



RADIO TEST REPORT

Applicant	:	MAXMADE AUTO ELECTRONICS CO.,LTD.
Address of Applicant	:	Building 2, GIEC Industrial Park, Puzai Road, Pingdi, Longgang District, Shenzhen, China
Manufacturer	:	MAXMADE AUTO ELECTRONICS CO.,LTD.
Address of Manufacturer	:	Building 2, GIEC Industrial Park, Puzai Road, Pingdi, Longgang District, Shenzhen, China
Equipment under Test	:	Car infotainer
Model No.	:	Z-N538, Z-N548
FCC ID	:	2AT9B-Z-N538
Test Standard(s)	:	FCC Rules and Regulations Part 15 Subpart C, ANSI C63.10-2020, 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-RE25101002-1E02
Issue Date	:	2025/12/26
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	:	MAXMADE AUTO ELECTRONICS CO.,LTD.
Address of Applicant	:	Building 2, GIEC Industrial Park, Puzai Road, Pingdi, Longgang District, Shenzhen, China
Equipment under Test	:	Car infotainer
Model No.	:	Z-N538, Z-N548
Manufacturer	:	MAXMADE AUTO ELECTRONICS CO.,LTD.
Address of Manufacturer	:	Building 2, GIEC Industrial Park, Puzai Road, Pingdi, Longgang District, Shenzhen, China

Test Standard Used:

FCC Rules and Regulations Part 15 Subpart C,
ANSI C63.10-2020,
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-RE25101002-1E02		
Date of Receipt:	2025/10/16	Date of Test:	2025/10/16 - 2025/11/23

Created: Jacky Huang	Reviewed: Johnson Huang	Approved: Ella Gong
		
2025/11/25	2025/12/26	2025/12/26

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	2025/12/26	Ella Gong

1. Summary of Test Results

No.	Test Parameter	Clause No.	Condition	Result
1	6 dB Bandwidth and 99% Bandwidth	47 CFR Part 15 15.247(a)(2), RSS-247 clause 6.3.1(a), RSS-Gen clause 6.7	/	Pass
2	Peak Output Power	47 CFR Part 15 15.247(b)(3), RSS-247 clause 6.3.2	/	Pass
3	Power Spectral Density	47 CFR Part 15 15.247(e), RSS-247 clause 6.3.1(b)	/	Pass
4	RF Conducted Spurious Emissions	47 CFR Part 15 15.247(d), RSS-247 clause 6.6	/	Pass
5	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
6	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
7	Antenna Requirement	47 CFR Part 15 15.203, RSS-Gen clause 6.8	/	Pass
8	Power Line Conducted Emissions	47 CFR Part 15 15.207(a), RSS-Gen clause 8.8	/	N/A
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	:	Car infotainer
Model Number	:	Z-N538, Z-N548
Difference of model number	:	Only the size of the casing and the model name are different, while the rest are exactly the same. The test model is Z-N538.
EUT Function Description	:	Please reference user manual of this device
Power Supply	:	DC 12V
Antenna Type	:	FPC
Max Antenna Gain (dBi)	:	6.42

Radio Technology	:	IEEE 802.11b/g/n
Operation frequency	:	IEEE 802.11b: 2412MHz to 2462MHz IEEE 802.11g: 2412MHz to 2462MHz IEEE 802.11n HT20: 2412MHz to 2462MHz IEEE 802.11n HT40: 2422MHz to 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)

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
/	/	/	/

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: putty.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, setting Tx power and rand data rate information				
Mode	Setting Tx Power	Data rate (Mbps) (see Note)	Channel	Frequency (MHz)
	ANT1			
IEEE 802.11b	45	1	Low: CH1	2412
		1	Middle: CH6	2437
		1	High: CH11	2462
IEEE 802.11g	45	6	Low: CH1	2412
		6	Middle: CH6	2437
		6	High: CH11	2462
IEEE 802.11n HT20	45	MCS 0	Low: CH1	2412
		MCS 0	Middle: CH6	2437
		MCS 0	High: CH11	2462
IEEE 802.11n HT40	44	MCS 0	Low: CH3	2422
		MCS 0	Middle: CH6	2437
		MCS 0	High: CH9	2452
Note 1: According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test.				
Note 2: All the emissions are measured with PK detector. Scan with IEEE 802.11b, IEEE 802.11g, IEEE 802.11n HT20, IEEE 802.11n HT40 mode, the worst case is recorded in this report.				

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 to106 kPa

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

2.7. Test laboratory

Guangdong Dongdian Testing Service Co., Ltd.

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

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

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

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

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

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, R-20240, G-20118

2.8. Measurement uncertainty

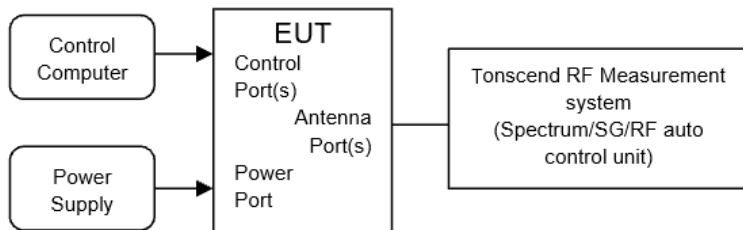
Test Item	Uncertainty
Bandwidth	1.1%
Peak Output Power (Conducted) (Spectrum analyzer)	0.86 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$);
	1.38 dB ($3.6 \text{ GHz} \leq f < 8 \text{ GHz}$)
Peak Output Power (Conducted) (Power Sensor)	0.74 dB
Power Spectral Density	0.74 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$);
	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 4#)					
Signal &Spectrum Analyzer	R&S	FSV3044	101173	2026/03/28	1 Year
Wideband Radio Communication Tester	R&S	CMW500	168801	2026/03/28	1 Year
MXG Vector Signal Generator	Agilent	N5182A	MY48180737	2026/03/28	1 Year
PSG Vector Signal Generator	Agilent	E8267D	US49060192	2026/08/10	1 Year
RF Control Unit	Tonscend	JS0806-2	21I8060485	2026/03/28	1 Year
TEMP&HUMI Programmable Chamber	ZHIXIANG	ZXGDJS-150L	ZX170110-A	2026/03/28	1 Year
Test Software	Tonscend	JS1120-3	V3.6.21	N/A	N/A

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 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

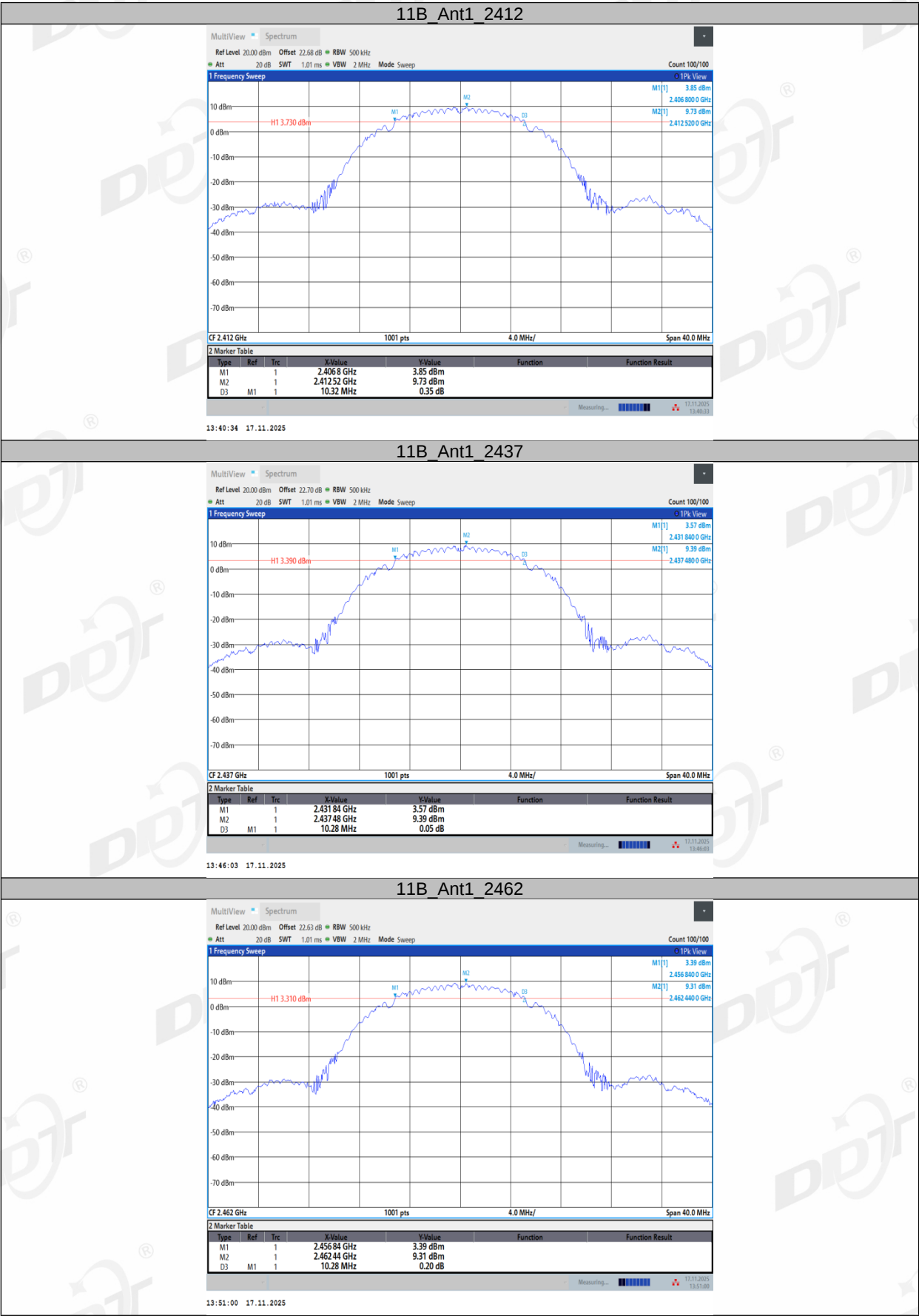
- (5) Allow the trace to stabilize, measure the 6 dB bandwidth of signal, and record the results in the report.

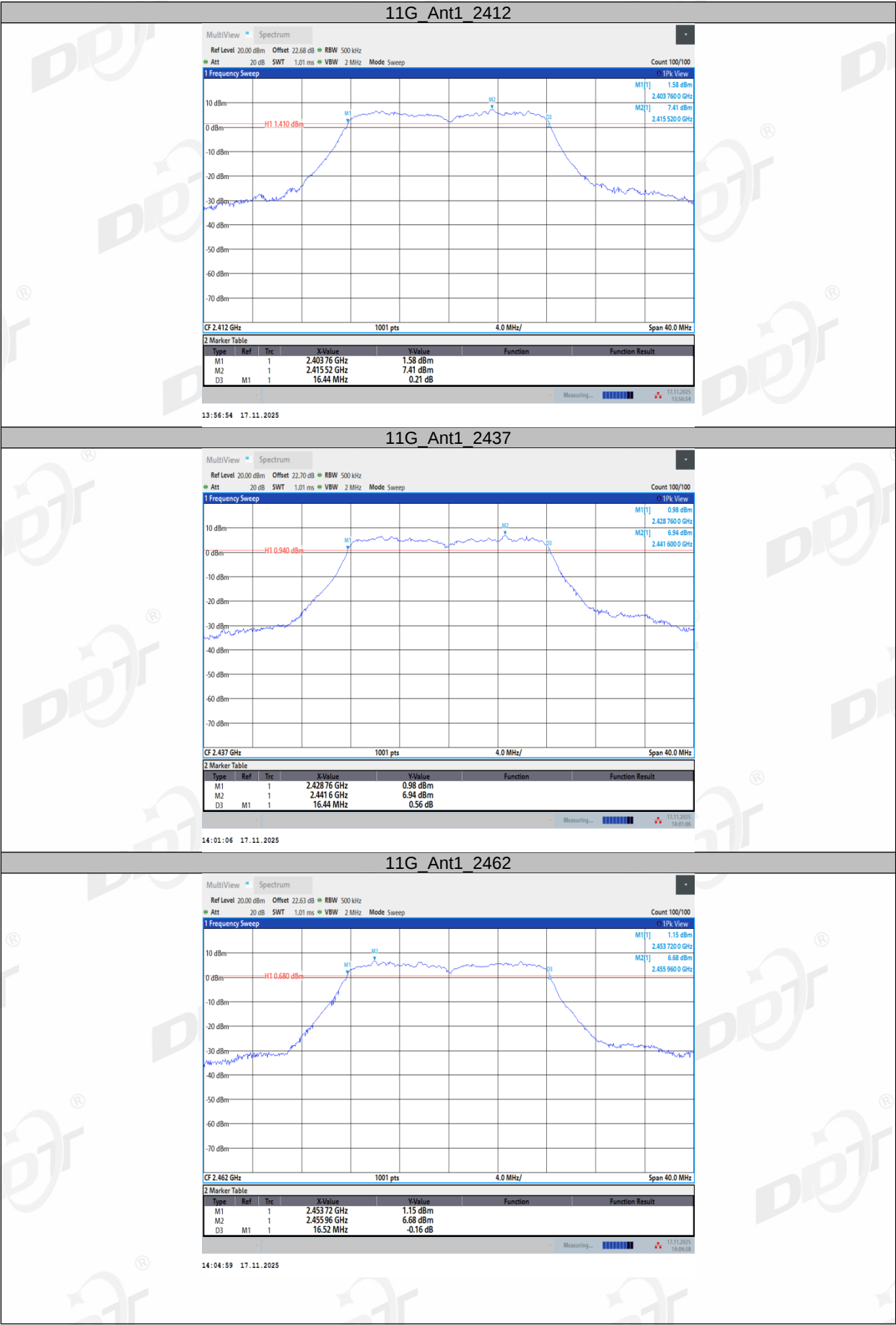
4.4. Test result

Test Engineer:	Lin Guoyuan	Test Site:	RF Measurement System 4#
Ambient Condition:	23.4-25.4℃,32.3-40.8%RH	Test Date:	2025.11.17-2025.11.19
Test Power Supply:	DC 12V	Sample Number:	S25101002-003

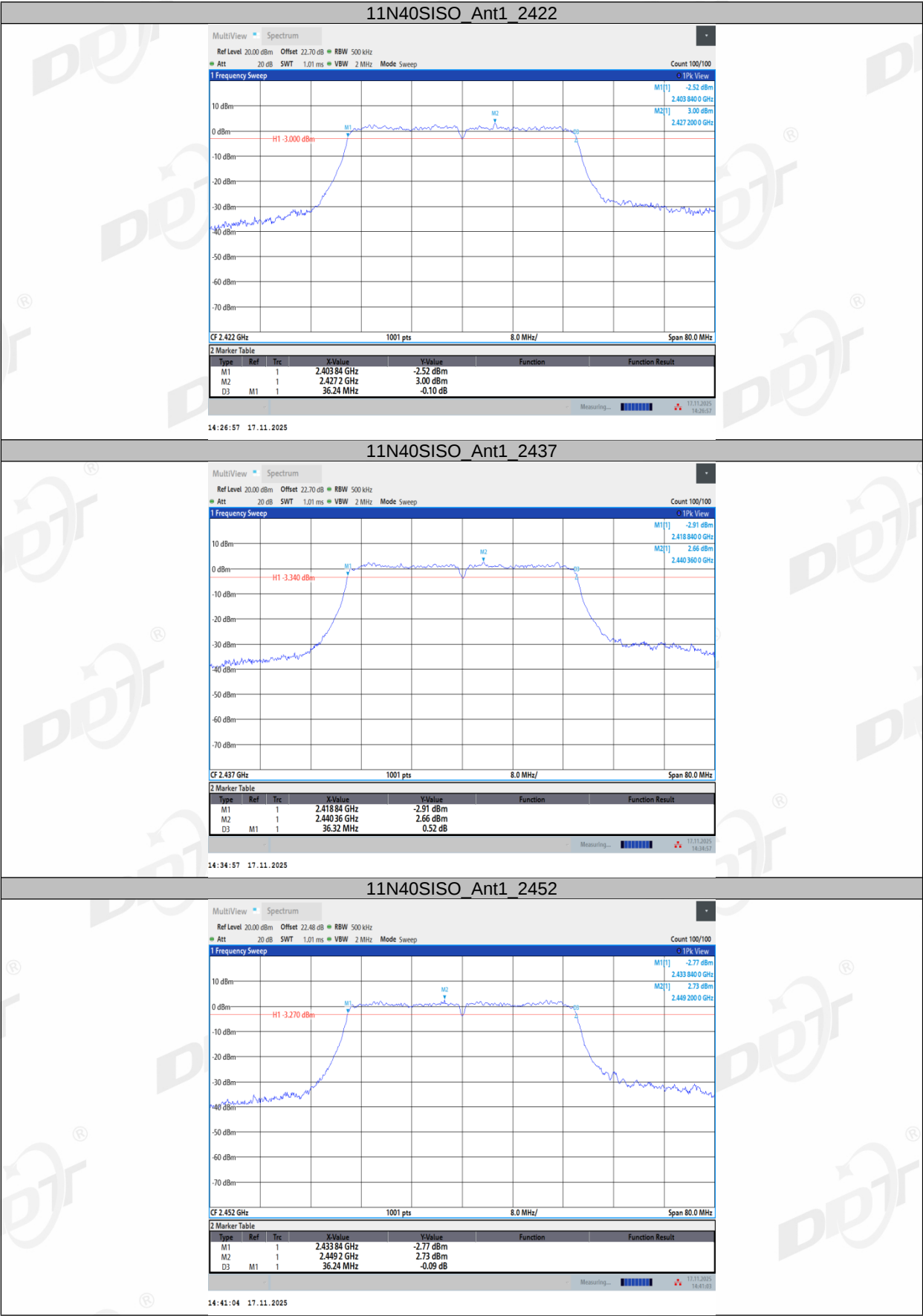
Test Mode	Antenna	Frequency [MHz]	DTS BW [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
11B	Ant1	2412	10.32	2406.80	2417.12	0.5	PASS
		2437	10.28	2431.84	2442.12	0.5	PASS
		2462	10.28	2456.84	2467.12	0.5	PASS
11G	Ant1	2412	16.44	2403.76	2420.20	0.5	PASS
		2437	16.44	2428.76	2445.20	0.5	PASS
		2462	16.52	2453.72	2470.24	0.5	PASS
11N20SISO	Ant1	2412	17.60	2403.16	2420.76	0.5	PASS
		2437	17.72	2428.12	2445.84	0.5	PASS
		2462	17.72	2453.12	2470.84	0.5	PASS
11N40SISO	Ant1	2422	36.24	2403.84	2440.08	0.5	PASS
		2437	36.32	2418.84	2455.16	0.5	PASS
		2452	36.24	2433.84	2470.08	0.5	PASS

4.5. Test graphs



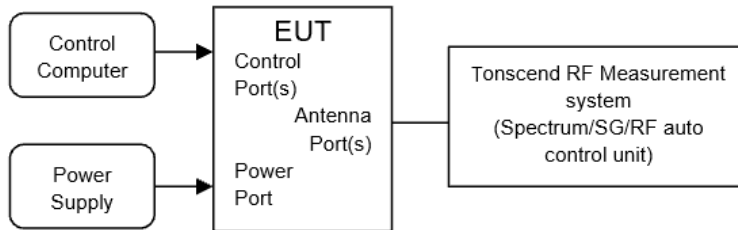






5. 99% Bandwidth

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 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

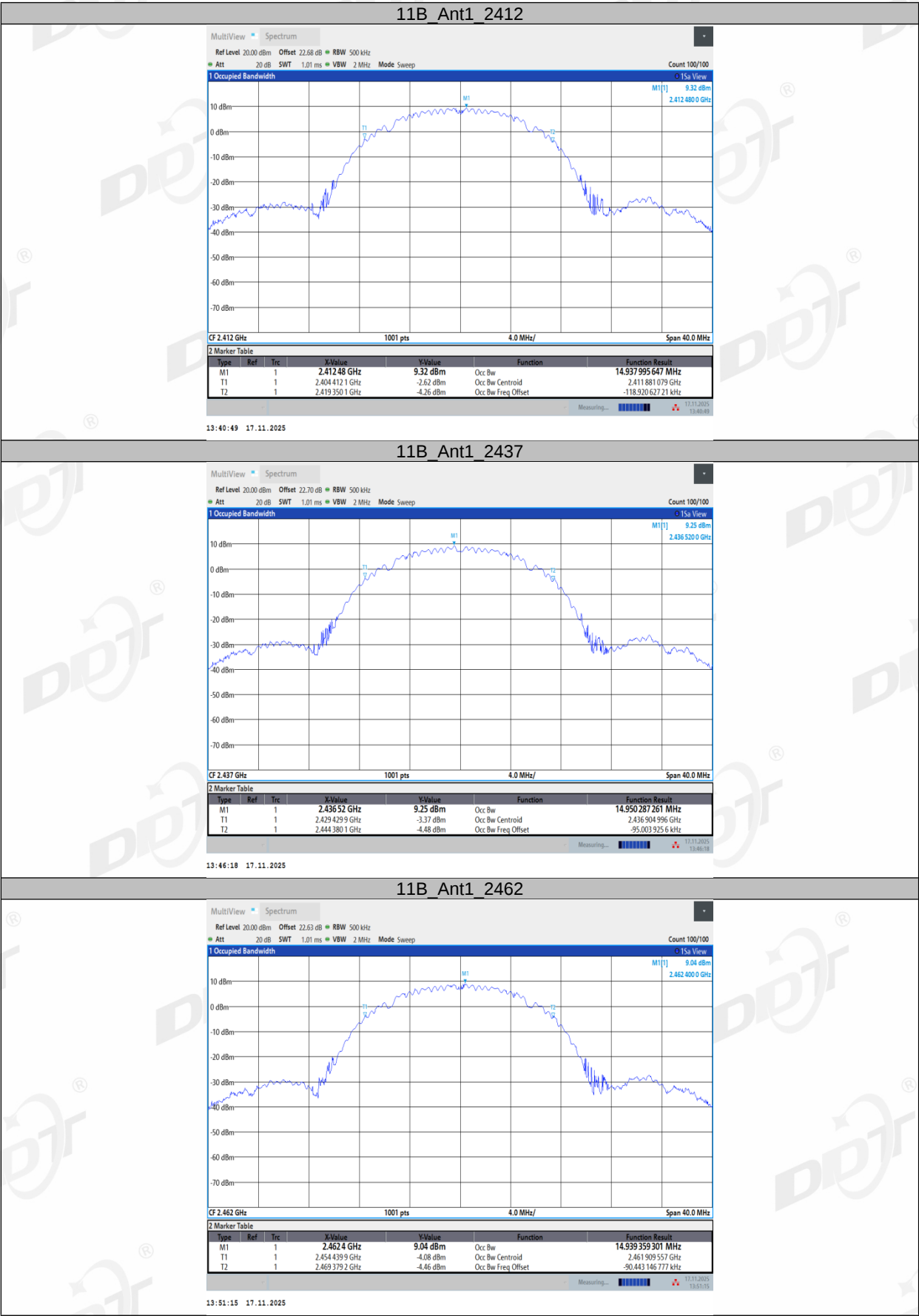
- (5) Allow the trace to stabilize, measure the 99% bandwidth of signal, and record the results in the report.

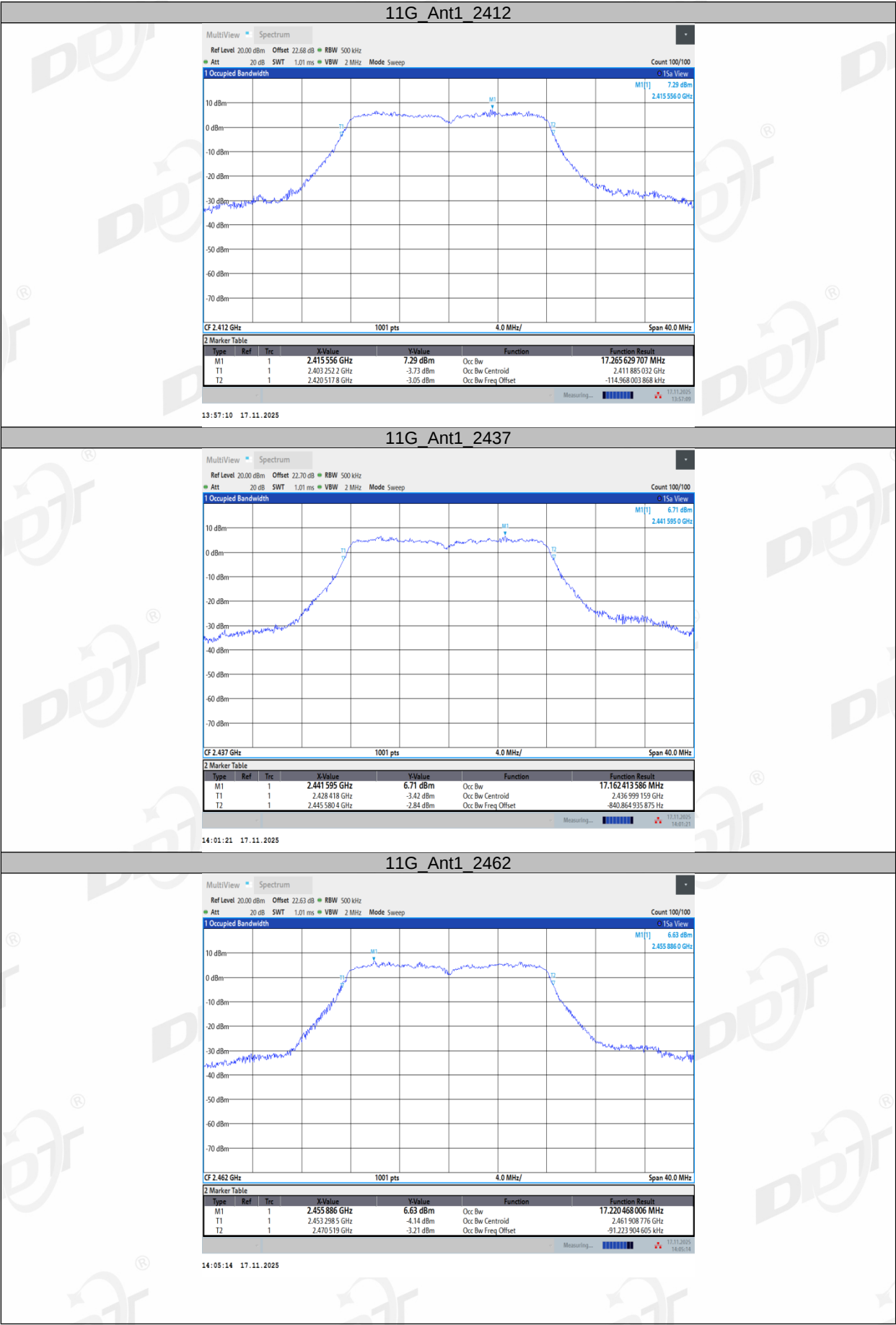
5.4. Test result

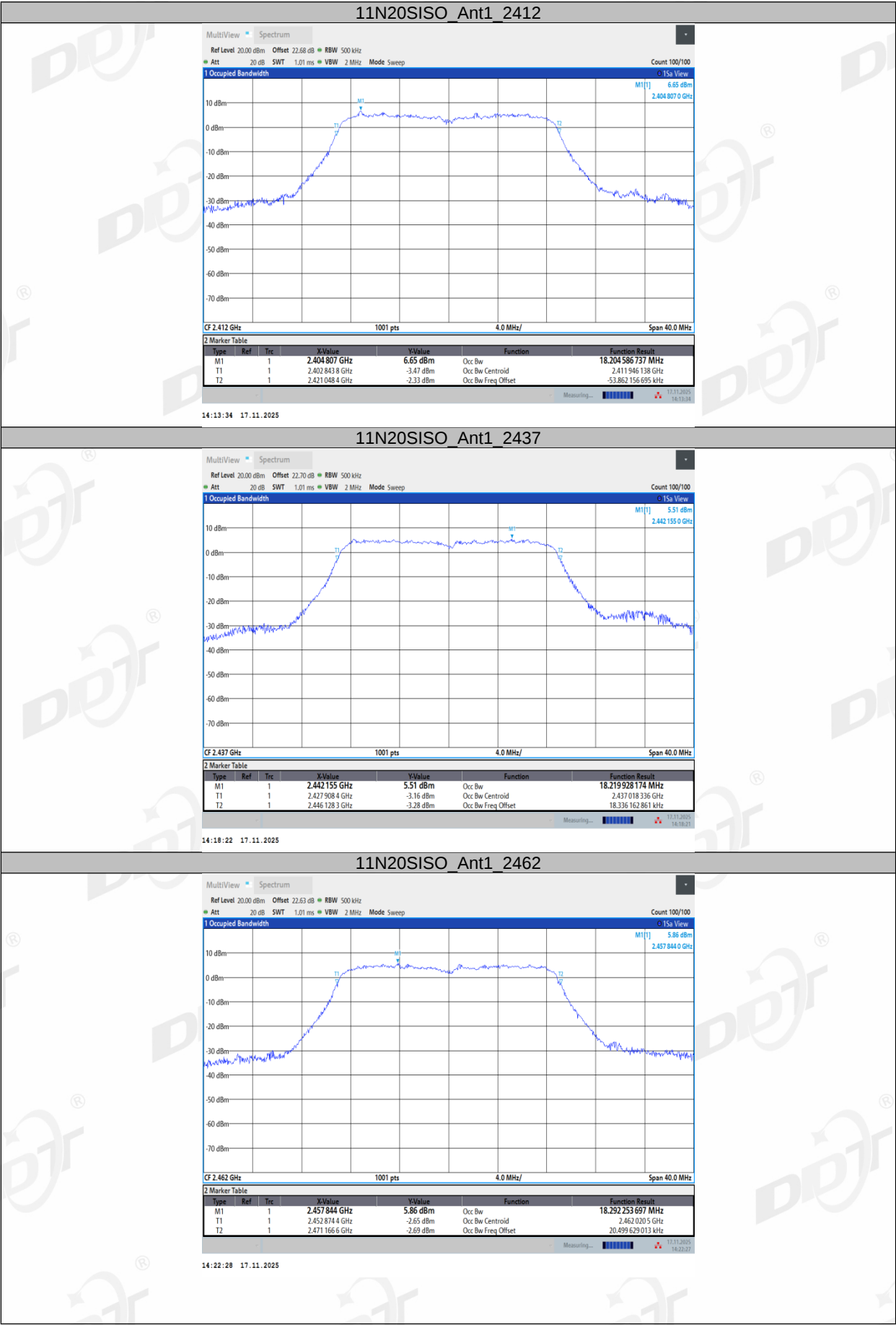
Test Engineer:	Lin Guoyuan	Test Site:	RF Measurement System 4#
Ambient Condition:	23.4-25.4℃,32.3-40.8%RH	Test Date:	2025.11.17-2025.11.19
Test Power Supply:	DC 12V	Sample Number:	S25101002-003

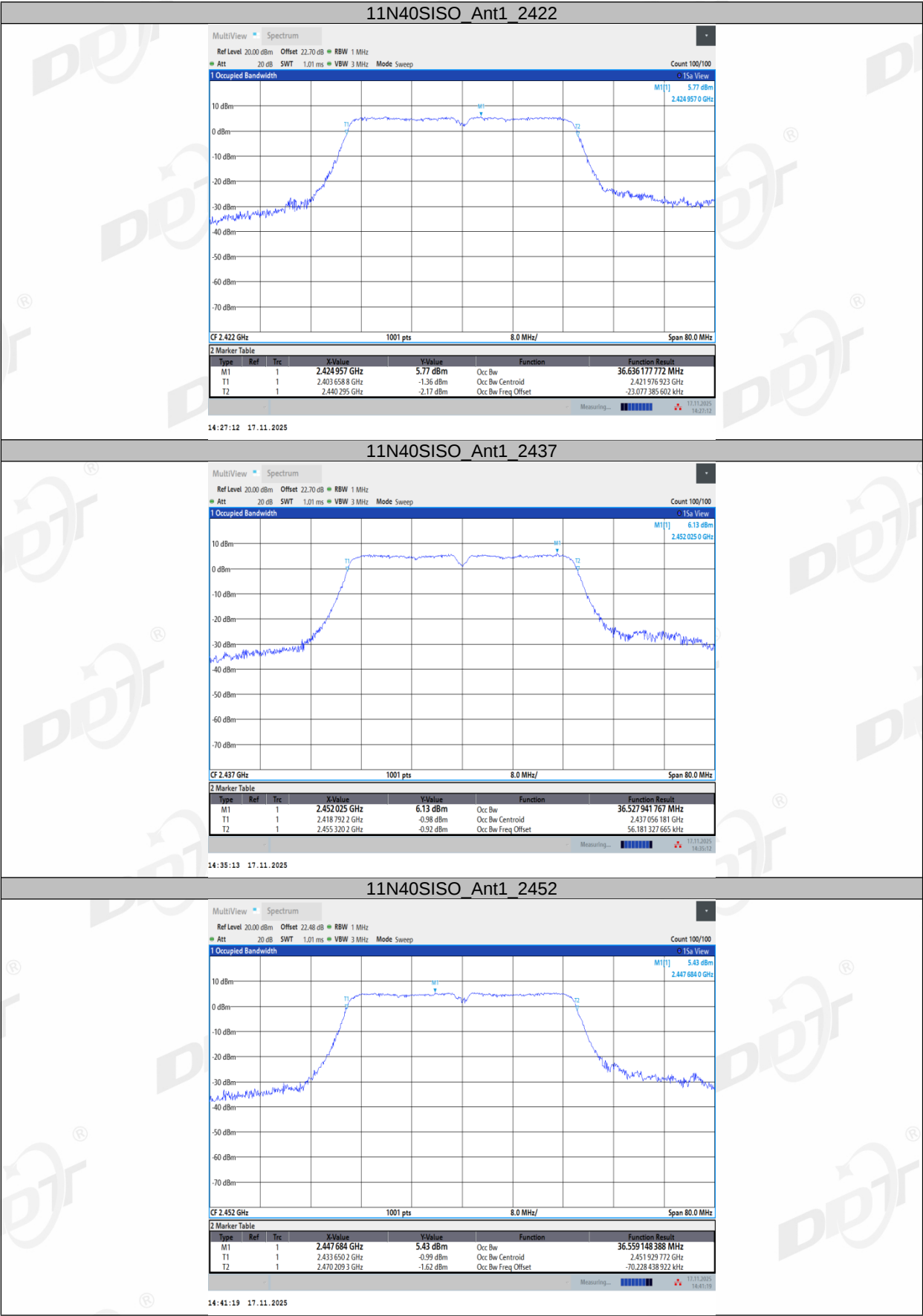
Test Mode	Antenna	Channel Frequency [MHz]	OCB [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
11B	Ant1	2412	14.938	2404.4121	2419.3501	---	---
		2437	14.950	2429.4299	2444.3801	---	---
		2462	14.939	2454.4399	2469.3792	---	---
11G	Ant1	2412	17.266	2403.2522	2420.5178	---	---
		2437	17.162	2428.4180	2445.5804	---	---
		2462	17.220	2453.2985	2470.5190	---	---
11N20SISO	Ant1	2412	18.205	2402.8438	2421.0484	---	---
		2437	18.220	2427.9084	2446.1283	---	---
		2462	18.292	2452.8744	2471.1666	---	---
11N40SISO	Ant1	2422	36.636	2403.6588	2440.2950	---	---
		2437	36.528	2418.7922	2455.3202	---	---
		2452	36.559	2433.6502	2470.2093	---	---

5.5. Test graphs



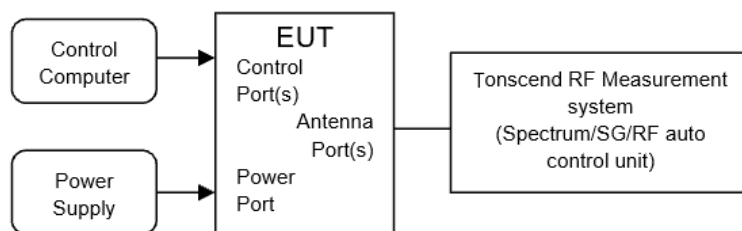






6. Conducted Output Power

6.1. Block diagram of test setup



6.2. Limits

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

6.3. Test procedure

- (1) The test according to ANSI C63.10 clause 11.9.2.3.
- (2) Connect EUT's antenna output to RF power meter 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, If the transmitter does not transmit continuously, measure the duty cycle, D, of the transmitter output signal.
- (4) Measure the average power of the transmitter. This measurement is an average over both the ON and OFF periods of the transmitter.
- (5) Adjust the measurement in dBm by adding $[10 \log (1 / D)]$, where D is the duty cycle.
- (6) Record the RF average power of each antenna port.

6.4. Test result average

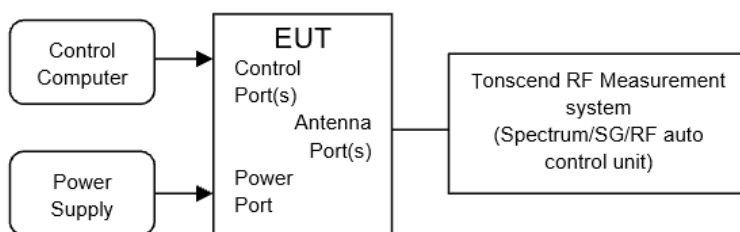
Test Engineer:	Lin Guoyuan	Test Site:	RF Measurement System 4#
Ambient Condition:	23.4-25.4℃,32.3-40.8%RH	Test Date:	2025.11.17-2025.11.19
Test Power Supply:	DC 12V	Sample Number:	S25101002-003

Test Mode	Antenna	Frequency [MHz]	Average power [dBm]	Duty Cycle [%]	DC Factor [dB]	Result [dBm]	Limit [dBm]	EIRP [dBm]	EIRP Limit [dBm]	Verdict
11B	Ant1	2412	17.90	99.36	0	17.90	≤29.58	24.32	≤35.58	PASS
		2437	17.48	99.52	0	17.48	≤29.58	23.90	≤35.58	PASS
		2462	17.17	100.00	0	17.17	≤29.58	23.59	≤35.58	PASS
11G	Ant1	2412	12.51	96.28	0.16	12.67	≤29.58	19.09	≤35.58	PASS
		2437	12.29	94.09	0.26	12.55	≤29.58	18.97	≤35.58	PASS
		2462	12.08	92.38	0.34	12.42	≤29.58	18.84	≤35.58	PASS
11N20SISO	Ant1	2412	12.46	92.34	0.35	12.81	≤29.58	19.23	≤35.58	PASS
		2437	12.17	93.66	0.28	12.45	≤29.58	18.87	≤35.58	PASS
		2462	11.92	94.58	0.24	12.16	≤29.58	18.58	≤35.58	PASS
11N40SISO	Ant1	2422	12.20	92.23	0.35	12.55	≤29.58	18.97	≤35.58	PASS
		2437	11.99	85.59	0.68	12.67	≤29.58	19.09	≤35.58	PASS
		2452	11.84	86.36	0.64	12.48	≤29.58	18.90	≤35.58	PASS

Note: EIRP (dBm)=Conducted Output Power (dBm)+ Antenna Gain (dBi)

7. Power Spectral Density

7.1. Block diagram of test setup



7.2. Limits

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

7.3. Test procedure

- (1) The test according to ANSI C63.10 clause 11.10.5.
- (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 Power Spectral Density measurement:

Center frequency:	DTS Channel center frequency
RBW:	$3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$
VBW:	$\geq 3\text{RBW}$
Span:	1.5 times the DTS bandwidth
Detector Mode:	RMS
Sweep time:	auto
Trace mode:	max hold
Trace:	Employ trace averaging (rms) mode over a minimum of 100 traces.

- (5) Add $[10 \log (1 / D)]$, where D is the duty cycle measured in step a), to the measured PSD to compute the average PSD during the actual transmission time.
- (6) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repe

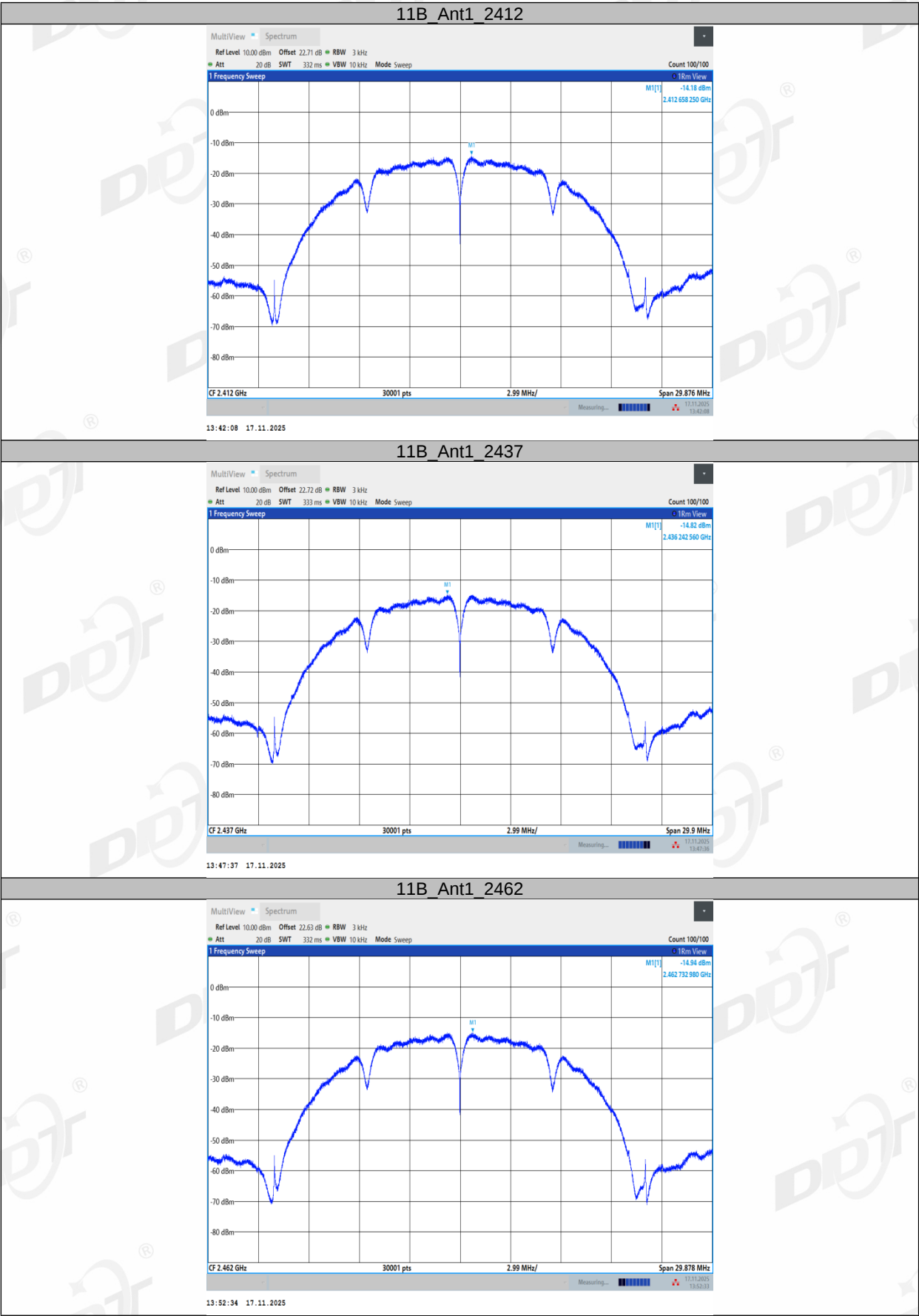
7.4. Test result

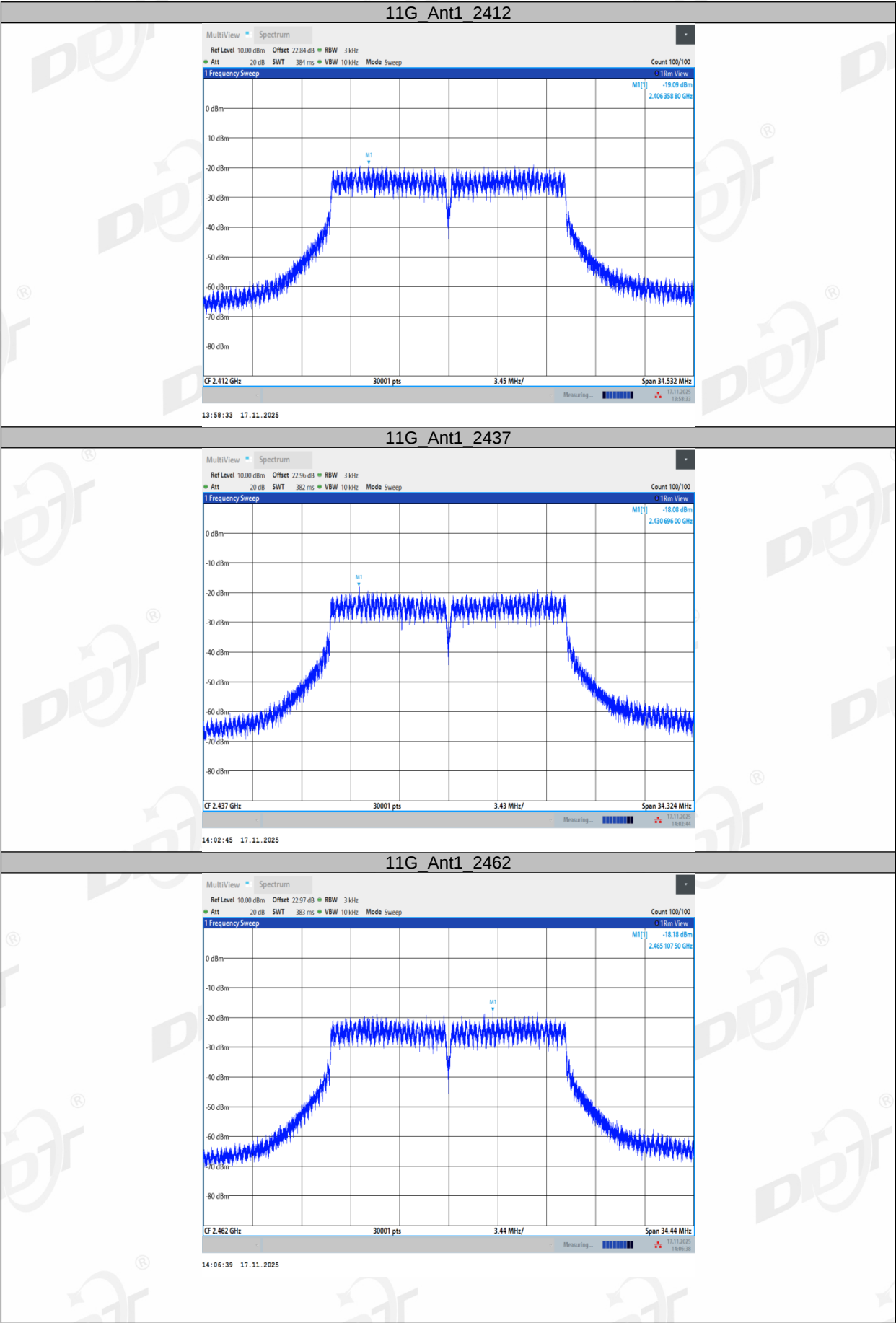
Test Engineer:	Lin Guoyuan	Test Site:	RF Measurement System 4#
Ambient Condition:	23.4-25.4℃,32.3-40.8%RH	Test Date:	2025.11.17-2025.11.19
Test Power Supply:	DC 12V	Sample Number:	S25101002-003

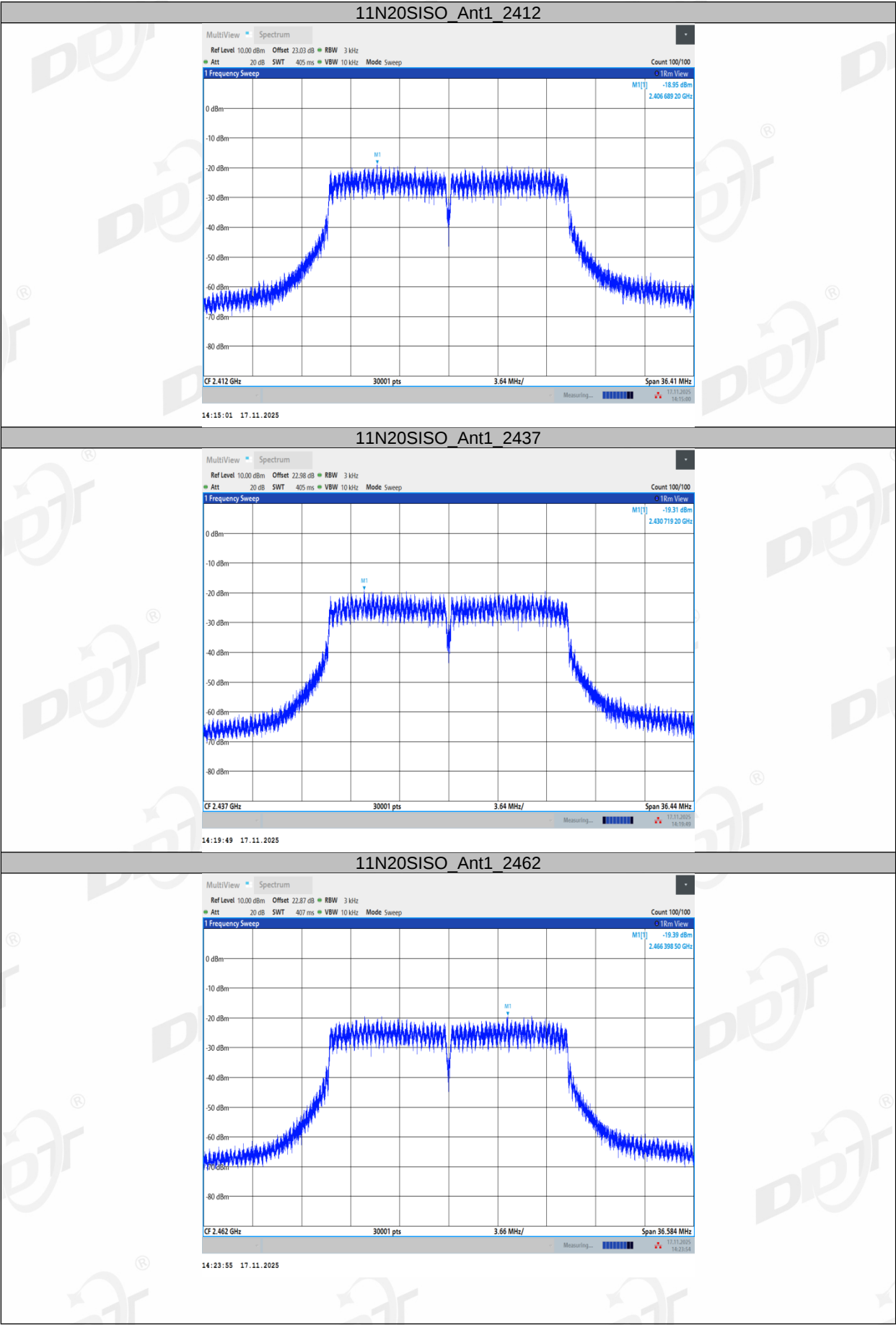
Test Mode	Antenna	Frequency [MHz]	Result [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
11B	Ant1	2412	-14.18	≤7.58	PASS
		2437	-14.82	≤7.58	PASS
		2462	-14.94	≤7.58	PASS
11G	Ant1	2412	-19.09	≤7.58	PASS
		2437	-18.08	≤7.58	PASS
		2462	-18.18	≤7.58	PASS
11N20SISO	Ant1	2412	-18.95	≤7.58	PASS
		2437	-19.31	≤7.58	PASS
		2462	-19.39	≤7.58	PASS
11N40SISO	Ant1	2422	-21.12	≤7.58	PASS
		2437	-21.17	≤7.58	PASS
		2452	-22.13	≤7.58	PASS

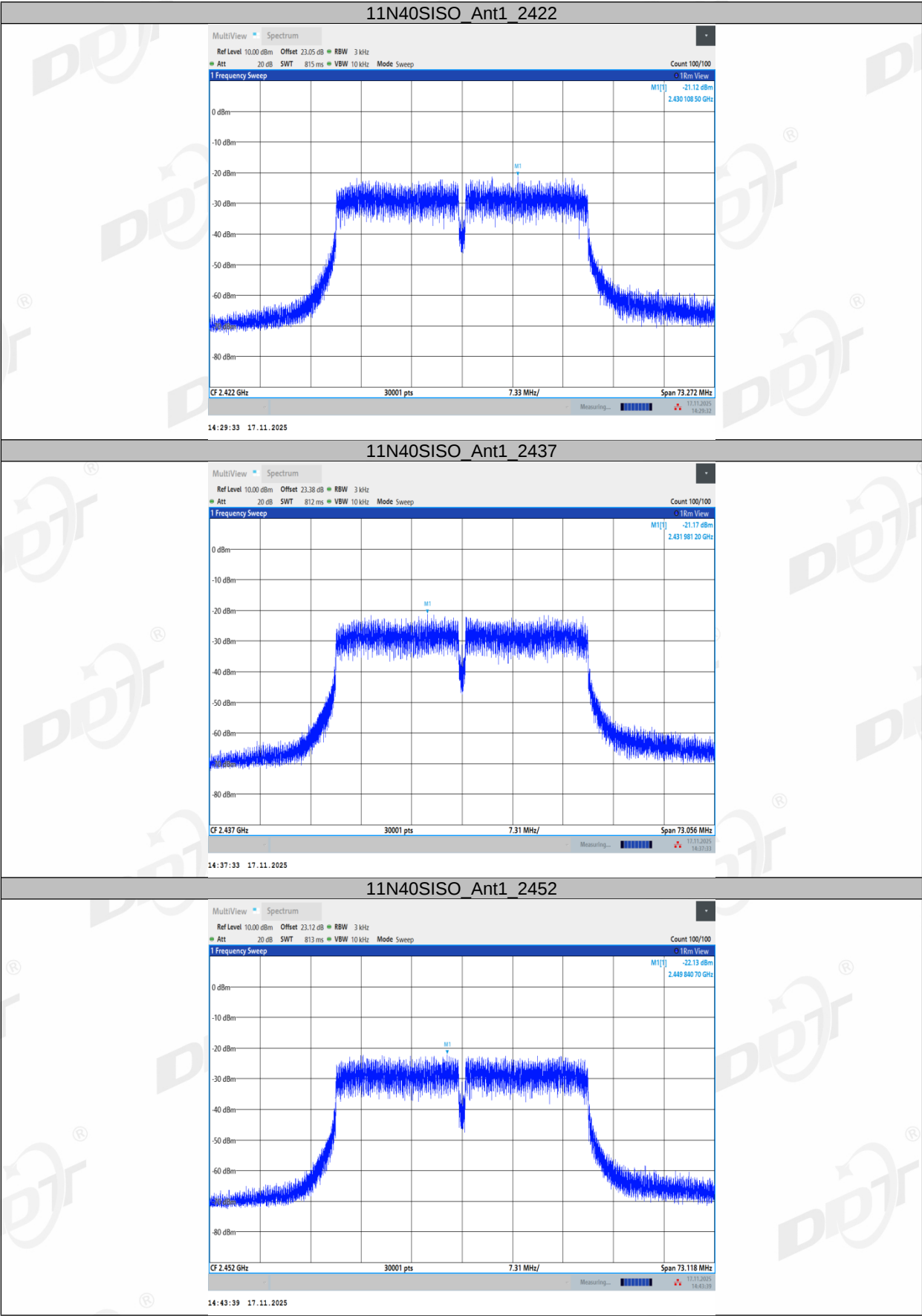
Note: The Duty Cycle Factor is compensated in the graph.

7.5. Test graphs



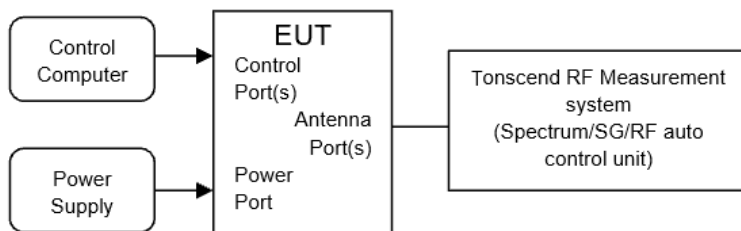






8. Band Edge Compliance (Conducted Method)

8.1. Block diagram of test setup



8.2. 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 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

8.3. 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.

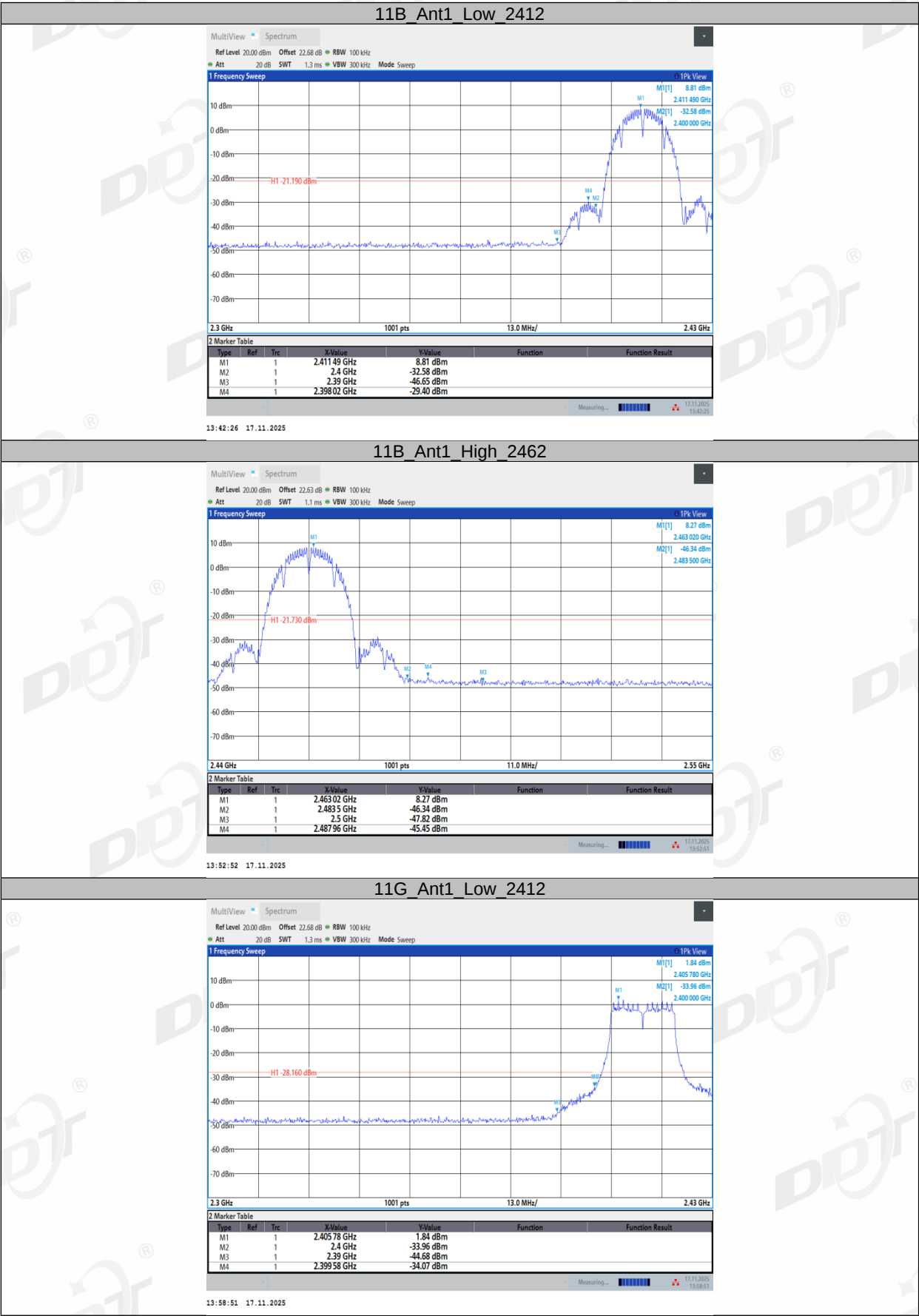
(4) Then mark the maximum amplitude of all unwanted emissions outside of the authorized frequency band.

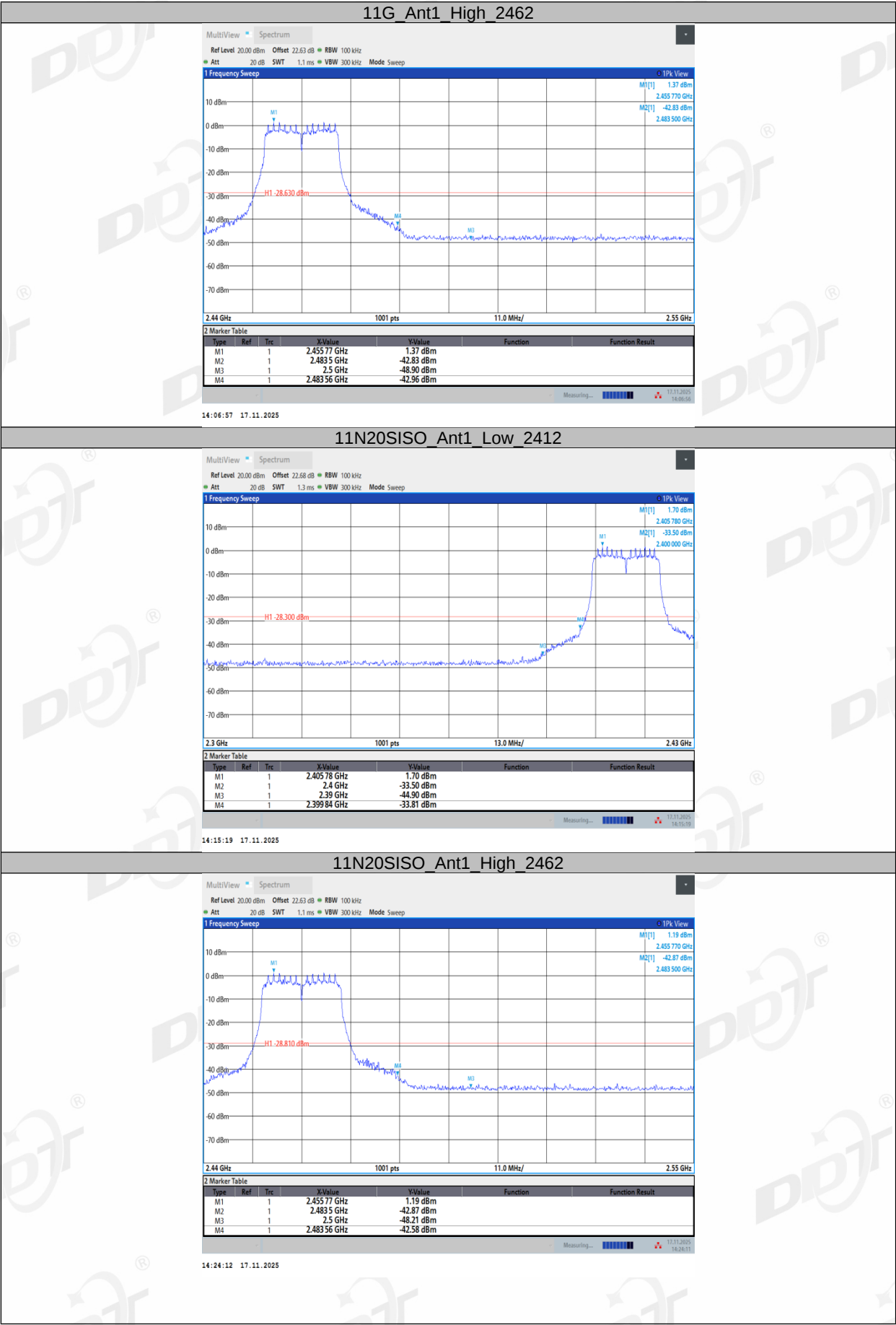
8.4. Test result

Test Engineer:	Lin Guoyuan	Test Site:	RF Measurement System 4#
Ambient Condition:	23.4-25.4℃,32.3-40.8%RH	Test Date:	2025.11.17-2025.11.19
Test Power Supply:	DC 12V	Sample Number:	S25101002-003

EUT Set Mode	CH or Frequency	Result (dBm)	EUT Set Mode	CH or Frequency	Result (dBm)
11b	CH1	Pass	11g	CH1	Pass
	CH11	Pass		CH11	Pass
11n HT 20	CH1	Pass	11n HT 40	CH3	Pass
	CH11	Pass		CH9	Pass

8.5. Test graphs

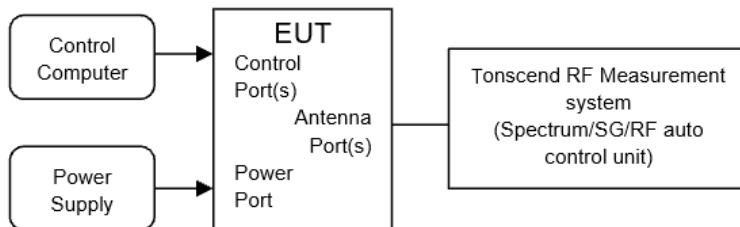






9. RF Conducted Spurious Emissions

9.1. Block diagram of test setup



9.2. 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 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

9.3. 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
- (5) 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

9.4. Test result

Test Engineer:	Lin Guoyuan	Test Site:	RF Measurement System 4#
Ambient Condition:	23.4-25.4℃, 32.3-40.8%RH	Test Date:	2025.11.17-2025.11.19
Test Power Supply:	DC 12V	Sample Number:	S25101002-003

EUT Set Mode	CH or Frequency	Result (dBm)	EUT Set Mode	CH or Frequency	Result (dBm)
11b	CH1	Pass	11g	CH1	Pass
	CH11	Pass		CH11	Pass
11n HT 20	CH1	Pass	11n HT 40	CH3	Pass
	CH11	Pass		CH9	Pass

9.5. Test graphs

