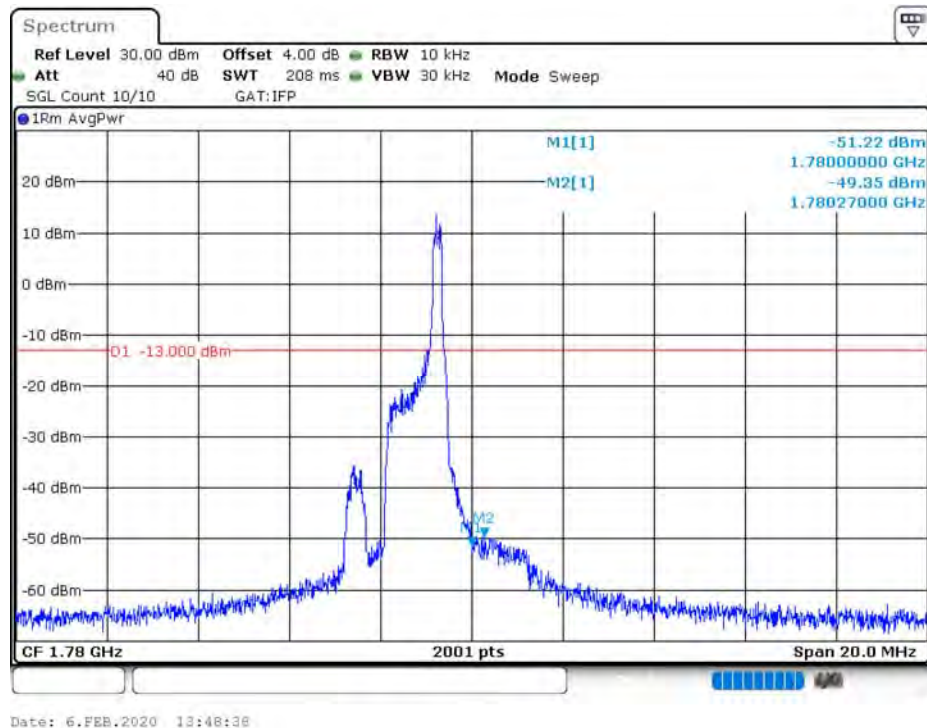
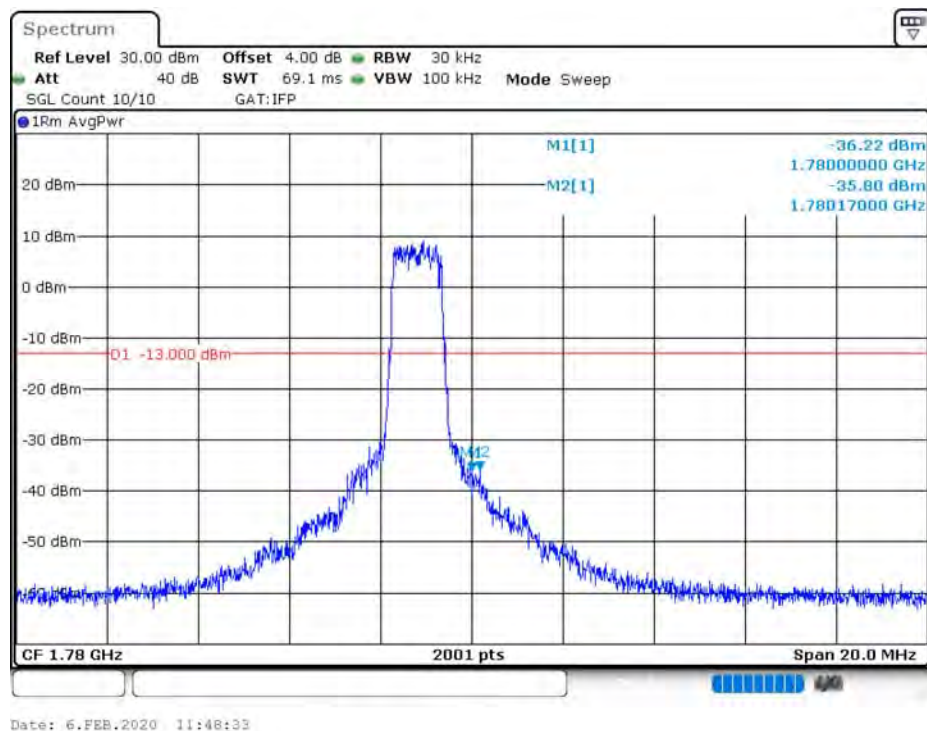


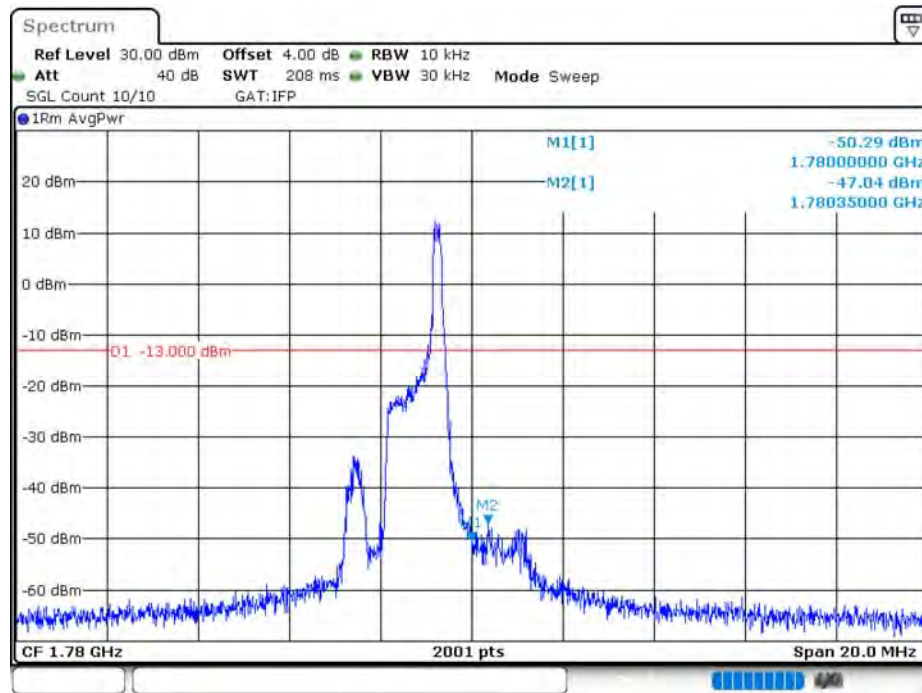
## B66\_CH132622\_10M\_QPSK\_1RB5



## B66\_CH132622\_10M\_QPSK\_6RB0

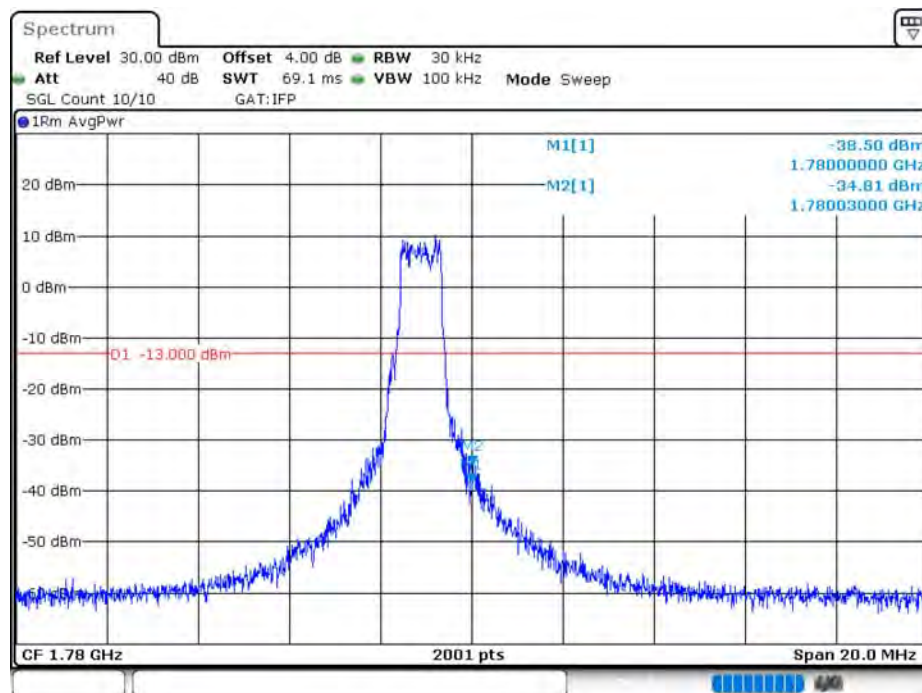


## B66\_CH132622\_10M\_16-QAM\_1RB5



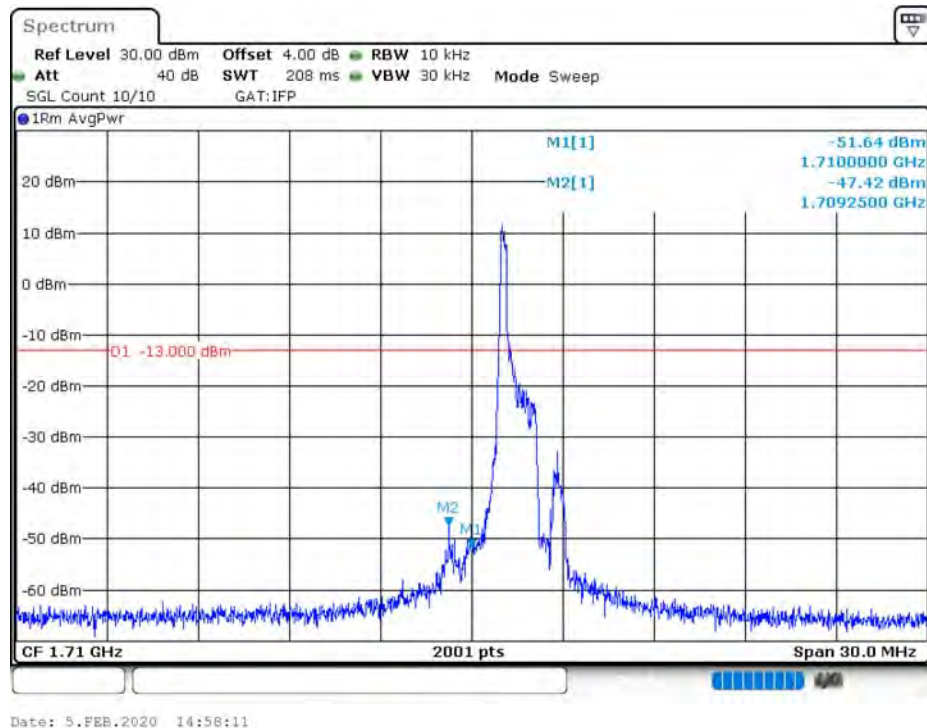
Date: 6.FEB.2020 13:49:21

## B66\_CH132622\_10M\_16-QAM\_5RB1

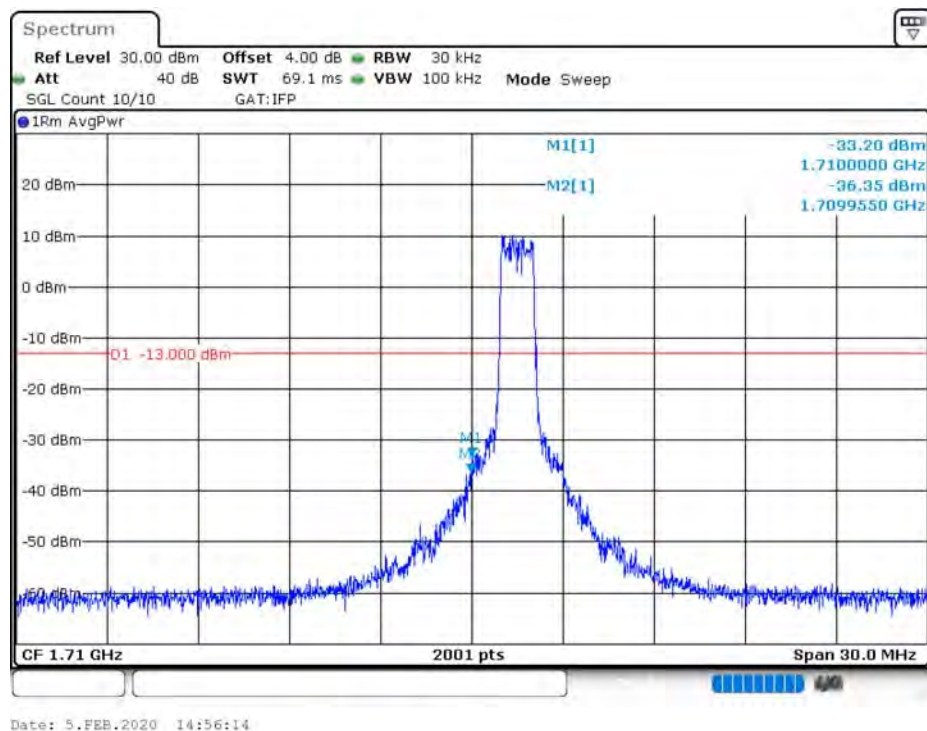


Date: 6.FEB.2020 11:49:03

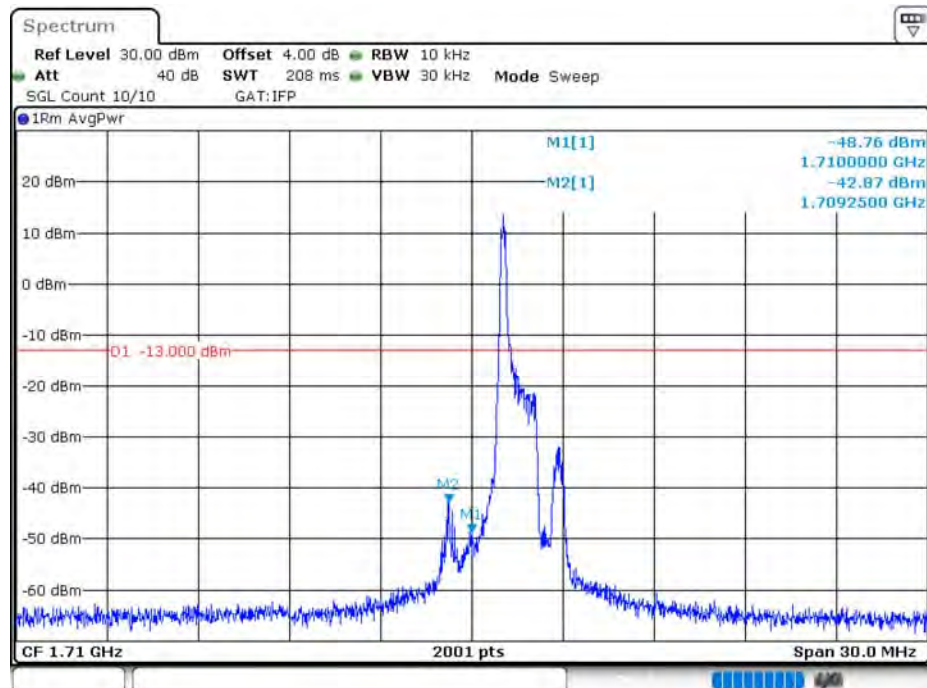
## B66\_CH132047\_15M\_QPSK\_1RB0



## B66\_CH132047\_15M\_QPSK\_6RB0

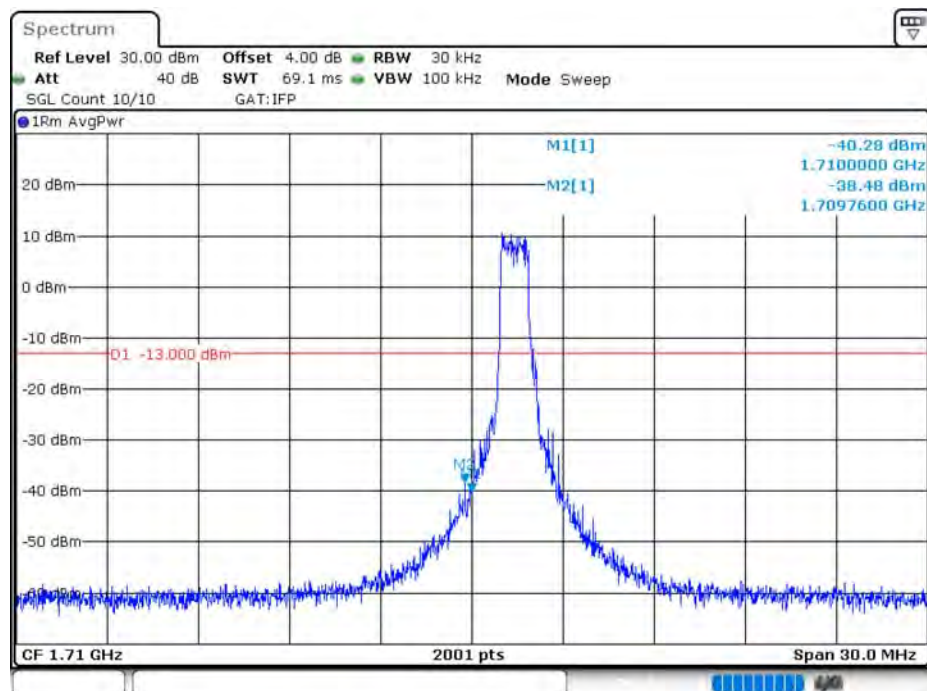


## B66\_CH132047\_15M\_16-QAM\_1RB0



Date: 5.FEB.2020 14:57:47

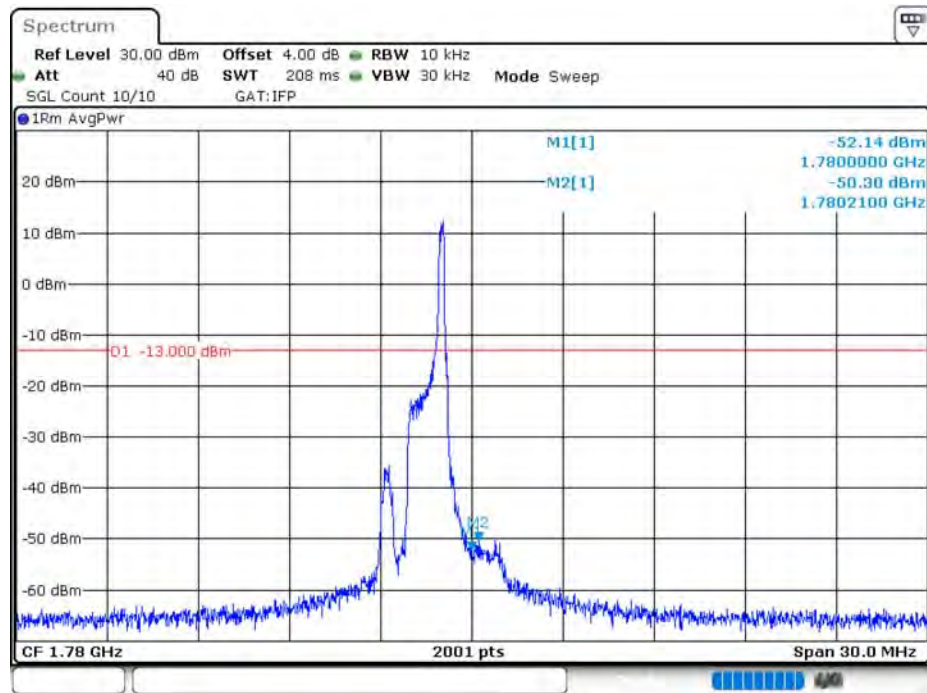
## B66\_CH132047\_15M\_16-QAM\_5RB0



Date: 5.FEB.2020 14:56:33

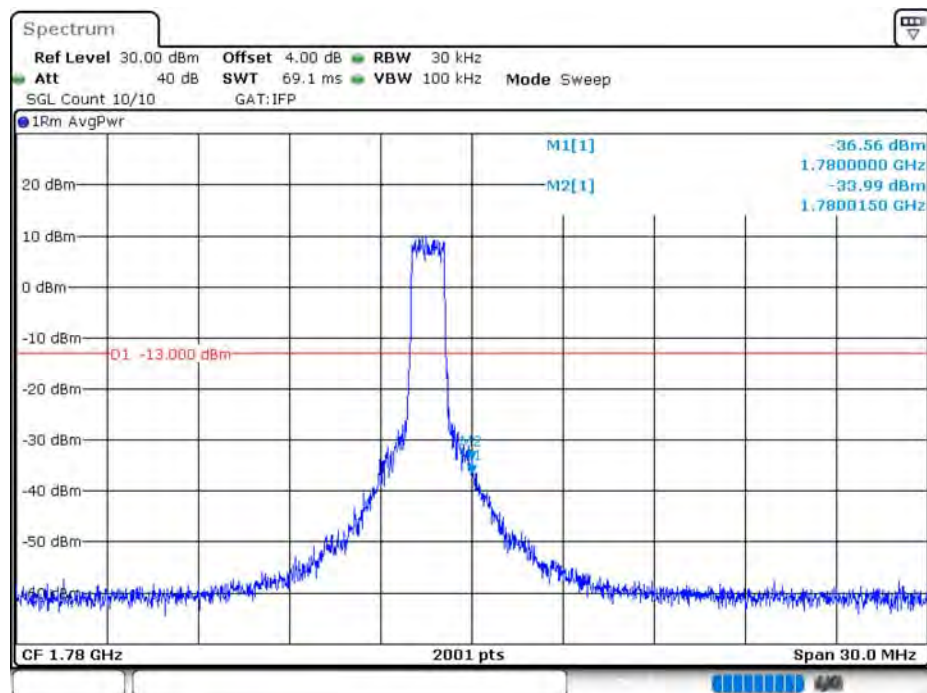


## B66\_CH132597\_15M\_QPSK\_1RB5



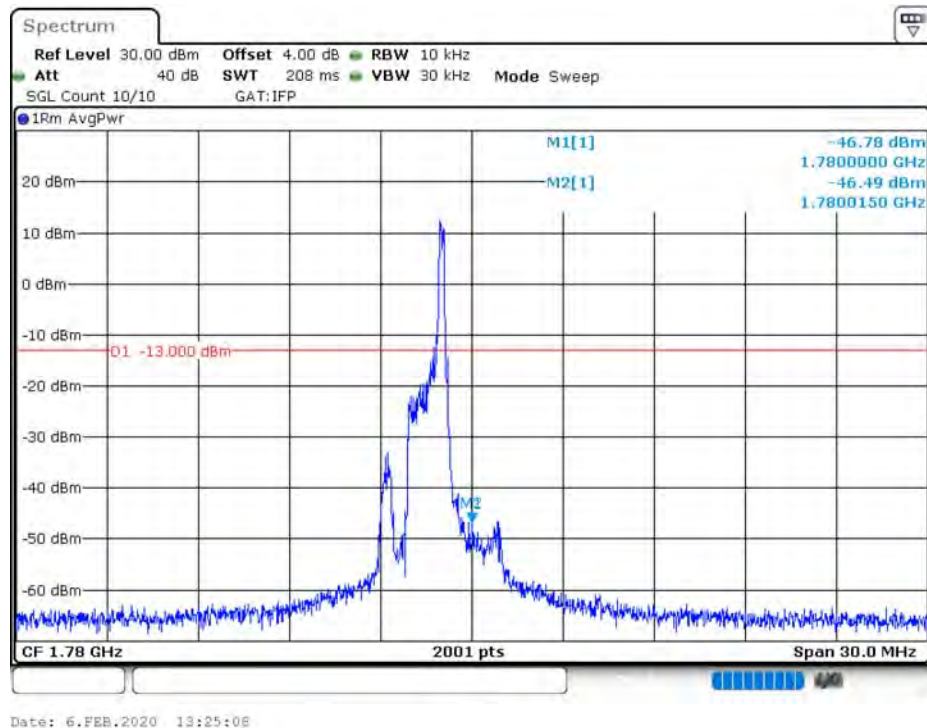
Date: 6.FEB.2020 13:26:29

## B66\_CH132597\_15M\_QPSK\_6RB0

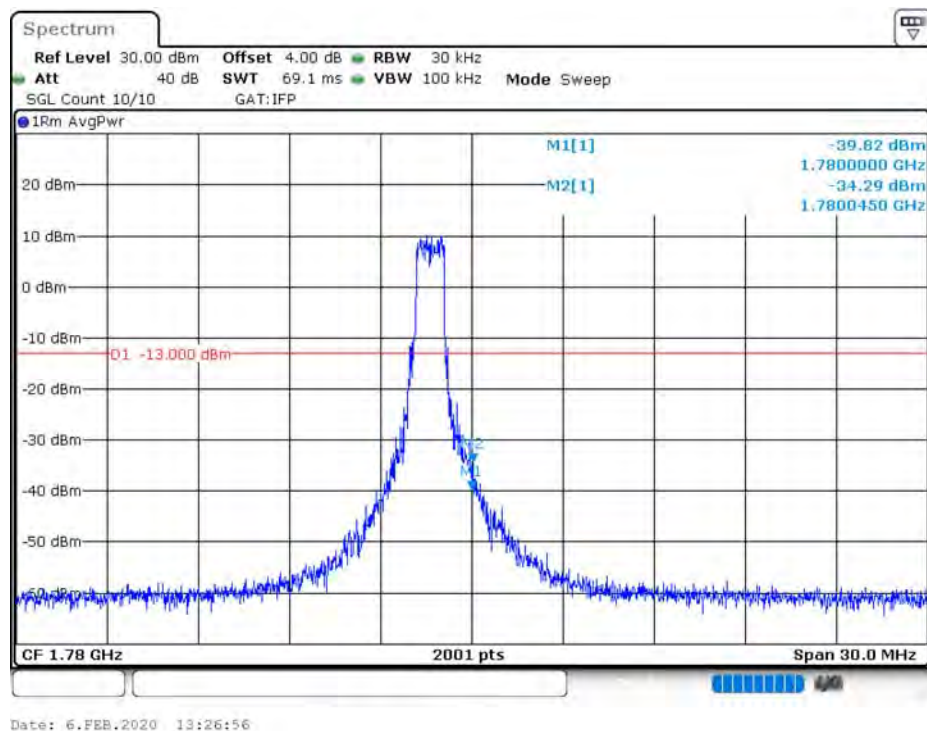


Date: 6.FEB.2020 13:27:12

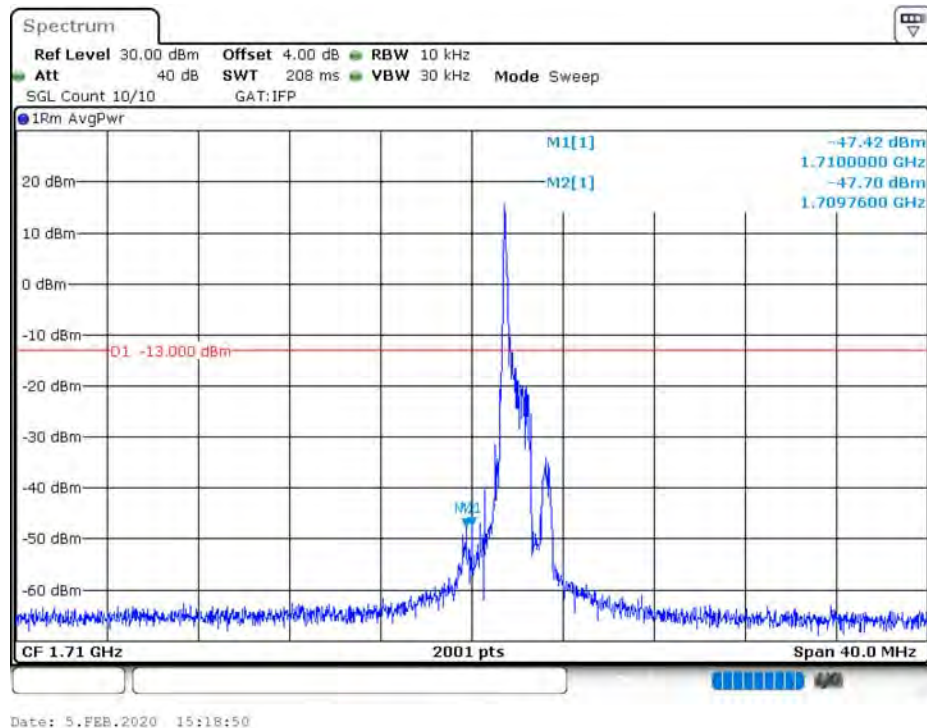
## B66\_CH132597\_15M\_16-QAM\_1RB5



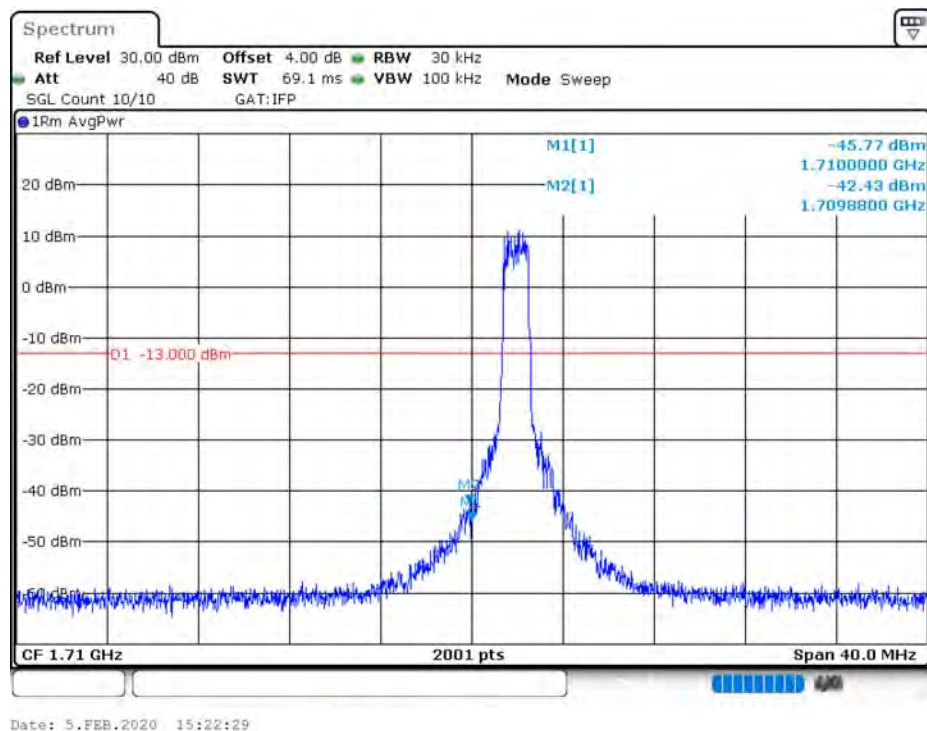
## B66\_CH132597\_15M\_16-QAM\_5RB1



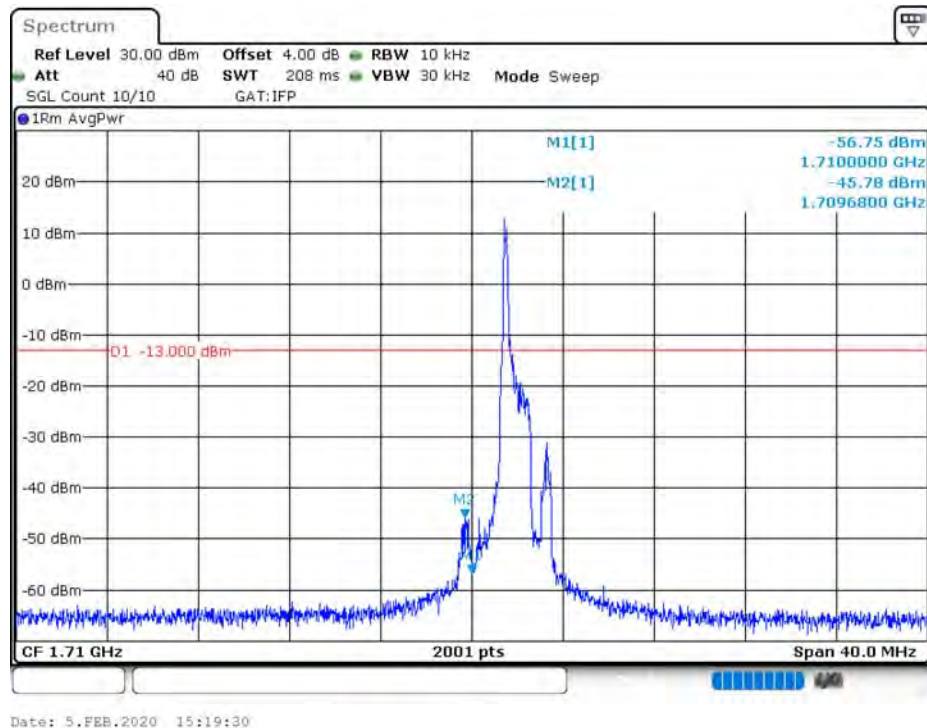
## B66\_CH132072\_20M\_QPSK\_1RB0



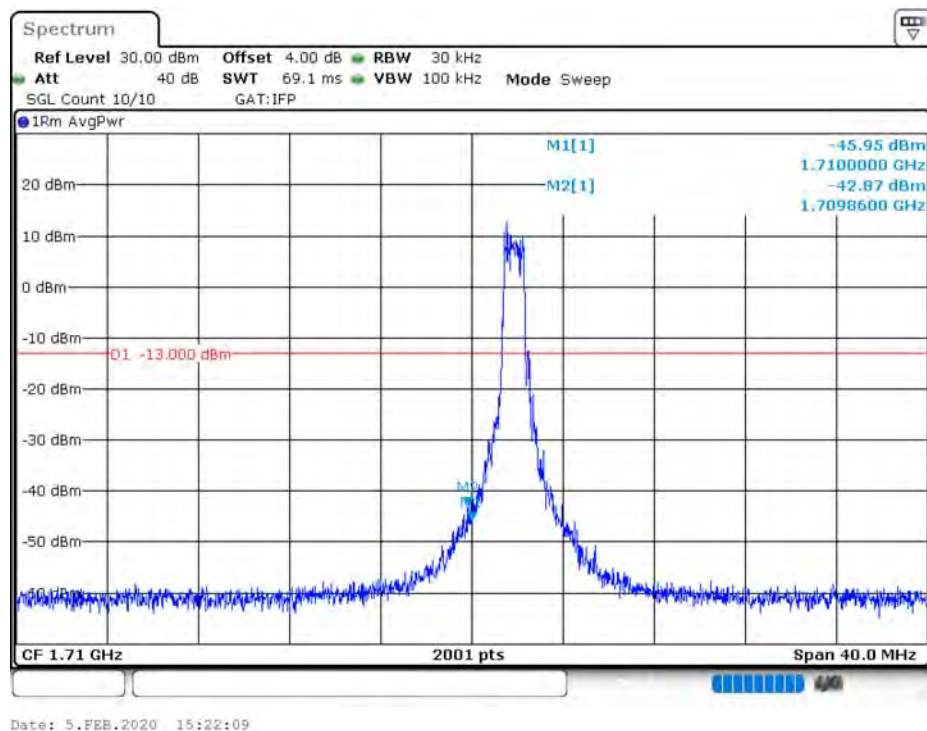
## B66\_CH132072\_20M\_QPSK\_6RB0



## B66\_CH132072\_20M\_16-QAM\_1RB0

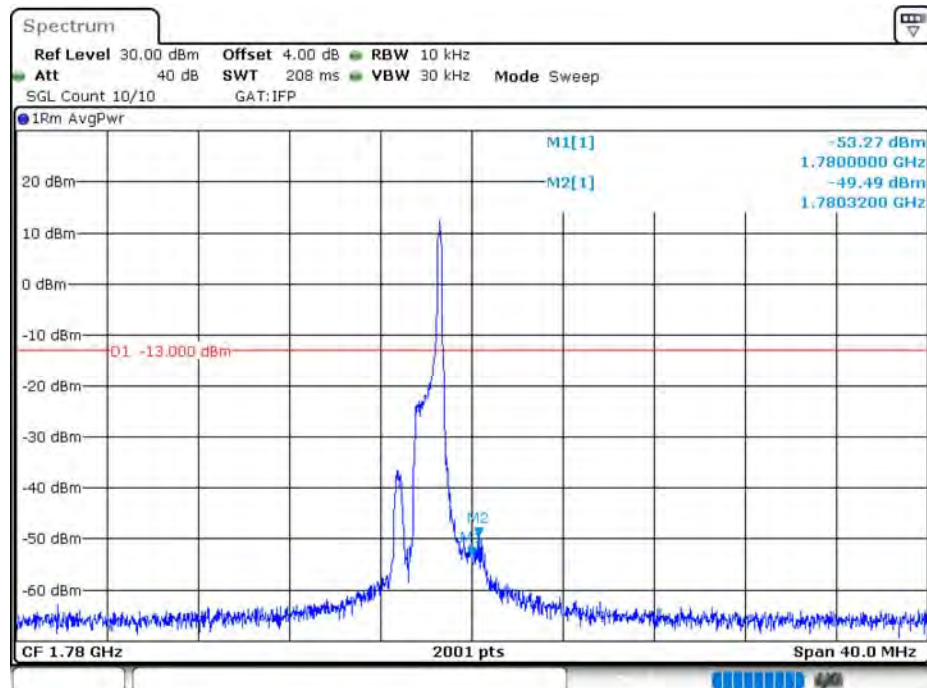


## B66\_CH132072\_20M\_16-QAM\_5RB0



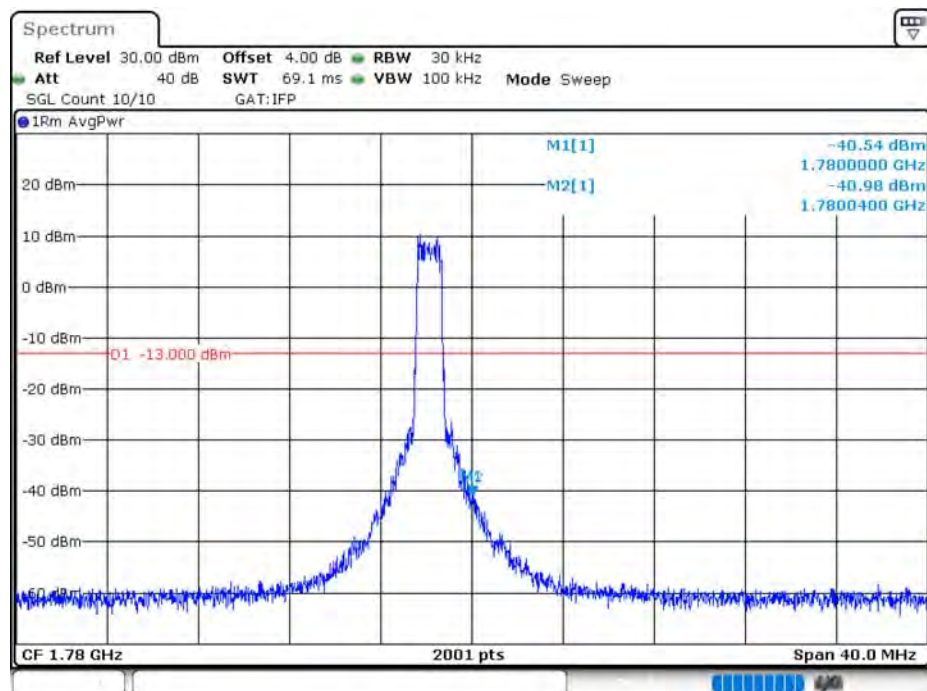


## B66\_CH132572\_20M\_QPSK\_1RB5



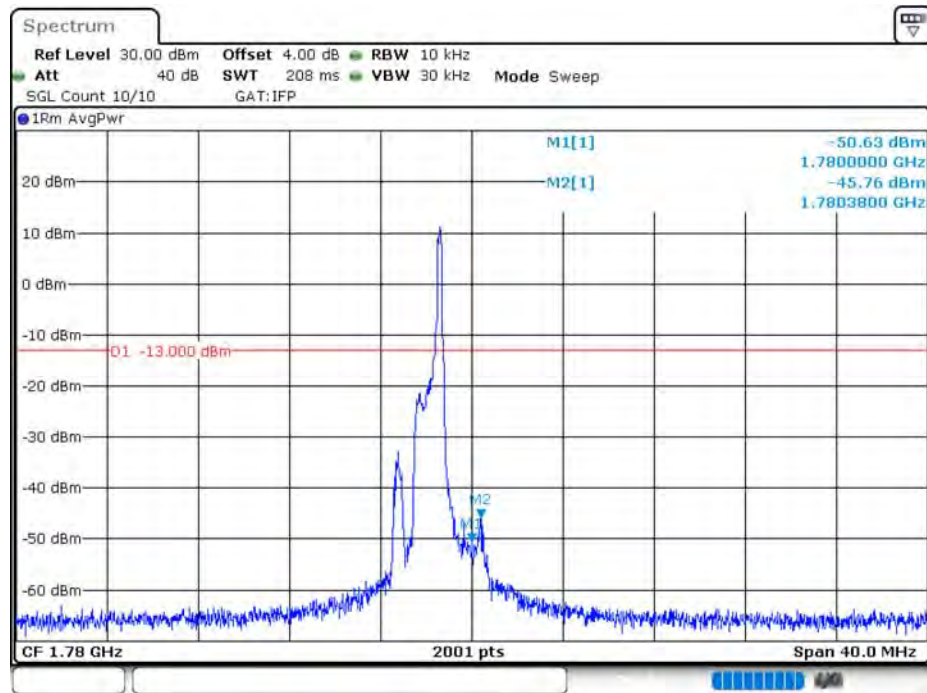
Date: 6.FEB.2020 11:08:51

## B66\_CH132572\_20M\_QPSK\_6RB0

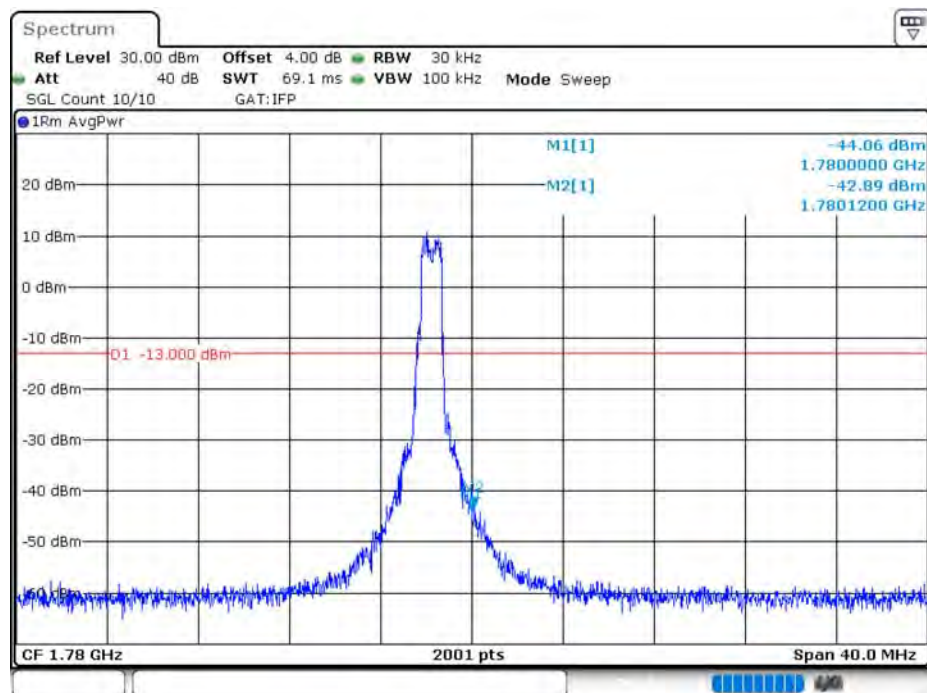


Date: 6.FEB.2020 11:11:12

## B66\_CH132572\_20M\_16-QAM\_1RB5

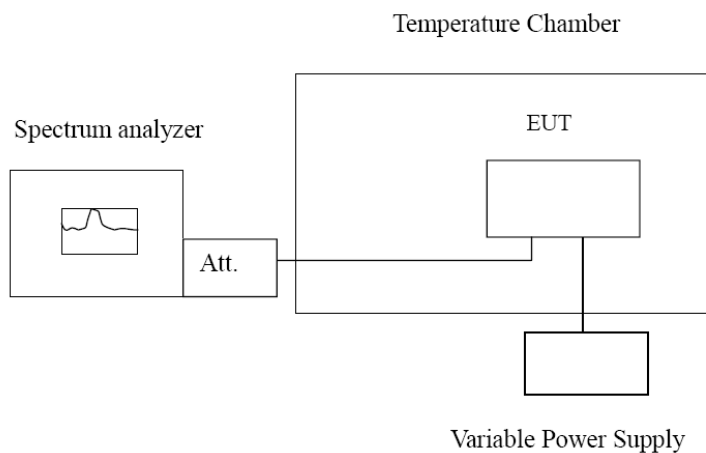


## B66\_CH132572\_20M\_16-QAM\_5RB1



## 8. Frequency Stability

### 8.1. Test Setup



### 8.2. Test Procedure

#### Frequency Stability Under Temperature Variations:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

#### Frequency Stability Under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency. Reduce the input voltage to specify extreme voltage variation ( $\pm 15\%$ ) and endpoint, record the maximum frequency change.

### 8.3. Test Method

KDB 971168 D01 Power Meas License Digital Systems v03 sub-clause 9

ANSI C63.26: 2015 Sub-clause 5.6

#### 8.4. Test Result

|                  |                                                            |                |        |
|------------------|------------------------------------------------------------|----------------|--------|
| Product          | Module                                                     |                |        |
| Test Item        | Frequency Stability Under Temperature & Voltage Variations |                |        |
| Test Mode        | Mode 1 : LTE Cat-M1_Band 2                                 |                |        |
| Date of Test     | 2020/02/13                                                 | Test Site      | SR12-H |
| Temperature (°C) | 21.0                                                       | Humidity (%RH) | 58.0   |

LTE-Band 2 1860MHz

Voltage

| Voltage (VDC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | 0.57                | 0.0003               |
| 3.7           | 1.48                | 0.0008               |
| 3.2           | 0.39                | 0.0002               |

Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 1.06                | 0.0006                |
| -20         | 0.24                | 0.0001                |
| -10         | 1.16                | 0.0006                |
| 0           | 0.62                | 0.0003                |
| 10          | 1.53                | 0.0008                |
| 20          | 1.49                | 0.0008                |
| 30          | 1.95                | 0.0010                |
| 40          | 1.18                | 0.0006                |
| 50          | 0.74                | 0.0004                |
| 60          | 1.23                | 0.0007                |
| 70          | 0.96                | 0.0005                |



## LTE-Band 2 1880MHz

## Voltage

| Voltage (VDC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | 1.02                | 0.0005               |
| 3.7           | 1.58                | 0.0008               |
| 3.2           | 1.14                | 0.0006               |

## Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 0.90                | 0.0005                |
| -20         | 1.28                | 0.0007                |
| -10         | 1.53                | 0.0008                |
| 0           | 0.92                | 0.0005                |
| 10          | 0.21                | 0.0001                |
| 20          | 0.98                | 0.0005                |
| 30          | 0.56                | 0.0003                |
| 40          | 0.71                | 0.0004                |
| 50          | 1.60                | 0.0009                |
| 60          | 0.15                | 0.0001                |
| 70          | 0.53                | 0.0003                |

## LTE-Band 2 1900MHz

## Voltage

| Voltage (VDC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | 0.56                | 0.0003               |
| 3.7           | 1.22                | 0.0006               |
| 3.2           | 0.67                | 0.0004               |

## Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 0.80                | 0.0004                |
| -20         | 0.78                | 0.0004                |
| -10         | 1.52                | 0.0008                |
| 0           | -0.03               | 0.0000                |
| 10          | 0.71                | 0.0004                |
| 20          | 0.63                | 0.0003                |
| 30          | 1.34                | 0.0007                |
| 40          | 0.76                | 0.0004                |
| 50          | -0.38               | -0.0002               |
| 60          | 1.24                | 0.0007                |
| 70          | 0.87                | 0.0005                |

|                  |                                                            |                |        |
|------------------|------------------------------------------------------------|----------------|--------|
| Product          | Module                                                     |                |        |
| Test Item        | Frequency Stability Under Temperature & Voltage Variations |                |        |
| Test Mode        | Mode 2 : LTE Cat-M1_Band 4                                 |                |        |
| Date of Test     | 2020/02/13                                                 | Test Site      | SR12-H |
| Temperature (°C) | 21.0                                                       | Humidity (%RH) | 58.0   |

LTE-Band 4 1720MHz

Voltage

| Voltage (VDC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | 0.88                | 0.0005               |
| 3.7           | 1.54                | 0.0009               |
| 3.2           | 1.00                | 0.0006               |

Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 0.18                | 0.0001                |
| -20         | 1.03                | 0.0006                |
| -10         | 1.18                | 0.0007                |
| 0           | 1.46                | 0.0008                |
| 10          | 1.25                | 0.0007                |
| 20          | 1.27                | 0.0007                |
| 30          | 1.23                | 0.0007                |
| 40          | 1.15                | 0.0007                |
| 50          | 1.66                | 0.0010                |
| 60          | 0.63                | 0.0004                |
| 70          | 1.07                | 0.0006                |

LTE-Band 4 1732.5MHz

Voltage

| Voltage (VDC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | 0.55                | 0.0003               |
| 3.7           | 1.23                | 0.0007               |
| 3.2           | 0.23                | 0.0001               |

Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 0.22                | 0.0001                |
| -20         | 0.91                | 0.0005                |
| -10         | 0.79                | 0.0005                |
| 0           | 0.73                | 0.0004                |
| 10          | 0.79                | 0.0005                |
| 20          | 0.35                | 0.0002                |
| 30          | 0.56                | 0.0003                |
| 40          | 1.29                | 0.0007                |
| 50          | 1.03                | 0.0006                |
| 60          | 0.81                | 0.0005                |
| 70          | 0.97                | 0.0006                |



## LTE-Band 4 1745MHz

## Voltage

| Voltage (VDC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | 1.52                | 0.0009               |
| 3.7           | 1.38                | 0.0008               |
| 3.2           | 0.75                | 0.0004               |

## Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 1.09                | 0.0006                |
| -20         | 1.68                | 0.0010                |
| -10         | 0.58                | 0.0003                |
| 0           | 1.06                | 0.0006                |
| 10          | 0.56                | 0.0003                |
| 20          | 0.71                | 0.0004                |
| 30          | 1.43                | 0.0008                |
| 40          | 1.72                | 0.0010                |
| 50          | 1.59                | 0.0009                |
| 60          | 1.17                | 0.0007                |
| 70          | 0.35                | 0.0002                |

|                  |                                                            |                |        |
|------------------|------------------------------------------------------------|----------------|--------|
| Product          | Module                                                     |                |        |
| Test Item        | Frequency Stability Under Temperature & Voltage Variations |                |        |
| Test Mode        | Mode 3 : LTE Cat-M1_Band 5                                 |                |        |
| Date of Test     | 2020/02/13                                                 | Test Site      | SR12-H |
| Temperature (°C) | 21.0                                                       | Humidity (%RH) | 58.0   |

## LTE-Band 5 829MHz

## Voltage

| Voltage (VAC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | 0.63                | 0.0008               |
| 3.7           | 1.67                | 0.0020               |
| 3.2           | 1.79                | 0.0022               |

## Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 1.78                | 0.0021                |
| -20         | 0.50                | 0.0006                |
| -10         | 0.71                | 0.0009                |
| 0           | 1.34                | 0.0016                |
| 10          | 0.84                | 0.0010                |
| 20          | 1.54                | 0.0019                |
| 30          | 1.20                | 0.0014                |
| 40          | 0.96                | 0.0012                |
| 50          | 0.97                | 0.0012                |
| 60          | 1.12                | 0.0014                |
| 70          | 1.25                | 0.0015                |

LTE-Band 5 836.5MHz

Voltage

| Voltage (VAC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | 0.35                | 0.0004               |
| 3.7           | 1.26                | 0.0015               |
| 3.2           | 0.67                | 0.0008               |

Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 1.54                | 0.0018                |
| -20         | 0.63                | 0.0008                |
| -10         | 0.31                | 0.0004                |
| 0           | 0.84                | 0.0010                |
| 10          | 0.76                | 0.0009                |
| 20          | 0.53                | 0.0006                |
| 30          | 0.55                | 0.0007                |
| 40          | -0.14               | -0.0002               |
| 50          | 0.49                | 0.0006                |
| 60          | 0.74                | 0.0009                |
| 70          | 0.81                | 0.0010                |

LTE-Band 5 844MHz

Voltage

| Voltage (VAC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | 0.27                | 0.0003               |
| 3.7           | 1.05                | 0.0012               |
| 3.2           | 1.05                | 0.0012               |

Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 0.37                | 0.0004                |
| -20         | 0.76                | 0.0009                |
| -10         | -0.43               | -0.0005               |
| 0           | -0.12               | -0.0001               |
| 10          | 0.30                | 0.0004                |
| 20          | 0.67                | 0.0008                |
| 30          | 0.14                | 0.0002                |
| 40          | 0.13                | 0.0002                |
| 50          | -0.15               | -0.0002               |
| 60          | 0.80                | 0.0009                |
| 70          | 1.50                | 0.0018                |

|                  |                                                            |                |        |
|------------------|------------------------------------------------------------|----------------|--------|
| Product          | Module                                                     |                |        |
| Test Item        | Frequency Stability Under Temperature & Voltage Variations |                |        |
| Test Mode        | Mode 4 : LTE Cat-M1_Band 12                                |                |        |
| Date of Test     | 2020/02/13                                                 | Test Site      | SR12-H |
| Temperature (°C) | 21.0                                                       | Humidity (%RH) | 58.0   |

## LTE-Band 12 704MHz

## Voltage

| Voltage (VAC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | 1.78                | 0.0025               |
| 3.7           | 1.78                | 0.0025               |
| 3.2           | 1.66                | 0.0024               |

## Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 1.36                | 0.0019                |
| -20         | 0.77                | 0.0011                |
| -10         | 0.45                | 0.0006                |
| 0           | 1.03                | 0.0015                |
| 10          | 1.23                | 0.0017                |
| 20          | 1.09                | 0.0015                |
| 30          | 1.61                | 0.0023                |
| 40          | 0.85                | 0.0012                |
| 50          | 0.75                | 0.0011                |
| 60          | 1.14                | 0.0016                |
| 70          | 0.41                | 0.0006                |

LTE-Band 12 707.5MHz

Voltage

| Voltage (VAC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | 1.27                | 0.0018               |
| 3.7           | 2.29                | 0.0032               |
| 3.2           | 2.07                | 0.0029               |

Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 1.46                | 0.0021                |
| -20         | 1.14                | 0.0016                |
| -10         | 2.31                | 0.0033                |
| 0           | 0.81                | 0.0011                |
| 10          | 2.14                | 0.0030                |
| 20          | 1.26                | 0.0018                |
| 30          | 2.19                | 0.0031                |
| 40          | 2.30                | 0.0033                |
| 50          | 1.80                | 0.0025                |
| 60          | 1.81                | 0.0026                |
| 70          | 2.37                | 0.0033                |



## LTE-Band 12 711MHz

## Voltage

| Voltage (VAC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | 1.98                | 0.0028               |
| 3.7           | 2.02                | 0.0028               |
| 3.2           | 1.96                | 0.0028               |

## Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 2.60                | 0.0037                |
| -20         | 2.03                | 0.0029                |
| -10         | 0.95                | 0.0013                |
| 0           | 1.95                | 0.0027                |
| 10          | 1.31                | 0.0018                |
| 20          | 2.03                | 0.0029                |
| 30          | 1.39                | 0.0020                |
| 40          | 2.18                | 0.0031                |
| 50          | 1.06                | 0.0015                |
| 60          | 1.10                | 0.0015                |
| 70          | 2.00                | 0.0028                |

|                  |                                                            |                |        |
|------------------|------------------------------------------------------------|----------------|--------|
| Product          | Module                                                     |                |        |
| Test Item        | Frequency Stability Under Temperature & Voltage Variations |                |        |
| Test Mode        | Mode 5 : LTE Cat-M1_Band 13                                |                |        |
| Date of Test     | 2020/02/13                                                 | Test Site      | SR12-H |
| Temperature (°C) | 21.0                                                       | Humidity (%RH) | 58.0   |

## LTE-Band 13 782MHz

## Voltage

| Voltage (VDC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | 2.11                | 0.0027               |
| 3.7           | 1.83                | 0.0023               |
| 3.2           | 1.71                | 0.0022               |

## Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 1.73                | 0.0022                |
| -20         | 1.70                | 0.0022                |
| -10         | 1.19                | 0.0015                |
| 0           | 1.20                | 0.0015                |
| 10          | 1.53                | 0.0020                |
| 20          | 0.81                | 0.0010                |
| 30          | 1.27                | 0.0016                |
| 40          | 1.42                | 0.0018                |
| 50          | 1.07                | 0.0014                |
| 60          | 0.82                | 0.0010                |
| 70          | 1.15                | 0.0015                |

|                  |                                                            |                |        |
|------------------|------------------------------------------------------------|----------------|--------|
| Product          | Module                                                     |                |        |
| Test Item        | Frequency Stability Under Temperature & Voltage Variations |                |        |
| Test Mode        | Mode 6 : LTE Cat-M1_Band 25                                |                |        |
| Date of Test     | 2020/02/13                                                 | Test Site      | SR12-H |
| Temperature (°C) | 21.0                                                       | Humidity (%RH) | 58.0   |

LTE-Band 25 1860MHz

Voltage

| Voltage (VDC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | 0.91                | 0.0005               |
| 3.7           | 1.49                | 0.0008               |
| 3.2           | 1.54                | 0.0008               |

Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 1.28                | 0.0007                |
| -20         | 0.87                | 0.0005                |
| -10         | 0.63                | 0.0003                |
| 0           | 0.46                | 0.0002                |
| 10          | 0.06                | 0.0000                |
| 20          | 0.51                | 0.0003                |
| 30          | 0.47                | 0.0003                |
| 40          | 0.64                | 0.0003                |
| 50          | 1.65                | 0.0009                |
| 60          | 0.88                | 0.0005                |
| 70          | 1.79                | 0.0010                |

LTE-Band 25 1882.5MHz

Voltage

| Voltage (VDC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | -0.21               | -0.0001              |
| 3.7           | 0.59                | 0.0003               |
| 3.2           | 0.11                | 0.0001               |

Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 0.00                | 0.0000                |
| -20         | 0.29                | 0.0002                |
| -10         | -0.09               | 0.0000                |
| 0           | -0.05               | 0.0000                |
| 10          | -0.50               | -0.0003               |
| 20          | 0.66                | 0.0004                |
| 30          | -0.16               | -0.0001               |
| 40          | 0.07                | 0.0000                |
| 50          | 0.09                | 0.0000                |
| 60          | -0.20               | -0.0001               |
| 70          | -0.37               | -0.0002               |

LTE-Band 25 1905MHz

Voltage

| Voltage (VDC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | -0.39               | -0.0002              |
| 3.7           | 0.31                | 0.0002               |
| 3.2           | -0.15               | -0.0001              |

Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 0.18                | 0.0001                |
| -20         | -0.83               | -0.0004               |
| -10         | 0.70                | 0.0004                |
| 0           | 0.00                | 0.0000                |
| 10          | 0.51                | 0.0003                |
| 20          | 0.11                | 0.0001                |
| 30          | -0.57               | -0.0003               |
| 40          | -0.07               | 0.0000                |
| 50          | 0.24                | 0.0001                |
| 60          | 0.07                | 0.0000                |
| 70          | 0.02                | 0.0000                |

|                  |                                                                      |                |        |
|------------------|----------------------------------------------------------------------|----------------|--------|
| Product          | Module                                                               |                |        |
| Test Item        | Frequency Stability Under Temperature & Voltage Variations (Part 22) |                |        |
| Test Mode        | Mode 7 : LTE Cat-M1_Band 26                                          |                |        |
| Date of Test     | 2020/02/13                                                           | Test Site      | SR12-H |
| Temperature (°C) | 21.0                                                                 | Humidity (%RH) | 58.0   |

LTE-Band 26(Part 22) 831.5MHz

Voltage

| Voltage (VDC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | 1.95                | 0.0023               |
| 3.7           | 1.86                | 0.0022               |
| 3.2           | 1.48                | 0.0018               |

Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 2.22                | 0.0027                |
| -20         | 1.77                | 0.0021                |
| -10         | 1.05                | 0.0013                |
| 0           | 0.89                | 0.0011                |
| 10          | 2.00                | 0.0024                |
| 20          | 0.84                | 0.0010                |
| 30          | 0.96                | 0.0012                |
| 40          | 1.12                | 0.0013                |
| 50          | 1.62                | 0.0019                |
| 60          | 0.96                | 0.0012                |
| 70          | 1.53                | 0.0018                |

LTE-Band 26(Part 22) 836.5MHz

Voltage

| Voltage (VDC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | 2.07                | 0.0025               |
| 3.7           | 1.83                | 0.0022               |
| 3.2           | 1.80                | 0.0022               |

Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 0.49                | 0.0006                |
| -20         | 0.99                | 0.0012                |
| -10         | 1.20                | 0.0014                |
| 0           | 0.30                | 0.0004                |
| 10          | 2.10                | 0.0025                |
| 20          | 1.57                | 0.0019                |
| 30          | 1.30                | 0.0016                |
| 40          | 1.42                | 0.0017                |
| 50          | 0.57                | 0.0007                |
| 60          | 0.94                | 0.0011                |
| 70          | 1.50                | 0.0018                |



## LTE-Band 26 (Part 22) 841.5MHz

## Voltage

| Voltage (VDC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | 1.29                | 0.0015               |
| 3.7           | 1.60                | 0.0019               |
| 3.2           | 2.14                | 0.0025               |

## Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 0.26                | 0.0003                |
| -20         | 1.21                | 0.0014                |
| -10         | -0.05               | -0.0001               |
| 0           | 1.56                | 0.0019                |
| 10          | 0.64                | 0.0008                |
| 20          | 1.88                | 0.0022                |
| 30          | 1.00                | 0.0012                |
| 40          | 0.77                | 0.0009                |
| 50          | 0.09                | 0.0001                |
| 60          | 0.73                | 0.0009                |
| 70          | 0.50                | 0.0006                |

|                  |                                                                      |                |        |
|------------------|----------------------------------------------------------------------|----------------|--------|
| Product          | Module                                                               |                |        |
| Test Item        | Frequency Stability Under Temperature & Voltage Variations (Part 90) |                |        |
| Test Mode        | Mode 7 : LTE Cat-M1_Band 26                                          |                |        |
| Date of Test     | 2020/02/13                                                           | Test Site      | SR12-H |
| Temperature (°C) | 21.0                                                                 | Humidity (%RH) | 58.0   |

## LTE-Band 26(Part 90) 819MHz

## Voltage

| Voltage (VDC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | -0.11               | -0.0001              |
| 3.7           | 1.19                | 0.0015               |
| 3.2           | 0.99                | 0.0012               |

## Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 1.83                | 0.0022                |
| -20         | 0.47                | 0.0006                |
| -10         | 1.13                | 0.0014                |
| 0           | 0.76                | 0.0009                |
| 10          | 1.19                | 0.0015                |
| 20          | -0.33               | -0.0004               |
| 30          | 1.25                | 0.0015                |
| 40          | 1.34                | 0.0016                |
| 50          | 0.47                | 0.0006                |
| 60          | -0.41               | -0.0005               |
| 70          | 0.46                | 0.0006                |

|                  |                                                            |                |        |
|------------------|------------------------------------------------------------|----------------|--------|
| Product          | Module                                                     |                |        |
| Test Item        | Frequency Stability Under Temperature & Voltage Variations |                |        |
| Test Mode        | Mode 8 : LTE Cat-M1_Band 66                                |                |        |
| Date of Test     | 2020/02/13                                                 | Test Site      | SR12-H |
| Temperature (°C) | 21.0                                                       | Humidity (%RH) | 58.0   |

## LTE-Band 66 1720MHz

## Voltage

| Voltage (VDC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | 1.89                | 0.0011               |
| 3.7           | 1.91                | 0.0011               |
| 3.2           | 2.16                | 0.0013               |

## Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 1.12                | 0.0007                |
| -20         | 0.72                | 0.0004                |
| -10         | 1.58                | 0.0009                |
| 0           | 1.51                | 0.0009                |
| 10          | 1.29                | 0.0008                |
| 20          | 1.15                | 0.0007                |
| 30          | 1.71                | 0.0010                |
| 40          | 1.13                | 0.0007                |
| 50          | 1.91                | 0.0011                |
| 60          | 1.41                | 0.0008                |
| 70          | 2.00                | 0.0012                |

LTE-Band 66 1745MHz

Voltage

| Voltage (VDC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | -0.76               | -0.0004              |
| 3.7           | 0.75                | 0.0004               |
| 3.2           | 0.41                | 0.0002               |

Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 0.71                | 0.0004                |
| -20         | 0.08                | 0.0000                |
| -10         | 0.10                | 0.0001                |
| 0           | 0.51                | 0.0003                |
| 10          | 0.06                | 0.0000                |
| 20          | 0.05                | 0.0000                |
| 30          | 0.95                | 0.0005                |
| 40          | 0.20                | 0.0001                |
| 50          | -0.19               | -0.0001               |
| 60          | 0.68                | 0.0004                |
| 70          | -0.03               | 0.0000                |

LTE-Band 66 1770MHz

Voltage

| Voltage (VDC) | Frequency Error(Hz) | Frequency Error(ppm) |
|---------------|---------------------|----------------------|
| 4.35          | 0.90                | 0.0005               |
| 3.7           | 1.06                | 0.0006               |
| 3.2           | 0.54                | 0.0003               |

Temperature

| TEMPERATURE | Frequency Error(Hz) | Frequency Error (ppm) |
|-------------|---------------------|-----------------------|
| -30         | 0.37                | 0.0002                |
| -20         | 1.06                | 0.0006                |
| -10         | 0.21                | 0.0001                |
| 0           | 0.82                | 0.0005                |
| 10          | 1.40                | 0.0008                |
| 20          | 0.30                | 0.0002                |
| 30          | 0.63                | 0.0004                |
| 40          | 0.49                | 0.0003                |
| 50          | 1.07                | 0.0006                |
| 60          | -0.36               | -0.0002               |
| 70          | 0.97                | 0.0005                |