

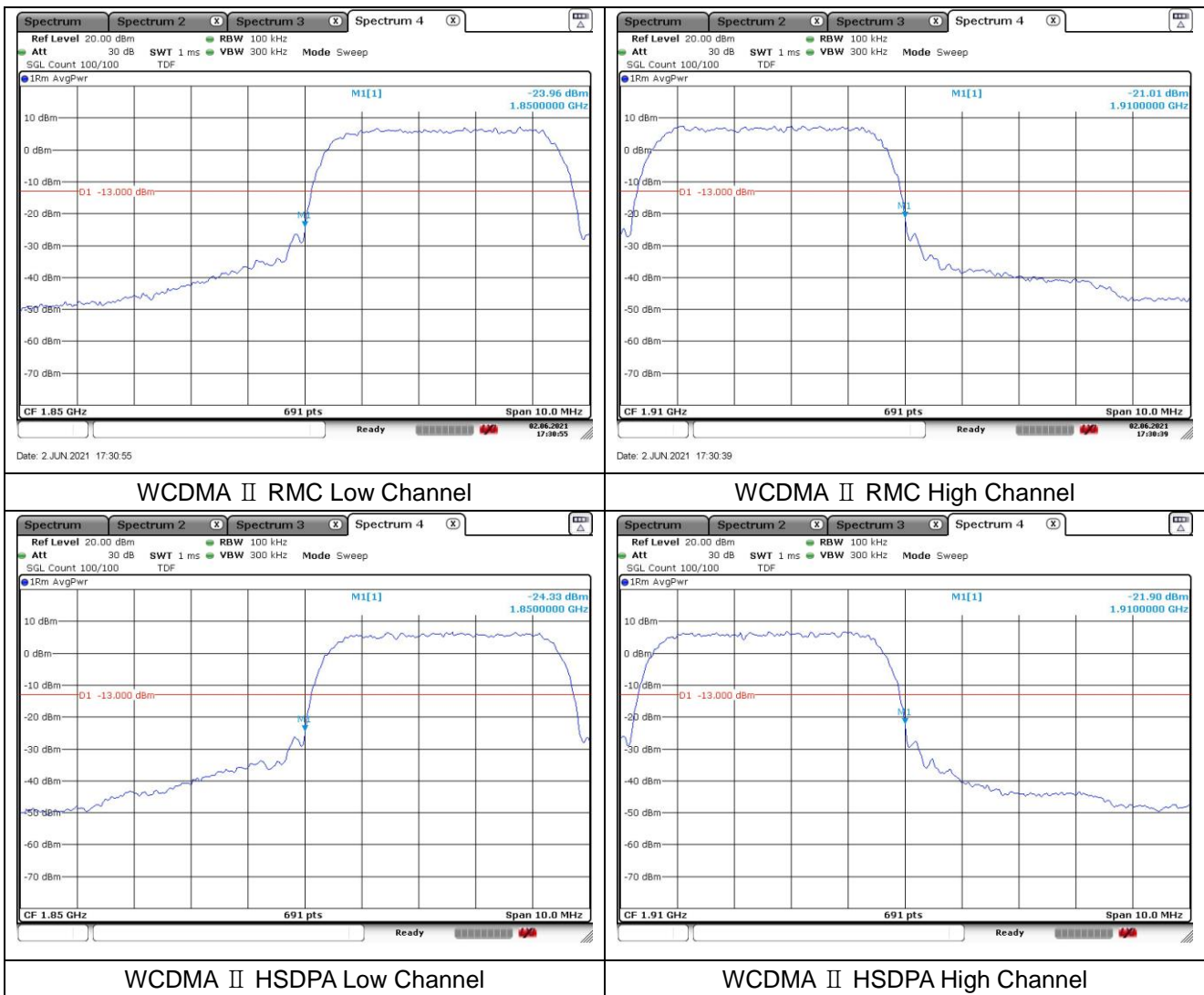
### 7.3. Test Results

Ambient temperature : (23 ± 1) °C  
 Relative humidity : 47 % R.H.

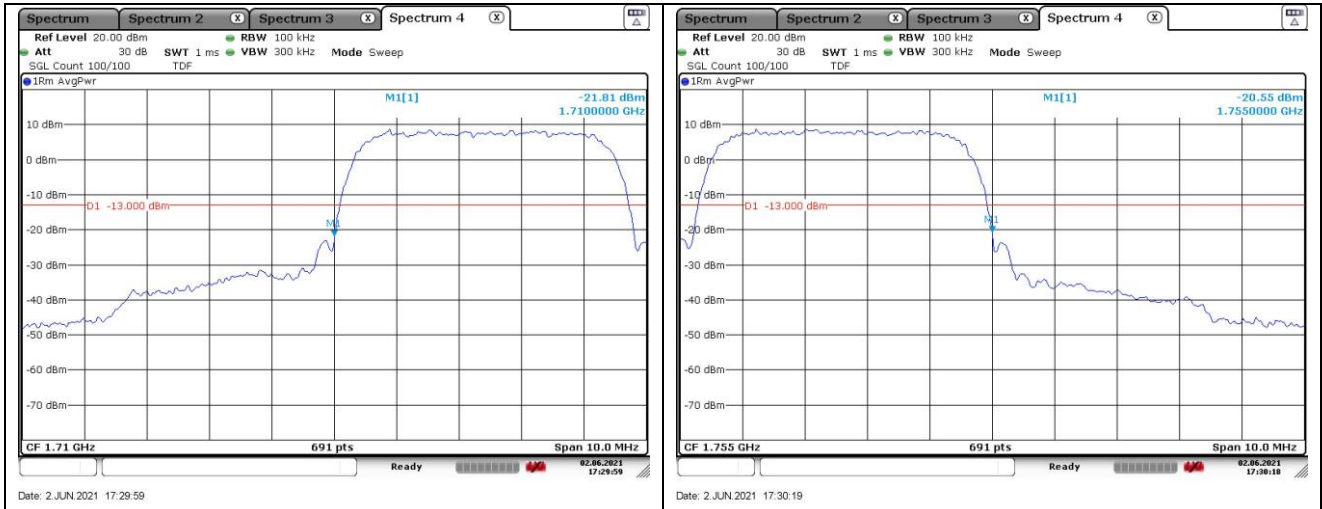
#### - Test plots

#### SIM 1

#### WCDMA II

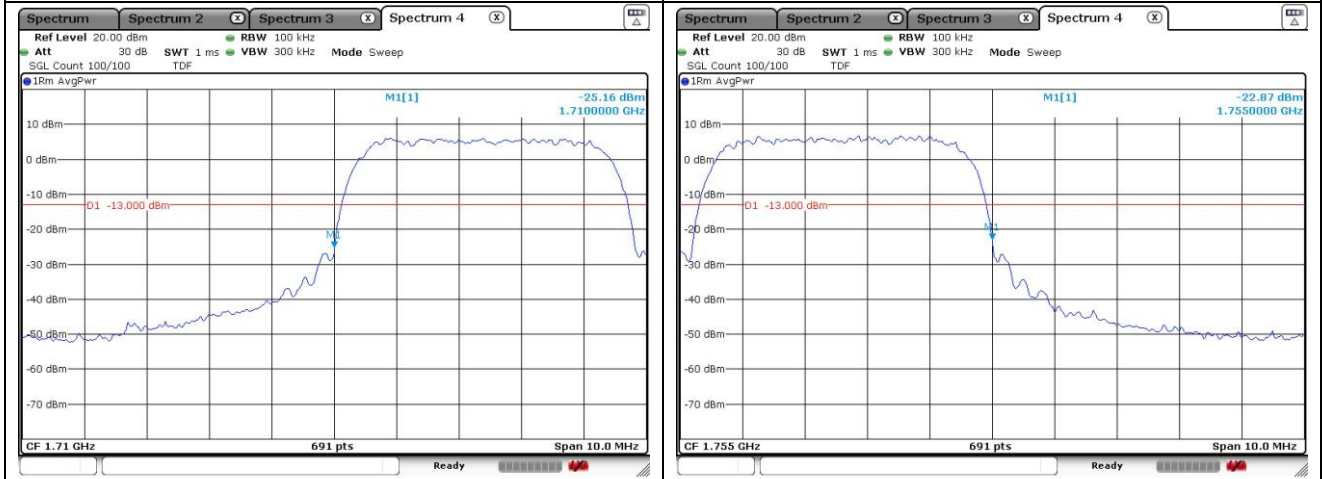


**WCDMA IV**



**WCDMA IV RMC Low Channel**

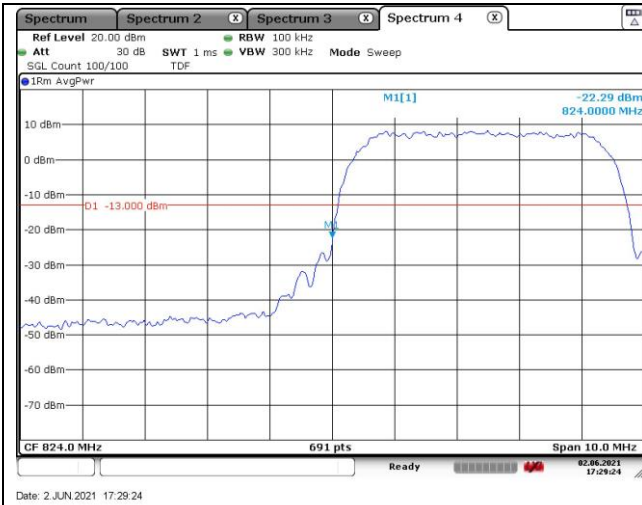
**WCDMA IV RMC High Channel**



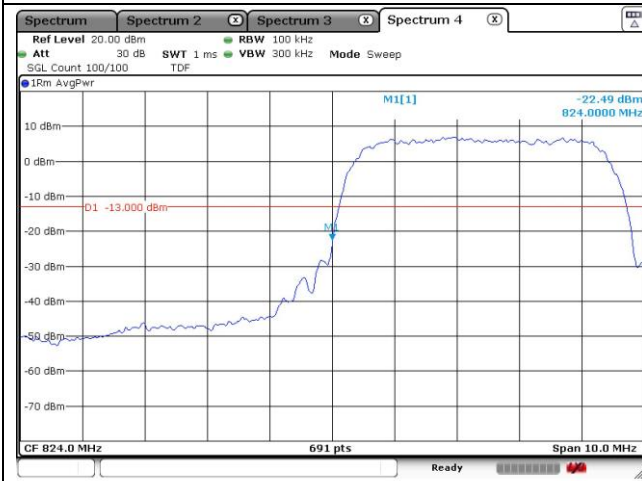
**WCDMA IV HSDPA Low Channel**

**WCDMA IV HSDPA High Channel**

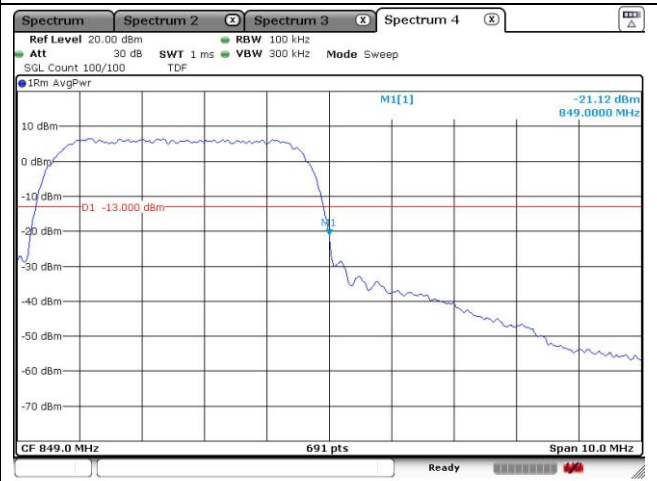
**WCDMA V**



**WCDMA V RMC Low Channel**



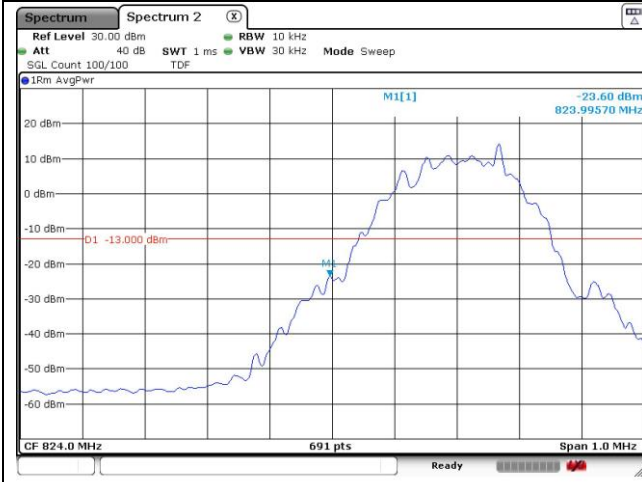
**WCDMA V RMC High Channel**



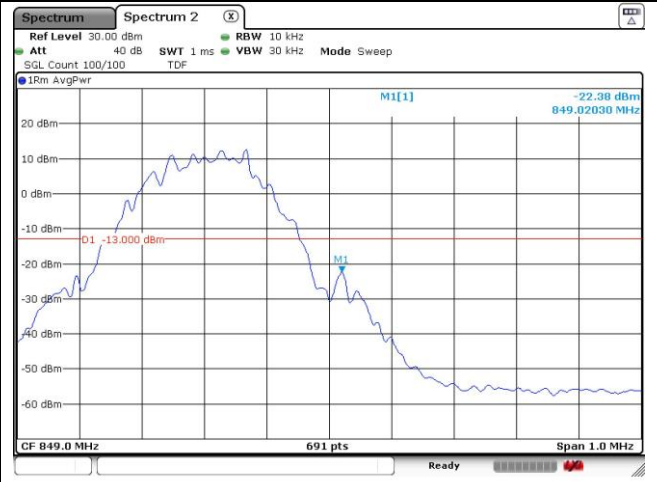
**WCDMA V HSDPA Low Channel**

**WCDMA V HSDPA High Channel**

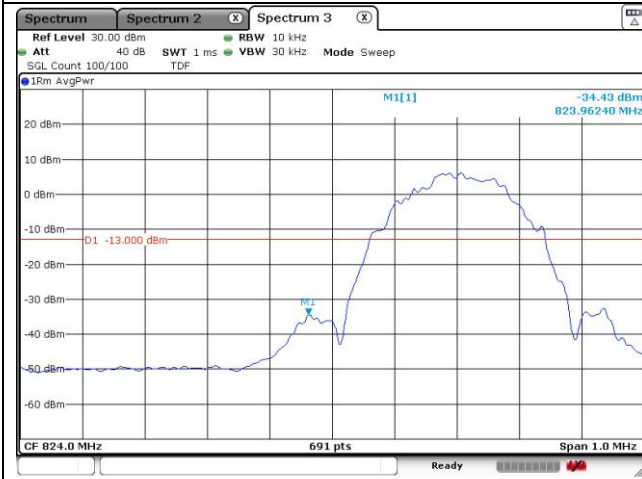
**GSM 850**



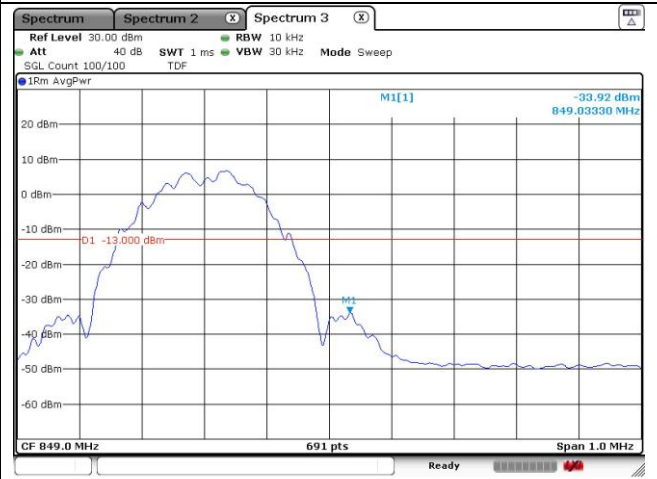
GSM 850 VOICE Low Channel



GSM 850 VOICE High Channel

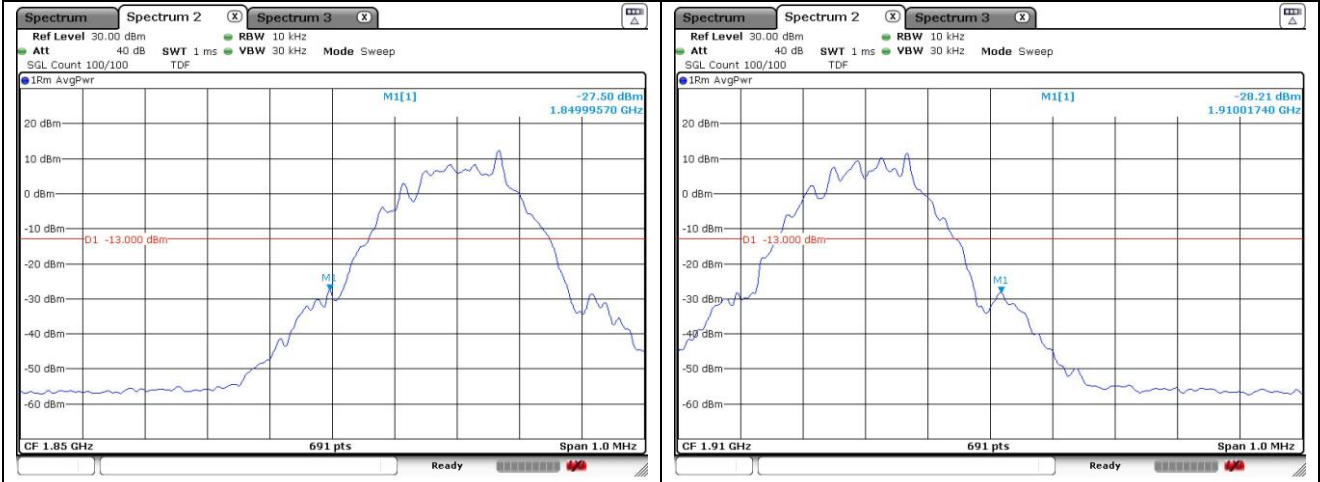


GSM 850 EDGE Low Channel



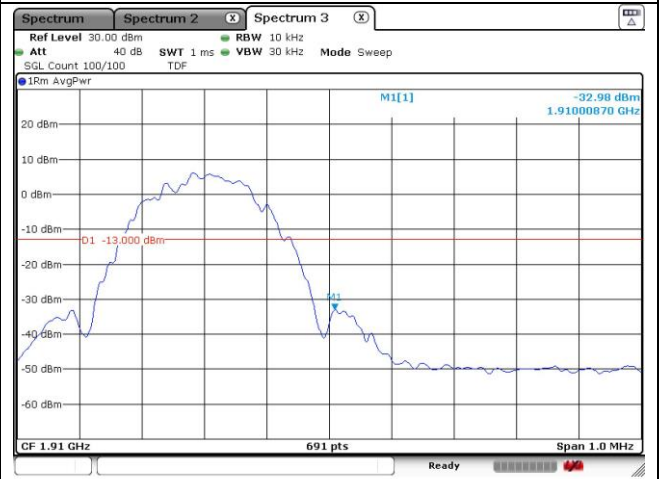
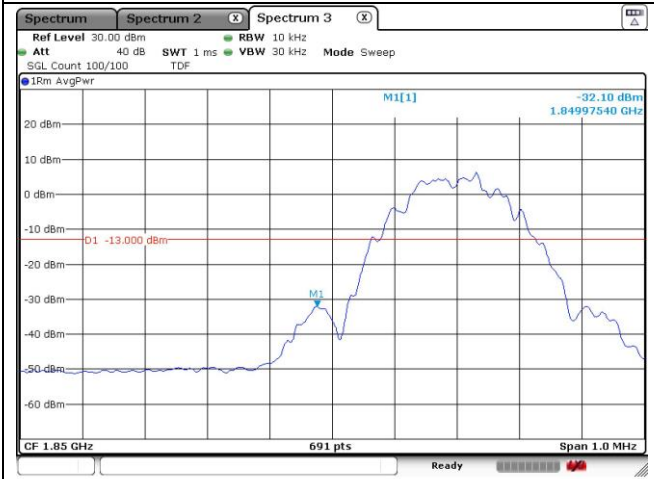
GSM 850 EDGE High Channel

**GSM 1900**



GSM 1900 VOICE Low Channel

GSM 1900 VOICE High Channel

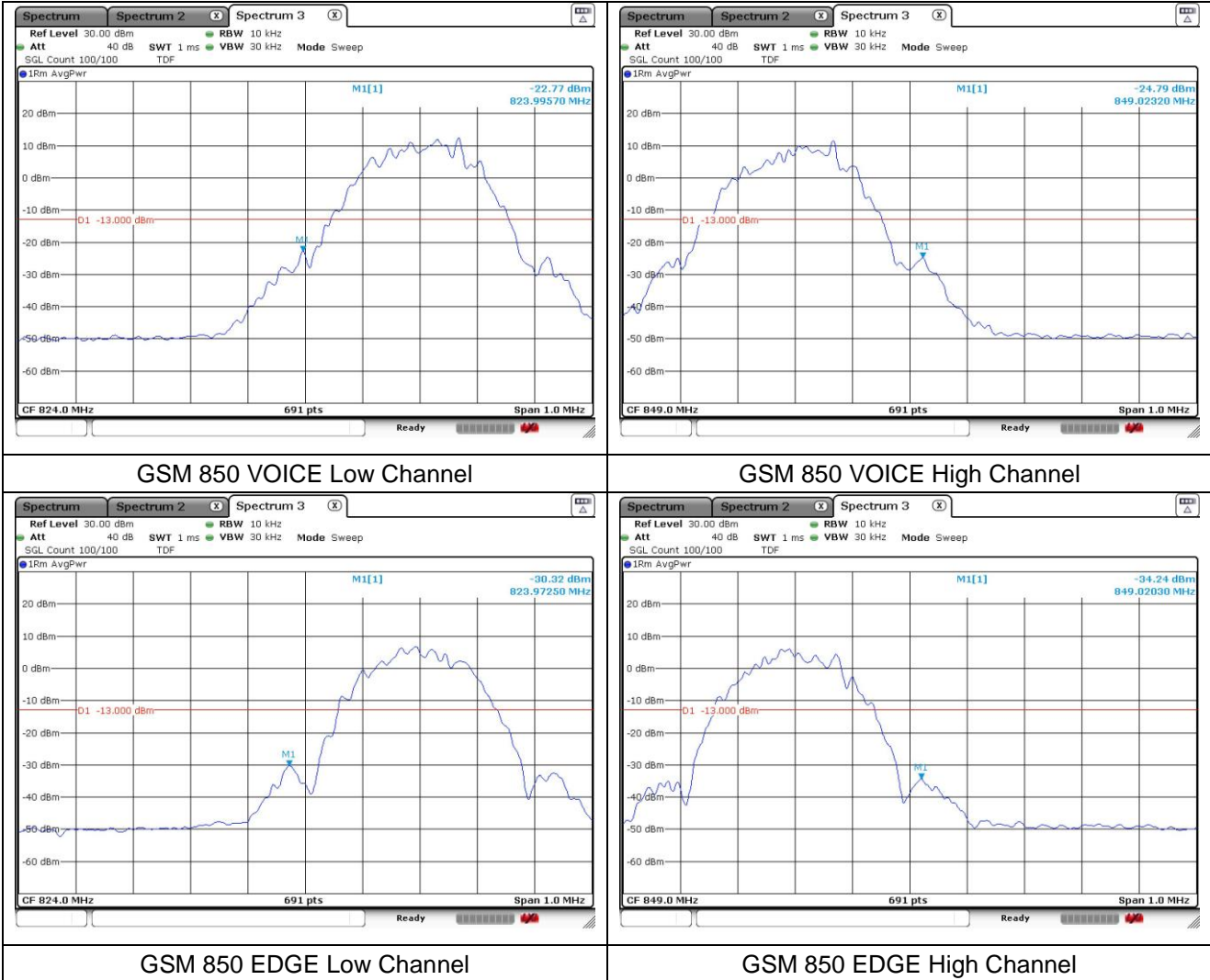


GSM 1900 EDGE Low Channel

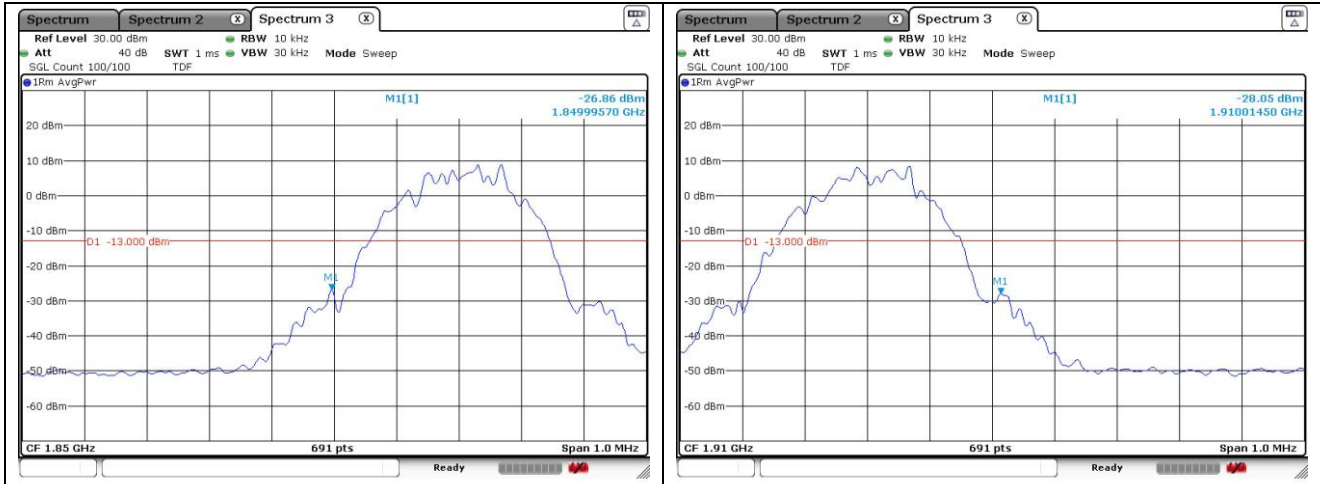
GSM 1900 EDGE High Channel

**SIM 2**

**GSM 850**

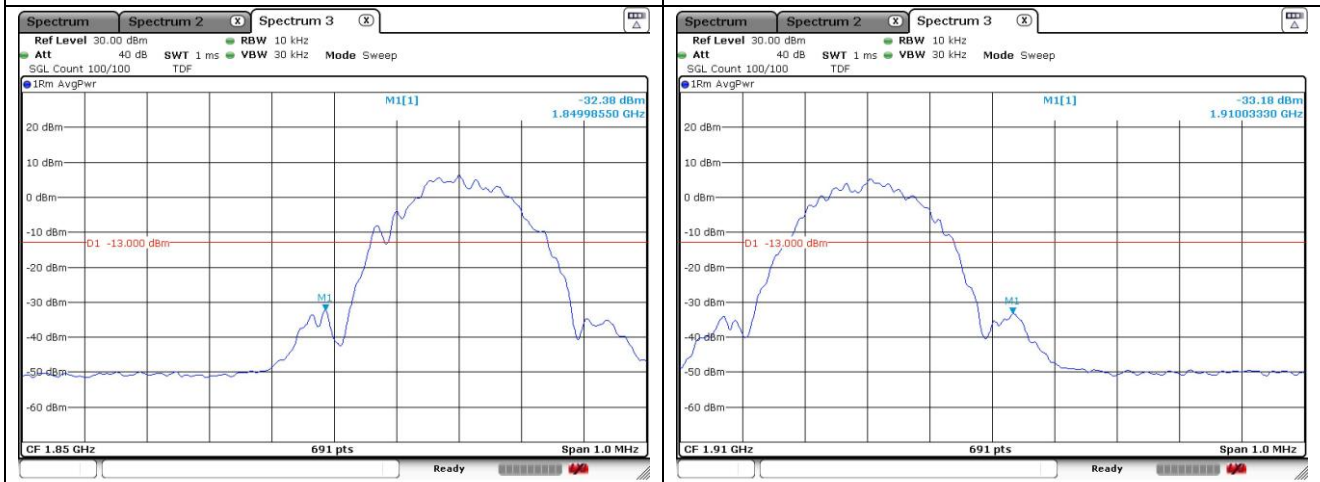


**GSM 1900**



GSM 1900 VOICE Low Channel

GSM 1900 VOICE High Channel



GSM 1900 EDGE Low Channel

GSM 1900 EDGE High Channel

## 8. Frequency Stability

### 8.1. Limit

#### FCC

- § 2.1055 (a), § 2.1055 (d) & following:

- §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table of this section.

For Mobile devices operating in the 824 to 849 MHz band at a power level less than or equal to 3 Watts, the limit specified in Table C-1 is +/- 2.5 ppm.

- §24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

- §27.54, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

#### IC

- RSS-Gen Issue 5

6.11, for licensed devices, the following measurement conditions apply:

a. at the temperatures of -30°C (-22°F), +20°C (+68°F) and +50°C (+122°F), and at the manufacturer's rated supply voltage

- RSS-132 Issue 3

5.3, The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations and ±1.5 ppm for base stations.

- RSS-133 Issue 6

6.3, the carrier frequency shall not depart from the reference frequency, in excess of ±2.5 ppm for mobile stations and ±1.0 ppm for base stations.

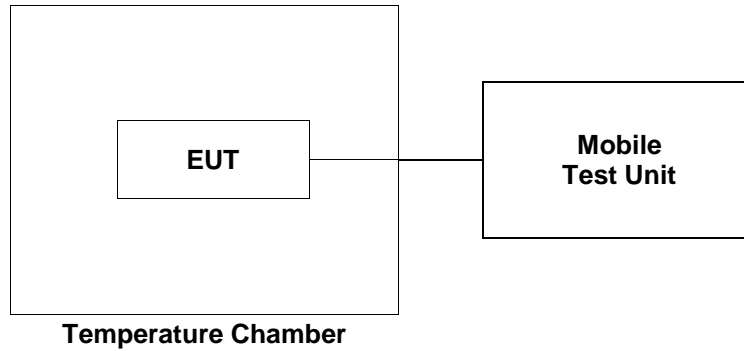
- RSS-139 Issue 3

6.4, the frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.



## 8.2. Test Procedure

1. Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to a Mobile Test Unit via feed-through attenuators.
2. The EUT was placed inside the temperature chamber.
3. After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from Mobile Test Unit.



### 8.3. Test Results

Ambient temperature : (23 ± 1) °C  
 Relative humidity : 47 % R.H.

#### SIM 1

#### WCDMA II mode at middle channel

| Reference Frequency: 1 880.0 MHz        |                    |                                    |           |
|---|--------------------|------------------------------------|-----------|
| Frequency Stability versus Temperature  |                    |                                    |           |
| Environment Temperature (°C)            | Power Supplied (V) | Frequency Measure with Time Elapse |           |
|   |                    | Frequency Error (Hz)               | ppm       |
| 50                                      | 12.5               | 12.57                              | 0.000 51  |
| 40                                      |                    | 11.96                              | 0.000 18  |
| 30                                      |                    | 12.34                              | 0.000 38  |
| 20(Ref.)                                |                    | 11.62                              | -         |
| 10                                      |                    | 11.35                              | -0.000 14 |
| 0                                       |                    | 11.24                              | -0.000 20 |
| -10                                     |                    | 11.08                              | -0.000 29 |
| -20                                     |                    | 11.37                              | -0.000 13 |
| -30                                     |                    | 11.24                              | -0.000 20 |
| Frequency Stability versus Power Supply |                    |                                    |           |
| Environment Temperature (°C)            | Power Supplied (V) | Frequency Measure with Time Elapse |           |
|   |                    | Frequency Error (Hz)               | ppm       |
| 20                                      | 14.38 (115%)       | 11.28                              | -0.000 18 |
|   | 10.63 (85%)        | 11.53                              | -0.000 05 |

**WCDMA IV mode at middle channel**

| Reference Frequency: 1 732.6 MHz        |                    |                                    |           |
|---|--------------------|------------------------------------|-----------|
| Frequency Stability versus Temperature  |                    |                                    |           |
| Environment Temperature (°C)            | Power Supplied (V) | Frequency Measure with Time Elapse |           |
|   |                    | Frequency Error (Hz)               | ppm       |
| 50                                      | 12.5               | -11.36                             | 0.000 27  |
| 40                                      |                    | -11.05                             | 0.000 44  |
| 30                                      |                    | -11.79                             | 0.000 02  |
| 20(Ref.)                                |                    | -11.82                             | -         |
| 10                                      |                    | -12.51                             | -0.000 40 |
| 0                                       |                    | -11.96                             | -0.000 08 |
| -10                                     |                    | -11.86                             | -0.000 02 |
| -20                                     |                    | -12.36                             | -0.000 31 |
| -30                                     |                    | -13.05                             | -0.000 71 |
| Frequency Stability versus Power Supply |                    |                                    |           |
| Environment Temperature (°C)            | Power Supplied (V) | Frequency Measure with Time Elapse |           |
|   |                    | Frequency Error (Hz)               | ppm       |
| 20                                      | 14.38 (115%)       | -11.79                             | 0.000 02  |
|   | 10.63 (85%)        | -11.59                             | 0.000 13  |

**WCDMA V mode at middle channel**

| Reference Frequency: 836.6 MHz          |                    |                                    |           |
|---|--------------------|------------------------------------|-----------|
| Frequency Stability versus Temperature  |                    |                                    |           |
| Environment Temperature (°C)            | Power Supplied (V) | Frequency Measure with Time Elapse |           |
|   |                    | Frequency Error (Hz)               | ppm       |
| 50                                      | 12.5               | -4.21                              | -0.001 86 |
| 40                                      |                    | -3.02                              | -0.000 44 |
| 30                                      |                    | -3.11                              | -0.000 55 |
| 20(Ref.)                                |                    | -2.65                              | -         |
| 10                                      |                    | -3.25                              | -0.000 72 |
| 0                                       |                    | -2.77                              | -0.000 14 |
| -10                                     |                    | -3.19                              | -0.000 65 |
| -20                                     |                    | -2.96                              | -0.000 37 |
| -30                                     |                    | -4.16                              | -0.001 80 |
| Frequency Stability versus Power Supply |                    |                                    |           |
| Environment Temperature (°C)            | Power Supplied (V) | Frequency Measure with Time Elapse |           |
|   |                    | Frequency Error (Hz)               | ppm       |
| 20                                      | 14.38 (115%)       | -2.89                              | -0.000 29 |
|   | 10.63 (85%)        | -3.10                              | -0.000 54 |

**GSM 850 mode at middle channel**

| Reference Frequency: 836.6 MHz          |                    |                                    |          |
|---|--------------------|------------------------------------|----------|
| Frequency Stability versus Temperature  |                    |                                    |          |
| Environment Temperature (°C)            | Power Supplied (V) | Frequency Measure with Time Elapse |          |
|   |                    | Frequency Error (Hz)               | ppm      |
| 50                                      | 12.5               | 7.10                               | 0.001 30 |
| 40                                      |                    | 6.24                               | 0.000 27 |
| 30                                      |                    | 6.36                               | 0.000 42 |
| 20(Ref.)                                |                    | 6.01                               | -        |
| 10                                      |                    | 6.55                               | 0.000 65 |
| 0                                       |                    | 6.36                               | 0.000 42 |
| -10                                     |                    | 6.78                               | 0.000 92 |
| -20                                     |                    | 7.51                               | 0.001 79 |
| -30                                     |                    | 6.99                               | 0.001 17 |
| Frequency Stability versus Power Supply |                    |                                    |          |
| Environment Temperature (°C)            | Power Supplied (V) | Frequency Measure with Time Elapse |          |
|   |                    | Frequency Error (Hz)               | ppm      |
| 20                                      | 14.38 (115%)       | 7.36                               | 0.001 61 |
|   | 10.63 (85%)        | 6.99                               | 0.001 17 |

**GSM 1900 mode at middle channel**

| Reference Frequency: 1 880.0 MHz        |                    |                                    |           |
|---|--------------------|------------------------------------|-----------|
| Frequency Stability versus Temperature  |                    |                                    |           |
| Environment Temperature (°C)            | Power Supplied (V) | Frequency Measure with Time Elapse |           |
|   |                    | Frequency Error (Hz)               | ppm       |
| 50                                      | 12.5               | -4.89                              | 0.000 23  |
| 40                                      |                    | -5.11                              | 0.000 12  |
| 30                                      |                    | -5.52                              | -0.000 10 |
| 20(Ref.)                                |                    | -5.33                              | -         |
| 10                                      |                    | -5.71                              | -0.000 20 |
| 0                                       |                    | -5.91                              | -0.000 31 |
| -10                                     |                    | -6.22                              | -0.000 47 |
| -20                                     |                    | -5.78                              | -0.000 24 |
| -30                                     |                    | -6.31                              | -0.000 52 |
| Frequency Stability versus Power Supply |                    |                                    |           |
| Environment Temperature (°C)            | Power Supplied (V) | Frequency Measure with Time Elapse |           |
|   |                    | Frequency Error (Hz)               | ppm       |
| 20                                      | 14.38 (115%)       | -4.98                              | 0.000 19  |
|   | 10.63 (85%)        | -5.64                              | -0.000 16 |

**SIM 2**

**GSM 850 mode at middle channel**

| Reference Frequency: 836.6 MHz          |                    |                                    |           |
|---|--------------------|------------------------------------|-----------|
| Frequency Stability versus Temperature  |                    |                                    |           |
| Environment Temperature (°C)            | Power Supplied (V) | Frequency Measure with Time Elapse |           |
|   |                    | Frequency Error (Hz)               | ppm       |
| 50                                      | 12.5               | 9.22                               | 0.003 04  |
| 40                                      |                    | 8.12                               | 0.001 72  |
| 30                                      |                    | 6.92                               | 0.000 29  |
| 20(Ref.)                                |                    | 6.68                               | -         |
| 10                                      |                    | 6.77                               | 0.000 11  |
| 0                                       |                    | 9.61                               | 0.003 50  |
| -10                                     |                    | 8.74                               | 0.002 46  |
| -20                                     |                    | 8.53                               | 0.002 21  |
| -30                                     |                    | 9.11                               | 0.002 90  |
| Frequency Stability versus Power Supply |                    |                                    |           |
| Environment Temperature (°C)            | Power Supplied (V) | Frequency Measure with Time Elapse |           |
|   |                    | Frequency Error (Hz)               | ppm       |
| 20                                      | 14.38 (115%)       | 6.36                               | -0.000 38 |
|   | 10.63 (85%)        | 7.51                               | 0.000 99  |

**GSM 1900 mode at middle channel**

| Reference Frequency: 1 880.0 MHz        |                    |                                    |           |
|---|--------------------|------------------------------------|-----------|
| Frequency Stability versus Temperature  |                    |                                    |           |
| Environment Temperature (°C)            | Power Supplied (V) | Frequency Measure with Time Elapse |           |
|   |                    | Frequency Error (Hz)               | ppm       |
| 50                                      | 12.5               | 11.53                              | -0.000 63 |
| 40                                      |                    | 11.91                              | -0.000 43 |
| 30                                      |                    | 11.68                              | -0.000 55 |
| 20(Ref.)                                |                    | 12.72                              | -         |
| 10                                      |                    | 12.36                              | -0.000 19 |
| 0                                       |                    | 12.54                              | -0.000 10 |
| -10                                     |                    | 12.84                              | 0.000 06  |
| -20                                     |                    | 13.11                              | 0.000 21  |
| -30                                     |                    | 13.50                              | 0.000 41  |
| Frequency Stability versus Power Supply |                    |                                    |           |
| Environment Temperature (°C)            | Power Supplied (V) | Frequency Measure with Time Elapse |           |
|   |                    | Frequency Error (Hz)               | ppm       |
| 20                                      | 14.38 (115%)       | 12.54                              | -0.000 10 |
|   | 10.63 (85%)        | 13.51                              | 0.000 42  |

**- End of the Test Report -**