

WiMAX Baseband SoC



The APW2050 is a high-performance, very low-power, mobile WiMAX Wave 2 baseband SoC containing PHY, MAC, embedded CPU, and many popular data interfaces. Supported by powerful Mobile Station software and multiple real-time operating systems, the SoC requires a minimum of external components to create WiMAX modems for devices such as CPE, PC Cards, USB dongles, and portable handheld devices.

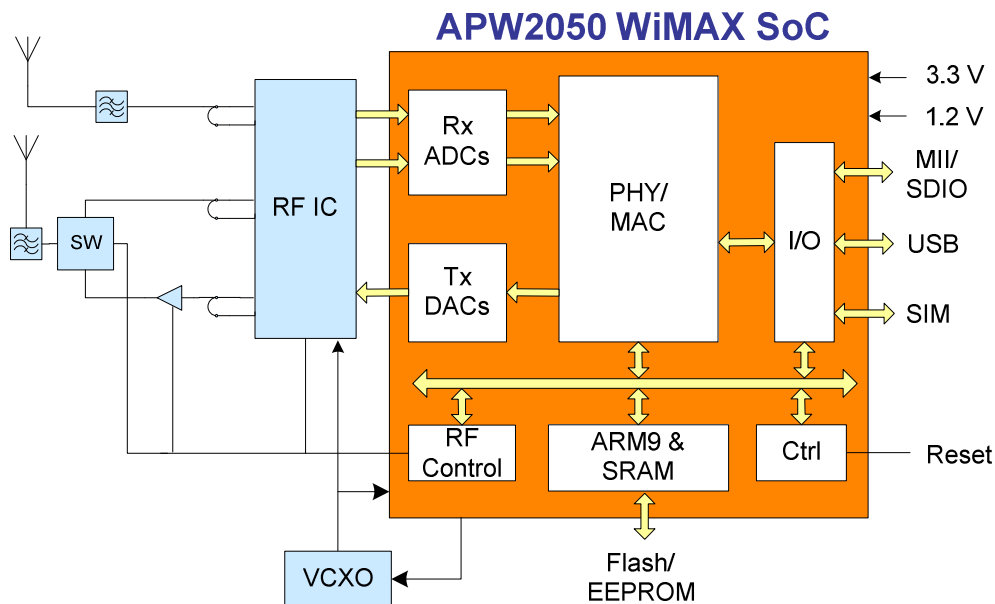
Based on ApacWave's first generation APW2000 SoC, and an IP portfolio of over 20 patents, the APW-2050 architecture and algorithms were engineered for very low-power, high data rate, and exceptional performance under full-mobility channel conditions.

ApacWave's WiMAX solutions have been designed for the most desired data applications, including web surfing, audio and video downloads, video streaming, VoIP, email exchange, gaming, systems to meet popular customer needs.

Features

- System on a Chip requires minimal external components for reduced bill of materials
- Innovative PHY algorithms and System Software for superior high-speed mobile performance
- Intelligent MAC protocols for high throughput and guaranteed QoS
- Dynamic power management reduces active and standby power
- Multiple interfaces support multiple platforms with a single SoC
- Standard low-cost RF transceivers supported
- Manufacturer-ready referenced designs available
- Small size and low total BOM cost fits Half-mini Card and other compact formats
- 9 x 9 x 1 mm, 232 ball TFBGA, 65nm design
- Superior customer support to enable fast time-to-market and business success

Block Diagram



APW2050 Product Brief

Preliminary

Superior Support:

ApaceWave provides strong support to enable customers to achieve lowest overall total-cost solutions. Through quality reference designs, manufacturing test support, software utilities, calibration support, and performance and certification support – ApaceWave reduces go-to-market time and risk to best ensure profitability and business success.

APW2050 Specification Summary	
Feature	Benefit
SYSTEM SPECIFICATIONS	
WiMAX Wave 2 compliant and Certification-ready	Interoperable with WiMAX standard-compliant base stations
MIMO and Beam Forming per WiMAX Wave 2 standard	Improves performance for higher throughput and longer range
HARQ Cat 1-4	Improves user experience significantly
Bandwidths Supported: 3.5, 5, 7, 10 MHz, TDD	Supports all WiMAX profiles, and operators' available frequency spectrum
Mobility: Performs well beyond SPWG Full mobility requirements of 120 km/h	Useful for high-speed transportation
Latency: < 60 ms Jitter: < 20 ms	Supports gaming, interactive applications, VoIP & Video conferencing, and real-time streaming media
Connections: 4 UL & 4 DL connections	4 QoS connections enable simultaneously web surfing/ file transfer, VoIP calls, gaming, and video streaming
Throughput: > 30 Mbps for MIMO	Supports the most demanding real-time mobile applications and high-speed file transfer
HARDWARE FEATURES	
Embedded RAM	Requires no external RAM; lowers BOM and power consumption
Non-volatile Memory: Serial Flash or EEPROM	Serial Flash for code image and parameter storage Serial EEPROM provides parameter storage for platforms where the host stores the code image
Interfaces: MII, USB, SDIO, SIM	Supports fixed and mobile platforms
RF Transceivers: Supports multiple standard RF transceivers	Multiple source benefits
Calibration H/W: built-in compensation for RF errors	Easy end-of-manufacturing-line calibration
GPIO: I/O lines for status or control	Supports customization for different platforms
Process: 65nm with 1.2V core Interfaces use: 3.3V, 2.8V, 2.5V, 1.8V (depending on configuration)	Latest process provides greatest power savings
Package: 9x9x1mm, 232 ball grid array	Fits fixed and mobile platforms. Supports 4-layer PCB layout for CPE.
Active Power: ≤ 160mW peak Idle Mode Power: < 10 mW	Enables long battery-life for portable platforms
Temperature: -20 to +85 degrees C	Supports broad environmental conditions
SOFTWARE FEATURES	
OS: Linux or ThreadX supported	Optimized for embedded or stand-alone platforms
MAC Software: High performance stand-alone MAC firmware	Requires no assistance from the host platform

ApaceWave Technologies

Bridging WiMAX Technology and Manufacturing™

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