



**CTC Laboratories, Inc.**

Room 101 Building B, No. 7, Lanqing 1st Road, Luhua Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China  
Tel: +86-755- 27521059 Fax: +86-755- 27521011 [Http://www.sz-ctc.org.cn](http://www.sz-ctc.org.cn)

## **Appendix for LTE Band 13**

**Applicant: UCLOUDLINK (SINGAPORE) PTE.LTD**

**Address: 80 ROBINSON ROAD #02-00 SINGAPORE**

**Product Name: 4G Wireless Data Terminal**

**Model: GLMX23A01**

**FCC ID: 2BB6E-GLMX23A01**

## TABLE OF CONTENTS

|          |                                                        |          |
|----------|--------------------------------------------------------|----------|
| <b>1</b> | <b>Summary of Test Results Data and Graph.....</b>     | <b>3</b> |
| 1.1.     | Appendix A: Conducted Power Output Data .....          | 3        |
| 1.2.     | Appendix B: Peak-to-Average Ratio(CCDF) .....          | 5        |
| 1.3.     | Appendix C: 26dB Bandwidth and Occupied Bandwidth..... | 11       |
| 1.4.     | Appendix D: Band Edge .....                            | 15       |
| 1.5.     | Appendix E: Conducted Spurious Emission .....          | 22       |
| 1.6.     | Appendix F: Frequency Stability .....                  | 38       |

# 1 Summary of Test Results Data and Graph

## 1.1. Appendix A: Conducted Power Output Data

### Test Result

| Band   | Bandwidth | Modulation | Channel | RB Configuration | Result(dBm)  | Verdict |
|--------|-----------|------------|---------|------------------|--------------|---------|
| Band13 | 5MHz      | QPSK       | 23205   | 1RB#0            | 23.34        | PASS    |
| Band13 | 5MHz      | 16QAM      | 23205   | 1RB#0            | 22.38        | PASS    |
| Band13 | 5MHz      | QPSK       | 23205   | 1RB#12           | 23.50        | PASS    |
| Band13 | 5MHz      | 16QAM      | 23205   | 1RB#12           | 22.55        | PASS    |
| Band13 | 5MHz      | QPSK       | 23205   | 1RB#24           | 23.09        | PASS    |
| Band13 | 5MHz      | 16QAM      | 23205   | 1RB#24           | 22.09        | PASS    |
| Band13 | 5MHz      | QPSK       | 23205   | 12RB#0           | 23.02        | PASS    |
| Band13 | 5MHz      | 16QAM      | 23205   | 12RB#0           | 23.06        | PASS    |
| Band13 | 5MHz      | QPSK       | 23205   | 12RB#6           | 23.05        | PASS    |
| Band13 | 5MHz      | 16QAM      | 23205   | 12RB#6           | 23.03        | PASS    |
| Band13 | 5MHz      | QPSK       | 23205   | 12RB#13          | 22.29        | PASS    |
| Band13 | 5MHz      | 16QAM      | 23205   | 12RB#13          | 22.35        | PASS    |
| Band13 | 5MHz      | QPSK       | 23205   | 25RB#0           | 22.64        | PASS    |
| Band13 | 5MHz      | 16QAM      | 23205   | 25RB#0           | 21.65        | PASS    |
| Band13 | 5MHz      | QPSK       | 23230   | 1RB#0            | 23.64        | PASS    |
| Band13 | 5MHz      | 16QAM      | 23230   | 1RB#0            | 22.51        | PASS    |
| Band13 | 5MHz      | QPSK       | 23230   | 1RB#12           | 24.02        | PASS    |
| Band13 | 5MHz      | 16QAM      | 23230   | 1RB#12           | 23.13        | PASS    |
| Band13 | 5MHz      | QPSK       | 23230   | 1RB#24           | 23.97        | PASS    |
| Band13 | 5MHz      | 16QAM      | 23230   | 1RB#24           | 23.09        | PASS    |
| Band13 | 5MHz      | QPSK       | 23230   | 12RB#0           | 22.28        | PASS    |
| Band13 | 5MHz      | 16QAM      | 23230   | 12RB#0           | 22.27        | PASS    |
| Band13 | 5MHz      | QPSK       | 23230   | 12RB#6           | 22.27        | PASS    |
| Band13 | 5MHz      | 16QAM      | 23230   | 12RB#6           | 22.29        | PASS    |
| Band13 | 5MHz      | QPSK       | 23230   | 12RB#13          | 22.95        | PASS    |
| Band13 | 5MHz      | 16QAM      | 23230   | 12RB#13          | 22.97        | PASS    |
| Band13 | 5MHz      | QPSK       | 23230   | 25RB#0           | 23.05        | PASS    |
| Band13 | 5MHz      | 16QAM      | 23230   | 25RB#0           | 21.98        | PASS    |
| Band13 | 5MHz      | QPSK       | 23255   | 1RB#0            | <b>24.22</b> | PASS    |
| Band13 | 5MHz      | 16QAM      | 23255   | 1RB#0            | 22.89        | PASS    |
| Band13 | 5MHz      | QPSK       | 23255   | 1RB#12           | 23.99        | PASS    |
| Band13 | 5MHz      | 16QAM      | 23255   | 1RB#12           | 22.92        | PASS    |
| Band13 | 5MHz      | QPSK       | 23255   | 1RB#24           | 23.36        | PASS    |

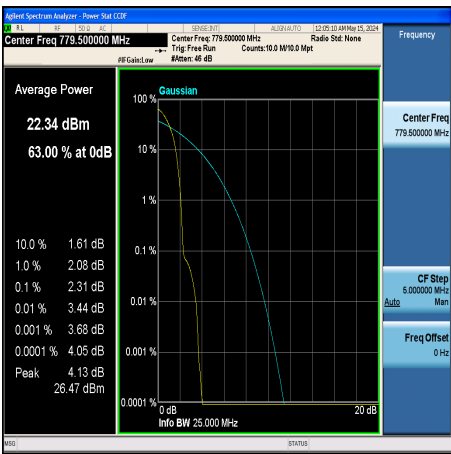
|        |       |       |       |         |       |      |
|--------|-------|-------|-------|---------|-------|------|
| Band13 | 5MHz  | 16QAM | 23255 | 1RB#24  | 22.19 | PASS |
| Band13 | 5MHz  | QPSK  | 23255 | 12RB#0  | 23.12 | PASS |
| Band13 | 5MHz  | 16QAM | 23255 | 12RB#0  | 23.12 | PASS |
| Band13 | 5MHz  | QPSK  | 23255 | 12RB#6  | 23.13 | PASS |
| Band13 | 5MHz  | 16QAM | 23255 | 12RB#6  | 23.14 | PASS |
| Band13 | 5MHz  | QPSK  | 23255 | 12RB#13 | 22.87 | PASS |
| Band13 | 5MHz  | 16QAM | 23255 | 12RB#13 | 22.88 | PASS |
| Band13 | 5MHz  | QPSK  | 23255 | 25RB#0  | 22.85 | PASS |
| Band13 | 5MHz  | 16QAM | 23255 | 25RB#0  | 21.88 | PASS |
| Band13 | 10MHz | QPSK  | 23230 | 1RB#0   | 23.24 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 1RB#0   | 22.13 | PASS |
| Band13 | 10MHz | QPSK  | 23230 | 1RB#24  | 24.16 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 1RB#24  | 22.99 | PASS |
| Band13 | 10MHz | QPSK  | 23230 | 1RB#49  | 23.64 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 1RB#49  | 22.37 | PASS |
| Band13 | 10MHz | QPSK  | 23230 | 25RB#0  | 22.96 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 25RB#0  | 22.96 | PASS |
| Band13 | 10MHz | QPSK  | 23230 | 25RB#12 | 22.91 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 25RB#12 | 22.86 | PASS |
| Band13 | 10MHz | QPSK  | 23230 | 25RB#25 | 23.11 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 25RB#25 | 23.16 | PASS |
| Band13 | 10MHz | QPSK  | 23230 | 50RB#0  | 23.03 | PASS |

## 1.2. Appendix B: Peak-to-Average Ratio(CCDF)

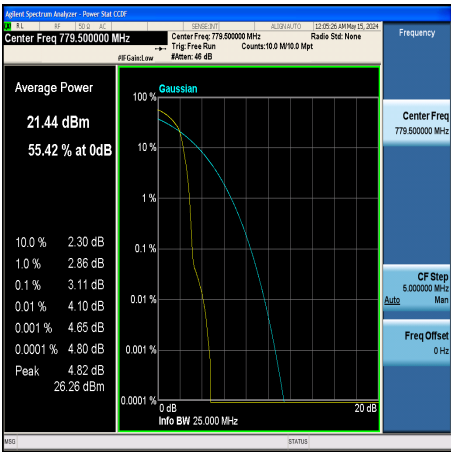
### Test Result

| Band   | Bandwidth | Modulation | Channel | RB Configuration | Result(dB) | Limit(dB) | Verdict |
|--------|-----------|------------|---------|------------------|------------|-----------|---------|
| Band13 | 5MHz      | QPSK       | 23205   | 1RB#0            | 2.31       | 13        | PASS    |
| Band13 | 5MHz      | 16QAM      | 23205   | 1RB#0            | 3.11       | 13        | PASS    |
| Band13 | 5MHz      | QPSK       | 23205   | 25RB#0           | 4.74       | 13        | PASS    |
| Band13 | 5MHz      | 16QAM      | 23205   | 25RB#0           | 5.68       | 13        | PASS    |
| Band13 | 5MHz      | QPSK       | 23230   | 1RB#0            | 4.26       | 13        | PASS    |
| Band13 | 5MHz      | 16QAM      | 23230   | 1RB#0            | 5.06       | 13        | PASS    |
| Band13 | 5MHz      | QPSK       | 23230   | 25RB#0           | 4.97       | 13        | PASS    |
| Band13 | 5MHz      | 16QAM      | 23230   | 25RB#0           | 5.83       | 13        | PASS    |
| Band13 | 5MHz      | QPSK       | 23255   | 1RB#0            | 4.12       | 13        | PASS    |
| Band13 | 5MHz      | 16QAM      | 23255   | 1RB#0            | 4.93       | 13        | PASS    |
| Band13 | 5MHz      | QPSK       | 23255   | 25RB#0           | 5.06       | 13        | PASS    |
| Band13 | 5MHz      | 16QAM      | 23255   | 25RB#0           | 5.88       | 13        | PASS    |
| Band13 | 10MHz     | QPSK       | 23230   | 1RB#0            | 2.53       | 13        | PASS    |
| Band13 | 10MHz     | 16QAM      | 23230   | 1RB#0            | 3.32       | 13        | PASS    |
| Band13 | 10MHz     | QPSK       | 23230   | 50RB#0           | 4.89       | 13        | PASS    |

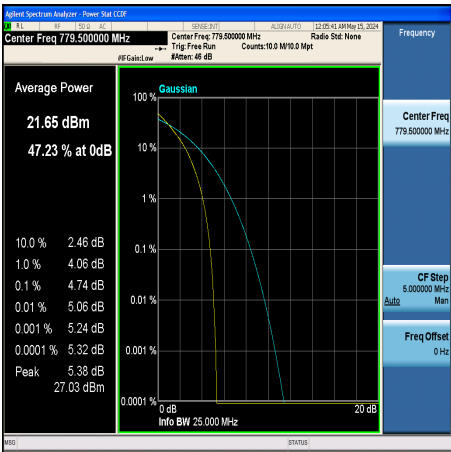
Test Graphs



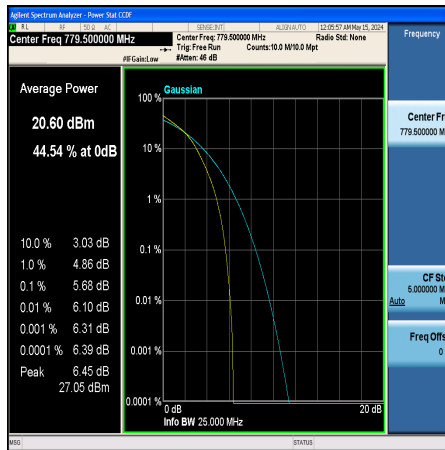
Band13-5MHz-QPSK-23205-1RB#0-PASS



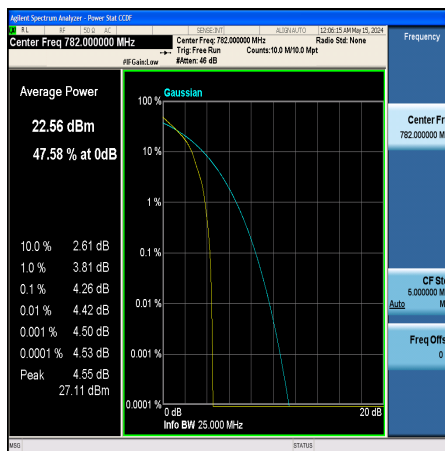
Band13-5MHz-16QAM-23205-1RB#0-PASS



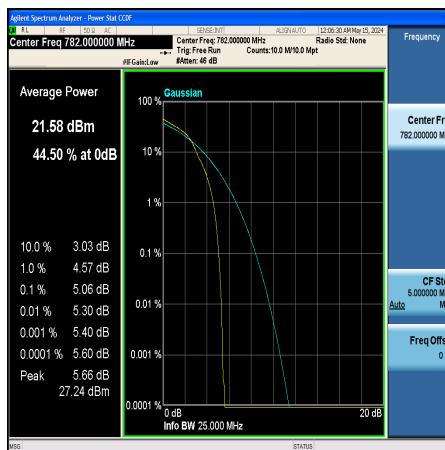
Band13-5MHz-QPSK-23205-25RB#0-PASS



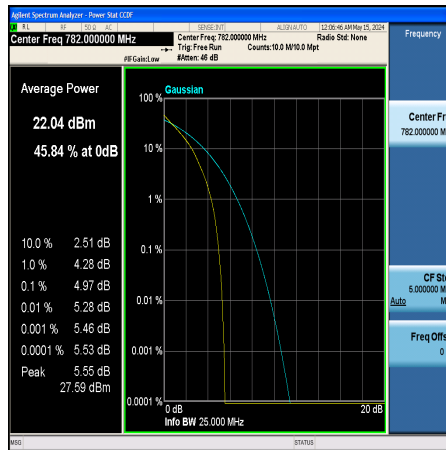
Band13-5MHz-16QAM-23205-25RB#0-PASS



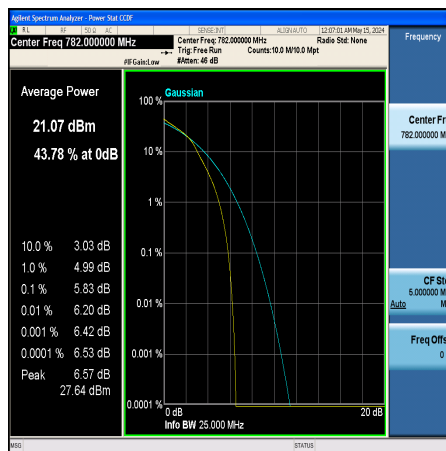
Band13-5MHz-QPSK-23230-1RB#0-PASS



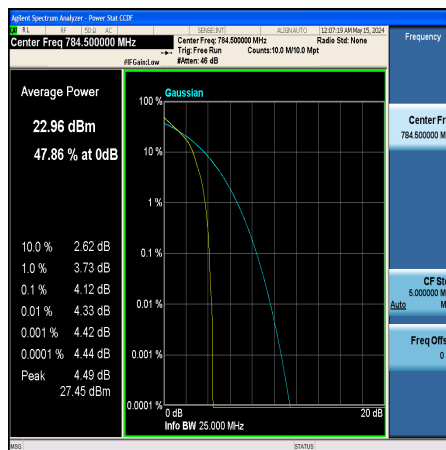
Band13-5MHz-16QAM-23230-1RB#0-PASS



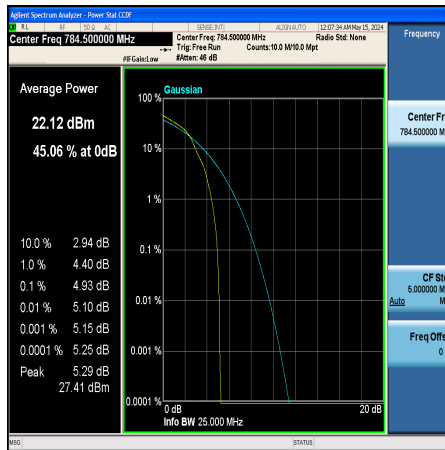
Band13-5MHz-QPSK-23230-25RB#0-PASS



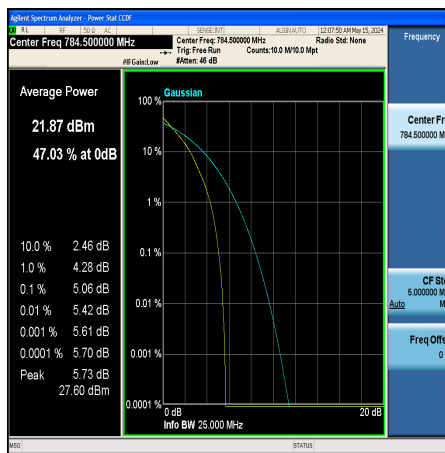
Band13-5MHz-16QAM-23230-25RB#0-PASS



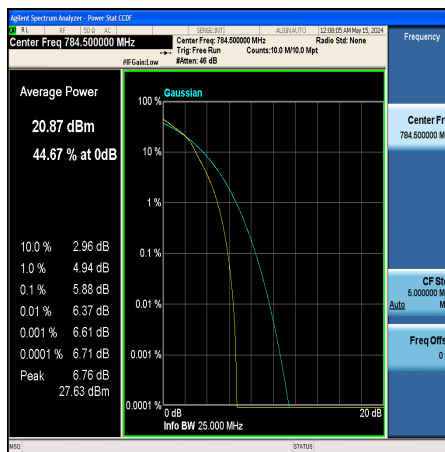
Band13-5MHz-QPSK-23255-1RB#0-PASS



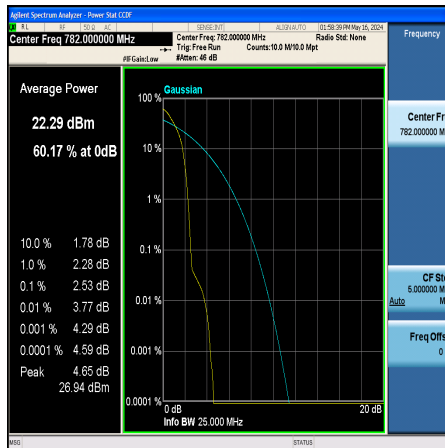
Band13-5MHz-16QAM-23255-1RB#0-PASS



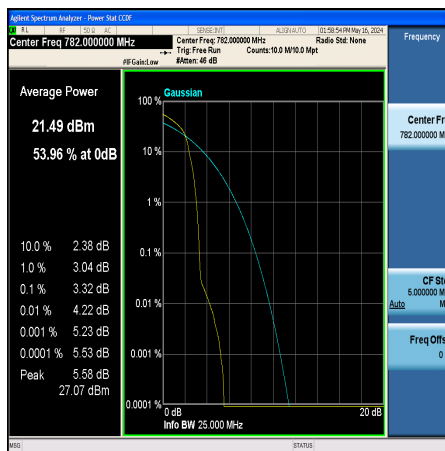
Band13-5MHz-QPSK-23255-25RB#0-PASS



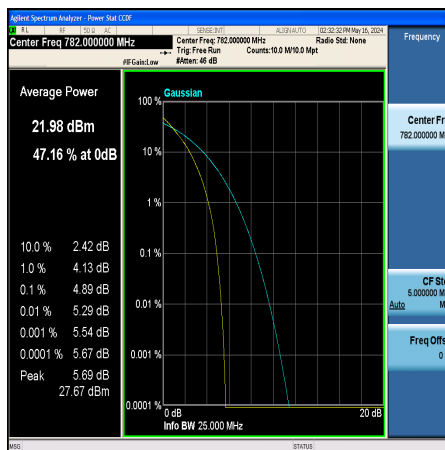
Band13-5MHz-16QAM-23255-25RB#0-PASS



Band13-10MHz-QPSK-23230-1RB#0-PASS



Band13-10MHz-16QAM-23230-1RB#0-PASS



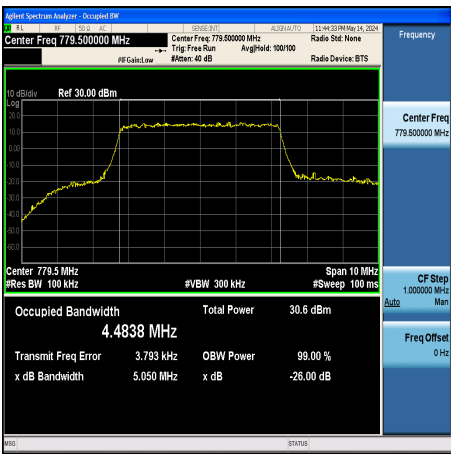
Band13-10MHz-QPSK-23230-50RB#0-PASS

### 1.3. Appendix C: 26dB Bandwidth and Occupied Bandwidth

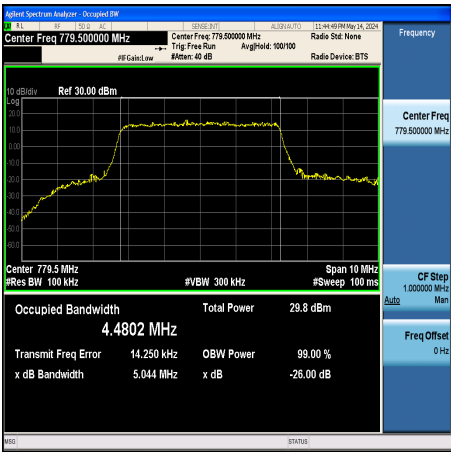
#### Test Result

| Band   | Bandwidth | Modulation | Channel | RB Configuration | Occupied Bandwidth (MHz) | 26dB Bandwidth (MHz) | Verdict |
|--------|-----------|------------|---------|------------------|--------------------------|----------------------|---------|
| Band13 | 5MHz      | QPSK       | 23205   | 25RB#0           | 4.4838                   | 5.050                | PASS    |
| Band13 | 5MHz      | 16QAM      | 23205   | 25RB#0           | 4.4802                   | 5.044                | PASS    |
| Band13 | 5MHz      | QPSK       | 23230   | 25RB#0           | 4.4946                   | 5.118                | PASS    |
| Band13 | 5MHz      | 16QAM      | 23230   | 25RB#0           | 4.5062                   | 5.106                | PASS    |
| Band13 | 5MHz      | QPSK       | 23255   | 25RB#0           | 4.4970                   | 5.102                | PASS    |
| Band13 | 5MHz      | 16QAM      | 23255   | 25RB#0           | 4.5038                   | 5.129                | PASS    |
| Band13 | 10MHz     | QPSK       | 23230   | 50RB#0           | 8.9636                   | 9.807                | PASS    |

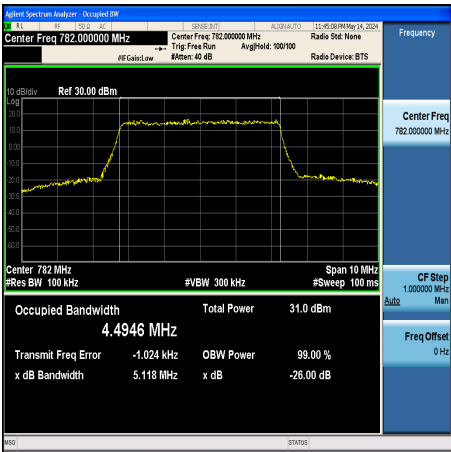
Test Graphs



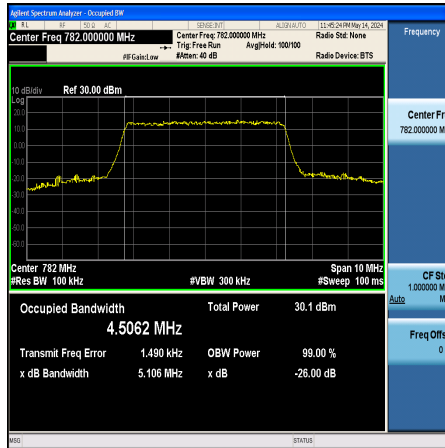
Band13-5MHz-QPSK-23205-25RB#0-PASS



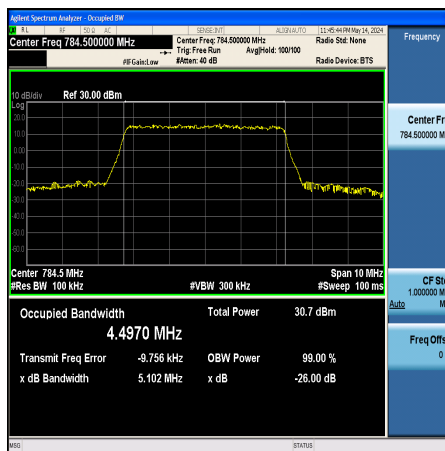
Band13-5MHz-16QAM-23205-25RB#0-PASS



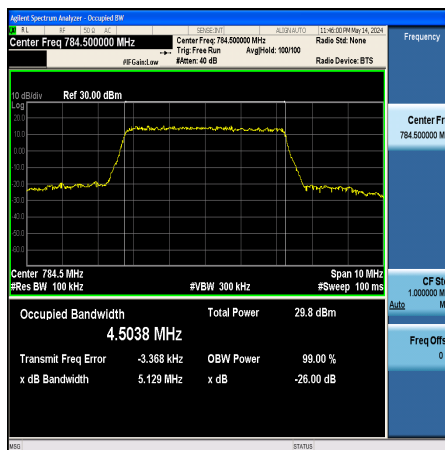
Band13-5MHz-QPSK-23230-25RB#0-PASS



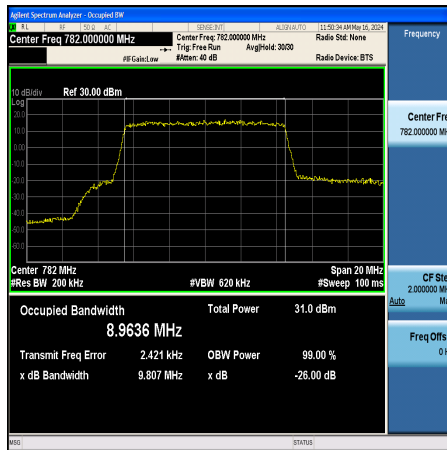
Band13-5MHz-16QAM-23230-25RB#0-PASS



Band13-5MHz-QPSK-23255-25RB#0-PASS



Band13-5MHz-16QAM-23255-25RB#0-PASS



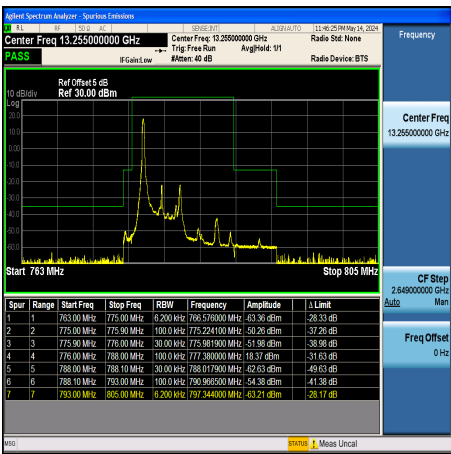
Band13-10MHz-QPSK-23230-50RB#0-PASS

## 1.4. Appendix D: Band Edge

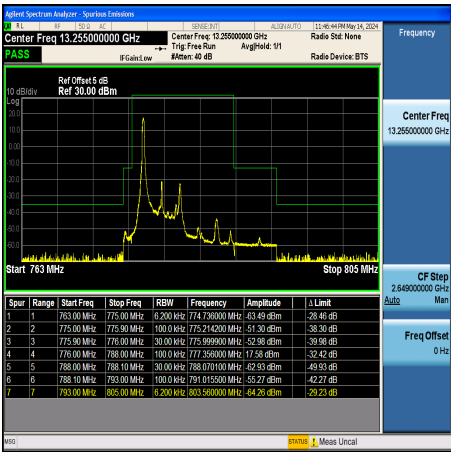
### Test Result

| Band   | Bandwidth | Modulation | Channel | RB Configuration | Result(dBm) | Verdict |
|--------|-----------|------------|---------|------------------|-------------|---------|
| Band13 | 5MHz      | QPSK       | 23205   | 1RB#0            | -63.21      | PASS    |
| Band13 | 5MHz      | 16QAM      | 23205   | 1RB#0            | -63.49      | PASS    |
| Band13 | 5MHz      | QPSK       | 23205   | 1RB#24           | -63.50      | PASS    |
| Band13 | 5MHz      | 16QAM      | 23205   | 1RB#24           | -63.47      | PASS    |
| Band13 | 5MHz      | QPSK       | 23205   | 25RB#0           | -54.54      | PASS    |
| Band13 | 5MHz      | 16QAM      | 23205   | 25RB#0           | -37.69      | PASS    |
| Band13 | 5MHz      | QPSK       | 23255   | 1RB#0            | -63.30      | PASS    |
| Band13 | 5MHz      | 16QAM      | 23255   | 1RB#0            | -62.60      | PASS    |
| Band13 | 5MHz      | QPSK       | 23255   | 1RB#24           | -56.22      | PASS    |
| Band13 | 5MHz      | 16QAM      | 23255   | 1RB#24           | -54.06      | PASS    |
| Band13 | 5MHz      | QPSK       | 23255   | 25RB#0           | -58.06      | PASS    |
| Band13 | 5MHz      | 16QAM      | 23255   | 25RB#0           | -55.26      | PASS    |
| Band13 | 10MHz     | QPSK       | 23230   | 1RB#0            | -49.61      | PASS    |
| Band13 | 10MHz     | 16QAM      | 23230   | 1RB#0            | -52.74      | PASS    |
| Band13 | 10MHz     | QPSK       | 23230   | 1RB#49           | -56.83      | PASS    |
| Band13 | 10MHz     | 16QAM      | 23230   | 1RB#49           | -60.19      | PASS    |
| Band13 | 10MHz     | QPSK       | 23230   | 50RB#0           | -45.67      | PASS    |

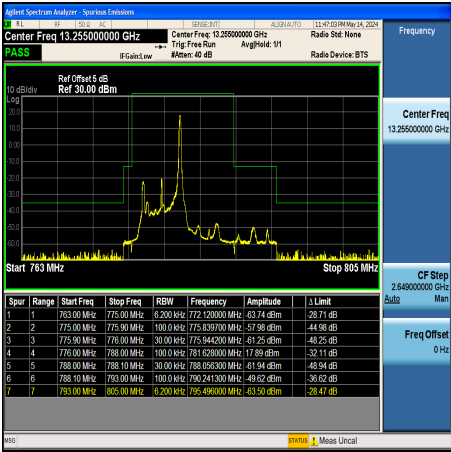
Test Graphs



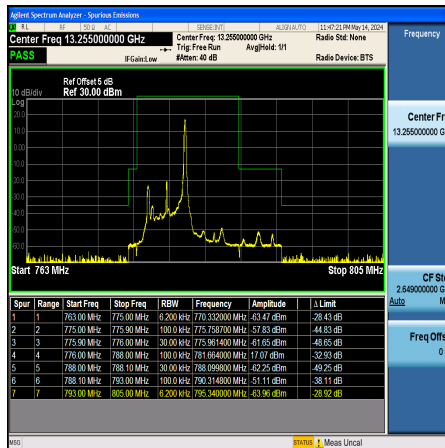
Band13\_5MHz\_QPSK\_23205\_1RB#0



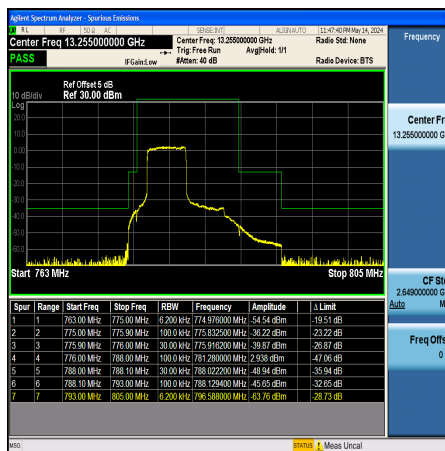
Band13\_5MHz\_16QAM\_23205\_1RB#0



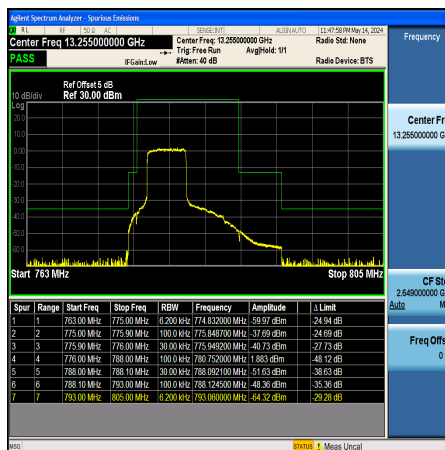
Band13\_5MHz\_QPSK\_23205\_1RB#24



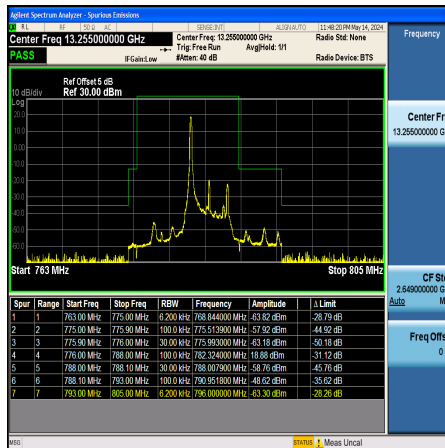
Band13\_5MHz\_16QAM\_23205\_1RB#24



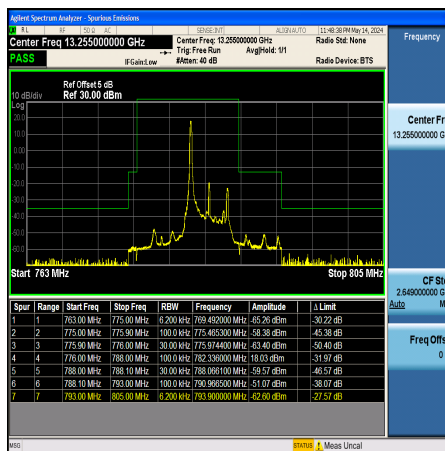
Band13\_5MHz\_QPSK\_23205\_25RB#0



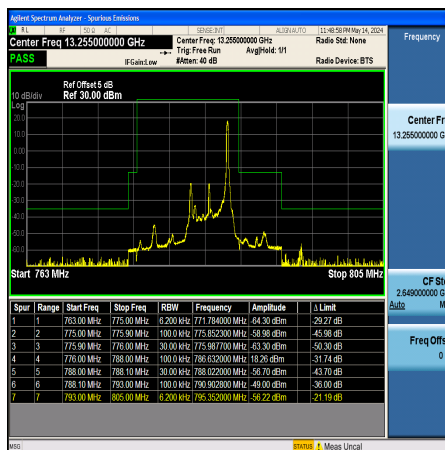
Band13\_5MHz\_16QAM\_23205\_25RB#0



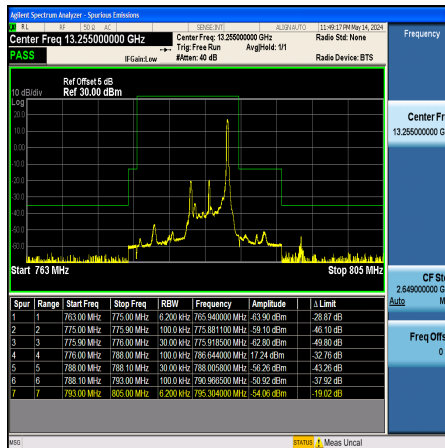
Band13\_5MHz\_QPSK\_23255\_1RB#0



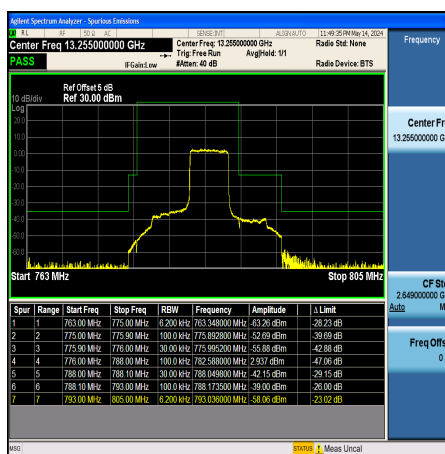
Band13\_5MHz\_16QAM\_23255\_1RB#0



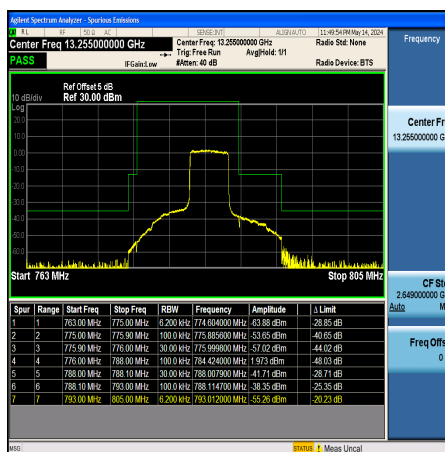
Band13\_5MHz\_QPSK\_23255\_1RB#24



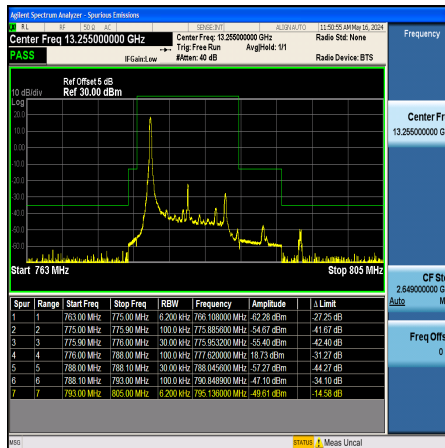
Band13\_5MHz\_16QAM\_23255\_1RB#24



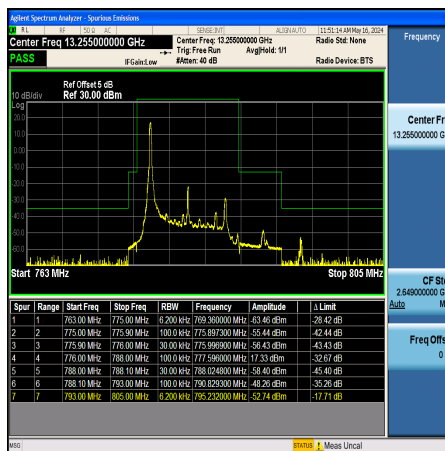
Band13\_5MHz\_QPSK\_23255\_25RB#0



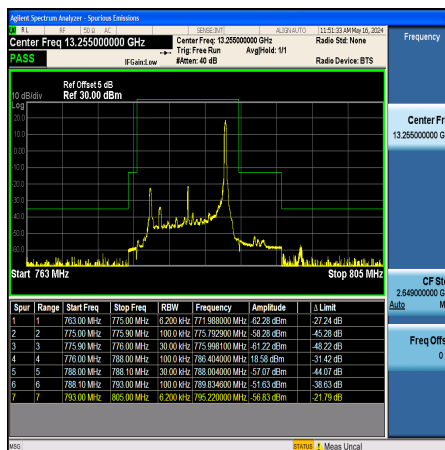
Band13\_5MHz\_16QAM\_23255\_25RB#0



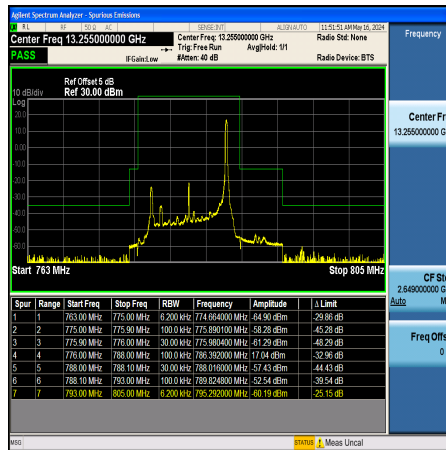
Band13\_10MHz\_QPSK\_23230\_1RB#0



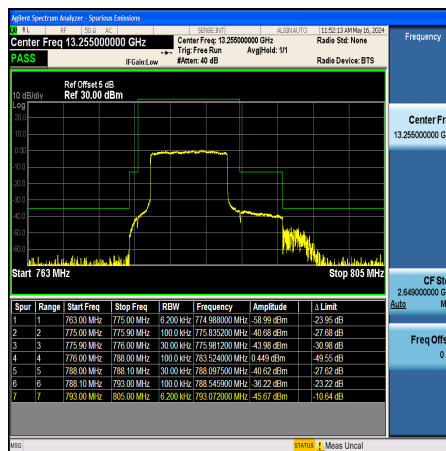
Band13\_10MHz\_16QAM\_23230\_1RB#0



Band13\_10MHz\_QPSK\_23230\_1RB#49



Band13\_10MHz\_16QAM\_23230\_1RB#49



Band13\_10MHz\_QPSK\_23230\_50RB#0

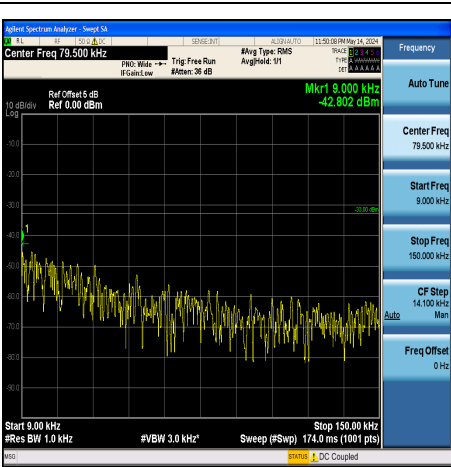
## 1.5. Appendix E: Conducted Spurious Emission

### Test Result

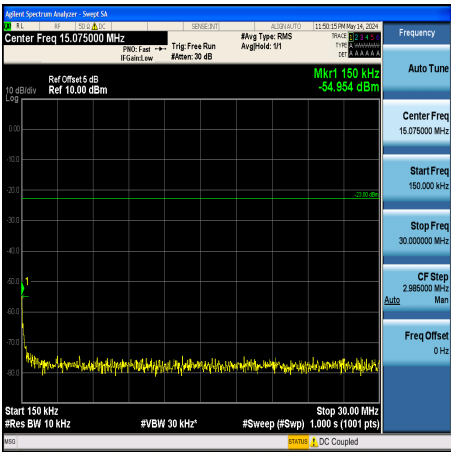
| Band   | Bandwidth | Modulation | Channel | RB Configuration | Frequency Range | Result (dBm) | Verdict |
|--------|-----------|------------|---------|------------------|-----------------|--------------|---------|
| Band13 | 5MHz      | QPSK       | 23205   | 1RB#0            | 0.009~0.15      | -42.80       | PASS    |
| Band13 | 5MHz      | QPSK       | 23205   | 1RB#0            | 0.15~30         | -54.95       | PASS    |
| Band13 | 5MHz      | QPSK       | 23205   | 1RB#0            | 30~1000         | -62.29       | PASS    |
| Band13 | 5MHz      | QPSK       | 23205   | 1RB#0            | 1000~3000       | -44.11       | PASS    |
| Band13 | 5MHz      | QPSK       | 23205   | 1RB#0            | 3000~10000      | -50.36       | PASS    |
| Band13 | 5MHz      | 16QAM      | 23205   | 1RB#0            | 0.009~0.15      | -41.52       | PASS    |
| Band13 | 5MHz      | 16QAM      | 23205   | 1RB#0            | 0.15~30         | -53.51       | PASS    |
| Band13 | 5MHz      | 16QAM      | 23205   | 1RB#0            | 30~1000         | -63.36       | PASS    |
| Band13 | 5MHz      | 16QAM      | 23205   | 1RB#0            | 1000~3000       | -44.42       | PASS    |
| Band13 | 5MHz      | 16QAM      | 23205   | 1RB#0            | 3000~10000      | -50.27       | PASS    |
| Band13 | 5MHz      | QPSK       | 23230   | 1RB#0            | 0.009~0.15      | -41.06       | PASS    |
| Band13 | 5MHz      | QPSK       | 23230   | 1RB#0            | 0.15~30         | -56.73       | PASS    |
| Band13 | 5MHz      | QPSK       | 23230   | 1RB#0            | 30~1000         | -64.35       | PASS    |
| Band13 | 5MHz      | QPSK       | 23230   | 1RB#0            | 1000~3000       | -42.17       | PASS    |
| Band13 | 5MHz      | QPSK       | 23230   | 1RB#0            | 3000~10000      | -50.27       | PASS    |
| Band13 | 5MHz      | 16QAM      | 23230   | 1RB#0            | 0.009~0.15      | -39.68       | PASS    |
| Band13 | 5MHz      | 16QAM      | 23230   | 1RB#0            | 0.15~30         | -55.72       | PASS    |
| Band13 | 5MHz      | 16QAM      | 23230   | 1RB#0            | 30~1000         | -64.43       | PASS    |
| Band13 | 5MHz      | 16QAM      | 23230   | 1RB#0            | 1000~3000       | -43.80       | PASS    |
| Band13 | 5MHz      | 16QAM      | 23230   | 1RB#0            | 3000~10000      | -50.34       | PASS    |
| Band13 | 5MHz      | QPSK       | 23255   | 1RB#0            | 0.009~0.15      | -40.59       | PASS    |
| Band13 | 5MHz      | QPSK       | 23255   | 1RB#0            | 0.15~30         | -55.86       | PASS    |
| Band13 | 5MHz      | QPSK       | 23255   | 1RB#0            | 30~1000         | -64.69       | PASS    |
| Band13 | 5MHz      | QPSK       | 23255   | 1RB#0            | 1000~3000       | -41.88       | PASS    |
| Band13 | 5MHz      | QPSK       | 23255   | 1RB#0            | 3000~10000      | -50.13       | PASS    |
| Band13 | 5MHz      | 16QAM      | 23255   | 1RB#0            | 0.009~0.15      | -44.63       | PASS    |
| Band13 | 5MHz      | 16QAM      | 23255   | 1RB#0            | 0.15~30         | -55.71       | PASS    |
| Band13 | 5MHz      | 16QAM      | 23255   | 1RB#0            | 30~1000         | -65.06       | PASS    |
| Band13 | 5MHz      | 16QAM      | 23255   | 1RB#0            | 1000~3000       | -41.16       | PASS    |
| Band13 | 5MHz      | 16QAM      | 23255   | 1RB#0            | 3000~10000      | -50.34       | PASS    |
| Band13 | 10MHz     | QPSK       | 23230   | 1RB#0            | 0.009~0.15      | -40.76       | PASS    |
| Band13 | 10MHz     | QPSK       | 23230   | 1RB#0            | 0.15~30         | -54.36       | PASS    |

|        |       |       |       |       |            |        |      |
|--------|-------|-------|-------|-------|------------|--------|------|
| Band13 | 10MHz | QPSK  | 23230 | 1RB#0 | 30~1000    | -64.74 | PASS |
| Band13 | 10MHz | QPSK  | 23230 | 1RB#0 | 1000~3000  | -44.50 | PASS |
| Band13 | 10MHz | QPSK  | 23230 | 1RB#0 | 3000~10000 | -49.92 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 1RB#0 | 0.009~0.15 | -41.96 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 1RB#0 | 0.15~30    | -54.30 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 1RB#0 | 30~1000    | -64.70 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 1RB#0 | 1000~3000  | -44.39 | PASS |
| Band13 | 10MHz | 16QAM | 23230 | 1RB#0 | 3000~10000 | -50.05 | PASS |

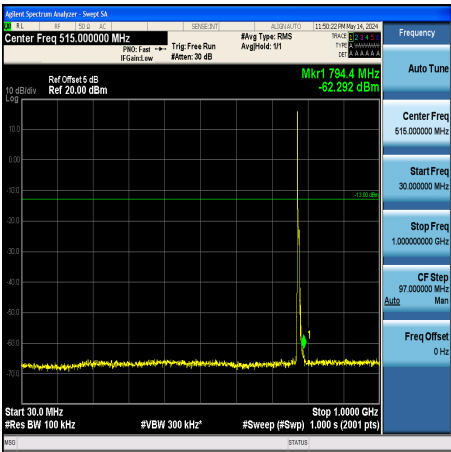
Test Graphs



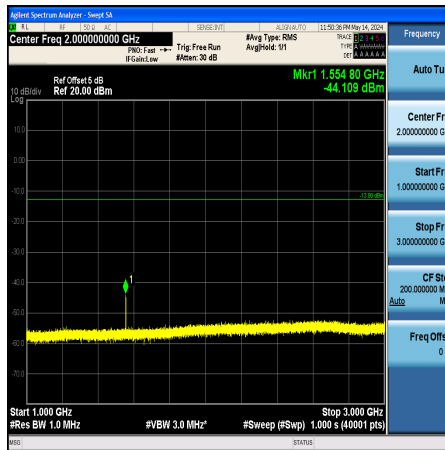
Band13\_5MHz\_QPSK\_23205\_1RB#0\_0.009~0.15\_0.009~0.15



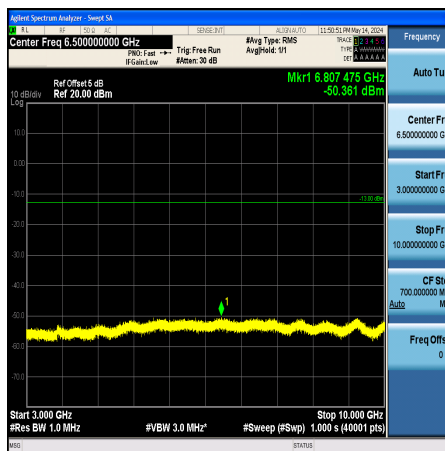
Band13\_5MHz\_QPSK\_23205\_1RB#0\_0.15~30\_0.15~30



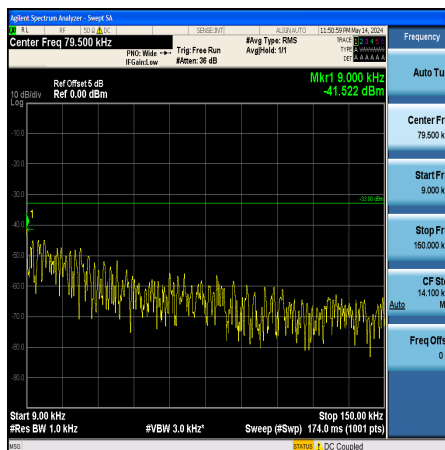
Band13\_5MHz\_QPSK\_23205\_1RB#0\_30~1000\_30~1000



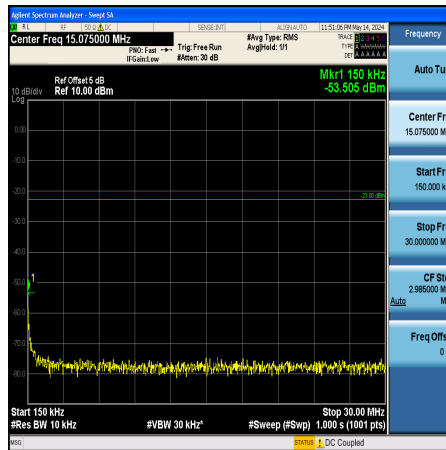
Band13\_5MHz\_QPSK\_23205\_1RB#0\_1000~3000\_1000~3000



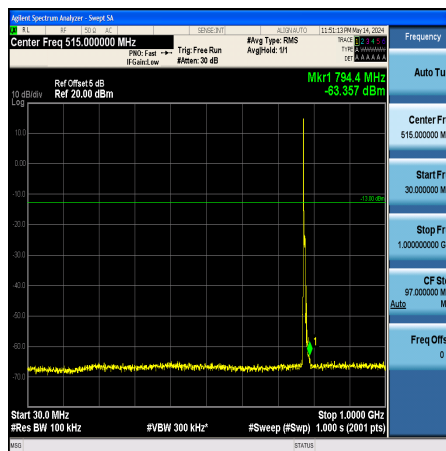
Band13\_5MHz\_QPSK\_23205\_1RB#0\_3000~10000\_3000~10000



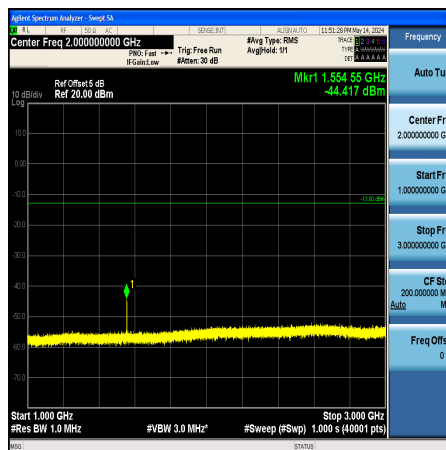
Band13\_5MHz\_16QAM\_23205\_1RB#0\_0.009~0.15\_0.009~0.15



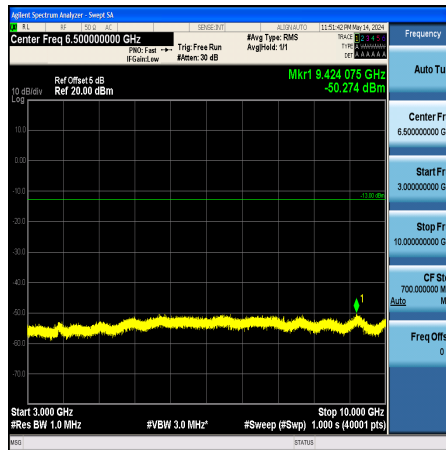
Band13\_5MHz\_16QAM\_23205\_1RB#0\_0.15~30\_0.15~30



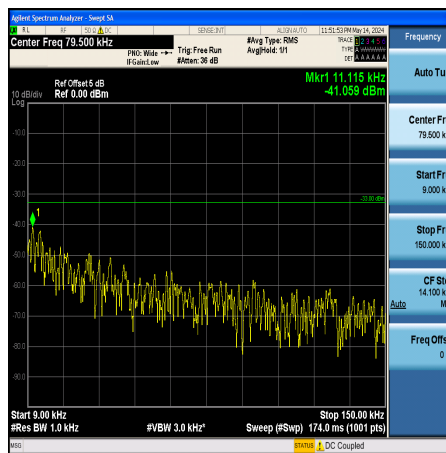
Band13\_5MHz\_16QAM\_23205\_1RB#0\_30~1000\_30~1000



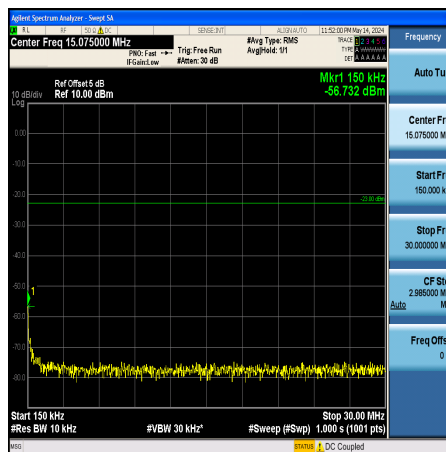
Band13\_5MHz\_16QAM\_23205\_1RB#0\_1000~3000\_1000~3000



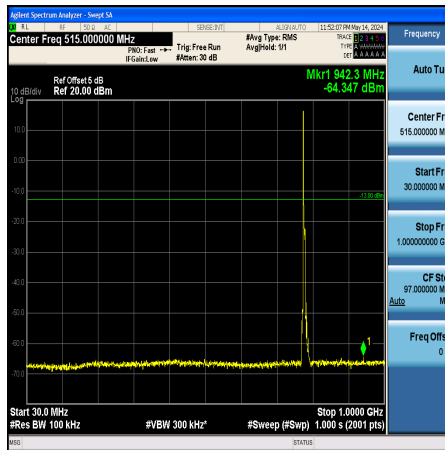
Band13\_5MHz\_16QAM\_23205\_1RB#0\_3000~10000\_3000~10000



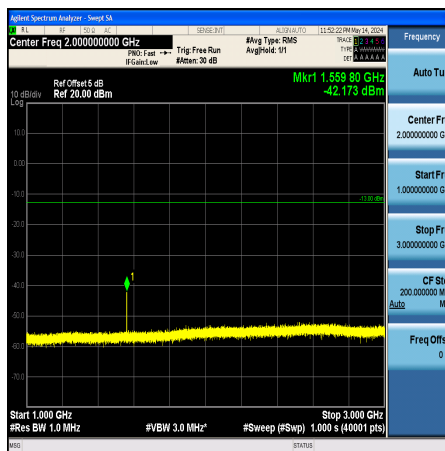
Band13\_5MHz\_QPSK\_23230\_1RB#0\_0.009~0.15\_0.009~0.15



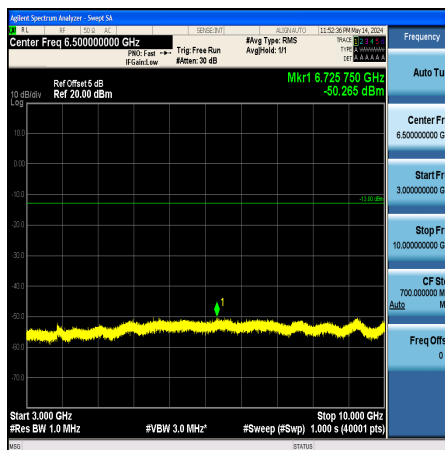
Band13\_5MHz\_QPSK\_23230\_1RB#0\_0.15~30\_0.15~30



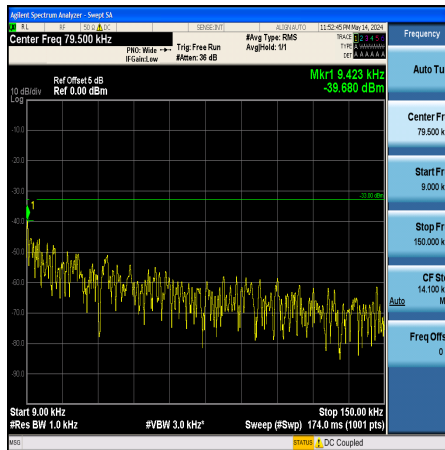
Band13\_5MHz\_QPSK\_23230\_1RB#0\_30~1000\_30~1000



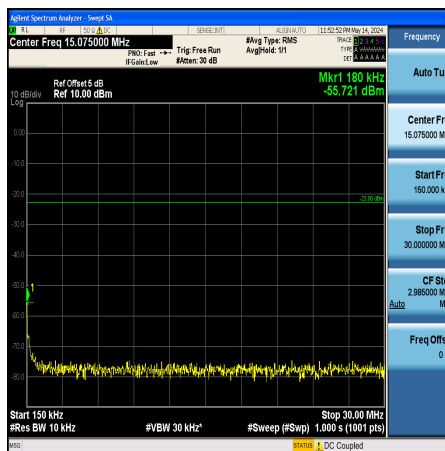
Band13\_5MHz\_QPSK\_23230\_1RB#0\_1000~3000\_1000~3000



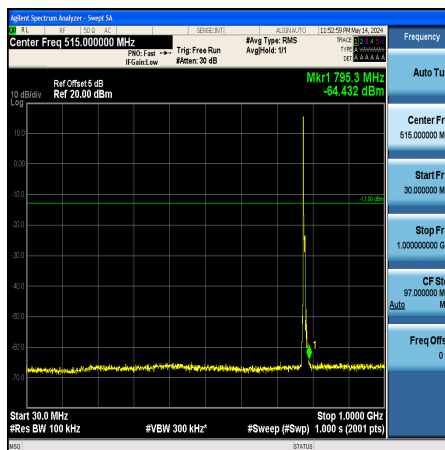
Band13\_5MHz\_QPSK\_23230\_1RB#0\_3000~10000\_3000~10000



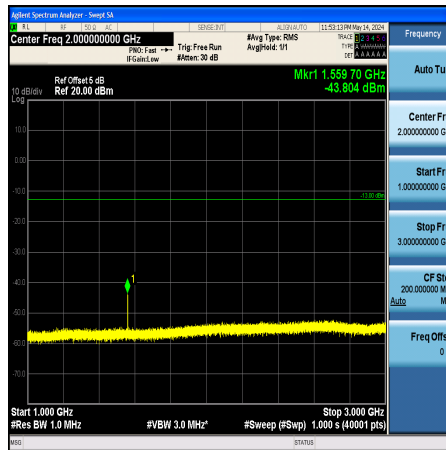
Band13\_5MHz\_16QAM\_23230\_1RB#0\_0.009~0.15\_0.009~0.15



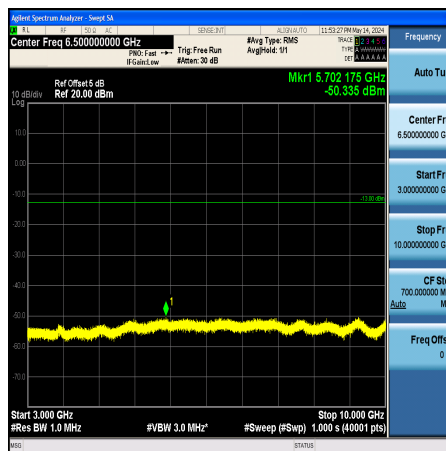
Band13\_5MHz\_16QAM\_23230\_1RB#0\_0.15~30\_0.15~30



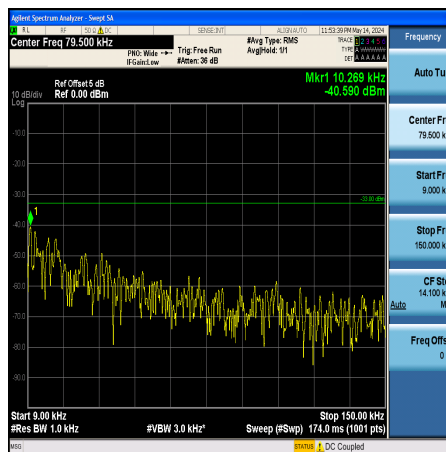
Band13\_5MHz\_16QAM\_23230\_1RB#0\_30~1000\_30~1000



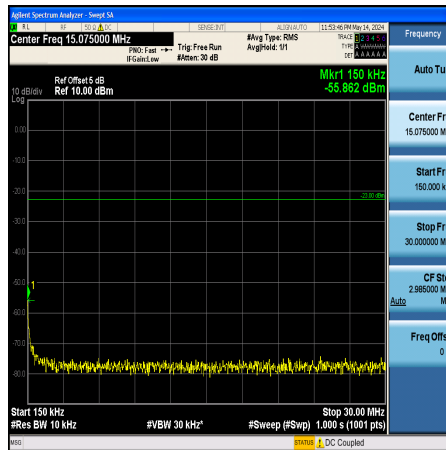
Band13\_5MHz\_16QAM\_23230\_1RB#0\_1000~3000\_1000~3000



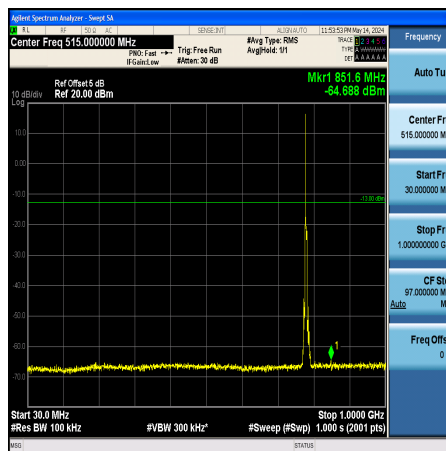
Band13\_5MHz\_16QAM\_23230\_1RB#0\_3000~10000\_3000~10000



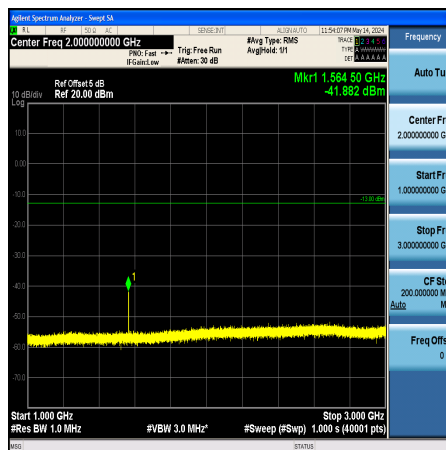
Band13\_5MHz\_QPSK\_23255\_1RB#0\_0.009~0.15\_0.009~0.15



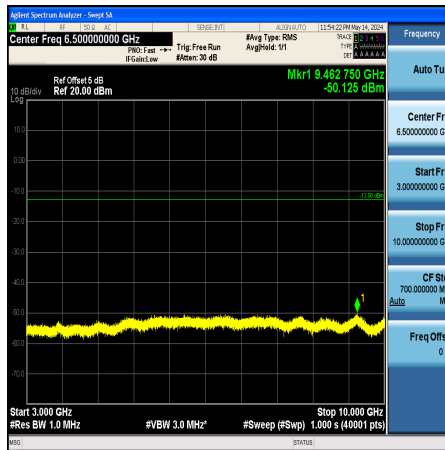
Band13\_5MHz\_QPSK\_23255\_1RB#0\_0.15~30\_0.15~30



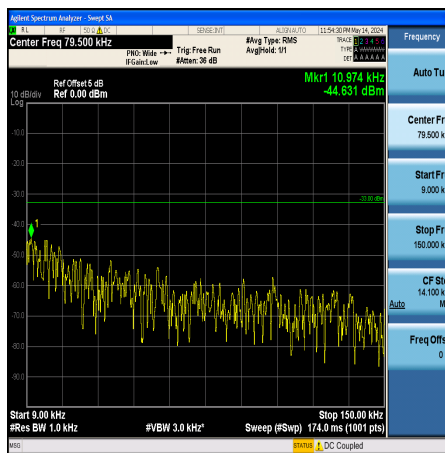
Band13\_5MHz\_QPSK\_23255\_1RB#0\_30~1000\_30~1000



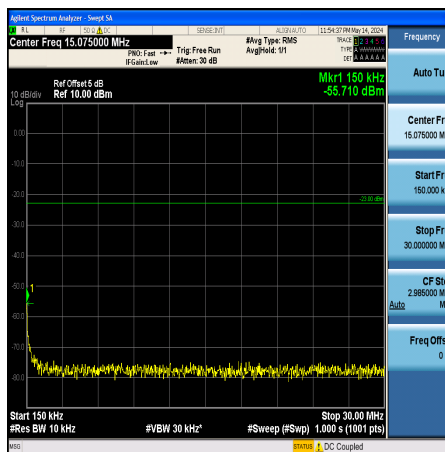
Band13\_5MHz\_QPSK\_23255\_1RB#0\_1000~3000\_1000~3000



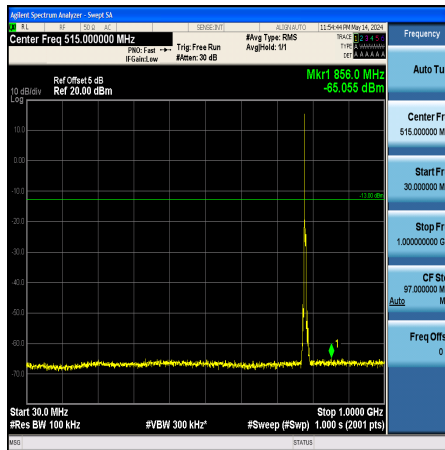
Band13\_5MHz\_QPSK\_23255\_1RB#0\_3000~10000\_3000~10000



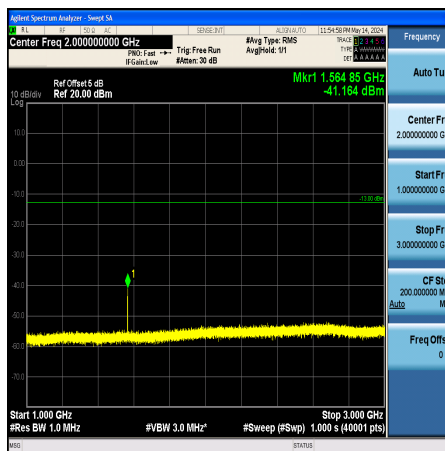
Band13\_5MHz\_16QAM\_23255\_1RB#0\_0.009~0.15\_0.009~0.15



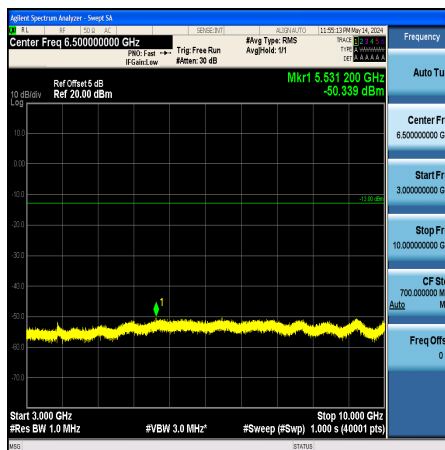
Band13\_5MHz\_16QAM\_23255\_1RB#0\_0.15~30\_0.15~30



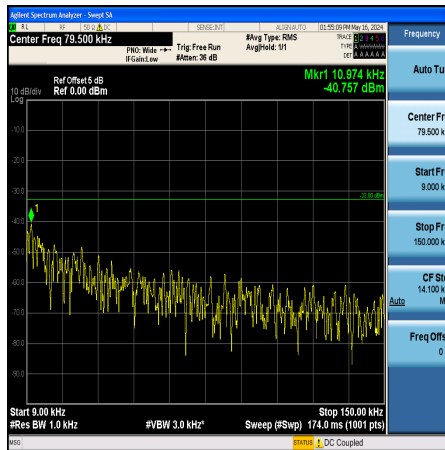
Band13\_5MHz\_16QAM\_23255\_1RB#0\_30~1000\_30~1000



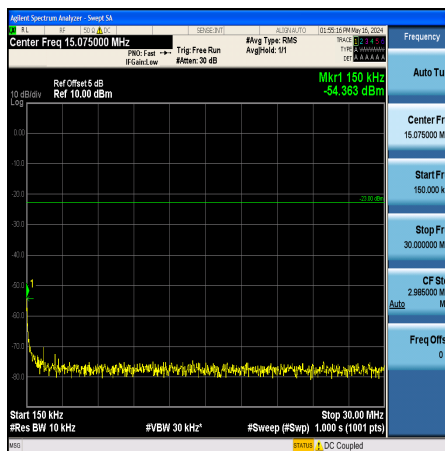
Band13\_5MHz\_16QAM\_23255\_1RB#0\_1000~3000\_1000~3000



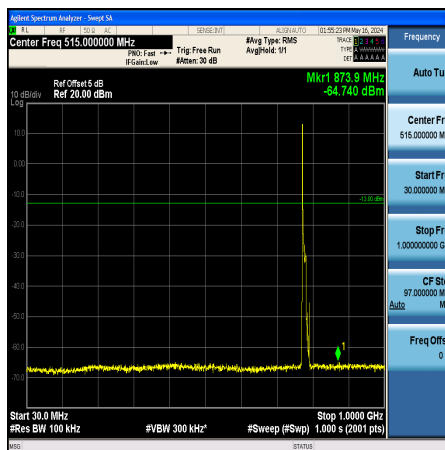
Band13\_5MHz\_16QAM\_23255\_1RB#0\_3000~10000\_3000~10000



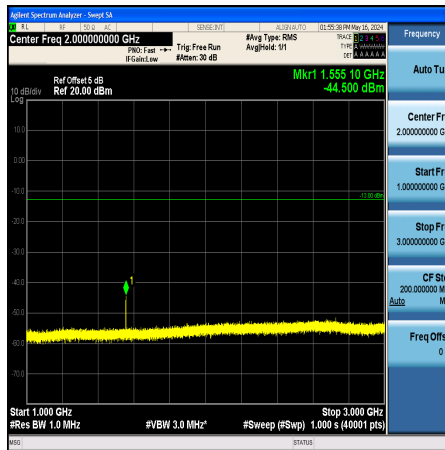
Band13\_10MHz\_QPSK\_23230\_1RB#0\_0.009~0.15\_0.009~0.15



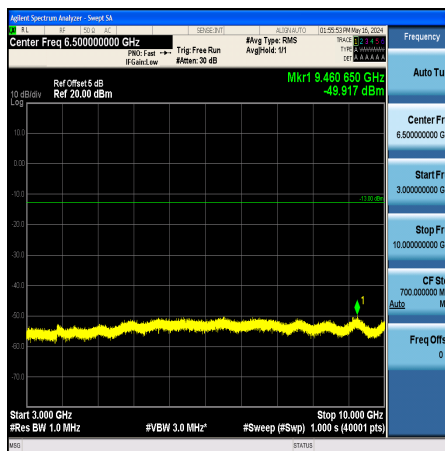
Band13\_10MHz\_QPSK\_23230\_1RB#0\_0.15~30\_0.15~30



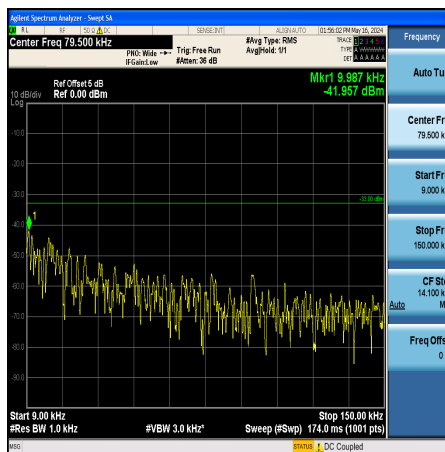
Band13\_10MHz\_QPSK\_23230\_1RB#0\_30~1000\_30~1000



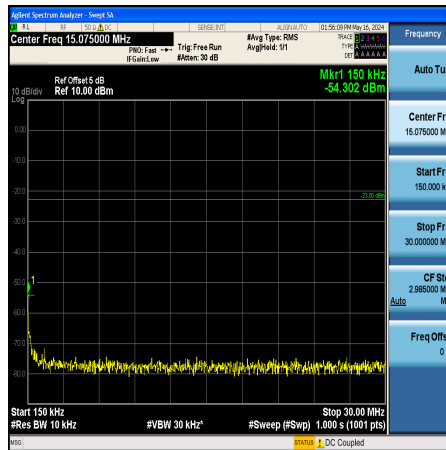
Band13\_10MHz\_QPSK\_23230\_1RB#0\_1000~3000\_1000~3000



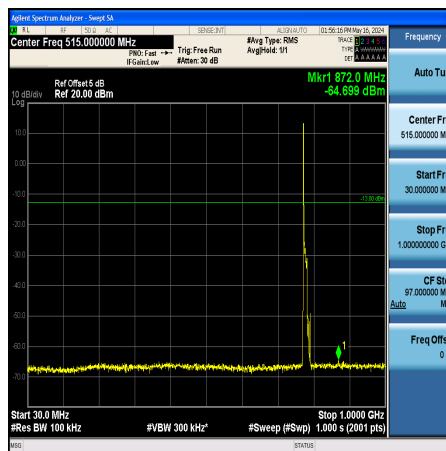
Band13\_10MHz\_QPSK\_23230\_1RB#0\_3000~10000\_3000~10000



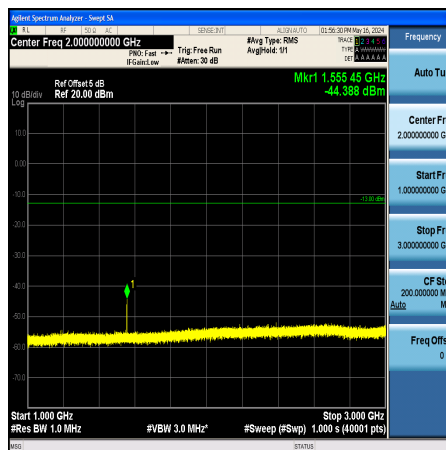
Band13\_10MHz\_16QAM\_23230\_1RB#0\_0.009~0.15\_0.009~0.15



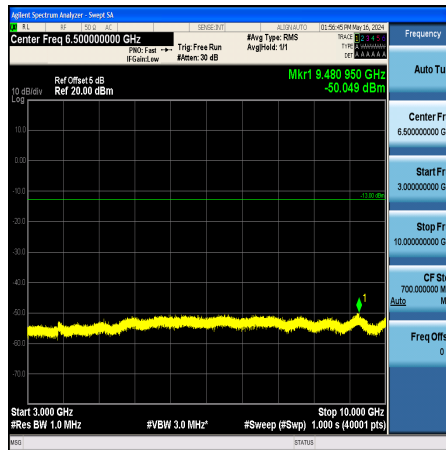
Band13\_10MHz\_16QAM\_23230\_1RB#0\_0.15~30\_0.15~30



Band13\_10MHz\_16QAM\_23230\_1RB#0\_30~1000\_30~1000



Band13\_10MHz\_16QAM\_23230\_1RB#0\_1000~3000\_1000~3000



Band13\_10MHz\_16QAM\_23230\_1RB#0\_3000~10000\_3000~10000

## 1.6. Appendix F: Frequency Stability

### Test Result

| Voltage |           |            |         |              |               |                  |                |                 |             |         |
|---------|-----------|------------|---------|--------------|---------------|------------------|----------------|-----------------|-------------|---------|
| Band    | Bandwidth | Modulation | Channel | RB Configure | Voltage [Vdc] | Temperature (°C) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| Band13  | 5MHz      | QPSK       | 23205   | 25RB#0       | VN            | NT               | -7.02          | -0.009006       | ±2.5        | PASS    |
| Band13  | 5MHz      | QPSK       | 23205   | 25RB#0       | VL            | NT               | 6.41           | 0.008223        | ±2.5        | PASS    |
| Band13  | 5MHz      | QPSK       | 23205   | 25RB#0       | VH            | NT               | 4.75           | 0.006094        | ±2.5        | PASS    |
| Band13  | 5MHz      | 16QAM      | 23205   | 25RB#0       | VN            | NT               | -5.46          | -0.007004       | ±2.5        | PASS    |
| Band13  | 5MHz      | 16QAM      | 23205   | 25RB#0       | VL            | NT               | -5.99          | -0.007684       | ±2.5        | PASS    |
| Band13  | 5MHz      | 16QAM      | 23205   | 25RB#0       | VH            | NT               | -8.61          | -0.011046       | ±2.5        | PASS    |
| Band13  | 5MHz      | QPSK       | 23230   | 25RB#0       | VN            | NT               | 8.53           | 0.010908        | ±2.5        | PASS    |
| Band13  | 5MHz      | QPSK       | 23230   | 25RB#0       | VL            | NT               | -4.39          | -0.005614       | ±2.5        | PASS    |
| Band13  | 5MHz      | QPSK       | 23230   | 25RB#0       | VH            | NT               | 4.56           | 0.005831        | ±2.5        | PASS    |
| Band13  | 5MHz      | 16QAM      | 23230   | 25RB#0       | VN            | NT               | -3.56          | -0.004552       | ±2.5        | PASS    |
| Band13  | 5MHz      | 16QAM      | 23230   | 25RB#0       | VL            | NT               | -7.82          | -0.010000       | ±2.5        | PASS    |
| Band13  | 5MHz      | 16QAM      | 23230   | 25RB#0       | VH            | NT               | -8.91          | -0.011394       | ±2.5        | PASS    |
| Band13  | 5MHz      | QPSK       | 23255   | 25RB#0       | VN            | NT               | 7.32           | 0.009331        | ±2.5        | PASS    |
| Band13  | 5MHz      | QPSK       | 23255   | 25RB#0       | VL            | NT               | -3.58          | -0.004563       | ±2.5        | PASS    |
| Band13  | 5MHz      | QPSK       | 23255   | 25RB#0       | VH            | NT               | -3.49          | -0.004449       | ±2.5        | PASS    |
| Band13  | 5MHz      | 16QAM      | 23255   | 25RB#0       | VN            | NT               | -6.75          | -0.008604       | ±2.5        | PASS    |
| Band13  | 5MHz      | 16QAM      | 23255   | 25RB#0       | VL            | NT               | 6.21           | 0.007916        | ±2.5        | PASS    |
| Band13  | 5MHz      | 16QAM      | 23255   | 25RB#0       | VH            | NT               | 3.55           | 0.004525        | ±2.5        | PASS    |
| Band13  | 10MHz     | QPSK       | 23230   | 50RB#0       | VN            | NT               | -9.48          | -0.012123       | ±2.5        | PASS    |
| Band13  | 10MHz     | QPSK       | 23230   | 50RB#0       | VL            | NT               | -5.18          | -0.006624       | ±2.5        | PASS    |
| Band13  | 10MHz     | QPSK       | 23230   | 50RB#0       | VH            | NT               | -9.54          | -0.012199       | ±2.5        | PASS    |

| Temperature |           |            |         |              |               |                  |                |                 |             |         |
|-------------|-----------|------------|---------|--------------|---------------|------------------|----------------|-----------------|-------------|---------|
| Band        | Bandwidth | Modulation | Channel | RB Configure | Voltage [Vdc] | Temperature (°C) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| Band13      | 5MHz      | QPSK       | 23205   | 25RB#0       | NV            | 0                | -7.85          | -0.010071       | ±2.5        | PASS    |
| Band13      | 5MHz      | QPSK       | 23205   | 25RB#0       | NV            | 10               | 7.80           | 0.010006        | ±2.5        | PASS    |
| Band13      | 5MHz      | QPSK       | 23205   | 25RB#0       | NV            | 20               | 4.76           | 0.006106        | ±2.5        | PASS    |
| Band13      | 5MHz      | QPSK       | 23205   | 25RB#0       | NV            | 30               | 8.40           | 0.010776        | ±2.5        | PASS    |
| Band13      | 5MHz      | QPSK       | 23205   | 25RB#0       | NV            | 40               | 4.61           | 0.005914        | ±2.5        | PASS    |
| Band13      | 5MHz      | 16QAM      | 23205   | 25RB#0       | NV            | 0                | -2.83          | -0.003631       | ±2.5        | PASS    |
| Band13      | 5MHz      | 16QAM      | 23205   | 25RB#0       | NV            | 10               | -5.29          | -0.006786       | ±2.5        | PASS    |
| Band13      | 5MHz      | 16QAM      | 23205   | 25RB#0       | NV            | 20               | 3.85           | 0.004939        | ±2.5        | PASS    |

|        |       |       |       |        |    |    |       |           |      |      |
|--------|-------|-------|-------|--------|----|----|-------|-----------|------|------|
| Band13 | 5MHz  | 16QAM | 23205 | 25RB#0 | NV | 30 | 3.49  | 0.004477  | ±2.5 | PASS |
| Band13 | 5MHz  | 16QAM | 23205 | 25RB#0 | NV | 40 | 3.58  | 0.004593  | ±2.5 | PASS |
| Band13 | 5MHz  | QPSK  | 23230 | 25RB#0 | NV | 0  | 3.60  | 0.004604  | ±2.5 | PASS |
| Band13 | 5MHz  | QPSK  | 23230 | 25RB#0 | NV | 10 | 6.14  | 0.007852  | ±2.5 | PASS |
| Band13 | 5MHz  | QPSK  | 23230 | 25RB#0 | NV | 20 | 4.59  | 0.005870  | ±2.5 | PASS |
| Band13 | 5MHz  | QPSK  | 23230 | 25RB#0 | NV | 30 | -4.91 | -0.006279 | ±2.5 | PASS |
| Band13 | 5MHz  | QPSK  | 23230 | 25RB#0 | NV | 40 | -3.49 | -0.004463 | ±2.5 | PASS |
| Band13 | 5MHz  | 16QAM | 23230 | 25RB#0 | NV | 0  | -4.25 | -0.005435 | ±2.5 | PASS |
| Band13 | 5MHz  | 16QAM | 23230 | 25RB#0 | NV | 10 | 2.39  | 0.003056  | ±2.5 | PASS |
| Band13 | 5MHz  | 16QAM | 23230 | 25RB#0 | NV | 20 | 3.91  | 0.005000  | ±2.5 | PASS |
| Band13 | 5MHz  | 16QAM | 23230 | 25RB#0 | NV | 30 | -3.29 | -0.004207 | ±2.5 | PASS |
| Band13 | 5MHz  | 16QAM | 23230 | 25RB#0 | NV | 40 | 3.05  | 0.003900  | ±2.5 | PASS |
| Band13 | 5MHz  | QPSK  | 23255 | 25RB#0 | NV | 0  | -5.59 | -0.007126 | ±2.5 | PASS |
| Band13 | 5MHz  | QPSK  | 23255 | 25RB#0 | NV | 10 | 2.95  | 0.003760  | ±2.5 | PASS |
| Band13 | 5MHz  | QPSK  | 23255 | 25RB#0 | NV | 20 | 4.95  | 0.006310  | ±2.5 | PASS |
| Band13 | 5MHz  | QPSK  | 23255 | 25RB#0 | NV | 30 | -5.46 | -0.006960 | ±2.5 | PASS |
| Band13 | 5MHz  | QPSK  | 23255 | 25RB#0 | NV | 40 | -6.64 | -0.008464 | ±2.5 | PASS |
| Band13 | 5MHz  | 16QAM | 23255 | 25RB#0 | NV | 0  | 2.89  | 0.003684  | ±2.5 | PASS |
| Band13 | 5MHz  | 16QAM | 23255 | 25RB#0 | NV | 10 | 3.05  | 0.003888  | ±2.5 | PASS |
| Band13 | 5MHz  | 16QAM | 23255 | 25RB#0 | NV | 20 | 3.93  | 0.005010  | ±2.5 | PASS |
| Band13 | 5MHz  | 16QAM | 23255 | 25RB#0 | NV | 30 | 3.10  | 0.003952  | ±2.5 | PASS |
| Band13 | 5MHz  | 16QAM | 23255 | 25RB#0 | NV | 40 | 7.75  | 0.009879  | ±2.5 | PASS |
| Band13 | 10MHz | QPSK  | 23230 | 50RB#0 | NV | 0  | -8.15 | -0.010422 | ±2.5 | PASS |
| Band13 | 10MHz | QPSK  | 23230 | 50RB#0 | NV | 10 | -5.42 | -0.006931 | ±2.5 | PASS |
| Band13 | 10MHz | QPSK  | 23230 | 50RB#0 | NV | 20 | -8.74 | -0.011176 | ±2.5 | PASS |
| Band13 | 10MHz | QPSK  | 23230 | 50RB#0 | NV | 30 | -6.64 | -0.008491 | ±2.5 | PASS |
| Band13 | 10MHz | QPSK  | 23230 | 50RB#0 | NV | 40 | 4.96  | 0.006343  | ±2.5 | PASS |

-----END-----