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Abstract	<p>This paper presents a satellite transponder system based on LTCC technology for applications at Ka-band. The transponder system is one of many experimental payloads onboard the TET-1 experiment carrier of the German Aerospace Agency. LTCC technology is advantageous for designing modules and subsystems especially for radio frequency (RF) applications. By means of hybrid integration circuit functionality can be shifted from expensive semiconductors to the inexpensive ceramic. Additionally, the ceramic multilayer can function as a chip packaging solution. In this fashion, various modules have been fabricated and connected together as a transparent satellite transponder. This transponder passed all mechanical, thermal and electromagnetic compatibility tests and is currently integrated into the payload segment of the satellite TET-1, which is scheduled for launch in the second half of 2011.</p>