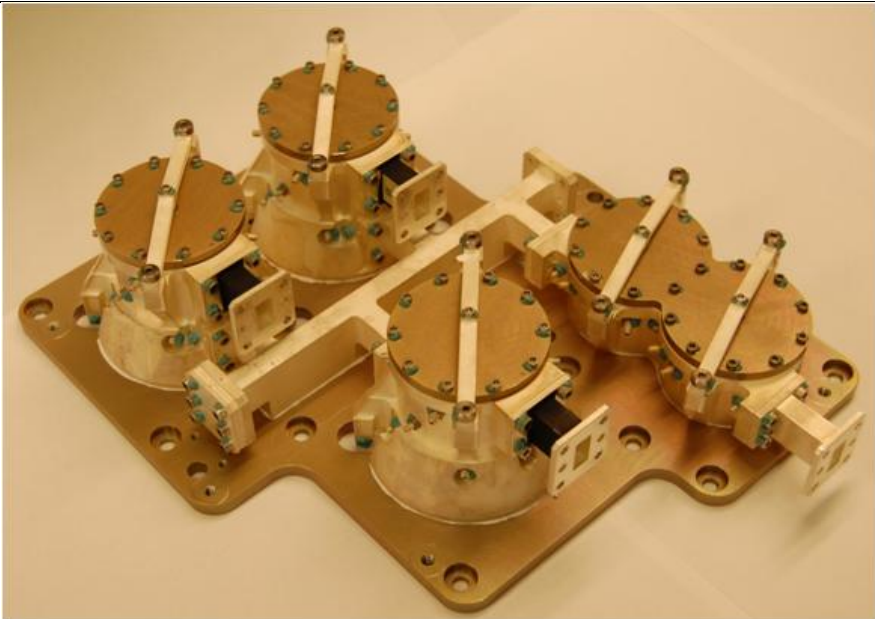


Title:	“High-Power Ka-Band Output Multiplexers“		
Contract type	<i>ARTES 5.1</i>	Budget (K€)	650K€
Company (-ies) (including country)	COM DEV International (Canada)		
Team (name of the participant in the project)	Mostafa Ismail Sean Kellett William Fitzpatrick		
(*) Speaker (s)	William Fitzpatrick	Email	Bill.fitzpatrick@comdev.ca
Short Speaker Information (experience and involvement in this project)	William has been in the space business for 25 years and has been a part of COMDEV research and development for over 20 years. During this time he has been active in numerous technical roles and is currently a project manager. Involvement in the subject activity has been in that capacity.		
Summary of the activity (maximum 400 words)	<p>High power operation at high frequencies in a traditional contiguous format multiplexer is typically limited by the punishing dissipative losses of narrow bandwidth channelization. Technologies and approaches used at lower frequencies (e.g. 10GHz) often are not applicable at Ka Band (e.g. 20GHz). In order to provide narrow channelization (36MHz) at operating frequencies of 17GHz it is necessary to resolve the issue of dissipative loss in the channel filter. To accomplish this, novel operating modes or means to reduce channel filter loss is a necessity. Further careful thermal management at the multiplexer level is required to operate within the limitations of the spacecraft bus heat flux limits.</p> <p>For this development COMDEV proposed and developed a novel application of a higher order mode which we called Super Q. Different combinations of inter-cavity irises provide for both direct and cross-coupling of aligned field polarizations in adjacent cavities, as required, to realize complex filter functions</p> <p>Utilizing this mode of operation COMDEV developed three variants of the filter. Filter performance from this filter was beyond that envisaged by the statement of work. In the spirit of investigation and advancement of the state of the art COMDEV and ESA agreed to update the multiplexer requirements to reduce channel bandwidth from 54MHz to 36MHz for the contiguous operation at 500W.</p> <p>The project achieved the objectives of the statement of work and exceeded the power handling requirements.</p> <p>The developed hardware achieved:</p> <ul style="list-style-type: none"> • Filter Q of 25000 • Power handling of 500W/ channel in a contiguous multiplexer • Compact multiplexer design • Three filter topologies • Comb line inputs with Herringbone channel arrangement • Extreme power handling up to 1000W for the planar filter configuration 		



(*) The speaker needs to do the registration through the [website](#)