

## **ULTRA PRECISE TIME DISSEMINATION SYSTEM**

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During the last three meetings : the Joint Meeting of the 13th European Frequency and Time Forum and the IEEE International Frequency Control Symposium in Besançon (FRANCE) 12-16 April, 1999, the 14th European Frequency and Time Forum in Torino (ITALY) 14-16 March 2000, and the 15th European Frequency and Time Forum in Neuchâtel (SWITZERLAND) 6-8 March 2001 we presented an Ultra Precise Time Dissemination System reporting the possibility of performing time transfer between two areas separated by few kilometers with an accuracy of a few picoseconds. We demonstrated the ability to synchronize remote systems within 10 to 30 picoseconds over a temperature variation of 4°C. In Torino we also

demonstrated improved temperature corrections in order to accommodate drift in electronic transit time with temperature operating range extended from 15°C to 35°C.

The path variation range can be as high as several nanoseconds and the synchronisation process is maintained in the picosecond range.

The results obtained with production equipments has confirmed the reliability of the measurements presented at Besançon and Torino.

We have simulated the behavior of our circuitry and we now can predict significant improvement that allows us to claim about a picosecond of accuracy in short distances as few kilometers and 100 picoseconds in metropolitan applications. In overseas links we believe that the nanosecond is a realistic goal.