Microwave spectroscopy provides a unique opportunity to study model non-covalent interactions. Of particular interest is the hydrogen bonding of water, whose various molecular properties are influenced by both strong and weak intermolecular forces. More specifically, measuring the hydrogen bonded structures of water-alcohol dimers investigates both strong (OH ··· OH) and weak (CH ··· OH) hydrogen bond interactions. Recently, we have measured the pure rotational spectrum of the isopropanol-water dimer using chirped-pulse Fourier transform microwave spectroscopy (CP-FTMW) between 8-18 GHz. Here, we present the spectrum of this dimer and elaborate on the structure’s strong and weak hydrogen bonding.