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The known families of binary sequences having asymptotic merit factor  $\geq 6$  are modifications to the families of Legendre sequences, Jacobi, or modified Jacobi sequences. In this paper, we show that at length  $N = p_1 p_2 \dots p_r$ , where  $p_i$ 's are distinct odd primes, we can construct a binary sequence of length  $2N$  so that such families of sequences have asymptotic merit factor 6.0 without cyclic shifting on the base sequences. *Keywords:* aperiodic correlation, merit factor, real primitive characters (Received January 19, 2010)