



FCC RF Test Report

APPLICANT : Realme Chongqing Mobile Telecommunications Corp., Ltd.
EQUIPMENT : Mobile Phone
BRAND NAME : realme
MODEL NAME : RMX5000
FCC ID : 2AUYFRMX5000
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure
TEST DATE(S) : Jun. 23, 2024 ~ Jul. 08, 2024

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
FR461305E	Rev. 01	Initial issue of report	Jul. 19, 2024



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 5.13 dB at 5350.62 MHz
3.5	15.207	AC Conducted Emission	15.207(a)	15.207(a)	Pass	Under limit 9.71 dB at 0.17 MHz
3.6	15.203 & 15.407(a)	Antenna Requirement	15.203 & 15.407(a)	15.203 & 15.407(a)	Pass	-

Conformity Assessment Condition:

1. 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.
2. 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	RMX5000
FCC ID	2AUYFRMX5000
IMEI Code	Conducted: 864218070019594&864218070019586 Conduction: 864218070019453/864218070019446 Radiation: 864218070019537/864218070019529
HW Version	11
SW Version	realme UI 5.0
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 : 17.41 dBm / 0.0551 W 802.11ax HE20: 17.48 dBm / 0.0560 W 802.11ax HE40: 17.74 dBm / 0.0594 W 802.11ax HE80: 11.11 dBm / 0.0129 W <5260 MHz ~ 5320 MHz> 802.11a : 17.20 dBm / 0.0525 W 802.11ax HE20: 17.31 dBm / 0.0538 W 802.11ax HE40: 17.68 dBm / 0.0586 W 802.11ax HE80: 12.45 dBm / 0.0176 W <5500 MHz ~ 5700 MHz > 802.11a : 17.40 dBm / 0.0550 W

	802.11ax HE20: 17.55 dBm / 0.0569 W 802.11ax HE40: 17.97 dBm / 0.0627 W 802.11ax HE80: 16.86 dBm / 0.0485 W <5745 MHz ~ 5825 MHz> 802.11a : 17.45 dBm / 0.0556 W 802.11ax HE20: 17.60 dBm / 0.0575 W 802.11ax HE40: 17.88 dBm / 0.0614 W 802.11ax HE80: 16.96 dBm / 0.0497 W
99% Occupied Bandwidth	<5180 MHz ~ 5240 MHz> 802.11a : 17.223 MHz 802.11ax HE20: 19.221 MHz 802.11ax HE40: 37.882 MHz 802.11ax HE80: 77.522 MHz <5260 MHz ~ 5320 MHz> 802.11a : 17.223 MHz 802.11ax HE20: 19.301 MHz 802.11ax HE40: 37.962 MHz 802.11ax HE80: 77.522 MHz <5500 MHz ~ 5700 MHz> 802.11a : 17.582 MHz 802.11ax HE20: 19.221 MHz 802.11ax HE40: 38.202 MHz 802.11ax HE80: 78.162 MHz <5745 MHz ~ 5825 MHz> 802.11a : 17.463 MHz 802.11ax HE20: 19.341 MHz 802.11ax HE40: 38.122 MHz 802.11ax HE80: 77.522 MHz
Antenna Type / Gain	<5180 MHz ~ 5240 MHz> : IFA Antenna with gain 2.11 dBi <5260 MHz ~ 5320 MHz> : IFA Antenna with gain 1.77 dBi <5500 MHz ~ 5700 MHz> : IFA Antenna with gain 2.44 dBi <5745 MHz ~ 5825 MHz> : IFA Antenna with gain 1.34 dBi
Type of Modulation	802.11a/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) 802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM) 802.11ax : OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)

Note:

1. For 802.11n/ac/ax mode, the 11n/ac power are set less than 11ax power, thus full test 11ax to cover 11n/ac mode.
2. 802.11ax support OFDMA full RU tone and partial RU tone, both full RU and partial RU-left (for low CH) and partial RU-right (for high CH) test output power/PSD/Bandedge and Spurious.
3. The device does not support 802.11ax channel puncturing mode.

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	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	CO01-SZ TH01-SZ	CN1256	421272

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.
	03CH01-SZ	CN1256	421272

1.7 Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH01-SZ	AUDIX	E3	6.2009-8-24
2.	CO01-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 (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)
Straddle Channel	138 [#]	5690	144	5720
	142*	5710	-	-

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.

SISO Mode

Modulation	Data Rate
802.11a	6 Mbps
802.11ax HE20	MCS0
802.11ax HE40	MCS0
802.11ax HE80	MCS0

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

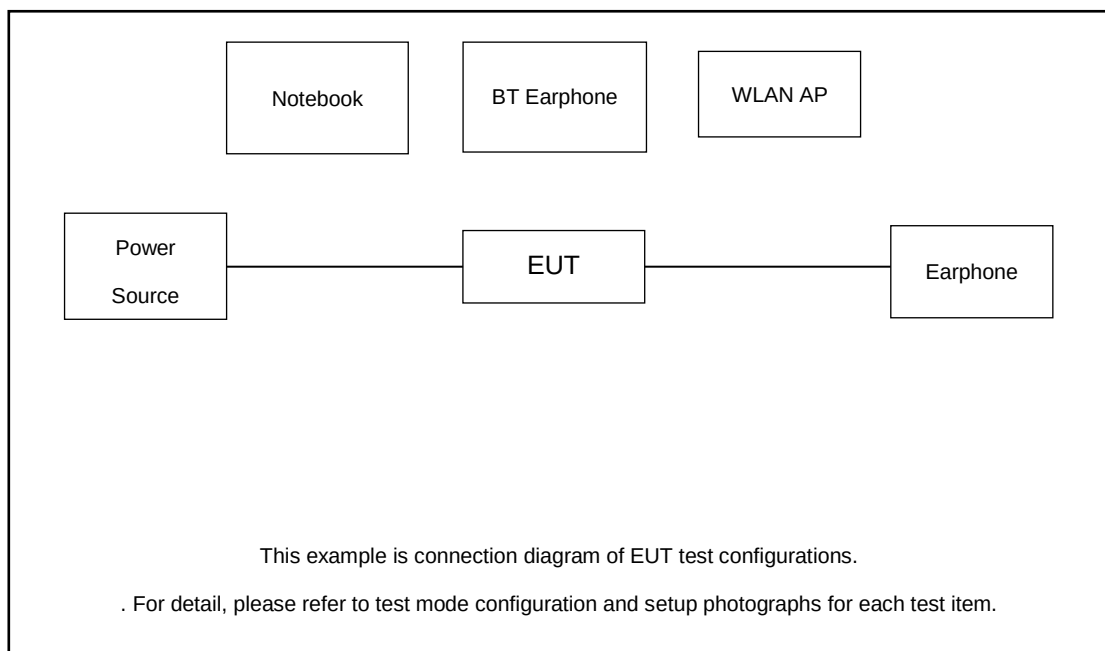
Ch. #		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
		20M BW	20M BW	20M BW	20M BW
L	Low	36	52	100	149
M	Middle	44	60	116	157
H	High	48	64	140	165

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	-	-	110	-
H	High	46	62	134	159

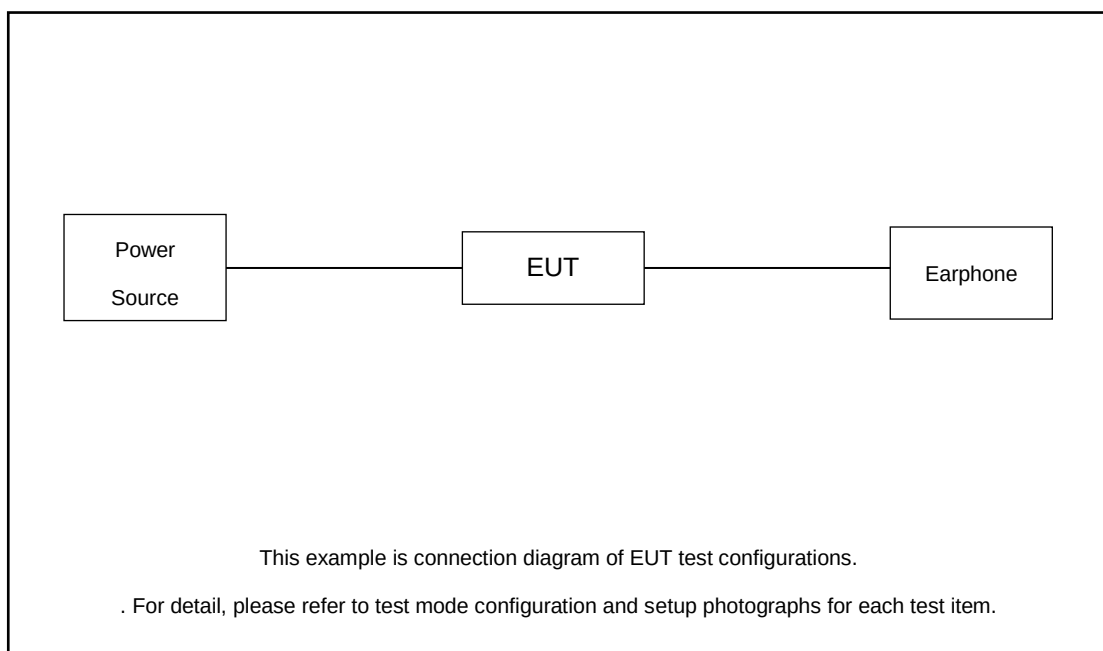
Ch. #		U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
		80M BW	80M BW	80M BW	80M BW
L	Low	-	-	106	-
M	Middle	42	58	-	155
H	High	-	-	122	-

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.	Bluetooth Earphone	Samsung	EO-MG900	PYAHS-107W	N/A	N/A
2.	WLAN AP	Dlink	DIR-820L	KA2IR820LA1	N/A	Unshielded,1.8m
3.	Notebook	Lenovo	Y-480	N/A	N/A	Unshielded,1.2m

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

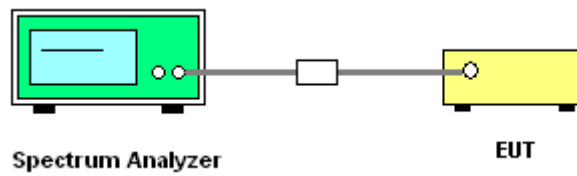
The measuring equipment is listed in the section 4 of this test report.

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 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 $11 \text{ dBm} + 10 \log_{10} B$, 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.

For the 5.47–5.6 GHz and 5.65–5.725 GHz band, the maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$, dBm, whichever power is less. The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz.

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.

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3.2.2 Measuring Instruments

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

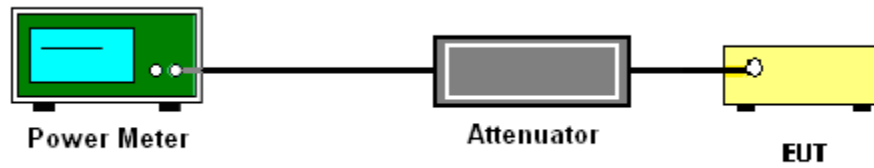
3.2.3 Test Procedures

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

Please refer to Appendix A.

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).

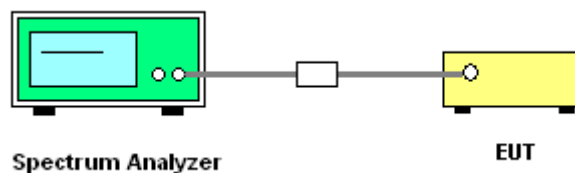
- Measure the duty cycle.
- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz.
- Set VBW $\geq$ 3 MHz.
- Number of points in sweep $\geq$ 2 Span / RBW.
- Sweep time = auto.
- Detector = RMS
- Trace average at least 100 traces in power averaging mode.
- Add $10 \log(1/x)$, 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	68.2

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

(4) ANSI C63.10-2013 clause 12.7.3 note 97

As specified by regulatory requirements, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit. However, an out-of-band emission that complies with both the average and peak general regulatory limits is not required to satisfy the peak emission limit.

3.4.2 Measuring Instruments

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

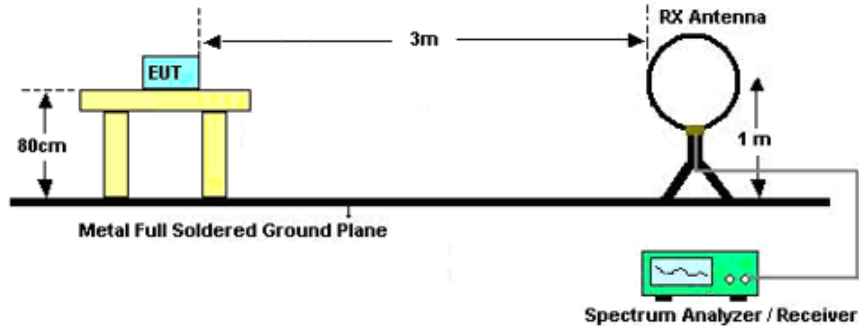


3.4.3 Test Procedures

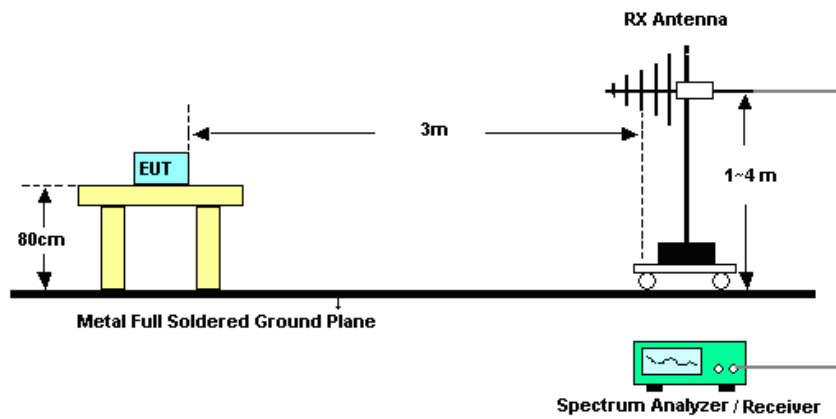
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04.
Section G) Unwanted emissions measurement.
(1) Procedure for Unwanted Emissions Measurements Below 1000MHz
 - RBW = 120 kHz
 - VBW = 300 kHz
 - Detector = Peak
 - Trace mode = max hold(2) Procedure for Peak Unwanted 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

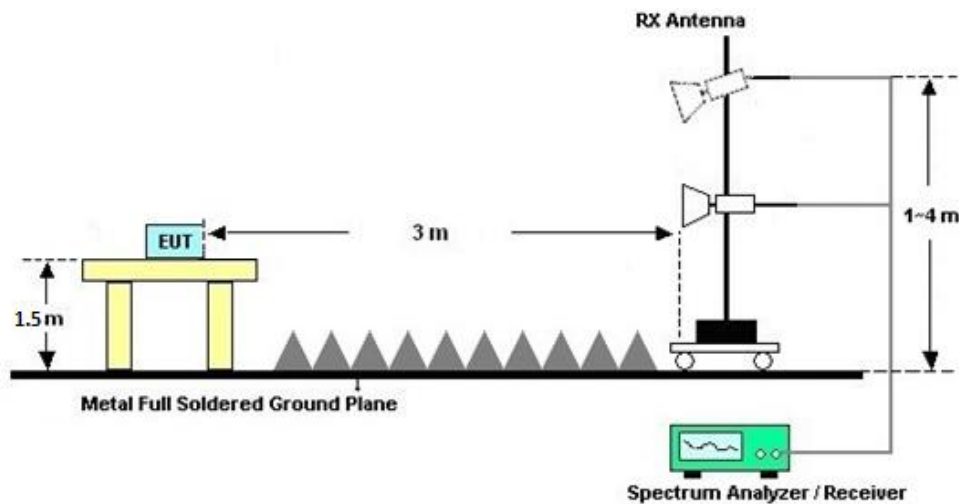
For radiated emissions below 30MHz



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.

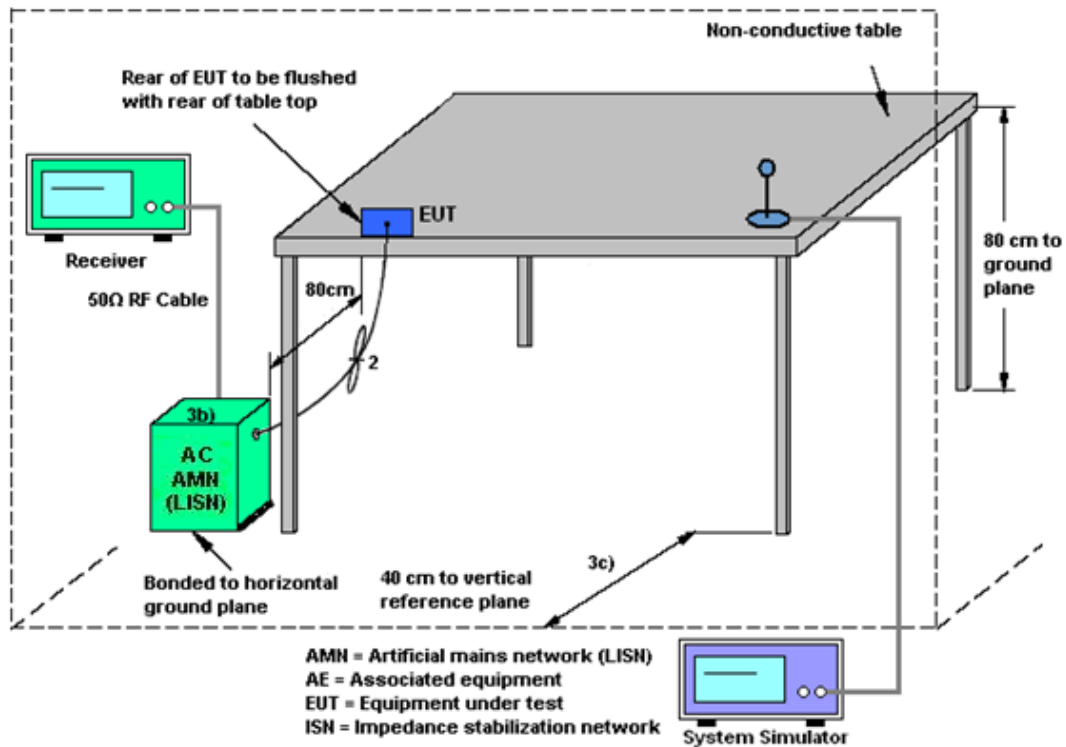
3.5.2 Measuring Instruments

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
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 09, 2024	Jun. 23, 2024~ Jul. 03, 2024	Apr. 08, 2025	Conducted (TH01-SZ)
Pulse Power Sensor	Anritsu	MA2411B	1339473	30MHz~40GHz	Dec. 29, 2023	Jun. 23, 2024~ Jul. 03, 2024	Dec. 28, 2024	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	50MHz Bandwidth	Aug. 21, 2023	Jun. 23, 2024~ Jul. 03, 2024	Aug. 20, 2024	Conducted (TH01-SZ)
EMI Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Dec. 27, 2023	Jun. 23, 2024~ Jul. 08, 2024	Dec. 26, 2024	Radiation (03CH01-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY59071191	10Hz~44GHz	Apr. 09, 2024	Jun. 23, 2024~ Jul. 08, 2024	Apr. 08, 2025	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	Jul. 28, 2022	Jun. 23, 2024~ Jul. 08, 2024	Jul. 27, 2024	Radiation (03CH01-SZ)
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz~2GHz	Oct. 24, 2023	Jun. 23, 2024~ Jul. 08, 2024	Oct. 23, 2025	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-2206	1GHz~18GHz	Apr. 09, 2024	Jun. 23, 2024~ Jul. 08, 2024	Apr. 08, 2025	Radiation (03CH01-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz~40GHz	Apr. 09, 2024	Jun. 23, 2024~ Jul. 08, 2024	Apr. 08, 2025	Radiation (03CH01-SZ)
LF Amplifier	Burgeon	BPA-530	102209	0.01~3000Mhz	Apr. 09, 2024	Jun. 23, 2024~ Jul. 08, 2024	Apr. 08, 2025	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	AMF-7D-0010 1800-30-10P-R	1943528	1GHz~18GHz	Oct. 18, 2023	Jun. 23, 2024~ Jul. 08, 2024	Oct. 17, 2024	Radiation (03CH01-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270105	0.5GHz~26.5GHz	Oct. 18, 2023	Jun. 23, 2024~ Jul. 08, 2024	Oct. 17, 2024	Radiation (03CH01-SZ)
HF Amplifier	EM Electronics	EM18G40G	060778	18GHz~40GHz	Apr. 09, 2024	Jun. 23, 2024~ Jul. 08, 2024	Apr. 08, 2025	Radiation (03CH01-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	Oct. 18, 2023	Jun. 23, 2024~ Jul. 08, 2024	Oct. 17, 2024	Radiation (03CH01-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Jun. 23, 2024~ Jul. 08, 2024	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Jun. 23, 2024~ Jul. 08, 2024	NCR	Radiation (03CH01-SZ)
EMI Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Dec. 27, 2023	Jul. 05, 2024	Dec. 26, 2024	Conduction (CO01-SZ)
AC LISN	R&S	ENV216	100063	9kHz~30MHz	Aug. 21, 2023	Jul. 05, 2024	Aug. 20, 2024	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Oct. 16, 2023	Jul. 05, 2024	Oct. 15, 2024	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Jul. 07, 2023	Jul. 05, 2024	Jul. 06, 2024	Conduction (CO01-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))	2.50dB
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Uncertainty of Radiated Emission Measurement (9 KHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.80dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.20dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.00dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.30dB
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----- THE END -----



Appendix A. Conducted Test Results

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Chen ZhiQiang	Temperature:	21~25	°C
Test Date:	2024/6/23~2024/7/03	Relative Humidity:	51~54	%

TEST RESULTS DATA
Average Power Table

UNII-1										
Mod.	Data Rate	NTX	CH.	RU Config	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	Pass/Fail
						Ant 10	Ant 10	Ant 10	Ant 10	
11a	6Mbps	1	36	Full	5180	0.15	17.19	24.00	2.11	Pass
11a	6Mbps	1	44	Full	5220	0.15	17.41	24.00	2.11	Pass
11a	6Mbps	1	48	Full	5240	0.15	17.28	24.00	2.11	Pass
HE20	MCS0	1	36	Full	5180	0.17	17.20	24.00	2.11	Pass
				26/0		0.17	13.01	24.00	2.11	Pass
				52/37		0.17	16.15	24.00	2.11	Pass
				106/53		0.17	16.33	24.00	2.11	Pass
			44	Full	5220	0.17	17.48	24.00	2.11	Pass
			48	Full	5240	0.17	17.29	24.00	2.11	Pass
HE40	MCS0	1	38	Full	5190	0.31	14.20	24.00	2.11	Pass
			46	Full	5230	0.31	17.74	24.00	2.11	Pass
HE80	MCS0	1	42	Full	5210	0.56	11.11	24.00	2.11	Pass

TEST RESULTS DATA
Average Power Table

UNII-2A											
Mod.	Data Rate	NTX	CH.	RU Config	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail
						Ant 10	Ant 10	Ant 10	Ant 10		
11a	6Mbps	1	52	Full	5260	0.15	17.15	23.98	1.77	26.99	Pass
11a	6Mbps	1	60	Full	5300	0.15	17.20	23.98	1.77	26.99	Pass
11a	6Mbps	1	64	Full	5320	0.15	17.18	23.98	1.77	26.99	Pass
HE20	MCS0	1	52	Full	5260	0.17	17.31	23.98	1.77	26.99	Pass
			60	Full	5300	0.17	17.30	23.98	1.77	26.99	Pass
			64	Full	5320	0.17	17.29	23.98	1.77	26.99	Pass
				26/8		0.17	13.89	23.98	1.77	26.99	Pass
				52/40		0.17	15.28	23.98	1.77	26.99	Pass
				106/54		0.17	16.38	23.98	1.77	26.99	Pass
HE40	MCS0	1	54	Full	5270	0.31	17.68	23.98	1.77	26.99	Pass
			62	Full	5310	0.31	16.19	23.98	1.77	26.99	Pass
HE80	MCS0	1	58	Full	5290	0.56	12.45	23.98	1.77	26.99	Pass

TEST RESULTS DATA
Average Power Table

UNII-2C											
Mod.	Data Rate	N _{TX}	CH.	RU Config	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	EIRP Power Limit (dBm)	Pass/Fail
						Ant 10	Ant 10	Ant 10	Ant 10		
11a	6Mbps	1	100	Full	5500	0.15	16.74	23.98	2.44	26.99	Pass
11a	6Mbps	1	116	Full	5580	0.15	17.40	23.98	2.44	26.99	Pass
11a	6Mbps	1	140	Full	5700	0.15	16.78	23.98	2.44	26.99	Pass
HE20	MCS0	1	100	Full	5500	0.17	16.94	23.98	2.44	26.99	Pass
				26/0		0.17	13.82	23.98	2.44	26.99	Pass
				52/37		0.17	16.31	23.98	2.44	26.99	Pass
				106/53		0.17	16.42	23.98	2.44	26.99	Pass
			116	Full	5580	0.17	17.55	23.98	2.44	26.99	Pass
			140	Full	5700	0.17	16.43	23.98	2.44	26.99	Pass
				26/8		0.17	13.85	23.98	2.44	26.99	Pass
				52/40		0.17	16.38	23.98	2.44	26.99	Pass
				106/54		0.17	16.42	23.98	2.44	26.99	Pass
			102	Full	5510	0.31	16.80	23.98	2.44	26.99	Pass
				Full	5550	0.31	17.97	23.98	2.44	26.99	Pass
				Full	5670	0.31	17.32	23.98	2.44	26.99	Pass
HE80	MCS0	1	106	Full	5530	0.56	13.91	23.98	2.44	26.99	Pass
			122	Full	5610	0.56	16.86	23.98	2.44	26.99	Pass

TEST RESULTS DATA
Average Power Table

UNII-3										
Mod.	Data Rate	N _{TX}	CH.	RU Config	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)	FCC Conducted Power Limit (dBm)	DG (dBi)	Pass/Fail
						Ant 10	Ant 10	Ant 10	Ant 10	
11a	6Mbps	1	149	Full	5745	0.15	17.37	30.00	1.34	Pass
11a	6Mbps	1	157	Full	5785	0.15	17.45	30.00	1.34	Pass
11a	6Mbps	1	165	Full	5825	0.15	17.43	30.00	1.34	Pass
HE20	MCS0	1	149	Full	5745	0.17	17.48	30.00	1.34	Pass
HE20	MCS0	1	149	26/0	5745	0.17	16.05	30.00	1.34	Pass
HE20	MCS0	1	149	52/37	5745	0.17	16.15	30.00	1.34	Pass
HE20	MCS0	1	149	106/53	5745	0.17	16.19	30.00	1.34	Pass
HE20	MCS0	1	157	Full	5785	0.17	17.56	30.00	1.34	Pass
HE20	MCS0	1	165	Full	5825	0.17	17.60	30.00	1.34	Pass
HE20	MCS0	1	165	26/8	5825	0.17	16.12	30.00	1.34	Pass
HE20	MCS0	1	165	52/40	5825	0.17	16.18	30.00	1.34	Pass
HE20	MCS0	1	165	106/54	5825	0.17	16.23	30.00	1.34	Pass
HE40	MCS0	1	151	Full	5755	0.31	17.88	30.00	1.34	Pass
HE40	MCS0	1	159	Full	5795	0.31	17.83	30.00	1.34	Pass
HE80	MCS0	1	155	Full	5775	0.56	16.96	30.00	1.34	Pass



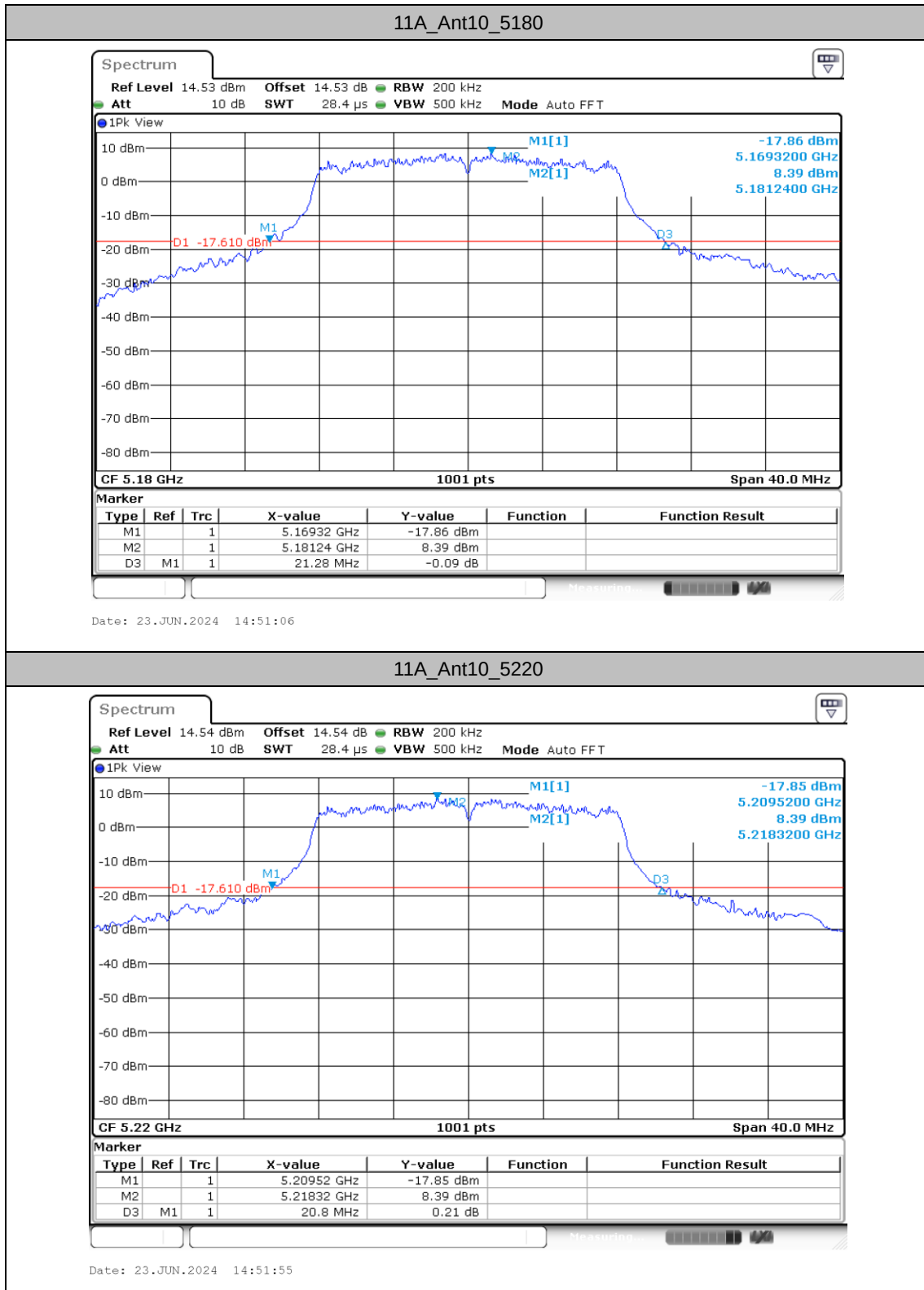
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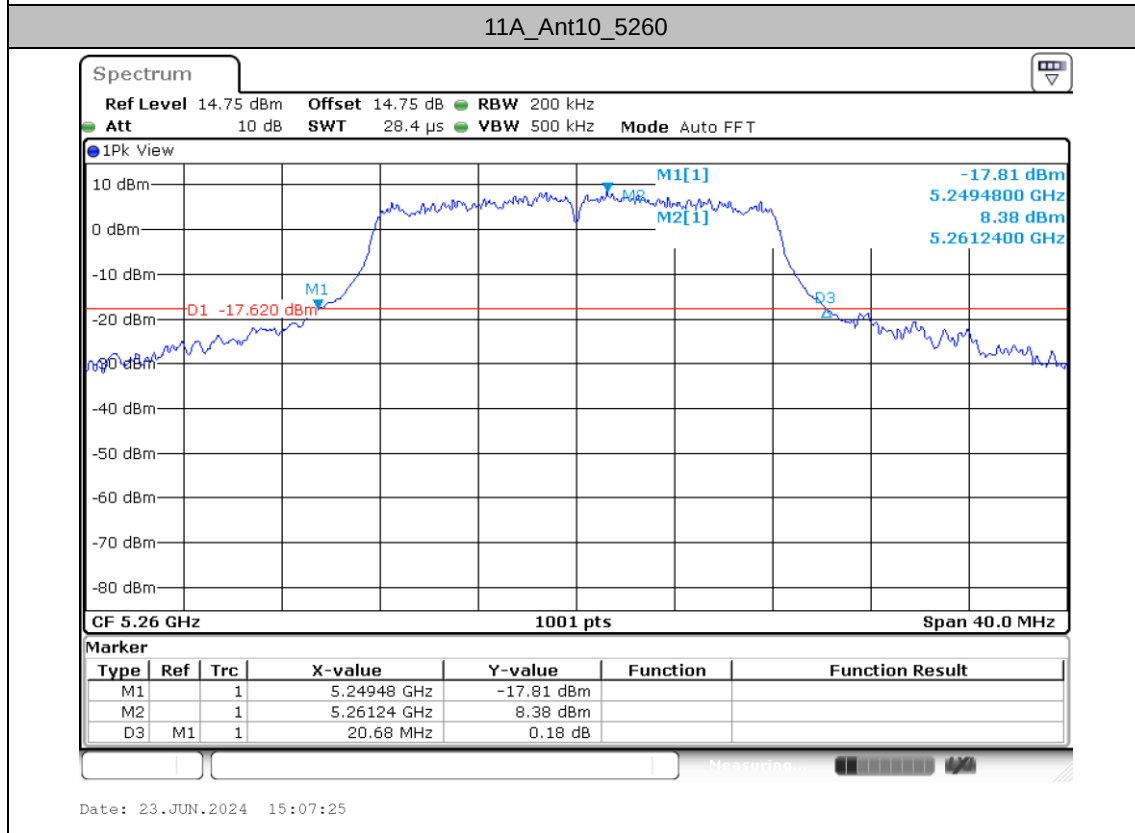
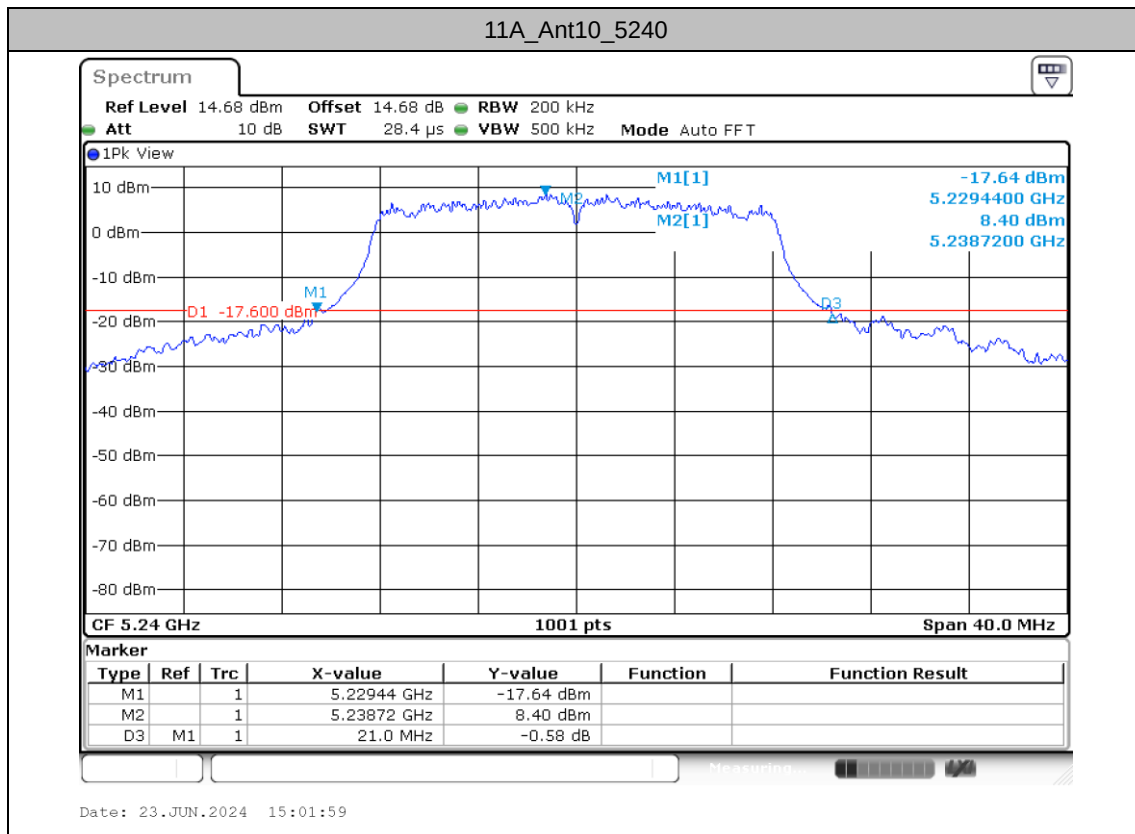
Test Result

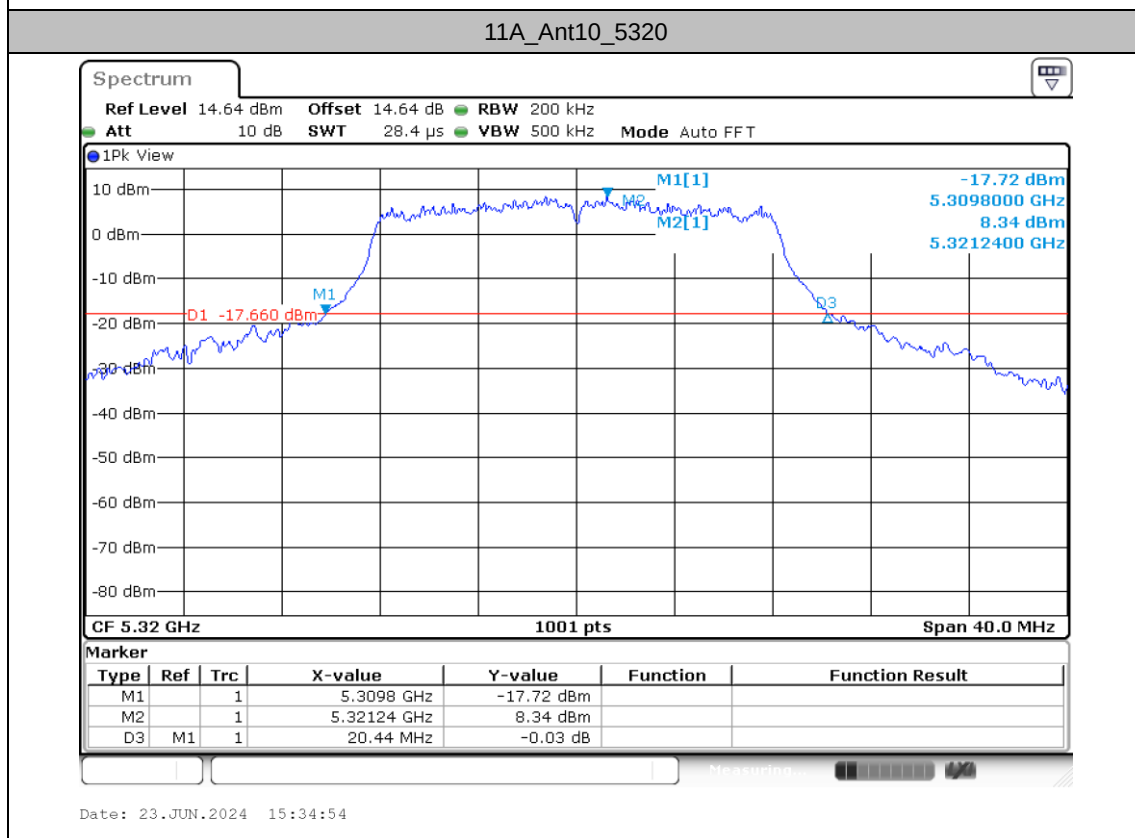
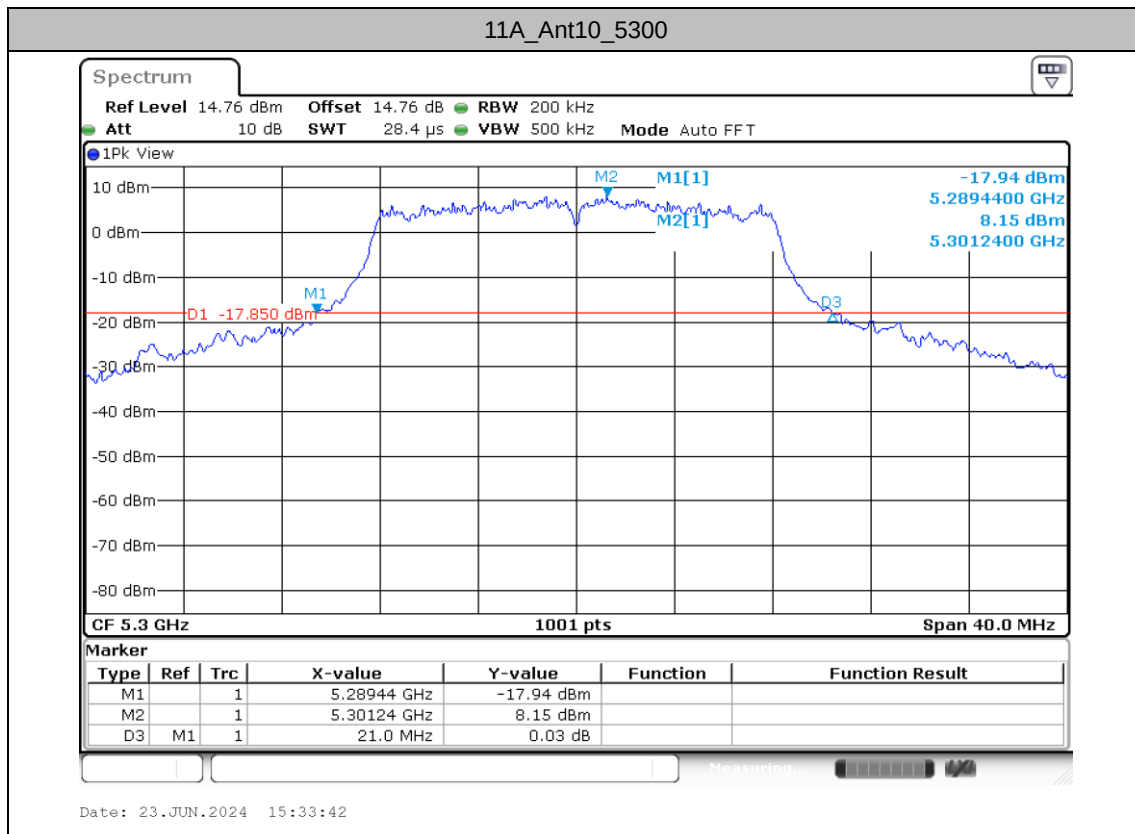
TestMode	Antenna	Freq(MHz)	26dB EBW [MHz]	FL[MHz]	FH[MHz]
11A	Ant10	5180	21.28	5169.32	5190.60
		5220	20.80	5209.52	5230.32
		5240	21.00	5229.44	5250.44
		5260	20.68	5249.48	5270.16
		5300	21.00	5289.44	5310.44
		5320	20.44	5309.80	5330.24
		5500	21.24	5489.52	5510.76
		5580	23.20	5569.36	5592.56
		5700	21.64	5688.44	5710.08
		5745	21.12	5734.40	5755.52
		5785	21.64	5773.92	5795.56
		5825	22.92	5812.68	5835.60
11AX20SISO	Ant10	5180	22.52	5168.84	5191.36
		5220	21.48	5209.16	5230.64
		5240	21.84	5228.96	5250.80
		5260	21.76	5249.12	5270.88
		5300	22.36	5288.40	5310.76
		5320	22.28	5308.72	5331.00
		5500	21.88	5488.88	5510.76
		5580	22.16	5569.00	5591.16
		5700	23.68	5687.20	5710.88
		5745	22.68	5734.08	5756.76
		5785	22.04	5773.96	5796.00
		5825	22.84	5813.04	5835.88
11AX40SISO	Ant10	5190	39.92	5170.08	5210.00
		5230	39.92	5210.00	5249.92
		5270	39.92	5250.08	5290.00
		5310	43.04	5286.96	5330.00
		5510	39.84	5490.00	5529.84
		5550	39.84	5530.00	5569.84
		5670	40.24	5649.92	5690.16
		5755	48.24	5735.08	5783.32
11AX80SISO	Ant10	5795	39.92	5775.00	5814.92
		5210	80.64	5169.68	5250.32
		5290	80.32	5249.84	5330.16
		5530	80.80	5489.68	5570.48
		5610	80.80	5569.52	5650.32
		5775	80.48	5734.84	5815.32

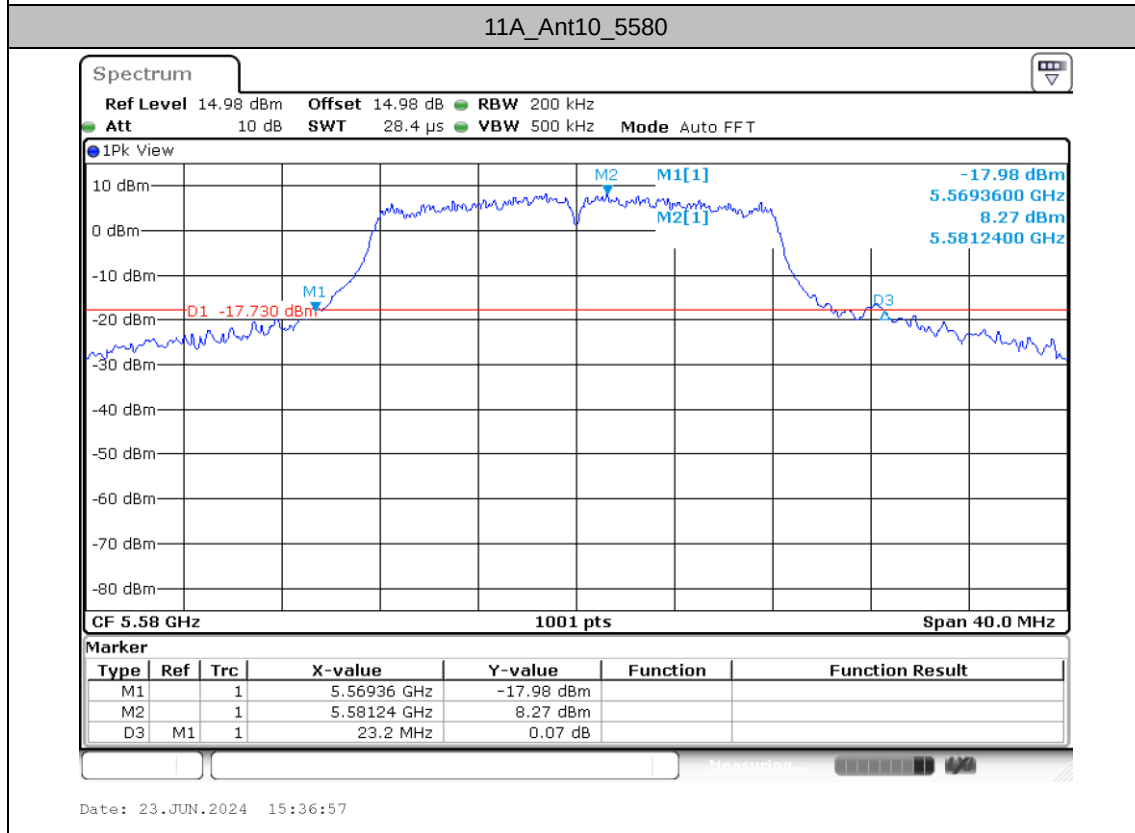
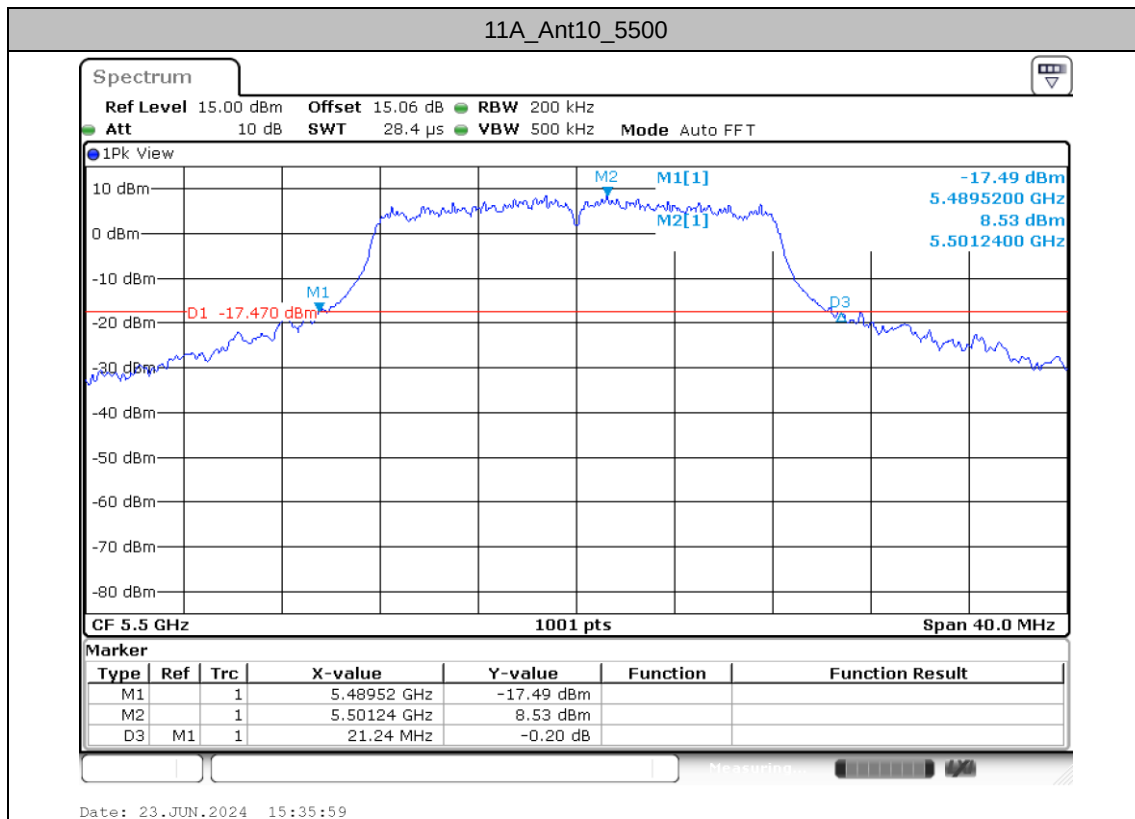


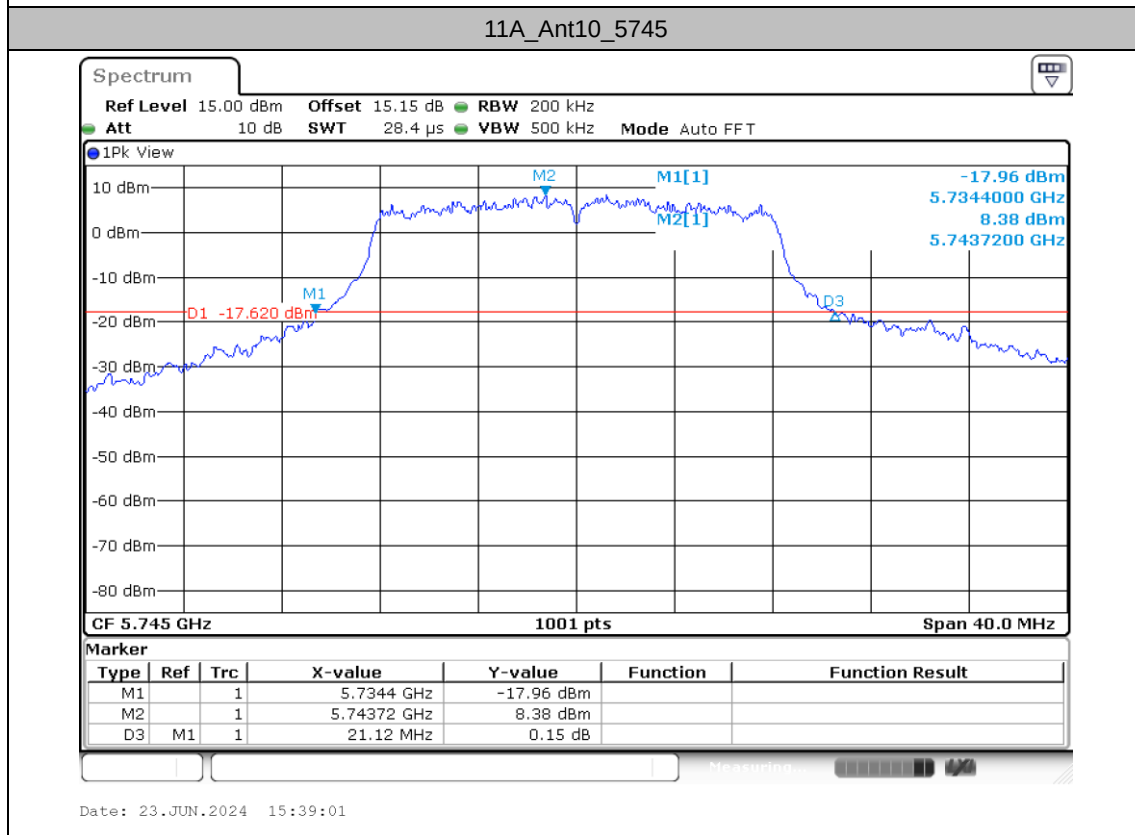
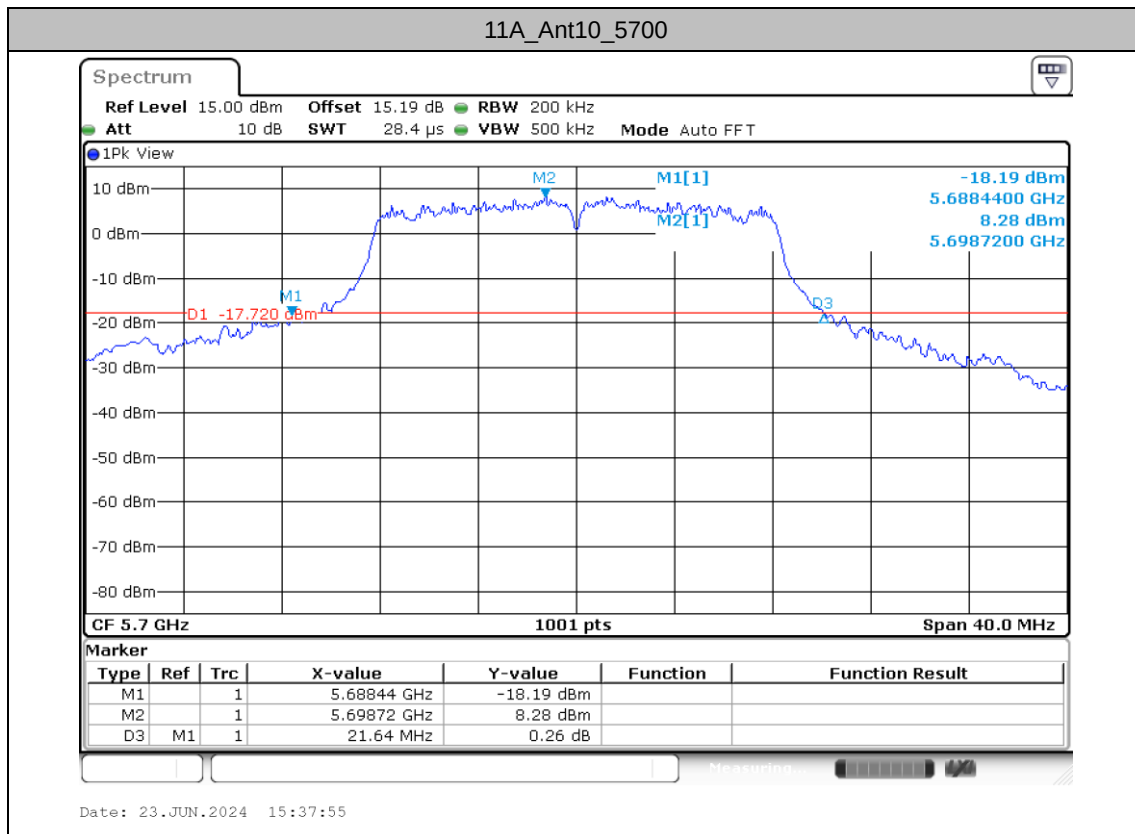
Test Graphs

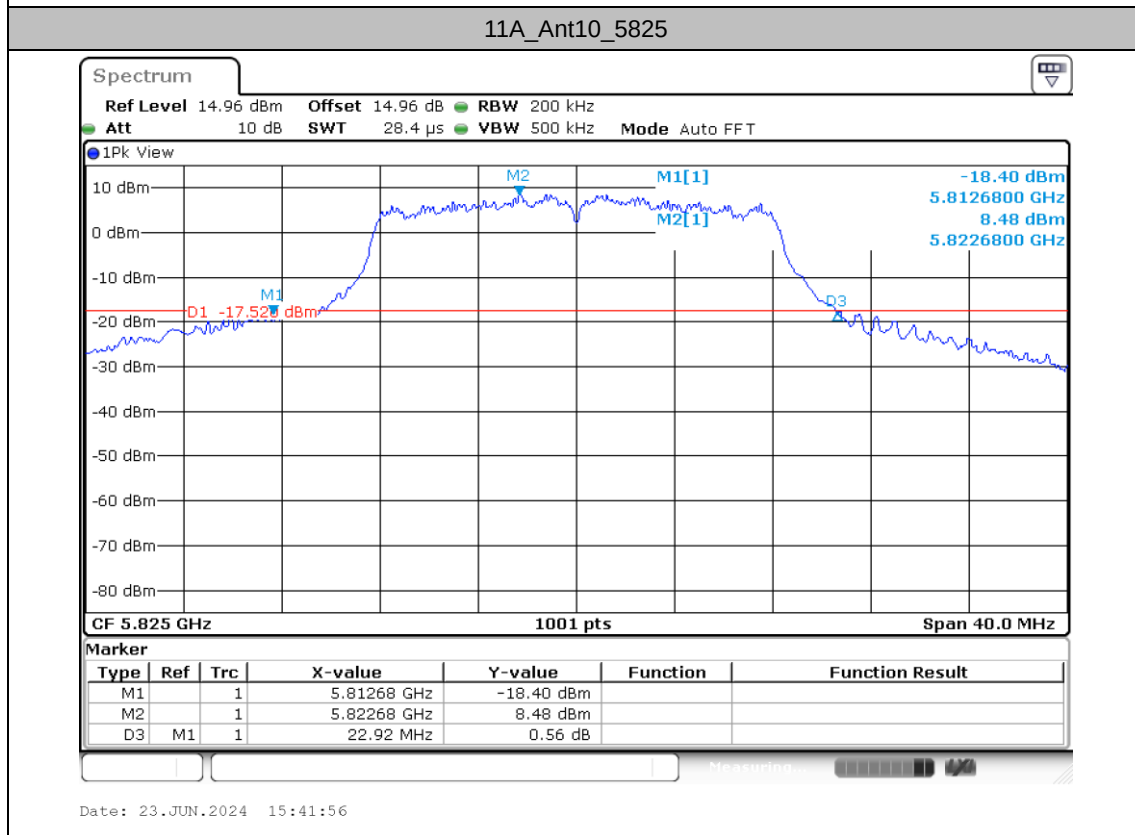
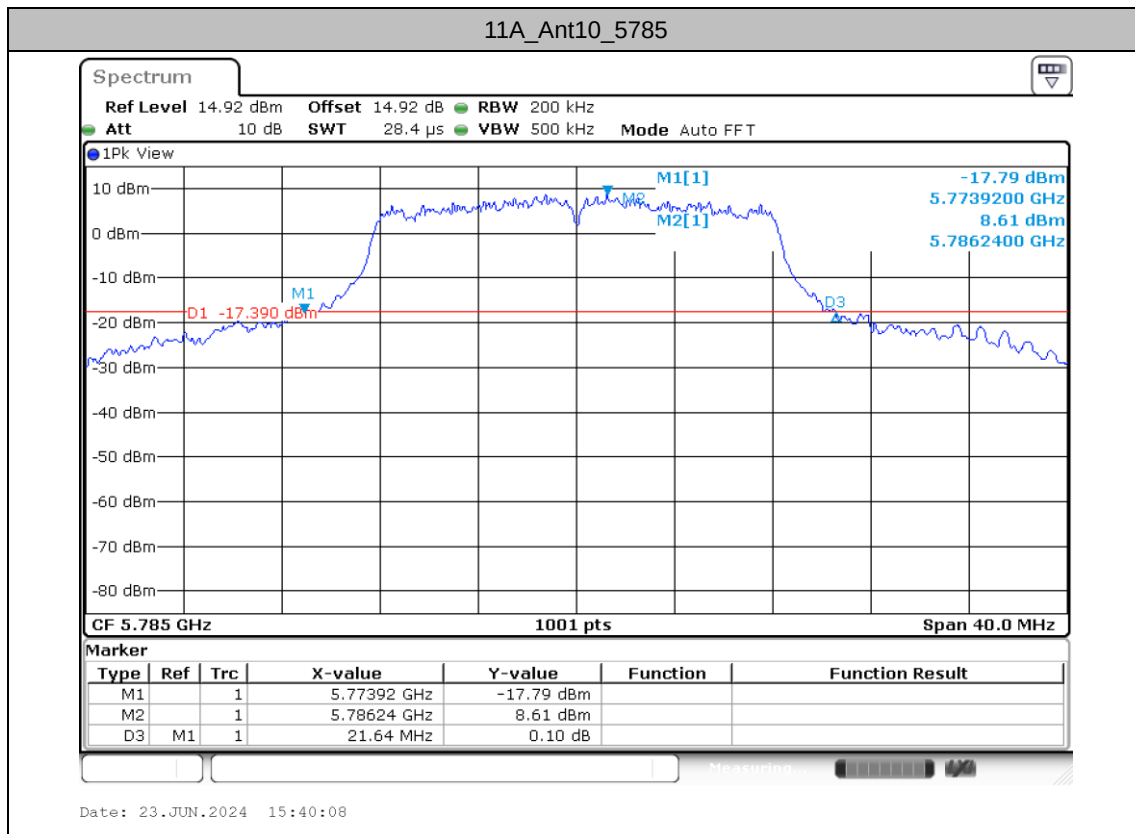


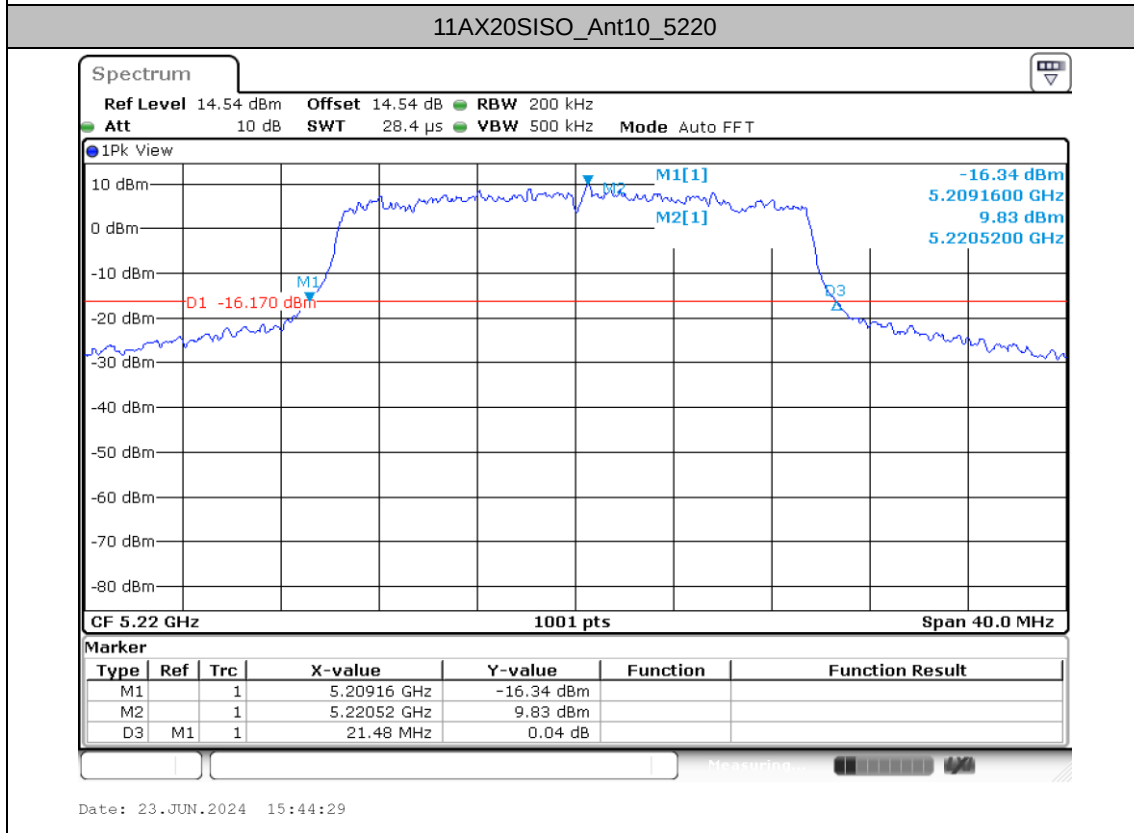
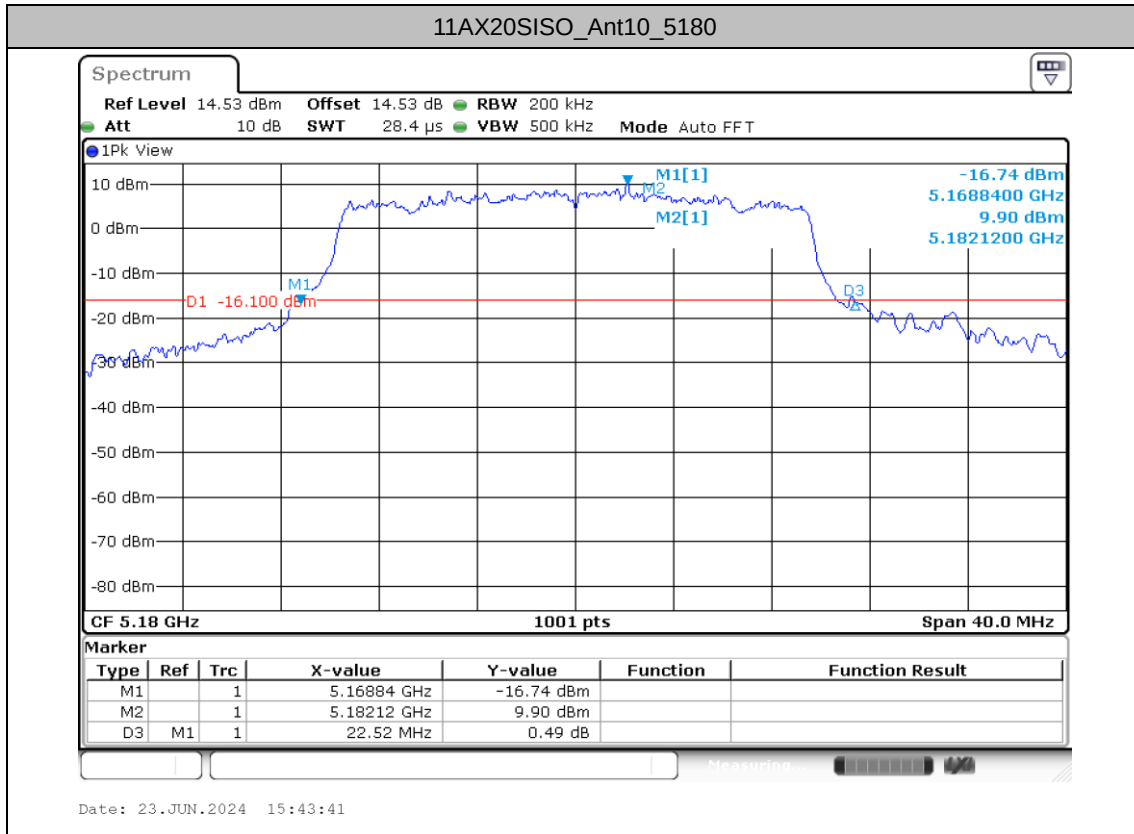


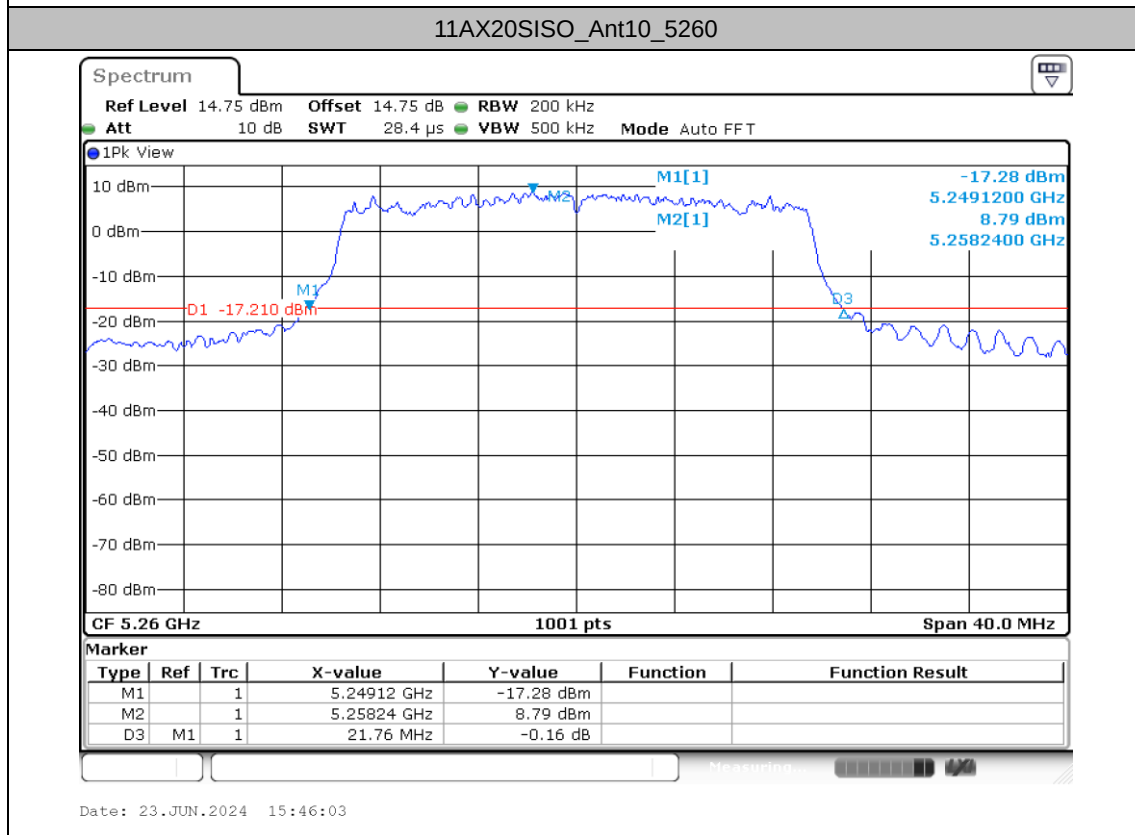
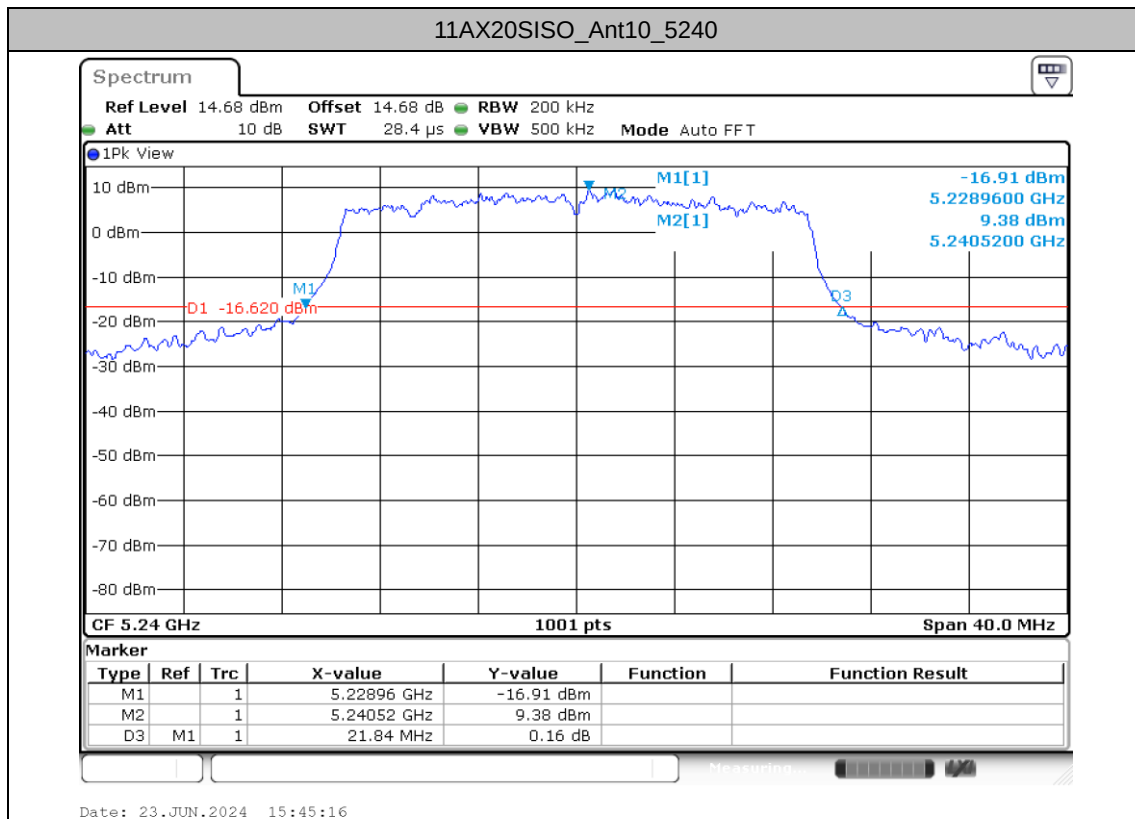


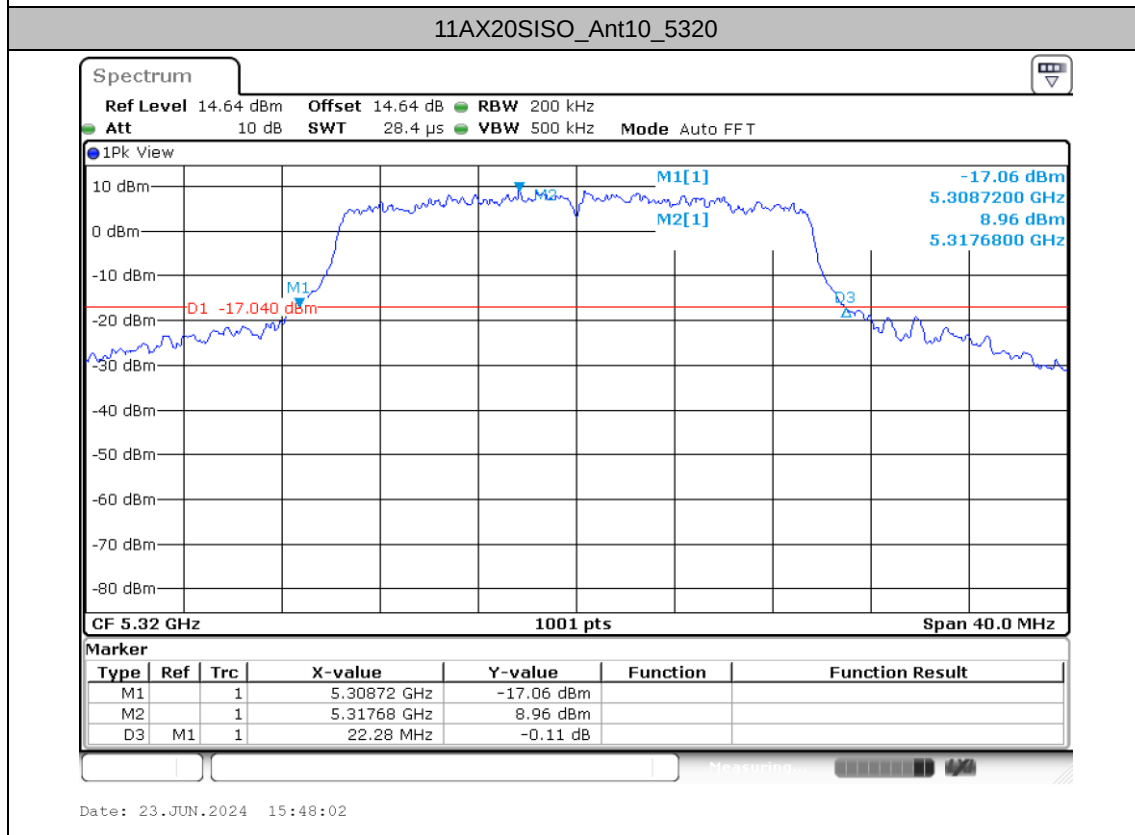
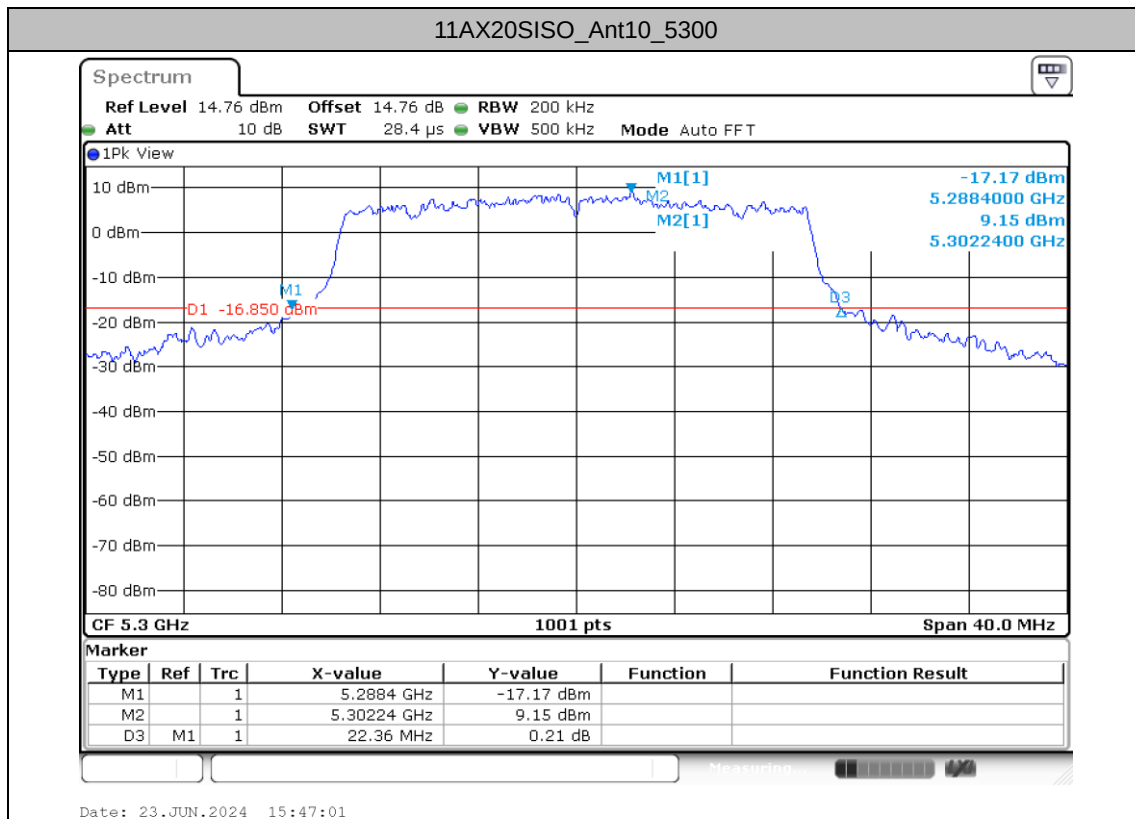


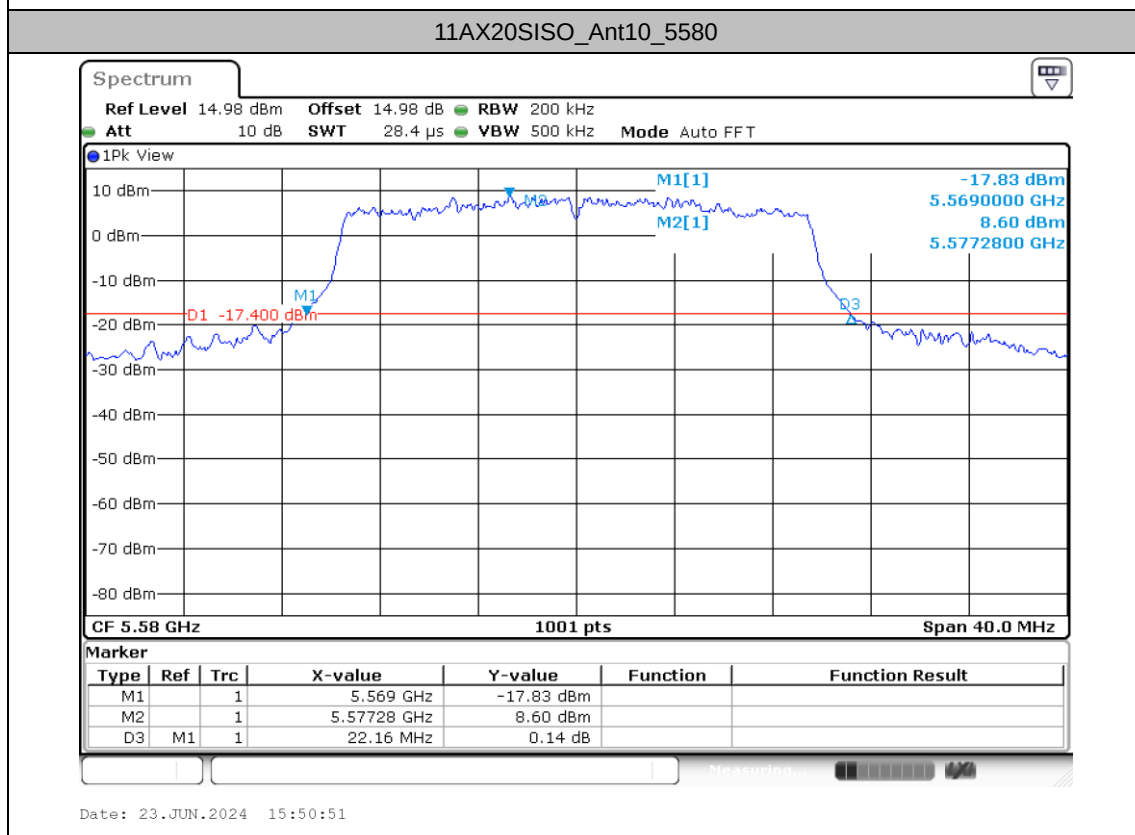
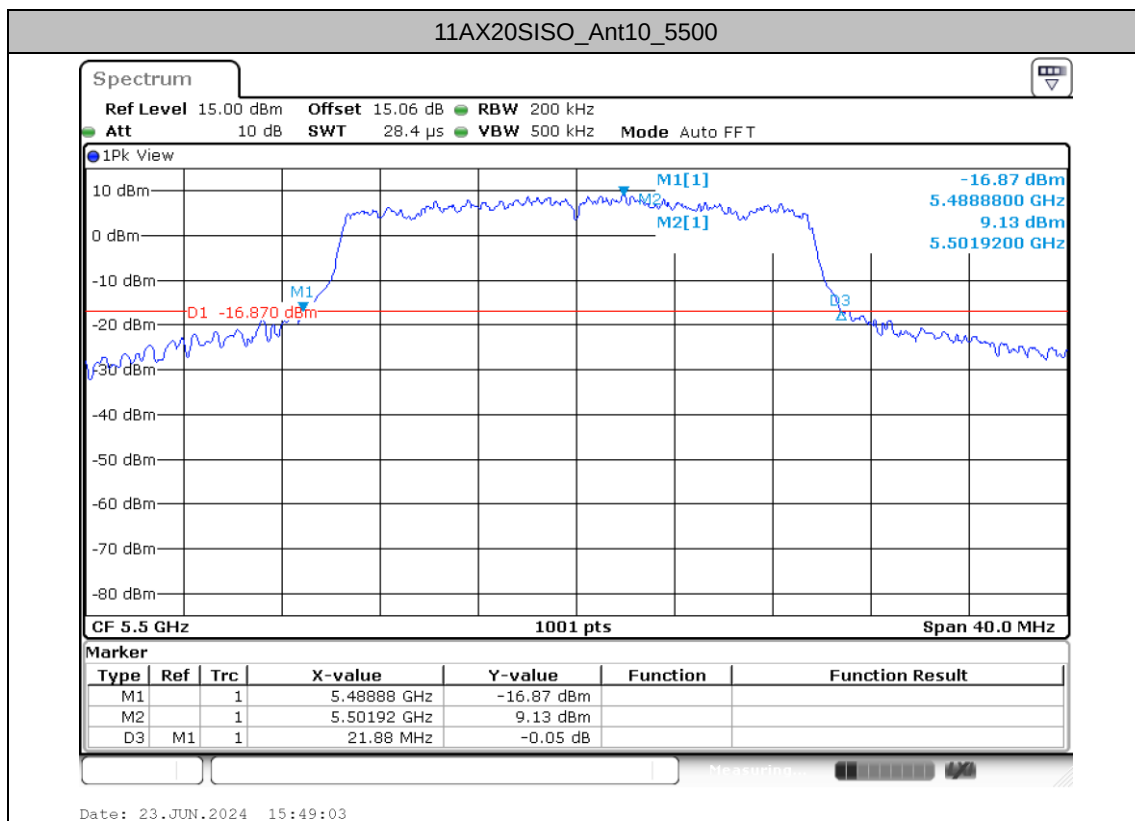


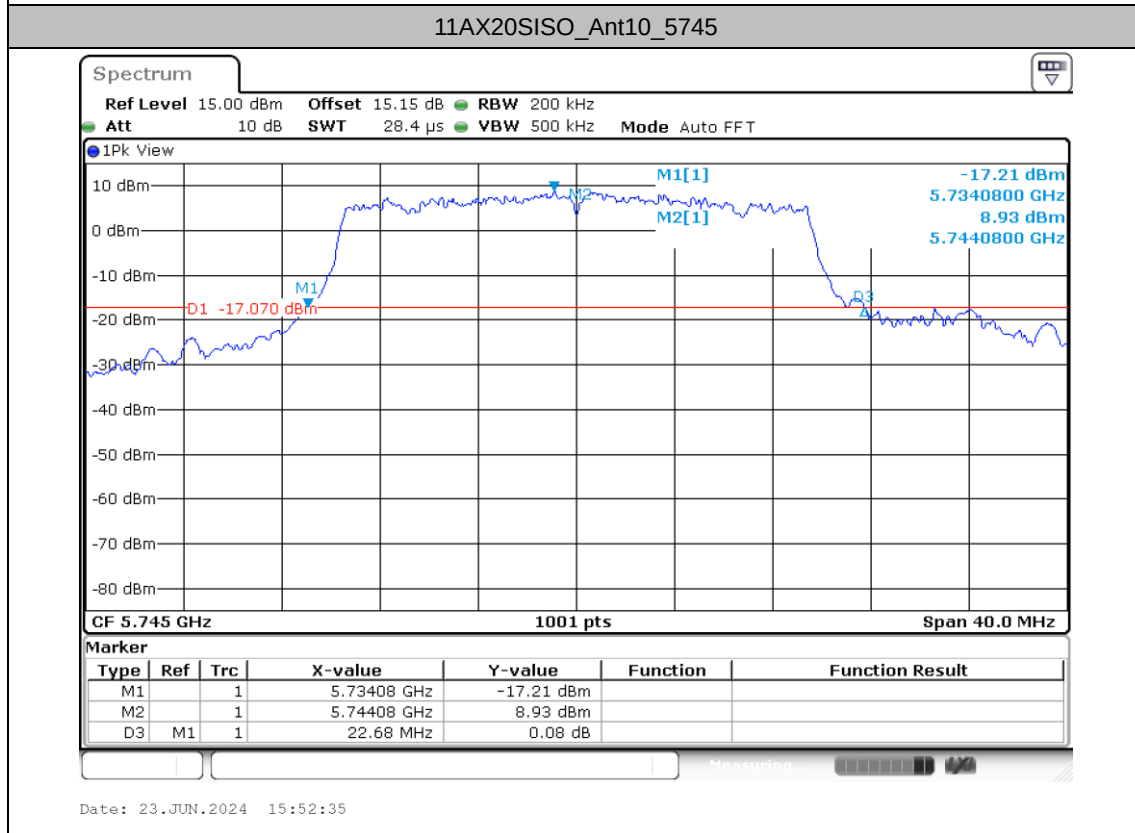
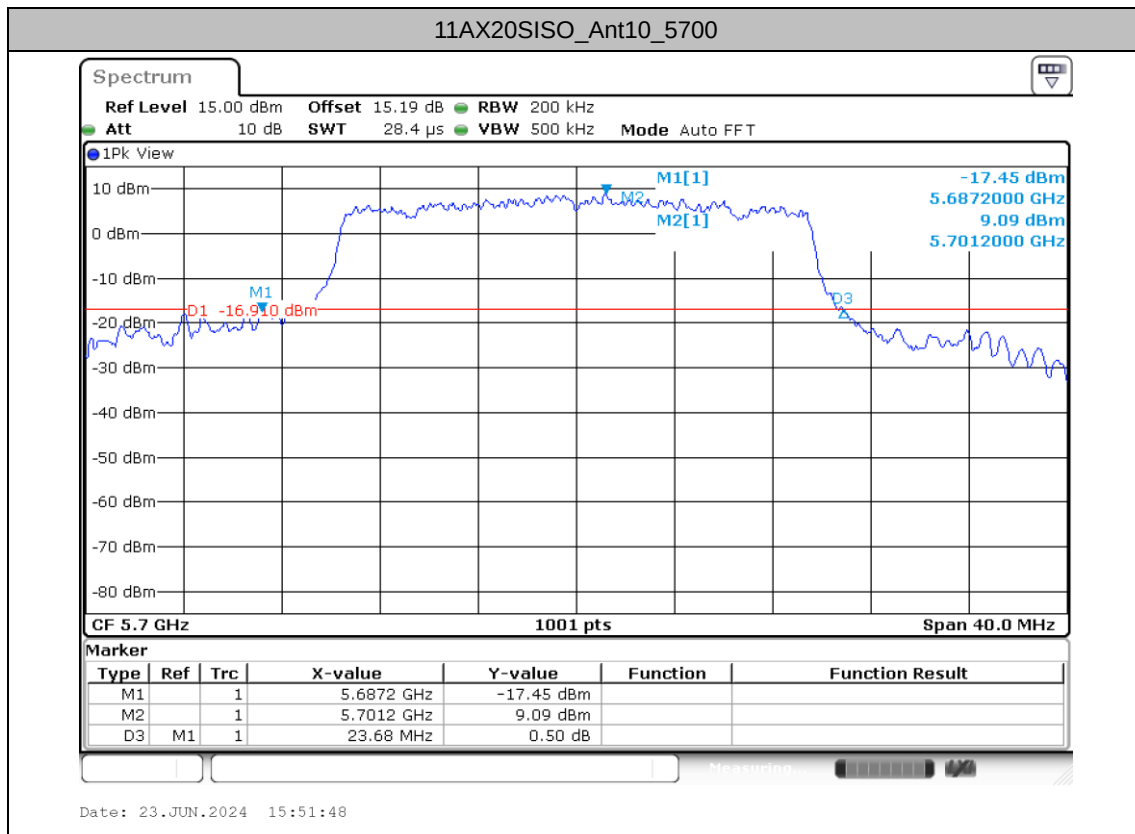


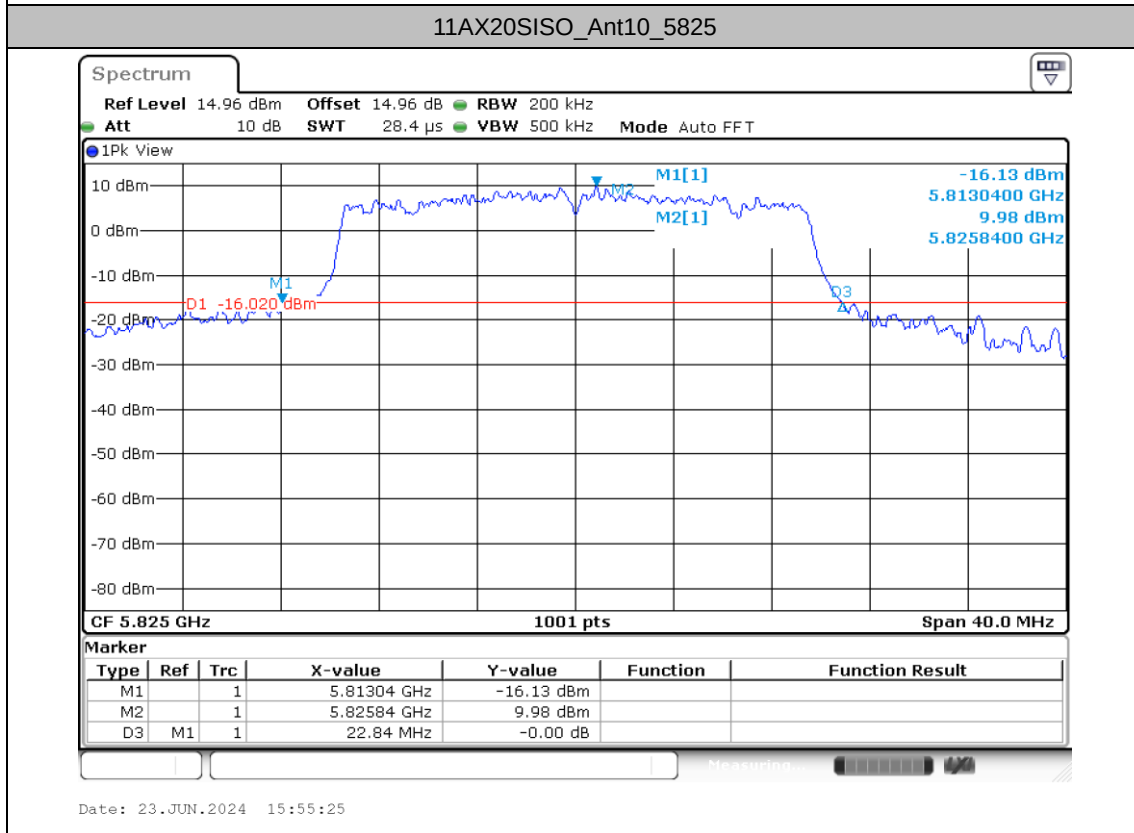
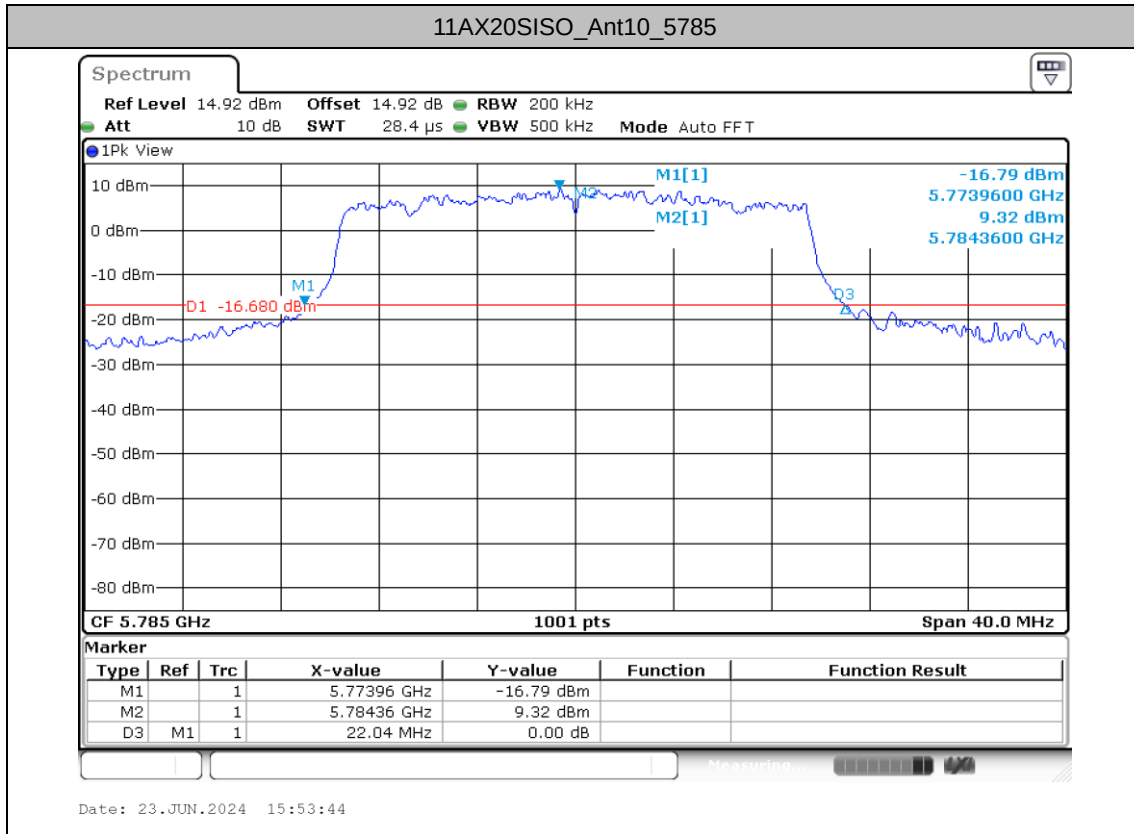


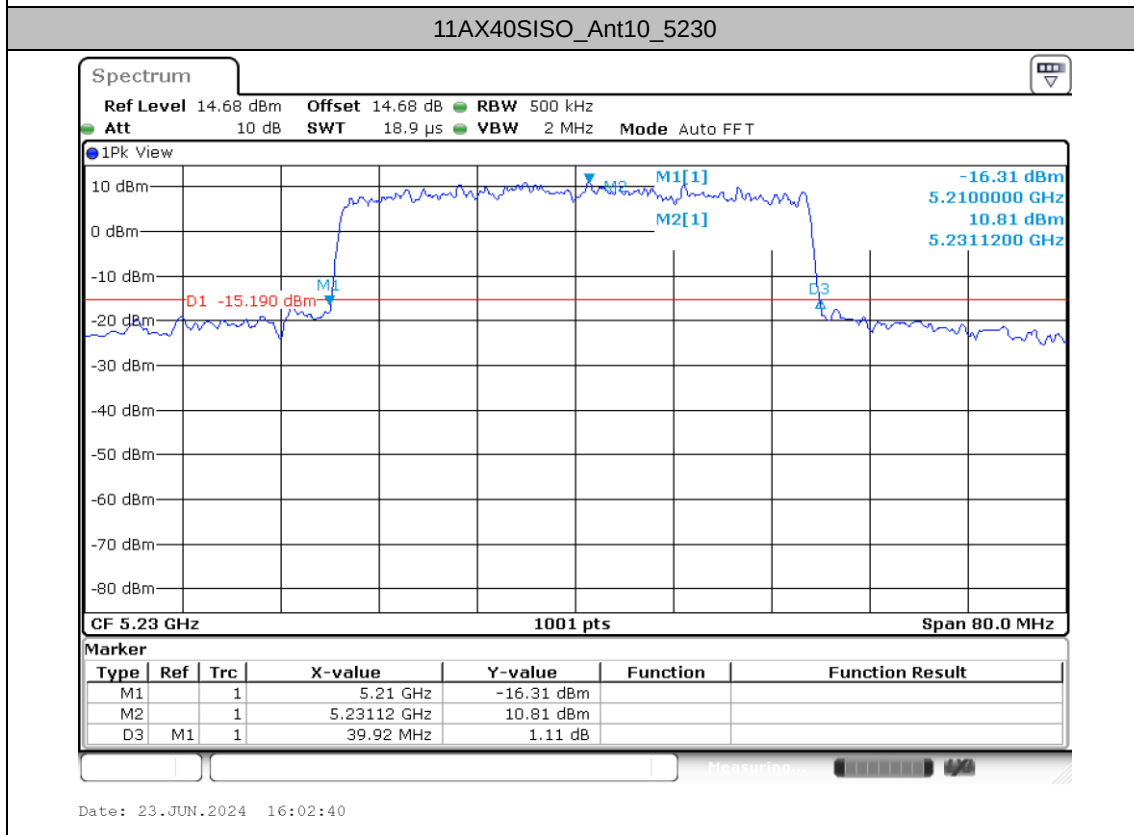
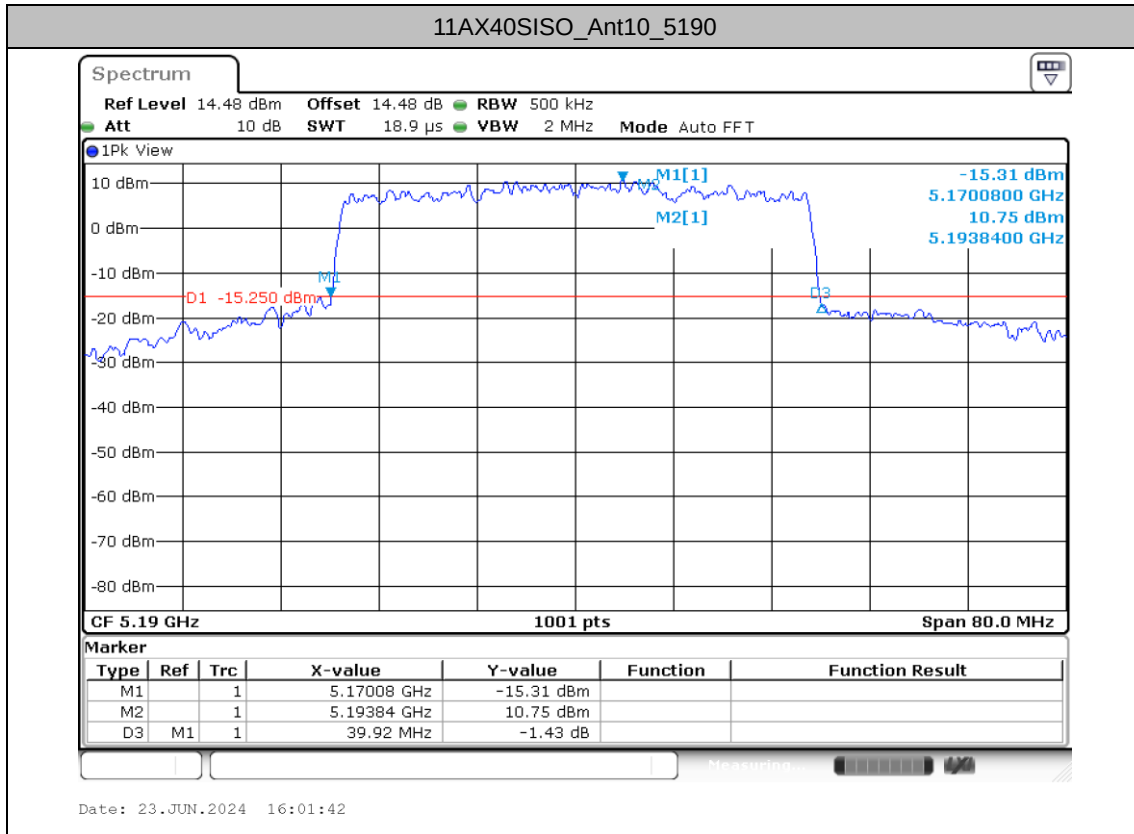


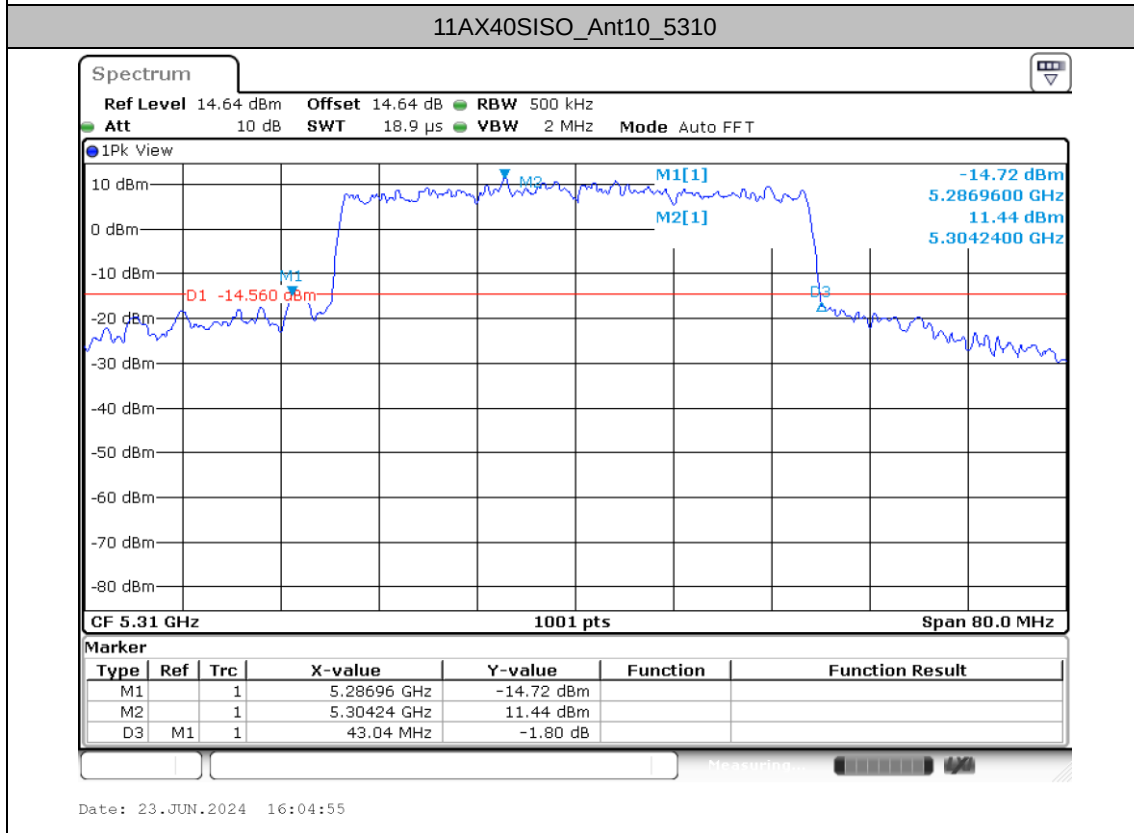
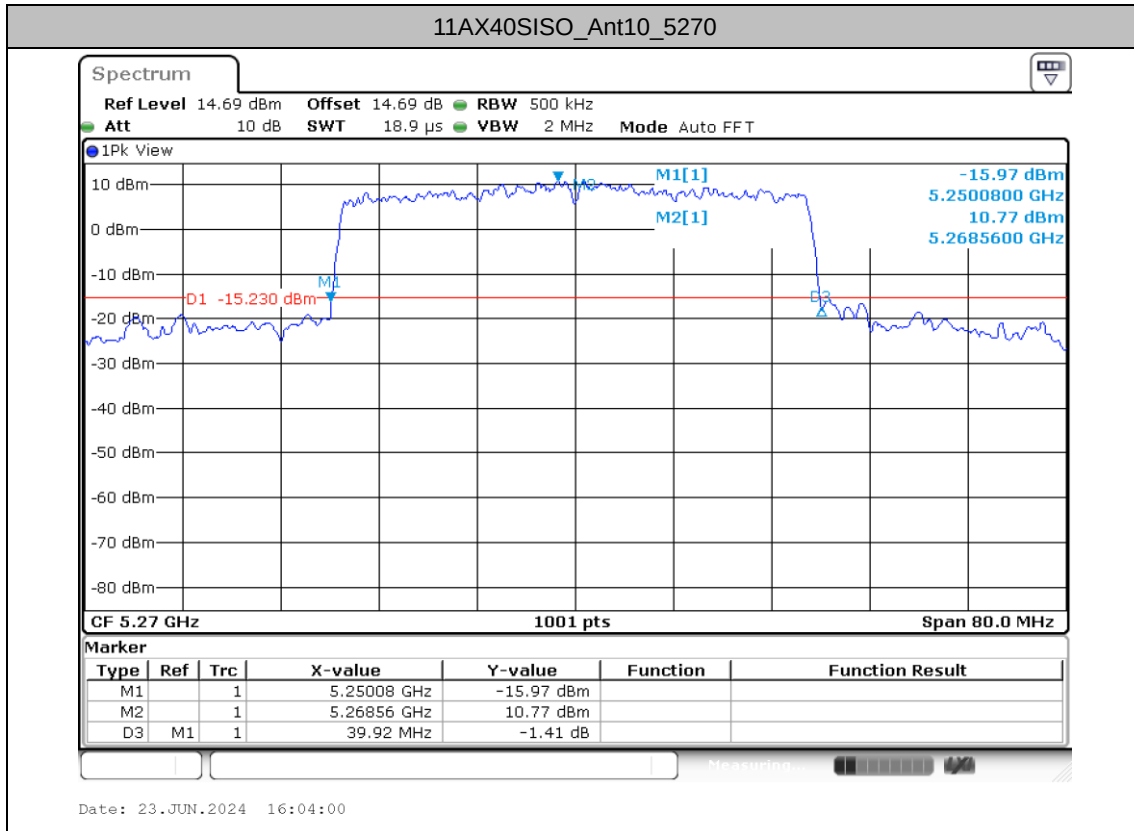


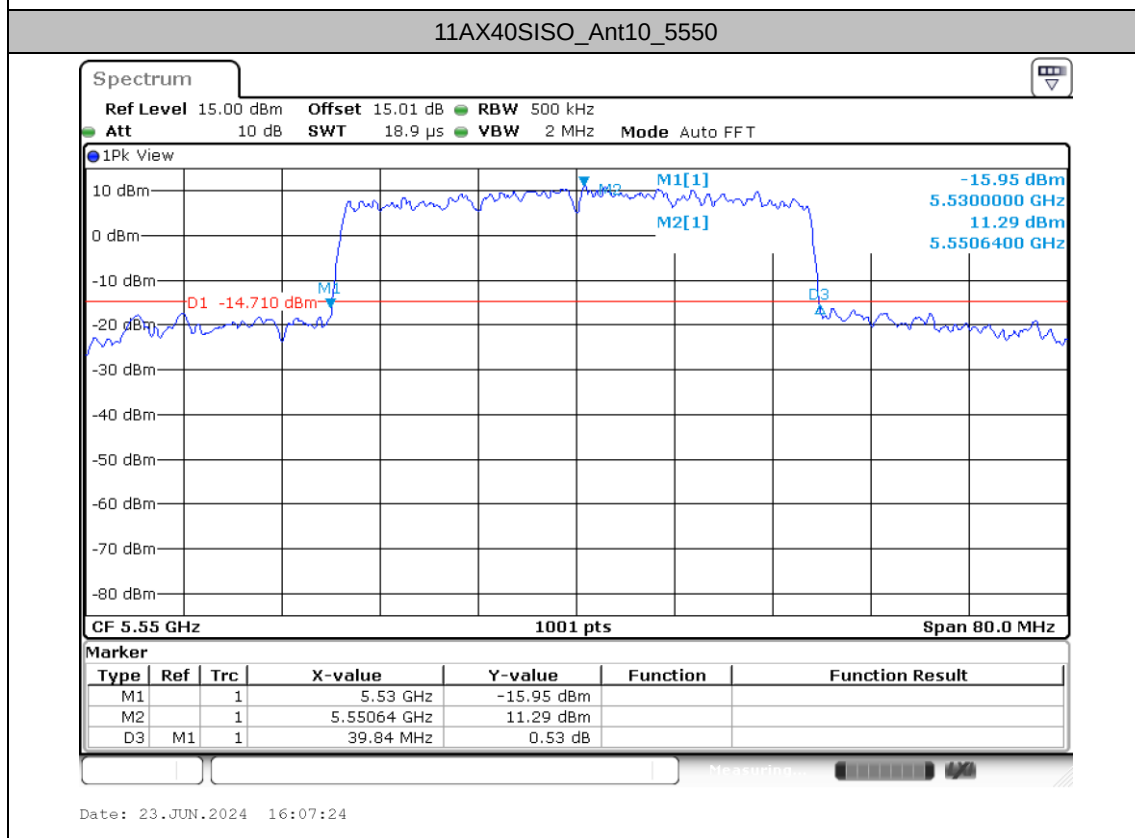
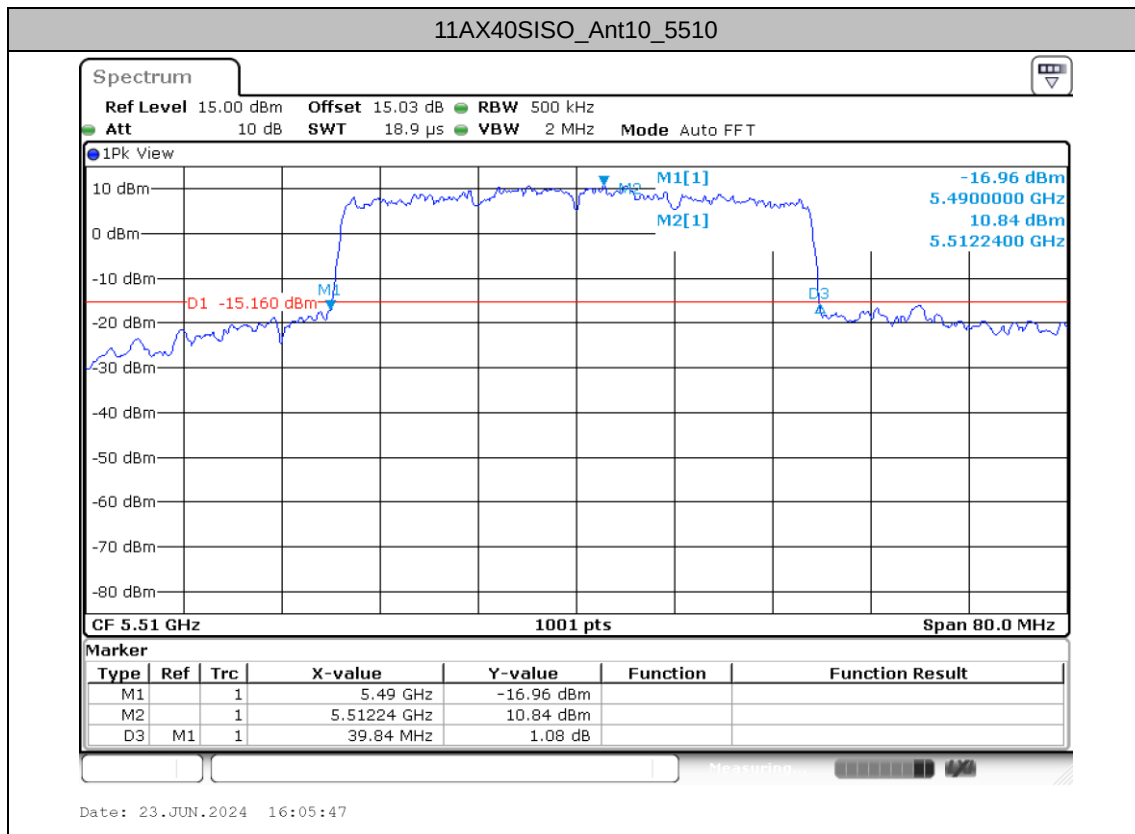


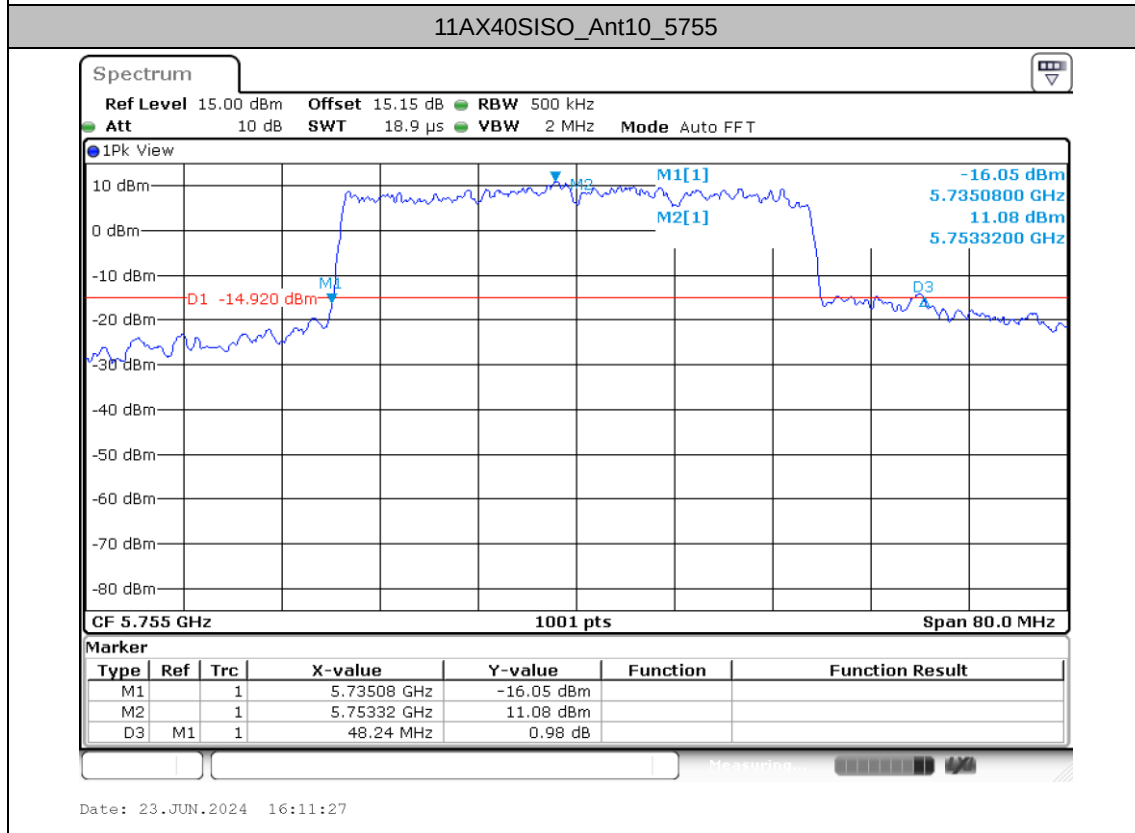
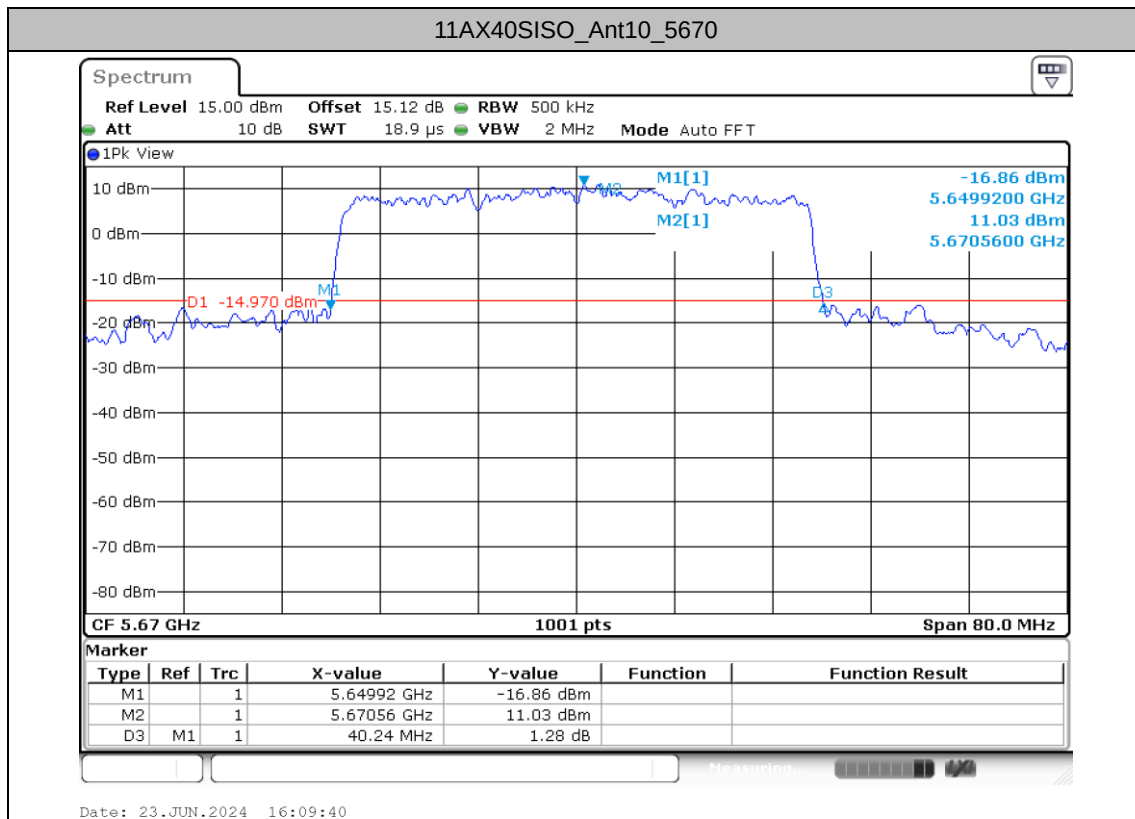


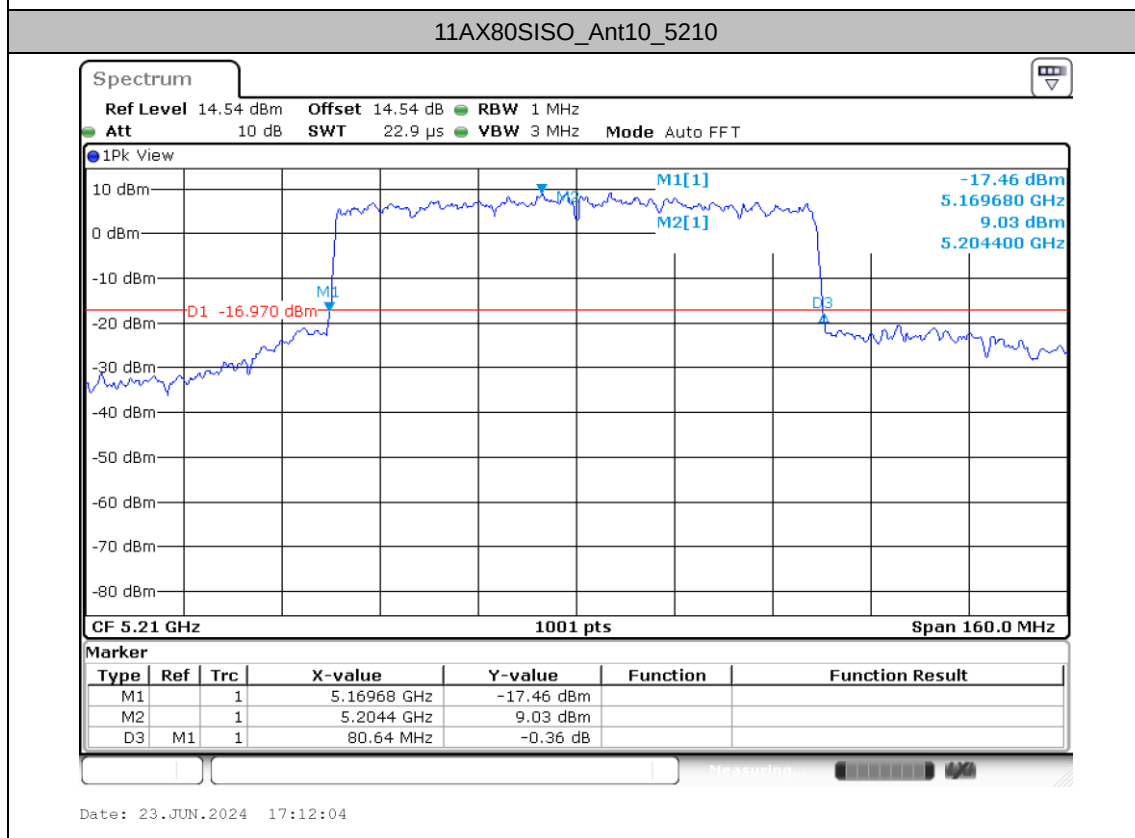
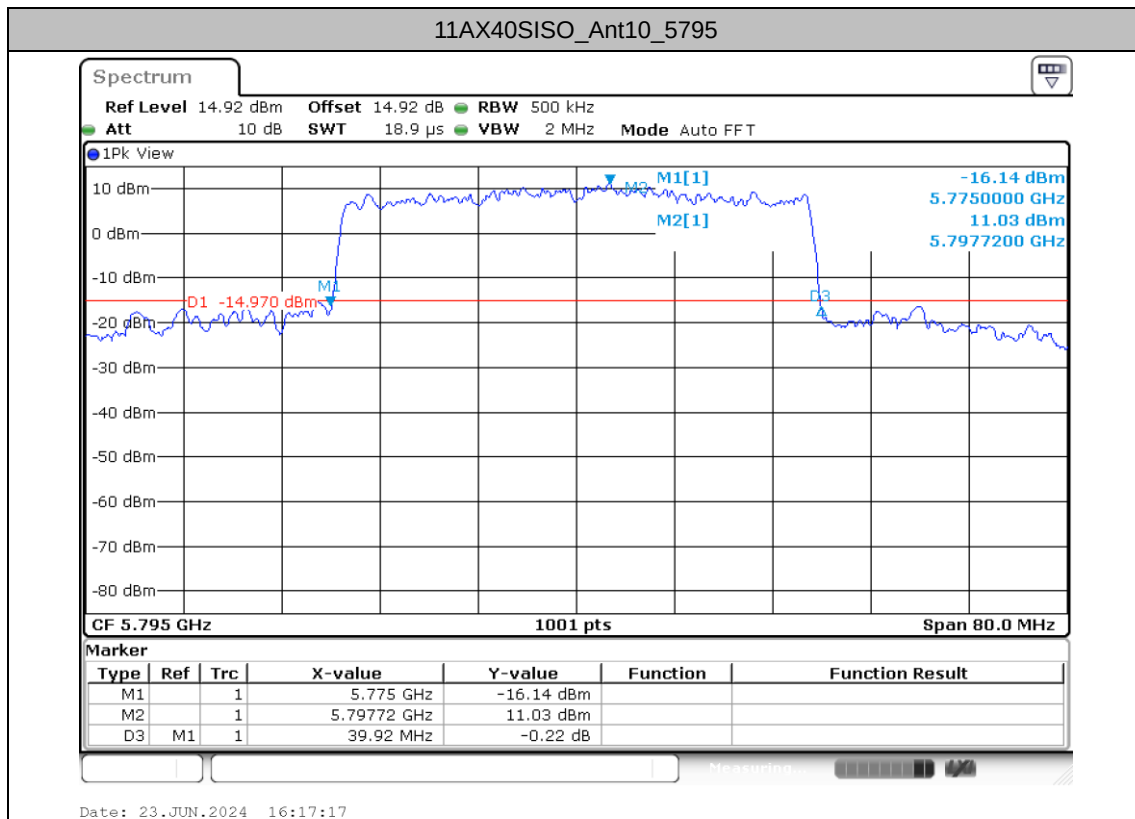


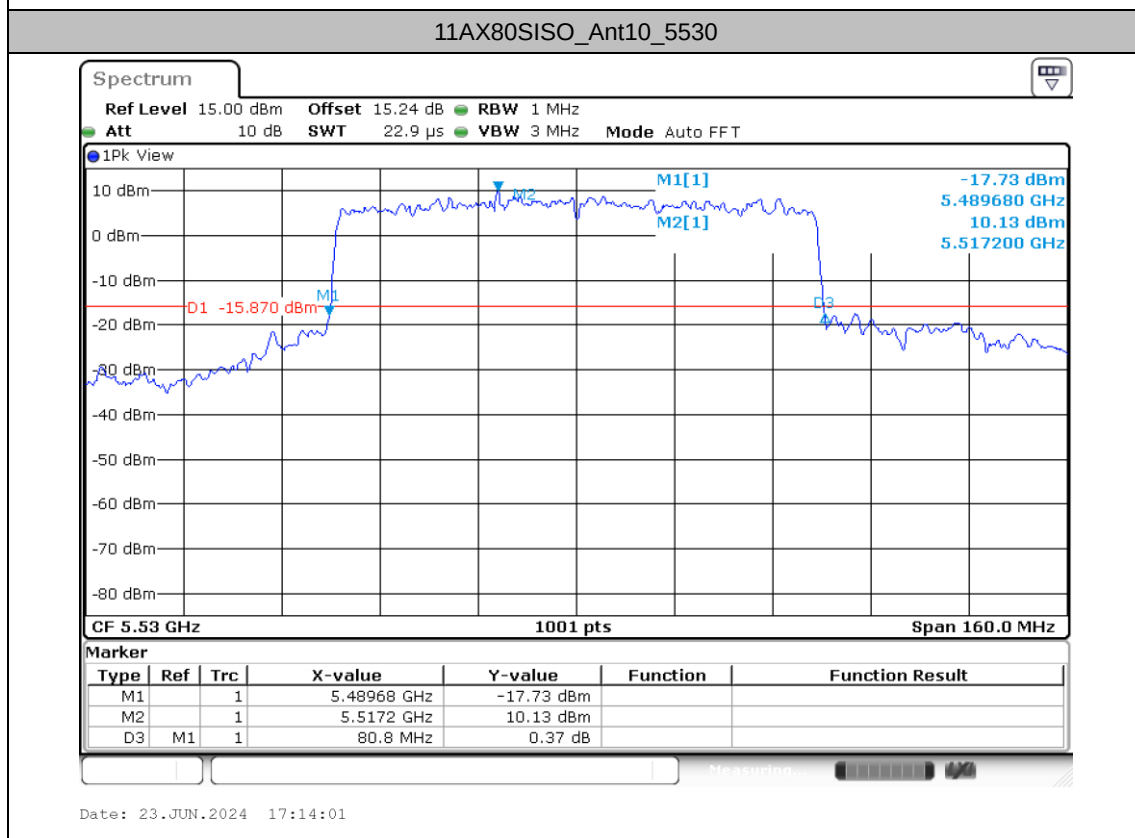
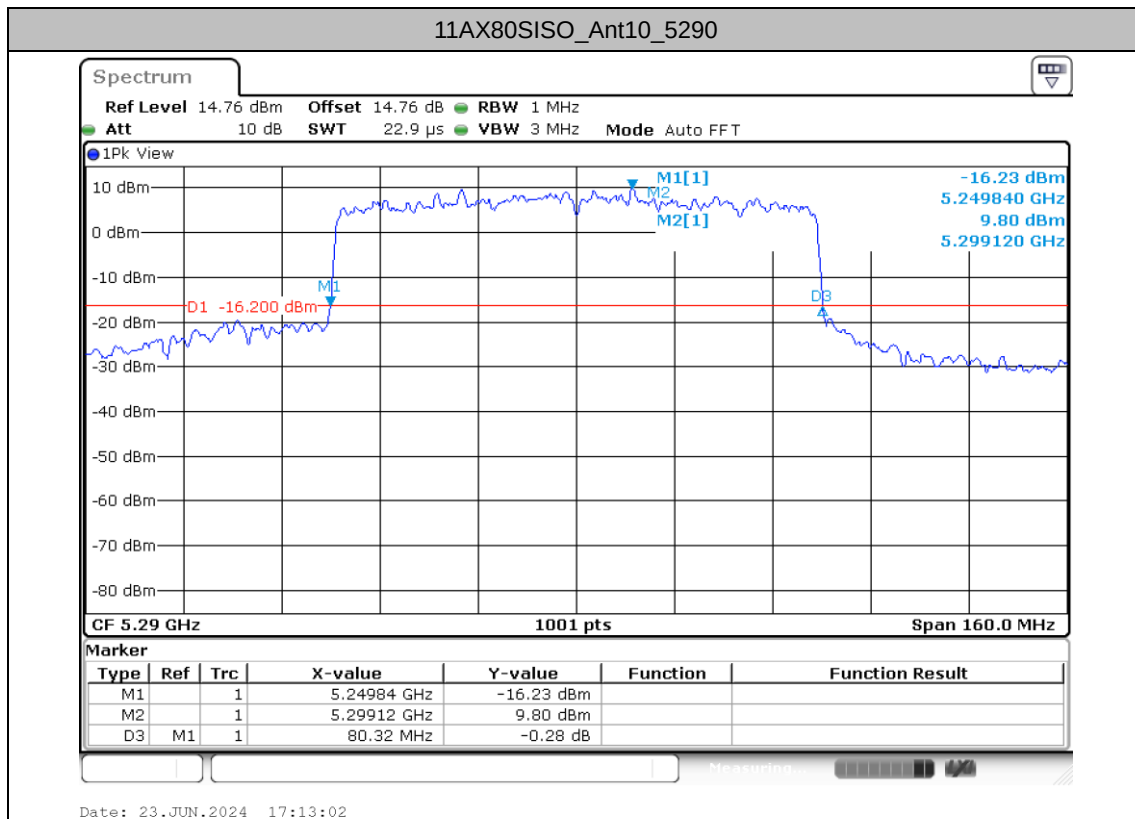


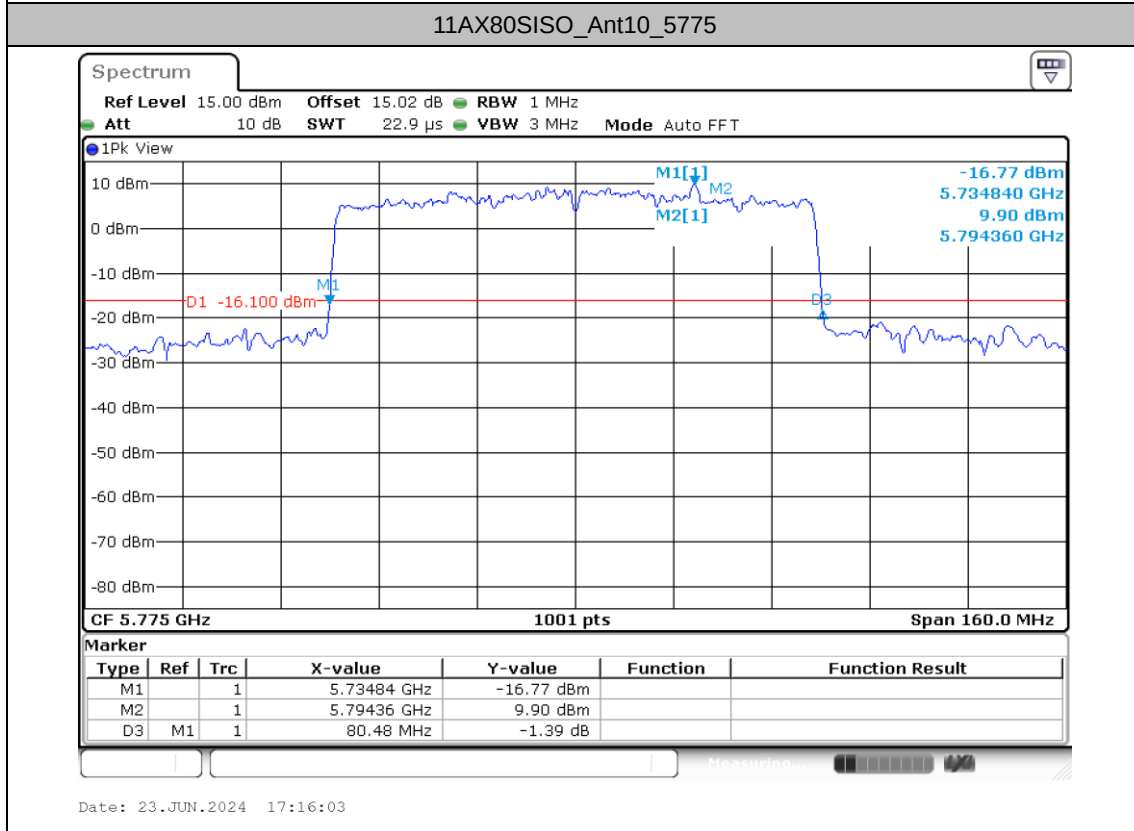
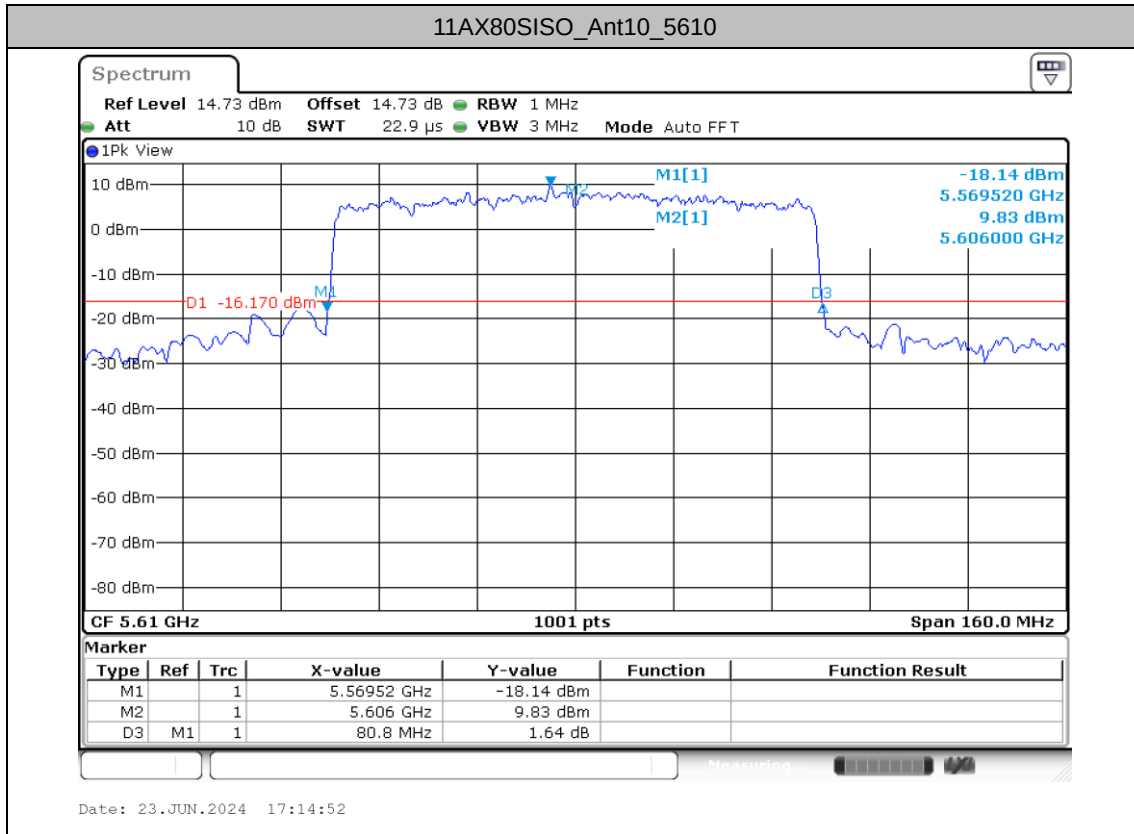














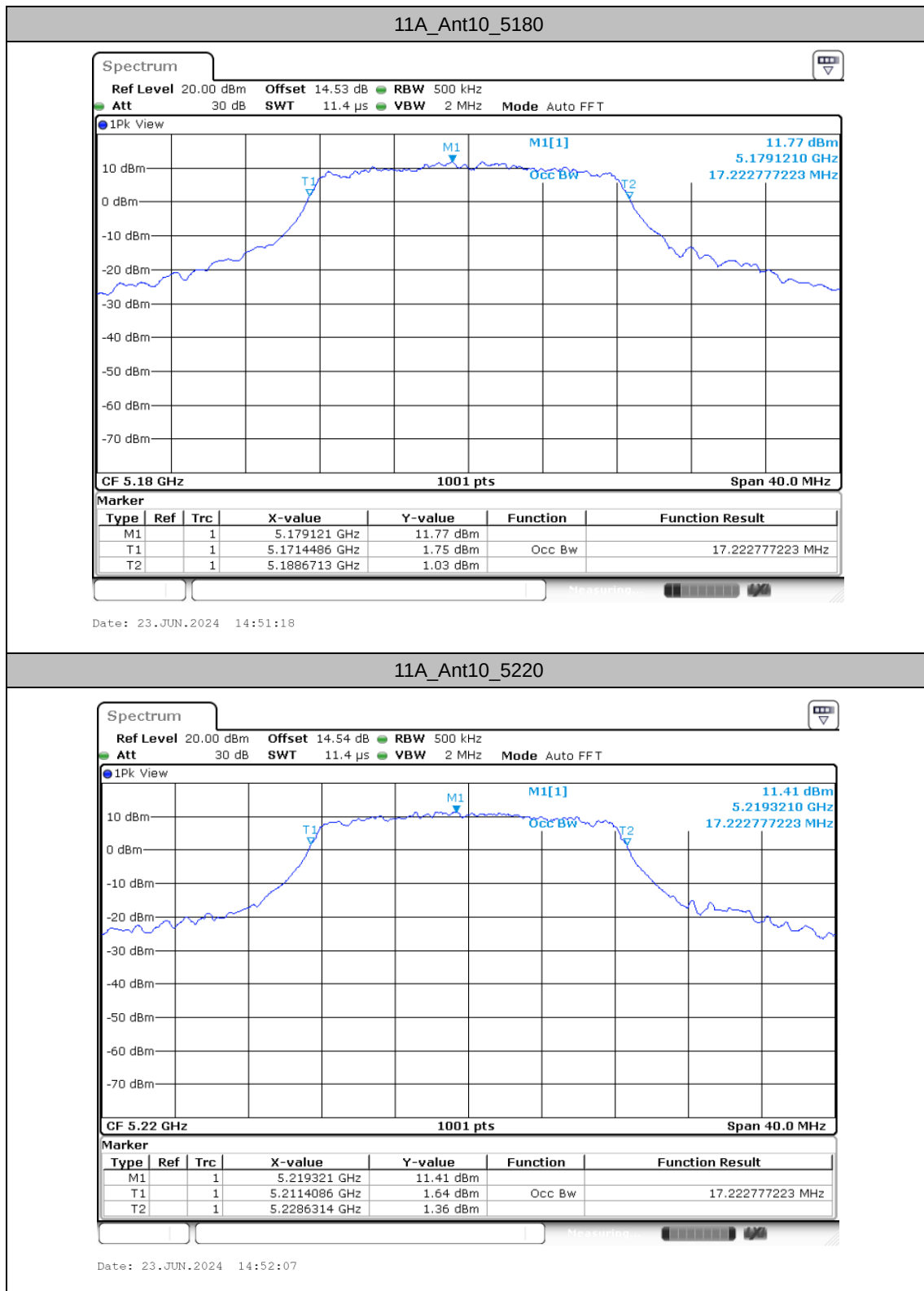
Occupied channel bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]
11A	Ant10	5180	17.223	5171.4486	5188.6713
		5220	17.223	5211.4086	5228.6314
		5240	17.183	5231.3686	5248.5514
		5260	17.143	5251.4086	5268.5514
		5300	17.223	5291.3287	5308.5514
		5320	17.183	5311.4086	5328.5914
		5500	17.343	5491.2887	5508.6314
		5580	17.582	5571.0490	5588.6314
		5700	17.303	5691.2887	5708.5914
		5745	17.223	5736.4086	5753.6314
		5785	17.183	5776.4086	5793.5914
		5825	17.463	5816.2088	5833.6713
11AX20SISO	Ant10	5180	19.221	5170.4496	5189.6703
		5220	19.221	5210.4096	5229.6304
		5240	19.061	5230.4895	5249.5504
		5260	19.141	5250.4496	5269.5904
		5300	19.261	5290.4096	5309.6703
		5320	19.301	5310.3696	5329.6703
		5500	19.141	5490.4096	5509.5504
		5580	19.141	5570.4496	5589.5904
		5700	19.221	5690.3297	5709.5504
		5745	19.181	5735.4096	5754.5904
		5785	19.181	5775.4096	5794.5904
		5825	19.341	5815.4096	5834.7502
11AX40SISO	Ant10	5190	37.882	5171.0589	5208.9411
		5230	37.882	5211.0589	5248.9411
		5270	37.882	5251.0589	5288.9411
		5310	37.962	5291.0589	5329.0210
		5510	38.202	5490.8991	5529.1009
		5550	37.962	5531.0589	5569.0210
		5670	38.202	5650.8991	5689.1009
		5755	38.122	5735.9790	5774.1009
11AX80SISO	Ant10	5795	37.962	5775.9790	5813.9411
		5210	77.522	5171.3187	5248.8412
		5290	77.522	5251.1588	5328.6813
		5530	78.162	5491.1588	5569.3207
		5610	77.363	5571.3187	5648.6813
		5775	77.522	5736.3187	5813.8412

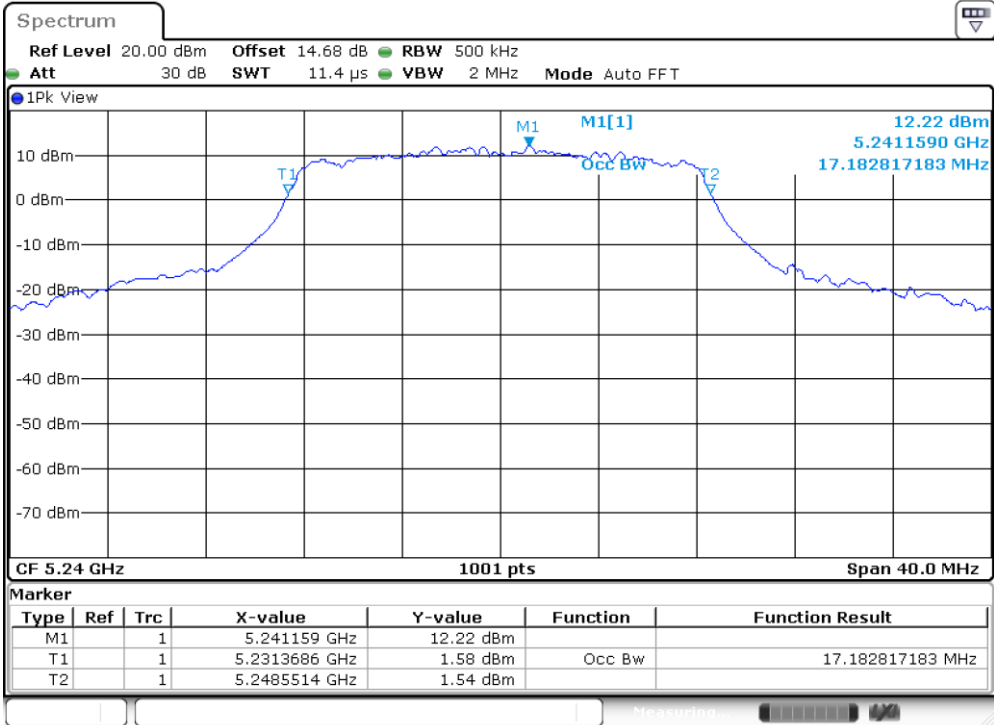


Test Graphs

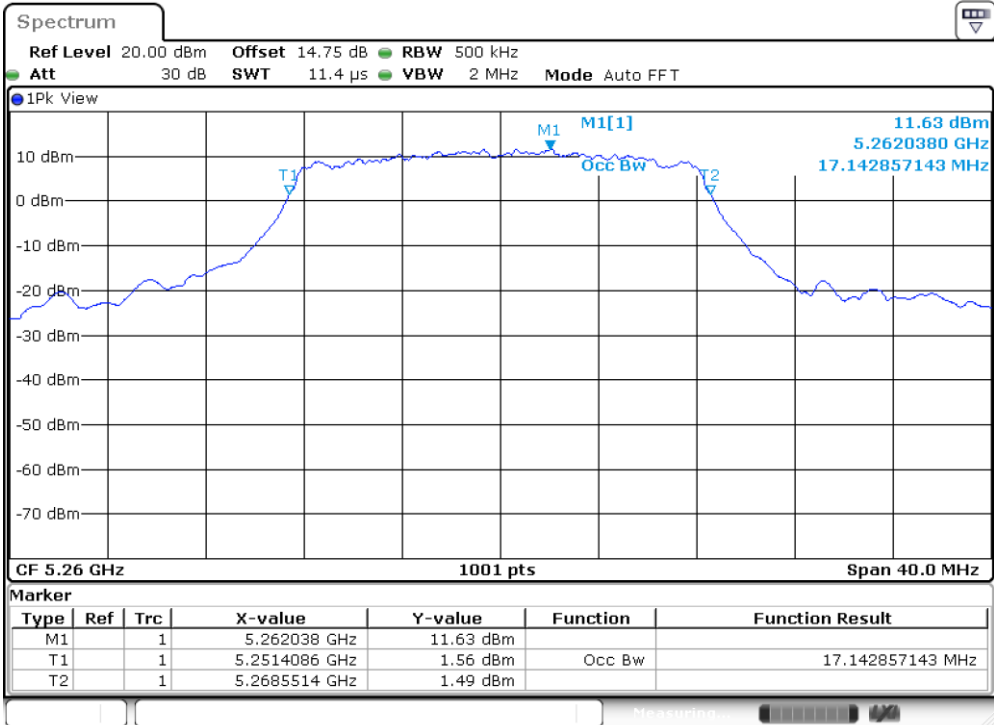


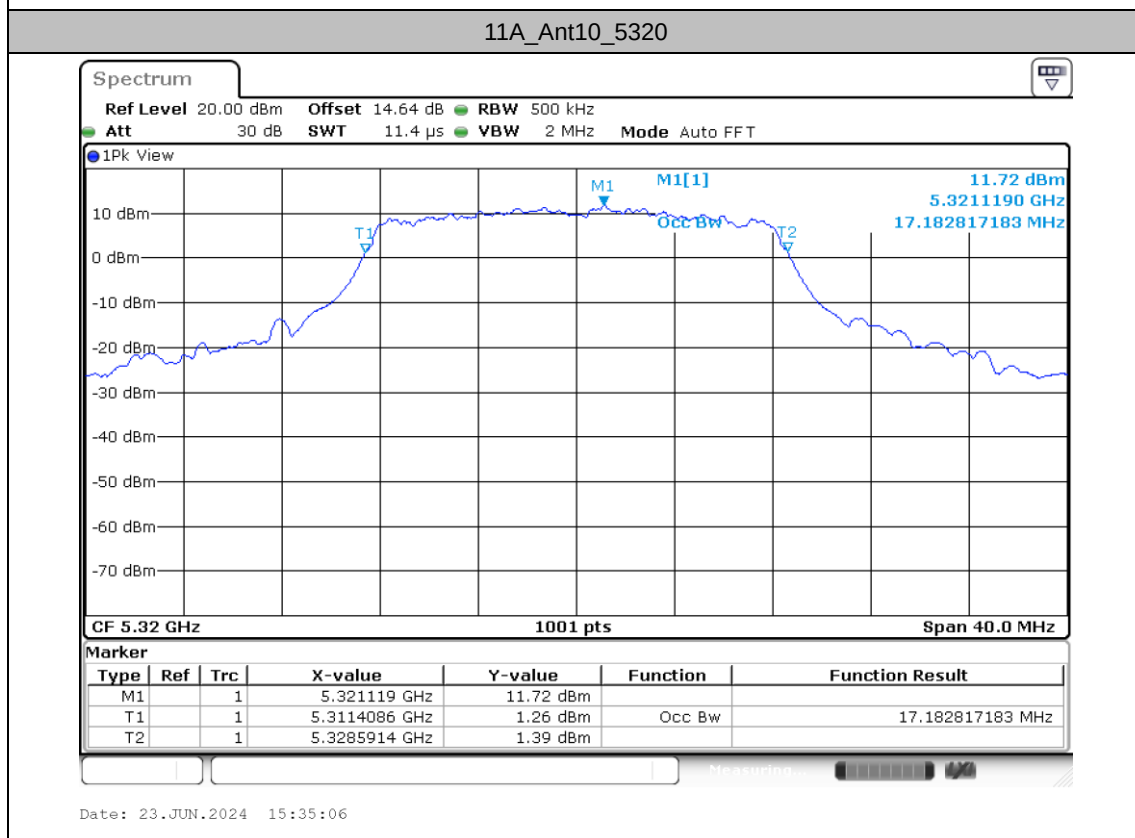
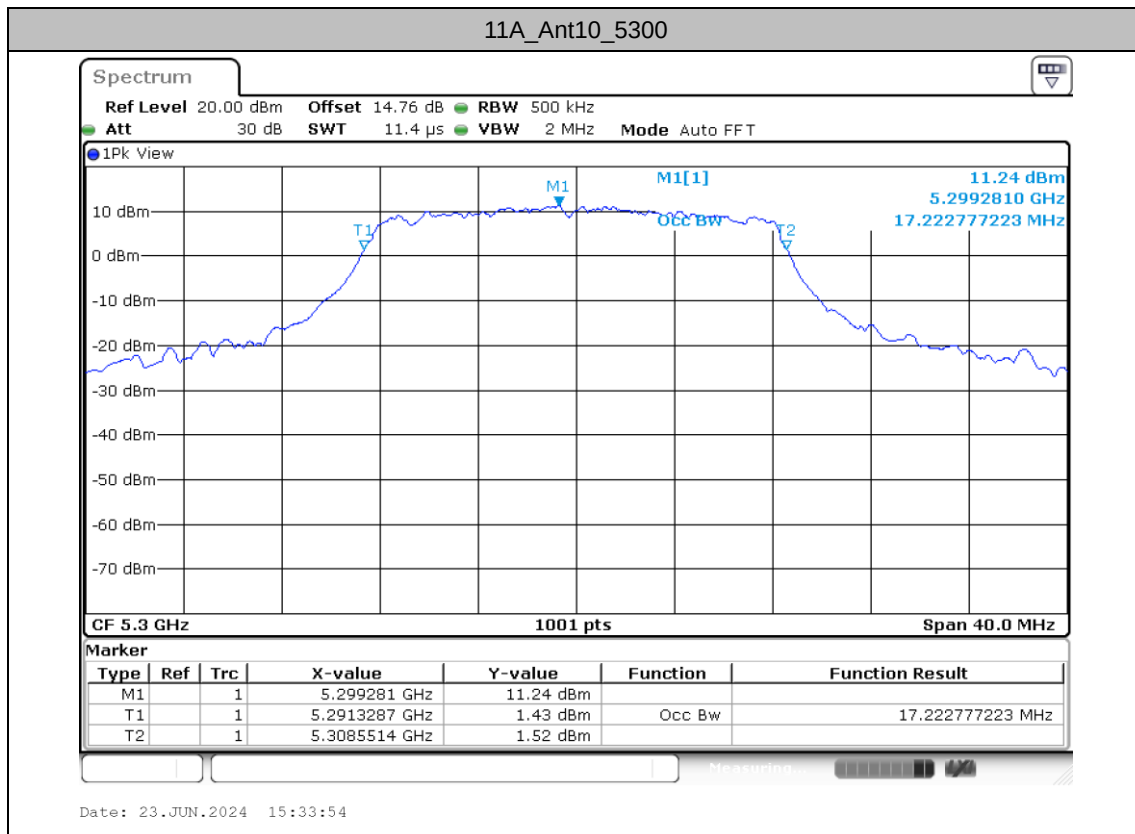


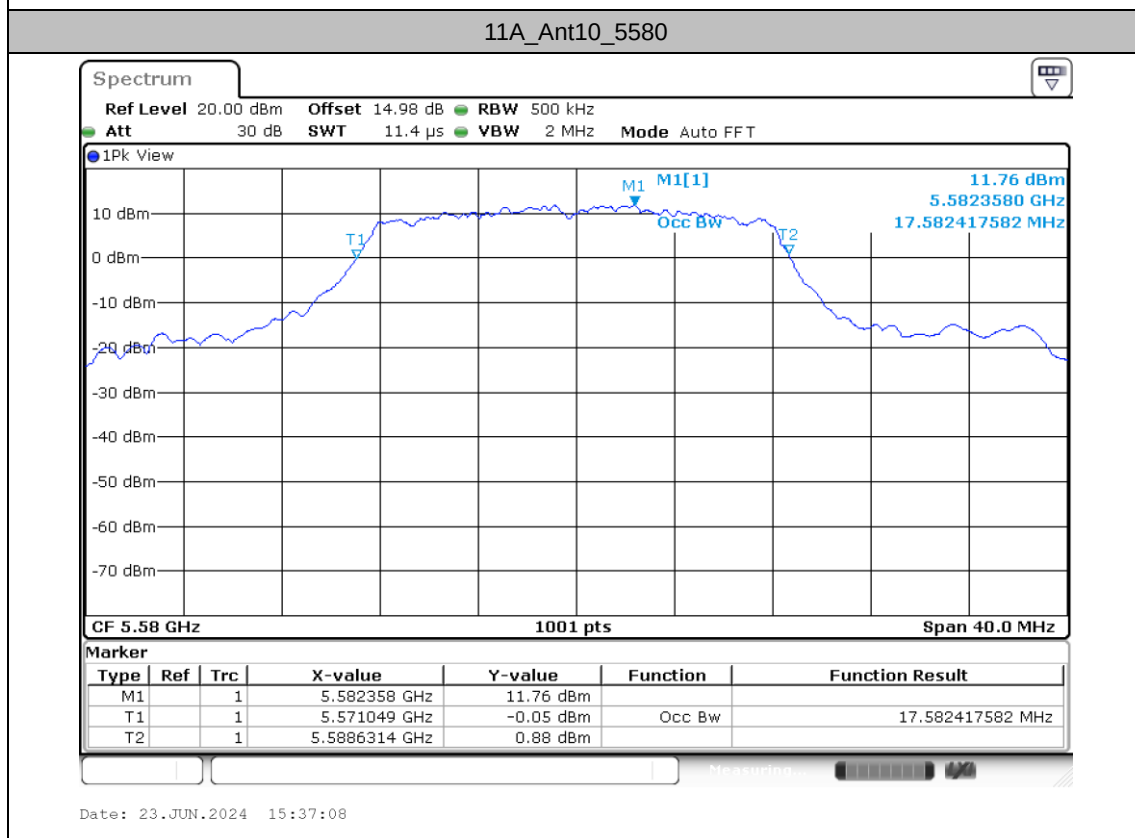
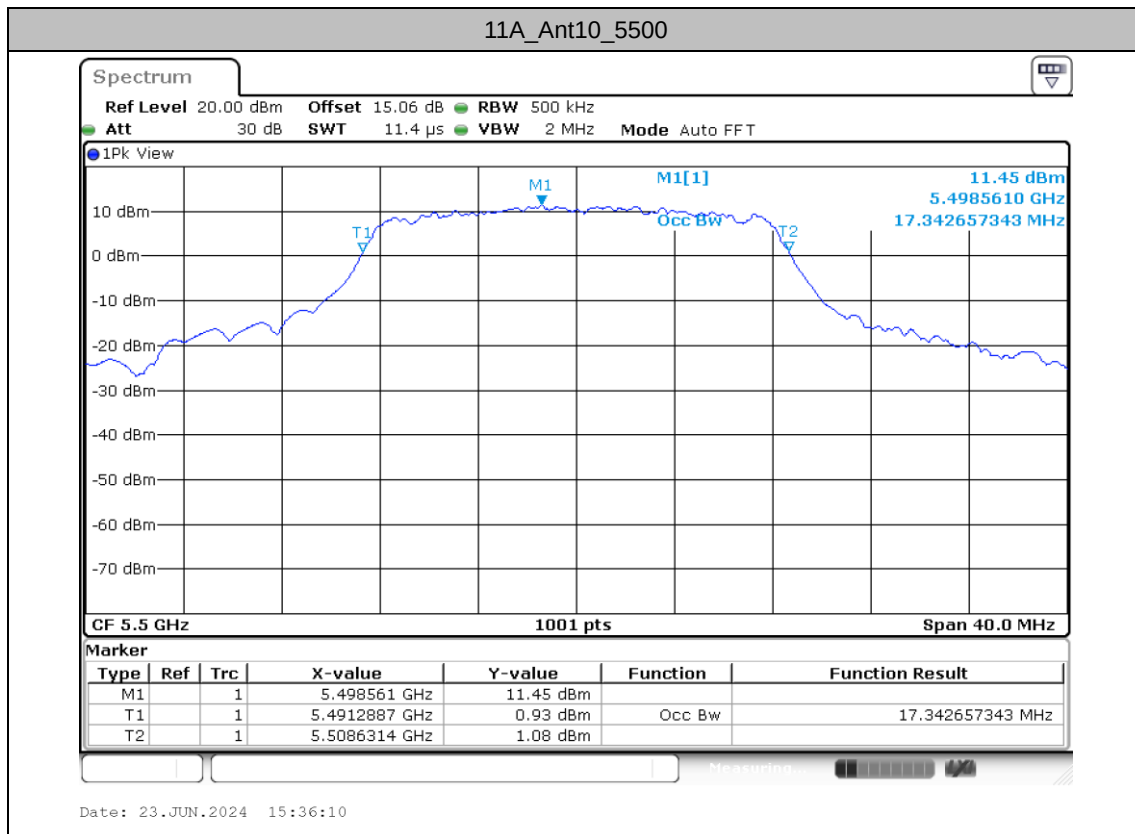
11A_Ant10_5240



11A_Ant10_5260

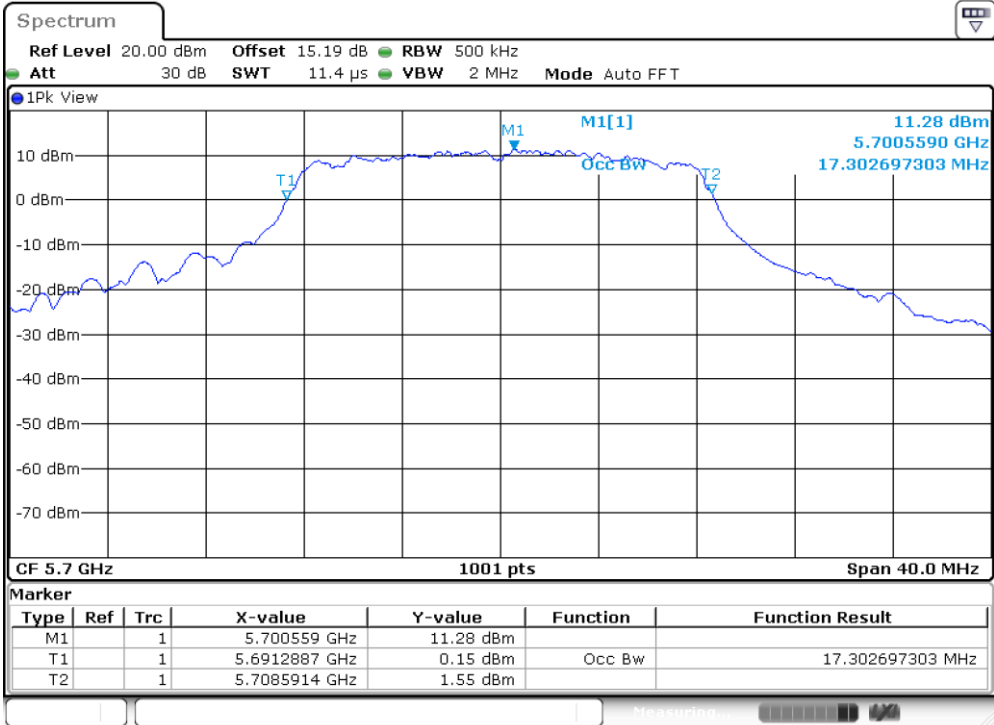




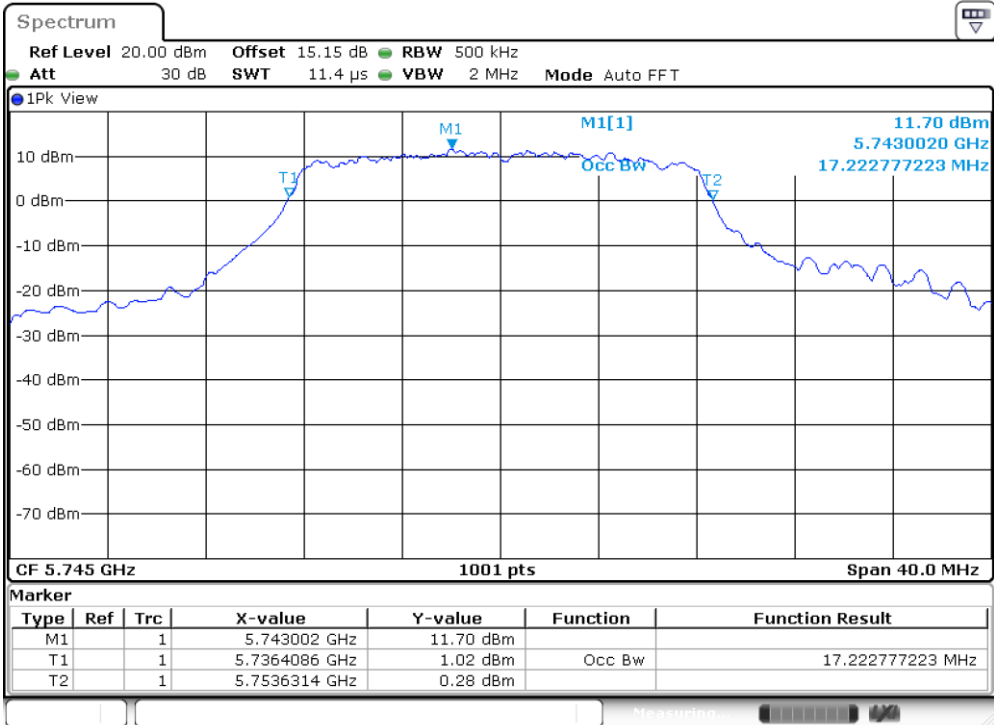




11A_Ant10_5700

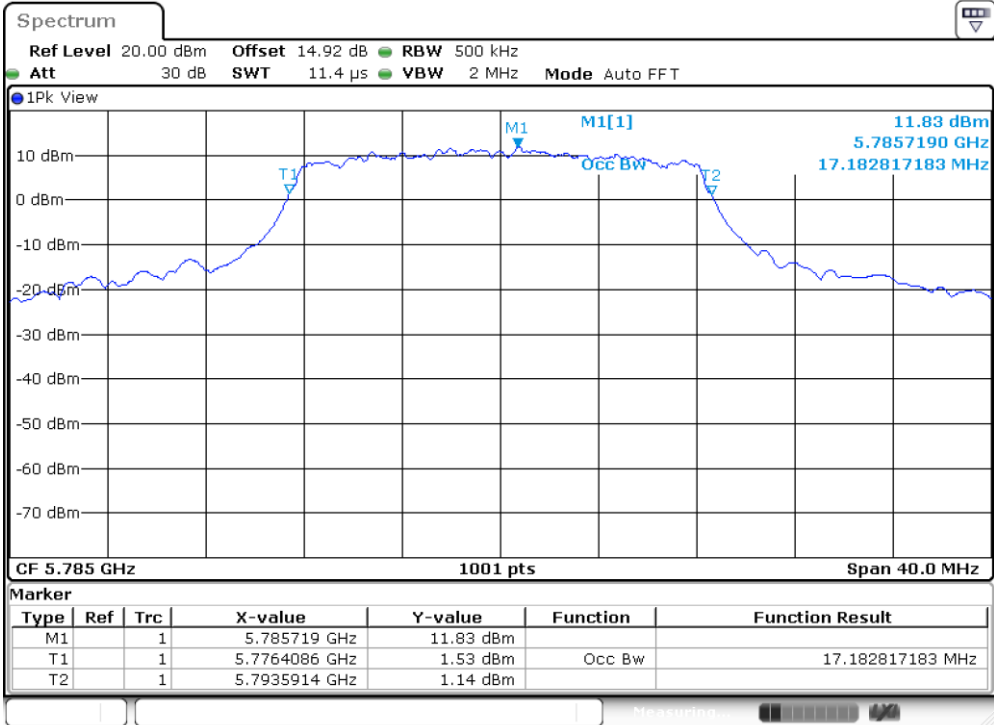


11A_Ant10_5745



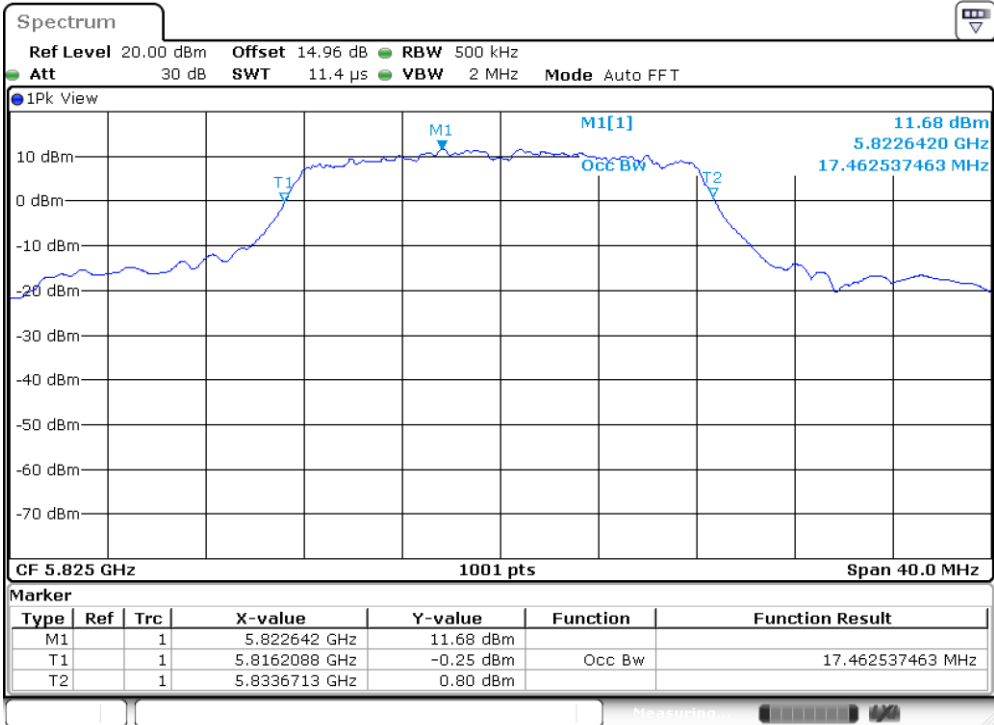


11A_Ant10_5785



Date: 23.JUN.2024 15:40:33

11A_Ant10_5825



Date: 23.JUN.2024 15:42:21

