The Technology Research of Master and Backup Clock Switch

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LI Wei, XU Yongliang*, YUAN Haibo+

National Time Service Center/ Key Lab of Time-frequency Standard of the Chinese Academy of Sciences, Xi'an Shaanxi China

* National Time Service Center/ Key Laboratory of Precision Navigation and Timing Technology, Xi'an Shaanxi China

+ National Time Service Center/ Key Lab of Time-frequency Standard of the Chinese Academy of Sciences, Xi'an Shaanxi China

Email: kim_weili@ntsc.ac.cn

Abstract: Time and frequency reference is usually established and maintained by the clock ensemble, and the real time physical signal is output by the master clock system. Master clock system include the a high-performance atomic clock selected from the clock ensemble and phase trimming instrument, which output the real time, continuous and stable frequency signal and the second signal; at the same time, when the main clock system have abnormalities, it is needed to switch to a backup clock system to ensure the continuity and stability of time and frequency signal.

System contains two separate master clock system, a master one and a backup one run in parallel. In the case of the master clock running, according to the time difference of master clock and the backup clock, the backup clock frequency is controlled to maintain consistency with the master clock through the phase trimming instrument. When the master clock is abnormal, it is switched to the backup clock directly through the switch. In the long process of experiment, master and backup clock frequency and phase is very consistent.

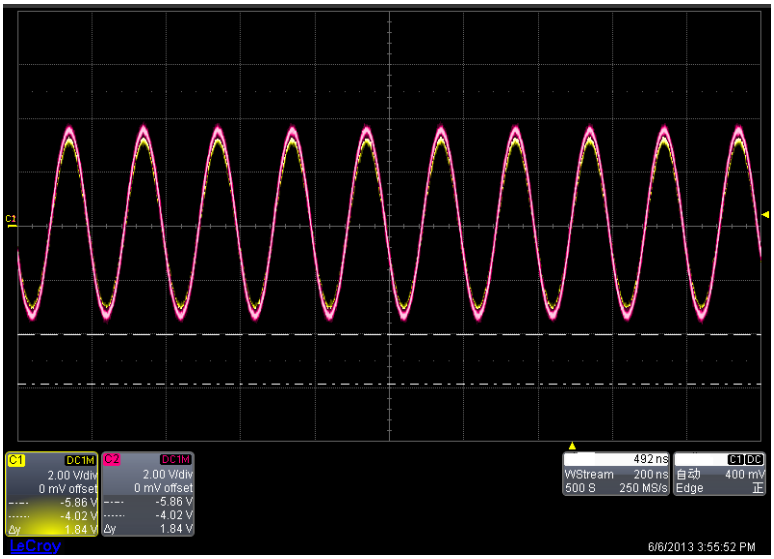

Fig. 1: master and backup clock frequency

[1] Dr. LI Wei, vice researcher, works on the time scale algorithm, timekeeping and precise time transfer.