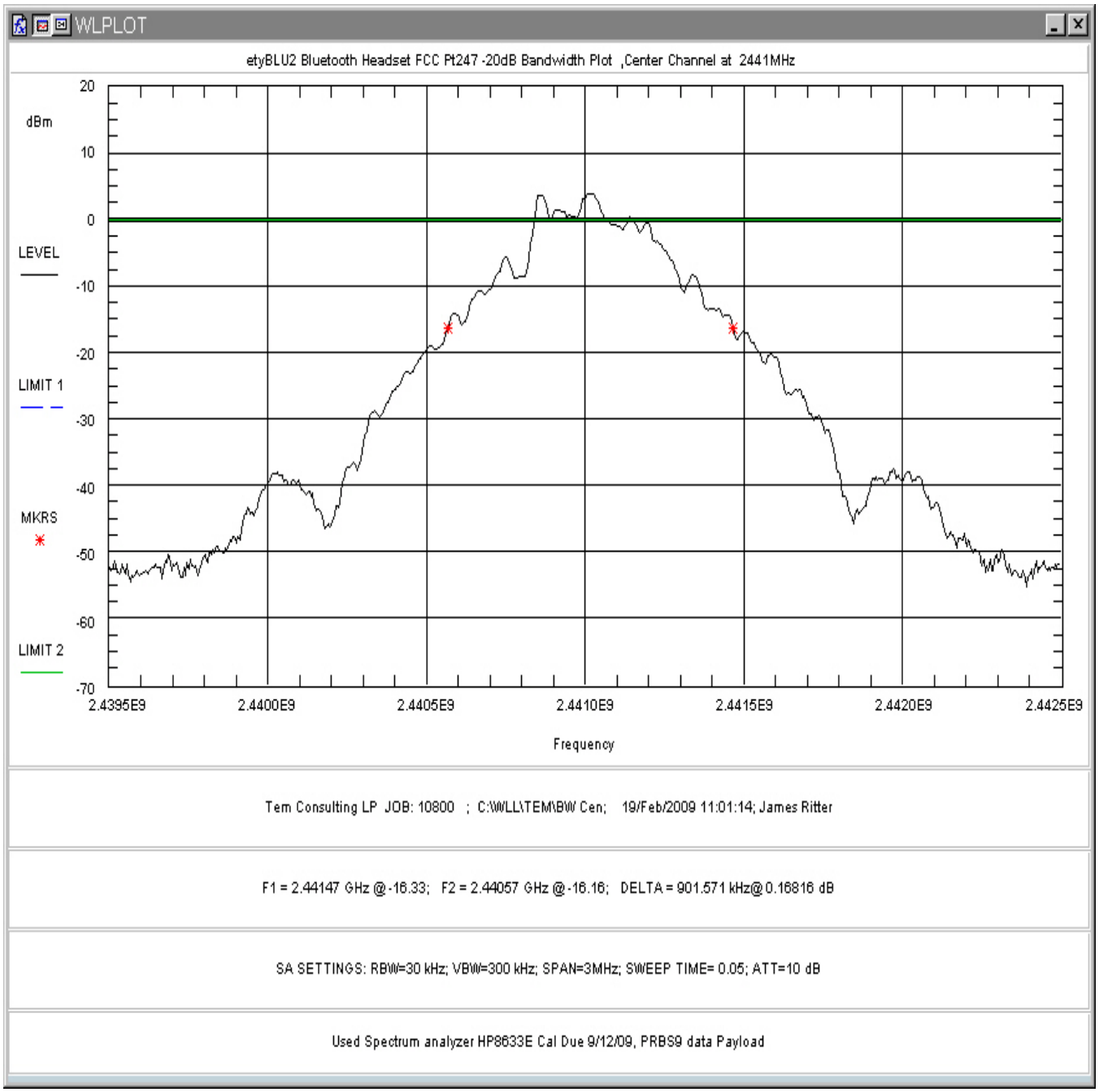

Figure 5-8. Occupied Bandwidth, Mid Channel

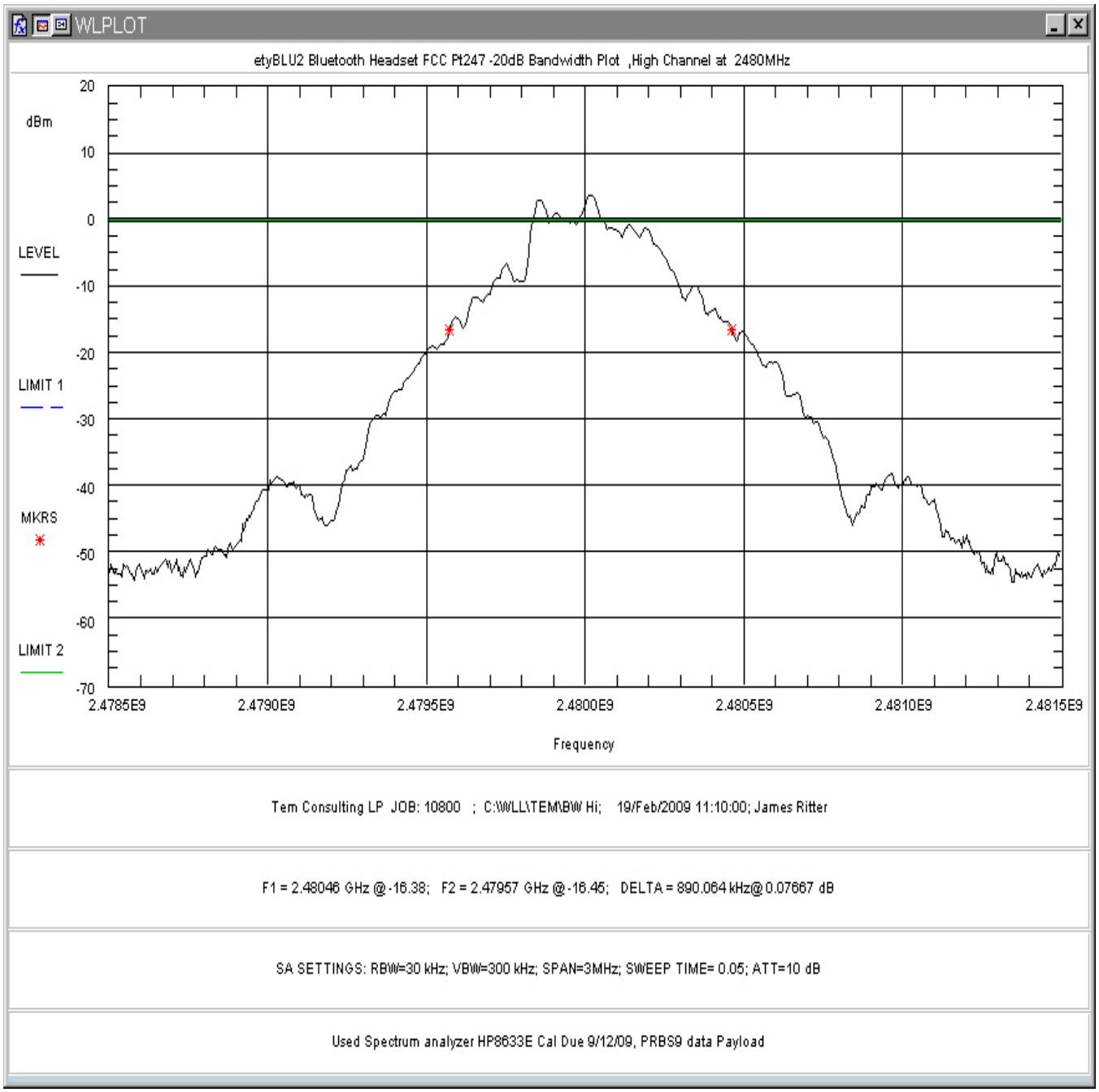

Figure 5-9. Occupied Bandwidth, High Channel

Table 5 provides a summary of the Occupied Bandwidth Results.

Table 5. Occupied Bandwidth Results

Frequency	Bandwidth
Low Channel: 2402MHz	911.4kHz
Mid Channel: 2441MHz	901.6kHz
High Channel: 2480MHz	890.1kHz

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 911.4kHz so the channel spacing must be more than 607.3kHz. In addition, for a 2.4GHz the number of hopping channels shall be stated.

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 following are plots of the channel spacing and number of hopping channels data. The channel spacing was measured to be 1.001MHz and the number of channels used is 79.

Table 6 Channel spacing and number of hopping channels summary

Test	Result	Limit	Pass/Fail
Channel spacing	1.001MHz	607.3kHz Minimum	Pass
Number of Channels	79 channels	15 channels minimum	Pass

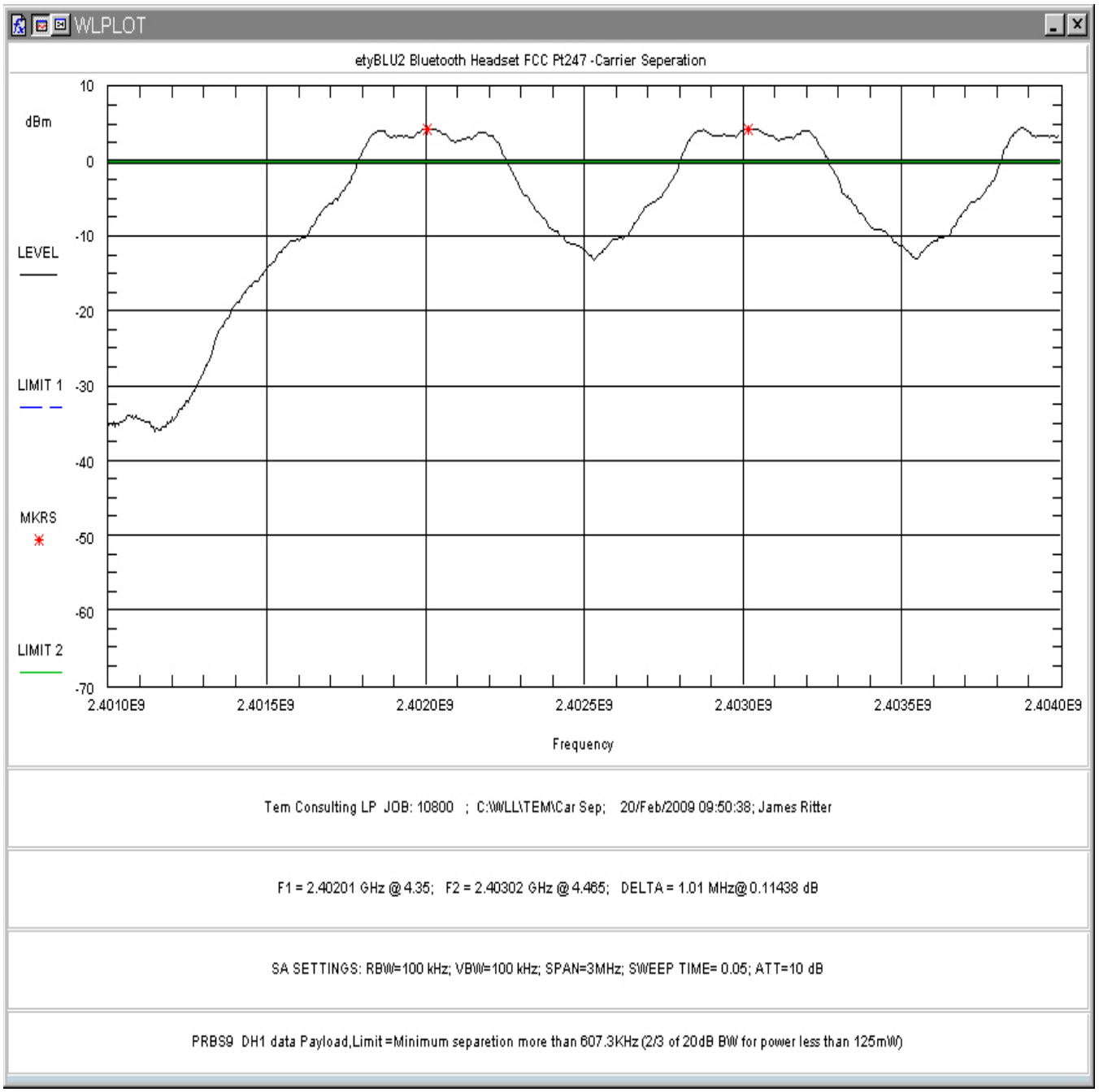

Figure 5-10, Channel Spacing

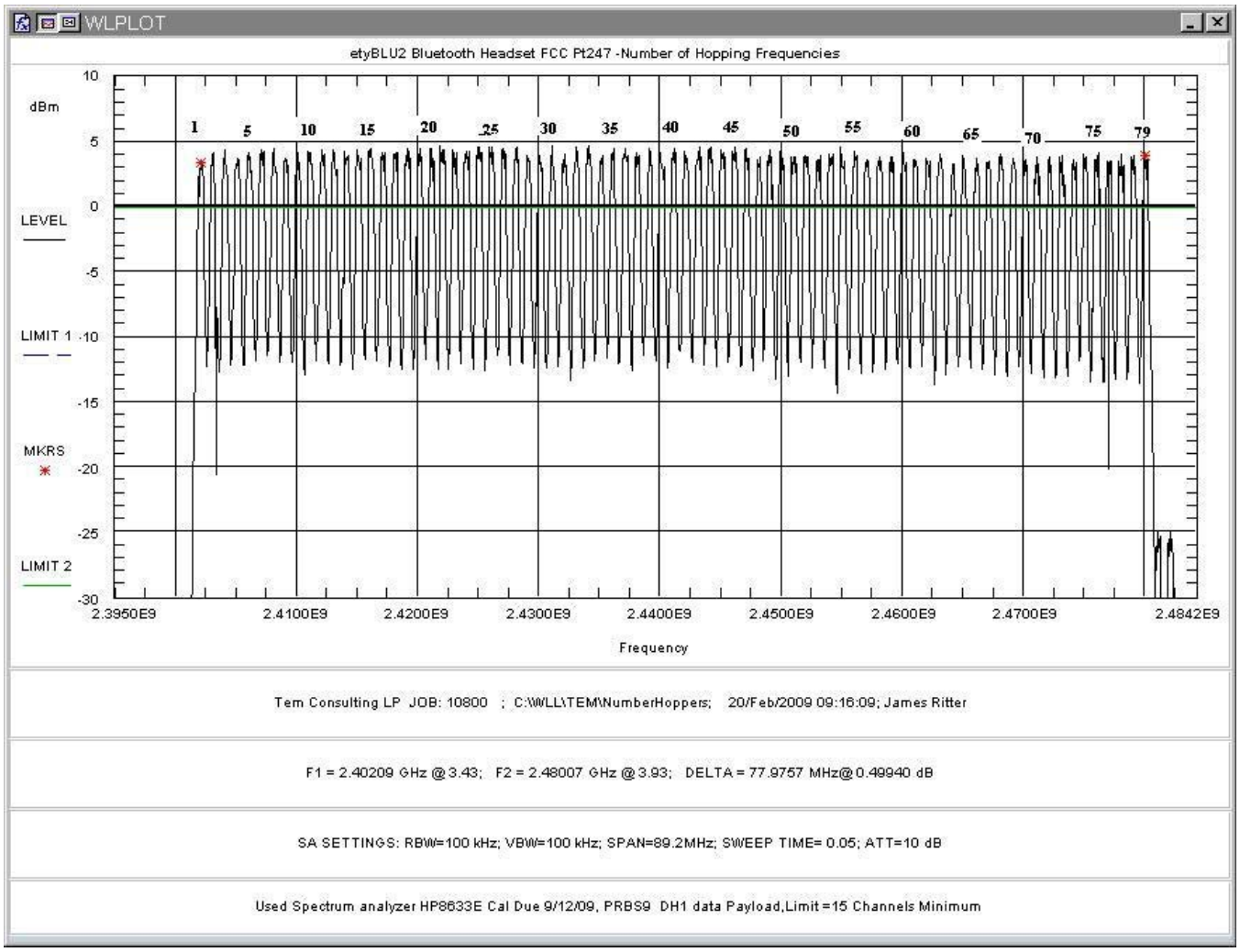

Figure 5-11, Number of Channels

5.5 RF Peak Power Spectral Density (§15.247(e) and RSS-210, Annex 8.2)

For Hybrid Systems the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. As Bluetooth technology is a hybrid transceiver it is subject to Power Spectral Density requirements of part15.247 in a non-hopping mode.

The output from the transmitter was connected to an attenuator and then to the input of the RF Spectrum Analyzer. The analyzer offset was adjusted to compensate for the attenuator and other losses in the system.

The highest peak within the transmission was located and measured for the upper and lower channels. Plots of the PSD were taken as below. Table 7 provides a summary of the data.

Table 7. Power Spectral Density Results

Frequency	Level (dBm)	Limit (dBm)	Pass/Fail
Low Channel: 2402MHz	-5.73	8	Pass
Mid Channel: 2441MHz	-6.29	8	Pass
High Channel: 2480MHz	-6.73	8	Pass

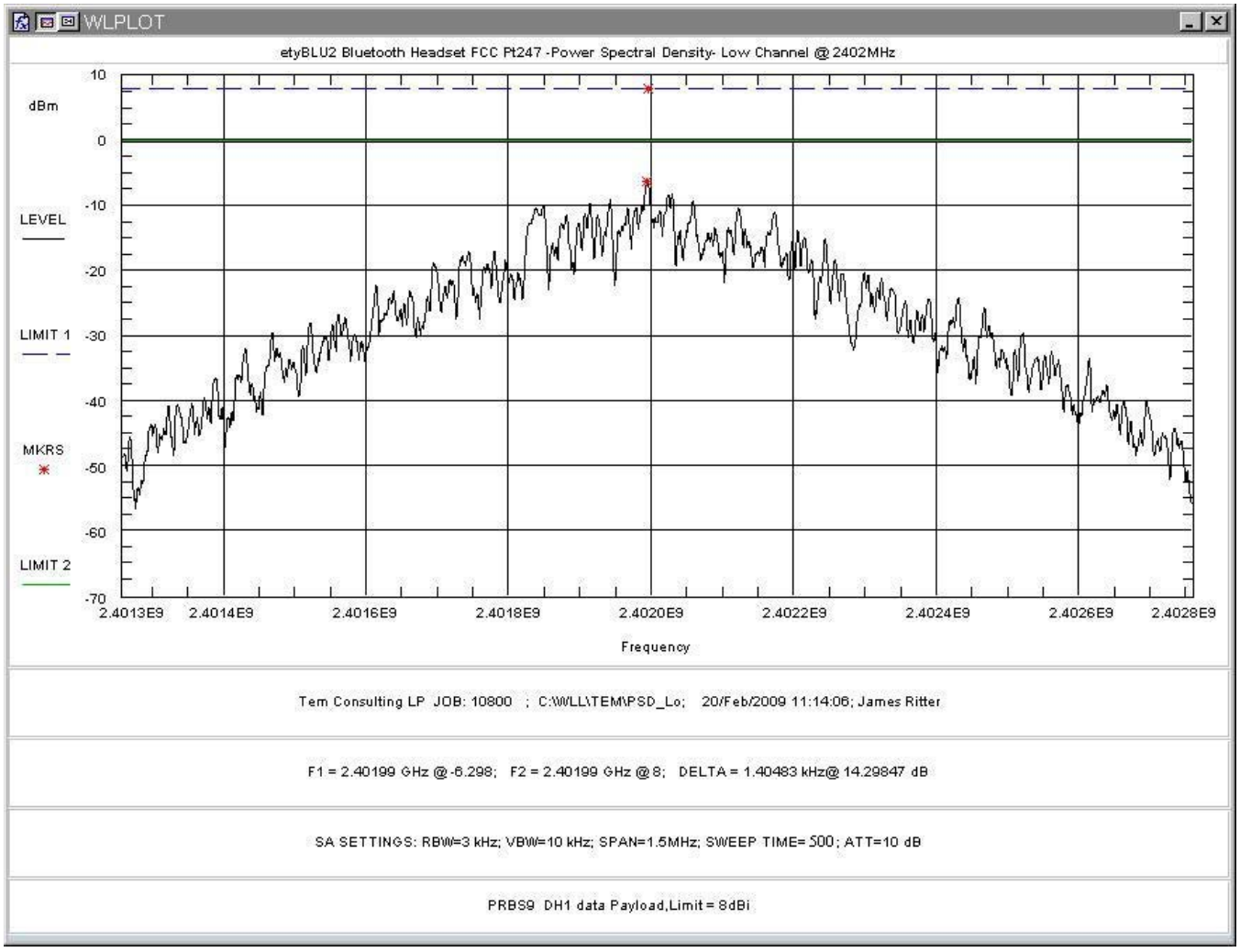

Figure 5-12 Power Spectral Density, Low Channel

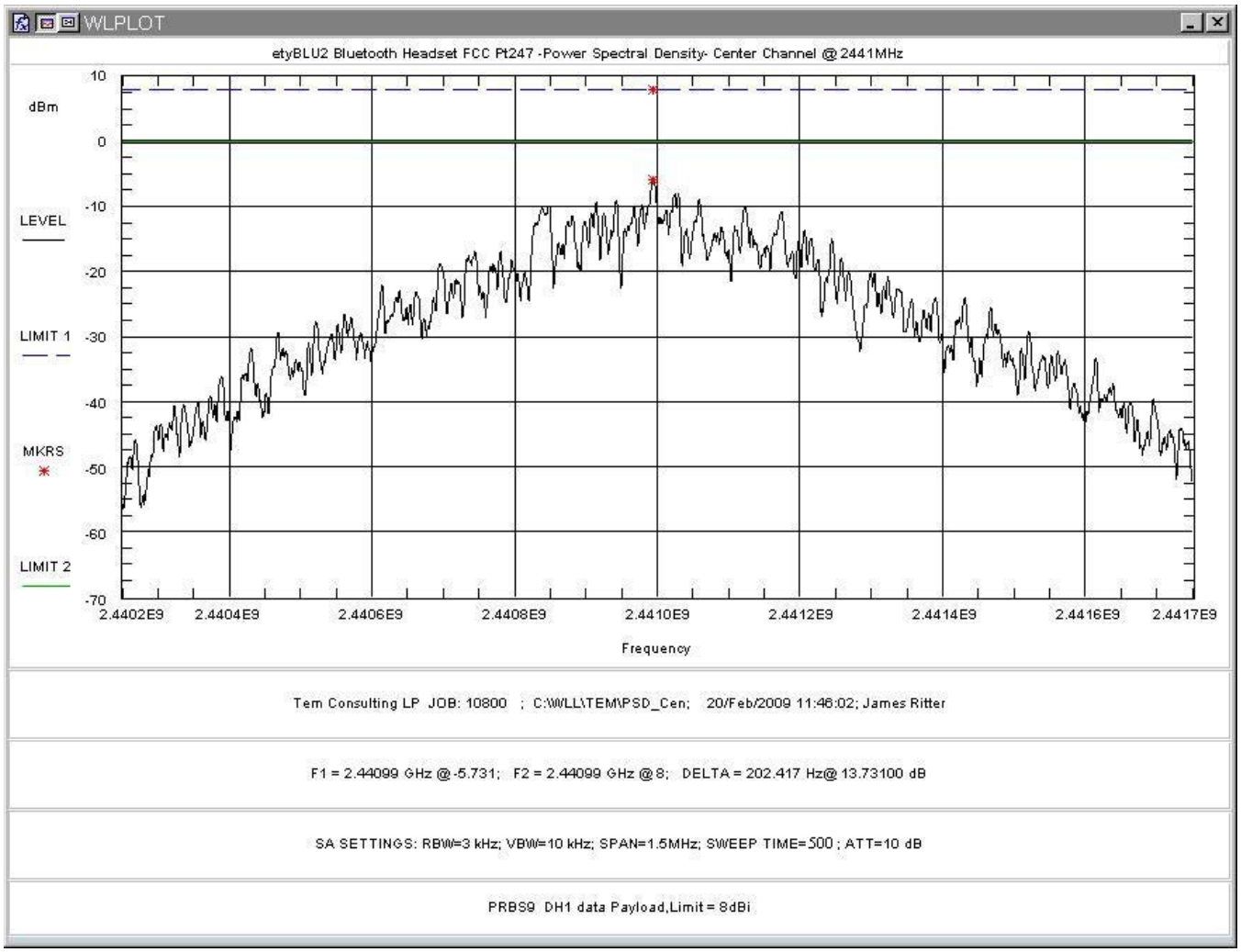

Figure 5-13 Power Spectral Density, Center Channel

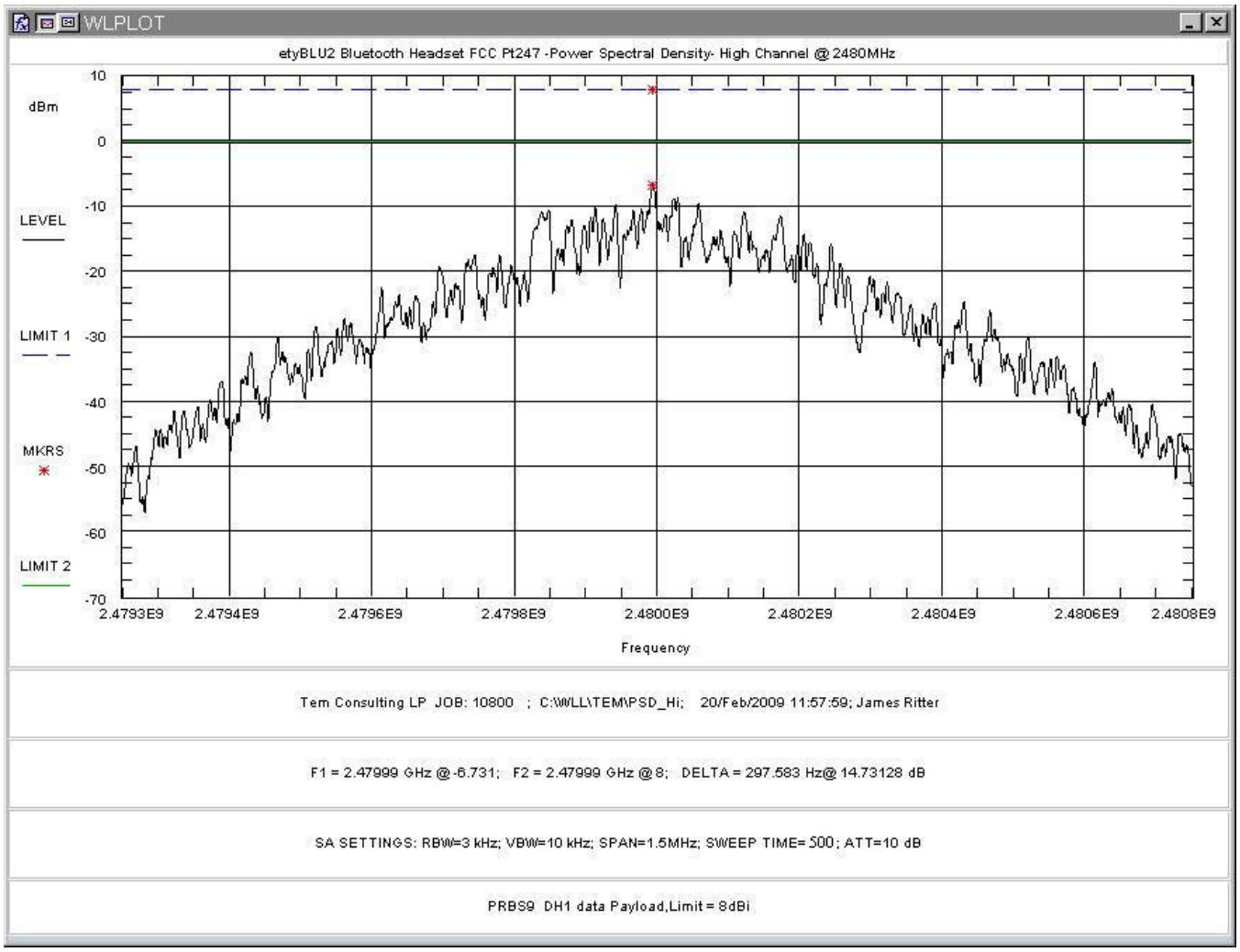

Figure 5-14 Power Spectral Density, High Channel

5.6 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.

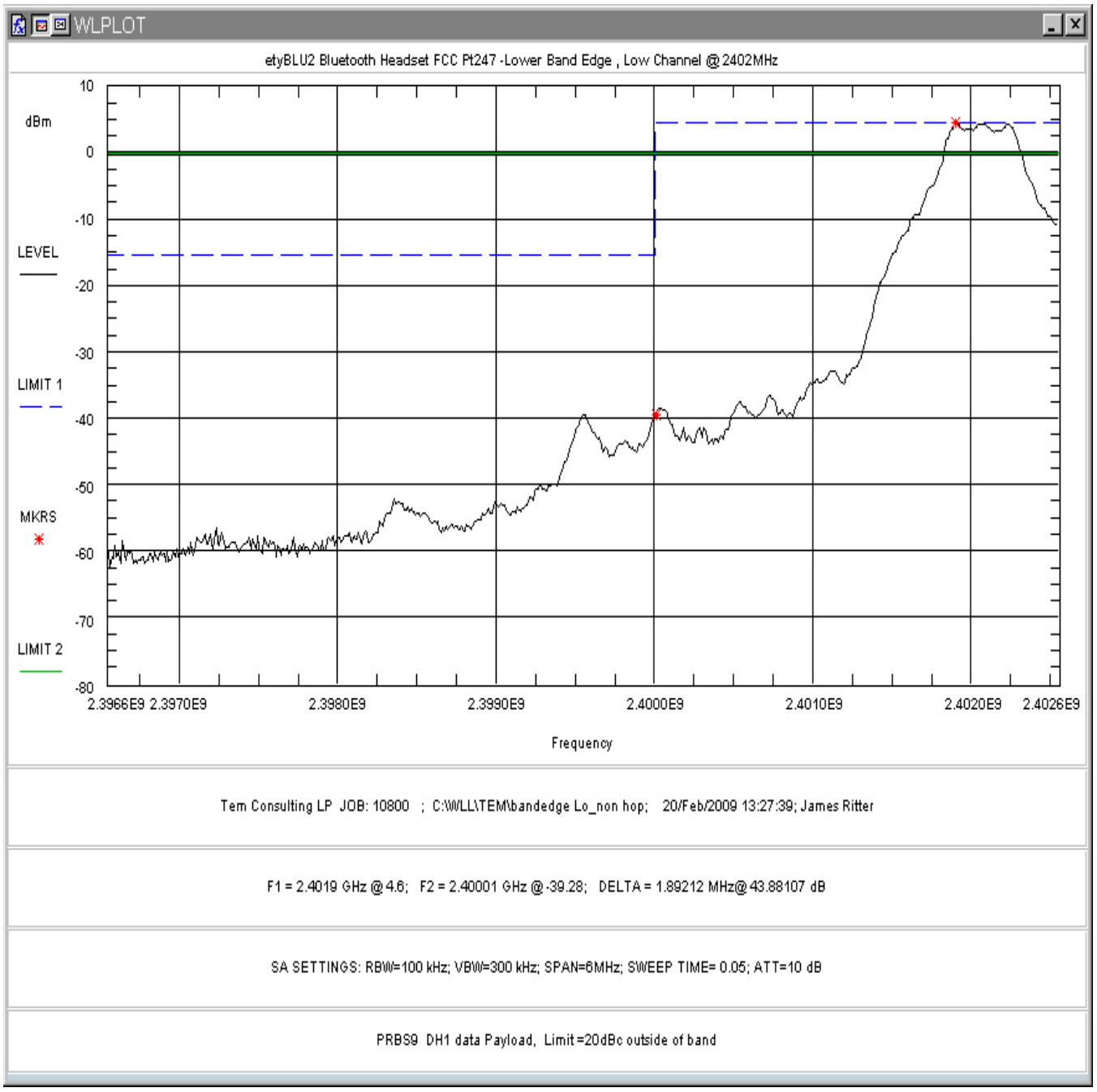

Figure 5-15 Lower Band Edge Plot, Low Channel

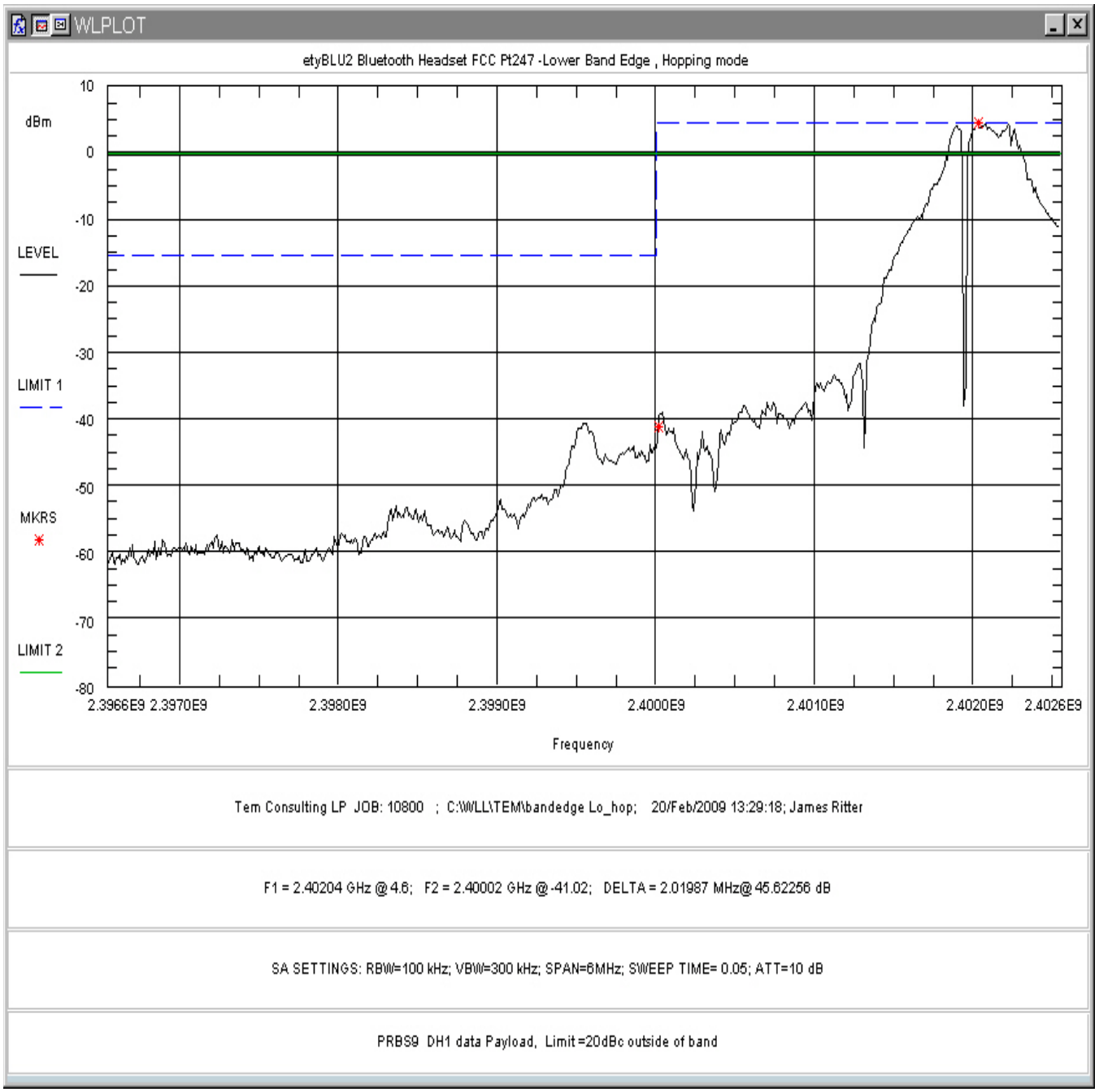

Figure 5-16 Lower Band Edge Plot, Hopping Mode

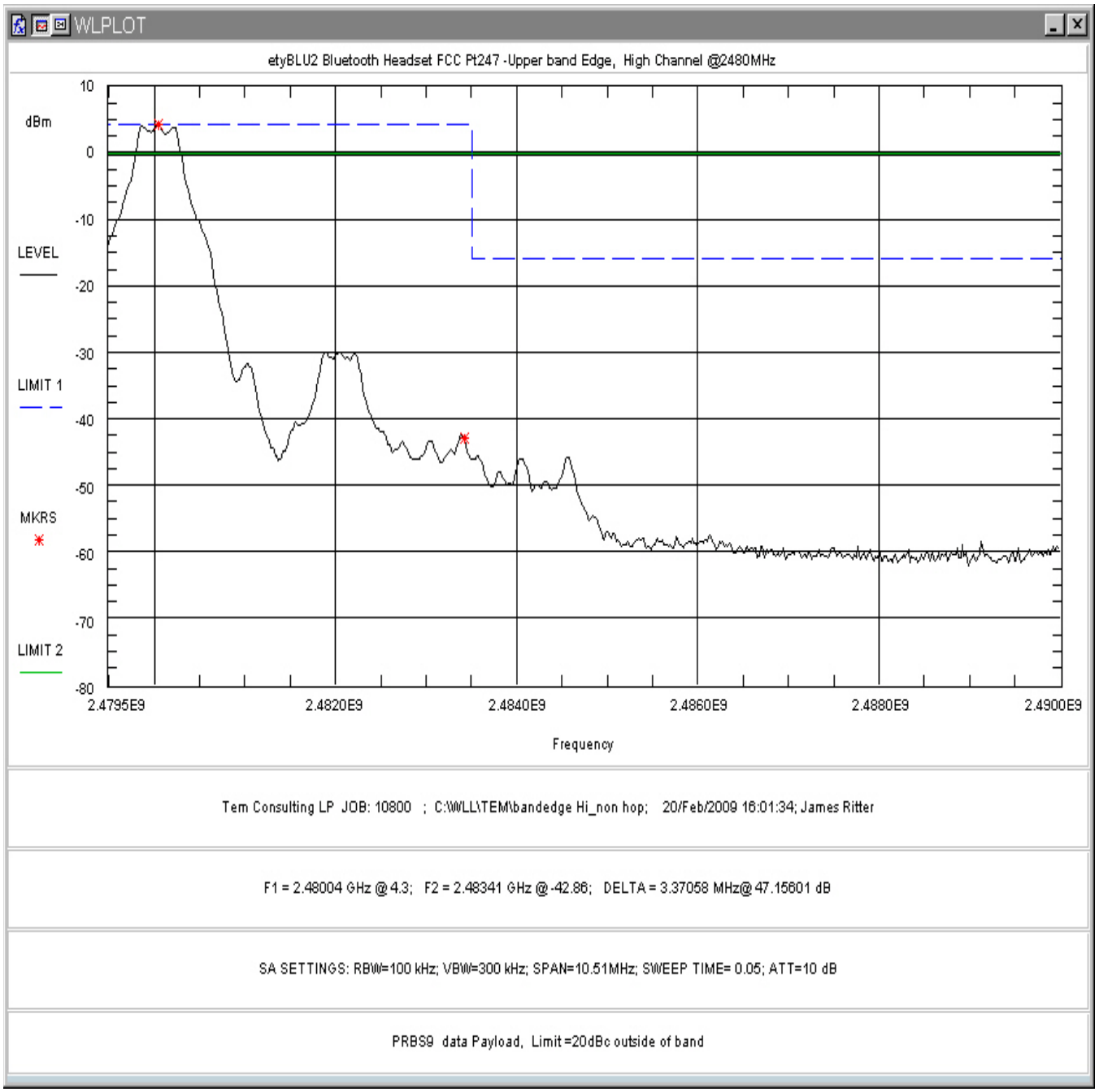

Figure 5-17 Upper Band Edge Plot, High Channel

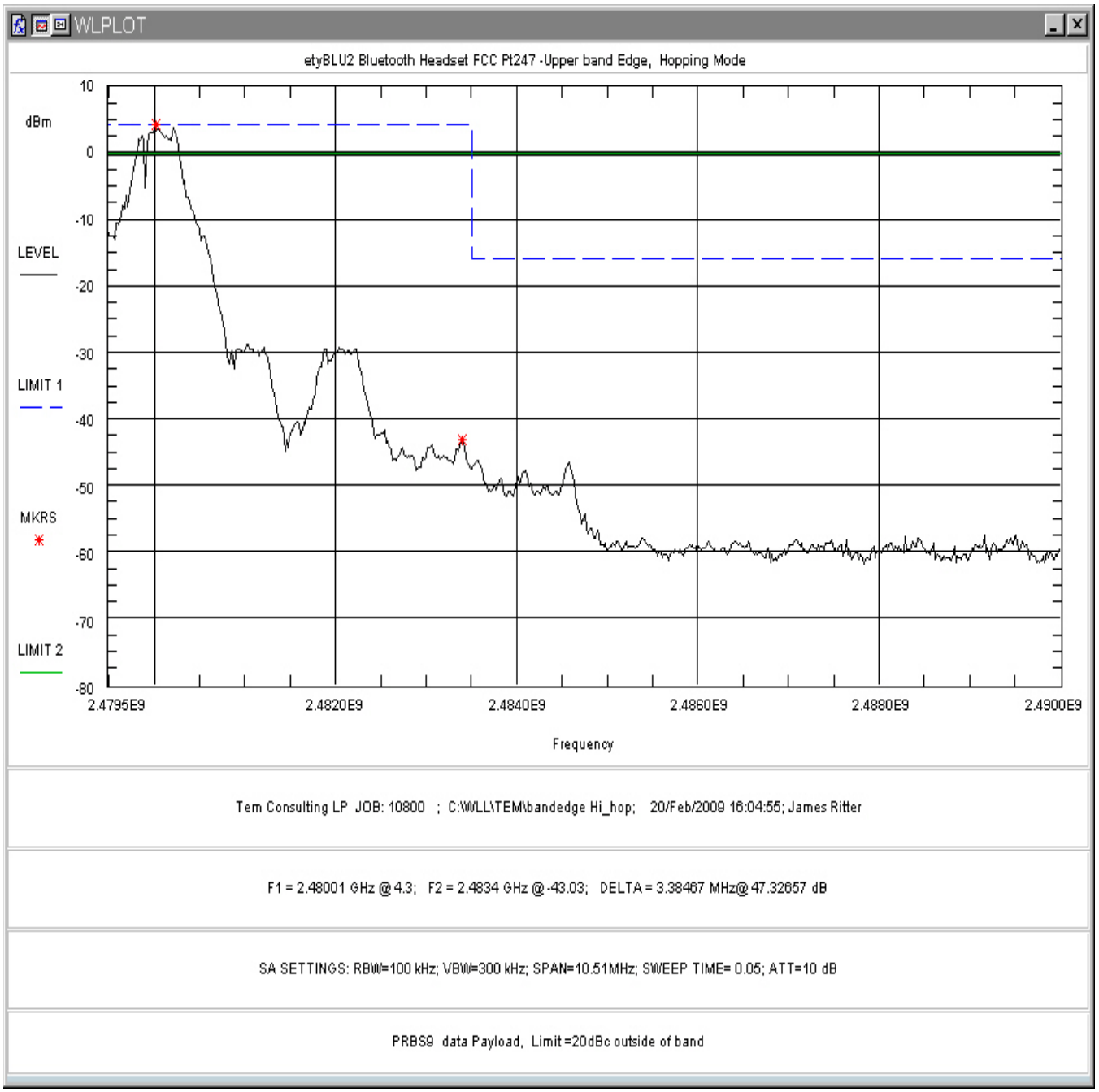

Figure 5-18 Upper Band Edge Plot, Hopping Mode

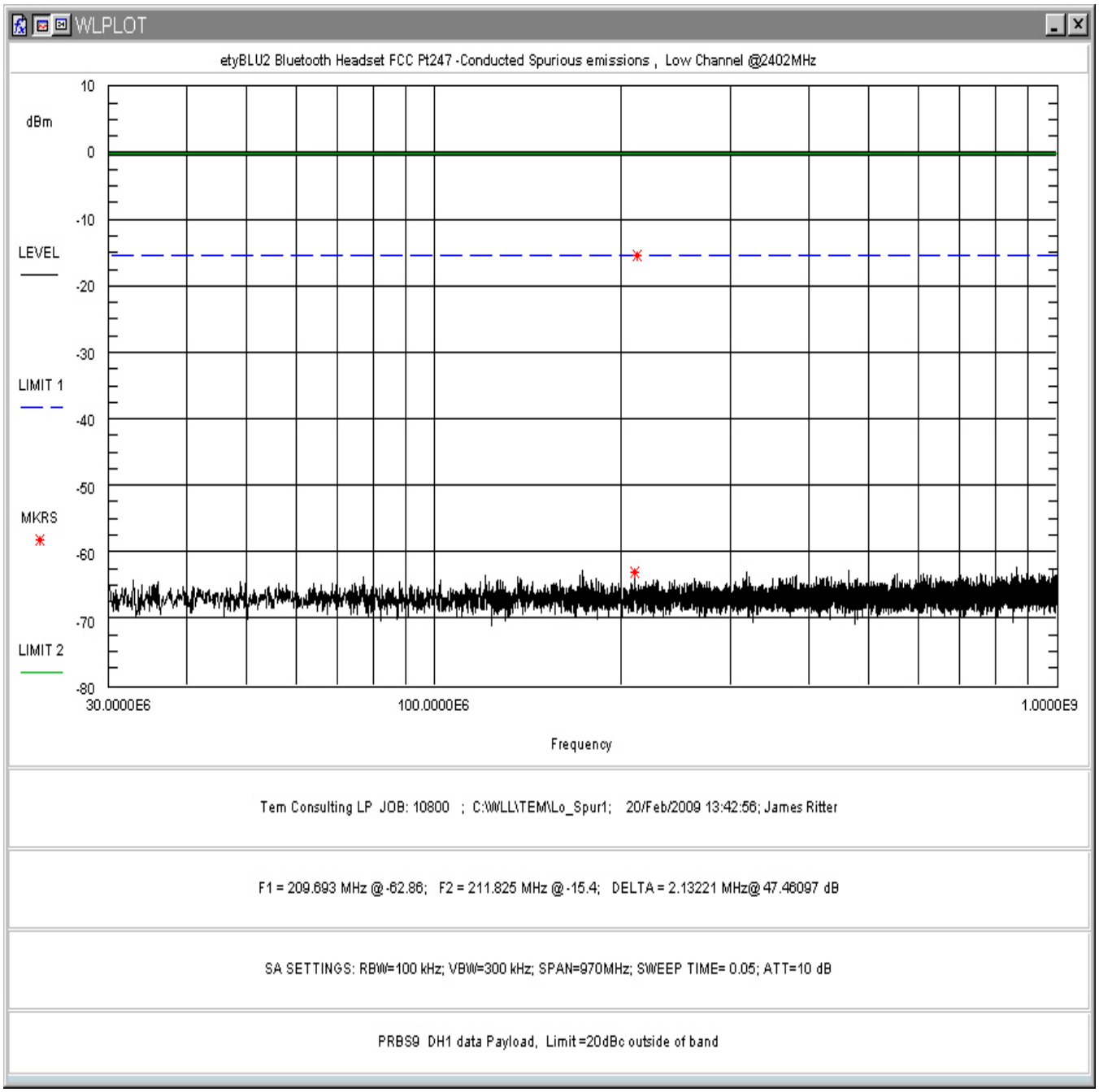

Figure 5-19. Conducted Spurious Emissions, Low Channel 30 - 1000MHz

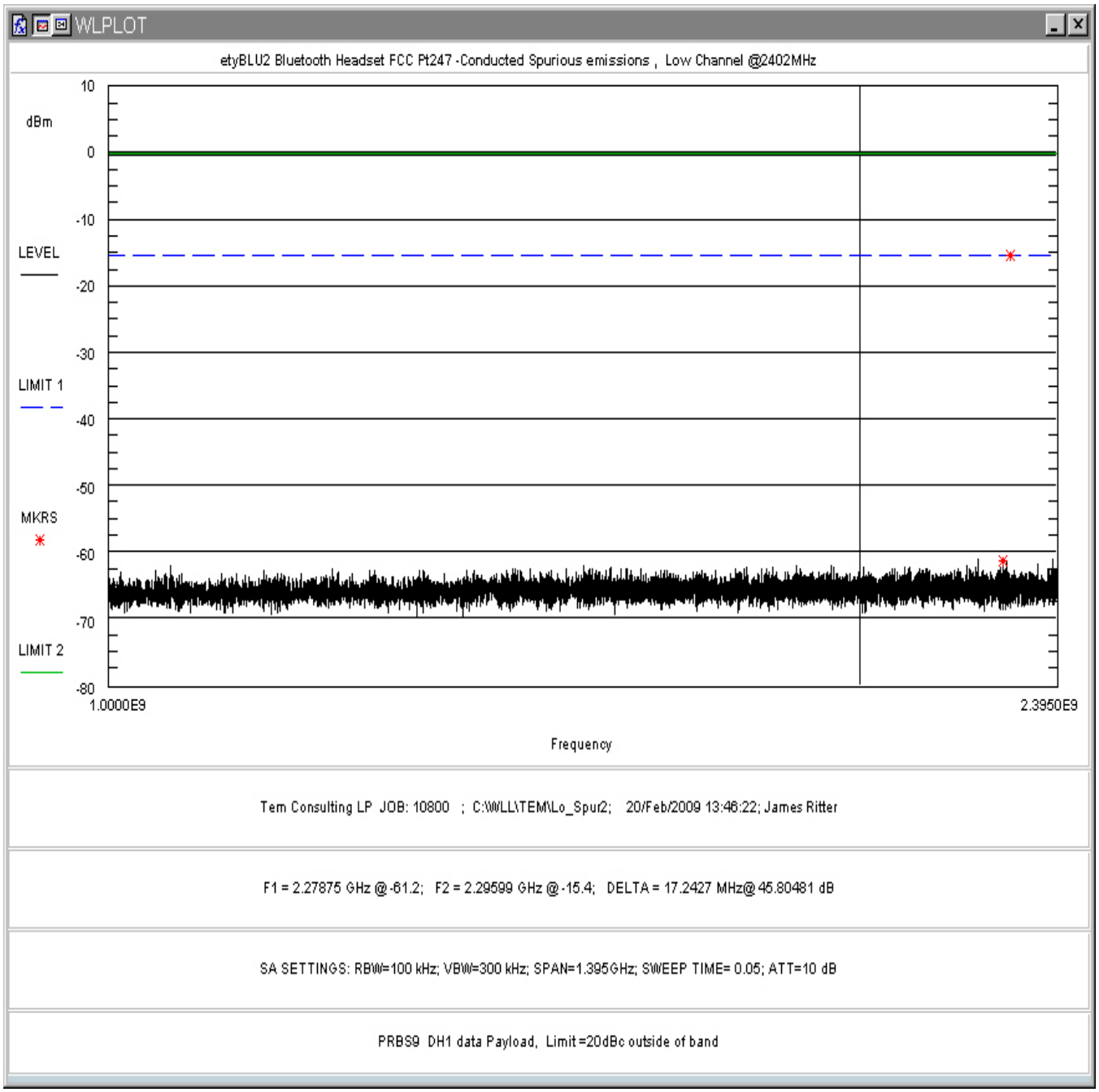

Figure 5-20. Conducted Spurious Emissions, Low Channel 1 – 2.395GHz

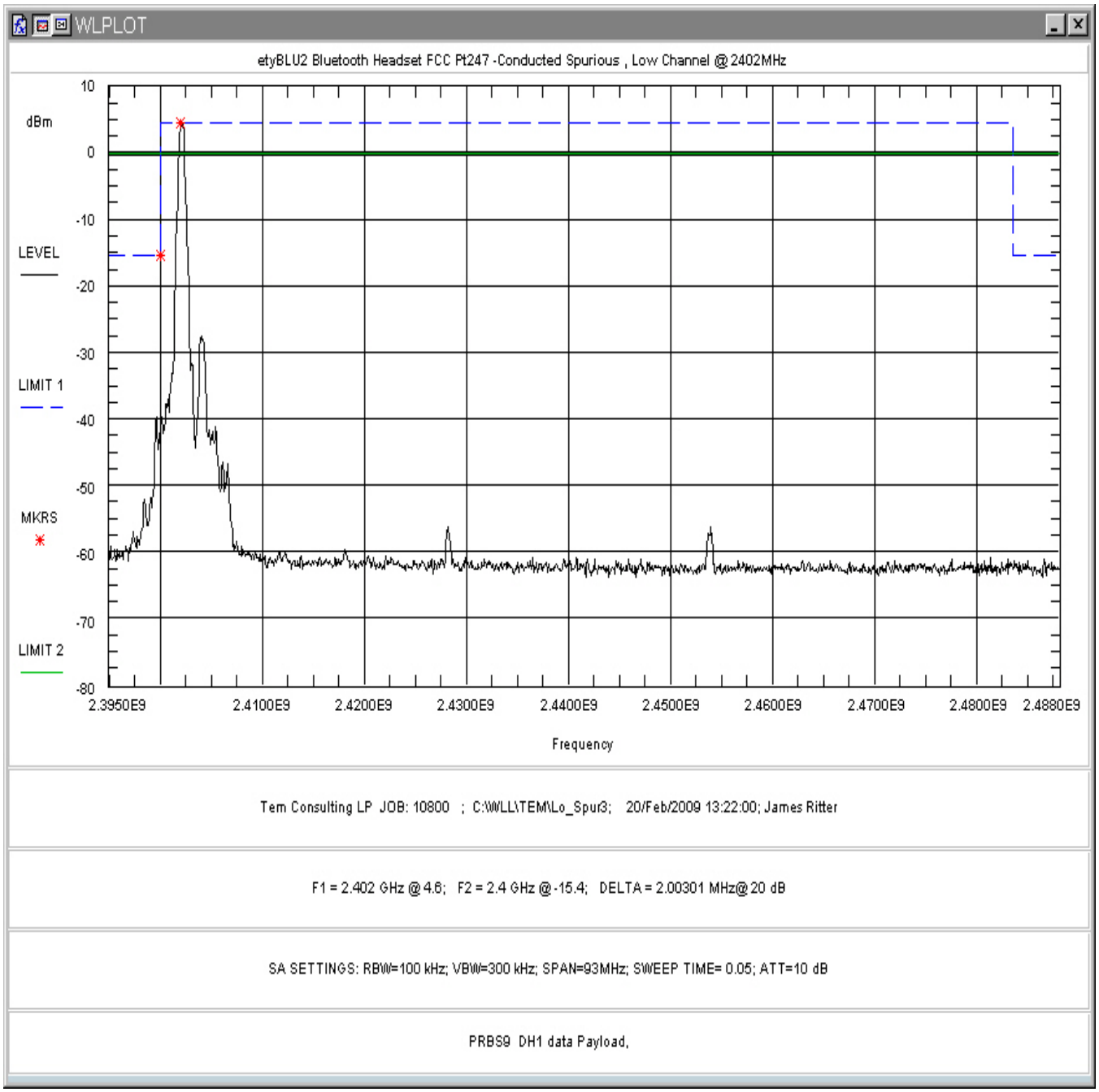

Figure 5-21. Conducted Spurious Emissions, Low Channel 2.395 – 2.488GHz

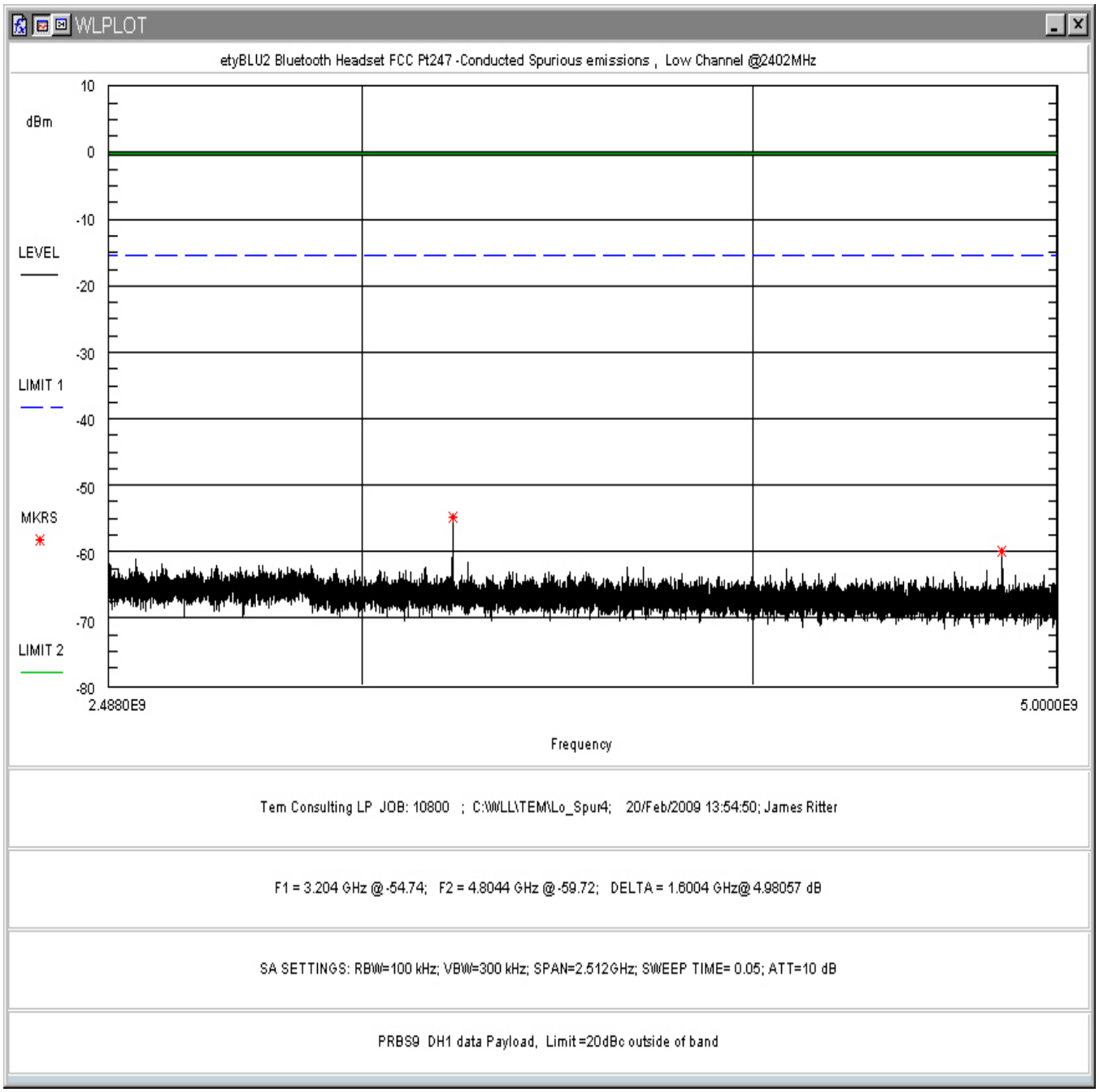

Figure 5-22. Conducted Spurious Emissions, Low Channel 2.488 - 5GHz

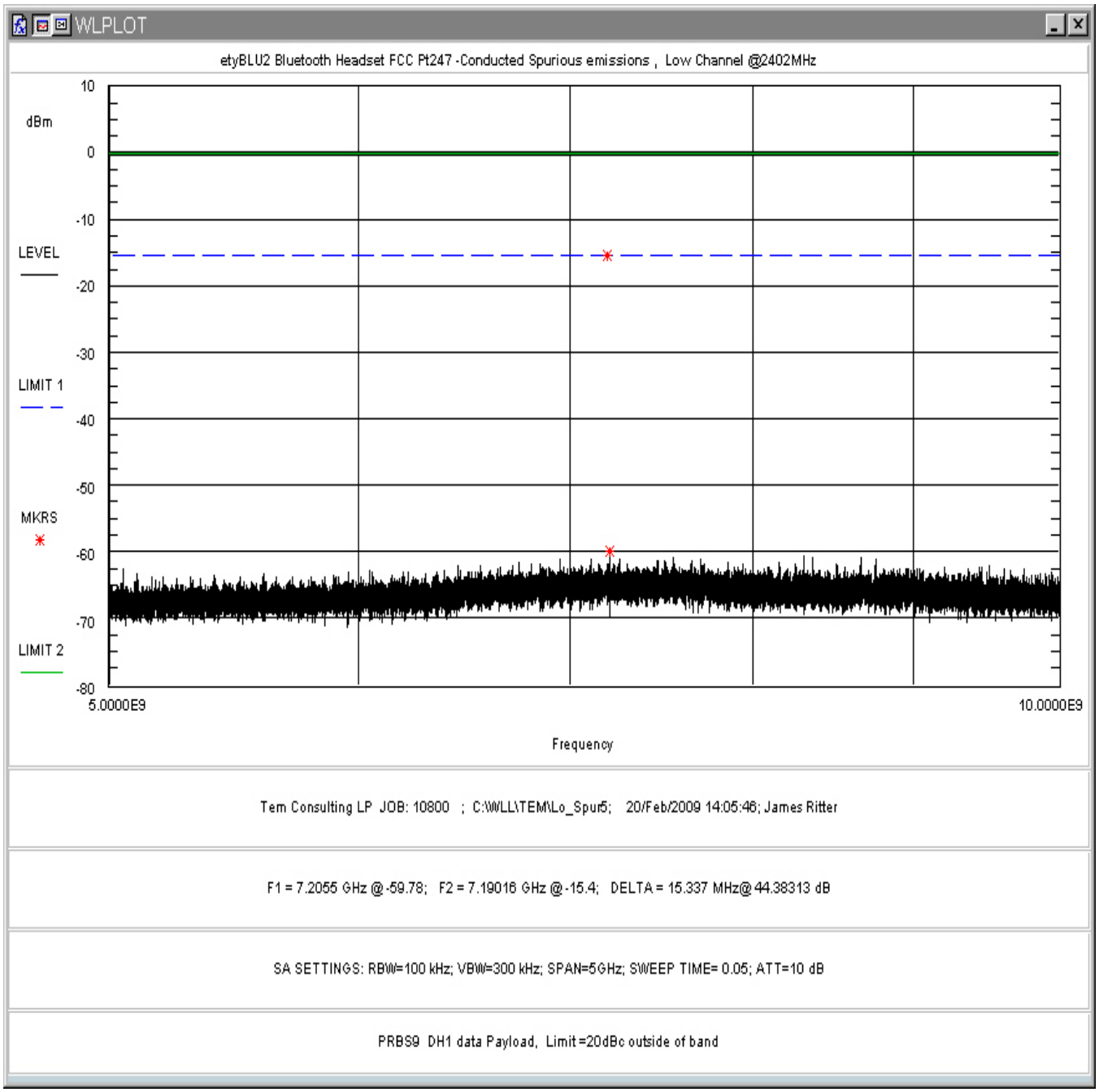

Figure 5-23. Conducted Spurious Emissions, Low Channel 5-10GHz

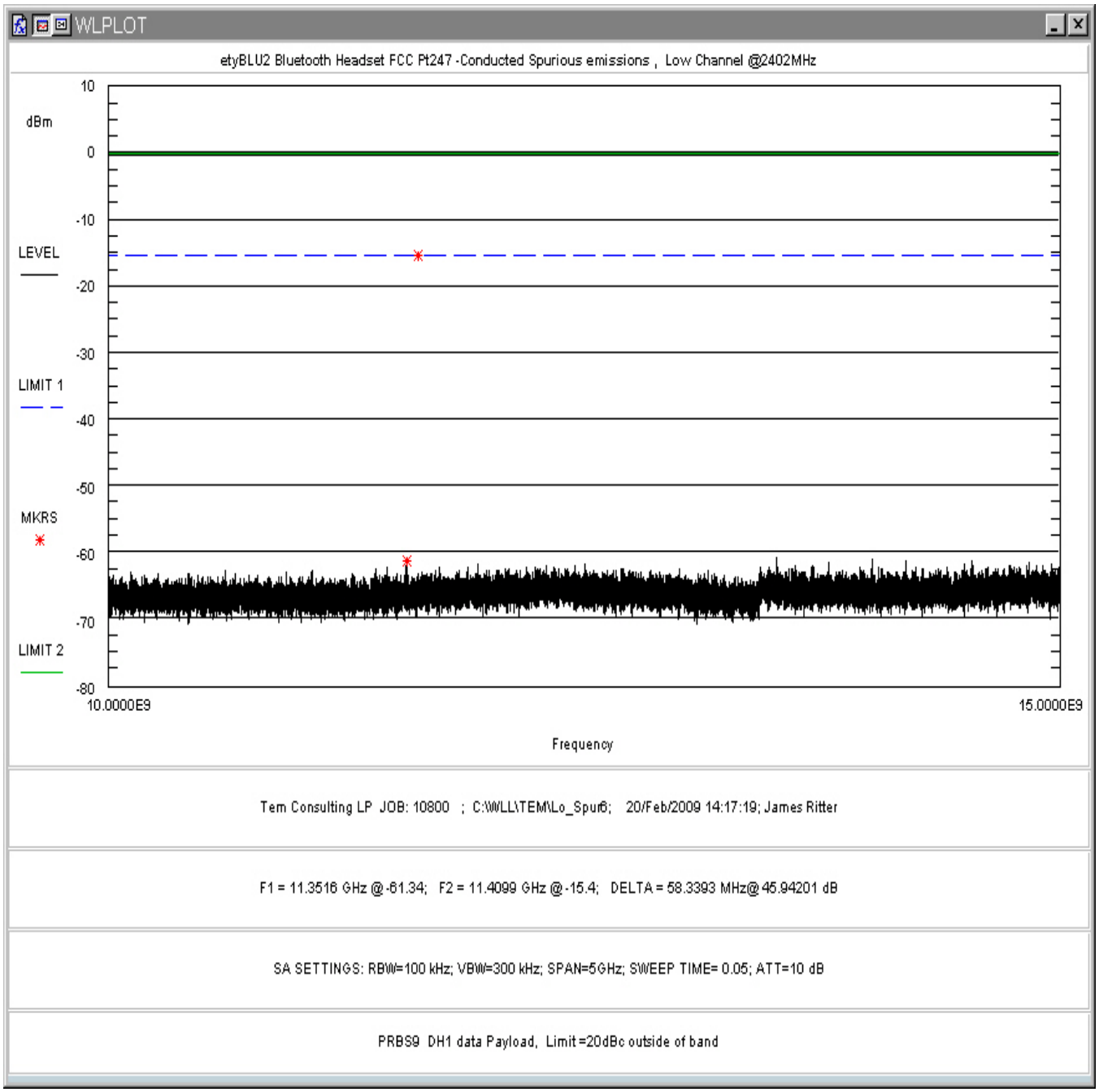

Figure 5-24. Conducted Spurious Emissions, Low Channel 10-15GHz

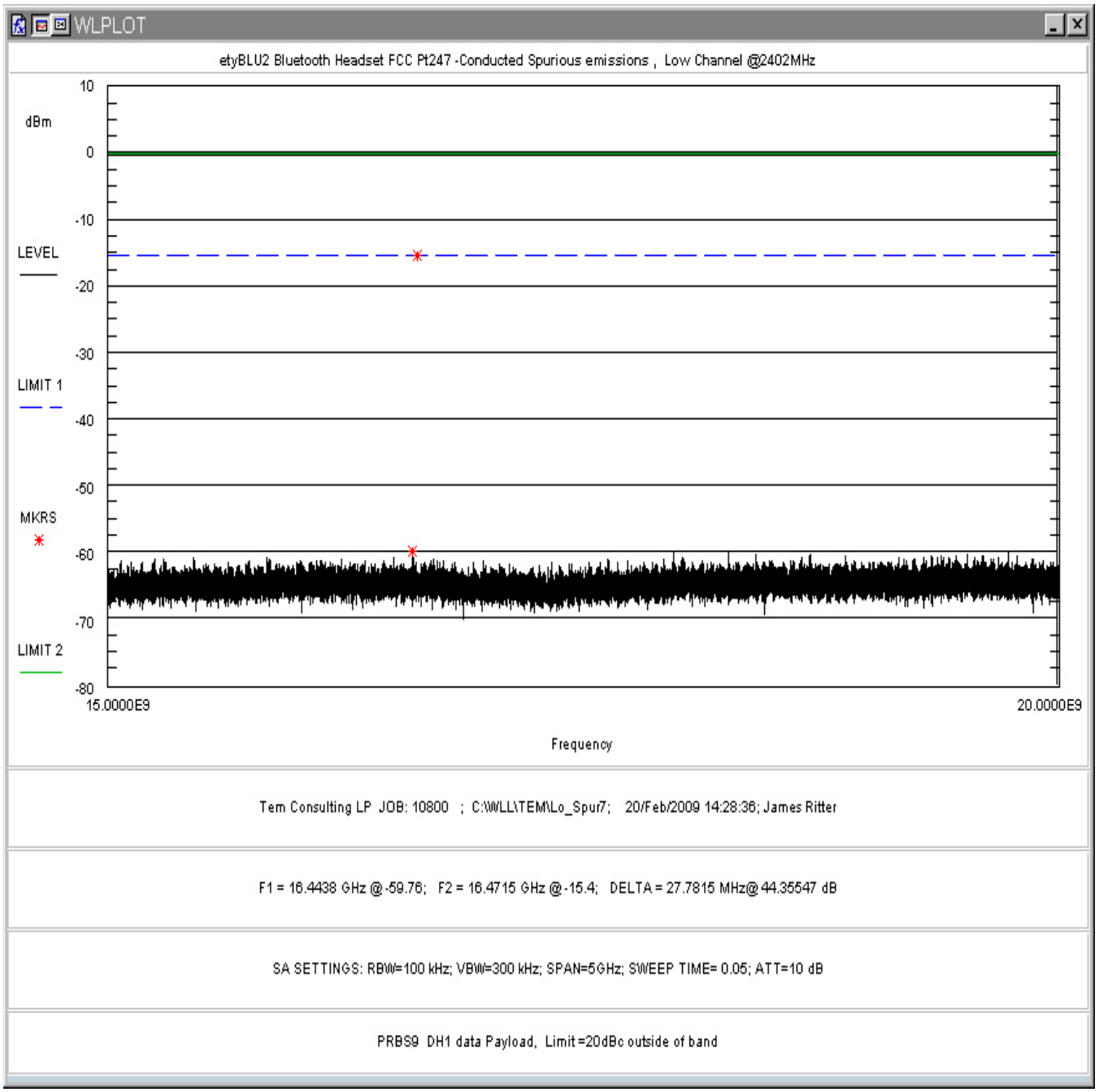

Figure 5-25. Conducted Spurious Emissions, Low Channel 15-20GHz

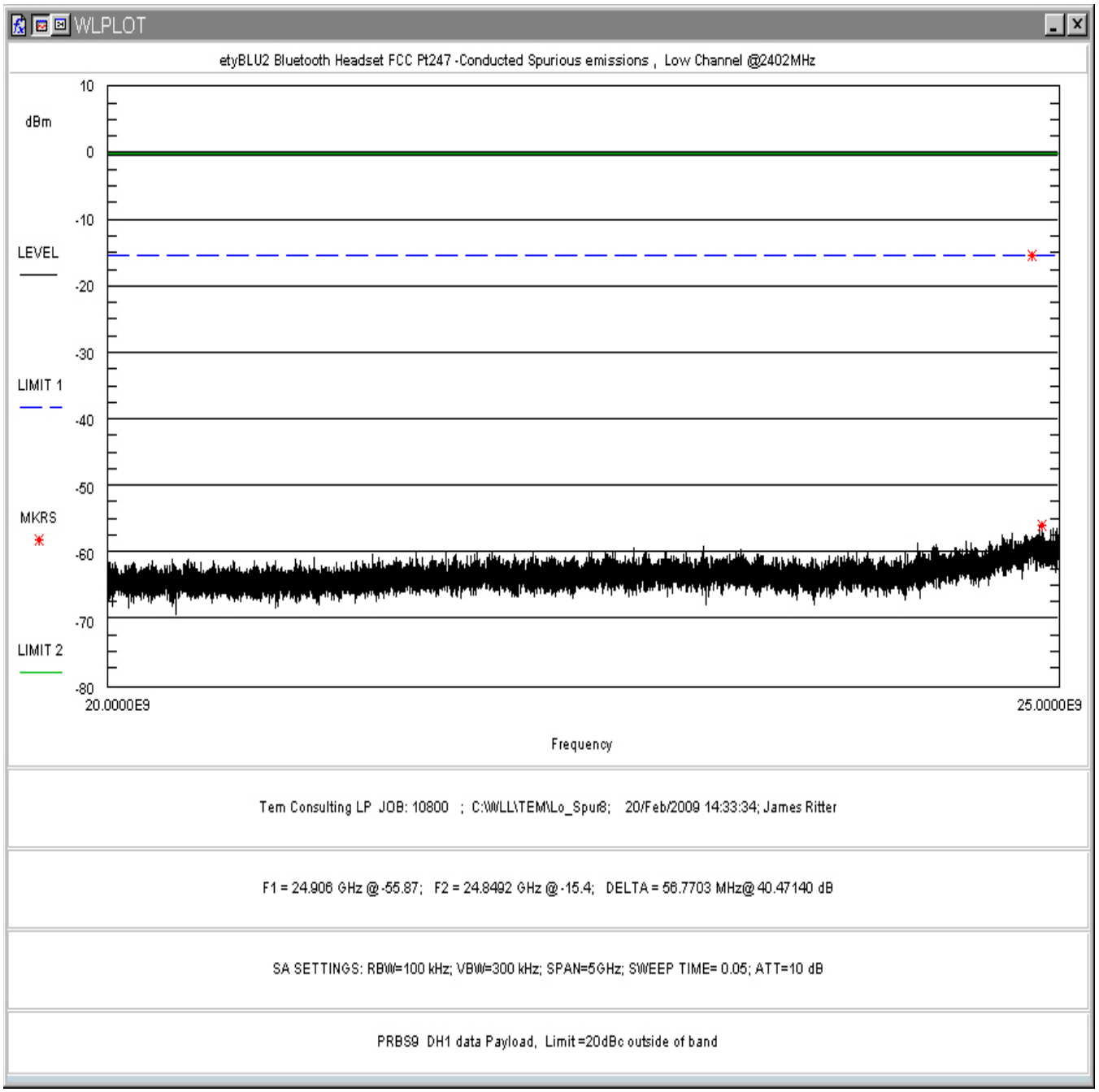

Figure 5-26. Conducted Spurious Emissions, Low Channel 20-25GHz

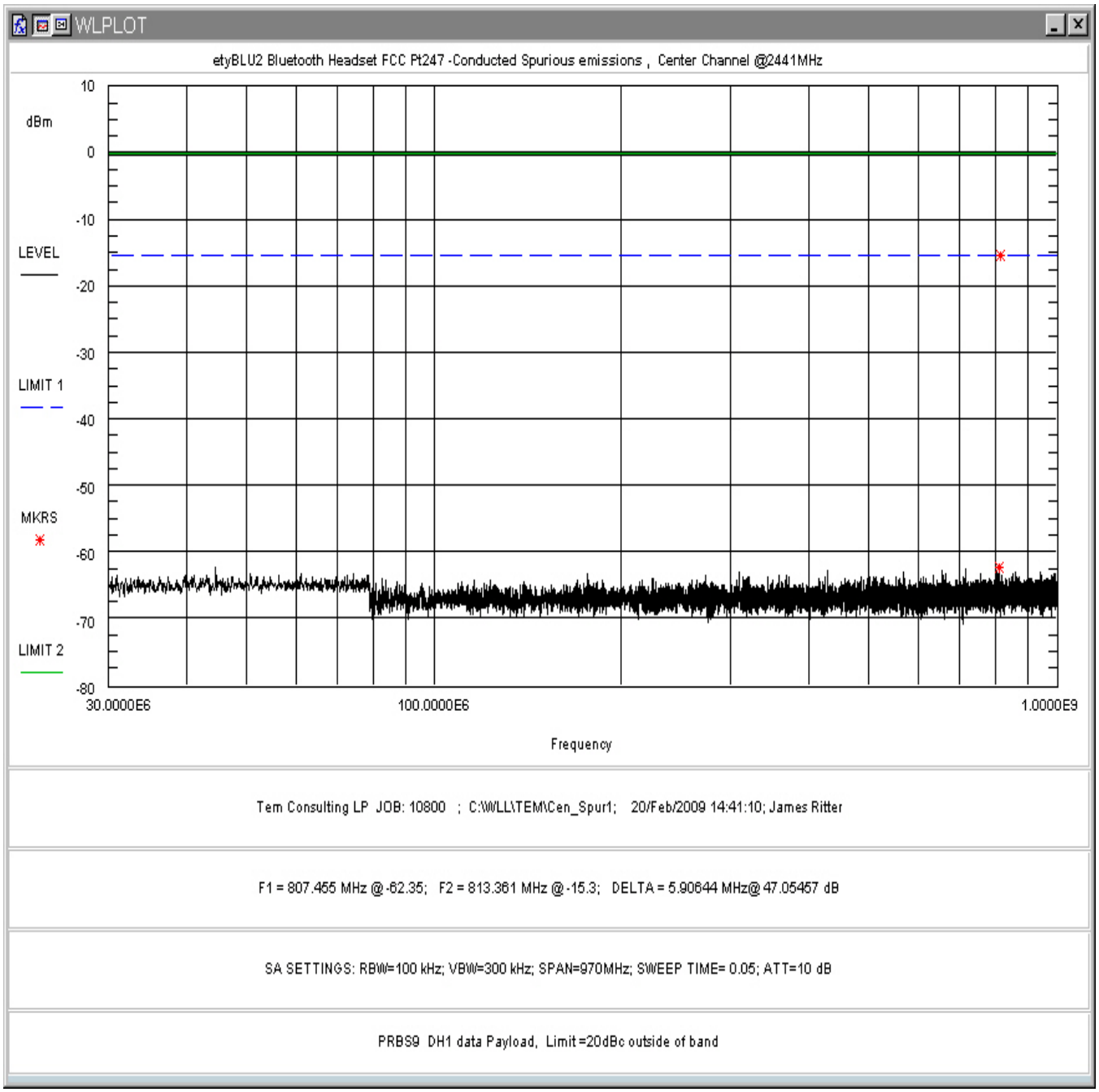

Figure 5-27. Conducted Spurious Emissions, Mid Channel 30 - 1000MHz

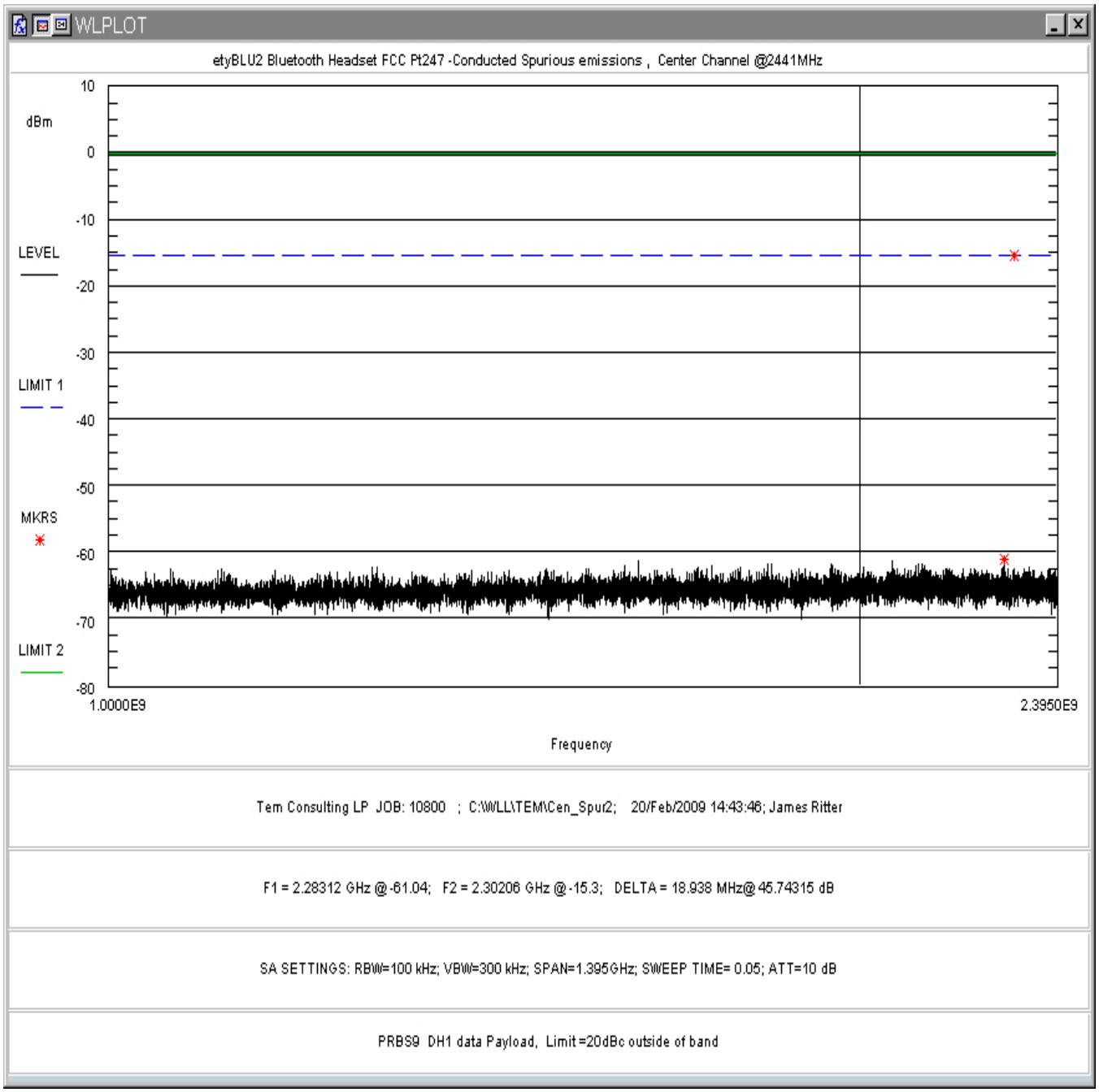

Figure 5-28. Conducted Spurious Emissions, Mid Channel 1 – 2.395GHz

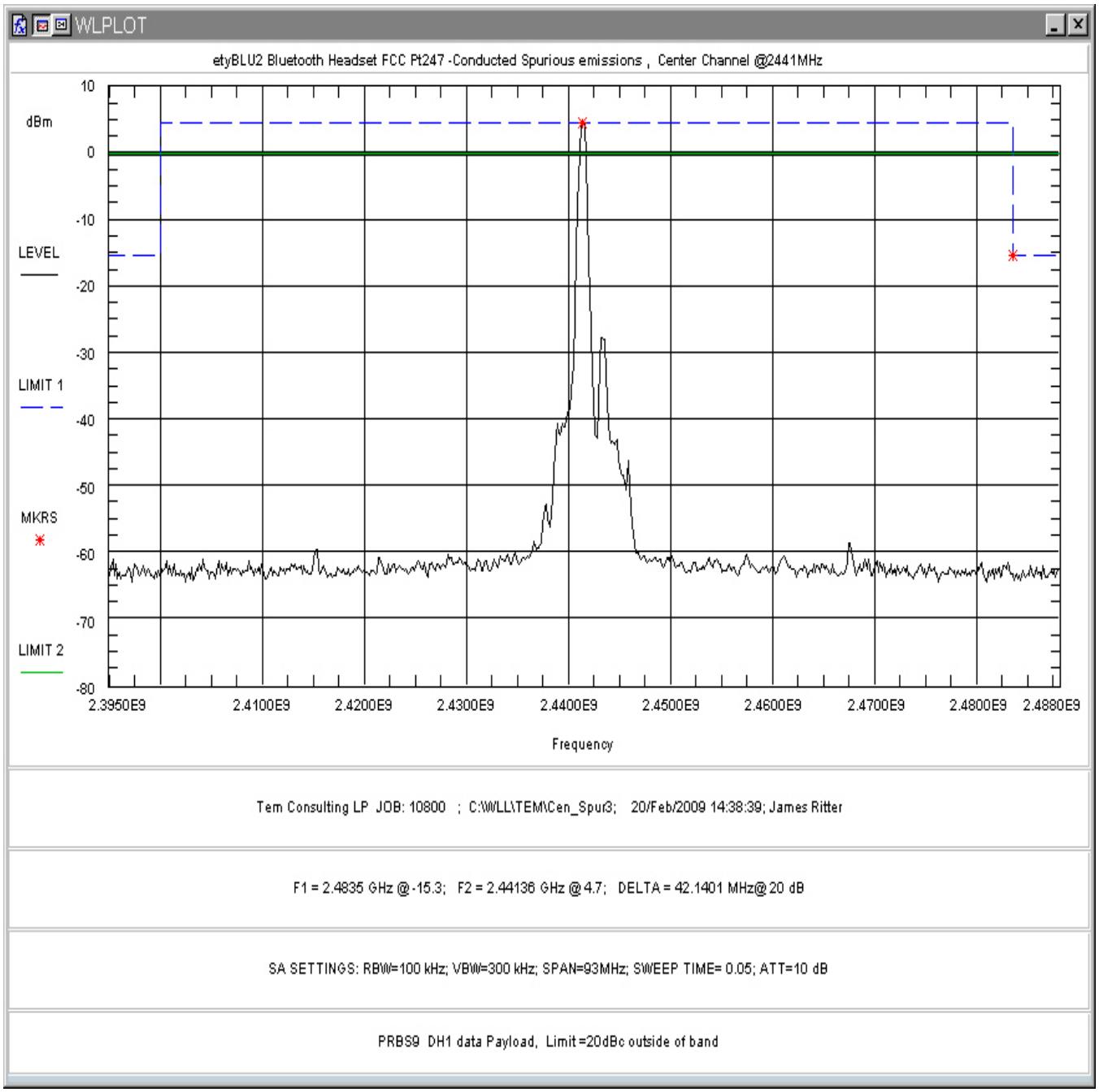

Figure 5-29. Conducted Spurious Emissions, Mid Channel 2.395 – 2.488GHz

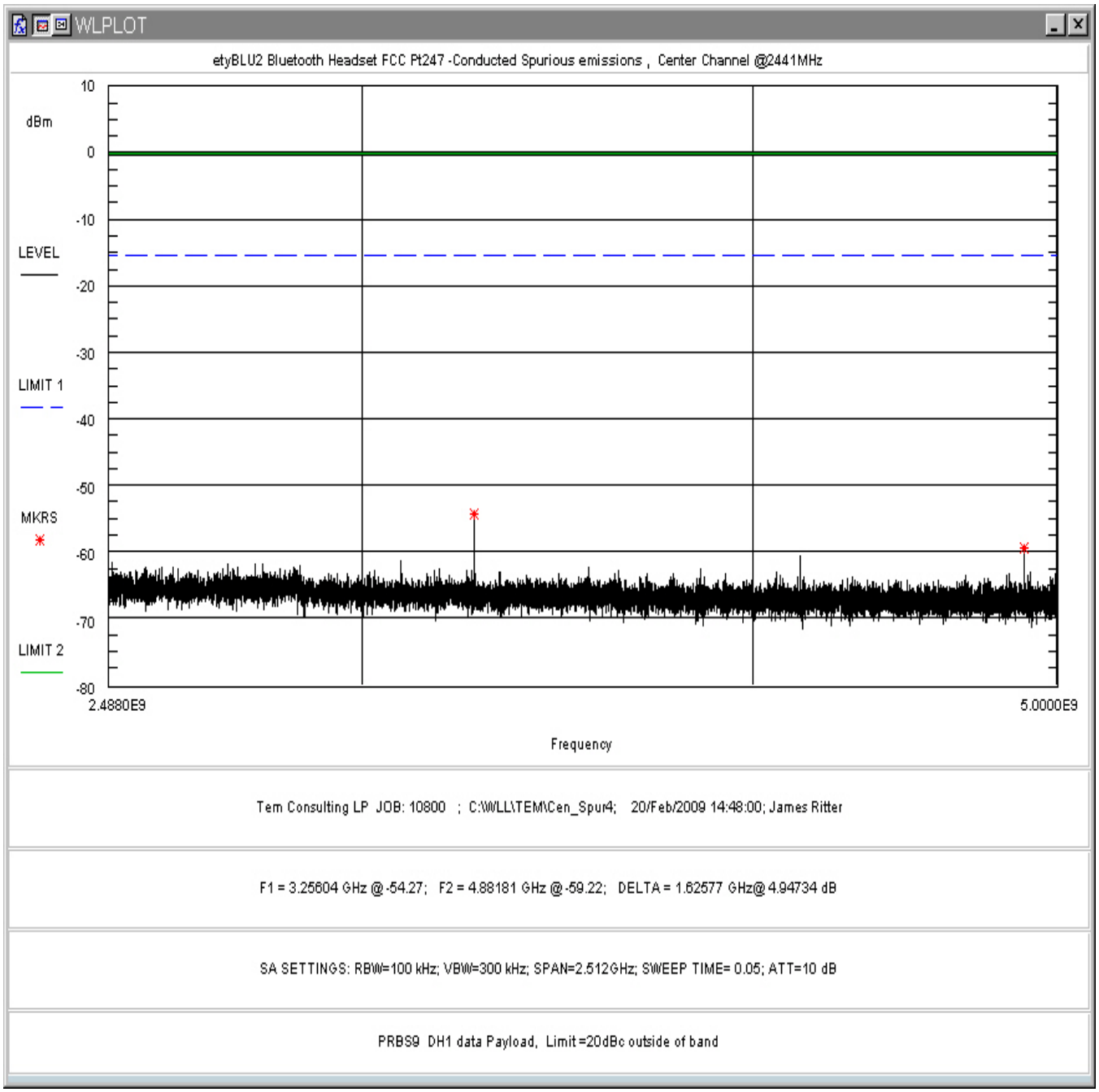

Figure 5-30. Conducted Spurious Emissions, Mid Channel 2.488 - 5GHz

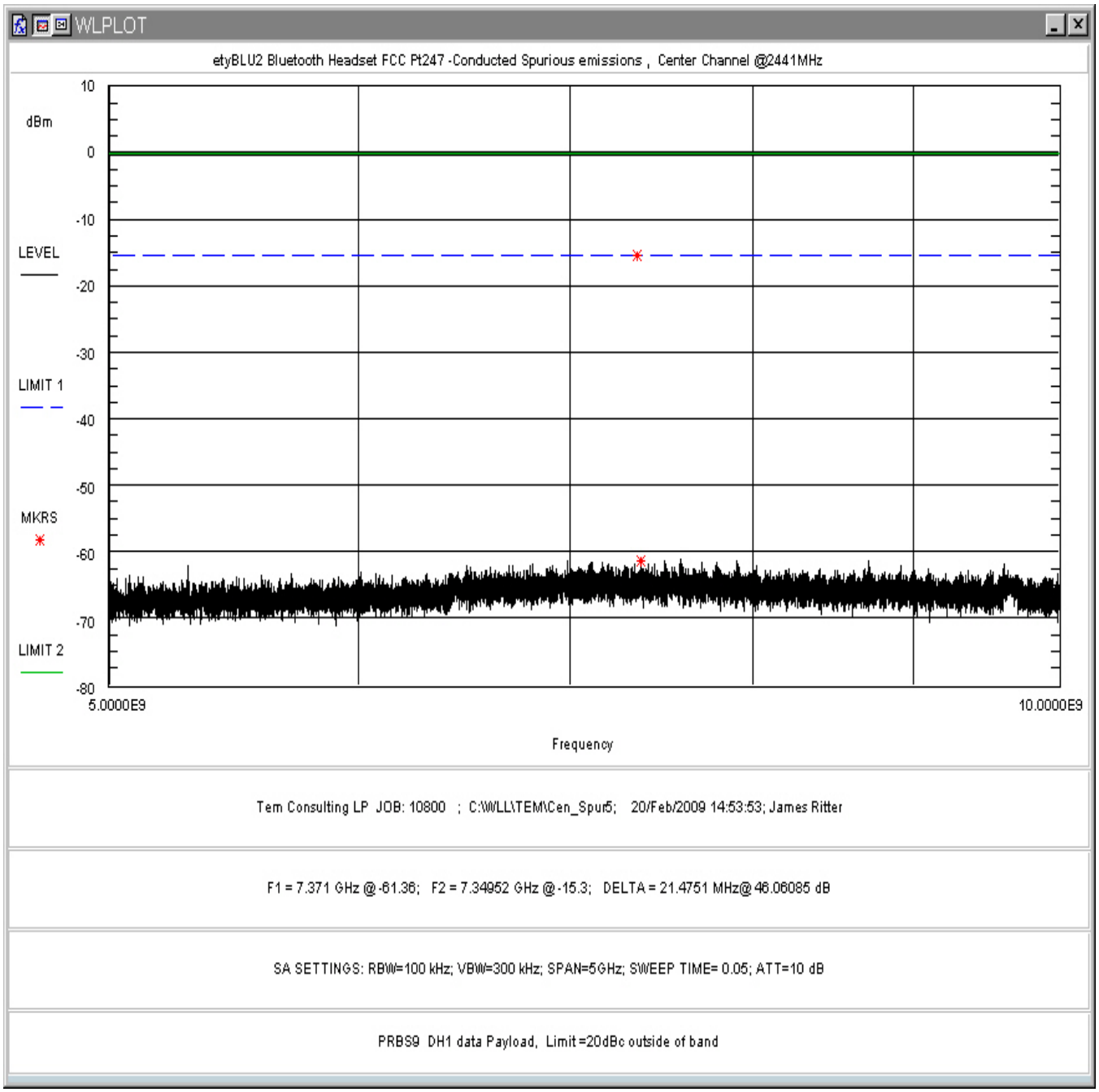

Figure 5-31. Conducted Spurious Emissions, Mid Channel 5 - 10GHz

