



Feature articles

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SIM20A Short range Transceiver Field Testing Results

New High Speed Products

This quarter we have introduced 2 new, high speed modems.

The first device is SIM5210RS232, which provides HSDPA Speed, with fallback to 3G, EDGE and GPRS, and a serial interface, making this modem attractive on first sight.

The industry standard for such a modem has been set close to R1,500 for devices with similar functionality.

SIMCom® products, however, are notorious for re-writing the standards book, when it comes to pricing, and so it should come as no surprise that we can ship this modem, in quantities of 100 or more, for R950.00 excluding VAT.

The second device is our high speed USB device, U9-W7. It is a true plug and play device, providing HSDPA and HSUPA performance at an affordable price.

Download the basic specs for both products at www.otto.co.za

The SIM20A is a shortrange transceiver, operating in the 433-434.79MHz Frequency Band. On paper, the device is capable of 1500m transmission distance. Whereas this looks very well and good, we know that these sort of specs are achieved under very carefully controlled conditions, using high gain directional antennas, in line-of-sight conditions.

Clients often ask us what the "expected specs" are, under 'South African Conditions'. This is an open ended question and cannot really be answered with any sort of exactness, so decided to run some tests under conditions which are as close to typical industry deployments as possible.

In putting the paper specs to the test we used a low cost and readily available quarter wavelength stubby antenna, and took the devices into two very standard South African environments.

The SIM20A is basically a mesh network RF device; a RF module which is able to function as a transceiver, or a transceiver plus repeater. In order to deliver relevant results, we chose 2 common environments, being a farming environment and a mining environment.

In a rural environment, we tested the device along a straight sand road, over a small hill, and finally through dense foliage. Weather conditions were good.

Our second environment was an underground coal mine in the Secunda area. Mines notoriously present one of the most challenging environments for RF to function reliably; SIMCom® rose to the challenge and performed admirably. We tested the device within the confines of bedrock tunnels. The testing was carried out on straight paths, around corners, with the coal train vehicle between the source and end points, and also within close proximity of heavy underground mining machinery.

...*"Mines notoriously present one of the most challenging environments for RF to function reliably; SIMCom® rose to the challenge and performed admirably."*...

Although test results will vary depending on environmental conditions we found the results of the testing extremely positive, showing that it is feasible to use SIMCom® devices in both applications, provided one tests for and consider the limitations within each specific deployment.

We hope that this information will provide some useful insight for any industrial applications, where RF mesh networking is being considered as a possible solution for communications.

A full application note detailing the tests is available for download within our "products" section on www.otto.co.za, or you are welcome to email wireless@otto.co.za in order to receive a copy.

Our summarized tabled results are as follows:

RESULTS TABLE—ENVIRONMENT 1—RURAL

	CLEAR LINE OF SIGHT	OVER A HILL	THROUGH FOLIAGE
DEVICE BAUDRATE	115200bps	115200bps	115200bps
EFFECTIVE BAUDRATE	2400bps	2400bps	2400bps
MEASURED DIST	400m	120m	350m
RECOMMENDED DIST	350m	100m	300m

RESULTS TABLE—ENVIRONMENT 2—MINING

	CLEAR LINE OF SIGHT	INTERRUPTED BY COAL TRAIN	INTERRUPTED BY PILLAR SUPPORTS	INTERRUPTED BY MACHINES
DEVICE BAUDRATE	115200bps	115200bps	115200bps	115200bps
EFFECTIVE BAUDRATE	2400bps	2400bps	2400bps	2400bps
MEASURED DIST	300m	0m	30m / 2 Corners	12m
RECOMMENDED DIST	280m	0m	25m / 2 Corners	10m

Customer Spotlight—The GSM Controller - Control Simplified

August sees the launch of the South African designed GSM Controller. Supported by Otto Wireless through the initial design stages, and through to final production at design stages at CZ Electronics, this highly innovative product is sure to find it's way into many applications where industrial control, management, or monitoring is required.



Irrigation Control

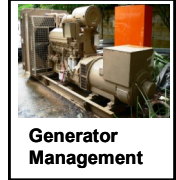
With features like Missed Call activation of relays, inputs and outputs, programmability via SMS or via a PC application, and the ability easily allow single use of a pre-authenticated number, the product is perfect for linking to an existing home access control system, in order to immediately enable your gates or doors for remote cellphone control. On those days when your domestic worker is due to arrive, you can

easily allow access via a missed call from the domestic's cellphone, and the GSM Controller will only allow access from this pre-determined phone number for 1 day (to a max of 32 days).



Access Control

Add to this an optional back end web portal, and you have the perfect platform for managing and monitoring almost anything via the GSM network. The unit has been tested alongside leading industrial irrigation systems, generators and home alarm systems. For more info on this product, visit www.gsmcontroller.co.za or email info@gsmcontroller.co.za



Generator Management

platforms have been systems

**Barry's
Blog**

The 2010 FIFA World Cup provided all businesses with an opportunity to invest in their people, and Otto was no exception. Whereas the period of June—July 2010 was a tough one in terms of productivity, we really used this opportunity at Otto to invest in our staff. From lucky draws to braais in the parking lot, it was really great to see staff with their spirits so high. Let's hope that this positive attitude and team spirit continues for many months to come!



Chris' Corner

Time to market is critical, and this is why successful companies strive to bring down their design cycle time. I have been in this industry for some time now, and in June 2010 I witnessed a client go from discussion, to design, through prototypes, and into production in a record breaking 3 weeks. Much of this was associated to the clear and precise Application Notes which are now available for download on our website, the sample code we provided for the client's microcontroller, and the ease of use of the SIMCom Development Kits. With turnaround times like this, it is no wonder that more and more clients are making the switch to SIMCom.



Price vs Performance has always been the tradeoff. Until now. The SIM900 family offers customers the benefits of low cost, without compromising the quality of the device.

The SIM900 devices are powered by an ARM9 core processor, delivering speed of performance in terms of powering up and connecting, while simultaneously lowering overheads in terms of current consumption.

The lowest cost member of the family, SIM900, features a castellation SMD form-factor, making it easy to assemble and work with, while simultaneously lowering BOM costs by eradicating the need to have a stacking connector.

SIM900B offers clients a pluggable approach, which is normally required when applications may require the ability to plug the GSM module in and out, or if clients build up partial assemblies for stock, and populate the GSM engine last. Although slightly more expensive than the SMD flagship product, SIM900, the SIM900B also caters for applications where there is a need to have the SIM card holder mounted

directly on the

GSM engine. The SIM900B is available in 2 variants—one with, and one without the SIM card holder mounted in place.

SIM900D varies from the SIM900 in that it has the same form-factor as the popular SIM340DZ, which was the first of the SMD castellation devices. The backward compatibility to this older device offers an immediate cost saving without the need to redesign an existing base board.

Development is supported by low cost development kits. The development kit is sold in 2 parts—a base board, and a plug-in module. The plug-in module can be purchased separately which allows customers to use these plug in modules in their own prototype boards as well, before taking the final plunge and laying out the SMD form-factor. The development kit includes UART connection to the device, which allows

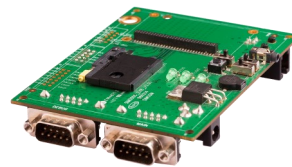


The versatile SIM900 family caters for any industrial application requiring GSM, GPRS, Voice or SMS connectivity, whether you prefer a SMD device, or a pluggable module including SIM card holder...

SIM900—Dawn of the Low Cost and High Performance Generation

the developer to connect to their microcontroller development kit, and take control of the SIM900.

Locally, we have put together a number of Application notes, specifically for the SIM900, which describes, in detail, exactly how to use the device in any standard configurations, such



as GPRS server mode connection, Transparent GPRS Connection, how to check Network Status, TCP Client connectivity etc. We have also produced an application note and accompany-

ing sample code which describes how to interface the SIM900 Development Kit to an industry standard Microcontroller evaluation kit, which assists clients in terms of their design cycles and associated time to market. As a result, we have seen clients move quickly through the proof of concept to final production stages.

In summary, the SIM900 saves clients money not only due to its low device cost, but also presents a low cost design cycle, making it, overall, excellent value for money.

Comparing Compatibility between the SIM5215E & SIM5218E 3G Modules

The SIM5215E and the SIM5218E are two highly capable devices, rich in features and low in cost. But they are meant for 2 very different markets. Or are they really? We explore this question.

At first glance, the 2 modules look vastly different. The SIM5215E is a 3G module, but it appears to be of almost archaic origin. With a data limit of 384kbps, the device is barely recognizable as 3G. And yet this innovative product has been the recipient of recent awards, not least of which was the GSMA Award for the "The Best Low Bandwidth 3G module" in late 2009.

The fact is that where 3G is simply networks worldwide well for this—in are not being ap-networks, unless criteria, which is



SIM5215E — 3G low bandwidth

fallback to 2G. The result is that products which do not require 3G speeds are being forced onto 3G technology platforms not out of technical necessity, but instead as a result of network compliance.

The first problem with this is cost, because 3G technology costs more than 2G. As soon as hardware cost starts to rise, many applications which were borderline viable, are now rendered non-viable as a result. This is where the SIM5215E comes into its own—it is specifically a low cost 3G module, which meets the Network Compliance requirements, but

does not leave a hole in the wallet.

So now there is a low cost entry into the 3G market. But what about future proofing in terms of future high speed requirements? This is where the bigger brother, the HSDPA / HSUPA, 7.2Mbps (DL) / 5.76Mbps (UL), SIM5218E starts to become attractive. Not only is it pin, footprint and power supply compatible with its smaller counterpart, the SIM5215E, but it also offers basic AT command compatibility as well. Both devices feature a seamless interface to an external Micro-SD card, and both devices feature a direct camera interface. In addition, to this, the high speed variant, SIM5218E, also features an embedded GPS.

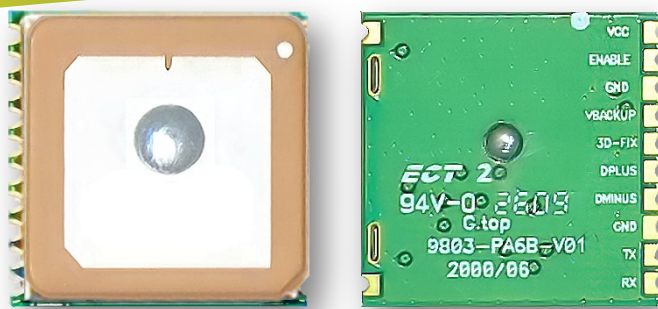


SIM5218E - high speed, with GPS

Now consider a security application - the SIM5215E is selected for cost. The unit drives a camera which takes snapshots and stores them seamlessly to the Micro-SD card for later retrieval, on demand. The SIM5215E is perfect for this. But what if the same security product had a more powerful variant, capable of delivering the same info, as well as the ability to initiate a video call on demand? The SIM5218E will do this with ease. As the manufacturer, you can have 2 products, from 1 PCB design.

This is the true power of the SIMCom® SIM5215E and SIM5218E. They are such different products, and yet in seeming contradiction to this statement they have so much in common.

GTOP launches the PA6 range of highly integrated miniature GPS modules



World's Smallest GPS Modules with Patch Antenna

Global Top has announced the release of a 2 new GPS module, FGPMMPA6B, and FGPMMPA6E.

Both modules are physically the same size, and according to Global Top, this is the world's smallest (16mm x 16mm), single-chip, complete solution, GPS Module Engine Board with a finely tuned, high-sensitivity Patch on Top (POT) ceramic antenna utilizing SmartAntenna Structure. These tiny GPS modules present an ideal solution for those who want to incorporate GPS receiver functions into their own design without worrying about RF noise interference or any additional antenna fine tuning adjustment. Because of their high sensitivity, they are able to excel in tracking performances under urban landscapes or other environments where GPS signals can be difficult to acquire.

Their design is powered by MediaTek Inc. (MTK) 66 channels single chip architecture, the leading digital fabless semiconductor company for wireless communications and digital media solutions.

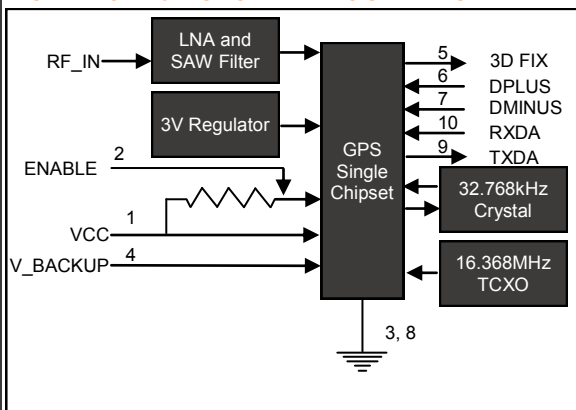
These GPS module engine boards have an extraordinary compact design with excellent tracking performances, accurate positioning and highest of sensitivity. Because of its size and SMD type design, it is ideal for use in small-form factor device design and can be integrated easily with maximum degree of flexibility. It is the best choice for any system designer who wishes to simplify GPS system integration process of their own electronic design.

...smallest single chip complete solution GPS Module ...with Patch on Top...

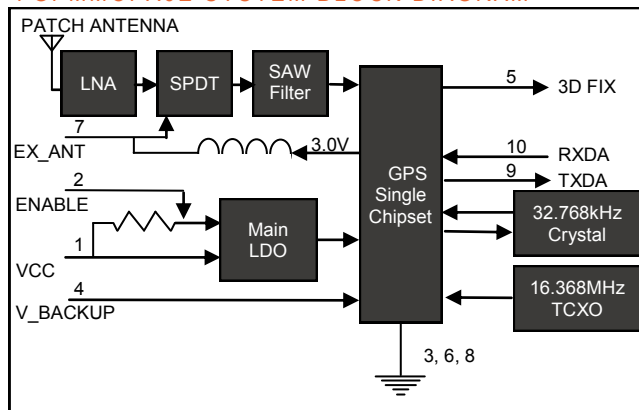
The difference between the PA6B and the PA6E is that the latter also accommodates an external antenna interface, and includes the switching circuitry for selecting

between the integrated patch antenna, or the external antenna. This is a major advantage in security environments, where it is common practice to remove the external GPS antenna, which would normally render the tracking system inoperable.

FGPMMPA6B SYSTEM BLOCK DIAGRAM



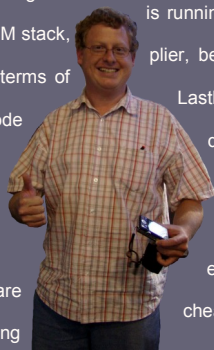
FGPMMPA6E SYSTEM BLOCK DIAGRAM



JD's Journal – Engineering Blogs for Engineers

Q: What is the benefit to running my application in an external micro, as opposed to running within a GSM device like other vendors advocate?

A: As an engineer, I would feel uncomfortable running my code alongside anyone else's application. In the case of running alongside a GSM stack, I would assume that the GSM stack will always get priority in terms of code execution. This would be my first concern - guarantee of code execution within a given timeframe. Secondly, the firmware on GSM devices changes as required due to network upgrades and maintenance being performed on GSM towers. If my code is compiled for a specific version of firmware, and the firmware changes, I would worry that I could find myself in a never ending



maintenance cycle. In reducing the GSM to a bitpipe, it's always waiting for the same AT commands, regardless of the version of firmware which is running. Thirdly, I would not want to be tied to any GSM supplier, because then I would be at their mercy in terms of cost. Lastly, I would consider cost. What's really cheaper? Using a device and integrating your application within their core (considering potential ongoing maintenance costs), or using the lowest cost GSM device and the cheapest external micro that can do the job? Normally, the latter is cheaper, by over R100 (if you use SIMCom).

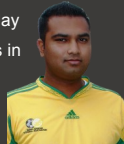
Mark's Memos



With many projects now now considering wireless connectivity as their primary method of communication, we have compiled solutions catering for almost every need. Our website now contains many application notes, predominantly for the SIM900 GSM module. Keep a close eye on our website, as new application notes will be released through August and September. These will cover SRD to GSM / GPRS / 3G connectivity. Also look out for the Low res Video calling application note and some basic guides for your next GSM based design. Feedback with regard to our current application notes has been extremely positive, with many clients commenting that their design times have been drastically reduced as a result. We also have Development Kit Schematics available on request, and this aid has also been a major contributor in terms of time savings realised by our customers. Please contact me if you need any assistance whatsoever, and I will be glad to assist you.

New Appointment: Nalin Pillay

Nalin Pillay joined us in June as an Account Manager. Although he is based in Gauteng and will handle opportunities in and around Johannesburg, he will also be travelling to Natal regularly, in order to grow our presence in this important region. If you reside in the Natal area and are in need of our support, please don't hesitate to contact Nalin.





The Wireless, RF and Connector People
 GSM/GPRS/3G and GPS modules and modems, antennas and accessories
 Wireless interfacing solutions for embedded designs

From Concept to Manufacture

Our market is made up of a diverse array of verticals, and many of these markets are niche, where high volume manufacture is unheard of. Otto Marketing is synonymous with providing high levels of support to niche markets, and Otto Wireless is no exception.

In establishing our logistic support structure, we considered that many of our clients will build 100 to 500 units as a once-off, and getting a contract manufacturer to take them seriously and provide competitive pricing is often challenging. This is why we have a strong working relationship with CZ Electronics, whom we have dealt with over many years under the Otto Marketing banner.

What CZ brings to the table is not only high volume pricing for medium volume customers, but an entire logistic support structure, which starts where the Otto Wireless' support ends, provides extensive support up to and including delivery to the end customer.

What's In an Approval?

We approve all of our devices for a number of reasons. Firstly, we are required by law to pay our licenses and approve any GSM devices via ICASA.

Secondly, we are addressing network approval for our popular devices via MTN and Vodacom. The reason for doing this is to allow the networks to test the specific hardware and firmware which we intend distributing. They only issue a certificate if they are satisfied that our devices will behave properly on the network, and more importantly, will maintain compatibility with planned tower upgrades within the service provider. If tower upgrades take place, and device firmware is no longer compatible, clients who are using an approved device have recourse with the networks.

This is why it is important to only work with an approved device, and with a supplier who takes the entire approval process seriously. This is why we take the approval process seriously.

We offer an extensive range of product shortforms, application notes, etc. We compile many of these application notes locally. Should you need to cater for anything from basic sms and voice functionality, to establishing a GPRS connection and setting up the device in

To start with, Otto Wireless clients who elect to make use of CZ Electronics for manufacturing purposes will only have to pay for machine setup time and components. Advice in terms of industrialisation, which allows for ease of assembly (which affects assembly cost) will also be provided free of charge. The client's Bill of Materials will be scrutinized, and where it makes sense to move to standard components which CZ already keeps in stock, CZ will submit proposals in terms of changing components.

Once a client has moved through the pre-production process and is satisfied with production yields, logistic support can be considered. For instance, many of our clients



have concerns around handling warranties, out of warranty repairs, stock, shipping to end clients etc; why not consider using a reputable contract manufacturer like CZ Electronics as an extension of your business, a facility which can handle the logistics effectively, leaving you to go about your business with peace of mind?

CZ Electronics work closely with Otto Wireless Solutions, to ensure that each customer's needs are individually catered for. Apart from providing a very attractive pricing structure, this extensive support has been the major contributing factor for several of our customers, when weighing up the offers from several Contract Manufacturers.

For more information on this initiative, or to set up a meeting to discuss your requirements, please feel free to contact us.

Visit us Online

client, server, or transparent mode, our extensive application notes will assist you in doing this.

We also cater for online purchasing. Visit us online at www.otto.co.za.



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