The method of differential optical absorption spectroscopy is an effective tool for open-path measurements of atmospheric gases and impurities. The gas analyzers based on this method traditionally include a high pressure xenon lamp as the radiation source, that require high voltage, which makes gas analyzers are bulky and power-inefficient. Recent developments in fiber-coupling telescope technology and the availability of ultraviolet light emitting diodes have now allowed us to construct a portable, long path gas analyzer. The gas analyzer comprises two UV-LEDs emitting in the near UV-region of the spectrum, the system of optical fibers, a receiving-transmitting telescope, and spectrometer and treatment system. There are presents a description of the methodology and results of the measurement of chlorine and bromine oxides with gas analyzer based on UV-LEDs.