Excellent Results from Libera Sync Testing at Sincrotrone Trieste (FERMI@Elettra) Tunnel

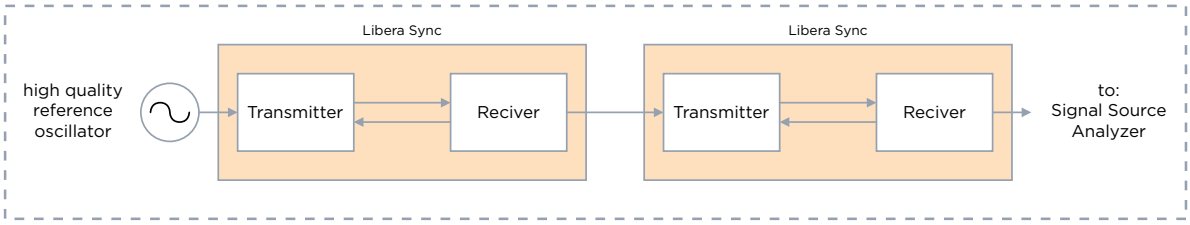
Performance

Phase noise measurements:	
phase noise [100 Hz – 10 MHz]	**6 fs RMS**
Long-term measurements:	
drift over 24 hours	**16 fs RMS**

Phase noise measurements

Test set-up

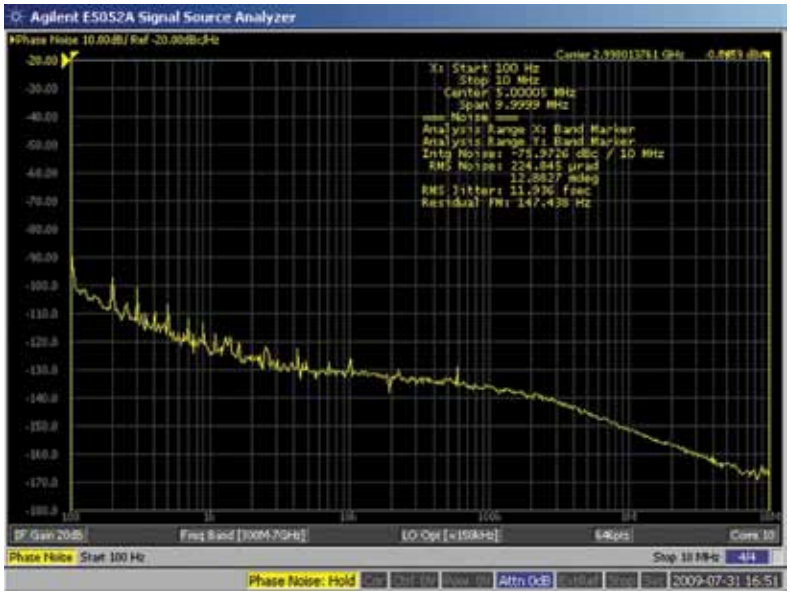
The measurements were carried out with the industrial Reference Master Oscillator (RMO). Fibers connecting the Libera Sync were laid in the tunnel with loop-back at the far end.
Two Libera Sync devices were sequentially connected, with the RF output of the first pair connected to the RF input of the second pair.



Results

Total phase noise: 11.9 fs RMS for 100Hz to 10MHz bandwidth.

The added jitter by one Libera Sync clock distribution system is 6 fs RMS.

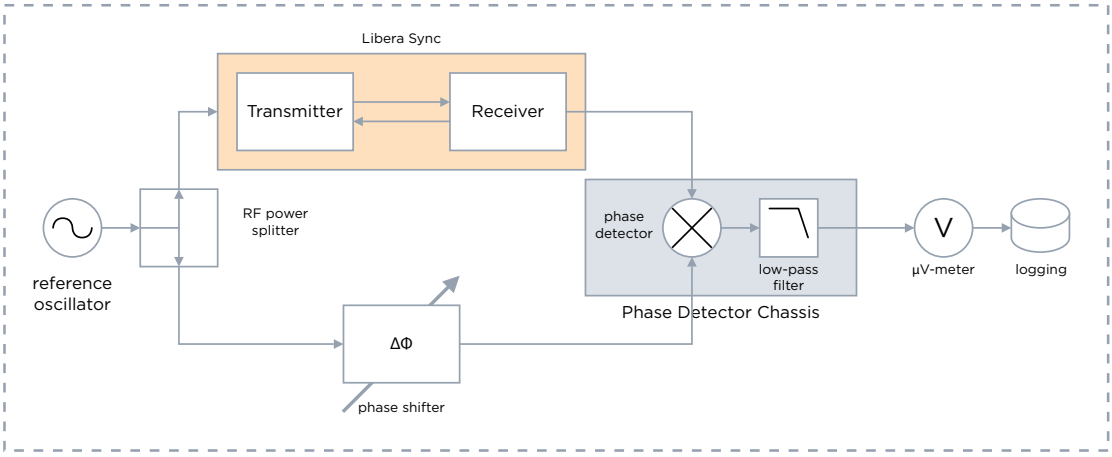


Long-term measurements

Test set-up

The RF output of the in-house made Reference Oscillator (RO) is split into two paths with a Wilkinson 3GHz splitter. One output from the splitter is connected to the RF input of the Libera Sync transmitter. The second is connected to the phase shifter. Outputs of the Libera Sync receiver and phase shifter are connected to the phase detector. The output of the phase detector is measured with a micro voltmeter and logged.

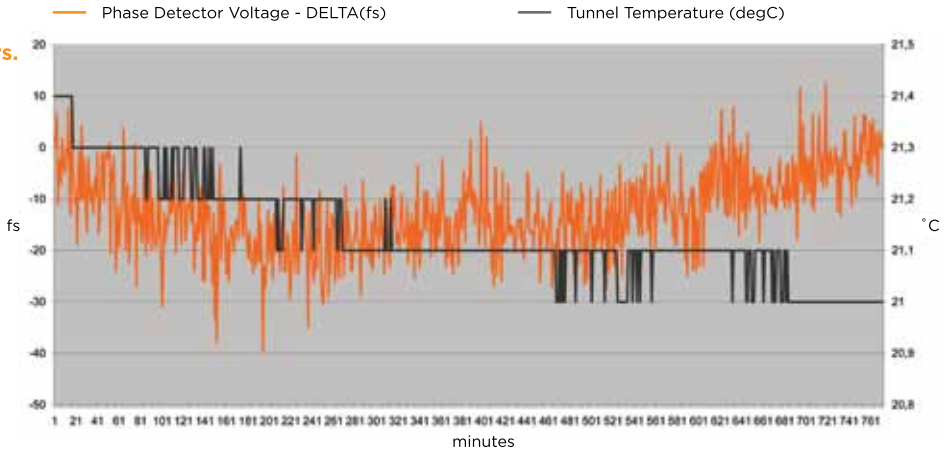
The Libera Sync transmitter and receiver are connected with fibers laid in the tunnel with loop-back at the far end. Logging is performed once per minute.



Results

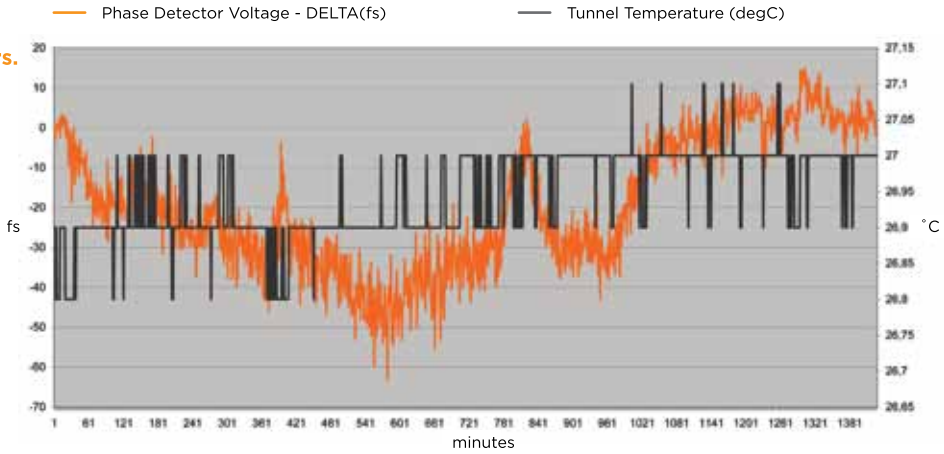
Libera Sync, Link 2, Daltron Voltmeter **RMS = 7.8562 fs**

Drift RMS: 7.86 fs over 13 hours.



Libera Sync, Link 2, Daltron Voltmeter **RMS = 16.3215 fs**

Drift RMS: 16.32 fs over 24 hours.



Libera Sync

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