

Estimate of time synchronized technique by GPS Common view

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Digitalization of communication technology is increasing amount of information and communication efficiency with frequency. But, signal synchronization is more difficult than previous one. So, Devices are need to have precise clock. For familiar example, relay center of digital broadcasting need to have precise clock.

Transmitter station with precise clock make easy to lock the signal, and avoid stretching out frequency band. Receiving station with precise clock make avoiding slipped out from locking signal by prolonged stability, and helping locking signal by short-term stability. As affairs now stand digital broadcasting relay station have cesium or rubidium atomic clock locked with GPS clock by individual receiver.

With these circumstances, for increasing dimension of information, each sending and receiving devices need to precise clock more than before. So clock comparing method, GPS Common View, which use to decide TAI, International Atomic Time, is focused attention on. This method compare the two atomic clocks with GPS satellite. Now, most of communication devices use VCXO, Voltage Controlled Xtal Oscillator, or TCXO, Temperature Compensated Xtal Oscillator, as a benchmark. But because of miniaturization of atomic clock, atomic clocks are mounted in general devices, so necessary of correcting clock offset is boiled up. These devices can't have individual receiving system of GPS because of limiting size. So, most of signal processing is handled on software.

Most of signal processing on software have not only physical superiority, but also corresponding to the other positioning systems with only rewriting software. Actually, the

receiver unit developed this go-round with 2MHz bandwidth can correspond to signal of MSAS, MTSAT (Multi-functional Transport Satellite) Satellite-based Augmentation System, and QZSS, Quasi-Zenith Satellite System with same hardware architecture. So stretching bandwidth makes corresponding to Galileo Positioning System.

This time, GPS Common View with including other satellite positioning system is called GNSS Common View. This time, I develop system of conventional GPS Common View with Software, and evaluate the system including hardware. And elementary result of common view is obtained, so this paper is involved in evaluation of this result. This result develop GNSS Common View potentialities.