We discuss techniques to verify the accuracy of parameter or input densities constructed using Bayesian inference. The posterior distribution can be computed using the prior distribution, likelihood and possibly high-dimensional integration. We first employ a direct method to compute the posterior using the formula directly via a numerical quadrature. We then compare the direct method to two adaptive methods, Delayed Rejection Adaptive Metropolis (DRAM) and Differential Evolution Adaptive Metropolis (DREAM). These methods employ a MCMC algorithm and efficiently estimate model parameters without involving high-dimensional integration. We use a steady-state heat model as an example to demonstrate how these methods construct densities and compare their accuracy. (Received September 14, 2013)