

## TERAXION AND NKT PHOTONICS EXPERTISE SUCCESSFULLY INTEGRATED IN ONE OF THE WORLD'S MOST IMPORTANT ASTRONOMICAL PROJECTS

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NKT Photonics A/S, the industry leading manufacturer of low noise, single frequency Koheras fiber lasers, and TeraXion, a leading-edge manufacturer of ultra stable frequency-stabilized lasers, are proud to announce that a laser system at 1556 nm developed from their joint technologies has successfully been incorporated as a master clock in the world's largest and most powerful radio astronomy telescope, the Atacama Large Millimeter Array (ALMA) telescope, located in the Atacama desert of northern Chile. The ALMA Master Laser, a frequency-stabilized laser built by TeraXion, includes a NKT's Koheras Boostik Fiber Laser.



*Credit: ALMA (ESO/NAOJ/NRAO), Carlos Padilla*

### **The ALMA project**

The objective of ALMA is to study the cold regions of the Universe and capturing never-before seen details about the very first stars and galaxies with unprecedented sensitivity and resolution by linking the antennas into an interferometer array. The facility will consist of up to 66 12-meter parabolic antennas that are located at an elevation of 5,000 m with baselines up to 18 km between the antennas. To accurately measure the phase of the sky signal over the array, each antenna must receive a highly stable Local Oscillator reference signal.

### **Long coherence length and high stability as key attributes**

TeraXion and NKT Photonics joined their skills to achieve this world premiere: the unrivalled coherence length of the Koheras Boostik coupled with TeraXion's expertise in laser frequency stabilization and industrialization of complex optical systems gave birth to a rugged laser system constantly providing a stable laser signal. This system was also built to sustain harsh environmental conditions, for example when earthquakes occur, a test that it successfully passed during the Antofagasta region's earthquake of the 20<sup>th</sup> of June 2011, ranking 6.5 on the Richter scale.

*"We have had a long and constructive collaboration with TeraXion, and are proud to contribute with a crucial component for this very demanding telescope application, which can really benefit from our unique combination of low phase noise and extreme coherence length",* said Søren Løvgreen, Sales Manager for Koheras fiber lasers.

*"Our expertise in frequency-stabilized lasers and the special characteristics of the Koheras Fiber Laser allowed us to achieve, in a collaborative way with NKT, a crucial part of one of the most important*

*astronomical projects of all time*”, said Ghislain Lafrance, Vice-President of Business Development at TeraXion.

### **About NKT Photonics**

NKT Photonics designs and manufactures commercial and industrial class specialty microstructured fibers and high power fiber amplifiers. The company also designs and manufactures fiber-based industrial systems such as supercontinuum lasers and ultra precise DFB fiber lasers. The mentioned products are produced under the brand names CRYSTAL FIBRE, aeroLASE™, SuperK™ and KOHERAS™. These systems are commercially deployed in material processing, bio-photonics, metrology, optical sensors, coherent communications, test and measurement, high resolution spectroscopy and LIDAR markets. NKT Photonics has its headquarters in Denmark. Sales & services offices are in the USA, Germany and France. NKT Photonics is wholly owned by the Danish industrial conglomerate NKT Holding A/S.

### **About TeraXion**

TeraXion is a leading-edge photonic solutions provider for high-end applications of the optical communications, industrial lasers and optical sensing markets. Its line of semiconductor laser sources includes high performance frequency-stabilized and ultra narrow-linewidth laser modules which offer unmatched long-term stability, accuracy and spectral linewidth for RF photonic and coherent detection systems. TeraXion also offers customized filtering solutions based on advanced FBG technology and chromatic dispersion management solutions for terrestrial and submarine networks.