



FCC RF Test Report

APPLICANT : Realme Chongqing Mobile Telecommunications Corp., Ltd.
EQUIPMENT : Mobile Phone
BRAND NAME : realme
MODEL NAME : RMX5078
FCC ID : 2AUYFRMX5078
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure
TEST DATE(S) : Feb. 07, 2025 ~ Feb. 25, 2025

We, Sporton International Inc. (ShenZhen), would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc.(ShenZhen), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia



Sporton International Inc. (ShenZhen)

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People's Republic of China



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR4D2714E	Rev. 01	Initial issue of report	Mar. 04, 2025

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit for U-NII-1/2A/2C	Limit for U-NII-3	Result	Remark
3.1	2.1049 & 15.403(i)	6dB, 26dB & 99% Bandwidth	-	6dB Bandwidth > 500kHz	Pass	-
3.2	15.407(a)	Maximum Conducted Output Power	≤ 24 dBm	≤ 30 dBm	Pass	-
3.3	15.407(a)	Power Spectral Density	≤ 11 dBm/MHz	≤ 30 dBm/500kHz	Pass	-
3.4	15.407(b)	Unwanted Emissions	15.407(b) & 15.209(a)	15.407(b)(4)(i) & 15.209(a)	Pass	Under limit 5.01 dB at 5149.91 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	15.207(a)	Pass	Under limit 12.19 dB at 0.47 MHz
3.6	15.203 & 15.407(a)	Antenna Requirement	15.203 & 15.407(a)	15.203 & 15.407(a)	Pass	-

Conformity Assessment Condition:

- The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
- The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty"

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.



1 General Description

1.1 Applicant

Realme Chongqing Mobile Telecommunications Corp., Ltd.
No.178 Yulong Avenue, Yufengshan, Yubei District, Chongqing, China

1.2 Manufacturer

Realme Chongqing Mobile Telecommunications Corp., Ltd.
No.178 Yulong Avenue, Yufengshan, Yubei District, Chongqing, China

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Phone
Brand Name	realme
Model Name	RMX5078
FCC ID	2AUYFRMX5078
IMEI Code	Conducted: 865317070019775/865317070019767 Conduction: 865317070019635/865317070019627 Radiation: 865317070019692/865317070019684 for Ant 8 865317070019577/865317070019569 for Ant 9
HW Version	11
SW Version	realme UI 6.0
EUT Stage	Production Unit

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.



1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	5180 MHz ~ 5240 MHz 5260 MHz ~ 5320 MHz 5500 MHz ~ 5700 MHz 5745 MHz ~ 5825 MHz
Maximum Output Power to Antenna	<5180 MHz ~ 5240 MHz> 802.11a : 17.39 dBm / 0.0548 W 802.11n HT20 : 17.26 dBm / 0.0532 W 802.11n HT40 : 16.62 dBm / 0.0459 W 802.11ac VHT80: 12.56 dBm / 0.0180 W <5260 MHz ~ 5320 MHz> 802.11a : 15.32 dBm / 0.0340 W 802.11n HT20 : 15.24 dBm / 0.0334 W 802.11n HT40 : 14.69 dBm / 0.0294 W 802.11ac VHT80: 13.01 dBm / 0.0200 W <5500 MHz ~ 5700 MHz > 802.11a : 12.37 dBm / 0.0173 W 802.11n HT20 : 12.32 dBm / 0.0171 W 802.11n HT40 : 14.86 dBm / 0.0306 W 802.11ac VHT80: 14.86 dBm / 0.0306 W <5745 MHz ~ 5825 MHz> 802.11a : 12.63 dBm / 0.0183 W 802.11n HT20 : 12.97 dBm / 0.0198 W 802.11n HT40 : 12.93 dBm / 0.0196 W 802.11ac VHT80: 12.64 dBm / 0.0184 W
99% Occupied Bandwidth	<5180 MHz ~ 5240 MHz> 802.11a : 17.318 MHz 802.11n HT20 : 18.358 MHz 802.11n HT40 : 36.740 MHz 802.11ac VHT80 : 75.928 MHz <5260 MHz ~ 5320 MHz> 802.11a : 17.330 MHz 802.11n HT20 : 18.234 MHz 802.11n HT40 : 36.452 MHz 802.11ac VHT80 : 76.232 MHz <5500 MHz ~ 5700 MHz> 802.11a : 17.406 MHz 802.11n HT20 : 18.418 MHz 802.11n HT40 : 36.564 MHz 802.11ac VHT80 : 76.392 MHz <5745 MHz ~ 5825 MHz> 802.11a : 17.330 MHz 802.11n HT20 : 18.326 MHz 802.11n HT40 : 36.732 MHz 802.11ac VHT80 : 77.160 MHz

Antenna Type / Gain	<5180 MHz ~ 5240 MHz> <Ant.8>: IFA Antenna with gain 2.00 dBi <Ant.9>: IFA Antenna with gain -0.93 dBi <5260 MHz ~ 5320 MHz> <Ant.8>: IFA Antenna with gain 2.00 dBi <Ant.9>: IFA Antenna with gain -0.45 dBi <5500 MHz ~ 5700 MHz> <Ant.8>: IFA Antenna with gain 2.00 dBi <Ant.9>: IFA Antenna with gain -0.98 dBi <5745 MHz ~ 5825 MHz> <Ant.8>: IFA Antenna with gain 2.00 dBi <Ant.9>: IFA Antenna with gain -1.10 dBi
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)

Note:

- For 802.11n HT20 / ac VHT20 and 802.11n HT40 / ac VHT40 mode, the whole testing has assessed only 802.11n HT20/ HT40 by referring to their higher conducted power.
- WLAN ANT8 & ANT9 not support MIMO mode, they share the same RF antenna port. The device works with ANT8 by default and switches to ANT9 only when the game scene and the product is in landscape mode. After evaluation, only the main ANT8 is tested for the conducted test items.

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Testing Location

Sporton International Inc. (ShenZhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International Inc. (ShenZhen)		
Test Site Location	101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City, Guangdong Province 518103 People's Republic of China TEL: +86-755-86066985		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	TH01-SZ CO02-SZ 03CH04-SZ	CN1256	421272

1.7 Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH04-SZ	AUDIX	E3	6.2009-8-24
2.	CO02-SZ	AUDIX	E3	6.120613b

1.8 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR Part 15 Subpart E
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- ♦ ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Z/Y plane) were recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq.(MHz)	Channel	Freq. (MHz)
5180-5240 MHz U-NII-1	36	5180	44	5220
	38*	5190	46*	5230
	40	5200	48	5240
	42 [#]	5210	-	-
Frequency Band	Channel	Freq.(MHz)	Channel	Freq. (MHz)
5260-5320 MHz U-NII-2A	52	5260	60	5300
	54*	5270	62*	5310
	56	5280	64	5320
	58 [#]	5290	-	-
Frequency Band	Channel	Freq.(MHz)	Channel	Freq. (MHz)
5500-5700MHz U-NII-2C	100	5500	112	5560
	102*	5510	116	5580
	104	5520	132	5660
	106 [#]	5530	134*	5670
	108	5540	136	5680
	110*	5550	140	5700
Frequency Band	Channel	Freq.(MHz)	Channel	Freq. (MHz)
5745-5825 MHz U-NII-3	149	5745	157	5785
	151*	5755	159*	5795
	153	5765	161	5805
	155 [#]	5775	165	5825

Frequency Band	Channel	Freq.(MHz)	Channel	Freq. (MHz)
TDWR Channel	118*	5590	124	5620
	120	5600	126*	5630
	122 [#]	5610	128	5640

Note:

1. The above Frequency and Channel in "*" are 40MHz bandwidth.
2. The above Frequency and Channel in "[#]" are 80MHz bandwidth.

2.2 Test Mode

Final test modes are considering the modulation and worse data rates as below table.

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0
802.11ac VHT80	MCS0

AC Conducted Emission	Mode 1 : GSM 850 Idle + Bluetooth Link + WLAN Link (5G) + USB Cable(Charging from Adapter1) + Battery
Remark: For Radiated Test Cases, The tests were performance with Adapter 1 and USB Cable.	

RSE Co-location mode
802.11n HT40 CH38 Tx + LTE Band13 Link
802.11n HT40 CH38 Tx + Bluetooth BR_GFSK CH00 Tx + LTE Band13 Link

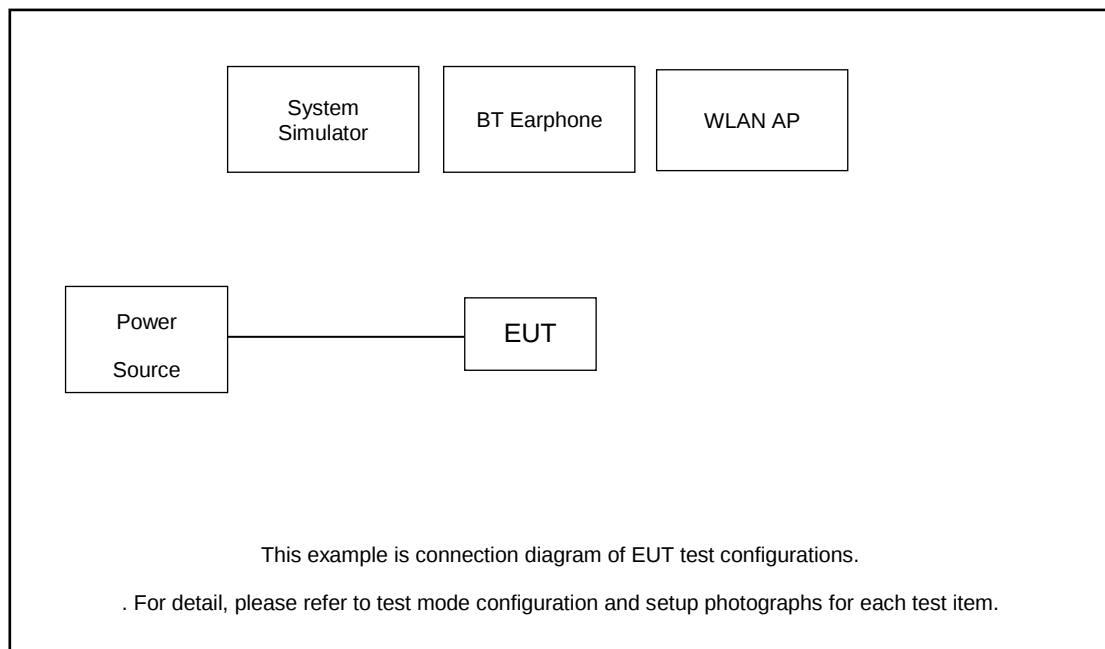
Ch. #		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
		20M BW	20M BW	20M BW	20M BW
L	Low	36	52	100	149
M	Middle	44	60	116	157
H	High	48	64	140	165

Ch. #		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
		40M BW	40M BW	40M BW	40M BW
L	Low	38	54	102	151
M	Middle	-	-	-	-
H	High	46	62	134	159

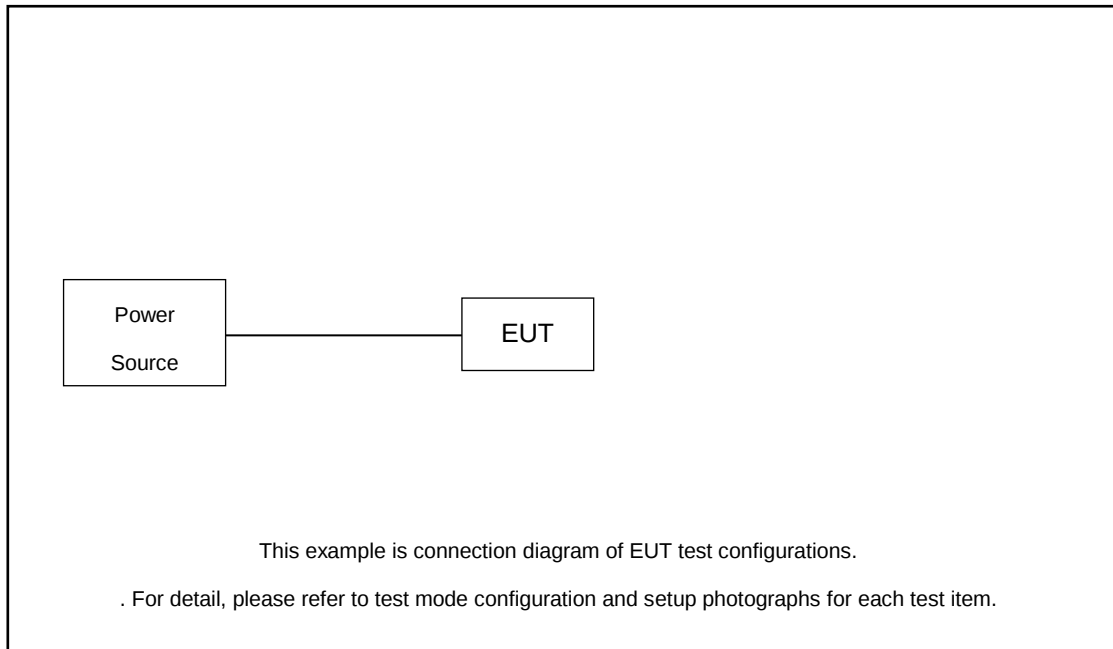
Ch. #		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
		80M BW	80M BW	80M BW	80M BW
L	Low	-	-	106	-
M	Middle	42	58	-	155
H	High	-	-	122	-

2.3 Connection Diagram of Test System

AC Conducted Emission:



Radiated Emission:



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8m
2.	WLAN AP	D-Link	DIR-628	KA2DIR628A2	N/A	Unshielded, 1.8 m
3.	Bluetooth Earphone	Samsung	EO-MG900	PYAHS-107W	N/A	N/A

2.5 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuously transmit.

For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.



2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.53 dB and 10dB attenuator.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 4.53 + 10 = 14.53 \text{ (dB)}\end{aligned}$$



3 Test Result

3.1 6dB and 26dB and 99% Occupied Bandwidth Measurement

3.1.1 Description of 6dB and 26dB and 99% Occupied Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

26dB and 99% Occupied bandwidth are reporting only.

3.1.2 Measuring Instruments

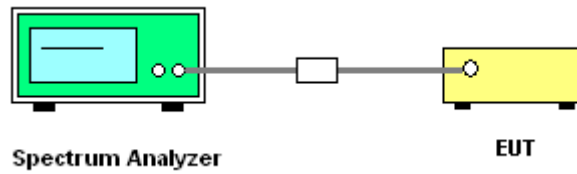
The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

☒	Section C) Bandwidth Measurement 1. Emission Bandwidth (EBW) and 99% OBW
	1. Set RBW = approximately 1% of the emission bandwidth. 2. Set the VBW > RBW. 3. Detector = Peak. 4. Trace mode = max hold 5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%. 6. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set to 1%~5% of the OBW and set the Video bandwidth (VBW) $\geq 3 * RBW$. 7. Measure and record the results in the test report.
☒	Section C) Bandwidth Measurement 2. Minimum Emission Bandwidth for the band 5.725 - 5.85 GHz
	1. Set RBW = 100kHz. 2. Set the VBW $\geq 3 * RBW$. 3. Detector = Peak. 4. Trace mode = max hold 5. Measure the maximum width of the emission that is 6 dB down from the peak of the emission. 6. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 6dB and 26dB and 99% Occupied Bandwidth

Please refer to Appendix A.

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

<FCC 14-30 CFR 15.407>

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW.

For the 5.25–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm +10 log₁₀ B, where B is the 26 dB emission bandwidth in megahertz.

For the band 5.725–5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note that U-NII-2 band, devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

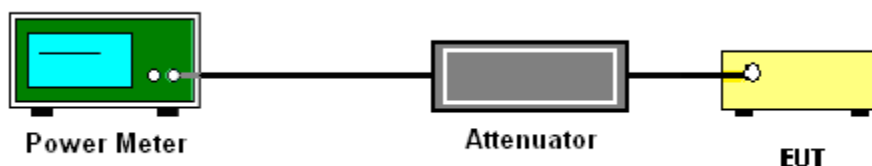
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, $10 \log(1/x)$, where x is the duty cycle.

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

<5180 MHz ~ 5240 MHz>										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	Pass/Fail	Power Setting
11a	6Mbps	1	36	5180	0.09	17.22	24.00	2.00	Pass	18
11a	6Mbps	1	44	5220	0.09	17.36	24.00	2.00	Pass	18
11a	6Mbps	1	48	5240	0.09	17.39	24.00	2.00	Pass	18
HT20	MCS0	1	36	5180	0.10	17.10	24.00	2.00	Pass	18
HT20	MCS0	1	44	5220	0.10	17.25	24.00	2.00	Pass	18
HT20	MCS0	1	48	5240	0.10	17.26	24.00	2.00	Pass	18
HT40	MCS0	1	38	5190	0.26	14.56	24.00	2.00	Pass	15
HT40	MCS0	1	46	5230	0.26	16.62	24.00	2.00	Pass	17
VHT80	MCS0	1	42	5210	0.51	12.56	24.00	2.00	Pass	13

<5260 MHz ~ 5320 MHz>											
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail	Power Setting
11a	6M bps	1	52	5260	0.09	15.32	23.98	2.00	26.99	Pass	16
11a	6M bps	1	60	5300	0.09	15.27	23.98	2.00	26.99	Pass	16
11a	6M bps	1	64	5320	0.09	15.29	23.98	2.00	26.99	Pass	16
HT20	MCS 0	1	52	5260	0.10	15.24	23.98	2.00	26.99	Pass	16
HT20	MCS 0	1	60	5300	0.10	15.19	23.98	2.00	26.99	Pass	16
HT20	MCS 0	1	64	5320	0.10	14.20	23.98	2.00	26.99	Pass	15
HT40	MCS 0	1	54	5270	0.26	14.69	23.98	2.00	26.99	Pass	15
HT40	MCS 0	1	62	5310	0.26	14.63	23.98	2.00	26.99	Pass	15
VHT80	MCS 0	1	58	5290	0.51	13.01	23.98	2.00	26.99	Pass	13.5



<5500 MHz ~ 5720 MHz >											
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail	Power Setting
11a	6M bps	1	100	5500	0.09	12.37	23.98	2.00	26.99	Pass	13
11a	6M bps	1	116	5580	0.09	12.10	23.98	2.00	26.99	Pass	13
11a	6M bps	1	140	5700	0.09	11.61	23.98	2.00	26.99	Pass	12.5
HT20	MCS 0	1	100	5500	0.10	12.32	23.98	2.00	26.99	Pass	13
HT20	MCS 0	1	116	5580	0.10	11.60	23.98	2.00	26.99	Pass	12.5
HT20	MCS 0	1	140	5700	0.10	11.51	23.98	2.00	26.99	Pass	12.5
HT40	MCS 0	1	102	5510	0.26	12.73	23.98	2.00	26.99	Pass	13
HT40	MCS 0	1	110	5550	0.26	14.68	23.98	2.00	26.99	Pass	15
HT40	MCS 0	1	134	5670	0.26	14.86	23.98	2.00	26.99	Pass	15.5
VHT80	MCS 0	1	106	5530	0.51	12.53	23.98	2.00	26.99	Pass	13
VHT80	MCS 0	1	122	5610	0.51	14.86	23.98	2.00	26.99	Pass	15.5

<5745 MHz ~ 5825 MHz>											
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	Pass/Fail	Setting	
11a	6M bps	1	149	5745	0.09	12.63	30.00	2.00	Pass	13.5	
11a	6Mbps	1	157	5785	0.09	10.90	30.00	2.00	Pass	12	
11a	6Mbps	1	165	5825	0.09	10.84	30.00	2.00	Pass	12	
HT20	MCS 0	1	149	5745	0.10	12.97	30.00	2.00	Pass	14	
HT20	MCS 0	1	157	5785	0.10	11.25	30.00	2.00	Pass	12.5	
HT20	MCS 0	1	165	5825	0.10	9.64	30.00	2.00	Pass	11	
HT40	MCS 0	1	151	5755	0.26	12.93	30.00	2.00	Pass	13.5	
HT40	MCS 0	1	159	5795	0.26	12.72	30.00	2.00	Pass	13.5	
VHT80	MCS 0	1	155	5775	0.51	12.64	30.00	2.00	Pass	13.5	

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

<FCC 14-30 CFR 15.407>

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band.

For the 5.25–5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

For the band 5.725–5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04.
Section F) Maximum power spectral density.

For devices operating in the bands UNII-1/2A/2C

Method SA-2

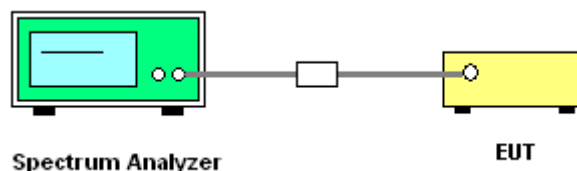
(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz.
- Set VBW $\geq$ 3 MHz.
- Number of points in sweep $\geq$ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add $10 \log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add $10 \log(1/0.25) = 6$ dB if the duty cycle is 25 percent.

For devices operating in the band UNII-3**# Method SA-2 #**

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

- Measure the duty cycle.
 - Set span to encompass the entire emission bandwidth (EBW) of the signal.
 - Set RBW = 500KHz (or 300 kHz if the SA can't set RBW=500KHz).
 - Set VBW ≥ 1 MHz.
 - Number of points in sweep ≥ 2 Span / RBW.
 - Sweep time = auto.
 - Detector = RMS
 - Trace average at least 100 traces in power averaging mode.
 - If the SA can't set RBW=500KHz, then add $10 \log(500\text{kHz}/\text{RBW})$ to the test result.
 - Add $10 \log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add $10 \log(1/0.25) = 6$ dB if the duty cycle is 25 percent.
1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
 2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.

3.3.4 Test Setup**3.3.5 Test Result of Power Spectral Density**

Please refer to Appendix A.

3.4 Unwanted Emissions Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part 15.205.

3.4.1 Limit of Unwanted Emissions

- (1) For transmitters operating in the 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27dBm/MHz.

For transmitters operating in the 5250-5350 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band must meet all applicable technical requirements for operation in the 5150-5250 MHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5150-5250 MHz band.

For transmitters operating in the 5470-5600 MHz and 5650-5725MHz band: all emissions outside of the 5470-5600 MHz and 5650-5725MHz band shall not exceed an EIRP of -27 dBm/MHz.

- (2) For transmitters operating in the 5.725-5.85 GHz band:
- 15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(3) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table,

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

(4) EIRP (dBm)	Field Strength at 3m (dBμV/m)
- 27	68.3

Note: The following formula is used to convert the EIRP to field strength.

$$\text{EIRP} = E_{\text{Meas}} + 20\log (d_{\text{Meas}}) - 104.7$$

where

EIRP is the equivalent isotropically radiated power, in dBm

E_{Meas} is the field strength of the emission at the measurement distance, in dBμV/m

d_{Meas} is the measurement distance, in m

3.4.2 Measuring Instruments

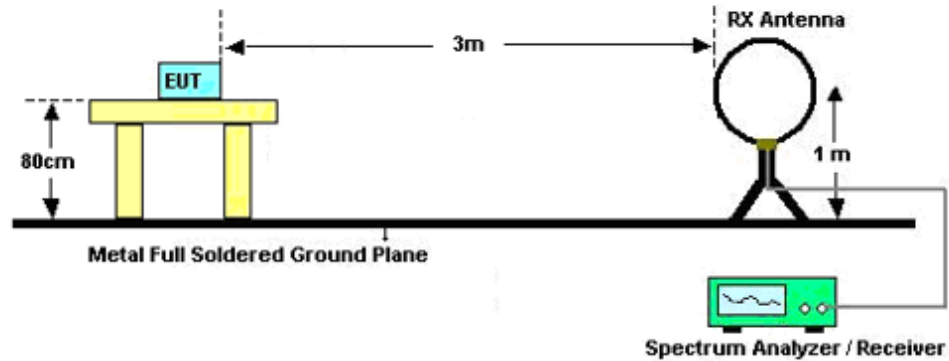
The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

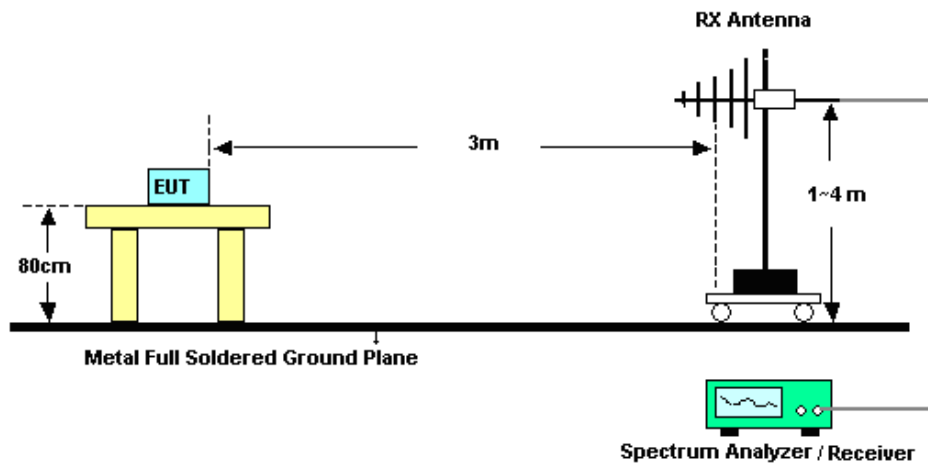
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04.
Section G) Unwanted emissions measurement.
(1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold(2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz
 - RBW = 1 MHz
 - VBW $\geq$ 3 MHz
 - Detector = Peak
 - Sweep time = auto
 - Trace mode = max hold(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz
 - RBW = 1 MHz
 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq$ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on.
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.4.4 Test Setup

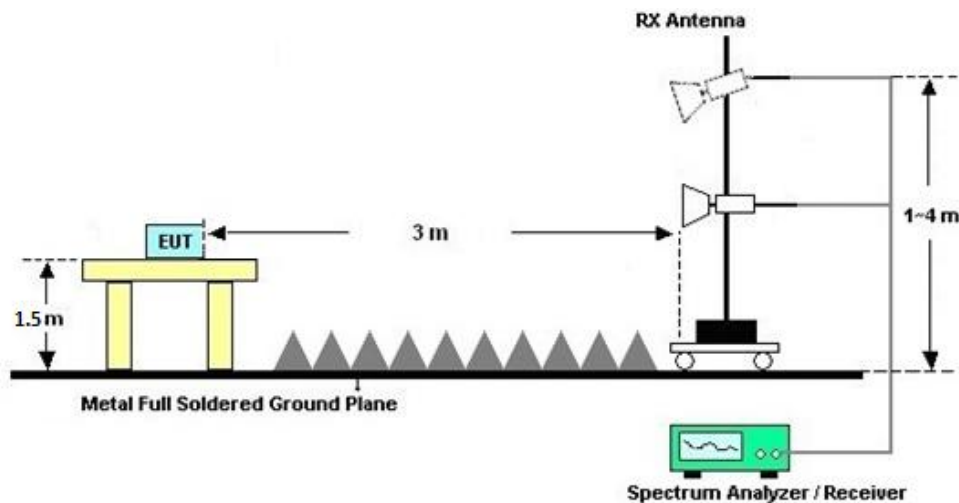
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



**3.4.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)**

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

3.4.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C.

3.4.7 Duty Cycle

Please refer to Appendix D.

3.4.8 Test Result of Radiated Spurious Emissions (30MHz ~ 10th Harmonic)

Please refer to Appendix C.

3.5 AC Conducted Emission Measurement

3.5.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

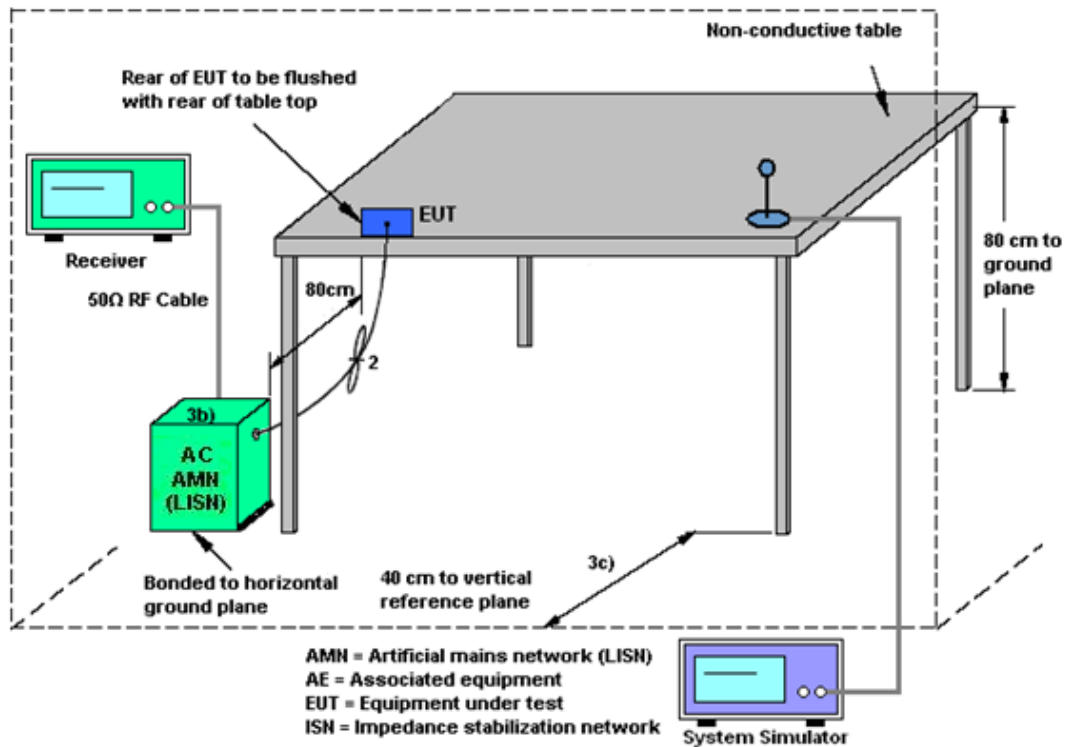
3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.5.4 Test Setup



3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.



3.6 Antenna Requirements

3.6.1 Standard Applicable

According to FCC 47 CFR Section 15.407(a)(1)(2), if transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.6.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.6.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	R&S	ESR7	101404	9kHz~7GHz	Oct. 14, 2024	Feb. 10, 2025~ Feb. 25, 2025	Oct. 13, 2025	Radiation (03CH04-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY551502 13	10Hz~44GHz	Jul. 03, 2024	Feb. 10, 2025~ Feb. 25, 2025	Jul. 02, 2025	Radiation (03CH04-SZ)
Loop Antenna	R&S	HFH2-Z2E	101141	9kHz~30MHz	Dec. 28, 2024	Feb. 10, 2025~ Feb. 25, 2025	Dec. 27, 2025	Radiation (03CH04-SZ)
Bilog Antenna	TeseQ	CBL6111D	41909	30MHz~1GHz	May 09, 2024	Feb. 10, 2025~ Feb. 25, 2025	May 08, 2025	Radiation (03CH04-SZ)
Double Ridge Horn Antenna	SCHWARZBE CK	BBHA9120D	9120D-147 4	1GHz~18GHz	Jul. 07, 2023	Feb. 10, 2025~ Feb. 25, 2025	Jul. 06, 2025	Radiation (03CH04-SZ)
Horn Antenna	SCHWARZBE CK	BBHA9170	9170#679	15GHz~40GHz	Jul. 04, 2024	Feb. 10, 2025~ Feb. 25, 2025	Jul. 03, 2025	Radiation (03CH04-SZ)
Amplifier	Burgeon	BPA-530	102211	0.01Hz ~3000MHz	Oct. 18, 2024	Feb. 10, 2025~ Feb. 25, 2025	Oct. 17, 2025	Radiation (03CH04-SZ)
HF Amplifier	MITEQ	AMF-7D-0010 1800-30-10P- R	1943528	1GHz~18GHz	Oct. 14, 2024	Feb. 10, 2025~ Feb. 25, 2025	Oct. 13, 2025	Radiation (03CH04-SZ)
HF Amplifier	MITEQ	TTA1840-35- HG	1871923	18GHz~40GHz	Jul. 03, 2024	Feb. 10, 2025~ Feb. 25, 2025	Jul. 02, 2025	Radiation (03CH04-SZ)
Amplifier	Agilent Technologies	83017A	MY572801 36	500MHz~26.5G Hz	Jul. 03, 2024	Feb. 10, 2025~ Feb. 25, 2025	Jul. 02, 2025	Radiation (03CH04-SZ)
AC Power Source	APC	AFV-S-600B	F11905001 9	N/A	Oct. 14, 2024	Feb. 10, 2025~ Feb. 25, 2025	Oct. 13, 2025	Radiation (03CH04-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Feb. 10, 2025~ Feb. 25, 2025	NCR	Radiation (03CH04-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Feb. 10, 2025~ Feb. 25, 2025	NCR	Radiation (03CH04-SZ)
EMI Receiver	R&S	ESR7	102297	9kHz~7GHz;	Jul. 03, 2024	Feb. 12, 2025	Jul. 02, 2025	Conduction (CO02-SZ)
AC LISN	R&S	ENV216	101499	9kHz~30MHz	Jul. 03, 2024	Feb. 12, 2025	Jul. 02, 2025	Conduction (CO02-SZ)
AC Power Source	CHROMA	61601	616010002 470	100Vac~250Vac	Dec.25, 2024	Feb. 12, 2025	Dec. 24, 2025	Conduction (CO02-SZ)
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 09, 2024	Feb. 07, 2025	Apr. 08, 2025	Conducted (TH01-SZ)
Pulse Power Senor	Anritsu	MA2411B	1339473	30MHz~40GHz	Dec. 25, 2024	Feb. 07, 2025	Dec. 24, 2025	Conducted (TH01-SZ)
Thermo meter	Anymetre	JR593	#7	- 10℃ ~ 50℃ 10%RH~99%R H	Apr. 09, 2024	Feb. 07, 2025	Apr. 08, 2025	Conducted (TH01-SZ)

NCR: No Calibration Required

5 Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.10-2013. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Conducted Measurement

Test Item	Uncertainty
Conducted Spurious Emission & Bandedge	±1.34 dB
Occupied Channel Bandwidth	±0.012 MHz
Conducted Power	±1.34 dB
Conducted Power Spectral Density	±1.32 dB
Frequency	±1.3 Hz

Uncertainty of AC Conducted Emission Measurement (0.15 MHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.5 dB
---	--------

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.1 dB
---	--------

Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.8 dB
---	--------

Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.1 dB
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----- THE END -----



Appendix A. Conducted Test Results



Ambient Condition: 24-26 °C, 45-55 %RH

Test Date: 2025.02.07

Test Engineer: Chen ZhiQiang

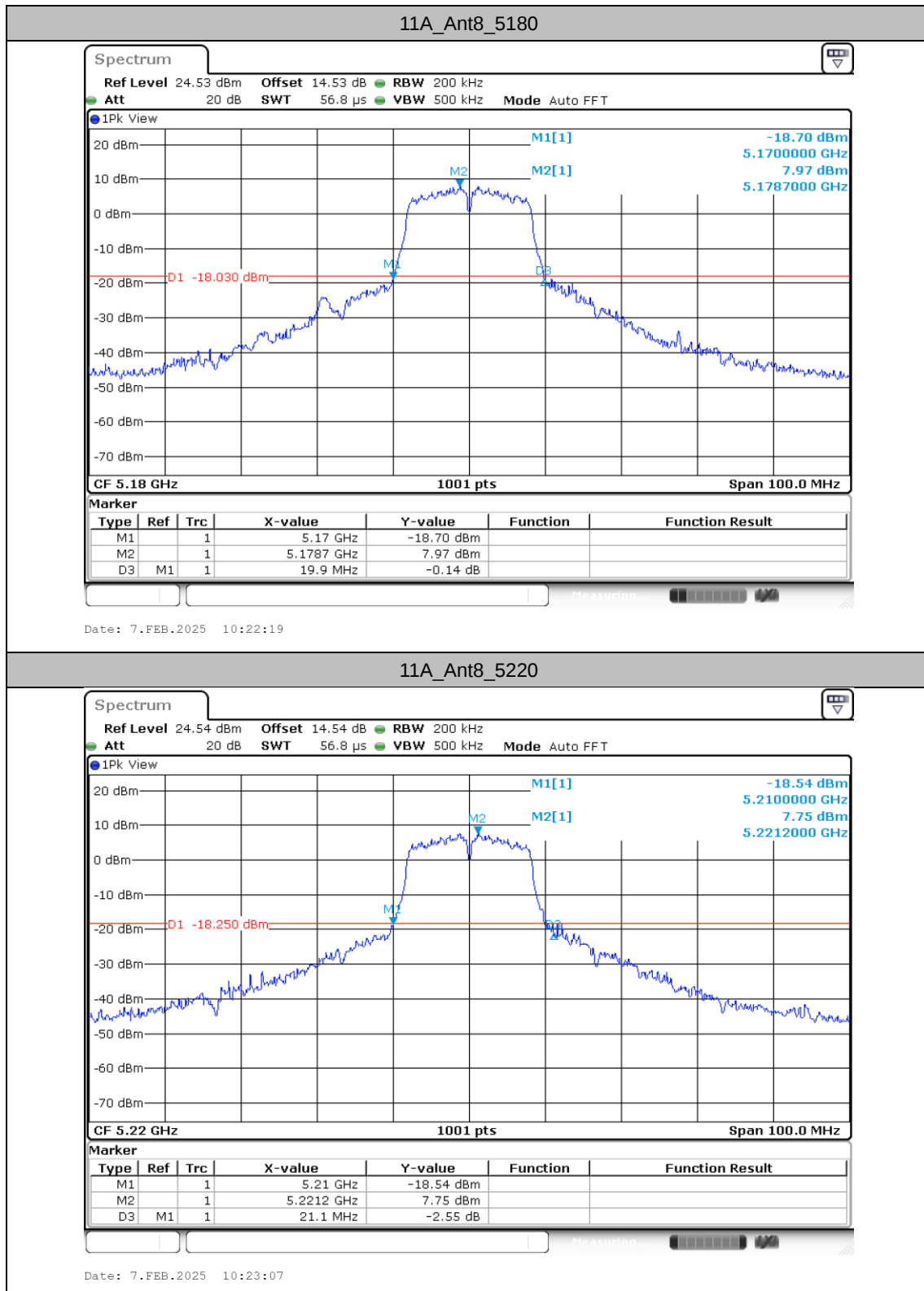
Emission Bandwidth

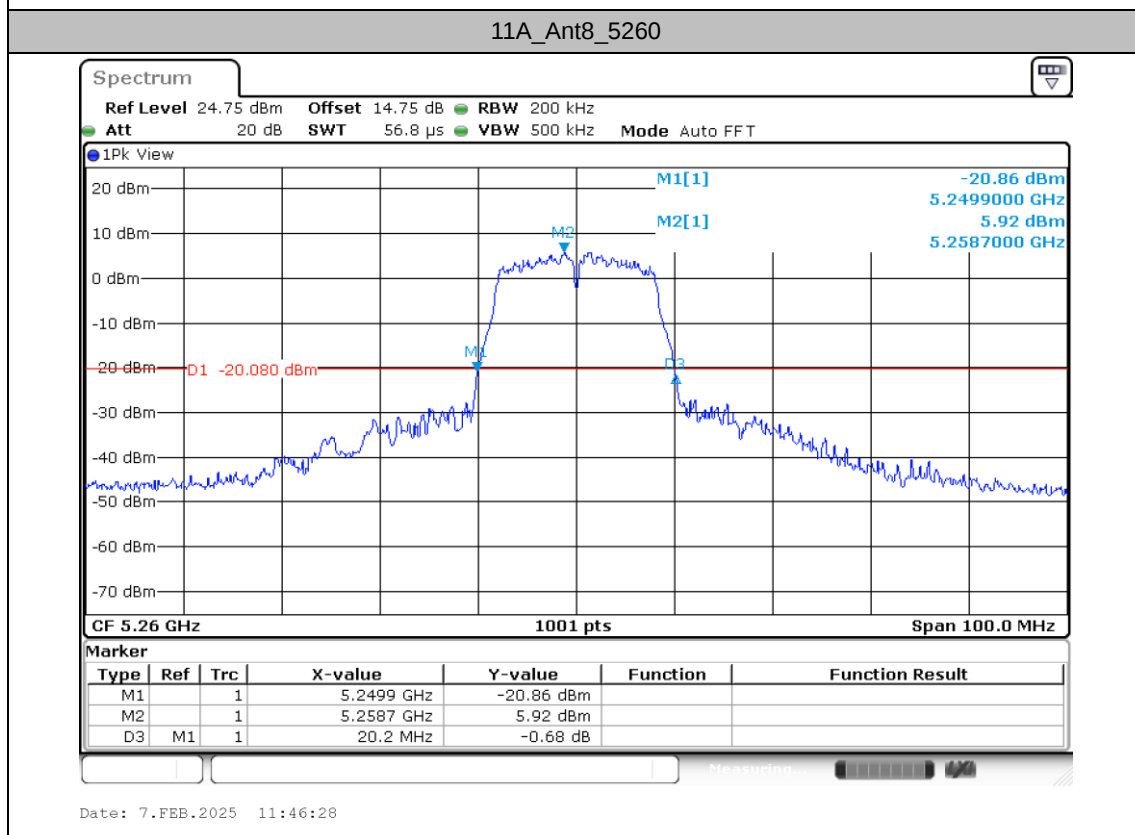
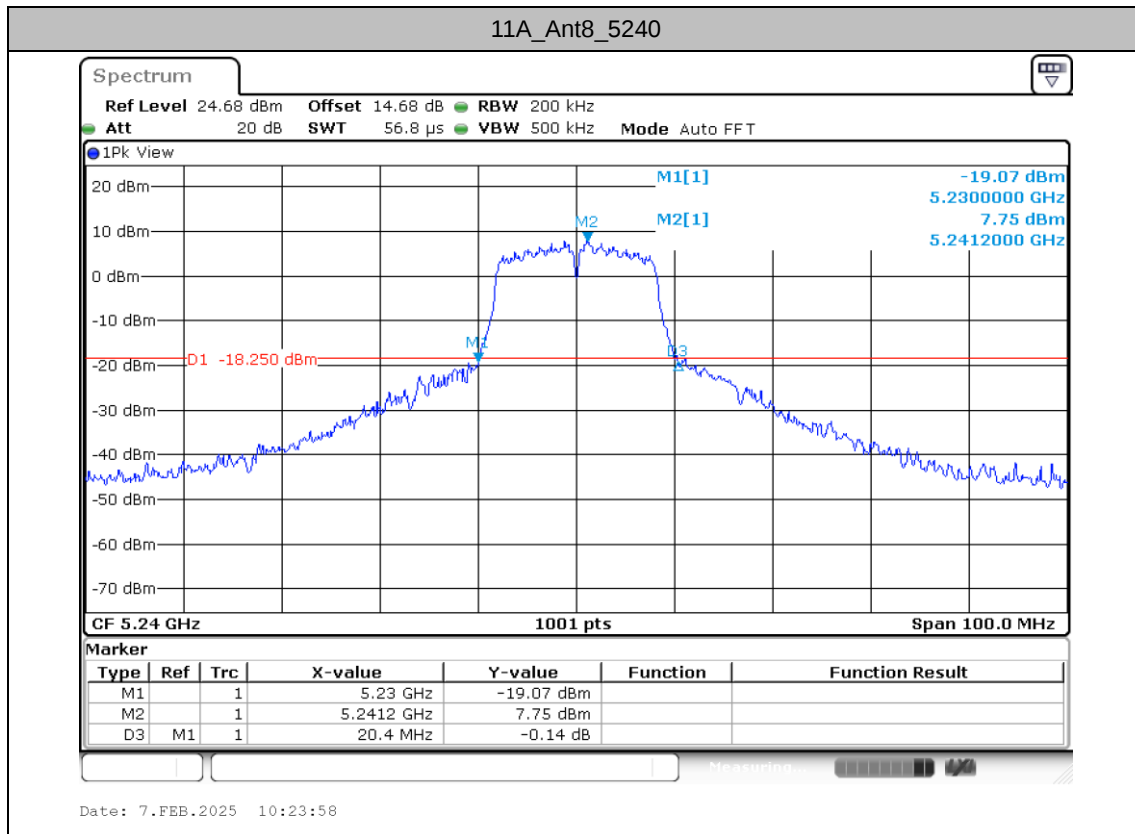
Test Result

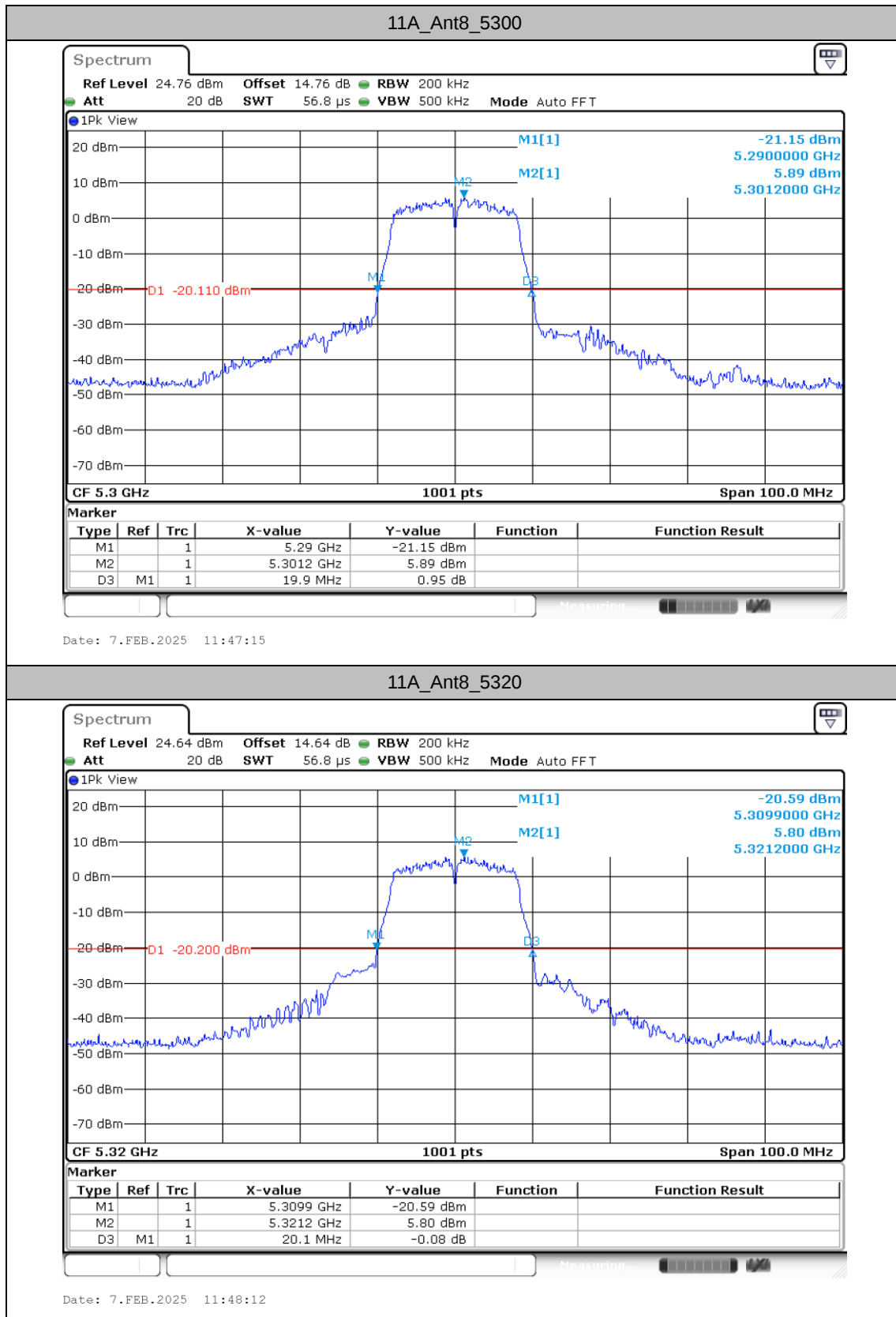
TestMode	Antenna	Freq(MHz)	26dB EBW [MHz]	FL[MHz]	FH[MHz]
11A	Ant8	5180	19.90	5170.00	5189.90
		5220	21.10	5210.00	5231.10
		5240	20.40	5230.00	5250.40
		5260	20.20	5249.90	5270.10
		5300	19.90	5290.00	5309.90
		5320	20.10	5309.90	5330.00
		5500	20.00	5490.00	5510.00
		5580	20.00	5570.00	5590.00
		5700	19.90	5690.10	5710.00
		5745	20.30	5735.00	5755.30
		5785	20.20	5774.90	5795.10
11N20SISO	Ant8	5825	19.90	5815.10	5835.00
		5180	21.30	5169.20	5190.50
		5220	22.00	5208.20	5230.20
		5240	21.90	5228.20	5250.10
		5260	20.40	5249.80	5270.20
		5300	20.30	5289.90	5310.20
		5320	20.30	5309.80	5330.10
		5500	20.40	5489.70	5510.10
		5580	20.40	5569.80	5590.20
		5700	20.50	5689.70	5710.20
		5745	20.40	5734.80	5755.20
11N40SISO	Ant8	5785	20.40	5774.80	5795.20
		5825	20.30	5814.80	5835.10
		5190	41.40	5169.00	5210.40
		5230	42.40	5209.00	5251.40
		5270	40.80	5249.60	5290.40
		5310	41.20	5289.40	5330.60
		5510	40.60	5489.60	5530.20
		5550	41.00	5529.60	5570.60
		5670	41.00	5649.60	5690.60
		5755	40.80	5734.60	5775.40
		5795	41.00	5774.60	5815.60
11AC80SISO	Ant8	5210	81.60	5169.20	5250.80
		5290	81.60	5249.20	5330.80
		5530	81.20	5489.60	5570.80
		5610	81.60	5569.20	5650.80
		5775	82.00	5733.80	5815.80

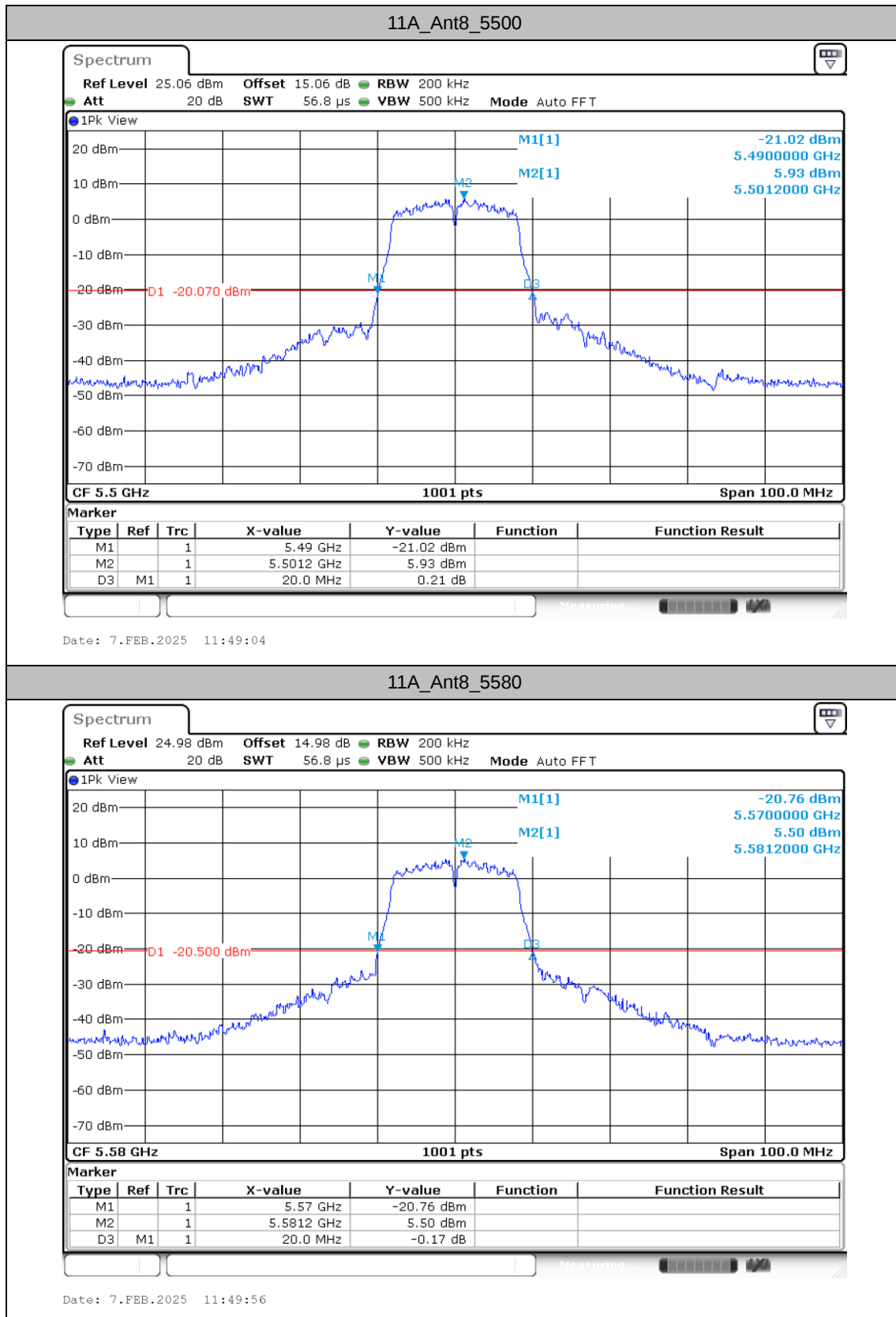


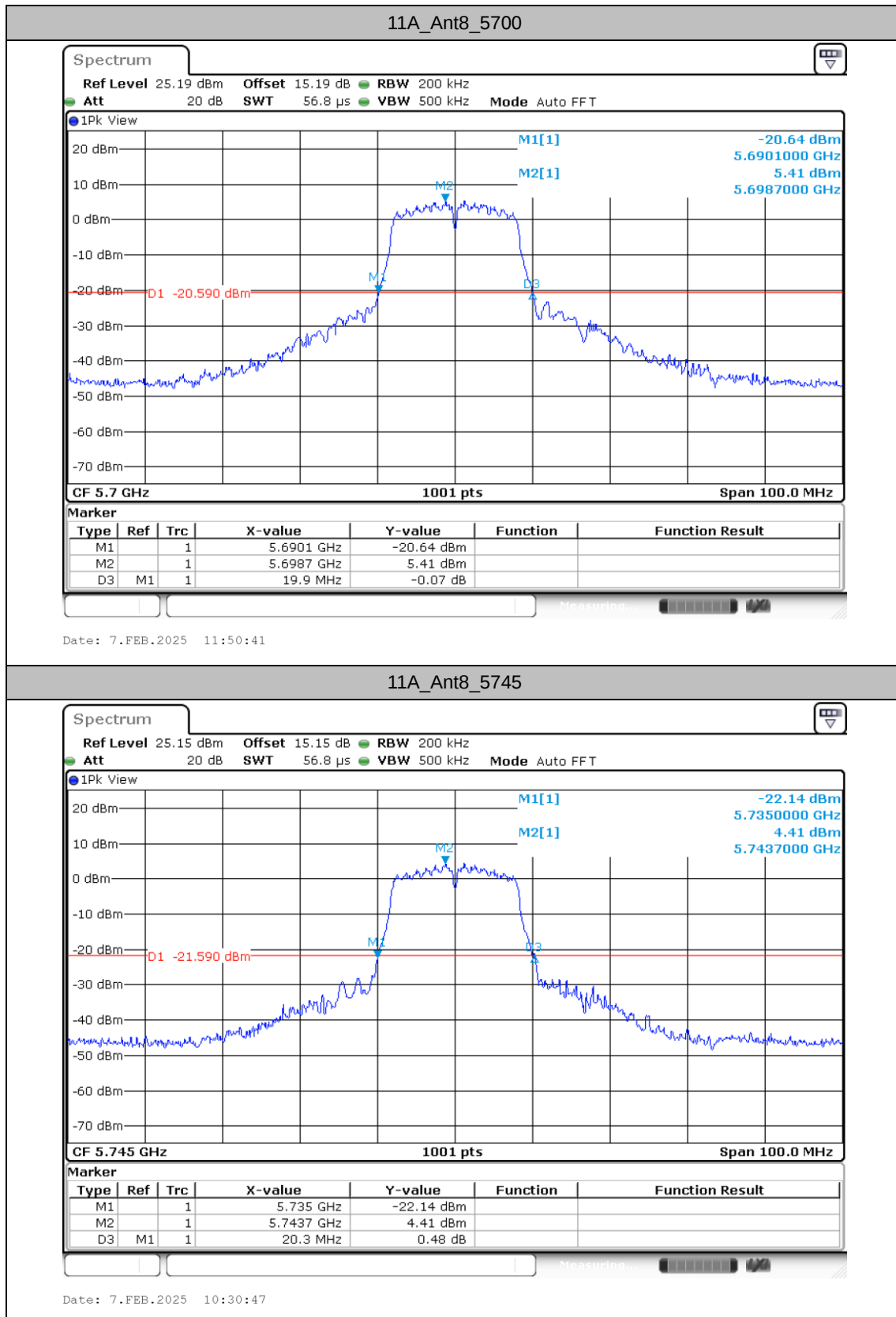
Test Graphs

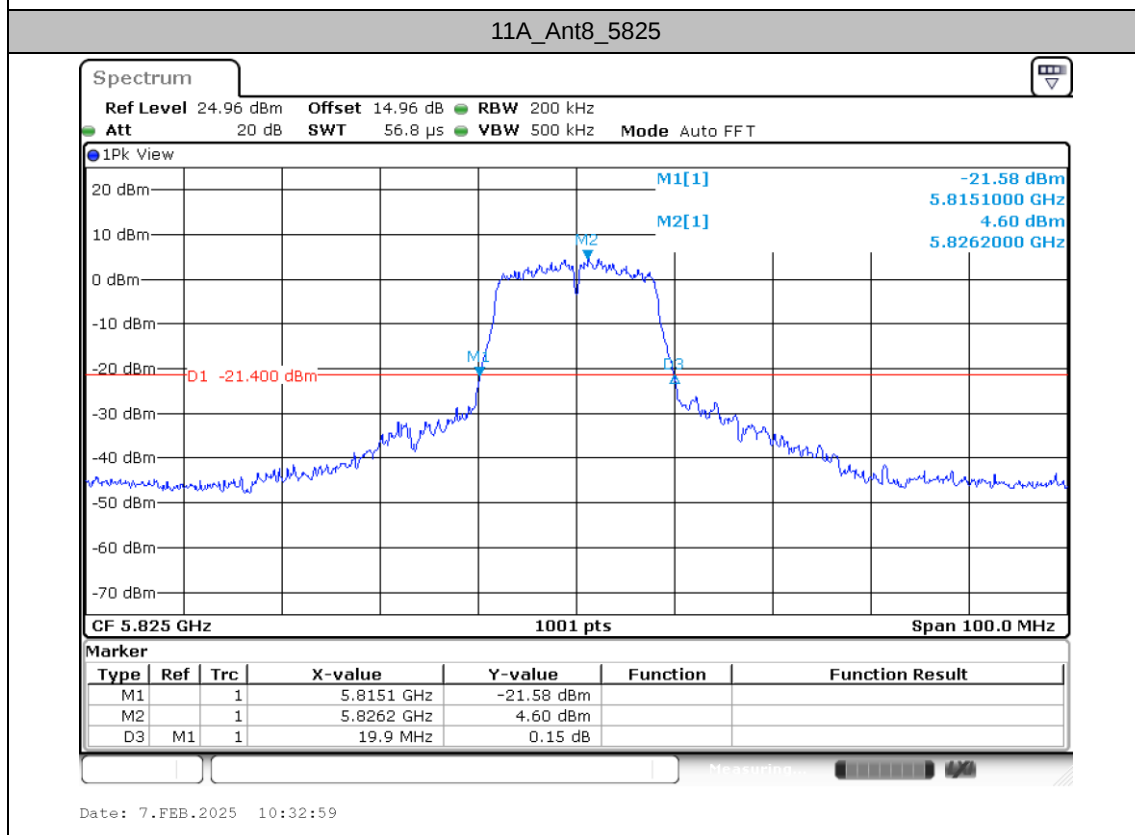
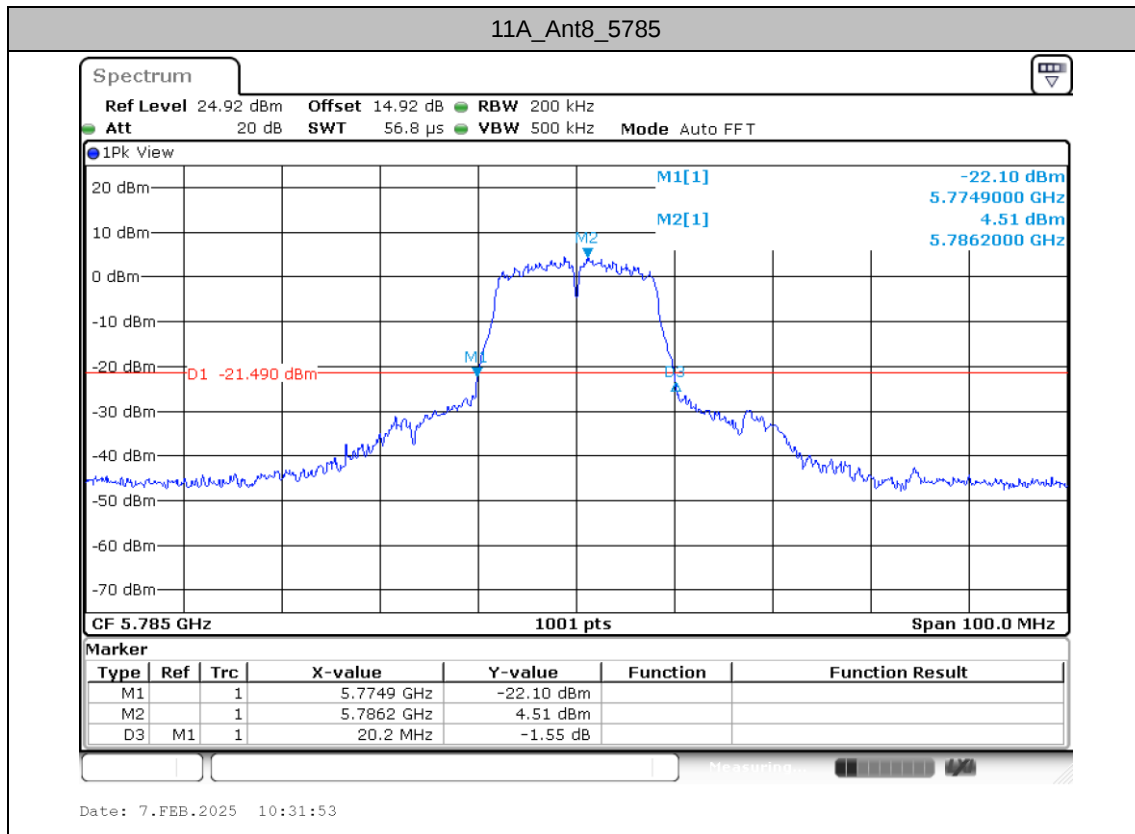


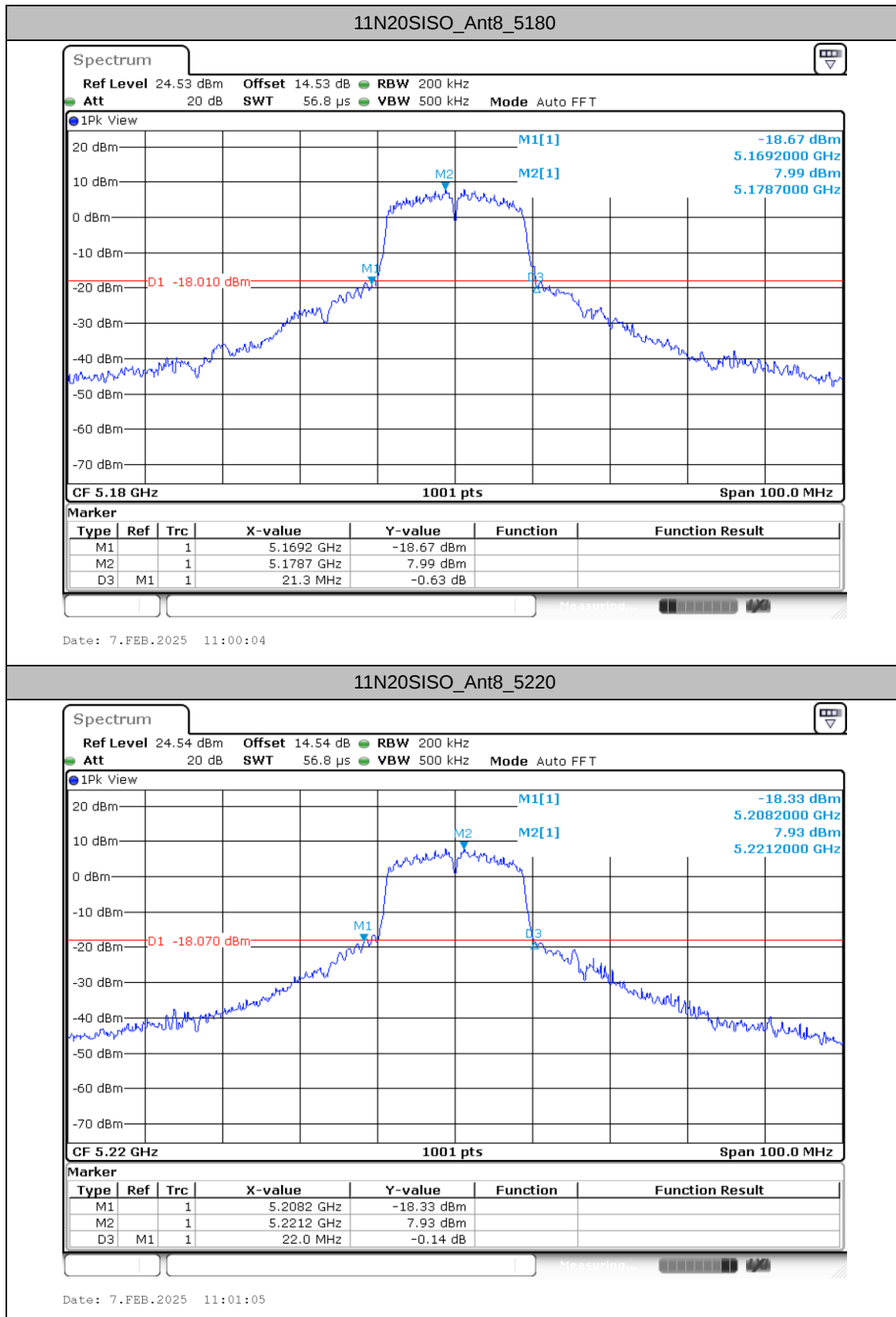


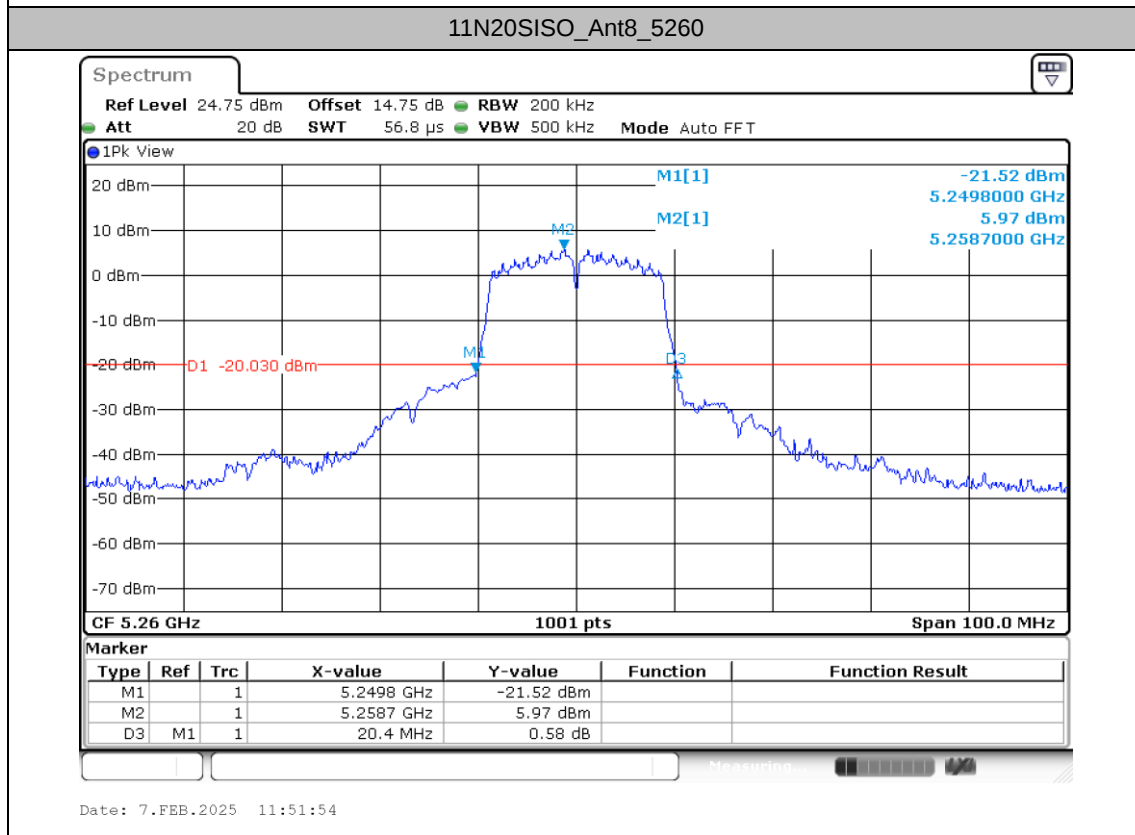
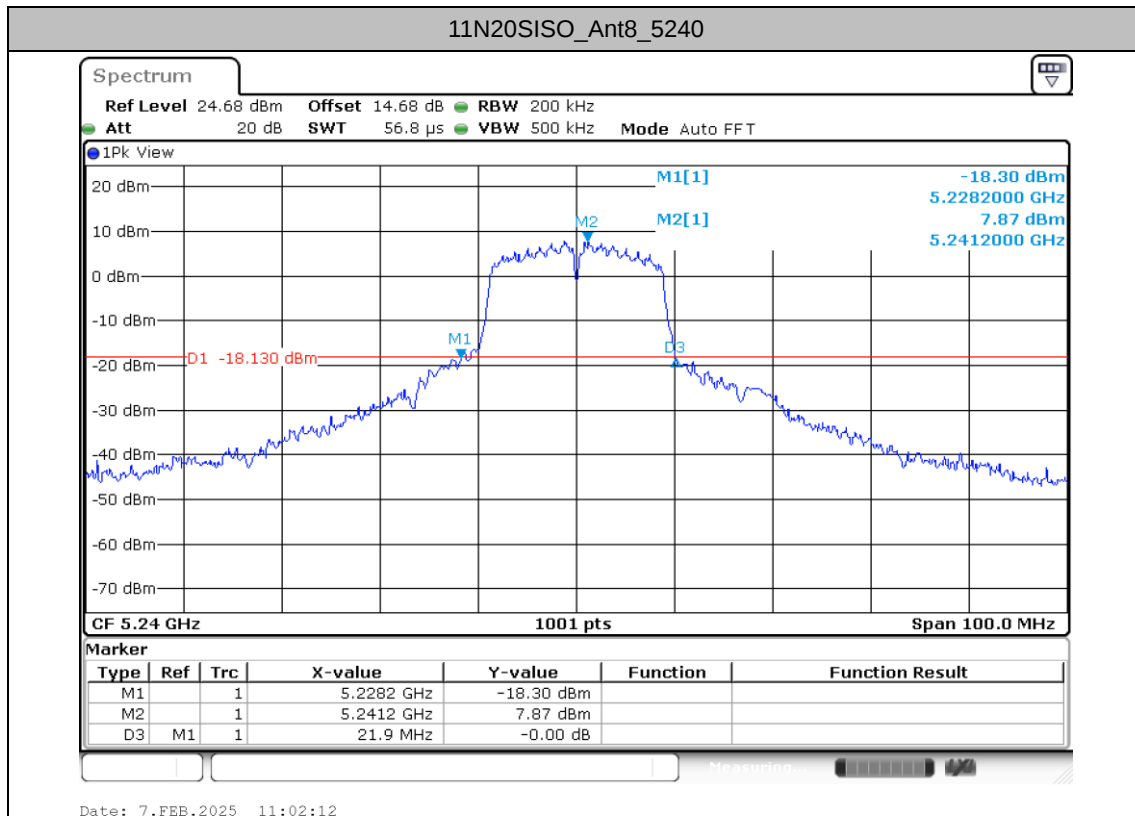


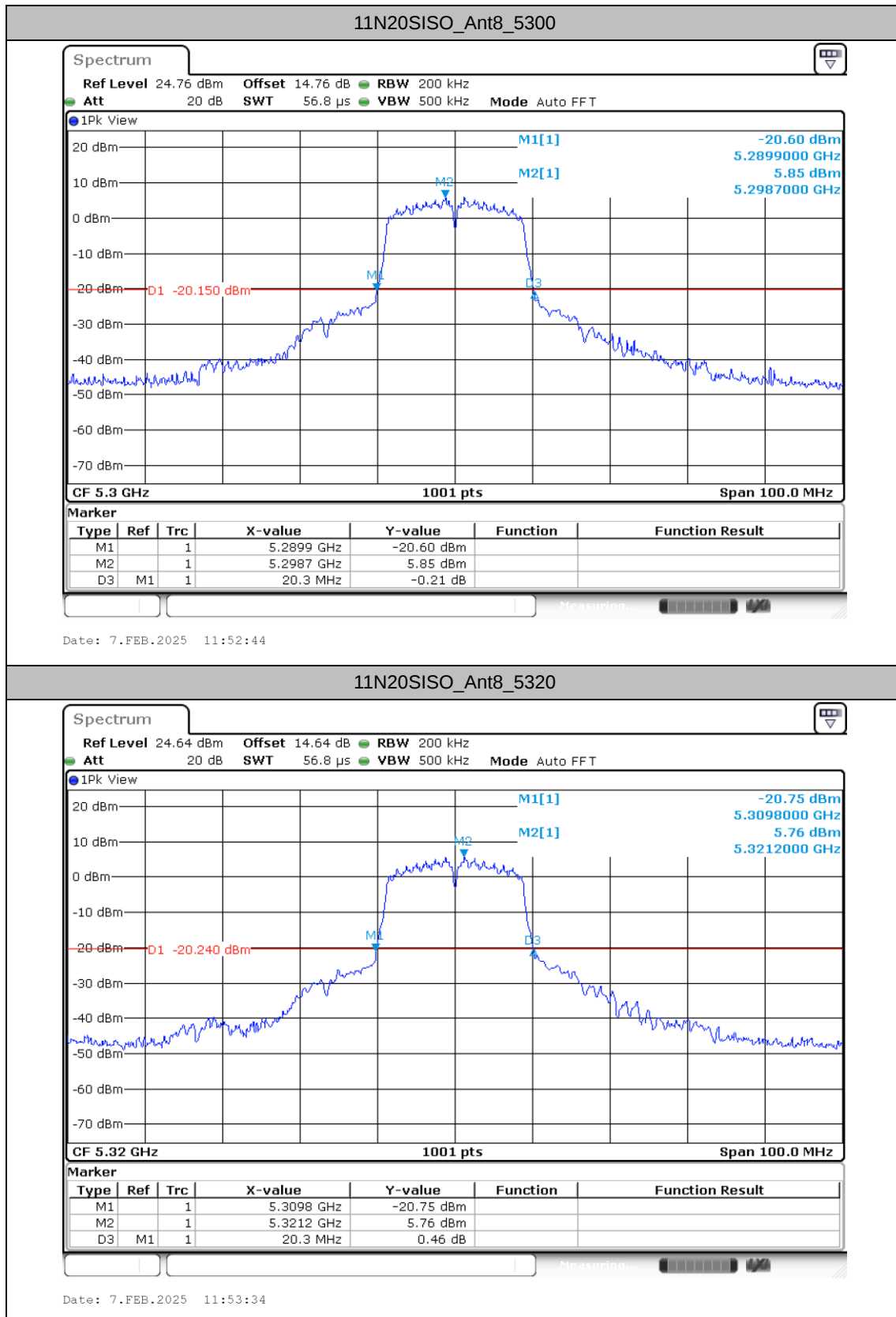


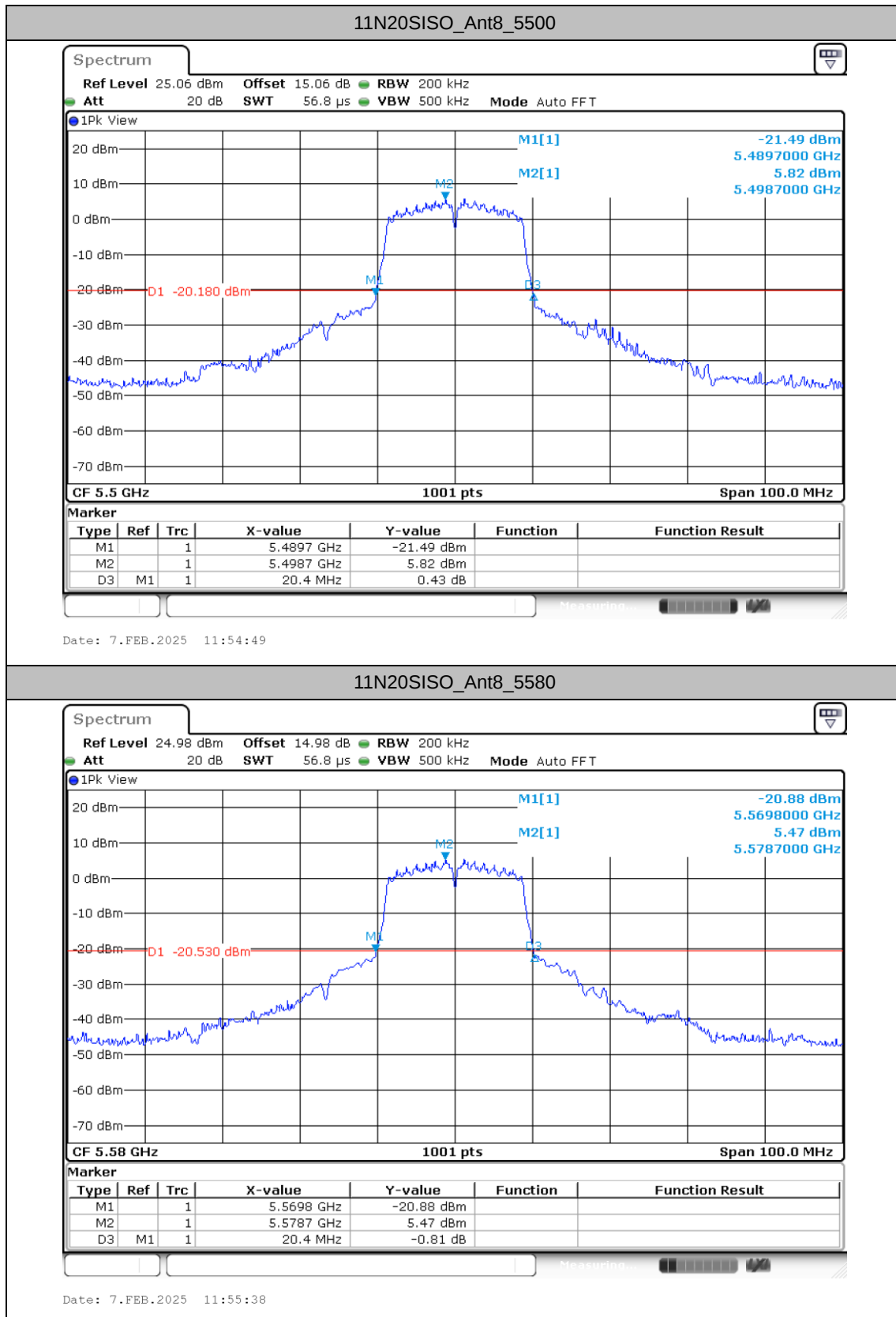


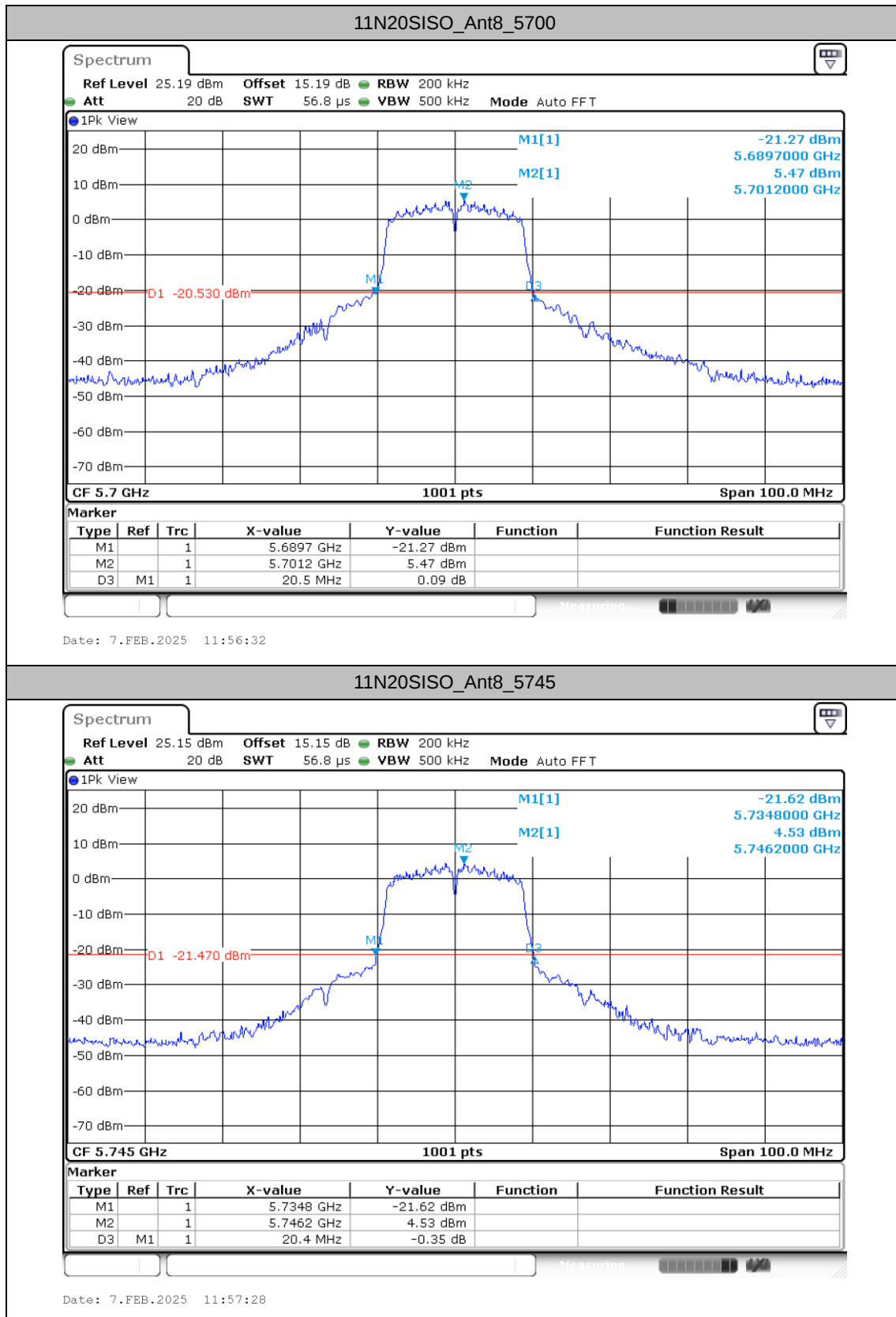


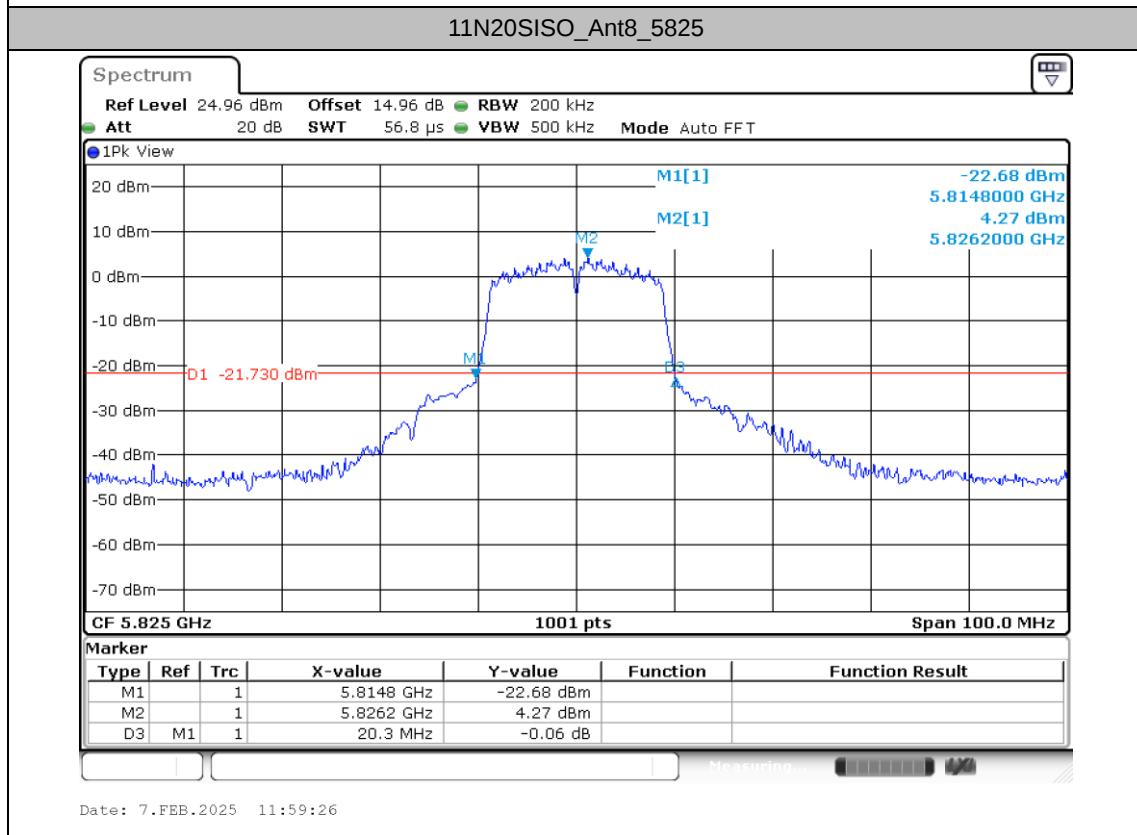
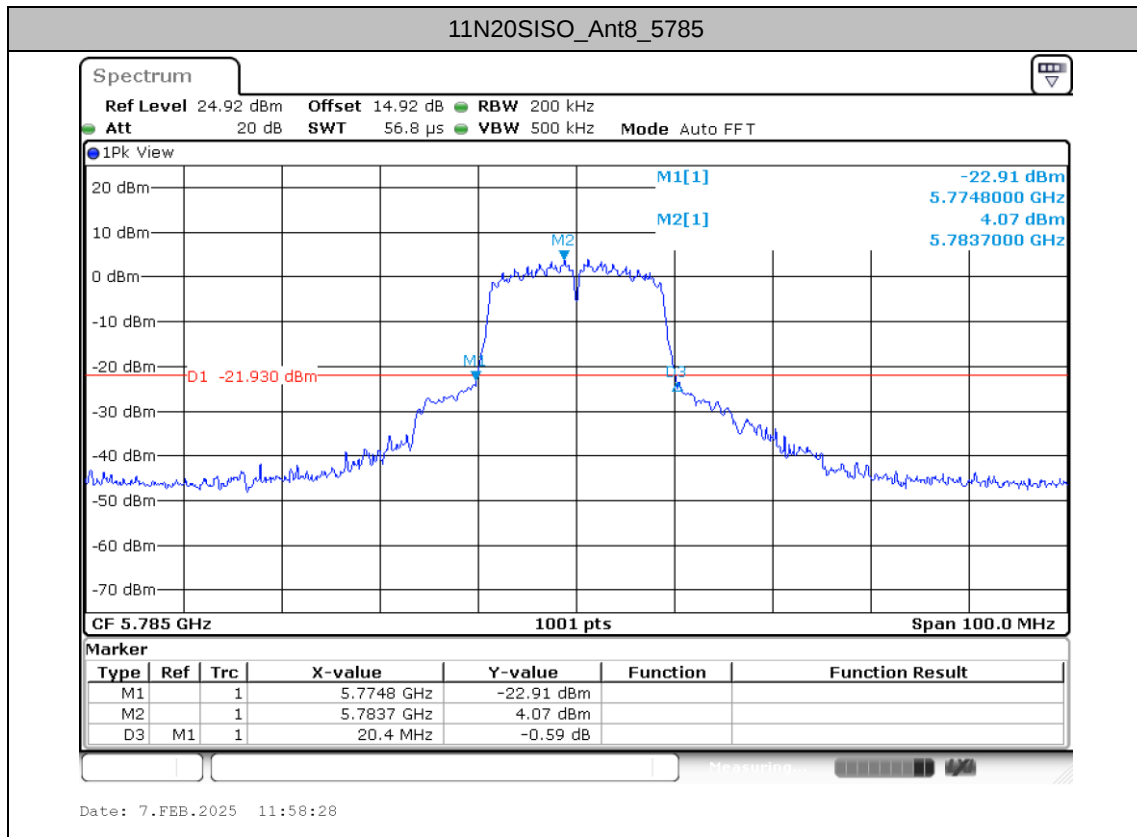


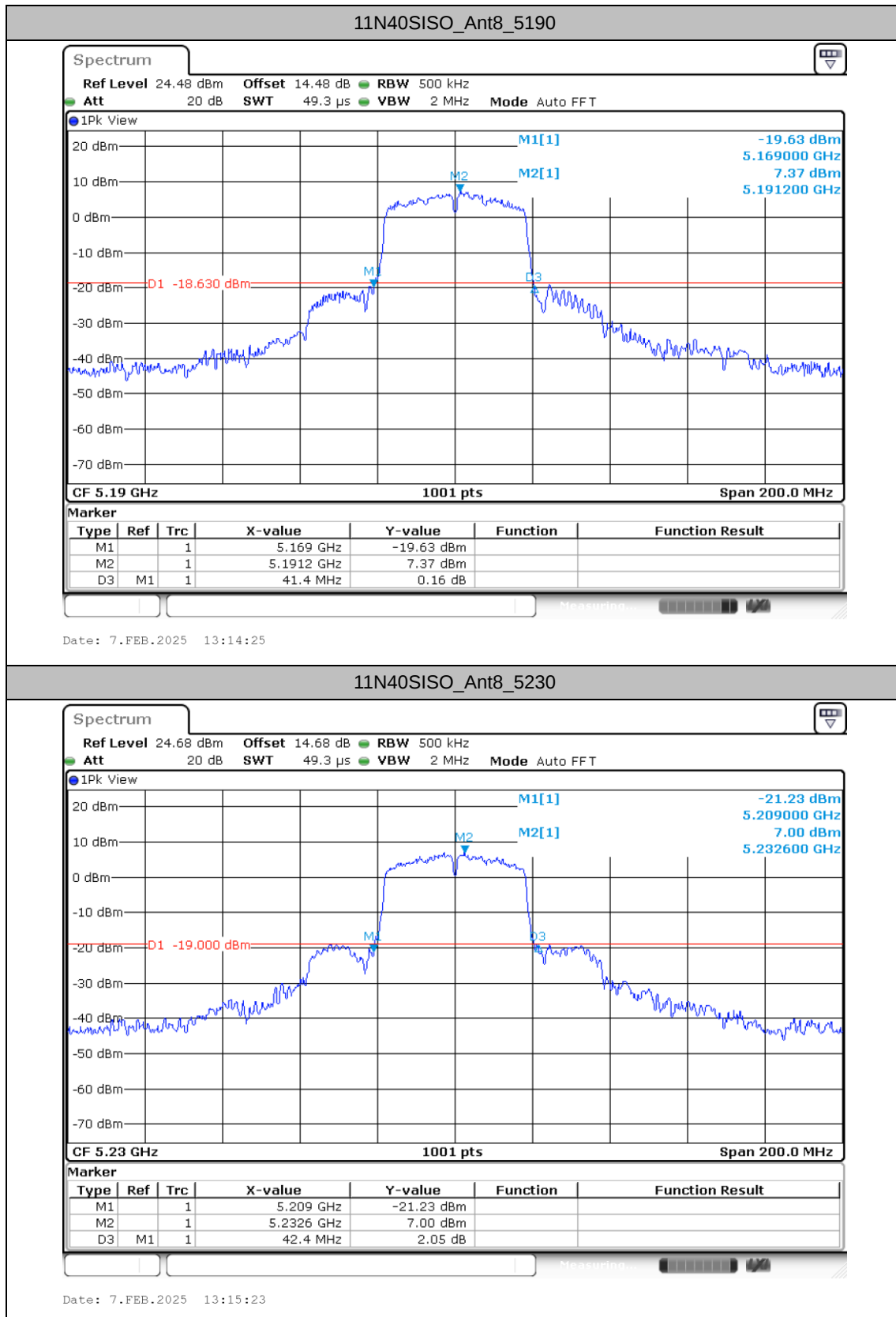


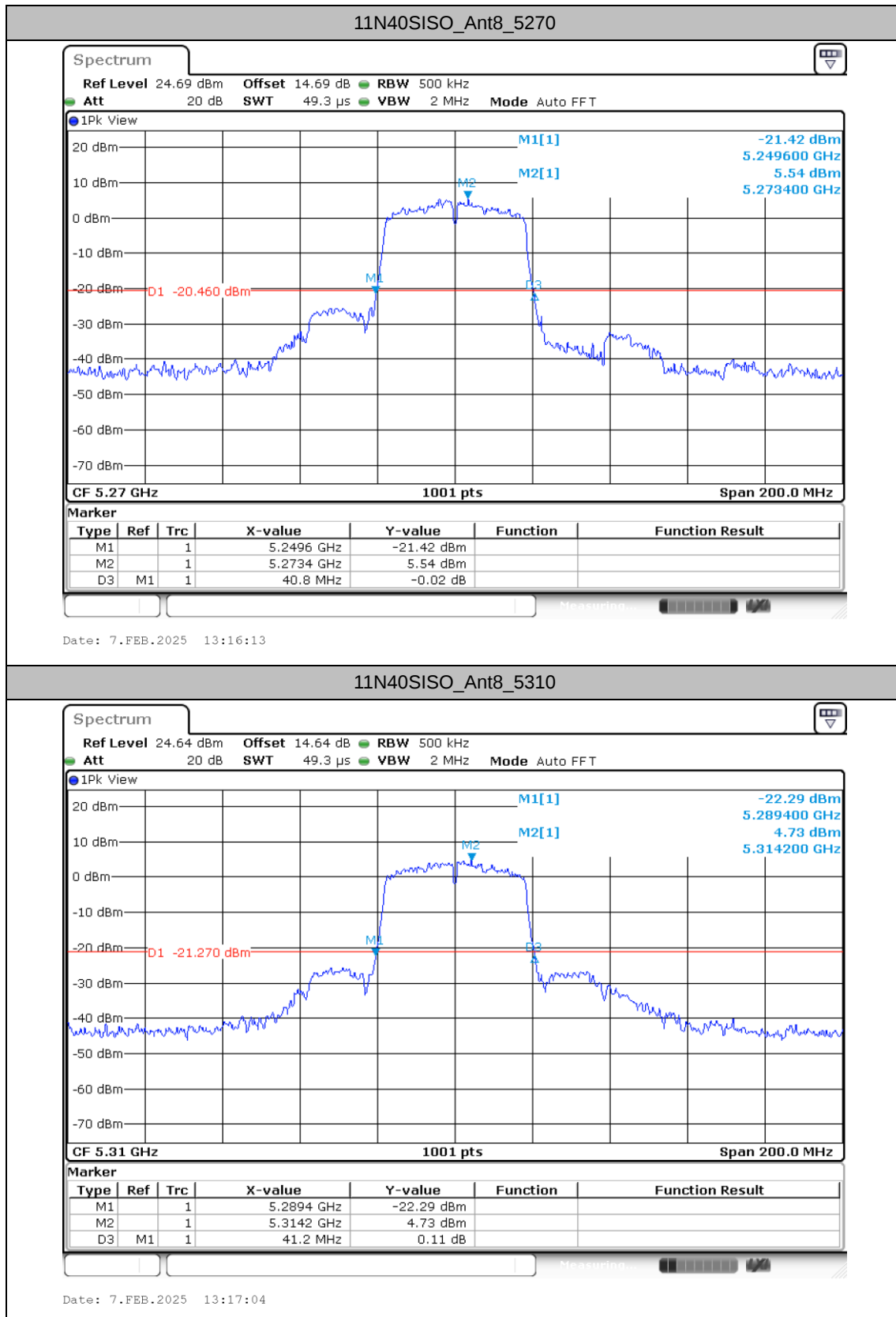


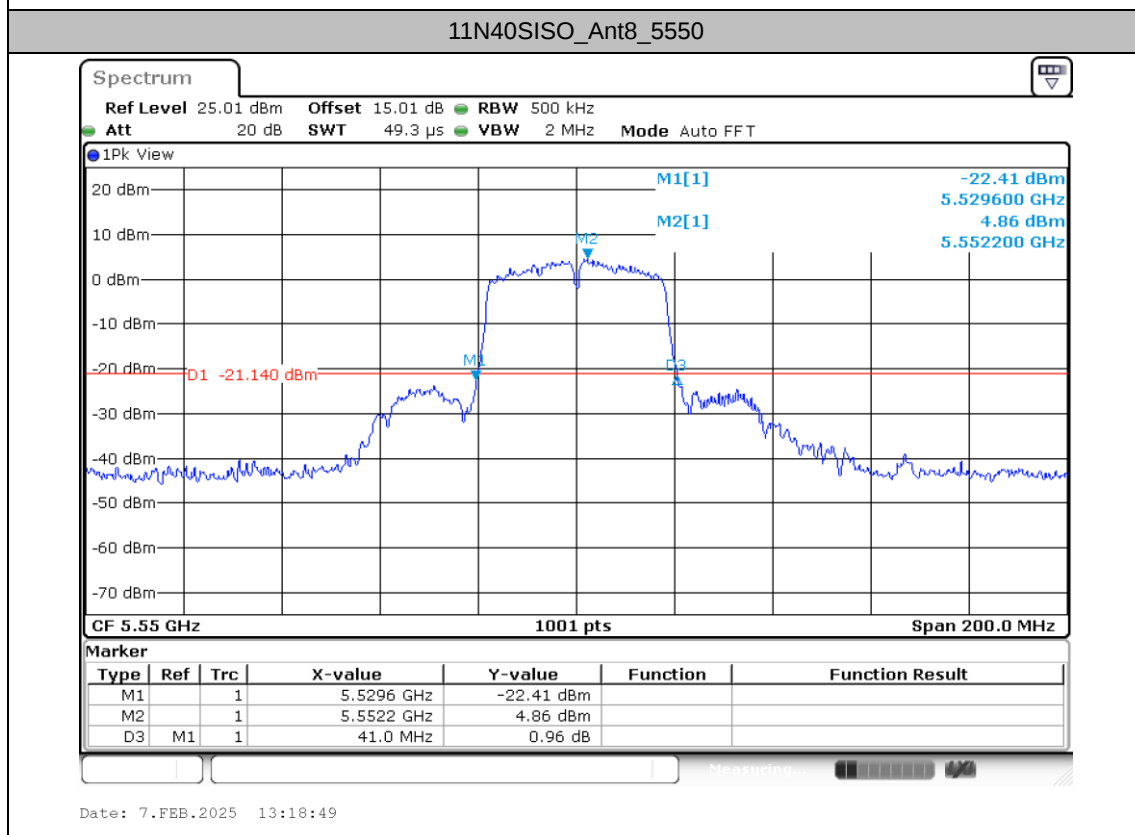
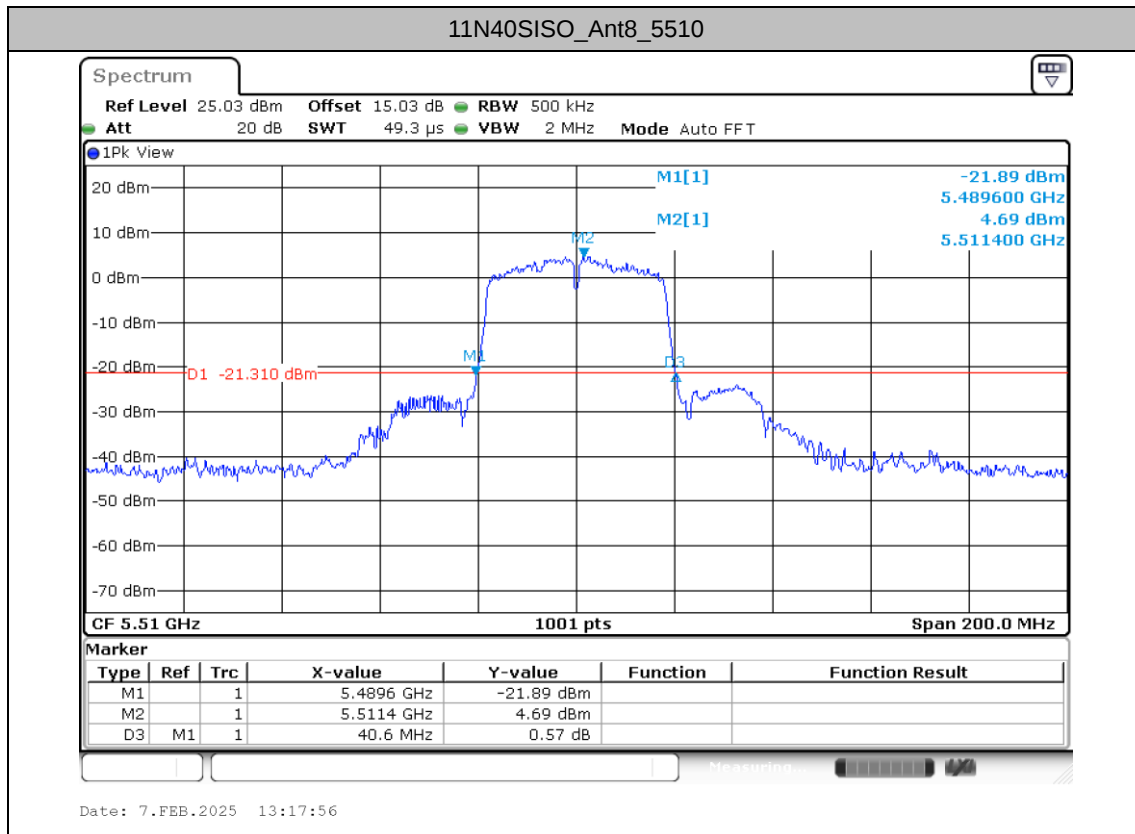


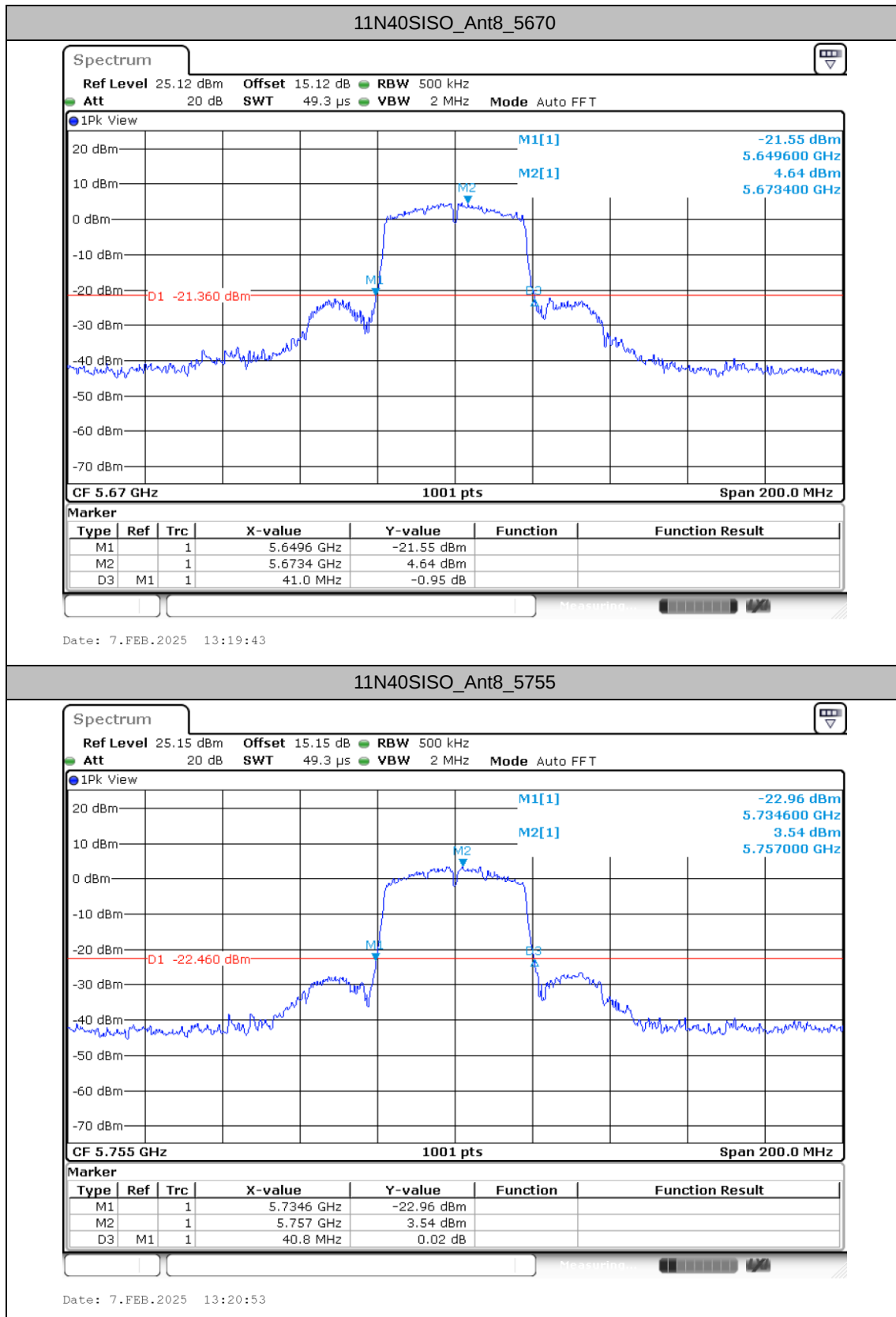


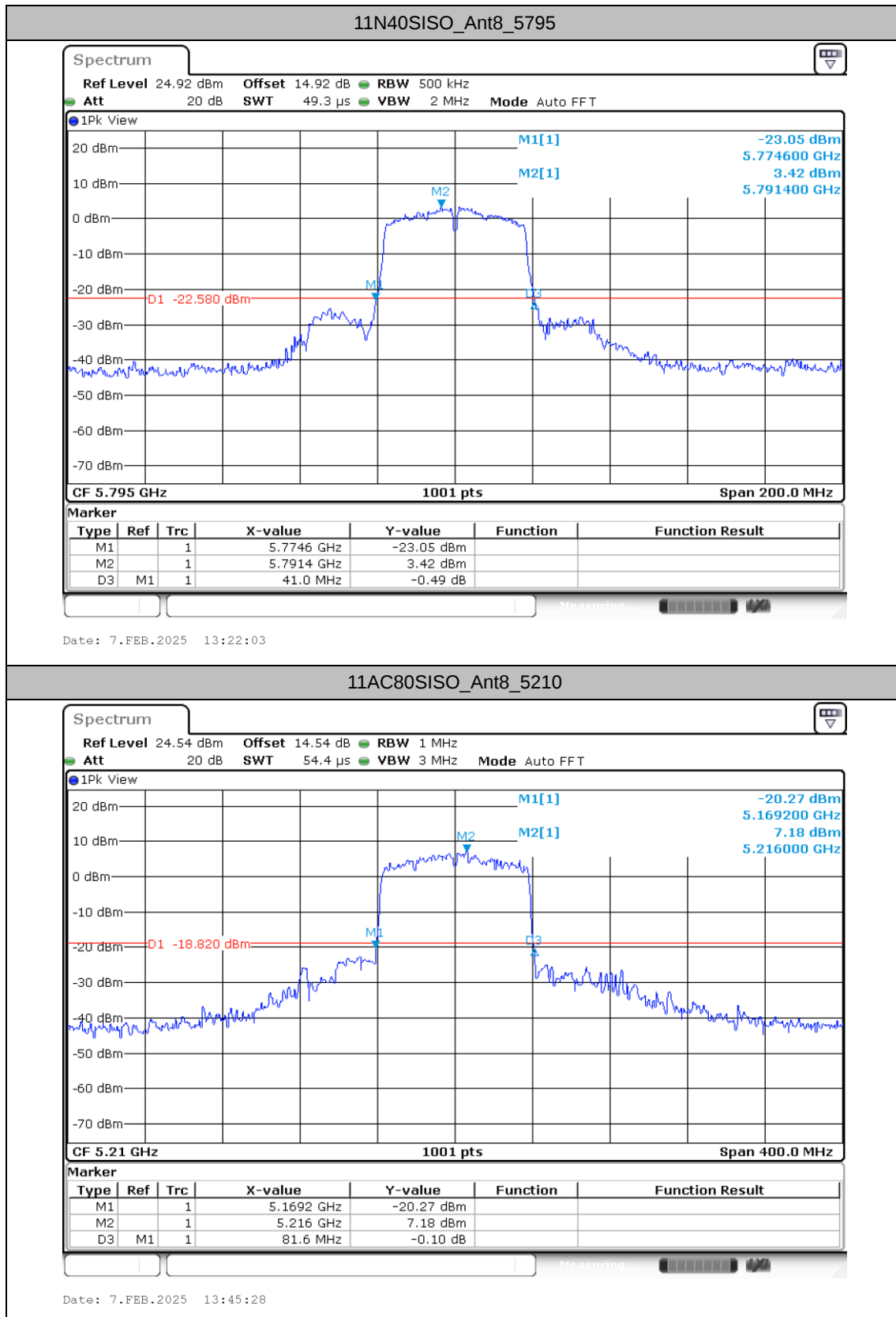


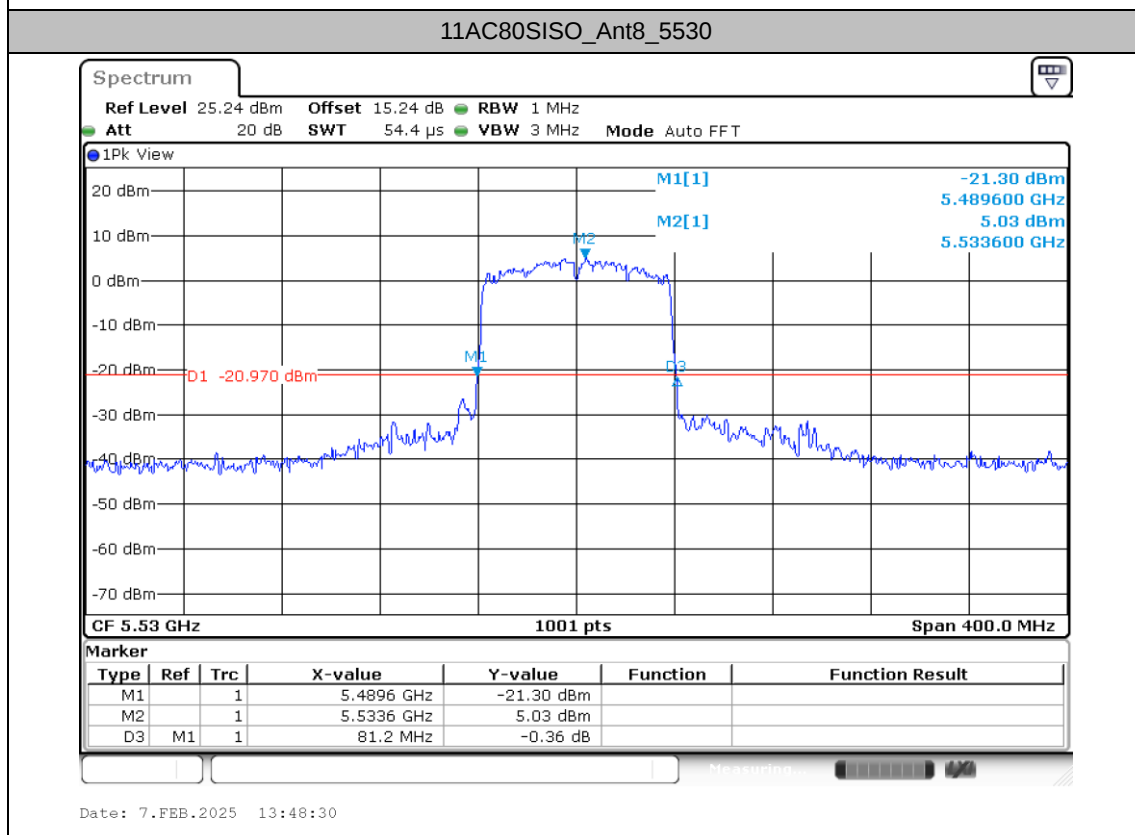
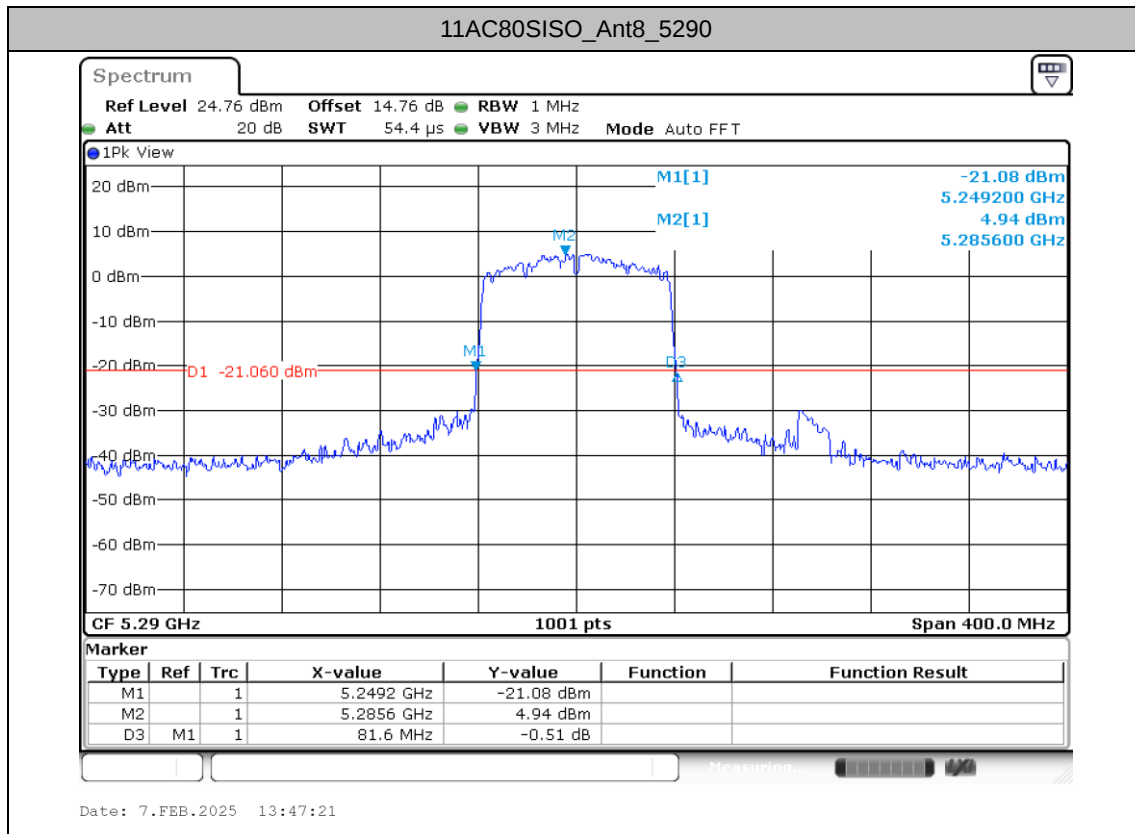


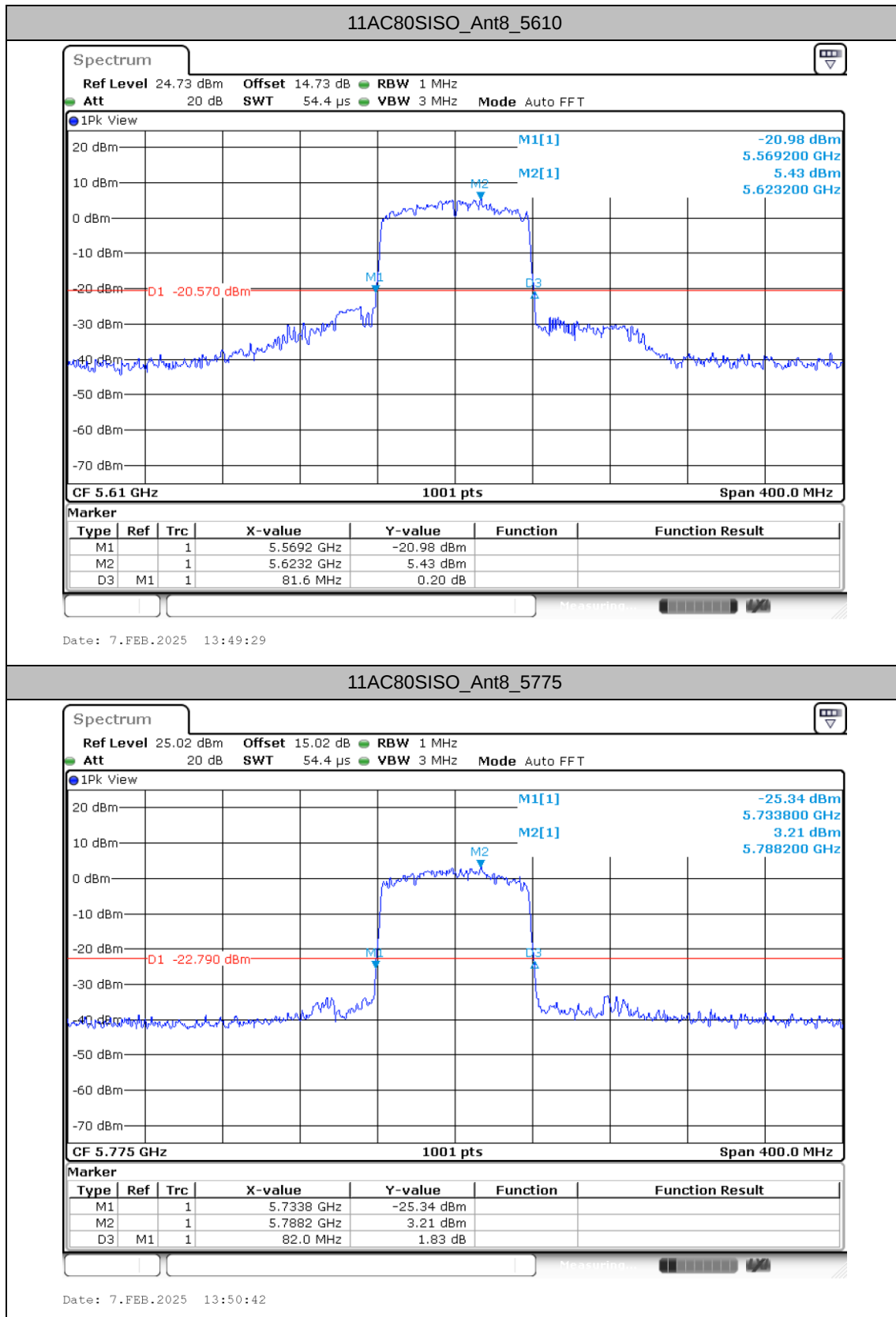














Occupied channel bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]
11A	Ant8	5180	17.122	5171.3729	5188.4952
		5220	17.306	5211.4009	5228.7071
		5240	17.318	5231.3489	5248.6671
		5260	17.33	5251.3409	5268.6711
		5300	17.242	5291.3929	5308.6351
		5320	17.094	5311.5488	5328.6431
		5500	17.13	5491.4329	5508.6631
		5580	17.242	5571.3929	5588.6351
		5700	17.406	5691.2369	5708.6431
		5745	17.234	5736.2689	5753.5031
		5785	17.29	5776.3249	5793.6151
		5825	17.33	5816.3249	5833.6551
11N20SISO	Ant8	5180	18.338	5170.7809	5189.1191
		5220	18.358	5210.8409	5229.1991
		5240	18.158	5230.9169	5249.0751
		5260	18.054	5250.9449	5268.9991
		5300	18.102	5290.8329	5308.9351
		5320	18.234	5310.8289	5329.0631
		5500	18.034	5490.9729	5509.0071
		5580	18.418	5570.6329	5589.0511
		5700	18.13	5690.9729	5709.1031
		5745	18.206	5735.8329	5754.0391
		5785	18.122	5775.9209	5794.0431
		5825	18.326	5815.8169	5834.1431
11N40SISO	Ant8	5190	36.484	5171.6818	5208.1662
		5230	36.74	5211.6338	5248.3742
		5270	36.452	5251.7858	5288.2382
		5310	36.38	5291.8578	5328.2382
		5510	36.556	5491.7458	5528.3022
		5550	36.564	5531.7858	5568.3502
		5670	36.54	5651.5938	5688.1342
		5755	36.732	5736.6258	5773.3582
		5795	36.5	5776.7538	5813.2542
11AC80SISO	Ant8	5210	75.928	5172.0518	5247.9802
		5290	76.232	5251.9078	5328.1402
		5530	76.392	5491.7798	5568.1722
		5610	76.152	5572.0838	5648.2362
		5775	77.16	5736.3319	5813.4922



Test Graphs

