

# RF Module for Mobile WiMAX™ Terminal Equipment

June, 2008

## Abstract

The new RF module, MB86K71, co-developed with Fujitsu Limited, was designed using 90-nanometer CMOS process technology. The sample shipment has been started at the end of February. This new RF module is that the world's smallest to feature all of the RF circuits necessary for 2.5GHz-band Mobile WiMAX devices including RF-IC, antenna switches, a power amplifier, filters, and an oscillator circuit, measures just 15mm x 15mm (height: 1.5mm) in dimension. Thus, this RF module will enable significant reduction of the form-factor of Mobile WiMAX devices. The new RF module supports MIMO technology, thereby enabling high-speed and reliable wireless connections that are essential for Mobile WiMAX devices.

Mobile WiMAX is a next-generation broadband wireless technology featuring data transmission that is faster than that of 3G cellular networks, and wider coverage than existing wireless LANs.

## Technology

### 1. World's smallest RF module realized by utilizing 90nm CMOS process technology

With the RF-IC fabricated in 90nm CMOS process technology, combined with antenna switches, a power amplifier, filters, and an oscillator circuit, all the necessary RF circuits for a Mobile WiMAX device are in one module. Subsequently, the world's smallest size module was realized, with dimensions 15mm x 15mm (with height 1.5mm) which will contribute to a reduction in the form-factor of Mobile WiMAX devices.

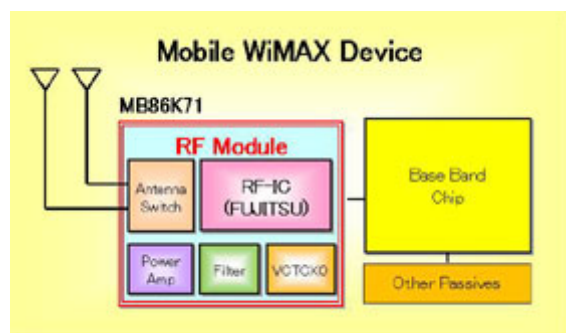
### 2. High-speed, reliable connections using MIMO

This product supports MIMO, which utilizes multiple antennas, to achieve high-speed and reliable wireless connections. This product also supports WiMAX Forum's Wave 2 specifications.

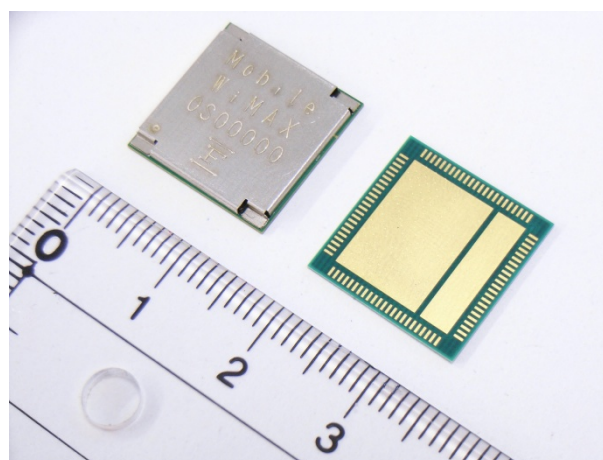
We presented the detail of this technology at the 2008 IEEE Radio Frequency Integrated Circuits (RFIC) Symposium (with Treatise No. RM02A-4).

## Application Examples

The mobile WiMAX terminal which is small size and low power consumption.



RF Module block diagram



RF Module photograph