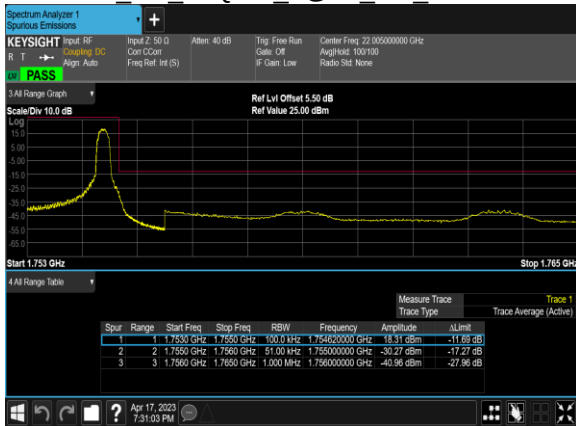


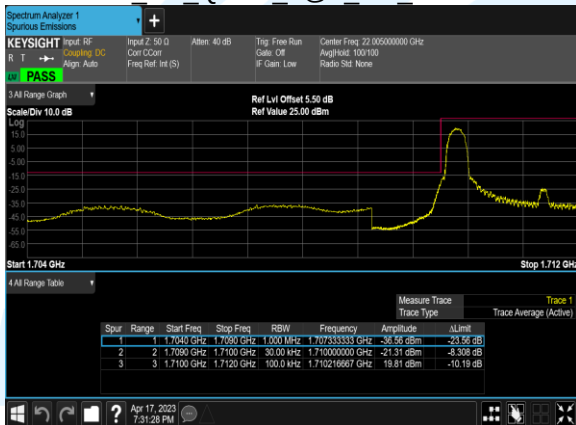
B4 5M 16QAM 1@24 CH 20375



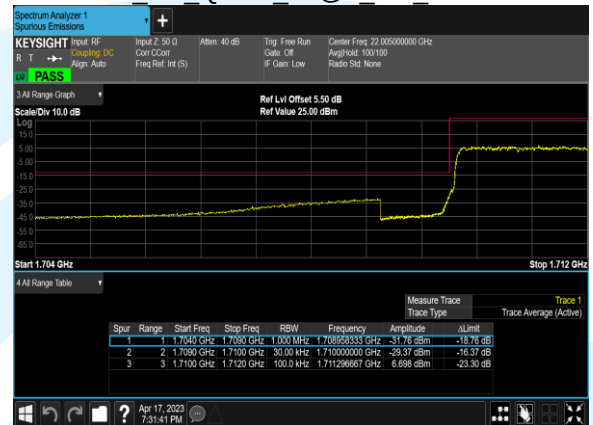
B4 5M 16QAM 25@0 CH 20375



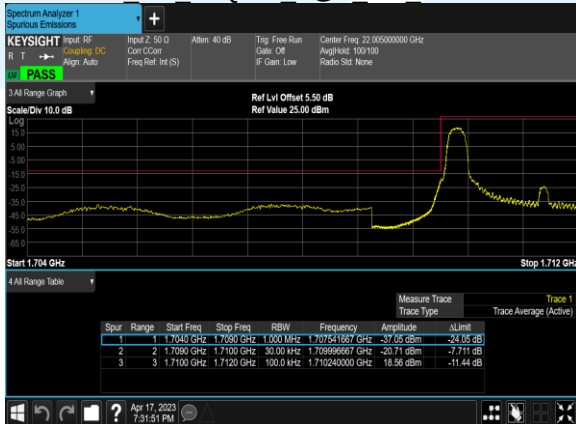
B4 3M QPSK 1@0 CH 19965



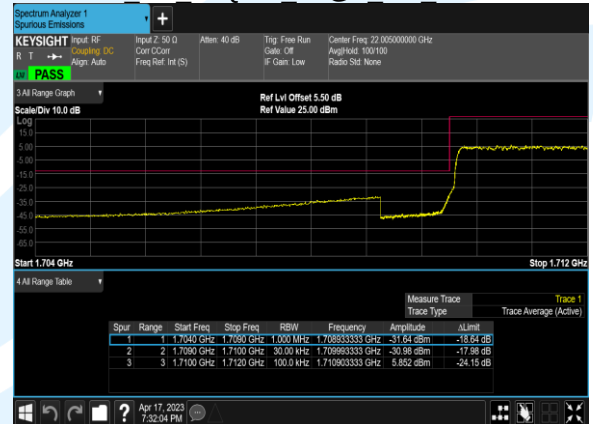
B4 3M QPSK 15@0 CH 19965



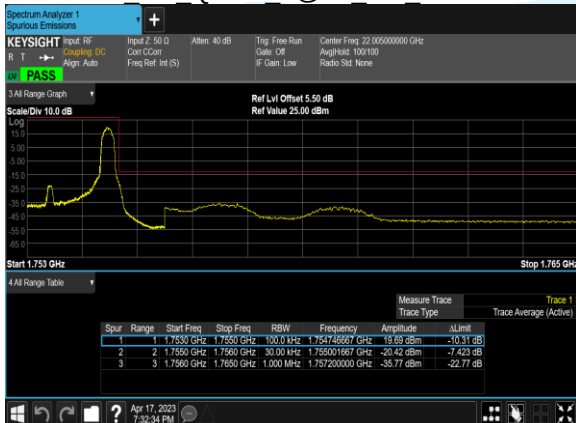
B4 3M 16QAM 1@0 CH 19965



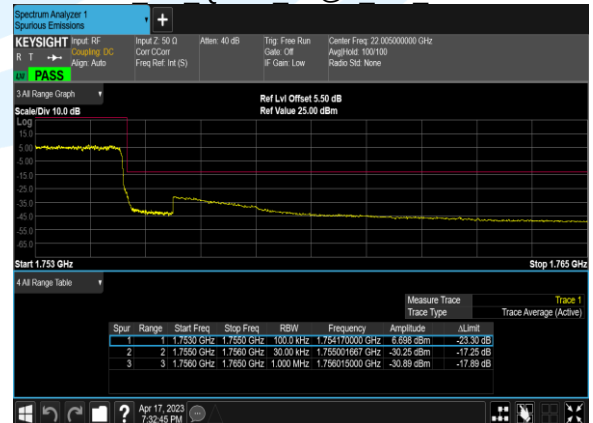
B4 3M 16QAM 15@0 CH 19965



B4 3M QPSK 1@14 CH 20385



B4 3M QPSK 15@0 CH 20385



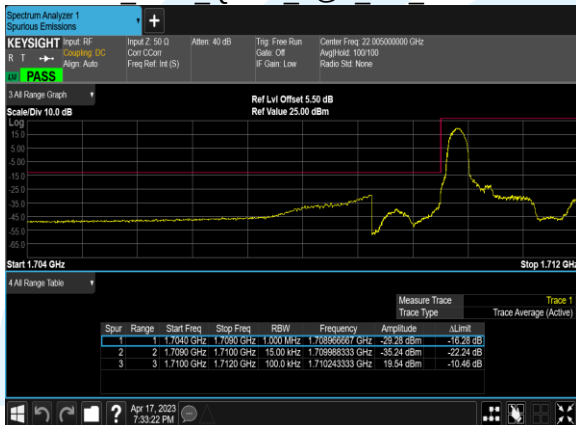
B4 3M 16QAM 1@14 CH 20385



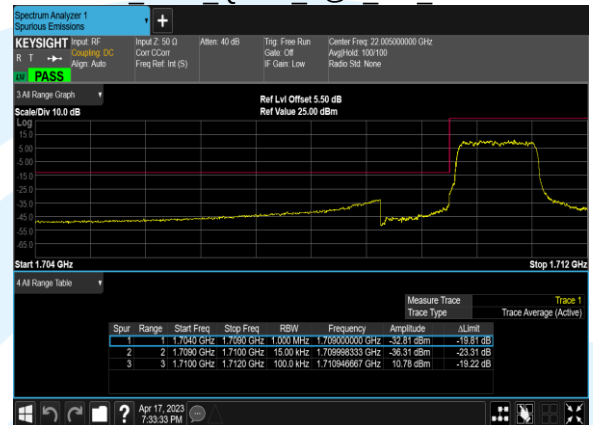
B4 3M 16QAM 15@0 CH 20385



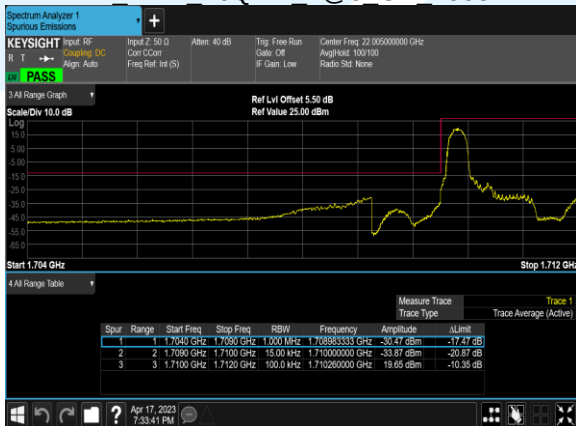
B4 1.4M QPSK 1@0 CH 19957



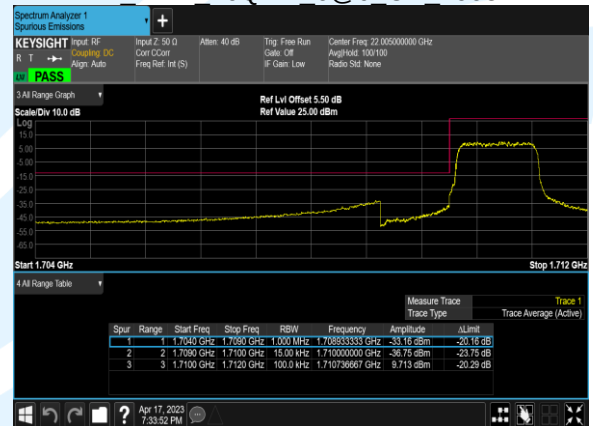
B4 1.4M QPSK 6@0 CH 19957



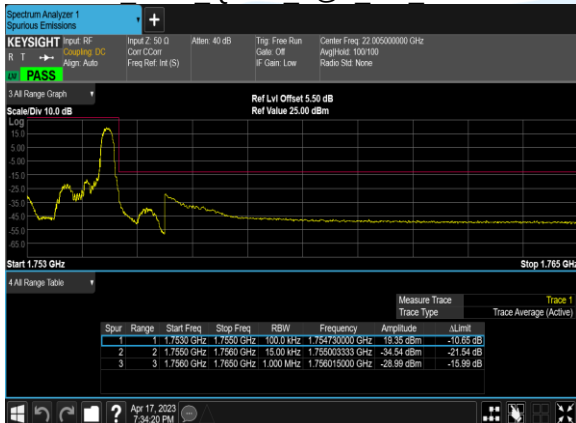
B4 1.4M 16QAM 1@0 CH 19957



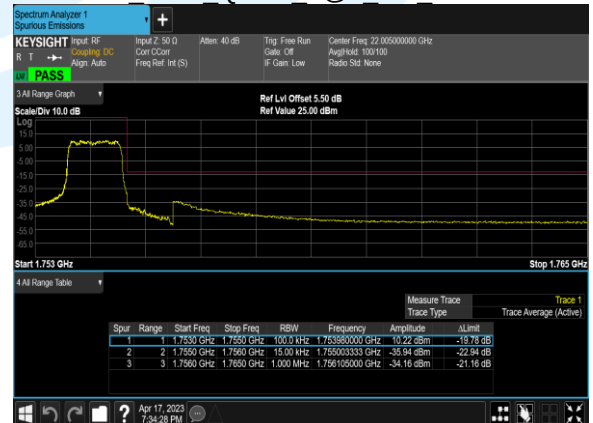
B4 1.4M 16QAM 6@0 CH 19957



B4 1.4M QPSK 1@5 CH 20393



B4 1.4M QPSK 6@0 CH 20393



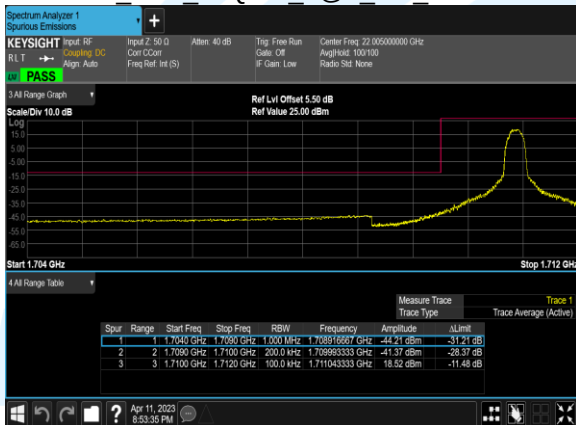
B4 1.4M 16QAM 1@5 CH 20393



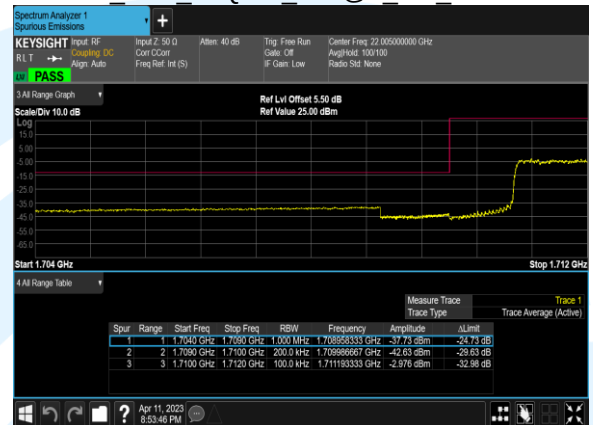
B4 1.4M 16QAM 6@0 CH 20393



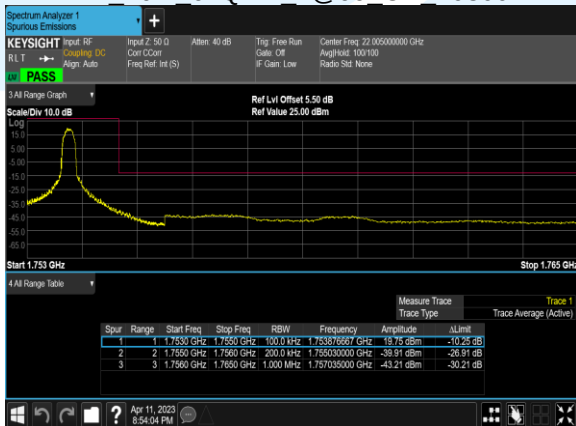
B4 20M 64QAM 1@0 CH 20050



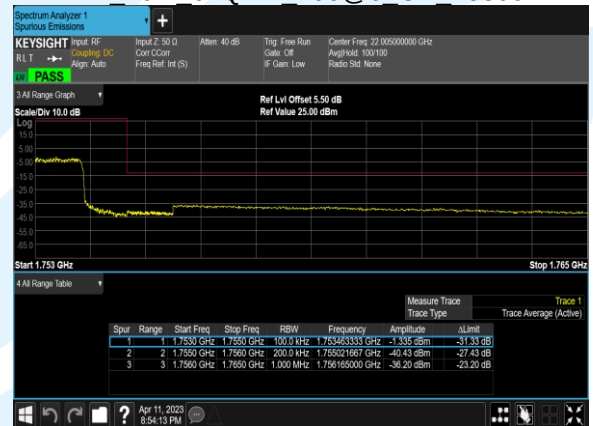
B4 20M 64QAM 100@0 CH 20050



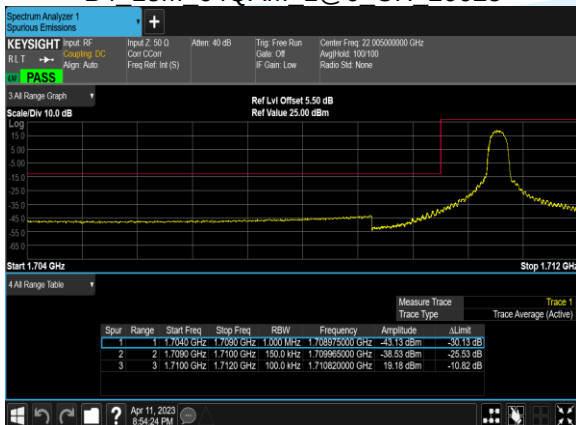
B4 20M 64QAM 1@99 CH 20300



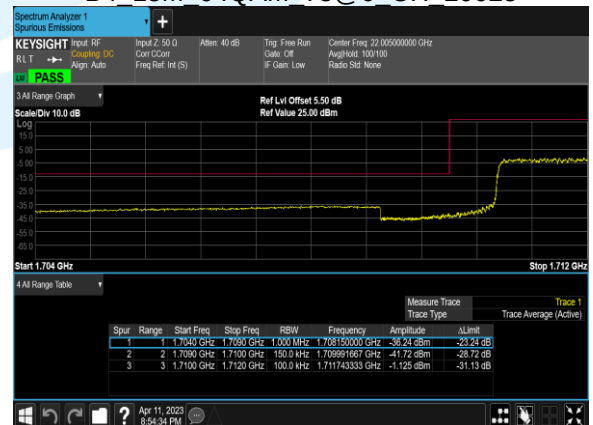
B4 20M 64QAM 100@0 CH 20300



B4 15M 64QAM 1@0 CH 20025



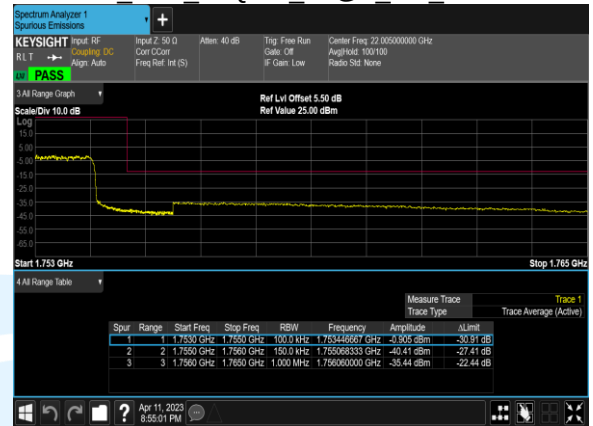
B4 15M 64QAM 75@0 CH 20025



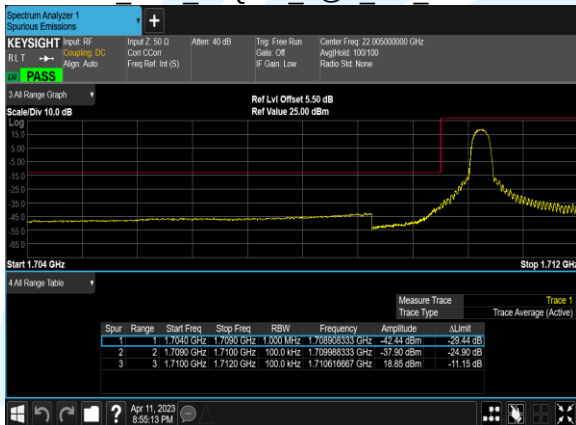
B4 15M 64QAM 1@74 CH 20325



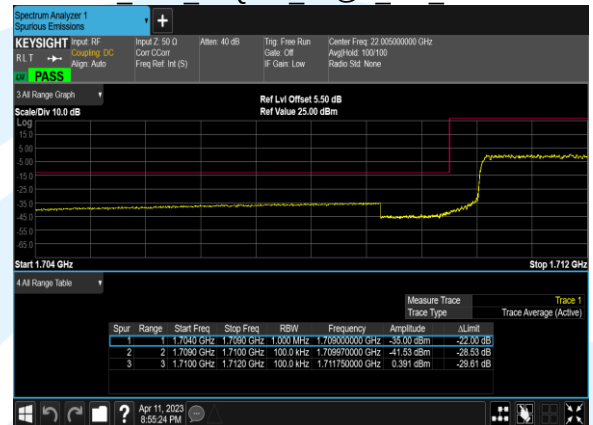
B4 15M 64QAM 75@0 CH 20325



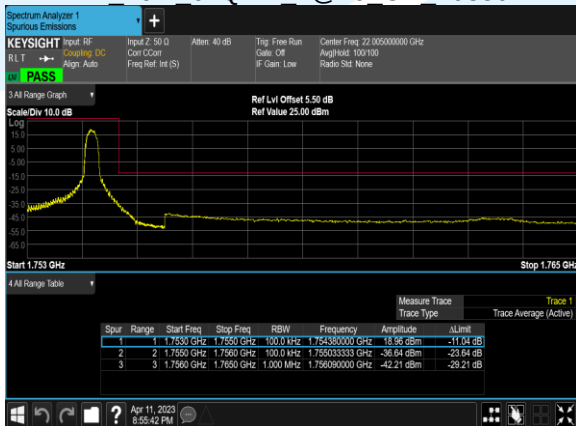
B4 10M 64QAM 1@0 CH 20000



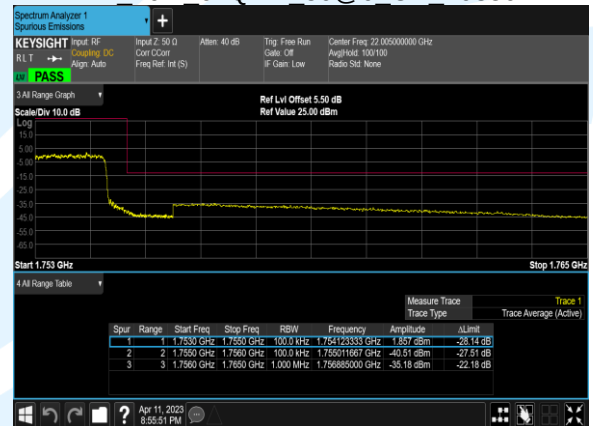
B4 10M 64QAM 50@0 CH 20000



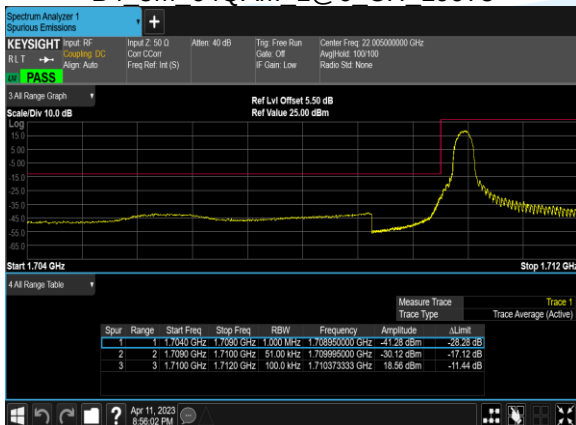
B4 10M 64QAM 1@49 CH 20350



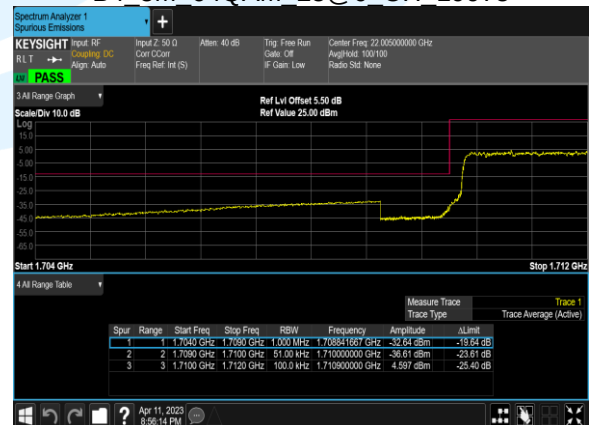
B4 10M 64QAM 50@0 CH 20350



B4 5M 64QAM 1@0 CH 19975

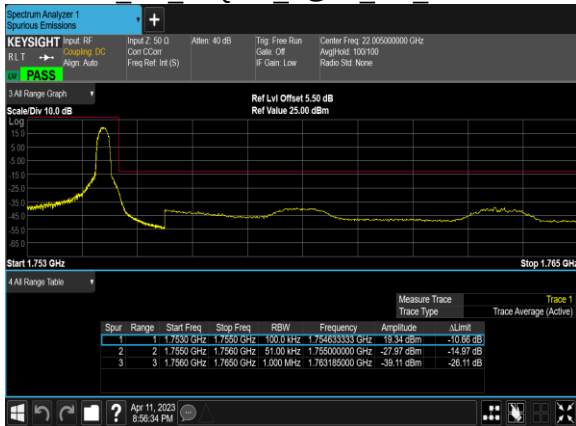


B4 5M 64QAM 25@0 CH 19975





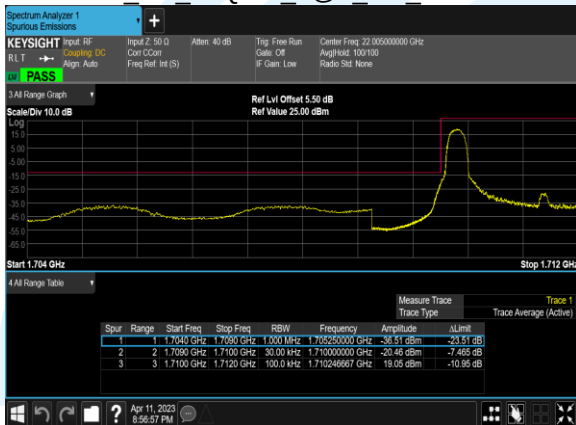
B4 5M 64QAM 1@24 CH 20375



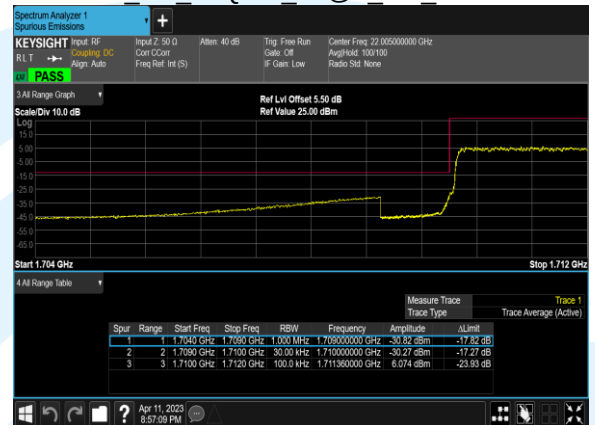
B4 5M 64QAM 25@0 CH 20375



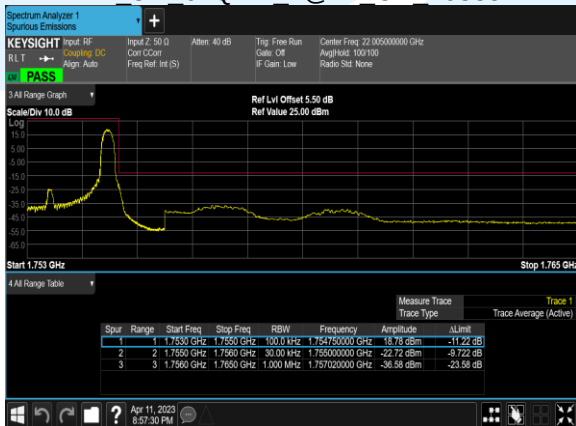
B4 3M 64QAM 1@0 CH 19965



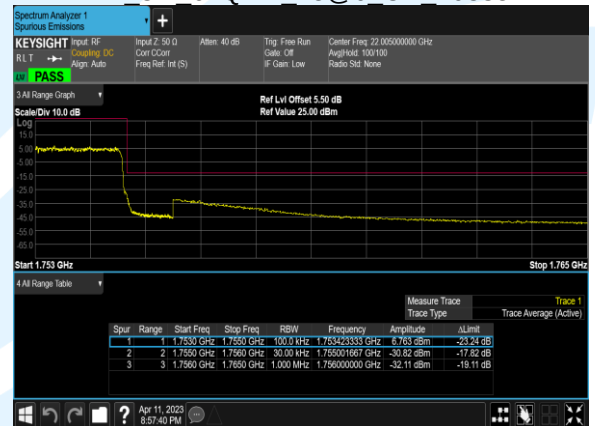
B4 3M 64QAM 15@0 CH 19965



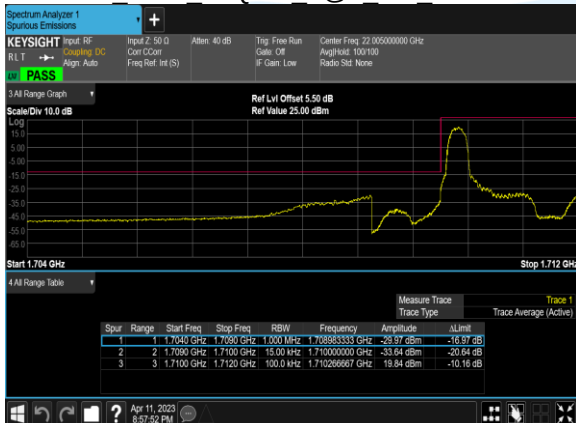
B4 3M 64QAM 1@14 CH 20385



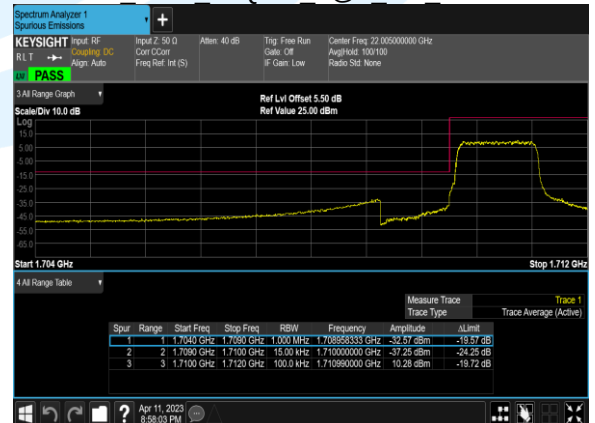
B4 3M 64QAM 15@0 CH 20385



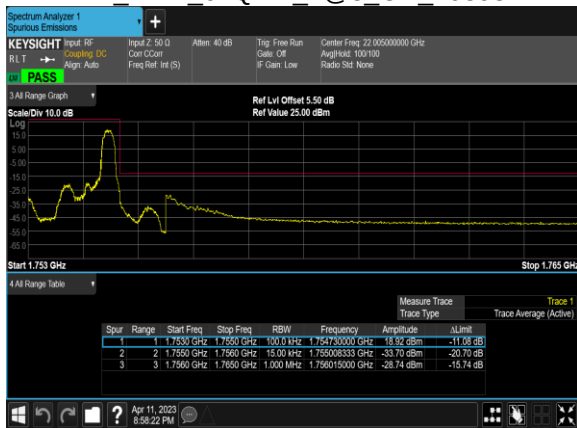
B4 1.4M 64QAM 1@0 CH 19957



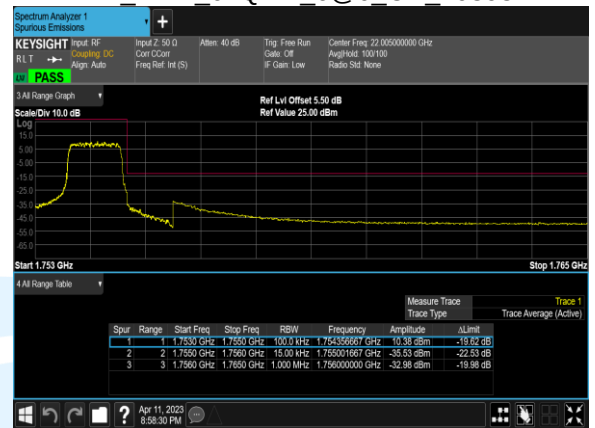
B4 1.4M 64QAM 6@0 CH 19957



B4 1.4M 64QAM 1@5 CH 20393



B4 1.4M 64QAM 6@0 CH 20393



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UTTR-RF-FCC4G-V1.1

## 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   | 836.5      | QPSK       | 50@0 | 5.48        | 13         | PASS    |
| 5    | 10.0            | 20450   | 829.0      | 16QAM      | 50@0 | 6.30        | 13         | PASS    |
| 5    | 10.0            | 20525   | 836.5      | QPSK       | 50@0 | 5.47        | 13         | PASS    |
| 5    | 10.0            | 20525   | 836.5      | 16QAM      | 50@0 | 6.22        | 13         | PASS    |
| 5    | 10.0            | 20600   | 844.0      | QPSK       | 50@0 | 5.75        | 13         | PASS    |
| 5    | 10.0            | 20600   | 844.0      | 16QAM      | 50@0 | 6.44        | 13         | PASS    |
| 5    | 5.0             | 20425   | 826.5      | QPSK       | 25@0 | 5.50        | 13         | PASS    |
| 5    | 5.0             | 20425   | 826.5      | 16QAM      | 25@0 | 6.16        | 13         | PASS    |
| 5    | 5.0             | 20525   | 836.5      | QPSK       | 25@0 | 5.50        | 13         | PASS    |
| 5    | 5.0             | 20525   | 836.5      | 16QAM      | 25@0 | 6.15        | 13         | PASS    |
| 5    | 5.0             | 20625   | 846.5      | QPSK       | 25@0 | 5.61        | 13         | PASS    |
| 5    | 5.0             | 20625   | 846.5      | 16QAM      | 25@0 | 6.28        | 13         | PASS    |
| 5    | 3.0             | 20415   | 825.5      | QPSK       | 15@0 | 5.38        | 13         | PASS    |
| 5    | 3.0             | 20415   | 825.5      | 16QAM      | 15@0 | 6.17        | 13         | PASS    |
| 5    | 3.0             | 20525   | 836.5      | QPSK       | 15@0 | 5.48        | 13         | PASS    |
| 5    | 3.0             | 20525   | 836.5      | 16QAM      | 15@0 | 6.22        | 13         | PASS    |
| 5    | 3.0             | 20635   | 847.5      | QPSK       | 15@0 | 5.60        | 13         | PASS    |
| 5    | 3.0             | 20635   | 847.5      | 16QAM      | 15@0 | 6.32        | 13         | PASS    |
| 5    | 1.4             | 20407   | 824.7      | QPSK       | 6@0  | 5.12        | 13         | PASS    |
| 5    | 1.4             | 20407   | 824.7      | 16QAM      | 6@0  | 5.92        | 13         | PASS    |
| 5    | 1.4             | 20525   | 836.5      | QPSK       | 6@0  | 5.48        | 13         | PASS    |
| 5    | 1.4             | 20525   | 836.5      | 16QAM      | 6@0  | 6.16        | 13         | PASS    |
| 5    | 1.4             | 20643   | 848.3      | QPSK       | 6@0  | 5.50        | 13         | PASS    |
| 5    | 1.4             | 20643   | 848.3      | 16QAM      | 6@0  | 6.16        | 13         | PASS    |
| 5    | 10.0            | 20450   | 829.0      | 64QAM      | 50@0 | 6.43        | 13         | PASS    |
| 5    | 10.0            | 20525   | 836.5      | 64QAM      | 50@0 | 6.28        | 13         | PASS    |
| 5    | 10.0            | 20600   | 844.0      | 64QAM      | 50@0 | 6.47        | 13         | PASS    |
| 5    | 5.0             | 20425   | 826.5      | 64QAM      | 25@0 | 6.28        | 13         | PASS    |
| 5    | 5.0             | 20525   | 836.5      | 64QAM      | 25@0 | 6.29        | 13         | PASS    |
| 5    | 5.0             | 20625   | 846.5      | 64QAM      | 25@0 | 6.28        | 13         | PASS    |
| 5    | 3.0             | 20415   | 825.5      | 64QAM      | 15@0 | 6.26        | 13         | PASS    |
| 5    | 3.0             | 20525   | 836.5      | 64QAM      | 15@0 | 6.30        | 13         | PASS    |
| 5    | 3.0             | 20635   | 847.5      | 64QAM      | 15@0 | 6.37        | 13         | PASS    |
| 5    | 1.4             | 20407   | 824.7      | 64QAM      | 6@0  | 6.11        | 13         | PASS    |
| 5    | 1.4             | 20525   | 836.5      | 64QAM      | 6@0  | 6.34        | 13         | PASS    |
| 5    | 1.4             | 20643   | 848.3      | 64QAM      | 6@0  | 6.22        | 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



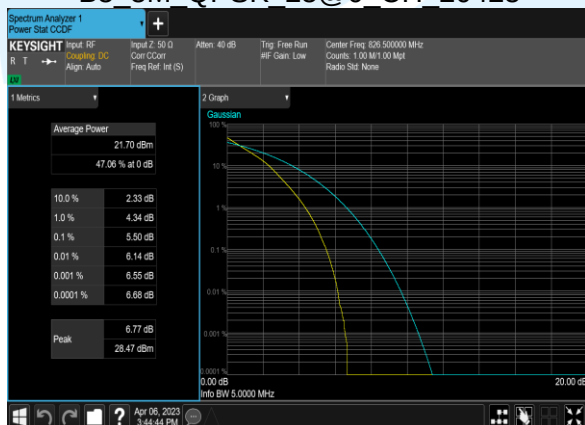
B5 10M QPSK 50@0 CH 20600



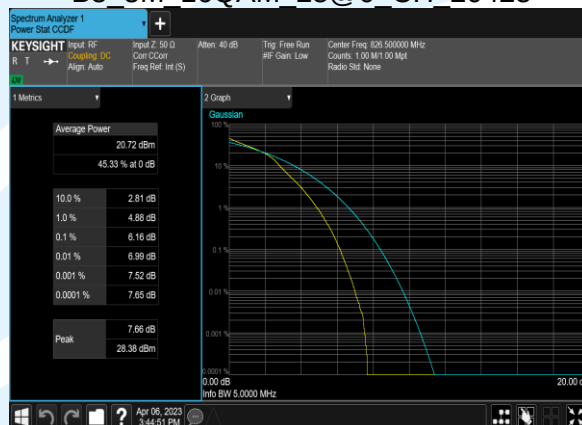
B5 10M 16QAM 50@0 CH 20600



B5 5M QPSK 25@0 CH 20425



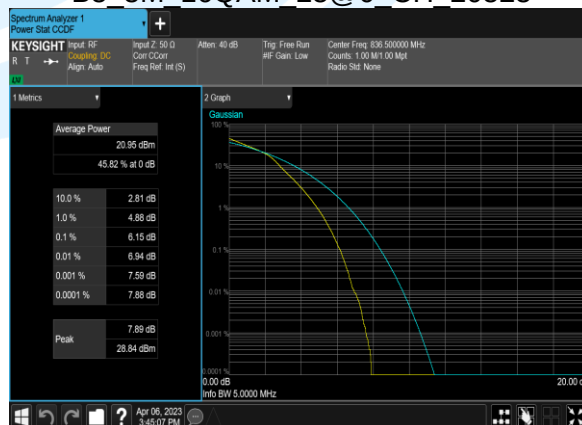
B5 5M 16QAM 25@0 CH 20425



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



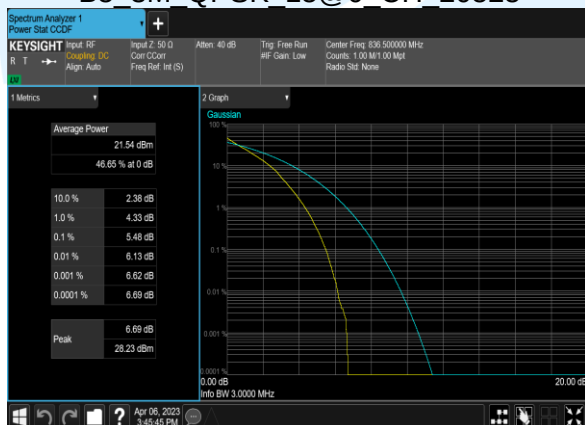
B5\_3M\_QPSK\_15@0\_CH\_20415



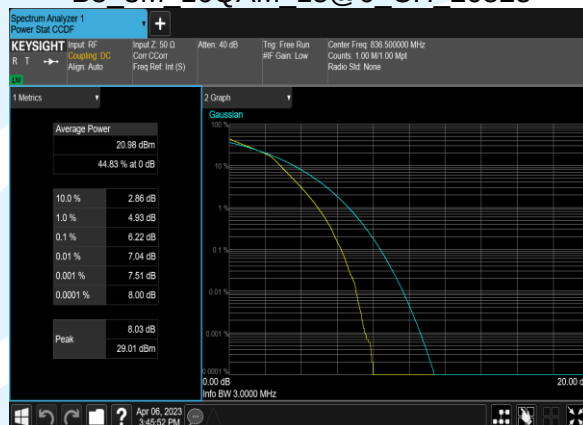
B5\_3M\_16QAM\_15@0\_CH\_20415



B5\_3M\_QPSK\_15@0\_CH\_20525



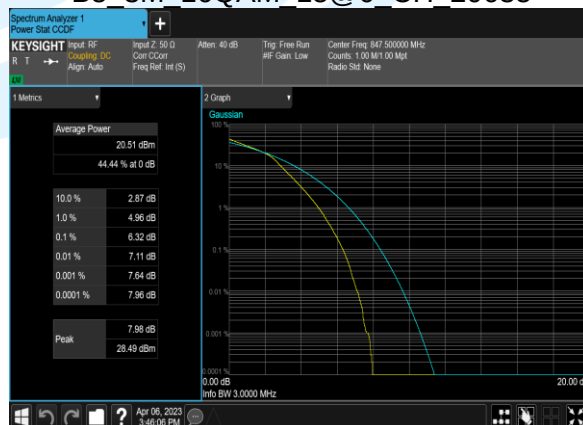
B5\_3M\_16QAM\_15@0\_CH\_20525



B5\_3M\_QPSK\_15@0\_CH\_20635



B5\_3M\_16QAM\_15@0\_CH\_20635



B5 1.4M QPSK 6@0 CH 20407



B5 1.4M 16QAM 6@0 CH 20407



B5 1.4M QPSK 6@0 CH 20525



B5 1.4M 16QAM 6@0 CH 20525



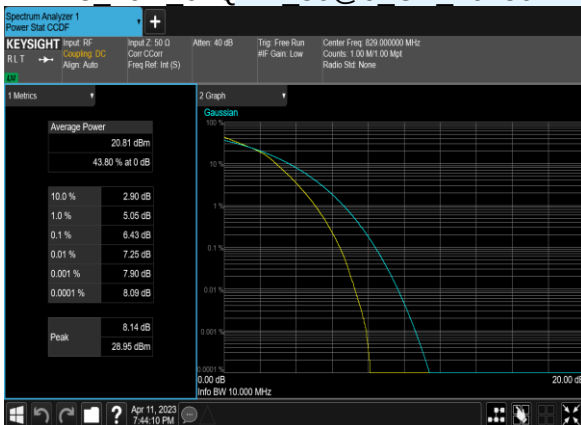
B5 1.4M QPSK 6@0 CH 20643



B5 1.4M 16QAM 6@0 CH 20643



B5 10M 64QAM 50@0 CH 20450



B5 10M 64QAM 50@0 CH 20525



B5 10M 64QAM 50@0 CH 20600



B5 5M 64QAM 25@0 CH 20425



B5 5M 64QAM 25@0 CH 20525



B5 5M 64QAM 25@0 CH 20625



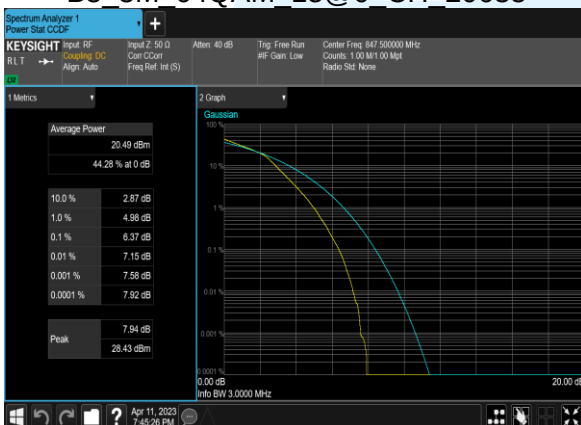
B5 3M 64QAM 15@0 CH 20415



B5 3M 64QAM 15@0 CH 20525



B5 3M 64QAM 15@0 CH 20635



B5 1.4M 64QAM 6@0 CH 20407



B5\_1.4M\_64QAM\_6@0\_CH\_20525



B5\_1.4M\_64QAM\_6@0\_CH\_20643



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UTTR-RF-FCC4G-V1.1

### Occupied Bandwidth

| Band | Bandwidth (MHz) | Channel | Freq (MHz) | Modulation | RB   | OBW (MHz) | 26dB BW (MHz) |
|------|-----------------|---------|------------|------------|------|-----------|---------------|
| 5    | 10.0            | 20450   | 829.0      | QPSK       | 50@0 | 8.9557    | 9.601         |
| 5    | 10.0            | 20450   | 829.0      | 16QAM      | 50@0 | 8.9480    | 9.680         |
| 5    | 10.0            | 20525   | 836.5      | QPSK       | 50@0 | 8.9029    | 9.608         |
| 5    | 10.0            | 20525   | 836.5      | 16QAM      | 50@0 | 8.9372    | 9.523         |
| 5    | 10.0            | 20600   | 844.0      | QPSK       | 50@0 | 8.9620    | 9.725         |
| 5    | 10.0            | 20600   | 844.0      | 16QAM      | 50@0 | 8.9781    | 9.503         |
| 5    | 5.0             | 20425   | 826.5      | QPSK       | 25@0 | 4.4606    | 4.890         |
| 5    | 5.0             | 20425   | 826.5      | 16QAM      | 25@0 | 4.4594    | 4.911         |
| 5    | 5.0             | 20525   | 836.5      | QPSK       | 25@0 | 4.4528    | 4.874         |
| 5    | 5.0             | 20525   | 836.5      | 16QAM      | 25@0 | 4.4760    | 4.895         |
| 5    | 5.0             | 20625   | 846.5      | QPSK       | 25@0 | 4.4642    | 4.837         |
| 5    | 5.0             | 20625   | 846.5      | 16QAM      | 25@0 | 4.4637    | 4.887         |
| 5    | 3.0             | 20415   | 825.5      | QPSK       | 15@0 | 2.6855    | 3.008         |
| 5    | 3.0             | 20415   | 825.5      | 16QAM      | 15@0 | 2.6826    | 2.956         |
| 5    | 3.0             | 20525   | 836.5      | QPSK       | 15@0 | 2.6953    | 2.984         |
| 5    | 3.0             | 20525   | 836.5      | 16QAM      | 15@0 | 2.6797    | 2.945         |
| 5    | 3.0             | 20635   | 847.5      | QPSK       | 15@0 | 2.6819    | 2.965         |
| 5    | 3.0             | 20635   | 847.5      | 16QAM      | 15@0 | 2.6792    | 2.998         |
| 5    | 1.4             | 20407   | 824.7      | QPSK       | 6@0  | 1.0760    | 1.218         |
| 5    | 1.4             | 20407   | 824.7      | 16QAM      | 6@0  | 1.0786    | 1.220         |
| 5    | 1.4             | 20525   | 836.5      | QPSK       | 6@0  | 1.0812    | 1.219         |
| 5    | 1.4             | 20525   | 836.5      | 16QAM      | 6@0  | 1.0781    | 1.214         |
| 5    | 1.4             | 20643   | 848.3      | QPSK       | 6@0  | 1.0769    | 1.220         |
| 5    | 1.4             | 20643   | 848.3      | 16QAM      | 6@0  | 1.0778    | 1.224         |

| Band | Bandwidth (MHz) | Channel | Freq (MHz) | Modulation | RB   | OBW (MHz) | 26dB BW (MHz) |
|------|-----------------|---------|------------|------------|------|-----------|---------------|
| 5    | 10.0            | 20450   | 829.0      | 64QAM      | 50@0 | 8.9422    | 9.720         |
| 5    | 10.0            | 20525   | 836.5      | 64QAM      | 50@0 | 8.9369    | 9.683         |
| 5    | 10.0            | 20600   | 844.0      | 64QAM      | 50@0 | 8.9586    | 9.709         |
| 5    | 5.0             | 20425   | 826.5      | 64QAM      | 25@0 | 4.4612    | 4.857         |
| 5    | 5.0             | 20525   | 836.5      | 64QAM      | 25@0 | 4.4598    | 4.858         |
| 5    | 5.0             | 20625   | 846.5      | 64QAM      | 25@0 | 4.4663    | 4.863         |
| 5    | 3.0             | 20415   | 825.5      | 64QAM      | 15@0 | 2.6789    | 2.968         |
| 5    | 3.0             | 20525   | 836.5      | 64QAM      | 15@0 | 2.6790    | 2.981         |
| 5    | 3.0             | 20635   | 847.5      | 64QAM      | 15@0 | 2.6731    | 2.990         |
| 5    | 1.4             | 20407   | 824.7      | 64QAM      | 6@0  | 1.0798    | 1.215         |
| 5    | 1.4             | 20525   | 836.5      | 64QAM      | 6@0  | 1.0779    | 1.211         |
| 5    | 1.4             | 20643   | 848.3      | 64QAM      | 6@0  | 1.0771    | 1.224         |

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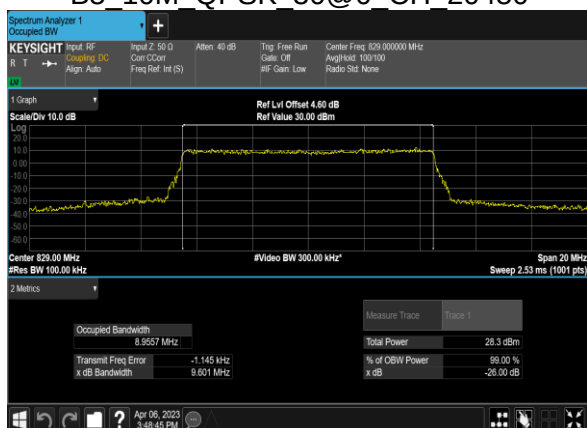
<http://www.uttlab.com>

UTTR-RF-FCC4G-V1.1

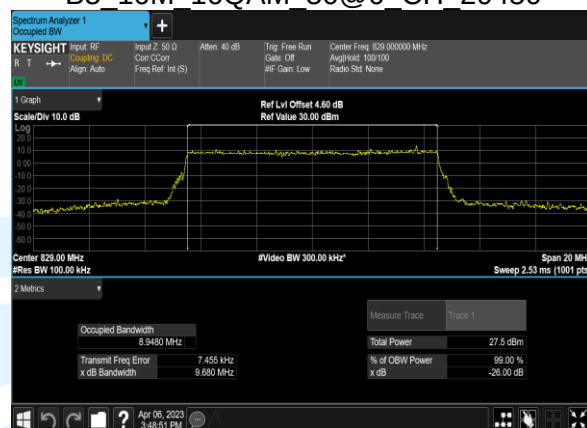


## Test Graphs

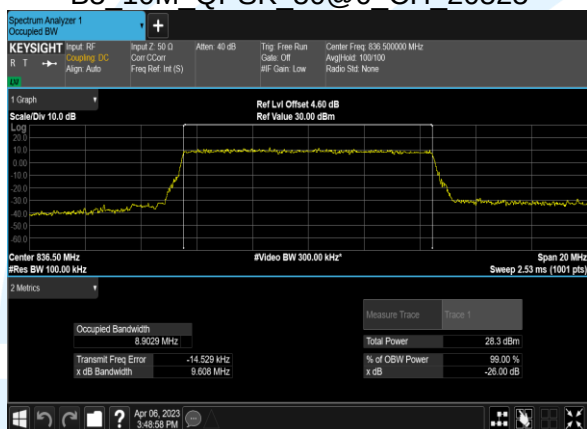
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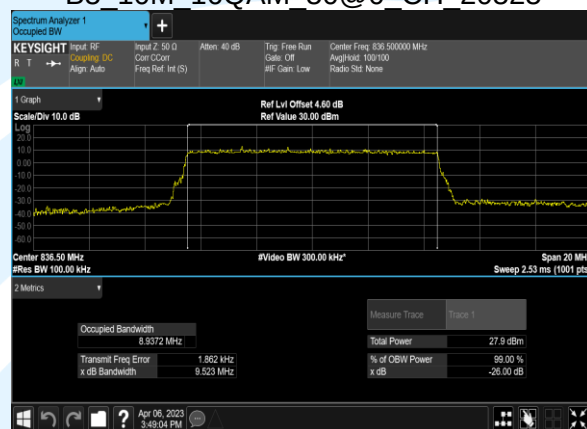
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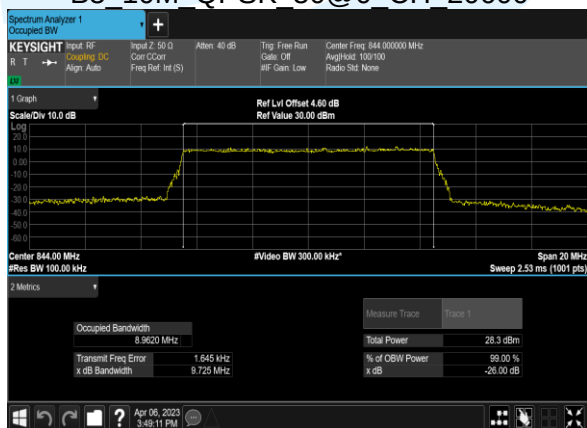
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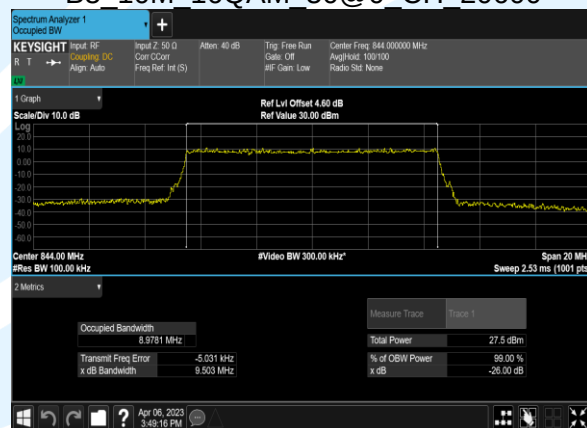
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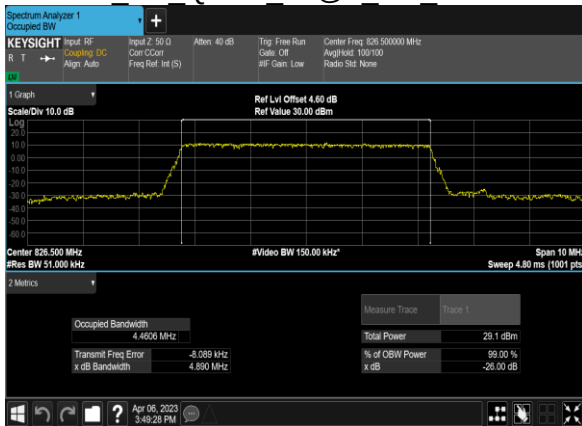
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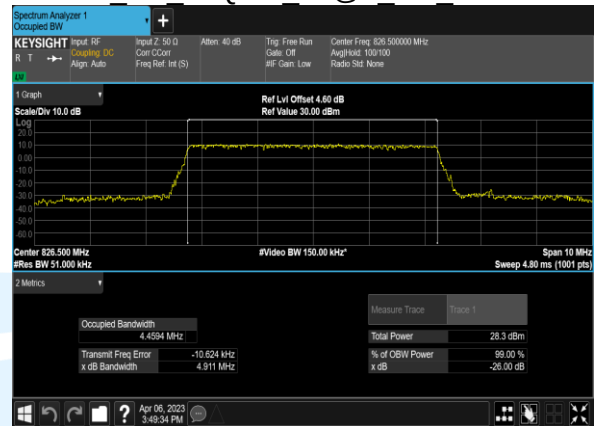
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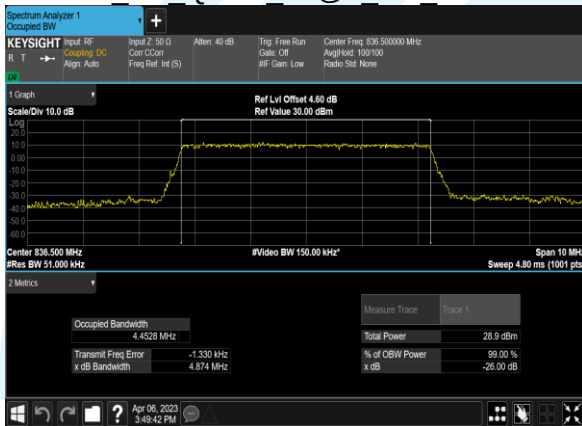
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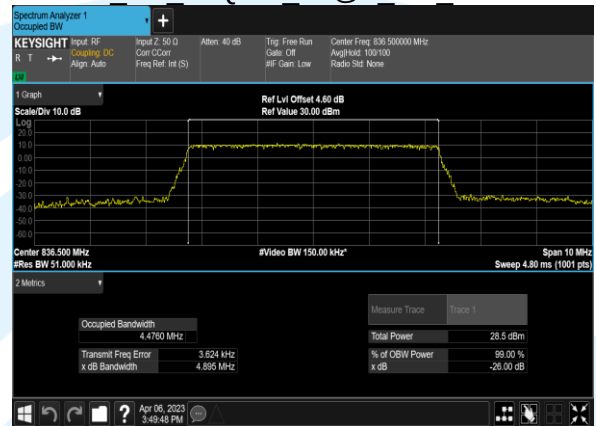
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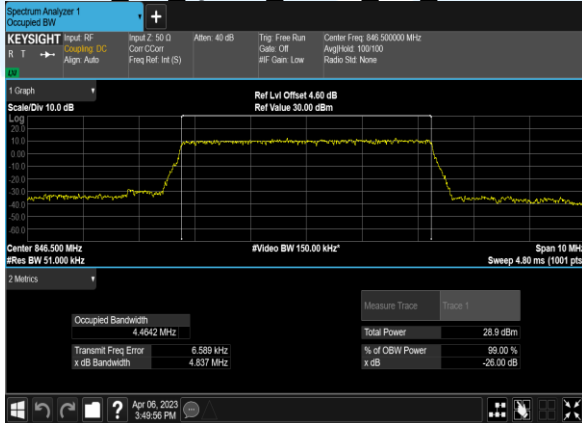
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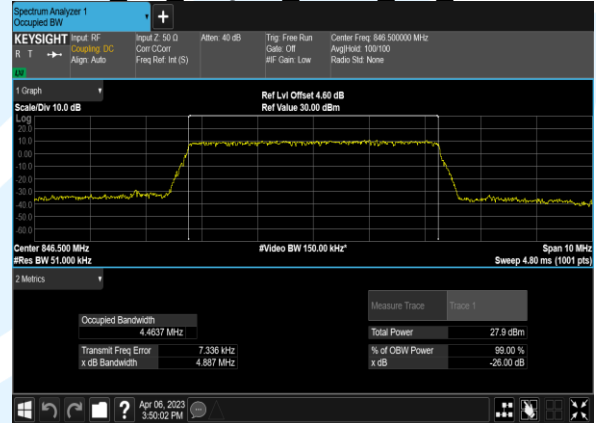
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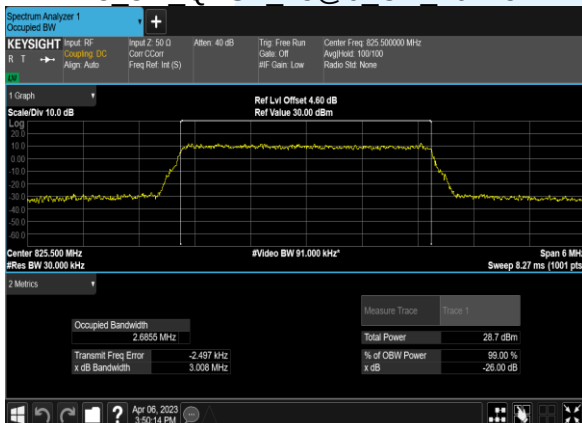
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B5 3M QPSK 15@0 CH 20415



B5 3M 16QAM 15@0 CH 20415

