



FCC CERTIFICATION TEST REPORT

Applicant	:	Guangzhou FiiO Electronics Technology Co., Ltd.
Address of Applicant	:	2/F, F Building, Hougang Industrial Zone, Shigang, Huangshi West Road, Baiyun District, Guangzhou, China
Manufacturer	:	Guangzhou FiiO Electronics Technology Co., Ltd.
Address of Manufacturer	:	2/F, F Building, Hougang Industrial Zone, Shigang, Huangshi West Road, Baiyun District, Guangzhou, China
Equipment under Test	:	All-In-One Desktop Android HiFi Music Player
Model No.	:	F3051R, F3061R, F3071R, F3081R, F3091R, F3051M, F3061M, F3071M, F3081M, F3091M, F3051S, F3061S, F3071S, F3091S
FCC ID	:	R56-F30511
Test Standard(s)	:	FCC Rules and Regulations Part 15 Subpart E, ANSI C63.10:2013
Report No.	:	DDT-RE23101912-2E10
Issue Date	:	2024/01/17
Issue By	:	Guangdong Dongdian Testing Service Co., Ltd.
Address of Laboratory	:	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	:	Guangzhou FiiO Electronics Technology Co., Ltd.
Address of Applicant	:	2/F, F Building, Hougang Industrial Zone, Shigang, Huangshi West Road, Baiyun District, Guangzhou, China
Equipment under Test	:	All-In-One Desktop Android HiFi Music Player
Model No.	:	F3051R, F3061R, F3071R, F3081R, F3091R, F3051M, F3061M, F3071M, F3081M, F3091M, F3051S, F3061S, F3071S, F3091S
Manufacturer	:	Guangzhou FiiO Electronics Technology Co., Ltd.
Address of Manufacturer	:	2/F, F Building, Hougang Industrial Zone, Shigang, Huangshi West Road, Baiyun District, Guangzhou, China

Test Standard Used:

FCC Rules and Regulations Part 15 Subpart E, RSS-247 Issue 3 August 2023.

Test procedure used:

ANSI C63.10:2013, 789033 D02 General U-NII Test Procedures New Rules v02r01

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.

After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above standards.

Report No.:	DDT-RE23101912-2E10		
Date of Receipt:	2023/10/24	Date of Test:	2023/10/24-2023/11/15

Prepared By:

Jacky Huang

Jacky Huang/Engineer

Approved By:



Damon Hu

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	2024/01/17	

1. Summary of Test Results

The EUT have been tested according to the applicable standards as referenced below.

Description of Test Item	Standard	Results
6/26db Bandwidth and 99% Bandwidth	FCC 15.407 (e)	PASS
Maximum Conducted Output Power	FCC 15.407 (a)	PASS
Power Spectral Density	FCC 15.407 (a)	PASS
Frequency Stability Measurement	FCC 15.407 (g)	PASS
Emissions in restricted frequency bands	FCC 15.407 (b) FCC 15.209 FCC 15.205	PASS
Band Edge Compliance	FCC 15.407 (b) FCC 15.209 FCC 15.205	PASS
Power Line Conducted Emission	FCC 15.207	PASS
Antenna requirement	FCC 15.203	PASS
Dynamic Frequency Selection	FCC 15.407 (h)	PASS

2. General Test Information

2.1. Description of EUT

EUT Name	: All-In-One Desktop Android HiFi Music Player
Model Number	: F3051R, F3061R, F3071R, F3081R, F3091R, F3051M, F3061M, F3071M, F3081M, F3091M, F3051S, F3061S, F3071S, F3091S
Model Difference	: Only the model name and appearance are different, any other is the same. The test model is F3051R.
EUT Function Description	: Please reference user manual of this device
Power Supply	: AC 100-240V~50/60Hz, 40W
Radio Specification	: Bluetooth (BR/EDR/LE), WLAN (2.4 GHz): IEEE 802.11b/g/n, WLAN (5 GHz): IEEE 802.11a/n/ac
Operation Frequency	: Bluetooth (BR/EDR/LE): 2402 MHz-2480 MHz IEEE 802.11b/g/n: 2412 MHz to 2472 MHz, IEEE 802.11a/n/ac: 5180 MHz to 5240 MHz, 5260 MHz to 5320 MHz, 5500 MHz to 5720 MHz, 5745 MHz to 5825 MHz
Modulation	: Bluetooth BR/EDR: GFSK, $\pi/4$ -DQPSK, 8DPSK Bluetooth LE: GFSK IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g/a: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK)
Sample Number	: S23101912-01

Note 1: EUT is the abbreviation of equipment under test.

Note 2: “☑” means to be chosen or applicable; “☐” means don't to be chosen or not applicable; This note applies to entire report.

Note 3: Band 5600-5650MHz will be disabled when shipped to Canada

Note 4: This report only for WLAN (5 GHz): IEEE 802.11a/n/ac.

Note 5: Simultaneously transmission condition: N/A.

Note 6: Antenna information:

5 GHz WLAN Antenna information:		
Antenna Type	FPC	
Antenna Gain (dBi)	Band 1 (5150-5250MHz)	6.14
	Band 2 (5250-5350MHz)	6.50
	Band 3 (5470-5725MHz)	8.16
	Band 4 (5725-5850MHz)	8.16
Note: This product does not support beamforming.		

Note 7: Channel information:

Channel information					
IEEE 802.11a IEEE 802.11n (HT20) IEEE 802.11ac (VHT20)		IEEE 802.11n (HT40) IEEE 802.11ac (VHT40)		IEEE 802.11ac (VHT80)	
UNII-1					
CH	Frequency (MHz)	CH	Frequency (MHz)	CH	Frequency (MHz)
36	5180	38	5190	42	5210
40	5200	46	5230	/	/
44	5220	/	/	/	/
48	5240	/	/	/	/
UNII-2A					
52	5260	54	5270	58	5290
56	5280	62	5310		/
60	5300	/	/	/	/
64	5320	/	/	/	/
UNII-2C					
100	5500	102	5510	106	5530
104	5520	110	5550	122	5610
108	5540	118	5590	138	5690
112	5560	126	5630	/	/
116	5580	134	5670	/	/
120	5600	142	5710	/	/
124	5620	/	/	/	/
128	5640	/	/	/	/
132	5660	/	/	/	/
136	5680	/	/	/	/
140	5700	/	/	/	/
144	5720	/	/	/	/
UNII-3					
149	5745	151	5755	155	5775
153	5765	159	5795	/	/
157	5785	/	/	/	/
161	5805	/	/	/	/
165	5825	/	/	/	/

Note 8: 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. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	Other	SN
Laptop	Lenovo	X201	N/A	00154-290-415-484
Router	ASUS	GT-AXE11000	FCC ID: MSQ-RTAXJF00	M8IG0X400384RSG

2.4. Block diagram of EUT configuration for test



The QRCT4.exe was used to control EUT work in Continuous Tx mode and select test channel, wireless mode as below table.

The pathloss of external cable: 2 dB (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)
IEEE 802.11a	Default	6	Low: CH36	5180
	Default	6	Middle: CH40	5200
	Default	6	High: CH48	5240
	Default	6	Low: CH52	5260
	Default	6	Middle: CH56	5280
	Default	6	High: CH64	5320
	Default	6	Low: CH100	5500
	Default	6	Middle: CH116	5580
	Default	6	High: CH140	5700
	Default	6	High: CH144	5720
	Default	6	Low: CH149	5745
	Default	6	Middle: CH157	5785
	Default	6	High: CH165	5825
IEEE 802.11n HT20	Default	MCS 0	Low: CH36	5180
	Default	MCS 0	Middle: CH40	5200
	Default	MCS 0	High: CH48	5240
	Default	MCS 0	Low: CH52	5260

	Default	MCS 0	Middle: CH56	5280
	Default	MCS 0	High: CH64	5320
	Default	MCS 0	Low: CH100	5500
	Default	MCS 0	Middle: CH116	5580
	Default	MCS 0	High: CH140	5700
	Default	MCS 0	High: CH144	5720
	Default	MCS 0	Low: CH149	5745
	Default	MCS 0	Middle: CH157	5785
	Default	MCS 0	High: CH165	5825
IEEE 802.11n HT40	Default	MCS 0	Low: CH38	5190
	Default	MCS 0	Middle: CH46	5230
	Default	MCS 0	High: CH54	5270
	Default	MCS 0	Low: CH62	5310
	Default	MCS 0	Middle: CH102	5510
	Default	MCS 0	High: CH110	5550
	Default	MCS 0	Low: CH134	5670
	Default	MCS 0	Low: CH142	5710
	Default	MCS 0	Middle: CH151	5755
	Default	MCS 0	High: CH159	5795
IEEE 802.11ac VHT20	Default	MCS 0	Low: CH36	5180
	Default	MCS 0	Middle: CH40	5200
	Default	MCS 0	High: CH48	5240
	Default	MCS 0	Low: CH52	5260
	Default	MCS 0	Middle: CH56	5280
	Default	MCS 0	High: CH64	5320
	Default	MCS 0	Low: CH100	5500
	Default	MCS 0	Middle: CH116	5580
	Default	MCS 0	High: CH140	5700
	Default	MCS 0	High: CH144	5720
	Default	MCS 0	Low: CH149	5745
	Default	MCS 0	Middle: CH157	5785
	Default	MCS 0	High: CH165	5825
	Default	MCS 0	Low: CH38	5190
	Default	MCS 0	Middle: CH46	5230
IEEE 802.11ac VHT40	Default	MCS 0	High: CH54	5270
	Default	MCS 0	Low: CH62	5310
	Default	MCS 0	Middle: CH102	5510
	Default	MCS 0	High: CH110	5550
	Default	MCS 0	Low: CH134	5670
	Default	MCS 0	Low: CH142	5710
	Default	MCS 0	Middle: CH151	5755

	Default	MCS 0	Low: CH142	5710
	Default	MCS 0	Middle: CH151	5755
	Default	MCS 0	High: CH159	5795
IEEE 802.11ac VHT80	Default	MCS 0	CH42	5210
	Default	MCS 0	CH58	5290
	Default	MCS 0	CH106	5530
	Default	MCS 0	CH122	5610
	Default	MCS 0	CH122	5690
	Default	MCS 0	CH155	5775
Note: According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test.				

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

Temperature range:	+15℃ to +35 ℃
Humidity range:	20% to 75%
Pressure range:	86 kPa to 106 kPa

2.7. Test laboratory

Guangdong Dongdian Testing Service Co., Ltd.

Add.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, 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

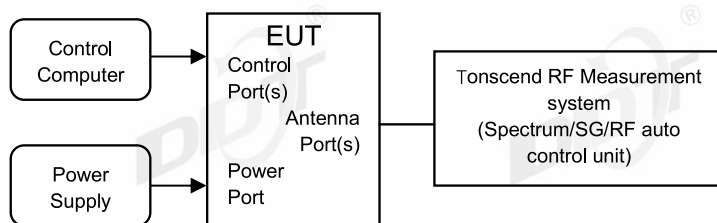
Test Item	Uncertainty
Bandwidth	1.1%
Peak Output Power (Conducted) (Spectrum analyzer)	0.86 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$);
	1.38 dB ($3.6 \text{ GHz} \leq f < 8 \text{ GHz}$)
Peak Output Power (Conducted) (Power Sensor)	0.74 dB
Power Spectral Density	0.74 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$);
	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	N/A

4. 26dB Bandwidth

4.1. Block diagram of test setup



4.2. Limits

FCC Part15, Subpart E		
Test Item	Limit	Frequency Range (MHz)
26 dB Bandwidth	---	5150 - 5250
	---	5250 - 5350
	---	5470 - 5725

4.3. Test procedure

Connect EUT's antenna output to spectrum analyzer by RF cable.

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	approximately 1% of the emission bandwidth.
VBW	> RBW
Trace	Max hold
Sweep	Auto couple

Allow the trace to stabilize, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.

4.4. Test result

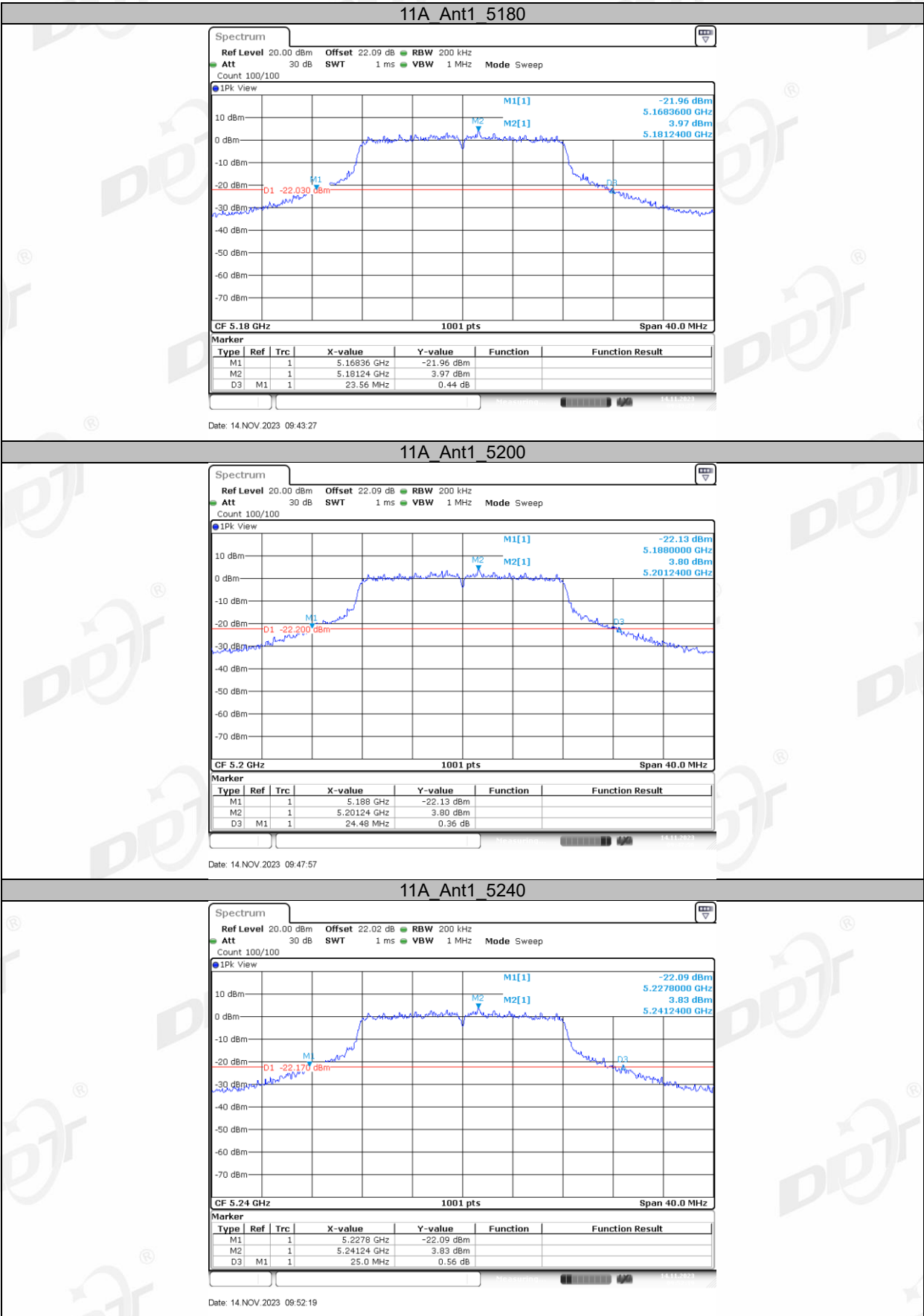
Test Engineer:	Zhongyao	Test Site:	RF Measurement System 3#
Ambient Condition:	25.3℃, 45.7%RH	Test Date:	2023.11.07-2023.11.08
Test Power Supply:	AC 230V	EUT:	All-In-One Desktop Android HiFi Music Player
Sample Number:	S23101912-01	Model No.:	F3051R

Test Mode	Antenna	Frequency [MHz]	26db EBW [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
11A	Ant1	5180	23.56	5168.36	5191.92	---	---
		5200	24.48	5188.00	5212.48	---	---
		5240	25.00	5227.80	5252.80	---	---
		5260	25.16	5247.68	5272.84	---	---
		5280	24.96	5267.60	5292.56	---	---
		5320	25.72	5307.40	5333.12	---	---
		5500	24.68	5488.08	5512.76	---	---
		5580	23.64	5568.24	5591.88	---	---
		5700	22.32	5688.88	5711.20	---	---
		5720	22.84	5708.36	5731.20	---	---
		5720_UNII-2C	16.64	5708.36	5725.00	---	---
		5720_UNII-3	6.20	5725.00	5731.20	---	---
		5745	22.92	5733.76	5756.68	---	---
		5785	23.52	5773.08	5796.60	---	---
		5825	22.80	5813.80	5836.60	---	---
11N20SISO	Ant1	5180	25.08	5167.80	5192.88	---	---
		5200	25.16	5187.12	5212.28	---	---
		5240	24.40	5227.80	5252.20	---	---
		5260	25.00	5247.84	5272.84	---	---
		5280	25.32	5267.48	5292.80	---	---
		5320	26.00	5307.20	5333.20	---	---
		5500	26.00	5487.44	5513.44	---	---
		5580	24.76	5567.44	5592.20	---	---
		5700	23.44	5688.36	5711.80	---	---
		5720	22.88	5708.72	5731.60	---	---
		5720_UNII-2C	16.28	5708.72	5725.00	---	---
		5720_UNII-3	6.60	5725.00	5731.60	---	---

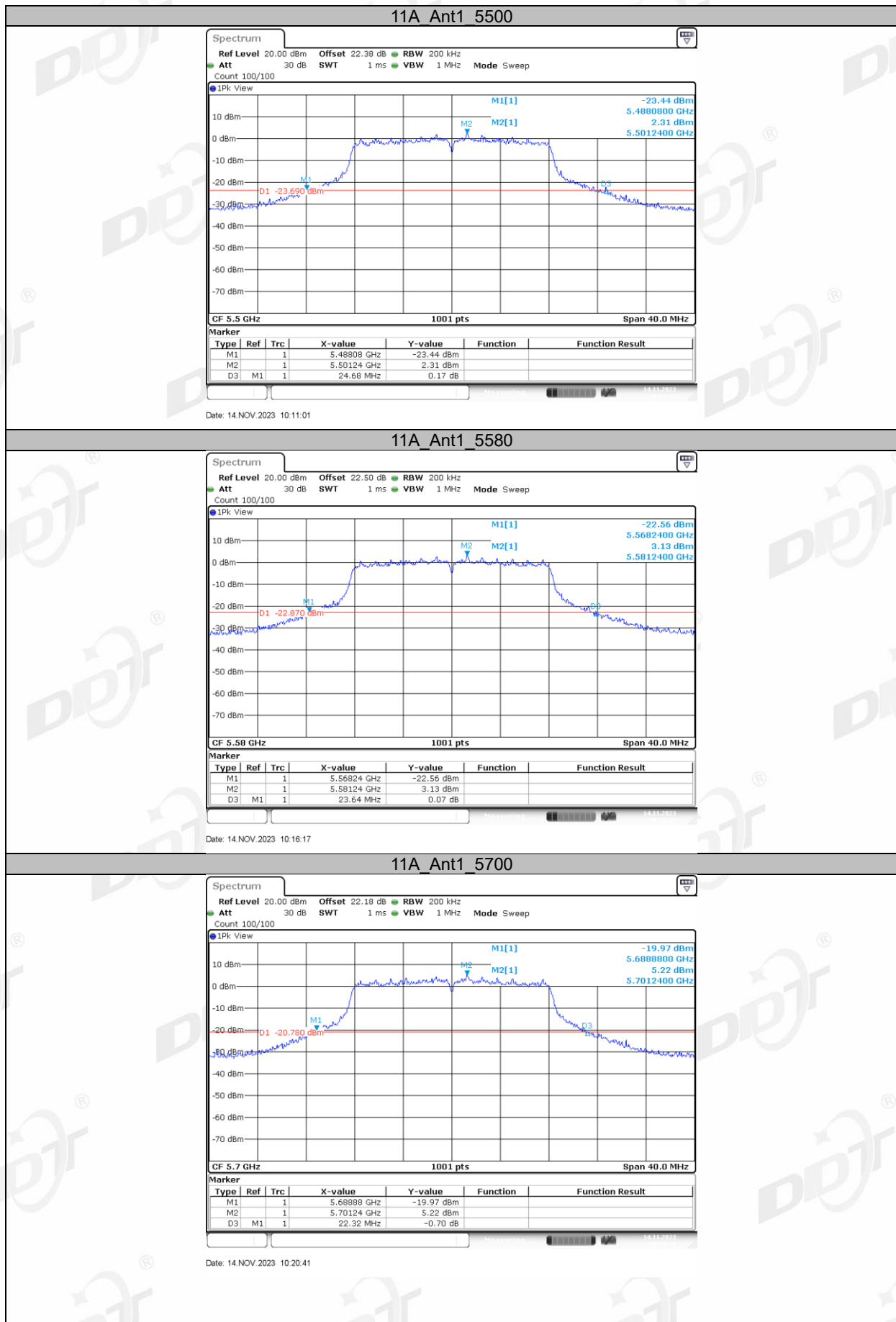
		5745	23.84	5733.36	5757.20	---	---
		5785	23.12	5773.48	5796.60	---	---
		5825	23.76	5813.08	5836.84	---	---
11N40SISO	Ant1	5190	42.16	5168.88	5211.04	---	---
		5230	42.96	5208.72	5251.68	---	---
		5270	48.48	5248.48	5296.96	---	---
		5310	43.04	5288.48	5331.52	---	---
		5510	42.64	5488.80	5531.44	---	---
		5550	42.48	5528.88	5571.36	---	---
		5670	42.08	5649.20	5691.28	---	---
		5710	42.00	5689.12	5731.12	---	---
		5710_UNII-2C	35.88	5689.12	5725.00	---	---
		5710_UNII-3	6.12	5725.00	5731.12	---	---
		5755	41.92	5734.12	5776.04	---	---
		5795	42.00	5773.96	5815.96	---	---
11AC20SISO	Ant1	5180	24.20	5167.76	5191.96	---	---
		5200	23.84	5188.08	5211.92	---	---
		5240	24.20	5228.00	5252.20	---	---
		5260	24.00	5248.20	5272.20	---	---
		5280	24.48	5268.28	5292.76	---	---
		5320	24.76	5307.72	5332.48	---	---
		5500	24.04	5488.32	5512.36	---	---
		5580	23.92	5568.04	5591.96	---	---
		5700	23.32	5688.32	5711.64	---	---
		5720	24.04	5708.12	5732.16	---	---
		5720_UNII-2C	16.88	5708.12	5725.00	---	---
		5720_UNII-3	7.16	5725.00	5732.16	---	---
		5745	22.80	5733.80	5756.60	---	---
		5785	23.08	5773.36	5796.44	---	---
		5825	23.28	5813.56	5836.84	---	---
11AC40SISO	Ant1	5190	41.92	5168.96	5210.88	---	---
		5230	41.68	5209.20	5250.88	---	---
		5270	41.92	5248.96	5290.88	---	---
		5310	41.68	5289.20	5330.88	---	---

		5510	41.76	5489.04	5530.80	---	---
		5550	42.00	5528.88	5570.88	---	---
		5670	42.08	5649.04	5691.12	---	---
		5710	41.92	5689.04	5730.96	---	---
		5710_UNII-2C	35.96	5689.04	5725.00	---	---
		5710_UNII-3	5.96	5725.00	5730.96	---	---
		5755	41.68	5734.12	5775.80	---	---
		5795	41.84	5774.04	5815.88	---	---
11AC80SISO	Ant1	5210	85.76	5166.96	5252.72	---	---
		5290	84.80	5247.76	5332.56	---	---
		5530	83.52	5488.56	5572.08	---	---
		5610	83.68	5568.72	5652.40	---	---
		5690	83.68	5648.56	5732.24	---	---
		5690_UNII-2C	76.44	5648.56	5725.00	---	---
		5690_UNII-3	7.24	5725.00	5732.24	---	---
		5775	84.48	5732.92	5817.40	---	---

4.5. Test graphs

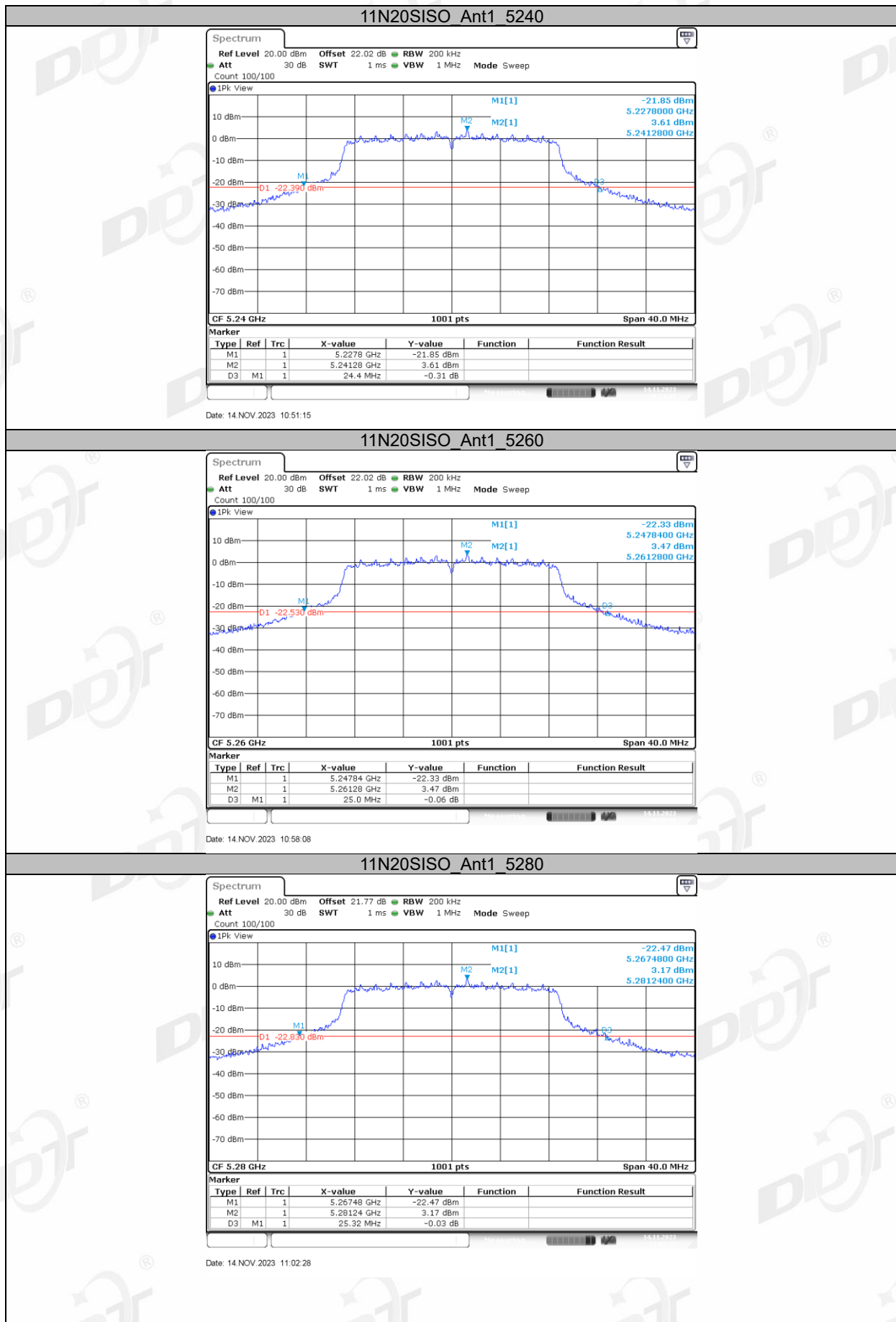


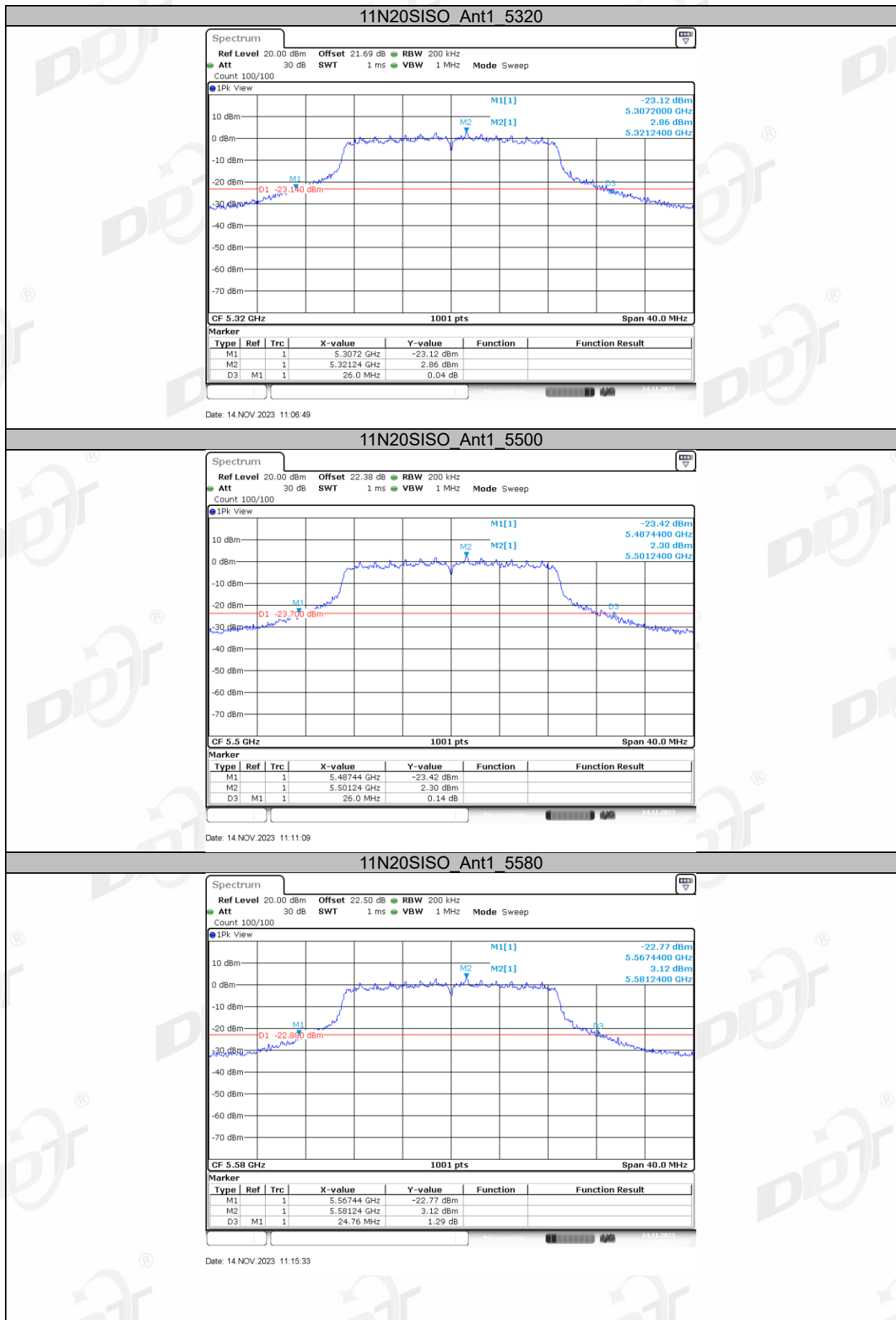












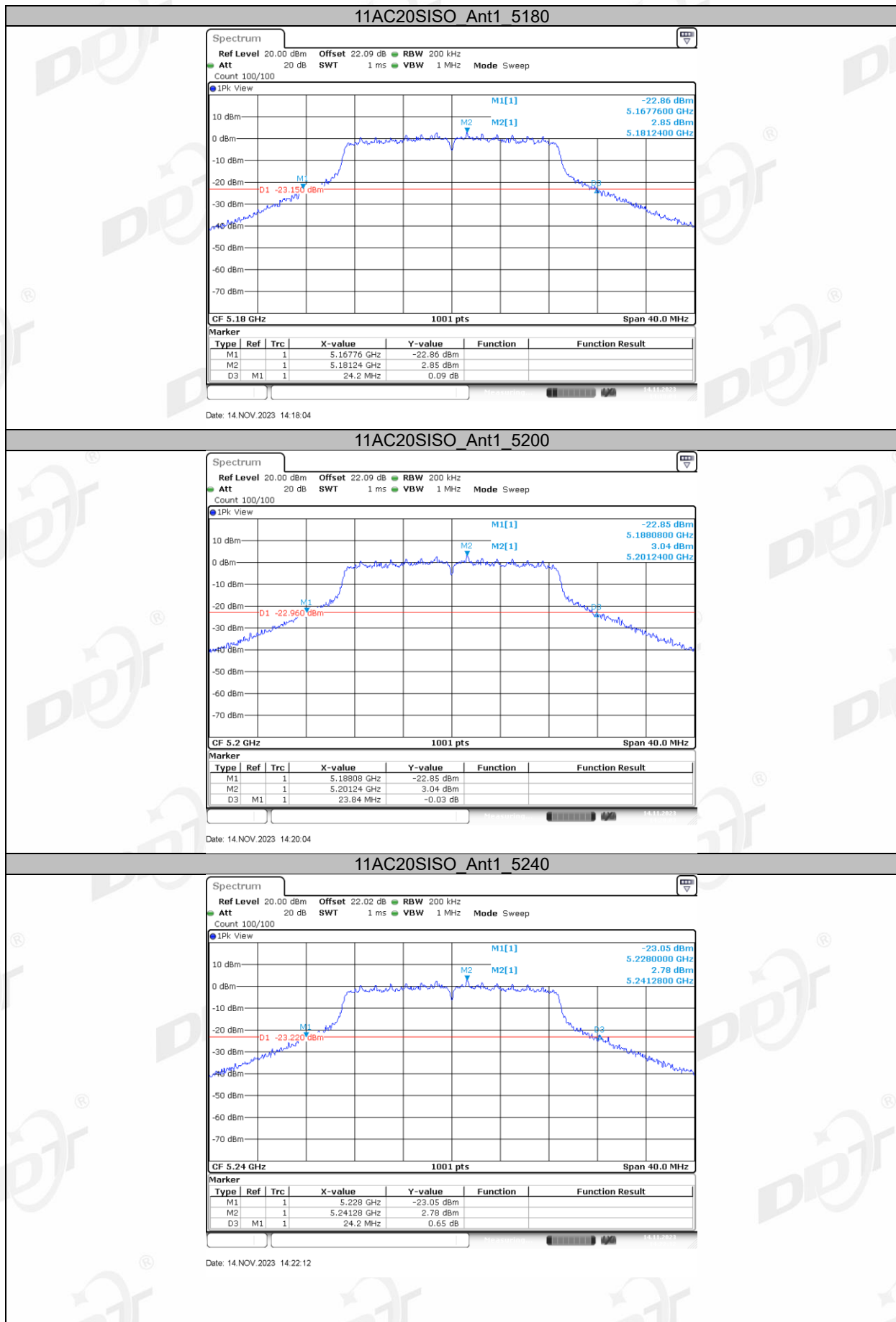


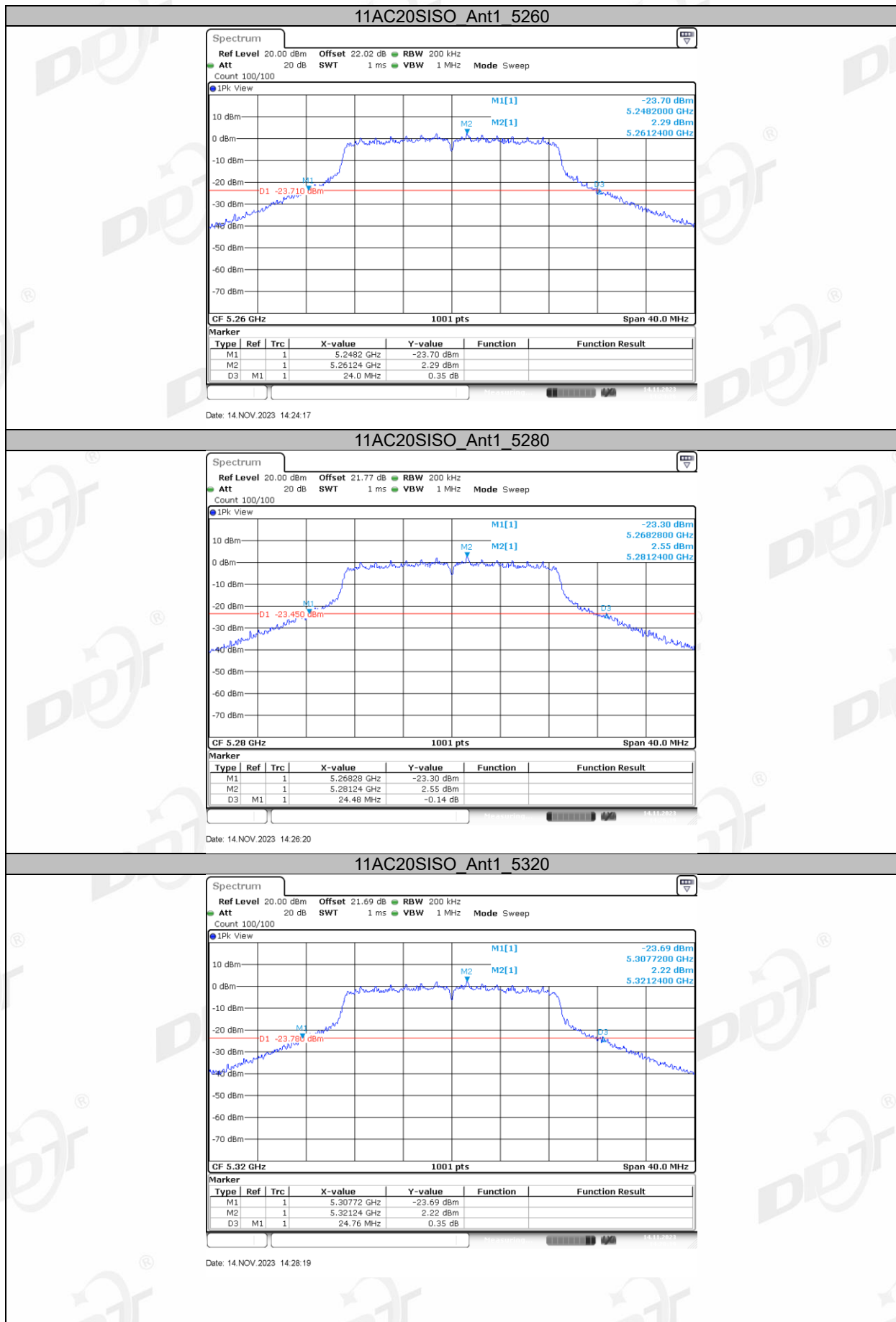


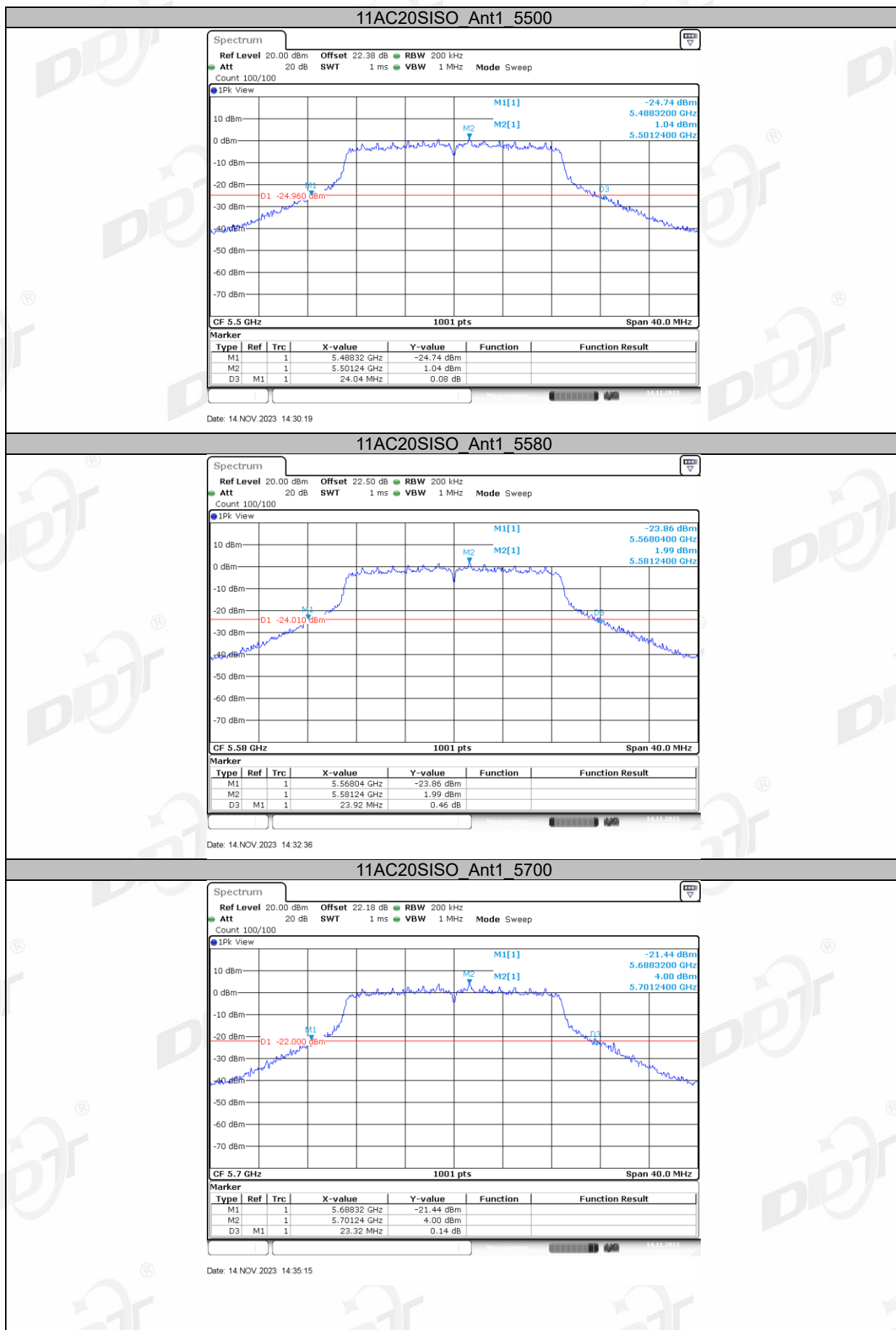


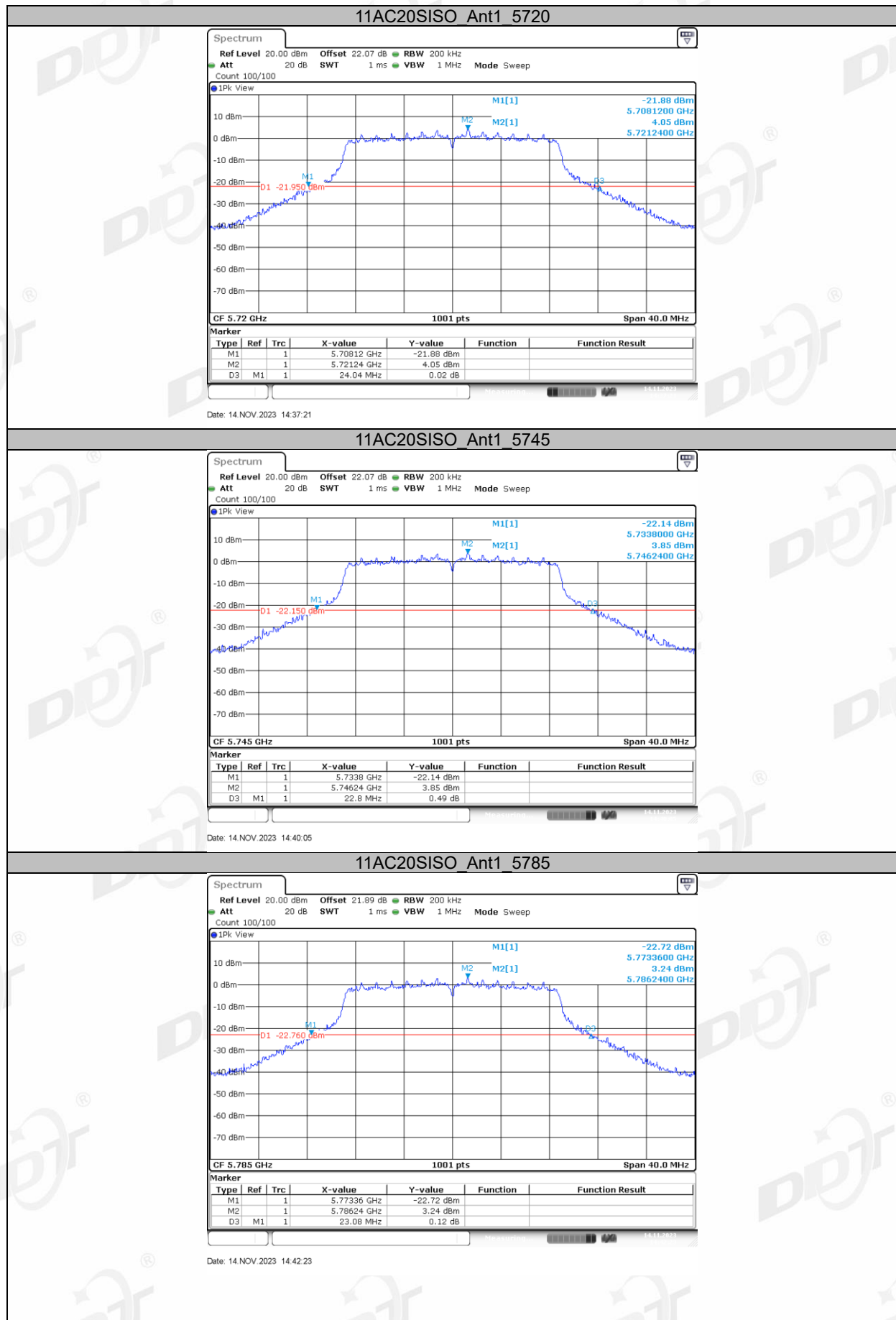






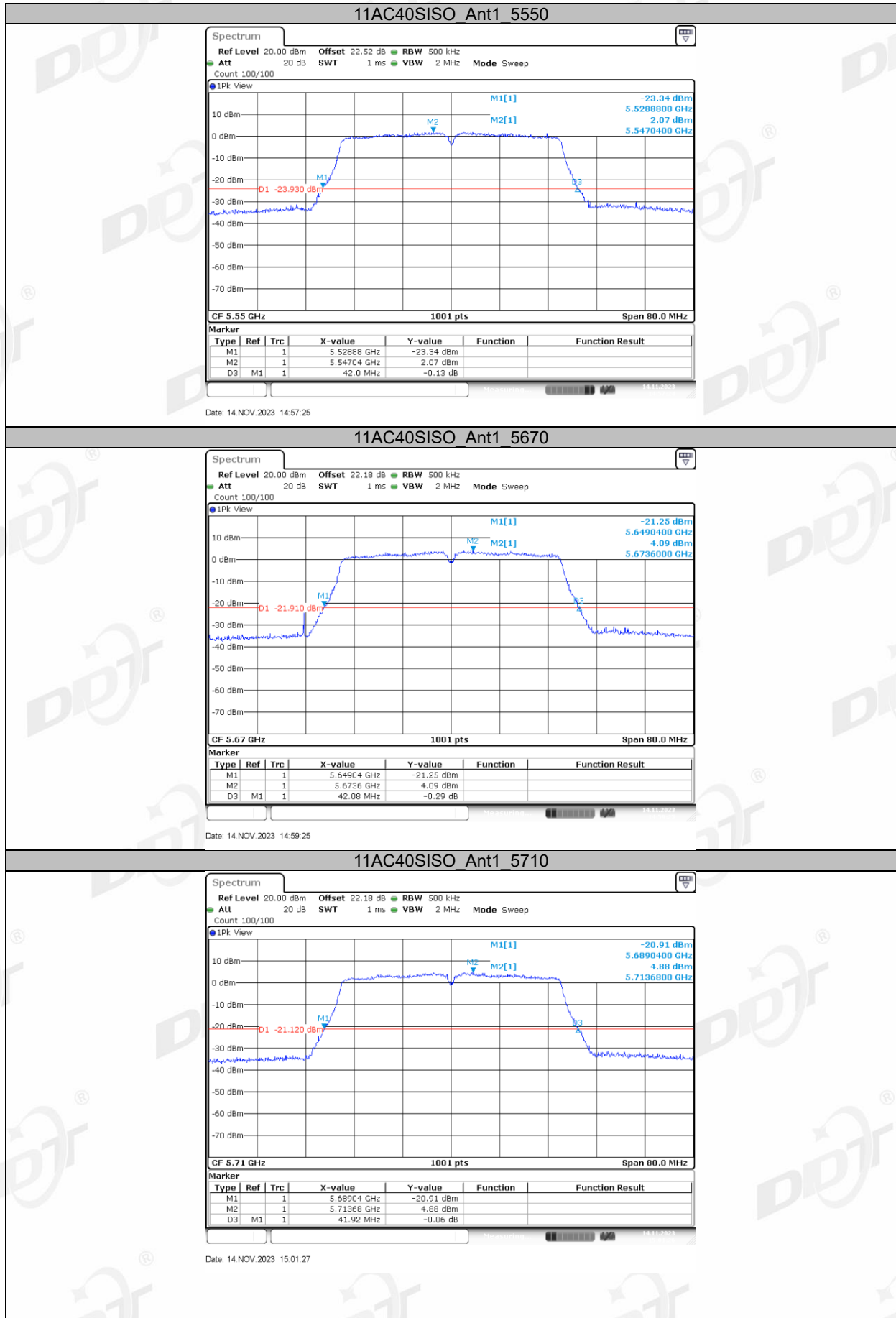


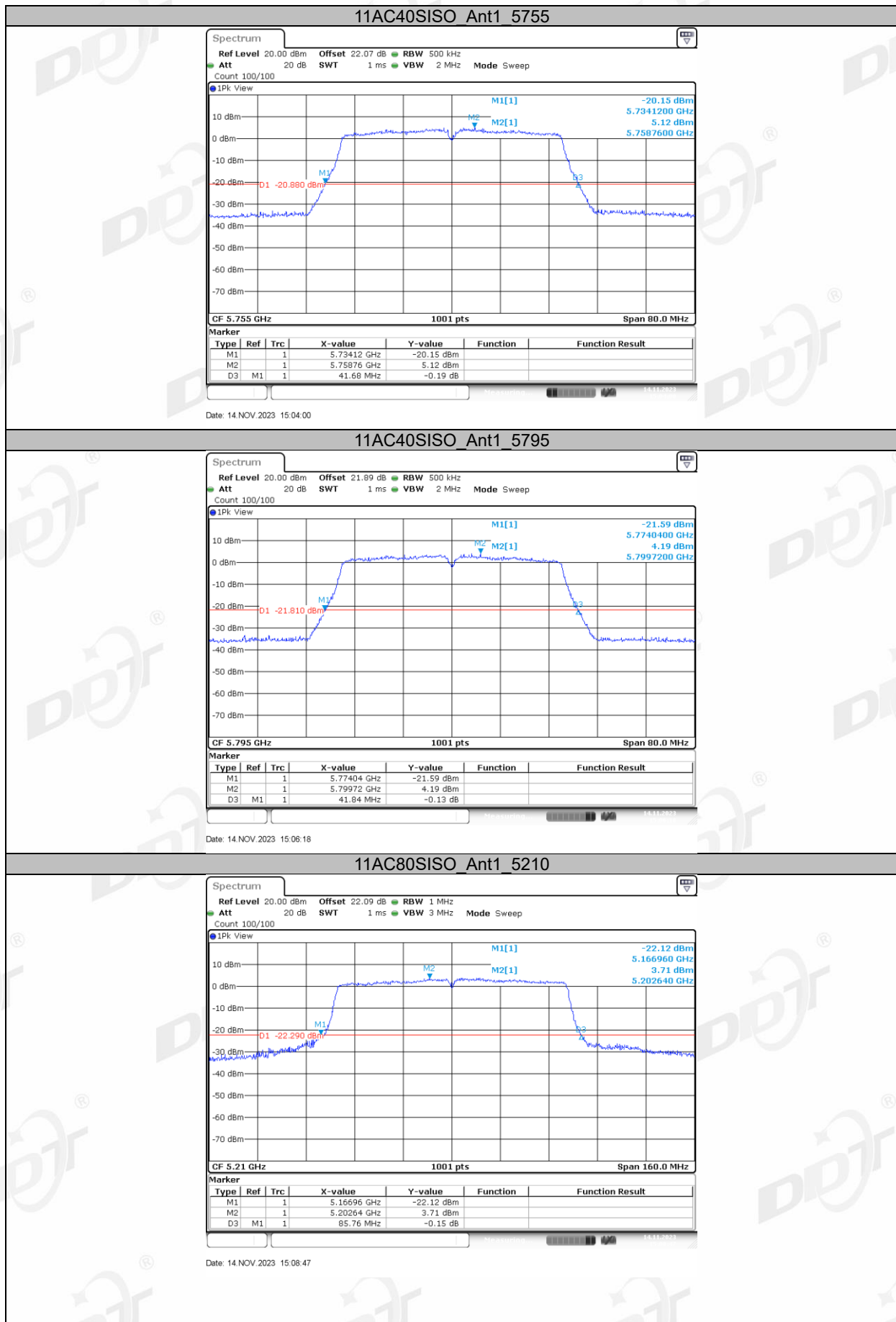


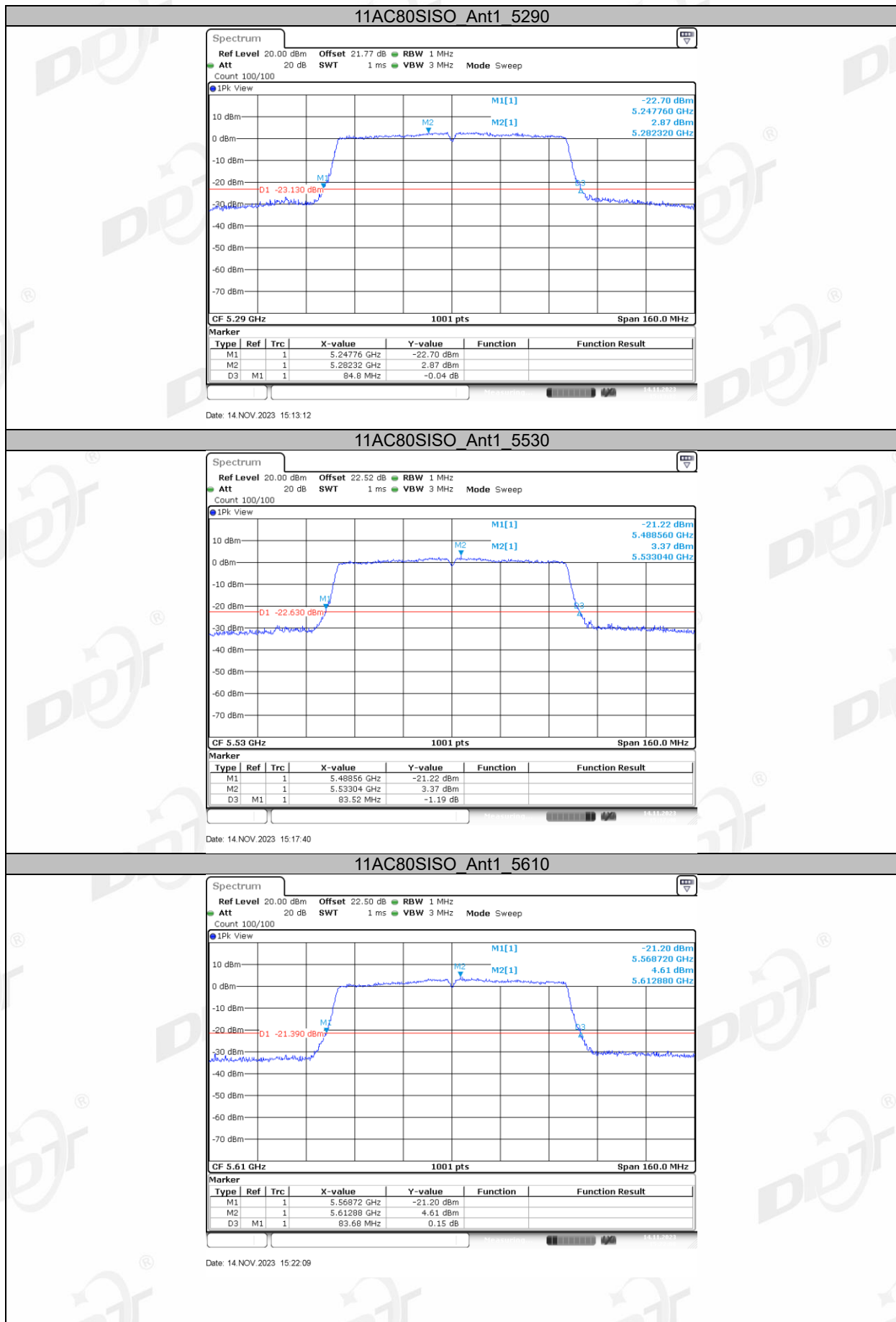


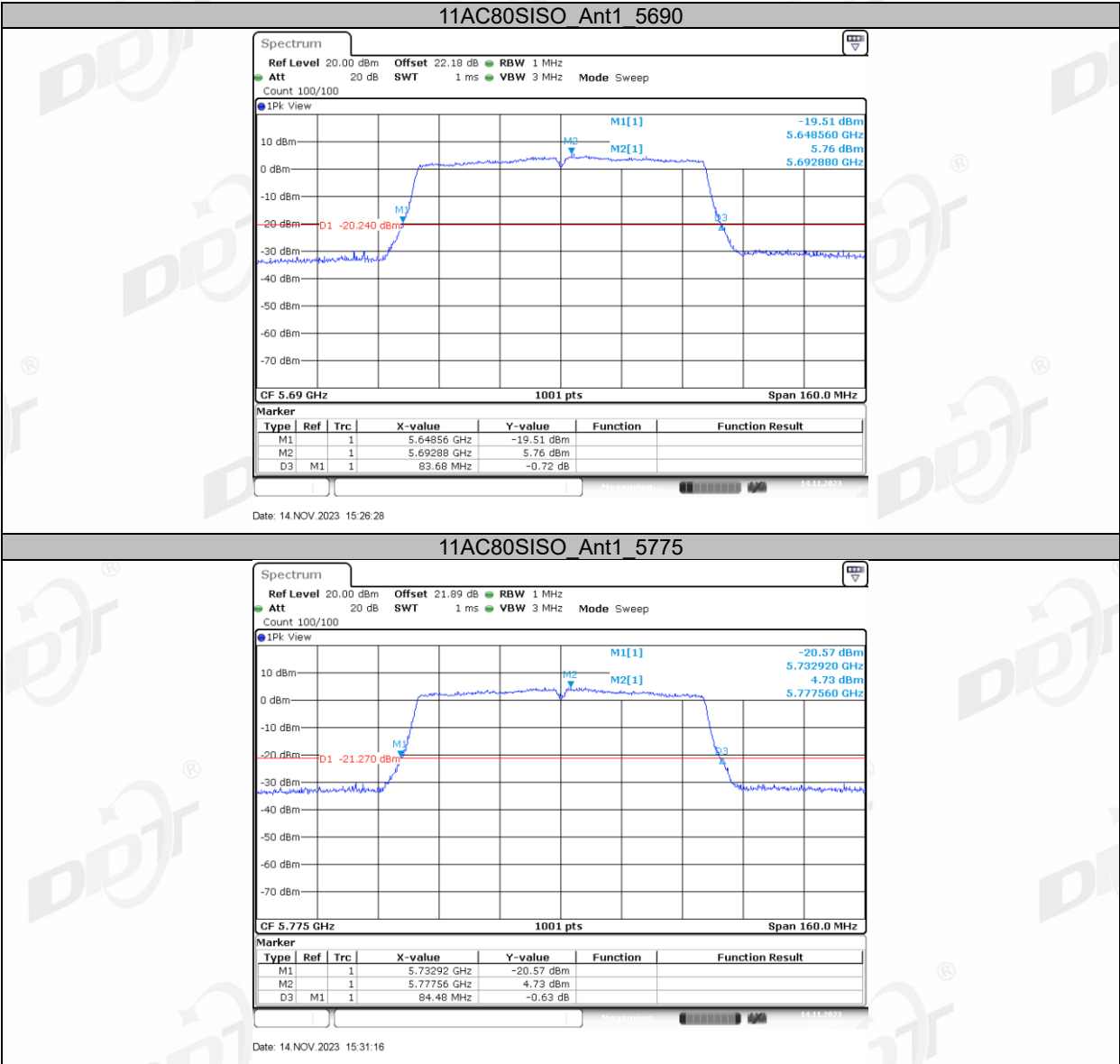






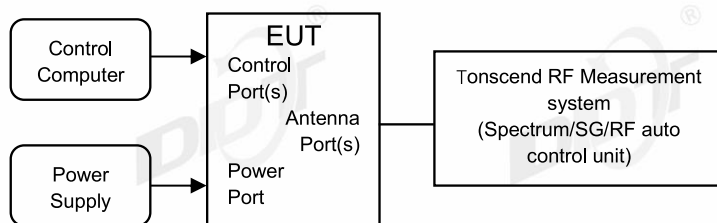






5. 6dB Bandwidth

5.1. Block diagram of test setup



5.2. Limits

FCC Part15, Subpart E		
Test Item	Limit	Frequency Range (MHz)
6 dB Bandwidth	Minimum 500 kHz	5725 - 5850

5.3. Test procedure

Connect EUT's antenna output to spectrum analyzer by RF cable.

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	For 6 dB Bandwidth: RBW=100 kHz For 26 dB Bandwidth: approximately 1% of the emission bandwidth.
VBW	For 6 dB Bandwidth: VBW=300 kHz For 26 dB Bandwidth: >3 RBW
Trace	Max hold
Sweep	Auto couple

Allow the trace to stabilize, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

5.4. Test result

Test Engineer:	Zhongyao	Test Site:	RF Measurement System 3#
Ambient Condition:	25.3℃, 45.7%RH	Test Date:	2023.11.07-2023.11.08
Test Power Supply:	AC 230V	EUT:	All-In-One Desktop Android HiFi Music Player
Sample Number:	S23101912-01	Model No.:	F3051R

Test Mode	Antenna	Frequency [MHz]	6db EBW [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
11A	Ant1	5745	15.68	5737.08	5752.76	0.5	PASS
		5785	16.28	5776.84	5793.12	0.5	PASS
		5825	15.80	5817.08	5832.88	0.5	PASS
11N20SISO	Ant1	5745	15.68	5737.40	5753.08	0.5	PASS
		5785	15.88	5776.84	5792.72	0.5	PASS
		5825	16.56	5816.80	5833.36	0.5	PASS
11N40SISO	Ant1	5755	36.08	5737.08	5773.16	0.5	PASS
		5795	35.76	5776.84	5812.60	0.5	PASS
11AC20SISO	Ant1	5745	17.28	5736.44	5753.72	0.5	PASS
		5785	16.68	5776.44	5793.12	0.5	PASS
		5825	15.96	5816.80	5832.76	0.5	PASS
11AC40SISO	Ant1	5755	36.08	5737.08	5773.16	0.5	PASS
		5795	36.08	5776.84	5812.92	0.5	PASS
11AC80SISO	Ant1	5775	75.20	5737.40	5812.60	0.5	PASS

5.5. Test graphs

