THE DEVELOPMENT OF DGPS SERVICE SYSTEM USING FM DARC (EYEDIO) IN KOREA

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ABSTRACT

The major milestone in the beginning of domestic GPS business in Korea was achieved when Korea Astronomy Observatory (KAO) introduced three precise surveying GPS receivers from Trimble in October 1989. And an epoch-making turning point in GPS research was on 1st, January 1994, when KAO GPS station played an active role of International GPS Service (IGS). During the last decade, GPS-related research activities of KAO have been expanded to the fields of Positional Astronomy, Geodesy, Surveying, Seismology, Meteorology, Geomatics, and other GPS applications like as GIS, ITS.

One of the major activities of KAO GPS Research Group for domestic GPS society is to operate a nationwide GPS network, which is consist of seven Continuously Operating Reference Station (CORS) systems including a IGS site DAEJ. KAO provide the observation data of reference stations for the post-processing applications through internet and the DGPS correction data via FM DAta Radio Channel (DARC) for the real-time applications. The Munhwa Broadcasting Corp. (MBC), one of the major broadcasting companies in Korea, started to broadcast the DGPS data using FM DARC from the 2nd, December 1999. A self-defined, compressed algorithm for DGPS data transmission format is adopted to provide the maximun 11 satellites in three packets (63 bytes) considering the data transfer capability and the performance of DARC. The EYEDIO, a nickname of FM DARC system operated by MBC, broadcasts now the DGPS data provided by KAO's 7 stations. The received data are converted to the RTCM SC-104 message types at a dedicated FM receiver unit, and can be transferred to the user with communication port. The delay time of broadcasting DGPS data is less than one second and positioning accuracy is decimeter level when using the high precision GPS receiver. At the end of last year, MBC expanded the coverage area to the 70% of population, including six major cities in Korea. This service will cover the nationwide area in the second half of 2001.

The precise descriptions, such as the configurations and functions of FM DARC/DGPS service system in Korea, will be addressed in this paper. It then describes the preliminary results and analysis in the static application of GPS.

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