Introduction

Welcome to our latest edition of the Taoglas newsletter. What a fantastic year we are having so far in 2015. Taoglas has experienced substantial growth, which we put down to the explosion of sensors and devices in the market we all now call the Internet of Things (IoT).

The year began with a bang at CES where IoT and M2M were what everyone was talking about in Las Vegas. Since then, there has been multiple events and big industry announcements. As Taoglas have been providing solutions for this market for over 11 years now we are very excited to finally see that the age of the machines has finally arrived.

For this newsletter I’d like to talk about some of the highlights from the first half of this year and new products we have launched.

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1. Pantheon in Paris
You might have noticed we describe many of our products as “robust” and “reliable”, and we have good reason to do so! Many of our antennas are IP67 waterproof, are made from UV resistant ABS plastics and are generally tough pieces of kit. However, nothing can really fully prepare equipment for the real-world. As devious as our engineers can be in testing, we can’t account for some of the situations our devices are exposed to in the field. This is especially true when it comes to one of the toughest antennas ever assembled, our Pantheon series, which are visible on the streets of Paris. Paris has a rich history and our Pantheon has become part of that history, having been adorned with some Gallic graffiti. There is no way to break it off these street utility boxes but thankfully graffiti doesn’t stop the Pantheon from performing as the best antenna in its class.

2. SolarTech selects the Spartan
Next time you drive past a digital display on the freeway, it is likely that our Spartan MA600 is the connectivity link. This allows Solar Tech to remotely change and manage the messages on the display.

3. Taoglas GPS antenna appears in Defence News
Our antennas appear in many weird and wonderful places. We noticed one interesting application recently in the news. If found in the field please return to Taoglas HQ! Taoglas GPS patch antenna installed on Cicada mini drone. In the photograph, right, a man holds a Cicada, a miniature drone invented by US military scientists, outside the Pentagon on May 14 in Arlington, Va.

4. Public Safety
It appears the public safety sector also likes our antennas. We noticed the police cars and SUVs around Taoglas USA proudly display the Olympian G30 antennas on the roofs of the vehicles.

5. The Owl by Landis & Gyr
Don’t be left in the dark, with Taoglas antennas. The Owl is a new street light controller designed incorporating our high performance, high gain 915 MHz TI.T19.2113 terminal antenna solution.
6. Hercules is the antenna of choice for Smart Grid
S&C Electric Automatic Switch Controllers manage electrical distribution switches. The Hercules MA501 was designed for commercial vehicle and outdoor equipment installations. It is designed for covert mounting as it is only 3cm high when mounted, something that is critical to utility and Smart Grid applications. Robustness, environmental durability and high performance are delivered in this compact, easy to install, antenna solution. Our Hercules MA104 was also chosen by Gridco Systems for their Distributed Grid Controller (DGC).

7. Taoglas helps ABC News deliver breaking, national and world news.
We’re helping ensure ABC are always first to the story with our Stream and Pantheon series. You can find various ABC News broadcast vans across America using our products as their high speed, high bandwidth connectivity solution.

8. AUVSI show in Atlanta advertises some Taoglas products.
May 4-7th 2015: Our antennas were on display in many of our customers interesting applications from soldier communication solutions to drones and robots.
Taoglas launches another market leading mobile antenna product for transportation and remote monitoring. The Storm MA412 LTE MIMO antenna is a low profile, heavy-duty, fully IP67 waterproof external M2M antenna for use in applications which require best in class LTE performance. This unique product, only 30.9mm high, delivers powerful worldwide 4G LTE MIMO antenna technology at 700MHz / 800MHz / 900MHz / 1700MHz / 1800MHz / 1900MHz / 2600MHz. The storm also comes with GPS Iridium and Wifi options available, all within the same enclosure.

Dimensions: 216.24*93.25*30.95mm

Storm MA412.A.BI.001

Low profile, high performance mobile antenna solution
Verizon Partnership

One of our priorities at Taoglas is forging productive and lasting relationships with our clients. This focus has led to partnerships with some industry leading firms - none more so than Verizon, the largest 4G LTE network provider in America.

Verizon’s partnership program brings together its key partners and clients to collaborate and better serve our M2M customers. With 4G being such an integral part of M2M, we are delighted to be working with the leading provider of 4G LTE in North America.

We have been busy participating in the Verizon IoT Developer Workshops. We are delighted to continue to be involved in those innovative sessions all the way to and through September. More details about the times and locations of each session are available here:

http://taoglas.com/news/84

When it comes to testing, all our antennas are put through their paces inside our anechoic chambers either in Taoglas Ireland or Taoglas San Diego. These anechoic chambers are built to be the perfect RF environment, secured so no signal gets in or out and adorned with microwave absorber cones preventing any reflection of signal.

To get some “real-world” test results, our joint managing director, Dermot O’Shea and one of our engineers in San Diego, Alberto Saldivar decided to stick several of our antennas onto a Dodge Ram and drive around to some of San Diego’s most famous landmarks to see how we do on the Verizon 4G LTE network. We brought out our Pantheon, Shockwave, Apex and recently released Gemini models as well as an internally mounted external stream antenna.

Thanks to some help from our partners at Sierra Wireless we hooked them all into two Airlink GX440 routers, with two different configurations. The routers were fired up for the Verizon 4G LTE network with help from our partners at DCS. You can watch the video HERE and read the full report to see the sights of San Diego and get an in-depth look our testing process.
Chris Anderson, our VP of Engineering wrote up an article for edn.com on GPS testing. As Chris says “Modern GPS receivers are extremely sensitive signal detection devices”. Any GPS device requires a focused and most importantly, organized testing cycle. Government regulations mean that it is technically possible to release a GPS device that essentially doesn’t work and that is something a device manufacturer wants to avoid.

I have seen instances where people perform “car park testing” on antennas - usually to get a good idea of how the antenna performs in the best possible conditions. Chris points out that “Your product may work fine in this situation, but when presented with an impaired signal such as seen in urban canyons or inside structures, if your receiver is impaired you won’t get a fix, where a properly tested product will.”. Being able to test in the proper environment is an investment any engineering company has to make at some stage - you need a proper, repeatable and observable test to get accurate results.

You can read Chris’s full article here:

http://www.edn.com/design/automotive/4429798/1/Design-Verification-Testing-of-GPS- Receivers?isCmsPreview=1

Taoglas USA are excited about the launch of its newest product “The Cellular Signal Amplifier”. The CSB.01 Wireless Network Range Extender is a high performance, microprocessor controlled, bidirectional RF amplifier for the entire North American 850 MHz cellular and 1900 MHz PCS frequency bands. The amplifier has an automatic gain and oscillation control. This amplifier is designed to operate as a direct connect unit within a cellular system, for maximum performance in weak signal coverage areas.

The CSB.01 is equipped with passive bypass technology. This feature allows the amplifier to be passively bypassed and become a pass through cable when amplification is not necessary, during loss of power or when a fault is detected. The technology is also extremely useful in fire and security system installations where a network connection must always be maintained, even with loss of power.

Taoglas launches high performance GNSS Magma Series

**Embedded Ceramic Patch Antenna** - 35 x 35 x 6mm  
**Housing Dimensions** - 53 x 50 x 17mm

Taoglas have added the Magma AA.170 and the MagmaX AA.171 to their extensive range of antenna solutions for high accuracy GNSS applications such as timing, advanced telematics, location based services etc. The Magma and MagmaX are housed in compact magnetic mount enclosures and are available with a wide range of connector options.

Spartan **STS.01** Iridium™ Transceiver Antenna System

**Housing Dimensions** - 145.6 x 147.5 x 33.3mm

We recently developed a range of antennas for maritime, aeronautical, government / defence, public safety, utilities, oil / gas, mining, forestry, and transportation applications using the Iridium™ Satellite constellation. The Spartan **STS.01** Iridium™ Transceiver consists of an advanced Taoglas Iridium™ certified patch antenna and Iridium 9602 transceiver with RS-232 interface, all enclosed in a robust, IP67 waterproof through-hole mount enclosure. The Iridium™ satellite network offers truly global M2M service with the lowest latency in the industry — extending the value of intelligent data far beyond the 10% of the Earth serviced by terrestrial networks.
New Product Launches (2/5)

**Gemini LMA100**
Here at Taoglas we excel at pushing the boundaries of M2M technology and the new LTE enabled Gemini Antenna Solution is the product of that drive. Gemini makes true 2x2 LTE Advanced systems a reality, with two of our flagship antennas, the **PA.710.A** “Warrior” and the **PA.711** inside. With two antennas in one system, you might wonder if isolation is an issue but the Gemini system allows the two antennas to be placed as close as 10mm apart while still achieving better than 10dbi of isolation. This achievement is a testament to the strength of our innovation and problem solving. Solving one of the industry’s longest standing challenges in the isolation numbers wasn’t an easy task but some incredible work from all our engineering teams around the world made it possible. We know the Gemini will become one of Taoglas most important projects and products in the years to come and the work will certainly have been worth it. You can read the full Gemini press releases, with a few words from Ronan Quinlan our joint managing director and some more in-depth technical specs [HERE](#). The Gemini can also be used as an embedded antenna solution for devices that need to implement a true 2x2 MIMO LTE solution. This would mean integration of the **PA.710.A** and **PA.711.A** These are also available on a **PAD.71X.A** evaluation board.

**FXUB71**
Our new **FXUB71** is a MIMO wideband antenna for 4G LTE technology. The FXUB71 includes all bands required to operate cellular globally on a MIMO basis, meaning customers only need one antenna to cover all their needs.

**The Olympian MA140**
The **Olympian MA140** is a high performance combination LTE and GPS/GLONASS screw mount antenna in a compact housing, for external use on vehicles and outdoor assets worldwide. The LTE antenna also supports all 2G and 3G worldwide frequencies. The GPS/Glonass antenna has stable gain and radiation patterns on both bands.
New Product Launches (3/5)

TG.08 & TS.07
The **TS.07** is a deceptively small passive GNSS antenna that is capable of matching the performance of far bigger competitors. It supports an impressive array of satellite technologies such as BEIDOU/GPS/GLONASS and Galileo. The TG.07 is an ideal solution when a terminal or connector mount antenna is required for GNSS. Our new **TG.08** is a derivative of our hugely successful cellular (2G/3G) TG.09. The TG.08 basically adds GNSS to the **TG.09**. This antenna is ideal for use as a terminal or connector mount antenna with a cellular module that also has AGPS or GPSONE functionality.

GW.05
With its distinctive green colour, the **GW.05** WiFi monopole antenna’s Irish heritage is on clear display. The antenna works well with or without the ground plane connection (>50% Efficiency).

**Pantheon ST Series**
We have launched an alternative version of the Pantheon series in the form of the ST Pantheon series. ST means short thread and is ideal for installations in smaller vehicles like police cars, where a shorter thread and nut is required in order not to be visible in the interior roof covering.
**New Product Launches (4/5)**

**Ultima, an ultra low profile cell/GNSS combo antenna**
The MA.111 Ultima Series 2in1 GPS/GLONASS & Cellular Combination Antenna is an extremely low profile combination high performance GPS/GLONASS and penta-band cellular antenna solution for professional telematics applications. At only 22mm height it is the lowest profile antenna in the market, with a diameter of 55mm.

**External permanent mount WiFi MIMO antenna solutions**
The MA510 and MA530 are the latest in our line of WiFi/MIMO antennas. MIMO is focused around high bandwidth applications and these antennas are perfectly suited to such tasks. The pair are equipped to be compatible with the upcoming 802.11ac WiFi standard. This means that they are capable of taking up to 500 megabits a second in data. The 802.11ac standard is estimated to have a billion devices in use by 2015, so if you have the future in mind for any of your WiFi needs, the MA 510 and MA530 can comfortably cover them while still being durable, waterproof (both IP67 & IP67K standard) pieces of kit.
New Product Launches (5/5)

Wide band high performance GNSS CGGBP.35 patch antenna
This CGGBP.35 is a 35mmx35mm embedded ceramic GPS/GLONASS/BEIDOU patch antenna with a wide band of operation, leading to excellent gain and radiation pattern stability on all three GNSS system bands. Compared to using a smaller antenna, this will translate into the GNSS system having much higher location accuracy, improved reliability of lock in urban areas, better signal reception, with more satellites acquired and a quicker time to first fix. The patch is mounted via pin and double-sided adhesive. While the antenna will work very well in most device environments (Note cannot be covered with metal enclosure), tuning and further optimization of this antenna to different ground-planes and enclosures can be done if required, also including a pin length change. These changes would be subject to possible NRE and a minimum order quantity.

New 2.4 GHz passive antenna solutions
We recently launched some new 2.4GHz on board antenna solutions that do not require ground clearance underneath the antenna. Quite often for bluetooth or wifi applications you are required to reserve a keep out area on your pcb for these antennas. This line is a great choice for Bluetooth LE wearable applications as it can work directly on ground (except for feed area) and over metal - and hence the body. These environments are ones in which traditional chip antennas cannot operate in. We also have some new patch antennas which deliver a more directional pattern but have excellent gain and efficiency characteristics in that direction. We have both a surface mount and a through pin hole mount version.

LA.02
The LA.02 is a loop antenna so hence delivers a very omnidirectional radiation pattern, once mounted on the middle edge of one side of the pcb.

The SWLP.2450.10.4.A.02 is a patent pending 10mm SMT ceramic patch antenna. It is a breakthrough antenna in terms of size and performance. It is ideally suited for 2.4GHz applications such as Bluetooth LE, Wi-Fi, ISM, and ZigBee that require the best performance and a directional radiation pattern. The antenna also does not need ground plane clearance around it (except for feed area).

The WDP.2458.25.4.B.02 is ideal for dual band WiFi applications in that it adds the upper band 5GHz frequency.
Taoglas San Diego has invested over $1 million to upgrade its Over The Air (OTA) anechoic chamber to allow it to also support 4G LTE OTA testing for LTE Total Radiated Power (TRP), Total Isotropic Sensitivity (TIS) measurements as well as full Radiated Spurious Emission (RSE) testing that is required for PTCRB certification.

This provides M2M and IoT device manufacturers with the resources of a full-service design and testing center that cater to 2G, 3G, 4G LTE, Wifi, BT and GNSS testing as well as providing antenna solutions and RF troubleshooting assistance.

Taoglas can ensure that devices pass first time, on time, and enjoy the higher upload and download speeds promised by LTE Advanced. Taoglas’ added value is that we have two decades of expertise designing and manufacturing antennas for all kinds of M2M devices.

If there’s a problem with noise control or with emissions getting into a radio system, we know not only how to test and identify the problem, but we know what to do to fix it.

For a full list of all service we provide please visit www.taoglas.com/solutions/design
Upcoming & Recent Events

Watch an interview with Tim Dolan at TU-Automotive Detroit in Novi, MI, on June 4, 2015.

Following CES and a great Distributech show in San Diego we’ve been to some terrific industry events recently, including Cisco Live also in San Diego. Here is a list of upcoming shows that we will attend, please contact us if you would like to set up a meeting.

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Please come and see us soon at...

APCO
Walter E. Washington Convention Center.
801 Mount Vernon Place NW, Washington, DC 20001
August 16th - 19th, 2015

M2M Summit
Congress Center Düsseldorf
Eingang CCD Stadthalle.
Rotterdammerstasse 141, 40474 Düsseldorf
Deutschland
September 8th - 9th, 2015

CTIA Super Mobility 2015
Sands Expo & Convention Center
Las Vegas, NV.
Sept 9 - 11th, 2015

Railway Interchange
Booth 2113
Minneapolis, MN.
4 - 7th October 2015

M2M World Congress 2015 London, April 28 - 29th
Ronan Quinlan and Steven Rowley attended the M2M World Congress in London.
Taoglas has volunteered for “Irish You A Merry Christmas”

The organization served Christmas dinner to over 200 people. The charity provided gifts to the children, and a wonderful array of performers performed accompanied with Irish music, dance, and crafts. Clothes and nonperishable food items were also collected and distributed through the excellent Roosevelt’s programs.

For more information visit www.irishyouamerrychristmassd.org

Recently our Minnesota location had a great customer appreciation event at the Target field. We brought some Minnesota customers to see the Boston Red Sox take on the Minnesota Twins, a great evening was had by all despite the rain delaying play.

Taoglas on Social Media

We recently launched a quartet of social media accounts on Twitter, Facebook, Youtube and LinkedIn. We’ve put all the videos up on our Youtube page, linked below alongside all our other accounts. Give them a follow for product launches, updates, news articles and video content!

www.twitter.com/taoglas
www.youtube.com/user/taoglas
www.facebook.com/taoglas
www.linkedin.com/company/taoglas

Catalogue App

The 2015 catalogue is available on the on the iTunes App Store and is free to download.

...or just scan this QR code!
Contact us for more information on any of our products and services.

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