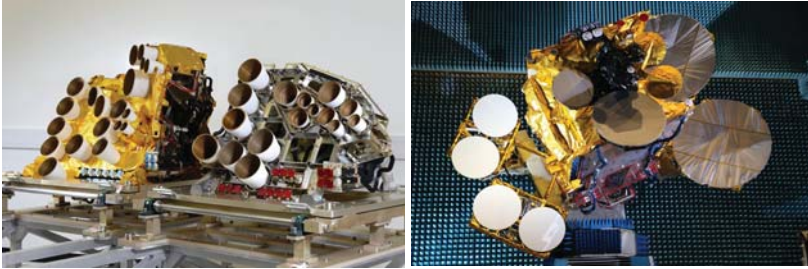


Activity Title:	<i>Development of a Large, Distributed Ku Band Single Feed per Beam Array</i>		
Contract type	ARTES 3-4	Budget (k€)	980
Company (-ies) (including country)	Airbus Defence and Space (UK)		
Team (name of the participants in the project)	Tom Mc Connell, ADS Stephen Phipps, ADS David Hawthorne, ADS Simon Leigh, ADS Peter Webster, ADS Ian Panton, ADS		
(*) Speaker (s)	Tom Mc Connell	Email	tom.mcconnell@airbus.com
Short Speaker Information (experience and involvement in this project – maximum 60 words)	Tom Mc Connell has been involved in microwave communications for over 30 years and in the development of space-borne antennas since 2007. On the current project, known as the LMFA, Large Multi-Feed Array, he has managed the project through from concept to integration and test on the space craft, which is now completed and ready for launch.		
Summary of the activity (maximum 400 words and 2 pictures)	<p>In this activity the main objective has been to develop the necessary tools, processes and techniques to enable a generic capability for LMFA design. The initial LMFA unit to result from this activity cannot, of course, meet the needs of all future missions since the layout and scale of these multi-feed arrays varies significantly from mission to mission. However, the development work for this specific programme has enabled the definition of generic design aspects for future large multi-feed assemblies.</p> <p>The commercial programme for which this initial LMFA was built requires a large transcontinental coverage pattern. It requires an LMFA, housing multiple Ku Band linear polarised feed chain assemblies, pointing at multiple reflectors. The overall spacecraft configuration is driven by the need to accommodate several different antenna missions. This is reflected in the layout of the LMFA, creating a complicated feed arrangement that does not have a regular pattern or distribution as shown.</p> <p>Multiple feasible allocations of feeds-to-reflectors exist in theory; hundreds of possible layouts, each with similar nominal RF performance but different associated mechanical designs and different scattering environments. Selection of the optimum feed allocation layout is highly dependent on mechanical accommodation constraints. Obtaining an optimised feed layout early in a project timescale, that meets the RF and mechanical requirements, is key to the success of large multi-feed assembly design and to that end software was developed during the early stages that combines mechanical layout with RF performance.</p> <p>In addition to this software development, investigations were carried out to enable generic capability that encompass LMFA housing concepts, horn alignment and polarisation setting techniques, waveguide manufacturing technology, waveguide support development and the production of guidelines for future LMFA designs.</p>		
			

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