MBTERA

MICROMACHINED TERAHERTZ SYSTEMS

A new heterogeneous integration platform enabling the commercialization of the THz frequency spectrum

MISSION OF M3TERA

Mission: Provide a wide-spread use of low cost THz technology in our society, enabled by a micromachined heterogeneous integration platform, which provides an unique way to highly-integrated, volume - manufacturable, cost– and energy-efficient, reconfigurable submillimeter-wave and THz systems

Objective: Develop a **heterogeneous microsystem integration platform** which facilitates high volume manufacturing of **compact**, reliable, energy-efficient and advanced-performance millimetre-wave and THz systems at drastically **reduced costs**

M3TERA Highlights

Micromachined waveguides

World's lowest loss waveguides 110 - 170 GHz
World's lowest loss filters/diplexers 110 - 170 GHz band

Fianl Thz Microsystem Prototypes for Telecom and THz Sensor Prototype

Interfaces

3 SiGe chip to waveguide interfaces
 New, air-gap tolerant, micromachined-waveguide to flange interface with design
 Prototype of fabricated and characterized sensor interface ready



<u>Report on End-of-Life/Recyclability Analysis of</u> <u>THz-Microsystem Based Products for</u> <u>Telecom and Sensor Applications</u> • Significant advantages in terms of volume, size and weight reduction

• Between 59.459 and 178.376 ton/year potential saved weight in the EU (compared to current systems)

Europe's first micromachined THz system Platform



<u>Antennas</u>

Created two different antenna interfaces (reflector + lens)
 Antenna measurement setup finalized



D-band SiGe MMICs

- Unique combination of wide-bandwidth/ power level/Q-factors
- Record power/area efficiency for Power Amplifier
- Data-rate expected to be state-of-the-art or beyond

Report on characterized integrated multifunction receive / transmit chipset

Receive/Transmit MMIC chipset for the D-band ready





Project start:1st February, 2015Project duration:45 months

VETENSKAP OCH KONST

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Other Project Partners

ANTERAL ERICSSON





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