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TELIT WHITE PAPER

TELIT INTELLIGENT MODULES HARNESS THE POWER OF INTEL® ATOM™ x3 PROCESSORS TO PROVIDE IoT DEVELOPERS WITH UNRIVALLED CHOICE, FLEXIBILITY & PERFORMANCE.

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INTRODUCTION

As developers work on creating IoT applications and services they are challenged to select communications processing modules that allow the greatest design flexibility, offer a range of connectivity and operating system (HLOS) options, are compliant with service provider certification requirements in multiple markets and enable fast time to market at low cost.

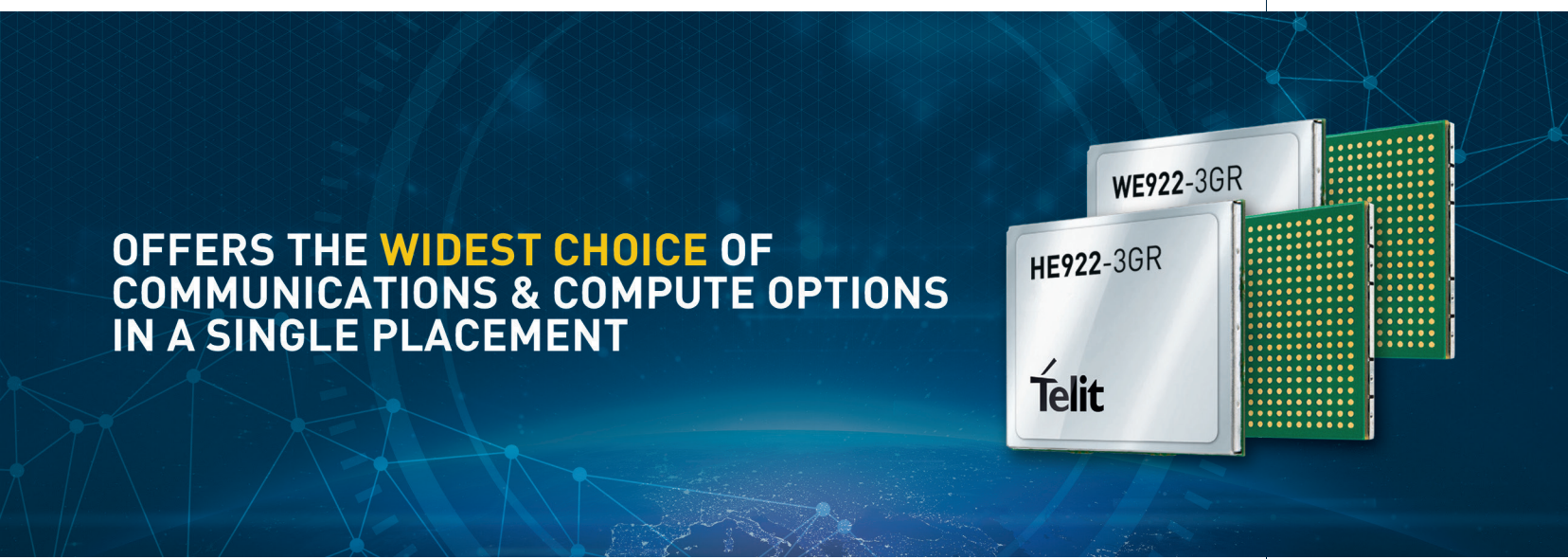
This is an extensive wish list of attributes and identifying, sourcing and deploying an optimal module is one of the greatest causes of delay in bringing IoT solutions to market. With addressing this problem in mind, Telit has developed its HE922-3GR and WE922-3GR modules to offer users the widest choice of communications and compute options in a single placement.

The HE922-3GR module is the HSPA cellular variant, while the WE922-3GR module addresses non-cellular and Wi-Fi deployments. The modules utilize the Quad core Intel® ATOM™ x3 processors which provide integrated multi-connectivity across a range of network technologies.

Developers have never previously had such a wide choice of connectivity from a single module, nor have they had the ability to combine different options from different networks at the same time as simply as enabled by these intelligent modules.

GLOBAL COVERAGE

The intelligent modules offer an integrated wireless solution with a pre-certified 3G global modem, Wi-Fi, Bluetooth low energy and Navigation (GNSS) connectivity. Telit is providing the Intel® Atom™ x3 processor within modules that offer integrated communications from carriers worldwide. Regional variants are not necessary because 2G/3G coverage addresses the entire world.



WHY INTEL® ATOM™ x3 PROCESSORS?

Right-sized and highly performant

The 64-bit quad-core Intel® Atom™ x3 processor offers a compact form factor. That is important for enabling deployments in devices that have limited internal space and also for high volume deployments where the application has relatively low value. The modules have been designed to deliver outstanding performance for low power IoT applications.

Long-life roadmap

Intel® is committed to seven years of product availability for the Intel® Atom™ x3 processor-based intelligent module. This gives developers the peace of mind that modules will continue to be fully supported by Intel®. The extended support commitment is ideal for many vertical markets with devices that have long lifecycles.

Compact footprint

The intelligent modules offer a high level of integration of functionalities typically requiring a traditional component-level PC-board layout, a much larger footprint to aggregate as many processing and communications sub-systems than the modules' 34x40mm. That gives designers the opportunity to create devices that are small and portable at first generation launch. Achieving size reductions is typically a goal set for subsequent product generations, after the product has had a chance to produce enough ROI to fund the size reductions effort.

Qualified for extended temperature

In addition to a standard Commercial Temperature variant which operates in the 0-70oC range, the Telit HE922-3GR and WE922-3GR modules can be supplied as Extended Temperature variants that operate from -40 - +85 oC, This range gives developers are far wider window of operation to deploy the intelligent modules in. The extended temperature capability of the Intel® Atom™ x3 processor makes it an ideal processor for extreme temperature implementations such as in the aeronautics sector.

Fully featured with multiple OS options

The intelligent modules offer graphics and display capability as well as camera and audio support with multiple I/O options. In addition, developers get operating system (OS) choice with Intel® Atom™ x3 processor support for Android, Linux, and a variety of RTOS including Wind River VxWorks.

Hardware security

The modules feature robust security capabilities extending from secure boot, secure update and secure certificate management to address secure virtualization

and Secure VM (virtual machines).

Secure boot gives the confidence that, as soon as the module is fired up and the firmware is initiated, every single line of code comes from a trusted source. This means that there is no possibility of sniffing or injecting malware as the module boots, thereby radically strengthening the security of the intelligent modules.

Security is further enhanced by the secure update functionality offered which enables module software to be updated over the air, minimizing the potential for security breaches over Telit's secure deviceWISE management platform.

A major security weak point is the flawed administration of security certificates. These can be managed using the PKI (public key infrastructure) security that is in-built into the deviceWISE platform and can be utilized to manage the intelligent devices.

All of the features detailed above come together to deliver a plug in solution with integrated connectivity that enables developers to create products and reduce time to market. Cost savings are achieved because developers don't have to invest a lot of engineering time and resources in gaining modem knowledge, for example. Similarly, time to market acceleration is achieved because the intelligent modules are pre-certified and approved globally, enabling rapid deployment, with no regional alterations required.

TARGET MARKETS

The flexibility and performance offered by the intelligent modules means they are well-suited to a wide variety of use cases across most industries and sectors.

Retail

The 64-bit quad-core Intel® Atom™ x3 processor offers a compact form factor. That is important for enabling deployments in devices that have limited internal space and also for high volume deployments where the application has relatively low value. The modules have been designed to deliver outstanding performance for low power IoT applications.

Smart Homes/Smart Buildings

The choice of connectivity and compact footprint make the HE922-3GR and WE922-3GR ideal for smart home and smart building applications. Thermostatic controls, for example, could readily accommodate the intelligent modules.

Energy

Another good fit is the energy market, whether for deployment in smart meters or in monitoring devices out in the smart grid, where the extended operational temperature attributes of the modules could become significant.

Medical

The performance offered by the intelligent modules makes them highly suitable for medical applications such as remote patient monitoring.

Telematics

The modules are suitable for aftermarket telematics applications. Again, the low and high temperature operational capabilities are attractive but the connectivity choices are also compelling in this sector.

Industrial

There are a wide range of industrial applications for which the HE922-3GR and WE922-3GR are suitable. The robustness of the modules in terms of the temperatures at which they can operate, coupled with the long-life roadmap for the product makes a strong case for deployments in devices such as IoT gateways for data aggregation.

CONCLUSION

The HE922-3GR and WE922-3GR intelligent modules bring a new range of capabilities and choice to developers. Never before has the flexibility of using different networks, in different regions from different providers been so easily enabled. In addition, the choice of operating systems, couples with the long life roadmap mean developers can select with confidence that the modules will be supported by Telit and Intel® and be suitable for applications where the expected lifespan is well in excess of five years.

Ultimately though, it's the sheer versatility of the intelligent modules that makes them so attractive. The small form factor means they can be accommodated in everything from medical monitoring devices, to dongles and tablets as well as more usual deployments such as IoT gateways.

It is that versatility that cuts development time and resources and enables developers to accelerate time to market while harnessing the power of the intelligent modules to provide a high performance solution. The modules enable developers therefore to save money by spending less on app development, to make money by accelerating time to market and to know they are putting pre-certified, compliant technologies out into the market place.

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