



# Appendix B

## LTE-M1 BAND 4



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## 1 Effective (Isotropic) Radiated Power Output Data

Effective Isotropic Radiated Power of Transmitter (EIRP) for LTE-M1 BAND 4

| Test Band(LTE) | Test Mode  | Test Bandwidth | Test channel | Test RB | Measured (dBm) | EIRP (dBm) | limit (dBm) | Verdict |
|----------------|------------|----------------|--------------|---------|----------------|------------|-------------|---------|
| BAND4          | LTE-M1/TM1 | 1.4M           | LCH          | RB1#0   | 22.84          | 24.44      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.89          | 24.49      | 30          | PASS    |
|                |            |                |              | RB6#0   | 21.99          | 23.59      | 30          | PASS    |
|                |            |                | MCH          | RB1#0   | 22.97          | 24.57      | 30          | PASS    |
|                |            |                |              | RB1#5   | 23.02          | 24.62      | 30          | PASS    |
|                |            |                |              | RB6#0   | 22.02          | 23.62      | 30          | PASS    |
|                |            |                | HCH          | RB1#0   | 22.98          | 24.58      | 30          | PASS    |
|                |            |                |              | RB1#5   | 23             | 24.6       | 30          | PASS    |
|                |            |                |              | RB6#0   | 21.89          | 23.49      | 30          | PASS    |

| Test Band(LTE) | Test Mode  | Test Bandwidth | Test channel | Test RB | Measured (dBm) | EIRP (dBm) | limit (dBm) | Verdict |
|----------------|------------|----------------|--------------|---------|----------------|------------|-------------|---------|
| BAND4          | LTE-M1/TM2 | 1.4M           | LCH          | RB1#0   | 22.24          | 23.84      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.31          | 23.91      | 30          | PASS    |
|                |            |                |              | RB6#0   | 21.23          | 22.83      | 30          | PASS    |
|                |            |                | MCH          | RB1#0   | 22.26          | 23.86      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.11          | 23.71      | 30          | PASS    |
|                |            |                |              | RB6#0   | 21.21          | 22.81      | 30          | PASS    |
|                |            |                | HCH          | RB1#0   | 22.25          | 23.85      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.31          | 23.91      | 30          | PASS    |
|                |            |                |              | RB6#0   | 21.23          | 22.83      | 30          | PASS    |

| Test Band(LTE) | Test Mode  | Test Bandwidth | Test channel | Test RB | Measured (dBm) | EIRP (dBm) | limit (dBm) | Verdict |
|----------------|------------|----------------|--------------|---------|----------------|------------|-------------|---------|
| BAND4          | LTE-M1/TM1 | 3M             | LCH          | RB1#0   | 22.82          | 24.42      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.77          | 24.37      | 30          | PASS    |
|                |            |                |              | RB6#0   | 21.88          | 23.48      | 30          | PASS    |
|                |            |                | MCH          | RB1#0   | 22.83          | 24.43      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.87          | 24.47      | 30          | PASS    |
|                |            |                |              | RB6#0   | 21.85          | 23.45      | 30          | PASS    |
|                |            |                | HCH          | RB1#0   | 22.81          | 24.41      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.72          | 24.32      | 30          | PASS    |
|                |            |                |              | RB6#0   | 21.83          | 23.43      | 30          | PASS    |

| Test Band(LTE) | Test Mode  | Test Bandwidth | Test channel | Test RB | Measured (dBm) | EIRP (dBm) | limit (dBm) | Verdict |
|----------------|------------|----------------|--------------|---------|----------------|------------|-------------|---------|
| BAND4          | LTE-M1/TM2 | 3M             | LCH          | RB1#0   | 21.84          | 23.44      | 30          | PASS    |
|                |            |                |              | RB1#5   | 21.92          | 23.52      | 30          | PASS    |
|                |            |                |              | RB6#0   | 20.74          | 22.34      | 30          | PASS    |
|                |            |                | MCH          | RB1#0   | 21.95          | 23.55      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.01          | 23.61      | 30          | PASS    |
|                |            |                |              | RB6#0   | 20.75          | 22.35      | 30          | PASS    |



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|  |  |  |     |       |       |       |    |      |
|--|--|--|-----|-------|-------|-------|----|------|
|  |  |  | HCH | RB1#0 | 21.97 | 23.57 | 30 | PASS |
|  |  |  |     | RB1#5 | 22.11 | 23.71 | 30 | PASS |
|  |  |  |     | RB6#0 | 20.72 | 22.32 | 30 | PASS |

| Test Band(LTE) | Test Mode  | Test Bandwidth | Test channel | Test RB | Measured (dBm) | EIRP (dBm) | limit (dBm) | Verdict |
|----------------|------------|----------------|--------------|---------|----------------|------------|-------------|---------|
| BAND4          | LTE-M1/TM1 | 5M             | LCH          | RB1#0   | 22.81          | 24.41      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.74          | 24.34      | 30          | PASS    |
|                |            |                |              | RB6#0   | 21.92          | 23.52      | 30          | PASS    |
|                |            |                | MCH          | RB1#0   | 22.75          | 24.35      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.78          | 24.38      | 30          | PASS    |
|                |            |                |              | RB6#0   | 21.88          | 23.48      | 30          | PASS    |
|                |            |                | HCH          | RB1#0   | 22.81          | 24.41      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.87          | 24.47      | 30          | PASS    |
|                |            |                |              | RB6#0   | 21.93          | 23.53      | 30          | PASS    |

| Test Band(LTE) | Test Mode  | Test Bandwidth | Test channel | Test RB | Measured (dBm) | EIRP (dBm) | limit (dBm) | Verdict |
|----------------|------------|----------------|--------------|---------|----------------|------------|-------------|---------|
| BAND4          | LTE-M1/TM2 | 5M             | LCH          | RB1#0   | 22.22          | 23.82      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.28          | 23.88      | 30          | PASS    |
|                |            |                |              | RB6#0   | 20.92          | 22.52      | 30          | PASS    |
|                |            |                | MCH          | RB1#0   | 22.26          | 23.86      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.28          | 23.88      | 30          | PASS    |
|                |            |                |              | RB6#0   | 20.88          | 22.48      | 30          | PASS    |
|                |            |                | HCH          | RB1#0   | 22.15          | 23.75      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.25          | 23.85      | 30          | PASS    |
|                |            |                |              | RB6#0   | 20.95          | 22.55      | 30          | PASS    |

| Test Band(LTE) | Test Mode  | Test Bandwidth | Test channel | Test RB | Measured (dBm) | EIRP (dBm) | limit (dBm) | Verdict |
|----------------|------------|----------------|--------------|---------|----------------|------------|-------------|---------|
| BAND4          | LTE-M1/TM1 | 10M            | LCH          | RB1#0   | 22.74          | 24.34      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.63          | 24.23      | 30          | PASS    |
|                |            |                |              | RB6#0   | 21.87          | 23.47      | 30          | PASS    |
|                |            |                | MCH          | RB1#0   | 22.85          | 24.45      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.66          | 24.26      | 30          | PASS    |
|                |            |                |              | RB6#0   | 21.81          | 23.41      | 30          | PASS    |
|                |            |                | HCH          | RB1#0   | 22.75          | 24.35      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.77          | 24.37      | 30          | PASS    |
|                |            |                |              | RB6#0   | 21.82          | 23.42      | 30          | PASS    |

| Test Band(LTE) | Test Mode  | Test Bandwidth | Test channel | Test RB | Measured (dBm) | EIRP (dBm) | limit (dBm) | Verdict |
|----------------|------------|----------------|--------------|---------|----------------|------------|-------------|---------|
| BAND4          | LTE-M1/TM2 | 10M            | LCH          | RB1#0   | 22.14          | 23.74      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.06          | 23.66      | 30          | PASS    |
|                |            |                |              | RB6#0   | 20.78          | 22.38      | 30          | PASS    |
|                |            |                | MCH          | RB1#0   | 22.22          | 23.82      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.26          | 23.86      | 30          | PASS    |
|                |            |                |              | RB6#0   | 20.8           | 22.4       | 30          | PASS    |

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|  |  |  |     |       |       |       |    |      |
|--|--|--|-----|-------|-------|-------|----|------|
|  |  |  | HCH | RB1#0 | 22.14 | 23.74 | 30 | PASS |
|  |  |  |     | RB1#5 | 22.16 | 23.76 | 30 | PASS |
|  |  |  |     | RB6#0 | 20.91 | 22.51 | 30 | PASS |

| Test Band(LTE) | Test Mode  | Test Bandwidth | Test channel | Test RB | Measured (dBm) | EIRP (dBm) | limit (dBm) | Verdict |
|----------------|------------|----------------|--------------|---------|----------------|------------|-------------|---------|
| BAND4          | LTE-M1/TM1 | 15M            | LCH          | RB1#0   | 22.72          | 24.32      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.57          | 24.17      | 30          | PASS    |
|                |            |                |              | RB6#0   | 22.63          | 24.23      | 30          | PASS    |
|                |            |                | MCH          | RB1#0   | 22.76          | 24.36      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.73          | 24.33      | 30          | PASS    |
|                |            |                |              | RB6#0   | 22.79          | 24.39      | 30          | PASS    |
|                |            |                | HCH          | RB1#0   | 22.67          | 24.27      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.55          | 24.15      | 30          | PASS    |
|                |            |                |              | RB6#0   | 22.67          | 24.27      | 30          | PASS    |

| Test Band(LTE) | Test Mode  | Test Bandwidth | Test channel | Test RB | Measured (dBm) | EIRP (dBm) | limit (dBm) | Verdict |
|----------------|------------|----------------|--------------|---------|----------------|------------|-------------|---------|
| BAND4          | LTE-M1/TM2 | 15M            | LCH          | RB1#0   | 22.12          | 23.72      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.11          | 23.71      | 30          | PASS    |
|                |            |                |              | RB6#0   | 22.81          | 24.41      | 30          | PASS    |
|                |            |                | MCH          | RB1#0   | 22.29          | 23.89      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.27          | 23.87      | 30          | PASS    |
|                |            |                |              | RB6#0   | 22.76          | 24.36      | 30          | PASS    |
|                |            |                | HCH          | RB1#0   | 22.4           | 24         | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.38          | 23.98      | 30          | PASS    |
|                |            |                |              | RB6#0   | 22.67          | 24.27      | 30          | PASS    |

| Test Band(LTE) | Test Mode  | Test Bandwidth | Test channel | Test RB | Measured (dBm) | EIRP (dBm) | limit (dBm) | Verdict |
|----------------|------------|----------------|--------------|---------|----------------|------------|-------------|---------|
| BAND4          | LTE-M1/TM1 | 20M            | LCH          | RB1#0   | 22.78          | 24.38      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.74          | 24.34      | 30          | PASS    |
|                |            |                |              | RB6#0   | 22.83          | 24.43      | 30          | PASS    |
|                |            |                | MCH          | RB1#0   | 22.89          | 24.49      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.82          | 24.42      | 30          | PASS    |
|                |            |                |              | RB6#0   | 22.93          | 24.53      | 30          | PASS    |
|                |            |                | HCH          | RB1#0   | 22.94          | 24.54      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.83          | 24.43      | 30          | PASS    |
|                |            |                |              | RB6#0   | 22.92          | 24.52      | 30          | PASS    |

| Test Band(LTE) | Test Mode  | Test Bandwidth | Test channel | Test RB | Measured (dBm) | EIRP (dBm) | limit (dBm) | Verdict |
|----------------|------------|----------------|--------------|---------|----------------|------------|-------------|---------|
| BAND4          | LTE-M1/TM2 | 20M            | LCH          | RB1#0   | 22.27          | 23.87      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.14          | 23.74      | 30          | PASS    |
|                |            |                |              | RB6#0   | 22.08          | 23.68      | 30          | PASS    |
|                |            |                | MCH          | RB1#0   | 22.61          | 24.21      | 30          | PASS    |
|                |            |                |              | RB1#5   | 22.67          | 24.27      | 30          | PASS    |
|                |            |                |              | RB6#0   | 23.02          | 24.62      | 30          | PASS    |



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|  |  |  |     |       |       |       |    |      |
|--|--|--|-----|-------|-------|-------|----|------|
|  |  |  | HCH | RB1#0 | 22.52 | 24.12 | 30 | PASS |
|  |  |  |     | RB1#5 | 22.58 | 24.18 | 30 | PASS |
|  |  |  |     | RB6#0 | 23.02 | 24.62 | 30 | PASS |

Note:

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

$$\text{EIRP [dBm]} = \text{SGP [dBm]} - \text{Cable Loss [dB]} + \text{Gain [dBi]}$$

b: SGP=Signal Generator Level



## 2 Peak-to-Average Ratio

### Part I - Test Results

| Test Band | Test Mode         | Test Channel | Measured[dB] | Limit [dB] | Verdict |
|-----------|-------------------|--------------|--------------|------------|---------|
| Band 4    | TM1/5M<br>Full RB | LCH          | 4.26         | 13         | PASS    |
|           |                   | MCH          | 4.29         | 13         | PASS    |
|           |                   | HCH          | 5.65         | 13         | PASS    |
|           | TM1/5M<br>1 RB    | LCH          | 4.38         | 13         | PASS    |
|           |                   | MCH          | 4.32         | 13         | PASS    |
|           |                   | HCH          | 4.03         | 13         | PASS    |
|           | TM2/5M<br>Full RB | LCH          | 5.77         | 13         | PASS    |
|           |                   | MCH          | 4.26         | 13         | PASS    |
|           |                   | HCH          | 5.88         | 13         | PASS    |
|           | TM2/5M<br>1 RB    | LCH          | 5.01         | 13         | PASS    |
|           |                   | MCH          | 5.04         | 13         | PASS    |
|           |                   | HCH          | 4.17         | 13         | PASS    |

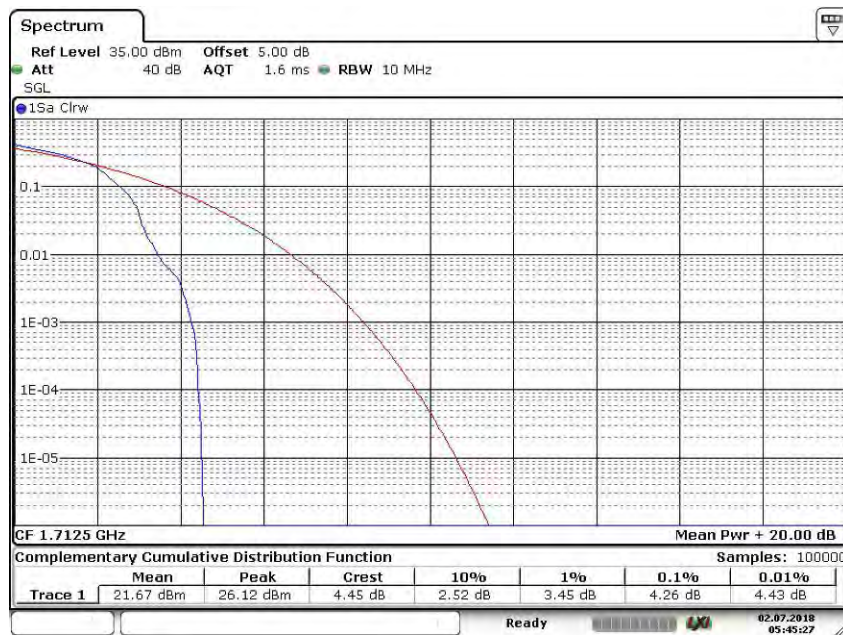
### Part II - Test Plots

#### 2.1 For LTE-M1

##### 2.1.1 Test Band = LTE-M1 BAND4

##### 2.1.1.1 Test Mode = LTE-M1/TM1.Bandwidth=5MHz Full RB

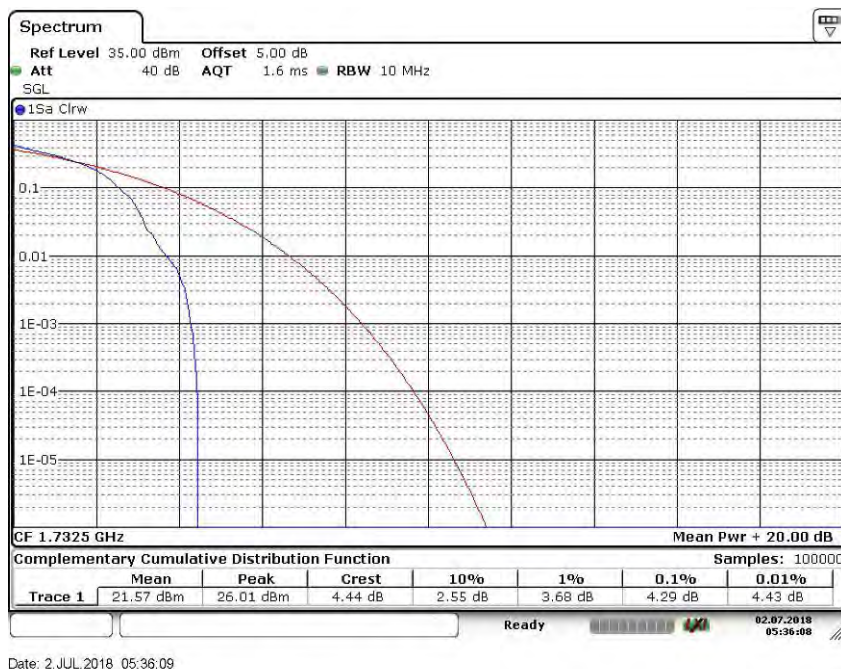
##### 2.1.1.1.1 Test Channel = LCH



Date: 2 JUL 2018 05:45:27

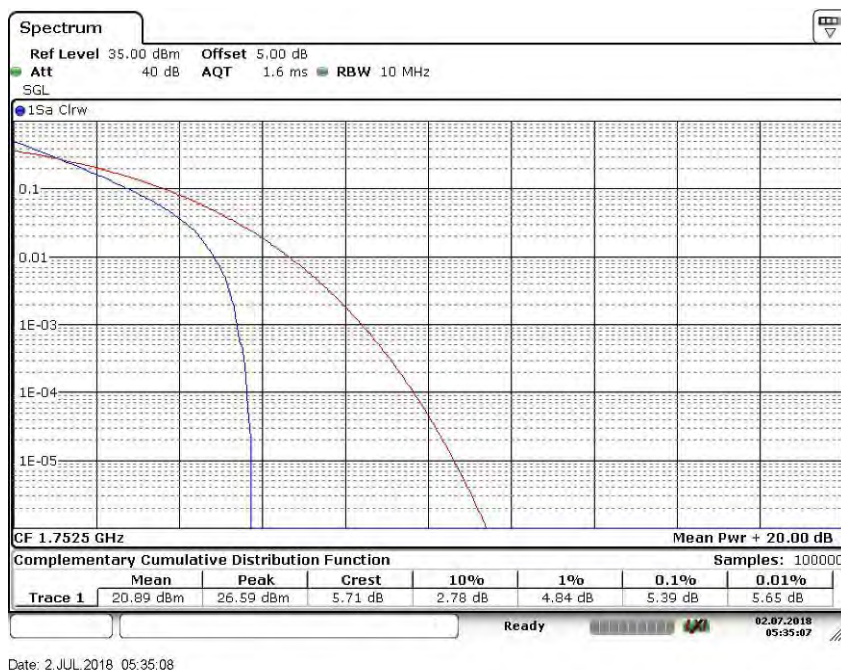


2.1.1.1.2 Test Channel = MCH



Date: 2 JUL 2018 05:36:09

2.1.1.1.3 Test Channel = HCH

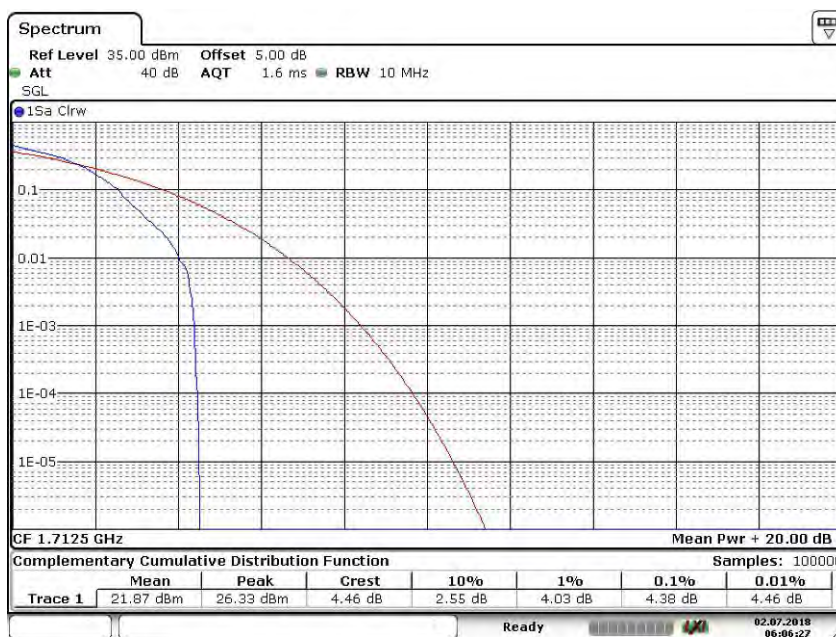


Date: 2 JUL 2018 05:35:08



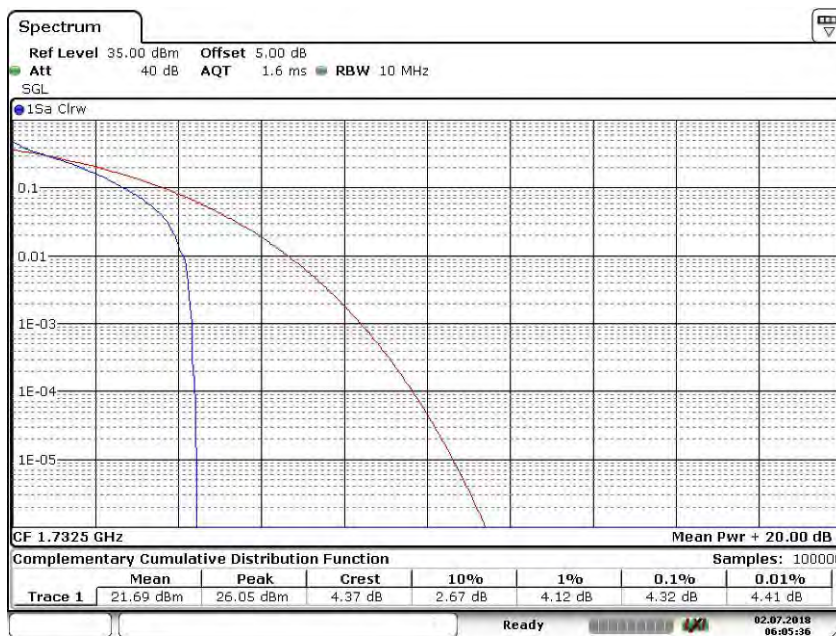
2.1.1.2 Test Mode = LTE-M1/TM1.Bandwidth=5MHz 1 RB

2.1.1.2.1 Test Channel = LCH



Date: 2 JUL 2018 06:06:27

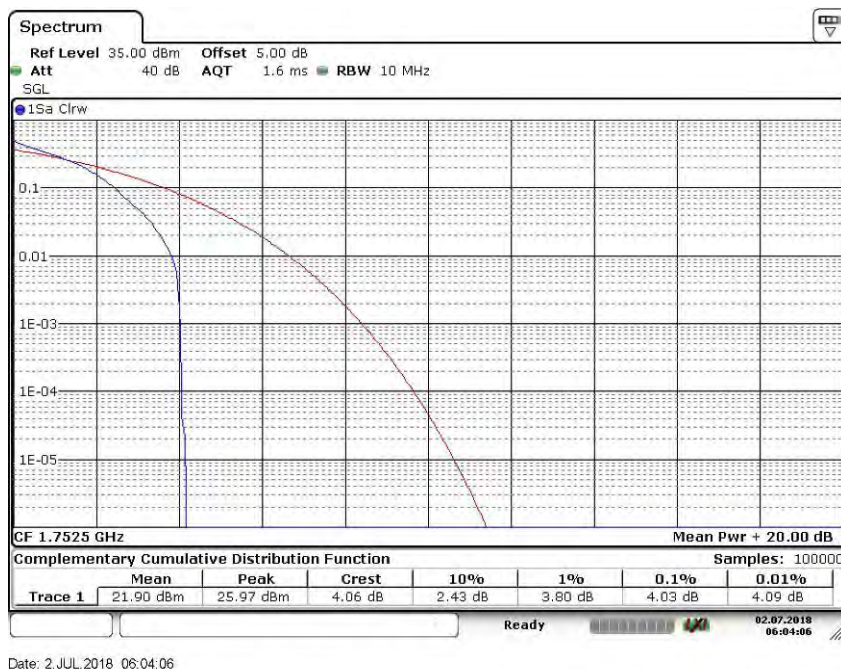
2.1.1.2.2 Test Channel = MCH



Date: 2 JUL 2018 06:05:37

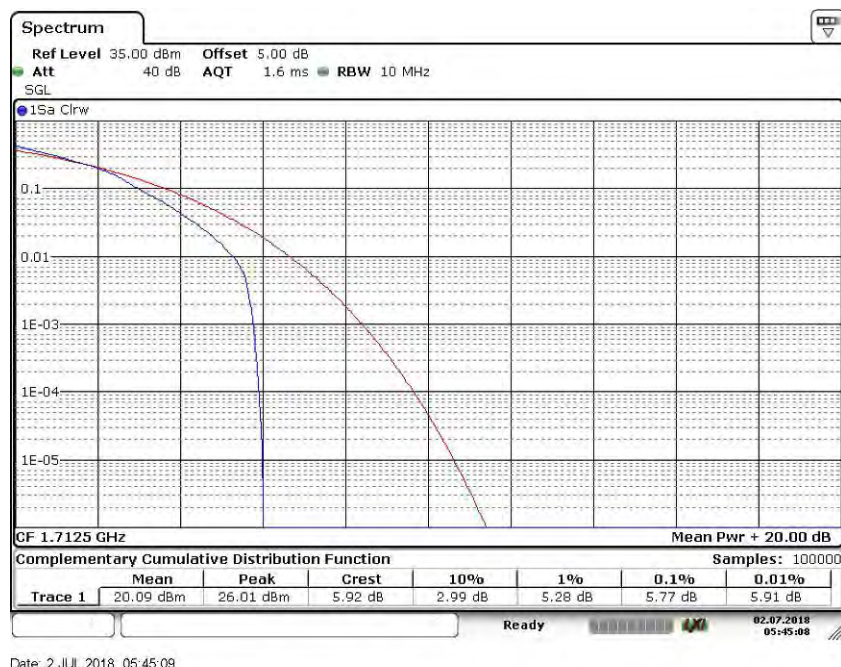


### 2.1.1.2.3 Test Channel = HCH



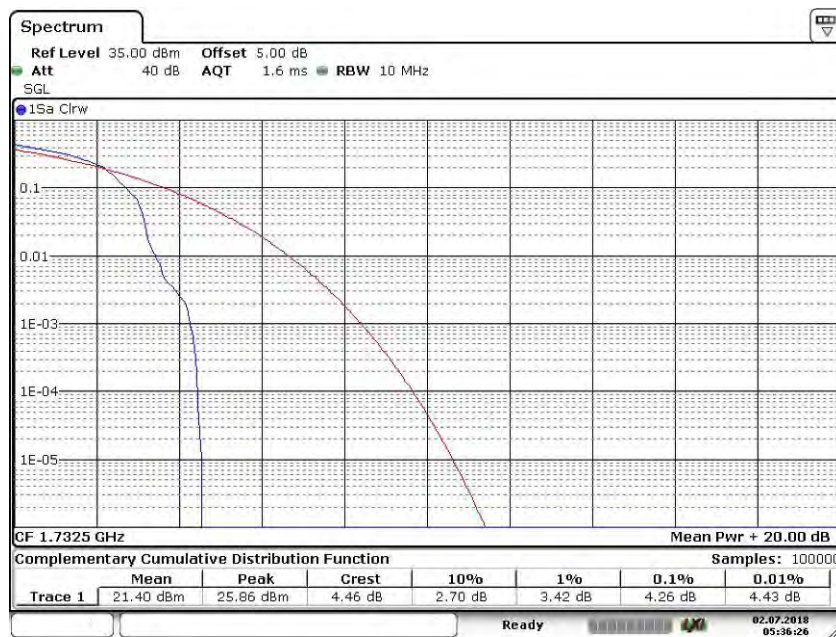
### 2.1.1.3 Test Mode = LTE-M1/TM2.Bandwidth=5MHz Full RB

#### 2.1.1.3.1 Test Channel = LCH



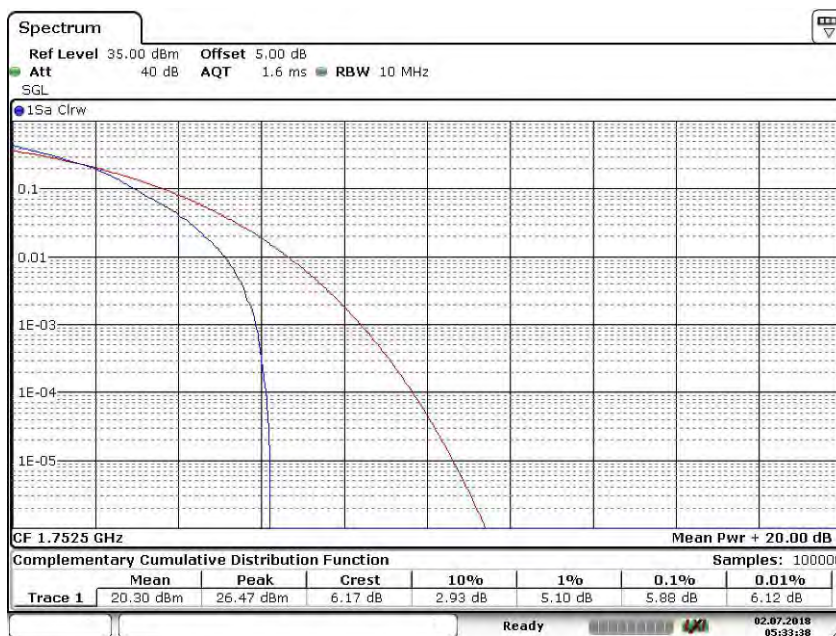


### 2.1.1.3.2 Test Channel = MCH



Date: 2 JUL 2018 05:36:26

### 2.1.1.3.3 Test Channel = HCH

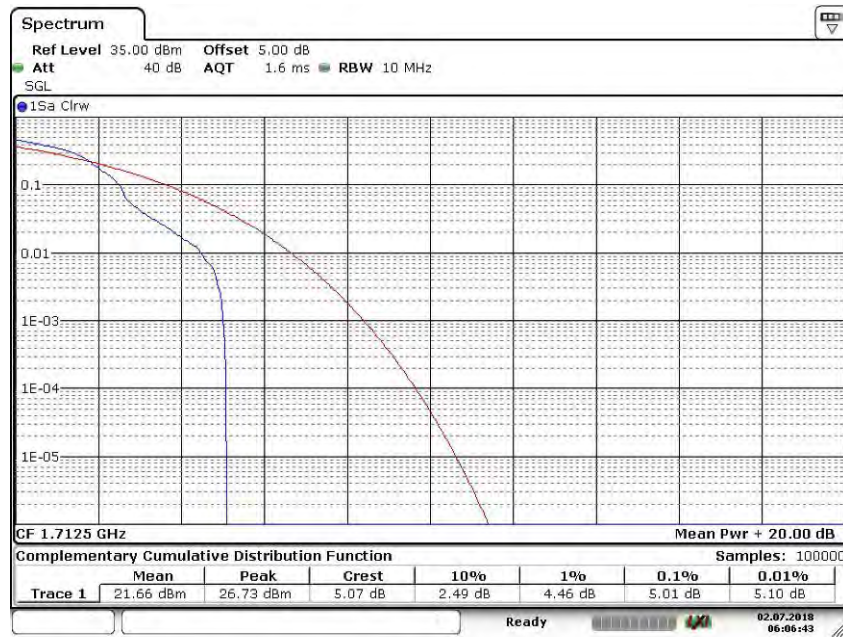


Date: 2 JUL 2018 05:33:38



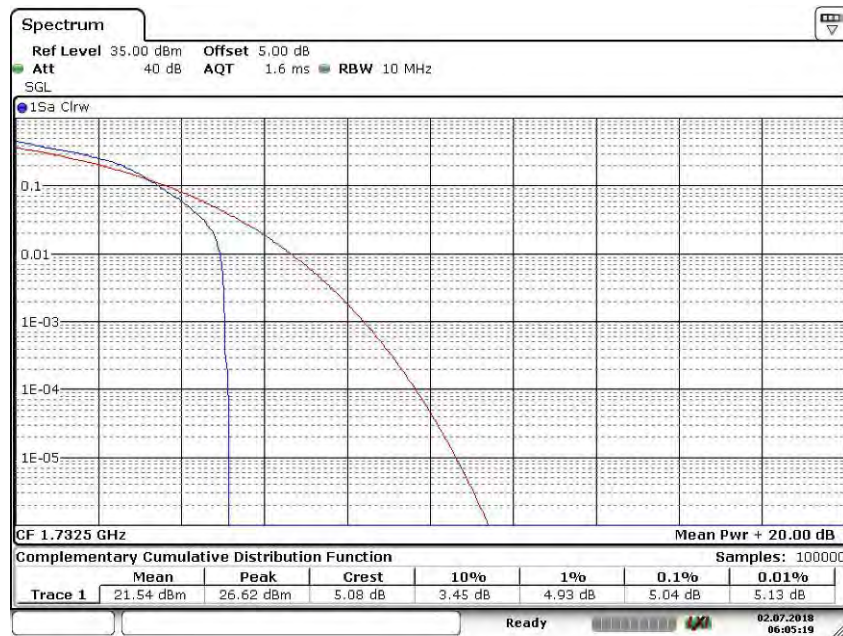
2.1.1.4 Test Mode = LTE-M1/TM2.Bandwidth=5MHz 1 RB

2.1.1.4.1 Test Channel = LCH



Date: 2 JUL 2018 06:06:44

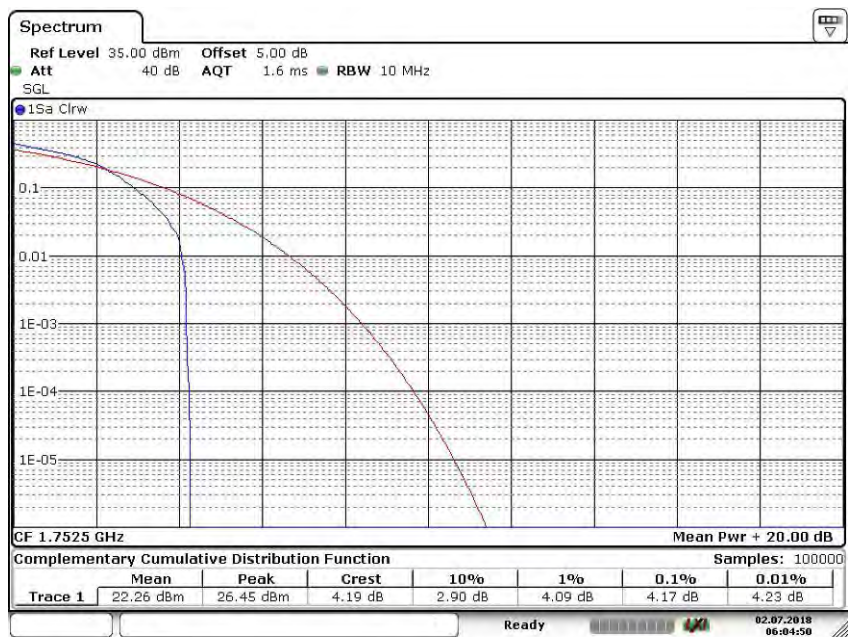
2.1.1.4.2 Test Channel = MCH



Date: 2 JUL 2018 06:05:19



2.1.1.4.3 Test Channel = HCH



Date: 2 JUL 2018 06:04:50



### 3 Modulation Characteristics

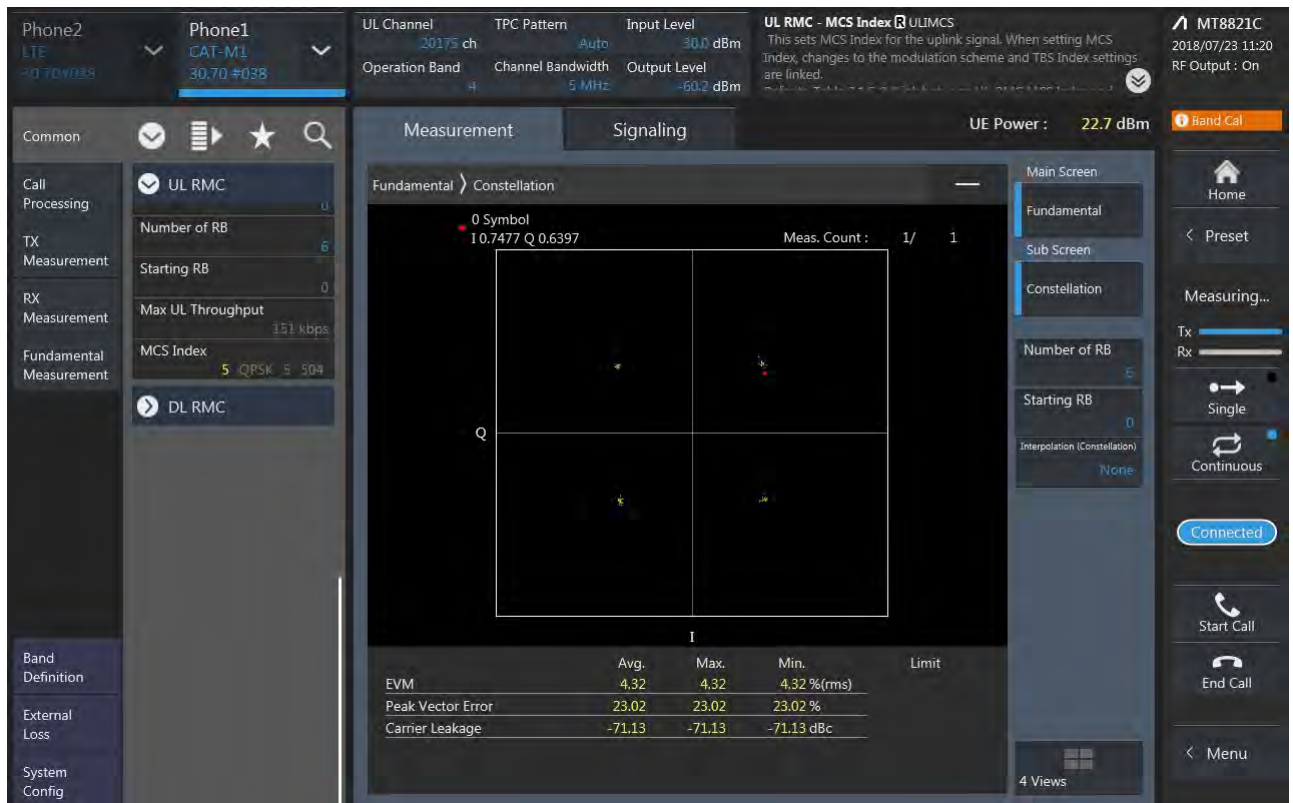
#### Part I - Test Plots

#### 3.1 For LTE-M1

##### 3.1.1 Test Band = LTE-M1 BAND4

##### 3.1.1.1 Test Mode = LTE-M1 /TM1 5MHz

##### 3.1.1.1.1 Test Channel = MCH





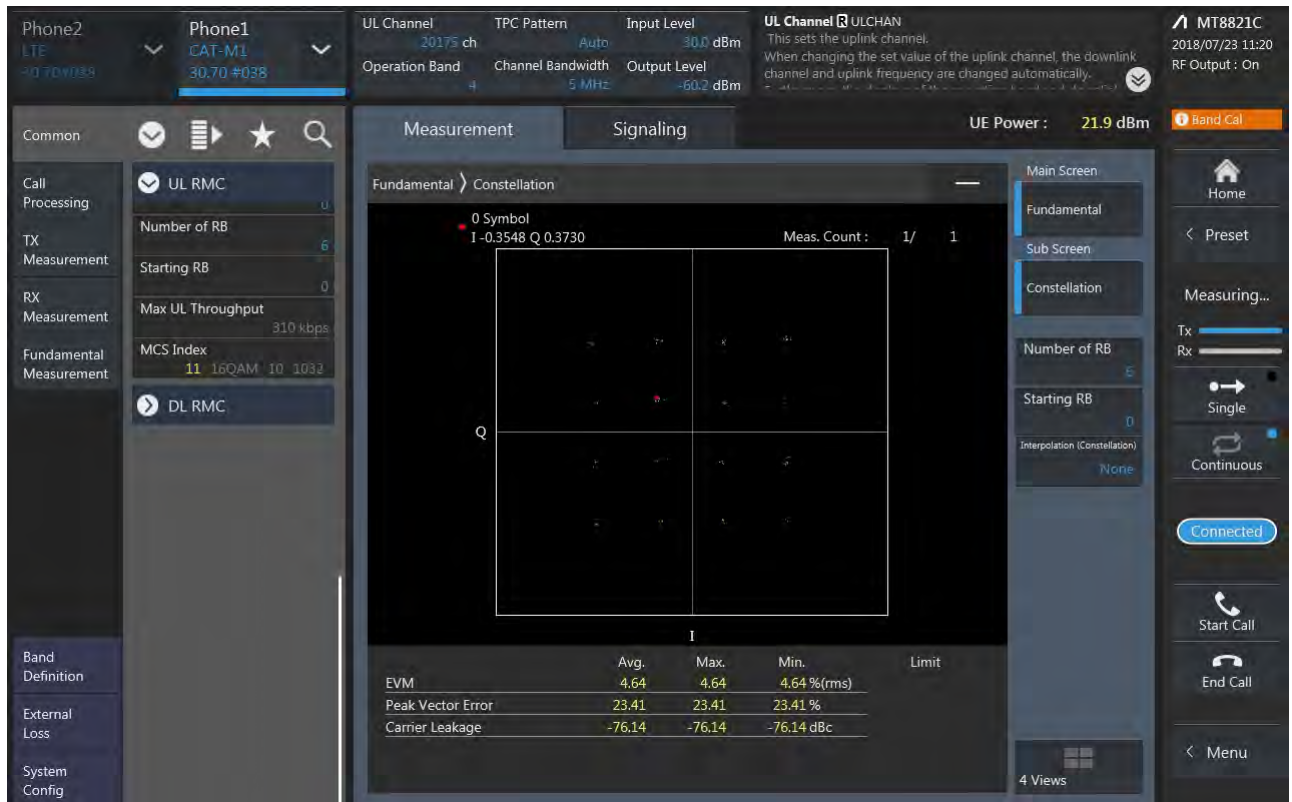
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## 3.1.1.2 Test Mode = LTE-M1 /TM2 5MHz

### 3.1.1.2.1 Test Channel = MCH



## 4 Bandwidth

### Part I - Test Results

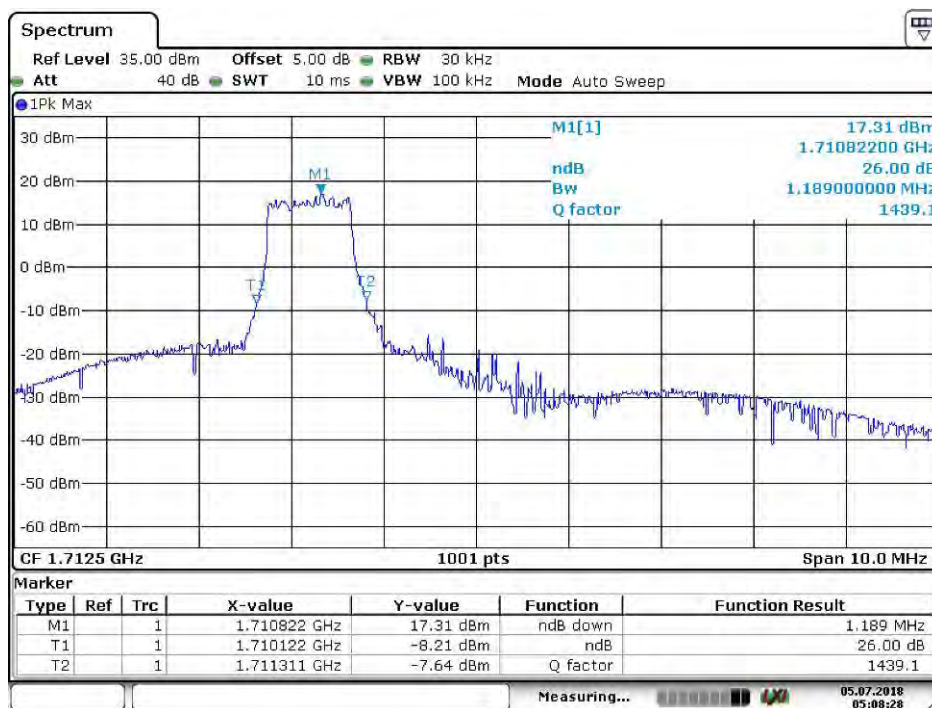
| Test Band | Test Mode | Test Channel | Occupied Bandwidth [MHz] | Emission Bandwidth [MHz] | Verdict |
|-----------|-----------|--------------|--------------------------|--------------------------|---------|
| BAND4     | TM1/ 5MHz | LCH          | 0.92                     | 1.18                     | PASS    |
|           |           | MCH          | 1.11                     | 1.18                     | PASS    |
|           |           | HCH          | 1.10                     | 1.16                     | PASS    |
|           | TM2/ 5MHz | LCH          | 0.95                     | 1.23                     | PASS    |
|           |           | MCH          | 1.12                     | 1.22                     | PASS    |
|           |           | HCH          | 1.12                     | 1.23                     | PASS    |

### 4.1 For LTE

#### 4.1.1 Test Band = LTE-M1 BAND4

##### 4.1.1.1 Test Mode = LTE-M1/TM1 5MHz

##### 4.1.1.1.1 Test Channel = LCH

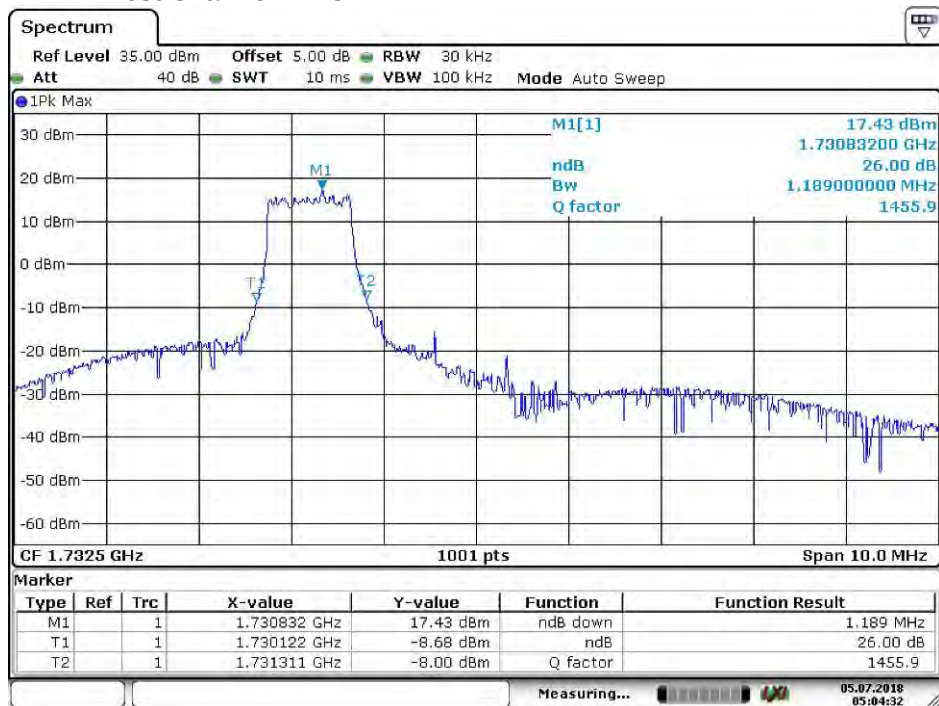


Date: 5.JUL.2018 05:08:28



Date: 5.JUL.2018 05:09:15

#### 4.1.1.1.2 Test Channel = MCH

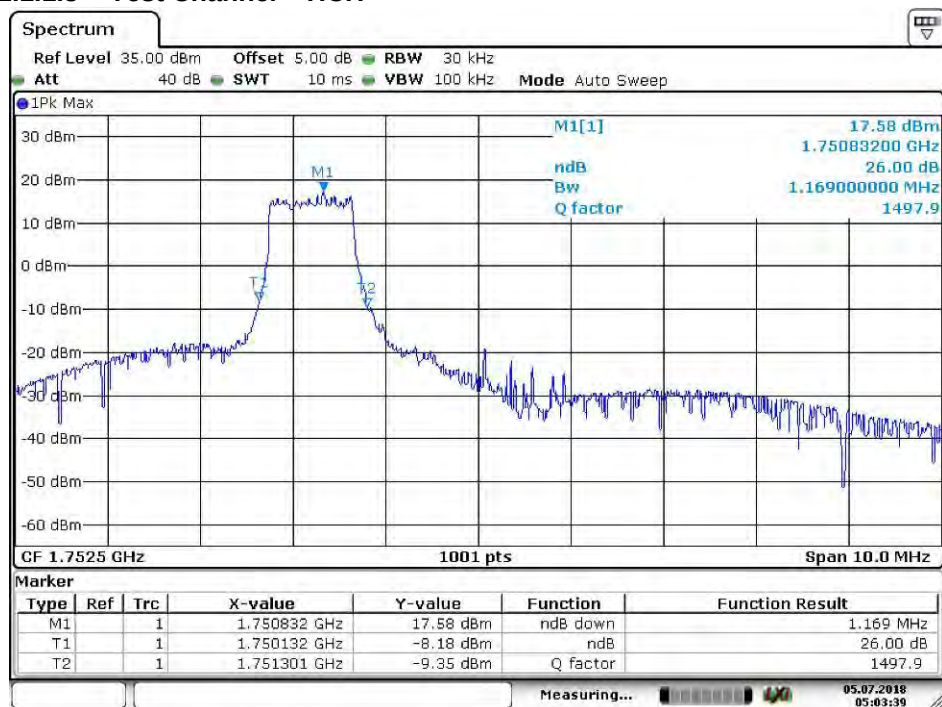


Date: 5.JUL.2018 05:04:32

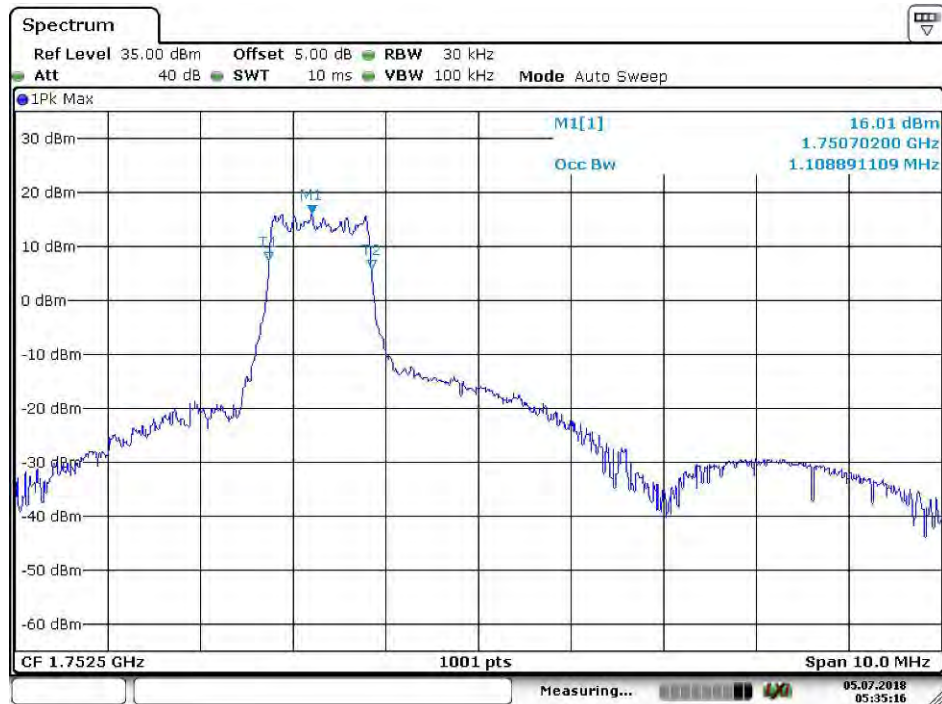


Date: 5.JUL 2018 05:32:27

#### 4.1.1.1.3 Test Channel = HCH



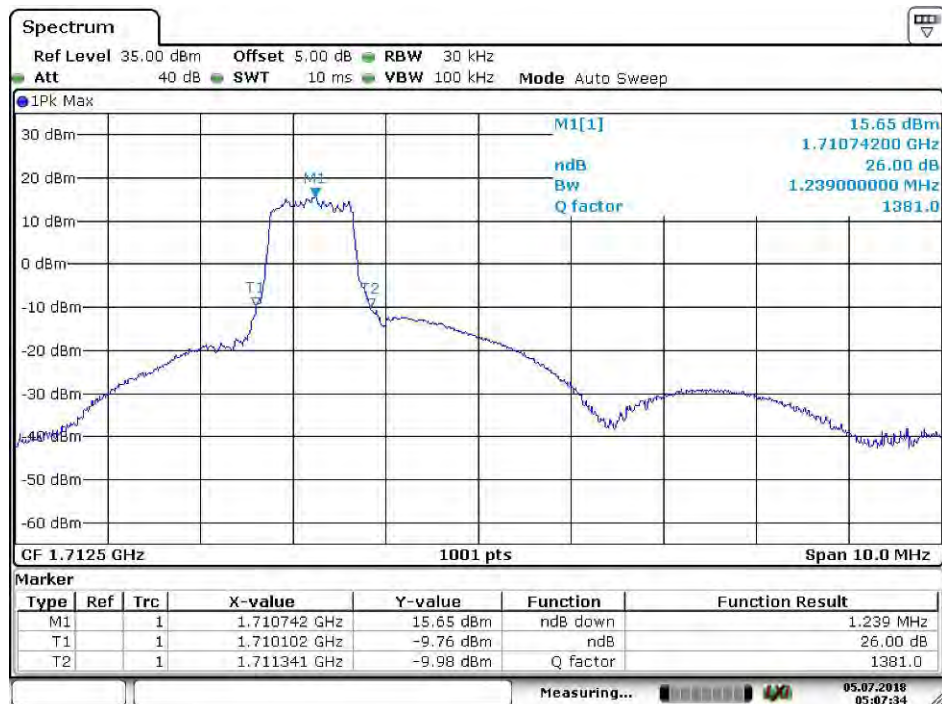
Date: 5.JUL 2018 05:03:39



Date: 5.JUL.2018 05:35:16

#### 4.1.1.2 Test Mode = LTE-M1/TM2 5MHz

##### 4.1.1.2.1 Test Channel = LCH

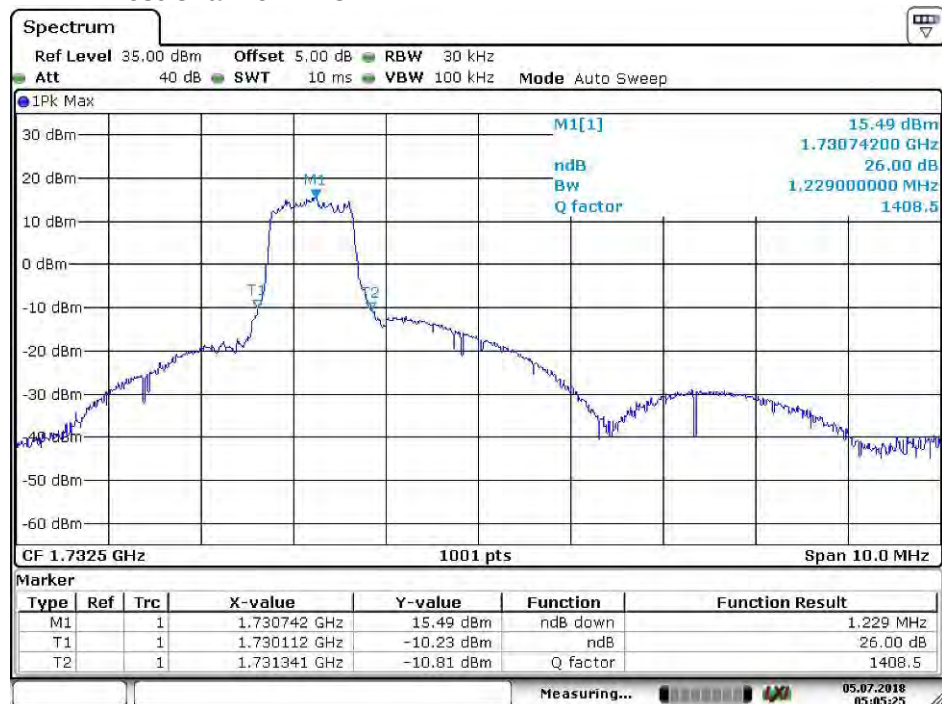


Date: 5.JUL.2018 05:07:34

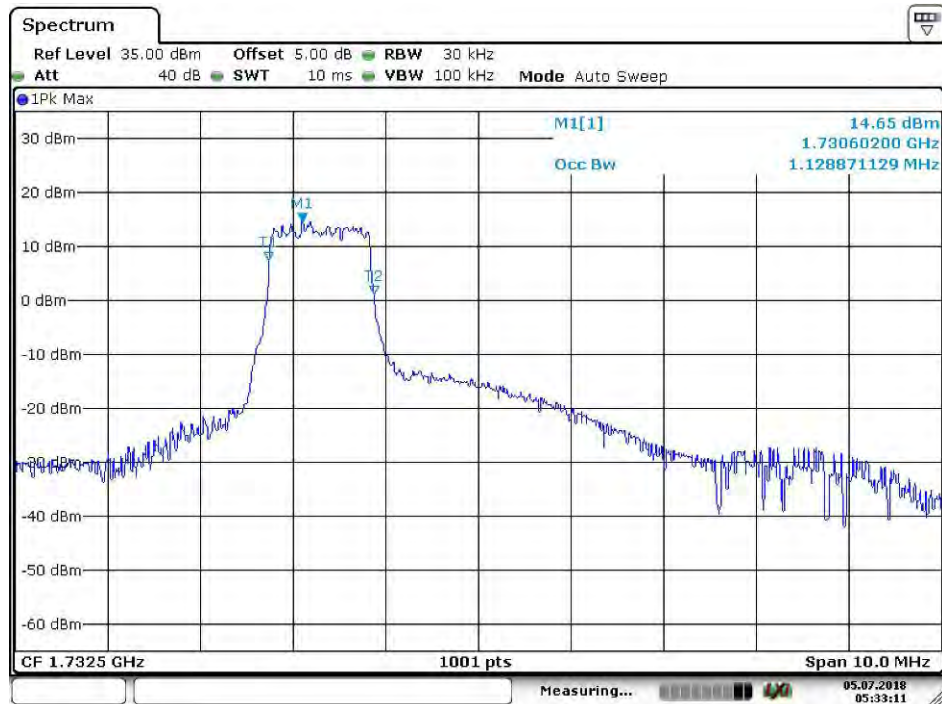


Date: 5.JUL.2018 05:10:40

#### 4.1.1.2.2 Test Channel = MCH

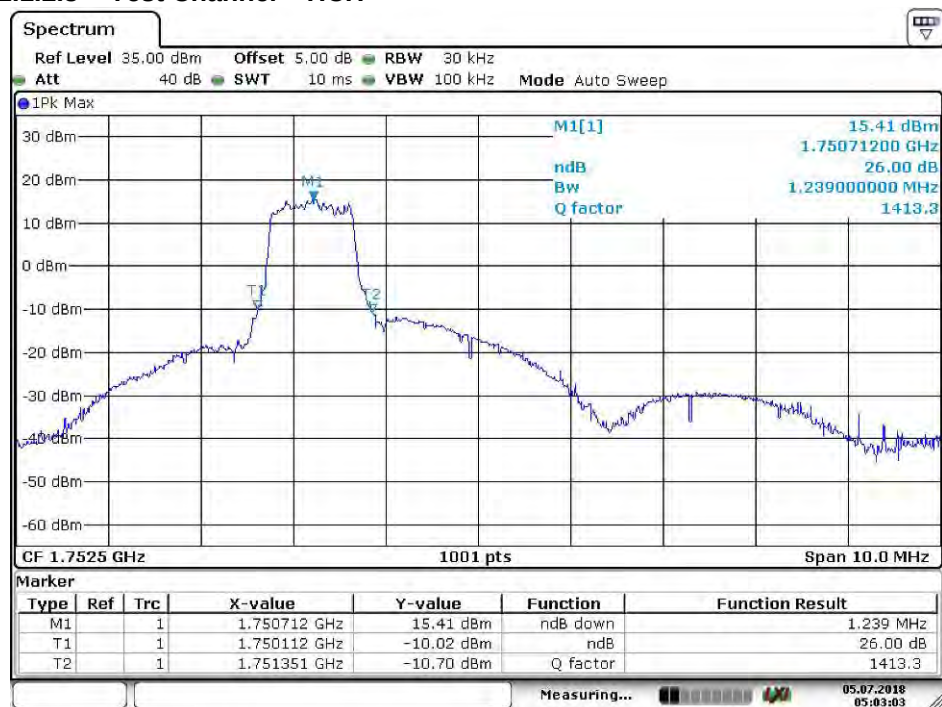


Date: 5.JUL.2018 05:05:25



Date: 5.JUL.2018 05:33:11

#### 4.1.1.2.3 Test Channel = HCH



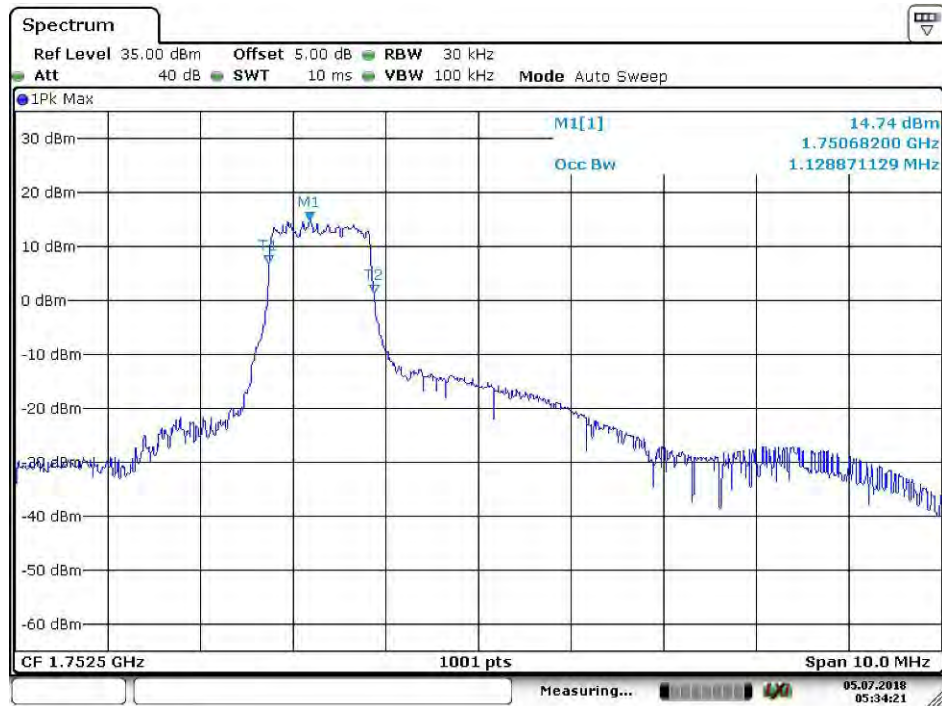
Date: 5.JUL.2018 05:03:03



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Date: 5.JUL 2018 05:34:21

## 5 Band Edges Compliance

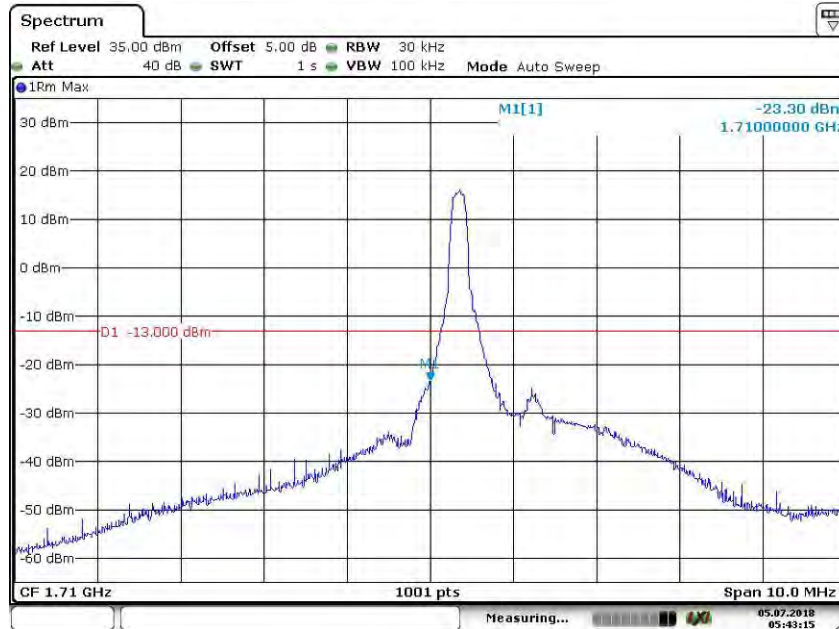
### 5.1 For LTE-M1

#### 5.1.1 Test Band = LTE-M1 BAND4

##### 5.1.1.1 Test Mode = LTE-M1/TM1 5MHz

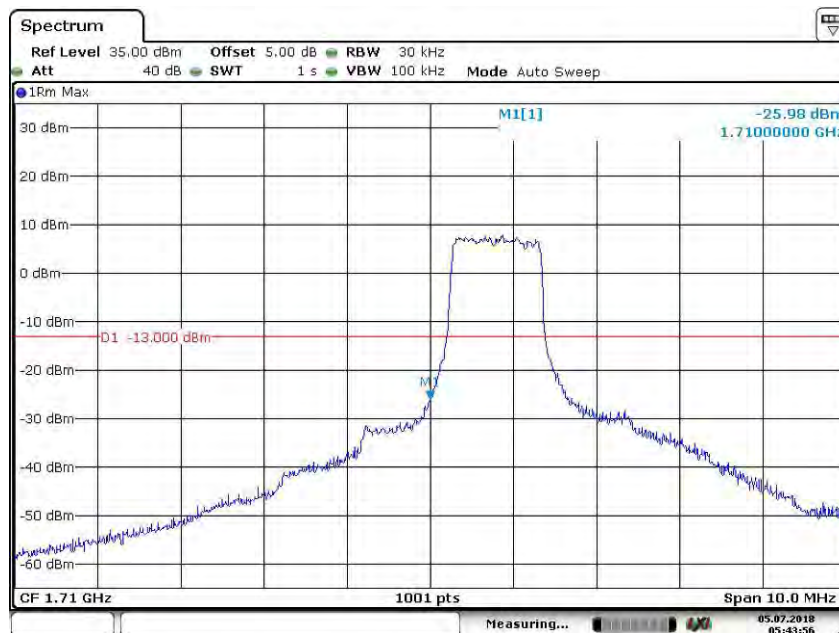
##### 5.1.1.1.1 Test Channel = LCH

##### 5.1.1.1.1.1 Test RB=1RB



Date: 5 JUL 2018 05:43:16

##### 5.1.1.1.1.2 Test RB=6RB

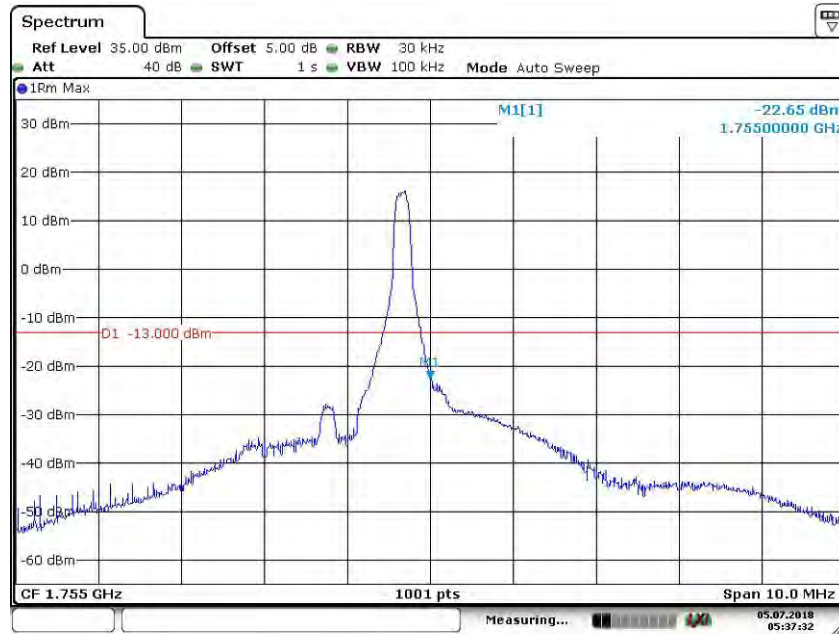


Date: 5 JUL 2018 05:43:57



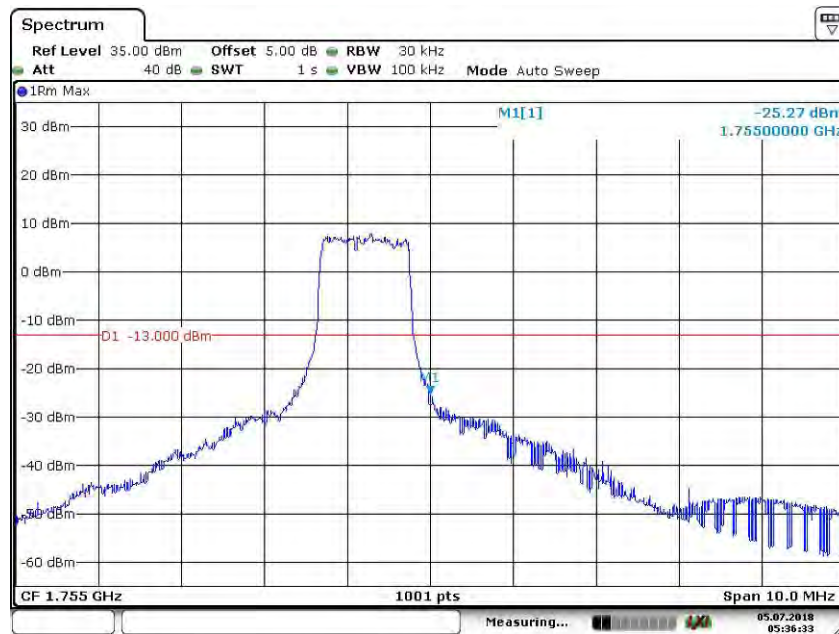
5.1.1.1.2 Test Channel = HCH

5.1.1.1.2.1 Test RB=1RB



Date: 5 JUL 2018 05:37:33

5.1.1.1.2.2 Test RB=6RB



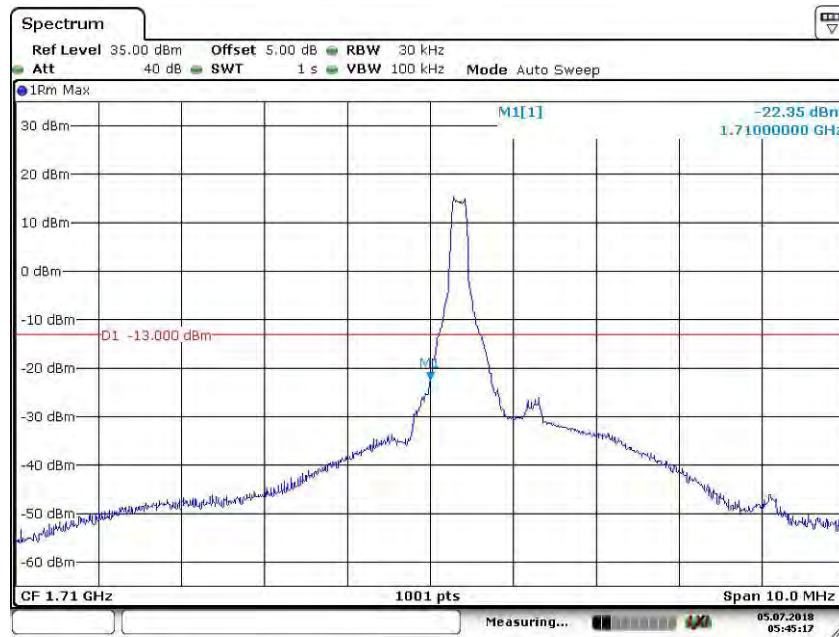
Date: 5 JUL 2018 05:36:34



5.1.1.2 Test Mode = LTE-M1/TM2 5MHz

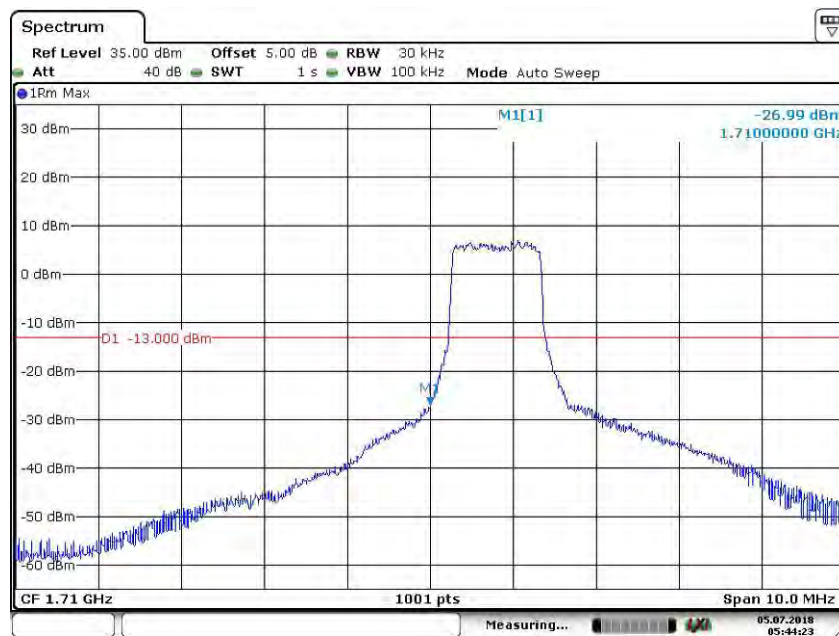
5.1.1.2.1 Test Channel = LCH

5.1.1.2.1.1 Test RB=1RB



Date: 5 JUL 2018 05:45:17

5.1.1.2.1.2 Test RB=6RB

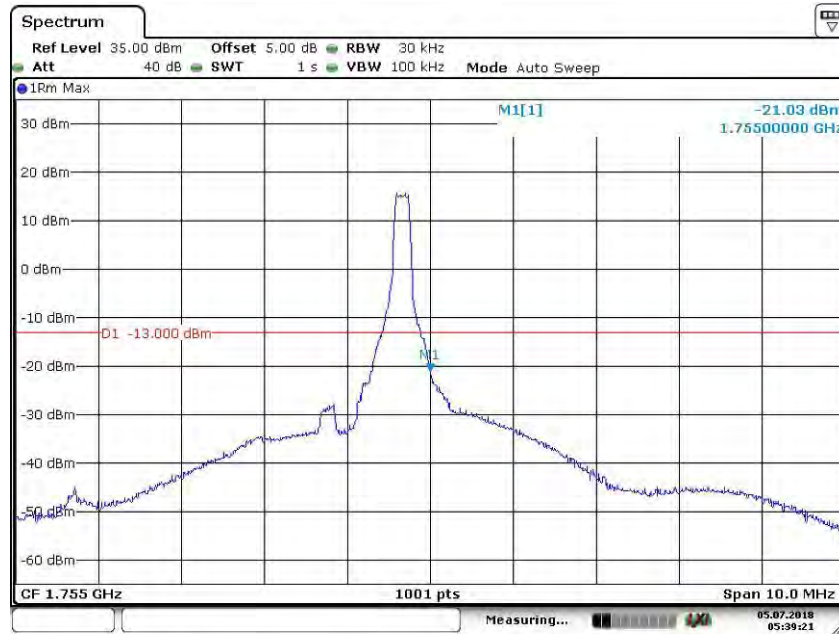


Date: 5 JUL 2018 05:44:23



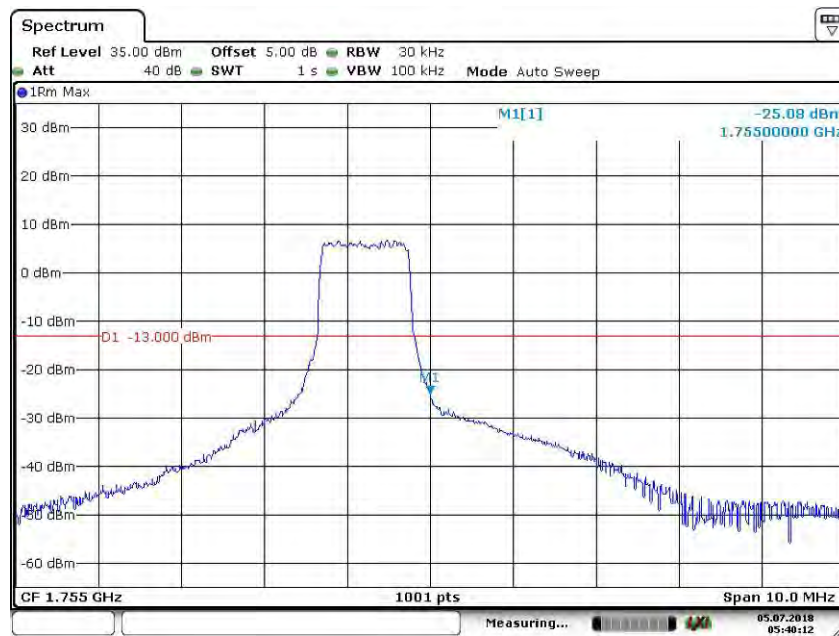
#### 5.1.1.2.2 Test Channel = HCH

##### 5.1.1.2.2.1 Test RB=1RB



Date: 5 JUL 2018 05:39:21

##### 5.1.1.2.2.2 Test RB=6RB



Date: 5 JUL 2018 05:40:13



## 6 Spurious Emission at Antenna Terminal

NOTE1: 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 =  $k \cdot (\text{Span} / \text{RBW})$ " with  $k$  between 4 and 5, which results in an acceptable level error of less than 0.5 dB.

NOTE2: only the worst case data displayed in this report.

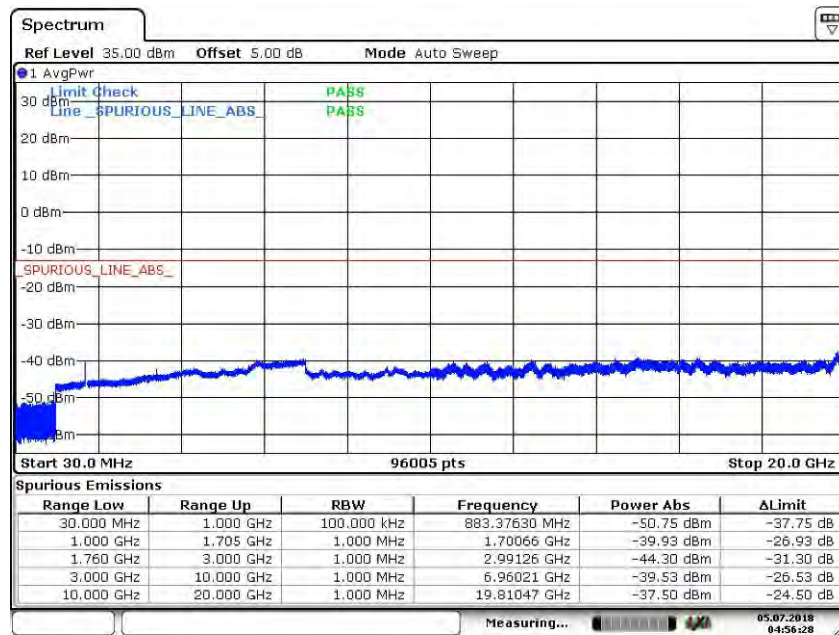
Part I - Test Plots

### 6.1 For LTE-M1

#### 6.1.1 Test Band = LTE-M1 BAND4

##### 6.1.1.1 Test Mode = LTE-M1 / TM1 5MHz RB1#0

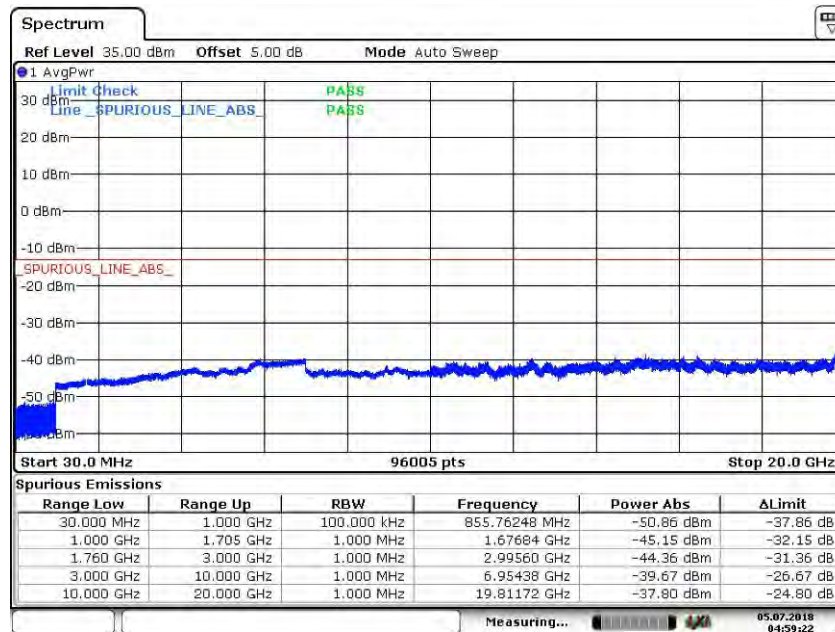
##### 6.1.1.1.1 Test Channel = LCH



Date: 5 JUL 2018 04:56:28

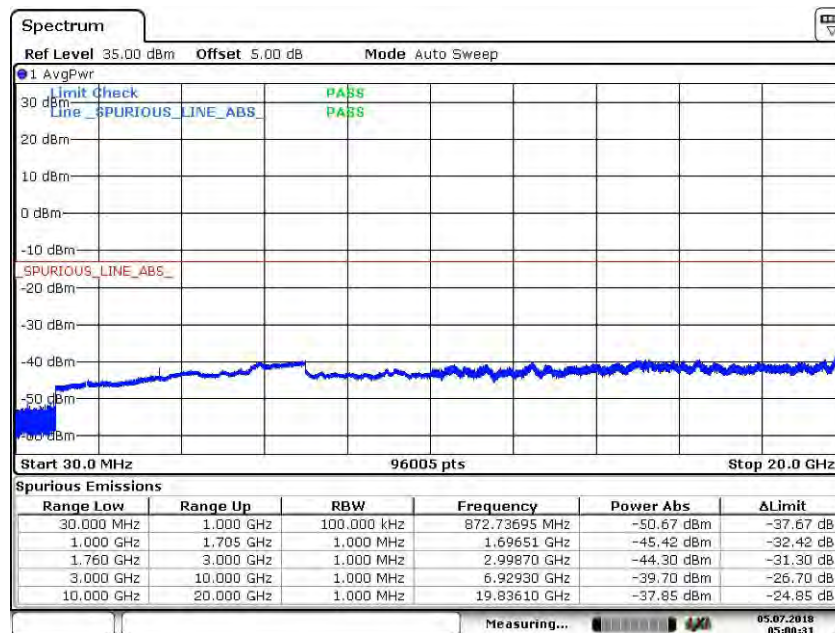


6.1.1.1.2 Test Channel = MCH



Date: 5 JUL 2018 04:59:21

6.1.1.1.3 Test Channel = HCH

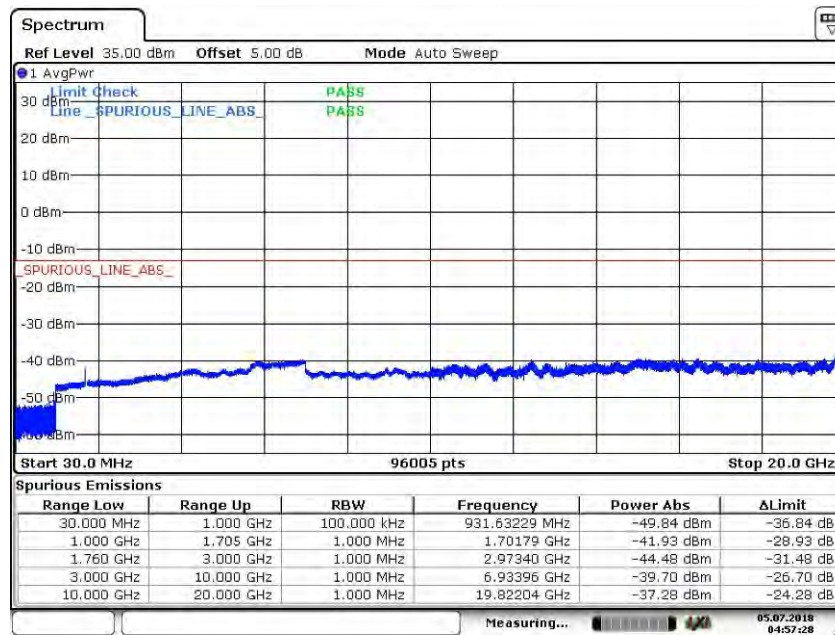


Date: 5 JUL 2018 05:00:31



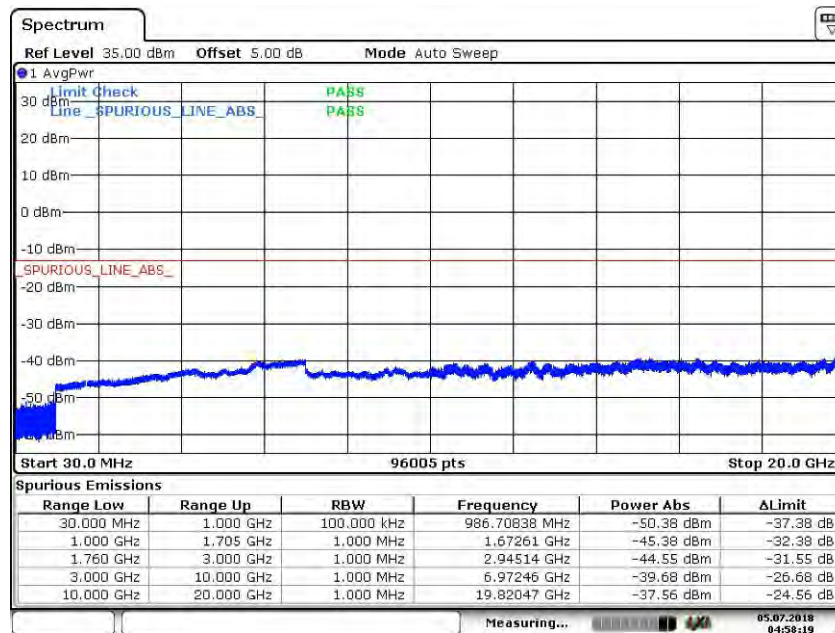
6.1.1.2 Test Mode = LTE-M1 / TM2 5MHz RB1#0

6.1.1.2.1 Test Channel = LCH



Date: 5 JUL 2018 04:57:28

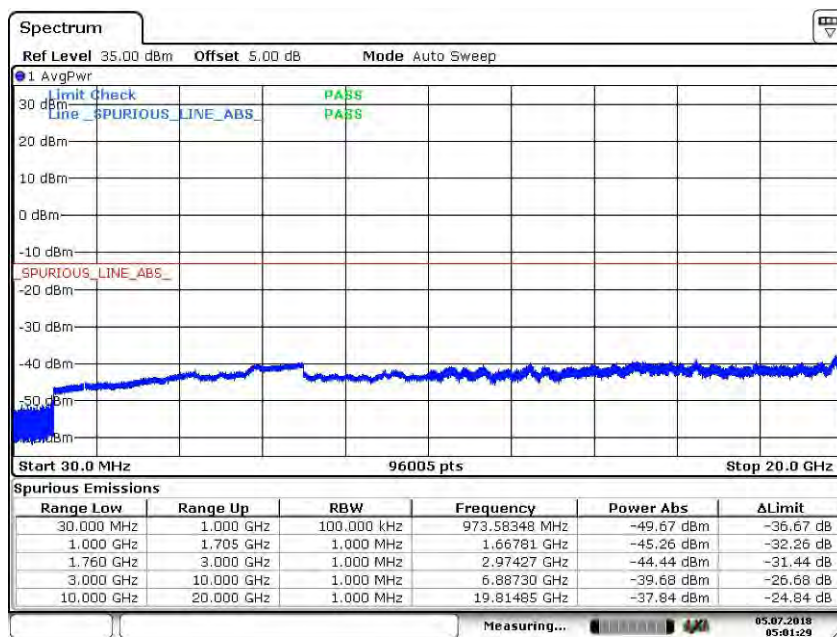
6.1.1.2.2 Test Channel = MCH



Date: 5 JUL 2018 04:58:19



6.1.1.2.3 Test Channel = HCH



Date: 5 JUL 2018 05:01:29



## 7 Field Strength of Spurious Radiation

### 7.1 For LTE-M1

#### 7.1.1 Test Band = LTE-M1 BAND4

##### 7.1.1.1 Test Mode =LTE-M1/TM1 5MHz RB1#0

###### 7.1.1.1.1 Test Channel = LCH

| Frequency (MHz) | Level (dBm) | Limit Line (dBm) | Over Limit (dB) | Polarization |
|-----------------|-------------|------------------|-----------------|--------------|
| 65.050000       | -82.47      | -13.00           | -69.47          | Vertical     |
| 124.950000      | -87.58      | -13.00           | -74.58          | Vertical     |
| 791.595833      | -80.51      | -13.00           | -67.51          | Vertical     |
| 3420.225000     | -53.64      | -13.00           | -40.64          | Vertical     |
| 5131.350000     | -62.79      | -13.00           | -49.79          | Vertical     |
| 6841.500000     | -53.17      | -13.00           | -40.17          | Vertical     |
| 62.650000       | -77.74      | -13.00           | -64.74          | Horizontal   |
| 110.750000      | -93.38      | -13.00           | -80.38          | Horizontal   |
| 268.750000      | -87.06      | -13.00           | -74.06          | Horizontal   |
| 3420.550000     | -45.80      | -13.00           | -32.80          | Horizontal   |
| 5131.025000     | -61.05      | -13.00           | -48.05          | Horizontal   |
| 6842.150000     | -59.38      | -13.00           | -46.38          | Horizontal   |

###### 7.1.1.1.2 Test Channel = MCH

| Frequency (MHz) | Level (dBm) | Limit Line (dBm) | Over Limit (dB) | Polarization |
|-----------------|-------------|------------------|-----------------|--------------|
| 65.450000       | -82.12      | -13.00           | -69.12          | Vertical     |
| 125.000000      | -87.29      | -13.00           | -74.29          | Vertical     |
| 307.900000      | -87.02      | -13.00           | -74.02          | Vertical     |
| 3460.525000     | -50.50      | -13.00           | -37.50          | Vertical     |
| 5190.825000     | -61.64      | -13.00           | -48.64          | Vertical     |
| 6921.775000     | -54.89      | -13.00           | -41.89          | Vertical     |
| 62.450000       | -77.68      | -13.00           | -64.68          | Horizontal   |
| 111.050000      | -93.43      | -13.00           | -80.43          | Horizontal   |
| 265.000000      | -87.14      | -13.00           | -74.14          | Horizontal   |
| 3460.200000     | -45.08      | -13.00           | -32.08          | Horizontal   |
| 5190.500000     | -64.21      | -13.00           | -51.21          | Horizontal   |
| 6921.775000     | -56.73      | -13.00           | -43.73          | Horizontal   |



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**7.1.1.1.3 Test Channel = HCH**

| Frequency (MHz) | Level (dBm) | Limit Line (dBm) | Over Limit (dB) | Polarization |
|-----------------|-------------|------------------|-----------------|--------------|
| 65.150000       | -82.19      | -13.00           | -69.19          | Vertical     |
| 125.000000      | -87.64      | -13.00           | -74.64          | Vertical     |
| 1103.000000     | -61.93      | -13.00           | -48.93          | Vertical     |
| 3501.150000     | -52.13      | -13.00           | -39.13          | Vertical     |
| 5250.950000     | -65.26      | -13.00           | -52.26          | Vertical     |
| 7001.400000     | -54.74      | -13.00           | -41.74          | Vertical     |
| 62.100000       | -78.43      | -13.00           | -65.43          | Horizontal   |
| 300.300000      | -87.33      | -13.00           | -74.33          | Horizontal   |
| 1046.000000     | -61.12      | -13.00           | -48.12          | Horizontal   |
| 3501.150000     | -55.85      | -13.00           | -42.85          | Horizontal   |
| 5250.300000     | -65.82      | -13.00           | -52.82          | Horizontal   |
| 7002.050000     | -61.34      | -13.00           | -48.34          | Horizontal   |

**NOTE:**

- 1) The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
- 2) We have tested all modulation and all bandwidth, but only the worst case data presented in this report.



## 8 Frequency Stability

### 8.1 Frequency Error VS. Voltage

| Test Band       | Test Mode          | Test Channel | Test Temp. | Test Volt. | Freq. Error [Hz] | Freq. vs. rated [ppm] | Verdict |
|-----------------|--------------------|--------------|------------|------------|------------------|-----------------------|---------|
| LTE-M1<br>BAND4 | LTE-M1/TM1<br>5MHz | LCH          | TN         | VL         | -5.13            | -0.002991             | PASS    |
|                 |                    |              |            | VN         | -8.66            | -0.005047             | PASS    |
|                 |                    |              |            | VH         | -9.96            | -0.005809             | PASS    |
|                 |                    | MCH          | TN         | VL         | 6.69             | 0.003859              | PASS    |
|                 |                    |              |            | VN         | -6.87            | -0.003967             | PASS    |
|                 |                    |              |            | VH         | 5.30             | 0.003058              | PASS    |
|                 |                    | HCH          | TN         | VL         | 9.17             | 0.005238              | PASS    |
|                 |                    |              |            | VN         | -0.30            | -0.000174             | PASS    |
|                 |                    |              |            | VH         | -0.76            | -0.000434             | PASS    |
|                 | LTE-M1/TM2<br>5MHz | LCH          | TN         | VL         | 4.49             | 0.002616              | PASS    |
|                 |                    |              |            | VN         | -2.37            | -0.001382             | PASS    |
|                 |                    |              |            | VH         | 8.11             | 0.004727              | PASS    |
|                 |                    | MCH          | TN         | VL         | -6.02            | -0.003476             | PASS    |
|                 |                    |              |            | VN         | 3.88             | 0.002239              | PASS    |
|                 |                    |              |            | VH         | 7.45             | 0.004301              | PASS    |
|                 |                    | HCH          | TN         | VL         | 8.26             | 0.004720              | PASS    |
|                 |                    |              |            | VN         | 3.05             | 0.001744              | PASS    |
|                 |                    |              |            | VH         | 2.02             | 0.001154              | PASS    |



## 8.2 Frequency Error VS. Temperature

| Test Band       | Test Mode          | Test Channel | Test Volt. | Test Temp. | Freq. Error [Hz] | Freq. vs. rated [ppm] | Verdict |
|-----------------|--------------------|--------------|------------|------------|------------------|-----------------------|---------|
| LTE-M1<br>BAND4 | LTE-M1/TM1<br>5MHz | LCH          | VN         | -30        | -3.59            | -0.002094             | PASS    |
|                 |                    |              |            | -20        | 2.09             | 0.001218              | PASS    |
|                 |                    |              |            | -10        | 2.54             | 0.001484              | PASS    |
|                 |                    |              |            | 0          | -9.41            | -0.005488             | PASS    |
|                 |                    |              |            | 10         | -8.64            | -0.005038             | PASS    |
|                 |                    |              |            | 20         | -9.60            | -0.005599             | PASS    |
|                 |                    |              |            | 30         | -8.42            | -0.004909             | PASS    |
|                 |                    |              |            | 40         | 7.08             | 0.004128              | PASS    |
|                 |                    |              |            | 50         | -9.72            | -0.005669             | PASS    |
|                 |                    | MCH          | VN         | -30        | 8.01             | 0.004623              | PASS    |
|                 |                    |              |            | -20        | -8.20            | -0.004734             | PASS    |
|                 |                    |              |            | -10        | 2.04             | 0.001179              | PASS    |
|                 |                    |              |            | 0          | 6.94             | 0.004006              | PASS    |
|                 |                    |              |            | 10         | 2.40             | 0.001386              | PASS    |
|                 |                    |              |            | 20         | -7.48            | -0.004320             | PASS    |
|                 |                    |              |            | 30         | -2.12            | -0.001222             | PASS    |
|                 |                    |              |            | 40         | 8.58             | 0.004952              | PASS    |
|                 |                    |              |            | 50         | 3.21             | 0.001853              | PASS    |
|                 |                    | HCH          | VN         | -30        | 3.43             | 0.001961              | PASS    |
|                 |                    |              |            | -20        | 8.51             | 0.004864              | PASS    |
|                 |                    |              |            | -10        | 9.61             | 0.005493              | PASS    |
|                 |                    |              |            | 0          | -1.67            | -0.000954             | PASS    |
|                 |                    |              |            | 10         | 6.52             | 0.003728              | PASS    |
|                 |                    |              |            | 20         | 2.55             | 0.001458              | PASS    |
|                 |                    |              |            | 30         | 9.93             | 0.005672              | PASS    |
|                 |                    |              |            | 40         | 0.29             | 0.000166              | PASS    |
|                 |                    |              |            | 50         | 6.28             | 0.003590              | PASS    |



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| Test Band       | Test Mode          | Test Channel | Test Volt. | Test Temp. | Freq. Error [Hz] | Freq. vs. rated [ppm] | Verdict |
|-----------------|--------------------|--------------|------------|------------|------------------|-----------------------|---------|
| LTE-M1<br>BAND4 | LTE-M1/TM2<br>5MHz | LCH          | VN         | -30        | 2.73             | 0.001591              | PASS    |
|                 |                    |              |            | -20        | 4.57             | 0.002663              | PASS    |
|                 |                    |              |            | -10        | 9.05             | 0.005277              | PASS    |
|                 |                    |              |            | 0          | -5.05            | -0.002943             | PASS    |
|                 |                    |              |            | 10         | -1.95            | -0.001137             | PASS    |
|                 |                    |              |            | 20         | 1.14             | 0.000665              | PASS    |
|                 |                    |              |            | 30         | -3.56            | -0.002079             | PASS    |
|                 |                    |              |            | 40         | -6.61            | -0.003854             | PASS    |
|                 |                    |              |            | 50         | -9.44            | -0.005503             | PASS    |
|                 |                    | MCH          | VN         | -30        | 3.67             | 0.002120              | PASS    |
|                 |                    |              |            | -20        | 0.90             | 0.000522              | PASS    |
|                 |                    |              |            | -10        | 8.16             | 0.004711              | PASS    |
|                 |                    |              |            | 0          | -6.83            | -0.003944             | PASS    |
|                 |                    |              |            | 10         | 2.53             | 0.001461              | PASS    |
|                 |                    |              |            | 20         | -0.48            | -0.000277             | PASS    |
|                 |                    |              |            | 30         | 7.86             | 0.004539              | PASS    |
|                 |                    |              |            | 40         | 9.37             | 0.005407              | PASS    |
|                 |                    |              |            | 50         | -6.72            | -0.003879             | PASS    |
|                 |                    | HCH          | VN         | -30        | -2.33            | -0.001333             | PASS    |
|                 |                    |              |            | -20        | 6.10             | 0.003484              | PASS    |
|                 |                    |              |            | -10        | 9.47             | 0.005413              | PASS    |
|                 |                    |              |            | 0          | -8.26            | -0.004718             | PASS    |
|                 |                    |              |            | 10         | -7.86            | -0.004493             | PASS    |
|                 |                    |              |            | 20         | 2.69             | 0.001536              | PASS    |
|                 |                    |              |            | 30         | 0.87             | 0.000495              | PASS    |
|                 |                    |              |            | 40         | 1.62             | 0.000924              | PASS    |
|                 |                    |              |            | 50         | -5.29            | -0.003022             | PASS    |

The End