LTE Band 4 16QAM 1.4MHz CH-Low

LTE Band 4 16QAM 3MHz CH-Low

LTE Band 4 16QAM 1.4MHz CH-Middle

LTE Band 4 16QAM 3MHz CH-Middle

LTE Band 4 16QAM 1.4MHz CH-High

LTE Band 4 16QAM 3MHz CH-High

LTE Band 4 16QAM 5MHz CH-Low

LTE Band 4 16QAM 10MHz CH-Low

LTE Band 4 16QAM 5MHz CH-Middle

LTE Band 4 16QAM 10MHz CH-Middle

LTE Band 4 16QAM 5MHz CH-High

LTE Band 4 16QAM 10MHz CH-High

LTE Band 4 16QAM 15MHz CH-Low

LTE Band 4 16QAM 20MHz CH-Low

LTE Band 4 16QAM 15MHz CH-Middle

LTE Band 4 16QAM 20MHz CH-Middle

LTE Band 4 16QAM 15MHz CH-High

LTE Band 4 16QAM 20MHz CH-High

LTE Band 12 QPSK 1.4MHz CH-Low

LTE Band 12 QPSK 3MHz CH-Low

LTE Band 12 QPSK 1.4MHz CH-Middle

LTE Band 12 QPSK 3MHz CH-Middle

LTE Band 12 QPSK 1.4MHz CH-High

LTE Band 12 QPSK 3MHz CH-High

LTE Band 12 QPSK 5MHz CH-Low

LTE Band 12 QPSK 10MHz CH-Low

LTE Band 12 QPSK 5MHz CH-Middle

LTE Band 12 QPSK 10MHz CH-Middle

LTE Band 12 QPSK 5MHz CH-High

LTE Band 12 QPSK 10MHz CH-High

LTE Band 12 16QAM 1.4MHz CH-Low

LTE Band 12 16QAM 3MHz CH-Low

LTE Band 12 16QAM 1.4MHz CH-Middle

LTE Band 12 16QAM 3MHz CH-Middle

LTE Band 12 16QAM 1.4MHz CH-High

LTE Band 12 16QAM 3MHz CH-High

LTE Band 12 16QAM 5MHz CH-Low

LTE Band 12 16QAM 10MHz CH-Low

LTE Band 12 16QAM 5MHz CH-Middle

LTE Band 12 16QAM 10MHz CH-Middle

LTE Band 12 16QAM 5MHz CH-High

LTE Band 12 16QAM 10MHz CH-High

LTE Band 13 QPSK 5MHz CH-Low

LTE Band 13 16QAM 5MHz CH-Low

LTE Band 13 QPSK 5MHz CH-Middle

LTE Band 13 16QAM 5MHz CH-Middle

LTE Band 13 QPSK 5MHz CH-High

LTE Band 13 16QAM 5MHz CH-High

LTE Band 13 QPSK 10MHz CH- Middle	LTE Band 13 16QAM 10MHz CH-Middle
	

LTE Band 66 QPSK 1.4MHz CH-Low

LTE Band 66 QPSK 3MHz CH-Low

LTE Band 66 QPSK 1.4MHz CH-Middle

LTE Band 66 QPSK 3MHz CH-Middle

LTE Band 66 QPSK 1.4MHz CH-High

LTE Band 66 QPSK 3MHz CH-High

LTE Band 66 QPSK 5MHz CH-Low

LTE Band 66 QPSK 10MHz CH-Low

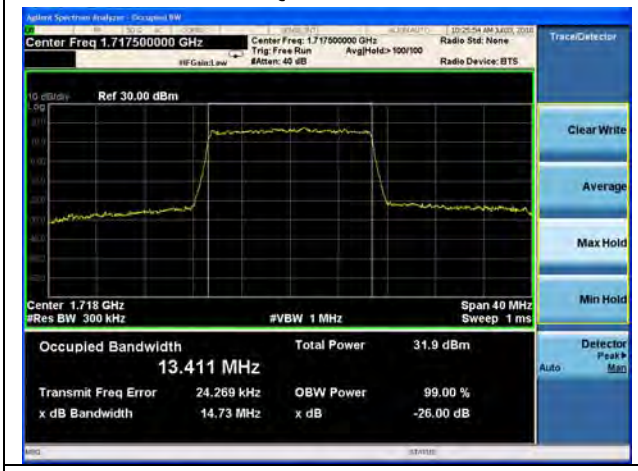
LTE Band 66 QPSK 5MHz CH-Middle

LTE Band 66 QPSK 10MHz CH-Middle

LTE Band 66 QPSK 5MHz CH-High

LTE Band 66 QPSK 10MHz CH-High

LTE Band 66 QPSK 15MHz CH-Low

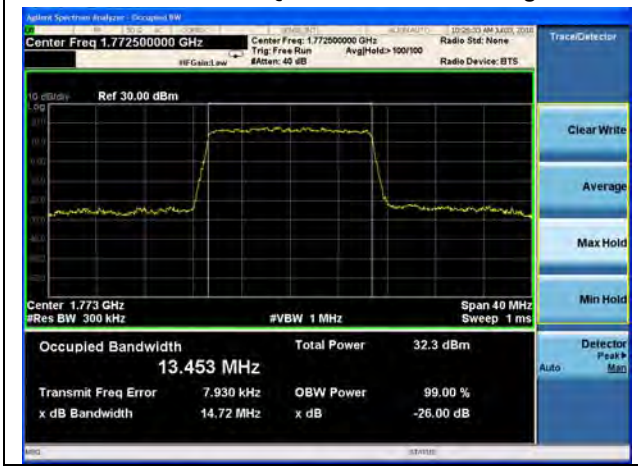


LTE Band 66 QPSK 20MHz CH-Low

LTE Band 66 QPSK 15MHz CH-Middle

LTE Band 66 QPSK 20MHz CH-Middle

LTE Band 66 QPSK 15MHz CH-High



LTE Band 66 QPSK 20MHz CH-High

LTE Band 66 16QAM 1.4MHz CH-Low

LTE Band 66 16QAM 3MHz CH-Low

LTE Band 66 16QAM 1.4MHz CH-Middle

LTE Band 66 16QAM 3MHz CH-Middle

LTE Band 66 16QAM 1.4MHz CH-High

LTE Band 66 16QAM 3MHz CH-High

LTE Band 66 16QAM 5MHz CH-Low

LTE Band 66 16QAM 10MHz CH-Low

LTE Band 66 16QAM 5MHz CH-Middle

LTE Band 66 16QAM 10MHz CH-Middle

LTE Band 66 16QAM 5MHz CH-High

LTE Band 66 16QAM 10MHz CH-High

LTE Band 66 16QAM 15MHz CH-Low

LTE Band 66 16QAM 20MHz CH-Low

LTE Band 66 16QAM 15MHz CH-Middle

LTE Band 66 16QAM 20MHz CH-Middle

LTE Band 66 16QAM 15MHz CH-High

LTE Band 66 16QAM 20MHz CH-High

LTE Band 71 QPSK 5MHz CH-Low

LTE Band 71 QPSK 10MHz CH-Low

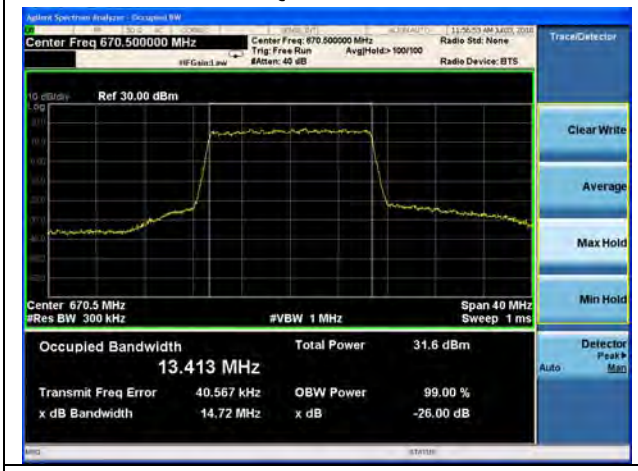
LTE Band 71 QPSK 5MHz CH-Middle

LTE Band 71 QPSK 10MHz CH-Middle

LTE Band 71 QPSK 5MHz CH-High

LTE Band 71 QPSK 10MHz CH-High

LTE Band 71 QPSK 15MHz CH-Low



LTE Band 71 QPSK 20MHz CH-Low

LTE Band 71 QPSK 15MHz CH-Middle

LTE Band 71 QPSK 20MHz CH-Middle

LTE Band 71 QPSK 15MHz CH-High

LTE Band 71 QPSK 20MHz CH-High

LTE Band 71 16QAM 5MHz CH-Low

LTE Band 71 16QAM 10MHz CH-Low

LTE Band 71 16QAM 5MHz CH-Middle

LTE Band 71 16QAM 10MHz CH-Middle

LTE Band 71 16QAM 5MHz CH-High

LTE Band 71 16QAM 10MHz CH-High

LTE Band 71 16QAM 15MHz CH-Low

LTE Band 71 16QAM 20MHz CH-Low

LTE Band 71 16QAM 15MHz CH-Middle

LTE Band 71 16QAM 20MHz CH-Middle

LTE Band 71 16QAM 15MHz CH-High

LTE Band 71 16QAM 20MHz CH-High

EC25-AFX MINIPCIE

LTE Band 12 QPSK 1.4MHz CH- Middle

LTE Band 12 16QAM 1.4MHz CH- Middle

LTE Band 12 QPSK 3MHz CH- Middle

LTE Band 12 16QAM 3MHz CH- Middle

LTE Band 12 QPSK 5MHz CH- Middle

LTE Band 12 16QAM 5MHz CH- Middle

LTE Band 12 QPSK 10MHz CH- Middle

LTE Band 12 16QAM 10MHz CH- Middle

5.4 Band Edge Compliance

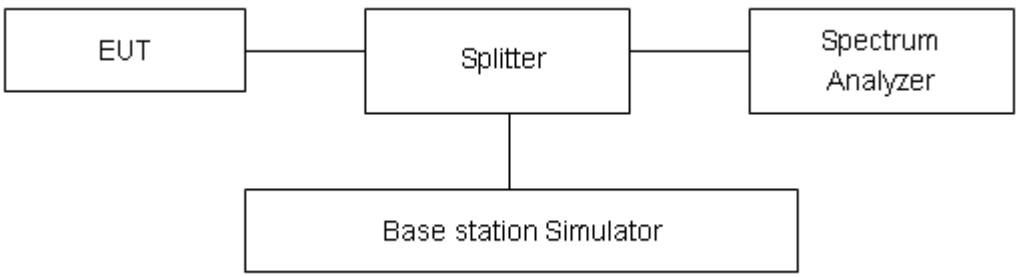
Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The band edge of the lowest and highest channels were measured.
The testing follows KDB 971168 D01 v03r01 Section 6.0
1.The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured.
RBW is set to 51 kHz, VBW is set to 160 kHz for WCDMA Band IV.
RBW is set to 15 kHz, VBW is set to 51 kHz for LTE Band 4/66 (1.4MHz).
RBW is set to 30 kHz, VBW is set to 100 kHz for LTE Band 4/66 (3MHz).
RBW is set to 51 kHz, VBW is set to 160 kHz for LTE Band 4/66/71 (5MHz).
RBW is set to 100 kHz, VBW is set to 300kHz for LTE Band 4/66/71 (10MHz).
RBW is set to 150 kHz, VBW is set to 510 kHz for LTE Band 4/66/71 (15MHz).
RBW is set to 200 kHz, VBW is set to 620 kHz for LTE Band 4/66/71 (20MHz)
RBW is set to 100 kHz, VBW is set to 300kHz for LTE Band 12(1.4MHz/3MHz/5MHz/10MHz).
RBW is set to 10 kHz, VBW is set to 30 kHz for LTE Band 13 (763MHz~775MHz).
RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 13 (775MHz~777MHz).
RBW is set to 100 kHz, VBW is set to 300 kHz for LTE Band 13 (787MHz~793MHz).
RBW is set to 10 kHz, VBW is set to 30 kHz for LTE Band 13 (793MHz~805MHz).
on spectrum analyzer.
4. Set spectrum analyzer with RMS detector.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. Checked that all the results comply with the emission limit line.

Test Setup



Limits

Rule Part 27.53(i) By a factor of not less than 43 + 10 log (P) dB on all frequencies between 2305 and 2320 MHz.

Rule Part 27.53(h)/ specifies that " for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 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"
Part 27.53(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

Part 27.53(m) (4)/ specifies that "for BRS and EBS stations. For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(4) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.
Example:
The limit line is derived from 43 + 10log (P) dB below the transmitter power P(Watts)
= P(W)- [43 + 10log(P)] (dB)
= [30 + 10log (P)] (dBm) - [43 + 10log(P)] (dB) = -13dBm.

Rule Part 27.53(f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to −70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and −80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

Part 27.53 (c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:
(1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;

(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB;
(3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 76 + 10 log (P) dB in a 6.25 kHz band segment, for base and fixed stations;
(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than 65 + 10 log (P) dB in a 6.25 kHz band segment, for mobile and portable stations;
(5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96, U=0.684dB.

Test Result

All the test traces in the plots shows the test results clearly.

WCDMA Band IV CH-Low	WCDMA Band IV CH-High
	

LTE Band 4 QPSK 1.4MHz CH-Low, 1 RB

LTE Band 4 QPSK 1.4MHz CH-High, 1 RB

LTE Band 4 QPSK 1.4MHz CH-Low, 100%RB

LTE Band 4 QPSK 1.4MHz CH-High, 100%RB

LTE Band 4 QPSK 3MHz CH-Low, 1 RB

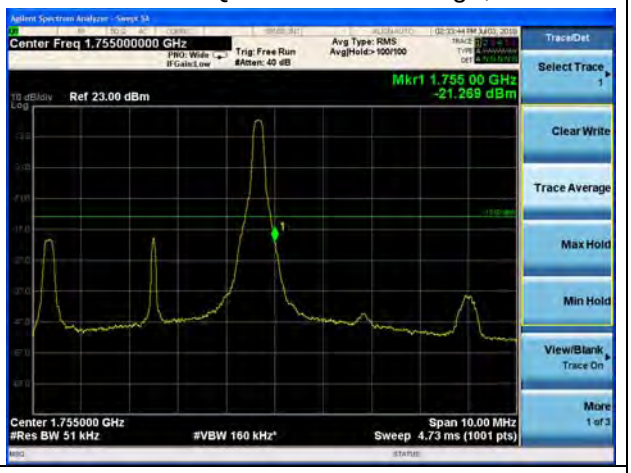
LTE Band 4 QPSK 3MHz CH-High, 1 RB

LTE Band 4 QPSK 3MHz CH-Low, 100%RB

LTE Band 4 QPSK 3MHz CH-High, 100%RB

LTE Band 4 QPSK 5MHz CH-Low, 1 RB

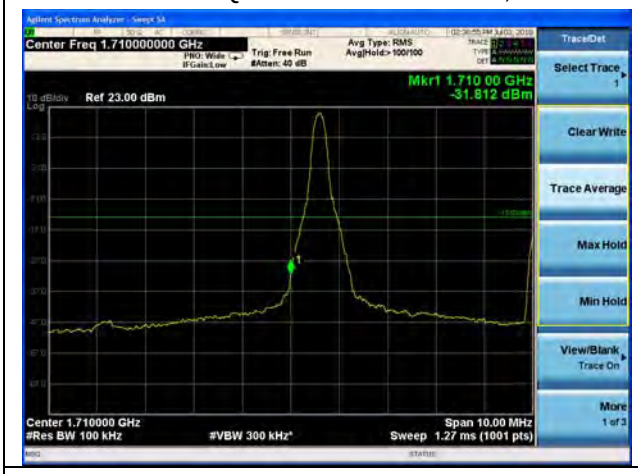
LTE Band 4 QPSK 5MHz CH-High, 1 RB



LTE Band 4 QPSK 5MHz CH-Low, 100%RB

LTE Band 4 QPSK 5MHz CH-High, 100%RB

LTE Band 4 QPSK 10MHz CH-Low, 1 RB

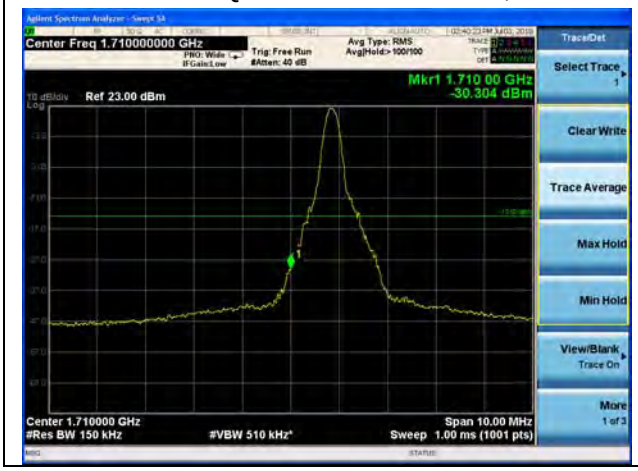


LTE Band 4 QPSK 10MHz CH-High, 1 RB

LTE Band 4 QPSK 10MHz CH-Low, 100%RB

LTE Band 4 QPSK 10MHz CH-High, 100%RB

LTE Band 4 QPSK 15MHz CH-Low, 1 RB

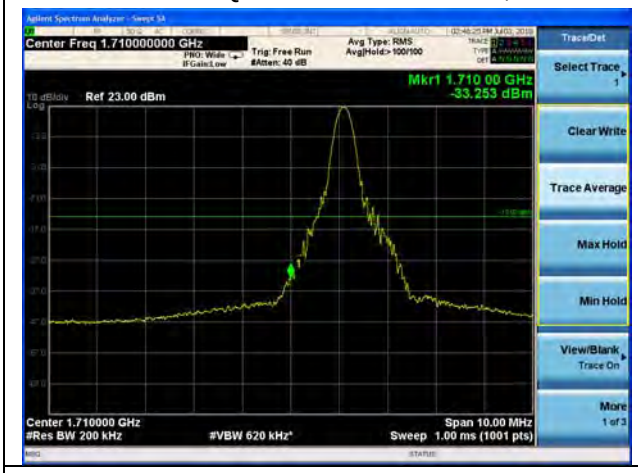


LTE Band 4 QPSK 15MHz CH-High, 1 RB

LTE Band 4 QPSK 15MHz CH-Low, 100%RB

LTE Band 4 QPSK 15MHz CH-High, 100%RB

LTE Band 4 QPSK 20MHz CH-Low, 1 RB



LTE Band 4 QPSK 20MHz CH-High, 1 RB

LTE Band 4 QPSK 20MHz CH-Low, 100%RB

LTE Band 4 QPSK 20MHz CH-High, 100%RB

LTE Band 4 16QAM 1.4MHz CH-Low, 1 RB

LTE Band 4 16QAM 1.4MHz CH-High, 1 RB

LTE Band 4 16QAM 1.4MHz CH-Low, 100%RB

LTE Band 4 16QAM 1.4MHz CH-High, 100%RB

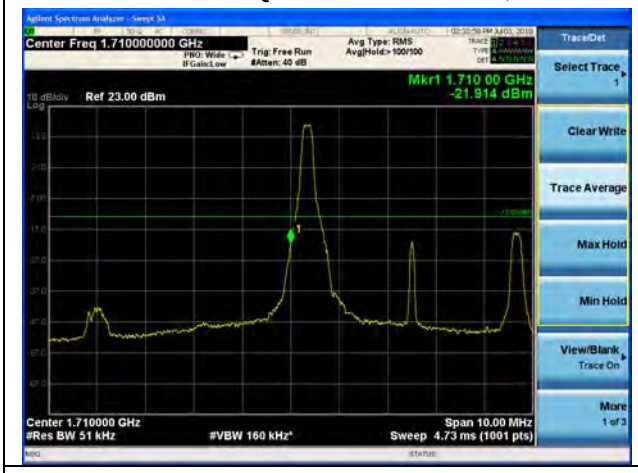
LTE Band 4 16QAM 3MHz CH-Low, 1 RB

LTE Band 4 16QAM 3MHz CH-High, 1 RB

LTE Band 4 16QAM 3MHz CH-Low, 100%RB

LTE Band 4 16QAM 3MHz CH-High, 100%RB

LTE Band 4 16QAM 5MHz CH-Low, 1 RB

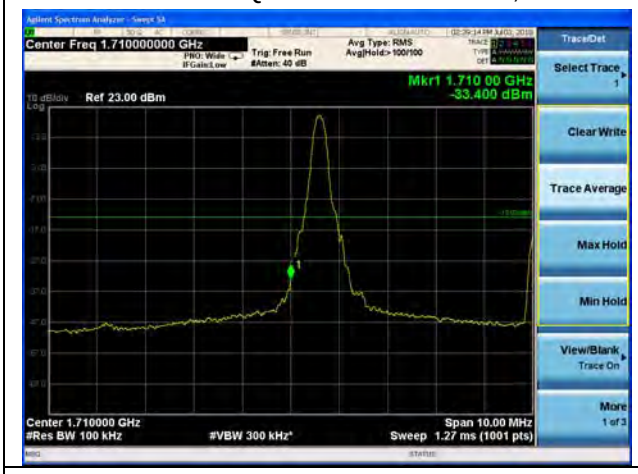


LTE Band 4 16QAM 5MHz CH-High, 1 RB

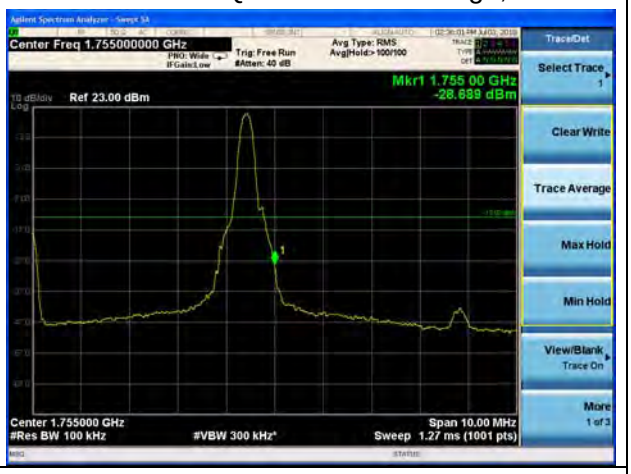
LTE Band 4 16QAM 5MHz CH-Low, 100%RB

LTE Band 4 16QAM 5MHz CH-High, 100%RB

LTE Band 4 16QAM 10MHz CH-Low, 1 RB



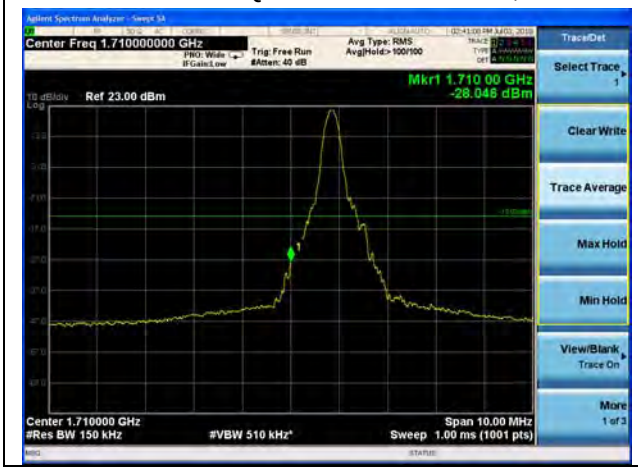
LTE Band 4 16QAM 10MHz CH-High, 1 RB



LTE Band 4 16QAM 10MHz CH-Low, 100%RB

LTE Band 4 16QAM 10MHz CH-High, 100%RB

LTE Band 4 16QAM 15MHz CH-Low, 1 RB

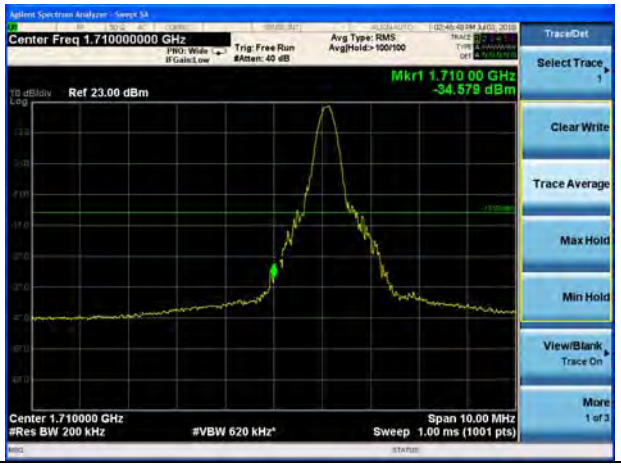


LTE Band 4 16QAM 15MHz CH-High, 1 RB

LTE Band 4 16QAM 15MHz CH-Low, 100%RB

LTE Band 4 16QAM 15MHz CH-High, 100%RB

LTE Band 4 16QAM 20MHz CH-Low, 1 RB

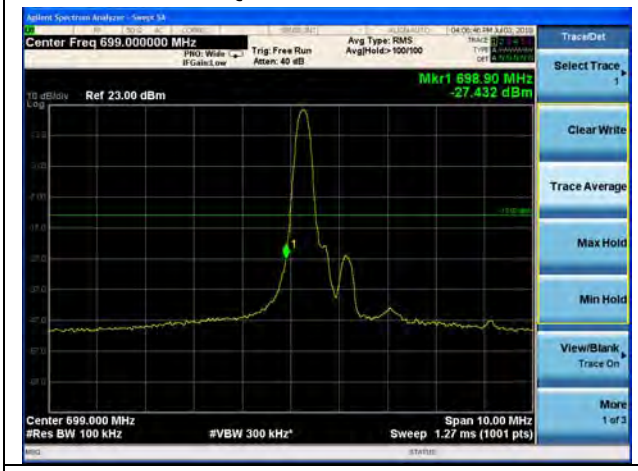


LTE Band 4 16QAM 20MHz CH-High, 1 RB

LTE Band 4 16QAM 20MHz CH-Low, 100%RB

LTE Band 4 16QAM 20MHz CH-High, 100%RB

LTE Band 12 QPSK 1.4MHz CH-Low, 1 RB



LTE Band 12 QPSK 1.4MHz CH-High, 1 RB

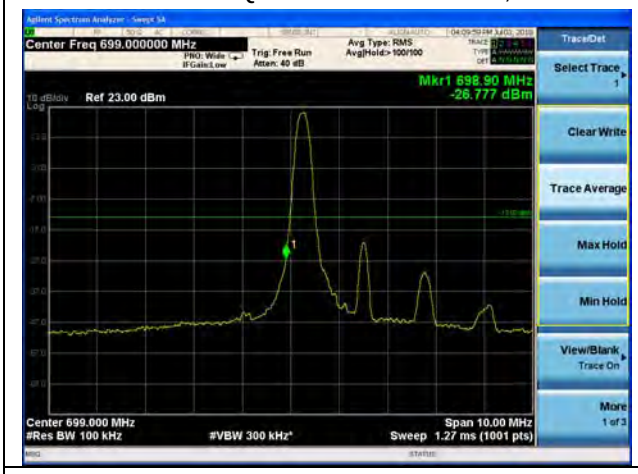
LTE Band 12 QPSK 1.4MHz CH-Low, 1 RB
698MHz~699MHz

LTE Band 12 QPSK 1.4MHz CH-High, 1 RB
716MHz~717MHz

LTE Band 12 QPSK 1.4MHz CH-Low, 100%RB

LTE Band 12 QPSK 1.4MHz CH-High, 100%RB

LTE Band 12 QPSK 3MHz CH-Low, 1 RB



LTE Band 12 QPSK 3MHz CH-High, 1 RB

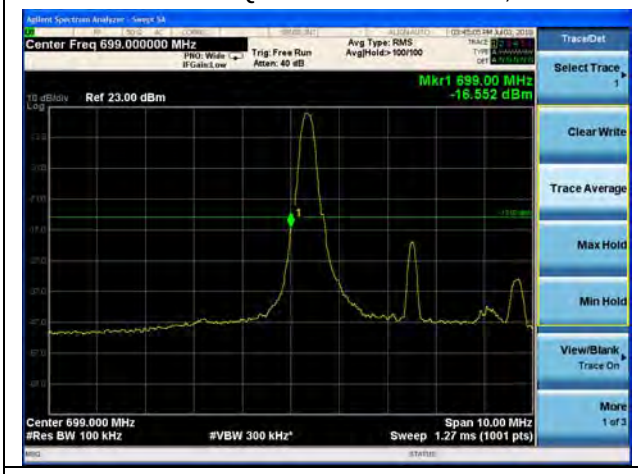
LTE Band 12 QPSK 3MHz CH-Low, 1 RB
698MHz~699MHz

LTE Band 12 QPSK 3MHz CH-High, 1 RB
716MHz~717MHz

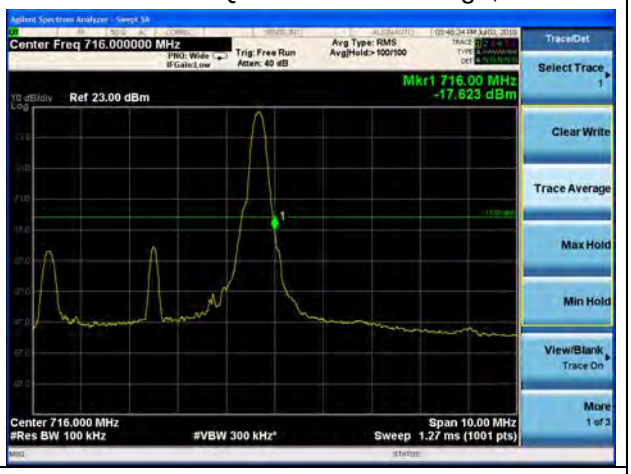
LTE Band 12 QPSK 3MHz CH-Low, 100%RB

LTE Band 12 QPSK 3MHz CH-High, 100%RB

LTE Band 12 QPSK 5MHz CH-Low, 1 RB



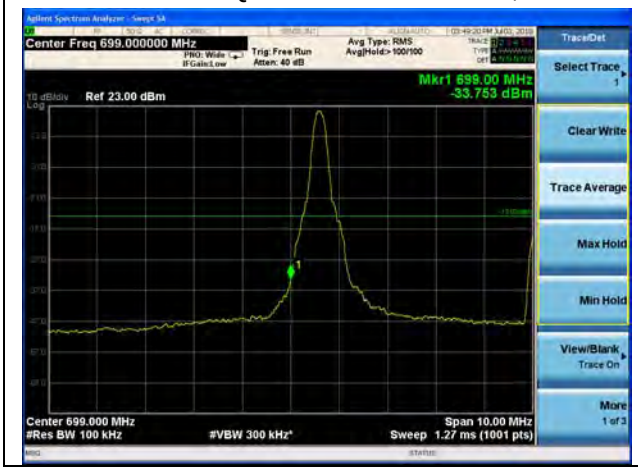
LTE Band 12 QPSK 5MHz CH-High, 1 RB



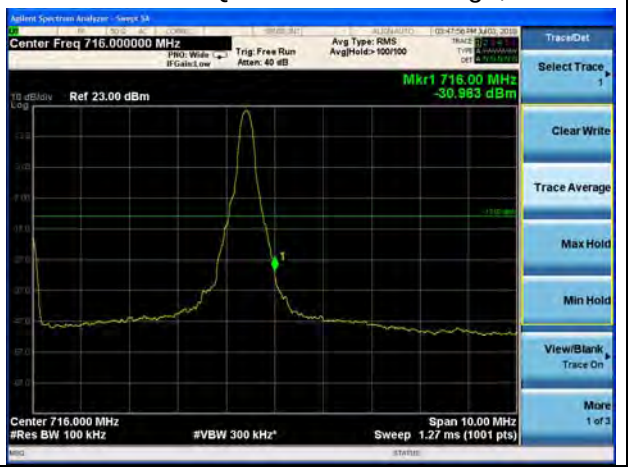
LTE Band 12 QPSK 5MHz CH-Low, 100%RB

LTE Band 12 QPSK 5MHz CH-High, 100%RB

LTE Band 12 QPSK 10MHz CH-Low, 1 RB



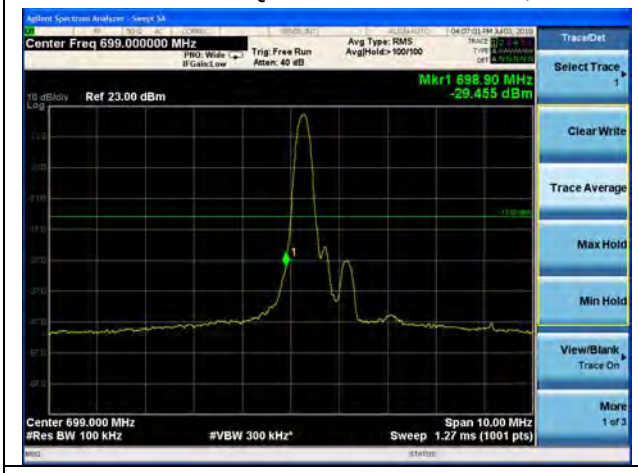
LTE Band 12 QPSK 10MHz CH-High, 1 RB



LTE Band 12 QPSK 10MHz CH-Low, 100%RB

LTE Band 12 QPSK 10MHz CH-High, 100%RB

LTE Band 12 16QAM 1.4MHz CH-Low, 1 RB



LTE Band 12 16QAM 1.4MHz CH-High, 1 RB

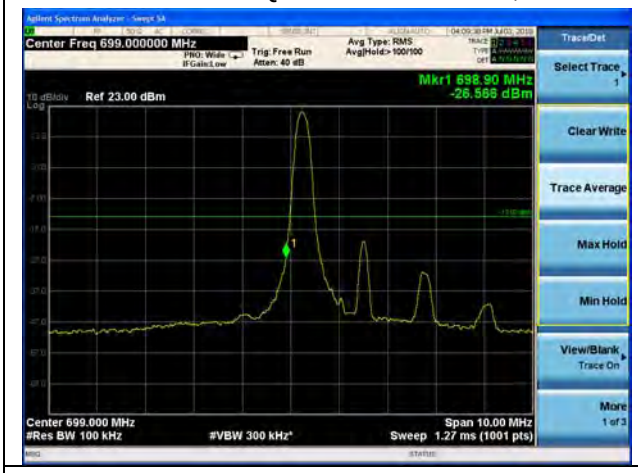
LTE Band 12 16QAM 1.4MHz CH-Low, 1 RB
698MHz~699MHz

LTE Band 12 16QAM 1.4MHz CH-High, 1 RB
716MHz~717MHz

LTE Band 12 16QAM 1.4MHz CH-Low, 100%RB

LTE Band 12 16QAM 1.4MHz CH-High, 100%RB

LTE Band 12 16QAM 3MHz CH-Low, 1 RB



LTE Band 12 16QAM 3MHz CH-High, 1 RB

LTE Band 12 16QAM 3MHz CH-Low, 1 RB
698MHz~699MHz

LTE Band 12 16QAM 3MHz CH-High, 1 RB
698MHz~699MHz