

2

**TWO-FOLD RADIATION HARDENING APPROACH:**

The SEPHY transceiver will undergo:

- \* Radiation hardening by design: special circuit design techniques that can be applied at the system, architectural or layout level, e.g.: EDAC, TMR.
- \* Process hardening: modifications during fabrication processes to reduce the impact of radiation on integrated circuits, e.g.: use of specific insulator materials or the modification of doping profiles.

3

**FUNCTIONAL AND ENVIRONMENTAL (RADIATION) TESTING:**

- \* The SEPHY results will be tested in a radiation environment measuring all the electrical parameters. In particular, Total Ionizing Dose (TID), Single Event Upset (SEU) and Single Event Latch-up (SEL) tests will be performed.
- \* Estimate the overall performance of the space qualified communication system built around the SEPHY device.
- \* Determine the amount of communication errors induced in the system by the radiation effects.
- \* The PHY behavior will be tested with regards to standard Ethernet and Time-Triggered Ethernet functionality.
- \* All tests guarantee that the SEPHY device achieves a high maturity level such that it will be ready for qualification at the end of the project

4

**SPACE-QUALIFIED MANUFACTURING AND PACKAGING:**

- \* The chip will achieve manufacturing which is fully compliant with already existing quality standards and reliability requirements.
- \* The chip will be available in space-grade ceramic and plastic packaging to support different customer requests. The package will be Quad Flat type (QFP), with a maximum of 64 pins.

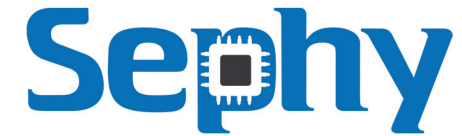
5

**SUPPORT EUROPEAN PACKAGING OF NAKED COMPLEX MULTIPAD DIES AND MIXED ASIC TESTING CAPABILITIES:**

- \* The Ethernet PHY will be a mixed-signal device packaged and tested within Europe.

**SEPHY**  
**SPACE ETHERNET PHYSICAL LAYER TRANSCEIVER**

*Project partners:*



Project number: **640243**

Project website: [www.sephy.eu](http://www.sephy.eu)

Project start: **1st May, 2015**

Project duration: **39 months**

Total costs: **EUR 3.115.222,50**

EC contribution: **EUR 3.115.222,50**

**CONTACT**

ARQUIMEA INGENIERIA S.L.U.  
C/Margarita Salas, 10  
28918, Leganés, Madrid, SPAIN

Tel: +34 91 689 80 94, Fax: +34 91 182 15 77

E-mail: [info@arquimea.com](mailto:info@arquimea.com)  
URL: <http://www.sephy.eu>



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 640243.

**Disclaimer:** The opinions expressed and arguments employed herein do not necessarily reflect the official views of the REA.

The SEPHY consortium brings together a team of recognized partners to achieve the objectives planned within the project. It is composed of 4 industrial companies, 1 research center and 1 leading university, with roots in four European countries.

These partners combine their experience in the areas of analogue and digital design, manufacturing, mixed-signal methodology, fault-tolerant techniques for space electronics and Time-Triggered Ethernet to deliver a first-class device for space applications.