

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

Transmitting spurious emission test result as below:

SPTM1 (Version S)

802.11a Modulation 5180MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	97.46	-28.1	32.59	Horizontal	43.50	10.91	QP	Pass
30-1000	39.16	-25.0	27.11	Vertical	40.00	12.89	QP	Pass
1000-7000	1248.43	-12.2	32.67	Horizontal	74.00	41.33	PK	Pass
1000-7000	1258.37	-11.9	30.36	Vertical	74.00	43.64	PK	Pass
1000-7000	5150.00	2.9	33.71	Horizontal	74.00	40.29	PK	Pass
1000-7000	5150.00	3.0	32.48	Vertical	74.00	41.52	PK	Pass
7000-40000	10685.34	10.0	43.11	Horizontal	74.00	30.89	PK	Pass
7000-40000	13117.71	13.4	44.57	Vertical	74.00	29.43	PK	Pass

802.11a Modulation 5200MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	4207.00	0.6	35.29	Horizontal	74.00	38.71	PK	Pass
1000-7000	5869.00	3.6	36.21	Vertical	74.00	37.79	PK	Pass
7000-40000	10400.03	9.1	48.33	Horizontal	74.00	25.67	PK	Pass
7000-40000	10400.03	9.2	47.01	Vertical	74.00	26.99	PK	Pass

802.11a Modulation 5240MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	5646.06	3.3	35.81	Horizontal	74.00	38.19	PK	Pass
1000-7000	1034.68	-13.8	38.68	Vertical	74.00	35.32	PK	Pass
7000-40000	10480.12	9.5	48.84	Horizontal	74.00	25.16	PK	Pass
7000-40000	10480.12	9.6	47.71	Vertical	74.00	26.29	PK	Pass

802.11a Modulation 5260MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	--	--	--	Horizontal	74.00	--	PK	Pass
1000-7000	--	--	--	Vertical	74.00	--	PK	Pass
7000-40000	10520.00	9.6	44.74	Horizontal	74.00	29.26	PK	Pass
7000-40000	10520.00	9.7	48.94	Vertical	74.00	25.06	PK	Pass

802.11a Modulation 5280MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	--	--	--	Horizontal	74.00	--	PK	Pass
1000-7000	--	--	--	Vertical	74.00	--	PK	Pass
7000-40000	13125.62	13.2	43.92	Horizontal	74.00	30.08	PK	Pass
7000-40000	12803.87	13.0	46.00	Vertical	74.00	28.00	PK	Pass

802.11a Modulation 5320MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	5350.00	2.9	36.97	Horizontal	74.00	37.03	PK	Pass
1000-7000	5350.00	3.0	37.21	Vertical	74.00	36.79	PK	Pass
7000-40000	10639.96	10.0	43.18	Horizontal	74.00	30.82	PK	Pass
7000-40000	17904.43	22.9	51.42	Vertical	74.00	22.58	PK	Pass

802.11a Modulation 5500MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	5470.00	2.8	35.23	Horizontal	74.00	38.77	PK	Pass
1000-7000	5470.00	2.8	33.56	Vertical	74.00	40.44	PK	Pass
7000-40000	12439.84	12.8	44.62	Horizontal	74.00	29.38	PK	Pass
7000-40000	11745.46	11.8	43.56	Vertical	74.00	30.44	PK	Pass

802.11a Modulation 5580MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	--	--	--	Horizontal	74.00	--	PK	Pass
1000-7000	--	--	--	Vertical	74.00	--	PK	Pass
7000-40000	10063.15	9.7	42.39	Horizontal	74.00	31.61	PK	Pass
7000-40000	12893.59	13.2	42.94	Vertical	74.00	31.06	PK	Pass

802.11a Modulation 5700MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	--	--	--	Horizontal	74.00	--	PK	Pass
1000-7000	--	--	--	Vertical	74.00	--	PK	Pass
7000-40000	13059.62	13.3	44.66	Horizontal	74.00	29.34	PK	Pass
7000-40000	11400.00	10.9	45.21	Vertical	74.00	28.79	PK	Pass

802.11a Modulation 5745MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	--	--	--	Horizontal	74.00	--	PK	Pass
1000-7000	--	--	--	Vertical	74.00	--	PK	Pass
7000-40000	13026.96	13.1	43.64	Horizontal	74.00	30.36	PK	Pass
7000-40000	11824.87	12.2	43.91	Vertical	74.00	30.09	PK	Pass

802.11a Modulation 5785MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	--	--	--	Horizontal	74.00	--	PK	Pass
1000-7000	--	--	--	Vertical	74.00	--	PK	Pass
7000-40000	13119.09	13.2	44.27	Horizontal	74.00	29.73	PK	Pass
7000-40000	12401.34	12.8	44.09	Vertical	74.00	29.91	PK	Pass

802.11a Modulation 5825MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	--	--	--	Horizontal	74.00	--	PK	Pass
1000-7000	--	--	--	Vertical	74.00	--	PK	Pass
7000-40000	13647.09	14.4	44.94	Horizontal	74.00	29.06	PK	Pass
7000-40000	12351.50	12.7	44.00	Vertical	74.00	30.00	PK	Pass

SPTM1 (Version W)

802.11a Modulation 5180MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	866.89	-15.8	32.08	Horizontal	46.00	13.92	QP	Pass
30-1000	867.91	-15.3	31.15	Vertical	46.00	14.85	QP	Pass
1000-7000	4090.37	0.1	35.08	Horizontal	74.00	38.92	PK	Pass
1000-7000	3222.81	-3.0	31.17	Vertical	74.00	42.83	PK	Pass
1000-7000	5150.00	2.9	34.11	Horizontal	74.00	39.89	PK	Pass
1000-7000	5150.00	3.0	32.48	Vertical	74.00	41.52	PK	Pass
7000-40000	10360.15	9.2	44.34	Horizontal	74.00	29.66	PK	Pass
7000-40000	12500.68	12.7	44.02	Vertical	74.00	29.98	PK	Pass

802.11a Modulation 5200MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	--	--	--	Horizontal	74.00	--	PK	Pass
1000-7000	--	--	--	Vertical	74.00	--	PK	Pass
7000-40000	12441.21	12.8	43.94	Horizontal	74.00	30.06	PK	Pass
7000-40000	10400.03	9.2	45.04	Vertical	74.00	28.96	PK	Pass

802.11a Modulation 5240MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	--	--	--	Horizontal	74.00	--	PK	Pass
1000-7000	--	--	--	Vertical	74.00	--	PK	Pass
7000-40000	10480.12	9.5	45.94	Horizontal	74.00	28.06	PK	Pass
7000-40000	12849.93	13.1	43.02	Vertical	74.00	30.98	PK	Pass

802.11a Modulation 5260MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	--	--	--	Horizontal	74.00	--	PK	Pass
1000-7000	--	--	--	Vertical	74.00	--	PK	Pass
7000-40000	10520.00	9.6	44.74	Horizontal	74.00	29.26	PK	Pass
7000-40000	10520.00	9.7	44.30	Vertical	74.00	29.70	PK	Pass

802.11a Modulation 5280MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	--	--	--	Horizontal	74.00	--	PK	Pass
1000-7000	--	--	--	Vertical	74.00	--	PK	Pass
7000-40000	10560.21	9.7	46.90	Horizontal	74.00	27.10	PK	Pass
7000-40000	10560.21	9.7	47.09	Vertical	74.00	26.91	PK	Pass

802.11a Modulation 5320MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	5350.00	2.9	36.97	Horizontal	74.00	37.03	PK	Pass
1000-7000	5350.00	2.9	37.21	Vertical	74.00	36.79	PK	Pass
7000-40000	10639.96	10.0	49.02	Horizontal	74.00	24.98	PK	Pass
7000-40000	10639.96	10.1	48.17	Vertical	74.00	25.83	PK	Pass

802.11a Modulation 5500MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	5470.00	2.8	39.29	Horizontal	74.00	34.71	PK	Pass
1000-7000	5470.00	2.8	57.82	Vertical	74.00	16.18	PK	Pass
7000-40000	11000.21	10.3	48.95	Horizontal	74.00	25.05	PK	Pass
7000-40000	11000.21	10.4	46.90	Vertical	74.00	27.10	PK	Pass

802.11a Modulation 5580MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	--	--	--	Horizontal	74.00	--	PK	Pass
1000-7000	--	--	--	Vertical	74.00	--	PK	Pass
7000-40000	11160.06	10.7	48.88	Horizontal	74.00	25.12	PK	Pass
7000-40000	11160.06	10.7	46.99	Vertical	74.00	27.01	PK	Pass

802.11a Modulation 5700MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	--	--	--	Horizontal	74.00	--	PK	Pass
1000-7000	--	--	--	Vertical	74.00	--	PK	Pass
7000-40000	11400.00	10.9	48.42	Horizontal	74.00	25.58	PK	Pass
7000-40000	11400.00	11.1	44.70	Vertical	74.00	29.30	PK	Pass

802.11a Modulation 5745MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	--	--	--	Horizontal	74.00	--	PK	Pass
1000-7000	--	--	--	Vertical	74.00	--	PK	Pass
7000-40000	11490.06	10.8	45.45	Horizontal	74.00	28.55	PK	Pass
7000-40000	12410.62	12.9	43.66	Vertical	74.00	30.34	PK	Pass

802.11a Modulation 5785MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	--	--	--	Horizontal	74.00	--	PK	Pass
1000-7000	--	--	--	Vertical	74.00	--	PK	Pass
7000-40000	11570.15	11.0	45.29	Horizontal	74.00	28.71	PK	Pass
7000-40000	12853.71	13.1	45.27	Vertical	74.00	28.73	PK	Pass

802.11a Modulation 5825MHz Test Result

Frequency Range	Frequency	Corr. Factor	Emission Level	Polarization	Limit	Margin	Detector	Result
MHz	MHz	dB	dBuV/m		dBuV/m	dB		
30-1000	--	--	--	Horizontal	--	--	QP	Pass
30-1000	--	--	--	Vertical	--	--	QP	Pass
1000-7000	--	--	--	Horizontal	74.00	--	PK	Pass
1000-7000	--	--	--	Vertical	74.00	--	PK	Pass
7000-40000	13073.03	13.1	45.27	Horizontal	74.00	28.73	PK	Pass
7000-40000	11650.25	11.4	43.90	Vertical	74.00	30.10	PK	Pass

Remark:

- (1) Above 1GHz Corrector factor= Antenna Factor +Cable Loss - Amp. Factor.
- (2) Below 1GHz Corrector factor= Antenna Factor +Cable Loss.
- (3) "*" means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.
- (4) We test all modes and only the worst case for each bandwidth recorded in the report.
- (5) Testing is carried out with frequency rang 30MHz to 40GHz, which data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) The Low frequency, which start from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

9.6 Band Edge

Test Method

According to KBD789033 D02

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.

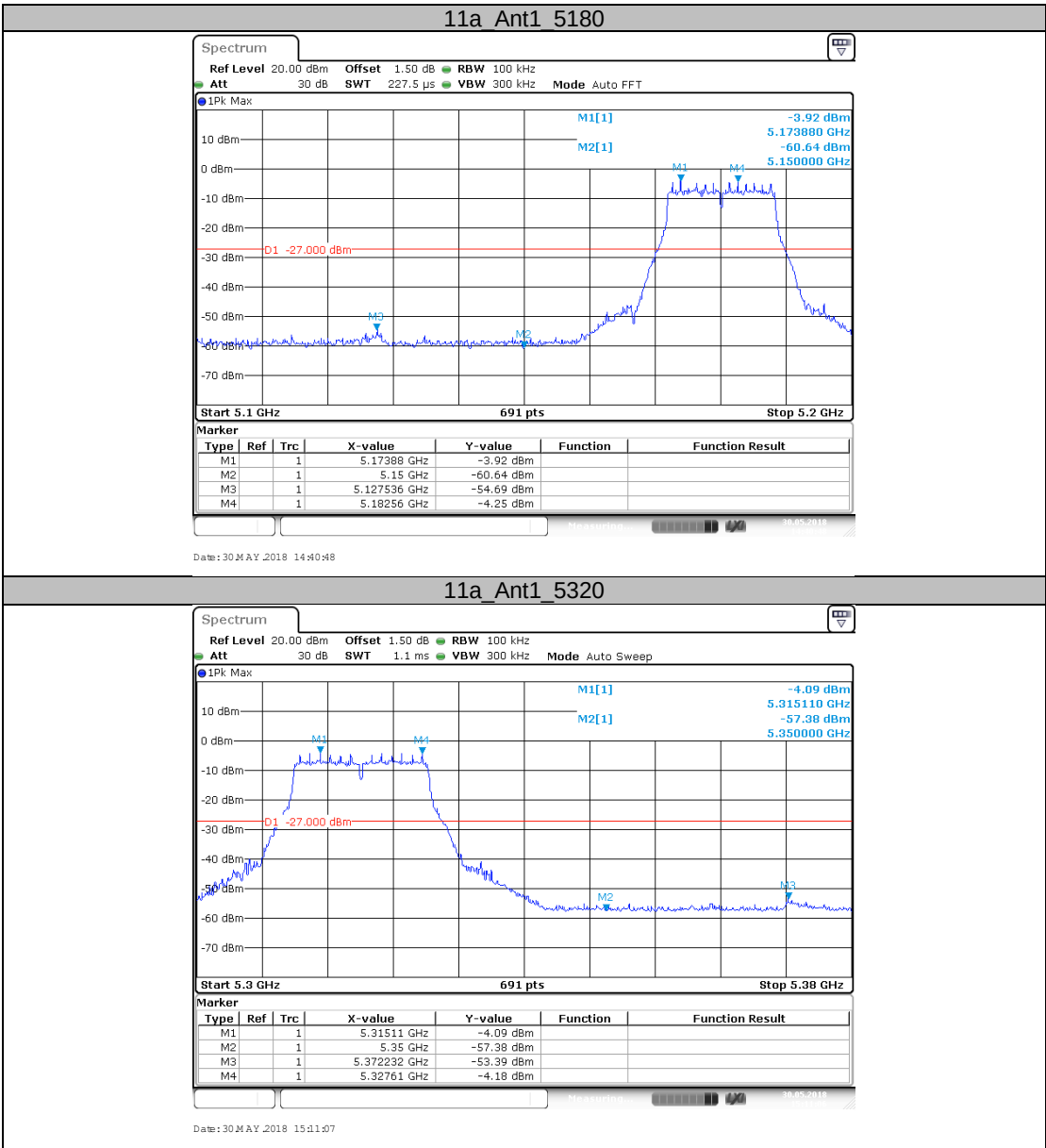
For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p.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

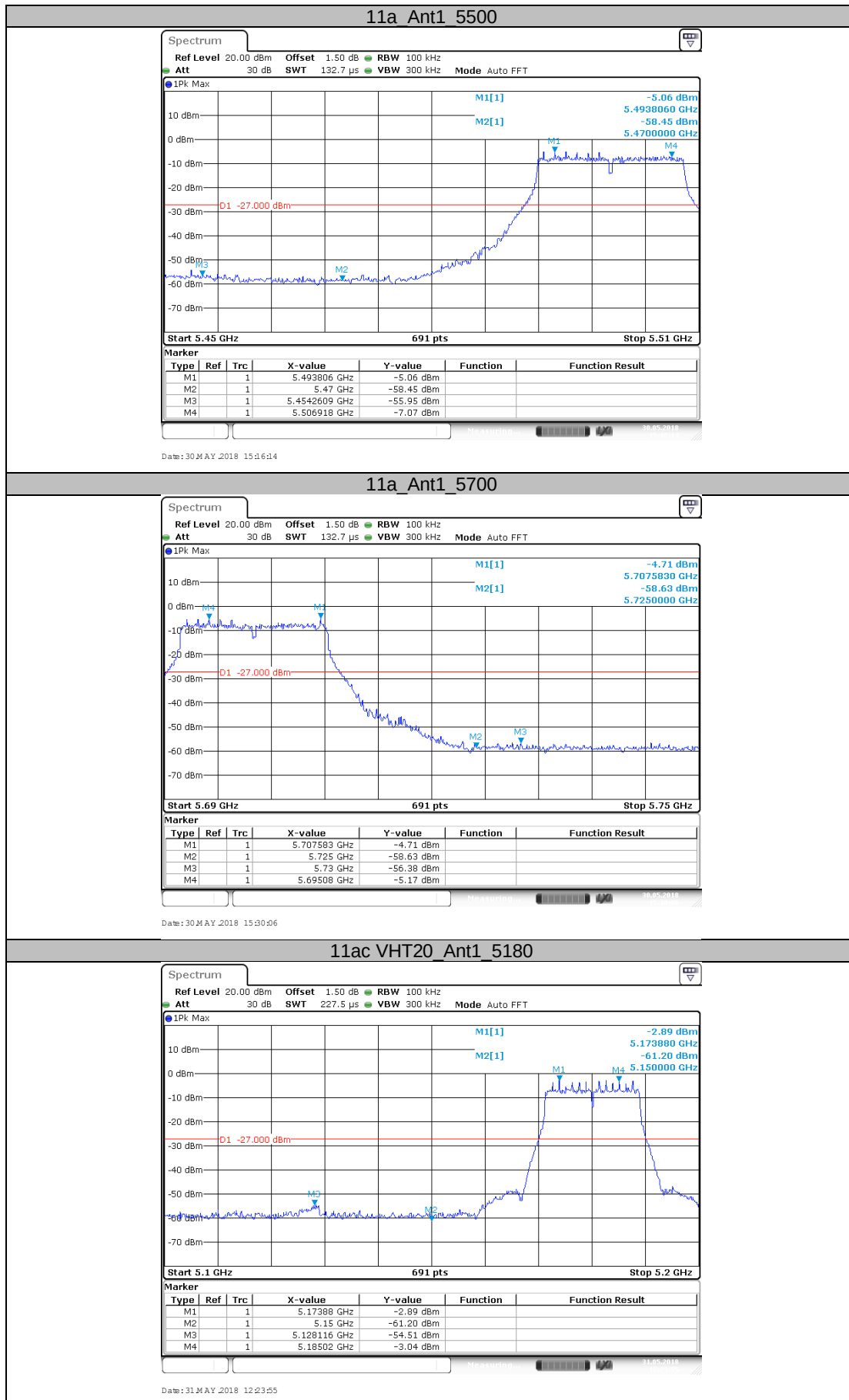
Test Result:

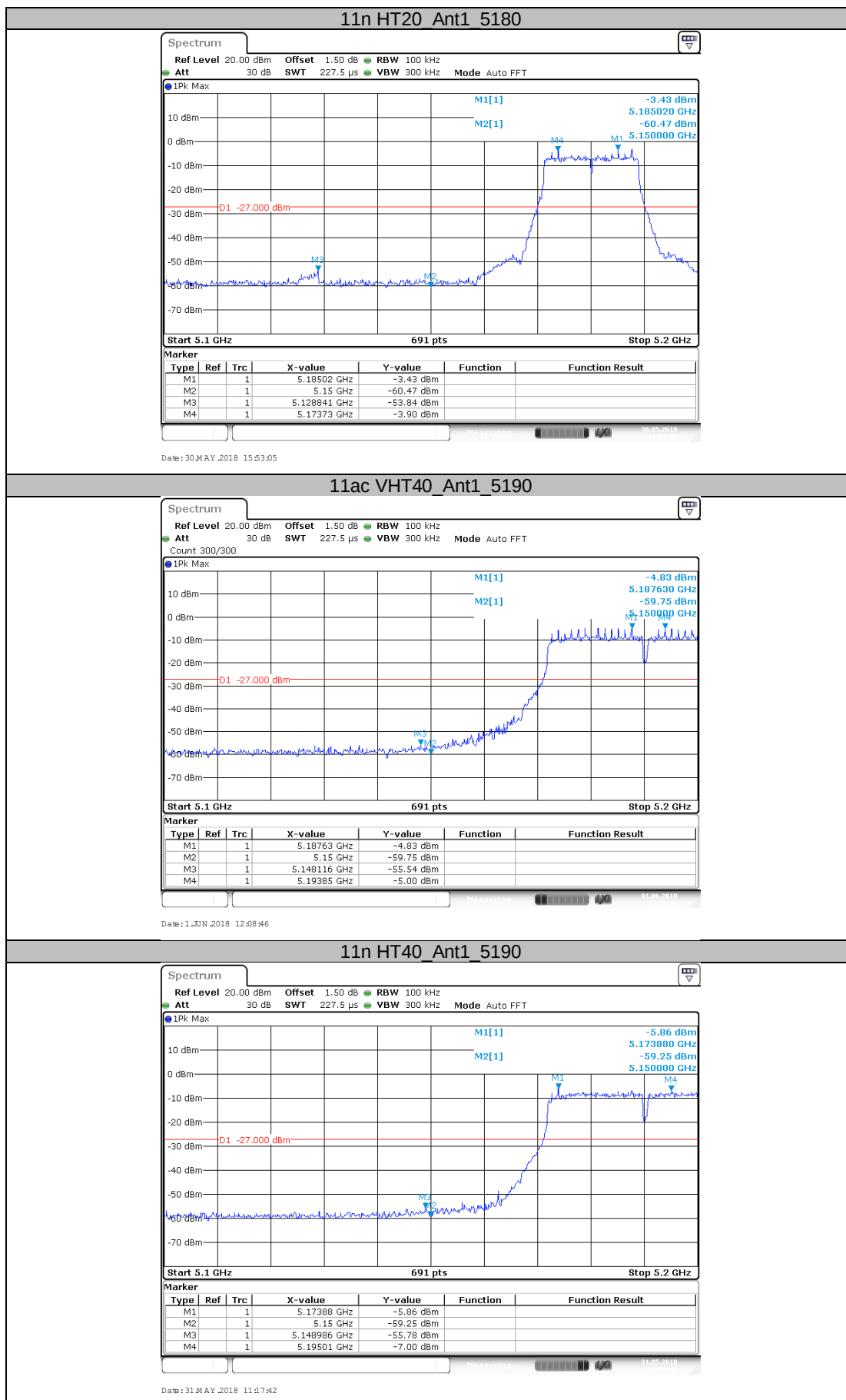
Test Mode	Antenna	Ch Name	Channel	Result	Limit	Verdict
11a	Ant1	Low	5180	-54.69	-27	PASS
		High	5320	-53.39	-27	PASS
		Low	5500	-55.95	-27	PASS
		High	5700	-56.38	-27	PASS
11ac VHT20	Ant1	Low	5180	-54.51	-27	PASS
11n HT20	Ant1	Low	5180	-53.84	-27	PASS
11ac VHT40	Ant1	Low	5190	-55.54	-27	PASS
11n HT40	Ant1	Low	5190	-55.78	-27	PASS
11ac VHT80	Ant1	Low	5210	-54.97	-27	PASS
11n HT40	Ant1	High	5310	-53.86	-27	PASS
11ac VHT40	Ant1	High	5310	-52.06	-27	PASS
11n HT20	Ant1	High	5320	-52.92	-27	PASS
11ac VHT20	Ant1	High	5320	-53.41	-27	PASS
		Low	5500	-55.28	-27	PASS
11n HT20	Ant1	Low	5500	-55.21	-27	PASS
11n HT40	Ant1	Low	5510	-54.83	-27	PASS
11ac VHT40	Ant1	Low	5510	-53.62	-27	PASS
11ac VHT80	Ant1	Low	5530	-54.15	-27	PASS
		High	5610	-57.32	-27	PASS
11ac VHT40	Ant1	High	5670	-57.04	-27	PASS
11n HT40	Ant1	High	5670	-56.86	-27	PASS
11ac VHT80	Ant1	Low	5690	-55.99	-27	PASS
		High	5690	-55.41	-27	PASS
11ac VHT20	Ant1	High	5700	-56.02	-27	PASS
11n HT20	Ant1	High	5700	-56.21	-27	PASS
11ac VHT40	Ant1	Low	5710	-55.63	-27	PASS
		High	5710	-54.87	-27	PASS

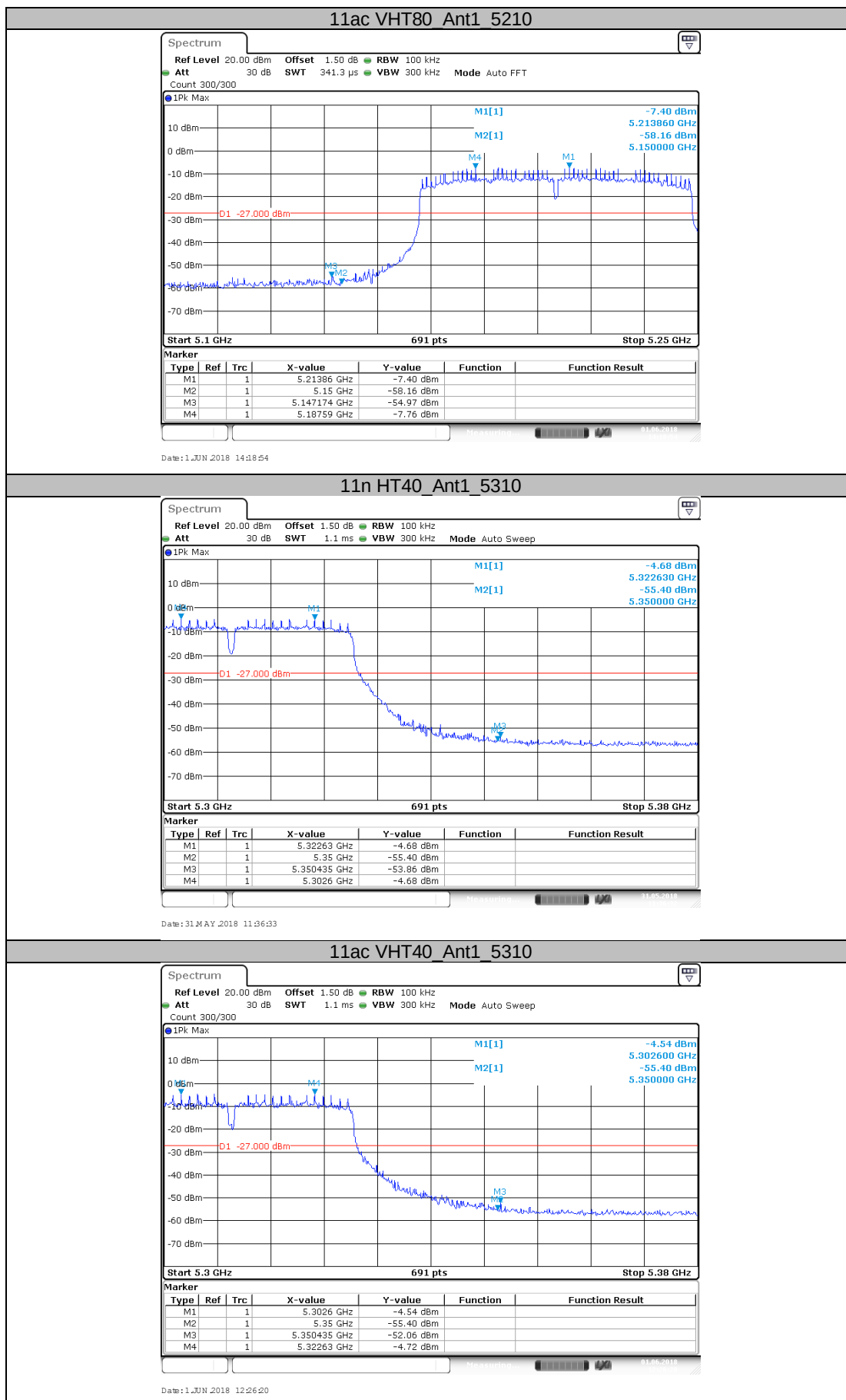


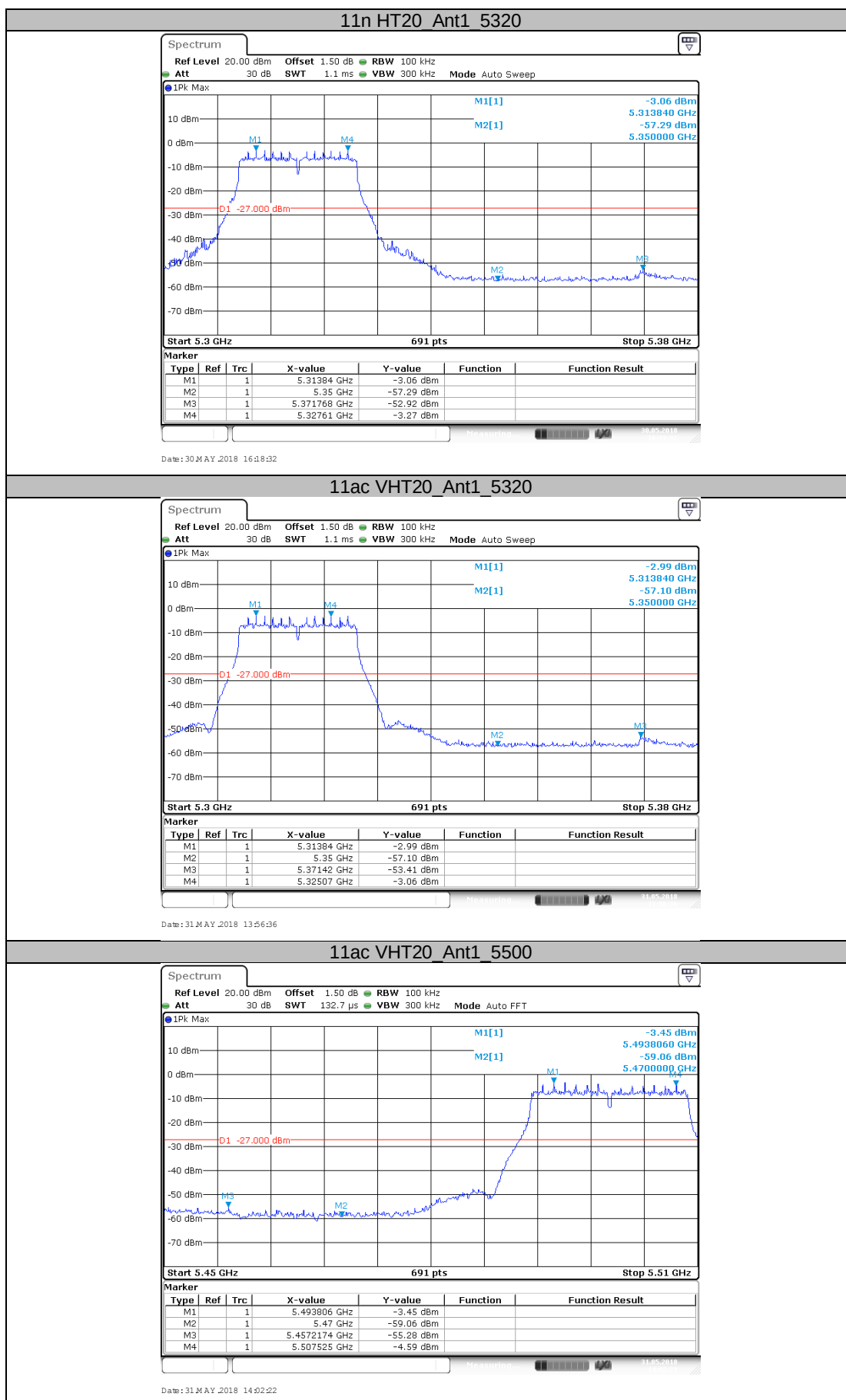
Test Graphs

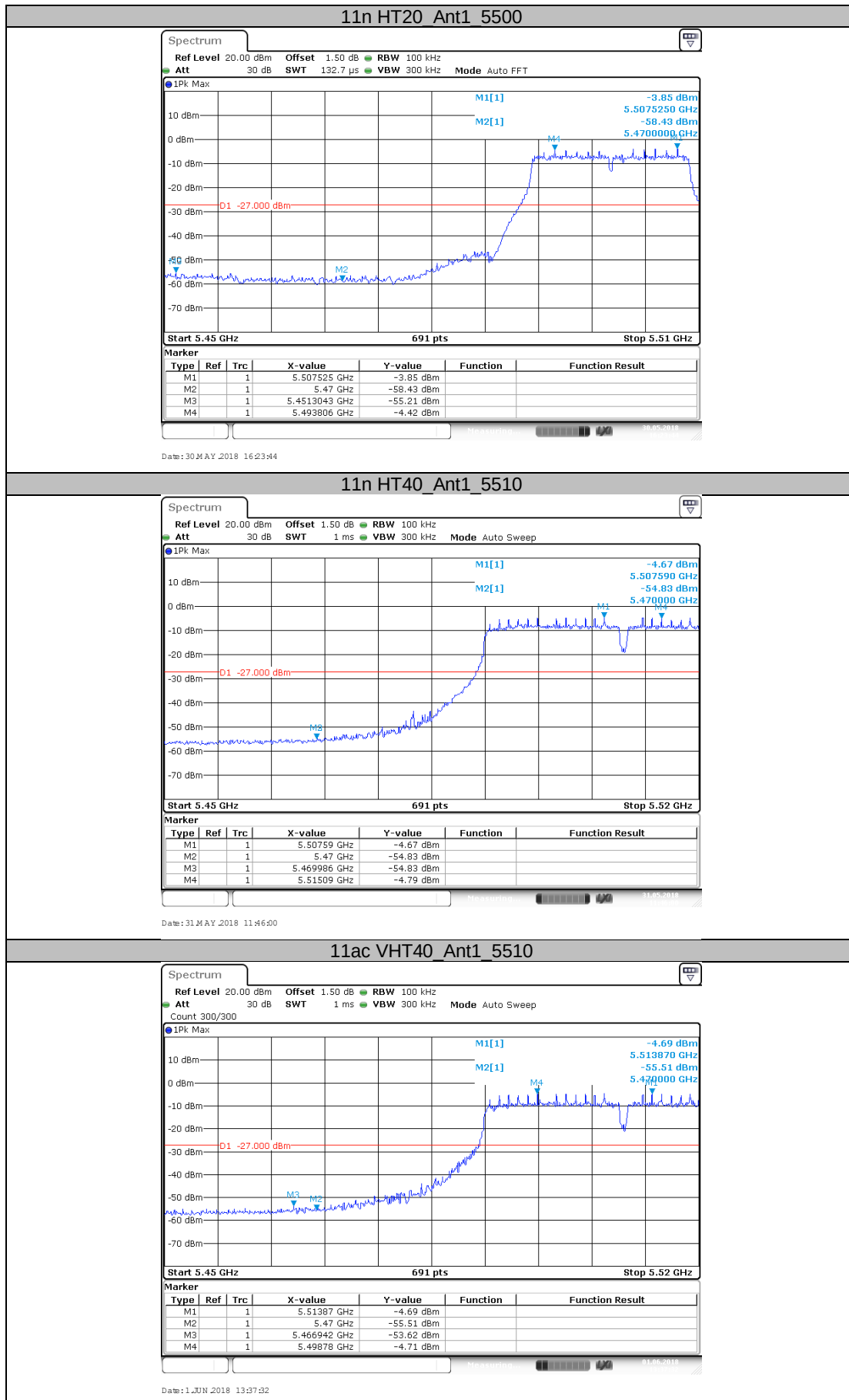


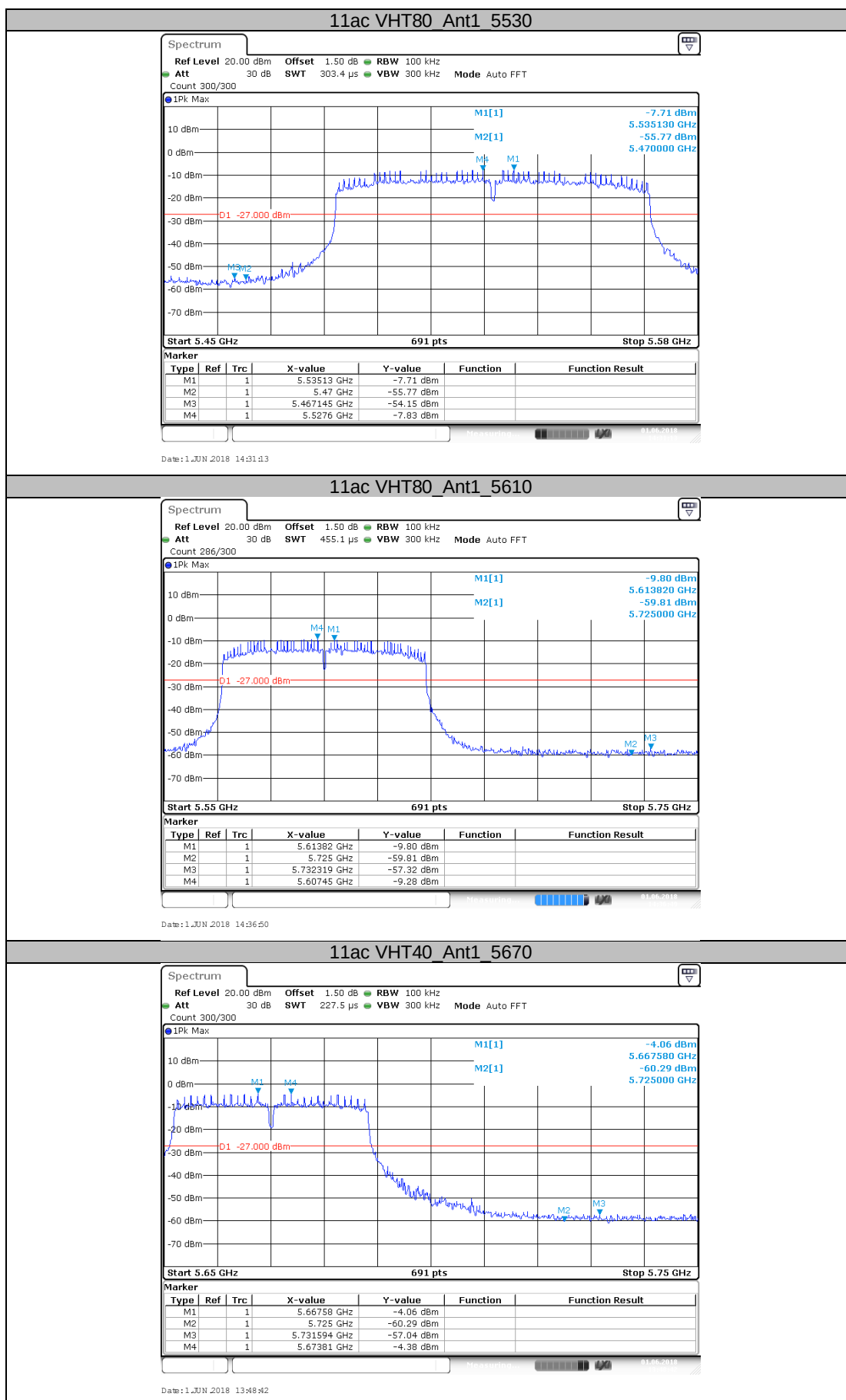


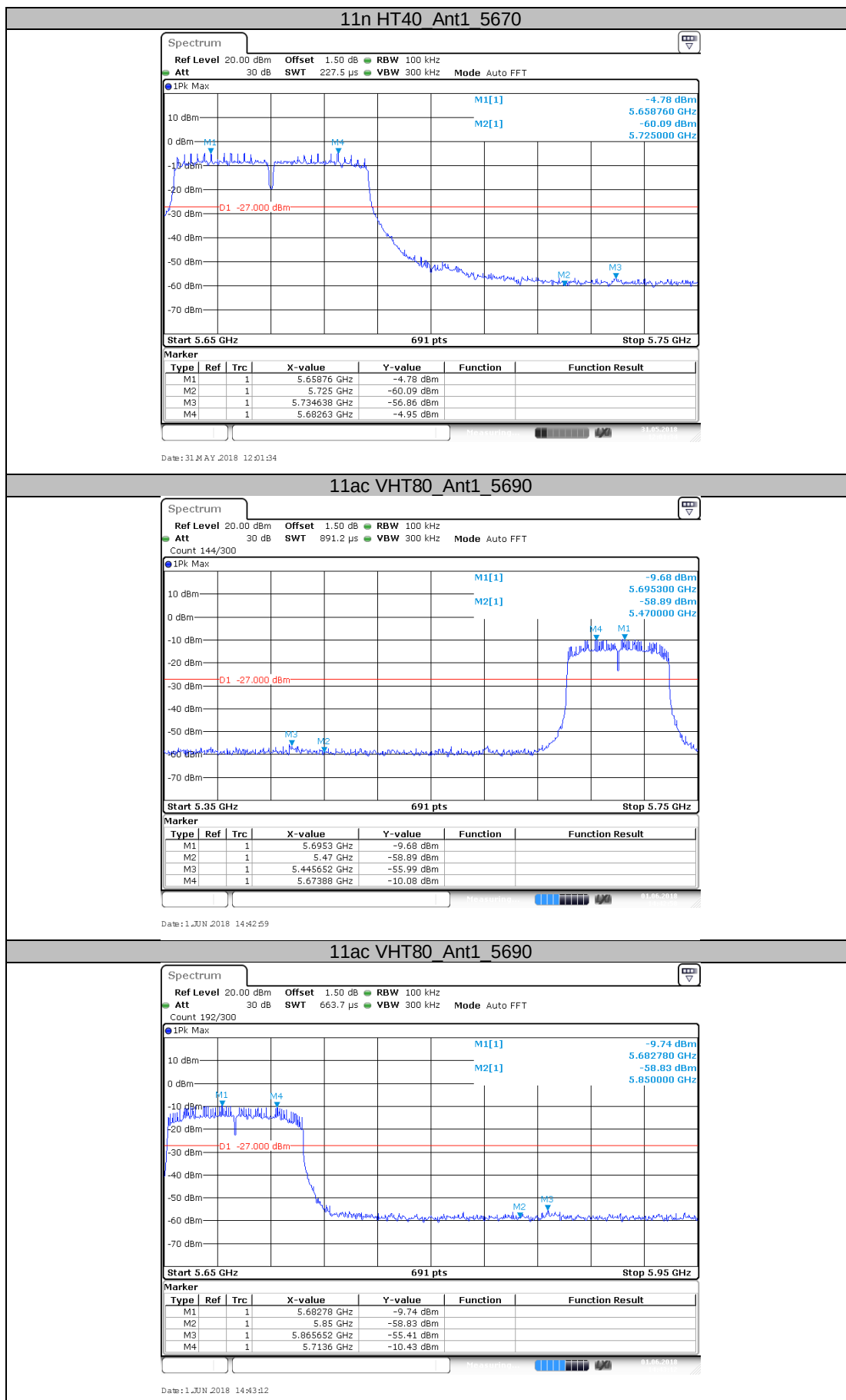


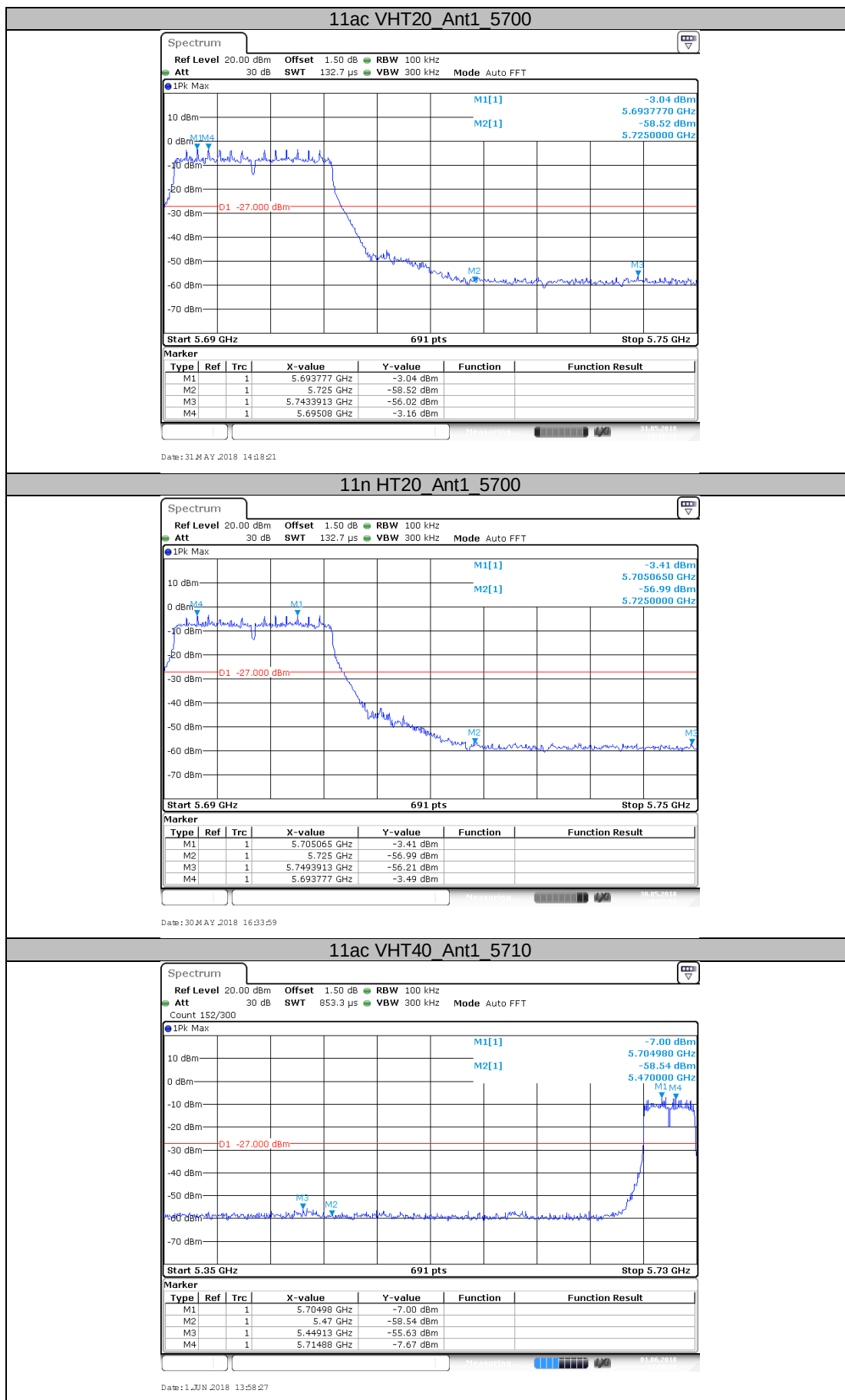


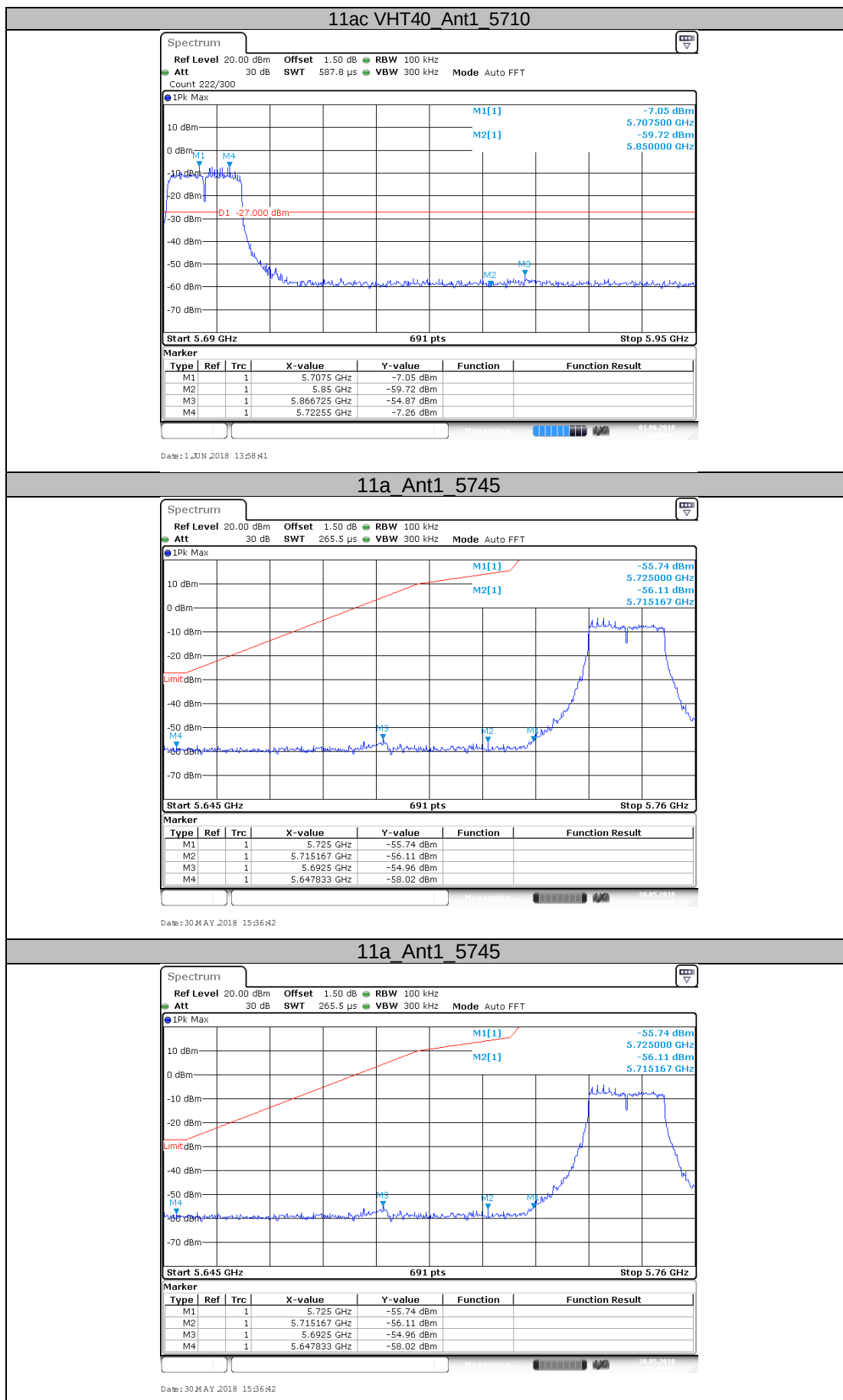




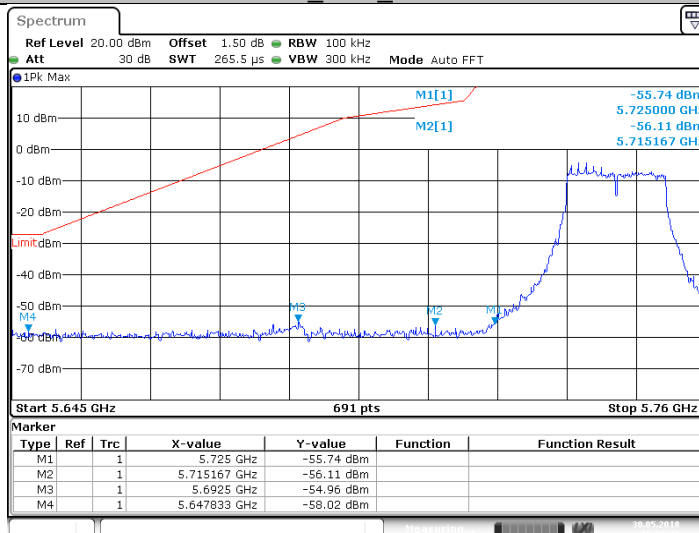




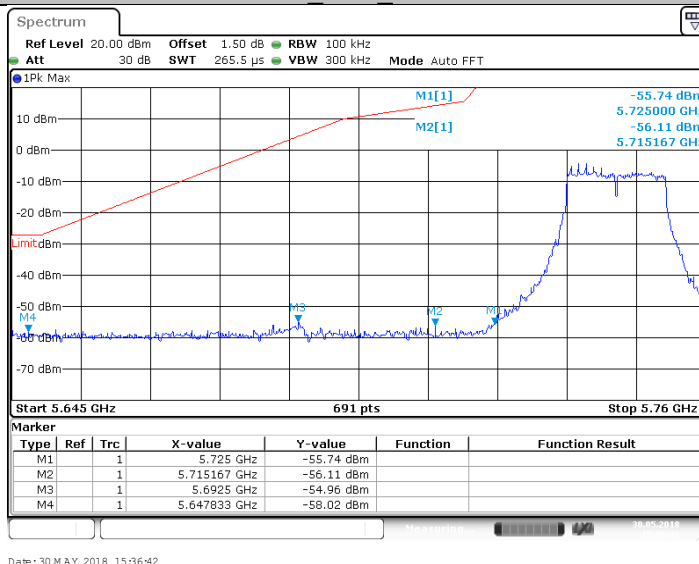




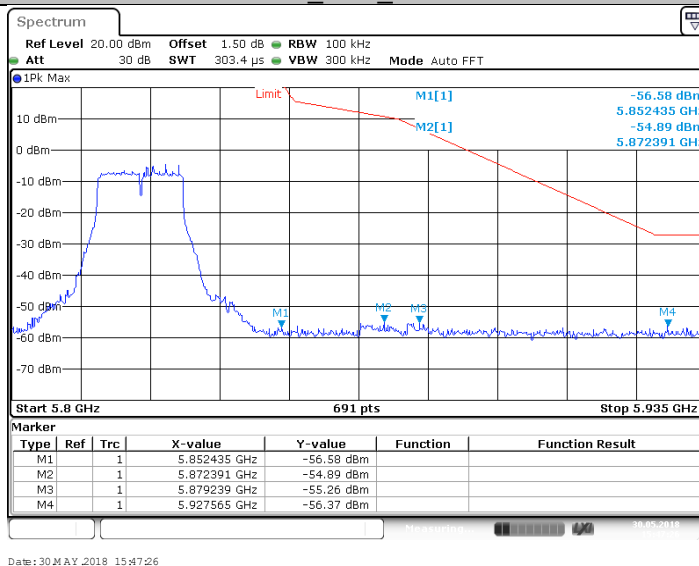
11a_Ant1_5745



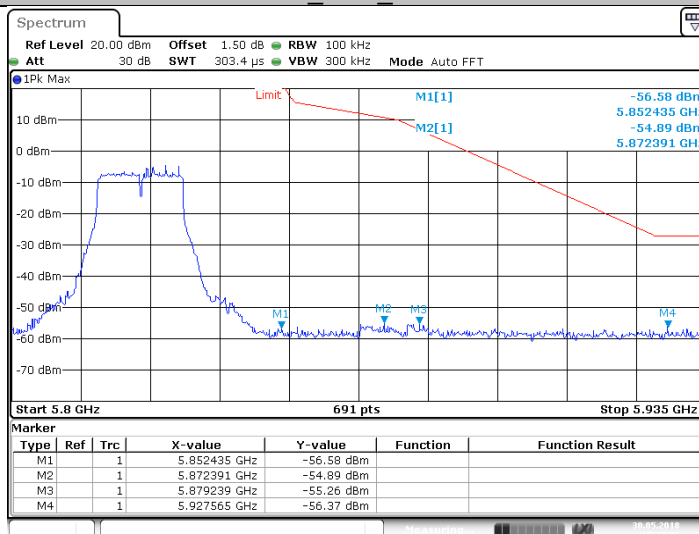
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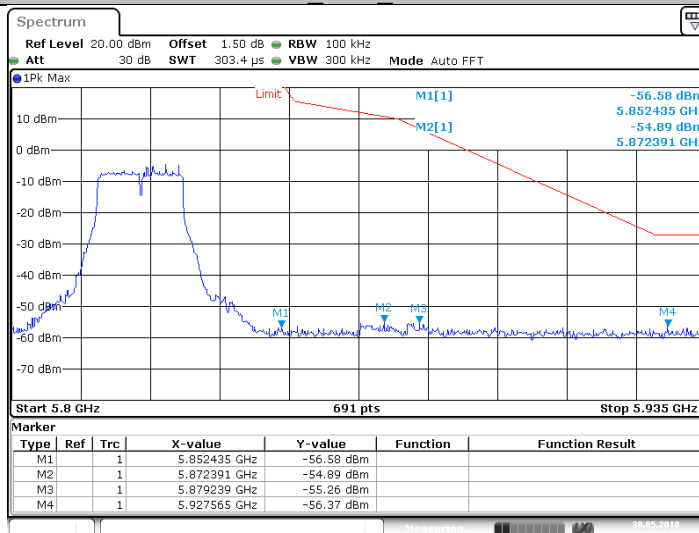
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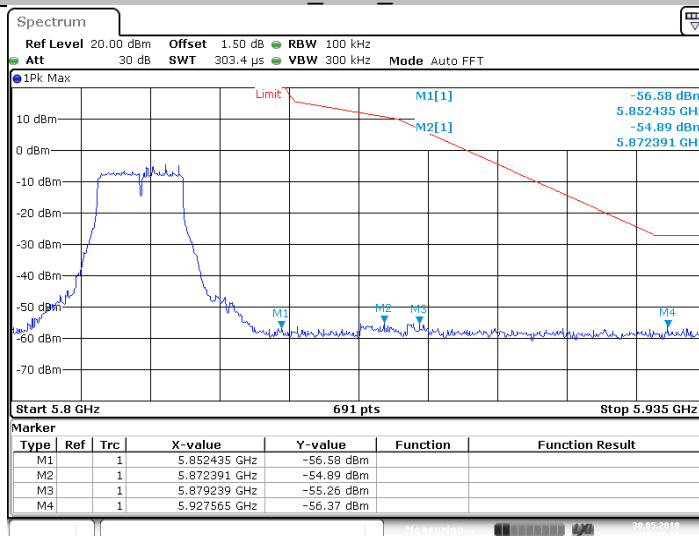
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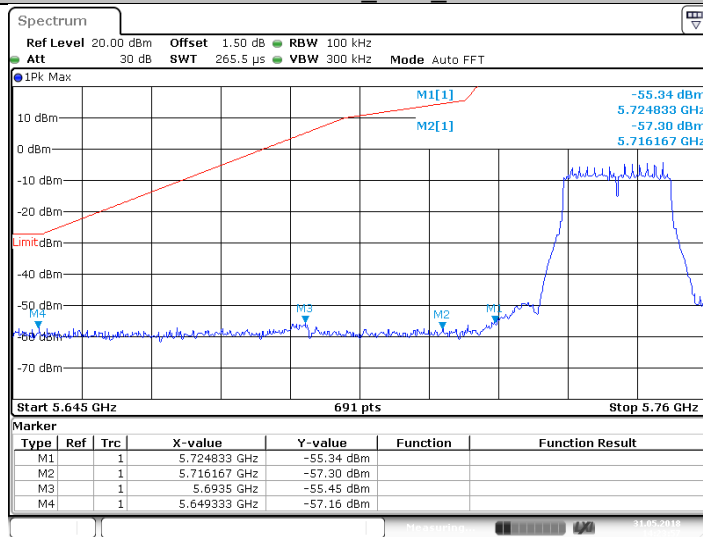
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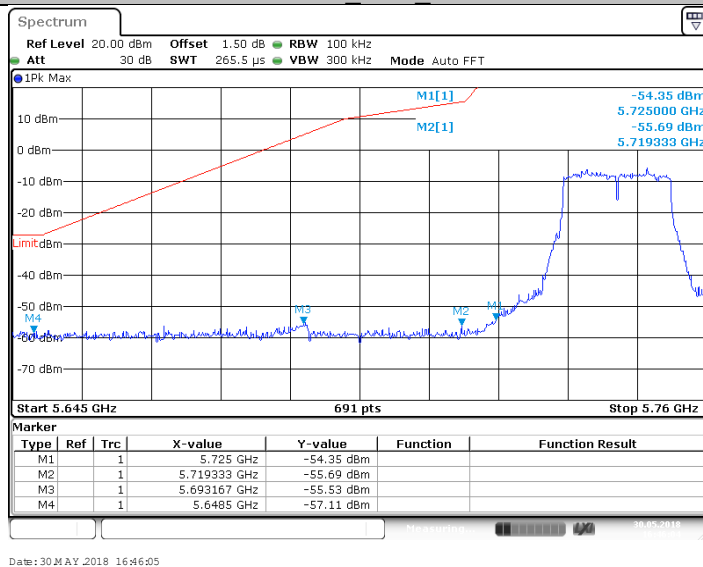
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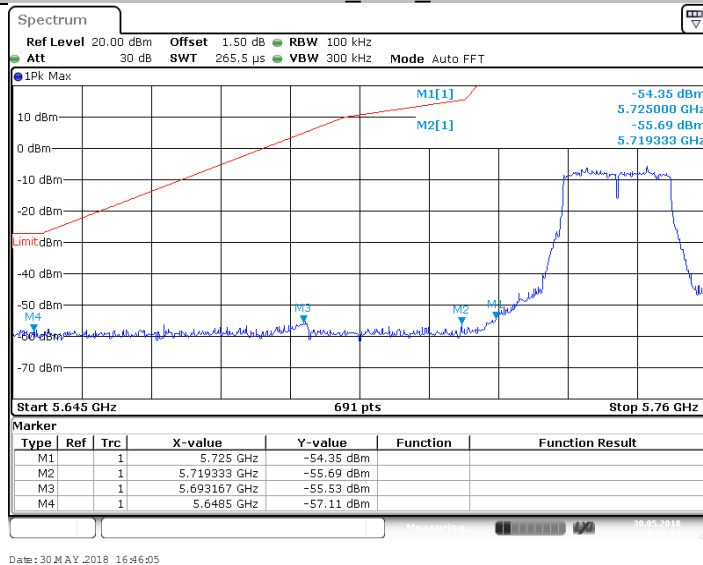
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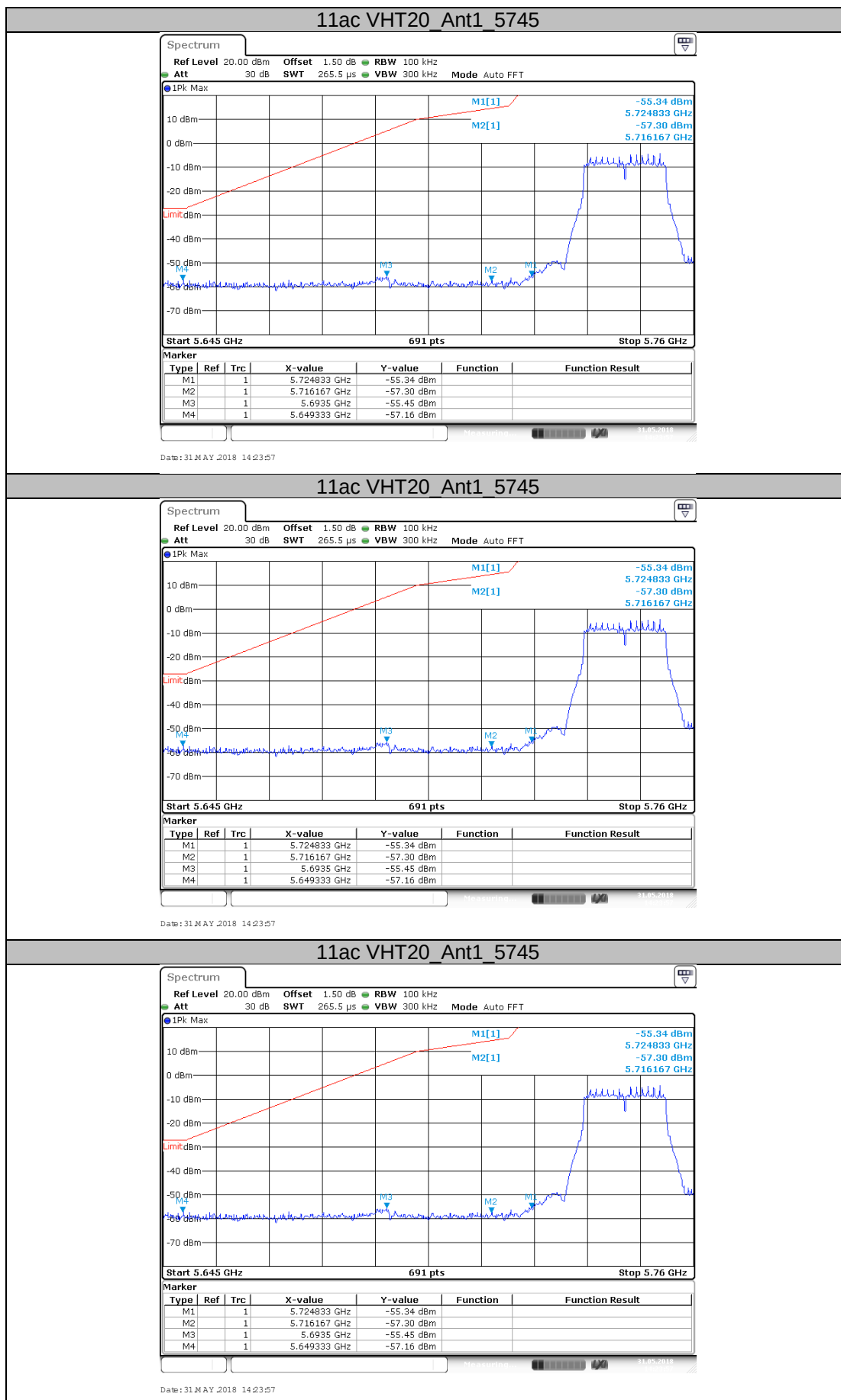


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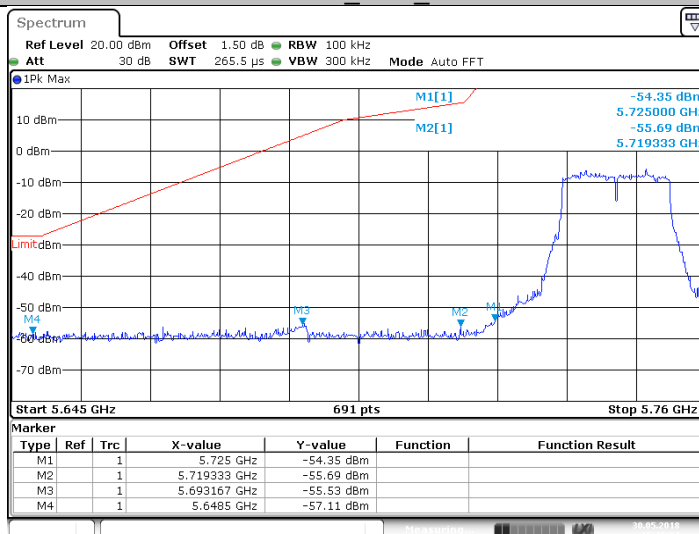


11n HT20_Ant1_5745



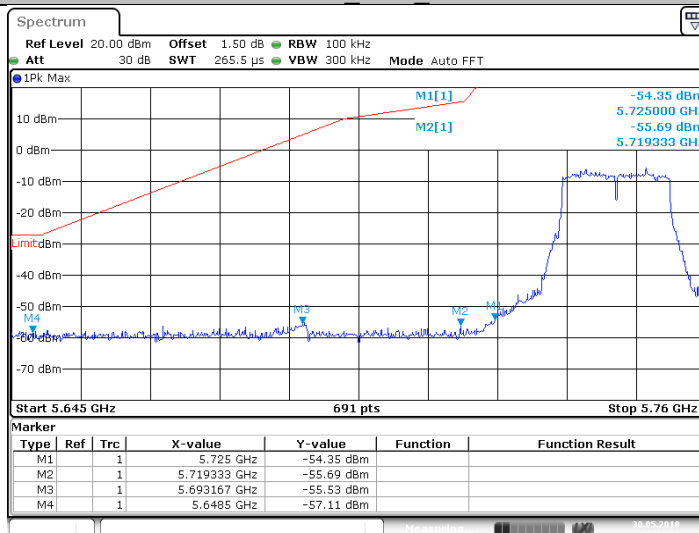


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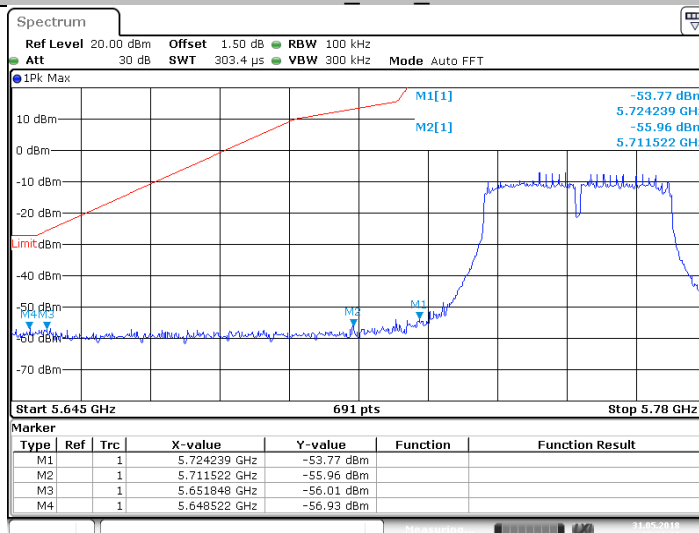
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11n HT20_Ant1_5745



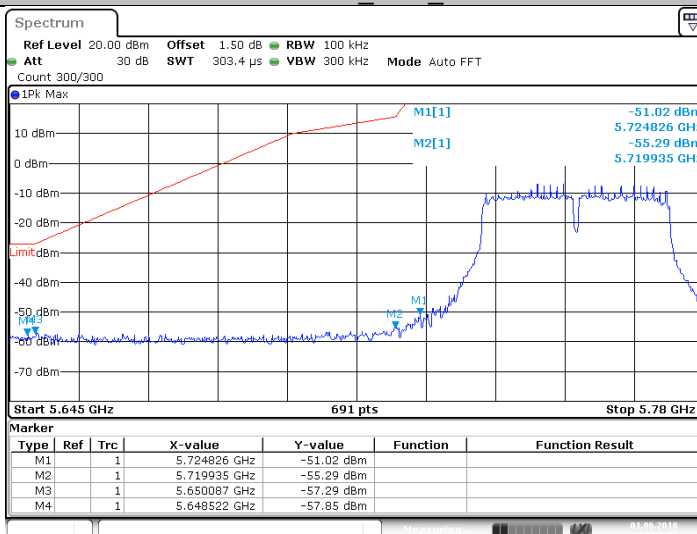
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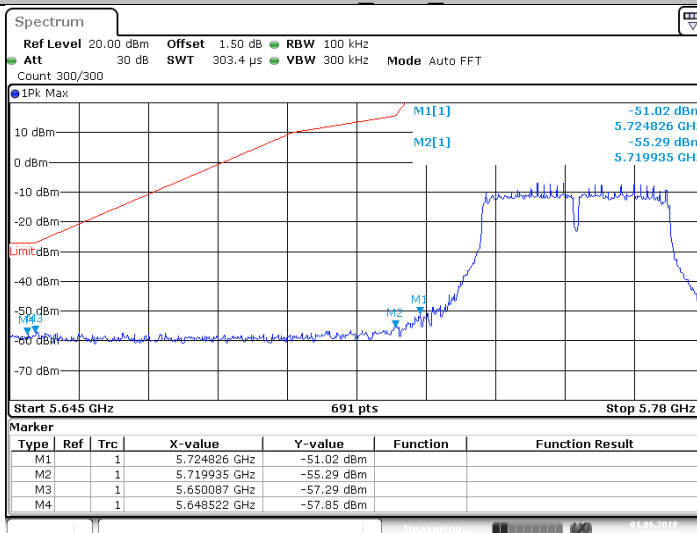


Date: 31 MAY 2018 12:12:32

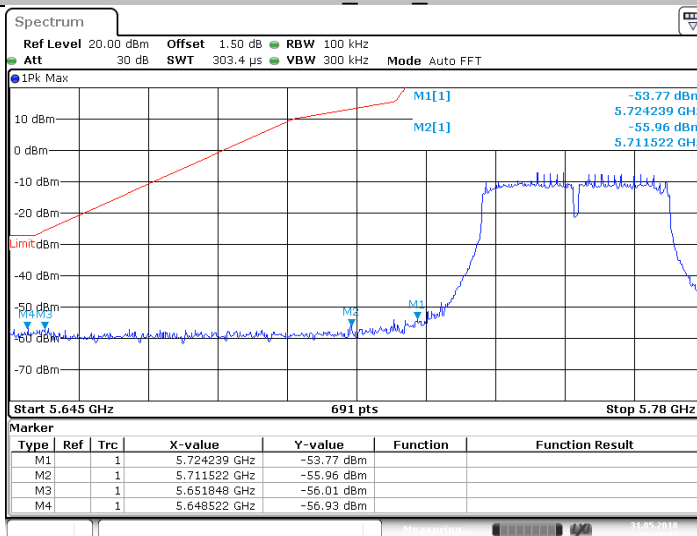
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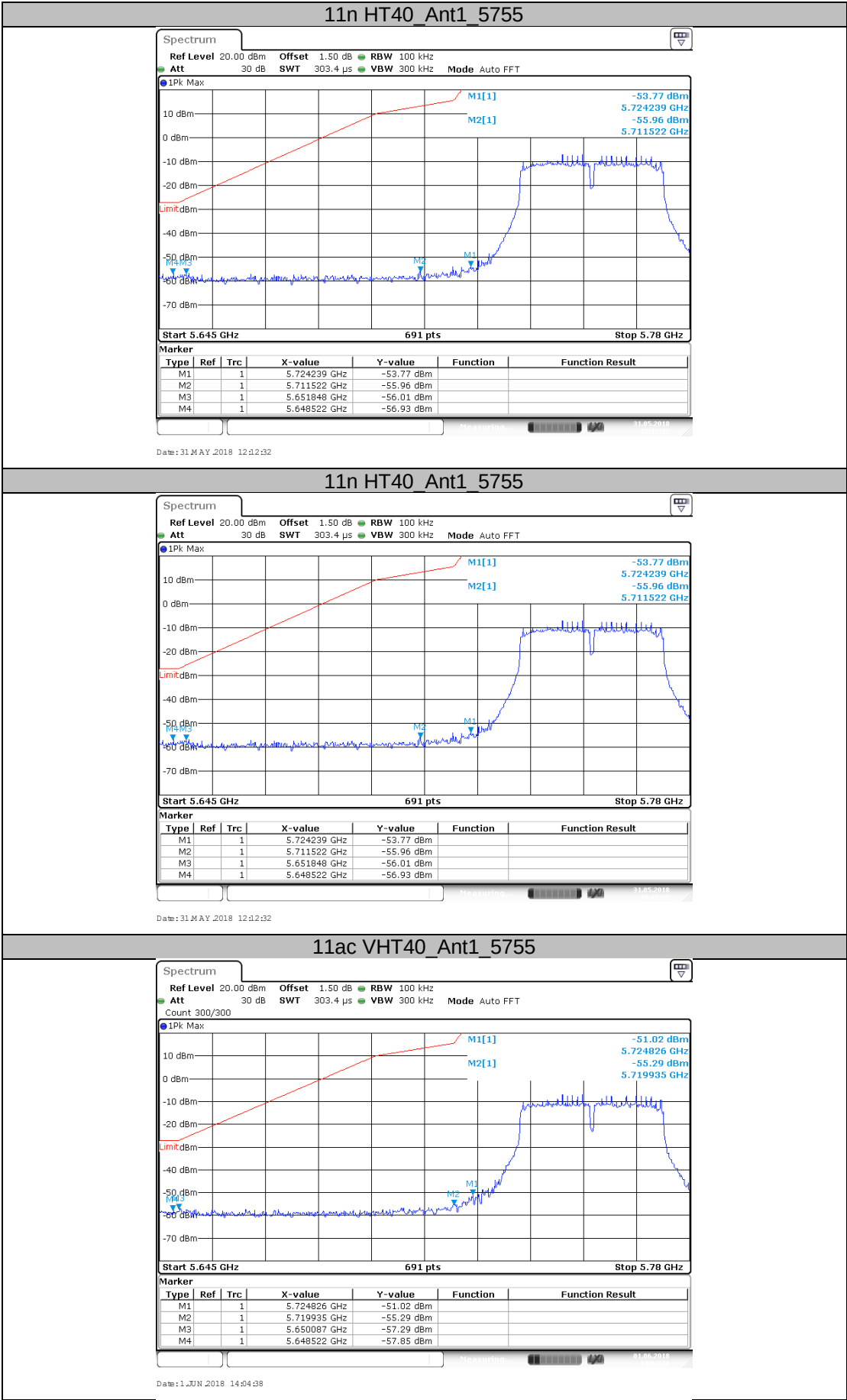


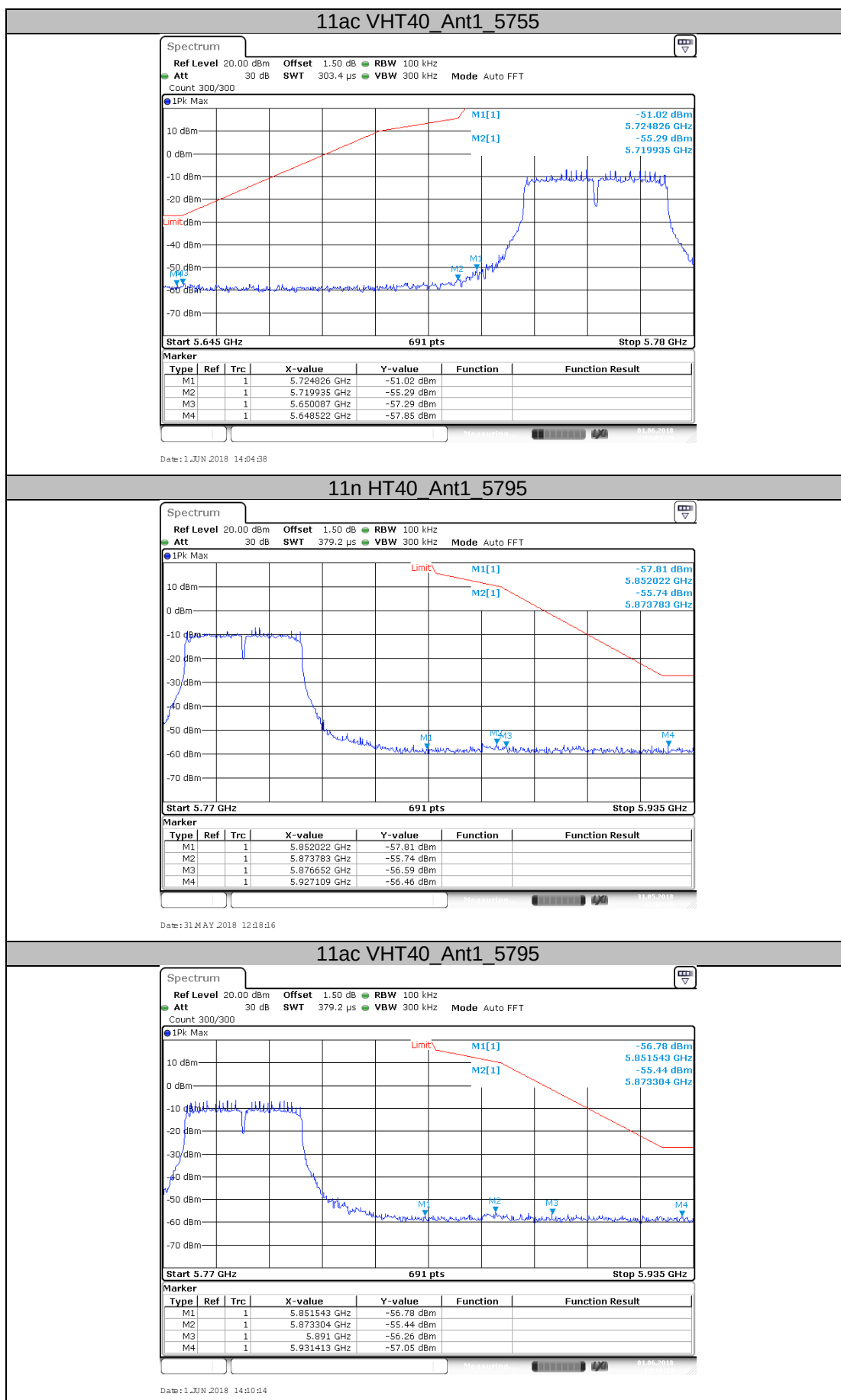
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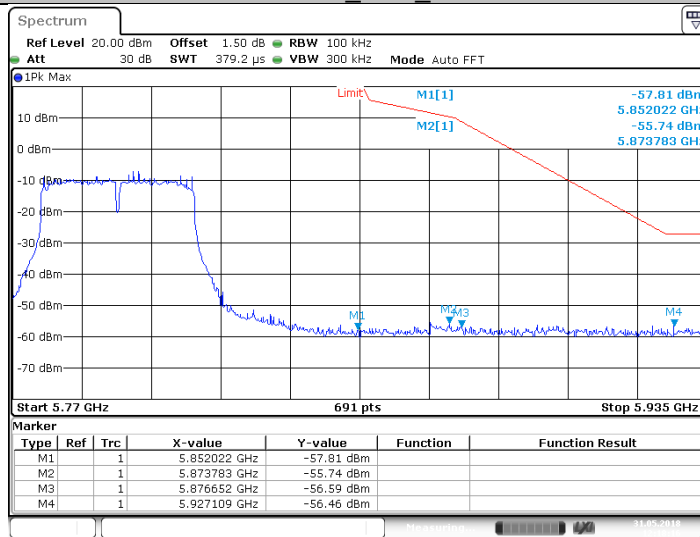
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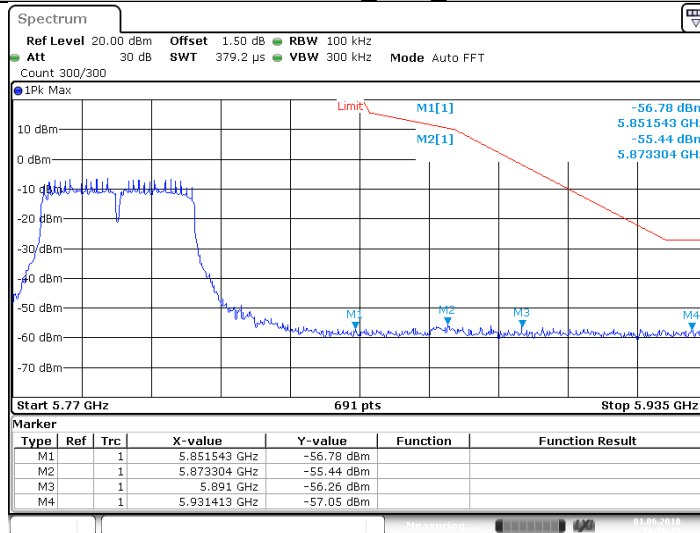


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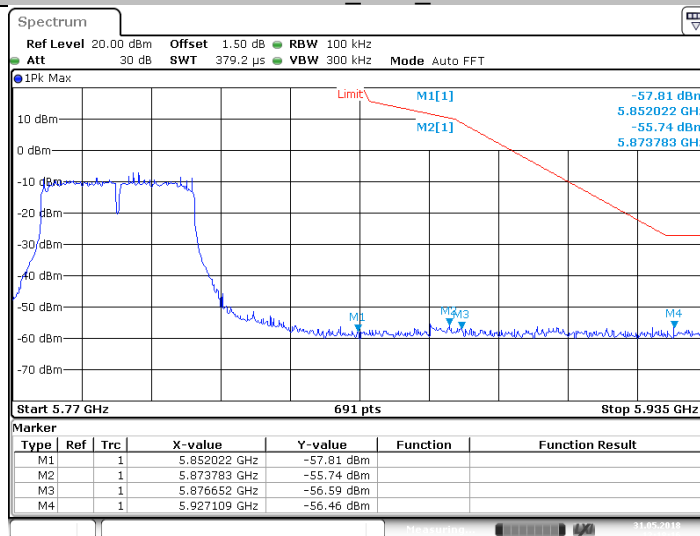
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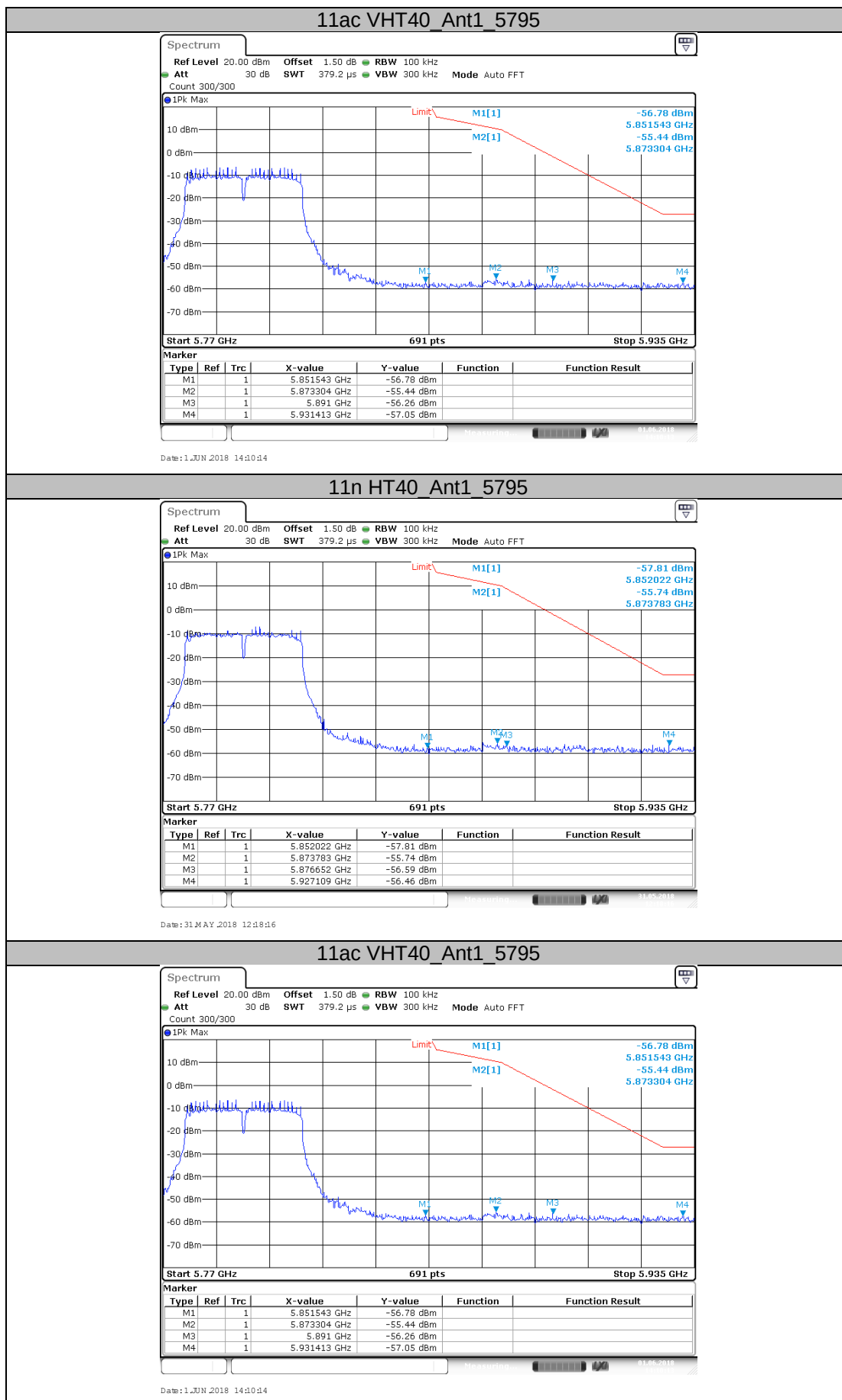


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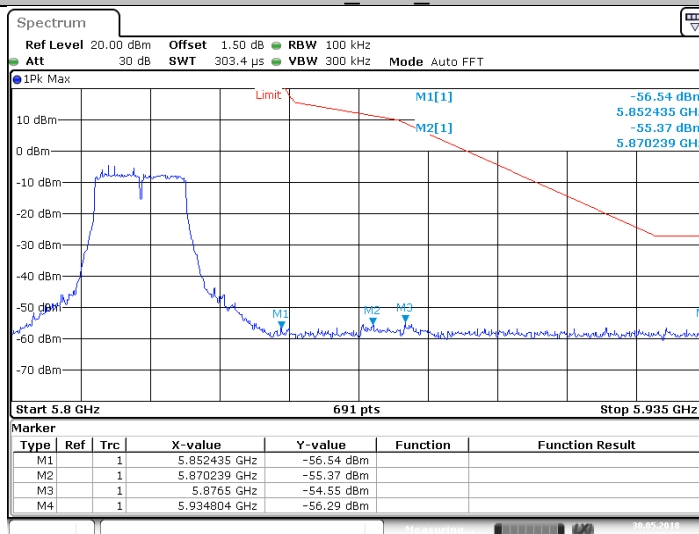
11n HT40_Ant1_5795



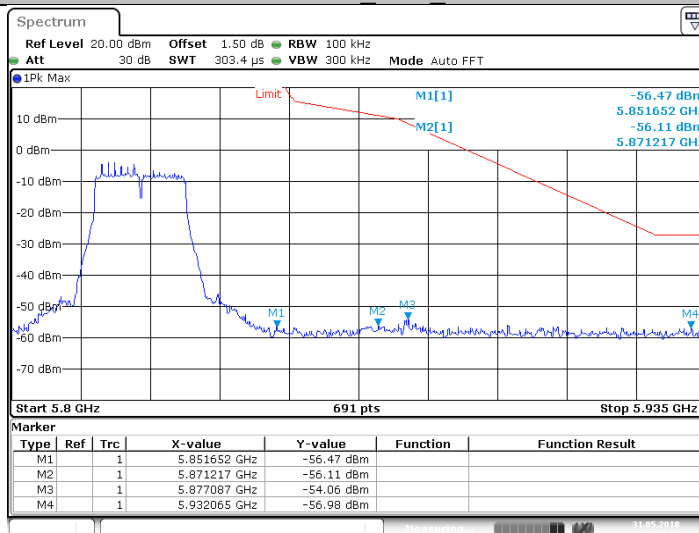
Date: 31 MAY 2018 12:18:16



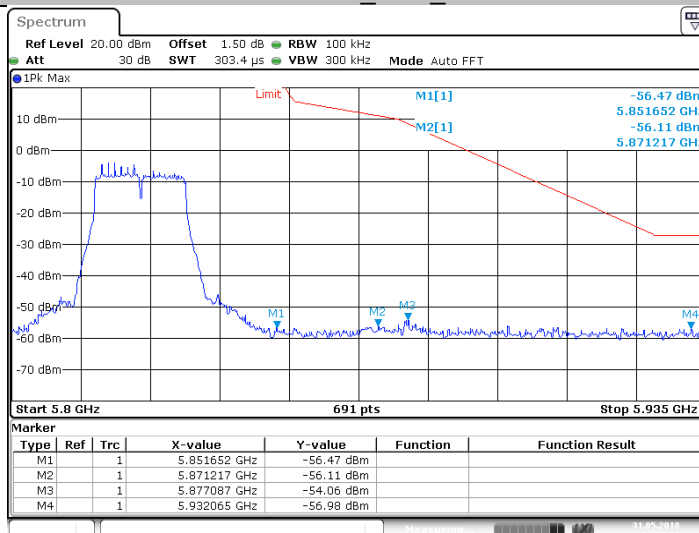
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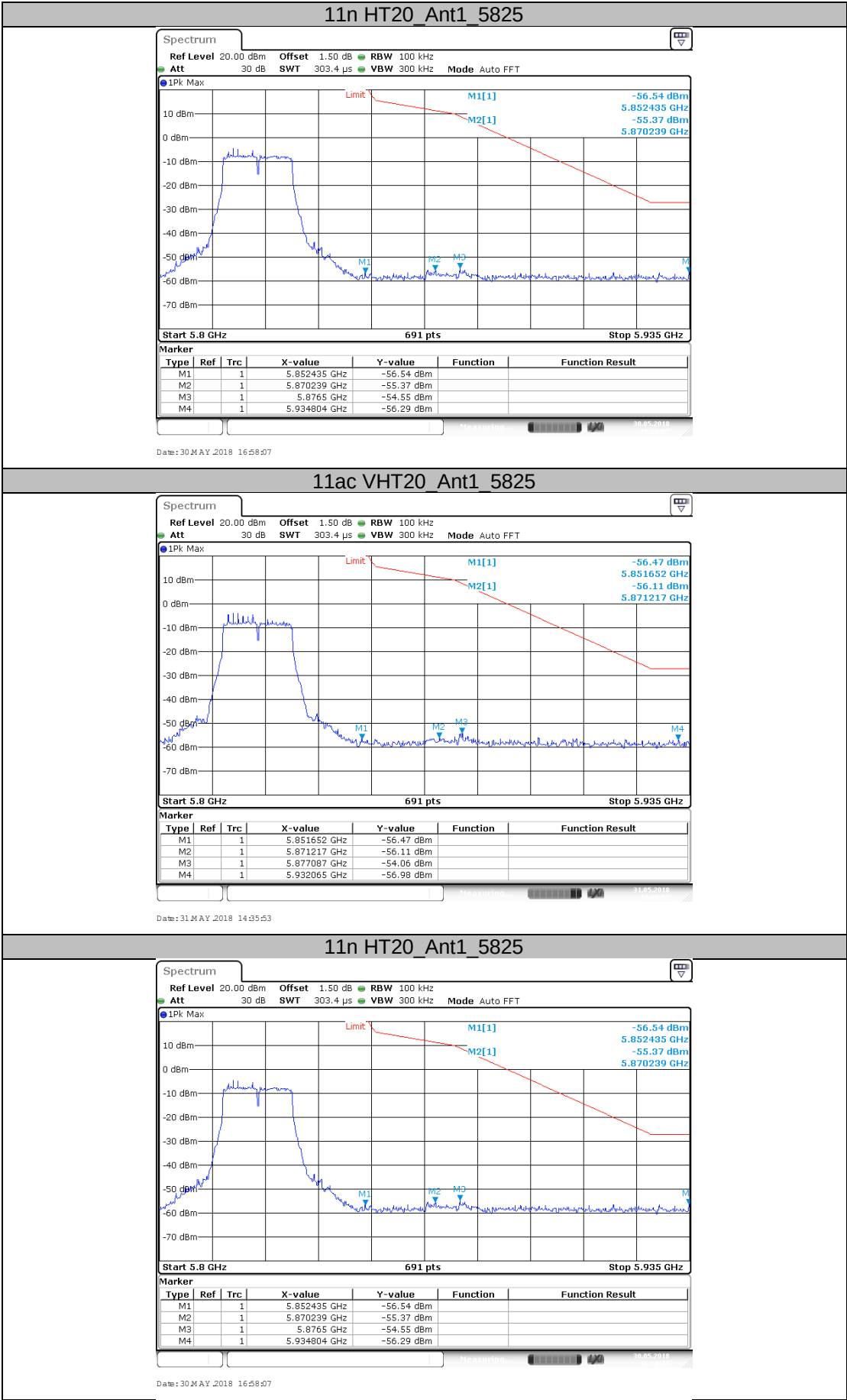


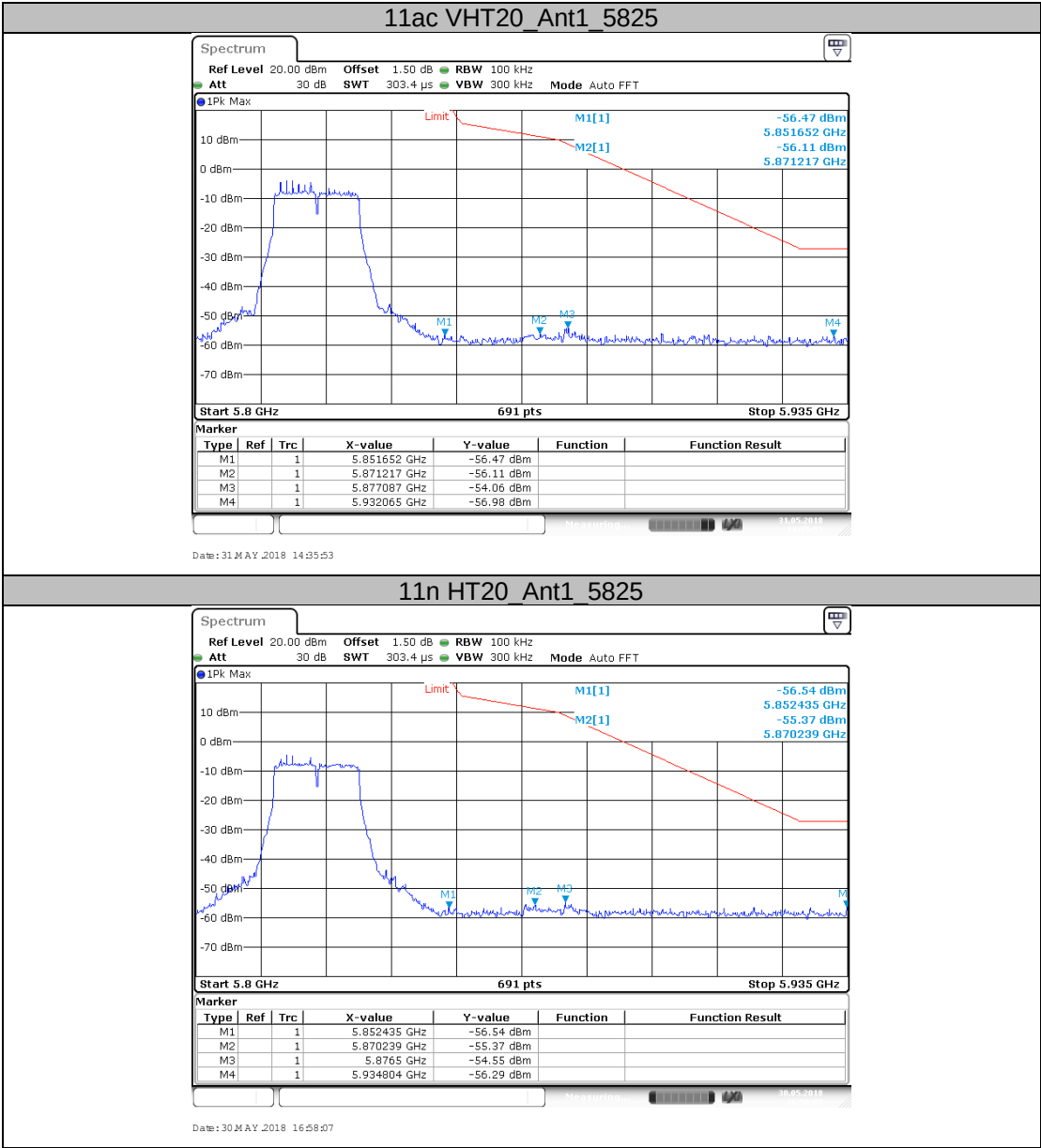
11ac VHT20_Ant1_5825



11ac VHT20_Ant1_5825







9.7 Frequencies Stability

Test Method

1. Connect the UUT to the spectrum analyzer
2. Set Centre Frequency of the channel under test.
3. Set Detector PEAK
4. Set RBW: 10KHz, VBW: 3RBW
5. Set Span: Encompass the entire emissions bandwidth (EBW) of the signal.
6. Allow the trace to stabilize, find the peak value of the power envelope and record the frequency, then calculated the frequency drift.

The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.

User manual temperature is -10°C to 35°C

Limit: 20ppm

Test Results (All conditions and all modes were performed, only list Worst-Case in the report)

Voltage								
Test Mode	Antenna	Channel	Voltage [Vdc]	Temp (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11a	Ant1	5180	LV	NT	60000	11.583012	20	PASS
		5180	NV	NT	75000	14.478764	20	PASS
		5180	HV	NT	60000	11.583012	20	PASS
		5200	HV	NT	60000	11.538462	20	PASS
		5200	LV	NT	45000	8.653846	20	PASS
		5200	NV	NT	60000	11.538462	20	PASS
		5240	HV	NT	60000	11.450382	20	PASS
		5240	LV	NT	60000	11.450382	20	PASS
		5240	NV	NT	60000	11.450382	20	PASS
		5260	HV	NT	60000	11.406844	20	PASS
		5260	LV	NT	60000	11.406844	20	PASS
		5260	NV	NT	60000	11.406844	20	PASS
		5280	HV	NT	60000	11.363636	20	PASS
		5280	NV	NT	75000	14.204545	20	PASS
		5280	LV	NT	60000	11.363636	20	PASS
		5320	NV	NT	60000	11.278195	20	PASS
		5320	LV	NT	60000	11.278195	20	PASS
		5320	HV	NT	75000	14.097744	20	PASS
		5500	HV	NT	60000	10.909091	20	PASS
		5500	LV	NT	60000	10.909091	20	PASS
		5500	NV	NT	60000	10.909091	20	PASS
		5580	HV	NT	75000	13.44086	20	PASS
		5580	LV	NT	60000	10.752688	20	PASS
		5580	NV	NT	60000	10.752688	20	PASS
		5700	HV	NT	60000	10.526316	20	PASS
		5700	LV	NT	60000	10.526316	20	PASS
		5700	NV	NT	60000	10.526316	20	PASS
		5745	NV	NT	60000	10.443864	20	PASS
		5745	HV	NT	60000	10.443864	20	PASS
		5745	LV	NT	45000	7.832898	20	PASS
		5785	NV	NT	60000	10.371651	20	PASS
		5785	LV	NT	75000	12.964564	20	PASS
		5785	HV	NT	75000	12.964564	20	PASS
		5825	LV	NT	75000	12.875536	20	PASS
		5825	NV	NT	60000	10.300429	20	PASS
		5825	HV	NT	60000	10.300429	20	PASS

Test Mode	Antenna	Temperature						
		Channel	Voltage [Vdc]	Temp (°C)	Deviation (Hz)	Deviation (ppm)	Limit (ppm)	Verdict
11a	Ant1	5180	NV	10	60000	11.583012	20	PASS
		5180	NV	-10	60000	11.583012	20	PASS
		5180	NV	20	75000	14.478764	20	PASS
		5180	NV	35	60000	11.583012	20	PASS
		5180	NV	0	60000	11.583012	20	PASS
		5200	NV	35	60000	11.538462	20	PASS
		5200	NV	-10	60000	11.538462	20	PASS
		5200	NV	10	60000	11.538462	20	PASS
		5200	NV	0	60000	11.538462	20	PASS
		5200	NV	20	60000	11.538462	20	PASS
		5240	NV	20	60000	11.450382	20	PASS
		5240	NV	-10	45000	8.587786	20	PASS
		5240	NV	10	60000	11.450382	20	PASS
		5240	NV	0	60000	11.450382	20	PASS
		5240	NV	35	60000	11.450382	20	PASS
		5260	NV	35	75000	14.258555	20	PASS
		5260	NV	20	60000	11.406844	20	PASS
		5260	NV	-10	60000	11.406844	20	PASS
		5260	NV	10	60000	11.406844	20	PASS
		5260	NV	0	60000	11.406844	20	PASS
		5280	NV	0	60000	11.363636	20	PASS
		5280	NV	-10	60000	11.363636	20	PASS
		5280	NV	20	60000	11.363636	20	PASS
		5280	NV	35	75000	14.204545	20	PASS
		5280	NV	10	60000	11.363636	20	PASS
		5320	NV	0	60000	11.278195	20	PASS
		5320	NV	-10	60000	11.278195	20	PASS
		5320	NV	20	75000	14.097744	20	PASS
		5320	NV	35	60000	11.278195	20	PASS
		5320	NV	10	75000	14.097744	20	PASS
		5500	NV	-10	60000	10.909091	20	PASS
		5500	NV	0	60000	10.909091	20	PASS
		5500	NV	10	60000	10.909091	20	PASS
		5500	NV	20	75000	13.636364	20	PASS
		5500	NV	35	45000	8.181818	20	PASS
		5580	NV	20	60000	10.752688	20	PASS
		5580	NV	-10	75000	13.44086	20	PASS
		5580	NV	10	75000	13.44086	20	PASS
		5580	NV	35	60000	10.752688	20	PASS
		5580	NV	0	60000	10.752688	20	PASS
		5700	NV	0	60000	10.526316	20	PASS
		5700	NV	10	75000	13.157895	20	PASS
		5700	NV	-10	75000	13.157895	20	PASS
		5700	NV	20	60000	10.526316	20	PASS
		5700	NV	35	75000	13.157895	20	PASS
		5745	NV	10	75000	13.05483	20	PASS
		5745	NV	-10	60000	10.443864	20	PASS
		5745	NV	20	75000	13.05483	20	PASS
		5745	NV	35	60000	10.443864	20	PASS
		5745	NV	0	60000	10.443864	20	PASS
		5785	NV	0	75000	12.964564	20	PASS
		5785	NV	35	60000	10.371651	20	PASS
		5785	NV	20	60000	10.371651	20	PASS
		5785	NV	-10	60000	10.371651	20	PASS
		5785	NV	10	60000	10.371651	20	PASS
		5825	NV	0	75000	12.875536	20	PASS
		5825	NV	10	60000	10.300429	20	PASS
		5825	NV	-10	75000	12.875536	20	PASS
		5825	NV	20	75000	12.875536	20	PASS
		5825	NV	35	60000	10.300429	20	PASS

9.8 Dynamic Frequency Selection (DFS)

1、 General Test Condition

Parameters of EUT	
Frequency	5250 – 5350 MHz & 5470 – 5725 MHz
Operational Mode	Slave
Modulation:	OFDM
Channel Bandwidth:	20 MHz , 40 MHz, 80 MHz

Note: This device was functioned as a Slave device during the DFS

2、 Test requirement

The manufacturer shall whether the EUT is capable of operating as a master and a client. If the EUT is capable of operating in more than one operating mode then each operating mode shall be tested separately.

DFS Applicability

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

DFS Applicability During Normal Operation

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Radar Detection
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Yes	Not required
Uniform Spreading	Yes	Yes	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

3、Test Limited

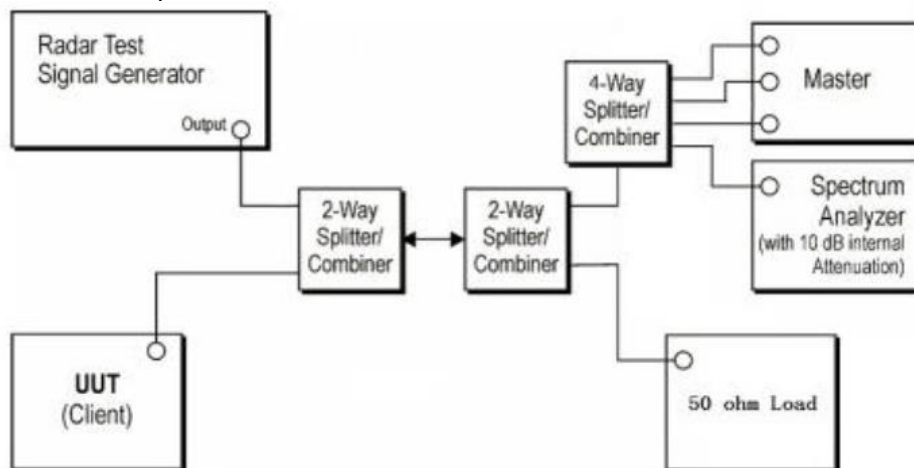
According to KDB 905462 D02 Table 4 DFS Response Requirement Values

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

4、Calibration of Radar Waveform

- (1) A 50ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected to place of the master.
- (2) The interference Radar Detection Threshold Level is $-62\text{dBm} + 3.7\text{dB} + 1.5\text{dB} = -55.8\text{dBm}$ that had been taken into account the output power range and antenna gain.
- (3) The following equipment setup was used to calibrate the conducted radar waveform. A vector signal generator was utilized to establish the test signal level for radar type 0. During this process there were no transmissions by either the master or client device. The spectrum analyzer was switched to the zero spans (time domain) at the frequency of the radar waveform generator. Peak detection was used. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3MHz. The spectrum analyzer had offset -1.5dB to compensate RF cable loss 1.5dB.
- (4) The vector signal generator amplitude was set so that the power level measured at the spectrum analyzer was $-62\text{dBm} + 3.7\text{dB} + 1.5\text{dB} = -55.8\text{dBm}$. Capture the spectrum analyzer plots on short pulse radar waveform.

Conducted Calibration Setup:



Radar Waveform Calibration result:

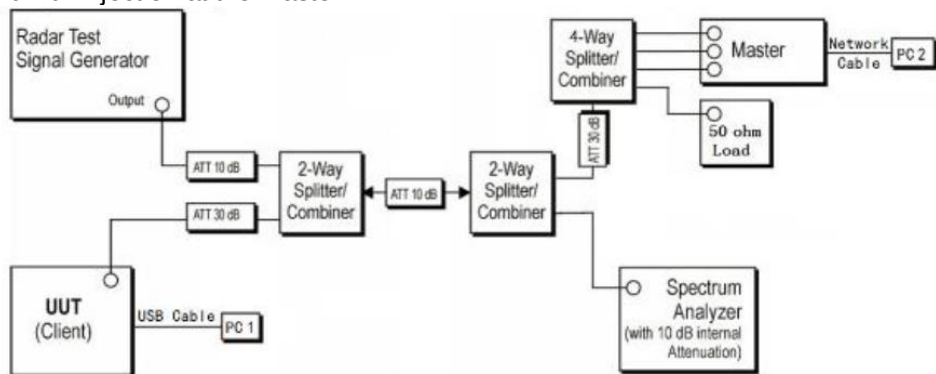
5、Channel Closing Transmission Time, Channel Move Time and Non-Occupancy Period.

Block Diagram of test setup test procedure.

- (1) The Radar Pulse generator is setup to provide a pulse at frequency that the master and client are operating, A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.
- (2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -55.8dBm at the antenna of the master device.
- (3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.
- (4) EUT will associate with the master at channel. The file "iperf.exe" specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using test software in order to properly load the network for the entire period of the test.
- (5) When radar burst with a Level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection threshold +1dB.
- (6) Observer the transmissions of the EUT at the end of the radar Burst on the Operating channel. Measure and record the transmissions from the UUT during The observation time (channel move time). One 15 seconds plot is reported for the short pulse radar type 0. The plot for the short pulse radar burst. The channel move time will be calculated based on the zoom in 600ms plot of the short pulse radar type.
- (7) Measurement of the aggregate duration of the channel closed transmission time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: $Dwell(3.0) = S(12000ms)/B(4000)$; where dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of channel closing transmission time is calculated by: $C(ms) = N \times Dwell(0.3ms)$; where C is the closing time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and dwell is the dwell time per bin.
- (8) Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

Test Setup:

Setup for client with injection at the master.

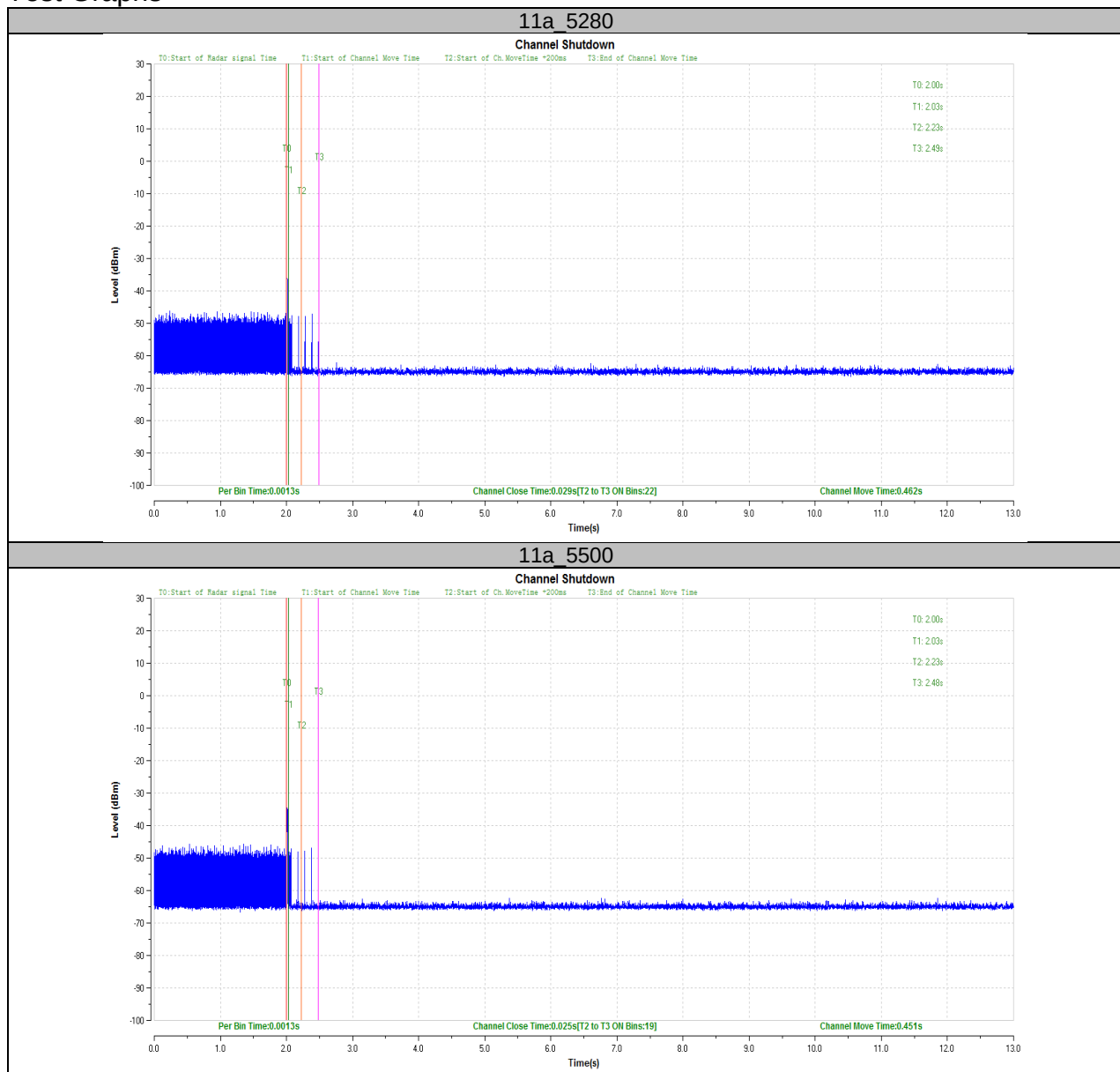


6、Test Result

Clause	Test Parameter	Remarks	Pass/Fail
15.407	DFS Detection Threshold	No Applicable	N/A
15.407	Channel Availability Check time	No Applicable	N/A
15.407	Channel Move time	Applicable	Pass
15.407	Channel Closing Transmission Time	Applicable	Pass
15.407	Non-Occupancy Period	Applicable	Pass
15.407	Uniform Spreading	No Applicable	N/A
15.407	U-NII Detection Bandwidth	No Applicable	N/A

BW/Channel	Test Item	Test Result	Limit (s)	Result
20M/5530MHz	Channel Move Time	0.46	<10	Pass
	Channel Closing Transmission Time	0.029	<1	Pass

Test Graphs



10 Test Equipment List

Radiated Emission Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	2018-7-14
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	2018-7-14
Horn Antenna	Rohde & Schwarz	HF907	102294	2018-7-14
Pre-amplifier	Rohde & Schwarz	SCU 18	102230	2018-7-14
Signal Generator	Rohde & Schwarz	SMY01	839369/005	2018-7-7
Attenuator	Agilent	8491A	MY39264334	2018-7-7
3m Semi-anechoic chamber	TDK	9X6X6	----	2020-7-7
Test software	Rohde & Schwarz	EMC32	Version 9.15.00	N/A

Conducted Emission Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 3	101782	2018-7-14
LISN	Rohde & Schwarz	ENV4200	100249	2018-7-14
LISN	Rohde & Schwarz	ENV432	101318	2018-7-14
LISN	Rohde & Schwarz	ENV216	100326	2018-7-14
ISN	Rohde & Schwarz	ENY81	100177	2018-7-14
ISN	Rohde & Schwarz	ENY81-CA6	101664	2018-7-14
High Voltage Probe	Rohde & Schwarz	TK9420(VT94 20)	9420-584	2018-7-14
RF Current Probe	Rohde & Schwarz	EZ-17	100816	2018-7-14
Attenuator	Shanghai Huaxiang	TS2-26-3	080928189	2018-7-7
Test software	Rohde & Schwarz	EMC32	Version 9.15.00	N/A

TS8997 Test System

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Signal Generator	Rohde & Schwarz	SMB100A	108272	2018-7-7
Vector Signal Generator	Rohde & Schwarz	SMBV100A	262825	2018-7-23
Communication Synthetical Test Instrument	Rohde & Schwarz	CMW 270	101251	2019-2-15
Signal Analyzer	Rohde & Schwarz	FSV40	101030	2018-7-7
Vector Signal Generator	Rohde & Schwarz	SMU 200A	105324	2018-7-7
RF Switch Module	Rohde & Schwarz	OSP120/OSP-B157	101226/100851	2018-7-7
Power Splitter	Weinschel	1580	SC319	2018-7-7
10dB Attenuator	Weinschel	56-10	58764	2018-7-14
10dB Attenuator	R&S	DNF	DNF-001	2018-7-14
10dB Attenuator	R&S	DNF	DNF-002	2018-7-14
10dB Attenuator	R&S	DNF	DNF-003	2018-7-14
10dB Attenuator	R&S	DNF	DNF-004	2018-7-14
Test software	Rohde & Schwarz	EMC32	Version 10.38.00	N/A
Test software	Tonscend	System for BT/WIFI	Version 2.6	N/A

11 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

Items	Extended Uncertainty
Uncertainty for Radiated Emission in 3m chamber 9kHz-30MHz	4.70dB
Uncertainty for Radiated Emission in 3m chamber 30MHz-1000MHz	Horizontal: 4.99dB; Vertical: 4.97dB;
Uncertainty for Radiated Emission in 3m chamber 1000MHz-18000MHz	Horizontal: 4.96dB; Vertical: 4.95dB;
Uncertainty for Radiated Emission in 3m chamber 18000MHz-40000MHz	Horizontal: 5.14dB; Vertical: 5.12dB;
Uncertainty for Conducted RF test	Power level test involved: 2.06dB Frequency test involved: 1.16×10^{-7}
Uncertainty for Conducted Emission 9kHz-150KHz	3.46dB

THE END