



# Appendix B

## GSM 850 & 1900



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## 1. Effective (Isotropic) Radiated Power Output Data

### 1.1. Test Result

| 2. BAND  | Channel | Slot | Conducted Power (dBm) | ERP (dBm) | Limit(dBm) | Verdict |
|----------|---------|------|-----------------------|-----------|------------|---------|
| GSM850   | 128     | ---  | 32.96                 | 30.21     | 38.45      | PASS    |
| GSM850   | 190     | ---  | 32.75                 | 30.00     | 38.45      | PASS    |
| GSM850   | 251     | ---  | 32.77                 | 30.02     | 38.45      | PASS    |
| EGPRS850 | 128     | 1    | 27.19                 | 24.44     | 38.45      | PASS    |
| EGPRS850 | 128     | 2    | 26.16                 | 23.41     | 38.45      | PASS    |
| EGPRS850 | 128     | 3    | 24.14                 | 21.39     | 38.45      | PASS    |
| EGPRS850 | 128     | 4    | 23.14                 | 20.39     | 38.45      | PASS    |
| EGPRS850 | 190     | 1    | 27.32                 | 24.57     | 38.45      | PASS    |
| EGPRS850 | 190     | 2    | 26.25                 | 23.50     | 38.45      | PASS    |
| EGPRS850 | 190     | 3    | 24.22                 | 21.47     | 38.45      | PASS    |
| EGPRS850 | 190     | 4    | 23.27                 | 20.52     | 38.45      | PASS    |
| EGPRS850 | 251     | 1    | 27.31                 | 24.56     | 38.45      | PASS    |
| EGPRS850 | 251     | 2    | 26.22                 | 23.47     | 38.45      | PASS    |
| EGPRS850 | 251     | 3    | 24.18                 | 21.43     | 38.45      | PASS    |
| EGPRS850 | 251     | 4    | 23.21                 | 20.46     | 38.45      | PASS    |

| BAND      | Channel | Slot | Conducted Power (dBm) | EIRP (dBm) | Limit(dBm) | Verdict |
|-----------|---------|------|-----------------------|------------|------------|---------|
| GSM1900   | 512     | ---  | 30.24                 | 29.54      | 33.00      | PASS    |
| GSM1900   | 661     | ---  | 30.12                 | 29.42      | 33.00      | PASS    |
| GSM1900   | 810     | ---  | 30.22                 | 29.52      | 33.00      | PASS    |
| EGPRS1900 | 512     | 1    | 26.38                 | 25.68      | 33.00      | PASS    |
| EGPRS1900 | 512     | 2    | 24.66                 | 23.96      | 33.00      | PASS    |
| EGPRS1900 | 512     | 3    | 22.13                 | 21.43      | 33.00      | PASS    |
| EGPRS1900 | 512     | 4    | 20.63                 | 19.93      | 33.00      | PASS    |
| EGPRS1900 | 661     | 1    | 26.28                 | 25.58      | 33.00      | PASS    |
| EGPRS1900 | 661     | 2    | 24.49                 | 23.79      | 33.00      | PASS    |
| EGPRS1900 | 661     | 3    | 22.02                 | 21.32      | 33.00      | PASS    |
| EGPRS1900 | 661     | 4    | 20.47                 | 19.77      | 33.00      | PASS    |
| EGPRS1900 | 810     | 1    | 26.65                 | 25.95      | 33.00      | PASS    |
| EGPRS1900 | 810     | 2    | 24.81                 | 24.11      | 33.00      | PASS    |
| EGPRS1900 | 810     | 3    | 22.44                 | 21.74      | 33.00      | PASS    |
| EGPRS1900 | 810     | 4    | 20.79                 | 20.09      | 33.00      | PASS    |



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Remark:

a: For getting the EIRP (Efficient Isotropic Radiated Power), the following formula should be taken to calculate it,

$$ERP [dBm] = \text{Conducted Power [dBm]} + \text{Gain [dBd]}$$

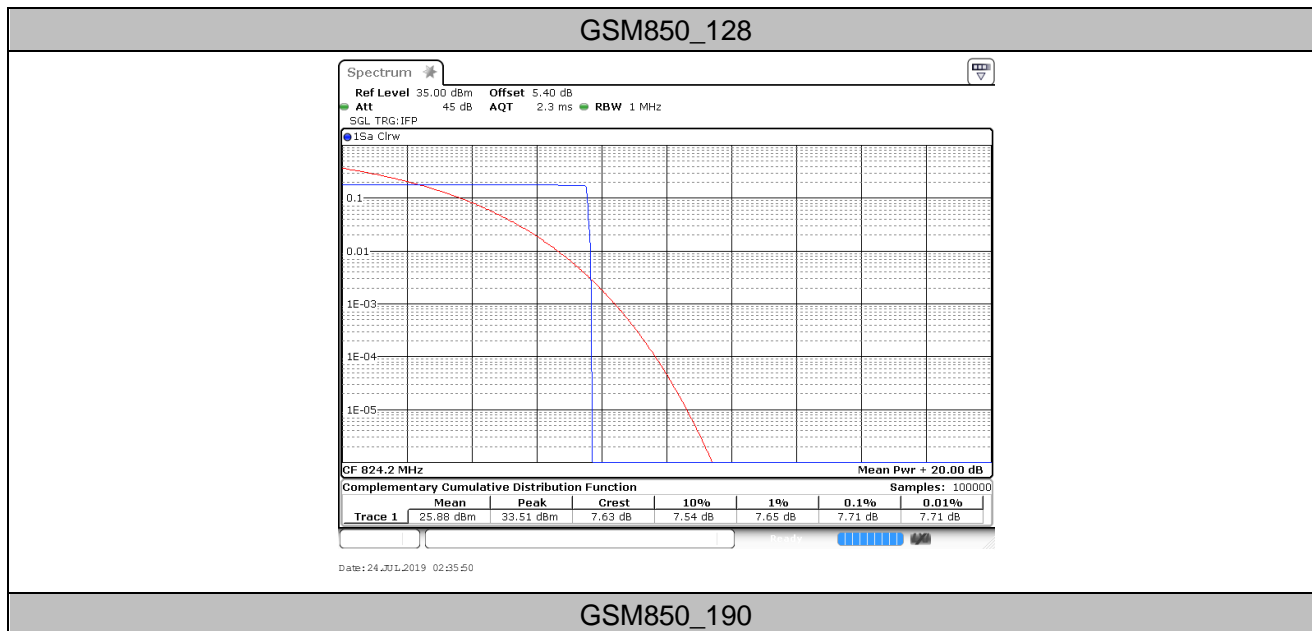
$$EIRP [dBm] = \text{Conducted Power [dBm]} + \text{Gain [dBi]}$$

## 2. Peak-to-Average Ratio

### 2.1. Test Result

| BAND      | Channel | Peak-to-Average Ratio(dB) | Limit(dB) | Verdict |
|-----------|---------|---------------------------|-----------|---------|
| GSM850    | 128     | 7.71                      | 13        | PASS    |
| GSM850    | 190     | 7.68                      | 13        | PASS    |
| GSM850    | 251     | 7.62                      | 13        | PASS    |
| EGPRS850  | 128     | 10.72                     | 13        | PASS    |
| EGPRS850  | 190     | 10.26                     | 13        | PASS    |
| EGPRS850  | 251     | 10.23                     | 13        | PASS    |
| GSM1900   | 512     | 7.68                      | 13        | PASS    |
| GSM1900   | 661     | 7.68                      | 13        | PASS    |
| GSM1900   | 810     | 7.68                      | 13        | PASS    |
| EGPRS1900 | 512     | 10.58                     | 13        | PASS    |
| EGPRS1900 | 661     | 11.22                     | 13        | PASS    |
| EGPRS1900 | 810     | 10.52                     | 13        | PASS    |

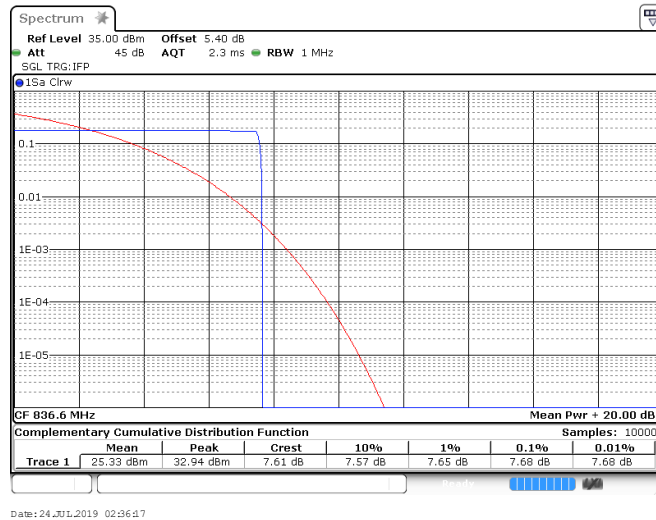
### 2.2. Part II - Test Plots



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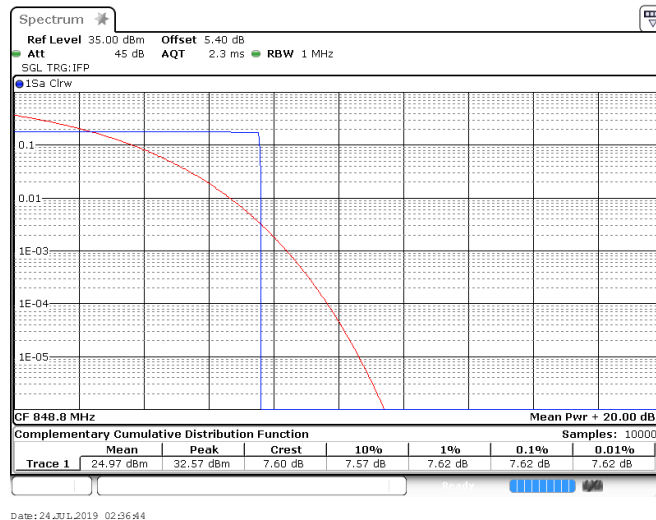
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Date: 24.JUL.2019 02:36:17

**GSM850\_251**



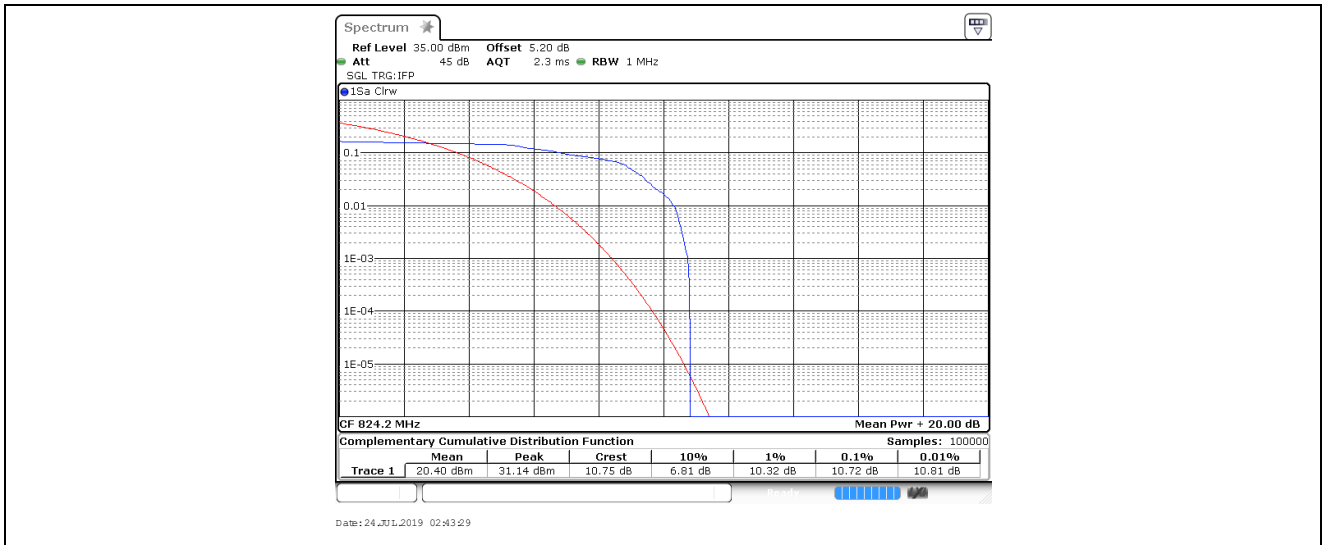
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**EGPRS850\_128**

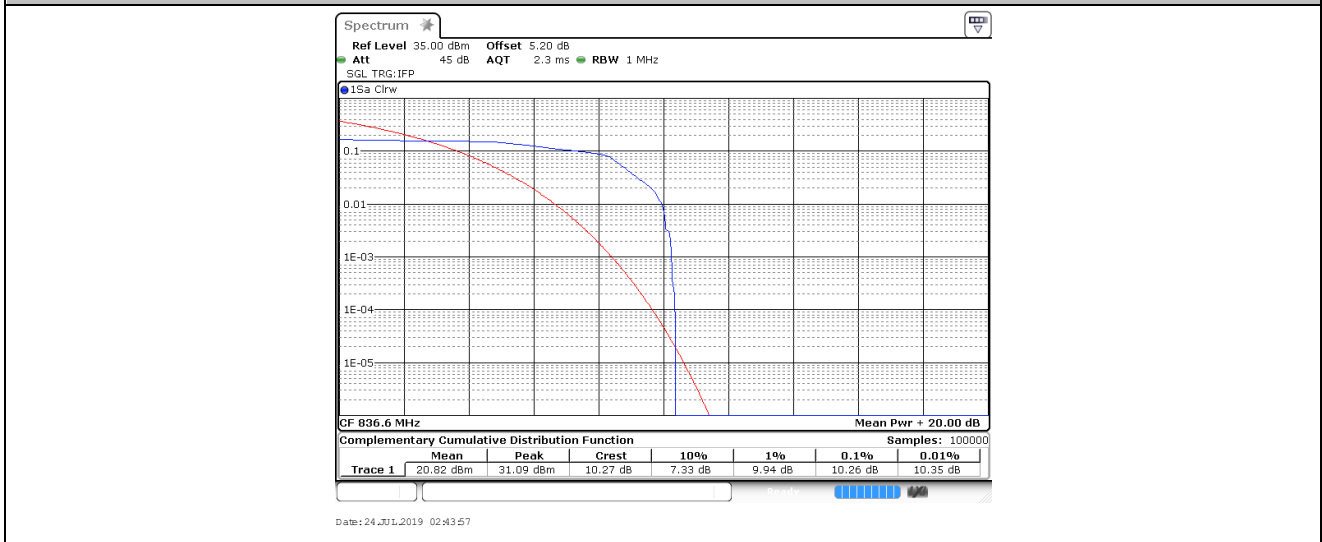


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**EGPRS850\_190**

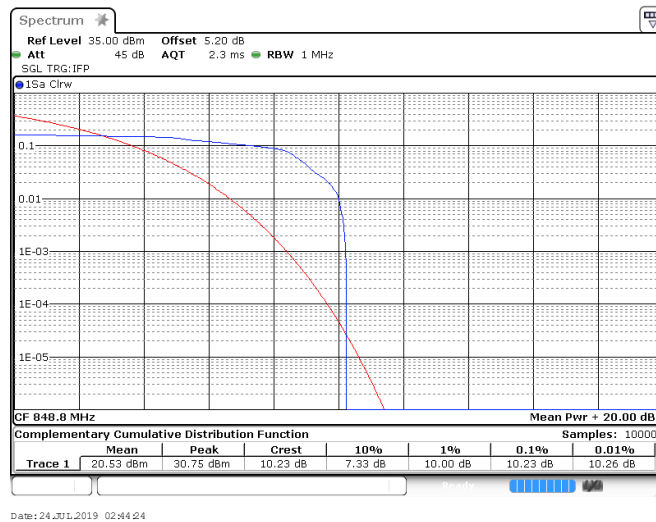


**EGPRS850\_251**

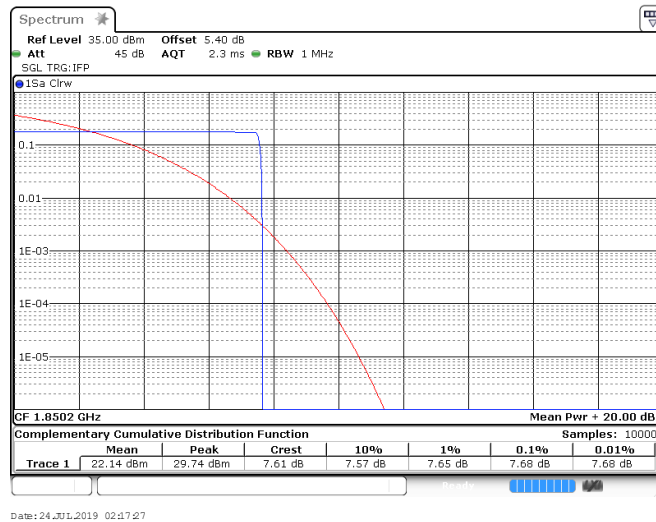


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GSM1900\_512

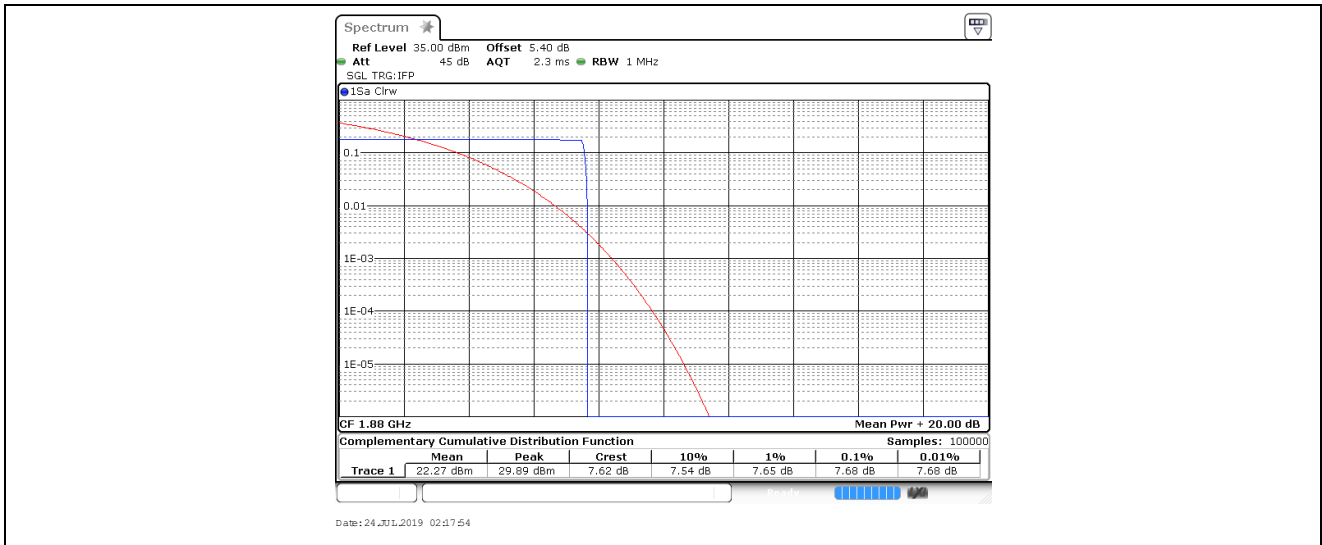


GSM1900\_661

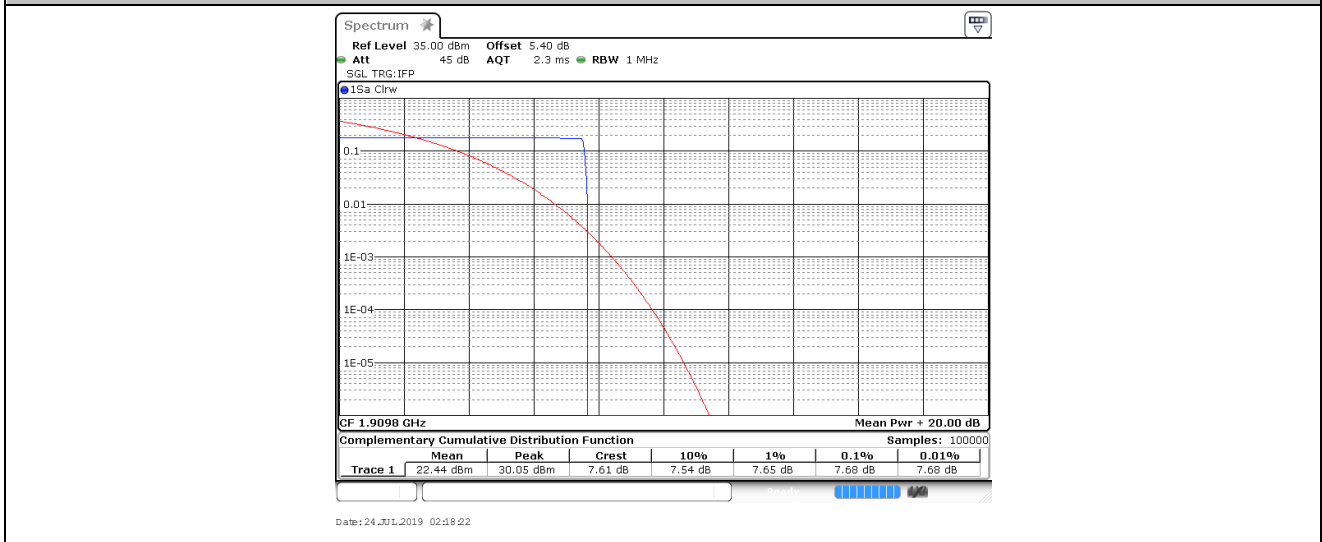


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**GSM1900\_810**

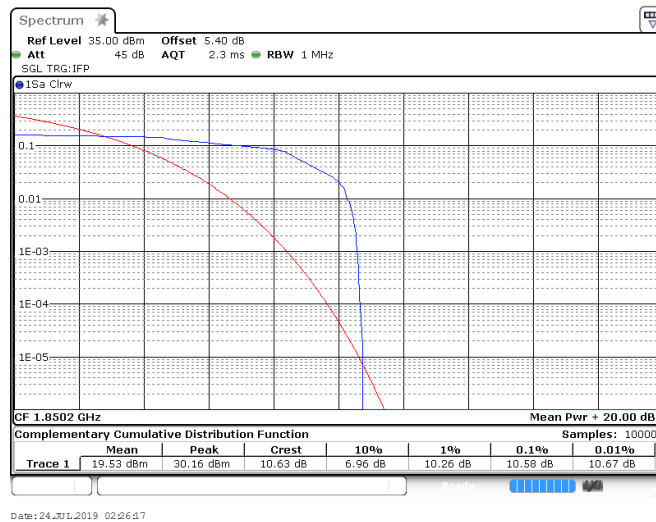


**EGPRS1900\_512**

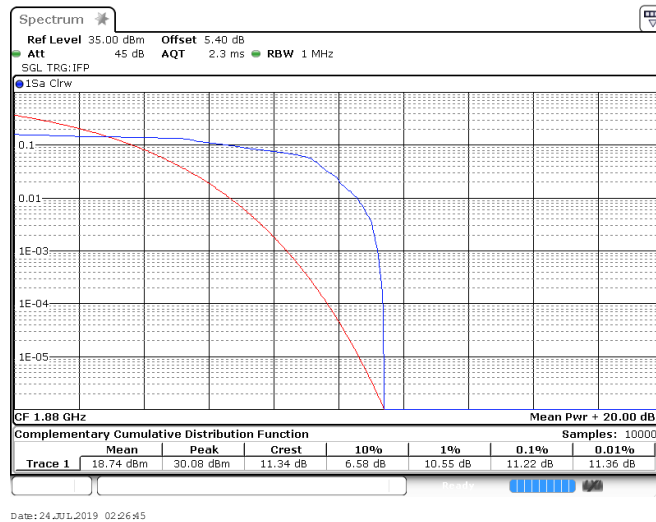


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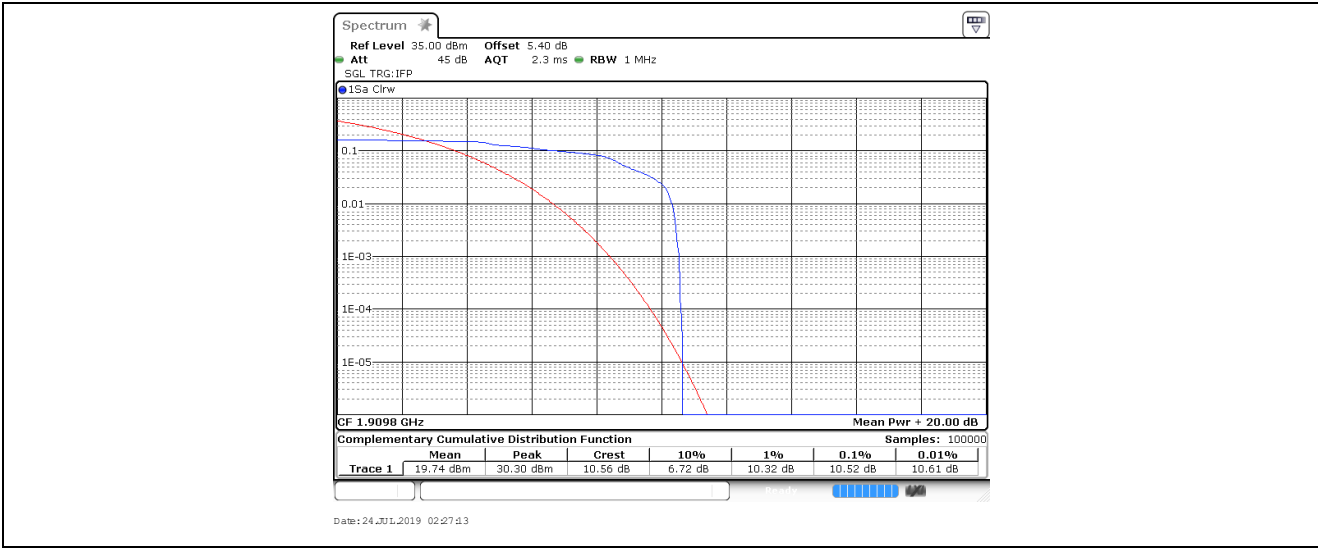


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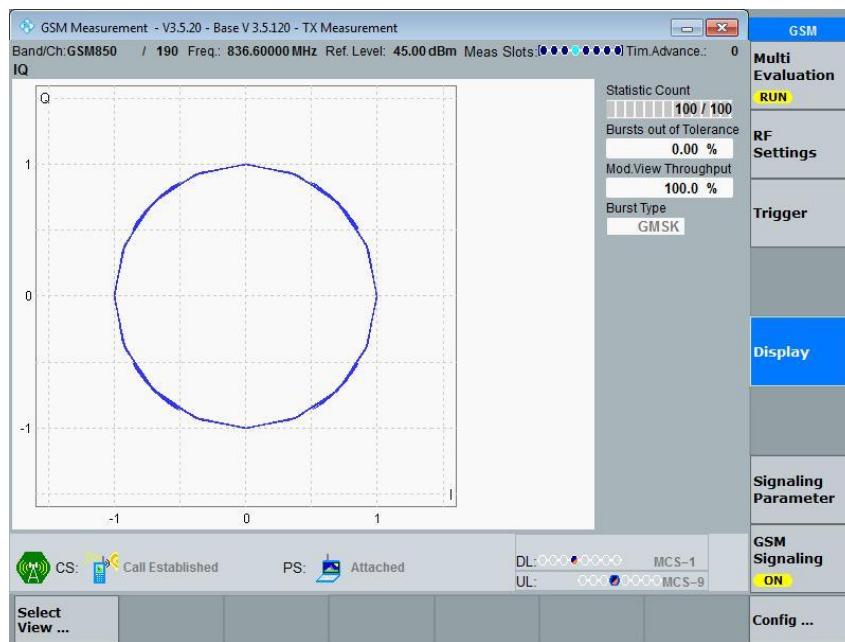
### 3. Modulation Characteristics

#### 3.1. For GSM

##### 3.1.1. Test BAND = GSM 850

##### 3.1.1.1. Test Mode = GSM/TM1

##### 3.1.1.1.1. Test Channel = MCH

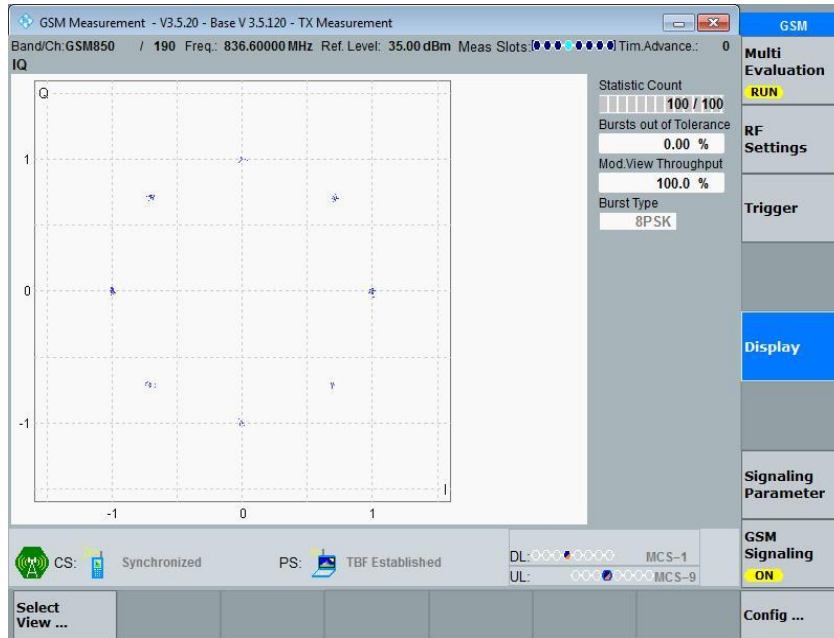


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**3.1.1.2. Test Mode = GSM/TM2**

**3.1.1.2.1. Test Channel = MCH**



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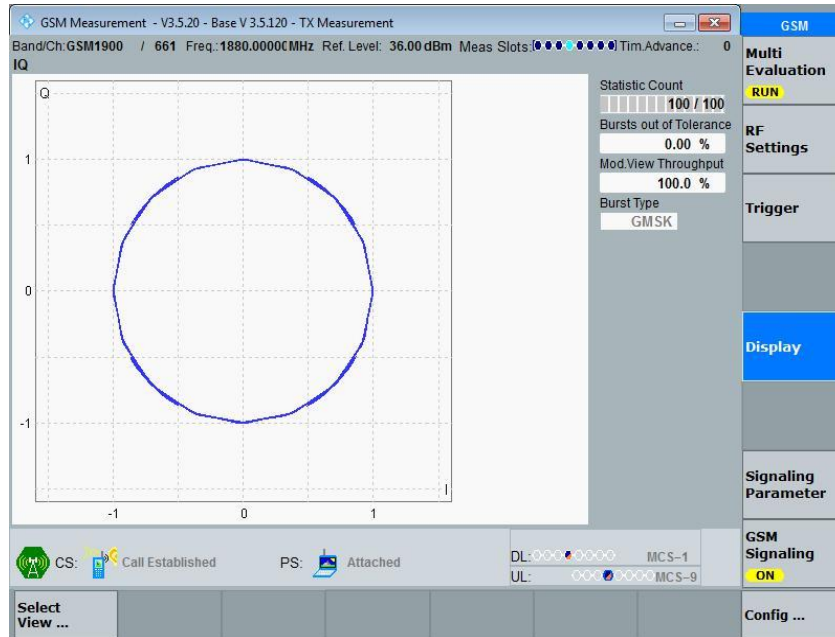
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**3.1.2. Test BAND = GSM 1900**

**3.1.2.1. Test Mode = GSM/TM1**

**3.1.2.1.1. Test Channel = MCH**

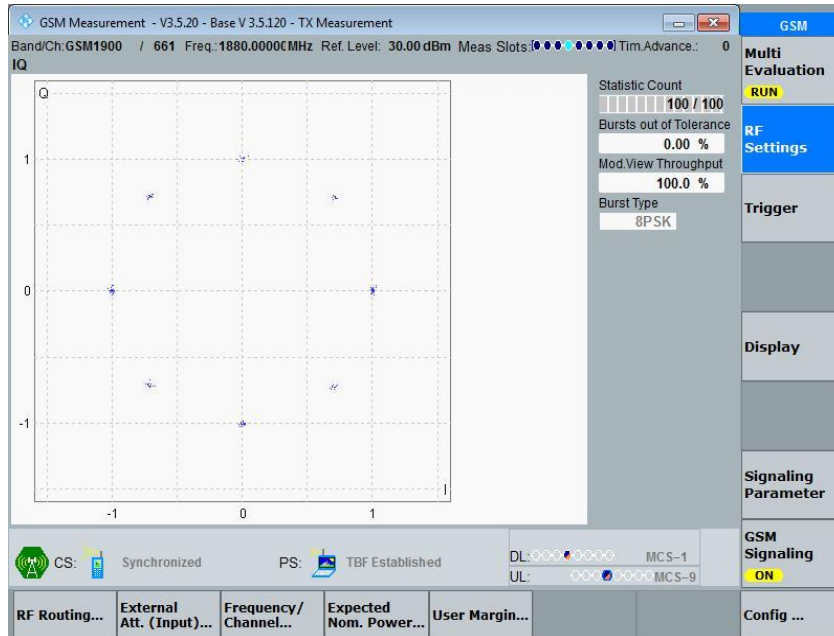


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**3.1.2.2. Test Mode = GSM/TM2**

**3.1.2.2.1. Test Channel = MCH**



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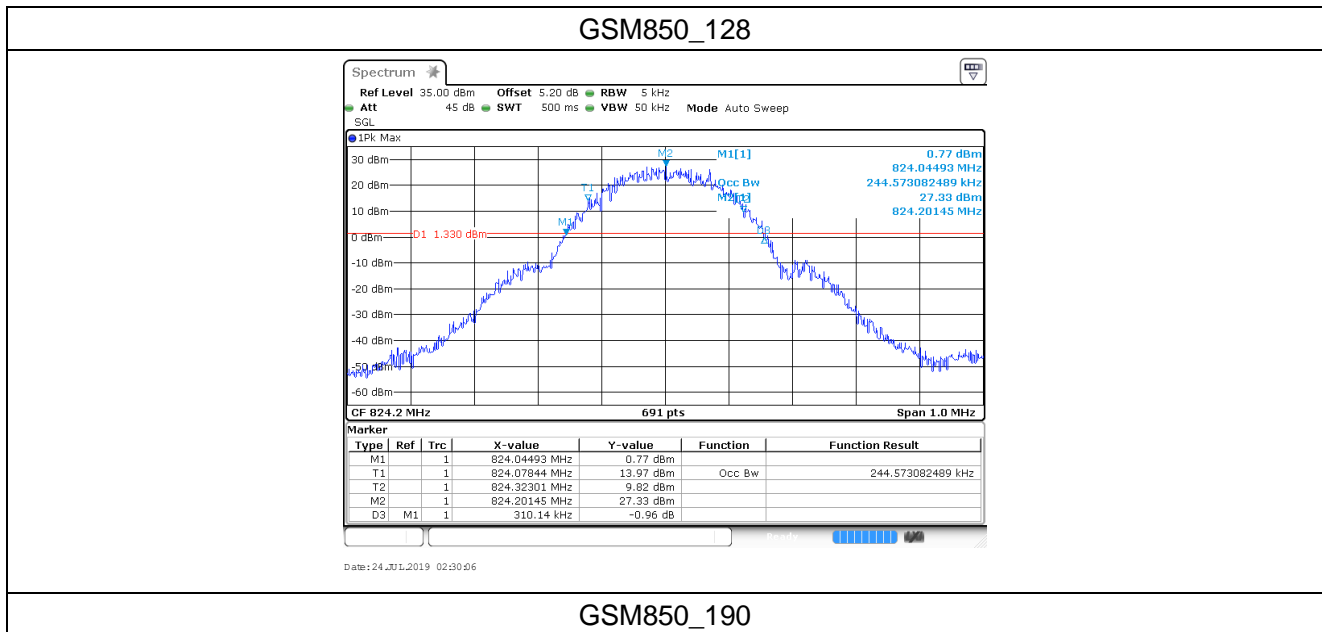
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中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

## 4. 26dB Bandwidth and Occupied Bandwidth

### 4.1. Test Result

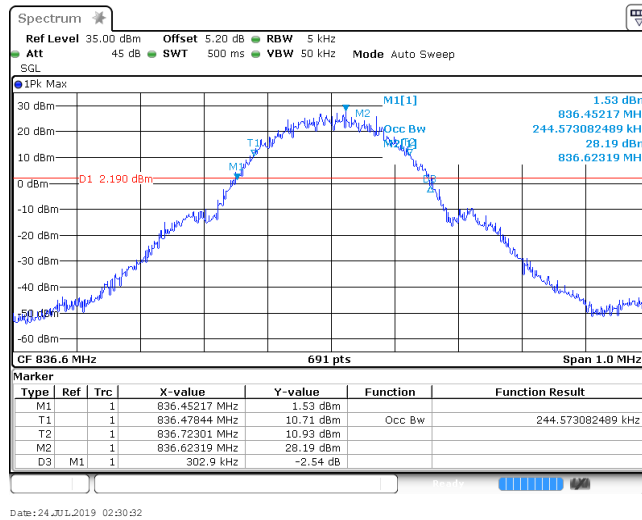
| BAND      | Channel | Occupied Bandwidth (kHz) | 26dB Bandwidth (kHz) | Limit(kHz) | Verdict |
|-----------|---------|--------------------------|----------------------|------------|---------|
| GSM850    | 128     | 244.57                   | 310.14               | ---        | PASS    |
| GSM850    | 190     | 244.57                   | 302.90               | ---        | PASS    |
| GSM850    | 251     | 248.91                   | 315.94               | ---        | PASS    |
| EGPRS850  | 128     | 253.26                   | 311.59               | ---        | PASS    |
| EGPRS850  | 190     | 251.81                   | 302.90               | ---        | PASS    |
| EGPRS850  | 251     | 256.15                   | 305.80               | ---        | PASS    |
| GSM1900   | 512     | 246.02                   | 314.49               | ---        | PASS    |
| GSM1900   | 661     | 244.57                   | 307.25               | ---        | PASS    |
| GSM1900   | 810     | 246.02                   | 291.30               | ---        | PASS    |
| EGPRS1900 | 512     | 244.57                   | 308.70               | ---        | PASS    |
| EGPRS1900 | 661     | 244.57                   | 305.80               | ---        | PASS    |
| EGPRS1900 | 810     | 243.13                   | 302.90               | ---        | PASS    |

### 4.2. Test Plots



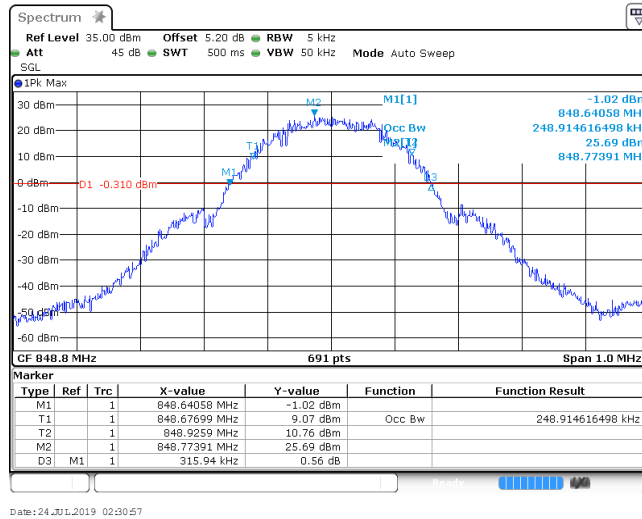
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Date: 24\_JUL\_2019 02:30:52

**GSM850\_251**

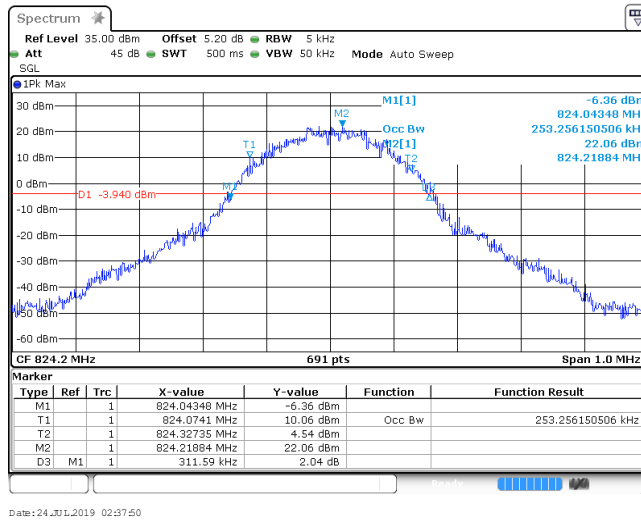


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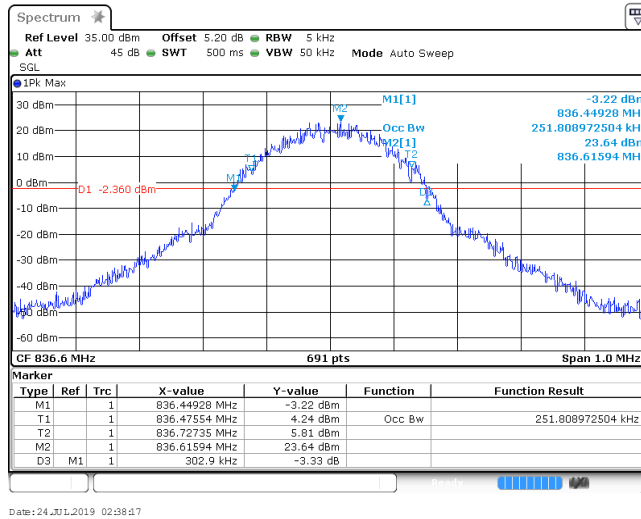
**EGPRS850\_128**



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**EGPRS850\_190**

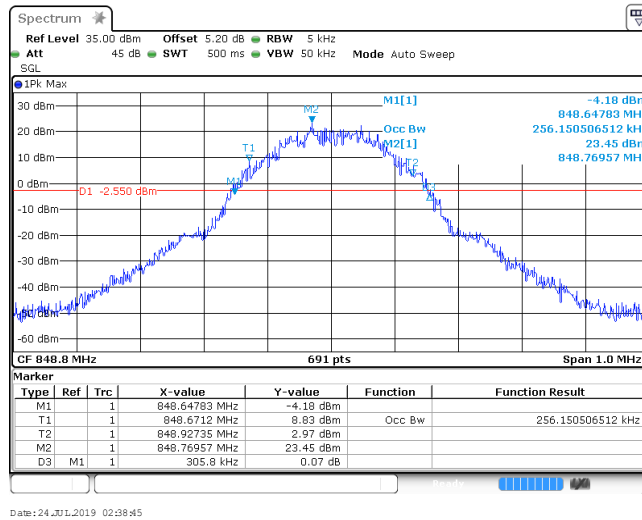


**EGPRS850\_251**



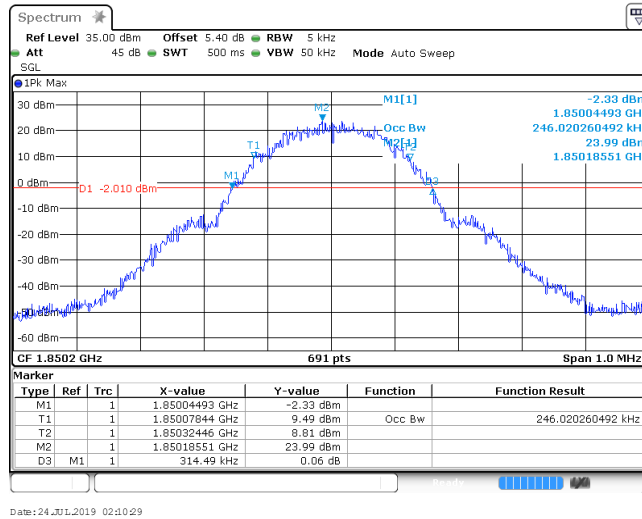
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Date: 24\_JUL\_2019 02:38:45

**GSM1900\_512**

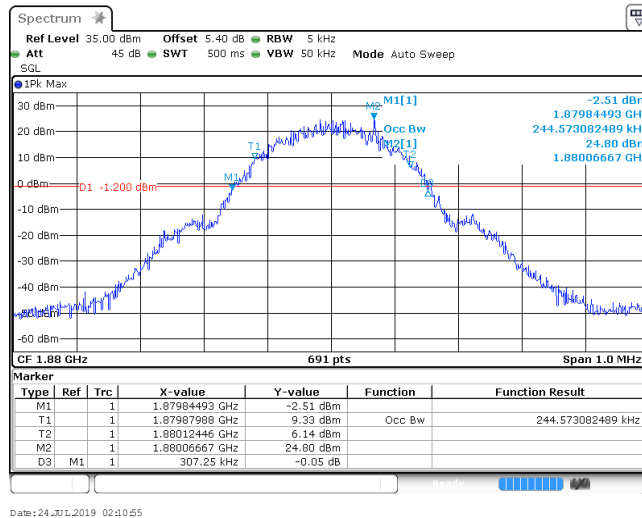


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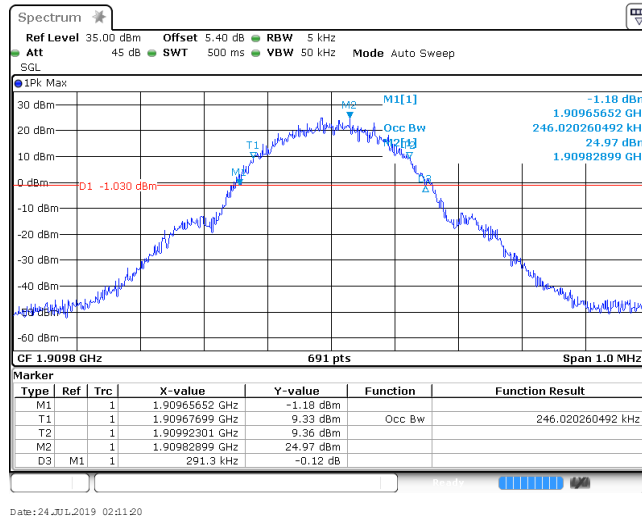
**GSM1900\_661**



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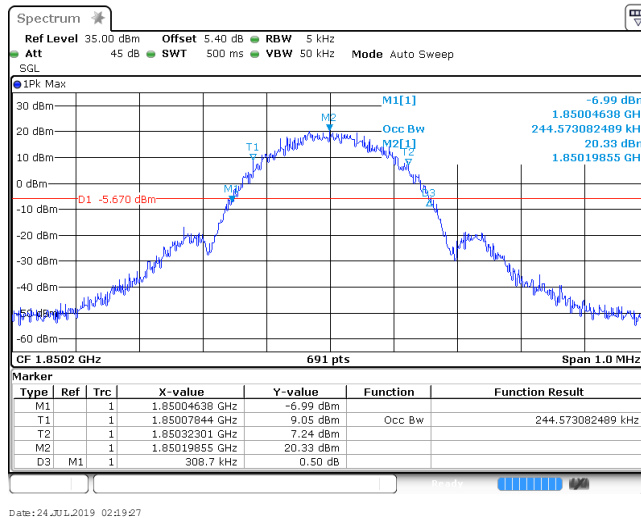
**GSM1900\_810**



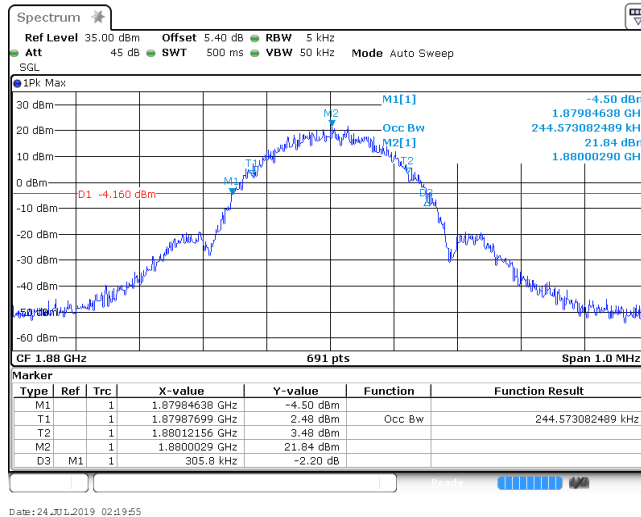
**EGPRS1900\_512**



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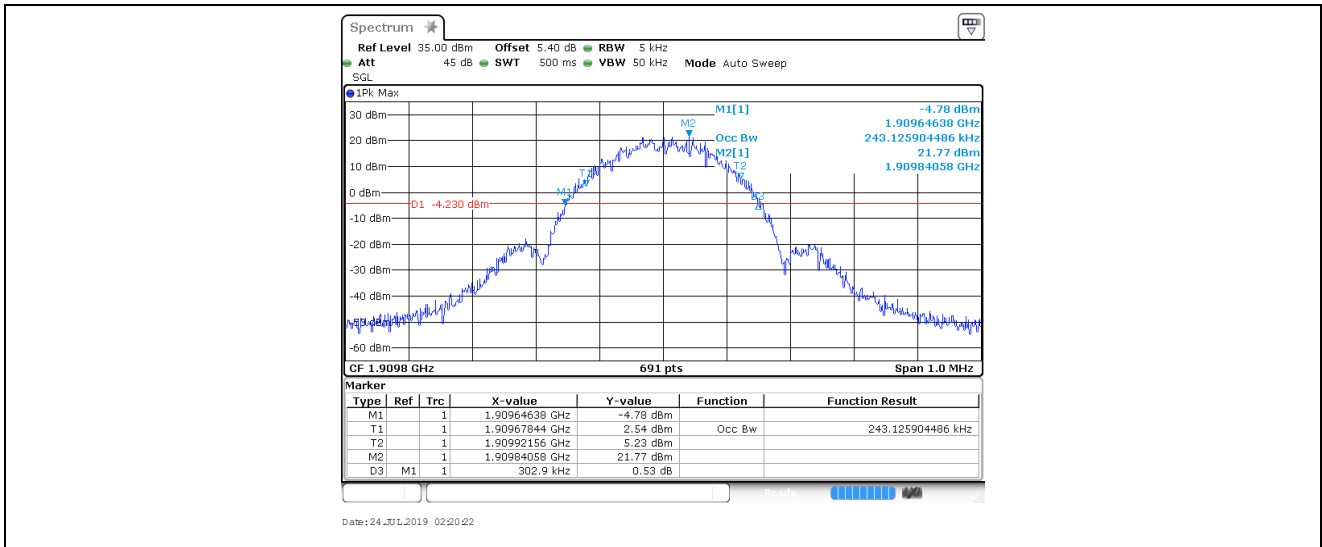
EGPRS1900\_661



EGPRS1900\_810



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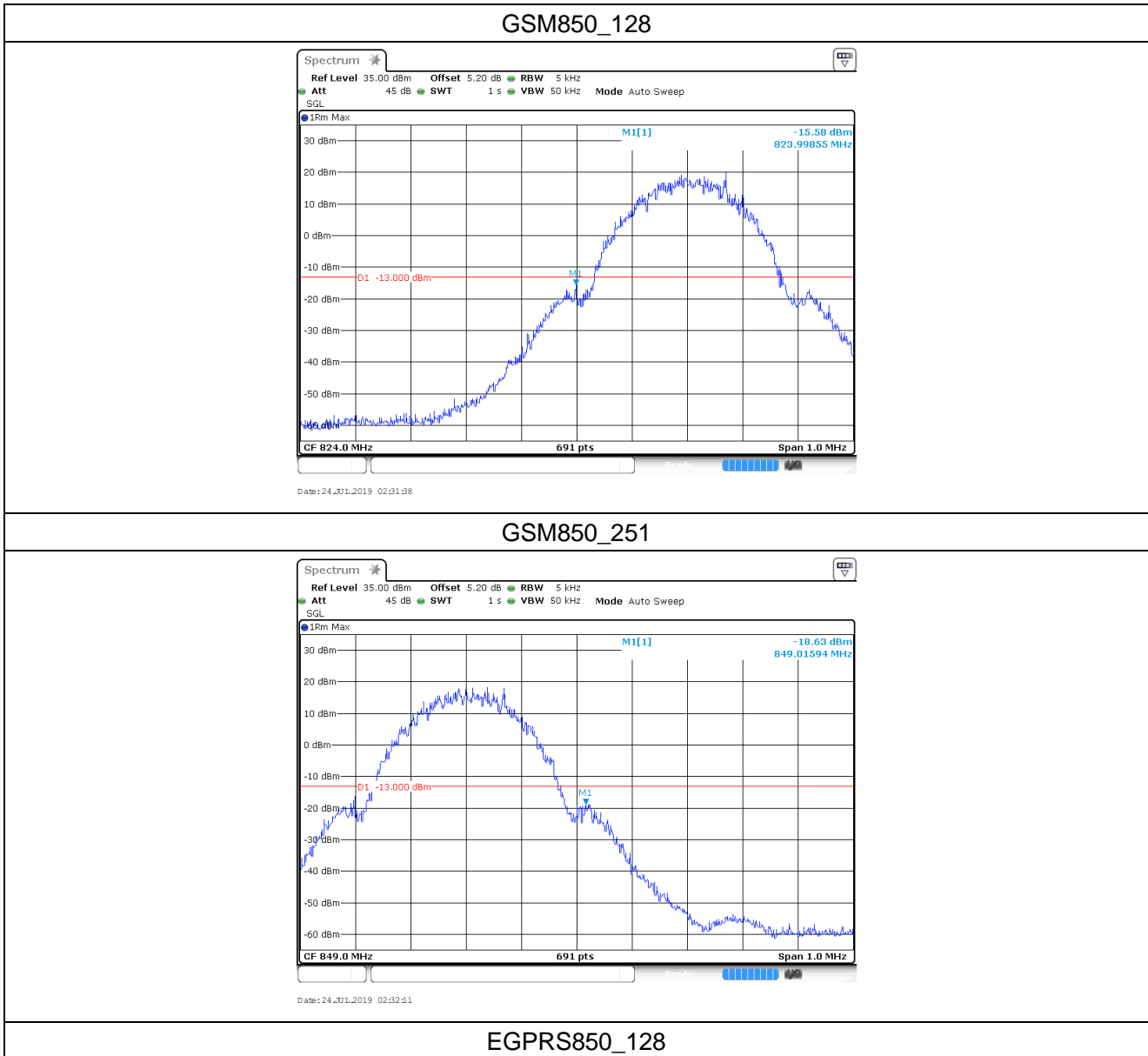


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## 5. Band Edge Compliance

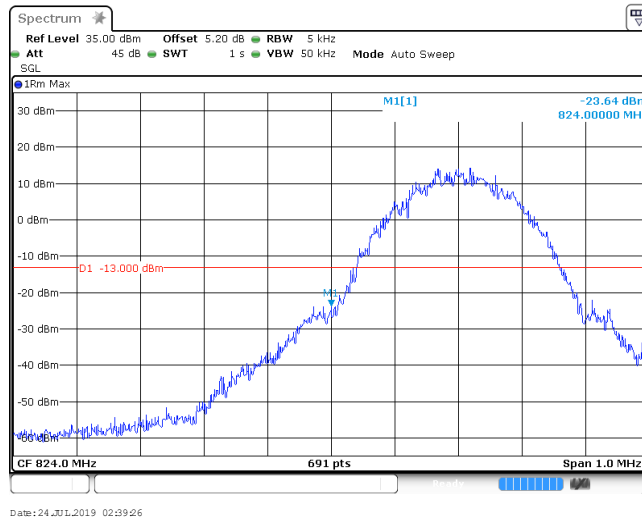
### 5.1. Test Plots



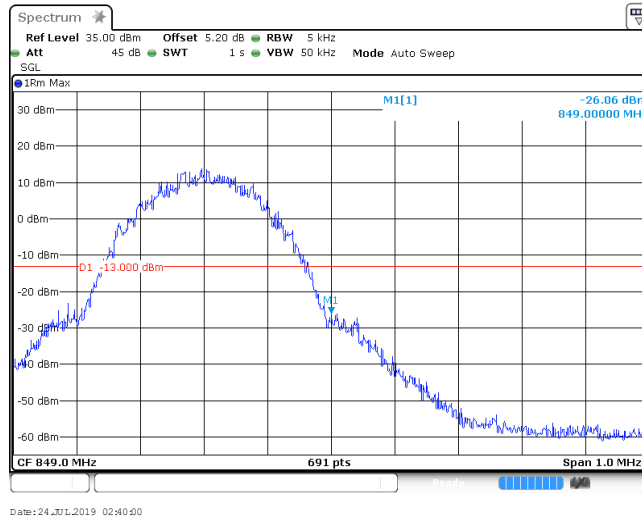
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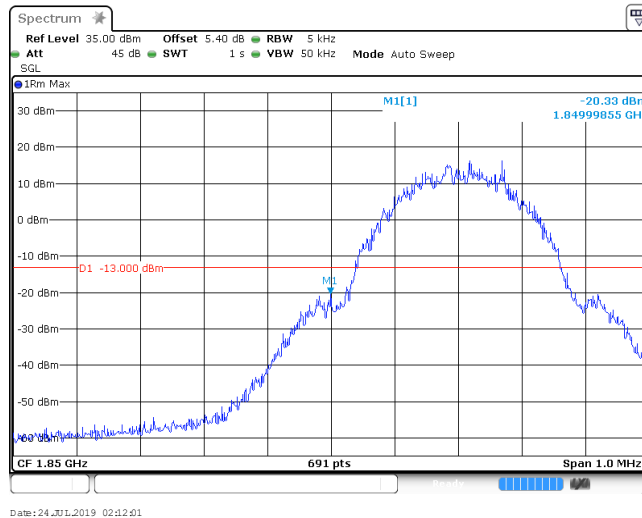


GSM1900\_512

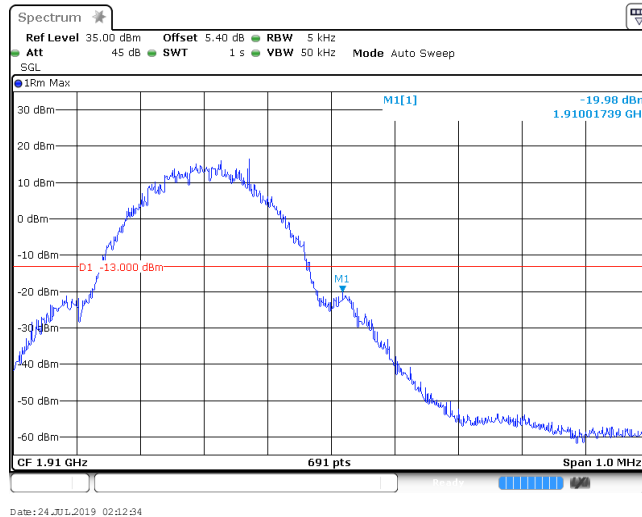


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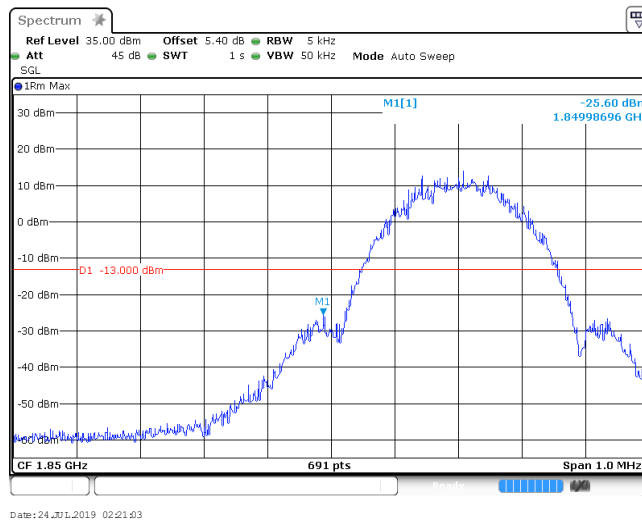


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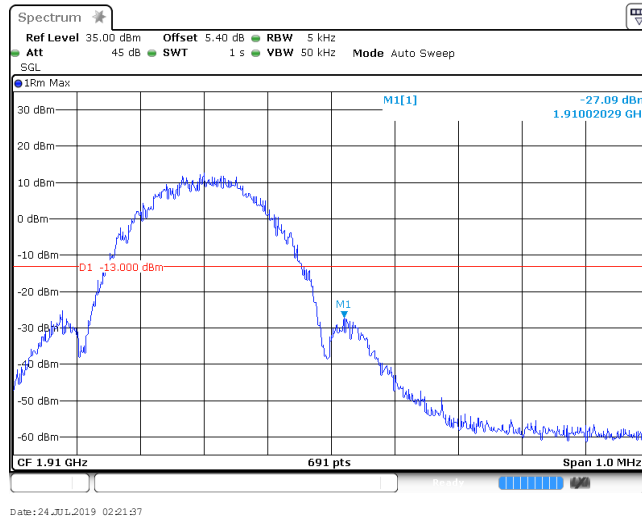


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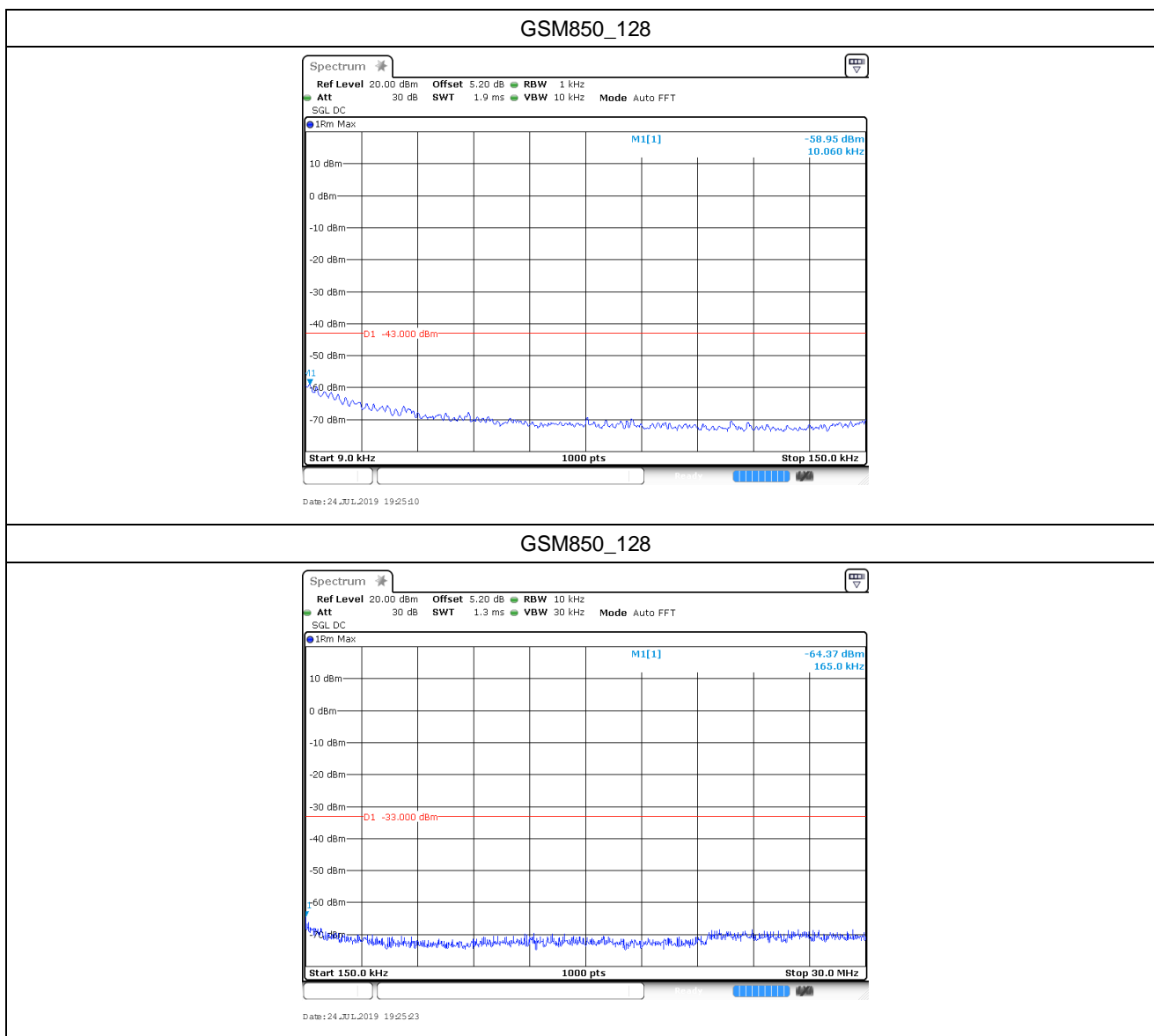
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## 6. Spurious Emission at Antenna Terminal

Remark1: For the averaged unwanted emissions measurements, the measurement points in each sweep is greater than twice the Span/RBW in order to ensure bin-to-bin spacing of  $< RBW/2$  so that narrowband signals are not lost between frequency bins. As to the present test item, the "Measurement Points =  $k * (\text{Span} / RBW)$ " with  $k$  between 4 and 5, which results in an acceptable level error of less than 0.5 dB.

Remark2: only the worst case data displayed in this report.

### 6.1. Test Plots

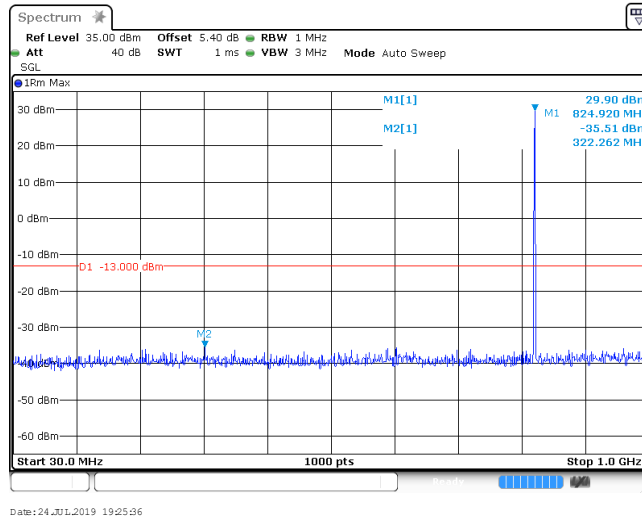


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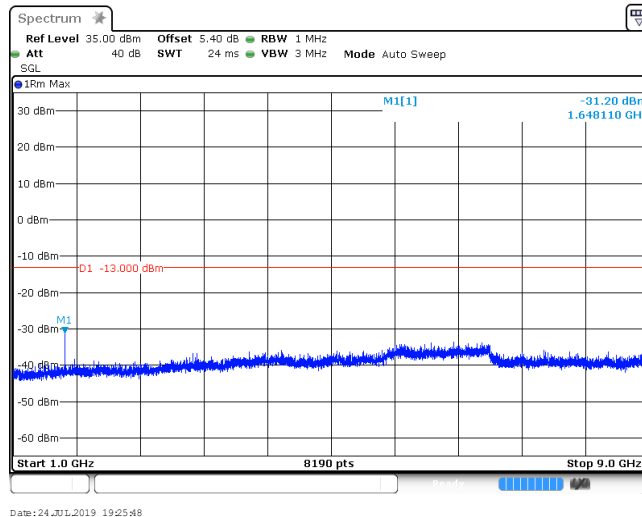
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GSM850\_128



GSM850\_128



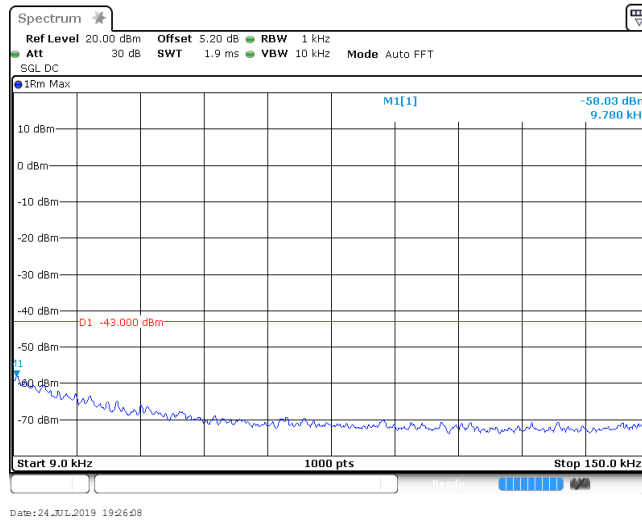
GSM850\_190



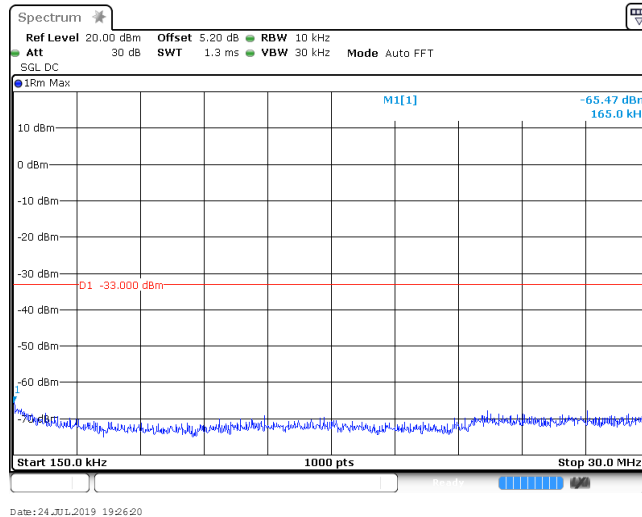
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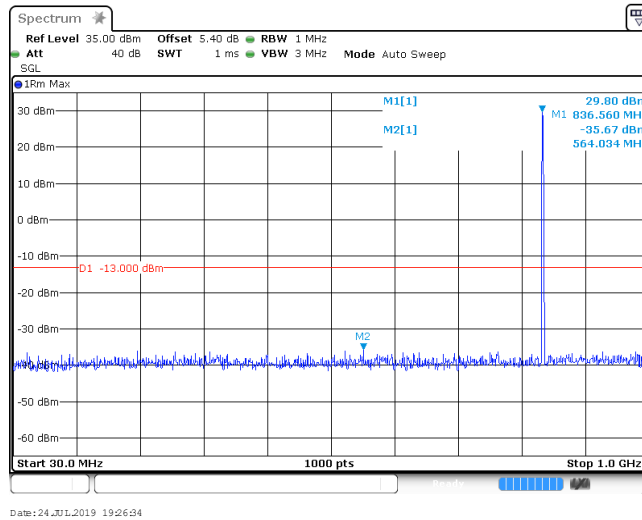


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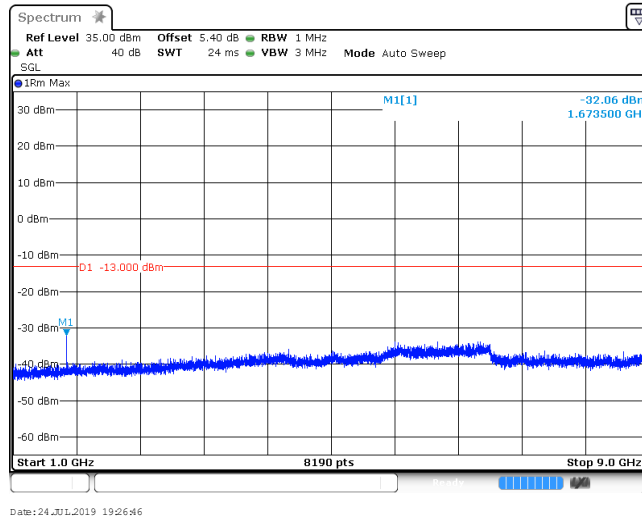


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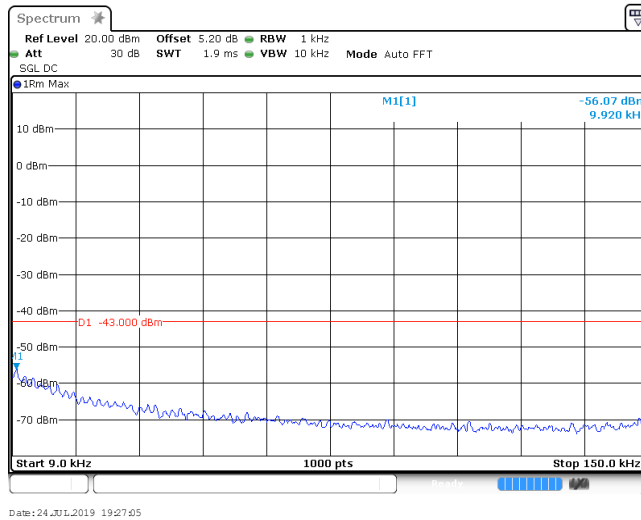
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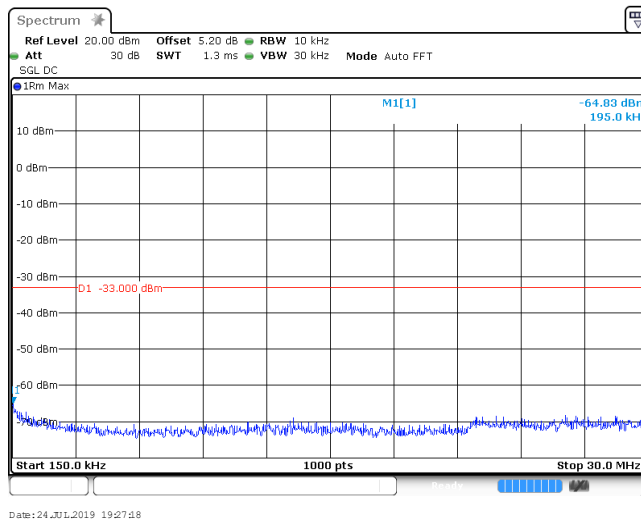
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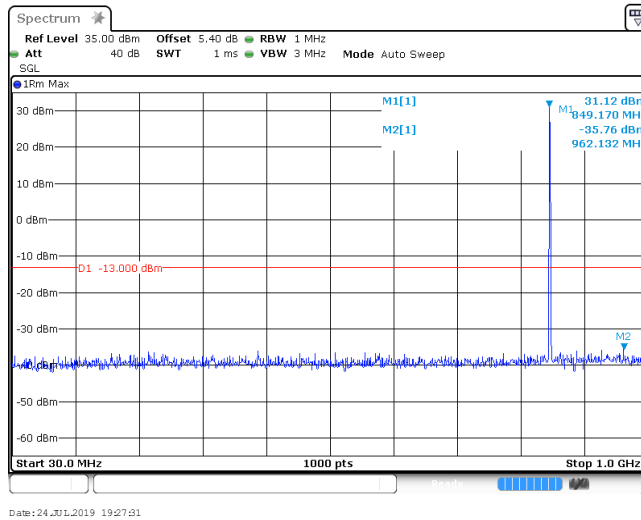


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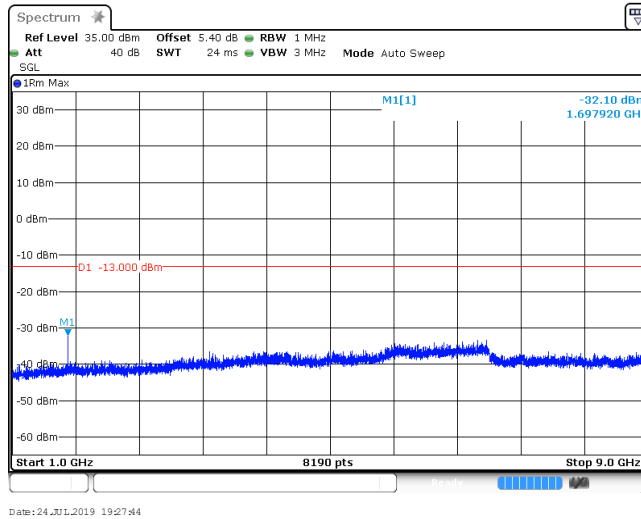


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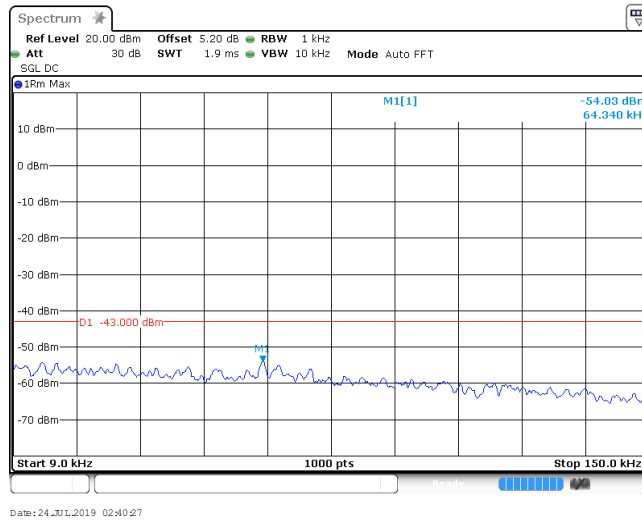


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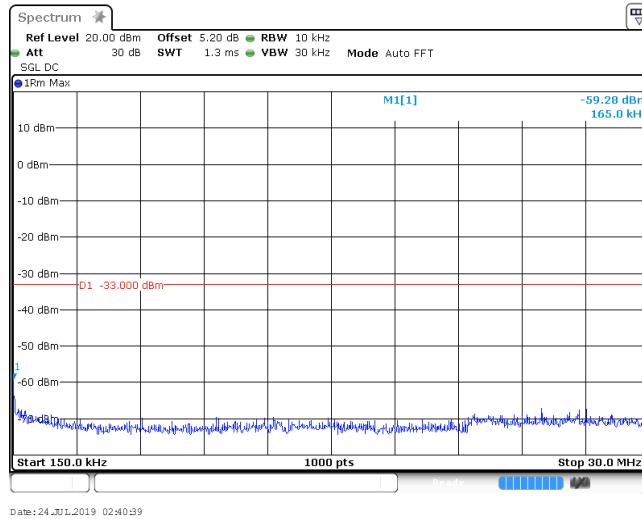


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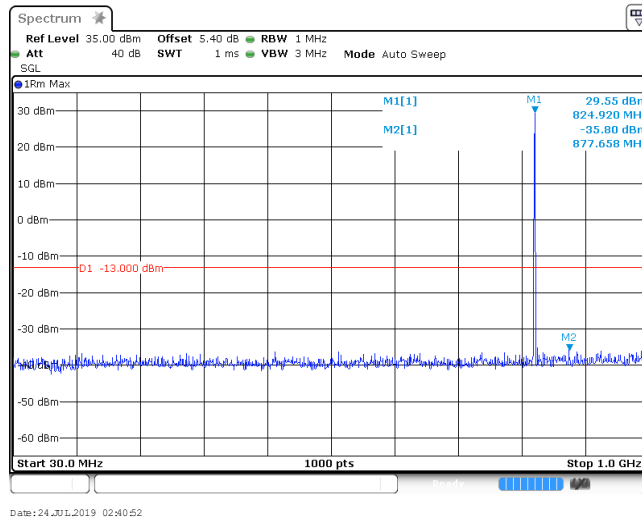
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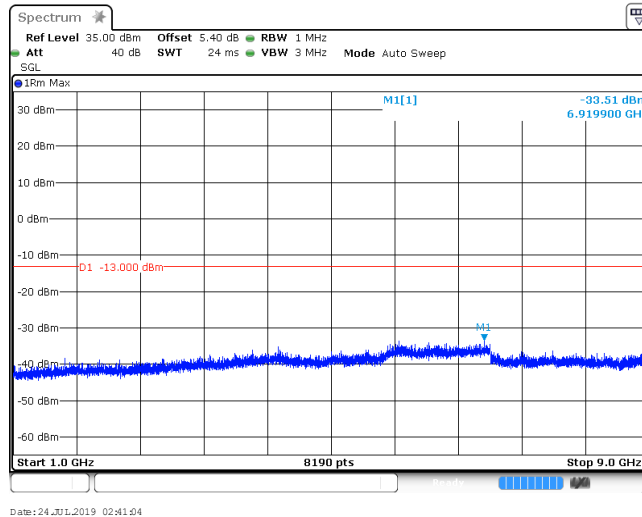
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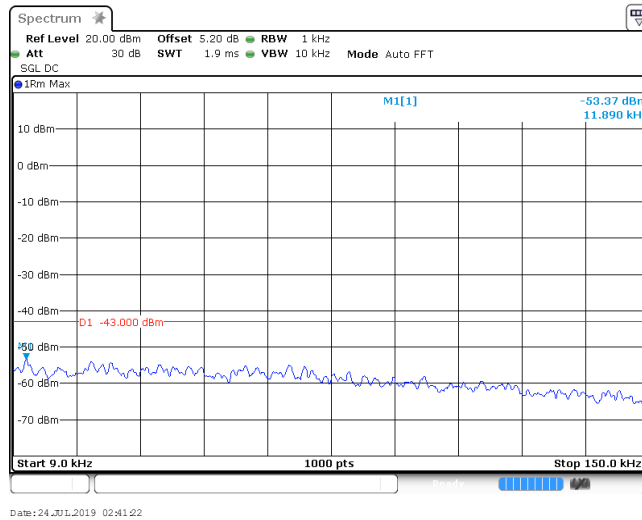


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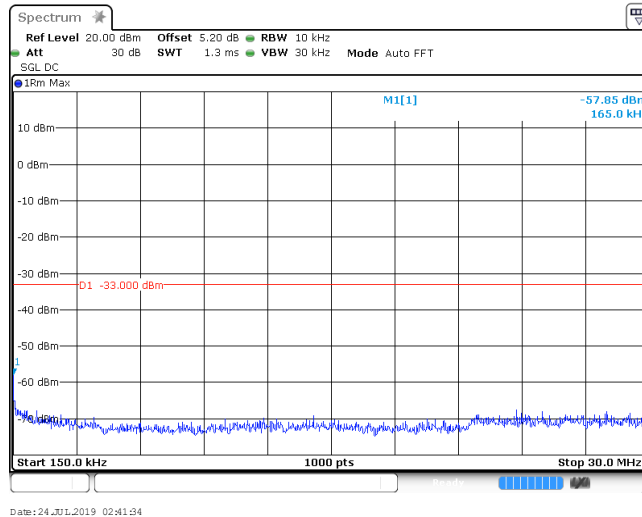


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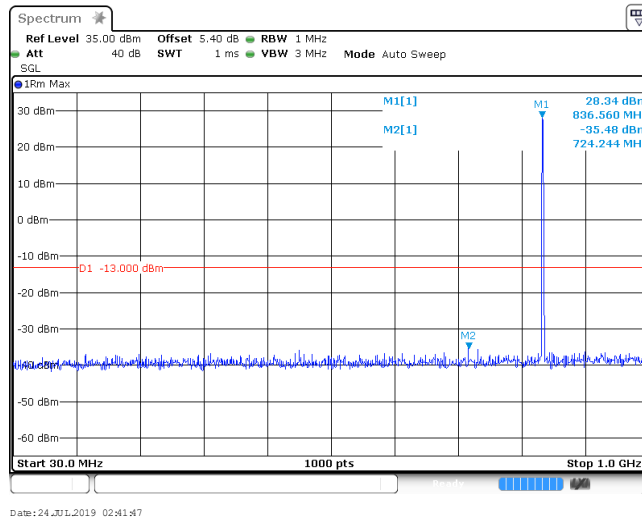


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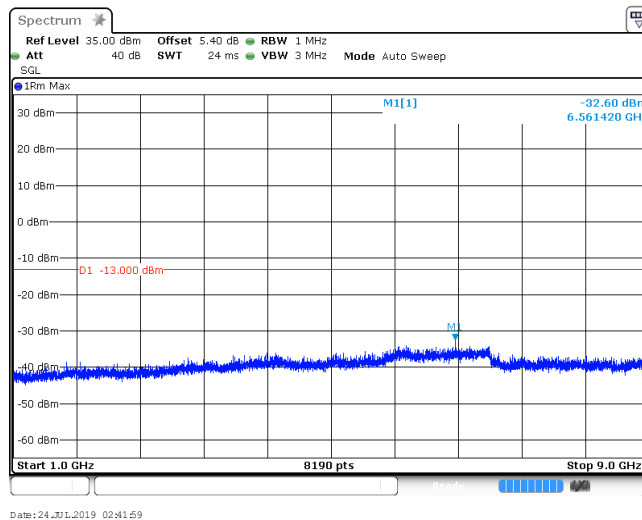


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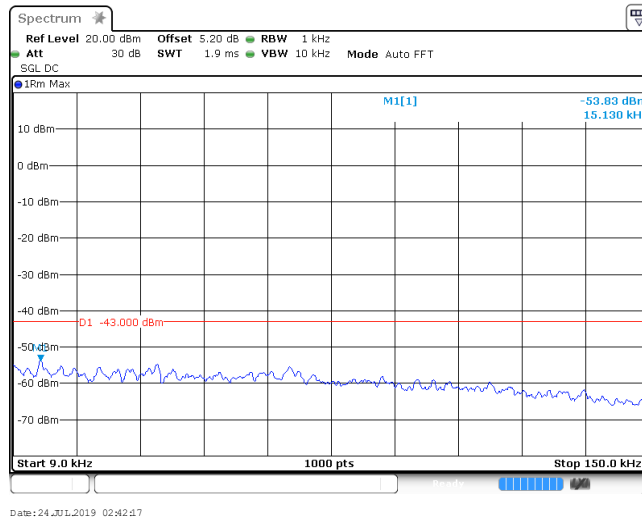
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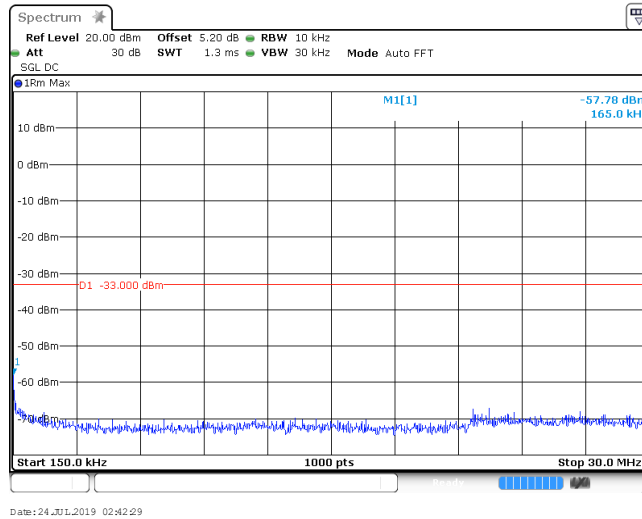
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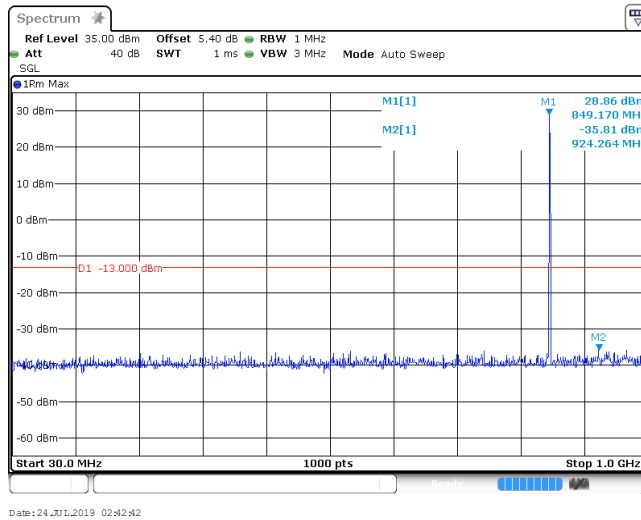


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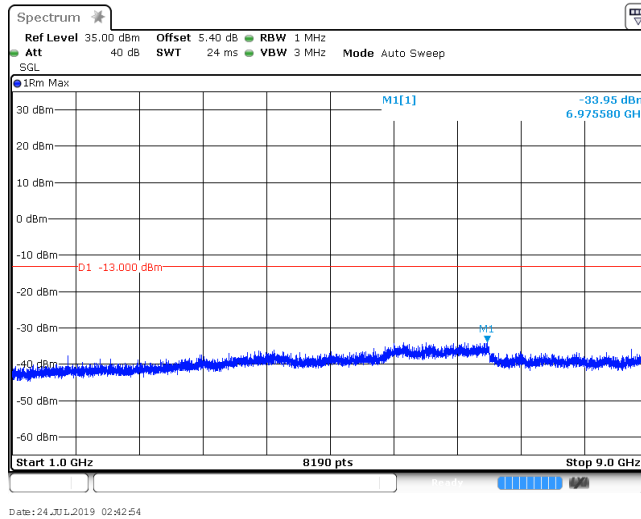


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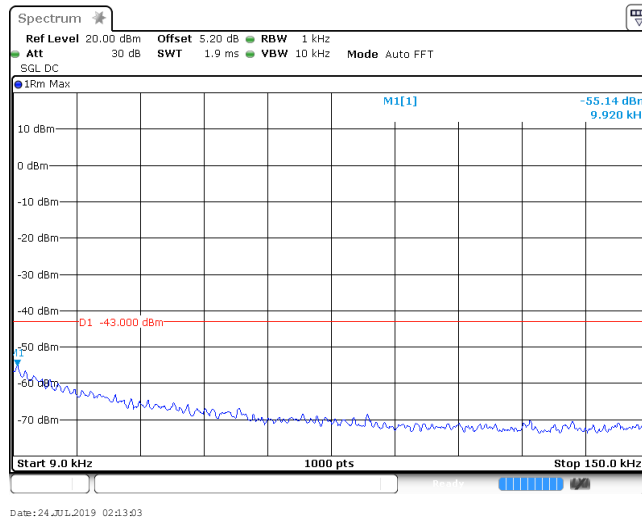
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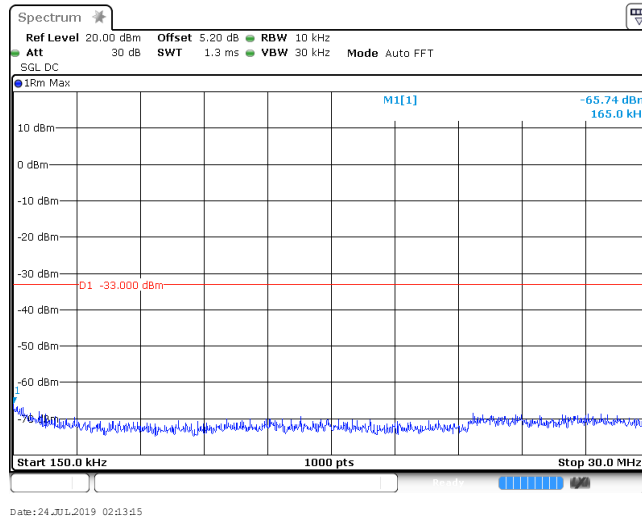
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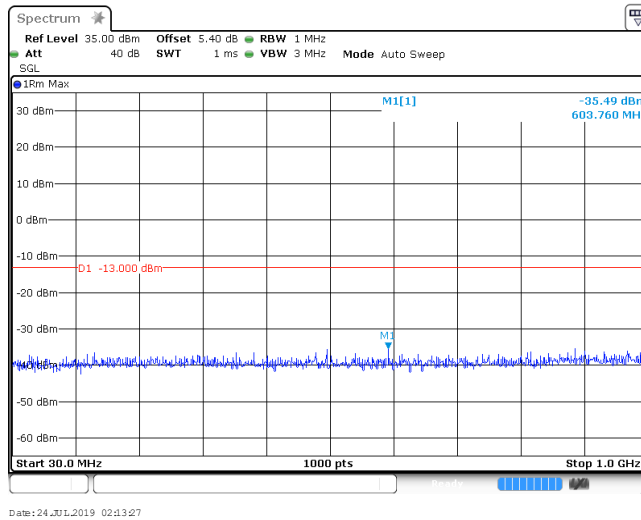


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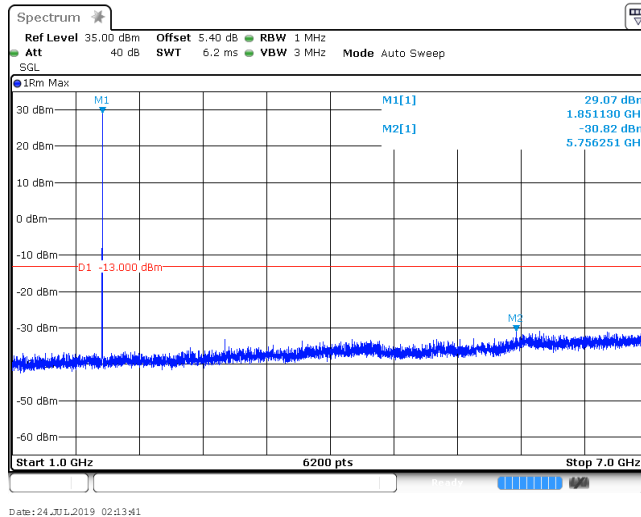


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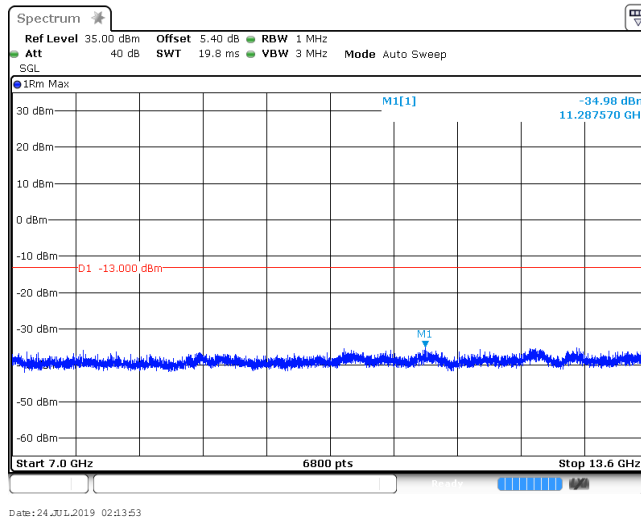


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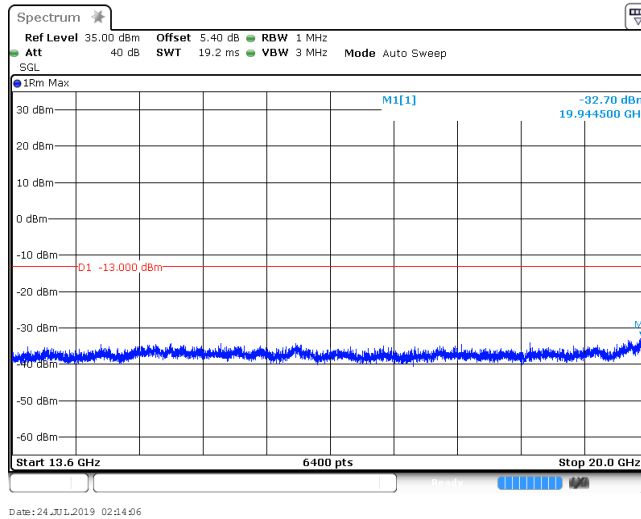
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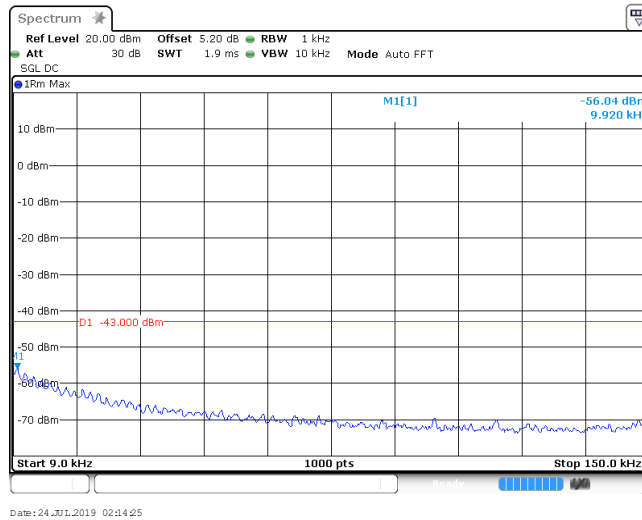


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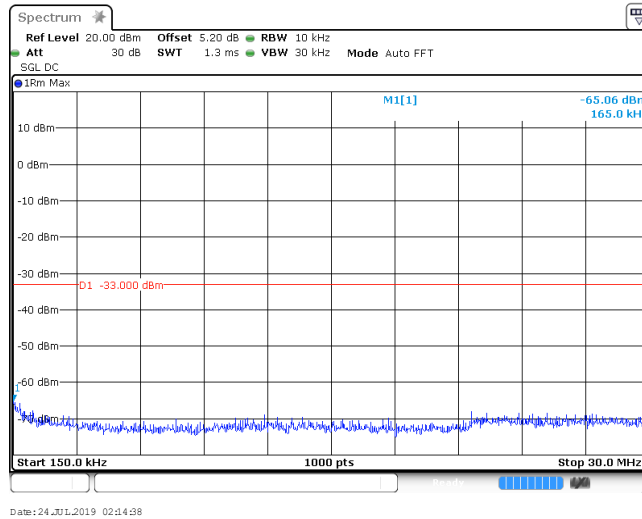
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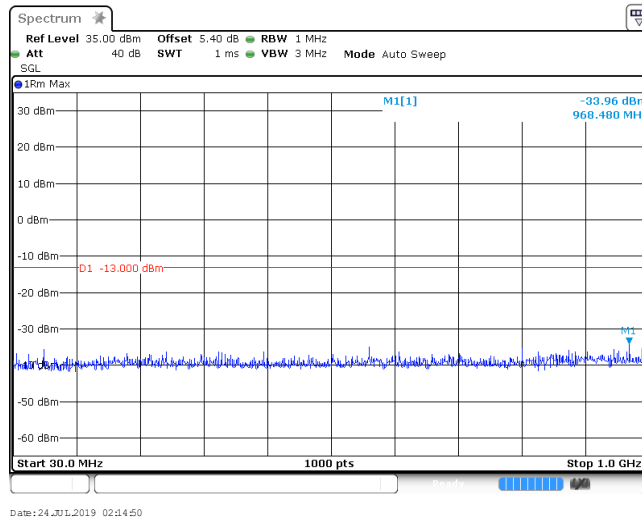


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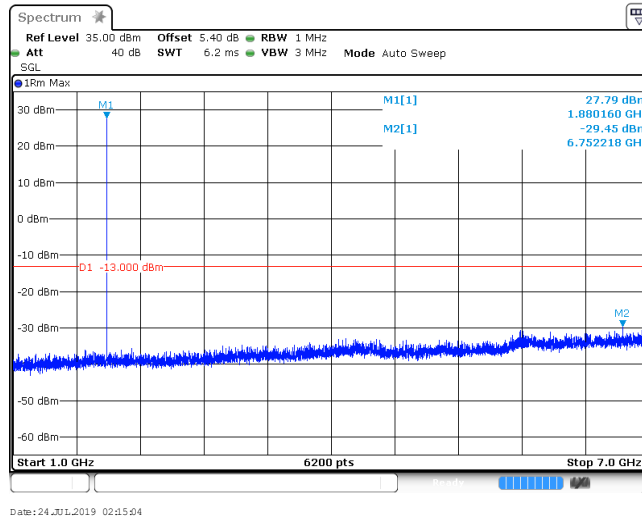


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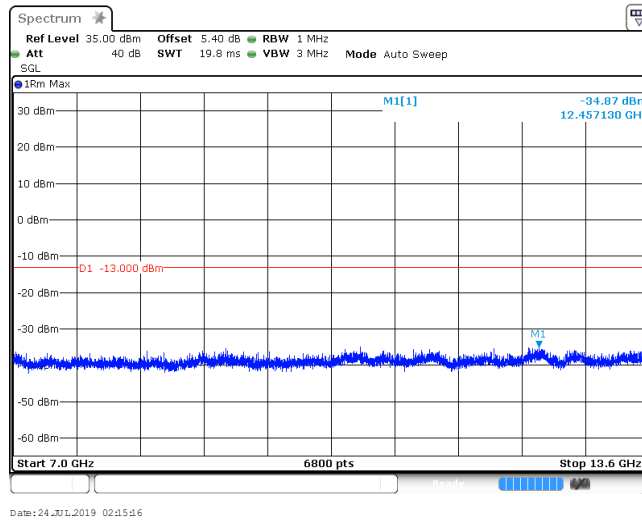
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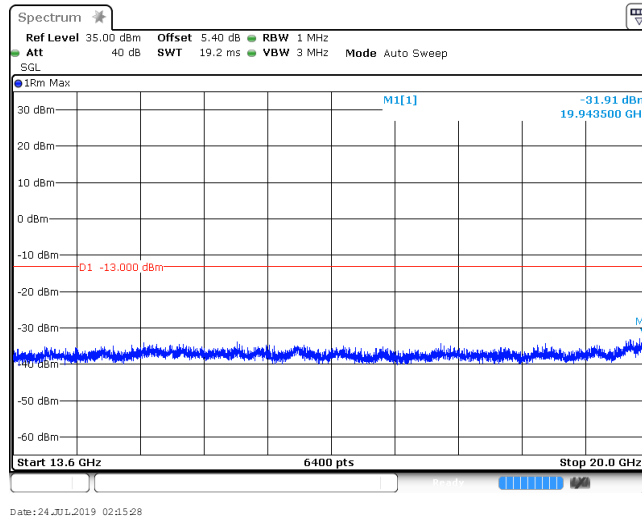
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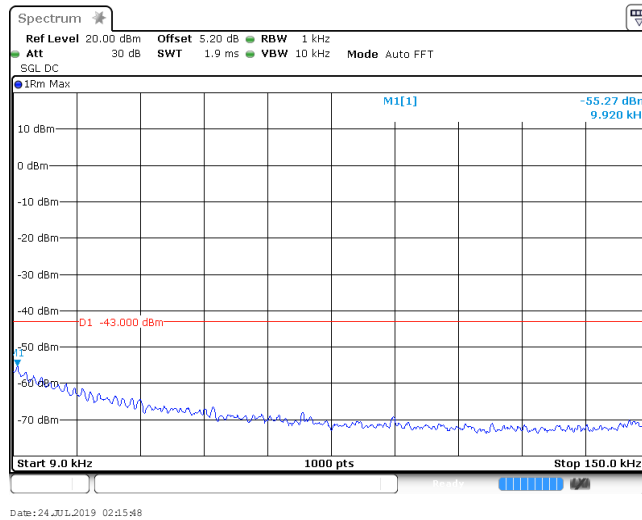


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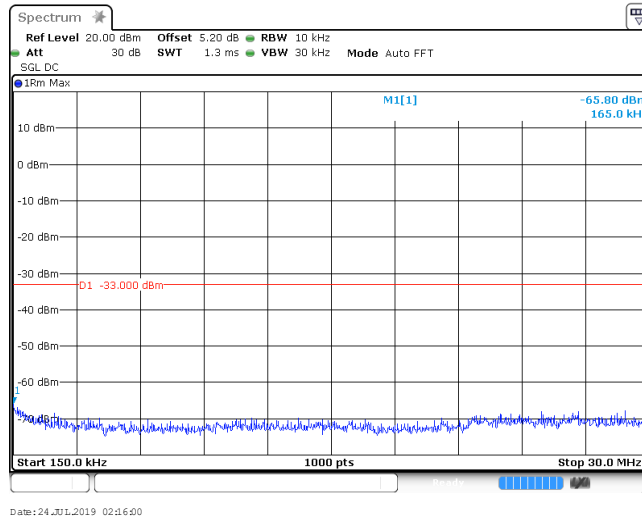
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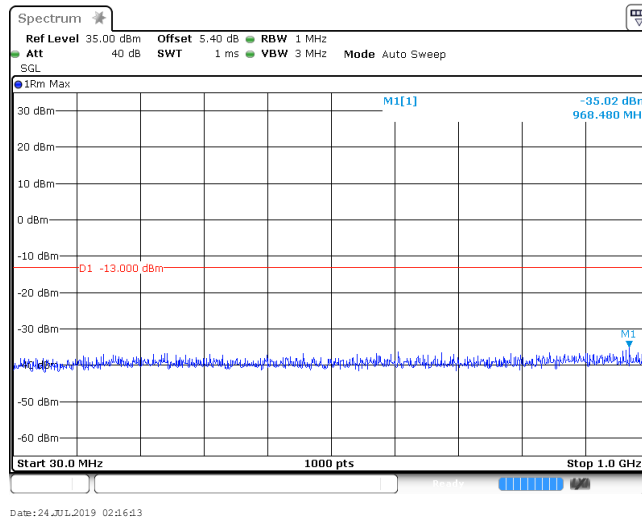


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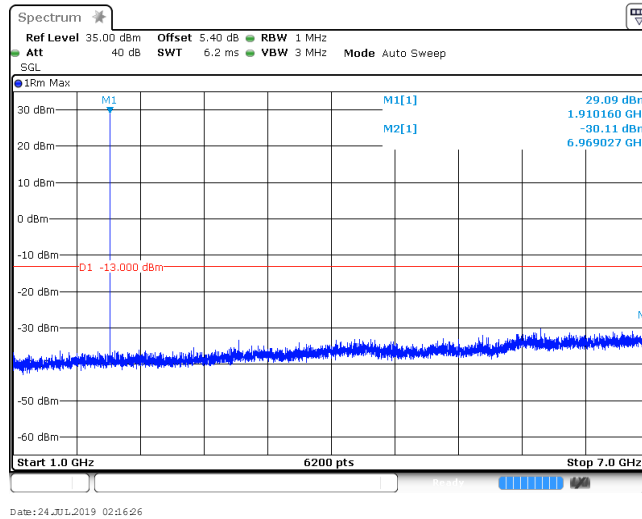


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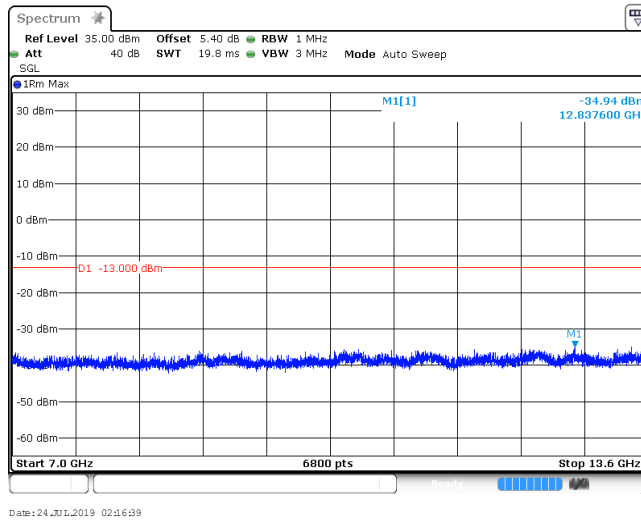


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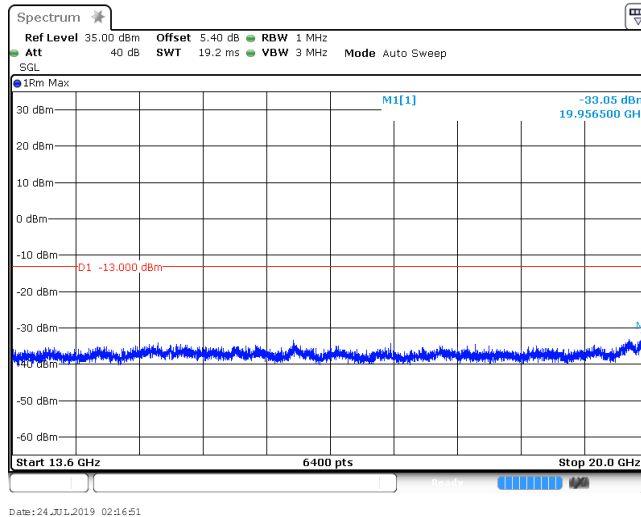


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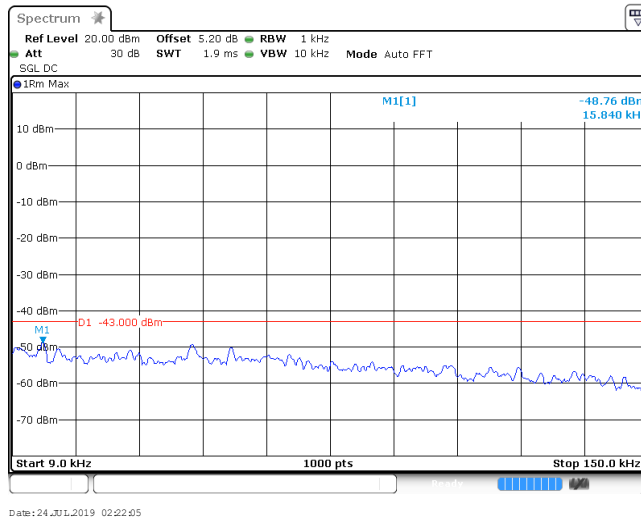


EGPRS1900\_512

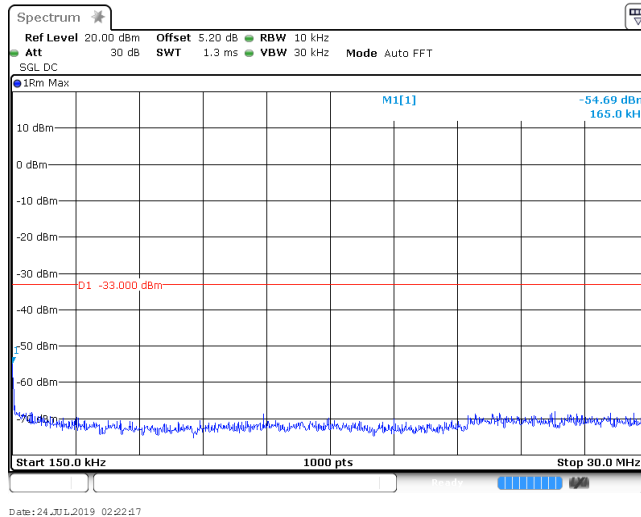


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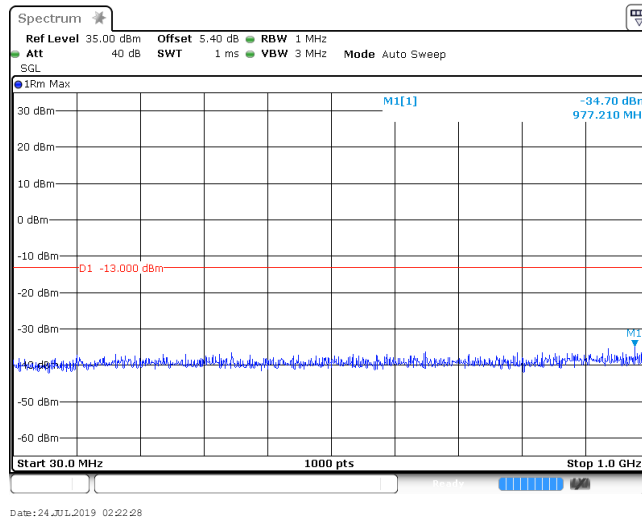
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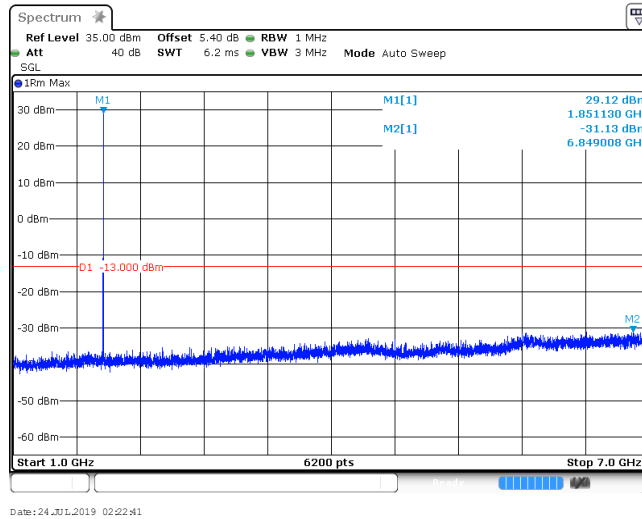
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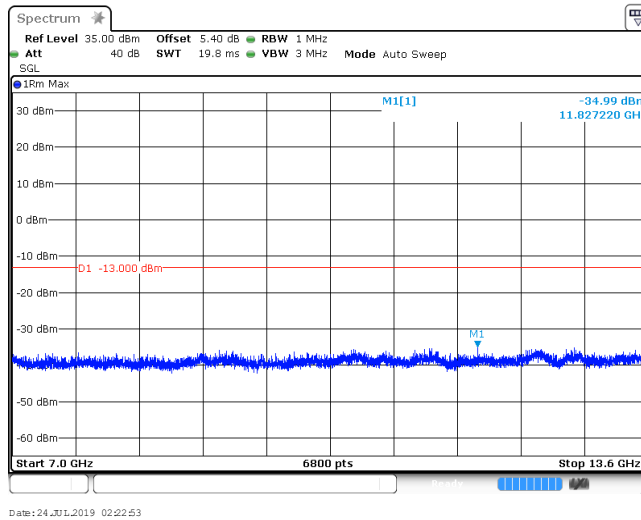
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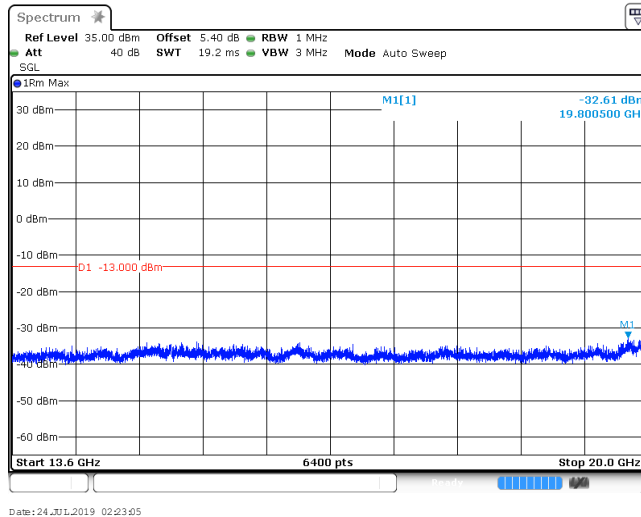


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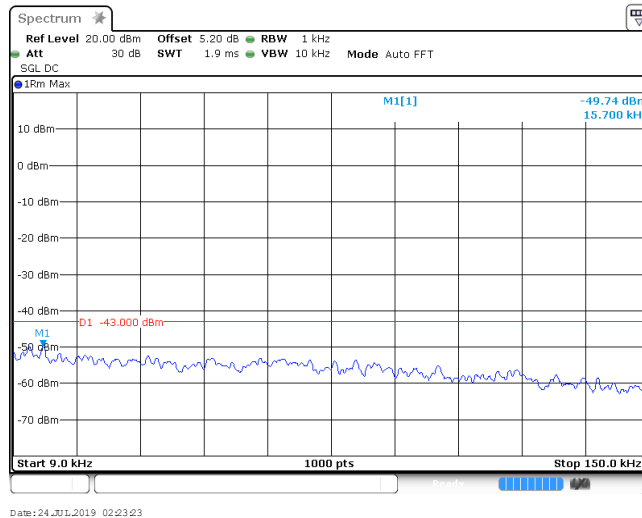


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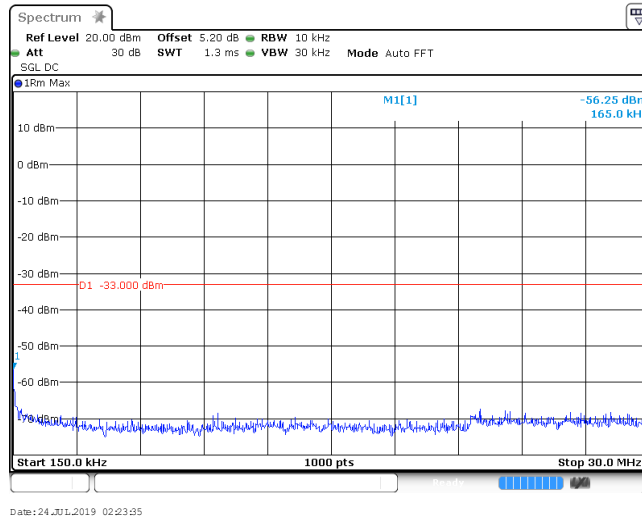


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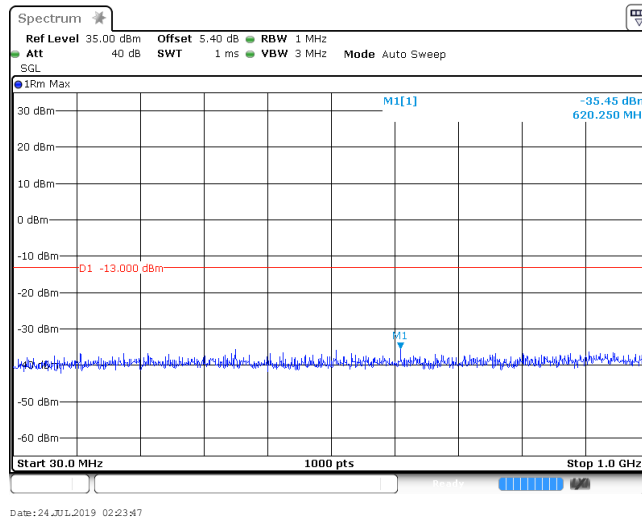


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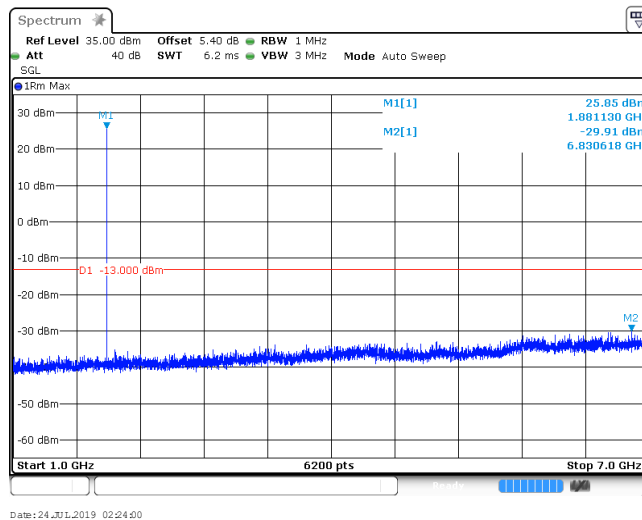
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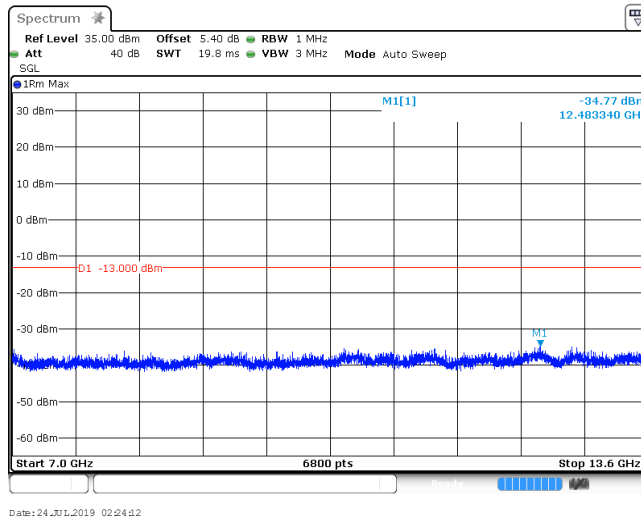


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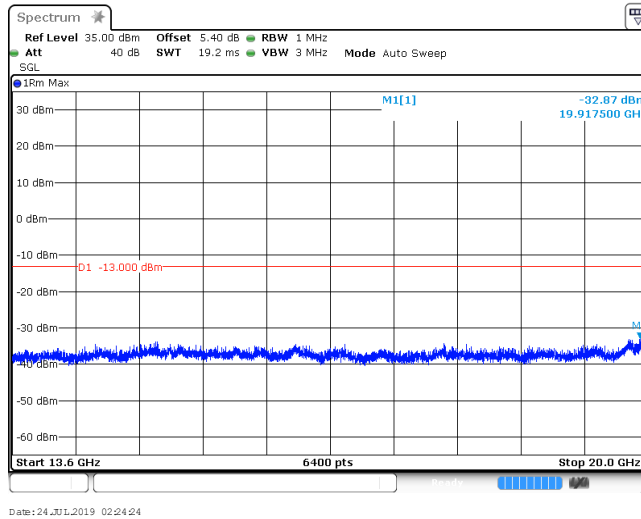


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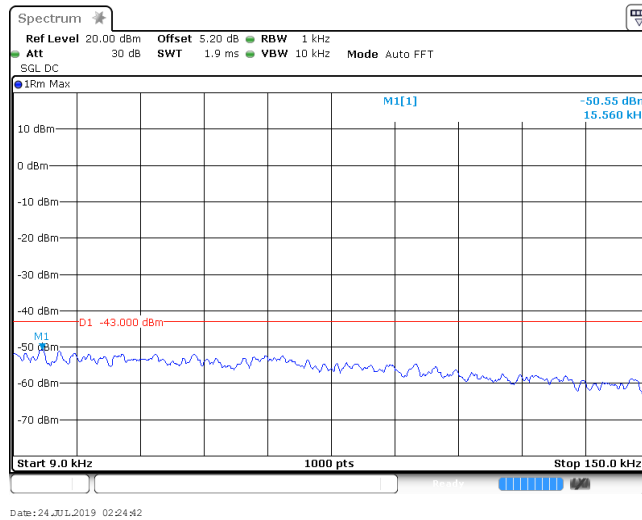
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EGPRS1900\_810

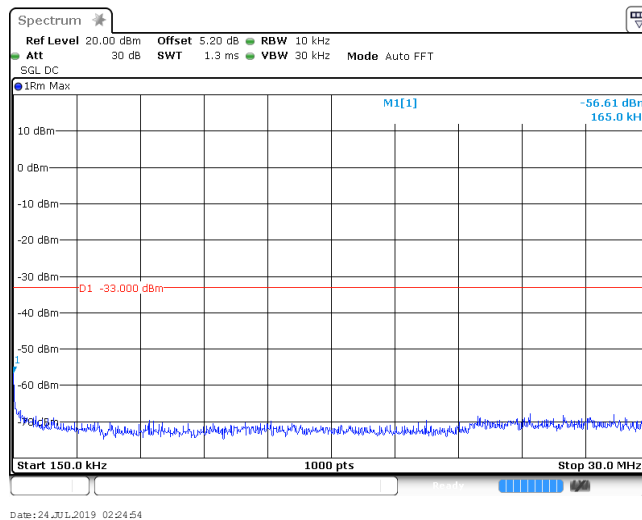


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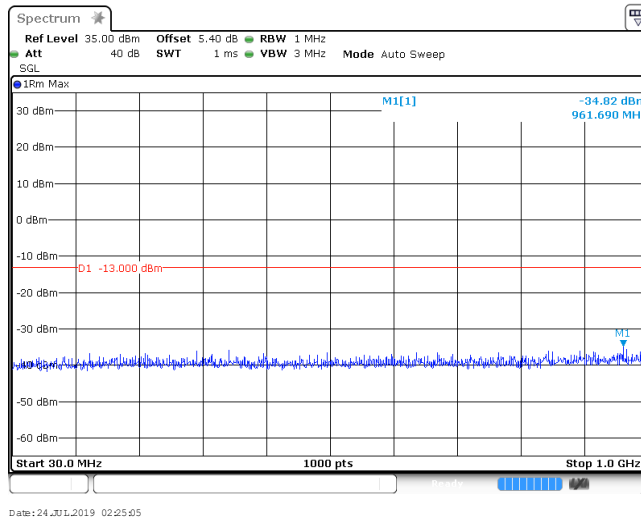


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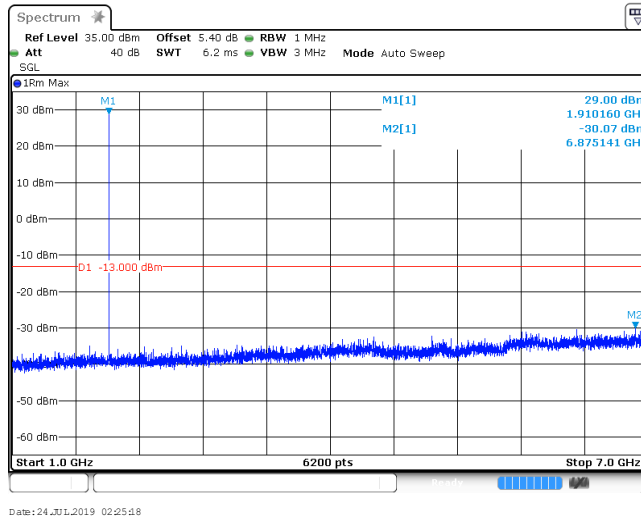
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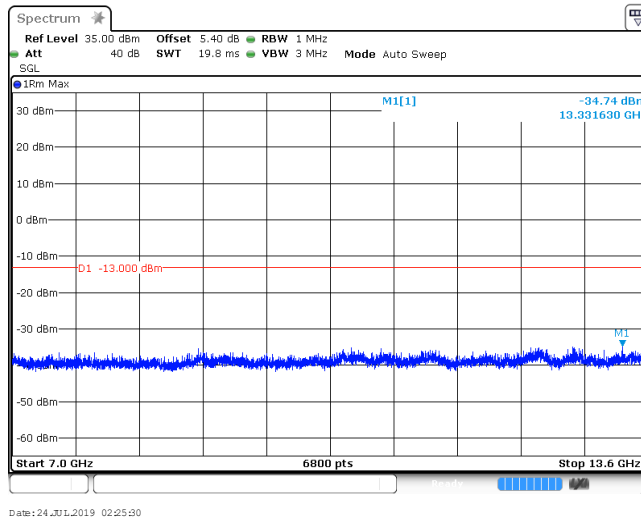


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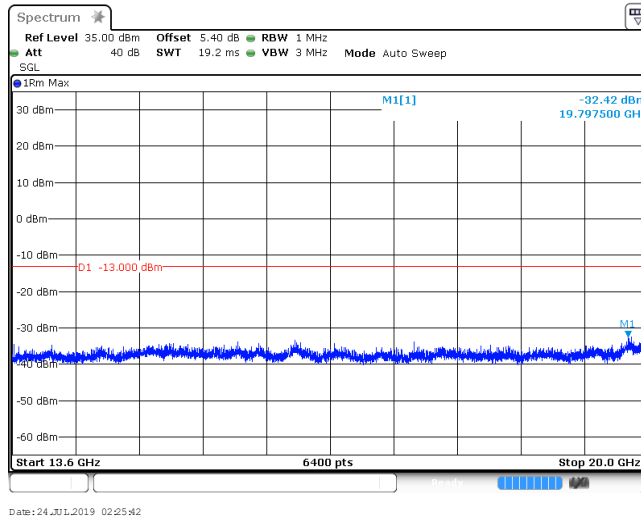
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## 7. Field Strength of Spurious Radiation

### 7.1. Test Band = GSM 850

#### 7.1.1. Test Channel = LCH

| Frequency (MHz) | Level (dBm) | Limit Line (dBm) | Margin (dB) | Polarization |
|-----------------|-------------|------------------|-------------|--------------|
| 111.9691        | -63.57      | -13.00           | 50.57       | Vertical     |
| 527.5864        | -65.26      | -13.00           | 52.26       | Vertical     |
| 1648.1296       | -29.58      | -13.00           | 16.58       | Vertical     |
| 2472.6945       | -45.74      | -13.00           | 32.74       | Vertical     |
| 7363.6455       | -53.14      | -13.00           | 40.14       | Vertical     |
| 17996.4999      | -32.56      | -13.00           | 19.56       | Vertical     |
| 42.0771         | -63.37      | -13.00           | 50.37       | Horizontal   |
| 65.7948         | -71.41      | -13.00           | 58.41       | Horizontal   |
| 231.2851        | -67.12      | -13.00           | 54.12       | Horizontal   |
| 1648.5297       | -33.09      | -13.00           | 20.09       | Horizontal   |
| 2472.6945       | -44.28      | -13.00           | 31.28       | Horizontal   |
| 17994.4998      | -37.67      | -13.00           | 24.67       | Horizontal   |

#### 7.1.2. Test Channel = MCH

| Frequency (MHz) | Level (dBm) | Limit Line (dBm) | Margin (dB) | Polarization |
|-----------------|-------------|------------------|-------------|--------------|
| 108.0404        | -63.90      | -13.00           | 50.90       | Vertical     |
| 536.1228        | -64.80      | -13.00           | 51.80       | Vertical     |
| 1673.3347       | -33.60      | -13.00           | 20.60       | Vertical     |
| 2509.9020       | -42.99      | -13.00           | 29.99       | Vertical     |
| 10116.7372      | -48.01      | -13.00           | 35.01       | Vertical     |
| 17996.4999      | -32.84      | -13.00           | 19.84       | Vertical     |
| 37.9544         | -63.68      | -13.00           | 50.68       | Horizontal   |
| 232.7886        | -67.41      | -13.00           | 54.41       | Horizontal   |
| 1673.3347       | -38.17      | -13.00           | 25.17       | Horizontal   |
| 2509.9020       | -40.76      | -13.00           | 27.76       | Horizontal   |
| 8027.6676       | -53.15      | -13.00           | 40.15       | Horizontal   |
| 16399.4466      | -38.04      | -13.00           | 25.04       | Horizontal   |

#### 7.1.3. Test Channel = HCH

| Frequency (MHz) | Level (dBm) | Limit Line (dBm) | Margin (dB) | Polarization |
|-----------------|-------------|------------------|-------------|--------------|
| 110.9991        | -64.31      | -13.00           | 51.31       | Vertical     |
| 389.2575        | -66.43      | -13.00           | 53.43       | Vertical     |
| 1697.7395       | -42.04      | -13.00           | 29.04       | Vertical     |
| 2546.3093       | -47.24      | -13.00           | 34.24       | Vertical     |
| 8554.6852       | -52.21      | -13.00           | 39.21       | Vertical     |
| 17987.9996      | -32.94      | -13.00           | 19.94       | Vertical     |
| 43.2897         | -63.72      | -13.00           | 50.72       | Horizontal   |
| 224.9312        | -67.04      | -13.00           | 54.04       | Horizontal   |
| 1697.7395       | -42.85      | -13.00           | 29.85       | Horizontal   |
| 2546.3093       | -44.11      | -13.00           | 31.11       | Horizontal   |
| 8490.6830       | -52.88      | -13.00           | 39.88       | Horizontal   |
| 17995.4999      | -37.51      | -13.00           | 24.51       | Horizontal   |



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**7.2. Test Band = GSM 1900**

**7.2.1. Test Channel = LCH**

| Frequency (MHz) | Level (dBm) | Limit Line (dBm) | Margin (dB) | Polarization |
|-----------------|-------------|------------------|-------------|--------------|
| 49.7890         | -71.84      | -13.00           | 58.84       | Vertical     |
| 110.6110        | -64.66      | -13.00           | 51.66       | Vertical     |
| 1437.6875       | -46.93      | -13.00           | 33.93       | Vertical     |
| 3700.5234       | -48.38      | -13.00           | 35.38       | Vertical     |
| 5550.5850       | -49.61      | -13.00           | 36.61       | Vertical     |
| 17993.4998      | -31.79      | -13.00           | 18.79       | Vertical     |
| 44.6477         | -64.43      | -13.00           | 51.43       | Horizontal   |
| 107.9434        | -72.90      | -13.00           | 59.90       | Horizontal   |
| 231.1881        | -68.29      | -13.00           | 55.29       | Horizontal   |
| 2697.5395       | -36.13      | -13.00           | 23.13       | Horizontal   |
| 3700.5234       | -45.21      | -13.00           | 32.21       | Horizontal   |
| 16384.4461      | -37.42      | -13.00           | 24.42       | Horizontal   |

**7.2.2. Test Channel = MCH**

| Frequency (MHz) | Level (dBm) | Limit Line (dBm) | Margin (dB) | Polarization |
|-----------------|-------------|------------------|-------------|--------------|
| 72.0516         | -67.16      | -13.00           | 54.16       | Vertical     |
| 115.8493        | -65.17      | -13.00           | 52.17       | Vertical     |
| 761.3196        | -61.94      | -13.00           | 48.94       | Vertical     |
| 3760.0253       | -46.85      | -13.00           | 33.85       | Vertical     |
| 10527.2509      | -46.85      | -13.00           | 33.85       | Vertical     |
| 17984.9995      | -32.07      | -13.00           | 19.07       | Vertical     |
| 37.3239         | -64.53      | -13.00           | 51.53       | Horizontal   |
| 232.6431        | -68.01      | -13.00           | 55.01       | Horizontal   |
| 2695.1390       | -36.43      | -13.00           | 23.43       | Horizontal   |
| 3760.0253       | -45.13      | -13.00           | 32.13       | Horizontal   |
| 9281.7094       | -49.09      | -13.00           | 36.09       | Horizontal   |
| 17999.0000      | -36.58      | -13.00           | 23.58       | Horizontal   |

**7.2.3. Test Channel = HCH**

| Frequency (MHz) | Level (dBm) | Limit Line (dBm) | Margin (dB) | Polarization |
|-----------------|-------------|------------------|-------------|--------------|
| 48.7219         | -69.61      | -13.00           | 56.61       | Vertical     |
| 110.8535        | -64.17      | -13.00           | 51.17       | Vertical     |
| 599.2730        | -63.71      | -13.00           | 50.71       | Vertical     |
| 3819.5273       | -44.62      | -13.00           | 31.62       | Vertical     |
| 9047.7016       | -49.84      | -13.00           | 36.84       | Vertical     |
| 17988.4996      | -31.78      | -13.00           | 18.78       | Vertical     |
| 45.6663         | -64.20      | -13.00           | 51.20       | Horizontal   |
| 236.5718        | -68.37      | -13.00           | 55.37       | Horizontal   |
| 2699.5399       | -36.17      | -13.00           | 23.17       | Horizontal   |
| 3819.5273       | -44.66      | -13.00           | 31.66       | Horizontal   |
| 5729.5910       | -52.64      | -13.00           | 39.64       | Horizontal   |
| 17996.9999      | -36.97      | -13.00           | 23.97       | Horizontal   |

Remark:

- 1) The disturbance above 12.75GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the worst case data had been displayed.



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## 8. Frequency Stability

### 8.1. Frequency Error Vs Voltage

| Voltage   |         |               |                  |                |                 |             |         |
|-----------|---------|---------------|------------------|----------------|-----------------|-------------|---------|
| BAND      | Channel | Voltage (Vdc) | Temperature (°C) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| GSM850    | 128     | VL            | TN               | 3.00           | 0.003643        | ±2.5        | PASS    |
| GSM850    | 128     | VN            | TN               | 3.33           | 0.004035        | ±2.5        | PASS    |
| GSM850    | 128     | VH            | TN               | 5.68           | 0.006894        | ±2.5        | PASS    |
| GSM850    | 190     | VL            | TN               | 6.52           | 0.007796        | ±2.5        | PASS    |
| GSM850    | 190     | VN            | TN               | 8.27           | 0.009879        | ±2.5        | PASS    |
| GSM850    | 190     | VH            | TN               | 4.81           | 0.005750        | ±2.5        | PASS    |
| GSM850    | 251     | VL            | TN               | 5.33           | 0.006276        | ±2.5        | PASS    |
| GSM850    | 251     | VN            | TN               | 1.94           | 0.002282        | ±2.5        | PASS    |
| GSM850    | 251     | VH            | TN               | 3.97           | 0.004679        | ±2.5        | PASS    |
| EGPRS850  | 128     | VL            | TN               | 0.45           | 0.000548        | ±2.5        | PASS    |
| EGPRS850  | 128     | VN            | TN               | 0.87           | 0.001058        | ±2.5        | PASS    |
| EGPRS850  | 128     | VH            | TN               | -6.10          | -0.007404       | ±2.5        | PASS    |
| EGPRS850  | 190     | VL            | TN               | 0.71           | 0.000849        | ±2.5        | PASS    |
| EGPRS850  | 190     | VN            | TN               | -4.91          | -0.005866       | ±2.5        | PASS    |
| EGPRS850  | 190     | VH            | TN               | -0.16          | -0.000193       | ±2.5        | PASS    |
| GSM1900   | 512     | VL            | TN               | 11.27          | 0.006090        | ±2.5        | PASS    |
| GSM1900   | 512     | VN            | TN               | 7.62           | 0.004118        | ±2.5        | PASS    |
| GSM1900   | 512     | VH            | TN               | 16.30          | 0.008812        | ±2.5        | PASS    |
| GSM1900   | 661     | VL            | TN               | 10.56          | 0.005616        | ±2.5        | PASS    |
| GSM1900   | 661     | VN            | TN               | 6.46           | 0.003435        | ±2.5        | PASS    |
| GSM1900   | 661     | VH            | TN               | 6.78           | 0.003606        | ±2.5        | PASS    |
| GSM1900   | 810     | VL            | TN               | 1.78           | 0.000930        | ±2.5        | PASS    |
| GSM1900   | 810     | VN            | TN               | 10.46          | 0.005477        | ±2.5        | PASS    |
| GSM1900   | 810     | VH            | TN               | 8.72           | 0.004564        | ±2.5        | PASS    |
| EGPRS1900 | 512     | VL            | TN               | 3.23           | 0.001745        | ±2.5        | PASS    |
| EGPRS1900 | 512     | VN            | TN               | -5.59          | -0.003019       | ±2.5        | PASS    |
| EGPRS1900 | 512     | VH            | TN               | 1.58           | 0.000855        | ±2.5        | PASS    |
| EGPRS1900 | 661     | VL            | TN               | -0.90          | -0.000481       | ±2.5        | PASS    |
| EGPRS1900 | 661     | VN            | TN               | 1.78           | 0.000945        | ±2.5        | PASS    |
| EGPRS1900 | 661     | VH            | TN               | 0.77           | 0.000412        | ±2.5        | PASS    |
| EGPRS1900 | 810     | VL            | TN               | -7.10          | -0.003719       | ±2.5        | PASS    |
| EGPRS1900 | 810     | VN            | TN               | -4.94          | -0.002587       | ±2.5        | PASS    |
| EGPRS1900 | 810     | VH            | TN               | -0.84          | -0.000440       | ±2.5        | PASS    |



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### 8.2. Frequency Error Vs Temperature

| Temperature |         |               |                  |                |                 |             |         |
|-------------|---------|---------------|------------------|----------------|-----------------|-------------|---------|
| BAND        | Channel | Voltage (Vdc) | Temperature (°C) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| GSM850      | 128     | VN            | -30              | 0.97           | 0.001175        | ±2.5        | PASS    |
| GSM850      | 128     | VN            | -20              | 4.07           | 0.004936        | ±2.5        | PASS    |
| GSM850      | 128     | VN            | -10              | 3.39           | 0.004113        | ±2.5        | PASS    |
| GSM850      | 128     | VN            | 0                | 8.59           | 0.010420        | ±2.5        | PASS    |
| GSM850      | 128     | VN            | 10               | 11.66          | 0.014141        | ±2.5        | PASS    |
| GSM850      | 128     | VN            | 20               | 10.78          | 0.013084        | ±2.5        | PASS    |
| GSM850      | 128     | VN            | 30               | 9.14           | 0.011086        | ±2.5        | PASS    |
| GSM850      | 128     | VN            | 40               | 9.69           | 0.011752        | ±2.5        | PASS    |
| GSM850      | 128     | VN            | 50               | 7.10           | 0.008618        | ±2.5        | PASS    |
| GSM850      | 190     | VN            | -30              | 6.30           | 0.007525        | ±2.5        | PASS    |
| GSM850      | 190     | VN            | -20              | 2.26           | 0.002701        | ±2.5        | PASS    |
| GSM850      | 190     | VN            | -10              | 3.07           | 0.003666        | ±2.5        | PASS    |
| GSM850      | 190     | VN            | 0                | 4.75           | 0.005673        | ±2.5        | PASS    |
| GSM850      | 190     | VN            | 10               | 5.17           | 0.006175        | ±2.5        | PASS    |
| GSM850      | 190     | VN            | 20               | 8.36           | 0.009995        | ±2.5        | PASS    |
| GSM850      | 190     | VN            | 30               | 3.87           | 0.004631        | ±2.5        | PASS    |
| GSM850      | 190     | VN            | 40               | -2.07          | -0.002470       | ±2.5        | PASS    |
| GSM850      | 190     | VN            | 50               | -2.62          | -0.003126       | ±2.5        | PASS    |
| GSM850      | 251     | VN            | -30              | -0.19          | -0.000228       | ±2.5        | PASS    |
| GSM850      | 251     | VN            | -20              | 2.36           | 0.002777        | ±2.5        | PASS    |
| GSM850      | 251     | VN            | -10              | 5.36           | 0.006314        | ±2.5        | PASS    |
| GSM850      | 251     | VN            | 0                | 5.78           | 0.006809        | ±2.5        | PASS    |
| GSM850      | 251     | VN            | 10               | 1.39           | 0.001636        | ±2.5        | PASS    |
| GSM850      | 251     | VN            | 20               | -0.16          | -0.000190       | ±2.5        | PASS    |
| GSM850      | 251     | VN            | 30               | 2.97           | 0.003499        | ±2.5        | PASS    |
| GSM850      | 251     | VN            | 40               | 4.52           | 0.005325        | ±2.5        | PASS    |
| GSM850      | 251     | VN            | 50               | 6.59           | 0.007760        | ±2.5        | PASS    |
| EGPRS850    | 128     | VN            | -30              | -3.42          | -0.004152       | ±2.5        | PASS    |
| EGPRS850    | 128     | VN            | -20              | -0.13          | -0.000157       | ±2.5        | PASS    |
| EGPRS850    | 128     | VN            | -10              | 1.07           | 0.001293        | ±2.5        | PASS    |
| EGPRS850    | 128     | VN            | 0                | -1.45          | -0.001763       | ±2.5        | PASS    |
| EGPRS850    | 128     | VN            | 10               | 2.58           | 0.003134        | ±2.5        | PASS    |
| EGPRS850    | 128     | VN            | 20               | 13.33          | 0.016178        | ±2.5        | PASS    |
| EGPRS850    | 128     | VN            | 30               | 9.65           | 0.011713        | ±2.5        | PASS    |
| EGPRS850    | 128     | VN            | 40               | 4.29           | 0.005210        | ±2.5        | PASS    |
| EGPRS850    | 128     | VN            | 50               | 8.49           | 0.010302        | ±2.5        | PASS    |
| EGPRS850    | 190     | VN            | -30              | -0.16          | -0.000193       | ±2.5        | PASS    |
| EGPRS850    | 190     | VN            | -20              | -3.84          | -0.004592       | ±2.5        | PASS    |
| EGPRS850    | 190     | VN            | -10              | -1.55          | -0.001852       | ±2.5        | PASS    |
| EGPRS850    | 190     | VN            | 0                | -1.68          | -0.002007       | ±2.5        | PASS    |
| EGPRS850    | 190     | VN            | 10               | -0.90          | -0.001081       | ±2.5        | PASS    |



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|           |     |    |     |        |           |      |      |
|-----------|-----|----|-----|--------|-----------|------|------|
| EGPRS850  | 190 | VN | 20  | 5.46   | 0.006522  | ±2.5 | PASS |
| EGPRS850  | 190 | VN | 30  | 1.58   | 0.001891  | ±2.5 | PASS |
| EGPRS850  | 190 | VN | 40  | 1.49   | 0.001775  | ±2.5 | PASS |
| EGPRS850  | 190 | VN | 50  | 4.36   | 0.005210  | ±2.5 | PASS |
| GSM1900   | 512 | VN | -30 | 8.27   | 0.004467  | ±2.5 | PASS |
| GSM1900   | 512 | VN | -20 | 9.52   | 0.005148  | ±2.5 | PASS |
| GSM1900   | 512 | VN | -10 | 8.43   | 0.004554  | ±2.5 | PASS |
| GSM1900   | 512 | VN | 0   | 20.60  | 0.011133  | ±2.5 | PASS |
| GSM1900   | 512 | VN | 10  | 25.44  | 0.013751  | ±2.5 | PASS |
| GSM1900   | 512 | VN | 20  | 28.35  | 0.015321  | ±2.5 | PASS |
| GSM1900   | 512 | VN | 30  | 25.47  | 0.013768  | ±2.5 | PASS |
| GSM1900   | 512 | VN | 40  | 16.95  | 0.009161  | ±2.5 | PASS |
| GSM1900   | 512 | VN | 50  | 18.73  | 0.010121  | ±2.5 | PASS |
| GSM1900   | 661 | VN | -30 | 11.33  | 0.006028  | ±2.5 | PASS |
| GSM1900   | 661 | VN | -20 | 8.91   | 0.004740  | ±2.5 | PASS |
| GSM1900   | 661 | VN | -10 | 9.30   | 0.004946  | ±2.5 | PASS |
| GSM1900   | 661 | VN | 0   | 16.47  | 0.008758  | ±2.5 | PASS |
| GSM1900   | 661 | VN | 10  | 18.02  | 0.009583  | ±2.5 | PASS |
| GSM1900   | 661 | VN | 20  | 15.59  | 0.008295  | ±2.5 | PASS |
| GSM1900   | 661 | VN | 30  | 13.30  | 0.007075  | ±2.5 | PASS |
| GSM1900   | 661 | VN | 40  | 5.81   | 0.003091  | ±2.5 | PASS |
| GSM1900   | 661 | VN | 50  | 12.46  | 0.006629  | ±2.5 | PASS |
| GSM1900   | 810 | VN | -30 | 9.52   | 0.004987  | ±2.5 | PASS |
| GSM1900   | 810 | VN | -20 | 5.23   | 0.002739  | ±2.5 | PASS |
| GSM1900   | 810 | VN | -10 | 5.84   | 0.003060  | ±2.5 | PASS |
| GSM1900   | 810 | VN | 0   | 7.94   | 0.004159  | ±2.5 | PASS |
| GSM1900   | 810 | VN | 10  | 8.23   | 0.004311  | ±2.5 | PASS |
| GSM1900   | 810 | VN | 20  | -13.46 | -0.007050 | ±2.5 | PASS |
| GSM1900   | 810 | VN | 30  | 3.58   | 0.001876  | ±2.5 | PASS |
| GSM1900   | 810 | VN | 40  | 15.21  | 0.007962  | ±2.5 | PASS |
| GSM1900   | 810 | VN | 50  | 5.36   | 0.002806  | ±2.5 | PASS |
| EGPRS1900 | 512 | VN | -30 | 5.78   | 0.003124  | ±2.5 | PASS |
| EGPRS1900 | 512 | VN | -20 | 6.59   | 0.003560  | ±2.5 | PASS |
| EGPRS1900 | 512 | VN | -10 | 8.65   | 0.004677  | ±2.5 | PASS |
| EGPRS1900 | 512 | VN | 0   | 8.23   | 0.004450  | ±2.5 | PASS |
| EGPRS1900 | 512 | VN | 10  | 20.70  | 0.011185  | ±2.5 | PASS |
| EGPRS1900 | 512 | VN | 20  | 24.67  | 0.013332  | ±2.5 | PASS |
| EGPRS1900 | 512 | VN | 30  | 21.28  | 0.011499  | ±2.5 | PASS |
| EGPRS1900 | 512 | VN | 40  | 28.12  | 0.015199  | ±2.5 | PASS |
| EGPRS1900 | 512 | VN | 50  | 19.82  | 0.010714  | ±2.5 | PASS |
| EGPRS1900 | 661 | VN | -30 | 0.32   | 0.000172  | ±2.5 | PASS |
| EGPRS1900 | 661 | VN | -20 | 2.42   | 0.001288  | ±2.5 | PASS |
| EGPRS1900 | 661 | VN | -10 | 2.26   | 0.001202  | ±2.5 | PASS |
| EGPRS1900 | 661 | VN | 0   | 1.29   | 0.000687  | ±2.5 | PASS |
| EGPRS1900 | 661 | VN | 10  | 10.69  | 0.005684  | ±2.5 | PASS |
| EGPRS1900 | 661 | VN | 20  | 10.27  | 0.005461  | ±2.5 | PASS |
| EGPRS1900 | 661 | VN | 30  | 9.23   | 0.004912  | ±2.5 | PASS |



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|           |     |    |     |       |           |      |      |
|-----------|-----|----|-----|-------|-----------|------|------|
| EGPRS1900 | 661 | VN | 40  | 12.14 | 0.006457  | ±2.5 | PASS |
| EGPRS1900 | 661 | VN | 50  | 11.27 | 0.005993  | ±2.5 | PASS |
| EGPRS1900 | 810 | VN | -30 | 2.62  | 0.001369  | ±2.5 | PASS |
| EGPRS1900 | 810 | VN | -20 | -2.16 | -0.001133 | ±2.5 | PASS |
| EGPRS1900 | 810 | VN | -10 | 6.10  | 0.003195  | ±2.5 | PASS |
| EGPRS1900 | 810 | VN | 0   | -1.10 | -0.000575 | ±2.5 | PASS |
| EGPRS1900 | 810 | VN | 10  | 7.65  | 0.004007  | ±2.5 | PASS |
| EGPRS1900 | 810 | VN | 20  | 12.69 | 0.006644  | ±2.5 | PASS |
| EGPRS1900 | 810 | VN | 30  | 8.88  | 0.004649  | ±2.5 | PASS |
| EGPRS1900 | 810 | VN | 40  | 17.63 | 0.009230  | ±2.5 | PASS |
| EGPRS1900 | 810 | VN | 50  | 6.75  | 0.003533  | ±2.5 | PASS |

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