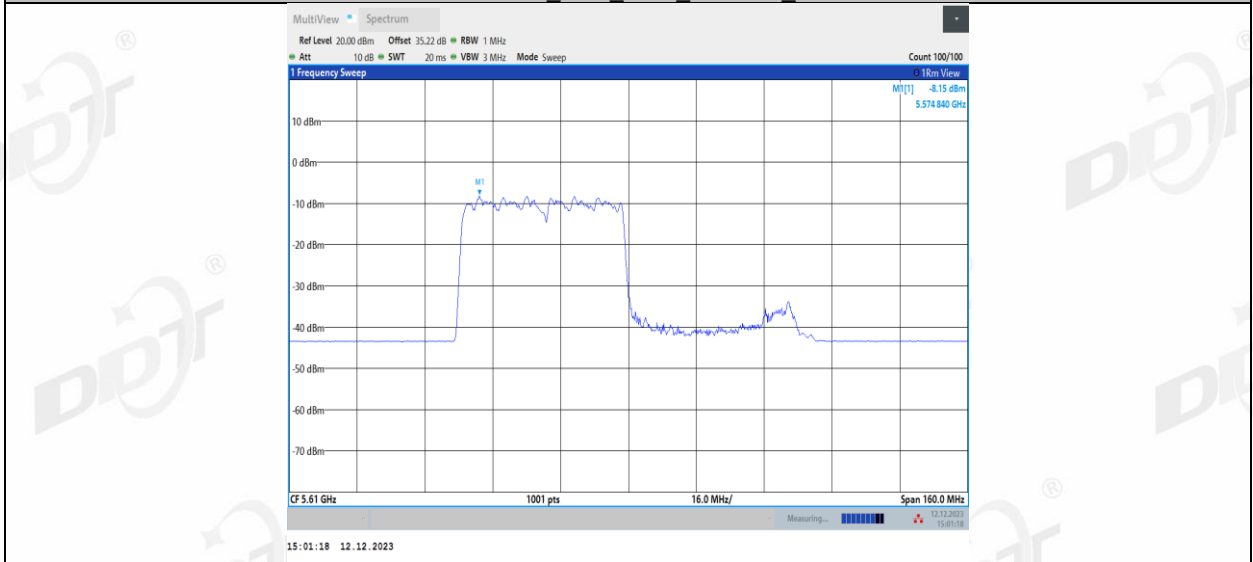
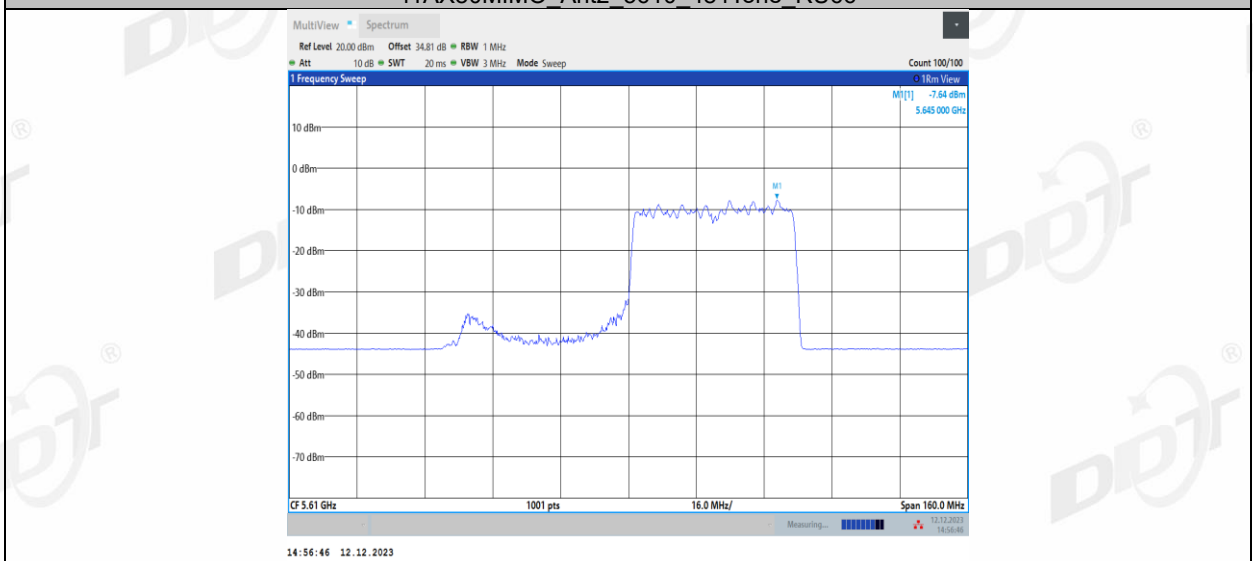


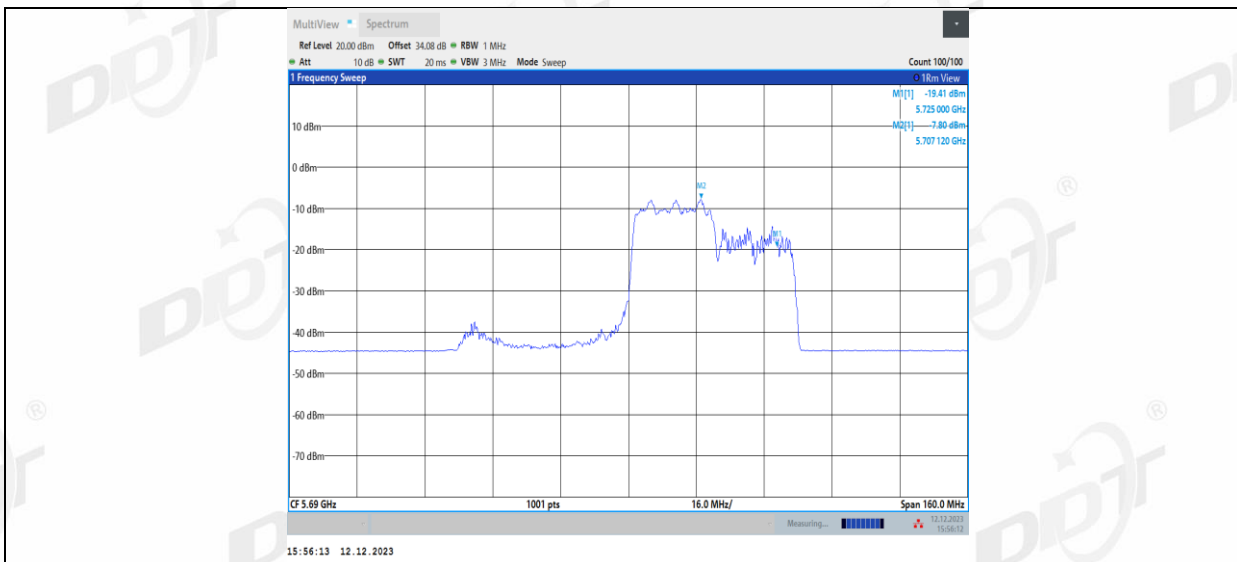
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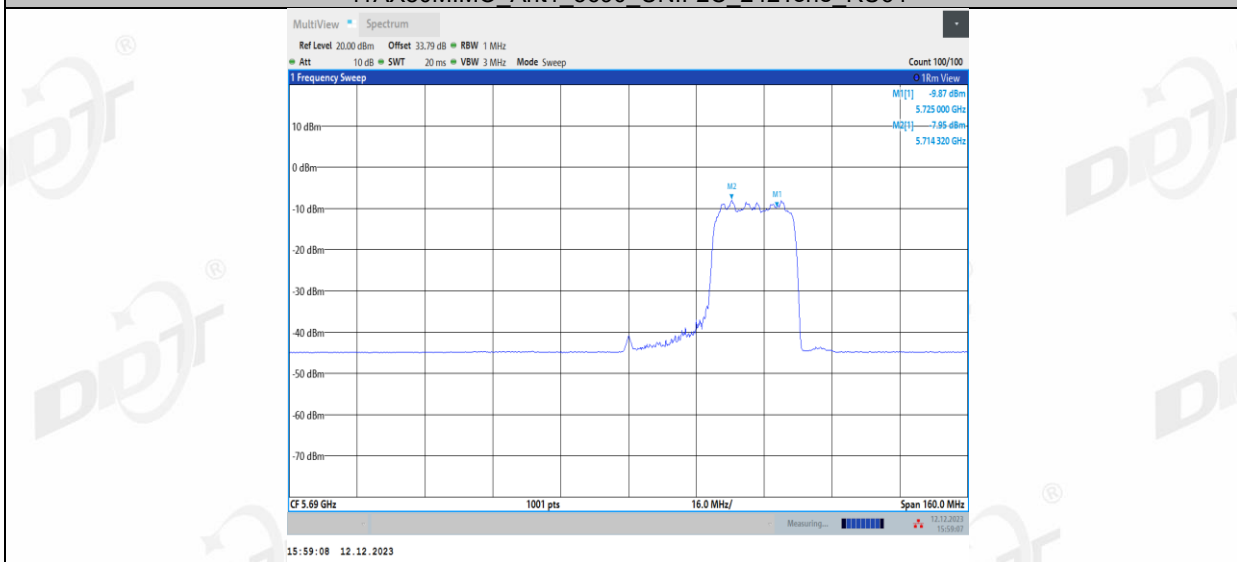
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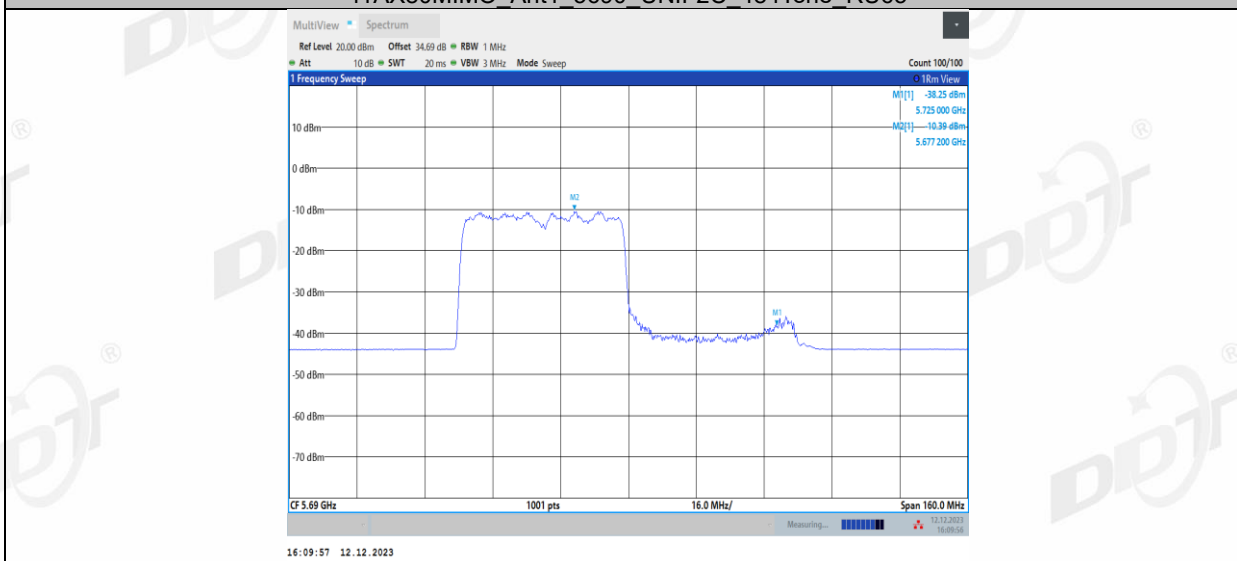
11AX80MIMO_Ant1_5690_UNII-2C_242Tone_RU63



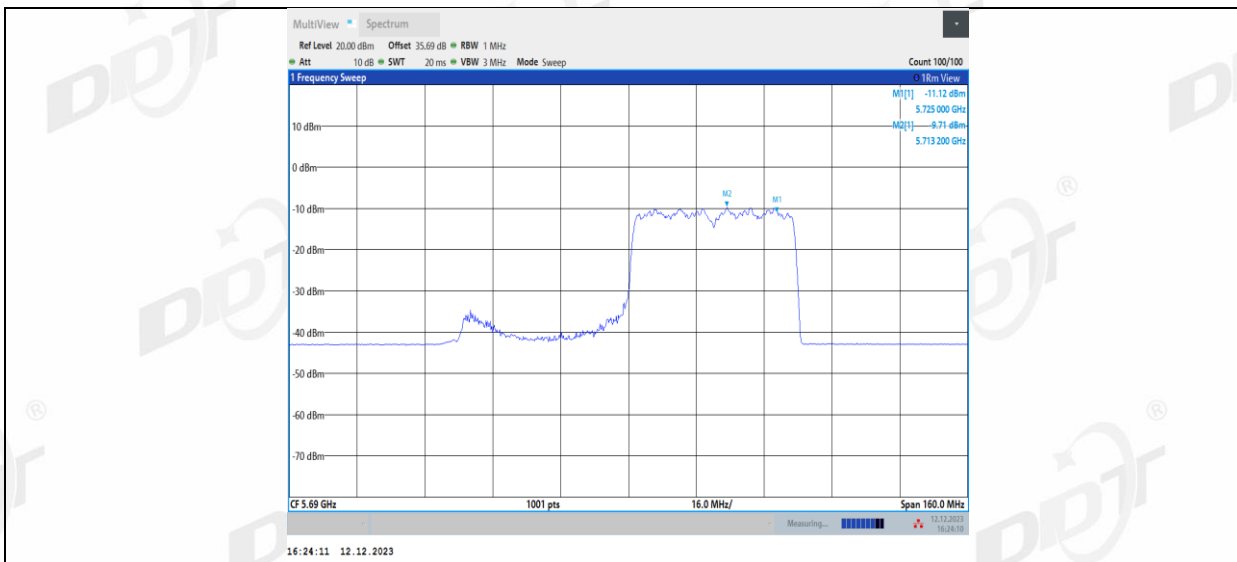
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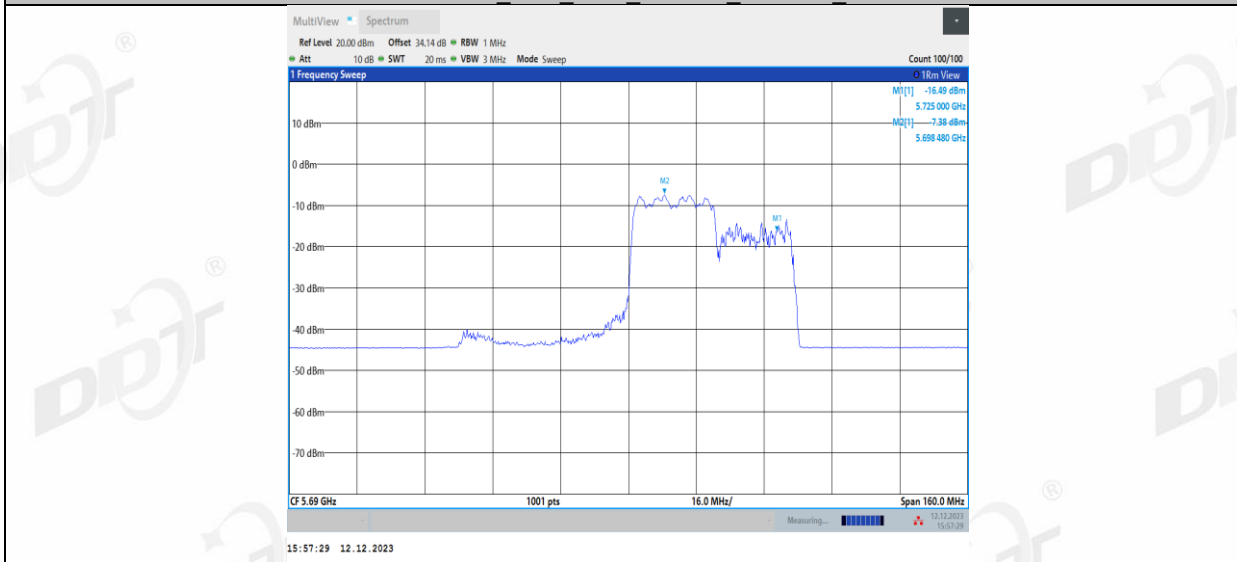
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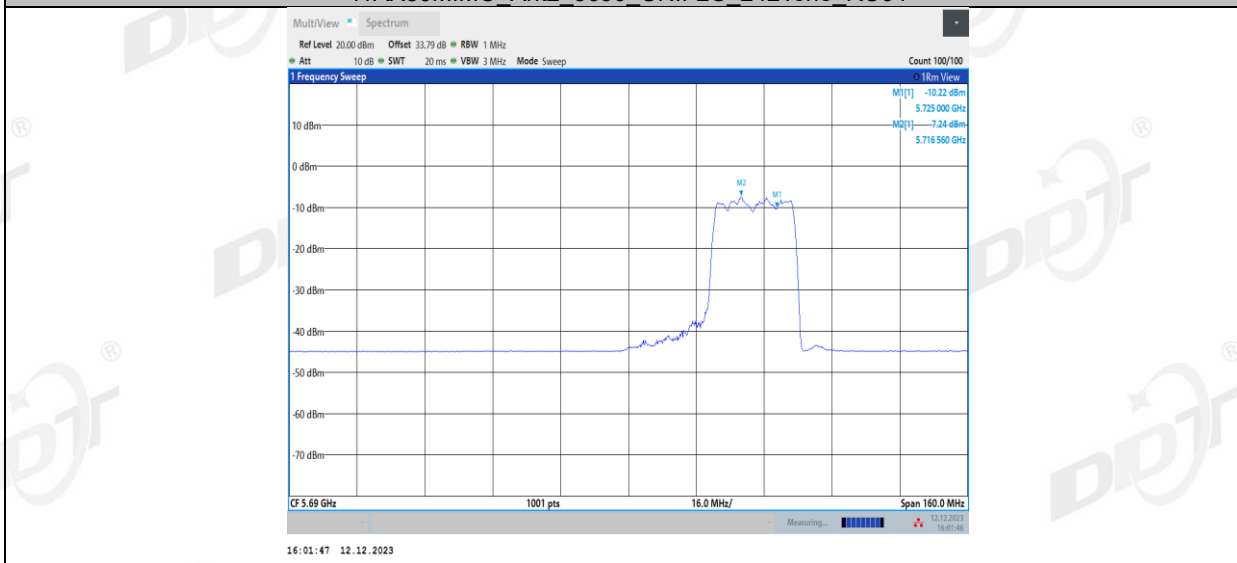
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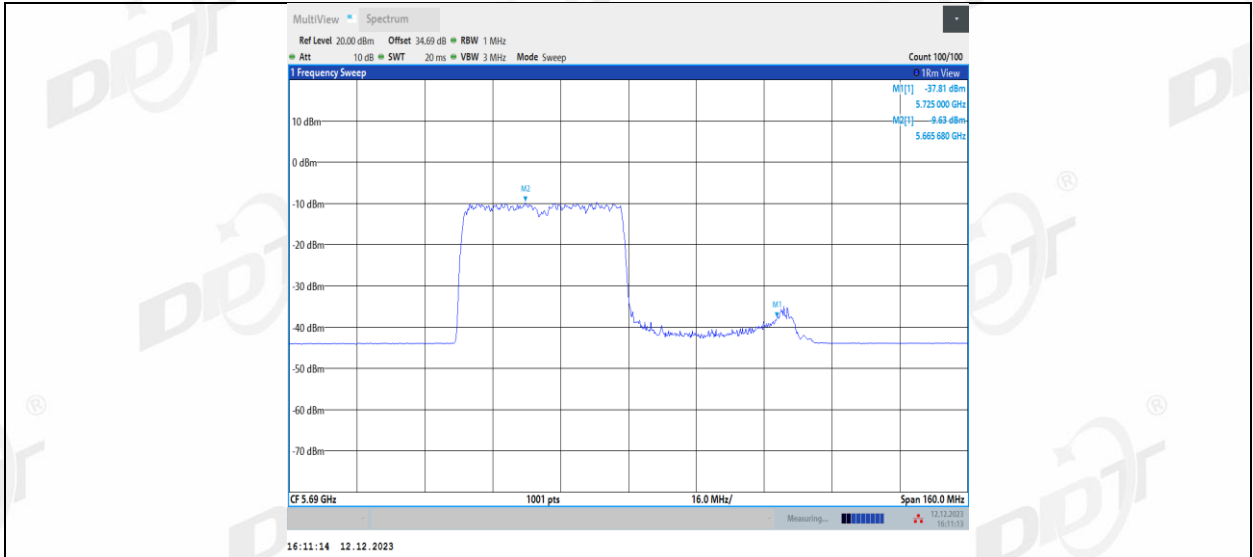
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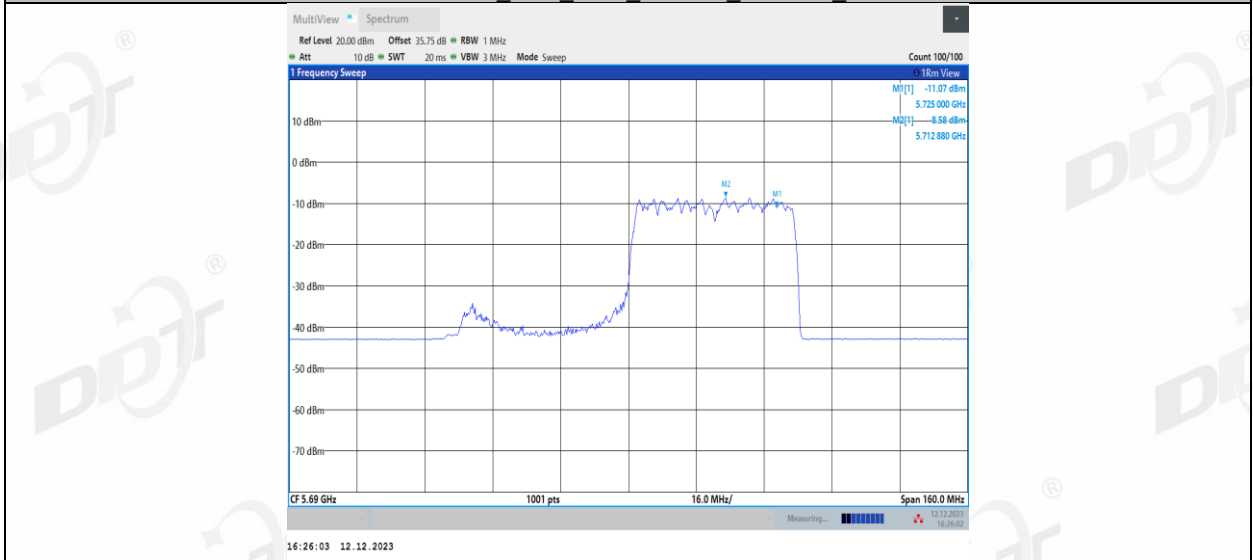
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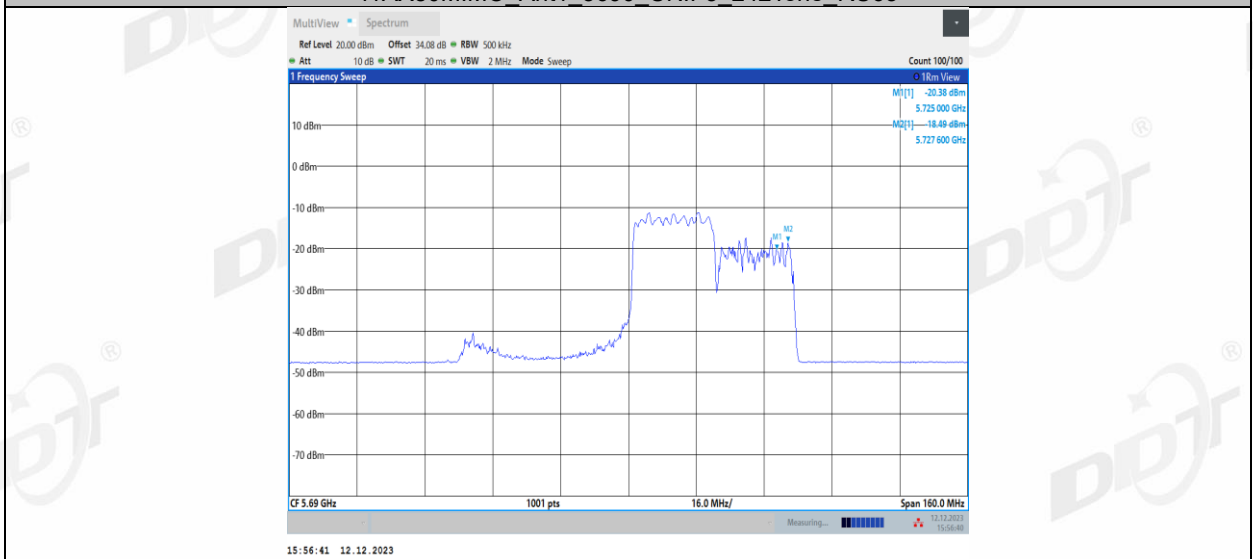
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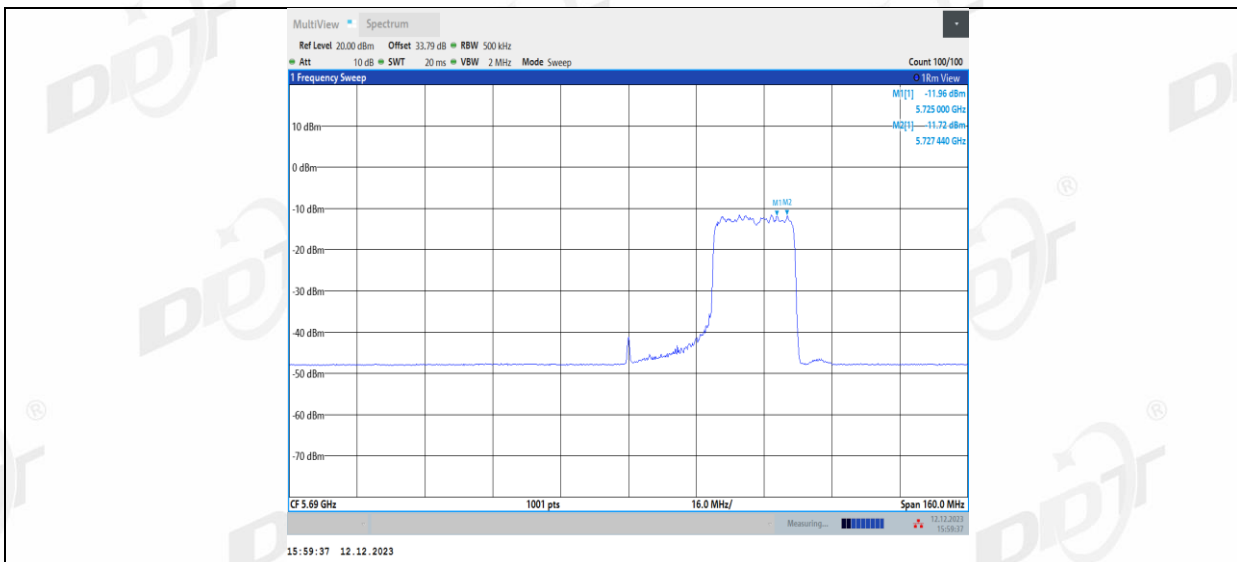
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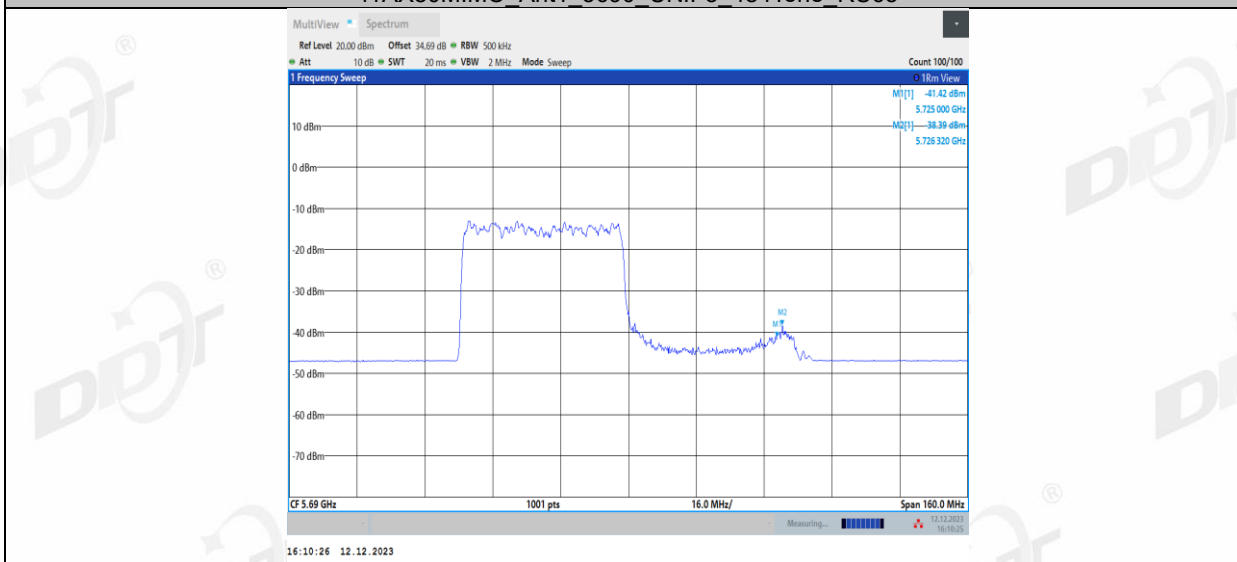
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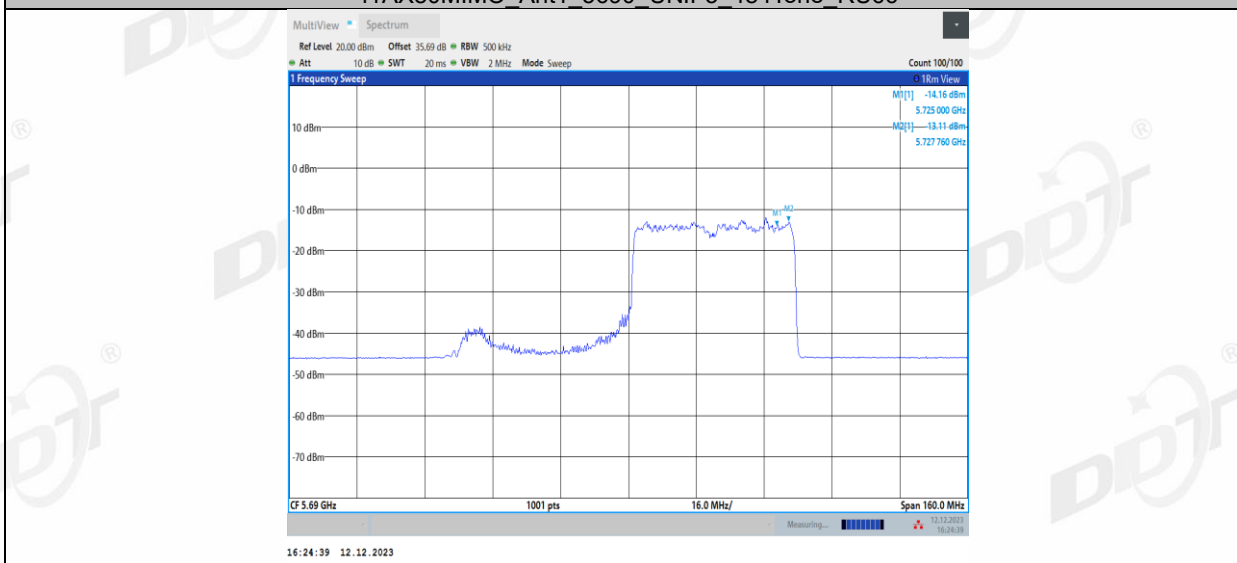
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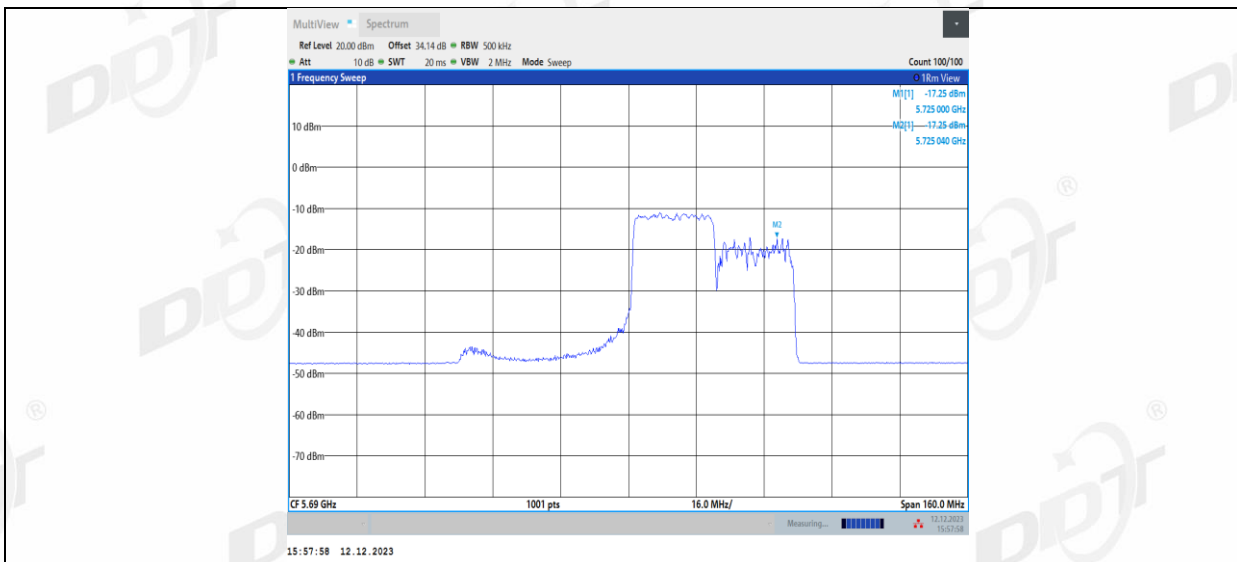
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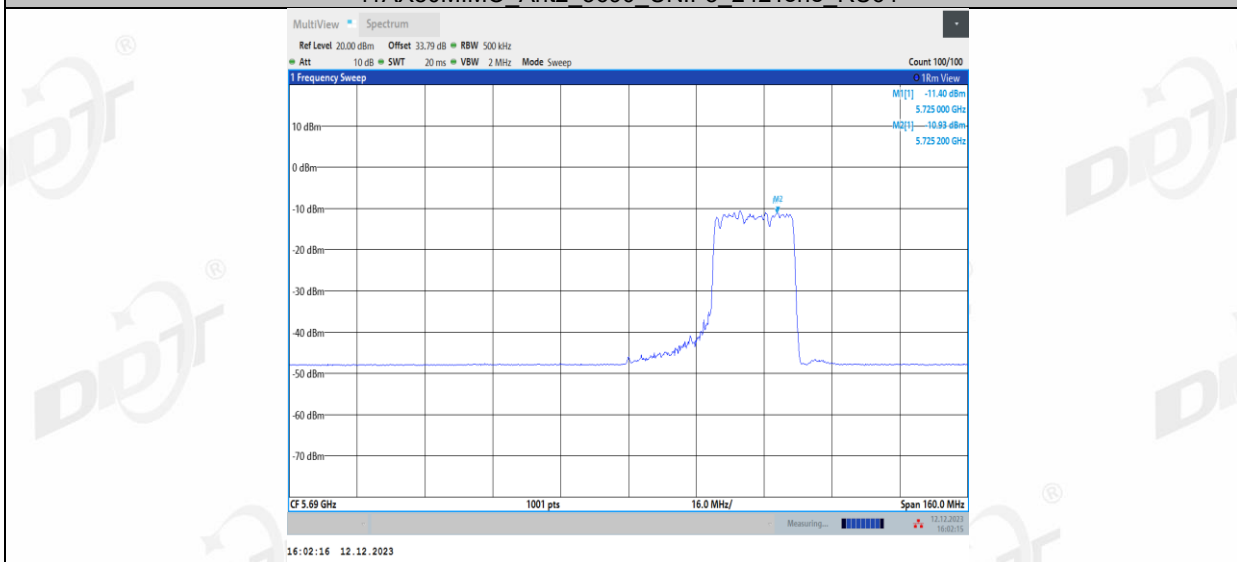
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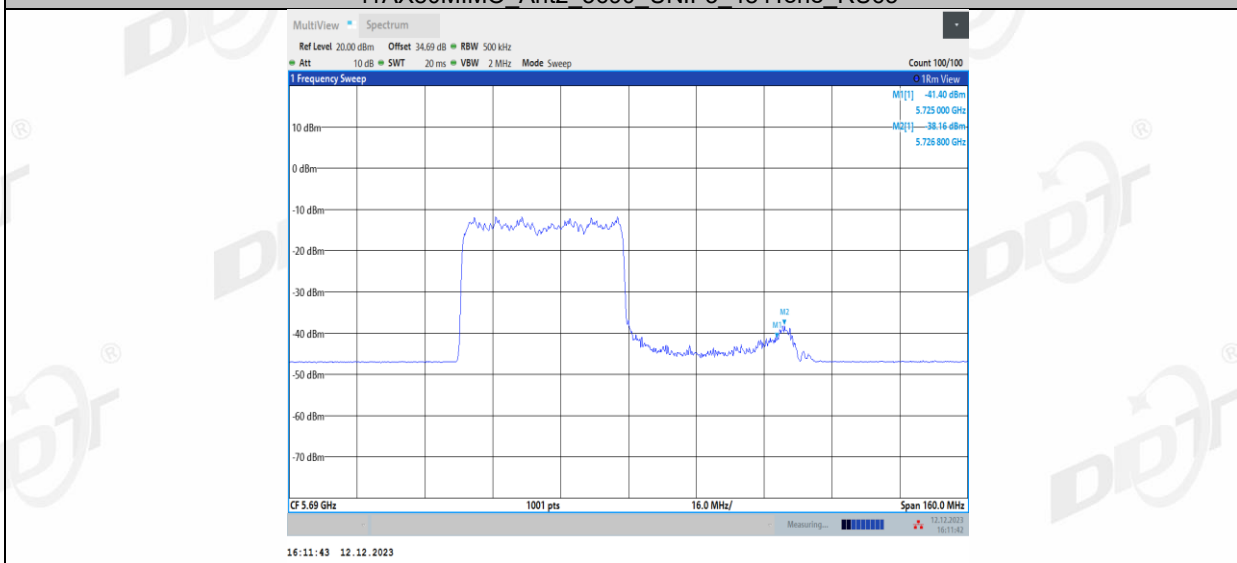
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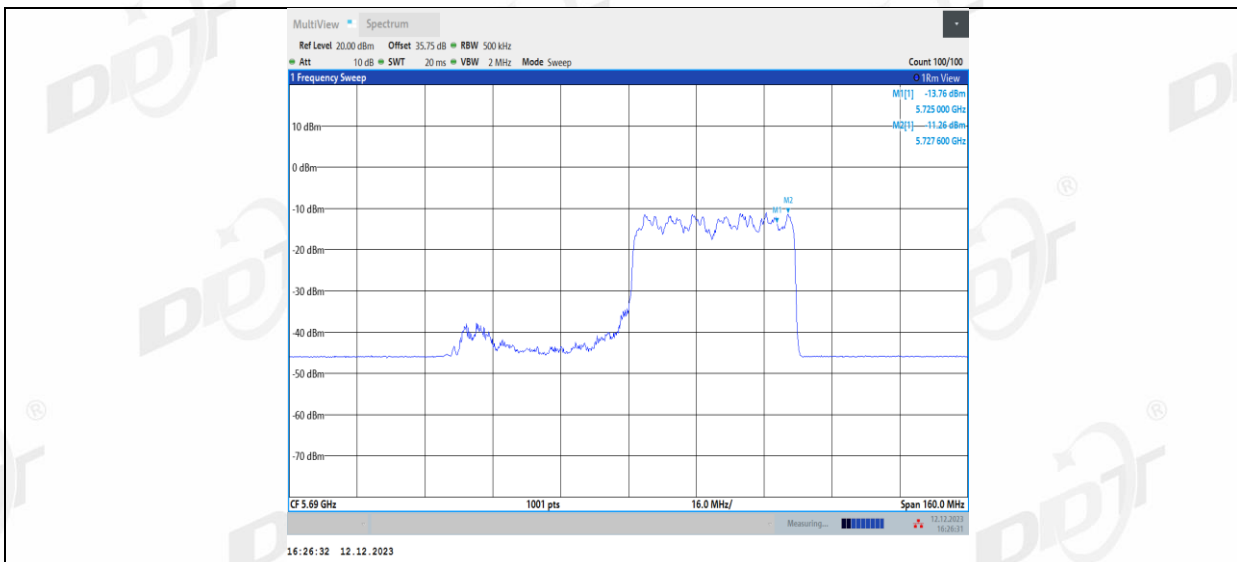
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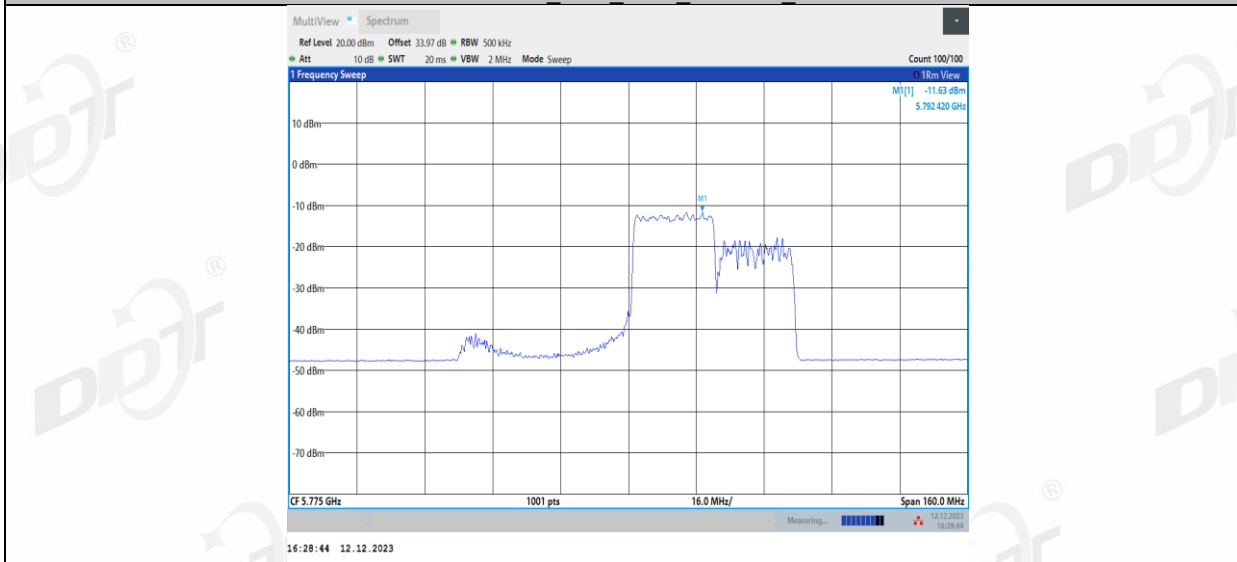
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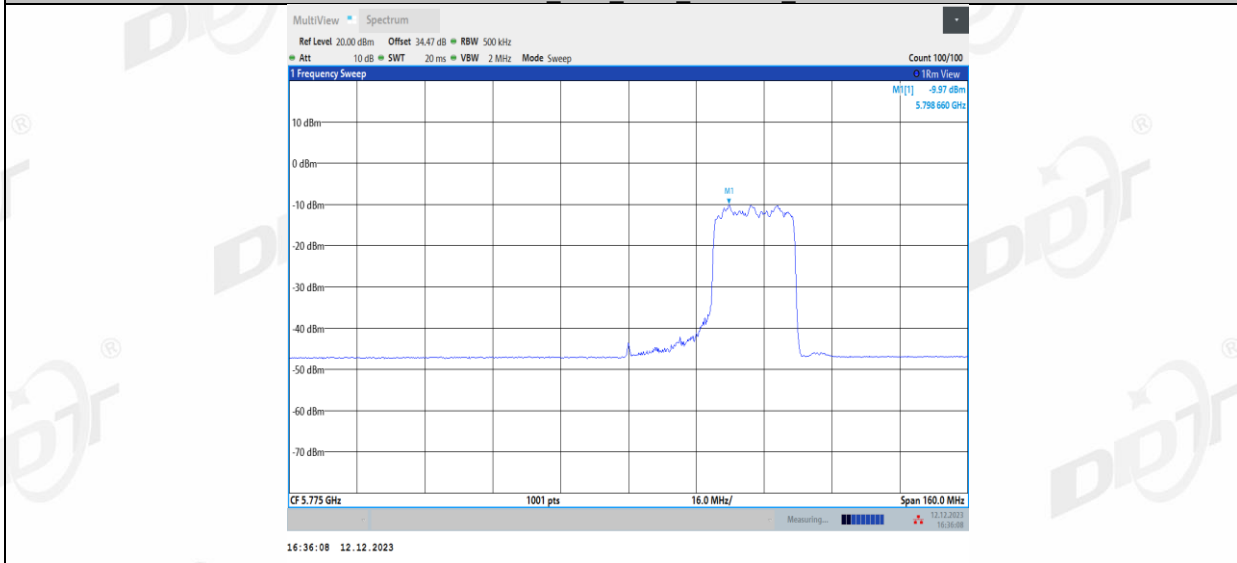
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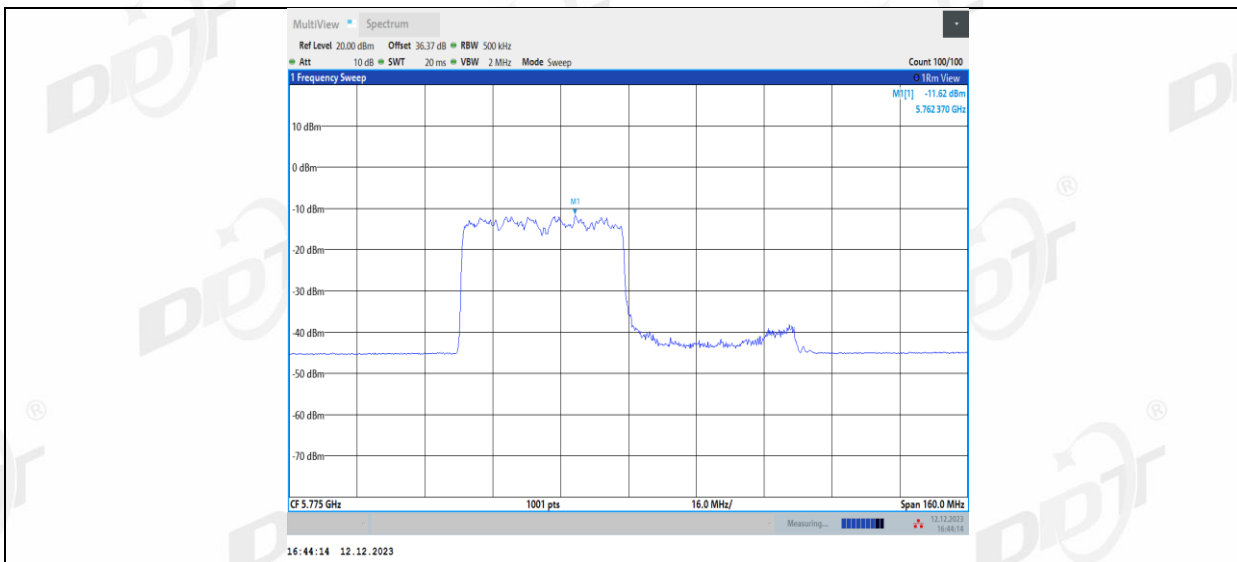
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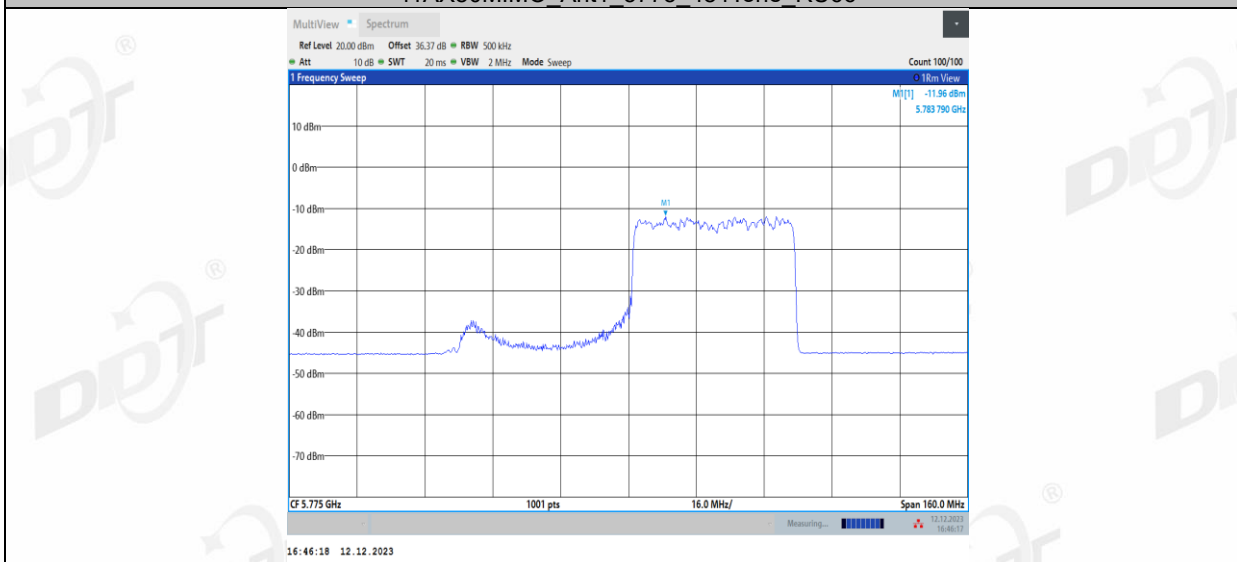
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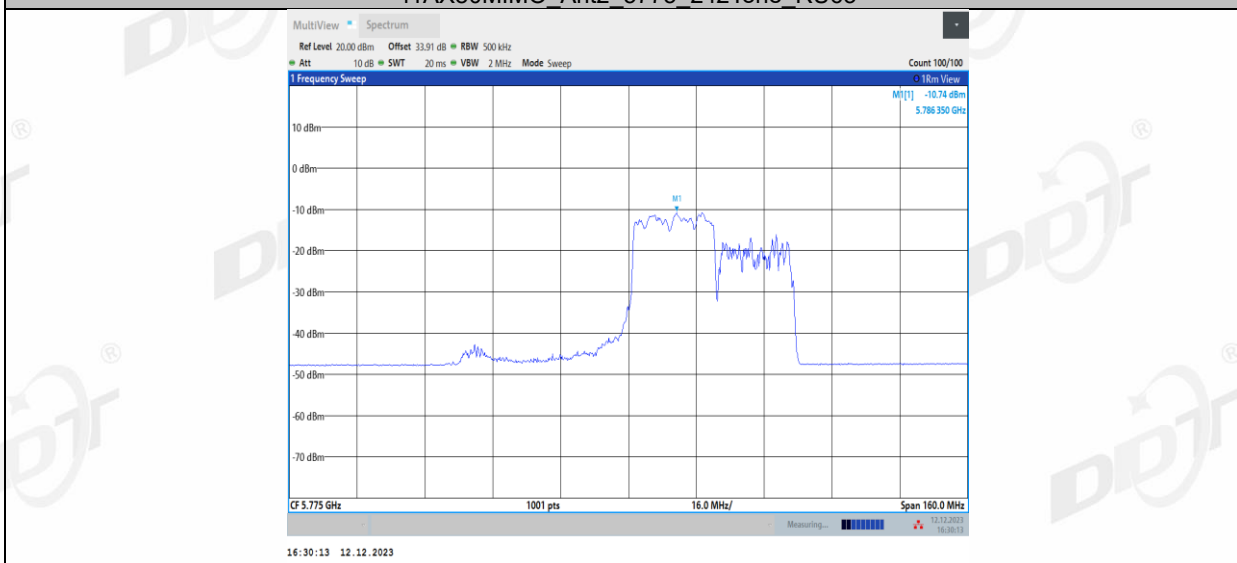
11AX80MIMO_Ant1_5775_484Tone_RU65



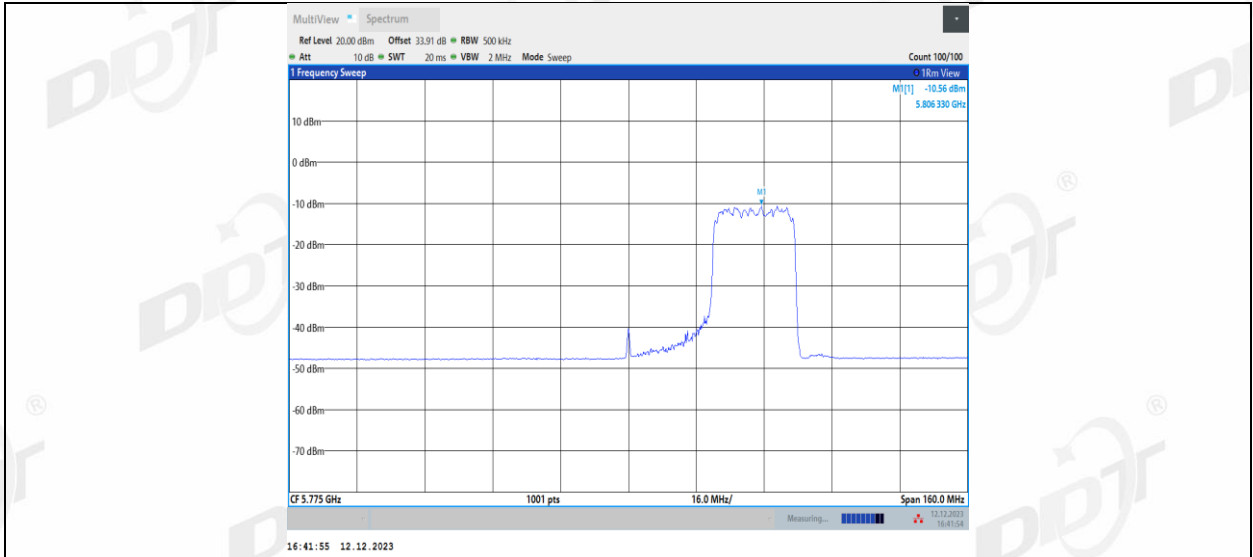
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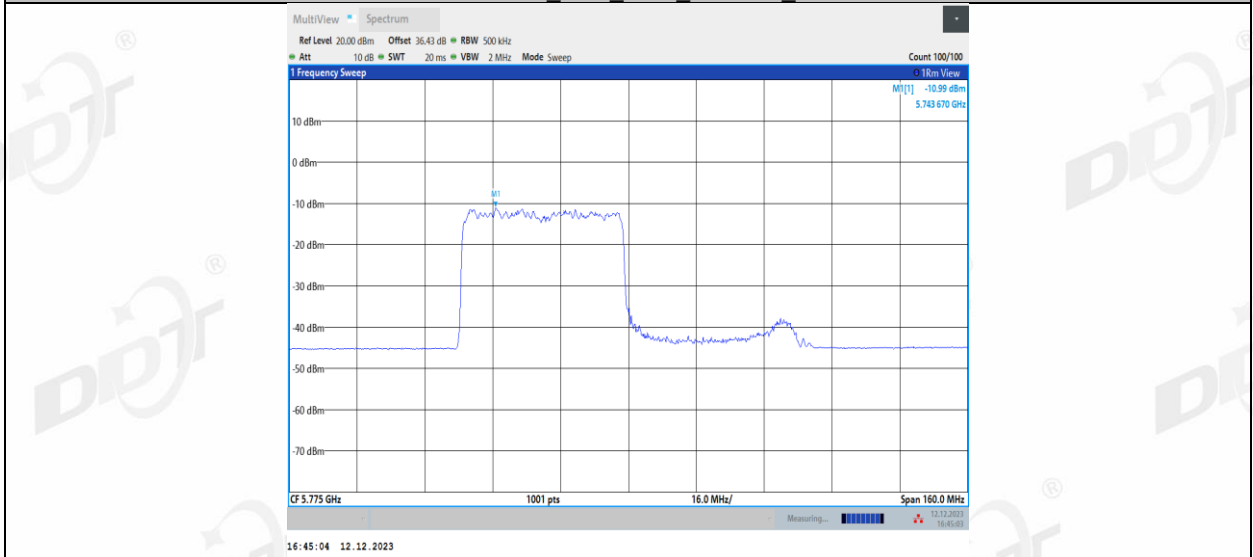
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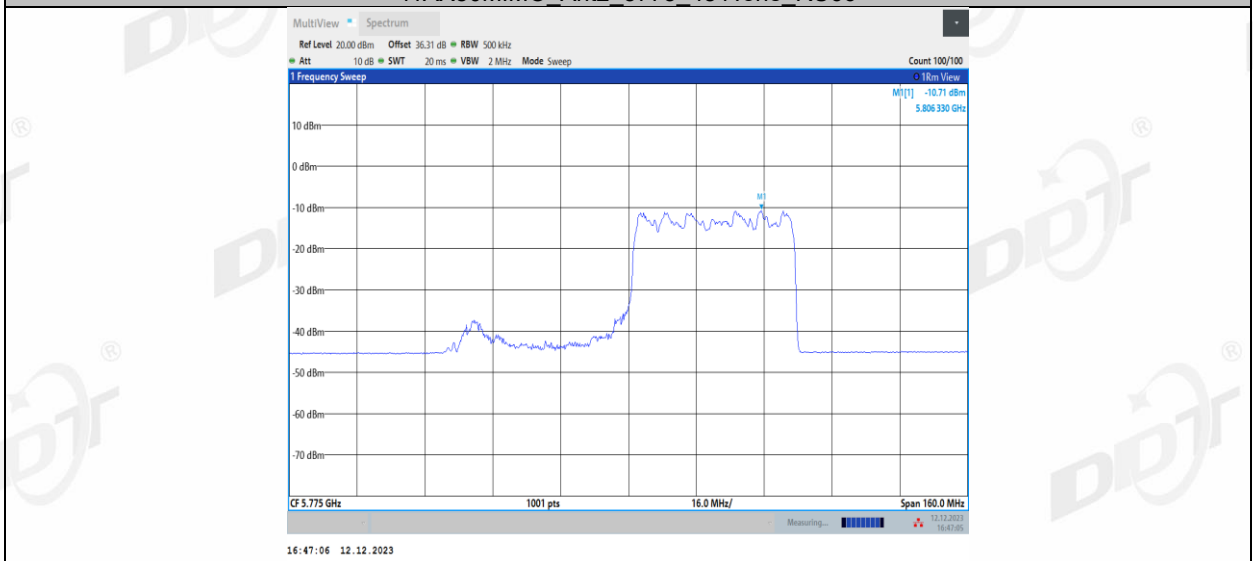
11AX80MIMO_Ant2_5775_242Tone_RU64



11AX80MIMO_Ant2_5775_484Tone_RU65



11AX80MIMO_Ant2_5775_484Tone_RU66



10. Frequency Stability Measurement

10.1. Limit of Frequency Stability

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 user's manual.

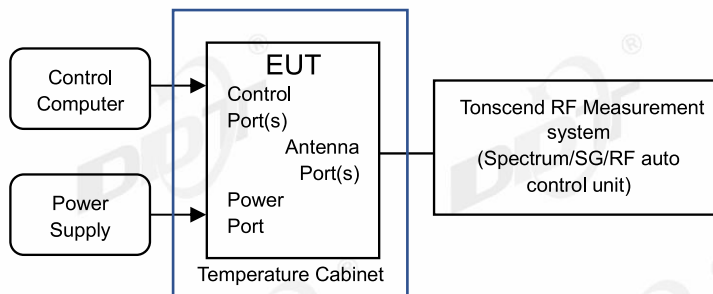
10.2. Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

10.3. Test procedures

- (1) To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
- (2) The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10 dB lower than the measured peak value.
- (3) The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

10.4. Test setup



10.5. Test result

| | | | |
|--------------------|-------------------------|------------|---|
| Test Engineer: | Haofeng | Test Site: | RF Measurement System 4# |
| Ambient Condition: | 20.4-25.1℃,32.2-50.2%RH | Test Date: | 2023.11.25-2023.11.28/2024.02.01-2024.02.02 |
| Test Power Supply: | Battery | EUT: | Wireless Speaker |
| Sample Number: | S23111312-01 | Model No.: | BOOMBOX3 Wi-Fi |

| Voltage | | | | | | | | |
|-----------|---------|-----------------|---------------|------------------|----------------|-----------------|-------------|---------|
| Test Mode | Antenna | Frequency [MHz] | Voltage [Vdc] | Temperature (°C) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| 11N20MIMO | Ant1 | 5180 | NV | NT | -60000.00 | -11.583012 | 20 | PASS |
| | | | LV | NT | -60000.00 | -11.583012 | 20 | PASS |
| | | | HV | NT | -60000.00 | -11.583012 | 20 | PASS |
| | Ant2 | 5180 | NV | NT | -60000.00 | -11.583012 | 20 | PASS |
| | | | LV | NT | -60000.00 | -11.583012 | 20 | PASS |
| | | | HV | NT | -60000.00 | -11.583012 | 20 | PASS |
| | Ant1 | 5200 | NV | NT | -60000.00 | -11.538462 | 20 | PASS |
| | | | LV | NT | -60000.00 | -11.538462 | 20 | PASS |
| | | | HV | NT | -60000.00 | -11.538462 | 20 | PASS |
| | Ant2 | 5200 | NV | NT | -60000.00 | -11.538462 | 20 | PASS |
| | | | LV | NT | -40000.00 | -7.692308 | 20 | PASS |
| | | | HV | NT | -60000.00 | -11.538462 | 20 | PASS |
| | Ant1 | 5240 | NV | NT | -60000.00 | -11.450382 | 20 | PASS |
| | | | LV | NT | -60000.00 | -11.450382 | 20 | PASS |
| | | | HV | NT | -40000.00 | -7.633588 | 20 | PASS |
| | Ant2 | 5240 | NV | NT | -60000.00 | -11.450382 | 20 | PASS |
| | | | LV | NT | -40000.00 | -7.633588 | 20 | PASS |
| | | | HV | NT | -60000.00 | -11.450382 | 20 | PASS |
| | Ant1 | 5260 | NV | NT | -60000.00 | -11.406844 | 20 | PASS |
| | | | LV | NT | -40000.00 | -7.604563 | 20 | PASS |
| | | | HV | NT | -60000.00 | -11.406844 | 20 | PASS |
| | Ant2 | 5260 | NV | NT | -60000.00 | -11.406844 | 20 | PASS |
| | | | LV | NT | -60000.00 | -11.406844 | 20 | PASS |
| | | | HV | NT | -60000.00 | -11.406844 | 20 | PASS |
| | Ant1 | 5280 | NV | NT | -60000.00 | -11.363636 | 20 | PASS |
| | | | LV | NT | -60000.00 | -11.363636 | 20 | PASS |
| | | | HV | NT | -60000.00 | -11.363636 | 20 | PASS |
| | Ant2 | 5280 | NV | NT | -60000.00 | -11.363636 | 20 | PASS |
| | | | LV | NT | -40000.00 | -7.575758 | 20 | PASS |
| | | | HV | NT | -60000.00 | -11.363636 | 20 | PASS |
| | Ant1 | 5320 | NV | NT | -60000.00 | -11.278195 | 20 | PASS |
| | | | LV | NT | -40000.00 | -7.518797 | 20 | PASS |
| | | | HV | NT | -60000.00 | -11.278195 | 20 | PASS |
| | Ant2 | 5320 | NV | NT | -80000.00 | -15.037594 | 20 | PASS |
| | | | LV | NT | -60000.00 | -11.278195 | 20 | PASS |
| | | | HV | NT | -60000.00 | -11.278195 | 20 | PASS |
| | Ant1 | 5500 | NV | NT | -40000.00 | -7.272727 | 20 | PASS |
| | | | LV | NT | -60000.00 | -10.909091 | 20 | PASS |
| | | | HV | NT | -40000.00 | -7.272727 | 20 | PASS |
| | Ant2 | 5500 | NV | NT | -60000.00 | -10.909091 | 20 | PASS |
| | | | LV | NT | -60000.00 | -10.909091 | 20 | PASS |
| | | | HV | NT | -60000.00 | -10.909091 | 20 | PASS |
| | Ant1 | 5580 | NV | NT | -60000.00 | -10.752688 | 20 | PASS |
| | | | LV | NT | -60000.00 | -10.752688 | 20 | PASS |
| | | | HV | NT | -60000.00 | -10.752688 | 20 | PASS |
| | Ant2 | 5580 | NV | NT | -80000.00 | -14.336918 | 20 | PASS |
| | | | LV | NT | -60000.00 | -10.752688 | 20 | PASS |
| | | | HV | NT | -60000.00 | -10.752688 | 20 | PASS |
| Ant1 | 5700 | NV | NT | -60000.00 | -10.526316 | 20 | PASS | |
| | | LV | NT | -60000.00 | -10.526316 | 20 | PASS | |
| | | HV | NT | -80000.00 | -14.035088 | 20 | PASS | |
| Ant2 | 5700 | NV | NT | -80000.00 | -14.035088 | 20 | PASS | |

| | | | | | | | | |
|-----------|------|------|----|-----------|------------|------------|------|------|
| 11N40MIMO | Ant1 | 5720 | LV | NT | -80000.00 | -14.035088 | 20 | PASS |
| | | | HV | NT | -80000.00 | -14.035088 | 20 | PASS |
| | | | NV | NT | -60000.00 | -10.489510 | 20 | PASS |
| | Ant2 | 5720 | LV | NT | -60000.00 | -10.489510 | 20 | PASS |
| | | | HV | NT | -60000.00 | -10.489510 | 20 | PASS |
| | | | NV | NT | -80000.00 | -13.986014 | 20 | PASS |
| | Ant1 | 5745 | LV | NT | -80000.00 | -13.986014 | 20 | PASS |
| | | | HV | NT | -80000.00 | -13.986014 | 20 | PASS |
| | | | NV | NT | -80000.00 | -13.925152 | 20 | PASS |
| | Ant2 | 5745 | LV | NT | -60000.00 | -10.443864 | 20 | PASS |
| | | | HV | NT | -60000.00 | -10.443864 | 20 | PASS |
| | | | NV | NT | -80000.00 | -13.925152 | 20 | PASS |
| | Ant1 | 5785 | LV | NT | -80000.00 | -13.925152 | 20 | PASS |
| | | | HV | NT | -80000.00 | -13.925152 | 20 | PASS |
| | | | NV | NT | -60000.00 | -10.371651 | 20 | PASS |
| | Ant2 | 5785 | LV | NT | -60000.00 | -10.371651 | 20 | PASS |
| | | | HV | NT | -60000.00 | -10.371651 | 20 | PASS |
| | | | NV | NT | -80000.00 | -13.828868 | 20 | PASS |
| | Ant1 | 5825 | LV | NT | -80000.00 | -13.828868 | 20 | PASS |
| | | | HV | NT | -80000.00 | -13.828868 | 20 | PASS |
| | | | NV | NT | -60000.00 | -10.300429 | 20 | PASS |
| | Ant2 | 5825 | LV | NT | -60000.00 | -10.300429 | 20 | PASS |
| | | | HV | NT | -60000.00 | -10.300429 | 20 | PASS |
| | | | NV | NT | -80000.00 | -13.733906 | 20 | PASS |
| | Ant1 | 5190 | LV | NT | -80000.00 | -13.733906 | 20 | PASS |
| | | | HV | NT | -80000.00 | -13.733906 | 20 | PASS |
| | | | NV | NT | -40000.00 | -7.707129 | 20 | PASS |
| | Ant2 | 5190 | LV | NT | -40000.00 | -7.707129 | 20 | PASS |
| | | | HV | NT | -40000.00 | -7.707129 | 20 | PASS |
| | | | NV | NT | -40000.00 | -7.707129 | 20 | PASS |
| Ant1 | 5230 | LV | NT | -80000.00 | -15.296367 | 20 | PASS | |
| | | HV | NT | -80000.00 | -15.296367 | 20 | PASS | |
| | | NV | NT | -40000.00 | -7.648184 | 20 | PASS | |
| Ant2 | 5230 | LV | NT | -40000.00 | -7.648184 | 20 | PASS | |
| | | HV | NT | -40000.00 | -7.648184 | 20 | PASS | |
| | | NV | NT | -80000.00 | -15.180266 | 20 | PASS | |
| Ant1 | 5270 | LV | NT | -80000.00 | -15.180266 | 20 | PASS | |
| | | HV | NT | -80000.00 | -15.180266 | 20 | PASS | |
| | | NV | NT | -40000.00 | -7.590133 | 20 | PASS | |
| Ant2 | 5270 | LV | NT | -40000.00 | -7.590133 | 20 | PASS | |
| | | HV | NT | -40000.00 | -7.590133 | 20 | PASS | |
| | | NV | NT | -80000.00 | -15.180266 | 20 | PASS | |
| Ant1 | 5310 | LV | NT | -80000.00 | -15.180266 | 20 | PASS | |
| | | HV | NT | -80000.00 | -15.180266 | 20 | PASS | |
| | | NV | NT | -40000.00 | -7.532957 | 20 | PASS | |
| Ant2 | 5310 | LV | NT | -40000.00 | -7.532957 | 20 | PASS | |
| | | HV | NT | -40000.00 | -7.532957 | 20 | PASS | |
| | | NV | NT | -80000.00 | -15.065913 | 20 | PASS | |
| Ant1 | 5510 | LV | NT | -80000.00 | -15.065913 | 20 | PASS | |
| | | HV | NT | -80000.00 | -15.065913 | 20 | PASS | |
| | | NV | NT | -40000.00 | -7.259528 | 20 | PASS | |
| Ant2 | 5510 | LV | NT | -40000.00 | -7.259528 | 20 | PASS | |
| | | HV | NT | -40000.00 | -7.259528 | 20 | PASS | |
| | | NV | NT | -80000.00 | -14.519056 | 20 | PASS | |
| Ant1 | 5550 | LV | NT | -80000.00 | -14.519056 | 20 | PASS | |
| | | HV | NT | -80000.00 | -14.519056 | 20 | PASS | |
| | | NV | NT | -40000.00 | -7.207207 | 20 | PASS | |
| Ant2 | 5550 | LV | NT | -40000.00 | -7.207207 | 20 | PASS | |
| | | HV | NT | -40000.00 | -7.207207 | 20 | PASS | |
| | | NV | NT | -80000.00 | -14.414414 | 20 | PASS | |
| Ant1 | 5670 | LV | NT | -80000.00 | -14.414414 | 20 | PASS | |
| | | HV | NT | -80000.00 | -14.414414 | 20 | PASS | |
| | | NV | NT | 0.00 | 0.000000 | 20 | PASS | |
| Ant2 | 5670 | LV | NT | 0.00 | 0.000000 | 20 | PASS | |
| | | HV | NT | -40000.00 | -7.054674 | 20 | PASS | |
| | | NV | NT | -40000.00 | -7.054674 | 20 | PASS | |

| | | | | | | | | |
|------------|------|------|----|-----------|------------|------------|------|------|
| 11AC80MIMO | Ant2 | 5670 | HV | NT | -40000.00 | -7.054674 | 20 | PASS |
| | | | NV | NT | -40000.00 | -7.054674 | 20 | PASS |
| | | | LV | NT | -40000.00 | -7.054674 | 20 | PASS |
| | Ant1 | 5710 | HV | NT | -40000.00 | -7.054674 | 20 | PASS |
| | | | NV | NT | -40000.00 | -7.005254 | 20 | PASS |
| | | | LV | NT | -40000.00 | -7.005254 | 20 | PASS |
| | Ant2 | 5710 | HV | NT | -40000.00 | -7.005254 | 20 | PASS |
| | | | NV | NT | -40000.00 | -7.005254 | 20 | PASS |
| | | | LV | NT | -40000.00 | -7.005254 | 20 | PASS |
| | Ant1 | 5755 | HV | NT | -40000.00 | -6.950478 | 20 | PASS |
| | | | NV | NT | -40000.00 | -6.950478 | 20 | PASS |
| | | | LV | NT | -80000.00 | -13.900956 | 20 | PASS |
| | Ant2 | 5755 | HV | NT | -80000.00 | -13.900956 | 20 | PASS |
| | | | NV | NT | -40000.00 | -6.950478 | 20 | PASS |
| | | | LV | NT | -40000.00 | -6.950478 | 20 | PASS |
| | Ant1 | 5795 | HV | NT | -40000.00 | -6.902502 | 20 | PASS |
| | | | NV | NT | -40000.00 | -6.902502 | 20 | PASS |
| | | | LV | NT | -40000.00 | -6.902502 | 20 | PASS |
| | Ant2 | 5795 | HV | NT | -40000.00 | -6.902502 | 20 | PASS |
| | | | NV | NT | -40000.00 | -6.902502 | 20 | PASS |
| | | | LV | NT | -40000.00 | -6.902502 | 20 | PASS |
| | Ant1 | 5210 | HV | NT | 0.00 | 0.000000 | 20 | PASS |
| | | | NV | NT | 0.00 | 0.000000 | 20 | PASS |
| | | | LV | NT | 0.00 | 0.000000 | 20 | PASS |
| | Ant2 | 5210 | HV | NT | -80000.00 | -15.355086 | 20 | PASS |
| | | | NV | NT | 0.00 | 0.000000 | 20 | PASS |
| | | | LV | NT | 0.00 | 0.000000 | 20 | PASS |
| | Ant1 | 5290 | HV | NT | -80000.00 | -15.122873 | 20 | PASS |
| | | | NV | NT | -80000.00 | -15.122873 | 20 | PASS |
| | | | LV | NT | 0.00 | 0.000000 | 20 | PASS |
| | Ant2 | 5290 | HV | NT | -80000.00 | -15.122873 | 20 | PASS |
| | | | NV | NT | 0.00 | 0.000000 | 20 | PASS |
| | | | LV | NT | -80000.00 | -15.122873 | 20 | PASS |
| | Ant1 | 5530 | HV | NT | -80000.00 | -14.466546 | 20 | PASS |
| | | | NV | NT | -80000.00 | -14.466546 | 20 | PASS |
| | | | LV | NT | 0.00 | 0.000000 | 20 | PASS |
| Ant2 | 5530 | HV | NT | 0.00 | 0.000000 | 20 | PASS | |
| | | NV | NT | 0.00 | 0.000000 | 20 | PASS | |
| | | LV | NT | 0.00 | 0.000000 | 20 | PASS | |
| Ant1 | 5610 | HV | NT | 0.00 | 0.000000 | 20 | PASS | |
| | | NV | NT | 0.00 | 0.000000 | 20 | PASS | |
| | | LV | NT | 0.00 | 0.000000 | 20 | PASS | |
| Ant2 | 5610 | HV | NT | 0.00 | 0.000000 | 20 | PASS | |
| | | NV | NT | 0.00 | 0.000000 | 20 | PASS | |
| | | LV | NT | 0.00 | 0.000000 | 20 | PASS | |
| Ant1 | 5690 | HV | NT | -80000.00 | -14.059754 | 20 | PASS | |
| | | NV | NT | 0.00 | 0.000000 | 20 | PASS | |
| | | LV | NT | 0.00 | 0.000000 | 20 | PASS | |
| Ant2 | 5690 | HV | NT | -80000.00 | -14.059754 | 20 | PASS | |
| | | NV | NT | 0.00 | 0.000000 | 20 | PASS | |
| | | LV | NT | -80000.00 | -14.059754 | 20 | PASS | |
| Ant1 | 5775 | HV | NT | -80000.00 | -13.852814 | 20 | PASS | |
| | | NV | NT | -80000.00 | -13.852814 | 20 | PASS | |
| | | LV | NT | 0.00 | 0.000000 | 20 | PASS | |
| Ant2 | 5775 | HV | NT | -80000.00 | -13.852814 | 20 | PASS | |
| | | NV | NT | 0.00 | 0.000000 | 20 | PASS | |
| | | LV | NT | -80000.00 | -13.852814 | 20 | PASS | |
| | | | HV | NT | 0.00 | 0.000000 | 20 | PASS |

| Temperature | | | | | | | | |
|-------------|---------|----------------|---------------|------------------|----------------|-----------------|-------------|---------|
| Test Mode | Antenna | Frequency[MHz] | Voltage [Vdc] | Temperature (°C) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| 11N20MIMO | Ant1 | 5180 | NV | -30 | -60000.00 | -11.583012 | 20 | PASS |

| | | | | | | | | | | |
|------|------|-----------|------|-----------|------------|------------|-----------|------------|----|------|
| | | | NV | -20 | -60000.00 | -11.583012 | 20 | PASS | | |
| | | | NV | -10 | -60000.00 | -11.583012 | 20 | PASS | | |
| | | | NV | 0 | -60000.00 | -11.583012 | 20 | PASS | | |
| | | | NV | 10 | -60000.00 | -11.583012 | 20 | PASS | | |
| | | | NV | 20 | -60000.00 | -11.583012 | 20 | PASS | | |
| | | | NV | 30 | -60000.00 | -11.583012 | 20 | PASS | | |
| | | | NV | 40 | -60000.00 | -11.583012 | 20 | PASS | | |
| | | | NV | 50 | -60000.00 | -11.583012 | 20 | PASS | | |
| | | | Ant2 | 5180 | NV | -30 | -60000.00 | -11.583012 | 20 | PASS |
| | | | | | NV | -20 | -60000.00 | -11.583012 | 20 | PASS |
| NV | -10 | -60000.00 | | | -11.583012 | 20 | PASS | | | |
| NV | 0 | -60000.00 | | | -11.583012 | 20 | PASS | | | |
| NV | 10 | -40000.00 | | | -7.722008 | 20 | PASS | | | |
| NV | 20 | -40000.00 | | | -7.722008 | 20 | PASS | | | |
| NV | 30 | -40000.00 | | | -7.722008 | 20 | PASS | | | |
| NV | 40 | -40000.00 | | | -7.722008 | 20 | PASS | | | |
| Ant1 | 5200 | NV | 50 | -40000.00 | -7.722008 | 20 | PASS | | | |
| | | NV | -30 | -60000.00 | -11.538462 | 20 | PASS | | | |
| | | NV | -20 | -40000.00 | -7.692308 | 20 | PASS | | | |
| | | NV | -10 | -60000.00 | -11.538462 | 20 | PASS | | | |
| | | NV | 0 | -60000.00 | -11.538462 | 20 | PASS | | | |
| | | NV | 10 | -60000.00 | -11.538462 | 20 | PASS | | | |
| | | NV | 20 | -40000.00 | -7.692308 | 20 | PASS | | | |
| | | NV | 30 | -60000.00 | -11.538462 | 20 | PASS | | | |
| Ant2 | 5200 | NV | 40 | -60000.00 | -11.538462 | 20 | PASS | | | |
| | | NV | 50 | -40000.00 | -7.692308 | 20 | PASS | | | |
| | | NV | -30 | -60000.00 | -11.538462 | 20 | PASS | | | |
| | | NV | -20 | -60000.00 | -11.538462 | 20 | PASS | | | |
| | | NV | -10 | -60000.00 | -11.538462 | 20 | PASS | | | |
| | | NV | 0 | -60000.00 | -11.538462 | 20 | PASS | | | |
| | | NV | 10 | -60000.00 | -11.538462 | 20 | PASS | | | |
| | | NV | 20 | -40000.00 | -7.692308 | 20 | PASS | | | |
| Ant1 | 5240 | NV | 30 | -60000.00 | -11.538462 | 20 | PASS | | | |
| | | NV | 40 | -60000.00 | -11.538462 | 20 | PASS | | | |
| | | NV | 50 | -60000.00 | -11.538462 | 20 | PASS | | | |
| | | NV | -30 | -40000.00 | -7.633588 | 20 | PASS | | | |
| | | NV | -20 | -60000.00 | -11.450382 | 20 | PASS | | | |
| | | NV | -10 | -40000.00 | -7.633588 | 20 | PASS | | | |
| | | NV | 0 | -40000.00 | -7.633588 | 20 | PASS | | | |
| | | NV | 10 | -60000.00 | -11.450382 | 20 | PASS | | | |
| Ant2 | 5240 | NV | 20 | -40000.00 | -7.633588 | 20 | PASS | | | |
| | | NV | 30 | -60000.00 | -11.450382 | 20 | PASS | | | |
| | | NV | 40 | -60000.00 | -11.450382 | 20 | PASS | | | |
| | | NV | 50 | -60000.00 | -11.450382 | 20 | PASS | | | |
| | | NV | -30 | -60000.00 | -11.450382 | 20 | PASS | | | |
| | | NV | -20 | -40000.00 | -7.633588 | 20 | PASS | | | |
| | | NV | -10 | -40000.00 | -7.633588 | 20 | PASS | | | |
| | | NV | 0 | -40000.00 | -7.633588 | 20 | PASS | | | |
| Ant1 | 5260 | NV | 10 | -60000.00 | -11.406844 | 20 | PASS | | | |
| | | NV | 20 | -60000.00 | -11.406844 | 20 | PASS | | | |
| | | NV | 30 | -40000.00 | -7.604563 | 20 | PASS | | | |
| | | NV | 40 | -40000.00 | -7.604563 | 20 | PASS | | | |
| | | NV | 50 | -60000.00 | -11.406844 | 20 | PASS | | | |
| | | NV | -30 | -60000.00 | -11.406844 | 20 | PASS | | | |
| | | NV | -20 | -60000.00 | -11.406844 | 20 | PASS | | | |
| | | NV | -10 | -40000.00 | -7.604563 | 20 | PASS | | | |
| Ant2 | 5260 | NV | 0 | -60000.00 | -11.406844 | 20 | PASS | | | |
| | | NV | 10 | -60000.00 | -11.406844 | 20 | PASS | | | |

| | | | | | | | | |
|--|------|------|-----|-----------|------------|------------|------|------|
| | | NV | -10 | -60000.00 | -11.406844 | 20 | PASS | |
| | | NV | 0 | -60000.00 | -11.406844 | 20 | PASS | |
| | | NV | 10 | -60000.00 | -11.406844 | 20 | PASS | |
| | | NV | 20 | -60000.00 | -11.406844 | 20 | PASS | |
| | | NV | 30 | -60000.00 | -11.406844 | 20 | PASS | |
| | | NV | 40 | -60000.00 | -11.406844 | 20 | PASS | |
| | | NV | 50 | -60000.00 | -11.406844 | 20 | PASS | |
| | Ant1 | 5280 | NV | -30 | -60000.00 | -11.363636 | 20 | PASS |
| | | | NV | -20 | -60000.00 | -11.363636 | 20 | PASS |
| | | | NV | -10 | -60000.00 | -11.363636 | 20 | PASS |
| | | | NV | 0 | -60000.00 | -11.363636 | 20 | PASS |
| | | | NV | 10 | -60000.00 | -11.363636 | 20 | PASS |
| | | | NV | 20 | -60000.00 | -11.363636 | 20 | PASS |
| | | | NV | 30 | -60000.00 | -11.363636 | 20 | PASS |
| | | | NV | 40 | -60000.00 | -11.363636 | 20 | PASS |
| | Ant2 | 5280 | NV | 50 | -60000.00 | -11.363636 | 20 | PASS |
| | | | NV | -30 | -60000.00 | -11.363636 | 20 | PASS |
| | | | NV | -20 | -60000.00 | -11.363636 | 20 | PASS |
| | | | NV | -10 | -60000.00 | -11.363636 | 20 | PASS |
| | | | NV | 0 | -60000.00 | -11.363636 | 20 | PASS |
| | | | NV | 10 | -60000.00 | -11.363636 | 20 | PASS |
| | | | NV | 20 | -60000.00 | -11.363636 | 20 | PASS |
| | | | NV | 30 | -60000.00 | -11.363636 | 20 | PASS |
| | Ant1 | 5320 | NV | 40 | -40000.00 | -7.575758 | 20 | PASS |
| | | | NV | 50 | -80000.00 | -15.151515 | 20 | PASS |
| | | | NV | -30 | -60000.00 | -11.278195 | 20 | PASS |
| | | | NV | -20 | -60000.00 | -11.278195 | 20 | PASS |
| | | | NV | -10 | -40000.00 | -7.518797 | 20 | PASS |
| | | | NV | 0 | -60000.00 | -11.278195 | 20 | PASS |
| | | | NV | 10 | -60000.00 | -11.278195 | 20 | PASS |
| | | | NV | 20 | -60000.00 | -11.278195 | 20 | PASS |
| | Ant2 | 5320 | NV | 30 | -60000.00 | -11.278195 | 20 | PASS |
| | | | NV | 40 | -60000.00 | -11.278195 | 20 | PASS |
| | | | NV | 50 | -60000.00 | -11.278195 | 20 | PASS |
| | | | NV | -30 | -60000.00 | -11.278195 | 20 | PASS |
| | | | NV | -20 | -60000.00 | -11.278195 | 20 | PASS |
| | | | NV | -10 | -60000.00 | -11.278195 | 20 | PASS |
| | | | NV | 0 | -60000.00 | -11.278195 | 20 | PASS |
| | | | NV | 10 | -60000.00 | -11.278195 | 20 | PASS |
| | Ant1 | 5500 | NV | 20 | -60000.00 | -11.278195 | 20 | PASS |
| | | | NV | 30 | -80000.00 | -15.037594 | 20 | PASS |
| | | | NV | 40 | -60000.00 | -11.278195 | 20 | PASS |
| | | | NV | 50 | -60000.00 | -11.278195 | 20 | PASS |
| | | | NV | -30 | -60000.00 | -10.909091 | 20 | PASS |
| | | | NV | -20 | -60000.00 | -10.909091 | 20 | PASS |
| | | | NV | -10 | -60000.00 | -10.909091 | 20 | PASS |
| | | | NV | 0 | -40000.00 | -7.272727 | 20 | PASS |
| | Ant2 | 5500 | NV | 10 | -60000.00 | -10.909091 | 20 | PASS |
| | | | NV | 20 | -60000.00 | -10.909091 | 20 | PASS |
| | | | NV | 30 | -60000.00 | -10.909091 | 20 | PASS |
| | | | NV | 40 | -60000.00 | -10.909091 | 20 | PASS |
| | | | NV | 50 | -60000.00 | -10.909091 | 20 | PASS |
| | | | NV | -30 | -60000.00 | -10.909091 | 20 | PASS |
| | | | NV | -20 | -60000.00 | -10.909091 | 20 | PASS |
| | | | NV | -10 | -60000.00 | -10.909091 | 20 | PASS |
| | Ant1 | 5580 | NV | 0 | -80000.00 | -14.545455 | 20 | PASS |
| | | | NV | 10 | -80000.00 | -14.545455 | 20 | PASS |
| | | | NV | 20 | -80000.00 | -14.545455 | 20 | PASS |
| | | | NV | 30 | -60000.00 | -10.909091 | 20 | PASS |
| | Ant1 | 5580 | NV | 40 | -60000.00 | -10.909091 | 20 | PASS |
| | | | NV | 50 | -60000.00 | -10.909091 | 20 | PASS |
| | | | NV | -30 | -60000.00 | -10.752688 | 20 | PASS |
| | | | NV | -20 | -60000.00 | -10.752688 | 20 | PASS |
| | | | NV | -10 | -60000.00 | -10.752688 | 20 | PASS |

| | | | | | | | | |
|--|------|------|----|-----------|------------|------------|------|------|
| | | NV | 0 | -60000.00 | -10.752688 | 20 | PASS | |
| | | NV | 10 | -60000.00 | -10.752688 | 20 | PASS | |
| | | NV | 20 | -80000.00 | -14.336918 | 20 | PASS | |
| | | NV | 30 | -60000.00 | -10.752688 | 20 | PASS | |
| | | NV | 40 | -60000.00 | -10.752688 | 20 | PASS | |
| | | NV | 50 | -60000.00 | -10.752688 | 20 | PASS | |
| | Ant2 | 5580 | NV | -30 | -60000.00 | -10.752688 | 20 | PASS |
| | | | NV | -20 | -60000.00 | -10.752688 | 20 | PASS |
| | | | NV | -10 | -60000.00 | -10.752688 | 20 | PASS |
| | | | NV | 0 | -60000.00 | -10.752688 | 20 | PASS |
| | | | NV | 10 | -80000.00 | -14.336918 | 20 | PASS |
| | | | NV | 20 | -80000.00 | -14.336918 | 20 | PASS |
| | | | NV | 30 | -80000.00 | -14.336918 | 20 | PASS |
| | | | NV | 40 | -80000.00 | -14.336918 | 20 | PASS |
| | | | NV | 50 | -80000.00 | -14.336918 | 20 | PASS |
| | Ant1 | 5700 | NV | -30 | -60000.00 | -10.526316 | 20 | PASS |
| | | | NV | -20 | -60000.00 | -10.526316 | 20 | PASS |
| | | | NV | -10 | -60000.00 | -10.526316 | 20 | PASS |
| | | | NV | 0 | -60000.00 | -10.526316 | 20 | PASS |
| | | | NV | 10 | -60000.00 | -10.526316 | 20 | PASS |
| | | | NV | 20 | -60000.00 | -10.526316 | 20 | PASS |
| | | | NV | 30 | -60000.00 | -10.526316 | 20 | PASS |
| | | | NV | 40 | -60000.00 | -10.526316 | 20 | PASS |
| | | | NV | 50 | -60000.00 | -10.526316 | 20 | PASS |
| | Ant2 | 5700 | NV | -30 | -80000.00 | -14.035088 | 20 | PASS |
| | | | NV | -20 | -80000.00 | -14.035088 | 20 | PASS |
| | | | NV | -10 | -80000.00 | -14.035088 | 20 | PASS |
| | | | NV | 0 | -80000.00 | -14.035088 | 20 | PASS |
| | | | NV | 10 | -80000.00 | -14.035088 | 20 | PASS |
| | | | NV | 20 | -80000.00 | -14.035088 | 20 | PASS |
| | | | NV | 30 | -60000.00 | -10.526316 | 20 | PASS |
| | | | NV | 40 | -60000.00 | -10.526316 | 20 | PASS |
| | | | NV | 50 | -60000.00 | -10.526316 | 20 | PASS |
| | Ant1 | 5720 | NV | -30 | -80000.00 | -13.986014 | 20 | PASS |
| | | | NV | -20 | -60000.00 | -10.489510 | 20 | PASS |
| | | | NV | -10 | -60000.00 | -10.489510 | 20 | PASS |
| | | | NV | 0 | -80000.00 | -13.986014 | 20 | PASS |
| | | | NV | 10 | -60000.00 | -10.489510 | 20 | PASS |
| | | | NV | 20 | -60000.00 | -10.489510 | 20 | PASS |
| | | | NV | 30 | -60000.00 | -10.489510 | 20 | PASS |
| | | | NV | 40 | -60000.00 | -10.489510 | 20 | PASS |
| | | | NV | 50 | -60000.00 | -10.489510 | 20 | PASS |
| | Ant2 | 5720 | NV | -30 | -80000.00 | -13.986014 | 20 | PASS |
| | | | NV | -20 | -60000.00 | -10.489510 | 20 | PASS |
| | | | NV | -10 | -80000.00 | -13.986014 | 20 | PASS |
| | | | NV | 0 | -80000.00 | -13.986014 | 20 | PASS |
| | | | NV | 10 | -60000.00 | -10.489510 | 20 | PASS |
| | | | NV | 20 | -80000.00 | -13.986014 | 20 | PASS |
| | | | NV | 30 | -60000.00 | -10.489510 | 20 | PASS |
| | | | NV | 40 | -80000.00 | -13.986014 | 20 | PASS |
| | | | NV | 50 | -80000.00 | -13.986014 | 20 | PASS |
| | Ant1 | 5745 | NV | -30 | -60000.00 | -10.443864 | 20 | PASS |
| | | | NV | -20 | -60000.00 | -10.443864 | 20 | PASS |
| | | | NV | -10 | -60000.00 | -10.443864 | 20 | PASS |
| | | | NV | 0 | -60000.00 | -10.443864 | 20 | PASS |
| | | | NV | 10 | -60000.00 | -10.443864 | 20 | PASS |
| | | | NV | 20 | -80000.00 | -13.925152 | 20 | PASS |
| | | | NV | 30 | -60000.00 | -10.443864 | 20 | PASS |
| | | | NV | 40 | -80000.00 | -13.925152 | 20 | PASS |
| | | | NV | 50 | -60000.00 | -10.443864 | 20 | PASS |
| | Ant2 | 5745 | NV | -30 | -60000.00 | -10.443864 | 20 | PASS |
| | | | NV | -20 | -80000.00 | -13.925152 | 20 | PASS |
| | | | NV | -10 | -60000.00 | -10.443864 | 20 | PASS |
| | | | NV | 0 | -60000.00 | -10.443864 | 20 | PASS |

| | | | | | | | | | | |
|-----------|------|------|------|-----------|------------|------------|-----------|------------|----|------|
| | | | NV | 10 | -60000.00 | -10.443864 | 20 | PASS | | |
| | | | NV | 20 | -60000.00 | -10.443864 | 20 | PASS | | |
| | | | NV | 30 | -80000.00 | -13.925152 | 20 | PASS | | |
| | | | NV | 40 | -80000.00 | -13.925152 | 20 | PASS | | |
| | | | NV | 50 | -80000.00 | -13.925152 | 20 | PASS | | |
| | | | Ant1 | 5785 | NV | -30 | -60000.00 | -10.371651 | 20 | PASS |
| | | | | | NV | -20 | -60000.00 | -10.371651 | 20 | PASS |
| | | | | | NV | -10 | -60000.00 | -10.371651 | 20 | PASS |
| | | | | | NV | 0 | -60000.00 | -10.371651 | 20 | PASS |
| | | | | | NV | 10 | -80000.00 | -13.828868 | 20 | PASS |
| | NV | 20 | | | -60000.00 | -10.371651 | 20 | PASS | | |
| | Ant2 | 5785 | NV | 30 | -60000.00 | -10.371651 | 20 | PASS | | |
| | | | NV | 40 | -60000.00 | -10.371651 | 20 | PASS | | |
| | | | NV | 50 | -60000.00 | -10.371651 | 20 | PASS | | |
| | | | NV | -30 | -80000.00 | -13.828868 | 20 | PASS | | |
| | | | NV | -20 | -60000.00 | -10.371651 | 20 | PASS | | |
| | | | NV | -10 | -80000.00 | -13.828868 | 20 | PASS | | |
| | | | NV | 0 | -60000.00 | -10.371651 | 20 | PASS | | |
| | | | NV | 10 | -60000.00 | -10.371651 | 20 | PASS | | |
| | | | NV | 20 | -80000.00 | -13.828868 | 20 | PASS | | |
| | | | NV | 30 | -60000.00 | -10.371651 | 20 | PASS | | |
| | Ant1 | 5825 | NV | 40 | -60000.00 | -10.371651 | 20 | PASS | | |
| | | | NV | 50 | -60000.00 | -10.371651 | 20 | PASS | | |
| | | | NV | -30 | -80000.00 | -13.733906 | 20 | PASS | | |
| | | | NV | -20 | -60000.00 | -10.300429 | 20 | PASS | | |
| | | | NV | -10 | -60000.00 | -10.300429 | 20 | PASS | | |
| | | | NV | 0 | -60000.00 | -10.300429 | 20 | PASS | | |
| | | | NV | 10 | -60000.00 | -10.300429 | 20 | PASS | | |
| | | | NV | 20 | -80000.00 | -13.733906 | 20 | PASS | | |
| | | | NV | 30 | -60000.00 | -10.300429 | 20 | PASS | | |
| | | | NV | 40 | -60000.00 | -10.300429 | 20 | PASS | | |
| | Ant2 | 5825 | NV | 50 | -60000.00 | -10.300429 | 20 | PASS | | |
| | | | NV | -30 | -60000.00 | -10.300429 | 20 | PASS | | |
| | | | NV | -20 | -80000.00 | -13.733906 | 20 | PASS | | |
| | | | NV | -10 | -80000.00 | -13.733906 | 20 | PASS | | |
| | | | NV | 0 | -80000.00 | -13.733906 | 20 | PASS | | |
| | | | NV | 10 | -60000.00 | -10.300429 | 20 | PASS | | |
| | | | NV | 20 | -60000.00 | -10.300429 | 20 | PASS | | |
| | | | NV | 30 | -60000.00 | -10.300429 | 20 | PASS | | |
| | | | NV | 40 | -80000.00 | -13.733906 | 20 | PASS | | |
| NV | | | 50 | -80000.00 | -13.733906 | 20 | PASS | | | |
| 11N40MIMO | Ant1 | 5190 | NV | -30 | -80000.00 | -15.414258 | 20 | PASS | | |
| | | | NV | -20 | -40000.00 | -7.707129 | 20 | PASS | | |
| | | | NV | -10 | -40000.00 | -7.707129 | 20 | PASS | | |
| | | | NV | 0 | -40000.00 | -7.707129 | 20 | PASS | | |
| | | | NV | 10 | -40000.00 | -7.707129 | 20 | PASS | | |
| | | | NV | 20 | -40000.00 | -7.707129 | 20 | PASS | | |
| | | | NV | 30 | -80000.00 | -15.414258 | 20 | PASS | | |
| | | | NV | 40 | -80000.00 | -15.414258 | 20 | PASS | | |
| | | | NV | 50 | -40000.00 | -7.707129 | 20 | PASS | | |
| | | | Ant2 | 5190 | NV | -30 | 0.00 | 0.000000 | 20 | PASS |
| | NV | -20 | | | -40000.00 | -7.707129 | 20 | PASS | | |
| | NV | -10 | | | -40000.00 | -7.707129 | 20 | PASS | | |
| | NV | 0 | | | -40000.00 | -7.707129 | 20 | PASS | | |
| | NV | 10 | | | -40000.00 | -7.707129 | 20 | PASS | | |
| | NV | 20 | | | -40000.00 | -7.707129 | 20 | PASS | | |
| | NV | 30 | | | -40000.00 | -7.707129 | 20 | PASS | | |
| | NV | 40 | | | -40000.00 | -7.707129 | 20 | PASS | | |
| | NV | 50 | | | -40000.00 | -7.707129 | 20 | PASS | | |
| | Ant1 | 5230 | | | NV | -30 | -40000.00 | -7.648184 | 20 | PASS |
| | | | NV | -20 | -80000.00 | -15.296367 | 20 | PASS | | |
| NV | | | -10 | -40000.00 | -7.648184 | 20 | PASS | | | |
| NV | | | 0 | -40000.00 | -7.648184 | 20 | PASS | | | |
| NV | | | 10 | -40000.00 | -7.648184 | 20 | PASS | | | |
| NV | | | 20 | -40000.00 | -7.648184 | 20 | PASS | | | |

| | | | | | | | | | | |
|--|------|------|------|-----------|-----------|------------|-----------|-----------|----|------|
| | | NV | 20 | -40000.00 | -7.648184 | 20 | PASS | | | |
| | | NV | 30 | -40000.00 | -7.648184 | 20 | PASS | | | |
| | | NV | 40 | -40000.00 | -7.648184 | 20 | PASS | | | |
| | | NV | 50 | -40000.00 | -7.648184 | 20 | PASS | | | |
| | Ant2 | 5230 | NV | -30 | -80000.00 | -15.296367 | 20 | PASS | | |
| | | | NV | -20 | -40000.00 | -7.648184 | 20 | PASS | | |
| | | | NV | -10 | -40000.00 | -7.648184 | 20 | PASS | | |
| | | | NV | 0 | -40000.00 | -7.648184 | 20 | PASS | | |
| | | | NV | 10 | -40000.00 | -7.648184 | 20 | PASS | | |
| | | | NV | 20 | -40000.00 | -7.648184 | 20 | PASS | | |
| | | | NV | 30 | -40000.00 | -7.648184 | 20 | PASS | | |
| | | | NV | 40 | -40000.00 | -7.648184 | 20 | PASS | | |
| | | | NV | 50 | -40000.00 | -7.648184 | 20 | PASS | | |
| | | | Ant1 | 5270 | NV | -30 | 0.00 | 0.000000 | 20 | PASS |
| | | | | | NV | -20 | -40000.00 | -7.590133 | 20 | PASS |
| | | | | | NV | -10 | -40000.00 | -7.590133 | 20 | PASS |
| | NV | 0 | | | -40000.00 | -7.590133 | 20 | PASS | | |
| | NV | 10 | | | -40000.00 | -7.590133 | 20 | PASS | | |
| | NV | 20 | | | -40000.00 | -7.590133 | 20 | PASS | | |
| | NV | 30 | | | -40000.00 | -7.590133 | 20 | PASS | | |
| | NV | 40 | | | -40000.00 | -7.590133 | 20 | PASS | | |
| | Ant2 | 5270 | NV | -30 | -40000.00 | -7.590133 | 20 | PASS | | |
| | | | NV | -20 | -80000.00 | -15.180266 | 20 | PASS | | |
| | | | NV | -10 | -40000.00 | -7.590133 | 20 | PASS | | |
| | | | NV | 0 | -40000.00 | -7.590133 | 20 | PASS | | |
| | | | NV | 10 | -40000.00 | -7.590133 | 20 | PASS | | |
| | | | NV | 20 | -40000.00 | -7.590133 | 20 | PASS | | |
| | | | NV | 30 | -40000.00 | -7.590133 | 20 | PASS | | |
| | | | NV | 40 | -80000.00 | -15.180266 | 20 | PASS | | |
| | Ant1 | 5310 | NV | -30 | -40000.00 | -7.532957 | 20 | PASS | | |
| | | | NV | -20 | -40000.00 | -7.532957 | 20 | PASS | | |
| | | | NV | -10 | -40000.00 | -7.532957 | 20 | PASS | | |
| | | | NV | 0 | -40000.00 | -7.532957 | 20 | PASS | | |
| | | | NV | 10 | -40000.00 | -7.532957 | 20 | PASS | | |
| | | | NV | 20 | -40000.00 | -7.532957 | 20 | PASS | | |
| | | | NV | 30 | -40000.00 | -7.532957 | 20 | PASS | | |
| | | | NV | 40 | -40000.00 | -7.532957 | 20 | PASS | | |
| | Ant2 | 5310 | NV | 50 | 0.00 | 0.000000 | 20 | PASS | | |
| | | | NV | -30 | -40000.00 | -7.532957 | 20 | PASS | | |
| | | | NV | -20 | -40000.00 | -7.532957 | 20 | PASS | | |
| | | | NV | -10 | -40000.00 | -7.532957 | 20 | PASS | | |
| | | | NV | 0 | -40000.00 | -7.532957 | 20 | PASS | | |
| | | | NV | 10 | -40000.00 | -7.532957 | 20 | PASS | | |
| | | | NV | 20 | -40000.00 | -7.532957 | 20 | PASS | | |
| | | | NV | 30 | -40000.00 | -7.532957 | 20 | PASS | | |
| | Ant1 | 5510 | NV | 40 | -40000.00 | -7.532957 | 20 | PASS | | |
| | | | NV | 50 | -80000.00 | -15.065913 | 20 | PASS | | |
| | | | NV | -30 | -40000.00 | -7.259528 | 20 | PASS | | |
| | | | NV | -20 | -40000.00 | -7.259528 | 20 | PASS | | |
| | | | NV | -10 | -40000.00 | -7.259528 | 20 | PASS | | |
| | | | NV | 0 | -40000.00 | -7.259528 | 20 | PASS | | |
| | | | NV | 10 | -40000.00 | -7.259528 | 20 | PASS | | |
| | | | NV | 20 | -40000.00 | -7.259528 | 20 | PASS | | |
| | Ant2 | 5510 | NV | 30 | -40000.00 | -7.259528 | 20 | PASS | | |
| | | | NV | 40 | -40000.00 | -7.259528 | 20 | PASS | | |
| | | | NV | 50 | -80000.00 | -14.519056 | 20 | PASS | | |
| | | | NV | -30 | -40000.00 | -7.259528 | 20 | PASS | | |
| | | | NV | -20 | -40000.00 | -7.259528 | 20 | PASS | | |
| | | | NV | -10 | -40000.00 | -7.259528 | 20 | PASS | | |
| | | | NV | 0 | -80000.00 | -14.519056 | 20 | PASS | | |
| | | | NV | 10 | -40000.00 | -7.259528 | 20 | PASS | | |
| | | | NV | 20 | -40000.00 | -7.259528 | 20 | PASS | | |

| | | | | | | | | | |
|------|------|------|------|-----------|------------|-----------|-----------|----|------|
| | | NV | 30 | -40000.00 | -7.259528 | 20 | PASS | | |
| | | NV | 40 | -40000.00 | -7.259528 | 20 | PASS | | |
| | | NV | 50 | -40000.00 | -7.259528 | 20 | PASS | | |
| Ant1 | 5550 | NV | -30 | -40000.00 | -7.207207 | 20 | PASS | | |
| | | NV | -20 | -80000.00 | -14.414414 | 20 | PASS | | |
| | | NV | -10 | -80000.00 | -14.414414 | 20 | PASS | | |
| | | NV | 0 | -40000.00 | -7.207207 | 20 | PASS | | |
| | | NV | 10 | -80000.00 | -14.414414 | 20 | PASS | | |
| | | NV | 20 | -40000.00 | -7.207207 | 20 | PASS | | |
| | | NV | 30 | -40000.00 | -7.207207 | 20 | PASS | | |
| | | NV | 40 | -40000.00 | -7.207207 | 20 | PASS | | |
| | | NV | 50 | 0.00 | 0.000000 | 20 | PASS | | |
| | | Ant2 | 5550 | NV | -30 | -40000.00 | -7.207207 | 20 | PASS |
| | | | | NV | -20 | -40000.00 | -7.207207 | 20 | PASS |
| NV | -10 | | | -40000.00 | -7.207207 | 20 | PASS | | |
| NV | 0 | | | -40000.00 | -7.207207 | 20 | PASS | | |
| NV | 10 | | | -40000.00 | -7.207207 | 20 | PASS | | |
| NV | 20 | | | -80000.00 | -14.414414 | 20 | PASS | | |
| NV | 30 | | | -80000.00 | -14.414414 | 20 | PASS | | |
| NV | 40 | | | -40000.00 | -7.207207 | 20 | PASS | | |
| Ant1 | 5670 | NV | 50 | -80000.00 | -14.414414 | 20 | PASS | | |
| | | NV | -30 | -40000.00 | -7.054674 | 20 | PASS | | |
| | | NV | -20 | -40000.00 | -7.054674 | 20 | PASS | | |
| | | NV | -10 | -40000.00 | -7.054674 | 20 | PASS | | |
| | | NV | 0 | -40000.00 | -7.054674 | 20 | PASS | | |
| | | NV | 10 | -40000.00 | -7.054674 | 20 | PASS | | |
| | | NV | 20 | -40000.00 | -7.054674 | 20 | PASS | | |
| | | NV | 30 | -40000.00 | -7.054674 | 20 | PASS | | |
| Ant2 | 5670 | NV | 40 | -40000.00 | -7.054674 | 20 | PASS | | |
| | | NV | 50 | -40000.00 | -7.054674 | 20 | PASS | | |
| | | NV | -30 | -40000.00 | -7.054674 | 20 | PASS | | |
| | | NV | -20 | -40000.00 | -7.054674 | 20 | PASS | | |
| | | NV | -10 | -40000.00 | -7.054674 | 20 | PASS | | |
| | | NV | 0 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | 10 | -40000.00 | -7.054674 | 20 | PASS | | |
| | | NV | 20 | -40000.00 | -7.054674 | 20 | PASS | | |
| Ant1 | 5710 | NV | 30 | -40000.00 | -7.054674 | 20 | PASS | | |
| | | NV | 40 | -40000.00 | -7.054674 | 20 | PASS | | |
| | | NV | 50 | -40000.00 | -7.054674 | 20 | PASS | | |
| | | NV | -30 | -40000.00 | -7.005254 | 20 | PASS | | |
| | | NV | -20 | -40000.00 | -7.005254 | 20 | PASS | | |
| | | NV | -10 | -40000.00 | -7.005254 | 20 | PASS | | |
| | | NV | 0 | -40000.00 | -7.005254 | 20 | PASS | | |
| | | NV | 10 | -40000.00 | -7.005254 | 20 | PASS | | |
| Ant2 | 5710 | NV | 20 | -40000.00 | -7.005254 | 20 | PASS | | |
| | | NV | 30 | -40000.00 | -7.005254 | 20 | PASS | | |
| | | NV | 40 | -40000.00 | -7.005254 | 20 | PASS | | |
| | | NV | 50 | -40000.00 | -7.005254 | 20 | PASS | | |
| | | NV | -30 | -40000.00 | -7.005254 | 20 | PASS | | |
| | | NV | -20 | -40000.00 | -7.005254 | 20 | PASS | | |
| | | NV | -10 | -40000.00 | -7.005254 | 20 | PASS | | |
| | | NV | 0 | -40000.00 | -7.005254 | 20 | PASS | | |
| Ant1 | 5755 | NV | 10 | -40000.00 | -7.005254 | 20 | PASS | | |
| | | NV | 20 | -40000.00 | -7.005254 | 20 | PASS | | |
| | | NV | 30 | -80000.00 | -14.010508 | 20 | PASS | | |
| | | NV | 40 | -80000.00 | -14.010508 | 20 | PASS | | |
| | | NV | -30 | -80000.00 | -13.900956 | 20 | PASS | | |
| | | NV | -20 | -80000.00 | -13.900956 | 20 | PASS | | |
| | | NV | -10 | -40000.00 | -6.950478 | 20 | PASS | | |
| | | NV | 0 | -40000.00 | -6.950478 | 20 | PASS | | |
| | | NV | 10 | -40000.00 | -6.950478 | 20 | PASS | | |
| | | NV | 20 | -40000.00 | -6.950478 | 20 | PASS | | |
| | | NV | 30 | -80000.00 | -13.900956 | 20 | PASS | | |

| | | | | | | | | | |
|------|------------|------|-----------|------|------------|------------|-----------|------------|------|
| | Ant2 | 5755 | NV | 40 | -40000.00 | -6.950478 | 20 | PASS | |
| | | | NV | 50 | -40000.00 | -6.950478 | 20 | PASS | |
| | | | NV | -30 | -40000.00 | -6.950478 | 20 | PASS | |
| | | | NV | -20 | -40000.00 | -6.950478 | 20 | PASS | |
| | | | NV | -10 | -40000.00 | -6.950478 | 20 | PASS | |
| | | | NV | 0 | -80000.00 | -13.900956 | 20 | PASS | |
| | | | NV | 10 | -40000.00 | -6.950478 | 20 | PASS | |
| | | | NV | 20 | -40000.00 | -6.950478 | 20 | PASS | |
| | | | NV | 30 | -40000.00 | -6.950478 | 20 | PASS | |
| | | | NV | 40 | -40000.00 | -6.950478 | 20 | PASS | |
| | Ant1 | 5795 | NV | -30 | -40000.00 | -6.902502 | 20 | PASS | |
| | | | NV | -20 | -40000.00 | -6.902502 | 20 | PASS | |
| | | | NV | -10 | -40000.00 | -6.902502 | 20 | PASS | |
| | | | NV | 0 | -40000.00 | -6.902502 | 20 | PASS | |
| | | | NV | 10 | -40000.00 | -6.902502 | 20 | PASS | |
| | | | NV | 20 | -40000.00 | -6.902502 | 20 | PASS | |
| | | | NV | 30 | -40000.00 | -6.902502 | 20 | PASS | |
| | | | NV | 40 | -80000.00 | -13.805004 | 20 | PASS | |
| | | | NV | 50 | -40000.00 | -6.902502 | 20 | PASS | |
| | | | Ant2 | 5795 | NV | -30 | -40000.00 | -6.902502 | 20 |
| | NV | -20 | | | -80000.00 | -13.805004 | 20 | PASS | |
| | NV | -10 | | | -40000.00 | -6.902502 | 20 | PASS | |
| | NV | 0 | | | -40000.00 | -6.902502 | 20 | PASS | |
| | NV | 10 | | | -40000.00 | -6.902502 | 20 | PASS | |
| | NV | 20 | | | -40000.00 | -6.902502 | 20 | PASS | |
| | NV | 30 | | | -40000.00 | -6.902502 | 20 | PASS | |
| | NV | 40 | | | -80000.00 | -13.805004 | 20 | PASS | |
| | 11AC80MIMO | Ant1 | 5210 | NV | -30 | 0.00 | 0.000000 | 20 | PASS |
| | | | | NV | -20 | 0.00 | 0.000000 | 20 | PASS |
| | | | | NV | -10 | 0.00 | 0.000000 | 20 | PASS |
| NV | | | | 0 | 0.00 | 0.000000 | 20 | PASS | |
| NV | | | | 10 | 0.00 | 0.000000 | 20 | PASS | |
| NV | | | | 20 | 0.00 | 0.000000 | 20 | PASS | |
| NV | | | | 30 | 0.00 | 0.000000 | 20 | PASS | |
| NV | | | | 40 | 0.00 | 0.000000 | 20 | PASS | |
| NV | | | | 50 | 0.00 | 0.000000 | 20 | PASS | |
| Ant2 | | | | 5210 | NV | -30 | 0.00 | 0.000000 | 20 |
| | | NV | -20 | | 0.00 | 0.000000 | 20 | PASS | |
| | | NV | -10 | | 0.00 | 0.000000 | 20 | PASS | |
| | | NV | 0 | | 0.00 | 0.000000 | 20 | PASS | |
| | | NV | 10 | | 0.00 | 0.000000 | 20 | PASS | |
| | | NV | 20 | | 0.00 | 0.000000 | 20 | PASS | |
| | | NV | 30 | | -80000.00 | -15.355086 | 20 | PASS | |
| | | NV | 40 | | 0.00 | 0.000000 | 20 | PASS | |
| | | NV | 50 | | 0.00 | 0.000000 | 20 | PASS | |
| | | Ant1 | 5290 | | NV | -30 | 0.00 | 0.000000 | 20 |
| NV | | | | -20 | 0.00 | 0.000000 | 20 | PASS | |
| NV | | | | -10 | 0.00 | 0.000000 | 20 | PASS | |
| NV | | | | 0 | 0.00 | 0.000000 | 20 | PASS | |
| NV | | | | 10 | -80000.00 | -15.122873 | 20 | PASS | |
| NV | | | | 20 | 0.00 | 0.000000 | 20 | PASS | |
| NV | | | | 30 | 0.00 | 0.000000 | 20 | PASS | |
| NV | | | | 40 | 0.00 | 0.000000 | 20 | PASS | |
| NV | | | | 50 | 0.00 | 0.000000 | 20 | PASS | |
| Ant2 | | | | 5290 | NV | -30 | -80000.00 | -15.122873 | 20 |
| | | NV | -20 | | 0.00 | 0.000000 | 20 | PASS | |
| | | NV | -10 | | 0.00 | 0.000000 | 20 | PASS | |
| | NV | 0 | 80000.00 | | 15.122873 | 20 | PASS | | |
| | NV | 10 | 80000.00 | | 15.122873 | 20 | PASS | | |
| | NV | 20 | 0.00 | | 0.000000 | 20 | PASS | | |
| | NV | 30 | -80000.00 | | -15.122873 | 20 | PASS | | |
| | NV | 40 | -80000.00 | | -15.122873 | 20 | PASS | | |

| | | | | | | | | | |
|------|------|------|------|-----------|------------|-----------|------------|----|------|
| Ant1 | 5530 | NV | 50 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | -30 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | -20 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | -10 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | 0 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | 10 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | 20 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | 30 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | 40 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | 50 | -80000.00 | -14.466546 | 20 | PASS | | |
| | | Ant2 | 5530 | NV | -30 | 0.00 | 0.000000 | 20 | PASS |
| | | | | NV | -20 | 0.00 | 0.000000 | 20 | PASS |
| | | | | NV | -10 | 0.00 | 0.000000 | 20 | PASS |
| | | | | NV | 0 | 0.00 | 0.000000 | 20 | PASS |
| | | | | NV | 10 | -80000.00 | -14.466546 | 20 | PASS |
| | | | | NV | 20 | 0.00 | 0.000000 | 20 | PASS |
| NV | 30 | | | 0.00 | 0.000000 | 20 | PASS | | |
| NV | 40 | | | 0.00 | 0.000000 | 20 | PASS | | |
| Ant1 | 5610 | NV | 50 | -80000.00 | -14.466546 | 20 | PASS | | |
| | | NV | -30 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | -20 | -80000.00 | -14.260250 | 20 | PASS | | |
| | | NV | -10 | -80000.00 | -14.260250 | 20 | PASS | | |
| | | NV | 0 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | 10 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | 20 | -80000.00 | -14.260250 | 20 | PASS | | |
| | | NV | 30 | 0.00 | 0.000000 | 20 | PASS | | |
| Ant2 | 5610 | NV | 40 | -80000.00 | -14.260250 | 20 | PASS | | |
| | | NV | 50 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | -30 | -80000.00 | -14.260250 | 20 | PASS | | |
| | | NV | -20 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | -10 | -80000.00 | -14.260250 | 20 | PASS | | |
| | | NV | 0 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | 10 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | 20 | 0.00 | 0.000000 | 20 | PASS | | |
| Ant1 | 5690 | NV | 30 | -80000.00 | -14.260250 | 20 | PASS | | |
| | | NV | 40 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | 50 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | -30 | -80000.00 | -14.059754 | 20 | PASS | | |
| | | NV | -20 | -80000.00 | -14.059754 | 20 | PASS | | |
| | | NV | -10 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | 0 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | 10 | 0.00 | 0.000000 | 20 | PASS | | |
| Ant2 | 5690 | NV | 20 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | 30 | -80000.00 | -14.059754 | 20 | PASS | | |
| | | NV | 40 | -80000.00 | -14.059754 | 20 | PASS | | |
| | | NV | 50 | -80000.00 | -14.059754 | 20 | PASS | | |
| | | NV | -30 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | -20 | -80000.00 | -14.059754 | 20 | PASS | | |
| | | NV | -10 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | 0 | 0.00 | 0.000000 | 20 | PASS | | |
| Ant1 | 5775 | NV | 10 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | 20 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | 30 | -80000.00 | -13.852814 | 20 | PASS | | |
| | | NV | 40 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | 50 | -80000.00 | -13.852814 | 20 | PASS | | |
| | | NV | -30 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | -20 | 0.00 | 0.000000 | 20 | PASS | | |
| | | NV | -10 | 0.00 | 0.000000 | 20 | PASS | | |

| | | | | | | | |
|------|------|----|-----|-----------|------------|----|------|
| Ant2 | 5775 | NV | -30 | -80000.00 | -13.852814 | 20 | PASS |
| | | NV | -20 | -80000.00 | -13.852814 | 20 | PASS |
| | | NV | -10 | 0.00 | 0.000000 | 20 | PASS |
| | | NV | 0 | -80000.00 | -13.852814 | 20 | PASS |
| | | NV | 10 | 0.00 | 0.000000 | 20 | PASS |
| | | NV | 20 | 0.00 | 0.000000 | 20 | PASS |
| | | NV | 30 | -80000.00 | -13.852814 | 20 | PASS |
| | | NV | 40 | 0.00 | 0.000000 | 20 | PASS |
| | | NV | 50 | 0.00 | 0.000000 | 20 | PASS |

11. Dynamic Frequency Selection

11.1. Applicability of DFS requirements

Table 1: Applicability of DFS Requirements Prior to Use of a Channel

| Requirement | Operational Mode | | |
|---------------------------------|---------------------------------|--|--|
| | <input type="checkbox"/> Master | <input checked="" type="checkbox"/> Client Without Radar Detection | <input type="checkbox"/> 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 |
| U-NII Detection Bandwidth | Yes | Not required | Yes |

Table 2: Applicability of DFS requirements during normal operation

| Requirement | Operational Mode | |
|-----------------------------------|---|--|
| | <input type="checkbox"/> Master Device or Client with Radar Detection | <input checked="" type="checkbox"/> Client Without Radar Detection |
| DFS Detection Threshold | Yes | Not required |
| Channel Closing Transmission Time | Yes | Yes |
| Channel Move Time | Yes | Yes |
| U-NII Detection Bandwidth | Yes | Not required |

| Additional requirements for devices with multiple bandwidth modes | <input type="checkbox"/> Master Device or Client with Radar Detection | <input checked="" type="checkbox"/> Client Without Radar Detection |
|---|---|--|
| U-NII Detection Bandwidth and Statistical Performance Check | All BW modes must be tested | Not required |
| Channel Move Time and Channel Closing Transmission Time | Test using widest BW mode available | Test using the widest BW mode available for the link |
| All other tests | Any single BW mode | Not required |

Note: Frequencies selected for statistical performance check should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.

11.2. Limit

(1) DFS Detection Thresholds

Table 3: DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

| Maximum Transmit Power | Value (See Notes 1, 2, and 3) |
|--|-------------------------------|
| EIRP \geq 200 milliwatt | -64 dBm |
| EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz | -62 dBm |
| EIRP < 200 milliwatt that do not meet the power spectral density requirement | -64 dBm |

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.
 Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.
 Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

(2) DFS Response Requirements

Table 4: DFS Response Requirement Values

| Parameter | Value |
|-----------------------------------|---|
| Non-occupancy period | Minimum 30 minutes |
| Channel Availability Check Time | 60 seconds |
| Channel Move Time | 10 seconds See Note 1. |
| Channel Closing Transmission Time | 200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2. |
| U-NII Detection Bandwidth | Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3. |

Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.
 Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required facilitating a Channel 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 U-NII Detection Bandwidth 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.

11.3. Parameters of radar test waveforms

This section provides the parameters for required test waveforms, minimum percentage of successful detections, and the minimum number of trials that must be used for determining DFS conformance. Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

Table 5 Short Pulse Radar Test Waveforms

| Radar Type | Pulse Width (μsec) | PRI (μsec) | Number of Pulses | Minimum Percentage of Successful Detection | Minimum Number of Trials |
|---|--------------------|------------|---|--|--------------------------|
| 0 | 1 | 1428 | 18 | See Note 1 | See Note 1 |
| 1 | 1 | Test A | Roundup $\left\{ \frac{1}{360} \cdot \frac{19 \cdot 10^6}{\text{PRI}_{\mu\text{sec}}} \right\}$ | 60% | 30 |
| | | Test B | | | |
| 2 | 1-5 | 150-230 | 23-29 | 60% | 30 |
| 3 | 6-10 | 200-500 | 16-18 | 60% | 30 |
| 4 | 11-20 | 200-500 | 12-16 | 60% | 30 |
| Aggregate (Radar Types 1-4) | | | | 80% | 120 |
| <p>Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.</p> <p>Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a</p> <p>Test B: 15 unique PRI values randomly selected within the range of 518-3066 μsec, with a minimum increment of 1 μsec, excluding PRI values selected in Test A</p> | | | | | |

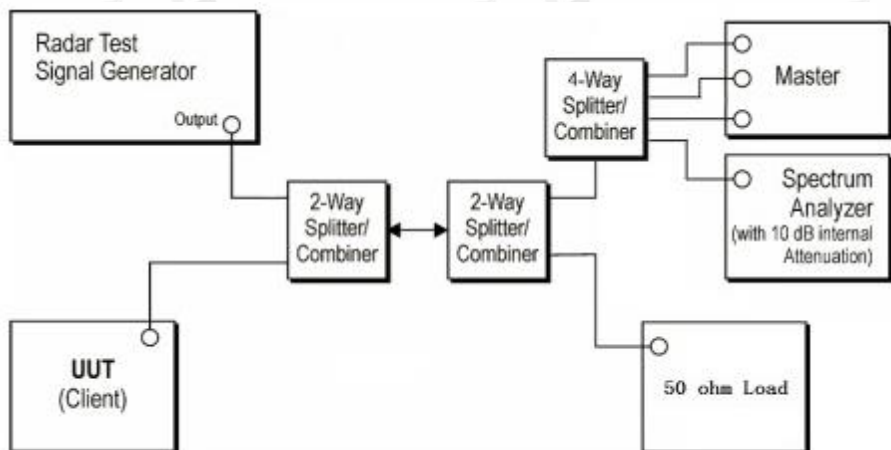
A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. If more than 30 waveforms are used for Short Pulse Radar Type 1, then each additional waveform is generated with Test B and must also be unique and not repeated from the previous waveforms in Tests A or B. Test aggregate is average of the percentage of successful detections of short pulse radar types 1-4

11.4. Calibration of radar waveform

Radar Waveform Calibration Procedure:

- (1) A 50 ohm 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 $-62\text{dBm} + 0\text{dBi} + 1\text{dB} = -61\text{dBm}$ 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 3 MHz. The spectrum analyzer had offset -1.0dB to compensate RF cable loss 1.0dB .
- (4) The vector signal generator amplitude was set so that the power level measured at the spectrum analyzer was $-62\text{dBm} + 0\text{dBi} + 1\text{dB} = -61\text{dBm}$. Capture the spectrum analyzer plots on short pulse radar waveform.

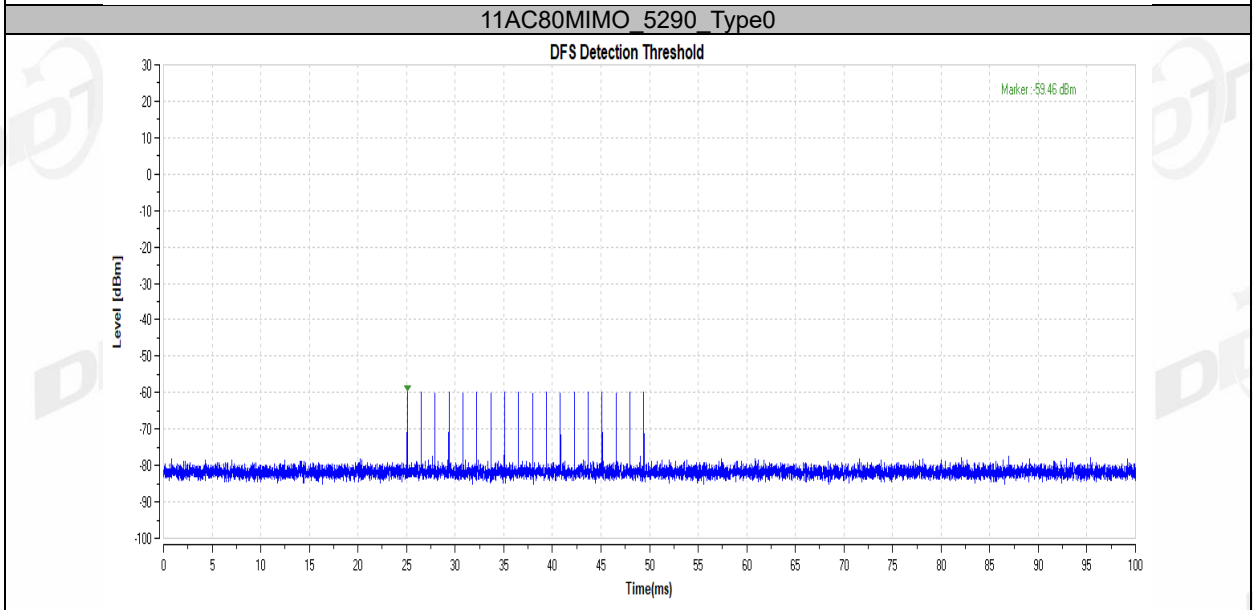
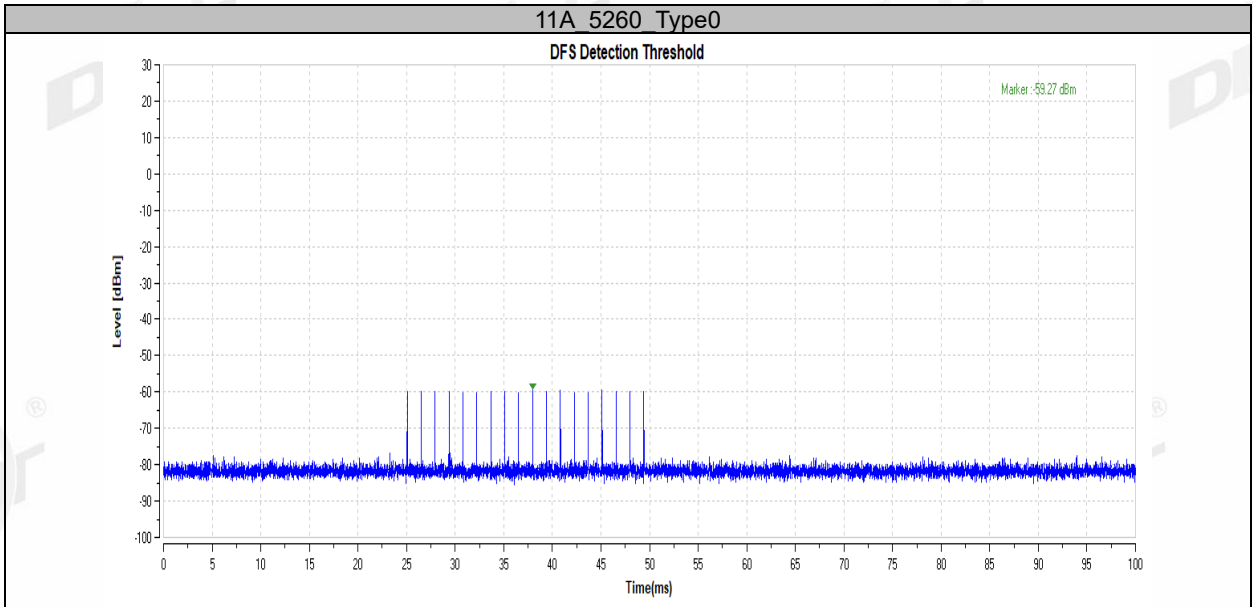
Conducted Calibration Setup:



Note: 1. Use the software "Web" to set the frequency channel.
 2. EUT is not support TPC and not with Radar detection.

Radar Waveform Calibration Result:

| Frequency [MHz] | Radar Type | Result [dBm] | Limit [dBm] | Verdict |
|-----------------|------------|--------------|-------------|---------|
| 5260 | Type0 | -59.27 | -59.05 | PASS |
| 5290 | Type0 | -59.46 | -59.05 | PASS |



11.5. Channel closing transmission time, channel move time and non-occupancy period

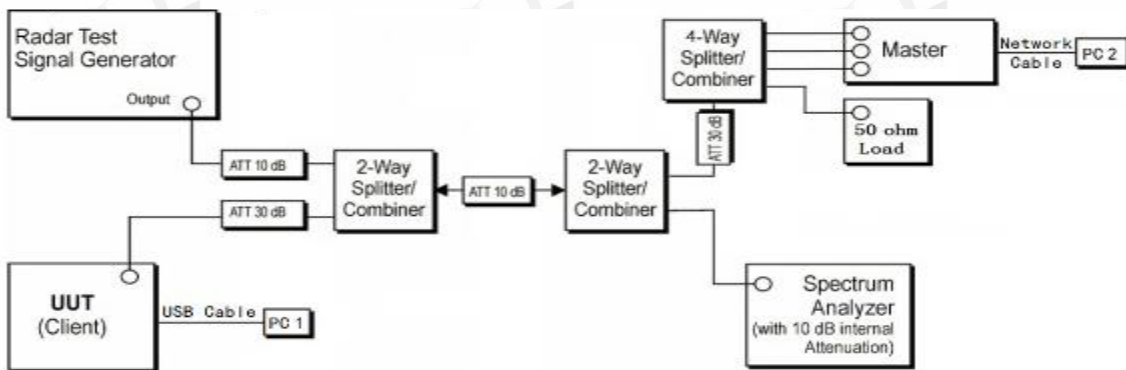
Block diagram of test setup Test Procedure:

- (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 -61dBm at the antenna port 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) Observe 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 Types start at the end of the 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
- (8) 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: $Dwell (0.3ms) = S (12000ms) / B (4000)$; where Dwell is the 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.

Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

11.6. Test setup

Setup for Client with injection at the Master



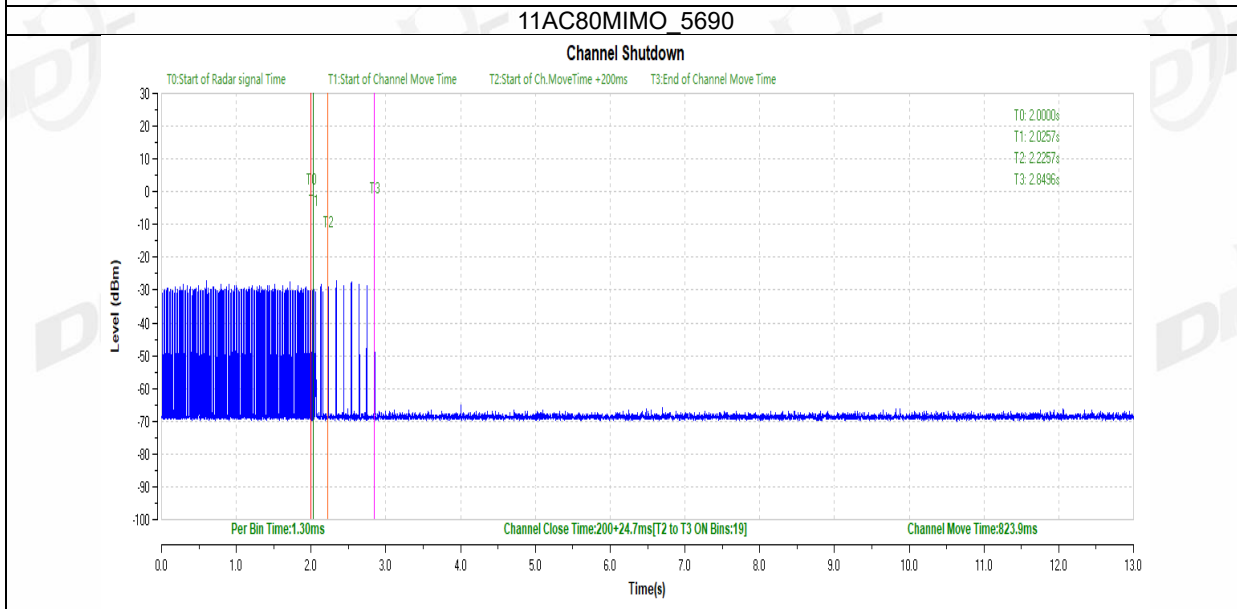
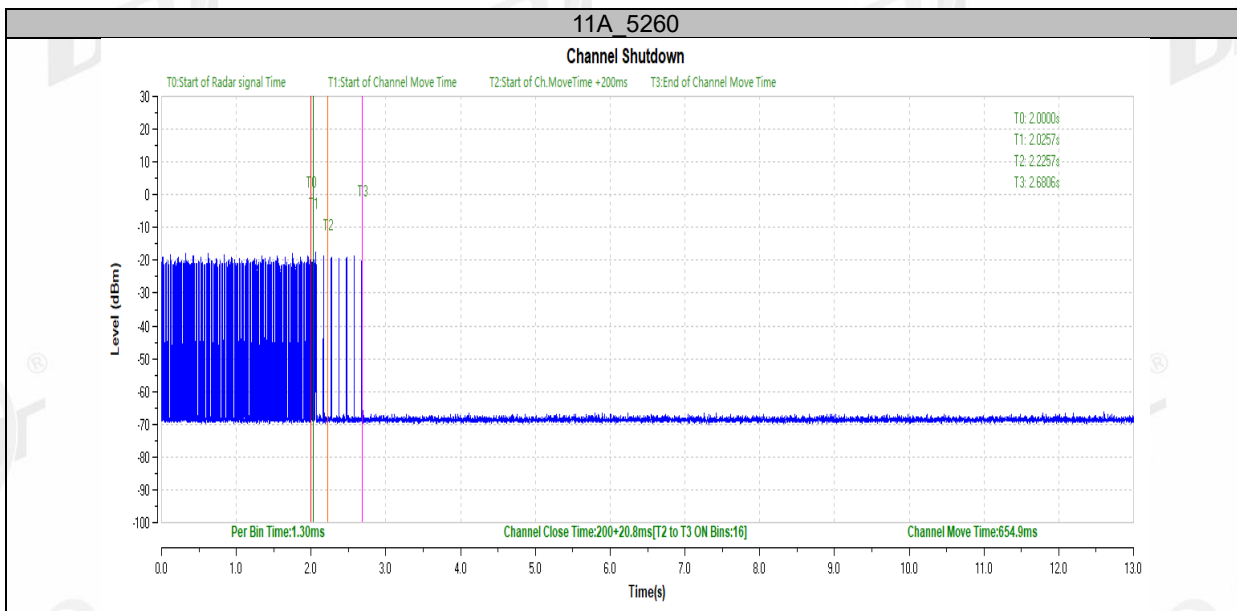
11.7. Test result

| | | | |
|--------------------|---------------------------|------------|---|
| Test Engineer: | Haofeng | Test Site: | RF Measurement System 4# |
| Ambient Condition: | 20.4-25.1 °C,32.2-50.2%RH | Test Date: | 2023.11.25-2023.11.28/2024.02.01-2024.02.02 |
| Test Power Supply: | Battery | EUT: | Wireless Speaker |
| Sample Number: | S23111312-01 | Model No.: | BOOMBOX3 Wi-Fi |

| | | | |
|-------------------------|--------------|---------------|---------------|
| Auxiliary Master device | Manufacturer | FCC ID | IC |
| | Ruijie | 2AX5J-RAP73HD | 27676-RAP73HD |

| Test Mode | Frequency [MHz] | CCTT[ms] | Limit[ms] | CMT[ms] | Limit[ms] | Verdict |
|------------|-----------------|----------|-----------|---------|-----------|---------|
| 11A | 5260 | 200+20.8 | 200+60 | 654.9 | 10000 | PASS |
| 11AC80MIMO | 5290 | 200+24.7 | 200+60 | 823.9 | 10000 | PASS |

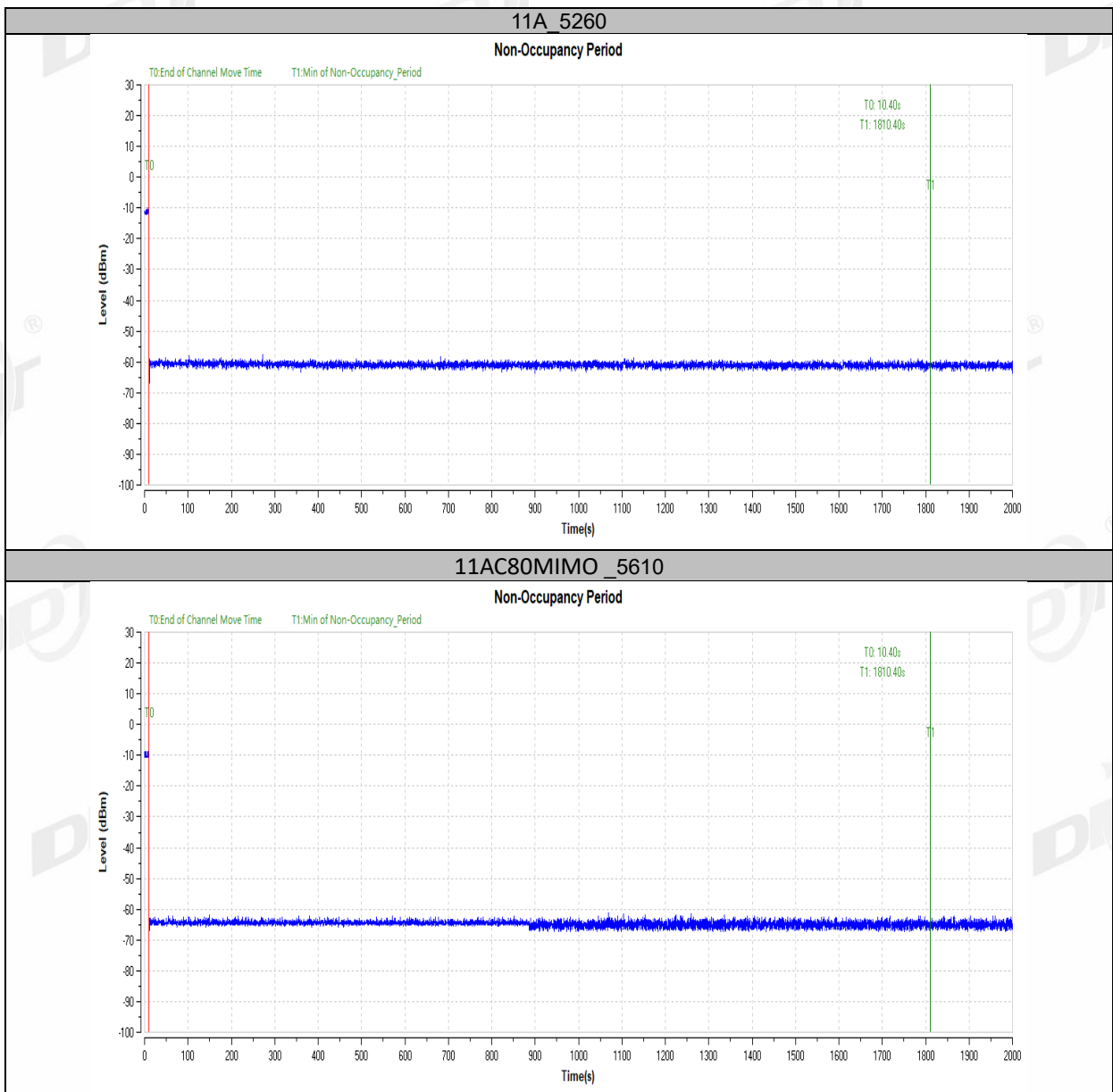
Test plots as follows:



Non-Occupancy Period

| Test Mode | Frequency [MHz] | Result | Limit[s] | Verdict |
|------------|-----------------|----------------|----------|---------|
| 11A | 5260 | see test graph | ≥1800 | PASS |
| 11AC80MIMO | 5610 | see test graph | ≥1800 | PASS |

Test plots as follows:



12. Antenna Requirements

12.1. Limit

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For intentional device, according to RSS-Gen issue 5 section 6.8.

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

12.2. Result

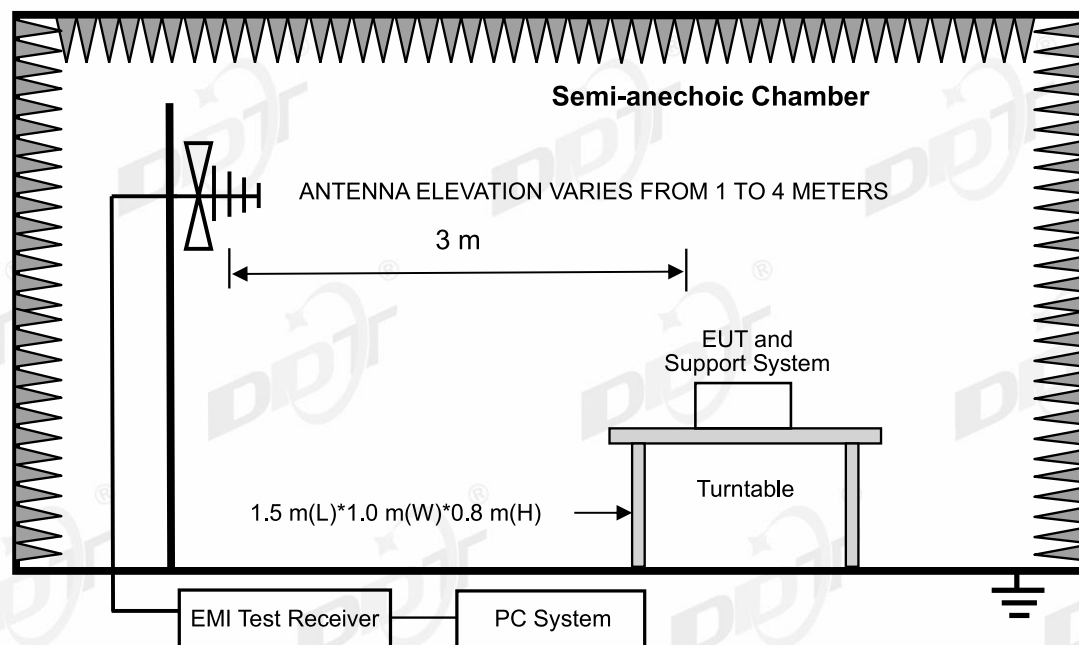
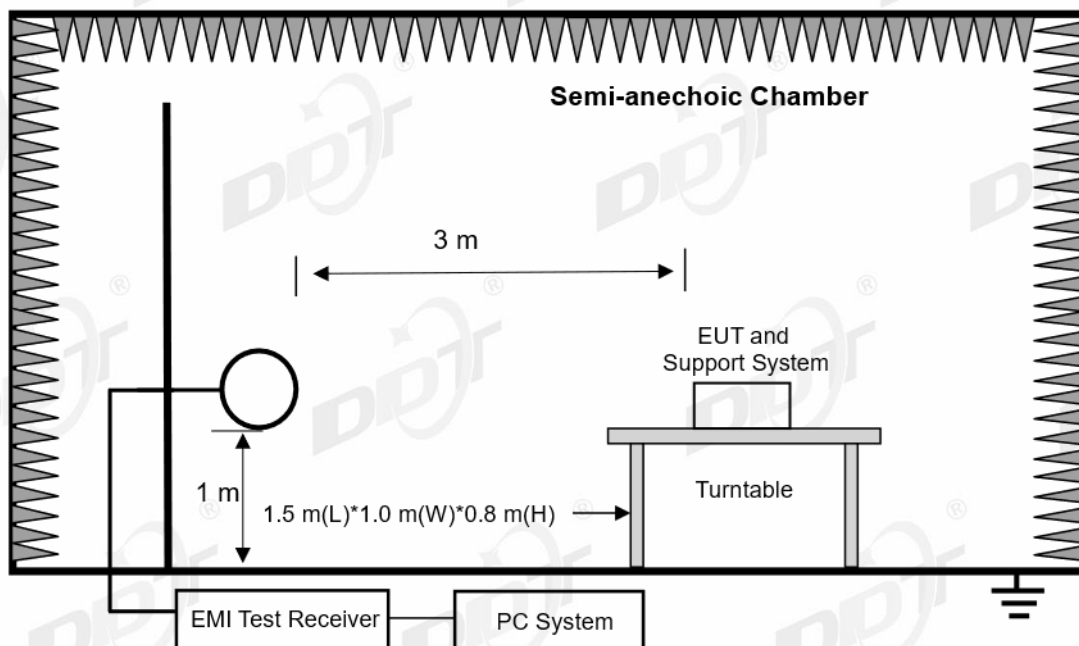
The antenna used for this product as Antenna information described in section 2.1 of the report, and there is no other antenna than that furnished by the responsible party shall be used with the device.

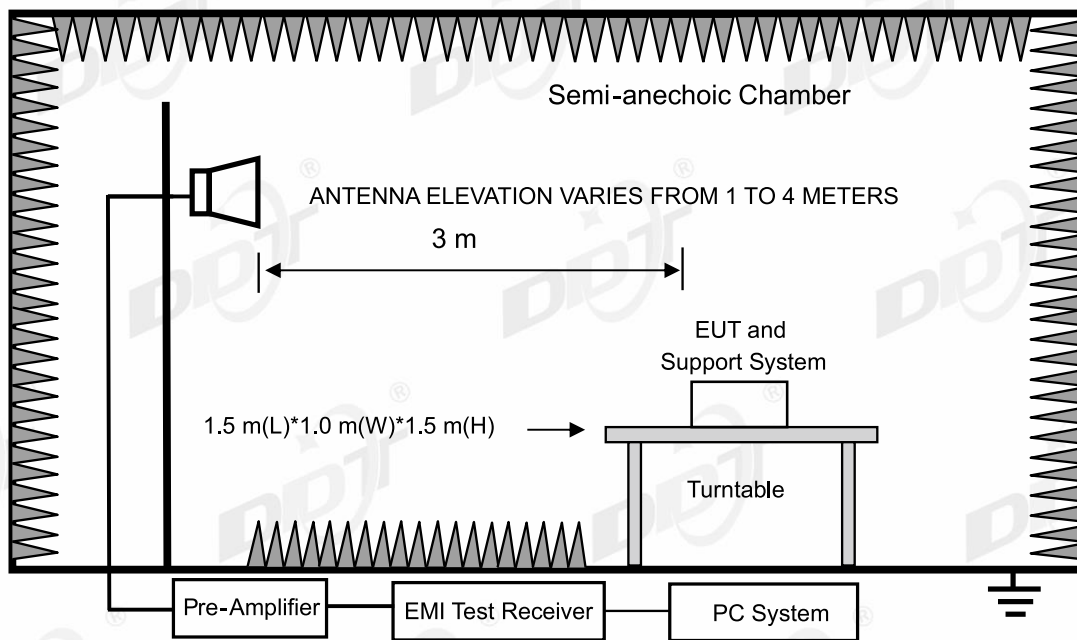
13.Radiated Emission

13.1. Test equipment

| Equipment | Manufacturer | Model No. | Serial No. | Cal Due To |
|-----------|--------------|-----------|------------|------------|
| / | / | / | / | / |

13.2. Block diagram of test setup





13.3. Limits

(1) FCC 15.205 Restricted frequency band

| MHz | MHz | MHz | GHz |
|-------------------|---------------------|---------------|-------------|
| 0.090-0.110 | 16.42-16.423 | 399.9-410 | 4.5-5.15 |
| 10.495-0.505 | 16.69475-16.69525 | 608-614 | 5.35-5.46 |
| 2.1735-2.1905 | 16.80425-16.80475 | 960-1240 | 7.25-7.75 |
| 4.125-4.128 | 25.5-25.67 | 1300-1427 | 8.025-8.5 |
| 4.1772&4.17775 | 37.5-38.25 | 1435-1626.5 | 9.0-9.2 |
| 4.2072&4.20775 | 73-74.6 | 1645.5-1646.5 | 9.3-9.5 |
| 6.215-6.218 | 74.8-75.2 | 1660-1710 | 10.6-12.7 |
| 6.26775-6.26825 | 108-121.94 | 1718.8-1722.2 | 13.25-13.4 |
| 6.31175-6.31225 | 123-138 | 2200-2300 | 14.47-14.5 |
| 8.291-8.294 | 149.9-150.05 | 2310-2390 | 15.35-16.2 |
| 8.362-8.366 | 156.52475-156.52525 | 2483.5-2500 | 17.7-21.4 |
| 8.37625-8.38675 | 156.7-156.9 | 2690-2900 | 22.01-23.12 |
| 8.41425-8.41475 | 162.0125-167.17 | 3260-3267 | 23.6-24.0 |
| 12.29-12.293 | 167.72-173.2 | 3332-3339 | 31.2-31.8 |
| 12.51975-12.52025 | 240-285 | 3345.8-3358 | 36.43-36.5 |
| 12.57675-12.57725 | 322-335.4 | 3600-4400 | (2) |
| 13.36-13.41 | | | |

1Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

2Above 38.6

RSS-Gen section 8.10 Restricted frequency bands*

| MHz | MHz | MHz | GHz |
|-----------------|---------------------|---------------|-------------|
| 0.090-0.110 | 12.51975-12.52025 | 240-285 | 3.5-4.4 |
| 0.495-0.505 | 12.57675-12.57725 | 322-335.4 | 4.5-5.15 |
| 2.1735-2.1905 | 13.36-13.41 | 399.9-410 | 5.35-5.46 |
| 3.020-3.026 | 16.42-16.423 | 608-614 | 7.25-7.75 |
| 4.125-4.128 | 16.69475-16.69525 | 960-1427 | 8.025-8.5 |
| 4.1772&4.17775 | 16.80425-16.80475 | 1435-1626.5 | 9.0-9.2 |
| 4.2072&4.20775 | 25.5-25.67 | 1645.5-1646.5 | 9.3-9.5 |
| 5.677-5.683 | 37.5-38.25 | 1660-1710 | 10.6-12.7 |
| 6.215-6.218 | 73-74.6 | 1718.8-1722.2 | 13.25-13.4 |
| 6.26775-6.26825 | 74.8-75.2 | 2200-2300 | 14.47-14.5 |
| 6.31175-6.31225 | 108-138 | 2310-2390 | 15.35-16.2 |
| 8.291-8.294 | 149.9-150.05 | 2483.5-2500 | 17.7-21.4 |
| 8.362-8.366 | 156.52475-156.52525 | 2655-2900 | 22.01-23.12 |
| 8.37625-8.38675 | 156.7-156.9 | 3260-3267 | 23.6-24.0 |
| 8.41425-8.41475 | 162.0125-167.17 | 3332-3339 | 31.2-31.8 |
| 12.29-12.293 | 167.72-173.2 | 3345.8-3358 | 36.43-36.5 |
| | | | Above 38.6 |

* Certain frequency bands listed in table and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.

(2) FCC 15.209 Limit & RSS-Gen section 8.9 Limit

| FREQUENCY MHz | DISTANCE Meters | FIELD STRENGTHS LIMIT | |
|------------------|--------------------|---|---------------|
| | | mV/m | dB(mV)/m |
| 0.009 ~ 0.490 | 300 | 2400/F(kHz) | 67.6-20log(F) |
| 0.490 ~ 1.705 | 30 | 24000/F(kHz) | 87.6-20log(F) |
| 1.705 ~ 30.0 | 30 | 30 | 29.54 |
| 30 ~ 88 | 3 | 100 | 40.0 |
| 88 ~ 216 | 3 | 150 | 43.5 |
| 216 ~ 960 | 3 | 200 | 46.0 |
| 960 ~ 1000 | 3 | 500 | 54.0 |
| Above | 1000 | 74.0 dB(mV)/m (Peak) 54.0 dB(mV)/m (Average) | |

Note:

(1) The emission limits shown in the above table are based on measurements employing a CISPR QP detector except for the frequency bands 9 - 90 kHz, 110 - 490 kHz and above 1000 MHz, radiated emissions limits in these three bands are based on measurements employing an average detector.

(2) At frequencies below 30 MHz, measurement may be performed at a distance closer than that specified, and the limit at closer measurement distance can be extrapolated by below formula:

$$\text{Limit}_{3\text{m}}(\text{dBuV/m}) = \text{Limit}_{30\text{m}}(\text{dBuV/m}) + 40\text{Log}(30\text{m}/3\text{m})$$

(3) Limit for this EUT

The emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, and the emissions appearing within RSS-Gen section 8.10 Restricted frequency bands shall not exceed the limits shown in RSS-Gen section 8.9, all the other emissions shall be at least 20 dB below the fundamental emissions or comply with 15.209 limits and RSS-Gen section 8.9 limits.

13.4. Assistant equipment used for test

| Assistant equipment | Manufacturer | Model number | Description | other |
|---------------------|--------------|--------------|-------------|-------|
| / | / | / | / | / |

13.5. Test procedure

(1) EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber for below 1G and 150 cm above the ground plane inside a fully-anechoic chamber for above 1G.

(2) Test antenna was located 3 m from the EUT on an adjustable mast, and the antenna used as below table.

| Test frequency range | Test antenna used | Test antenna distance |
|----------------------|--|-----------------------|
| 9 kHz - 30 MHz | Active Loop antenna | 3 m |
| 30 MHz - 1 GHz | Trilog Broadband Antenna | 3 m |
| 1 GHz - 18 GHz | Double Ridged Horn Antenna(1 GHz-18 GHz) | 3 m |
| 18 GHz - 40 GHz | Horn Antenna(18 GHz-40 GHz) | 1 m |

According ANSI C63.10:2013 clause 6.4.6 and 6.5.3, for measurements below 30 MHz, Antenna was located 3 m from EUT, the loop antenna was positioned in three antenna orientations (parallel, perpendicular, and round-parallel), for each measurement antenna alignment, the EUT shall be rotated through 0° to 360° on a turntable, and the lowest height of the magnetic antenna shall be 1 m above the ground. For measurement above 30MHz, the trilog Broadband Antenna or Horn Antenna was located 3m from EUT, Measurements were made with the antenna positioned in both the horizontal and vertical planes of Polarization, and the measurement antenna was varied from 1 m to 4 m. in height above the reference ground plane to obtain the maximum signal strength.

(3) Below pre-scan procedure was first performed in order to find prominent frequency spectrum radiated emissions from 9 kHz to 25 GHz:

(a) Scanning the peak frequency spectrum with the antenna specified in step (3), and the EUT was rotated 360 degree, the antenna height was varied from 1 m to 4 m (Except loop antenna, it's fixed 1 m above ground.)

(b) Change work frequency or channel of device if practicable.

(c) Change modulation type of device if practicable.

(d) Change power supply range from 85% to 115% of the rated supply voltage

(e) Rotated EUT through three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions.

Spectrum frequency from 9 kHz to 25 GHz (tenth harmonic of fundamental frequency) was investigated, and no any obvious emission were detected from 18 GHz to 25 GHz, so below final test was performed with frequency range from 9 kHz to 18 GHz.

(4) For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1 m and 4 m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed according to ANSI C63.10:2013 on Radiated Emission test.

(5) The emissions from 9 kHz to 1 GHz were measured based on CISPR QP detector except for the frequency bands 9 - 90 kHz, 110 - 490 kHz, for emissions from 9 kHz - 90 kHz, 110 kHz - 490 kHz and above 1 GHz were measured based on average detector, for emissions above 1 GHz, peak emissions also be measured and need comply with Peak limit.

(6) The emissions from 9 kHz to 1 GHz, QP or average values were measured with EMI receiver with below RBW.

| Frequency band | RBW |
|------------------|---------|
| 9 kHz - 150 kHz | 200 Hz |
| 150 kHz - 30 MHz | 9 kHz |
| 30 MHz - 1 GHz | 120 kHz |

(7) For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1 MHz, VBW is set at 3 MHz for Peak measure; According ANSI C63.10:2013 clause 4.1.4.2.2 procedure for average measure.

(8) For portable device, X axis, Y axis, Z axis are tested, and worse setup is reported.

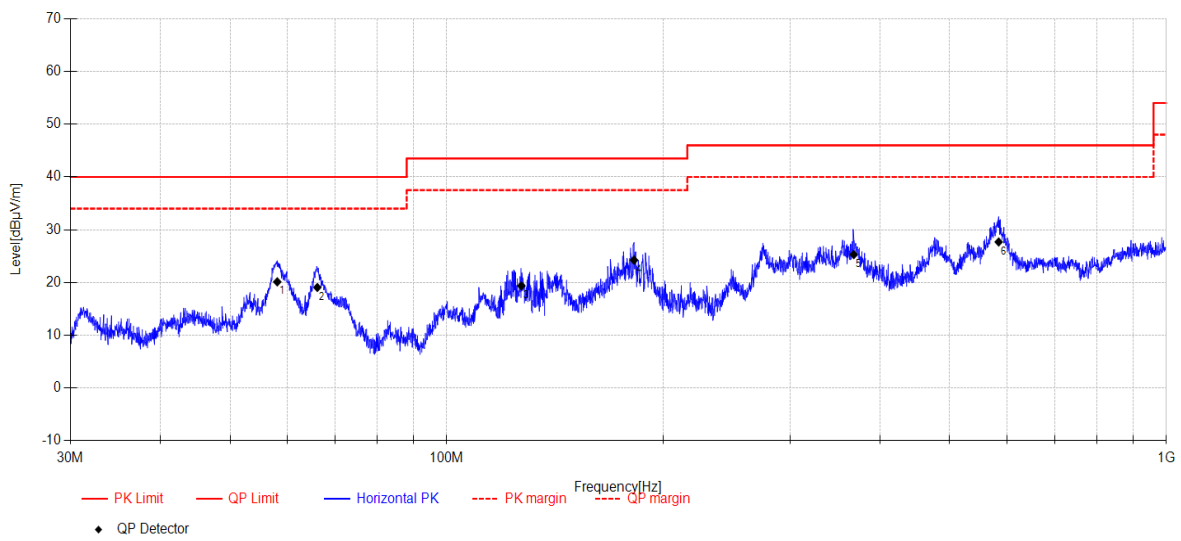
13.6. Test result

PASS. (See below detailed test result)

13.7. Test data

TR-4-E-009 Radiated Emission Test Result

Test Date: 2024-01-27 **Tested By:** Bairong
EUT: Wireless Speaker **Model Number:** BOOMBOX 3 Wi-Fi
Test Mode: BT TX **Power Supply:** AC 120V/60Hz
Condition: Temp:21.5°C;Humi:39.7% **Test Site:** DDT 3# Chamber
File Path: d:\ts\2024 report data\Q23111312-2E BOOMBOX 3 Wi-Fi\FCC BELOW 1G\20240127-013411_H
Memo: Sample Number:S23111312-02 Power Setting:NA



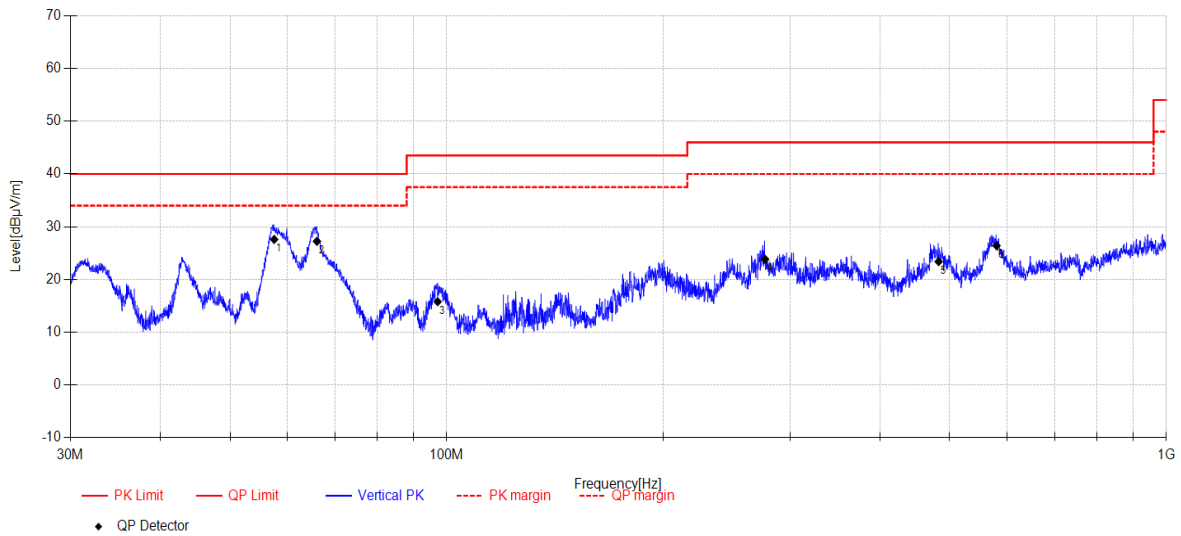
| Data List | | | | | | | | | | |
|-----------|-------------|------------------|---------------------|-----------------|----------|-----------------|----------------|-------------|----------|------------|
| NO. | Freq. [MHz] | Reading [dBµV/m] | Antenna Factor [dB] | Cable Loss [dB] | AMP [dB] | Result [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Detector | Polarity |
| 1 | 58.15 | 33.3 | 12.72 | 4.75 | -30.65 | 20.12 | 40.00 | 19.88 | QP | Horizontal |
| 2 | 66.12 | 33.62 | 11.25 | 4.78 | -30.59 | 19.06 | 40.00 | 20.94 | QP | Horizontal |
| 3 | 127.00 | 35.77 | 9.20 | 5.21 | -30.82 | 19.36 | 43.50 | 24.14 | QP | Horizontal |
| 4 | 182.11 | 40.13 | 9.18 | 5.58 | -30.65 | 24.24 | 43.50 | 19.26 | QP | Horizontal |
| 5 | 367.93 | 33.5 | 15.43 | 6.52 | -30.16 | 25.29 | 46.00 | 20.71 | QP | Horizontal |
| 6 | 584.85 | 31.99 | 18.32 | 7.27 | -29.90 | 27.68 | 46.00 | 18.32 | QP | Horizontal |

Note:

1. Result Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date: 2024-01-27 **Tested By:** Bairong
EUT: Wireless Speaker **Model Number:** BOOMBOX 3 Wi-Fi
Test Mode: BT TX **Power Supply:** AC 120V/60Hz
Condition: Temp:21.5°C;Humi:39.7% **Test Site:** DDT 3# Chamber
File Path: d:\ts\2024 report data\Q23111312-2E BOOMBOX 3 Wi-Fi\FCC BELOW 1G\20240127-013455_V
Memo: Sample Number:S23111312-02 Power Setting:NA



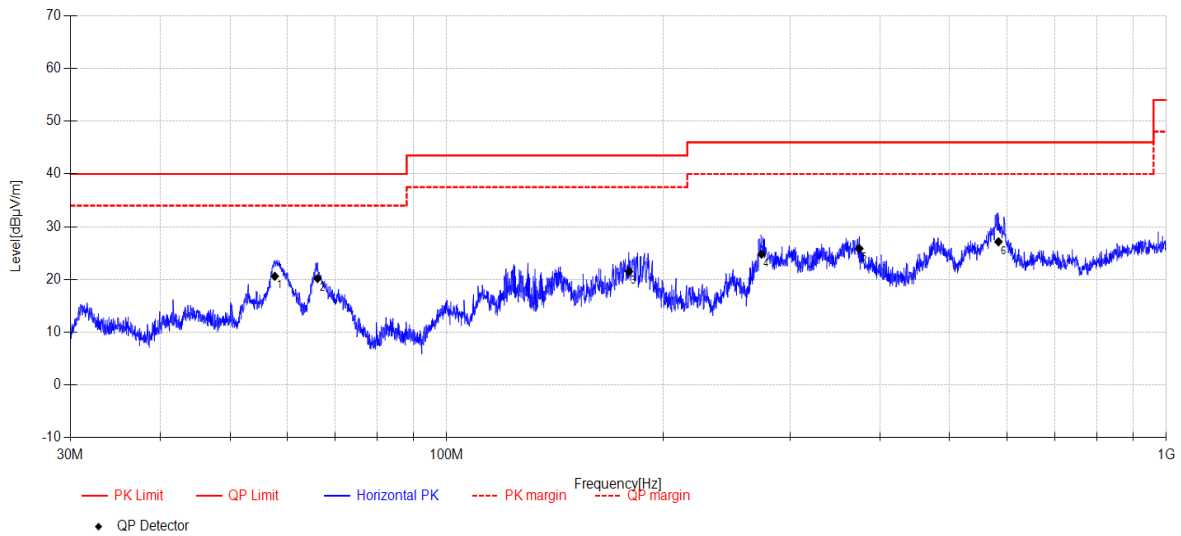
| Data List | | | | | | | | | | |
|-----------|-------------|------------------|---------------------|-----------------|----------|-----------------|----------------|-------------|----------|----------|
| NO. | Freq. [MHz] | Reading [dBµV/m] | Antenna Factor [dB] | Cable Loss [dB] | AMP [dB] | Result [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Detector | Polarity |
| 1 | 57.59 | 40.98 | 12.51 | 4.75 | -30.65 | 27.59 | 40.00 | 12.41 | QP | Vertical |
| 2 | 66.02 | 41.68 | 11.37 | 4.78 | -30.59 | 27.24 | 40.00 | 12.76 | QP | Vertical |
| 3 | 97.16 | 30.99 | 10.61 | 5.03 | -30.84 | 15.79 | 43.50 | 27.71 | QP | Vertical |
| 4 | 276.97 | 35.69 | 12.46 | 6.05 | -30.37 | 23.83 | 46.00 | 22.17 | QP | Vertical |
| 5 | 482.62 | 29.94 | 16.50 | 6.89 | -29.93 | 23.40 | 46.00 | 22.60 | QP | Vertical |
| 6 | 580.77 | 30.18 | 18.89 | 7.25 | -29.90 | 26.42 | 46.00 | 19.58 | QP | Vertical |

Note:

1. Result Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date: 2024-01-27 **Tested By:** Bairong
EUT: Wireless Speaker **Model Number:** BOOMBOX 3 Wi-Fi
Test Mode: BLE 1M TX **Power Supply:** AC 120V/60Hz
Condition: Temp:21.5°C;Humi:39.7% **Test Site:** DDT 3# Chamber
File Path: d:\ts\2024 report data\Q23111312-2E BOOMBOX 3 Wi-Fi\FCC BELOW 1G\20240127-013558_H
Memo: Sample Number:S23111312-02 Power Setting:NA



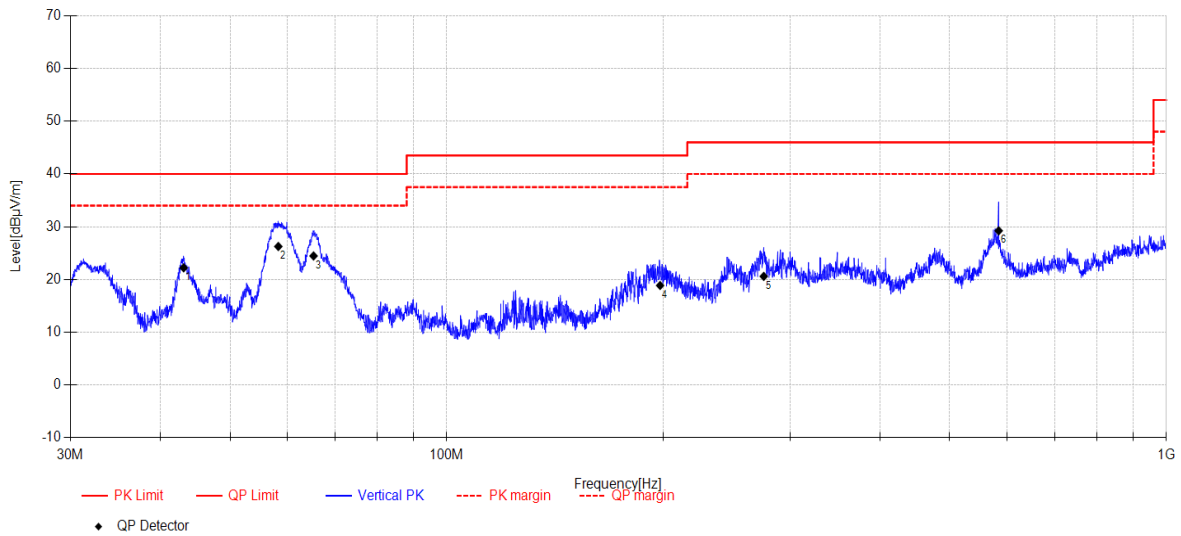
| Data List | | | | | | | | | | |
|-----------|-------------|------------------|---------------------|-----------------|----------|-----------------|----------------|-------------|----------|------------|
| NO. | Freq. [MHz] | Reading [dBµV/m] | Antenna Factor [dB] | Cable Loss [dB] | AMP [dB] | Result [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Detector | Polarity |
| 1 | 57.71 | 33.91 | 12.60 | 4.75 | -30.65 | 20.61 | 40.00 | 19.39 | QP | Horizontal |
| 2 | 66.16 | 34.8 | 11.19 | 4.78 | -30.59 | 20.18 | 40.00 | 19.82 | QP | Horizontal |
| 3 | 179.20 | 37.06 | 9.54 | 5.56 | -30.66 | 21.50 | 43.50 | 22.00 | QP | Horizontal |
| 4 | 273.88 | 36.63 | 12.50 | 6.04 | -30.38 | 24.79 | 46.00 | 21.21 | QP | Horizontal |
| 5 | 374.43 | 34.01 | 15.45 | 6.56 | -30.15 | 25.87 | 46.00 | 20.13 | QP | Horizontal |
| 6 | 584.44 | 31.39 | 18.38 | 7.27 | -29.90 | 27.14 | 46.00 | 18.86 | QP | Horizontal |

Note:

1. Result Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date: 2024-01-27 **Tested By:** Bairong
EUT: Wireless Speaker **Model Number:** BOOMBOX 3 Wi-Fi
Test Mode: BLE 1M TX **Power Supply:** AC 120V/60Hz
Condition: Temp:21.5°C;Humi:39.7% **Test Site:** DDT 3# Chamber
File Path: d:\ts\2024 report data\Q23111312-2E BOOMBOX 3 Wi-Fi\FCC BELOW 1G\20240127-013642_V
Memo: Sample Number:S23111312-02 Power Setting:NA



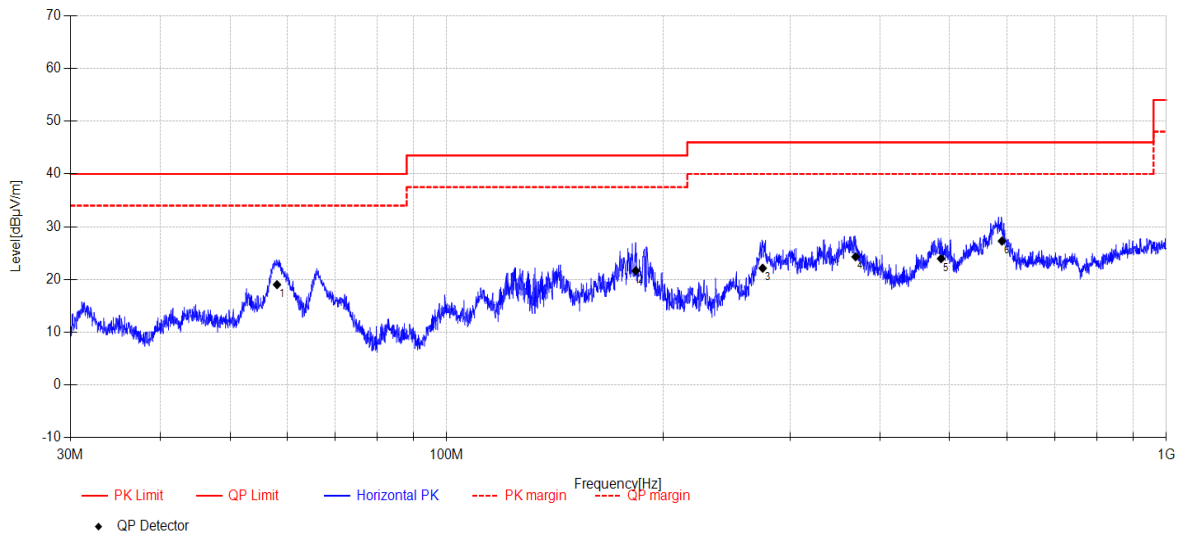
| Data List | | | | | | | | | | |
|-----------|-------------|------------------|---------------------|-----------------|----------|-----------------|----------------|-------------|----------|----------|
| NO. | Freq. [MHz] | Reading [dBµV/m] | Antenna Factor [dB] | Cable Loss [dB] | AMP [dB] | Result [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Detector | Polarity |
| 1 | 43.11 | 35.55 | 12.82 | 4.64 | -30.80 | 22.21 | 40.00 | 17.79 | QP | Vertical |
| 2 | 58.36 | 39.52 | 12.62 | 4.76 | -30.64 | 26.26 | 40.00 | 13.74 | QP | Vertical |
| 3 | 65.33 | 38.35 | 11.93 | 4.78 | -30.60 | 24.46 | 40.00 | 15.54 | QP | Vertical |
| 4 | 197.96 | 33.27 | 10.50 | 5.71 | -30.61 | 18.87 | 43.50 | 24.63 | QP | Vertical |
| 5 | 275.81 | 32.43 | 12.48 | 6.05 | -30.37 | 20.59 | 46.00 | 25.41 | QP | Vertical |
| 6 | 584.85 | 33.54 | 18.32 | 7.27 | -29.90 | 29.23 | 46.00 | 16.77 | QP | Vertical |

Note:

1. Result Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date: 2024-01-27 **Tested By:** Bairong
EUT: Wireless Speaker **Model Number:** BOOMBOX 3 Wi-Fi
Test Mode: BLE 2M TX **Power Supply:** AC 120V/60Hz
Condition: Temp:21.5°C;Humi:39.7% **Test Site:** DDT 3# Chamber
File Path: d:\ts\2024 report data\Q23111312-2E BOOMBOX 3 Wi-Fi\FCC BELOW 1G\20240127-013742_H
Memo: Sample Number:S23111312-02 Power Setting:NA



| Data List | | | | | | | | | | |
|-----------|-------------|------------------|---------------------|-----------------|----------|-----------------|----------------|-------------|----------|------------|
| NO. | Freq. [MHz] | Reading [dBµV/m] | Antenna Factor [dB] | Cable Loss [dB] | AMP [dB] | Result [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Detector | Polarity |
| 1 | 58.11 | 32.18 | 12.74 | 4.75 | -30.65 | 19.02 | 40.00 | 20.98 | QP | Horizontal |
| 2 | 183.13 | 36.93 | 9.77 | 5.59 | -30.65 | 21.64 | 43.50 | 21.86 | QP | Horizontal |
| 3 | 274.84 | 33.98 | 12.50 | 6.04 | -30.38 | 22.14 | 46.00 | 23.86 | QP | Horizontal |
| 4 | 370.00 | 32.14 | 15.80 | 6.53 | -30.16 | 24.31 | 46.00 | 21.69 | QP | Horizontal |
| 5 | 486.36 | 30.56 | 16.42 | 6.90 | -29.93 | 23.95 | 46.00 | 22.05 | QP | Horizontal |
| 6 | 591.04 | 31.33 | 18.56 | 7.29 | -29.90 | 27.28 | 46.00 | 18.72 | QP | Horizontal |

Note:

1. Result Level = Reading + Cable loss + Antenna Factor + AMP
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.