



FCC CERTIFICATION TEST REPORT

Applicant	:	BYD Auto Industry Company Limited
Address of Applicant	:	No.3001, 3007, HengPing Road, Pingshan, Shenzhen, Guangdong, P.R. China
Manufacturer	:	BYD Auto Industry Company Limited
Address of Manufacturer	:	No.3001, 3007, HengPing Road, Pingshan, Shenzhen, Guangdong, P.R. China
Equipment under Test	:	In-vehicle Multimedia Host
Model No.	:	MTCD03
FCC ID	:	SD4-MTCD03
Test Standard(s)	:	FCC Rules and Regulations Part 15 Subpart C, ANSI C63.10:2020
Report No.	:	DDT-RE24101411-1E09
Issue Date	:	2025/01/13
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	:	BYD Auto Industry Company Limited
Address of Applicant	:	No.3001, 3007, HengPing Road, Pingshan, Shenzhen, Guangdong, P.R. China
Equipment under Test	:	In-vehicle Multimedia Host
Model No.	:	MTCD03
Manufacturer	:	BYD Auto Industry Company Limited
Address of Manufacturer	:	No.3001, 3007, HengPing Road, Pingshan, Shenzhen, Guangdong, P.R. China

Test Standard Used:

FCC Rules and Regulations Part 15 Subpart C,

ANSI C63.10:2020

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-RE24101411-1E09		
Date of Receipt:	2024/10/23	Date of Test:	2024/10/23~2024/11/13

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	2025/01/13	

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)	/	Pass
2	Peak Output Power	FCC Part 15: 15.247(b)(3)	/	Pass
3	Power Spectral Density	FCC Part 15:15.247(e)	/	Pass
4	RF Conducted Spurious Emissions	FCC Part 15: 15.247(d)	/	Pass
5	Radiated Emission	FCC Part 15: 15.205, FCC Part 15: 15.209, FCC Part 15: 15.247(d)	/	Pass
6	Band Edge Compliance	FCC Part 15: 15.205, FCC Part 15: 15.209, FCC Part 15: 15.247(d)	/	Pass
7	Power Line Conducted Emissions	FCC Part 15: 15.207(a)	/	N/A
8	Antenna Requirement	FCC Part 15: 15.203	/	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	: In-vehicle Multimedia Host
Model Number	: MTCD03
EUT Function Description	: Please reference user manual of this device
Power Supply	: DC 12V
Radio Technology	: IEEE 802.11 b/g/n
Operation frequency	: IEEE 802.11b: 2412MHz-2462MHz : IEEE 802.11g: 2412MHz-2462MHz : IEEE 802.11n HT20: 2412MHz-2462MHz
Modulation	: IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) : IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) : IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Antenna information	
Antenna Type	: External PCB Antenna
Max Antenna Gain (dBi)	: 0.94

Note: This EUT support Bluetooth BR/EDR/LE, 2.4G WIFI, 5G WIFI, GSM, WCDMA and LTE, this report only for 2.4G WIFI.

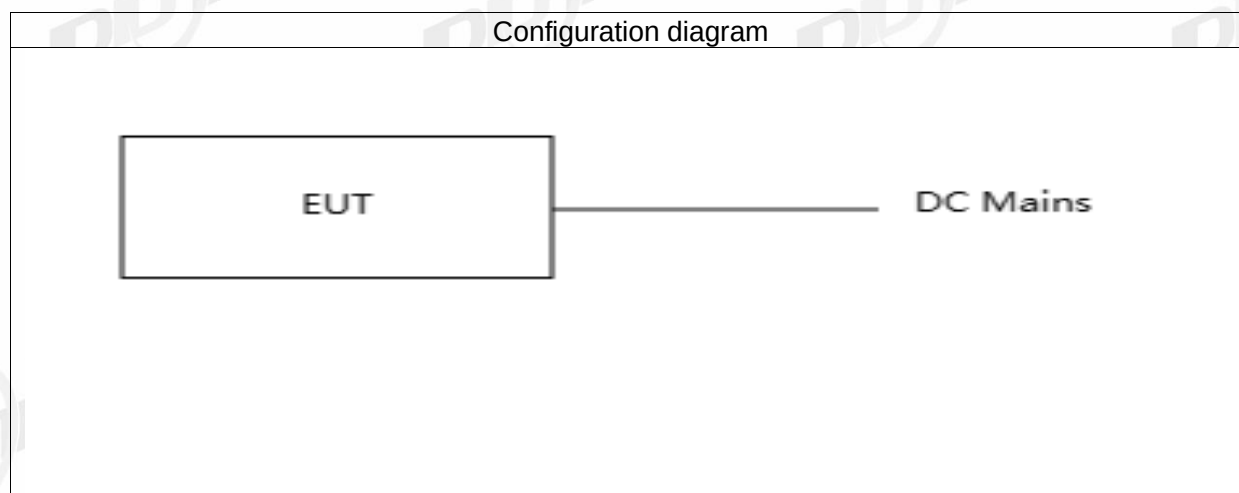
Channel information					
CH	Frequency (MHz)	CH	Frequency (MHz)	CH	Frequency (MHz)
1	2412	5	2432	9	2452
2	2417	6	2437	10	2457
3	2422	7	2442	11	2462
4	2427	8	2447	/	/

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
Power connecting cable	N/A	N/A	length: 2.5m, unshielded
MIC cable	N/A	N/A	length: 2.2m, unshielded
Power amplifier cable	N/A	N/A	length: 2.0m, unshielded
Camera/recorder cable	N/A	N/A	length: 2.0m, shielded
SIM cable	N/A	N/A	length: 0.8m, shielded
Bluetooth/WIFI antenna	N/A	N/A	length: 2.0m, shielded
FM/AM/DAB antenna	N/A	N/A	length: 4.2m, shielded
GNSS antenna	N/A	N/A	length: 2.2m, shielded

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: QRCT.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			
IEEE 802.11b	10	1	LCH: CH1	2412
	10	1	MCH: CH6	2437
	10	1	HCH: CH11	2462
IEEE 802.11g	10	6	LCH: CH1	2412
	10	6	MCH: CH6	2437
	10	6	HCH: CH11	2462
IEEE 802.11n HT20	10	MCS 0	LCH: CH1	2412
	10	MCS 0	MCH: CH6	2437
	10	MCS 0	HCH: CH11	2462
IEEE 802.11n HT40	10	MCS 0	LCH: CH3	2422
	10	MCS 0	MCH: CH6	2437
	10	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°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-20155, G-20118

2.8. Measurement uncertainty

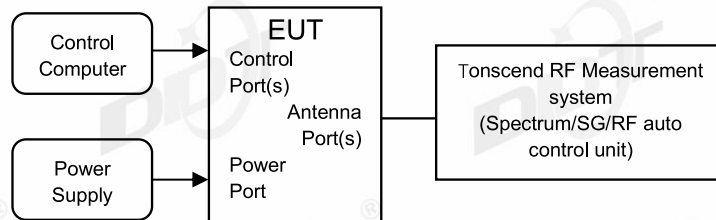
Test Item	Uncertainty
Bandwidth	1.1%
Peak Output Power (Conducted) (Spectrum analyzer)	0.86 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$);
	1.38 dB ($3.6 \text{ GHz} \leq f < 8 \text{ GHz}$)
Peak Output Power (Conducted) (Power Sensor)	0.74 dB
Power Spectral Density	0.74 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$);
	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 4#)					
Signal & Spectrum Analyzer	R&S	FSV3044	101173	2025/03/31	1 Year
Wideband Radio Communication Tester	R&S	CMW500	168801	2025/03/31	1 Year
MXG Vector Signal Generator	Agilent	N5182A	MY48180737	2025/03/31	1 Year
PSG Vector Signal Generator	Agilent	E8267D	US49060192	2025/08/25	1 Year
RF Control Unit	Tonsend	JS0806-2	2118060485	2025/03/31	1 Year
TEMP&HUMI Programmable Chamber	ZHIXIANG	ZXGDJS-150L	ZX170110-A	2025/04/22	1 Year
Test Software	Tonscend	JS1120-3	Ver.3.2.22	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 C63.10-2020 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

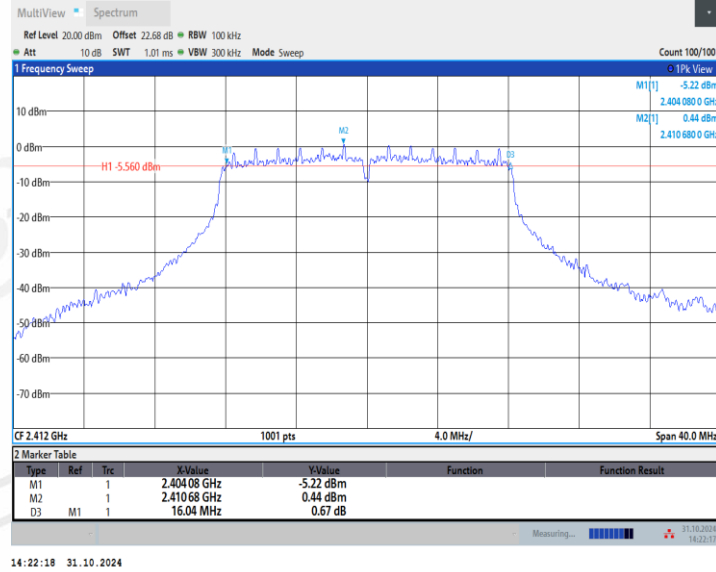
Test Engineer:	Zoe	Test Site:	RF Measurement System 4#
Ambient Condition:	23.6℃, 48.4%RH	Test Date:	2024.10.23-2024.10.31
Test Power Supply:	DC 12V	Sample Number:	S24101411-001

Test Mode	Antenna	Frequency [MHz]	DTS BW [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
11B	Ant1	2412	8.08	2407.92	2416.00	0.5	PASS
		2437	8.04	2432.96	2441.00	0.5	PASS
		2462	8.08	2457.92	2466.00	0.5	PASS
11G	Ant1	2412	16.04	2404.08	2420.12	0.5	PASS
		2437	16.08	2429.08	2445.16	0.5	PASS
		2462	16.36	2453.80	2470.16	0.5	PASS
11N20SISO	Ant1	2412	16.96	2403.56	2420.52	0.5	PASS
		2437	17.20	2428.56	2445.76	0.5	PASS
		2462	17.32	2453.44	2470.76	0.5	PASS
11N40SISO	Ant1	2422	35.76	2404.48	2440.24	0.5	PASS
		2437	35.12	2419.48	2454.60	0.5	PASS
		2452	36.32	2433.84	2470.16	0.5	PASS

4.5. Test graphs

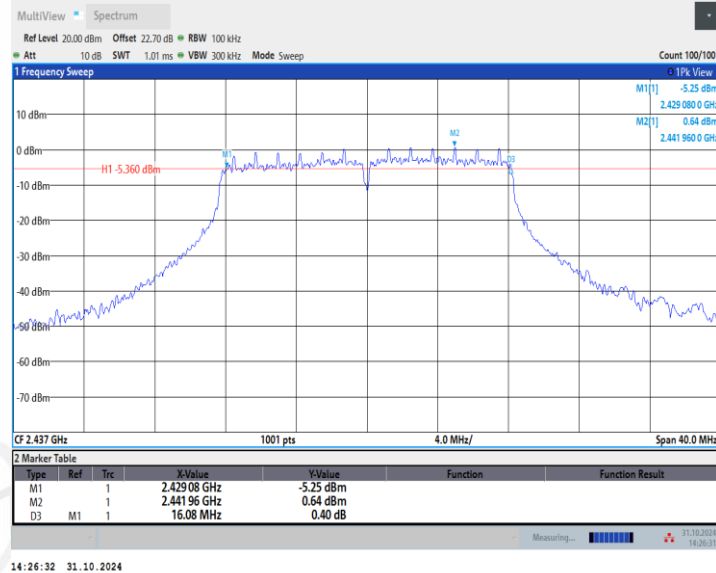


11G_Ant1_2412



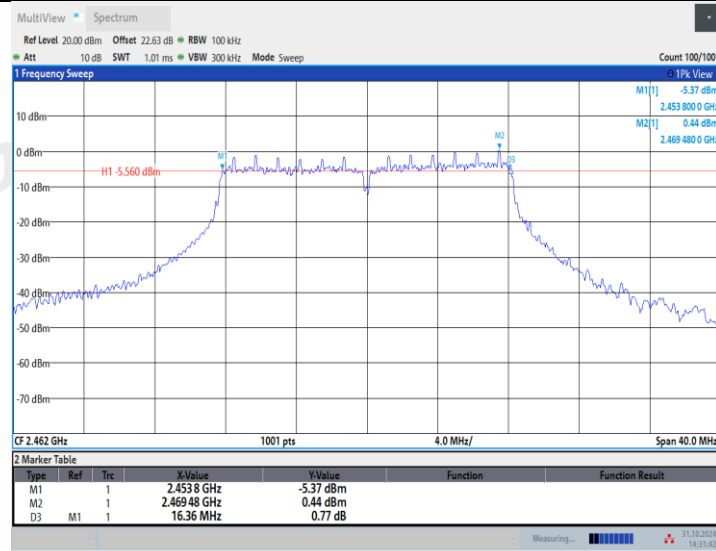
14:22:18 31.10.2024

11G_Ant1_2437



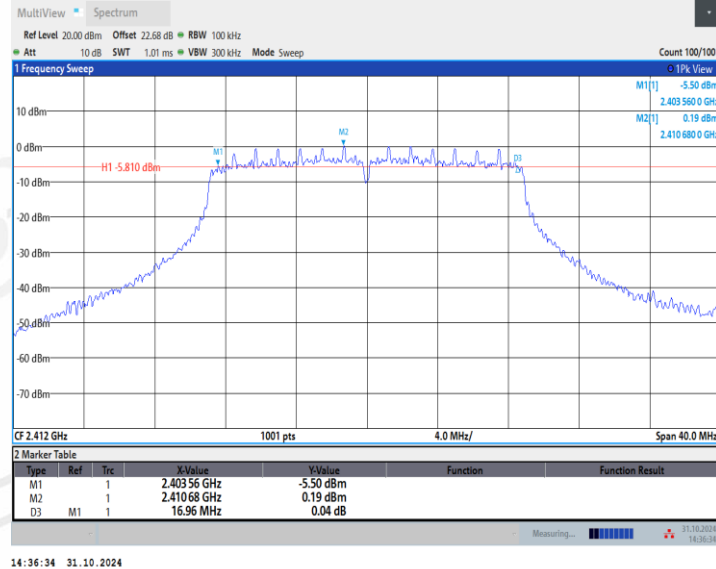
14:26:32 31.10.2024

11G_Ant1_2462



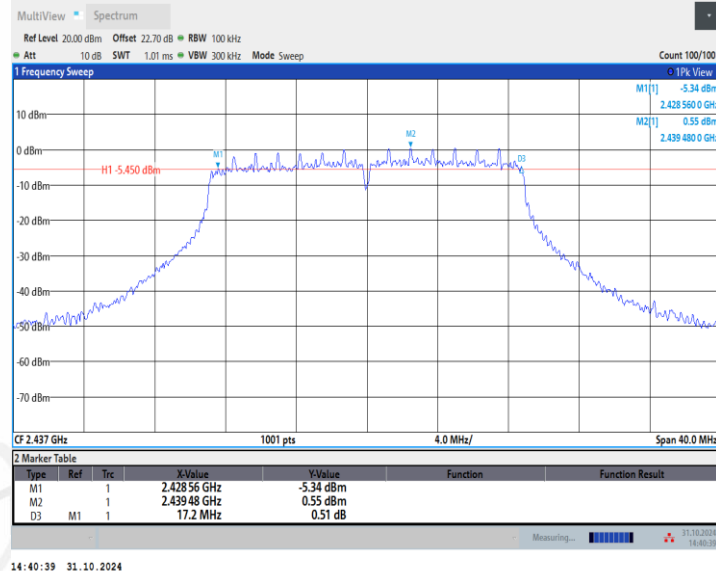
14:31:43 31.10.2024

11N20SISO_Ant1_2412



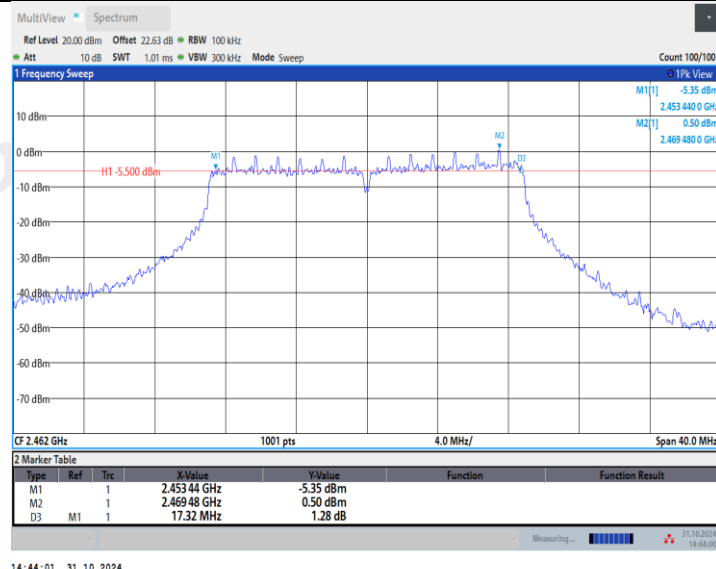
14:36:34 31.10.2024

11N20SISO_Ant1_2437

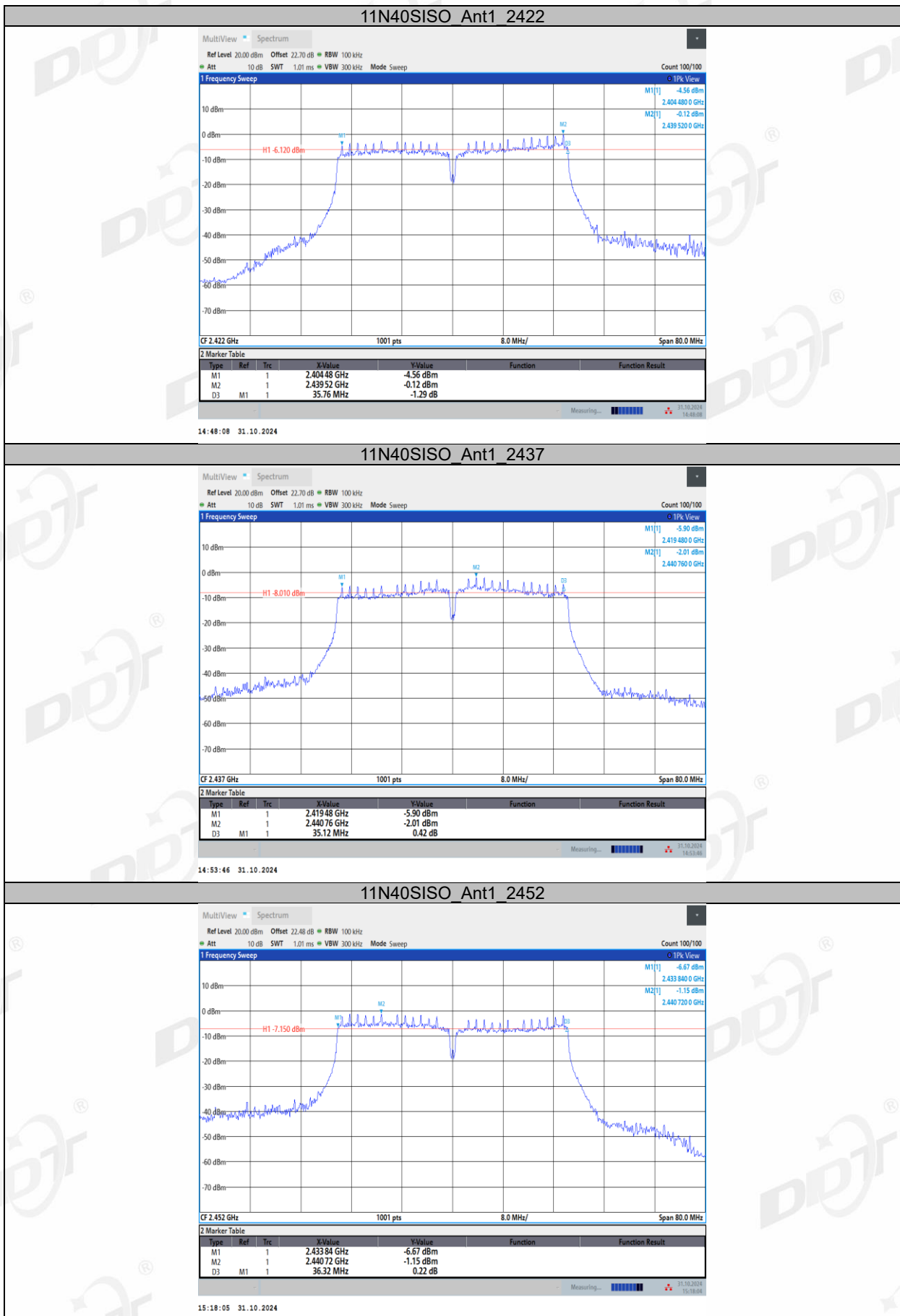


14:40:39 31.10.2024

11N20SISO_Ant1_2462

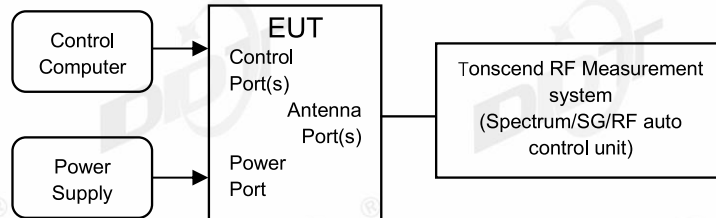


14:44:01 31.10.2024



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 C63.10-2020 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:

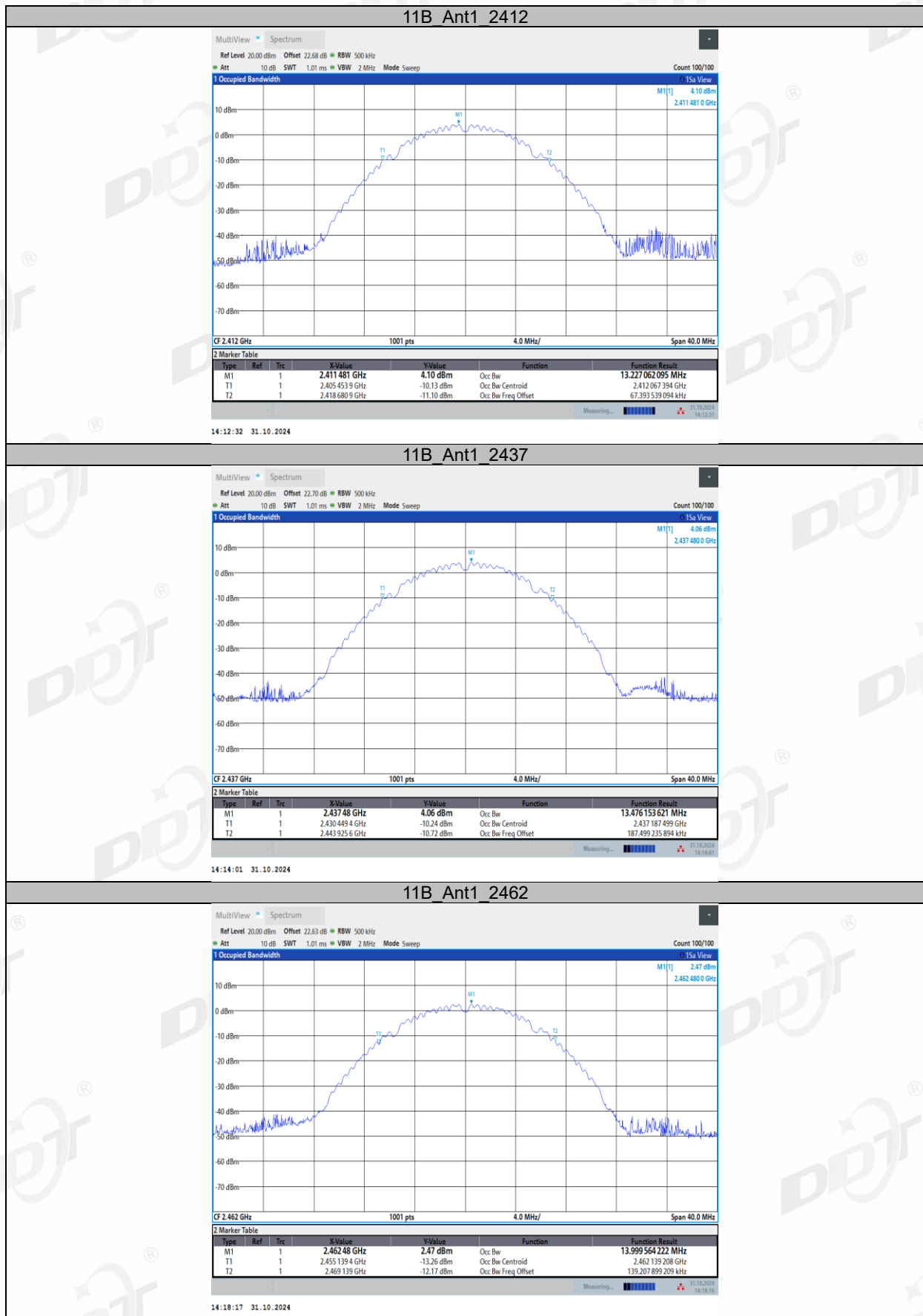
RBW:	1% to 5% of the OBW
VBW:	approximately three times RBW
Span:	between 1.5 times and 5.0 times the OBW
Detector Mode:	peak
Sweep time:	auto
Trace mode	max hold
- (5) Allow the trace to stabilize, measure the 99% bandwidth of signal, and record the results in the report.

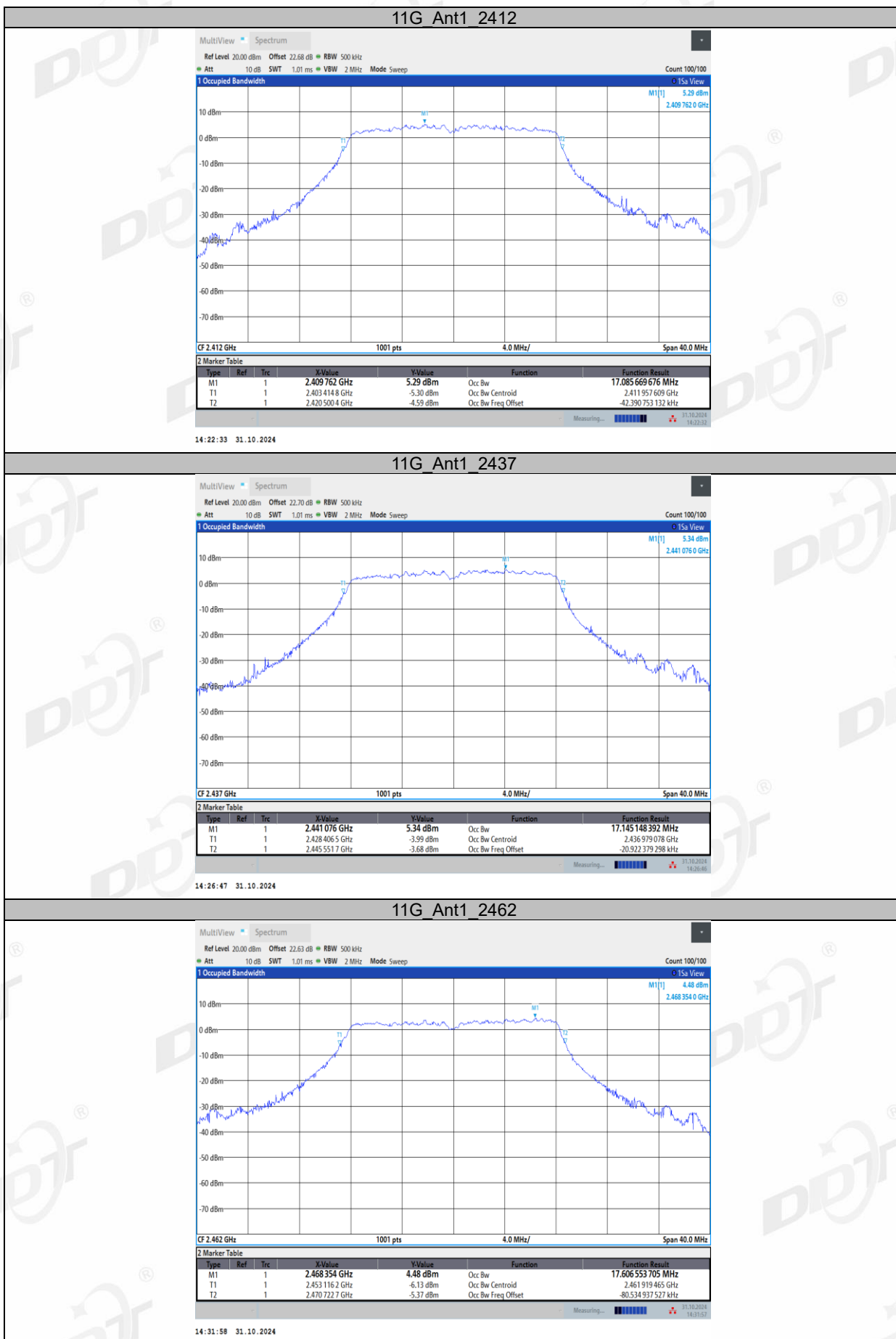
5.4. Test result

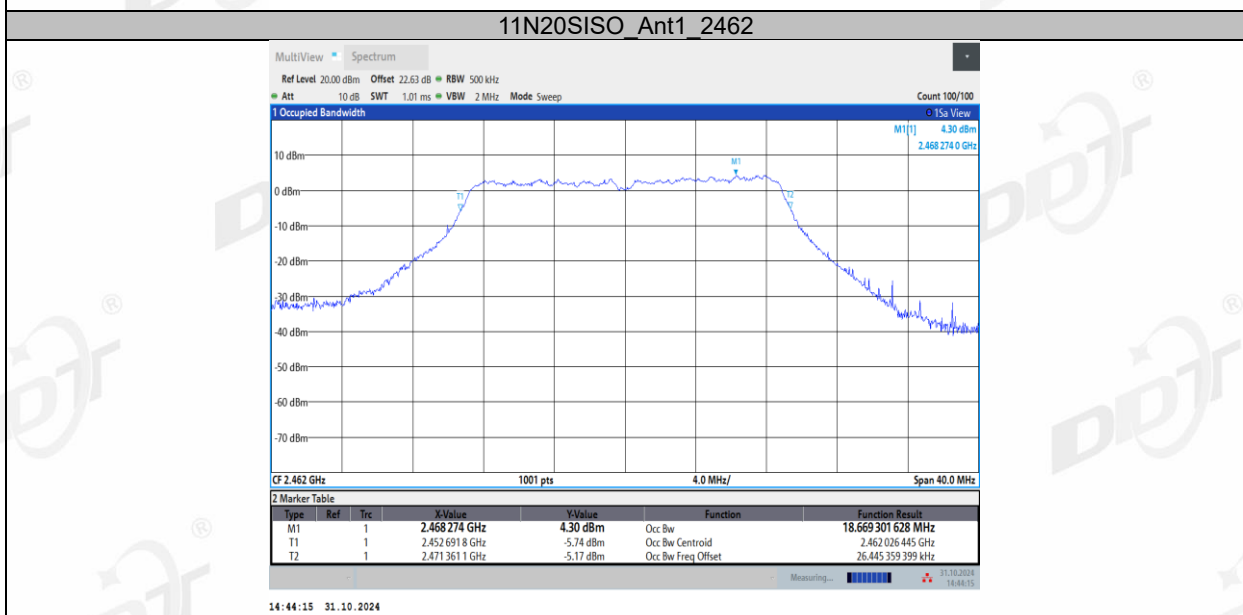
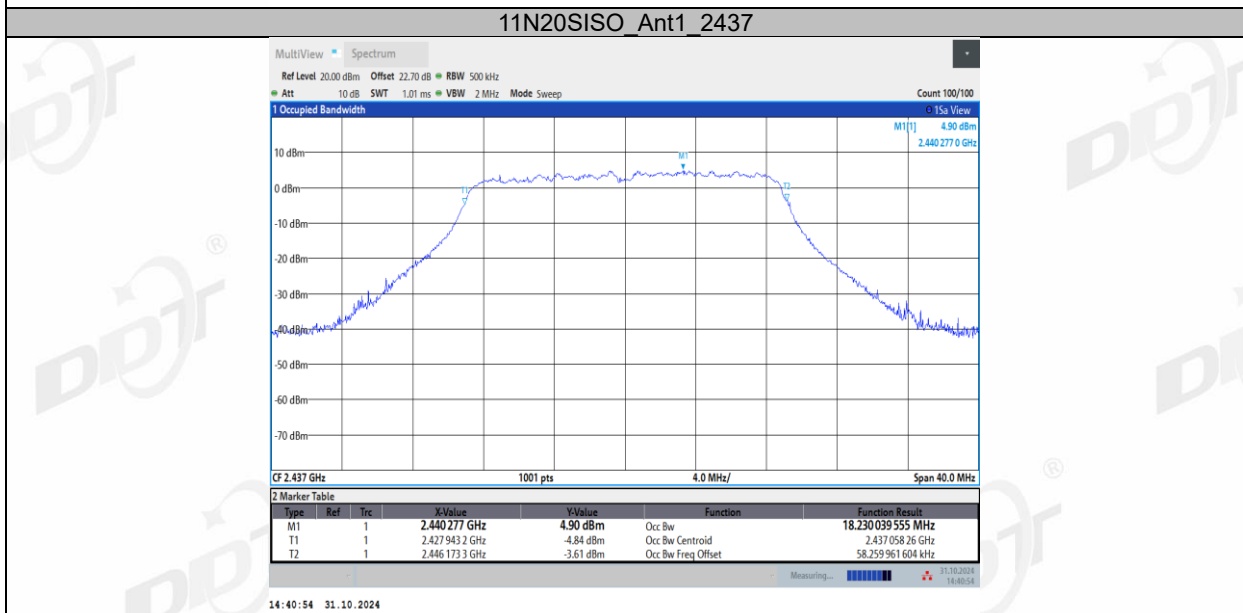
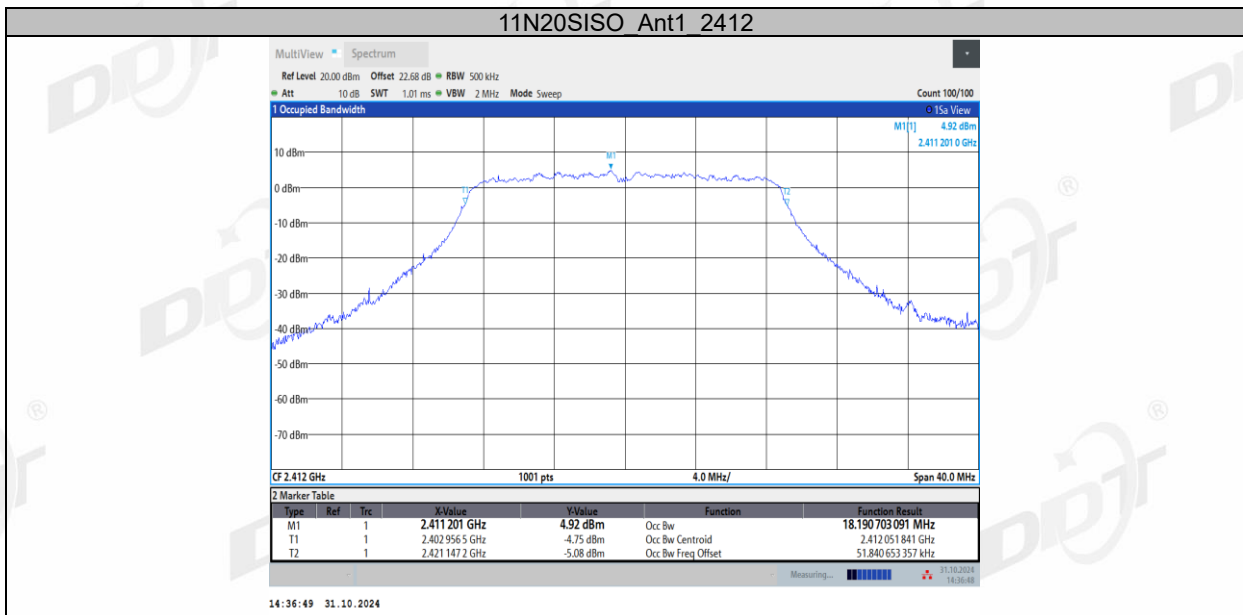
Test Engineer:	Zoe	Test Site:	RF Measurement System 4#
Ambient Condition:	23.6℃, 48.4%RH	Test Date:	2024.10.23-2024.10.23
Test Power Supply:	DC 12V	Sample Number:	S24101411-001

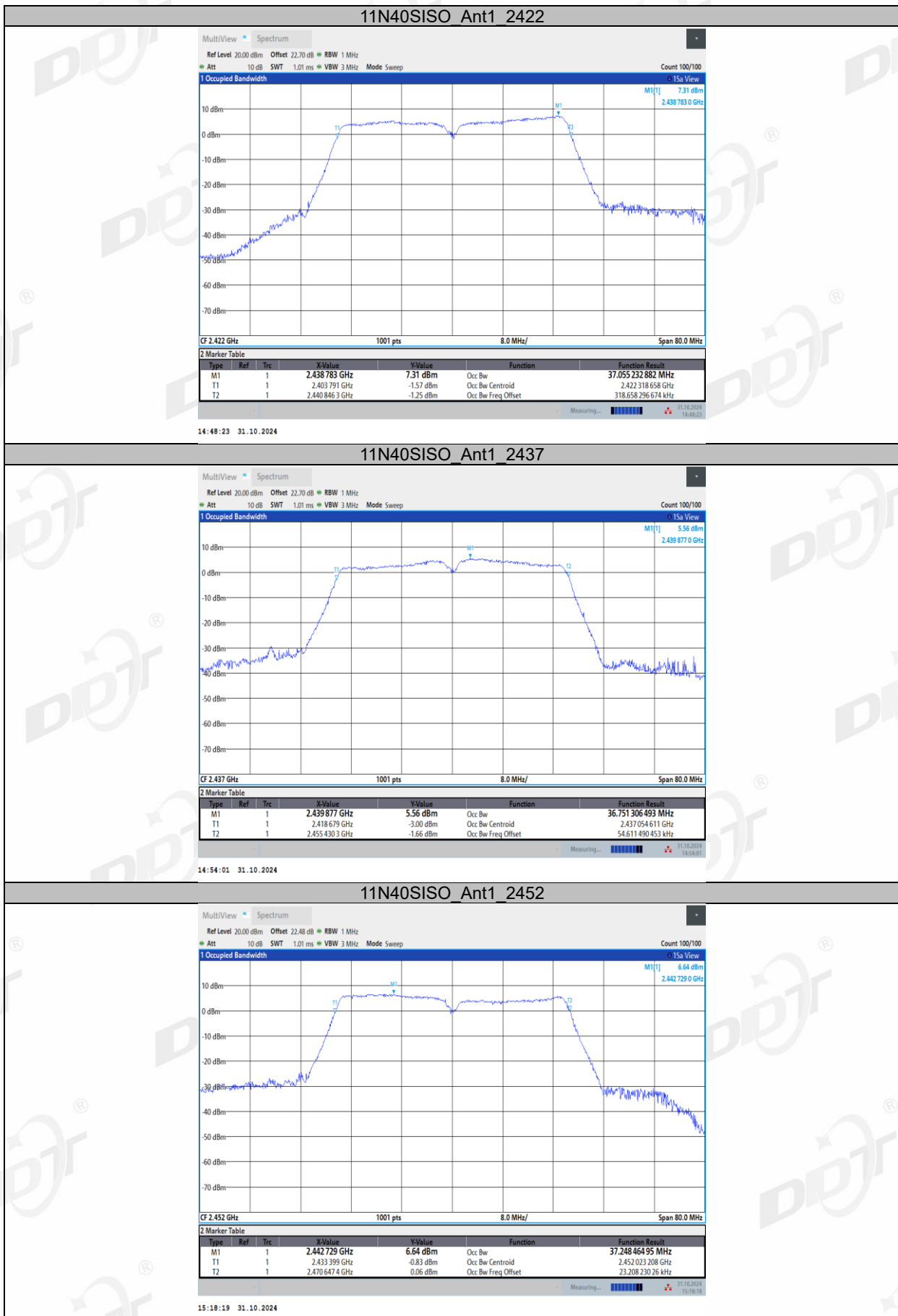
Test Mode	Antenna	Channel Frequency [MHz]	OCB [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
11B	Ant1	2412	13.227	2405.4539	2418.6809	---	---
		2437	13.476	2430.4494	2443.9256	---	---
		2462	14.000	2455.1394	2469.1390	---	---
11G	Ant1	2412	17.086	2403.4148	2420.5004	---	---
		2437	17.145	2428.4065	2445.5517	---	---
		2462	17.607	2453.1162	2470.7227	---	---
11N20SISO	Ant1	2412	18.191	2402.9565	2421.1472	---	---
		2437	18.230	2427.9432	2446.1733	---	---
		2462	18.669	2452.6918	2471.3611	---	---
11N40SISO	Ant1	2422	37.055	2403.7910	2440.8463	---	---
		2437	36.751	2418.6790	2455.4303	---	---
		2452	37.248	2433.3990	2470.6474	---	---

5.5. Test graphs



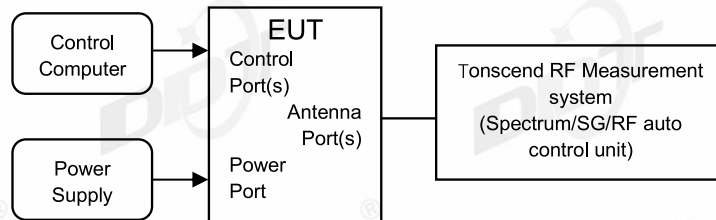






6. Conducted Output Power

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 C63.10-2020 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

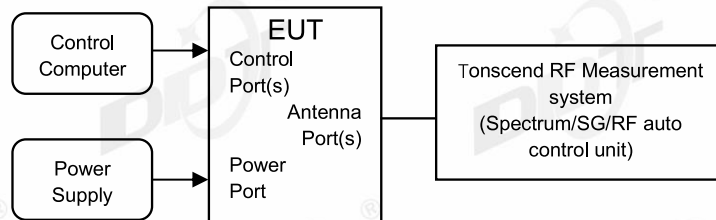
Test Engineer:	Zoe	Test Site:	RF Measurement System 4#
Ambient Condition:	23.6℃, 48.4%RH	Test Date:	2024.10.23-2024.10.31
Test Power Supply:	DC 12V	Sample Number:	S24101411-001

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	11.49	98.57	0.06	11.55	≤30.00	13.40	≤36.00	PASS
		2437	11.52	98.57	0.06	11.58	≤30.00	13.43	≤36.00	PASS
		2462	10.17	98.11	0.08	10.25	≤30.00	12.10	≤36.00	PASS
11G	Ant1	2412	11.43	98.10	0.08	11.51	≤30.00	13.36	≤36.00	PASS
		2437	11.58	98.10	0.08	11.66	≤30.00	13.51	≤36.00	PASS
		2462	10.67	98.10	0.08	10.75	≤30.00	12.60	≤36.00	PASS
11N20SISO	Ant1	2412	11.22	98.47	0.07	11.29	≤30.00	13.14	≤36.00	PASS
		2437	11.38	97.97	0.09	11.47	≤30.00	13.32	≤36.00	PASS
		2462	10.76	97.96	0.09	10.85	≤30.00	12.70	≤36.00	PASS
11N40SISO	Ant1	2422	12.34	95.00	0.22	12.56	≤30.00	14.41	≤36.00	PASS
		2437	10.84	95.00	0.22	11.06	≤30.00	12.91	≤36.00	PASS
		2452	12.48	95.00	0.22	12.70	≤30.00	14.55	≤36.00	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 C63.10-2020 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 repeat.

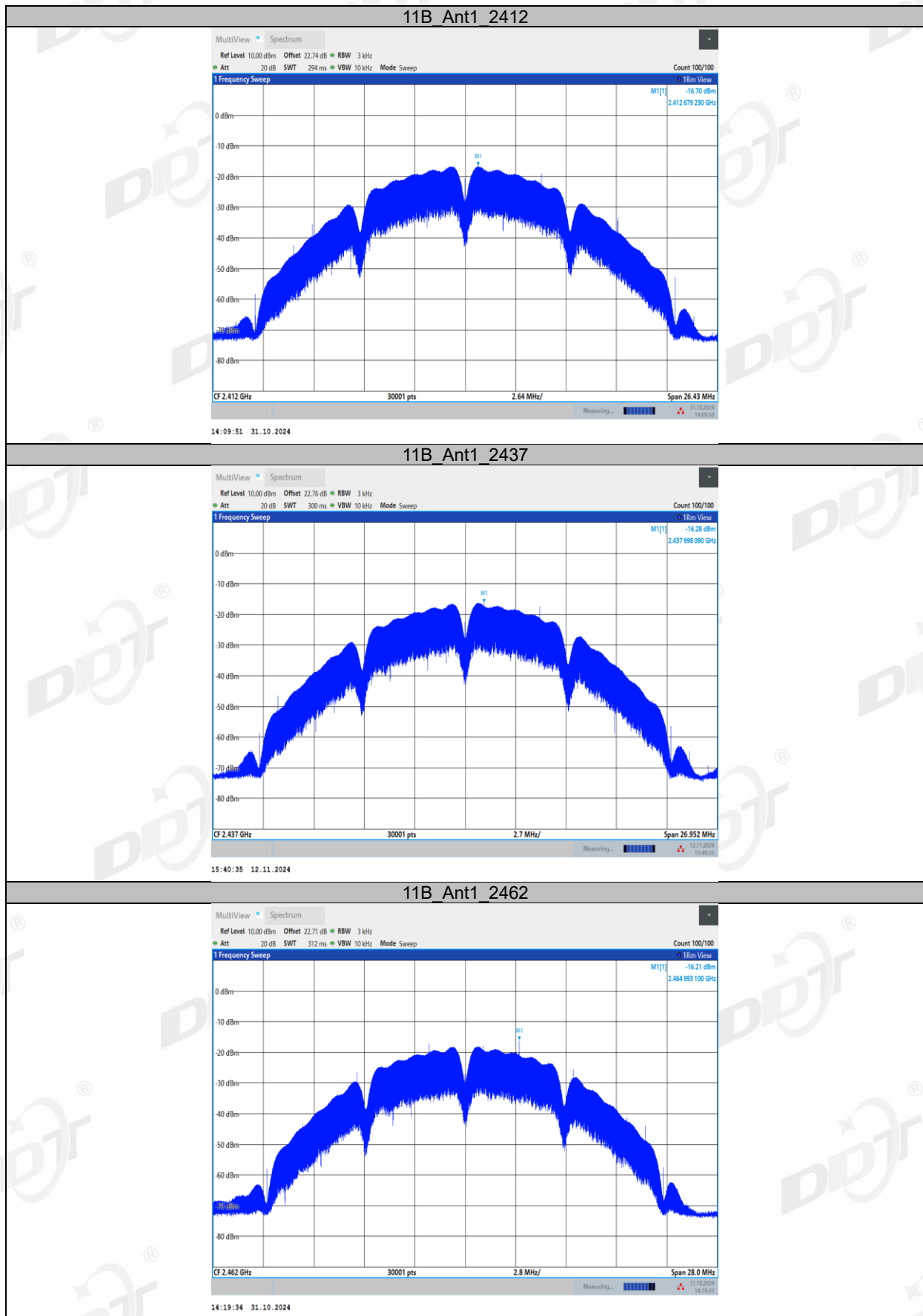
7.4. Test result

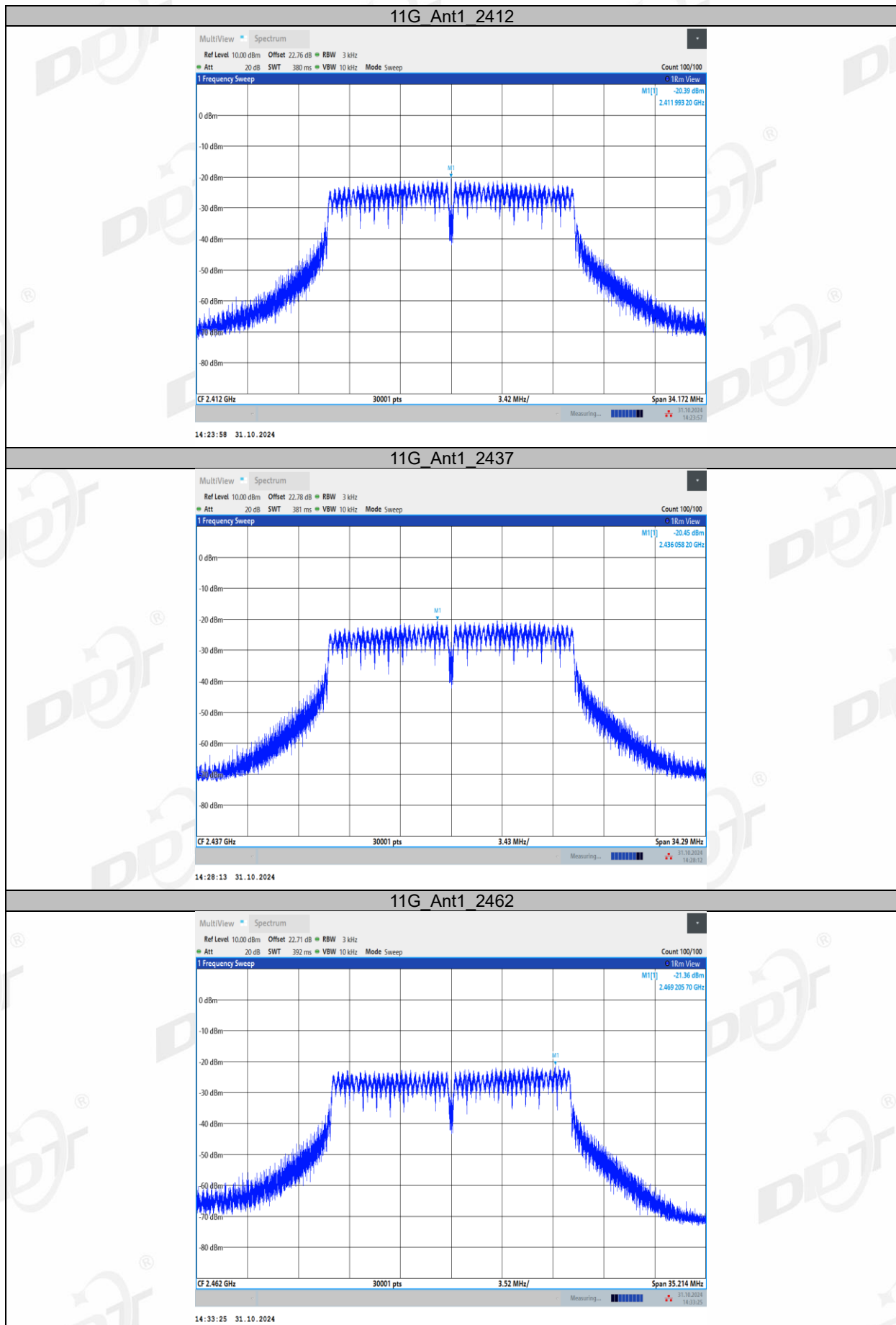
Test Engineer:	Zoe	Test Site:	RF Measurement System 4#
Ambient Condition:	23.6℃, 48.4%RH	Test Date:	2024.10.23-2024.10.31
Test Power Supply:	DC 12V	Sample Number:	S24101411-001

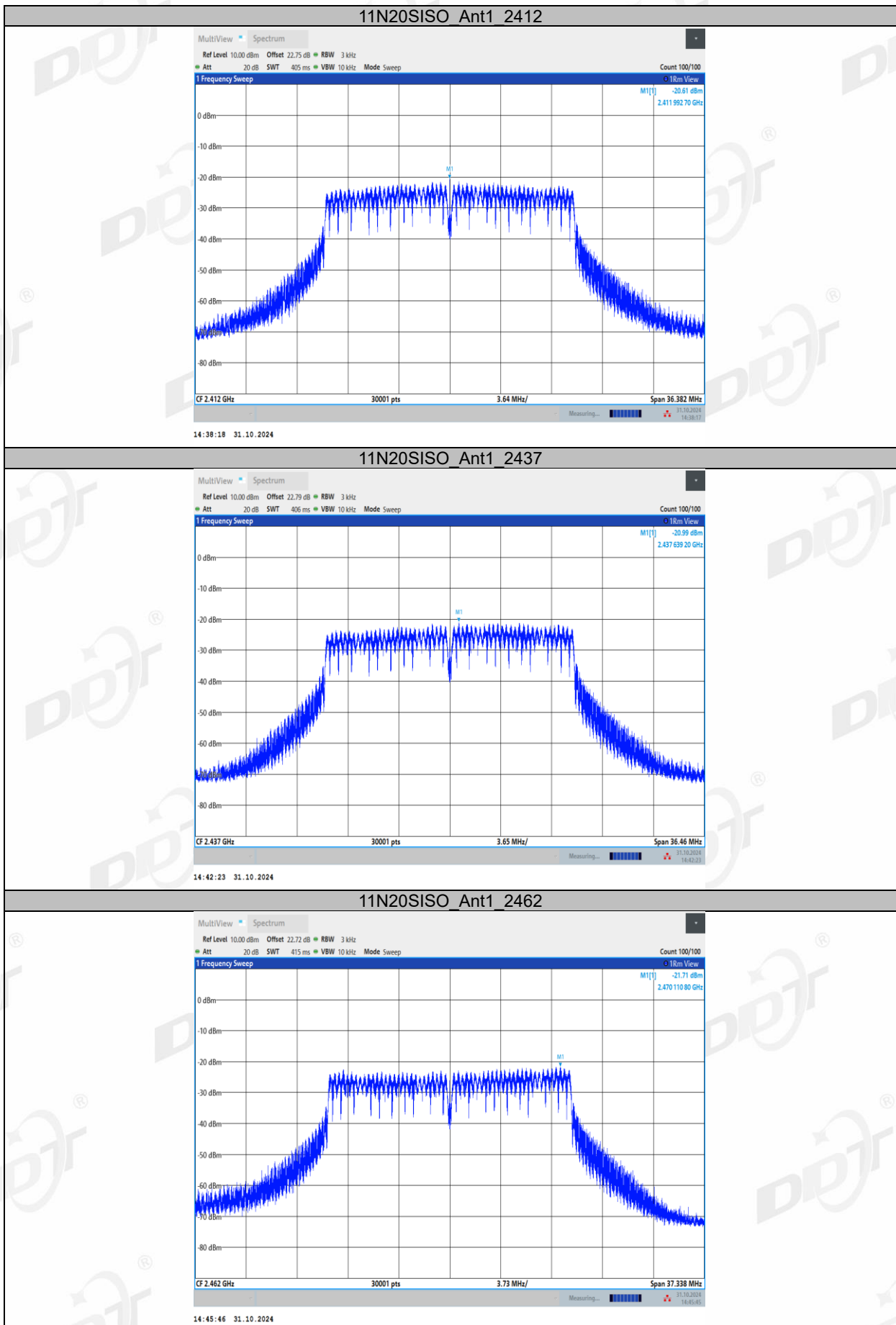
Test Mode	Antenna	Frequency [MHz]	Result [dBm/3-100kHz]	Limit [dBm/3kHz]	Verdict
11B	Ant1	2412	-16.70	≤8.00	PASS
		2437	-16.28	≤8.00	PASS
		2462	-16.21	≤8.00	PASS
11G	Ant1	2412	-20.39	≤8.00	PASS
		2437	-20.45	≤8.00	PASS
		2462	-21.36	≤8.00	PASS
11N20SISO	Ant1	2412	-20.61	≤8.00	PASS
		2437	-20.99	≤8.00	PASS
		2462	-21.71	≤8.00	PASS
11N40SISO	Ant1	2422	-21.41	≤8.00	PASS
		2437	-23.26	≤8.00	PASS
		2452	-21.73	≤8.00	PASS

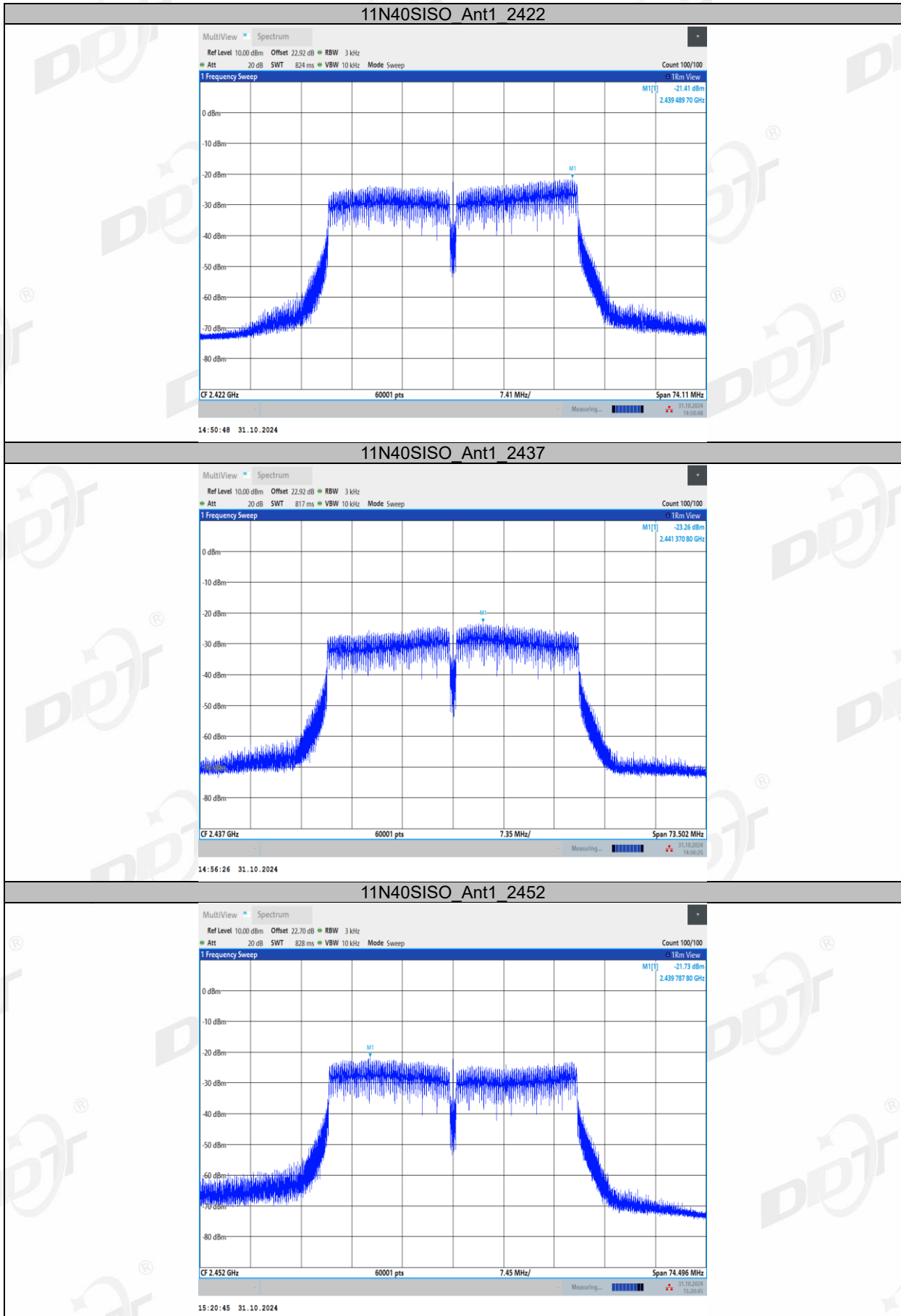
Note: The Duty Cycle Factor is compensated in the graph.

7.5. Test graphs



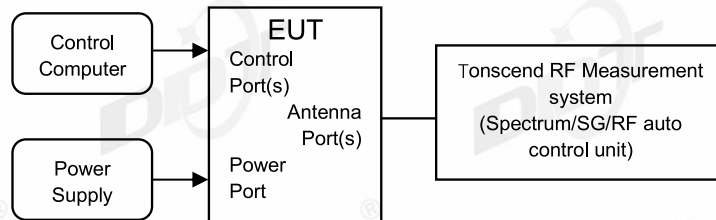






8. Band Edge Compliance (Conducted Method)

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:

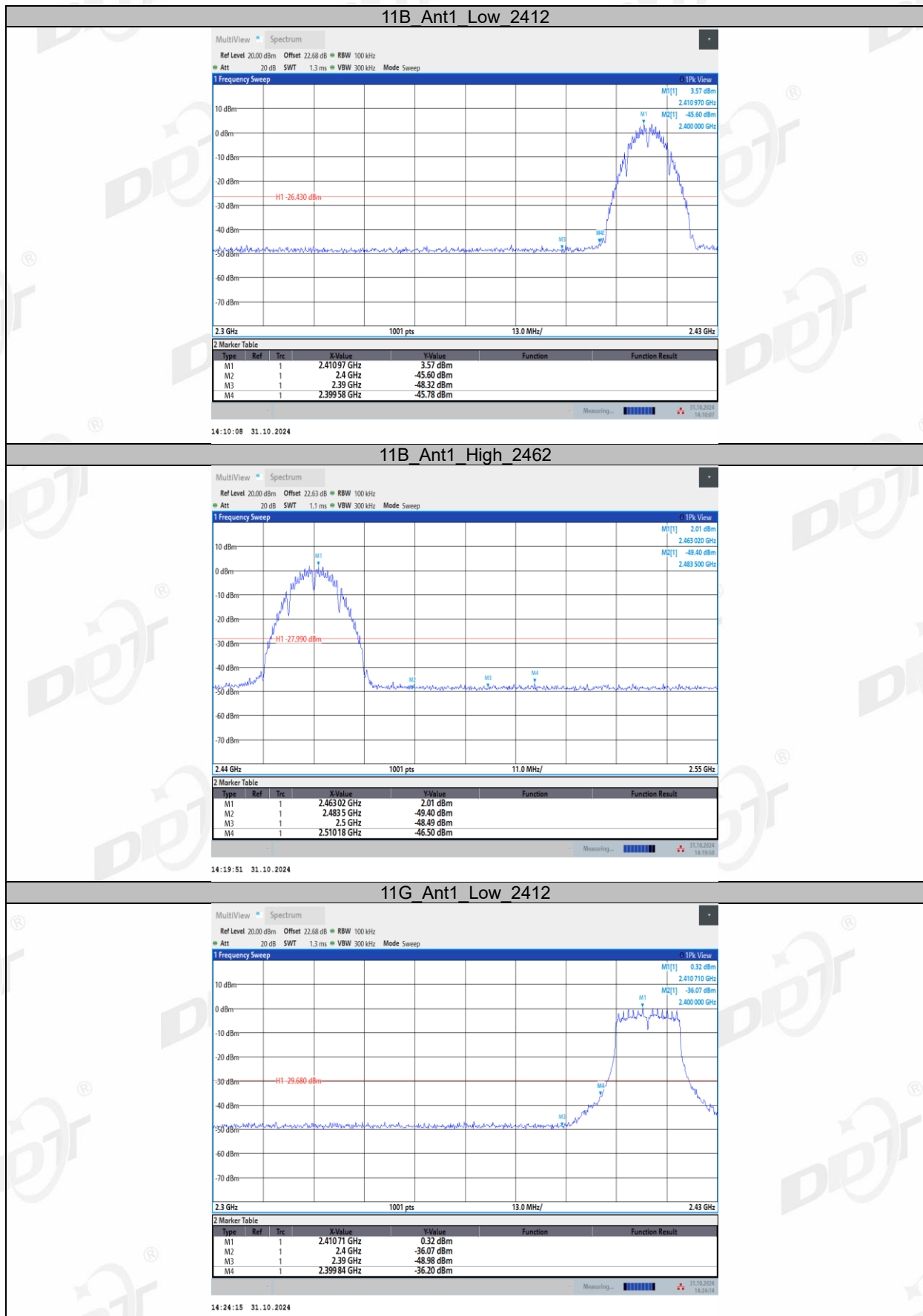
RBW:	100 kHz
VBW:	300 kHz
Span	Encompass frequency range to be measured
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold
- (3) Allow the trace to stabilize, use the peak marker function to determine the maximum peak power level to establish the reference level.
- (4) Then mark the maximum amplitude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

8.4. Test result

Test Engineer:	Zoe	Test Site:	RF Measurement System 4#
Ambient Condition:	23.6℃, 48.4%RH	Test Date:	2024.10.23-2024.10.31
Test Power Supply:	DC 12V	Sample Number:	S24101411-001

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

Same as 8.1

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	$\geq \text{Span/RBW}$
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:	Zoe	Test Site:	RF Measurement System 4#
Ambient Condition:	23.6℃,48.4%RH	Test Date:	2024.10.23-2024.10.31
Test Power Supply:	DC 12V	Sample Number:	S24101411-001

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

