A LOOK AT A SERIES OF ALKYL AND PERFLUOROALKYL BROMIDES AND CHLORIDES

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The pure rotational spectrum for bromoperfluoroethane between 8.0 and 14.0 GHz and chloroperfluoroethane between 8.0 and 16.0 GHz has been measured on a chirped pulse Fourier transform microwave spectrometer for the first time. A total of 839 transitions for the bromoperfluoroethane, which includes the ^{79}Br, ^{81}Br parent isotopologues and the four ^{13}C's, have been assigned quantum numbers. 496 transitions were observed for chloroperfluoroethane, which includes the ^{35}Cl and ^{37}Cl species. Only the $trans$ conformers were observed for which the rotational constants are reported. Nuclear electric quadrapole coupling constants have been determined and reported. Also, two dipole forbidden/quadrapole allowed ΔJ = 2 transitions were observed in only the bromoperfluoroethane spectra. No forbidden transitions were observed in the chloroperfluoroethane.