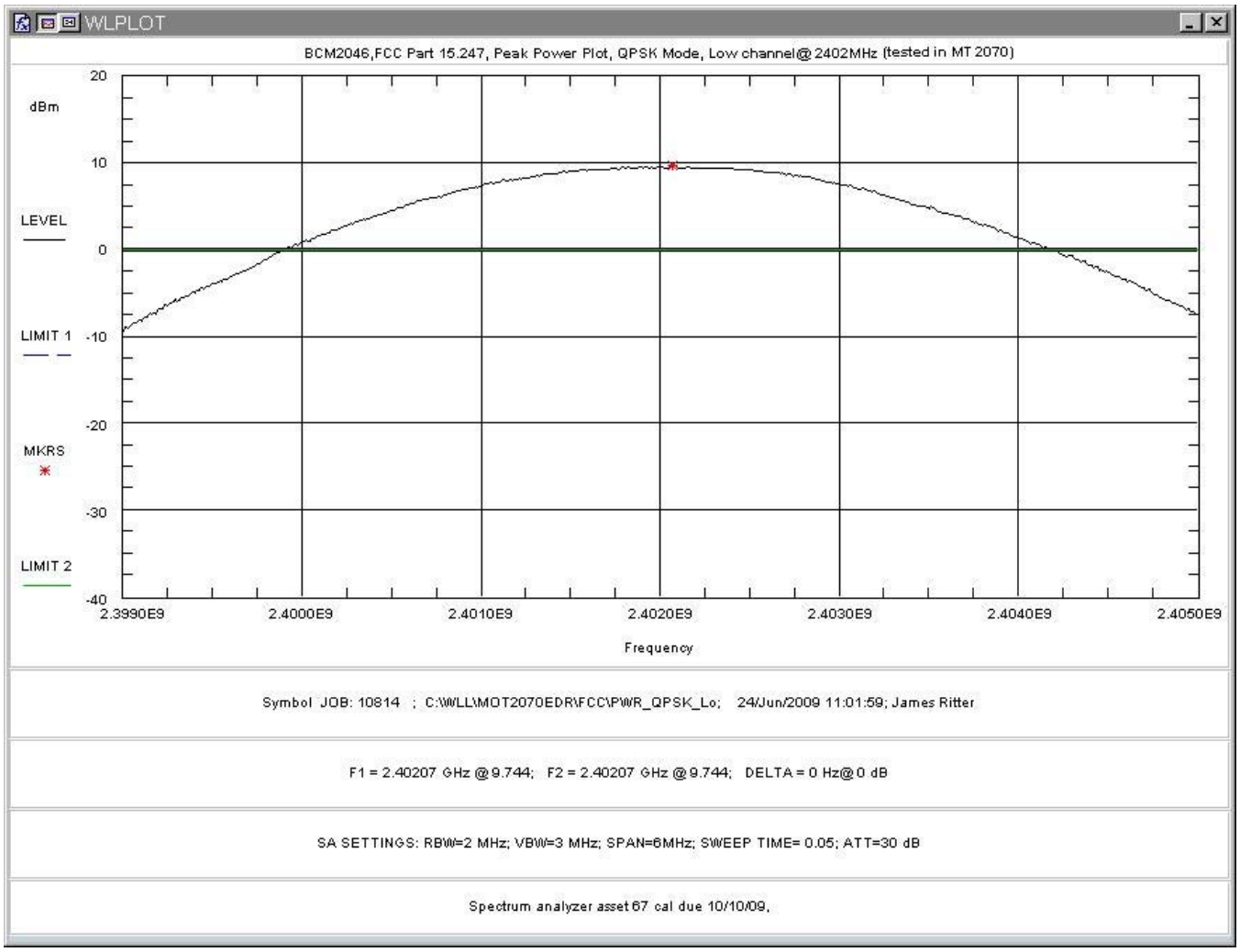

Figure 14. RF Peak Power, QPSK Mode, Low Channel (In MT2070 Host)

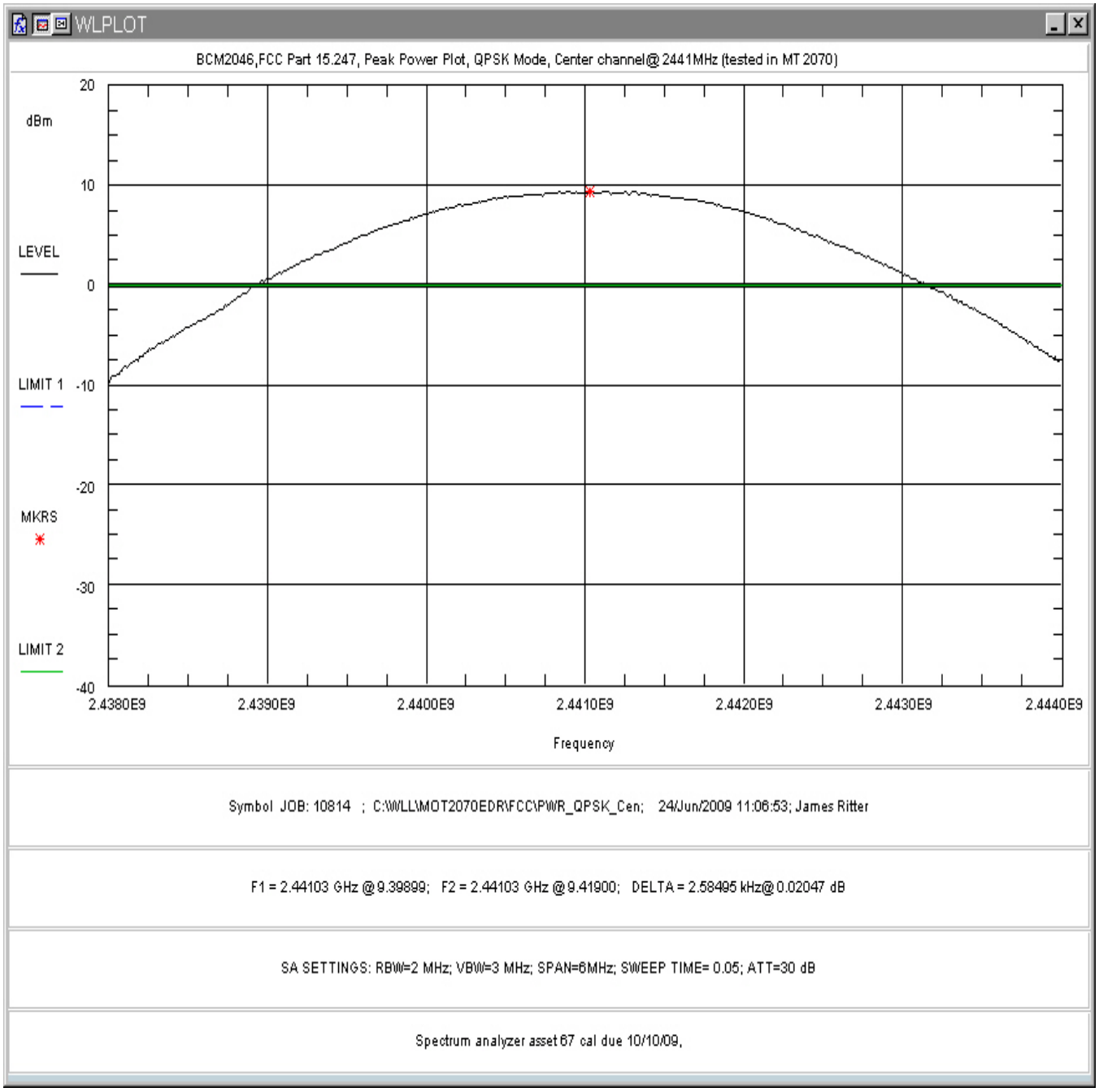

Figure 15. RF Peak Power, QPSK Mode, Center Channel (In MT2070 Host)

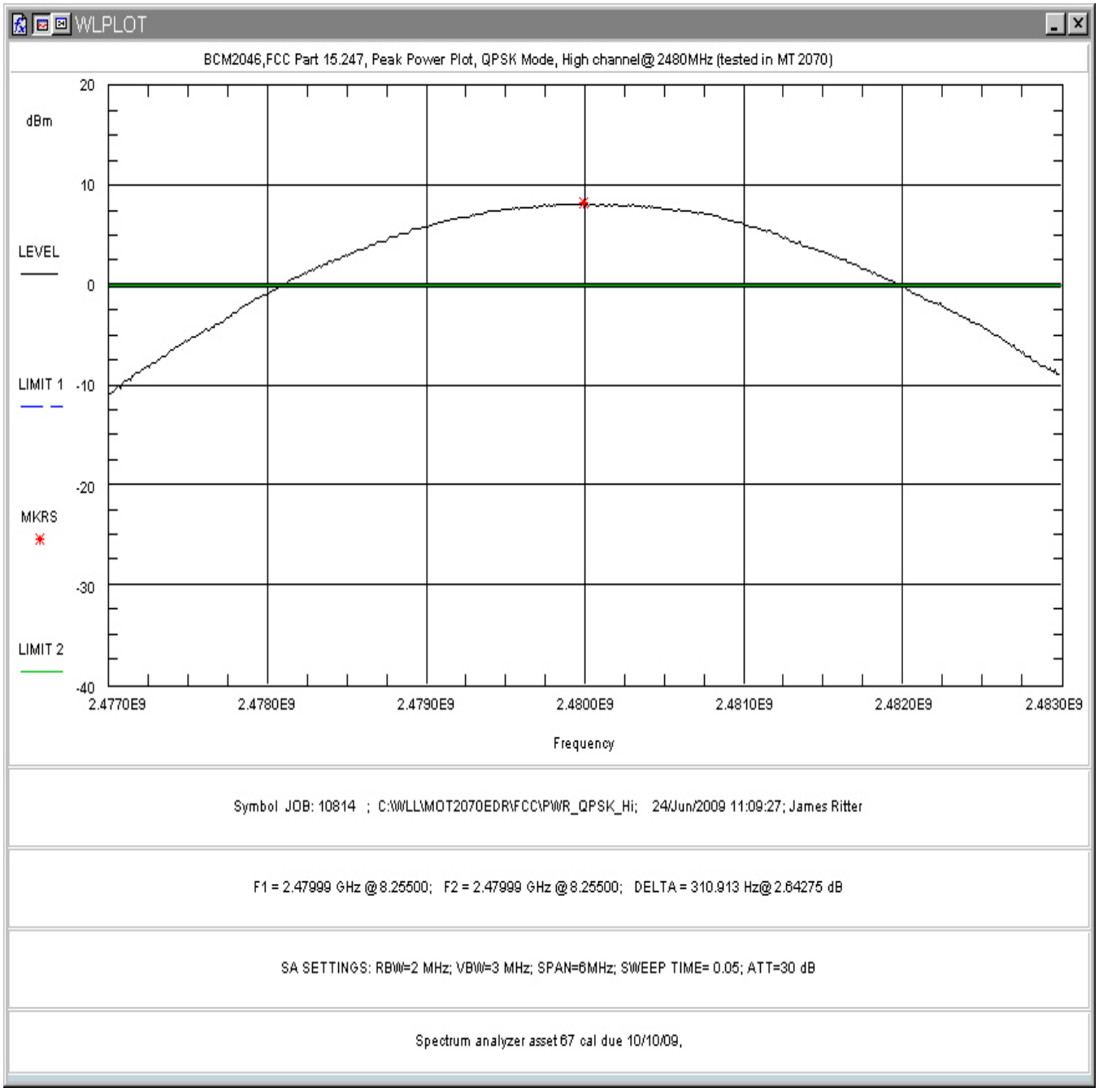

Figure 16. RF Peak Power, QPSK Mode, High Channel (In MT2070 Host)

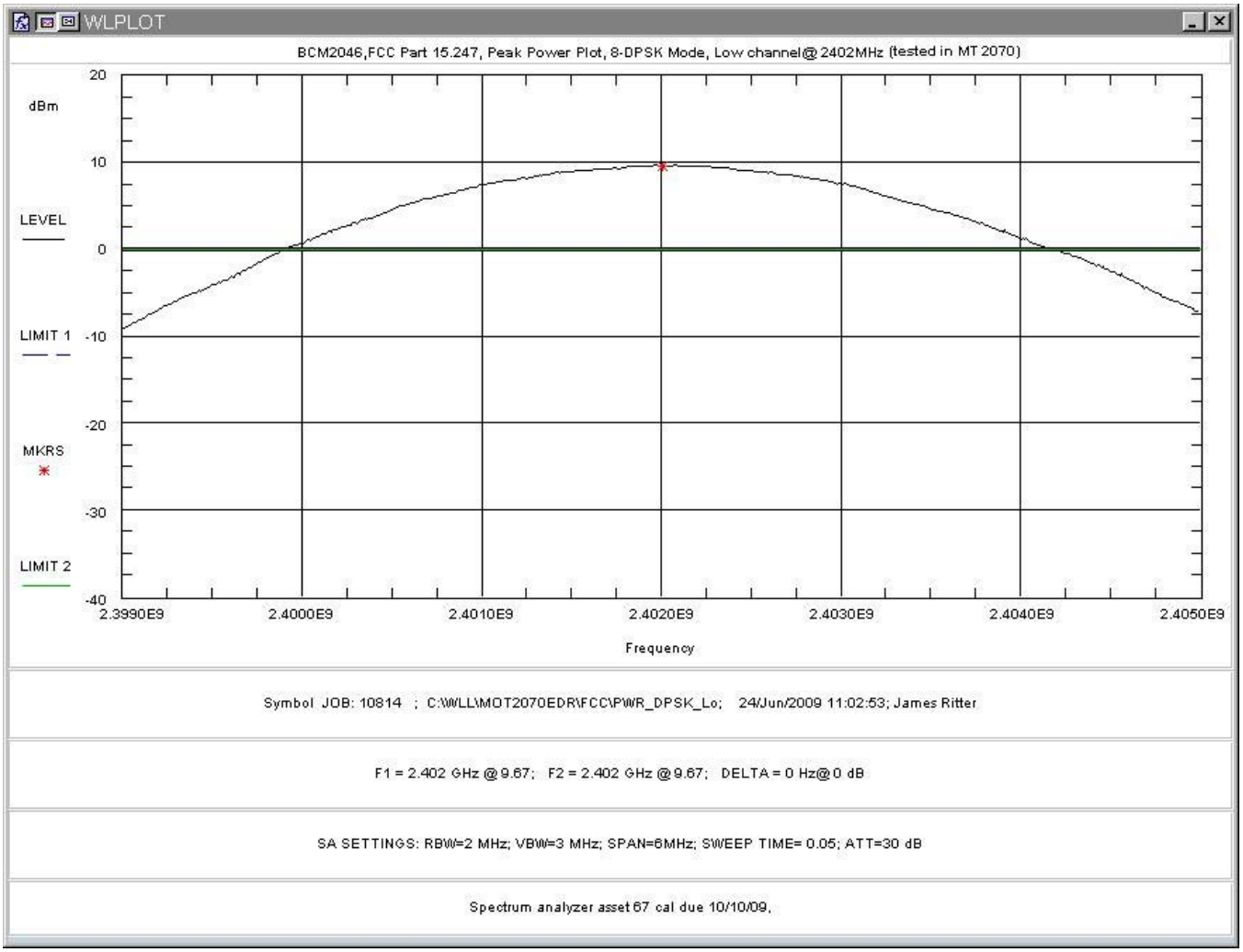

Figure 17. RF Peak Power, 8-DPSK Mode, Low Channel (In MT2070 Host)

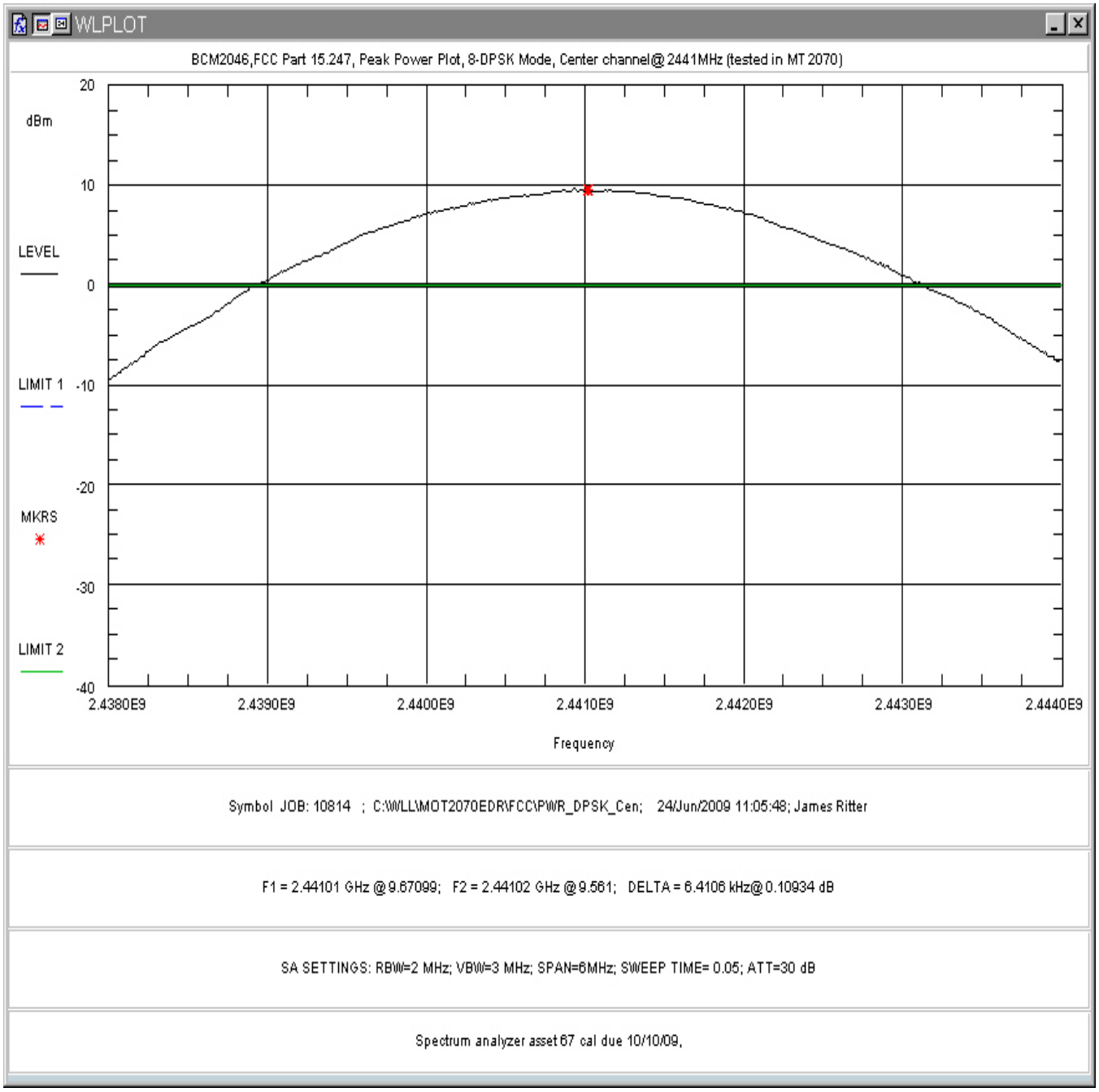

Figure 18. RF Peak Power, 8-DPSK Mode, Center Channel (In MT2070 Host)

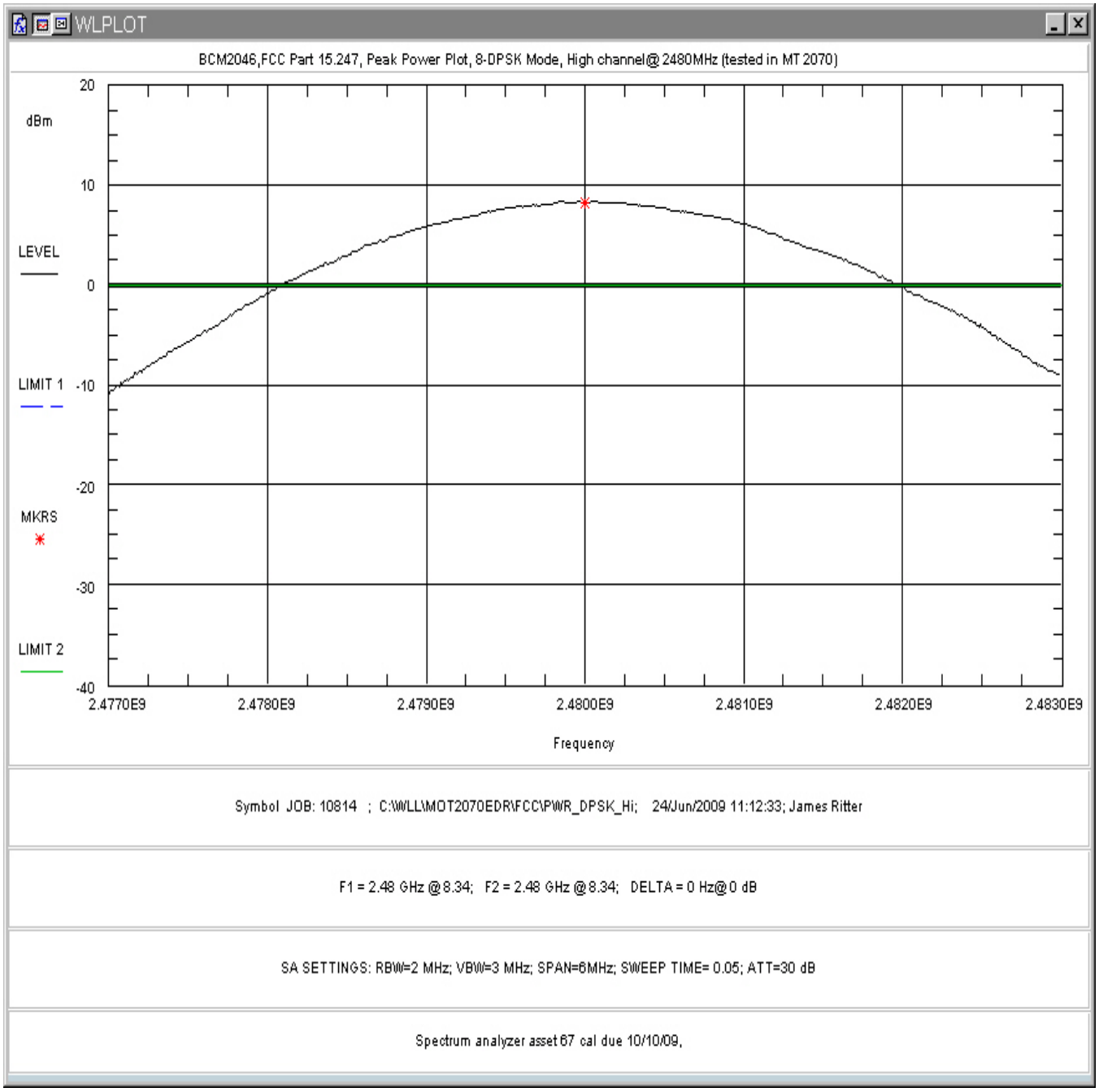

Figure 19. RF Peak Power, 8-DPSK Mode, High Channel (In MT2070 Host)

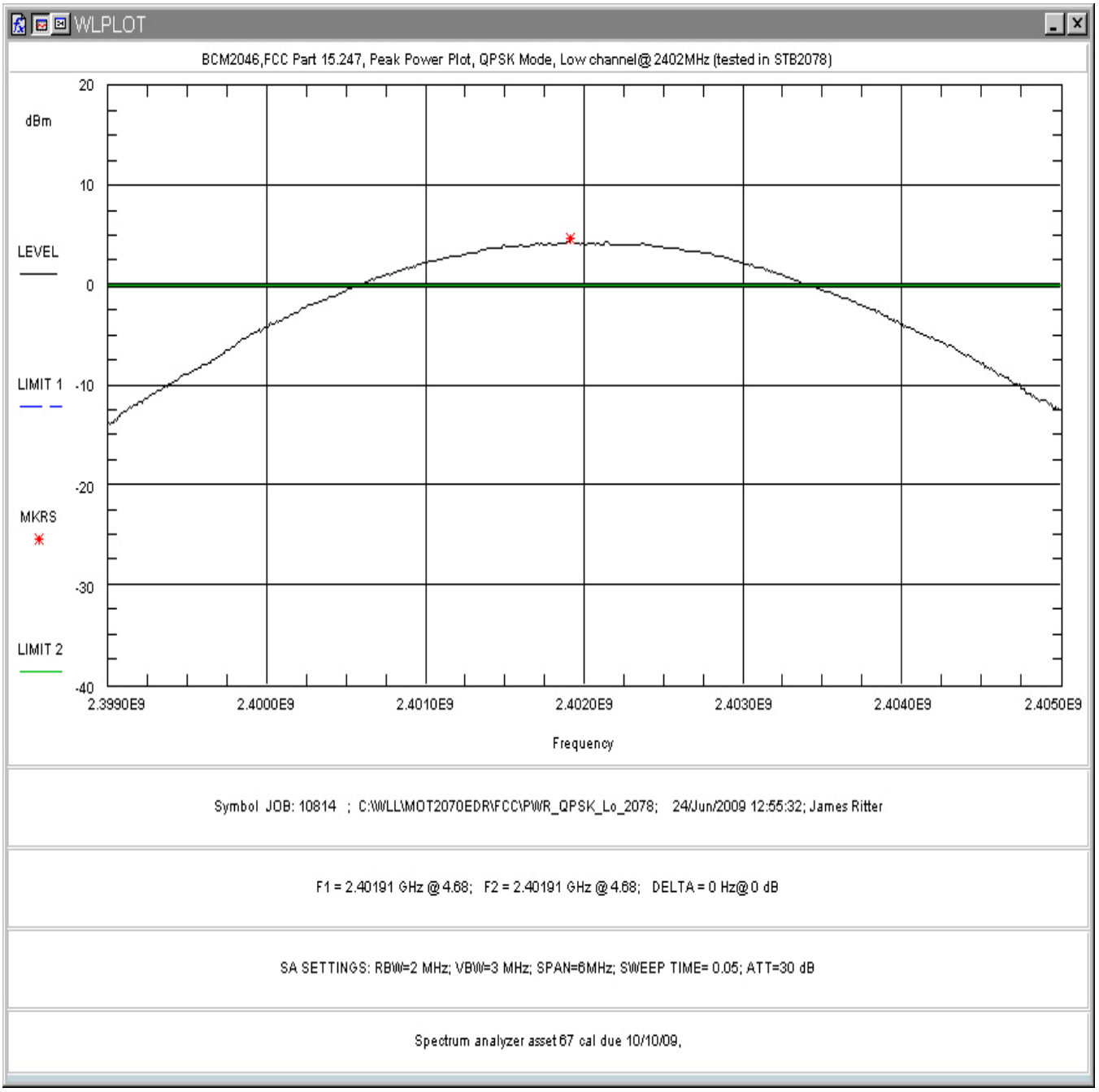

Figure 20. RF Peak Power, QPSK Mode, Low Channel (In STB2078 Host)

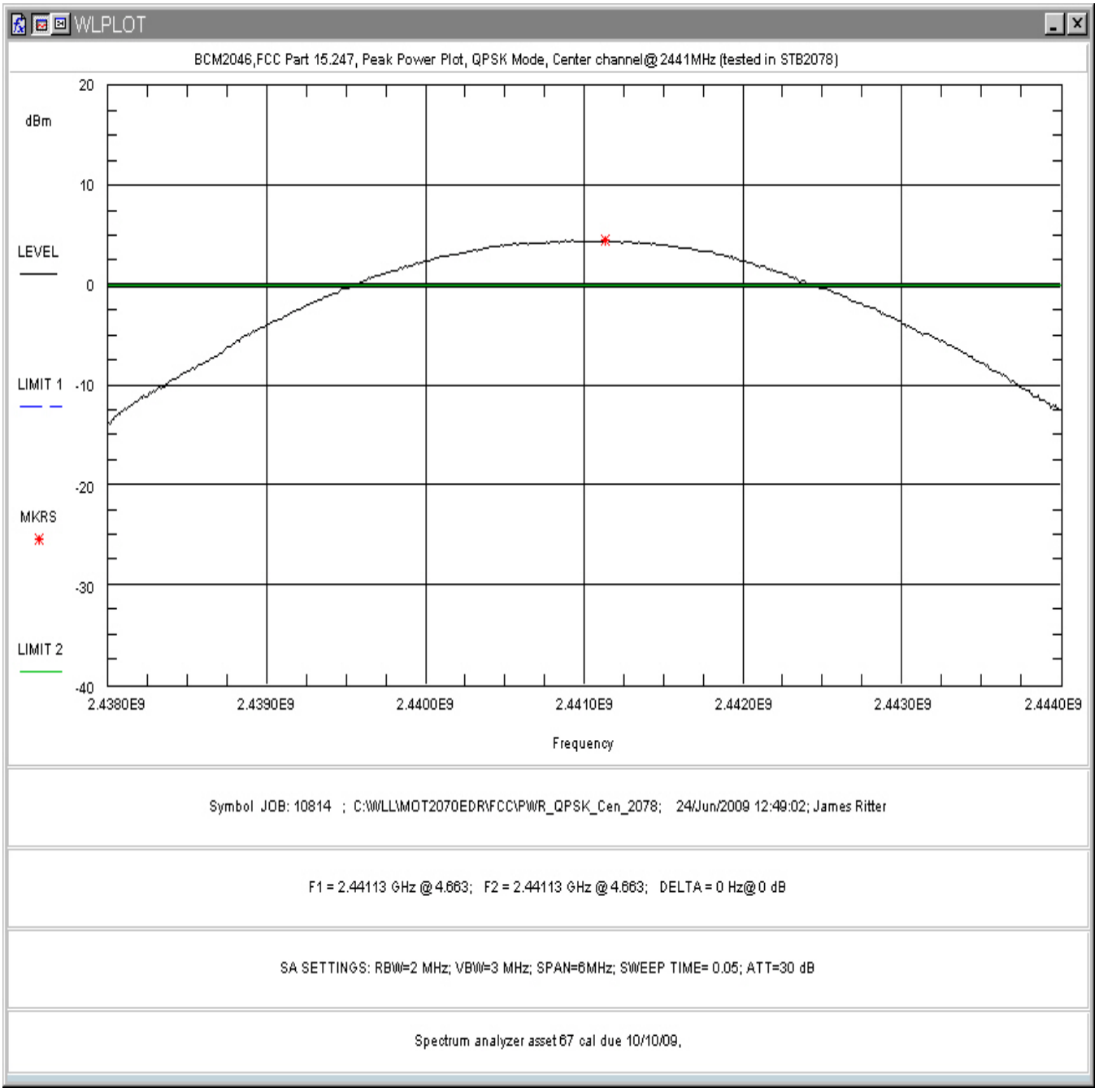

Figure 21. RF Peak Power, QPSK Mode, Center Channel (In STB2078 Host)

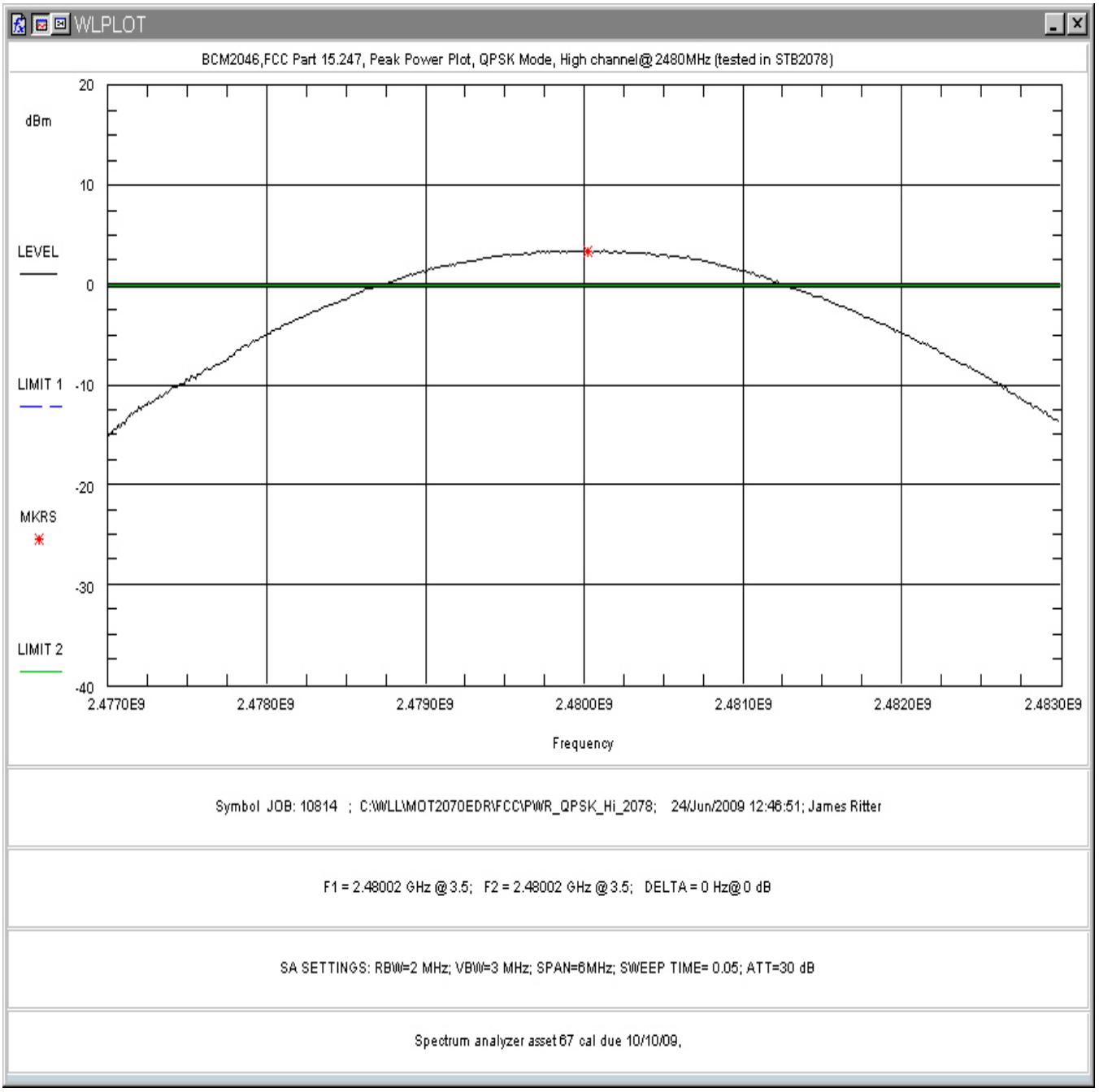

Figure 22.RF Peak Power, QPSK Mode, High Channel (In STB2078 Host)

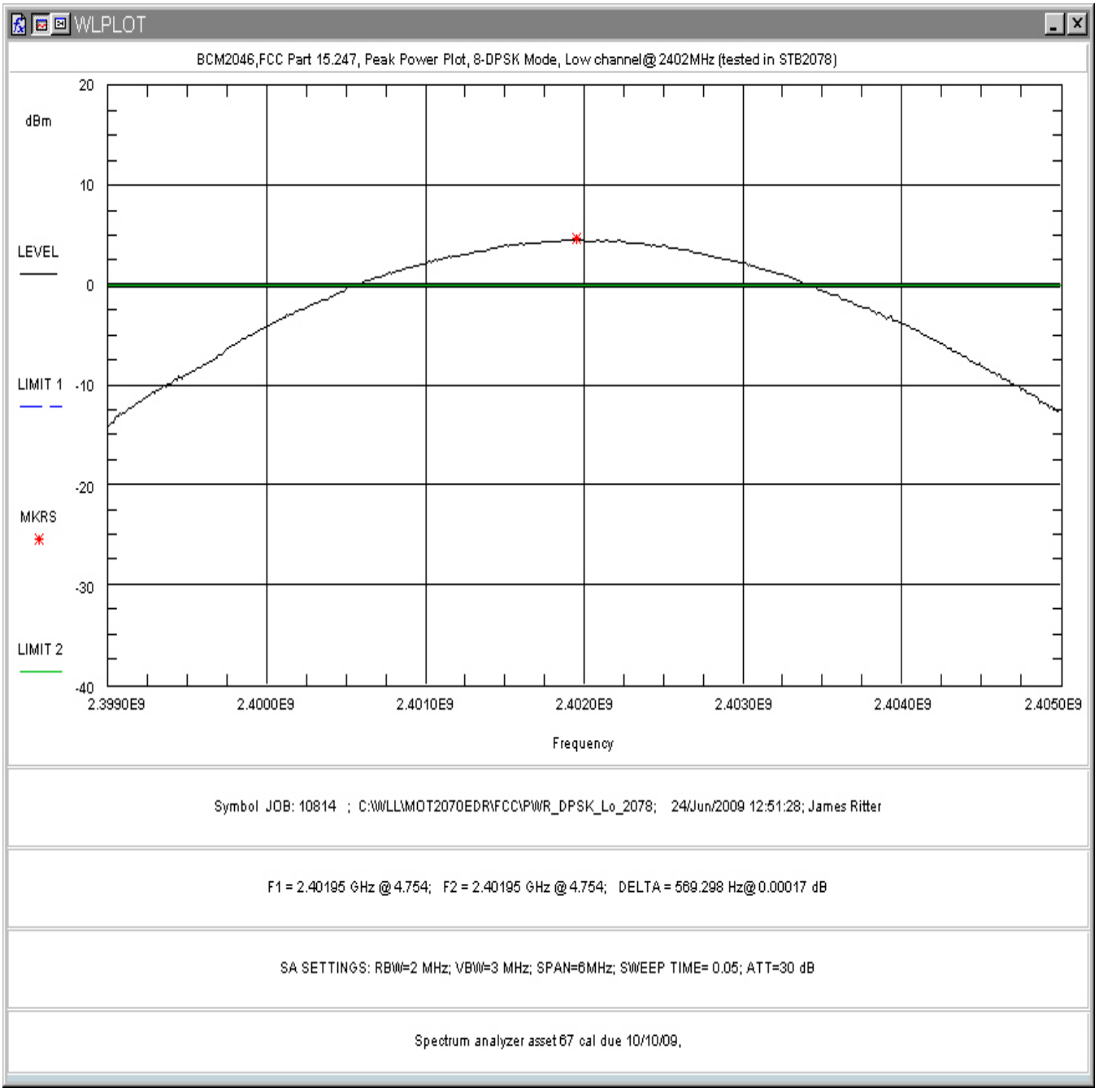

Figure 23. RF Peak Power, 8-DPSK Mode, Low Channel (In STB2078 Host)

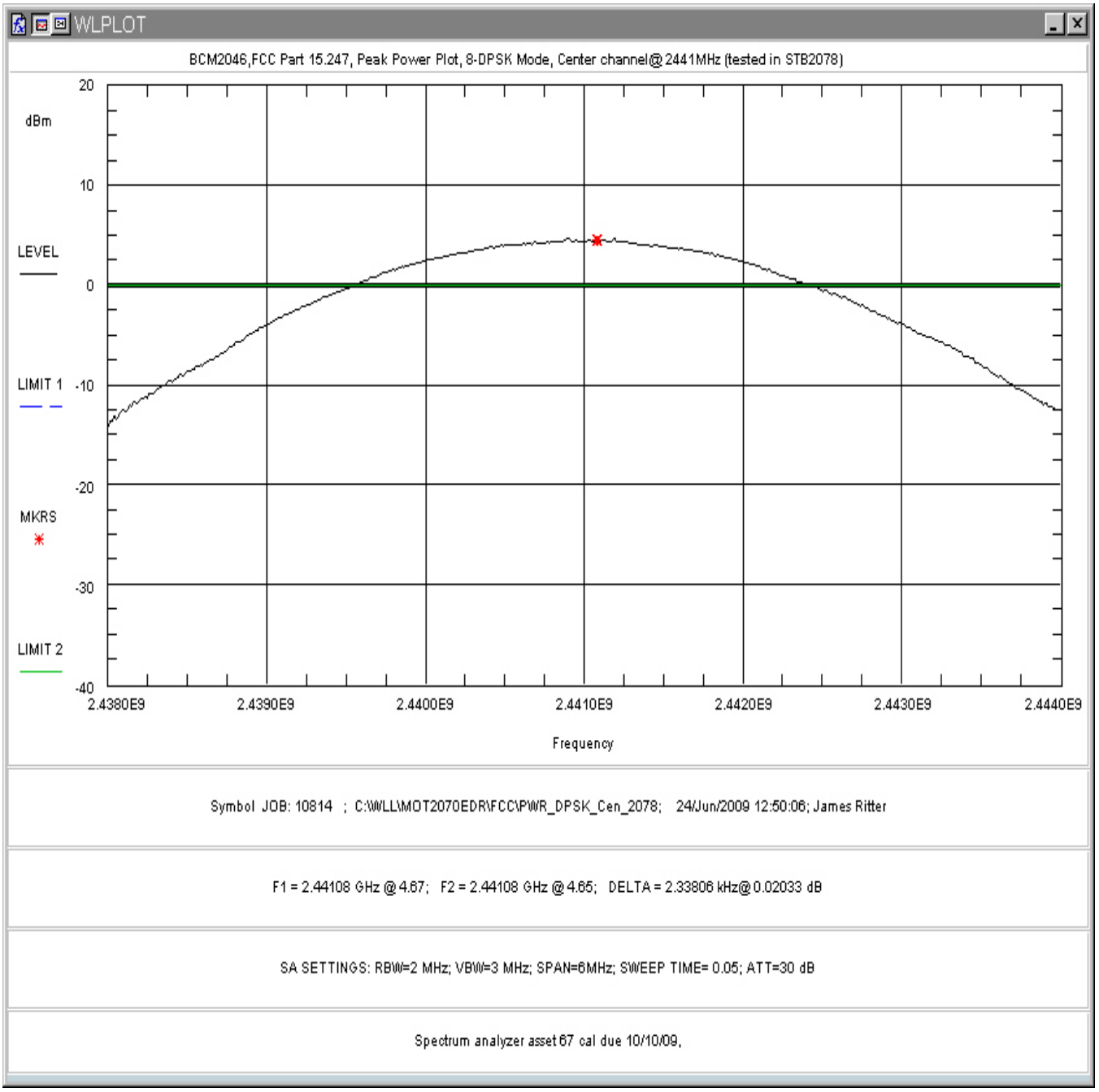

Figure 24. RF Peak Power, 8-DPSK Mode, Center Channel (In STB2078 Host)

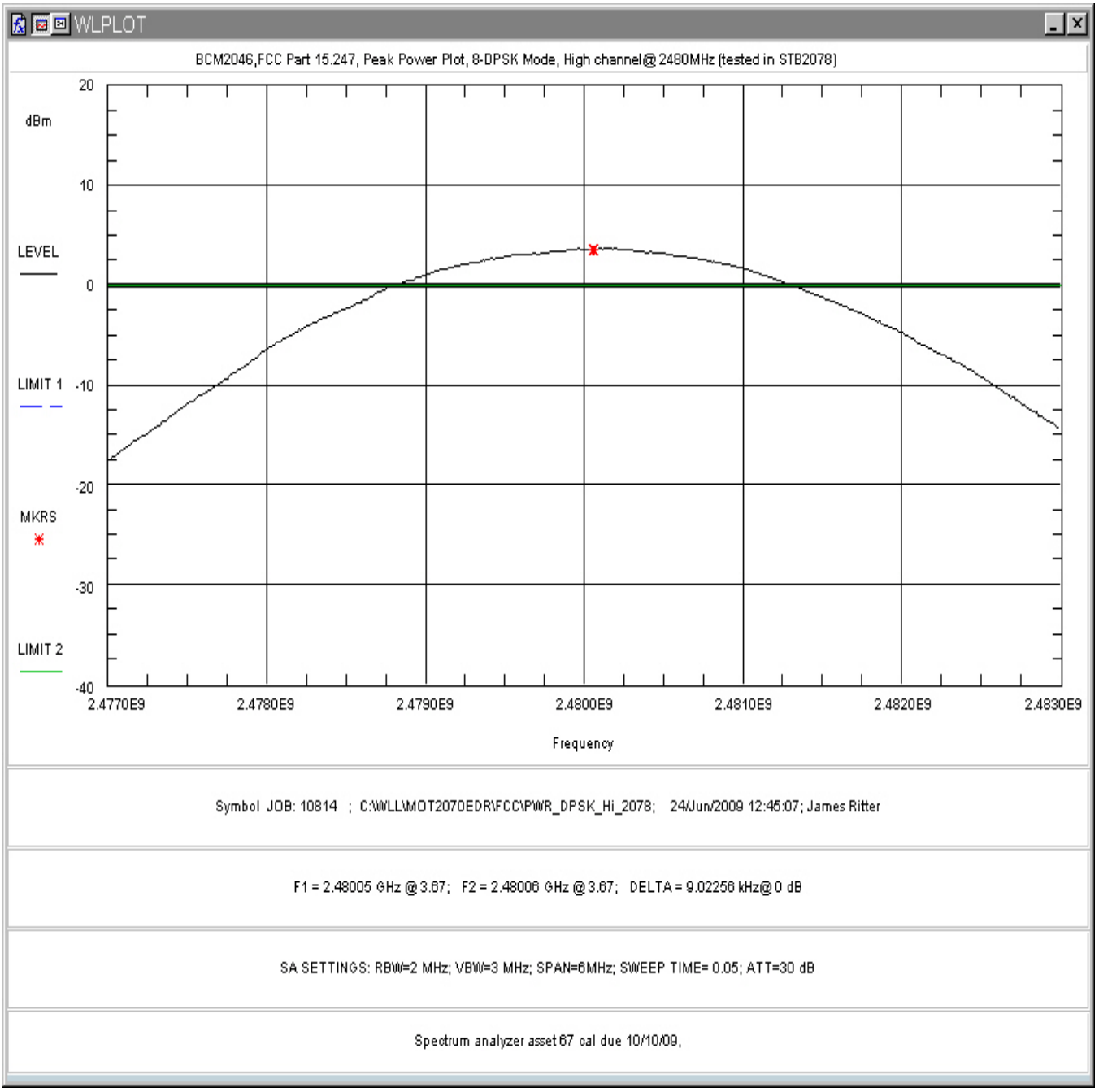

Figure 25. RF Peak Power, 8-DPSK Mode, High Channel (In STB2078 Host)

5.3 Occupied Bandwidth: (FCC Part §2.1049)

Occupied bandwidth was performed by coupling the output of the EUT to the input of a spectrum analyzer.

At full modulation, the occupied bandwidth was measured as shown:

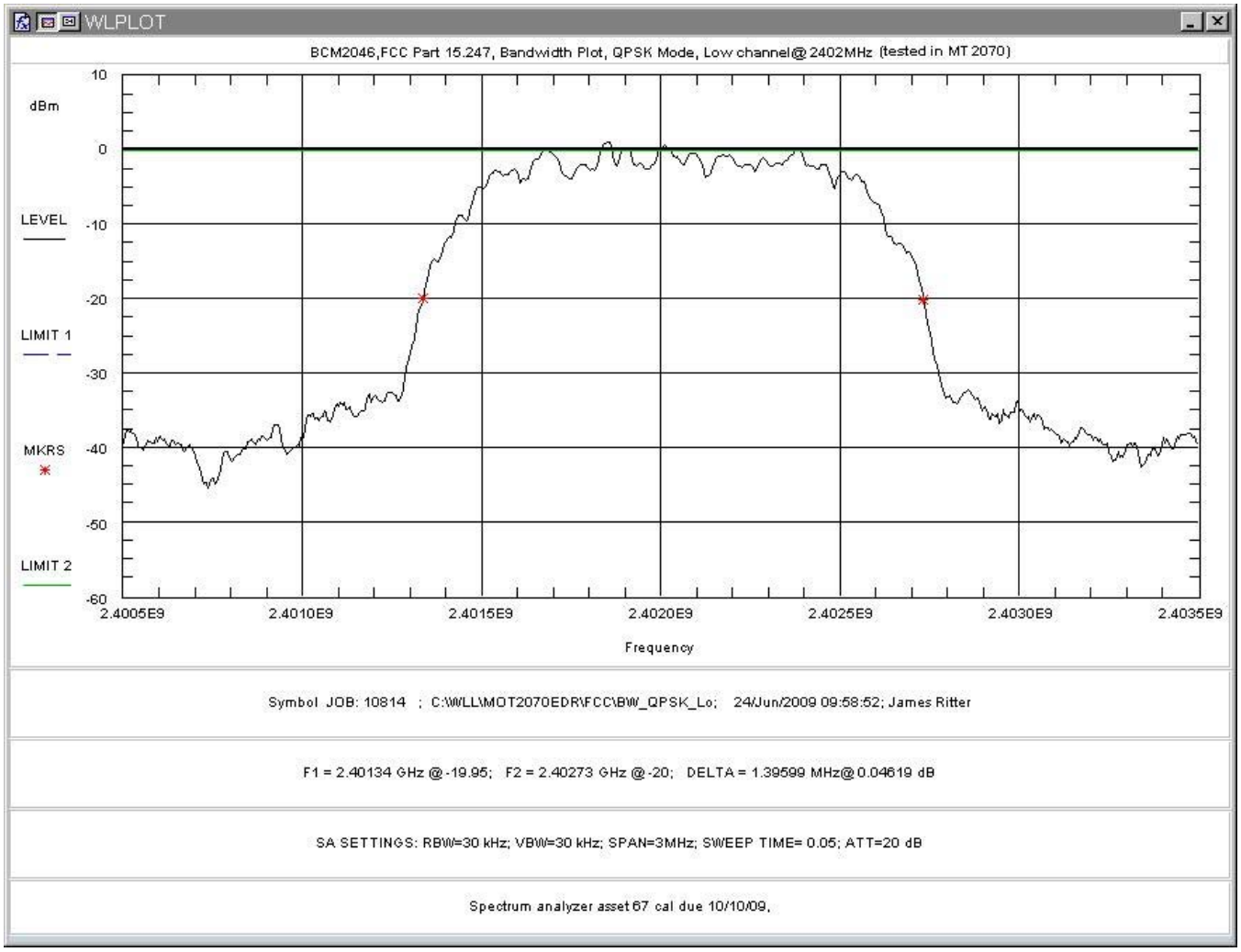

Figure 26. Occupied Bandwidth, QPSK Mode, Low Channel

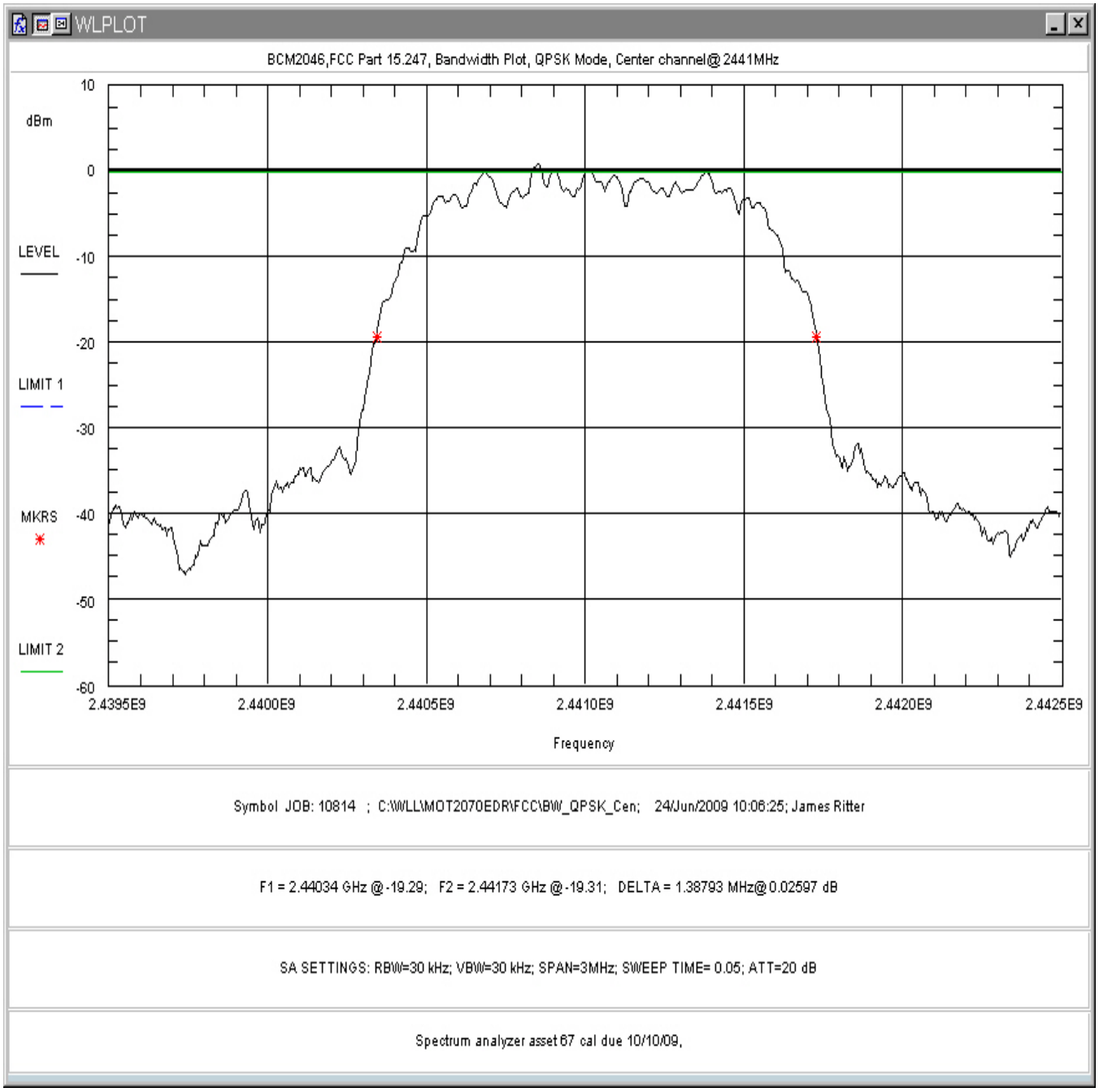

Figure 27. Occupied Bandwidth, QPSK Mode, Center Channel

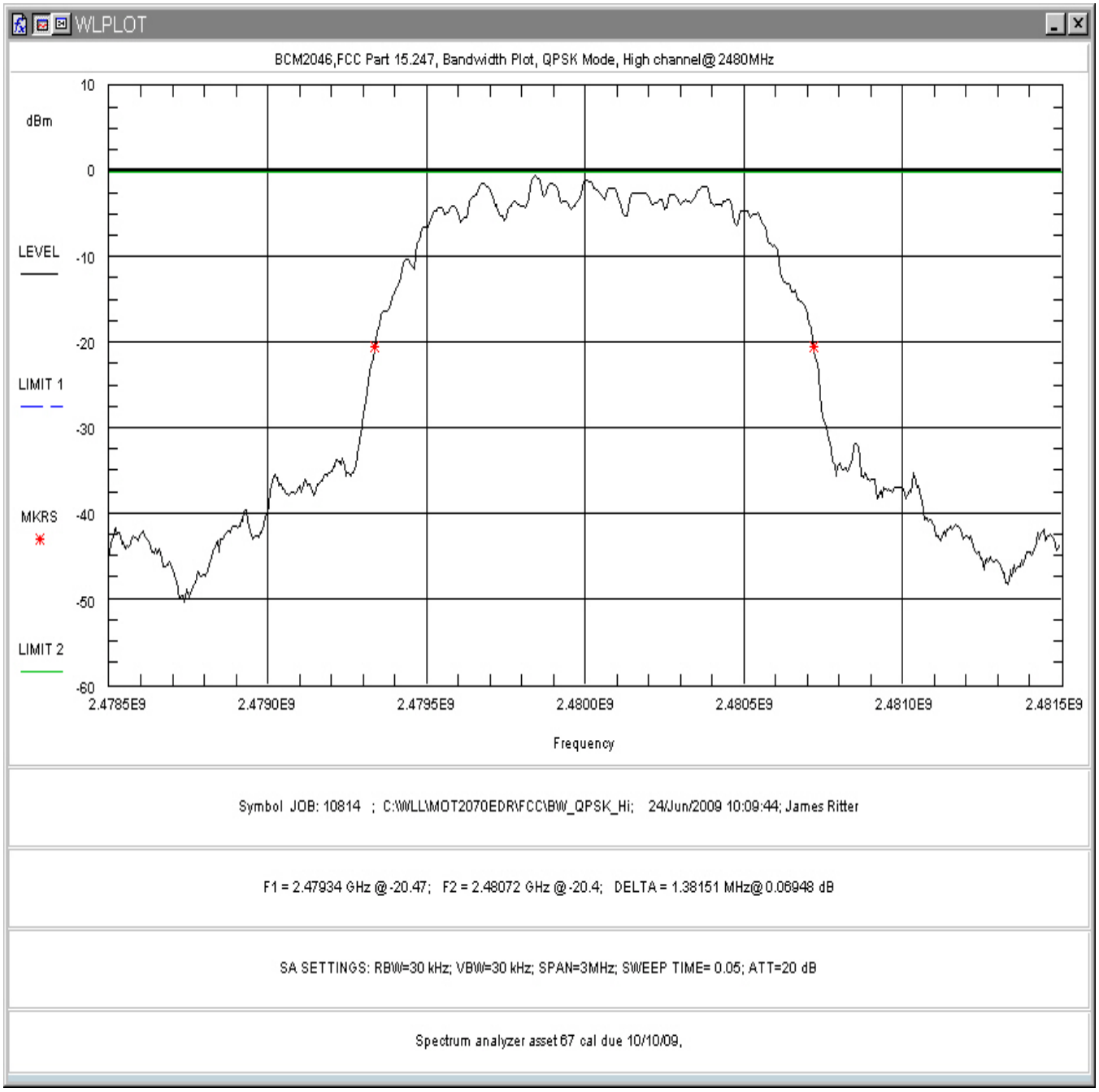

Figure 28. Occupied Bandwidth, QPSK Mode, High Channel

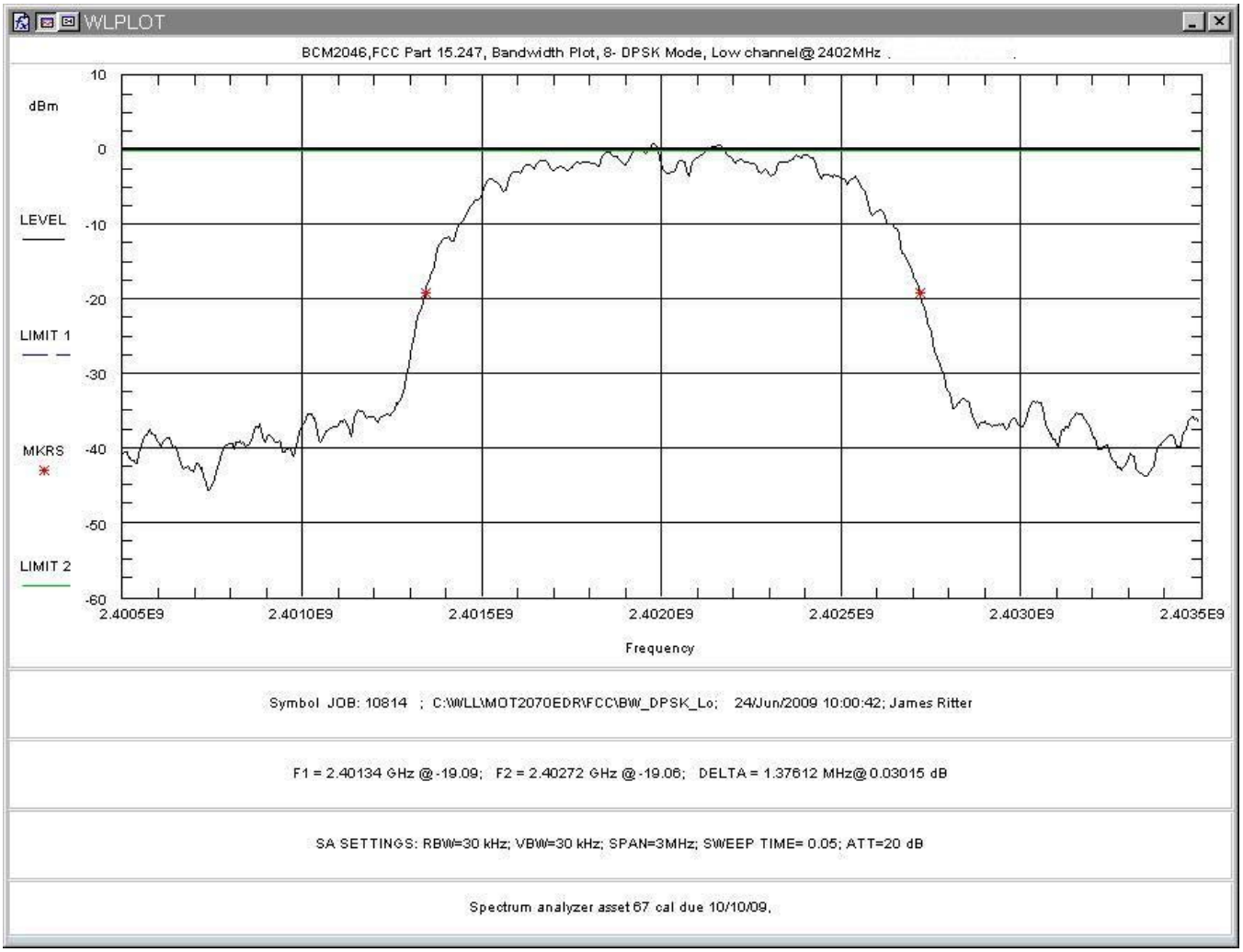

Figure 29. Occupied Bandwidth, 8-DPSK Mode, Low Channel

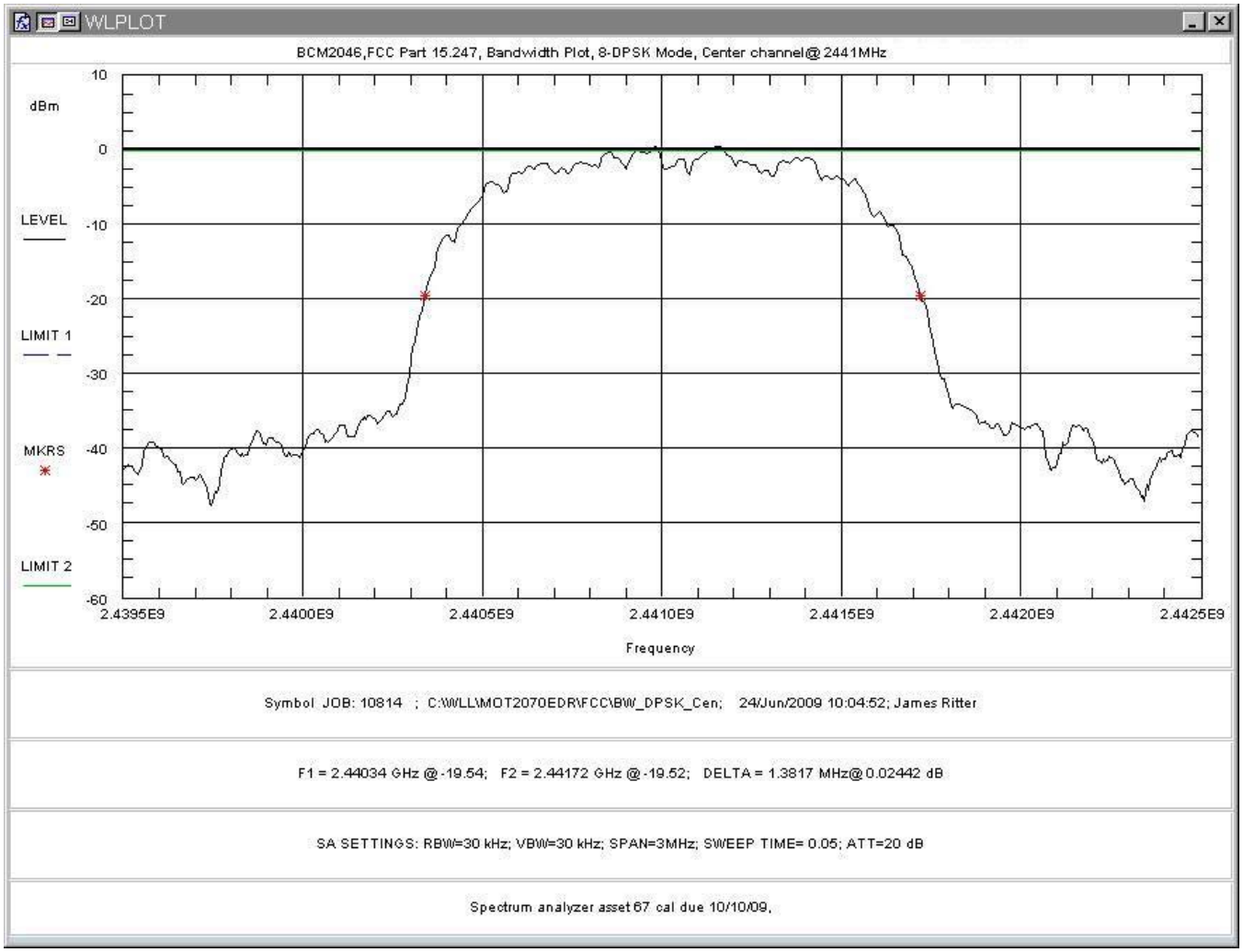

Figure 30. Occupied Bandwidth, 8-DPSK Mode, Center Channel

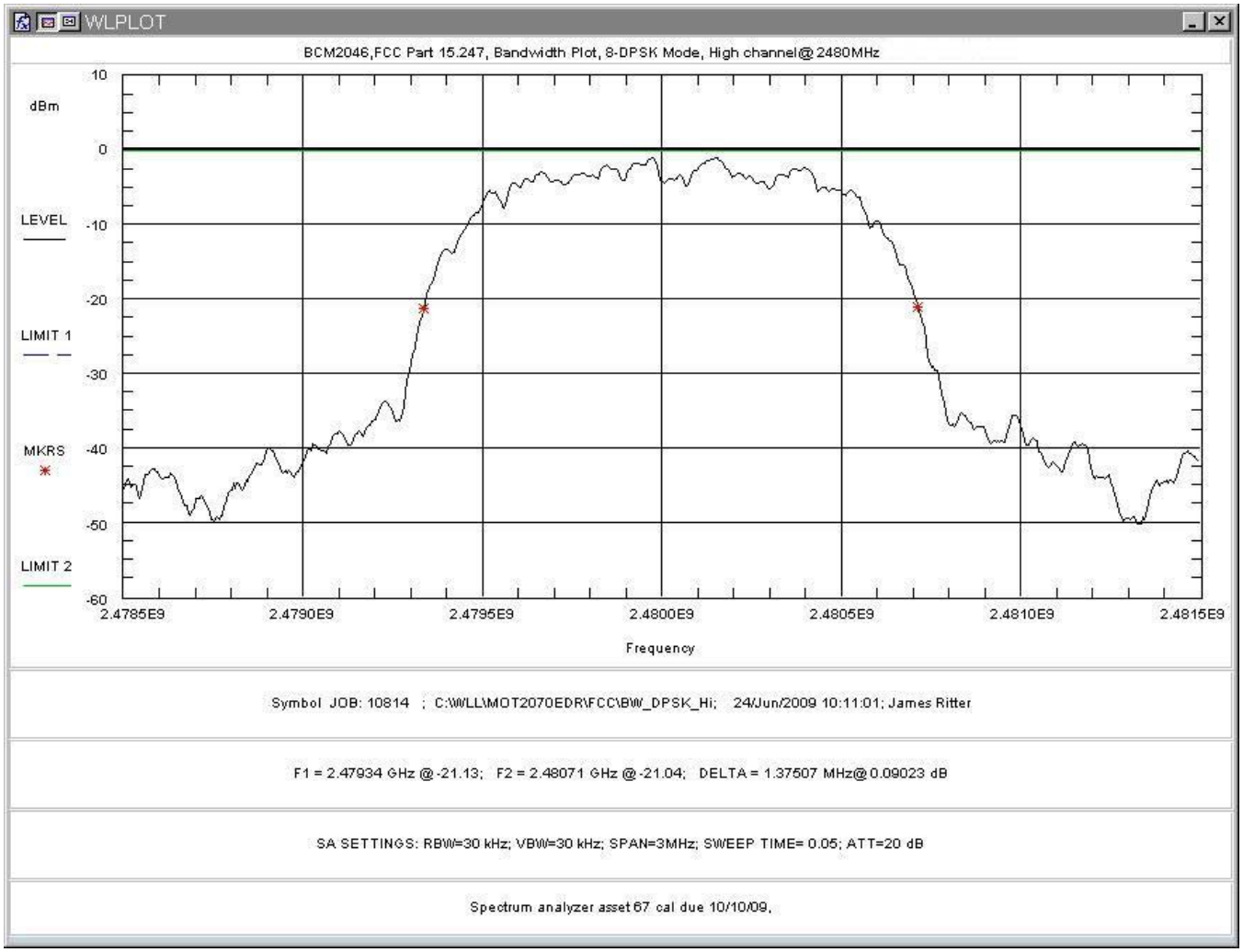

Figure 31. Occupied Bandwidth, 8-DPSK Mode, High Channel

Table 6 provides a summary of the Occupied Bandwidth Results.

Table 6. Occupied Bandwidth Results

QPSK Mode

Frequency	Bandwidth
Low Channel: 2402MHz	1.396MHz
Mid Channel: 2441MHz	1.388MHz
High Channel: 2480MHz	1.382MHz

8-DPSK Mode

Frequency	Bandwidth
Low Channel: 2402MHz	1.376MHz
Mid Channel: 2441MHz	1.382MHz
High Channel: 2480MHz	1.375MHz

5.4 Channel Spacing and Number of Hop Channels (FCC Part §15247(a)(1)

Per the FCC requirements, frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the two thirds of the 20 dB bandwidth, whichever is greater. The maximum 20dB bandwidth measured is 1.396MHz so the channel spacing must be more than 930kHz. In addition, for a 2.4GHz the number of hopping channels shall be 15 channels minimum.

The EUT antenna was removed and the cable was connected directly into a spectrum analyzer through a 10 dB attenuator. An offset was programmed into the spectrum analyzer to compensate for the loss of the external attenuator. The spectrum analyzer resolution bandwidth was set to 100 kHz and the video bandwidth was set to 100 kHz. The channel spacing of 2 adjacent channels was measured using a spectrum analyzer span setting of 2.3MHz. Also, the number of hopping channels was measured from 2.4GHz to 2.5GHz.

The Number of channels was taken in GFSK mode for clarity. All modes have the same number of channels.

The following are plots of the channel spacing and number of hopping channels data. The channel spacing was measured to be 1 MHz and the number of channels used is 79.

Table 7 Channel spacing and number of hopping channels summary

Test	Result	Limit	Pass/Fail
Channel spacing QPSK Mode	1MHz	930 kHz Minimum	Pass
Channel spacing 8-DPSK Mode	1MHZ	930 kHz Minimum	Pass
Number of Channels	79 channels	15 channels minimum	Pass

Symbol BCM2046, Job 10814, FCC part 15.247, Carrier Separation, QPSK mode
Limit= 2/3 of the Occupied bandwidth= 2/3 of 1.4MHz =933.3kHz minimum separation
Measured Separation = 1MHz

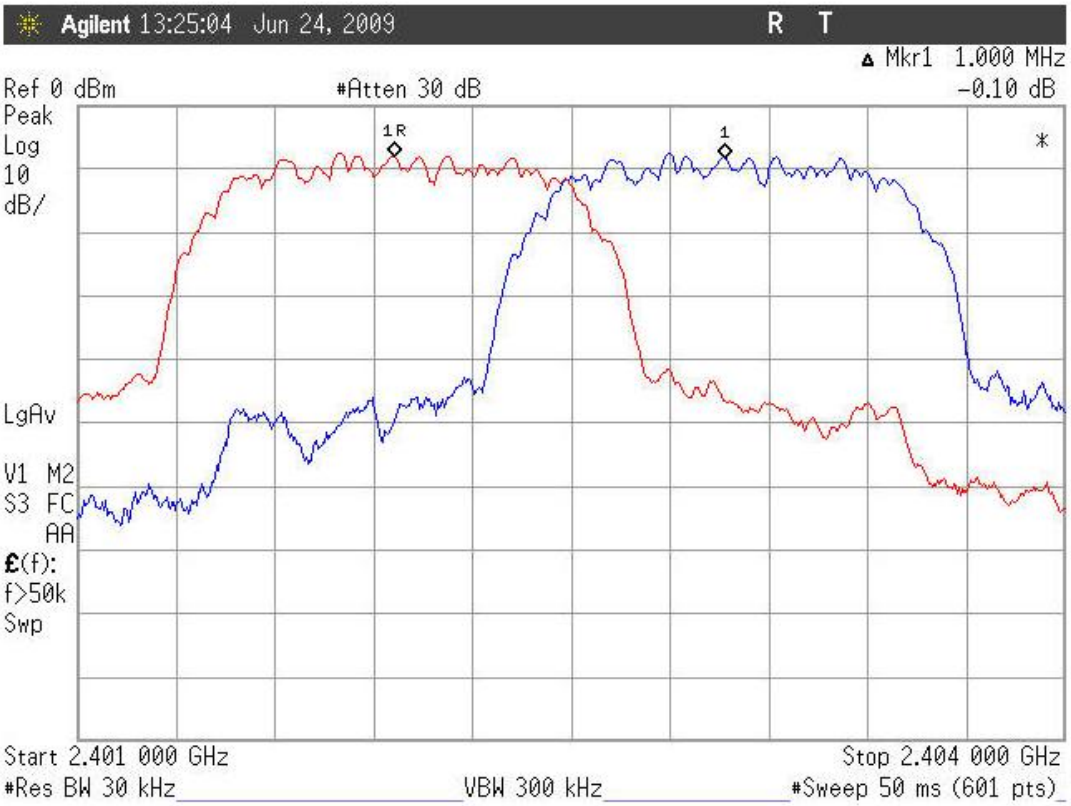

Figure 32, Channel Spacing QPSK Mode

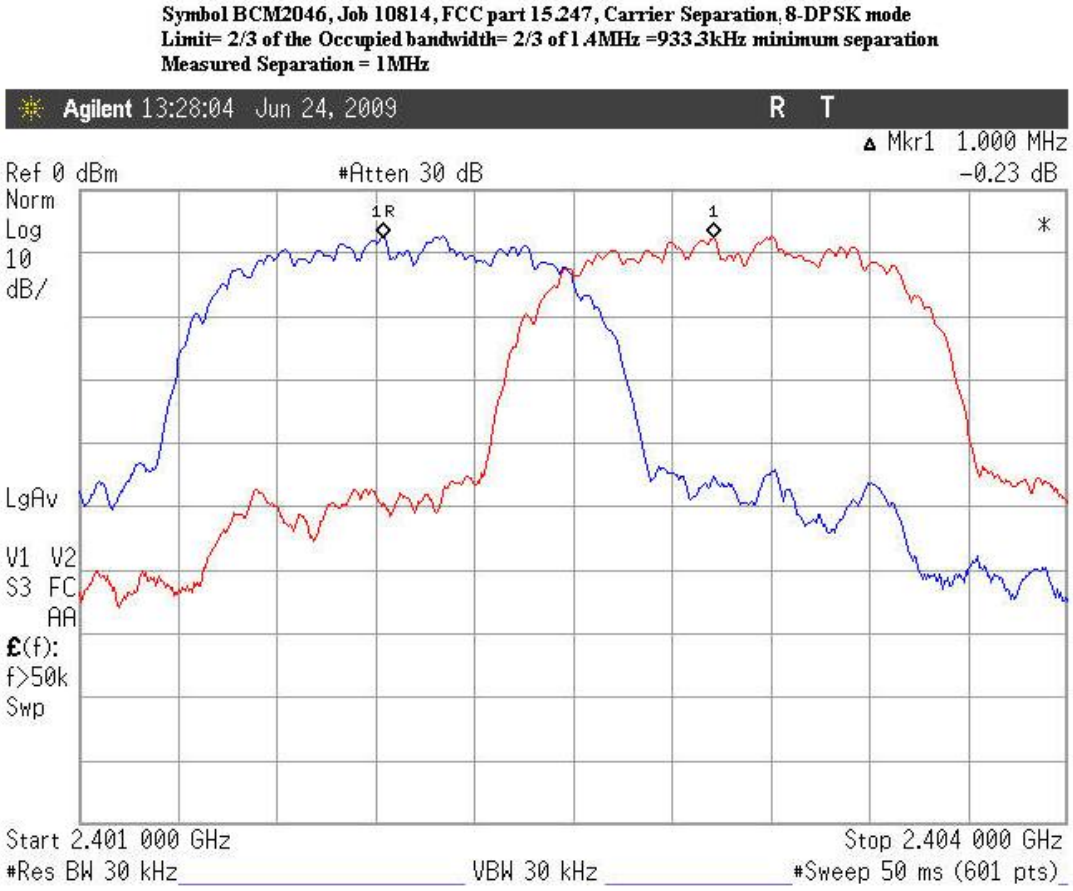

Figure 33, Channel Spacing 8-DPSK Mode

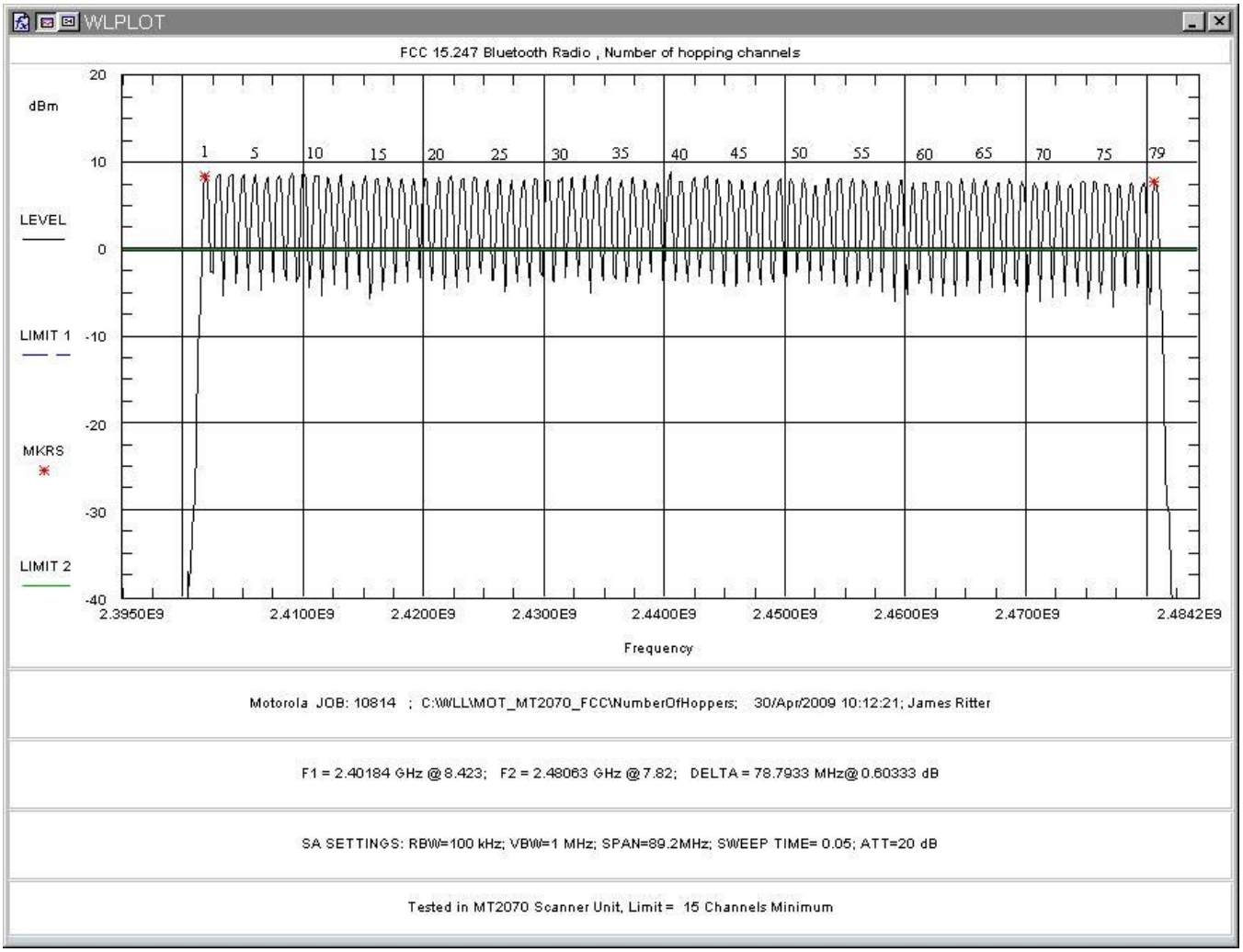

Figure 34, Number of Channels (taken in GFSK mode)

5.5 Conducted Spurious Emissions at Antenna Terminals (FCC Part §2.1051)

The EUT must comply with requirements for spurious emissions at antenna terminals. Per §15.247(c) all spurious emissions in any 100 kHz bandwidth outside the frequency band in which the spread spectrum device is operating shall be attenuated 20 dB below the highest power level in a 100 kHz bandwidth within the band containing the highest level of the desired power.

The EUT antenna was removed and the cable was connected directly into a spectrum analyzer through a 10 dB attenuator. An offset was programmed into the spectrum analyzer to compensate for the loss of the external attenuator. The spectrum analyzer resolution bandwidth was set to 100 kHz and the video bandwidth was set to 100 kHz. The amplitude of the EUT carrier frequency was measured to determine the emissions limit (20 dB below the carrier frequency amplitude). The emissions outside of the allocated frequency band were then scanned from 30 MHz up to the tenth harmonic of the carrier.

Close-up plots of the 2400- 2483.5MHz band edges are provided in both the hopping and non-hopping modes to show compliance at both of these points

The following are plots of the conducted spurious emissions data.

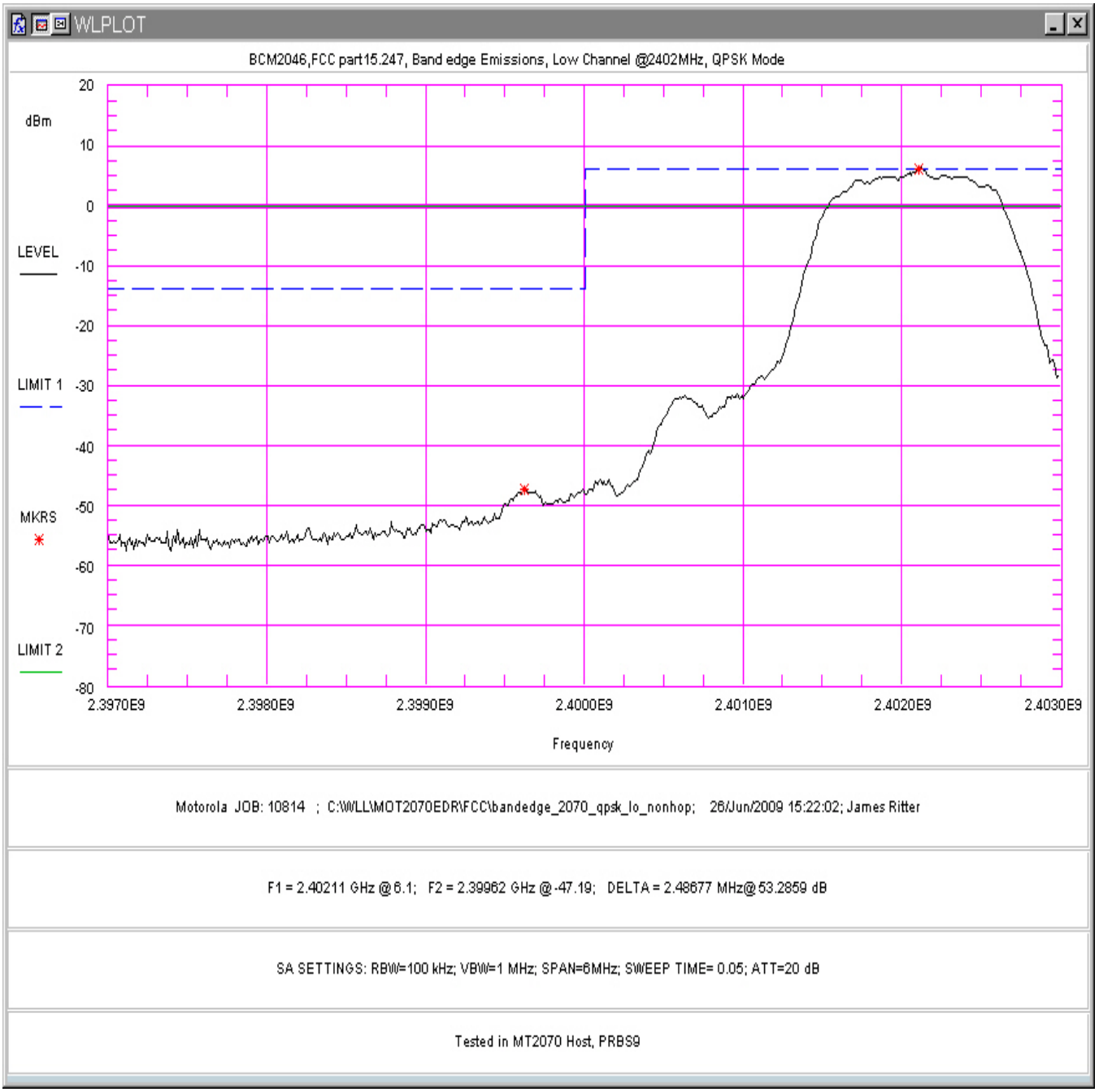

Figure 35 Lower Band Edge Plot, QPSK Mode, Low Channel (in MT2070 Host)

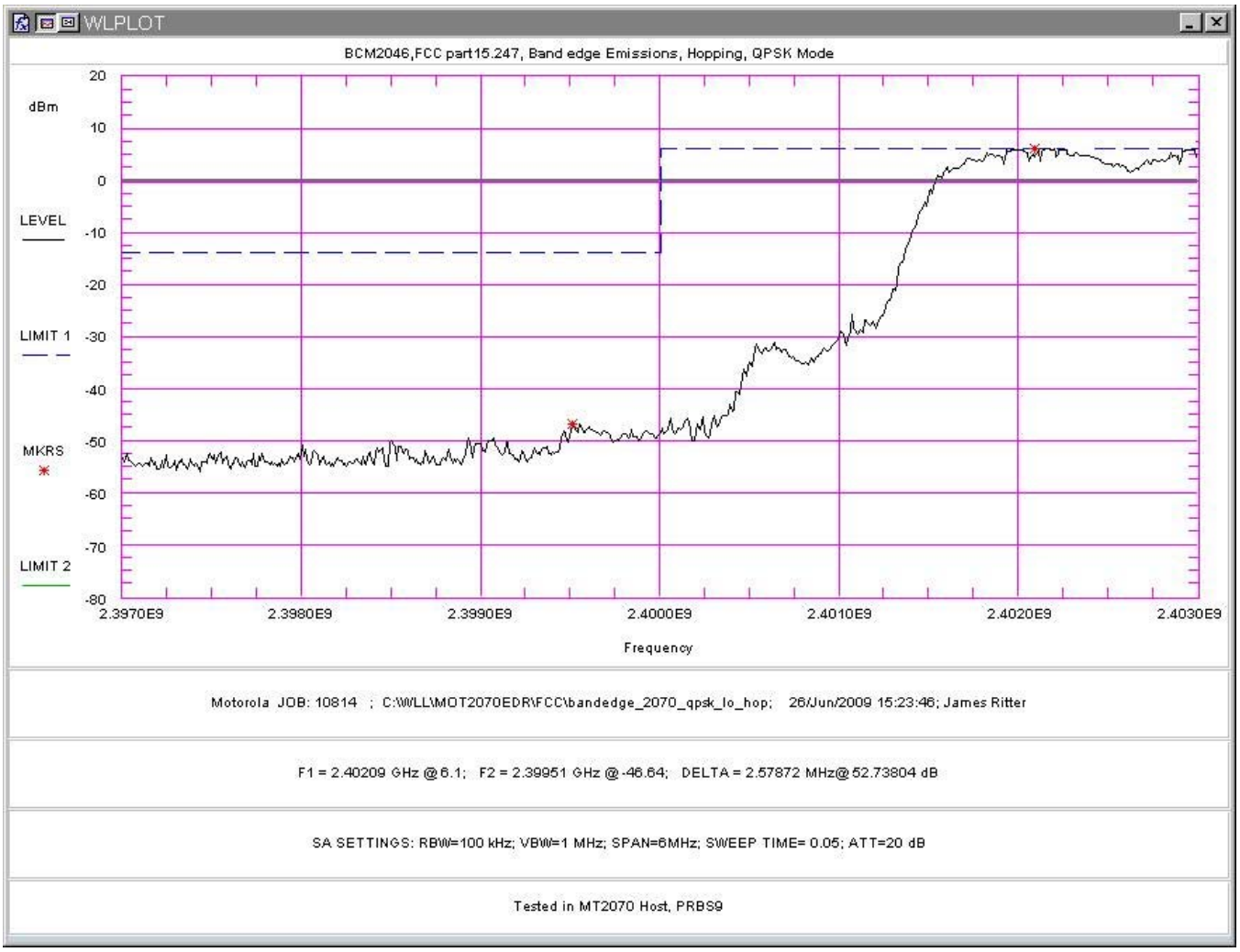

Figure 36 Lower Band Edge Plot, QPSK Mode, Hopping Mode (in MT2070 Host)

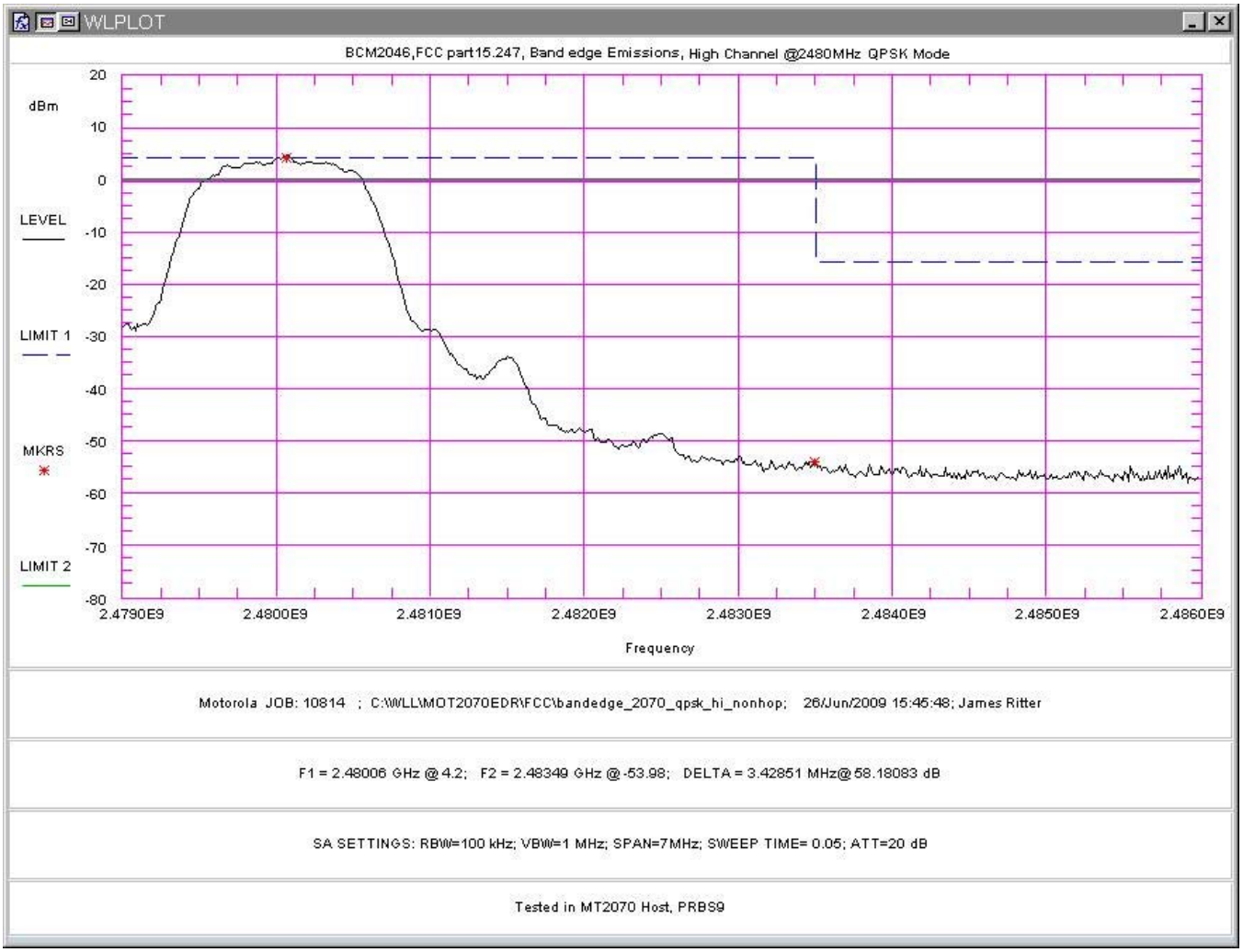

Figure 37 Upper Band Edge Plot, QPSK Mode, High Channel (in MT2070 Host)

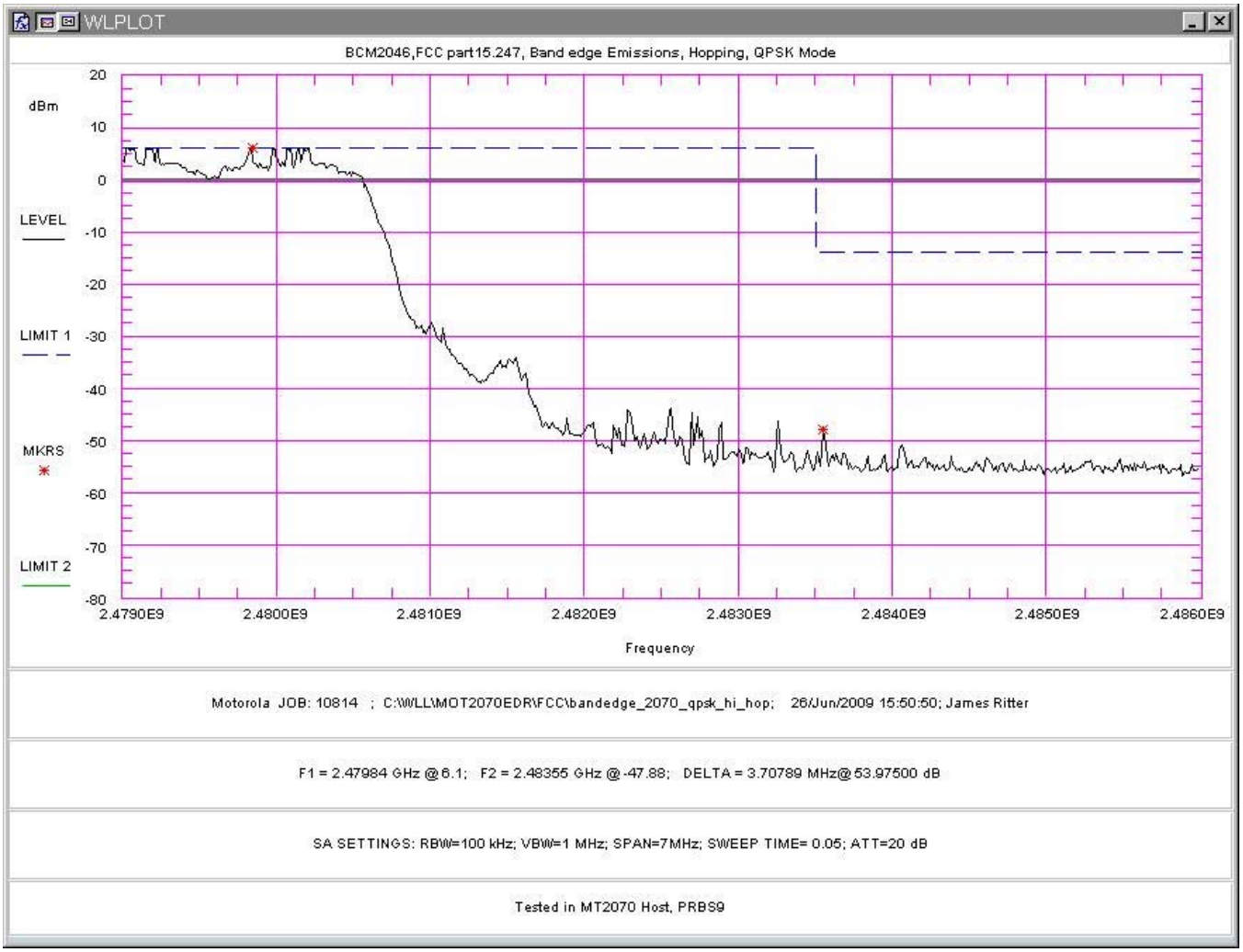

Figure 38 Upper Band Edge Plot, QPSK Mode, Hopping Mode (in MT2070 Host)

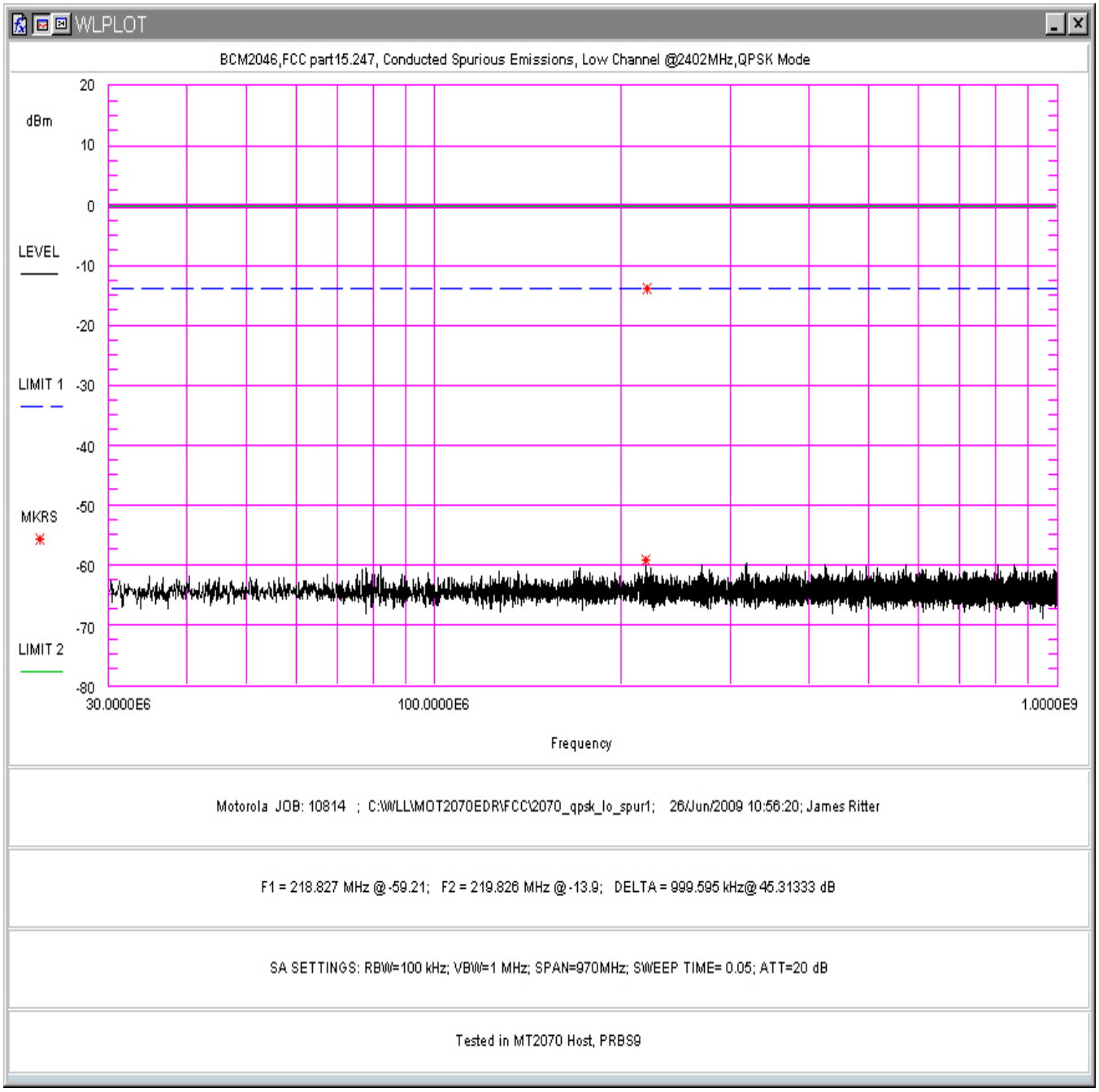

Figure 39. Conducted Spurious Emissions, QPSK Mode, Low Channel 30 - 1000MHz (in MT2070 Host)

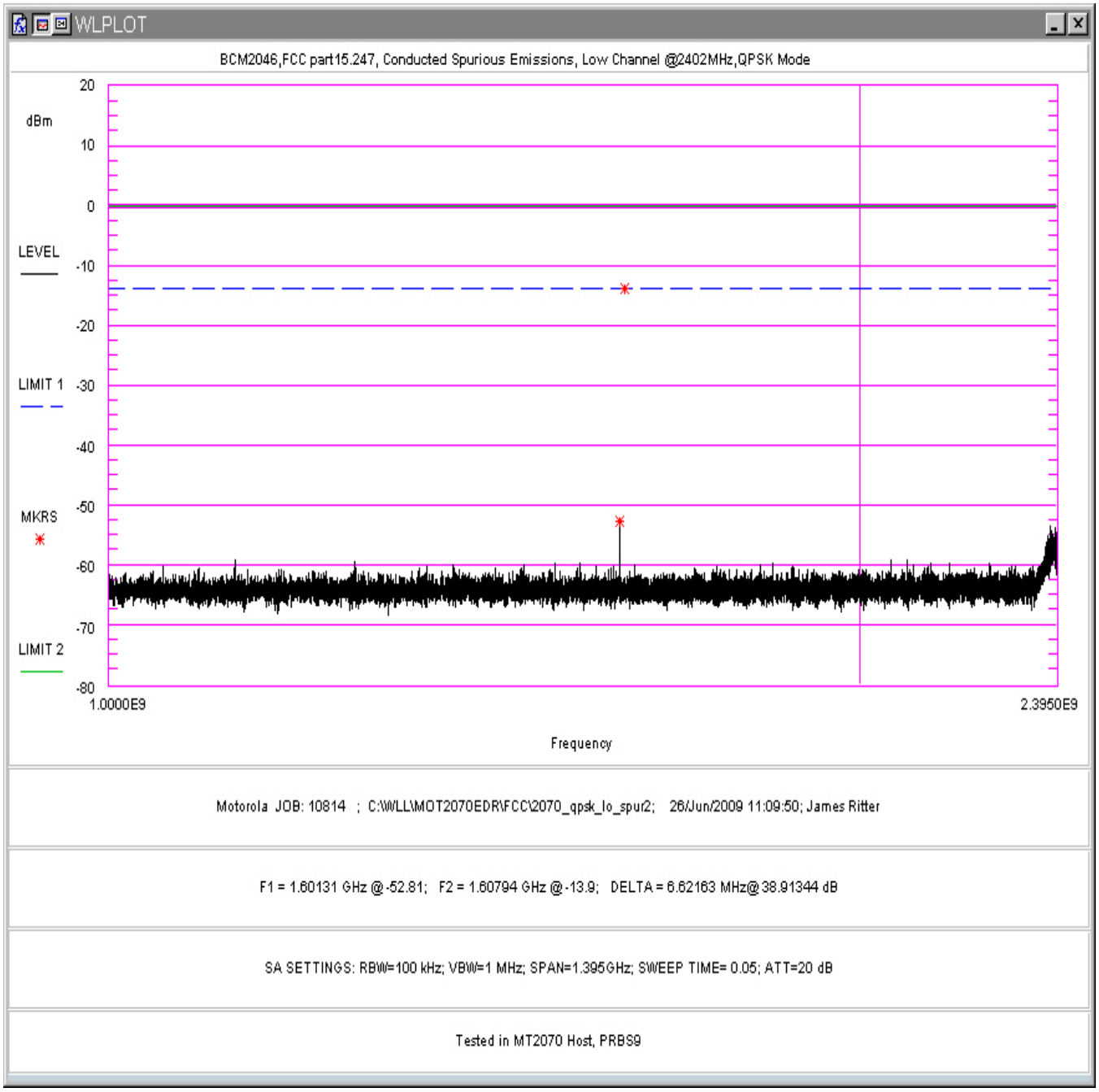

Figure 40. Conducted Spurious Emissions, QPSK Mode,Low Channel 1 – 2.395GHz (in MT2070 Host)

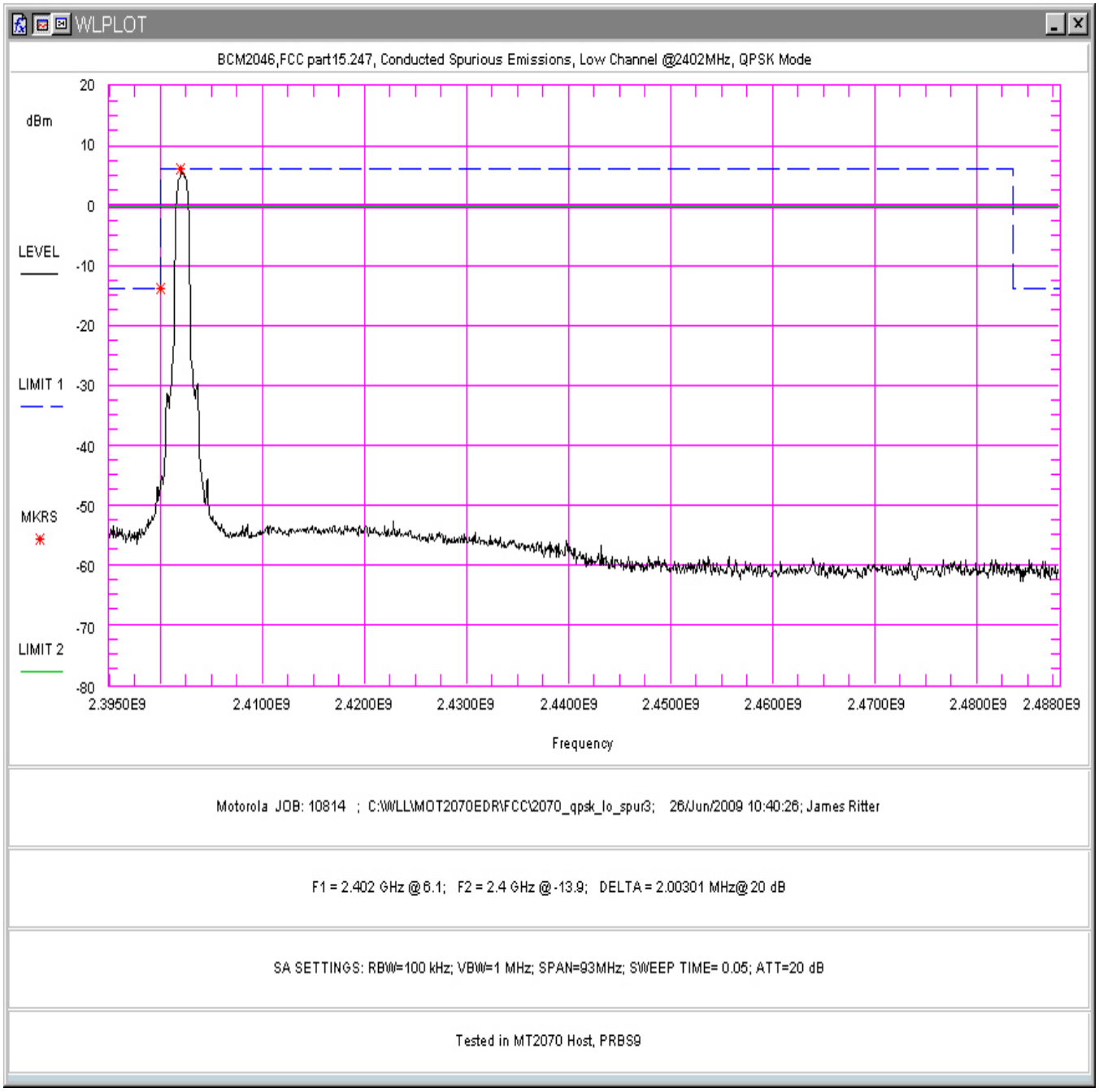

Figure 41. Conducted Spurious Emissions, QPSK Mode, Low Channel 2.395 – 2.488GHz (in MT2070 Host)

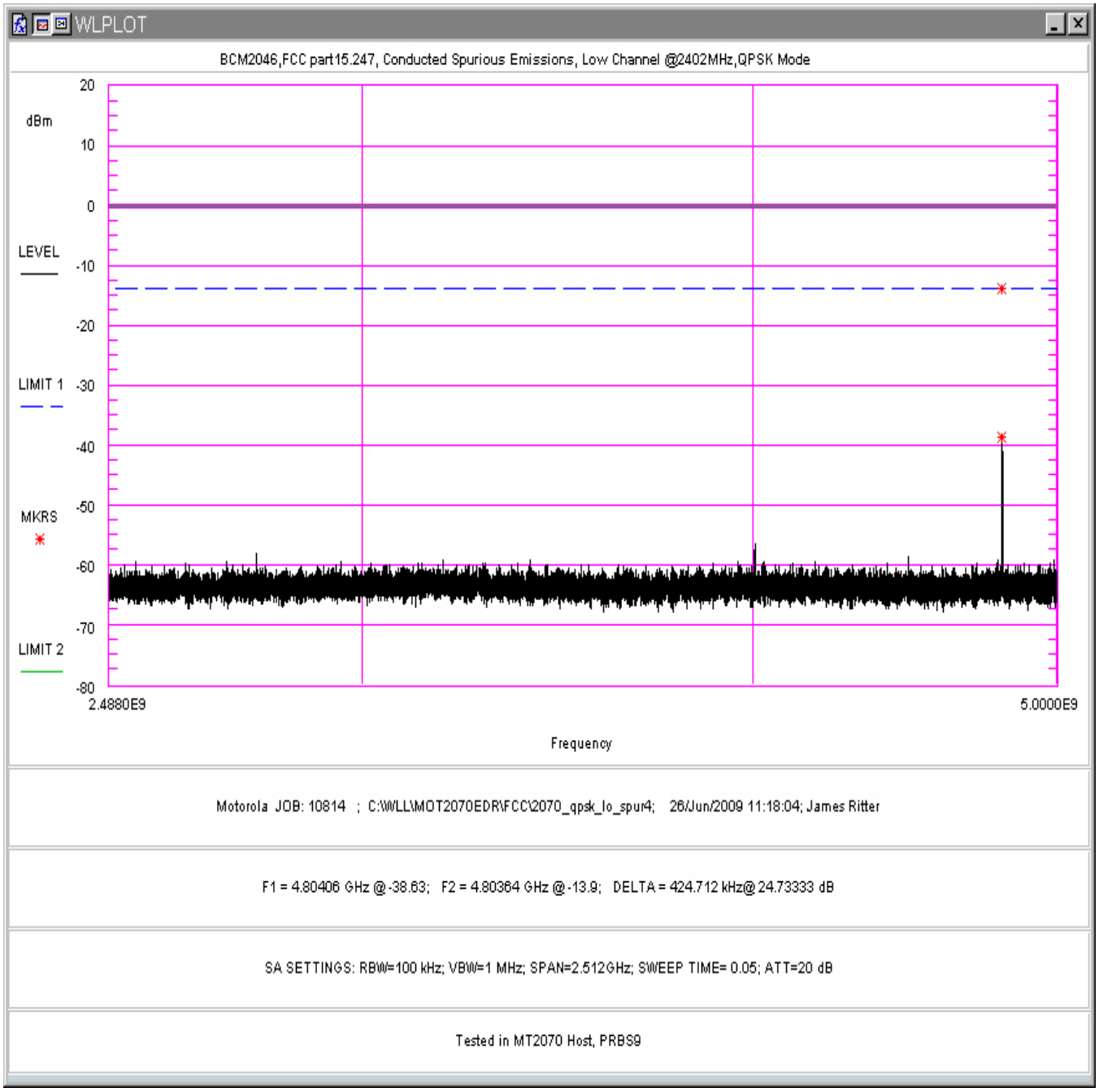

Figure 42. Conducted Spurious Emissions, QPSK Mode, Low Channel 2.488 - 5GHz (in MT2070 Host)

