Single- and polycrystalline HoMnO₄ system were synthesized in an optical floating zone furnace and with solid-state reaction methods, respectively. The dielectric constant \( \varepsilon(T) \) was measured using an LCR meter under the various external magnetic fields and heat capacity \( C(T) \) was measured using a relaxation method from 2 to 300 K. The sharp features along the \( c \)-axis of HoMnO₃ in \( \varepsilon(T) \) and \( C(T) \) at 5 and 40 K correspond to Ho antiferromagnetic ordering and Mn spin reorientation, and the magnetic Néel temperature \( T_N \) shows at 72 K. As increasing external applied magnetic field, the dielectric anomaly peak at 40 K was shifted to low temperature and finally the value is about 27 K under 4 Tesla. Mössbauer spectra of the Fe-doped polycrystalline HoMnO₃ have been taken at various temperatures ranging from 4.2 K to room temperature. We notice that the electric quadrupole splitting \( \Delta E_Q \) values are large for all temperature ranges. The value is 0.42±0.01 and 1.86±0.01 mm/s at 4.2 K and above \( T_N \), respectively. Also, the temperature dependence of quadrupole splitting show two peaks at the same point obtained from \( \varepsilon(T) \) and \( C(T) \) curve. We present that the change of electric quadrupole splitting occurs simultaneously with the anomaly of dielectric constant. The isomer shift value at room temperature is found to be 0.16±0.01 mm/s relative to the Fe metal that are consistent with the Fe³⁺ valence state.