



Preface

Special Issue on Fujitsu's Mobile WiMAX Solutions

A handwritten signature in black ink that reads "Toshitaka Tsuda". The signature is fluid and cursive, written in a professional style.

Toshitaka Tsuda
Senior Vice President
Fujitsu Laboratories Ltd.

The information and communications technology (ICT) environment is moving towards ubiquitous and user-centric systems. Since mobility is the essential requirement for such systems, wireless communication systems are taking on greater roles. Fujitsu is active in this field and known as a total system vendor of a third-generation (3G) mobile cellular phone system based on wideband code division multiple access (WCDMA). Preparation for the next generation, that is beyond 3G, is in progress, and Fujitsu recently prototyped NTT DOCOMO's super 3G base station, the world's first long-term evolution (LTE) base station.

Worldwide interoperability for microwave access (WiMAX) is another stream of wireless communication systems. Based on expectations for high-speed data transmission capability and cost-efficient systems, it is attracting global interest. A series of WiMAX standardizations has been progressing under the IEEE 802.16 Working Group. Fujitsu has been known as a leading chip vendor since the first specification, IEEE 802.16d, which is dedicated to fixed wireless access systems. Current world interests are on Mobile WiMAX (IEEE 802.16e and j). Since the beginning of IEEE 802.16e/j discussion, Fujitsu has undertaken activities aimed at becoming a one-stop solution supplier. These activities include standardization, chipset development for mobile terminals, base station development, system design environment, network planning tools, and typical application scenario creation. This has resulted in the present product and service lineup. Some of these have been demonstrated live in several exhibitions and have impressed visitors with Fujitsu's leading position and advanced technologies. Some of our technologies are included in the specification and recognized as essential intellectual

property rights.

Fujitsu's WiMAX system R&D is carried out under the global collaboration of Fujitsu Group companies in Europe, the USA, Canada, China, and Japan. I am delighted to have the opportunity to introduce this activity as a good example of global R&D collaboration. Worldwide deployment of WiMAX is just about to start, so I think it is an appropriate time to summarize all of the activities in the Fujitsu Scientific and Technical Journal. This issue covers the developed products, the proud technologies that differentiate our system, standardization activities, and some application scenarios devised by members of the global collaboration team. The technologies include system aspects such as an efficient frequency reuse algorithm and a base station dimensioning algorithm, chip design aspects such as low-power logic and RF CMOS, signal processing aspects such as multiple-input multiple-output (MIMO), and device aspects such as a highly efficient power amplifier using a GaN device. It should also be noted that Fujitsu has been playing a key role in IEEE 802.16j and is also active in IEEE 802.16m standardization.

I sincerely hope that this special issue will help readers to understand the WiMAX system and its potential applications and also show the breadth of Fujitsu Group company activities in this field.