SARANTEL

SARANTEL GROUP PLC

Placing and Admission to AIM by Arbuthnot Securities Limited

A new generation of filtering antennas for wireless devices

SARANTEL

Geohelix - SMP (Passive Antenna)

This dielectrically loaded quadrifilar helix antenna with its high performance and balanced design is ideal for applications requiring tight integration.

Geohelix - S (Active Antenna)

This dielectrically loaded quadrifilar helix antenna offers high performance with tight integration and an integral high gain/low noise amplifier.

THIS DOCUMENT IS IMPORTANT AND REQUIRES YOUR IMMEDIATE ATTENTION. If you are in any doubt about the contents of this document you should consult a person authorised under the Financial Services and Markets Act 2000 who specialises in advising on the acquisition of shares and other securities.

This document, which comprises a prospectus, has been drawn up in accordance with the Public Offers of Securities Regulations 1995. A copy of this document has been delivered to the Registrar of Companies in England and Wales for registration in accordance with regulation 4(2) of those regulations.

The Directors of the Company, whose names appear on page 4 of this document, accept responsibility for the information contained in this document. To the best of the knowledge and belief of the Directors, the information contained in this document is in accordance with the facts and makes no omission likely to affect the import of such information.

Application has been made for the whole of the issued and to be issued ordinary share capital of the Company in issue following the Placing to be admitted to trading on AIM, a market operated by the London Stock Exchange. AIM is a market designed primarily for emerging or smaller companies to which a higher investment risk tends to be attached than to larger or more established companies. AIM securities are not admitted to the Official List of the UK Listing Authority. A prospective investor should be aware of the risks in investing in such companies and should make the decision to invest only after careful consideration and, if appropriate, consultation with an independent financial adviser. The rules of AIM are less demanding than those of the Official List. It is emphasised that no application is being made for admission of the Ordinary Shares to the Official List. Further, the London Stock Exchange has not examined or approved the contents of this document. The Ordinary Shares are not traded on any other recognised investment exchange and no other such applications have been made. It is expected that First Admission will become effective and dealings in the First Placing Shares and the Existing Shares will commence on AIM on 2 March 2005 and that Second Admission will become effective and dealings in the Second Placing Shares shall commence on AIM on 3 March 2005. The whole text of this document should be read. The attention of investors is drawn in particular to the risk factors set out in Part II of this document.

Sarantel Group PLC

(Incorporated and registered in England and Wales under the Companies Act 1985 with registered number 5299925)

Admission to trading on AIM
Placing of 21,951,220 Ordinary Shares
at 82p per share

by

Arbuthnot Securities Limited

Nominated Adviser and Broker

Ordinary share capital immediately following Admission

Authorised			*Issued and fully paid*	
Number	*Amount*		*Number*	*Amount*
63,000,000	£6,300,000	A ordinary shares of 10p each	51,658,353	£5,165,835.3
2,000,000	£200,000	B ordinary shares of 10p each	1,096,340	£109,634.0

Arbuthnot Securities Limited, which is regulated by the Financial Services Authority, is acting as nominated adviser and broker to the Company in relation to the Placing and Admission and will not be responsible to any person other than the Company for providing the protections afforded to its customers or for advising any other person on the contents of this document or any transaction or arrangement referred to herein. Arbuthnot Securities Limited has not authorised the contents of any part of this document for the purposes of Regulation 13(1)(g) of the POS Regulations. The responsibilities of Arbuthnot Securities Limited as the Company's nominated adviser and broker under the AIM Rules are owed solely to the London Stock Exchange and are not owed to the Company or any Director, Shareholder or to any other person. Arbuthnot is not making any representation or warranty, express or implied, as to the contents of this document.

This document does not constitute an offer to sell, or the solicitation of an offer to buy, shares in any jurisdiction in which such offer or solicitation is unlawful and, in particular, is not for distribution into the United States, Canada, Australia, the Republic of Ireland or Japan. The issue of the Ordinary Shares has not been and will not be registered under the applicable securities laws of the United States, Canada, Australia, the Republic of Ireland or Japan or to any national, resident or citizen of the United States, Canada, Australia, the Republic of Ireland or Japan. The distribution of this document in other jurisdictions may be restricted by law and therefore persons into whose possession this document comes should inform themselves about and observe any such restriction. Any failure to comply with these restrictions may constitute a violation of the securities law of any such jurisdictions.

In making any investment decision in respect of the Placing, no information or representation should be relied upon in relation to the Placing or in relation to the Placing Shares other than as contained in this document. No person has been authorised to give any information or make any representation other than that contained in this document and, if given or made, such information or representation must not be relied upon as having been authorised.

CONTENTS

KEY INFORMATION

The following information is derived from, and should be read in conjunction with, the full text of this document.

Business

Sarantel designs, manufactures and sells patented, ceramic, filtering antennas for use in portable wireless devices. Sarantel holds 11 core registered patents for its miniature dielectric loaded antennas, which the Directors believe offer significant performance advantages for users and manufacturers of such devices based on its groundbreaking technology. The antennas simplify system design, thus allowing design standardisation and reduced time to market and cost for manufacturers.

The Directors believe that data services based on GPS, Wi-Fi, 3G and Bluetooth platforms will be a key element in the future success of mobile network operators and device manufacturers. Sarantel's filtering antennas are already playing a leading role in enabling the integration of GPS in mass-market mobile devices and PDAs and have significantly increased the range and effective bandwidth of Wi-Fi devices. Sarantel is planning to commence high volume delivery of its antennas into the satellite radio market within the next 12 months.

Sarantel has supplied to more than 50 wireless device manufacturers and/or suppliers, and is working with top tier OEMs and ODMs in the development and application of Sarantel's GPS antenna. Sales are accelerating rapidly and Sarantel now plans to expand significantly its manufacturing capacity in order to meet demand.

The Directors believe that the market for Sarantel's filtering antennas has the potential for rapid and significant growth. Admission to AIM will provide the funds for the Group to invest in new manufacturing capacity and to accelerate new product development. Furthermore, Admission is intended to help to enhance the Company's profile and position Sarantel as a major supplier of antenna technology to the wireless devices market worldwide.

Financial information

The following summary financial information has been extracted from the accountants' report on Sarantel as set out in Part VI of this document.

	Year ended 30 September 2002 £'000	*Year ended 30 September 2003 £'000*	*Year ended 30 September 2004 £'000*
Turnover	106	205	839
Cost of materials	(49)	(63)	(289)
Profit before other operating costs	57	142	550
Operating loss	(2,415)	(2,877)	(3,990)

Current trading and prospects

Since 30 September 2004, Sarantel has continued to trade in line with the Directors' expectations. The Directors are encouraged by the prospects due to the significantly increased level of orders received in the financial year to date and its new sales opportunities.

Details of the Placing

The Group will raise approximately £18.0 million (before expenses) through the issue of the Placing Shares at 82p per share.

DIRECTORS, SECRETARY AND ADVISERS

Directors	David Dey	*(Non-executive Chairman)*
	David Michael Wither	*(Chief Executive Officer)*
	Sitkow Yeung	*(Chief Financial Officer)*
	Dr Oliver Paul Leisten	*(Chief Technology Officer)*
	David Russell Ward	*(Non-executive Director)*
	All of:	
Registered Office	Unit 2 Wendel Point Ryle Drive Park Farm South Wellingborough NN8 6AQ	
Company Secretary	Sitkow Yeung	
Nominated Adviser and Broker	Arbuthnot Securities Limited Arbuthnot House 20 Ropemaker Street London EC2Y 9AR	
Solicitors to the Company	Pinsent Masons 3 Colmore Circus Birmingham B4 6BH	
Solicitors to the Nominated Adviser	Ashurst Broadwalk House 5 Appold Street London EC2A 2HA	
Registered Auditors	Grant Thornton UK LLP Grant Thornton House 202 Silbury Boulevard Central Milton Keynes MK9 1LW	
Reporting Accountants	Grant Thornton UK LLP Enterprise House 115 Edmund Street Birmingham B3 2HJ	
Registrars	Computershare Investor Services PLC PO Box 82 The Pavilions Bridgwater Road Bristol BS99 7NH	
Principal Bankers	National Westminster Bank PLC 501 Silbury Boulevard Saxon Gate East Milton Keynes MK9 3ER	
Financial Public Relations	Smithfield Consultants Limited 78 Cowcross Street London EC1M 6HE	

EXPECTED TIMETABLE OF PRINCIPAL EVENTS

Dealings in Existing Ordinary Shares and First Placing Shares commence on AIM	8.00 a.m. on 2 March 2005
CREST accounts credited with First Placing Shares	8.30 a.m. on 2 March 2005
Dealings in Second Placing Shares commence on AIM	8.00 a.m. on 3 March 2005
CREST accounts credited with Second Placing Shares	8.30 a.m. on 3 March 2005
Despatch of definitive share certificates in respect of the Placing Shares (where appropriate)	by 9 March 2005

PLACING STATISTICS

Placing Price	82p
Number of New Ordinary Shares being placed on behalf of the Company	21,951,220
Number of Ordinary Shares in issue immediately following Second Admission	52,754,693
Estimated net proceeds receivable by the Company	£16.7 million
Percentage of Enlarged Share Capital being placed pursuant to the Placing	41.6 per cent.
Market capitalisation of the Company at the Placing Price immediately following Second Admission	£43.3 million

PART I

Information on the Group

1. Introduction

Sarantel Limited (a wholly owned subsidiary of Sarantel Group PLC) was incorporated on 30 March 2000 and designs, manufactures and sells patented, ceramic, filtering antennas for use in portable wireless devices. Sarantel holds 11 core registered patents for its miniature dielectric loaded antennas, which the Directors believe offer significant performance advantages for users and manufacturers of such devices based on its groundbreaking technology. The antennas simplify system design, thus allowing design standardisation and reduced time to market and cost for manufacturers.

The Directors believe that data services based on GPS, Wi-Fi, 3G and Bluetooth platforms will be a key element in the future success of mobile network operators and device manufacturers. In this respect, Sarantel's filtering antennas are already playing a leading role in enabling the integration of GPS in mass-market mobile devices and PDAs. In addition, Sarantel's antennas have significantly increased the range and effective bandwidth of Wi-Fi devices. Sarantel's antennas are also expected by the Directors to become widely used in satellite radio. Sarantel is planning to commence high volume delivery of its antennas into the satellite radio market within the next 12 months.

Sarantel has supplied to more than 50 wireless device manufacturers and/or suppliers, and is working with top tier OEMs and ODMs in the development and application of Sarantel's GPS antenna. Sales are accelerating rapidly and, as a result, Sarantel now plans to expand significantly its manufacturing capacity in order to meet demand.

The Directors believe that the market for Sarantel's filtering antennas has the potential for rapid and significant growth. Admission to AIM will provide the funds for the Group to invest in new manufacturing capacity and to accelerate new product development. Furthermore, Admission is intended to help to enhance the Company's profile. The Directors intend to position Sarantel as a major supplier of antenna technology to the wireless devices market worldwide.

2. History and Background

The Company is a newly formed public limited company incorporated in England and Wales on 30 November 2004 as a vehicle to bring Sarantel to AIM. The Company acquired the entire issued share capital of Sarantel on 23 February 2005 in return for the issue of A Ordinary Shares to the then shareholders of Sarantel.

Sarantel was founded in 2000 when Oliver Leisten, the Company's Chief Technology Officer, led the acquisition of the UK dielectric antenna division of Symmetricom, Inc., a US company whose shares are quoted on NASDAQ. Funding was initially provided by 3i Group PLC and Foresight, and since Foresight's purchase of 3i Group PLC's investment in 2002, by investors led by Foresight and MTI Partners. These funds, amounting in aggregate to more than £14.0 million, have been invested primarily to develop the Group's technology, to equip and develop the existing manufacturing facility and to increase production volume to fulfil existing orders.

Sarantel designs and manufactures filtering antennas for use in portable wireless devices. Its current focus is on producing antennas for the GPS market. The Directors believe that the signal on conventional antennas, and consequently their performance, is generally adversely affected by being held close to the human body. The Group has developed a patented filtering antenna formed around a core ceramic material that is less affected by the body's presence allowing a much clearer signal. In addition, the clearer signal can enhance the battery life of the device in which the antenna is incorporated and, in the case of a mobile phone, reduce the amount of energy absorbed by the head by approximately 90 per cent.

Sarantel aims to become a high volume supplier of its differentiated and patented filtering antenna technology. Sarantel is targeting manufacturers of portable wireless electronic devices that serve high volume consumer markets. As with its current success in the GPS market, Sarantel intends to focus on emerging and fast-growing markets, including satellite radio, Wi-Fi and 3G, where the

Directors believe there is the greatest demand for its technology. Sarantel intends to increase its existing manufacturing capacity in order to meet demand. The Directors believe that the success in the execution of these plans should result in Sarantel becoming a leading supplier of antennas to the next generation of mass market mobile devices. In June 2004, Sarantel was identified by the European Tech Tour Association as one of the top 25 high growth privately held technology companies in the UK. Sarantel has now established itself as a supplier for multiple GPS specific consumer products, accessories, PDAs and asset tracking devices.

Protection of intellectual property is a critical element of Sarantel's competitive advantage and the Group has approximately 200 international filings in respect of 11 core patents. This has contributed to Sarantel being one of the first companies to exploit dielectrically loaded antenna technology. Further details of the Company's patents are contained in the section below headed "Intellectual Property" and in the report by Withers & Rogers set out in Part IV of this document.

3. Markets

GPS market

GPS is a radio navigation system using satellites that orbit the earth and is widely recognised as the best technology to supply location data for mobile devices. It is already widely used by the military and automotive markets and is being adopted in mass market electronic devices such as mobile phones and PDAs. This market is currently the Group's primary focus.

The market for GPS antennas is forecast to be entering a period of significant growth, with annual sales of GPS-enabled mobile handsets expected to grow from 21 million in 2003 to 150 million in 2009. Much of this growth will be driven by legislation, which the Directors believe will lead to GPS becoming standard in many mobile phones. The E911 legislation in the US requires mobile network operators to provide the location of anyone calling the 911 emergency number from a mobile phone. Network operators may use network or handset-based systems to meet this requirement. The handset-based solution currently requiring GPS has been adopted by network operators with an aggregate subscriber base in the US of 49 million. Consumer demand is also driving growth, with sales of GPS enabled navigation aids increasing.

According to ABI research, 20 million GPS-enabled mobile phone handsets were shipped in 2003. Network operators are looking to invest in GPS for location-based services, and the current available market is estimated to be 285 million subscribers worldwide. Semiconductor companies have driven down the cost and power requirements of GPS by making it an integral part of their chipset solutions. Sales of GPS-enabled mobile phones and PDAs are consequently forecast to grow from 20 million to approximately 240 million units per annum by 2009.

Historically, GPS-enabled mobile phones have used relatively low performance antennas that limit the effectiveness of the applications in terms of navigational accuracy and reliability. The Directors believe that Sarantel's product delivers a significant improvement in the performance of GPS receivers in comparison to conventional antennas and in many cases is easier to integrate with handsets. Trials conducted in association with a major handset OEM on the Nextel network have demonstrated that Sarantel's GPS antenna provides significant performance advantages over the conventional antenna solutions. Sarantel has also conducted tests on multiple GPS-enabled phones marketed in the US and believes that the majority do not reliably produce accurate location information due to poor antenna performance.

The Directors believe the better antenna performance will be key to enabling the growth to GPS applications in hand-held devices. Tests with a leading mobile phone OEM have demonstrated a significant reduction on its time to first fix using Sarantel's antenna.

Satellite radio market

Satellite radio, which is regulated in the US by the FCC, has the distinct advantage over traditional radio enabling a customer to listen to the same station across the US without retuning. In 1997, the FCC awarded licences to two companies, namely CD Radio (now known as Sirius Satellite Radio) and American Mobile Radio (now called XM Satellite Radio). Each company paid in excess of $80 million to use space in the S-band allocated by the FCC specifically for digital satellite transmission. Research suggests that XM Satellite Radio and Sirius Satellite Radio could have more than 42 million subscribers by the end of 2009.

Sarantel has already been commissioned to provide prototype products for the satellite radio market and on the basis of customer response Sarantel is planning to commence high volume delivery of its antennas within 12 months. The Directors believe that the satellite radio market will achieve dramatic growth in the coming years.

Wi-Fi market

Wi-Fi is widely used in laptops, PDAs and desktop PCs and the Directors believe it is on the verge of widespread adoption in mobile phones. Wi-Fi is already being used in 50 million mobile devices and the market for Wi-Fi units is expected to increase to 375 million units per annum by 2007. The Directors believe that Wi-Fi networks can become a viable alternative to the traditional wired computer networks, if Wi-Fi characteristics of range and bandwidth can be improved. Sarantel's antennas have been proven to significantly enhance both Wi-Fi range and bandwidth, with immunity to interference when compared with incumbent technologies, meaning they can be fitted in small devices next to GSM/CDMA radios and other "noisy" components. The Directors believe that this will accelerate the deployment of voice over internet protocol on Wi-Fi enabled devices.

Independent tests have demonstrated that Sarantel's Wi-Fi antenna significantly improved the range and signal strength of a Lucent Orinoco Wi-Fi PCMCIA card when compared to the existing antenna solution.

3G market

Despite the slow implementation of 3G to date, the Directors anticipate that this market will expand dramatically over the next few years, with the majority of mobile devices expected to be 3G-enabled by 2009. In the UK much of this growth will be driven by the requirement for 3G licence holders to be able to reach no less than 80 per cent. of the UK population by the end of 2007.

Low battery life is considered a major problem for users of 3G-enabled mobile devices. Sarantel's antennas have greater in-use power efficiency than conventional antennas and could, therefore, have the potential to offer longer battery life for 3G phones and/or mobile devices.

Bluetooth market

As uptake of Bluetooth technology continues to grow, opportunities are emerging to differentiate devices by improving reception. Sarantel's Wi-Fi antenna also supports Bluetooth applications as the frequency bands are the same.

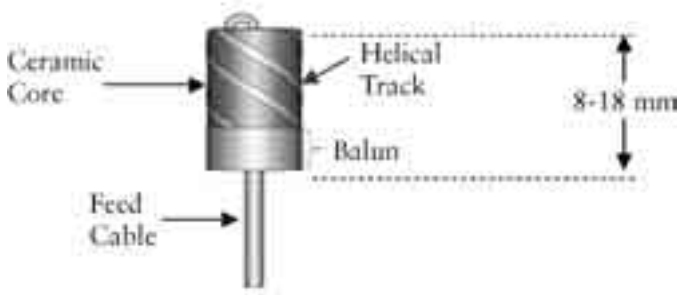
Market summary

All these market opportunities have the potential to contribute significantly to the medium to long term growth of Sarantel.

Further details of the Group's markets are contained in the technical expert's report on the activities of the Group by PA Strategy Partners Limited set out in Part III of this document.

4. Technology

Sarantel's filtering antennas comprise one or more helical copper tracks on a high dielectric ceramic core with an insulating balun at the base and a feed cable connector. The core antenna is illustrated in the diagram below:



Conventional antennas, used in mobile devices, suffer low in-use efficiency and de-tuning in the presence of the human body. They are also highly susceptible to interference from nearby components. For the user, the consequences are reduced battery life, poor reception and excessive emission of heat radiation. The Directors understand that manufacturers endure a relatively long lead time to bring a product to market as well as complex sourcing because each new antenna requires extensive development work and design compromise. Each mobile device design is unique, so antennas differ across devices, increasing sourcing costs and risk. As devices get smaller, their problems intensify, whilst adding GPS, Wi-Fi or Bluetooth to a mobile device compounds these problems still further.

In contrast, Sarantel's technology enhances performance for the user and, as its core antenna can be used in multiple device designs, it can transform the antenna into a standardised component. This shortens the device design cycle and thus time to market.

The Directors believe Sarantel's technology offers five key advantages over conventional antennas:

Small near-field

Conventional antennas have a near-field of energy that is typically around one metre in diameter. During the use of a mobile phone or PDA, the user's body comes into contact with the near-field and the antenna's energy drains into the user, significantly weakening reception. The tuning of the antenna is also changed. For GPS in a mobile phone or other mobile device, the performance degradation is usually so significant that location finding may become unreliable. Sarantel's patented antennas use a ceramic core to shrink the near-field to only a few millimetres in diameter. This results in less interference and dramatically improves performance. The Directors believe small near-field advantage is a critical element to achieving high performance Wi-Fi.

Isolation from interference

Conventional antennas collect noise generated by oscillators and other electronic components in the same device. For a designer creating a highly integrated wireless handheld device, this interference is a major problem because it reduces performance. Sarantel's antenna technology is electronically isolated from other components and therefore avoids collecting the noise generated by those components. This isolation rests on two features: the antenna is a balanced di-pole that does not rely on the PCB to function; and the integrated balun acts as a trap that rejects electronic interference from other devices present on the PCB. These features enable the Sarantel antenna to be co-located with other antennas and integrated in close proximity to DSPs, MP3 players, CMOS cameras and other sensitive or noisy components.

Omni-directional

Conventional patch antennas tend to be sensitive to the design of the mobile device and its orientation and therefore in certain circumstances only "see" satellites if the user holds the mobile device in a relatively narrow range of positions. Conventional antennas are susceptible to nulls or gaps in the signal pattern that result in poor performance. As Sarantel's antenna is independent of the device, it is less sensitive to its orientation, which is a major advantage in hand-held devices.

No ground plane required

Conventional antennas require relatively large ground planes, thereby using space that is scarce in mobile devices. Sarantel's antenna does not require a ground plane, and therefore has a much smaller overall space requirement, reducing the size requirement of the device. This is an increasingly important attribute in mobile devices as integration levels increase.

Filtering response

Conventional antennas have very broad frequency responses to accommodate the de-tuning caused by biological loading that occurs when the user holds the product. Sarantel's antennas do not de-tune in this way and are also designed for sharp filtering responses, thereby reducing interference and will obviate the need for certain discrete filter components.

Conventional antennas

The conventional antennas tend to be: patch, PIFA, quadrifilar helix or whip-type antennas, which are described in further detail below:

(a) *Patch antennas*

Patch antennas typically comprise of two flat metal plates separated by a layer of ceramic. The plates must be approximately 30 millimetres square in order to achieve acceptable GPS reception. The size of this type of GPS antenna rules them out of most mobile device designs. Patch equipped devices must either be held horizontally in use or have the antenna attached by a hinge, making the device less user friendly.

(b) *PIFA antennas*

PIFA antennas are widely used to carry voice signals in mobile phones. Although the antenna itself is relatively small, it works by using the entire volume of the device's PCB as an integral part of the receiver. In the user's hand, most of the antenna's energy is absorbed into the body. As a result, performance may be reduced to a point where PIFA antennas are not sensitive enough to provide effective GPS reception. Many current Wi-Fi enabled hand-held devices use PIFA antennas and as a result, in such devices, performance is reduced in terms of range and bandwidth.

Laptop designers tend to locate the PIFA antennas at different positions around the screen for isolation, in order to achieve acceptable levels of performance. The antennas are then connected to the system using coaxial cables. This adds cost and complexity to the assembly process and can affect realiability when used.

(c) *Quadrifilar helix antennas*

Quadrifilar helix antennas comprise a metal double spiral similar in shape to Sarantel's plated copper tracks, but without the ceramic core. For effective GPS reception, such antennas need to be quite large. Conventional quadrifilar helix antennas are not used in mobile phones, PDAs or similar devices.

(d) *Whip-type antennas*

Whip-type antennas were widely used for voice communications on earlier mobile phones and in some designs are also used for GPS reception. When the device is in the user's hand, the large near-field of a whip antenna results in loss of efficiency. The Directors do not believe such devices provide acceptable GPS performance.

5. Product Development

Sarantel has created a number of powerful tools that it uses during the product development process. The Group has created a software tool that links inputs from a computer model of the antenna to a standard CAD/CAM package. This CAD/CAM file is then transferred to a rapid-prototyping machine that can produce a prototype antenna within minutes. This resource was installed in 2003 and has enabled Sarantel to iterate new designs and to provide prototype antennas for new applications. Sarantel has used the rapid-prototype machine to make significant advances in its satellite radio, Wi-Fi, 3G and, previously, GSM applications.

Sarantel has two key near-term technology development objectives.

First, the cost of the feed-cable that is common to all Sarantel antennas can be reduced significantly through re-design and outsourcing. Feed-cable assembly is currently carried out in-house. The new feed system design is expected to reduce the complexity of the production process, improve production yields and increase the consistency of its antennas.

Secondly, Sarantel has begun work on a design that aims to significantly reduce the size and weight of the GPS antenna without any compromise in performance. If successful, this design technique could be applied to all of Sarantel's existing antennas.

Considerable interaction exists between the technical and development expertise and the manufacturing process.

6. Manufacturing

Sarantel operates a highly-automated manufacturing process designed specifically for its antennas. The process combines electro-chemical plating techniques adapted from the PCB manufacturing industry with laser-imaging equipment and tuning software developed by Sarantel. The Directors are not aware of any other manufacturer worldwide operating a similar 3D-photolithographic process.

Ownership of the manufacturing process is a key element of Sarantel's strategy. Sarantel has developed considerable intellectual property in the manufacturing process. Sarantel outsources certain final assembly operations to Hungary and China. Sarantel's manufacturing strategy differentiates the Company from most other emerging antenna companies, which follow a licensing strategy. The Directors believe that Sarantel's manufacturing strategy is consistent with its aim to build Sarantel into a world-leading supplier of antennas.

Sarantel's manufacturing plant is located in Wellingborough, UK within a 20,000 square foot facility. The plant is currently equipped to produce approximately 60,000 antenna elements per month. Capacity has increased significantly over the past 12 months as a result of successful yield improvement programmes and integration of improved laser source technology. Sarantel has ordered additional equipment for delivery in March 2005. This equipment will be accommodated in the existing facility and will increase capacity to approximately 230,000 units per month. Sarantel plans to establish a second manufacturing plant to provide the next step-up in capacity, planned for 2006.

7. Intellectual Property

The Directors believe that the strength of protection of Sarantel's antennas via its patents results in key competitive advantages.

Sarantel's approach is to file an initial broad claim and subsequently undertake a more thorough review to protect any improvements and application-specific features. The Directors believe the quality of its intellectual property portfolio is key to underpinning the Group's future growth. Sarantel does not license any third party intellectual property for use in its antennas.

Sarantel currently owns 11 core patents and has made approximately 200 international filings. Sarantel continues to expand its intellectual property portfolio and is adding filings in further territories to those already held in the Pacific Rim, South Asia, Europe, the North American Free Trade Area and South America.

The core patents relate to inventions that are associated with:

- the depositing of a three-dimensional pattern on a dielectric core with a relative dielectric constant of greater than 5;
- the shape and the structure of the balun; and
- the method of connecting the device to the antenna with a co-axial cable.

The Directors strongly believe that Sarantel's patents are capable of being defended.

Further details of the patents owned or applied for by the Group are set out in the Intellectual Property Report by Withers & Rogers set out in Part IV of this document. Your attention is also drawn to the section entitled "Intellectual property" set out in "Risk Factors" in Part II of this document.

8. Sales and Marketing

Sarantel sells directly and through a network of distributors to large OEMs. Sarantel currently employs four executives located in the three main territorial regions of Asia, Europe and the US with responsibility for direct sales. Direct sales are a key focus of Sarantel's marketing strategy and following Admission, the Group plans to devote further resource to this area by increasing direct sales staff numbers.

Sarantel also has partner relationships with chipset and module manufacturers that market Sarantel antennas to facilitate their own sales. These relationships generate new business opportunities and result in Sarantel's antennas being designed into certain reference platforms. Its network of relationships is expanding and moving from smaller niche players to worldwide organisations.

9. Competition

For the reasons already outlined, the Directors believe that Sarantel's filtering antennas offer superior performance compared to conventional antennas, providing the opportunity to displace conventional antennas in Sarantel's markets. The increasing number of enquiries from potential customers received by Sarantel leads the Directors to believe many mobile device OEMs and designers are seeking to improve their products with better antennas. The Directors are aware that a number of early stage businesses have developed innovative antennas for mobile devices but the Directors are not aware of any such businesses offering directly competitive products in Sarantel's core GPS market. The Directors understand that the technologies of these companies are currently focussed on the voice applications market.

Further details on competition are contained in the technical experts' report by PA Strategy Limited set out in Part III of this document and in "Risk Factors" in Part II of this document.

10. Summary Financial Information

The following summary of the financial information of Sarantel for the three financial years ended 30 September 2004 has been extracted from the accountants' report on Sarantel as set out in Part VI of this document. Investors should read the whole of this document and should not rely solely on the key or summarised information set out below.

	Year ended 30 September 2002 £'000	*Year ended 30 September 2003 £'000*	*Year ended 30 September 2004 £'000*
Turnover	106	205	839
Cost of materials	(49)	(63)	(289)
Profit before other operating costs	57	142	550
Operating loss	(2,415)	(2,877)	(3,990)

Turnover for the financial year ended 30 September 2004 rose by approximately 300 per cent. to £0.84 million from £0.21 million in the financial year ended 30 September 2003 (2002: £0.1 million). The increase in turnover over the three financial years ended 30 September 2004 reflects the Group's evolution over this period from a research and development-led company to a selling and manufacturing company.

11. Current Trading and Prospects

Since 30 September 2004, the date to which the last audited accounts for Sarantel were prepared, Sarantel has continued to trade in line with the Directors' expectations. Manufacturing output has been significantly increased to meet demand from customers.

The Board views the future prospects of the Group with confidence. The Directors are encouraged by the trading prospects for the Group due to the significantly increased level of orders received in the financial year to date and its new sales opportunities.

The Board is confident that following Admission, the Group will be better positioned to take advantage of the growing opportunities in its target markets. Furthermore, Admission of the Ordinary Shares to AIM should lead to increased awareness of the Group and its activities which the Directors believe will create further opportunities.

12. Reasons for Admission and Use of Proceeds

The reasons for Admission include the following:

- to provide the Group with additional capital to finance future growth;

- to position Sarantel as a major supplier of antenna technology to the wireless devices market worldwide;
- to provide the Group with access to a wider range of investors;
- to assist in recruiting, retaining and incentivising key employees; and
- to raise the overall profile of Sarantel.

The proceeds of the Placing, net of the total anticipated costs and expenses of Placing and Admission, receivable by the Company are approximately £16.7 million. The net proceeds will be applied principally as follows:

- to further increase manufacturing capacity and further automate the processs;
- to fit out a second production facility to meet demand;
- to fund working capital;
- to invest in IT infrastructure and systems; and
- to increase sales and marketing activities.

13. Details of the Placing

The Company is proposing to raise approximately £10.0 million through a conditional placing by Arbuthnot of the First Placing Shares at 82 pence per share. In addition, the Company is proposing to raise approximately £8.0 million through a conditional placing by Arbuthnot of the Second Placing Shares, also at 82 pence per share.

Under the Placing Agreement, Arbuthnot has agreed to use its reasonable endeavours to procure subscribers for the Placing Shares at the Placing Price and has conditionally placed all of these shares at the Placing Price with institutional and other investors. The obligations of Arbuthnot under the Placing Agreement are conditional upon, *inter alia*, First Admission taking place by 8.00 a.m. on 2 March 2005 (or such later date, being not later than 8.00 a.m. on 30 March 2005, as the Company and Arbuthnot may agree) and Second Admission taking place by 8.00 a.m. on 3 March 2005 (or such later date, being no later than 8.00 a.m. on 30 March 2005, as the Company and Arbuthnot may agree).

The Placing Agreement contains provisions entitling Arbuthnot to terminate the Placing Agreement at any time prior to First Admission in certain circumstances. If this right is exercised, the First Placing and the Second Placing will lapse. The Placing Agreement contains provisions entitling Arbuthnot to terminate its obligations in respect of the Second Placing where certain circumstances arise after the First Placing and prior to the Second Placing. The First Placing is not dependent upon the Second Placing occurring. However the Second Placing cannot occur unless the First Placing has occurred.

The Placing has been underwritten by Arbuthnot.

The Placing is expected to raise approximately £18.0 million before expenses. The Placing Shares will represent approximately 41.6 per cent. of the Enlarged Share Capital. On Second Admission, at the Placing Price, the Company will have a market capitalisation of approximately £43.3 million.

The Placing of New Ordinary Shares will take place in two tranches:

(a) the First Placing amounting to £10.0 million; and

(b) the Second Placing amounting to £8.0 million.

The Company has applied to the Inland Revenue for, and received, provisional clearance that the First Placing Shares will (depending on an investor's particular circumstances) constitute qualifying holdings for VCT purposes and eligible shares for EIS purposes. VCT investors and investors seeking EIS relief should take their own advice and are referred to paragraph 21 below.

Further details of the Placing Agreement are set out in paragraph 9 of Part VII of this document.

Further details of the Company's issued share capital following Second Admission are set out in paragraph 21 below.

14. Lock-in Arrangements

Each of the Directors, who holds or who is interested in Ordinary Shares, and the Covenantors, have entered into share restriction deeds in respect of all or some of their shareholdings, the terms of which are described more fully in paragraph 9 of Part VII of this document.

Under the terms of the Placing Agreement, the Directors have agreed not to sell, transfer or otherwise dispose of any interest in any Ordinary Shares held by them immediately following Second Admission, other than in certain specified circumstances, for a period of 36 months following Admission, although one-third of such shares cease to be restricted on the first anniversary of First Admission and a further one-third on the second anniversary of First Admission.

The Covenantors have agreed not to sell, transfer or otherwise dispose of any interest in any Ordinary Shares held by them immediately following Second Admission (save for any Placing Shares), other than in certain specified circumstances for a period of 12 months following First Admission.

After the expiry of the relevant periods, the Directors and the Covenators have agreed that any sale or disposal of Ordinary Shares will be effected through Arbuthnot for such time as it remains the Company's broker.

The lock-in arrangements outlined above will apply in respect of 26,880,662 Ordinary Shares representing approximately 51.0 per cent. of the Enlarged Share Capital.

15. Directors, Senior Management and Employees

The Board comprises three executive Directors and two non-executive Directors all of whom were appointed to such Board on 4 February 2005.

Directors

David Dey, *Non-executive Chairman,* aged 67. David was appointed to the board of Sarantel in June 2003 and has over 30 years' experience in telecoms and technology companies, having worked at senior levels in companies such as British Telecom, Energis, IBM and Plessey. Recently, he has been executive Chairman of a number of early stage ventures such as Alpha Telecom Communications Limited and Neos Networks Limited**.** He is currently a director of Murray Extra Return Investment Trust PLC.

David Wither, *Chief Executive Officer,* aged 40. David was appointed to the board of Sarantel in January 2004 and has assumed primary responsibility for accelerating the Company's sales into high volume mobile device manufacturers. From 1998 to 2003 he was a director at RF Micro Devices Inc. with responsibility for European sales and the Bluetooth product line. Previously he worked for Baxter Healthcare Inc.. He holds a Master of Science degree in Engineering Management and spent 7 years as an officer with the US Army Corps of Engineers.

Sitkow Yeung, *Chief Financial Officer,* aged 47. Sitkow, who is a chartered accountant, and has over 20 years' experience of working in high growth technology companies, joined Sarantel in May 2004, and was subsequently appointed to the board of Sarantel in January 2005. Sitkow was a divisional finance director of Ericsson Telecommunications Limited until 1997 when he became the Controller, Western Europe, for Ericsson's mobile systems business. He subsequently worked as regional director for Ericsson in the Asia-Pacific region and more recently, has held senior finance roles at a number of venture capital-backed private technology companies.

Dr. Oliver Leisten, *Chief Technology Officer,* aged 44. Oliver founded the Group in September 2000 and has 25 years' experience in the radio communications industry. He is responsible for the development of 11 patents for miniature dielectric loaded antennas, which form the existing intellectual property rights owned by Sarantel. Previously, Oliver was chief technologist at Symmetricom Limited, responsible for leading a team of specialist radio systems and design engineers. He trained with Philips Research Laboratories and has held a number of engineering appointments with Plessey Avionics and Communications and GEC.

David Ward, *Non-executive Director,* aged 37. David, who joined the board of Sarantel in February 2003, is a partner at MTI Partners, the private equity firm, which has provided significant funding for Sarantel, where he has worked since 1999. Previously he was a director of Calder Aluminium Limited, EMP Technologies Limited, iBase Image Systems Limited and Phocis Limited

The Board recognises that its composition should comply, as far as reasonably practicable with the provisions of the Combined Code. To this end, the Board recognises the need to recruit an additional non-executive director as soon as reasonably practicable following Admission.

Senior Management

Bill Taylor, *Chief Operating Officer,* aged 44. Bill joined Sarantel in January 2005. He has over 25 years' experience in electronics manufacturing, with a particular emphasis on managing high growth, high volume environments. He joined Sarantel from Jabil Circuit Inc., a major electronic contract manufacturer, where he was senior director of operations in Europe and was responsible for multiple European sites supplying blue-chip OEMs, such as Nokia, Philips and Alcatel. Previously, he had been director of logistics and fulfilment at Motorola between 1993 and 2001.

Andrew Christie, *Director of Engineering,* aged 36. Andrew joined Sarantel in January 2005 and leads the development and applications engineering teams. Previously, he held a similar role at RF Micro Devices Inc., where he was responsible for establishing the development processes as the company grew into the world's largest power amplifier provider. Andrew has worked with all major handset manufacturers and original device manufacturers to develop power amplifiers for all major wireless standards.

Employees

As at 30 September 2004, Sarantel's most recent financial year end, Sarantel had 44 employees (excluding Directors). Employees can be analysed as follows:

	No. of employees
Head office	11
Sales & marketing	3
Technical	3
Operations	27
Total	44

16. Share Incentive Schemes

The Group has operated employee share incentive arrangements since 2000 and is committed to using equity incentives to align the interests of shareholders with those of employees, as well as to attract and retain high calibre employees. After Admission, employees may continue to hold options under the 2000 Scheme (details of which are set out in paragraph 3 of Part VII of this document) which were "rolled over" into options over shares in the Company prior to Admission.

The Company has obtained shareholder approval for the establishment of a new employee share option scheme on substantially the same terms as the 2000 Scheme (the principal features of which are set out in paragraph 3.2 of Part VII of this document) on 22 February 2005.

The Directors have determined that after Admission, options under the new scheme may be granted to selected key employees and/or new joiners of the Group over a maximum of 2.5 per cent. of the issued share capital of the Company as at the date of Admission.

17. Admission, Settlement and CREST

Application has been made to the London Stock Exchange for all the Ordinary Shares to be admitted to trading on AIM.

The Articles permit the Company to issue shares in uncertificated form in accordance with the CREST Regulations. CREST is a computerised paperless share transfer and settlement system which allows shares and other securities, including depository interests, to be held in electronic rather than paper form. Application has been made by the Company's Registrar and transfer agent for the issued and the to be issued Ordinary Shares to be admitted to CREST with effect from First Admission or Second Admission (as appropriate) and CREST has agreed to such admission.

Accordingly, settlement of transactions in the Ordinary Shares following First Admission and/or Second Admission (as appropriate) may take place within CREST if the individual Shareholders so wish. CREST is a voluntary system and Shareholders who wish to receive and retain share certificates will be able to do so.

It is expected that share certificates for First Placing Shares to be held in certificated form will be despatched by the Company's registrars no later than 9 March 2005 and First Placing Shares to be held in uncertificated form will be credited to CREST stock accounts by 8.30 a.m. on 2 March 2005.

It is expected that share certificates for Second Placing Shares to be held in certificated form will be despatched by the Company's registrars no later than 9 March 2005 and Second Placing Shares to be held in uncertificated form will be credited to CREST stock accounts by 8.30 a.m. on 3 March 2005.

18. Corporate Governance and Share Dealing Code

The Directors recognise the importance of sound corporate governance, whilst taking into account the size and nature of the Company. The Directors intend to comply with the main provisions of the Combined Code on Corporate Governance and Code of Best Practice as appended to the existing listing rules of the UKLA, in so far as possible and appropriate given the Company's size and the constitution of the Board.

The Company will hold at least 10 board meetings throughout the year. The Board is responsible for formulating, reviewing and approving the Company's strategy, budgets, major items of capital expenditure and acquisitions.

An audit committee has been established. It will meet at least twice each year and be responsible for ensuring that the financial performance of the Company is properly reported on and monitored and for meeting the auditors and reviewing the reports from the auditors relating to accounts and internal control systems. It will meet once a year with the auditors without executive board members present. The audit committee comprises non-executive Directors of the Company and is chaired by David Dey.

A remuneration committee has been established. It will review the performance of the executive Directors and will set and review the scale and structure of their remuneration and the basis of their remuneration and the terms of their service agreements with due regard to the interests of Shareholders. In determining the remuneration of executive Directors, the remuneration committee will seek to enable the Company to attract and retain executives of the highest calibre. The remuneration committee will also make recommendations to the Board concerning the allocation of share options to employees. No Director will be permitted to participate in discussions or decisions concerning his own remuneration. The remuneration committee comprises non-executive Directors and is chaired by David Ward.

The Company has adopted a model code for Directors' and key employee share dealings which is appropriate for an AIM quoted company. The Directors will comply with Rule 19 of the AIM Rules relating to Directors' dealings and will take all reasonable steps to ensure compliance by the Group's applicable employees as well.

19. Dividend Policy

The Directors currently intend to apply the Company's cash resources to invest in the growth of its operations and therefore do not anticipate paying dividends in the near future. They will reconsider the Company's dividend policy as and when the Company is in a position to pay dividends. The declaration and payment by the Company of any dividends will depend on the results of the Group's operations, its financial condition, cash requirements, future prospects, profits available for distribution and other factors deemed to be relevant at the time.

20. Group Reorganisation

In preparation for the admission of the Company's shares to trading on AIM, resolutions were passed on 23 February 2005 to create one class of shares in Sarantel having a nominal value of 10p each and a share for share agreement (more particularly described in paragraph 8 of Part VII of this document) was entered into on 23 February 2005 in order to insert the Company as the new holding company of the Group.

21. Share Capital Structure

The A Ordinary Shares to be issued under the Placing will, on Admission, rank *pari passu* in all respects with the existing A Ordinary Shares in issue, including the right to receive all dividends and other distributions thereafter declared, made or paid in respect of the ordinary share capital of the Company. Prior to the First Placing there will be no B Ordinary Shares in issue. The B Ordinary Shares to be issued under the First Placing will, on First Admission, rank *pari passu* in all respects with existing A Ordinary Shares in issue, including the right to receive all dividends and other distributions thereafter declared, made or paid in respect of the ordinary share capital of the Company, save that the subscribers for B Ordinary Shares shall only be entitled to receive 10 clear days' notice from the directors requiring payment of any moneys unpaid on their shares whereas the holders of A Ordinary Shares are entitled to 14 clear days' notice. However the Existing Ordinary Shares and all the Placing Shares will be issued fully paid and cannot therefore be subject to a call.

22. Taxation

The attention of investors is drawn to the further information regarding taxation set out in paragraph 13 of Part VII of this document. These details are, however, intended only as a general guide to the current tax position under UK taxation law.

Enterprise Investment Scheme ("EIS")

Provided that the investor and the Company comply with the EIS legislation (Chapter III of Part VII of the Income and Corporation Taxes Act 1988 and Sections 150A-D, Schedule 5B and 5BA of the Taxation of Chargeable Gains Act 1992), which includes a requirement that the Ordinary Shares are held by investors for three years, UK taxpayers should qualify for EIS relief on their investment in new issue shares in the Company.

The Directors have obtained confirmation from the Inland Revenue, in accordance with Inland Revenue practice, that subject to a form EIS1 being submitted, an investment under the First Placing by an individual (depending on such individual's particular circumstances) should qualify for EIS relief. The Directors intend to manage the Company so as to maintain (as far as they are able) such relief for investors although no guarantee can be given in this regard. Subsequent conditions placed on the Company may affect any EIS relief obtained by investors.

There are five EIS tax reliefs being:

(i) *Income tax relief*

Individuals can obtain income tax relief on the amount subscribed for ordinary shares (up to £200,000 in 2004-2005) in one or more qualifying companies, which are retained for a period of three years, provided the individuals are not connected to the issuing Company. A tax credit of 20 per cent. of the eligible amount subscribed is given. The credit is given against the individual's income tax liability for the tax year in which the ordinary shares are issued although it is possible to carry back up to one half of the amount invested, subject to a maximum of £25,000 to the preceding tax year where ordinary shares are issued before 6 October in any tax year. The relief will be limited to an individual's tax liability before EIS relief and cannot create a loss. EIS income tax relief is not available for individuals who own more than 30 per cent. of the issued share capital of the Company and certain other connected individuals.

(ii) *Capital gains tax ("CGT") exemption*

Any capital gains realised on the disposal, after three years, of ordinary shares on which EIS income tax relief has been given and not withdrawn are tax-free. This is not available for individuals who own more than 30 per cent. of the issued share capital of the Company and certain other connected individuals.

(iii) *Loss relief*

Subject to certain conditions, tax relief is available for a qualifying shareholder who realises a loss on a disposal of ordinary shares on which EIS income tax relief (see (i) above) has been given and not withdrawn or CGT deferral relief (see (iv) below) has been given and not

withdrawn. The amount of the loss (after taking account of the income tax relief initially obtained) can be set against a qualifying gain in the year of loss or following years or offset against taxable income in the tax year in which the disposal occurs or the preceding year.

(iv) *Capital gains tax liability/deferral*

To the extent that a UK resident investing ordinary shareholder (which includes individuals and certain trustees) subscribes for qualifying ordinary shares, it can claim to defer all or part of a chargeable gain arising on the disposal of any asset. Although there is a limit of £200,000 for income tax relief and the exemption from CGT (see (i) and (ii) above), there is no limit on the amount of gains that can be deferred in this way. The subscription must have been made within one year before or three years after the date of the disposal which gave rise to the gain or the date when a previously deferred gain crystallises. The gain is deferred until there is a "chargeable event" such as the disposal of ordinary shares after the three year qualifying period. If the investing ordinary shareholder does not retain the ordinary shares for three years or the EIS rules are otherwise breached, the CGT deferral originally granted will be withdrawn and tax charged based on a taxable event occurring at the date the rules cease to be met or, in certain instances, by reference to the normal payment date.

(v) *Serial EIS investor relief*

Investors who defer a chargeable gain on the disposal of an EIS investment by reinvesting the proceeds of the original EIS investment in ordinary shares of another EIS Company may benefit from capital gains tax taper relief on a cumulative basis. In these circumstances, taper relief, which reduces the amount of a chargeable gain according to how long an asset has been held after 5 April 1998, will be calculated over the combined period for which both investments (and further investments if the gain is further deferred) are held. This relief applies where the ordinary shares in the first EIS Company were issued after 5 April 1998 and are disposed of after 5 April 1999.

Whilst the Company cannot guarantee to conduct its activities in a way to allow it to maintain its status as a qualifying EIS investment, the Directors intend, as far as possible, to do so.

VCT

The Company has received advance assurance from the Inland Revenue, in accordance with Inland Revenue practice, that an investment by a VCT under the First Placing (depending on the VCT's particular circumstances) should constitute a qualifying holding for VCT purposes.

The Directors intend to manage the Company so as to maintain (as far as they are able) qualifying holding status for VCT investments although no guarantee can be given in this regard. Subsequent conditions placed on the Company may affect the qualifying holding status of any such investment.

Income Tax

Under the current UK taxation legislation, no withholding tax will be deducted from dividends paid by the Company.

An individual UK resident Shareholder is generally entitled to a tax credit in respect of the dividend, which he can set of against his total liability to UK income tax. The amount of the tax credit is equal to ⅑th of the cash dividend. The cash dividend aggregated with the amount of the tax credit (the "gross dividend") will be included in the Shareholder's income for UK tax purposes and will be treated as the top slice of the Shareholder's income. Thus, a Shareholder receiving a dividend of £90 will be treated as having received income of £100 which has a tax credit of £10 attached to it.

An individual UK resident Shareholder who, after taking into account the gross dividend, pays income tax at the lower rate or basic rate will pay tax on the gross dividend at the Schedule F ordinary rate of 10 per cent. against which he can set the tax credit. Such a Shareholder will have no further liability to account for income tax on the dividend.

An individual UK resident Shareholder who, after taking into account the gross dividend, pays income tax at the higher rate will pay tax on the gross dividend at the Schedule F upper rate of 32.5 per cent. against which he can set the tax credit. Such a Shareholder will have a liability to account

for additional tax on the gross dividend, calculated by multiplying the gross dividend by the Schedule F upper rate and deducting the tax credit. This will be equivalent to 25 per cent. of the cash dividend received.

An individual UK resident Shareholder who does not pay income tax or whose liability to income tax does not exceed the amount of the tax credit will not be entitled to claim repayment of the tax credit attaching to the dividend.

With certain exceptions for traders in securities, a holder of Ordinary Shares that is a company resident (for taxation purposes) in the UK and receives a dividend paid by the Company will not be subject to tax in respect of the dividend.

Subject to certain exemptions for Commonwealth citizens, residents of the Isle of Man or the Channel Islands, nationals of any state which is party to the European Economic Area agreement and certain others, the right of a holder of Ordinary Shares who is not resident (for tax purposes) in the UK to a tax credit in respect of a dividend received from the Company and to claim payment of any part of that tax credit will depend on the existence and terms of a relevant double tax convention concluded with the UK. However, following the reduction in the rate of tax credit on all distributions of UK companies, Shareholders are unlikely to be entitled to any payment from the Inland Revenue. Holders who are not resident in the UK should consult their own tax advisers concerning their liabilities on dividends received, whether they are entitled to claim any part of the tax credit and, if so, the procedure for so doing.

Stamp Duty

No UK stamp duty will be payable on the issue by the Company of Ordinary Shares. Transfers of Ordinary Shares for value will give rise to a liability to UK ad valorem stamp duty, or stamp duty reserve tax, at the rate in each case of 50p per £100 of the amount or value of the consideration (rounded up in the case of stamp duty to the nearest £5). Transfers under the CREST system for paperless transfers of shares will generally be liable to stamp duty reserve tax.

23. Risk Factors

The Group's business is dependent on many factors and potential investors are advised to read the whole of this document, and in particular Part II entitled "Risk Factors".

24. Further Information

The attention of investors is drawn to the information contained in the remainder of this document.

PART II

Risk Factors

An investment in the Ordinary Shares involves a high degree of risk. Accordingly, prospective investors should carefully consider the specific risk factors set out below in addition to the other information contained in this document before investing in the Ordinary Shares. The Directors consider the following risks and other factors to be the most significant for potential investors in the Company, but the risks listed do not necessarily comprise all those associated with an investment in the Company and are not set out in any particular order of priority. Additional risks and uncertainties not currently known to the Directors may also have an adverse effect on the Group's business.

If any of the following risks actually occur, the Group's business, financial condition, capital resources, results or future operations could be materially adversely affected. In such a case, the price of the Ordinary Shares could decline and investors may lose all or part of their investment.

Intellectual property

The commercial success of the Group depends in part on its ability to protect its intellectual property and to preserve the confidentiality of its own and its collaborators' know-how. No assurance is given that the Group will be able to protect and preserve its intellectual property rights or to exclude competitors with similar technology or products. Substantial costs may be incurred if the Group is required to defend its intellectual property rights including any patents and trade marks against third parties. There is no assurance that obligations to maintain the Group's or its collaborators' know-how will not be breached or otherwise become known in a manner which provides the Group with no recourse. The commercial success of the Group may also depend in part on non-infringement by the Group of intellectual property owned by third parties including compliance by the Group with the terms of any licences granted to it. If this is the case, the Group may have to obtain appropriate intellectual property licences or cease and/or alter certain activities or processes or develop or obtain alternative technology.

Markets and competition

The market in which the Group operates is competitive and may become more competitive. It is possible that developments by others will render the Group's current and proposed products and services obsolete.

The Directors believe that they have been successful in the markets they have targetted. Although the Directors believe that the Group will continue to compete favourably in these markets, there can be no assurance that the Group can maintain its competitive position against current and any potential competitors, especially those with greater financial, marketing, service, support, technical and other resources.

The Directors believe that the market for the Group's products and services will continue to grow, however, there can be no assurance that growth in the market for its products and services will occur at the rate envisaged by the Directors.

The Company may need access to additional capital in the future

The Group's capital requirements depend on numerous factors, including the rate of market acceptance of the Group's products and its ability to expand its customer base. If its capital requirements vary materially from its current plans, the Company may require further financing. Any additional equity financing may be dilutive to Shareholders, and debt financing, if available, may involve restrictions on financing and operating activities. In addition, there can be no assurance that the Company will be able to raise additional funds when needed or that such funds will be available on terms favourable to the Company. If the Company is unable to obtain additional financing as needed, the Group may be required to reduce the scope of its operations or anticipated expansion or to cease trading.

Key management and staff

The Group is dependent on certain key executives and personnel for its success. There can be no guarantee that it will be able to retain the services of key employees. In addition, the Group may find it difficult to recruit new employees. The business may suffer if the Group fails to attract, hire or retain the necessary personnel or to retain existing employees.

Management of growth

The Group's plans to continue its growth will place additional demand on the Group's management, customer support, marketing, administrative and technological resources. If the Group is unable to manage its growth effectively, its business, operations or financial condition may deteriorate.

Installation and commissioning of new equipment

The Group plans to install additional production capacity during March 2005. This equipment is bespoke for Sarantel's requirements and the risk exists that the new equipment may not function properly or does not provide the additional capacity required.

Certain Shareholders will continue to have substantial control over the Company following Admission

Following Admission, certain Directors, members of their families and principal Shareholders who hold three per cent. or more of the Enlarged Share Capital will beneficially own, in aggregate, approximately 51.4 per cent. of the Enlarged Share Capital. As a result, these Shareholders could, if acting together, be able to exercise significant control over all matters requiring Shareholder approval, which could delay or prevent an outside party from acquiring or merging with the Company. The ability of such Shareholders, if they choose act together, to prevent or delay these transactions could cause the price of the Ordinary Shares to decline.

Liquidity of the Ordinary Shares and the AIM market generally

It may be more difficult for an investor to realise his or her investment on AIM than to realise an investment in a company whose shares or other securities are quoted on the Official List. The AIM Rules are less demanding than those of the Official List. An investment in a share that is traded on AIM is likely to carry a higher risk than an investment in a share quoted on the Official List. AIM has been in existence since June 1995 but its future success and liquidity in the market for the Ordinary Shares cannot be guaranteed. The share price of publicly traded emerging companies can be highly volatile.

The price at which the Ordinary Shares will be traded and the price at which investors may realise their investment will be influenced by a large number of factors, some specific to the Group and its operations and some which may affect quoted companies generally. Admission to AIM should not be taken as implying that there will be a liquid market for the Ordinary Shares particularly as, on Admission, the Company will have a limited number of Shareholders. Historically, the market for shares in smaller public companies (which would include the Company), has been less liquid than for larger public companies. The Group is aiming to achieve capital growth and, therefore, the Ordinary Shares may not be suitable as a short-term investment. Consequently, the share price may be subject to greater fluctuation on small volumes of shares, and thus the Ordinary Shares may be difficult to sell at a particular price. The market price of the Ordinary Shares may not reflect the underlying value of the Group's net assets.

Currency risk

The Company reports its financial statements in Sterling. However, the Group enters into certain transactions in Euros, US Dollars and other foreign currencies and the Group's financial results could, therefore, be adversely affected by fluctuations in the exchange rates between currencies. The current Group policy is to hold foreign currency option contracts to help protect against the downside risk whilst giving the opportunity to participate in any appreciation of the foreign currency.

Price erosion, manufacturing costs and gross margins

Prices of wireless devices typically decline over the product lifecycle and it is expected that discounts will be built into customer contracts thereby adversely affecting the Group's expected gross margins. In order to offset such declines, reductions in the underlying cost of each antenna will need to match or exceed the reductions in sale price. Whilst the Directors anticipate that price erosion will occur in its products, these rates may be greater than expected resulting in a material adverse effect on the Group's expected gross margin.

It is possible that a decline in selling prices could occur at or around the same time as an increase in manufacturing costs. Either of these would have a material adverse impact on the Company's gross margins, financial condition and future results.

Overseas activities

It is expected that a large proportion of sales will be derived from overseas, thereby exposing the Company to additional risks related to operating in foreign countries. These risks include difficulties in managing and administering a globally dispersed business, export controls or other regulatory restrictions which may prevent the shipping of products into and from some markets or may increase the costs of doing so, the impact of applicable foreign regulations and foreign taxes, an inability to repatriate earnings or overseas sales, difficulties in debt collection or enforcing or protecting intellectual property rights and economic weakness or political instability in foreign economies or markets. These additional risks associated with the Company's international operations may adversely affect the Company's business, financial condition and results.

Investors should therefore consider carefully whether investment in the Company is suitable for them, in light of the risk factors outlined above, their personal circumstances and the financial resources available to them.

PART III

Technical Experts' Report

The following is the text of a report by PA Strategy Partners Limited:

PA Consulting Group

123 Buckingham Palace Road
London SW1W 9SR
Tel: +44 20 7730 9000
Fax: +44 20 7333 5050
www.paconsulting.com

The Directors
Sarantel Group PLC
Unit 2, Wendel Point
Ryle Drive
Park Farm South
Wellingborough
NN8 6AQ

and

The Directors
Arbuthnot Securities Limited
Arbuthnot House
20 Ropemaker Street
London
EC2Y 9AR

25 February 2005

Dear Sirs

EXPERTS REPORT ON SARANTEL LIMITED (SARANTEL)

1. Executive Summary

1.1 *Introduction to Sarantel Limited*

Sarantel produces high performance, market leading, technically differentiated GPS antenna for hand-held devices. Sarantel is well positioned in the rapidly growing market for hand-held GPS enabled devices, which is being driven both by US E911 regulations and by the global development of new location-based consumer applications.

Sarantel's customer orders for their GPS antenna grew strongly during 2004, and orders are looking encouraging for 2005.

In future, Sarantel is targeting the 3G, Wi-Fi, satellite radio and Wireless LAN markets. Sarantel is at early developmental stages in these areas, but there are encouraging signs of its ability to diversify and extend the market applicability of its antenna technology. Sarantel operates in a highly dynamic market place, where prices fall quickly and technology development cycles are short. Sarantel has a window of opportunity where it appears to have a material technological lead, but will have to move fast to capitalise.

Sarantel anticipate aggressive competitor plays short term, and technological performance improvements from patch or chip substitute products in the medium/longer term. More effective marketing of Sarantel's technical and end user benefits will enhance and protect its market position.

1.2 *Technical Overview*

Sarantel's GPS antenna delivers end-user benefits in the form of robust hand-held performance, immunity from biological de-tuning and integrated filtering that eliminates the need for additional filtering after the antenna. These factors result in increased received signal levels, faster time to first

fix and improved signal re-acquisition time, more stable, predictable performance and easier integration. These factors strongly differentiate the performance of the Sarantel antennas relative to cheaper patch competitors.

Sarantel's ceramic antenna headline price is currently some five times greater than patch antenna alternatives, though the latter have distinctly inferior performance, and this difference ignores the lower integration cost benefits of the Sarantel solution. Despite the price premium, customers are still buying and the order levels are strong. Price erosion can be delayed by more effective marketing of the technical and the end-user benefits described above.

Plans are in place to further align with the market trends of size and cost reduction and internalisation. This alignment, as well as future technology plays in 3G, Wi-Fi and satellite radio, are at an early stage, but this situation has been strengthened by the appointment of a new Engineering Director in January 2005.

1.3 *Manufacturing Overview*

Sarantel's key challenge is scaling up manufacturing capacity quickly, in order to keep up with rapidly growing customer demand.

The current process is robust, easily replicable and relatively effective, but is reaching capacity. Significant new manufacturing capacity is required by March 2005, and solutions are currently in development. However, the new single feed process, the key to step-change scaling up, is an unproven prototype and scaling plans are not yet finalised.

Plans to bring new capacity on line are aggressive, but again, the recent appointments of a highly experienced Engineering Director and COO should help mitigate some of the execution risk.

1.4 *Customer Feedback*

Sarantel is well regarded by customers and order levels grew rapidly in 2004, despite the premium price position.

Sarantel's ambition is to supply the mass global GPS device market. However Sarantel's GPS market is in immature developmental stages and currently has two distinct customer segments:

- the premium branded European/US device producers who are marketing niche, premium priced GPS applications, GPS add-on accessories and GPS based; and
- Far Eastern device producers who are embedding GPS in current mid price range PDA product range.

Sarantel's proposition is currently viewed very differently by their two main customer segments.

Fig 1: Sarantel Customer Mapping

Sarantel is consistently well regarded by Western and US manufacturers where it is seen as bringing unique capability, both in technology and in technical support. For these premium brand customers where quality is key, cost is less of an immediate issue, Sarantel's performance differentiators are effectively showcased and they appear under less immediate price pressure.

The Far Eastern device manufacturers, expressed mixed views, seeing Sarantel technology and industrial design as a positive differentiator, however Sarantel's current price level is raised as an issue but this is countered by continuing strong orders for 2005 and follow-on design wins.

Orders are growing strongly across the customer base and indications from customer interviews look broadly positive, subject primarily to continued ability to fulfil order volumes.

The quality of Sarantel's sales and support function is strong and well regarded by all customers, particularly where Sarantel is involved at design stage and can show case the technical benefits effectively.

1.5 *Risk Factors*

We have identified the key risk factors in the Sarantel proposition as being in the areas of:

- Customer Risks: given Sarantel's premium price position, it is critical that close customer relations are developed with commercial as well as technical buyers and that marketing fully articulates end user benefits and competitive differentiators. Early involvement in the customer design process will enable customers to fully appreciate the Sarantel technical and total cost benefits. If this does not happen, the Sarantel component will appear unduly expensive as a proportion of the bill of materials, the internal customer business case for Sarantel will be weak, and they may be vulnerable to design out.
- Technical Risks: the underlying Sarantel GPS technology is strong. However as the GPS market commoditises and prices are forced down, Sarantel will be required to innovate into new markets. 3G, Wi-Fi and satellite radio markets look attractive for Sarantel, but success is dependent upon deploying sufficient expertise to these areas, and resources are already stretched. The recruitment of an Engineering Director and COO, both of whom joined in January 2005, should significantly mitigate this risk.
- Manufacturing Risks: Sarantel's manufacturing capacity is being stretched, but increased capacity is dependent upon new and as yet unproven processes. Sarantel could be stretched by significant orders, and failure to fulfil would significantly impact customer perception.
- Market and Competitive Risks: the GPS market is projected for rapid growth however it is as yet an immature market. Visible growth is largely driven by current security issues, particularly the US E911 legislation and consumer up-take of GPS services is still in the early stages. As the market is forecast to grow strongly, Sarantel should expect aggressive plays by competitors, both in GPS and in their other target markets and IP infringement in the Far East may also represent a significant threat.

2. Scope of work and approach

PA Strategy Partners (PASP) has been instructed by the directors of Sarantel Group PLC to undertake a full market and technical due diligence on Sarantel. This Expert's Report prepared for inclusion in the prospectus of Sarantel Group PLC dated 25 February 2005 ("Prospectus") forms part of that work.

PASP is a wholly owned subsidiary of PA Consulting Group Limited, which is a leading management, systems and technology consultancy. PA has worked extensively in the telecommunications, high technology and manufacturing sectors and has a track record of delivering commercial, market and technical due diligence assignments.

PA Strategy Partners' approach to market and technical due diligence is based on our well established methodology for carrying out due diligence projects and preparing expert reports in the telecommunications, high technology and manufacturing sectors. Our approach is based on the use of market and technical specialists who have the detailed experience of the relevant industries and the underlying technologies required to form an expert opinion across the range of assumptions, issues and interdependencies covered in this report.

This report has been prepared by PA Strategy Partners on the basis of information supplied by Sarantel, its advisers, conducted PA interviews and that which is available in the public domain. The contents of the report have not been verified and it does not purport to be all-inclusive. PASP expressly disclaims any and all liability for any representation, warranty or undertaking, or

omission expressed or implied, which is or will be given in relation to the truth, accuracy or completeness of this report and no representation or liability is or will be accepted by PASP. In particular but without limitation, no representation or warranty is given as to the achievement or reasonableness of future projections or the assumptions underlying them, management targets, valuation, opinions, prospects or returns, if any. This report does not constitute any form of commitment or recommendation on the part of PASP. Except where otherwise indicated, this report speaks as at the date hereof.

PA has not authorised or approved any parts of the Prospectus other than the inclusion of this report.

3. GPS Market Sizing and Forecasts

Shipments of GPS-enabled mobile handsets are expected to grow 40 per cent. year-on-year until 2009 reaching volumes of 153.4MM – 20.5 per cent. of total handset shipments

3.1 *Demand drivers for GPS-enabled mobile handsets*

E-911 One of the main demand drivers of GPS-enabled mobile phones is legislation, primarily Enhanced 911 in the US, and to a lesser degree, and longer term, the equivalent Enhanced 112 in Europe. Legislation is creating the motive for carriers to deploy the necessary technology to make location-based services attractive to consumers thus further spurring the uptake of GPS-enabled handsets.

Location-based services In the US, wireless carrier Nextel is the only major provider of GPS-enabled services, but the company is gaining traction with services including driving directions and tracking solutions, mostly targeted at consumers, but also used by small, to medium sized enterprises.

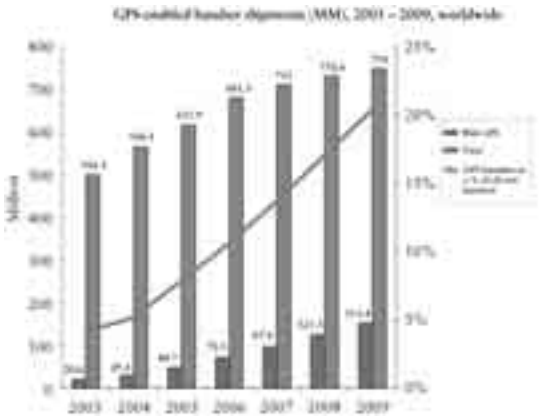


Fig 3: GPS-enabled mobile handset shipments (Units MM) 2003 – 2009, worldwide

Source: ABI research 2004 (moderate forecast), ESYS 2004 GPSWorld.com, PA Analysis

Demand in Asia, primarily Japan and South Korea, is primarily commercially driven with consumers demanding more location-based services. However, in Japan, a government mandate dictates that all 3G mobile phones must be GPS-enabled by 2007 in order to get position information on emergency calls.

E-112 In the EU, E112 is likely to become a major demand driver in the medium term. The main current demand driver is commercial location based services, but little market traction has been achieved to date.

Miniaturisation and falling cost are likely to drive acceptance of GPS functionality in handsets, boosting demand and driving mass market up-take.

A-GPS is specifically being driven by a small number of industry participants. Qualcomm has included A-GPS capability in all of their CDMA baseband chipsets. Motorola's iDEN group only offers A-GPS compatible handsets. Vodafone has apparently selected A-GPS for location-based services.

4. Summary of Sarantel's Strengths, Weaknesses, Opportunities and Threats

Sarantel has some real competitive and technical strengths and opportunities, but faces significant operational challenges to realise them

4.1 *Strengths*

- **Robust, high quality technology** which out-performs patch substitute products, differentiated through superior hand-held performance and integrated filtering solution

- **High profile, premium segment customers,** several large OEMs who value Sarantel's ability to bring them unique capability that they lack in-house
- **First to market** with high performance GPS antenna, Sarantel has set price/performance standards for quality GPS antenna in the market
- **Lower switch-in costs** than competitors, easier than competitor technology to integrate into handsets, requiring less development, and there are significant costs for customers to switch back to competitor products and to design Sarantel out
- **Unique performance in certain GPS application areas –** particularly in close bio-loading, for hand held/body worn GPS devices
- **Sales and customer support** well regarded by all customers
- **Robust, scalable manufacturing process,** easy to replicate and capable of high degree of automation
- **Motivated highly skilled Sarantel team,** which has been boosted by experienced management hires in January 2005.

4.2 *Weaknesses*

- **Sarantel is not effectively articulating or marketing the relative benefits and price differential, relative to patch substitutes.** Sarantel's headline unit price is currently 4-5 times higher than patch alternatives, but this does not take into account integration costs or performance differences. Benefits led marketing and commercial total cost propositions need to be developed. **Customers also need to compare the antenna in a handheld application to fully realise the benefits, but few of them yet appear to be doing this**
- **Projected cost reduction is dependant on new processes and expanding capacity –** the newly appointed COO has developed detailed capacity model and a facility plan. However, there is a significant amount of work that has to be completed in the near term to support the rapidly growing demand and the Company's resources are stretched
- **Manufacturing output is at full capacity,** and new manufacturing equipment is still in developmental stages. New capacity is scheduled to come on line in March 2005. **Current manufacturing systems are only '1-deep'** with no spare capacity or back-up and as a result are vulnerable
- **Price reduction target outlined in the business plan look optimistic by 6-12 months.** The life cycle model predicts £1 cost target reached in Q4 2006
- **Currently Sarantel is positioned as a technical sell rather than a commercial benefits/user experience sell,** marketing is aimed at a technical audience such as senior design engineers, but Sarantel will need to get better at articulating commercial benefits to commercial buyers in order to justify the price premium. The key benefits of the GPS extra signal level is not made explicit in marketing communications
- **Currently Sarantel is still a single product, GPS play,** but there are encouraging early signs of market diversification e.g. into satellite radio
- **Limited R&D capacity to develop** new products, with insufficient staff to develop new products in 3G, Wi-Fi or satellite radio markets in a timely fashion. This situation has been improved by the recruitment of a Director of Engineering in January 2005.

4.3 *Opportunities*

- **Better commercially focussed, proposition led marketing** would enhance positioning with key customers by articulating relative benefits, lower total cost of ownership relative to patch substitutes, and integrated filtering capability. This will help protect current price premium, delay price erosion and enhance differentiation

- **New single piece feed system** due to drive down BOM by 11 per cent.

- **Leveraging inherent technology benefits into new markets** potentially in 3G, Wi-Fi, satellite radio.

- **E911 mandate in USA** is a major opportunity for Sarantel since all mobiles must have some position location technology.

4.4 *Threats*

- **Pressure from key customers** if Sarantel can't consistently ship the volumes and react to large new orders, key customer relationships will be threatened.

- **Several customers flagged concerns over high prices,** but plans are in place to drive prices down and customer order volumes are increasing, even at the current price levels

- **Sarantel team may become overloaded** juggling new processes, technical development, market trend developments and key customers. The recruitment of new COO and Engineering Director was specifically intended to mitigate this load

- **Competitors get to market with cheaper** substitutes in next 18-24 months and multiple voice companies, including Antenova and Ethertronics will be targeting Sarantel's new target markets 3G, WLAN and satellite radio

- **IP infringement,** counterfeiting or new processes such as conductive inks. Sarantel have looked at conductive inks for their process, but their IP is in the dielectrically loaded antenna. If any company copied Sarantel's approach, they would still be in violation of their IP regardless of the production process they used.

5. Detailed Technical Analysis

The two main technical advantages of the Sarantel antenna are robust hand-held performance and integrated filtering

5.1 *Robust handheld performance created by the high dielectric puck, around which and the integrated balanced antenna drive (balun):*

- The high dielectric puck, around which the antenna is built, constrains the electromagnetic resonating field into a much smaller area than that occupied by a traditional antenna design. This is known as dielectric loading and makes the antenna performance more robust in the presence of nearby physical objects that would otherwise de-tune a standard antenna implementation. The Sarantel antenna maintains its original frequency tune even in the presence of objects as near as 10mm to the antenna, making it highly resistant to the biological loading effect of the users hand and/or head, in handheld applications

- The integral balanced antenna drive means that the antenna does not rely on other external signal paths for the return path of its electromagnetic field. Because the antenna provides its own go-and-return signal path, it works in isolation from its surroundings. Conventional handheld antennas use the printed circuit board (PCB) that carries the electronic components of the product as a part of the antenna element. Such designs are easy to de-tune by the physical presence of objects such as the human hand or head, around the PCB that forms the antenna return path.

5.2 *Integrated filtering*

The Sarantel antenna is narrowband in nature, having a bandwidth of approx 20MHz, which is 1.3 per cent. of the centre frequency of 1575MHz. At 5 per cent. either side of centre frequency, ±75MHz, the antenna reduces signals by 20dB. In the commonly used cellular phone bands, the

response is 20-25dB down. This response means the antenna protects the highly sensitive GPS receiver front end Low Noise Amplifiers (LNA) from blocking by other signal sources, such as local mobile phone transmissions, and the higher power transmissions from cellular base station transmitters:

- The result of these benefits is an increase in the received signal levels from the antenna in a handheld application and higher immunity to accidental jamming from other radio sources. In addition the immunity from local biological de-tuning results in more stable and predictable performance. A major OEM measured a 5.7dB average improvement from the Sarantel antenna when compared with their standard handheld GPS antenna.

In PA's view the benefit to the GPS user of the extra signal level is not made clear in Sarantel's marketing, which is aimed at a technical audience such as a senior design engineer. Specifically there is no translation for quantifying the 5.7dB signal acquisition enhancement against real-life experience and customer benefits such as Time To First Fix (TTFF) or signal re-acquisition time, also known as Hot-Starting.

These are expected to improve with a better antenna, but it is unclear by how much. Since design engineers do not always have significant purchasing power they need to influence those in their organisation who do. Marketing the antenna on the basis of a quantified improvement to the user would help Sarantel sell to a less technically specialised individual who may have more purchasing influence, such as a product/project manager.

The benefits of the filtering performance of the antenna are not well marketed. Integrated filtering is a major advantage, as it can eliminate the need for additional filtering after the antenna and before the LNA, which can reduce the performance at low signal levels due to the extra loss from the additional filter. PA's contacts in the GPS community have told us that blocking from both the mobile cellular network and local mobile phones, causes signal drop-out on GPS resulting in GPS dead-zones around cellular base stations and deployment difficulties when using a GPS receiver near to a mobile phone. One can imagine an advantage in a handheld commercial application, whereby the user can use a mobile phone whilst simultaneously obtaining GPS location information from a PDA.

6. Current Product Development Status

Sarantel has two standard parts currently shipping, with a third one about to be released

These are:

Geohelix PSMT – A passive surface mount antenna

Geohelix S type – An active antenna with a 24dB gain amplifier

Geohelix M type – An active antenna with a14dB amplifier, soon to be released.

They are all GPS specific at the L1 frequency of 1575.42MHz.

Prototype antennas have been produced for 3G receive (1920-1980MHz)and WLAN (2400MHz), and an antenna for handheld satellite radio applications at 2350MHz is also currently under development. For enhanced functionality, dual-band and triple-mode resonance techniques have been investigated, with patents either pending or granted on many of the methods used.

To date, the dominant selling product is the GeoHelix S type active antenna. Increasingly, the newer generations of GPS receive chipsets are capable of working with the cheaper Geohelix SMT passive antenna and Sarantel is seeing increased demand for this.

The actual antenna puck is the same for any of the antennas, so there is no significant impact on Sarantels antenna production line, but the final assembled part is different, so the outsourced assembly houses in Hungary and China need to assemble different variants. Where the different products affect Sarantel is in final assembly test, where the test process is different for each antenna. Sarantel is currently developing new test processes to speed up its passive antenna production.

In PA's view Sarantel does not have the R&D development resources to continue developing high performance antennas in a timely manner, for GPS as well as 3G, Wi-Fi, Bluetooth and satellite radio.

7. Technical, Competitive and Market Positioning

Sarantel has a mature GPS antenna offering, targeted primarily at the handheld GPS market. These include standard handheld GPS, PDAs with GPS and mobile phones with GPS such as Nextel's iDen system. The antenna supports the GPS L1 frequency of 1575.42MHz only. There are no multi-band GPS antennas available yet. In 2008, the L2 1227MHz GPS frequency will be made available due to the need to inter-operate with the European Galileo system, creating demand for a dual-band antenna for GPS applications. Sarantel has patents on a solution for a dual band antenna based on their existing architecture. This involves using the edge ring of the balun as a second circular polarised resonator – the so-called "Whispering Gallery" technique. It is worth noting that dual-band versions of competing antenna technologies such as the patch are not without their difficulties.

PA's view is that there are clear technical advantages to using the Sarantel antenna for handheld GPS applications over current competing solutions. Since the antenna is not affected by its surroundings, it has a consistent antenna aperture, resulting in a consistently high level of signal acquisition. Other GPS antenna solutions, such as the patch antenna, work well in laboratory conditions or when the GPS system is isolated, but in real-world usage, when the user of the GPS enabled PDA is physically holding the device, the traditional antenna solutions deteriorate in performance due to the biological loading effect of the users hand. The Sarantel antenna does not suffer from this, so gives the same performance in its real-world application as it does in the laboratory.

The GPS antenna has been independently evaluated by some customers, most notably a major handset OEM, who found an average improvement of 5.7dB for the Sarantel GPS antenna over its existing solution. The GPS antenna's isolated measurements were good, but there was a slightly larger than expected loss when the antenna was measured on a dummy phone next to a human head.

The performance advantage does come at a financial cost. The current passive GPS antenna offering from Sarantel is £2.50 in >10K quantities compared to the cost of a GPS patch antenna which is c£1.00. The management is committed to reducing the unit cost of Sarantel's antenna as the technology matures.

The strongest adopters of the technology are the Taiwanese GPS-enabled PDA manufacturers. Mid-range GPS PDAs featuring Sarantel's antenna are now available in the shops.

A leading GPS OEM has expressed an interest in designing the Sarantel antenna into their next generation handheld GPS product. This OEM currently uses an extendable patch antenna, which is cumbersome for the user.

Some interest has been expressed in using the Sarantel antenna for in-car deployments, in areas of a car where a patch antenna implementation may be impractical, such as a dashboard mount. Common GPS patch solutions are deployed in wing mirrors or on an external part of the car body.

8. Future Market Opportunities

Potential Future Application areas for Sarantel are in GPS phones, WLAN (Wi-Fi), 3G and satellite radio

8.1 *GPS enabled mobile phones will be a key future application area for Sarantel*

As convergence takes place, GPS is being applied to position location in mobile phones. This is a legislation driven requirement in the USA based on the E911 edict. In Europe, there is discussion of similar legislation commonly referred to as Enhanced 112.

In PA's view, E911 represents a major opportunity for Sarantel in the USA as an estimated 100 million mobile phone users will all need an E911 phone by the end of 2005. A-GPS in its various guises, will be the best solution for approx. 60 million of them.

8.2 *WLAN (Wi-Fi) is a growth area, but more marketing work needs to be done to determine Sarantel USPs in this market*

Sarantel is keen to explore the possibilities of using its antenna in WLAN applications. They have an interest from a USA based WLAN company wanting to use smart antenna technology in their Access Points (AP), to reduce inter-cell interference between neighbouring WLAN cells by steering antenna response nulls in the direction of neighbouring WLAN cells. To do this they need at least 2× antenna, and the inter-antenna isolation properties of the Sarantel antenna are attractive to them. There are many other competing antenna array solutions available, and the application is for an access point, where many antenna options are possible. Only one of the USPs is applicable here, since isolation is important, but not handheld performance.

An independent operating range trial by VTT of Finland found that the Sarantel antenna gave an average of +3dB signal-to-noise (SNR) advantage at an operating range of 100m-300m, over a standard fit antenna for a WLAN system. The measurement system was unable to translate this advantage into an absolute operating range improvement, due to a rapid fall-off in signal level caused by the local environment but, at the distances and frequencies concerned, the unobstructed line-of-sight (LOS) range should increase by around 40 per cent. In indoor environments, where the signal path between a WLAN access point and user could be obstructed, the operating range may increase by around 20 per cent.

There are three main WLAN product applications:

- Wi-Fi Laptops
- Wi-Fi PDAs
- Wi-Fi mobile phones.

There are two main reasons why a WLAN product would use an improved antenna:

- **Implementing the antenna into an existing or new product design would result in a cheaper and/or superior performance individual product.** Here, the product designer would be the technical decision maker
- **The use of the antenna in a product provides a compelling performance advantage in the network in which the product operates**, such that the overall performance of the network, as well as the product increases. Here, the network operator would have an influence on the product designer, since they stand to benefit if the improved technology is widely accepted.

WLAN Next Steps: To consider the case for using Sarantel's antenna for WLAN, the above two drivers need to be analysed. To do this, a detailed investigation into the likely product advantages should be done and the possible WLAN network improvements in terms of coverage and/or capacity should be analysed and quantified.

WLAN Competitor Plays: Several competitor companies already claim to have WLAN antenna products. Among them are: Antenova, Ethertronics, Skycross and Fractus. Most of these are solutions that appear to have been optimised for laptop use.

In PA's view, applying the Sarantel antenna to Wi-Fi laptops will require further work to develop a compelling proposition for an application that is predominantly not handheld. On one level, there is sufficient space in a laptop for other cheaper antenna alternatives. However the laptop market it is not only about performance and space, but also about total cost of ownership. Looking at existing laptop designs, 'cheap' antenna elements are connected using coax cable that is run from the LCD screen to the motherboard. Existing antennas are put on the LCD screen because it allows them to move the antennas away from the motherboard where there is a great deal of interaction with the human hand. The current approach is not low cost when considering the integration costs. There are also field reliability costs associated with coax cable breakage. More analysis and marketing work needs to be done, but there may be a real opportunity if the integration can be done directly on the motherboard. There are also opportunities for applying the antenna to Wi-Fi PDAs and Wi-Fi mobiles. Since these are handheld applications, the Sarantel antenna would be expected to give an improvement in range and/or battery life due to its superior handheld propagation characteristics.

8.3 *In 3G Sarantel appears to have some technical advantages, but it will be a highly competitive market*

Sarantel has produced a 3G receive antenna prototype:

- This consists of a triple notch resonator design, so that the 3x notches provide the 60MHz receive bandwidth needed for 3G operation at 1920-1980MHz. A paper has been presented at a conference, but the 3G opportunities have been limited until recently.
- **Through the due-diligence process, we have come to the conclusion that there appears to be some clear technical advantages for the Sarantel antenna in a 3G mobile phone application.** This is because the antenna has a high isolation and inherent filtering characteristics, so its costs could be offset against the cost of components other than just the antenna in a 3G application, e.g. duplexers, and possibly isolators.
- The improved performance and efficiency of Sarantel's antenna could also contribute to longer battery life, which is currently a major problem for 3G enabled mobile devices.
- It is worth mentioning that several other antenna companies are also targeting the 3G market and claim on their websites to have suitable products. These include: Antenova, Ethertronics, Skycross and Fractus.

In PA's view, the 3G mobile phone environment is a very demanding application, driven by a sophisticated engineering technology base. A strong technical case will need to be made to persuade the 3G mobile engineering community to change the design of the front end of a mobile phone radio from the current architecture to one that optimises the Sarantel antenna. The case would need to be based on an antenna designed to specifications suitable for a 3G mobile phone architecture, plus analytical evidence and data that the architecture incorporating the antenna really has advantages over alternatives. Such a case should enable Sarantel to secure a design win into a 3G mobile phone reference design, which will provide credible entry into the 3G market. In addition, the applications department would need to develop experience in applying the antenna to 3G terminals. Making a sale into a 3G terminal may take a couple of years, which gives the applications department time to develop expertise.

8.4 *Satellite radio is likely to be an attractive application for Sarantel*

A satellite radio network operator in the USA has approached Sarantel with an interest in using their antenna technology for a handheld satellite radio product.

The antenna operates at 2.35GHz. The existing satellite radio antenna solution uses patch technology for receiving the satellite downlink signal. After evaluating prototypes, the customer has asked Sarantel to be in volume production before the fourth quarter of 2005. This represents an opportunity for Sarantel to enter a new market but it also represents a major operational challenge.

In PA's view there is a clear technical advantage in the satellite radio market for the Sarantel antenna, comparable with that in the handheld GPS application. Sarantel's antenna displayed significant technical performance lead over the current handheld solution, giving superior signal strength capture, resulting in a lower incidence of signal drop-out.

9. Manufacturing Evaluation

Sarantel's current manufacturing process is efficient but vulnerable, scaling rapidly is the key challenge

9.1 *Strengths*

- Efficient manufacturing process based on robust process
- Motivated, highly skilled team
- Technology is well understood and under control

9.2 *Weaknesses*

- Process is limited on current site and plans for expansion have only recently been developed in detail

- Quality and yield is generally good but variable and manufacturing systems are 1-deep
- Manufacturing is reliant on a few key people
- Some vulnerabilities e.g. IT viruses and single sourcing of components. Product may be possible to counterfeit – IP must be constantly guarded.

9.3 *Opportunities*

- Process is low risk to automate and optimise
- Process can be replicated for medium term capacity
- New developments are in the pipeline
- Process can be improved in future.

9.4 *Threats*

- Year-on-year learning curve unit cost reduction does not appear sustainable without new process development which is not in evidence
- The price reduction forecast in the business plan will be hard to achieve, but the importance of this is difficult to ascertain. If Sarantel succeeds in maintaining margin by marketing benefits more effectively, then rapid price erosion can be postponed
- Team will become stretched/ overloaded with new locations, new products and new processes.

9.5 *Sarantel needs to prepare three key strategies for expansion to underpin the business plan:*

- **Manufacturing strategy** showing how capacity will be achieved in time, including the investments, project plans, resource, and timescale requirements to achieve planned demand
- **Process development strategy** describing how the process will improve in future, exploring options for a more cost effective process
- **Product development strategy** showing how new products will be controlled and phased into manufacture when demand already exceeds capacity.

9.6 *Sarantel's Manufacturing Process*

- Sarantel's current manufacturing process is effective
- Sarantel's "Wet Bath" processes are well proven technologies, similar to those used to manufacture PCBs
- Sarantel has world class capability in 3D photolithography using laser technology
- Manufacturing processes are highly de-skilled
- New laser trim equipment will reduce cycle time
- Final test and shipment moves offshore from 2005.

10. Conclusions

Overall, we believe that based on their advanced and differentiated antenna technology, positive customer perception and the growing GPS market, and subject to their ability to scale manufacturing effectively, reduce prices and in the absence of major counterfeiting or significant new disruptive technological competitors, Sarantel has the potential to become a significant and successful player in the GPS antenna market.

Yours faithfully

Charlie Simpson
PA Strategy Partners Limited

PART IV

Intellectual Property Report

The following is the text of a report by Withers & Rogers:

WITHERS & ROGERS
EUROPEAN & CHARTERED PATENT ATTORNEYS
TRADE MARK ATTORNEYS

Goldings House, 2 Hays Lane, London SE1 2HW
Tel: +44 (0)20 7663 3500 Fax: +44 (0)20 7663 3550
E-Mail: admin@withersrogers.com Web: www.withersrogers.com

The Directors
Sarantel Group PLC
Unit 2, Wendel Point
Ryle Drive
Park Farm South
Wellingborough
NN8 6AQ

and

The Directors
Arbuthnot Securities Limited
Arbuthnot House
20 Ropemaker Street
London
EC2Y 9AR

25 February 2005

Dear Sirs

SARANTEL LIMITED (SARANTEL)

1. Introduction

Withers & Rogers is a Partnership of Chartered Patent Attorneys and European Patent Attorneys with offices in London, Leamington Spa, Bristol and Birmingham. The firm advises on all aspects of intellectual property, including patents, registered designs, design rights, trademarks and copyright, and has a wide variety of British and overseas clients. The firm is able to handle inventions from all technical fields.

The author of this report is Michael Blatchford, a partner in Withers & Rogers. Michael Blatchford holds a B.Sc in Electronic and Electrical Engineering from the University of Loughborough, and is a Chartered Patent Attorney and European Patent Attorney.

Withers & Rogers have acted for Sarantel and its predecessors, Symmetricom, Inc. and Navstar Systems Limited in patent matters since the technology forming the basis of the business of Sarantel was first devised.

2. The Patent System

2.1 *Aim*

The aim of the patent system is to promote innovation by granting a monopoly right for a period of time (typically 20 years) to the owner of a patent. The monopoly right is intended to prevent third parties from carrying out the invention claimed in the patent. In return for the grant of the monopoly, the specification of the patent (which is open to public inspection once the application is published) must describe the invention in sufficient detail to enable third parties to carry out the invention once the monopoly period has expired.

2.2 *Patentability*

The criteria of patentability differ from country to country, but generally speaking an invention must fulfill the criteria of novelty, inventive step and industrial applicability.

2.3 *Territorial Coverage*

A patent has effect only in the territory for which it is granted. Accordingly, it is usual to seek patent protection in all of the important territories where an invention is likely to be exploited. There are, however, international conventions which facilitate the obtaining of patent protection in most of these countries.

2.4 *Initial Procedure*

In the United Kingdom, an applicant normally begins the application process by filing a British patent application at the British Patent Office. The filing date of such an application constitutes a "priority date", the novelty of the claimed invention being assessed as of that date. By virtue of an international convention (the Paris Convention), a corresponding application filed in practically any other country of the world within 12 months of the priority date also has the novelty of the claimed invention assessed as of the priority date. Often, the initial British application is then allowed to lapse, protection for the United Kingdom being sought by a replacement British application containing additional subject matter, or by a PCT or European application.

2.5 *Patent Co-operation Treaty (PCT)*

Although it is possible to file individual patent applications in each territory for which patent protection is required, an alternative is to file an International Patent Application under the PCT, which application will designate those countries in which the applicant seeks patent protection. Most important countries in the world are signatories to the PCT. After a PCT application is filed, an International Search Report is prepared, after which International Preliminary Examination (IPE) may be carried out by the searching authority. For a United Kingdom applicant, the European Patent Office (EPO) carries out both the International Search and the IPE. At the end of the IPE procedure, an International Patent Application reaches the regional/national phase, when individual patent applications must be filed in one or more of the originally-designated territories. Although the conclusions of the IPE are not binding on national patent offices, a favourable IPE report is usually indicative of patentability.

2.6 *European Patent Convention*

An application can also be made to the EPO, either under the Paris Convention or as a regional phase of a PCT application. The European Patent Convention has been signed by 30 European countries, which constitute most of the countries of Europe. The EPO also carries out prior art searches and a subsequent examination procedure to determine the patentability of an invention. At the end of the examination procedure, the EPO may grant a European patent which is then, subject to the applicant validating the application in one or more of the originally-designated European countries, effective as a national patent in each of these designated countries. A European Patent can be opposed at the EPO by third parties within 9 months of patent grant.

2.7 *Prior Art*

Prior art is all information relevant to the subject matter of a patent application which is available to the public before the priority date of that application. Typically, searches carried out by the relevant patent offices in connection with a patent application are performed by looking amongst patent specifications from the major countries of the world published before the priority date of the application, although other relevant prior art documents (such as technical data published by companies operating in the relevant field) may also be included.

3. Sarantel's Patent Protection

Sarantel's Philisophy for Patent Protection

Being a technology-centered company, Sarantel regards patent protection as fundamental. Accordingly, the policy of the company is to protect all significant technical developments by way of patent applications, while maintaining a sensible balance between the number of applications

filed and the associated cost. In general, patent protection is sought in the main developed countries of the world, where antennas are, or are likely to be, manufactured or widely used.

We have cooperated closely with Sarantel in preparing patent applications, and we find them willing and able to provide conscientious and helpful technical backup for successful drafting of the applications and prosecuting them through to grant of patents.

3.1 *Brief Description of Sarantel's Patent Rights*

The patent applications which we have filed for Sarantel fall into three broad product groups. These product groups are as follows.

- Antennas for Circularly Polarised Radiation – antennas which, by their construction, synthesise the effect of a spinning dipole so as to be responsive to circularly polarized electromagnetic radiation. In the specific antennas which have been produced these properties are achieved primarily by means of a quadrifilar helical structure which is dielectrically loaded. They also have advantages in terms of the ability to retain a required pattern of response independently of the platforms to which they are attached and their proximity to, e.g., the human body.
- Multi-Mode Antennas – antennas which allow product designers to rationalise antenna requirements by providing a single antenna for more than one service, typically in different frequency bands and with different polarisations (e.g. circular polarisation and linear polarisation).
- Filtering Antennas – antennas which exhibit a filtering property in frequency terms, which property is comparatively unaffected by proximity to the human body owing to low near-field intensity. This also has benefits in terms of user irradiation. Successive designs in this group achieve required filter passbands using a variety of multiple pole filter structures.

The inventions relating to these products are described in more detail below. In each case, the related patents and patent applications are listed, together with filing and priority dates and their status at the date of this report. We summarise the invention from a technical standpoint, and then briefly describe the patent application history and assess the patent claims and their validity. Validity assessments are limited to an assessment on the basis of novelty and inventive step and not with respect to, for instance, sufficiency and added matter. With regard to the priority dates provided, in the majority of cases the claims of the existing applications and patents are entitled to the priority dates indicated. In some instances, however, there are claims which are not entitled to the respective priority dates because they are directed to modifications introduced after the corresponding priority applications were filed. In the case of pending applications, the lists give estimates of the likely time to grant of patents, but it is difficult to be sure of the length of the application procedure. This uncertainty results particularly from variations in the speed with which the patent authorities process applications and the severity of the objections they raise. The estimates should be treated accordingly.

3.2 *Antennas for Circularly Polarised Radiation (Geohelix, Smart Antenna)*

3.2.1 *Dielectric-Loaded Volute*

Country	*Patent/ Application No.*	*Filing Date*	*Priority Details*	*Status*
U.S.A.	5854608	06/12/1994	GB 9417450.5 – 25/08/1994	Granted 29/12/1998 Expires 29/12/2015
– continuation 1	6181297	03/12/1998	As above	Granted 30/01/2001 Expires 06/12/2014
– continuation 2	6424316	06/10/2000	As above	Granted 23/07/2002 Expires 06/12/2014
United Kingdom	2292638	21/08/1995	GB 9417450.5 – 25/08/1994 GB 9424150.2 – 30/11/1994	Granted 24/02/1999 Expires 21/08/2015
– divisional 1	2326532	29/09/1998	As above	Granted 24/02/1999 Expires 21/08/2015

Country	*Patent/ Application No.*	*Filing Date*	*Priority Details*	*Status*
– divisional 2	2326533	29/09/1998	As above	Granted 24/02/1999 Expires 21/08/2015
European Patent Office (Validated in Germany, Denmark, Spain, France, Italy and Sweden)	0777922	21/08/1995	As above	Granted 16/05/2001 Expires 21/08/2015
– divisional (All member states designated including Germany, Denmark, Spain, France, United Kingdom, Italy and Sweden.)	00123015.0	23/10/2000	As above	Pending, under examination Estimated grant date 2006; expiry date would be 21/08/2015
Australia	707488	21/08/1995	As above	Granted 21/10/1999 Expires 21/08/2015
Brazil	PI9508769-9	21/08/1995	As above	Granted 20/07/2004 Expires 21/08/2015
Canada	2198375	21/08/1995	As above	Allowed 09/07/2004 Expires 21/08/2015
China	ZL95195772.4	21/08/1995	As above	Granted 11/09/2002 Expires 21/08/2015
Finland	970759	21/08/1995	As above	Pending, under examination Estimated grant date 2006; expiry date would be 21/08/2015
Japan	8-507877	21/08/1995	As above	Pending, under examination Estimated grant date 2006; expiry date would be 21/08/2015
South Korea	366071	21/08/1995	As above	Granted 11/12/2002 Expires 21/08/2015
Mexico	205239	21/08/1995	As above	Granted 15/11/2001 Expires 21/08/2015
– divisional 1	2001/007271	18/07/2001	As above	Pending, awaiting examination Estimated grant date 2007; expiry date would be 21/08/2015
– divisional 2	2001/007272	18/07/2001	As above	Pending, awaiting examination Estimated grant date 2007; expiry date would be 21/08/2015
Malaysia	MY 112,473 A	23/08/1995	As above	Granted 30/06/2001 Expires 30/06/2016
New Zealand	291852	21/08/1995	As above	Granted 07/09/1999 Expires 21/08/2015
– divisional	334614	21/08/1995	As above	Granted 18/08/2000 Expires 21/08/2015
Philippines	1-1995-51169	22/08/1995	As above	Granted 25/06/2003 Expires 25/06/2020
– divisional	1-1999-03167	15/12/1999	As above	Granted 10/11/2003 Expires 10/11/2020

Country	*Patent/ Application No.*	*Filing Date*	*Priority Details*	*Status*
Russian Federation	2173009	21/08/1995	As above	Granted 12/10/2000 Expires 21/08/2015
Singapore	37745	21/08/1995	As above	Granted 16/11/1998 Expires 21/08/2015
Thailand	17812	24/08/1995		Granted 28/10/2004 Expires 24/08/2015

The Dielectric-Loaded Volute (DLV) Antenna was the first fruit of the efforts of Oliver Leisten (CTO of Sarantel) to develop a miniature antenna capable of receiving signals from the GPS satellite constellation. Such signals are transmitted as circularly polarised radiation at 1.575GHz. The unique structure of this antenna, in which four helical elements and a balun sleeve are plated on a dielectric core having a high relative dielectric constant resulted in a manyfold reduction in size compared with air-cored backfire quadrifilar helical antennas of the time. In the described embodiments of the invention, the helical elements of one pair of antenna elements plated on the ceramic core follow a meandering path which deviates from a strict helical path in order to increase their length. The plated sleeve acts in conjunction with the feed structure to form an integral balun for matching the antenna to an unbalanced feed. The ceramic core fills the major part of the interior volume defined by the radiating element structure to give the antenna its small size. It is also mechanically robust and electrically stable.

Patent protection has been sought on a wide geographical basis, initially by way of two British patent applications filed in August 1994 and November 1994. A US patent application was filed in December 1994, and then a British patent application, a number of national patent applications and an International (PCT) application were all filed in August 1995. The International (PCT) application was converted into applications in Europe (EPO) and a number of other countries. Divisional applications have been filed in the UK, and at the EPO, and two continuation applications have been filed in the U.S. to cover different aspects of the invention.

The patents and applications each contain a number of independent claims. The common elements in the broad antenna claims of the main applications are an antenna having an insulative core of a solid material of relative dielectric constant greater than 5, a feeder structure which passes through the core, and a three-dimensional antenna element structure defining an interior volume, the major part of the volume being occupied by the material of the core. As such, these claims cover virtually all of the later antenna designs derived from this first antenna. The main application in the United Kingdom includes the further limitation to the feature of the 3-D antenna element structure being a plurality of co-extensive antenna elements with respective widths less than the spacing between them, this limitation being introduced to distinguish the claim from the earlier-filed application of S.J. Branson, referred to below in this report. At the EPO, the claims were amended to recite the feature of a balun on the core. A similar claim was pursued in a U.S. continuation application which resulted in U.S. Patent No. 6,424,316 and a UK divisional application resulted in UK Patent No. 2326532 with claims differently distinguished from the Branson application by recitation of the conductive sleeve. Patents have also been obtained in the UK and the USA for telephone apparatus incorporating an antenna having the basic antenna features referred to above.

Notwithstanding the limitation of certain patent claims to a balun on the core, this family of patents and applications give broad coverage for Sarantel's antennas, including the basic antenna referred to as the Dielectric-Loaded Volute and derivative antennas. None of the prior art which came to our attention during prosecution of these and subsequent applications teaches dielectric loading of antennas in the class to which the claims relate. It is our opinion that the allowed claims are novel and inventive.

3.2.2 *Crown Rim Quadrifilar Antenna*

Country	*Patent/ Application No.*	*Filing Date*	*Priority Details*	*Status*
United Kingdom	2310543	17/02/1997	GB 9603914.4 – 23/02/1996	Granted 06/10/1999 Expires 17/02/2017
European Patent Office (Currently being validated in Austria, Switzerland/ Liechtenstein, Germany, Spain, Finland, France, Italy, The Netherlands and Sweden)	0791978	17/02/1997	As above	Granted 25/08/2004 Expires 17/02/2017
U.S.A.	5859621	21/02/1997	As above	Granted 12/01/1999 Expires 21/02/2017
Canada	2198318	24/02/1997	As above	Granted 08/10/2002 Expires 24/02/2017
India	268/CAL/97	14/02/1997	As above	Allowed 11/02/2004 Estimated grant date 2005; expiry date would be 14/02/2011
Japan	3489775	24/02/1997	As above	Granted 07/11/2003 Expires 24/02/2017
South Korea	348441	22/02/1997	As above	Granted 29/07/2002 Expires 22/02/2017
Mexico	199890	20/02/1997	As above	Granted 30/11/2000 Expires 20/02/2017

The Crown Rim Quadrifilar Antenna was developed as a variation of the Dielectric-Loaded Volute (DLV) to avoid the meandering of the longer antenna elements from the respective helical paths so as to yield more balanced radiation resistances for the antenna elements and to obtain consequent improved performance for reception of circularly polarised signals. A varying height rim to the balun sleeve of the antenna distinguishes it from the DLV antenna and two pairs of simple helical antenna elements connect respectively with the highest and lowest points of the rim. As a result, each respective pair of antenna elements has a different length.

Patent protection was sought initially by way of a British patent application filed in February 1996. Applications were subsequently filed directly in the United Kingdom, the USA, in a number of other countries, and at the EPO in February 1997.

Each patent contains a single independent claim broadly directed to an antenna with an insulative core of a material having a dielectric constant greater than 5, a feeder structure extending axially through the core, a trap in the form of a conductive sleeve encircling part of the core and having a ground connection at one edge. First and second pairs of antenna elements are each connected at one end to the feeder structure and at the other end to a linking edge of the sleeve, the antenna elements of the second pair being longer than those of the first pair. The so called crown rim is recited in terms of the linking edge following a non-planar path around the core, the antenna elements of the first pair being joined to the linking edge at points which are nearer to the connections of the elements to the feeder structure than are the points at which the antenna elements of the second pair are joined to the linking edge. The originally filed claims have been allowed without significant amendment in all countries where protection has been sought.

We are not aware of any prior art relevant to this invention.

3.2.3 *DLV with Sleeved Feed*

Country	*Patent/ Application No.*	*Filing Date*	*Priority Details*	*Status*
U.S.A.	6369776	29/09/1999	GB 9902765.8 – 08/02/1999	Granted 09/04/2002 Expires 29/09/2019
United Kingdom	2367429	03/02/2000	As above	Granted 20/08/2003 Expires 03/02/2020
European Patent Office (validated in Germany, Finland, France, Italy and Sweden)	1153458	03/02/2000	As above	Granted 04/06/2003 Expires 03/02/2020
China	00803562.8	03/02/2000	As above	Allowed 15/10/2005 Estimated grant date 2007; expiry date would be 03/02/2020
Japan	2000-599097	03/02/2000	As above	Pending, underexamination Estimated grant date 2008; expiry date would be 03/02/2020
South Korea	2001-7009520	03/02/2000	As above	Pending, under examination Estimated grant date 2008; expiry date would be 03/02/2020

This antenna is a further development of the DLV Antenna in that the feeder structure housed in a passage through the core of the antenna is spaced from the passage wall by a plastic dielectric layer with a dielectric constant of less than half of that of the core. In this way, the resonant frequency of the feeder structure is lowered without significantly altering the resonant frequency of the antenna. This is useful where the resonant frequency of the feeder structure would otherwise be close to the resonant frequency of the antenna. As a result, the efficiency of the antenna is increased.

Patent protection was sought initially by way of a United Kingdom patent application filed in February 1999, and an application was subsequently filed in the USA in September 1999. An International (PCT) application was filed in February 2000 and was later converted into applications at the EPO, and in the UK, China, Japan and South Korea. Patents have been granted in the UK, US and at the EPO, and the Chinese application has been allowed. No prior art relevant to the novelty or obviousness of the invention was cited during examination.

The granted patents each contain a single independent claim which adds to the features of the original DLV concept the feature of the feeder structure being spaced from the wall of a passage through the core by a dielectric layer having a relative dielectric constant which is less than half that of the antenna core.

No significant prior art came to our attention during the prosecution of these applications.

3.2.4 *Trimming Antennas*

Country	*Patent/ Application No.*	*Filing Date*	*Priority Details*	*Status*
United Kingdom	2356086	05/11/1999	No priority claimed	Granted 05/11/2003 Expires 05/11/2019
U.S.A.	517782	02/03/2000	GB 9926328.7 – 05/11/1999	Allowed 04/08/2004 Estimated grant date 2005; expiry date would be 02/03/2020
– continuation	11/005,743	07/12/2004	As above	Pending Estimated grant date 2007; expiry date would be 02/03/2020

Country	*Patent/ Application No.*	*Filing Date*	*Priority Details*	*Status*
European Patent Office (Designated states are Germany, France, Finland and Sweden)	00309631.0	01/11/2000	As above	Pending, under examination Estimated grant date 2007; expiry date would be 01/11/2020
China	00136656.4	06/11/2000	As above	Pending, under examination Estimated grant date 2007; expiry date would be 06/11/2020
Japan	2000-338219	06/11/2000	As above	Pending, under examination Estimated grant date 2007; expiry date would be 06/11/2020
South Korea	2000-0065376	04/11/2000	As above	Pending, under examination Estimated grant date 2007; expiry date would be 04/11/2020
Taiwan	90100989	17/01/2001		Pending, under examination Estimated grant date 2006; expiry date would be 17/01/2021

While the majority of patent applications filed to protect Sarantel's inventions are directed to antennas and apparatus including antennas, this invention is concerned mainly with a process for tuning quadrifilar antennas such as that described in the Dielectric-Loaded Volute patents and its derivatives (e.g. Crown Rim and DLV with Sleeved Feed). The bandwidth of a dielectrically loaded quadrifilar helical antenna is relatively narrow to the extent that it can be difficult to achieve the required resonant characteristics and radiation pattern merely by, for instance, plating and etching a conductive layer on a ceramic core. In its preferred form, this invention involves removing conductive material from plated tracks by laser etching apertures of predetermined size in the tracks so as to alter their inductance and, thereby, to produce, for example, the required current distribution in the helical elements. In practice, the production line includes a trimming station at which capacitive probes are brought into juxtaposition with portions of the helical tracks whilst a swept frequency signal is fed to the antenna. Relative phases and amplitudes of signals in the radiating tracks are monitored and the dimensions of apertures in the tracks are computed to bring the monitored phase and/or amplitude to a required relationship. The apertures are then laser etched in the tracks on the planar top face of the antenna.

An initial British patent application in November 1999 was followed by a corresponding U.S. patent application and, subsequently, by European, Chinese, Japanese, Korean and Taiwanese applications. So far, a British patent has been granted.

The applications were filed with a main claim directed to a method of producing a quadrifilar antenna which has substantially helical conductive radiating tracks on a dielectric substrate, the method comprising monitoring at least one electrical parameter of the antenna and removing conductive material from at least one of the tracks to increase the inductance of the track and to bring the monitored parameter nearer to a predetermined value. The applications also contain a claim to a quadrifilar antenna in which at least one of the helical conductive tracks has a cut out of predetermined size for increasing the inductance of the track. This claim has been allowed in the UK. Claims of the original scope were allowed without objection in the British Patent Office and, indeed, some broader claims were filed and accepted as well. The search carried out by the EPO has produced only "background" prior art which leads us to suggest that broad protection should be

obtainable in Europe. The USPTO has, in our view quite unjustifiably, persistently rejected the main claim on the basis of a document which appears to disclose trimming quadrifilar elements by reducing rather than increasing their inductance. As a matter of expediency to obtain allowance, the original main claim has been replaced by a number of independent claims each limited to a respective preferred feature. In the Taiwanese application, the main claim has been objected to on the basis of one of the Company's earlier patents. We see no basis for this objection and there is a prospect for good coverage.

3.2.5 *Branson DL Antenna*

Country	*Patent/ Application No.*	*Filing Date*	*Priority Details*	*Status*
United Kingdom	2292257	22/06/1994	No priority claimed	Granted 07/04/1999 Expires 22/06/2014

This patent was the result of a patent application filed by an ex-employee of a predecessor company in his own name shortly before the first application in the Dielectric-Loaded Volute (DLV) family of applications.

The rights in this application were later transferred by assignment to a second predecessor company, Symmetricom, Inc. on 13 June 1997. Symmetricom Inc. took responsibility for prosecuting the application through to grant on 7 April 1999, and it was subsequently assigned to Sarantel with the other then-existing patent rights covered by this report.

The invention concerns a cylindrical antenna with four helical elements on a cylindrical dielectric core having a dielectric constant higher than that of air. The elements are separated from each other by narrow helical slots. During prosecution of the application various documents were cited by the UK Patent Office Examiner, but were considered relevant to the patentability of the invention.

A single independent claim was granted directed to a radio frequency antenna comprising a plurality of conductive antenna elements arranged around a common axis, a substantially axially located feeder structure, and conductors connecting the antenna elements to the feeder structure, wherein the interior of the antenna comprises a dielectric material, the relative dielectric constant of which is higher than that of air to the extent that the antenna is of substantially smaller size than an equivalent antenna in which the antenna elements are immersed in an environment approximating to that of free space.

As far as we are aware, the subject matter of this application was not made available to the public before either the priority dates or the filing dates of any of the DLV applications, which means that in practical terms, its prior art effect against the DLV family of patents and applications is limited to the UK only, and in respect of novelty only, not inventive step. As stated above, the British DLV application was amended to give it novelty over the Branson application and a divisional application (DLV divisional 2 above) was filed and prosecuted to protect another primary novel aspect of the DLV antenna and later antennas.

3.3 *Multi-Mode Antennas*

3.3.1 *Dual-Service Antenna System*

Country	*Patent/ Application No.*	*Filing Date*	*Priority Details*	*Status*
U.S.A.	5963180	01/08/1996	GB 9606593.3 – 28/03/1996 GB 9615917.3 – 30/07/1996	Granted 05/10/1999 Expires 01/08/2016
United Kingdom	2311675	26/03/1997	As above	Granted 15/11/2000 Expires 20/03/2017
European Patent Office (Validated in Germany, Finland, France, Italy and Sweden)	0935826	26/03/1997	As above	Granted 25/06/2003 Expires 26/03/2017
Australia	716542	26/03/1997	As above	Granted 08/06/2000 Expires 26/03/2017

Country	*Patent/ Application No.*	*Filing Date*	*Priority Details*	*Status*
Canada	2250790	26/03/1997	As above	Granted 03/08/2004 Expires 26/03/2017
China	97194742.2	26/03/1997	As above	Pending, under examination Estimated grant date 2006; expiry date would be 26/03/2017
India	536/CAL/97	26/03/1997	As above	Allowed 04/09/2004 Estimated grant date 2005; expiry date would be 26/03/2011
Japan	9-535017	26/03/1997	As above	Pending, under examination Estimated grant date 2007; expiry date would be 26/03/2017
South Korea	458310	26/03/1997	As above	Granted 12/11/2004 Expires 26/03/2017
Malaysia	PI9701315	27/03/1997	As above	Allowed 11/06/2004 Estimated grant date 2005; expiry date would be 15 years from date granted
Mexico	220048	26/03/1997	As above	Granted 22/04/2004 Expires 26/03/2017
Philippines	I-1997-55978	25/03/1997	As above	Granted 10/10/2000 Expires 10/11/2017
Russian Federation	2210146	26/03/1997	As above	Granted 10/08/2003 Expires 26/03/2017
Singapore	56480	26/03/1997	As above	Granted 19/11/2001 Expires 26/03/2017
Thailand	036513	27/03/1997	As above	Pending, under examination Estimated grant date 2008; expiry date would be 27/03/2017
Taiwan	094978	08/05/1997		Granted 01/10/1998 Expires 08/05/2017

In 1996 the inventor found that the antenna referred to above as the Dielectric-Loaded Volute could be used to receive linearly polarised signals in a frequency band spaced from the frequency band containing the quadrifilar resonance for circularly polarised signals. It was found that the antenna could be dimensioned to bring this second resonance to a frequency in, for instance, a mobile telephone band of operation, whilst maintaining the quadrifilar resonance at the required frequency for receiving satellite signals from, e.g., GPS satellites. One result is a dual-service antenna capable of feeding both a GPS receiver and a telephone receiver. Other dual-service applications are envisaged. The mode of resonance for the linearly polarised signals is a single ended mode, whereas the quadrifilar resonance is a balanced mode resonance. In a preferred system, the signals for the two services are split in a diplexer having two output ports, one connected to the GPS receiver and the other connected to the telephone receiver.

Patent protection was sought initially by way of two British patent applications filed in March and July 1996. A U.S. application was filed in August 1996 and an International (PCT) application in March 1997. The latter was used as the basis for a number of applications in other territories, including a European application. An application was also filed in Taiwan. Patents have been obtained in a number of territories, including Europe, the UK, the USA and Taiwan.

The most important claims are claims directed to a radio communication apparatus and claims directed to an antenna system. The main claim in the European patent to a radio communication apparatus recites an antenna and, connected to the antenna, radio communication circuit means operable in at least two radio frequency bands. The antenna is recited as having a dielectric core, a feeder structure through the core, and the series combination of at least one elongate conductor and a conductive trap. The radio communication circuit means is limited to two parts operable in first and second radio frequency bands, each part being associated with respective signal lines for conveying signals between the feeder structure of the antenna and the respective part of the circuit means, the antenna being resonant in a first mode in one frequency band and in a second mode in the other frequency band.

The main antenna system claim refers instead to the combination of an antenna and a coupling stage which has a common signal line associated with the feeder structure of the antenna and at least two further signal lines for connection to radio signal processing equipment operating in respective frequency bands. Connected between the feeder structure and these signals lines is an impedance matching section and a signal directing section for coupling together the common signal line and one or other of the further signal lines according to whether the signals lie in one of the bands in which the antenna is resonant in a first mode of resonance or in the other of the bands and in which the antenna is resonant in a second mode of resonance.

During prosecution of the British and European applications, Sarantel elected to accept limitation of the radio communication apparatus claim to a common signal line of the antenna feeder structure. Although this limitation is not present in the corresponding U.S. claim, our view is that that claim is likely to be distinguished from the prior art. Indeed, the prior art cited in the British and European applications was considered by the U.S. Patent Office Examiner. "Use claims" are permissible in the UK and Europe, so the opportunity was taken to include claims to the use of an antenna in spaced apart frequency bands to feed signals via a common signal line of the feeder structure.

Summarising, claims of good scope have been allowed in most countries and no prior art that we feel is more relevant than that considered during prosecution of the applications has come to our attention.

3.3.2 *Whispering Gallery Antenna*

Country	*Patent/ Application No.*	*Filing Date*	*Priority Details*	*Status*
European Patent Office (All member states designated including Germany, Denmark, Spain, Finland, France, United Kingdom, Italy and Sweden)	99956177.2	19/11/1999	GB 9828768.3 – 29/12/1998	Pending, under examination Estimated grant date 2006; expiry date would be 19/11/2019
U.S.A.	6552693	29/11/1999	As above	Granted 22/04/2003 Expires 29/11/2019
Canada	2357041	19/11/1999	As above	Pending, under examination Estimated grant date 2007; expiry date would be 19/11/2019
China	99816387.2	19/11/1999	As above	Pending, under examination Estimated grant date 2006; expiry date would be 19/11/2019
Japan	2000-591694	19/11/1999	As above	Pending, under examination Estimated grant date 2007; expiry date would be 19/11/2019

Country	*Patent/ Application No.*	*Filing Date*	*Priority Details*	*Status*
South Korea	2001-7008736	19/11/1999	As above	Pending, under examination Estimated grant date 2007; expiry date would be 19/11/2019
Taiwan	144801	23/11/1999		Granted 18/07/2003 Expires 23/11/2019

The Whispering Gallery Antenna invention arose out of the discovery that, by manipulating the diameter of the conductive sleeve of one of the Company's earlier antenna designs, such as the Dielectric-Loaded Loop, it is possible to produce a resonance which is characterised by a standing wave around the sleeve rim (referred to in these patents and applications as a "ring resonance"), and which is located at a frequency used, for instance, for satellite positioning signals. The plated conductive sleeve and the plated underside of the antenna form an open-ended cavity which is filled with the dielectric material of the core. Half or quarter-wave helices on the cylindrical surface of the core above the rim of the sleeve and fed in a backfire manner, as in the earlier antenna designs, promote the ring resonance at a frequency determined by the length of the sleeve rim and the dielectric constant of the core to produce a classic cardioid-shaped spatial response for circularly polarised radiation, as used for satellite communications. This antenna offers not only an alternative mode of operation for receiving circularly polarized signals for satellite services, but also a dual mode capability combining use for satellite signals and use for terrestrial linearly polarised signals. The latter mode can be produced by, e.g., arranging for the dual helix feed for the cavity to resonate at a required frequency in the balanced twisted loop mode of the Dielectric-Loaded Loop antenna described below.

Patent protection was sought by way of International (PCT) and U.S. applications in November 1999, based on a British application filed in December 1998. An application was also filed in Taiwan. Patents have been granted in the USA and Taiwan and applications in Canada, China, the European Patent Office, Japan and South Korea, derived from the International application, are currently pending.

The applications contain claims to an antenna with a cylindrical insulative body of relative dielectric constant greater than 5, the body bearing a conductive sleeve on its surface and a conductive layer on an underside so as to form an open-ended cavity filled with the solid material of the dielectric body. The recited distinguishing features include a feeder structure associated with the cavity (e.g. a pair of helical conductors on the cylindrical surface of the dielectric body above the open end of the cavity) and the dimensions of the cavity being such that the electrical length of its circumference at the open end is substantially equal to a whole number of guide wavelengths around the circumference corresponding to the operating frequency. Additional independent claims include an antenna claim directed to a dielectrically loaded cavity-backed antenna with a rotational feed system, with functional limitations to the nature of the resonance and the circular polarisation radiation pattern. They also include a claim to a mobile telephone system including the above antenna, the antenna feed system acting as a loop exhibiting a resonance for linearly polarised waves, and a claim to a method of operating an antenna with an open-ended cavity containing dielectric material.

During prosecution of the U.S. application, the claims were limited to the cardioid-shaped radiation pattern for circularly polarised radiation. In the pending European application the Examiner has recently asked for the same limitation together with a limitation to the helical elements, despite having indicated in the PCT application that the original claims are novel and inventive. This does not affect our view that there are good grounds for expecting patent protection of useful scope for this elegant and advantageous invention in Europe and in other territories where applications are pending.

3.4 *Filtering Antennas*

3.4.1 *Dielectric-Loaded Loop*

Country	*Patent/ Application No.*	*Filing Date*	*Priority Details*	*Status*
United Kingdom	2309592	21/05/1996	GB 9601250.5 – 23/01/1996	Granted 31/01/2001 Expires 21/05/2016l
U.S.A.	5945963	13/06/1996	As above	Granted 31/08/1999 Expires 13/06/2016
European Patent Office (Validated in Germany, Finland, France, Italy and Sweden)	0876688	10/01/1997	GB 9601250.5 – 23/01/1996 GB 9610581.2 – 21/05/1996	Granted 04/06/2003 Expires 10/01/2017
Australia	720873	10/01/1997	As above	Granted 28/09/2000 Expires 10/01/2017
Canada	2245882	10/01/1997	As above	Allowed 02/04/2004 Estimated grant date 2005; expiry date would be 10/01/2017
China	ZL97193099.6	10/01/1997	As above	Granted 22/01/2003 Expires 10/01/2017
India	75/CAL/97	15/01/1997	As above	Allowed 24/07/2004 Estimated grant date 2007; expiry date would be 15/01/2011
Japan	9-526629	10/01/1997	As above	Pending, under examination Estimated grant date 2007; expiry date would be 10/01/2017
South Korea	705622/1998	10/01/1997	As above	Pending, under examination Estimated grant date 2006; expiry date would be 10/01/2017
Malaysia	PI 9700213	21/01/1997	As above	Pending, under examination Estimated grant date 2006; expiry date would be 15 years from date granted
Mexico	213947	10/01/1997	As above	Granted 28/04/2003 Expires 10/01/2017
Philippines	55284	14/01/1997	As above	Granted 19/04/2001 Expires 19/04/2018
Singapore	54891	10/01/1997	As above	Granted 25/01/2000 Expires 10/01/2017
Taiwan	108488	30/01/1997	US 08/664,104 – 13/06/1996	Granted 09/03/2000 Expires 30/01/2017
Thailand	035299	20/01/1997	GB 9610581.2 – 21/05/1996	Pending, under examination Estimated grant date 2008; expiry date would be 20/01/2017

The Dielectric-Loaded Loop Antenna forms the basis for a group of antennas especially suited for transmitting and/or receiving linearly polarised terrestrial signals, such as signals used by mobile telephone systems. It has particular properties which help to reduce radiation into the head of a

mobile telephone user. Patent protection has been sought on a similarly wide geographical basis to the geographical coverage of the Dielectric-Loaded Volute invention. The antenna shares with the Dielectric-Loaded Volute Antenna a cylindrical ceramic core bearing helical radiating elements coupled between the end of a feeder which passes axially through the core on the one hand and the rim of a balun sleeve encircling part of the core. A single pair of laterally opposed helices, when driven from the balanced source created by the balun sleeve, act as a twisted loop, reproducing the toroidal radiation pattern of a conventional planar loop antenna, which is a radiation pattern having oppositely directed transverse nulls at the operating frequency. By orienting the antenna in a handheld mobile telephone so that one of the nulls is directed towards the user's head, radiation into the head can be significantly reduced. With the exception of the nulls, the radiation pattern is substantially omnidirectional so that antenna performance is maintained over a wide spatial coverage.

The original British patent application was filed in January 1996 and corresponding U.S. and International (PCT) applications were filed in June 1996 and January 1997 respectively. Corresponding applications were also filed in Taiwan and other Asian countries. Patents have been granted in the UK, the USA, the EPO, China, Taiwan and a number of other countries. Elsewhere, applications are still pending.

All of the patents and applications contain an independent claim directed to a radio communication unit having an antenna orientated in a specified way. The antenna is recited as having a pair of antenna elements disposed co-extensively in an opposing configuration and connected together to form a loop, the antenna including an insulative core having a relative dielectric constant greater than 5. The radio communication unit is recited as having a radio transceiver and an integral earphone for directing sound energy from an inner face which, in use of the unit, is placed against a user's ear. The antenna is recited as having a radiation pattern with a null in a direction transverse to the antenna elements, the mounting of the antenna in the unit being such that the null is directed generally perpendicularly to the inner face of the unit so as to reduce the level of radiation from the unit in the direction of the user's head. In some countries, including the USA and the UK, claims directed to the antenna *per se* have also been allowed. These are directed to an antenna having a single pair of axially co-extensive antenna elements disposed in an opposing configuration on or adjacent to the outer surface of the insulative core, the ends of the elements being interconnected to form a conductive path around the core, or similar limitations.

The claims to a radio communication unit have a strong presumption of validity, having been allowed by the British, U.S. and European Patent Offices.

3.4.2 *Dual-Peak Loop Antenna*

Country	*Patent/ Application No.*	*Filing Date*	*Priority Details*	*Status*
U.S.A.	6184845	10/07/1997	GB 9624649.1 – 27/11/1996 GB 9709518.6 – 09/05/1997	Granted 06/02/2001 Expires 10/07/2017
United Kingdom	2321785	24/11/1997	As above	Granted 09/05/2001 Expires 24/11/2017
EPO (Validated in Germany, Finland, France and Sweden)	0941557	24/11/1997	As above	Granted 12/11/2003 Expires 24/11/2017
Canada	2272389	24/11/1997	As above	Granted 17/02/2004 Expires 24/11/2017
China	ZL97181567.4	24/11/1997	As above	Granted 04/08/2004 Expires 24/11/2017
India	2169/CAL/97	18/11/1997	As above	Pending, under examination Estimated grant date 2005; expiry date would be 18/11/2011

Country	*Patent/ Application No.*	*Filing Date*	*Priority Details*	*Status*
Japan	3489684	24/11/1997	As above	Granted 07/11/2003 Expires 24/11/2017
South Korea	446790	24/11/1997	As above	Granted 23/08/2004 Expires 24/11/2017
Malaysia	PI9705667	25/11/1997	As above	Allowed 30/08/2004 Estimated grant date 2005; expiry date would be 15 years from date granted
Mexico	9904946	24/11/1997	As above	Granted 09/04/2003 Expires 24/11/2017
Philippines	1-1997-58557	18/11/1997	As above	Granted 25/04/2002 Expires 25/04/2019
Thailand	040940	25/11/1997	As above	Pending, under examination Estimated grant date 2008; expiry date would be 25/11/2017
Taiwan	123671	12/12/1997	US 08/889,998 – 10/07/1997	Granted 21/11/2000 Expires 12/12/2017

The Dual-Peak Loop Antenna is one of a number of developments of the Dielectric-Loaded Loop aimed at increasing bandwidth. It shares with the Dielectric-Loaded Loop the end-fed bifilar helical structure but differs from the original design in that the antenna elements are forked and in that the rim of the balun sleeve has two parts of differing height. A channel between the forked parts of each element extends into the sleeve. As a result, there are two looped conductive paths terminated at the feeder, one extending around one side of the core and the other extending around the other side of the core. Owing to the difference in height of the balun sleeve rim parts, these paths have different electrical lengths and, therefore, different resonant frequencies.

Patent protection was sought initially by way of two United Kingdom patent applications filed in November 1996 and May 1997, and an application was subsequently filed in the USA in July 1997. An International (PCT) application and various national applications were filed in November 1997.

Broad protection to the concept of providing two looped paths of different electrical length has been obtained in several territories, including Europe and the USA. The European patent, for instance, contains a claim to an antenna having laterally opposed elongate antenna elements, linking conductors interconnecting these elements, these together forming at least two looped conductive paths each extending from the feed connection to a location spaced lengthwise of the core from the feed connection, then around the core, and back to the feed connection, the electrical length of one of the two paths being greater than that of the other path at an operating frequency. This general scope has a strong presumption of validity, having been allowed in the UK, USA and Europe. We are not aware of any prior art significantly more relevant than that considered during prosecution of the applications.

Additional independent claims include a handheld radio claim incorporating the antenna and an antenna claim reciting one linking conductor (instead of a pair) and a stepped rim.

3.4.3 *Mode-Coupling Loop*

Country	*Patent/ Application No.*	*Filing Date*	*Priority Details*	*Status*
United Kingdom	2338605	14/06/1999	GB 9813002.4 – 16/06/1998	Granted 18/06/2003 Expires 14/06/2019
European Patent Office (Currently being validated in Germany, Denmark, Spain, Finland, France, Italy and Sweden)	1088367	14/06/1999	As above	Granted 02/02/2005 Expires 14/06/2019
U.S.A.	6690336	15/06/1999	As above	Granted 10/02/2004 Expires 15/06/2019
Japan	2000-555323	14/06/1999	As above	Pending, under examination Estimated grant date 2007; expiry date would be 14/06/2019
South Korea	2000-7014353	14/06/1999	As above	Pending, under examination Estimated grant date 2007; expiry date would be 14/06/2019

The Mode-Coupling Loop invention provides an antenna which uniquely exhibits coupled modes of resonance of differing types, that is a balanced and an unbalanced mode of resonance, from a bifilar helical antenna structure. The balanced and unbalanced modes of resonance occur because a plated sleeve on the cylindrical surface of the antenna core and a metallic lining in the feeder structure act as a balun at a first resonant frequency but do not act as a balun at a second resonant frequency. As a result, different current patterns occur on the conductive structure of the antenna at each frequency of resonance. A broad saddle-shaped response is achieved by dimensioning the antenna such that the two modes of resonance are close enough to couple. Further, the Mode-Coupling Loop Antenna, like the Dielectric-Loaded Loop Antenna, exhibits a null in the radiation pattern which, in use, may be directed towards a user's head to improve the SAR (Specific Absorption Rate).

Patent protection was sought initially by way of a British patent application filed in June 1998, and applications were subsequently filed in the USA and the United Kingdom in June 1999, as was an International (PCT) application. The international application was converted into separate national applications in Japan and South Korea and a regional application in Europe via the EPO.

The patents and patent applications each contain a main claim directed to a dielectrically loaded antenna with the main recited distinction being that the core and the conductive structure are configured such that the antenna has at least two modes of resonance of differing types which are coupled thereby to define together an operating frequency band for signals fed to or received from the transmission line, the different modes of resonance being associated with different respective radio frequency current patterns in the conductive structure, each pattern including the said radiating elements. Patents have been granted in the UK, the USA and at the EPO with broad claims to an antenna exhibiting coupled modes of resonance of different types. Examination is pending in Japan and South Korea, and we are optimistic that similar protection will be achieved in these two countries. Further independent claims are directed to a handheld radio communication unit incorporating the above antenna.

3.4.4 *Loop with Paired Helices*

Country	*Patent/ Application No.*	*Filing Date*	*Priority Details*	*Status*
U.S.A.	6300917	12/08/1999	GB 9912441.4 – 27/05/1999	Granted 09/10/2001 Expires 12/08/2019
United Kingdom	2351850	24/05/2000	As above	Granted 27/08/2003 Expires 24/05/2020
– Divisional	2383901	24/05/2000	As above	Granted 31/12/2003 Expires 24/05/2020
EPO (All member states designated including Germany, Denmark, Spain, Finland, France, United Kingdom, Italy and Sweden)	00935317.8	24/05/2000	As above	Pending, under examination Estimated grant date 2006; expiry date would be 24/05/2020
Australia	769570	24/05/2000	As above	Granted 20/05/2004 Expires 24/05/2020
Brazil	PI0010954-1	24/05/2000	As above	Pending, under examination Estimated grant date 2007; expiry date would be 24/05/2020
Canada	2373941	24/05/2000	As above	Pending, under examination Estimated grant date 2007; expiry date would be 24/05/2020
China	00808144.1	24/05/2000	As above	Pending, under examination Estimated grant date 2007; expiry date would be 24/05/2020
India	2001/01200	24/05/2000	As above	Pending, under examination Estimated grant date 2006; expiry date would be 24/05/2014
Japan	2001-500367	24/05/2000	As above	Pending, awaiting examination Estimated grant date 2008; expiry date would be 24/05/2020
South Korea	2001-7015039	24/05/2000	As above	Pending, awaiting examination Estimated grant date 2008; expiry date would be 24/05/2020
Mexico	2001/012163	24/05/2000	As above	Pending, under examination Estimated grant date mid 2006; expiry date would be 24/05/2020
Taiwan	156702	25/05/2000	U.S. 09/372,865 – 12/08/1999	Granted 25/09/2002 Expires 25/05/2020

This invention follows on from the Dual Peak Loop Antenna in that it concerns a loop antenna having two resonant frequencies within a band of operation and similarly achieves this property by arranging for the elongate elements to form at least two conductive loops of different electrical

lengths. However, where the Dual-Peak Loop Antenna uses slits in the balun to isolate the two loops, the Loop with Paired Helices antenna uniquely uses a half wavelength channel or slit, the majority of which is located between the elements and not in the balun. As the major part of the channel is located between the antenna elements, and preferably extends to the connection of the antenna elements to the feeder, intrusion into other parts of the antenna elements is reduced. This has benefits in that the antenna is easier to manufacture and currents flowing in the balun sleeve are less restricted. In the preferred antenna, the difference in electrical lengths is achieved by forming the antenna elements as tracks of different widths.

The original British application was filed in May 1999 and corresponding US and International (PCT) applications were filed in August 1999 and May 2000 respectively. A corresponding application was also filed in Taiwan. Patents have been granted in the UK (including a divisional application), the USA, Australia and Taiwan. European and Japanese applications derived from the International (PCT) application, among others, are still pending.

The patents and applications each contain at least one independent antenna claim in which the distinguishing features include a pair of laterally opposed groups of elongate elements, each group comprising first and second mutually adjacent elongate elements which have different electrical lengths at a frequency within the operating band of the antenna. These elements define between them, at least in part, a channel of substantially a half wavelength in the operating band of the antenna. Additional independent claims which are broader in some respects than the main claim have been granted in the UK, the USA and Taiwan. There are also independent claims to the feature of antenna elements of different widths. Claims of broad scope have been granted in the UK and USA. There is an outstanding obviousness objection in the European application. As a result, while some amendment may be required, we feel it should be possible to obtain a patent with claims of useful scope.

3.4.5 *Multi-Mode Meandering*

Country	*Patent/ Application No.*	*Filing Date*	*Priority Details*	*Status*
United Kingdom	0307251.9	28/03/2003	No priority claimed	Pending, awaiting examination Estimated grant date 2007; expiry date would be 28/03/2023
U.S.A.	10/457717	09/06/2003	GB 0307251.9 – 28/03/2003	Allowed 20/10/2004 Estimated grant date early 2005; expiry date would be 09/06/2023
PCT Application (All member states designated including EPO, Australia, Canada, China, Japan and South Korea)	GB04/01109	16/03/2004	As above	Pending, under examination
Taiwan	93107605	22/03/2004	As above	Pending, under examination Estimated grant date 2007; expiry date would be 22/03/2024

The Multi-Mode Meandering Antenna is a development of the Loop with Paired Helices Antenna which yields a further improvement in bandwidth. The invention takes advantage of the discovery by the inventor that grouped and substantially coextensive radiating elements of different electrical lengths have fundamental modes of resonance corresponding not only to the individual elements which are close together, but also corresponding to the elements as a combination. Accordingly, where each group of elements has two substantially co-extensive radiating elements, there exists a fundamental mode of resonance associated with one of the tracks, another fundamental resonance associated with the other of the tracks, and a third fundamental resonance associated with the composite element represented by the two tracks together. The frequency at the third resonance can

be manipulated by asymmetrically altering the lengths of edges of the antenna elements. In this way, the third frequency of resonance can be brought close to the other resonant frequencies so that these different modes all couple to form a broad response.

The applications contain independent claims directed to a dielectrically-loaded loop antenna having an insulative body of relative dielectric constant greater than 5, and an antenna structure on or adjacent the surface of the core in the form of a pair of laterally opposed groups of conductive elongate elements, each group comprising elongate elements of different electrical lengths. Different distinguishing features are recited in the different claims.

Protection was initially sought by way of a British patent application filed in March 2003. A corresponding U.S. application was filed in June 2003 and has now been allowed. Protection elsewhere has been sought by way of an International (PCT) application and a Taiwanese application, both filed in March 2004. One feature which is used to distinguish from the Loop with Paired Helices antenna is that at least one of the elongate elements is in the form of a conductive strip having non-parallel edges. Another feature is that the element is in the form of a strip having opposing edge of different lengths. Although amendment of the claims in some countries may be required, we feel that there are a number of options for potentially valid claims and that the prospects for good protection for this invention are promising.

3.5 *Unpublished Inventions*

In line with its policy of protecting all significant technical developments Sarantel has recently filed patent applications in addition to those listed above. These applications have not yet been published by the patent authorities because they have priority dates of less than 18 months ago, 18 months from the earliest priority date being the normal statutory delay before publication can occur. For commercial reasons, Sarantel does not usually allow the contents of unpublished applications to enter the public domain and it is for this reason that they are not listed here.

4. Freedom to Use

An investigation has been carried out into Sarantel's freedom to market its current and imminently to be introduced antenna products. Two facts benefit the position of Sarantel. Firstly, the original antennas, as a concept, represented a fundamental departure from previous antennas. Secondly, the current and imminently to be introduced antenna products of the company embody the main features of its original dielectrically loaded helical antennas which were disclosed in the early patent applications referred to in this report and published several years ago. As a consequence, any later-dated patent rights are valid only insofar as they differ from those original antenna disclosures. We have not carried out infringement clearance searches for the purposes of this report in order to locate third party patent rights which might restrict Sarantel's freedom to use its technology. We have reviewed patents and patent applications which have come to light over the period of our having handled the company's patent portfolio and which we have been asked to look at from a freedom-to-use viewpoint. None have been located which are clearly valid and infringed by the products in question.

Yours faithfully

WITHERS & ROGERS

PART V

Accountants' Report on the Company

Set out on the following pages is the Accountants' Report on the Company together with the opinion thereon of Grant Thornton UK LLP, the Company's reporting accountant.

Grant Thornton

The Directors
Sarantel Group PLC
Unit 2 Wendel Point
Ryle Drive
Park Farm South
Wellingborough
NN8 6QA

and

The Directors
Arbuthnot Securities Limited
Arbuthnot House
20 Ropemaker Street
London
EC2Y 9AR

Grant Thornton UK LLP
Enterprise House
115 Edmund Street
Birmingham
B3 2HJ

25 February 2005

Dear Sirs

SARANTEL GROUP PLC (THE COMPANY)

1. Introduction

1.1 We report on the financial information set out in paragraphs 2 to 5. This financial information has been prepared for inclusion in the Company's prospectus dated 25 February 2005 (the "Prospectus").

Basis of preparation

1.2 The financial information set out in paragraphs 2 to 5 below is based on the transactions of the Company from incorporation on 30 November 2004 to 31 December 2004. No adjustments were considered necessary.

Responsibility

1.3 The directors of the Company are responsible for the contents of the Prospectus in which this report is included.

1.4 It is our responsibility to compile the financial information set out in our report, to form an opinion on the financial information and to report our opinion to you.

Basis of opinion

1.5 We conducted our work in accordance with the Statements of Investment Circular Reporting Standards issued by the Auditing Practices Board. Our work included an assessment of evidence relevant to the amounts and disclosures in the financial information. It also included an assessment of whether the accounting policies are appropriate to the entity's circumstances, consistently applied and adequately disclosed.

1.6 We planned and performed our work so as to obtain all the information and explanations which we considered necessary in order to provide us with sufficient evidence to give reasonable assurance that the financial information is free from material misstatement whether caused by fraud or other irregularity or error.

Opinion

1.7 In our opinion the financial information gives, for the purposes of the Prospectus, a true and fair view of the state of affairs of the Company at 31 December 2004.

Consent

1.8 We consent to the inclusion in the Prospectus of this report and accept responsibility for this report for the purposes of paragraph 45(8)(b) of Schedule 1 to the Public Offers of Securities Regulations 1995 (as amended).

2. Statutory information

2.1 Statutory information (including share movements) on the Company is as set out in Part VII of the Prospectus.

2.2 The Company was incorporated on 30 November 2004 and has not completed its first accounting period. No statutory financial statements have been prepared, audited or filed with the Registrar of Companies since incorporation.

2.3 Since incorporation the Company has not traded.

3. Accounting policies

3.1 The financial information has been prepared in accordance with applicable UK accounting standards under the historical cost convention.

4. Balance sheet at 31 December 2004

	Note	*At 31 December 2004* £
Current assets		
Cash in hand		2
Net assets		2
Share capital	5.1	2

5. Notes to the financial information

5.1 *Share capital*

	£
Authorised	
50,000 Ordinary Shares of £1 each	50,000
Issued	
2 Ordinary Shares of £1 each	2

The Company was incorporated on 30 November 2004 with an authorised share capital of £50,000 divided into 50,000 Ordinary Shares of £1 each. Two Ordinary Shares of £1 each were issued at par.

5.2 *Post balance sheet events*

On 2 February 2005, the authorised share capital of the Company was amended by converting the existing 50,000 Ordinary Shares of £1 each into 500,000 A Ordinary Shares of 10p each.

On the same date, the authorised share capital of the Company was increased from £50,000 to £6,500,000 by the creation of 62,500,000 A Ordinary Shares of 10p each and 2,000,000 B Ordinary Shares of 10p each.

On 23 February 2005, A Ordinary Shares of 10p each were issued to the existing shareholders of Sarantel pro rata to their respective shareholdings in Sarantel in consideration for the transfer to the Company of the entire issued share capital of Sarantel.

Yours faithfully

GRANT THORNTON UK LLP

PART VI

Accountants' Report on Sarantel

Set out on the following pages is the Accountants' Report on Sarantel together with the opinion thereon of Grant Thornton UK LLP, Sarantel's reporting accountant.

Grant Thornton
Grant Thornton UK LLP
Enterprise House
115 Edmund Street
Birmingham
B3 2HJ

The Directors
Sarantel Group PLC
Unit 2 Wendel Point
Ryle Drive
Park Farm South
Wellingborough
NN8 6QA

and

The Directors
Arbuthnot Securities Limited
Arbuthnot House
20 Ropemaker Street
London
EC2Y 9AR

25 February 2005

Dear Sirs

SARANTEL LIMITED (SARANTEL)

1. Introduction

1.1 We report on the financial information set out in paragraphs 2 to 7. This financial information has been prepared for inclusion in the prospectus of Sarantel Group PLC dated 25 February 2005 (the "Prospectus").

Basis of preparation

1.2 The financial information set out in paragraphs 2 to 7 below is based on the audited financial statements of Sarantel for the three years ended 30 September 2004 and has been prepared on the basis set out in paragraph 3. No adjustments were considered necessary.

Responsibility

1.3 Such financial statements are the responsibility of the directors of Sarantel Limited who approved their issue.

1.4 The directors of Sarantel Group PLC are responsible for the contents of the Prospectus in which this report is included.

1.5 It is our responsibility to compile the financial information set out in our report from the financial statements, to form an opinion on the financial information and to report our opinion to you.

Basis of opinion

1.6 We conducted our work in accordance with the Statements of Investment Circular Reporting Standards issued by the Auditing Practices Board. Our work included an assessment of evidence relevant to the amounts and disclosures in the financial information. The evidence included that previously obtained by us relating to the audit of the financial statements underlying the financial information. It also included an assessment of significant estimates and judgements made by those responsible for the preparation of the financial statements underlying the financial information and whether the accounting policies are appropriate to the entity's circumstances, consistently applied and adequately disclosed.

1.7 We planned and performed our work so as to obtain all the information and explanations which we considered necessary in order to provide us with sufficient evidence to give reasonable assurance that the financial information is free from material misstatement, whether caused by fraud or other irregularity or error.

Opinion

1.8 In our opinion the financial information gives, for the purposes of the Prospectus, a true and fair view of the losses and cash flows of Sarantel for the three years ended 30 September 2004 and the state of affairs of Sarantel at the end of each of those years.

Consent

1.9 We consent to the inclusion in the Prospectus of this report and accept responsibility for this report for the purposes of paragraph 45(1)(b)(iii) of Schedule 1 to the Public Offers of Securities Regulations 1995 (as amended).

2. Statutory Information

2.1 Sarantel was incorporated under the name Pinco 1390 Limited on 30 March 2000. Its name was changed to Sarantel Limited on 13 July 2000.

2.2 At the date of this report Sarantel's authorised share capital comprises:

	No of shares
Ordinary shares of £0.10 each	41,681,687

2.3 The number of shares issued and fully paid are as follows:

	No of shares
Ordinary shares of £0.10 each	30,803,474

2.4 Sarantel is principally engaged in the research, development and manufacture of electronic antenna components and exploitation of the associated intellectual property.

2.5 Sarantel's wholly owned subsidiary undertakings (both of which are dormant and have not traded) are:

Sarantel USA Inc.,
Sarantel Asia Pacific Pte. Ltd

3. Accounting Policies

3.1 *Basis of accounting*

The financial information has been prepared in accordance with applicable accounting standards and under the historical cost convention.

The principal accounting policies of Sarantel have remained unchanged throughout the period and are set out below.

3.2 *Turnover*

Turnover shown in the profit and loss account represents amounts invoiced during the year, exclusive of Value Added Tax.

3.3 *Research and development*

Research and development expenditure is written off in the year in which it is incurred.

3.4 *Amortisation*

Amortisation is calculated so as to write off the cost of an asset, less its estimated residual value, over the useful economic life of that asset as follows:

Goodwill	– 5 years
Patents	– 5 years from year following acquisition

3.5 *Depreciation*

Depreciation is calculated so as to write off the cost of an asset, less its estimated residual value, over the useful economic life of that asset, from the date the asset is brought into use as follows:

Leasehold improvements	– 10 per cent.
Plant and machinery	– 10-33 per cent.
Fixtures and fittings	– 20 per cent.
Computer equipment	– 33 per cent.

3.6 *Stocks*

Stocks are valued at the lower of cost and net realisable value, after making due allowance for obsolete and slow moving items.

3.7 *Leasing and hire purchase commitments*

Assets held under finance leases, which are leases where substantially all the risks and rewards of ownership of the asset have passed to Sarantel, and hire purchase contracts, are capitalised in the balance sheet and are depreciated over their useful lives. The capital elements of future obligations under the leases and hire purchase contracts are included as liabilities in the balance sheet.

The interest elements of the rental obligations are charged in the profit and loss account over the periods of the leases and hire purchase contracts and represent a constant proportion of the balance of capital repayments outstanding.

Rentals payable under operating leases are charged in the profit and loss account on a straight line basis over the lease term.

3.8 *Deferred taxation*

Deferred tax is recognised on all timing differences where the transactions or events that give Sarantel an obligation to pay more tax in the future, or a right to pay less tax in the future, have occurred by the balance sheet date. Deferred tax assets are recognised when it is more likely than not that they will be recovered. Deferred tax is measured using rates of tax that have been enacted or substantively enacted by the balance sheet date.

3.9 *Foreign currencies*

Transactions in foreign currencies are translated into Sterling at the rate of exchange ruling at the date of the transaction. Monetary assets and liabilities in foreign currencies are translated into Sterling at the rates of exchange ruling at the balance sheet date. Exchange differences are dealt with through the profit and loss account.

4. Profit and Loss Accounts

		Year ended 30 September				
		2002		2003		2004
	Note	*£'000*	*£'000*	*£'000*	*£'000*	*£'000*
Turnover	7.1		106		205	839
Operating costs						
Change in stocks of finished goods and work in progress		—	(36)		(75)	
Raw materials and consumables		49	99		364	
			49	63		289
Other operating income			—	—		(95)
Other external charges			—	—		142
Staff costs	7.3		778	889		1,501
Other operating charges			1,392	1,659		2,071
			2,219	2,611		3,908
Operating loss before depreciation and amortisation			(2,113)	(2,406)		(3,069)
Depreciation and other amounts written off tangible and intangible fixed assets			302	471		921
Operating loss	7.2		(2,415)	(2,877)		(3,990)
Interest receivable and similar income			22	53		34
Interest payable and similar charges			(428)	(106)		—
Loss on ordinary activities before taxation			(2,821)	(2,930)		(3,956)
Tax on loss on ordinary activities	7.4		200	275		200
Loss for the financial year	7.17		(2,621)	(2,655)		(3,756)

There were no other gains or losses in any of the years ended 30 September 2002, 2003 or 2004.

5. Balance Sheets

	Note	At 30 September 2002 £'000	2003 £'000	2004 £'000
Fixed assets				
Intangible assets	7.5	707	634	544
Tangible assets	7.6	2,956	2,886	2,593
Investments	7.7	—	6	6
		3,663	3,526	3,143
Current assets				
Stocks	7.8	182	228	364
Debtors	7.9	522	485	607
Cash at bank and in hand		103	1,270	2,069
		807	1,983	3,040
Creditors: amounts falling due within one year	7.10	(774)	(486)	(811)
Net current assets		33	1,497	2,229
Total assets less current liabilities		3,696	5,023	5,372
Creditors: amounts falling due after more than one year	7.11	(6,723)	—	(27)
		(3,027)	5,023	5,345
Capital and reserves				
Called up share capital	7.16	109	626	854
Share premium	7.17	1,044	11,232	14,258
Other reserve	7.17	—	—	824
Profit and loss account	7.17	(4,180)	(6,835)	(10,591)
Shareholders' (deficiency)/funds		(3,027)	5,023	5,345

6. Cash Flow Statements

	Note	At 30 September 2002 £'000	2003 £'000	2004 £'000
Net cash outflow from operating activities	7.18	(2,506)	(2,673)	(3,095)
Returns on investments and servicing of finance				
Interest (paid)/received		(406)	(53)	34
Taxation received		200	470	172
Capital expenditure and financial investment				
Payments to acquire intangible fixed assets		(122)	(136)	(146)
Payments to acquire tangible fixed assets		(454)	(192)	(392)
Receipts from sale of fixed assets		—	—	95
		(576)	(328)	(443)
Acquisitions and disposals				
Acquisition of shares in Group undertakings		—	(6)	—
Net cash from acquisition of subsidiary undertaking		—	—	850
Net cash (outflow)/inflow from capital expenditure and financial investment		(576)	(334)	407
Cash outflow before financing		(3,288)	(2,590)	(2,482)
Financing				
Issue of equity share capital		8	517	202
Share premium on issue of equity share capital		249	10,188	3,026
Issue of non-equity share capital		15	—	—
Hire purchase		—	—	53
Receipt/(repayment) of bank loans		1,320	(6,948)	—
Net cash inflow from financing		1,592	3,757	3,281
Increase/(decrease) in cash	7.19	(1,696)	1,167	799

7. Notes to the financial information

7.1 *Turnover*

Overseas turnover amounted to 74 per cent., 86 per cent. and 96 per cent. of total turnover for the years ended 30 September 2002, 2003 and 2004 respectively.

7.2 *Operating loss*

Operating loss is stated after charging:

	Year ended 30 September		
	2002	*2003*	*2004*
	£'000	*£'000*	*£'000*
Amortisation of intangible fixed assets	184	209	236
Depreciation of owned tangible fixed assets	118	262	412
Impairment of owned tangible fixed assets	—	—	272
Depreciation of assets held under finance leases and hire purchase agreements	—	—	1
Auditors' fees	6	7	8
Other operating income – profit on sale of current asset investment	—	—	(95)

7.3 *Staff costs*

Staff costs during the period were as follows:

	Year ended 30 September		
	2002	*2003*	*2004*
	£'000	*£'000*	*£'000*
Wages and salaries	693	800	1,367
Social security costs	85	89	134
	778	889	1,501

The average number of employees was as follows:

	Year ended 30 September		
	2002	*2003*	*2004*
	No	*No*	*No*
Direct	5	7	18
Office	11	19	26

Remuneration in respect of directors was as follows:

	Year ended 30 September		
	2002	*2003*	*2004*
	£'000	*£'000*	*£'000*
Emoluments	377	281	291
Compensation for loss of directorship	—	—	62
Payments to third parties for directors' services	36	44	45
	413	325	398

Amounts set out above include remuneration in respect of the highest paid director as follows:

	Year ended 30 September		
	2002	*2003*	*2004*
	£'000	*£'000*	*£'000*
Emoluments	115	115	84
Compensation for loss of directorship	—	—	62
	115	115	146

7.4 *Tax on loss on ordinary activities*

Current tax:

	Year ended 30 September		
	2002	*2003*	*2004*
	£'000	*£'000*	*£'000*
UK Corporation tax based on the results for the year at 30%	(200)	(200)	(165)
Credit in respect of prior year	—	(75)	(35)
	(200)	(275)	(200)

The taxation credits arise in respect of research and development expenditure and in respect of 2003 and 2004 are subject to agreement with the Inland Revenue.

Tax losses available at 30 September 2004, subject to agreement with the Inland Revenue, amount to approximately £6 million.

Factors affecting the tax charge for the year:

	Year ended 30 September		
	2002	*2003*	*2004*
	£'000	*£'000*	*£'000*
Loss on ordinary activities before taxation	(2,821)	(2,930)	(3,956)
Loss on ordinary activities multiplied by applicable rate of corporation tax in the UK of 19% (2002: 19.5%; 2003: 19%)	(550)	(557)	(752)
Effect of:			
Expenses not deductible for tax purposes	7	100	63
Differences between capital allowances and depreciation	(394)	60	89
Creation of tax losses	602	246	469
Research and development tax credit	135	(49)	(34)
Adjustments to tax credit in respect of prior years	—	(75)	(35)
Current tax credit for the period	(200)	(275)	(200)

7.5 Intangible fixed assets

	Goodwill £'000	*Patents £'000*	*Total £'000*
Cost			
At 1 October 2001	761	160	921
Additions	—	122	122
At 30 September 2002	761	282	1,043
Additions	—	136	136
At 30 September 2003	761	418	1,179
Additions	—	146	146
At 30 September 2004	761	564	1,325
Amortisation			
At 1 October 2001	152	—	152
Charge for the year	152	32	184
At 30 September 2002	304	32	336
Charge for the year	153	56	209
At 30 September 2003	457	88	545
Charge for the year	152	84	236
At 30 September 2004	609	172	781
Net book value			
30 September 2002	457	250	707
30 September 2003	304	330	634
30 September 2004	152	392	544

Goodwill arose in connection with the purchase of certain fixed assets and intellectual property rights.

7.6 *Tangible fixed assets*

	Leasehold improvements £'000	*Plant and Machinery £'000*	*Total £'000*
Cost			
At 1 October 2001	197	2,438	2,635
Additions	—	454	454
At 30 September 2002	197	2,892	3,089
Additions	—	192	192
At 30 September 2003	197	3,084	3,281
Additions	—	392	392
At 30 September 2004	197	3,476	3,673
Amortisation			
At 1 October 2001	—	15	15
Charge for the year	10	108	118
At 30 September 2002	10	123	133
Charge for the year	20	242	262
At 30 September 2003	30	365	395
Charge for the year	20	393	413
Impairment	—	272	272
At 30 September 2004	50	1,030	1,080
Net book value			
30 September 2002	187	2,769	2,956
30 September 2003	167	2,719	2,886
30 September 2004	147	2,446	2,593

The impairment is in respect of equipment for a product which is being discontinued.

Included within the net book value of £2,593,000 is £59,000 (2003 – £Nil; 2002 – £Nil) relating to assets held under finance leases and hire purchase agreements. The depreciation charged in the year in respect of such assets amounted to £1,000 (2003 – £Nil; 2002 – £Nil).

7.7 *Investments*

	Shares in subsidiary undertakings £'000
Cost	
At 1 October 2002	—
Additions	6
At 30 September 2003	6
Additions	—
At 30 September 2004	6
Net book value	
30 September 2003 and 30 September 2004	6

Sarantel owns 100 per cent. of the issued share capital of Sarantel USA Inc., a company incorporated in the United States of America. The company was incorporated on 6 June 2003 and has been dormant since that date.

Sarantel also owns 100 per cent. of the issued share capital of Sarantel Asia Pacific Pte. Ltd., a company incorporated in Singapore. The company was incorporated on 19 February 2004 and has been dormant since that date.

7.8 *Stocks*

	Year ended 30 September		
	2002	*2003*	*2004*
	£'000	*£'000*	*£'000*
Raw materials	182	192	253
Work in progress	—	10	36
Finished goods	—	26	75
	182	228	364

7.9 *Debtors*

	As at 30 September		
	2002	*2003*	*2004*
	£'000	*£'000*	*£'000*
Trade debtors	38	61	247
VAT recoverable	—	106	51
Corporation tax recoverable	392	197	225
Other debtors	92	121	84
	522	485	607

The debtors above include the following amount falling due after more than one year:

	As at 30 September		
	2002	*2003*	*2004*
	£'000	*£'000*	*£'000*
Other debtors	60	60	60

7.10 *Creditors: amounts falling due within one year*

	As at 30 September		
	2002	*2003*	*2004*
	£'000	*£'000*	*£'000*
Bank loans and overdrafts	225	—	—
Trade creditors	338	304	400
Other taxation and social security	56	30	46
Amounts due under finance leases and hire purchase agreements	—	—	26
Other creditors	155	152	339
	774	486	811

7.11 *Creditors: amounts falling due after more than one year*

	As at 30 September		
	2002	*2003*	*2004*
	£'000	*£'000*	*£'000*
Bank loans and overdrafts	6,723	—	—
Amounts due under finance leases and hire purchase agreements	—	—	27
	6,723	—	27

7.12 *Leasing commitments*

Sarantel had aggregate annual commitments under non-cancellable operating leases in respect of land and buildings as set out below:

	As at 30 September		
	2002	*2003*	*2004*
	£'000	*£'000*	*£'000*
Operating leases which expire:			
After more than 5 years	101	101	101

7.13 *Capital commitments*

	As at 30 September		
	2002	*2003*	*2004*
	£'000	*£'000*	*£'000*
Amounts contracted for but not provided for	104	142	302

7.14 *Contingent liabilities*

There were no contingent liabilities at 30 September 2002, 2003 or 2004.

7.15 *Related Party Transactions*

There were no transactions with related parties during the years ended 30 September 2002, 2003 or 2004.

7.16 **Share capital**

Authorised share capital

	As at 30 September		
	2002	*2003*	*2004*
	£'000	*£'000*	*£'000*
Ordinary shares of £0.10 each	39	—	—
A ordinary shares of £0.10 each	46	1,317	1,317
B ordinary shares of £0.01 each	—	228	228
B ordinary shares of £0.10 each	24	—	—
C ordinary shares of £0.10 each	22	—	
C ordinary shares of £0.01 each	—	—	26
D ordinary shares of £0.01 each	—	—	40
	131	1,545	1,611

Allotted, called up and fully paid:

	As at 30 September					
	2002		*2003*		*2004*	
	'000	*£'000*	*'000*	*£'000*	*'000*	*£'000*
Ordinary shares of £0.10 each	226	23	—	—	—	—
A ordinary shares of £0.10 each	424	43	4,859	486	6,241	624
B ordinary shares of £0.01 each	—	—	14,041	140	17,236	172
B ordinary shares of £0.10 each	214	21	—	—	—	—
C ordinary shares of £0.10 each	224	22	—	—	—	—
C ordinary shares of £0.01 each	—	—	—	—	2,580	26
D ordinary shares of £0.01 each	—	—	—	—	3,159	32
	1,088	109	18,900	626	29,216	854

Allotments during the respective years

Sarantel made the following allotments in the respective years:

Year ended 30 September 2002

19,700 ordinary £0.10 shares at £1.33 per share
49,383 A ordinary £0.10 shares at £1.33 per share
14,815 B ordinary £0.10 shares at £1.33 per share
35,803 C ordinary £0.10 shares at £1.33 per share
113,365 C ordinary £0.10 shares at £1.00 per share

The difference of £249,260 between the total consideration of £272,567 and the total nominal value of £23,307 has been credited to the share premium account.

Year ended 30 September 2003

3,770,774 A ordinary £0.10 shares at £1.00 per share
3,435,279 B ordinary £0.01 shares at £1.00 per share
10,606,060 B ordinary £0.01 shares at £0.33 per share

The difference of £10,188,562 between the total consideration of £10,706,052 and the total nominal value of £517,490 has been credited to the share premium account.

Sarantel also converted 225,700 ordinary £0.10 shares, 213,815 B ordinary £0.10 shares and 224,168 C ordinary £0.10 shares into 663,683 A ordinary £0.10 shares.

Year ended 30 September 2004

1,382,408 A ordinary £0.10 shares at £0.36 per share
3,194,444 B ordinary £0.01 shares at £0.36 per share

The difference of £1,477,717 between the total consideration of £1,647,905 and the total nominal value of £170,188 has been credited to the share premium account.

Rights issue

Sarantel issued 3,159,042 D ordinary £0.01 shares at £0.50 per share following a rights issue.

The difference of £1,547,931 between the total consideration of £1,579,521 and the total nominal value of £31,590 has been credited to the share premium account.

Share for share exchange

Sarantel issued 2,579,879 C ordinary £0.01 shares at £0.33 per share in connection with a share for share exchange on an acquisition made during the year. The investment was recorded as a current asset investment at its fair value of £850,000 and the difference of £824,201 between the consideration and the total nominal value of the shares, £25,799, was credited to an other reserve in accordance with section 131 Companies Act 1985.

The acquired company subsequently loaned £850,000 to Sarantel and later waived this loan prior to that company being sold. The loan waiver was set off against the cost of the investment.

In the opinion of the directors the substance of the transaction was to acquire this company solely to issue shares in exchange for the cash balances held by the acquired company. The other reserve account was therefore not released to the profit and loss reserve when that company was sold as this would have the effect of creating a distributable profit from the proceeds of a share issue.

The profit on disposal of the company after extracting the cash balances was £94,736 and is shown in other operating income.

Contingent rights to the allotment of shares

Sarantel has issued 1,304,519 B ordinary £0.01 share warrants. 395,428 warrants are exercisable at par before February 2013, and 909,091 warrants are exercisable at £0.33 per share before February 2008.

At 30 September 2004, certain employees of Sarantel had share options in the A ordinary £0.10 shares totalling 8,656,258 (2003 – 5,338,000; 2002 – nil). The following directors have agreements for share options included in the total:

(i) O Leisten has 1,728,702 (2003 – 739,000; 2002 – nil) A options exercisable at £0.10. 744,675 are exercisable before February 2013 and 984,027 are exercisable before August 2014. 895,377 are exercisable should Sarantel be sold or become listed on a stock exchange, 416,662 are exercisable from August 2004, and 416,663 are exercisable in equal tranches, such that by May 2006 all 416,663 are exercisable.

(ii) D Wither has 2,846,958 (2003 – nil; 2002 – nil) A options exercisable at £0.10 before August 2014. 1,423,479 are exercisable should Sarantel be sold or become listed on a stock exchange, 711,740 are exercisable from August 2004, and 711,739 are exercisable in equal tranches, such that by May 2006 all 711,739 are exercisable.

(iii) D Dey has 593,200 (2003 – nil; 2002 – nil) A options exercisable at £0.10 before August 2014. 296,600 are exercisable should Sarantel be sold or become listed on a stock exchange, 148,300 are exercisable from August 2004, and 148,300 are exercisable in equal tranches, such that by May 2006 all 148,300 are exercisable.

(iv) J Chace has 148,200 (2003 – nil; 2002 – nil) A options exercisable at £0.10 before August 2014. 74,100 are exercisable should Sarantel be sold or become listed on a stock exchange, 37,050 are exercisable from August 2004, and 37,050 are exercisable in equal tranches, such that by May 2006 all 37,050 are exercisable.

Shareholder rights to dividends

A ordinary shares, B ordinary shares, C ordinary shares and D ordinary shares constitute separate classes but rank *pari passu* in all respects. Holders of A ordinary shares, B ordinary shares, C ordinary shares and D ordinary shares are paid dividends at a rate proposed by the directors and approved by the shareholders. The dividends are not cumulative.

The shareholders of A ordinary shares, B ordinary shares, C ordinary shares and D ordinary shares each have one vote per share.

Return of capital

On liquidation or return of capital or otherwise, the assets of Sarantel remaining after payment of its liabilities shall be applied in the following order of priority; first, paying to each shareholder a sum equal to the subscription price, which each shareholder paid or was credited. If proceeds are insufficient to pay in full, then proceeds shall be distributed pro rata; second, the balance of proceeds shall be distributed amongst the shareholders in proportion to the nominal value of the shares held.

7.17 *Reconciliation of shareholders' funds and movement on reserves*

	Share capital £'000	*Share premium account £'000*	*Profit and loss account £'000*	*Other reserve £'000*	*Total shareholders' funds £'000*
At 1 October 2001	86	795	(1,559)	—	(678)
Loss for the year	—	—	(2,621)	—	(2,621)
New equity share capital subscribed	23	249	—	—	272
At 30 September 2002	109	1,044	(4,180)	—	(3,027)
Loss for the year	—	—	(2,655)	—	(2,655)
New equity share capital subscribed	517	10,188	—	—	10,705
At 30 September 2003	626	11,232	(6,835)	—	5,023
Loss for the year	—	—	(3,756)	—	(3,756)
New equity share capital subscribed	202	3,026	—	—	3,228
Share for share exchange	26	—	—	824	850
At 30 September 2004	854	14,258	(10,591)	824	5,345

7.18 *Net cash outflow from operating activities*

	Year ended 30 September		
	2002	*2003*	*2004*
	£'000	*£'000*	*£'000*
Operating loss	(2,415)	(2,877)	(3,990)
Amortisation	184	209	236
Depreciation	118	262	413
Impairment	—	—	272
Profit on disposal of fixed assets	—	—	(95)
(Increase) in stocks	(182)	(46)	(136)
(Increase)/decrease in debtors	70	(158)	(94)
Increase/(decrease) in creditors	(281)	(63)	299
Net cash outflow from operating activities	(2,506)	(2,673)	(3,095)

7.19 *Reconciliation of net cashflow to movement in net (debt)/funds*

	Year ended 30 September		
	2002	*2003*	*2004*
	£'000	*£'000*	*£'000*
Increase/(decrease) in cash in the year	(1,696)	1,167	799
Cash (outflow)/inflow from financing	(1,320)	6,948	(53)
Movement in net funds resulting from cash flows	(3,016)	8,115	746
Net (debt)/funds at start of the year	(3,829)	(6,845)	1,270
Net (debt)/funds at the end of the year	(6,845)	1,270	2,016

7.20 *Analysis of net (debt)/funds*

	At 30 September		
	2002	*2003*	*2004*
	£'000	*£'000*	*£'000*
Cash in hand and at bank	103	1,270	2,069
Bank loans and overdrafts	(6,948)	—	—
Hire purchase liabilities	—	—	(53)
	(6,845)	1,270	2,016

7.21 *Post balance sheet events*

On 29 October 2004 Sarantel allotted 620,451 D Ordinary £0.01 Shares at £0.55 per share.

On 23 February 2005 the authorised share capital of Sarantel was increased by the creation of:

153,542,009 B Ordinary Shares of £0.01 each;
28,935,351 C Ordinary Shares of £0.01 each;
33,786,178 D Ordinary Shares of £0.01 each.

On 23 February 2005, Sarantel allotted a further 571,644 C Ordinary Shares of £0.01 each at 33 pence per share in connection with the acquisition made during the year ended 30 September 2004.

On 23 February 2005, there was a 9 for 1 bonus issue of shares for the holders of the B Ordinary Shares, C Ordinary Shares and D Ordinary Shares. The bonus issue was satisfied by the capitalisation of £2,210,600 of Sarantel's share premium account.

On 23 February 2005, following the bonus issue of shares, the share capital of Sarantel was consolidated and divided so that:

176,312,110 B Ordinary Shares of £0.01 each became 17,631,211 B Ordinary Shares of £0.10 each;
31,515,230 C Ordinary Shares of £0.01 each became 3,151,523 C Ordinary Shares of £0.10 each;
37,794,930 D Ordinary Shares of £0.01 each became 3,779,493 D Ordinary Shares of £0.10 each.

On 23 February 2005, following the consolidation and division of shares, all A Ordinary Shares of £0.10 each, B Ordinary Shares of £0.10 each, C Ordinary Shares of £0.10 each and D Ordinary Shares of £0.10 each, issue or unissued, were re-designated as Ordinary Shares of £0.10 each.

Yours faithfully

GRANT THORNTON UK LLP

PART VII

Additional Information

1. Incorporation and Status of the Company

1.1 The Company was incorporated and registered in England and Wales on 30 November 2004 with the name Pinco 2231 PLC as a public limited company under the Act with registered number 05299925.

1.2 The Company's name was changed to Sarantel Group PLC on 2 February 2005 by a special resolution of the shareholders dated 2 February 2005.

1.3 The principal legislation under which the Company operates is the Act and regulations made thereunder.

1.4 The Company was issued with a certificate pursuant to section 117 of the Act (allowing it to carry on business and to exercise its borrowing powers) on 24 February 2005.

1.5 The Company's principal activity is that of a holding company. The Company owns the entire issued share capital of Sarantel which itself has two wholly owned subsidiaries, which are Sarantel USA Inc., and Sarantel Asia Pacific Pte. Ltd. Sarantel is a producer of miniature antennas for consumer electronics whilst Sarantel USA Inc. and Sarantel Asia Pacific Pte. Limited are both dormant companies.

1.6 The liability of the members of the Company is limited.

1.7 The Company's registered office is located at Unit 2, Wendel Point, Ryle Drive, Park Farm South, Wellingborough NN8 6AQ.

2. Share Capital of the Company

2.1 At the date of its incorporation, the Company had an authorised share capital of £50,000 divided into 50,000 Ordinary Shares of £1 each, of which two Ordinary Shares of £1 each were issued fully paid to the subscribers to the Memorandum of Association of the Company, and the remainder were unissued.

2.2 On 2 February 2005 by or pursuant to resolutions of the shareholders of the Company:

2.2.1 the authorised share capital of the Company was altered by sub-dividing each of the existing 50,000 Ordinary Shares of £1 each into 10 A Ordinary Shares of 10p each;

2.2.2 the authorised share capital of the Company was increased from £50,000 to £6,500,000 by the creation of 62,500,000 A Ordinary Shares of 10p each ranking equally with the existing A Ordinary Shares of 10p each and 2,000,000 B Ordinary Shares of 10p each ranking *pari passu* in all respects with the A Ordinary Shares, save that the subscribers for B Ordinary Shares shall only be entitled to receive 10 clear days' notice from the directors requiring payment of any moneys unpaid on their shares, whereas the holders of A Ordinary Shares are entitled to 14 clear days' notice;

2.2.3 the directors were given the power to allot relevant securities in relation to the specific proposed issues set out in paragraph 2.2.4 and in relation to up to an aggregate nominal amount of £1,375,480 generally;

2.2.4 the pre-emption rights were disapplied in relation to the Placing, the allotment of up to 8,000,000 A Ordinary Shares pursuant to the 2000 Scheme, the allotment of 30,803,473 A Ordinary Shares in relation to the share for share exchange referred to in paragraph 2.3, the issue of warrants proposed to be issued to eTechnology VCT PLC to subscribe for up to 909,091 A Ordinary Shares, the allotment of equity

securities to holders of A Ordinary Shares and B Ordinary Shares in proportion (or as nearly as may be) to their existing holding of Ordinary Shares (for this purpose the A Ordinary Shares and B Ordinary Shares being treated as one class) and for allotments of equity securities for cash up to an aggregate nominal amount of £229,017; and

2.2.5 new articles of association of the Company were adopted.

2.3 On 23 February 2005, A Ordinary Shares of 10p each were issued to the existing shareholders of Sarantel *pro rata* to their respective shareholdings in Sarantel in consideration for the transfer to the Company of the entire issued share capital of Sarantel.

2.4 As at the date of this document, the Company has an authorised share capital of £6,500,000 divided into 63,000,000 A Ordinary Shares and 2,000,000 B Ordinary Shares and a fully paid up or credited as fully paid up issued share capital of £3,080,347.3 divided into 30,803,473 A Ordinary Shares.

2.5 Immediately following the Second Admission, the authorised share capital of the Company will be £6,500,000 divided into 63,000,000 A Ordinary Shares and 2,000,000 B Ordinary Shares and the issued share capital will be £5,275,469.3 divided into 51,658,353 A Ordinary Shares and 1,096,340 B Ordinary Shares each fully paid or credited as fully paid.

2.6 Immediately following the Second Admission, the directors will have a general authority pursuant to section 80 of the Act to allot relevant securities up to an aggregate amount of £1,224,530.7.

2.7 Save as disclosed in this document, the Directors have no present intention of issuing any part of the authorised but unissued share capital.

2.8 The provisions of section 89(1) of the Act confer on Shareholders rights of pre-emption in respect of the allotment of equity securities (as defined in section 94(2) of the Act) which are, or are to be, paid up in cash. These provisions will apply to the whole of the authorised but unissued share capital of the Company except to the extent disapplied by the resolutions referred to in paragraph 2.2 above.

2.9 Save as disclosed in this document:

2.9.1 no unissued share or loan capital of the Company has been issued or is now proposed to be issued, fully or partly paid, either for cash or for consideration other than cash;

2.9.2 there has been no listed or unlisted securities issued by the Company not representing share capital and there are no convertible securities issued by the Company;

2.9.3 no unissued share or loan capital of the Company is under option or is agreed conditionally or unconditionally to be put under option;

2.9.4 there are no shares in the capital of the Company currently in issue with a fixed date on which entitlement to a dividend arises; and

2.9.5 no commission, discount, brokerage or other special terms has been granted by the Company or is now proposed in connection with the issue or sale of any part of the share or loan capital of the Company.

2.10 The Placing Shares that are being issued by the Company under the Placing are being issued at a price of 82 pence per share, representing a premium of 72 pence over their nominal value. The Placing Price is payable in full in cash on application. No applications for Placing Shares have been or will be accepted other than under the terms of the Placing Agreement and the placing letters sent to prospective placees under the Placing. All Placing Shares have been conditionally placed by Arbuthnot.

2.11 The Ordinary Shares in issue at the date of this document are in registered form.

2.12 eTechnology VCT PLC has a warrant to subscribe for up to 909,091 A Ordinary Shares at a price of 33p per A Ordinary Share. This warrant was granted by the Company on 23 February 2005 in consideration for eTechnology VCT PLC agreeing to cancel and waive all and any rights which it had under a warrant over 909,091 B Ordinary Shares of 1 pence each in Sarantel dated 10 February 2003. The terms of the 2005 warrant in all material respects mirror the terms of the 2003 warrant, save that the 2005 warrant must be exercised by 23 February 2007.

3. Employee Share Incentives

3.1 *Options granted under the 2000 Scheme*

EMI options and unapproved options have been granted under the 2000 Scheme. Qualifying EMI options offer income tax and NICs relief to optionholders, together with beneficial taper relief treatment for capital gains tax purposes.

As part of the pre-Admission re-organisation of the Group, optionholders under the 2000 Scheme were asked to approve the surrender of their options over shares in Sarantel in exchange for options over shares in the Company. This was effective on 23 February 2005, such that one optionholder who has options over 30,000 shares in Sarantel has declined to roll over his options. If he chooses to exercise his options, he may become a minority shareholder in Sarantel, although in certain circumstances, he may be forced to exchange all or certain of his shares in Sarantel resulting from the exercise of his options for shares in the Company on a 1:1 basis. Such shares would represent no greater than 0.097 per cent. of the share capital of Sarantel.

The exchange of options took place on a 1:1 basis, and the rolled over options are on exactly the same terms as the surrendered options. The rolled over options will continue to operate under the rules of the 2000 Scheme, which are summarised at paragraph 3.2 below, although no further options will be granted under the 2000 Scheme following Admission. The Inland Revenue has confirmed that the rolled over EMI options will maintain their beneficial tax status as EMI options.

A number of the options were adjusted, with the approval of shareholders, and the optionholders, to take account of a rights issue which took place in September 2004. The table below summarises the numbers of shares and the exercise prices for the options currently outstanding.

Date of Grant	*Number of Shares*	*Exercise Price Per Share*	*Last Date for Exercise*
26/02/03	707,722	10p & 25p	25/02/13
26/02/03	1,478,000	10p	31/12/05
04/08/04	30,000	10p	28/07/05
04/08/04	3,855,967	10p & 25p	03/08/14
05/08/04	787,090	25p	04/08/14
17/02/05	1,096,500	27.5p	16/02/15
23/02/05	301,404(1)	10p	31/12/05

(1) These options will be granted under a stand-alone unapproved share option contract, to an ex-employee of Sarantel, in satisfaction of a contractual promise made to the individual whilst he remained in employment.

3.2 *Summary of the 2000 Scheme*

3.2.1 *Introduction*

Options granted under the 2000 Scheme take the form of UK unapproved share options or EMI options ("Options"). EMI options offer tax advantages if all the requirements of the EMI legislation are met. Unapproved options do not offer any tax benefits. Options were granted by way of individual share option contracts, executed by the optionholder and Sarantel. The terms of the individual contracts may have varied some of the terms set out below in relation to those specific contracts.

3.2.2 *Exercise and lapse of options*

An Option is normally exercisable between the third and tenth anniversaries of the date of grant, to the extent that any performance condition attaching to the Option is satisfied.

Options may be exercised early if the optionholder ceases to be employed within the Group by reason of any of the following: ill-health, injury, disability, retirement, redundancy, or the business unit or company by which he is employed being sold outside the Group. In these

cases, an Option is exercisable within the period of six months following the date of cessation, over a number of shares representing the proportion of the performance period as fell before the date of cessation of employment. If not exercised during that period, the Option will lapse. If an optionholder dies in service, his personal representatives may exercise his Option, over a number of shares representing the proportion of the performance period as fell before the date of death.

If an optionholder leaves the Group for any other reason, his Option may only be exercised to the extent, and within such periods, as the directors may determine.

3.2.3 *Demerger, reconstruction or winding-up of the Company*

Options may be exercised early in the event of a demerger or statutory reconstruction of the Company within specified periods. If notice is given to shareholders of a resolution for the voluntary winding up of the Company, Options may be exercised at any time before the winding up commences or within a period notified to optionholders. All Options will lapse on the commencement of winding up.

3.2.4 *Takeover of the Company*

If shareholders accept a takeover offer for the Company, Options may be exercised during the period of six months following the change of control over a number of shares representing the proportion of the performance period as fell before the date of the change of control. If Options are not then exercised they will lapse.

3.2.5 *Variation of share capital*

In the event of a variation in the ordinary share capital of the Company the directors may adjust the number of shares subject to any Option and/or the exercise price. In the case of any variation other than a sub-division, consolidation of capitalisation issue, the Company's auditors must confirm in writing that any adjustment is fair and reasonable.

3.2.6 *Rights attaching to the shares*

Shares issued or transferred on the exercise of an Option shall rank equally in all respects with all of the other ordinary shares in the capital of the Company for the time being in issue, save as regards any rights attaching to ordinary shares by reference to a record date prior to the allotment or transfer of such shares.

3.2.7 *Non-transferability of options*

Options granted under the 2000 Scheme are not transferable (except in the case of the death of the optionholder to the optionholder's personal representatives) or pensionable.

3.2.8 *Administration and amendment*

The 2000 Scheme is administered by the directors of the Company or such appropriate person(s) to whom the directors delegate its administration. The directors may at any time for any reason amend or terminate the 2000 Scheme. No amendments shall, however, be made which benefit optionholders, to specified key features of the Scheme including the definition of "eligible employee" and the limits on the grant of Options without the prior approval of shareholders in general meeting, except to the extent that the directors consider it is a minor amendment which is necessary or appropriate to benefit the administration of the 2000 Scheme, to take account of a change in legislation or to obtain or maintain favourable tax, exchange control or regulatory treatment for optionholders or for the Company or any group company.

4. Memorandum and Articles of Association

4.1 The memorandum of association of the Company provides that its principal object is to carry on business as a holding company. Its objects are set out in full in clause 4 of the memorandum of association.

4.2 The Articles which were amended by special resolution on 2 February 2005, *inter alia*, include provisions to the following effect:

4.2.1 *Share Capital*

The A Ordinary Shares and the B Ordinary Shares shall constitute separate classes of shares but shall rank *pari passu* in all respects, save that the subscribers for B Ordinary Shares shall only be entitled to receive 10 clear days' notice from the directors requiring payment of any moneys unpaid on their shares, whereas the holders of A Ordinary Shares are entitled to 14 clear days' notice. The B Ordinary Shares will automatically convert into A Ordinary Shares forthwith on the subscribers thereof transferring or disposing of the shares.

4.2.2 *Voting Rights*

Subject to disenfranchisement as provided in paragraph 4.2.5 below and subject to any special terms as to voting on which any shares may be issued (no such shares currently being in issue), on a show of hands every member present in person (or, being a corporation, present by a duly authorised representative) shall have one vote and on a poll every member present in person or by proxy shall have one vote for every share of which he is the holder.

4.2.3 *Transfer of Shares*

The shares are in registered form and are capable of being held in uncertificated form.

A member may transfer all or any of his uncertificated shares by means of a relevant systems, as defined in the Uncertificated Securities Regulations, which includes CREST. The directors may refuse to register any transfer of an uncertificated share where permitted by the Uncertificated Securities Regulations. If the directors refuse to register a transfer of an uncertificated share they shall, within two months of the date on which the transfer instruction relating to such a transfer was received by the Company, send to the transferee notice of the refusal.

All transfers of certificated shares must be effected by a transfer in writing in any usual form or any other form approved by the directors. The instrument of transfer shall be executed by or on behalf of the transferor and, in the case of a partly paid share held in certificated form and may also refuse to register any transfer of a certificated share unless the instrument of transfer is:

(a) duly stamped (if so required), is lodged with the Company's registrars or at such other place as the directors may appoint and is accompanied by the certificate for the shares to which it relates and such other evidence as the directors may reasonably require to show the right of the transferor to make the transfer;

(b) in respect of only one class of shares; and

(c) in favour of not more than four transferees.

4.2.4 *Dividends*

The Company in general meeting may declare dividends in accordance with the respective rights of the members, provided that no dividend shall be payable in excess of the amount recommended by the directors. The directors may pay such interim dividends as appear to them to be justified. No dividend or other moneys payable in respect of a share shall bear interest as against the Company.

There are no fixed dates on which entitlement to dividends arises.

All dividends unclaimed for a period of twelve years after becoming due for payment shall be forfeited and shall revert to the Company.

4.2.5 *Disclosure of Interests in Shares*

If any member or other person appearing to be interested in shares of the Company is in default in supplying within 14 days after the date of service of a notice requiring such member or other person to supply to the Company in writing all or any such information as is referred to in section 212 of the Act, the directors may, for such period as the default shall continue, impose sanctions upon the relevant shares.

The sanctions available are the suspension of voting or other rights conferred by membership in relation to meetings of the Company in respect of the relevant shares and, additionally, in the case of a shareholding representing at least 0.25 per cent. by nominal value of any class of shares of the Company then in issue, the withholding of payment of any dividends, on, and the restriction of transfers of, the relevant shares.

4.2.6 *Distribution of Assets on Liquidation*

On a winding-up any surplus assets will be divided amongst the holders of the Ordinary shares according to the respective numbers of shares held by them and in accordance with the provisions of the Act, subject to the rights of any shares which may be issued with special rights or privileges (no such shares presently being in issue). The Articles provide that the liquidator may, with the sanction of an extraordinary resolution and any other sanction required by the Act, divide amongst the members *in specie* the whole or any part of the assets of the Company in such manner as he may determine.

4.2.7 *Changes in Share Capital*

Without prejudice to any rights attached to any existing shares, any share may be issued with such rights or restrictions as the Company may by ordinary resolution determine, or in the absence of such determination as the directors may determine. Subject to the Act, the Company may issue shares which are, or at the option of the Company or the holder are liable, to be redeemed.

(a) The Company may by ordinary resolution increase its share capital, consolidate and divide all or any of its share capital into shares of larger amount, subdivide its shares or any of them into shares of smaller amount or cancel or reduce the nominal value of any shares which have not been taken or agreed to be taken by any person and diminish the amount of its share capital by the amounts so cancelled or the amount of the reduction.

(b) Subject to the Act, the Company may by special resolution reduce its share capital, any capital redemption reserve and any share premium account, and may also, subject to the Act, purchase its own shares.

4.2.8 *Variation of Rights*

Whenever the capital of the Company is divided into different classes of shares, the rights attached to any class may (unless otherwise provided by the terms of issue of that class) be varied or abrogated either with the consent in writing of the holders of three-fourths of the issued shares of the class or with the sanction of an extraordinary resolution passed at a separate meeting of such holders.

4.2.9 *Directors' Interests*

(a) A director who is in any way, directly or indirectly, interested in a transaction or arrangement with the Company shall, at a meeting of the directors, declare in accordance with section 317 of the Act the nature of his interest.

(b) Provided that he has declared his interest in accordance with paragraph (a), a director may be a party to or otherwise interested in any transaction or arrangement with the Company or in which the Company is otherwise interested and may be a director or other officer or otherwise interested in any body corporate promoted by the Company or in which the Company is otherwise interested. No director so interested shall be accountable to the Company, by reason of his being a director, for any benefit which he derives from such office or interest or any such transaction or arrangement.

(c) Any director may act by himself or his firm in a professional capacity for the Company (otherwise than as auditor) and he or his firm shall be entitled to remuneration for professional services as if he were not a director.

(d) A director shall not vote at a meeting of the directors in respect of a matter in which he has any material interest otherwise than by virtue of his interest in shares, debentures or other securities of, or otherwise in or through, the Company unless his interest arises only because the case falls within one or more of the following paragraphs:

(i) the giving to him of any guarantee, security or indemnity in respect of money lent or an obligation incurred by him at the request of or for the benefit of the Company or any of its subsidiary undertakings;

(ii) the giving to a third party of any guarantee, security or indemnity in respect of any obligation of the Company or any of its subsidiary undertakings for which he has assumed responsibility in whole or in part under a guarantee or indemnity or by the giving of security;

(iii) the subscription by him for shares, debentures or other securities of the Company or any of its subsidiary undertakings or by virtue of his participation in the underwriting or sub-underwriting of an offer of such shares, debentures or other securities for subscription, purchase or exchange;

(iv) any proposal concerning any other company in which he is interested, directly or indirectly, whether as an officer or shareholder or otherwise, provided that the shares in which he is interested do not represent one per cent, or more of any class of the equity share capital of such company or of the voting rights available to members of the relevant company;

(v) any proposal relating to an arrangement in whole or in part for the benefit of the employees of the Group which does not award to him as such any privilege or advantage not awarded to the employees to whom such arrangement relates; and

(vi) any proposal concerning the purchase or maintenance of insurance against any liability which would otherwise attach to all or any of the directors.

(e) Where proposals are under consideration concerning the appointment of two or more directors to offices or employments with the Company or any company in which the Company is interested the proposals may be divided and considered in relation to each director separately and (if not otherwise precluded from voting) each of the directors concerned shall be entitled to vote and be counted in the quorum in respect of each resolution except that concerning his own appointment.

(f) The Company may by ordinary resolution suspend or relax these provisions to any extent or ratify any transaction not duly authorised by reason of a contravention of these provisions.

4.2.10 *Remuneration of Directors*

(a) The ordinary remuneration of the directors (other than an executive director) shall be such amount as the directors shall from time to time determine (provided that unless otherwise approved by the Company in general meeting the aggregate of the ordinary remuneration of such directors shall not exceed £150,000 per year) to be divided among them in such proportion and manner as the directors may determine. The directors shall also be paid by the Company all travelling, hotel and other expenses as they may incur in attending meetings of the directors or general meetings or otherwise in connection with the discharge of their duties.

(b) Any director who, by request of the directors, performs special services or goes or resides abroad for any purposes of the Company may be paid such extra remuneration as the directors may determine.

(c) The emoluments and benefits of any executive director for his services as such shall be determined by the directors and may be of any description, including membership of any pension or life assurance scheme for employees or their dependants, or apart from membership of any such scheme, the payment of a pension or other benefits to him or his dependants on or after retirement or death.

4.2.11 *Retirement of Director*

A director shall be capable of being appointed or reappointed a Director despite having attained the age of 70 or any other age and shall not be required to retire by reason of his having attained any particular age and section 293 of the Act (relating to the appointment and retirement as directors of persons who are aged 70 or over) shall not apply.

4.2.12 *Borrowing Powers*

The directors may exercise all the powers of the Company to borrow money and to mortgage or charge its undertaking, property and uncalled capital.

The directors shall restrict the borrowings of the Company and by the exercise of the Company's voting and other rights or powers of control over its subsidiary undertakings secure that they restrict their borrowings so that the aggregate amount at any time outstanding in respect of money borrowed by the Group (excluding intra-Group borrowings) shall not without the previous sanction of an ordinary resolution of the Company exceed a sum equal to the greater of three times the adjusted share capital and reserves.

5. Directors' and Other Interests

5.1 Save as set out in paragraphs 5.2 and 5.3 below neither the Directors nor the persons connected (within the meaning of section 346 of the Act) with them have any interests in the issued share capital of the Company:

5.1.1 which have been notified by each Director to the Company pursuant to section 324 or 328 of the Act;

5.1.2 which are required to be shown in the register maintained under section 325 of the Act; or

5.1.3 which are interests of a connected person (within the meaning of section 346 of the Act) of a Director which would, if the connected person were a director, be required to be disclosed under paragraphs 5.1.1 and 5.1.2 above and the existence of which is known to or could with reasonable diligence be ascertained by that Director, as at the date of this document and will be, immediately following Admission.

5.2 As at the date hereof and immediately following Admission, the interests, all of which are beneficial unless otherwise indicated, in the issued share capital of the Company which have been notified by each Director pursuant to section 324 or 325 of the Act, which are required pursuant to section 325 of the Act to be entered in the register referred to therein, or which are interests of a connected person of a Director which would, if the connected person were a Director, be required to be disclosed in accordance with the foregoing, and the existence of which is known to or could with reasonable diligence be ascertained by that Director, are as shown below:

	Number of A Ordinary Shares	*Number of B Ordinary Shares*	*Percentage of the issued ordinary share capital*	*Number of A Ordinary Shares immediately following Second Admission*	*Number of B Ordinary Shares immediately following Second Admission*	*Percentage of issued ordinary share capital immediately following Second Admission*
David Dey	—	—	—	—	—	—
David Wither	—	—	—	—	—	—
Sitkow Yeung	—	—	—	—	—	—
Oliver Leisten	121,264	—	0.4	121,264	—	0.2
David Ward	—	—	—	—	—	—

5.3 The following options over A Ordinary Shares have been granted to the Directors and at Admission remain outstanding:

Director	*Date of Grant*	*Number of Ordinary Shares*	*Exercise Price (p)*	*Last Date for Exercise*
David Dey	04/08/04	444,900	10p and 25p	03/08/14
David Wither	04/08/04	1,423,479	10p	03/08/14
David Wither	05/08/04	711,739	25p	04/08/14
Sitkow Yeung	04/08/04	225,000	10p and 25p	03/08/14
Oliver Leisten	26/02/03	375,175	10p and 25p	25/02/13
Oliver Leisten	04/08/04	833,325	10p	03/08/14
Oliver Leisten	05/08/04	75,351	25p	04/08/14
David Ward	—	—	—	—

5.4 Save as set out in paragraphs 5.2 and 5.3, none of the Directors (nor any person connected with them within the meaning of section 346 of the Act) has or will immediately following Admission have any interest in the share capital of the Company.

5.5 Insofar as it is known to the Directors, the following persons are as at the date of this document and will be, immediately following Admission, interested in 3 per cent. or more of the Company's issued share capital:

	Number of A Ordinary Shares	*Number of B Ordinary Shares*	*Percentage of the issued ordinary share capital*	*Number of A Ordinary Shares immediately following Second Admission*	*Number of B Ordinary Shares immediately following Second Admission*	*Percentage of issued ordinary share capital immediately following Second Admission*
Foresight Technology VCT	8,488,974	—	27.6	8,488,974	284,146	16.6
TriVest VCT	4,363,866	—	14.2	4,363,866	243,902	8.7
MTI Partners	11,217,682	—	36.4	11,217,682	—	21.3
eTechnology VCT	2,452,448	—	8.0	2,452,448	—	4.6

5.6 Save as set out in this paragraph 5, the Directors are not aware of any person who will immediately following Admission, be interested (within the meaning of the Act) directly or indirectly in 3 per cent. or more of the issued share capital) of the Company or of any persons who directly or indirectly, jointly or severally, will exercise or could exercise control over the Company.

5.7 Save as disclosed in this document, no Director has any interest, whether direct or indirect, in any transaction which is or was unusual in its nature or conditions or significant to the business of the Company taken as a whole and which was effected by any member of the Group during the current financial year and which remains in any respect outstanding or unperformed.

5.8 There are no loans, warranties or guarantees granted or provided by the Company to or for the benefit of any of the Directors which are now outstanding.

5.9 There is no arrangement under which any of the Directors has waived or agreed to waive future emoluments nor has there been any waiver of emoluments during the financial year immediately preceding the date of this document.

5.10 None of the Directors or persons connected with them within the meaning of section 346 of the Act has a related financial product (as defined in the AIM Rules) referenced to the A Ordinary Shares and/or the B Ordinary Shares.

6. Directors' Service Agreements

6.1 David Wither entered into a service agreement with Sarantel on 19 January 2004. The service agreement is terminable by either party by the giving of six months' notice. Mr Wither's basic annual salary is £130,000 per annum and he also participates in the Executive Bonus Scheme which can pay up to 50 per cent. of his basic salary. The service agreement provides for a holiday entitlement of 25 days per year. Mr Wither is also a member of the company pension scheme and has entitlements to death in service benefit, 3 months' company sick pay, BUPA medical insurance cover and travel costs. There is an extensive restrictive covenant preventing competition and solicitation of business for six months following employment. Mr Wither entered into a letter of appointment as an executive director with the Company on 24 February 2005. The letter of appointment is terminable by either party at will. Mr Wither is not entitled to any director's fee or other fee from the Company. Mr Wither is entitled to be reimbursed for any reasonable expenses incurred in carrying out his duties for the Company. There are no other arrangements that require disclosure to enable investors to estimate the possible liability of the Group upon early termination of the service agreement.

6.2 Sitkow Yeung entered into a service agreement with Sarantel on 13 May 2004. The service agreement is terminable by either party by the giving of 6 months' notice (this was extended from 3 months' notice on 24 February 2005). Mr Yeung's basic annual salary is £84,000 per annum and he also participates in the Executive Bonus Scheme which can pay up to 20 per cent. of basic salary. The service agreement provides for a holiday entitlement of 25 days per year. Mr Yeung is also a member of the company pension scheme and has entitlements to death in service benefit, 3 months' company sick pay and BUPA medical insurance cover. Mr Yeung entered into a letter of appointment as an executive director with the Company on 24 February 2005. The letter of appointment is terminable by either party at will. Mr Yeung is not entitled to any director's fee or other fee from the Company. Mr Yeung is entitled to be reimbursed for any reasonable expenses incurred in carrying out his duties for the Company. There are no other arrangements that require disclosure to enable investors to estimate the possible liability of the Group upon early termination of the service agreement.

6.3 Oliver Leisten entered into a service contract with Sarantel on 29 September 2000. The service contract is terminable by either party by the giving of 6 months' notice (this was extended from 3 months' notice on 24 February 2005). Mr Leisten's basic salary is £77,500 per annum. The service agreement provides for a holiday entitlement of 25 days per year. Mr Leisten is entitled to 3 months' company sick pay and BUPA medical insurance cover. Mr Leisten entered into a letter of appointment with the Company on 24 February 2005. The letter of appointment is terminable by either party at will. Mr Leisten is not entitled to any director's fee or other fee from the Company. Mr Leisten is entitled to be reimbursed for any reasonable expenses incurred in carrying out his duties for the Company. There are no other arrangements that require disclosure to enable investors to estimate the possible liability of the Group upon early termination of the service agreement.

6.4 David Dey entered into a letter of appointment with the Company on 24 February 2005. The letter of appointment is terminable by either party by the giving of 3 months' notice. Mr Dey is entitled to a fee of £20,000 per annum. Mr Dey will provide his services for 50 days per year and he will be reimbursed for any expenses reasonably incurred in carrying out his duties. There are no other arrangements that require disclosure to enable investors to estimate the possible liability of the Group upon early termination of the service agreement.

6.5 MTI Partners entered into an agreement with the Company on 24 February 2005 under which it undertakes to provide the services of David Ward to the Company, or an alternative person acceptable to the Company. The agreement is terminable by either party by the giving of 3 months' notice. MTI Partners is entitled to a fee of £20,000 per annum. Mr Ward is not entitled to any director's or other fee from the Company. There are no other arrangements that require disclosure to enable investors to estimate the possible liability of the Group upon early termination of the services agreement. Mr Ward has entered into a letter of appointment with the Company on 24 February 2005 reflecting the terms of the appointment of MTI Partners to provide his services and setting out further terms of his appointment, namely that Mr Ward will provide his services for 24 days per year and he will be reimbursed for any expenses reasonably incurred in carrying out his duties.

6.6 For the financial period ended 30 September 2004 the aggregate remuneration and benefits in kind granted to the Directors amounted to £245,000 including bonuses (Messrs Wither & Yeung having joined part way through the financial year).

6.7 For the current financial period due to end on 30 September 2005 under the current arrangements in force at the date of this document, it is estimated that the aggregate remuneration and benefits in kind granted to the Directors will be approximately £345,000 excluding bonuses.

7. Additional Information on the Directors

7.1 The Directors currently hold the following directorships (other than of the Company) and have or have held the following directorships within the five years prior to the publication of this document and are currently or have been partners in the following firms within the five years prior to publication of this document.

Name	*Current Directorships*	*Past Directorships*
David Dey	Dot Dash Limited Murray Extra Return Investment Trust PLC TFB Group Limited	Alpha Telecom Communications Limited DMN Installations Limited Lanergy Limited Moneyextra Mortgages Limited Neos Networks Limited Startech Partners Limited
David Wither	None	None
Sitkow Yeung	See-a-Sound Limited	Digital Communication Technologies Limited Elektex Limited Eurotextiles Company (Employee Trustee) Limited Eurotextiles Company Limited Protodel International Limited
Oliver Leisten	None	None
David Ward	Eleksen Limited Powerlase Limited	Heritage Image Library Limited Heritage Image Partnership Limited iBase Image Systems Limited Phocis Limited

7.2 Mr Dey was a director of Lanergy Limited when it was subject to a creditors voluntary liquidation on 10 April 2003.

7.3 Mr Dey was a director of World Telecom Public Limited Company that went into administrative receivership on 23 December 1999 and of Global Numbers Limited that went into administrative receivership on 23 December 1999.

7.4 Mr Dey was a director of Startech Investments Limited when it was dissolved on 15 January 1999.

7.5 Mr Yeung was a director of Protodel International Limited that went into administrative receivership on 23 July 2002 and came out of administrative receivership on 10 December 2004.

7.6 Mr Yeung was a director of Digital Communication Technologies Limited within the 12 months preceding such company going into creditors voluntary arrangement on 6 January 2005.

7.7 Mr Ward was a director of Phocis Limited when it was subject to a creditors voluntary liquidation on 4 April 2004.

7.8 Mr Ward was a director of Calder Aluminium Limited in the 12 months preceding such company going into administration on 11 August 1999.

7.9 Save as disclosed above, no Director has:

7.9.1 any unspent convictions;

7.9.2 had any bankruptcy order made against him or entered into any voluntary arrangements;

7.9.3 been a director of any company which has been placed in receivership, compulsory liquidation, creditors' voluntary liquidation or administration or which has entered into any company voluntary arrangements or any composition or arrangement with its creditors generally or any class of its creditors whilst he was a director of that company or within 12 months preceding such event;

7.9.4 been a partner in any partnership which has been placed in compulsory liquidation, administration or been the subject of a partnership voluntary arrangement whilst he was a partner in that partnership or within the 12 months preceding such event;

7.9.5 been a partner in any limited liability partnership which has been placed in compulsory liquidation, administration or been the subject of a partnership voluntary arrangement whilst he was a partner in that limited liability partnership or within the 12 months preceding such event;

7.9.6 had any personal assets, or assets of partnership in which the director was a partner, placed in receivership at the time the director was a partner or within the 12 months preceding the event;

7.9.7 been publicly criticised by any statutory or regulatory authority (including recognised professional bodies); or

7.9.8 been disqualified by a court from acting as a director or acting in the management or conduct of the affairs of any company.

8. Material Contracts

8.1 The Company has not entered into any contracts other than in the normal course of business since its incorporation that are or may be material other than those referred to in paragraph 9 of this Part VII or set out below:

Share for Share Exchange Agreement

On 23 February 2005, the Company (1) and the then shareholders of Sarantel (or persons on their behalf) (the "Sellers") (2) entered into an agreement whereby the Sellers have agreed to sell the whole of the legal and beneficial interest in the entire issued share capital of Sarantel with full title guarantee to the Company in consideration for the allotment and issue to the Sellers of A Ordinary Shares.

8.2 Sarantel has not entered into any contracts other than in the normal course of business within the two years immediately preceding the date of this document which are or may be material.

9. Placing Arrangements

9.1 *Placing Agreement*

On 25 February 2005, the Company (1), the Directors (2) and Arbuthnot (3) entered into the Placing Agreement pursuant to which Arbuthnot has agreed conditionally, *inter alia,* upon First Admission (expected to be on 2 March 2005, or such later date as the Company and Arbuthnot may

agree, being in any event not later than 8.00 a.m. on 30 March 2005) to use its reasonable endeavours to procure Placees to subscribe for the First Placing Shares at the Placing Price, and conditionally, *inter alia*, upon Second Admission (expected to be on 3 March 2005, or such later date as the Company and Arbuthnot may agree, being in any event not later than 8.00 a.m. on 30 March 2005), to use its reasonable endeavours to procure Placees to subscribe for the Second Placing Shares at the Placing Price.

Under the Placing Agreement, which is subject to satisfaction of certain conditions, the Company has agreed to pay Arbuthnot commissions of: (i) 3 per cent. of the value of any funds raised up to £5.0 million; and (ii) 4 per cent. of the value of any funds raised above £5.0 million. In each case the relevant percentage is of the funds raised excluding any funds raised from existing Shareholders. In addition, the Company has agreed to pay Arbuthnot a commission of 1 per cent. of any funds raised from existing Shareholders, 0.5 per cent. of any funds raised dependent on the valuation of the Company before any funds are raised and a corporate finance fee of £175,000.

The obligations of Arbuthnot to use its reasonable endeavours to procure subscribers, and themselves to subscribe for Ordinary Shares in the event any New Ordinary Shares are not issued and unconditionally allotted to placees who have returned placing letters, are subject to certain conditions which are typical for an agreement of this nature. These conditions include, amongst others, the Placing Agreement not having been terminated by Arbuthnot as a result of, *inter alia*, any of the warranties under the Placing Agreement not being, or having ceased to be, true and accurate and First Admission occurring by no later than 8.00 a.m. on 30 March 2005. In addition, Arbuthnot has the right to terminate the Placing Agreement in other specified circumstances that are typical for an agreement of this nature. These circumstances include the occurrence of certain significant changes in the condition (financial or otherwise), prospects or earnings of the Group and certain changes in the financial, political or economic conditions (as more fully set out in the Placing Agreement).

The Placing Agreement contains provisions entitling Arbuthnot to terminate its obligations in respect of the Second Placing where certain circumstances arise after the First Admission and prior to the Second Admission. The First Placing is not dependent upon the Second Placing occurring however the Second Placing cannot occur unless the First Placing has occurred.

The Company has agreed to pay to and reimburse Arbuthnot in respect of all stamp duty and any other tax charges and any related costs, fines, penalties or interest arising on the issue of the Placing Shares. The Company has also agreed to pay the costs, charges, fees and expenses of, in connection with, or incidental to, the Placing, Admission and the arrangements contemplated by the Placing Agreement.

The Company and the Directors have agreed to give certain customary warranties and indemnities to Arbuthnot. Arbuthnot must bring claims against the Company for breach of the warranties or under the indemnities within a period of six years from First Admission (or seven years in the case of matters relating to tax) but are unlimited as to amount. The liabilities of the Directors are limited as to time and amount.

Each of the Directors has agreed not to sell, transfer or otherwise dispose of any interest in any Ordinary Shares held by him, other than in certain specified circumstances which are typical for an agreement of this nature (such as a third party offer for the entire issued share capital of the Company or transfers to immediate family or trustees), for a period of three years following Admission. On both the first and second anniversary of First Admission, one third of each Director's interests in Ordinary Shares will be released from such restrictions. The Directors have also agreed that any sale or disposal of Ordinary Shares will be effected through Arbuthnot for such time as it remains the Company's nominated adviser and broker.

9.2 *Nominated Adviser and Broker Agreement*

On 25 February 2005, the Company (1), Arbuthnot (2) and the Directors (3) entered into an agreement whereby Arbuthnot has agreed to act as nominated adviser and broker to the Company, under the AIM Rules, in relation to Admission on the terms set out thereto. Arbuthnot has further

undertaken to provide its services as nominated adviser and broker to the Company on a continuing basis following Admission in return for an annual fee of £37,000 payable semi-annually in advance. The letter contains certain indemnities by the Company in favour of Arbuthnot. The appointment may be terminated by either party giving not less than 7 days' written notice.

9.3 *Lock-In and Orderly Marketing Agreement*

On 25 February 2005, the Company (1), Arbuthnot (2) and the Covenantors entered into a lock-in and orderly market agreement pursuant to which the Covenantors have agreed not to sell, transfer or otherwise dispose of any interest in Ordinary Shares held by them immediately following Second Admission (other than any New Ordinary Shares allotted under the Placing), other than in certain specified circumstances which are typical for an agreement of this nature (such as a third party offer for the entire issued share capital of the Company or transfers to immediate family or trustees), for a period of 12 months following Admission. The Covenantors have also agreed that any sale or disposal of Ordinary Shares will be effected through Arbuthnot for such time as it remains the Company's nominated adviser and broker.

10. Property

Premises are occupied at Unit 2, Wendel Point, Ryle Drive, Park Farm South, Wellingborough NN8 6AQ on a fifteen year lease which expires on 7 January 2016. There is the ability to terminate the lease in 2011, subject to complying with certain pre-conditions.

The current rent is £101,170 per annum (excluding VAT) which is subject to an open market upward only review in 2006, 2011 and 2016. There is also a liability to pay a quarterly service charge for services provided by the landlord for the benefit of the industrial estate on which the property is located.

The lease permits the use of premises for the design, development and manufacture of mobile antennas.

There is a further liability for the repair and maintenance of the facilities.

11. Litigation

No member of the Group is involved in any legal or arbitration proceedings which may have or have had during the twelve months preceding the date of this document a significant effect on the Group's financial position and, so far as the Directors are aware, there are no such proceedings pending or threatened against or being brought by any member of the Group.

12. Working Capital

The Directors are of the opinion, after making due and careful enquiry, that following Admission and taking account of the net proceeds of the Placing, the Group will have sufficient working capital for its present requirements, that is for at least the next twelve months from the date of Admission.

13. Taxation

The comments set out below are based on existing law and what is understood to be current Inland Revenue practice. They are intended as a general guide only and apply only to Shareholders who are resident and ordinarily resident in the UK for tax purposes (except to the extent that specific reference is made to Shareholders resident outside the UK), who hold the shares as investments, who are the absolute beneficial owners of those shares, and who are not employees or connected with employees of the Company. Any person who is in any doubt as to their taxation position or who is subject to taxation in any jurisdiction other than the UK, should consult their own professional advisers immediately.

13.1 *Taxation of Dividends*

Under current laws relevant in the various jurisdictions comprising the UK no taxation will be withheld from dividends paid by the Company.

An individual UK resident Shareholder is generally entitled to a tax credit in respect of the dividend, which he can set off against his total liability to UK income tax. The amount of the tax credit is equal to ⅑th of the cash dividend. The cash dividend aggregated with the amount of the tax credit

(the "gross dividend") will be included in the Shareholder's income for UK tax purposes and will be treated as the top slice of the Shareholder's income. Thus, a Shareholder receiving a dividend of £90 will be treated as having received income of £100 which has a tax credit of £10 attached to it.

An individual UK resident Shareholder who, after taking into account the gross dividend, pays income tax at the lower rate or basic rate will pay tax on the gross dividend at the Schedule F ordinary rate of 10 per cent. against which he can set the tax credit. Such a Shareholder will have no further liability to account for income tax on the dividend.

An individual UK resident Shareholder who, after taking into account the gross dividend, pays income tax at the higher rate will pay tax on the gross dividend at the Schedule F upper rate of 32.5 per cent. against which he can set the tax credit. Such a Shareholder will have a liability to account for additional tax on the gross dividend, calculated by multiplying the gross dividend by the Schedule F upper rate and deducting the tax credit. This will be equivalent to 25 per cent. of the cash dividend received.

An individual UK resident Shareholder who does not pay income tax or whose liability to income tax does not exceed the amount of the tax credit will not be entitled to claim repayment of the tax credit attaching to the dividend.

Trustees who are liable to income tax at (the rate applicable to trusts (previously 34 per cent. but increased to 40 per cent. with effect from 6 April 2004) will pay tax on the gross dividend at the Schedule F trust rate (previously 25 per cent. but increased to 32.5 per cent., with effect from 6 April 2004) against which they can set the tax credit. To the extent that the tax credit exceeds the trustees' liability to account for income tax the trustees will have no right to claim repayment of the tax credit. Special taxation provisions apply where trustees of discretionary trusts receive payment of dividends and subsequently make a distribution out of the trust. Trustees who are in any doubt as to their position should consult their own professional advisers immediately.

A UK resident corporate Shareholder will not generally be liable to corporation tax on any dividend received.

United Kingdom pension funds and charities are generally exempt from tax on dividends which they receive but are not entitled to claim repayment of the tax credit.

Whether a non UK resident Shareholder is entitled to repayment of any part of the tax credit in respect of dividends paid to him, will depend upon the provisions of the double tax treaty (if any) between the country in which the Shareholder is resident and the UK. A non UK resident Shareholder should consult his own professional advisers on the possible application of such provisions, the procedure for claiming repayment and what relief or credit (if any) may be claimed for such tax credit in the jurisdiction in which he is resident.

13.2 *Taxation of Chargeable Gains*

No liability to UK taxation on capital gains will arise solely by reason of a person applying for New Ordinary Shares to be issued to him.

On a subsequent disposal of New Ordinary Shares a liability to tax on capital gains may arise, depending on individual circumstances. For Shareholders who are individuals, taper relief, and for Shareholders within the charge to UK corporation tax, indexation allowance, may reduce any chargeable gain but this allowance will not create or increase any allowable loss.

13.3 *Stamp Duty and Stamp Duty Reserve Tax*

No liability to stamp duty or stamp duty reserve tax should arise on the allotment of New Ordinary Shares under the Placing.

13.3.1 *Shares held outside the CREST system*

The conveyance or transfer on sale of the Ordinary Shares will usually be subject to stamp duty on the instrument of transfer, generally at the rate of 0.5 per cent. of the amount or value of the consideration. Stamp duty is charged in multiples of £5. An obligation to account for stamp duty reserve tax ("SDRT") at the rate of 0.5 per cent., of the amount or value of the consideration will also arise if an unconditional agreement to transfer the Ordinary Shares is not completed by a duly stamped instrument of transfer before the

"accountable date" for SDRT purposes. The accountable date is the seventh day of the month following the month in which the agreement for the transfer is made. Payment of the stamp duty will cancel the liability to account for SDRT. It is the purchaser who is in general liable to account for stamp duty or SDRT.

13.3.2 *Shares held within the CREST system*

The transfer of the Ordinary Shares in uncertificated form in the CREST system will generally attract a liability to SDRT at the rate of 0.5 per cent. of the amount or value of the consideration. The SDRT is payable on the fourteenth day following the date of the unconditional agreement for the transfer of the Ordinary Shares.

The above statements are intended as a general guide to the current position. Certain categories of person are not liable to stamp duty or SDRT, and others may be liable at a higher rate or may, although not primarily liable for the tax, be required to notify and account for it under the Stamp Duty Reserve Tax Regulations 1986.

14. General

14.1 There has been no significant change in the trading or financial position of the Company since 30 November 2004, being the date on which the Company was incorporated. Furthermore, there has been no significant change in the trading or financial position of Sarantel since 30 September 2004, being the date to which the most recent audited financial statements of Sarantel have been prepared.

14.2 Arbuthnot has given and not withdrawn its written consent to the issue of this document with the inclusion of its name in the form and context in which it appears.

14.3 The auditors and reporting accountants of the Company are Grant Thornton UK LLP.

14.4 Grant Thornton UK LLP has given and not withdrawn its written consent to the inclusion of references to it herein in the form and context in which they appear and to the inclusion of its reports in this document and they accept responsibility for their report for the purposes of the POS Regulations.

14.5 PA Strategy Partners Limited has given and not withdrawn its written consent to the inclusion of the references to it herein in the form and context in which they appear and to the inclusion of its report in this document and they accept responsibility for their report for the purposes of the POS Regulations.

14.6 Withers & Rogers has given and not withdrawn its written consent to the inclusion of the references to it herein in the form and context in which they appear and to the inclusion of its report in this document and they accept responsibility for their report for the purposes of the POS Regulations.

14.7 Other than the current application for Admission, the Ordinary Shares have not been admitted to dealings on any investment exchange nor has any application for such admission been made nor are there intended to be any other arrangements for there to be dealings in the Ordinary Shares.

14.8 Save as disclosed in this document, no person (excluding professional advisers disclosed in this document and trade suppliers) has (i) received directly or indirectly from the Company within the 12 months preceding the date of this document or (ii) entered into contractual arrangements to receive, directly or indirectly, from the Company on or after Admission any of the following:

14.8.1 fees totalling £10,000 or more; or

14.8.2 securities in the Company where these have a value of £10,000 or more calculated by reference to the Placing Price; or

14.8.3 any other benefit to a value of £10,000 or more on the date of First Admission.

14.9 The Company's nominated adviser and broker is Arbuthnot, whose principal place of business is Arbuthnot House, 20 Ropemaker Street, London EC2Y 9AR.

14.10 The accounting reference date of the Company is 30 September.

14.11 The minimum amount which, in the opinion of the Directors, must be raised under the Placing to provide the sums required in respect of the matters specified in paragraph 21 (a) of Part IV of Schedule 1 of the POS Regulations is £18.0 million, is made up as follows:

14.11.1 any preliminary expenses payable by the Company and any commission payable to any person in consideration of his agreeing to subscribe for or of his procuring or agreeing to procure subscription for, any Ordinary Shares – approximately £1.3 million (excluding VAT); and

14.11.2 working capital – approximately £16.7 million.

14.12 The amount to be provided in respect of each of the matters mentioned in paragraph 14.11 above otherwise than out of the proceeds of the Placing is £nil.

14.13 Save as disclosed in this document, there are no patents or other intellectual property rights, licences or particular contracts which are or may be of fundamental importance to the Group's business.

14.14 There have been no significant recent trends concerning the development of the Company's business since 30 November 2004 being the date of its incorporation. Save as disclosed in this document, there have been no significant recent trends concerning the development of Sarantel since 30 September 2004, being the date to which the most recent audited financial statements of Sarantel have been prepared.

14.15 The financial information relating to the Company and Sarantel set out in Parts V and VI respectively and otherwise in this document does not comprise statutory accounts as referred to in section 240 of the Act.

14.16 The gross proceeds of the Placing are expected to be £18.0 million. The total costs and expenses in relation to Admission and Placing (including registration and London Stock Exchange fees, printing, advertising and distribution costs, legal, accounting, corporate finance and public relations fees and expenses) payable by the Company and (assuming subscription in full) are estimated to amount to approximately £1.3 million, (excluding VAT).

14.17 It is expected that definitive share certificates will be despatched by first class post on 9 March 2005 in respect of the First Placing Shares and on 9 March 2005 in respect of the Second Placing Shares. In respect of uncertificated shares it is expected that Shareholders' CREST stock accounts will be credited on 2 March 2005 in respect of the First Placing Shares and on 3 March 2005 in respect of the Second Placing Shares. No temporary documents of title will be issued.

14.18 There have been no interruptions and there have been no significant changes to the business of either the Company or Sarantel which have or have had a significant effect on the financial position of the Company since incorporation or Sarantel since 30 September 2004 being the date to which the most recent audited financial statements of Sarantel have been prepared respectively and there are no significant investments in progress by the Company, or save as disclosed in this document, by Sarantel.

14.19 Save as disclosed in this document, the Directors are unaware of any exceptional factors which have influenced the Company's or Sarantel's activities.

14.20 The Directors are not aware of any arrangements under which future dividends are waived or agreed to be waived.

14.21 Monies received from applicants pursuant to the Placing will be held in accordance with the terms of the application procedures issued by Arbuthnot until such time as the Placing becomes unconditional in all respects. If the Placing does not become unconditional in all respects by 30 March 2005 (or such later date as Arbuthnot and the Company may agree), application monies will be returned to applicants as soon as practicable at their own risk and without interest prior to delivery of the Ordinary Shares. The subscription monies for the First Placing Shares must be received by Arbuthnot by 28 February 2005 and in respect of the Second Placing Shares by 28 February 2005 as set out in the placing letters sent to Placees.

14.22 The Group has secured key man insurance cover of £0.5 million each for David Wither and Oliver Leisten, the Company's Chief Executive Officer and Chief Technology Officer respectively.

15. Documents available for Inspection

Copies of the following documents will be available for inspection at the registered office of the Company and at the offices of Pinsent Masons, Dashwood House, Old Broad Street, London EC2M 1NR during normal business hours for a period of 14 days following the date of this document:

15.1 the Memorandum and Articles of Association of the Company;

15.2 the published audited accounts of Sarantel for each of the three financial years ended 30 September 2004;

15.3 the technical experts' report included in Part III of this document;

15.4 the intellectual property report included in Part IV of this document;

15.5 the accountants' reports on the Company and Sarantel included in Parts V and VI of this document respectively;

15.6 the rules of the 2000 Scheme;

15.7 the Directors' service agreements and letters of appointment referred to in paragraph 6 above;

15.8 the material contracts referred to in paragraphs 8 and 9 above;

15.9 the consent letters referred to in paragraph 14 above; and

15.10 this document.

16. Availability of this document

Copies of this document will be available free of charge at the offices of Arbuthnot Securities Limited, Arbuthnot House, 20 Ropemaker Street, London EC2Y 9AR during normal business hours on any weekday (Saturdays and public holidays excepted) from the date of this document for a period of one month from the date of First Admission.

25 February 2005

DEFINITIONS

The following definitions apply throughout this document unless the context requires otherwise:

"2000 Scheme"	the Sarantel 2000 Unapproved Executive Share Option Scheme, details of which are set out in paragraph 3 of Part VII of this document
"A Ordinary Shares"	A Ordinary Shares of 10p each in the capital of the Company
"Act" or "Companies Act"	the Companies Act 1985, as amended
"Admission"	First Admission and Second Admission, or in the event that Second Admission does not occur, First Admission
"AIM"	AIM, a market operated by the London Stock Exchange
"AIM Rules"	the rules of AIM as set out in the publication entitled "AIM Rules for Companies" published by the London Stock Exchange from time to time
"Articles"	the articles of association of the Company
"Arbuthnot"	Arbuthnot Securities Limited, the Company's nominated adviser and broker
"B Ordinary Shares"	B Ordinary Shares of 10p each in the capital of the Company
"Board"	the board of Directors of the Company
"Combined Code"	the Combined Code (Code of Good Governance and the Code of Best Practice) as appended to the listing rules of the UKLA
"Company"	Sarantel Group PLC
"Covenantors"	Foresight, Foresight 3 VCT PLC, TriVest VCT PLC, MTIP Nominees and eTechnology VCT PLC
"CREST"	the relevant system (as defined in the CREST Regulations) operated by CRESTCo which facilitates the transfer of title to shares in uncertificated form
"CRESTCo"	CRESTCo Limited
"CREST Regulations"	the Uncertificated Securities Regulations 2001 (SI 2001/3755)
"Directors"	the directors of the Company, whose names are set out on page 4 of this document
"directors"	the directors of the Company, from time to time
"Enlarged Share Capital"	the Ordinary Shares in issue immediately following Admission
"EMI options"	Enterprise Management Incentive options
"Existing Ordinary Shares"	the 30,803,473 A Ordinary Shares in issue at the date of this document
"First Admission"	the admission of the Existing Ordinary Shares and the First Placing Shares to trading on AIM becoming effective in accordance with the AIM Rules
"First Placing"	the placing of the First Placing Shares pursuant to the Placing
"First Placing Shares"	the 11,074,460 A Ordinary Shares and 1,096,340 B Ordinary Shares to be issued pursuant to the First Placing
"Foresight"	Foresight Technology VCT PLC
"FSA"	the Financial Services Authority
"Group"	the Company and all or any of its subsidiaries
"London Stock Exchange"	London Stock Exchange PLC
"MTI Partners"	MTI Partners Limited

"New Ordinary Shares"	the 20,854,880 A Ordinary Shares and 1,096,340 B Ordinary Shares to be issued by the Company and placed with subscribers pursuant to the Placing Agreement
"Official List"	the Official List of the UKLA
"Ordinary Shares"	the A Ordinary Shares and the B Ordinary Shares
"Placees"	the subscribers of Placing Shares procured pursuant to the Placing
"Placing"	the conditional placing by Arbuthnot on behalf of the Company of the Placing Shares pursuant to the Placing Agreement
"Placing Agreement"	the conditional agreement dated 25 February 2005 between the Company, the Directors and Arbuthnot, relating to the Placing, details of which are set out in paragraph 9 of Part VII of this document
"Placing Price"	82p per Placing Share
"Placing Shares"	the First Placing Shares and the Second Placing Shares, or in the event that Second Admission does not occur, the First Placing Shares
"Sarantel"	Sarantel Limited, a wholly owned subsidiary of the Company
"Second Admission"	the admission of the Second Placing Shares to trading on AIM becoming effective in accordance with the AIM Rules
"Second Placing"	the placing of the Second Placing Shares pursuant to the Placing
"Second Placing Shares"	the 9,780,420 A Ordinary Shares to be issued pursuant to the Second Placing
"POS Regulations"	the Public Offers of Securities Regulations 1995, as amended
"Shareholders"	holders of Ordinary Shares
"UK"	United Kingdom of Great Britain and Northern Ireland
"UKLA"	the FSA acting in its capacity as the competent authority for the purposes of Part VI of the Financial Services and Markets Act 2000
"VCT"	venture capital trust as defined by Section 842 AA(1) of the Income and Corporation Taxes Act 1988

GLOSSARY

3G	third generation wireless technology generally includes high data speeds, always-on data access, and greater voice capacity
ABI Research	Location Based Services, ABI Research Q2 2004
antenna	an electrical conductor or array of conductors that radiates (transmits and/or receives) electromagnetic waves (often referred to as radio waves)
antenna efficiency	expresses the ratio of the total power radiated by an antenna (and the power dissipated in the antenna structure as heat) to the net power accepted by the antenna from the connected transmitter
A-GPS	assisted GPS, a technology that supplements and refines standard GPS information by using data from the network to which a wireless device is connected to improve position location accuracy and availability
balun	a type of transformer used to convert an unbalanced signal to a balanced one or vice versa
bandwidth	used to describe the rated throughput capacity of a given network medium or protocol
Bluetooth	Bluetooth™, a short-range wireless connection used to ease the interconnection of mobile phones, computers, PDAs and many accessories
CDMA	code-division multiple access, allows numerous signals to occupy a single transmission channel, optimising the use of available bandwidths
CMOS	complementary metal-oxide semiconductor, technology used in the transistors that are manufactured into most microchips
dielectrics	various insulating materials used in antenna systems, such as insulators and PCB material
di-pole antenna	one of the simplest types of antenna measuring ½ wavelength from end to end and connected at the centre to a feed line. Constitutes the main element in various sophisticated types of antennas
feed-cable	transmission lines of assorted types that are used to route radio frequency power from a transmitter to an antenna, or from an antenna to a receiver
GPS	global positioning system
ground plane	a system of conductors placed beneath an elevated antenna to serve as an earth ground or reference
GSM	global system for mobile communication, a digital mobile telephone system that is the most widely used digital wireless telephone technology
isolation	a measure of power transfer from one antenna to another or surrounding objects such as electrical circuits
LAN	local area network, a local communications network allowing easy inter-connection of computers and terminals
MP3	a standard technology and format for compression of a sound sequence whilst preserving the original level of sound quality when played

near-field	the region within one wavelength of an antenna, where the electric and magnetic fields are not related to each other solely by the characteristic impedance of free space
null	where minimum field intensity is observed in an antenna radiation pattern
OEM	original equipment manufacturer, a manufacturer or supplier who repackages, integrates and bundles equipment or components under its own brand name
ODM	original design manufacturer, a designer, developer and manufacturer of equipment or components according to a customer's specifications
omni-directional antenna	an antenna that radiates equally well in all directions
PCB	printed circuit board
PCMCIA	Personal Computer Memory Card International Association, trade association founded in 1989 to establish standards for expansion cards for portable computers
PDA	personal digital assistant, a small mobile hand-held device
PIFA	planar inverted F antenna – a category of internal antennas
wavelength	the distance a wave travels to complete one cycle is known as the wavelength of the signal
Wi-Fi	wireless fidelity, a term for certain types of WLAN
WLAN	a wireless LAN is one in which a mobile user can connect to a LAN through a wireless (radio) connection









Unit 2 Wendel Point
Ryle Drive
Park Farm South
Wellingborough
NN8 6AQ
www.sarantel.com