The microwave spectrum of allyl chloride at 0 °C was measured from 8.7–18.3 GHz with waveguide chirped-pulse Fourier transform microwave spectroscopy (CP-FTMW). The spectrum consists of contributions from $^{35}\text{Cl}$ and $^{37}\text{Cl}$ isotopomers of the cis and skew isomers. As the vibrational partition function for each of these conformers is approximately 4, the microwave spectrum contains a few thousand transitions with intensities above a 3:1 S/N ratio after a few hours of averaging. We will discuss our progress on the analysis of this spectrum, which has been aided with an automated strategy to find candidate assignments.