

4.5 Channel Edge / Out-of-Band Emissions Measurement

4.5.1 Limits of Band Edge / Out-of-Band Emissions Measurement

For WCDMA Band 4, LTE Band 4, LTE Band 66:

According to FCC 27.53(h) for operations in the 1695-1710MHz, 1710-1755MHz, 1755-1780 MHz, 1915-1920MHz, 1995-2000 MHz, 2000-2020MHz, 2110-2155MHz, 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 $43 + 10 \log (P)$ dB.

For LTE Band 12, LTE Band 71:

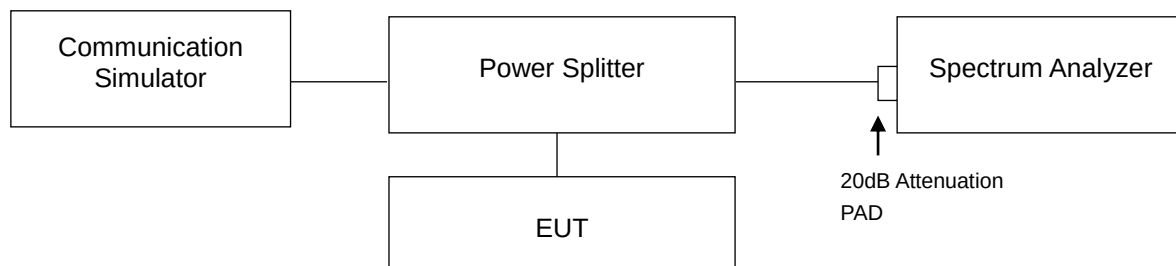
According to FCC 27.53(g) for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater.

For LTE Band 13:

According to FCC 27.53(c)(2) for 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.

According to 27.53(c)(4) On all frequencies between 763-775MHz and 793-805MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations

4.5.2 Test Setup



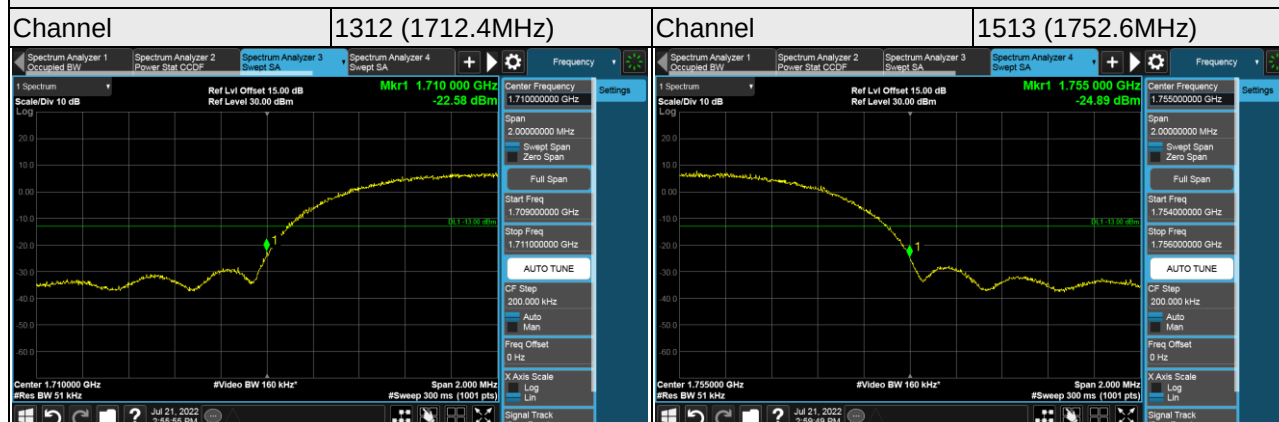
4.5.3 Test Procedures

- a. All measurements were done at low and high operational frequency range.
- b. The detector of the spectrum is RMS, and if the device can be configured to transmit continuously (duty cycle $\geq 98\%$), set the (sweep time) $> (\text{number of points in sweep}) \times (\text{symbol period})$ (e.g., by a factor of $10 \times \text{symbol period} \times \text{number of points}$). Increasing the sweep time (i.e., slowing the sweep speed) will allow for averaging over multiple symbols.
- c. The center frequency of spectrum is the band edge frequency and span is 5 MHz. RB of the spectrum is 51 kHz and VB of the spectrum is 160 kHz (WCDMA / HSDPA / HSUPA).
- d. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 15 kHz and VB of the spectrum is 51 kHz (LTE Bandwidth 1.4 MHz).
- e. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 30 kHz and VB of the spectrum is 100 kHz (LTE Bandwidth 3 MHz).
- f. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 51 kHz and VB of the spectrum is 160 kHz (LTE Bandwidth 5 MHz).
- g. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 100 kHz and VB of the spectrum is 300 kHz (LTE Bandwidth 10 MHz).
- h. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 150 kHz and VB of the spectrum is 470 kHz (LTE Bandwidth 15 MHz).
- i. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 200 kHz and VB of the spectrum is 1 MHz (LTE Bandwidth 20 MHz).
- a. Record the max. trace plot into the test report.

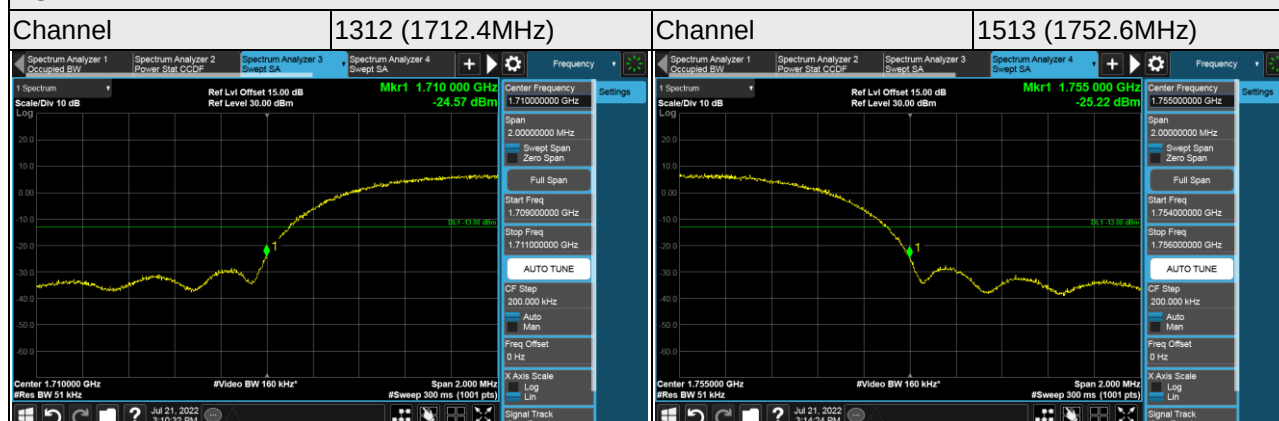
4.5.4 Test Results

Band Edge

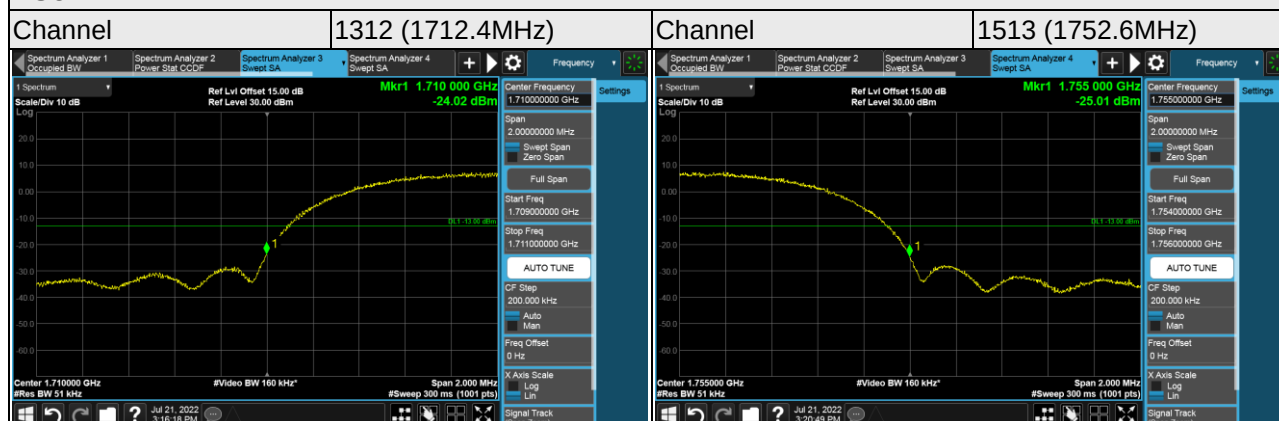
WCDMA Band 4



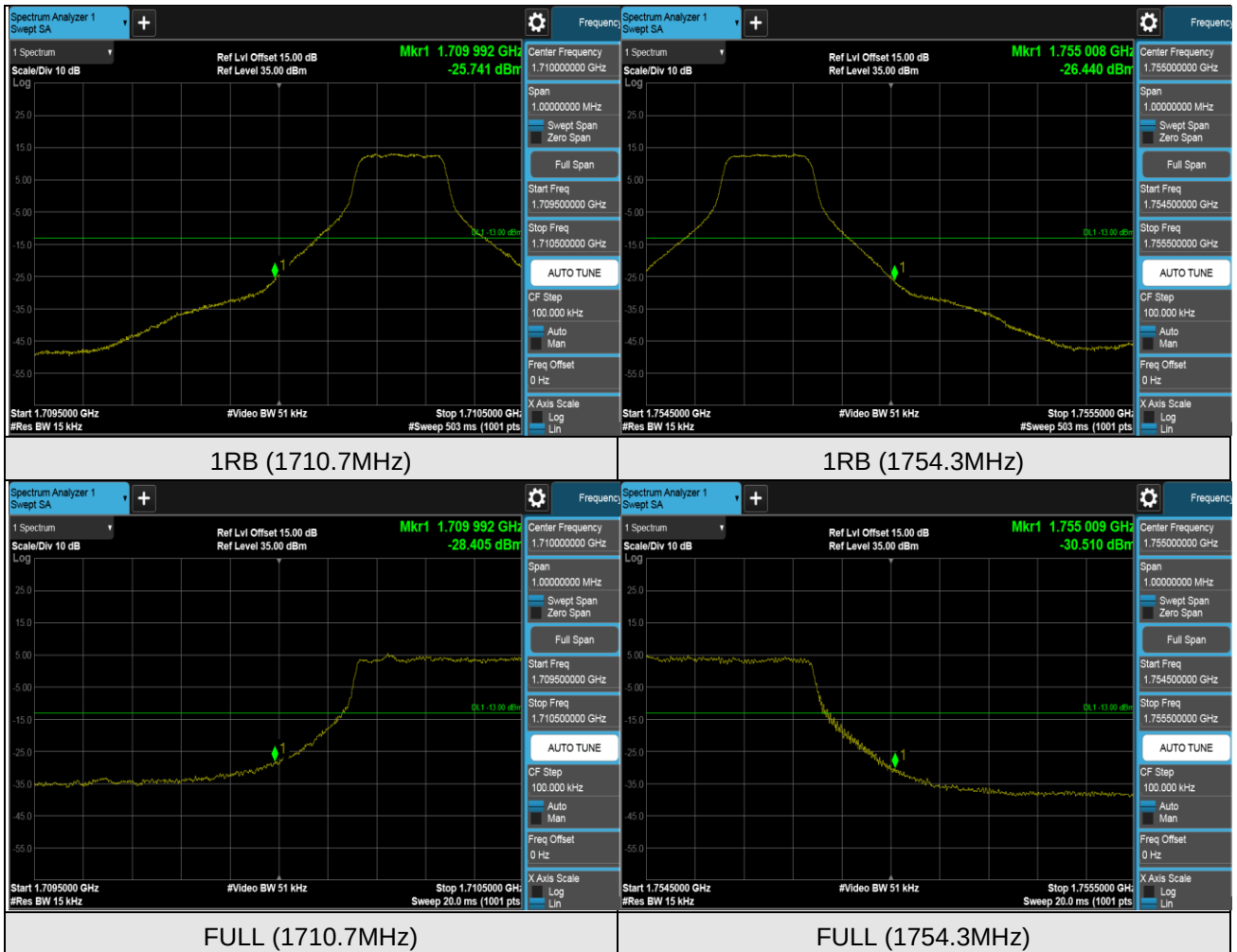
HSDPA



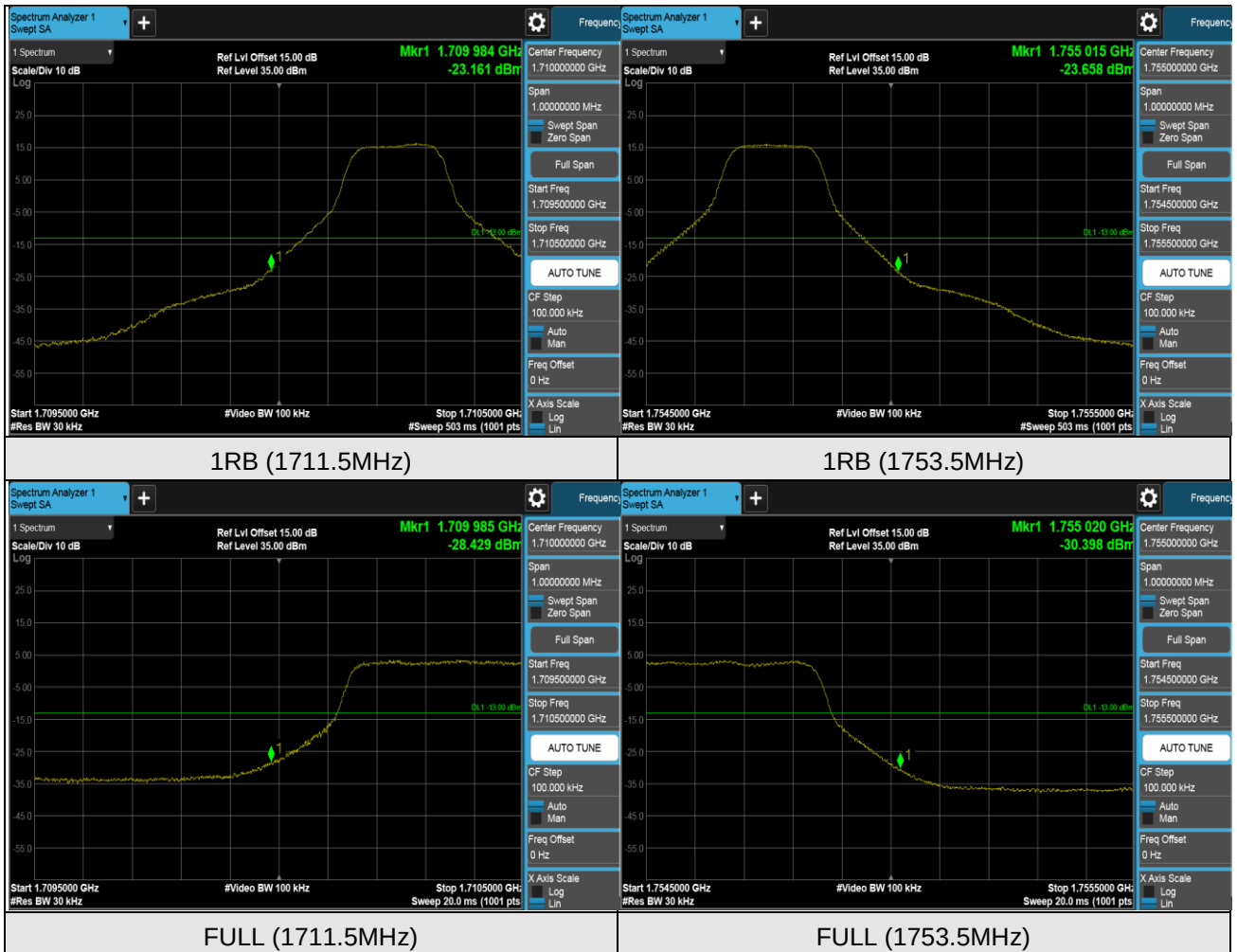
HSUPA



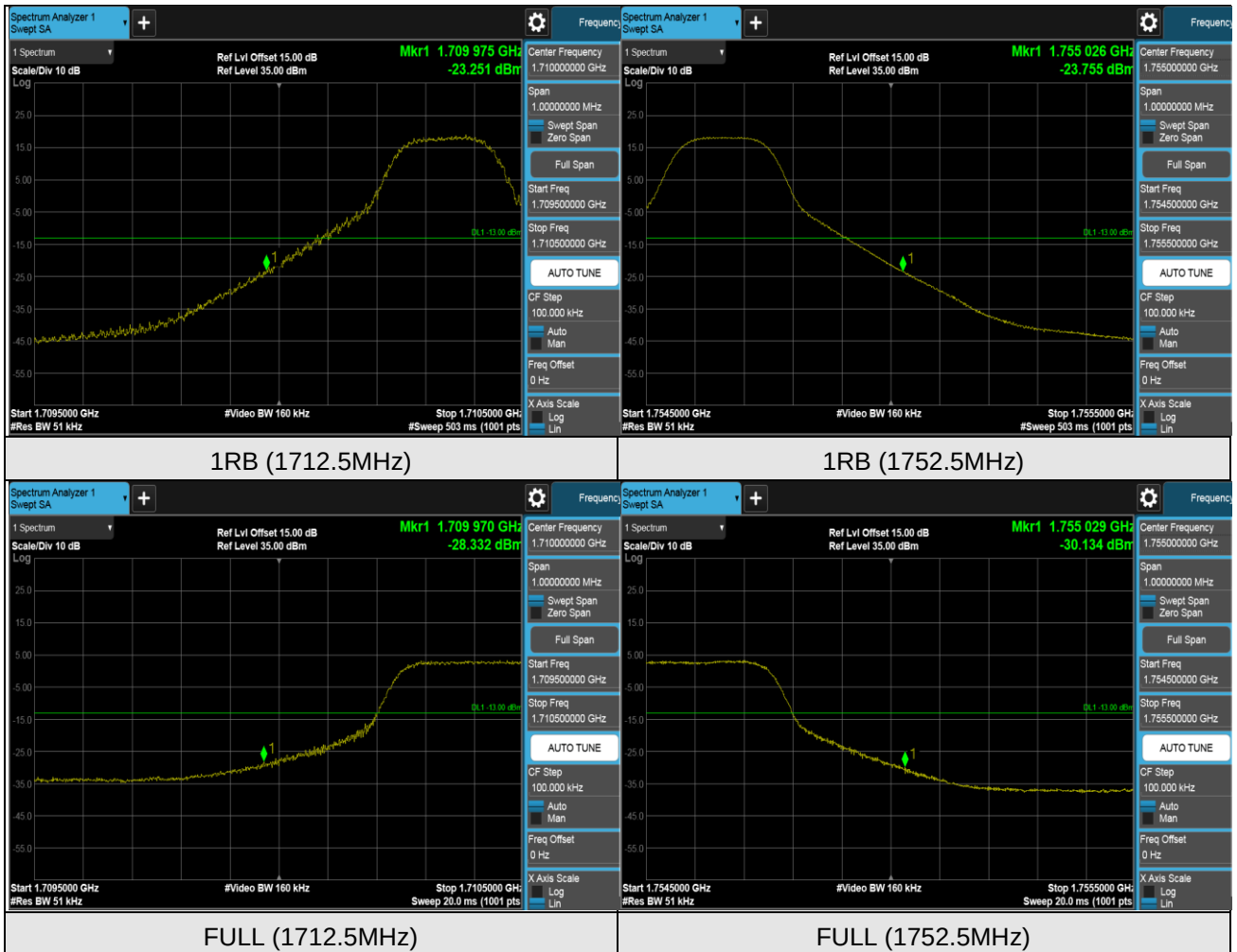
LTE Band 4 (Channel Bandwidth 1.4MHz)



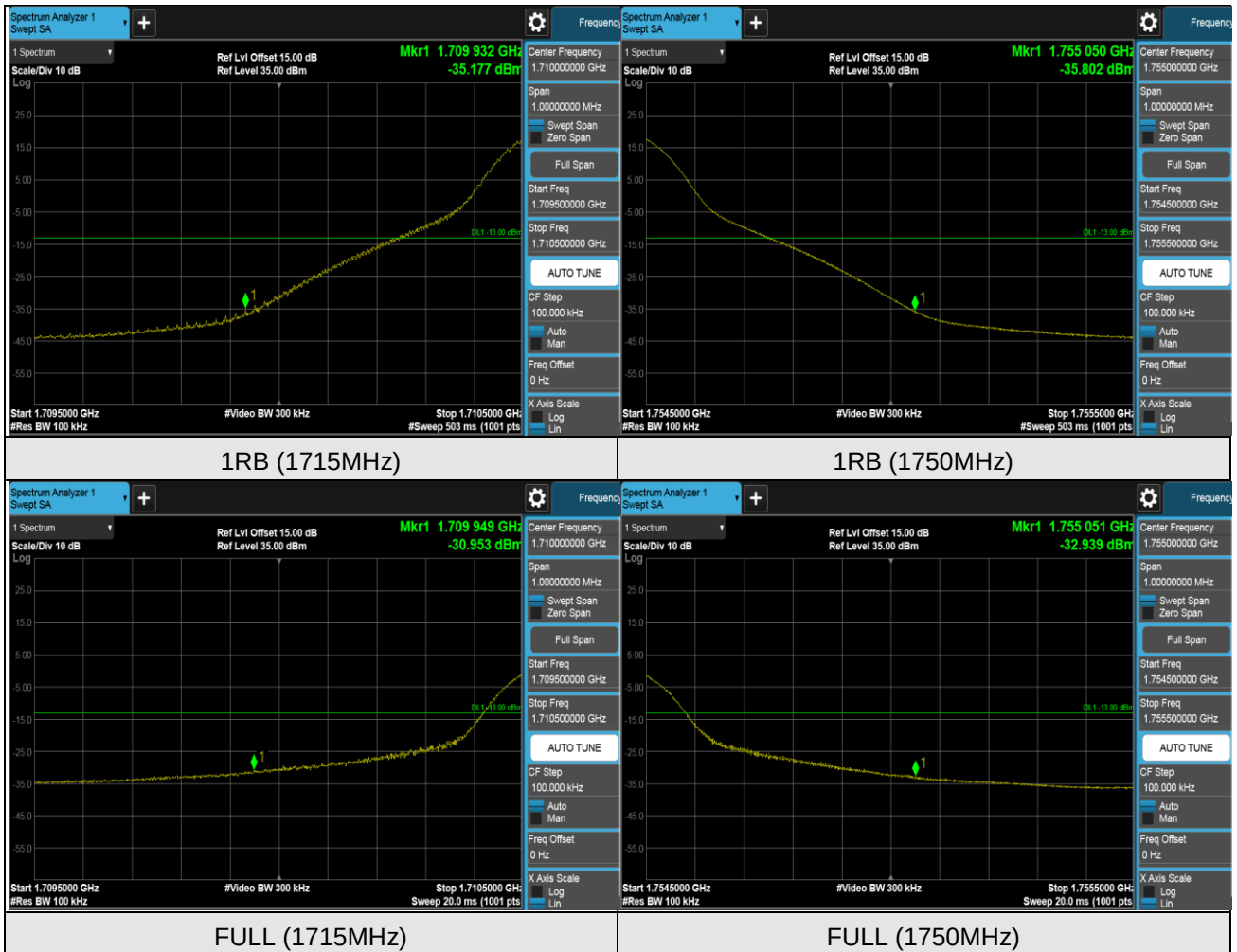
LTE Band 4 (Channel Bandwidth 3MHz)



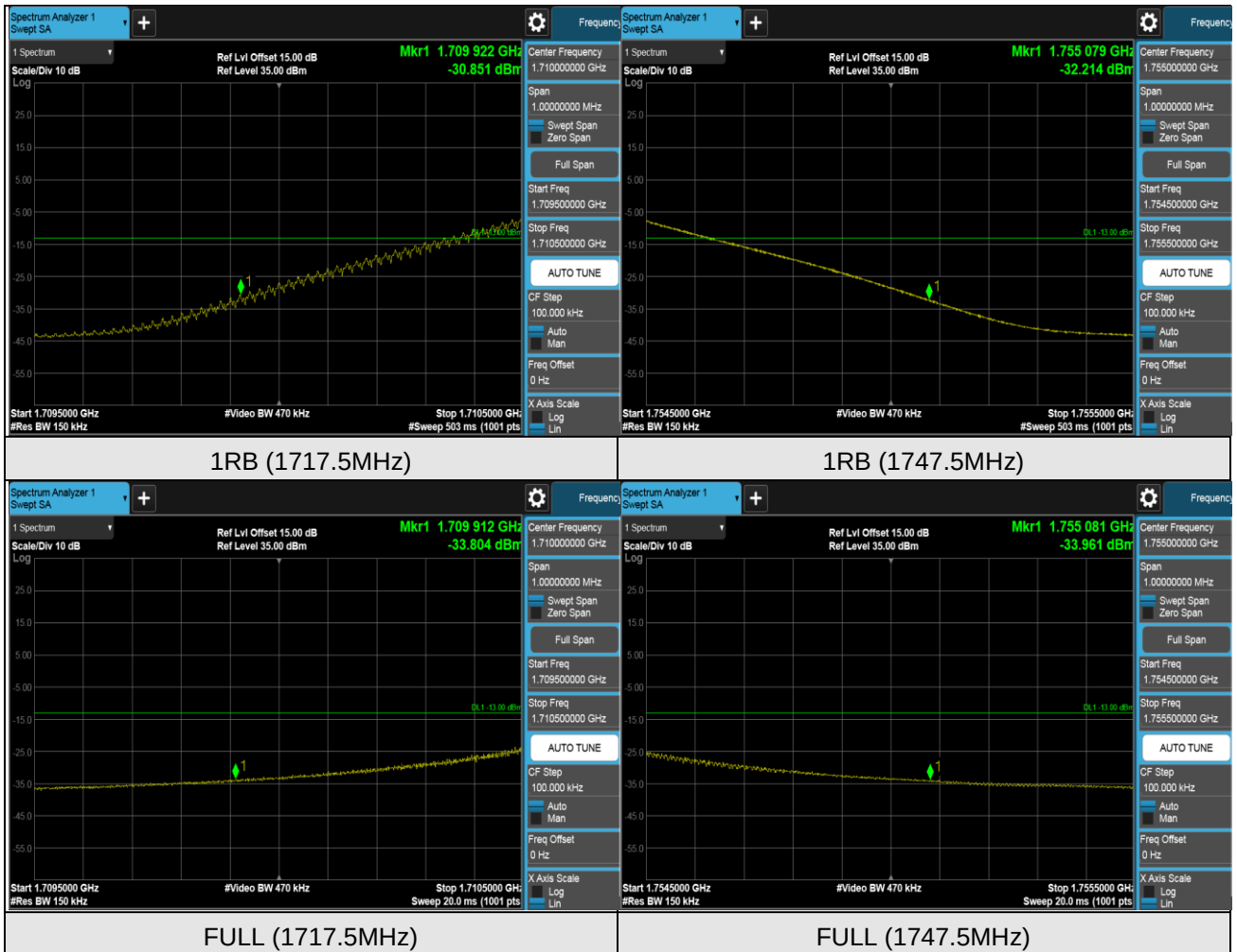
LTE Band 4 (Channel Bandwidth 5MHz)



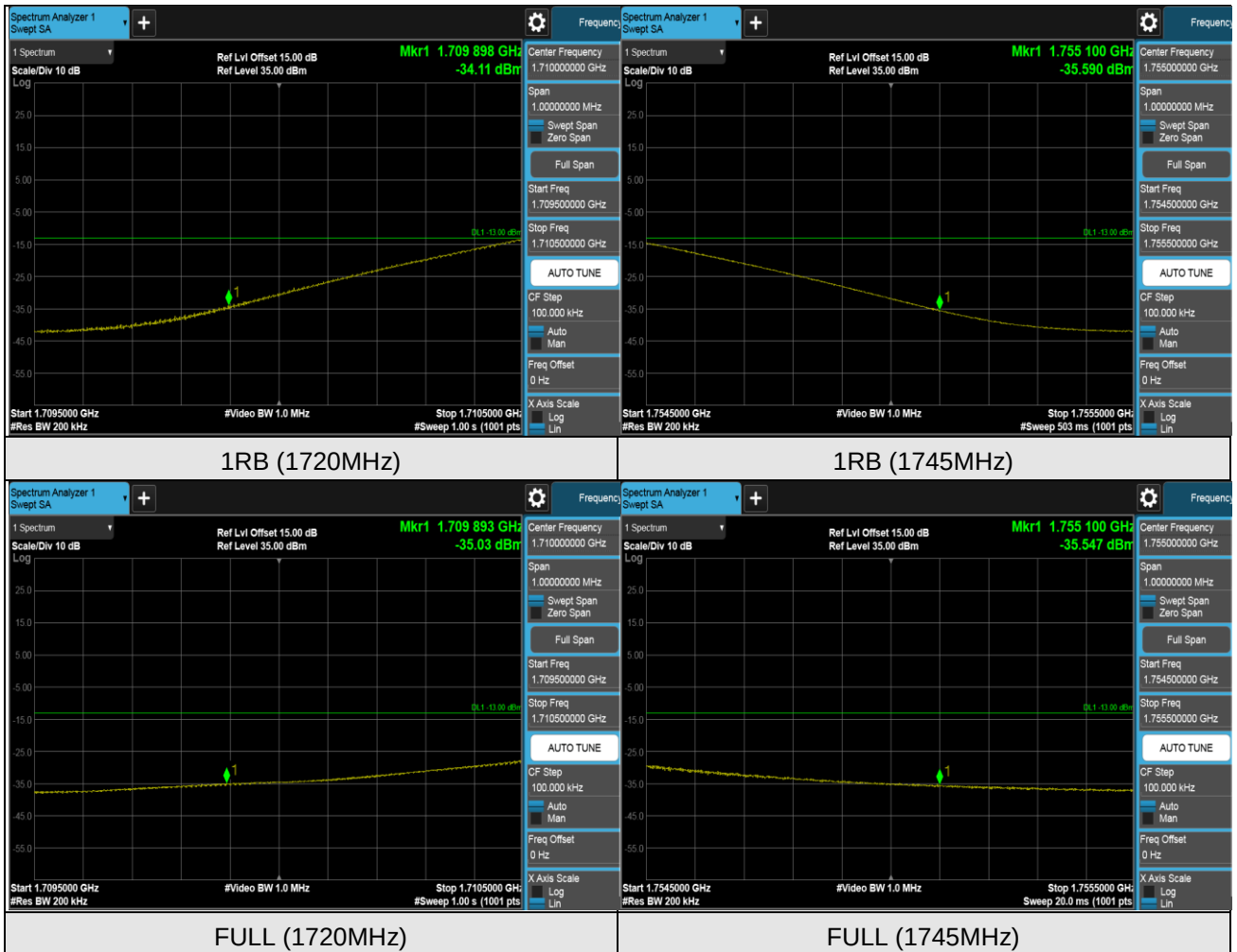
LTE Band 4 (Channel Bandwidth 10MHz)



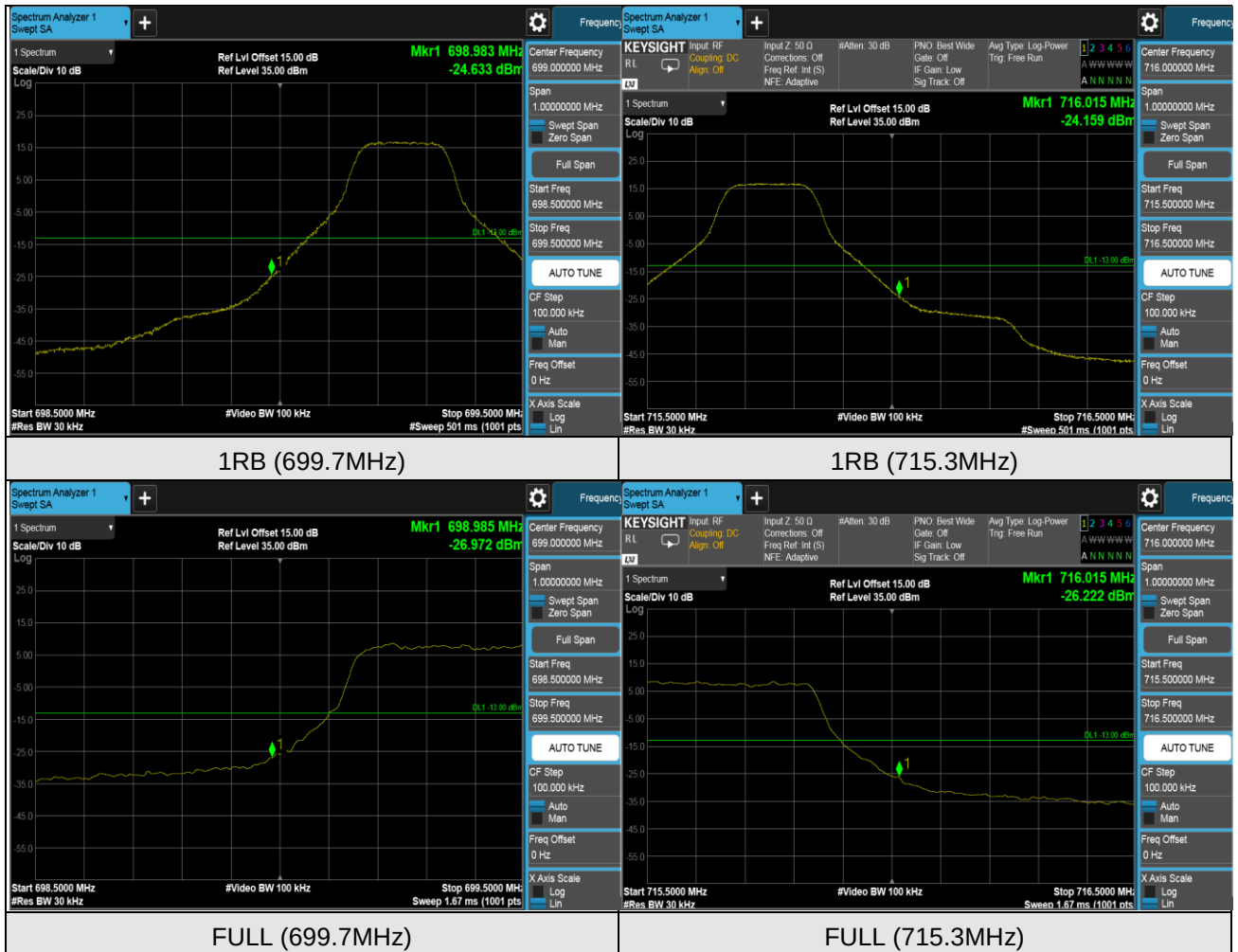
LTE Band 4 (Channel Bandwidth 15MHz)



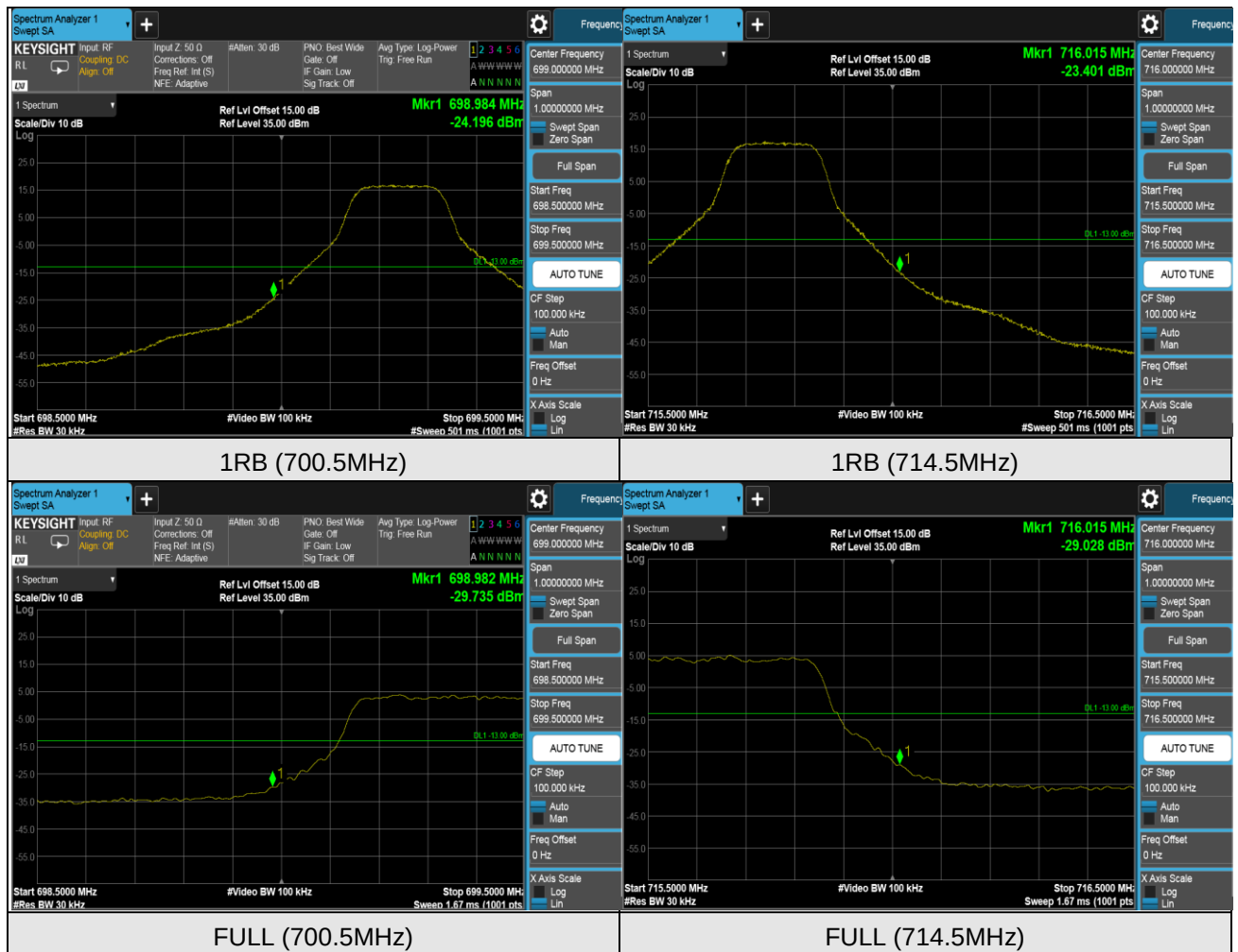
LTE Band 4 (Channel Bandwidth 20MHz)



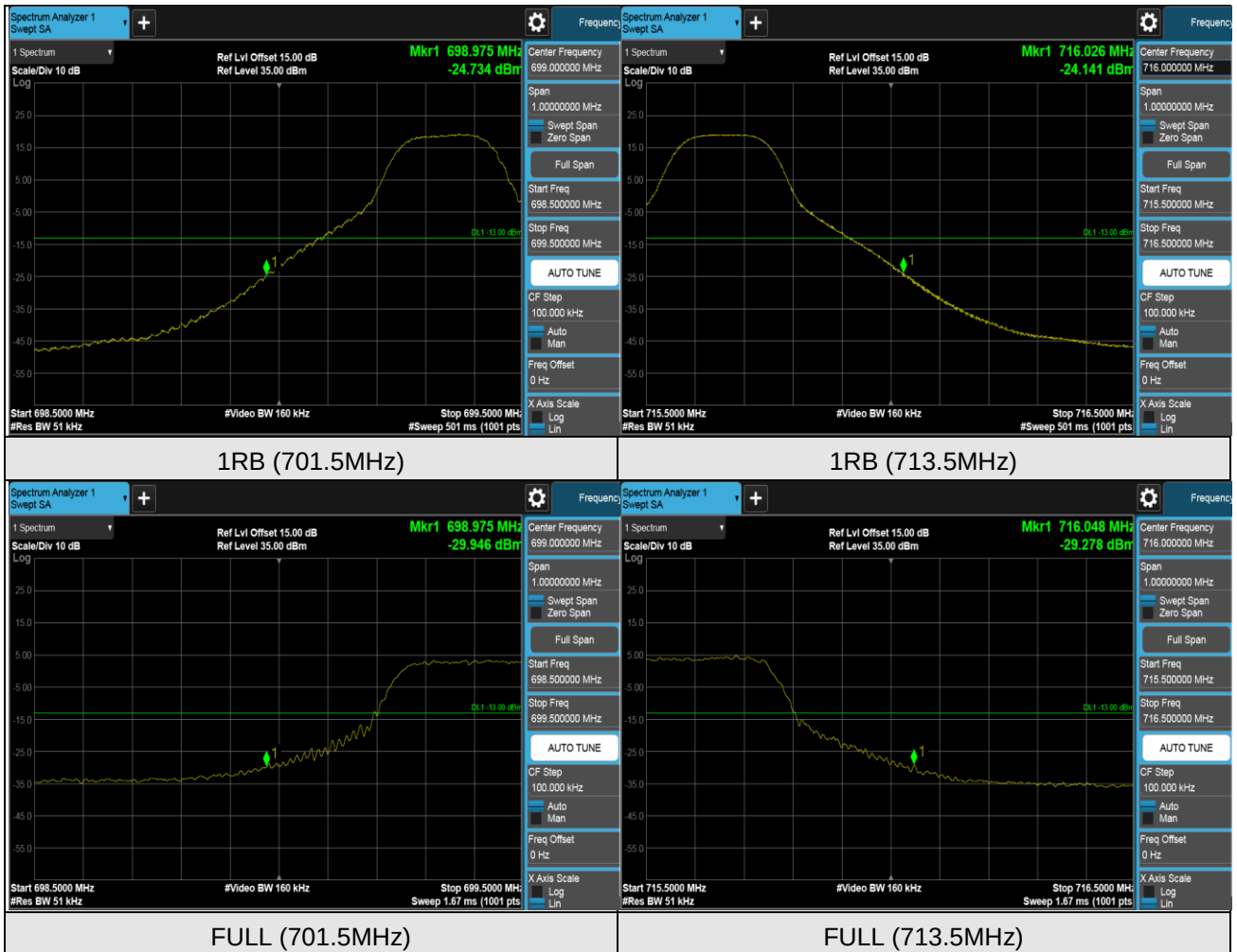
LTE Band 12 (Channel Bandwidth 1.4MHz)



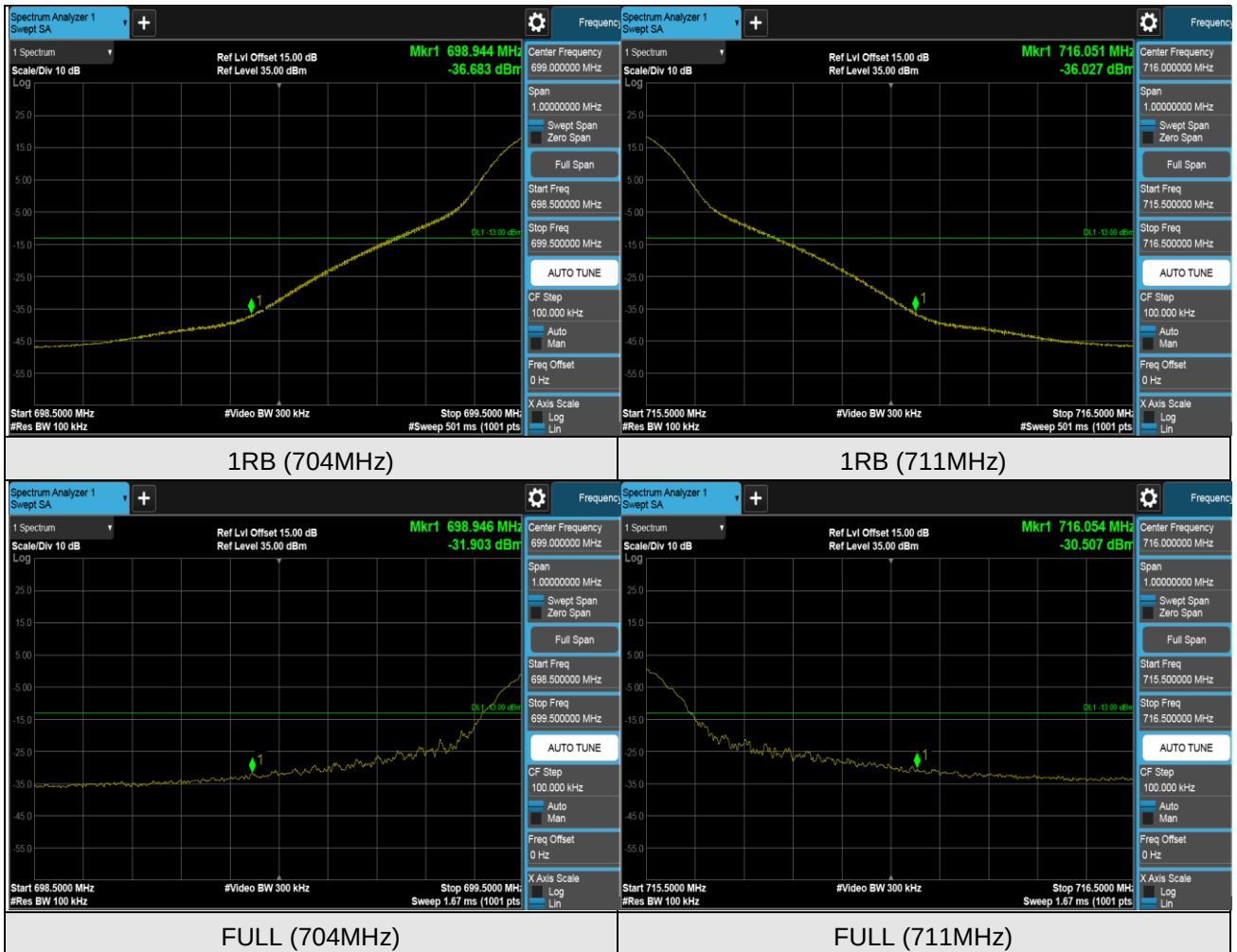
LTE Band 12 (Channel Bandwidth 3MHz)



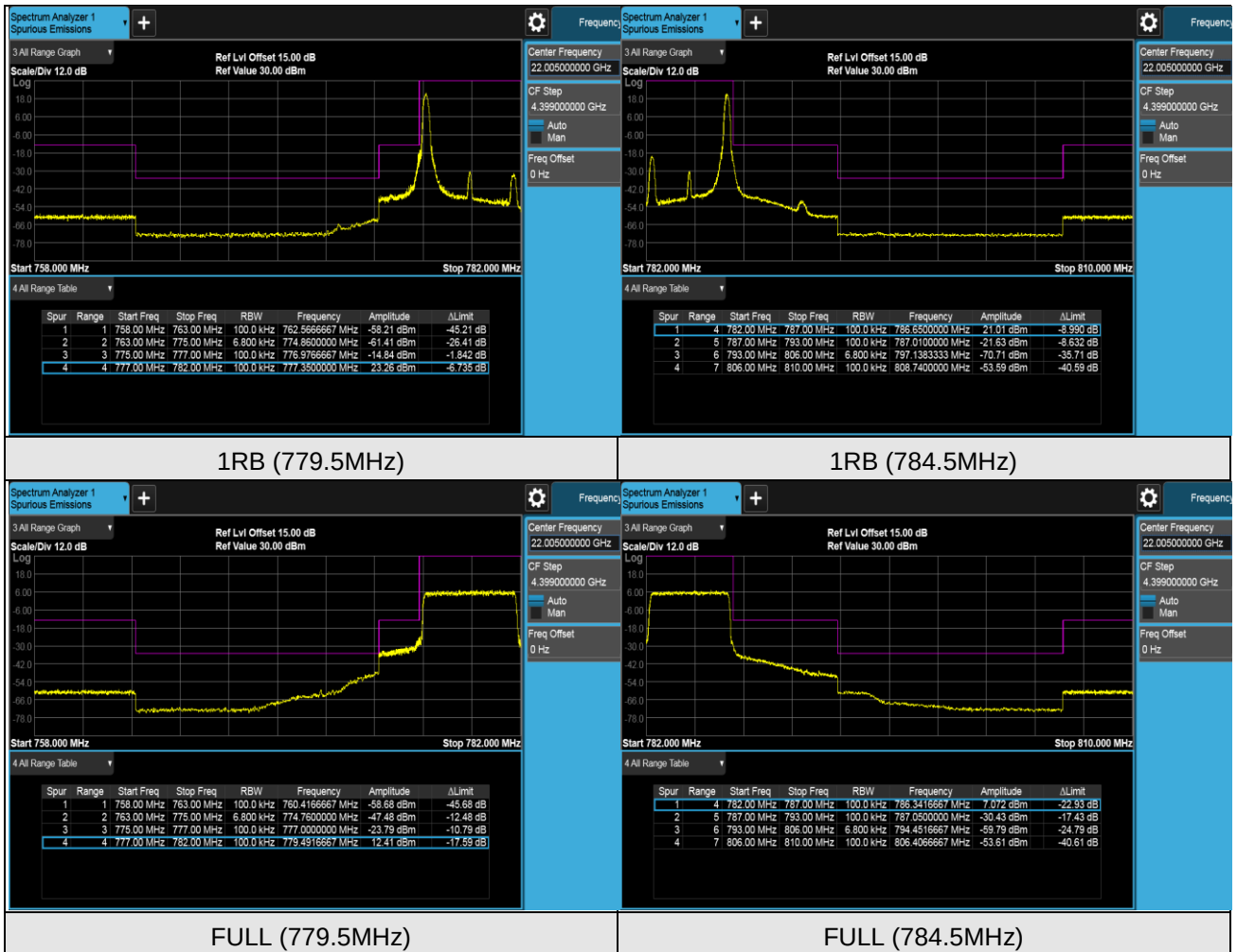
LTE Band 12 (Channel Bandwidth 5MHz)



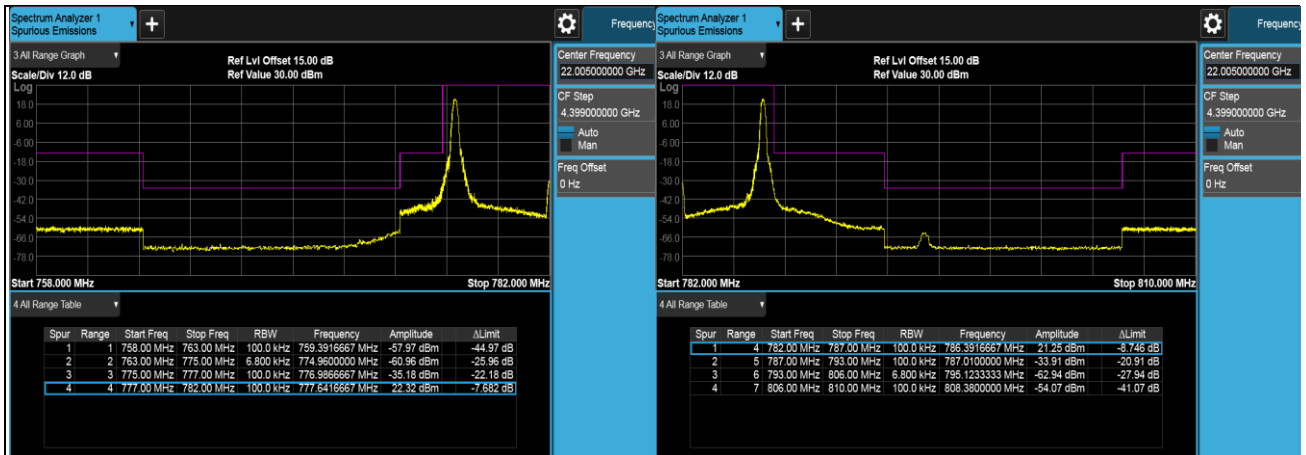
LTE Band 12 (Channel Bandwidth 10MHz)



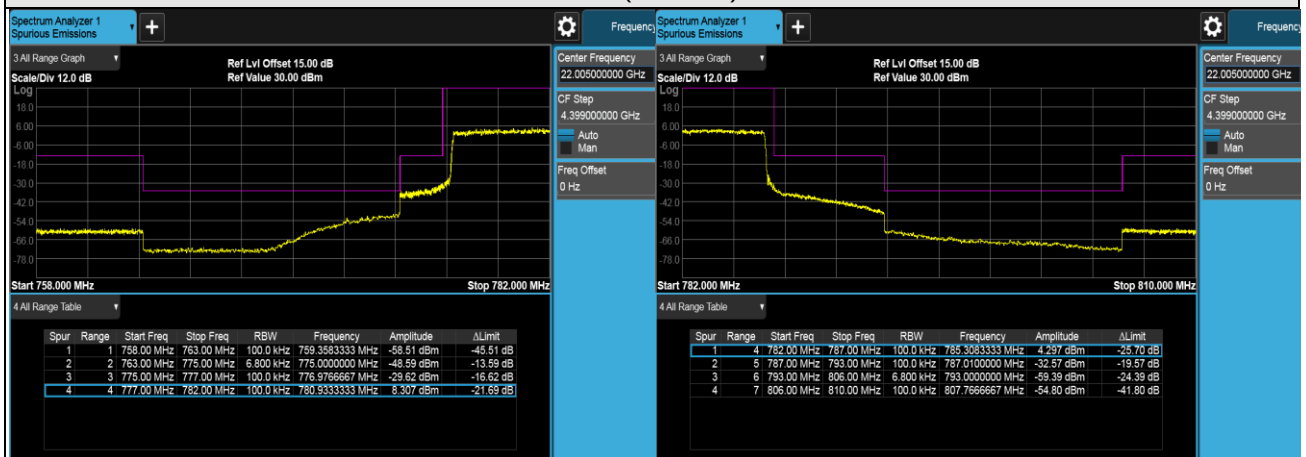
LTE Band 13 (Channel Bandwidth 5MHz)



LTE Band 13 (Channel Bandwidth 10MHz)

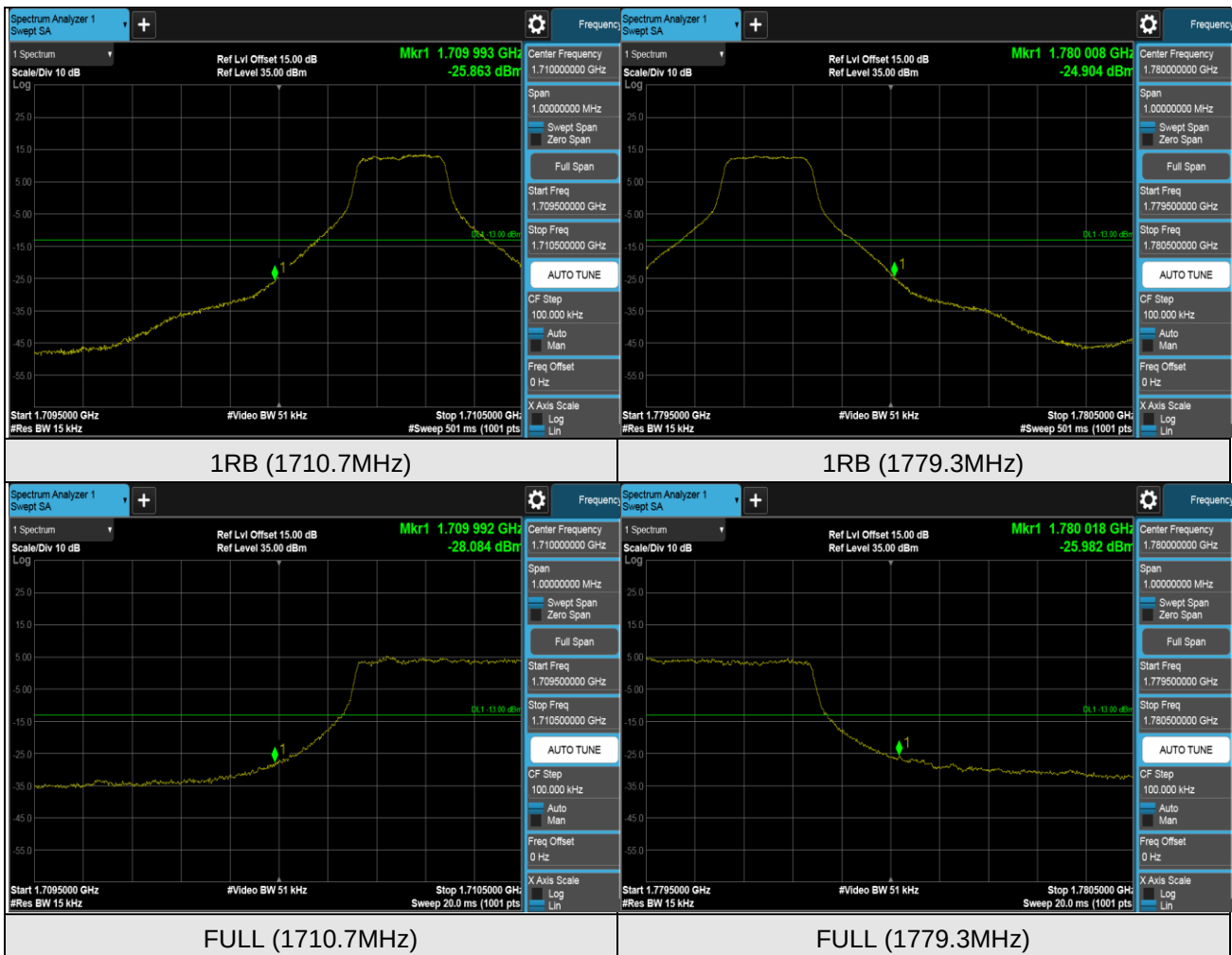


1RB (782MHz)

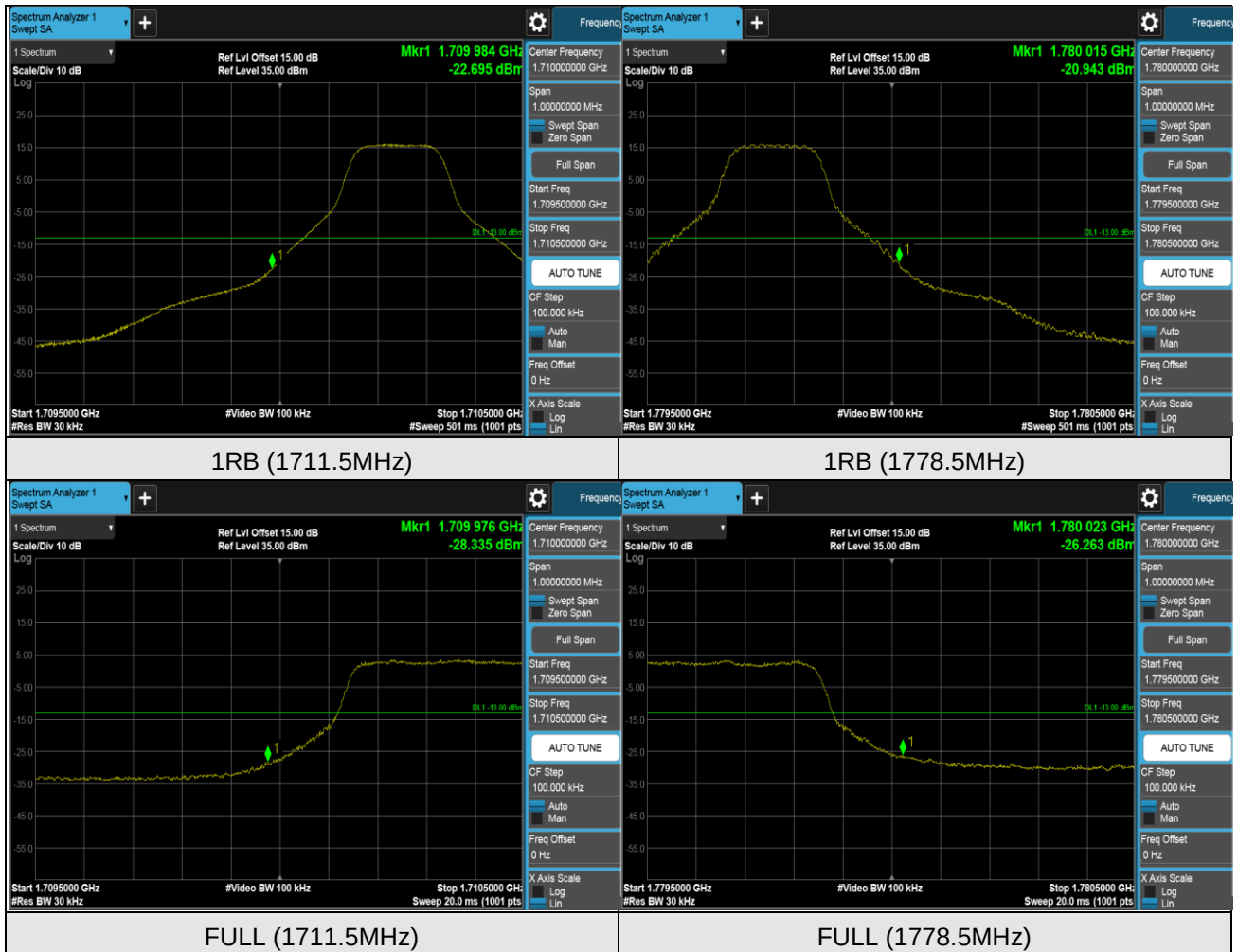


FULL (782MHz)

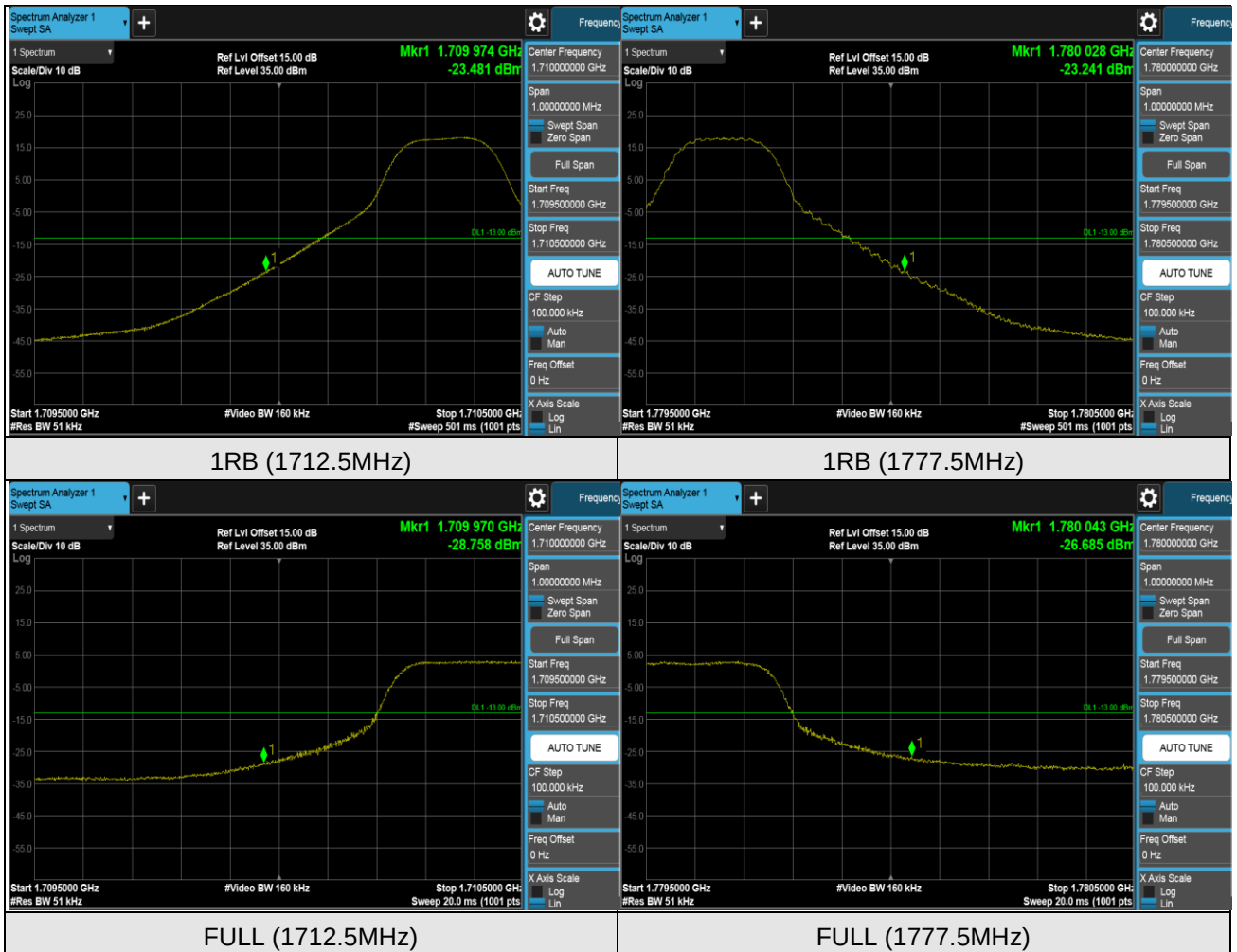
LTE Band 66 (Channel Bandwidth 1.4MHz)



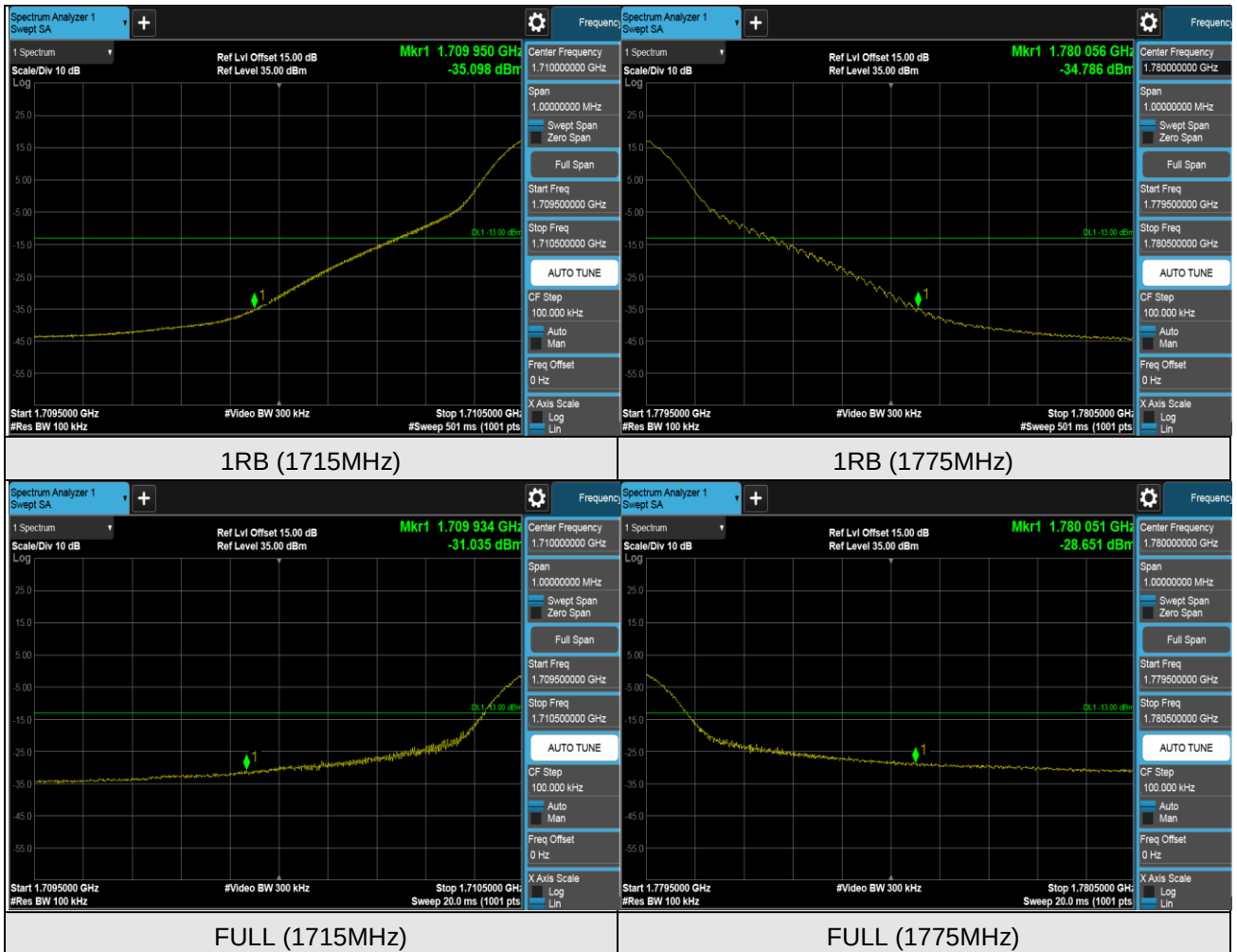
LTE Band 66 (Channel Bandwidth 3MHz)



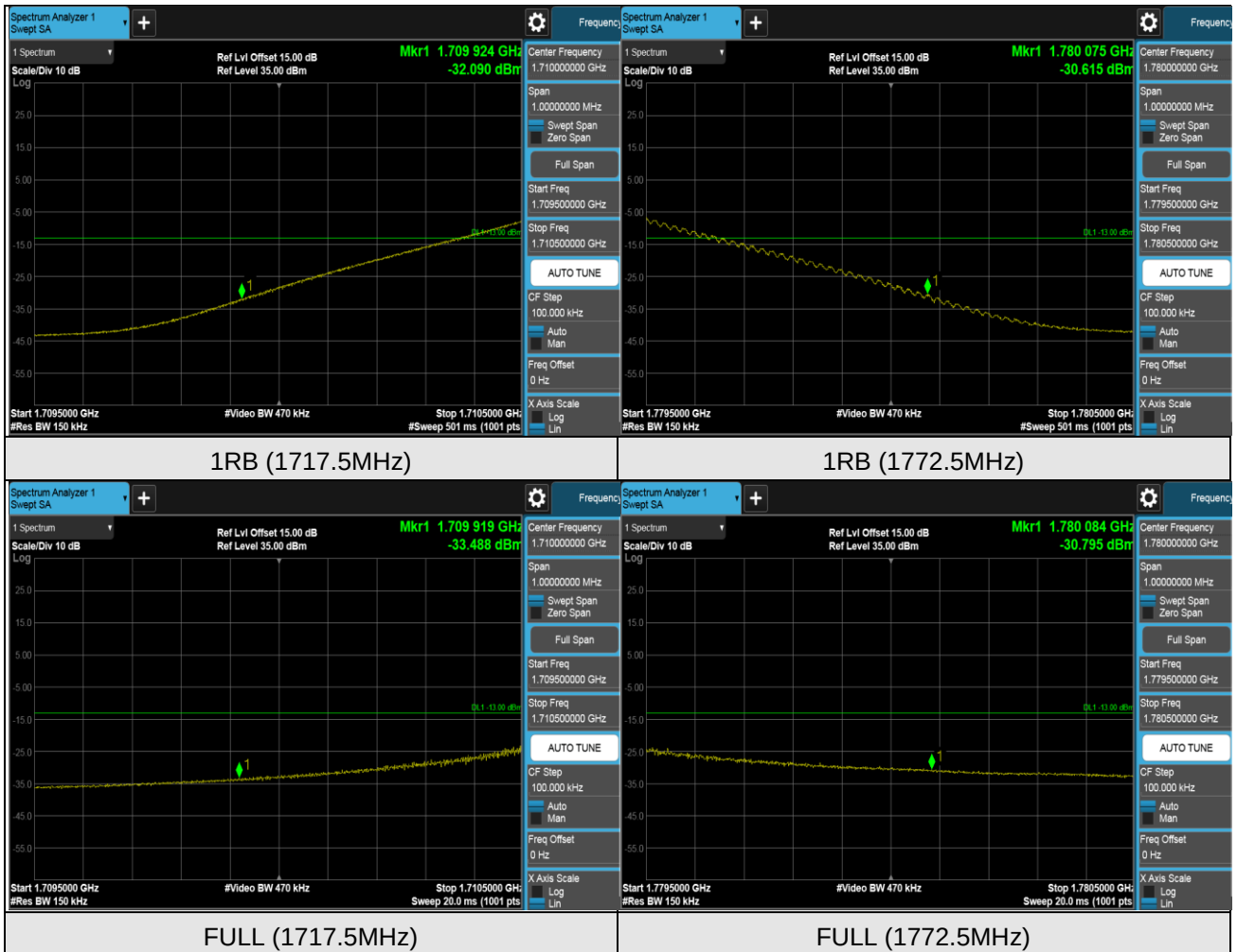
LTE Band 66 (Channel Bandwidth 5MHz)



LTE Band 66 (Channel Bandwidth 10MHz)



LTE Band 66 (Channel Bandwidth 15MHz)



LTE Band 66 (Channel Bandwidth 20MHz)

