Activity Title:	***HBV components for space – Initial definition***		
Contract type	**GSTP**	**Budget** *(k€)*	**100**
Company (-ies) *(including country)*	Wasa Millimeter Wave AB, Sweden		
Team *(name of the participants in the project)*	Jan Stake, Josip Vukusic, Tomas Bryllert, Oistein Olsen Wasa Millimeter Wave AB, Sweden Chalmers University of Technology, Sweden		
(*) **Speaker (s)**	Jan Stake	**Email**	jan.stake@chalmers.se
Short Speaker Information *(experience and involvement in this project – maximum 60 words)*	Jan Stake is Professor in Terahertz Electronics and is the Head of the Terahertz and Millimetre Wave Laboratory at the Department of Microtechnology and Nanoscience, Chalmers University of Technology. His research involves several aspects of THz techniques, science, and applications. This includes graphene electronics, high frequency semiconductor devices, THz sources, THz detectors and mixers, sub-millimetre wave measurement techniques ("THz metrology"), and THz in biology and medicine. He is also co-founder of Wasa Millimeter Wave AB.		
Summary of the activity *(maximum 400 words and 2 pictures)*	There is a strong demand for compact, room temperature sources at millimetre waves and THz frequencies for various applications in space as well as terrestrial. At frequencies above 150 GHz multipliers are producing state-of-the-art power levels. Even though it is mainly multipliers based on the more mature Schottky technology, HBV based multipliers have a number of advantages. They only generate odd harmonics and can operate bias free, which simplifies circuit complexity. The HBV can easily be scaled by increasing the number of barriers to manage higher powers. With the advent of W-band amplifiers producing Watts of output power, the HBV tripler (x3) to 300 GHz and quintupler (x5) to 500-600 GHz seems as commercially viable products. In this project we have investigated a suitable passivation material for the HBV, which would 'seal' the devices surface, which could be prone to degradation otherwise. In addition, the passivation is expected to reduce the device leakage current that might further improve multiplier performance and lifetime. Finally, suggestions for taking the HBV multiplier reliability assessment further have been discussed at the end of the report.  Click here to add a picture		

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