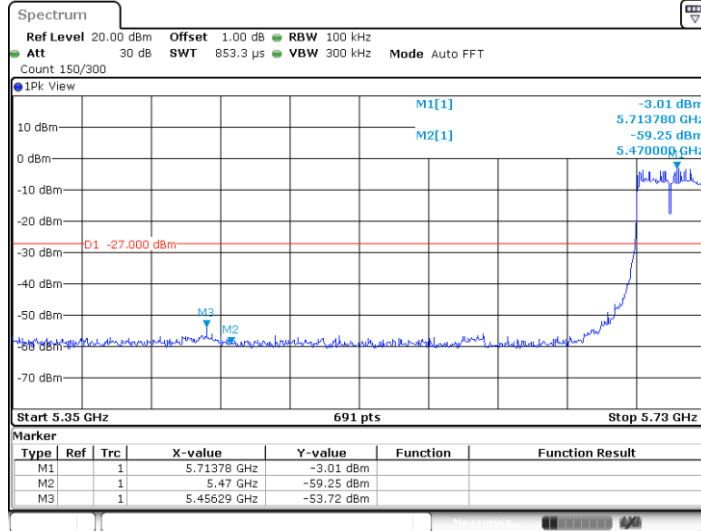


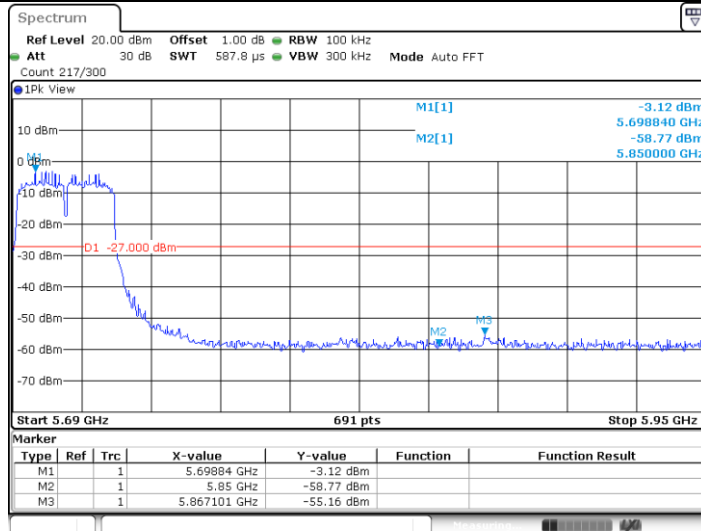
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11N40SISO\_Ant1\_Low\_5710



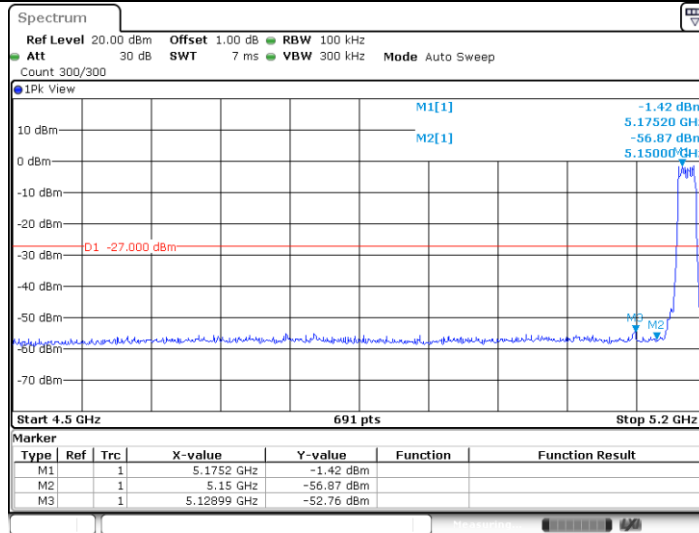
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11N40SISO\_Ant1\_High\_5710



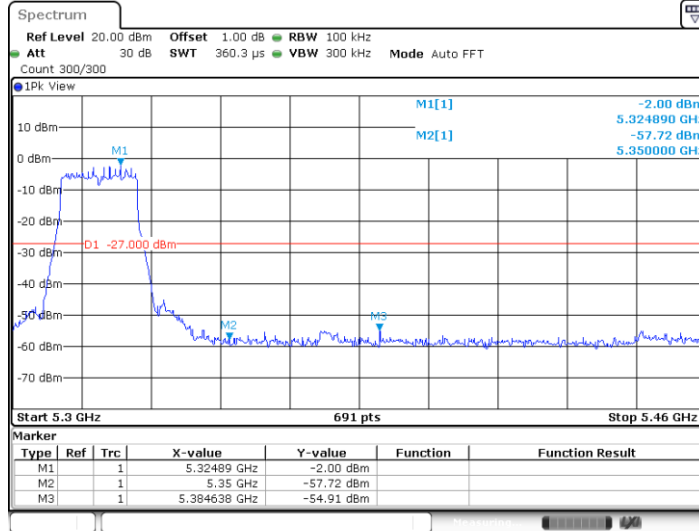
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11AC20SISO\_Ant1\_Low\_5180



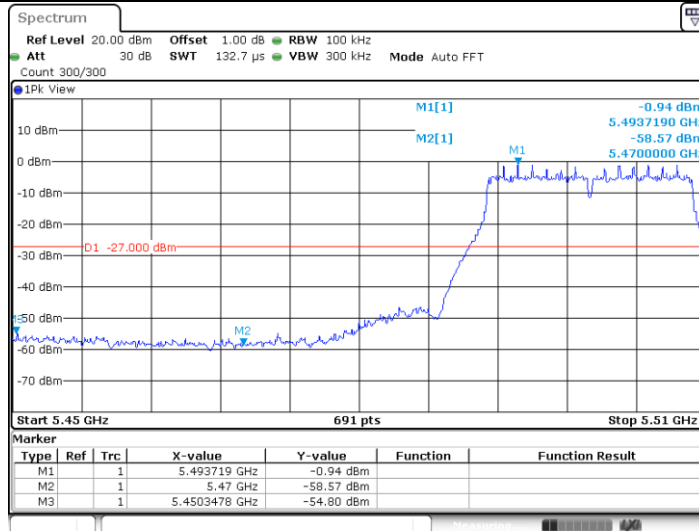
Date: 4 DEC.2020 13:35:42

11AC20SISO Ant1\_High\_5320



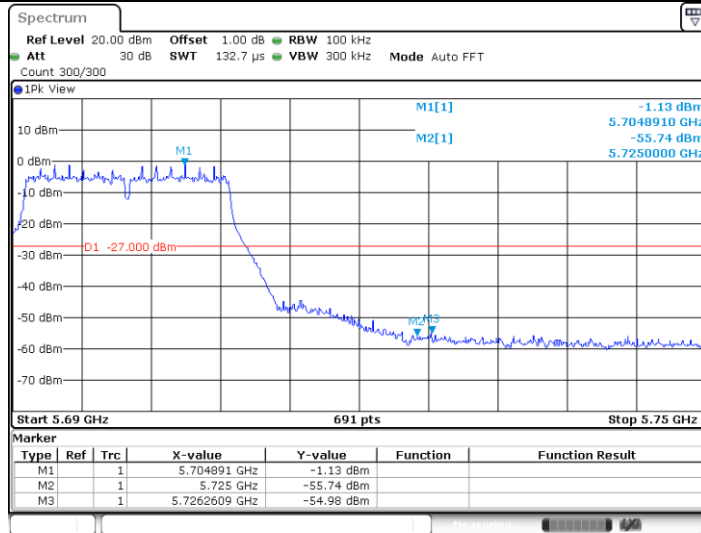
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11AC20SISO Ant1\_Low\_5500



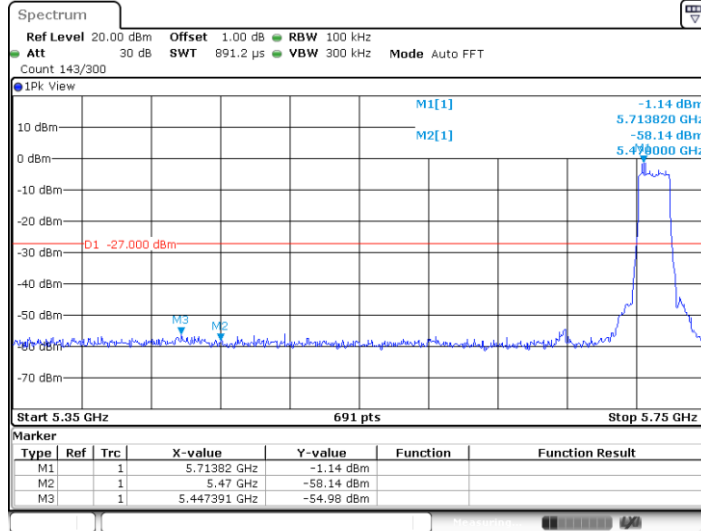
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11AC20SISO Ant1\_High\_5700



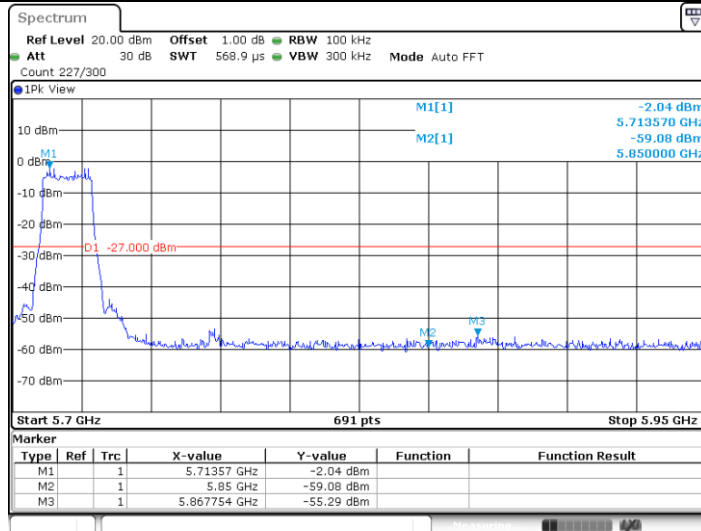
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11AC20SISO\_Ant1\_Low\_5720



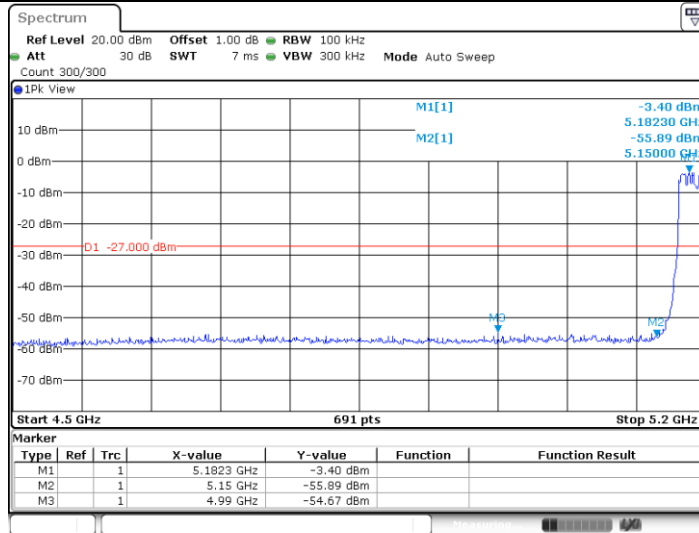
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11AC20SISO\_Ant1\_High\_5720



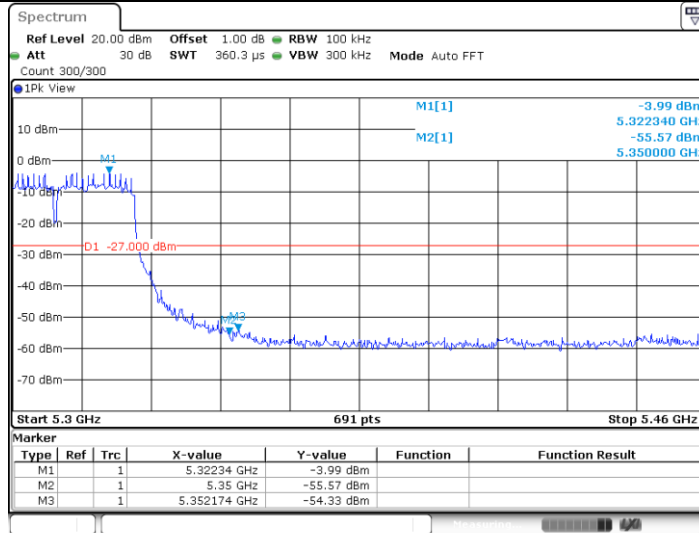
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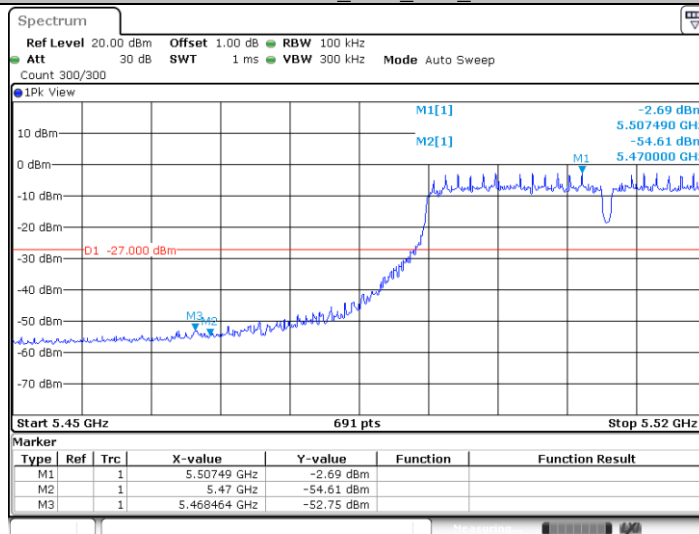
Date: 4 DEC.2020 16:36:42

11AC40SISO Ant1\_High\_5310



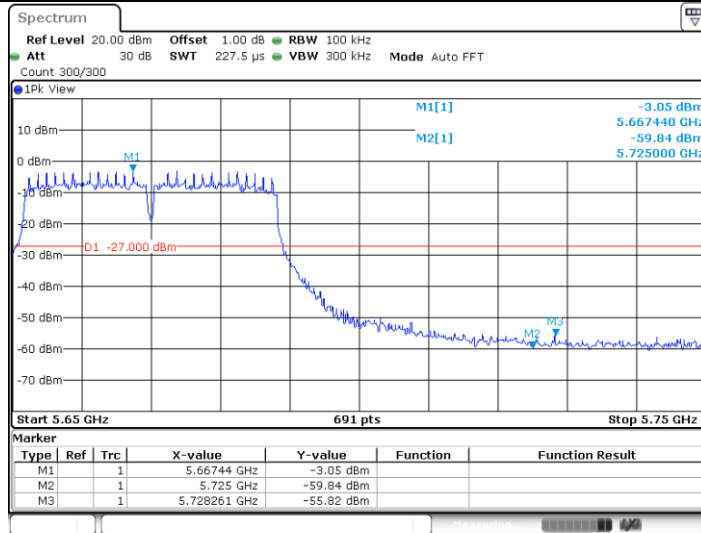
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11AC40SISO Ant1\_Low\_5510



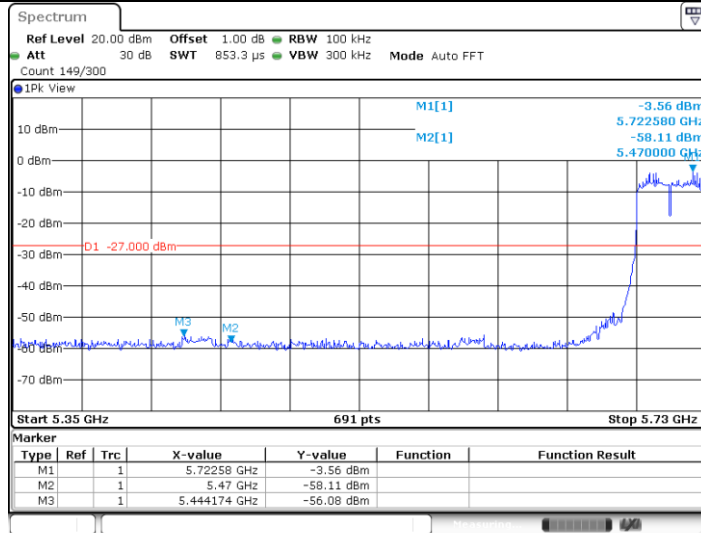
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11AC40SISO Ant1\_High\_5670



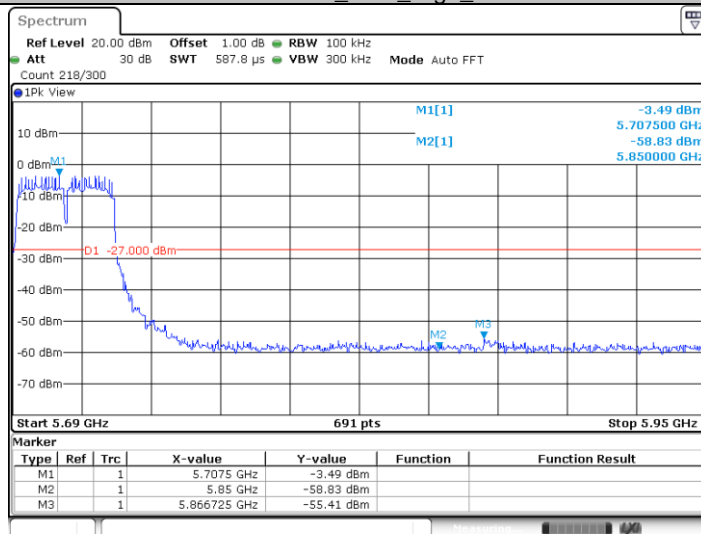
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11AC40SISO\_Ant1\_Low\_5710



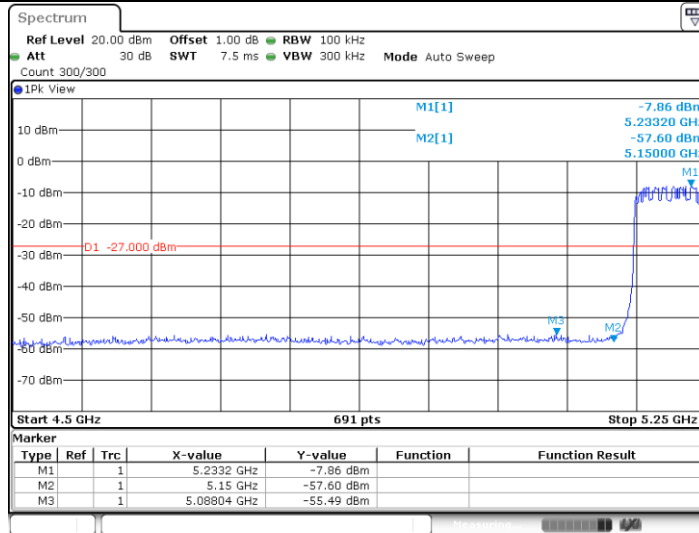
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11AC40SISO\_Ant1\_High\_5710



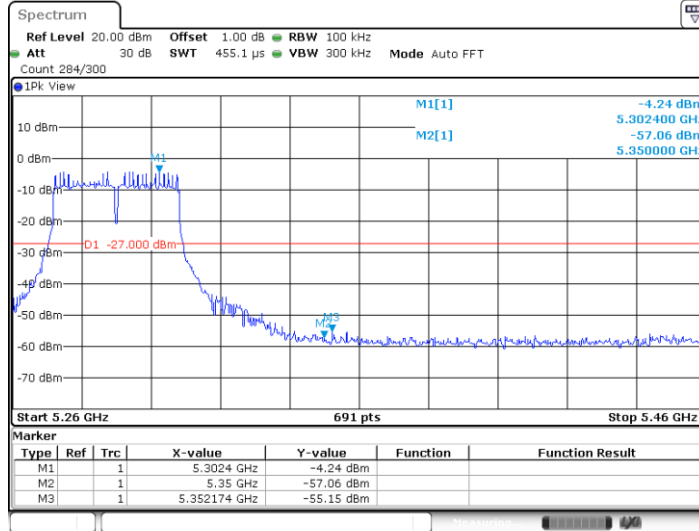
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11AC80SISO\_Ant1\_Low\_5210



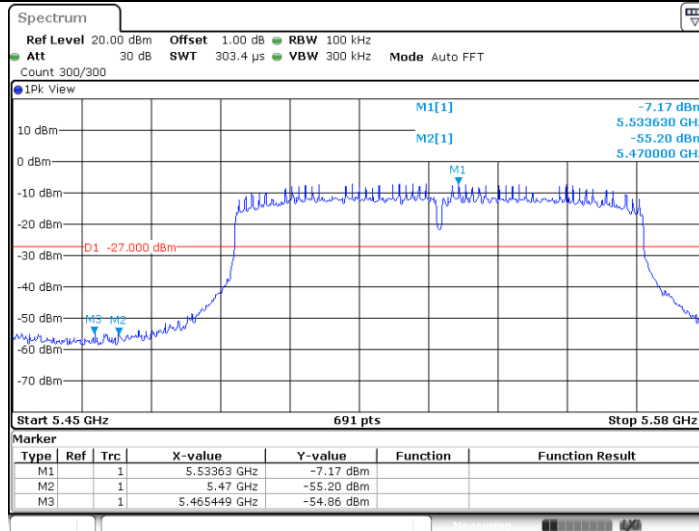
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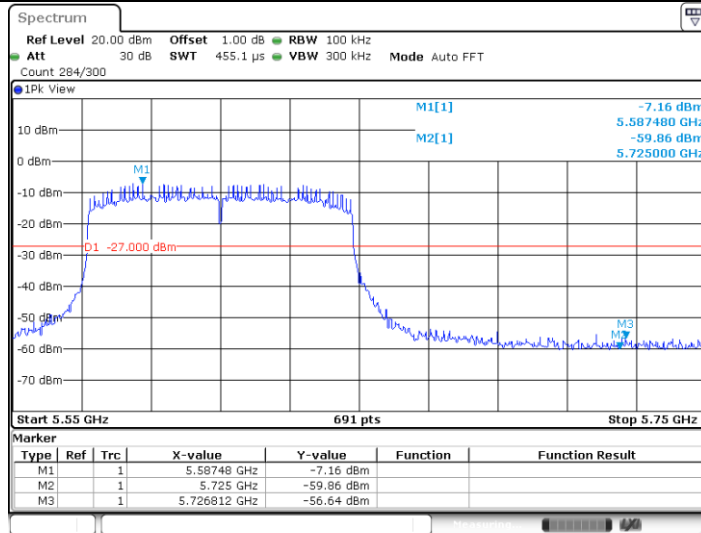
Date: 4 DEC.2020 17:02:06

11AC80SISO Ant1\_Low\_5530



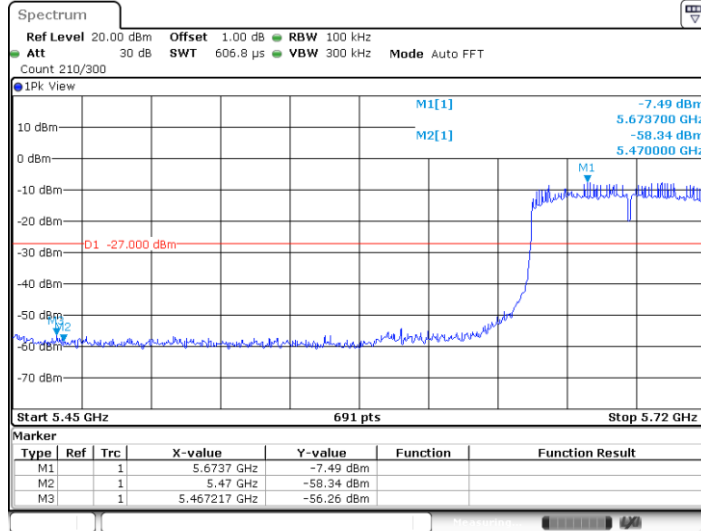
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11AC80SISO Ant1\_High\_5610



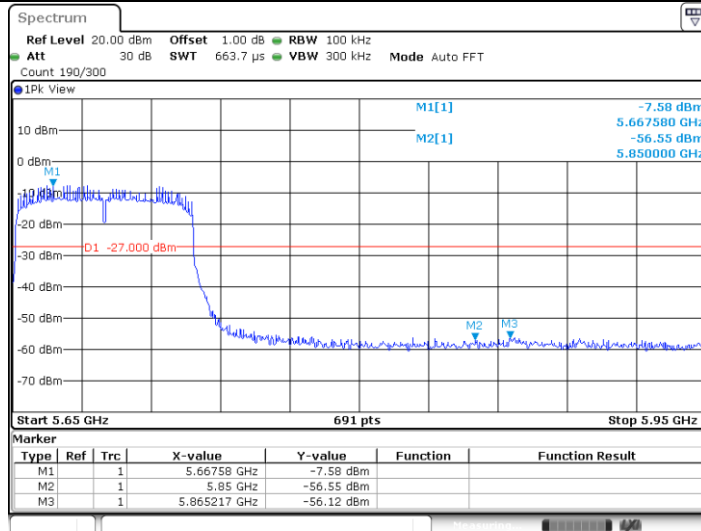
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11AC80SISO\_Ant1\_Low\_5690

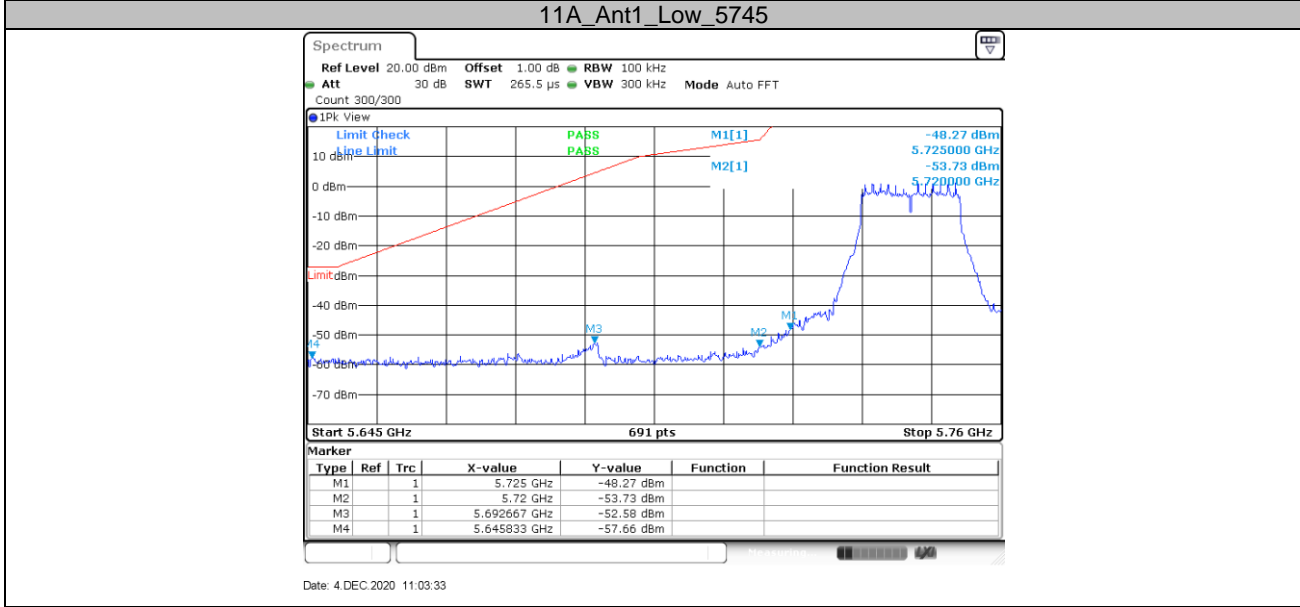
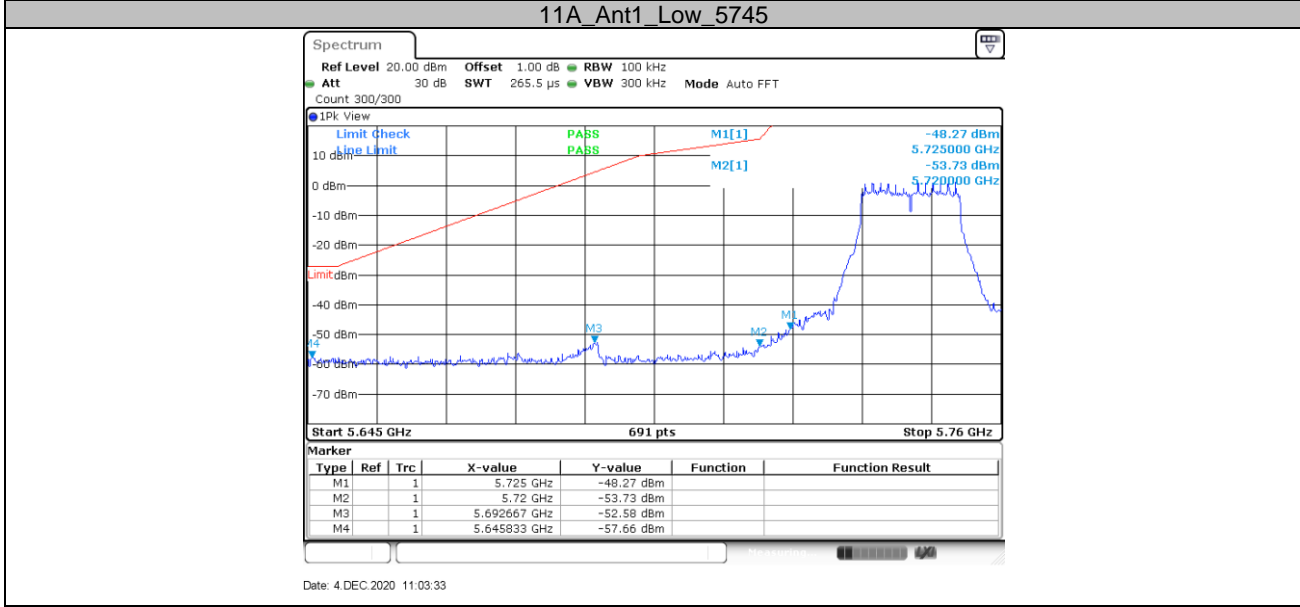
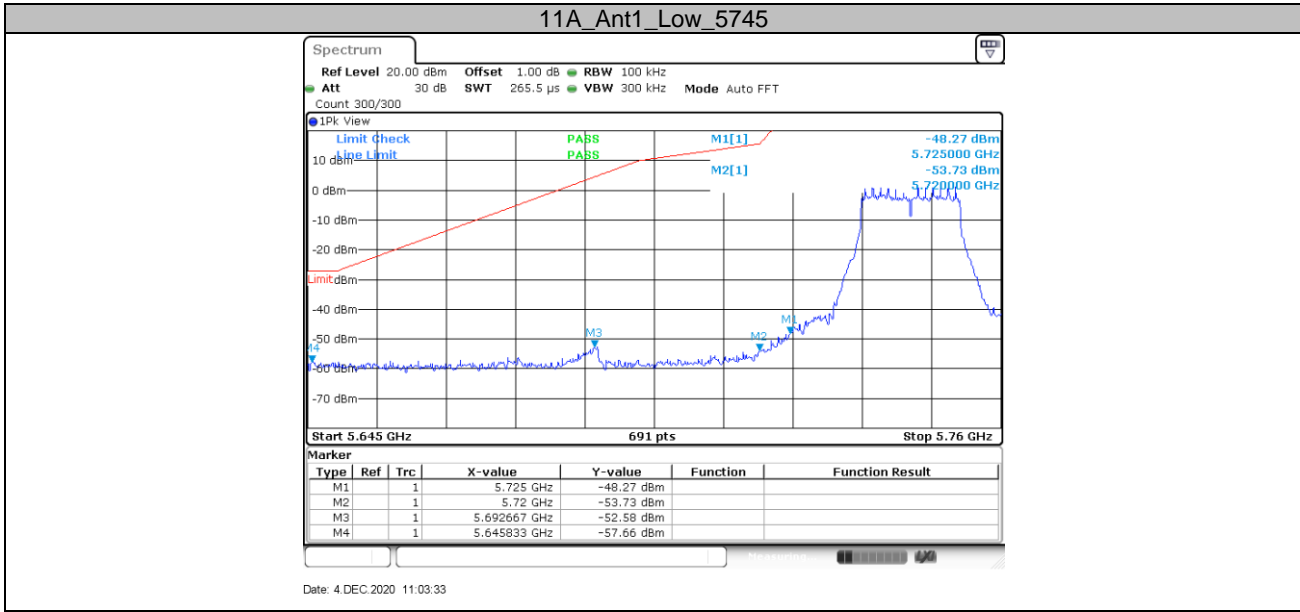


Date: 4 DEC.2020 17:10:13

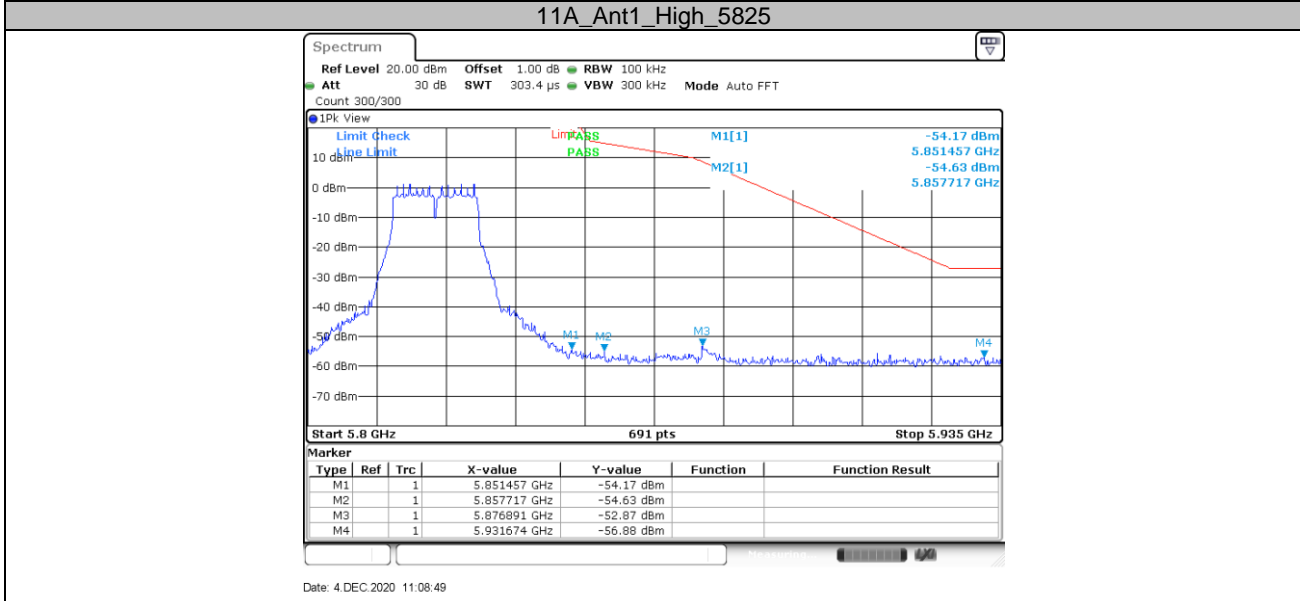
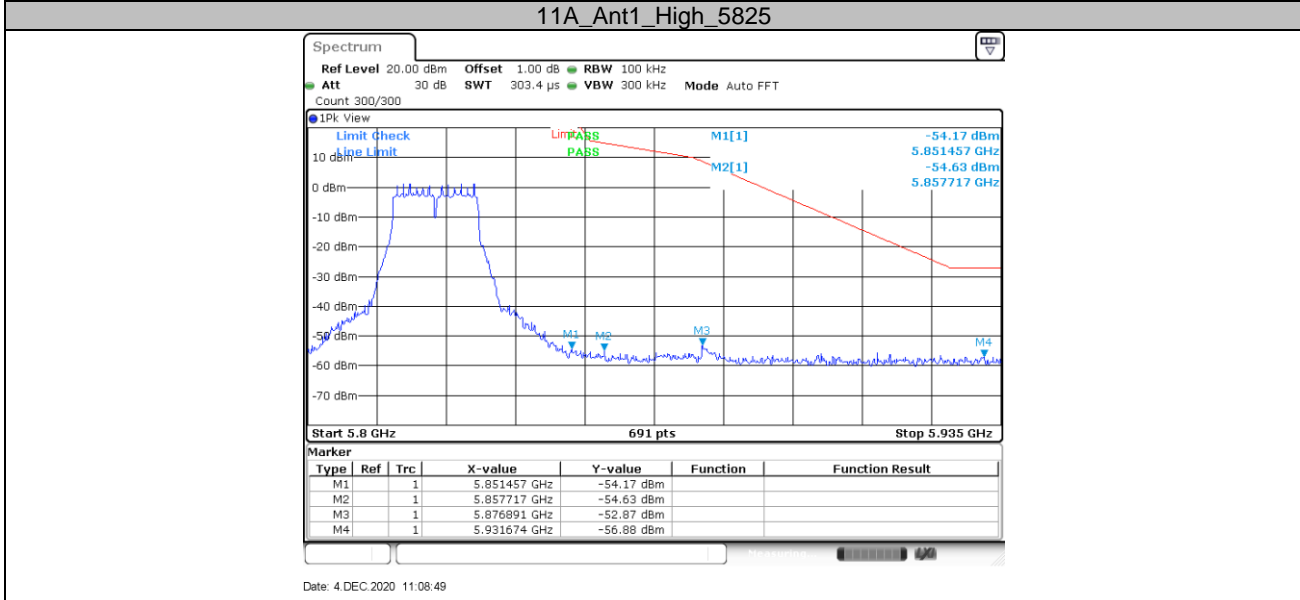
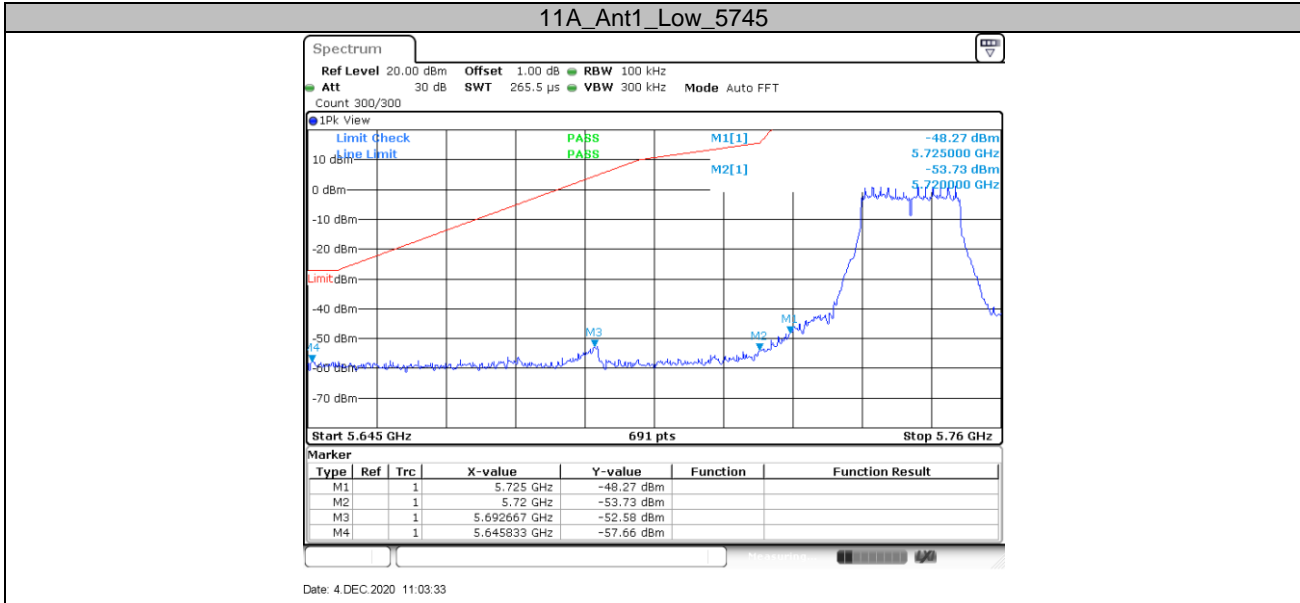
11AC80SISO\_Ant1\_High\_5690



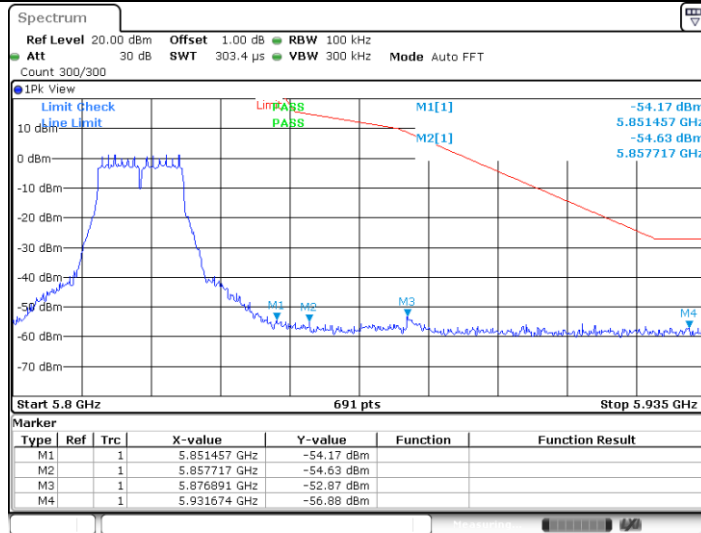
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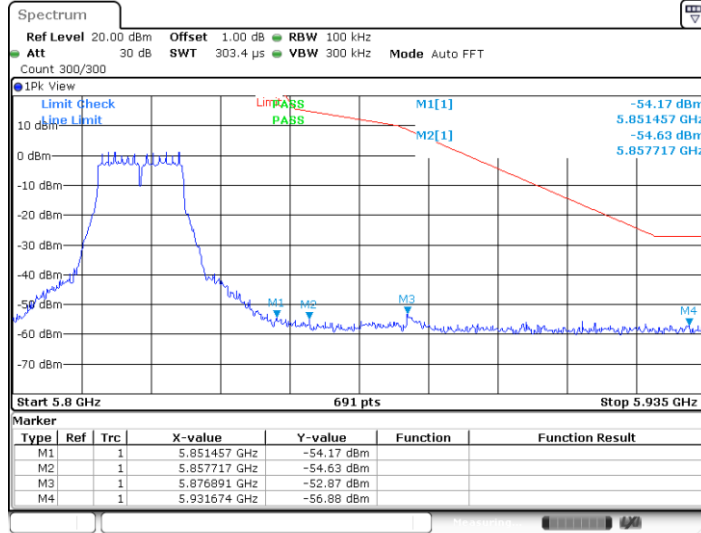


11A\_Ant1\_High\_5825



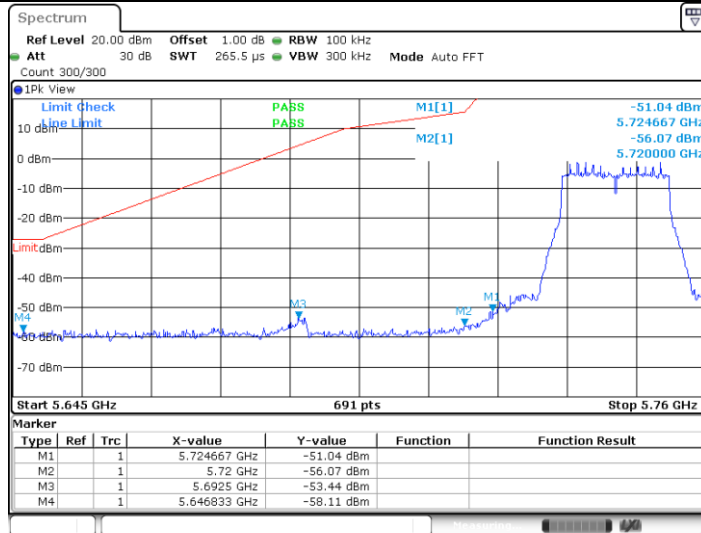
Date: 4 DEC.2020 11:08:49

11A\_Ant1\_High\_5825



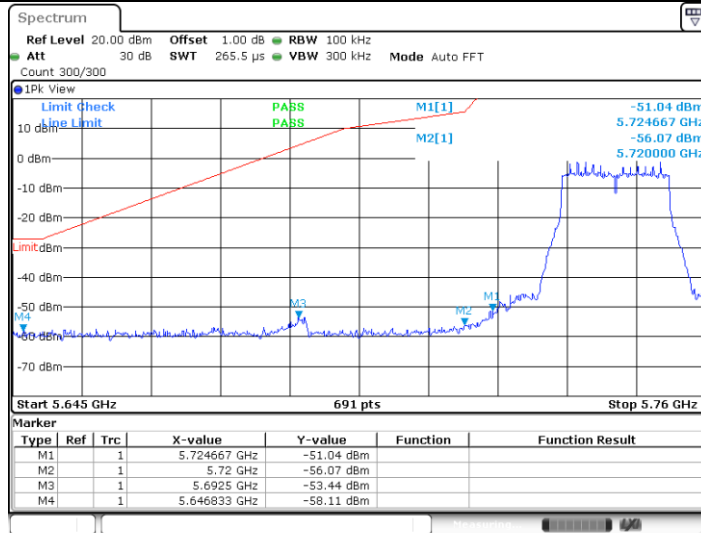
Date: 4 DEC.2020 11:08:49

11N20SISO\_Ant1\_Low\_5745



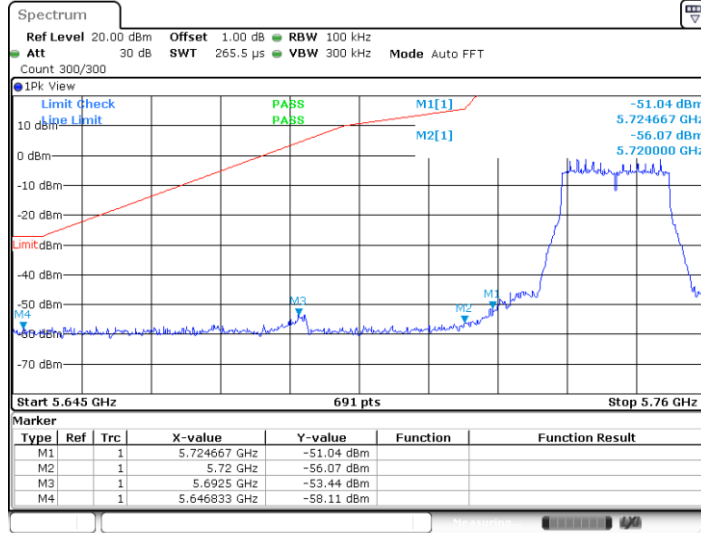
Date: 4 DEC.2020 12:22:16

11N20SISO\_Ant1\_Low\_5745



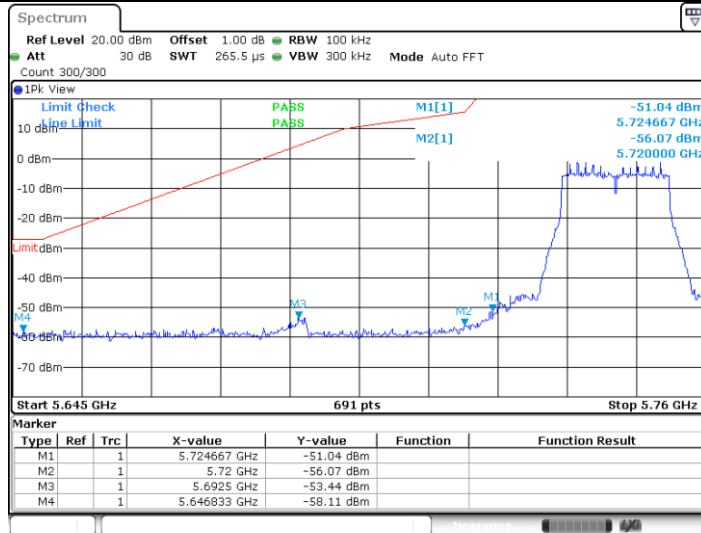
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11N20SISO\_Ant1\_Low\_5745



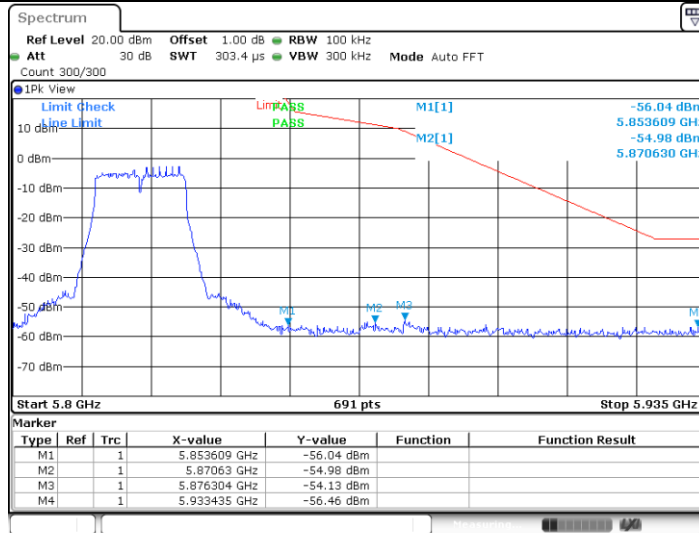
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11N20SISO\_Ant1\_Low\_5745



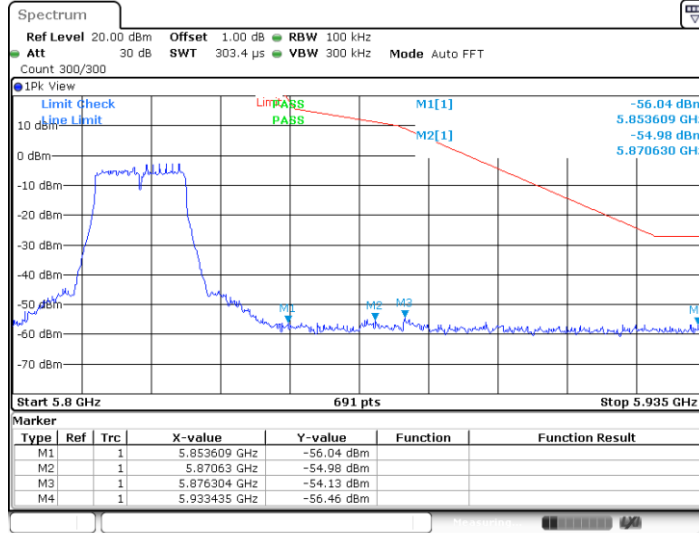
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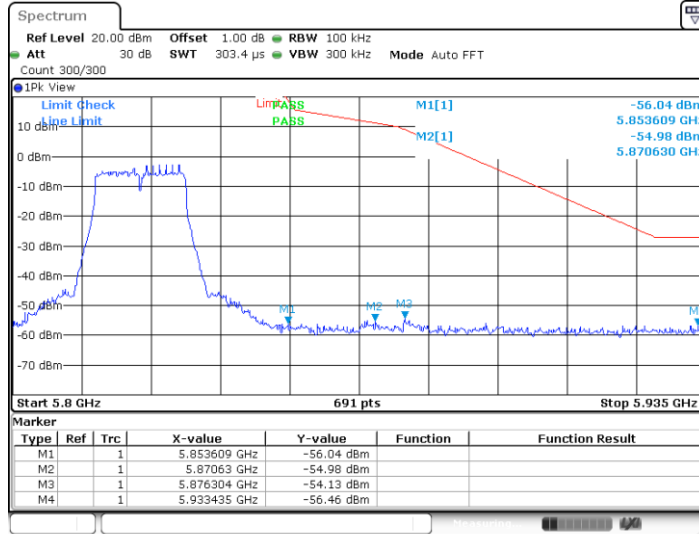
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11N20SISO\_Ant1\_High\_5825



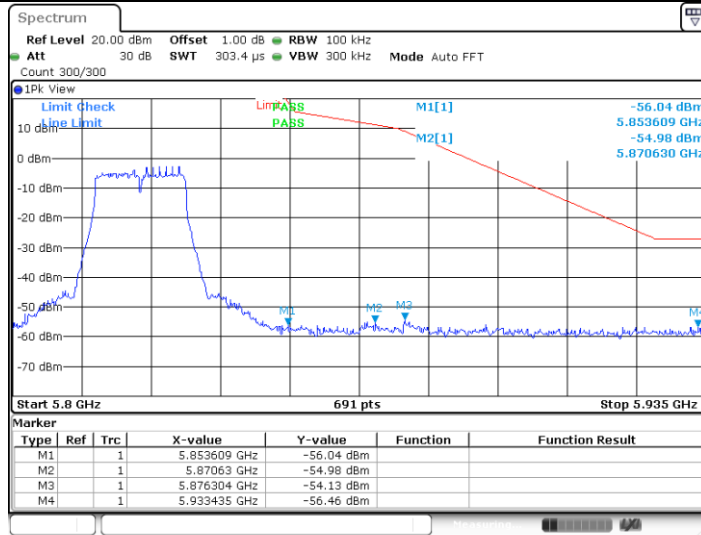
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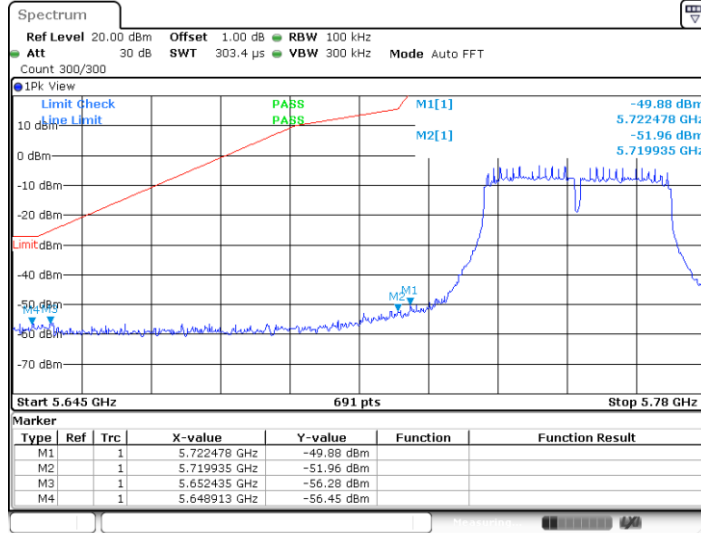
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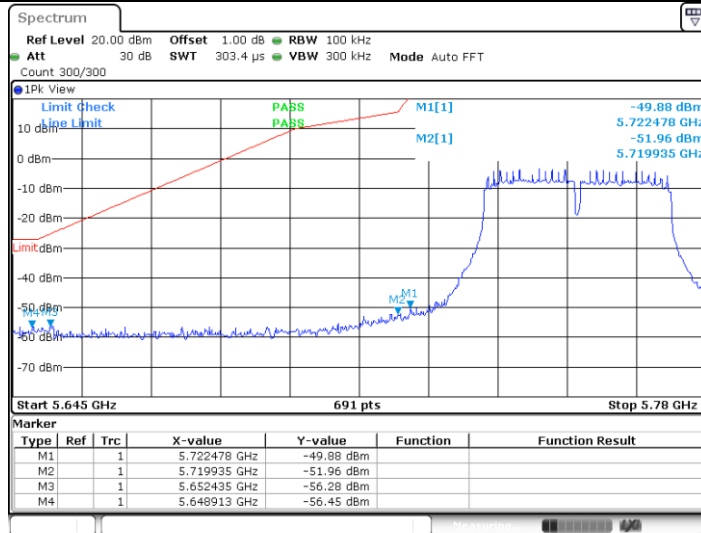
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11N40SISO\_Ant1\_Low\_5755



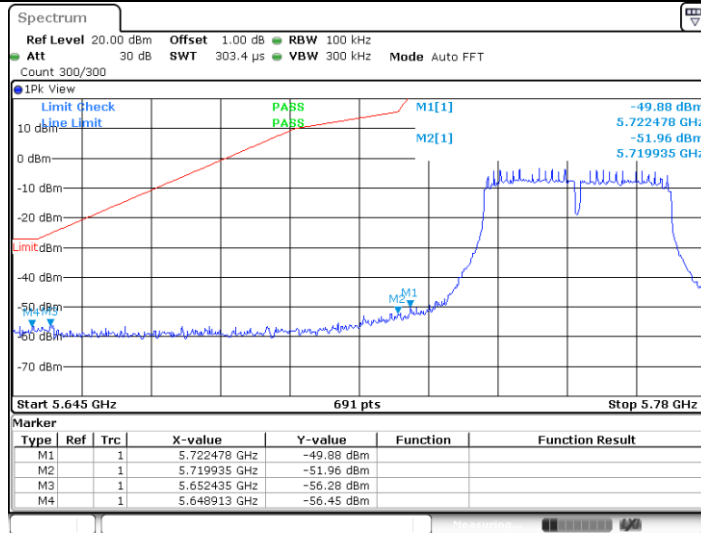
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11N40SISO\_Ant1\_Low\_5755



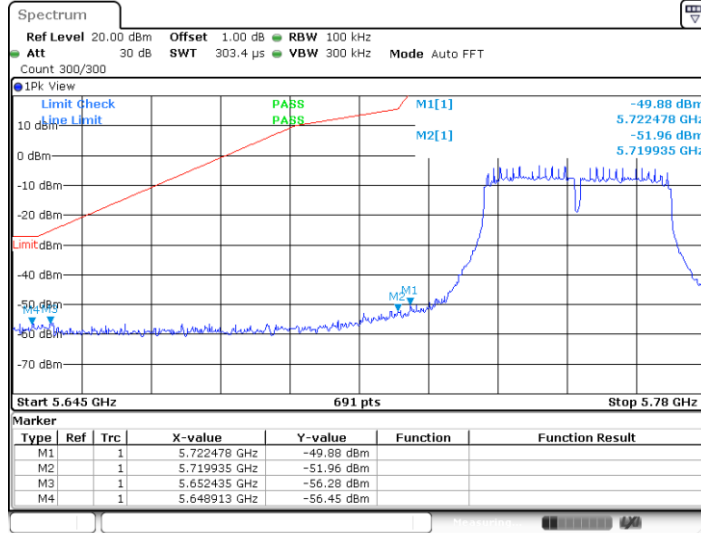
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11N40SISO\_Ant1\_Low\_5755



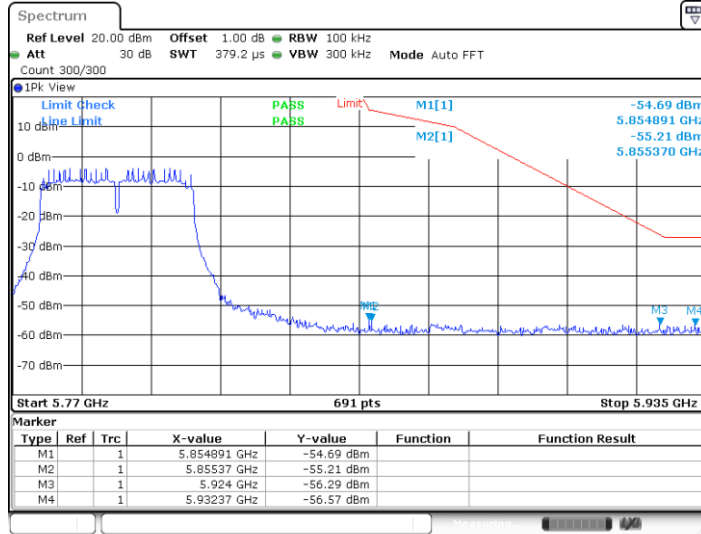
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11N40SISO\_Ant1\_Low\_5755



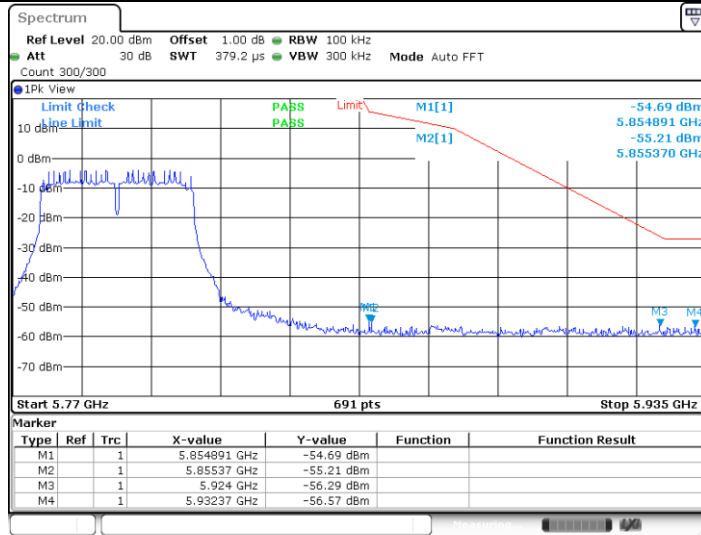
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11N40SISO\_Ant1\_High\_5795



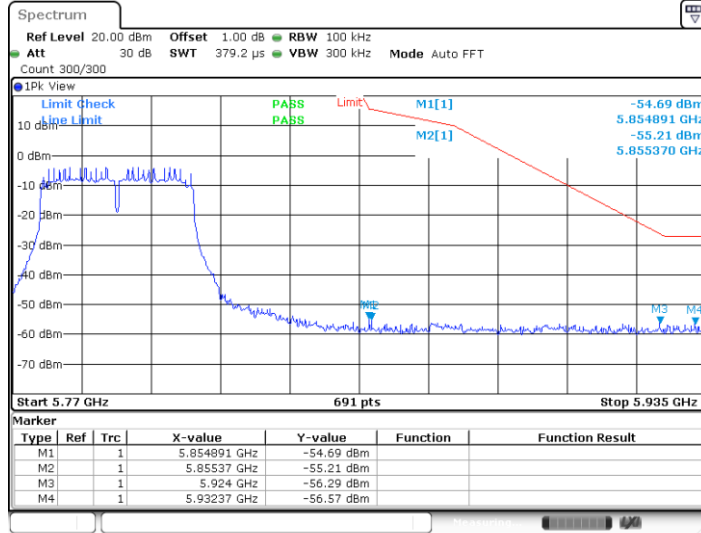
Date: 4 DEC.2020 13:31:17

11N40SISO\_Ant1\_High\_5795



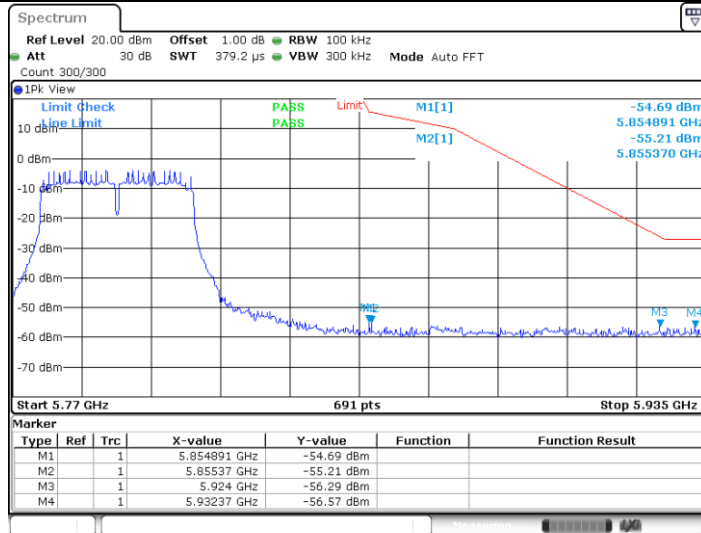
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11N40SISO\_Ant1\_High\_5795



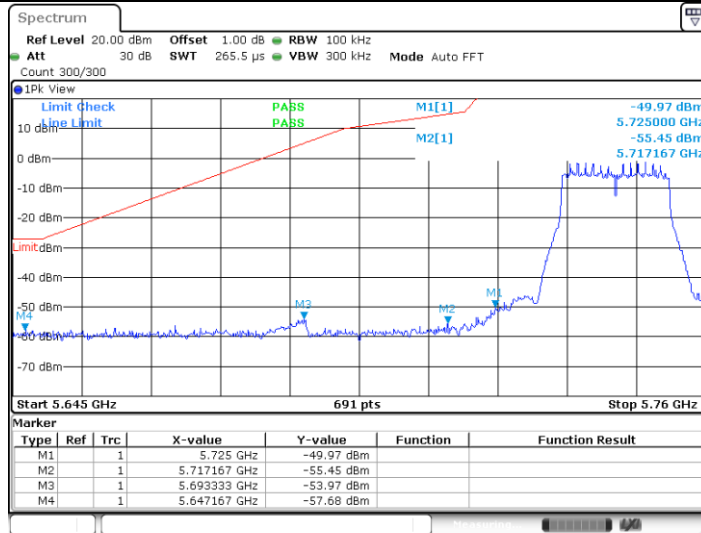
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11N40SISO\_Ant1\_High\_5795



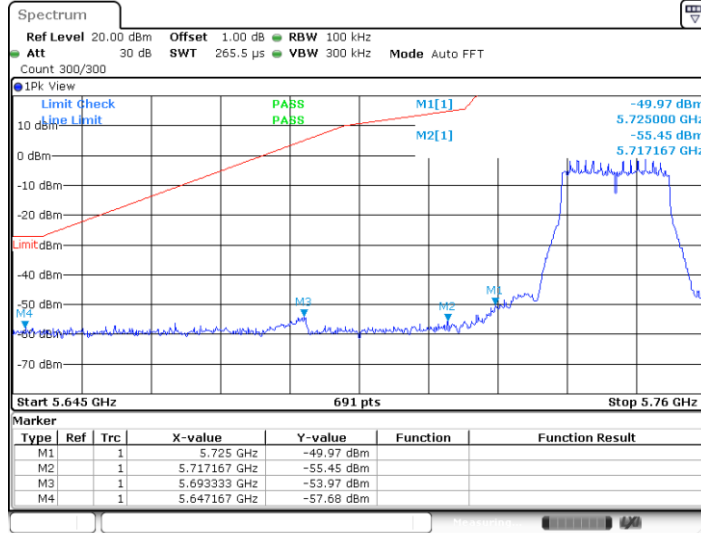
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11AC20SISO\_Ant1\_Low\_5745



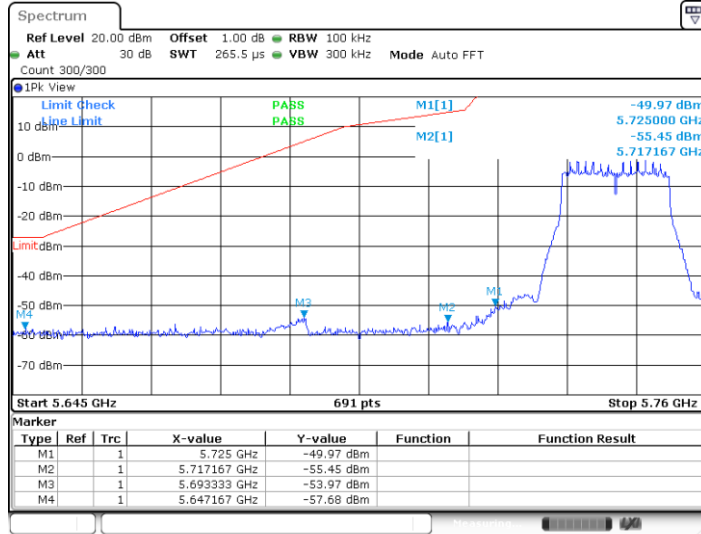
Date: 4 DEC.2020 14:08:13

11AC20SISO\_Ant1\_Low\_5745



Date: 4 DEC.2020 14:08:13

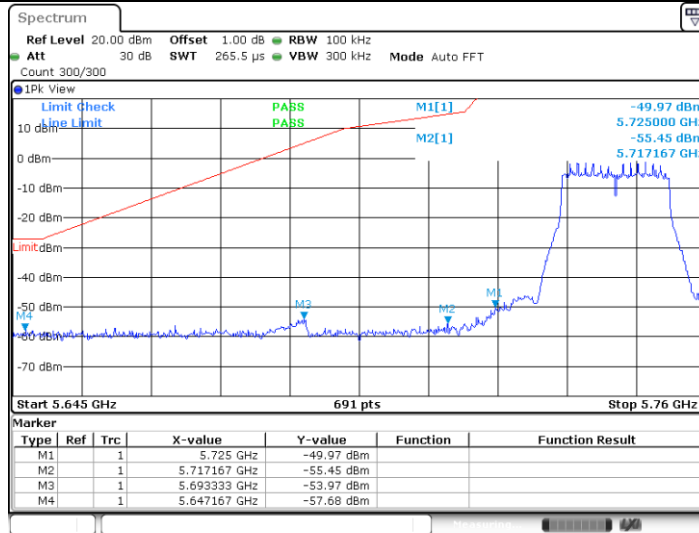
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Date: 4 DEC.2020 14:08:13

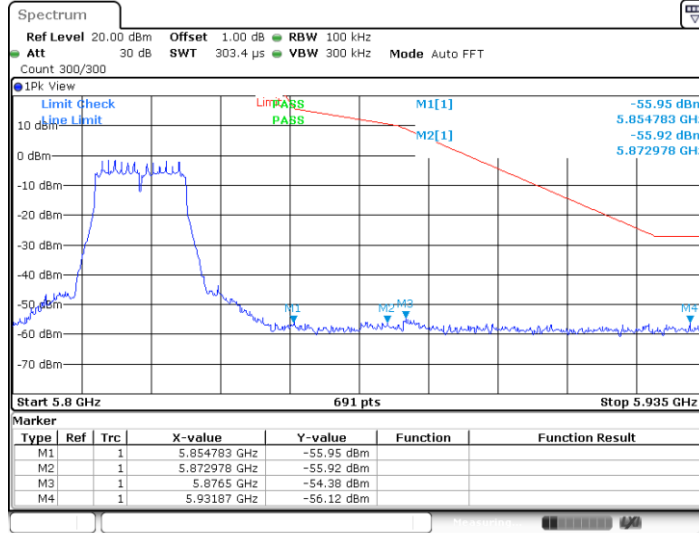
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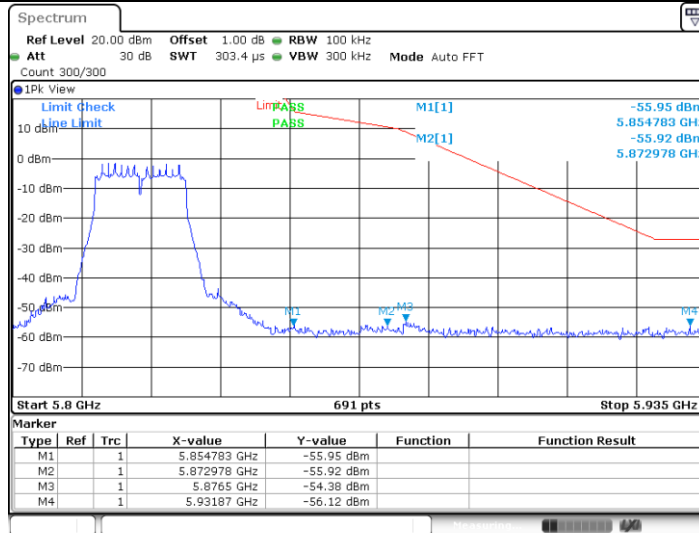
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11AC20SISO Ant1\_High\_5825



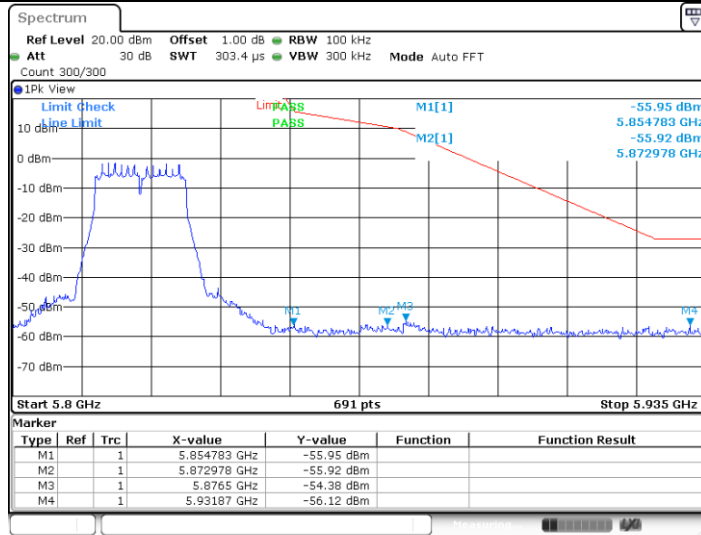
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11AC20SISO Ant1\_High\_5825



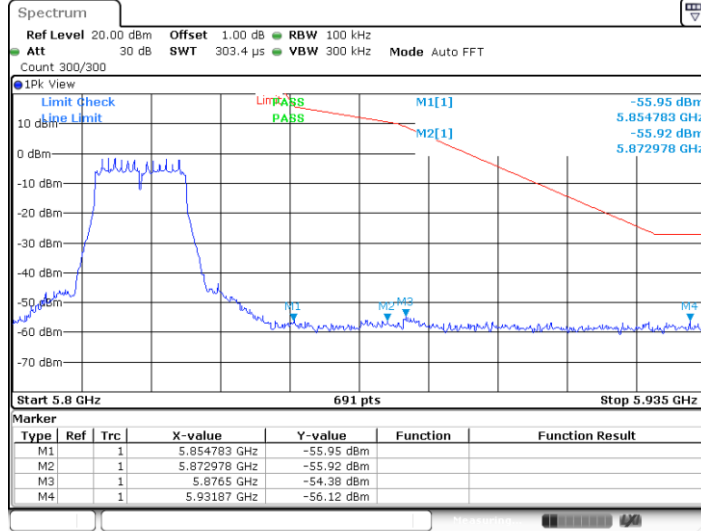
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11AC20SISO Ant1\_High\_5825



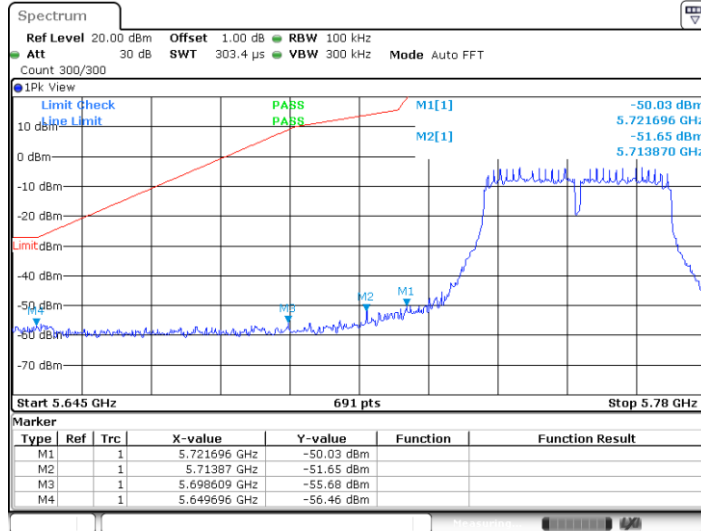
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11AC20SISO Ant1\_High\_5825



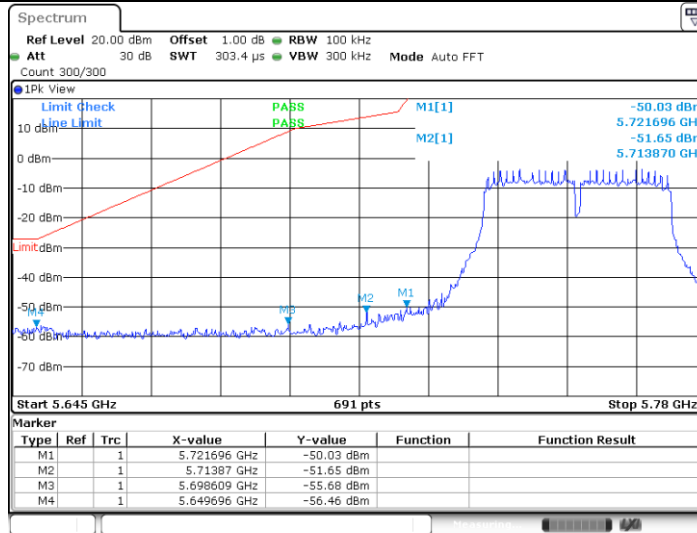
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11AC40SISO Ant1\_Low\_5755



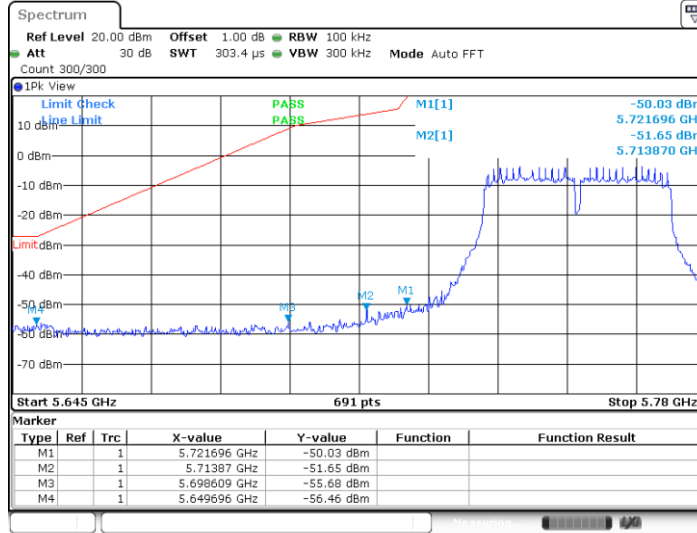
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11AC40SISO Ant1\_Low\_5755



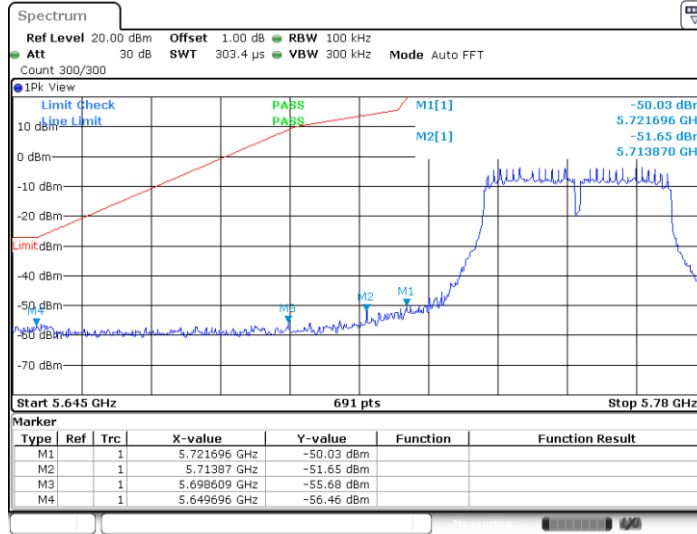
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11AC40SISO\_Ant1\_Low\_5755



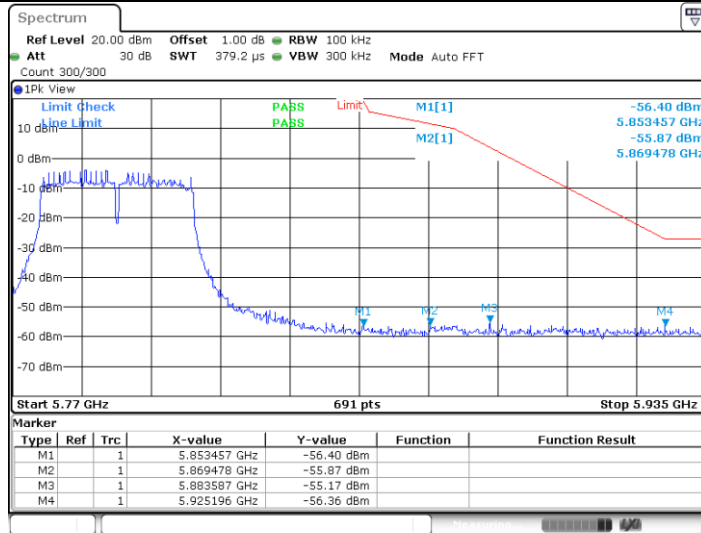
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11AC40SISO\_Ant1\_Low\_5755



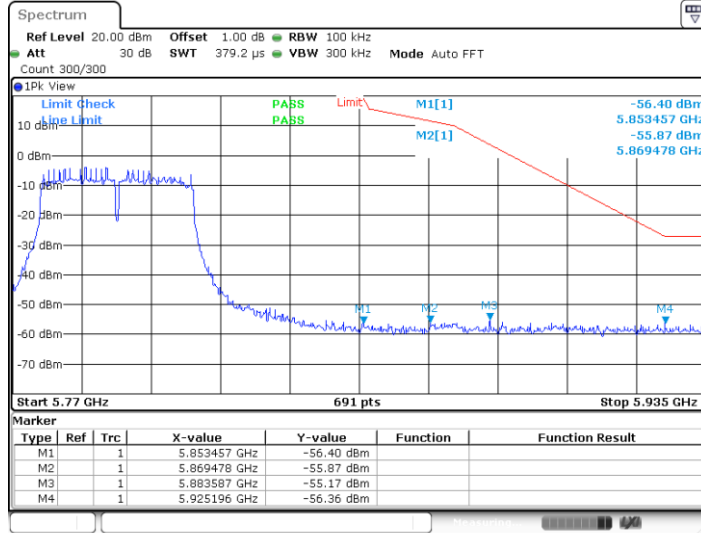
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11AC40SISO\_Ant1\_High\_5795



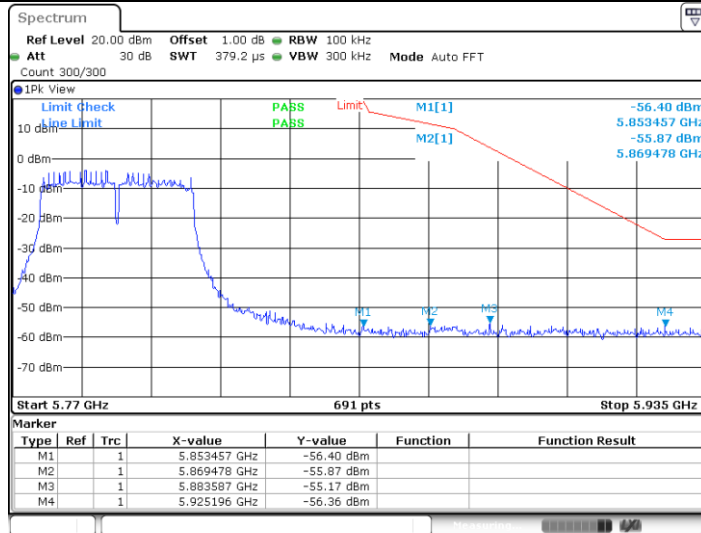
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11AC40SISO Ant1\_High\_5795



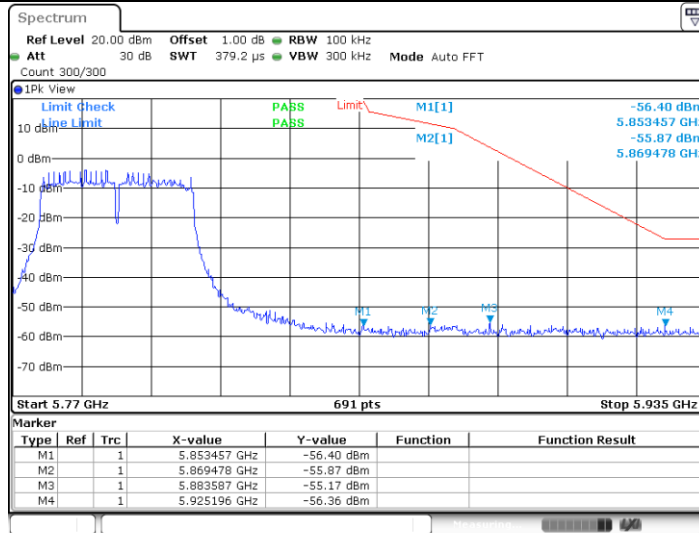
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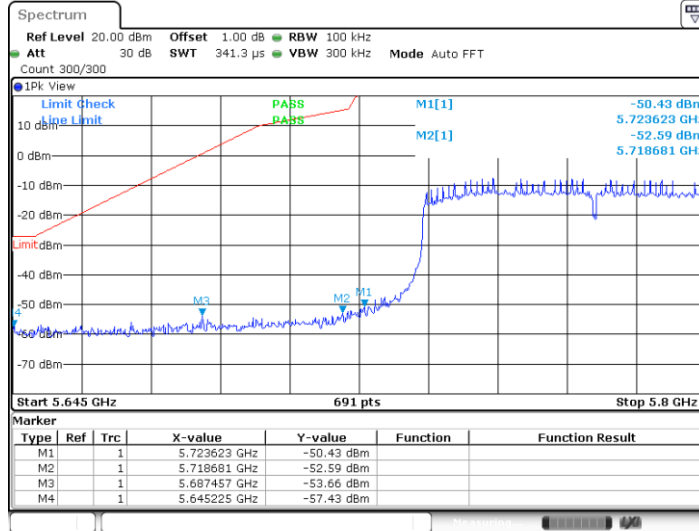
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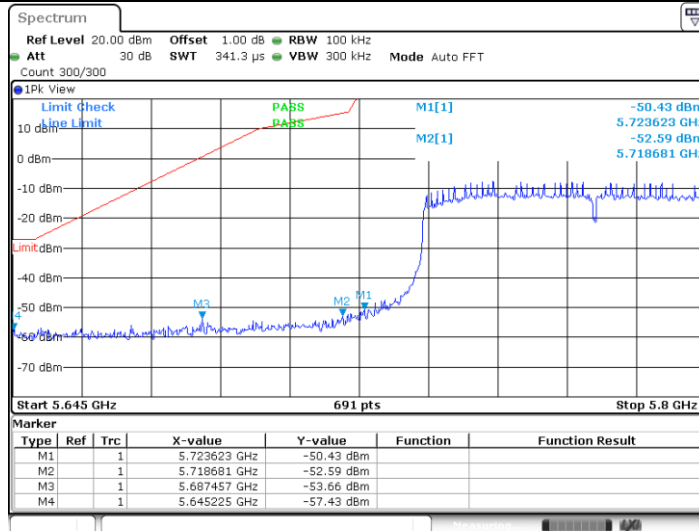
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11AC80SISO\_Ant1\_Low\_5775



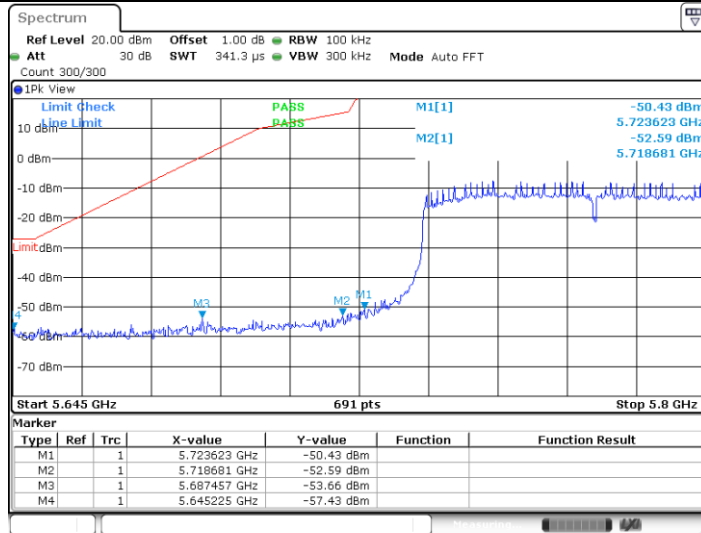
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11AC80SISO\_Ant1\_Low\_5775



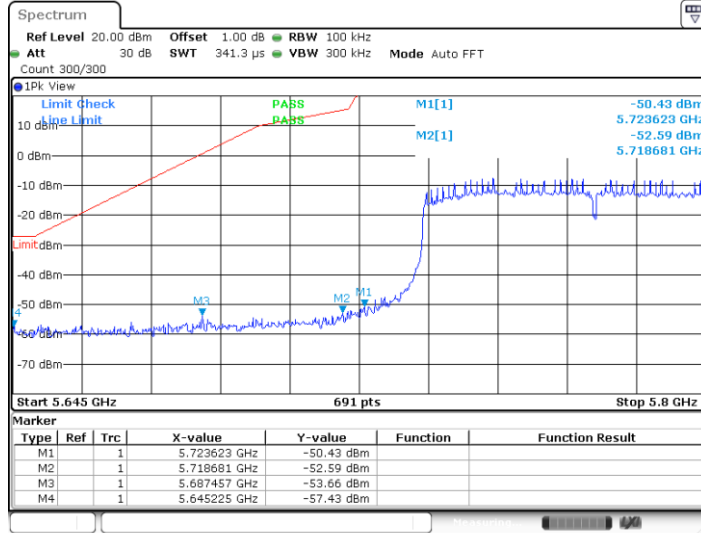
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11AC80SISO\_Ant1\_Low\_5775



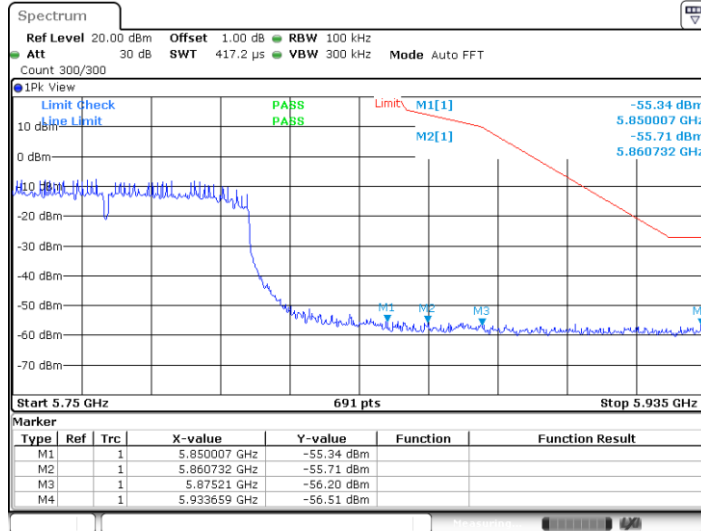
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11AC80SISO\_Ant1\_Low\_5775



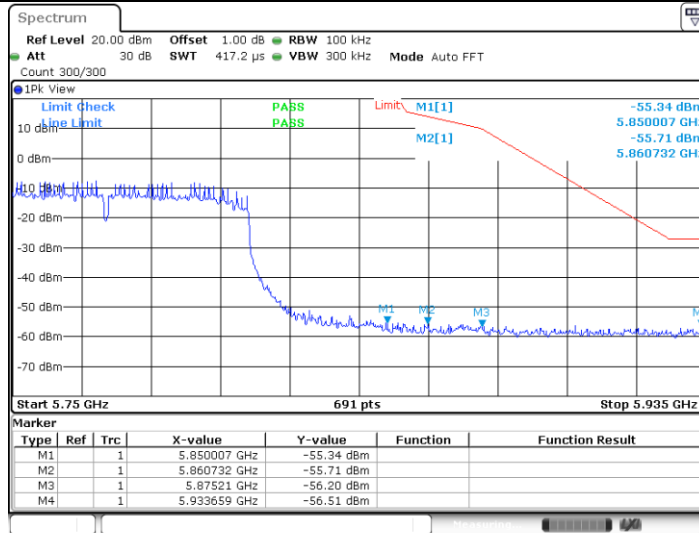
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11AC80SISO\_Ant1\_High\_5775



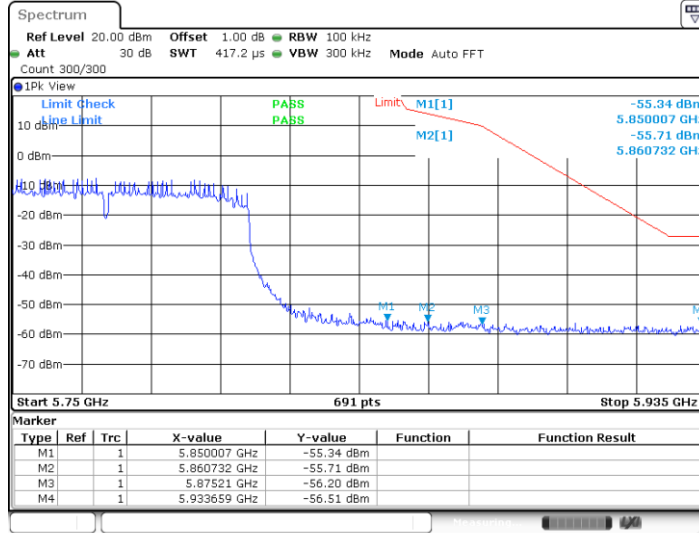
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11AC80SISO\_Ant1\_High\_5775



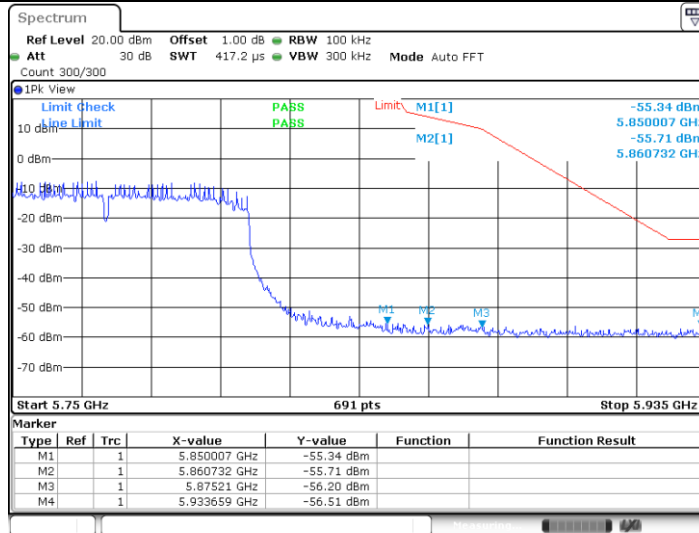
Date: 4 DEC.2020 17:12:58

11AC80SISO Ant1\_High\_5775



Date: 4 DEC.2020 17:12:58

11AC80SISO Ant1\_High\_5775



Date: 4 DEC.2020 17:12:58

## 9.6 Frequencies Stability

### Test Method

1. 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.
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 0°C to +40°C, normal Temperature is +20°C.

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

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

Remark: NV is normal Voltage: 7.2Vdc, HV is High Voltage: 8.28Vdc, LV is Low Voltage: 6.12Vdc, NT is normal Temperature: +20°C.

| TestMode       | Antenna | Channel | Voltage [Vdc] | Temperature (°C) | Deviation (Hz) | Deviation (ppm) | Verdict |
|----------------|---------|---------|---------------|------------------|----------------|-----------------|---------|
| 11AC20SIS<br>O | Ant1    | 5180    | NV            | NT               | -50000         | -9.65251        | PASS    |
|                |         |         | LV            | NT               | -52900         | -10.212355      | PASS    |
|                |         |         | HV            | NT               | -53900         | -10.405405      | PASS    |
|                |         | 5200    | NV            | NT               | -54900         | -10.557692      | PASS    |
|                |         |         | LV            | NT               | -55900         | -10.75          | PASS    |
|                |         |         | HV            | NT               | -55900         | -10.75          | PASS    |
|                |         | 5240    | NV            | NT               | -55900         | -10.667939      | PASS    |
|                |         |         | LV            | NT               | -56900         | -10.858779      | PASS    |
|                |         |         | HV            | NT               | -56900         | -10.858779      | PASS    |
|                |         | 5260    | NV            | NT               | -57900         | -11.007605      | PASS    |
|                |         |         | LV            | NT               | -57900         | -11.007605      | PASS    |
|                |         |         | HV            | NT               | -57900         | -11.007605      | PASS    |
|                |         | 5280    | NV            | NT               | -57900         | -10.965909      | PASS    |
|                |         |         | LV            | NT               | -58900         | -11.155303      | PASS    |
|                |         |         | HV            | NT               | -58900         | -11.155303      | PASS    |
|                |         | 5320    | NV            | NT               | -58900         | -11.071429      | PASS    |
|                |         |         | LV            | NT               | -58900         | -11.071429      | PASS    |
|                |         |         | HV            | NT               | -58900         | -11.071429      | PASS    |
|                |         | 5500    | NV            | NT               | -60900         | -11.072727      | PASS    |
|                |         |         | LV            | NT               | -60900         | -11.072727      | PASS    |
|                |         |         | HV            | NT               | -60900         | -11.072727      | PASS    |
|                |         | 5580    | NV            | NT               | -61900         | -11.09319       | PASS    |
|                |         |         | LV            | NT               | -61900         | -11.09319       | PASS    |
|                |         |         | HV            | NT               | -61900         | -11.09319       | PASS    |
| 5700           | NV      | NT      | -62900        | -11.035088       | PASS           |                 |         |
|                | LV      | NT      | -63900        | -11.210526       | PASS           |                 |         |





|                |      |                |      |      |        |            |        |            |      |
|----------------|------|----------------|------|------|--------|------------|--------|------------|------|
|                |      | 5720           | HV   | NT   | -63900 | -11.210526 | PASS   |            |      |
|                |      |                | NV   | NT   | -62900 | -10.996503 | PASS   |            |      |
|                |      |                | LV   | NT   | -63900 | -11.171329 | PASS   |            |      |
|                |      | 5745           | HV   | NT   | -63900 | -11.171329 | PASS   |            |      |
|                |      |                | NV   | NT   | -64900 | -11.29678  | PASS   |            |      |
|                |      |                | LV   | NT   | -63900 | -11.122715 | PASS   |            |      |
|                |      | 5785           | HV   | NT   | -64900 | -11.29678  | PASS   |            |      |
|                |      |                | NV   | NT   | -63900 | -11.045808 | PASS   |            |      |
|                |      |                | LV   | NT   | -64900 | -11.218669 | PASS   |            |      |
|                |      | 5825           | HV   | NT   | -64900 | -11.218669 | PASS   |            |      |
|                |      |                | NV   | NT   | -64900 | -11.141631 | PASS   |            |      |
|                |      |                | LV   | NT   | -64900 | -11.141631 | PASS   |            |      |
| 11AC40SIS<br>O | Ant1 | 5190           | NV   | NT   | -57900 | -11.156069 | PASS   |            |      |
|                |      |                | LV   | NT   | -57900 | -11.156069 | PASS   |            |      |
|                |      |                | HV   | NT   | -57900 | -11.156069 | PASS   |            |      |
|                |      | 5230           | NV   | NT   | -57900 | -11.070746 | PASS   |            |      |
|                |      |                | LV   | NT   | -57900 | -11.070746 | PASS   |            |      |
|                |      |                | HV   | NT   | -57900 | -11.070746 | PASS   |            |      |
|                |      | 5270           | NV   | NT   | -58900 | -11.176471 | PASS   |            |      |
|                |      |                | LV   | NT   | -58900 | -11.176471 | PASS   |            |      |
|                |      |                | HV   | NT   | -58900 | -11.176471 | PASS   |            |      |
|                |      | 5310           | NV   | NT   | -58900 | -11.092279 | PASS   |            |      |
|                |      |                | LV   | NT   | -58900 | -11.092279 | PASS   |            |      |
|                |      |                | HV   | NT   | -58900 | -11.092279 | PASS   |            |      |
|                |      | 5510           | NV   | NT   | -60900 | -11.052632 | PASS   |            |      |
|                |      |                | LV   | NT   | -61900 | -11.23412  | PASS   |            |      |
|                |      |                | HV   | NT   | -61900 | -11.23412  | PASS   |            |      |
|                |      | 5550           | NV   | NT   | -61900 | -11.153153 | PASS   |            |      |
|                |      |                | LV   | NT   | -61900 | -11.153153 | PASS   |            |      |
|                |      |                | HV   | NT   | -61900 | -11.153153 | PASS   |            |      |
|                |      | 5670           | NV   | NT   | -62900 | -11.093474 | PASS   |            |      |
|                |      |                | LV   | NT   | -62900 | -11.093474 | PASS   |            |      |
|                |      |                | HV   | NT   | -63900 | -11.269841 | PASS   |            |      |
|                |      | 5710           | NV   | NT   | -63900 | -11.190893 | PASS   |            |      |
|                |      |                | LV   | NT   | -63900 | -11.190893 | PASS   |            |      |
|                |      |                | HV   | NT   | -63900 | -11.190893 | PASS   |            |      |
|                |      | 5755           | NV   | NT   | -63900 | -11.103388 | PASS   |            |      |
|                |      |                | LV   | NT   | -63900 | -11.103388 | PASS   |            |      |
|                |      |                | HV   | NT   | -63900 | -11.103388 | PASS   |            |      |
|                |      | 5795           | NV   | NT   | -63900 | -11.026747 | PASS   |            |      |
|                |      |                | LV   | NT   | -64900 | -11.19931  | PASS   |            |      |
|                |      |                | HV   | NT   | -64900 | -11.19931  | PASS   |            |      |
|                |      | 11AC80SIS<br>O | Ant1 | 5210 | NV     | NT         | -57900 | -11.113244 | PASS |
|                |      |                |      |      | LV     | NT         | -57900 | -11.113244 | PASS |
|                |      |                |      |      | HV     | NT         | -57900 | -11.113244 | PASS |
|                |      |                |      | 5290 | NV     | NT         | -58900 | -11.134216 | PASS |
|                |      |                |      |      | LV     | NT         | -58900 | -11.134216 | PASS |
|                |      |                |      |      | HV     | NT         | -58900 | -11.134216 | PASS |
| 5530           | NV   |                |      | NT   | -60900 | -11.012658 | PASS   |            |      |
|                | LV   |                |      | NT   | -61900 | -11.19349  | PASS   |            |      |
|                | HV   |                |      | NT   | -61900 | -11.19349  | PASS   |            |      |
| 5610           | NV   |                |      | NT   | -61900 | -11.033868 | PASS   |            |      |
|                | LV   |                |      | NT   | -62900 | -11.212121 | PASS   |            |      |
|                | HV   |                |      | NT   | -62900 | -11.212121 | PASS   |            |      |
| 5690           | NV   |                |      | NT   | -62900 | -11.054482 | PASS   |            |      |
|                | LV   |                |      | NT   | -62900 | -11.054482 | PASS   |            |      |
|                | HV   |                |      | NT   | -63900 | -11.230228 | PASS   |            |      |
| 5775           | NV   |                |      | NT   | -63900 | -11.064935 | PASS   |            |      |
|                | LV   |                |      | NT   | -64900 | -11.238095 | PASS   |            |      |
|                | HV   |                |      | NT   | -64900 | -11.238095 | PASS   |            |      |



| TestMode       | Antenna | Channel (MHz) | Voltage [Vdc] | Temperature (°C) | Deviation (Hz) | Deviation (ppm) | Verdict |
|----------------|---------|---------------|---------------|------------------|----------------|-----------------|---------|
| 11AC20SIS<br>O | Ant1    | 5180          | NV            | 0                | -54900         | -10.598456      | PASS    |
|                |         |               | NV            | 10               | -54900         | -10.598456      | PASS    |
|                |         |               | NV            | 20               | -54900         | -10.598456      | PASS    |
|                |         |               | NV            | 30               | -54900         | -10.598456      | PASS    |
|                |         |               | NV            | 40               | -55900         | -10.791506      | PASS    |
|                |         | 5200          | NV            | 0                | -56900         | -10.942308      | PASS    |
|                |         |               | NV            | 10               | -55900         | -10.75          | PASS    |
|                |         |               | NV            | 20               | -56900         | -10.942308      | PASS    |
|                |         |               | NV            | 30               | -56900         | -10.942308      | PASS    |
|                |         |               | NV            | 40               | -56900         | -10.942308      | PASS    |
|                |         | 5240          | NV            | 0                | -56900         | -10.858779      | PASS    |
|                |         |               | NV            | 10               | -57900         | -11.049618      | PASS    |
|                |         |               | NV            | 20               | -57900         | -11.049618      | PASS    |
|                |         |               | NV            | 30               | -57900         | -11.049618      | PASS    |
|                |         |               | NV            | 40               | -57900         | -11.049618      | PASS    |
|                |         | 5260          | NV            | 0                | -57900         | -11.007605      | PASS    |
|                |         |               | NV            | 10               | -57900         | -11.007605      | PASS    |
|                |         |               | NV            | 20               | -57900         | -11.007605      | PASS    |
|                |         |               | NV            | 30               | -57900         | -11.007605      | PASS    |
|                |         |               | NV            | 40               | -57900         | -11.007605      | PASS    |
|                |         | 5280          | NV            | 0                | -58900         | -11.155303      | PASS    |
|                |         |               | NV            | 10               | -58900         | -11.155303      | PASS    |
|                |         |               | NV            | 20               | -58900         | -11.155303      | PASS    |
|                |         |               | NV            | 30               | -58900         | -11.155303      | PASS    |
|                |         |               | NV            | 40               | -58900         | -11.155303      | PASS    |
|                |         | 5320          | NV            | 0                | -58900         | -11.071429      | PASS    |
|                |         |               | NV            | 10               | -58900         | -11.071429      | PASS    |
|                |         |               | NV            | 20               | -59900         | -11.259398      | PASS    |
|                |         |               | NV            | 30               | -58900         | -11.071429      | PASS    |
|                |         |               | NV            | 40               | -58900         | -11.071429      | PASS    |
|                |         | 5500          | NV            | 0                | -60900         | -11.072727      | PASS    |
|                |         |               | NV            | 10               | -60900         | -11.072727      | PASS    |
|                |         |               | NV            | 20               | -61900         | -11.254545      | PASS    |
|                |         |               | NV            | 30               | -61900         | -11.254545      | PASS    |
|                |         |               | NV            | 40               | -61900         | -11.254545      | PASS    |
|                |         | 5580          | NV            | 0                | -62900         | -11.272401      | PASS    |
|                |         |               | NV            | 10               | -62900         | -11.272401      | PASS    |
|                |         |               | NV            | 20               | -62900         | -11.272401      | PASS    |
|                |         |               | NV            | 30               | -61900         | -11.09319       | PASS    |
|                |         |               | NV            | 40               | -62900         | -11.272401      | PASS    |
|                |         | 5700          | NV            | 0                | -63900         | -11.210526      | PASS    |
|                |         |               | NV            | 10               | -63900         | -11.210526      | PASS    |
|                |         |               | NV            | 20               | -63900         | -11.210526      | PASS    |
|                |         |               | NV            | 30               | -63900         | -11.210526      | PASS    |
|                |         |               | NV            | 40               | -63900         | -11.210526      | PASS    |
|                |         | 5720          | NV            | 0                | -63900         | -11.171329      | PASS    |
|                |         |               | NV            | 10               | -63900         | -11.171329      | PASS    |
|                |         |               | NV            | 20               | -63900         | -11.171329      | PASS    |
|                |         |               | NV            | 30               | -63900         | -11.171329      | PASS    |
|                |         |               | NV            | 40               | -63900         | -11.171329      | PASS    |
|                |         | 5745          | NV            | 0                | -63900         | -11.122715      | PASS    |
|                |         |               | NV            | 10               | -64900         | -11.29678       | PASS    |
|                |         |               | NV            | 20               | -64900         | -11.29678       | PASS    |
|                |         |               | NV            | 30               | -63900         | -11.122715      | PASS    |
|                |         |               | NV            | 40               | -64900         | -11.29678       | PASS    |
|                |         | 5785          | NV            | 0                | -64900         | -11.218669      | PASS    |
|                |         |               | NV            | 10               | -64900         | -11.218669      | PASS    |
|                |         |               | NV            | 20               | -64900         | -11.218669      | PASS    |
|                |         |               | NV            | 30               | -64900         | -11.218669      | PASS    |
|                |         |               | NV            | 40               | -64900         | -11.218669      | PASS    |



|                |      |      |    |    |        |            |      |
|----------------|------|------|----|----|--------|------------|------|
|                |      | 5825 | NV | 0  | -64900 | -11.141631 | PASS |
|                |      |      | NV | 10 | -64900 | -11.141631 | PASS |
|                |      |      | NV | 20 | -64900 | -11.141631 | PASS |
|                |      |      | NV | 30 | -64900 | -11.141631 | PASS |
|                |      |      | NV | 40 | -64900 | -11.141631 | PASS |
| 11AC40SIS<br>O | Ant1 | 5190 | NV | 0  | -57900 | -11.156069 | PASS |
|                |      |      | NV | 10 | -57900 | -11.156069 | PASS |
|                |      |      | NV | 20 | -57900 | -11.156069 | PASS |
|                |      |      | NV | 30 | -57900 | -11.156069 | PASS |
|                |      |      | NV | 40 | -57900 | -11.156069 | PASS |
|                |      | 5230 | NV | 0  | -58900 | -11.26195  | PASS |
|                |      |      | NV | 10 | -58900 | -11.26195  | PASS |
|                |      |      | NV | 20 | -58900 | -11.26195  | PASS |
|                |      |      | NV | 30 | -58900 | -11.26195  | PASS |
|                |      |      | NV | 40 | -58900 | -11.26195  | PASS |
|                |      | 5270 | NV | 0  | -58900 | -11.176471 | PASS |
|                |      |      | NV | 10 | -58900 | -11.176471 | PASS |
|                |      |      | NV | 20 | -58900 | -11.176471 | PASS |
|                |      |      | NV | 30 | -58900 | -11.176471 | PASS |
|                |      |      | NV | 40 | -58900 | -11.176471 | PASS |
|                |      | 5310 | NV | 0  | -59900 | -11.280603 | PASS |
|                |      |      | NV | 10 | -59900 | -11.280603 | PASS |
|                |      |      | NV | 20 | -59900 | -11.280603 | PASS |
|                |      |      | NV | 30 | -59900 | -11.280603 | PASS |
|                |      |      | NV | 40 | -58900 | -11.092279 | PASS |
|                |      | 5510 | NV | 0  | -61900 | -11.23412  | PASS |
|                |      |      | NV | 10 | -61900 | -11.23412  | PASS |
|                |      |      | NV | 20 | -61900 | -11.23412  | PASS |
|                |      |      | NV | 30 | -61900 | -11.23412  | PASS |
|                |      |      | NV | 40 | -61900 | -11.23412  | PASS |
|                |      | 5550 | NV | 0  | -61900 | -11.153153 | PASS |
|                |      |      | NV | 10 | -61900 | -11.153153 | PASS |
|                |      |      | NV | 20 | -61900 | -11.153153 | PASS |
|                |      |      | NV | 30 | -61900 | -11.153153 | PASS |
|                |      |      | NV | 40 | -61900 | -11.153153 | PASS |
|                |      | 5670 | NV | 0  | -63900 | -11.269841 | PASS |
|                |      |      | NV | 10 | -63900 | -11.269841 | PASS |
|                |      |      | NV | 20 | -63900 | -11.269841 | PASS |
|                |      |      | NV | 30 | -63900 | -11.269841 | PASS |
|                |      |      | NV | 40 | -63900 | -11.269841 | PASS |
|                |      | 5710 | NV | 0  | -63900 | -11.190893 | PASS |
|                |      |      | NV | 10 | -63900 | -11.190893 | PASS |
|                |      |      | NV | 20 | -63900 | -11.190893 | PASS |
|                |      |      | NV | 30 | -63900 | -11.190893 | PASS |
|                |      |      | NV | 40 | -63900 | -11.190893 | PASS |
|                |      | 5755 | NV | 0  | -64900 | -11.27715  | PASS |
|                |      |      | NV | 10 | -63900 | -11.103388 | PASS |
|                |      |      | NV | 20 | -64900 | -11.27715  | PASS |
|                |      |      | NV | 30 | -64900 | -11.27715  | PASS |
|                |      |      | NV | 40 | -63900 | -11.103388 | PASS |
|                |      | 5795 | NV | 0  | -64900 | -11.19931  | PASS |
|                |      |      | NV | 10 | -64900 | -11.19931  | PASS |
|                |      |      | NV | 20 | -64900 | -11.19931  | PASS |
|                |      |      | NV | 30 | -64900 | -11.19931  | PASS |
|                |      |      | NV | 40 | -64900 | -11.19931  | PASS |
| 11AC80SIS<br>O | Ant1 | 5210 | NV | 0  | -57900 | -11.113244 | PASS |
|                |      |      | NV | 10 | -57900 | -11.113244 | PASS |
|                |      |      | NV | 20 | -57900 | -11.113244 | PASS |
|                |      |      | NV | 30 | -57900 | -11.113244 | PASS |
|                |      |      | NV | 40 | -57900 | -11.113244 | PASS |
|                |      | 5290 | NV | 0  | -58900 | -11.134216 | PASS |
|                |      |      | NV | 10 | -58900 | -11.134216 | PASS |
|                |      |      | NV | 20 | -58900 | -11.134216 | PASS |
|                |      |      | NV | 30 | -58900 | -11.134216 | PASS |
|                |      |      | NV | 40 | -58900 | -11.134216 | PASS |



|  |      |    |    |        |            |      |
|--|------|----|----|--------|------------|------|
|  |      | NV | 40 | -58900 | -11.134216 | PASS |
|  | 5530 | NV | 0  | -61900 | -11.19349  | PASS |
|  |      | NV | 10 | -61900 | -11.19349  | PASS |
|  |      | NV | 20 | -61900 | -11.19349  | PASS |
|  |      | NV | 30 | -61900 | -11.19349  | PASS |
|  |      | NV | 40 | -61900 | -11.19349  | PASS |
|  | 5610 | NV | 0  | -62900 | -11.212121 | PASS |
|  |      | NV | 10 | -62900 | -11.212121 | PASS |
|  |      | NV | 20 | -62900 | -11.212121 | PASS |
|  |      | NV | 30 | -62900 | -11.212121 | PASS |
|  |      | NV | 40 | -62900 | -11.212121 | PASS |
|  | 5690 | NV | 0  | -63900 | -11.230228 | PASS |
|  |      | NV | 10 | -63900 | -11.230228 | PASS |
|  |      | NV | 20 | -63900 | -11.230228 | PASS |
|  |      | NV | 30 | -63900 | -11.230228 | PASS |
|  |      | NV | 40 | -63900 | -11.230228 | PASS |
|  | 5775 | NV | 0  | -64900 | -11.238095 | PASS |
|  |      | NV | 10 | -64900 | -11.238095 | PASS |
|  |      | NV | 20 | -64900 | -11.238095 | PASS |
|  |      | NV | 30 | -64900 | -11.238095 | PASS |
|  |      | NV | 40 | -64900 | -11.238095 | PASS |

## 9.7 Dynamic Frequency Selection (DFS)

### 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

### 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             |

## Test Limited

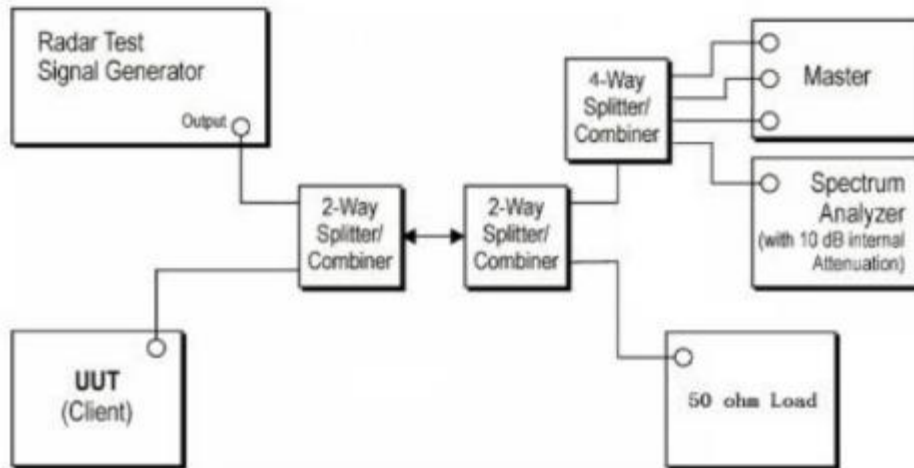
According to KDB 905462 D02 Table 4 DFS Response Requirement Values

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

## 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:

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

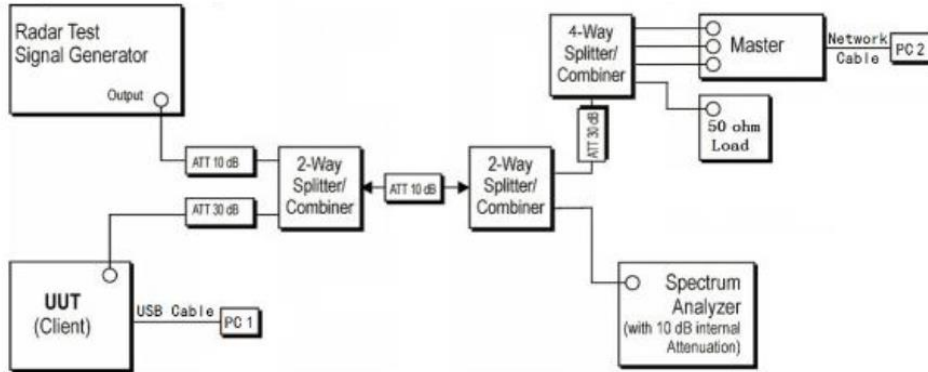
Block Diagram of test setup test procedure.

- (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:  $D_{well} (3.0) = S(12000ms)/B(4000)$ ; 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:  $C(ms) = N \times D_{well} (0.3ms)$ ; 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.



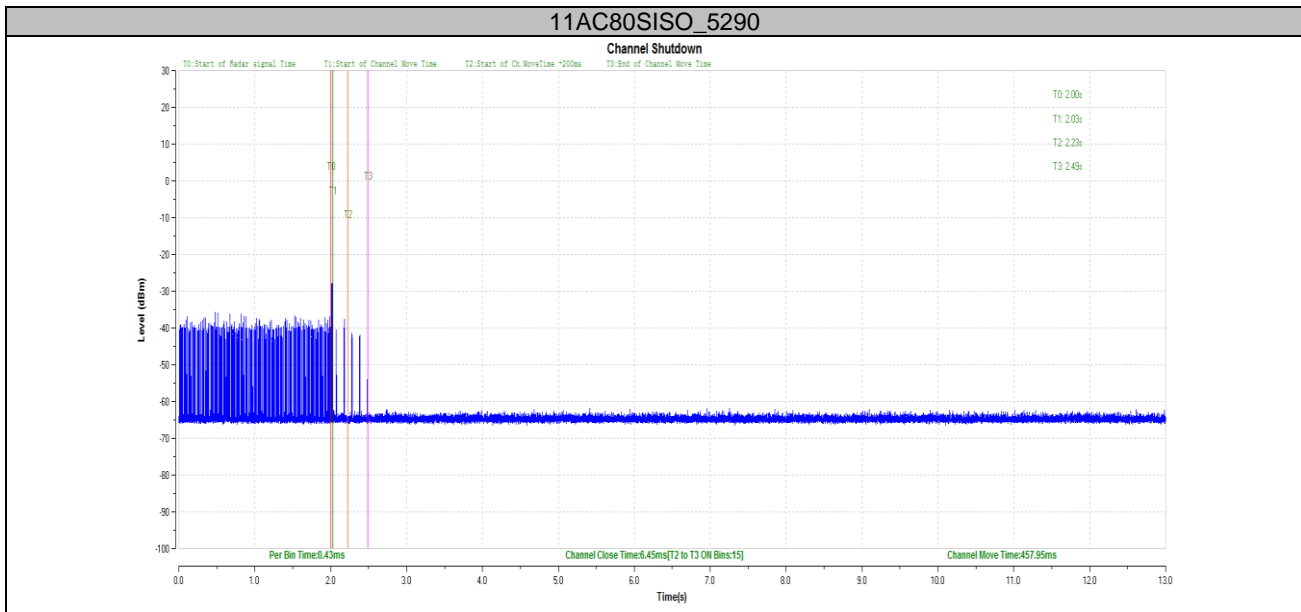
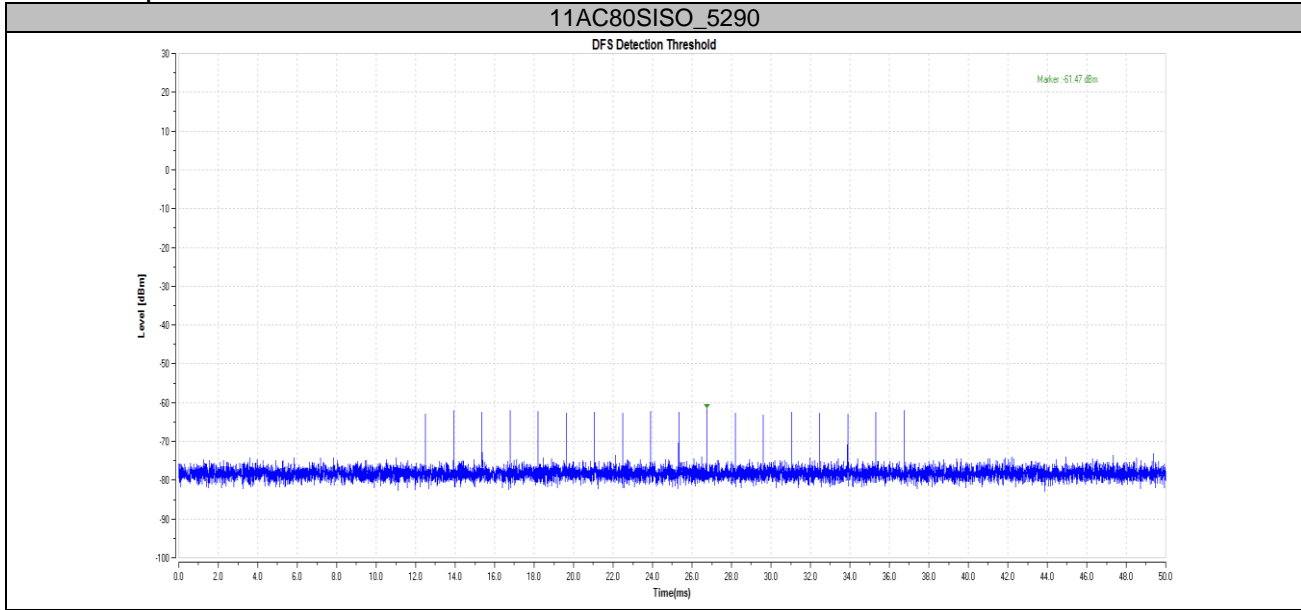
**Test Result**

| 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       |

| TestMode   | Channel | CCT[ms] | Limit[ms] | CMT[ms] | Limit[ms] | Verdict |
|------------|---------|---------|-----------|---------|-----------|---------|
| 11AC80SISO | 5290    | 6.45    | 60        | 457.95  | 10000     | PASS    |



### Test Graphs



## 10 Test Equipment List

### Conducted Emission Test

| Description       | Manufacturer      | Model no. | Serial no.     | cal. due date |
|-------------------|-------------------|-----------|----------------|---------------|
| EMI Test Receiver | Rohde & Schwarz   | ESR 3     | 101782         | 2021-6-29     |
| LISN              | Rohde & Schwarz   | ENV4200   | 100249         | 2021-6-12     |
| Attenuator        | Shanghai Huaxiang | TS2-26-3  | 080928189      | 2021-6-21     |
| Test software     | Rohde & Schwarz   | EMC32     | Version9.15.00 | N/A           |

### Radiated Emission Test

| DESCRIPTION                         | MANUFACTURER    | MODEL NO.         | SERIAL NO.      | CAL. DUE DATE |
|-------------------------------------|-----------------|-------------------|-----------------|---------------|
| EMI Test Receiver                   | Rohde & Schwarz | ESR 26            | 101269          | 2021-6-29     |
| High Pass Filter (HPF)              | UCL             | UCL-BPF1-7G       | 1504005103      | 2021-6-28     |
| Trilog Super Broadband Test Antenna | Schwarzbeck     | VULB 9163         | 707             | 2021-8-20     |
| Horn Antenna                        | Rohde & Schwarz | HF907             | 102295          | 2021-6-22     |
| Wideband Horn Antenna               | Q-PAR           | QWH-SL-18-40-K-SG | 12827           | 2021-7-12     |
| Pre-amplifier                       | Rohde & Schwarz | SCU 18            | 102230          | 2021-6-21     |
| Pre-amplifier                       | Rohde & Schwarz | SCU 40A           | 100432          | 2021-7-16     |
| Attenuator                          | Agilent         | 8491A             | MY39264334      | 2021-6-21     |
| 3m Semi-anechoic chamber            | TDK             | 9X6X6             | ----            | 2022-10-28    |
| Test software                       | Rohde & Schwarz | EMC32             | Version 9.15.00 | N/A           |

### RF conducted test

| DESCRIPTION      | MANUFACTURER    | MODEL NO.          | SERIAL NO.    | CAL. DUE DATE |
|------------------|-----------------|--------------------|---------------|---------------|
| Signal Analyzer  | Rohde & Schwarz | FSV40              | 101030        | 2021-6-21     |
| RF Switch Module | Rohde & Schwarz | OSP120/OSP-B157    | 101226/100851 | 2021-6-21     |
| Power Splitter   | Weinschel       | 1580               | SC319         | 2021-7-7      |
| RF Switch Module | Rohde & Schwarz | OSP120/OSP-B157    | 101226/100851 | 2021-6-21     |
| 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:

| System Measurement Uncertainty  |   |
|---|---|
| Test Items  | Extended Uncertainty  |
| Uncertainty for Conducted Emission 150kHz-30MHz<br>(for test using AMN ENV432 or ENV4200) | 3.62dB  |
| Uncertainty for Radiated Spurious Emission 25MHz-3000MHz                                  | Horizontal: 4.81dB;<br>Vertical: 4.89dB;  |
| Uncertainty for Radiated Spurious Emission 3000MHz-18000MHz                               | Horizontal: 4.69dB;<br>Vertical: 4.68dB;  |
| Uncertainty for Radiated Spurious Emission 18000MHz-40000MHz                              | Horizontal: 4.89dB;<br>Vertical: 4.87dB;  |
| Uncertainty for Conducted RF test   | RF Power Conducted: 1.16dB<br>Frequency test involved: $0.6 \times 10^{-7}$ or 1% |

---The End---