

## **Appendix for GSM850**

Product Name: Mobile Phone

Model No: STAR

## Appendix A: Average Power Output Data

### Test Result

| Band   | Channel | ERP/EIRP(dBm) | Limit(dBm) | Verdict |
|--------|---------|---------------|------------|---------|
| GSM850 | 128     | 32.07         | 38.45      | PASS    |
| GSM850 | 190     | 31.79         | 38.45      | PASS    |
| GSM850 | 251     | 31.82         | 38.45      | PASS    |

| Band    | Channel | Slot | Power(dBm) | Limit(dBm) | Verdict |
|---------|---------|------|------------|------------|---------|
| GPRS850 | 128     | 1    | 32.04      | 38.45      | PASS    |
| GPRS850 | 128     | 2    | 29.97      | 38.45      | PASS    |
| GPRS850 | 128     | 3    | 28.12      | 38.45      | PASS    |
| GPRS850 | 128     | 4    | 26.01      | 38.45      | PASS    |
| GPRS850 | 190     | 1    | 31.74      | 38.45      | PASS    |
| GPRS850 | 190     | 2    | 29.76      | 38.45      | PASS    |
| GPRS850 | 190     | 3    | 27.99      | 38.45      | PASS    |
| GPRS850 | 190     | 4    | 25.94      | 38.45      | PASS    |
| GPRS850 | 251     | 1    | 31.78      | 38.45      | PASS    |
| GPRS850 | 251     | 2    | 29.72      | 38.45      | PASS    |
| GPRS850 | 251     | 3    | 27.98      | 38.45      | PASS    |
| GPRS850 | 251     | 4    | 25.96      | 38.45      | PASS    |

| Band     | Channel | Slot | Power(dBm) | Limit(dBm) | Verdict |
|----------|---------|------|------------|------------|---------|
| EGPRS850 | 128     | 1    | 24.86      | 38.45      | PASS    |
| EGPRS850 | 128     | 2    | 23.51      | 38.45      | PASS    |
| EGPRS850 | 128     | 3    | 21.55      | 38.45      | PASS    |
| EGPRS850 | 128     | 4    | 19.36      | 38.45      | PASS    |
| EGPRS850 | 190     | 1    | 24.94      | 38.45      | PASS    |
| EGPRS850 | 190     | 2    | 23.81      | 38.45      | PASS    |
| EGPRS850 | 190     | 3    | 21.75      | 38.45      | PASS    |
| EGPRS850 | 190     | 4    | 19.70      | 38.45      | PASS    |
| EGPRS850 | 251     | 1    | 24.93      | 38.45      | PASS    |

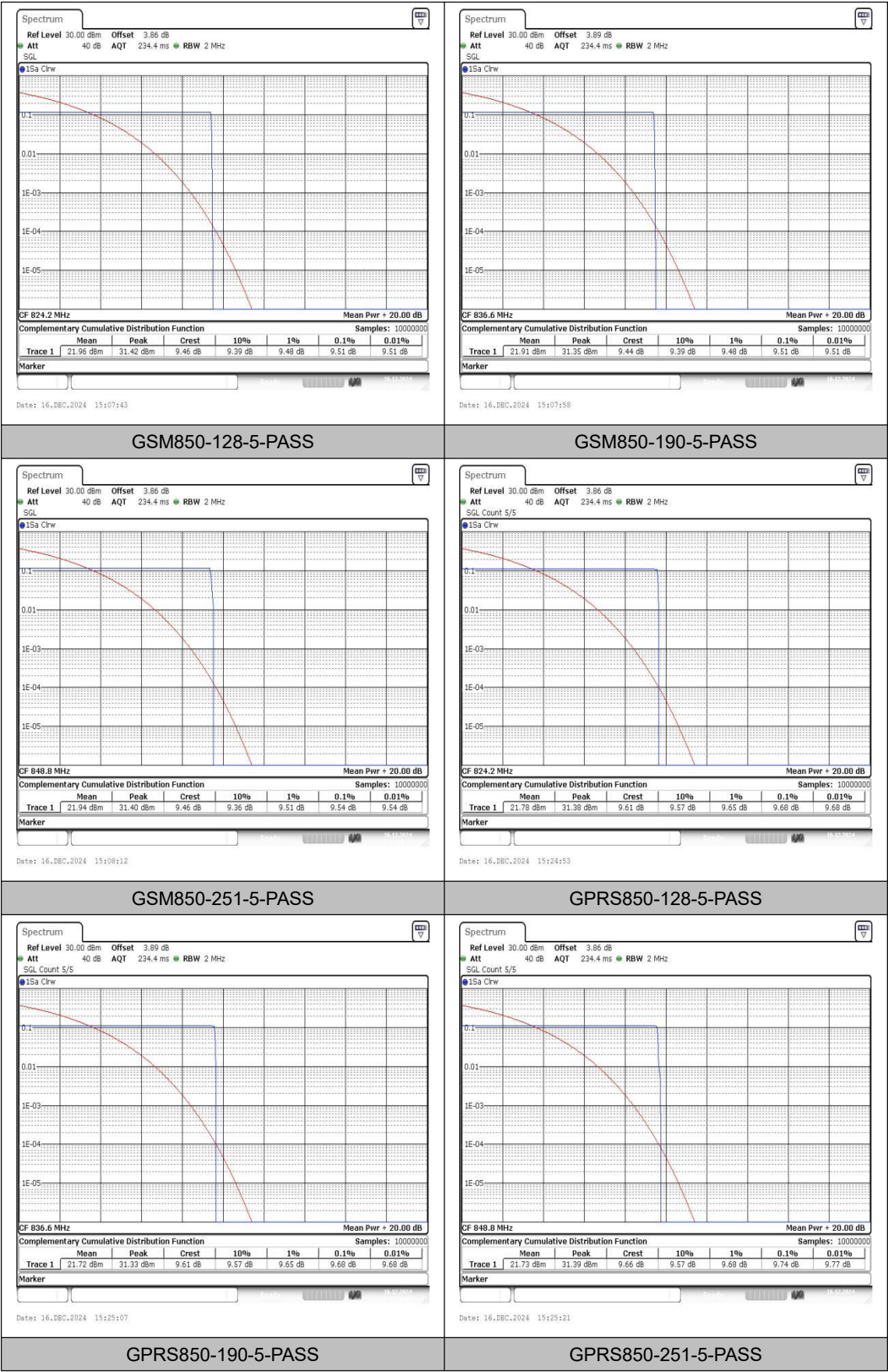
|              |     |   |       |       |      |
|--------------|-----|---|-------|-------|------|
| EGPRS85<br>0 | 251 | 2 | 23.90 | 38.45 | PASS |
| EGPRS85<br>0 | 251 | 3 | 21.78 | 38.45 | PASS |
| EGPRS85<br>0 | 251 | 4 | 19.59 | 38.45 | PASS |

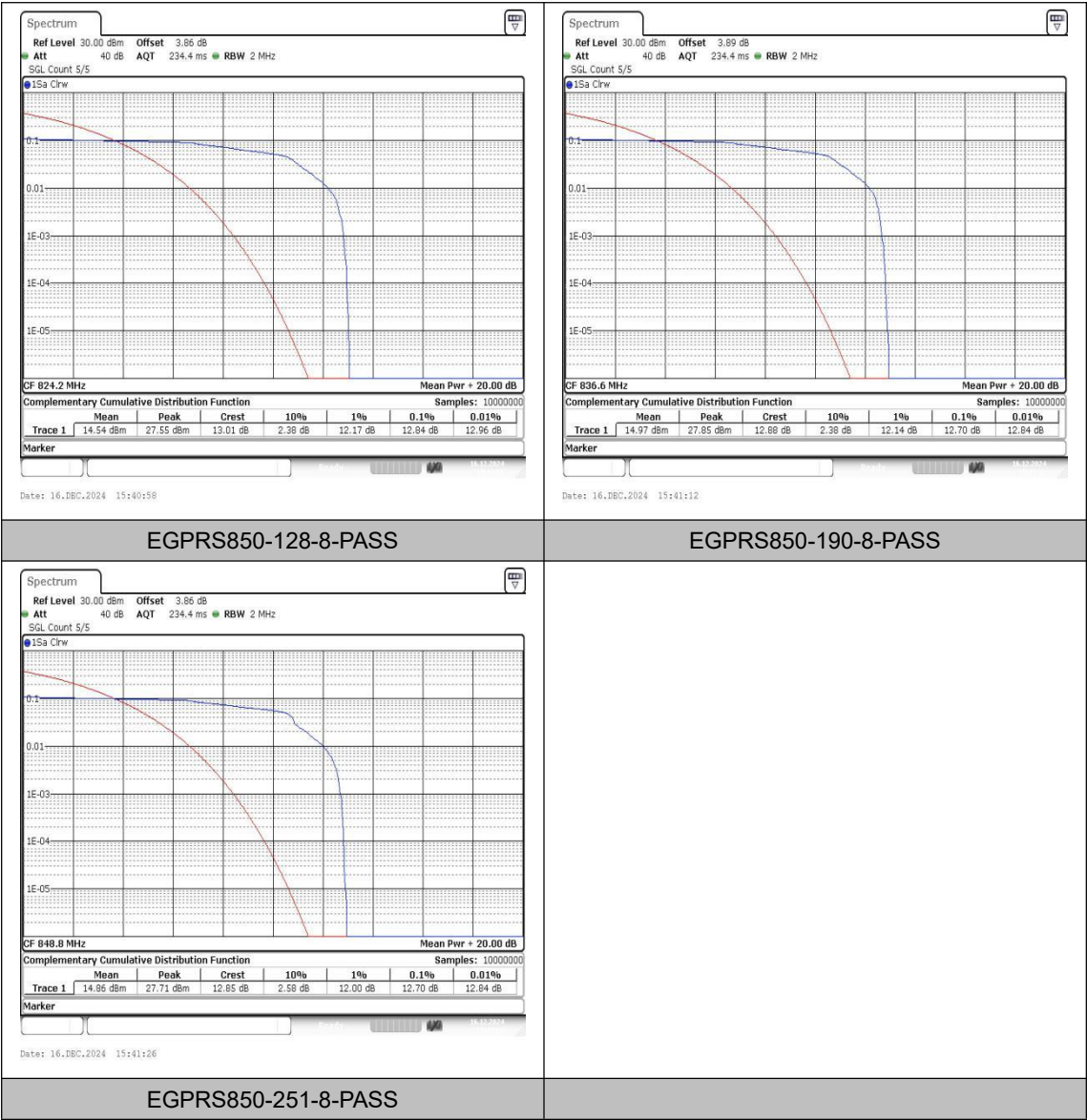
## Appendix B: Peak-to-Average Ratio(CCDF)

### Test Result

| Band     | Channel | Result(dB) | Limit(dB) | Verdict |
|----------|---------|------------|-----------|---------|
| GSM850   | 128     | 9.51       | 13        | PASS    |
| GSM850   | 190     | 9.51       | 13        | PASS    |
| GSM850   | 251     | 9.54       | 13        | PASS    |
| GPRS850  | 128     | 9.68       | 13        | PASS    |
| GPRS850  | 190     | 9.68       | 13        | PASS    |
| GPRS850  | 251     | 9.74       | 13        | PASS    |
| EGPRS850 | 128     | 12.84      | 13        | PASS    |
| EGPRS850 | 190     | 12.70      | 13        | PASS    |
| EGPRS850 | 251     | 12.70      | 13        | PASS    |

Test Graphs



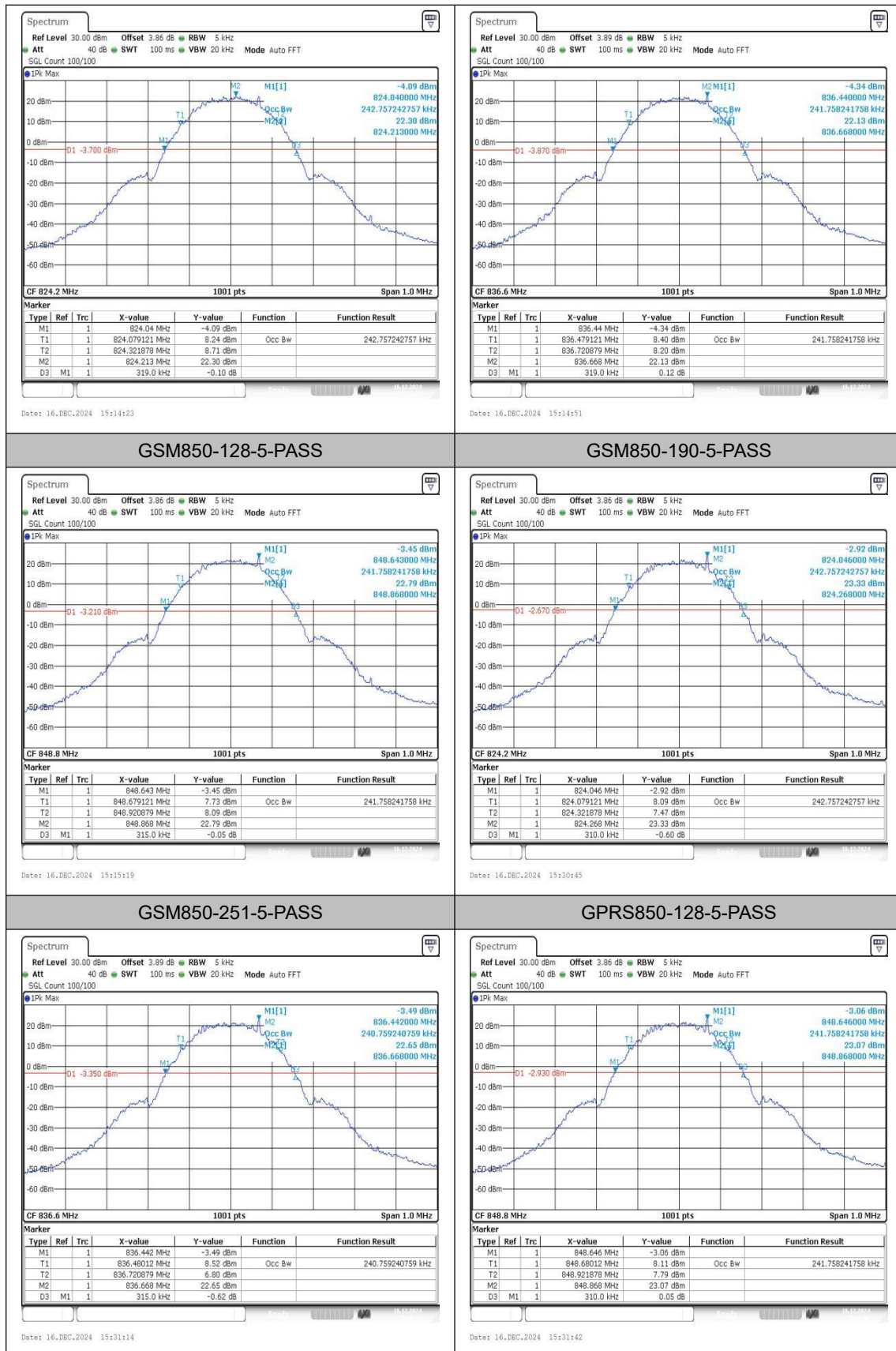


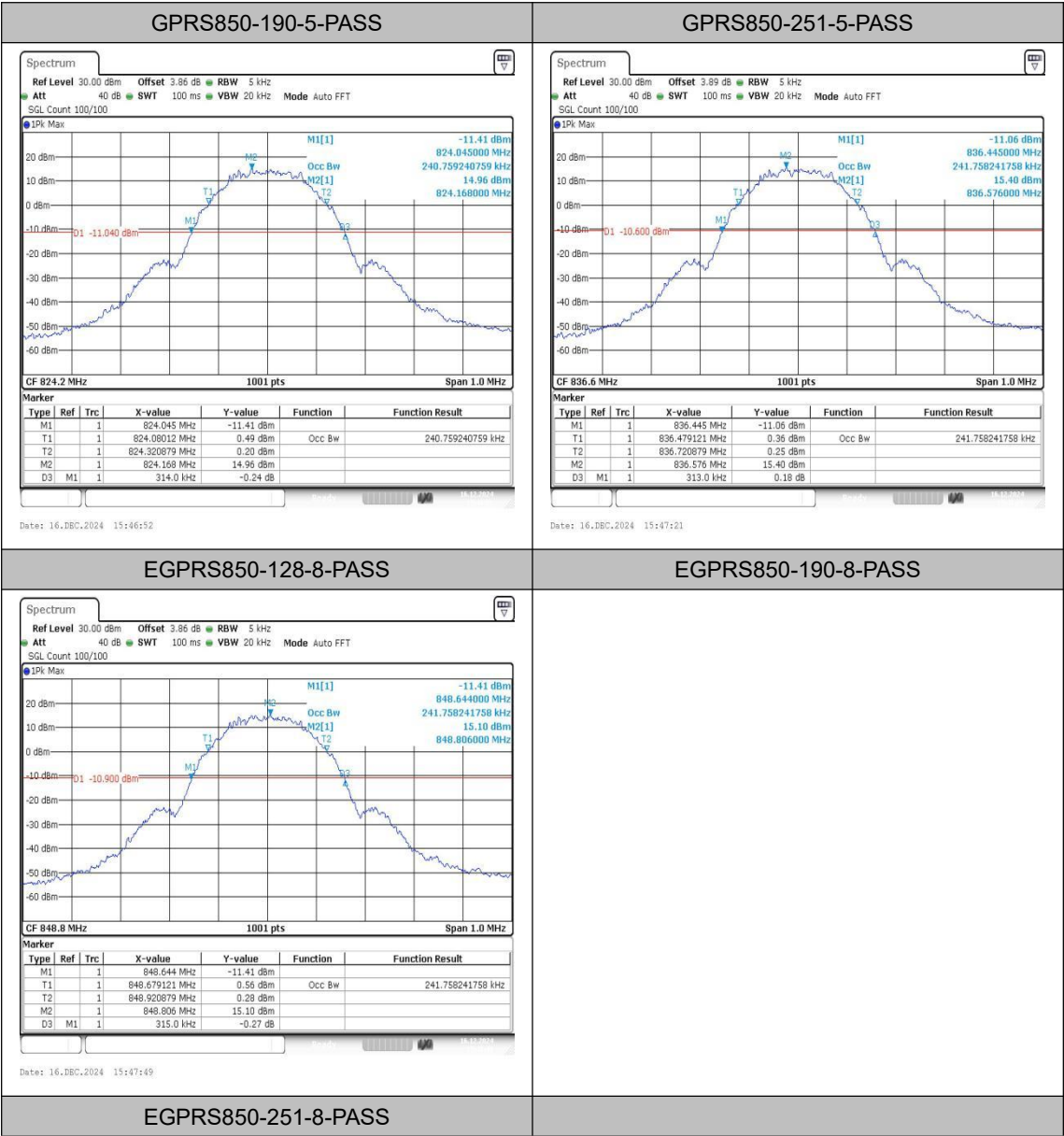
## Appendix C: 26dB Bandwidth and Occupied Bandwidth

### Test Result

| Band     | Channel | Occupied<br>Bandwidth (MHz) | 26dB Bandwidth<br>(MHz) | Limit<br>(MHz) | Verdict |
|----------|---------|-----------------------------|-------------------------|----------------|---------|
| GSM850   | 128     | 0.243                       | 0.32                    | ---            | PASS    |
| GSM850   | 190     | 0.242                       | 0.32                    | ---            | PASS    |
| GSM850   | 251     | 0.242                       | 0.32                    | ---            | PASS    |
| GPRS850  | 128     | 0.243                       | 0.31                    | ---            | PASS    |
| GPRS850  | 190     | 0.241                       | 0.32                    | ---            | PASS    |
| GPRS850  | 251     | 0.242                       | 0.31                    | ---            | PASS    |
| EGPRS850 | 128     | 0.241                       | 0.31                    | ---            | PASS    |
| EGPRS850 | 190     | 0.242                       | 0.31                    | ---            | PASS    |
| EGPRS850 | 251     | 0.242                       | 0.31                    | ---            | PASS    |

## Test Graphs



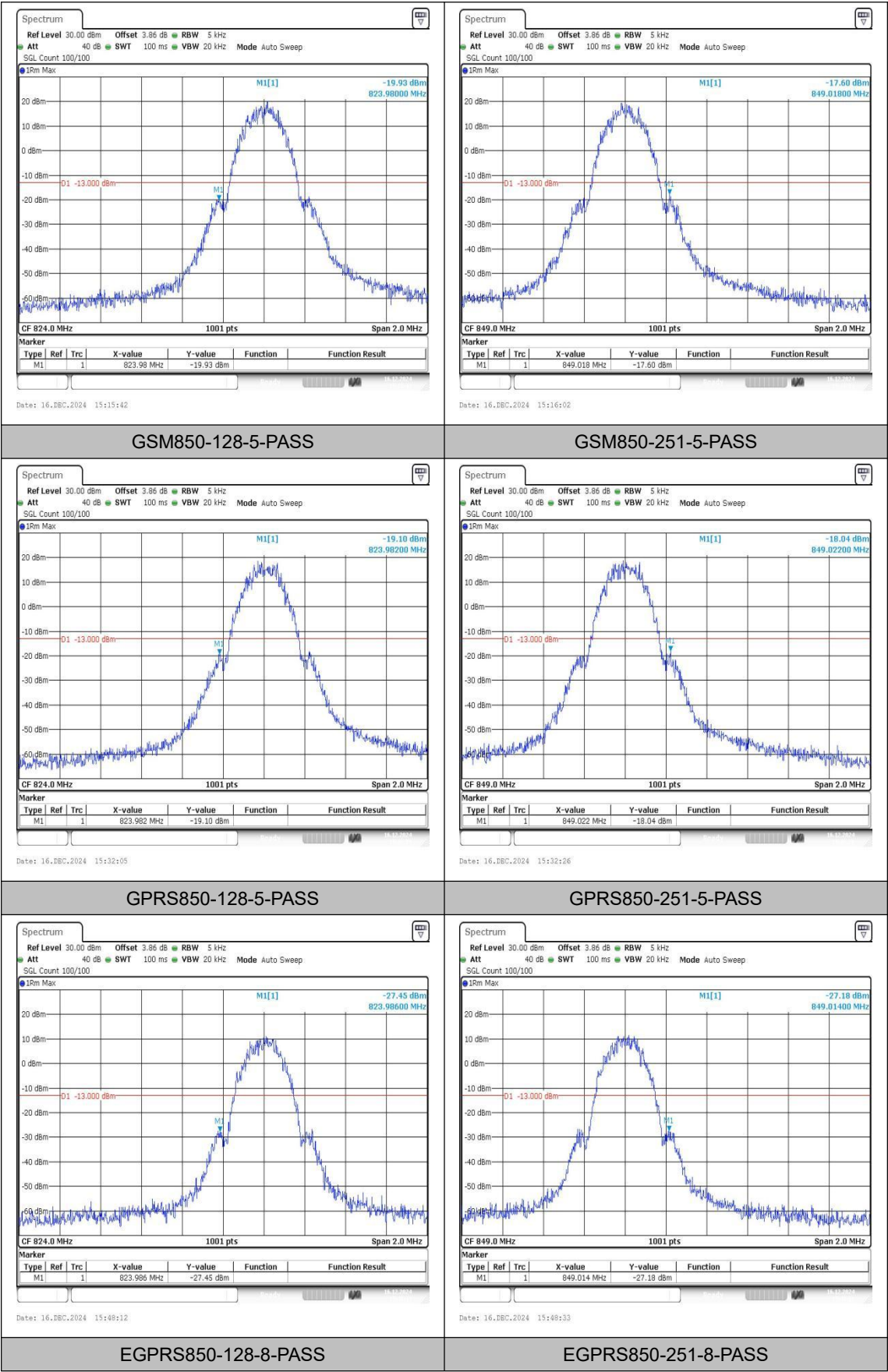


## Appendix D: Band Edge

### Test Result

| Band     | Channel | Freq (MHz) | Result (dBm) | Limit(dBm) | Verdict |
|----------|---------|------------|--------------|------------|---------|
| GSM850   | 128     | 823.98     | -19.93       | -13        | PASS    |
| GSM850   | 251     | 849.02     | -17.60       | -13        | PASS    |
| GPRS850  | 128     | 823.98     | -19.10       | -13        | PASS    |
| GPRS850  | 251     | 849.02     | -18.04       | -13        | PASS    |
| EGPRS850 | 128     | 823.99     | -27.45       | -13        | PASS    |
| EGPRS850 | 251     | 849.01     | -27.18       | -13        | PASS    |

Test Graphs

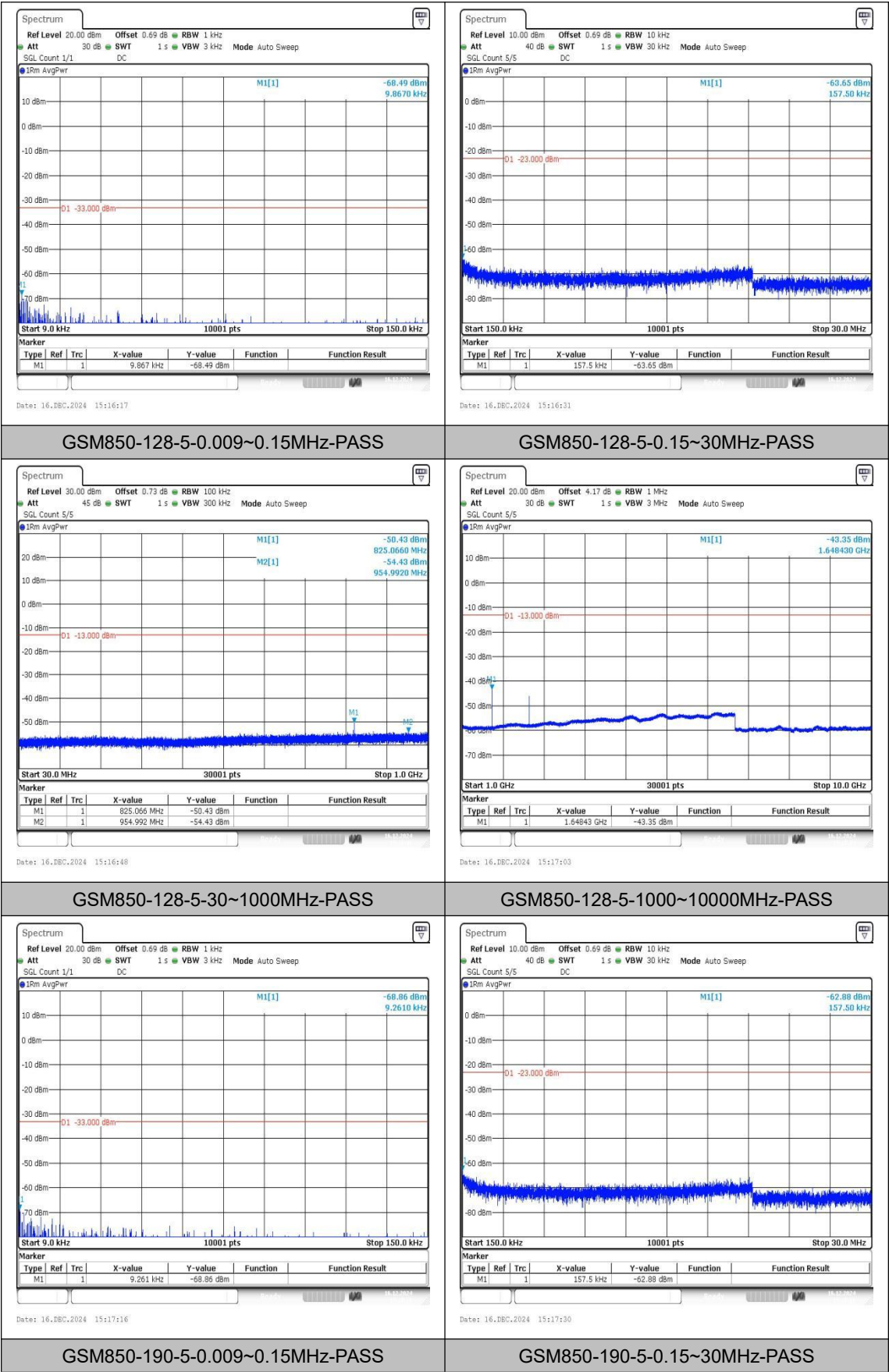


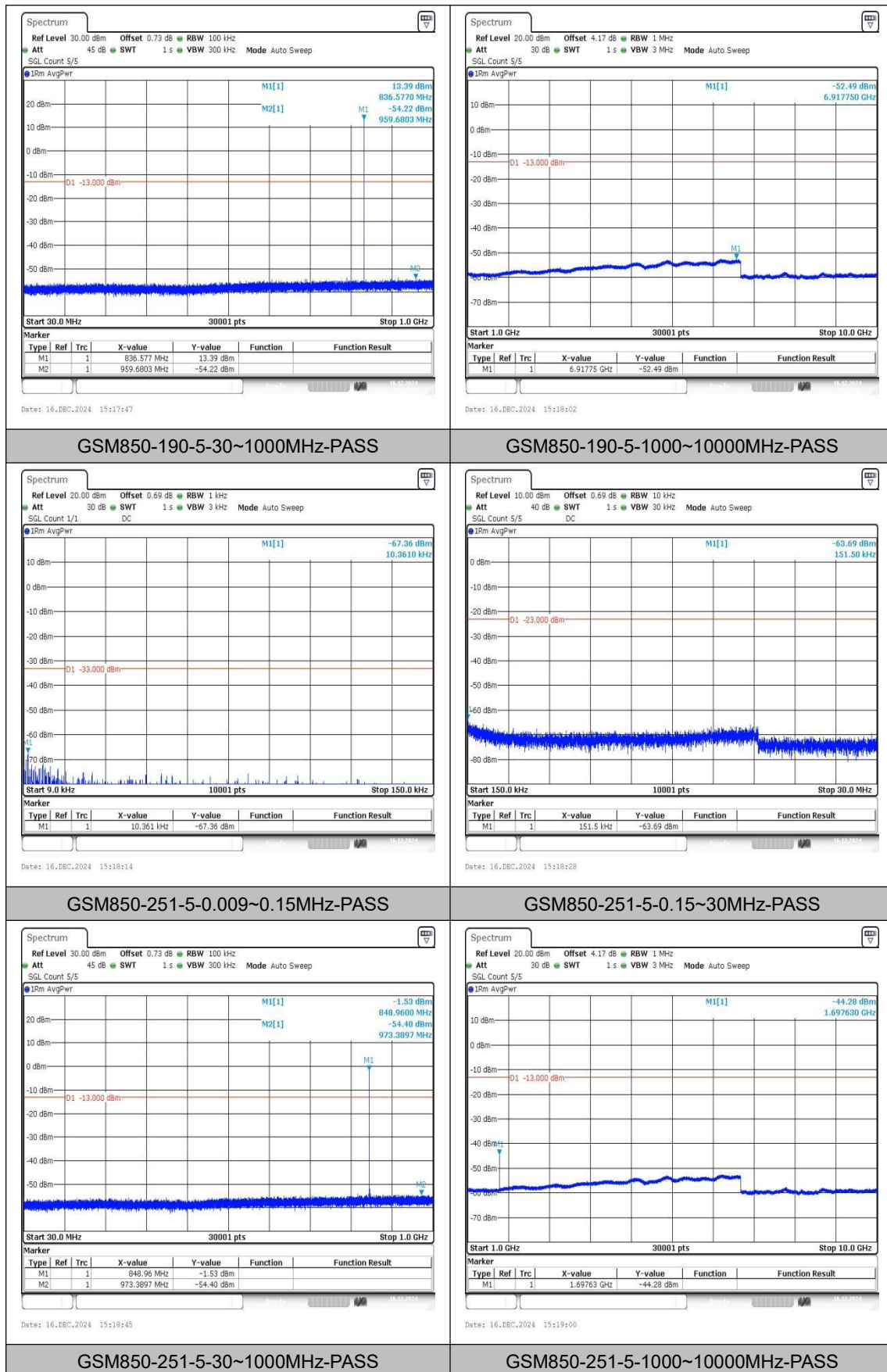
## Appendix E: Conducted Spurious Emission

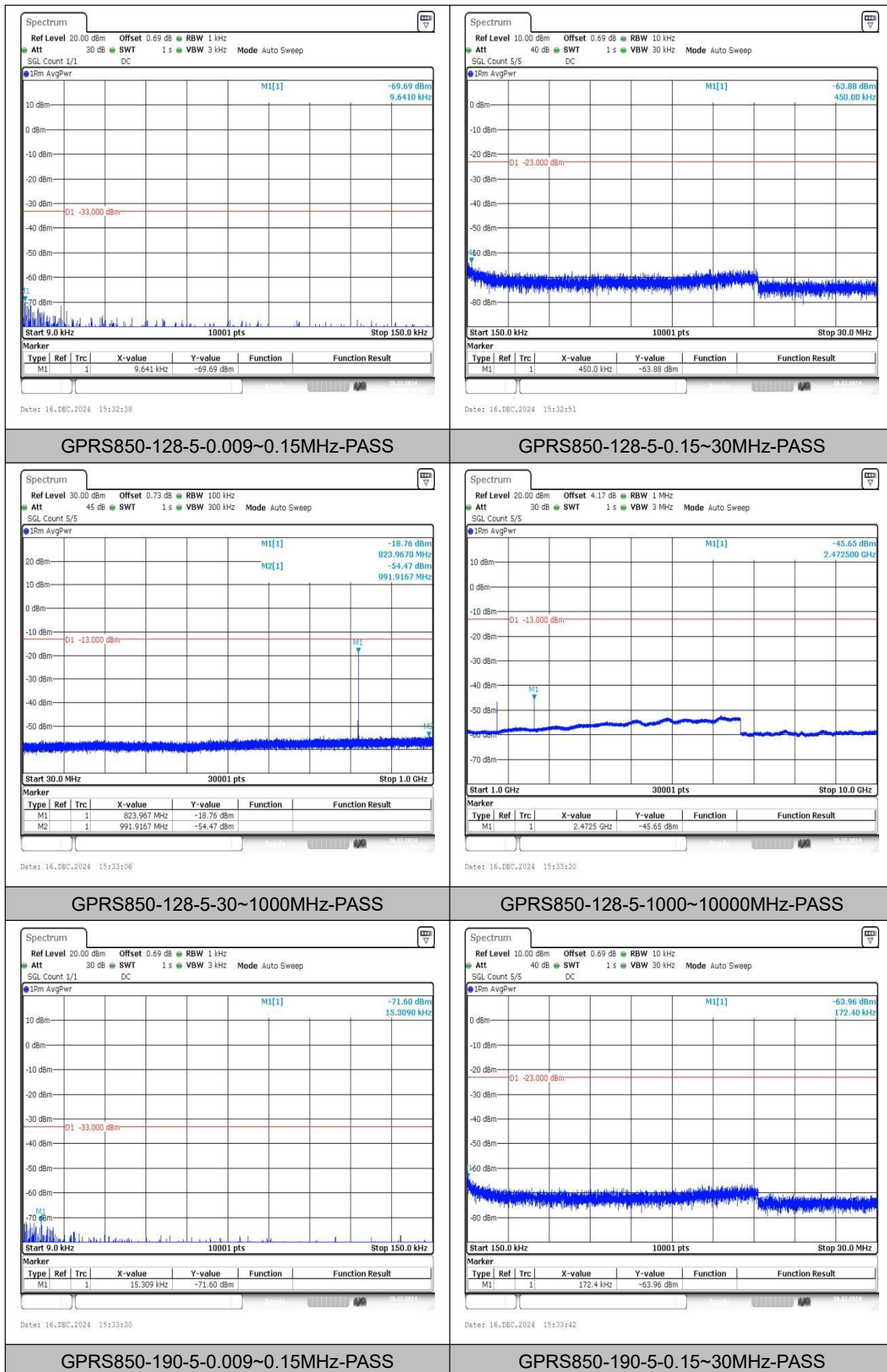
### Test Result

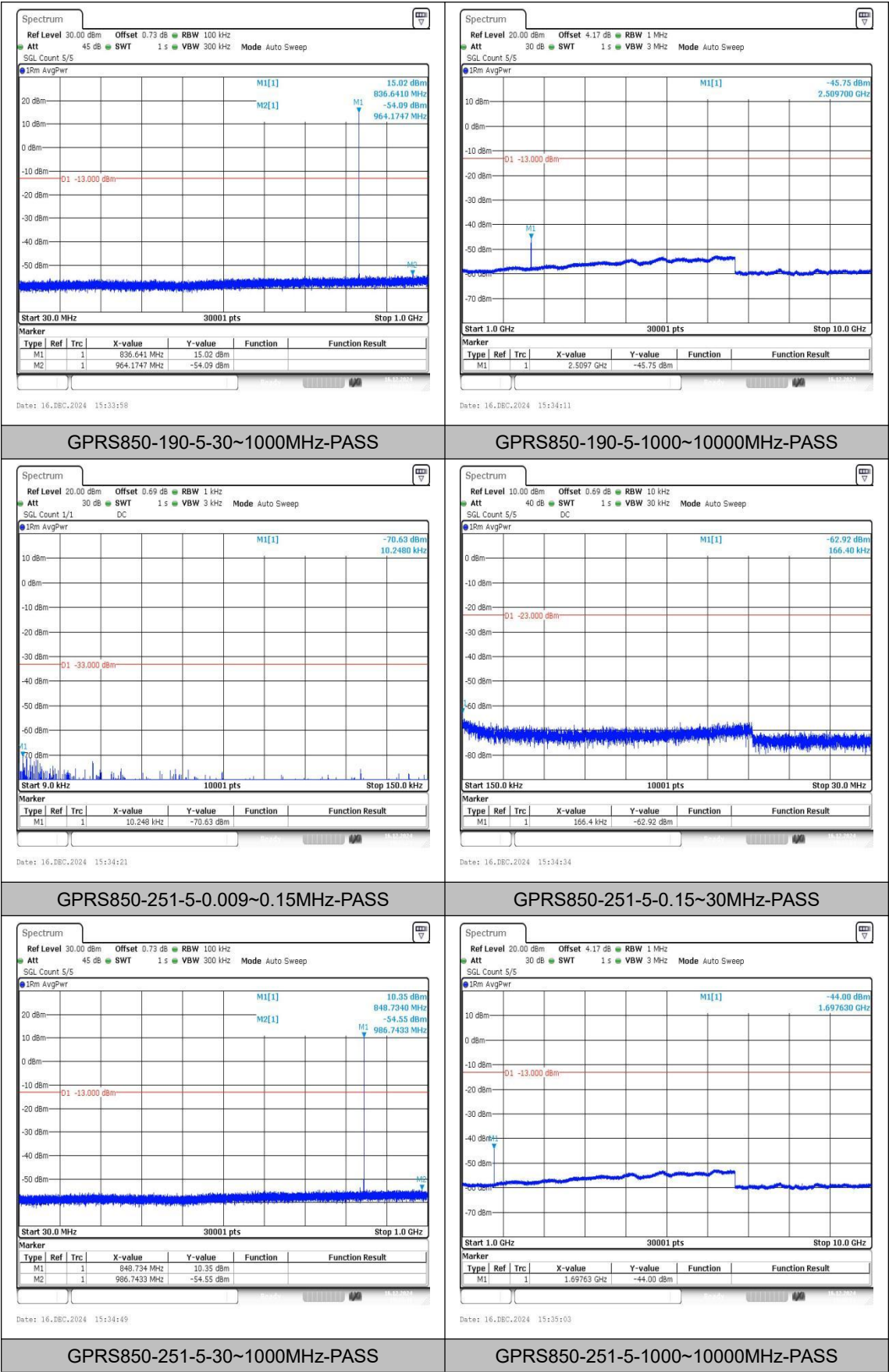
| Band     | Channel | Frequency Range(MHz) | Max.Freq. (MHz) | Result (dBm) | Limit (dBm) | Verdict |
|----------|---------|----------------------|-----------------|--------------|-------------|---------|
| GSM850   | 128     | 0.009~0.15MHz        | 0.01            | -68.49       | -33         | PASS    |
| GSM850   | 128     | 0.15~30MHz           | 0.16            | -63.65       | -23         | PASS    |
| GSM850   | 128     | 30~1000MHz           | 954.99          | -54.43       | -13         | PASS    |
| GSM850   | 128     | 1000~10000MHz        | 1648.43         | -43.35       | -13         | PASS    |
| GSM850   | 190     | 0.009~0.15MHz        | 0.01            | -68.86       | -33         | PASS    |
| GSM850   | 190     | 0.15~30MHz           | 0.16            | -62.88       | -23         | PASS    |
| GSM850   | 190     | 30~1000MHz           | 959.68          | -54.22       | -13         | PASS    |
| GSM850   | 190     | 1000~10000MHz        | 6917.75         | -52.49       | -13         | PASS    |
| GSM850   | 251     | 0.009~0.15MHz        | 0.01            | -67.36       | -33         | PASS    |
| GSM850   | 251     | 0.15~30MHz           | 0.15            | -63.69       | -23         | PASS    |
| GSM850   | 251     | 30~1000MHz           | 973.39          | -54.4        | -13         | PASS    |
| GSM850   | 251     | 1000~10000MHz        | 1697.63         | -44.28       | -13         | PASS    |
| GPRS850  | 128     | 0.009~0.15MHz        | 0.01            | -69.69       | -33         | PASS    |
| GPRS850  | 128     | 0.15~30MHz           | 0.45            | -63.88       | -23         | PASS    |
| GPRS850  | 128     | 30~1000MHz           | 991.92          | -54.47       | -13         | PASS    |
| GPRS850  | 128     | 1000~10000MHz        | 2472.5          | -45.65       | -13         | PASS    |
| GPRS850  | 190     | 0.009~0.15MHz        | 0.02            | -71.6        | -33         | PASS    |
| GPRS850  | 190     | 0.15~30MHz           | 0.17            | -63.96       | -23         | PASS    |
| GPRS850  | 190     | 30~1000MHz           | 964.17          | -54.09       | -13         | PASS    |
| GPRS850  | 190     | 1000~10000MHz        | 2509.7          | -45.75       | -13         | PASS    |
| GPRS850  | 251     | 0.009~0.15MHz        | 0.01            | -70.63       | -33         | PASS    |
| GPRS850  | 251     | 0.15~30MHz           | 0.17            | -62.92       | -23         | PASS    |
| GPRS850  | 251     | 30~1000MHz           | 986.74          | -54.55       | -13         | PASS    |
| GPRS850  | 251     | 1000~10000MHz        | 1697.63         | -44          | -13         | PASS    |
| EGPRS850 | 128     | 0.009~0.15MHz        | 0.01            | -74.55       | -33         | PASS    |
| EGPRS850 | 128     | 0.15~30MHz           | 0.19            | -63.32       | -23         | PASS    |
| EGPRS850 | 128     | 30~1000MHz           | 654.65          | -54.08       | -13         | PASS    |
| EGPRS850 | 128     | 1000~10000MHz        | 6608.46         | -52.39       | -13         | PASS    |
| EGPRS850 | 190     | 0.009~0.15MHz        | 0.02            | -74.44       | -33         | PASS    |
| EGPRS850 | 190     | 0.15~30MHz           | 0.23            | -63.45       | -23         | PASS    |
| EGPRS850 | 190     | 30~1000MHz           | 997.41          | -54.32       | -13         | PASS    |
| EGPRS850 | 190     | 1000~10000MHz        | 6533.77         | -52.58       | -13         | PASS    |
| EGPRS850 | 251     | 0.009~0.15MHz        | 0.02            | -72.12       | -33         | PASS    |
| EGPRS850 | 251     | 0.15~30MHz           | 0.18            | -63.84       | -23         | PASS    |
| EGPRS850 | 251     | 30~1000MHz           | 969.96          | -54.19       | -13         | PASS    |
| EGPRS850 | 251     | 1000~10000MHz        | 6612.66         | -52.6        | -13         | PASS    |

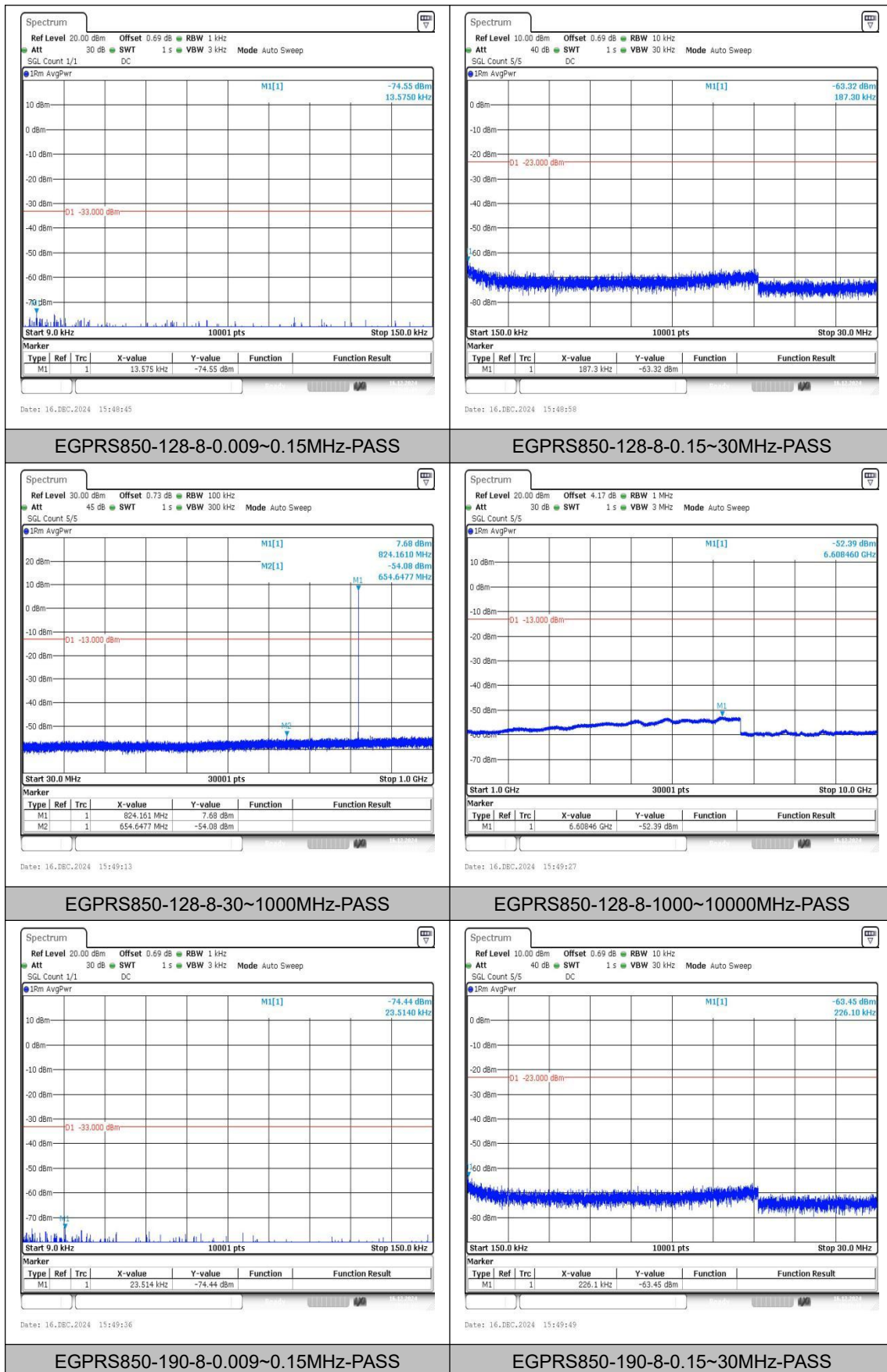
Test Graphs

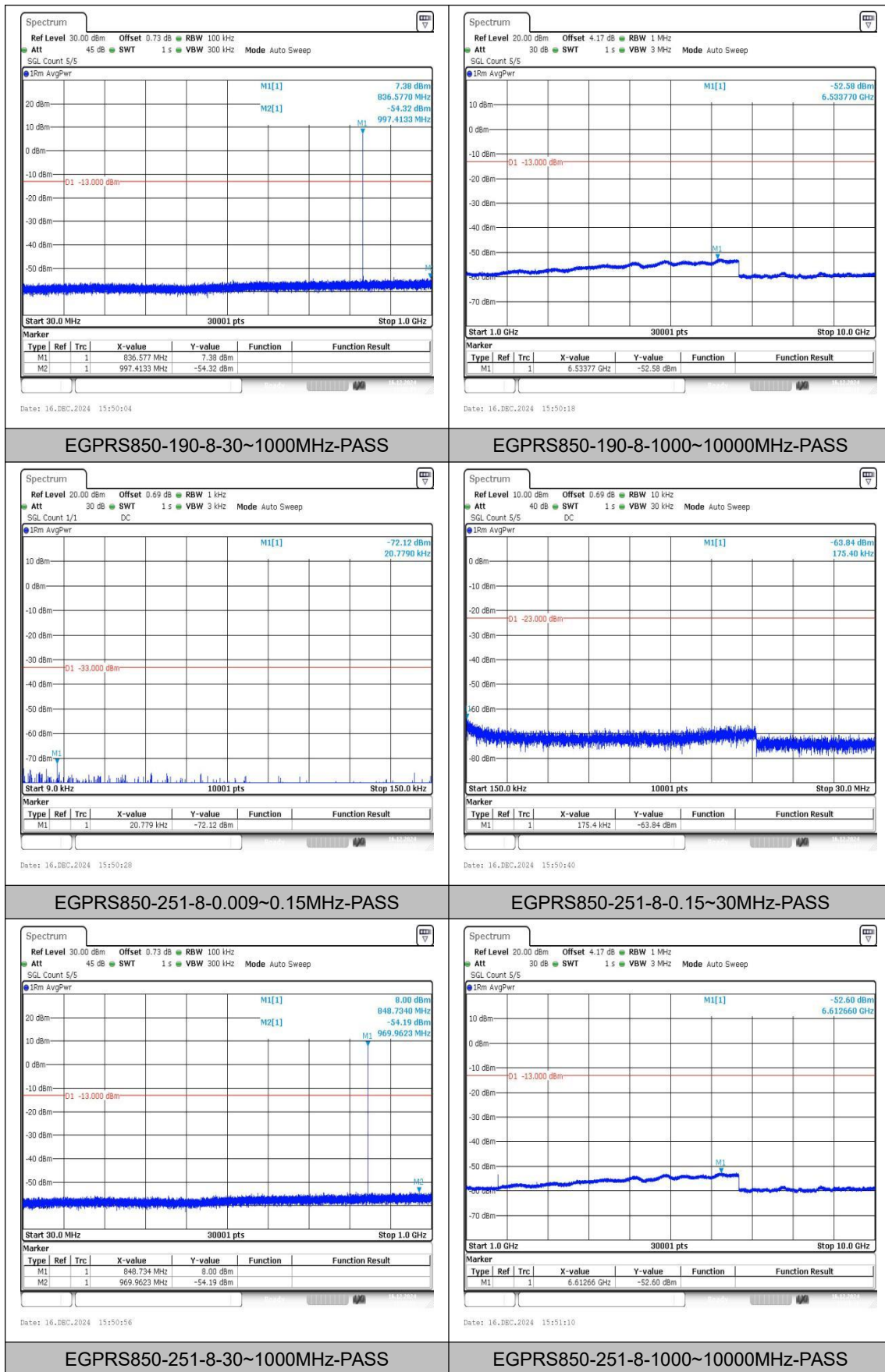












## Appendix F: Frequency Stability

### Test Result

| Voltage  |         |               |                  |                |                 |             |         |
|----------|---------|---------------|------------------|----------------|-----------------|-------------|---------|
| Band     | Channel | Voltage [Vdc] | Temperature (°C) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| GSM850   | 128     | VN            | NT               | 7.14           | 0.008663        | ±2.5        | PASS    |
| GSM850   | 128     | VL            | NT               | 11.24          | 0.013637        | ±2.5        | PASS    |
| GSM850   | 128     | VH            | NT               | 15.98          | 0.019388        | ±2.5        | PASS    |
| GSM850   | 190     | VN            | NT               | 14.37          | 0.017177        | ±2.5        | PASS    |
| GSM850   | 190     | VL            | NT               | 9.94           | 0.011881        | ±2.5        | PASS    |
| GSM850   | 190     | VH            | NT               | 13.85          | 0.016555        | ±2.5        | PASS    |
| GSM850   | 251     | VN            | NT               | 5.33           | 0.006279        | ±2.5        | PASS    |
| GSM850   | 251     | VL            | NT               | 9.30           | 0.010957        | ±2.5        | PASS    |
| GSM850   | 251     | VH            | NT               | 9.69           | 0.011416        | ±2.5        | PASS    |
| GPRS850  | 128     | VN            | NT               | 13.56          | 0.016452        | ±2.5        | PASS    |
| GPRS850  | 128     | VL            | NT               | 14.56          | 0.017666        | ±2.5        | PASS    |
| GPRS850  | 128     | VH            | NT               | 11.46          | 0.013904        | ±2.5        | PASS    |
| GPRS850  | 190     | VN            | NT               | 18.31          | 0.021886        | ±2.5        | PASS    |
| GPRS850  | 190     | VL            | NT               | 18.56          | 0.022185        | ±2.5        | PASS    |
| GPRS850  | 190     | VH            | NT               | 13.53          | 0.016173        | ±2.5        | PASS    |
| GPRS850  | 251     | VN            | NT               | 12.85          | 0.015139        | ±2.5        | PASS    |
| GPRS850  | 251     | VL            | NT               | 14.75          | 0.017377        | ±2.5        | PASS    |
| GPRS850  | 251     | VH            | NT               | 15.50          | 0.018261        | ±2.5        | PASS    |
| EGPRS850 | 128     | VN            | NT               | 10.20          | 0.012376        | ±2.5        | PASS    |
| EGPRS850 | 128     | VL            | NT               | 16.30          | 0.019777        | ±2.5        | PASS    |
| EGPRS850 | 128     | VH            | NT               | 18.21          | 0.022094        | ±2.5        | PASS    |
| EGPRS850 | 190     | VN            | NT               | 18.92          | 0.022615        | ±2.5        | PASS    |
| EGPRS850 | 190     | VL            | NT               | 18.08          | 0.021611        | ±2.5        | PASS    |
| EGPRS850 | 190     | VH            | NT               | 15.98          | 0.019101        | ±2.5        | PASS    |
| EGPRS850 | 251     | VN            | NT               | 19.21          | 0.022632        | ±2.5        | PASS    |
| EGPRS850 | 251     | VL            | NT               | 21.66          | 0.025518        | ±2.5        | PASS    |
| EGPRS850 | 251     | VH            | NT               | 14.46          | 0.017036        | ±2.5        | PASS    |

| Temperature |         |               |                  |                |                 |             |         |
|-------------|---------|---------------|------------------|----------------|-----------------|-------------|---------|
| Band        | Channel | Voltage [Vdc] | Temperature (°C) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| GSM850      | 128     | NV            | -30              | 12.33          | 0.014960        | ±2.5        | PASS    |
| GSM850      | 128     | NV            | -20              | 10.59          | 0.012849        | ±2.5        | PASS    |
| GSM850      | 128     | NV            | -10              | 10.82          | 0.013128        | ±2.5        | PASS    |

|         |     |    |     |       |          |      |      |
|---------|-----|----|-----|-------|----------|------|------|
| GSM850  | 128 | NV | 0   | 11.24 | 0.013637 | ±2.5 | PASS |
| GSM850  | 128 | NV | 10  | 13.82 | 0.016768 | ±2.5 | PASS |
| GSM850  | 128 | NV | 20  | 13.53 | 0.016416 | ±2.5 | PASS |
| GSM850  | 128 | NV | 30  | 8.27  | 0.010034 | ±2.5 | PASS |
| GSM850  | 128 | NV | 40  | 10.75 | 0.013043 | ±2.5 | PASS |
| GSM850  | 128 | NV | 50  | 14.43 | 0.017508 | ±2.5 | PASS |
| GSM850  | 190 | NV | -30 | 5.68  | 0.006789 | ±2.5 | PASS |
| GSM850  | 190 | NV | -20 | 7.75  | 0.009264 | ±2.5 | PASS |
| GSM850  | 190 | NV | -10 | 11.75 | 0.014045 | ±2.5 | PASS |
| GSM850  | 190 | NV | 0   | 12.04 | 0.014392 | ±2.5 | PASS |
| GSM850  | 190 | NV | 10  | 18.02 | 0.021540 | ±2.5 | PASS |
| GSM850  | 190 | NV | 20  | 12.24 | 0.014631 | ±2.5 | PASS |
| GSM850  | 190 | NV | 30  | 7.65  | 0.009144 | ±2.5 | PASS |
| GSM850  | 190 | NV | 40  | 8.59  | 0.010268 | ±2.5 | PASS |
| GSM850  | 190 | NV | 50  | 11.11 | 0.013280 | ±2.5 | PASS |
| GSM850  | 251 | NV | -30 | 9.40  | 0.011074 | ±2.5 | PASS |
| GSM850  | 251 | NV | -20 | 10.78 | 0.012700 | ±2.5 | PASS |
| GSM850  | 251 | NV | -10 | 8.14  | 0.009590 | ±2.5 | PASS |
| GSM850  | 251 | NV | 0   | 9.88  | 0.011640 | ±2.5 | PASS |
| GSM850  | 251 | NV | 10  | 8.78  | 0.010344 | ±2.5 | PASS |
| GSM850  | 251 | NV | 20  | 14.30 | 0.016847 | ±2.5 | PASS |
| GSM850  | 251 | NV | 30  | 12.11 | 0.014267 | ±2.5 | PASS |
| GSM850  | 251 | NV | 40  | 8.85  | 0.010426 | ±2.5 | PASS |
| GSM850  | 251 | NV | 50  | 7.88  | 0.009284 | ±2.5 | PASS |
| GPRS850 | 128 | NV | -30 | 13.14 | 0.015943 | ±2.5 | PASS |
| GPRS850 | 128 | NV | -20 | 8.36  | 0.010143 | ±2.5 | PASS |
| GPRS850 | 128 | NV | -10 | 12.07 | 0.014645 | ±2.5 | PASS |
| GPRS850 | 128 | NV | 0   | 10.36 | 0.012570 | ±2.5 | PASS |
| GPRS850 | 128 | NV | 10  | 7.07  | 0.008578 | ±2.5 | PASS |
| GPRS850 | 128 | NV | 20  | 13.59 | 0.016489 | ±2.5 | PASS |
| GPRS850 | 128 | NV | 30  | 11.75 | 0.014256 | ±2.5 | PASS |
| GPRS850 | 128 | NV | 40  | 9.62  | 0.011672 | ±2.5 | PASS |
| GPRS850 | 128 | NV | 50  | 16.11 | 0.019546 | ±2.5 | PASS |
| GPRS850 | 190 | NV | -30 | 10.65 | 0.012730 | ±2.5 | PASS |
| GPRS850 | 190 | NV | -20 | 12.49 | 0.014929 | ±2.5 | PASS |
| GPRS850 | 190 | NV | -10 | 16.40 | 0.019603 | ±2.5 | PASS |
| GPRS850 | 190 | NV | 0   | 19.40 | 0.023189 | ±2.5 | PASS |
| GPRS850 | 190 | NV | 10  | 11.82 | 0.014129 | ±2.5 | PASS |
| GPRS850 | 190 | NV | 20  | 13.62 | 0.016280 | ±2.5 | PASS |
| GPRS850 | 190 | NV | 30  | 16.50 | 0.019723 | ±2.5 | PASS |
| GPRS850 | 190 | NV | 40  | 17.95 | 0.021456 | ±2.5 | PASS |

|          |     |    |     |       |          |      |      |
|----------|-----|----|-----|-------|----------|------|------|
| GPRS850  | 190 | NV | 50  | 14.11 | 0.016866 | ±2.5 | PASS |
| GPRS850  | 251 | NV | -30 | 15.53 | 0.018296 | ±2.5 | PASS |
| GPRS850  | 251 | NV | -20 | 16.79 | 0.019781 | ±2.5 | PASS |
| GPRS850  | 251 | NV | -10 | 14.66 | 0.017271 | ±2.5 | PASS |
| GPRS850  | 251 | NV | 0   | 17.47 | 0.020582 | ±2.5 | PASS |
| GPRS850  | 251 | NV | 10  | 13.82 | 0.016282 | ±2.5 | PASS |
| GPRS850  | 251 | NV | 20  | 12.33 | 0.014526 | ±2.5 | PASS |
| GPRS850  | 251 | NV | 30  | 18.60 | 0.021913 | ±2.5 | PASS |
| GPRS850  | 251 | NV | 40  | 11.82 | 0.013926 | ±2.5 | PASS |
| GPRS850  | 251 | NV | 50  | 11.98 | 0.014114 | ±2.5 | PASS |
| EGPRS850 | 128 | NV | -30 | 20.31 | 0.024642 | ±2.5 | PASS |
| EGPRS850 | 128 | NV | -20 | 16.50 | 0.020019 | ±2.5 | PASS |
| EGPRS850 | 128 | NV | -10 | 15.82 | 0.019194 | ±2.5 | PASS |
| EGPRS850 | 128 | NV | 0   | 17.11 | 0.020760 | ±2.5 | PASS |
| EGPRS850 | 128 | NV | 10  | 16.01 | 0.019425 | ±2.5 | PASS |
| EGPRS850 | 128 | NV | 20  | 17.43 | 0.021148 | ±2.5 | PASS |
| EGPRS850 | 128 | NV | 30  | 18.40 | 0.022325 | ±2.5 | PASS |
| EGPRS850 | 128 | NV | 40  | 17.40 | 0.021111 | ±2.5 | PASS |
| EGPRS850 | 128 | NV | 50  | 13.04 | 0.015821 | ±2.5 | PASS |
| EGPRS850 | 190 | NV | -30 | 16.34 | 0.019531 | ±2.5 | PASS |
| EGPRS850 | 190 | NV | -20 | 17.82 | 0.021301 | ±2.5 | PASS |
| EGPRS850 | 190 | NV | -10 | 17.11 | 0.020452 | ±2.5 | PASS |
| EGPRS850 | 190 | NV | 0   | 17.82 | 0.021301 | ±2.5 | PASS |
| EGPRS850 | 190 | NV | 10  | 15.27 | 0.018252 | ±2.5 | PASS |
| EGPRS850 | 190 | NV | 20  | 16.72 | 0.019986 | ±2.5 | PASS |
| EGPRS850 | 190 | NV | 30  | 14.75 | 0.017631 | ±2.5 | PASS |
| EGPRS850 | 190 | NV | 40  | 19.15 | 0.022890 | ±2.5 | PASS |
| EGPRS850 | 190 | NV | 50  | 20.18 | 0.024121 | ±2.5 | PASS |
| EGPRS850 | 251 | NV | -30 | 16.43 | 0.019357 | ±2.5 | PASS |
| EGPRS850 | 251 | NV | -20 | 19.89 | 0.023433 | ±2.5 | PASS |
| EGPRS850 | 251 | NV | -10 | 14.88 | 0.017531 | ±2.5 | PASS |
| EGPRS850 | 251 | NV | 0   | 13.43 | 0.015822 | ±2.5 | PASS |
| EGPRS850 | 251 | NV | 10  | 12.37 | 0.014574 | ±2.5 | PASS |
| EGPRS850 | 251 | NV | 20  | 14.63 | 0.017236 | ±2.5 | PASS |
| EGPRS850 | 251 | NV | 30  | 15.30 | 0.018025 | ±2.5 | PASS |
| EGPRS850 | 251 | NV | 40  | 14.04 | 0.016541 | ±2.5 | PASS |
| EGPRS850 | 251 | NV | 50  | 11.11 | 0.013089 | ±2.5 | PASS |

## Appendix G: Modulation Characteristics

### Test Result

| Band     | Channel | Result | Verdict |
|----------|---------|--------|---------|
| GSM850   | 128     | PASS   | PASS    |
| GSM850   | 190     | PASS   | PASS    |
| GSM850   | 251     | PASS   | PASS    |
| GPRS850  | 128     | PASS   | PASS    |
| GPRS850  | 190     | PASS   | PASS    |
| GPRS850  | 251     | PASS   | PASS    |
| EGPRS850 | 128     | PASS   | PASS    |
| EGPRS850 | 190     | PASS   | PASS    |
| EGPRS850 | 251     | PASS   | PASS    |

## Test Graphs

