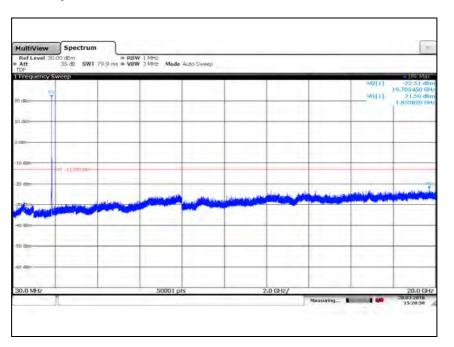


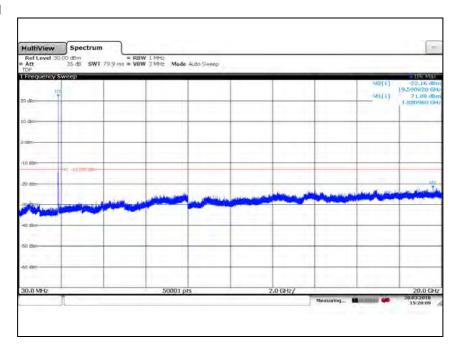
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### LTE band 2 (5 脏 - QPSK)

Low Channel

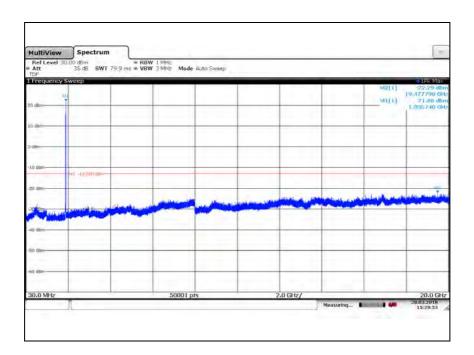


#### Middle Channel





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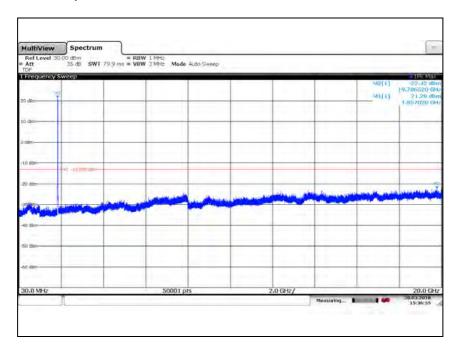




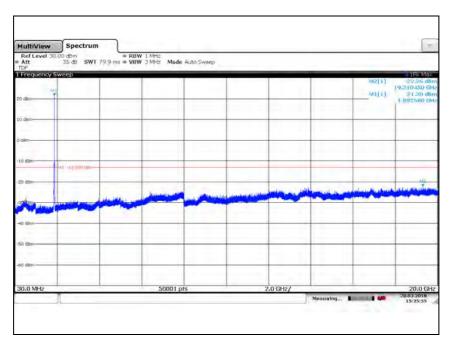
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## LTE band 2 (10 Mb - QPSK)

Low Channel

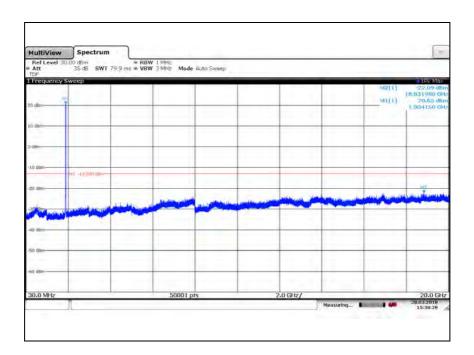


#### Middle Channel





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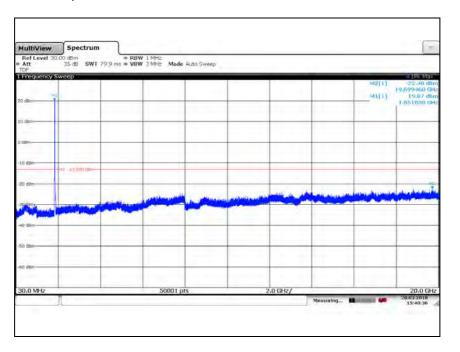




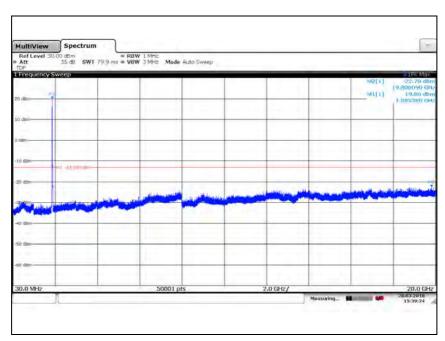
Report Number: F690501/RF-RTL012487 Page: 155 of 215

### LTE band 2 (15 Mb - QPSK)

Low Channel

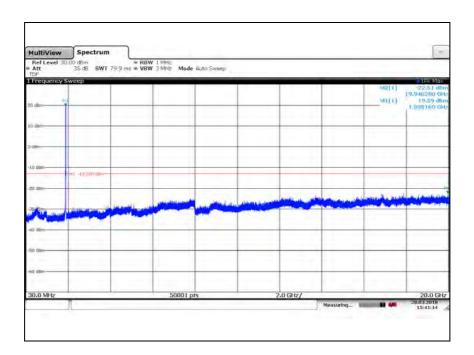


#### Middle Channel





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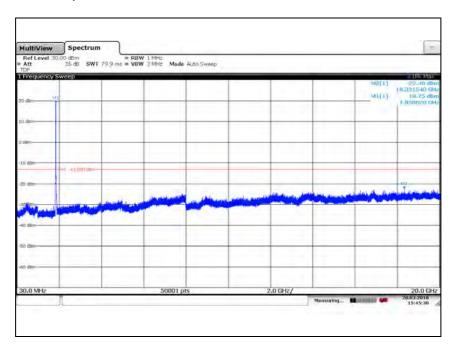




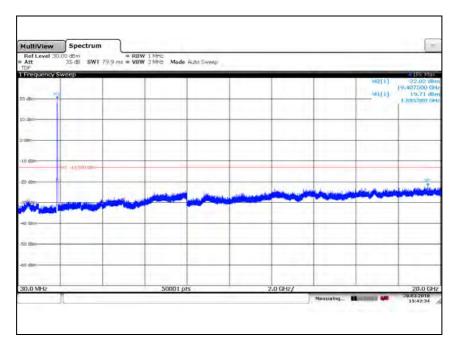
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### LTE band 2 (20 Mb - QPSK)

Low Channel

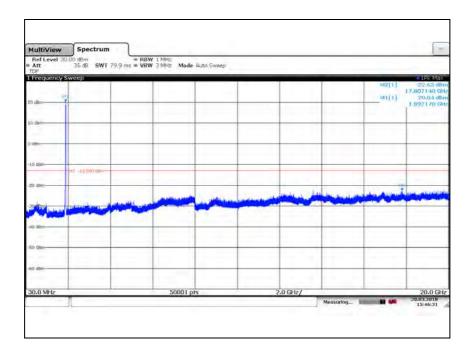


#### Middle Channel





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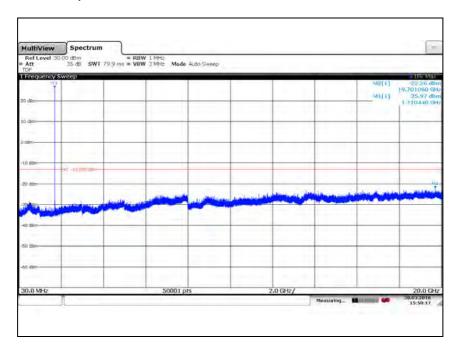




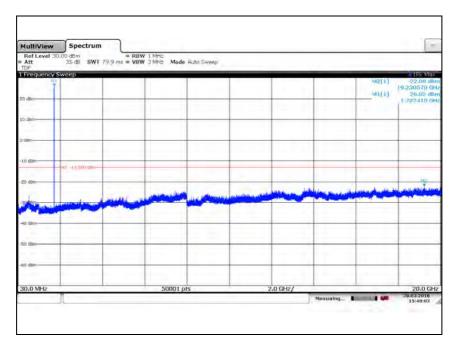
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## 

Low Channel

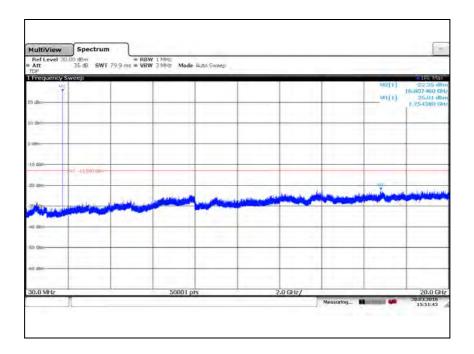


#### Middle Channel





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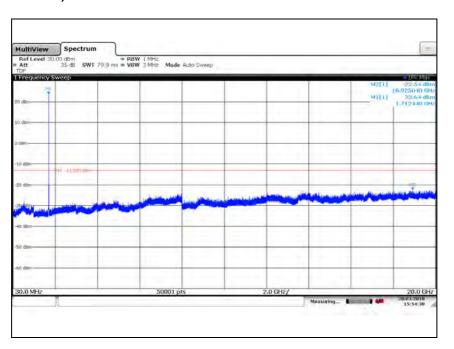




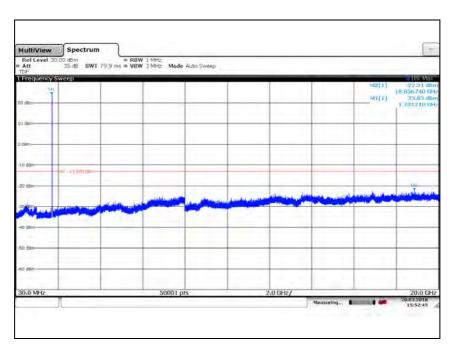
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### LTE band 4 (3 Mb - QPSK)

Low Channel

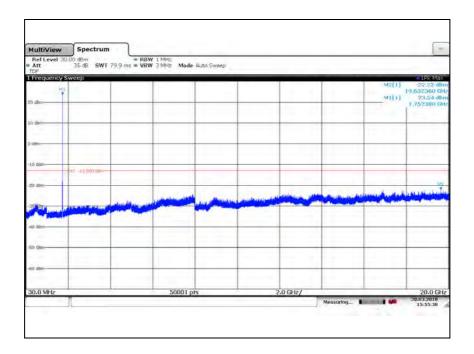


#### Middle Channel





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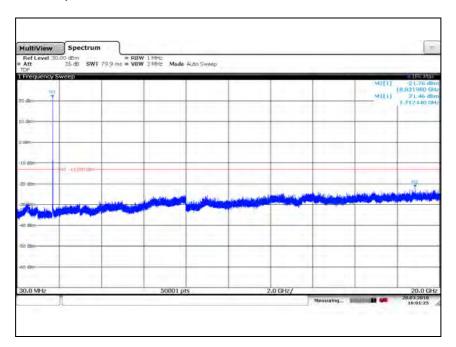




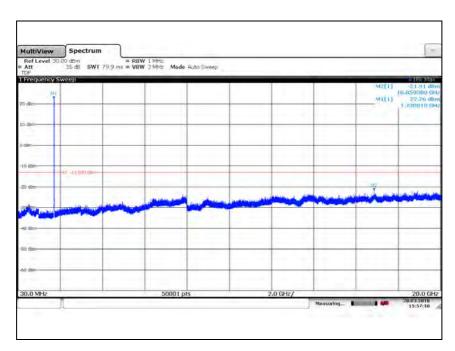
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### LTE band 4 (5 脏 - QPSK)

Low Channel

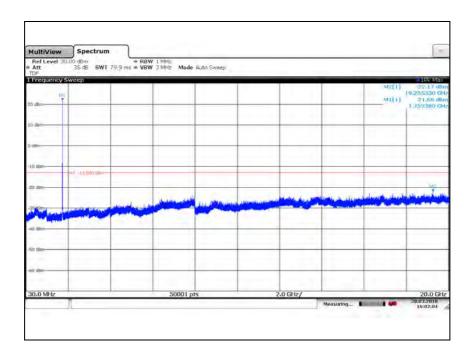


#### Middle Channel





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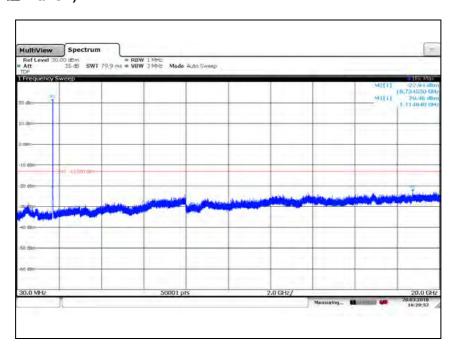




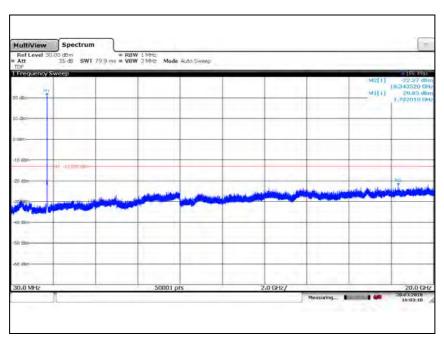
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## LTE band 4 (10 Mb - QPSK)

Low Channel

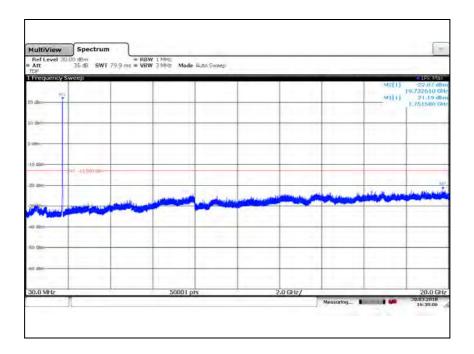


#### Middle Channel





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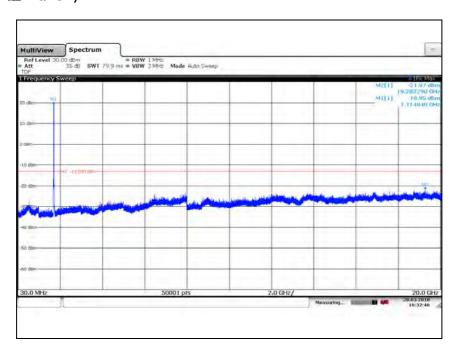




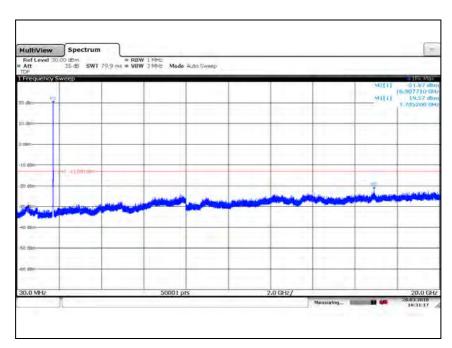
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### LTE band 4 (15 Mb - QPSK)

Low Channel

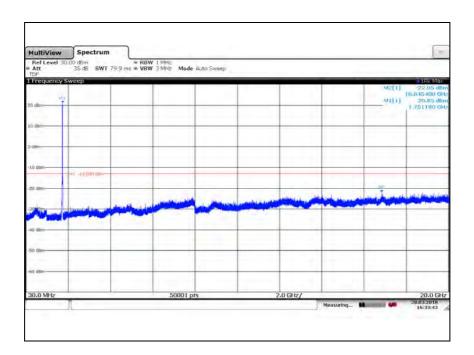


#### Middle Channel





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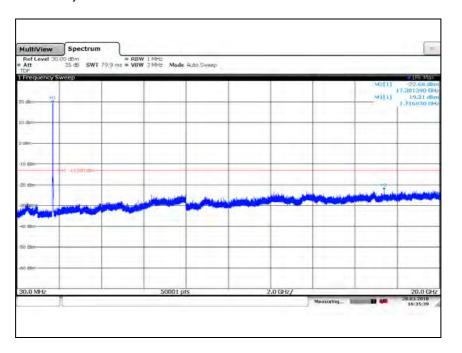




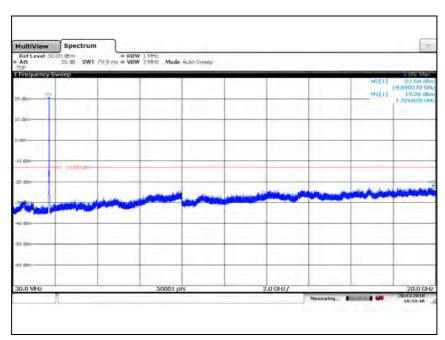
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### LTE band 4 (20 Mb - QPSK)

Low Channel

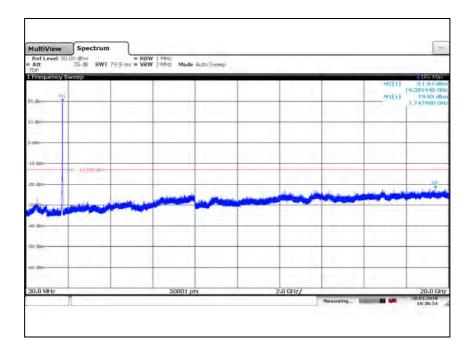


#### Middle Channel





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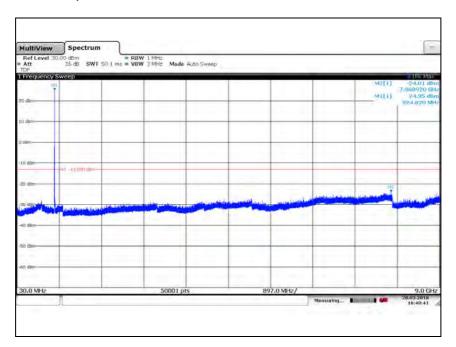




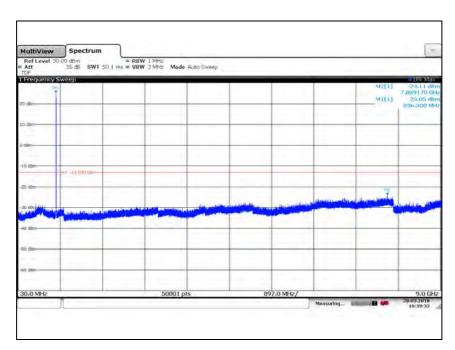
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## 

Low Channel

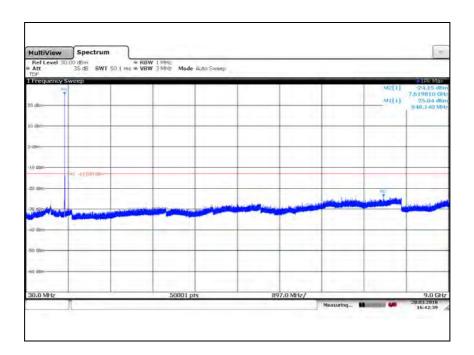


#### Middle Channel





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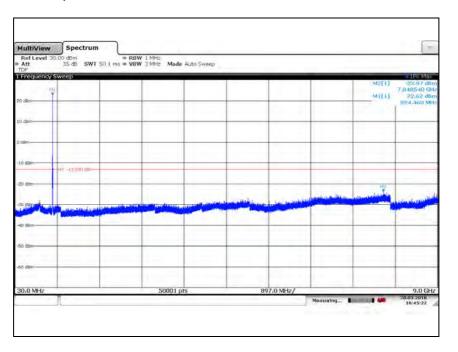




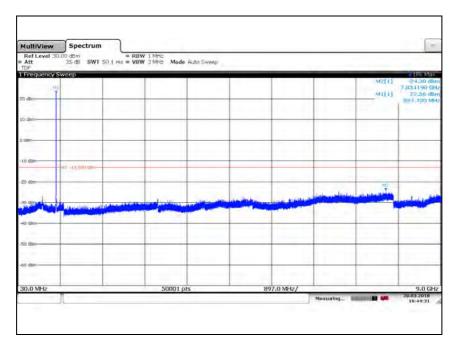
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### LTE band 5 (3 Mb - QPSK)

Low Channel

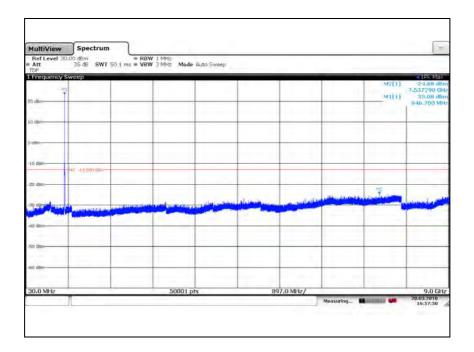


#### Middle Channel





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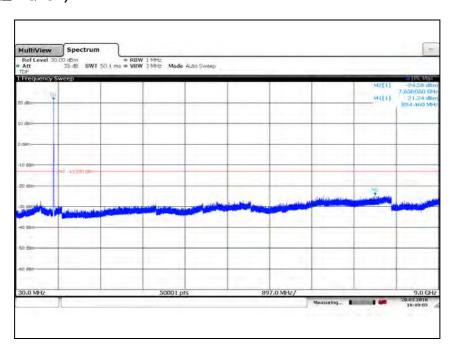




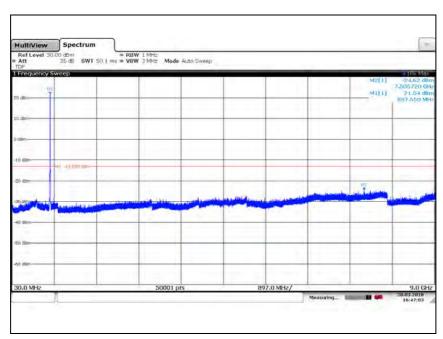
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### LTE band 5 (5 Mb - QPSK)

Low Channel

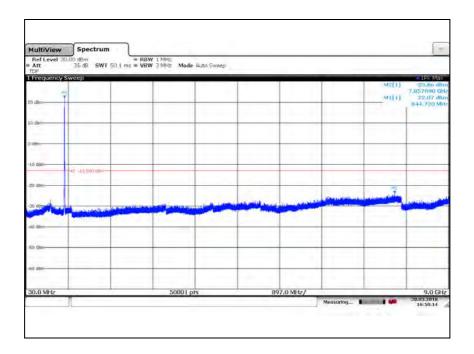


#### Middle Channel





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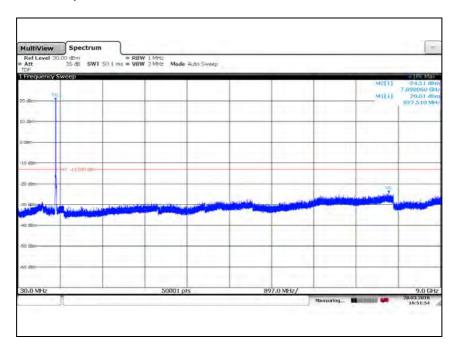




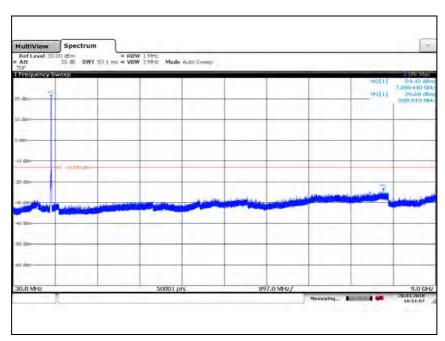
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## LTE band 5 (10 Mb - QPSK)

Low Channel

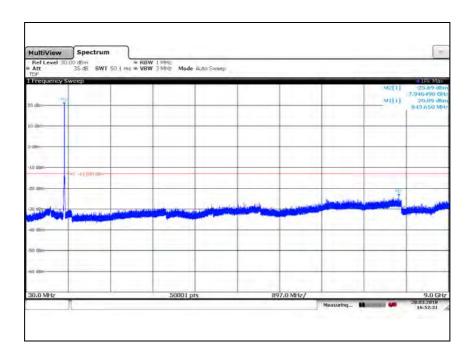


#### Middle Channel





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# 7. Band Edge

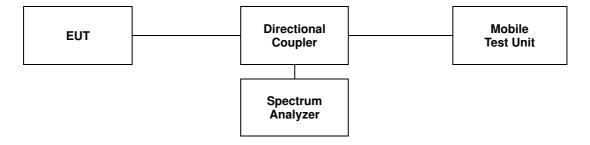
#### **7.1. Limit**

- §22.917(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) dB.
- §24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.
- §27.53(h)(1), for operations in the 1 695-1 710 Mb, 1 710-1 755 Mb, 1 755-1 780 Mb, 1 915-1 920 Mb, 1 995-2 000 Mb, 2 000-2 020 Mb, 2 110-2 155 Mb, 2 155-2 180 Mb, and 2 180-2 200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log 10$  (P) dB.

#### 7.2. Test Procedure

The test follows section 6.1 of FCC KDB Publication 971168 D01 v03.

- 1. Span was set large enough so as to capture all out of band emissions near the band edge.
- 2. RBW ≥ 1 % of OBW.
- 3. VBW  $\geq$  3 x RBW.
- 4. Detector = RMS.
- 5. Trace mode = Average.
- 6. Sweep time = Auto.
- 7. The trace was allowed to stabilize.
- 8. All path loss of frequency range was investigated and compensated to spectrum analyzer as correction factor.





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#### 7.3. Test Results

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

Please refer to the following plots.

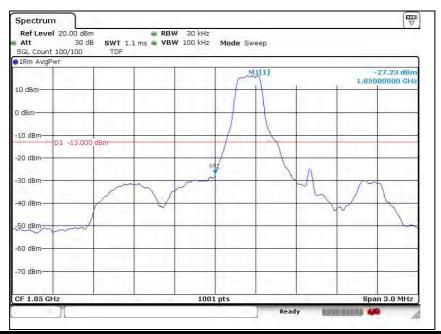
#### LTE band 2 (1.4 \mathbb{Mb} - QPSK\_RB 6)

Low Channel



## 

Low Channel

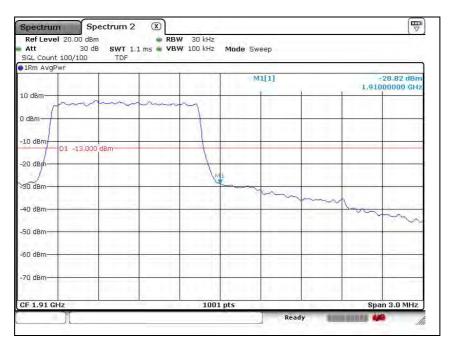




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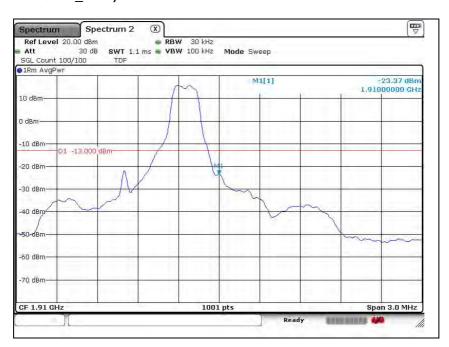
### LTE band 2 (1.4 \https://doi.org/10.1016

High Channel



### 

High Channel

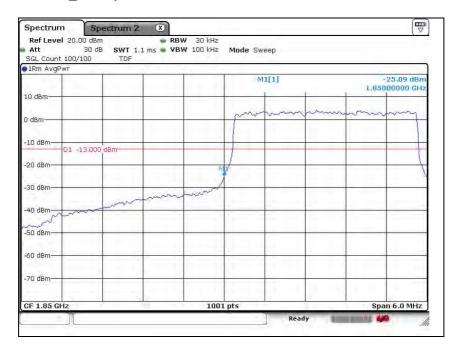




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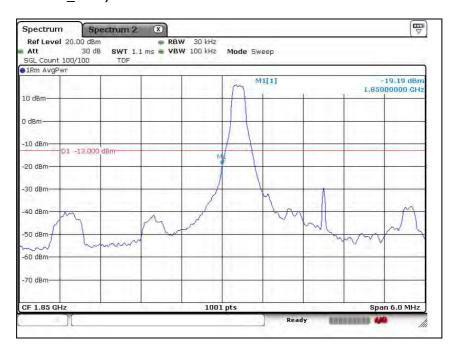
#### LTE band 2 (3 版 - QPSK\_RB 15)

Low Channel



### LTE band 2 (3 Mb - QPSK\_RB 1)

Low Channel

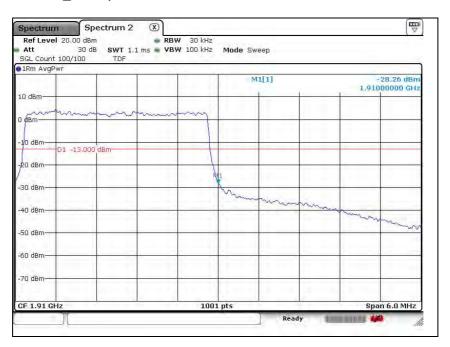




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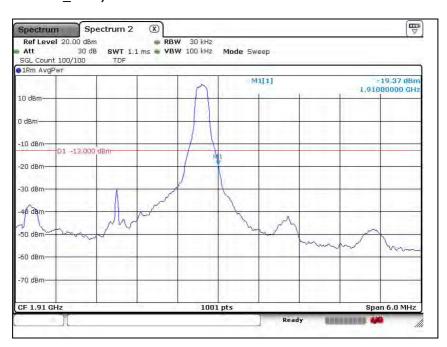
#### LTE band 2 (3 版 - QPSK\_RB 15)

High Channel



### LTE band 2 (3 Mb - QPSK\_RB 1)

High Channel

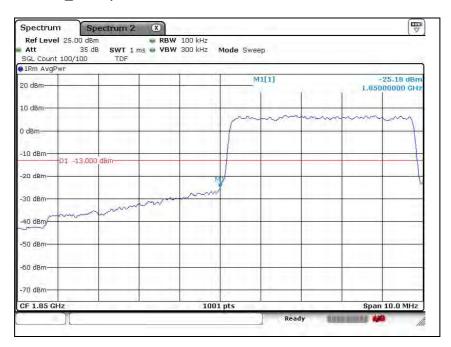




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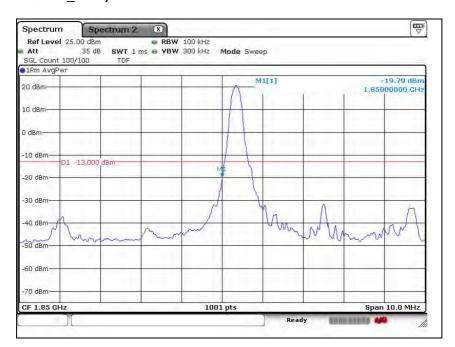
#### 

Low Channel



### LTE band 2 (5 Mb - QPSK\_RB 1)

Low Channel

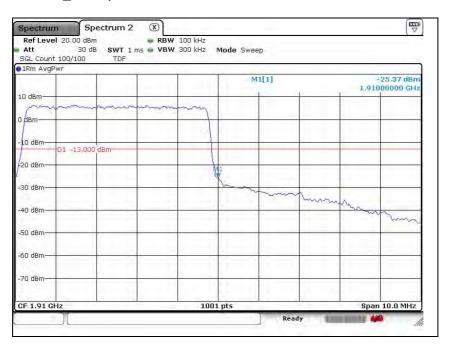




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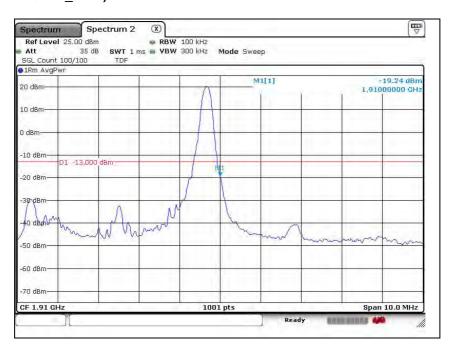
#### 

High Channel



### LTE band 2 (5 Mb - QPSK\_RB 1)

High Channel

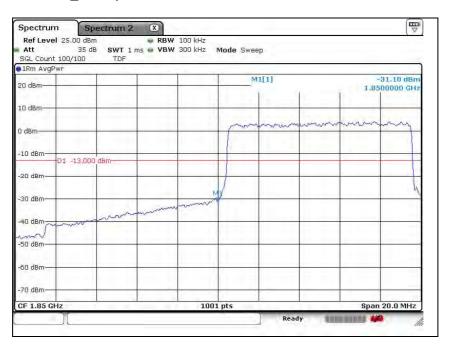




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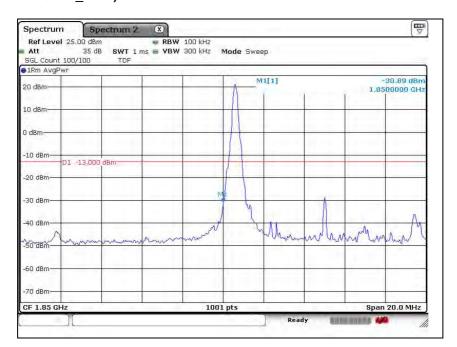
#### LTE band 2 (10 Mb - QPSK\_RB 50)

Low Channel



### LTE band 2 (10 Mb - QPSK\_RB 1)

Low Channel

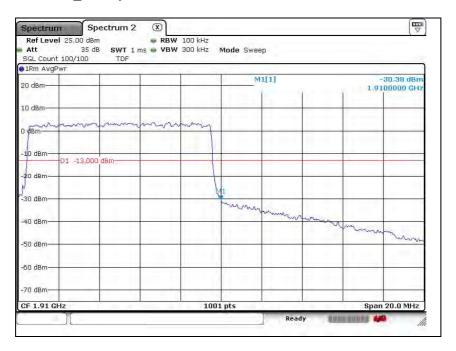




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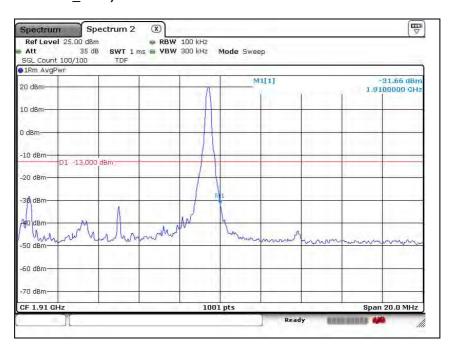
#### LTE band 2 (10 Mb - QPSK\_RB 50)

High Channel



#### LTE band 2 (10 Mb - QPSK\_RB 1)

High Channel

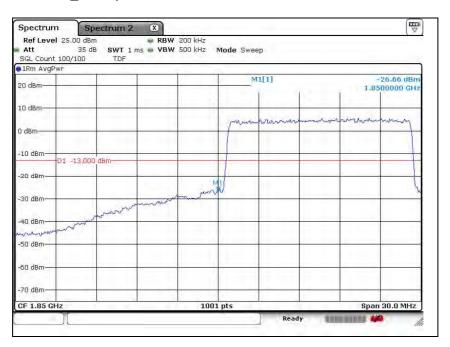




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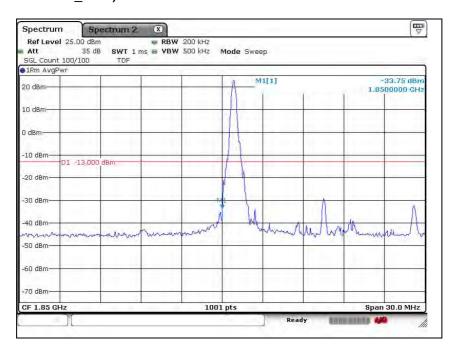
#### LTE band 2 (15 Mb - QPSK\_RB 75)

Low Channel



#### LTE band 2 (15 Mb - QPSK\_RB 1)

Low Channel

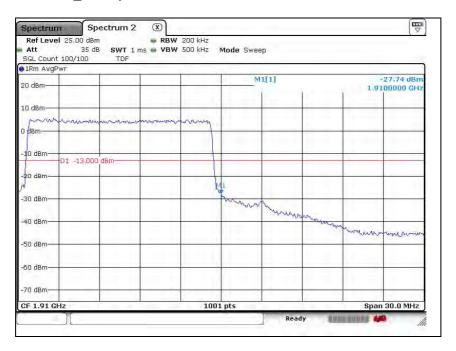




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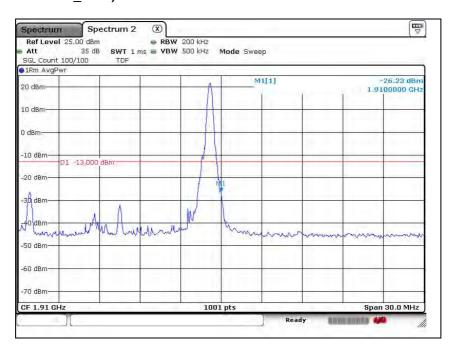
#### LTE band 2 (15 Mb - QPSK\_RB 75)

High Channel



#### LTE band 2 (15 Mb - QPSK\_RB 1)

High Channel





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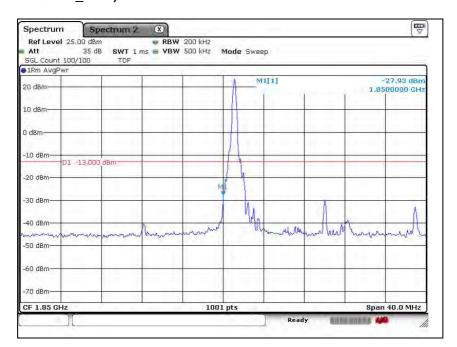
#### LTE band 2 (20 Mb - QPSK\_RB 100)

Low Channel



#### LTE band 2 (20 Mb - QPSK\_RB 1)

Low Channel

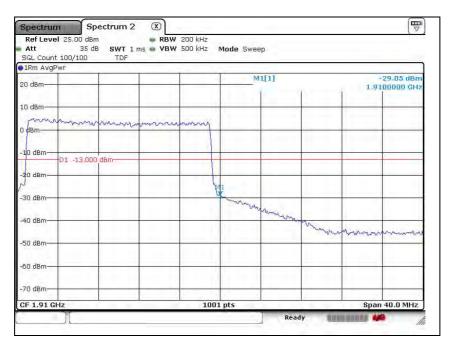




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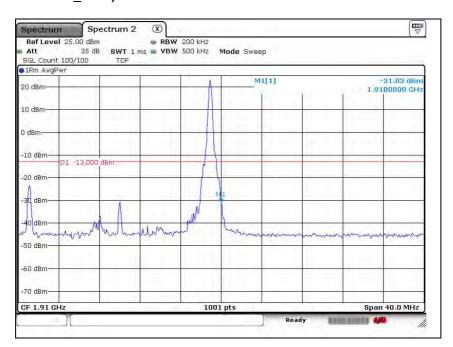
## LTE band 2 (20 Mb - QPSK\_RB 100)

High Channel



#### LTE band 2 (20 Mb - QPSK\_RB 1)

High Channel

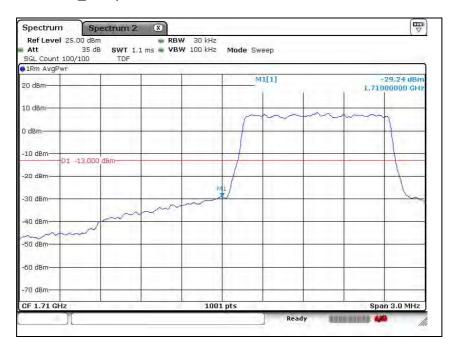




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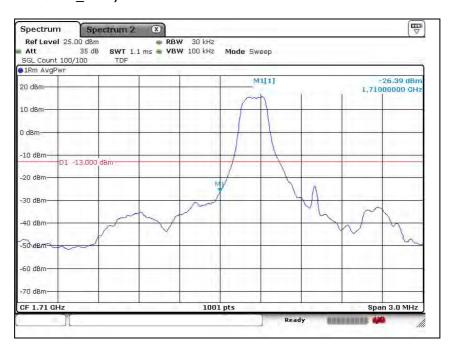
#### LTE band 4 (1.4 \( \mu \) - QPSK\_RB 6)

Low Channel



#### 

Low Channel

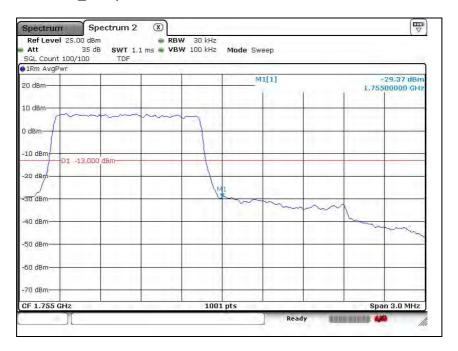




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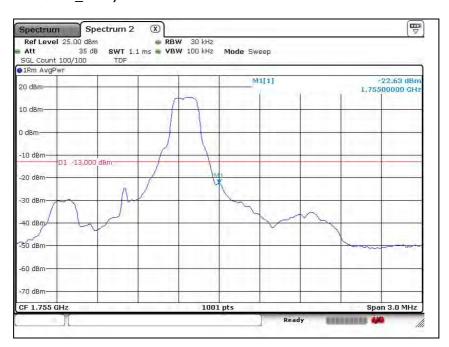
#### LTE band 4 (1.4 \( \mu \) - QPSK\_RB 6)

High Channel



#### 

High Channel

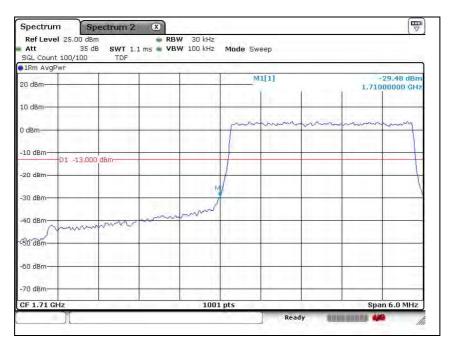




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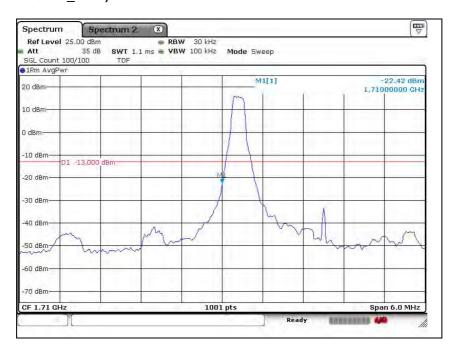
## LTE band 4 (3 版 - QPSK\_RB 15)

Low Channel



#### LTE band 4 (3 Mb - QPSK\_RB 1)

Low Channel

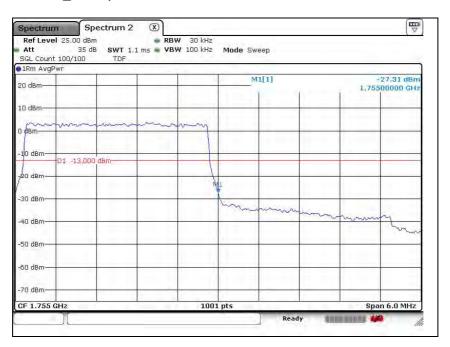




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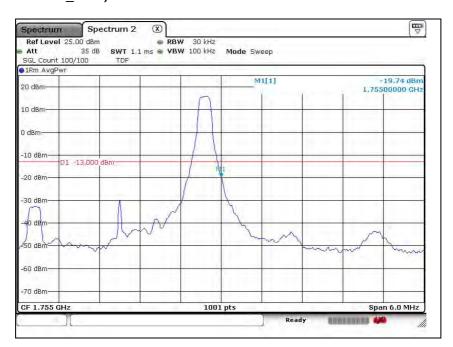
#### LTE band 4 (3 版 - QPSK\_RB 15)

High Channel



#### LTE band 4 (3 Mb - QPSK\_RB 1)

High Channel

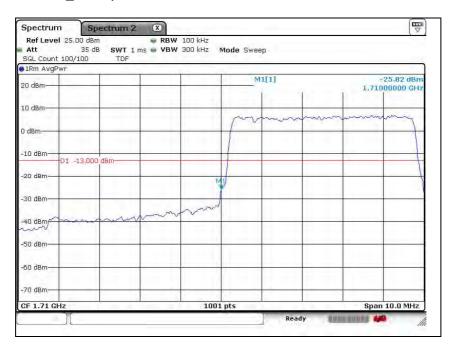




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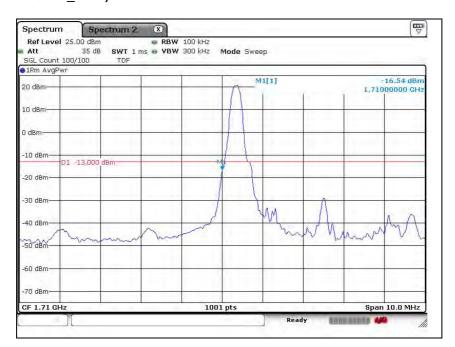
#### LTE band 4 (5 Mb - QPSK\_RB 25)

Low Channel



#### LTE band 4 (5 Mb - QPSK\_RB 1)

Low Channel

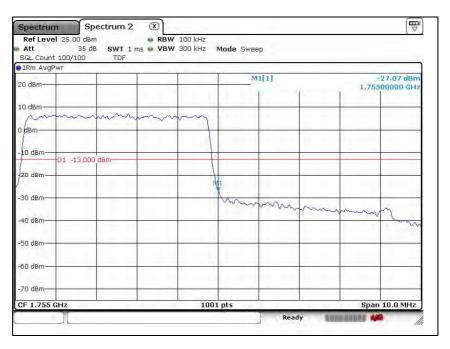




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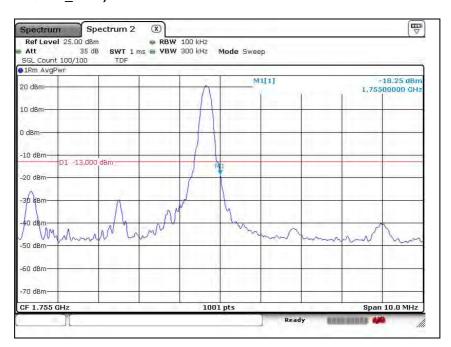
## LTE band 4 (5 Mb - QPSK\_RB 25)

High Channel



#### LTE band 4 (5 Mb - QPSK\_RB 1)

High Channel

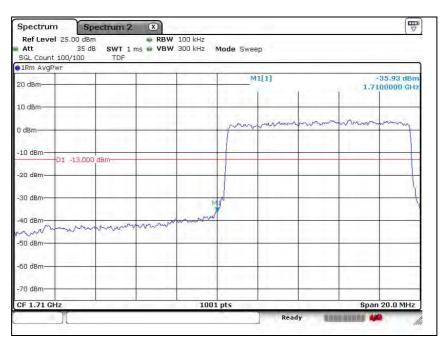




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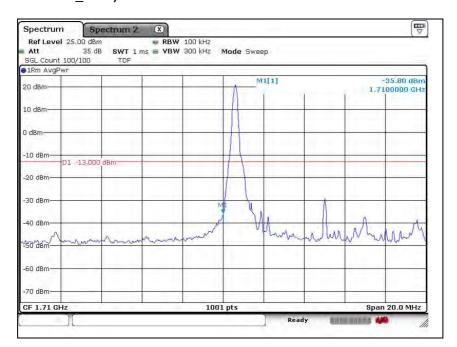
## LTE band 4 (10 Mb - QPSK\_RB 50)

Low Channel



#### LTE band 4 (10 Mb - QPSK\_RB 1)

Low Channel

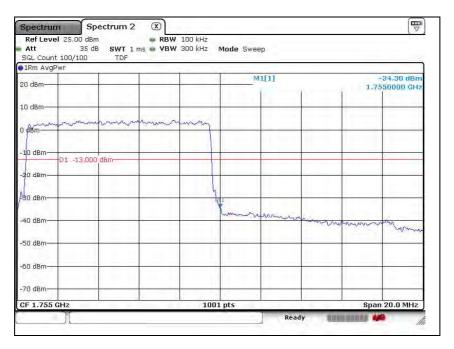




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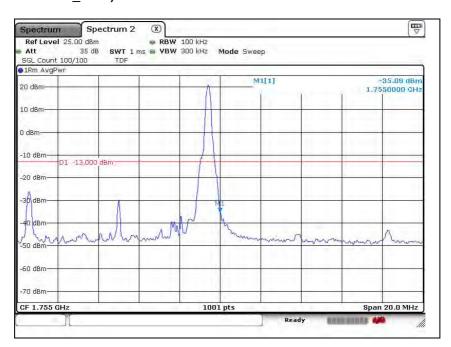
## LTE band 4 (10 Mb - QPSK\_RB 50)

High Channel



#### LTE band 4 (10 Mb - QPSK\_RB 1)

High Channel

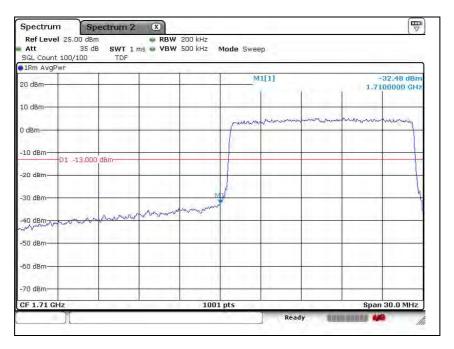




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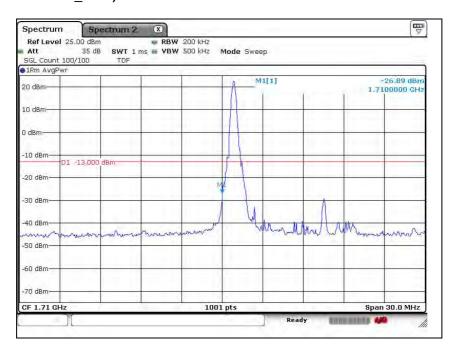
## LTE band 4 (15 Mb - QPSK\_RB 75)

Low Channel



#### LTE band 4 (15 Mb - QPSK\_RB 1)

Low Channel

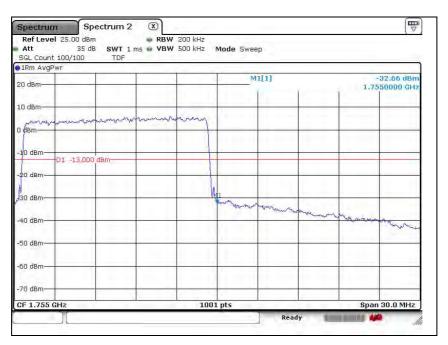




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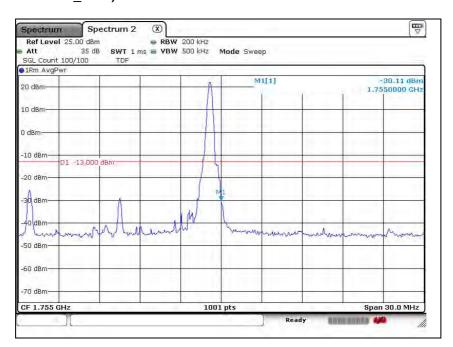
## LTE band 4 (15 Mb - QPSK\_RB 75)

High Channel



#### LTE band 4 (15 Mb - QPSK\_RB 1)

High Channel

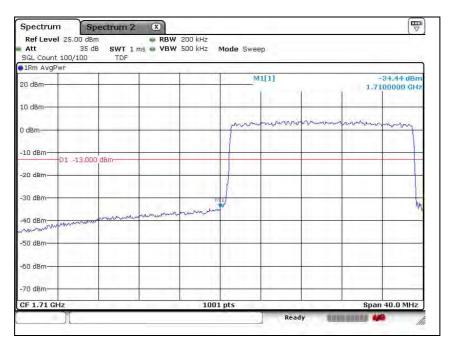




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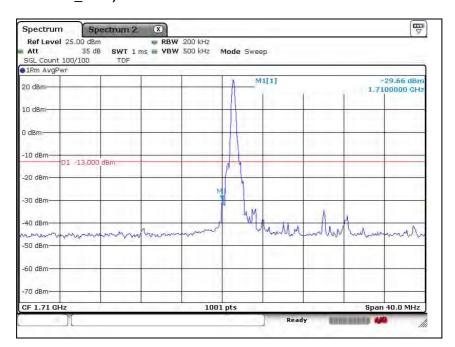
## LTE band 4 (20 Mb - QPSK\_RB 100)

Low Channel



#### LTE band 4 (20 Mb - QPSK\_RB 1)

Low Channel

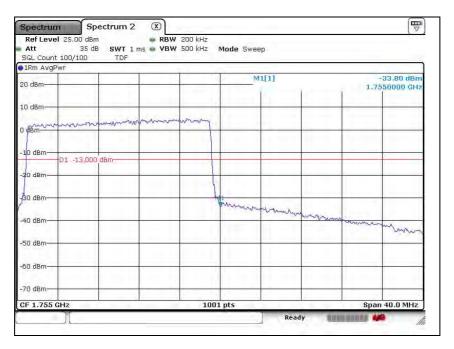




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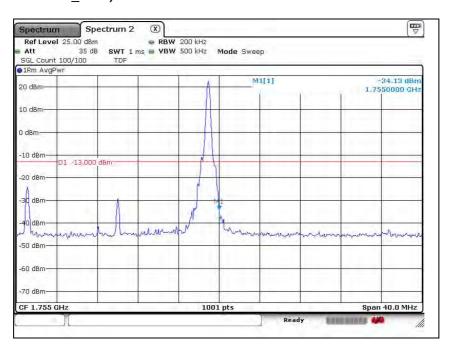
## LTE band 4 (20 Mb - QPSK\_RB 100)

High Channel



#### LTE band 4 (20 Mb - QPSK\_RB 1)

High Channel

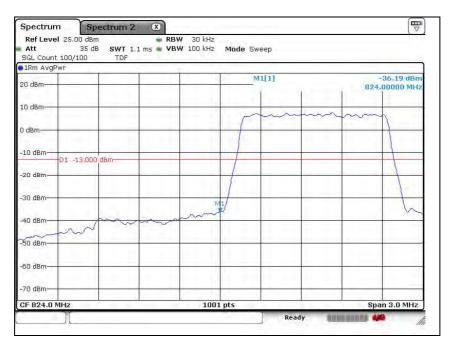




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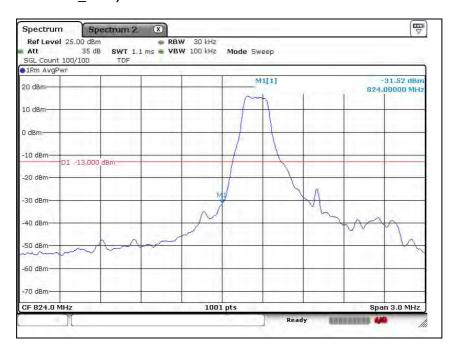
## LTE band 5 (1.4 \mathbb{Mb} - QPSK\_RB 6)

Low Channel



#### 

Low Channel

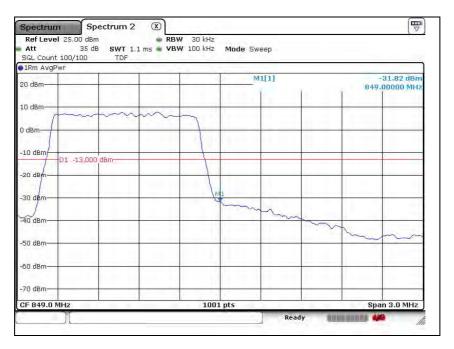




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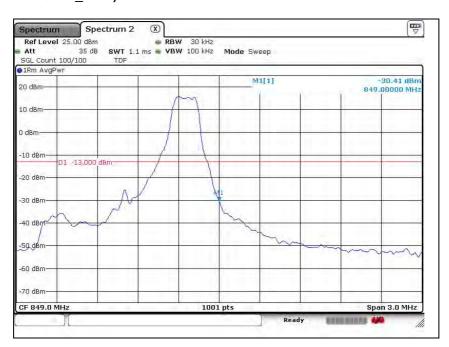
## LTE band 5 (1.4 \mathbb{Mb} - QPSK\_RB 6)

High Channel



#### 

High Channel

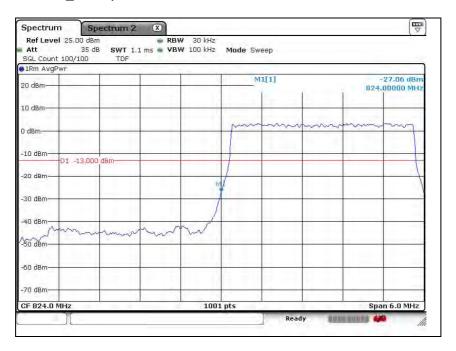




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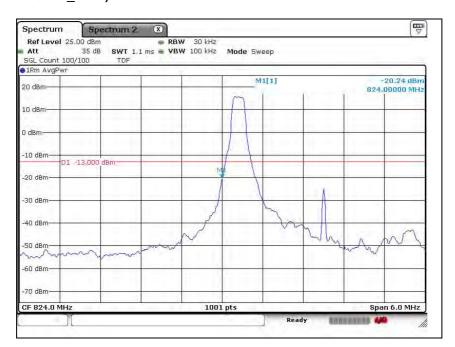
#### 

Low Channel



#### LTE band 5 (3 Mb - QPSK\_RB 1)

Low Channel

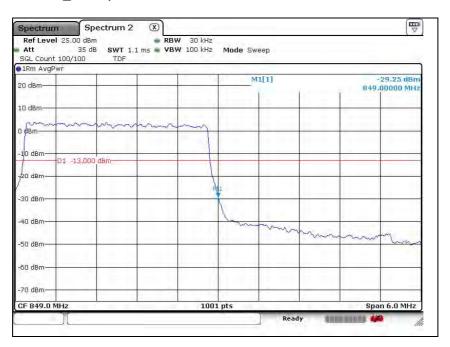




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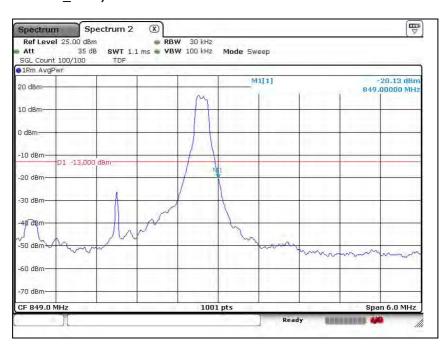
#### 

High Channel



#### LTE band 5 (3 Mb - QPSK\_RB 1)

High Channel

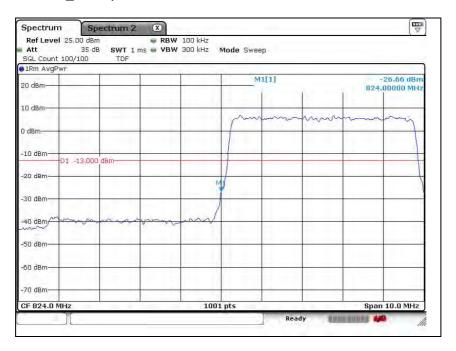




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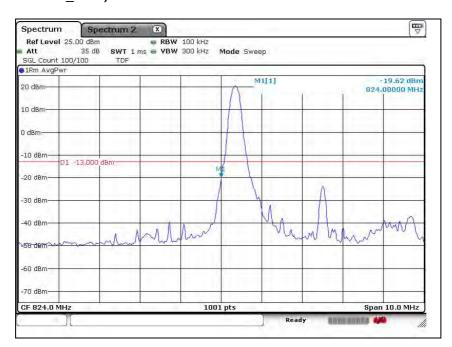
#### LTE band 5 (5 Mb - QPSK\_RB 25)

Low Channel



#### LTE band 5 (5 Mb - QPSK\_RB 1)

Low Channel

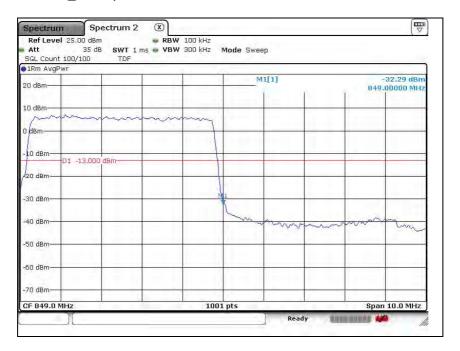




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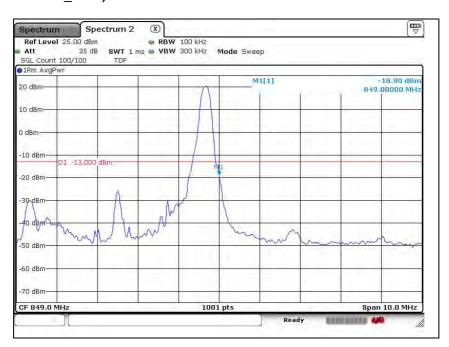
#### LTE band 5 (5 Mb - QPSK\_RB 25)

High Channel



#### LTE band 5 (5 Mb - QPSK\_RB 1)

High Channel

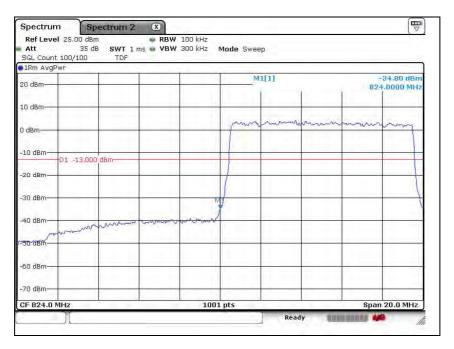




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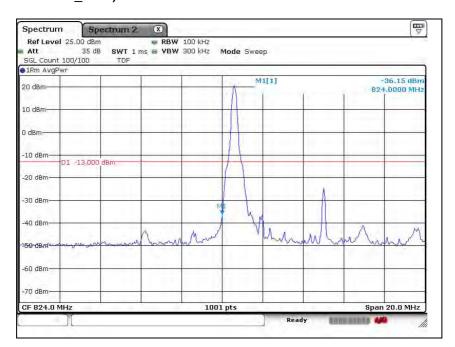
## LTE band 5 (10 Mb - QPSK\_RB 50)

Low Channel



#### LTE band 5 (10 Mb - QPSK\_RB 1)

Low Channel

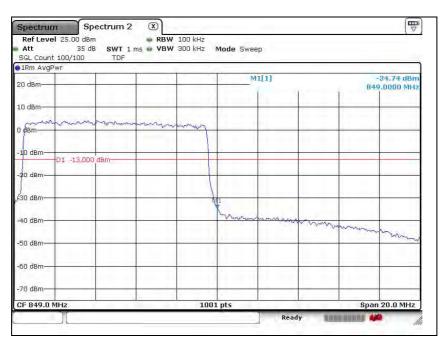




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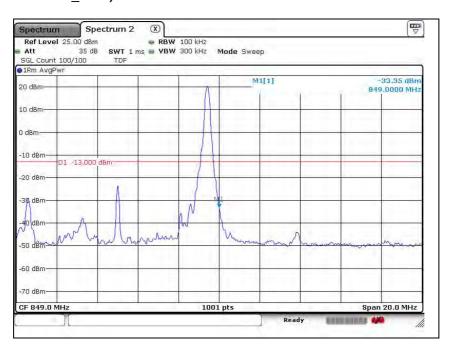
## LTE band 5 (10 Mb - QPSK\_RB 50)

High Channel



#### LTE band 5 (10 Mb - QPSK\_RB 1)

High Channel





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# 8. Frequency Stability

#### 8.1. Limit

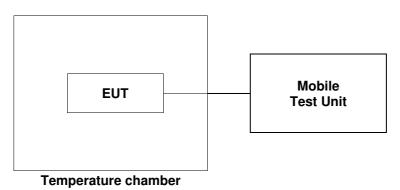
- § 2.1055 (a), § 2.1055 (d) & following:
- <u>§22.355</u>, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table of this section.

For Mobile devices operating in the 824 to 849  $\,^{\text{Mb}}$  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.

#### 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.





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#### 8.3. Test Results

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

## LTE band 2 at middle channel

## Reference Frequency: 1 880.0 MHz

#### Frequency Stability versus Temperature

Environment Temperature (℃)	Power Supplied (V <sub>dc</sub> )	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	12	-5	-0.002 7
40		-3	-0.001 6
30		1	0.000 5
23		3	0.001 6
10		5	0.002 7
0		7	0.003 7
-10		2	0.001 1
-20		3	0.001 6
-30		-5	-0.002 7

#### Frequency Stability versus Power Supply

Environment Temperature (℃)	Power Supplied (V <sub>dc</sub> )	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
23	13.8	5	0.002 7
	10.2	7	0.003 7



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#### LTE band 4 at middle channel

Reference Frequency: 1 732.5 WHz

# **Frequency Stability versus Temperature**

Environment Temperature (℃)	Power Supplied (V <sub>dc</sub> )	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	12	4	0.002 3
40		5	0.002 9
30		7	0.004 0
23		6	0.003 5
10		-2	-0.001 2
0		-4	-0.002 3
-10		1	0.000 6
-20		-5	-0.002 9
-30		-10	-0.005 8

#### Frequency Stability versus Power Supply

Environment Temperature (℃)	Power Supplied (V <sub>dc</sub> )	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
23	13.8	-4	-0.002 3
	10.2	6	0.003 5



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#### LTE band 5 at middle channel

#### Reference Frequency: 836.5 MHz

#### Frequency Stability versus Temperature

Environment Temperature (℃)	Power Supplied (V <sub>dc</sub> )	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
50	12	-5	-0.006 0
40		7	0.008 4
30		-3	-0.003 6
23		1	0.001 2
10		10	0.012 0
0		5	0.006 0
-10		-3	-0.003 6
-20		-5	-0.006 0
-30		1	0.001 2

#### Frequency Stability versus Power Supply

Environment Temperature (℃)	Power Supplied (V <sub>dc</sub> )	Frequency Measure with Time Elapse	
		Frequency Error (Hz)	ppm
23	13.8	3	0.003 6
	10.2	7	0.008 4

# - End of the Test Report -