Innovative ultra-BROADband ubiquitous Wireless communications through terahertz transceivers

Objective

The demand for broadband content and services has been growing at tremendous rates, and predictions indicate that wireless data-rates of multiple tens of Gbps will be required by the year 2020, essentially for short-range connectivity. Currently available wireless technology cannot support these future demands, and so there is an urgent need to develop new technology platforms that are cost and energy efficient to enable ubiquitous ultra-broadband wireless communications seamlessly integrated with high-speed fibre-optic networks, paving the way for 100 Gbps datarates in the long term. The frequency spectrum currently in use is not expected to be suitable to accommodate the predicted future data-rate requirements, and therefore there is a need to embrace higher frequency bands, above 60 GHz and up to 1 THz. iBROW aims at developing a novel, low cost, energy-efficient and compact ultra-broadband short-range wireless communication transceiver technology, capable of addressing predicted future network usage requirements. This will be pursued through the exploitation of Resonant Tunnelling Diode (RTD) devices which...
pursued through the exploitation of Resonant Tunnelling Diode (RTD) devices which represent the fastest pure solid-state electronic devices operating at room temperature with reported working frequencies exceeding 1 THz. Through the development of a unified technology that can be integrated into both ends of the wireless link, namely consumer portable devices and fibre-optic supported base-stations, the project aims at increasing the RTD output power, optical detection efficiency and energy efficiency at target frequencies, developing a methodology for low cost RTD manufacturing on a silicon platform, photonic integration and packaging, as well as identifying appropriate communication methods and architectures to enable its deployment in 10 Gbps short-range wireless communication devices in short term and paving the way for 100 Gbps in long term for both the mm-wave and THz frequency bands, seamlessly integrated with optical fibre networks.

Field of science

/ engineering and technology/electrical engineering, electronic engineering, information engineering/information engineering/telecommunications/wireless
/natural sciences/chemical sciences/inorganic chemistry/inorganic compounds
/social sciences/sociology/governance/public services
/natural sciences/physical sciences/optics/fibre optics
/engineering and technology/environmental engineering/waste management/energy efficiency

Programme(s)

Topic(s)

Call for proposal

H2020-ICT-2014-1

Funding Scheme

RIA - Research and Innovation action

Coordinator

UNIVERSITY OF GLASGOW

Address

University Avenue

Activity type

Higher or Secondary

EU contribution

€ 861 598,75
Participants (12)

VIVID COMPONENTS LTD
United Kingdom
EU contribution
€ 235 837,50
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Sigma House Oak View Close
TQ27FF Torquay
Activity type
Private for-profit entities
(excluding Higher or Secondary Education Establishments)

Contact the organisation

NOKIA SOLUTIONS AND NETWORKS GMBH &CO KG
Germany
EU contribution
€ 209 093,75
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Werinherstrasse 91
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Activity type
Private for-profit entities
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ALCATEL-LUCENT DEUTSCHLAND AG
Germany
EU contribution
€ 0
Address
Lorenzstrasse 10
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Activity type
Private for-profit entities
(excluding Higher or Secondary Education Establishments)
**UNIVERSIDADE DO ALGARVE**

- **Portugal**
- **EU contribution**: € 181,476.16
- **Address**: Campus De Penha, 8005 139 Faro
- **Activity type**: Higher or Secondary Education Establishments

**IQE Silicon Compounds Ltd**

- **United Kingdom**
- **EU contribution**: € 217,500
- **Address**: Cypress Drive Beech House, Pascal, CF3 0LW Cardiff, St Mellons
- **Activity type**: Private for-profit entities (excluding Higher or Secondary Education Establishments)

**III-V LAB**

- **France**
- **EU contribution**: € 500,430
- **Address**: 1 Avenue Augustin Fresnel, Campus Polytechnique, 91767 Palaiseau Cedex
- **Activity type**: Private for-profit entities (excluding Higher or Secondary Education Establishments)

**COMPOUND SEMICONDUCTOR TECHNOLOGIES GLOBAL LIMITED**

- **United Kingdom**
- **EU contribution**: € 256,250
Address | Activity type
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4 Stanley Boulevard Hamilton International Technol Lantyre G72 0BN Glasgow | Private for-profit entities (excluding Higher or Secondary Education Establishments)

Website | Contact the organisation
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TECHNISCHE UNIVERSITAET BRAUNSCHWEIG

Germany
EU contribution
€ 304 375

Address | Activity type
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Universitaetsplatz 2 38106 Braunschweig | Higher or Secondary Education Establishments

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COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES

France
EU contribution
€ 470 043,75

Address | Activity type
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Rue Leblanc 25 75015 Paris 15 | Research Organisations

Website | Contact the organisation
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INESC TEC - INSTITUTO DE ENGENHARIADE SISTEMAS E COMPUTADORES, TECNOLOGIA E CIENCIA

Portugal
EU contribution
€ 356 250

Address | Activity type
--- | ---
Rua Dr Roberto Frias Campus Da Feup 4200 465 Porto | Research Organisations

Website | Contact the organisation
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ALTER TECHNOLOGY TUV NORD UK LIMITED

EU contribution
€ 263 750

Address
Bain Square 5
EH54 7DQ Livingston

Activity type
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FCIENCIAS.ID - ASSOCIACAO PARA A INVESTIGACAO E DESENVOLVIMENTO DE CIENCIAS

EU contribution
€ 138 523,84

Address
Campo Grande, Edificio C1, Piso 3
1749 016 Lisbon

Activity type
Research Organisations

Website
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