

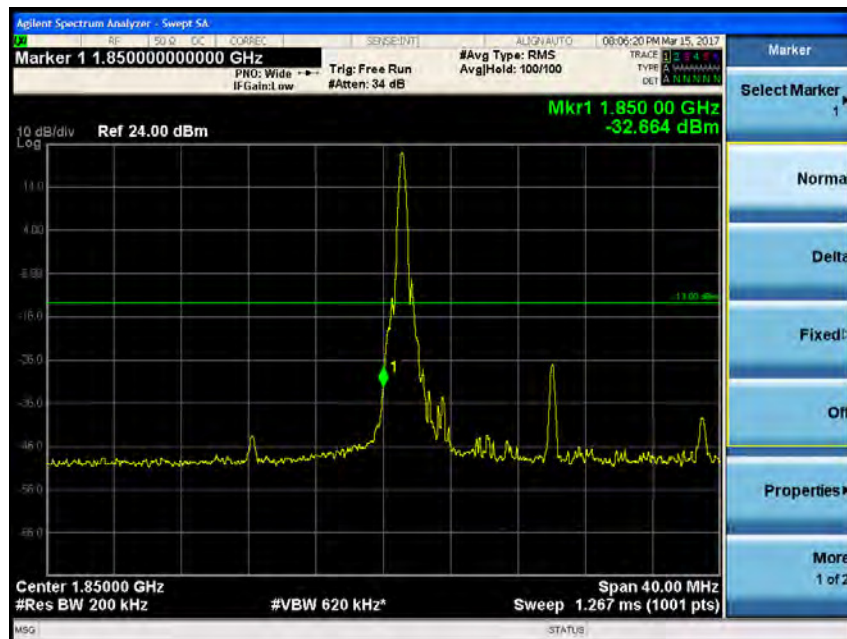
LTE band 2 (20 MHz - QPSK_RB 100)

Low Channel



LTE band 2 (20 MHz - QPSK_RB 1)

Low Channel



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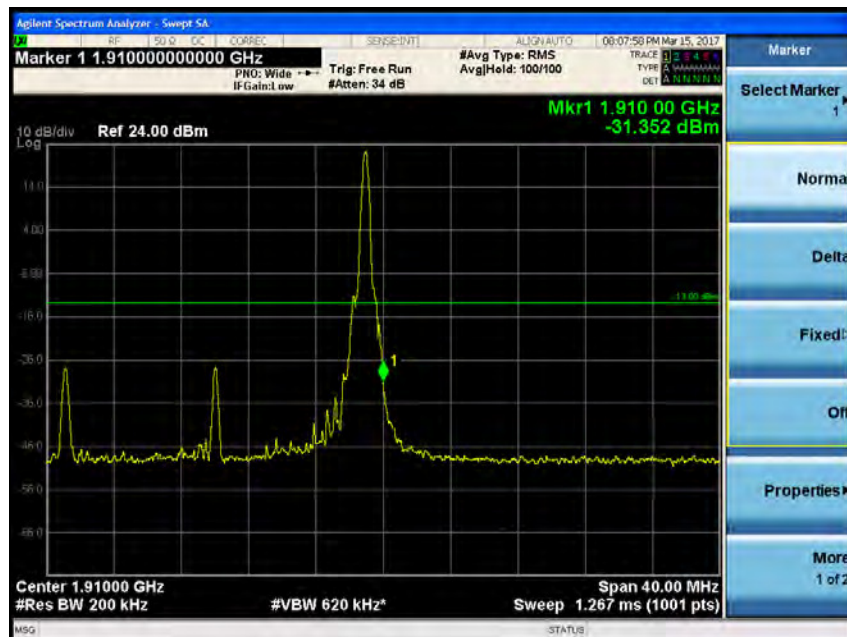
LTE band 2 (20 MHz - QPSK_RB 100)

High Channel



LTE band 2 (20 MHz - QPSK_RB 1)

High Channel



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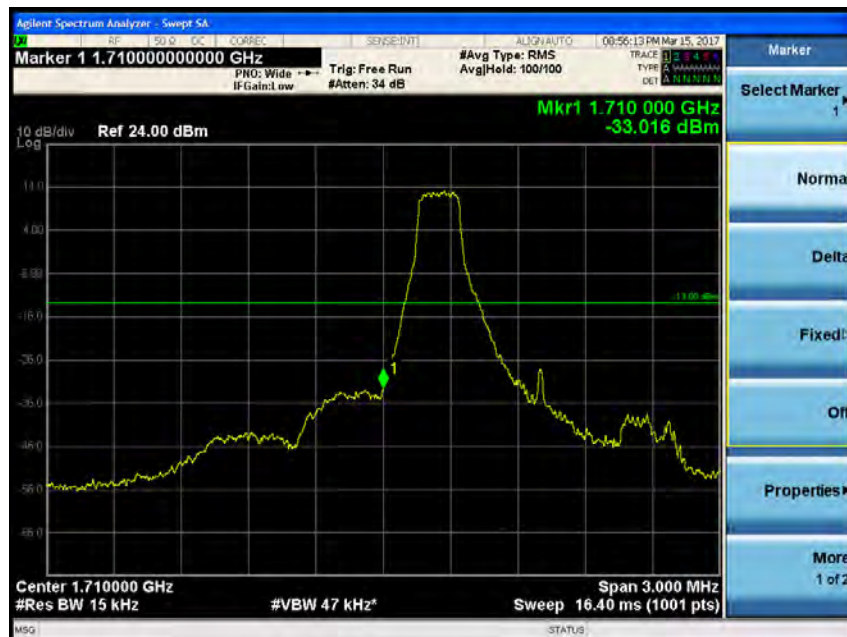
LTE band 4 (1.4 MHz - QPSK_RB 6)

Low Channel



LTE band 4 (1.4 MHz - QPSK_RB 1)

Low Channel



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LTE band 4 (1.4 MHz - QPSK_RB 6)

High Channel



LTE band 4 (1.4 MHz - QPSK_RB 1)

High Channel

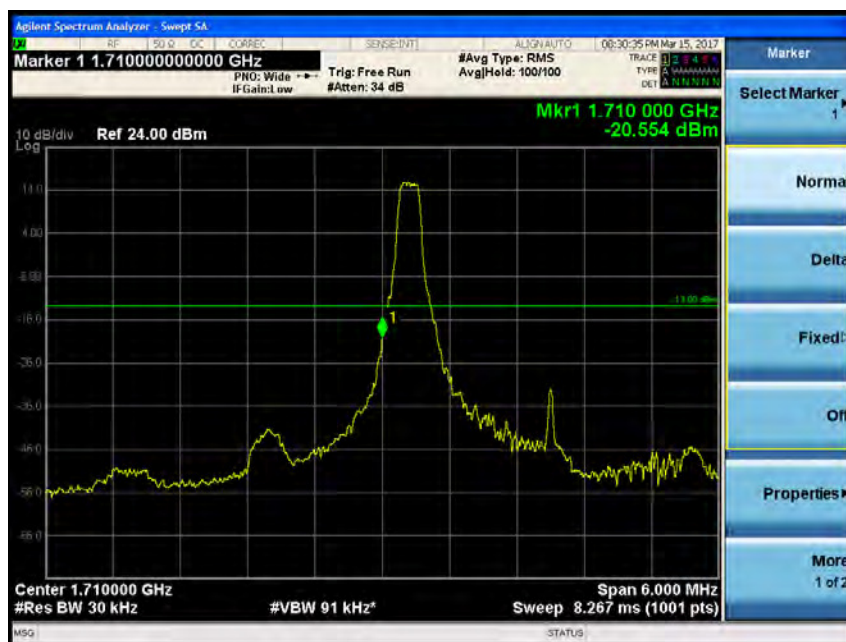


The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

LTE band 4 (3 MHz - QPSK_RB 15) Low Channel



LTE band 4 (3 MHz - QPSK_RB 1) Low Channel



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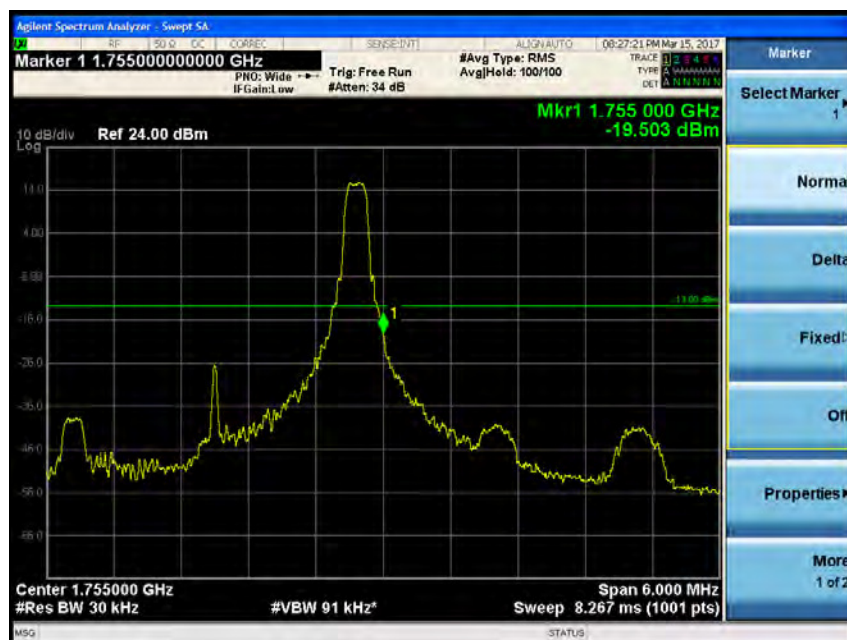
LTE band 4 (3 MHz - QPSK_RB 15)

High Channel



LTE band 4 (3 MHz - QPSK_RB 1)

High Channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

LTE band 4 (5 MHz - QPSK_RB 25) Low Channel



LTE band 4 (5 MHz - QPSK_RB 1) Low Channel



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LTE band 4 (5 MHz - QPSK_RB 25)

High Channel



LTE band 4 (5 MHz - QPSK_RB 1)

High Channel

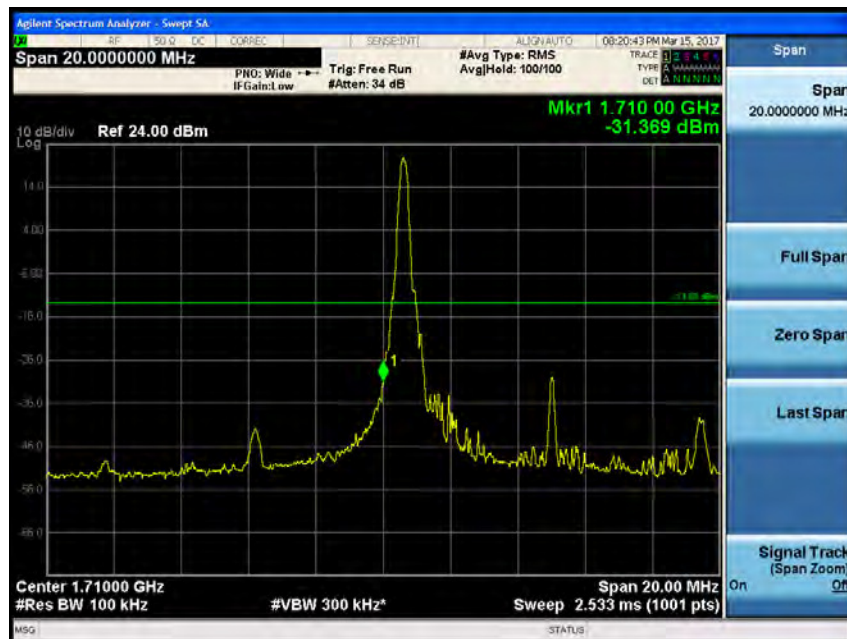


The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

LTE band 4 (10 MHz - QPSK_RB 50) Low Channel



LTE band 4 (10 MHz - QPSK_RB 1) Low Channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

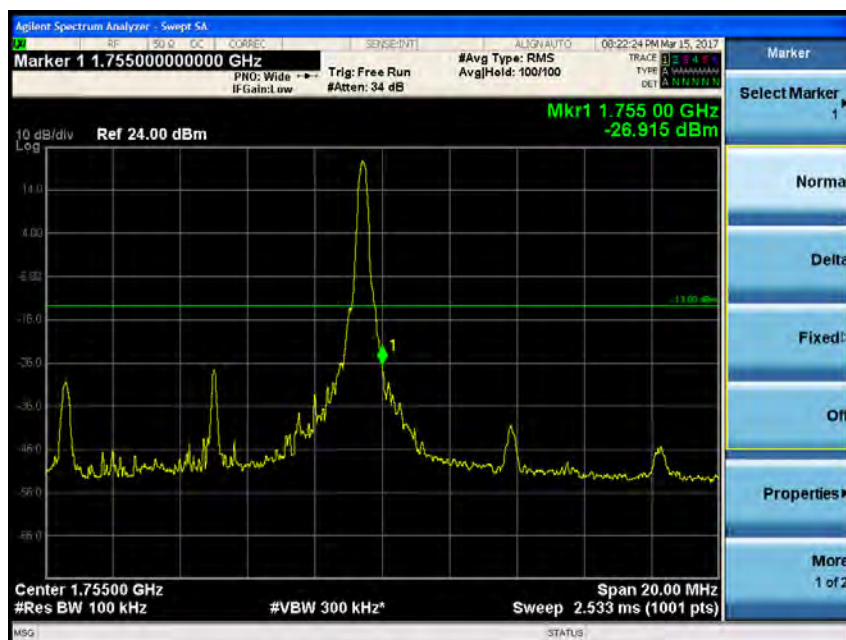
LTE band 4 (10 MHz - QPSK_RB 50)

High Channel



LTE band 4 (10 MHz - QPSK_RB 1)

High Channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

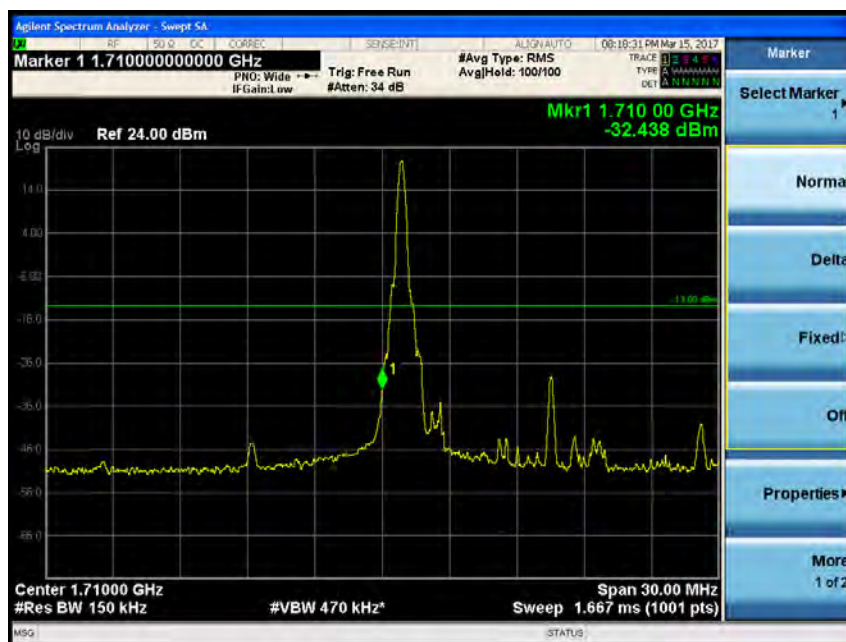
LTE band 4 (15 MHz - QPSK_RB 75)

Low Channel



LTE band 4 (15 MHz - QPSK_RB 1)

Low Channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

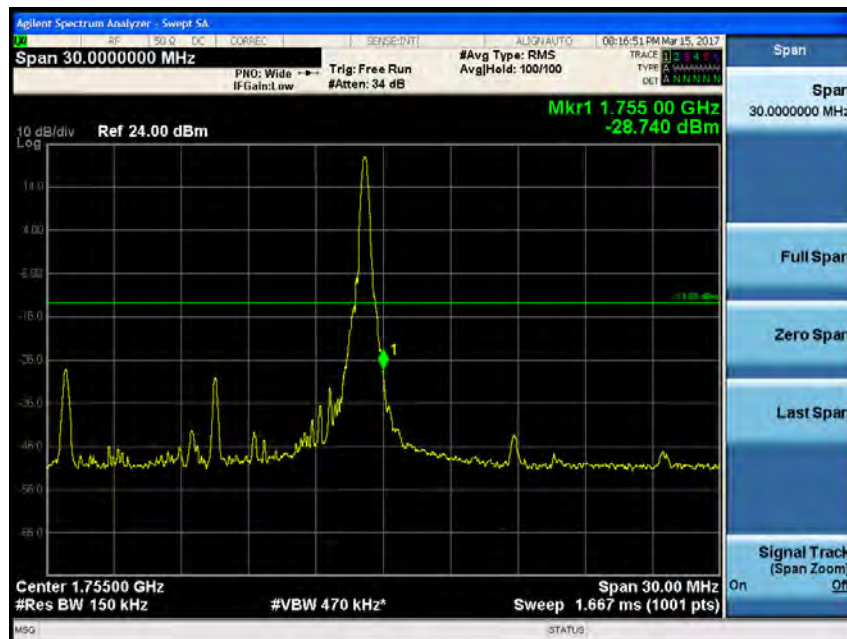
LTE band 4 (15 MHz - QPSK_RB 75)

High Channel



LTE band 4 (15 MHz - QPSK_RB 1)

High Channel

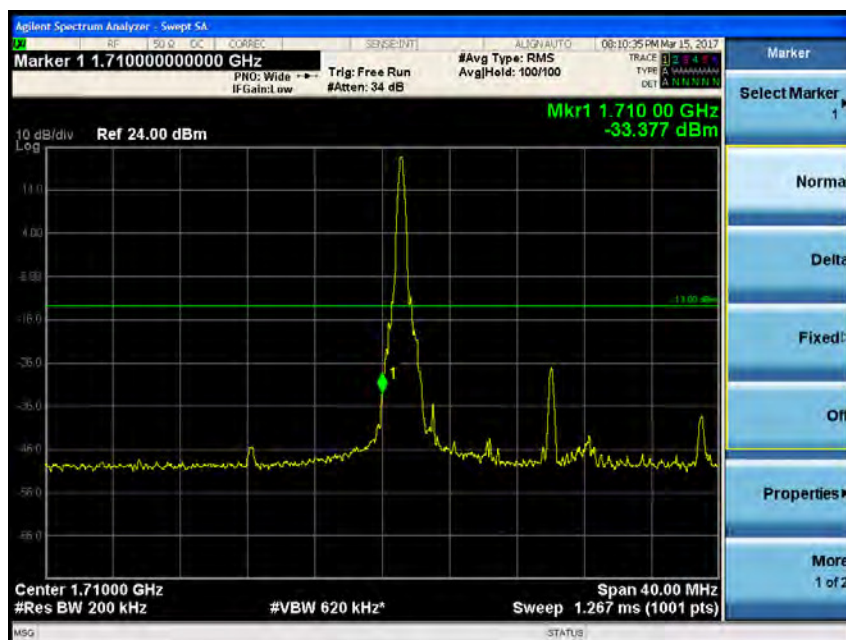


The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

LTE band 4 (20 MHz - QPSK_RB 100) Low Channel



LTE band 4 (20 MHz - QPSK_RB 1) Low Channel

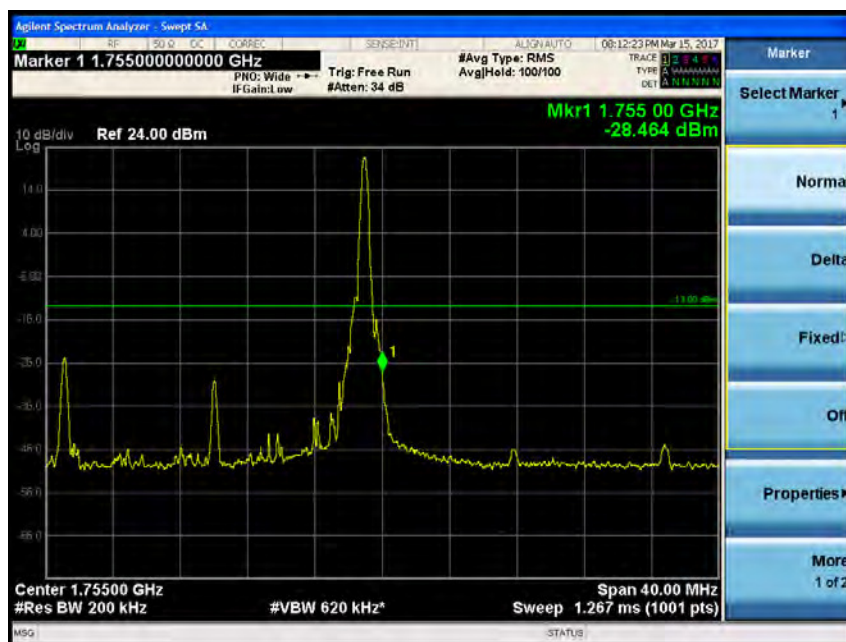


The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

LTE band 4 (20 MHz - QPSK_RB 100) High Channel



LTE band 4 (20 MHz - QPSK_RB 1) High Channel



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LTE band 5 (1.4 MHz - QPSK_RB 6)

Low Channel



LTE band 5 (1.4 MHz - QPSK_RB 1)

Low Channel



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LTE band 5 (1.4 MHz - QPSK_RB 6)

High Channel



LTE band 5 (1.4 MHz - QPSK_RB 1)

High Channel

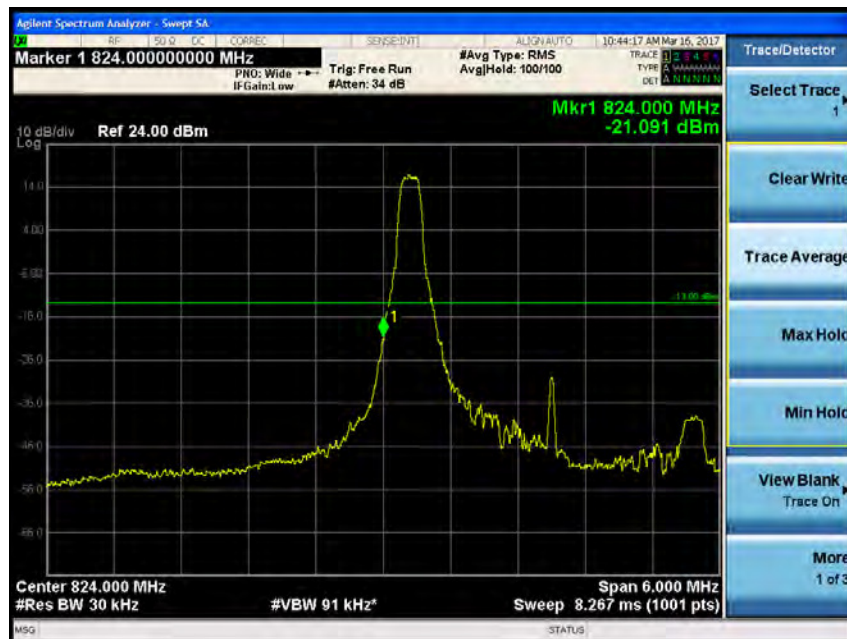


The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

LTE band 5 (3 MHz - QPSK_RB 15) Low Channel



LTE band 5 (3 MHz - QPSK_RB 1) Low Channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

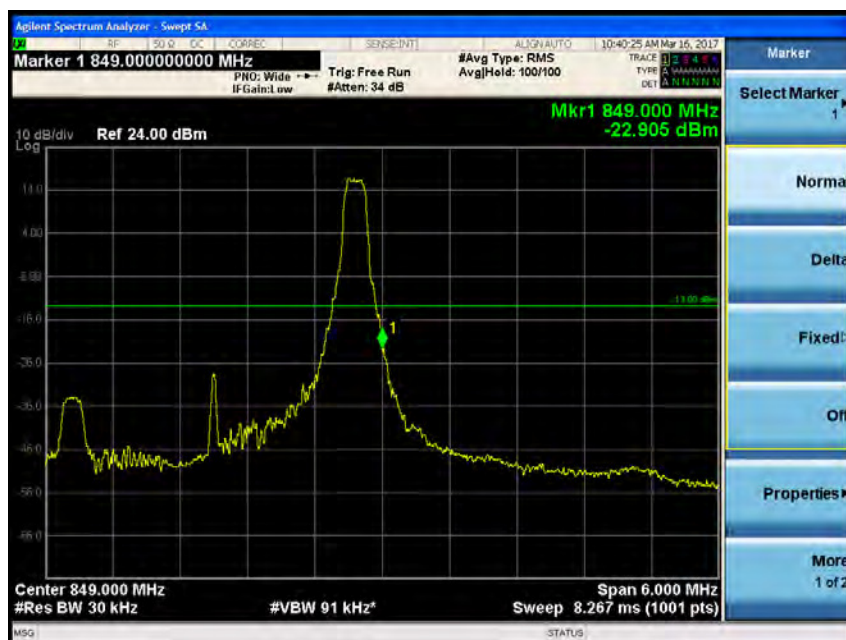
LTE band 5 (3 MHz - QPSK_RB 15)

High Channel



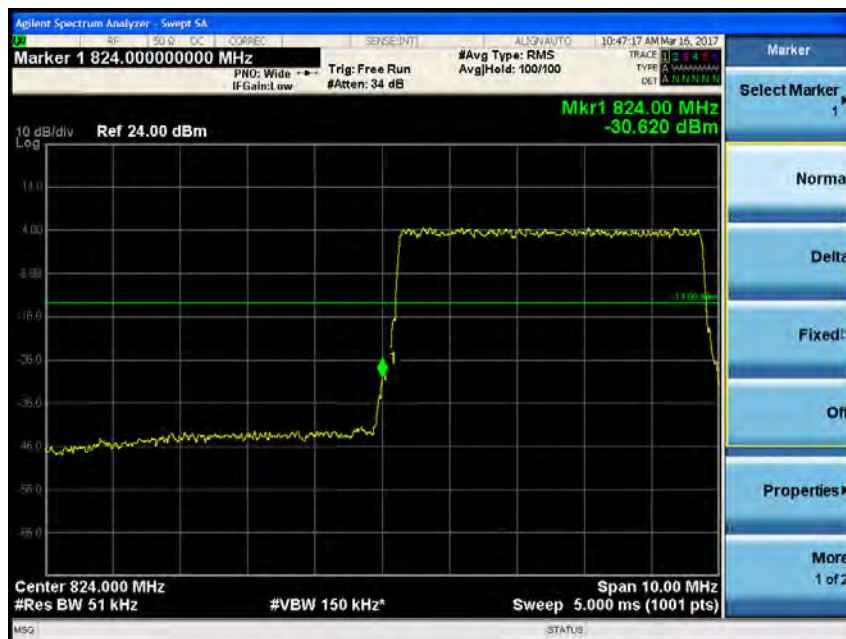
LTE band 5 (3 MHz - QPSK_RB 1)

High Channel

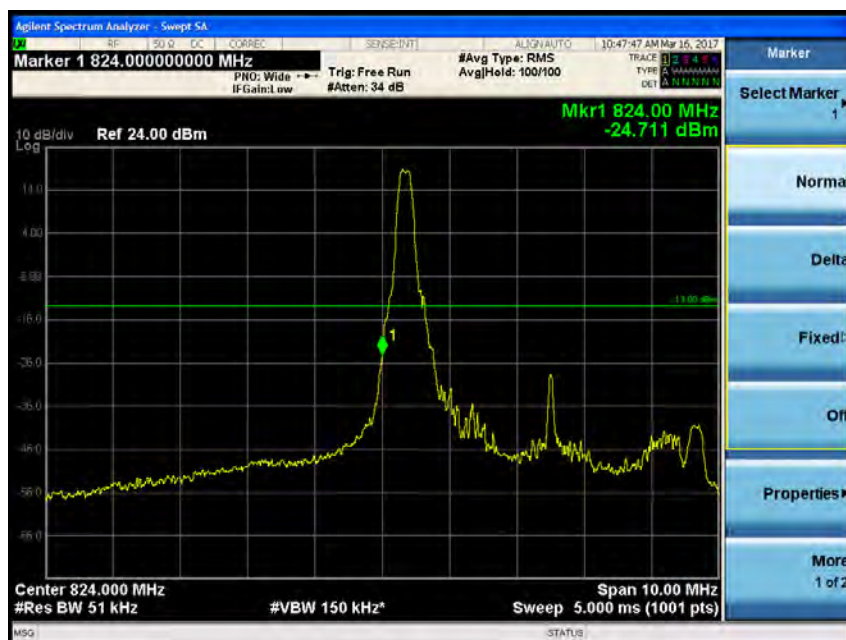


The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

LTE band 5 (5 MHz - QPSK_RB 25) Low Channel



LTE band 5 (5 MHz - QPSK_RB 1) Low Channel



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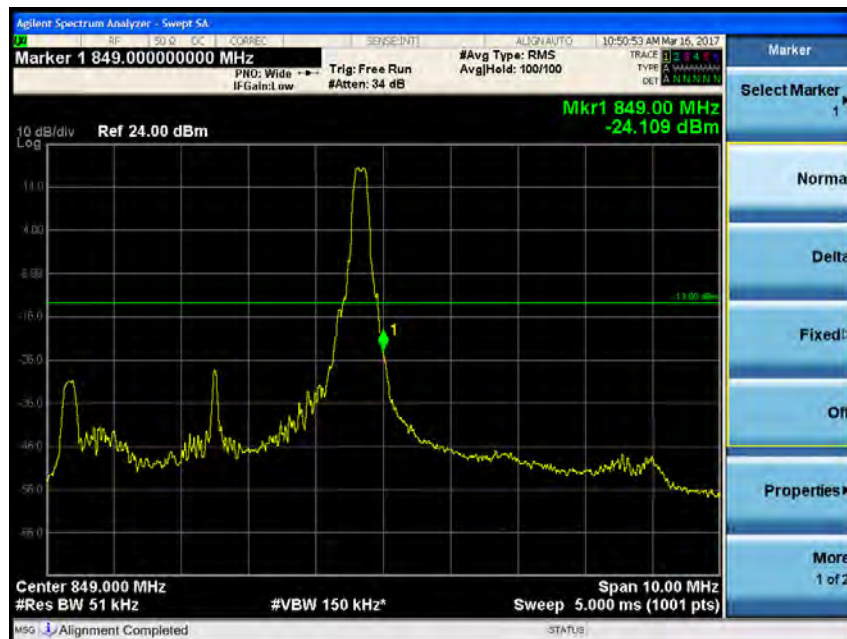
LTE band 5 (5 MHz - QPSK_RB 25)

High Channel



LTE band 5 (5 MHz - QPSK_RB 1)

High Channel

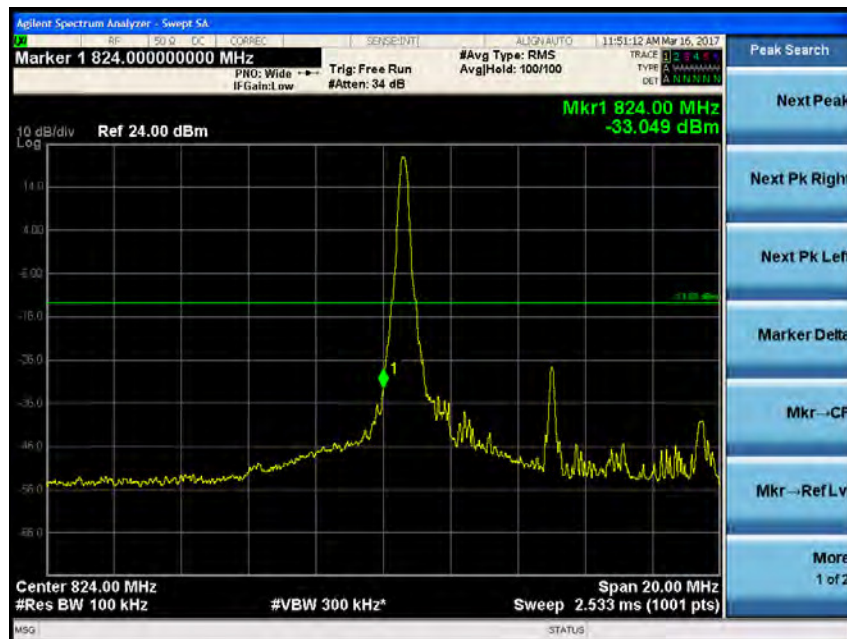


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LTE band 5 (10 MHz - QPSK_RB 50) Low Channel



LTE band 5 (10 MHz - QPSK_RB 1) Low Channel



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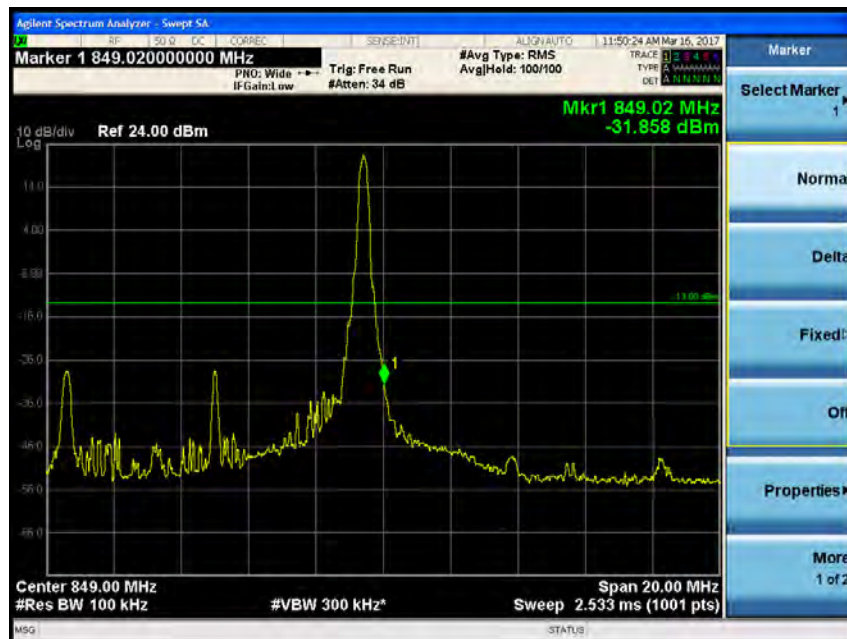
LTE band 5 (10 MHz - QPSK_RB 50)

High Channel



LTE band 5 (10 MHz - QPSK_RB 1)

High Channel



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LTE band 12 (1.4 MHz - QPSK_RB 6)

Low Channel



LTE band 12 (1.4 MHz - QPSK_RB 1)

Low Channel



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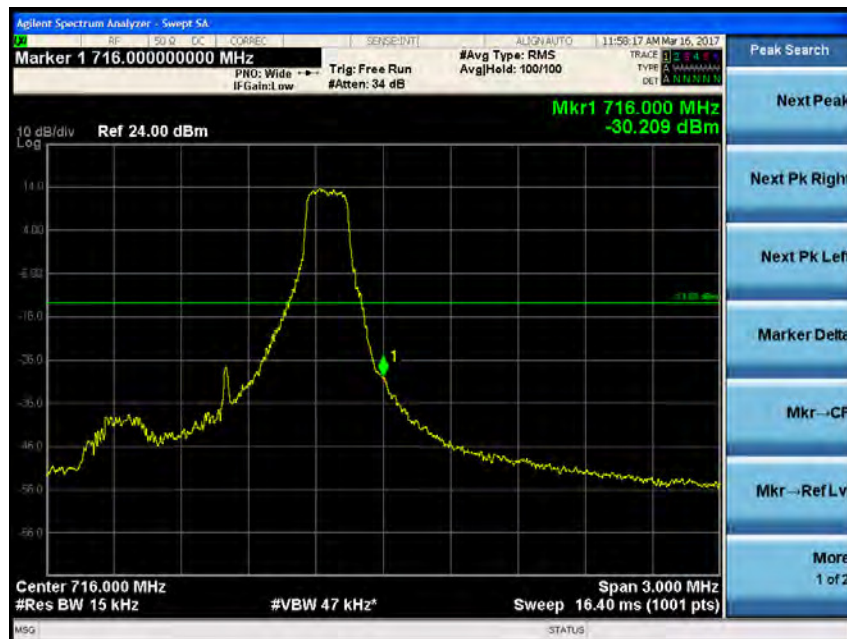
LTE band 12 (1.4 MHz - QPSK_RB 6)

High Channel



LTE band 12 (1.4 MHz - QPSK_RB 1)

High Channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

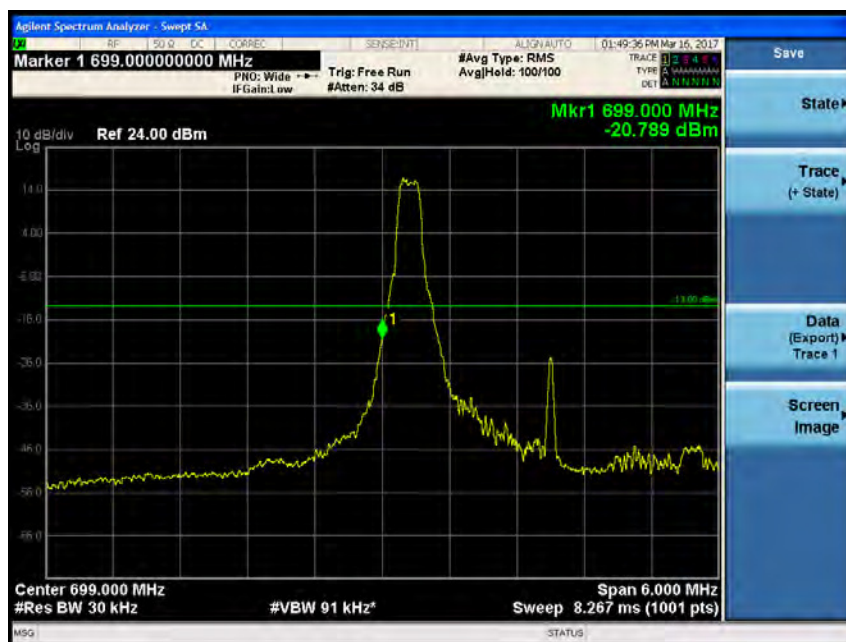
LTE band 12 (3 MHz - QPSK_RB 15)

Low Channel



LTE band 12 (3 MHz - QPSK_RB 1)

Low Channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

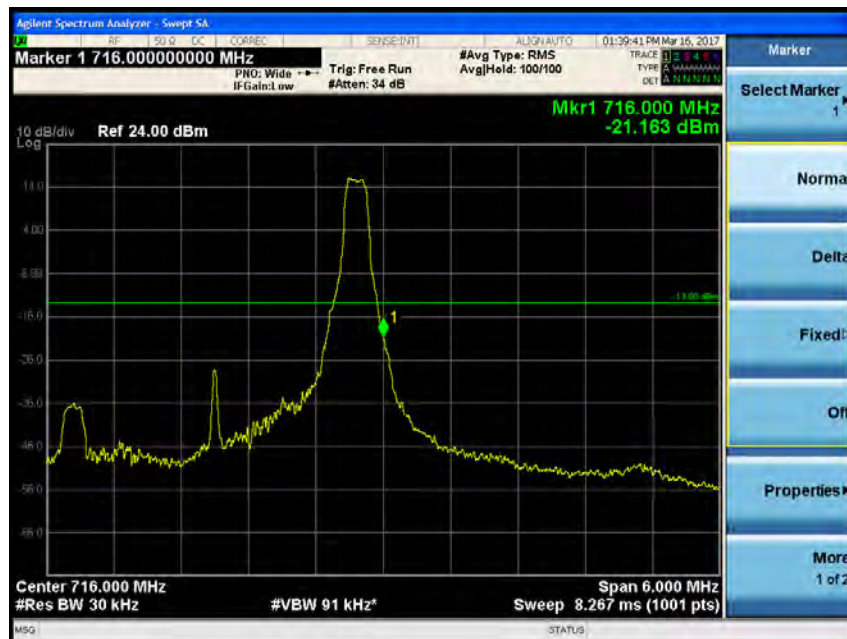
LTE band 12 (3 MHz - QPSK_RB 15)

High Channel



LTE band 12 (3 MHz - QPSK_RB 1)

High Channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

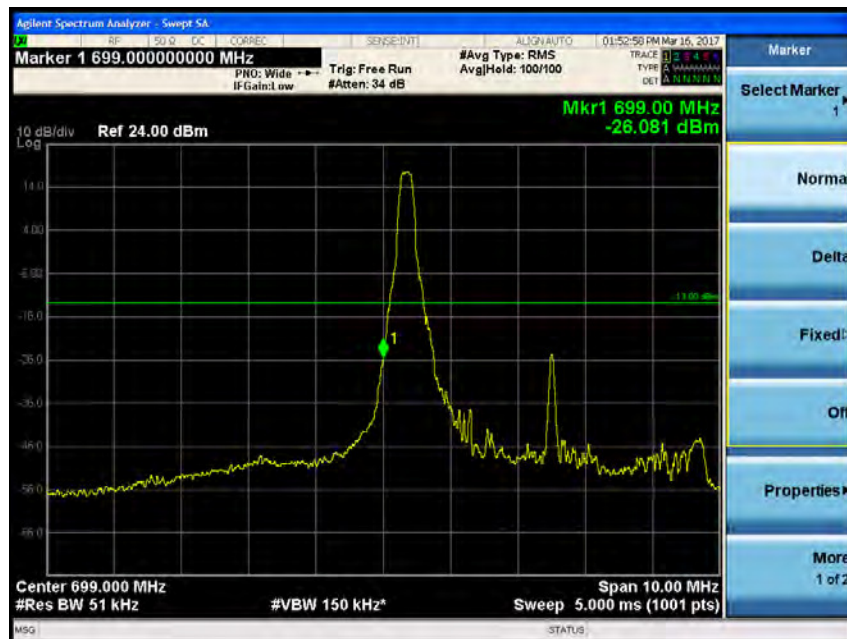
LTE band 12 (5 MHz - QPSK_RB 25)

Low Channel



LTE band 12 (5 MHz - QPSK_RB 1)

Low Channel

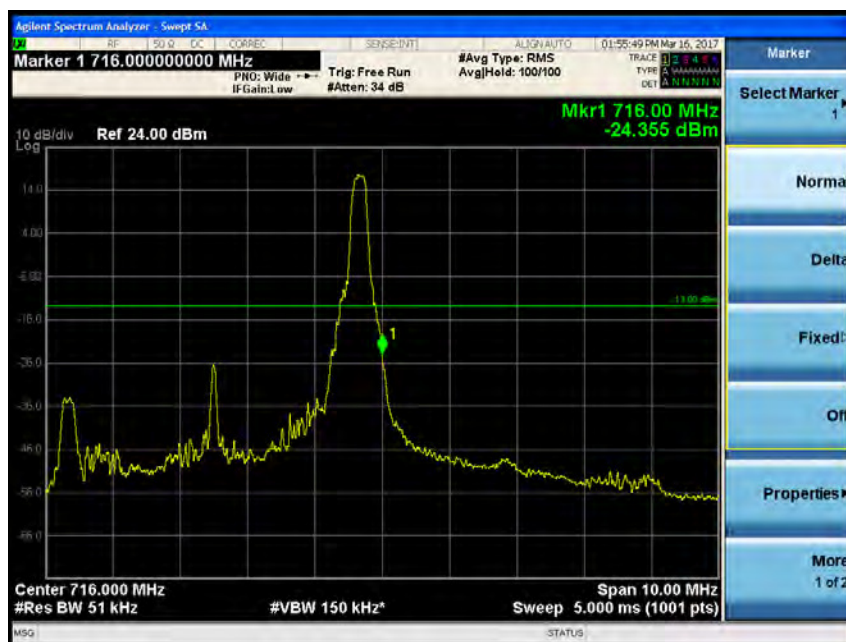


The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

LTE band 12 (5 MHz - QPSK_RB 25) High Channel



LTE band 12 (5 MHz - QPSK_RB 1) High Channel

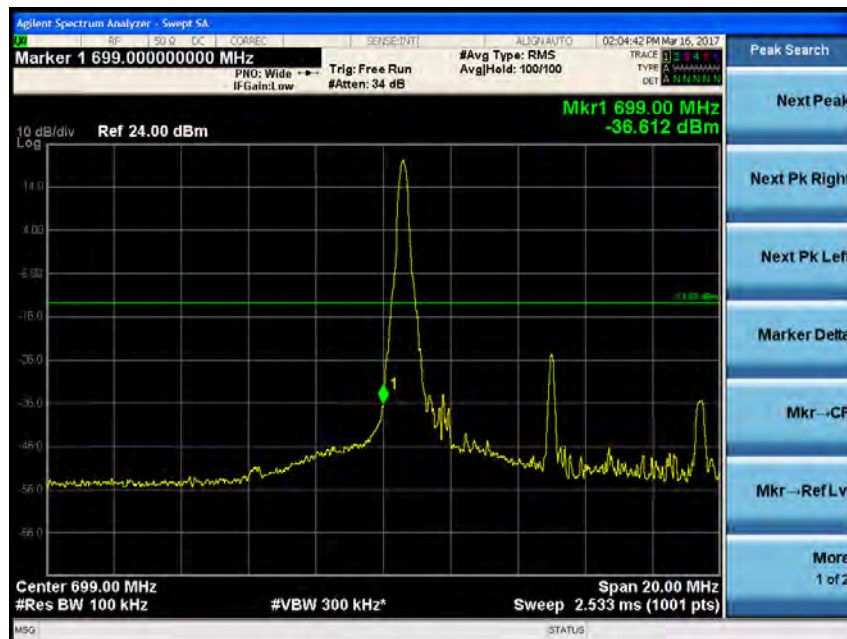


The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

LTE band 12 (10 MHz - QPSK_RB 50) Low Channel



LTE band 12 (10 MHz - QPSK_RB 1) Low Channel



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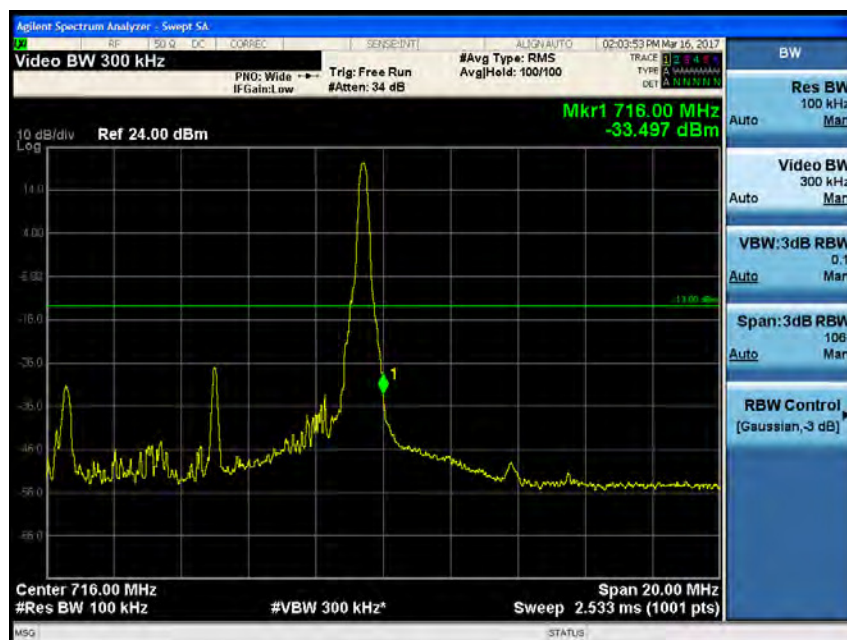
LTE band 12 (10 MHz - QPSK_RB 50)

High Channel



LTE band 12 (10 MHz - QPSK_RB 1)

High Channel

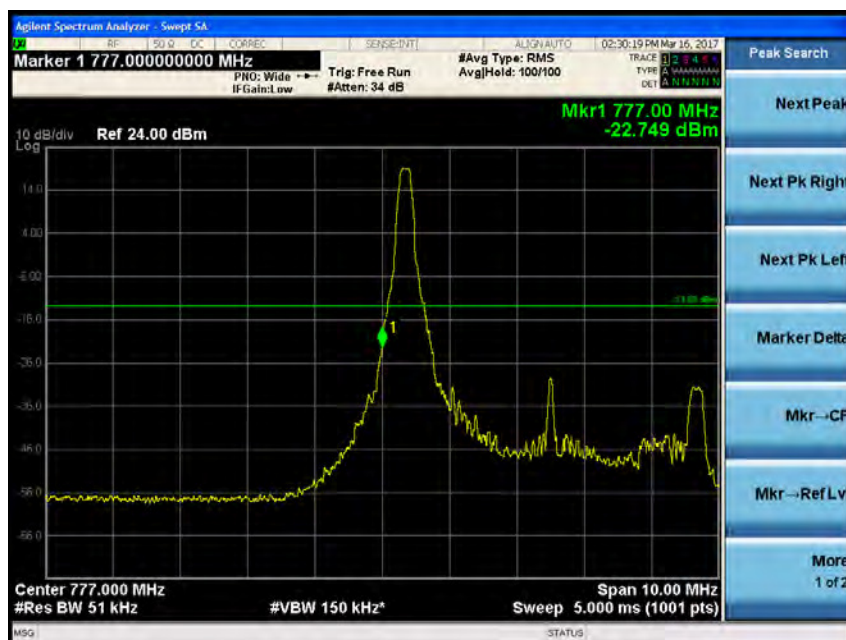


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LTE band 13 (5 MHz - QPSK_RB 25) Low Channel



LTE band 13 (5 MHz - QPSK_RB 1) Low Channel



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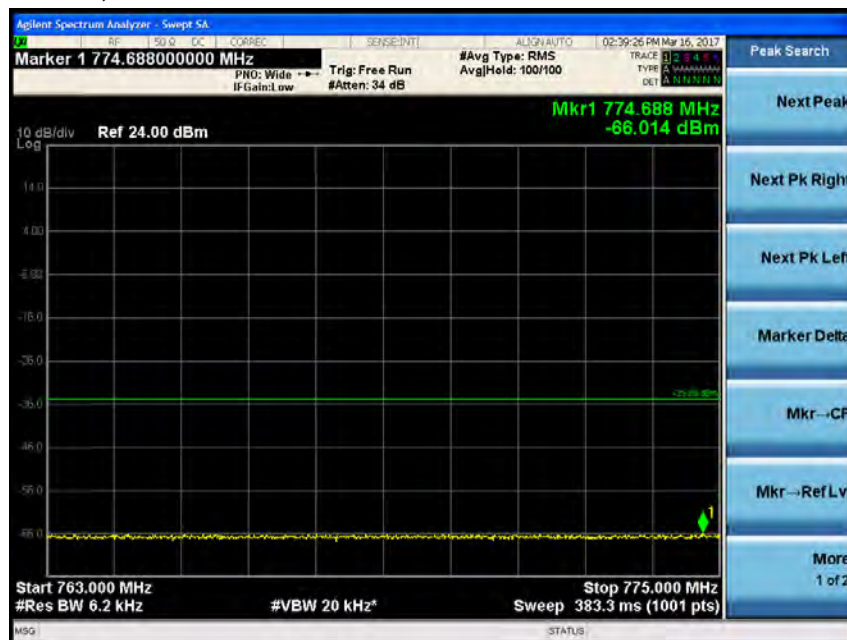
LTE band 13 (5 MHz - QPSK_RB 25)

Low Channel (763-775 MHz)



LTE band 13 (5 MHz - QPSK_RB 1)

Low Channel (763-775 MHz)

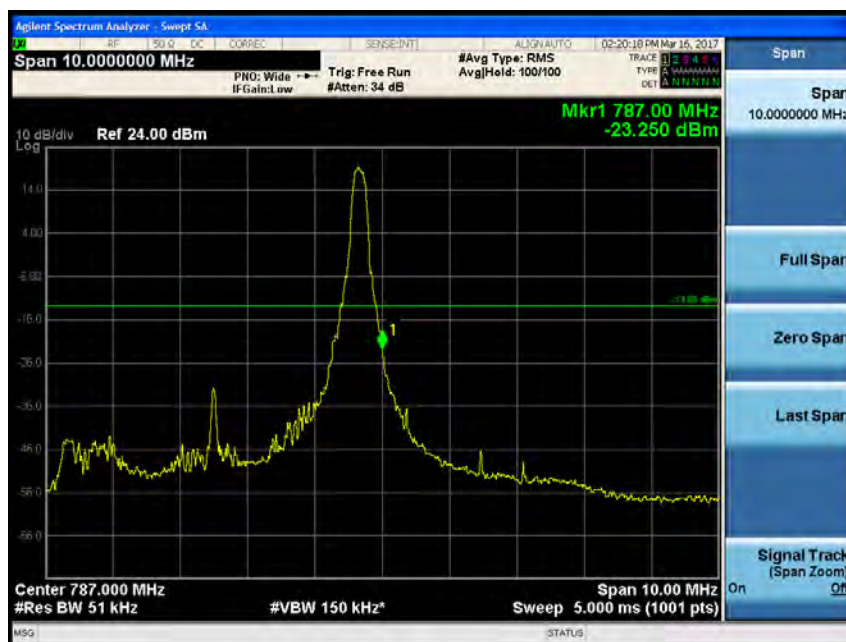


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LTE band 13 (5 MHz - QPSK_RB 25) High Channel



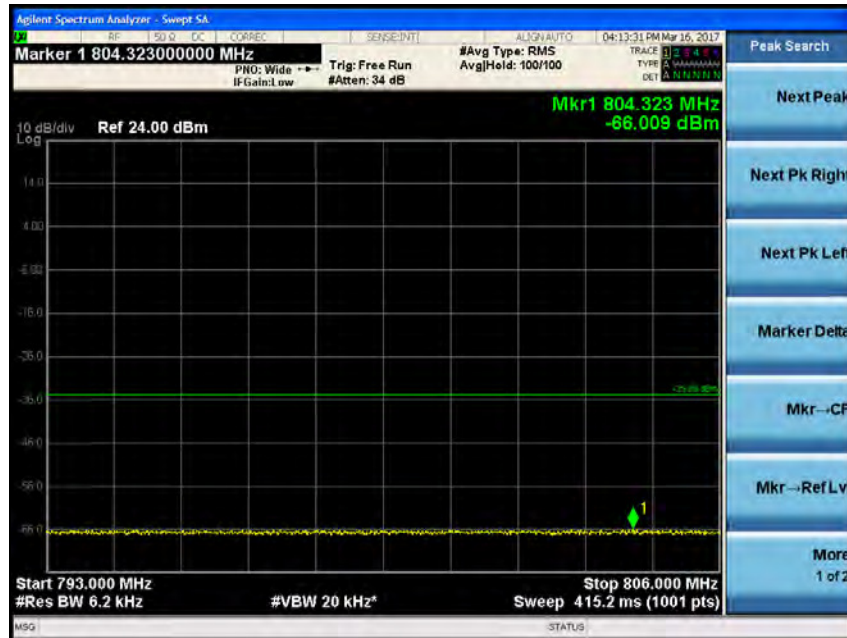
LTE band 13 (5 MHz - QPSK_RB 1) High Channel



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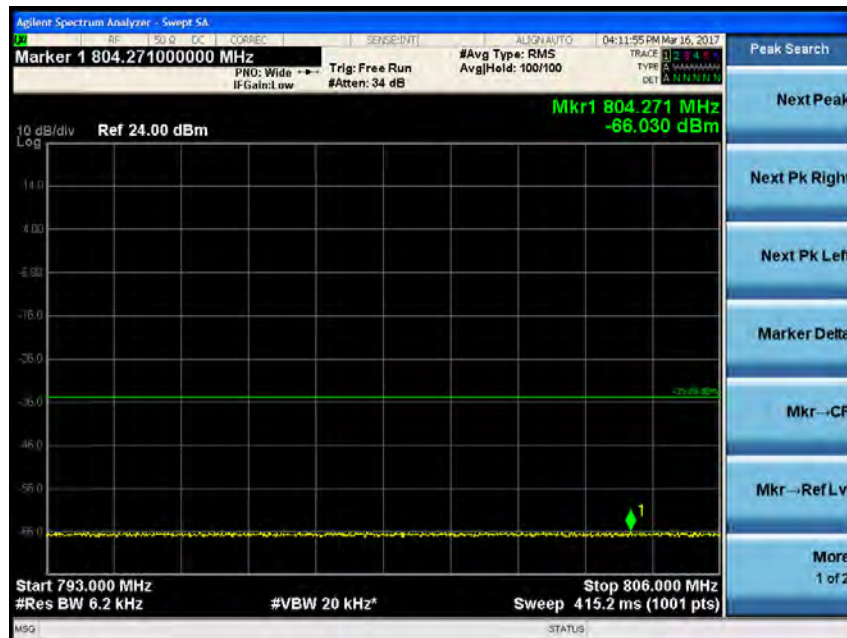
LTE band 13 (5 MHz - QPSK_RB 25)

High Channel (793-806 MHz)



LTE band 13 (5 MHz - QPSK_RB 1)

High Channel (793-806 MHz)

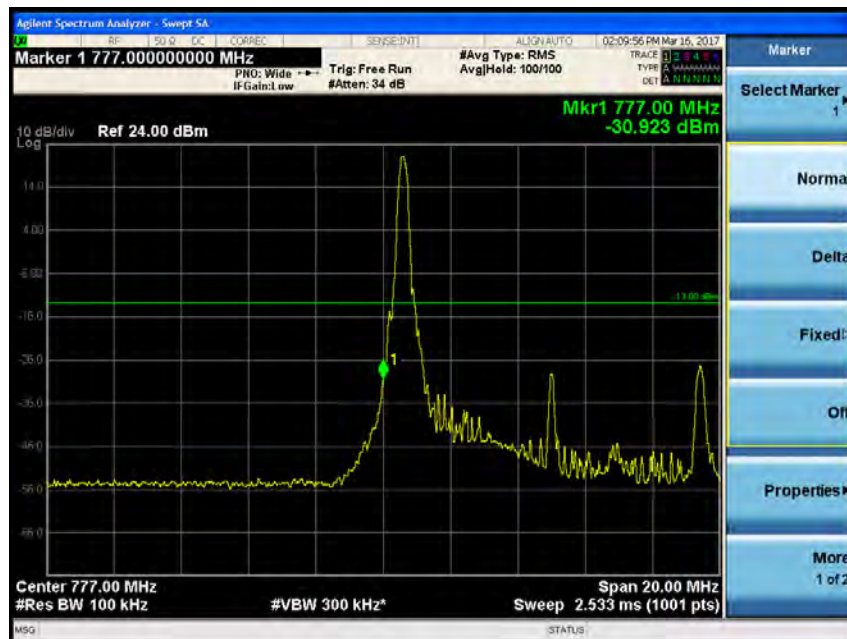


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LTE band 13 (10 MHz - QPSK_RB 50) Low Channel



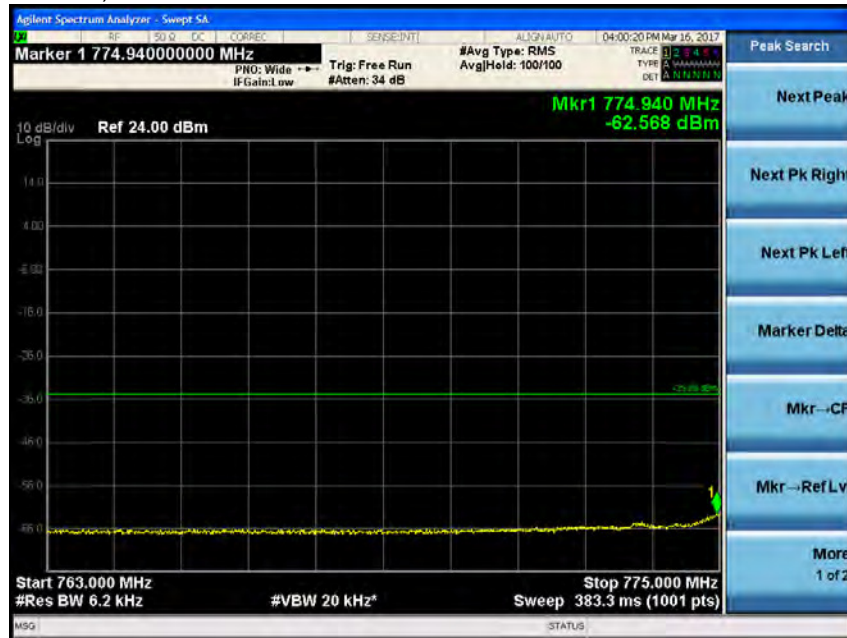
LTE band 13 (10 MHz - QPSK_RB 1) Low Channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report cannot be reproduced, except in full, without prior written permission of the Company. This test report does not assure KOLAS accreditation.

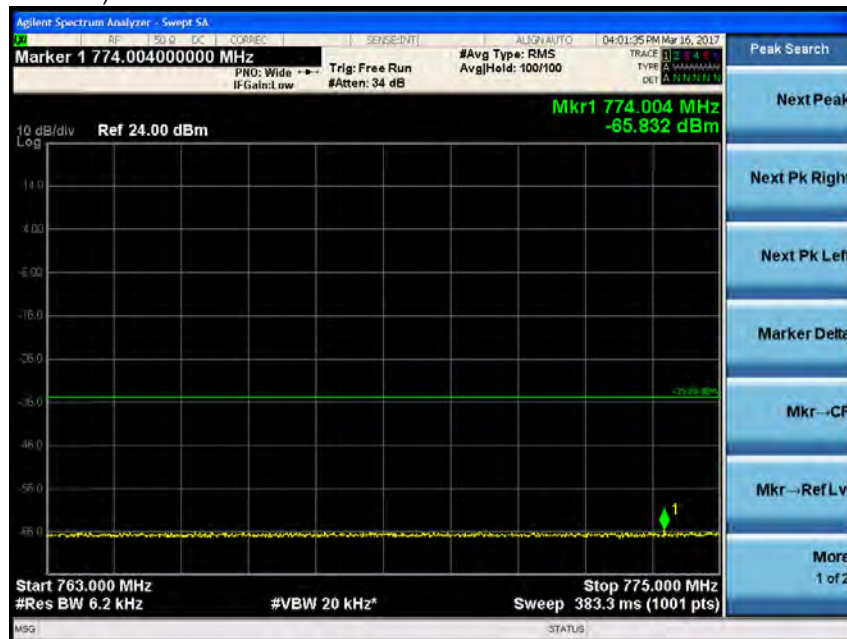
LTE band 13 (10 MHz - QPSK_RB 50)

Low Channel (763-775 MHz)



LTE band 13 (10 MHz - QPSK_RB 1)

Low Channel (763-775 MHz)

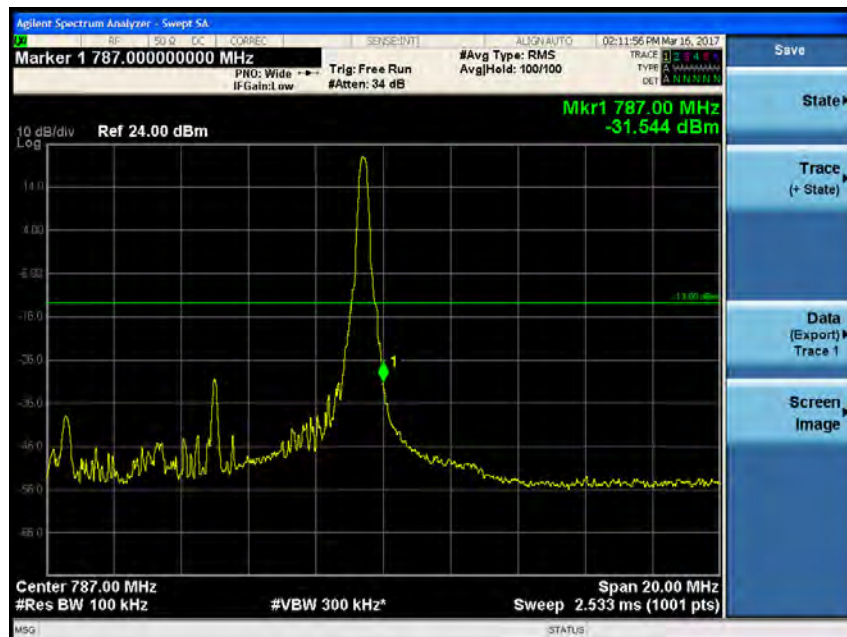


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LTE band 13 (10 MHz - QPSK_RB 50) High Channel



LTE band 13 (10 MHz - QPSK_RB 1) High Channel



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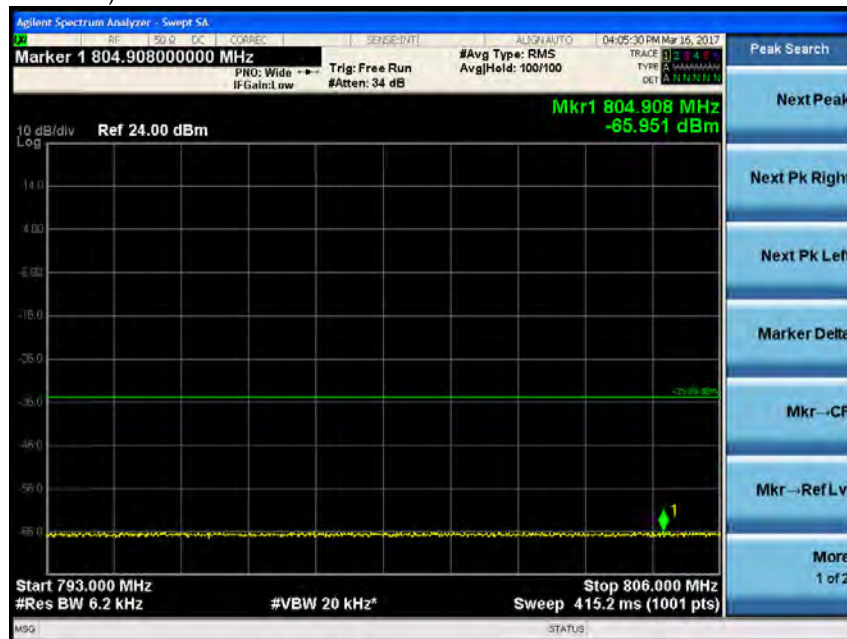
LTE band 13 (10 MHz - QPSK_RB 50)

High Channel (763-775 MHz)



LTE band 13 (10 MHz - QPSK_RB 1)

High Channel (763-775 MHz)

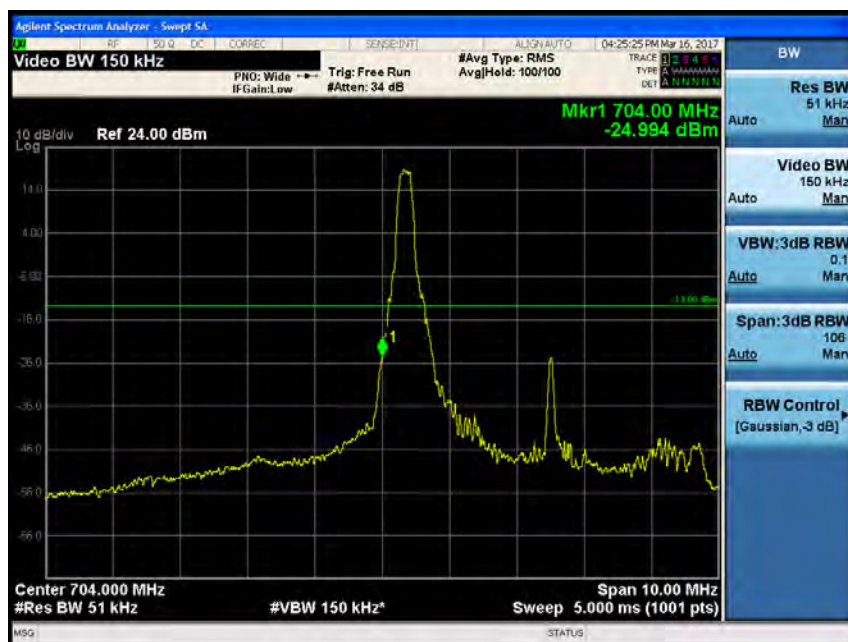


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LTE band 17 (5 MHz - QPSK_RB 25) Low Channel



LTE band 17 (5 MHz - QPSK_RB 1) Low Channel

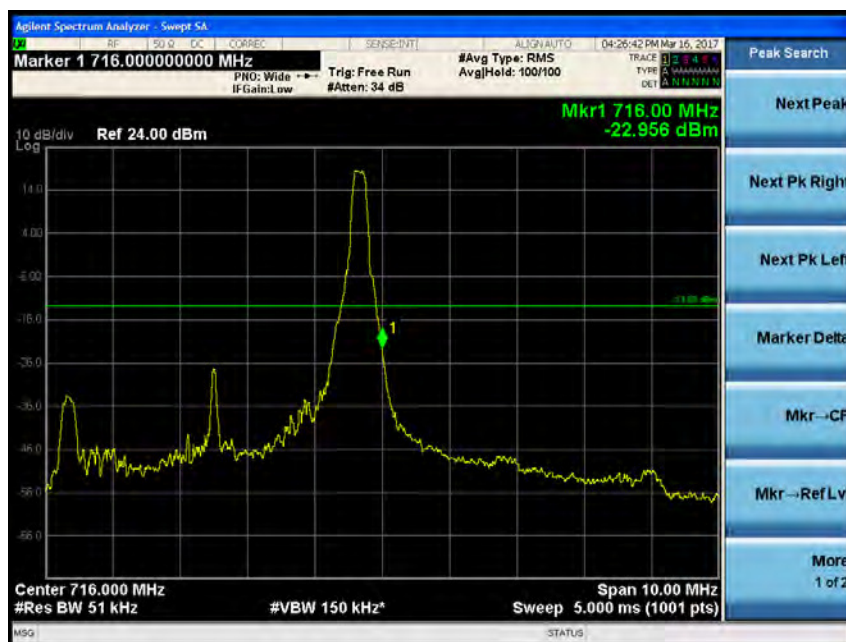


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LTE band 17 (5 MHz - QPSK_RB 25) High Channel



LTE band 17 (5 MHz - QPSK_RB 1) High Channel

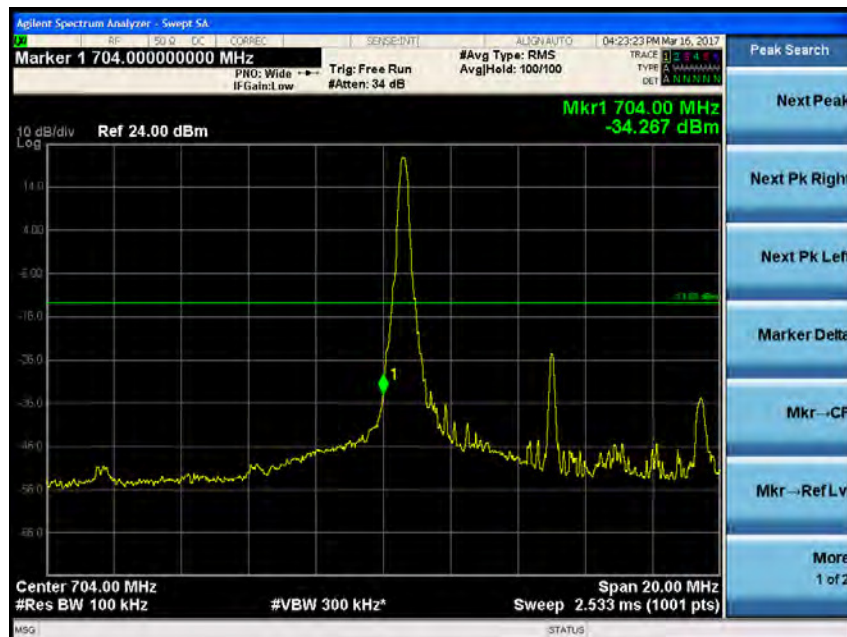


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LTE band 17 (10 MHz - QPSK_RB 50) Low Channel



LTE band 17 (10 MHz - QPSK_RB 1) Low Channel

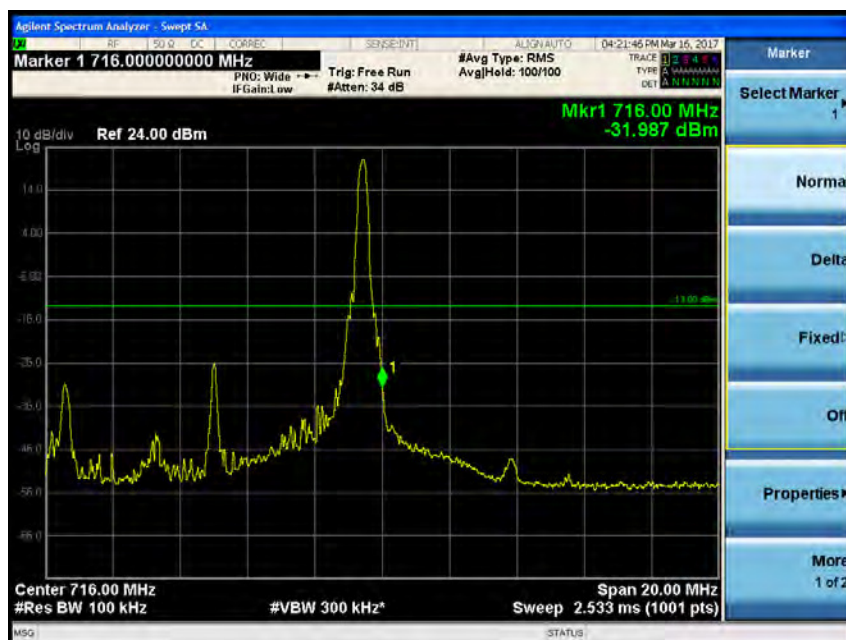


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LTE band 17 (10 MHz - QPSK_RB 50) High Channel



LTE band 17 (10 MHz - QPSK_RB 1) High Channel



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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-130 Issue 1

4.3, the transmitter frequency stability limit shall be determined as follows:

(a) The frequency offset shall be measured according to the procedure described in RSS-Gen and recorded;

(b) Using a resolution bandwidth of 1 % of the occupied bandwidth, a reference point at the unwanted emission level which complies with the attenuation of $43 + 10 \log_{10} p$ (watts) on the emission mask of the lowest and highest channel shall be selected, and the frequency at these points shall be recorded as f_L and f_H respectively.

The applicant shall ensure frequency stability by showing that f_L minus the frequency offset and f_H plus the frequency offset shall be within the frequency range in which the equipment is designed to operate.

- 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.

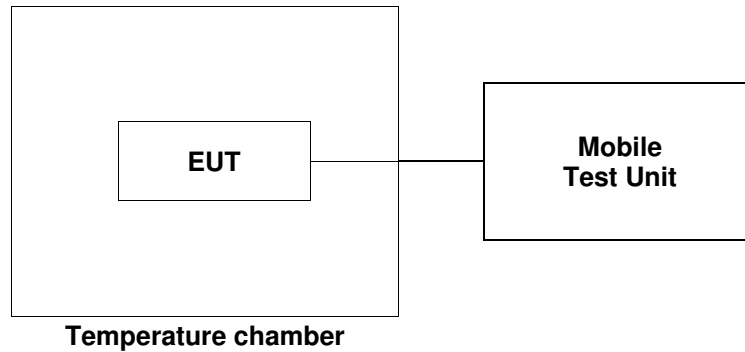
- RSS-139 Issue 3

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.

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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

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LTE band 4 at middle channel

Reference Frequency: 1 732.5

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RTT5041-19(2017.07.10)(0)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

LTE band 5 at middle channel

Reference Frequency: 836.5

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A4(210 mm x 297 mm)

LTE band 12 at middle channel**Reference Frequency: 707.5**

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A4(210 mm x 297 mm)

LTE band 13 at middle channel**Reference Frequency: 782.0**

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A4(210 mm x 297 mm)

LTE band 17 at middle channel

Reference Frequency: 710.0

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A4(210 mm x 297 mm)