FORMULA 4.272.4

$$\int_0^1 x^{q-1} \ln^{r-1}(1/x) \, \frac{\cos\lambda - px}{1 - 2px\cos\lambda + p^2 x^2} = \Gamma(r) \sum_{k=1}^{\infty} \frac{p^{k-1}\cos k\lambda}{(q+k-1)^r}$$