

TRACKS

News from Trackwise – The RF PCB Innovator

Autumn 2011

CRISIS? WHAT CRISIS?!

RECORD ORDERS FOR TRACKWISE – FOR APPLICATIONS ACROSS THE RF SPECTRUM



Further building on a record year in 2010, Trackwise have defied the gathering global economic gloom and booked record both half-year and monthly orders in 2011, from a wide range of customers and applications across the RF spectrum.

New generation antennas for mobile phone base stations – such as those for ‘digital dividend’ and fourth generation cellular wireless networks (4G) – are typically broadband and/or multiband and these antennas demand high performance and high precision components to meet demanding performance specifications. **Trackwise’ long experience with manufacturing low PIM, high reliability antenna PCBs** is valued by manufacturers of these high performance base station antennas.

The growing use of tablets and smart phones is underpinning demand for high speed mobile broadband with as many as 1.5 million LTE base stations to be

deployed by 2015. A recent Deloitte report indicated that wireless telecommunications companies in the United States could invest \$25 to \$53 billion in 4G networks between 2012 and 2016.

In addition to these high performance base station antennas, **Trackwise’ precision RF PCBs are in demand for a very wide range of RF applications** - drift chambers for dirty bomb detectors, coastal defence radar, ground-penetrating radar, aircraft navigation aids, RF power amplifiers, RF conditioning, 5GHz WiFi – to name but a few.

A recent Team Role analysis carried out on the Trackwise team has identified the team strengths that drive our total commitment to customer service. **All members of the Trackwise team recognise that manufacturing of RF PCBs is a customer service operation and that the success of your business determines the success of our business.**

For an established, experienced and proven partner to provide your antenna and RF PCBs on time and to quality – please be in touch with Trackwise.

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PTFE PRICE INCREASES

Late 2010 and 2011 have seen a growing shortage of the mineral Fluorspar - used in the production of not only fluoropolymers such as PTFE but also refrigerants, which are in strong demand for air conditioning systems for the world's growing middle classes.

This shortage, together with planned and unplanned reductions in PTFE manufacturing capacity, combined with overall robustness of demand, has resulted in both allocations and also significant price increases in PTFE laminates.

The laminate supply chain has taken steps to secure alternative supplies of the component materials that go to make up PTFE laminate and in addition 2011 has seen some new capacity come online.

Whether we shall see further price increases in PTFE-based RF laminates remains to be seen. It is Trackwise' belief that there is still excess capacity in the world market – resulting in competitive pressures that should resist further price increases.

In addition there are plenty of existing and new RF laminates that are not based upon PTFE and these new products potentially offer an alternative solution. Further PTFE price increases will simply force designers to avoid manufacturing products based on these laminates.

If you are concerned about the potential of price increases of PTFE laminates and wish to discuss a strategy to mitigate this risk, please do not hesitate to contact Trackwise.

Trackwise-lead consortium successful in Clean Sky bid

Trackwise are pleased to announce that their application to Clean Sky Call 8 (supported by Rogers BVBA, Systems Engineering & Assessment Ltd and Victrex Manufacturing Ltd) for "Demonstration of a large, high temperature, flexible printed circuit board" has, subject to negotiation, been successful.

This Project aims, through trials of flexible laminates manufactured from existing and brand new advanced polymers, to progress the temperature at which a flexible printed circuit can operate from the current state of the art maximum of 200°C into the desired range of 260°C (minimum) up to 400°C (target).

The Project aims to develop the materials and manufacturing

processes that enable this high temperature performance in a large format, such that the required overall harness length of 5m can be implemented in a single piece multilayer printed circuit.

This highly innovative response to an extreme technical challenge typifies the innovative thinking within Trackwise, building upon proven core competencies to deliver a step change to our customers and our industry.



PTFE recycle patent granted

Trackwise is pleased to announce that their patent, 'Recycle PTFE Laminate' has been granted by the European Patent Office (EP 1852004). A parallel application in the US is going through its final stages.

Trackwise will be presenting at EuMW 2011 a MicroApp paper 'Novel Re-manufacturing Process For a New Composite Incorporating PTFE/GF Recyclate Produced from PTFE/GF Laminate Manufacturing and End of Life Waste'

Zhoutian Xi (Sky) study on this subject has been rightly recognised by the award of his PhD this summer. Congratulations Sky!



TRACKWISE EPITOME INDIA – GROWING DEMAND FOR LOCALISED PRODUCTION

The Indian 3G and BWA auctions and the need to roll out the planned networks, plus the increasing demand for localised telecoms equipment manufacture has led to a huge jump in business for Trackwise Epitome India (TEI) facility for manufacturing antenna and RF PCBs.

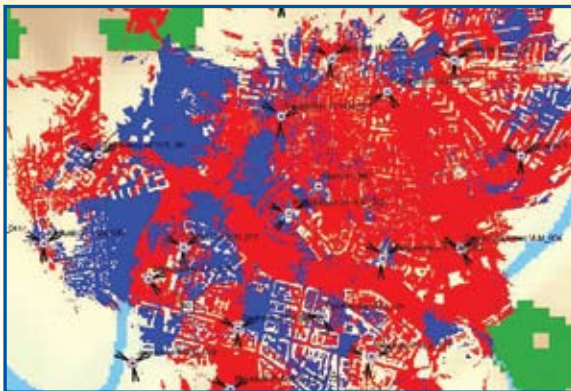
The TEI facility has been relocated to Epitome Components new facility in the "SUPA Industrial Estate" MIDC located on the Ahmednagar-Pune Highway.

For an established, experienced and proven partner to provide your antenna and RF PCBs, please be in touch with Trackwise Epitome India and come and see the excellent new facility.

Alpha Wireless – helps operator increase sector capacity

Trackwise are very proud to have supported Alpha Wireless from their earliest prototype antennas through to their current successes in the global market.

A real trial in Vilnius, Lithuania has illustrated the benefit to overall network performance of using Alpha Wireless antennas. The network operator was experiencing unacceptable interference in parts of its network. They identified this as interference between antenna radiation patterns emanating from neighbouring cells. By re-placing their existing antennas with Alpha Wireless antennas, the operator was able to significantly reduce the interference, and therefore improve network throughput by 30%, and sector capacity by 12%, in affected cells. All antennas radiate unwanted signals.



These unwanted signals (such as sector antenna upper sidelobes) create interference and therefore suppressing these unwanted signals reduces interference. Most antenna vendors only suppress the first upper sidelobe. However, when an antenna is tilted, the second, third and subsequent sidelobes can also create interference. Alpha Wireless antenna suppress all upper sidelobes, significantly reducing the interference, and therefore improving network throughput and sector capacity. **Trackwise' patented TrackSlip™ low friction surface finish is a key enabler within the Alpha Wireless phase shifter, used for varying antenna tilt angle.**

TRACKWISE – CONTINUING TO SERVE INTERNATIONAL MARKETS FOR SPECIALIST PCBs

Trackwise, formed in 1989, specialises in the manufacture of antennas using printed circuit technology – including very large (up to 2.8m) boards used as the radiating element in cellphone base station antennas.

From its UK manufacturing facilities the company exports to antenna manufacturers around the world, including the USA, Australia, Europe, and, China and Thailand.

At Trackwise, we specialise in leading-edge PCB manufacture. Over the past few years we have invested extensively in manufacturing technology dedicated to the production – to a very high degree of precision – of the very large high-frequency printed circuit boards used as antennas in the cellphone base stations run by mobile phone operators.

Trackwise has patented a number of innovations for the antenna community, including TrackSlip® a low-friction surface finish for the sliding element of variable tilt antennas.

The skills acquired in manufacturing antenna PCBs have brought success for the company in other RF and microwave industry sectors, such as security systems, broadcast and vehicle telematics.

TRACKWISE TO EXHIBIT AT EUMW 2011

Trackwise are pleased to announce that they will be exhibiting at the 14th European Microwave Week 2011 to be held 11th - 13th October 2011, Manchester, UK.

“The conference has grown over the years and is now the premier event in this field in Europe. In addition, Exhibitor Workshops, Seminars and Round Table Forums will be a platform for leading manufacturers, institutes and industry bodies to stimulate dialogue and interaction with attendees on relevant Microwave, RF, Wireless, Defence/Security and Radar issues.

The Week provides an invaluable opportunity for industrialists, academics and researchers to consider the latest trends and developments within the ever-widening field of microwaves.”

Trackwise would be delighted to welcome you to our Stand 326 at EUMW 2011 and to have the opportunity to explain our up-to-date achievements and also about exciting new developments within UK and India.

2.5 metres to 25 microns

Trackwise offer five orders of magnitude of capability and service

The following information is provided as a general guide to our normal manufacturing parameters, and should not be interpreted as absolute limits of our processes. We are always pleased to discuss any customer's specialised requirements.

Our Technical Services Department can help you with many aspects of material selection and high frequency applications, as well as helping you to develop prototypes.

PCB Types:

- Single Sided
- Double Sided
- Double Sided, Through Hole Plated
- Flexible
- Metal backed • Multilayer

Manufacturing Parameters:

- Minimum Track - 0.025mm (0.001")
- Minimum Gap - 0.025mm (0.001")
- Minimum Drill - 0.3 mm (0.012") (finished, after plating)
- Maximum Panel Size - 2.8m by 0.6m (110 x 24") (DSNPTH, DSPTH - some constraints apply)
- Maximum PCB Thickness - 6.35mm (0.25")

Conductor Finishes: ROHS Compliant

- Electroless Tin
- Hot Air Solder Level (Sn/Pb and Pb-Free)
- Electroless Nickel/Gold
- Electroless Silver
- OSP

Solder Masks:

- We can offer all standard solder masks, photoimageable or UV curing.

Trackslip®

- We have developed and patented a PTFE-loaded solder resist specifically for use on phase shifters for variable electrical tilt (VET) antennas.

Substrates:

- PTFE/Glass
- FR4 Epoxy/Glass
- Foam
- Polyimide
- Polyester

Inspection:

- 100% Visual Inspection to IPC-6018 (Microwave/RF products).
- 100% Visual Inspection to IPC-600A (Digital/analogue products).
- Electronic Test ("Roving Probe" and "Bed-of-nails", as appropriate, optional)
- Automatic Optical Inspection (AOI) (optional).

Quality Approvals:

- BS EN ISO 9001:2008 (Manufacture)
- BS EN ISO 14001:2004

We go to great lengths to ensure that we are aware of the latest developments in the field of microwave laminates – new products, latest prices etc. Please see our Microwave Laminates knowledge base at www.trackwise.co.uk for full details of available materials.

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