

B4\_15M QPSK 1@0 CH 20325



B4\_15M 16QAM 1@0 CH 20325



B4\_10M QPSK 1@0 CH 20000



B4\_10M 16QAM 1@0 CH 20000



B4\_10M QPSK 1@0 CH 20175



B4\_10M 16QAM 1@0 CH 20175



B4\_10M QPSK 1@0 CH 20350



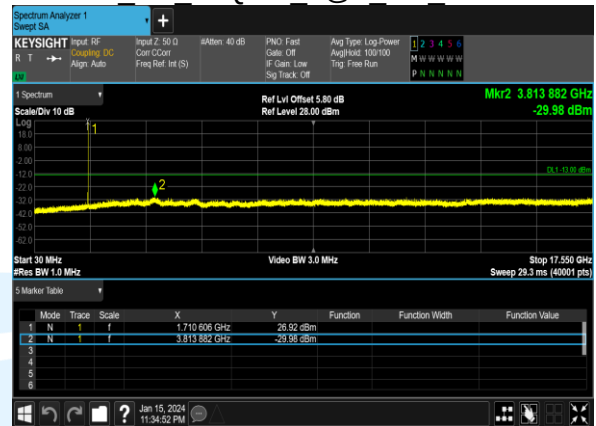
B4\_10M 16QAM 1@0 CH 20350



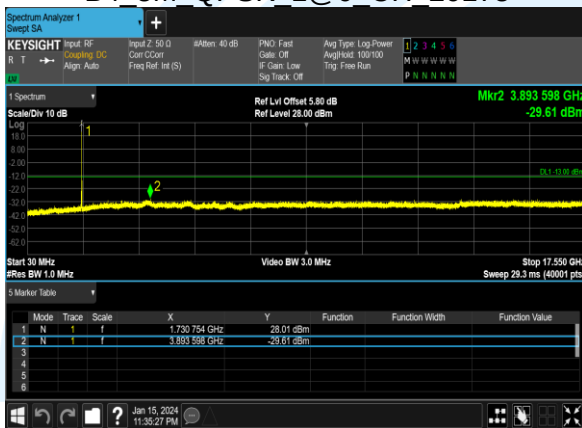
B4 5M QPSK 1@0 CH 19975



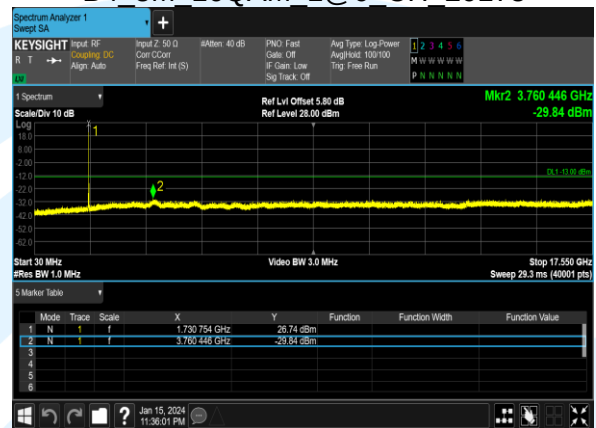
B4 5M 16QAM 1@0 CH 19975



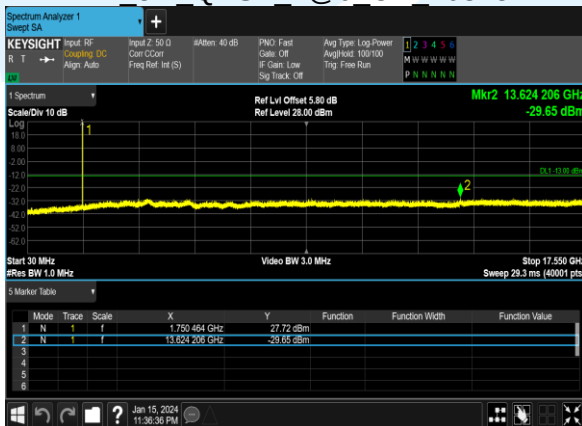
B4 5M QPSK 1@0 CH 20175



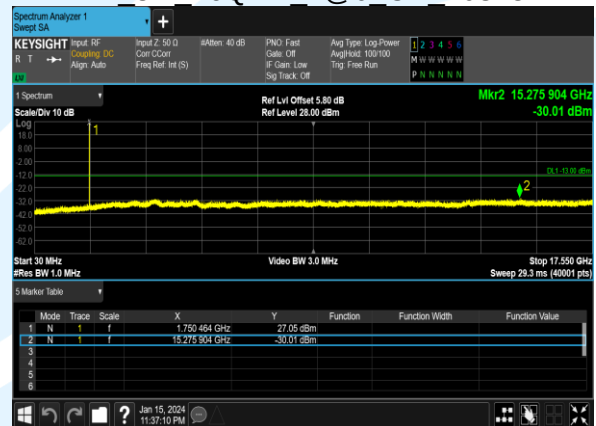
B4 5M 16QAM 1@0 CH 20175



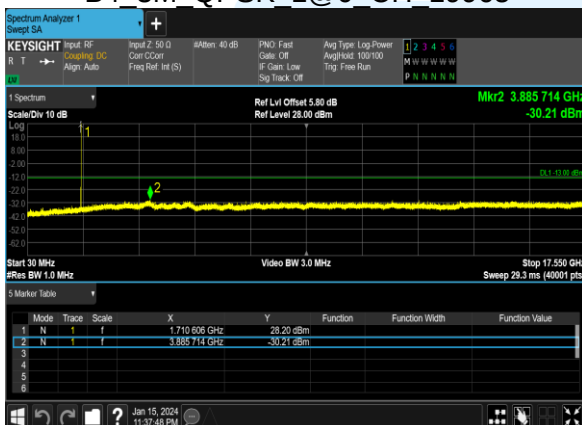
B4 5M QPSK 1@0 CH 20375



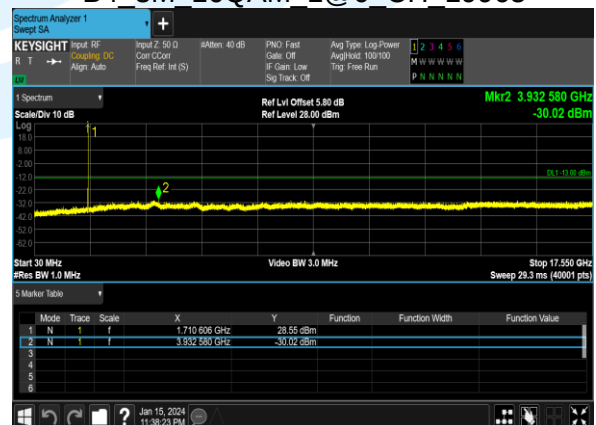
B4 5M 16QAM 1@0 CH 20375



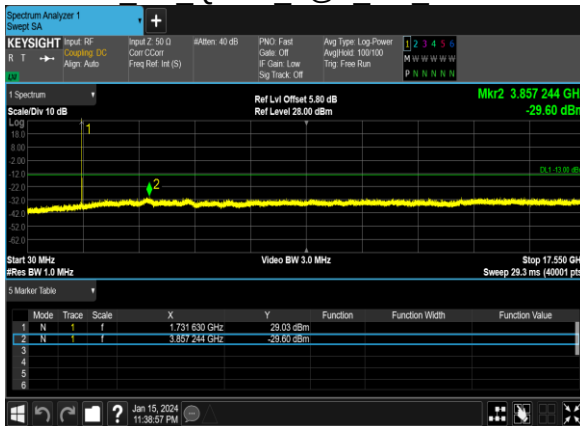
B4 3M QPSK 1@0 CH 19965



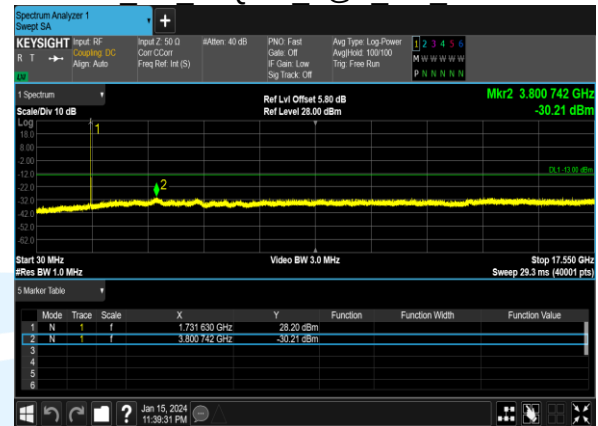
B4 3M 16QAM 1@0 CH 19965



B4 3M QPSK 1@0 CH 20175



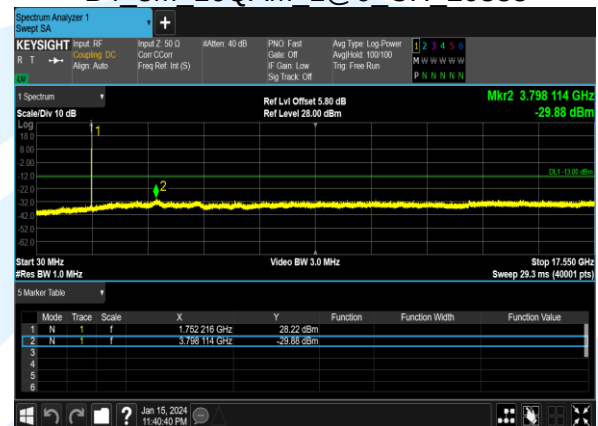
B4 3M 16QAM 1@0 CH 20175



B4 3M QPSK 1@0 CH 20385



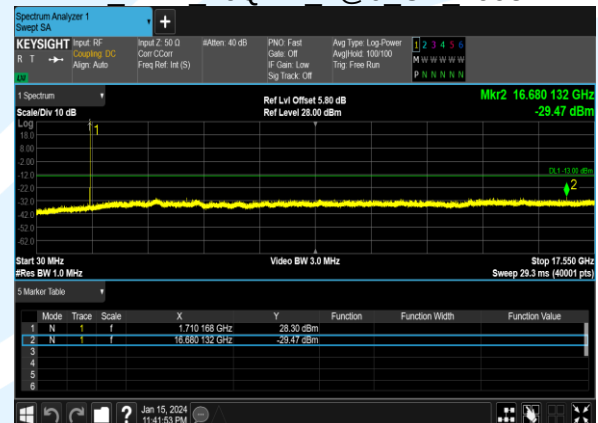
B4 3M 16QAM 1@0 CH 20385



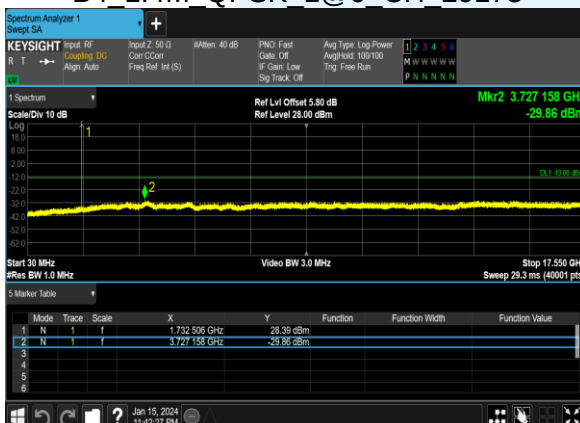
B4 1.4M QPSK 1@0 CH 19957



B4 1.4M 16QAM 1@0 CH 19957



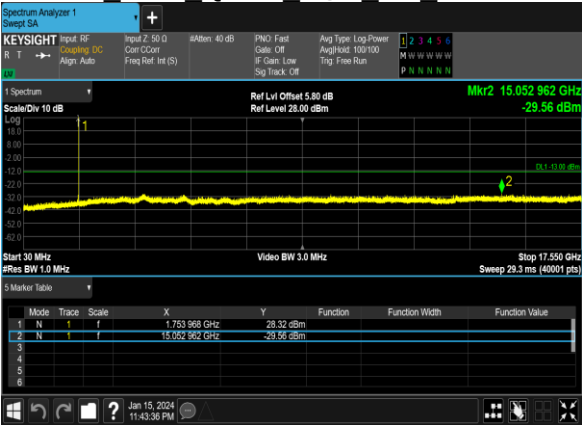
B4 1.4M QPSK 1@0 CH 20175



B4 1.4M 16QAM 1@0 CH 20175



B4 1.4M QPSK 1@0 CH 20393

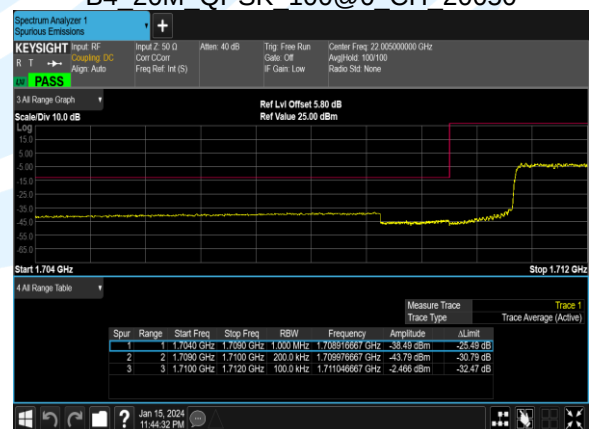


B4 1.4M 16QAM 1@0 CH 20393



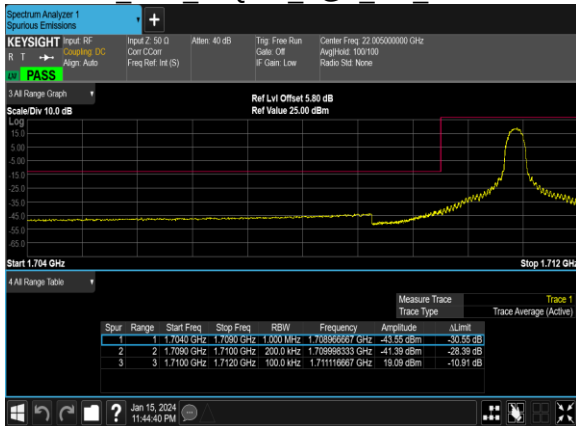
| Band | Bandwidth (MHz) | Channel | Freq (MHz) | Modulation | RB    | Result    | Verdict |
|------|-----------------|---------|------------|------------|-------|-----------|---------|
| 4    | 20.0            | 20050   | 1720.0     | QPSK       | 1@0   | see graph | PASS    |
| 4    | 20.0            | 20050   | 1720.0     | QPSK       | 100@0 | see graph | PASS    |
| 4    | 20.0            | 20050   | 1720.0     | 16QAM      | 1@0   | see graph | PASS    |
| 4    | 20.0            | 20050   | 1720.0     | 16QAM      | 100@0 | see graph | PASS    |
| 4    | 20.0            | 20300   | 1745.0     | QPSK       | 1@99  | see graph | PASS    |
| 4    | 20.0            | 20300   | 1745.0     | QPSK       | 100@0 | see graph | PASS    |
| 4    | 20.0            | 20300   | 1745.0     | 16QAM      | 1@99  | see graph | PASS    |
| 4    | 20.0            | 20300   | 1745.0     | 16QAM      | 100@0 | see graph | PASS    |
| 4    | 15.0            | 20025   | 1717.5     | QPSK       | 1@0   | see graph | PASS    |
| 4    | 15.0            | 20025   | 1717.5     | QPSK       | 75@0  | see graph | PASS    |
| 4    | 15.0            | 20025   | 1717.5     | 16QAM      | 1@0   | see graph | PASS    |
| 4    | 15.0            | 20025   | 1717.5     | 16QAM      | 75@0  | see graph | PASS    |
| 4    | 15.0            | 20325   | 1747.5     | QPSK       | 1@74  | see graph | PASS    |
| 4    | 15.0            | 20325   | 1747.5     | QPSK       | 75@0  | see graph | PASS    |
| 4    | 15.0            | 20325   | 1747.5     | 16QAM      | 1@74  | see graph | PASS    |
| 4    | 15.0            | 20325   | 1747.5     | 16QAM      | 75@0  | see graph | PASS    |
| 4    | 10.0            | 20000   | 1715.0     | QPSK       | 1@0   | see graph | PASS    |
| 4    | 10.0            | 20000   | 1715.0     | QPSK       | 50@0  | see graph | PASS    |
| 4    | 10.0            | 20000   | 1715.0     | 16QAM      | 1@0   | see graph | PASS    |
| 4    | 10.0            | 20000   | 1715.0     | 16QAM      | 50@0  | see graph | PASS    |
| 4    | 10.0            | 20350   | 1750.0     | QPSK       | 1@49  | see graph | PASS    |
| 4    | 10.0            | 20350   | 1750.0     | QPSK       | 50@0  | see graph | PASS    |
| 4    | 10.0            | 20350   | 1750.0     | 16QAM      | 1@49  | see graph | PASS    |
| 4    | 10.0            | 20350   | 1750.0     | 16QAM      | 50@0  | see graph | PASS    |
| 4    | 5.0             | 19975   | 1712.5     | QPSK       | 1@0   | see graph | PASS    |
| 4    | 5.0             | 19975   | 1712.5     | QPSK       | 25@0  | see graph | PASS    |
| 4    | 5.0             | 19975   | 1712.5     | 16QAM      | 1@0   | see graph | PASS    |
| 4    | 5.0             | 19975   | 1712.5     | 16QAM      | 25@0  | see graph | PASS    |
| 4    | 5.0             | 20375   | 1752.5     | QPSK       | 1@24  | see graph | PASS    |
| 4    | 5.0             | 20375   | 1752.5     | QPSK       | 25@0  | see graph | PASS    |
| 4    | 5.0             | 20375   | 1752.5     | 16QAM      | 1@24  | see graph | PASS    |
| 4    | 5.0             | 20375   | 1752.5     | 16QAM      | 25@0  | see graph | PASS    |
| 4    | 3.0             | 19965   | 1711.5     | QPSK       | 1@0   | see graph | PASS    |
| 4    | 3.0             | 19965   | 1711.5     | QPSK       | 15@0  | see graph | PASS    |
| 4    | 3.0             | 19965   | 1711.5     | 16QAM      | 1@0   | see graph | PASS    |
| 4    | 3.0             | 19965   | 1711.5     | 16QAM      | 15@0  | see graph | PASS    |
| 4    | 3.0             | 20385   | 1753.5     | QPSK       | 1@14  | see graph | PASS    |
| 4    | 3.0             | 20385   | 1753.5     | QPSK       | 15@0  | see graph | PASS    |
| 4    | 3.0             | 20385   | 1753.5     | 16QAM      | 1@14  | see graph | PASS    |
| 4    | 3.0             | 20385   | 1753.5     | 16QAM      | 15@0  | see graph | PASS    |
| 4    | 1.4             | 19957   | 1710.7     | QPSK       | 1@0   | see graph | PASS    |
| 4    | 1.4             | 19957   | 1710.7     | QPSK       | 6@0   | see graph | PASS    |
| 4    | 1.4             | 19957   | 1710.7     | 16QAM      | 1@0   | see graph | PASS    |
| 4    | 1.4             | 19957   | 1710.7     | 16QAM      | 6@0   | see graph | PASS    |
| 4    | 1.4             | 20393   | 1754.3     | QPSK       | 1@5   | see graph | PASS    |
| 4    | 1.4             | 20393   | 1754.3     | QPSK       | 6@0   | see graph | PASS    |
| 4    | 1.4             | 20393   | 1754.3     | 16QAM      | 1@5   | see graph | PASS    |
| 4    | 1.4             | 20393   | 1754.3     | 16QAM      | 6@0   | see graph | PASS    |

B4 20M QPSK 100@0 CH 20050

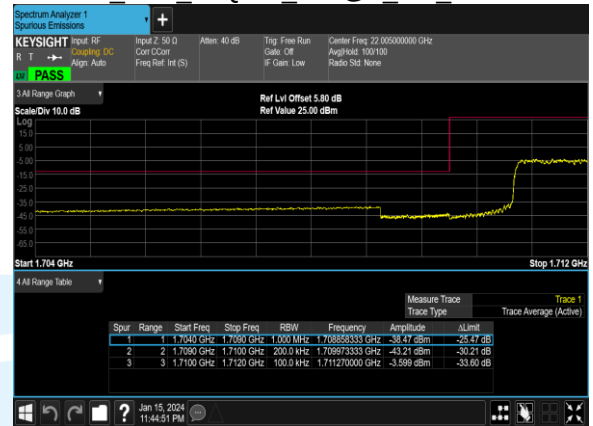


<http://www.uttlab.com>

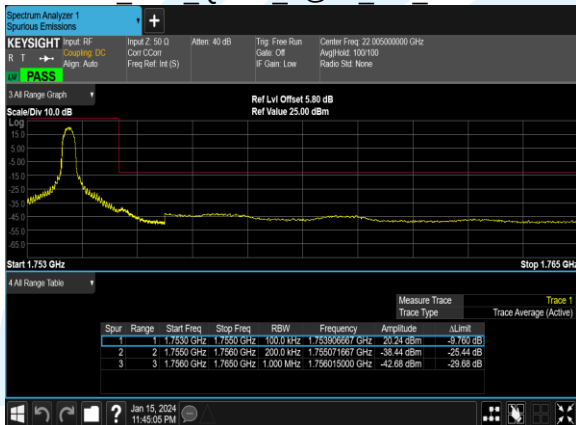
B4 20M 16QAM 1@0 CH 20050



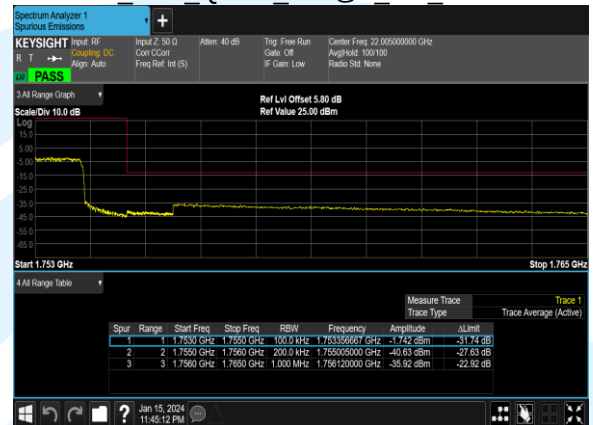
B4 20M 16QAM 100@0 CH 20050



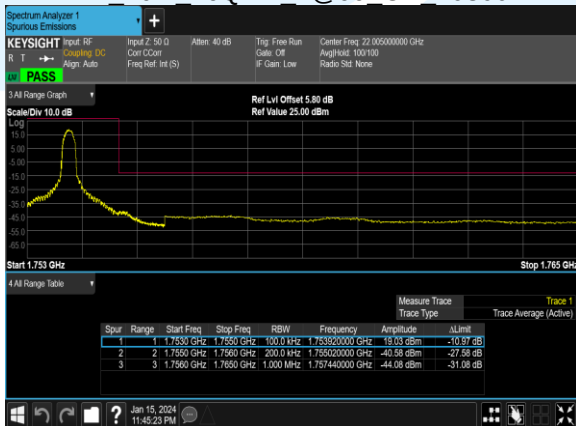
B4 20M QPSK 1@99 CH 20300



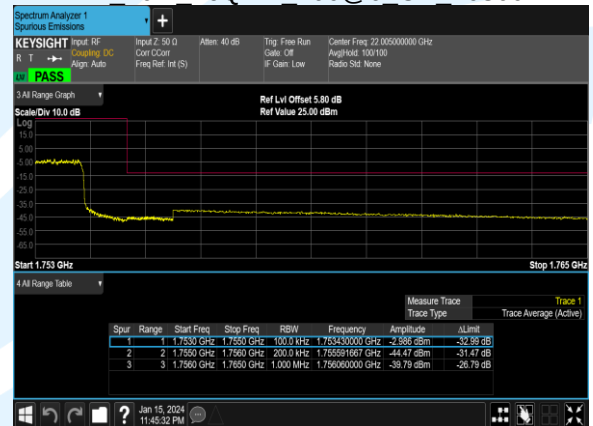
B4 20M QPSK 100@0 CH 20300



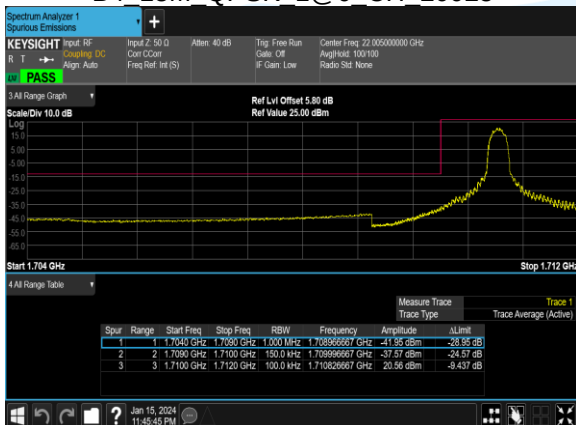
B4 20M 16QAM 1@99 CH 20300



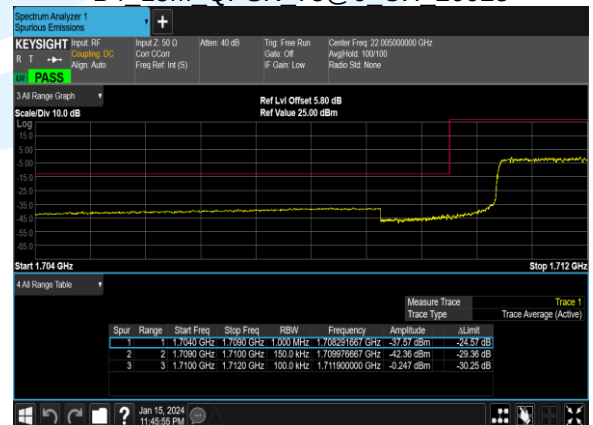
B4 20M 16QAM 100@0 CH 20300



B4 15M QPSK 1@0 CH 20025



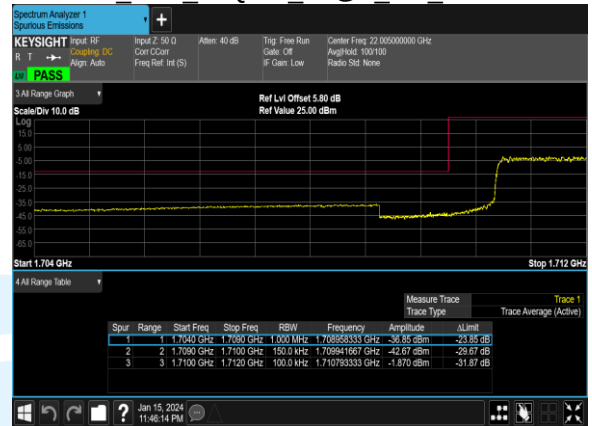
B4 15M QPSK 75@0 CH 20025



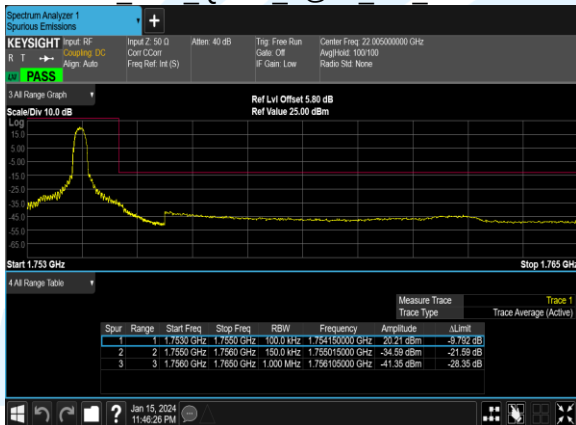
B4 15M 16QAM 1@0 CH 20025



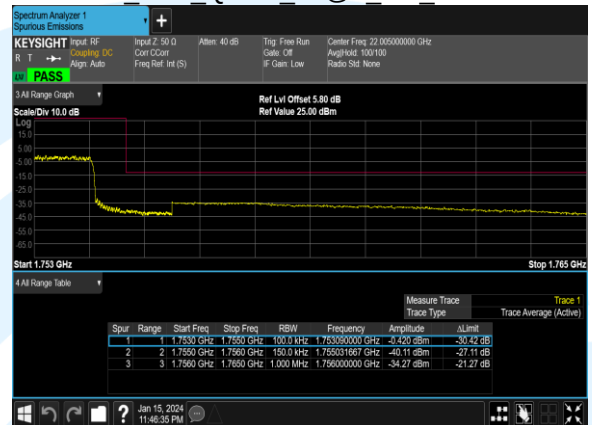
B4 15M 16QAM 75@0 CH 20025



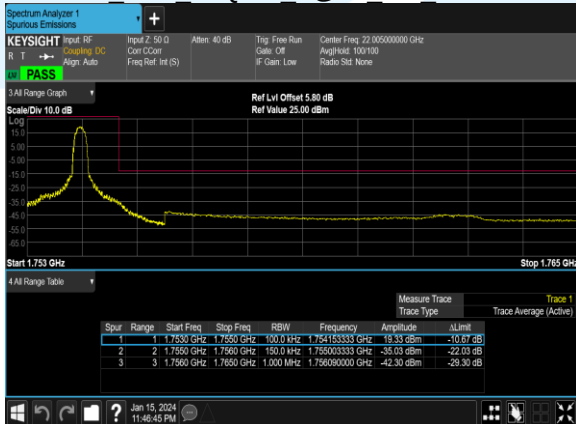
B4 15M QPSK 1@74 CH 20325



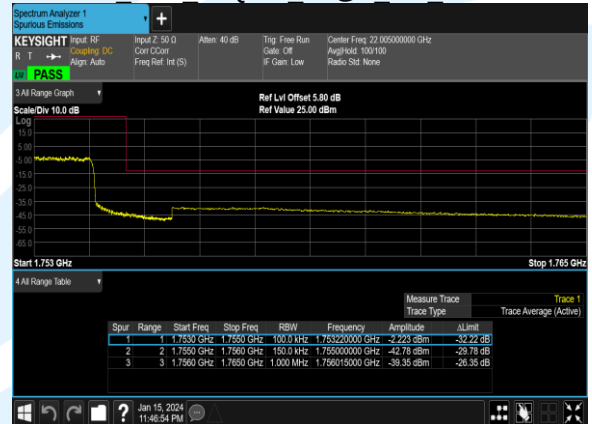
B4 15M QPSK 75@0 CH 20325



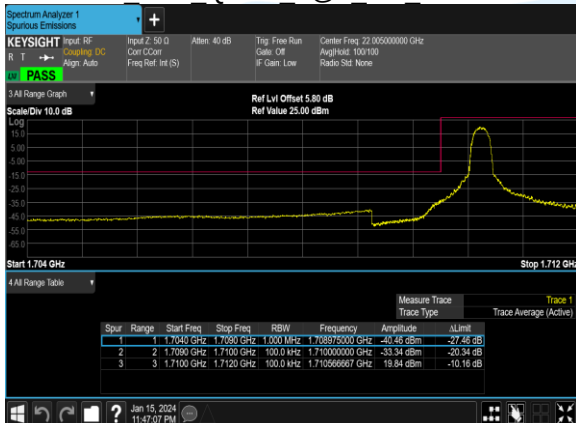
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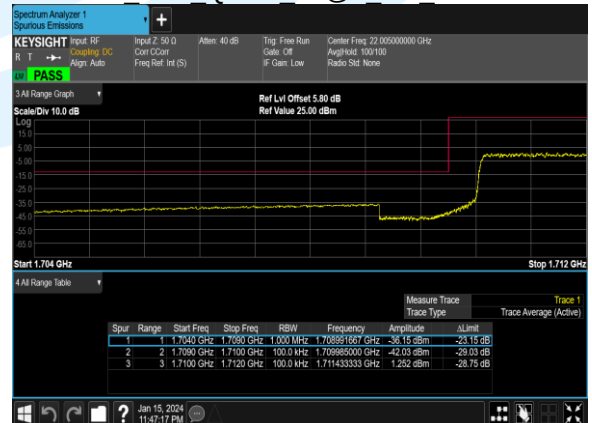
B4 15M 16QAM 75@0 CH 20325



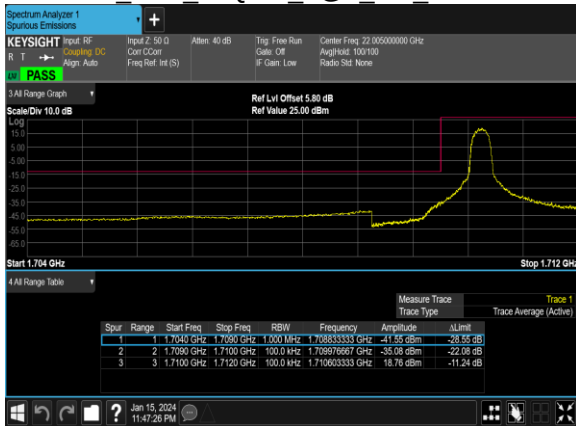
B4 10M QPSK 1@0 CH 20000



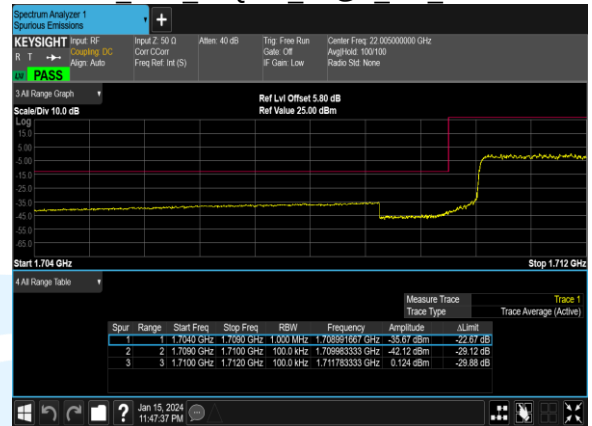
B4 10M QPSK 50@0 CH 20000



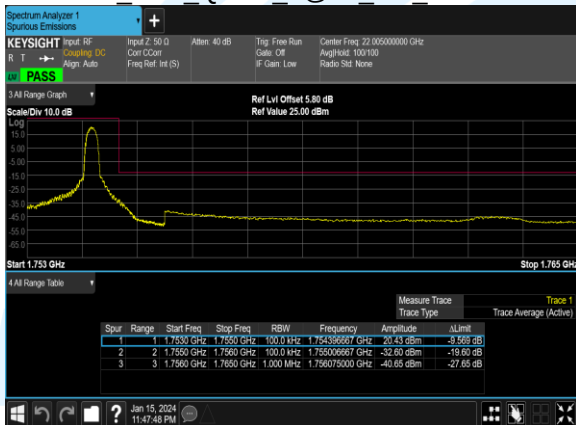
B4 10M 16QAM 1@0 CH 20000



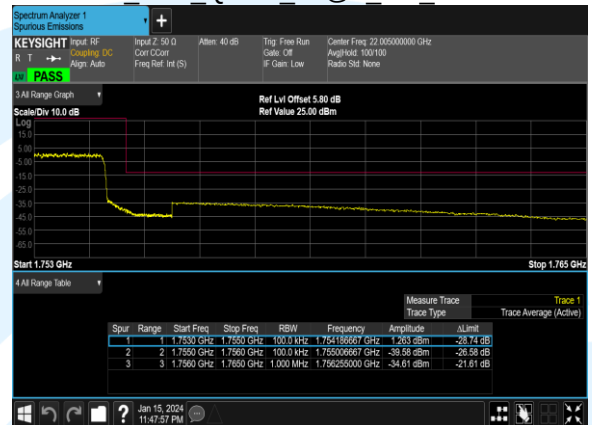
B4 10M 16QAM 50@0 CH 20000



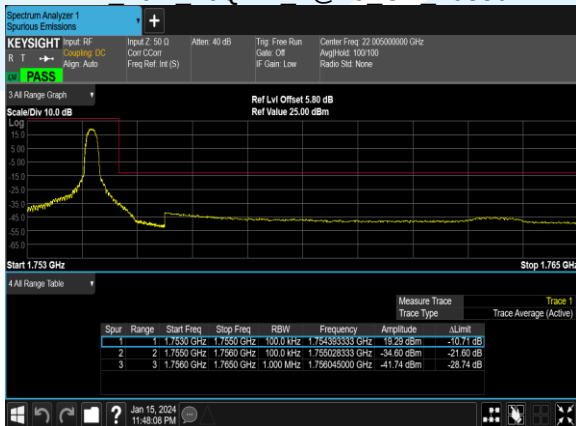
B4 10M QPSK 1@49 CH 20350



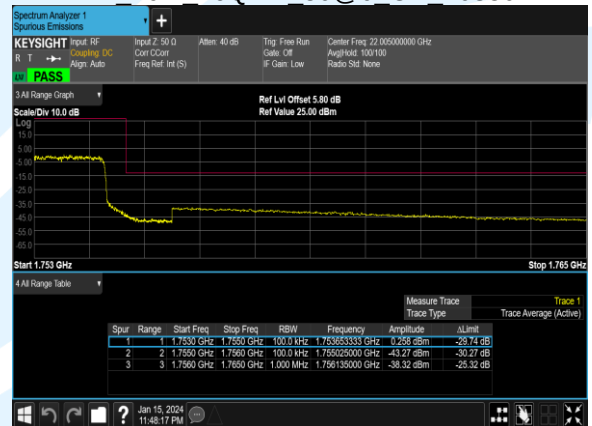
B4 10M QPSK 50@0 CH 20350



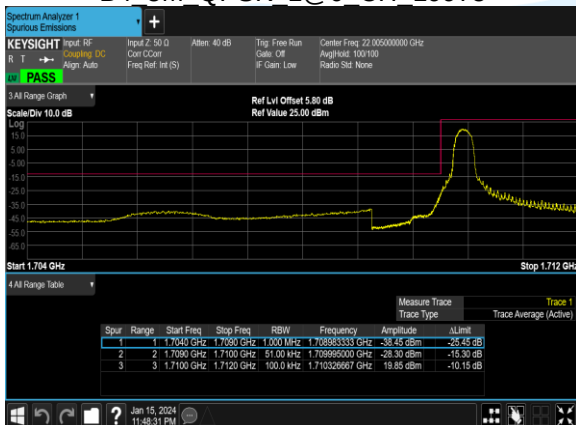
B4 10M 16QAM 1@49 CH 20350



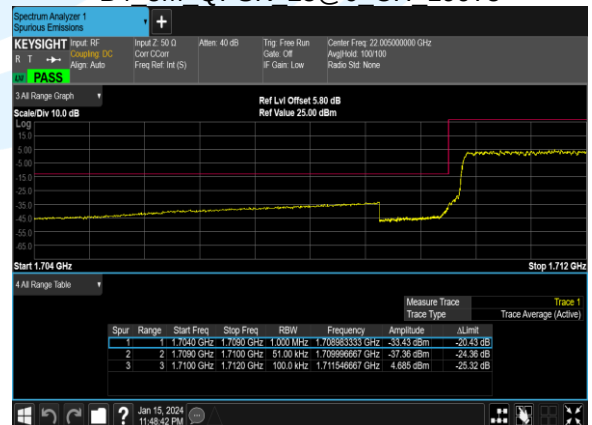
B4 10M 16QAM 50@0 CH 20350



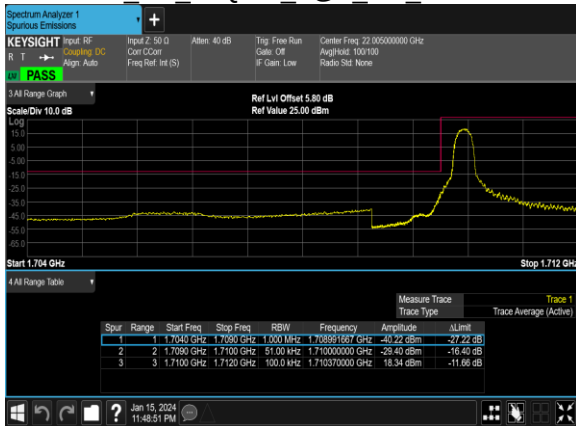
B4 5M QPSK 1@0 CH 19975



B4 5M QPSK 25@0 CH 19975



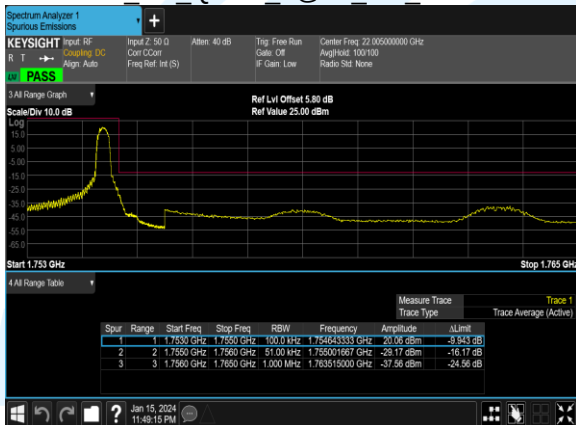
B4 5M 16QAM 1@0 CH 19975



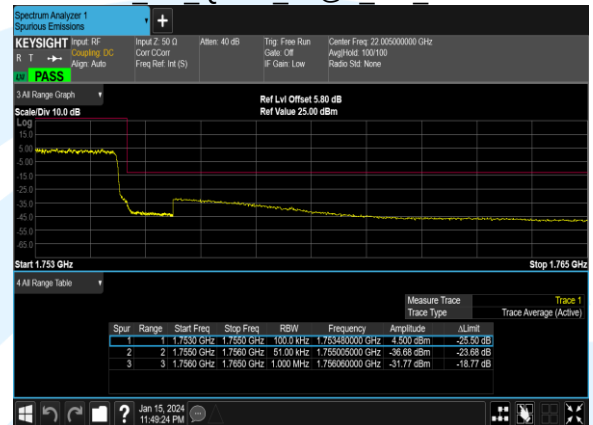
B4 5M 16QAM 25@0 CH 19975



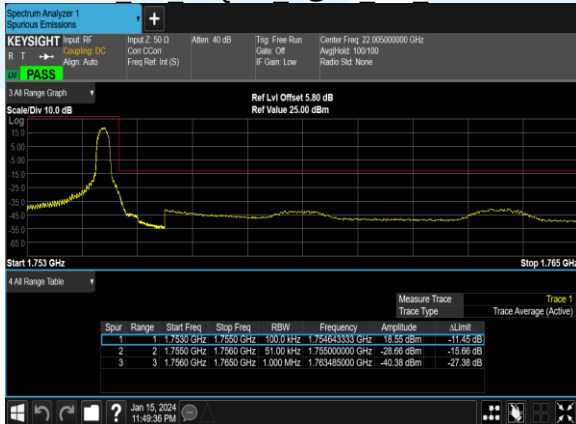
B4 5M QPSK 1@24 CH 20375



B4 5M QPSK 25@0 CH 20375



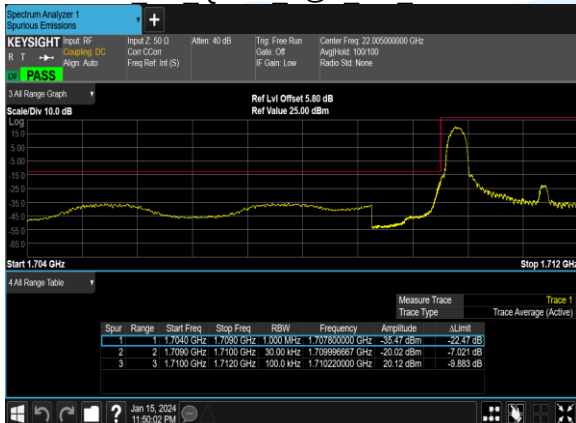
B4 5M 16QAM 1@24 CH 20375



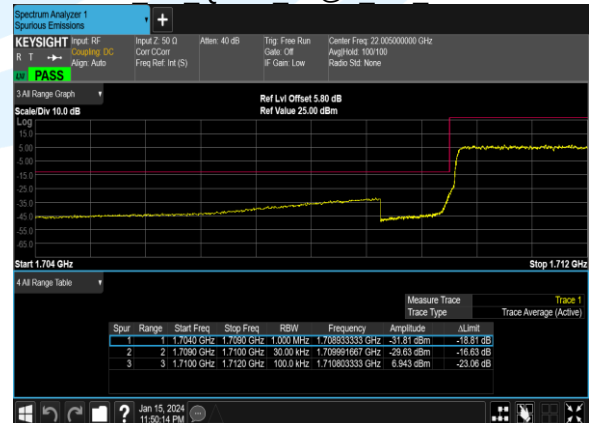
B4 5M 16QAM 25@0 CH 20375



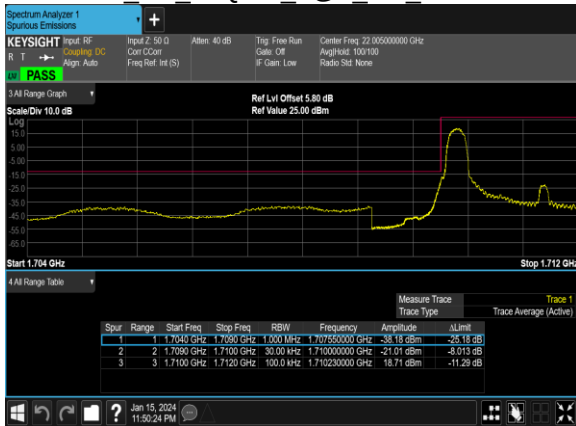
B4 3M QPSK 1@0 CH 19965



B4 3M QPSK 15@0 CH 19965



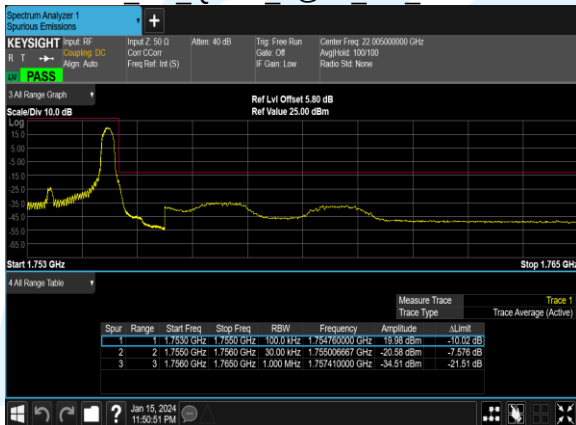
B4 3M 16QAM 1@0 CH 19965



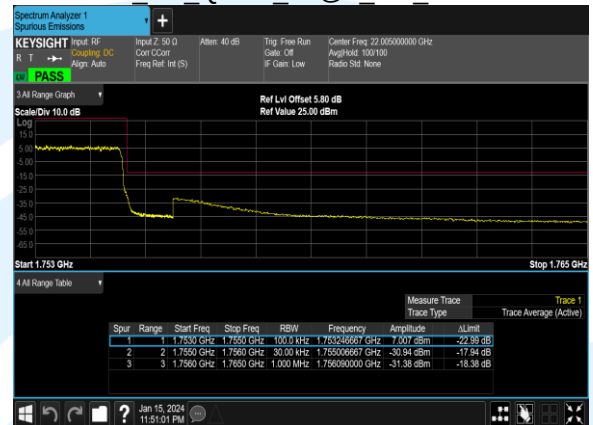
B4 3M 16QAM 15@0 CH 19965



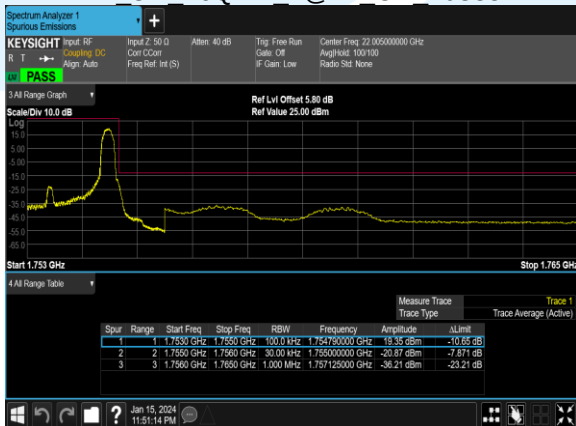
B4 3M QPSK 1@14 CH 20385



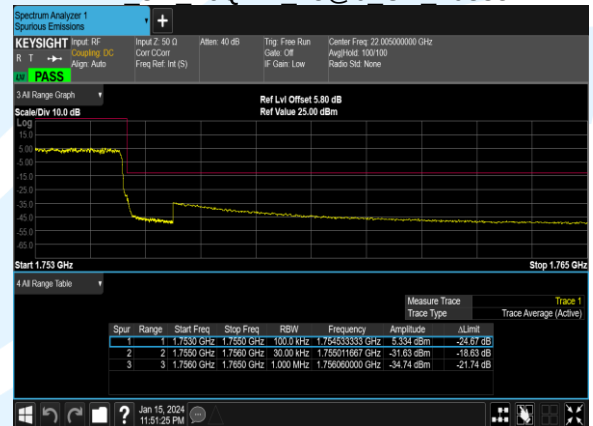
B4 3M QPSK 15@0 CH 20385



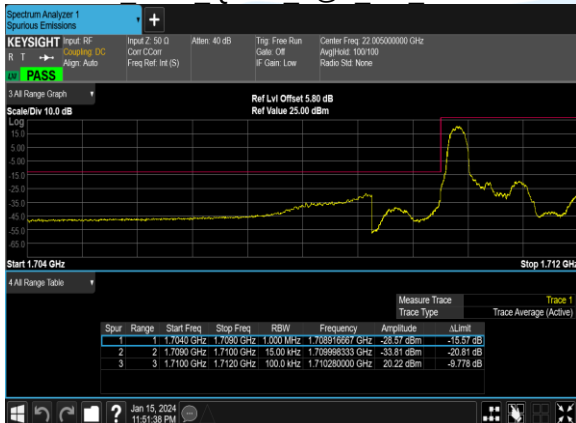
B4 3M 16QAM 1@14 CH 20385



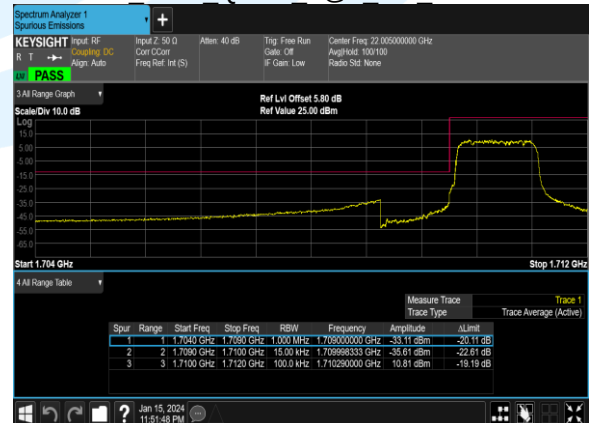
B4 3M 16QAM 15@0 CH 20385



B4 1.4M QPSK 1@0 CH 19957



B4 1.4M QPSK 6@0 CH 19957



B4 1.4M 16QAM 1@0 CH 19957



B4 1.4M 16QAM 6@0 CH 19957



B4 1.4M QPSK 1@5 CH 20393



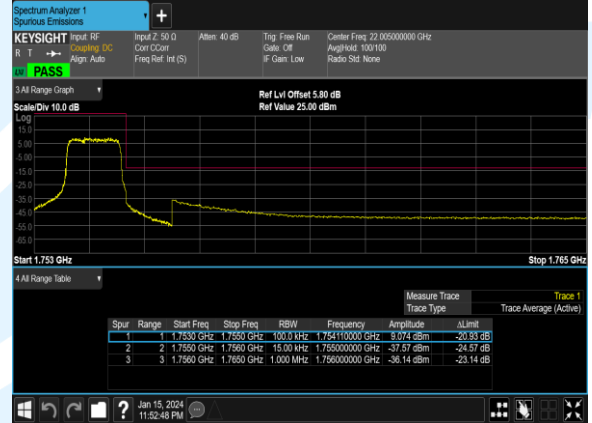
B4 1.4M QPSK 6@0 CH 20393



B4 1.4M 16QAM 1@5 CH 20393



B4 1.4M 16QAM 6@0 CH 20393



## A.3 LTE BAND 5

## Peak to Average Ratio

| Band | Bandwidth (MHz) | Channel | Freq (MHz) | Modulation | RB   | Result (dB) | Limit (dB) | Verdict |
|------|-----------------|---------|------------|------------|------|-------------|------------|---------|
| 5    | 10.0            | 20450   | 829.0      | QPSK       | 50@0 | 5.61        | 13         | PASS    |
| 5    | 10.0            | 20450   | 829.0      | 16QAM      | 50@0 | 6.30        | 13         | PASS    |
| 5    | 10.0            | 20525   | 836.5      | QPSK       | 50@0 | 5.68        | 13         | PASS    |
| 5    | 10.0            | 20525   | 836.5      | 16QAM      | 50@0 | 6.45        | 13         | PASS    |
| 5    | 10.0            | 20600   | 844.0      | QPSK       | 50@0 | 5.60        | 13         | PASS    |
| 5    | 10.0            | 20600   | 844.0      | 16QAM      | 50@0 | 6.38        | 13         | PASS    |
| 5    | 5.0             | 20425   | 826.5      | QPSK       | 25@0 | 5.55        | 13         | PASS    |
| 5    | 5.0             | 20425   | 826.5      | 16QAM      | 25@0 | 6.23        | 13         | PASS    |
| 5    | 5.0             | 20525   | 836.5      | QPSK       | 25@0 | 5.72        | 13         | PASS    |
| 5    | 5.0             | 20525   | 836.5      | 16QAM      | 25@0 | 6.42        | 13         | PASS    |
| 5    | 5.0             | 20625   | 846.5      | QPSK       | 25@0 | 5.70        | 13         | PASS    |
| 5    | 5.0             | 20625   | 846.5      | 16QAM      | 25@0 | 6.37        | 13         | PASS    |
| 5    | 3.0             | 20415   | 825.5      | QPSK       | 15@0 | 5.63        | 13         | PASS    |
| 5    | 3.0             | 20415   | 825.5      | 16QAM      | 15@0 | 6.43        | 13         | PASS    |
| 5    | 3.0             | 20525   | 836.5      | QPSK       | 15@0 | 5.64        | 13         | PASS    |
| 5    | 3.0             | 20525   | 836.5      | 16QAM      | 15@0 | 6.50        | 13         | PASS    |
| 5    | 3.0             | 20635   | 847.5      | QPSK       | 15@0 | 5.76        | 13         | PASS    |
| 5    | 3.0             | 20635   | 847.5      | 16QAM      | 15@0 | 6.57        | 13         | PASS    |
| 5    | 1.4             | 20407   | 824.7      | QPSK       | 6@0  | 5.68        | 13         | PASS    |
| 5    | 1.4             | 20407   | 824.7      | 16QAM      | 6@0  | 6.46        | 13         | PASS    |
| 5    | 1.4             | 20525   | 836.5      | QPSK       | 6@0  | 5.70        | 13         | PASS    |
| 5    | 1.4             | 20525   | 836.5      | 16QAM      | 6@0  | 6.48        | 13         | PASS    |
| 5    | 1.4             | 20643   | 848.3      | QPSK       | 6@0  | 5.78        | 13         | PASS    |
| 5    | 1.4             | 20643   | 848.3      | 16QAM      | 6@0  | 6.56        | 13         | PASS    |

## Test Graphs

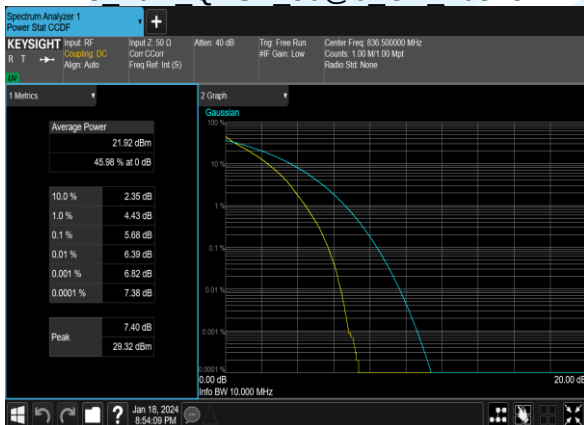
B5 10M QPSK 50@0 CH 20450



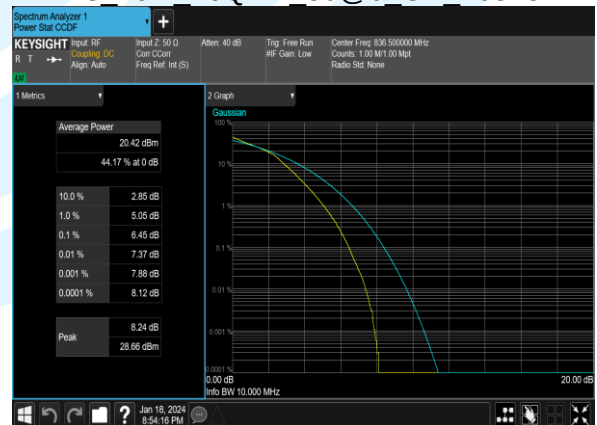
B5 10M 16QAM 50@0 CH 20450



B5 10M QPSK 50@0 CH 20525



B5 10M 16QAM 50@0 CH 20525



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UTTR-RF-FCC4G-V1.1

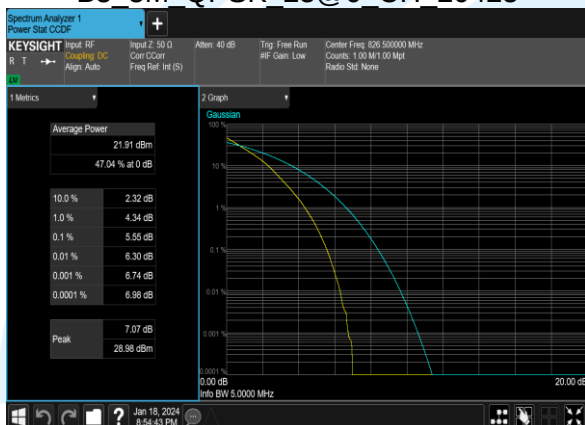
B5 10M QPSK 50@0 CH 20600



B5 10M 16QAM 50@0 CH 20600



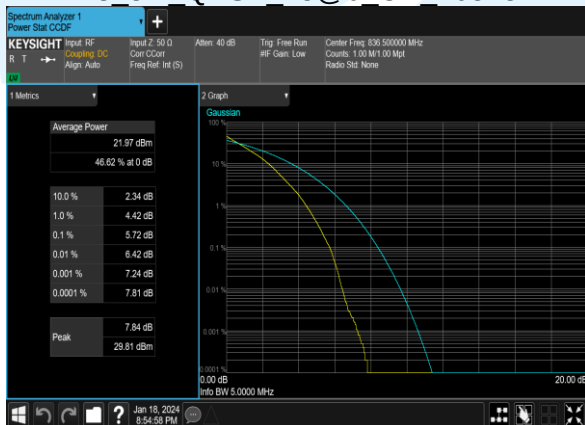
B5 5M QPSK 25@0 CH 20425



B5 5M 16QAM 25@0 CH 20425



B5 5M QPSK 25@0 CH 20525



B5 5M 16QAM 25@0 CH 20525



B5 5M QPSK 25@0 CH 20625



B5 5M 16QAM 25@0 CH 20625

