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Certain unified integral involving Generalized Bessel-Maitland function

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Abstract: MacRobert in his research paper established certain new finite integral formula, which is expressed in terms of gamma functions. Using the result of MacRobert, in this paper, we present a new integral formula involving the generalized Bessel-Maitland function, which is expressed in terms of generalized (Wright) hypergeometric function. Some interesting special cases of our main result are also considered.
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1. Introduction

Many unified integrals involving special functions of mathematical physics have been presented by a number of authors, for example, Rathie ([8], [9]), Ali [1], Choi and Agarwal [3] and Choi et al. [4]. Motivated by the above-mentioned works, in the present paper, we establish a new unified integral formula involving the Bessel-Maitland function. Some special cases of our main result are also considered.
The Bessel function $J_\nu(z)$ of the first kind (and order ν), defined by (See [7])

$$J_\nu(z) = \sum_{m=0}^{\infty} \frac{(-1)^m \ (z/2)^{\nu+2m}}{m! \ \Gamma(\nu+m+1)}, \tag{1.1}$$

it is well known that

$$J_{-\frac{1}{2}}(z) = \sqrt{\frac{2}{\pi z}} \ \cos z \tag{1.2}$$