wavecom

Smart wireless. Smart business.

Wireless CPU

Q52 Omni

World's first cellular-satellite hybrid

Smart Devices Creative Software Services

Q52 Omni

Do you need to know the location of your assets?
Do you need the ability to monitor and control those assets wherever they are?
Now you can with an integrated, cost-effective solution that you can use anywhere on the planet.

The story of a cargo delivery

Locate it. Listen to it. Talk to it.

This is a story about a delivery that travelled the world. Until now, the most you knew about its travels where when it left, when it passed through interconnecting depots and when it arrived.

Thanks to the Q52 Omni, you can now track it to 5m accuracy in real time anywhere on the planet, know the precise condition of your shipment during the journey, and even take preventive action against in-transit damage.

Day 1

Your frozen food delivery starts its journey and is soon in wide open space, with **Q52 Omni** sending information via satellite back to you about where it is, what speed it's travelling, what temperature your goods are.

Day 2

On arrival at the cargo port, **Q52 Omni** reports the route taken, speed and fuel economy profiles, time of departure and arrival plus the condition of your goods at every minute of the journey, all via cellular Internet link to your IT system.

Smart Devices

Day 3

While at sea, a problem is detected by **Q52 Omni** and informs your service centre on land who dispatches an engineer on board the vessel to fix the air-conditioning unit of the container with your goods inside.

Day 7

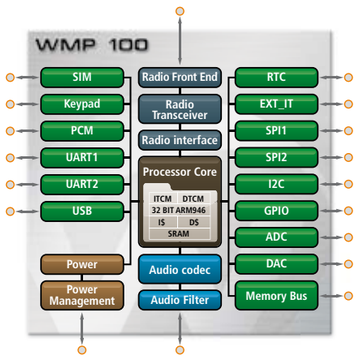
The delivery arrives on time, on budget and with a near disaster averted while at sea. All made possible thanks to **Q52 Omni**, the **Orbcomm** satellite system, and your **cellular service provider.**

Cellular, satellite
and GPS technology
in a single device

Smart Devices

All-in-one for global control

The Q52 Omni is a groundbreaking combination of cellular, satellite and GPS technology in a single device. Capable of enduring even the harshest environmental conditions, the Q52 Omni was created to enable cost-effective remote monitoring and control of assets absolutely anywhere in the world. It is particularly suited for industries focused on high-value equipment, transportation and logistics.



Based on Wavecom's unique Wireless Microprocessor® technology, the Q52 Omni embodies unprecedented integration by embedding control of cellular, satellite and GPS technologies on a single processor, enabling significant cost savings over existing multiprocessor solutions. The powerful, built-in ARM9 processor and included Open AT® Software Suite allow developers to develop, embed and execute their applications directly on the device.

Scalable Hardware Platform

↗ Standalone mode

The customer application is fully running on the Q52 Omni, eliminating the need for an external host CPU or IO chip. The lowest system cost is achieved this way.

↗ Cooperative mode

You can still keep your existing software running on a host processor and add wireless communication capability with the Q52 Omni. For example, if you need additional resources to run a TCP/IP stack and a Bluetooth stack, you can easily implemented it on the Q52 Omni without breaking your complete architecture.

↗ Smart modem mode

This mode allows a low cost GSM/GPRS connection on an existing system. The Q52 Omni is controlled through the AT commands. This mode offers an ideal solution when the cellular connectivity is optional.

inSIM® - An end-to-end SIM solution for the M2M market

inSIM® is a fully industrialized and personalised SIM solution that removes the plastic from a conventional SIM card and physically embeds the resulting silicon die right inside a Wireless CPU®. 3GPP security is maintained while providing the ability to provide a Wireless CPU with a service subscription already loaded, all in an industrial grade product that withstands extremes of temperature, vibration & humidity.

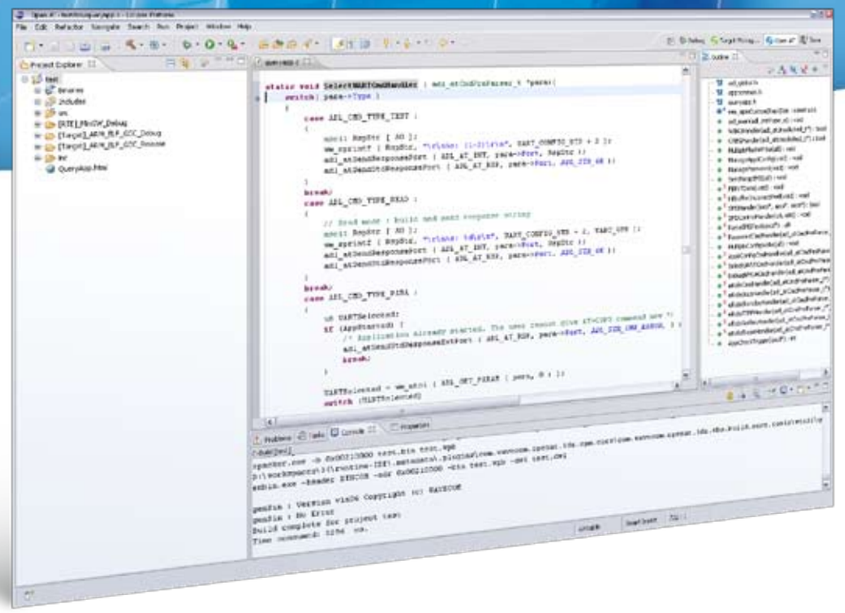
Benefits:

- ***SIM holder removed.*** *The SIM holder is causing operational issues linked to temperature range limitations and to module-SIM contact quality due to vibrations or humidity.*
- ***Simple SIM logistics process.*** *The current process requires a specific management of SIM deliveries, insertion into the application and personalisation handling. inSIM® removes complexity and cost from the deployment.*
- ***Miniaturization.*** *Many M2M applications require a high level of integration.*
- ***Anti-theft.*** *Having the SIM inside the Wireless Microprocessor® prevents any theft or misuse of the SIM*
- ***Operator compatibility and flexibility.*** *inSIM® is ready for any GSM operator with no modification of their personalization process. It is possible to change from operator by connecting an external plastic SIM card (internal switch). For more information, see www.wavecom.com/insim.*
- ***Warranty*** *of the full Wireless CPU® sub-system including the SIM.*

	Q52 Omni
Market Positioning	
	Automotive
Cellular performances	
Bearers	GSM GPRS class 10 Satellite (Orbcomm)
Radio Bands	Quad band - 850/900/1800/1900 Satellite - Tx 148 to 150.05 MHz - Rx 137 to 138 MHz
Approvals	R&TTE CE, GCF, FCC, PTCRB, China RTE, AT&T
Nominal Sensitivity	
850/900 MHz Rx	-109 dBm
1800/1900 MHz Rx	-108 dBm
850/900 MHz Tx	33 dBm -1/+2 (2W)
1800/1900 MHz Tx	30 dBm -1/+2 (1W)
Intellectual property rights (IPR)	Included
Power consumption (typ)	
GSM Alarm	16 uA
GSM Standby and Idle (GSM off/on)	1,5 mA to 38 mA
GSM (2W) / GPRS cl.10	250 mA / 400 mA
Satellite TX mode VCC 3V6	250mA
Satellite TX mode VCC 12V	1500mA
Satellite Non-TX mode VCC 12V	20mA
Control	
CPU Performances	
Processor	ARM926 / DSP
Core frequency (VariSpeed)	104 MHz (26MHz)
User MIPS available (GSM stack active)	70 MIPS
IO voltage	1V8 & 2V8
Audio	
Analog audio	1 x speaker out 1 x micro in
Digital audio	-
Codec	HR, FR, EFR, AMR
Quality	VDA2A
Echo Cancellation & noise reduction	√ (high)
DTMF	√
Interfaces	
UART	2
USB	N/A
SPI	1
I2C	1
ADC	2
DAC	1
GPIO	Up to 18*
RTC	Yes (external crystal)
Timers (HW, SW, Capture)	√
Interrupts pins	-
Flash LED output	1
PWM (Buzzer)	1
Keyboard interface	
SIM interface	1.8v/3v
Parallel bus (through software API)	Yes (Address, Data, Control)
External memory support (Flash /RAM in Mbit)	-
JTAG	-
Miscellaneous	
Packaging	Module
Mechanical size	114.6 x 49.5 x 10
Operational temperature	
Full specification	-20°C/+55°C
Class B	-40°C to +85°C*2
Quality grade	Standard
RoHS	√
Shipment packaging	100 per box

*1 Multiplexed, *2 with performance deviations

Creative Software



Industrial software for industrial design demands

The Open AT® Software Suite allows you to develop, compile, test, debug, download and natively execute your applications written in standard ANSI C and/or Lua directly on the Q52 Omni, or indeed any other Wavecom Wireless CPU®. It is royalty-free and comprises operating system, compiler and integrated development environments. There are no hidden costs - maintenance and qualification are provided for free by Wavecom.

- Multitasked Pre-Emptive Event-Based Real-Time Operating System
- Integrated Development Environment built on Eclipse™
- Extensive Set of Plug-Ins (Internet Suite, C-GPS and more)
- GSM Release 99 compliant modem firmware
- Secure Intelligent Device Services (IDS) compatible

Real Time Operating System

The Open AT® Operating System is a pre-emptive, multitasking real-time operating system that combines the wireless communications function with core embedded programming capability. It allows developers to natively execute their ANSI C based programs with a minimum memory footprint and processor resource overhead.

↗ Real-Time

Guaranted response time to interruption (even during GSM/GPRS activities, calls and transfer).

↗ Wireless CPU® Resources Direct Access and IT Management

- Hardware and Software Timers
- DSP
- SPI
- ADC
- External Interrupt Pins
- GPIOs
- UARTS

↗ Multitasking

- Up to 64 tasks in parallel

↗ Auto shut-down feature

Feature improving the overall consumption of the application by deactivating the RS232 interface.

↗ Application dedicated Hardware Watchdog

- Application dedicated for close monitoring
- Tunable depending on the complexity of the processing (ex: Pulse count Vs RSA signature calculation…)

A fully Eclipse-based integrated development environment

The new Open AT® IDE v2 is based on Eclipse Ganymede and brings you a lot of new features and advantages which will make the development, debugging, testing, compilation and download of your application an enjoyable experience.

Key benefits:
- *A familiar environment for many developers*
- *Fully integrates all Wavecom tools as Eclipse plug-ins*
- *Automatic update checker with pop-up notification*
- *Non-proprietary, built on an open source framework*
- *Multi-platform execution*

Integrated Development Environment

Built on the de-facto standard Eclipse™, offered for free, the Open AT® Integrated Development environment manages all the development steps of your project. It enables you to code in C and/or Lua, create multi-build configurations by project, compile, download, debug wireless applications that are run directly on the Wireless Microprocessor® of your choice. It allows also project versioning and work in team environment.

Wavecom provides a comprehensive set of high-level programming interfaces (as of today more than 450) known as Open AT® APIs in order to simplify development. Once the application coding is finalized, it can be compiled using a free compiler GCC that is linked with the Open AT® API library, and then downloaded to the Q52 Omni.

Debugging tool set

The IDE includes a set of powerful and configurable trace tools:
- Target Monitoring Tool for displaying debug traces sent by an Open AT® application
- Terminal Emulator: AT commands serial link terminal
- Remote Task Environment allowing the execution of an Open AT® application from a PC, while communicating with the Target software through a serial link.
- JTAG support

Quick and easy end-to-end development

With the M2M Developer Suite from Anyware Technologies, you can use a single IDE to create both the client and server side applications without needing any code programming software skills.
See www.anyware-tech.com for more information.

Creative Software

Seamlessly Plug-In additional features

Plug-Ins are an optional range of software feature packages that are selected when your order your Wireless CPU®. The standard range provides access to Internet clients and protocols, and to controllerless companion wireless peripherals such as Bluetooth and GPS.

Of course, the powerful flexibility of Open AT® Software Suite means that you can also develop your own Plug-Ins and own custom AT commands.

New functionalities, quickly and easily

↗ TCP/IP Plug-In

The basic building blocks to create a wireless Internet connected product.

↗ Internet Plug-In

Includes the functionality of the TCP/IP Plug-In and extends it to include email (POP3/SMTP) and file transfer (FTP) clients.

↗ Security Plug-In

Add end-to-end security with SSL, act on jamming attacks, and store data securely.

↗ Lua Scripting Language Plug-In

Lua simplifies application development by taking care of such tasks as memory, data flow, and control flow management.

↗ Companion GPS Plug-In

C-GPS is an optimised host base solution for geo-location, making your product smaller, cheaper and more powerful.

↗ Companion Bluetooth® Plug-In

With the addition of a reduced functionality controllerless (no microprocessor) chipset, you can realize a complete Bluetooth system.

↗ aqLink® Plug-In

aqLink® enables the delivery of critical data through any GSM network: 22 bytes in less than 1.5 s through the voice channel.

	Q52 Omni
Plug-Ins	
TCP/IP (Socket layer, UPD, TCP)	√
Internet (FTP, HTTP, SMTP, POP3, DNS, MMS)	√
Security (SSL, Jamming detection, crypto lib)	√
Bluetooth	√
C-GPS (inc. Dead Recogning)	√
C-CAN	√
Scripting language	LUA standard (open source)
Graphic library	√ (sample)
In-band modem	-
Download over the Air (DOTA)	√
Type I, Type II, IDS	Mutual authentication, OMA-DM1.2
Development Environment	
	Eclipse standard
C Compiler	√
Remote task Env	√
Traces	√
Break Point	√

Professional services

Wavecom professional services: less pain, more gain

Wavecom proposes an extensive professional services offering, enabling you to:

- Ensure a high degree of solution stability and performance
- Avoid deployment errors that could result in delays and added expenses
- Minimize time-consuming redesign by ensuring proper design early in the lifecycle
- Avoid common issues and expedite the resolution of critical problems
- Work on a safe design to integrate Wavecom products

Wavecom University

Open AT® developer courses

Wavecom University is our professional education program. Learn how to make the most of the Open AT® Software Suite and speed development time!

Product design and certification

↗ Application code review

Wavecom offers to perform a code review of your Open AT® Application. Our Open AT® experts review your C application and generate a comprehensive Code Review Report under strict confidentiality.

↗ Customer design review

The Customer Design Review Service helps you to integrate Wavecom's products into your device by benefiting from design best practices and Wavecom's own wireless expertise.

↗ Customer product certification

Wavecom's unique global experience in final product certification management is at your service for safety related certifications (CE, FCC, CCC) and/or GSM related certifications (GCF-CC, PTCRB).

Product build

IMEI implementation

- *Preloaded Customer IMEI:* Apply for your private range of IMEI numbers and Wavecom can download them in your Wireless CPU® prior to delivery.
- *Wavecom IMEI:* Wavecom proposes a valid IMEI number embedded within the Wireless CPU®. You share the Wavecom IMEI TAC number with other Wavecom customers.
- *Inactive IMEI:* This offer will allow you to download your IMEI numbers at your premises.

Tailored delivery

- *Express Delivery:* A limited amount of Wireless CPU®s can be delivered world wide in less than 7 working days to enable you to perform unexpected sales.
- *Fast Delivery:* All orders of Wireless CPU® devices can be delivered in less than 21 calendar days without limitation on the quantities.

Tailored product configuration

Our Tailored Product Configuration service gives you the opportunity to customize some of the configurations that are shipped from the factory by Wavecom.

After sales

↗ Wireless CPU® reconfiguration

This service gives you the opportunity to reconfigure your Wireless CPU® after sale.

↗ Out of warranty repair

You can request this service to repair your Wireless CPU® devices which are out of warranty.

Operated services

Enrich your products & services, reduce your costs

Life cycle expectations for cellular-equipped telematics and machine-to-machine products are increasing in fast paced business environments. This directly results in a dramatic increase of post-deployment field maintenance costs.

Wavecom has created the world's first cellular operated service portfolio for you to benefit from easy to use end-to-end Intelligent Device Services (IDS) that enable you to sleep at night. When choosing Wavecom, you can relax in the knowledge that no matter what happens, we can remotely monitor and securely upgrade the application software of your product in addition to the entire Wavecom embedded Open AT® Software.

Telematics and machine-to-machine cellular equipped product life cycle expectations are increasing in fast paced business environments. This directly results in a dramatic increase of post-deployment field maintenance costs. Wavecom has created the World's first cellular operated service portfolio to benefit from easy to use end-to-end Intelligent Device Services that enable to remotely monitor and securely upgrade the application software of your product in addition to the entire Wavecom embedded Open AT® Software.

Why use IDS?

- To reduce your technician dispatch by being able to configure and monitor remotely your devices.
- To increase your device uptime by getting device failure alerts that notify in real-time that a critical event is likely to occur.

Set up a FREE IDS trial account

Ask for a free (IDS) trial account to use Intelligent Device Services on http://www.wavecomservices.com. The trial is set up for 3 months for 100 devices. The trial can be performed during your product development phase, but also at an early stage of field deployment. After 3 months of trials, you are free to decide to go for commercial subscription or not.

See for yourself the benefits of instant IDS access by e-mailing us at wavecomservices@wavecom.com to receive your IDS access.

An end-to-end turn-key solution, reliable, secure and cost effective

Do you need to enhance the quality of your service, and shorten response time to your customers, while reducing support costs and saving money on your field maintenance? Wavecom Intelligent Device Services provide a rapid and reliable answer to your concerns.

End-to-end turn-key solution

The Q52 Omni is IDS compatible and the service can be used any time, anywhere.
There is no need for you to develop nor invest in any new back-end system, we take care of everything for you.

Cost effective solution

Benefiting from the latest software differential generation technology, you can free up memory for your application while reducing data traffic volume by upgrading only the parts that have changed, either in your software or in the entire Wavecom embedded Open AT® Software.

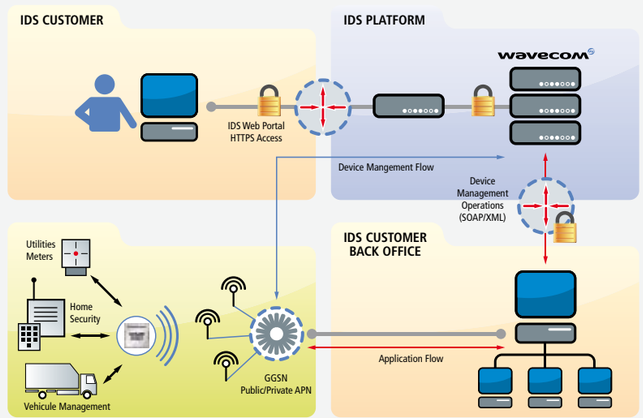
Reliable and secure end-to-end system

Wavecom has built its IDS system on a powerful, field-proven, OMA-DM client-server software suite developed for mass wireless deployment and has enhanced the security between devices and the Wavecom Device Management Server by an authentication mechanism already pre-installed in the Q52 Omni.

Online services

- On-demand Device Monitoring
- Real-time Device Diagnosis
- Traffic Usage Reporting
- Delta Software Generation Service
- Download Campaign Monitoring

IDS secure architecture



Easy and secure access to IDS back end

Interconnect your Information System with the Wavecom Back-End system via our web services interface or access via our web portal in a secure manner, and manage in real-time any remote operation status on any of your products round the clock, 24/7/365.

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Q52 Omni: *www.wavecom.com/q52omni*
inSIM® solutions: *www.wavecom.com/insim*
Developer Forum: *www.wavecom.com/forum*
Intelligent Device Services portal: *www.wavecomservices.com*

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