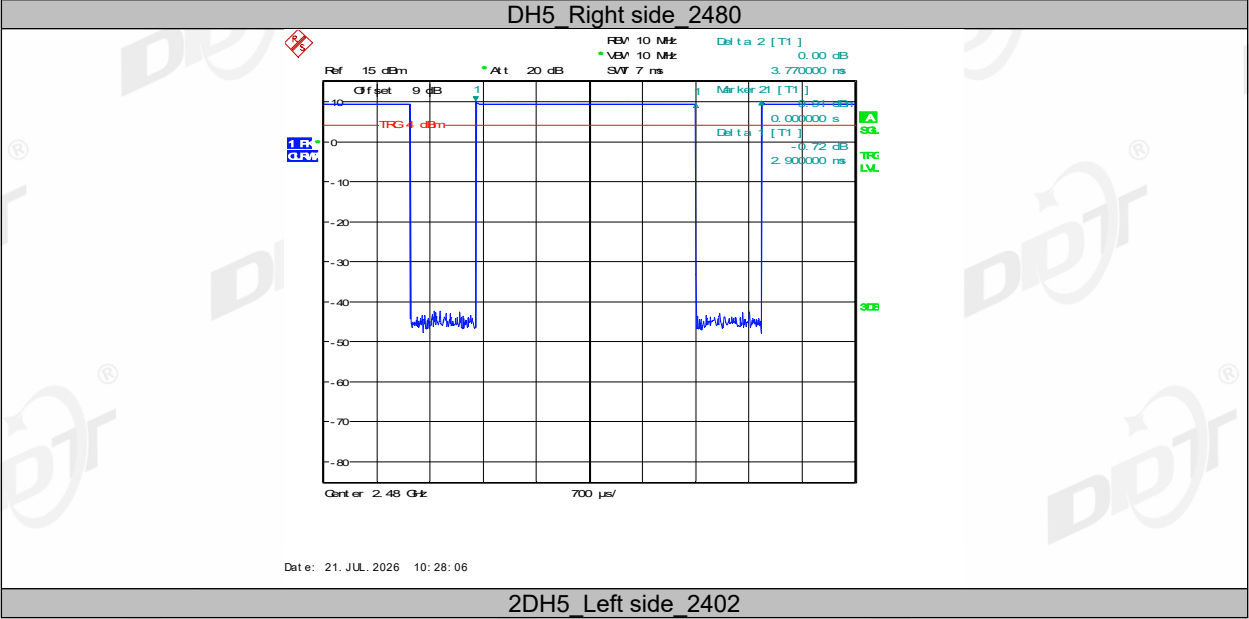
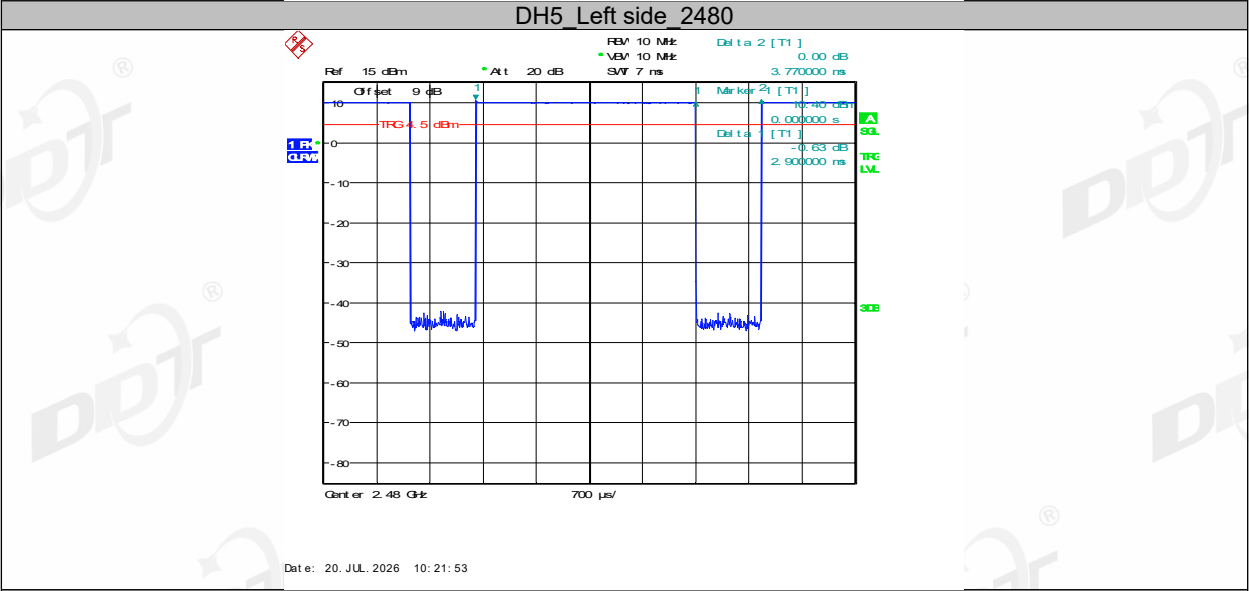
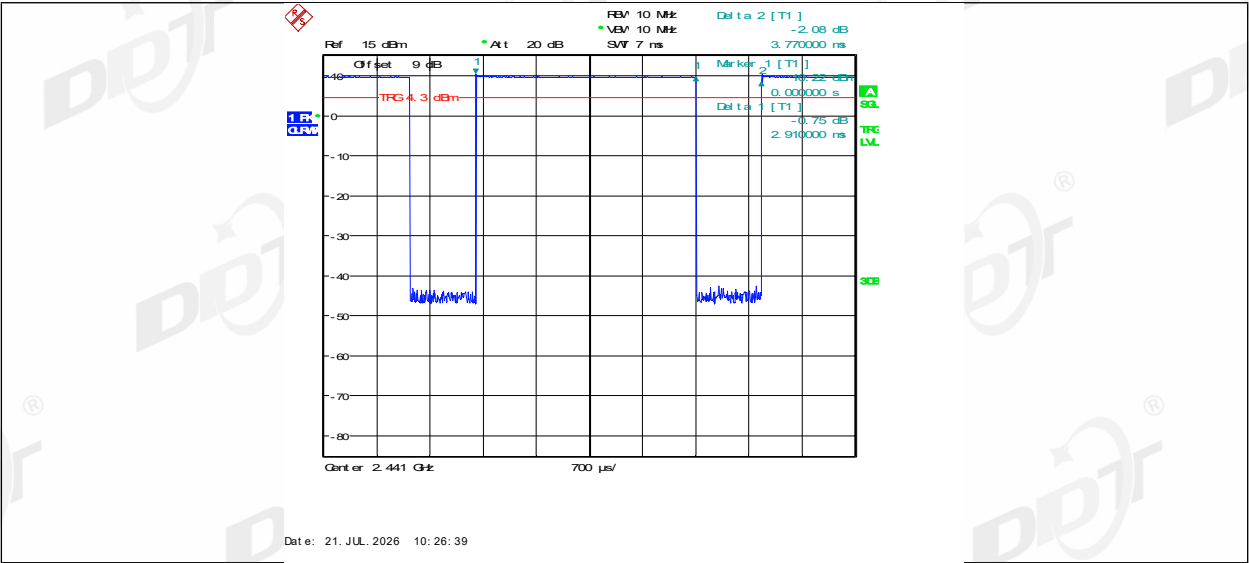
12.4. Test result

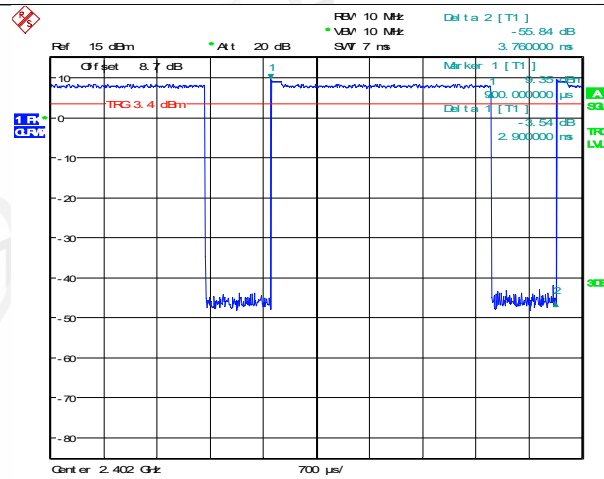
Test Engineer:	Zora Zhang	Test Site:	RF Measurement System 1#
Ambient Condition:	27.3-28.2℃,35-53.6%RH	Test Date:	2026.7.13-2026.7.28
Test Power Supply:	Battery	Sample Number:	S26070611-009

Test Mode	Antenna	Frequency [MHz]	ON Time [ms]	Period [ms]	Duty Cycle [%]	Duty Cycle Factor[dB]
DH5	Left side	2402	2.90	3.77	76.92	1.14
	Right side	2402	2.90	3.77	76.92	1.14
	Left side	2441	2.90	3.77	76.92	1.14
	Right side	2441	2.91	3.77	77.19	1.12
	Left side	2480	2.90	3.77	76.92	1.14
	Right side	2480	2.90	3.77	76.92	1.14
2DH5	Left side	2402	2.90	3.76	77.13	1.13
	Right side	2402	2.89	3.75	77.07	1.13
	Left side	2441	2.91	3.77	77.19	1.12
	Right side	2441	2.91	3.77	77.19	1.12
	Left side	2480	2.91	3.77	77.19	1.12
	Right side	2480	2.91	3.77	77.19	1.12
3DH5	Left side	2402	2.91	3.77	77.19	1.12
	Right side	2402	2.91	3.77	77.19	1.12
	Left side	2441	2.91	3.77	77.19	1.12
	Right side	2441	2.91	3.77	77.19	1.12
	Left side	2480	2.91	3.77	77.19	1.12
	Right side	2480	2.91	3.77	77.19	1.12

12.5. Test graphs

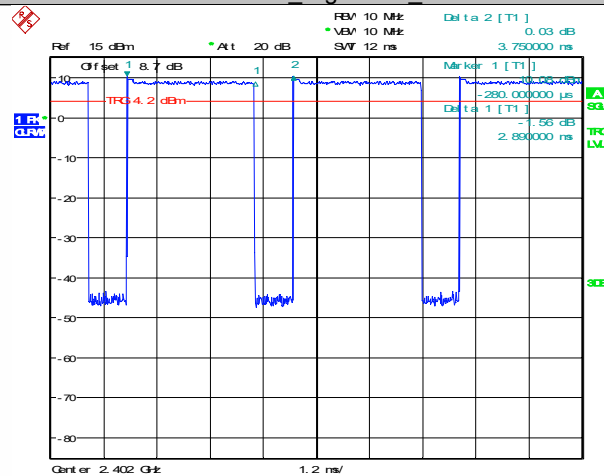






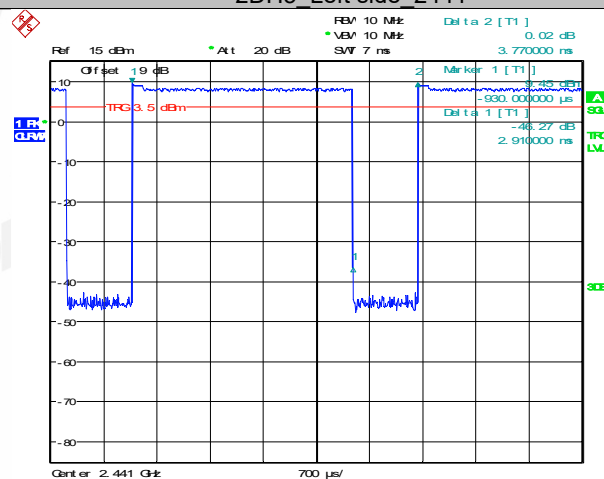
Date: 20. JUL. 2026 10:24:24

2DH5_Right side_2402



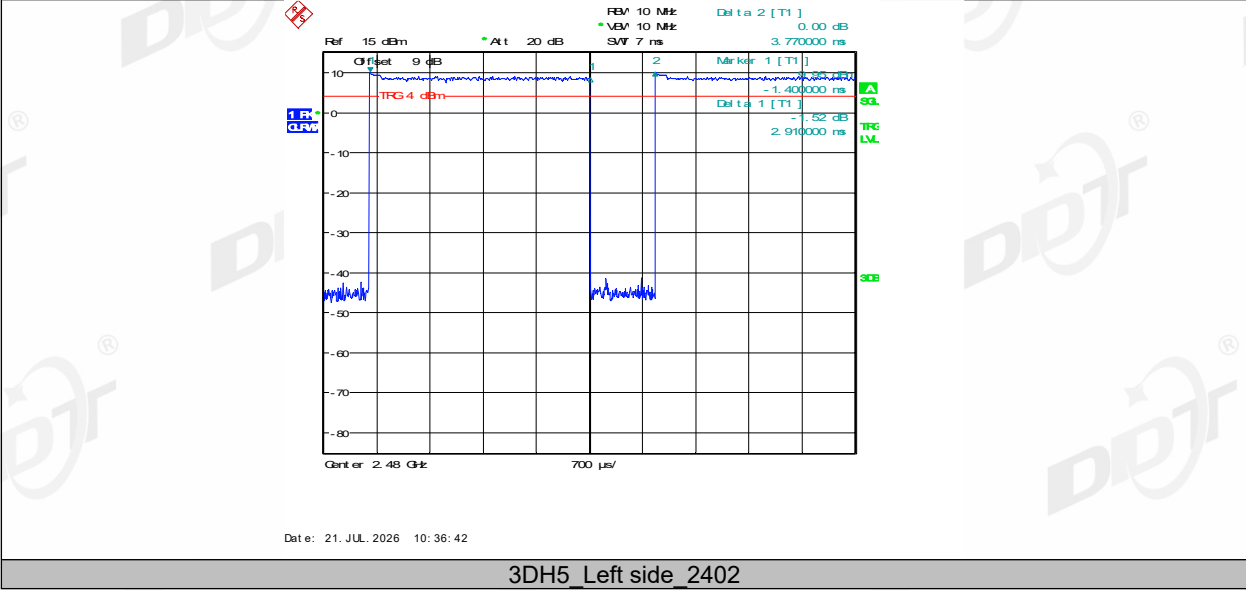
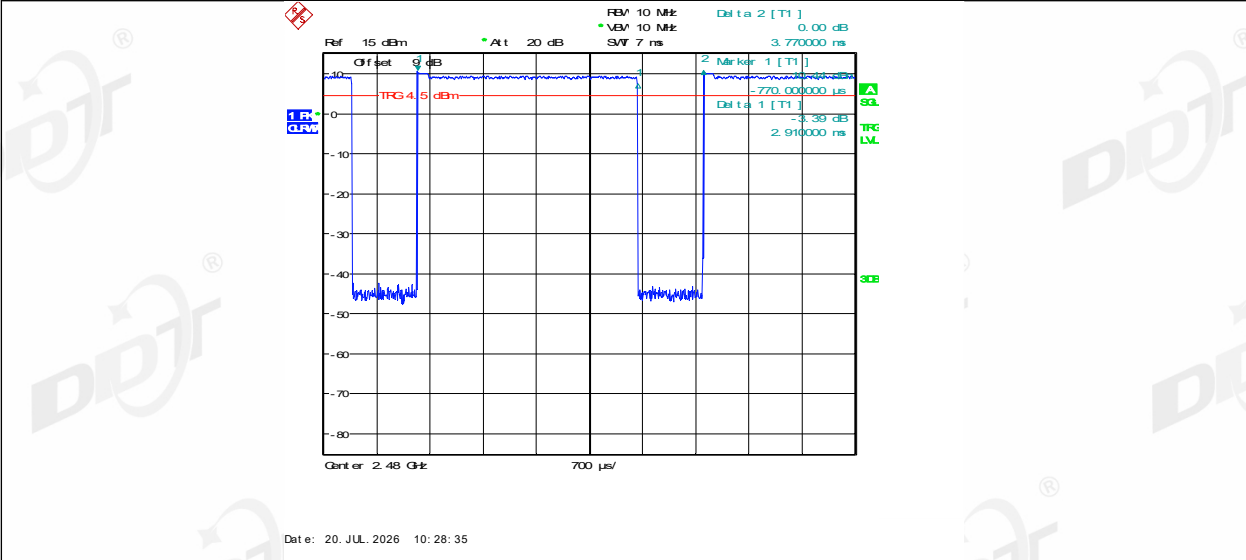
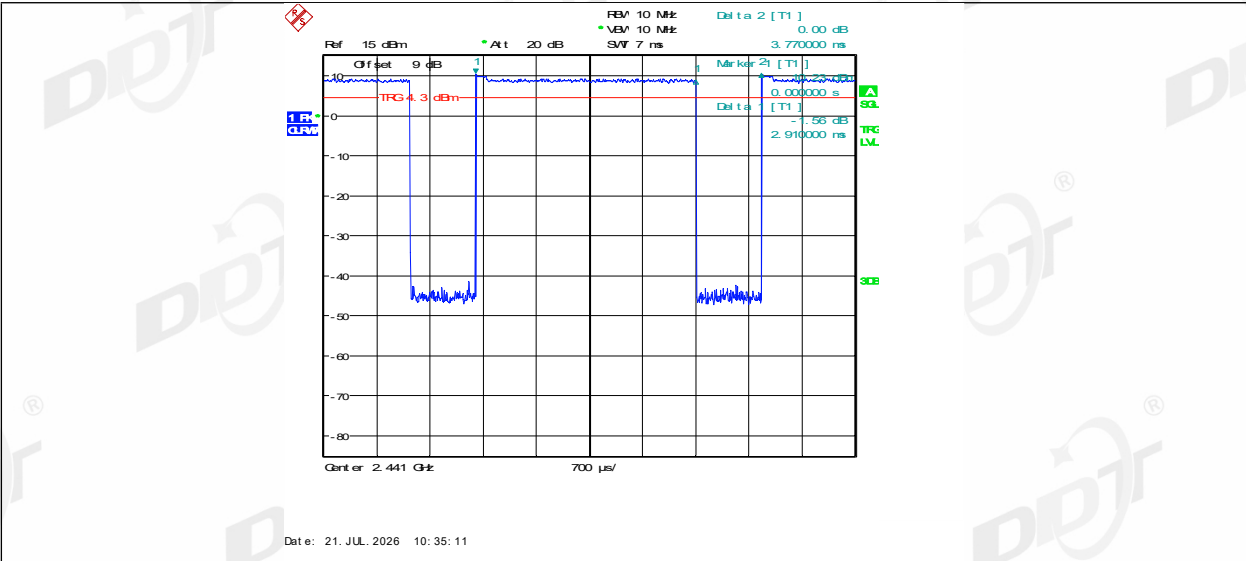
Date: 21. JUL. 2026 10:33:04

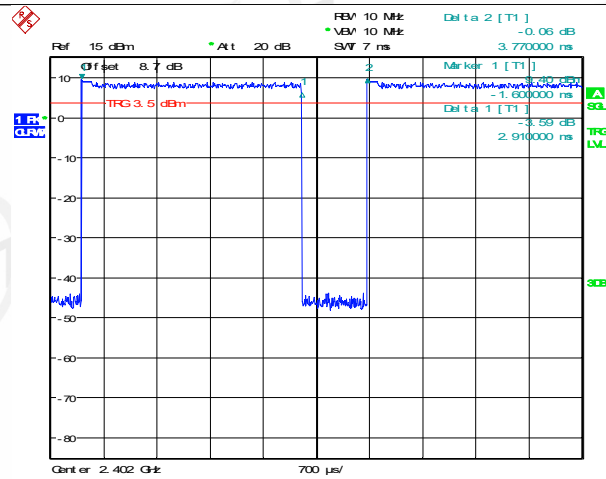
2DH5 Left side 2441



Date: 20. JUL. 2026 10:26:34

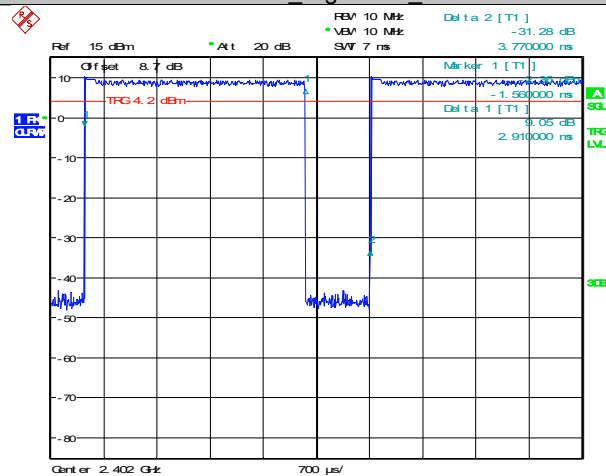
2DH5_Right side_2441





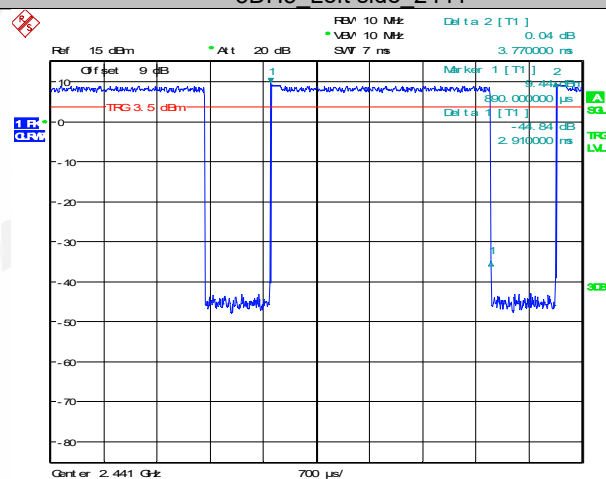
Date: 20. JUL. 2026 10:30:33

3DH5_Right side_2402



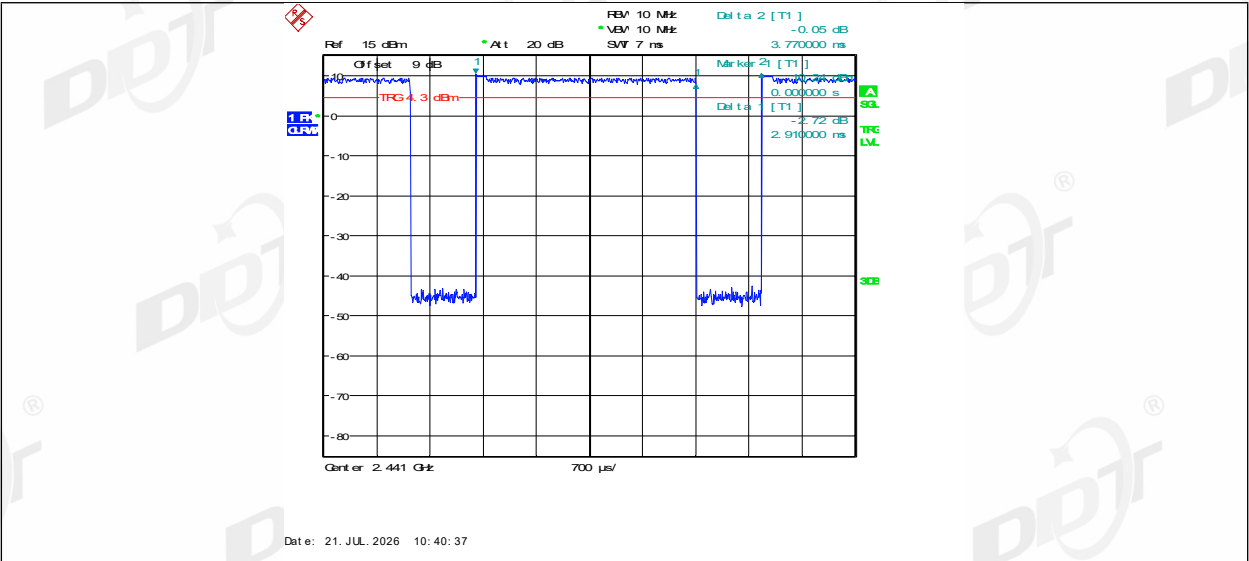
Date: 21. JUL. 2026 10:38:34

3DH5_Left side_2441

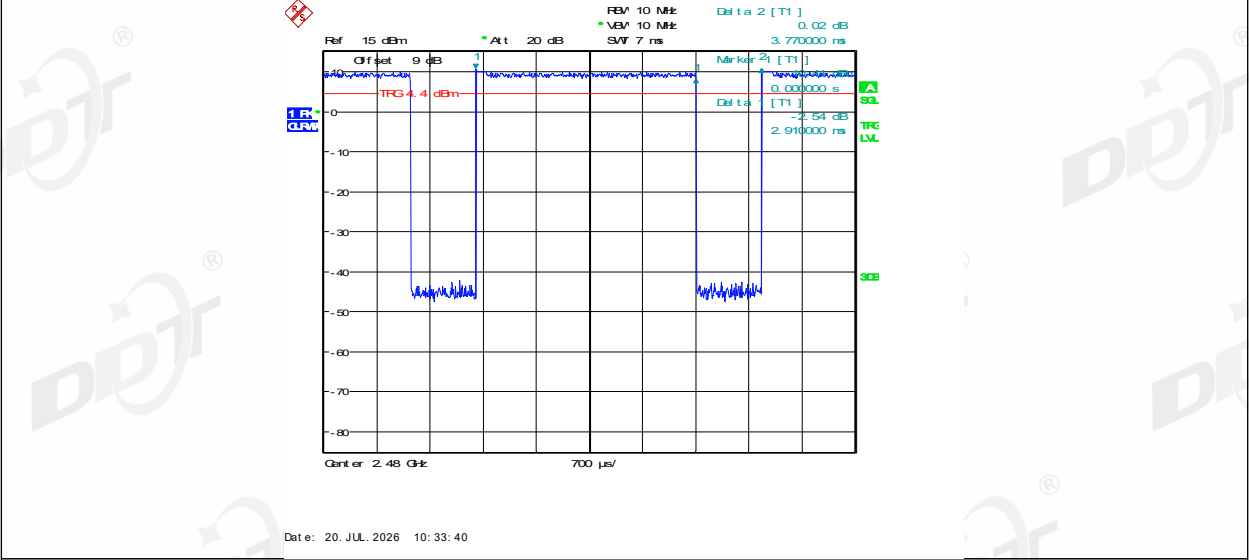


Date: 20. JUL. 2026 10:32:13

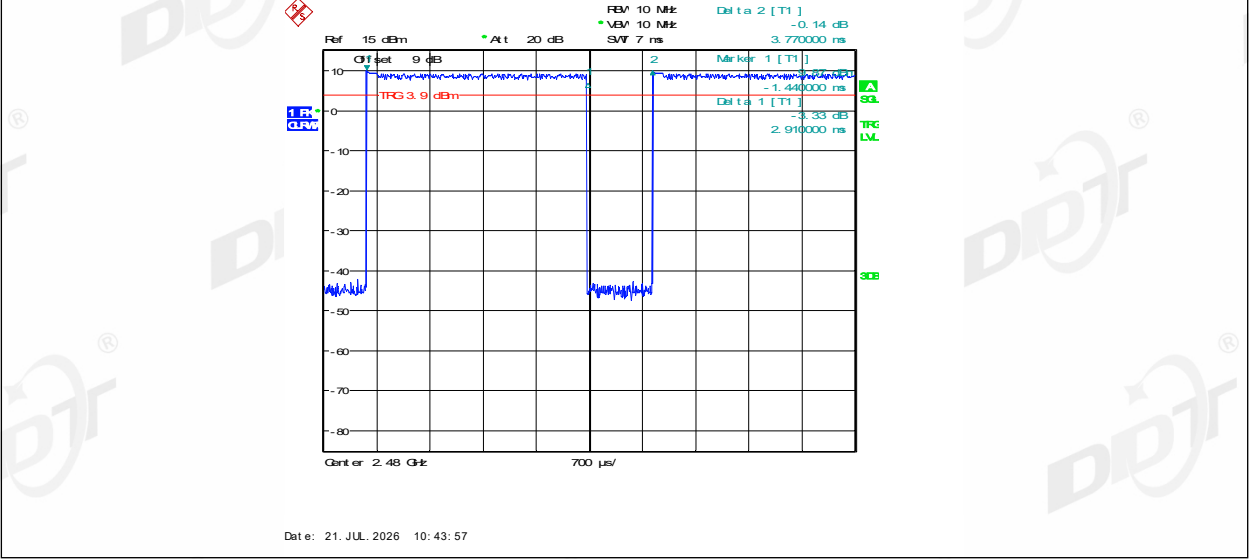
3DH5_Right side_2441



3DH5 Left side 2480



3DH5 Right side 2480



13. Antenna Requirements

13.1. Limit

For intentional device, according to FCC 47 CFR 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. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For intentional device, according to RSS-Gen issue 5 section 6.8.

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

13.2. Result

The antenna used for this product as Antenna information described in section 2.1 of the report, and there is no other antenna than that furnished by the responsible party shall be used with the device.

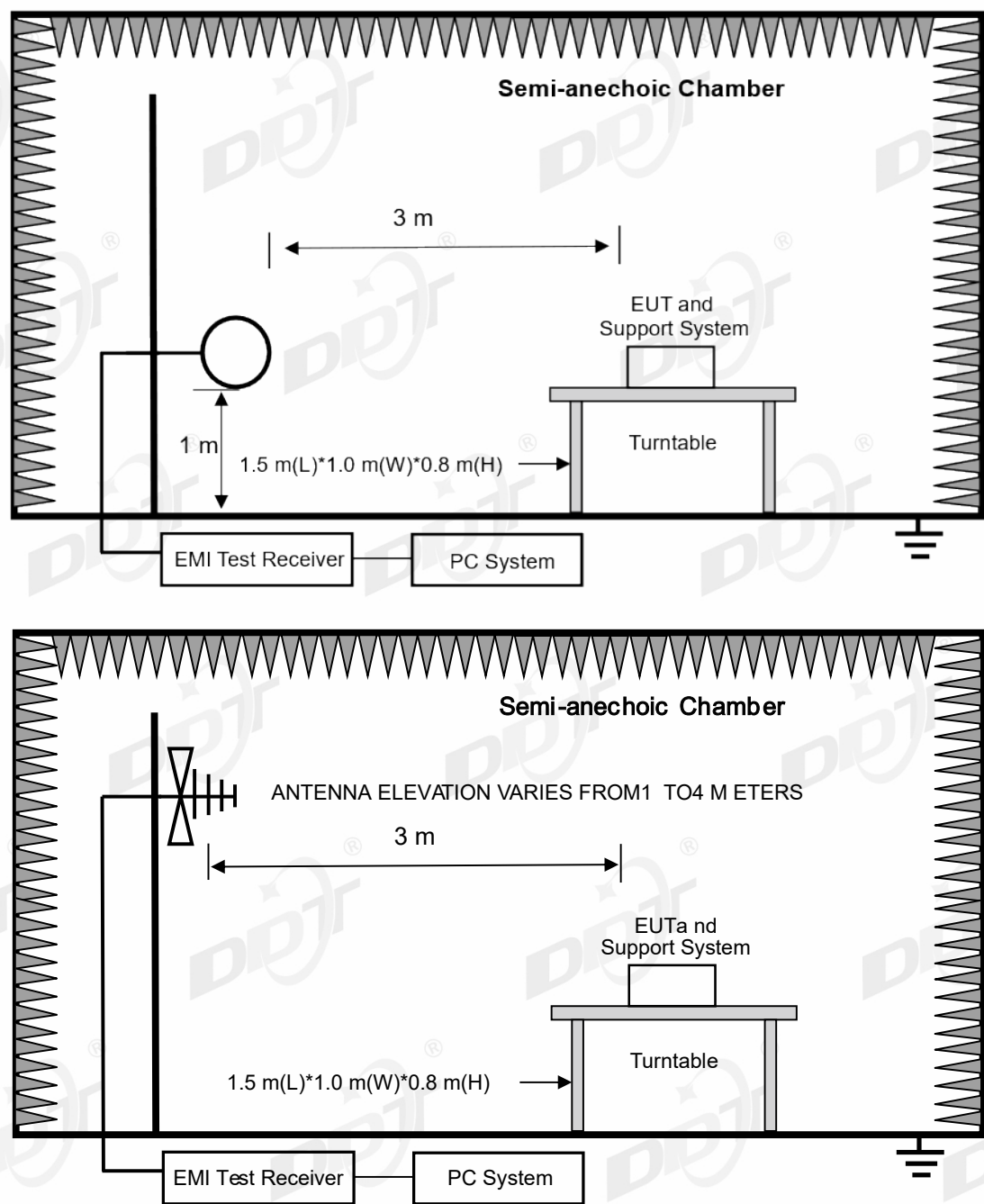
14. Radiated Emission

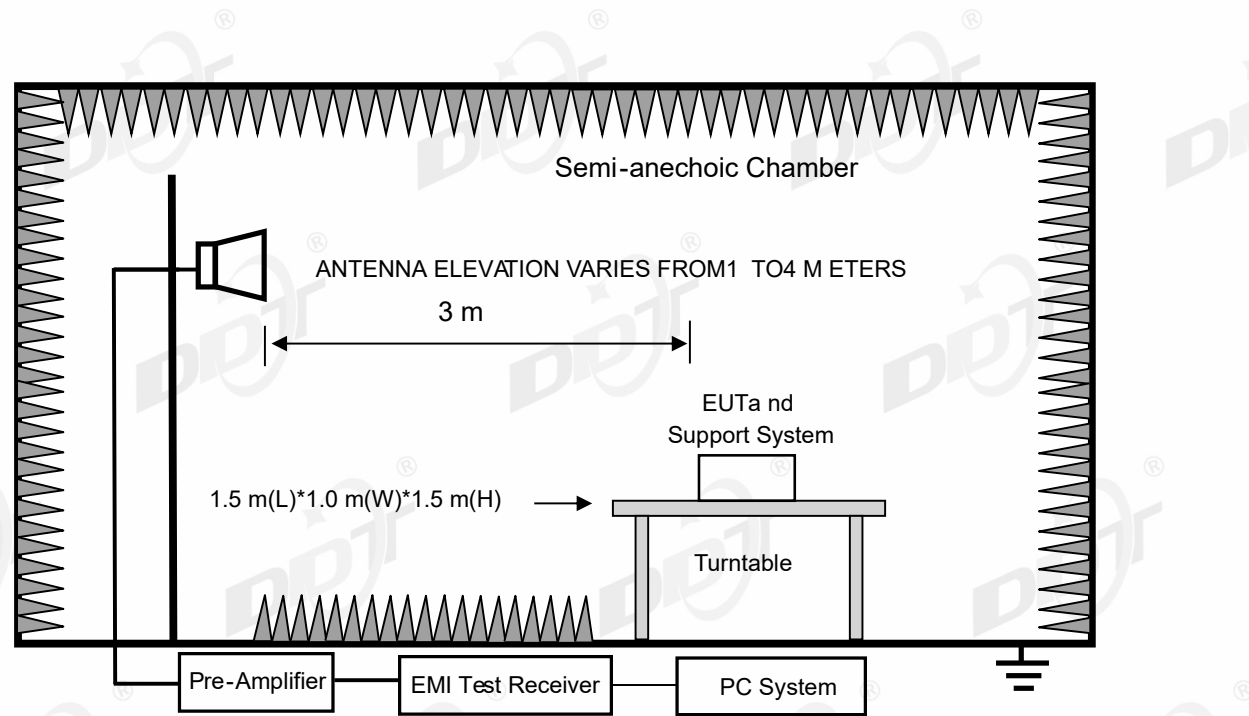
14.1. Test equipment

Equipment	Manufacturer	Model No.	Serial No.	Cal Due To
High pass filter	Micro-Tronics	HPM50102	DDT-ZC00561	2027/02/27
RF cable	Zhongke Junchuang	Z805UF-NJ-NJ-10M	DDT-ZC05591	2026/10/10
RF cable	Zhongke Junchuang	Z805UF-NJ-NJ-3M	DDT-ZC05590	2026/10/10
RF cable	Zhongke Junchuang	JCTB510-NJW-NJW-0.6M	DDT-ZC04595	2026/10/10
RF cable	Zhongke Junchuang	JCT40P-2.92J-2.92J-1M	DDT-ZC03802	2026/10/10
RF cable	Yuhu Technology	ZT26S-SMAJ-SMAJ-1M	DDT-ZC02037	2026/10/10
RF cable	Zhongke Junchuang	JCT40P-2.92J-2.92J-5M	DDT-ZC03800	2026/10/10
Radiation disturbance fully automated test software	Tonscend	JS32-RE (V5.0.0)	DDT-ZC02739	/
Pre-amplifier	SONOMA	310N	DDT-ZC01969	2027/06/25
Pre-amplifier	COM-POWER	PAM-840A	DDT-ZC01693	2027/03/05
Pre-amplifier	COM-POWER	PAM-118A	DDT-ZC01293	2027/07/08
EMI TEST RECEIVER	R&S	ESU26	DDT-ZC01909	2027/02/27
Micro-Tronics filters	REBES	BRM50702	DDT-ZC03242	/
High pass filter	Micro-Tronics	HPM50108	DDT-ZC00560	2027/02/27
High Pass filter	Xi'an Xingbo	XBLBQ-GTA67	DDT-ZC02179	2027/02/27
Micro-Tronics filters	REBES	BRM50716	DDT-ZC03240	/
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	DDT-ZC00506	2027/03/04
Trilog Broadband Antenna	Schwarzbeck	VULB 9163	DDT-ZC02050	2027/07/10
Hochgewinn-Hornantenne	SCHWARZBEC K	BBHA 9120 D	DDT-ZC02129	2027/07/10
Active Loop Antenna	Schwarzbeck	FMZB1519	DDT-ZC00524	2027/07/10
PSA Series Spectrum Analyzer	Agilent	E4447A	DDT-ZC00517	2027/02/27
Band Reject Filter Group	Tonscend	JS0806-F	DDT-ZC05733	/
Hochgewinn-Hornantenne	SCHWARZBEC K	BBHA 9120 D	DDT-ZC05922	2027/01/06
Broadband Preamplifier	HPX	BP-01G-18G	DDT-ZC05923	2027/01/06
Pre-amplifier	COM-POWER	PAM-840A	DDT-ZC01693	2027/03/05
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	DDT-ZC00506	2027/03/04
Signal & Spectrum analyzer	R&S	FSV40-N	DDT-ZC04979	2027/07/10
SPECTRUM ANALYZER	R&S	FSU26	DDT-ZC00236	2027/06/25
RF Cable	Tonscend	7+1+1+0.5+0.5m	DDT-ZC05978	2027/01/29
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	DDT-ZC00506	2027/03/04

PSA Series Spectrum Analyzer	Agilent	E4447A	DDT-ZC00517	2027/02/27
RF cable	Zhongke Junchuang	JCT40P-2.92J-2.92J-1M	DDT-ZC03802	2026/10/10
Radiation disturbance fully automated test software	Tonscend	JS-RE&RSE (V5.0.0)	DDT-ZC06466	/

14.2. Block diagram of test setup





14.3. Limits

(1) FCC 15.205 Restricted frequency band

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.1772&4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.2072&4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			

1Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

2Above 38.6