OPTIME - the system grows - a new 330 km line

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The document describes the OPTIME project – which implements a self-calibrating, high precision dissemination system for time and frequency reference signals. The system consists of three main elements: reference time and frequency laboratories, local time and frequency repositories and distribution network, which is based on fiber optical network in Poland.

The distribution network consists of two fully operational links and one planned:

- the first one, which works more than 3 years, connects two UTC laboratories: UTC(PL) located in Central Office of Measures (GUM) Warsaw and UTC(AOS) located in Astrogeodynamic Observatory, Space Research Centre Borowiec. Link length is about 420 km.
- the second one, which became operational on December 2014, connects Astrogeodynamic Observatory (AOS) in Borowiec with National Laboratory of Atomic, Molecular and Optical Physics (KL FAMO) in Toruń. Link length is more than 330 km.
- planned third link between UTC(PL) laboratory and Orange Polska network synchronization center in Anin (Warsaw). Link length is about 40 km.



Fig. 1: National Distribution System for Atomic Clocks Time and Frequency (T&F) Signals

Right now the time and frequency dissemination sys-

tem in Poland reaches more than 750 km. Fig. 1 shows topology of the OPTIME system.

Document provides also information about results of comparisons of UTC(PL) and UTC(AOS), and shows the first results of the new link between AOS in Borowiec and KL FAMO in Toruń, where two strontium optical lattice standards were build. Moreover, document describes a new local repository, where a passive H-maser will be installed. This local repository is being built in Poznan, and will be connected via optical fiber link, to both UTC laboratories, AOS and GUM.

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