

Wireless CPUs

Embedded wireless computing power

Wavecom has designed an extensive range of Wireless CPUs for industrial wireless applications. In conjunction with our Open AT® Operating Systems, IDEs, Plug-Ins and Services, they allow a new breed of applications to be developed without the need of external processors.

EMBED YOUR APPLICATION

Our Wireless CPUs are delivered with Open AT® software, which allows you to embed your application directly on the Wireless CPU.

BENEFIT FROM AUTOMOTIVE QUALITY STANDARDS

Selected by leading car makers, and manufactured by an ISO/TS 16949 certified manufacturing partner, our Wireless CPUs comply with the strictest quality standards.

PROTECT YOUR INVESTMENT

Wavecom's Wireless CPUs are designed for a long life. And, Download-Over-The-Air capability ensures system longevity and reduced field maintenance.

GO FASTER TO MARKET WITH CARRIER APPROVALS

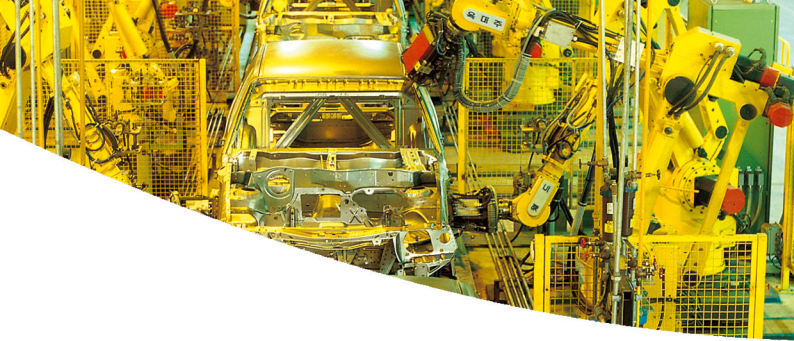
Our Wireless CPUs are carrier approved in all our major global markets.

RELY ON OUR LICENCE COVERAGE

Wavecom provides essential Intellectual Property Right (IPR) coverage for all of the technologies offered in our products.



wavecom[®]
Make it wireless



Wireless CPUs

Processing power for any application

In the early days of industrial wireless applications, the wireless element was a plain modem – an unintelligent device that receives data in one format and transmits it in another.

Technology has come a long way since then and today, Wavecom's intelligent products include ARM microprocessors that can process data, listen to more than 50 peripheral devices, address complex display driver interfaces, run embedded customer applications, connect to the Internet, and store the resulting data in embedded memory.

With such powerful functionality, the modem has evolved to become the Wireless CPU – a powerful, programmable processor which can also connect to cellular networks anywhere in the world.

ADD A PLUG & PLAY WIRELESS CPU TO EXISTING APPLICATIONS



FASTRACK M1306

The rugged, quick design Fastrack M1306 has proven itself for stable, reliable performance for many years, and continues to deliver rapid time to market and painless integration.

- Open AT® Operating System with DOTA II + Cache Memory
- Open AT® Plug-Ins including TCP/IP and Internet
- Programmable GPIO interfaces for alarm, telemetry and other applications
- Embedded SIM holder
- Simplified connectivity via D-Type connection
- Dual band GSM and GPRS
- "Finished Goods" certified, plug and play product



INTEGRA M2106

Built around Wavecom's field-proven technology and small enough to fit into the tightest spaces, the Integra M2106 offers a rapid, handy path to adding wireless capability to existing systems.

- Open AT® Operating System with DOTA II + Cache Memory
- Open AT® Plug-Ins including TCP/IP and Internet
- Programmable GPIO, keypad and ADC interfaces
- Embedded SIM holder
- PCB rapid change mounting
- Dual band GSM and GPRS with voice, data & SMS
- "Finished Goods" certified, plug and play product

MAINTAIN EXISTING DESIGNS AND ADD VALUE



GR64

Optimized for global M2M communications, the GR64 is ideal for a broad spectrum of applications including fleet and asset management, POS, vending, security and metering.

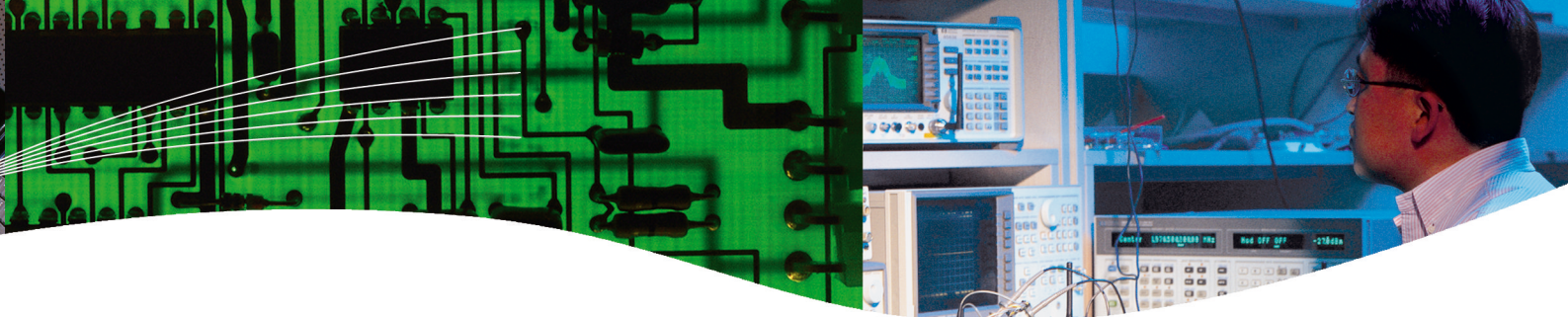
- Industrial grade: -30°C to +75°C
- ARM9 based M2mpower C script application execution as standard
- Functionally comparable to GM47/GM48/GR47/GR48
- Integrated TCP/UDP/IP protocol stack
- Global GSM and GPRS operation



GS64

The highly compact and slimline GS64 is ideal for applications including PDAs, laptops and PND (Personal Navigation Devices), as well as time critical or intensive monitoring applications.

- Prosumer grade: -20°C to +55°C
- Ultra-compact size
- 2x UART & USB connectivity
- Embedded SIM holder option
- Global GSM and GPRS operation



EMBED A QUIK WIRELESS CPU: ADD VALUE, REDUCE COST



NEW Q24 SERIES

This evolution of the hugely popular GSM Q24 Series extends the lifetime to more than 10 years, while bringing a range of new benefits to existing and new Q24 Series based product designs.

- Open AT® Operating System as standard
- ARM7 based native execution of ANSI C programs
- Embedded SIM holder option
- Global GSM and GPRS operation
- 5-way radio connectivity with high sensitivity
- Interchangeable with existing GSM Q24 Series
- Interchangeable with CDMA Q2438
- Choose from Q24 Classic, Q24 Plus, Q24 Extended or Q24 Auto



Q2438

The Q2438 Wireless CPU allows you to equip your application with CDMA2000® 1xRTT and AMPS technology. With integrated gpsOne®, the Q2438 is particularly suited for fleet management and tracking applications.

- Interchangeable with all GSM and GPRS Q24xx series Wireless CPUs
- Location enabled via gpsOne® technology
- Dual band Cellular 800 and PCS 1900
- Widely approved at CDMA operators
- Available with or without RUIM capable OS
- CM52 CDMA Wireless CPU also available for automotive applications



Q2501

Designed to meet stringent automotive requirements, the Q2501 combines wireless voice and data capabilities with an Open AT® controlled GPS receiver in a super-compact package.

- Open AT® Operating System with DOTA II + Cache Memory
- Open AT® Plug-Ins including TCP/IP and Internet
- Location enabled via Open AT® controlled 16 channel GPS
- Dual band GSM and GPRS with voice, data & SMS
- Compliant with automotive environmental requirements for temperature, humidity and vibration

MORE POWER, LESS SPACE

Q2686



Equipped with up to 44 GPIOs, the Q2686 is especially suited to applications which require a high number of connections. The Open AT® OS runs on an ARM9 core, providing applications with up to 87 MIPS (using VariSpeed).

- Open AT® OS with DOTA II + Cache Memory
- Open AT® Plug-Ins including TCP/IP and Internet
- Open AT® GTi compatible
- RTOS compatible; 32 bit, 104 MHz ARM9 core
- VariPower & VariSpeed for battery life optimisation
- Largest range of peripheral interfaces, including companion Bluetooth & GPS
- Global GSM and GPRS operation
- Extended temperature range



Q2687

Featuring new expansion port capability coupled with high speed wireless data technology, the Q2687 has the performance, flexibility and adaptability you need.

- Interchangeable with the Q2686; all Q2686 features
- Largest range of peripherals including a parallel bus as expansion port and new DAC
- Global GSM, GPRS and EDGE operation
- Microsoft® Windows Mobile® 5 compatible
- USB and RIL drivers available

MINIMIZE PARTS, MAXIMIZE PERFORMANCE

WMP100 & WMP150



Wavecom's new Wireless Microprocessor series redefines total cost of ownership via its fully automated machine placement form factor (no IO/Radio connectors), companion wireless Plug-Ins and multitasking operating system.

- Low latency Open AT® Multitasking OS as standard
- ARM9 based real time native ANSI C program execution
- Supports Open AT® GTi for complex graphics display based products
- Supports companion Bluetooth and GPS Open AT® Plug-Ins
- Machine placed to optimise parts & manufacturing costs
- Dedicated Automotive (WMP150) OS features

Wireless CPU family

| Processor | Type Architecture Top Speed VariSpeed Sleep Mode Cache Memory DMA (Direct Memory Access) | Plug & Play Series | | Q24 | | Quik Series | | Q2438F | | Q2686 | GR64 | GS64 | Micro Series | |
|----------------------------|--|--------------------|-------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------------------|-----------------|---------------------|-----------------------|-----------------------|------------------|-----------|
| | | Fastrack M1306 | Integra M2106 | Classic | Plus | Extended | Auto | Q2501 | Q2438F | Q2686 | GR64 | GS64 | WMP100 | WMP150 |
| ARM7 | ARM7 | ARM7 | ARM7 | ARM7 | ARM7 | ARM7 | ARM7 | ARM7 | ARM7 | ARM7 | ARM9 | | ARM9 | |
| 32 bit | 32 bit | 32 bit | 32 bit | 32 bit | 32 bit | 32 bit | 32 bit | 32 bit | 32 bit | 32 bit | 32 bit | | 32 bit | |
| 52MHz | 52MHz | 52MHz | 52MHz | 52MHz | 52MHz | 52MHz | 52MHz | 52MHz | 52MHz | 52MHz | 101MHz | | 104MHz | |
| | | | | | | | | | | 26/104MHz | | | 26/104MHz | |
| | | 32kHz | 32kHz | 32kHz | 32kHz | 32kHz | 32kHz | 32kHz | 32kHz | 32kHz | | | 32kHz | |
| | | ● | ● | | ● | ● | ● | ● | ● | ● | | | ● | |
| Open AT® | Operating System | Open AT® | Open AT® | Open AT® | Open AT® | Open AT® | Open AT® | Open AT® | Open AT® | Open AT® | M2mpower | | Open AT® | |
| Application Execution | MIPS (Worst / Best case) | 13 max. | 13 max. | 6 max. | 13 max. | 13 max. | 13 max. | 13 max. | 13 max. | 13 max. | 87 max. | | 87 max. | |
| | Application Flash (Byte) | 1.5M | 1.5M | 1.5M | 1.5M | 1.5M | 1.5M | 1.5M | 1.5M | 1.5M | 2x124k | | external | |
| | Application RAM (Byte) | 128k | 128k | 128k | 128k | 128k | 128k | 128k | 128k | 128k | 124k | | external | |
| | Free Compiler (GNU) | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | ● | |
| | Thumb Mode Compilation | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | ● | |
| | DOTA | Type I & II | Type I & II | Type I & II | Type I & II | Type I & II | Type I & II | Type I & II | Type I & II | Type I & II | Type I | | Type I, II, III | |
| Real Time Capabilities | HW timers (CPU clock res.) | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | ● | |
| | SW Timers | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | ● | |
| | External Interruption | <19ms | <19ms | <19ms | <19ms | <19ms | <19ms | <19ms | <19ms | <1ms | | | <1ms | |
| | DSP Interruption | | | | | | | | | | | | <1ms | |
| | RTC Interruption | | | | | | | | | <1ms | wakeup | | <1ms | |
| | LowLevel Interrupt Routine | | | | | | | | | | | | ● | |
| | HighLevel Interrupt Routine | | | | | | | | | | | | ● | |
| IO | Pins | 15+4 | 50 | 60 | 60 | 60 | 60 | 80 | 60 | 100 | 60 | 100 | BGA576 | |
| | RTOS Interrupt | ●+●+● | ●+●+● | ●+●+● | ●+●+● | ●+●+● | ●+●+● | ●+●+● | ●+●+● | ● | | | ● | |
| | GPIO/GPO/GPI | ●+●+● | ●+●+● | ●+●+● | ●+●+● | ●+●+● | ●+●+● | ●+●+● | ●+●+● | ● | | | ● | |
| | Digital Audio | | | | | | | | | 31 PCM ¹ | up to 12 PCM | 9 + 15 PCM | up to 44 PCM | |
| | Analogue Audio | ● | ●+● | ●+● | ●+● | ●+● | ●+● | ●+● | ●+● | ●+● | ●+● | ●+● | ●+● | |
| | ADC | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | DAC | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | SPI | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | I2C | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | RS232 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | USB | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | LED driver | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | Buzzer driver or PWM | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | Keyboard | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | SIM/RUIM | 3V SIM | 3V SIM | 1.8V/3V SIM | 1.8V/3V SIM | 1.8V/3V SIM | 1.8V/3V SIM | 1.8V/3V SIM | 1.8V/3V SIM | 1.8V/3V SIM | 1.8V/3V SIM | 1.8V/3V SIM | 1.8V/3V SIM | |
| | Parallel Bus | | | | | | | | | | | | | |
| Power Supply | Voltage/VDC (nom) | 5.5 to 3.2 | 5 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.8 | 3.6 | 3.6 | 3.6 | 3.6 | |
| | Current/µA (min) | | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | |
| | Current/mA (idle) | 17 @ 13.2V | 9 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| | Current/A (max) | 1.7 @ 5.5V | 1.32 | 1.8 | 1.8 | 1.8 | 1.8 | 1.9 | 0.67 | 1.7 | 1.6 | 1.6 | 1.6 | |
| | VariPower modes | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| RF Interface | Solder pad | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | IMP | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | U.FL (bottom side) | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | U.FL (top side) | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | MMS | | | | | | | | | | | | | |
| | MMCX | | | | | | | | | | | | | |
| | SMA | ● | ● | | | | | | | | | | | |
| Mechanical | Full shielding | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | Size/mm | 73x54x25 | 46x64x12 | 58x32x3.9 | 58x32x3.9 | 58x32x3.9 | 58x32x3.9 | 58x32x6 | 58.4x32.8x3.940 | 32.2x4 | 50x33x3.3 | 37x30x2.8 | 25x25x3.0 | |
| | Weight/g | 82 | 81 | <12 | <12 | <12 | <12 | <15 | <12 | <9 | 9 | 7 | 5 | |
| | SIM holder | | | option | option | option | option | | | | option | option | | |
| Temperature | Class A | -20°C/+55°C | -20°C/+55°C | -20°C/+55°C | -20°C/+55°C | -20°C/+55°C | -20°C/+55°C | -20°C/+55°C | -40°C/+85°C | -20°C/+55°C | -20°C/+55°C | -20°C/+55°C | -20°C/+55°C | |
| | Class B | | -30°C/+85°C | | | -30°C/+75°C | -30°C/+75°C | -35°C/+85°C | -40°C/+85°C | -40°C/+85°C | -30°C/+75°C | -30°C/+75°C | -40°C/+85°C | |
| Wireless | GSM | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | GPRS class | 10 | 10 | | 10 | 10 | 10 | 10 | | 10 | 10 | 10 | 10 | |
| | EDGE class | | | | | | | | | | | | | |
| | 1xRTT | | | | | | | | | | | | | |
| | AMPS | | | | | | | | | | | | | |
| Radio | 850MHz | | ● | ● | ● | ● | ● | ● | 800 | ● | ● | ● | ● | |
| | 900MHz | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | |
| | 1800MHz | | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | |
| | 1900MHz | | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | |
| | Maximum Sensitivity (dBm) | -108@900 | -108@900 | -110@900 | -110@900 | -110@900 | -110@900 | -108@900 | -107@800 | -110@900 | -110@900 | -110@900 | -110@900 | |
| Audio | Codecs ³ | FR/EFR/HR | FR/EFR/HR | FR/EFR/AMR | FR/EFR/AMR | FR/EFR/AMR | FR/EFR/AMR | FR/EFR/HR | EVRC/13k | quad | quad | quad | quad | |
| | Quality (incl. AEC/NR) | | | VDA2C | VDA2C | VDA2C | VDA2C | | | VDA2B | VDA2B | VDA2B | VDA2B | |
| Location Solution | | | | external ⁴ | external ⁴ | external ⁴ | external ⁴ | GPS | gpsOne | Plug-In | external ⁴ | external ⁴ | Plug-In | |
| Microsoft compatible | | | | | | | | | | | | | | |
| Open AT® OS | Windows Mobile® 5 (RIL) | | | | | | | | | | | | | |
| Open AT® Plug-Ins | TCP/IP | 6.57 ⁵ | 6.57 ⁵ | 6.57 ⁵ | 6.57 ⁵ | 6.57 ⁵ | 6.57 ⁵ | 6.57 ⁵ | | 6.61 ⁵ | R1C ⁵ | R1C ⁵ | 5.0 ⁵ | |
| | Internet ⁶ | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | GTi Mono | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | GTi Colour | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | IBM MQ-TT | | | | on request | on request | on request | | | ● (Q2687) | on request | on request | on request | |
| | Orange M2MC | ● | ● | | | | | | | | | | | |
| | Open SIM access | ● | ● | | | | | | | | | | | |
| | Bluetooth | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | C-GPS | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| Open AT® IDE | Open AT® | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | Open AT® GTi | | | | | | | | | | | | | |
| | Open AT® built on Eclipse™ | | | | | | | | | | | | | |
| | M2mPower | | | | | | | | | | | | | |
| Debug Tools | Remote Task Env. | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | Step by Step Execution | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | Break points | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | Traces | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | |
| | Application Examples | | | | | | | | | | | | | |
| Development Kit Order Code | | Free sources | Free sources | Free sources | Free sources | Free sources | Free sources | Free sources | Free sources | Free sources | Free sources | Free sources | Free sources | |
| | | M1306B-DK | M2106B-DK | Q24CL-DK | Q24PL-DK | Q24EXT-DK | Q24AUT-DK | Q2501B-DK | Q2438-DK | Q2686H-DK | Q2687H-DK | UDK-MK2 | UDK-MK2 | WMP100-DK |
| | | | | | | | | | | | | | WMP150-DK | |

NOTES
 1) From Q2438v6 onwards
 2) Requires external USB transceiver
 3) HR codec versions of Q24 Classic and Q24 Plus available on request
 4) Any external autonomous GPS solution which supports NMEA may be controlled via Open AT®
 5) Denotes current version and beyond within the major range (refer to Open AT® OS & Plug-In brochure for more information)
 6) Internet Plug-In includes TCP/IP features plus Email (POP3/SMTP) and File Transfer (FTP)

APPROVALS
 Regulatory - Entire GSM range is approved to R&TTE, GCF-CC (900/1800 MHz), PTCRB (850/1900MHz), FCC (USA) - CE (EMC & Safety)
 - CDMA: IEC950, UL950, FCC (O9EQ2438F-M), CSA, IC-133, CDG1 & CDG2 (IS-98D, IS-898) & CDG3 (application specific)
 Carrier - See www.wavecom.com/approvals for latest carrier list.

RoHS COMPLIANCE
 All Wavecom Wireless CPUs are compliant with the RoHS Directive (2002/95/EC).

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