

ABSTRACT. We consider a bitangential interpolation problem for operator-valued functions defined on a general class of domains in  $\mathbb{C}^n$  (including as particular cases, Cartan domains of types I, II and III) which satisfy a type of von Neumann inequality associated with the domain. The compact formulation of the interpolation conditions via a functional calculus with operator argument includes prescription of various combinations of functional values and of higher-order partial derivatives along left or right directions at a prescribed subset of the domain as particular examples. Using realization results for such functions in terms of unitary colligation and the defining polynomial for the domain, necessary and sufficient conditions for the problem to have a solution were established recently in Ambrozie and Eschmeier (preprint, 2002), and Ball and Bolotnikov, 2004. In this paper we present a parametrization of the set of all solutions in terms of a Redheffer linear fractional transformation acting on a free-parameter function from the class subject to no interpolation conditions. In the finite-dimensional case when functions are matrix-valued, the matrix of the linear fractional transformation is given explicitly in terms of the interpolation data.