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Experiment of Earthquake Early Warning system via the wireless communication network such as the WiMAX

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The earthquake early warning (EEW) information to the general public was started by the Japan Meteorological Agency on October 2007. On the other hand, due to the recent development of telecommunications infrastructure, many kinds of wireless services such as WiMAX have been released, and have became more convenient as a result that a service area expanded and baud rate became speedy. We thought that will be able to develop EEW more easily by using the wireless communication services. Therefore, this study aims to investigate the effectiveness of using wireless network as receiving EEW.

For an overview of the experiment, we made the test environment in Tokyo, received EEW by the terminal via a public wireless access service provider, and analyzed logs obtained by a network protocol analyzer. We tested four major wireless services, and the results were shown as follows:

The capacity utilization was nearly 99 percent over all carriers.

The average delay before receiving EEW was approximately from 30 to 400 milliseconds, and it was confirmed some differences in the distribution of delay time per carriers.

All four carriers have specifications of regularly and automatically disconnecting so that produce about 2 minutes off every 6 or 24 hours.

We may conclude by these results, we have to note that there are some differences in communication characteristics of each carriers, in this regard, we can understand the wireless access has an ability to use for EEW.

Keywords: Earthquake Early Warning System, wireless communication