



FCC AND ISCED CERTIFICATION TEST REPORT

Applicant	:	Mercku Inc.
Address of Applicant	:	3600 Steeles Avenue East, Suite C108B, Markham, Ontario, L3R 9Z7, Canada
Manufacturer	:	Mercku Technology (China), Inc.
Address of Manufacturer	:	Block B1, Southern Software Park No.1 Software Road, Tangjia Zhuhai, Guangdong, China
Equipment under Test	:	M6s Mesh Wi-Fi Router
Model No.	:	MAAA1
FCC ID	:	2APR4-M6S
IC	:	23877-M6S
Test Standard(s)	:	FCC Rules and Regulations Part 15 Subpart C, RSS-247 Issue 3 August 2023, ANSI C63.10:2013, RSS-Gen Issue 5, Apr. 2018, Amendment 2 (February 2021)
Report No.	:	DDT-RE23111603-2E05
Issue Date	:	2024/04/08
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.	6dB 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.....	27
5.1.	Block diagram of test setup	27
5.2.	Limits.....	27
5.3.	Test procedure.....	27
5.4.	Test result	28
5.5.	Test graphs.....	29
6.	Conducted Output Power	41
6.1.	Block diagram of test setup	41
6.2.	Limits.....	41
6.3.	Test procedure.....	41
6.4.	Test result average	42
7.	Power Spectral Density	43
7.1.	Block diagram of test setup	43
7.2.	Limits.....	43
7.3.	Test procedure.....	43
7.4.	Test result	44
7.5.	Test graphs.....	45
8.	Band Edge Compliance (Conducted Method).....	57
8.1.	Block diagram of test setup	57

8.2.	Limits.....	57
8.3.	Test procedure.....	57
8.4.	Test result	58
8.5.	Test graphs.....	59
9.	RF Conducted Spurious Emissions.....	67
9.1.	Block diagram of test setup	67
9.2.	Limits.....	67
9.3.	Test procedure.....	67
9.4.	Test result	68
9.5.	Test graphs.....	69
10.	Duty Cycle.....	105
10.1.	Block diagram of test setup	105
10.2.	Limit.....	105
10.3.	Test procedure.....	105
10.4.	Test result	106
10.5.	Test graphs.....	107
11.	Antenna Requirements	119
11.1.	Limit.....	119
11.2.	Result.....	119
12.	Radiated Emission.....	120
12.1.	Test equipment	120
12.2.	Block diagram of test setup	121
12.3.	Limits.....	122
12.4.	Assistant equipment used for test	124
12.5.	Test procedure.....	124
12.6.	Test result	125
12.7.	Test data	126
13.	Band Edge Compliance	134
13.1.	Test equipment	134
13.2.	Block diagram of test setup	135
13.3.	Limits.....	135
13.4.	Assistant equipment used for test	135
13.5.	Test procedure.....	135
13.6.	Test result	135
13.7.	Test data	136
14.	Power Line Conducted Emissions.....	168
14.1.	Test equipment	168
14.2.	Block diagram of test setup	168

14.3. Limits..... 168

14.4. Assistant equipment used for test 168

14.5. Test procedure..... 169

14.6. Test result 169

14.7. Test data 170

15. Test Setup Photograph..... 172

16. Photos of the EUT 175

Test Report Declare

Applicant	:	Mercku Inc.
Address of Applicant	:	3600 Steeles Avenue East, Suite C108B, Markham, Ontario, L3R 9Z7, Canada
Equipment under Test	:	M6s Mesh Wi-Fi Router
Model No.	:	MAAA1
Manufacturer	:	Mercku Technology (China), Inc.
Address of Manufacturer	:	Block B1, Southern Software Park No.1 Software Road, Tangjia Zhuhai, Guangdong, China

Test Standard Used:

FCC Rules and Regulations Part 15 Subpart C,

RSS-247 Issue 3 August 2023,

ANSI C63.10:2013,

RSS-Gen Issue 5, Apr. 2018, Amendment 2 (February 2021)

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-RE23111603-2E05		
Date of Receipt:	2023/11/29	Date of Test:	2023/11/29~2024/03/29

Prepared By:**Jacky Huang/Engineer****Approved By:****Damon Hu/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	2024/04/08	

1. Summary of Test Results

No.	Test Parameter	Clause No.	Condition	Result
1	6 dB Bandwidth and 99% Bandwidth	FCC Part 15: 15.247(a)(2), RSS-247 Issue 3 clause 5.2(a), RSS-Gen Issue 5 clause 6.7	/	Pass
2	Peak Output Power	FCC Part 15: 15.247(b)(3), RSS-247 Issue 3 clause 5.4(d)	/	Pass
3	Power Spectral Density	FCC Part 15:15.247(e), RSS-247 Issue 3 clause 5.2(b)	/	Pass
4	RF Conducted Spurious Emissions	FCC Part 15: 15.247(d), RSS-247 Issue 3 clause 5.5	/	Pass
5	Radiated Emission	FCC Part 15: 15.205, FCC Part 15: 15.209, FCC Part 15: 15.247(d), RSS-247 Issue 3 clause 5.5, RSS-Gen Issue 5 clause 8.9, RSS-Gen Issue 5 clause 8.10	/	Pass
6	Band Edge Compliance	FCC Part 15: 15.205, FCC Part 15: 15.209, FCC Part 15: 15.247(d), RSS-247 Issue 3 clause 5.5, RSS-Gen Issue 5 clause 8.9, RSS-Gen Issue 5 clause 8.10	/	Pass
7	Power Line Conducted Emissions	FCC Part 15: 15.207(a), RSS-Gen Issue 5 clause 8.8	/	Pass
8	Antenna Requirement	FCC Part 15: 15.203, RSS-Gen Issue 5 clause 6.8	/	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	: M6s Mesh Wi-Fi Router
Model Number	: MAAA1
EUT Function Description	: Please reference user manual of this device
Power Supply	: DC 12V powered by external adapter

Note: This EUT support 2.4 GHz WLAN, 5 GHz WLAN. This report only for 2.4 GHz WLAN.

Radio Technology	: IEEE 802.11b/g/n/ax
Operation frequency	: IEEE 802.11b: 2412MHz-2462MHz IEEE 802.11g: 2412MHz-2462MHz IEEE 802.11n HT20: 2412MHz-2462MHz IEEE 802.11n HT40: 2422MHz-2452MHz IEEE 802.11ax HE20: 2412MHz-2462MHz IEEE 802.11ax HE40: 2422MHz-2452MHz
Modulation	: IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ax: OFDM, OFDMA (1024QAM, 64QAM, 16QAM, QPSK, BPSK)

Antenna information				
Antenna Type	Dedicated antenna			
Max Antenna Gain (dBi)		Ant1 gain	Ant2 gain	Directional gain
	IEEE 802.11b	3.9	3.9	/
	IEEE 802.11g	3.9	3.9	/
	IEEE 802.11n HT20	3.9	3.9	3.9
	IEEE 802.11n HT40	3.9	3.9	3.9
	IEEE 802.11ax HE20	3.9	3.9	3.9
	IEEE 802.11ax HE40	3.9	3.9	3.9
Note: This EUT supports STBC, any transmit signals are uncorrelated with each other. So the Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10})/2]$ dBi				

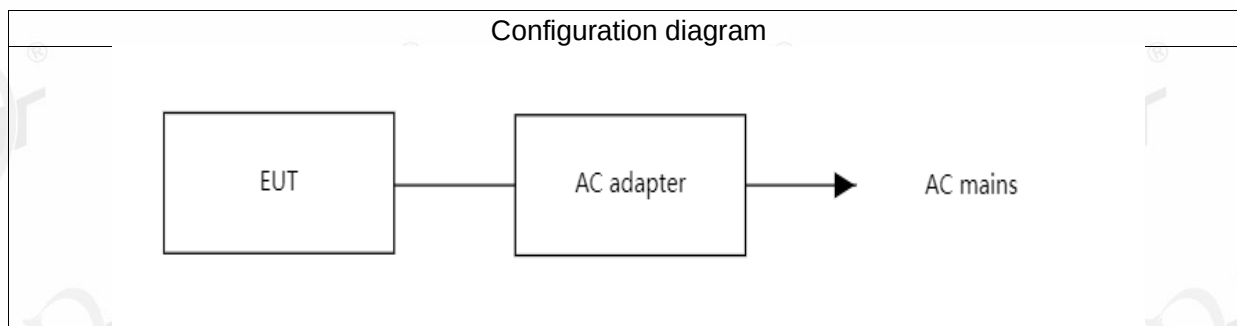
Channel information					
CH	Frequency (MHz)	CH	Frequency (MHz)	CH	Frequency (MHz)
1	2412	5	2432	9	2452
2	2417	6	2437	10	2457
3	2422	7	2442	11	2462
4	2427	8	2447	/	/

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.

2.2. Accessories of EUT

Accessories	Manufacturer	Model number	Description
AC/DC ADAPTER	Shenzhen Keyu Power Supply Technology Co., Ltd.	KA1801A-1201500EU	Input: 100-240V~50/60Hz 0.55A Max Output: DC 12V 1.5A 18.0W
RJ 45 cable	/	/	/

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: QATool_Dbg.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: 0.5dB (According to the manufacturer's claims)

Tested mode, channel, and data rate information					
Mode	Setting Tx Power		Data rate (Mbps) (see Note)	Channel	Frequency (MHz)
	ANT1	ANT2			
IEEE 802.11b	15	15	1	LCH: CH1	2412
	15	15	1	MCH: CH6	2437
	15	15	1	HCH: CH11	2462
IEEE 802.11g	12	12	6	LCH: CH1	2412
	12	12	6	MCH: CH6	2437
	12	12	6	HCH: CH11	2462
IEEE 802.11n HT20	10	10	MCS 8	LCH: CH1	2412
	10	10	MCS 8	MCH: CH6	2437
	10	10	MCS 8	HCH: CH11	2462
IEEE 802.11n HT40	10	10	MCS 8	LCH: CH3	2422
	10	10	MCS 8	MCH: CH6	2437
	10	10	MCS 8	HCH: CH9	2452
IEEE 802.11ax HE20	10	10	MCS 0	LCH: CH1	2412
	10	10	MCS 0	MCH: CH6	2437
	10	10	MCS 0	HCH: CH11	2462
IEEE 802.11ax HE40	9	9	MCS 0	LCH: CH3	2422
	9	9	MCS 0	MCH: CH6	2437
	9	9	MCS 0	HCH: CH9	2452

Note: According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test.

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 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-20155, G-20118

2.8. Measurement uncertainty

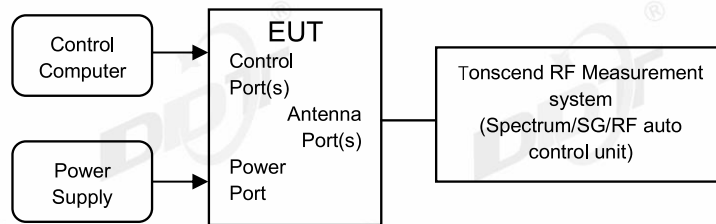
Test Item	Uncertainty
Bandwidth	1.1%
Peak Output Power (Conducted) (Spectrum analyzer)	0.86 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$); 1.38 dB ($3.6 \text{ GHz} \leq f < 8 \text{ GHz}$)
Peak Output Power (Conducted) (Power Sensor)	0.74 dB
Power Spectral Density	0.74 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$); 1.38 dB ($3.6 \text{ GHz} \leq f < 8 \text{ GHz}$)
Frequencies Stability	6.7×10^{-8} (Antenna couple method) 5.5×10^{-8} (Conducted method)
Conducted spurious emissions	0.86 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$); 1.40 dB ($3.6 \text{ GHz} \leq f < 8 \text{ GHz}$) 1.66 dB ($8 \text{ GHz} \leq f < 26.5 \text{ GHz}$)
Uncertainty for radio frequency (RBW < 20 kHz)	3×10^{-8}
Temperature	0.4 °C
Humidity	2 %
Uncertainty for Radiation Emission test (9 kHz – 30 MHz)	3.44 dB
Uncertainty for Radiation Emission test (30 MHz - 1 GHz)	4.70 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	Cal. Interval
☑RF Connected Test (RF Measurement System 3#)					
SIGNAL ANALYZER	R&S	FSV40	101407	2024/07/11	1 Year
Wideband Radio Communication Tester	R&S	CMW500	117491	2024/04/26	1 Year
EXG Analog Signal Generator	KEYSIGHT	N5173B	MY62153058	2024/07/11	1 Year
MXG Vector Signal Generator	Agilent	N5182A	MY48180912	2024/04/22	1 Year
RF Control Unit	Tonscend	JS0806-2	20C8060230	2024/04/26	1 Year
TEMP&HUMI Programmable Chamber	ZHIXIANG	ZXGDJS-150L	ZX170110-A	2024/05/14	1 Year
Test Software	Tonscend	JS1120-3	Ver.3.2.22	N/A	NA

4. 6dB Bandwidth

4.1. Block diagram of test setup



4.2. Limits

For direct sequence systems, the minimum 6 dB bandwidth shall be at least 500 kHz

4.3. Test procedure

- (1) The test according to ANSI C63.10-2013 clause 11.8.
- (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 6 dB Bandwidth:

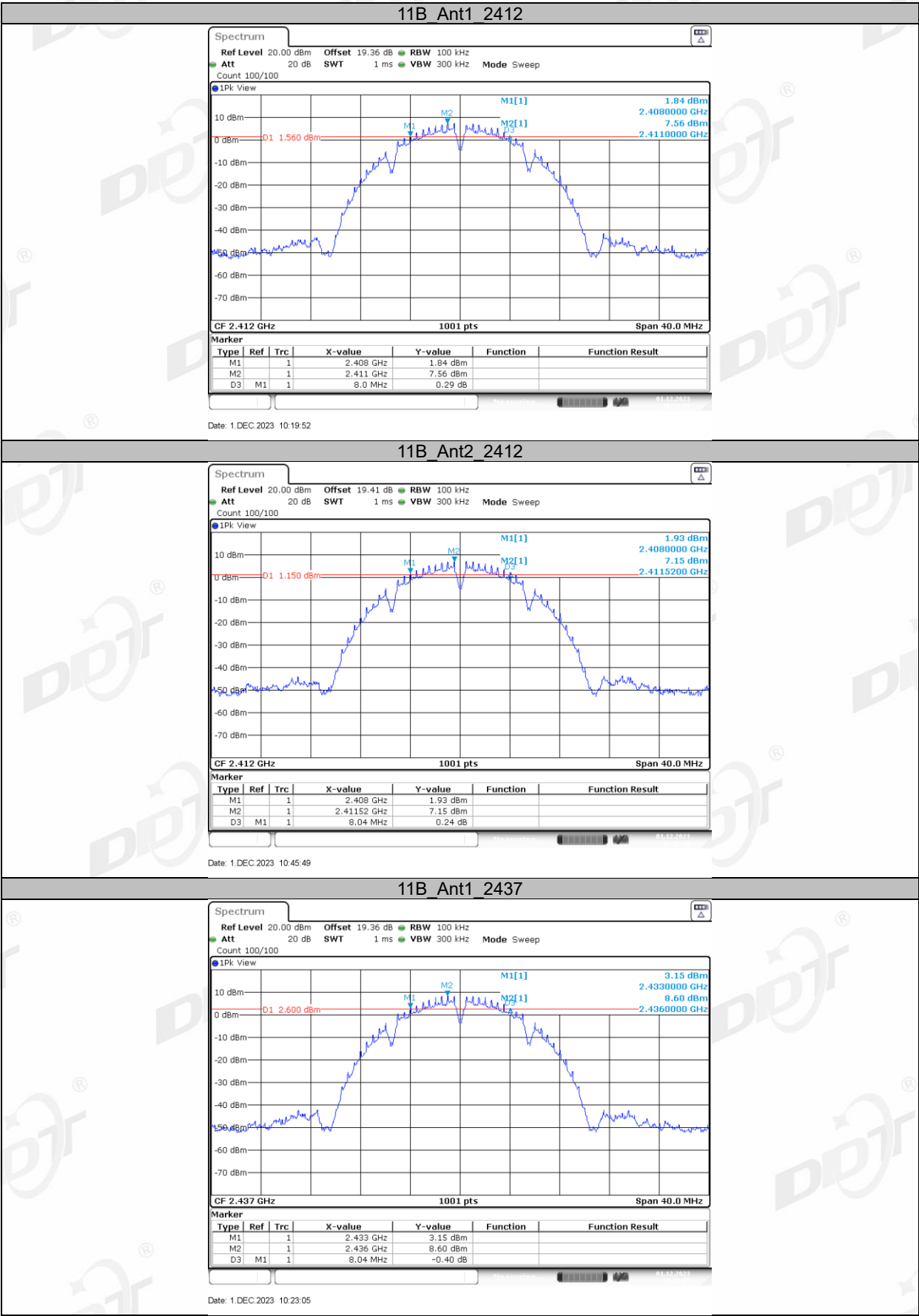
RBW:	100 kHz
VBW:	$\geq [3 \times \text{RBW}]$
Detector Mode:	peak
Sweep time:	auto
Trace mode	max hold
- (5) Allow the trace to stabilize, measure the 6 dB bandwidth of signal, and record the results in the report.

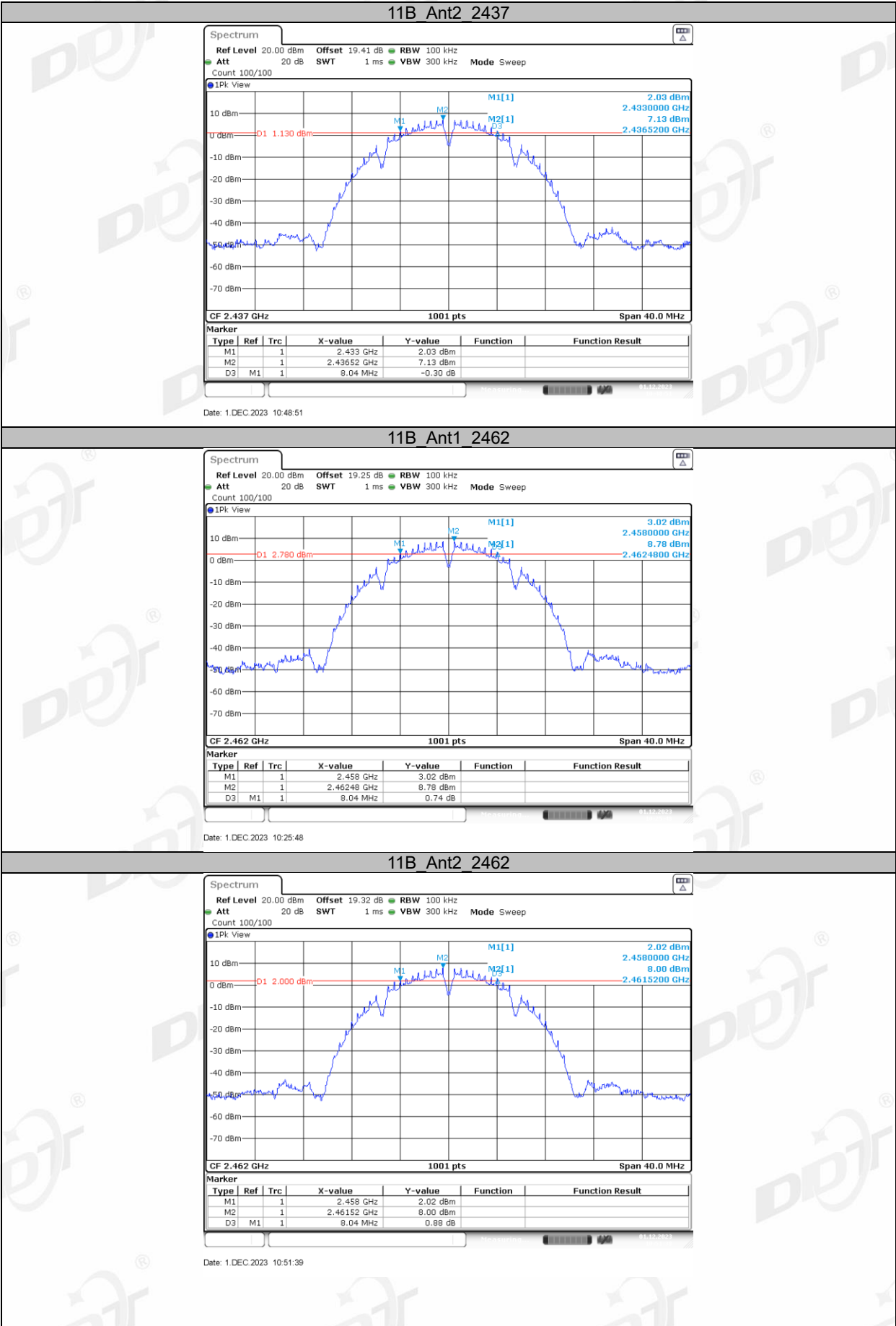
4.4. Test result

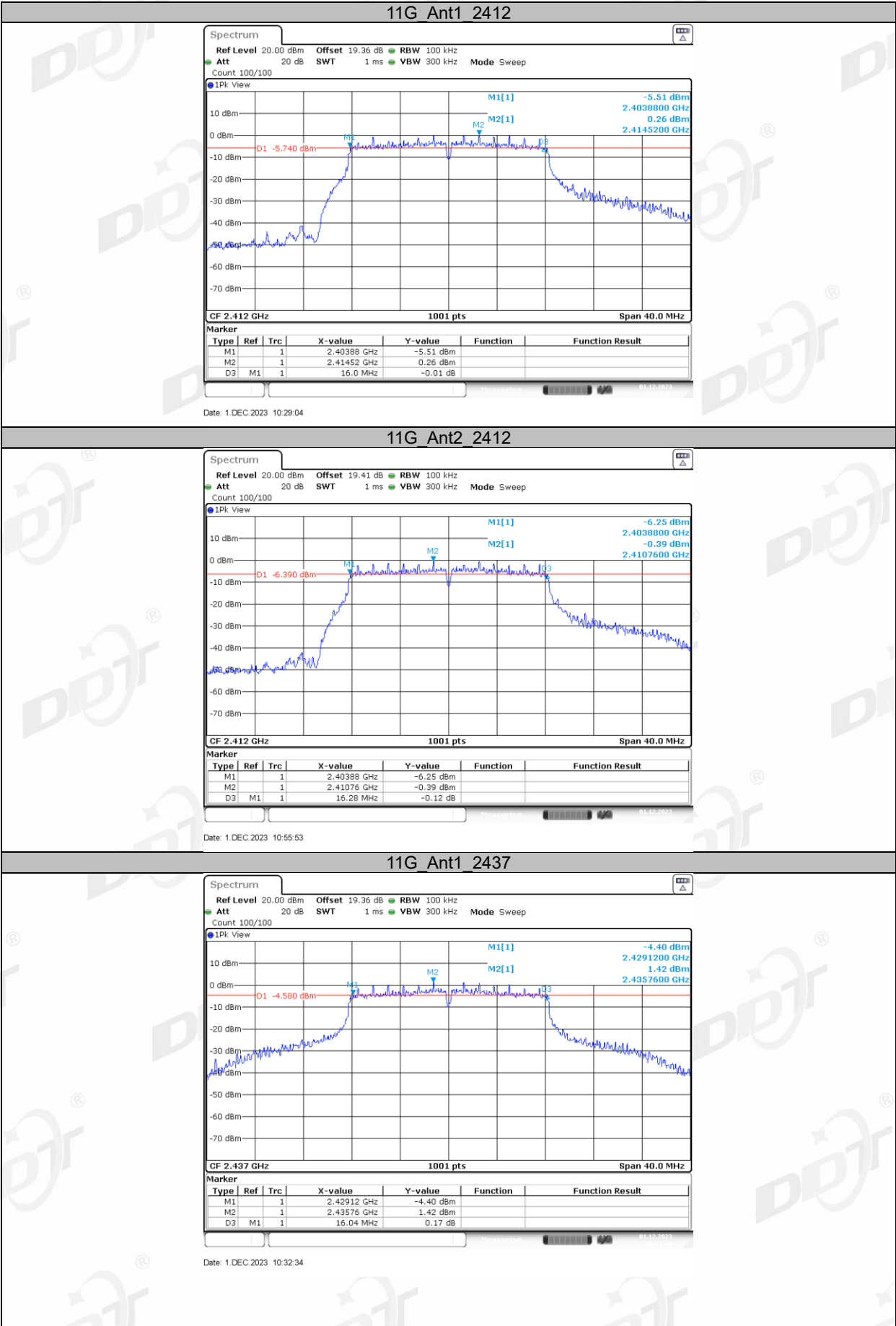
Test Engineer:	Zoe	Test Site:	RF Measurement System 3#
Ambient Condition:	22.6-23.1℃, 45.1-47.3%RH	Test Date:	2023.12.01-2023.12.04
Test Power Supply:	DC 12V from external adapter	Sample Number:	S23111603-02

Test Mode	Antenna	Frequency [MHz]	DTS BW [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
11B	Ant1	2412	8.00	2408.00	2416.00	0.5	PASS
	Ant2	2412	8.04	2408.00	2416.04	0.5	PASS
	Ant1	2437	8.04	2433.00	2441.04	0.5	PASS
	Ant2	2437	8.04	2433.00	2441.04	0.5	PASS
	Ant1	2462	8.04	2458.00	2466.04	0.5	PASS
	Ant2	2462	8.04	2458.00	2466.04	0.5	PASS
11G	Ant1	2412	16.00	2403.88	2419.88	0.5	PASS
	Ant2	2412	16.28	2403.88	2420.16	0.5	PASS
	Ant1	2437	16.04	2429.12	2445.16	0.5	PASS
	Ant2	2437	15.72	2429.44	2445.16	0.5	PASS
	Ant1	2462	15.80	2454.12	2469.92	0.5	PASS
	Ant2	2462	15.96	2453.84	2469.80	0.5	PASS
11N20MIMO	Ant1	2412	17.08	2403.48	2420.56	0.5	PASS
	Ant2	2412	17.56	2403.24	2420.80	0.5	PASS
	Ant1	2437	15.72	2429.44	2445.16	0.5	PASS
	Ant2	2437	17.56	2428.24	2445.80	0.5	PASS
	Ant1	2462	15.72	2454.44	2470.16	0.5	PASS
	Ant2	2462	17.56	2453.24	2470.80	0.5	PASS
11N40MIMO	Ant1	2422	35.12	2404.48	2439.60	0.5	PASS
	Ant2	2422	35.12	2404.48	2439.60	0.5	PASS
	Ant1	2437	35.12	2419.48	2454.60	0.5	PASS
	Ant2	2437	35.44	2419.48	2454.92	0.5	PASS
	Ant1	2452	35.12	2434.48	2469.60	0.5	PASS
	Ant2	2452	35.12	2434.48	2469.60	0.5	PASS
11AX20MIMO	Ant1	2412	18.52	2402.76	2421.28	0.5	PASS
	Ant2	2412	18.48	2402.56	2421.04	0.5	PASS
	Ant1	2437	18.36	2427.96	2446.32	0.5	PASS
	Ant2	2437	17.80	2428.00	2445.80	0.5	PASS
	Ant1	2462	18.20	2453.08	2471.28	0.5	PASS
	Ant2	2462	16.88	2454.40	2471.28	0.5	PASS
11AX40MIMO	Ant1	2422	37.28	2403.52	2440.80	0.5	PASS
	Ant2	2422	36.32	2404.48	2440.80	0.5	PASS
	Ant1	2437	36.88	2418.68	2455.56	0.5	PASS
	Ant2	2437	36.80	2419.00	2455.80	0.5	PASS
	Ant1	2452	36.32	2434.24	2470.56	0.5	PASS
	Ant2	2452	36.56	2434.24	2470.80	0.5	PASS

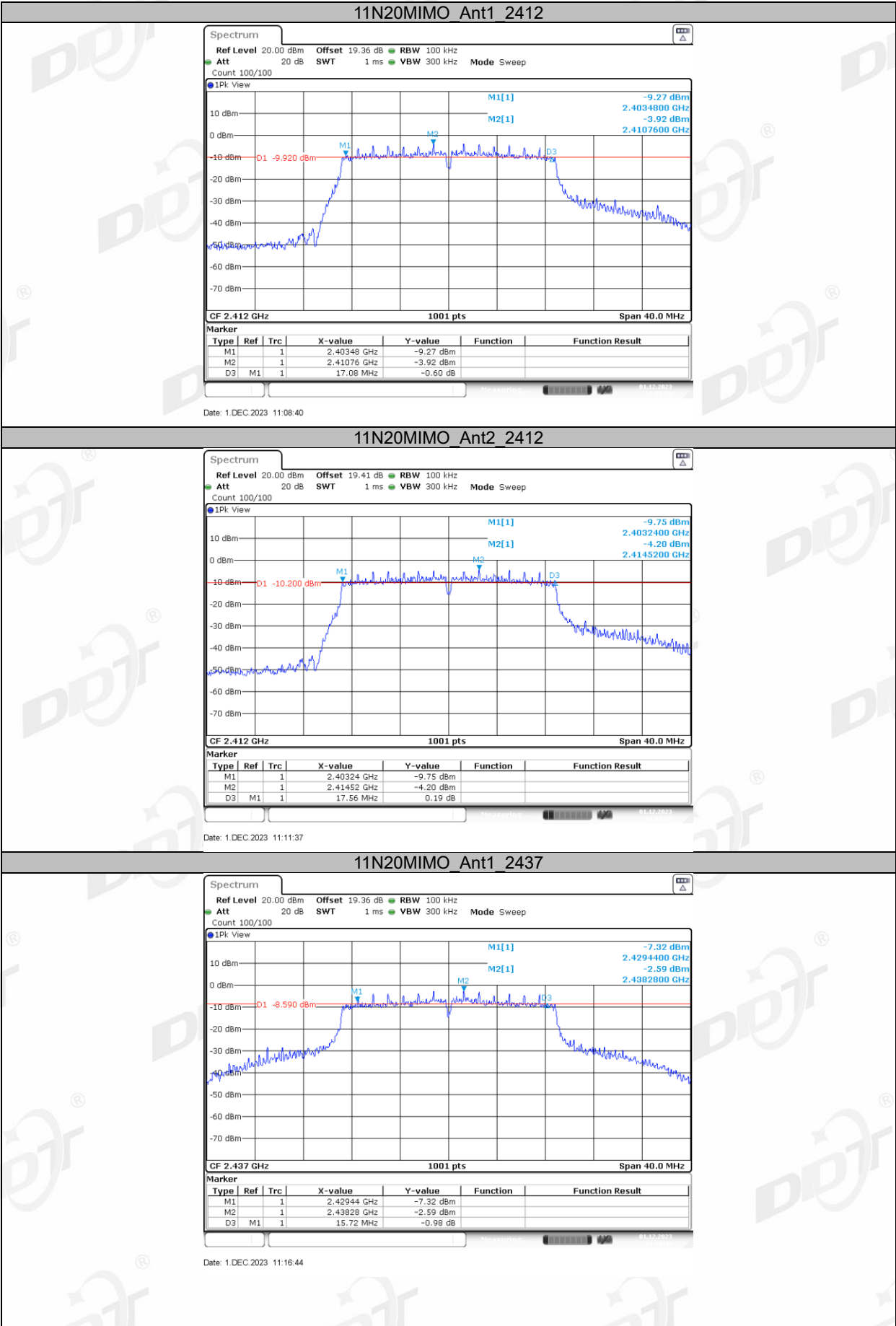
4.5. Test graphs

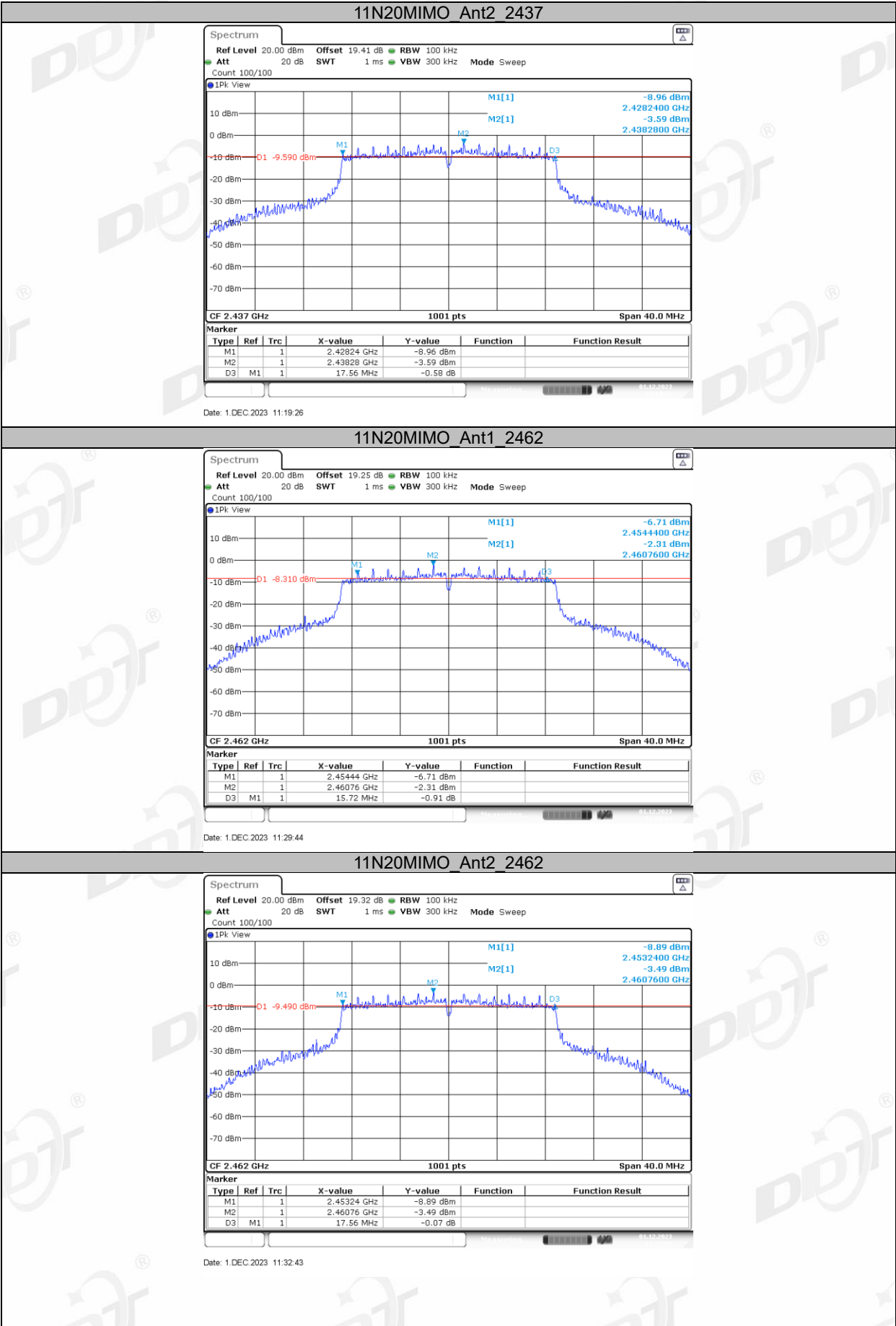


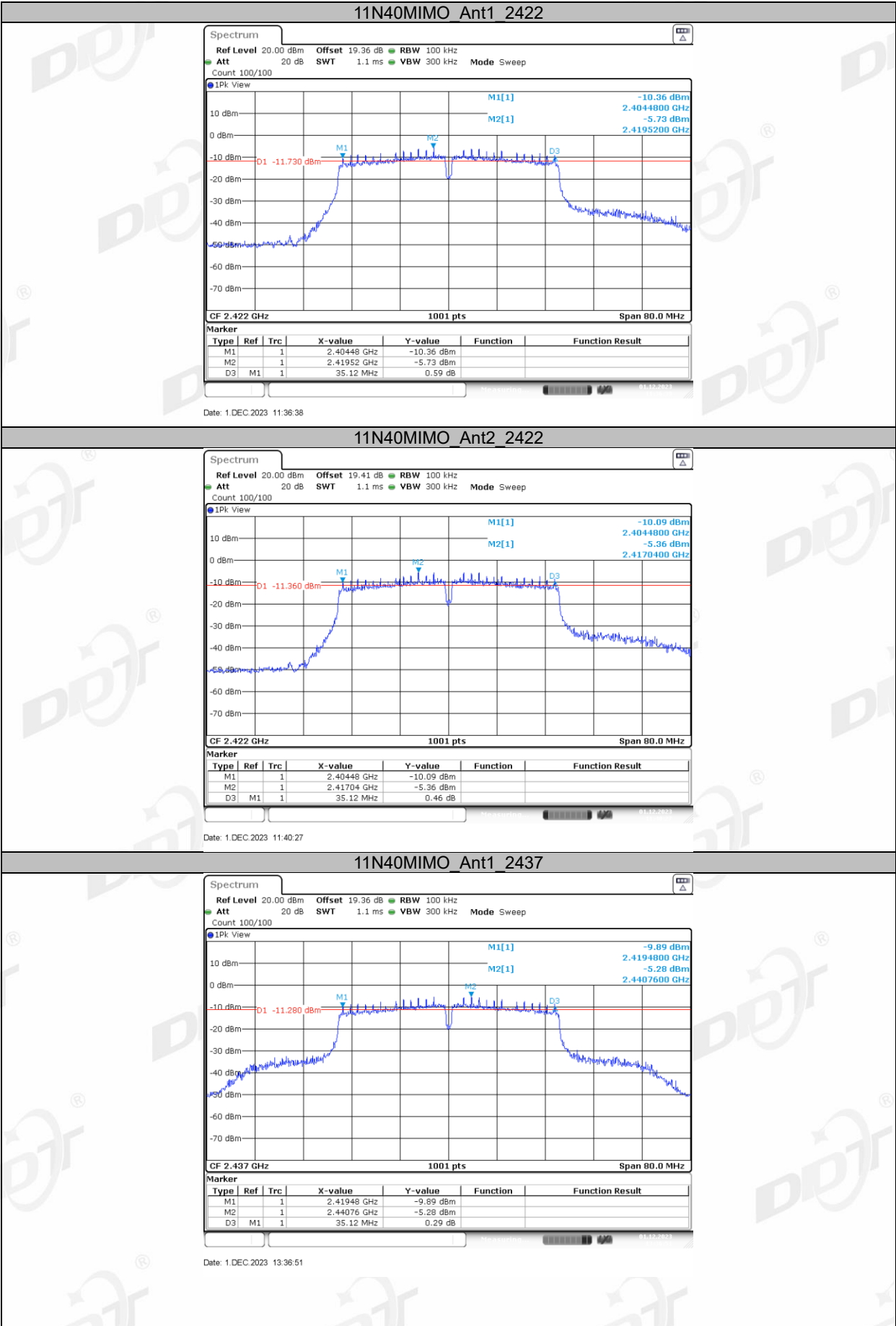




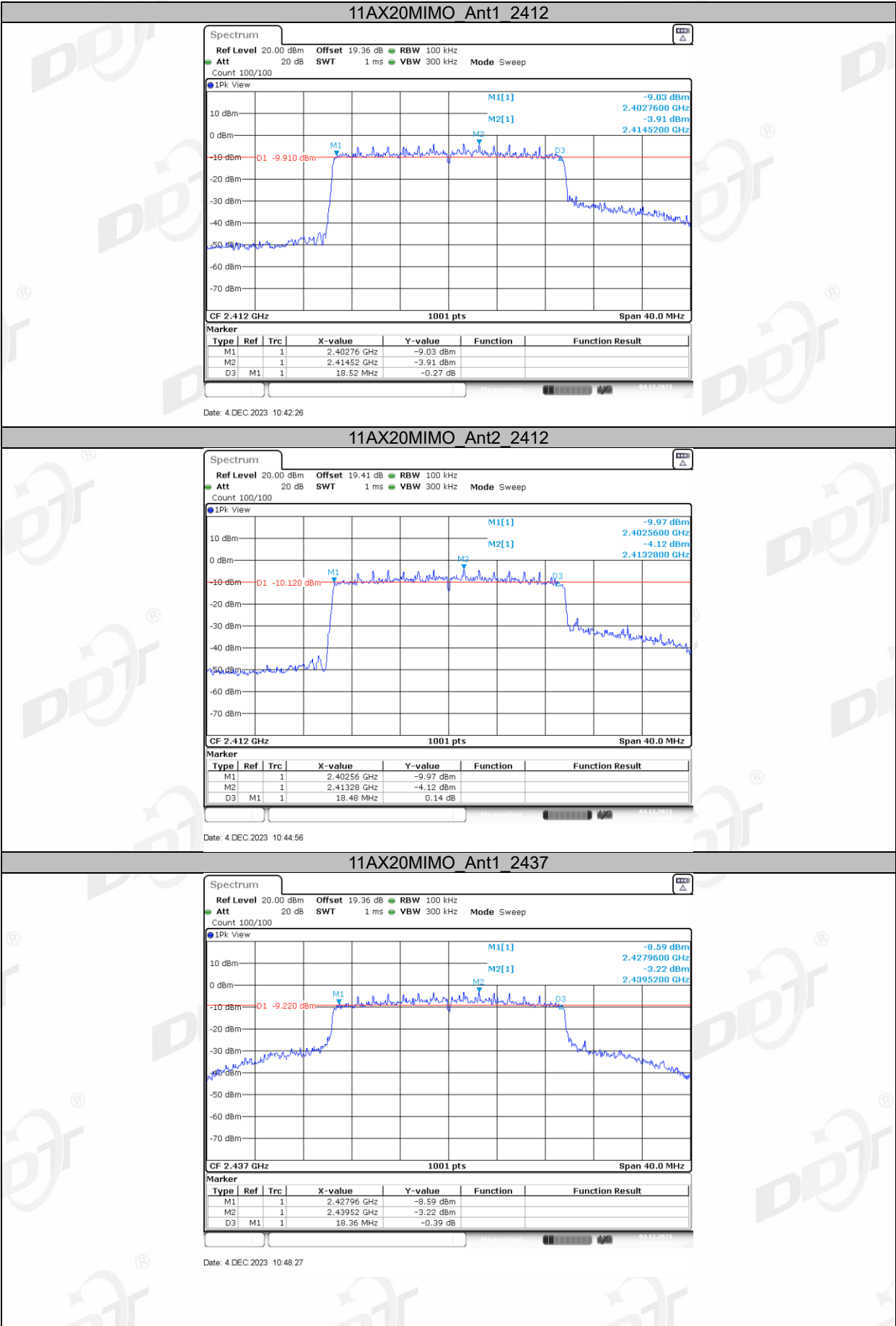


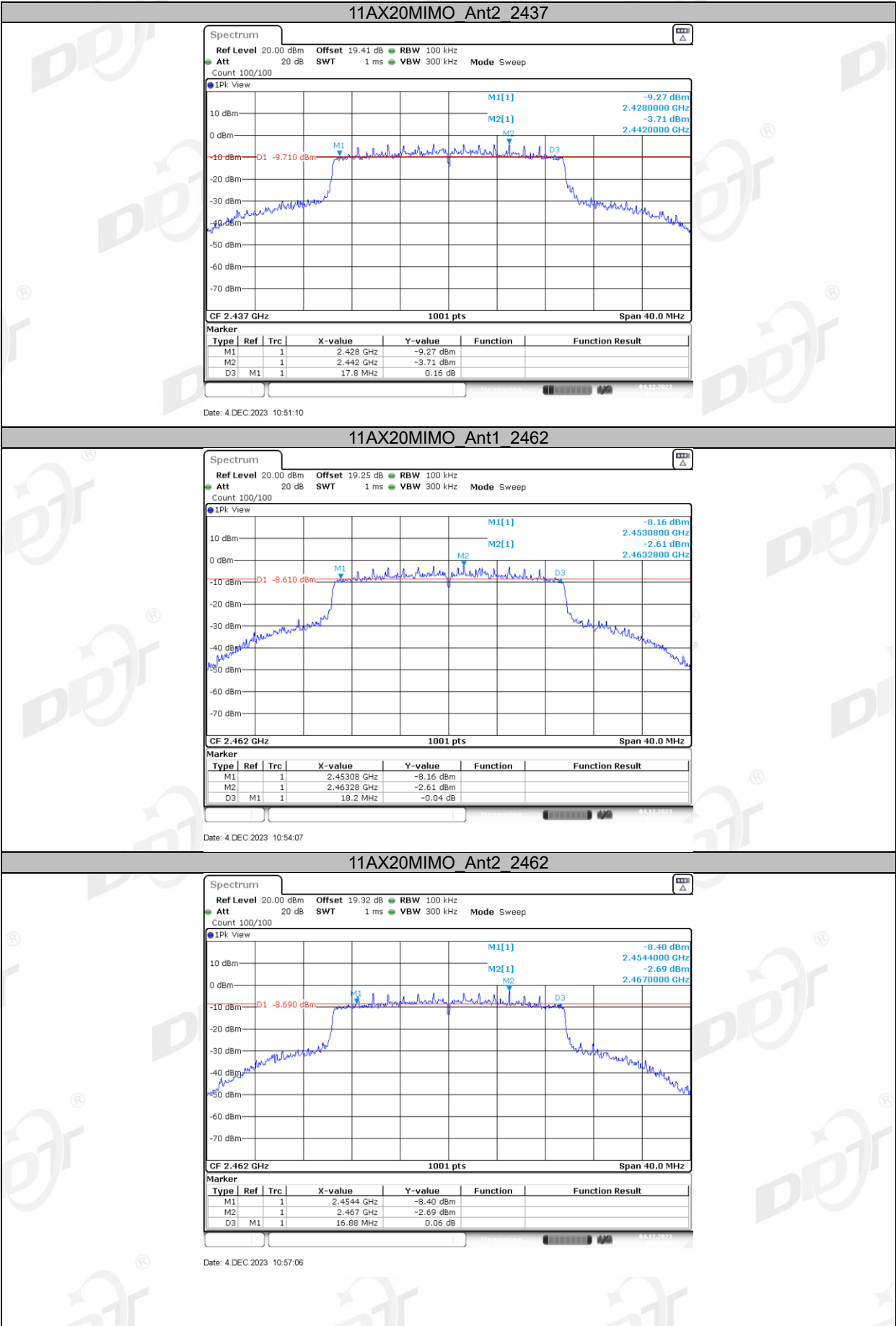




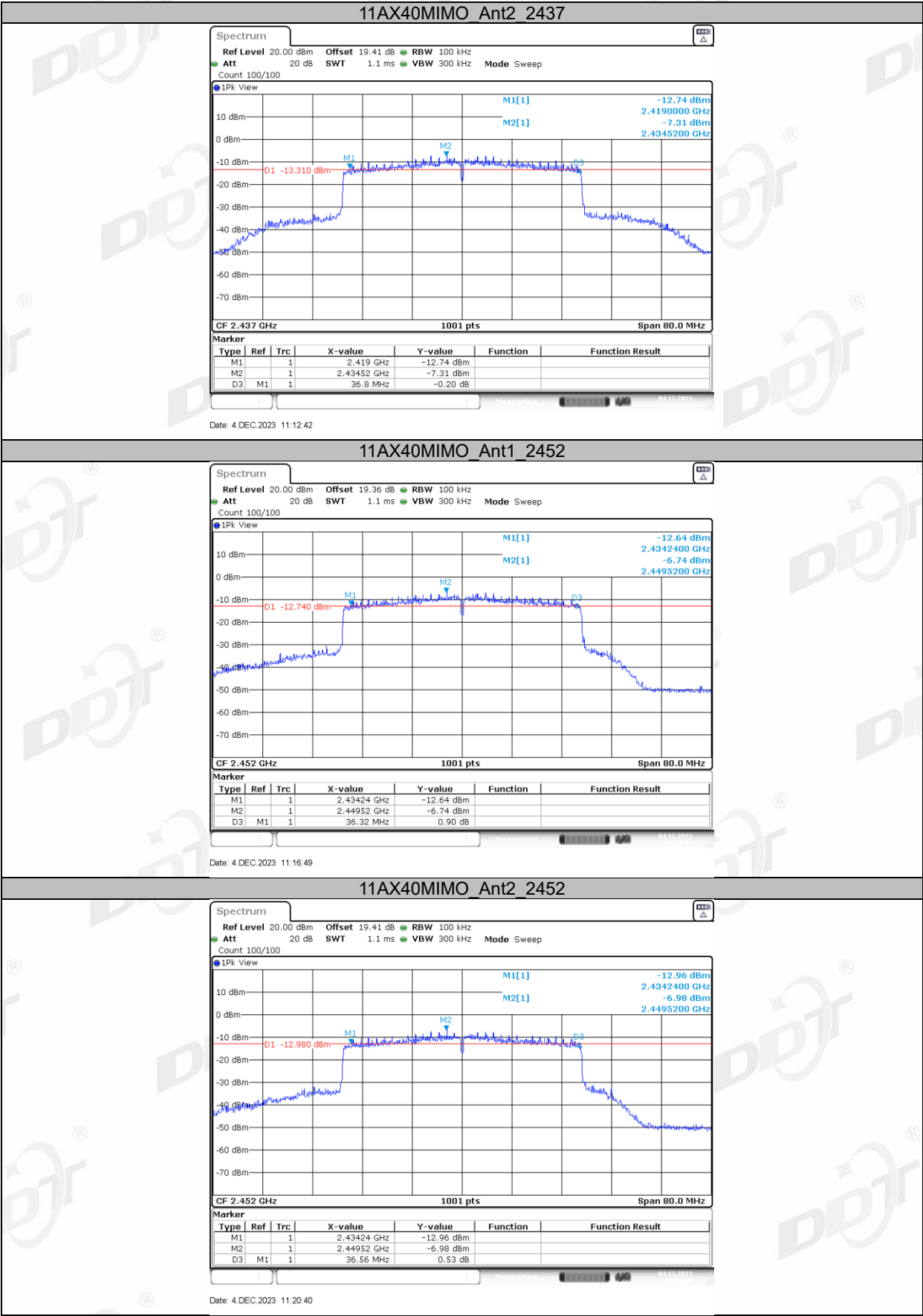






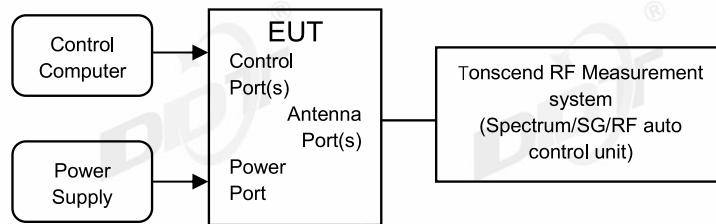






5. 99% Bandwidth

5.1. Block diagram of test setup



5.2. Limits

Just for Report.

5.3. Test procedure

- (1) The test according to ANSI C63.10-2013 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:

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) Allow the trace to stabilize, measure the 99% bandwidth of signal, and record the results in the report.

5.4. Test result

Test Engineer:	Zoe	Test Site:	RF Measurement System 3#
Ambient Condition:	22.6-23.1℃, 45.1-47.3%RH	Test Date:	2023.12.01-2023.12.04
Test Power Supply:	DC 12V from external adapter	Sample Number:	S23111603-02

Test Mode	Antenna	Channel Frequency [MHz]	OCB [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
11B	Ant1	2412	12.747	2405.6464	2418.3936	---	---
	Ant2	2412	12.787	2405.6464	2418.4336	---	---
	Ant1	2437	12.707	2430.6863	2443.3936	---	---
	Ant2	2437	12.747	2430.6464	2443.3936	---	---
	Ant1	2462	12.747	2455.6464	2468.3936	---	---
	Ant2	2462	12.747	2455.6464	2468.3936	---	---
11G	Ant1	2412	17.862	2403.2887	2421.1508	---	---
	Ant2	2412	17.862	2403.3287	2421.1908	---	---
	Ant1	2437	17.862	2428.1289	2445.9910	---	---
	Ant2	2437	17.862	2428.0889	2445.9510	---	---
	Ant1	2462	17.782	2453.1289	2470.9111	---	---
	Ant2	2462	17.782	2453.0889	2470.8711	---	---
11N20MIMO	Ant1	2412	18.581	2402.8492	2421.4306	---	---
	Ant2	2412	18.182	2403.0490	2421.2308	---	---
	Ant1	2437	18.861	2427.6494	2446.5105	---	---
	Ant2	2437	18.342	2427.8492	2446.1908	---	---
	Ant1	2462	18.781	2452.6494	2471.4306	---	---
	Ant2	2462	18.222	2452.8891	2471.1109	---	---
11N40MIMO	Ant1	2422	36.923	2403.7782	2440.7013	---	---
	Ant2	2422	36.763	2403.7782	2440.5415	---	---
	Ant1	2437	37.083	2418.5385	2455.6214	---	---
	Ant2	2437	36.763	2418.6983	2455.4615	---	---
	Ant1	2452	36.843	2433.5385	2470.3816	---	---
	Ant2	2452	36.683	2433.6184	2470.3017	---	---
11AX20MIMO	Ant1	2412	19.021	2402.5295	2421.5504	---	---
	Ant2	2412	19.021	2402.5295	2421.5504	---	---
	Ant1	2437	19.381	2427.3297	2446.7103	---	---
	Ant2	2437	19.381	2427.3297	2446.7103	---	---
	Ant1	2462	19.341	2452.3297	2471.6703	---	---
	Ant2	2462	19.341	2452.3297	2471.6703	---	---
11AX40MIMO	Ant1	2422	37.962	2403.1389	2441.1009	---	---
	Ant2	2422	37.962	2403.1389	2441.1009	---	---
	Ant1	2437	37.962	2418.0589	2456.0210	---	---
	Ant2	2437	37.962	2418.0589	2456.0210	---	---
	Ant1	2452	37.882	2433.0589	2470.9411	---	---
	Ant2	2452	37.882	2433.0589	2470.9411	---	---

5.5. Test graphs



