MOBILE WiMAX 802.16e-2005 USB reference kit
Dual band 2.5GHz and 3.5GHz

Description
Fujitsu has developed a one-chip, highly integrated, MAC and PHY, mixed signal, baseband processor for mobile WiMAX™ applications.

This MB86K21 baseband SoC combined with the Infineon PMB2008 state-of-the-art single chip RF transceiver are the core elements of the Mobile WiMAX USB dongle reference kit MB86K21-RK10.

This reference kit is the right starting point for development of a Mobile WiMAX product with USB interface.

Features
■ Baseband SoC implements all features required for Wave 2 Mobile WiMAX certification
■ Low power, dual band, high performance RF
  - 2.3-2.7GHz and 3.3-3.9GHz
  - Direct conversion (Zero-IF)
■ OFDMA PHY with TDD
■ 512/1024 points FFT to support 5MHz and 10MHz channel bandwidth
■ 64QAM (DL), 16QAM and QPSK modulation
  - Support of space time coding with 2-antenna matrix A/B (vertical encoding)
  - H-RRQ chase combining with CTC
  - AES encryption/decryption for 802.16 MAC security sub-layer
■ Dual RISC processors for implementing upper & lower MAC
■ USB2.0 interface

“Fujitsu has developed a one-chip baseband processor for mobile WiMAX™.”
Fujitsu has been actively involved in WiMAX and IEEE 802.16 activities since 2003, and has provided WiMAX solutions since the launch of its Fixed WiMAX System-on-Chip (SoC) based on the IEEE 802.16d-2004 standard.

The Fujitsu Mobile WiMAX reference kit uses Fujitsu’s capability to integrate complex electronic devices, its extensive experience in mobile phone design and development, and its system knowledge and expertise for end-to-end WiMAX solutions.

Reference design
This USB Dongle reference design kit is designed for OEMs, ODMs, and system manufacturers to provide WiMAX Mobile stations with USB interface.

Along with the reference design hardware, Fujitsu delivers detailed design documents.

The Fujitsu reference kit software package includes USB drivers for Windows® operating system. On top of the hardware interface driver, Fujitsu provides an API software layer for customers to develop custom application and graphic user interfaces.

Fujitsu offers the MAC software in binary code based on the mobile WiMAX standard and provides drivers, APIs, sample user application software and maintenance application software to help customers use the MB86K21 Mobile WiMAX SoC.

Fujitsu’s maintenance software can measure air-traffic performance, noise level, error rates, transmitting and receiving powers, MAC management messages, connection IDs, as well as providing settings/readings for many useful parameters.

More reference kits
The MB86K21-RK1 PC Card reference design kit (RDK) with CardBus interface allows a fast product development of Mobile WiMAX PC card products.

The system development kit enables customers to evaluate WiMAX using the MB86K21. With the SDK, the software development to integrate WiMAX into customer products and systems can be started in parallel with the hardware design.

The RDK and the SDK come with a similar set of software and tools as mentioned for the USB dongle reference kit.

Certification and compliance
Fujitsu has designed the WiMAX SoC to comply with the IEEE 802.16e-2005 standard. Systems using the Fujitsu MobileWiMAX SoC are certified by WiMAXForum.

Availability
Engineering samples of the MB86K21-RK10 are available in Q1 2009. The baseband SoC MB86K21, the RDK MB86K21-RK1 and SDK are available now. The MB86K21 is the first broadband SoC to deliver MIMO Wave 2 certification compliance. Systems using the Fujitsu Mobile WiMAX SoC are scheduled for WiMAX Forum certification. Fujitsu’s second generation SoC, the MB86K22, is also available now. With reduced power consumption it is ideally suited for handheld systems and small embedded modules.

The next generations of SoCs on Fujitsu's roadmap will address mobile systems with functions such as full mobility, VoIP and multimedia applications over mobile appliances.

Companion products such as WiMAX RF modules are available.

http://www.fujitsu.com/emea/services/microelectronics/networking
http://www.fujitsu.com/emea/services/microelectronics/wimax

WiMAX is a trademark of the WiMAX Forum.
Windows is a registered trademark of Microsoft Corp.