

Activity Title:	<i>Miniaturized and Self-Packaged Substrate Integrated Coaxial Resonator Filters for Space</i>		
Contract type	ITI-A	Budget (k€)	50
Company (-ies) (including country)	Universitat Politècnica de València (Spain) Wative-Tech (Spain) Thales Alenia Space France (France)		
Team (name of the participants in the project)	Stefano Sirci (UPV) Jorge D. Martínez (UPV) Vicente E. Boria (UPV) Alberto Valtueña (WATIVE-TECH) Hervé Leblond (TAS-F)		
(*) Speaker (s)	Stefano Sirci	Email	ssirci@iteam.upv.es
Short Speaker Information (experience and involvement in this project – maximum 60 words)	Stefano Sirci received the B.S. and M.S. degrees (with honors) in Electrical Engineering from the University of Perugia, Italy in 2006 and 2009. Since 2010 he has been with the Microwave Applications Group at Universitat Politècnica de Valencia working toward the PhD degree. In the framework of SUCRE project, he has been involved in the design and fabrication of the miniaturized substrate integrated coaxial filters.		
Summary of the activity (maximum 400 words and 2 pictures)	<p>A novel concept of band-pass filter using substrate integrated coaxial resonators is developed in this contract. These filters implement a classical waveguide combine topology into SIW technology. The outer conductor is formed by circular or rectangular rows of via holes, while the inner conductor of the coaxial resonator is implemented using an additional plated via. Capacitive loading at one end of the resonator is obtained using the fringing fields through a gap etched on the top metal plate of the substrate. Thus, a TEM mode is established along the vertical direction of the structure. This structure enables a significant reduction on the resonator size (i.e. more than 50% compared to conventional TE₁₀₁ configurations), providing not only compactness but also improved spurious-free range and post-fabrication tuning capabilities. Moreover, it is possible to introduce magnetic and electric cross-couplings between integrated coaxial resonators using current or capacitive probes respectively. This enable us to implement advanced filtering functions with prescribed transmission zeros and group delay equalization in order to satisfy the stringent rejection and isolation requirements of most space applications.</p> <p>In this contract two 6-pole C- and K-band filters with challengin specifications in terms of selectivity and miniaturization have been designed and manufactured showing promising results.</p>		

(*) The speaker needs to do the registration through this website