FCC - TEST REPORT

Report Number	:	**68.950.20.0157.01**	Date of Issue:	2020-04-22
Model	:	**SPBL1**		
Product Type	:	Camera		
Applicant	:	GoPro, Inc.		
Address	:	3000 Clearview Way, San Mateo, CA 94402, USA		
Manufacturer	:	GoPro, Inc.		
Address	:	3000 Clearview Way, San Mateo, CA 94402, USA		
Test Result	:	■ **Positive** ☐ **Negative**		
Total pages including Appendices	:	**132**		

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1 Table of Contents

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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 Designation Number:	CN5009
FCC Registration No.:	514049
ISED#:	10320A
Telephone:	86 755 8828 6998
Fax:	86 755 8828 5299

3 Description of the Equipment Under Test

Description of the Equipment Under Test

Product:	Camera
Model no.:	SPBL1
FCC ID:	CNFSPBL1
IC:	10193A-SPBL1
PMN:	SPBL1
HVIN:	SPBL1
Rating:	3.85VDC
RF Transmission Frequency:	5.180GHz~5.240GHz; 5.260GHz~5.320GHz; 5.500GHz~5.700GHz; 5.745GHz~5.825GHz Note: until further notice, device subject to this section shall not be capable of transmitting in the band 5600-5650MHz. This restriction is for the protection of Environment Canada's weather radars operating in this band.
Modulation:	802.11a: BPSK, QPSK, 16QAM, 64QAM 802.11n: BPSK, QPSK, 16QAM, 64QAM 802.11ac: BPSK, QPSK, 16QAM, 64QAM, 256QAM
Antenna Type:	Integral Metal Antenna
Antenna Gain:	-0.2dBi max for 5.180GHz~5.240GHz; 1.4dBi max for 5.260GHz~5.320GHz; 2.5dBi max for 5.500GHz~5.700GHz; 1.7dBi max for 5.745GHz~5.825GHz
Description of the EUT:	The Equipment Under Test (EUT) is a Camera supports 2.4GHz Bluetooth/WIFI, 5GHz WIFI functions.

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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
FCC Part 15 Subpart C 10-1-2018 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators
RSS-Gen Issue 5, Amendment 1, March 2019	General Requirements and Information for the Certification of Radio Apparatus
RSS-247 Issue 2 February 2017	Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSS) and License-Exempt Local Area Network (LE-LAN) Devices

Test Method:
FCC KDB 558074 D01 15.247 Meas Guidance v05r02
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

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5 Summary of Test Results

Technical Requirements			
FCC Part 15 Subpart E, FCC Part 15 Subpart C			
Test Condition	Test Result		
	Pass	Fail	N/A
15.207 & RSS-Gen Clause 8.8 Conducted Emission AC Power Port	☒	☐	☐
15.407(e) & RSS-247 Clause 6.2 Emission bandwidth	☒	☐	☐
15.407(a)(i) & RSS-247 Clause 6.2 Maximum Conducted Output Power	☒	☐	☐
15.407(a)(i) & RSS-247 Clause 6.2 Maximum Power Spectral Density	☒	☐	☐
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 & RSS-247 Clause 6.2 RSS-Gen Clause 8.9 Unwanted Emissions	☒	☐	☐
15.407(b)(i), 15.407(b)(5), 15.407(b)(7), 15.209 & RSS-247 Clause 6.2 RSS-Gen Clause 8.9 Band edge compliance	☒	☐	☐
15.407(g) & RSS-Gen Clause 6.11 Frequencies Stability	☒	☐	☐
15.407(h) & RSS-247 Clause 6.3 Dynamic Frequency Selection (DFS).	☒	☐	☐
15.203 & RSS-GEN Clause 6.13 Antenna Requirement	☒ See note 1	☐	☐

Remark: [a] The EUT can be configured as a master and client. When operating as Clients Device without Radar Detection, it will work on 5180GHz~5.240GHz; 5.260GHz~5.320GHz; 5.500GHz~5.700GHz; 5.745GHz~5.825GHz. When operating as Master Device without Radar Detection, it will work on 5180GHz~5.240GHz, 5.745GHz~5.825GHz.
Note 1: The EUT uses an Integrated antenna, which gain is -0.2dBi max for 5.180GHz~5.240GHz; 1.4dBi max for 5.260GHz~5.320GHz; 2.5dBi max for 5.500GHz~5.700GHz; 1.7dBi max for 5.745GHz~5.825GHz. In accordance to 15.203 & RSS-GEN 6.13, it is considered sufficiently to comply with the provisions of this section.

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6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: CNFSPBL1, complies with Section 15.207, 15.209, 15.205, 15.247 of the FCC Part 15, Subpart C

This submittal(s) (test report) is intended for IC: 10193A-SPBL1, complies with RSS-247, RSS-GEN.

The Model: SPBL1 supports Bluetooth Low Energy/Bluetooth BR+EDR /WIFI/GPS & Galileo receiving functions, power by 3.85Vdc, 1720mAh supplied by an rechargeable Lithium Ion Battery or 5Vdc supplied by USB type C port.

The TX and RX range is 2402MHz-2480MHz for Bluetooth, 2412MHz – 2462MHz for 2.4GHzWIFI, 5180MHz – 5320MHz, 5500MHz – 5700MHz, 5745MHz – 5825MHz for 5GHzWIFI, 1575.42MHz for GNSS (only GPS and Galileo) Receiver.

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: 2020-04-03

Testing Start Date: 2020-04-03

Testing End Date: 2020-04-20

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

Reviewed by:	Prepared by:	Tested by:
John Zhi	Joe Gu	Tree Zhan
EMC Project Manager	EMC Project Engineer	EMC Test Engineer

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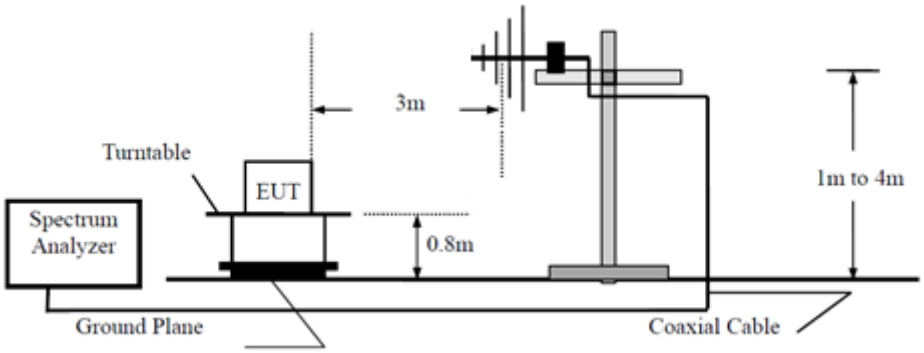
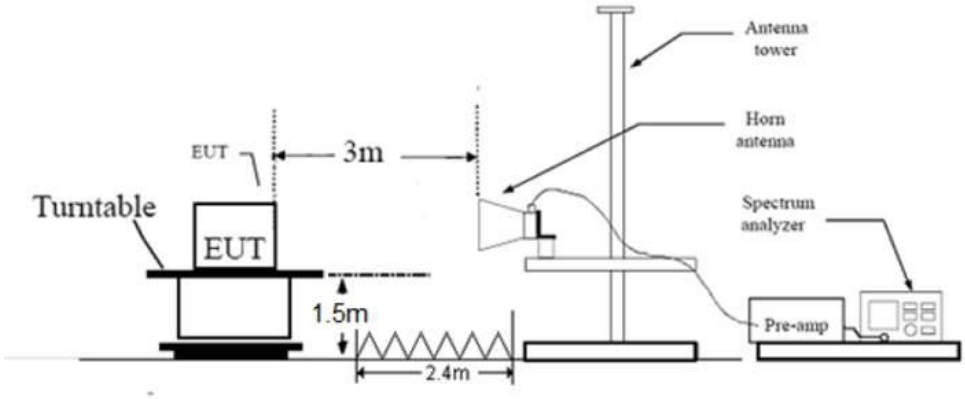
7 Test setups

7.1 Radiated test setups

Below 1GHz



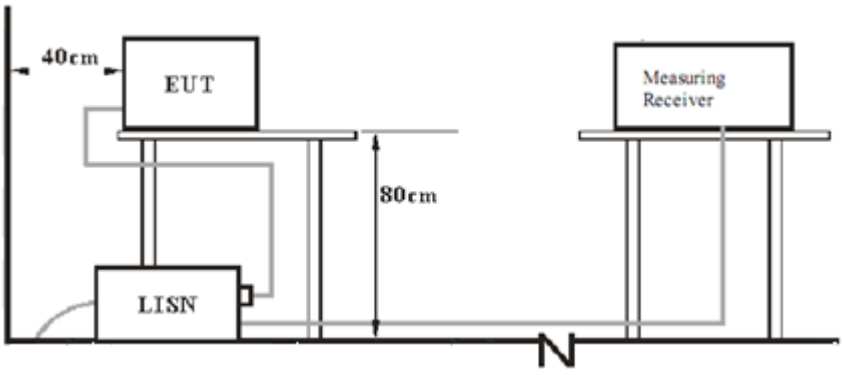
Above 1GHz



7.2 Conducted RF test setups

EUT

7.3 AC Power Line Conducted Emission test setups



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8. Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.	S/N
Laptop	Lenovo	T460S	---
USB Type C cable	GoPro	0.46m (Length)	---
AC Adapter	Apple	A1401	---

Test software information:

Test Software Version	QRCT (V3.0-186.0) from QUALCOMM			
Band	Mode	Freq (MHz)	Power level from QRCT	Packet Type
5G WIFI U-NII-1	802.11a	5180	15	11g 6 Mbps
	802.11a	5200	15	11g 6 Mbps
	802.11a	5240	15	11g 6 Mbps
	802.11n HT20	5180	15	MCS0 6.5 Mbps
	802.11n HT20	5200	15	MCS0 6.5 Mbps
	802.11n HT20	5240	15	MCS0 6.5 Mbps
	802.11n HT40	5190	15	MCS0 13.5 Mbps (40MHz)
	802.11n HT40	5230	15	MCS0 13.5 Mbps (40MHz)
	802.11ac VHT20	5180	15	11ac NGI 6.5 Mbps (20MHz)
	802.11ac VHT20	5200	15	11ac NGI 6.5 Mbps (20MHz)
	802.11ac VHT20	5240	15	11ac NGI 6.5 Mbps (20MHz)
	802.11ac VHT40	5190	15	11ac NGI 13.5 Mbps (40MHz)
	802.11ac VHT40	5230	15	11ac NGI 13.5 Mbps (40MHz)
	802.11ac VHT80	5210	14	11ac NGI 29.3 Mbps (80MHz)
5G WIFI U-NII-2A	802.11a	5260	15	11g 6 Mbps
	802.11a	5280	15	11g 6 Mbps
	802.11a	5320	15	11g 6 Mbps
	802.11n HT20	5260	15	MCS0 6.5 Mbps
	802.11n HT20	5280	15	MCS0 6.5 Mbps
	802.11n HT20	5320	15	MCS0 6.5 Mbps
	802.11n HT40	5270	15	MCS0 13.5 Mbps (40MHz)
	802.11n HT40	5310	15	MCS0 13.5 Mbps (40MHz)
	802.11ac VHT20	5260	15	11ac NGI 6.5 Mbps (20MHz)
	802.11ac VHT20	5280	15	11ac NGI 6.5 Mbps (20MHz)
	802.11ac VHT20	5320	15	11ac NGI 6.5 Mbps (20MHz)

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	802.11ac VHT40	5270	15	11ac NGI 13.5 Mbps (40MHz)
	802.11ac VHT40	5310	15	11ac NGI 13.5 Mbps (40MHz)
	802.11ac VHT80	5290	13.5	11ac NGI 29.3 Mbps (80MHz)
5G WIFI U-NII-2C	802.11a	5500	15	11g 6 Mbps
	802.11a	5580	15	11g 6 Mbps
	802.11a	5700	15	11g 6 Mbps
	802.11a	5720_UNII-2C	15	11g 6 Mbps
	802.11a	5720_UNII-3	15	11g 6 Mbps
	802.11n HT20	5500	15	MCS0 6.5 Mbps
	802.11n HT20	5580	15	MCS0 6.5 Mbps
	802.11n HT20	5700	15	MCS0 6.5 Mbps
	802.11n HT20	5720_UNII-2C	15	MCS0 6.5 Mbps
	802.11n HT20	5720_UNII-3	15	MCS0 6.5 Mbps
	802.11n HT40	5510	15	MCS0 13.5 Mbps (40MHz)
	802.11n HT40	5550	15	MCS0 13.5 Mbps (40MHz)
	802.11n HT40	5670	15	MCS0 13.5 Mbps (40MHz)
	802.11n HT40	5710_UNII-2C	15	MCS0 13.5 Mbps (40MHz)
	802.11n HT40	5710_UNII-3	15	MCS0 13.5 Mbps (40MHz)
	802.11ac VHT20	5500	15	11ac NGI 6.5 Mbps (20MHz)
	802.11ac VHT20	5580	15	11ac NGI 6.5 Mbps (20MHz)
	802.11ac VHT20	5700	15	11ac NGI 6.5 Mbps (20MHz)
	802.11ac VHT20	5720_UNII-2C	15	11ac NGI 6.5 Mbps (20MHz)
	802.11ac VHT20	5720_UNII-3	15	11ac NGI 6.5 Mbps (20MHz)
	802.11ac VHT40	5510	15	11ac NGI 13.5 Mbps (40MHz)
	802.11ac VHT40	5550	15	11ac NGI 13.5 Mbps (40MHz)
	802.11ac VHT40	5670	15	11ac NGI 13.5 Mbps (40MHz)
	802.11ac VHT40	5710_UNII-2C	15	11ac NGI 13.5 Mbps (40MHz)
	802.11ac VHT40	5710_UNII-3	15	11ac NGI 13.5 Mbps (40MHz)
	802.11ac VHT80	5530	13.5	11ac NGI 29.3 Mbps (80MHz)
	802.11ac VHT80	5690_UNII-2C	15	11ac NGI 29.3 Mbps (80MHz)
	802.11ac VHT80	5690_UNII-3	15	11ac NGI 29.3 Mbps (80MHz)
5G WIFI U-NII-3	802.11a	5745	11	11g 6 Mbps
	802.11a	5785	11	11g 6 Mbps
	802.11a	5825	11	11g 6 Mbps
	802.11n HT20	5745	11	MCS0 6.5 Mbps
	802.11n HT20	5785	11.5	MCS0 6.5 Mbps
	802.11n HT20	5825	11	MCS0 6.5 Mbps

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	802.11n HT40	5755	11	MCS0 13.5 Mbps (40MHz)
	802.11n HT40	5795	11	MCS0 13.5 Mbps (40MHz)
	802.11ac VHT20	5745	11	11ac NGI 6.5 Mbps (20MHz)
	802.11ac VHT20	5785	11	11ac NGI 6.5 Mbps (20MHz)
	802.11ac VHT20	5825	11	11ac NGI 6.5 Mbps (20MHz)
	802.11ac VHT40	5755	11	11ac NGI 13.5 Mbps (40MHz)
	802.11ac VHT40	5795	11.5	11ac NGI 13.5 Mbps (40MHz)
	802.11ac VHT80	5775	11.5	11ac NGI 29.3 Mbps (80MHz)

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The system was configured to channel:

Test Mode	Channel (MHz)		
802.11a, 802.11n HT20 802.11ac VHT20	5G WIFI-Band 1		
	CH36 (5180MHz)	CH40 (5200MHz)	CH48 (5240MHz)
	5G WIFI-Band 2		
	CH52 (5260MHz)	CH56 (5280MHz)	CH64 (5320MHz)
	5G WIFI-Band 3		
	CH100 (5500MHz)	CH116 (5580MHz)	CH140 (5700MHz)
	CH144 (5720MHz)		
	5G WIFI-Band 4		
	CH149 (5745MHz),	CH157(5785MHz)	CH165 (5825MHz)

Test Mode	Channel (MHz)		
802.11n HT40 802.11ac VHT40	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 142 (5710MHz)		
	5G WIFI-Band 4		
	CH151(5755MHz)	CH159(5795MHz)	

Test Mode	Channel (MHz)	
802.11ac VHT80	5G WIFI-Band 1	
	CH42(5210MHz)	
	5G WIFI-Band 2	
	CH58(5290MHz)	
	5G WIFI-Band 3	
	CH106(5530MHz)	CH138(5690MHz)
	5G WIFI-Band 4	
	CH155(5775MHz)	

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9 Technical Requirement

9.1 Conducted Emission

Test Method

1. The EUT was placed on a table, which is 0.8m above ground plane
2. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.).
3. Maximum procedure was performed to ensure EUT compliance
4. A EMI test receiver is used to test the emissions from both sides of AC line

Limit

According to §15.207, conducted emissions limit as below:

Frequency MHz	QP Limit dBµV	AV Limit dBµV
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

Remark: “*” Decreasing linearly with logarithm of the frequency

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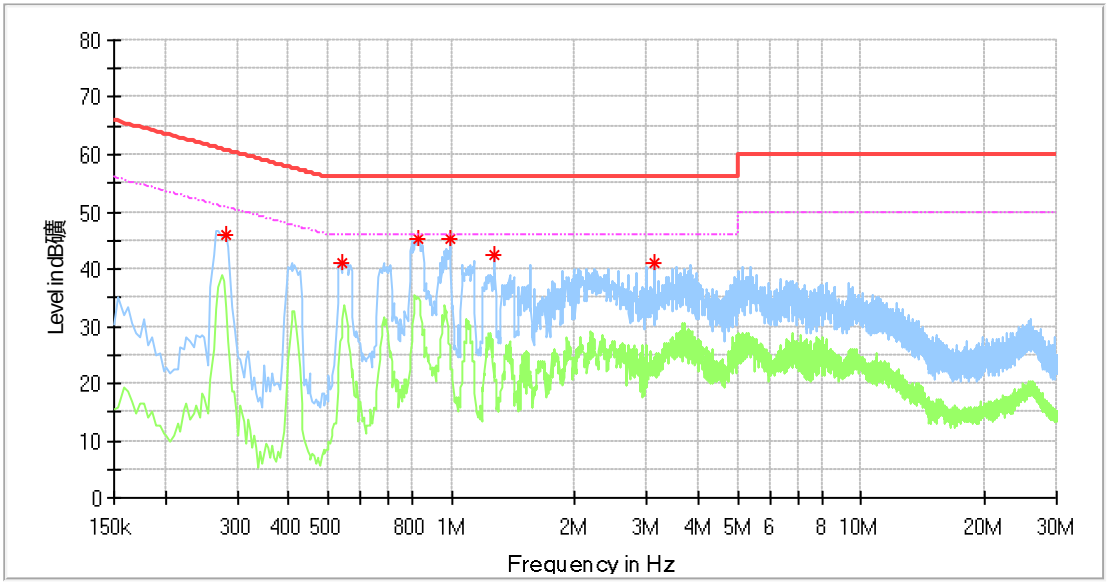
Conducted Emission

Product Type : Camera
M/N : SPBL1
Operating Condition : Charging + TX
Test Specification : Power Line, Live
Comment : AC 120V/60Hz (External adapter)



Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.282000	45.86	---	60.76	14.89	L1	10.3
0.542000	41.14	---	56.00	14.86	L1	10.3
0.826000	45.10	---	56.00	10.90	L1	10.3
0.994000	45.13	---	56.00	10.87	L1	10.3
1.274000	42.61	---	56.00	13.39	L1	10.3
3.118000	41.23	---	56.00	14.77	L1	10.4

Remark :
Level=Reading Level + Correction Factor
Correction Factor=Cable Loss + LISN Factor
(The Reading Level is recorded by software which is not shown in the sheet)

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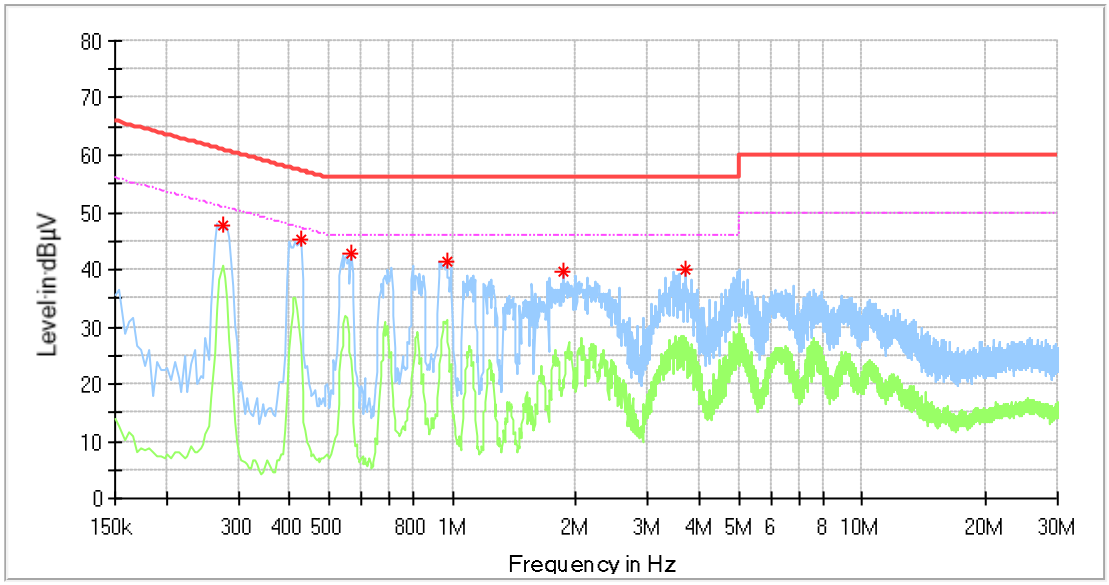
Conducted Emission

Product Type : Camera
M/N : SPBL1
Operating Condition : Charging + TX
Test Specification : Power Line, Neutral
Comment : AC 120V/60Hz (External adapter)



Frequency (MHz)	MaxPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.274000	47.70	---	61.00	13.30	N	10.3
0.426000	45.14	---	57.33	12.20	N	10.3
0.566000	42.69	---	56.00	13.31	N	10.3
0.970000	41.41	---	56.00	14.59	N	10.3
1.862000	39.50	---	56.00	16.50	N	10.4
3.690000	39.89	---	56.00	16.11	N	10.4

Remark :
Level=Reading Level + Correction Factor
Correction Factor=Cable Loss + LISN Factor
(The Reading Level is recorded by software which is not shown in the sheet)

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9.2 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) ≥ 3 × 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: ≥500KHz

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 ≥ 3 · 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

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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

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26dB Bandwidth Test result:

TestMode	Antenna	Channel	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	19.640	5170.240	5189.880	---	PASS
		5200	19.600	5190.520	5210.120	---	PASS
		5240	19.560	5230.400	5249.960	---	PASS
		5260	19.520	5250.240	5269.760	---	PASS
		5280	19.920	5270.120	5290.040	---	PASS
		5320	19.880	5310.200	5330.080	---	PASS
		5500	19.480	5490.160	5509.640	---	PASS
		5580	19.240	5570.600	5589.840	---	PASS
		5700	19.720	5690.320	5710.040	---	PASS
		5720	19.560	5710.320	5729.880	---	PASS
		5720_UNII-2C	14.68	5710.320	5725	---	PASS
		5720_UNII-3	4.88	5725	5729.880	---	PASS
		5745	19.000	5735.600	5754.600	---	PASS
		5785	19.280	5775.400	5794.680	---	PASS
		5825	19.120	5815.400	5834.520	---	PASS
11N20SISO	Ant1	5180	20.040	5170.000	5190.040	---	PASS
		5200	19.800	5190.200	5210.000	---	PASS
		5240	19.920	5230.080	5250.000	---	PASS
		5260	19.960	5250.000	5269.960	---	PASS
		5280	19.920	5270.120	5290.040	---	PASS
		5320	20.000	5310.000	5330.000	---	PASS
		5500	19.840	5490.160	5510.000	---	PASS
		5580	20.000	5570.040	5590.040	---	PASS
		5700	20.440	5690.080	5710.520	---	PASS
		5720	20.000	5710.120	5730.120	---	PASS
		5720_UNII-2C	14.88	5710.120	5725	---	PASS
		5720_UNII-3	5.12	5725	5730.120	---	PASS
		5745	19.880	5735.120	5755.000	---	PASS
		5785	19.800	5775.120	5794.920	---	PASS
		5825	19.840	5815.080	5834.920	---	PASS
11N40SISO	Ant1	5190	45.120	5167.120	5212.240	---	PASS
		5230	45.600	5207.200	5252.800	---	PASS
		5270	45.440	5247.280	5292.720	---	PASS
		5310	45.120	5287.920	5333.040	---	PASS
		5510	46.880	5486.560	5533.440	---	PASS
		5550	45.680	5526.960	5572.640	---	PASS
		5670	44.800	5648.080	5692.880	---	PASS
		5710	45.840	5686.960	5732.800	---	PASS
		5710_UNII-2C	38.04	5686.960	5725	---	PASS
		5710_UNII-3	7.8	5725	5732.800	---	PASS
		5755	44.800	5732.920	5777.720	---	PASS
		5795	44.880	5772.440	5817.320	---	PASS
11AC20SISO	Ant1	5180	19.960	5170.040	5190.000	---	PASS
		5200	20.120	5190.000	5210.120	---	PASS
		5240	19.880	5230.080	5249.960	---	PASS
		5260	19.760	5250.240	5270.000	---	PASS
		5280	20.000	5270.000	5290.000	---	PASS
		5320	19.960	5310.000	5329.960	---	PASS
		5500	20.120	5490.040	5510.160	---	PASS
		5580	19.760	5570.160	5589.920	---	PASS
		5700	20.000	5690.120	5710.120	---	PASS
		5720	19.840	5710.120	5729.960	---	PASS
		5720_UNII-2C	14.88	5710.120	5725	---	PASS
		5720_UNII-3	4.96	5725	5729.960	---	PASS
		5745	19.840	5735.160	5755.000	---	PASS
		5785	19.960	5775.080	5795.040	---	PASS
		5825	19.800	5815.160	5834.960	---	PASS

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11AC40SISO	Ant1	5190	44.880	5167.200	5212.080	---	PASS
		5230	46.000	5207.360	5253.360	---	PASS
		5270	41.520	5249.200	5290.720	---	PASS
		5310	43.360	5288.800	5332.160	---	PASS
		5510	42.320	5489.040	5531.360	---	PASS
		5550	46.080	5527.120	5573.200	---	PASS
		5670	41.520	5649.440	5690.960	---	PASS
		5710	46.080	5686.720	5732.800	---	PASS
		5710_UNII-2C	38.28	5686.720	5725	---	PASS
		5710_UNII-3	7.8	5725	5732.800	---	PASS
		5755	41.600	5734.120	5775.720	---	PASS
		5795	40.640	5774.680	5815.320	---	PASS
11AC80SISO	Ant1	5210	84.000	5167.600	5251.600	---	PASS
		5290	86.560	5245.040	5331.600	---	PASS
		5530	85.920	5487.120	5573.040	---	PASS
		5690	83.680	5648.240	5731.920	---	PASS
		5690_UNII-2C	76.76	5648.240	5725	---	PASS
		5690_UNII-3	6.92	5725	5731.920	---	PASS
		5775	83.520	5733.080	5816.600	---	PASS

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99% Bandwidth Test Result

TestMode	Antenna	Channel	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5180	16.583	5171.768	5188.352	---	PASS
		5200	16.543	5191.808	5208.352	---	PASS
		5240	16.583	5231.768	5248.352	---	PASS
		5260	16.583	5251.768	5268.352	---	PASS
		5280	16.583	5271.768	5288.352	---	PASS
		5320	16.583	5311.768	5328.352	---	PASS
		5500	16.623	5491.768	5508.392	---	PASS
		5580	16.623	5571.768	5588.392	---	PASS
		5700	16.583	5691.768	5708.352	---	PASS
		5720	16.623	5711.768	5728.392	---	PASS
		5720_UNII-2C	13.232	5711.768	5725	---	PASS
		5720_UNII-3	3.392	5725	5728.392	---	PASS
		5745	16.583	5736.768	5753.352	---	PASS
		5785	16.583	5776.768	5793.352	---	PASS
		5825	16.583	5816.768	5833.352	---	PASS
11N20SISO	Ant1	5180	17.622	5171.249	5188.871	---	PASS
		5200	17.662	5191.249	5208.911	---	PASS
		5240	17.622	5231.249	5248.871	---	PASS
		5260	17.662	5251.249	5268.911	---	PASS
		5280	17.662	5271.249	5288.911	---	PASS
		5320	17.702	5311.209	5328.911	---	PASS
		5500	17.622	5491.249	5508.871	---	PASS
		5580	17.622	5571.249	5588.871	---	PASS
		5700	17.622	5691.249	5708.871	---	PASS
		5720	17.662	5711.209	5728.871	---	PASS
		5720_UNII-2C	13.791	5711.209	5725	---	PASS
		5720_UNII-3	3.871	5725	5728.871	---	PASS
		5745	17.622	5736.249	5753.871	---	PASS
		5785	17.622	5776.249	5793.871	---	PASS
		5825	17.662	5816.249	5833.911	---	PASS
11N40SISO	Ant1	5190	36.284	5171.938	5208.222	---	PASS
		5230	36.204	5212.018	5248.222	---	PASS
		5270	36.284	5251.938	5288.222	---	PASS
		5310	36.044	5292.018	5328.062	---	PASS
		5510	36.204	5491.938	5528.142	---	PASS
		5550	36.364	5531.858	5568.222	---	PASS
		5670	36.364	5651.858	5688.222	---	PASS
		5710	36.284	5691.858	5728.142	---	PASS
		5710_UNII-2C	33.142	5691.858	5725	---	PASS
		5710_UNII-3	3.142	5725	5728.142	---	PASS
		5755	36.124	5737.018	5773.142	---	PASS
		5795	36.364	5776.858	5813.222	---	PASS
11AC20SISO	Ant1	5180	17.662	5171.249	5188.911	---	PASS
		5200	17.662	5191.249	5208.911	---	PASS
		5240	17.622	5231.249	5248.871	---	PASS
		5260	17.622	5251.249	5268.871	---	PASS
		5280	17.622	5271.249	5288.871	---	PASS
		5320	17.622	5311.249	5328.871	---	PASS
		5500	17.662	5491.249	5508.911	---	PASS
		5580	17.622	5571.249	5588.871	---	PASS
		5700	17.622	5691.249	5708.871	---	PASS
		5720	17.622	5711.249	5728.871	---	PASS
		5720_UNII-2C	13.751	5711.249	5725	---	PASS
		5720_UNII-3	3.871	5725	5728.871	---	PASS
		5745	17.622	5736.249	5753.871	---	PASS
		5785	17.622	5776.249	5793.871	---	PASS
		5825	17.662	5816.249	5833.911	---	PASS
11AC40SISO	Ant1	5190	36.284	5171.938	5208.222	---	PASS

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		5230	36.284	5211.938	5248.222	---	PASS
		5270	36.204	5251.938	5288.142	---	PASS
		5310	36.204	5291.938	5328.142	---	PASS
		5510	36.204	5491.938	5528.142	---	PASS
		5550	36.284	5531.858	5568.142	---	PASS
		5670	36.124	5652.018	5688.142	---	PASS
		5710	36.364	5691.858	5728.222	---	PASS
		5710_UNII-2C	33.142	5691.858	5725	---	PASS
		5710_UNII-3	3.222	5725	5728.222	---	PASS
		5755	36.124	5737.018	5773.142	---	PASS
		5795	36.204	5776.938	5813.142	---	PASS
11AC80SISO	Ant1	5210	75.285	5172.438	5247.722	---	PASS
		5290	75.445	5252.278	5327.722	---	PASS
		5530	75.285	5492.278	5567.562	---	PASS
		5690	75.285	5652.278	5727.562	---	PASS
		5690_UNII-2C	72.722	5652.278	5725	---	PASS
		5690_UNII-3	2.562	5725	5727.562	---	PASS
		5775	75.125	5737.438	5812.562	---	PASS

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6dB Bandwidth Test Result

TestMode	Antenna	Channel	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	15.240	5737.440	5752.680	0.5	PASS
		5785	15.200	5777.480	5792.680	0.5	PASS
		5825	15.240	5817.440	5832.680	0.5	PASS
11N20SISO	Ant1	5745	15.240	5737.440	5752.680	0.5	PASS
		5785	15.240	5777.440	5792.680	0.5	PASS
		5825	15.240	5817.440	5832.680	0.5	PASS
11N40SISO	Ant1	5755	35.200	5737.480	5772.680	0.5	PASS
		5795	35.200	5777.480	5812.680	0.5	PASS
11AC20SISO	Ant1	5745	15.200	5737.440	5752.640	0.5	PASS
		5785	15.240	5777.440	5792.680	0.5	PASS
		5825	15.200	5817.440	5832.640	0.5	PASS
11AC40SISO	Ant1	5755	35.280	5737.400	5772.680	0.5	PASS
		5795	35.200	5777.480	5812.680	0.5	PASS
11AC80SISO	Ant1	5775	75.360	5737.400	5812.760	0.5	PASS

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9.3 Maximum conducted output power & EIRP

Test Method
According to KDB789033 D02(E) Method 3, 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:

FCC
For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.
For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26dB emission bandwidth in megahertz.
For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

IC
For client devices in the 5.15-5.25 GHz band,

a) the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 $\log_{10}$B dBm, whichever power is less. B is the 99% emission bandwidth in megahertz.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands,

a) The maximum conducted output power shall not exceed 250 mW or 11 + 10 $\log_{10}$B dBm, whichever is less. B is the 99% emission bandwidth in megahertz.
b) The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 $\log_{10}$B dBm, whichever is less. B is the 99% emission bandwidth in megahertz.

For the band 5.725-5.85 GHz,

a) The maximum conducted output power shall not exceed 1W

Note:
1. Maximum Conducted Output Power=Conducted Output Power + Correction Factor
2. EIRP= Maximum Conducted Output Power + ANT Gain

Test result as below table

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FCC

IEEE 802.11a modulation Test Result

Band	Channel	Frequency (MHz)	Average Power (dBm)	Power Limit (dBm)
5.2G Band	Low	5180	14.80	24.00
	Middle	5200	14.79	24.00
	High	5240	14.86	24.00
5.2G Band	Low	5260	15.06	24.00
	Middle	5280	15.51	24.00
	High	5320	15.37	24.00
5.5G Band	Low	5500	15.54	24.00
	Middle	5580	15.43	24.00
	High	5700	15.02	24.00
	High	5720	14.99	24.00
5.8G Band	Low	5745	11.80	30.00
	Middle	5785	10.95	30.00
	High	5825	11.42	30.00

IEEE 802.11n HT20 modulation Test Result

Band	Channel	Frequency (MHz)	Average Power (dBm)	Power Limit (dBm)
5.2G Band	Low	5180	14.67	24.00
	Middle	5200	14.60	24.00
	High	5240	14.64	24.00
5.2G Band	Low	5260	14.93	24.00
	Middle	5280	15.37	24.00
	High	5320	15.24	24.00
5.5G Band	Low	5500	15.57	24.00
	Middle	5580	15.38	24.00
	High	5700	14.92	24.00
	High	5720	14.99	24.00
5.8G Band	Low	5745	11.60	30.00
	Middle	5785	11.16	30.00
	High	5825	11.07	30.00

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IEEE 802.11n HT40 modulation Test Result

Band	Channel	Frequency (MHz)	Average Power (dBm)	Power Limit (dBm)
5.2G Band	Low	5190	14.44	24.00
	High	5230	14.46	24.00
5.2G Band	Low	5270	14.75	24.00
	High	5310	15.14	24.00
5.5G Band	Low	5510	15.22	24.00
	Middle	5550	15.12	24.00
	High	5670	14.92	24.00
	High	5710	14.61	24.00
5.8G Band	Low	5755	11.45	30.00
	High	5795	10.48	30.00

IEEE 802.11ac VHT20 modulation Test Result

Band	Channel	Frequency (MHz)	Average Power (dBm)	Power Limit (dBm)
5.2G Band	Low	5180	14.54	24.00
	Middle	5200	14.51	24.00
	High	5240	14.64	24.00
5.2G Band	Low	5260	14.89	24.00
	Middle	5280	15.37	24.00
	High	5320	15.10	24.00
5.5G Band	Low	5500	15.51	24.00
	Middle	5580	15.31	24.00
	High	5700	14.93	24.00
	High	5720	14.77	24.00
5.8G Band	Low	5745	11.64	30.00
	Middle	5785	10.82	30.00
	High	5825	11.03	30.00

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IEEE 802.11ac VHT40 modulation Test Result

Band	Channel	Frequency (MHz)	Average Power (dBm)	Power Limit (dBm)
5.2G Band	Low	5190	14.39	24.00
	High	5230	14.43	24.00
5.2G Band	Low	5270	14.79	24.00
	High	5310	15.06	24.00
5.5G Band	Low	5510	15.24	24.00
	Middle	5550	15.03	24.00
	High	5670	14.89	24.00
	High	5710	14.48	24.00
5.8G Band	Low	5755	11.40	30.00
	High	5795	11.39	30.00

IEEE 802.11ac VHT80 modulation Test Result

Band	Channel	Frequency (MHz)	Average Power (dBm)	Power Limit (dBm)
5.2G Band	Low	5210	14.31	24.00
5.2G Band	High	5290	14.46	24.00
5.5G Band	Low	5530	14.89	24.00
	High	5690	15.06	24.00
5.8G Band	High	5775	11.79	30.00

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IEEE 802.11a modulation Test Result

Band	Channel	Frequency (MHz)	Max Conducted Power (dBm)	Gain(dBi)	EIRP (dBm)	Max Conducted Power Limit (dBm)	EIRP Limit (dBm)
5.2G Band	Low	5180	14.80	-0.2	14.60	/	22.20
	Middle	5200	14.79	-0.2	14.59	/	22.19
	High	5240	14.86	-0.2	14.66	/	22.20
5.2G Band	Low	5260	15.06	1.4	16.46	23.20	29.20
	Middle	5280	15.51	1.4	16.91	23.20	29.20
	High	5320	15.37	1.4	16.77	23.20	29.20
5.5G Band	Low	5500	15.54	2.5	18.04	23.21	29.21
	Middle	5580	15.43	2.5	17.93	23.21	29.21
	High	5700	15.02	2.5	17.52	23.20	29.20
	High	5720	14.99	2.5	17.49	23.21	29.21
5.8G Band	Low	5745	11.80	1.7	13.50	30	/
	Middle	5785	10.95	1.7	12.65	30	/
	High	5825	11.42	1.7	13.12	30	/

IEEE 802.11n HT20 modulation Test Result

Band	Channel	Frequency (MHz)	Max Conducted Power (dBm)	Gain(dBi)	EIRP (dBm)	Max Conducted Power Limit (dBm)	EIRP Limit (dBm)
5.2G Band	Low	5180	14.67	-0.2	14.47	/	22.46
	Middle	5200	14.60	-0.2	14.40	/	22.47
	High	5240	14.64	-0.2	14.44	/	22.46
5.2G Band	Low	5260	14.93	1.4	16.33	23.47	29.47
	Middle	5280	15.37	1.4	16.77	23.47	29.47
	High	5320	15.24	1.4	16.64	23.48	29.48
5.5G Band	Low	5500	15.57	2.5	18.07	23.46	29.46
	Middle	5580	15.38	2.5	17.88	23.46	29.46
	High	5700	14.92	2.5	17.42	23.46	29.46
	High	5720	14.99	2.5	17.49	23.47	29.47
5.8G Band	Low	5745	11.60	1.7	13.30	30	/
	Middle	5785	11.16	1.7	12.86	30	/
	High	5825	11.07	1.7	12.77	30	/

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IEEE 802.11n HT40 modulation Test Result

Band	Channel	Frequency (MHz)	Max Conducted Power (dBm)	Gain(dBi)	EIRP (dBm)	Max Conducted Power Limit (dBm)	EIRP Limit (dBm)
5.2G Band	Low	5190	14.44	-0.2	14.24	/	23
	High	5230	14.46	-0.2	14.26	/	23
5.2G Band	Low	5270	14.75	1.4	16.15	24	30
	High	5310	15.14	1.4	16.54	24	30
5.5G Band	Low	5510	15.22	2.5	17.72	24	30
	Middle	5550	15.12	2.5	17.62	24	30
	High	5670	14.92	2.5	17.42	24	30
	High	5710	14.61	2.5	17.11	24	30
5.8G Band	Low	5755	11.45	1.7	13.15	30	/
	High	5795	10.48	1.7	12.18	30	/

IEEE 802.11ac VHT20 modulation Test Result

Band	Channel	Frequency (MHz)	Max Conducted Power (dBm)	Gain(dBi)	EIRP (dBm)	Max Conducted Power Limit (dBm)	EIRP Limit (dBm)
5.2G Band	Low	5180	14.54	-0.2	14.34	/	22.47
	Middle	5200	14.51	-0.2	14.31	/	22.47
	High	5240	14.64	-0.2	14.44	/	22.46
5.2G Band	Low	5260	14.89	1.4	16.29	23.46	29.46
	Middle	5280	15.37	1.4	16.77	23.46	29.46
	High	5320	15.10	1.4	16.50	23.46	29.46
5.5G Band	Low	5500	15.51	2.5	18.01	23.47	29.47
	Middle	5580	15.31	2.5	17.81	23.46	29.46
	High	5700	14.93	2.5	17.43	23.46	29.46
	High	5720	14.77	2.5	17.27	23.46	29.46
5.8G Band	Low	5745	11.64	1.7	13.34	30	/
	Middle	5785	10.82	1.7	12.52	30	/
	High	5825	11.03	1.7	12.73	30	/

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IEEE 802.11ac VHT40 modulation Test Result

Band	Channel	Frequency (MHz)	Max Conducted Power (dBm)	Gain(dBi)	EIRP (dBm)	Max Conducted Power Limit (dBm)	EIRP Limit (dBm)
5.2G Band	Low	5190	14.39	-0.2	14.19	/	23
	High	5230	14.43	-0.2	14.23	/	23
5.2G Band	Low	5270	14.79	1.4	16.19	24	30
	High	5310	15.06	1.4	16.46	24	30
5.5G Band	Low	5510	15.24	2.5	17.74	24	30
	Middle	5550	15.03	2.5	17.53	24	30
	High	5670	14.89	2.5	17.39	24	30
	High	5710	14.48	2.5	16.98	24	30
5.8G Band	Low	5755	11.40	1.7	13.10	30	/
	High	5795	11.39	1.7	13.09	30	/

IEEE 802.11ac VHT80 modulation Test Result

Band	Channel	Frequency (MHz)	Max Conducted Power (dBm)	Gain(dBi)	EIRP (dBm)	Max Conducted Power Limit (dBm)	EIRP Limit (dBm)
5.2G Band	Low	5210	14.31	-0.2	14.11	/	23
5.2G Band	High	5290	14.46	1.4	15.86	24	30
5.5G Band	Low	5530	14.89	2.5	17.39	24	30
	High	5690	15.06	2.5	17.56	24	30
5.8G Band	High	5775	11.79	1.7	13.49	30	/

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9.4 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 ≥ 1/T, where T is defined in section II.B.I.a).

b) Set VBW ≥ 3 RBW.

c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log(500kHz/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 10log(1MHz/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.

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Limit:

FCC
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.

IC
The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band for 5.15-5.25GHz.
The power spectral density shall not exceed 11 dBm in any 1.0 MHz band for 5.25-5.35GHz and 5.47-5.725 GHz;
The output power spectral density shall not exceed 30 dBm in any 500 kHz band for 5825-5850MHz.

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Test Result

TestMode	Antenna	Channel (MHz)	Conducted Result(dBm/MHz)	Conducted Limit(dBm/MHz)	EIRP Result(dBm/MHz)	EIRP Limit(dBm/MHz)	Verdict
11A	Ant1	5180	3.74	<=11	3.54	<=10	PASS
		5200	3.55	<=11	3.35	<=10	PASS
		5240	3.96	<=11	3.76	<=10	PASS
		5260	3.78	<=11	/	/	PASS
		5280	4.44	<=11	/	/	PASS
		5320	4.25	<=11	/	/	PASS
		5500	4.27	<=11	/	/	PASS
		5580	4.23	<=11	/	/	PASS
		5700	4.15	<=11	/	/	PASS
		5720_UNII-2C	3.64	<=11	/	/	PASS
		5720_UNII-3	-0.01	<=11	/	/	PASS
		5745	-2.02	<=30	/	/	PASS
		5785	-2.3	<=30	/	/	PASS
		5825	-2.67	<=30	/	/	PASS
11N20SISO	Ant1	5180	4.17	<=11	3.97	<=10	PASS
		5200	3.5	<=11	3.30	<=10	PASS
		5240	4.15	<=11	3.95	<=10	PASS
		5260	3.95	<=11	/	/	PASS
		5280	4.91	<=11	/	/	PASS
		5320	4.62	<=11	/	/	PASS
		5500	4.51	<=11	/	/	PASS
		5580	4.52	<=11	/	/	PASS
		5700	4.48	<=11	/	/	PASS
		5720_UNII-2C	3.81	<=11	/	/	PASS
		5720_UNII-3	0.45	<=11	/	/	PASS
		5745	-1.64	<=30	/	/	PASS
		5785	-1.12	<=30	/	/	PASS
		5825	-2	<=30	/	/	PASS
11N40SISO	Ant1	5190	0.03	<=11	-0.17	<=10	PASS
		5230	0.42	<=11	0.22	<=10	PASS
		5270	0.28	<=11	/	/	PASS
		5310	1.16	<=11	/	/	PASS
		5510	0.76	<=11	/	/	PASS
		5550	0.93	<=11	/	/	PASS
		5670	0.38	<=11	/	/	PASS
		5710_UNII-2C	0.59	<=11	/	/	PASS
		5710_UNII-3	-3.74	<=11	/	/	PASS
		5755	-5.14	<=30	/	/	PASS
		5795	-5.93	<=30	/	/	PASS
11AC20SISO	Ant1	5180	3.68	<=11	3.48	<=10	PASS
		5200	3.48	<=11	3.28	<=10	PASS
		5240	4.09	<=11	3.89	<=10	PASS
		5260	3.93	<=11	/	/	PASS
		5280	4.53	<=11	/	/	PASS
		5320	4.2	<=11	/	/	PASS
		5500	4.35	<=11	/	/	PASS
		5580	4.38	<=11	/	/	PASS
		5700	4.29	<=11	/	/	PASS
		5720_UNII-2C	3.76	<=11	/	/	PASS
		5720_UN	0.22	<=11	/	/	PASS

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		II-3					
		5745	-1.81	<=30	/	/	PASS
		5785	-2.23	<=30	/	/	PASS
		5825	-2.69	<=30	/	/	PASS
11AC40SISO	Ant1	5190	-0.13	<=11	-0.33	<=10	PASS
		5230	0.24	<=11	0.04	<=10	PASS
		5270	0.19	<=11	/	/	PASS
		5310	0.67	<=11	/	/	PASS
		5510	0.29	<=11	/	/	PASS
		5550	0.37	<=11	/	/	PASS
		5670	0.15	<=11	/	/	PASS
		5710_UNII-2C	0.51	<=11	/	/	PASS
		5710_UNII-3	-3.96	<=11	/	/	PASS
		5755	-5.32	<=30	/	/	PASS
		5795	-5.88	<=30	/	/	PASS
11AC80SISO	Ant1	5210	-2.17	<=11	-2.37	<=10	PASS
		5290	-2.74	<=11	/	/	PASS
		5530	-2.46	<=11	/	/	PASS
		5690_UNII-2C	-1.42	<=11	/	/	PASS
		5690_UNII-3	-8.09	<=11	/	/	PASS
		5775	-6.16	<=30	/	/	PASS

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9.5 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 & RSS-GEN. 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.

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Test result:

TestMode	Antenna	Channel(MHz)	FreqRange (MHz)	Max. Fre (MHz)	Max. Level (dBm/MHz)	Limit (dBm/MHz)	Verdict
11A	Ant1	5180	30~5140	30~5140	-31.72	<=-27	PASS
		5180	5360~40000	5360~40000	-46.19	<=-27	PASS
		5200	30~5140	30~5140	-40.75	<=-27	PASS
		5200	5360~40000	5360~40000	-45.67	<=-27	PASS
		5240	30~5140	30~5140	-39.56	<=-27	PASS
		5240	5360~40000	5360~40000	-45.47	<=-27	PASS
		5260	30~5140	30~5140	-42.33	<=-27	PASS
		5260	5360~40000	5360~40000	-46.03	<=-27	PASS
		5280	30~5140	30~5140	-41.26	<=-27	PASS
		5280	5360~40000	5360~40000	-45.95	<=-27	PASS
		5320	30~5140	30~5140	-42.52	<=-27	PASS
		5320	5360~40000	5360~40000	-33.3	<=-27	PASS
		5500	30~5460	30~5460	-32.18	<=-27	PASS
		5500	5735~40000	5735~40000	-46.73	<=-27	PASS
		5580	30~5460	30~5460	-48.47	<=-27	PASS
		5580	5735~40000	5735~40000	-45.96	<=-27	PASS
		5700	30~5460	30~5460	-46.96	<=-27	PASS
		5700	5735~40000	5735~40000	-45.36	<=-27	PASS
		5720	30~5460	30~5460	-46.76	<=-27	PASS
		5720	5925~40000	5925~40000	-46.1	<=-27	PASS
		5745	30~5650	30~5650	-47.15	<=-27	PASS
		5745	5925~40000	5925~40000	-46.7	<=-27	PASS
		5785	30~5650	30~5650	-46.81	<=-27	PASS
		5785	5925~40000	5925~40000	-46.27	<=-27	PASS
		5825	30~5650	30~5650	-47.2	<=-27	PASS
		5825	5925~40000	5925~40000	-46.15	<=-27	PASS
11N20SISO	Ant1	5180	30~5140	30~5140	-32.66	<=-27	PASS
		5180	5360~40000	5360~40000	-46.42	<=-27	PASS
		5200	30~5140	30~5140	-40.16	<=-27	PASS
		5200	5360~40000	5360~40000	-46.78	<=-27	PASS
		5240	30~5140	30~5140	-40.72	<=-27	PASS
		5240	5360~40000	5360~40000	-45.46	<=-27	PASS
		5260	30~5140	30~5140	-41.82	<=-27	PASS
		5260	5360~40000	5360~40000	-45.97	<=-27	PASS
		5280	30~5140	30~5140	-40.88	<=-27	PASS
		5280	5360~40000	5360~40000	-45.32	<=-27	PASS
		5320	30~5140	30~5140	-42.84	<=-27	PASS
		5320	5360~40000	5360~40000	-40.45	<=-27	PASS
		5500	30~5460	30~5460	-30.89	<=-27	PASS
		5500	5735~40000	5735~40000	-45.44	<=-27	PASS
		5580	30~5460	30~5460	-49.22	<=-27	PASS
		5580	5735~40000	5735~40000	-45.95	<=-27	PASS
		5700	30~5460	30~5460	-47.7	<=-27	PASS
		5700	5735~40000	5735~40000	-31	<=-27	PASS
		5720	30~5460	30~5460	-47.94	<=-27	PASS
		5720	5925~40000	5925~40000	-45.36	<=-27	PASS
		5745	30~5650	30~5650	-47.75	<=-27	PASS
		5745	5925~40000	5925~40000	-46.35	<=-27	PASS
		5785	30~5650	30~5650	-47.24	<=-27	PASS
		5785	5925~40000	5925~40000	-45.43	<=-27	PASS
		5825	30~5650	30~5650	-48.32	<=-27	PASS
		5825	5925~40000	5925~40000	-46.26	<=-27	PASS
11N40SISO	Ant1	5190	30~5140	30~5140	-30.45	<=-27	PASS
		5190	5360~40000	5360~40000	-46.47	<=-27	PASS
		5230	30~5140	30~5140	-42.74	<=-27	PASS
		5230	5360~40000	5360~40000	-46.12	<=-27	PASS
		5270	30~5140	30~5140	-45.02	<=-27	PASS

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		5270	5360~40000	5360~40000	-46.77	<=-27	PASS
		5310	30~5140	30~5140	-40.57	<=-27	PASS
		5310	5360~40000	5360~40000	-39.04	<=-27	PASS
		5510	30~5460	30~5460	-30.26	<=-27	PASS
		5510	5735~40000	5735~40000	-46.29	<=-27	PASS
		5550	30~5460	30~5460	-41.89	<=-27	PASS
		5550	5735~40000	5735~40000	-46.39	<=-27	PASS
		5670	30~5460	30~5460	-46.29	<=-27	PASS
		5670	5735~40000	5735~40000	-45.61	<=-27	PASS
		5710	30~5460	30~5460	-48.86	<=-27	PASS
		5710	5925~40000	5925~40000	-46.39	<=-27	PASS
		5755	30~5650	30~5650	-38.43	<=-27	PASS
		5755	5925~40000	5925~40000	-46.06	<=-27	PASS
		5795	30~5650	30~5650	-49.31	<=-27	PASS
		5795	5925~40000	5925~40000	-46.31	<=-27	PASS
11AC20SISO	Ant1	5180	30~5140	30~5140	-36.37	<=-27	PASS
		5180	5360~40000	5360~40000	-45.96	<=-27	PASS
		5200	30~5140	30~5140	-41.1	<=-27	PASS
		5200	5360~40000	5360~40000	-45.36	<=-27	PASS
		5240	30~5140	30~5140	-41.35	<=-27	PASS
		5240	5360~40000	5360~40000	-46.23	<=-27	PASS
		5260	30~5140	30~5140	-42.34	<=-27	PASS
		5260	5360~40000	5360~40000	-45	<=-27	PASS
		5280	30~5140	30~5140	-40.58	<=-27	PASS
		5280	5360~40000	5360~40000	-45.55	<=-27	PASS
		5320	30~5140	30~5140	-43.99	<=-27	PASS
		5320	5360~40000	5360~40000	-45.49	<=-27	PASS
		5500	30~5460	30~5460	-33.47	<=-27	PASS
		5500	5735~40000	5735~40000	-46.36	<=-27	PASS
		5580	30~5460	30~5460	-48.76	<=-27	PASS
		5580	5735~40000	5735~40000	-46.65	<=-27	PASS
		5700	30~5460	30~5460	-47.42	<=-27	PASS
		5700	5735~40000	5735~40000	-46.14	<=-27	PASS
		5720	30~5460	30~5460	-46.75	<=-27	PASS
		5720	5925~40000	5925~40000	-46.32	<=-27	PASS
		5745	30~5650	30~5650	-48.12	<=-27	PASS
		5745	5925~40000	5925~40000	-46.16	<=-27	PASS
		5785	30~5650	30~5650	-48.31	<=-27	PASS
		5785	5925~40000	5925~40000	-46.17	<=-27	PASS
		5825	30~5650	30~5650	-48.67	<=-27	PASS
		5825	5925~40000	5925~40000	-46.58	<=-27	PASS
11AC40SISO	Ant1	5190	30~5140	30~5140	-30.25	<=-27	PASS
		5190	5360~40000	5360~40000	-46.1	<=-27	PASS
		5230	30~5140	30~5140	-41.84	<=-27	PASS
		5230	5360~40000	5360~40000	-47.2	<=-27	PASS
		5270	30~5140	30~5140	-39.75	<=-27	PASS
		5270	5360~40000	5360~40000	-40.63	<=-27	PASS
		5310	30~5140	30~5140	-39.06	<=-27	PASS
		5310	5360~40000	5360~40000	-36.07	<=-27	PASS
		5510	30~5460	30~5460	-29.38	<=-27	PASS
		5510	5735~40000	5735~40000	-46.67	<=-27	PASS
		5550	30~5460	30~5460	-44.92	<=-27	PASS
		5550	5735~40000	5735~40000	-46.04	<=-27	PASS
		5670	30~5460	30~5460	-46.47	<=-27	PASS
		5670	5735~40000	5735~40000	-43.85	<=-27	PASS
		5710	30~5460	30~5460	-46.97	<=-27	PASS
		5710	5925~40000	5925~40000	-46.28	<=-27	PASS
		5755	30~5650	30~5650	-42.77	<=-27	PASS
		5755	5925~40000	5925~40000	-47.05	<=-27	PASS
		5795	30~5650	30~5650	-40.14	<=-27	PASS
		5795	5925~40000	5925~40000	-46.28	<=-27	PASS
11AC80SISO	Ant1	5210	30~5140	30~5140	-27.86	<=-27	PASS
		5210	5360~40000	5360~40000	-46.59	<=-27	PASS
		5290	30~5140	30~5140	-39.47	<=-27	PASS

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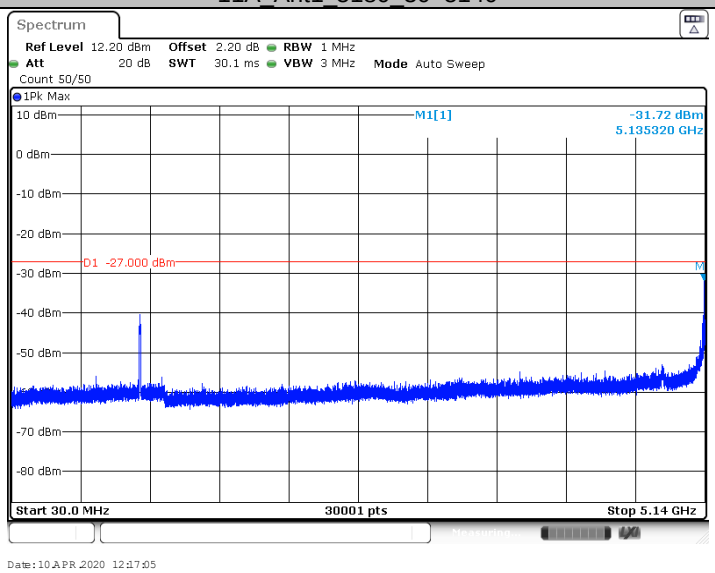
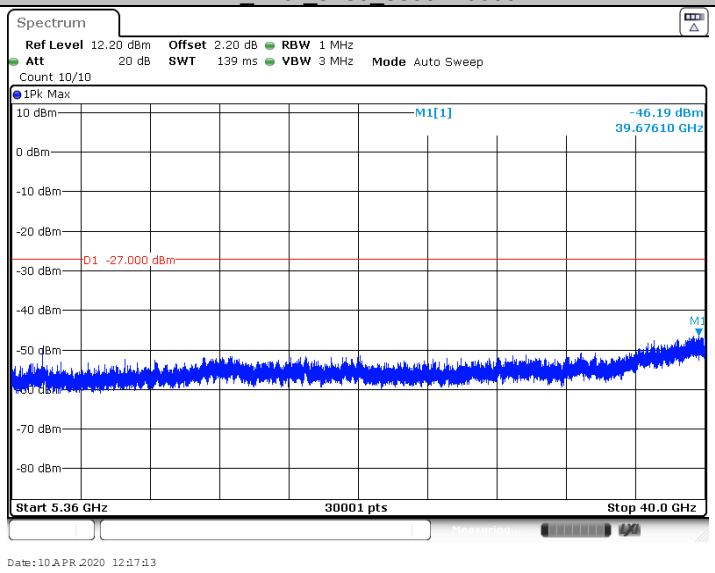
		5290	5360~40000	5360~40000	-29.87	<=-27	PASS
		5530	30~5460	30~5460	-28.25	<=-27	PASS
		5530	5735~40000	5735~40000	-45.09	<=-27	PASS
		5690	30~5460	30~5460	-36.81	<=-27	PASS
		5690	5925~40000	5925~40000	-46.42	<=-27	PASS
		5775	30~5650	30~5650	-37.93	<=-27	PASS
		5775	5925~40000	5925~40000	-46.54	<=-27	PASS

Test Graphs

11A_Ant1_5180_30~5140



11A_Ant1_5180_5360~40000



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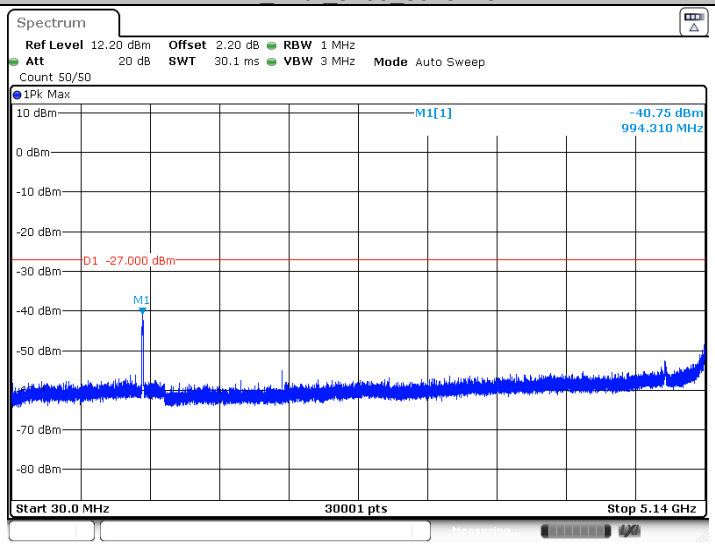
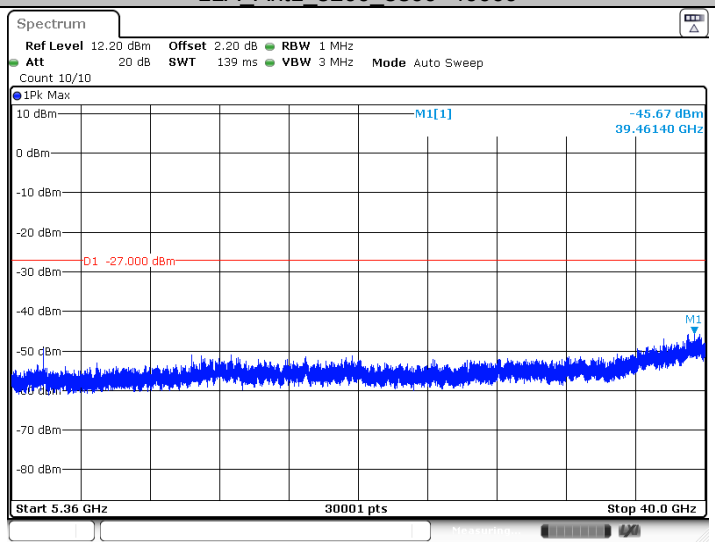
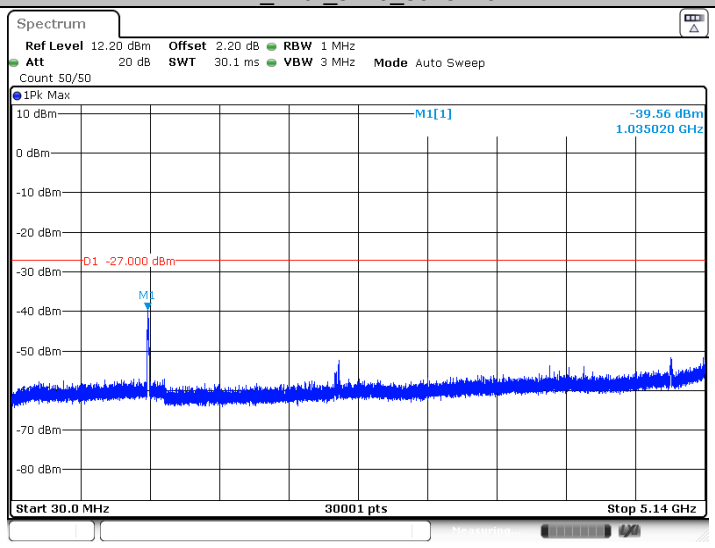
11A_Ant1_5200_30~5140



11A_Ant1_5200_5360~40000



11A_Ant1_5240_30~5140



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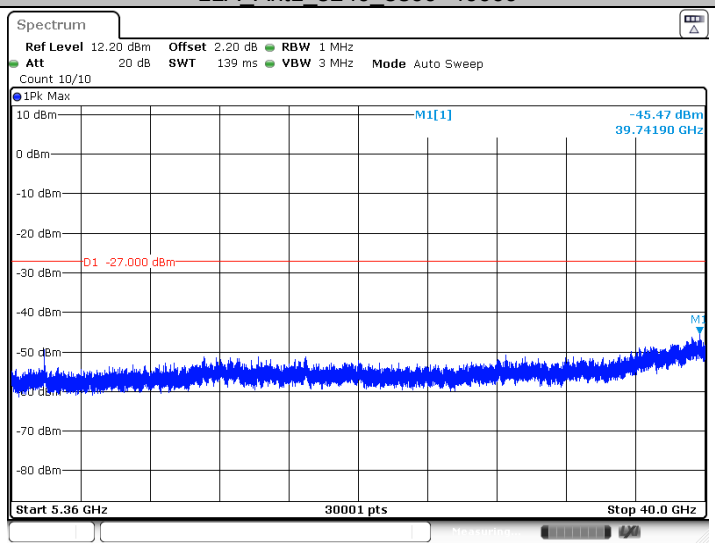
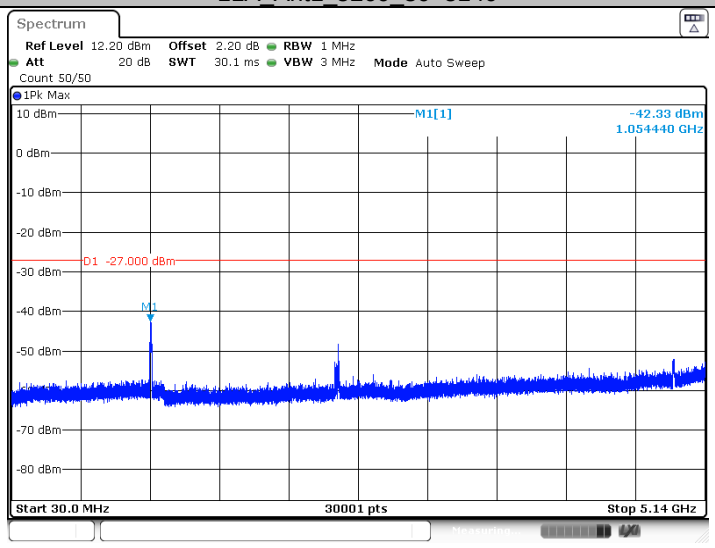
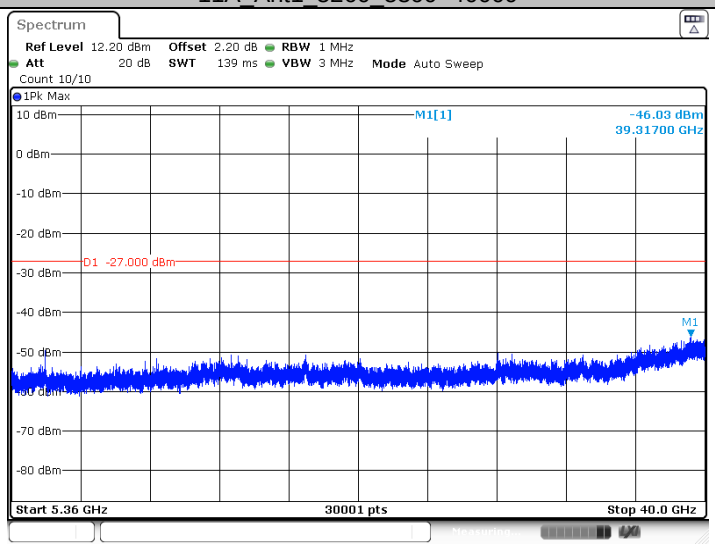
11A_Ant1_5240_5360~40000



11A_Ant1_5260_30~5140



11A_Ant1_5260_5360~40000



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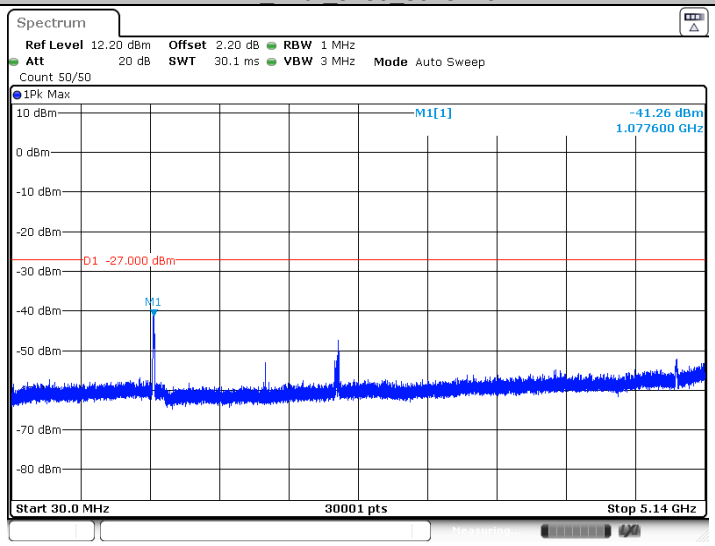
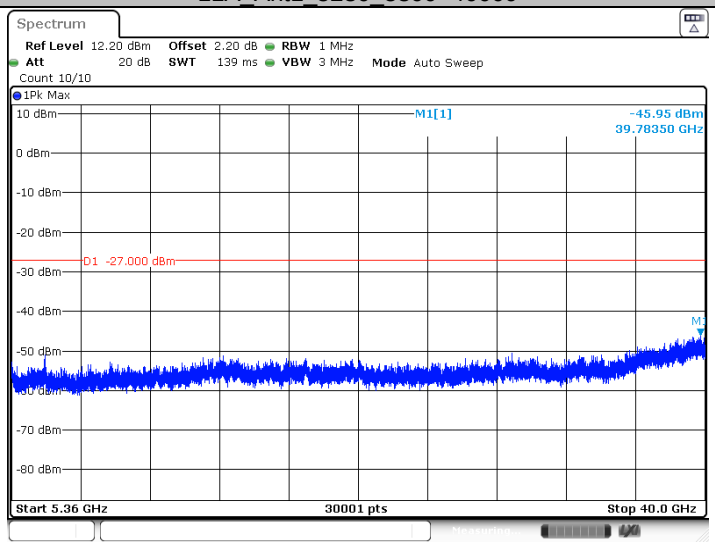
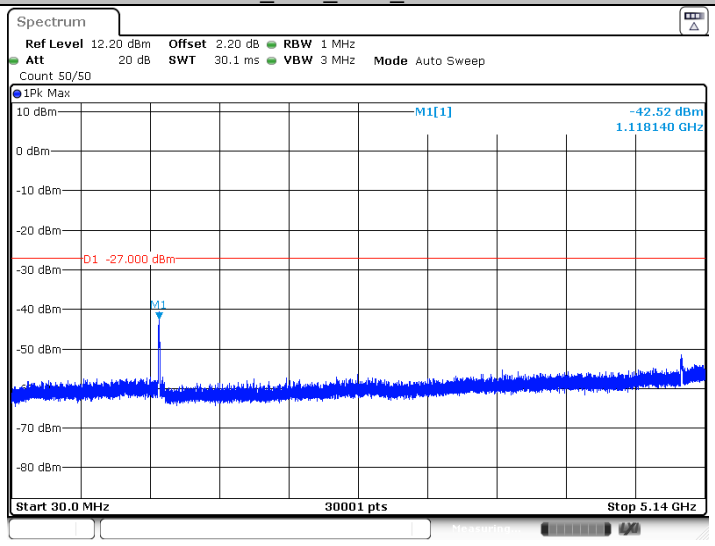
11A_Ant1_5280_30~5140



11A_Ant1_5280_5360~40000



11A_Ant1_5320_30~5140



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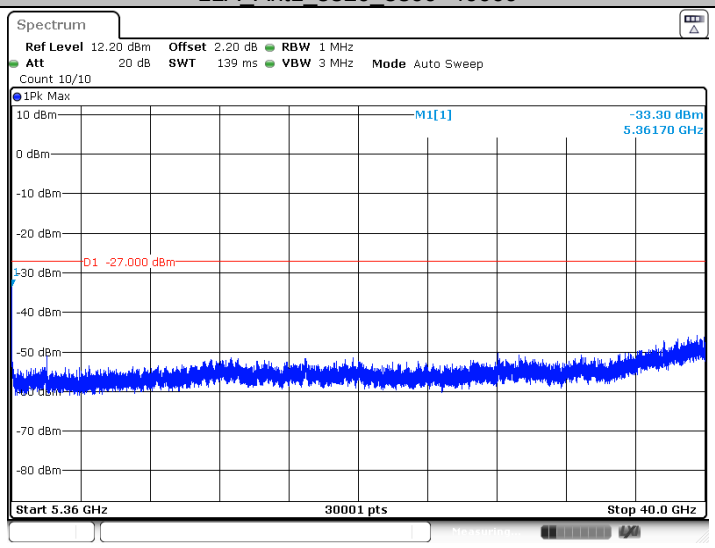
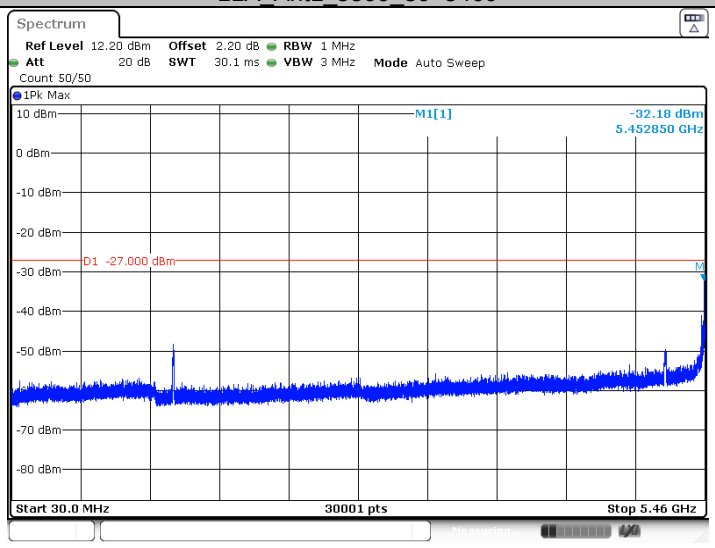
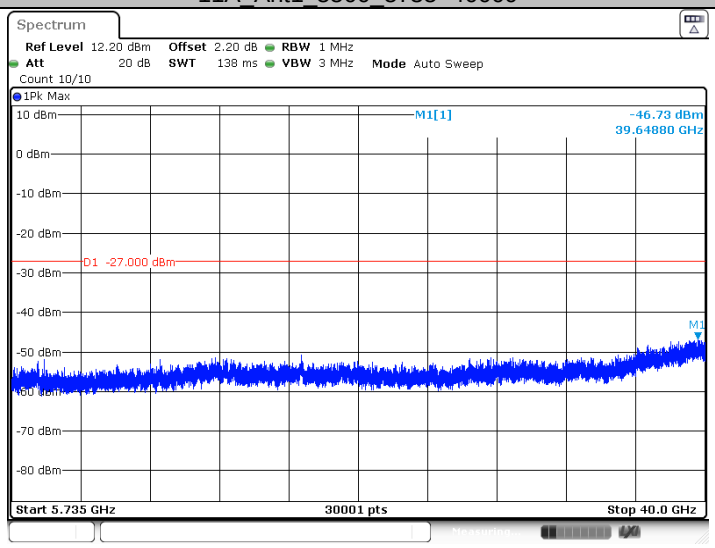
11A_Ant1_5320_5360~40000



11A_Ant1_5500_30~5460



11A_Ant1_5500_5735~40000



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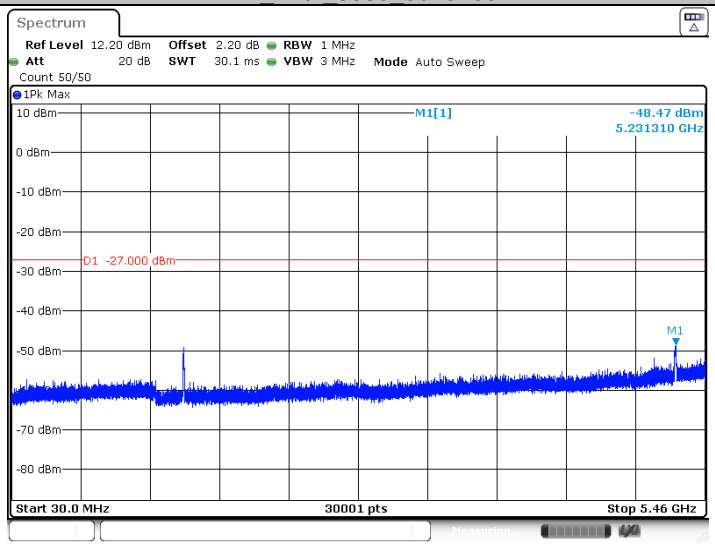
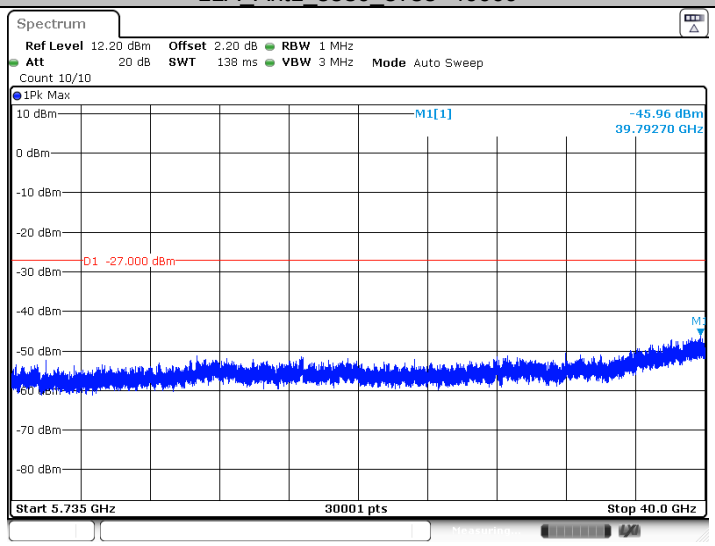
11A_Ant1_5580_30~5460



11A_Ant1_5580_5735~40000



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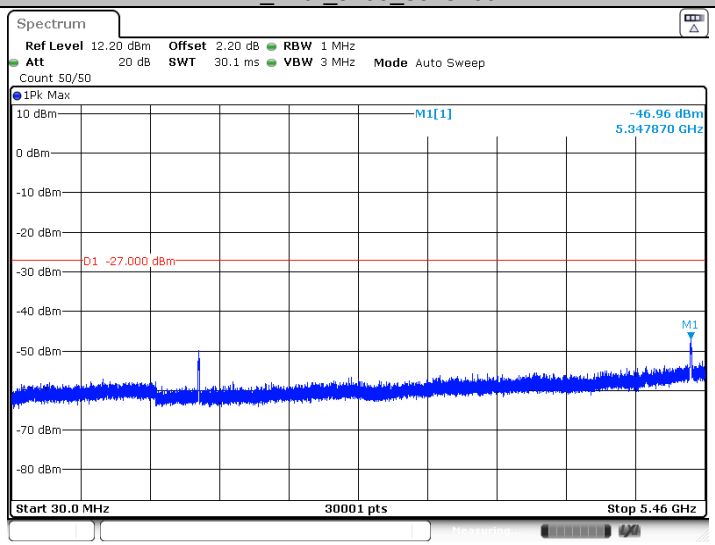

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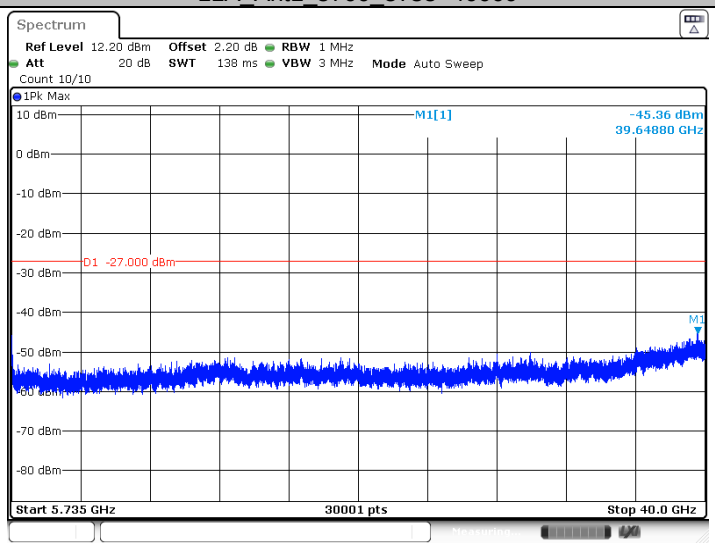
11A_Ant1_5700_5735~40000



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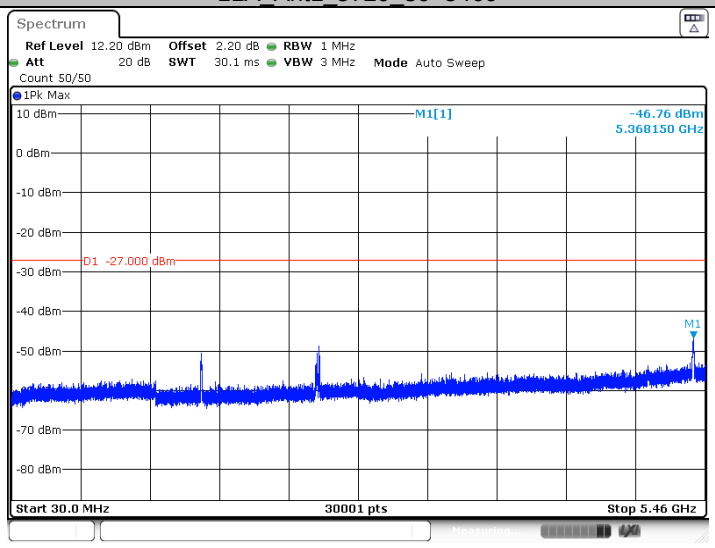
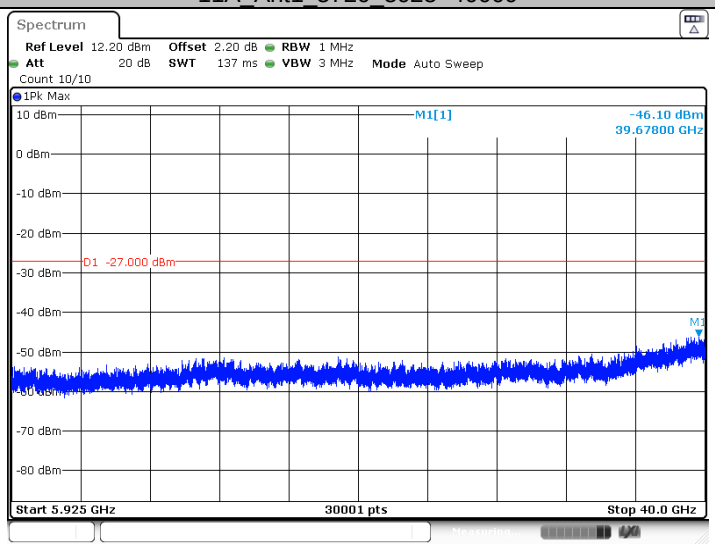


11A_Ant1_5720_5925~40000



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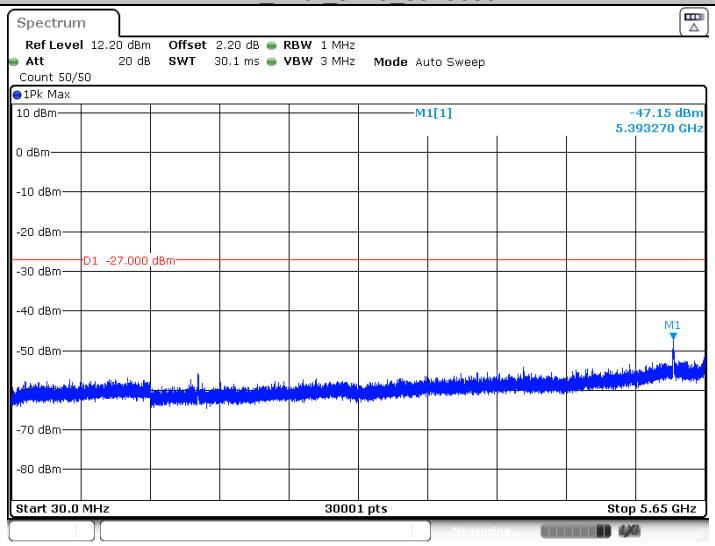
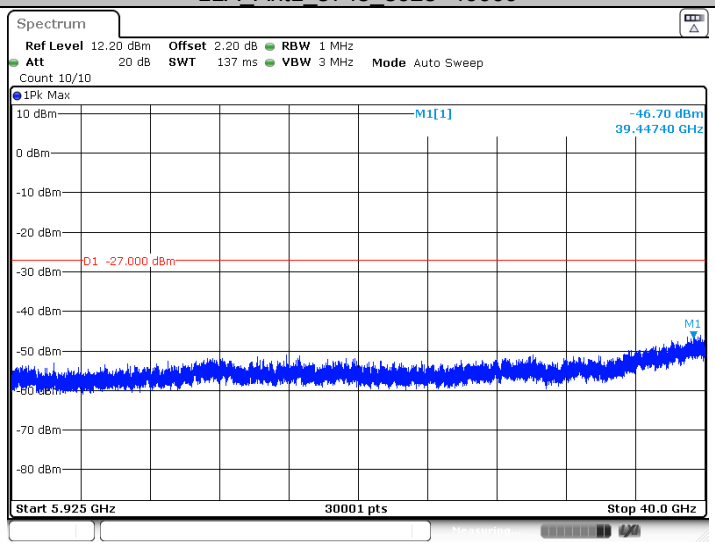
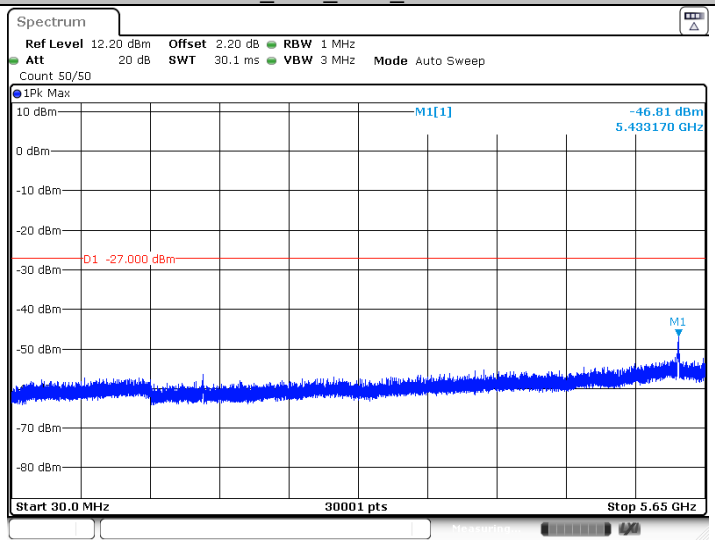
11A_Ant1_5745_30~5650



11A_Ant1_5745_5925~40000



11A_Ant1_5785_30~5650



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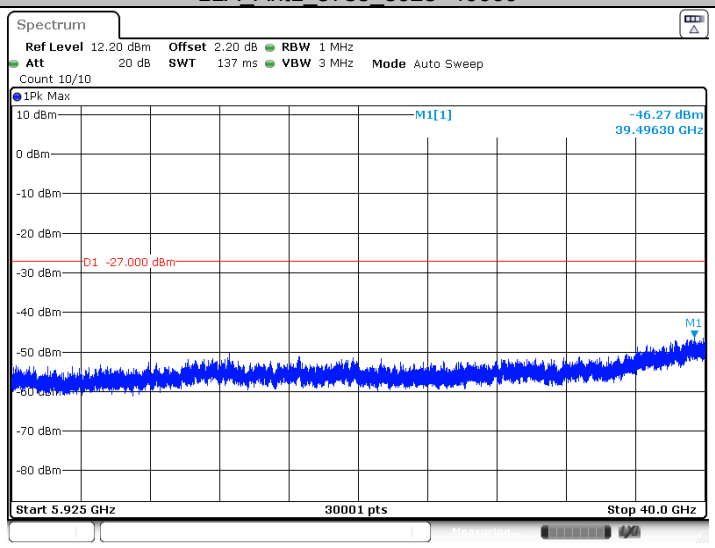
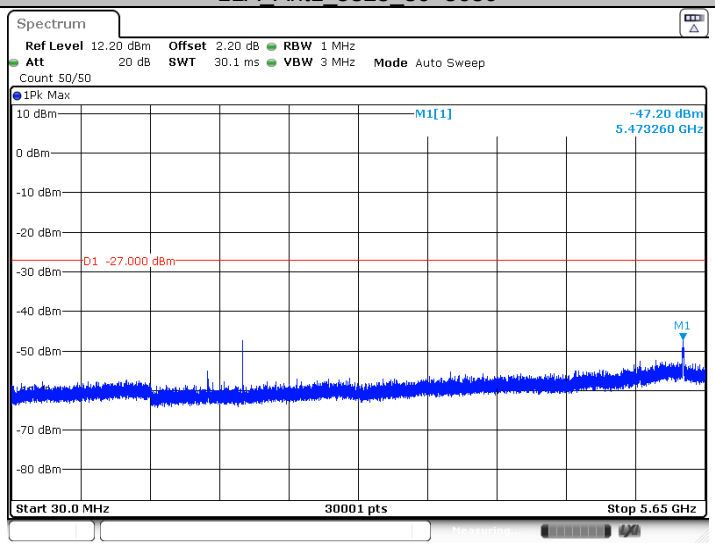
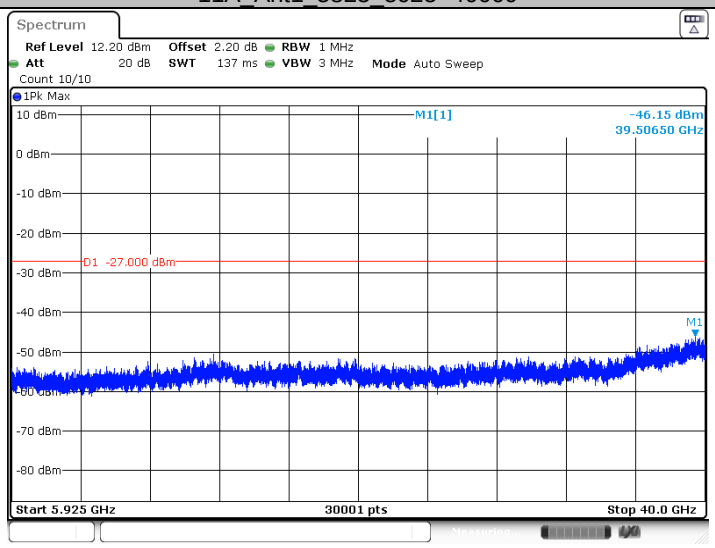
11A_Ant1_5785_5925~40000



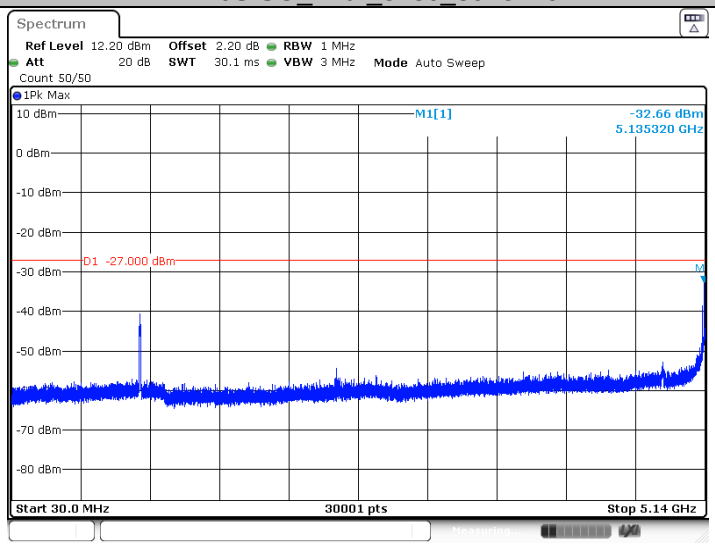
11A_Ant1_5825_30~5650



11A_Ant1_5825_5925~40000



11N20SISO_Ant1_5180_30~5140



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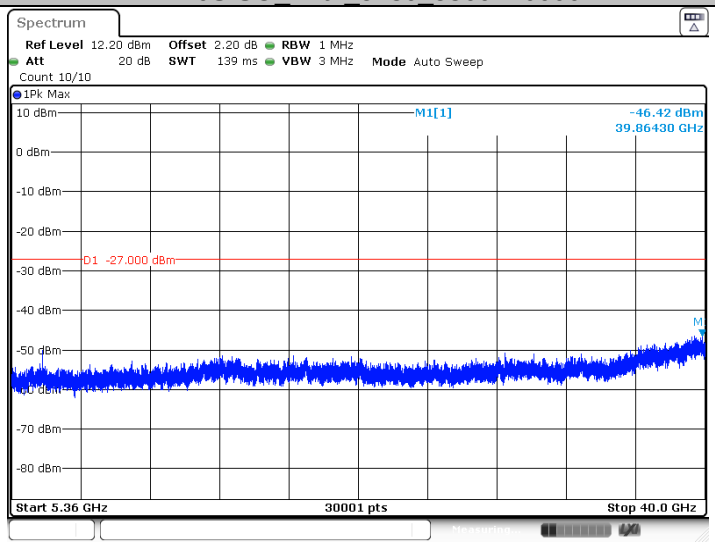
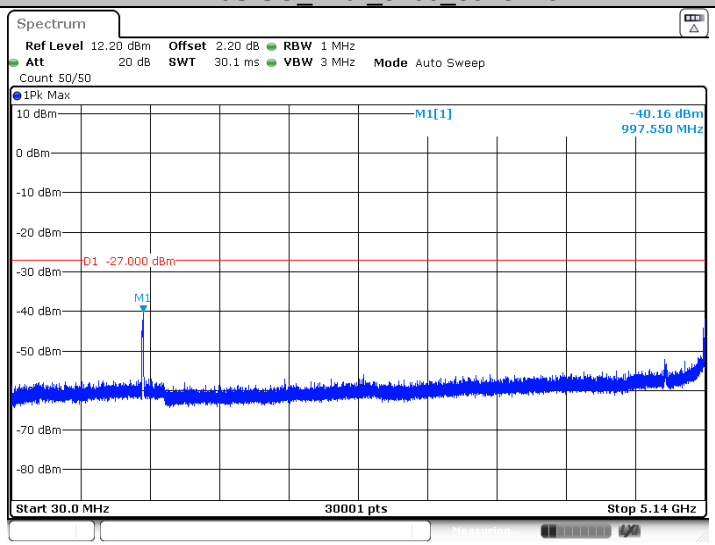


11N20SISO_Ant1_5200_30~5140



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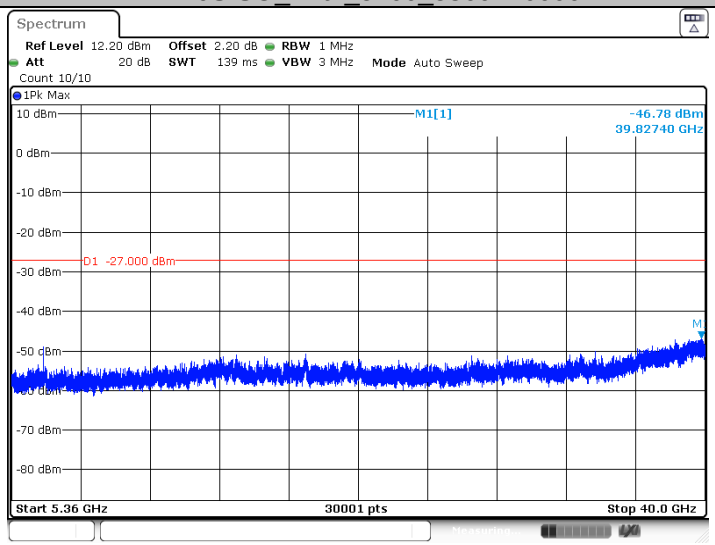
11N20SISO_Ant1_5200_5360~40000



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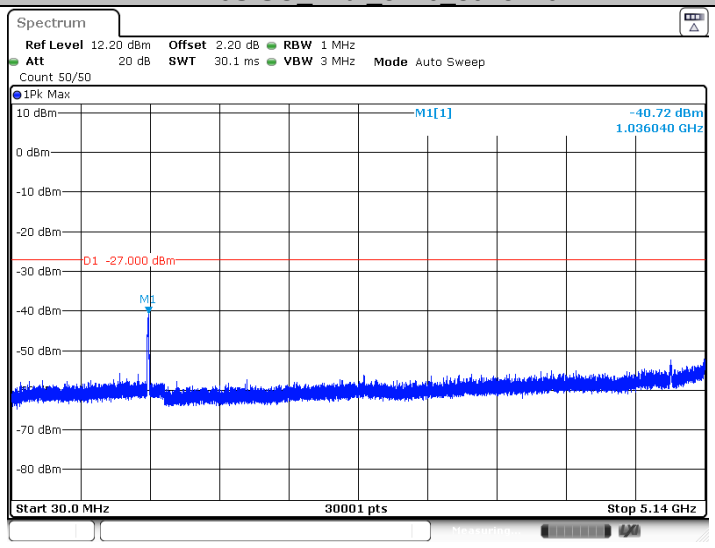

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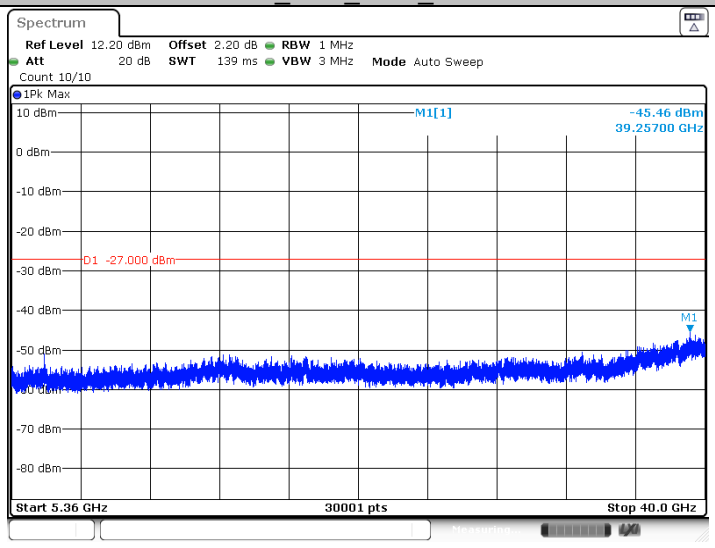

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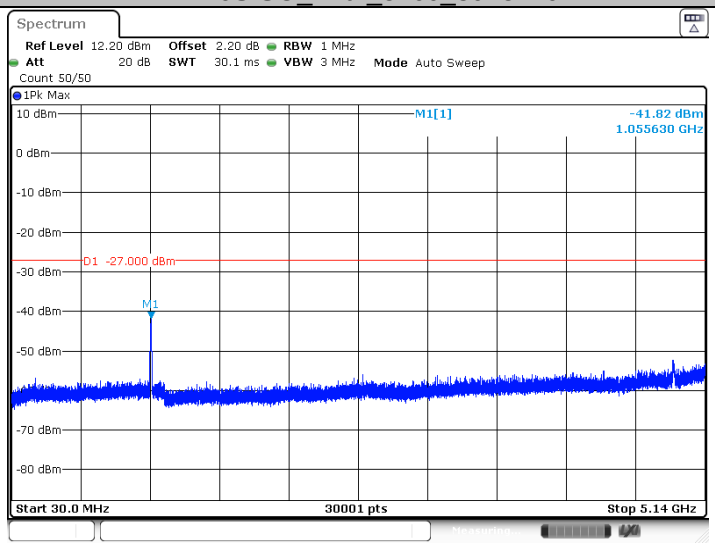
11N20SISO_Ant1_5260_30~5140



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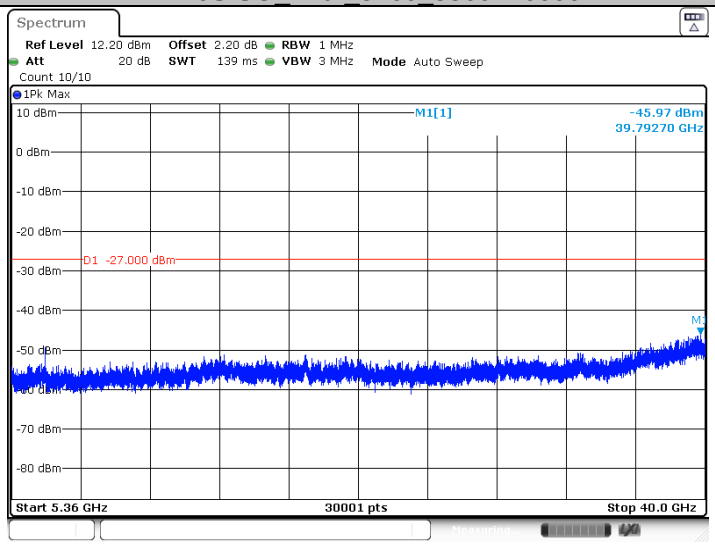

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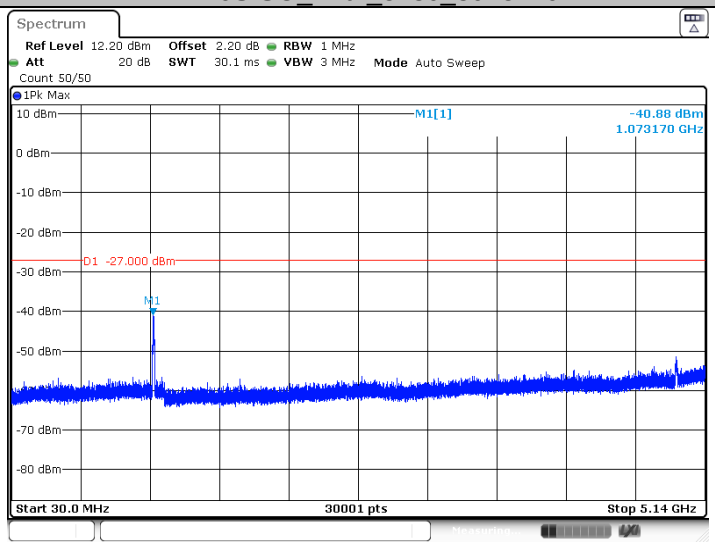

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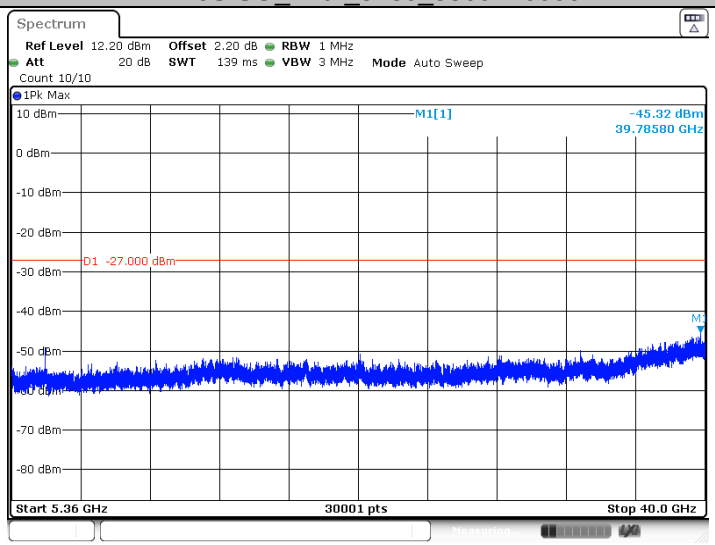
11N20SISO_Ant1_5280_5360~40000



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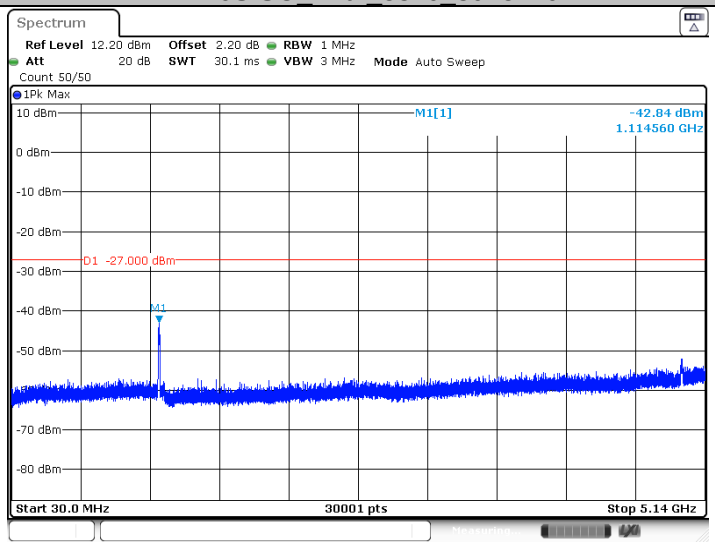

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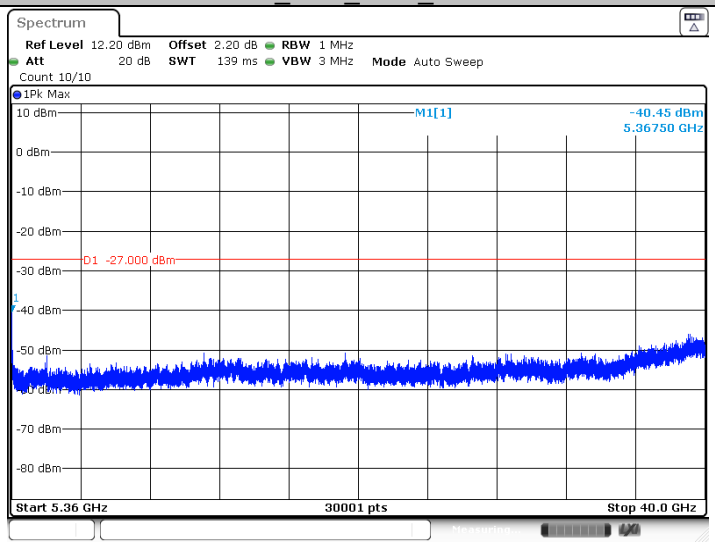

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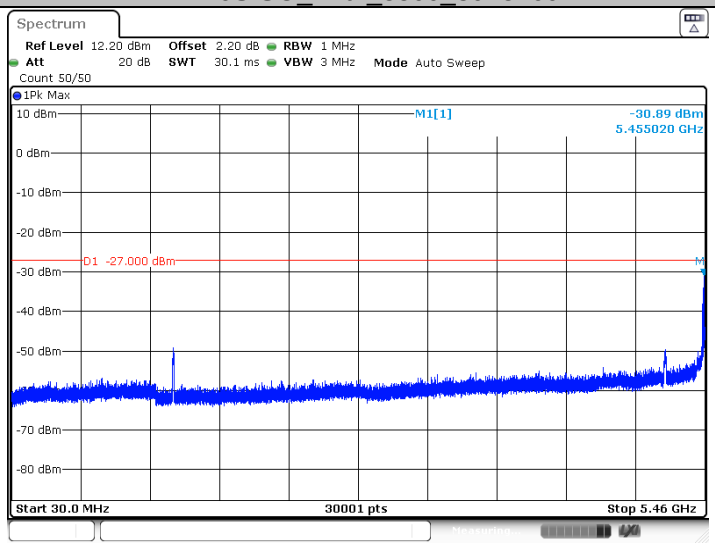
11N20SISO_Ant1_5500_30~5460



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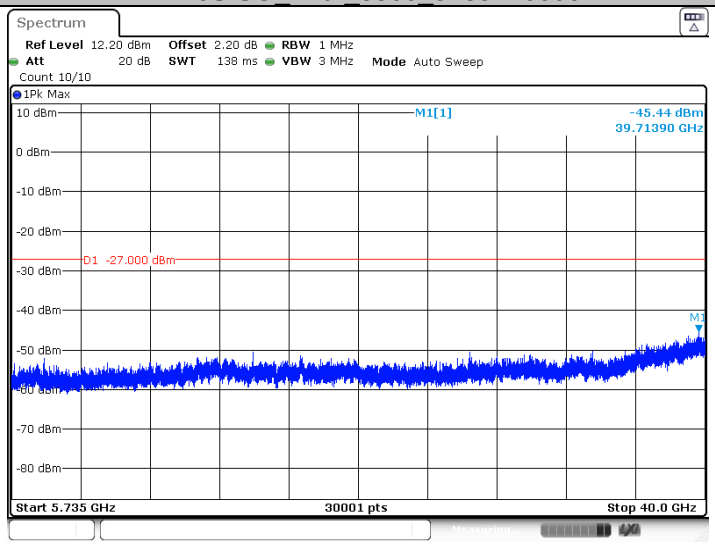
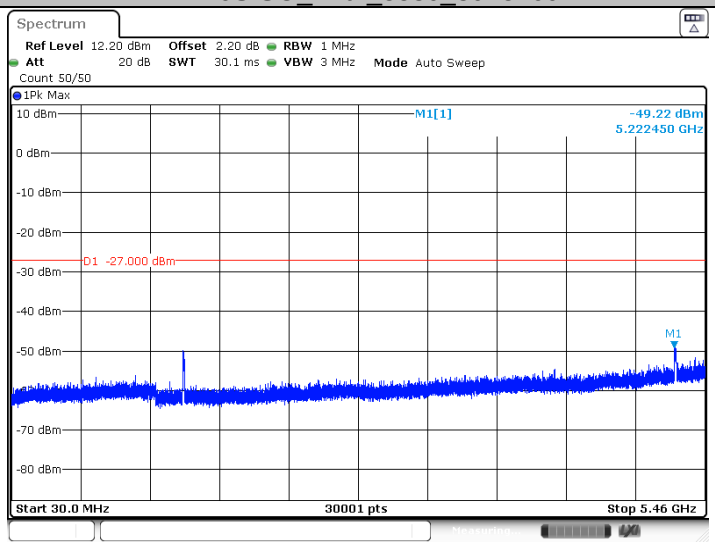


11N20SISO_Ant1_5580_30~5460



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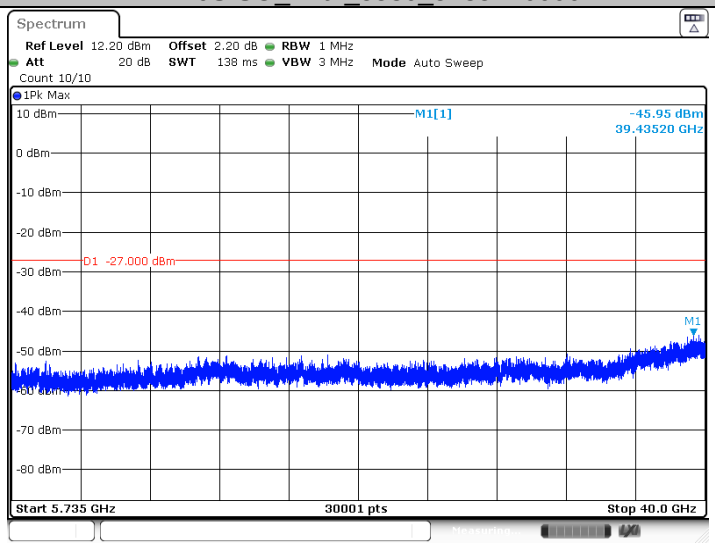
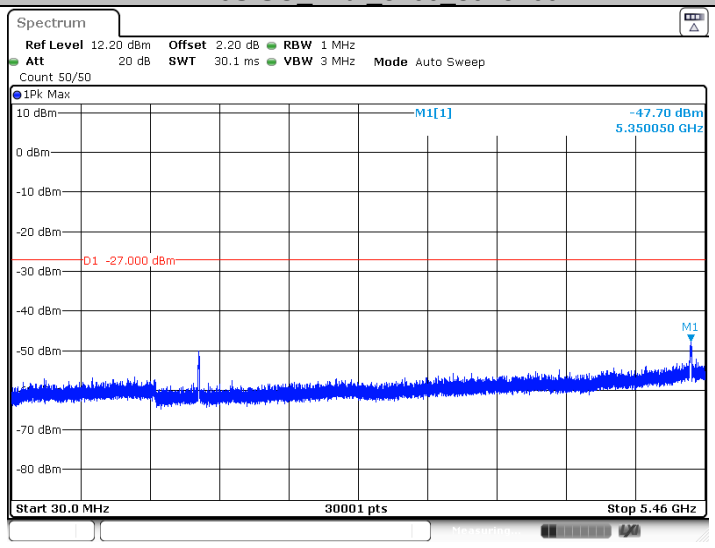
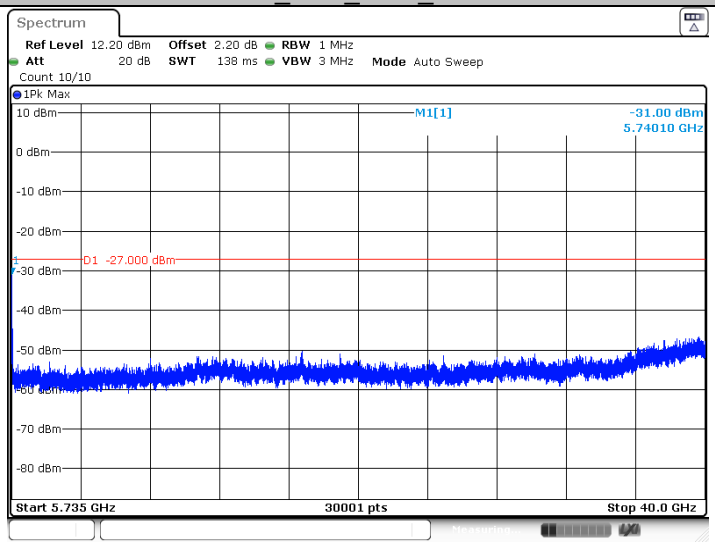
11N20SISO_Ant1_5580_5735~40000



11N20SISO_Ant1_5700_30~5460



11N20SISO_Ant1_5700_5735~40000



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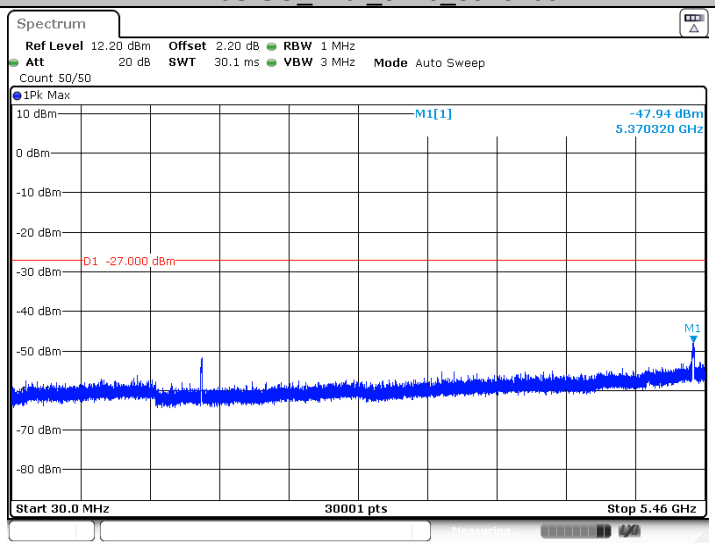
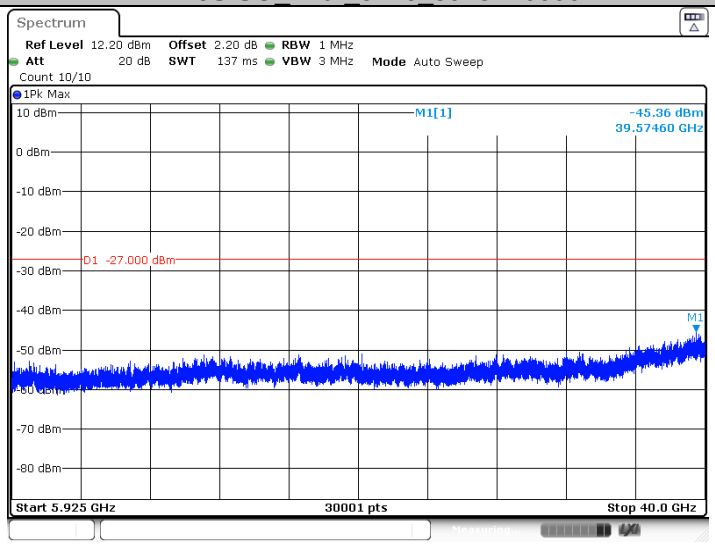
11N20SISO_Ant1_5720_30~5460



11N20SISO_Ant1_5720_5925~40000



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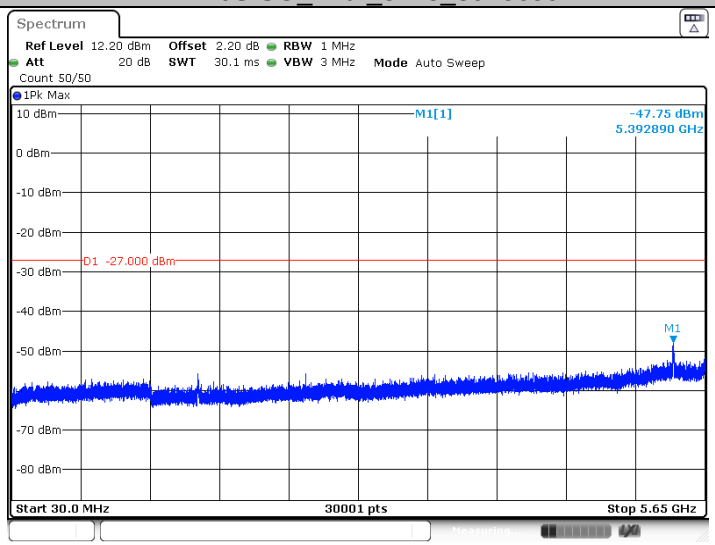

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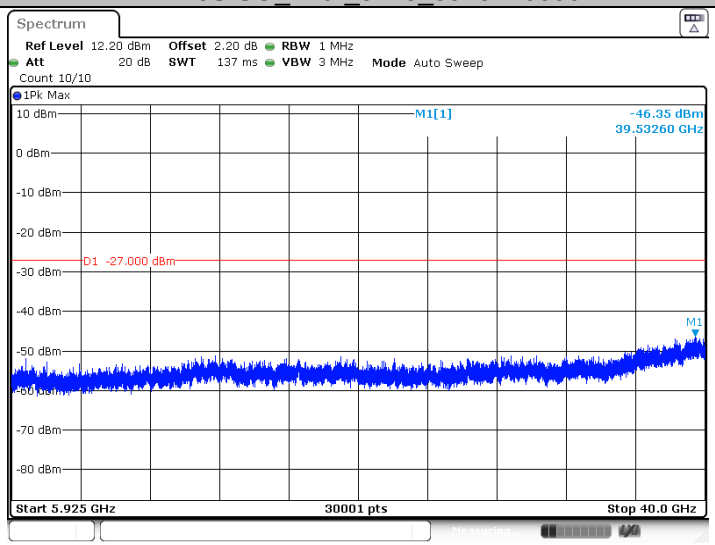
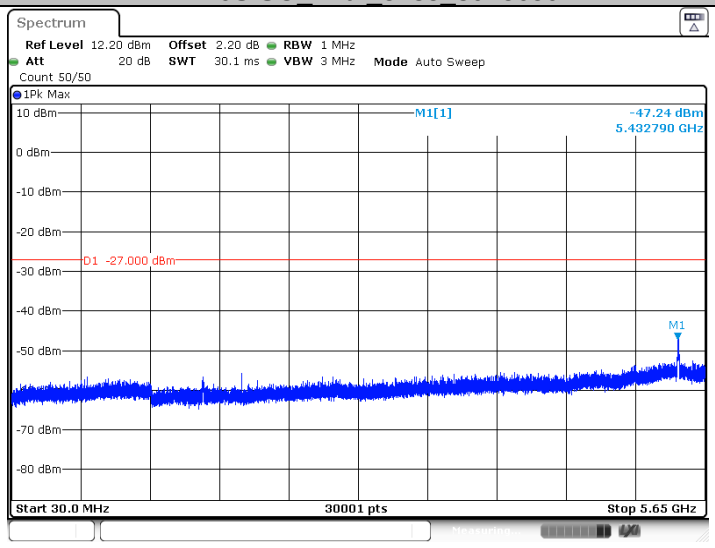
11N20SISO_Ant1_5745_5925~40000



11N20SISO_Ant1_5785_30~5650



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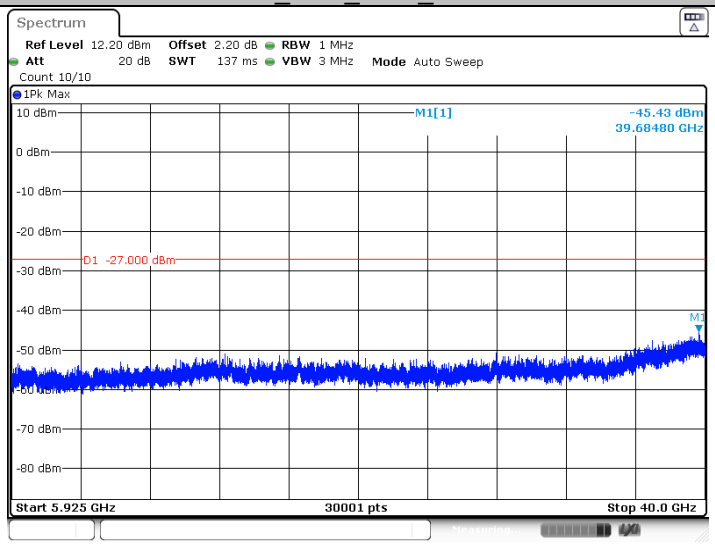

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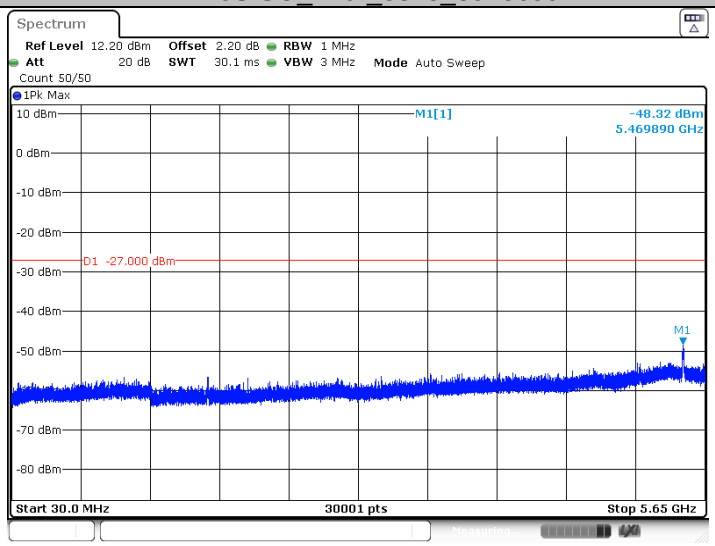

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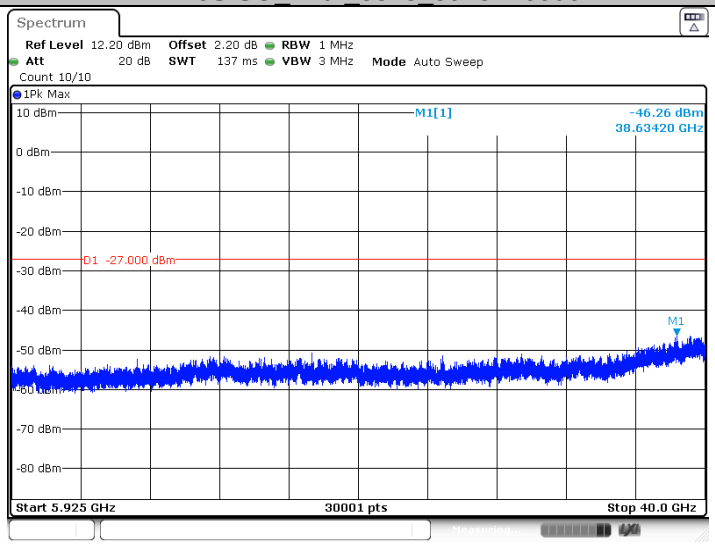
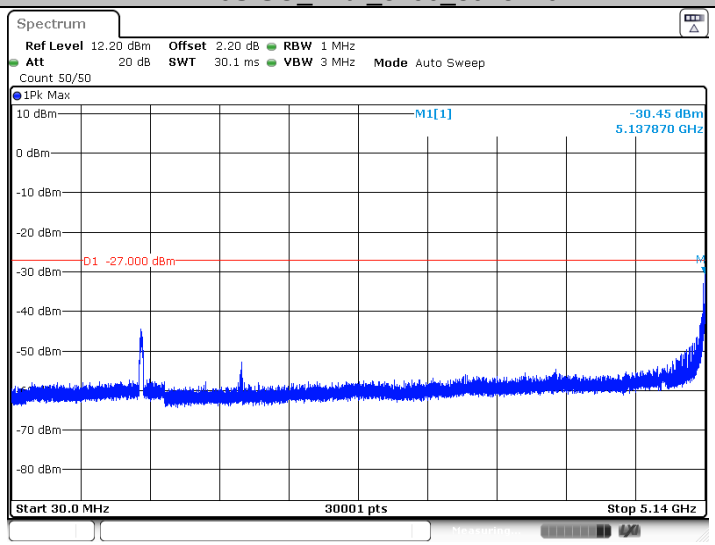


11N40SISO_Ant1_5190_30~5140



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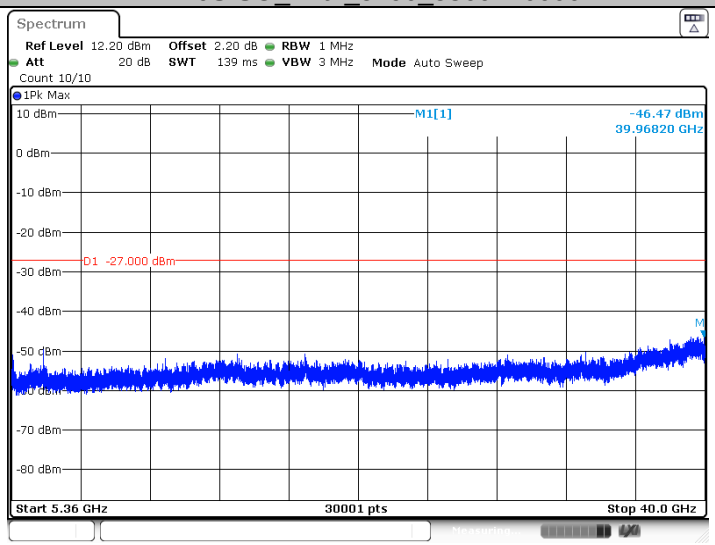
11N40SISO_Ant1_5190_5360~40000



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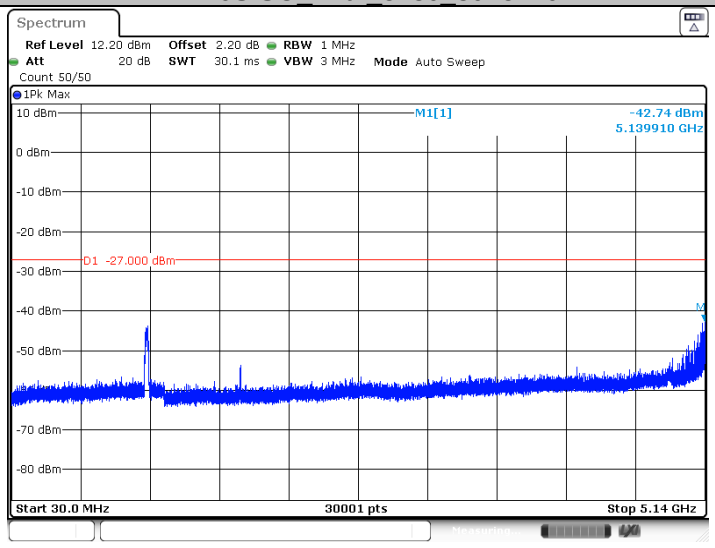

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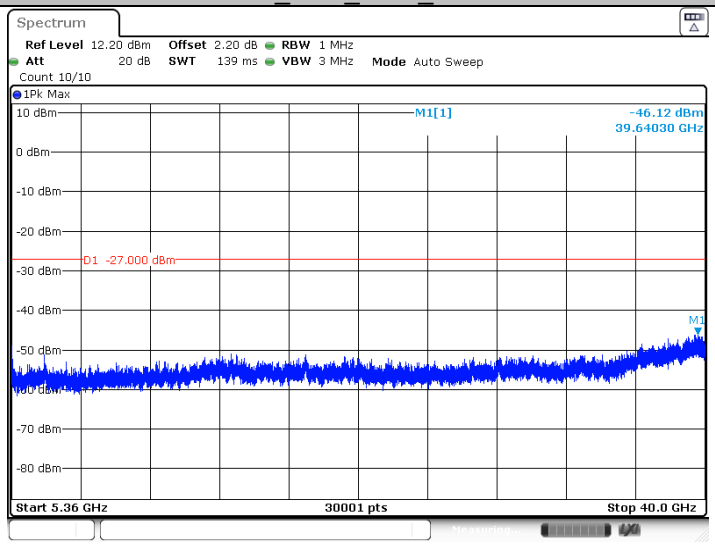

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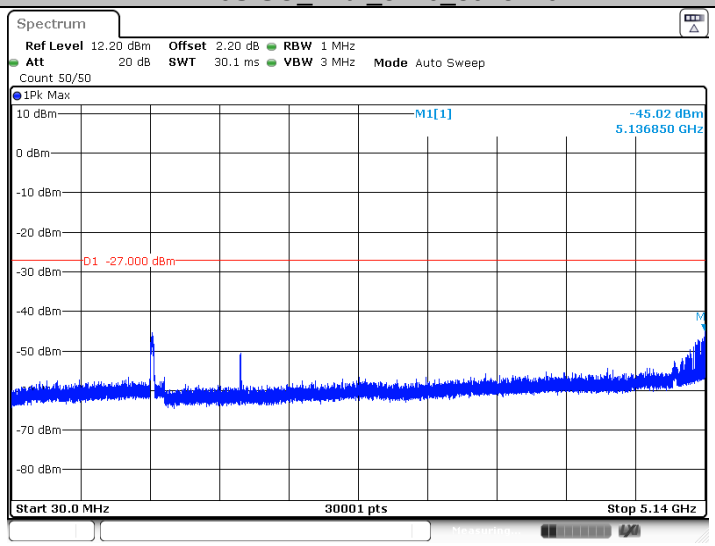
11N40SISO_Ant1_5270_30~5140



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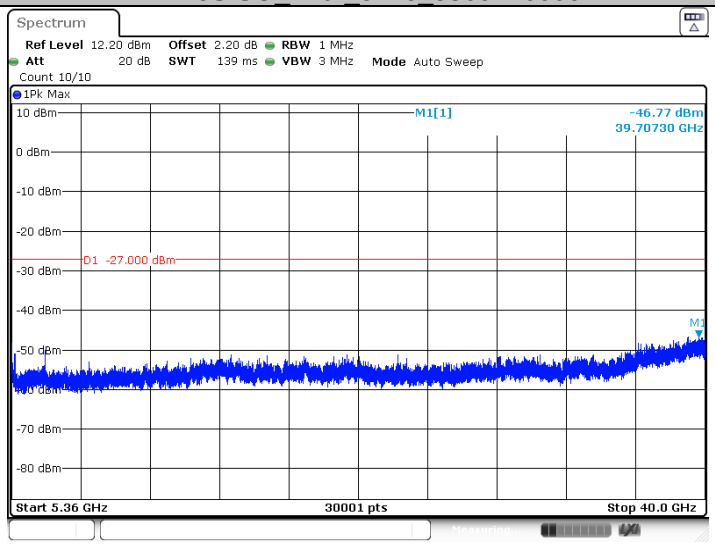
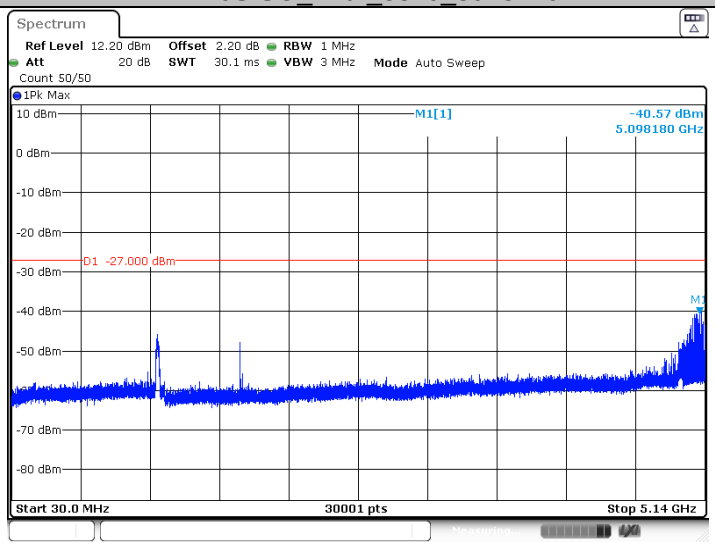


11N40SISO_Ant1_5310_30~5140



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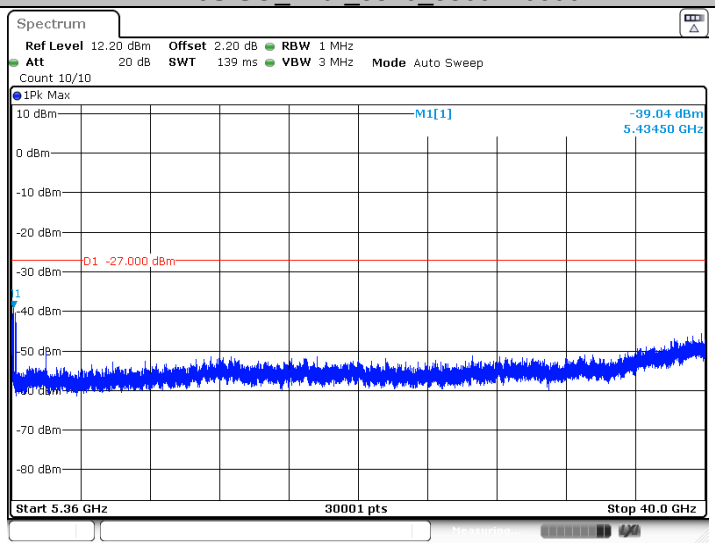
11N40SISO_Ant1_5310_5360~40000



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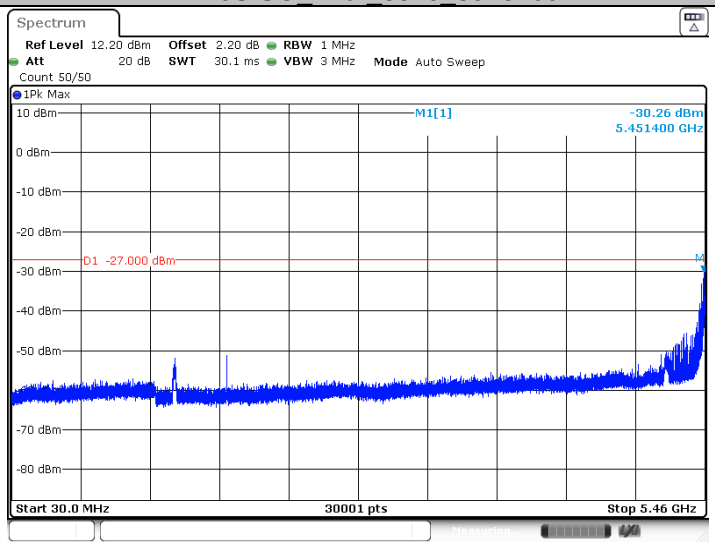

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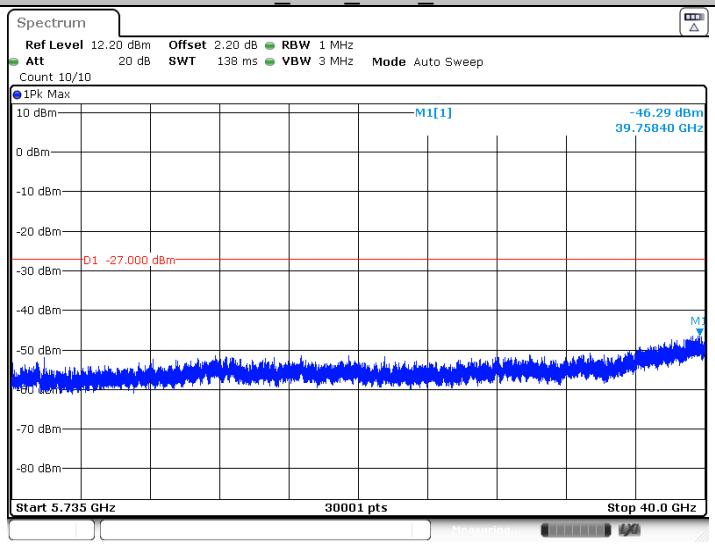

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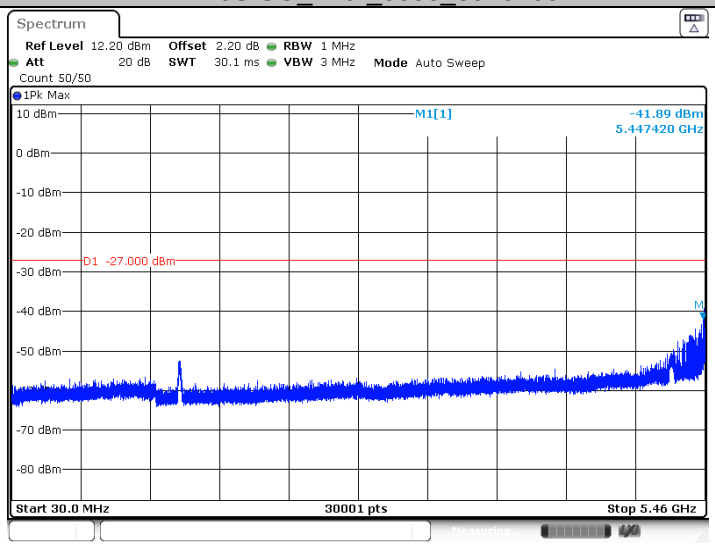
11N40SISO_Ant1_5550_30~5460



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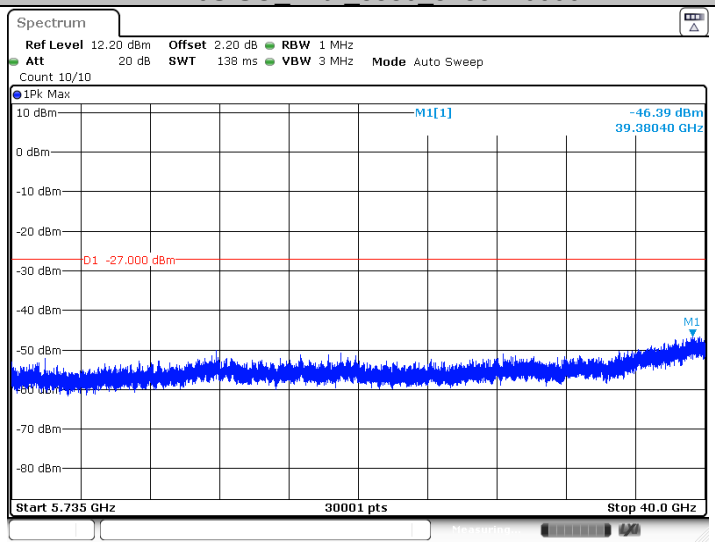

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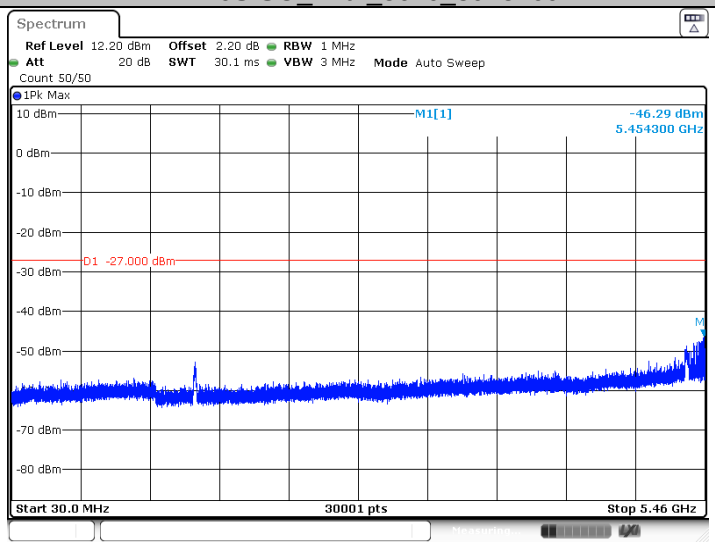

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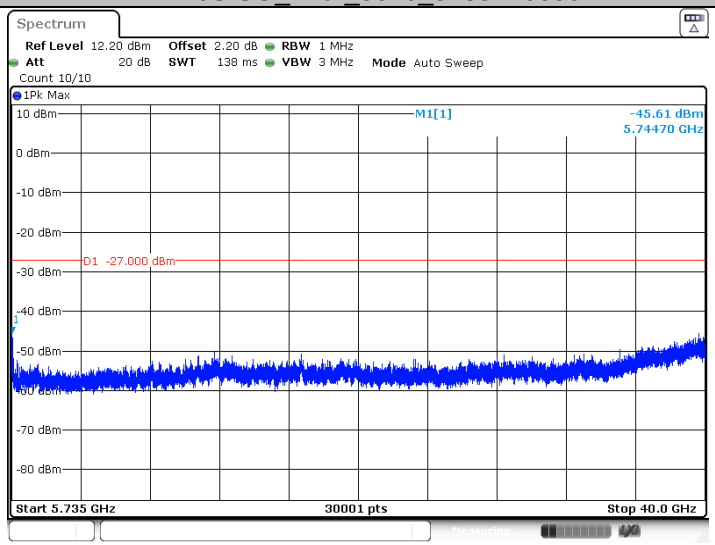

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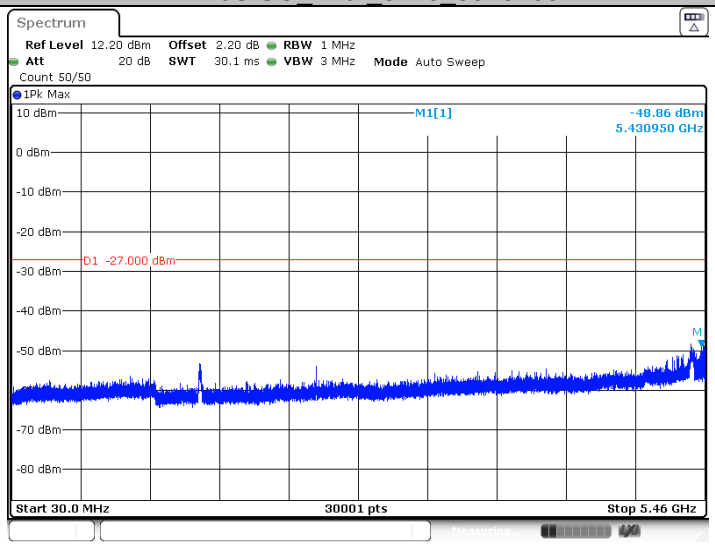

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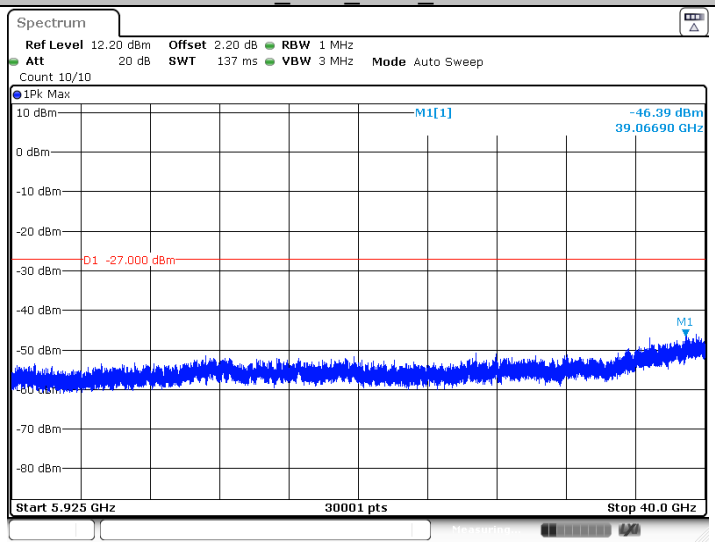

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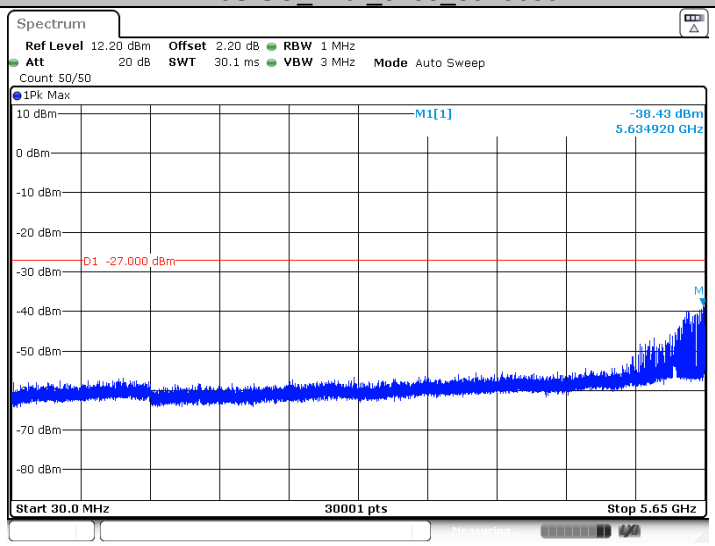
11N40SISO_Ant1_5755_30~5650



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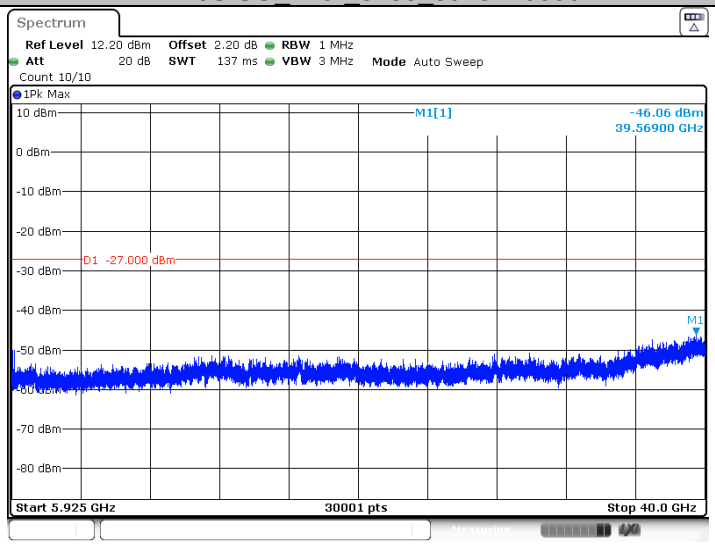

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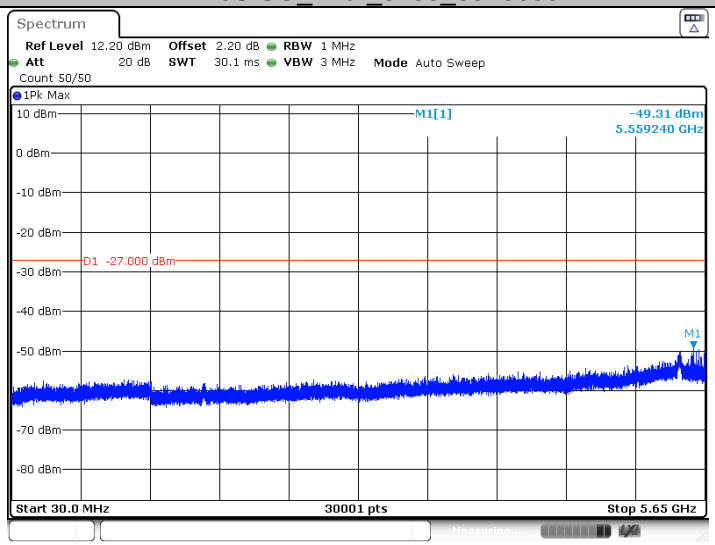

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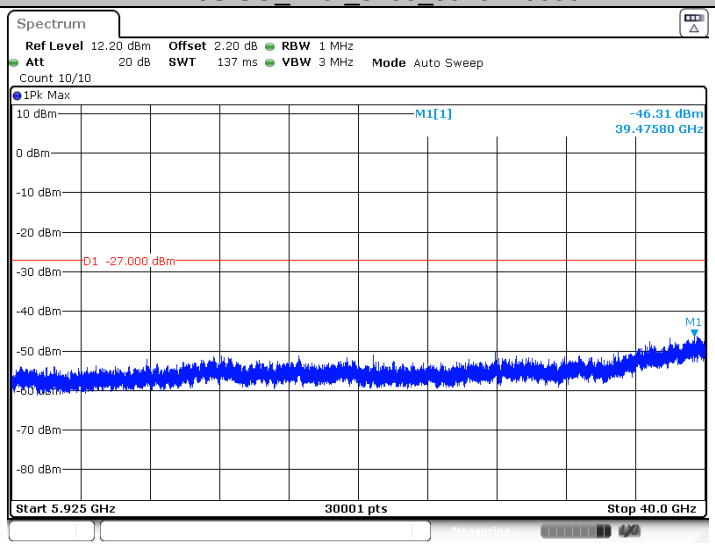
11N40SISO_Ant1_5795_5925~40000



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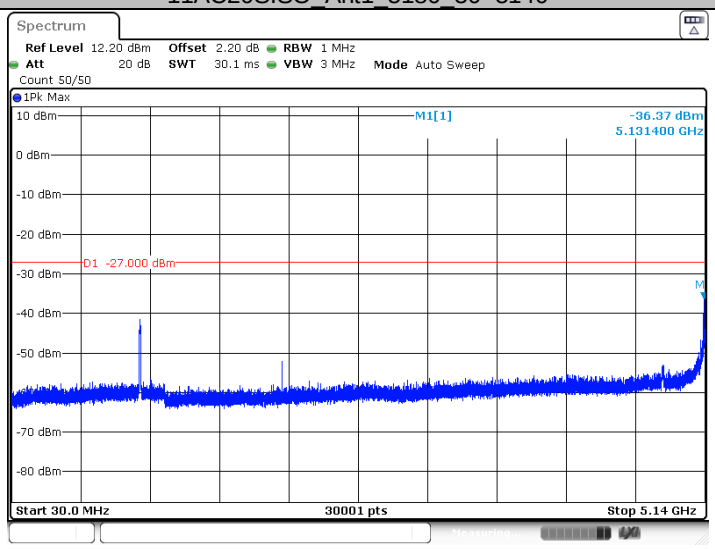

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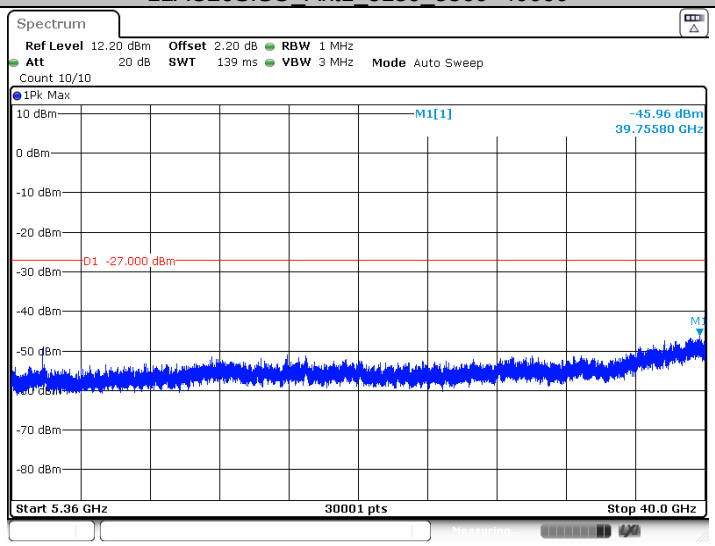

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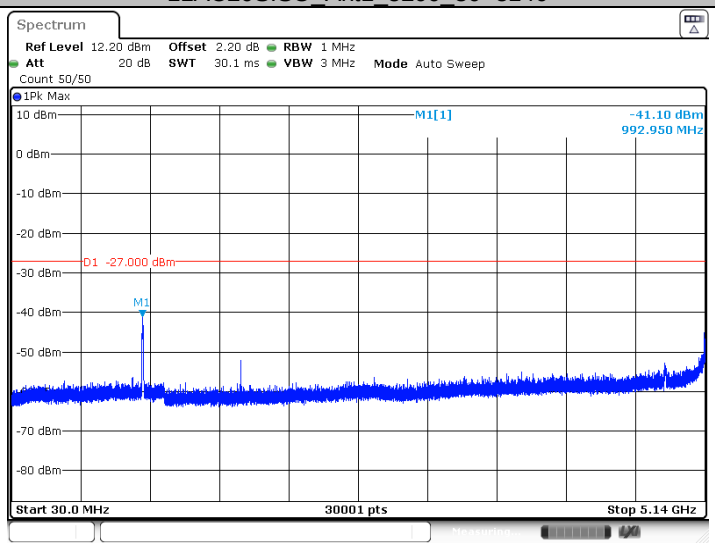

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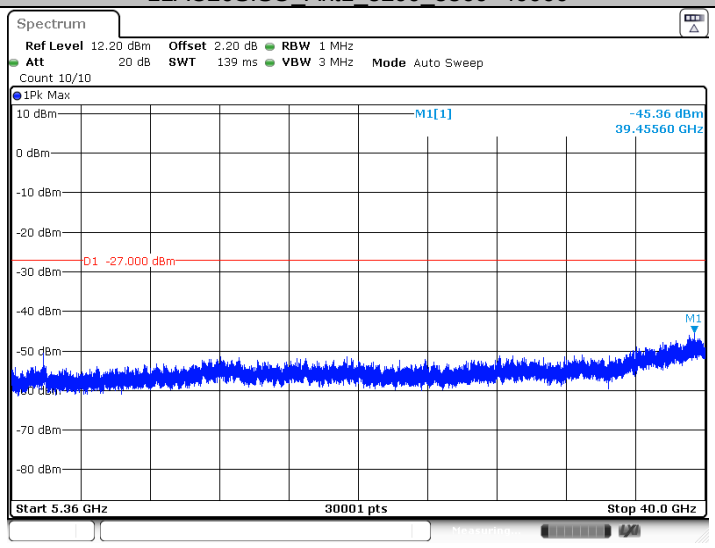

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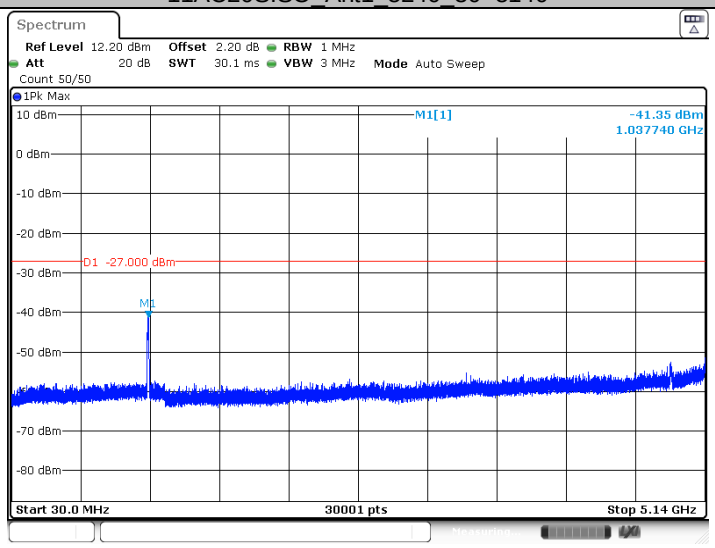

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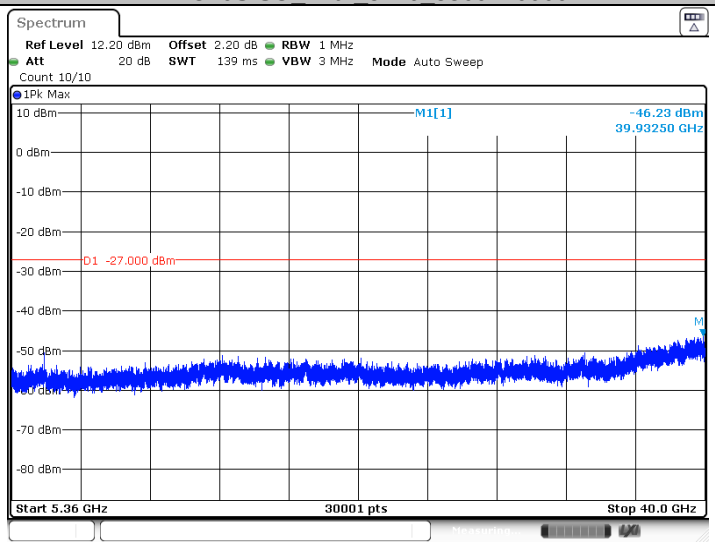

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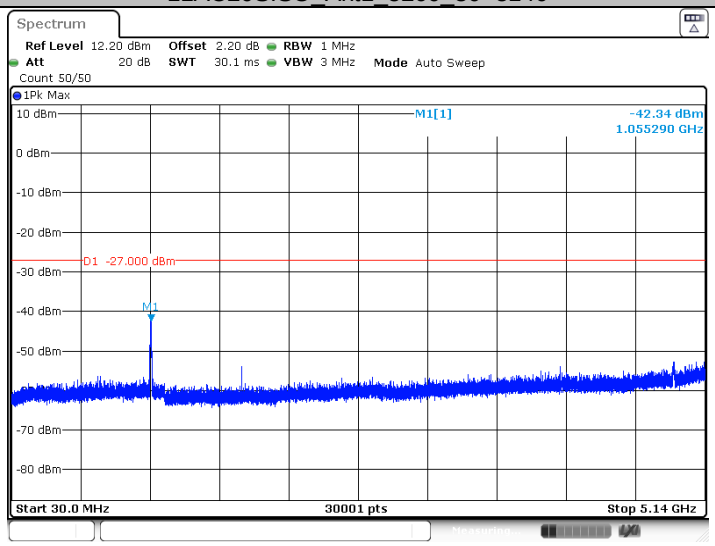

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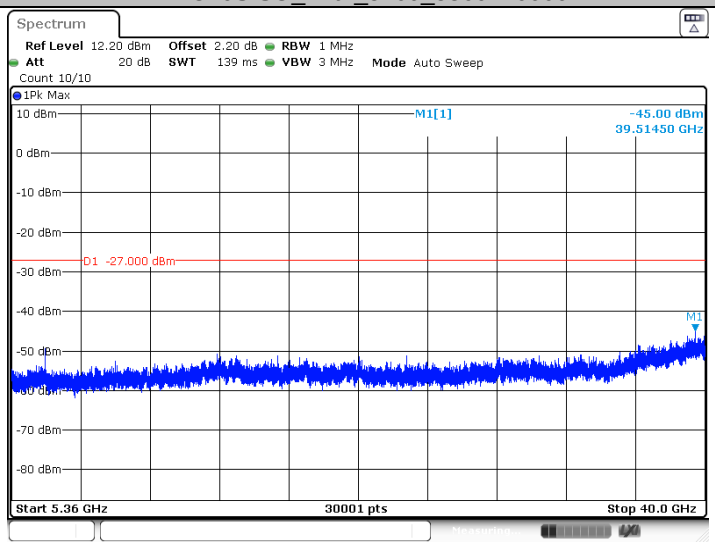

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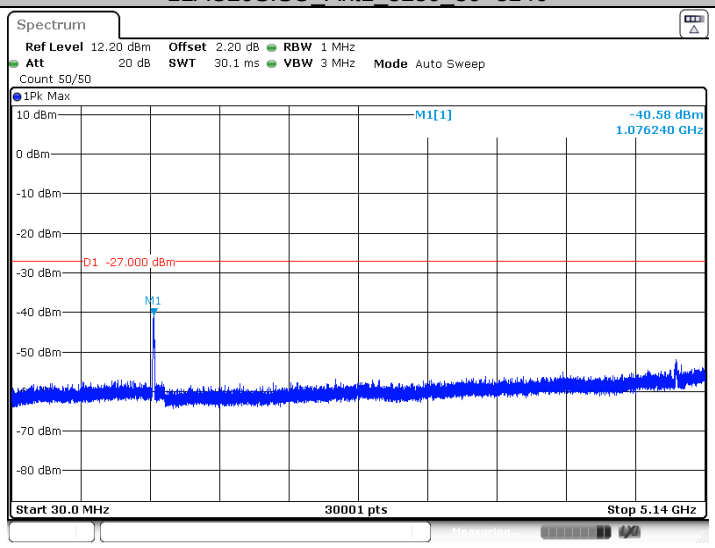
11AC20SISO_Ant1_5280_30~5140



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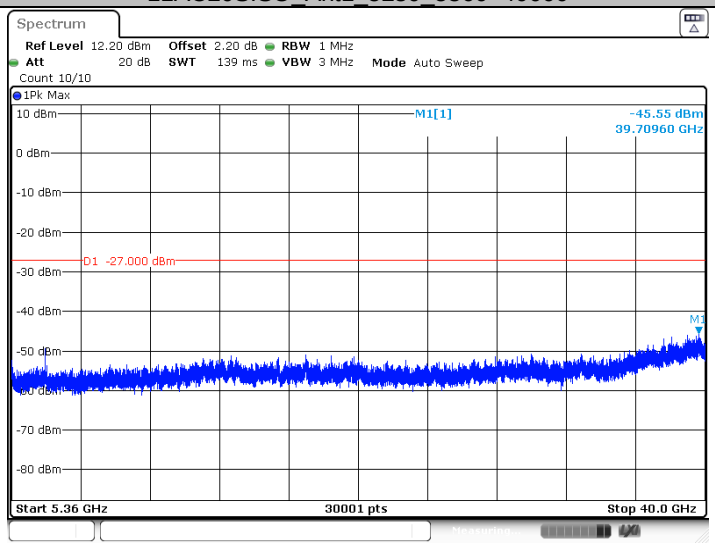

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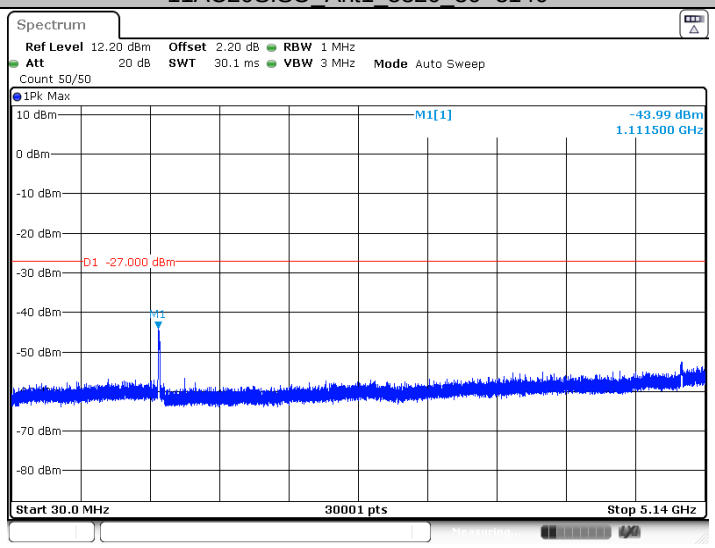

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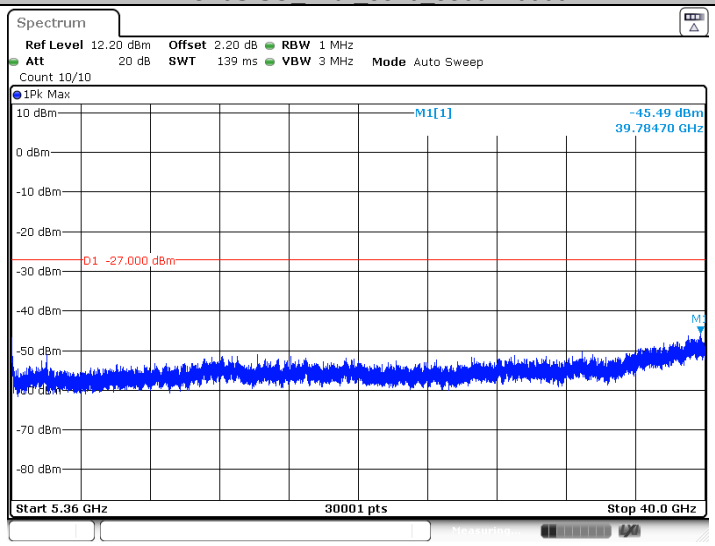
11AC20SISO_Ant1_5320_5360~40000



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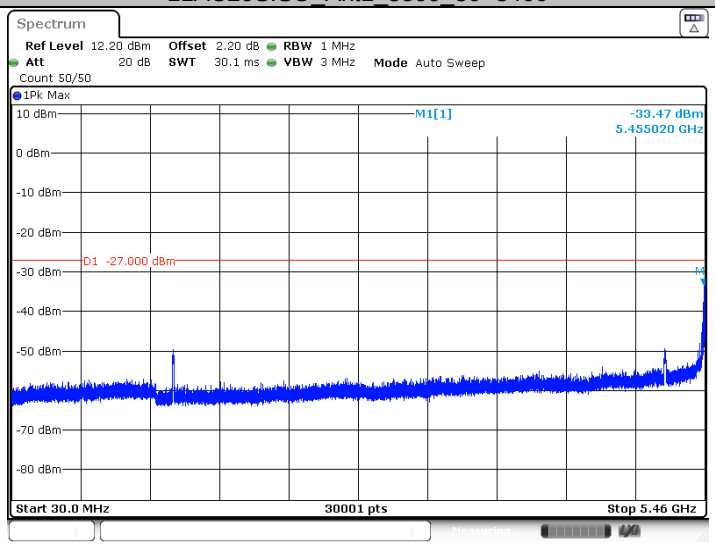

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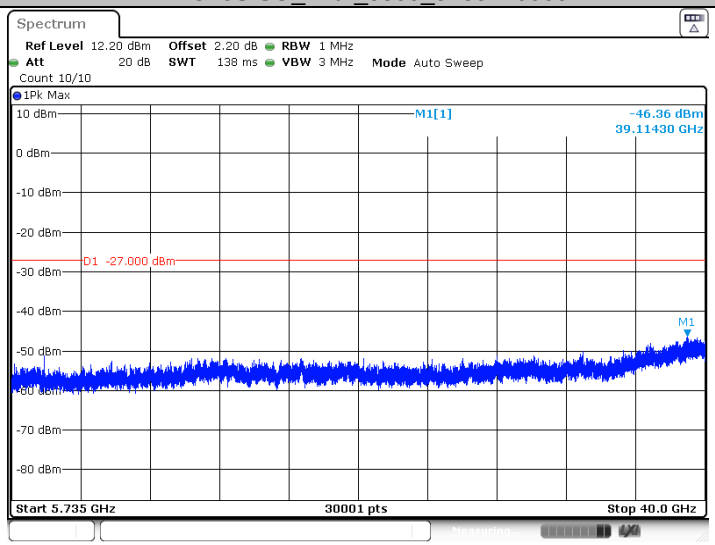

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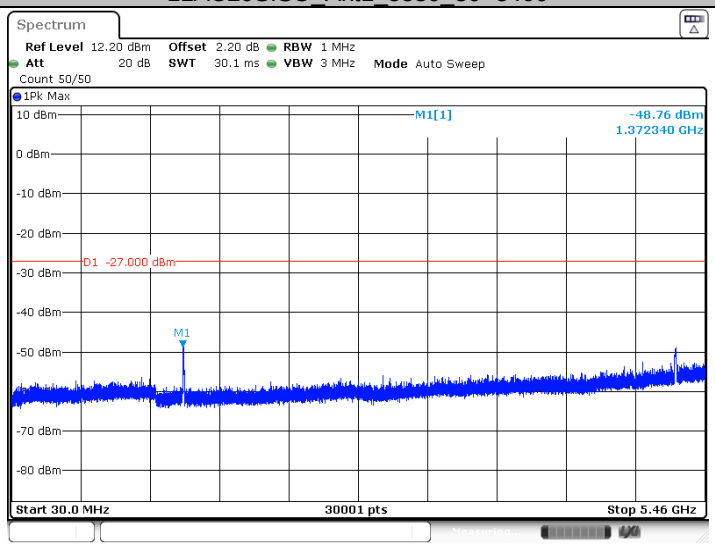
11AC20SISO_Ant1_5580_30~5460



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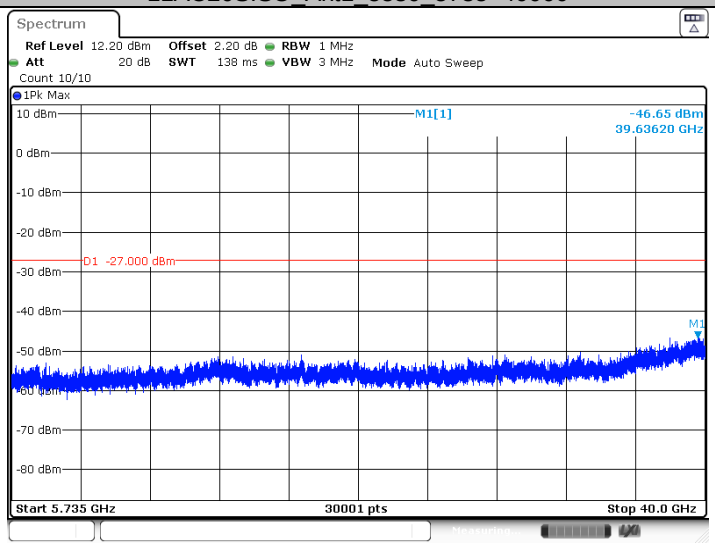

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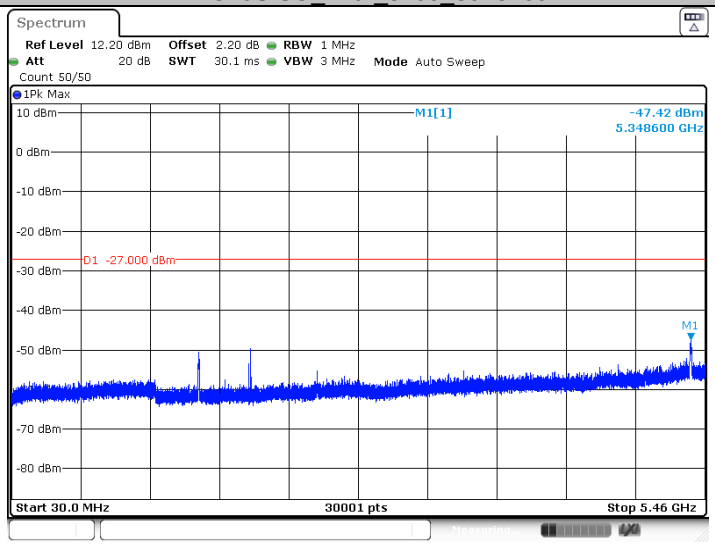

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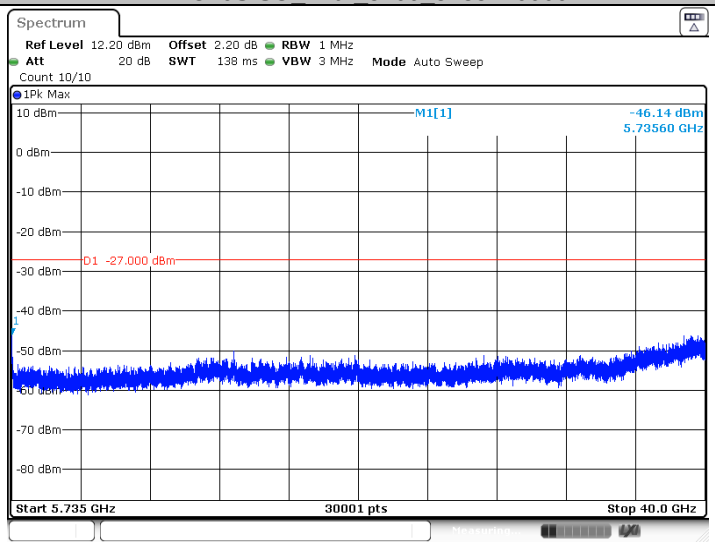

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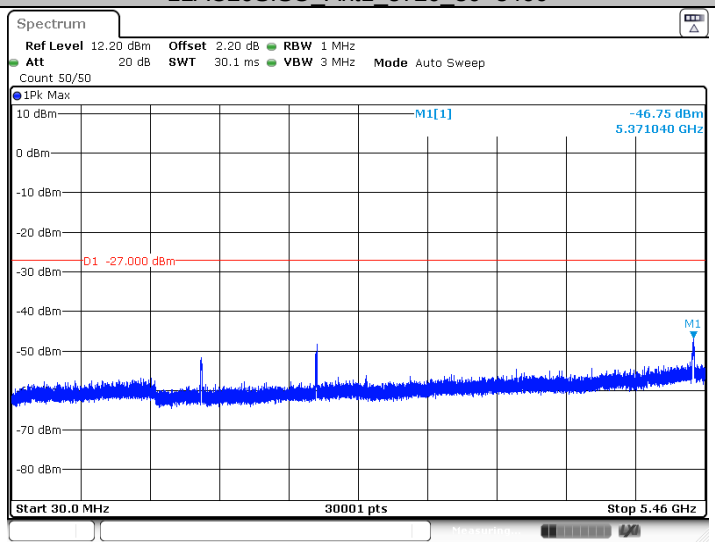

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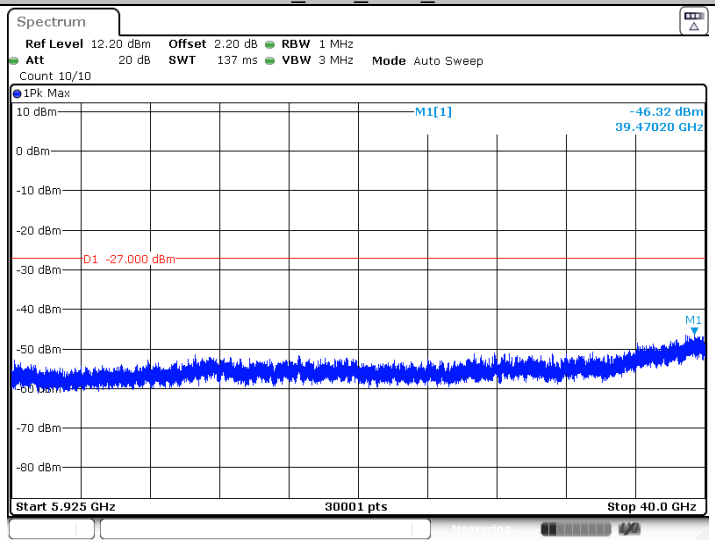

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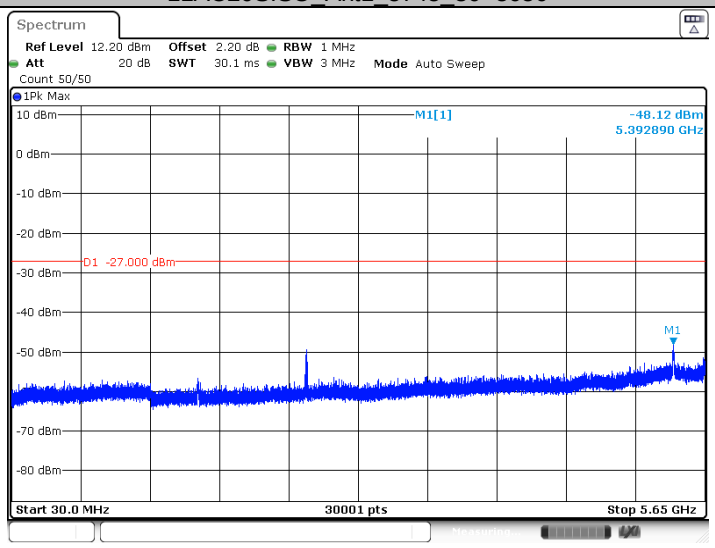

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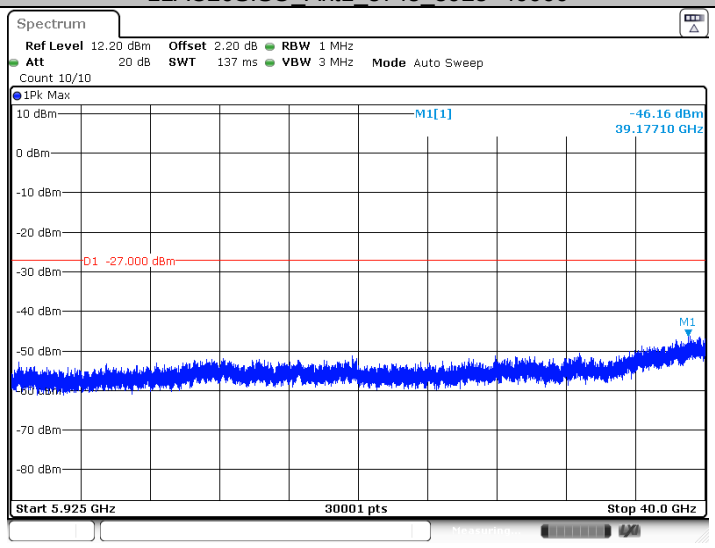

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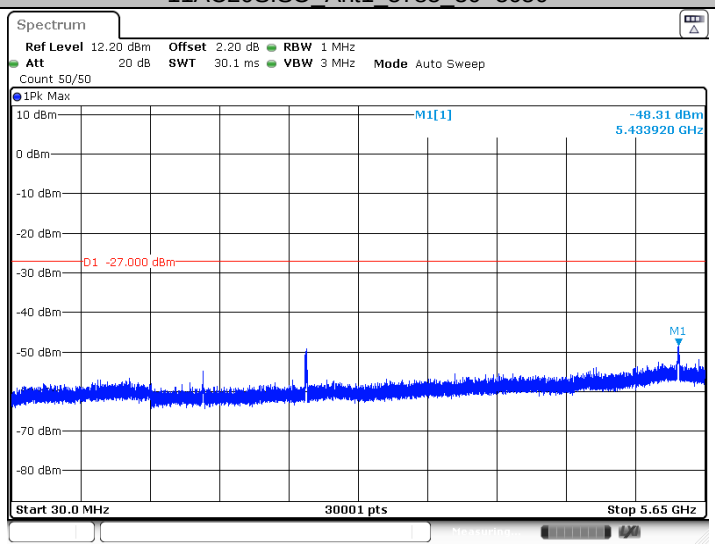

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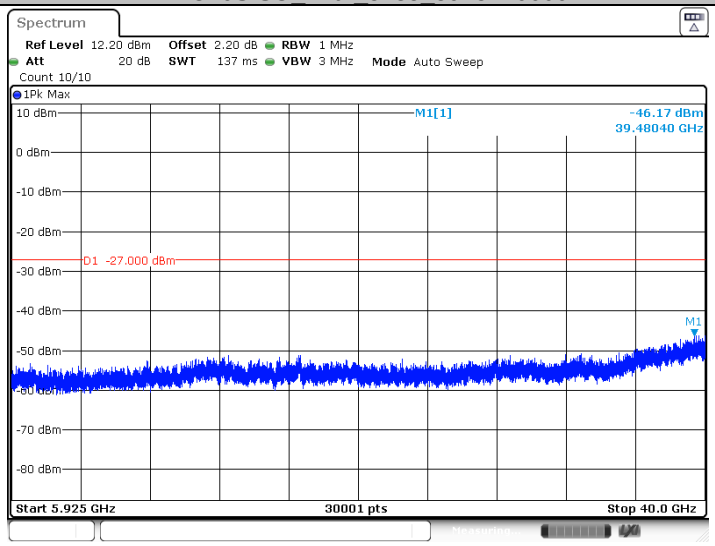

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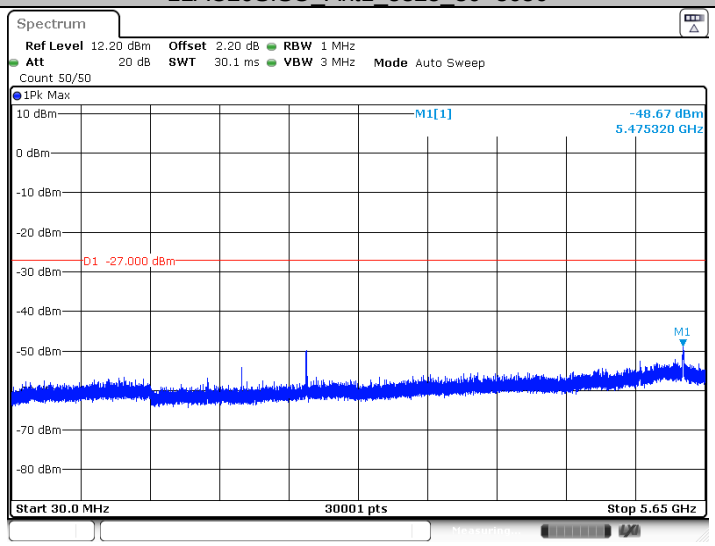

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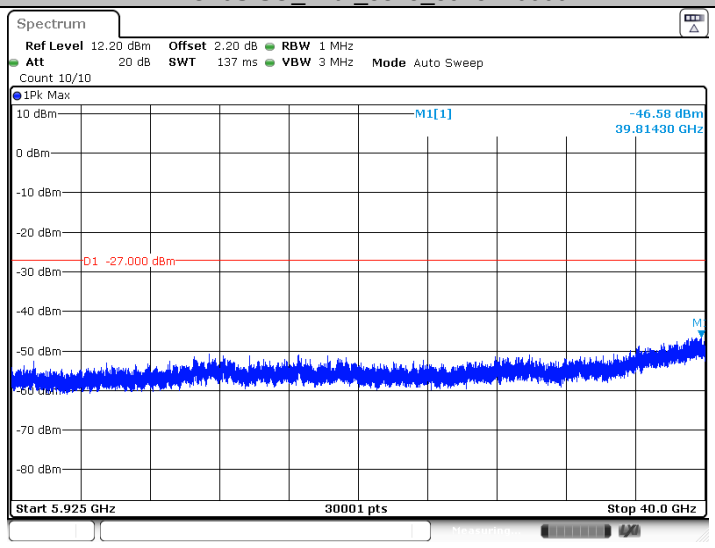

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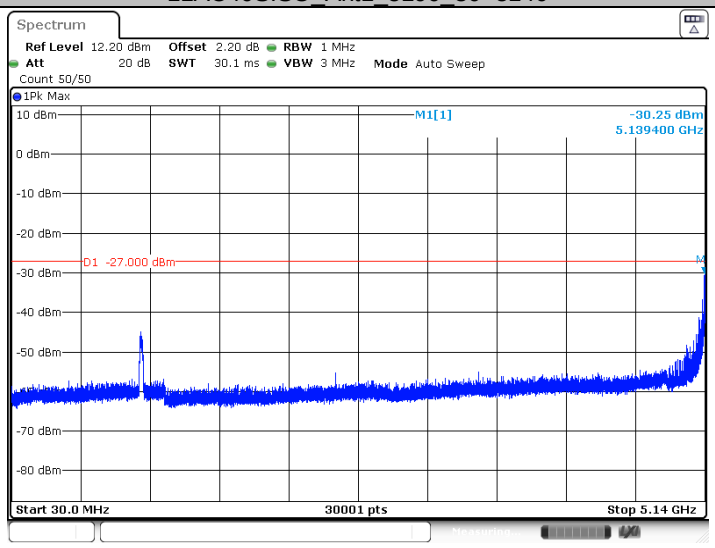

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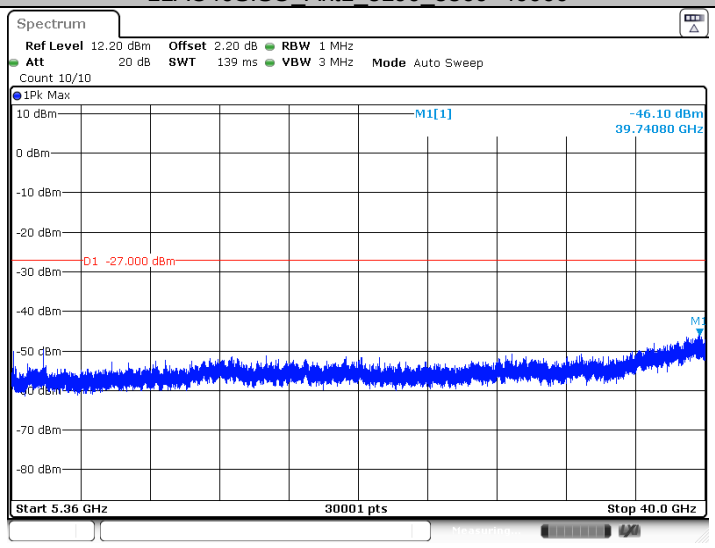

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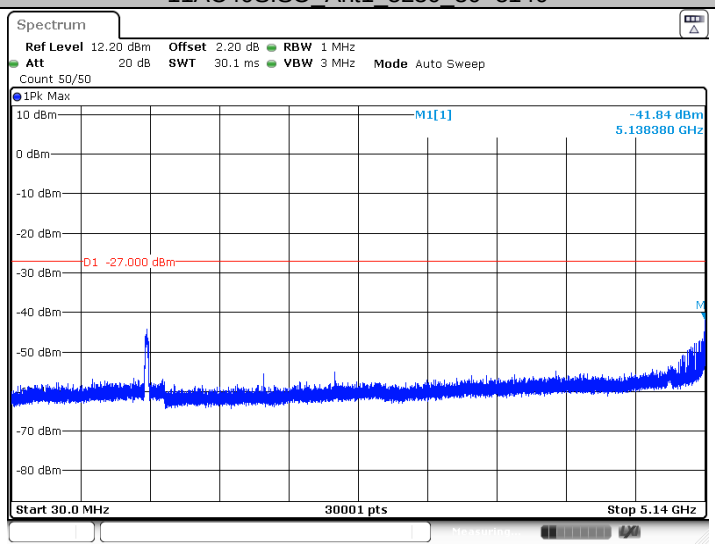

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