

## 11. BAND EDGE EMISSIONS

### RULE PART(S)

FCC: §22.359, §24.238, §27.53 and § 90.691

### LIMITS

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.

Part 27: (m)(4) (4) 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)(6) of this section. In addition, the attenuation factor shall not be less than  $43 + 10 \log (P)$  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.

Part 90:

(a)(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least  $116 \text{Log}_{10} (f/6.1)$  decibels or  $50 + 10 \text{Log}_{10}(P)$  decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(a)(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \text{Log}_{10} (P)$  decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz. {NOTE: Use 100 kHz reference bandwidth.}

### TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

The transmitter output was connected to an Agilent 8960 or a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

# 11.1. BAND EDGE PLOTS GSM



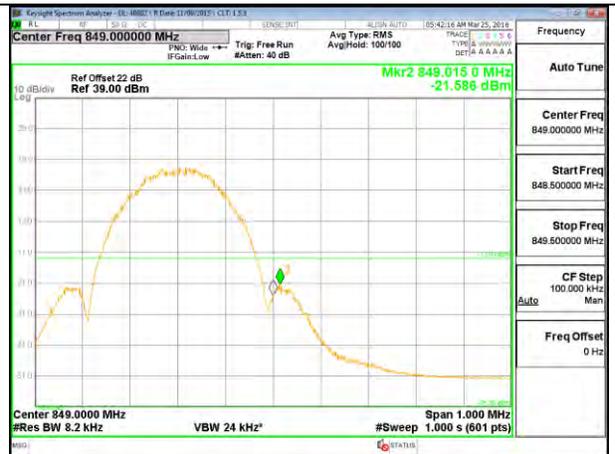
GSM850 GPRS Low Channel



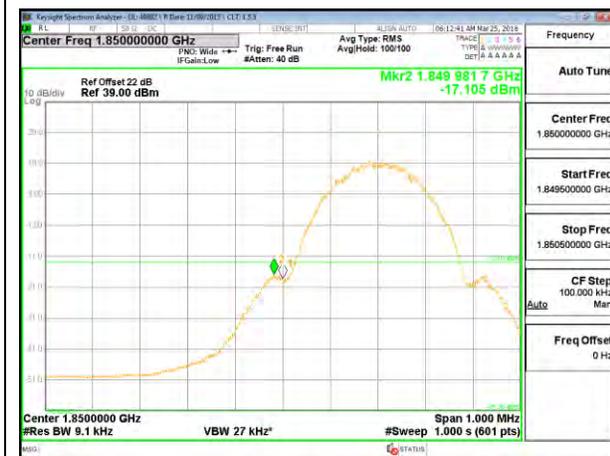
GSM850 GPRS High Channel



GSM850 EGPRS Low Channel



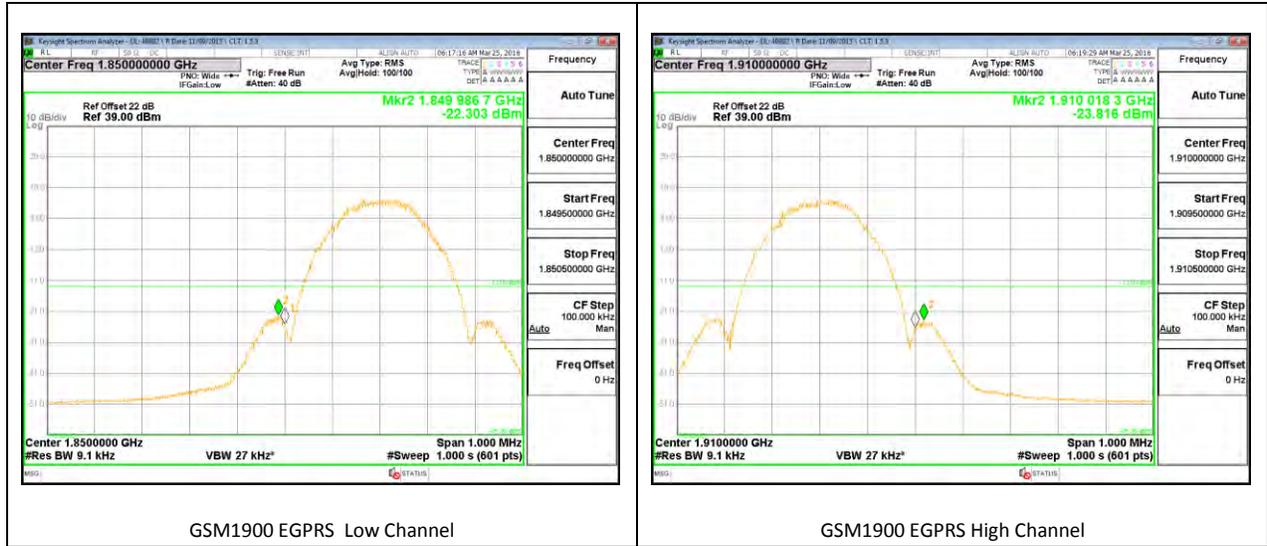
GSM850 EGPRS High Channel



GSM1900 GPRS Low Channel



GSM1900 GPRS High Channel



**WCDMA**



B2 REL99 Low Channel



B2 REL99 High Channel



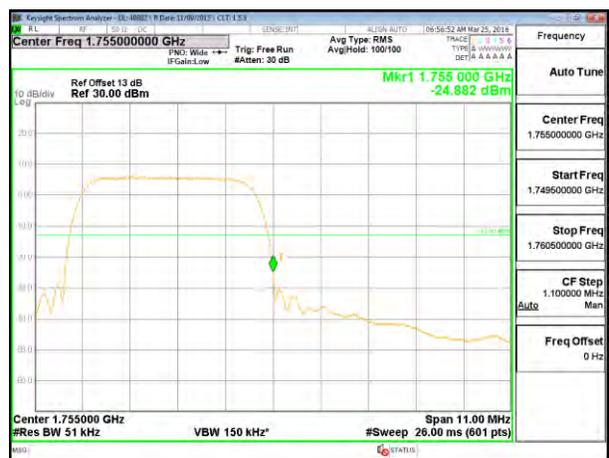
B2 HSDPA Low Channel



B2 HSDPA High Channel



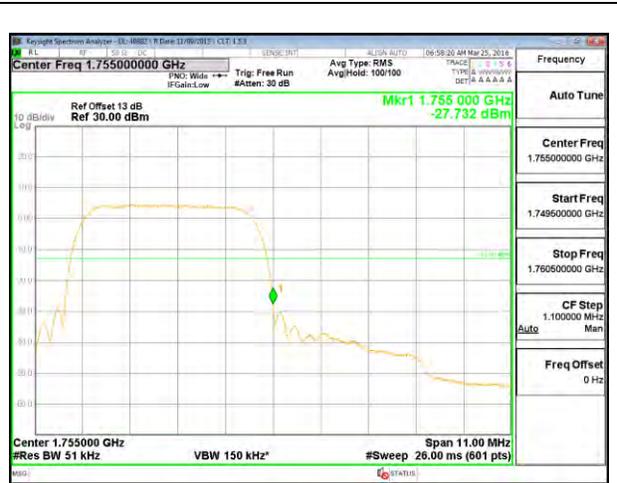
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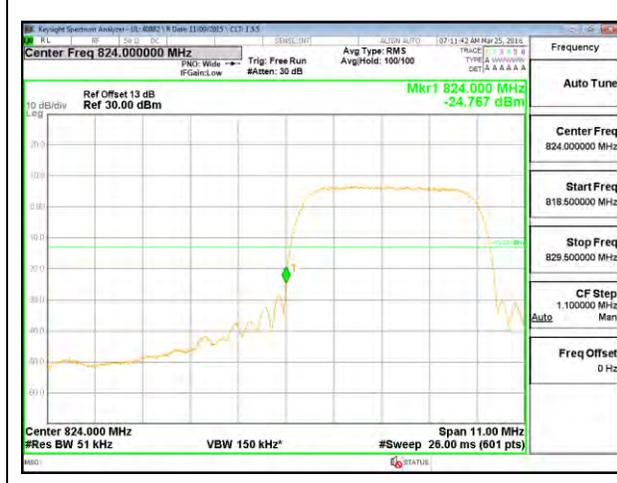
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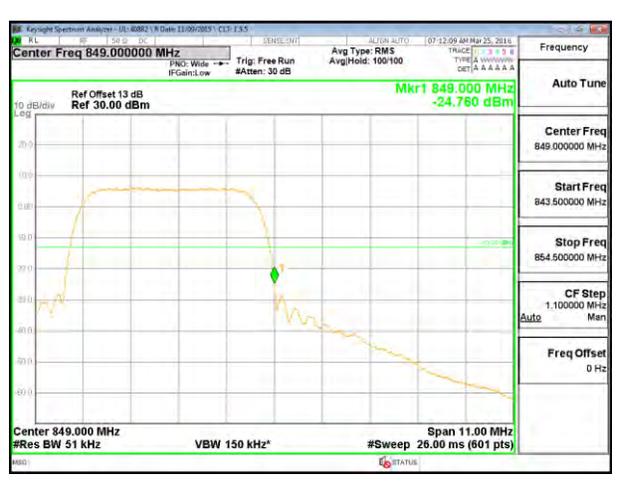
B4 HSDPA Low Channel



B4 HSDPA High Channel



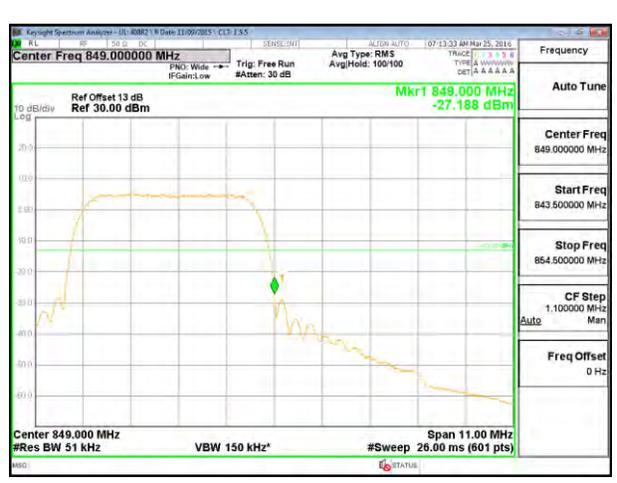
B5 REL99 Low Channel



B5 REL99 High Channel

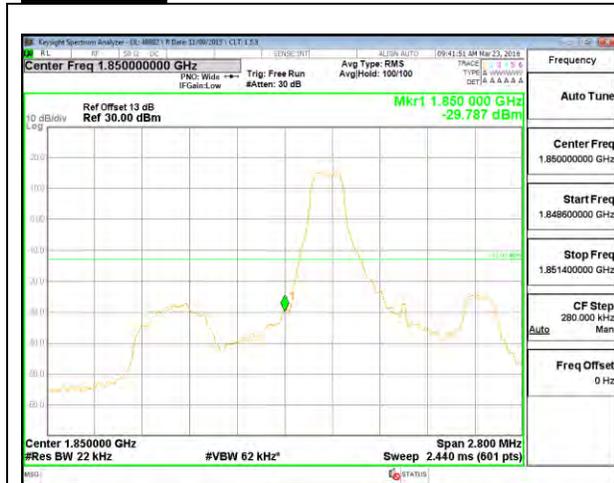


B5 HSDPA Low Channel

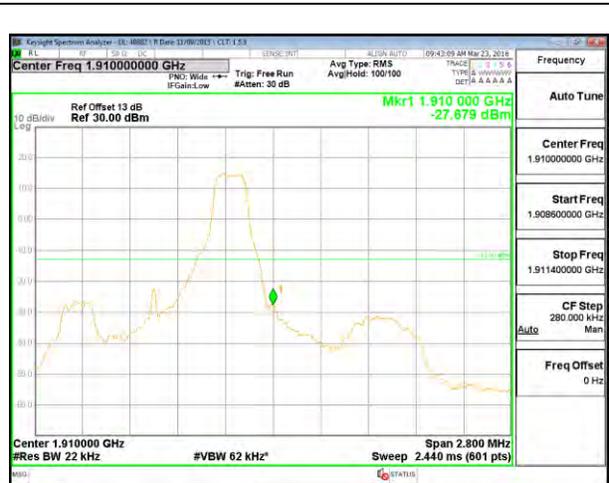


B5 HSDPA High Channel

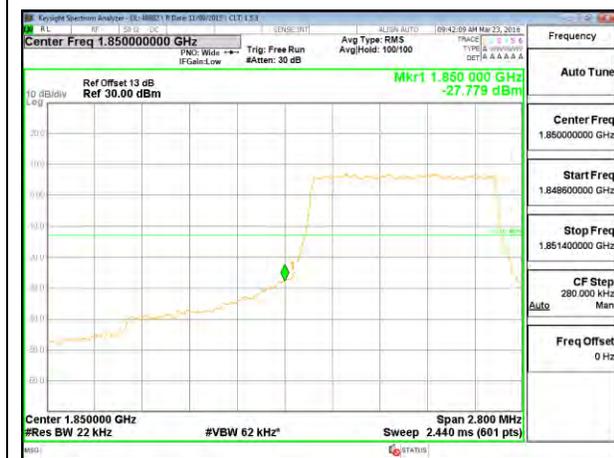
**LTE Band 2**



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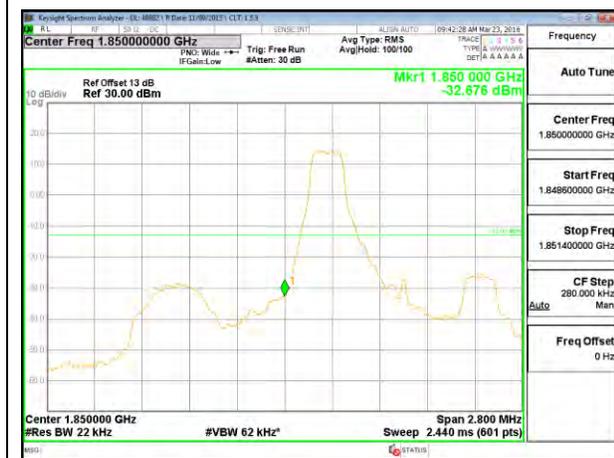
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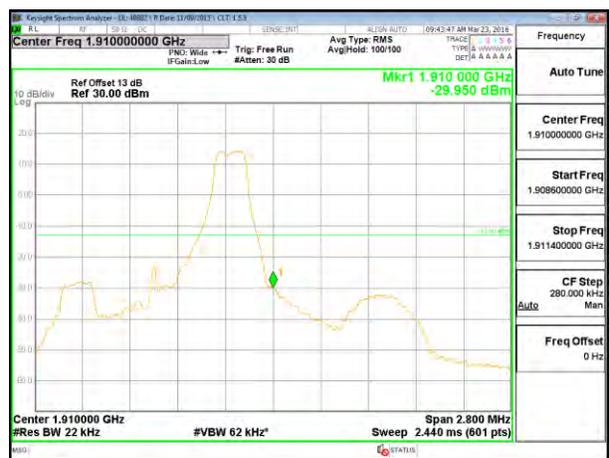
LTE B2 1.4MHz QPSK Low Channel FRB



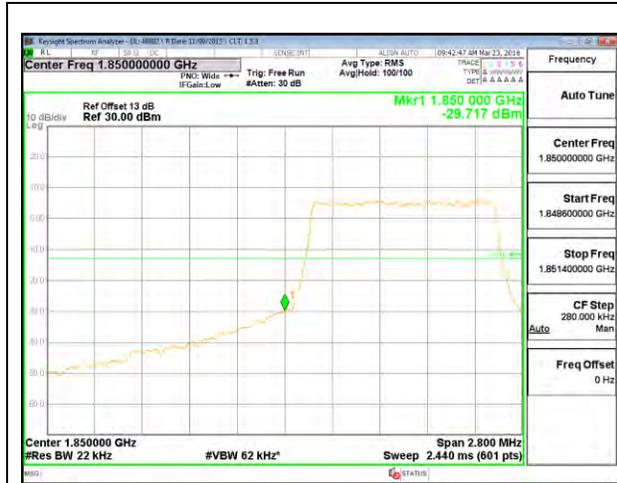
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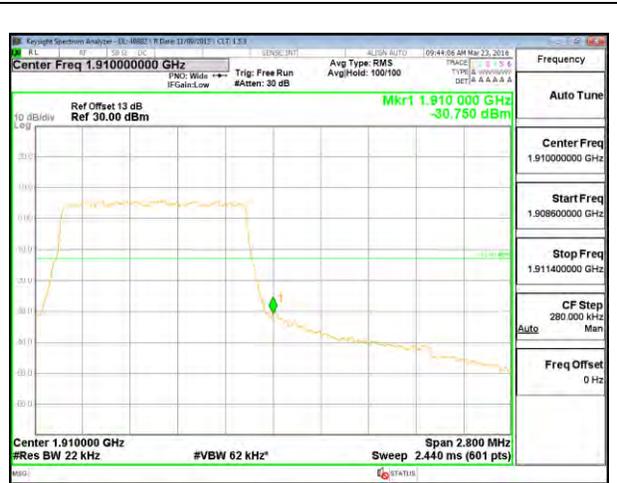
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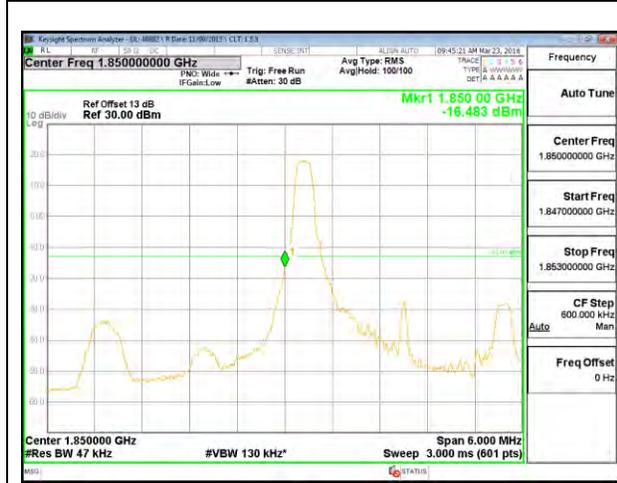
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LTE B2 1.4MHz 16QAM Low Channel FRB



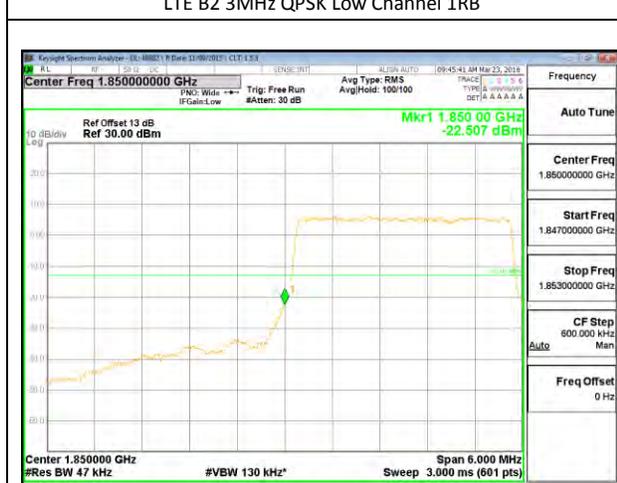
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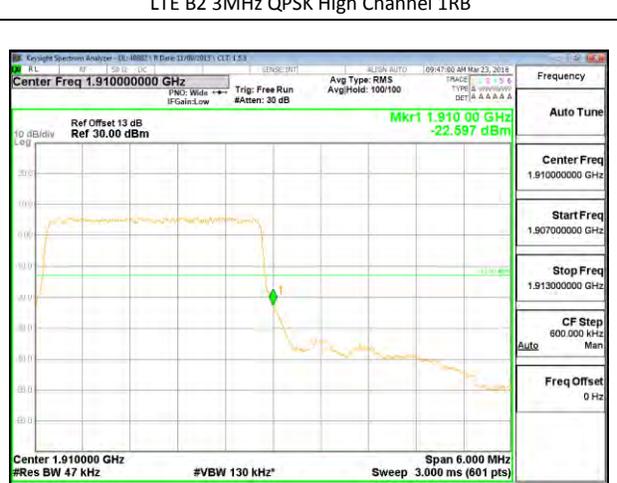
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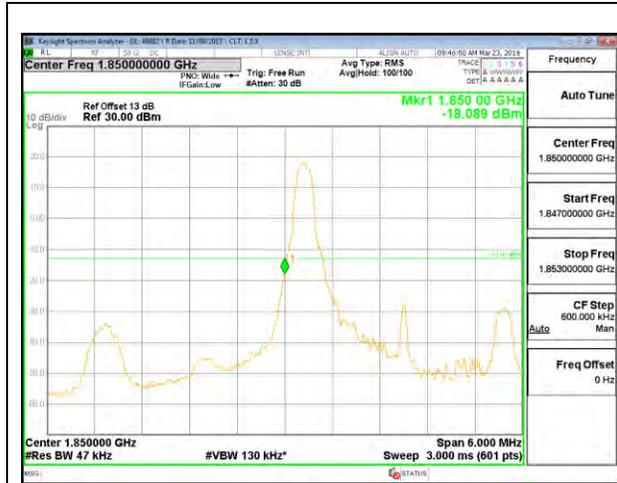
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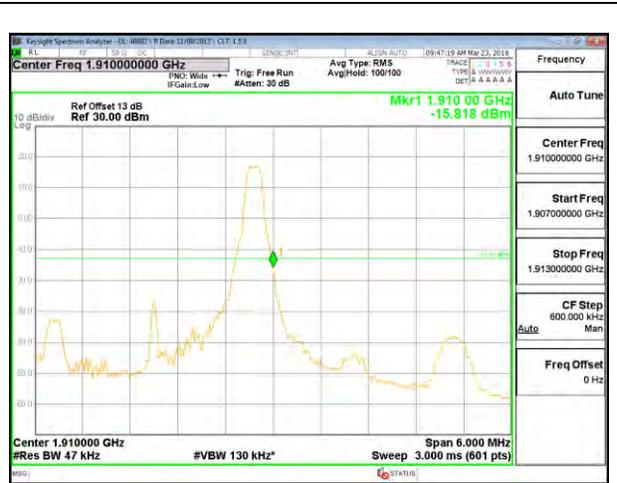
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LTE B2 3MHz QPSK High Channel FRB



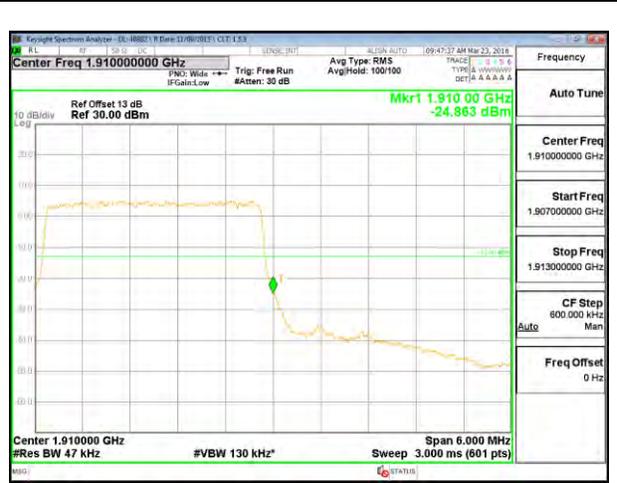
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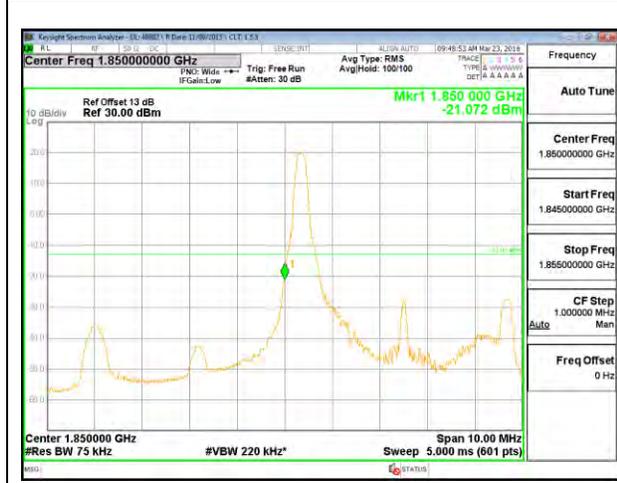
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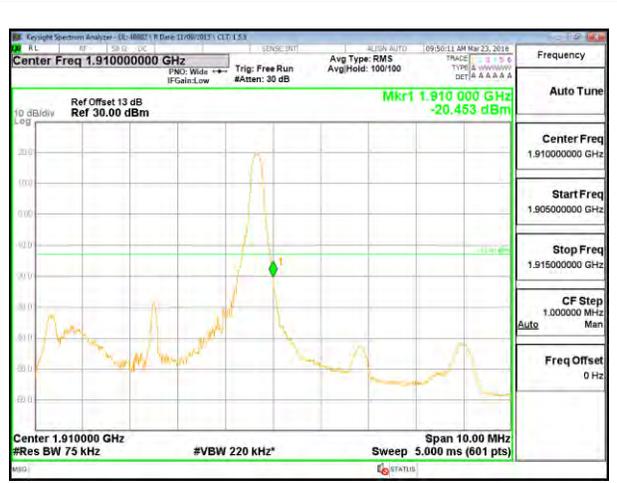
LTE B2 3MHz 16QAM Low Channel FRB



LTE B2 3MHz 16QAM High Channel FRB



LTE B2 5MHz QPSK Low Channel 1RB



LTE B2 5MHz QPSK High Channel 1RB



LTE B2 5MHz QPSK Low Channel FRB



LTE B2 5MHz QPSK High Channel FRB



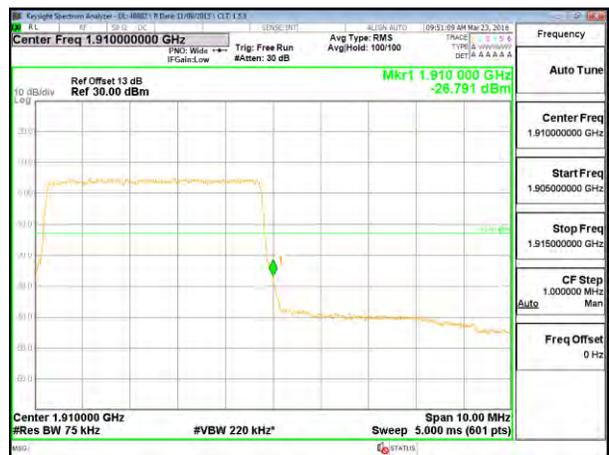
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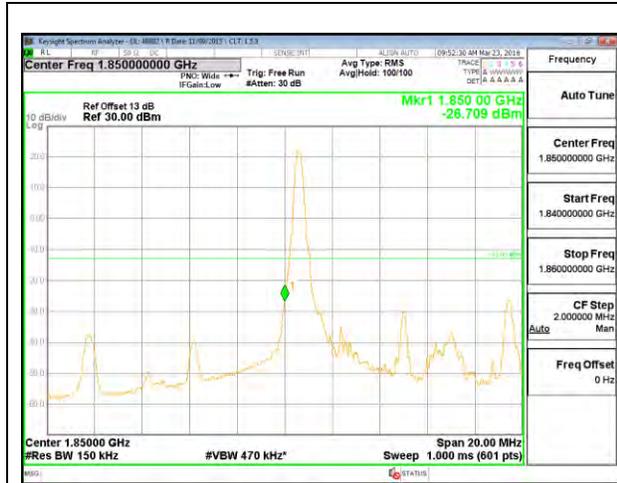
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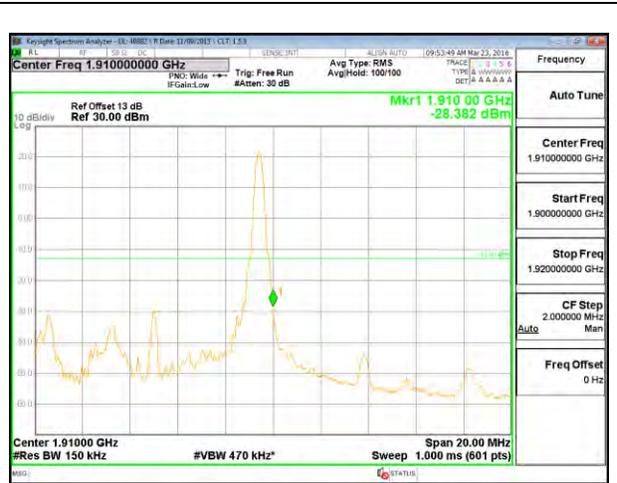
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LTE B2 5MHz 16QAM High Channel FRB



LTE B2 10MHz QPSK Low Channel 1RB



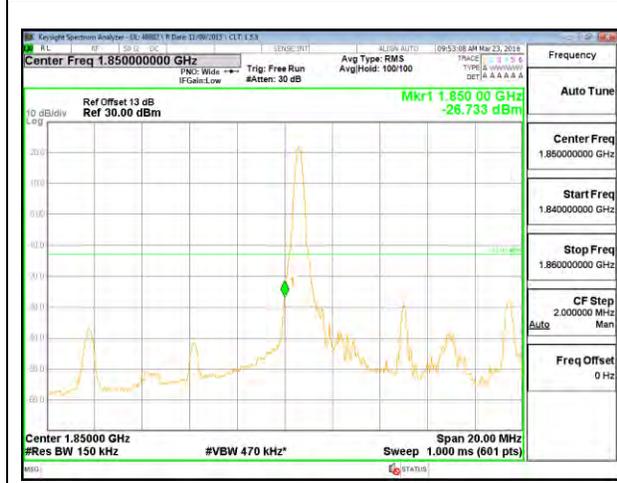
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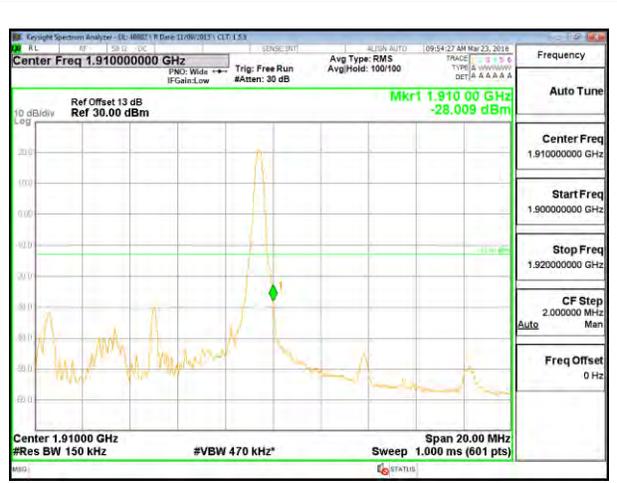
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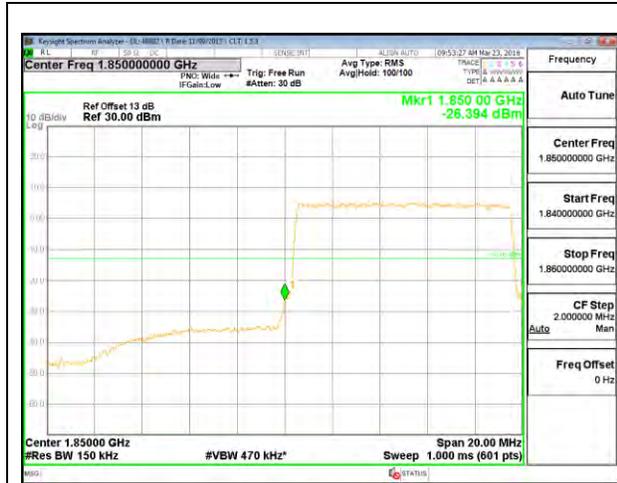
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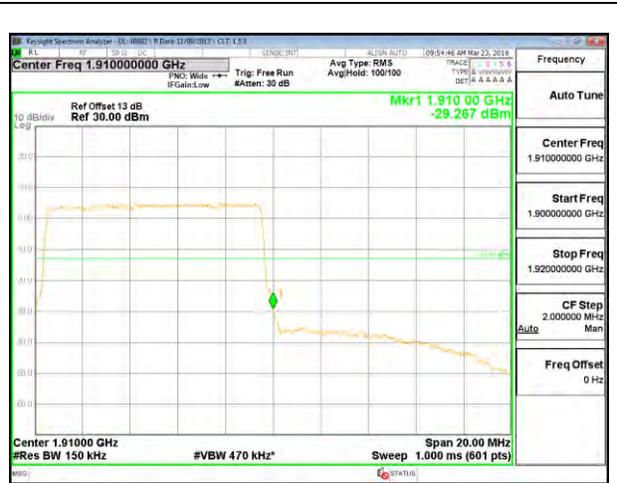
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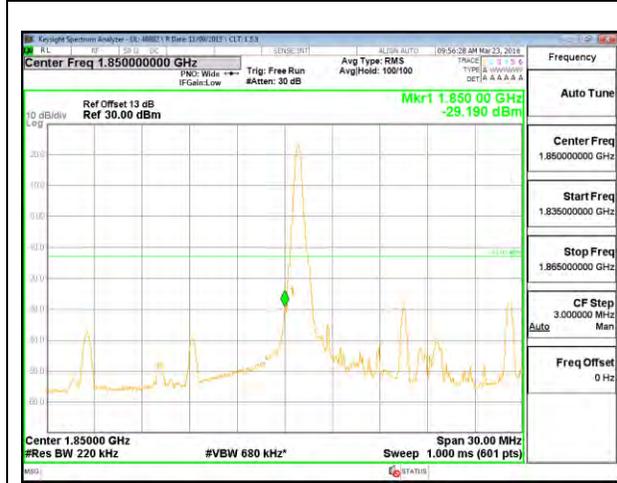
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LTE B2 10MHz 16QAM Low Channel FRB



LTE B2 10MHz 16QAM High Channel FRB



LTE B2 15MHz QPSK Low Channel 1RB



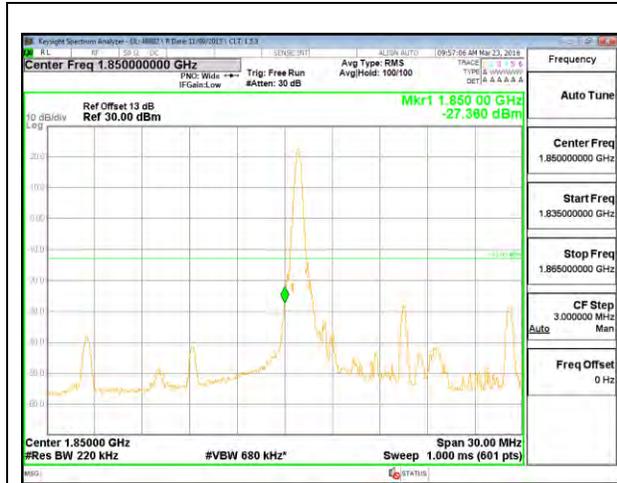
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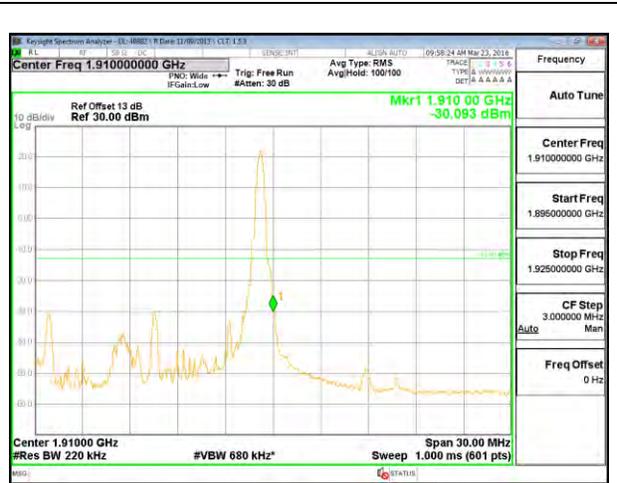
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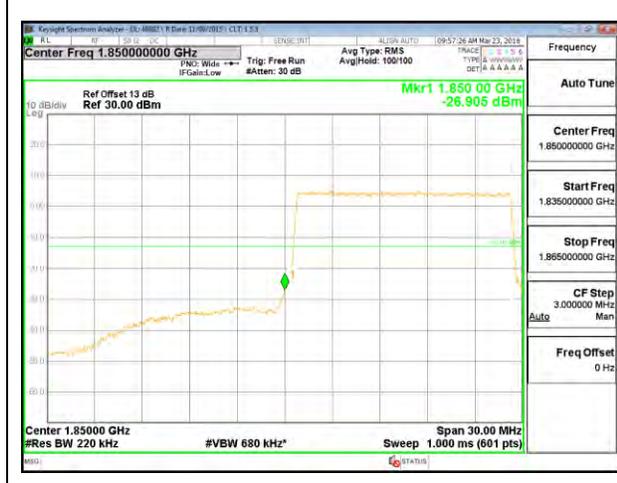
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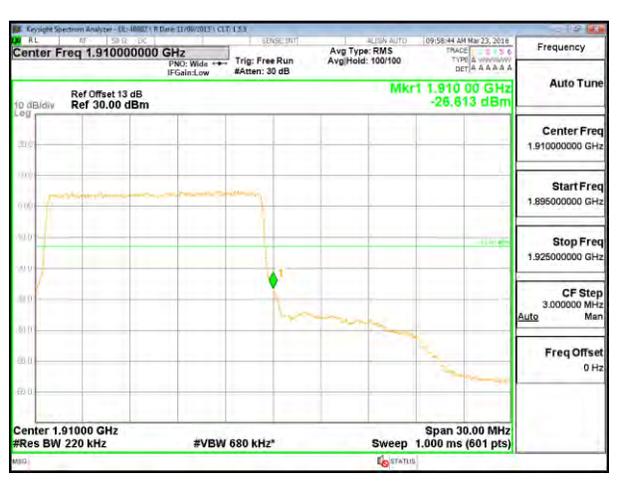
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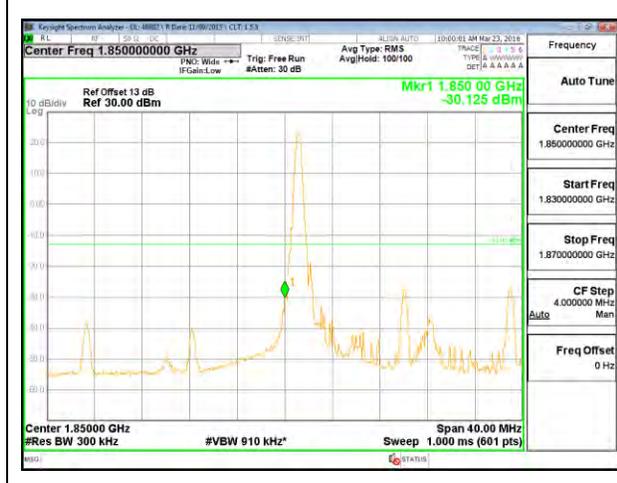
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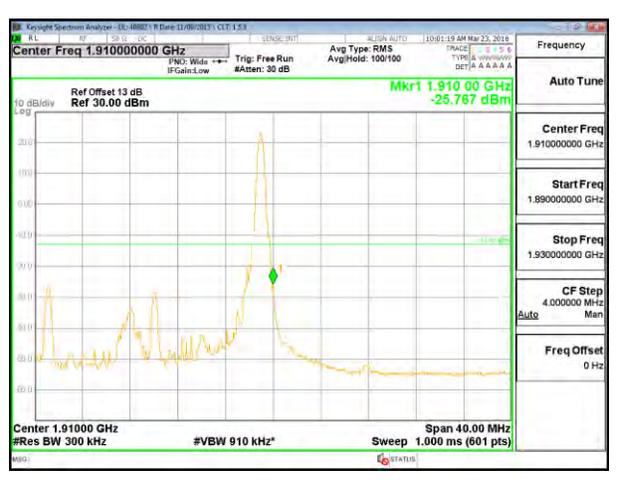
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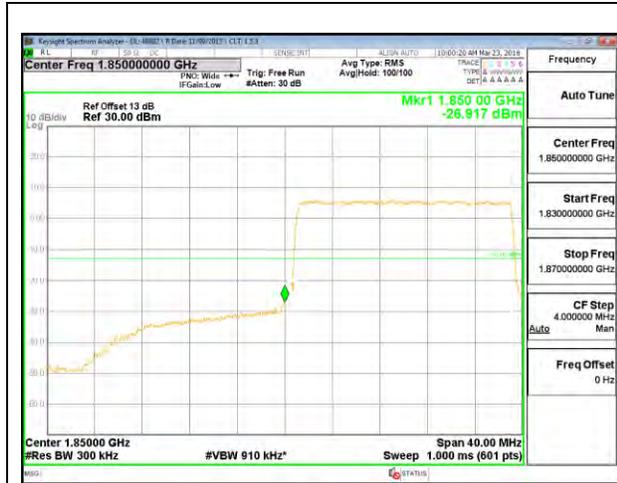
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LTE B2 20MHz QPSK Low Channel 1RB



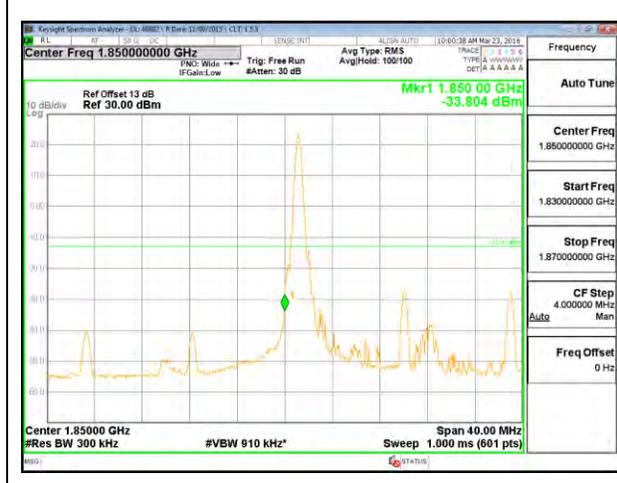
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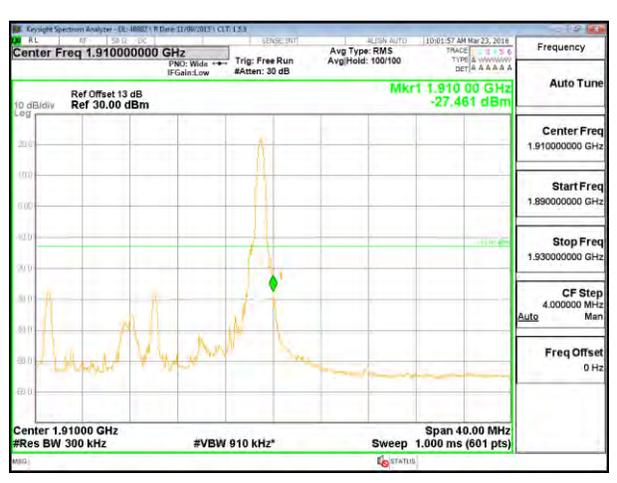
LTE B2 20MHz QPSK Low Channel FRB



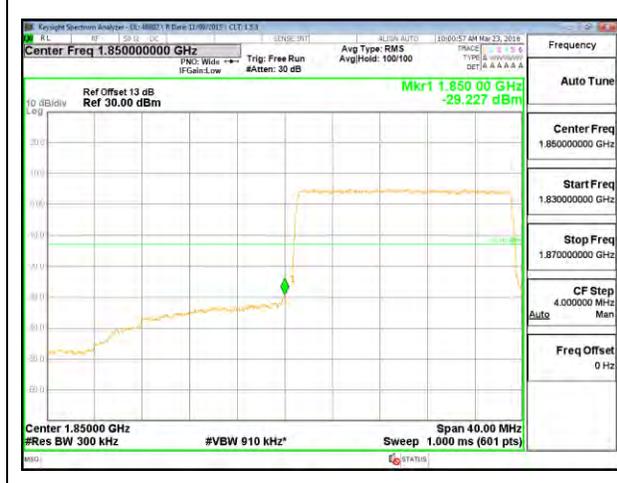
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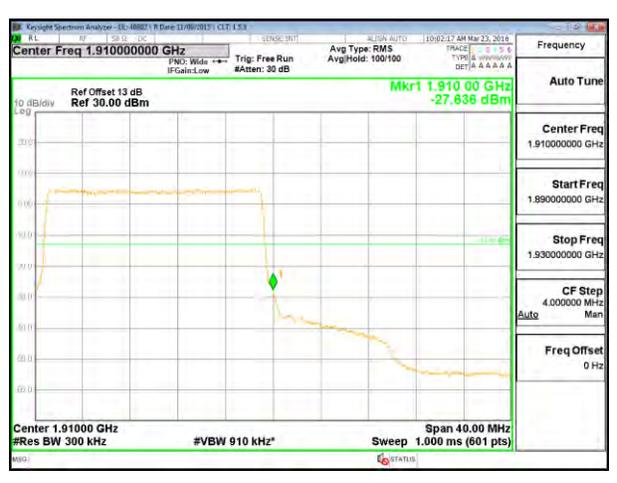
LTE B2 20MHz 16QAM Low Channel 1RB



LTE B2 20MHz 16QAM High Channel 1RB



LTE B2 20MHz 16QAM Low Channel FRB



LTE B2 20MHz 16QAM High Channel FRB

LTE Band 4



LTE B4 1.4MHz QPSK Low Channel 1RB



LTE B4 1.4MHz QPSK High Channel 1RB



LTE B4 1.4MHz QPSK Low Channel FRB



LTE B4 1.4MHz QPSK High Channel FRB



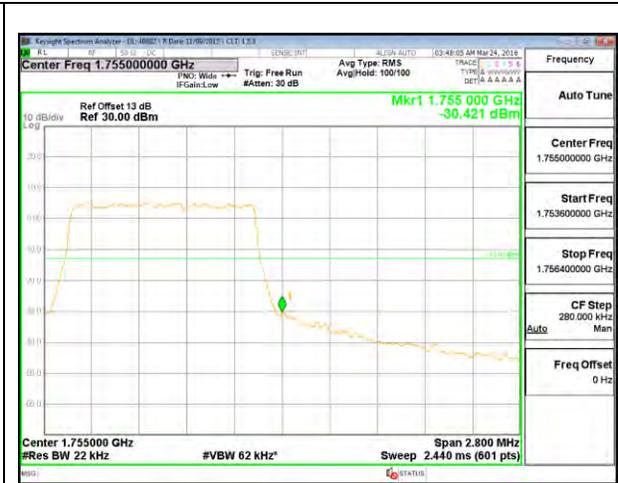
LTE B4 1.4MHz 16QAM Low Channel 1RB



LTE B4 1.4MHz 16QAM High Channel 1RB



LTE B4 1.4MHz 16QAM Low Channel FRB



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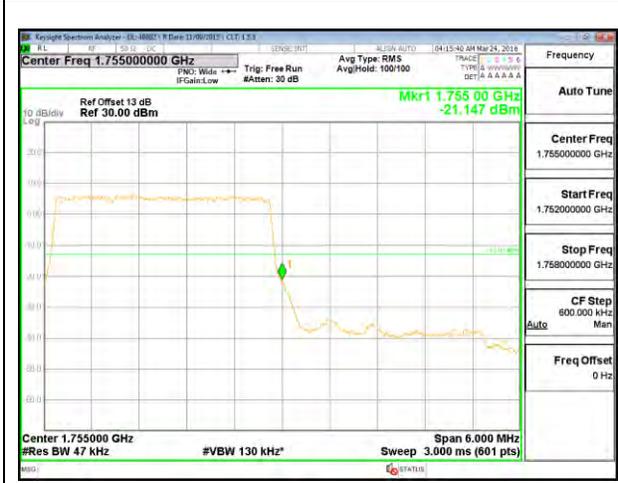
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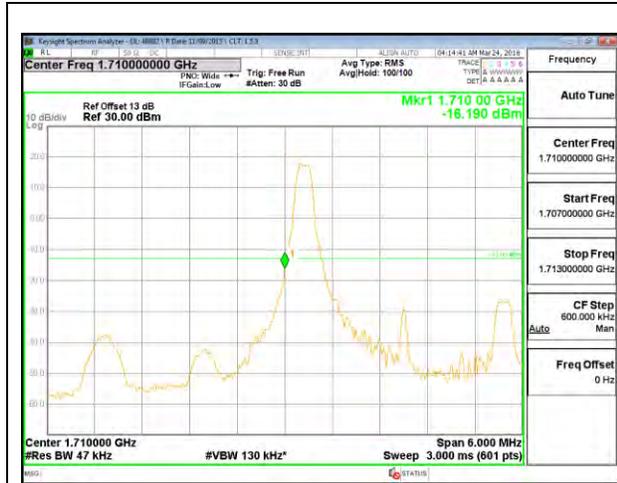
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LTE B4 3MHz QPSK Low Channel FRB



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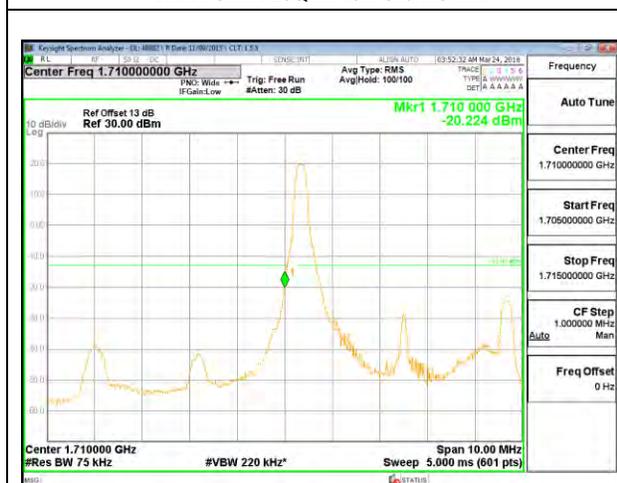
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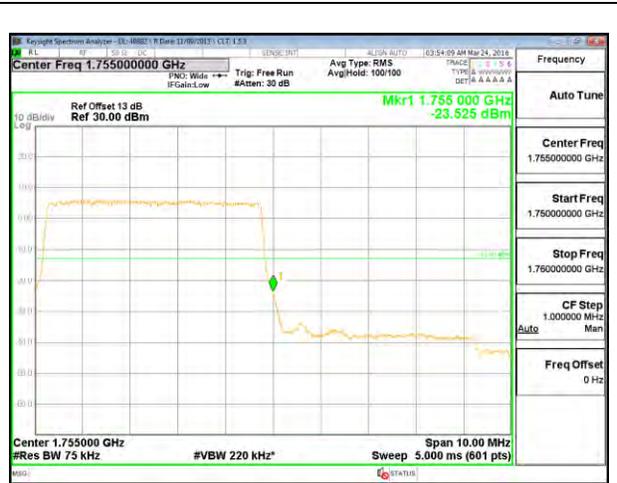
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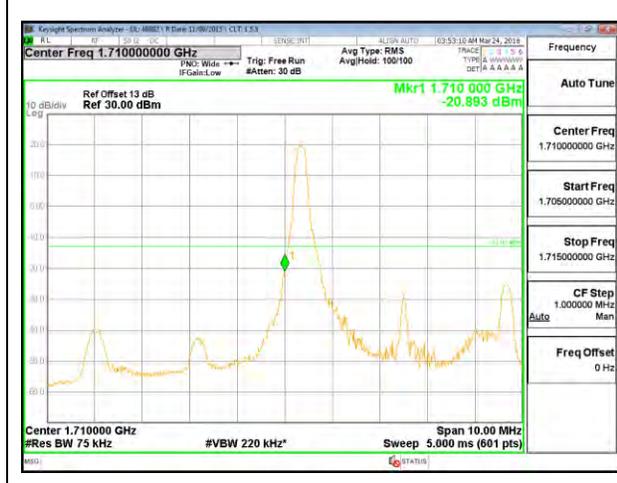
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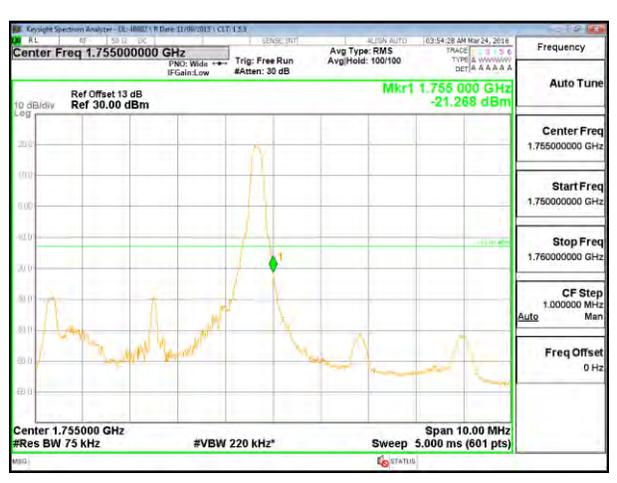
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LTE B4 5MHz QPSK High Channel FRB



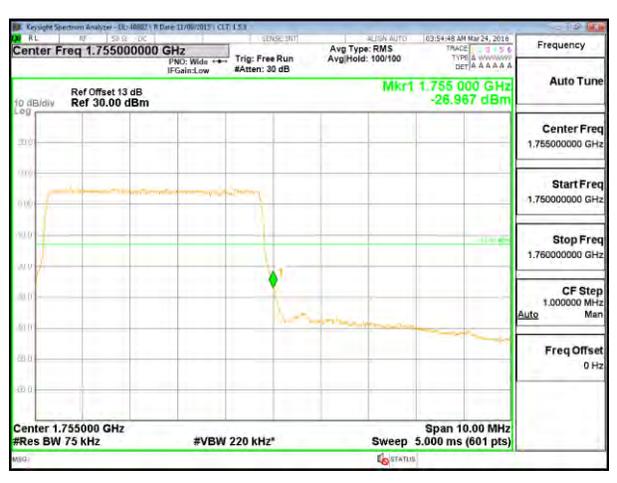
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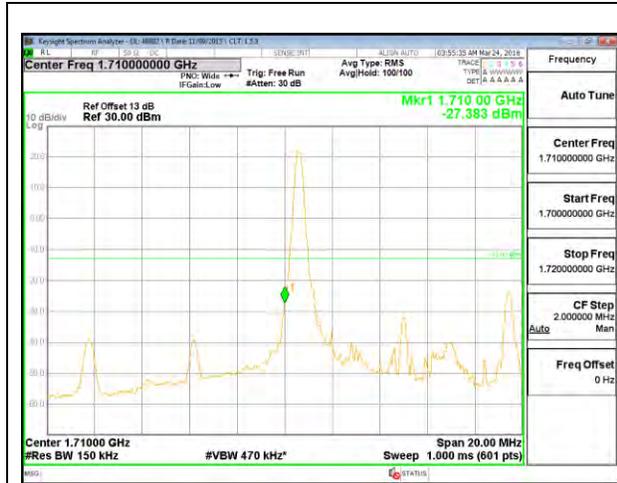
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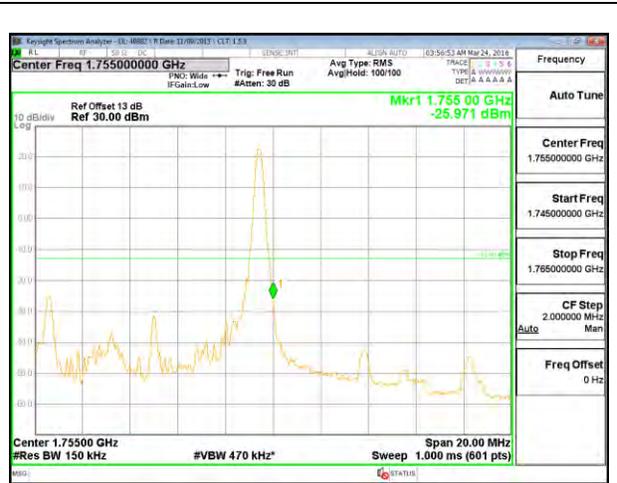
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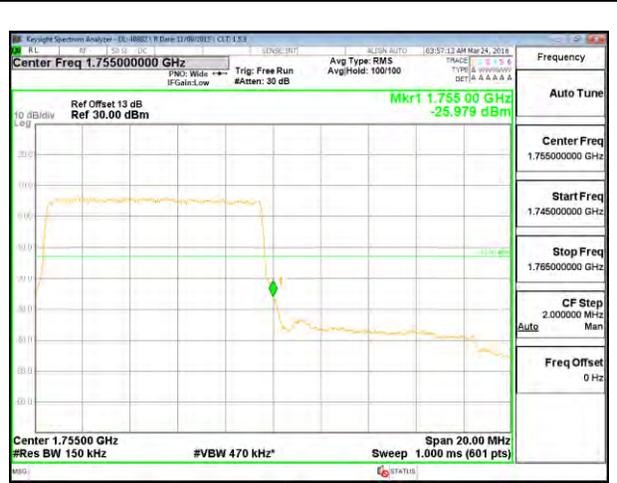
LTE B4 10MHz QPSK Low Channel 1RB



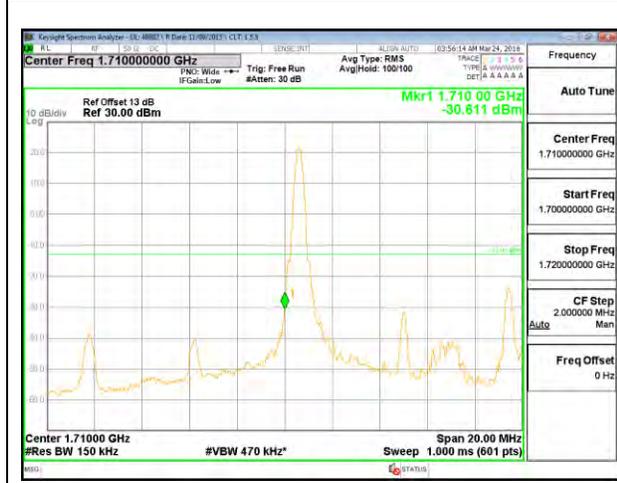
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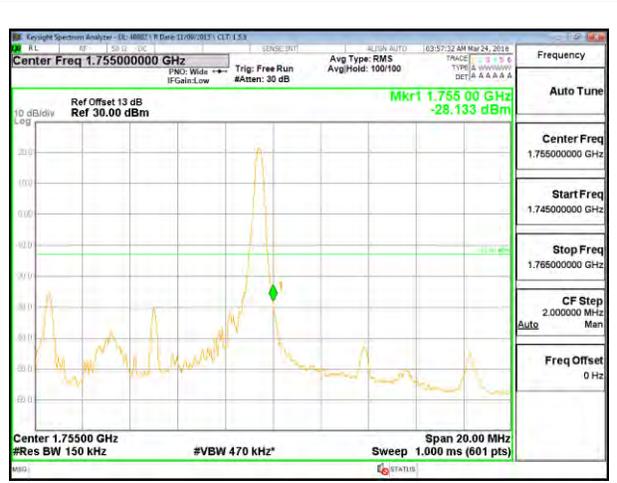
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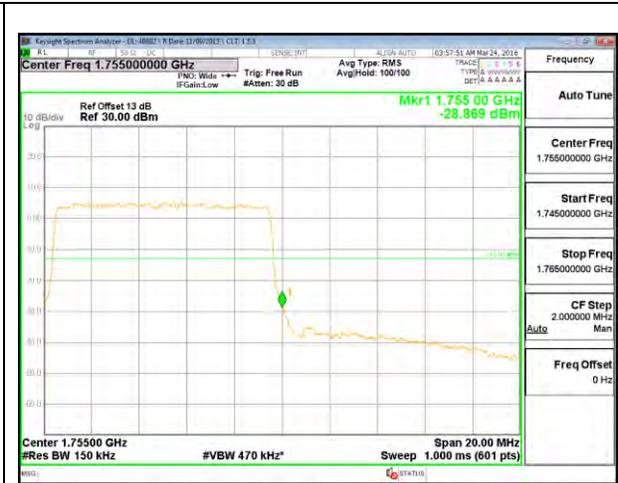
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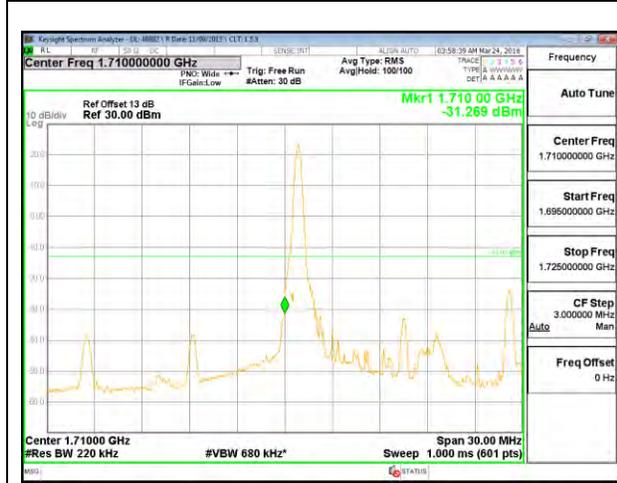
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LTE B4 10MHz 16QAM Low Channel FRB



LTE B4 10MHz 16QAM High Channel FRB



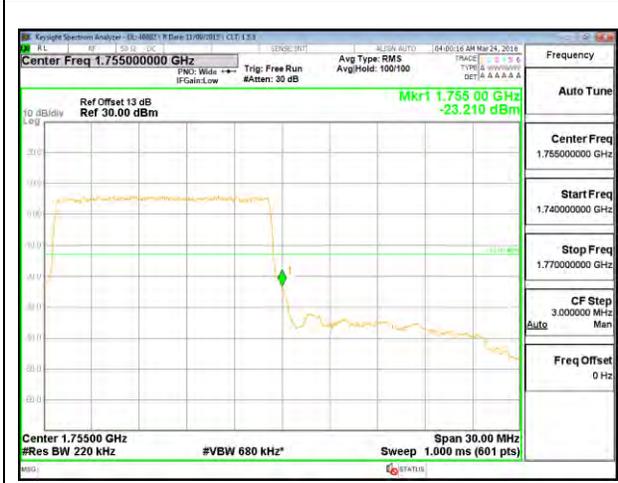
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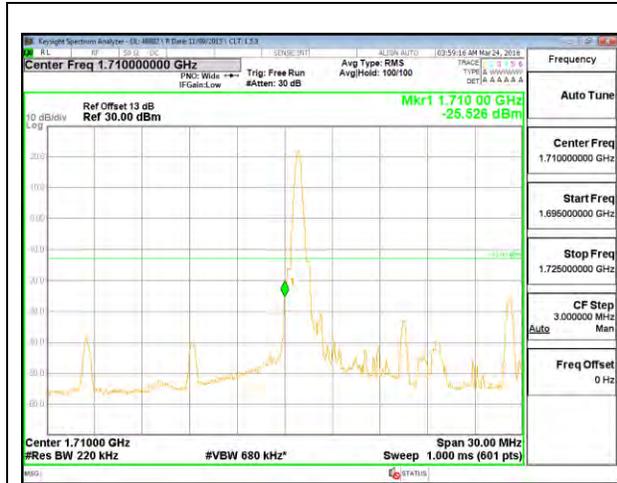
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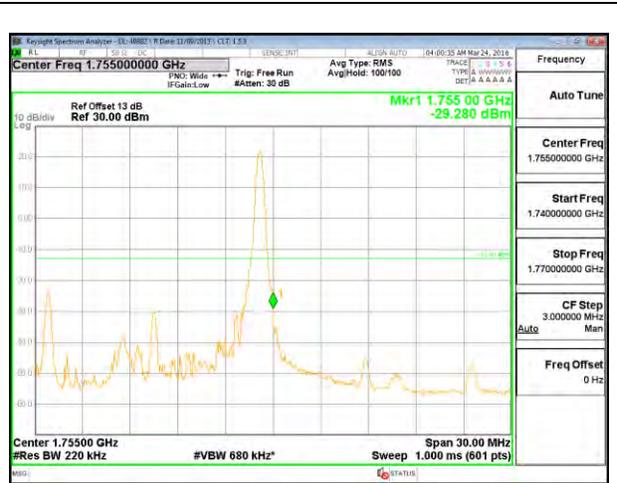
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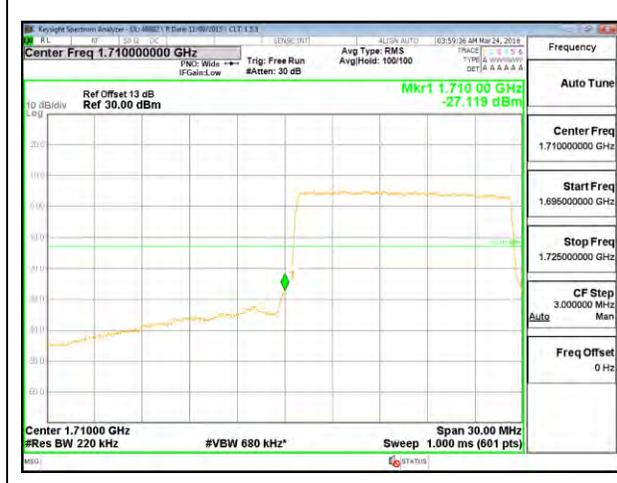
LTE B4 15MHz QPSK High Channel FRB



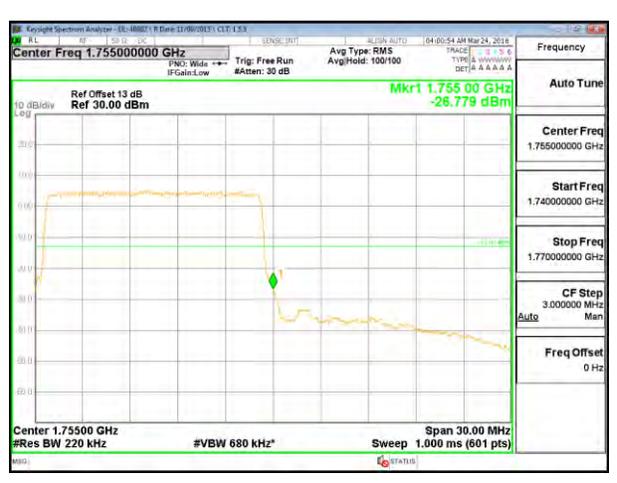
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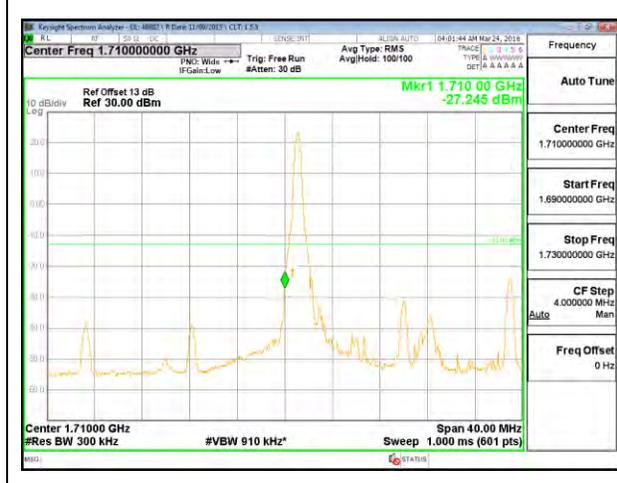
LTE B4 15MHz 16QAM High Channel 1RB



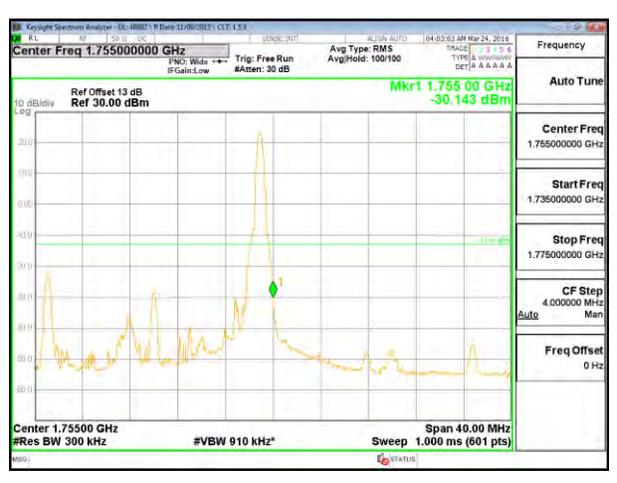
LTE B4 15MHz 16QAM Low Channel FRB



LTE B4 15MHz 16QAM High Channel FRB



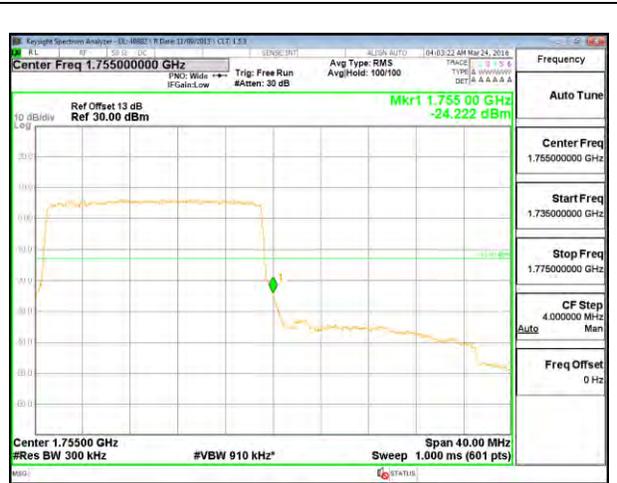
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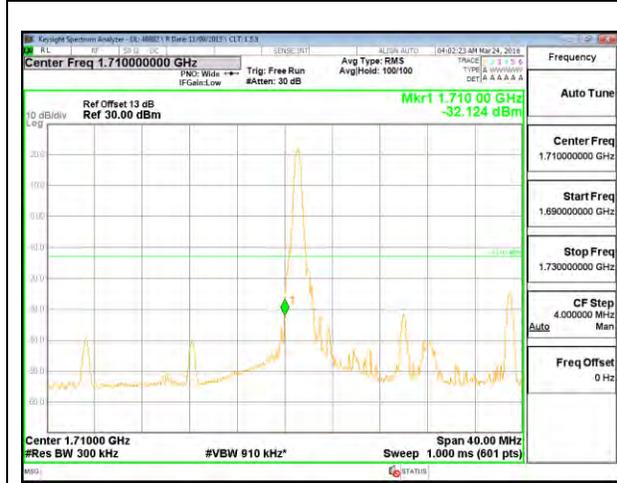
LTE B4 20MHz QPSK High Channel 1RB



LTE B4 20MHz QPSK Low Channel FRB



LTE B4 20MHz QPSK High Channel FRB



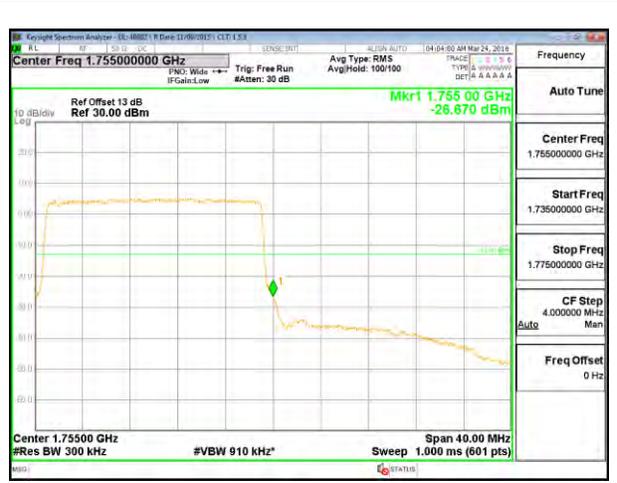
LTE B4 20MHz 16QAM Low Channel 1RB



LTE B4 20MHz 16QAM High Channel 1RB



LTE B4 20MHz 16QAM Low Channel FRB



LTE B4 20MHz 16QAM High Channel FRB

LTE Band 5



LTE B5 1.4MHz QPSK Low Channel 1RB



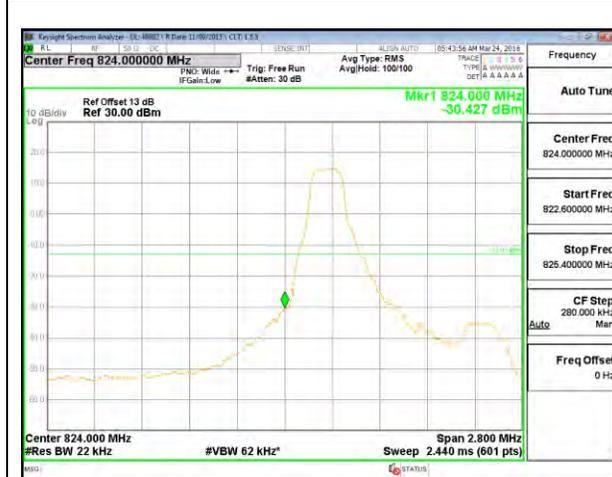
LTE B5 1.4MHz QPSK High Channel 1RB



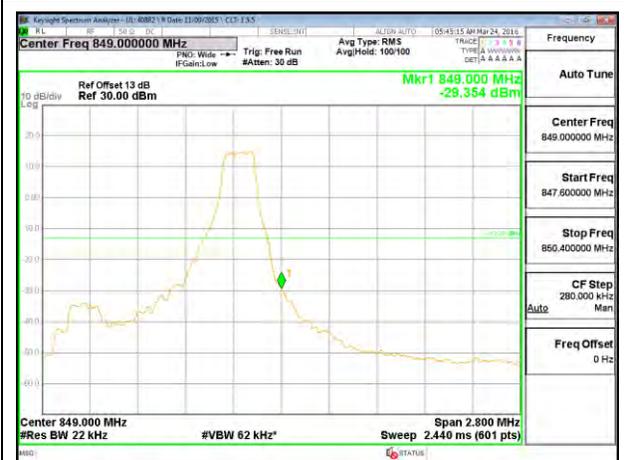
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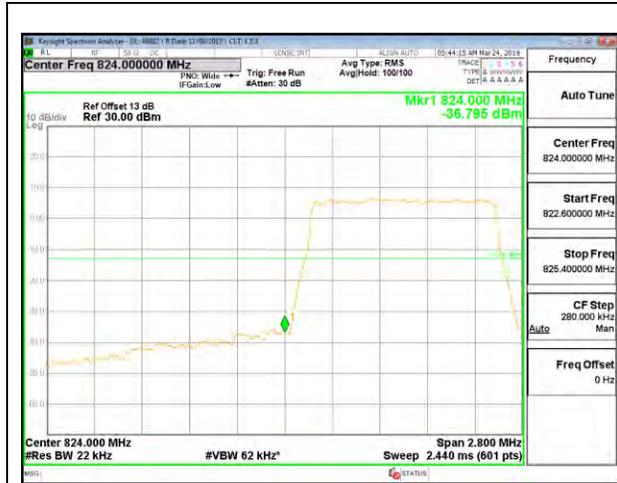
LTE B5 1.4MHz QPSK High Channel FRB



LTE B5 1.4MHz 16QAM Low Channel 1RB



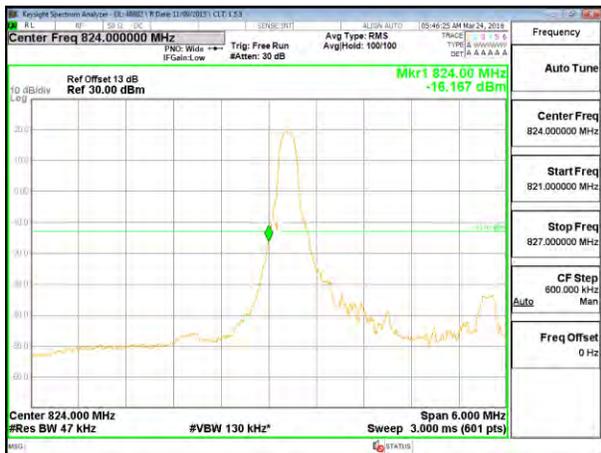
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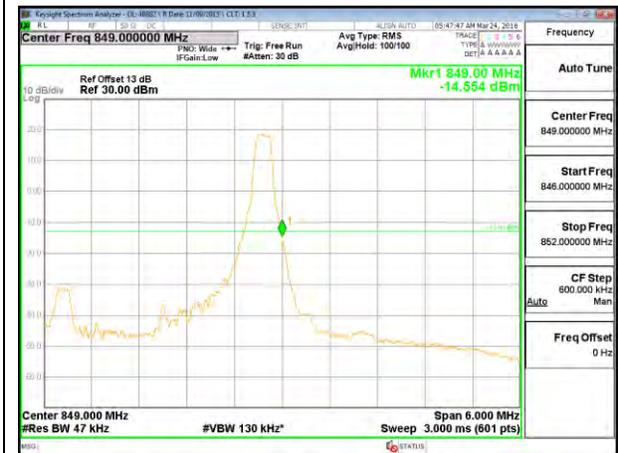
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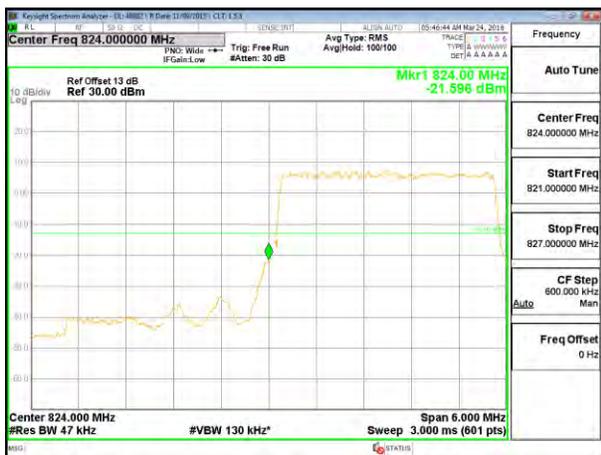
LTE B5 1.4MHz 16QAM High Channel FRB



LTE B5 3MHz QPSK Low Channel 1RB



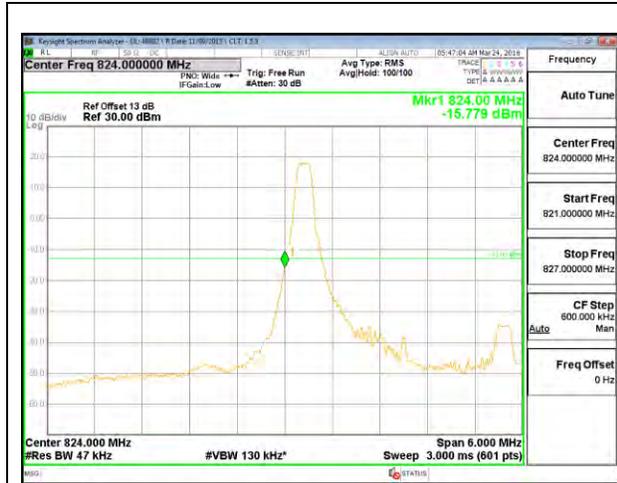
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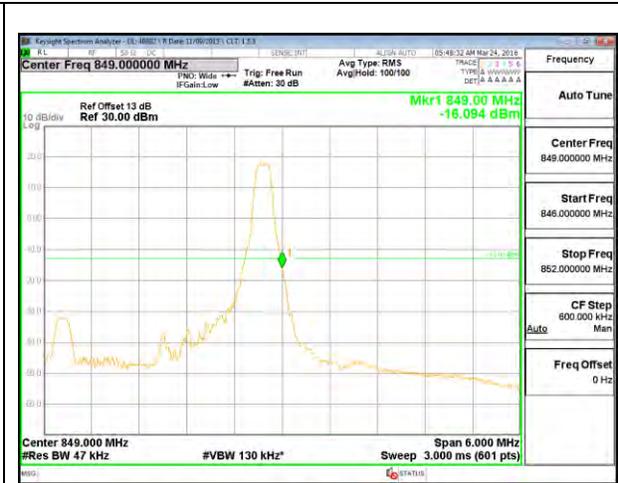
LTE B5 3MHz QPSK Low Channel FRB



LTE B5 3MHz QPSK High Channel FRB



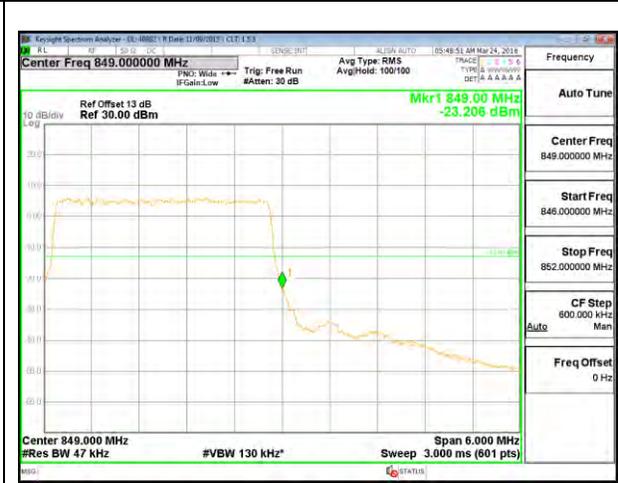
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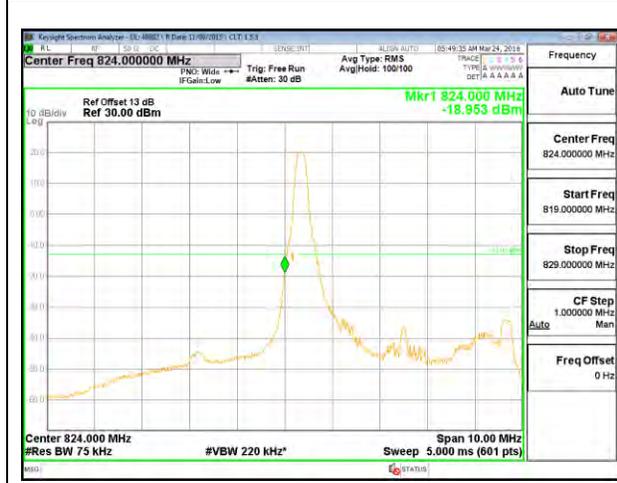
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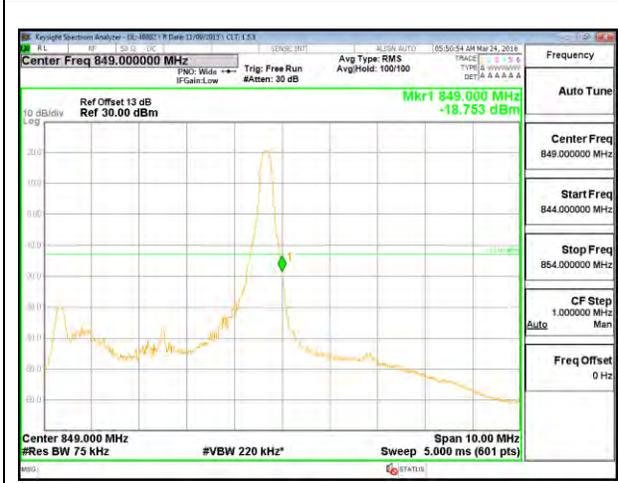
LTE B5 3MHz 16QAM Low Channel FRB



LTE B5 3MHz 16QAM High Channel FRB



LTE B5 5MHz QPSK Low Channel 1RB



LTE B5 5MHz QPSK High Channel 1RB