Spectroscopic and laser properties of a Er:CaF\textsubscript{2} crystal at room temperature were investigated. The Er:CaF\textsubscript{2} sample (Er = 4.5 at. %) had plan-parallel polished faces without anti-reflection coatings (thickness 10 mm). The transmission and emission spectra of Er:CaF\textsubscript{2} together with the fluorescence decay time were measured. The excitation of Er:CaF\textsubscript{2} was carried out by a laser diode radiation (pulse duration 6 ms, variable duty cycle, pump wavelength 975 nm). The water cooled Er:CaF\textsubscript{2} sample (temperature 20°C), mounted in a copper holder, was placed inside the hemispherical resonator, 145 mm in length with flat pumping mirror (HR @ 2.7 µm) and spherical output coupler (r = 150 mm, R = 95 % @ 2.5 - 2.8 µm). Laser tunability was reached using a MgF\textsubscript{2} birefringent filter and the laser tuning range of 148 nm from 2692 up to 2840 nm was demonstrated for Er:CaF\textsubscript{2} laser. The broad gain bandwidth of \sim 4 THz (FWHM) makes this laser potentially attractive to ultra-short pulse generation in the 2.7 µm region (corresponding Fourier limited Gaussian pulse width \sim 110 fs). The highest slope efficiency with respect to absorbed power was 2.8%. The maximal reached output energy was 2.3 mJ at 2739 nm for the absorbed pumping energy 101 mJ. The wavelength generated by Er:CaF\textsubscript{2} laser (2.7 µm) is relatively close to absorption peak of water (3 µm) and so, one of the possible usage should be in medicine and spectroscopy.