

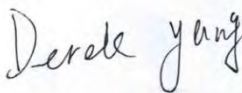
# FCC TEST REPORT

**Application No.:** ZR/2021/30022  
**Applicant:** HMD Global Oy  
**Address of Applicant:** Bertel Jungin aukio 9, 02600 Espoo, Finland  
**Manufacturer:** HMD Global Oy  
**Address of Manufacturer:** Bertel Jungin aukio 9, 02600 Espoo, Finland  
**EUT Description:** Smart Phone  
**Model No.:** TA-1371  
**Trade Mark:** NOKIA  
**FCC ID:** 2AJOTTA-1371  
**Standards:** 47 CFR FCC Part 2, Subpart J  
 47 CFR FCC Part 15, Subpart E  
**Date of Receipt:** 2021/4/2  
**Date of Test:** 2021/4/2 to 2021/5/14  
**Date of Issue:** 2021/5/14

<b>Test Result :</b>	<b>PASS *</b>
----------------------	---------------

\* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Authorized Signature:





Derek Yang  
 Wireless Laboratory Manager



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# 1 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2021-05-14		Original

Authorized for issue by:		
Prepared By		 <hr/> (Dee Zheng) / Engineer
Checked By		 <hr/> (Jim Huang) / Reviewer



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## 2 Test Summary

Test Item	Band	FCC rules	Test Requirements	Test Result	Result	Test Lab*
26dB Emission Bandwidth	5150-5250	15.403(i) 15.407(a)(1)	No limit.	Clause 4.5	PASS	A
	5250-5350	15.403(i) 15.407(a)(2)				
	5470-5725	15.403(i) 15.407(a)(2)				
6dB Emission Bandwidth	5725-5850	15.403(i) 15.407(e)	≥ 500 kHz.	Clause 4.6	PASS	A
99% Occupied Bandwidth	5150-5250	KDB 789033 D02§ D	No limit.	Clause 4.7	PASS	A
	5250-5350					
	5470-5725					
Duty Cycle	5150-5850	--	No limit.	Clause 4.3	PASS	A
Maximum Conducted Output Power	5150-5250	15.407(a)(1) 15.407(a)(4)	FCC < 250mW (avg during transmission)	Clause 4.4	PASS	A
	5250-5350	15.407(a)(2) 15.407(a)(4)	<MIN{250mW, 11dBm+10*Ig(EBW)} (avg during transmission)			
	5470-5725	15.407(a)(2) 15.407(a)(4)	<MIN{250mW, 11dBm+10*Ig(EBW)} (avg during transmission)			
Maximum Power Spectral Density	5150-5250	15.407(a)(1) 15.407(a)(4)	<11dBm/MHz (avg during transmission)	Clause 4.8	PASS	A
	5250-5350	15.407(a)(2) 15.407(a)(4)	<11dBm/MHz (avg during transmission)			
	5470-5725	15.407(a)(2) 15.407(a)(4)	<11dBm/MHz (avg during transmission)			
Unwanted Emissions that fall Out of the Restricted Bands (Radiated)	5150-5250	15.407(b)(1) 15.407(b)(6) 15.407(b)(7) 15.209	F<1GHz: §15.209/§7.2.5 limit (QP). F≥1GHz & out-restricted: <-27dBm/MHz PK e.i.r.p. (exl. 5.15-5.35 GHz). F≥1GHz & in-restricted: §15.209/§7.2.5 limit (AV&PK).	Clause 4.9	PASS	B
			5250-5350			
	5470-5750	15.407(b)(3) 15.407(b)(6) 15.407(b)(7) 15.209				



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			F≥1GHz & in-restricted: §15.209/§7.2.5 limit (AV&PK).			
Unwanted Emissions in the Restricted Bands (Radiated)	5150-5250 5250-5350 5470-5725	15.209	---	Clause 4.10	PASS	B
AC Power Line Conducted Emissions	5150-5250 5250-5350 5470-5725	15.207	---	Clause 4.2	PASS	B
Frequency Stability	5150-5250 5250-5350 5470-5725	15.209	---	Clause 4.11	PASS	A
Dynamic Frequency Selection	5250-5350 5470-5725	47 CFR Part 15, Subpart E 15.407	Channel Move Time:10 Seconds	Clause 4.12	PASS	B

Remark : All test were performed by Lab A and B.

Lab A SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

Lab B SGS-CSTC STANDARDS TECHNICAL SERVICES (XI'AN) CO., LTD.



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### 3 General Information

#### 3.1 Details of Client

Applicant:	HMD Global Oy
Address of Applicant	Bertel Jungin aukio 9, 02600 Espoo, Finland
Manufacturer:	HMD Global Oy
Address of Manufacturer	Bertel Jungin aukio 9, 02600 Espoo, Finland

#### 3.2 Test Location

##### Lab A:

Company:	SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
Address:	No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China
Post code:	518057
Test engineer:	Dee Zheng, Swing Hu, Habit Zeng

##### Lab B:

Company:	SGS-CSTC STANDARDS TECHNICAL SERVICES (XI 'AN) CO., LTD.
Address:	1/F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, Xi'an, Shaanxi China
Post code:	710086
Test engineer:	Leah Chen, Ken Liu, Andy Yao



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### 3.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

**Lab A:**

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

• **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

**Lab B:**

**A2LA (Certificate No. 4854.01)**

SGS-CSTC STANDARDS TECHNICAL SERVICES (XI 'AN) CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4854.01.

**FCC-Designation Number: CN1271.**



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### 3.4 General Description of EUT

EUT Description:	Smart Phone
Model No.:	TA-1371
Trade Mark:	NOKIA
Hardware Version:	V1.00
Software Version:	00WW_1_01A
IEEE 802.11 WLAN Mode Supported	<input checked="" type="checkbox"/> 802.11a (20 MHz channel bandwidth), <input checked="" type="checkbox"/> 802.11n (20 MHz channel bandwidth) <input checked="" type="checkbox"/> 802.11n (40 MHz channel bandwidth), <input checked="" type="checkbox"/> 802.11ac (20 MHz channel bandwidth) <input checked="" type="checkbox"/> 802.11ac (40 MHz channel bandwidth) <input checked="" type="checkbox"/> 802.11ac (80 MHz channel bandwidth)
Operation Frequency:	IEEE 802.11n(HT20/40)/ ac(HT20/40/80): 5150MHz to 5250MHz IEEE 802.11n(HT20/40)/ ac(HT20/40/80): 5250MHz to 5350MHz IEEE 802.11n(HT20/40)/ ac(HT20/40/80): 5470MHz to 5725MHz
Type of Modulation:	OFDM
DFS mode:	<input type="checkbox"/> Master <input type="checkbox"/> Slave with radar detection <input checked="" type="checkbox"/> Slave without radar detection
Sample Type:	<input checked="" type="checkbox"/> Portable Device, <input type="checkbox"/> Module
Antenna Type:	<input type="checkbox"/> External, <input checked="" type="checkbox"/> Integrated
Antenna Ports	<input checked="" type="checkbox"/> Ant 1, <input checked="" type="checkbox"/> Ant 2, <input type="checkbox"/> Ant 3
Smart System	<input checked="" type="checkbox"/> SISO (for 802.11a/n/ac), <input checked="" type="checkbox"/> MIMO (for 802.11a/n/ac), <input type="checkbox"/> Diversity (for 802.11a).
Antenna Gain:	-2.0dBi(ANT4); -2.0dBi(ANT7);

**Remark:**

In FCC 15.31, for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table, and the selected channel to perform the test as below:

Frequency Range of Operation Operating Frequency Range (in each Band)	Number of Measurement Frequencies Required	Location of Measurement Frequency in Band of Operation
1 MHz or less	1	centre
1 MHz to 10 MHz	2	1 near high end, 1 near low end
Greater than 10 MHz	3	1 near high end, 1 near centre



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For UNII Band I:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac 20MHz	The Lowest channel	5180
	The Middle channel	5200
	The Highest channel	5240
IEEE 802.11n/ac 40MHz	The Lowest channel	5190
	The Highest channel	5230
IEEE 802.11ac 80MHz	The Middle channel	5210

For UNII Band II-A:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac 20MHz	The Lowest channel	5260
	The Middle channel	5280
	The Highest channel	5320
IEEE 802.11n/ac 40MHz	The Lowest channel	5270
	The Highest channel	5310
IEEE 802.11ac 80MHz	The Middle channel	5290

For UNII Band II-C:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac 20MHz	The Lowest channel	5500
	The Middle channel	5580
	The Highest channel	5700
IEEE 802.11n/ac 40MHz	The Lowest channel	5510
	The Middle channel	5550
	The Highest channel	5670
IEEE 802.11ac 80MHz	The Lowest channel	5530
	The Highest channel	5610



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### 3.5 Test Environment and Mode

<b>Operating Environment:</b>	
Temperature:	25.0 °C
Humidity:	50 % RH
Atmospheric Pressure:	101.30 KPa
<b>Test mode:</b>	
Transmitting mode:	Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.



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## 4 Test results and Measurement Data

### 4.1 Antenna Requirement

<b>Standard requirement:</b>	47 CFR Part 15 Section 15.203
The antenna is integrated antenna and no consideration of replacement. The best case gain of the antenna is -2.0dBi.	

### 4.2 AC Power Line Conducted Emissions

<b>Test Requirement:</b>	47 CFR Part 15 Section 15.407(b)		
<b>Test Method:</b>	ANSI C63.10: 2013		
<b>Test Frequency Range:</b>	150kHz to 30MHz		
<b>Limit:</b>	Frequency range (MHz)	Limit (dBuV)	
		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.			
<b>Test Procedure:</b>	<ol style="list-style-type: none"> <li>1) The mains terminal disturbance voltage test was conducted in a shielded room.</li> <li>2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.</li> <li>3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,</li> <li>4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.</li> <li>5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.</li> </ol>		



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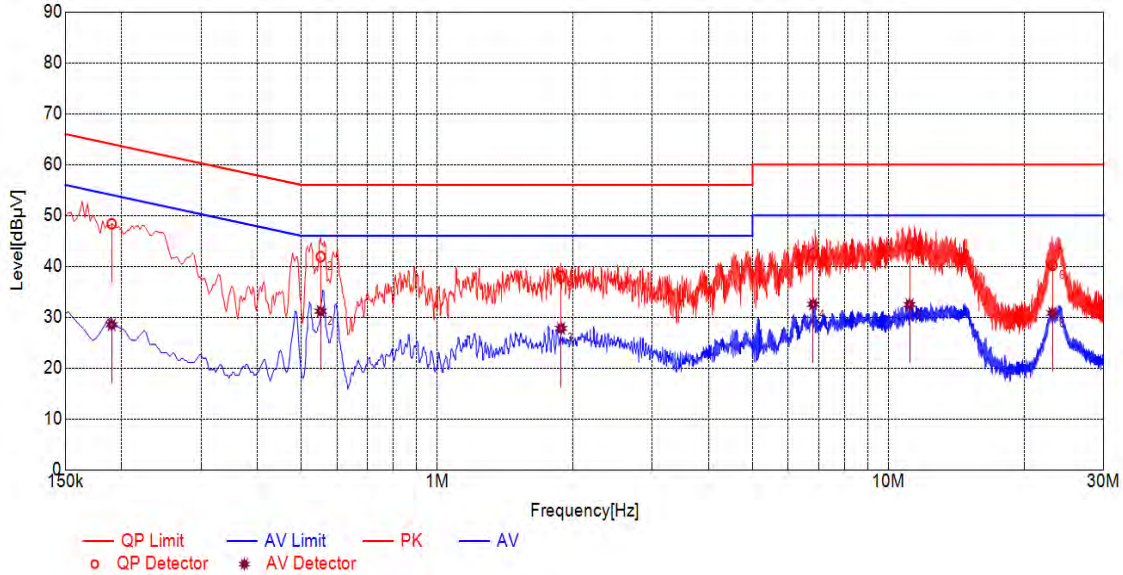
<p>Test Setup:</p>	
<p>Exploratory Test Mode:</p>	<p>Transmitting with all kind of modulations, data rates at lowest, middle and highest channel.</p>
<p>Final Test Mode:</p>	<p>Through Pre-scan, find the 6Mbps of rate of 802.11a at lowest channel is the worst case. Only the worst case is recorded in the report.</p>
<p>Instruments Used:</p>	<p>Refer to section 6 for details</p>
<p>Test Results:</p>	<p>Pass</p>



**Measurement Data**

An initial pre-scan was performed on the live and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

**Live Line:**



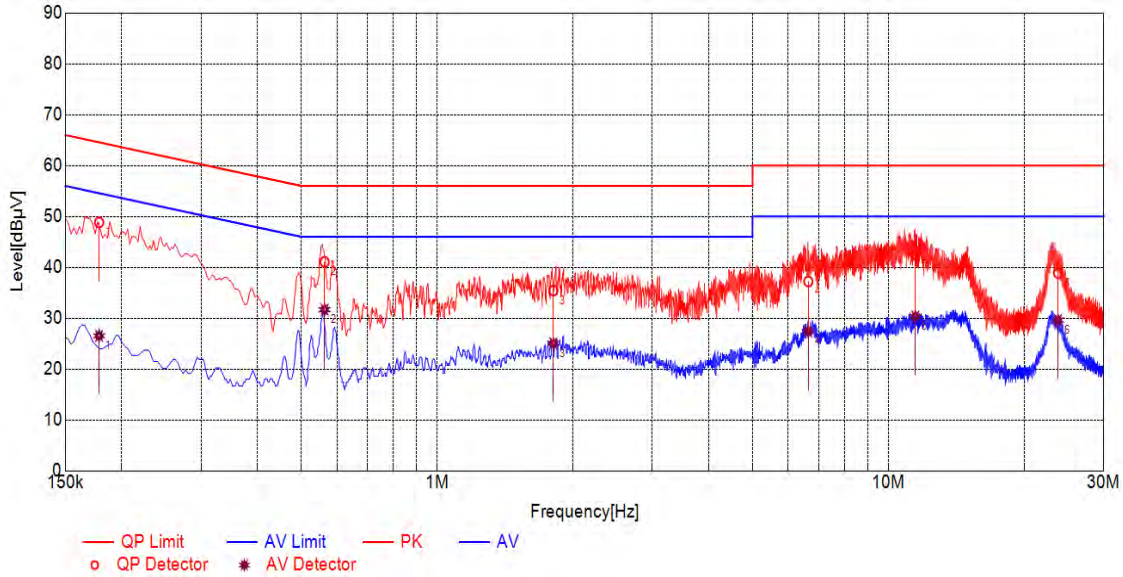
**Test Graph**

Final Data List								
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.1901	10.10	48.36	64.03	15.67	28.51	54.03	25.52
2	0.5523	10.10	41.90	56.00	14.10	31.16	46.00	14.84
3	1.8825	10.10	38.10	56.00	17.90	27.80	46.00	18.20
4	6.8124	10.10	42.52	60.00	17.48	32.54	50.00	17.46
5	11.1456	10.10	44.03	60.00	15.97	32.50	50.00	17.50
6	23.0928	10.11	40.21	60.00	19.79	30.80	50.00	19.20



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Neutral Line:



**Test Graph**

Final Data List								
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]
1	0.1783	10.10	48.83	64.57	15.74	26.54	54.57	28.03
2	0.5633	10.10	41.07	56.00	14.93	31.67	46.00	14.33
3	1.8095	10.10	35.44	56.00	20.56	25.06	46.00	20.94
4	6.6460	10.10	37.22	60.00	22.78	27.41	50.00	22.59
5	11.4817	10.10	42.49	60.00	17.51	30.33	50.00	19.67
6	23.7613	10.11	38.89	60.00	21.11	29.66	50.00	20.34

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.



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### 4.3 Duty Cycle

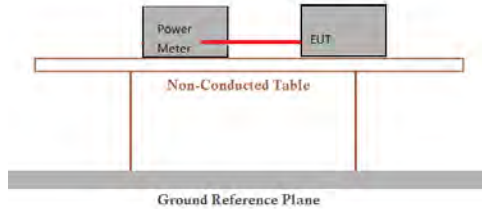
The detailed test data see: **Appendix**



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#### 4.4 Conducted Output Power

Test Requirement:	47 CFR Part 15 Section 15.407(a)	
Test Method:	ANSI C63.10 :2013	
Test Setup:		
Test Instruments:	Refer to section 6 for details	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates	
Final Test Mode:	Through Pre-scan, find the 6Mbps of rate is the worst case of 802.11a; MCS0 of rate is the worst case of 802.11n(HT20) ; MCS0 of rate is the worst case of 802.11n(HT40); MCS0 of rate is the worst case of 802.11ac(VHT20). MCS0 of rate is the worst case of 802.11ac(VHT40). MCS0 of rate is the worst case of 802.11ac(VHT80). Only the worst case is recorded in the report.	
Limit:	Frequency Band	Limit
	5150-5250MHz	Not exceed 250mW(24dBm)
	5250-5350MHz	The lesser of 250mW(24dBm) or 11+ 10logB
	5470-5725MHz	The lesser of 250mW(24dBm) or 11+ 10logB
	*Where B is the 26dB emission bandwidth in MHz	
Test Results:	Pass	

The detailed test data see: **Appendix**



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### 4.5 26dB Emission Bandwidth

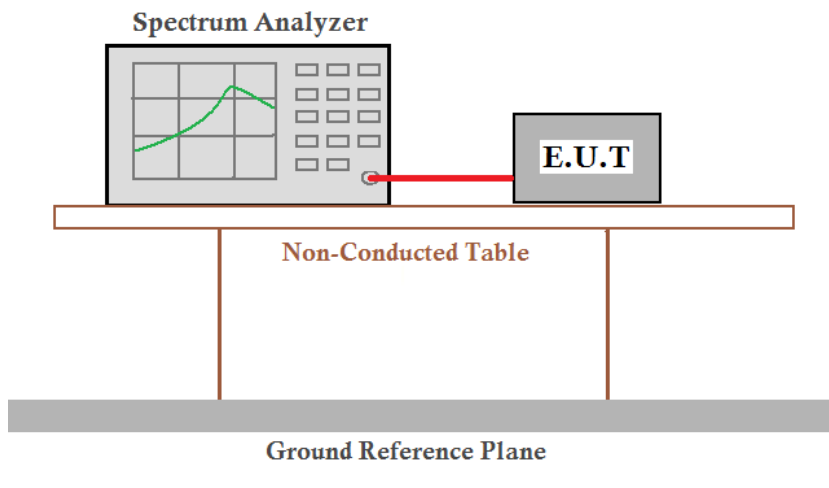
Test Requirement:	47 CFR Part 15 Section 15.407(a)
Test Method:	ANSI C63.10: 2013
Test Setup:	
Instruments Used:	Refer to section 6 for details
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 6Mbps of rate is the worst case of 802.11a; MCS0 of rate is the worst case of 802.11n(HT20) ; MCS0 of rate is the worst case of 802.11n(HT40); MCS0 of rate is the worst case of 802.11ac(VHT20). MCS0 of rate is the worst case of 802.11ac(VHT40). MCS0 of rate is the worst case of 802.11ac(VHT80). Only the worst case is recorded in the report.
Limit:	No restriction limits
Test Results:	Pass

The detailed test data see: **Appendix**



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### 4.6 99% Occupied Bandwidth

Test Requirement:	47 CFR Part 15 Section 15.407(a)
Test Method:	ANSI C63.10: 2013
Test Setup:	
Instruments Used:	Refer to section 6 for details
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 6Mbps of rate is the worst case of 802.11a; MCS0 of rate is the worst case of 802.11n(HT20) ; MCS0 of rate is the worst case of 802.11n(HT40); MCS0 of rate is the worst case of 802.11ac(VHT20). MCS0 of rate is the worst case of 802.11ac(VHT40). MCS0 of rate is the worst case of 802.11ac(VHT80). Only the worst case is recorded in the report.
Limit:	No restriction limits
Test Results:	Pass

The detailed test data see: **Appendix**



### 4.7 Power Spectral Density

Test Requirement:	47 CFR Part 15 Section 15.407(a)	
Test Method:	ANSI C63.10: 2013 KDB 789033 D02 v02r01, Section F.	
Test Setup:		
Instruments Used:	Refer to section 6 for details	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates	
Final Test Mode:	Through Pre-scan, find the 6Mbps of rate is the worst case of 802.11a; MCS0 of rate is the worst case of 802.11n(HT20) ; MCS0 of rate is the worst case of 802.11n(HT40); MCS0 of rate is the worst case of 802.11ac(VHT20). MCS0 of rate is the worst case of 802.11ac(VHT40). MCS0 of rate is the worst case of 802.11ac(VHT80). Only the worst case is recorded in the report.	
Limit:	Frequency Band	Limit
	5150-5250MHz	The power spectral density less than 11dBm/1MHz
	5250-5350MHz	The power spectral density less than 11dBm/1MHz
	5470-5725MHz	The power spectral density less than 11dBm/1MHz
Test Results:	Pass	

The detailed test data see: **Appendix**



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### 4.8 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15 Section 15.407(b)
Test Method:	ANSI C63.10: 2013
Test Site:	Measurement Distance: 3m or 10m (Semi-Anechoic Chamber)
Test Setup:	

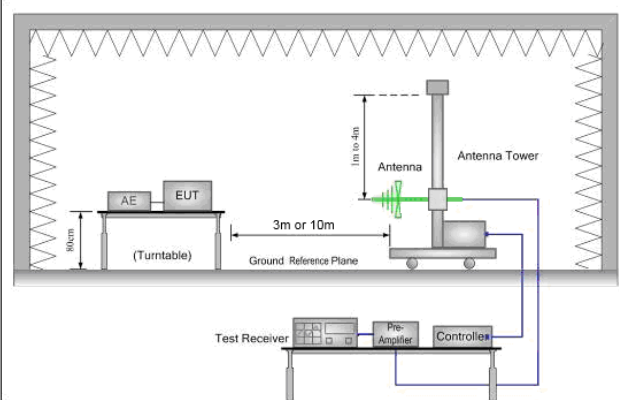


Figure 1. 30MHz to 1GHz

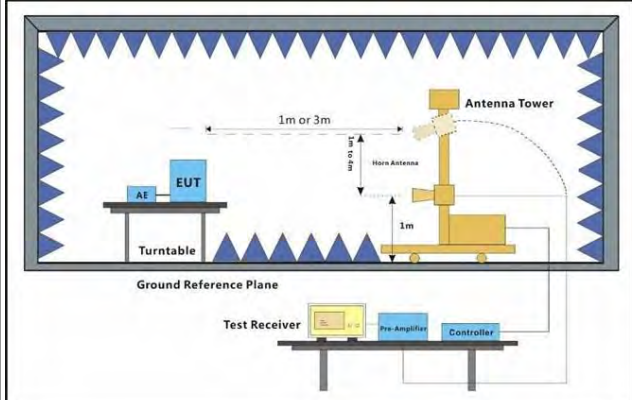


Figure 2. Above 1 GHz

Test Procedure:	<ol style="list-style-type: none"> <li>For below 1GHz test, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>For above 1GHz test, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li> <li>The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</li> <li>For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</li> <li>The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>Test the EUT in the outermost channels.</li> <li>The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.</li> <li>Repeat above procedures until all frequencies measured was complete.</li> </ol>
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates.
Final Test Mode:	Through Pre-scan, find the 6Mbps of rate is the worst case of 802.11a; MCS0 of rate is the worst case of 802.11n(HT20) ; MCS0 of rate is the worst case of 802.11n(HT40);



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	<p>MCS0 of rate is the worst case of 802.11ac(VHT20).  MCS0 of rate is the worst case of 802.11ac(VHT40).  MCS0 of rate is the worst case of 802.11ac(VHT80).  For below 1GHz, through Pre-scan, find the 1Mbps of rate of 802.11a at lowest channel is the worst case.  Only the worst case is recorded in the report.</p>
Instruments Used:	Refer to section 6 for details
Test Results:	Pass

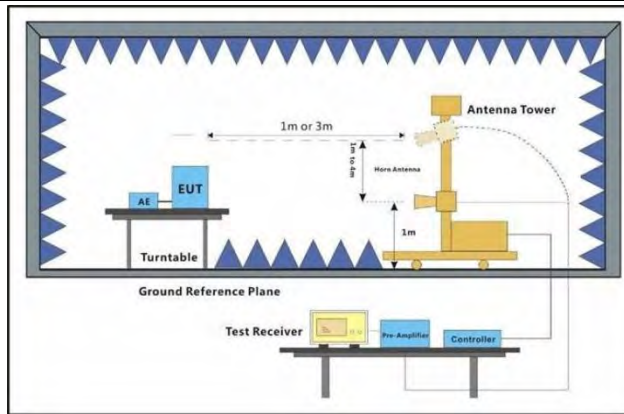
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### 4.9 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15 Section 15.407(b)		
Test Method:	ANSI C63.10: 2013		
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)		
Limit:	Frequency	Limit (dBuV/m)	Remark
	30MHz-88MHz	40.0	Quasi-peak
	88MHz-216MHz	43.5	Quasi-peak
	216MHz-960MHz	46.0	Quasi-peak
	960MHz-1GHz	54.0	Quasi-peak
	Above 1GHz	54.0	Average Value
		74.0	Peak Value
Test Setup:			



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<p>Test Procedure:</p>	<ol style="list-style-type: none"> <li>a. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li> <li>c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</li> <li>d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</li> <li>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>f. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel</li> <li>g. Test the EUT in the outermost channels.</li> <li>h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case.</li> <li>i. Repeat above procedures until all frequencies measured was complete.</li> </ol>
<p>Exploratory Test Mode:</p>	<p>Transmitting with all kind of modulations, data rates.</p>
<p>Final Test Mode:</p>	<p>Through Pre-scan, find the          6Mbps of rate is the worst case of 802.11a;          MCS0 of rate is the worst case of 802.11n(HT20) ;          MCS0 of rate is the worst case of 802.11n(HT40);          MCS0 of rate is the worst case of 802.11ac(VHT20).          MCS0 of rate is the worst case of 802.11ac(VHT40).          MCS0 of rate is the worst case of 802.11ac(VHT80).          Only the worst case is recorded in the report.</p>
<p>Instruments Used:</p>	<p>Refer to section 6 for details</p>
<p>Test Results:</p>	<p>Pass</p>

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## 4.10 Frequencies Stability

### 4.10.1 Frequency Error vs. Voltage

Test Conditions	Measured Frequency ( MHz )
	5180
V nom(V)	5180.004174
V max(V)	5180.010277
V min(V)	5180.012948
Max. Deviation Frequency	0.012948
Max. Frequency Error (ppm)	2.499619

### 4.10.2 Frequency Error vs. Temperature

Test Conditions	Measured Frequency ( MHz )
	5180
-5	5180.004620
5	5180.009486
15	5180.010123
25	5180.011629
35	5180.016331
45	5180.016917
50	5180.020295
Max. Deviation Frequency	0.020295
Max. Frequency Error (ppm)	3.917903



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## 4.11 Dynamic Frequency Selection

### 4.11.1 DFS Overview

**Table 1: Applicability of DFS Requirements Prior to Use of a Channel**

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
<i>Non-Occupancy Period</i>	Yes	Not required	Yes
<i>DFS Detection Threshold</i>	Yes	Not required	Yes
<i>Channel Availability Check Time</i>	Yes	Not required	Not required
<i>U-NII Detection Bandwidth</i>	Yes	Not required	Yes

**Table 2: Applicability of DFS requirements during normal operation**

Requirement	Operational Mode	
	Master Device or Client with Radar Detection	Client Without Radar Detection
<i>DFS Detection Threshold</i>	Yes	Not required
<i>Channel Closing Transmission Time</i>	Yes	Yes
<i>Channel Move Time</i>	Yes	Yes
<i>U-NII Detection Bandwidth</i>	Yes	Not required
<b>Additional requirements for devices with multiple bandwidth modes</b>	<b>Master Device or Client with Radar Detection</b>	<b>Client Without Radar Detection</b>
<i>U-NII Detection Bandwidth and Statistical Performance Check</i>	All BW modes must be tested	Not required
<i>Channel Move Time and Channel Closing Transmission Time</i>	Test using widest BW mode available	Test using the widest BW mode available for the link
<i>All other tests</i>	Any single BW mode	Not required
<p><b>Note:</b> Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.</p>		



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**4.11.2 DFS Detection Thresholds**

**Table 3: DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection**

Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP ≥ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm
<p><b>Note 1:</b> This is the level at the input of the receiver assuming a 0 dBi receive antenna.  <b>Note 2:</b> Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.  <b>Note 3:</b> EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.</p>	

**4.11.3 Response Requirements**

**Table 4: DFS Response Requirement Values**

Parameter	Value
<i>Non-occupancy period</i>	Minimum 30 minutes
<i>Channel Availability Check Time</i>	60 seconds
<i>Channel Move Time</i>	10 seconds See Note 1.
<i>Channel Closing Transmission Time</i>	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
<i>U-NII Detection Bandwidth</i>	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.
<p><b>Note 1:</b> <i>Channel Move Time</i> and the <i>Channel Closing Transmission Time</i> should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.  <b>Note 2:</b> The <i>Channel Closing Transmission Time</i> is comprised of 200 milliseconds starting at the beginning of the <i>Channel Move Time</i> plus any additional intermittent control signals required to facilitate a <i>Channel</i> move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.  <b>Note 3:</b> During the <i>U-NII Detection Bandwidth</i> detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.</p>	



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**4.11.4 Test plots**

**4.11.4.1 DFS Detection Thresholds**

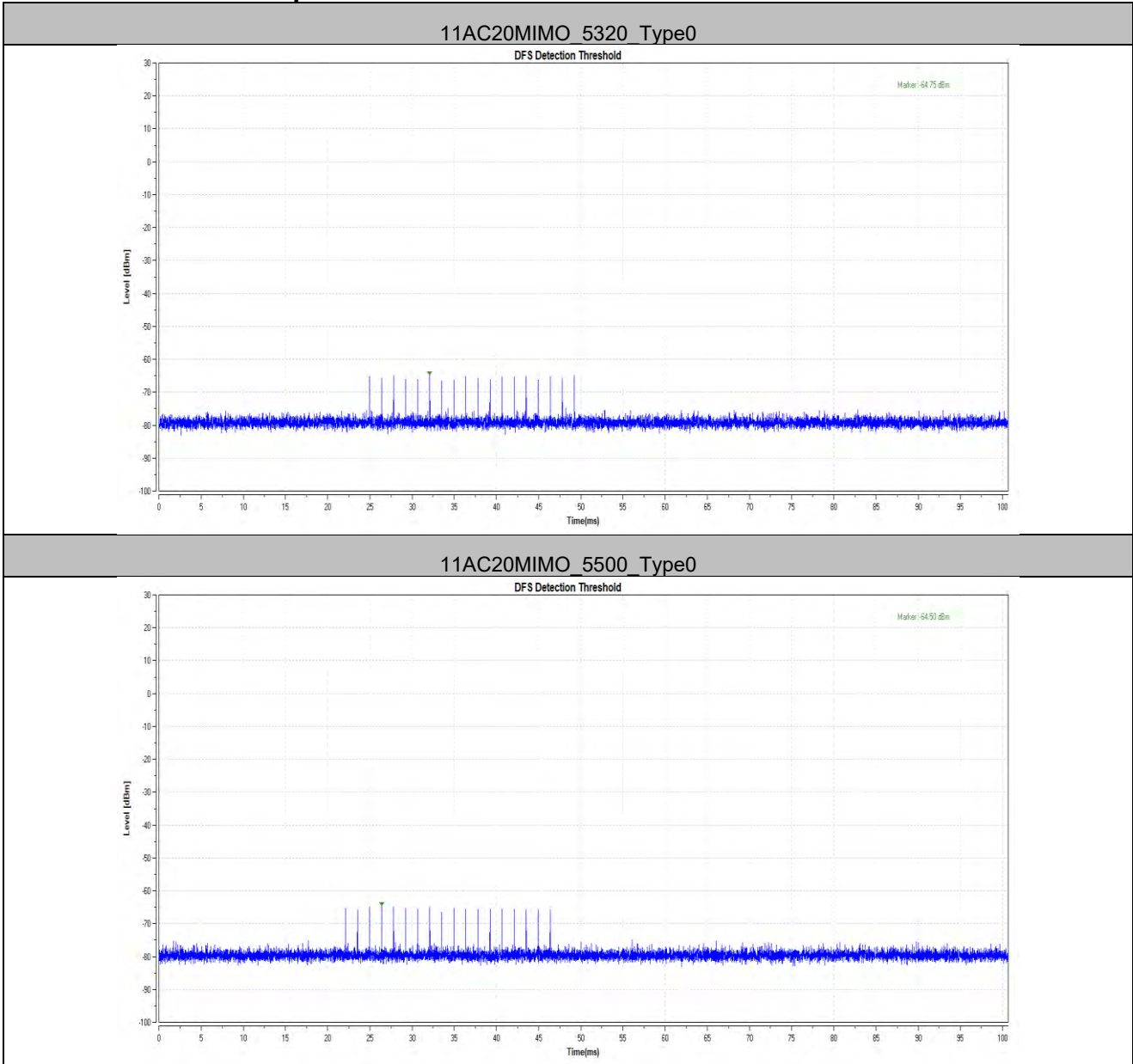
**4.11.4.1.1 Test Result**

TestMode	Channel	Radar Type	Result	Limit[dbm]	Verdict
11AC20MIMO	5320	Type0	-64.75	-64.00	PASS
	5500	Type0	-64.50	-64.00	PASS
11AC80MIMO	5290	Type0	-64.64	-64.00	PASS
	5530	Type0	-64.51	-64.00	PASS



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### 4.11.4.1.2 Test Graphs

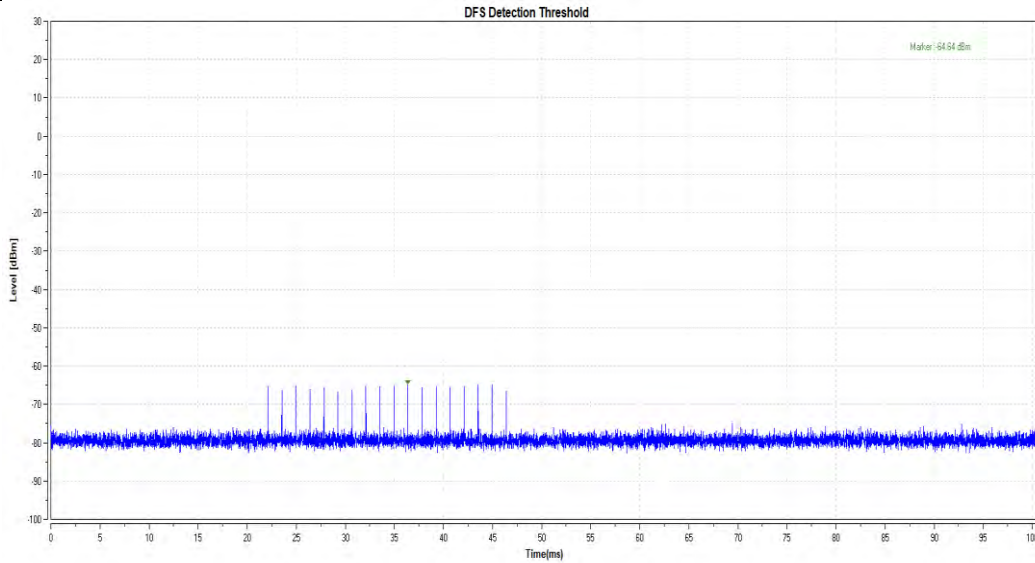


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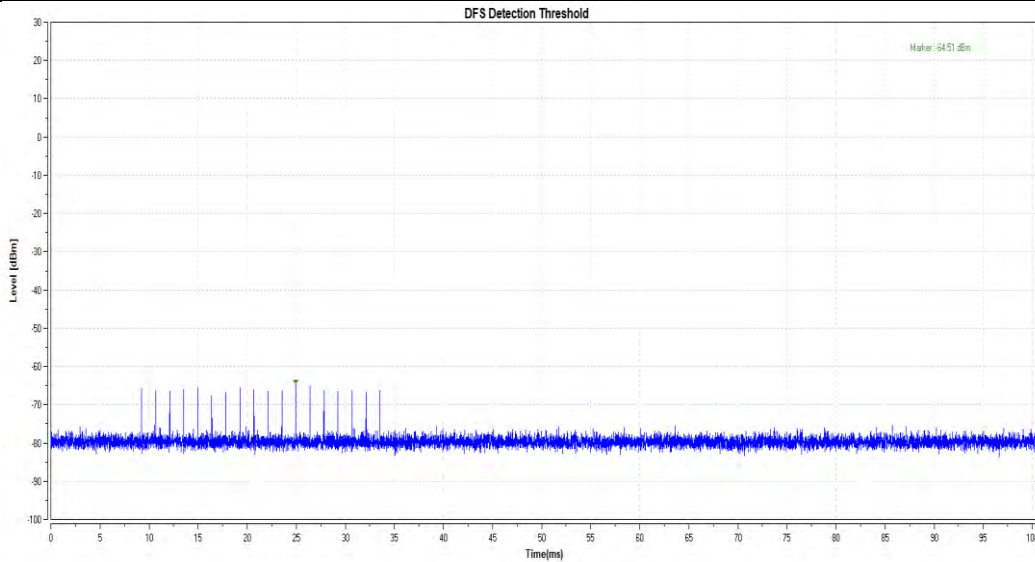
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11AC80MIMO\_5290\_Type0



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**4.11.4.2 Channel Move Time and Channel Closing Transmission Time**

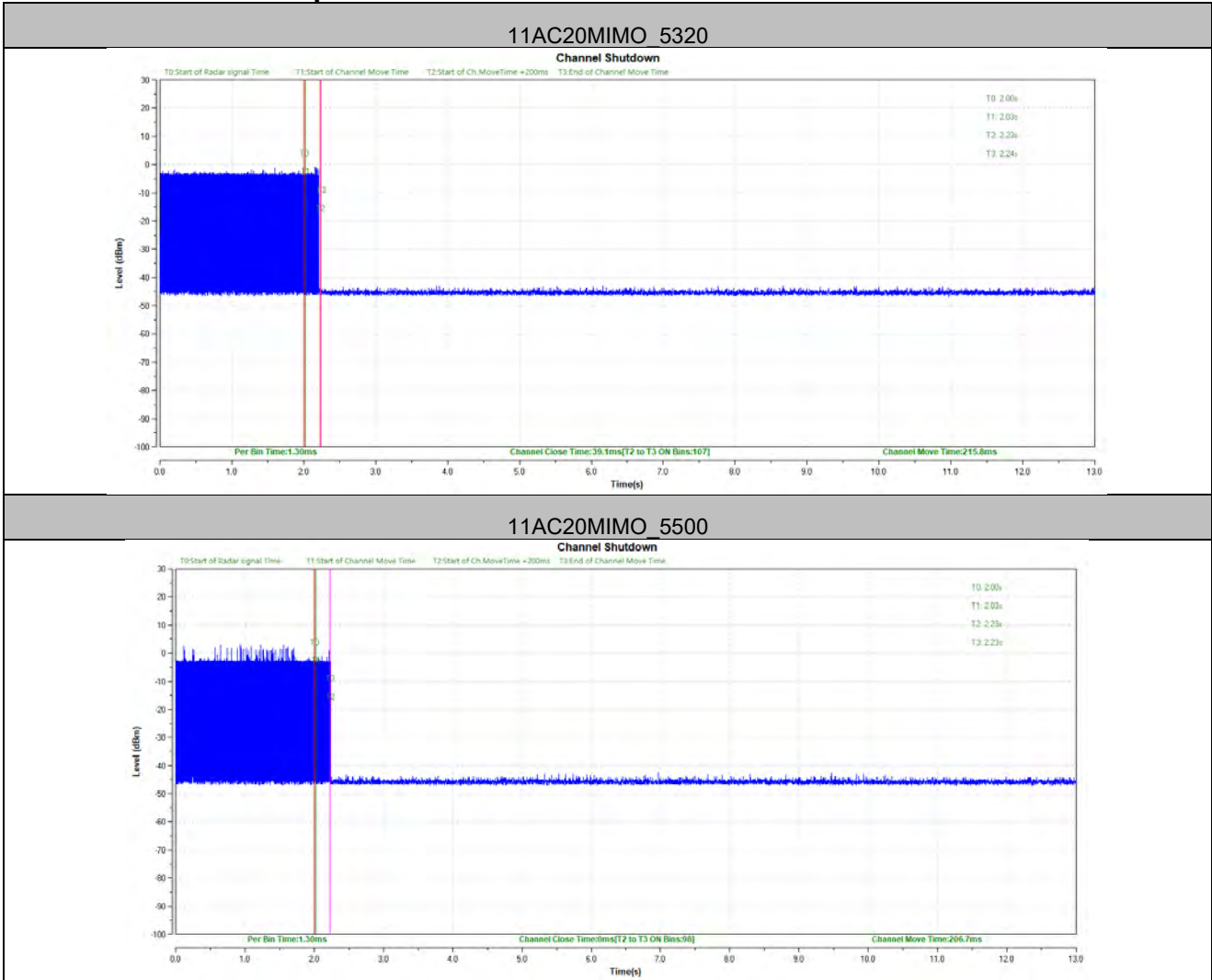
**4.11.4.2.1 Test Result**

TestMode	Channel	CCT[ms]	Limit[ms]	CMT[ms]	Limit[ms]	Verdict
11AC20MIMO	5320	39.1	60	215.8	10000	PASS
	5500	0	60	206.7	10000	PASS
11AC80MIMO	5290	48.2	60	215.8	10000	PASS
	5530	4.8	60	212.8	10000	PASS



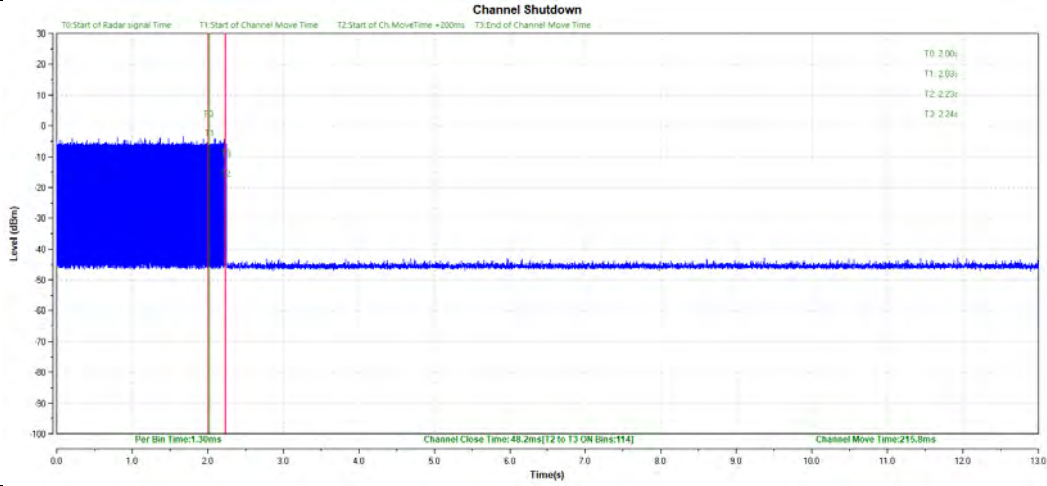
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### 4.11.4.2.2 Test Graphs

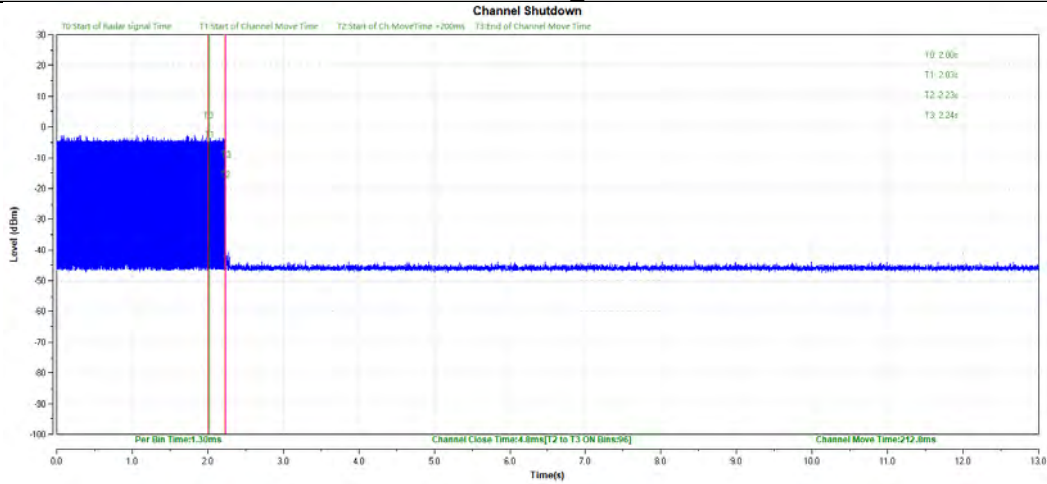


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### 11AC80MIMO\_5290



### 11AC80MIMO\_5530



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**4.11.4.3 Non-Occupancy Period**

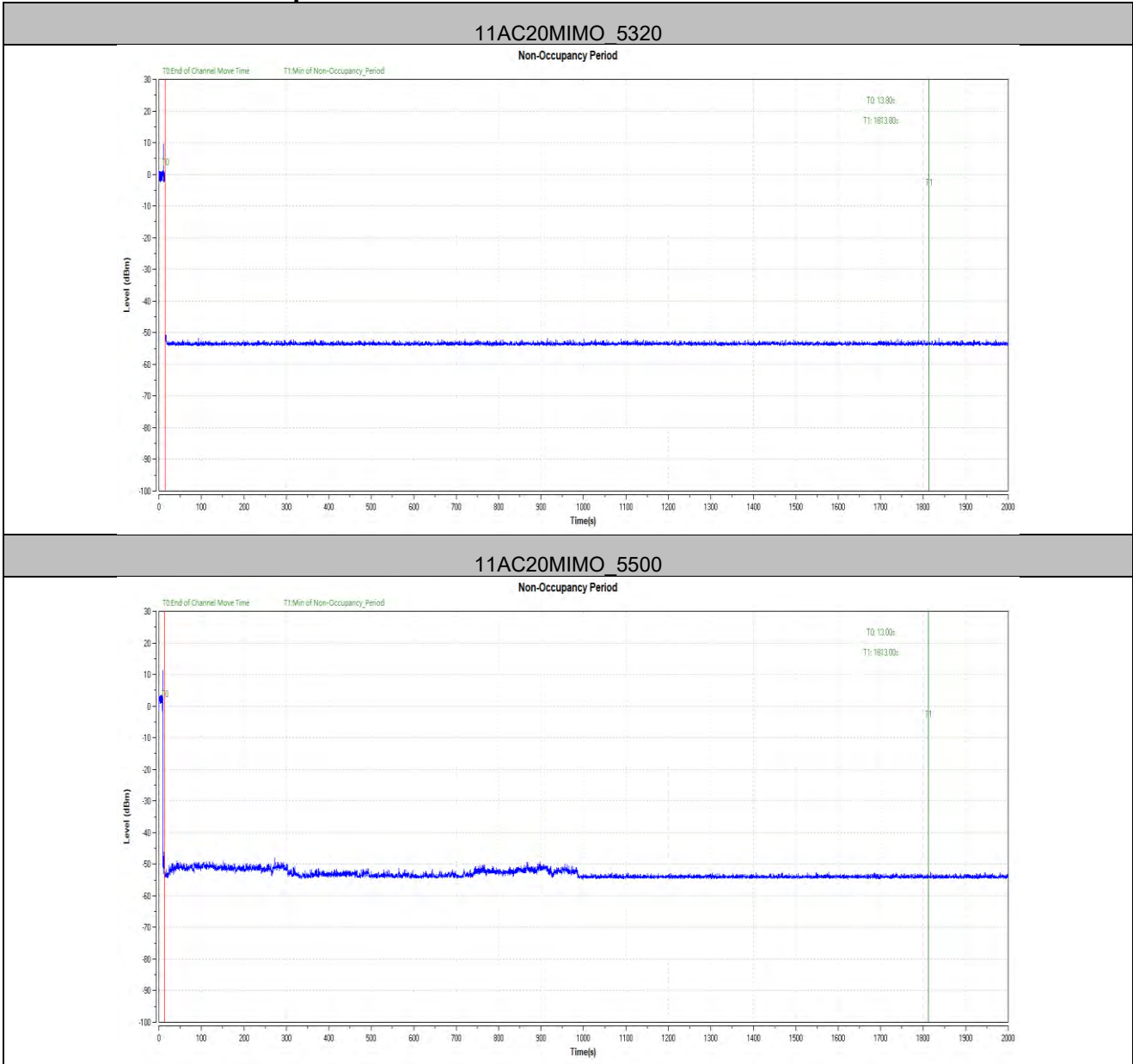
**4.11.4.3.1 Test Result**

TestMode	Channel	Result	Limit[s]	Verdict
11AC20MIMO	5320	see test graph	>=1800	PASS
	5500	see test graph	>=1800	PASS
11AC80MIMO	5290	see test graph	>=1800	PASS
	5530	see test graph	>=1800	PASS



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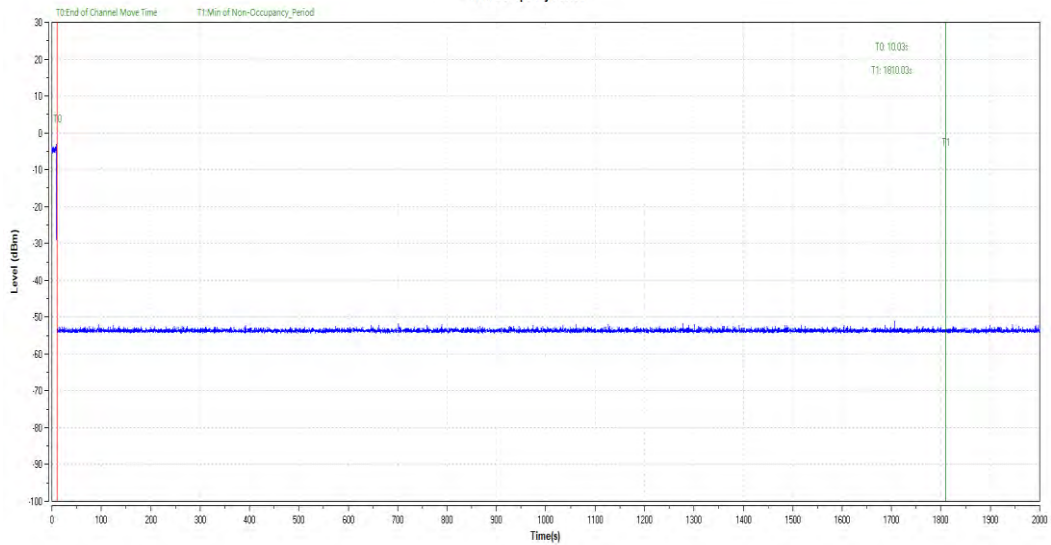
### 4.11.4.3.2 Test Graphs



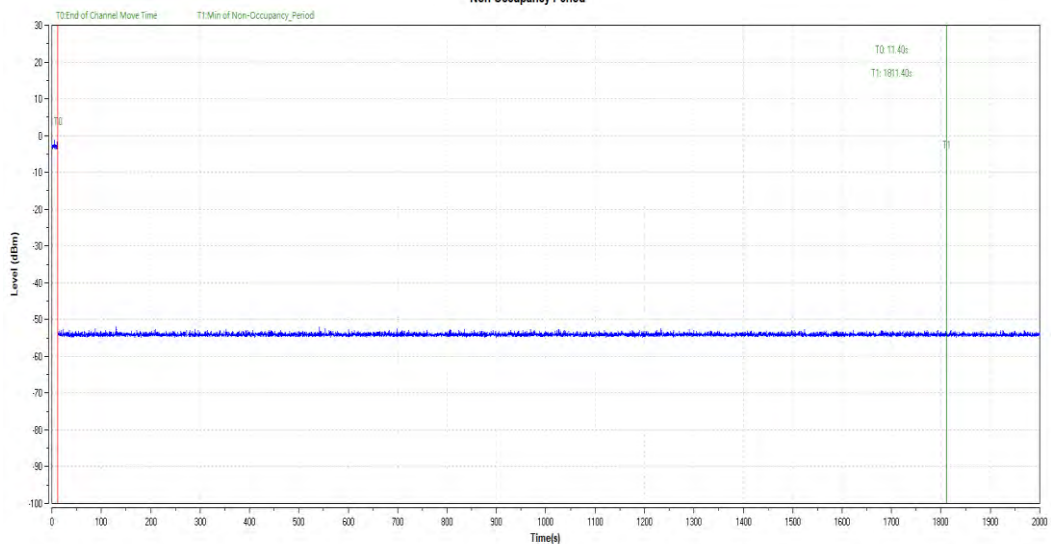
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## 5 Measurement Uncertainty (95% confidence levels, k=2)

Lab A:

No.	Item	Measurement Uncertainty
1	Total RF power, conducted	±0.41dB
2	RF power density, conducted	±1.96dB
3	Spurious emissions, conducted	±0.41dB
4	Radio Frequency	±7.10 x 10 <sup>-8</sup>
5	Duty Cycle	±0.49%
6	Occupied Bandwidth	±0.2%

Lab B:

No.	Item	Measurement Uncertainty
1	Conduction Emission	± 3.0dB (150kHz to 30MHz)
2	Radiated Emission	± 4.8dB (Below 1GHz)
		± 4.8dB (1GHz to 6GHz)
		± 4.5dB (6GHz to 18GHz)
		± 5.02dB (Above 18GHz)



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## 6 Equipment List

RF conducted					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
Signal Analyzer	Rohde & Schwarz	FSV	W025-05	2020/4/16	2021/4/15
				2021/4/14	2022/4/13
DC Power Supply	Rohde & Schwarz	HMP2020	W009-08	2020/7/15	2021/7/15
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2020/7/14	2021/7/13
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	HTC-1	W006-17	2020/4/21	2021/4/20
				2021/4/14	2022/4/13

CE Test System					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Shielding Room	Brilliant-emc	N/A	XAW03-35-01	2019-09-11	2022-09-10
Test receiver	ROHDE&SCHWARZ	ESR	XAW01-08-01	2020-09-11	2021-09-10
Artificial network	ROHDE&SCHWARZ	ENV216	XAW01-04-01	2020-08-04	2021-08-03
Temperature and humidity meter	MingGao	TH101B	XAW01-01-01	2020-11-06	2021-11-05
Measurement Software	Tonscend	TS+ CE V2.5	XAW02-05-02	NCR	NCR

DFS					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
Master Device	Linksys pte.Ltd	WRT32X	FCC ID:Q87-WRT3200ACM IC ID:3839A-WRT3200ACM	N/A	N/A
MXA signal analyzer	Angilent	N9020A	XAW01-06-07	2021/4/1	2022/03/31
MXG vector signal Generator	Angilent	N5182B	XAW01-07-16	2021/4/1	2022/03/31
MXG vector signal Generator	Angilent	N5182A	XAW01-07-17	2021/4/1	2022/03/31



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RSE Test System					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Semi-Anechoic Chamber	Brilliant-emc	N/A	XAW03-35-01	2019-09-11	2022-09-10
MXA signal analyzer	Keysight	N9020A	XAW01-06-01	2021-04-01	2022-03-31
Test receiver	ROHDE&SCHWARZ	ESR	XAW01-08-01	2020-09-11	2021-09-10
Spectrum Analyzer	Keysight	N9020B	XAW01-11-03	2020-04-15	2021-04-14
				2021-04-01	2022-03-31
Receiving antenna (30MHz-3GHz)	Schwarzbeck	VULB 9163	XAW01-09-01	2019-10-13	2021-10-12
Receiving antenna (1GHz~18GHz)	Schwarzbeck	BBHA 9120D	XAW01-09-02	2019-10-13	2021-10-12
Receiving antenna (15GHz~40GHz)	Schwarzbeck	BBHA 9170	XAW01-09-03	2019-10-13	2021-10-12
Directional antenna rack controller	Max-Full	MF-7802BS	XAW03-03-01	NCR	NCR
High-speed antenna rack controller	Max-Full	MF-7802	XAW03-04-01	NCR	NCR
Filter bank	Tonscend	JS0806-F	XAW03-05-01	NCR	NCR
Filter bank	Tonscend	JS0806s	XAW03-05-02	NCR	NCR
Amplifier	Tonscend	TAP00903040	XAW01-41-01	2020-10-26	2021-10-25
Amplifier	Tonscend	TAP01018048	XAW01-41-02	2020-10-26	2021-10-25
Amplifier	Tonscend	TAP18040048	XAW01-41-03	2020-10-27	2021-10-26
Amplifier	Shanghai Steed	YX28980930	XAW01-41-06	2020-10-26	2021-10-25
Temperature and humidity meter	MingGao	TH101B	XAW01-01-01	2020-11-06	2021-11-05
Measurement Software	Tonscend	TS+ RSE V3.0.0.2	XAW02-05-01	NCR	NCR



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## 7 Photographs - EUT Constructional Details

Refer to Appendix A Setup Photos.



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# Appendix



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**Emission Bandwidth**  
**Test Result**

TestMode	Antenna	Channel	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict	
11A	Ant4	5180	22.920	5168.630	5191.550	---	PASS	
	Ant7	5180	22.980	5168.810	5191.790	---	PASS	
	Ant4	5200	22.920	5188.600	5211.520	---	PASS	
	Ant7	5200	24.510	5188.600	5213.110	---	PASS	
	Ant4	5240	22.920	5228.780	5251.700	---	PASS	
	Ant7	5240	25.230	5228.570	5253.800	---	PASS	
	Ant4	5260	22.770	5248.750	5271.520	---	PASS	
	Ant7	5260	25.560	5248.330	5273.890	---	PASS	
	Ant4	5300	23.010	5288.780	5311.790	---	PASS	
	Ant7	5300	25.440	5288.360	5313.800	---	PASS	
	Ant4	5320	22.770	5308.840	5331.610	---	PASS	
	Ant7	5320	23.790	5308.690	5332.480	---	PASS	
	Ant4	5500	22.710	5488.870	5511.580	---	PASS	
	Ant7	5500	22.920	5488.630	5511.550	---	PASS	
	Ant4	5580	22.710	5568.840	5591.550	---	PASS	
	Ant7	5580	22.980	5568.840	5591.820	---	PASS	
	Ant4	5700	22.140	5689.230	5711.370	---	PASS	
	Ant7	5700	22.140	5688.840	5710.980	---	PASS	
	11N20SISO	Ant4	5180	23.250	5168.570	5191.820	---	PASS
		Ant7	5180	23.760	5168.450	5192.210	---	PASS
Ant4		5200	23.370	5188.570	5211.940	---	PASS	
Ant7		5200	24.480	5188.420	5212.900	---	PASS	
Ant4		5240	23.580	5228.210	5251.790	---	PASS	
Ant7		5240	26.550	5228.420	5254.970	---	PASS	
Ant4		5260	23.520	5248.270	5271.790	---	PASS	
Ant7		5260	24.540	5248.480	5273.020	---	PASS	
Ant4		5300	23.880	5288.360	5312.240	---	PASS	
Ant7		5300	29.670	5285.330	5315.000	---	PASS	
Ant4		5320	24.030	5308.480	5332.510	---	PASS	



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	Ant7	5320	24.960	5308.240	5333.200	---	PASS
	Ant4	5500	23.220	5488.570	5511.790	---	PASS
	Ant7	5500	23.220	5488.570	5511.790	---	PASS
	Ant4	5580	23.190	5568.690	5591.880	---	PASS
	Ant7	5580	23.250	5568.540	5591.790	---	PASS
	Ant4	5700	23.070	5688.720	5711.790	---	PASS
	Ant7	5700	23.130	5688.540	5711.670	---	PASS
11N40SISO	Ant4	5190	41.160	5169.180	5210.340	---	PASS
	Ant7	5190	40.920	5169.780	5210.700	---	PASS
	Ant4	5230	41.040	5209.540	5250.580	---	PASS
	Ant7	5230	41.400	5209.840	5251.240	---	PASS
	Ant4	5270	40.920	5249.480	5290.400	---	PASS
	Ant7	5270	48.120	5243.300	5291.420	---	PASS
	Ant4	5310	41.460	5289.420	5330.880	---	PASS
	Ant7	5310	41.760	5289.540	5331.300	---	PASS
	Ant4	5510	41.280	5489.600	5530.880	---	PASS
	Ant7	5510	40.620	5489.780	5530.400	---	PASS
	Ant4	5550	41.220	5529.600	5570.820	---	PASS
	Ant7	5550	40.740	5529.660	5570.400	---	PASS
	Ant4	5670	41.340	5649.480	5690.820	---	PASS
	Ant7	5670	40.740	5649.600	5690.340	---	PASS
11AC20SISO	Ant4	5180	23.700	5168.090	5191.790	---	PASS
	Ant7	5180	23.880	5168.450	5192.330	---	PASS
	Ant4	5200	23.460	5188.330	5211.790	---	PASS
	Ant7	5200	24.330	5188.570	5212.900	---	PASS
	Ant4	5240	23.370	5228.360	5251.730	---	PASS
	Ant7	5240	24.510	5228.450	5252.960	---	PASS
	Ant4	5260	24.060	5247.880	5271.940	---	PASS
	Ant7	5260	24.930	5248.000	5272.930	---	PASS
	Ant4	5300	24.120	5288.210	5312.330	---	PASS
	Ant7	5300	24.360	5288.570	5312.930	---	PASS
	Ant4	5320	23.310	5308.600	5331.910	---	PASS
	Ant7	5320	24.870	5308.090	5332.960	---	PASS



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	Ant4	5500	23.340	5488.600	5511.940	---	PASS
	Ant7	5500	23.850	5488.510	5512.360	---	PASS
	Ant4	5580	23.160	5568.600	5591.760	---	PASS
	Ant7	5580	23.280	5568.480	5591.760	---	PASS
	Ant4	5700	23.280	5688.570	5711.850	---	PASS
	Ant7	5700	23.760	5688.510	5712.270	---	PASS
11AC40SISO	Ant4	5190	40.980	5169.780	5210.760	---	PASS
	Ant7	5190	41.460	5169.720	5211.180	---	PASS
	Ant4	5230	41.040	5209.480	5250.520	---	PASS
	Ant7	5230	41.520	5209.780	5251.300	---	PASS
	Ant4	5270	41.280	5249.420	5290.700	---	PASS
	Ant7	5270	48.360	5243.180	5291.540	---	PASS
	Ant4	5310	41.160	5289.660	5330.820	---	PASS
	Ant7	5310	41.700	5289.720	5331.420	---	PASS
	Ant4	5510	40.920	5489.780	5530.700	---	PASS
	Ant7	5510	40.920	5489.720	5530.640	---	PASS
	Ant4	5550	41.400	5529.480	5570.880	---	PASS
	Ant7	5550	40.740	5529.600	5570.340	---	PASS
	Ant4	5670	41.580	5649.360	5690.940	---	PASS
	Ant7	5670	40.740	5649.660	5690.400	---	PASS
11AC80SISO	Ant4	5210	82.440	5169.080	5251.520	---	PASS
	Ant7	5210	83.400	5168.720	5252.120	---	PASS
	Ant4	5290	83.760	5248.240	5332.000	---	PASS
	Ant7	5290	91.440	5241.400	5332.840	---	PASS
	Ant4	5530	83.520	5488.360	5571.880	---	PASS
	Ant7	5530	83.280	5488.360	5571.640	---	PASS
	Ant4	5610	83.400	5568.360	5651.760	---	PASS
	Ant7	5610	83.640	5568.120	5651.760	---	PASS
11A-CDD	Ant4	5180	22.800	5168.780	5191.580	---	PASS
	Ant7	5180	23.070	5168.570	5191.640	---	PASS
	Ant4	5200	22.350	5188.780	5211.130	---	PASS
	Ant7	5200	22.350	5188.540	5210.890	---	PASS
	Ant4	5240	22.260	5228.780	5251.040	---	PASS



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	Ant7	5240	22.650	5228.630	5251.280	---	PASS
	Ant4	5260	22.560	5248.750	5271.310	---	PASS
	Ant7	5260	24.180	5247.460	5271.640	---	PASS
	Ant4	5300	22.260	5288.720	5310.980	---	PASS
	Ant7	5300	23.070	5288.630	5311.700	---	PASS
	Ant4	5320	22.830	5308.780	5331.610	---	PASS
	Ant7	5320	22.560	5309.200	5331.760	---	PASS
	Ant4	5500	22.500	5488.630	5511.130	---	PASS
	Ant7	5500	22.440	5489.140	5511.580	---	PASS
	Ant4	5580	22.170	5568.870	5591.040	---	PASS
	Ant7	5580	23.010	5568.510	5591.520	---	PASS
	Ant4	5700	22.860	5688.690	5711.550	---	PASS
	Ant7	5700	21.930	5688.930	5710.860	---	PASS
11N20MIMO	Ant4	5180	24.030	5168.120	5192.150	---	PASS
	Ant7	5180	22.710	5168.840	5191.550	---	PASS
	Ant4	5200	23.700	5188.120	5211.820	---	PASS
	Ant7	5200	24.240	5188.360	5212.600	---	PASS
	Ant4	5240	23.580	5228.330	5251.910	---	PASS
	Ant7	5240	24.930	5227.820	5252.750	---	PASS
	Ant4	5260	23.640	5248.210	5271.850	---	PASS
	Ant7	5260	22.620	5248.900	5271.520	---	PASS
	Ant4	5300	23.760	5288.090	5311.850	---	PASS
	Ant7	5300	24.600	5288.060	5312.660	---	PASS
	Ant4	5320	23.430	5308.390	5331.820	---	PASS
	Ant7	5320	24.330	5308.360	5332.690	---	PASS
	Ant4	5500	23.130	5488.630	5511.760	---	PASS
	Ant7	5500	23.370	5488.330	5511.700	---	PASS
	Ant4	5580	23.160	5568.600	5591.760	---	PASS
	Ant7	5580	23.310	5568.330	5591.640	---	PASS
	Ant4	5700	23.160	5688.600	5711.760	---	PASS
	Ant7	5700	23.460	5688.180	5711.640	---	PASS
11N40MIMO	Ant4	5190	40.980	5169.480	5210.460	---	PASS
	Ant7	5190	40.380	5169.900	5210.280	---	PASS



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	Ant4	5230	41.040	5209.420	5250.460	---	PASS
	Ant7	5230	40.260	5209.960	5250.220	---	PASS
	Ant4	5270	40.800	5249.540	5290.340	---	PASS
	Ant7	5270	40.440	5249.840	5290.280	---	PASS
	Ant4	5310	41.160	5289.600	5330.760	---	PASS
	Ant7	5310	40.980	5289.480	5330.460	---	PASS
	Ant4	5510	41.040	5489.540	5530.580	---	PASS
	Ant7	5510	40.560	5489.780	5530.340	---	PASS
	Ant4	5550	41.220	5529.540	5570.760	---	PASS
	Ant7	5550	40.560	5529.720	5570.280	---	PASS
	Ant4	5670	41.280	5649.480	5690.760	---	PASS
	Ant7	5670	40.500	5649.780	5690.280	---	PASS
11AC20MIMO	Ant4	5180	23.250	5168.600	5191.850	---	PASS
	Ant7	5180	24.510	5168.180	5192.690	---	PASS
	Ant4	5200	23.790	5188.030	5211.820	---	PASS
	Ant7	5200	24.420	5188.240	5212.660	---	PASS
	Ant4	5240	23.730	5228.000	5251.730	---	PASS
	Ant7	5240	24.690	5228.150	5252.840	---	PASS
	Ant4	5260	23.850	5248.450	5272.300	---	PASS
	Ant7	5260	24.390	5248.180	5272.570	---	PASS
	Ant4	5300	23.370	5288.420	5311.790	---	PASS
	Ant7	5300	25.140	5287.460	5312.600	---	PASS
	Ant4	5320	24.060	5308.300	5332.360	---	PASS
	Ant7	5320	24.330	5308.240	5332.570	---	PASS
	Ant4	5500	23.730	5488.180	5511.910	---	PASS
	Ant7	5500	23.970	5488.090	5512.060	---	PASS
	Ant4	5580	23.520	5568.270	5591.790	---	PASS
	Ant7	5580	23.310	5568.180	5591.490	---	PASS
	Ant4	5700	23.160	5688.600	5711.760	---	PASS
	Ant7	5700	23.550	5688.120	5711.670	---	PASS
11AC40MIMO	Ant4	5190	40.740	5169.600	5210.340	---	PASS
	Ant7	5190	40.980	5169.540	5210.520	---	PASS
	Ant4	5230	40.920	5209.540	5250.460	---	PASS



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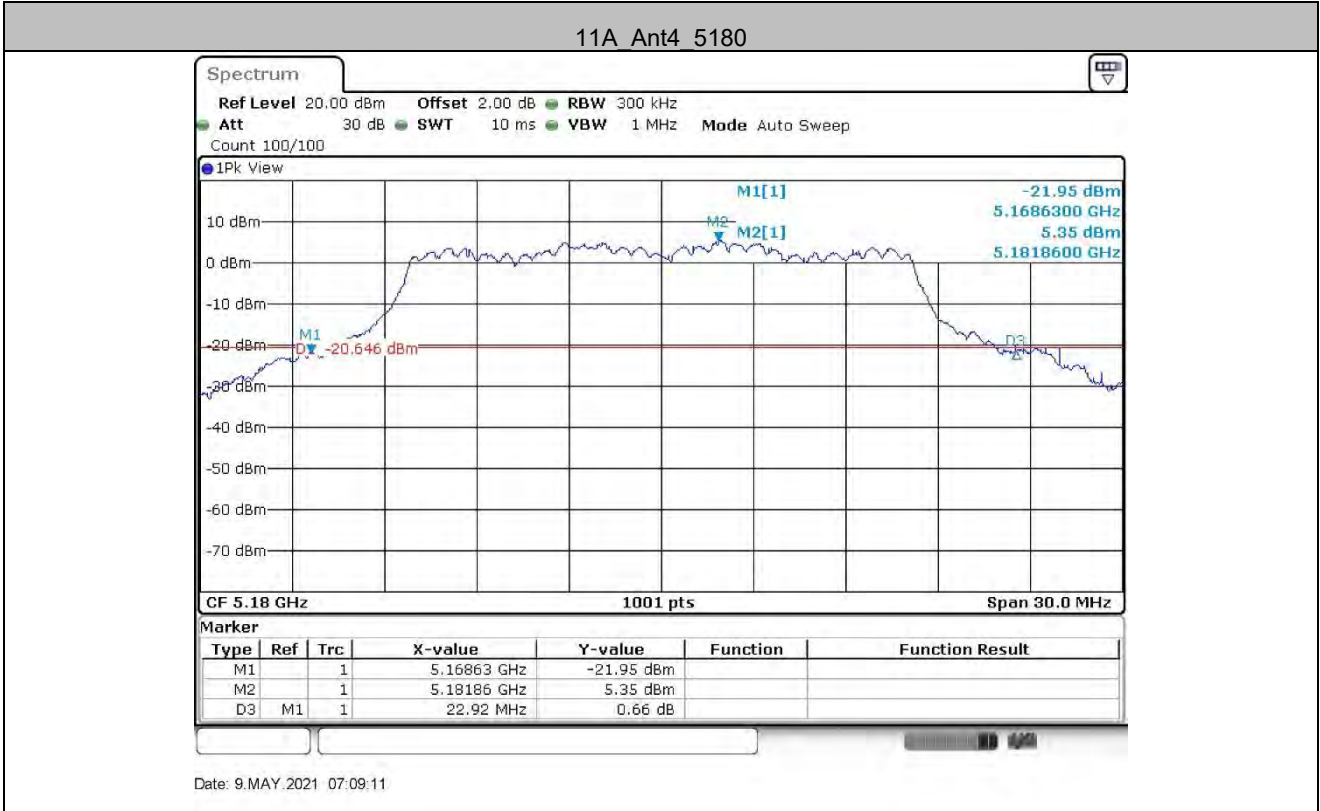
	Ant7	5230	40.800	5209.720	5250.520	---	PASS
	Ant4	5270	40.740	5249.660	5290.400	---	PASS
	Ant7	5270	40.500	5249.900	5290.400	---	PASS
	Ant4	5310	41.580	5289.240	5330.820	---	PASS
	Ant7	5310	40.440	5289.840	5330.280	---	PASS
	Ant4	5510	41.040	5489.600	5530.640	---	PASS
	Ant7	5510	40.800	5489.480	5530.280	---	PASS
	Ant4	5550	40.980	5529.480	5570.460	---	PASS
	Ant7	5550	40.500	5529.780	5570.280	---	PASS
	Ant4	5670	41.340	5649.480	5690.820	---	PASS
	Ant7	5670	40.500	5649.720	5690.220	---	PASS
11AC80MIMO	Ant4	5210	83.400	5168.480	5251.880	---	PASS
	Ant7	5210	81.960	5169.440	5251.400	---	PASS
	Ant4	5290	83.520	5248.480	5332.000	---	PASS
	Ant7	5290	82.560	5248.960	5331.520	---	PASS
	Ant4	5530	83.400	5488.480	5571.880	---	PASS
	Ant7	5530	82.560	5488.960	5571.520	---	PASS
	Ant4	5610	83.520	5568.360	5651.880	---	PASS
	Ant7	5610	82.320	5568.600	5650.920	---	PASS



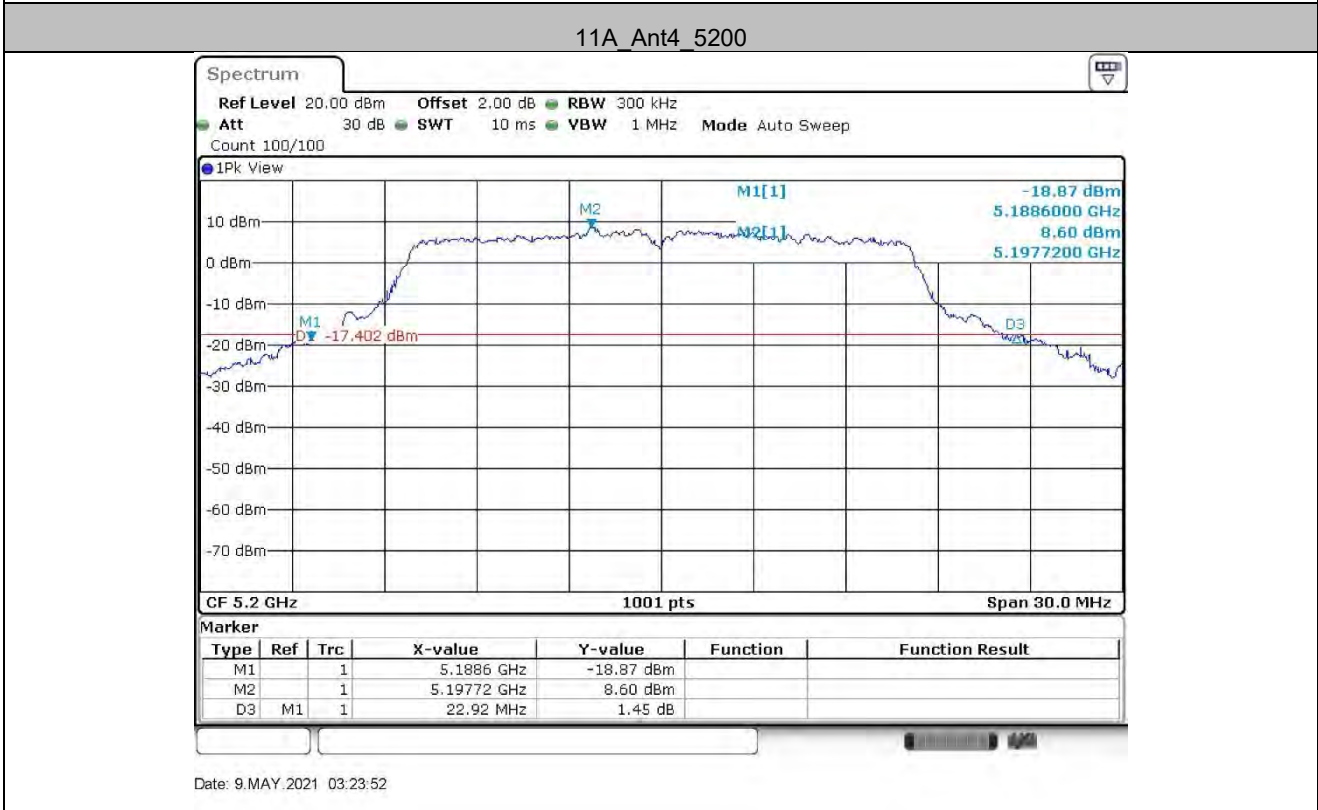
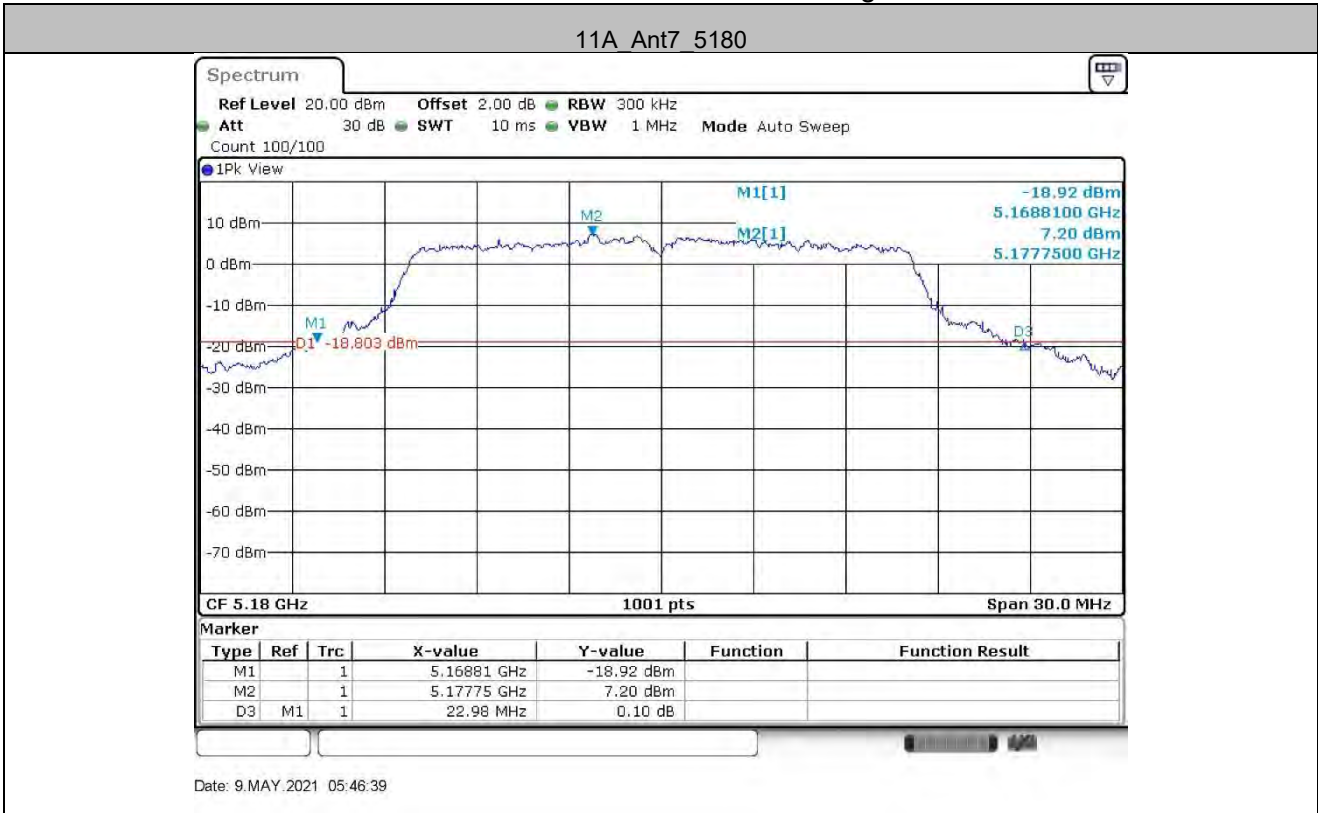
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### Test Graphs

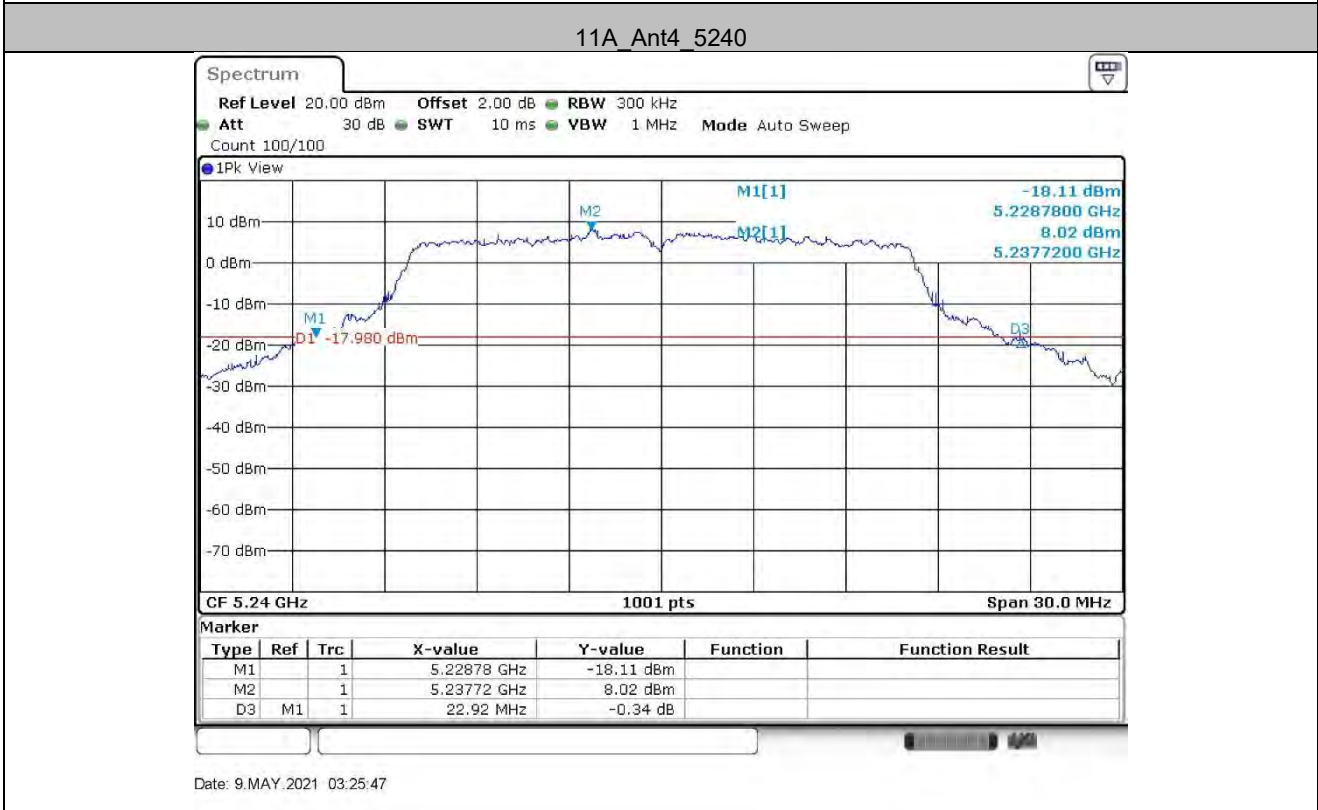
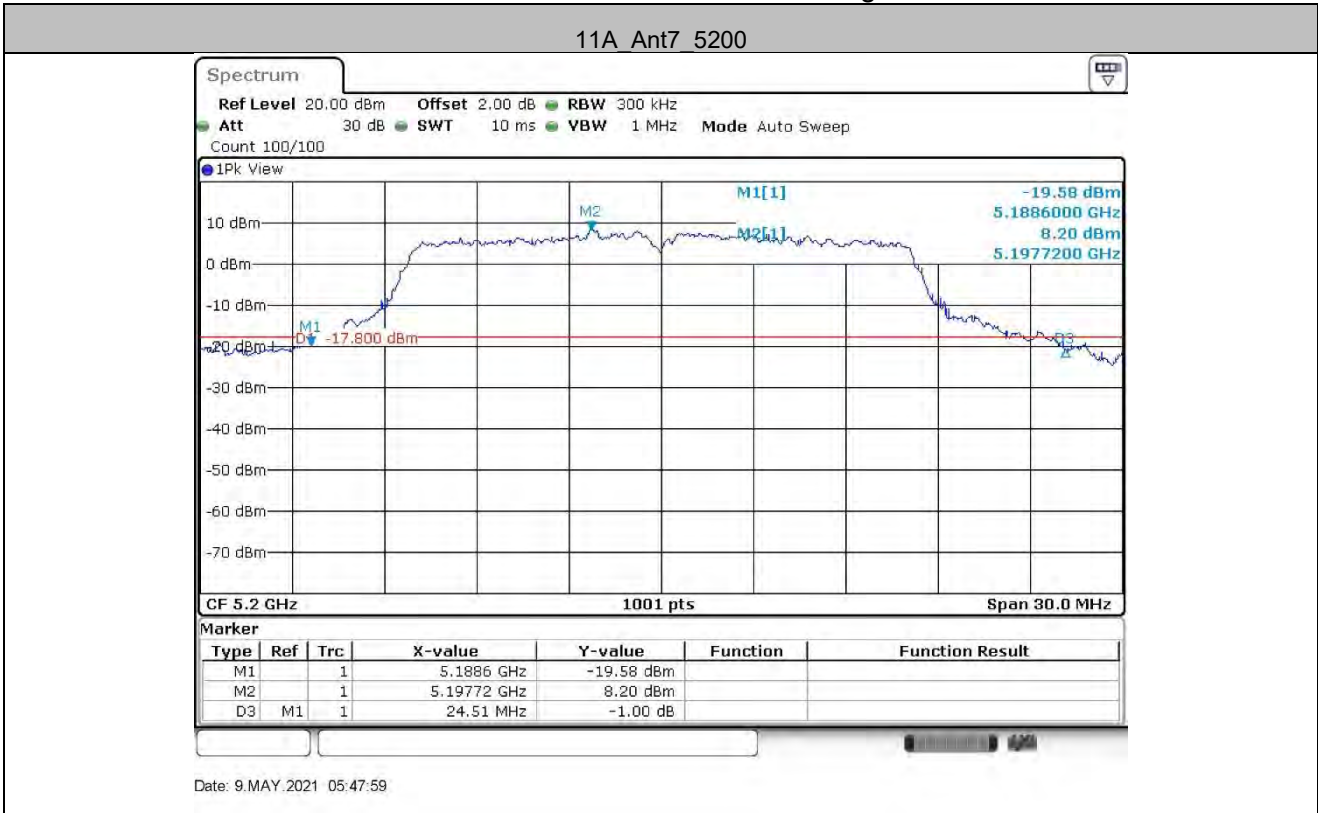


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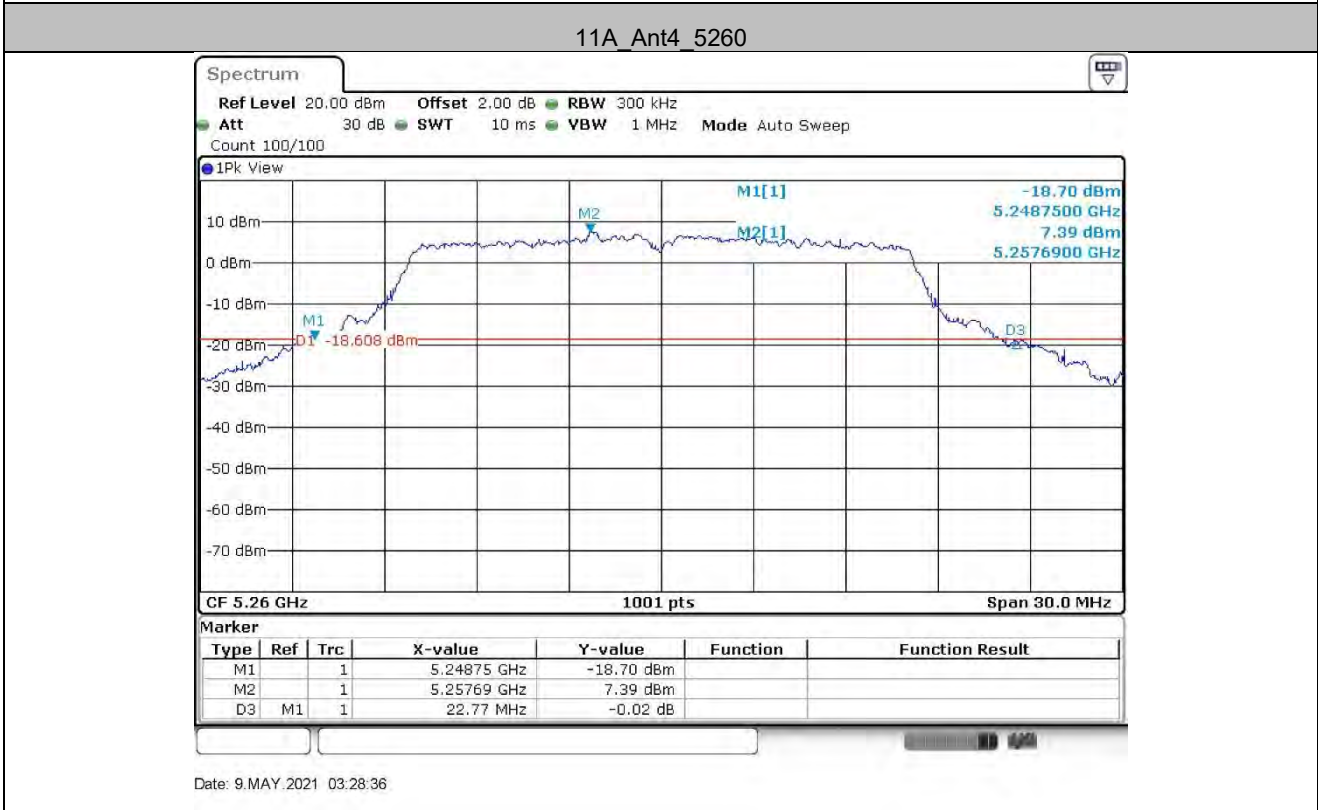
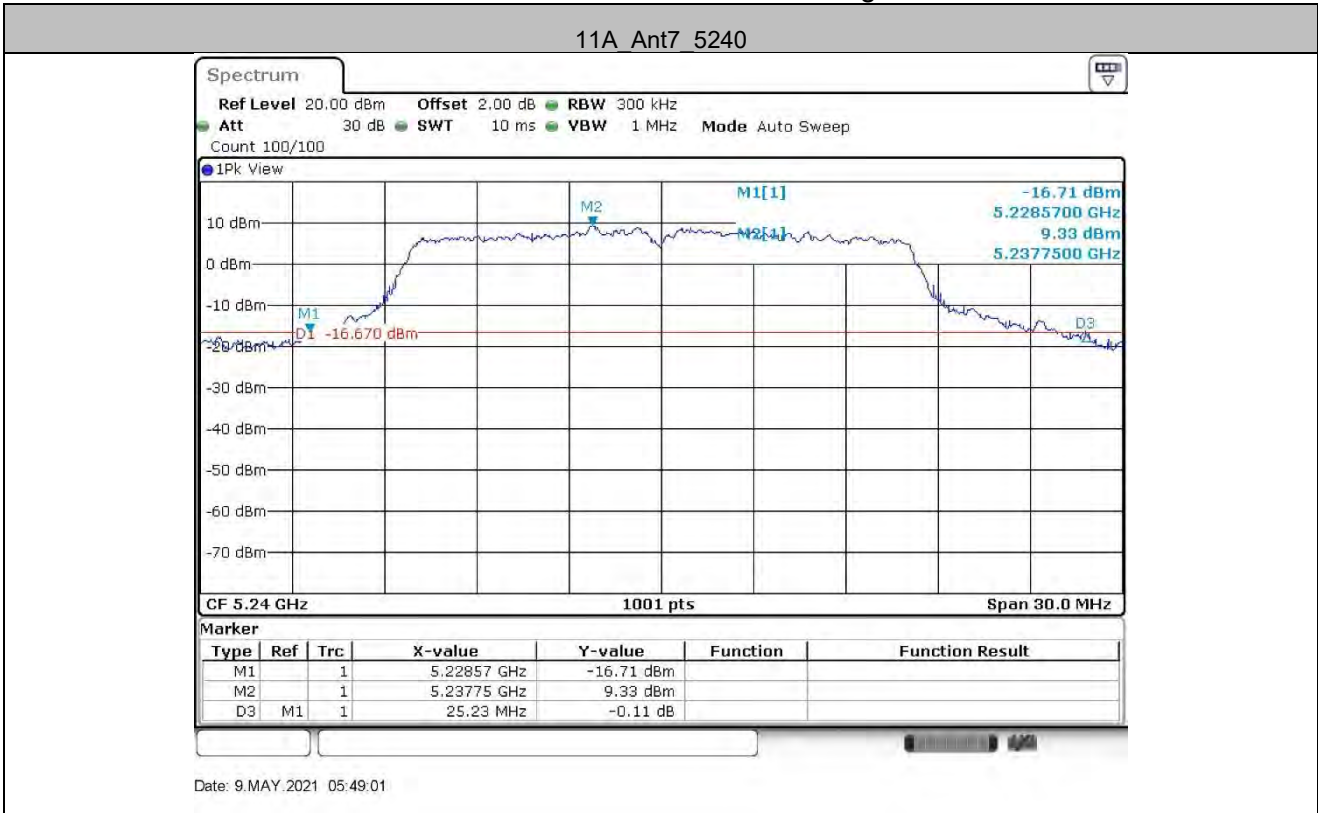
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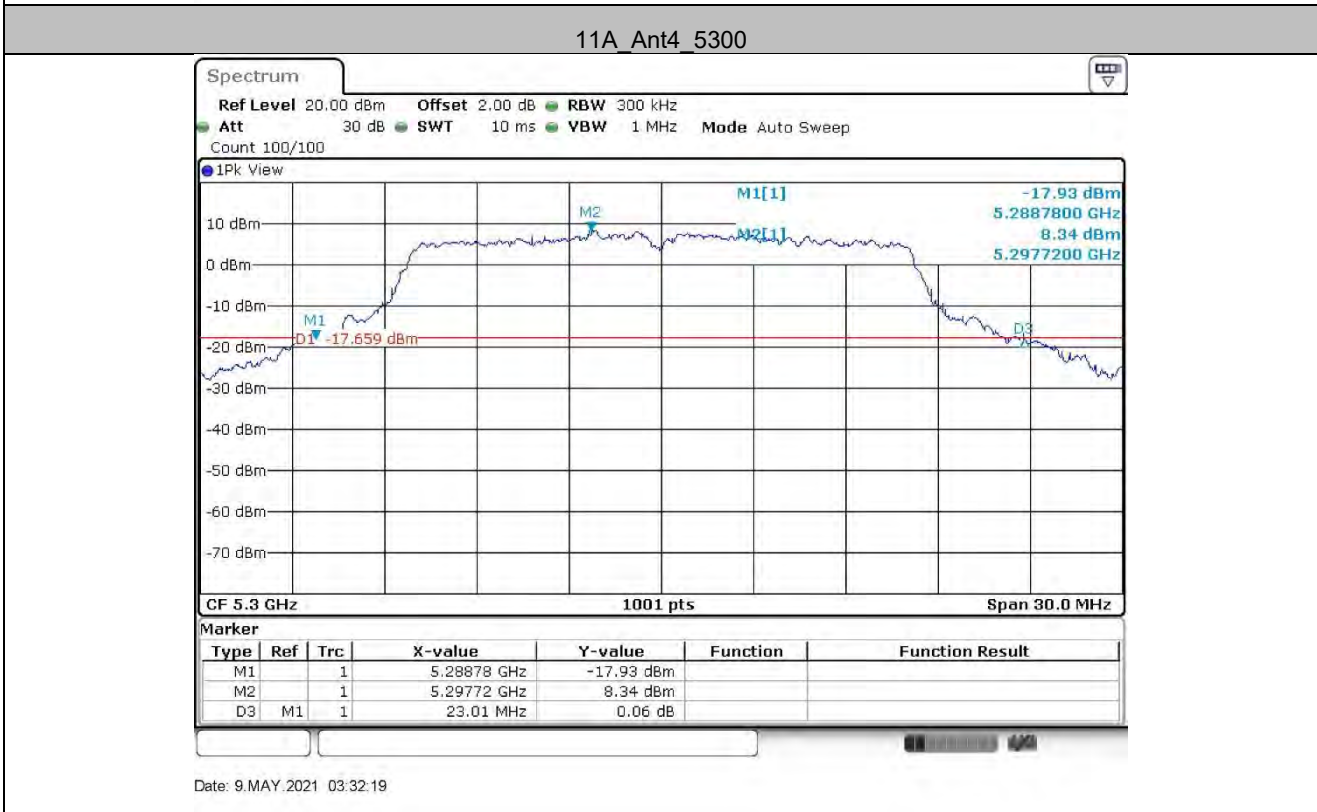
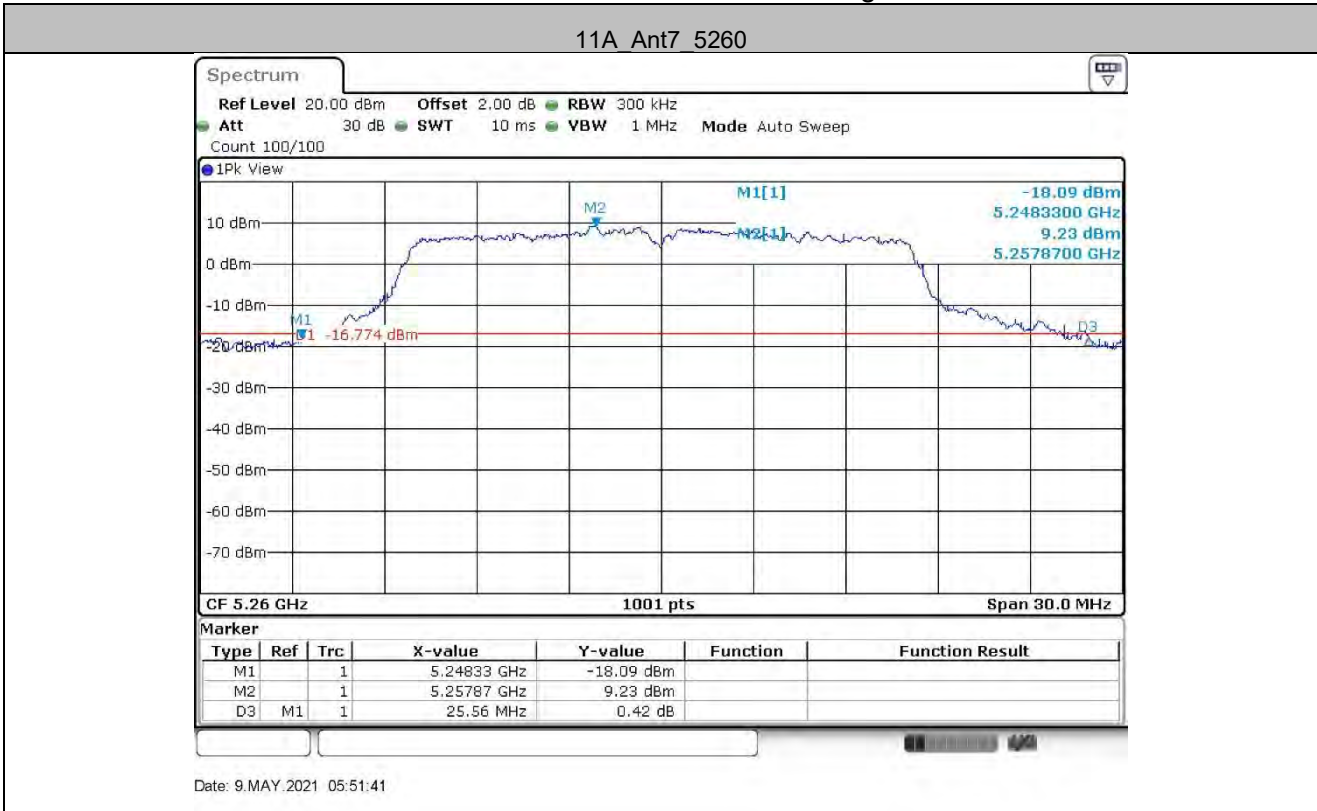
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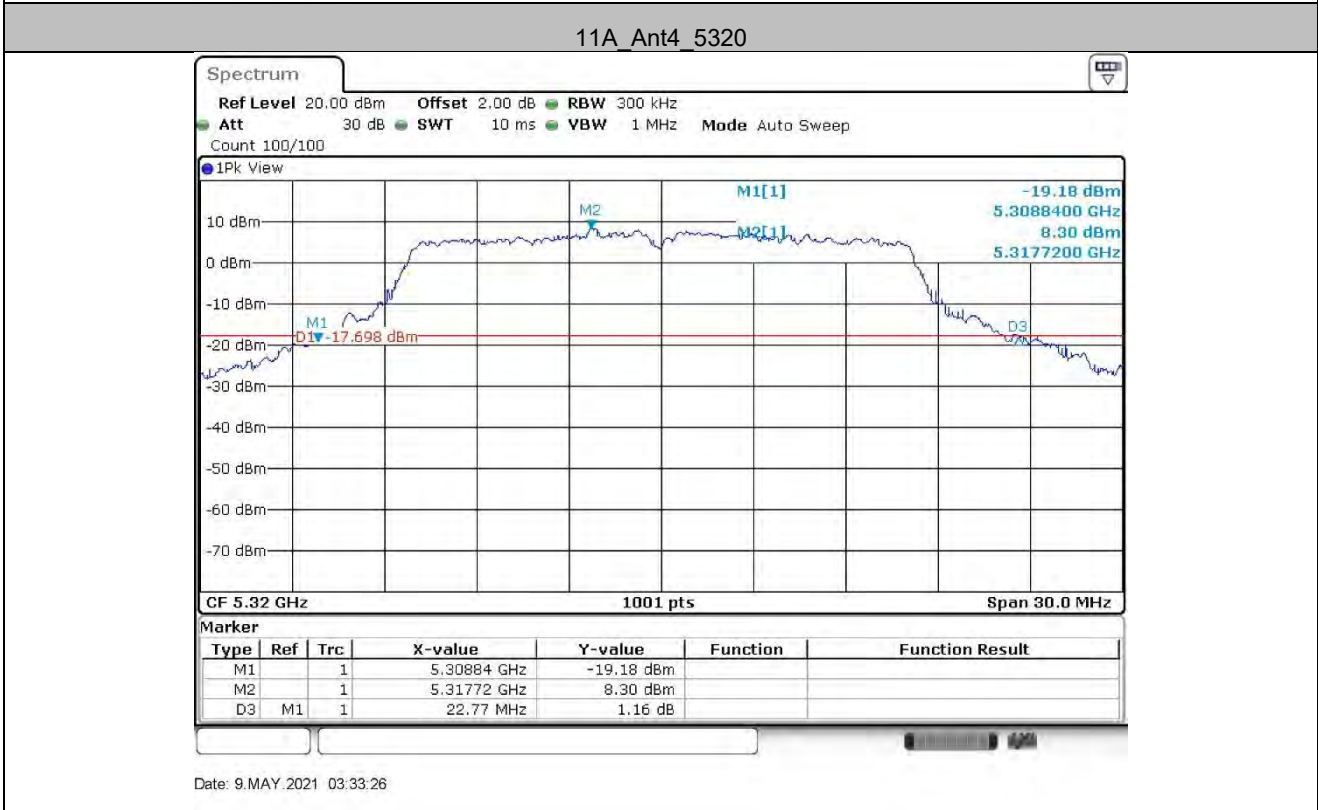
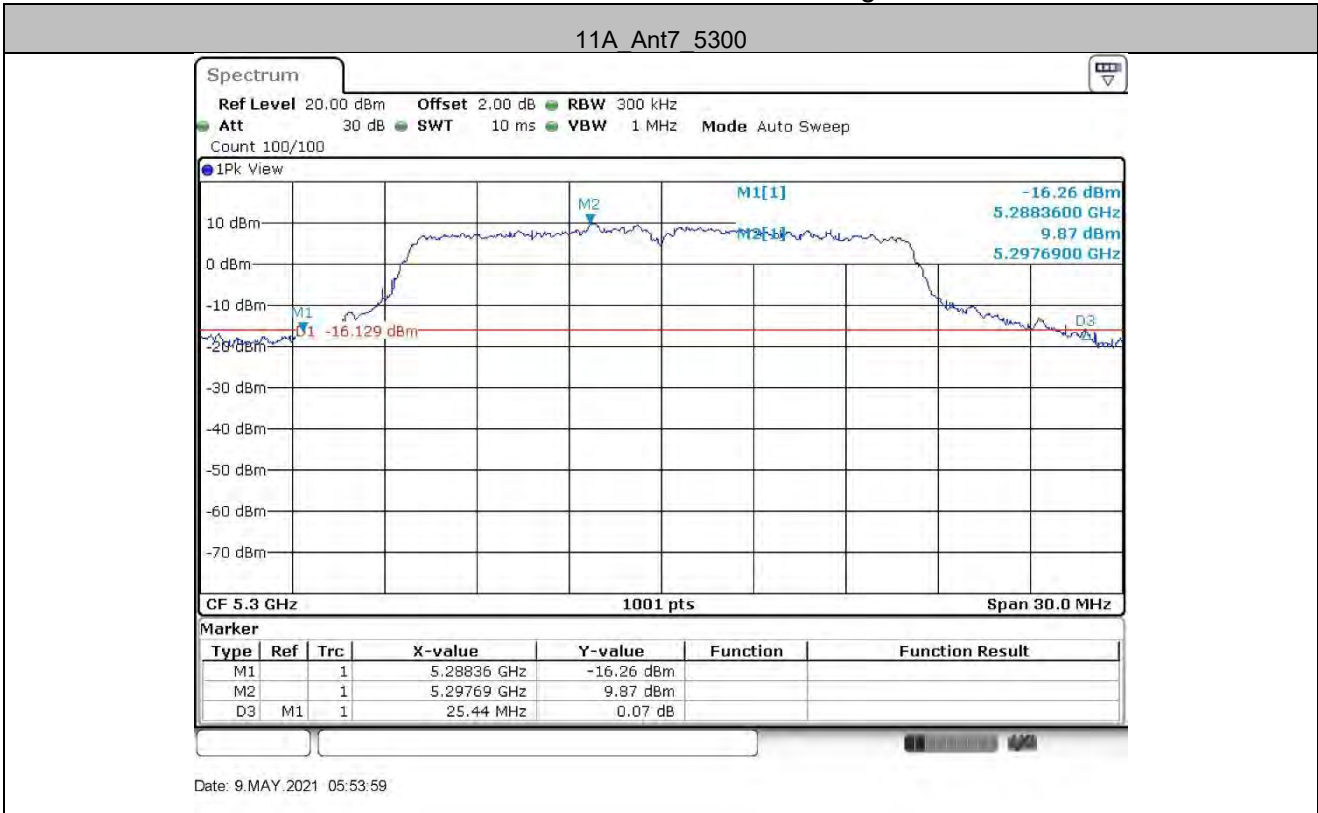


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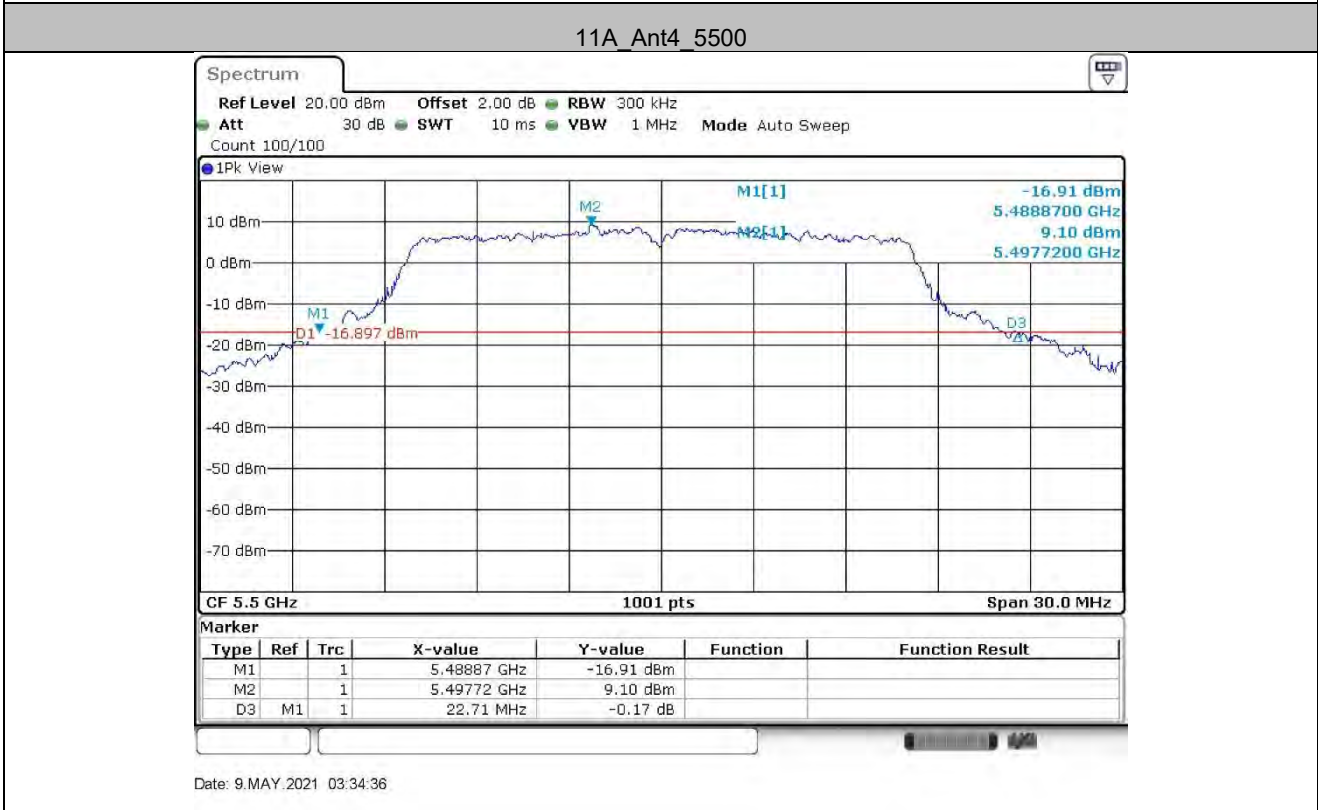
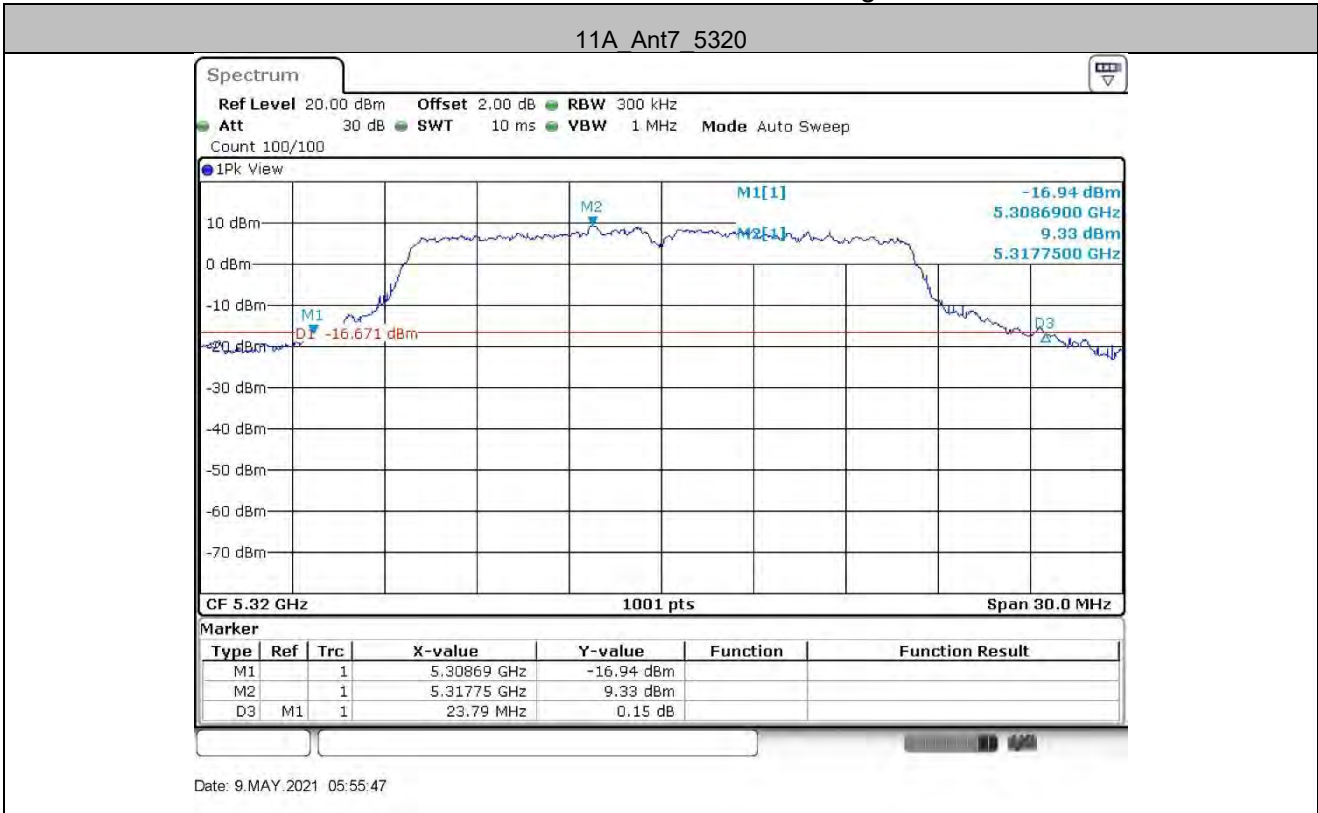
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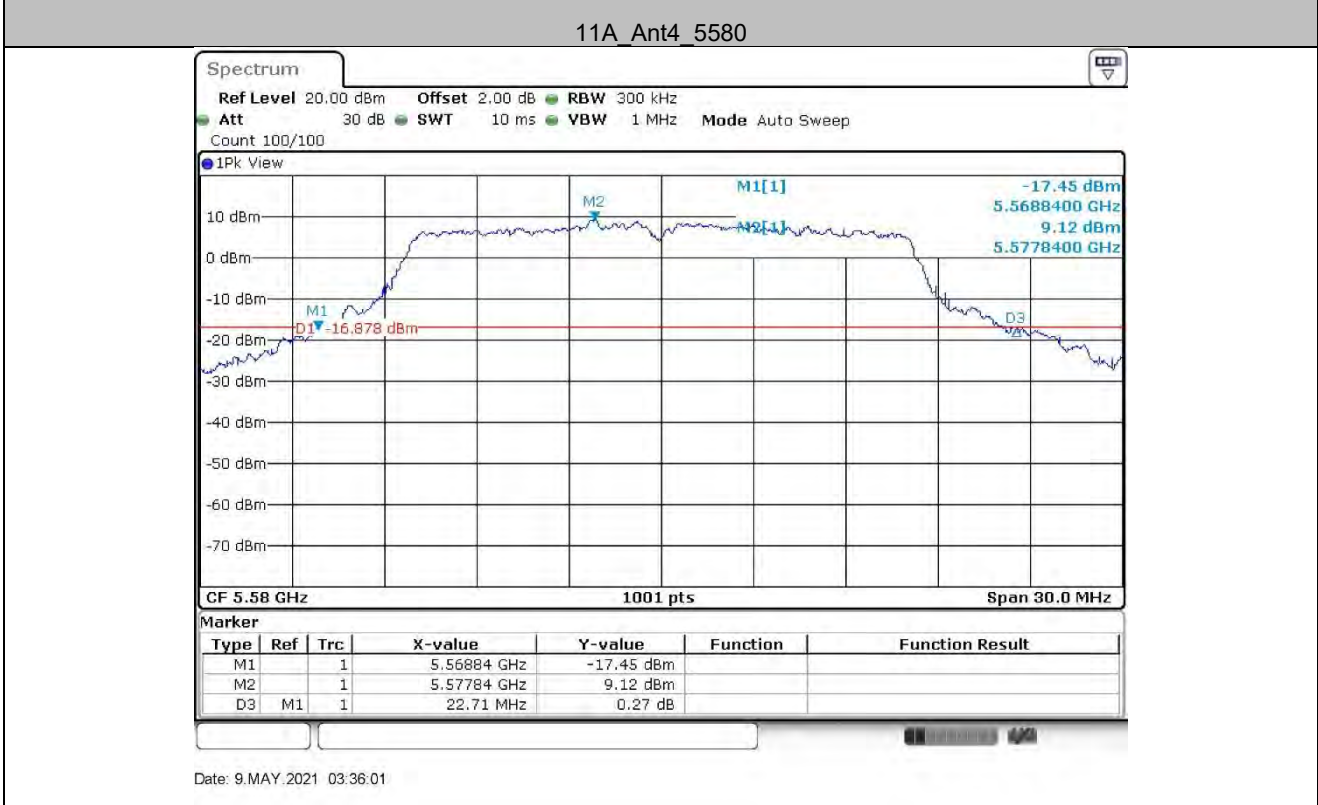
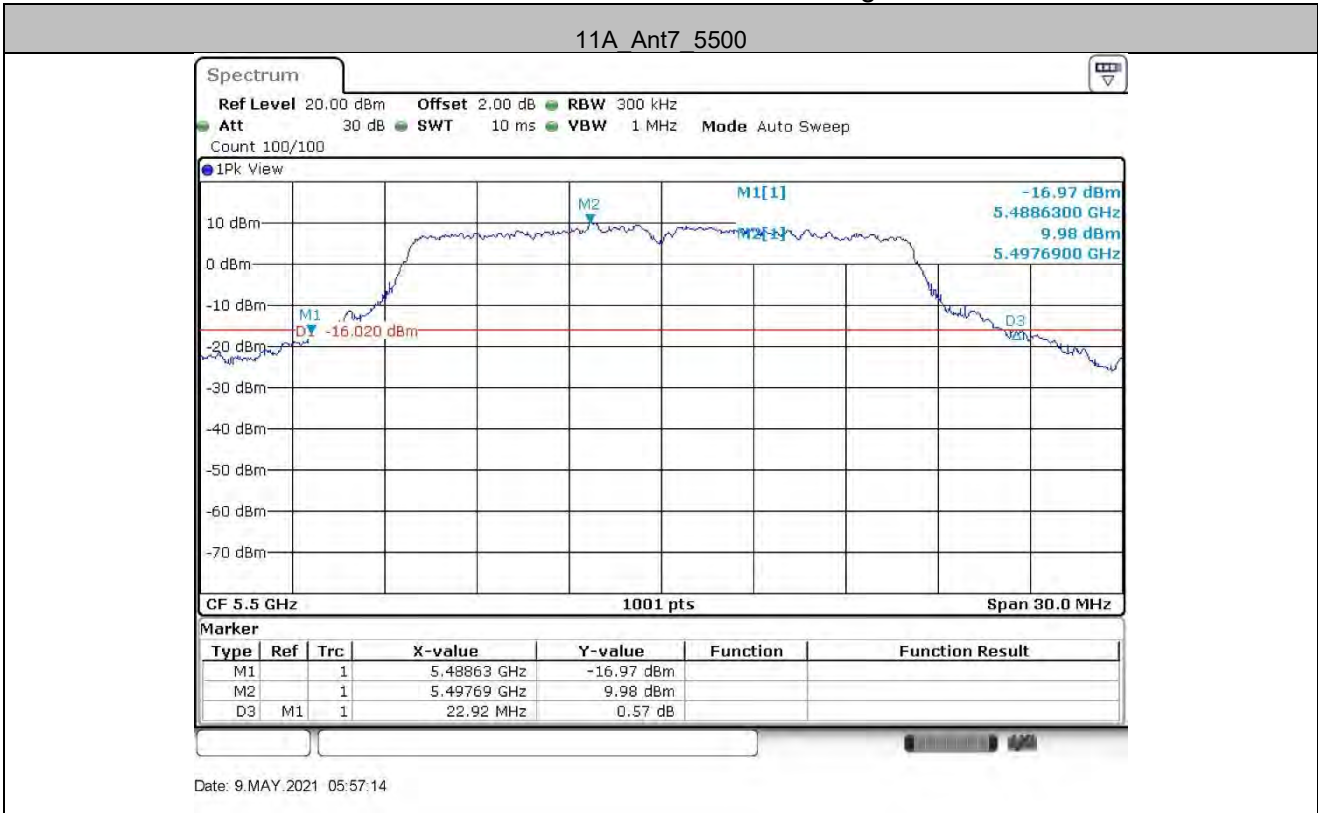
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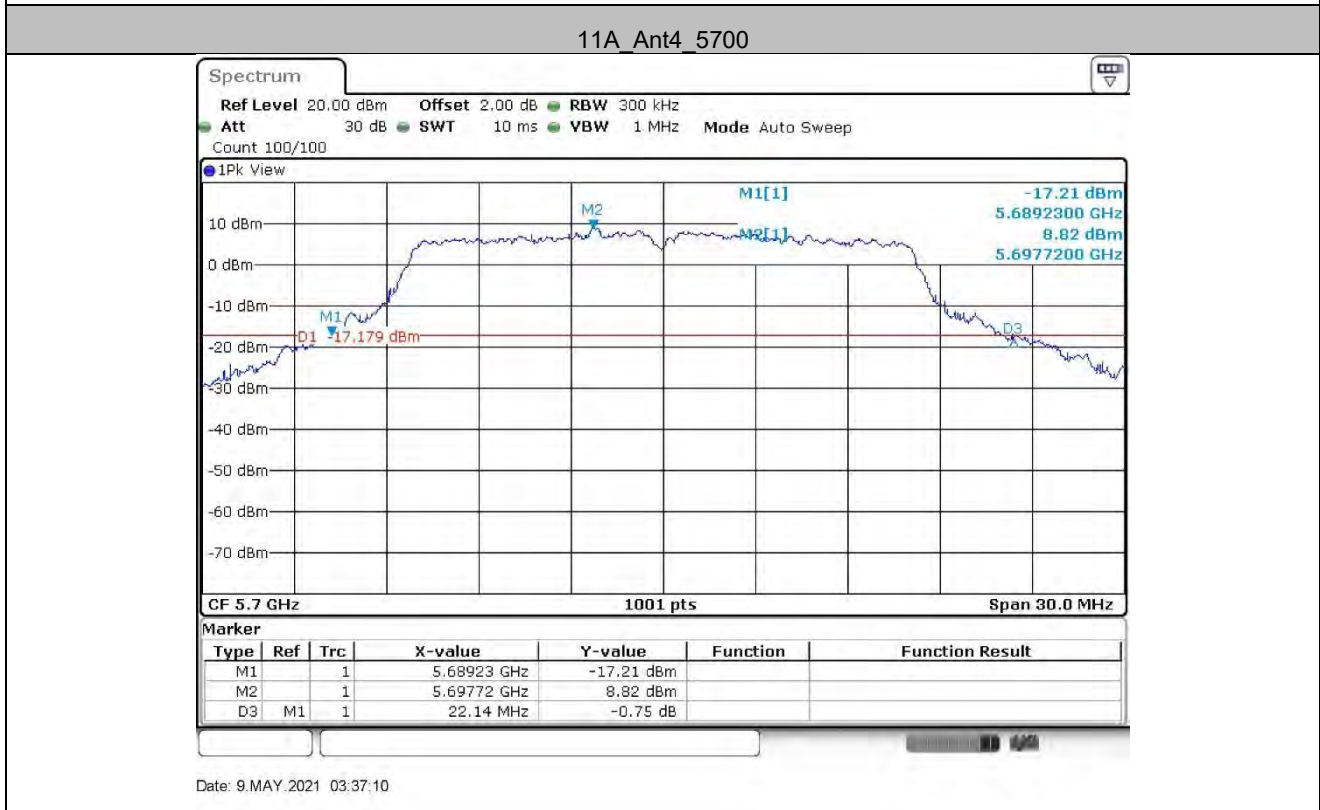
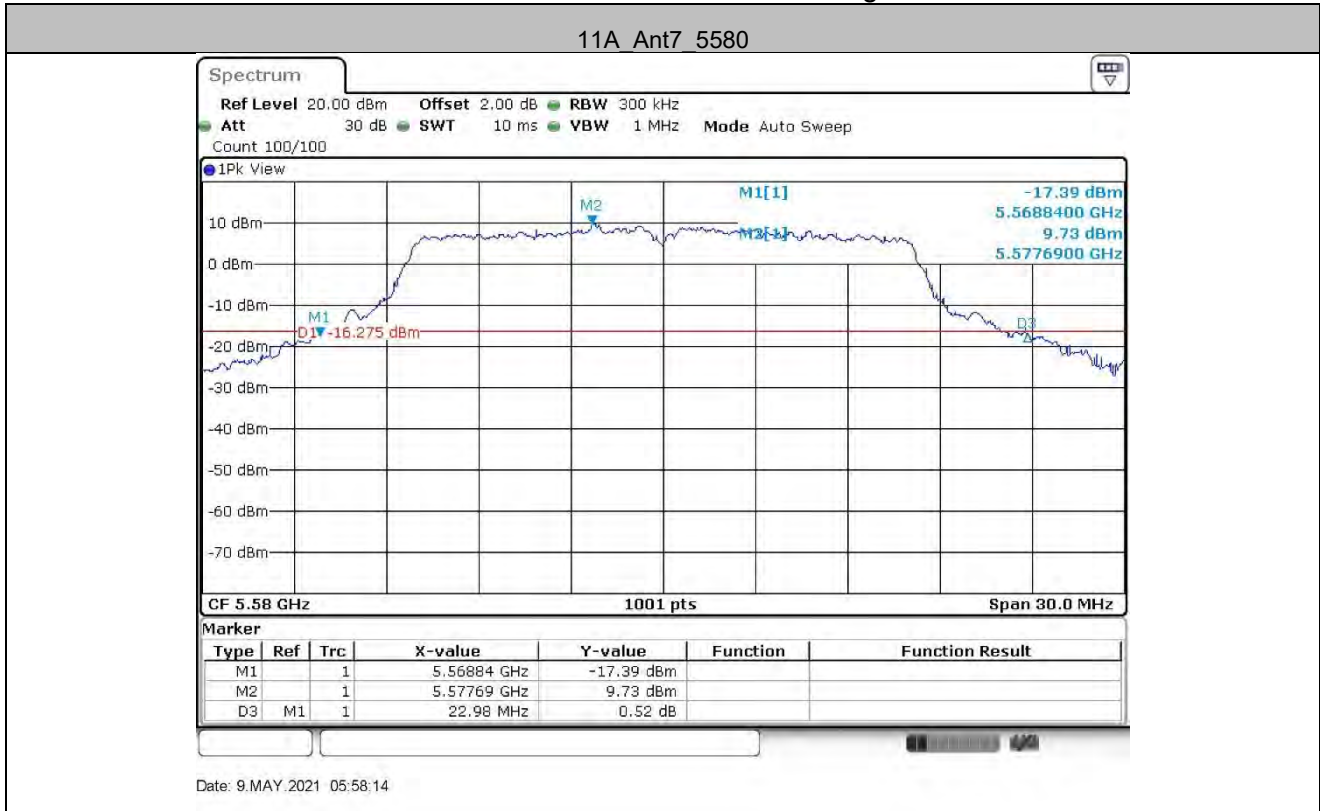
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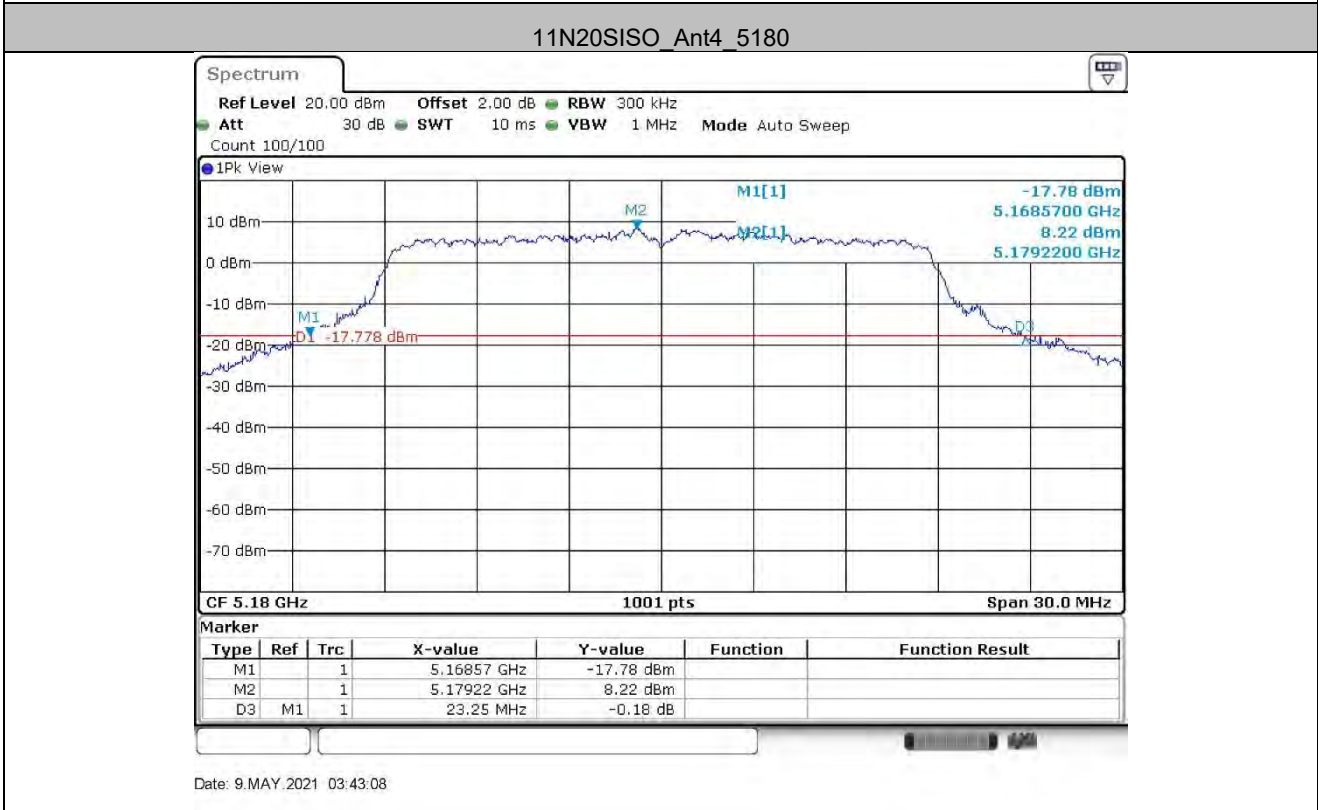
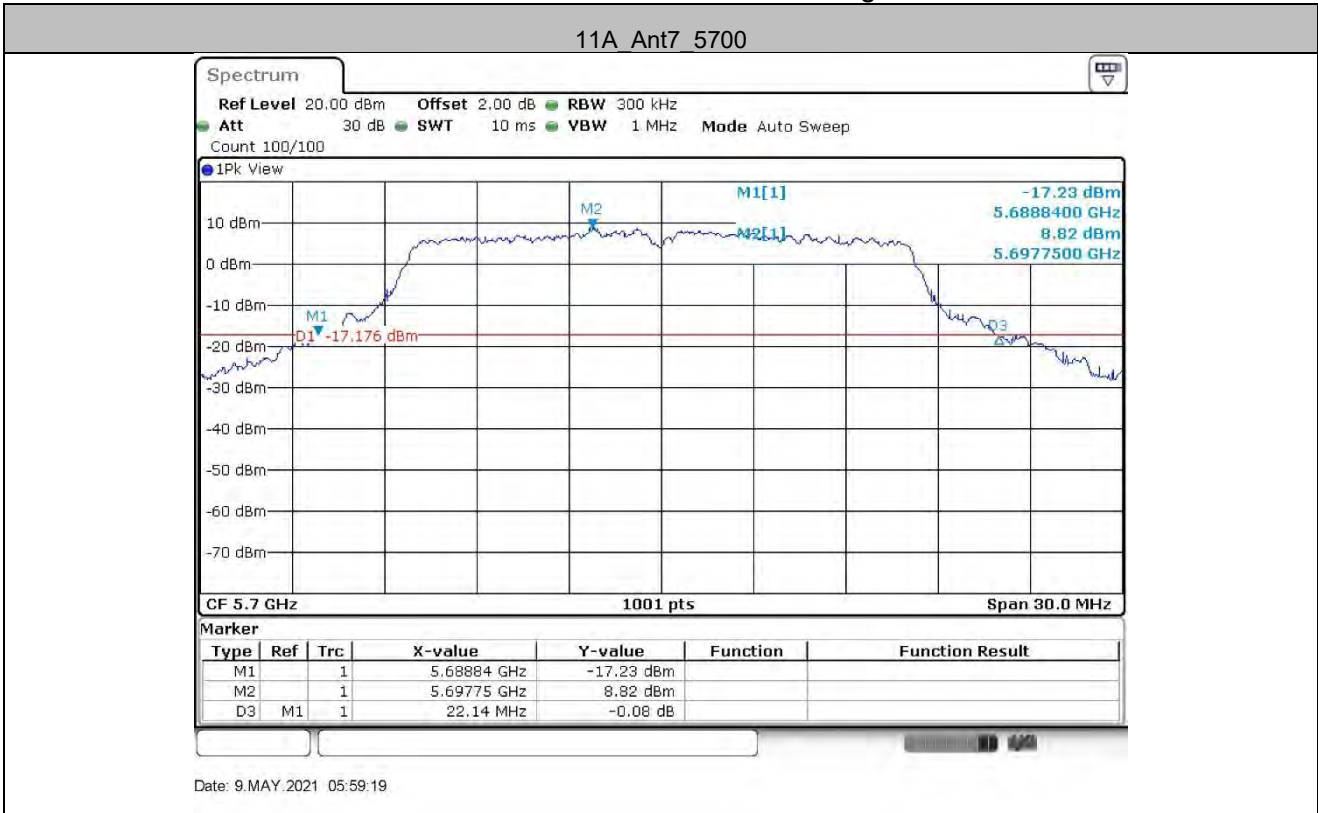
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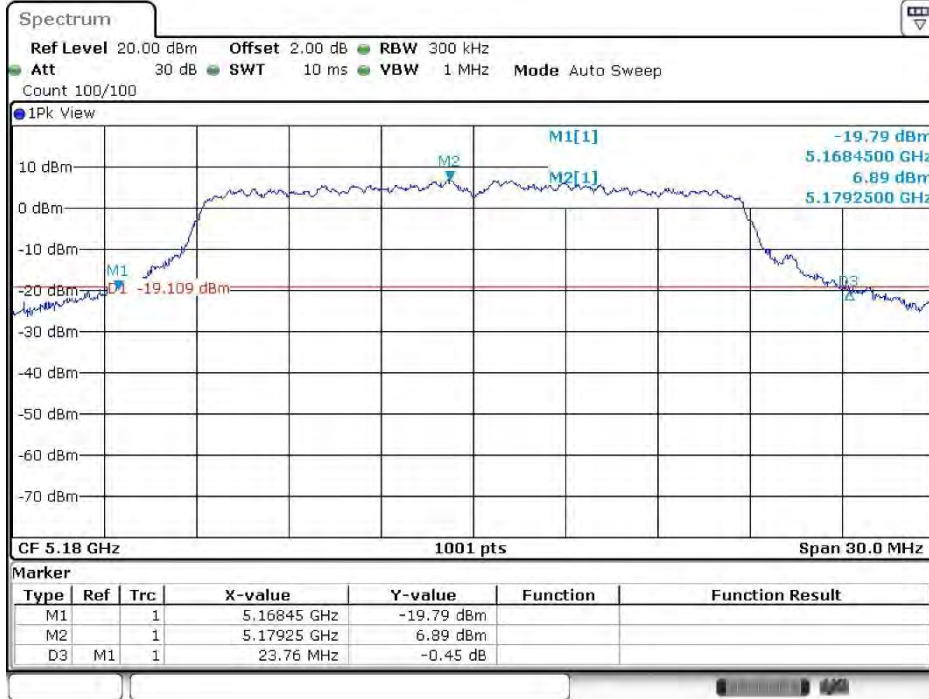
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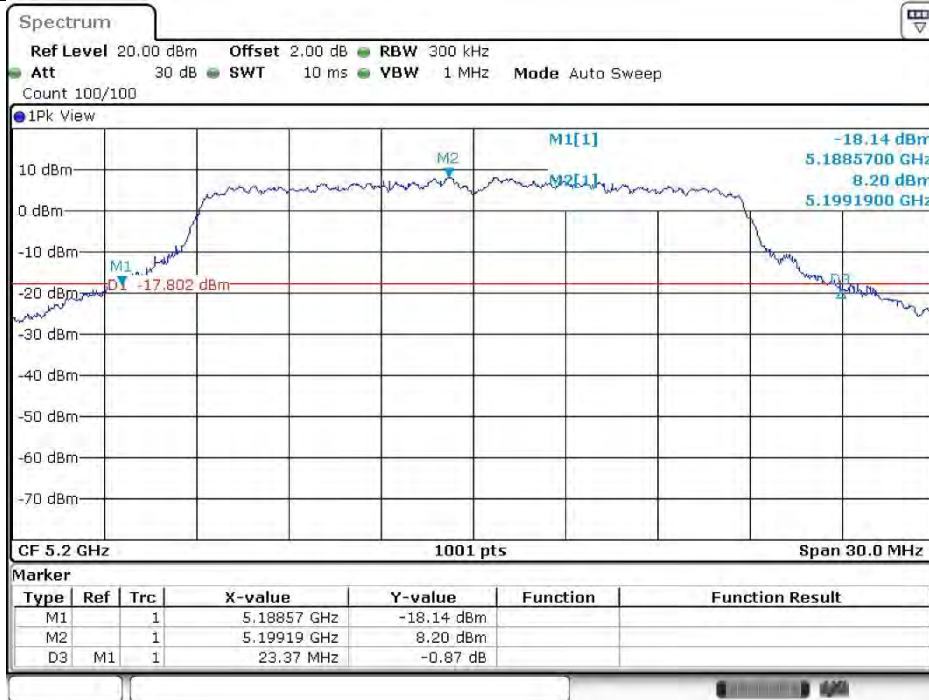


### 11N20SISO\_Ant7\_5180



Date: 9.MAY.2021 06:05:01

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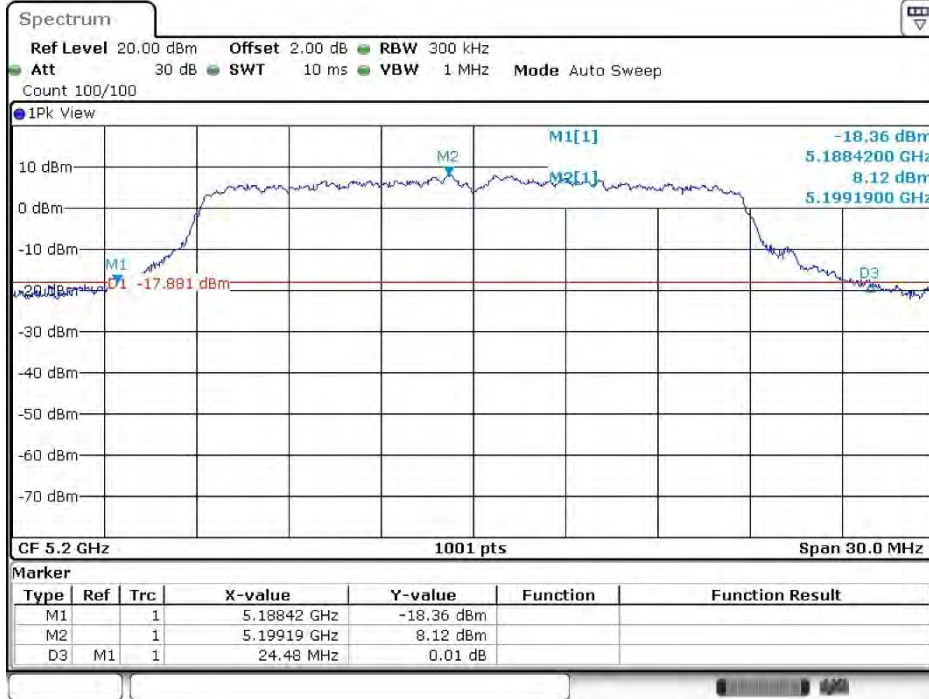
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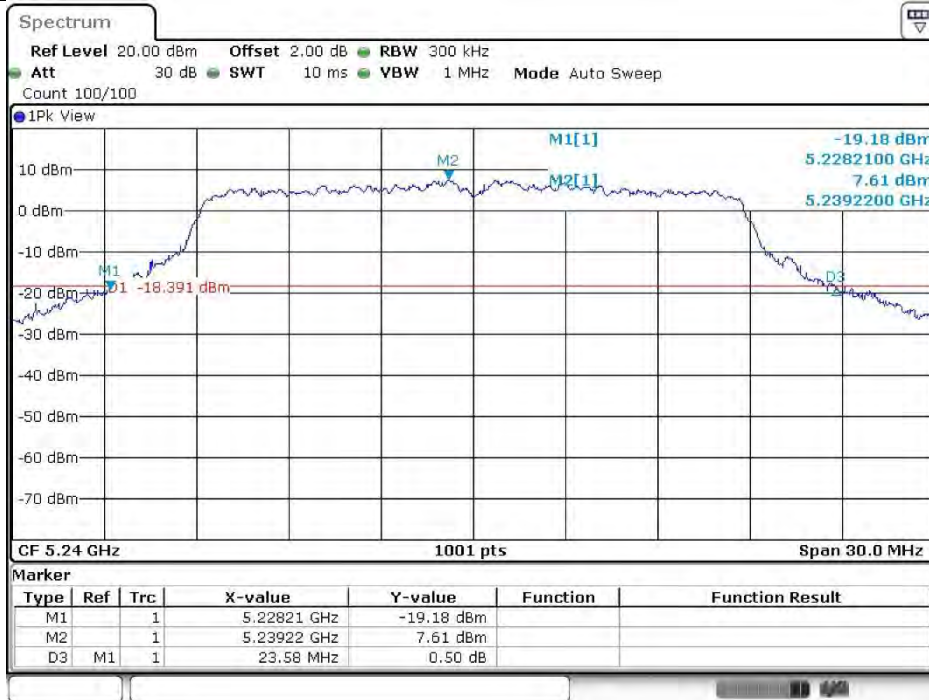
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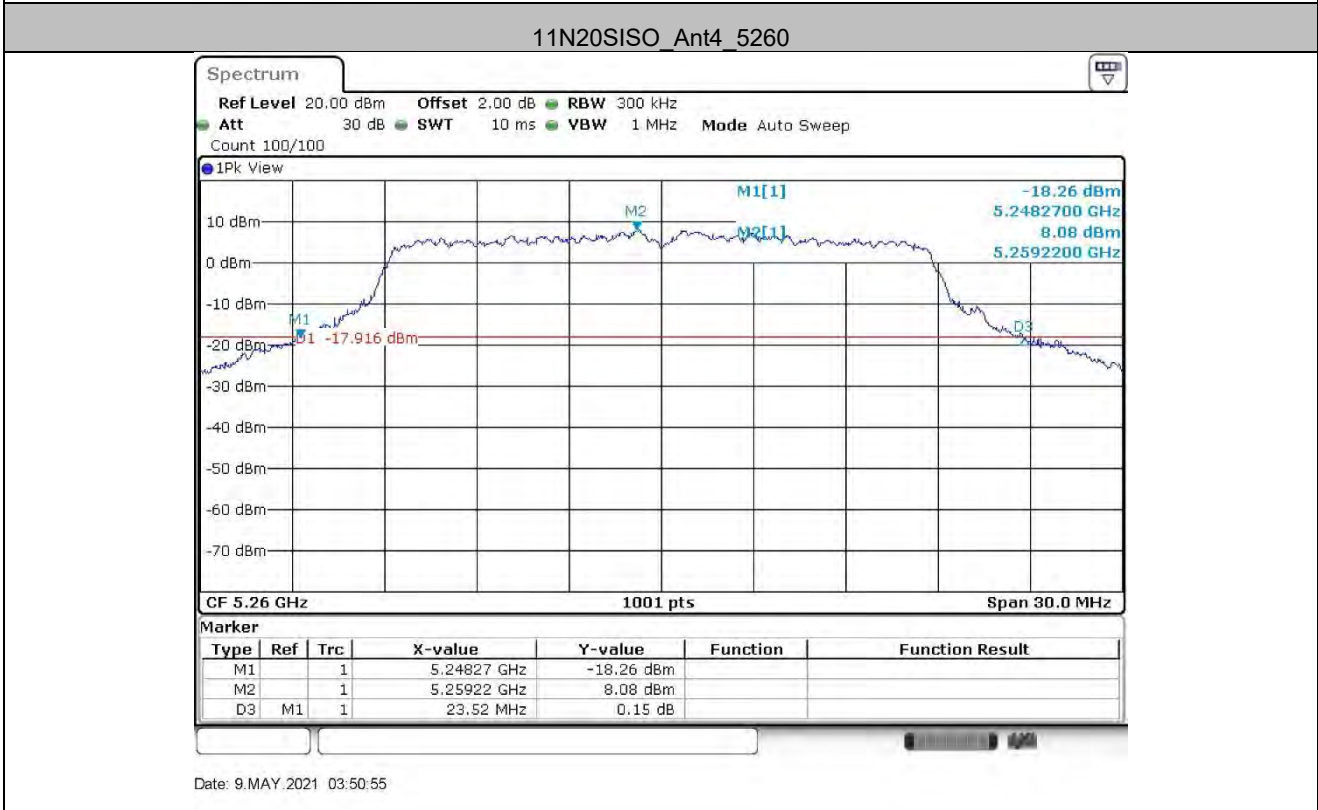
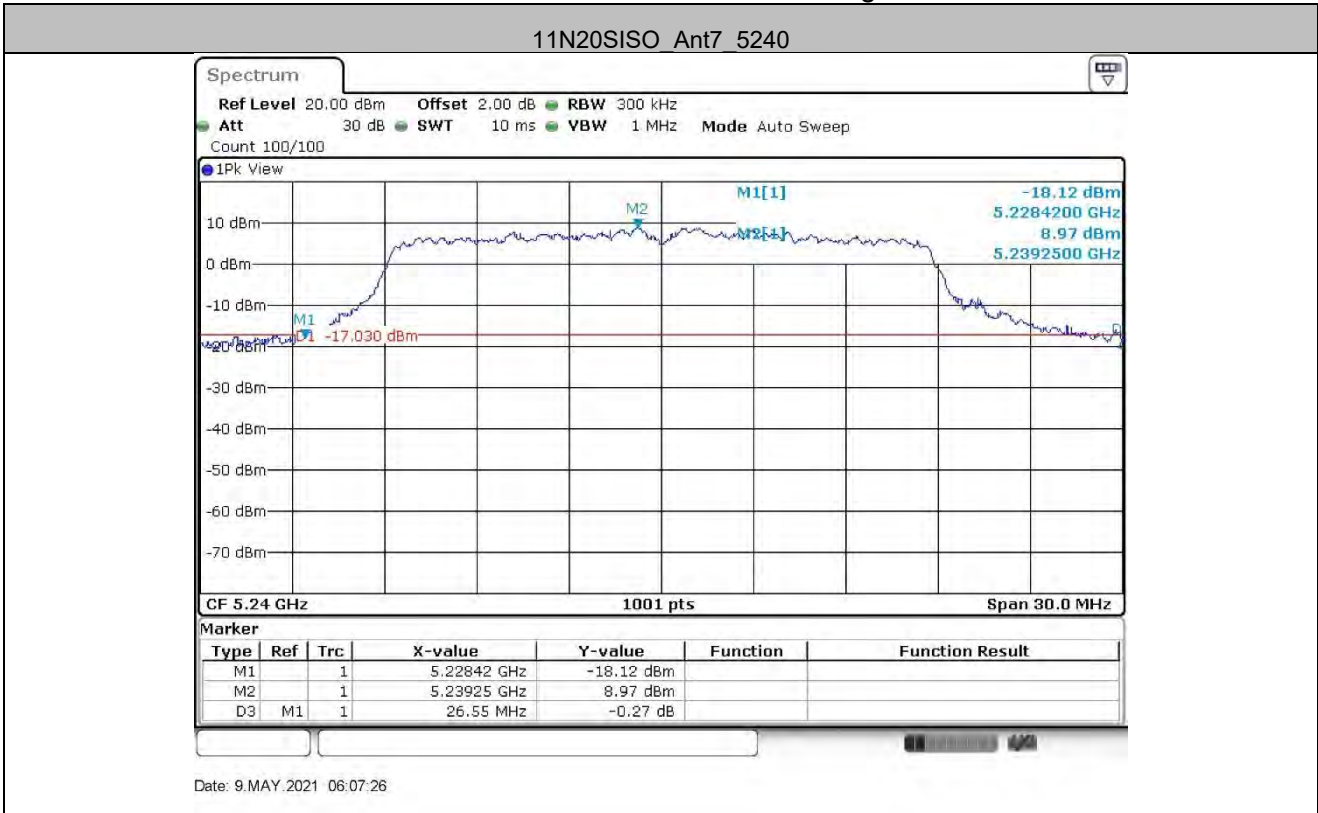
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Date: 9.MAY.2021 03:46:11

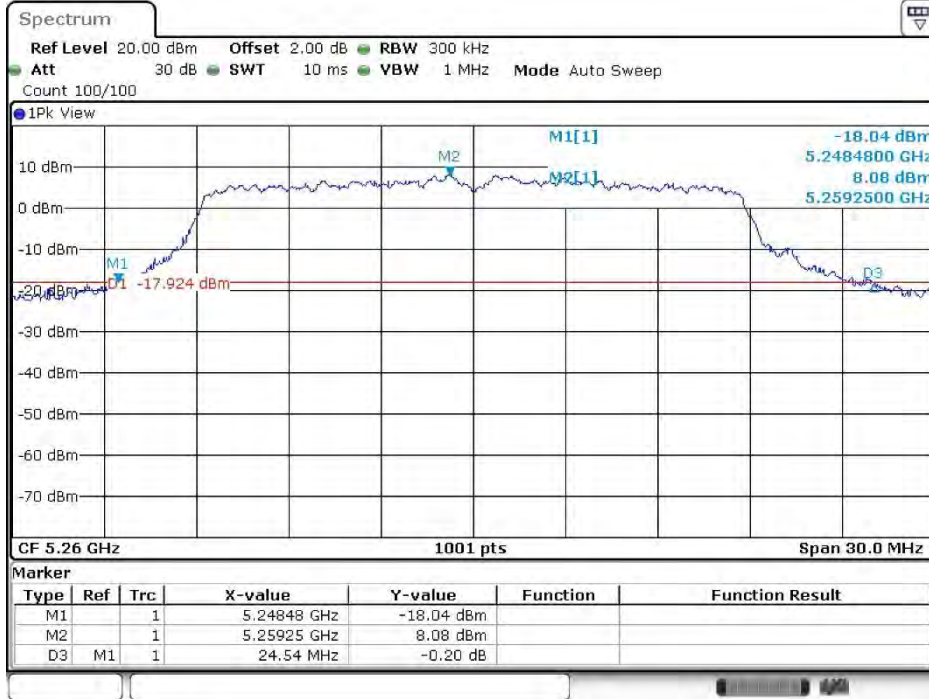


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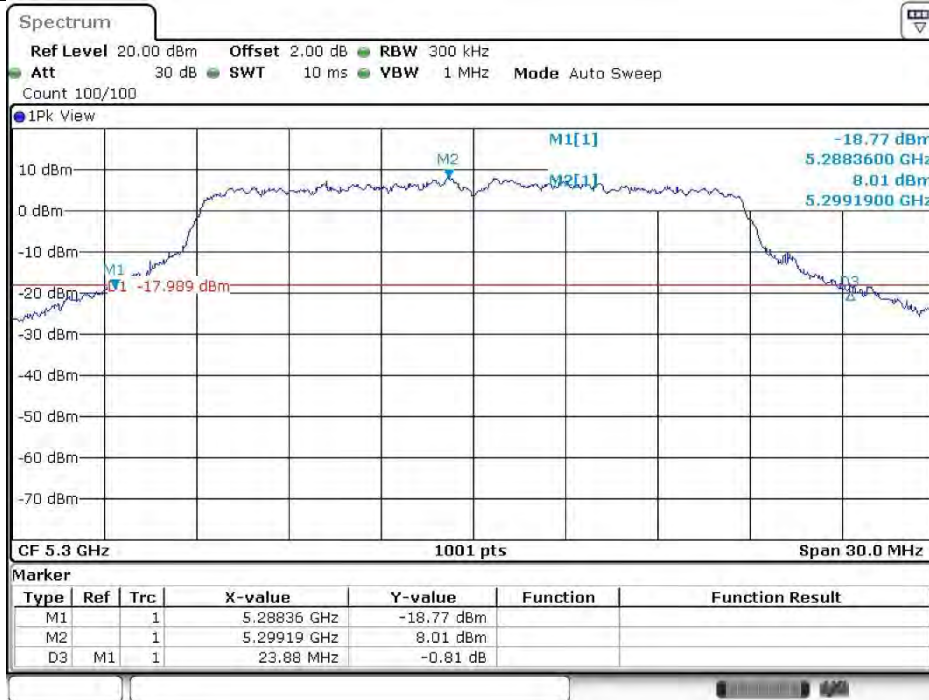
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Date: 9.MAY.2021 06:08:40

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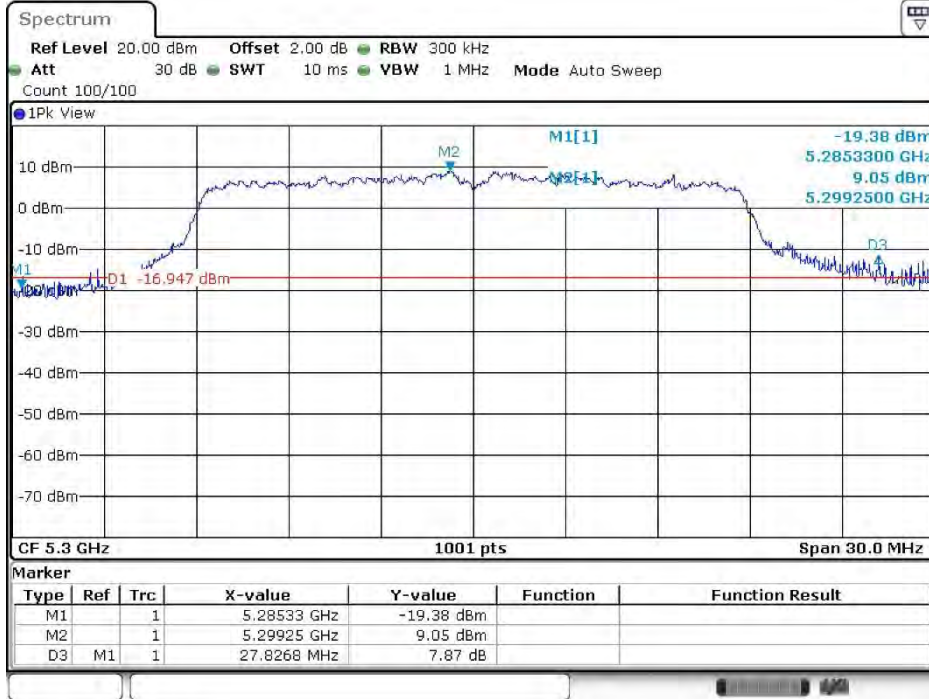


Date: 9.MAY.2021 03:51:56



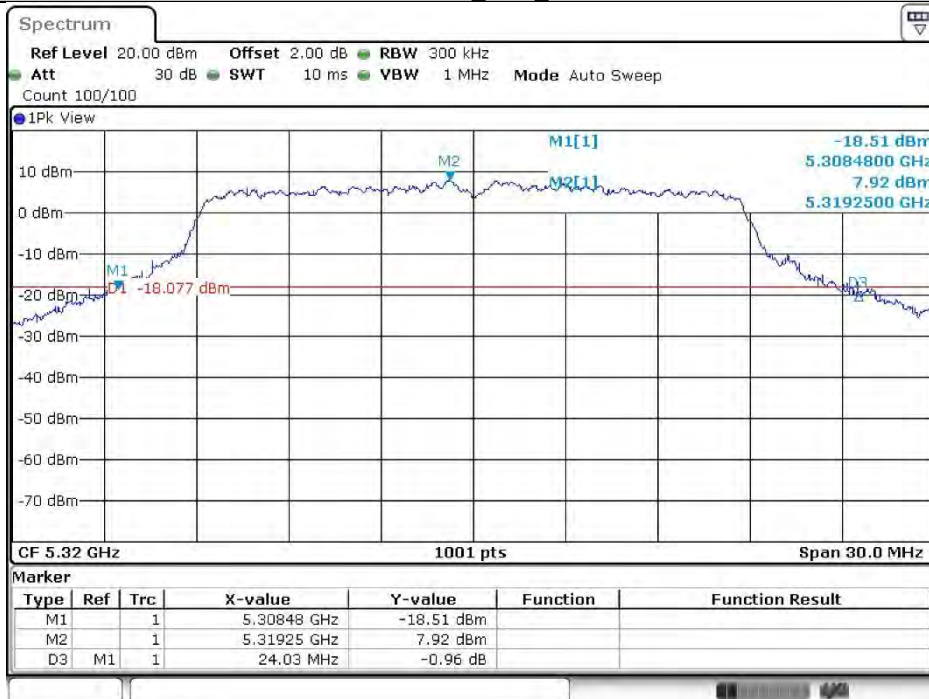
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### 11N20SISO Ant7 5300



Date: 9.MAY.2021 06:10:39

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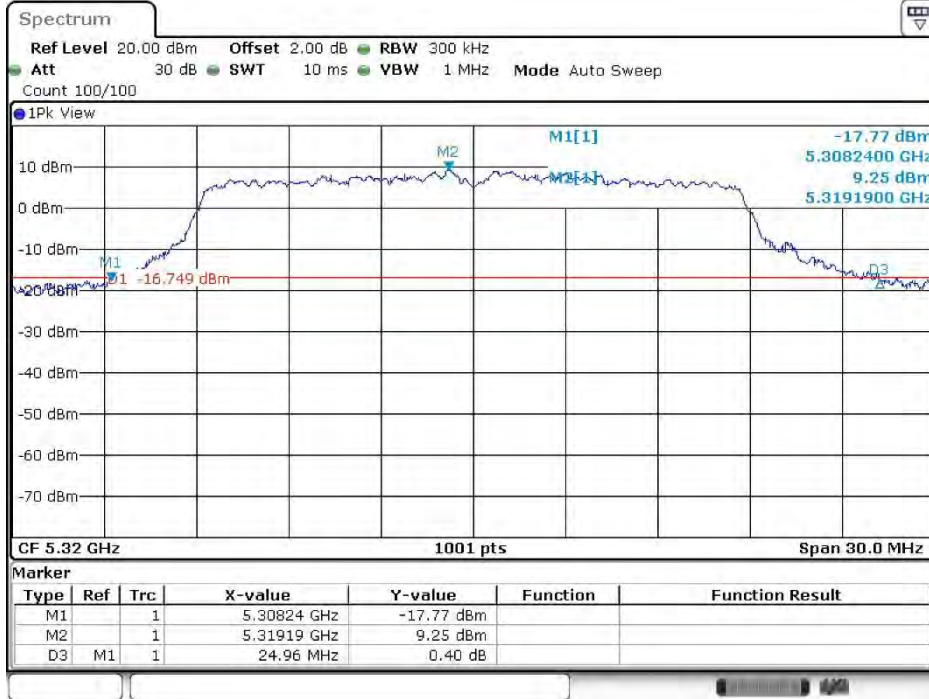


Date: 9.MAY.2021 03:53:19



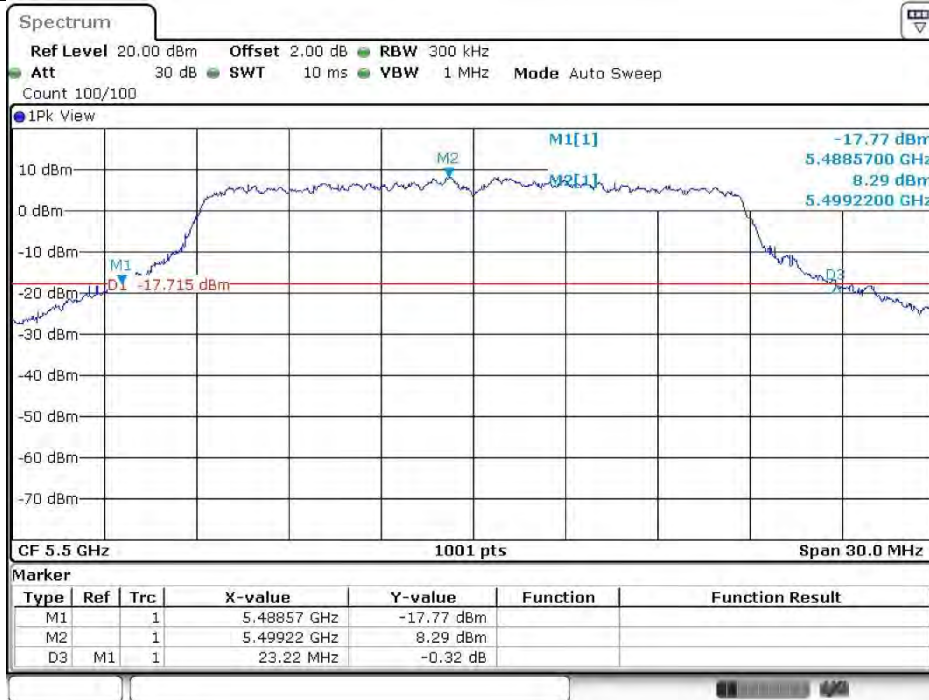
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Date: 9.MAY.2021 06:11:41

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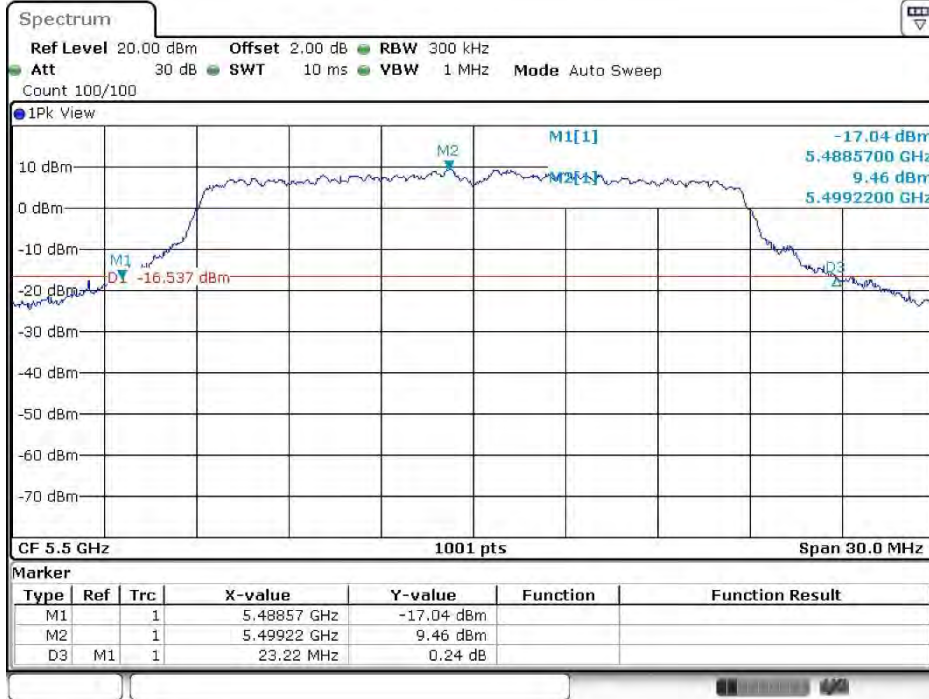


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### 11N20SISO Ant7 5500



Date: 9.MAY.2021 06:12:47

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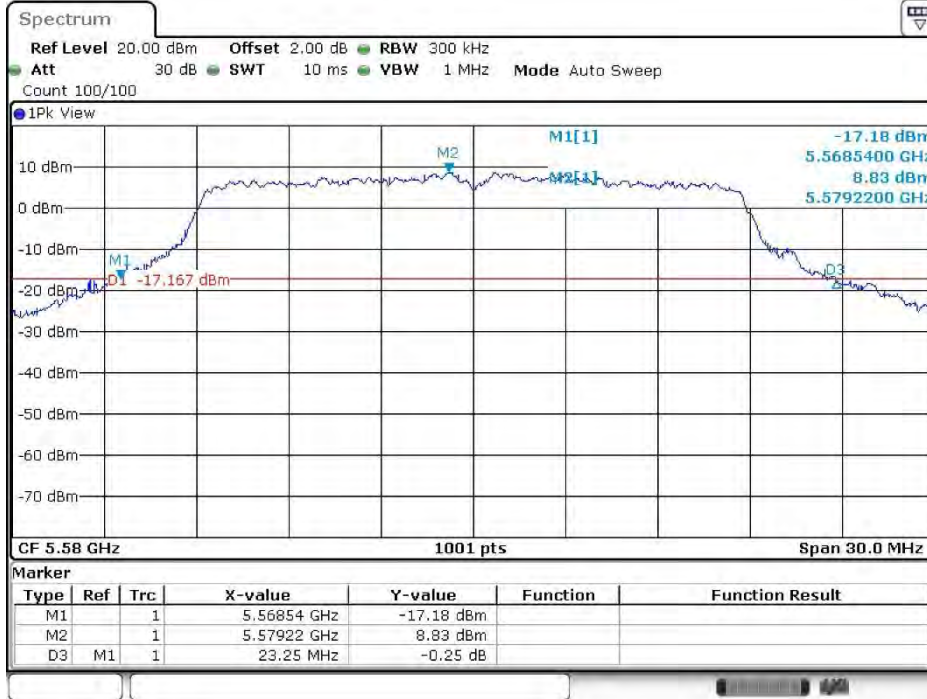


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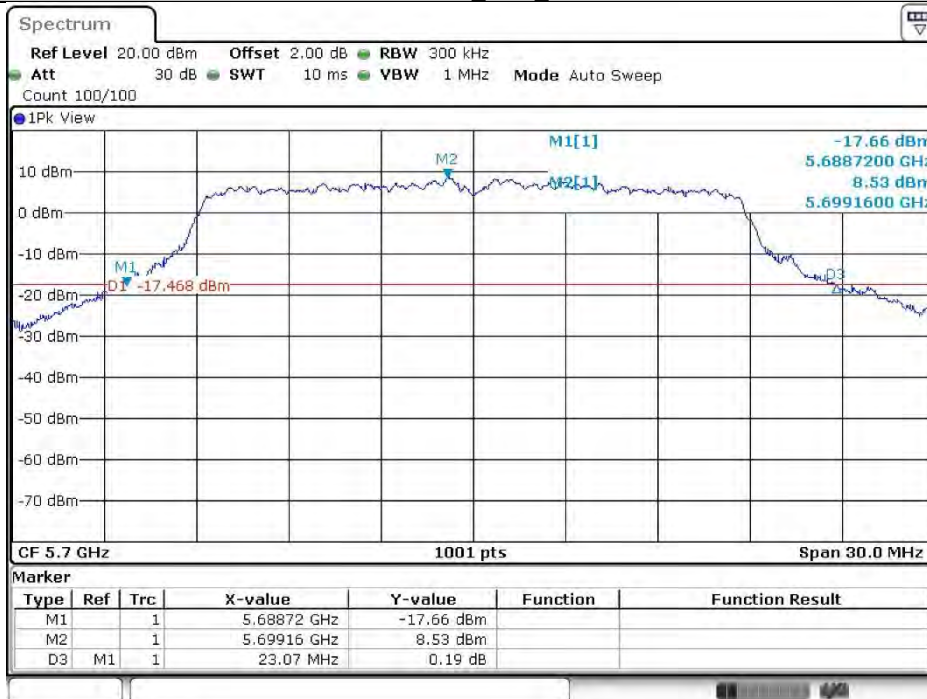
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### 11N20SISO\_Ant7\_5580



Date: 9.MAY.2021 06:14:03

### 11N20SISO\_Ant4\_5700



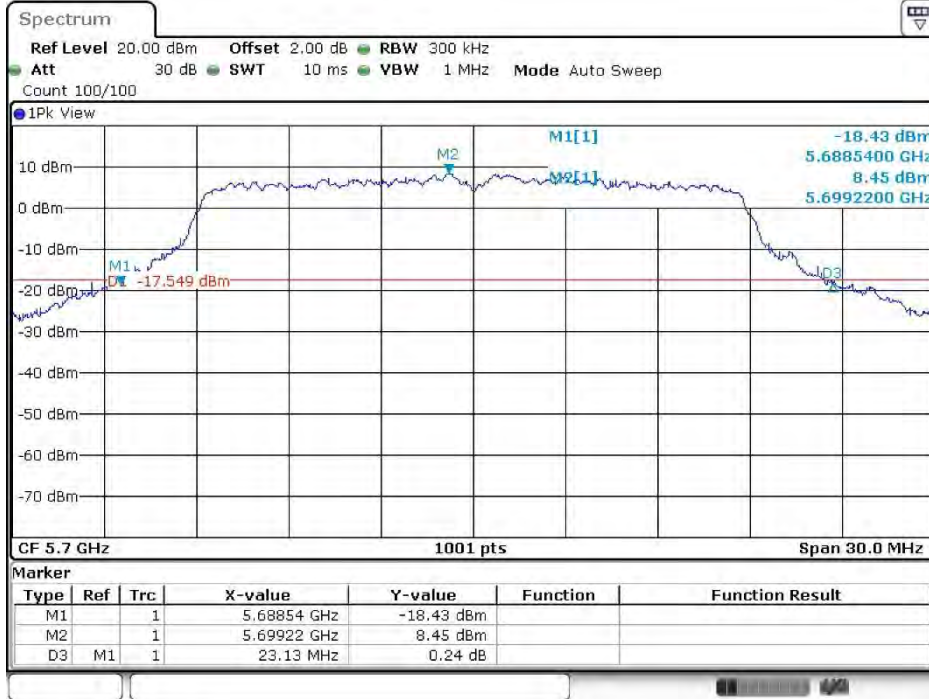
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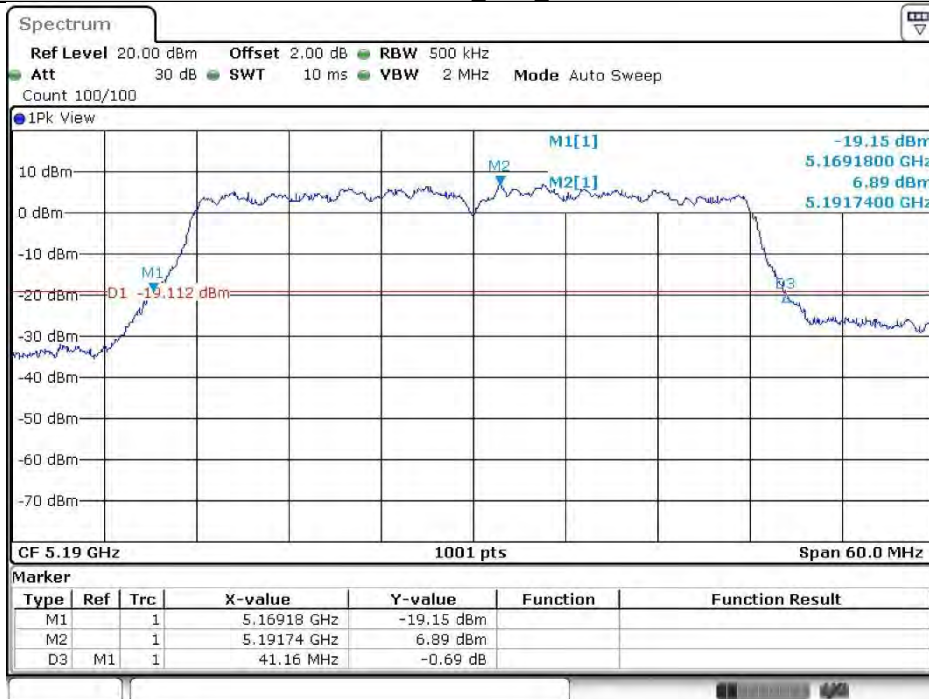


### 11N20SISO Ant7 5700



Date: 9.MAY.2021 06:15:15

### 11N40SISO Ant4 5190



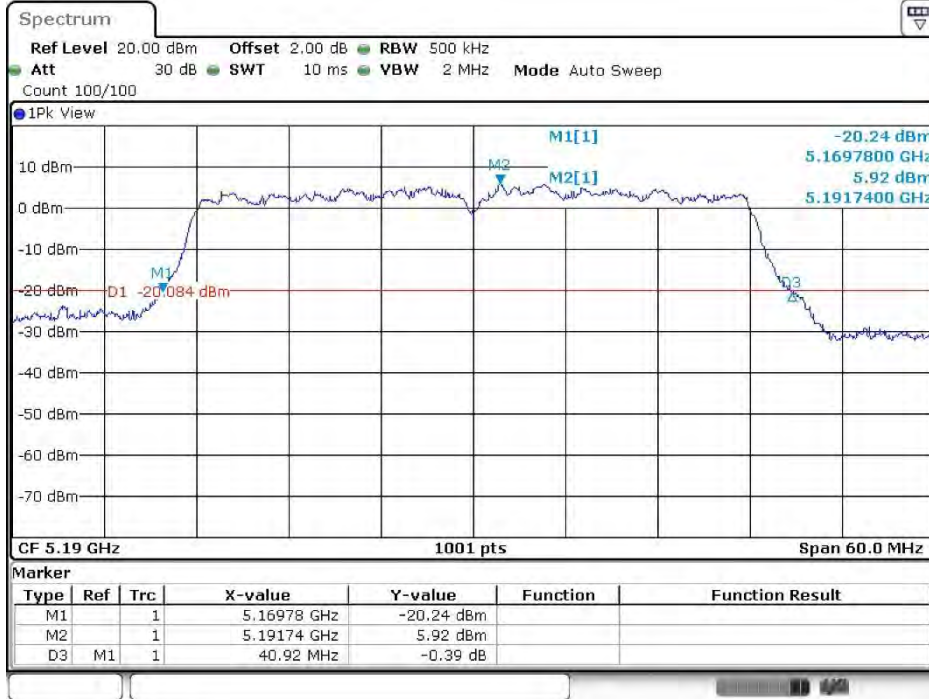
Date: 9.MAY.2021 21:30:24



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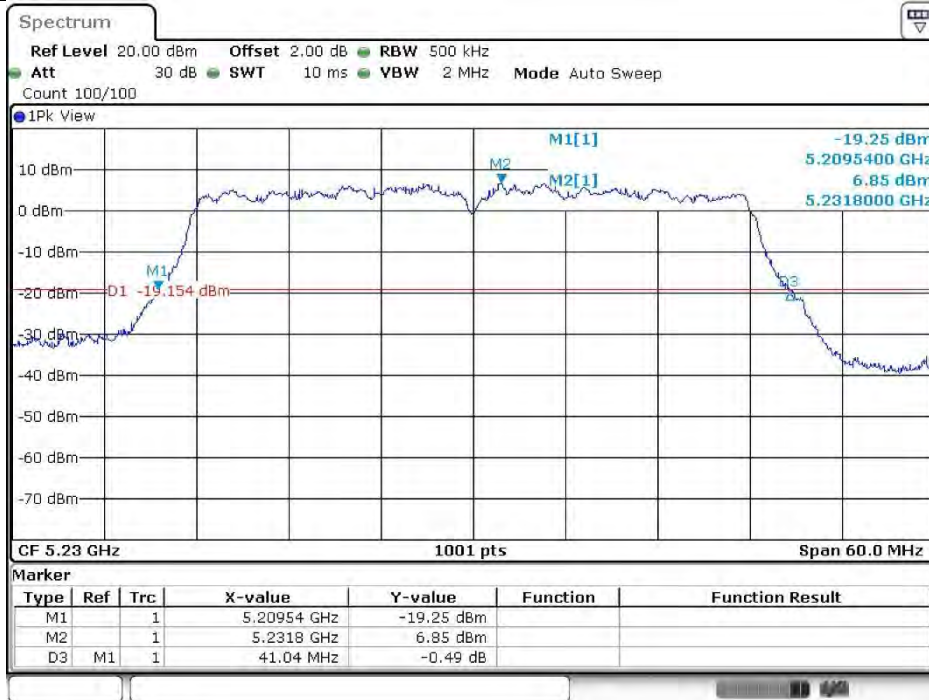
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### 11N40SISO Ant7 5190



Date: 9.MAY.2021 22:24:18

### 11N40SISO Ant4 5230

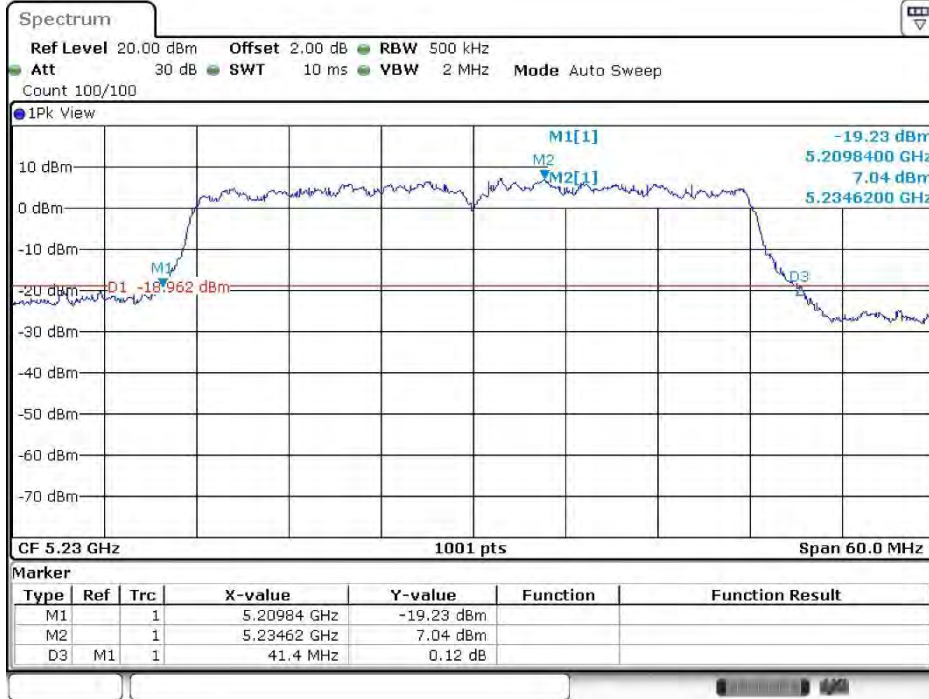


Date: 9.MAY.2021 21:31:22



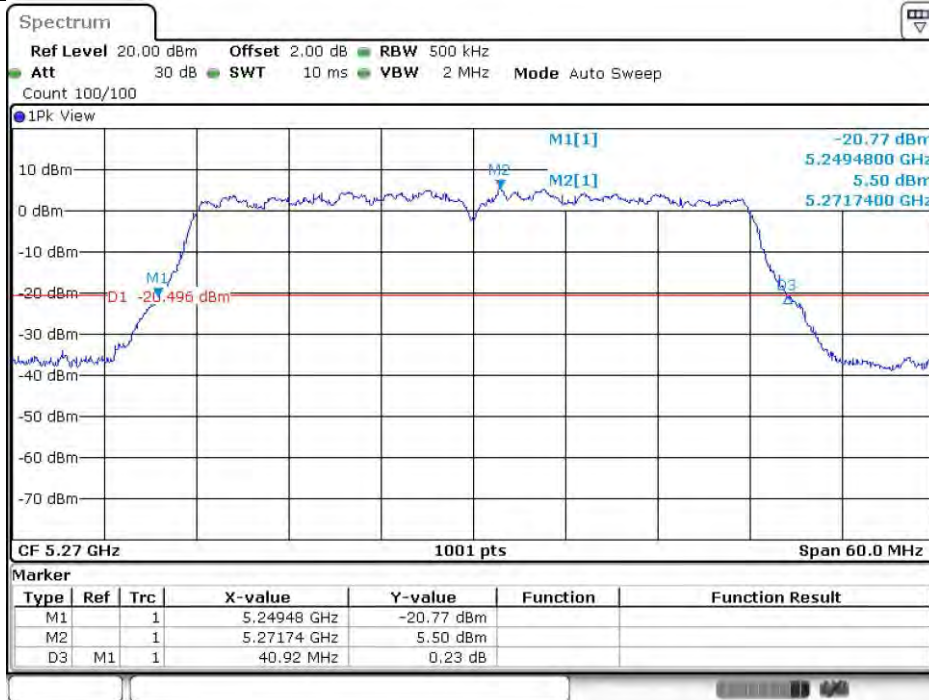
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### 11N40SISO\_Ant7\_5230



Date: 9.MAY.2021 22:27:02

### 11N40SISO\_Ant4\_5270



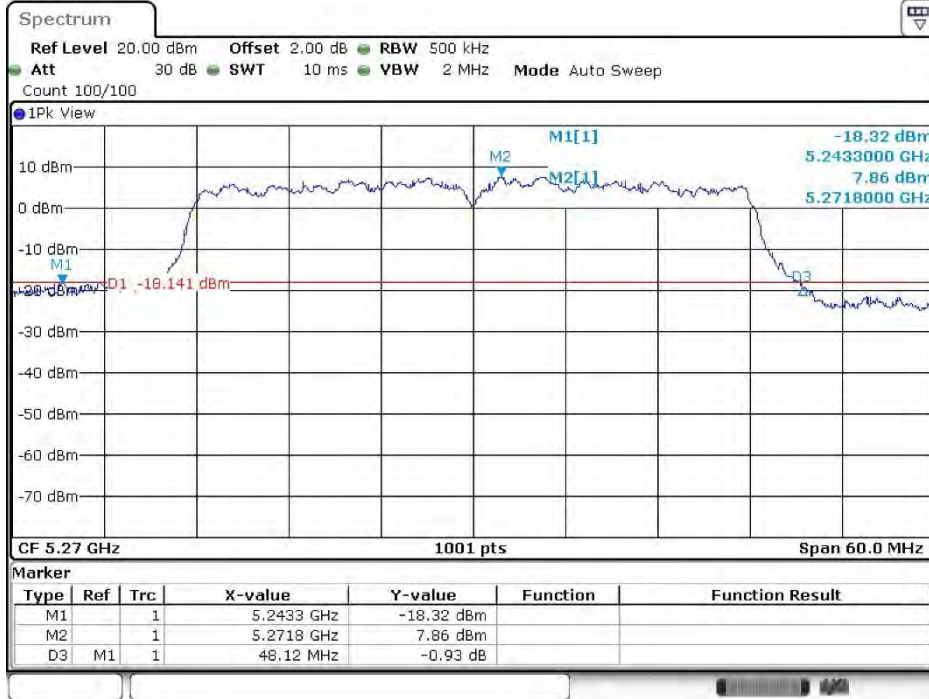
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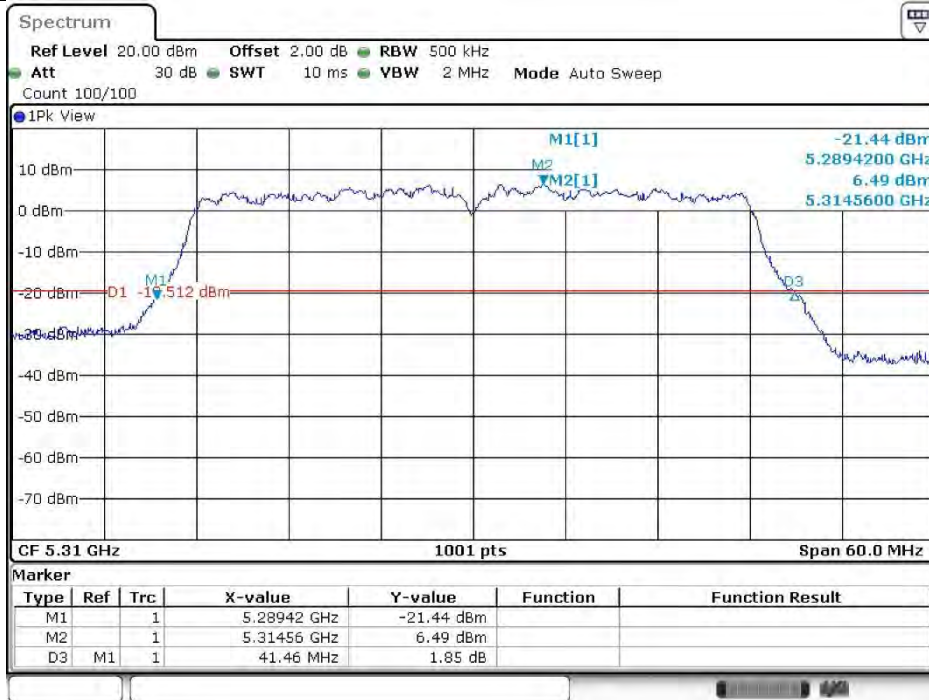
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### 11N40SISO\_Ant7\_5270



Date: 9.MAY.2021 22:28:18

### 11N40SISO\_Ant4\_5310

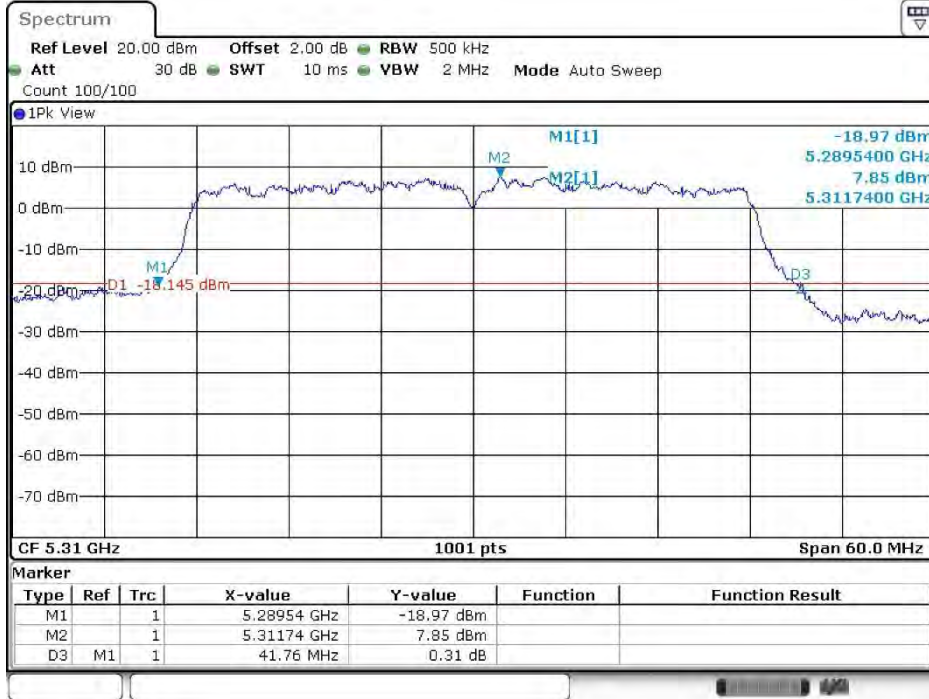


Date: 9.MAY.2021 21:34:57



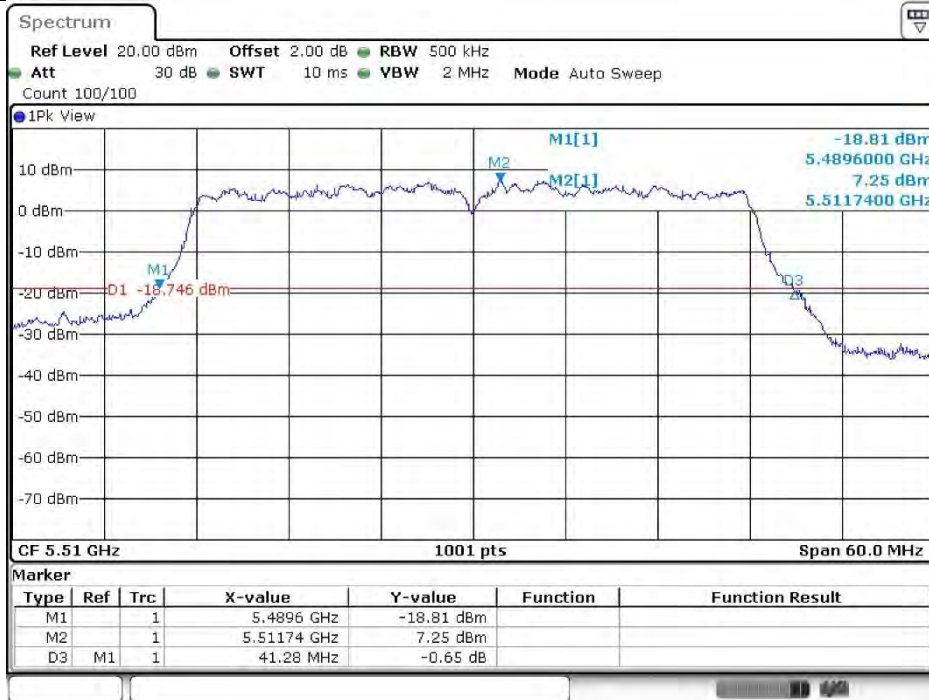
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### 11N40SISO Ant7 5310



Date: 9.MAY.2021 22:29:18

### 11N40SISO Ant4 5510

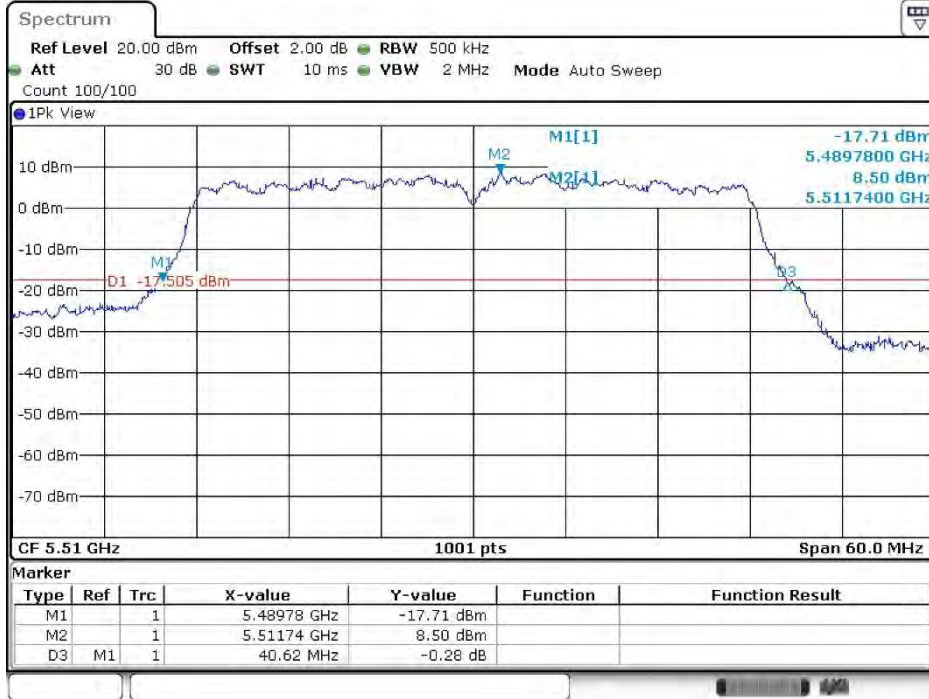


Date: 9.MAY.2021 21:36:03



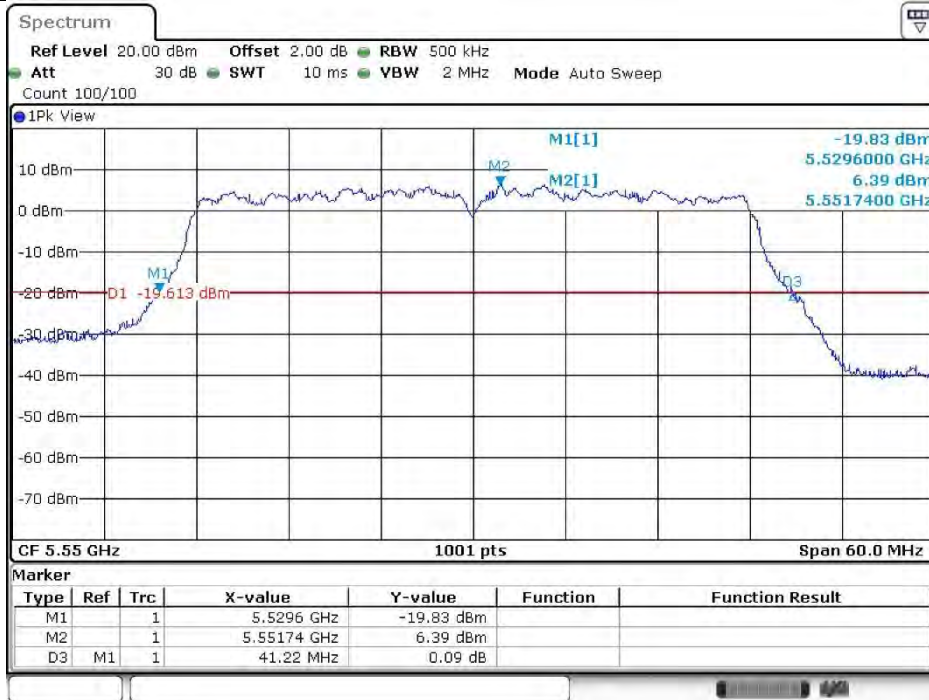
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### 11N40SISO\_Ant7\_5510



Date: 9.MAY.2021 22:33:51

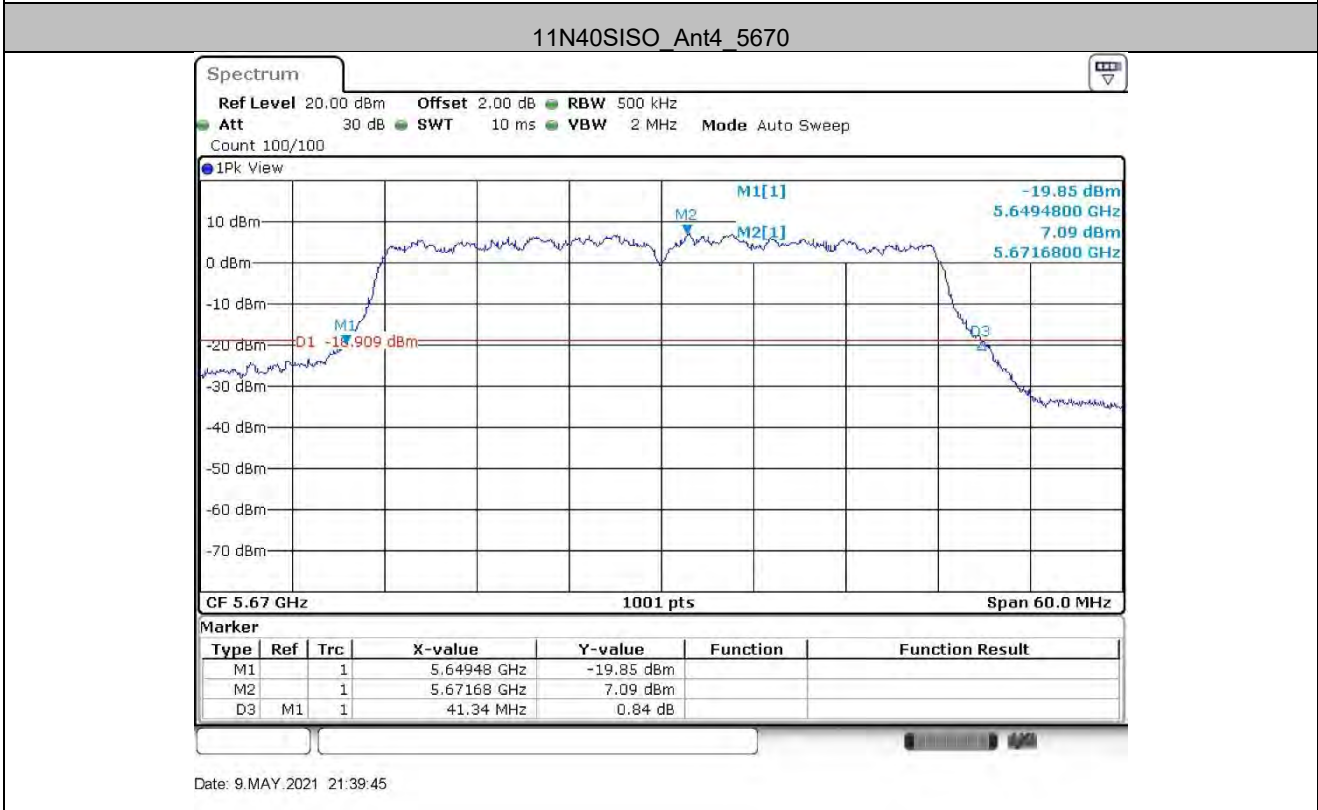
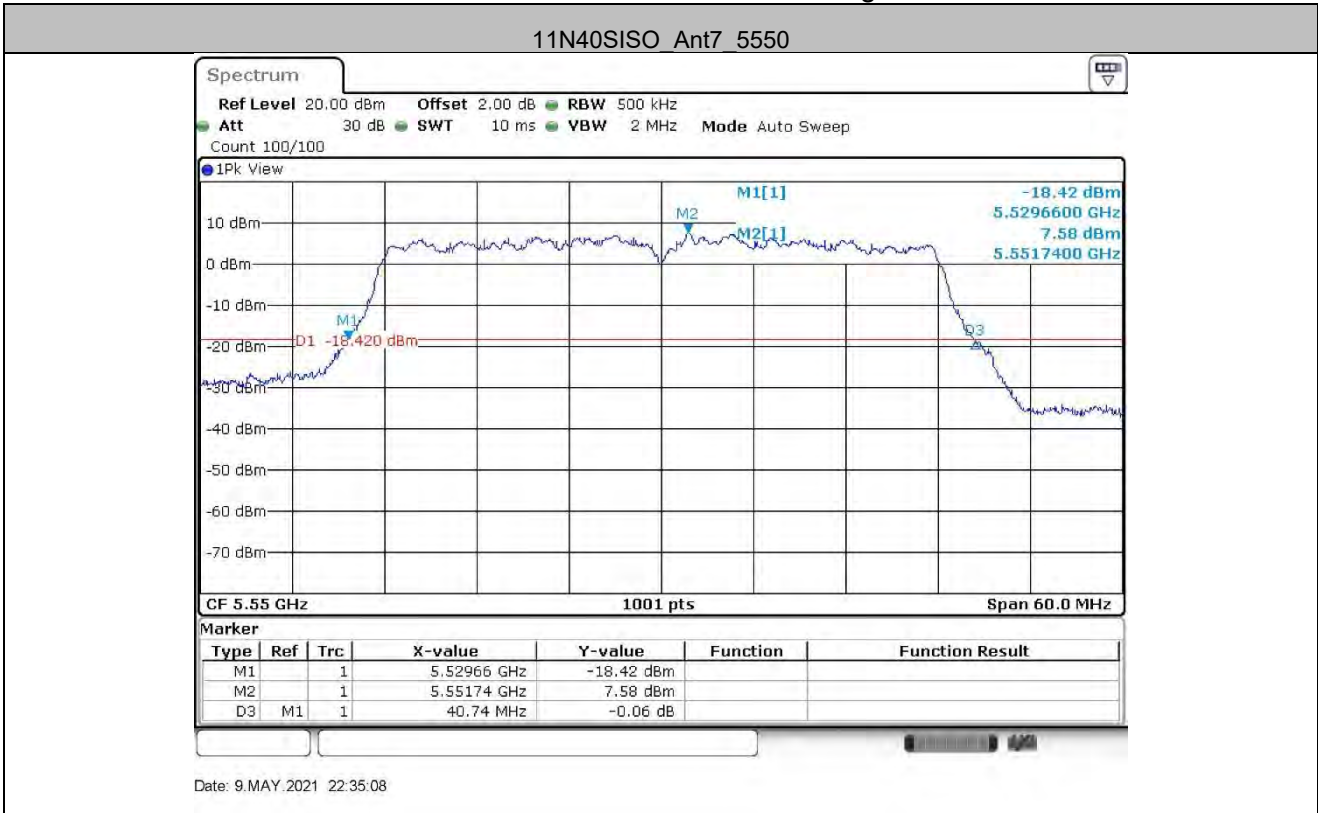
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Date: 9.MAY.2021 21:37:27

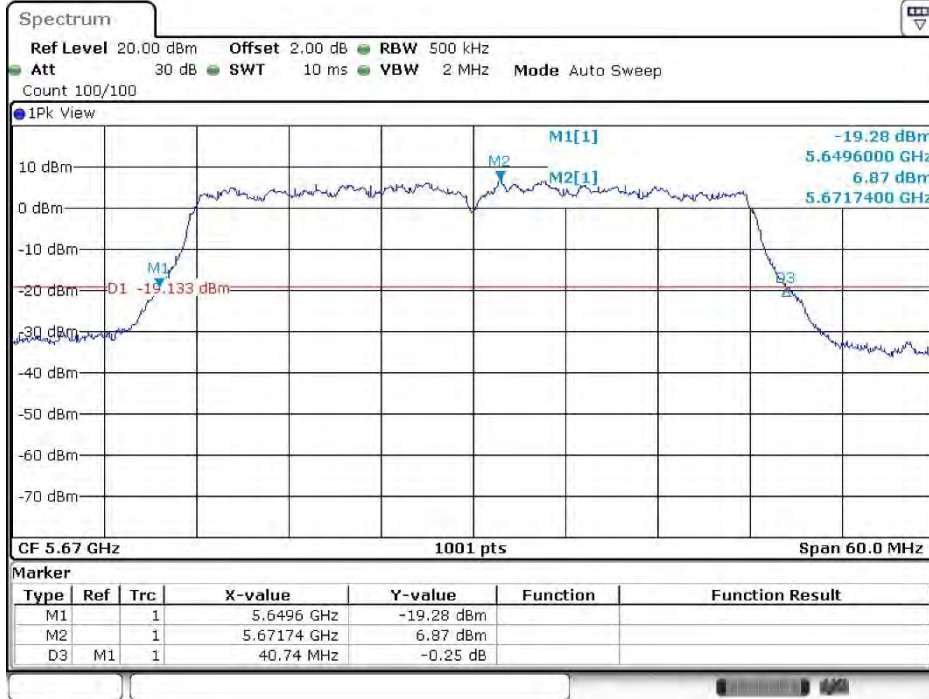


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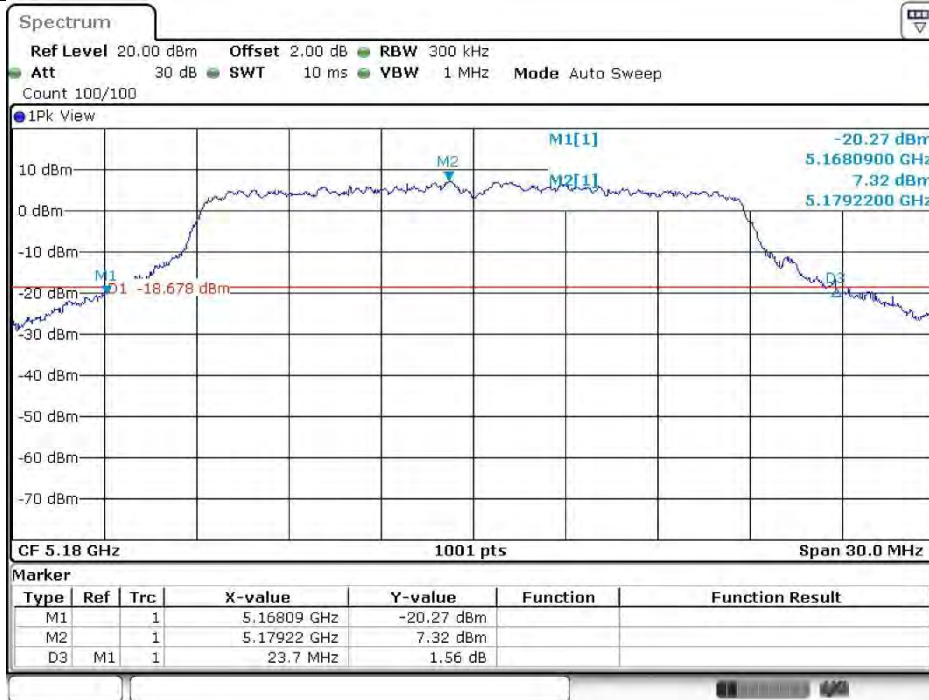
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### 11N40SISO Ant7 5670



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### 11AC20SISO Ant4 5180



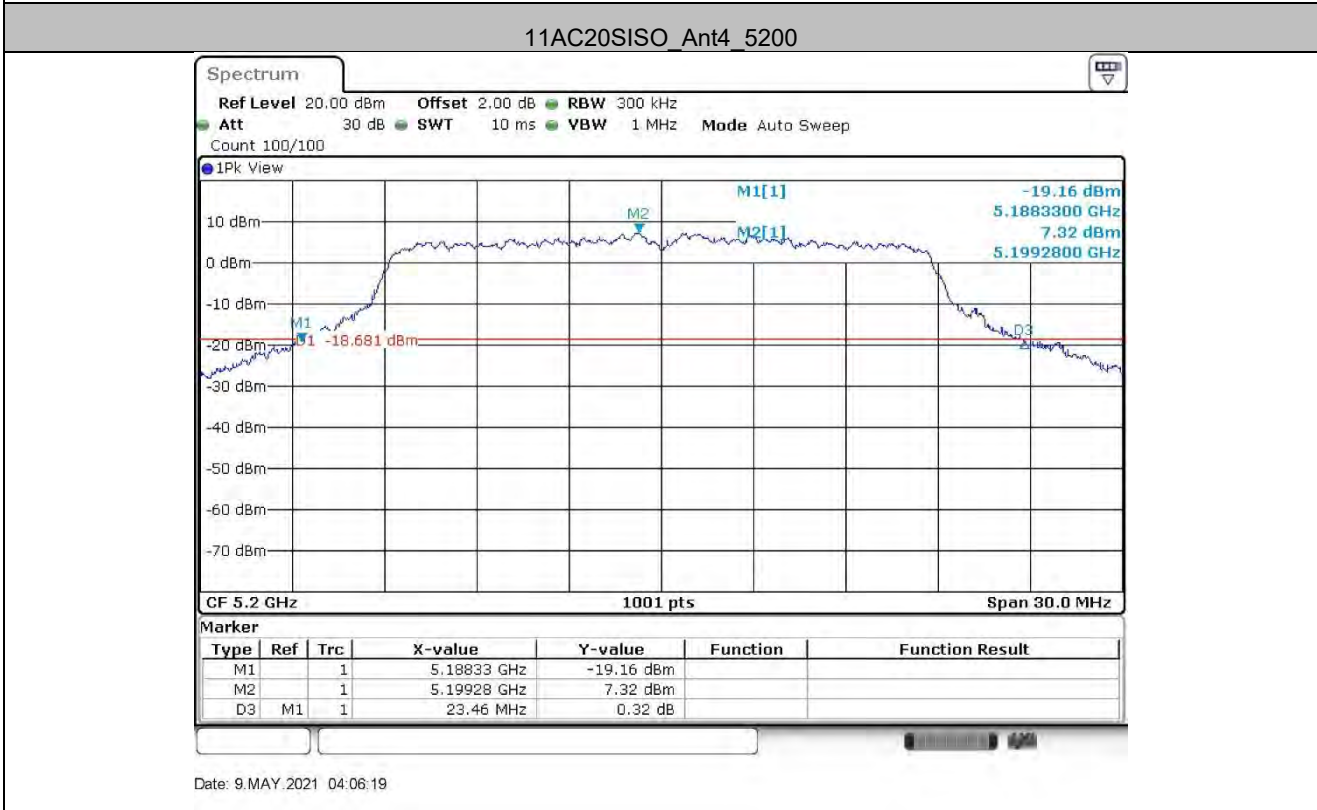
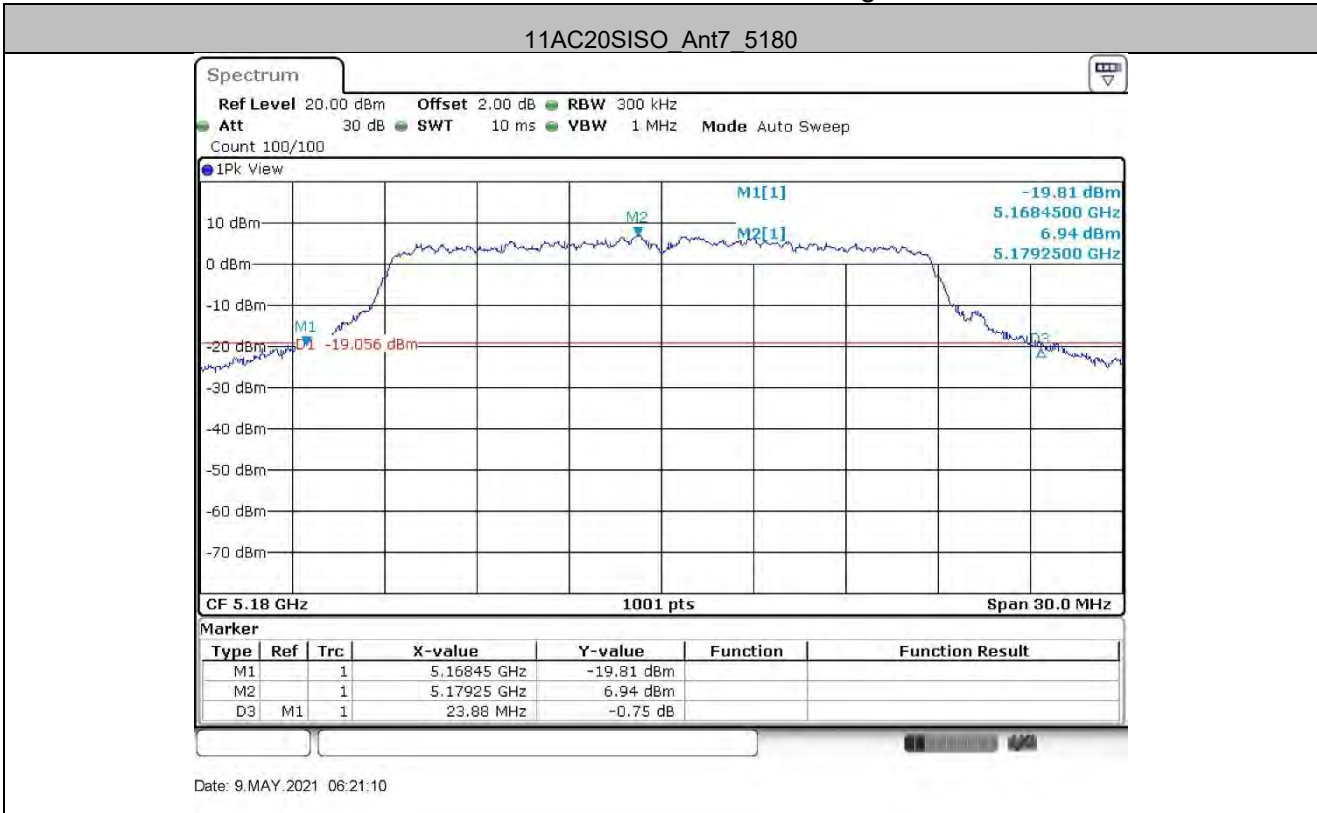
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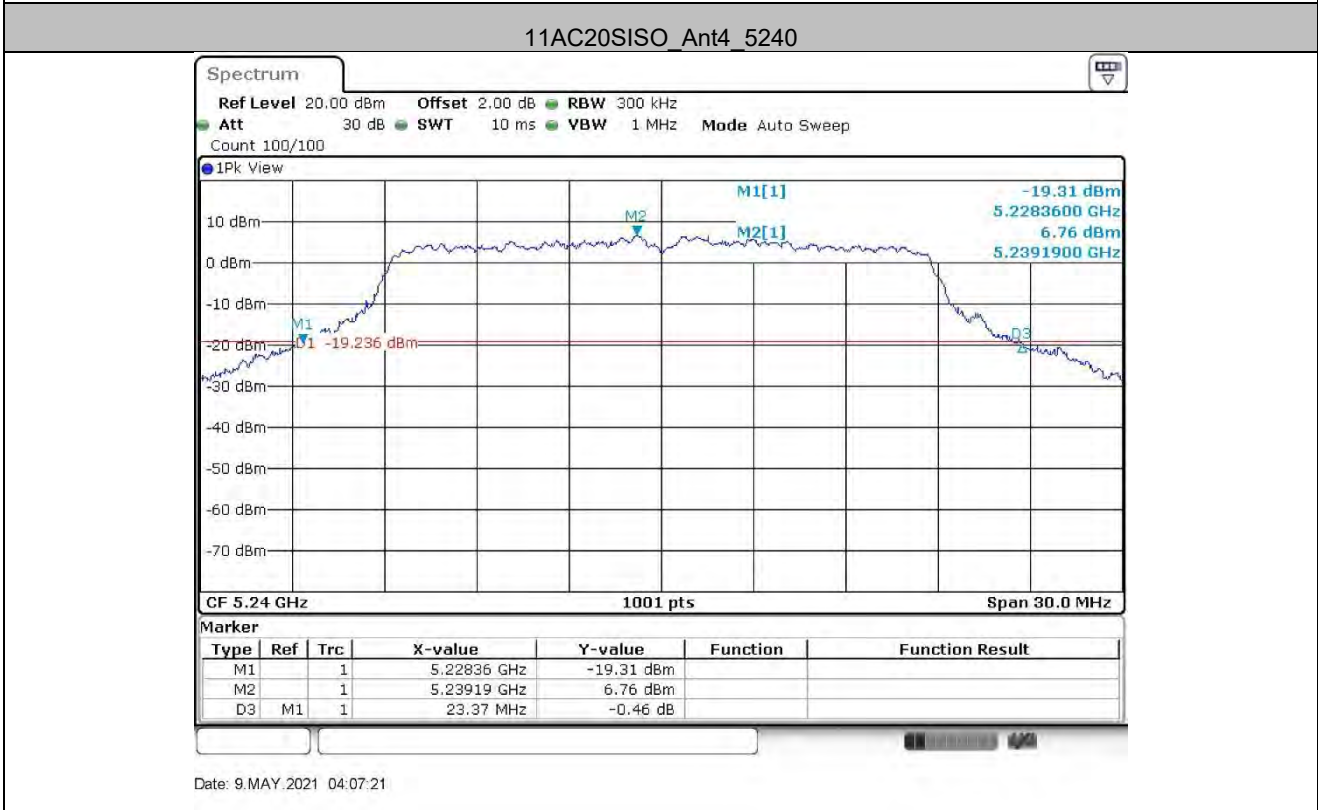
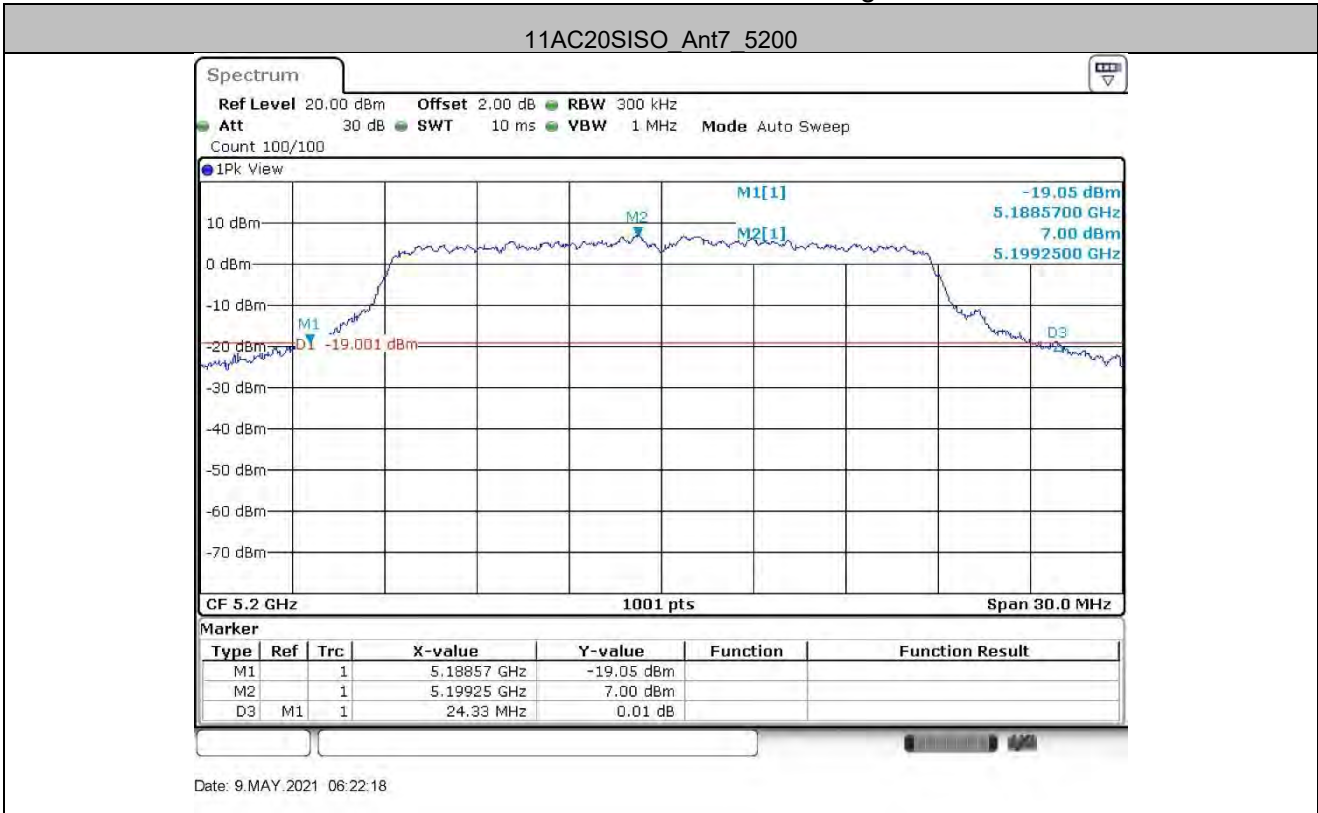
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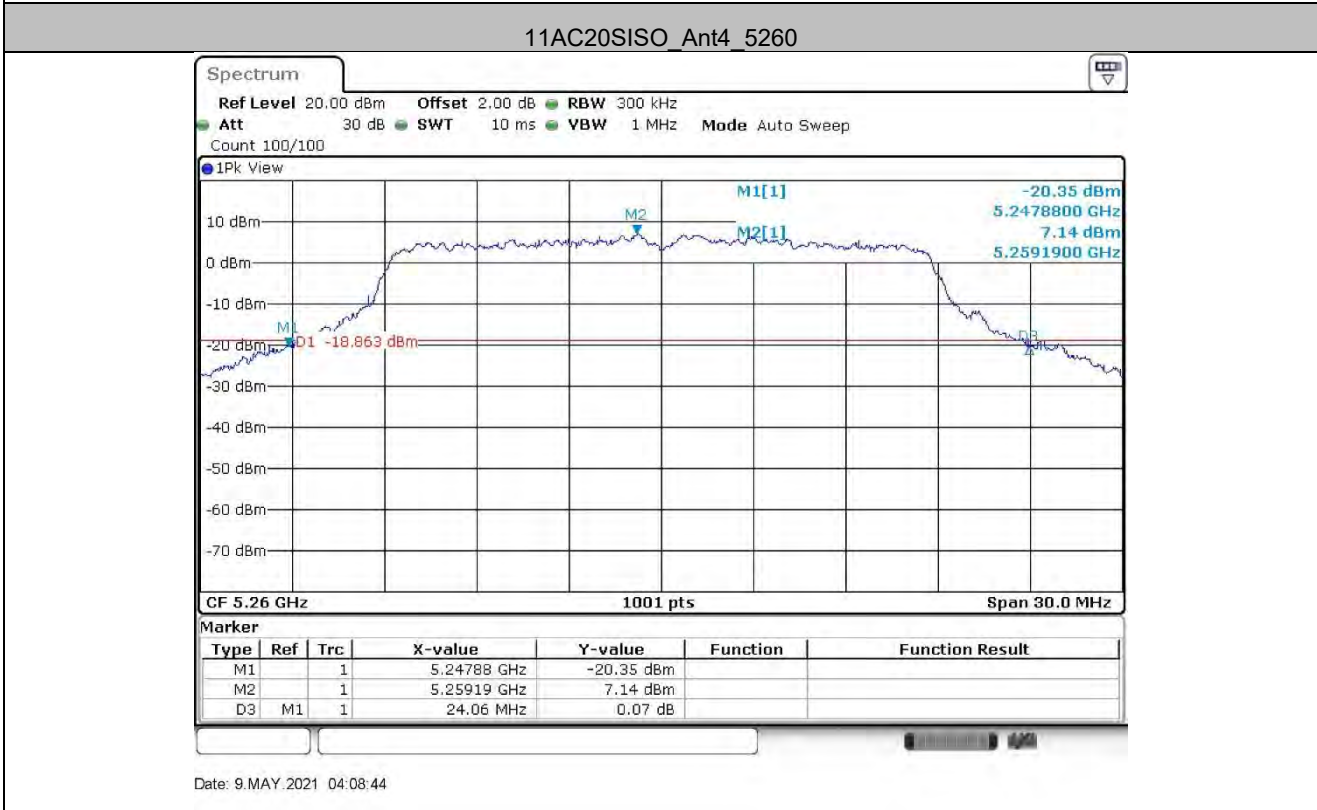
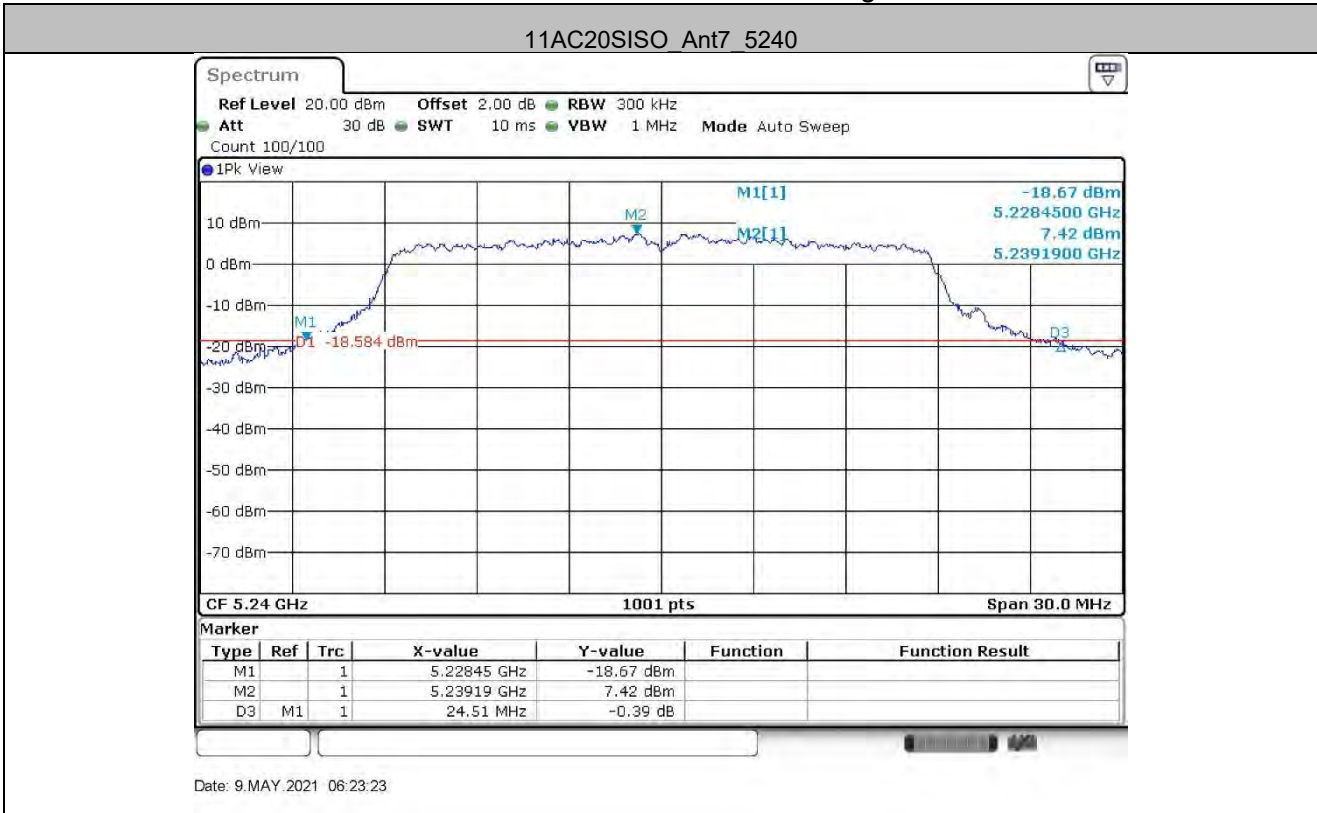


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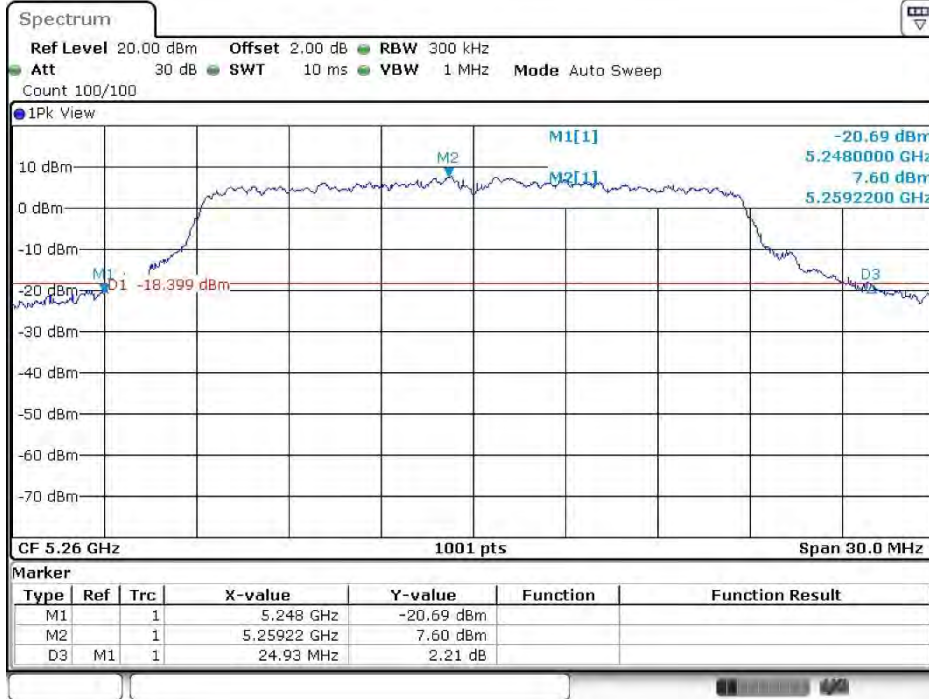


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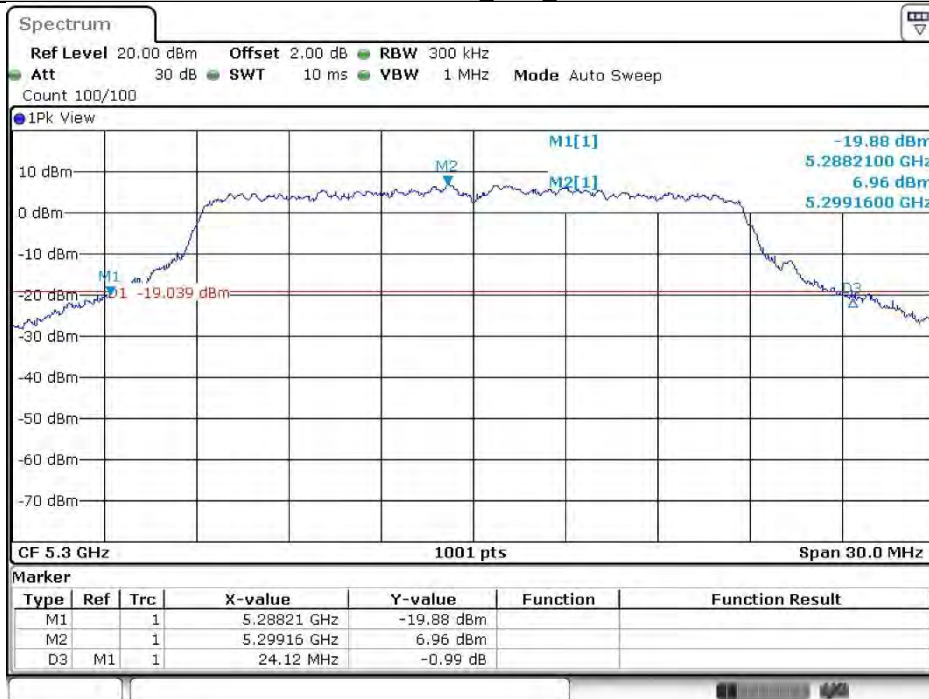
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### 11AC20SISO Ant7 5260



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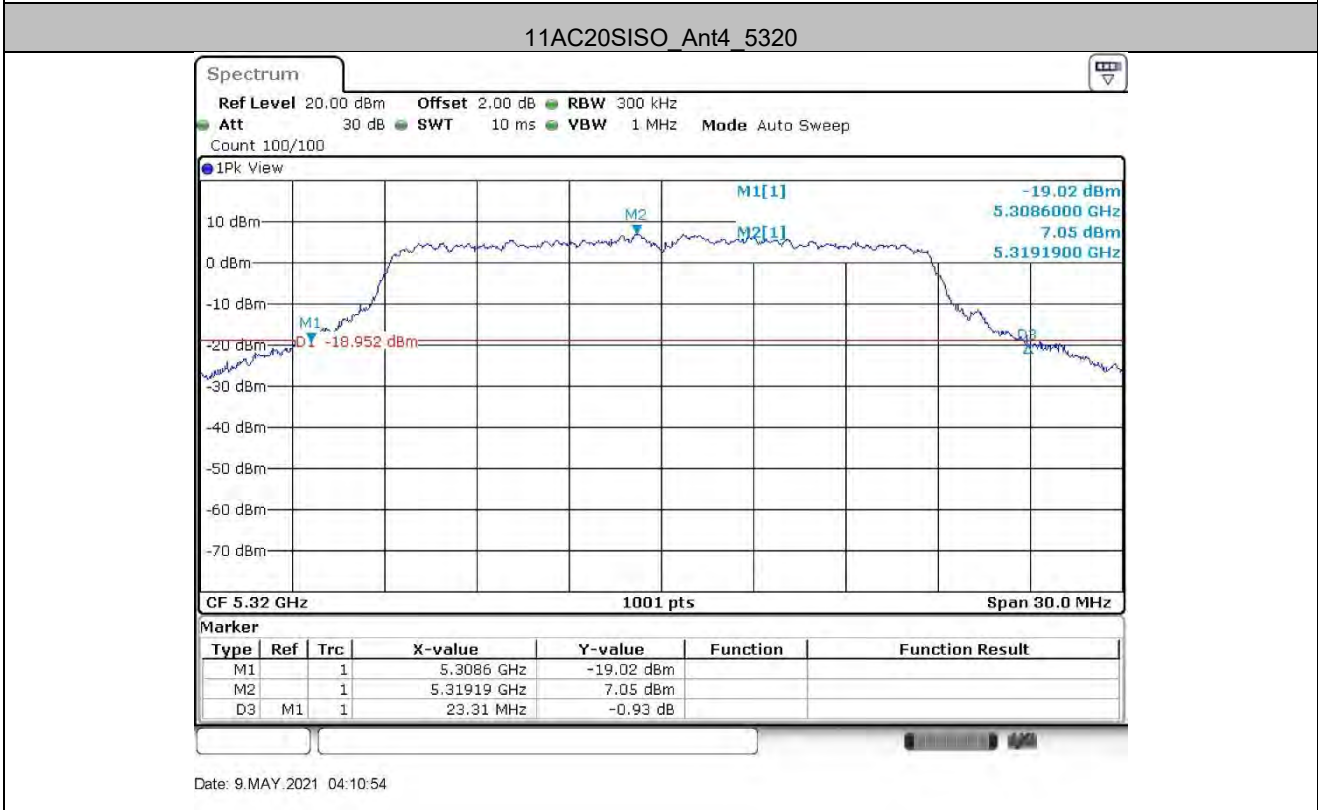
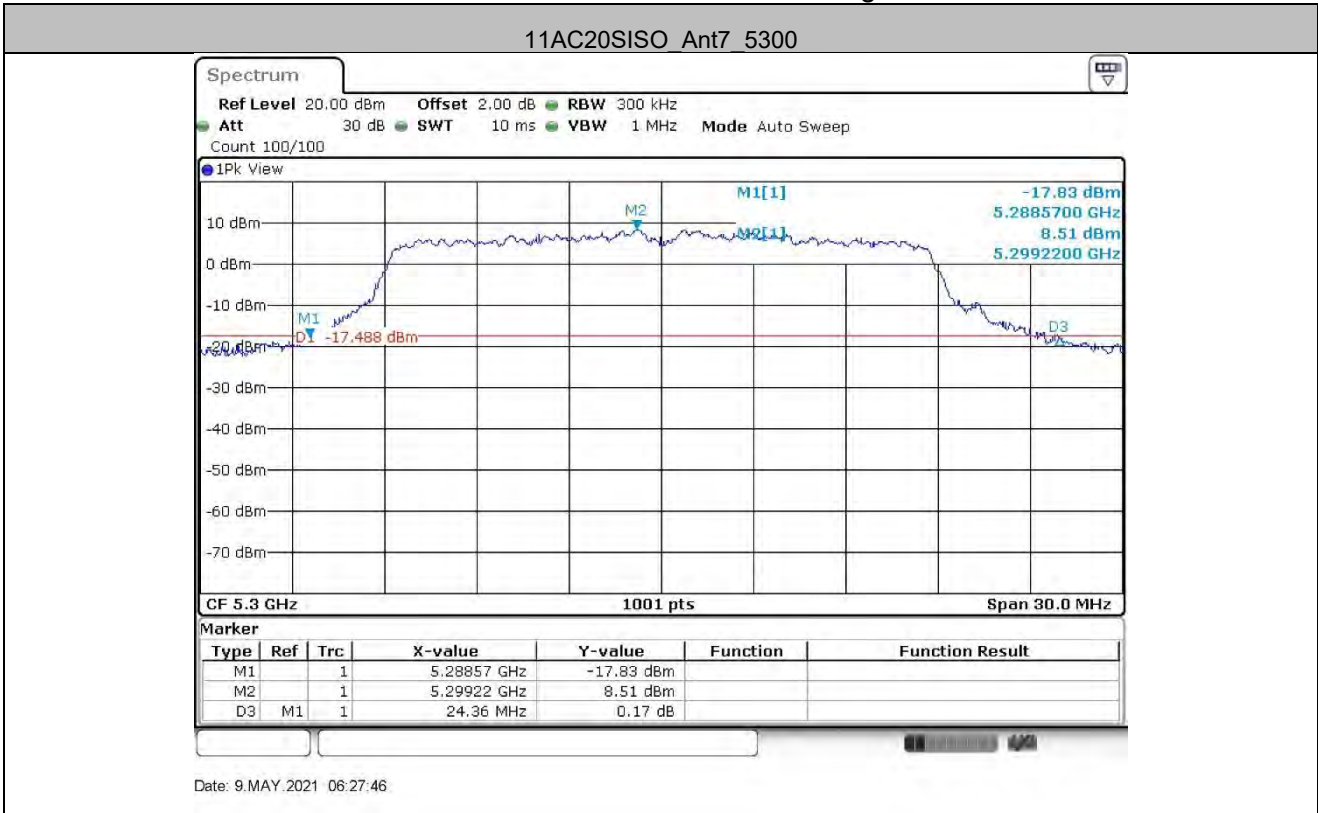
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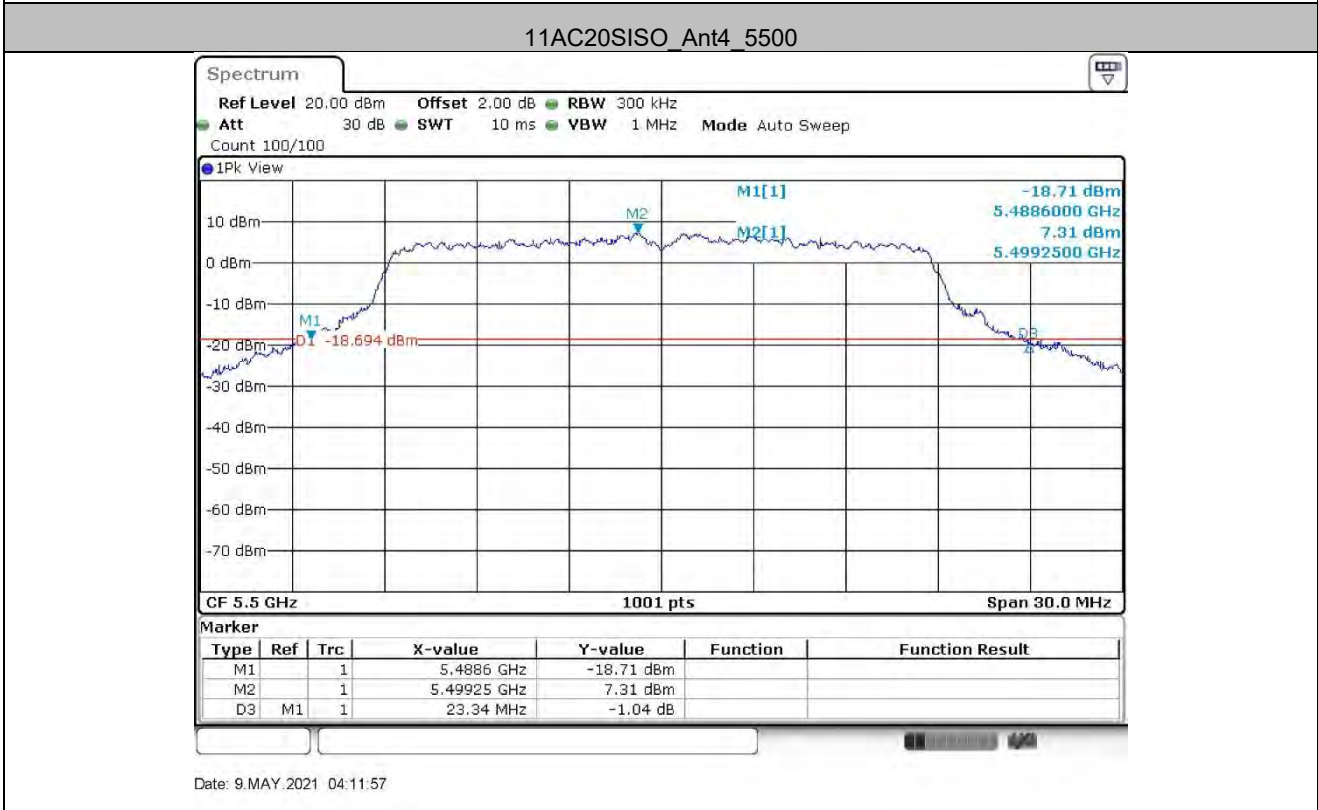
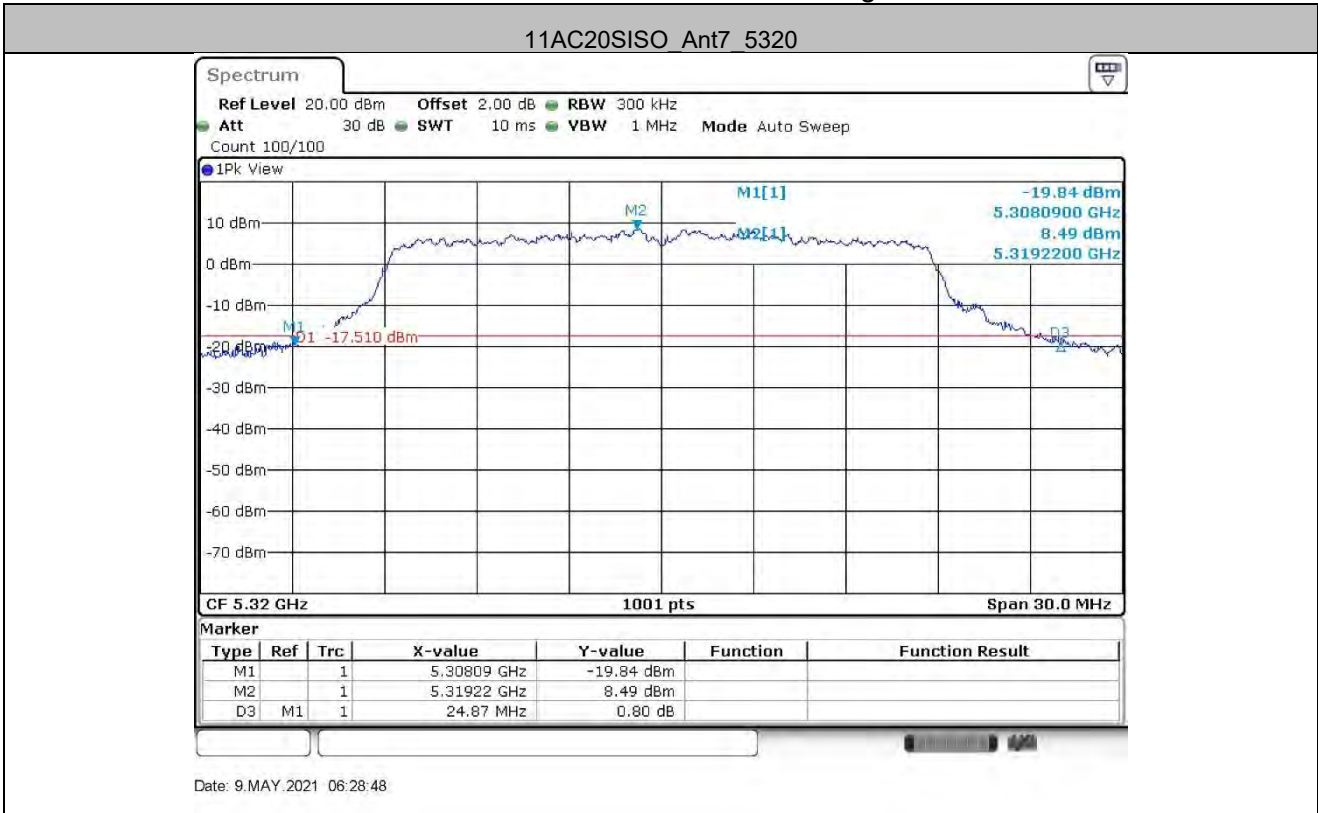
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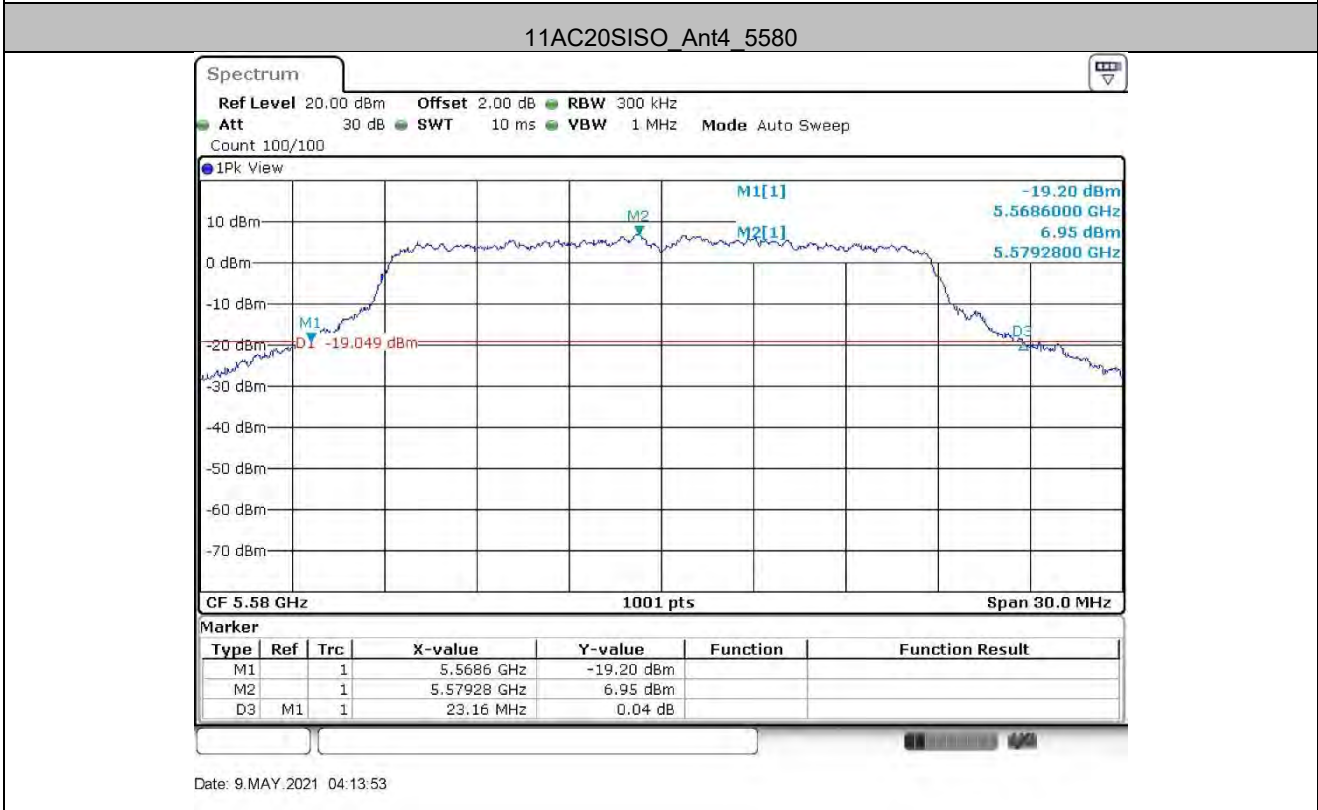
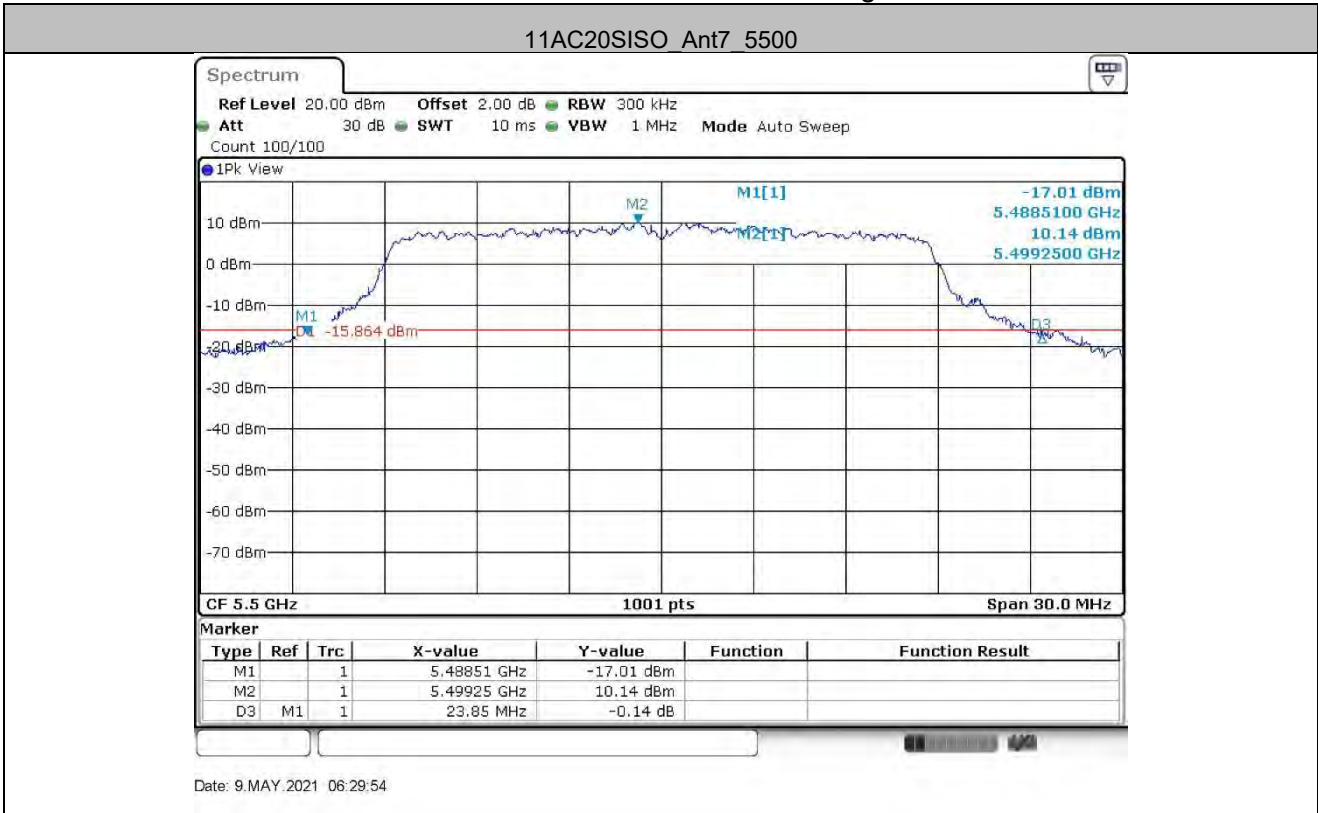


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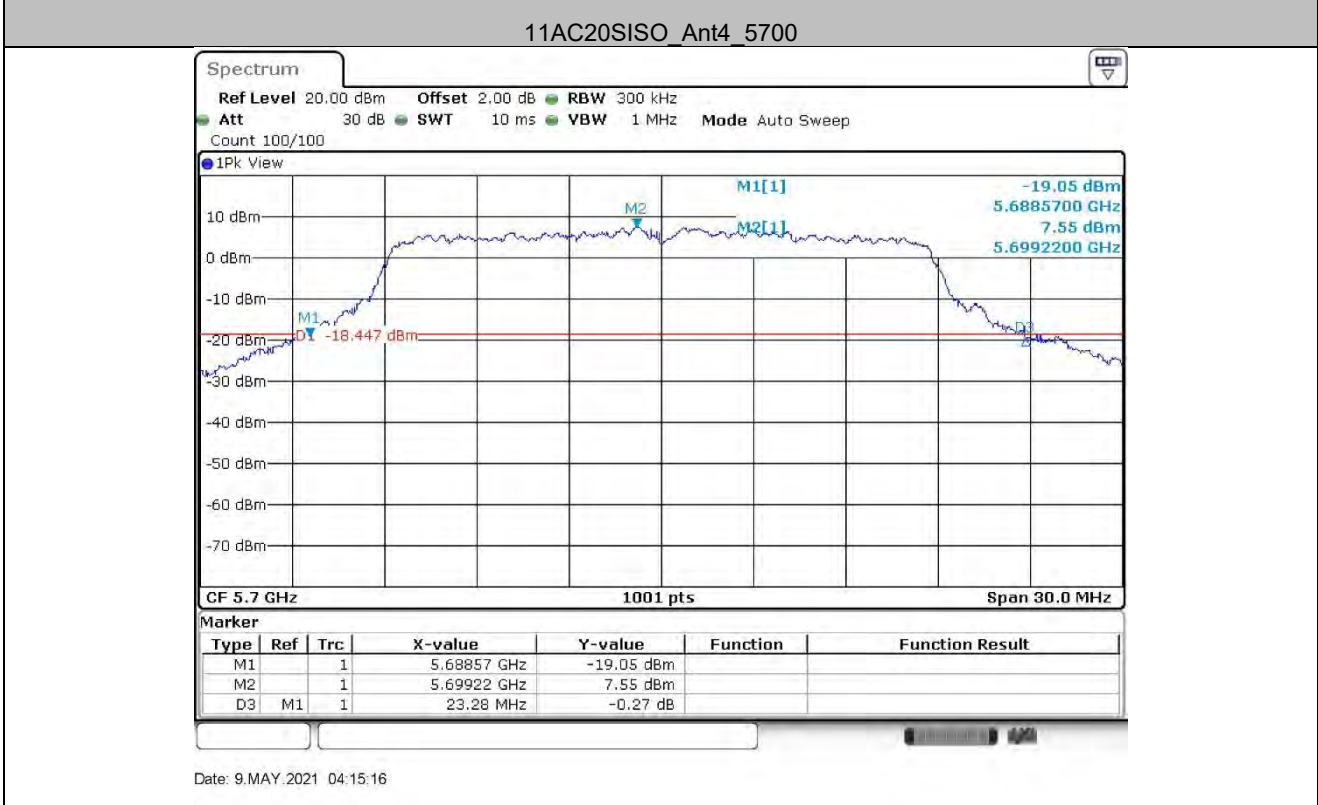
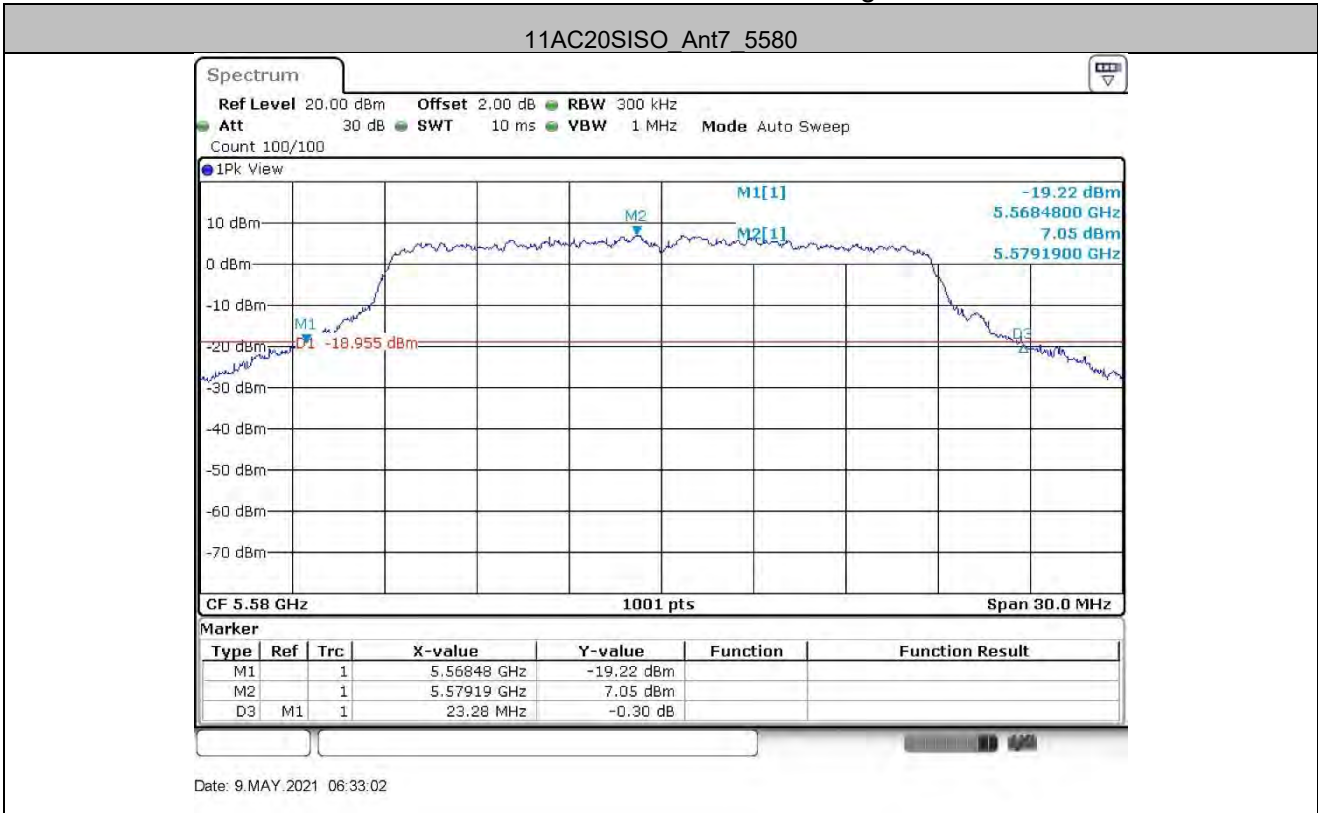
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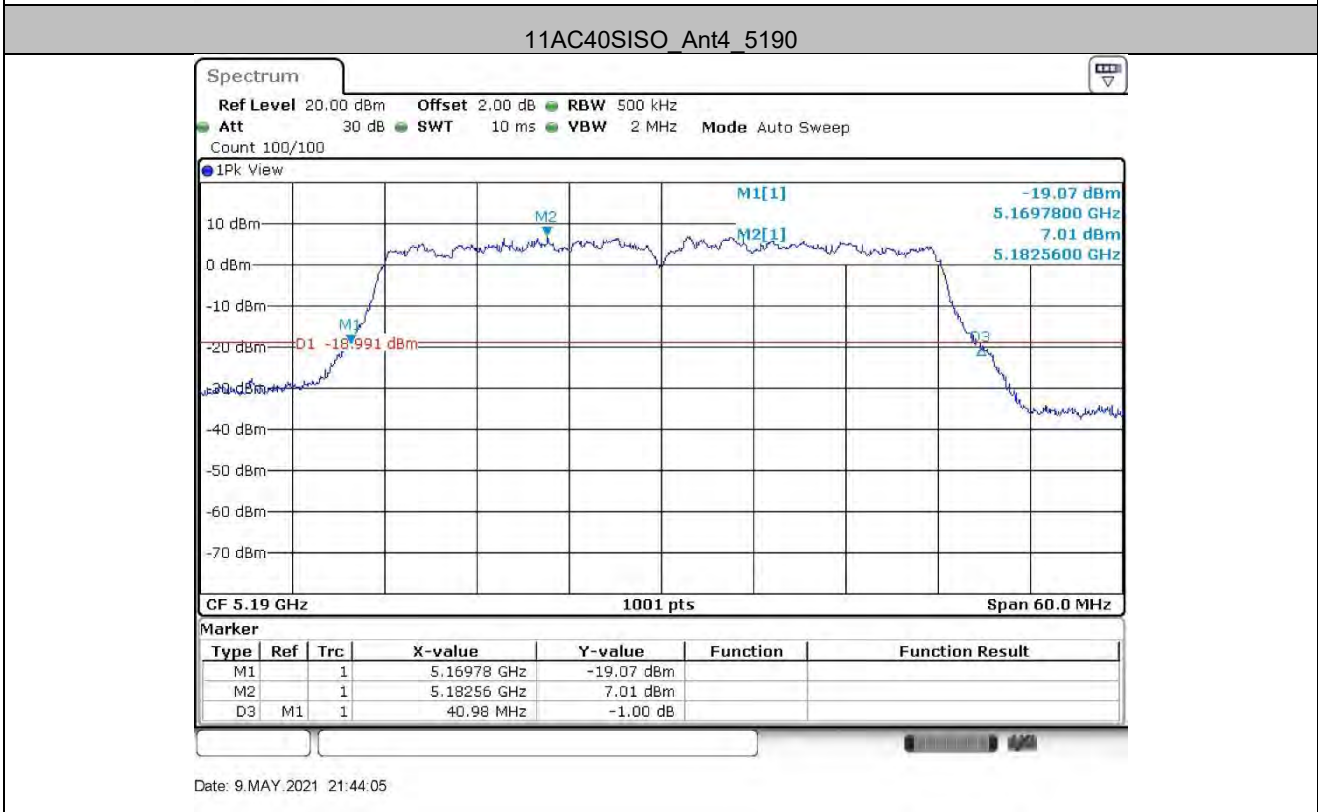
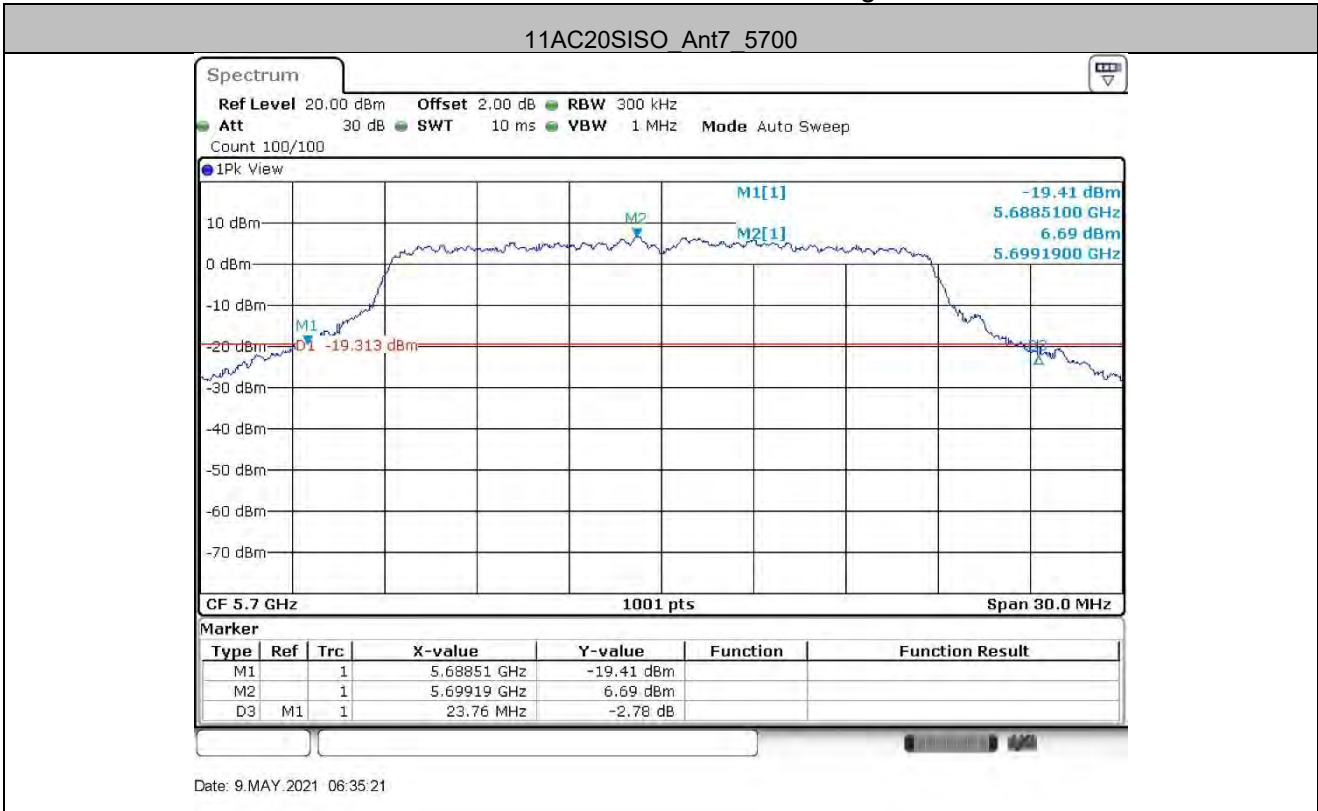
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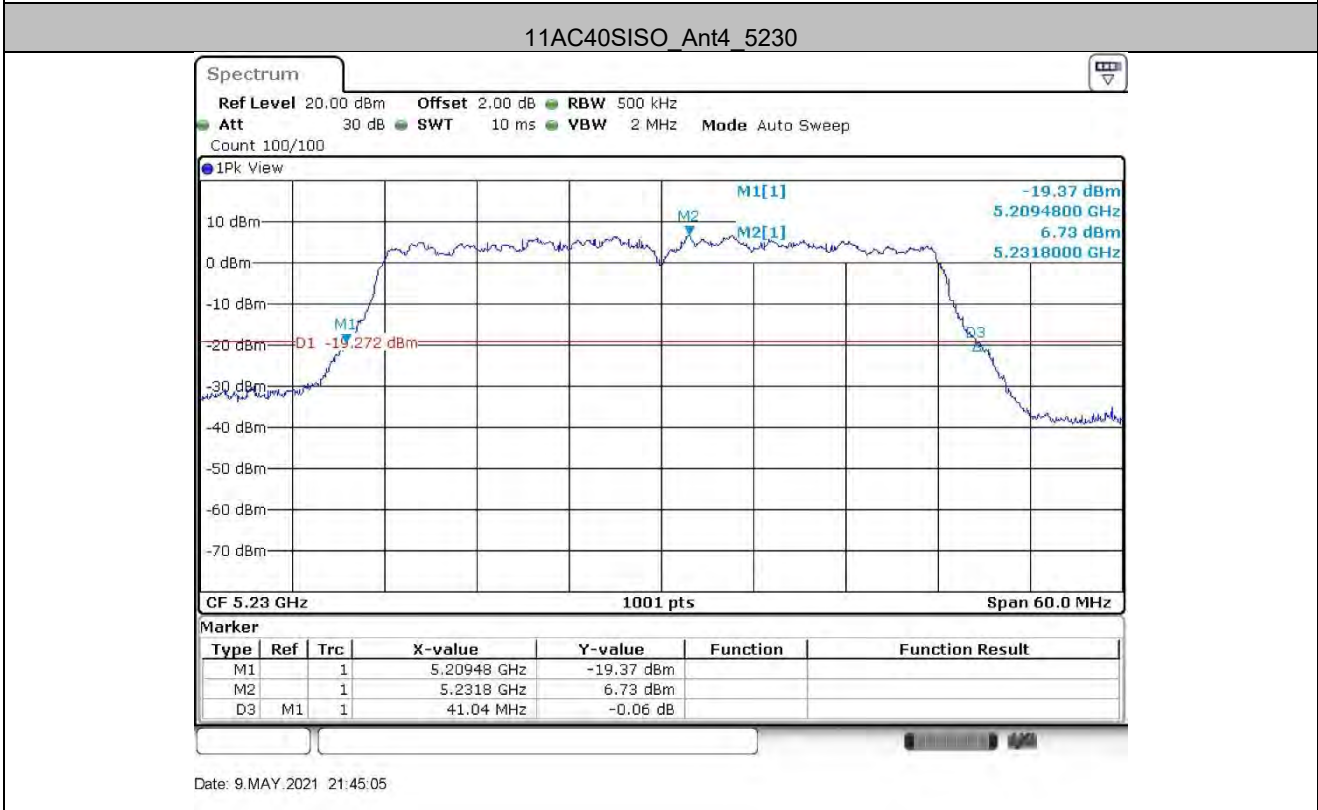
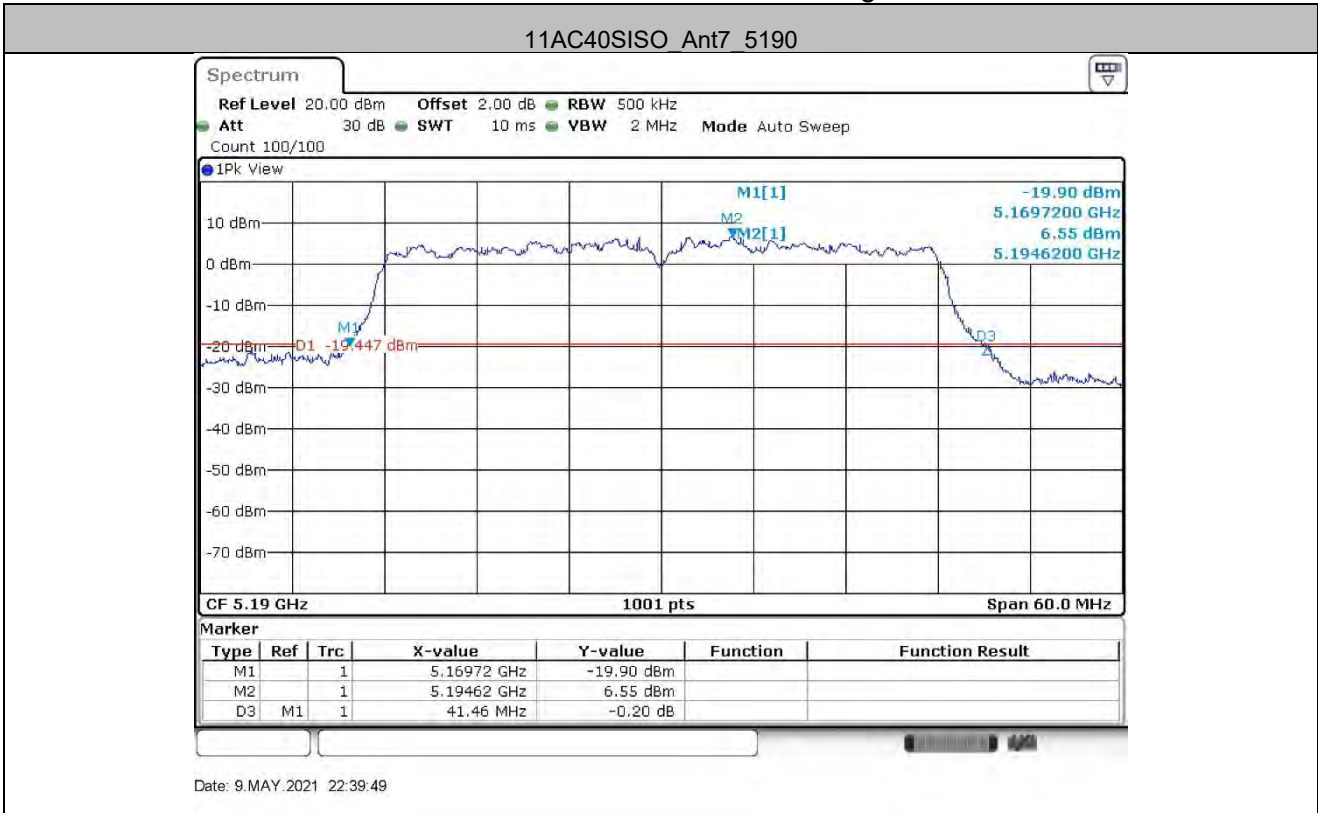
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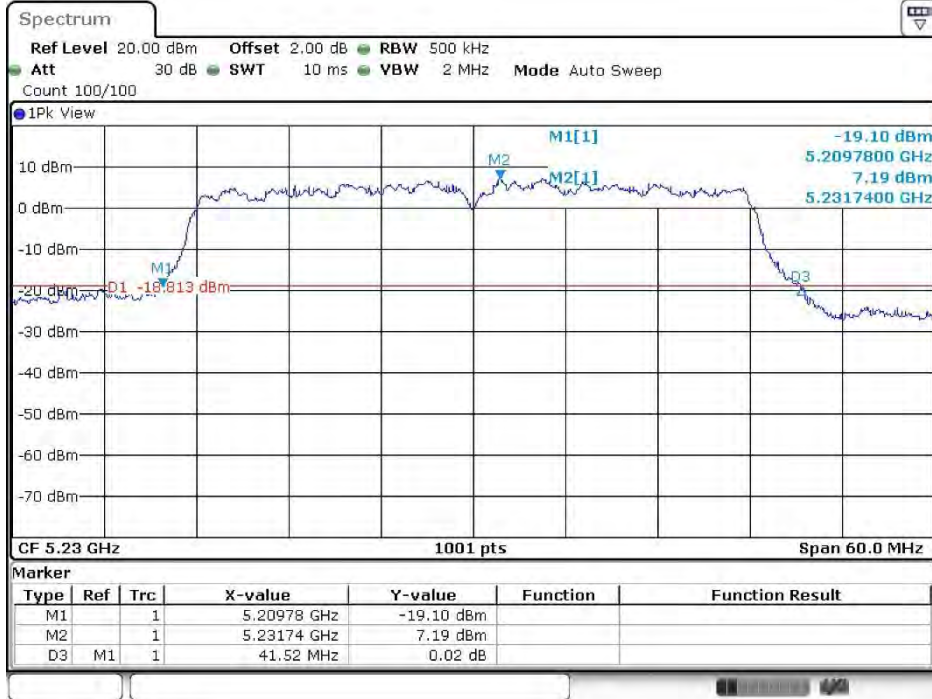


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### 11AC40SISO Ant7 5230



Date: 9.MAY.2021 22:42:05

### 11AC40SISO Ant4 5270



Date: 9.MAY.2021 21:46:14



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