A preliminary report of our rotational analysis of the \( \tilde{\text{A}} - \tilde{\text{X}} \) system of \( \text{C}_3 - \text{Ne} \) and \( \text{C}_3 - \text{Ar} \) van der Waals (vdW) complexes will be given. The complexes were generated from 193-nm photolysis of a gas mixture containing allene and rare-gas atom under supersonic molecular beam condition. The laser-induced fluorescence spectra near the \( \text{C}_3, \tilde{\text{A}} - \tilde{\text{X}}, 2^2 \Pi - 2^2 \Sigma^+ \) band were recorded with a resolution of 0.03 cm\(^{-1}\). Both a- and c-type transitions were observed. The rotational constants and geometry of these vdW complexes will be presented.