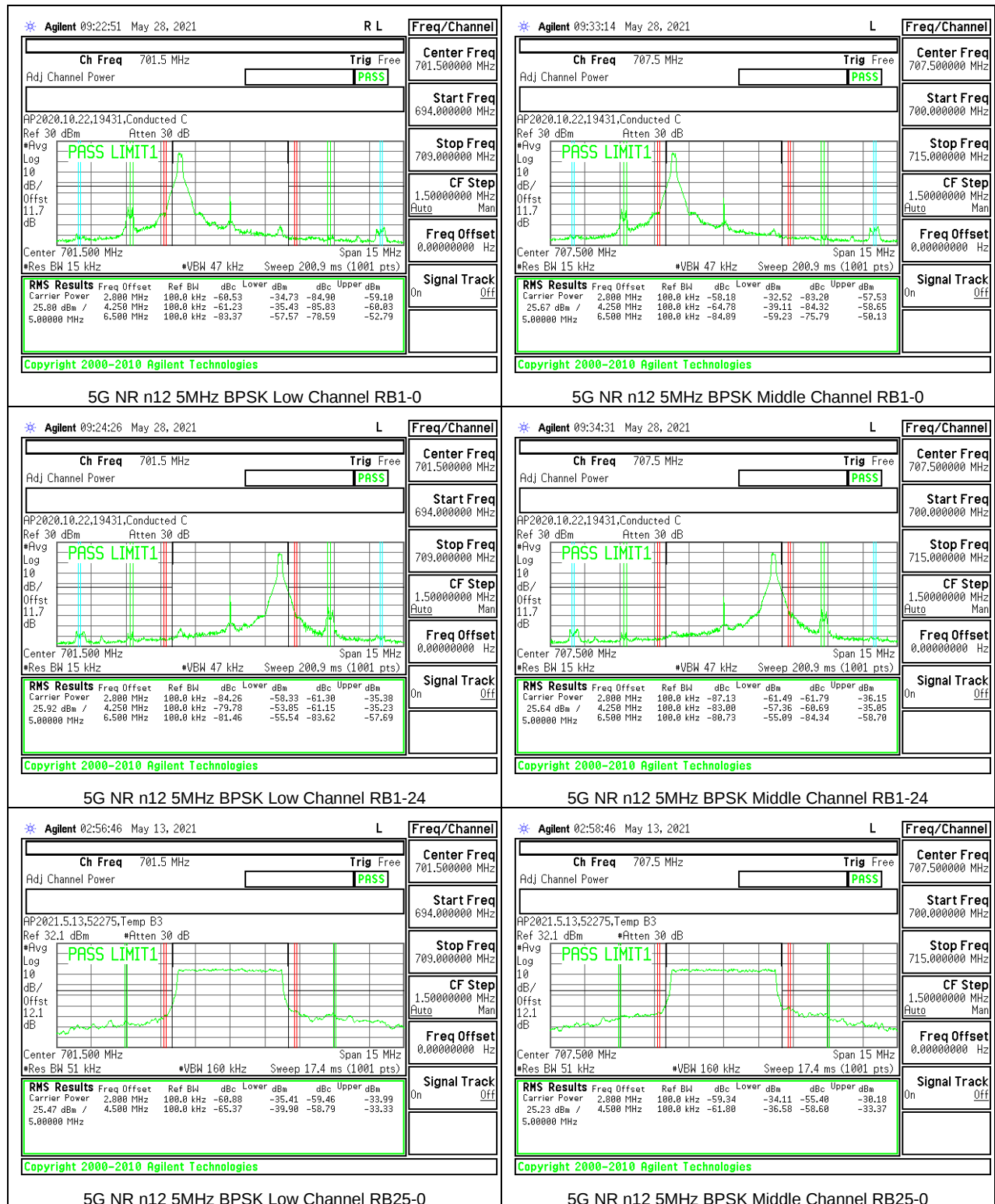
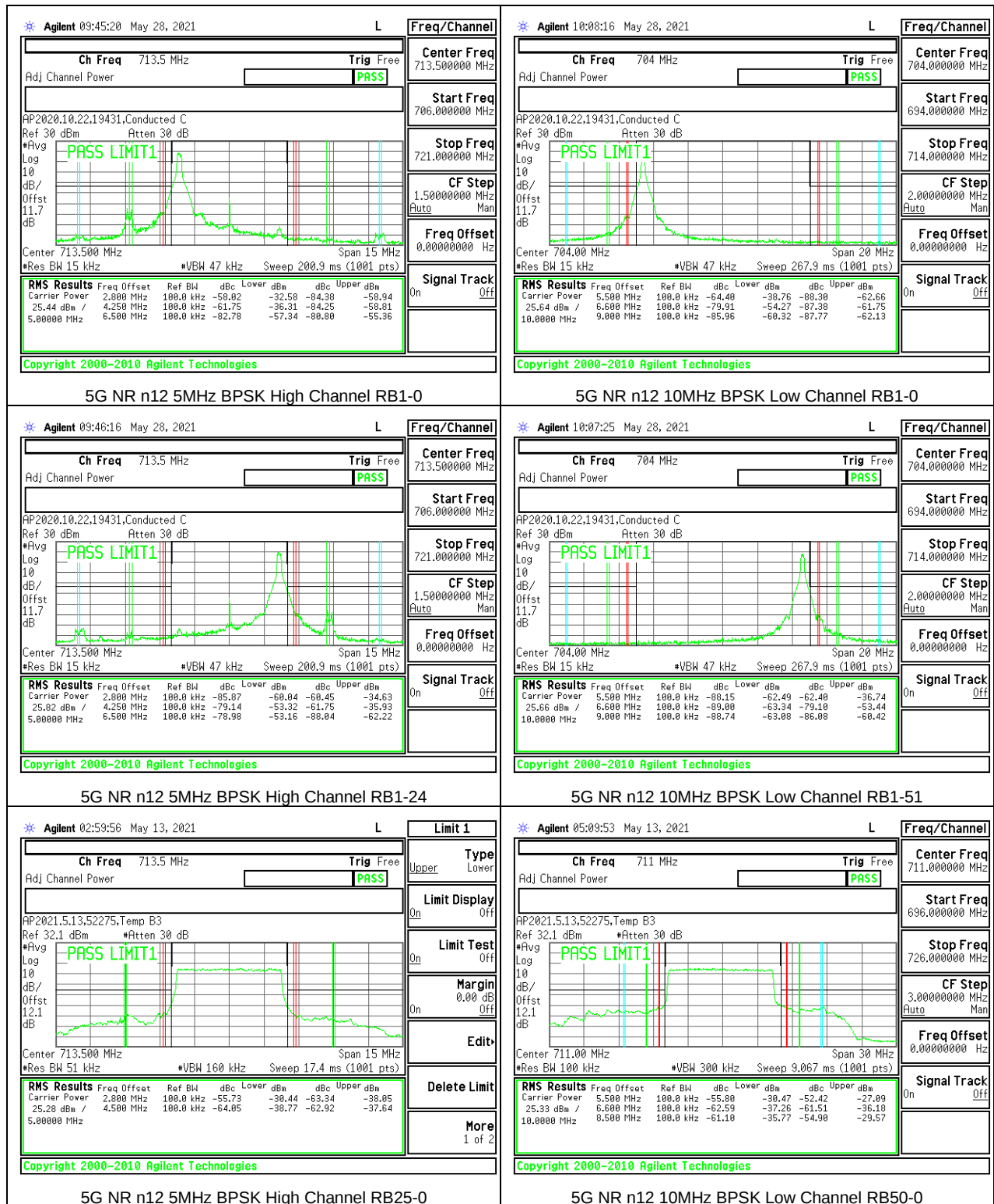
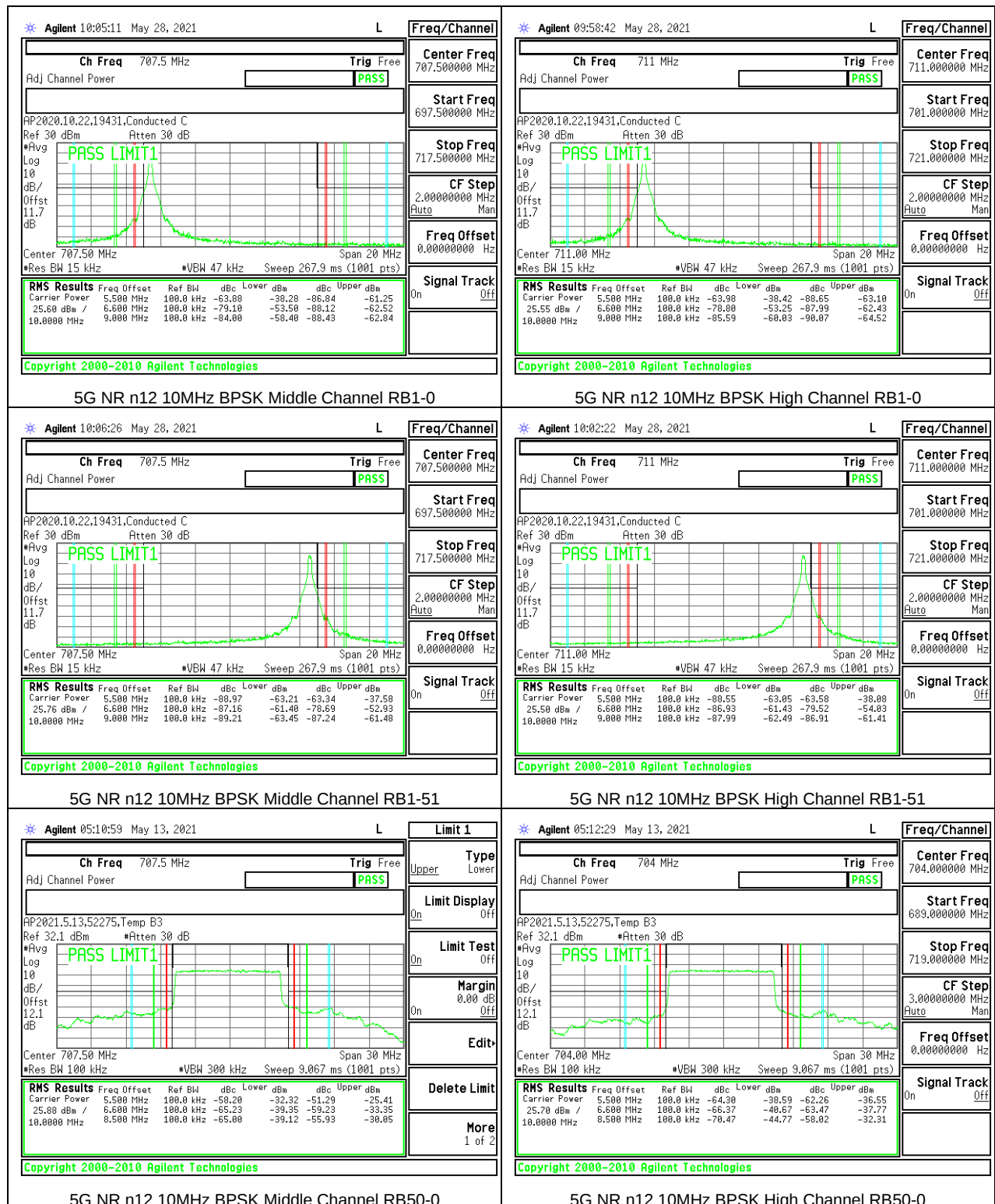
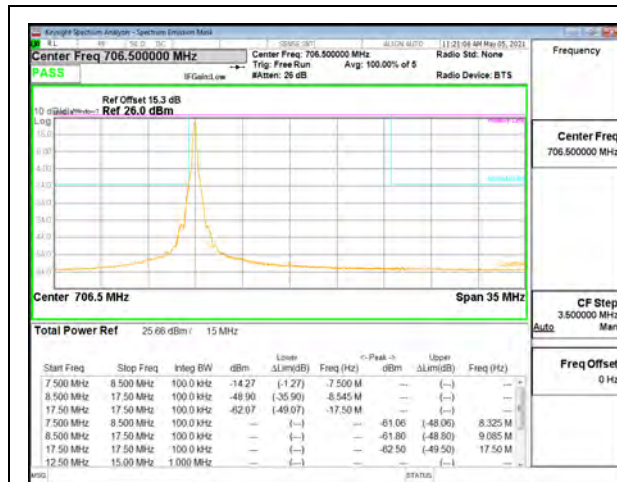


5G NR n12 ADJACENT CHANNEL POWER AND EMISSION MASK

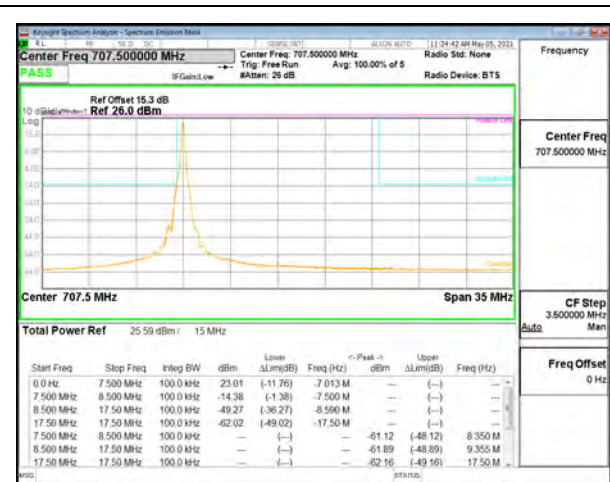




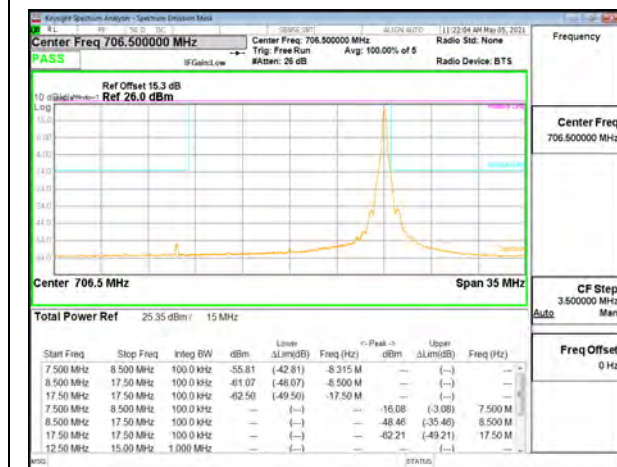




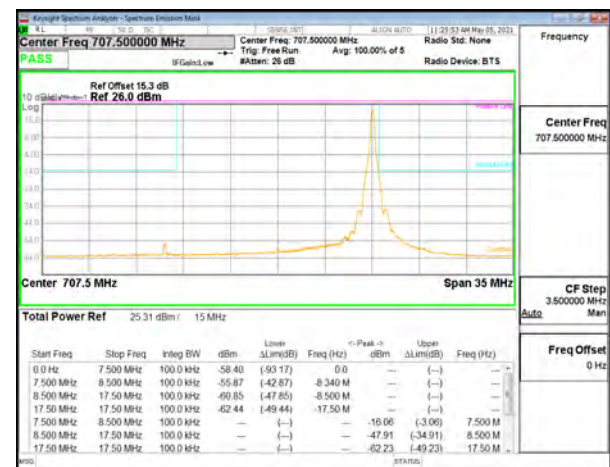
5G NR n12 15MHz BPSK Low Channel RB1-0



5G NR n12 15MHz BPSK Middle Channel RB1-0



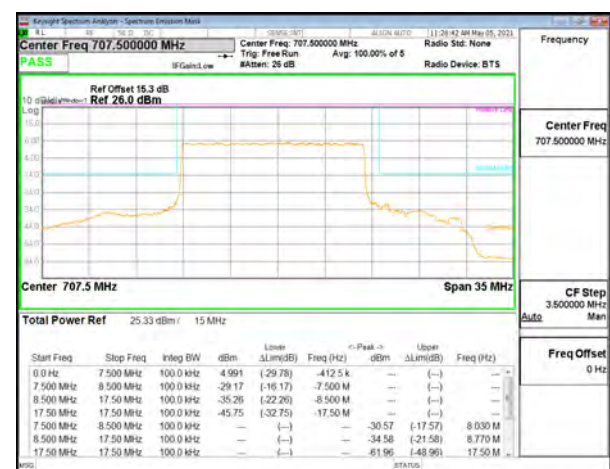
5G NR n12 15MHz BPSK Low Channel RB1-78



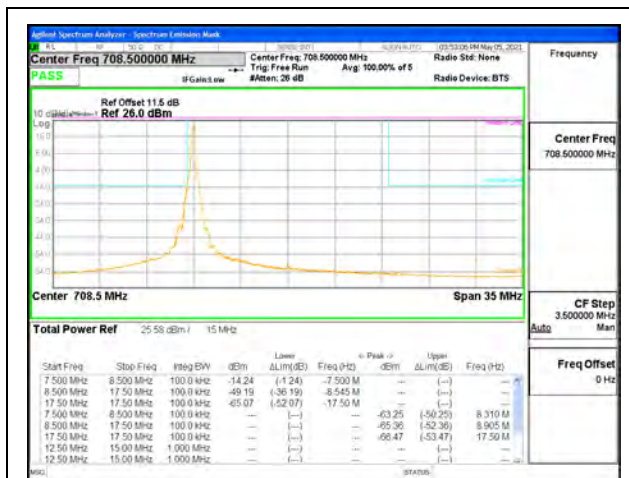
5G NR n12 15MHz BPSK Middle Channel RB1-78



5G NR n12 15MHz BPSK Low Channel RB75-0



5G NR n12 15MHz BPSK Middle Channel RB75-0



5G NR n12 15MHz BPSK High Channel RB1-0



5G NR n12 15MHz BPSK High Channel RB1-78



5G NR n12 15MHz BPSK High Channel RB75-0

9.2.4. LTE BAND 13 ADJACENT CHANNEL POWER

LIMITS

FCC: §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:

(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;

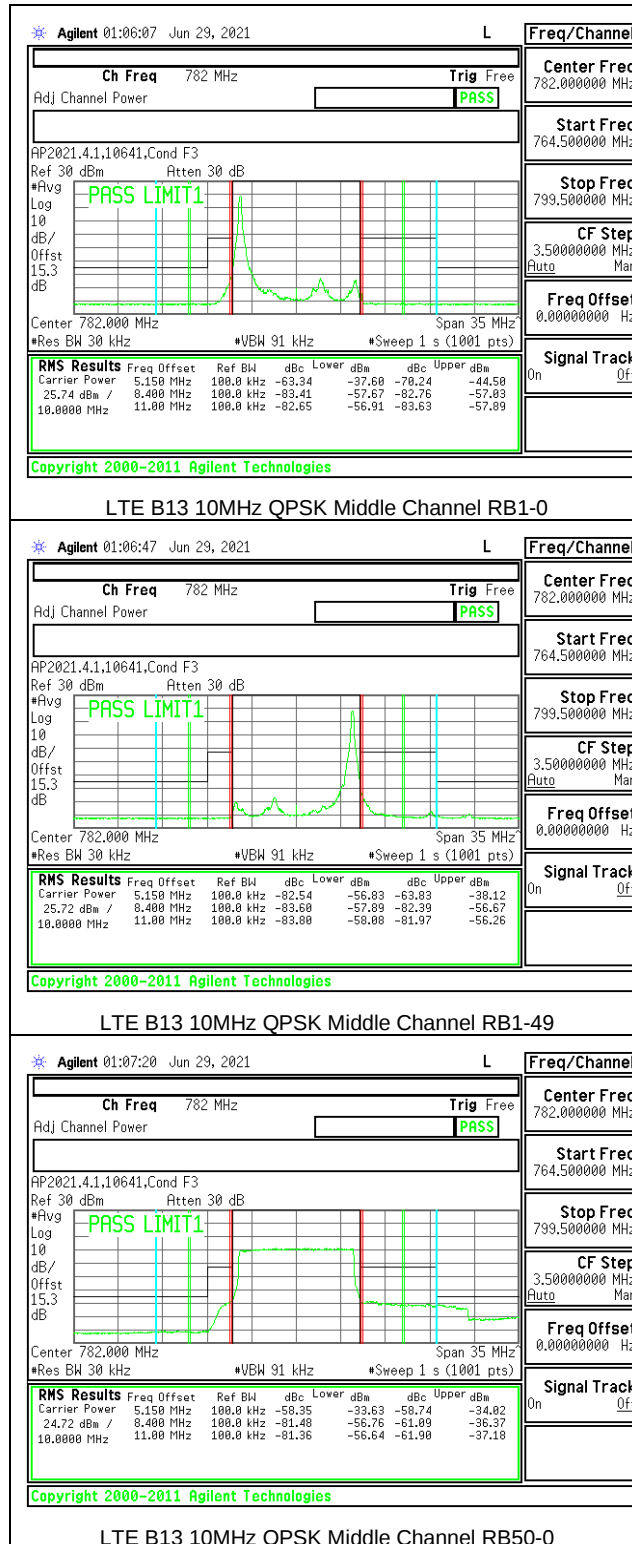
(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;

(5) Compliance with the provisions of paragraphs (c)(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;

(6) Compliance with the provisions of paragraphs (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

(f) Emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals. (-70 dBW/MHz = -40 dBm/MHz).





9.2.5. LTE BAND 14 ADJACENT CHANNEL POWER

LIMITS

FCC: §90.543 Emission Limitations.

(e) For operations in the 758-768 MHz and the 788-798 MHz bands, 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:

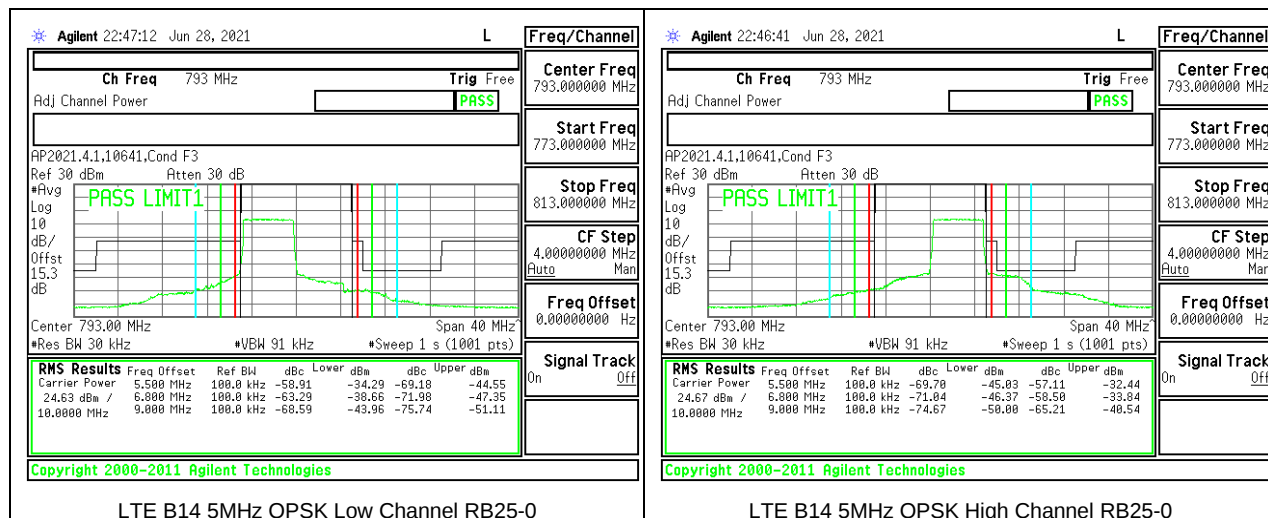
(2) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.

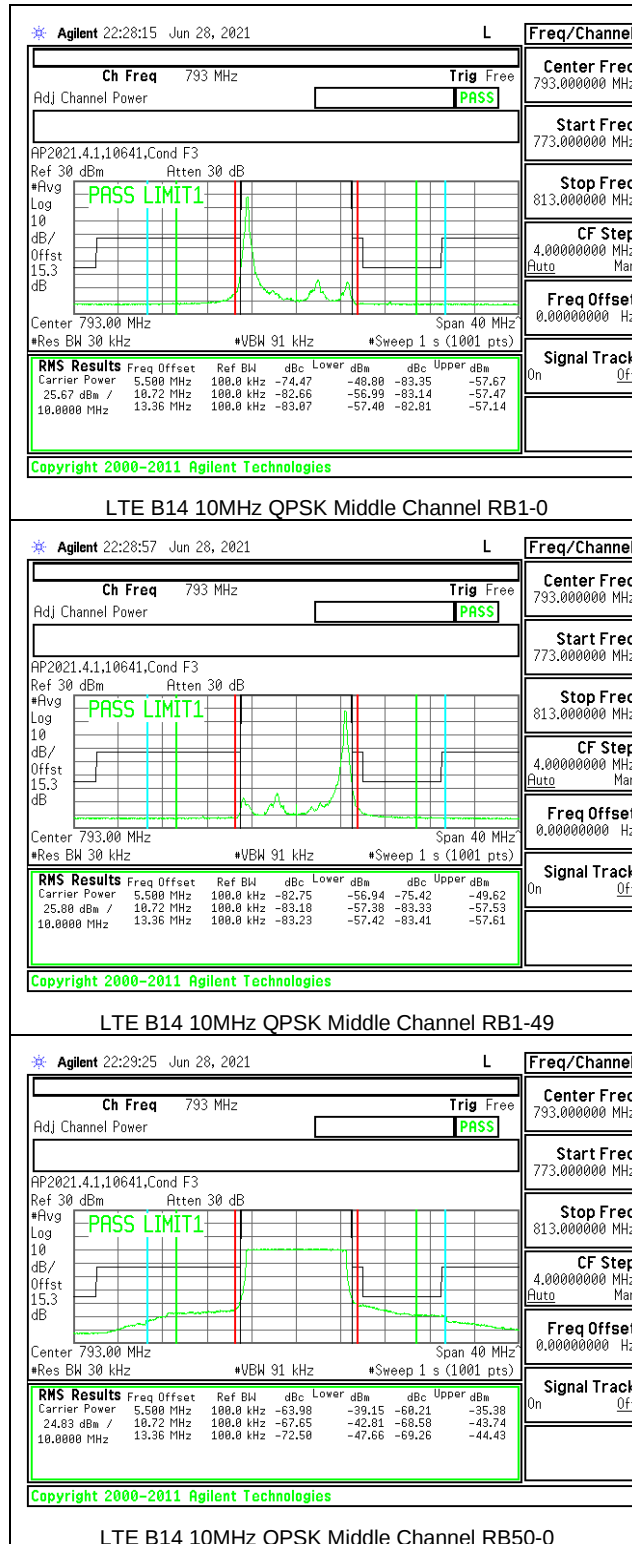
(3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.

(4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

(5) Compliance with the provisions of paragraph (e)(3) 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 30 kHz may be employed.

(f) For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics 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.





9.2.6. LTE BAND 17 EMISSION MASK

LIMITS

FCC: §27.53

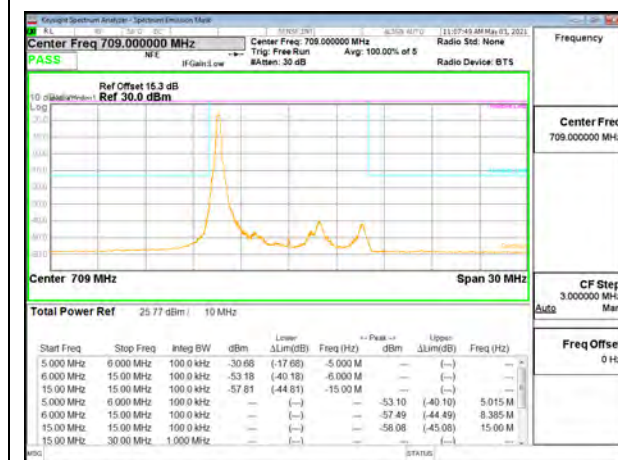
(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. Compliance 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.



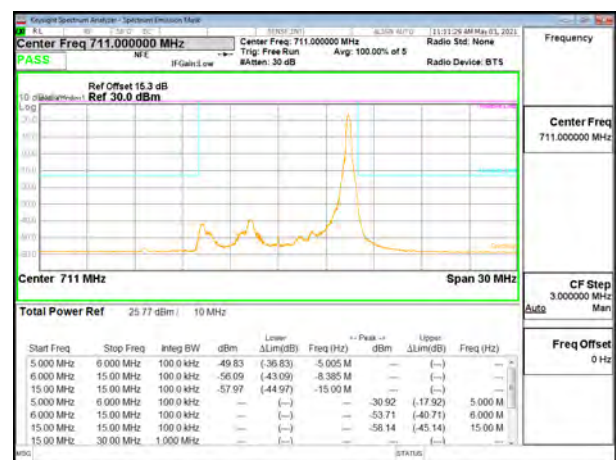
LTE B17 5MHz QPSK Low Channel RB25-0



LTE B17 5MHz QPSK High Channel RB25-0



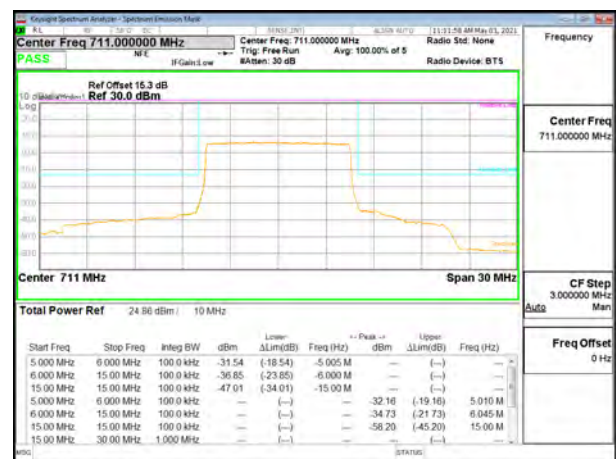
LTE B17 10MHz QPSK Low Channel RB1-0



LTE B17 10MHz QPSK High Channel RB1-49



LTE B17 10MHz QPSK Low Channel RB50-0



LTE B17 10MHz QPSK High Channel RB50-0

9.2.7. LTE BAND 25 AND 5G NR n25 ADJACENT CHANNEL POWER AND EMISSION MASK LIMITS

FCC: §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.

LTE BAND 25 EMISSION MASK

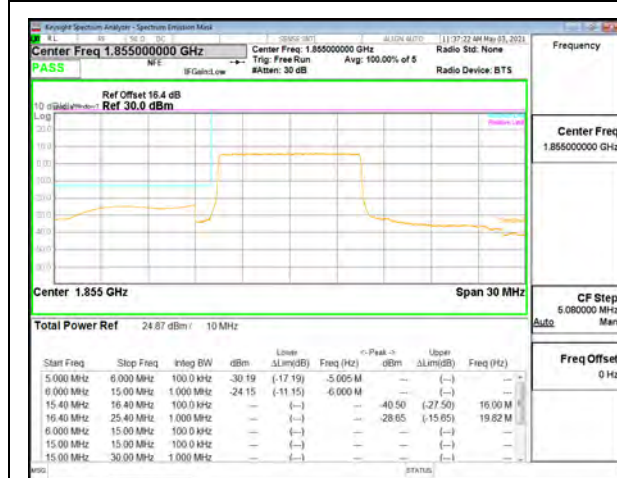




LTE B25 5MHz QPSK Low Channel RB25-0



LTE B25 5MHz QPSK High Channel RB25-0



LTE B25 10MHz QPSK Low Channel RB50-0



LTE B25 10MHz QPSK High Channel RB50-0



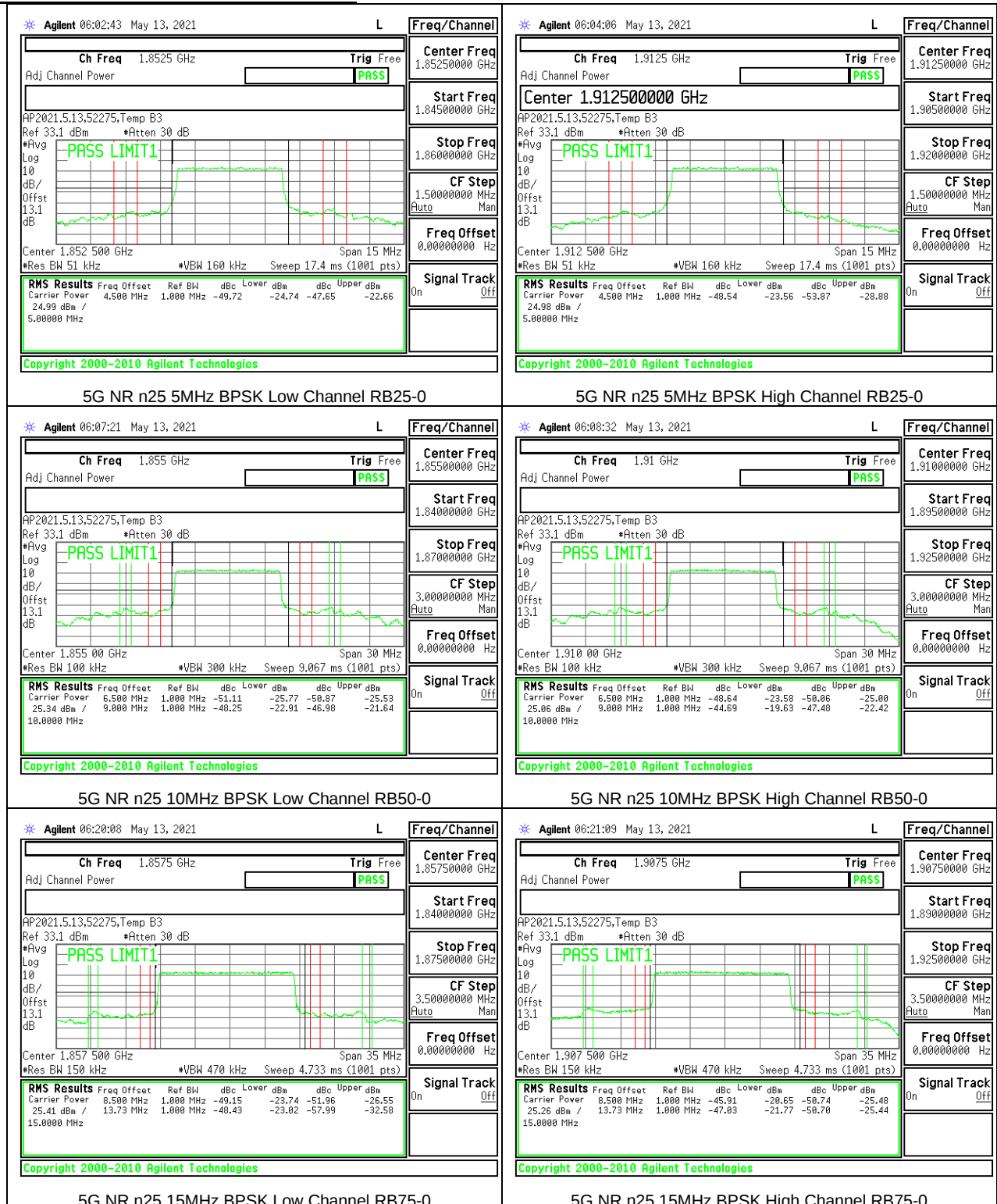
LTE B25 15MHz QPSK Low Channel RB75-0

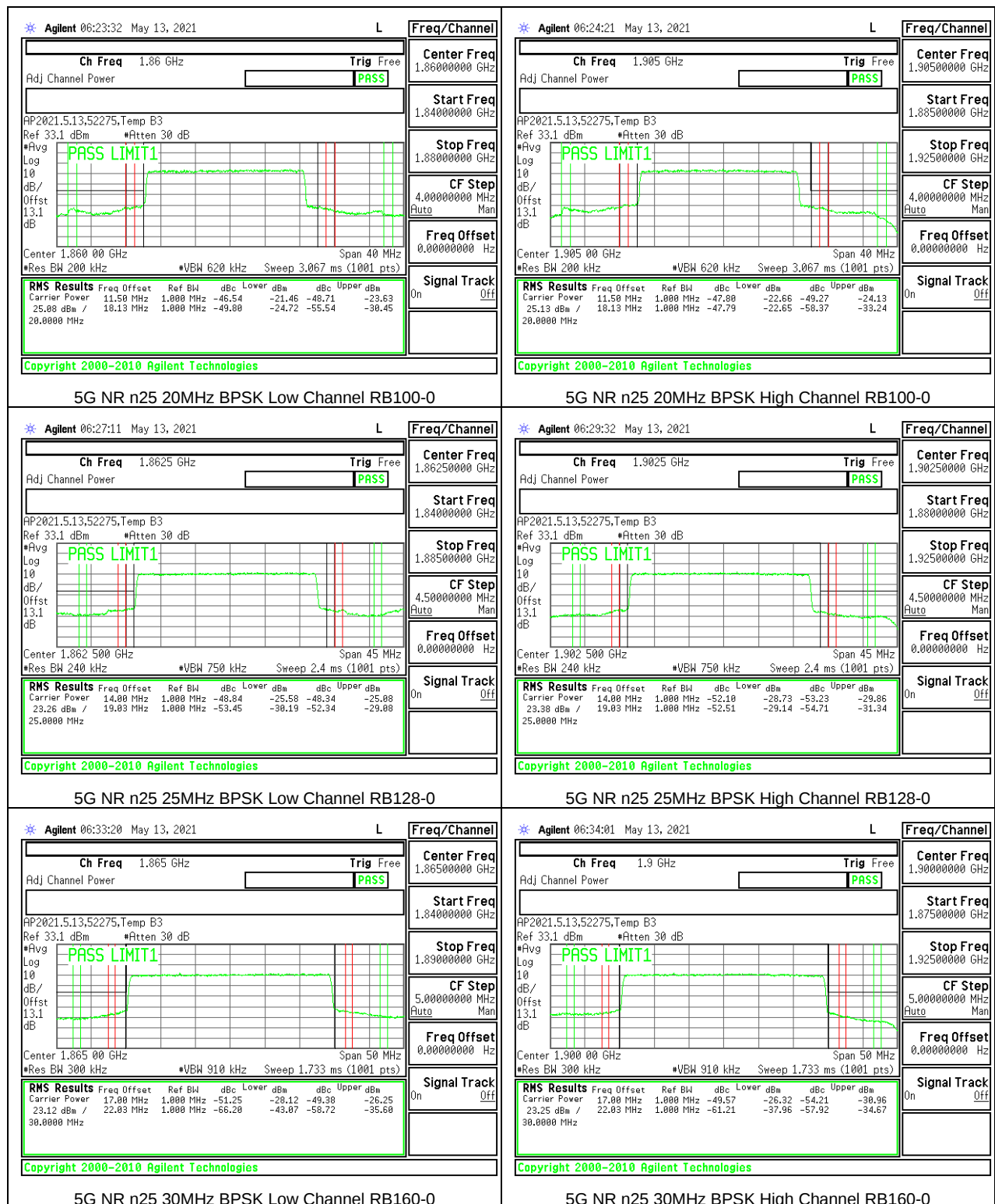


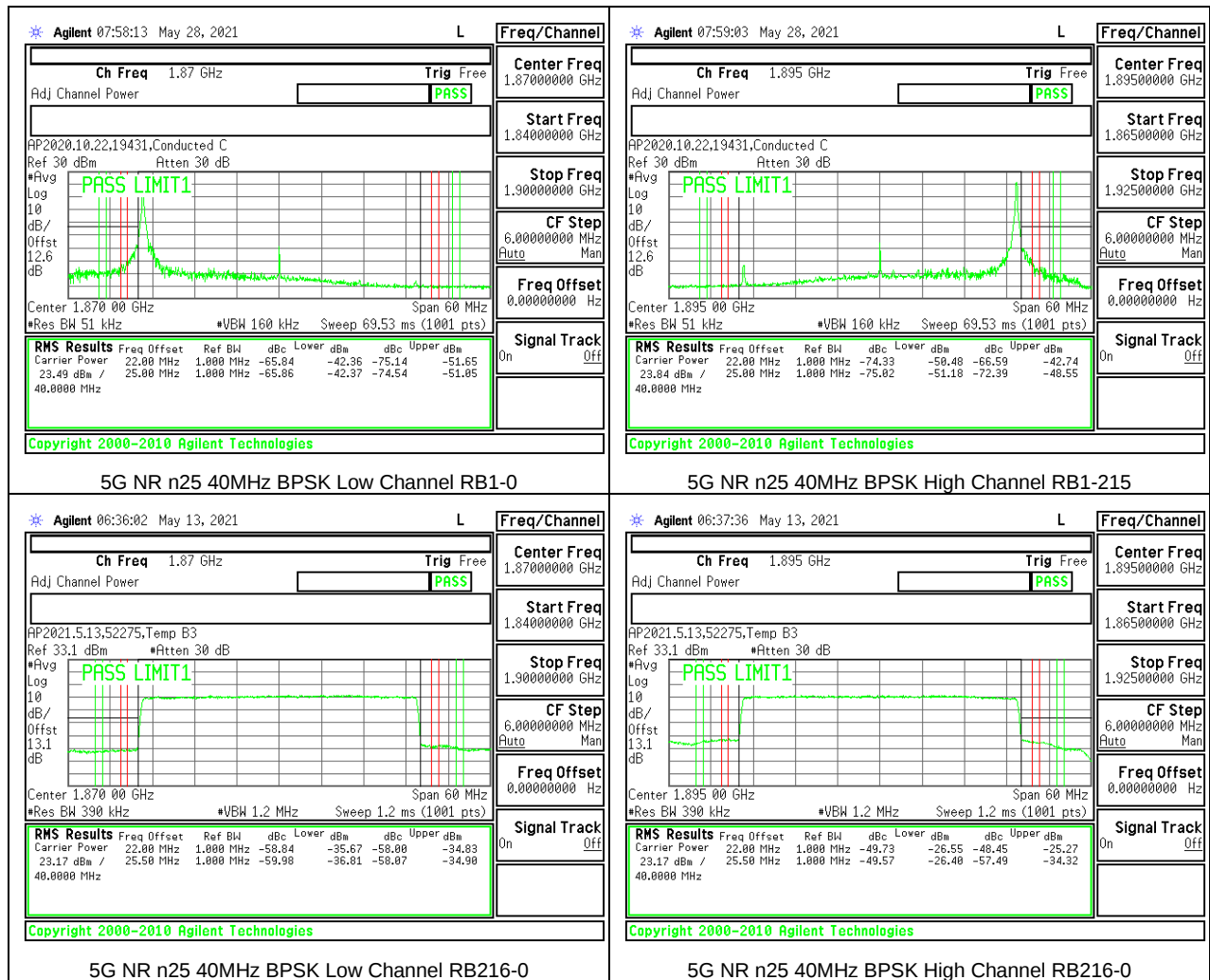
LTE B25 15MHz QPSK High Channel RB75-0



5G NR n25 ADJACENT CHANNEL POWER







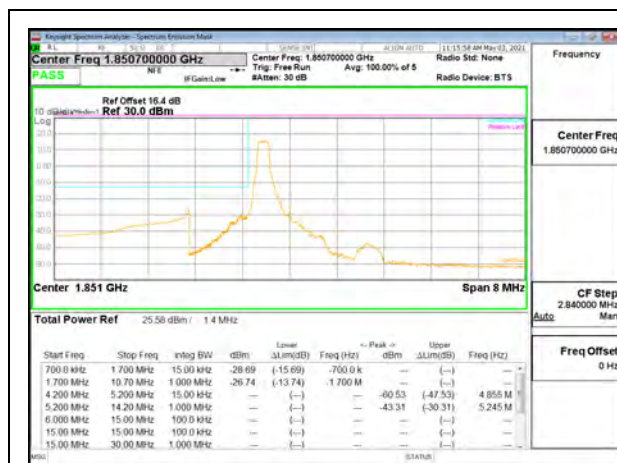
9.2.8. LTE BAND 26 ADJACENT CHANNEL POWER AND EMISSION MASK (PART 90S) LIMITS

FCC: §90.691 Emission mask requirements for EA-based systems.

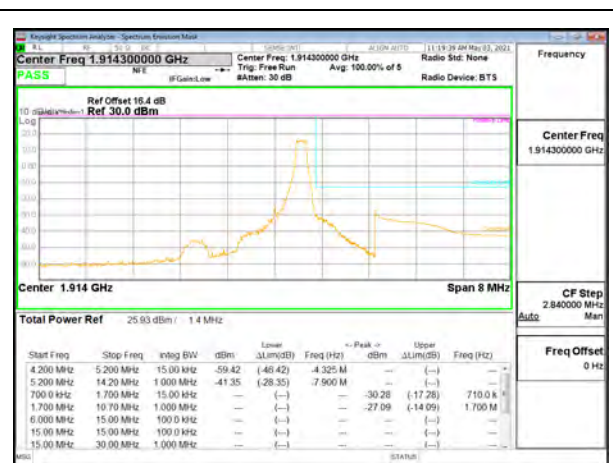
(a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

(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 $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ 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.

(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 $43 + 10 \log_{10}(P)$ 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.



LTE B26 1.4MHz QPSK Low Channel RB1-0



LTE B26 1.4MHz QPSK High Channel RB1-5

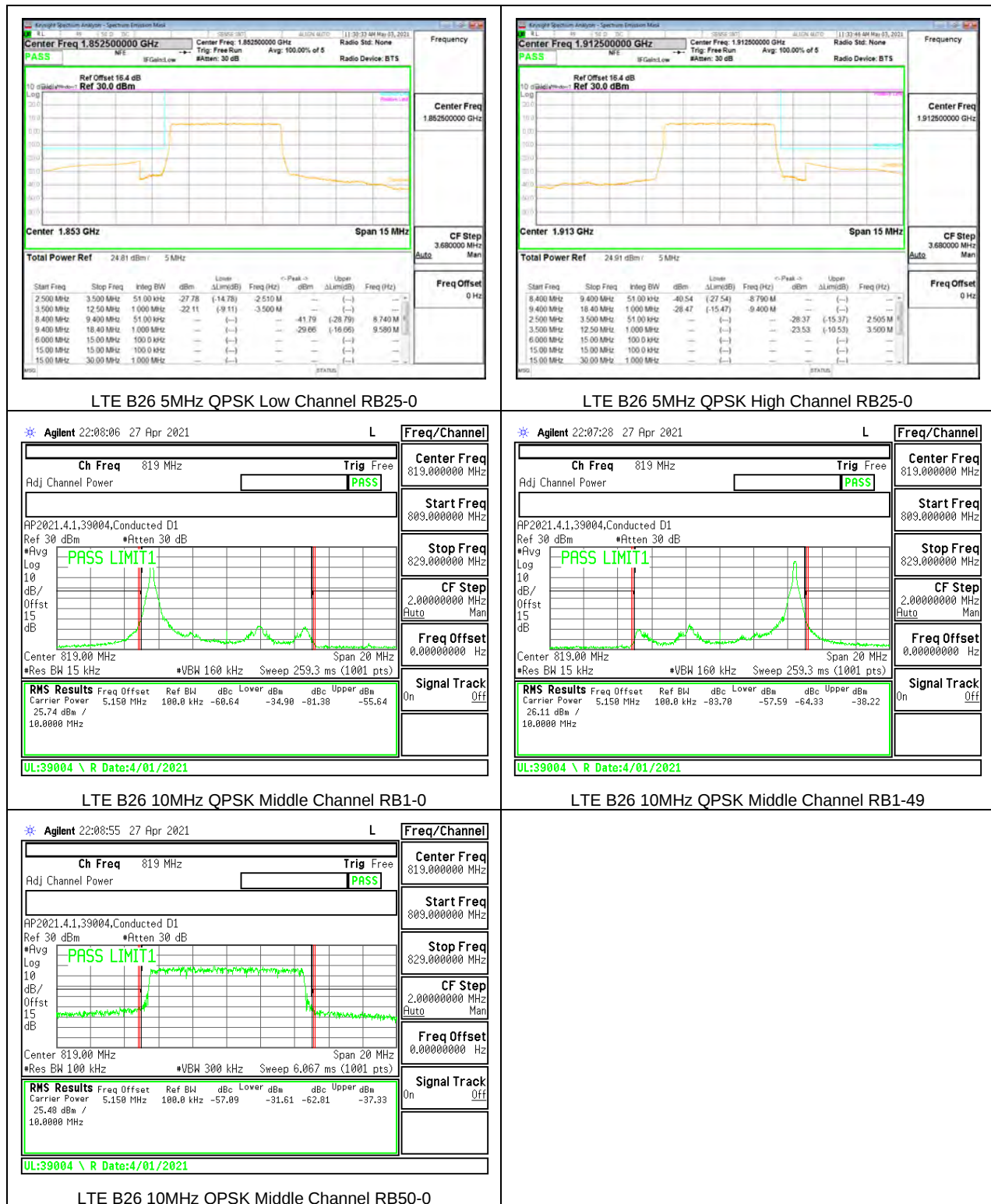


LTE B26 1.4MHz QPSK Low Channel RB6-0



LTE B26 1.4MHz QPSK High Channel RB6-0



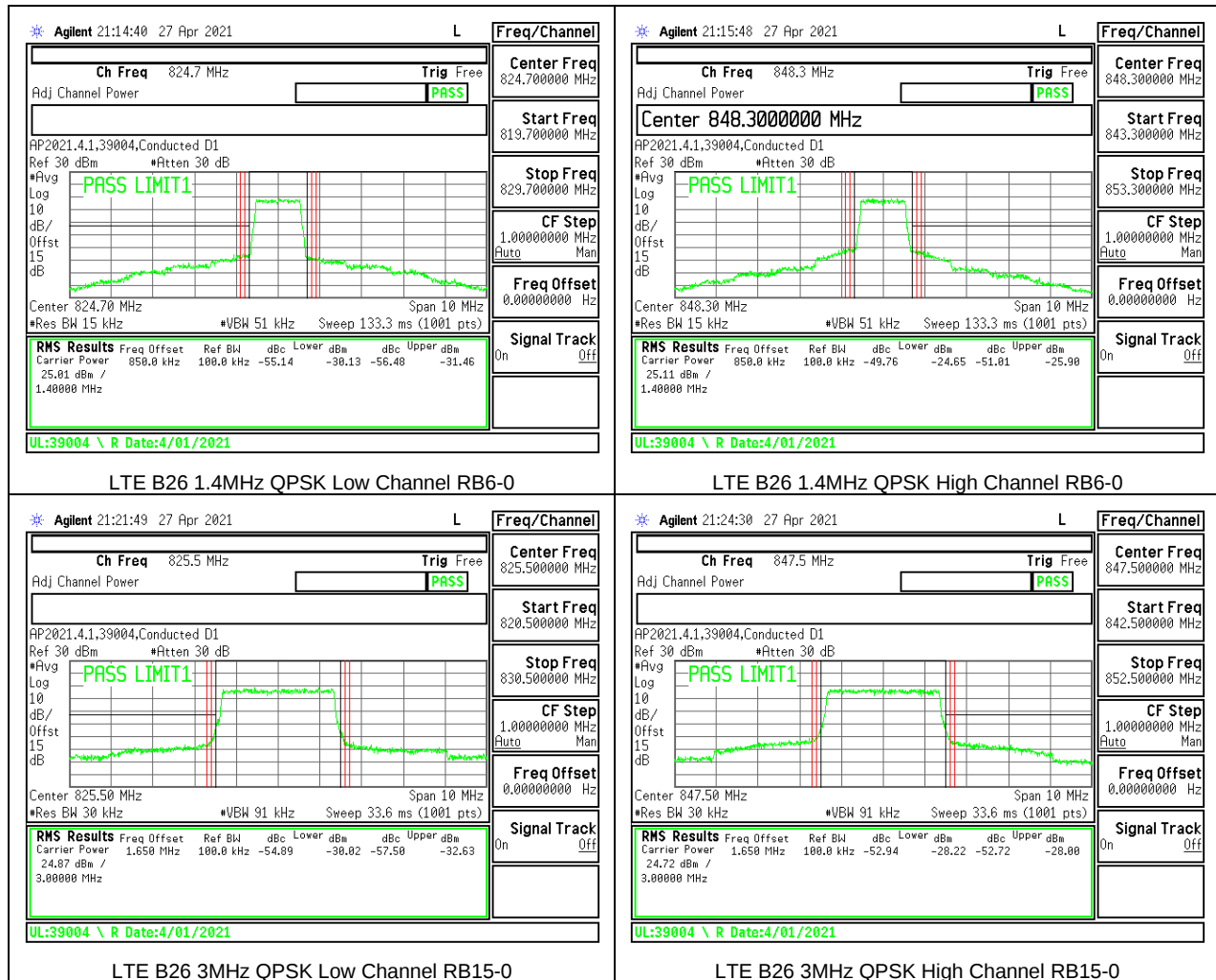


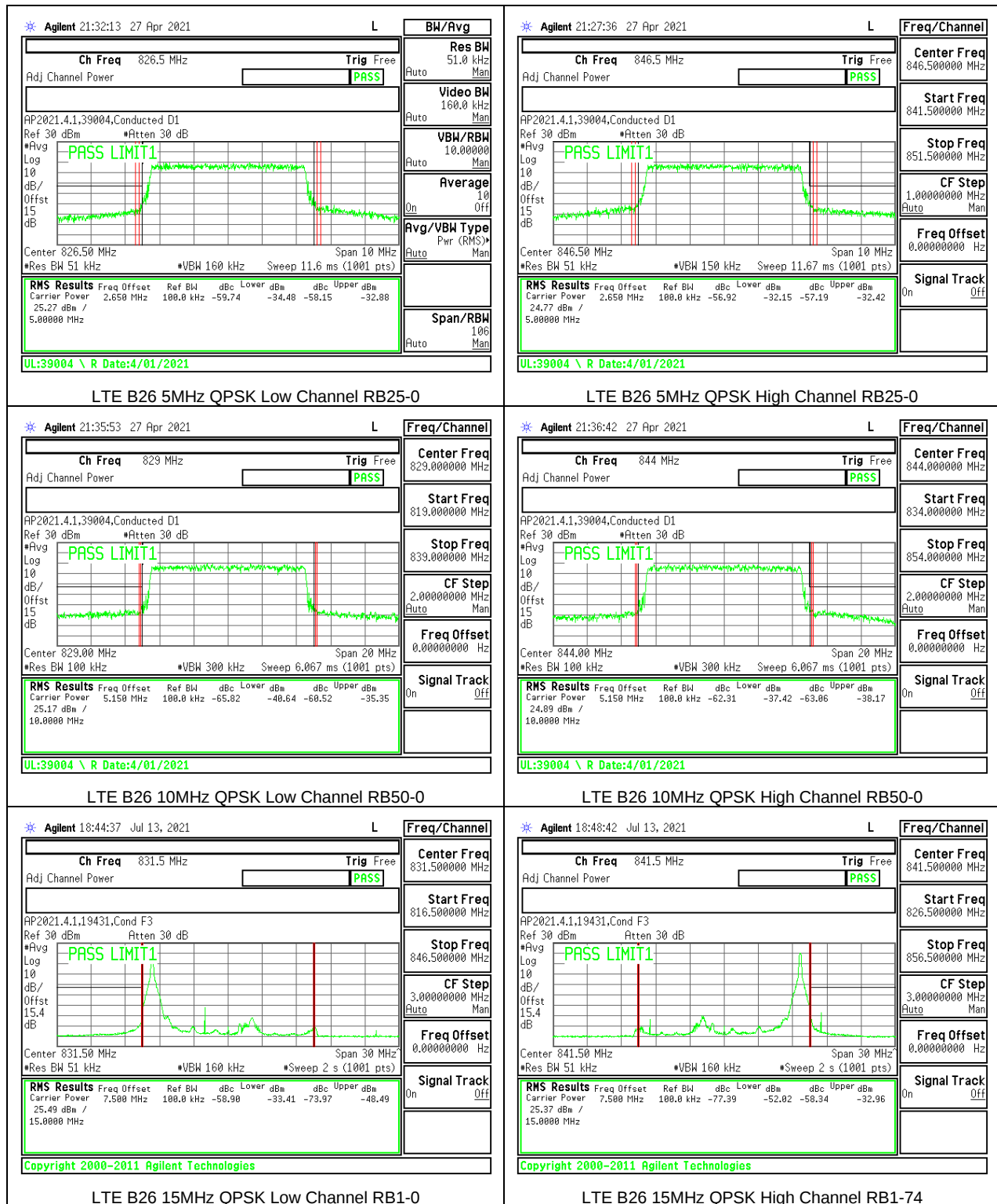
9.2.9. LTE BAND 26 ADJACENT CHANNEL POWER (PART 22)

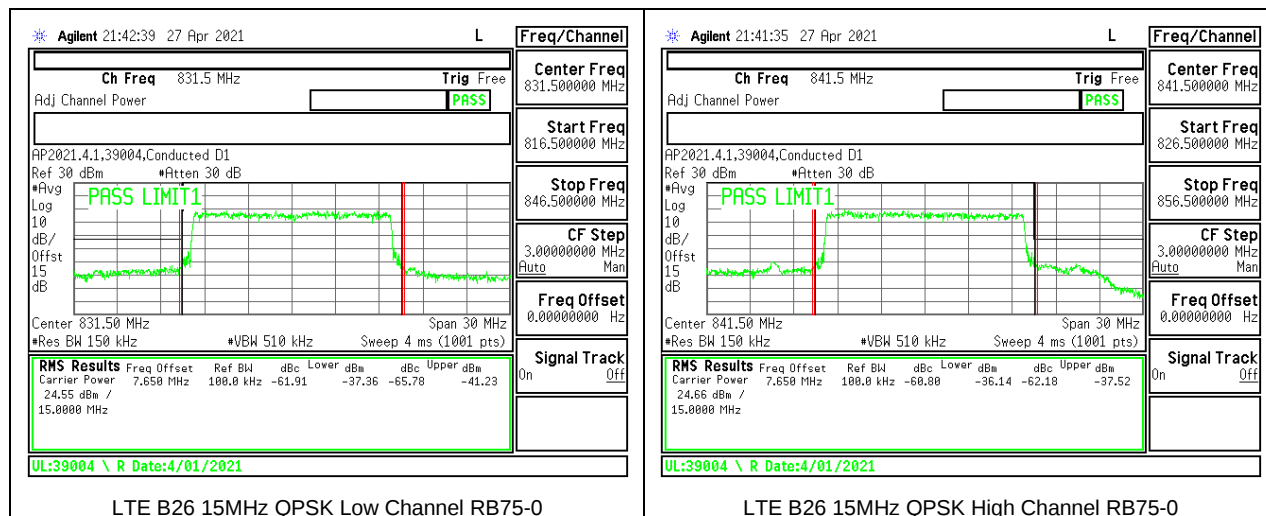
LIMITS

FCC: §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 $43 + 10 \log (P)$ dB.







9.2.10. LTE BAND 30 ADJACENT CHANNEL POWER LIMITS

FCC: §27.53

(a) For operations in the 2305-2320 MHz band and the 2345-2360 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power P (with averaging performed only during periods of transmission) within the licensed band(s) of operation, in watts, by the following amounts:

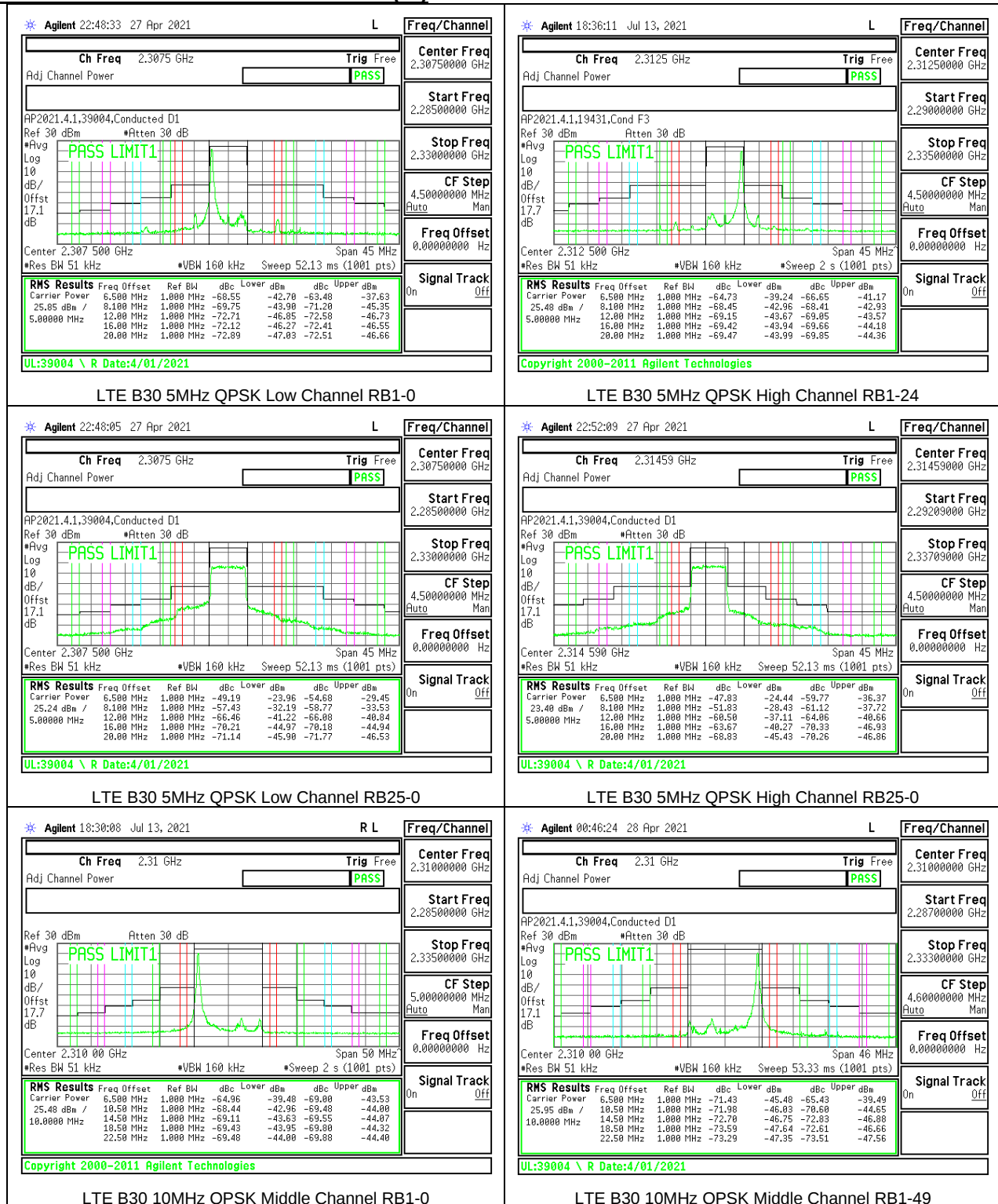
(4) For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands:

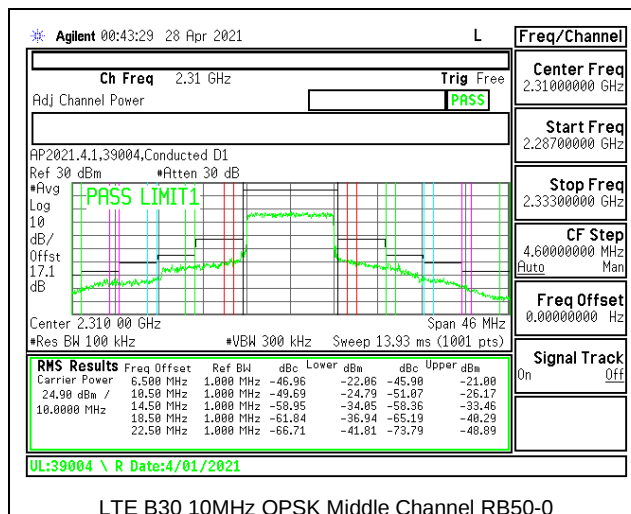
(i) By a factor of not less than: $43 + 10 \log (P)$ dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than $55 + 10 \log (P)$ dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than $61 + 10 \log (P)$ dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than $67 + 10 \log (P)$ dB on all frequencies between 2328 and 2337 MHz;

(ii) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2300 and 2305 MHz, $55 + 10 \log (P)$ dB on all frequencies between 2296 and 2300 MHz, $61 + 10 \log (P)$ dB on all frequencies between 2292 and 2296 MHz, $67 + 10 \log (P)$ dB on all frequencies between 2288 and 2292 MHz, and $70 + 10 \log (P)$ dB below 2288 MHz;

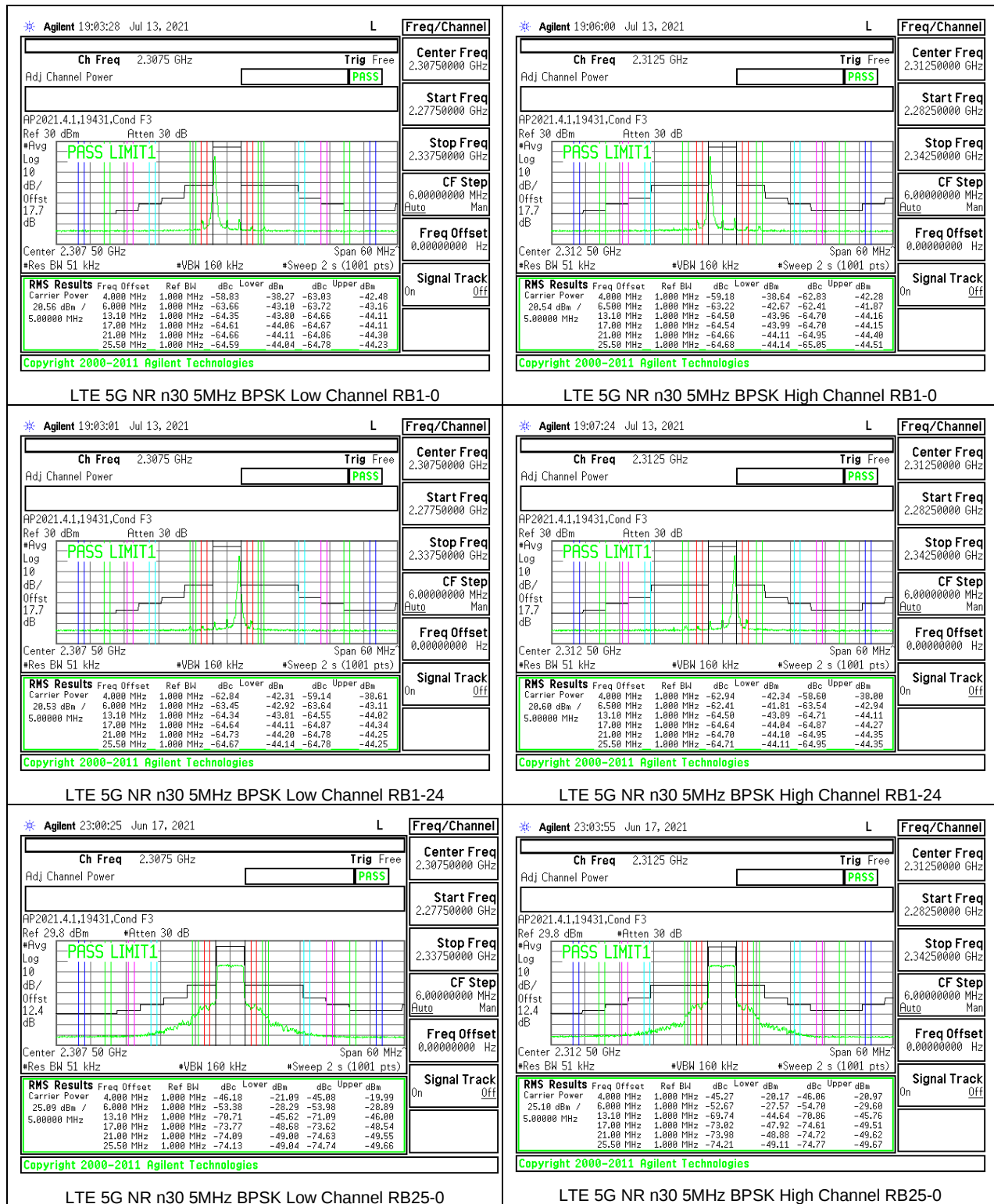
(iii) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2360 and 2365 MHz, and not less than $70 + 10 \log (P)$ dB above 2365 MHz.

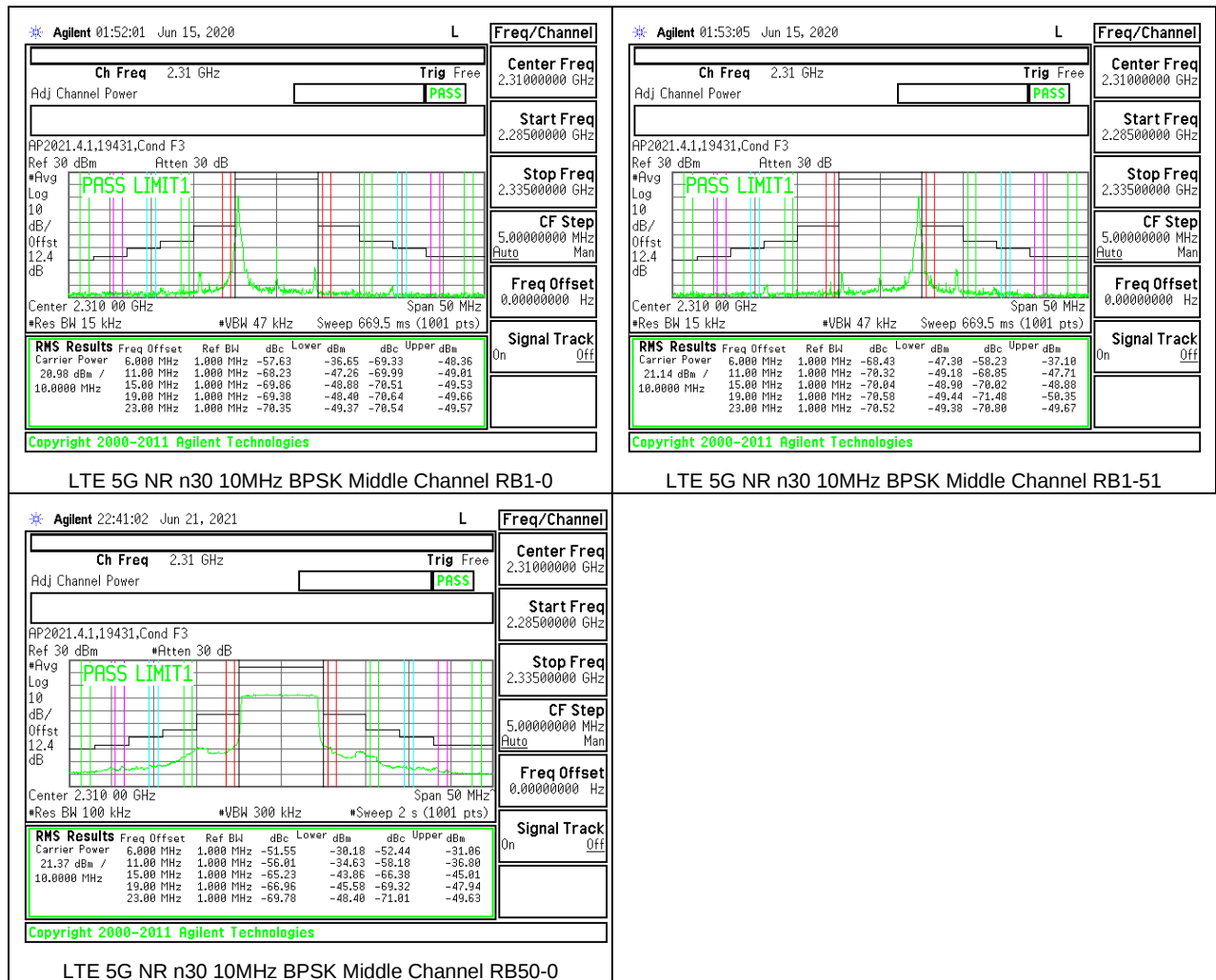
LTE BAND 30 ADJACENT CHANNEL POWER (IC)





LTE 5G NR n30 ADJACENT CHANNEL POWER





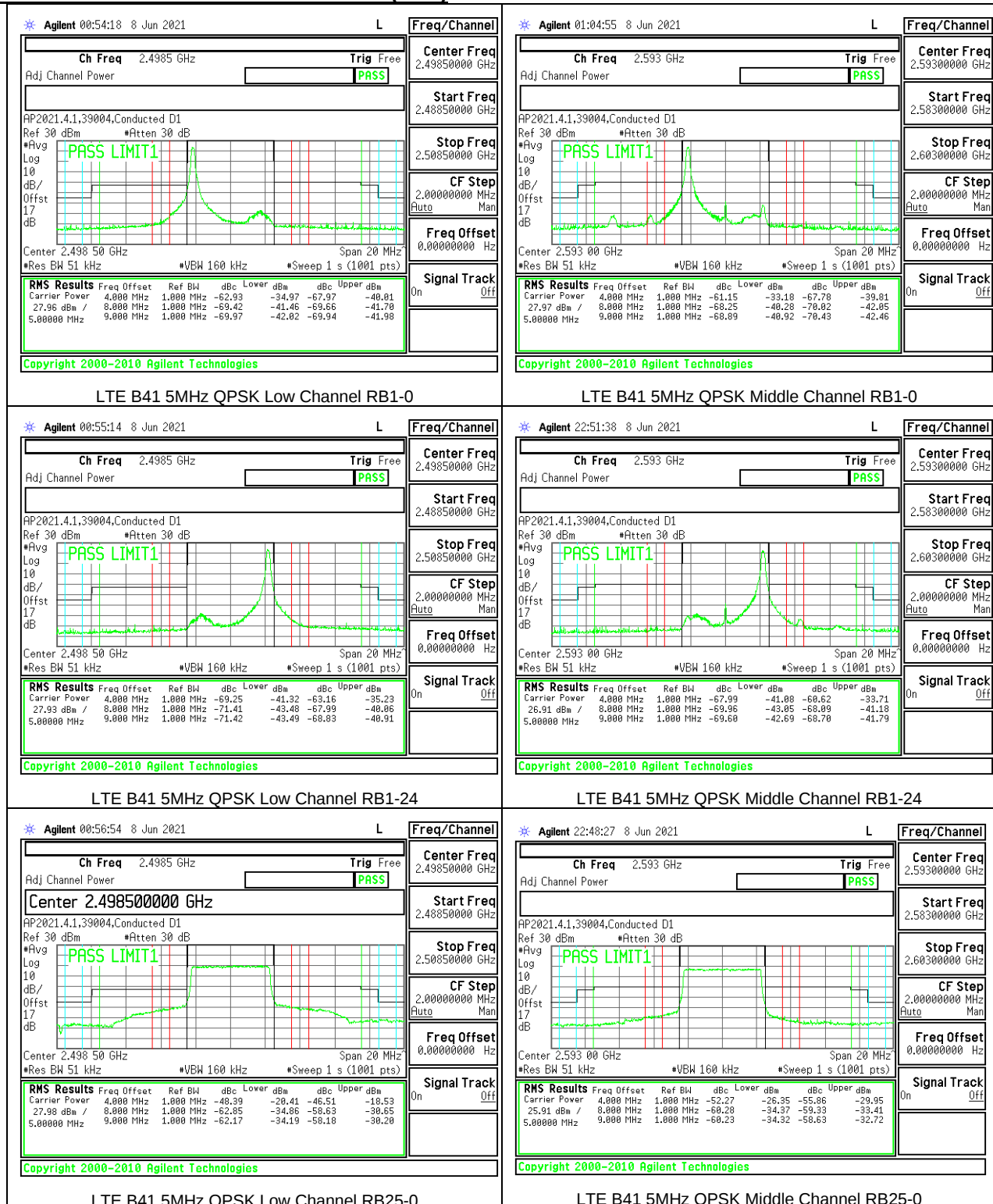
9.2.11. LTE BAND 41 AND 5G NR n41 ADJACENT CHANNEL POWER

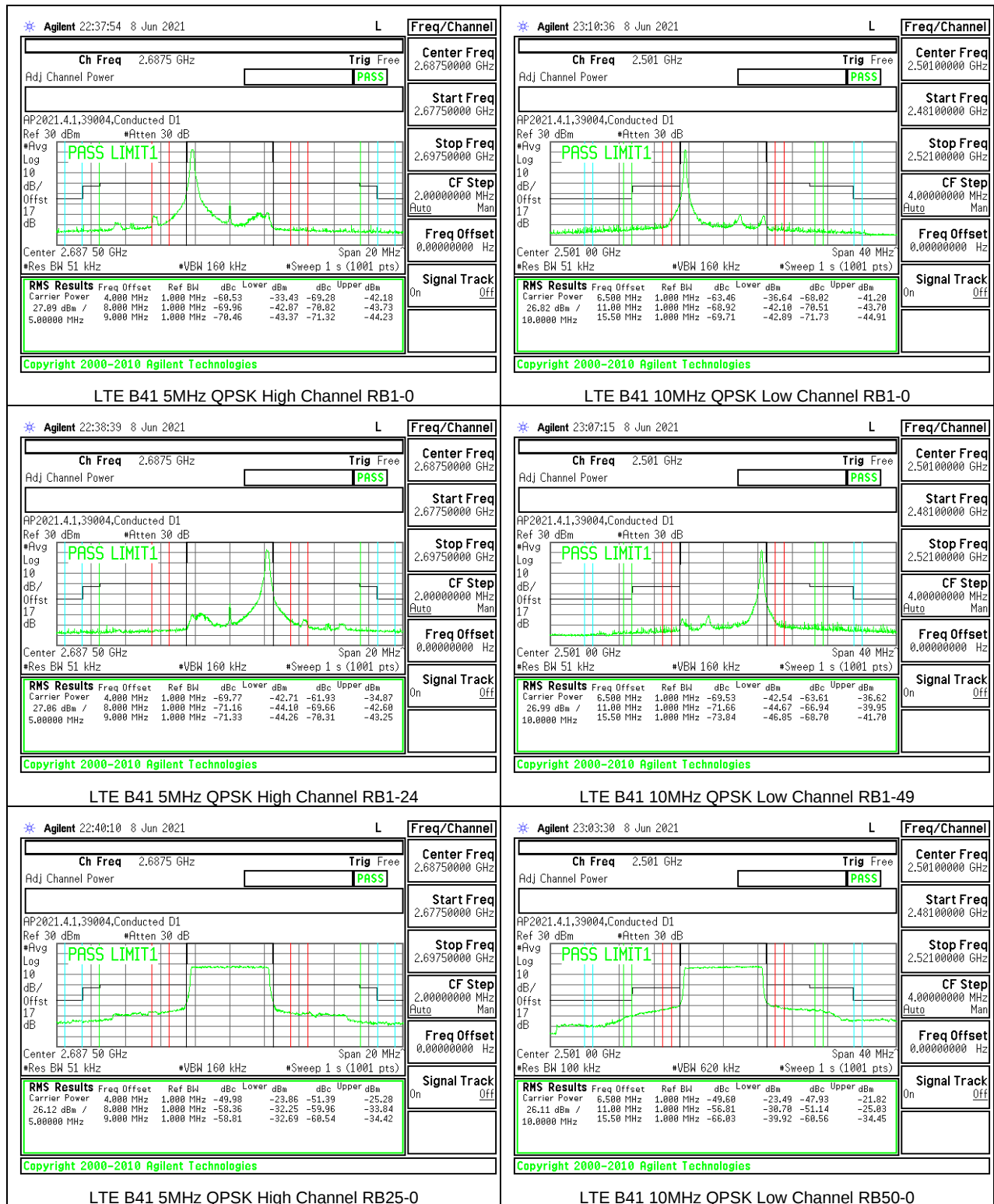
LIMITS

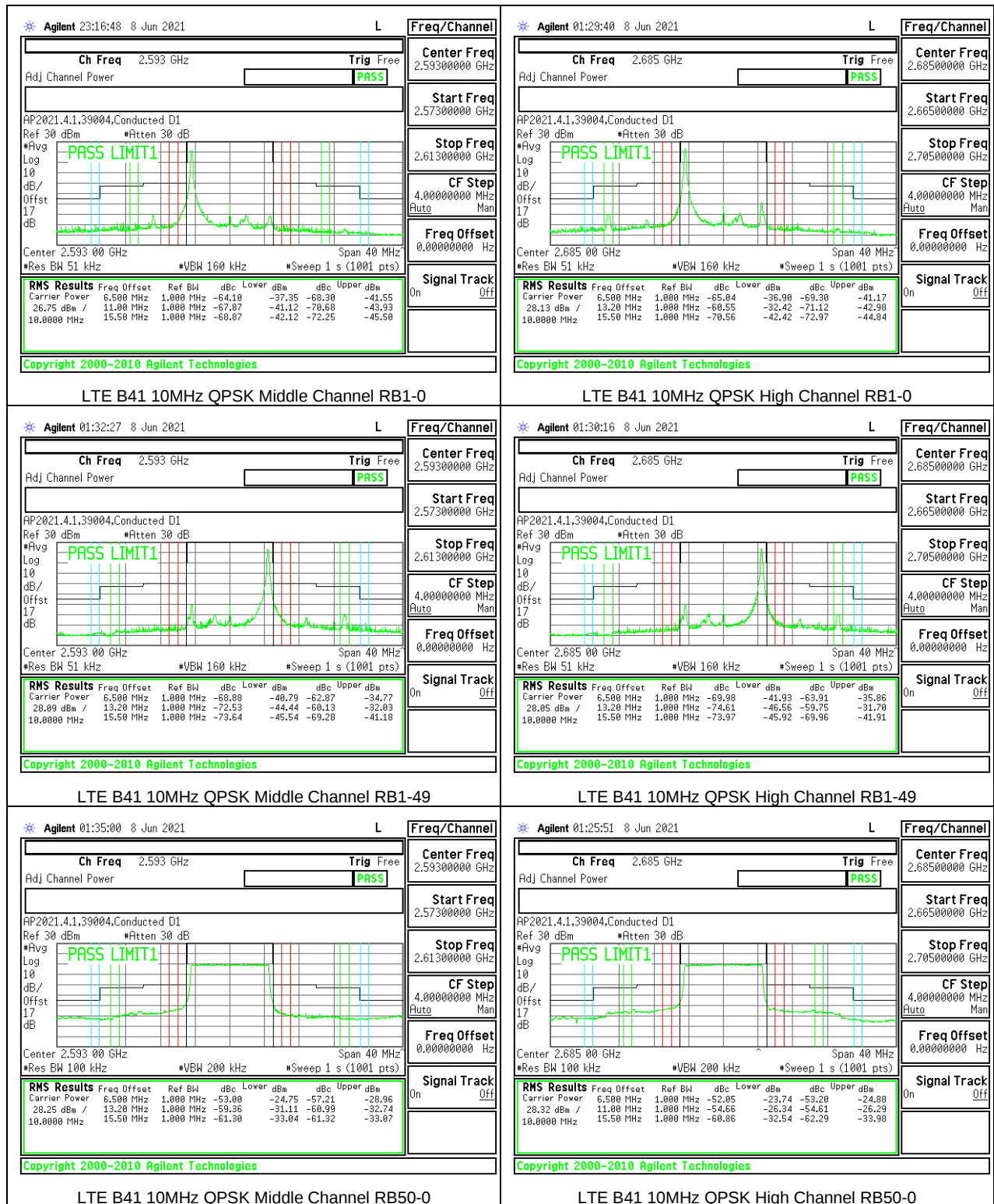
FCC: §27.53

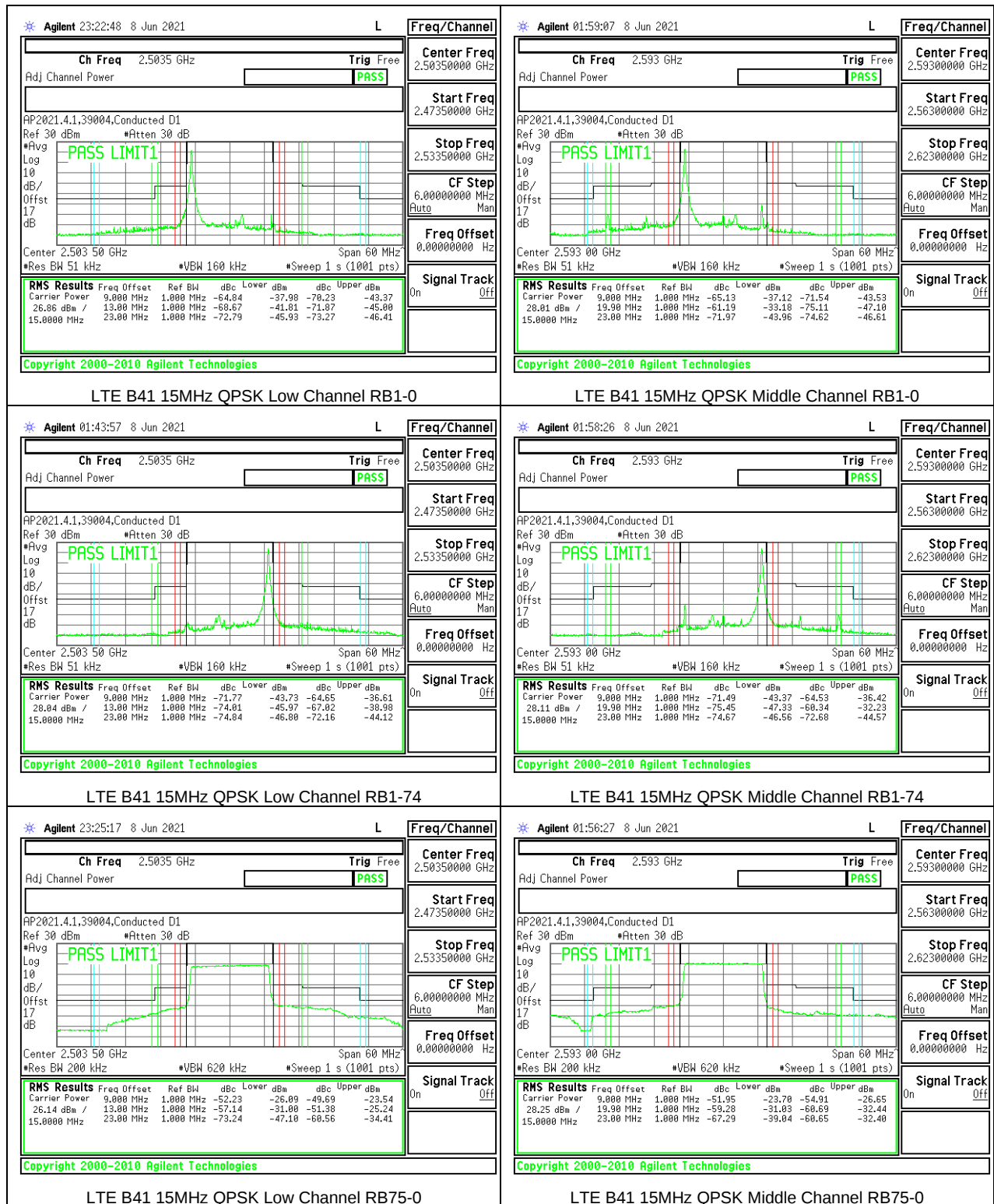
(m)(4) For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ 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.

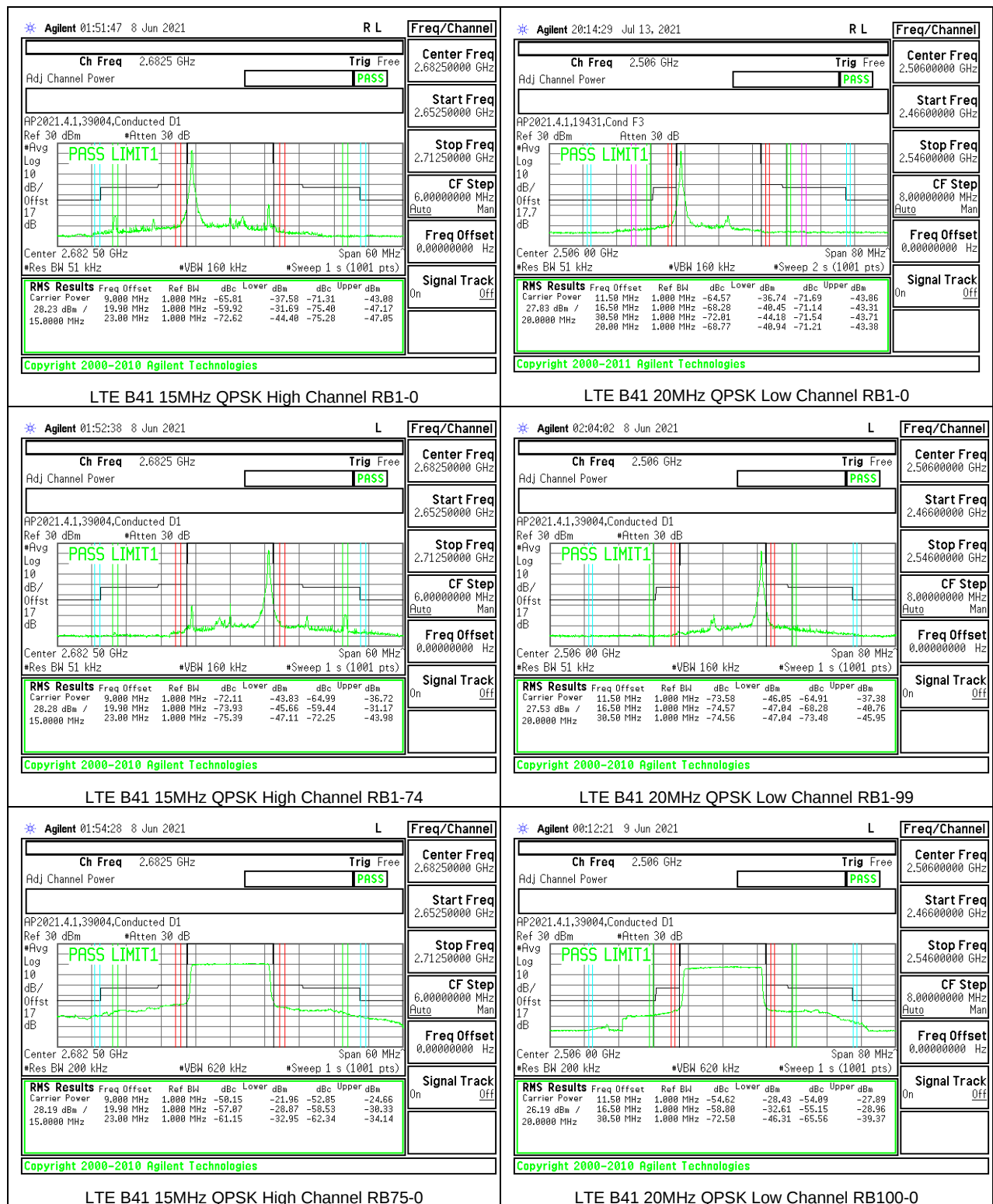
LTE BAND 41 ADJACENT CHANNEL POWER (FCC)

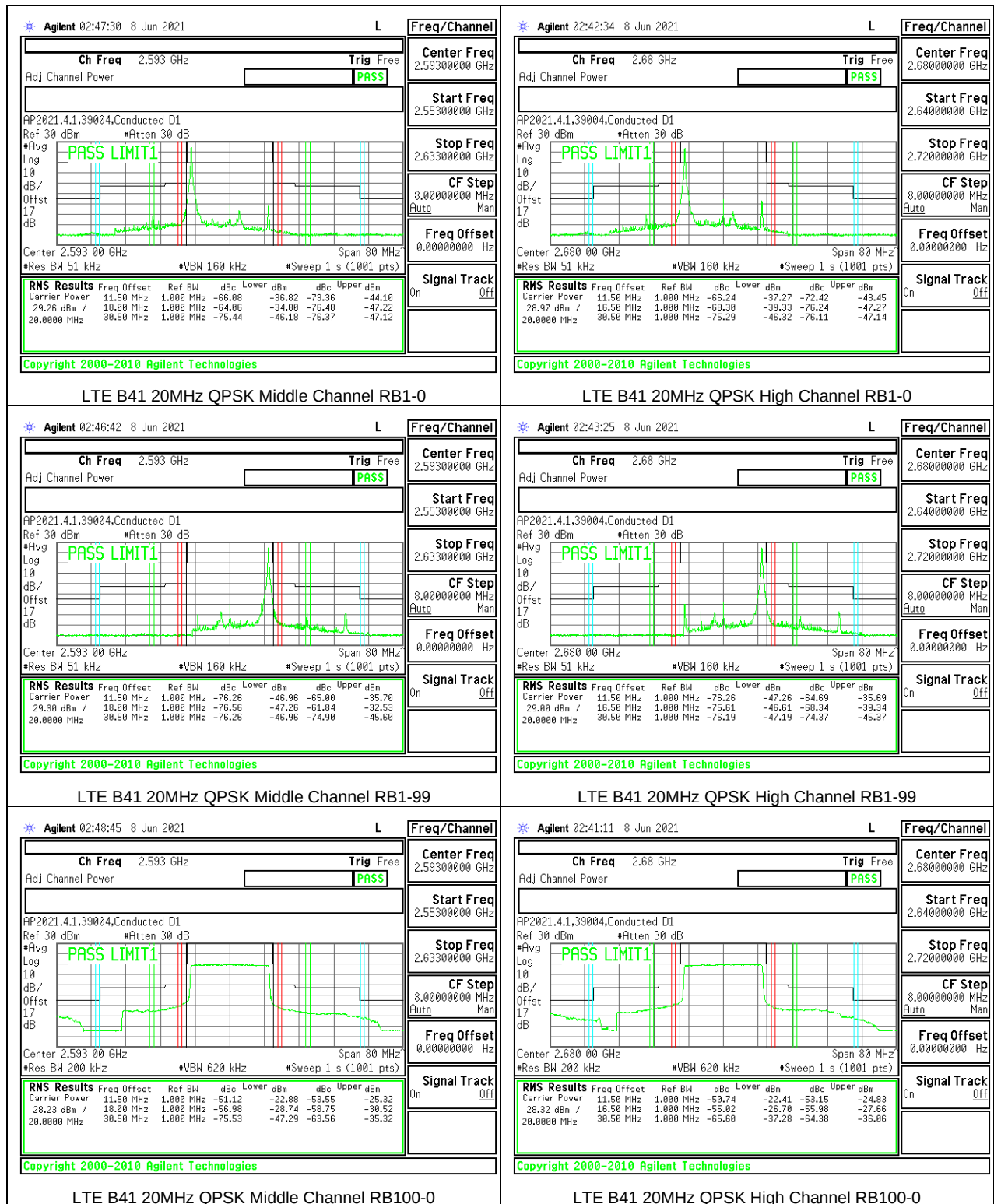






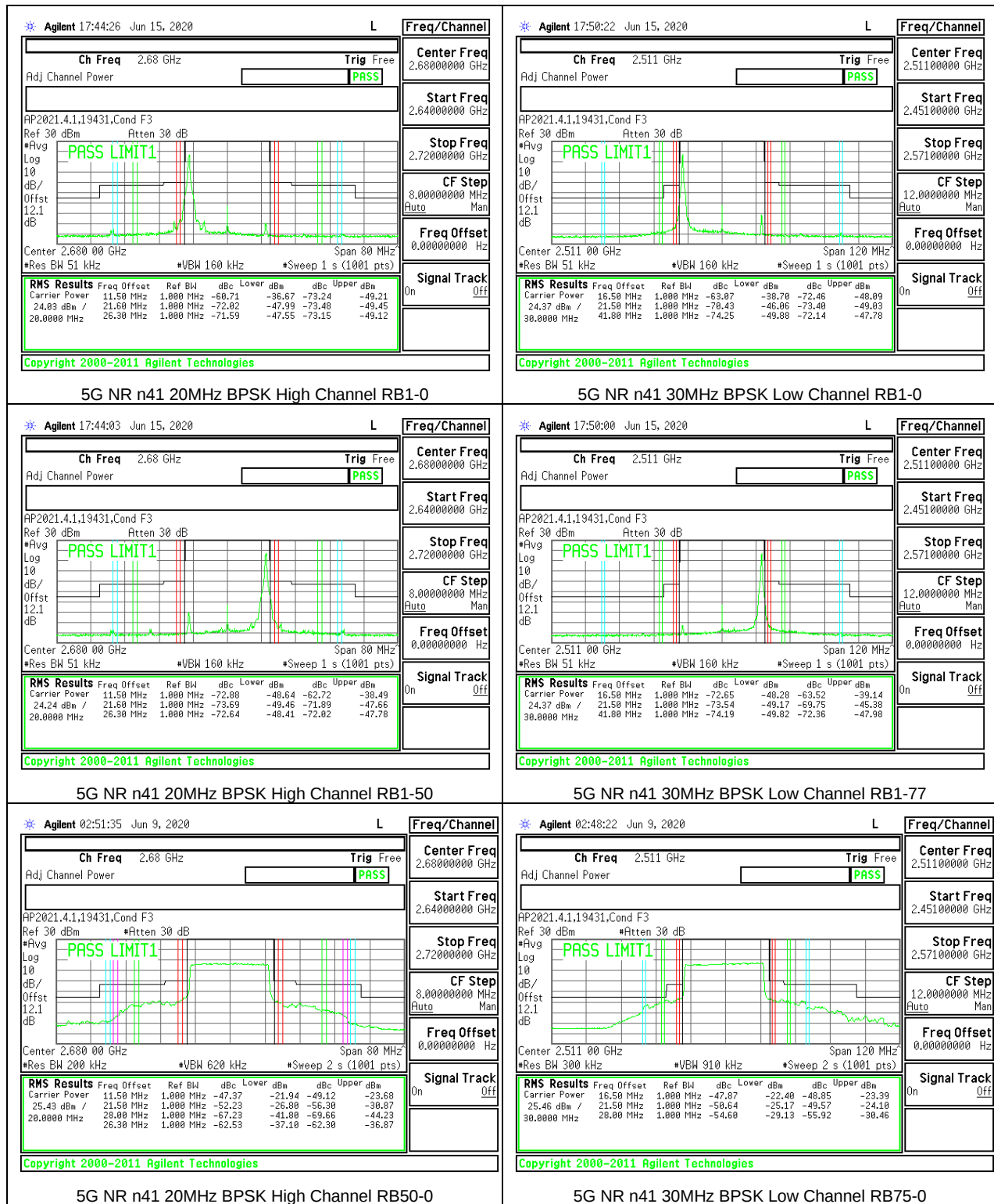


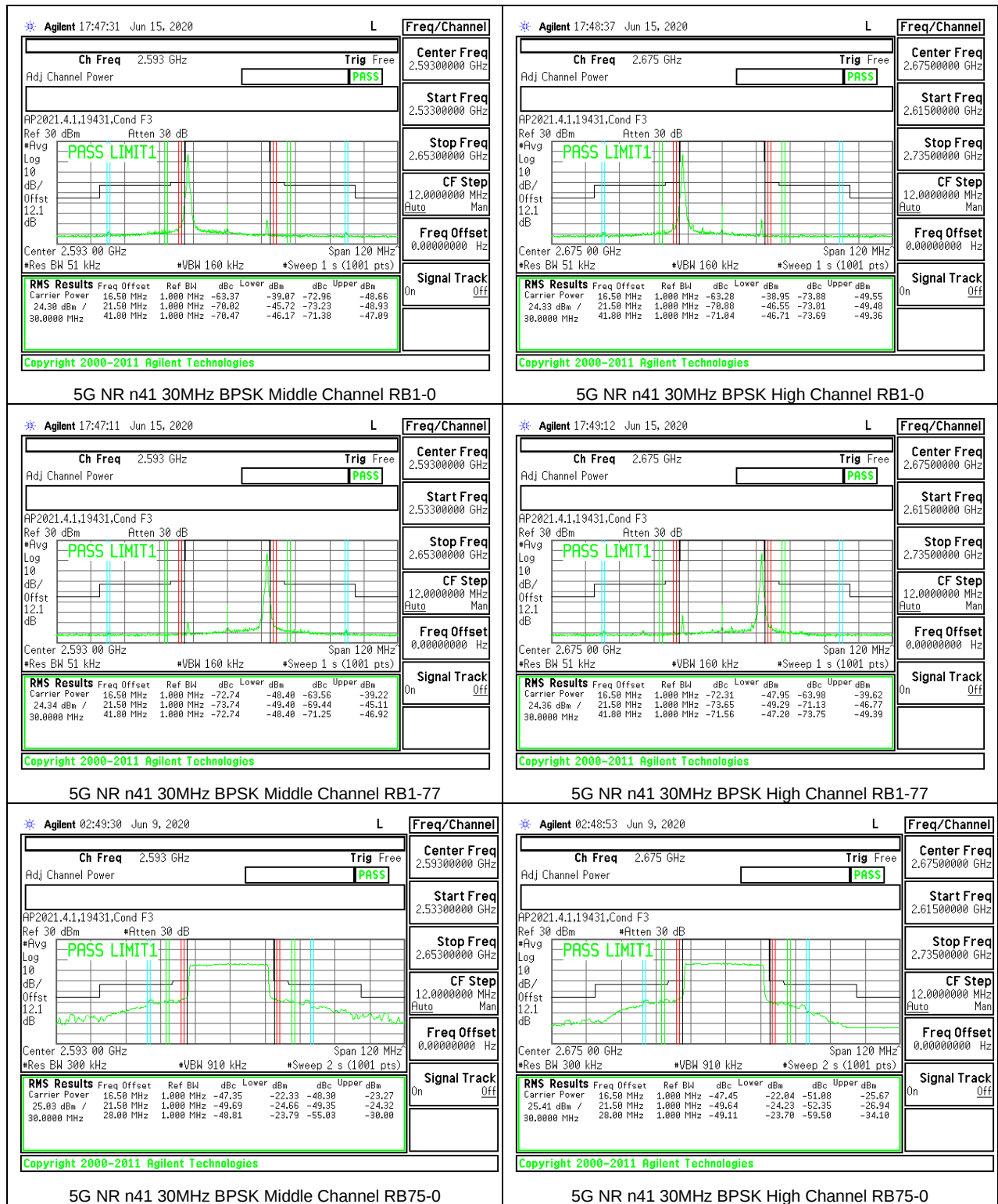




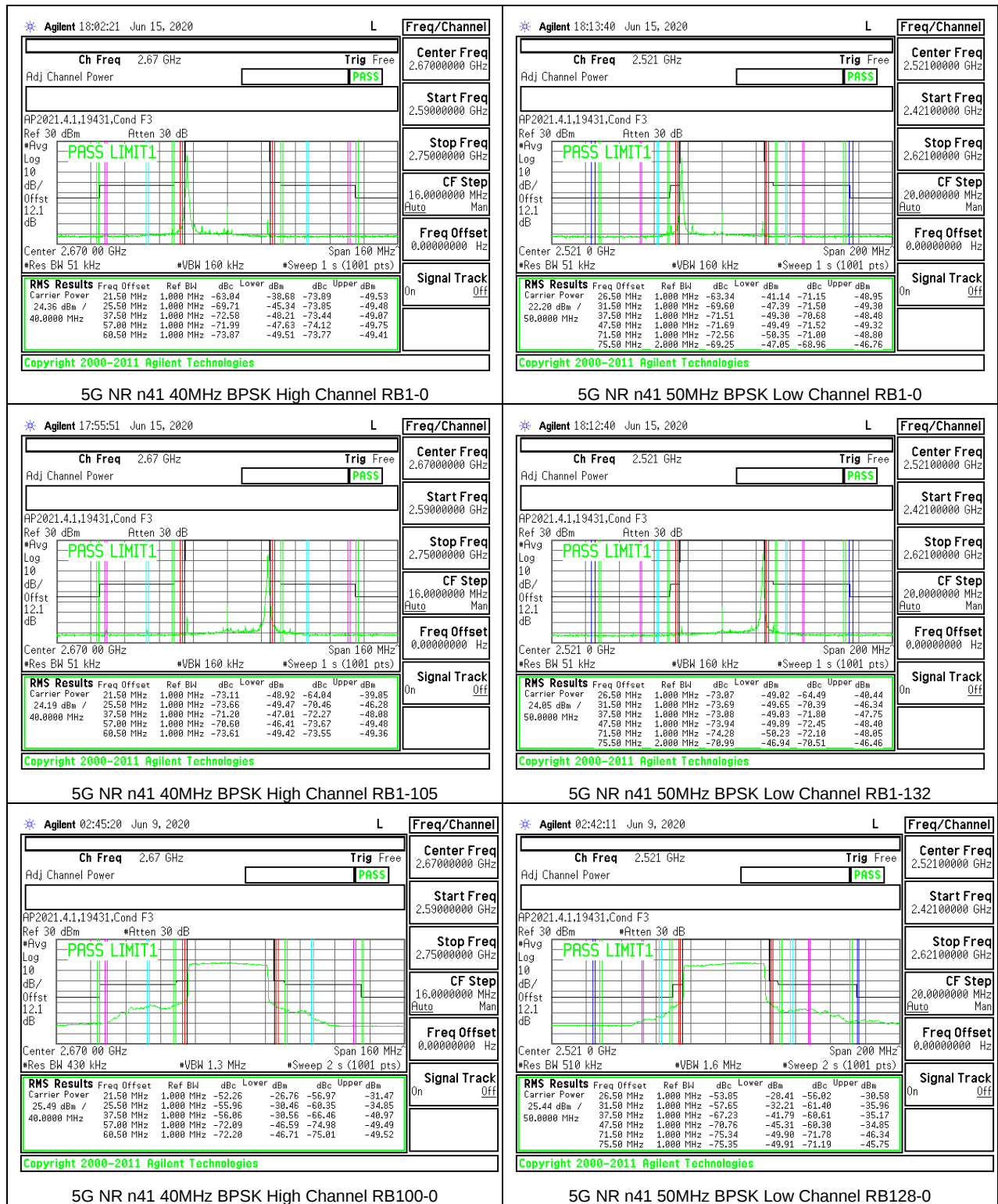
5G NR n41 ADJACENT CHANNEL POWER (FCC)

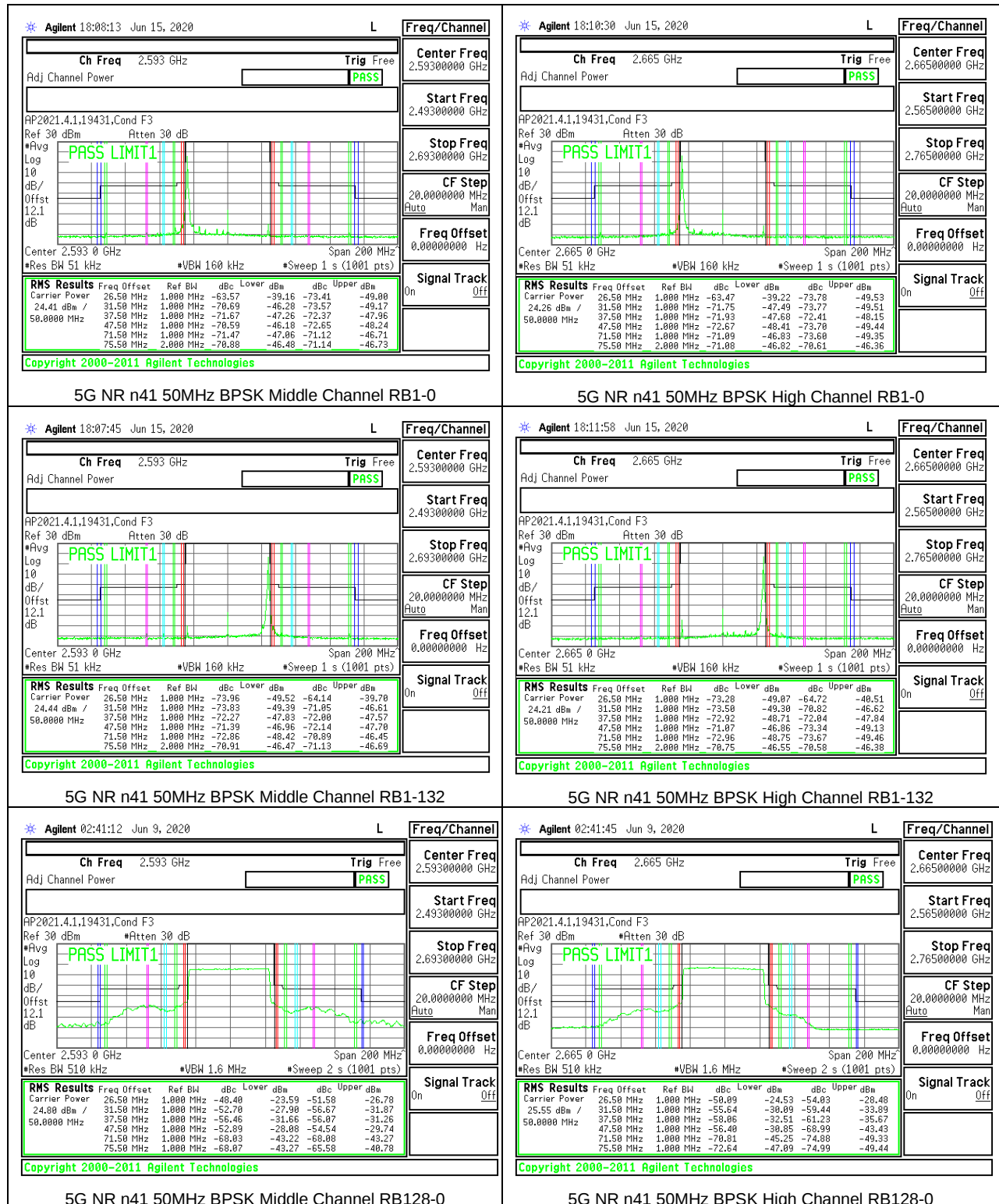


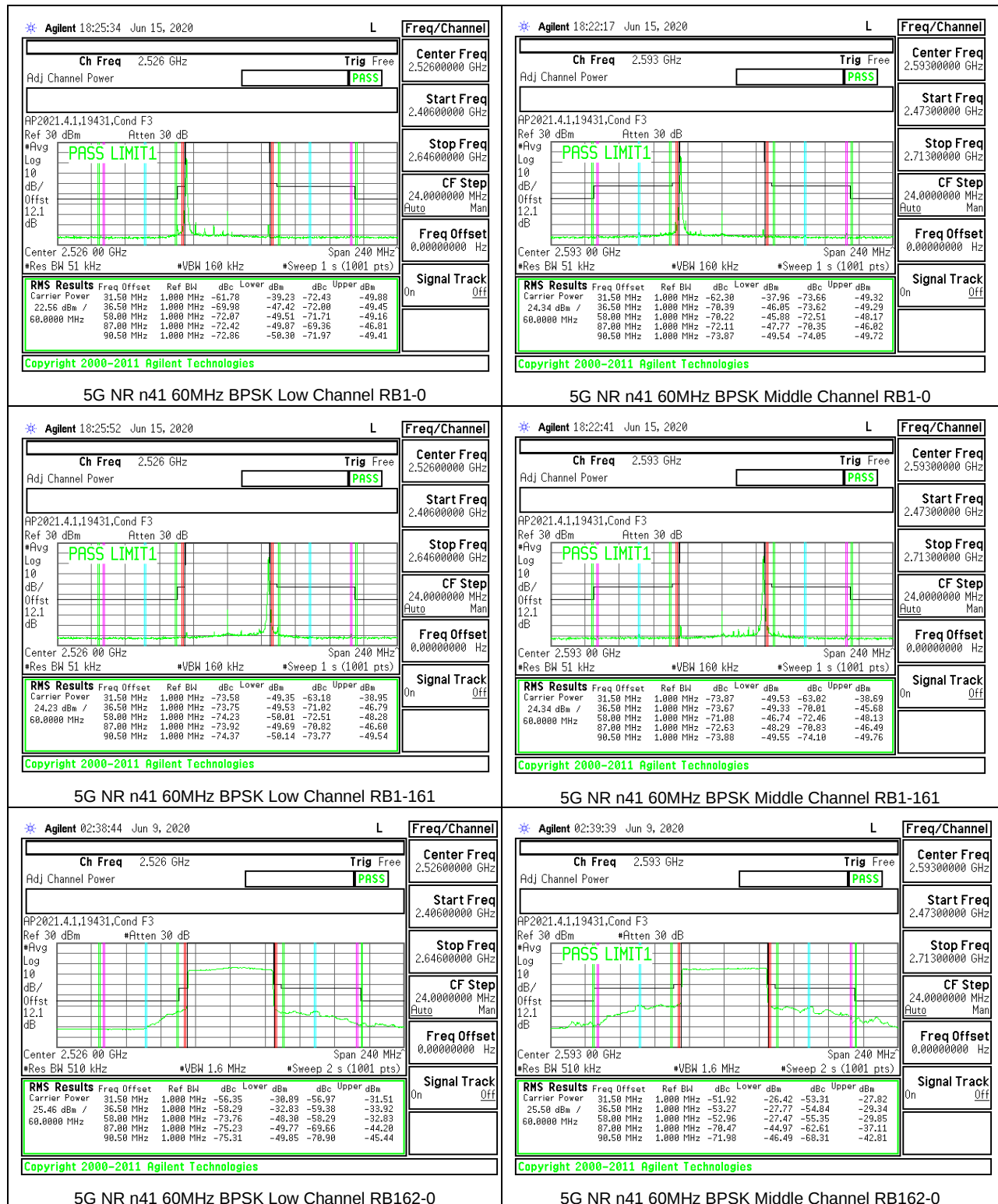


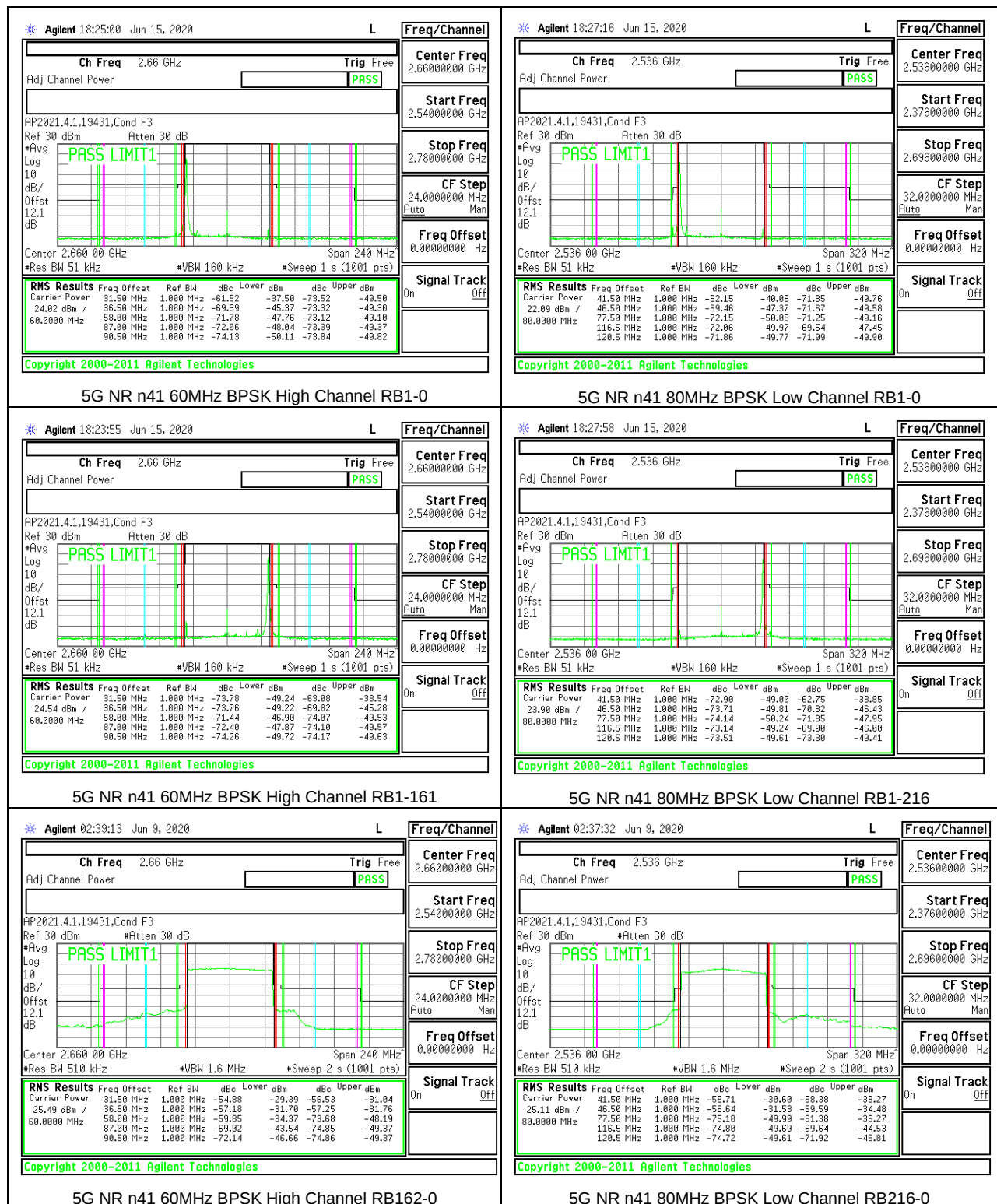




















9.2.12. LTE BAND 48 ADJACENT CHANNEL POWER

LIMITS

FCC: §96.41

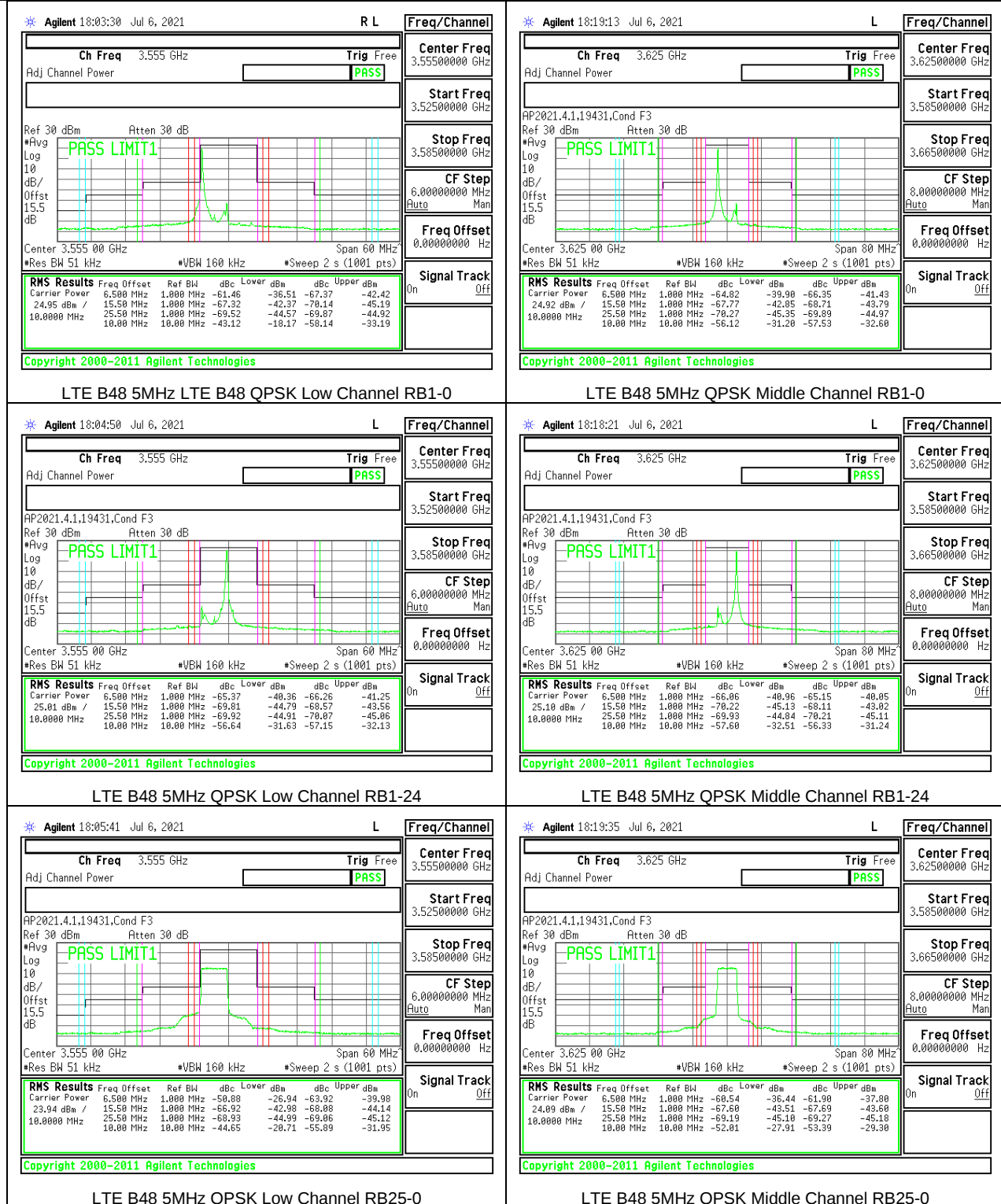
(e) 3.5 GHz Emissions and Interference Limits—

(1) General protection levels

(ii) Except as otherwise specified in paragraph (e)(2) of this section, for channel and frequency assignments made by a CBSD to End User Devices, the conducted power of any End User Device emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed -13 dBm/MHz within 0 to B megahertz (where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD-assigned channel edge. At all frequencies greater than B megahertz above the upper CBSD assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge, the conducted power of any End User Device emission shall not exceed -25 dBm/MHz. Notwithstanding the emission limits in this paragraph, the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.

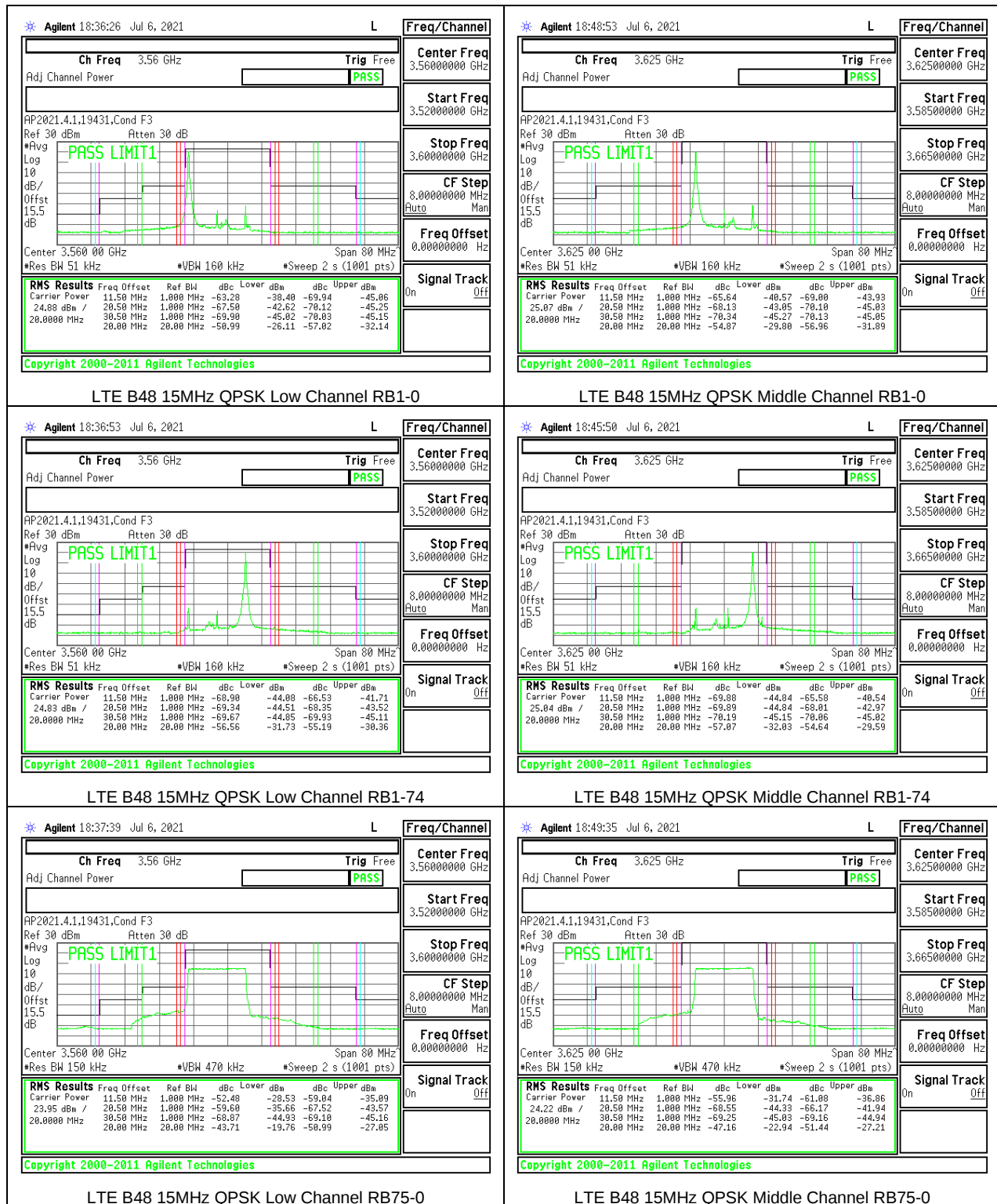
(2) Additional protection levels. Notwithstanding paragraph (e)(1) of this section, for CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed -25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed -40 dBm/MHz.

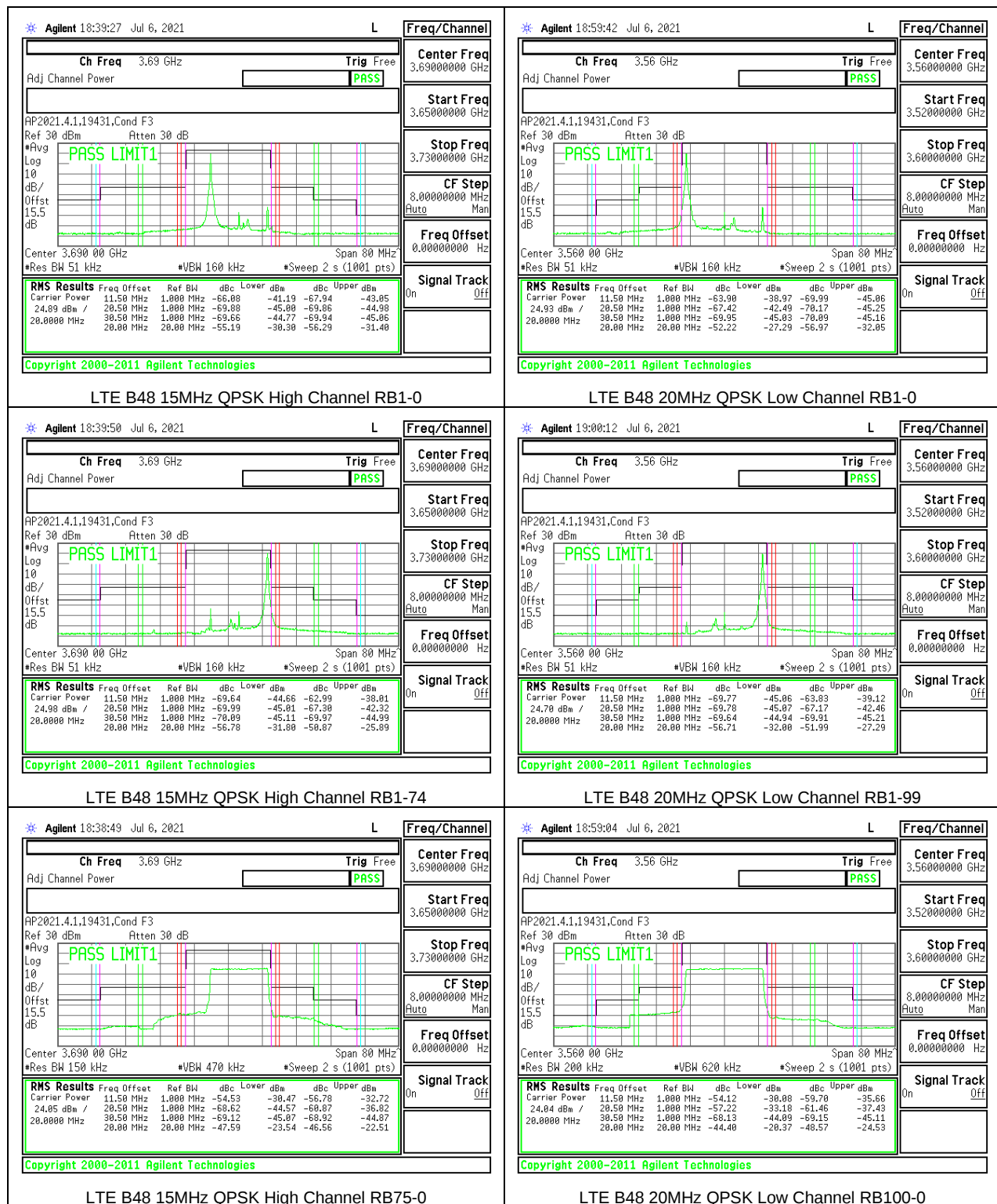
LTE BAND 48 ADJACENT CHANNEL POWER (FCC)

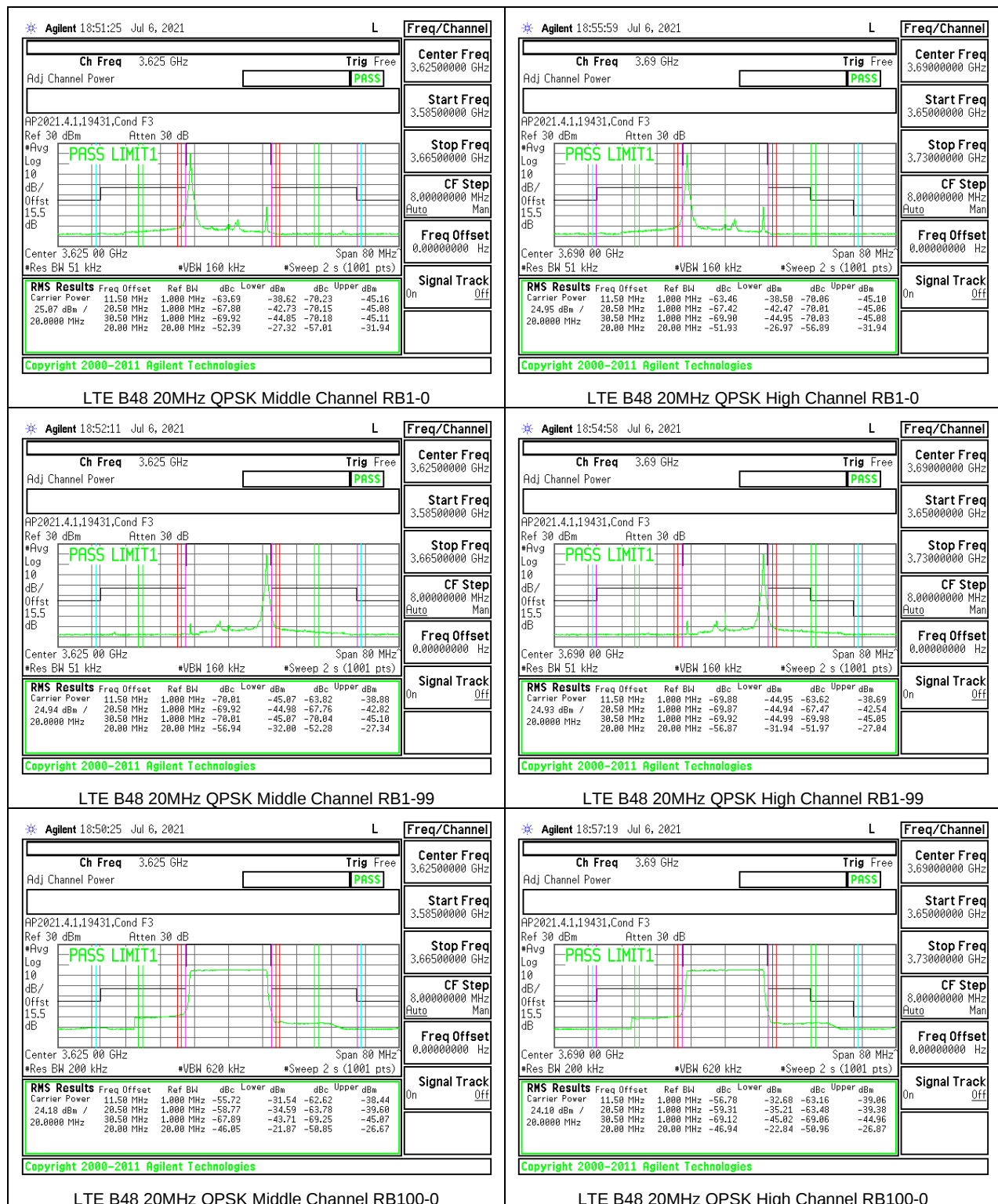












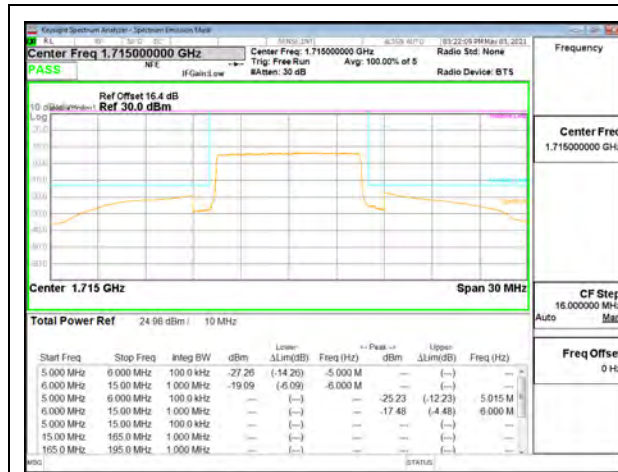
**9.2.13. LTE BAND 66 AND 5G NR n66 ADJACENT CHANNEL POWER AND EMISSION MASK
LIMITS**

FCC: §27.53(h)

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.

LTE BAND 66 EMISSION MASK





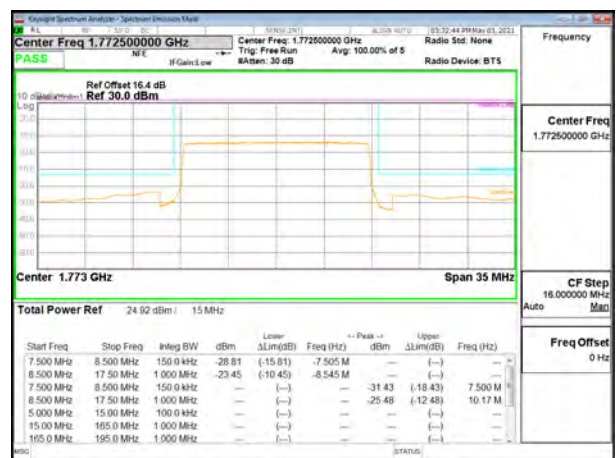
LTE B66 10MHz QPSK Low Channel RB50-0



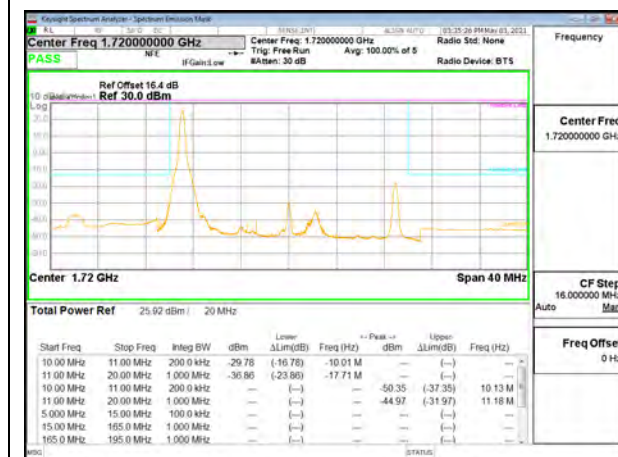
LTE B66 10MHz QPSK High Channel RB50-0



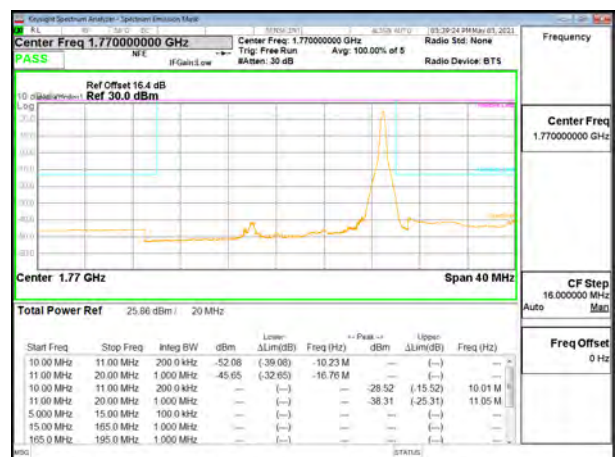
LTE B66 15MHz QPSK Low Channel RB75-0



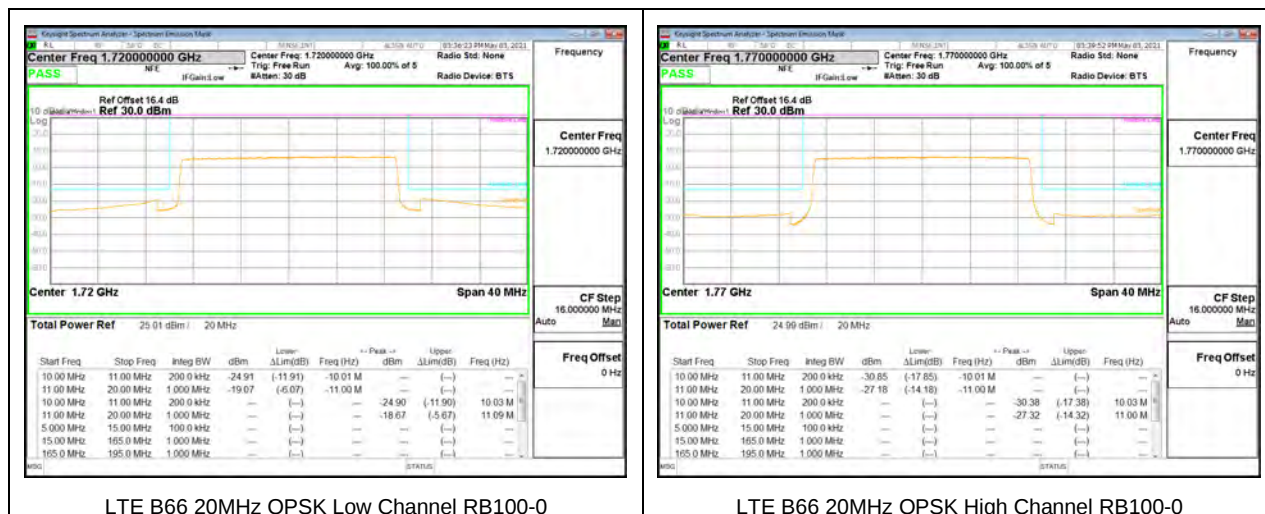
LTE B66 15MHz QPSK High Channel RB75-0



LTE B66 20MHz QPSK Low Channel RB1-0



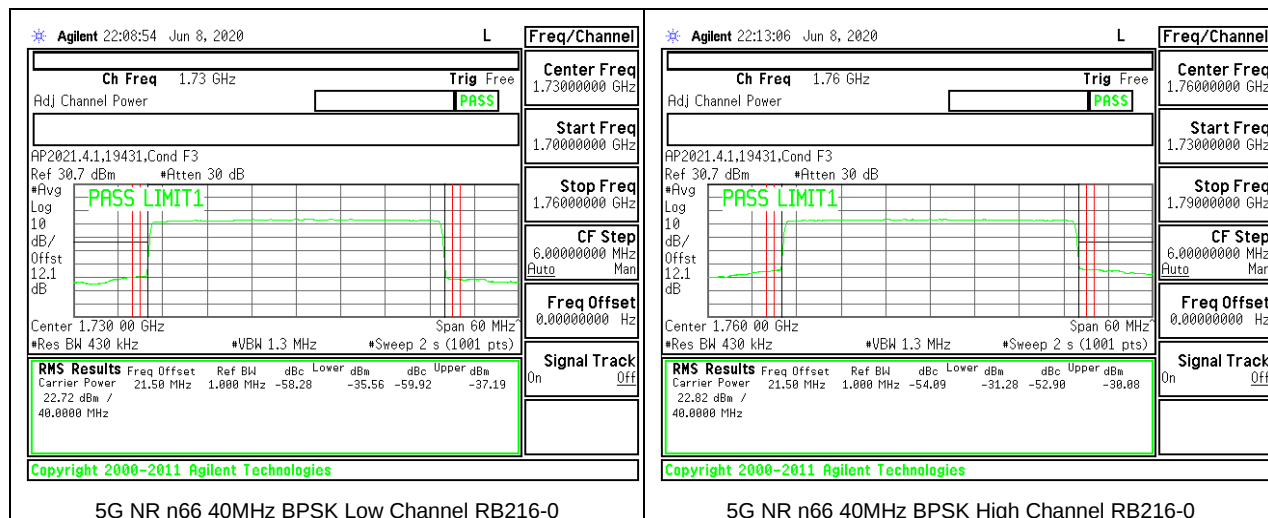
LTE B66 20MHz QPSK High Channel RB1-99



5G NR n66 ADJACENT C HANNEL POWER





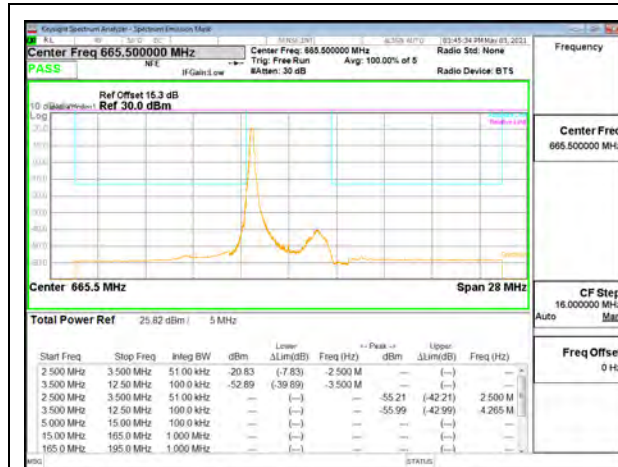


9.2.14. LTE BAND 71 AND 5G NR n71 ADJACENT CHANNEL POWER AND EMISSION MASK LIMITS

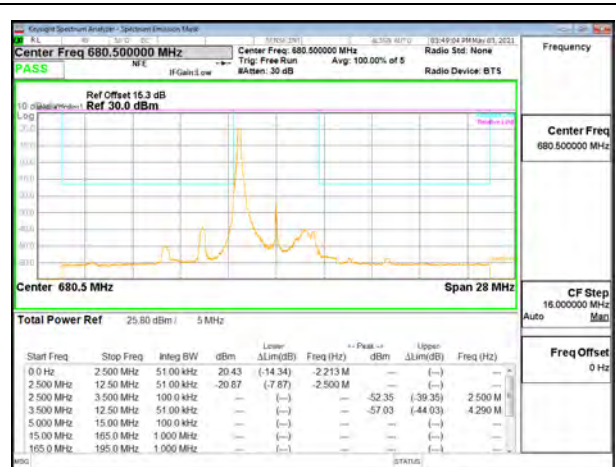
FCC: §27.53

(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.

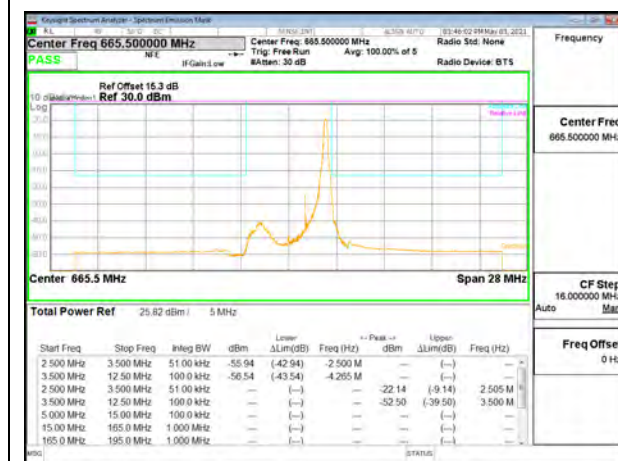
LTE BAND 71 ADJACENT CHANNEL POWER AND EMISSION MASK



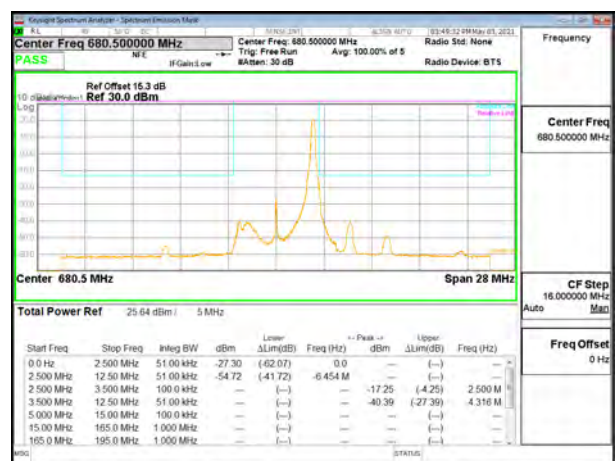
LTE B71 5MHz QPSK Low Channel RB1-0



LTE B71 5MHz QPSK Middle Channel RB1-0



LTE B71 5MHz QPSK Low Channel RB1-24



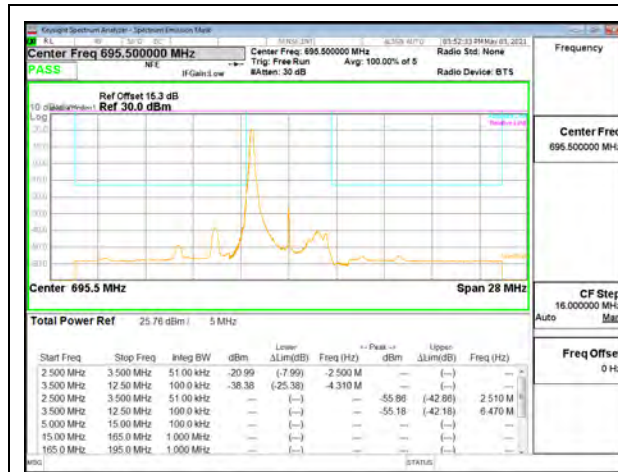
LTE B71 5MHz QPSK Middle Channel RB1-24



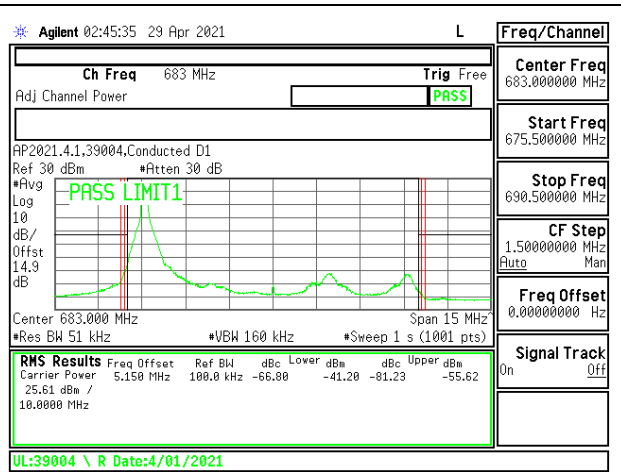
LTE B71 5MHz QPSK Low Channel RB25-0



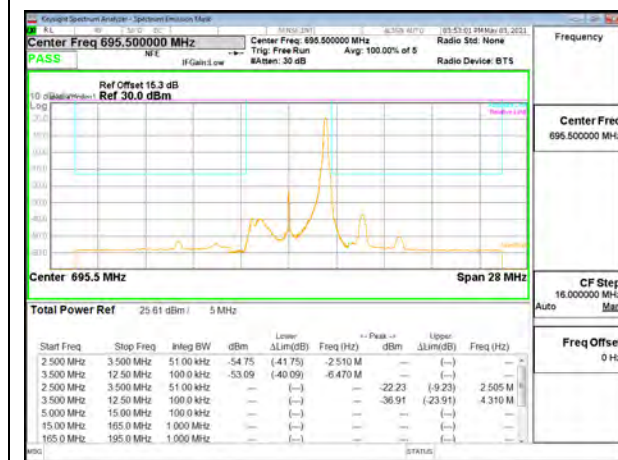
LTE B71 5MHz QPSK Middle Channel RB25-0



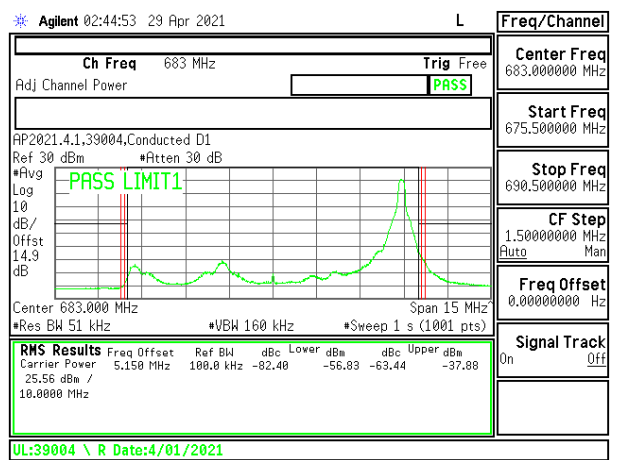
LTE B71 5MHz QPSK High Channel RB1-0



LTE B71 10MHz QPSK Low Channel RB1-0



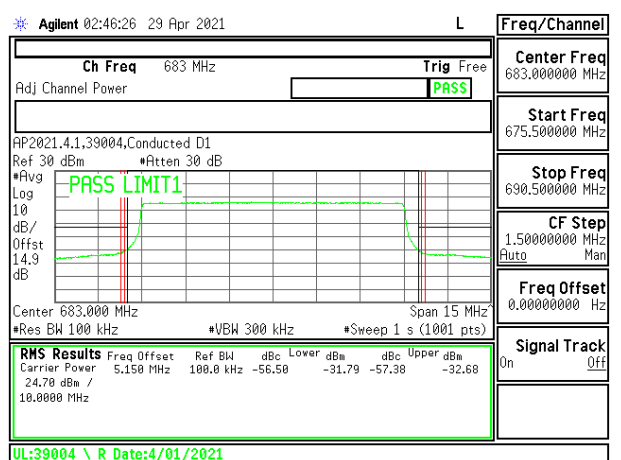
LTE B71 5MHz QPSK High Channel RB1-24



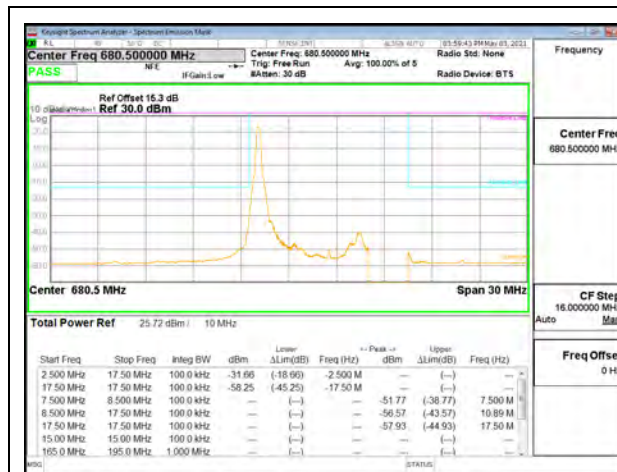
LTE B71 10MHz QPSK Low Channel RB1-49



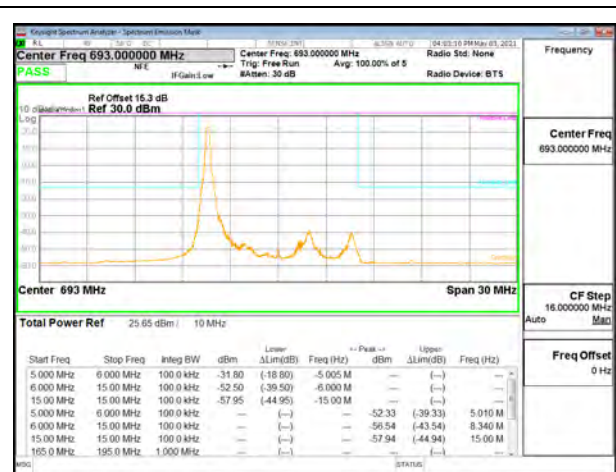
LTE B71 5MHz QPSK High Channel RB25-0



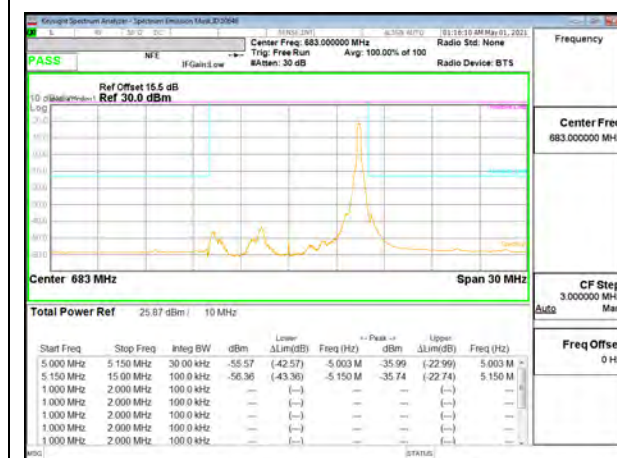
LTE B71 10MHz QPSK Low Channel RB50-0



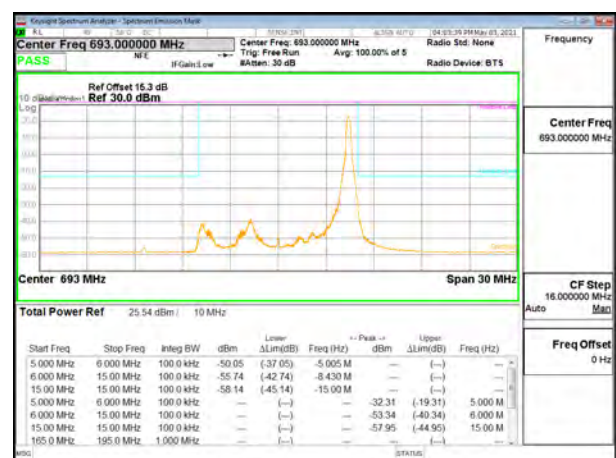
LTE B71 10MHz QPSK Middle Channel RB1-0



LTE B71 10MHz QPSK High Channel RB1-0



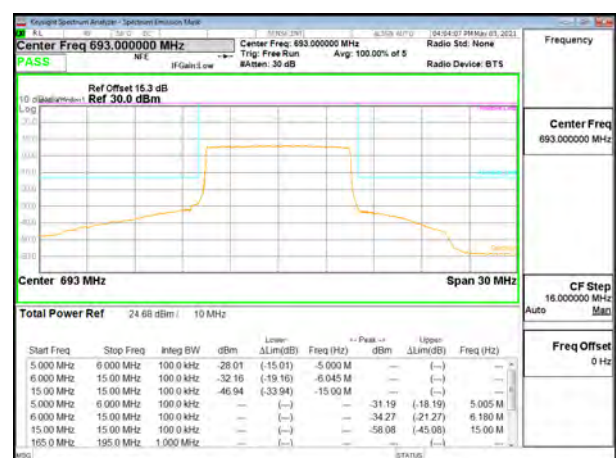
LTE B71 10MHz QPSK Middle Channel RB1-49



LTE B71 10MHz QPSK High Channel RB1-49

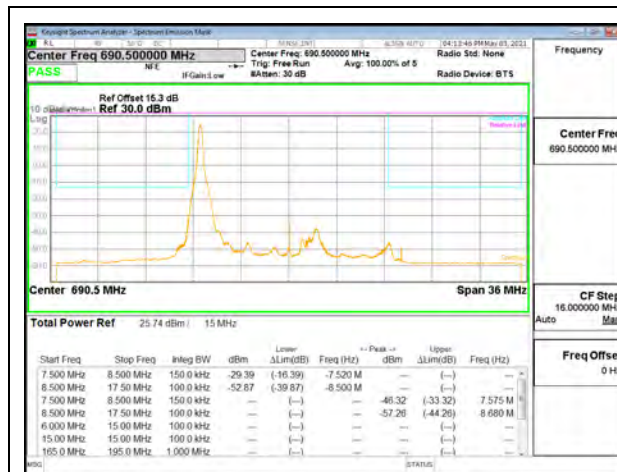


LTE B71 10MHz QPSK Middle Channel RB50-0

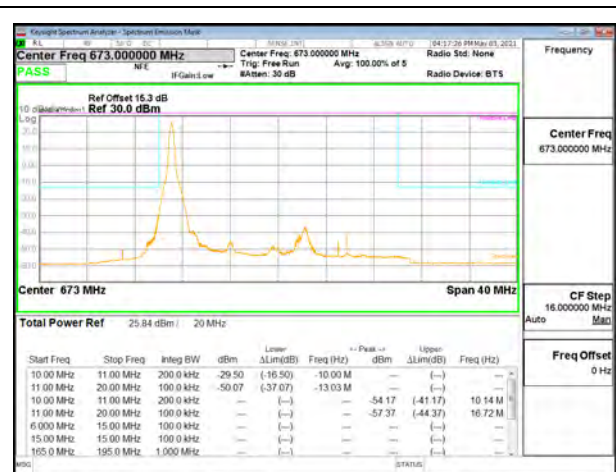


LTE B71 10MHz QPSK High Channel RB50-0

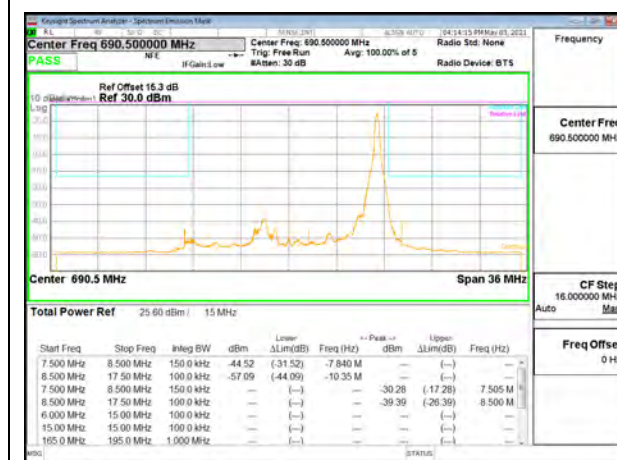




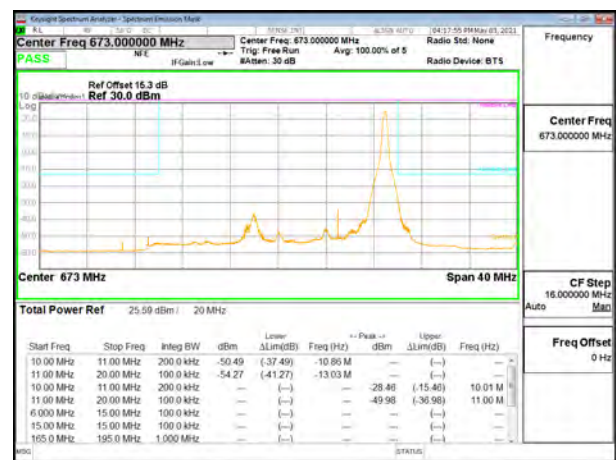
LTE B71 15MHz QPSK High Channel RB1-0



LTE B71 20MHz QPSK Low Channel RB1-0



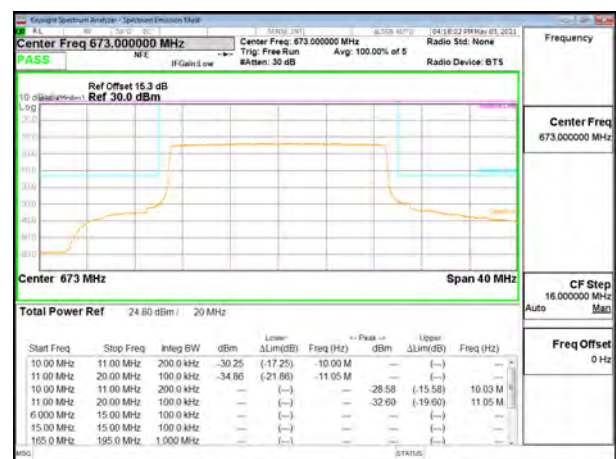
LTE B71 15MHz QPSK High Channel RB1-74



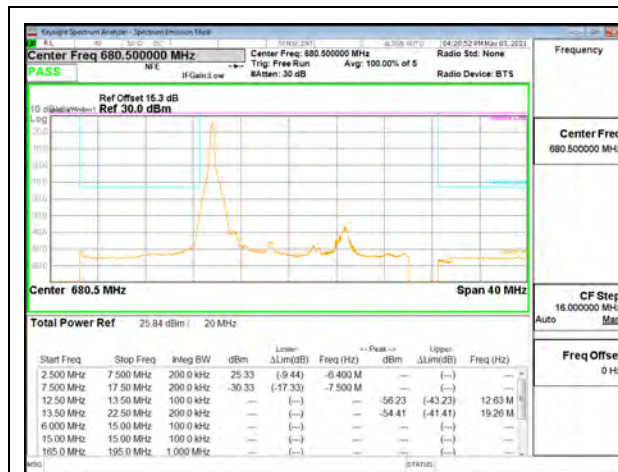
LTE B71 20MHz QPSK Low Channel RB1-99



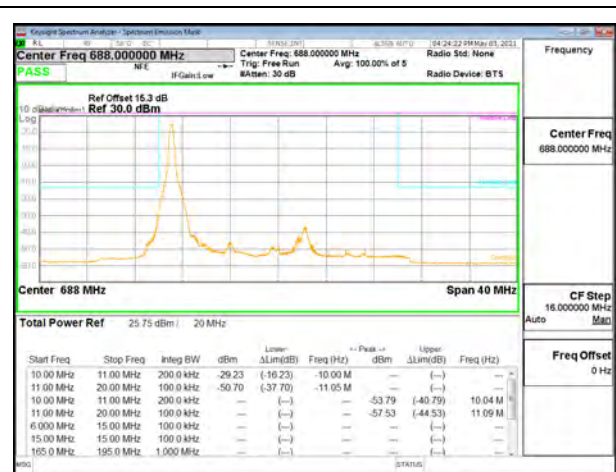
LTE B71 15MHz QPSK High Channel RB75-0



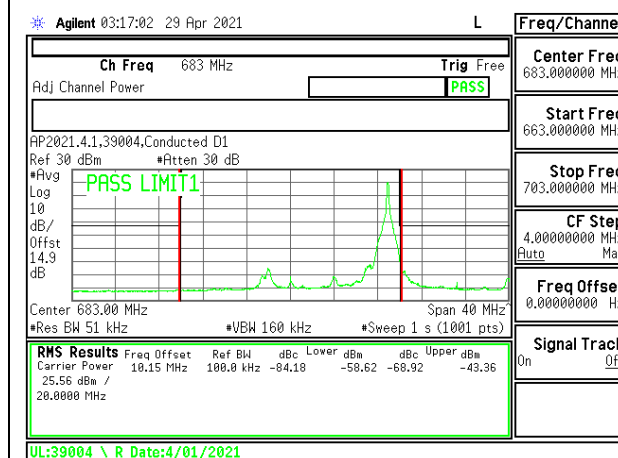
LTE B71 20MHz QPSK Low Channel RB100-0



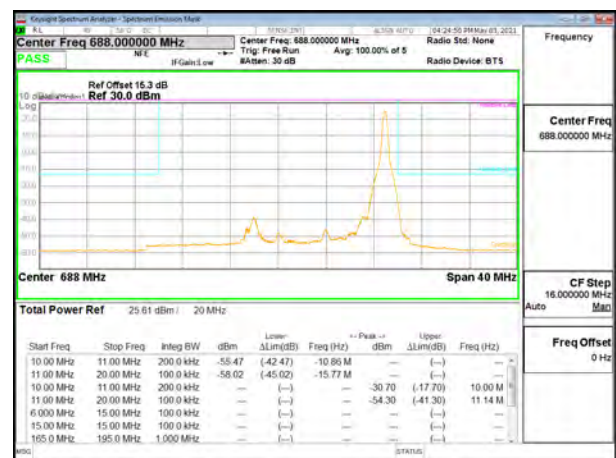
LTE B71 20MHz QPSK Middle Channel RB1-0



LTE B71 20MHz QPSK High Channel RB1-0



LTE B71 20MHz QPSK Middle Channel RB1-99



LTE B71 20MHz QPSK High Channel RB1-99

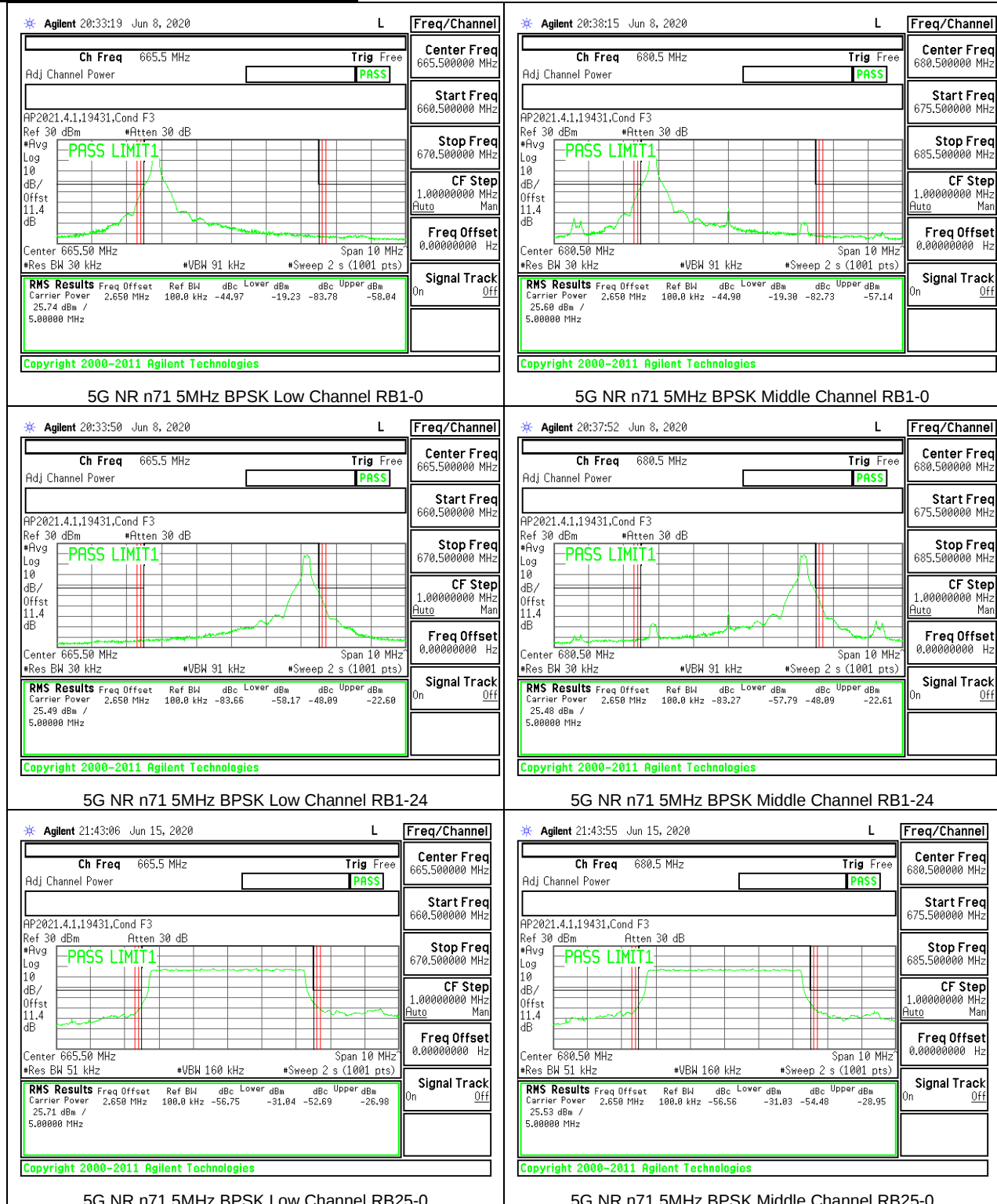


LTE B71 20MHz QPSK Middle Channel RB100-0

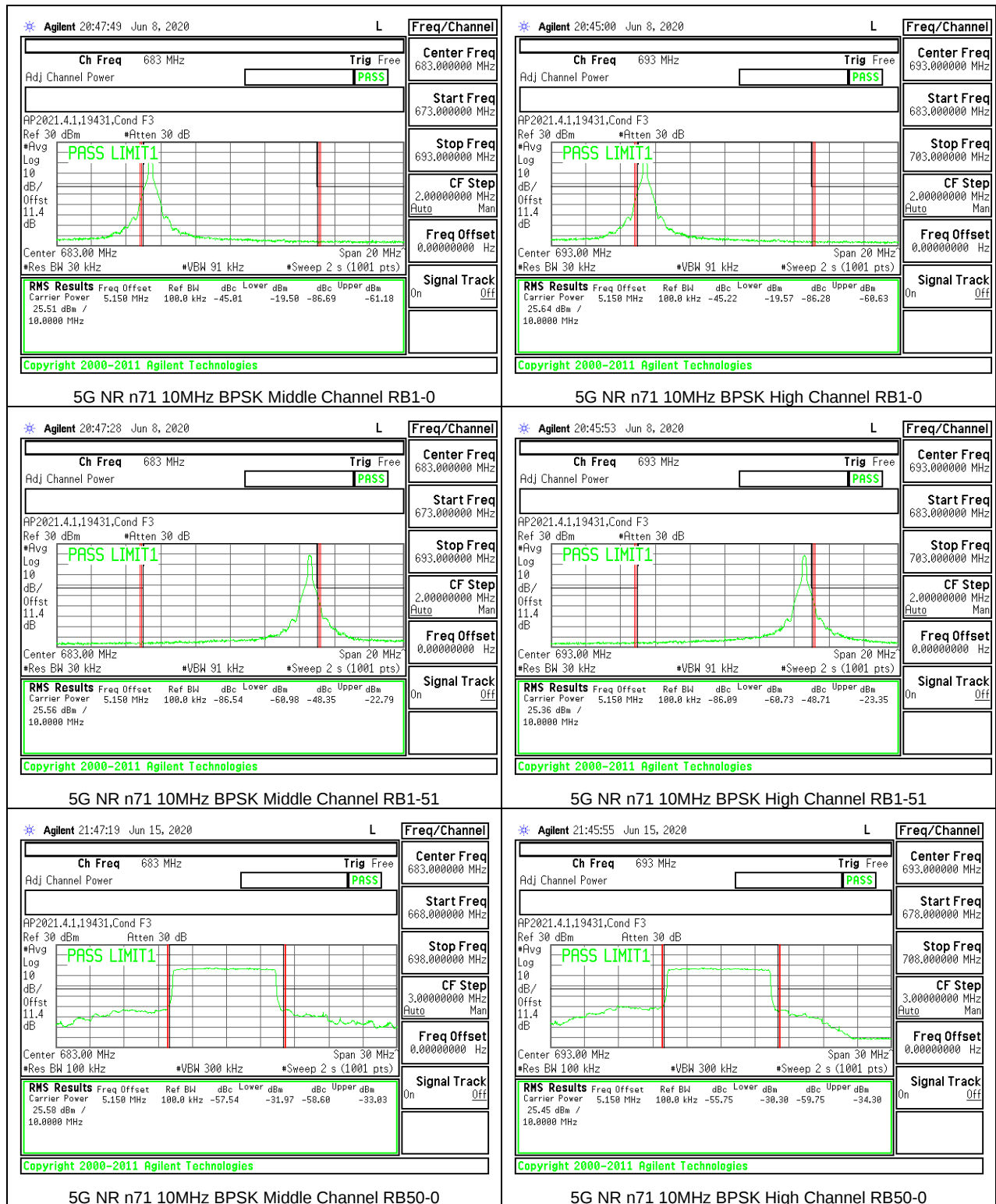


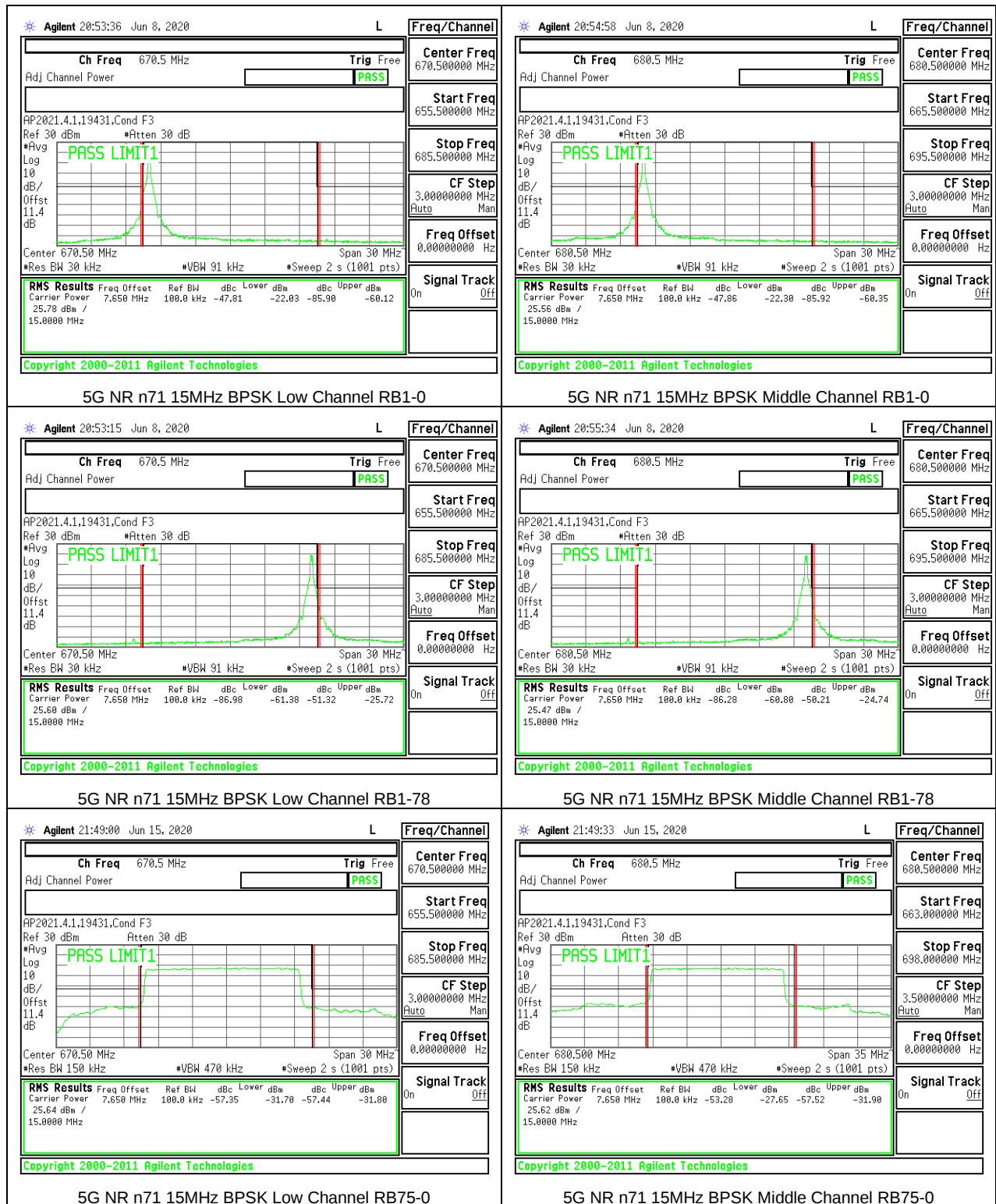
LTE B71 20MHz QPSK High Channel RB100-0

5G NR n71 ADJACENT CHANNEL POWER













9.2.15. 5G NR n77 ADJACENT CHANNEL POWER (Part 27 3450-3550MHz)

LIMITS

FCC: §27.53

(n) 3.45 GHz Service. The following emission limits apply to stations transmitting in the 3450-3550 MHz band:

(2) For mobile operations in the 3450-3550 MHz band, the conducted power of any emission outside the licensee's authorized bandwidth shall not exceed -13 dBm/MHz. Compliance with this paragraph (n)(2) is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed, but limited to a maximum of 200 kHz. In the bands between 1 and 5 MHz removed from the licensee's frequency block, the minimum resolution bandwidth for the measurement shall be 500 kHz. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.







