The work is dedicated to the experimental investigation of the intensive \( \text{H}^- \) ion source with volume-plasma generation in hydrogen discharge. The discharge chamber of the source represents inverse gas magnetron geometry, which works on the basis of glow discharge in crossed \( \text{ExH} \) fields.

Optimization of source conditions for vibrational excitation of molecules and for the subsequent formation of negative ions is realized due to creation of discharge system that generates in the emission chamber two areas of plasma - peripheral, with rather big fraction of fast electrons and paraxial with cold electrons.

Results of ion source optimization and emittance measurement are presented.

The ion source described here was in operation for a long time in the structure of RFQ accelerator.