

**FCC/IC - TEST REPORT**

Report Number : **68.950.19.0479.01** Date of Issue: May 17, 2019

Model : CTR

Product Type : Infotainment headunit

Applicant : Harman Automotive Electronic Systems(Suzhou) Co., Ltd

Address : No.125, Fangzhou Road, SIP, Suzhou, Jiangsu Province, China

Manufacturer : Harman Automotive Electronic Systems(Suzhou) Co., Ltd

Address : No.125, Fangzhou Road, SIP, Suzhou, Jiangsu Province, China

Test Result : ☒ **Positive** ☐ **Negative**

Total pages including  
Appendices : **108**

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## 2 Details about the Test Laboratory

### Details about the Test Laboratory

#### Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch  
Building 12&13, Zhiheng Wisdomland Business Park,  
Nantou Checkpoint Road 2, Nanshan District,  
Shenzhen City, 518052,  
P. R. China

FCC Registration Number: 514049

Telephone: 86 755 8828 6998  
Fax: 86 755 8828 5299

### 3 Description of the Equipment Under Test

Description of the Equipment Under Test	
Product:	Infotainment headunit
Model no.:	CTR
Rating:	DC 12V
RF transmission frequency:	5.180GHz~5.240GHz; 5.260GHz~5.320GHz; 5.500GHz~5.700GHz; 5.745GHz~5.825GHz
Modulation:	802.11a: BPSK, QPSK, 16QAM, 64QAM 802.11n20: BPSK, QPSK, 16QAM, 64QAM 802.11n40: BPSK, QPSK, 16QAM, 64QAM
Antenna Type:	Internal Antenna
Antenna Gain:	3.7dBi max for 5GHz
Description of the EUT	CTR is Infotainment headunit with AM, FM, DAB, Bluetooth, Wi-Fi function.

#### 4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart E, 10-1-2018 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart E - Unlicensed National Information Infrastructure Devices

Test Method:

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02

ANSI C63.10-2013, American National Standard for Testing Unlicensed Wireless Devices

## 5 Summary of Test Results

Test Condition	Test Result		
	Pass	Fail	N/A
15.207 Conducted Emission AC Power Port	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
15.407(e) Emission bandwidth	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.407(a)(i) Maximum Conducted Output Power	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.407(a)(i) Maximum Power Spectral Density	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.407(b)(1), 15.407(b)(2), 15.407(b)(3), 15.407(b)(4), 15.407(b)(6) 15.407(b)(7) 15.209 Unwanted Emissions	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.407(b)(i), 15.407(b)(5), 15.407(b)(7), 15.209 Band edge compliance	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.407(g) Frequencies Stability	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.407(h) Dynamic Frequency Selection (DFS). a	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.203 Antenna Requirement	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Remark: <sup>a</sup> The EUT is Clients Device without Radar Detection.

## 6 General Remarks

### Remarks

This submittal(s) (test report) is intended for FCC ID: 2ACRLCTR, complies with Section 15.207, 15.209, 15.205 of the FCC Part 15, Subpart C, Subpart E rules.

This report is for the 5GHz WIFI band 1/2/3/4.

### SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

□ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements.

□ - **Does not** fulfill the general approval requirements.

Sample Received Date: April 20, 2019

Testing Start Date: April 25, 2019

Testing End Date: May 16, 2019

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch –

Reviewed by:

Prepared by:

Tested by:



John Zhi  
Section Manager



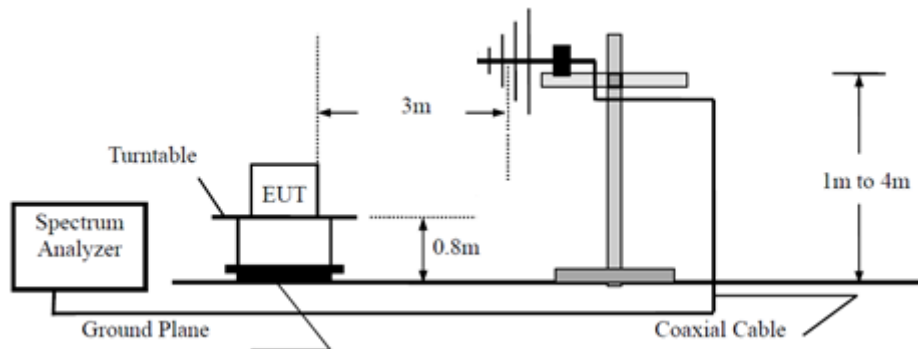
Moon Xiong  
Project Engineer



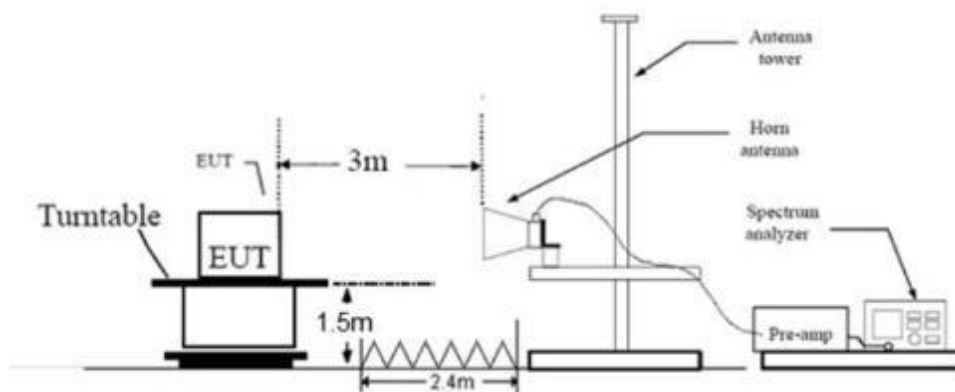
Louise Liu  
Test Engineer

## 7 Test setups

### 7.1 Below 1GHz



### Above 1GHz



### 7.2 Conducted RF test setups





## 8. Systems test configuration

Test software information:

Modulation	Setting TX Power	Data Rate
802.11a	13	11g 6 Mbps
802.11n HT20	13	MCS0 6.5 Mbps
802.11n HT40 Band1/2/3	13	MCS0 13.5 Mbps (40MHz)
802.11n HT40 Band4	13	MCS0 13.5 Mbps (40MHz)

The system was configured to channel:

Test Mode	Channel (MHz)		
802.11a, 802.11n HT20	5G WIFI-Band 1		
	CH36 (5180MHz)	CH40 (5200MHz)	CH46 (5240MHz)
	5G WIFI-Band 2		
	CH52 (5260MHz)	CH56 (5280MHz)	CH64 (5320MHz)
	5G WIFI-Band 3		
	CH100 (5500MHz)	CH116 (5580MHz)	CH140 (5700MHz)
	CH 142 (5710MHz)		
	5G WIFI-Band 4		
CH149 (5745MHz),	CH157(5785MHz)	CH165 (5825MHz)	

Test Mode	Channel (MHz)		
802.11n HT40	5G WIFI-Band 1		
	CH38(5190MHz)	CH46 (5230MHz)	
	5G WIFI-Band 2		
	CH54(5270MHz)	CH62(5310MHz)	
	5G WIFI-Band 3		
	CH102(5510MHz)	CH110(5550MHz)	CH134(5670MHz)
	CH 144 (5720MHz)		
	5G WIFI-Band 4		
	CH151(5755MHz)	CH159(5795MHz)	

Note: According to FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01, Channels: CH 142 (5710MHz) and CH 144 (5720MHz) were chose to perform Conducted output power and emission bandwidth testing.

## 9 Technical Requirement

### 9.1 Emission bandwidth

The EUT was placed on 0.8m height table, the RF output of EUT was connected to the test receiver by RF cable. The path loss was compensated to the results for each measurement.

#### 1、 Test Method of 26dB Bandwidth

According to KDB789033 D02

- a) Set RBW = approximately 1% of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the maximum 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%.

**Limit:** No limit

#### 2、 Test Method of 6dB Bandwidth

According to KDB789033 D02

- a) Set RBW = 100KHz
- b) Set the video bandwidth (VBW)  $\geq 3 \times$  RBW
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

**Limit:**  $\geq 500\text{KHz}$

#### 3、 Test Method of 99% Bandwidth

According to KDB789033 D02

- a) Set center frequency to the nominal EUT channel center frequency
- b) Set span = 1.5 times to 5.0 times the OBW.
- c) Set RBW = 1 % to 5 % of the OBW
- d) Set VBW  $\geq 3 \cdot$  RBW
- e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- f) Use the 99 % power bandwidth function of the instrument (if available).
- g) If the instrument does not have a 99 % power bandwidth function, the trace data points are

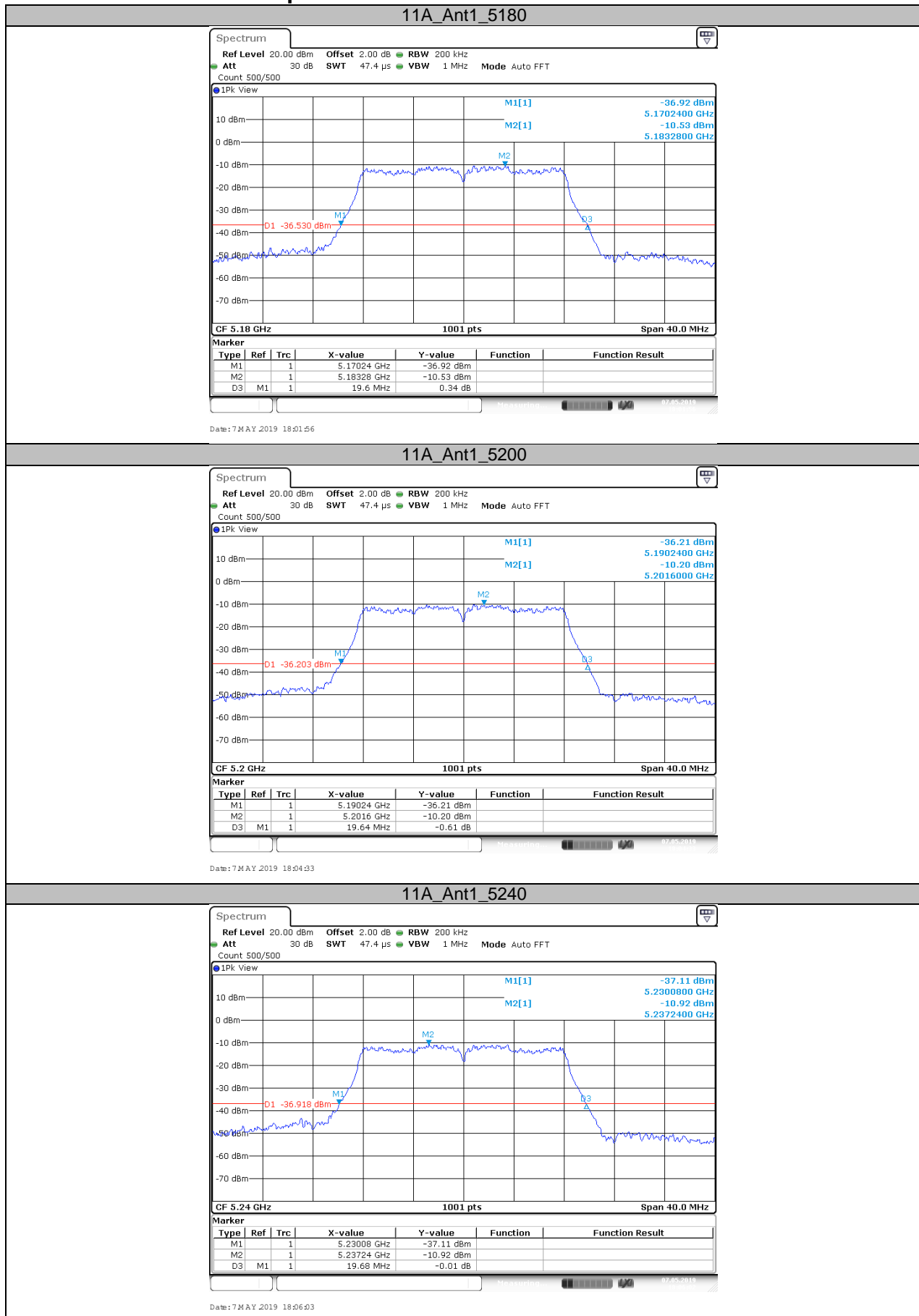
recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

**Limit:** No limit

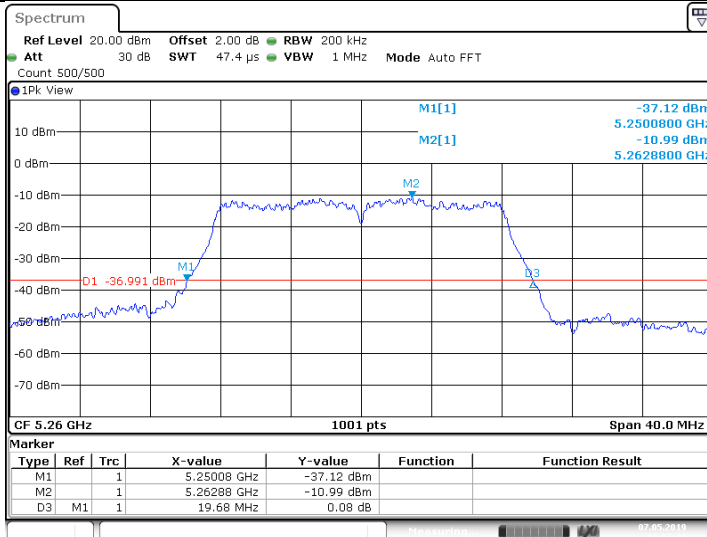
**26dB Bandwidth Test result:**

Test Mode	Antenna	Channel	26dB EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	19.600	5170.240	5189.840	---	PASS
		5200	19.640	5190.240	5209.880	---	PASS
		5240	19.680	5230.080	5249.760	---	PASS
		5260	19.680	5250.080	5269.760	---	PASS
		5280	19.720	5269.960	5289.680	---	PASS
		5320	19.560	5310.160	5329.720	---	PASS
		5500	19.640	5490.120	5509.760	---	PASS
		5580	19.800	5570.080	5589.880	---	PASS
		5700	19.680	5690.120	5709.800	---	PASS
		5720	19.720	5710.160	5729.880	---	PASS
		5720_UNII-2C	14.84	5710.160	5725	---	PASS
		5720_UNII-3	4.88	5725	5729.880	---	PASS
		5745	19.600	5735.160	5754.760	---	PASS
		5785	19.520	5775.120	5794.640	---	PASS
		5825	19.840	5815.000	5834.840	---	PASS
11N20	Ant1	5180	20.120	5169.880	5190.000	---	PASS
		5200	19.920	5190.080	5210.000	---	PASS
		5240	20.040	5229.920	5249.960	---	PASS
		5260	20.040	5249.960	5270.000	---	PASS
		5280	19.920	5270.000	5289.920	---	PASS
		5320	20.480	5309.560	5330.040	---	PASS
		5500	20.240	5489.880	5510.120	---	PASS
		5580	20.160	5569.840	5590.000	---	PASS
		5700	20.400	5689.760	5710.160	---	PASS
		5720	20.120	5709.880	5730.000	---	PASS
		5720_UNII-2C	15.12	5709.880	5725	---	PASS
		5720_UNII-3	5	5725	5730.000	---	PASS
		5745	20.080	5734.920	5755.000	---	PASS
		5785	19.960	5775.000	5794.960	---	PASS
		5825	20.000	5814.920	5834.920	---	PASS
11N40	Ant1	5190	40.800	5169.600	5210.400	---	PASS
		5230	41.120	5209.360	5250.480	---	PASS
		5270	40.960	5249.520	5290.480	---	PASS
		5310	41.120	5289.120	5330.240	---	PASS
		5510	40.720	5489.680	5530.400	---	PASS
		5550	40.720	5529.760	5570.480	---	PASS
		5670	41.120	5649.360	5690.480	---	PASS
		5710	40.960	5689.360	5730.320	---	PASS
		5710_UNII-2C	35.64	5689.360	5725	---	PASS
		5710_UNII-3	5.32	5725	5730.320	---	PASS
		5755	40.960	5734.440	5775.400	---	PASS
		5795	41.120	5774.280	5815.400	---	PASS

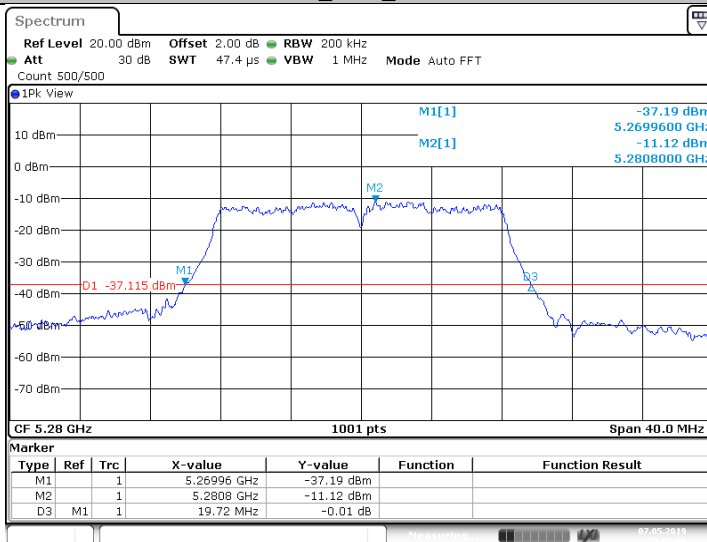
## 26dB Bandwidth Test Graphs



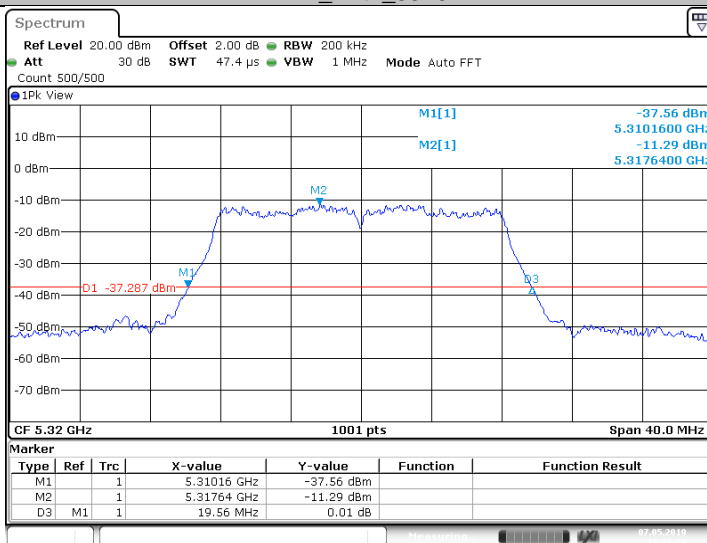
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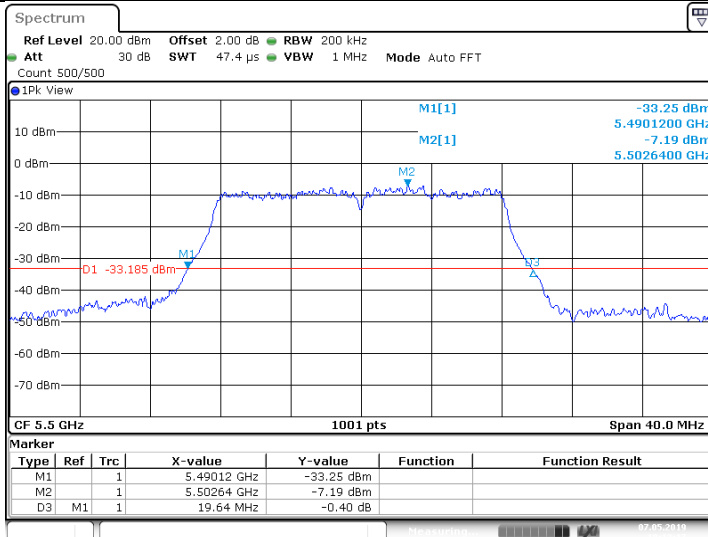
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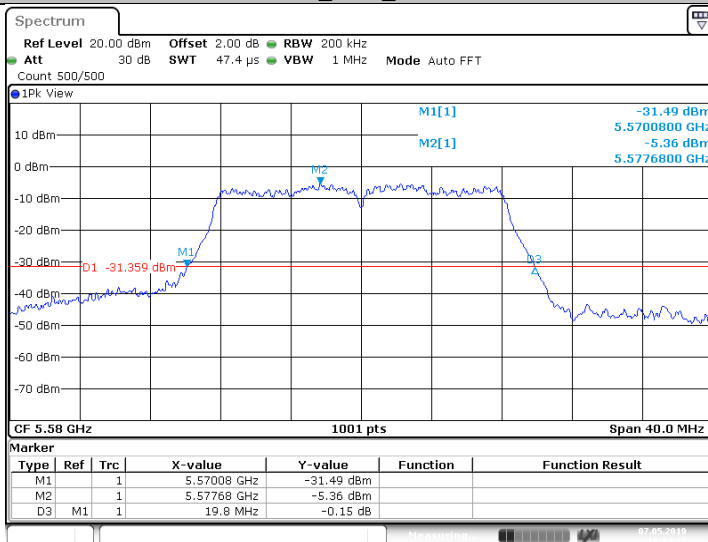
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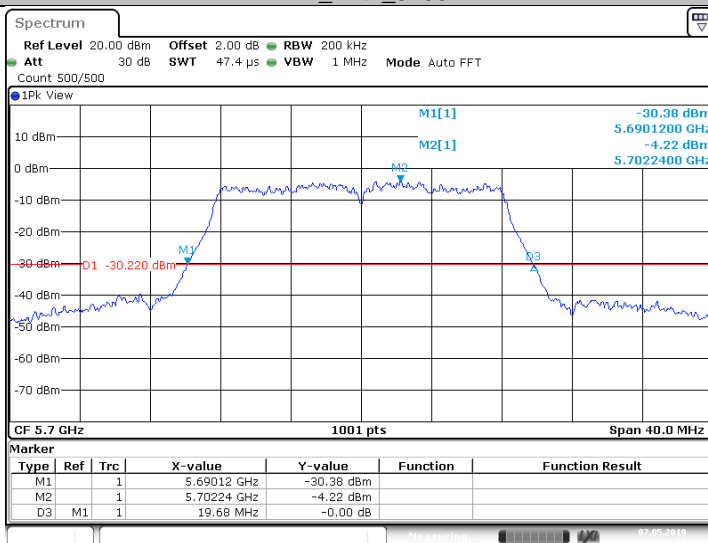
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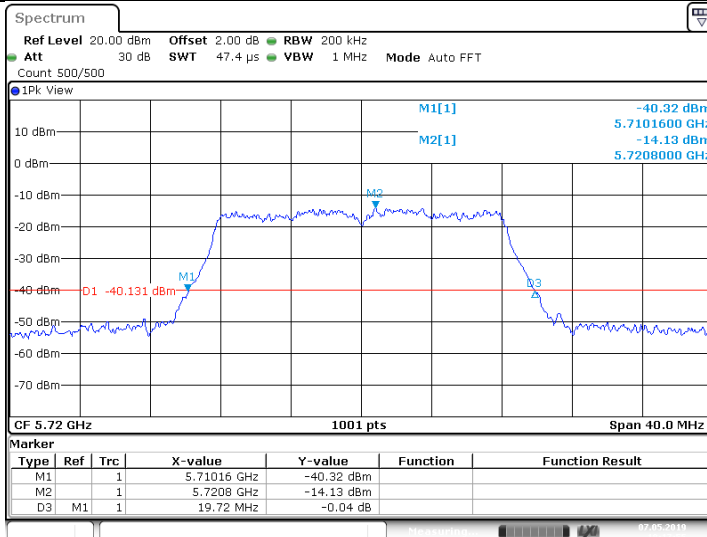
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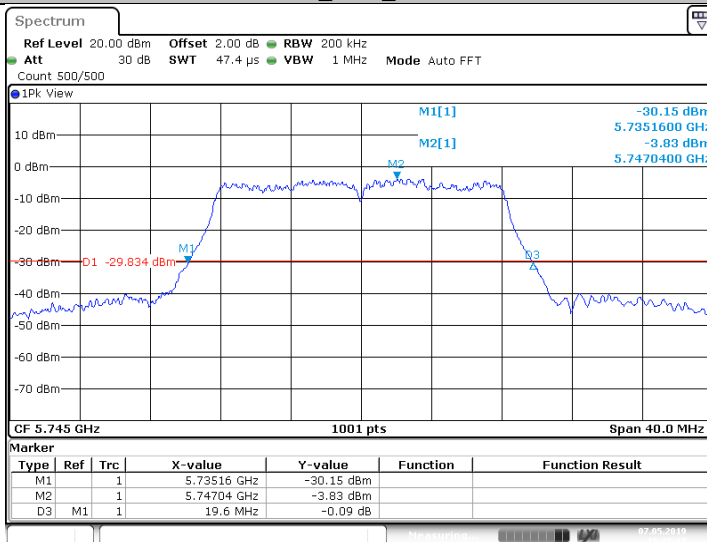
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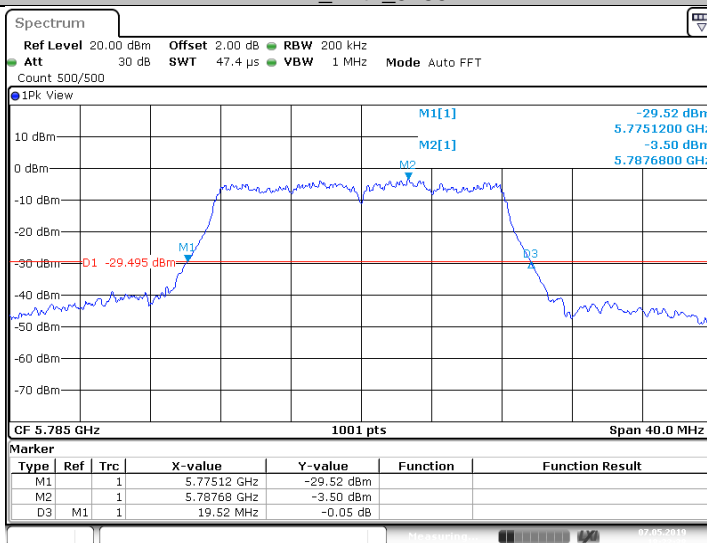
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## 11A\_Ant1\_5745

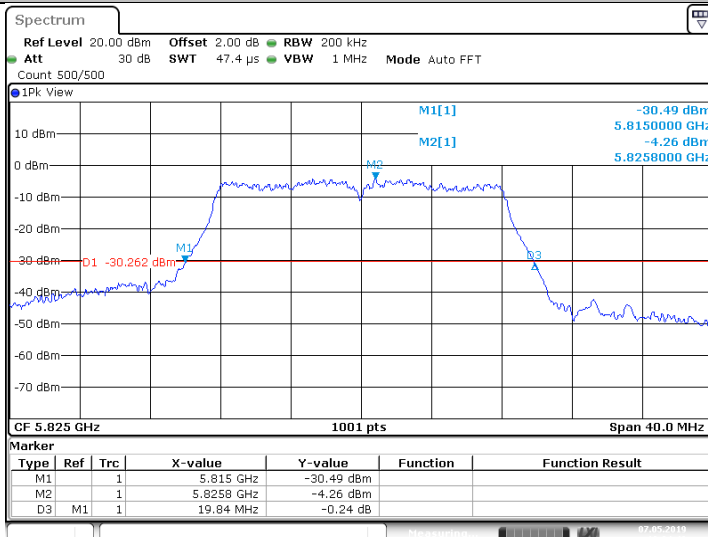


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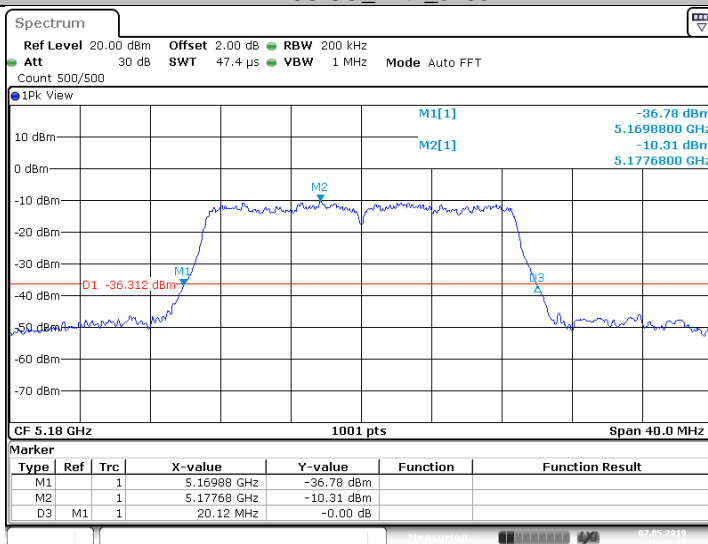




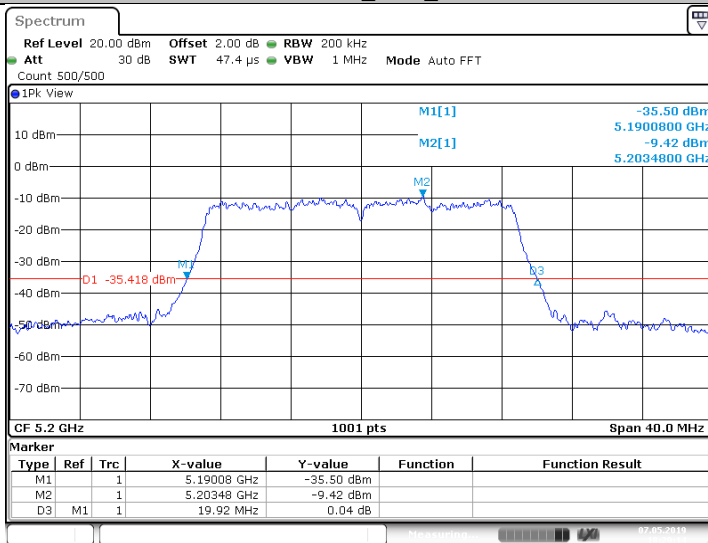
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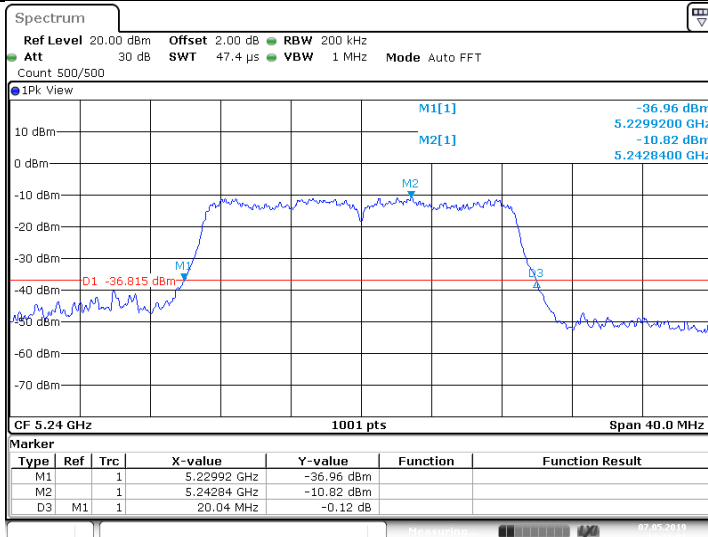
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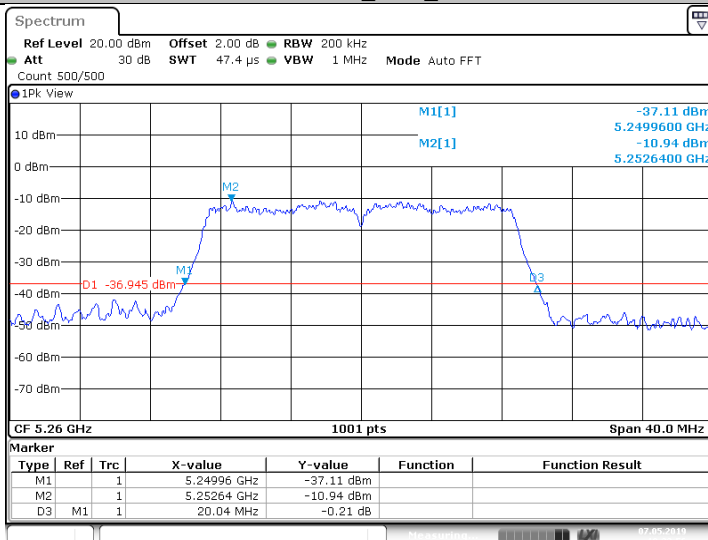


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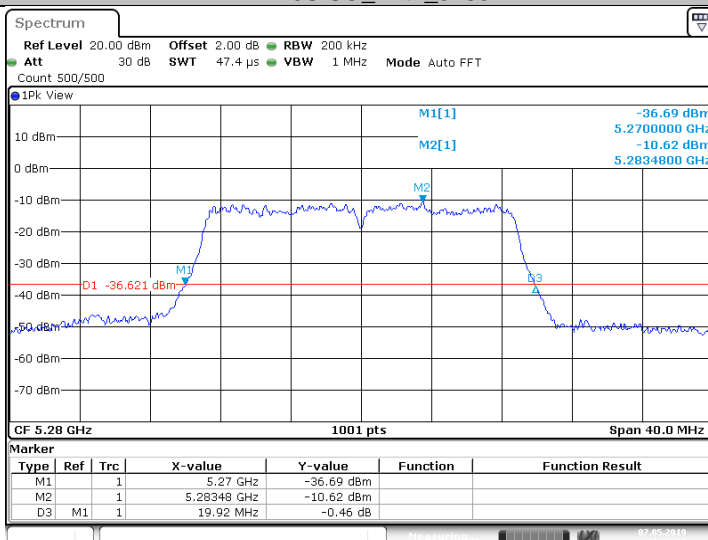
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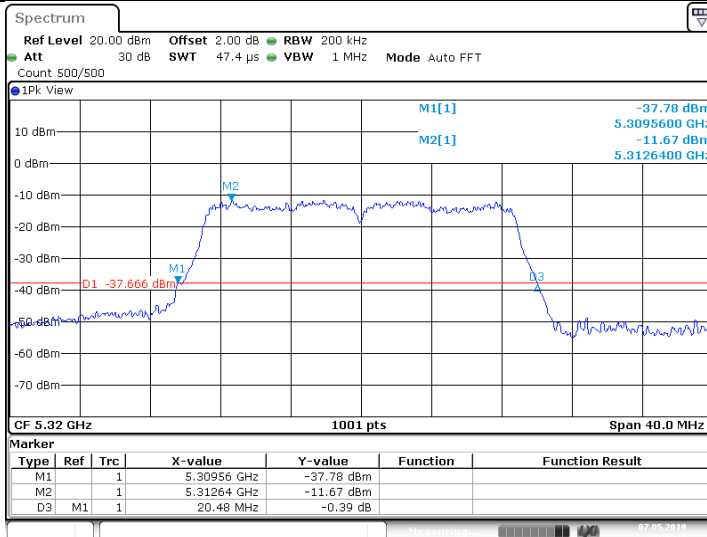
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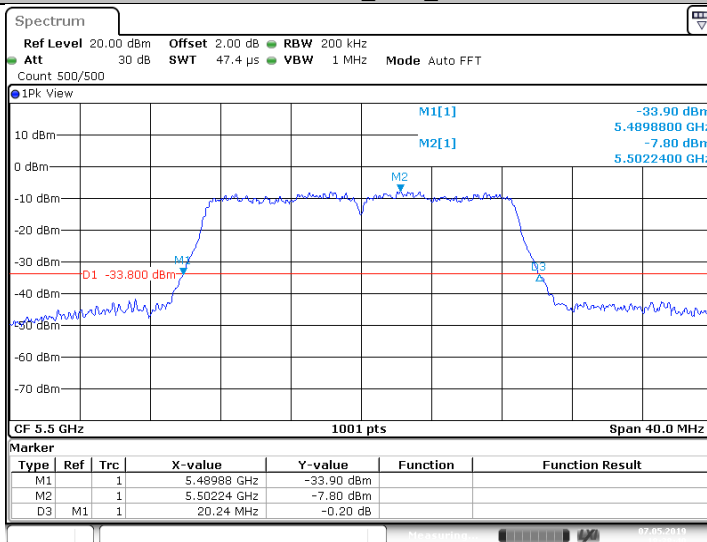


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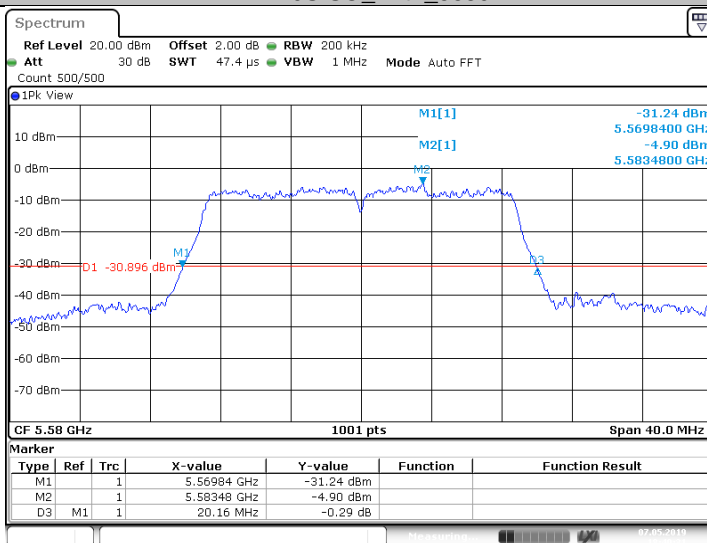
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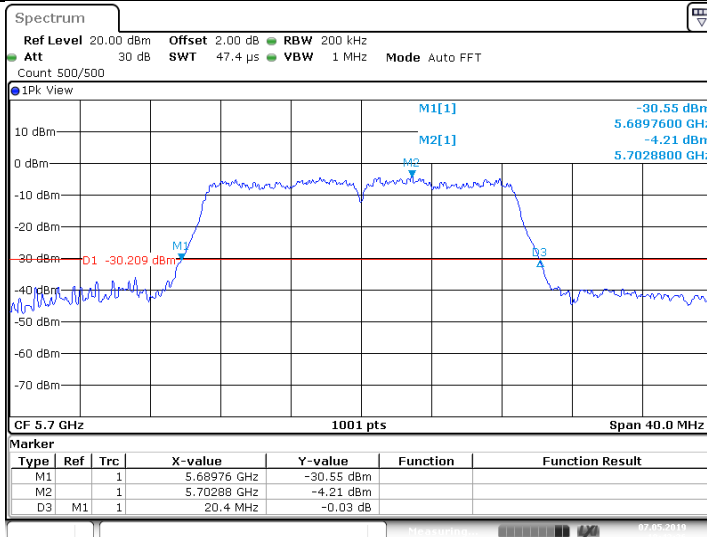
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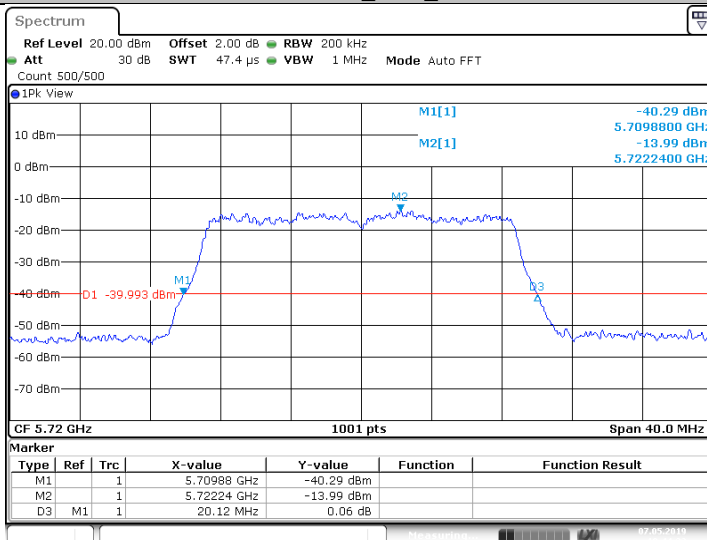


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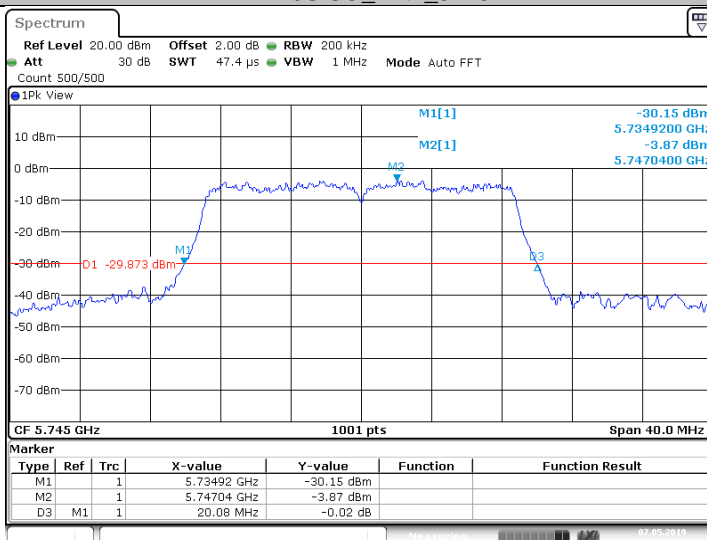
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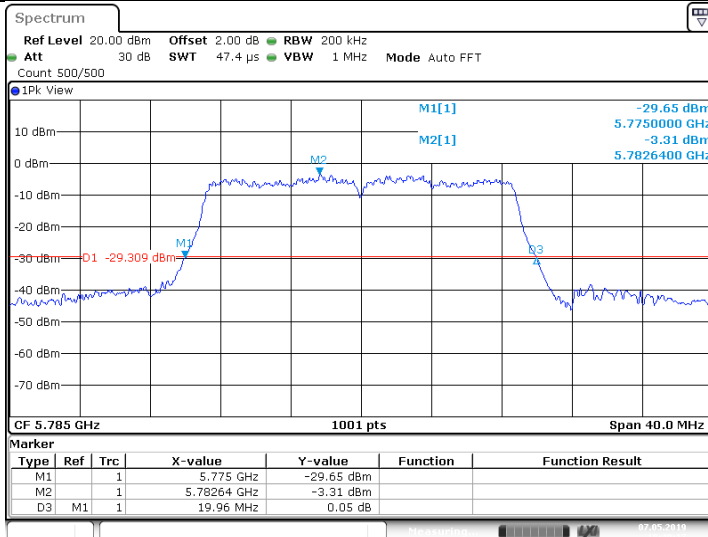
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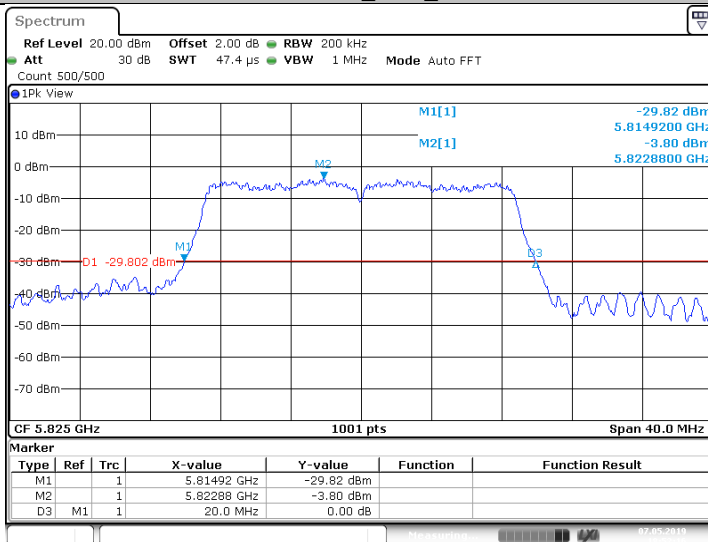


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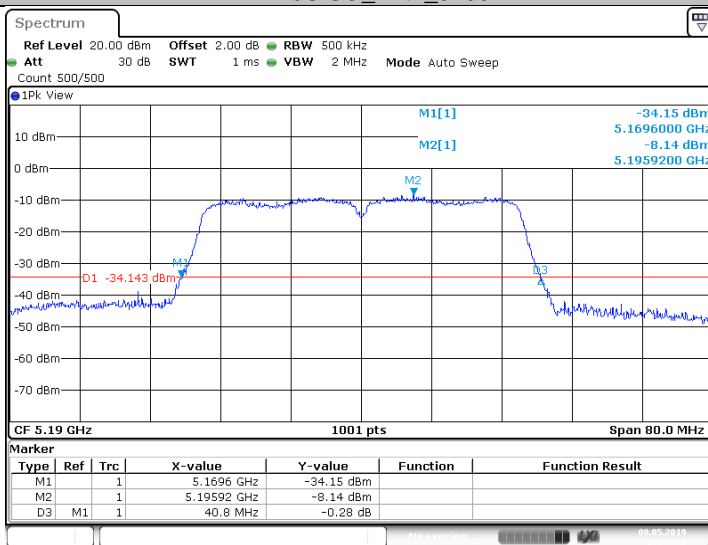
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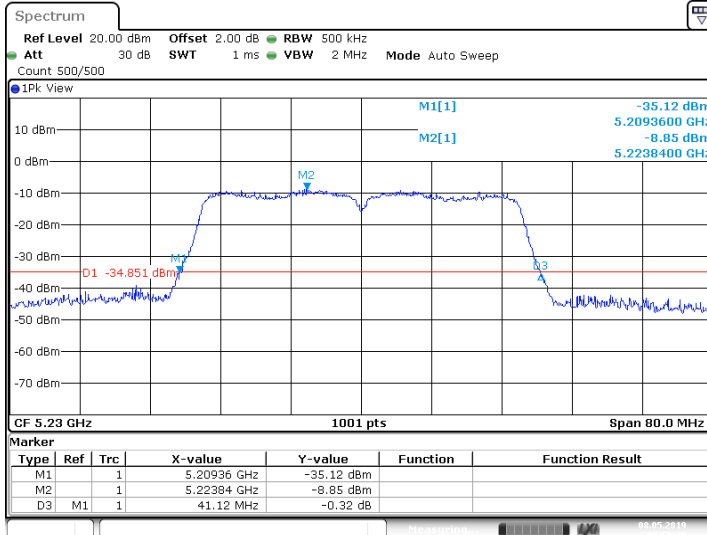
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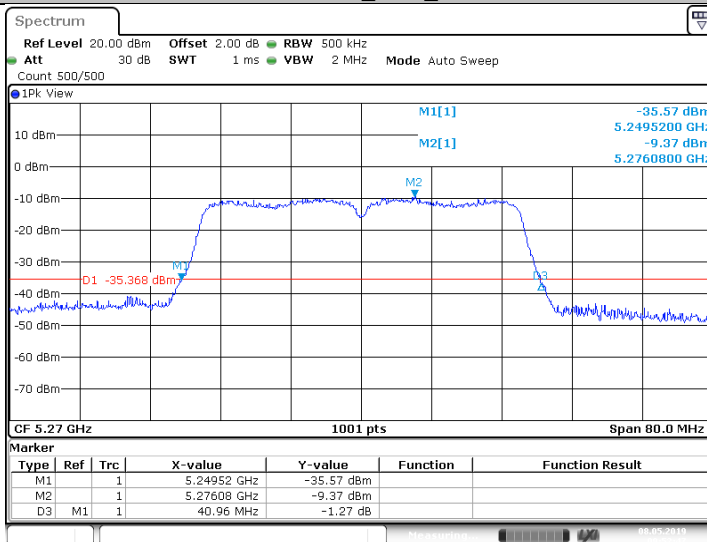
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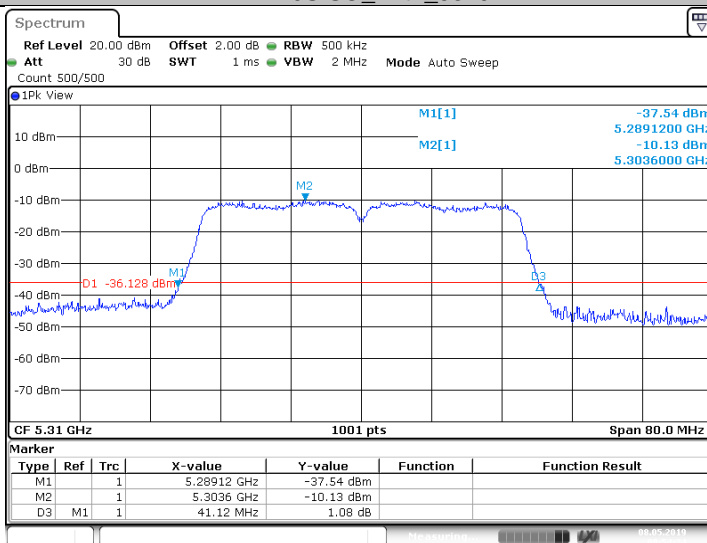
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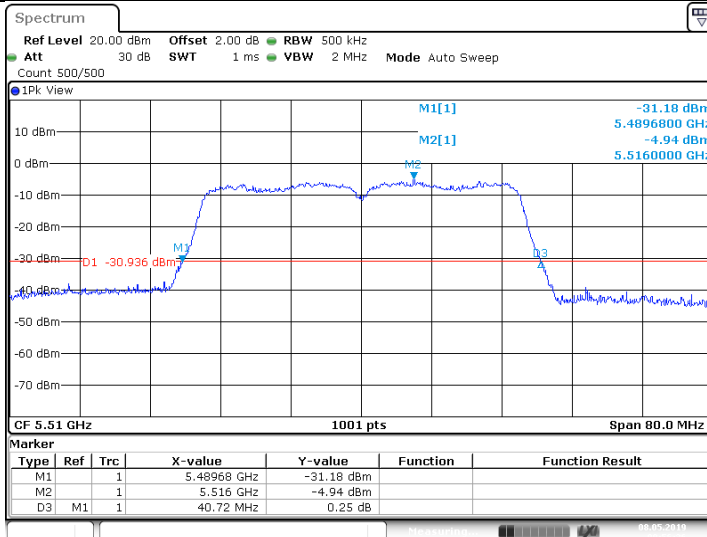
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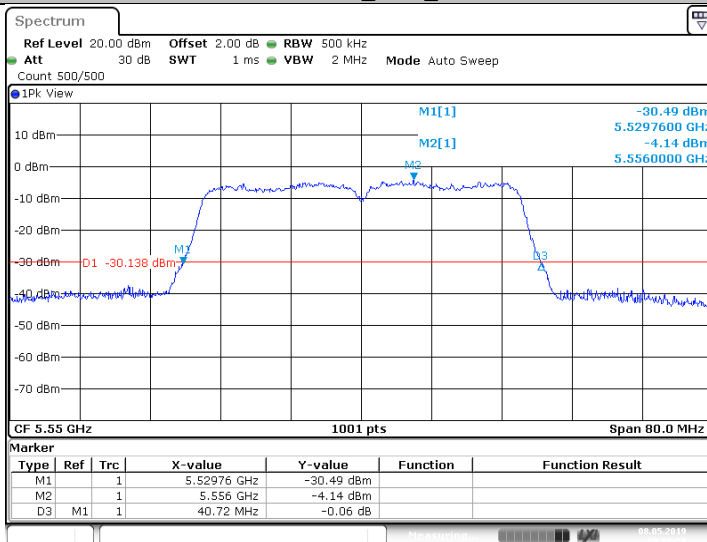
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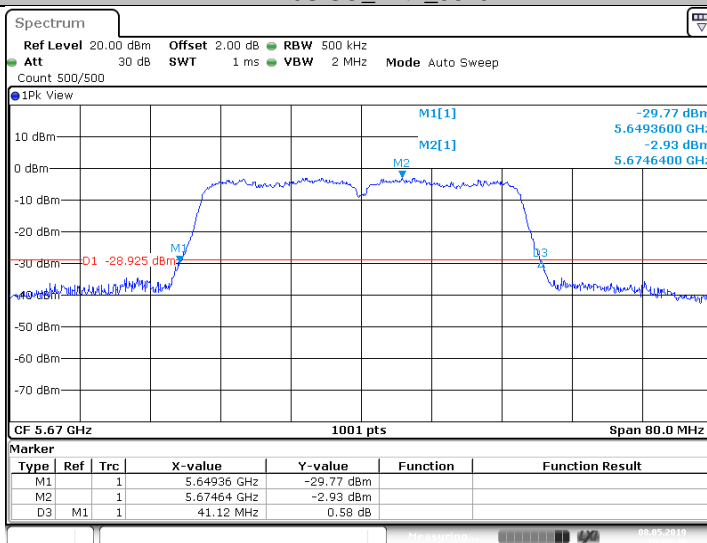
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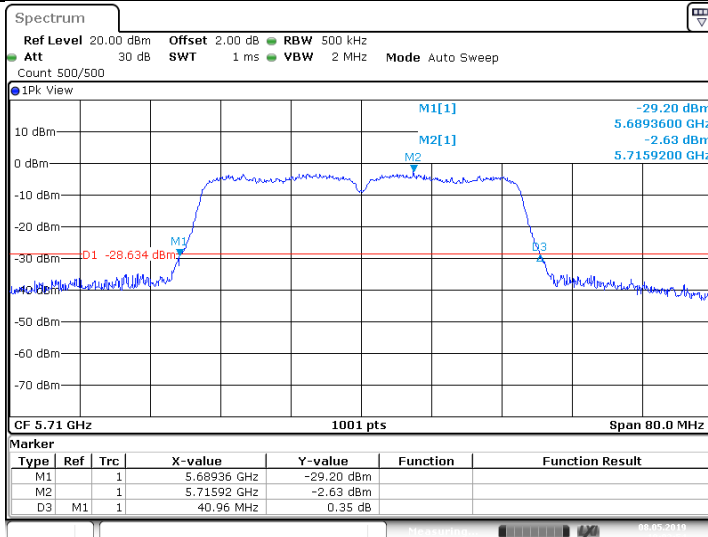
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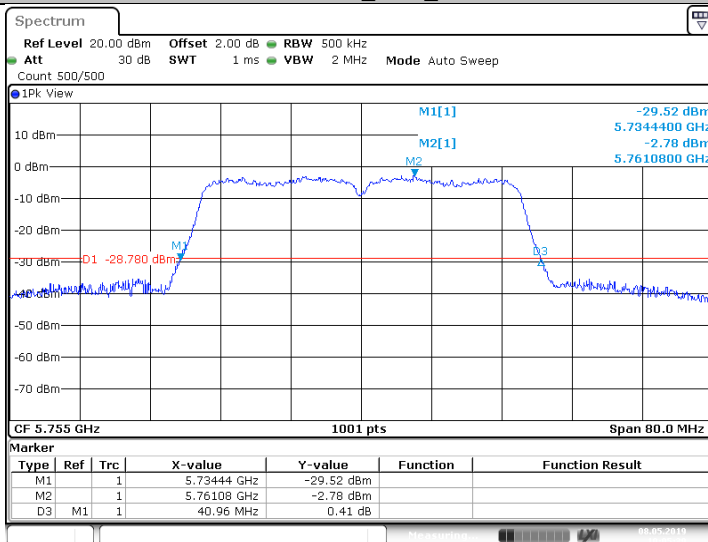
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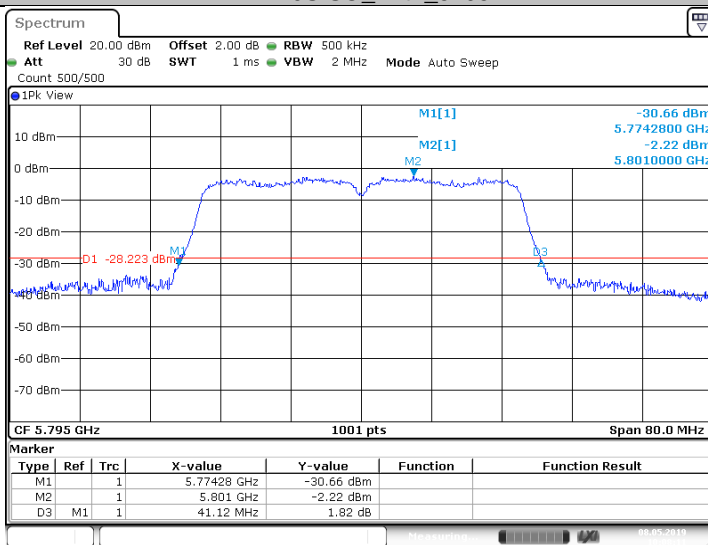
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## 11N40SISO\_Ant1\_5755



## 11N40SISO\_Ant1\_5795

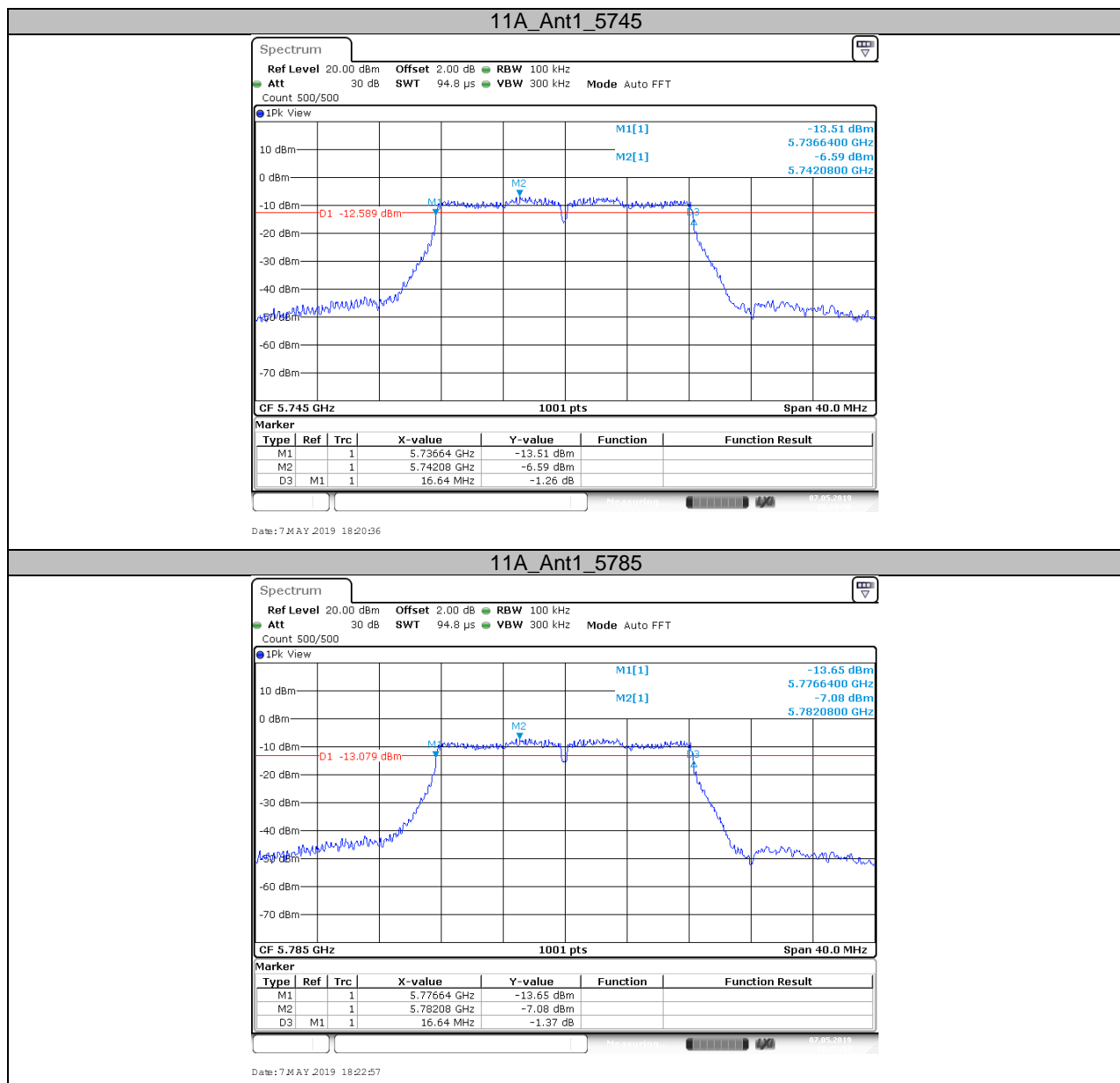




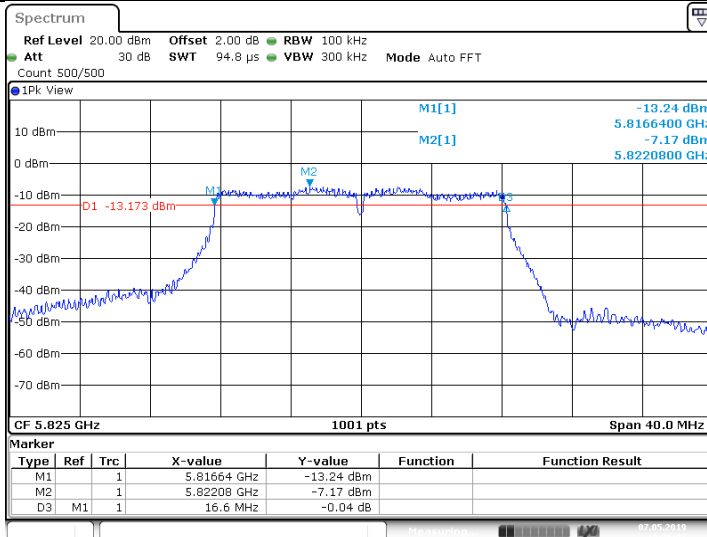
## 6dB Bandwidth Test Result

TestMode	Antenna	Channel	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	16.640	5736.640	5753.280	0.5	PASS
		5785	16.640	5776.640	5793.280	0.5	PASS
		5825	16.600	5816.640	5833.240	0.5	PASS
11N20	Ant1	5745	17.760	5736.080	5753.840	0.5	PASS
		5785	17.760	5776.080	5793.840	0.5	PASS
		5825	17.720	5816.080	5833.800	0.5	PASS
11N40	Ant1	5755	36.480	5736.760	5773.240	0.5	PASS
		5795	36.240	5776.920	5813.160	0.5	PASS

## 6dB Bandwidth Test Graphs

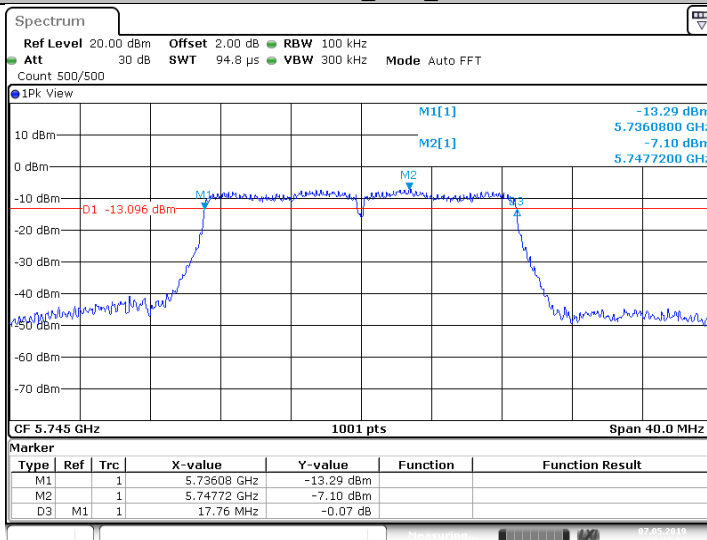


## 11A\_Ant1\_5825



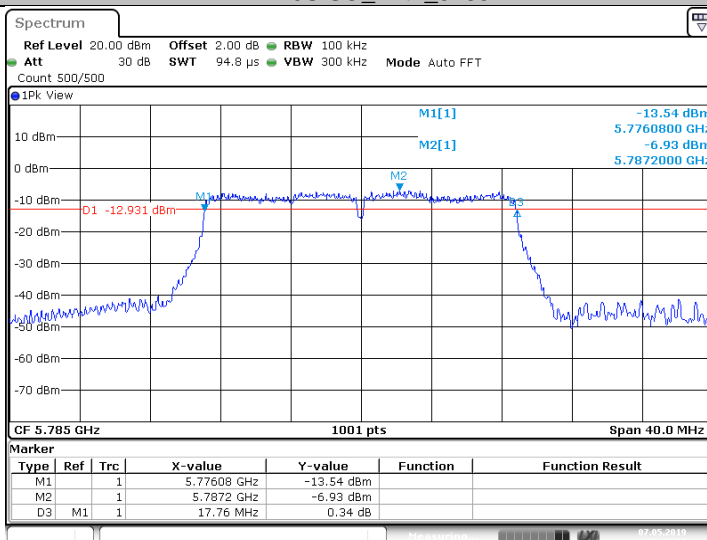
Date: 7 MAY 2019 18:25:07

## 11N20SISO\_Ant1\_5745



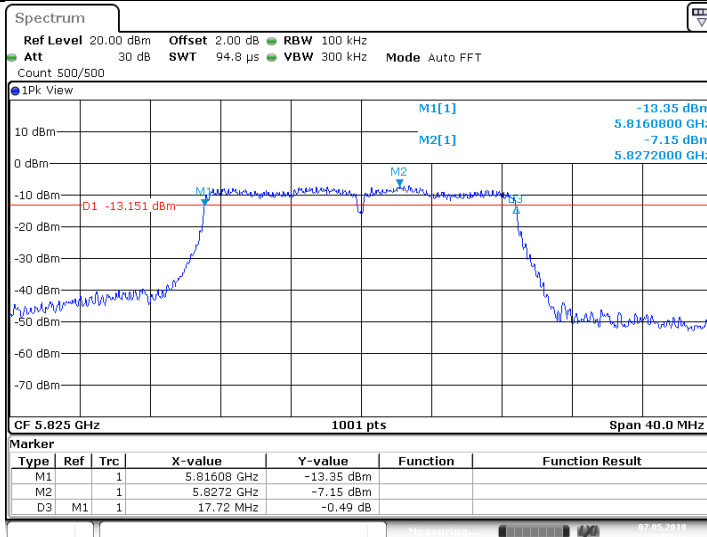
Date: 7 MAY 2019 18:47:09

## 11N20SISO\_Ant1\_5785



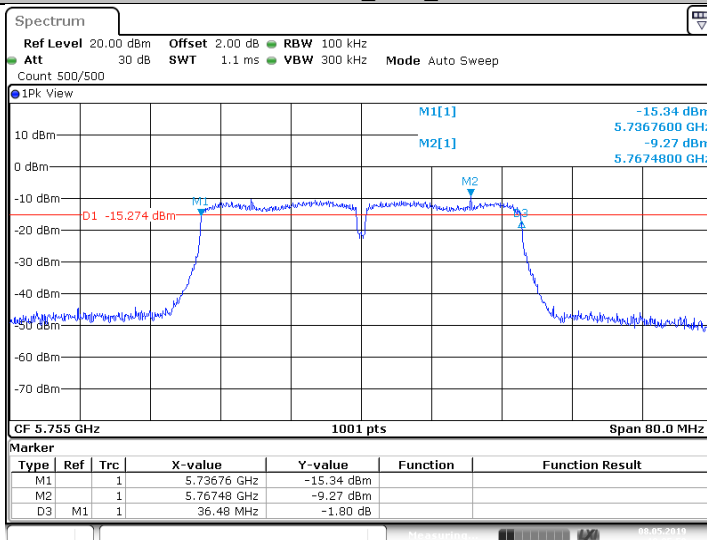
Date: 7 MAY 2019 18:49:36

## 11N20SISO\_Ant1\_5825



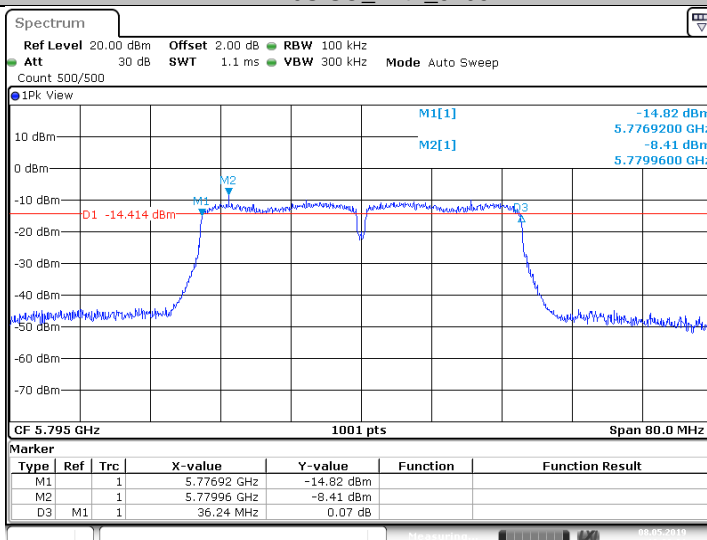
Date: 7 MAY 2019 18:52:34

## 11N40SISO\_Ant1\_5755



Date: 8 MAY 2019 10:06:00

## 11N40SISO\_Ant1\_5795



Date: 8 MAY 2019 10:08:31

## 9.2 Maximum conducted output power

### Test Method

According to KDB789033 D02

The EUT was placed on 0.8m height table, the RF output of EUT was connected to the test receiver by RF cable. The path loss was compensated to the results for each measurement.

**Limits:** The maximum conducted output power over the frequency band of operation shall not exceed 250mW for 5.15-5.25GHz Band, 250mW for 5.25-5.35GHz, 5.47-5.725 GHz Band and 1W for 5.725-5.85GHz Band, provided the maximum antenna gain does not exceed 6dBi.

### Note:

1. Maximum Conducted Output Power=Conducted Output Power + Correction Factor

Band	Duty cycle (%)	Correction factor
802.11a	100	0
802.11n HT20	100	0
802.11n HT40	100	0

### Test result as below table

#### IEEE 802.11a modulation Test Result

Band	Channel	Frequency (MHz)	Average Power (dBm)	Power Limit (dBm)
5.2G Band	Low	5180	1.4	24.00
	Middle	5200	0.1	24.00
	High	5240	1.2	24.00
5.2G Band	Low	5260	-0.2	24.00
	Middle	5280	-0.2	24.00
	High	5320	-0.4	24.00
5.5G Band	Low	5500	3.6	24.00
	Middle	5580	5.8	24.00
	High	5700	7.5	24.00
	High	5720	-3.0	24.00
5.8G Band	Low	5745	6.8	30.00
	Middle	5785	8.0	30.00
	High	5825	6.1	30.00

## IEEE 802.11n HT20 modulation Test Result

Band	Channel	Frequency (MHz)	Average Power (dBm)	Power Limit (dBm)
5.2G Band	Low	5180	1.5	24.00
	Middle	5200	0.2	24.00
	High	5240	1.0	24.00
5.2G Band	Low	5260	1.1	24.00
	Middle	5280	-0.3	24.00
	High	5320	-0.4	24.00
5.5G Band	Low	5500	3.5	24.00
	Middle	5580	5.2	24.00
	High	5700	7.4	24.00
	High	5720	-3.3	24.00
5.8G Band	Low	5745	6.8	30.00
	Middle	5785	8.1	30.00
	High	5825	6.5	30.00

## IEEE 802.11n HT40 modulation Test Result

Band	Channel	Frequency (MHz)	Average Power (dBm)	Power Limit (dBm)
5.2G Band	Low	5190	0	24.00
	High	5230	0	24.00
5.2G Band	Low	5270	-0.2	24.00
	High	5310	-1.5	24.00
5.5G Band	Low	5510	3.6	24.00
	Middle	5550	3.3	24.00
	High	5670	6.2	24.00
	High	5710	6.1	24.00
5.8G Band	Low	5755	6.3	30.00
	High	5795	6.8	30.00

### 9.3 Maximum power spectral density

#### Test Method

According to KDB789033 D02

The EUT was placed on 0.8m height table, the RF output of EUT was connected to the test receiver by RF cable. The path loss was compensated to the results for each measurement.

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:

- a) Set  $RBW \geq 1/T$ , where T is defined in section II.B.I.a).
- b) Set  $VBW \geq 3 RBW$ .
- c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add  $10\log(500\text{kHz}/RBW)$  to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
- d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add  $10\log(1\text{MHz}/RBW)$  to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
- e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

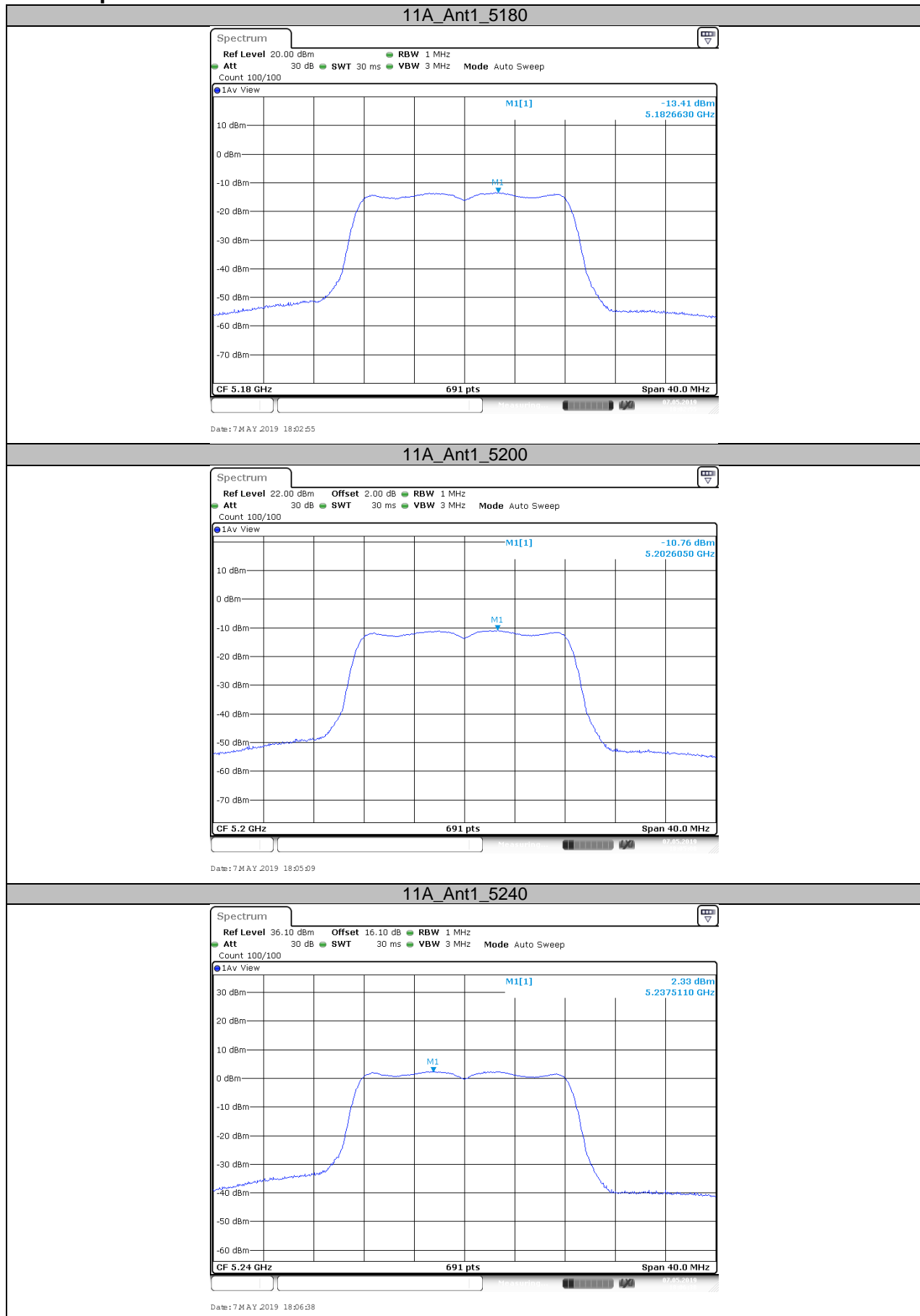
Note: As a practical matter, it is recommended to use reduced RBW of 100 KHz for the sections 5.c) and 5.d) above, since RBW=100 KHz is available on nearly all spectrum analyzers.

**Limit:** The maximum power spectral density shall not exceed 11dBm for the 5.15-5.25GHz, 5.25-5.35GHz, 5.47-5.725 GHz Band and 30dBm for the 5.8GHz Band in any 1 megahertz band.

## Test Result

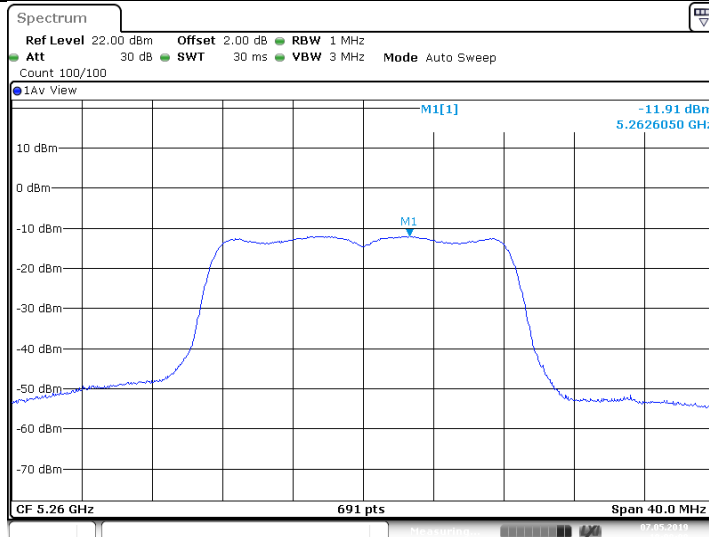
Test Mode	Antenna	Channel	Result	Limit	Verdict
11A	Ant1	5180	-13.41	<=11	PASS
		5200	-10.76	<=11	PASS
		5240	2.33	<=11	PASS
		5260	-11.91	<=11	PASS
		5280	-11.76	<=11	PASS
		5320	-12.29	<=11	PASS
		5500	-8.27	<=11	PASS
		5580	-6.2	<=11	PASS
		5700	-5.1	<=11	PASS
		5720_UNII-2C	-14.8	<=11	PASS
		5720_UNII-3	-17.91	<=11	PASS
		5745	-7.1	<=30	PASS
		5785	7.03	<=30	PASS
		5825	-7.46	<=30	PASS
11N20	Ant1	5180	-11.51	<=11	PASS
		5200	-10.88	<=11	PASS
		5240	-11.74	<=11	PASS
		5260	-12.19	<=11	PASS
		5280	-12.03	<=11	PASS
		5320	-12.68	<=11	PASS
		5500	-8.44	<=11	PASS
		5580	-6.16	<=11	PASS
		5700	-5.16	<=11	PASS
		5720_UNII-2C	-14.96	<=11	PASS
		5720_UNII-3	-17.79	<=11	PASS
		5745	-7.13	<=30	PASS
		5785	-7.1	<=30	PASS
		5825	-7.38	<=30	PASS
11N40	Ant1	5190	-14.38	<=11	PASS
		5230	-14.66	<=11	PASS
		5270	-0.69	<=11	PASS
		5310	-15.7	<=11	PASS
		5510	-11.25	<=11	PASS
		5550	-10.29	<=11	PASS
		5670	-8.79	<=11	PASS
		5710_UNII-2C	-8.78	<=11	PASS
		5710_UNII-3	-12.04	<=11	PASS
		5755	-11.1	<=30	PASS
		5795	-10.99	<=30	PASS

## Test Graphs



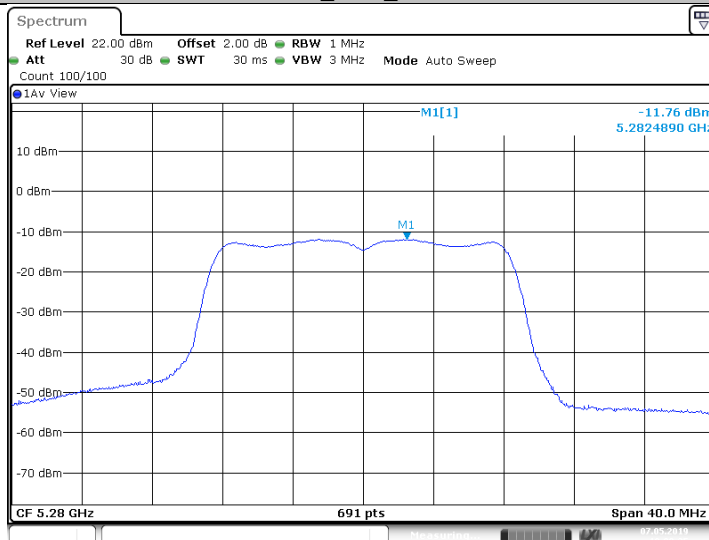


## 11A\_Ant1\_5260



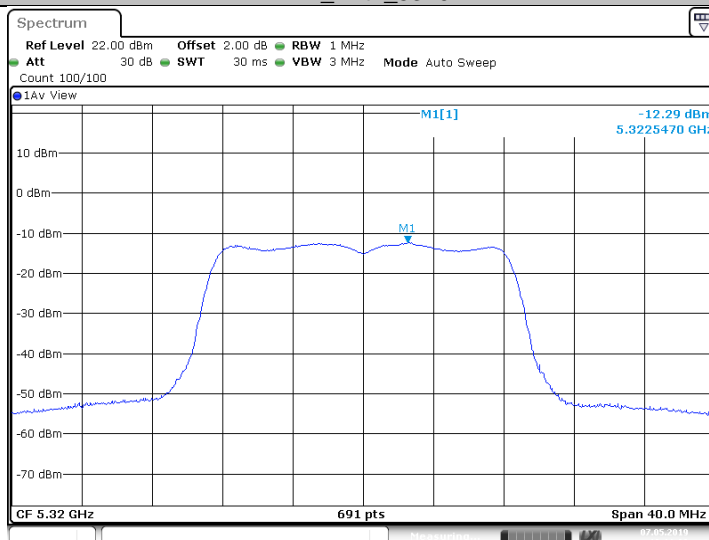
Date: 7 MAY 2019 18:08:09

## 11A\_Ant1\_5280



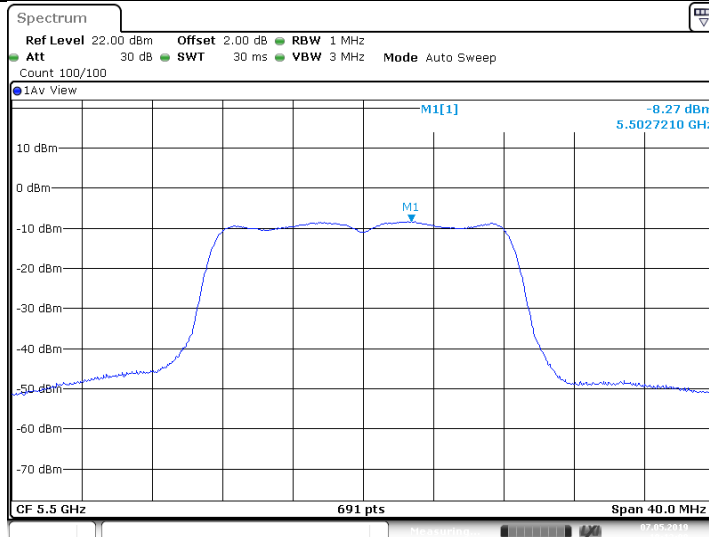
Date: 7 MAY 2019 18:09:35

## 11A\_Ant1\_5320



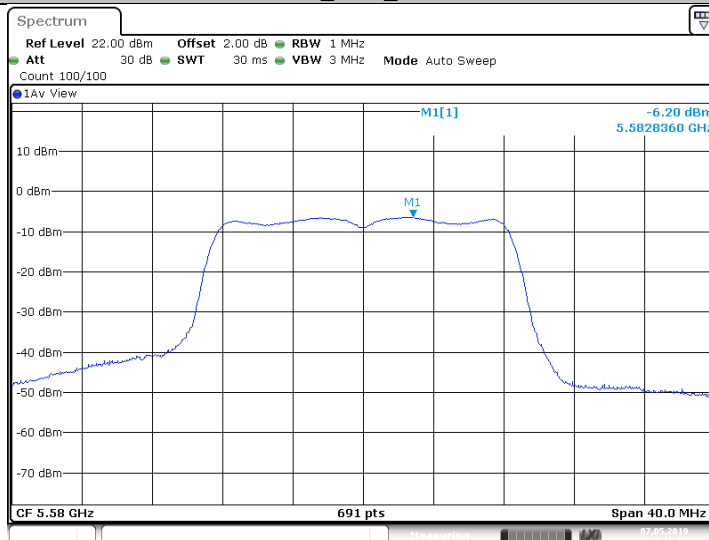
Date: 7 MAY 2019 18:11:07

## 11A\_Ant1\_5500



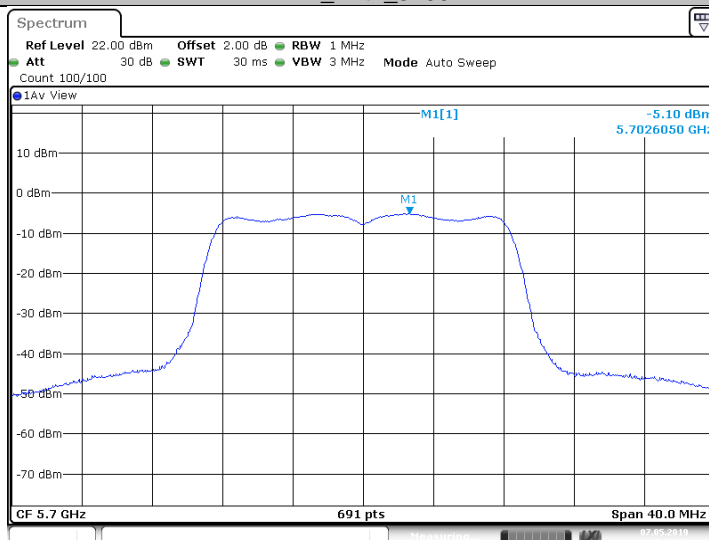
Date: 7 MAY 2019 18:13:09

## 11A\_Ant1\_5580



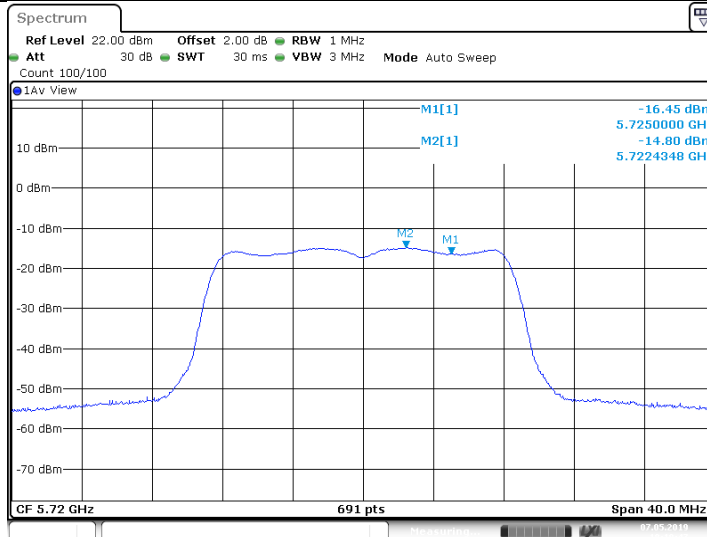
Date: 7 MAY 2019 18:15:09

## 11A\_Ant1\_5700

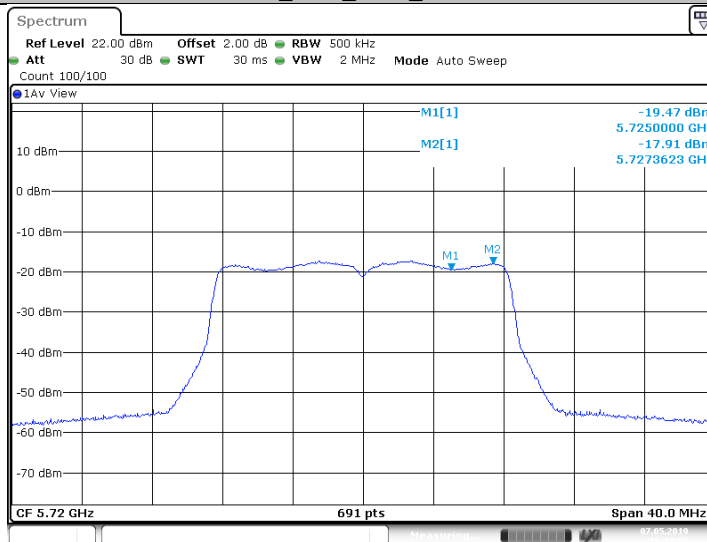


Date: 7 MAY 2019 18:16:51

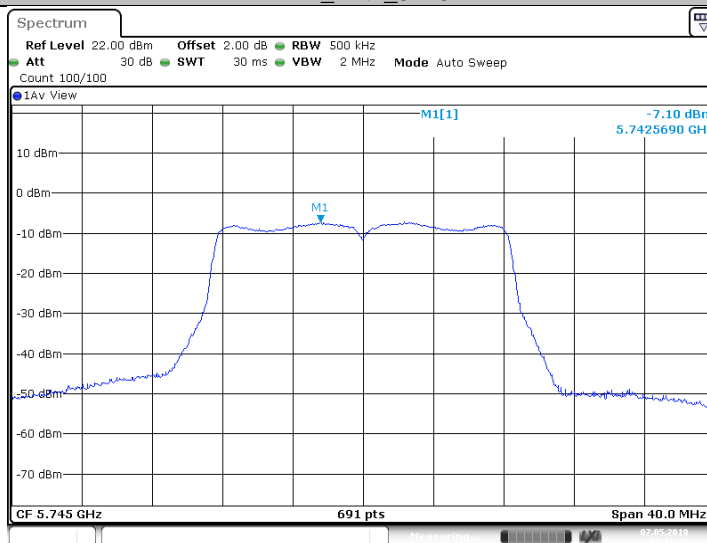
## 11A\_Ant1\_5720\_UNII-2C



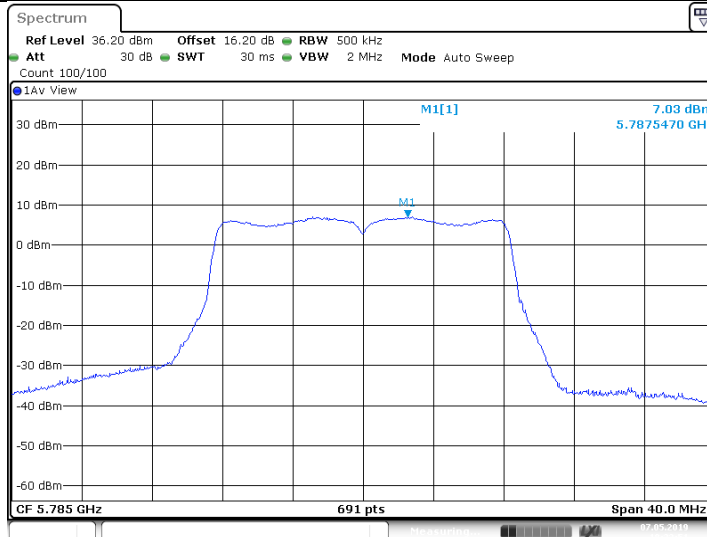
## 11A\_Ant1\_5720\_UNII-3



## 11A\_Ant1\_5745

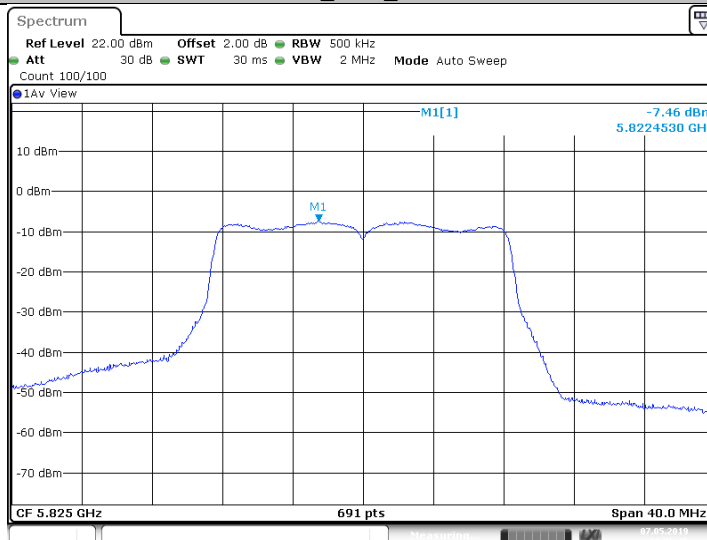


## 11A\_Ant1\_5785



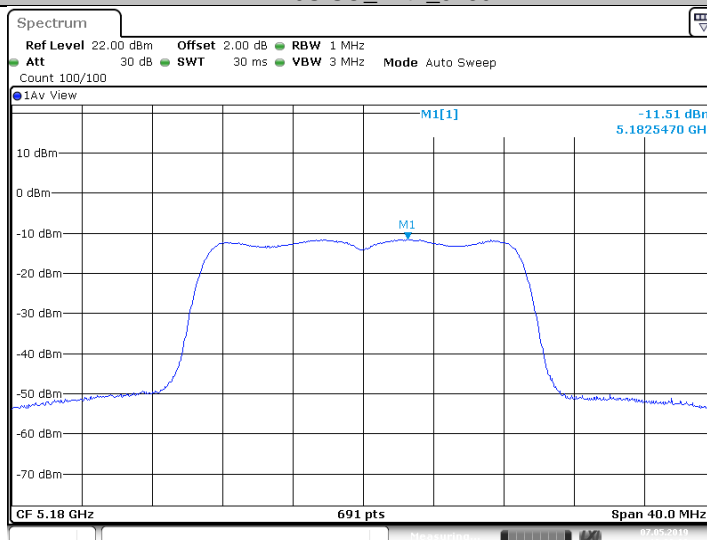
Date: 7 MAY 2019 18:23:52

## 11A\_Ant1\_5825



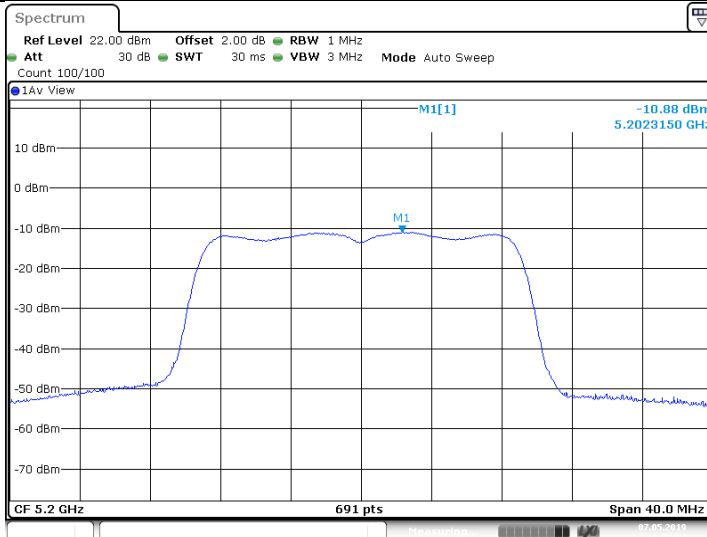
Date: 7 MAY 2019 18:25:46

## 11N20SISO\_Ant1\_5180



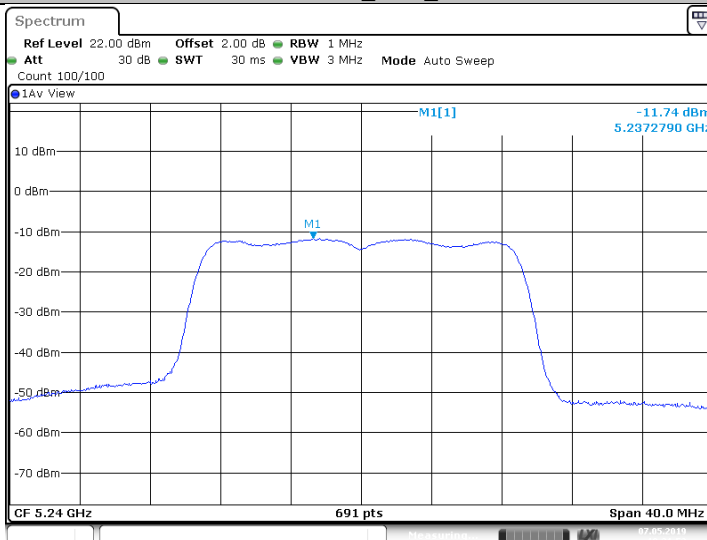
Date: 7 MAY 2019 18:28:00

## 11N20SISO\_Ant1\_5200



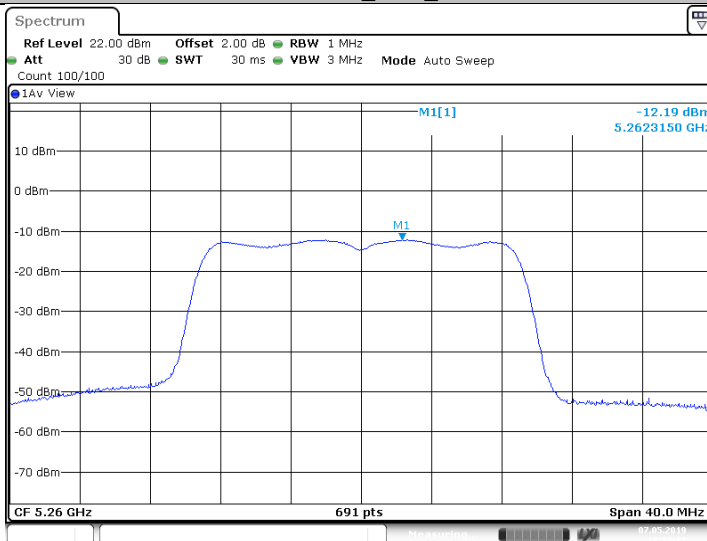
Date: 7 MAY 2019 18:29:54

## 11N20SISO\_Ant1\_5240



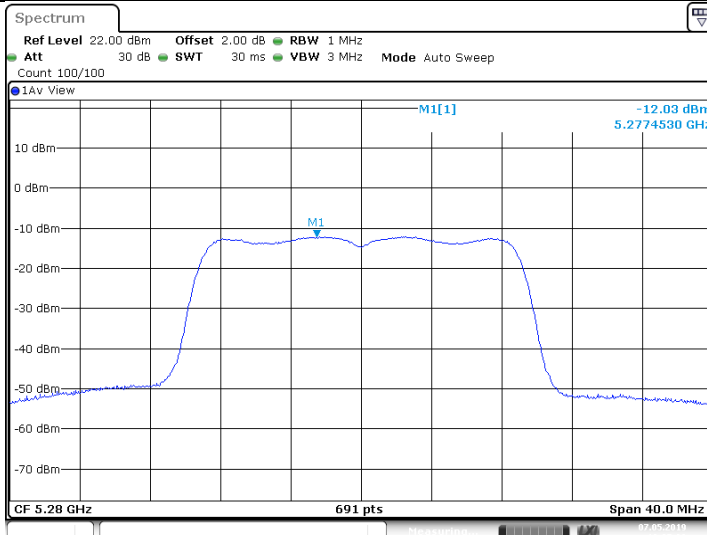
Date: 7 MAY 2019 18:31:52

## 11N20SISO\_Ant1\_5260



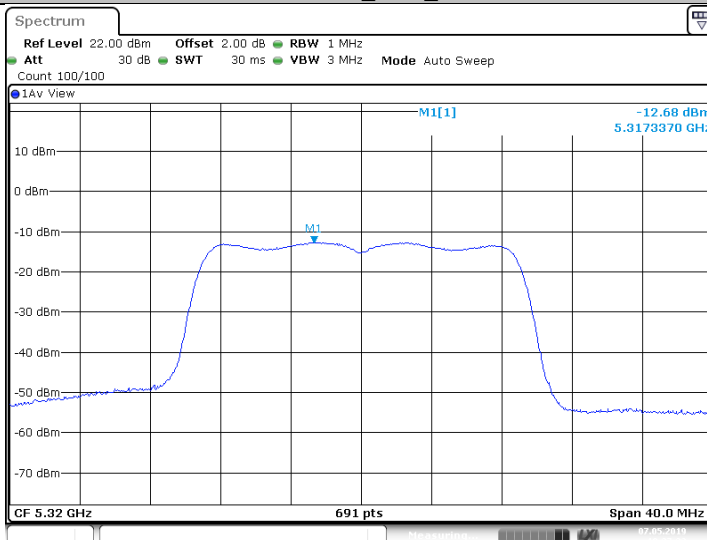
Date: 7 MAY 2019 18:33:33

## 11N20SISO\_Ant1\_5280



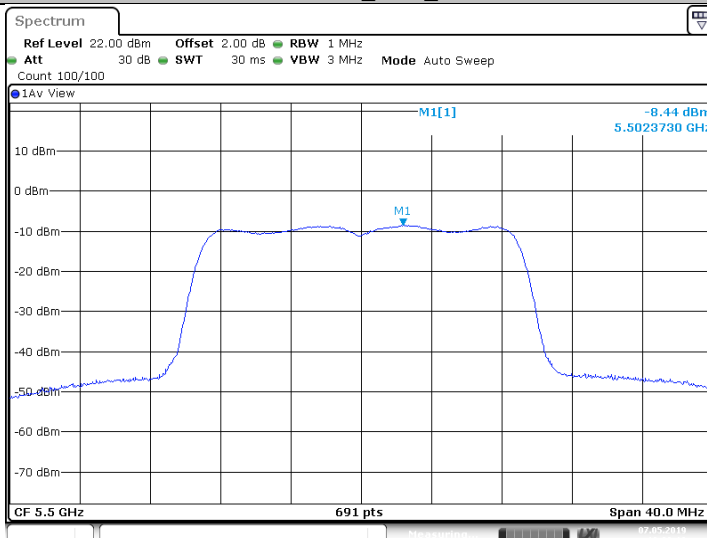
Date: 7 MAY 2019 18:35:30

## 11N20SISO\_Ant1\_5320



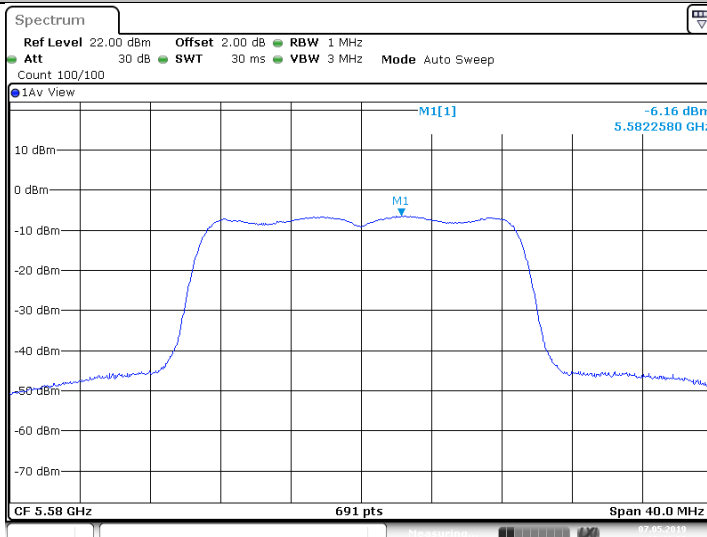
Date: 7 MAY 2019 18:37:24

## 11N20SISO\_Ant1\_5500



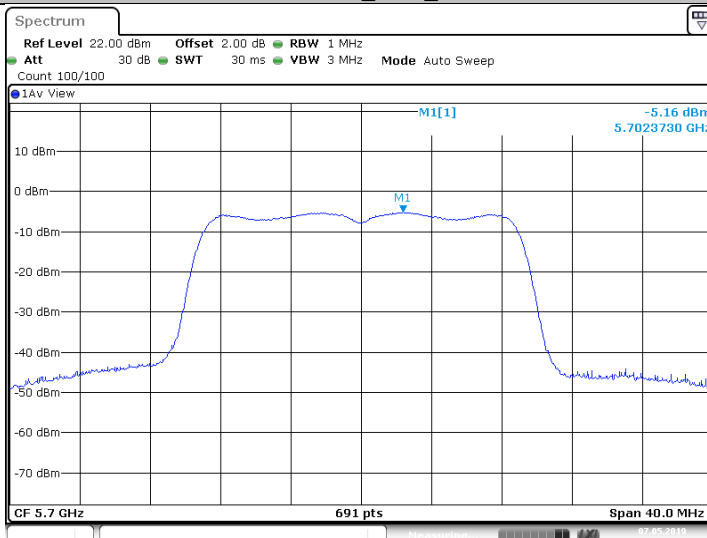
Date: 7 MAY 2019 18:39:17

## 11N20SISO\_Ant1\_5580



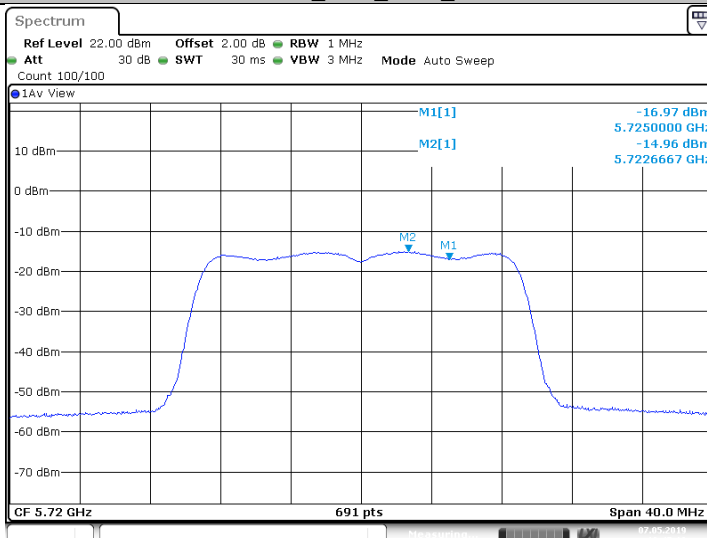
Date: 7 MAY 2019 18:41:23

## 11N20SISO\_Ant1\_5700



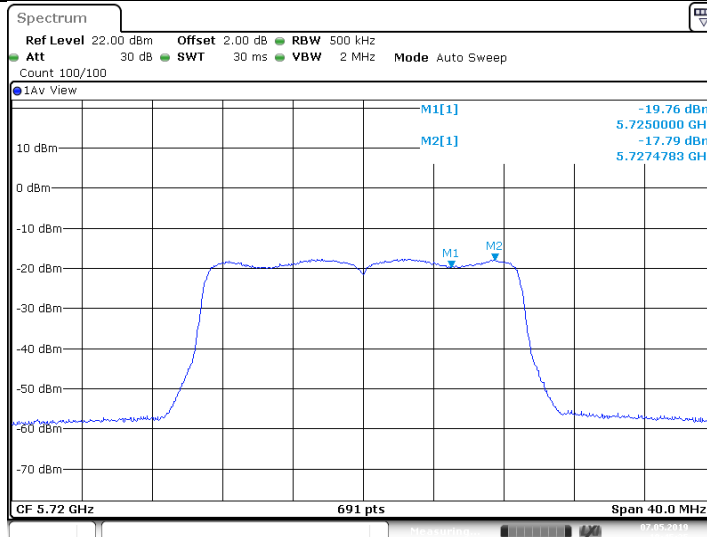
Date: 7 MAY 2019 18:43:18

## 11N20SISO\_Ant1\_5720\_UNII-2C

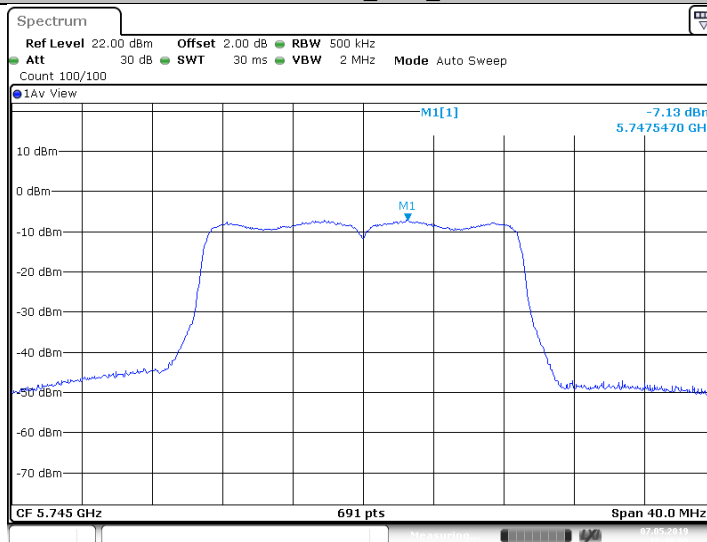


Date: 7 MAY 2019 18:45:16

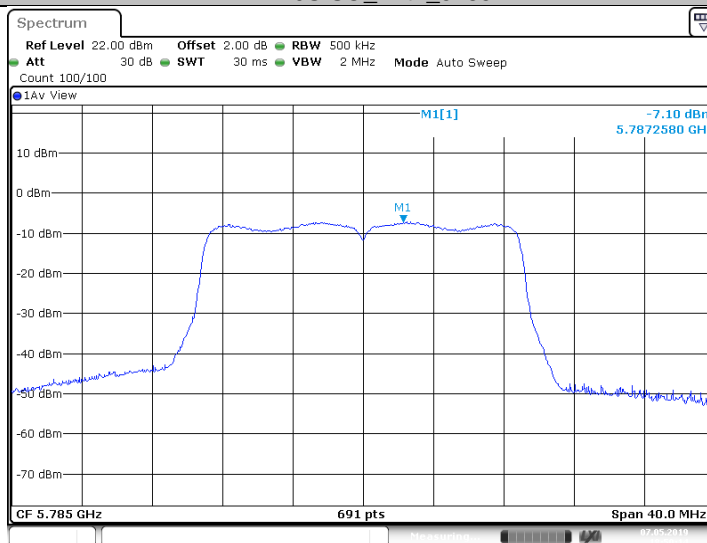
## 11N20SISO\_Ant1\_5720\_UNII-3



## 11N20SISO\_Ant1\_5745

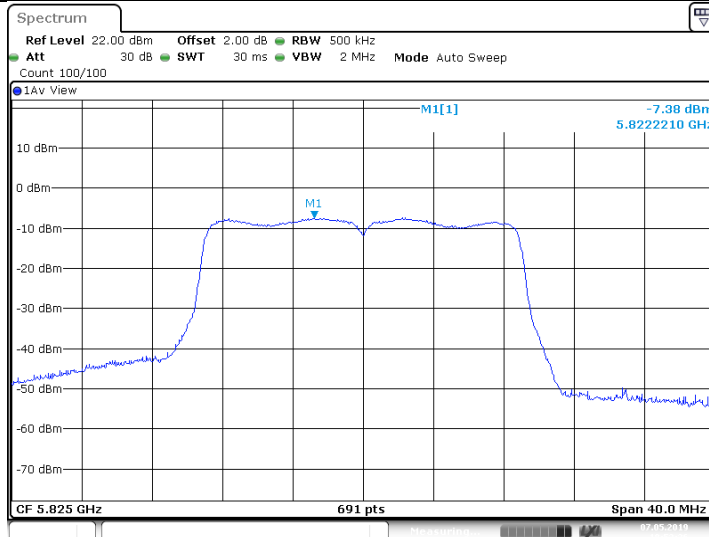


## 11N20SISO\_Ant1\_5785



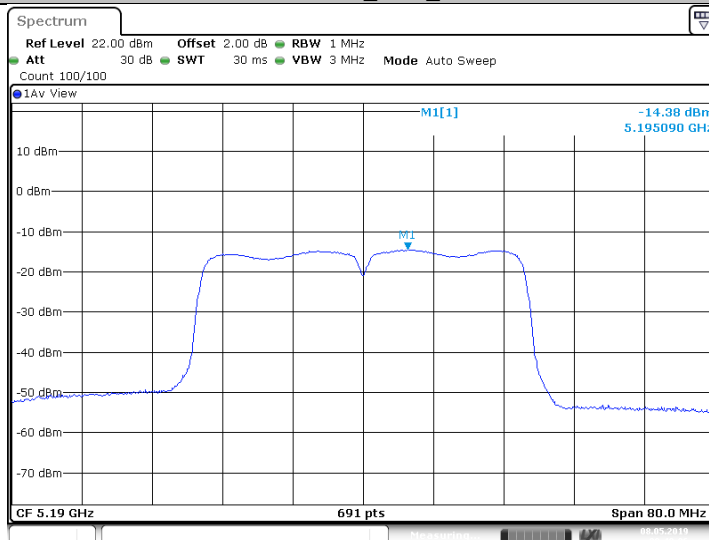


## 11N20SISO\_Ant1\_5825



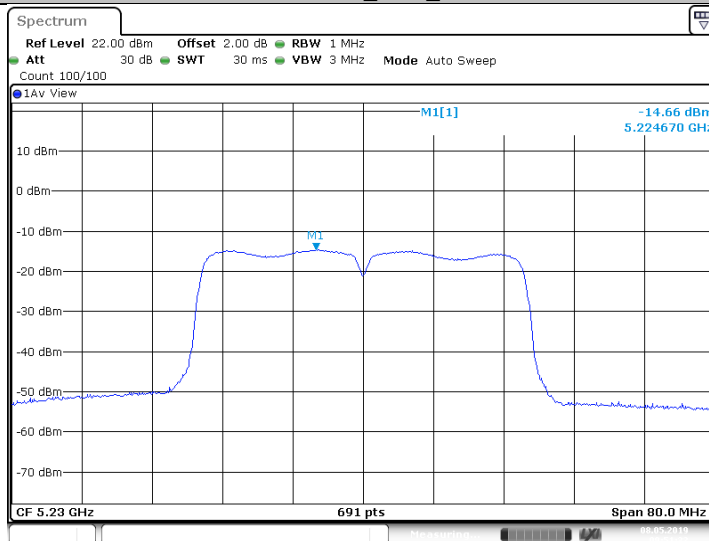
Date: 7 MAY 2019 18:53:25

## 11N40SISO\_Ant1\_5190



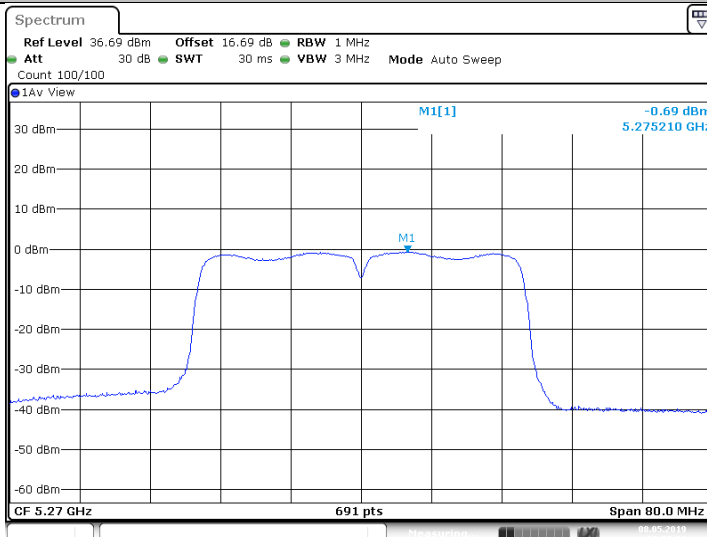
Date: 8 MAY 2019 09:49:06

## 11N40SISO\_Ant1\_5230



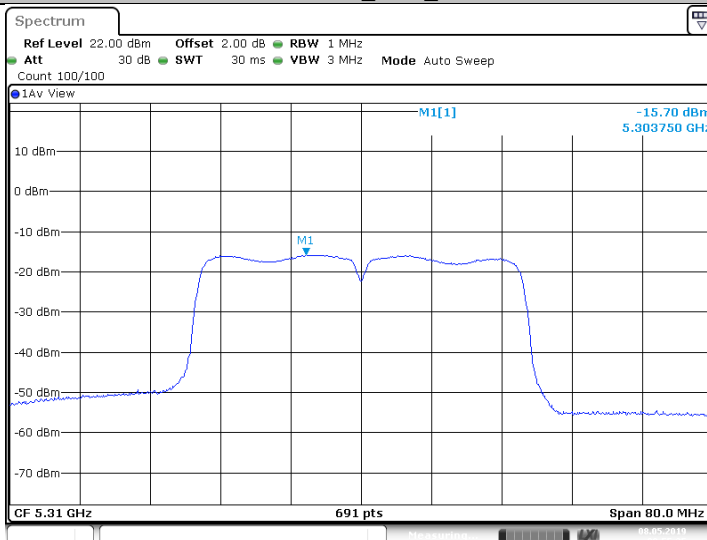
Date: 8 MAY 2019 09:51:32

## 11N40SISO\_Ant1\_5270



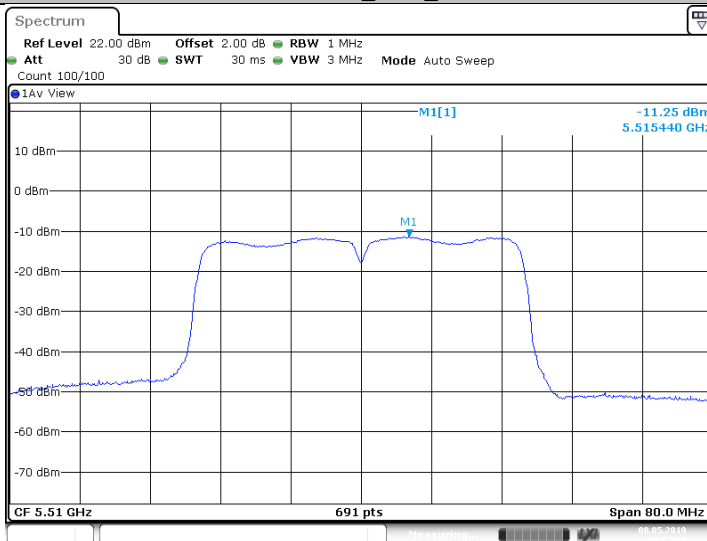
Date: 8 MAY 2019 09:53:23

## 11N40SISO\_Ant1\_5310



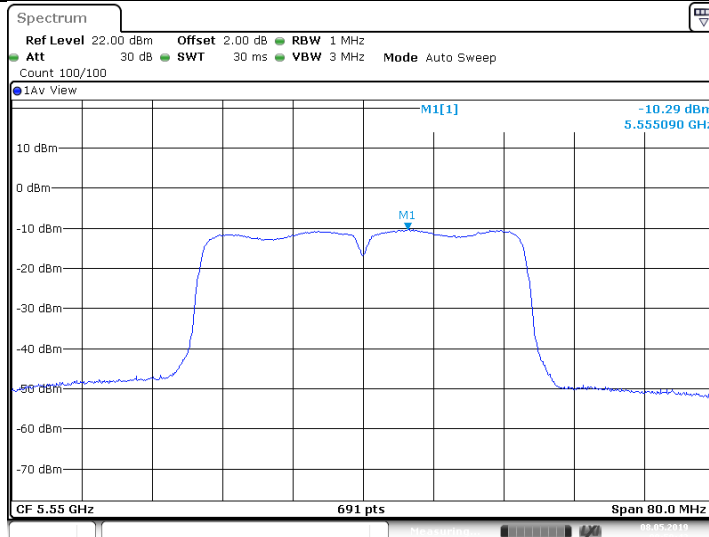
Date: 8 MAY 2019 09:55:25

## 11N40SISO\_Ant1\_5510



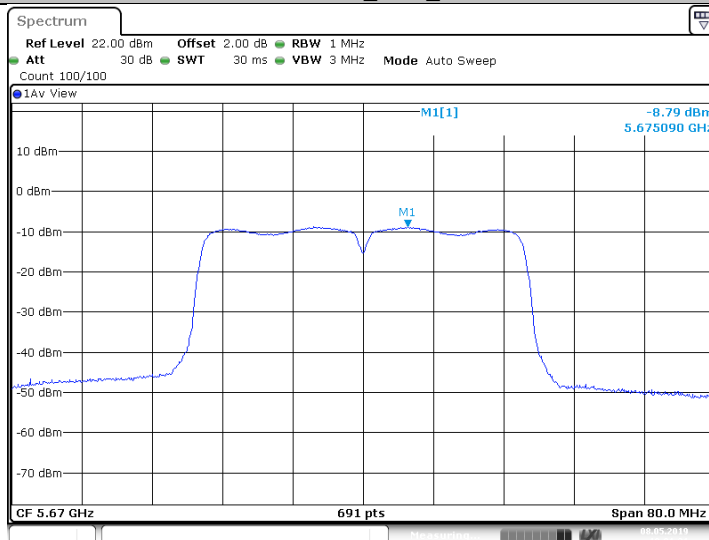
Date: 8 MAY 2019 09:57:28

## 11N40SISO\_Ant1\_5550



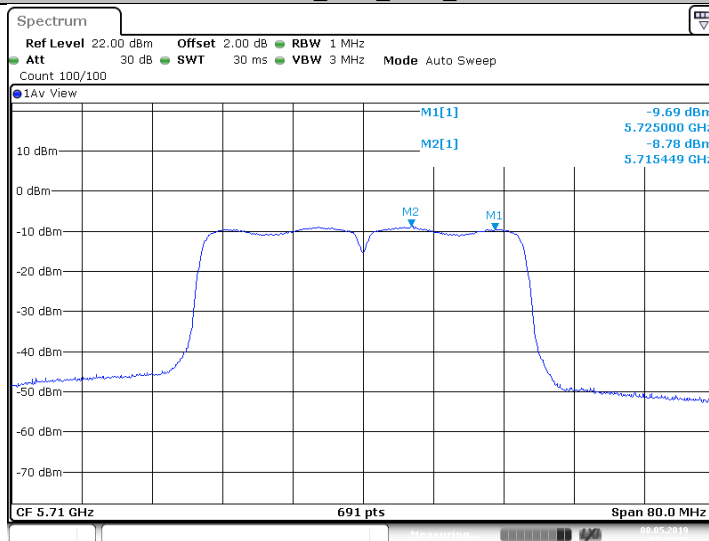
Date: 8 MAY 2019 09:59:42

## 11N40SISO\_Ant1\_5670



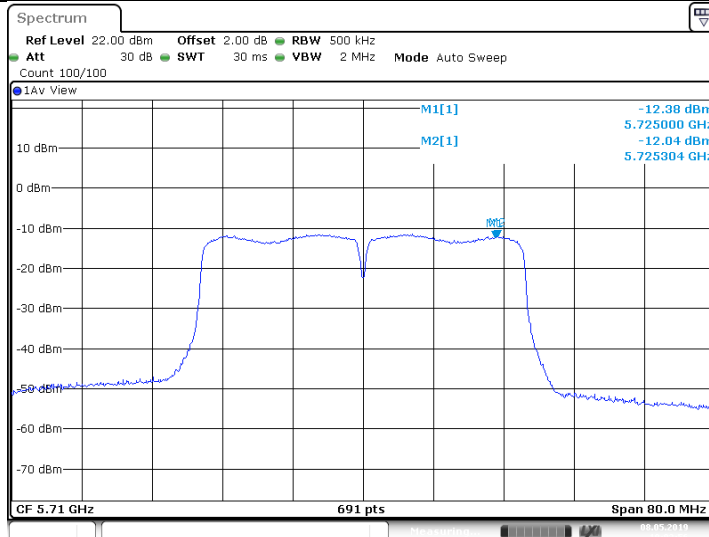
Date: 8 MAY 2019 10:01:31

## 11N40SISO\_Ant1\_5710\_UNII-2C

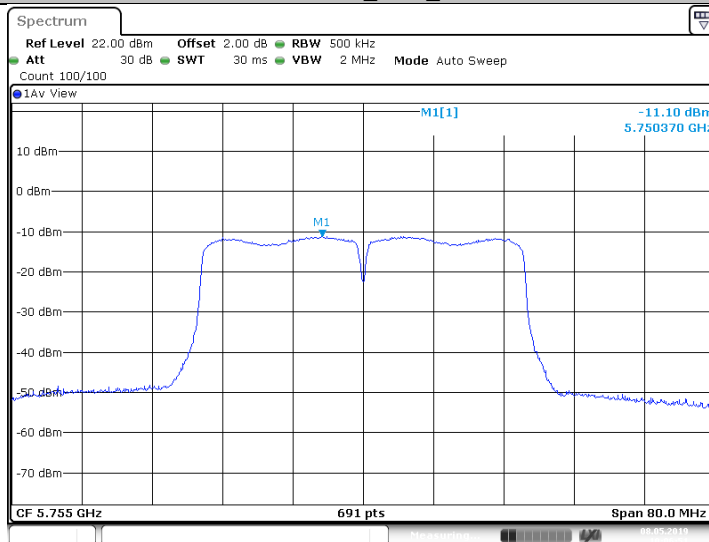


Date: 8 MAY 2019 10:03:47

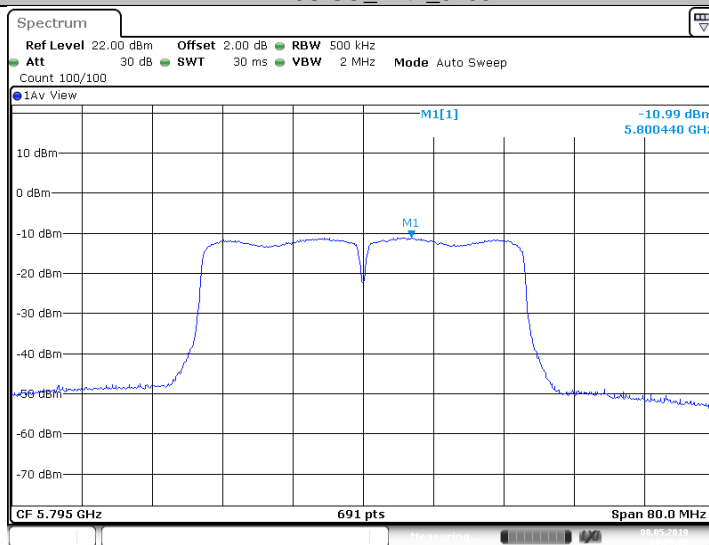
## 11N40SISO\_Ant1\_5710\_UNII-3



## 11N40SISO\_Ant1\_5755



## 11N40SISO\_Ant1\_5795



## 9.4 Unwanted emissions

### Test Method

According to KBD789033 D02

The EUT was placed on 0.8m height table, the RF output of EUT was connected to the test receiver by RF cable. The path loss was compensated to the results for each measurement.

### Limits:

For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.

For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.

For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of  $-17$  dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.

Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

The provisions of §15.205 apply to intentional radiators operating under this section.

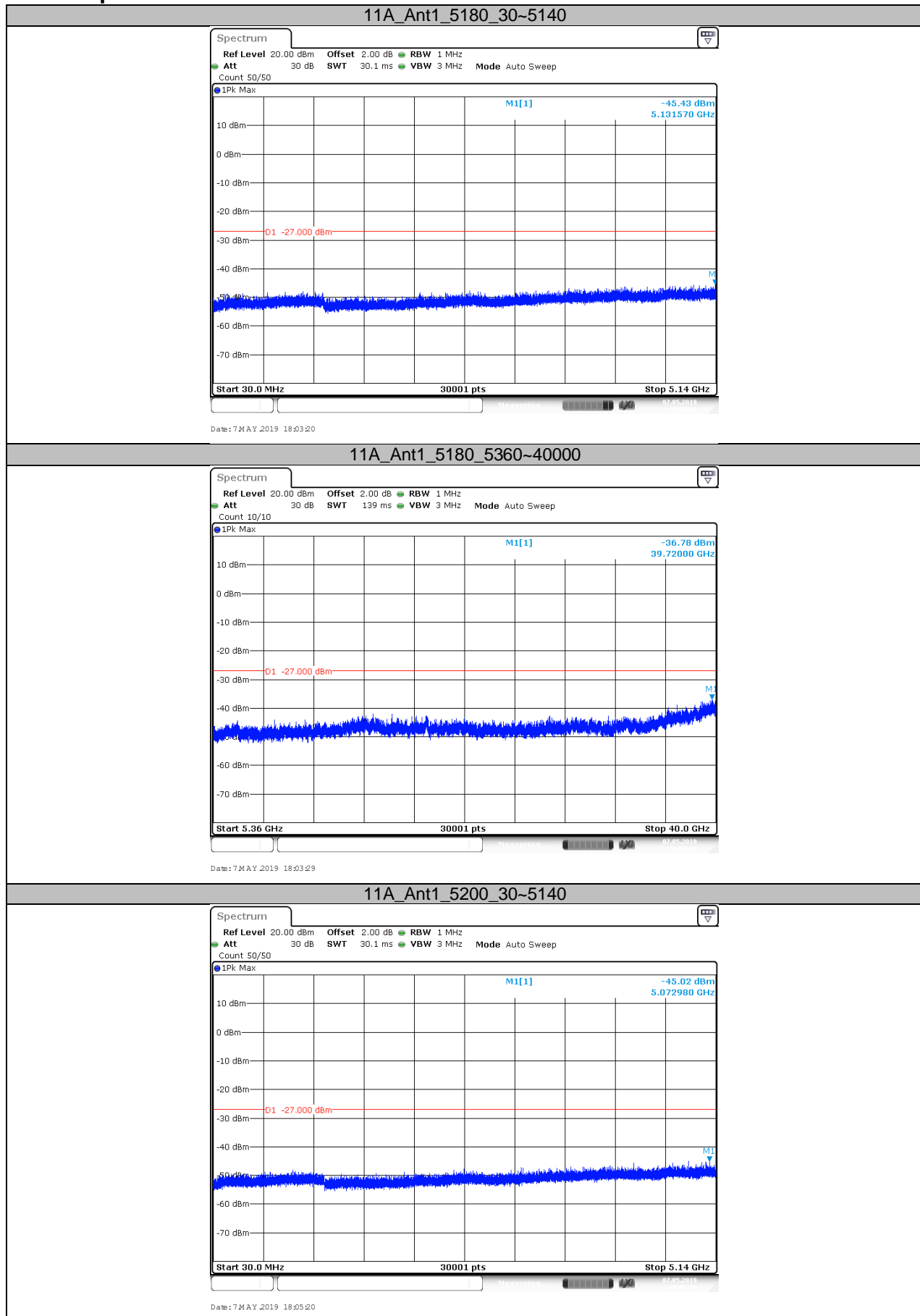
## Conducted Spurious Emission

### Test result:

Test Mode	Antenna	Channel	FreqRange	Max. Fre	Max. Level	Limit	Verdict
11A	Ant1	5180	30~5140	30~5140	-45.43	<=-27	PASS
		5180	5360~40000	5360~40000	-36.78	<=-27	PASS
		5200	30~5140	30~5140	-45.02	<=-27	PASS
		5200	5360~40000	5360~40000	-37.05	<=-27	PASS
		5240	30~5140	30~5140	-45.78	<=-27	PASS
		5240	5360~40000	5360~40000	-36.7	<=-27	PASS
		5260	30~5140	30~5140	-45.44	<=-27	PASS
		5260	5360~40000	5360~40000	-37.43	<=-27	PASS
		5280	30~5140	30~5140	-45.45	<=-27	PASS
		5280	5360~40000	5360~40000	-37.56	<=-27	PASS
		5320	30~5140	30~5140	-45.61	<=-27	PASS
		5320	5360~40000	5360~40000	-37.42	<=-27	PASS
		5500	30~5460	30~5460	-44.74	<=-27	PASS
		5500	5735~40000	5735~40000	-37.34	<=-27	PASS
		5580	30~5460	30~5460	-45.68	<=-27	PASS
		5580	5735~40000	5735~40000	-37.55	<=-27	PASS
		5700	30~5460	30~5460	-45.84	<=-27	PASS
		5700	5735~40000	5735~40000	-37.5	<=-27	PASS
		5720	30~5460	30~5460	-45.64	<=-27	PASS
		5720	5925~40000	5925~40000	-37.67	<=-27	PASS
		5745	30~5650	30~5650	-45.46	<=-27	PASS
		5745	5925~40000	5925~40000	-36.54	<=-27	PASS
		5785	30~5650	30~5650	-45.62	<=-27	PASS
		5785	5925~40000	5925~40000	-37.34	<=-27	PASS
		5825	30~5650	30~5650	-44.85	<=-27	PASS
		5825	5925~40000	5925~40000	-36.93	<=-27	PASS
11N20SISO	Ant1	5180	30~5140	30~5140	-45.94	<=-27	PASS
		5180	5360~40000	5360~40000	-37.14	<=-27	PASS
		5200	30~5140	30~5140	-45.62	<=-27	PASS
		5200	5360~40000	5360~40000	-36.83	<=-27	PASS
		5240	30~5140	30~5140	-45.62	<=-27	PASS
		5240	5360~40000	5360~40000	-36.21	<=-27	PASS
		5260	30~5140	30~5140	-45.72	<=-27	PASS
		5260	5360~40000	5360~40000	-37.24	<=-27	PASS
		5280	30~5140	30~5140	-45.44	<=-27	PASS
		5280	5360~40000	5360~40000	-36.6	<=-27	PASS
		5320	30~5140	30~5140	-45.94	<=-27	PASS
		5320	5360~40000	5360~40000	-37.55	<=-27	PASS
		5500	30~5460	30~5460	-45.63	<=-27	PASS
		5500	5735~40000	5735~40000	-37.7	<=-27	PASS
		5580	30~5460	30~5460	-45.4	<=-27	PASS
		5580	5735~40000	5735~40000	-37.46	<=-27	PASS
		5700	30~5460	30~5460	-45.66	<=-27	PASS
		5700	5735~40000	5735~40000	-37.11	<=-27	PASS
		5720	30~5460	30~5460	-45.48	<=-27	PASS
		5720	5925~40000	5925~40000	-37.27	<=-27	PASS
		5745	30~5650	30~5650	-45.7	<=-27	PASS
		5745	5925~40000	5925~40000	-36.86	<=-27	PASS
		5785	30~5650	30~5650	-45.47	<=-27	PASS
		5785	5925~40000	5925~40000	-37.31	<=-27	PASS
		5825	30~5650	30~5650	-45.68	<=-27	PASS
		5825	5925~40000	5925~40000	-36.9	<=-27	PASS
11N40SISO	Ant1	5190	30~5140	30~5140	-45.48	<=-27	PASS
		5190	5360~40000	5360~40000	-36.81	<=-27	PASS
		5230	30~5140	30~5140	-44.88	<=-27	PASS
		5230	5360~40000	5360~40000	-37.08	<=-27	PASS

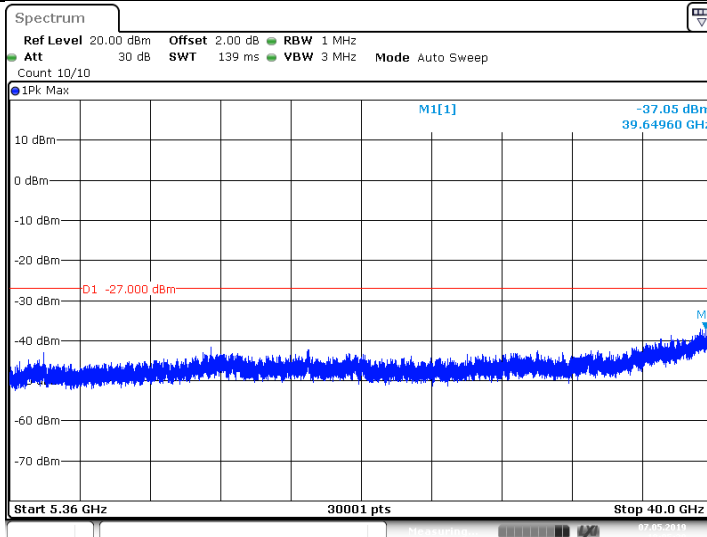
		5270	30~5140	30~5140	-45.93	<=-27	PASS
		5270	5360~40000	5360~40000	-37.1	<=-27	PASS
		5310	30~5140	30~5140	-46.1	<=-27	PASS
		5310	5360~40000	5360~40000	-37.24	<=-27	PASS
		5510	30~5460	30~5460	-44.89	<=-27	PASS
		5510	5735~40000	5735~40000	-37.34	<=-27	PASS
		5550	30~5460	30~5460	-45.56	<=-27	PASS
		5550	5735~40000	5735~40000	-37.33	<=-27	PASS
		5670	30~5460	30~5460	-45.59	<=-27	PASS
		5670	5735~40000	5735~40000	-36.52	<=-27	PASS
		5710	30~5460	30~5460	-46.06	<=-27	PASS
		5710	5925~40000	5925~40000	-37	<=-27	PASS
		5755	30~5650	30~5650	-45.09	<=-27	PASS
		5755	5925~40000	5925~40000	-37.27	<=-27	PASS
		5795	30~5650	30~5650	-45.33	<=-27	PASS
		5795	5925~40000	5925~40000	-37.05	<=-27	PASS

## Test Graphs



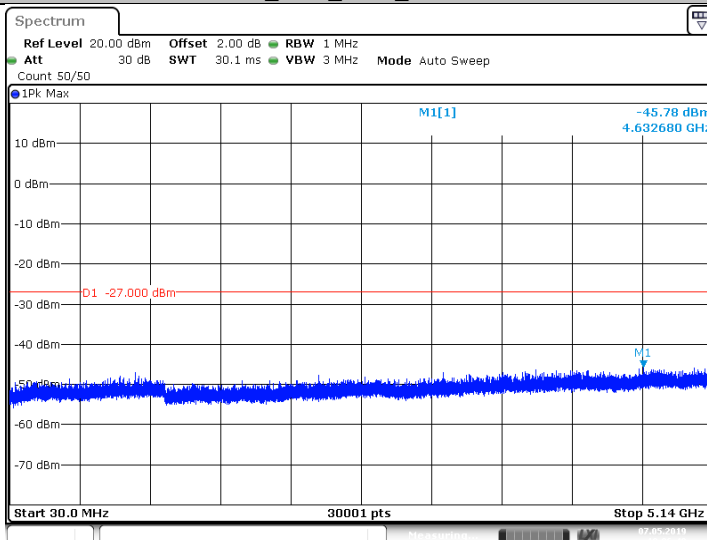


## 11A\_Ant1\_5200\_5360~40000



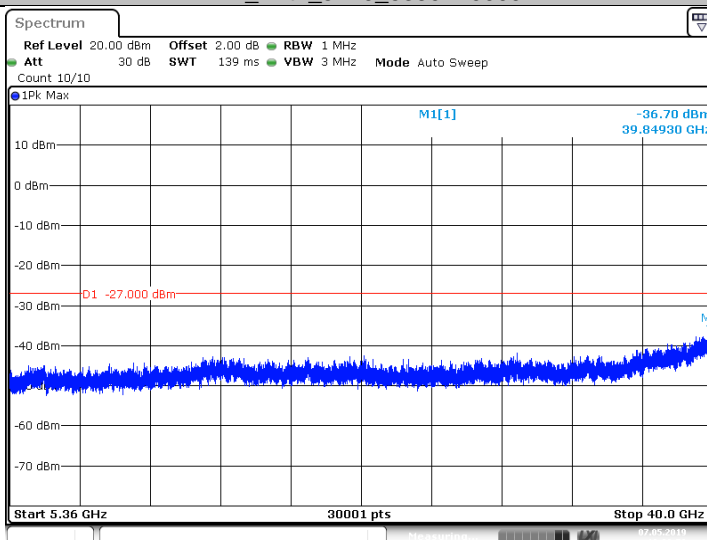
Date: 7 MAY 2019 18:05:29

## 11A\_Ant1\_5240\_30~5140



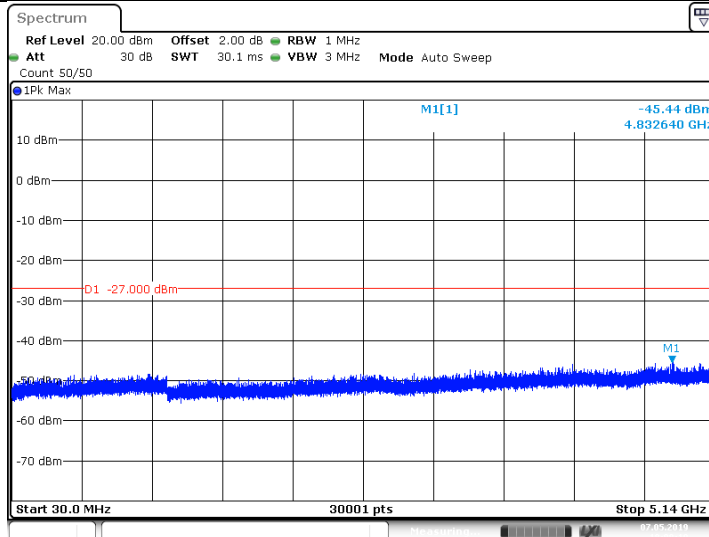
Date: 7 MAY 2019 18:06:49

## 11A\_Ant1\_5240\_5360~40000



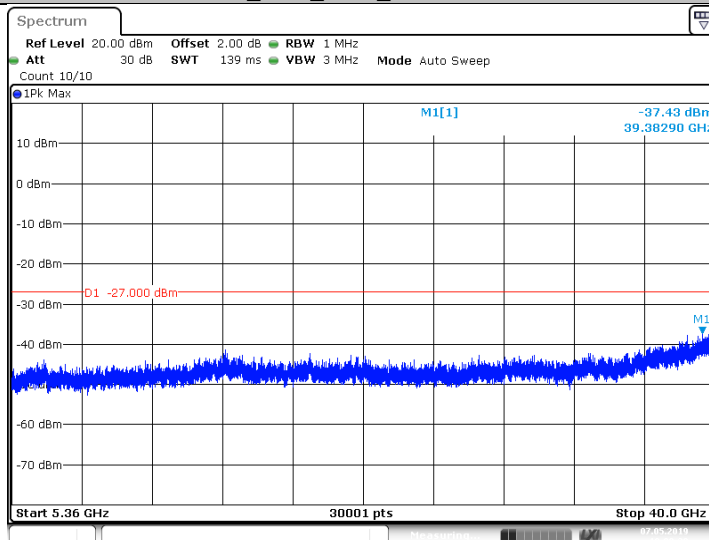
Date: 7 MAY 2019 18:06:58

## 11A\_Ant1\_5260\_30~5140



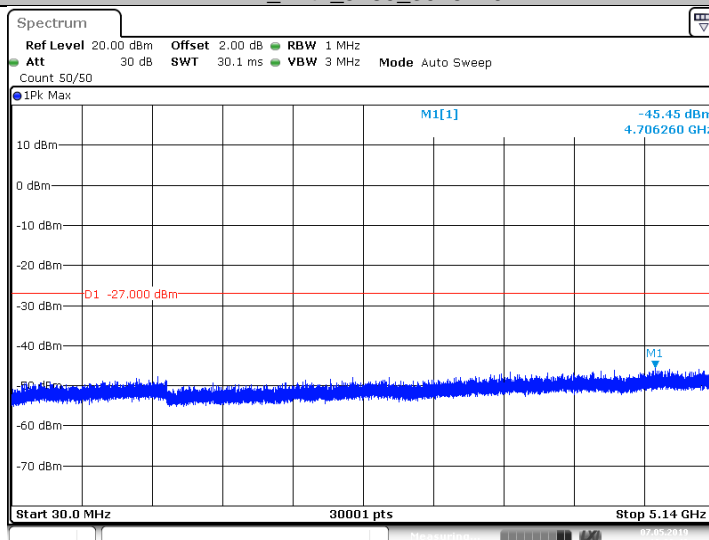
Date: 7 MAY 2019 18:08:20

## 11A\_Ant1\_5260\_5360~40000



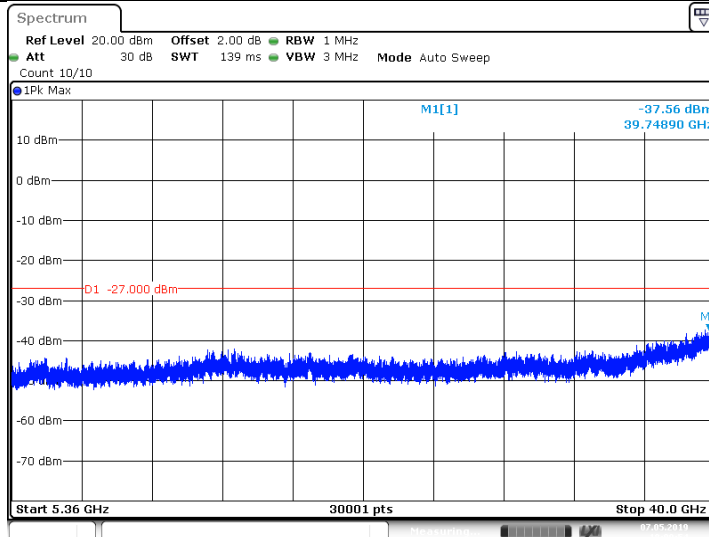
Date: 7 MAY 2019 18:08:29

## 11A\_Ant1\_5280\_30~5140



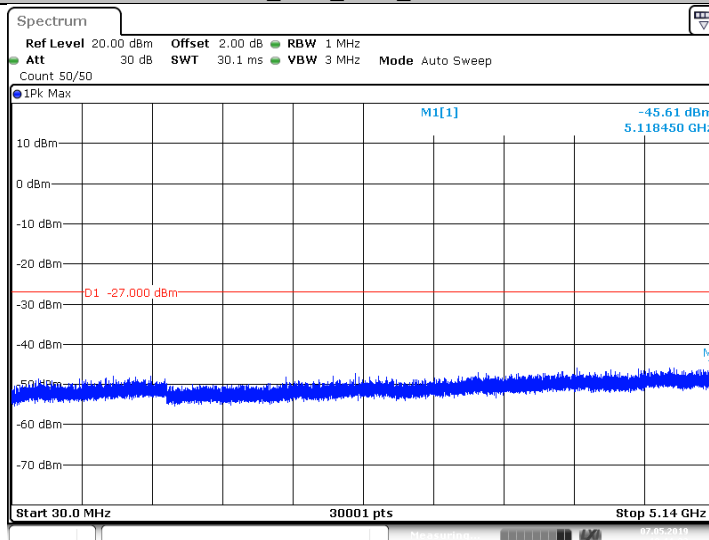
Date: 7 MAY 2019 18:09:46

## 11A\_Ant1\_5280\_5360~40000



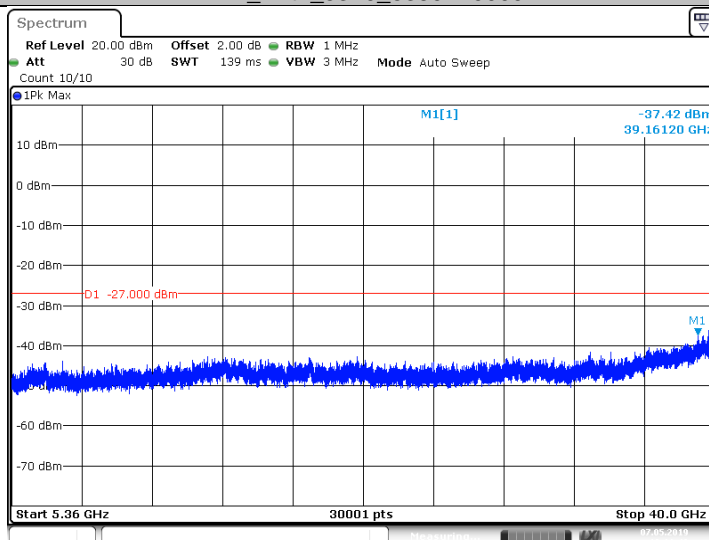
Date: 7 MAY 2019 18:09:55

## 11A\_Ant1\_5320\_30~5140



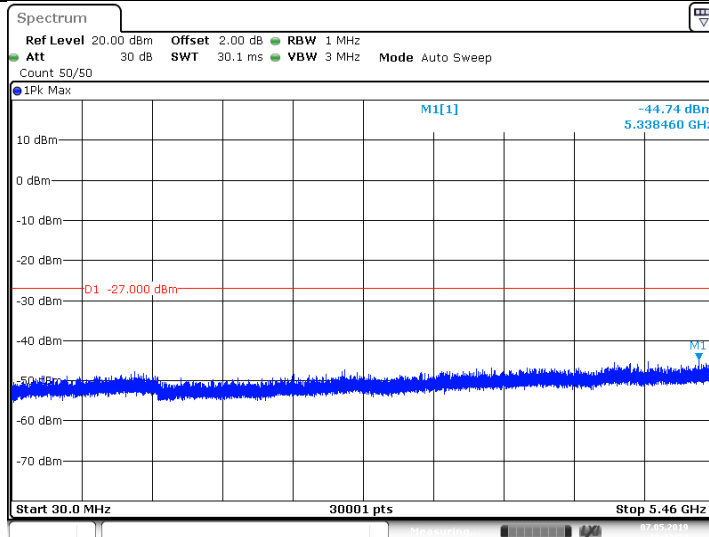
Date: 7 MAY 2019 18:11:32

## 11A\_Ant1\_5320\_5360~40000



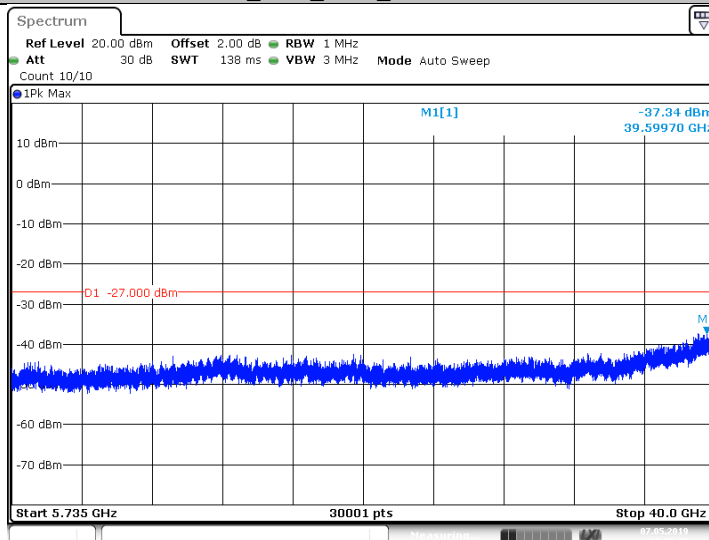
Date: 7 MAY 2019 18:11:41

## 11A\_Ant1\_5500\_30~5460



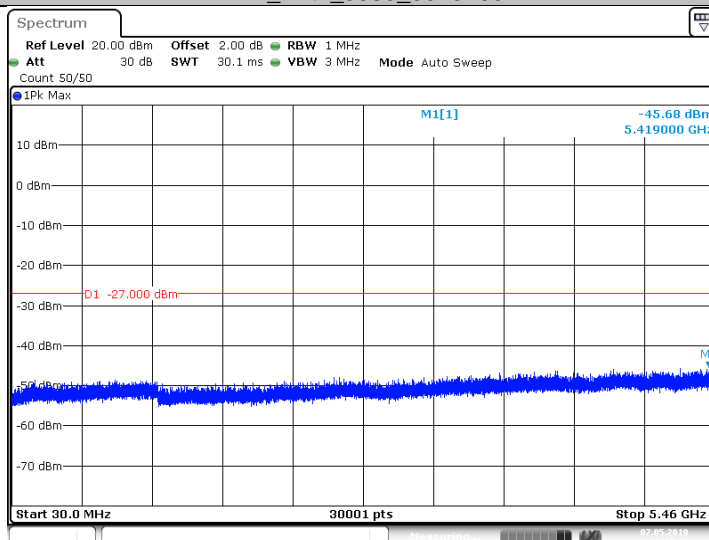
Date: 7 MAY 2019 18:13:34

## 11A\_Ant1\_5500\_5735~40000



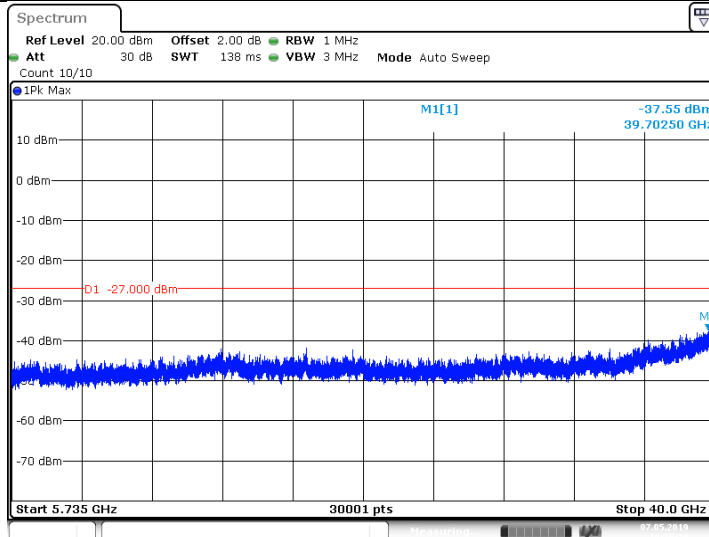
Date: 7 MAY 2019 18:13:43

## 11A\_Ant1\_5580\_30~5460



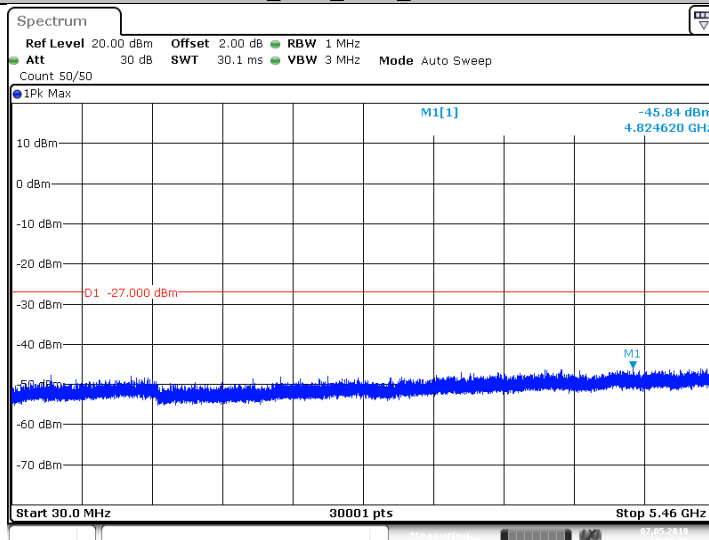
Date: 7 MAY 2019 18:15:20

## 11A\_Ant1\_5580\_5735~40000



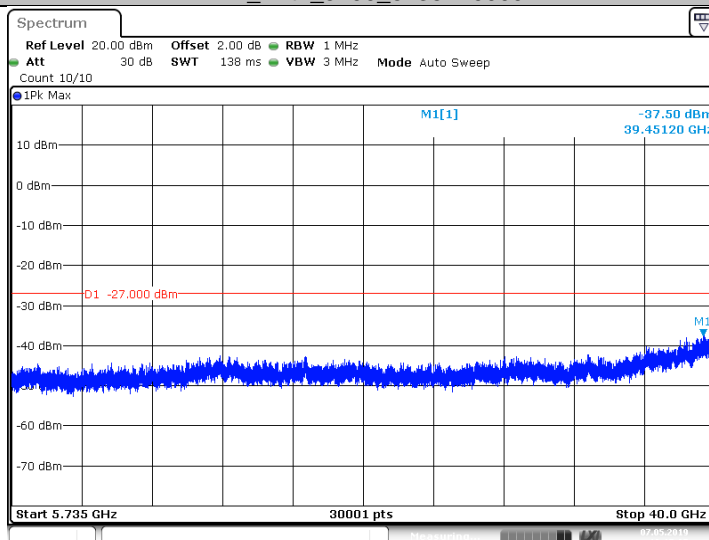
Date: 7 MAY 2019 18:15:28

## 11A\_Ant1\_5700\_30~5460



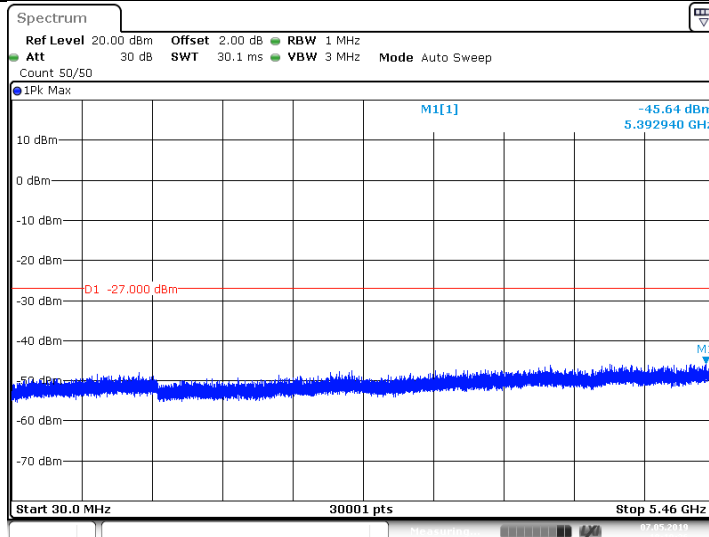
Date: 7 MAY 2019 18:17:16

## 11A\_Ant1\_5700\_5735~40000



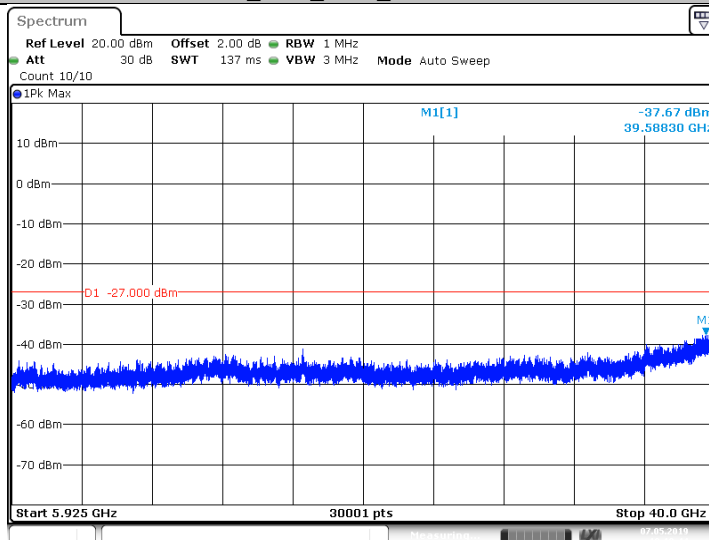
Date: 7 MAY 2019 18:17:25

## 11A\_Ant1\_5720\_30~5460



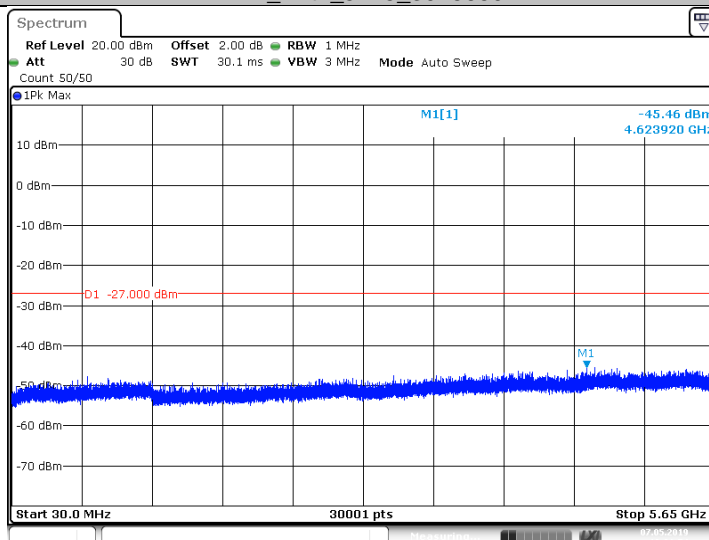
Date: 7 MAY 2019 18:19:35

## 11A\_Ant1\_5720\_5925~40000



Date: 7 MAY 2019 18:19:44

## 11A\_Ant1\_5745\_30~5650



Date: 7 MAY 2019 18:21:55