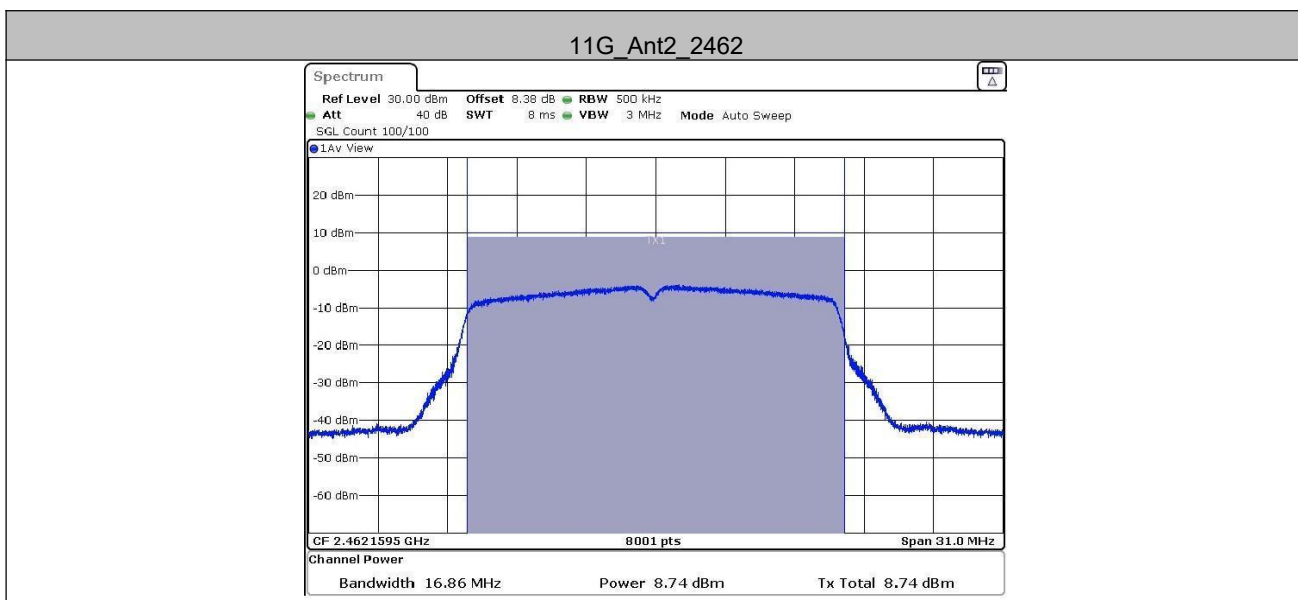
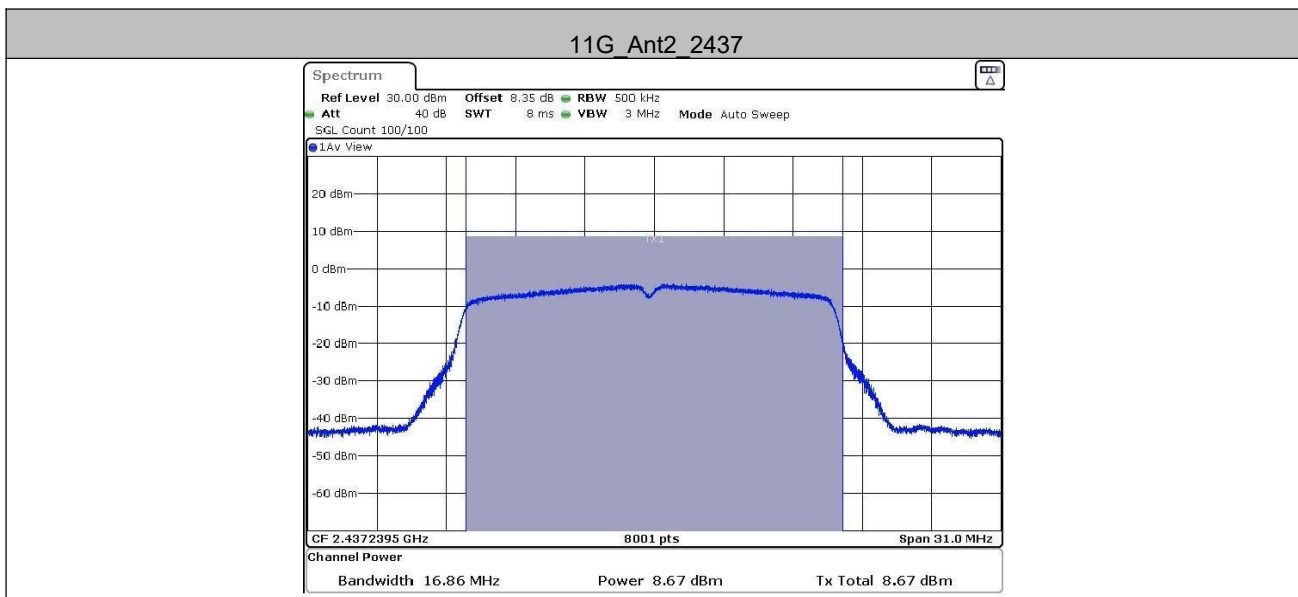
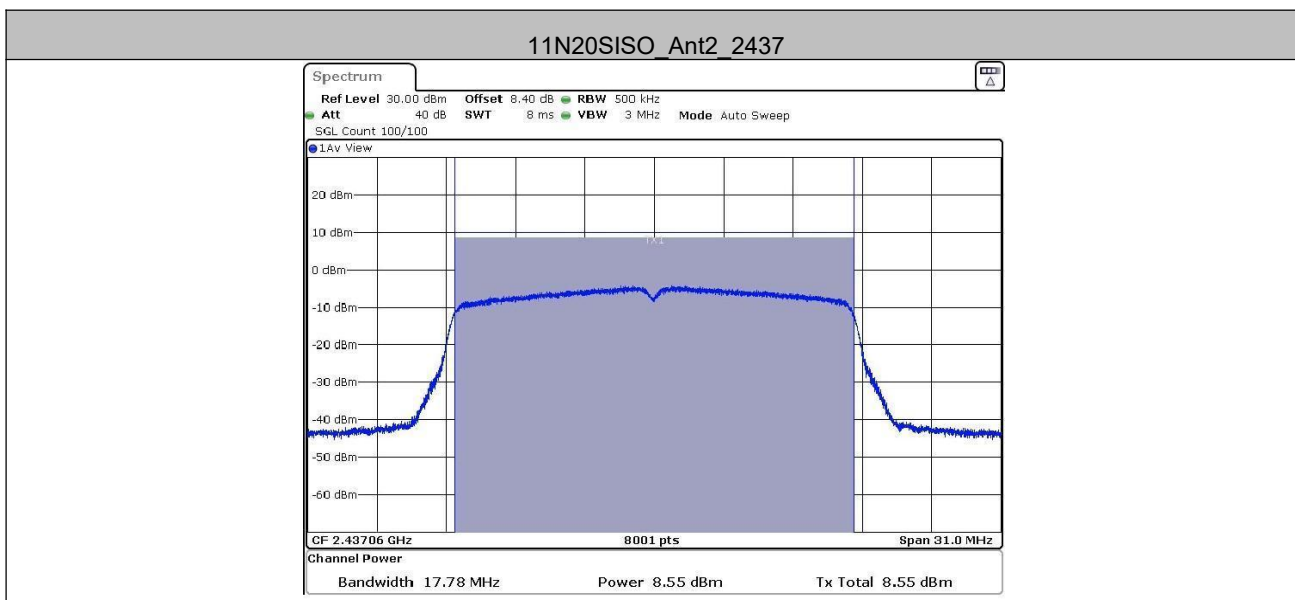
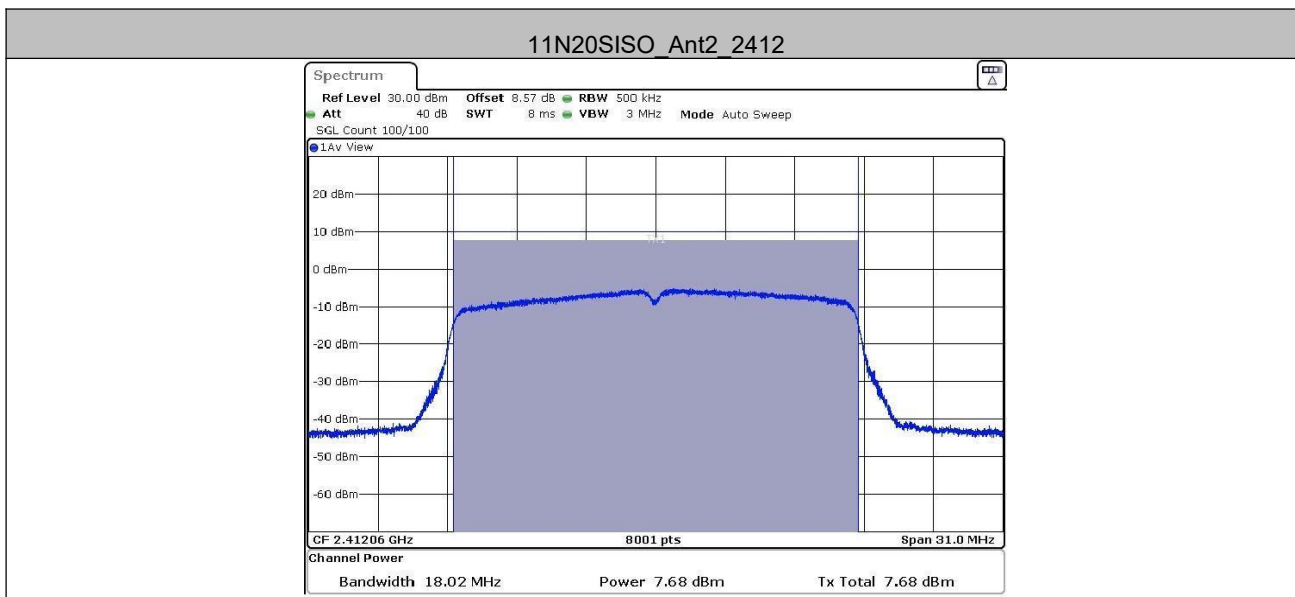
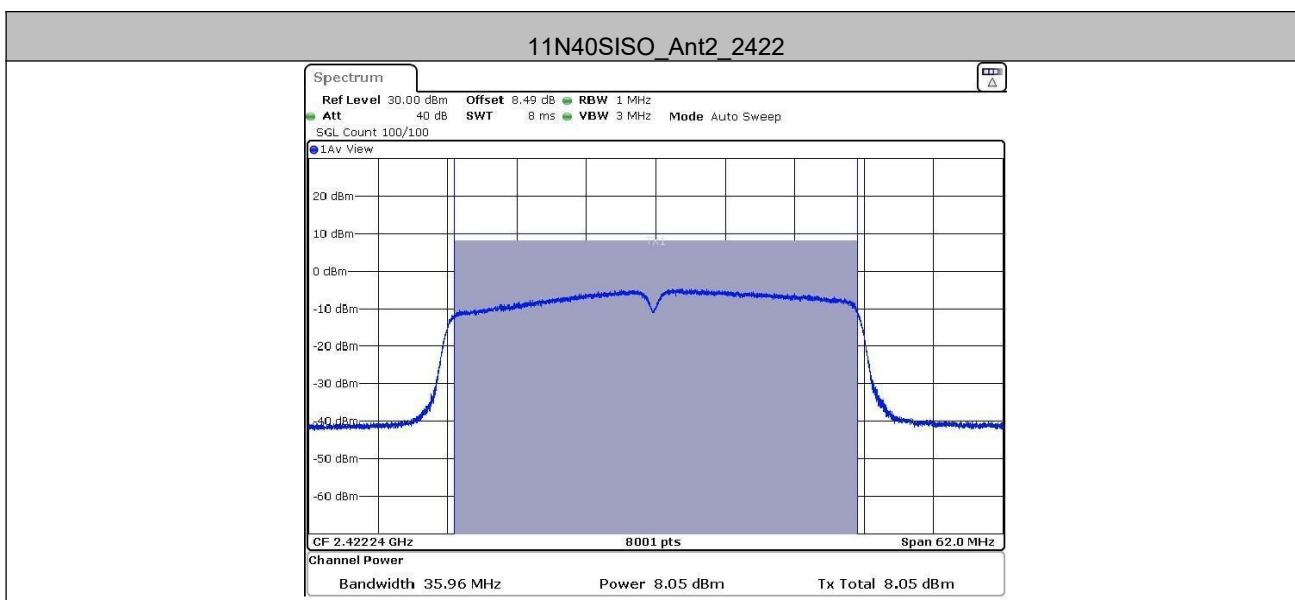
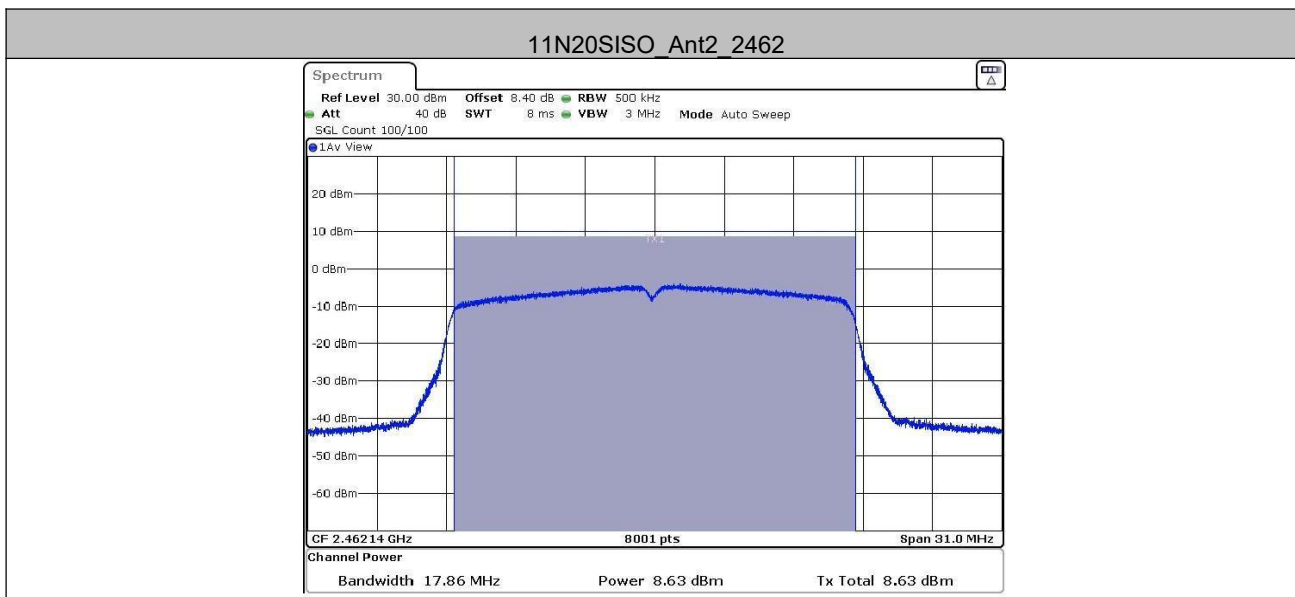
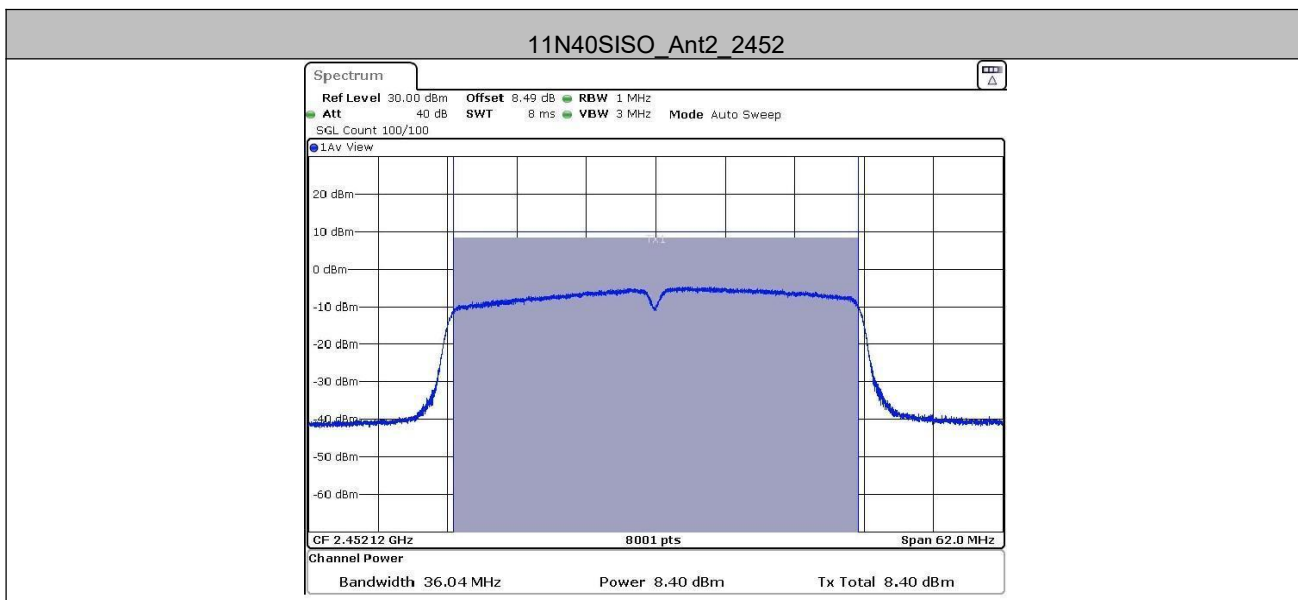
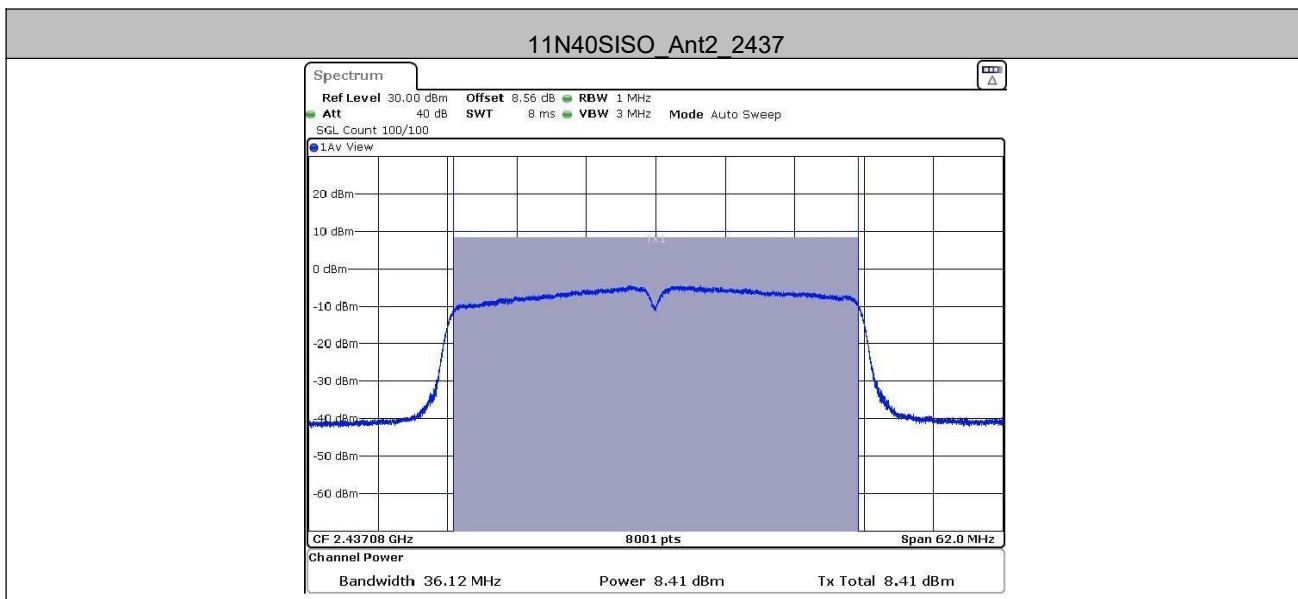


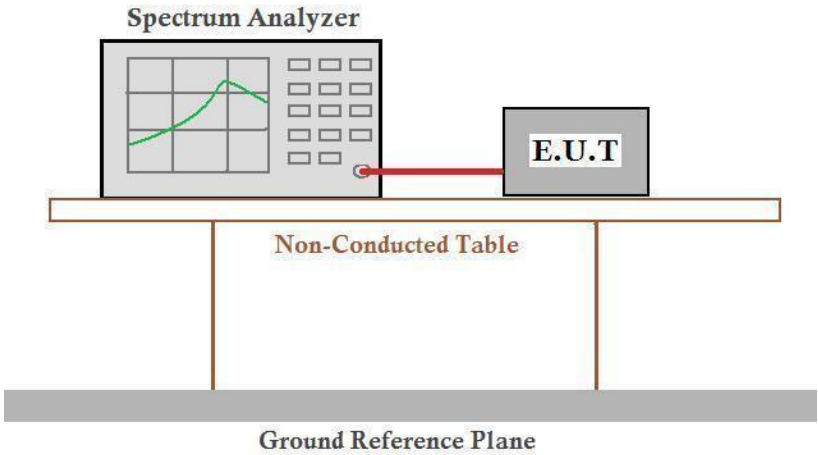








## 5.4 6dB Occupy Bandwidth

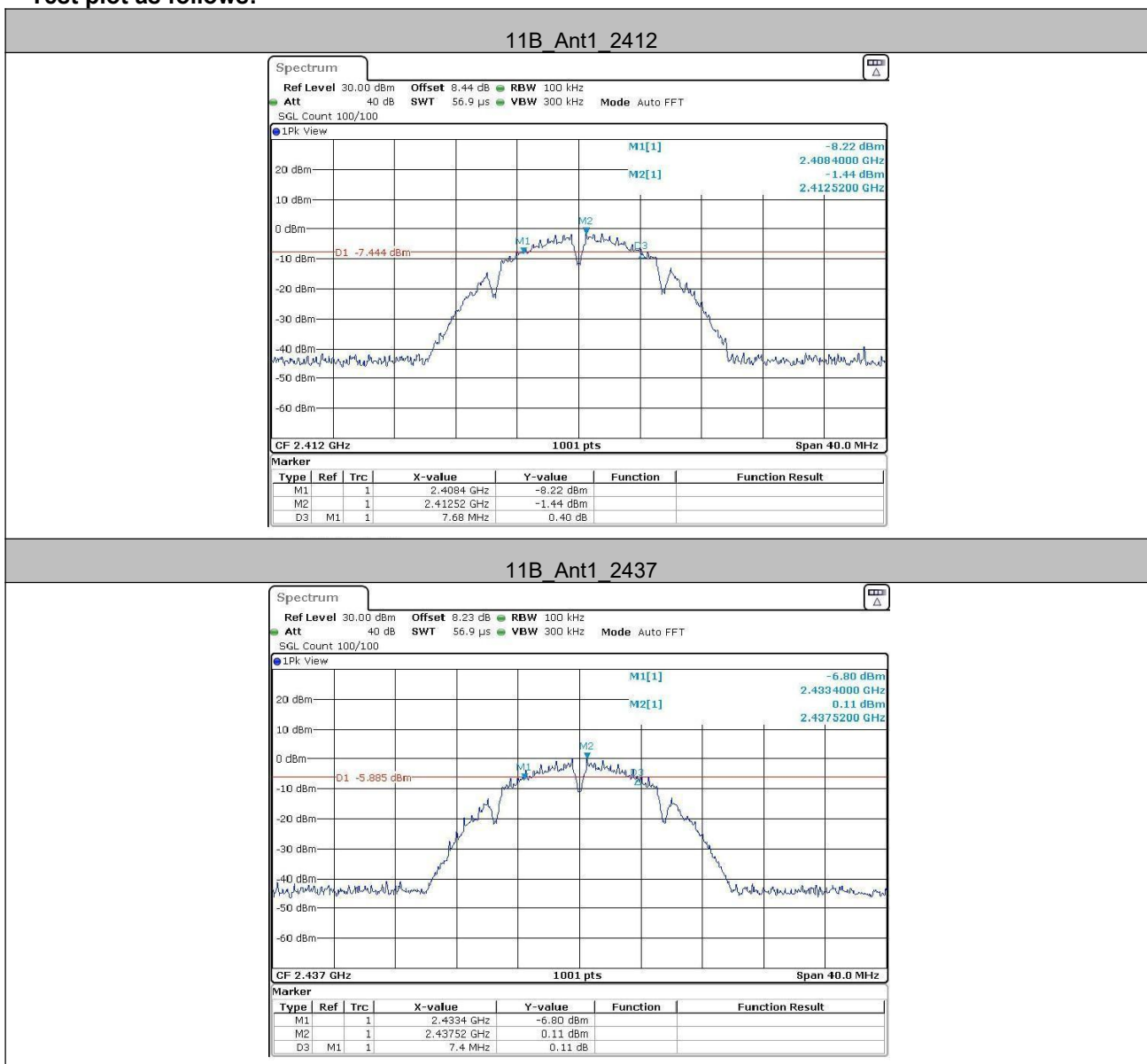
|                        |                                                                                                                                                                                                                                                                               |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement:      | 47 CFR Part 15C Section 15.247 (a)(2)                                                                                                                                                                                                                                         |
| Test Method:           | ANSI C63.10: 2013                                                                                                                                                                                                                                                             |
| Test Setup:            |  <p>Offset=cable loss+ attenuation factor</p>                                                                                                                                               |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates                                                                                                                                                                                                                         |
| Final Test Mode:       | Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20); 13.5Mbps of rate is the worst case of 802.11n(HT40).<br>Only the worst case is recorded in the report. |
| Limit:                 | ≥ 500 kHz                                                                                                                                                                                                                                                                     |
| Test Results:          | Pass                                                                                                                                                                                                                                                                          |

## Measurement Data

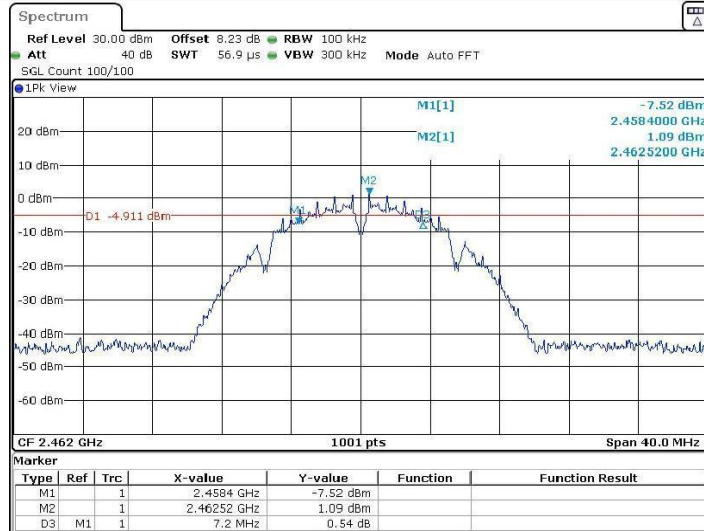
| TestMode  | Antenna | Channel | DTS BW<br>[MHz] | FL[MHz]  | FH[MHz]  | Limit[MHz] | Verdict |
|-----------|---------|---------|-----------------|----------|----------|------------|---------|
| 11B       | Ant1    | 2412    | 7.680           | 2408.400 | 2416.080 | 0.5        | PASS    |
|           |         | 2437    | 7.400           | 2433.400 | 2440.800 | 0.5        | PASS    |
|           |         | 2462    | 7.200           | 2458.400 | 2465.600 | 0.5        | PASS    |
| 11G       | Ant1    | 2412    | 16.400          | 2403.800 | 2420.200 | 0.5        | PASS    |
|           |         | 2437    | 13.920          | 2430.640 | 2444.560 | 0.5        | PASS    |
|           |         | 2462    | 16.400          | 2453.800 | 2470.200 | 0.5        | PASS    |
| 11N20SISO | Ant1    | 2412    | 17.640          | 2403.200 | 2420.840 | 0.5        | PASS    |
|           |         | 2437    | 17.640          | 2428.200 | 2445.840 | 0.5        | PASS    |
|           |         | 2462    | 17.040          | 2453.800 | 2470.840 | 0.5        | PASS    |
| 11N40SISO | Ant1    | 2422    | 32.800          | 2406.880 | 2439.680 | 0.5        | PASS    |
|           |         | 2437    | 35.920          | 2419.320 | 2455.240 | 0.5        | PASS    |
|           |         | 2452    | 30.160          | 2439.440 | 2469.600 | 0.5        | PASS    |

| TestMode  | Antenna | Channel | DTS BW<br>[MHz] | FL[MHz]  | FH[MHz]  | Limit[MHz] | Verdict |
|-----------|---------|---------|-----------------|----------|----------|------------|---------|
| 11B       | Ant2    | 2412    | 8.160           | 2407.920 | 2416.080 | 0.5        | PASS    |
|           |         | 2437    | 8.160           | 2432.920 | 2441.080 | 0.5        | PASS    |
|           |         | 2462    | 8.120           | 2457.960 | 2466.080 | 0.5        | PASS    |
| 11G       | Ant2    | 2412    | 15.760          | 2404.440 | 2420.200 | 0.5        | PASS    |
|           |         | 2437    | 16.400          | 2428.800 | 2445.200 | 0.5        | PASS    |
|           |         | 2462    | 16.120          | 2454.080 | 2470.200 | 0.5        | PASS    |
| 11N20SISO | Ant2    | 2412    | 17.720          | 2403.160 | 2420.880 | 0.5        | PASS    |
|           |         | 2437    | 13.960          | 2429.400 | 2443.360 | 0.5        | PASS    |
|           |         | 2462    | 16.040          | 2454.400 | 2470.440 | 0.5        | PASS    |
| 11N40SISO | Ant2    | 2422    | 35.440          | 2404.400 | 2439.840 | 0.5        | PASS    |
|           |         | 2437    | 34.640          | 2420.600 | 2455.240 | 0.5        | PASS    |
|           |         | 2452    | 28.400          | 2441.280 | 2469.680 | 0.5        | PASS    |

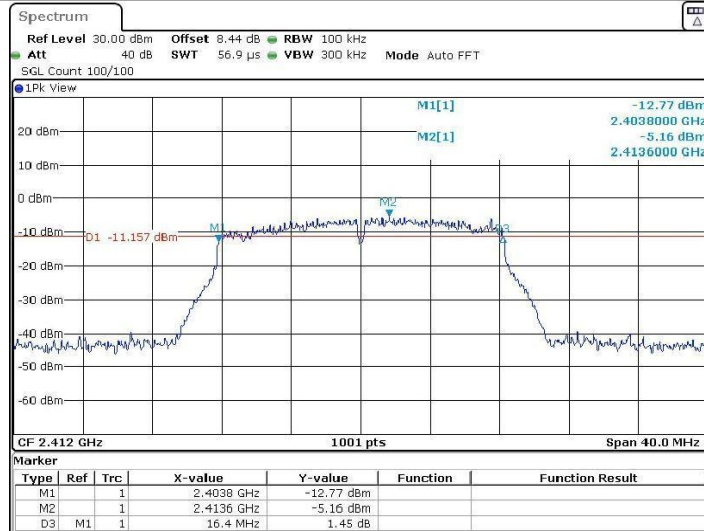
Test plot as follows:



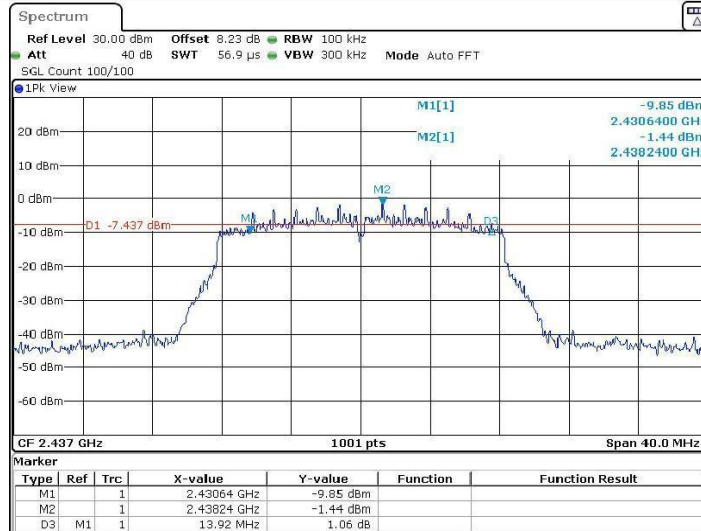
11B\_Ant1\_2462



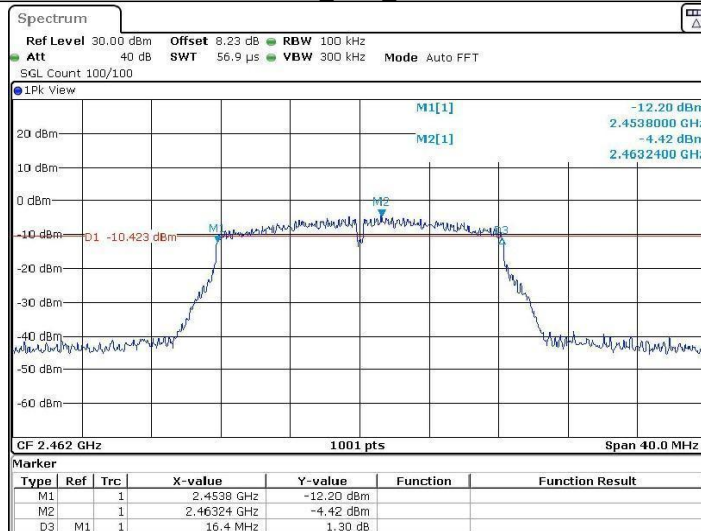
11G\_Ant1\_2412



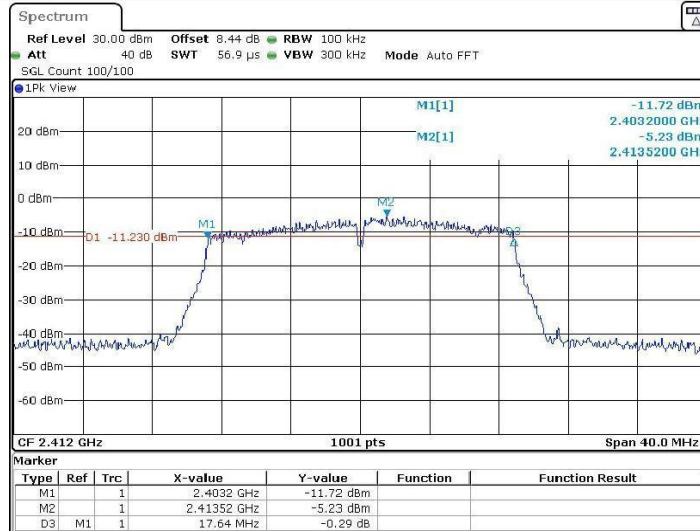
11G\_Ant1\_2437



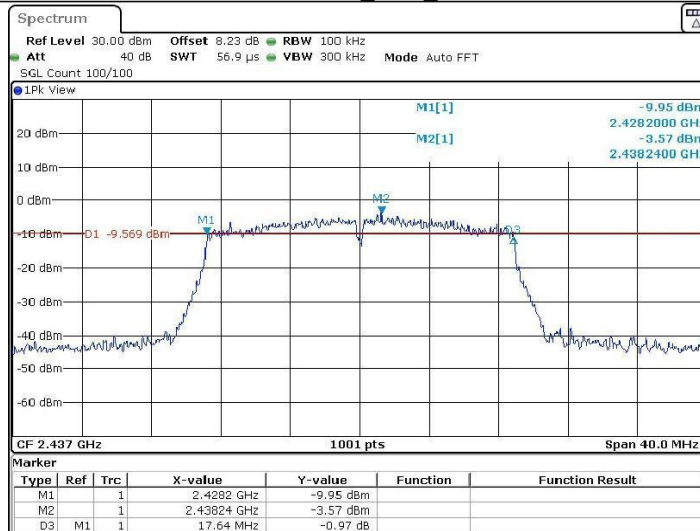
11G\_Ant1\_2462



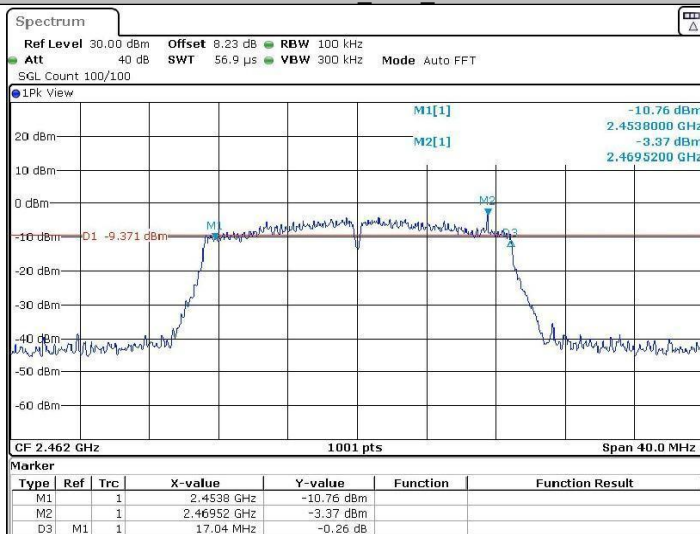
11N20SISO\_Ant1\_2412



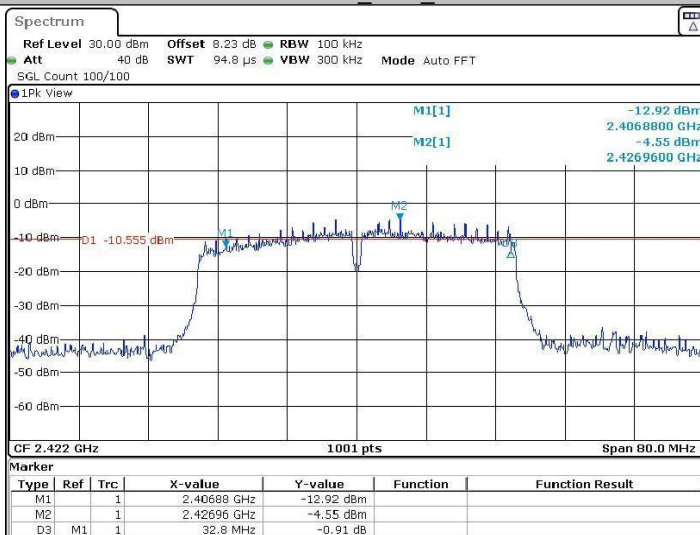
11N20SISO\_Ant1\_2437



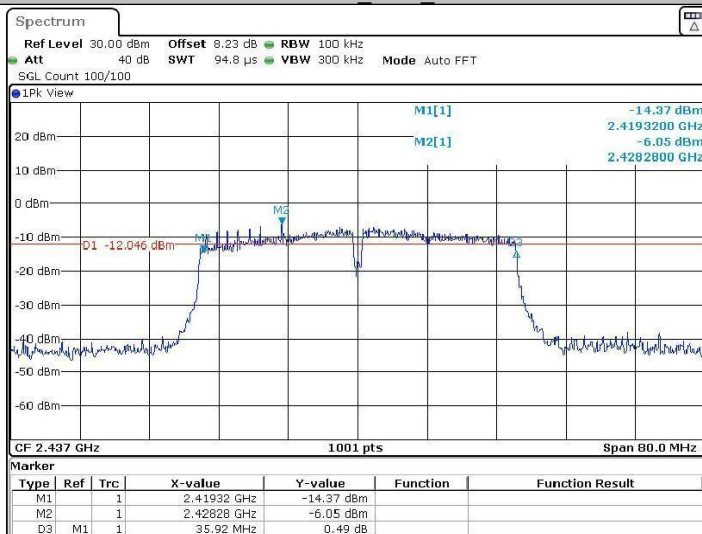
11N20SISO\_Ant1\_2462



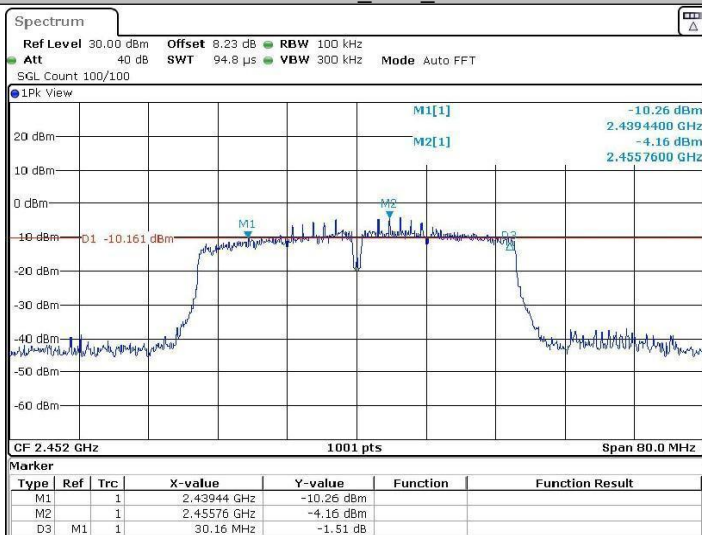
11N40SISO\_Ant1\_2422



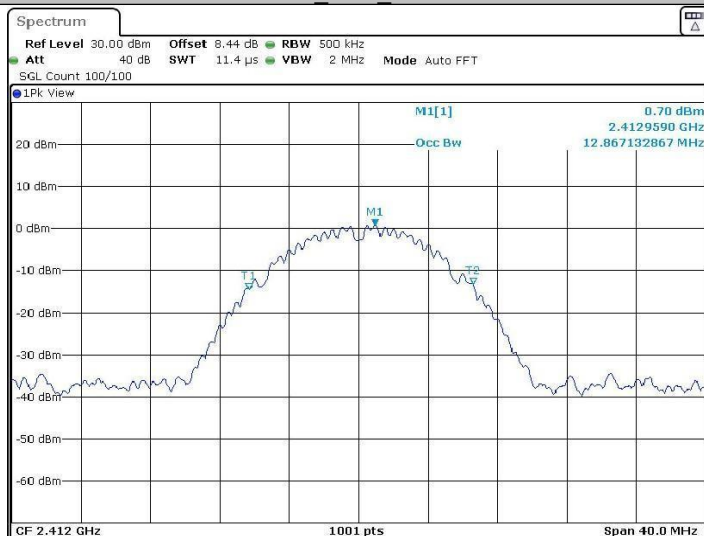
11N40SISO\_Ant1\_2437



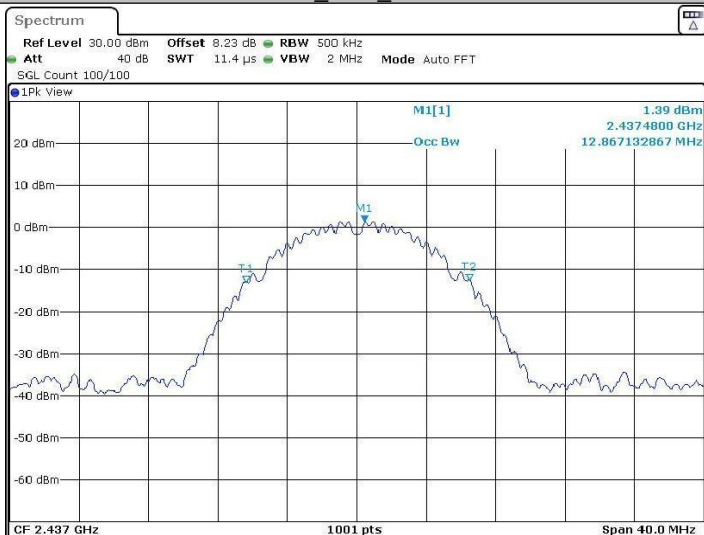
11N40SISO\_Ant1\_2452



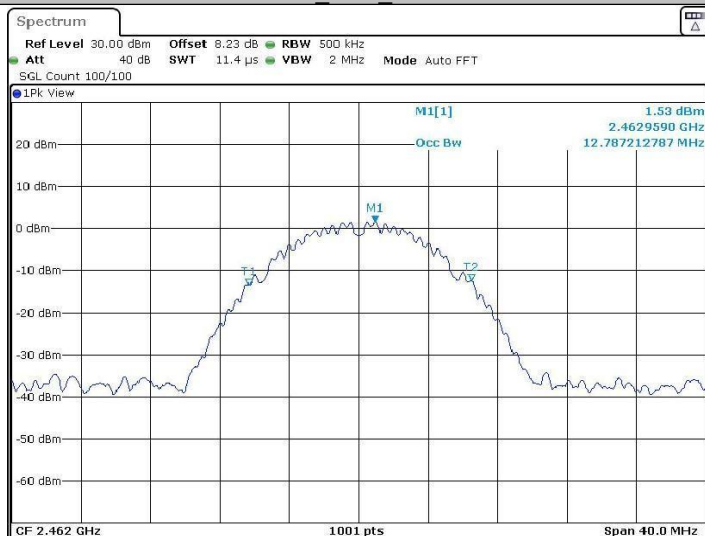
11B\_Ant1\_2412



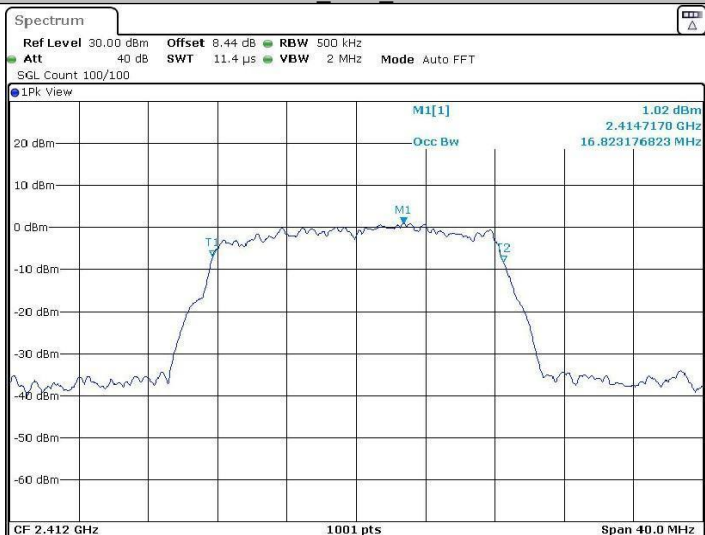
11B\_Ant1\_2437



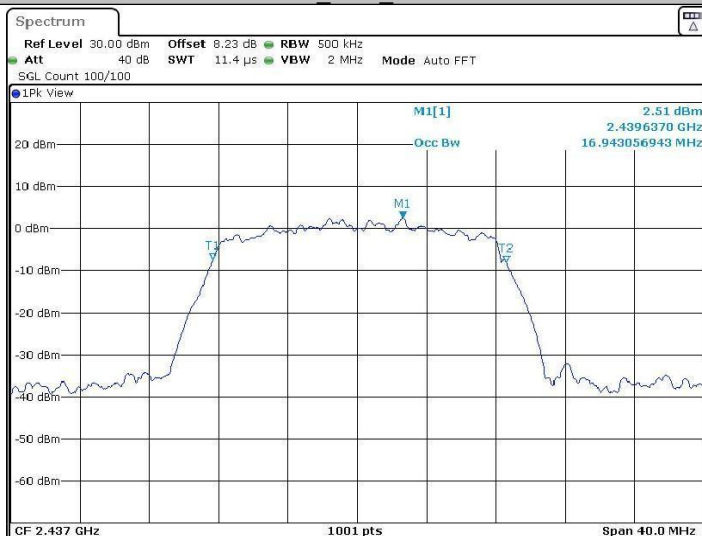
11B\_Ant1\_2462



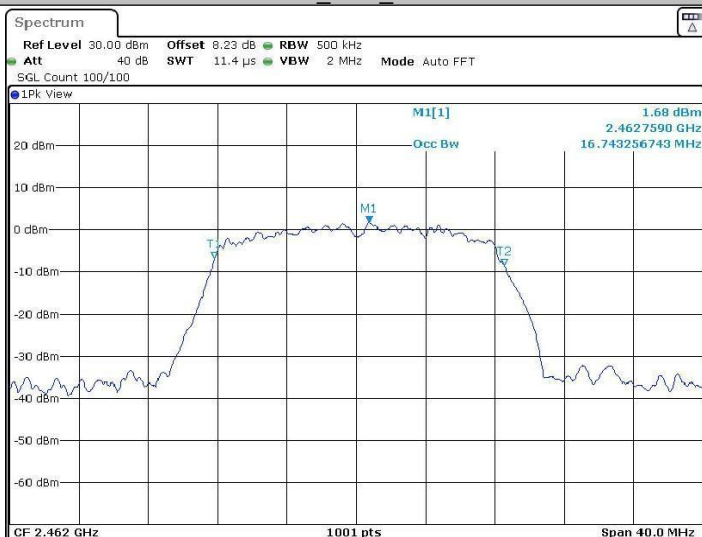
11G\_Ant1\_2412



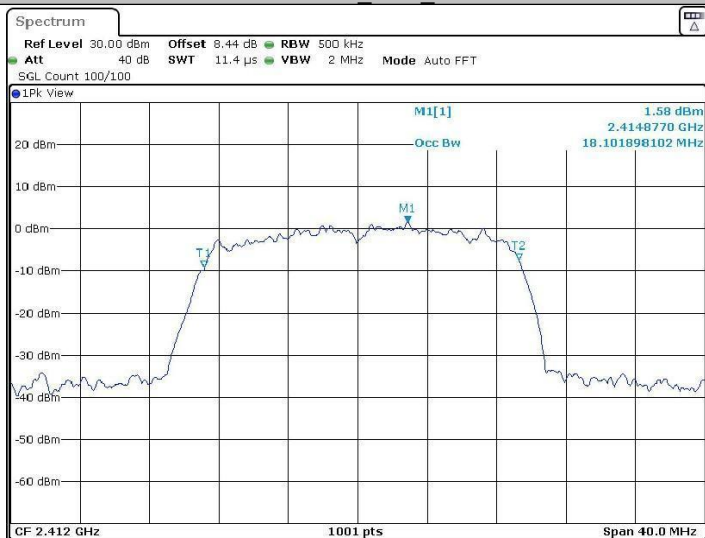
11G\_Ant1\_2437



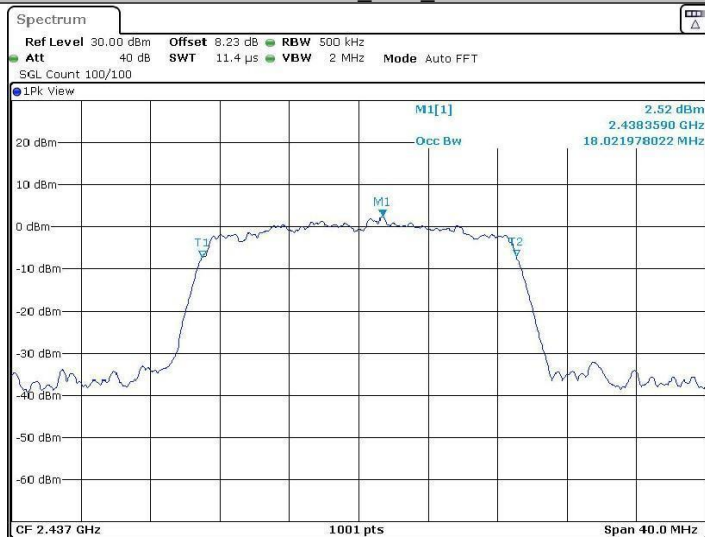
11G\_Ant1\_2462



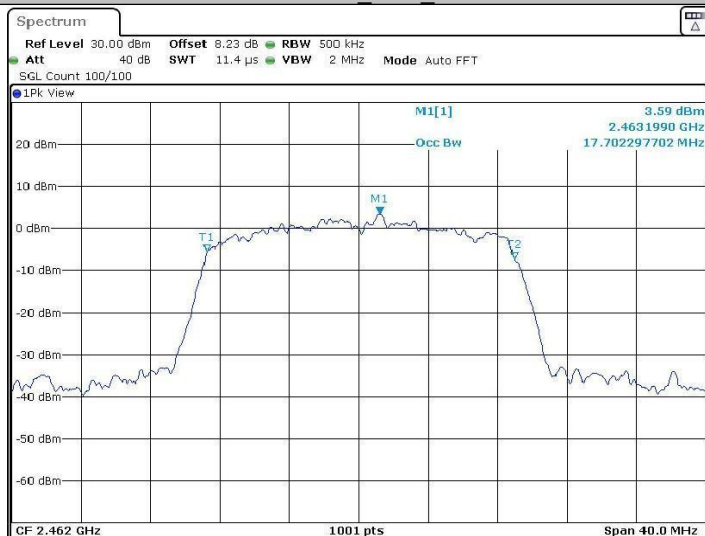
11N20SISO\_Ant1\_2412



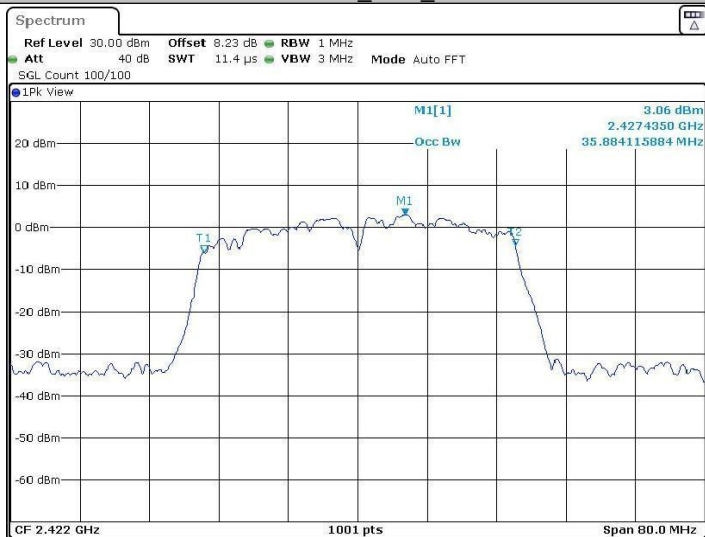
11N20SISO\_Ant1\_2437



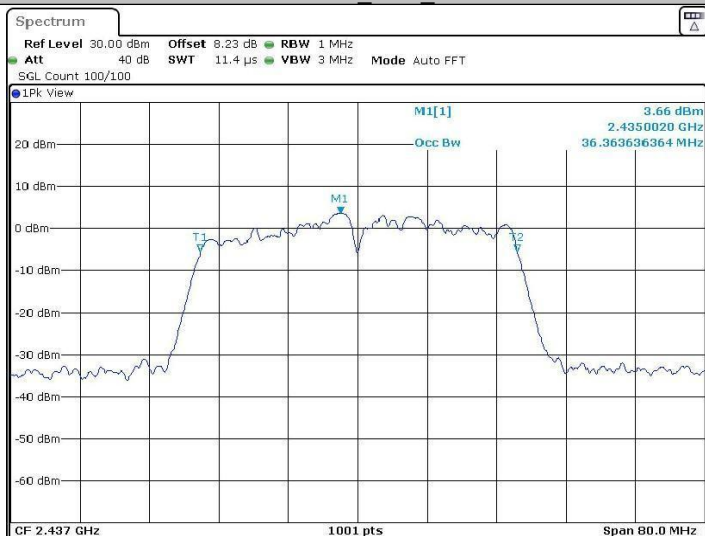
11N20SISO\_Ant1\_2462



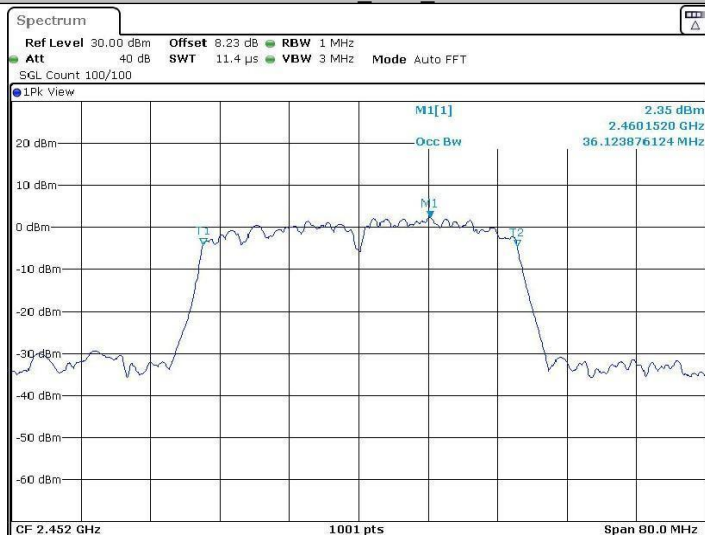
11N40SISO\_Ant1\_2422



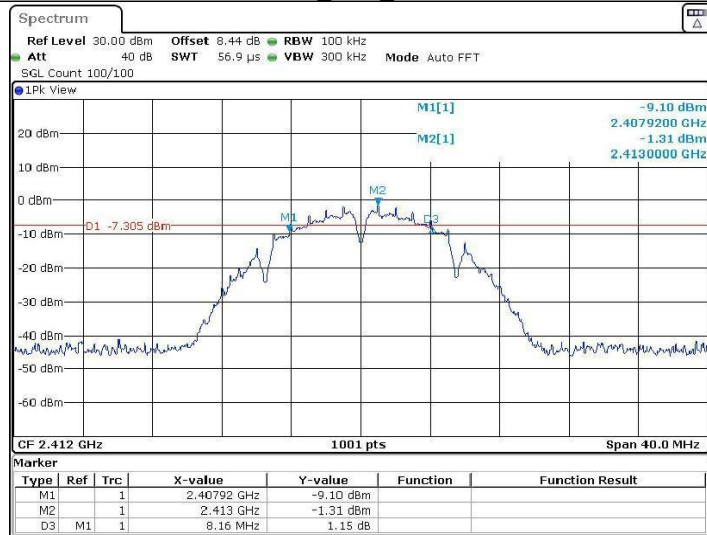
11N40SISO\_Ant1\_2437



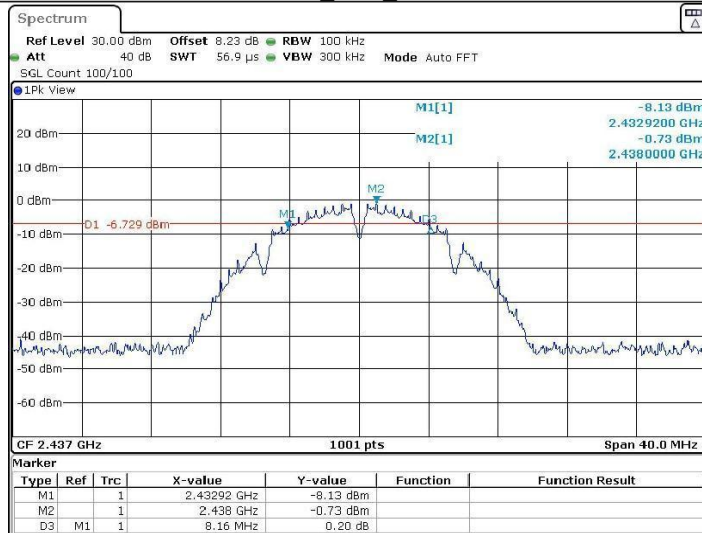
11N40SISO\_Ant1\_2452



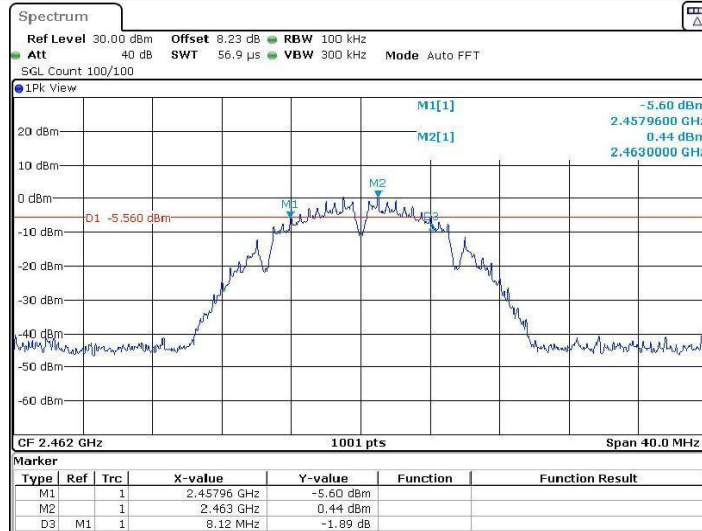
11B\_Ant2\_2412



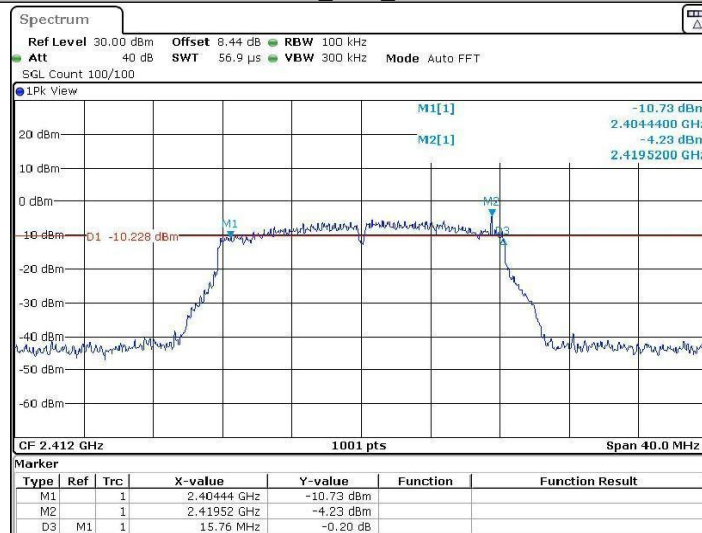
11B\_Ant2\_2437



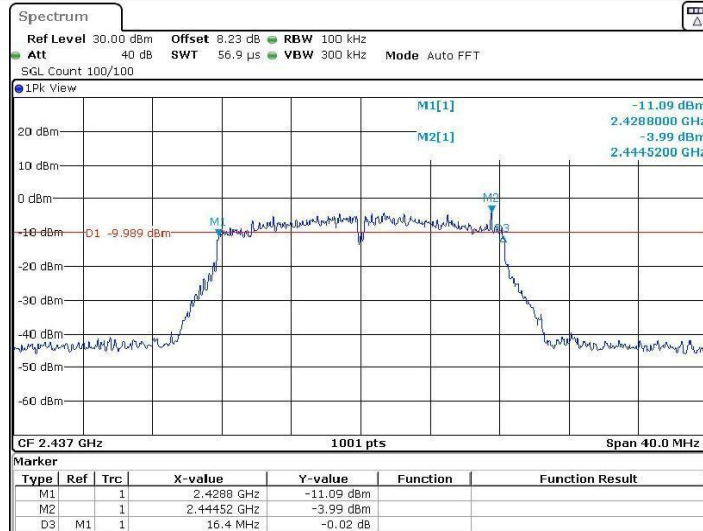
11B\_Ant2\_2462



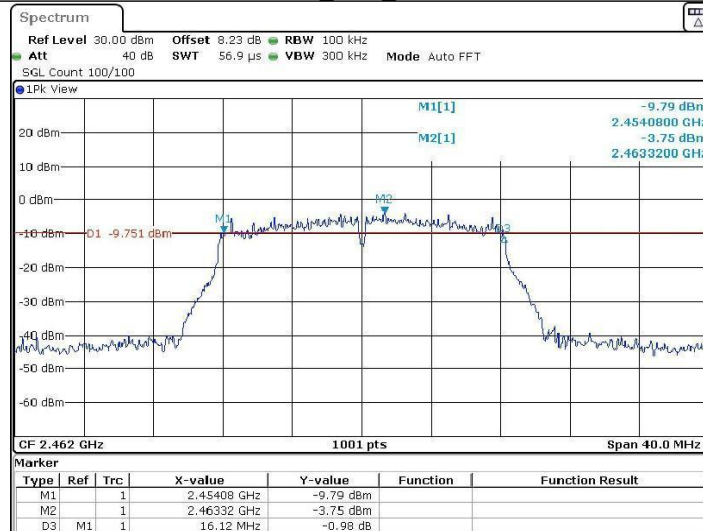
11G\_Ant2\_2412



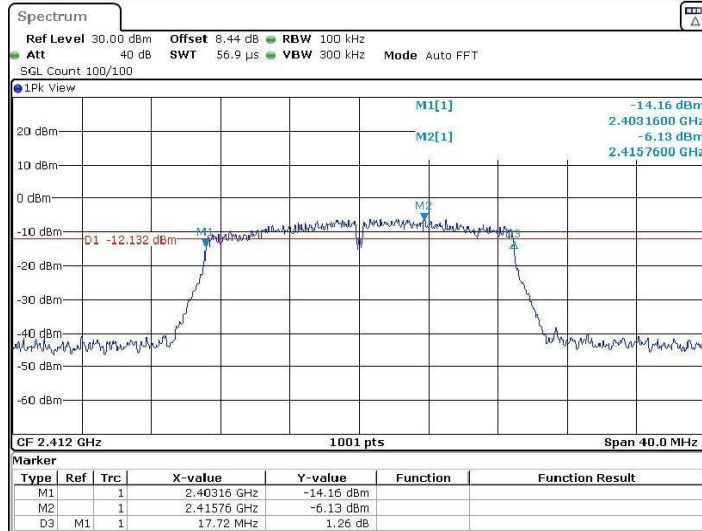
11G\_Ant2\_2437



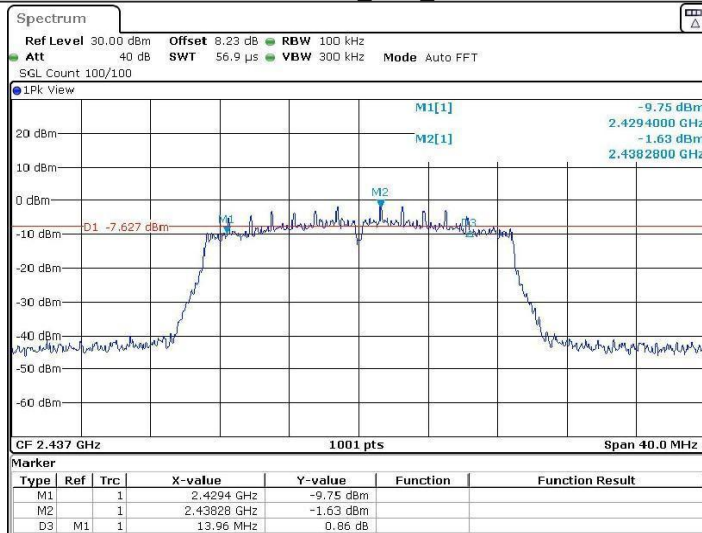
11G\_Ant2\_2462



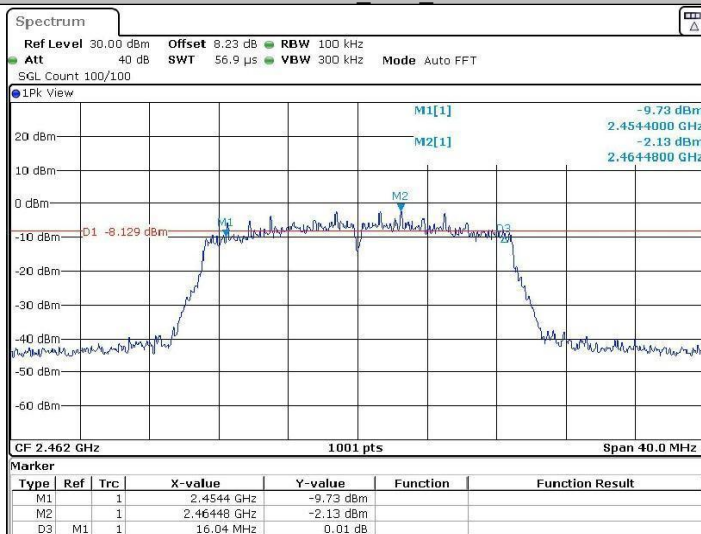
11N20SISO\_Ant2\_2412



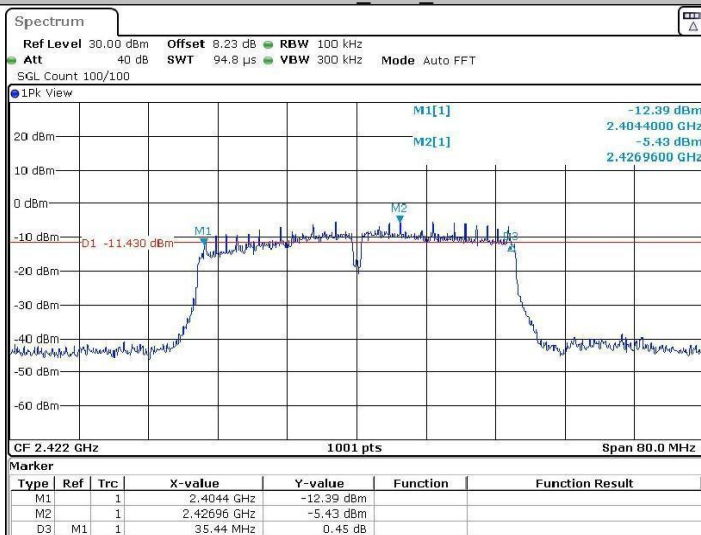
11N20SISO\_Ant2\_2437



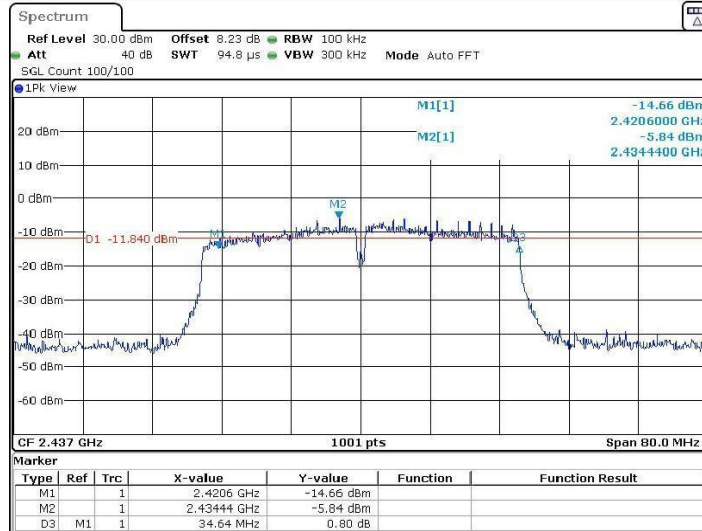
11N20SISO\_Ant2\_2462



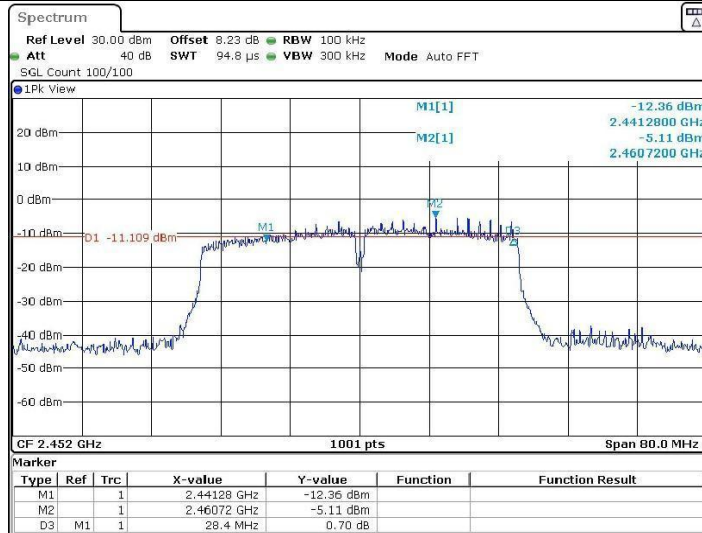
11N40SISO\_Ant2\_2422



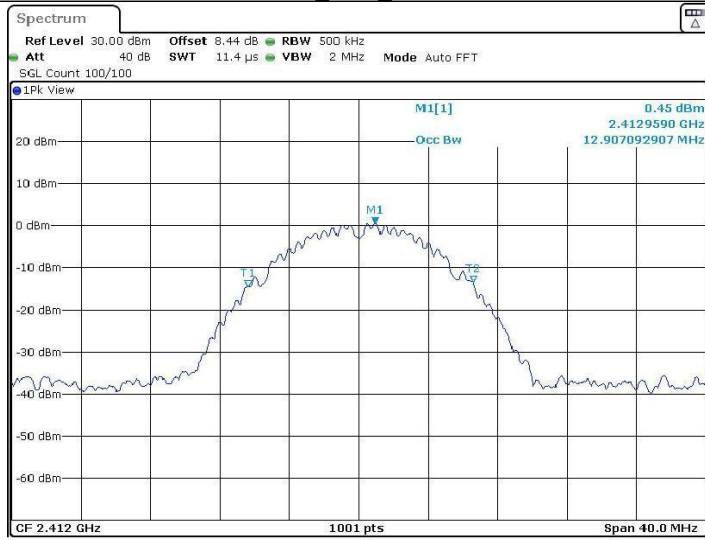
11N40SISO\_Ant2\_2437



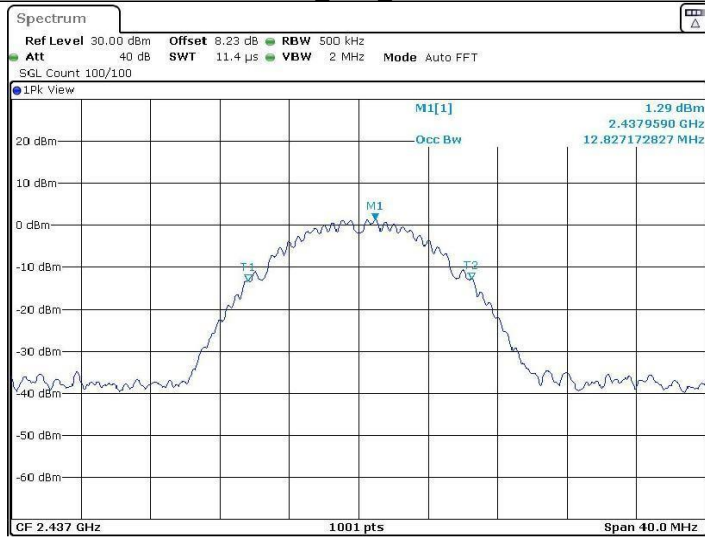
11N40SISO\_Ant2\_2452



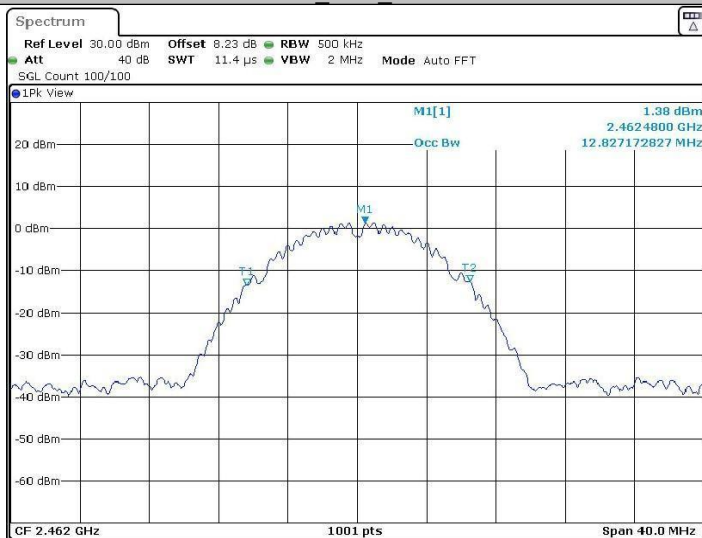
11B\_Ant2\_2412



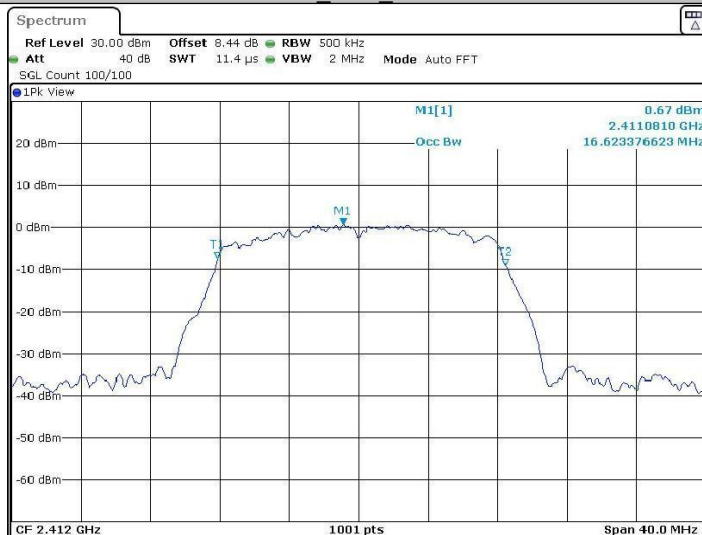
11B\_Ant2\_2437



11B\_Ant2\_2462



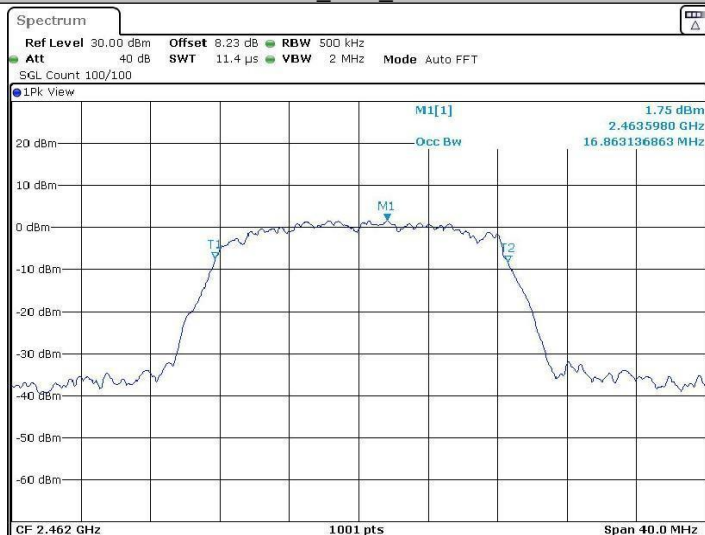
11G\_Ant2\_2412



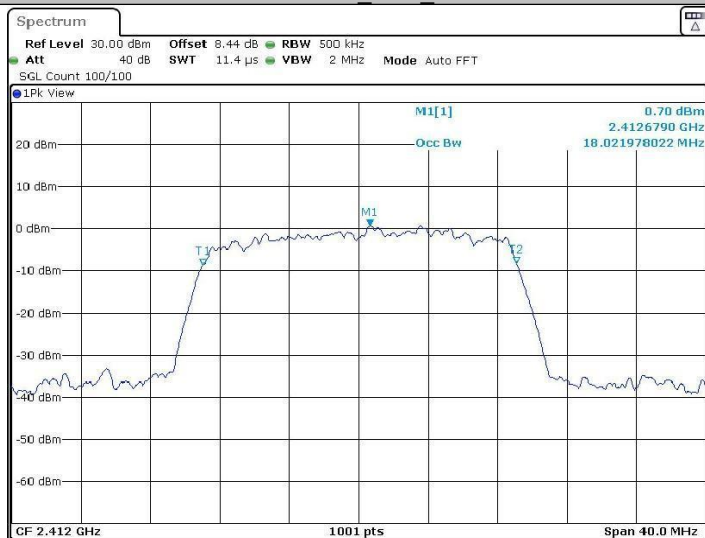
11G\_Ant2\_2437



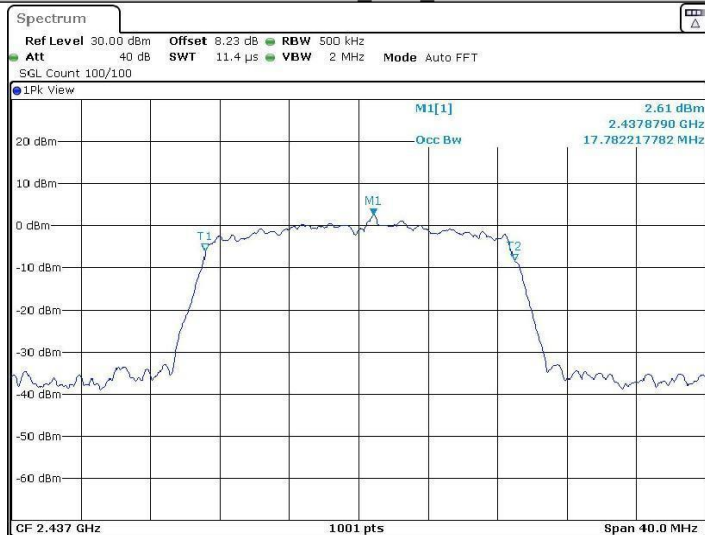
11G\_Ant2\_2462



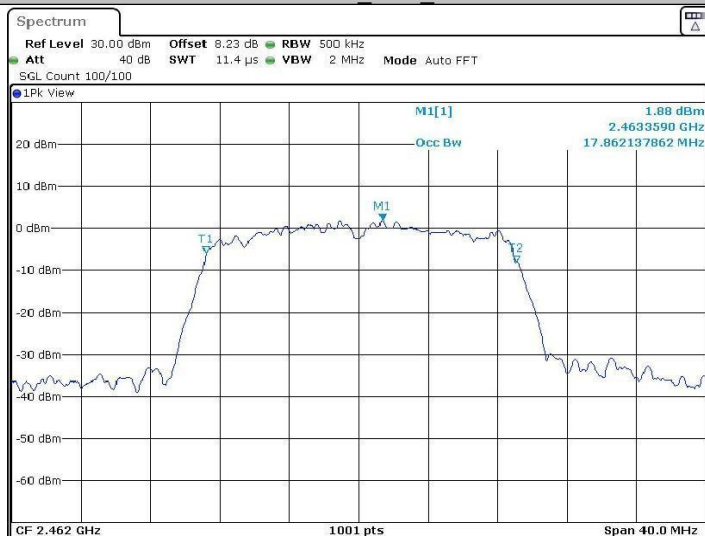
11N20SISO\_Ant2\_2412



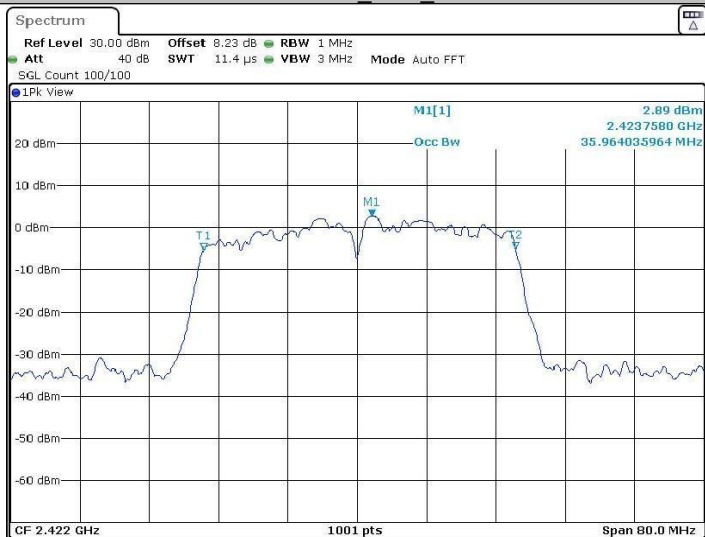
11N20SISO\_Ant2\_2437



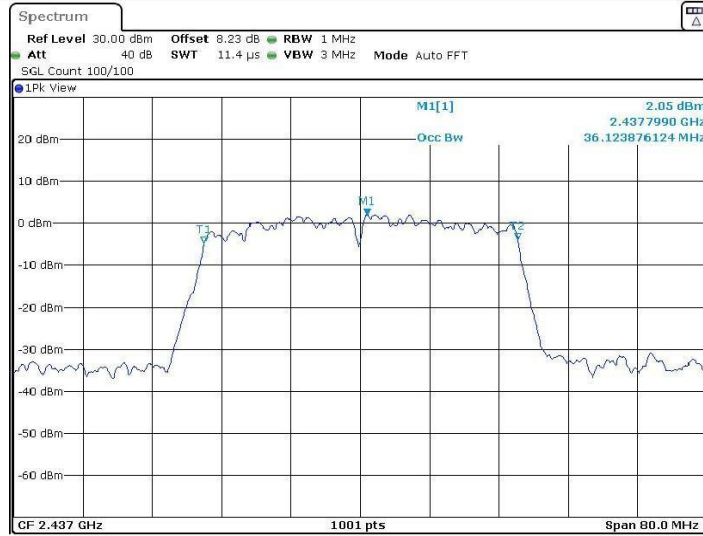
11N20SISO\_Ant2\_2462



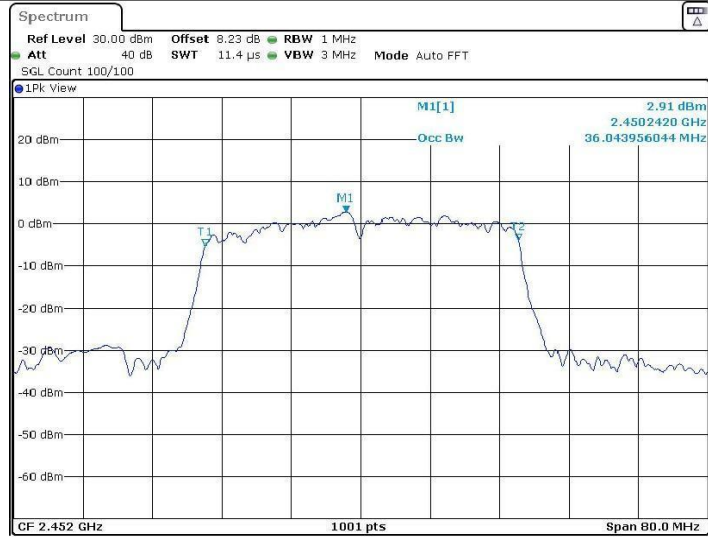
11N40SISO\_Ant2\_2422



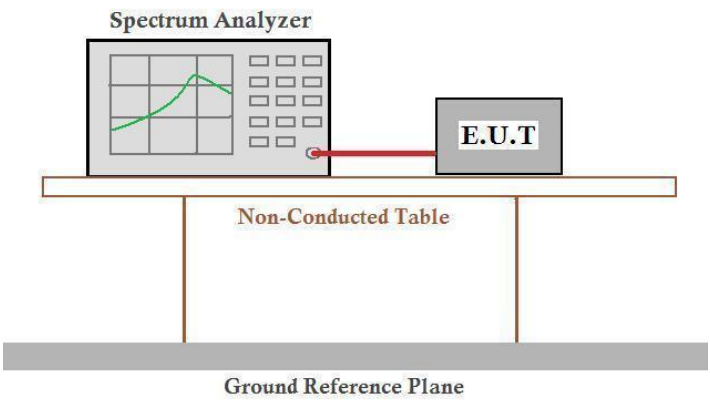
11N40SISO\_Ant2\_2437



11N40SISO\_Ant2\_2452



## 5.5 Power Spectral Density

|                        |                                                                                                                                                                                                                                                                            |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Requirement:      | 47 CFR Part 15C Section 15.247 (e)                                                                                                                                                                                                                                         |
| Test Method:           | ANSI C63.10: 2013                                                                                                                                                                                                                                                          |
| Test Setup:            |  <p>Offset=cable loss+ attenuation factor</p>                                                                                                                                            |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates                                                                                                                                                                                                                      |
| Final Test Mode:       | Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20); 13.5Mbps of rate is the worst case of 802.11n(HT40). Only the worst case is recorded in the report. |
| Limit:                 | ≤8.00dBm/3kHz                                                                                                                                                                                                                                                              |
| Test Results:          | Pass                                                                                                                                                                                                                                                                       |

## Measurement Data

| TestMode  | Antenna | Channel | Result[dBm/3-100kHz] | Limit[dBm/3kHz] | Verdict |
|-----------|---------|---------|----------------------|-----------------|---------|
| 11B       | Ant1    | 2412    | -22.88               | ≤8              | PASS    |
|           |         | 2437    | -21.64               | ≤8              | PASS    |
|           |         | 2462    | -21.95               | ≤8              | PASS    |
| 11G       | Ant1    | 2412    | -24.95               | ≤8              | PASS    |
|           |         | 2437    | -20.97               | ≤8              | PASS    |
|           |         | 2462    | -24.34               | ≤8              | PASS    |
| 11N20SISO | Ant1    | 2412    | -24.65               | ≤8              | PASS    |
|           |         | 2437    | -20.21               | ≤8              | PASS    |
|           |         | 2462    | -23.32               | ≤8              | PASS    |
| 11N40SISO | Ant1    | 2422    | -24.45               | ≤8              | PASS    |
|           |         | 2437    | -22.88               | ≤8              | PASS    |
|           |         | 2452    | -21.47               | ≤8              | PASS    |

| TestMode  | Antenna | Channel | Result[dBm/3-100kHz] | Limit[dBm/3kHz] | Verdict |
|-----------|---------|---------|----------------------|-----------------|---------|
| 11B       | Ant2    | 2412    | -23.02               | ≤8              | PASS    |
|           |         | 2437    | -22.12               | ≤8              | PASS    |
|           |         | 2462    | -21.94               | ≤8              | PASS    |
| 11G       | Ant2    | 2412    | -22.58               | ≤8              | PASS    |
|           |         | 2437    | -19.79               | ≤8              | PASS    |
|           |         | 2462    | -24.07               | ≤8              | PASS    |
| 11N20SISO | Ant2    | 2412    | -22.53               | ≤8              | PASS    |
|           |         | 2437    | -19.81               | ≤8              | PASS    |
|           |         | 2462    | -24.25               | ≤8              | PASS    |
| 11N40SISO | Ant2    | 2422    | -23.12               | ≤8              | PASS    |
|           |         | 2437    | -21.17               | ≤8              | PASS    |
|           |         | 2452    | -20.42               | ≤8              | PASS    |

| TestMode  | Antenna   | Channel | Result[dBm/3-100kHz] | Limit[dBm/3kHz] | Verdict |
|-----------|-----------|---------|----------------------|-----------------|---------|
| 11N20MIMO | Ant1+Ant2 | 2412    | -20.45               | ≤8              | PASS    |
|           |           | 2437    | -17.00               | ≤8              | PASS    |
|           |           | 2462    | -20.75               | ≤8              | PASS    |
| 11N40MIMO | Ant1+Ant2 | 2422    | -20.72               | ≤8              | PASS    |
|           |           | 2437    | -18.93               | ≤8              | PASS    |
|           |           | 2452    | -17.90               | ≤8              | PASS    |

Note:

The antenna is Omni Directional Antenna.

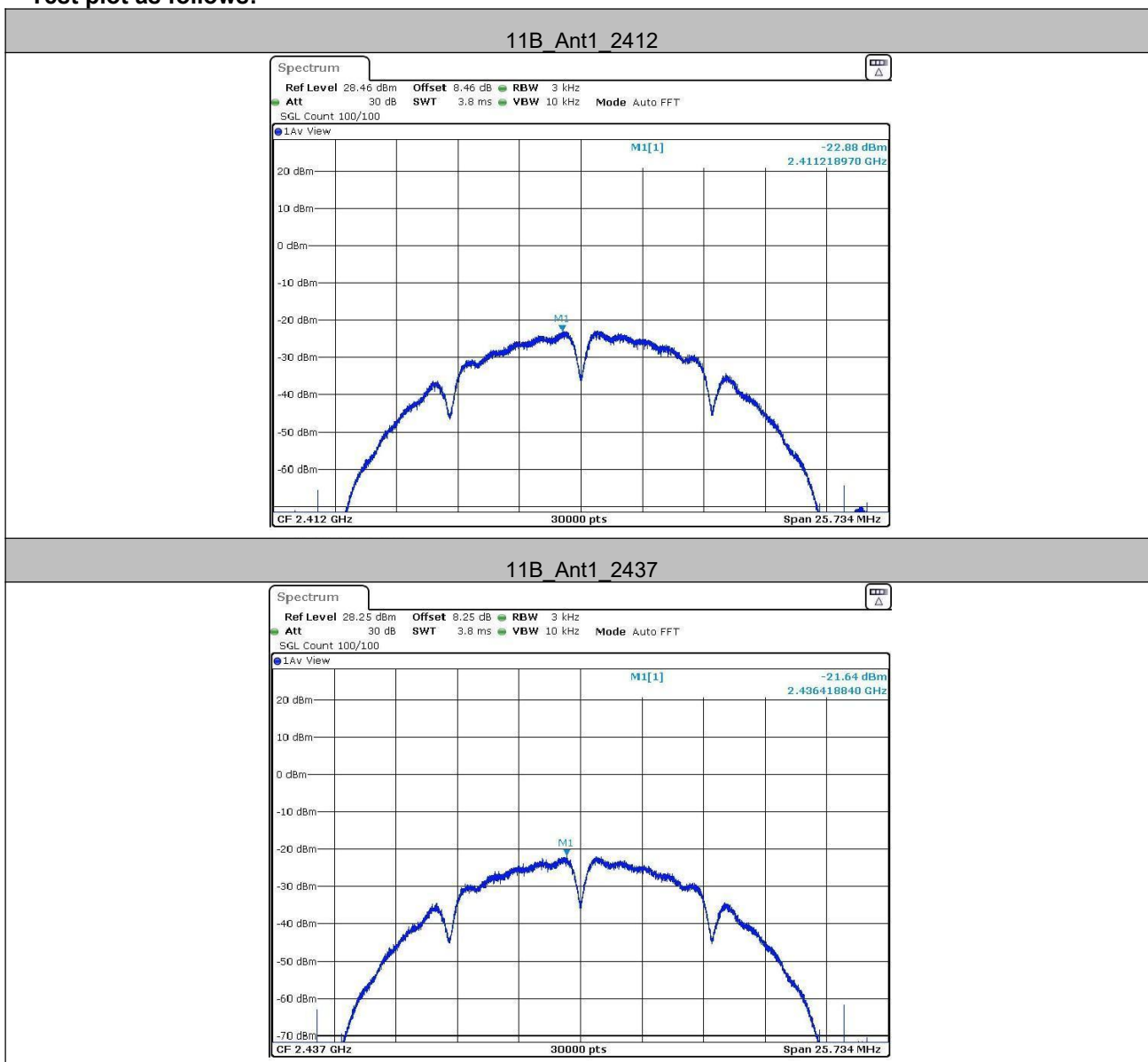
The best case gain of the ANT1 is 2.58dBi. The best case gain of the ANT2 is 2.58dBi.

MIMO mode:the antenna gain is 5.59dBi.

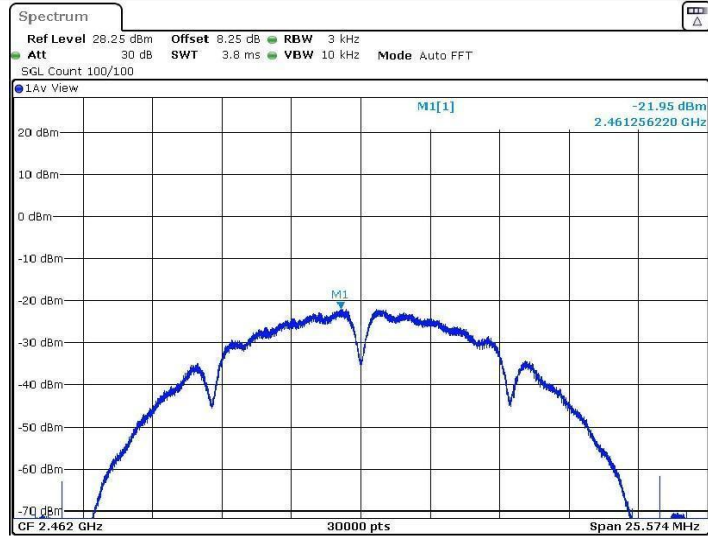
Transmit signals are correlated with each other,

Directional gain= $G_{ANT}+10\log(N_{ANT})$ dBi=2.58+10log(2)dBi=5.59dBi

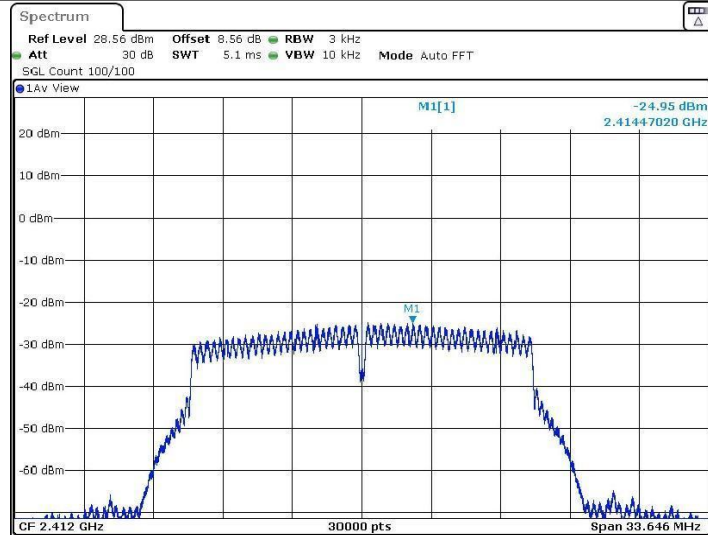
Test plot as follows:



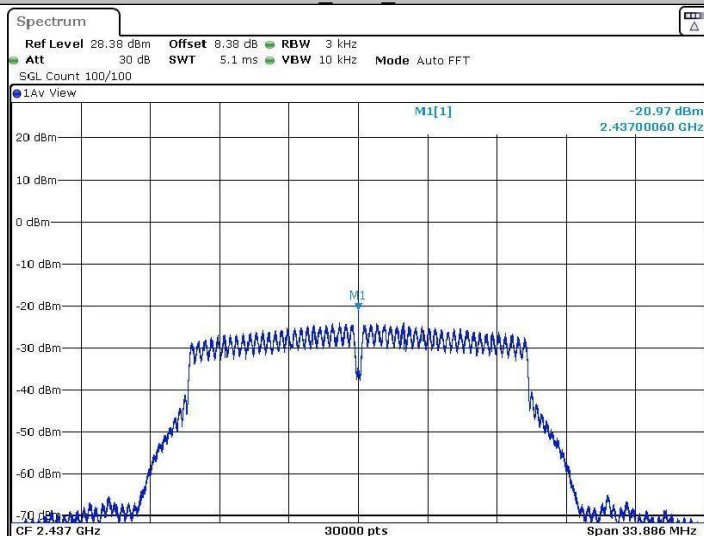
11B\_Ant1\_2462



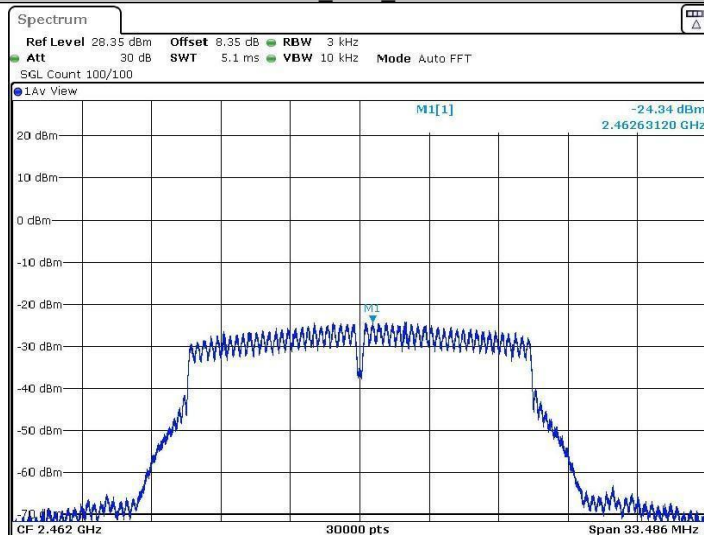
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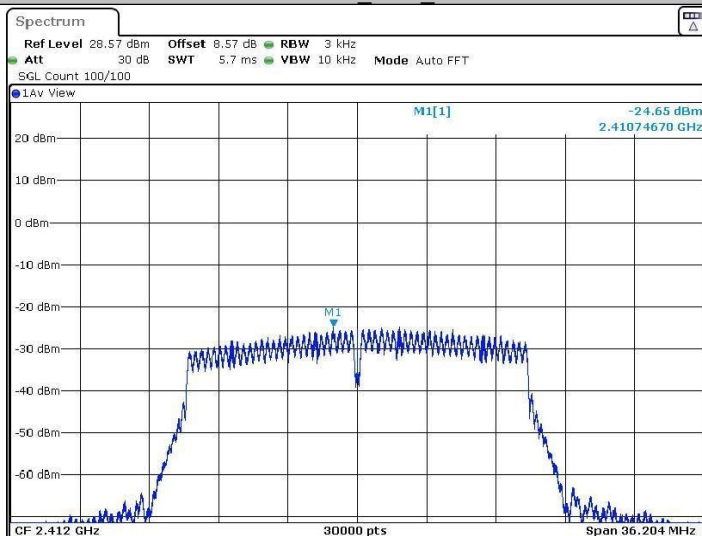
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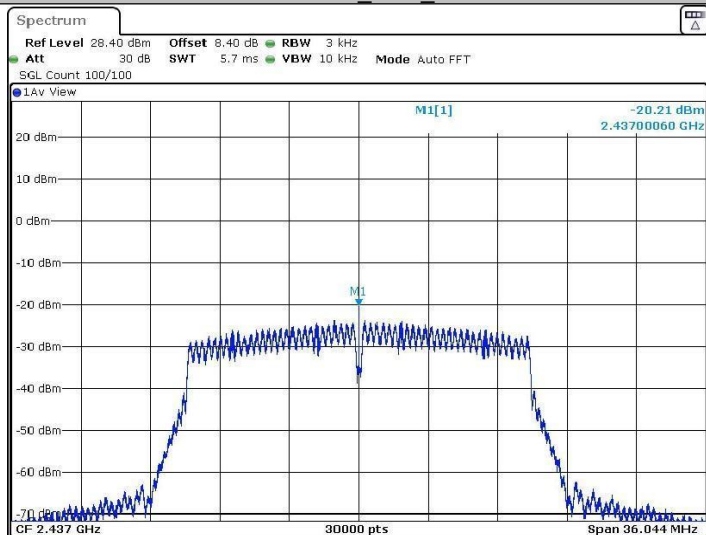
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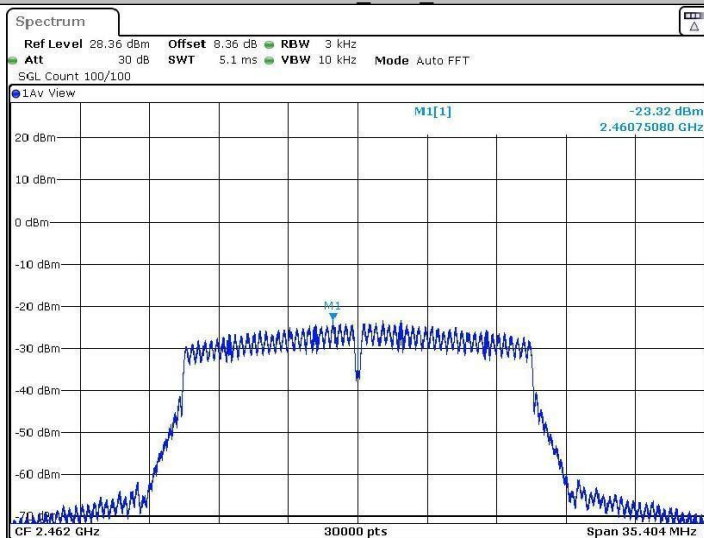
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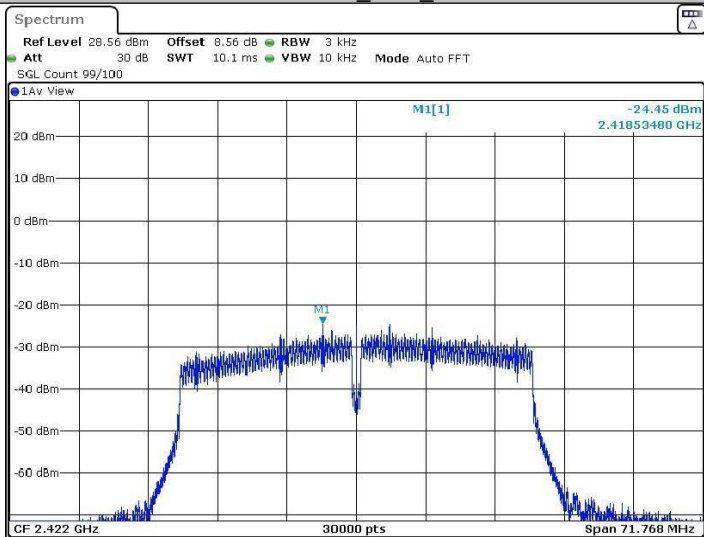
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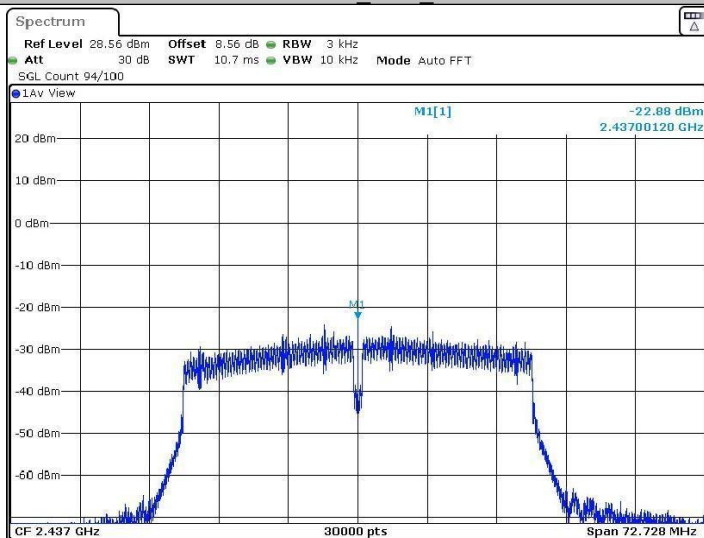
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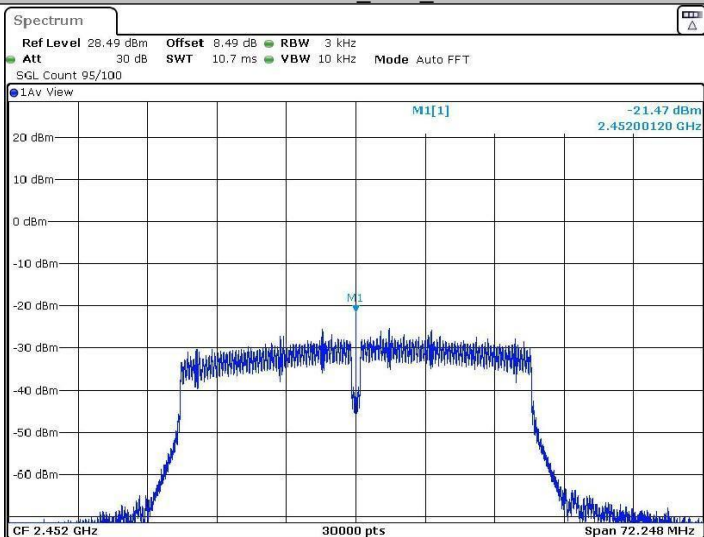
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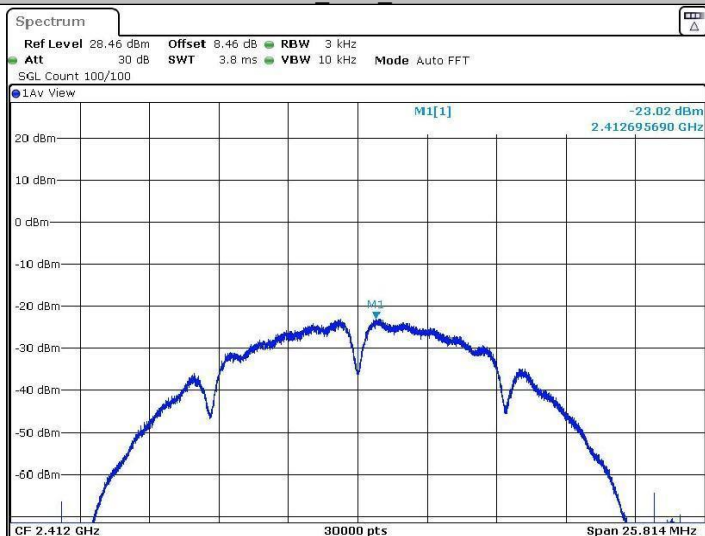
11N40SISO\_Ant1\_2437



11N40SISO\_Ant1\_2452



11B\_Ant2\_2412



11B\_Ant2\_2437

