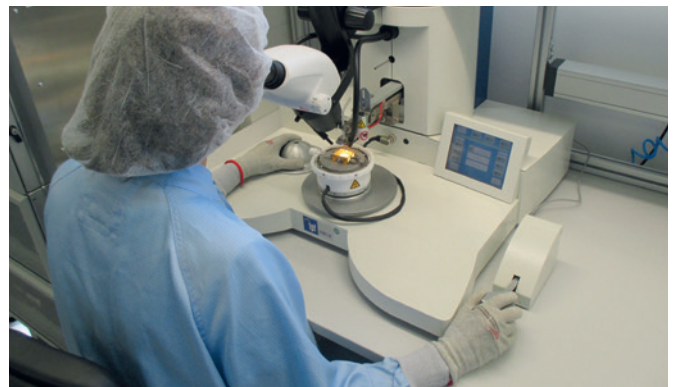


Design and Manufacturing of Spaceflight RF and Microwave Modules

Our space division group designs and manufactures RF and microwave components and modules for spacecraft since more than 10 years. In 2005 we developed X-band and L-band LNAs and power amplifiers for the German Satellite TerraSAR-X operating as subcontractor to EADS Astrium, Germany. Involved in various DLR studies we created an extreme low-power LNA MMIC for a receive-only antenna array using UMS foundry. Currently we deliver more than 100 units of a broadband bi-directional amplifier sub-system for the phased array satellite project SARah to Airbus Defence and Space.

Specialized knowledge and competences

- Design, procurement and manufacturing according to international quality standards (MIL, ESA)
- Analyses are done in-house at TRUMPF Hüttinger Microwave or with help of external specialists
- Documentation according to internal TRUMPF Hüttinger Microwave standards and to special customer requirements
- Manufacturing, assembly and testing in 160 m² clean room environment (class ISO 8)
- Personal is trained according to ESA requirements at Fraunhofer ZVE
- Assembly tools: chip positioners, glue dispensers, wire bonding, vacuum chip die soldering
- Process quality assurance: bond pull tester, die shear tester
- For large production volume parts of assembly can be outsourced to proven assembly facilities
- Electrical test equipment and environmental test in-house available
- Thermal vacuum test, vibration and shock testing are done at external partner facilities



RF modules for TerraSAR-X and Tandem – successful in space

- L-band LNA
- X-band LNA
- X-band 4 W driver amplifier
- Calibration network

RF modules for phased array satellite SARah

- Bi-directional X-band amplifier including 6-bit true-time delay lines
- Power splitters
- Gain equalizer
- Harness



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