

Sarantel LBS Pro

SL1300

Passive GPS Antenna for Mobile Phones and Tightly integrated GPS Devices



Product Description

Built on patented PowerHelix® filtering antenna technology, the SL1300 is ideally suited for mobile phones and tightly integrated GPS devices with multiple radios that require high positional accuracy. Unlike other conventional antennas, SL1300 achieves an uplift in gain once integrated into the customer's product.



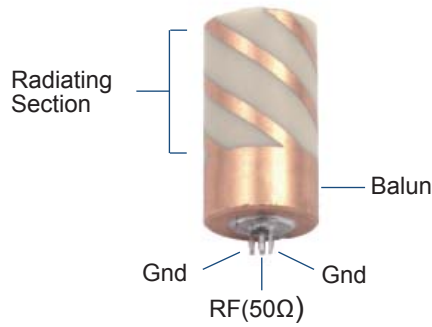
The SL1300 antenna is ideal in applications where:

- the device is handheld, body-worn, or otherwise surrounded by high-dielectric materials that would de-tune conventional antennas;
- the antenna is tightly integrated with other antennas, e.g., Bluetooth®/GPS receivers or GPS/GSM mobile phones;
- there are tight constraints on the size of the device or the amount of space allocated to ground planes; SL1300 does not need a ground plane.
- the orientation of the device is random; or
- the antenna will be embedded in the device.

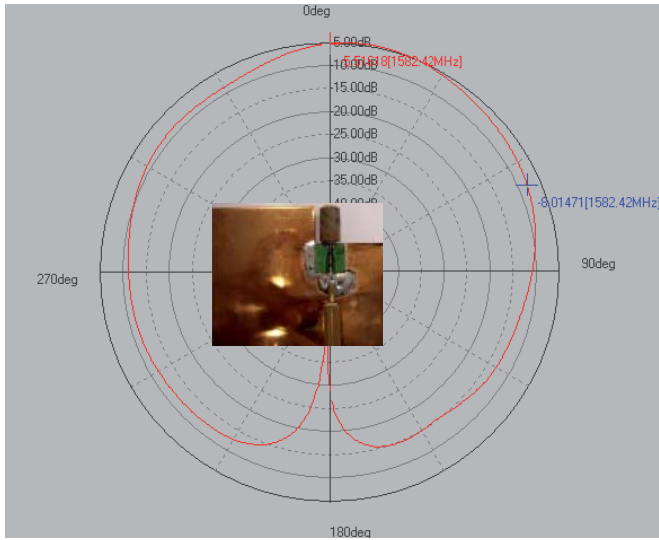
The SL1300 antenna is balanced. This isolates it from the device and enables the antenna to reject common mode noise resident on the device ground plane. The construction and materials of the antenna constrain its near-field to a very small volume, therefore materials near the antenna have negligible de-tuning effects. The SL1300 is 50% smaller than SL1200(P2) and ideal for embedded applications. The GPS performance of the SL1300 antenna is significantly enhanced when integrated appropriately into the customer's product. The antenna does not require a sleeve to de-tune it to GPS frequency.

Specifications

| | Minimum | Typical | Maximum | Unit |
|-----------------------|-------------------------------|----------|---------|---------------|
| Part Number | SL1300 | | | Each |
| Type | Quadrifilar Helix | | | |
| Embedded Frequency | 1573.42 | 1575.42 | 1577.42 | MHz |
| Polarization | Right-hand circular polarized | | | |
| Integrated Gain | | -5.0dBic | | dBic @ zenith |
| Beamwidth | | >120 | | Degrees |
| Bandwidth (3dB) | | 15 | | MHz |
| Axial Ratio | | <1.5 | | @Zenith |
| VSWR | | <2.0:1 | 2.3:1 | |
| Impedance | | 50 | | Ω |
| Operating Temperature | -40 | +20 | +85 | °C |
| Element Dimensions | 7.5 (diameter) x 12 (length) | | | mm |
| Weight | 3.0 | | | grams |



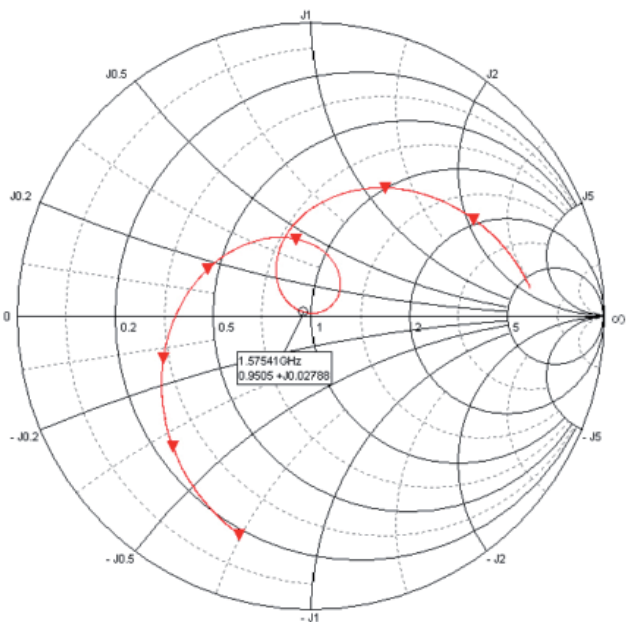
Integrated Radiation Pattern (dBic)



The integrated gain of the SL1300 is increased by ~2-3dBs in comparison to free space. It is essential that the gap between the antenna and the adjacent PCB is 1.5mm as the near field energy of the antenna is reflected in such configurations, boosting the gain of the antenna. The integrated radiation pattern highlights strong Right Hand Circular Polarisation, large 3dB beamwidth and the typical gain peaking to -5dBic.

The strength of the PowerHelix antenna technology is its immunity to de-tuning in the presence of dielectric loading, like human tissues. Appropriate integration of the SL1300 into the customer's product can be expected to double the efficiency in comparison to free space. However, conventional antennas lose 5-10dB of gain in similar circumstances.

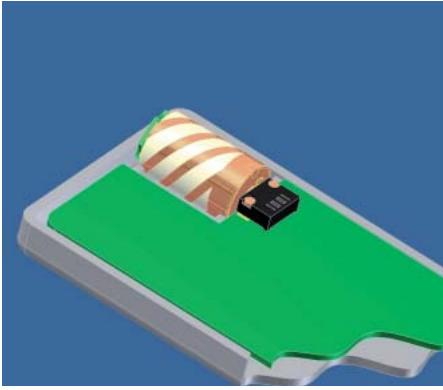
Typical Impedance



The SL1300 antenna is optimized for 50Ω impedance to simplify the matching process. The Smith chart showing a typical impedance plot of the antenna has been normalized to 1.

The near field energy of the SL1300 antenna is constrained within the ceramic and therefore, materials and human tissue have negligible effect on its impedance unless their within 2mm of the outer of the antenna.

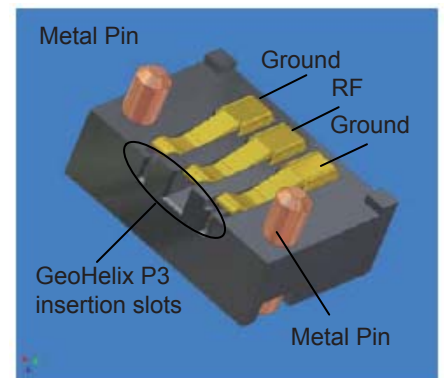
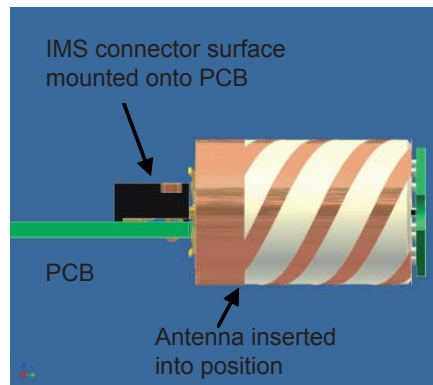
Embedding Information



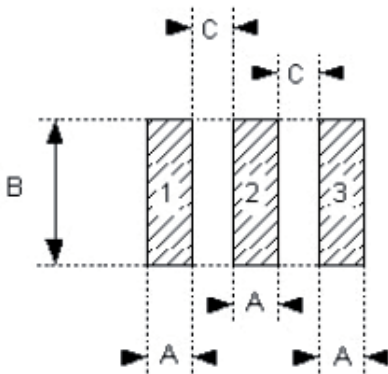
The SL1300 antenna is designed to be embedded within a device where space is a limitation. The antenna does not require a sleeve to de-tune it to GPS. The antenna is on frequency once integrated appropriately into the customer's housing and in this regard, the customer is advised to read the mechanical integration guidelines to ensure on frequency performance. Additional mechanical supports should be provided to hold the antenna in place. For further information on embedding the antenna, see the mechanical integration guideline documents.

SL1300 Connector (AGK-4003)

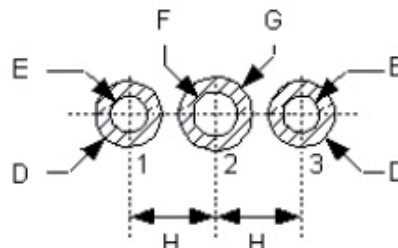
Sarantel in conjunction with IMS have developed a custom connector that can be surface mounted and reflowed using a conventional lead free manufacturing process. The connector should be ordered directly from IMS Connector Systems GmbH. Mechanical & electrical guides can be found at www.sarantel.com or by contacting Sarantel Ltd.



Pad Layout & Pin-out Designations



Option 1 : Surface Mount

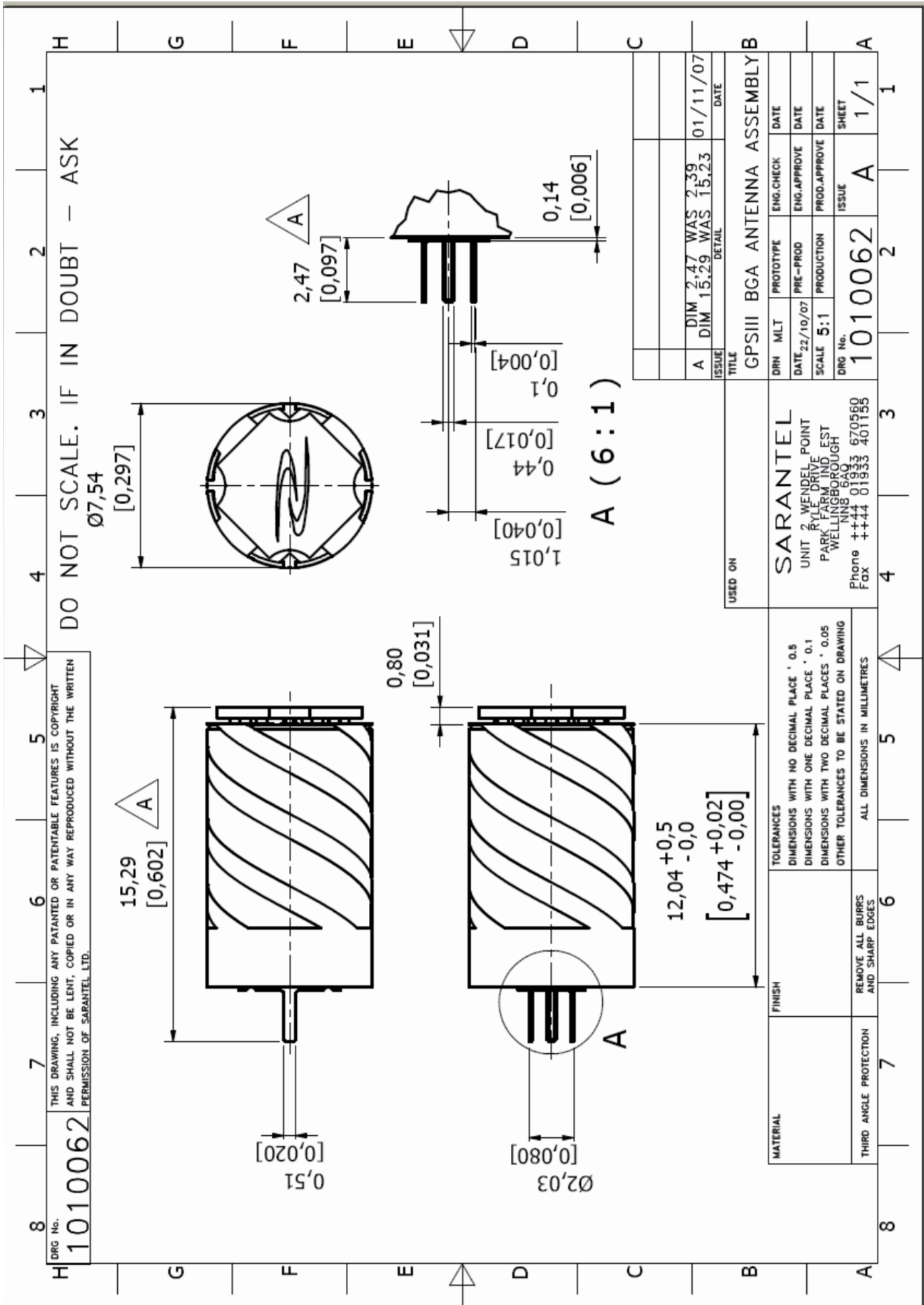


Option 2 : Through Hole

| Dimensions | mm \pm 0.05 |
|------------|---------------|
| A | 0.60 |
| B | 2.00 |
| C | 0.57 |
| D | 0.70 |
| E | 0.50 |
| F | 0.60 |
| G | 0.90 |
| H | 0.95 |

| Pin Number | Function |
|------------|----------|
| 1 | Ground |
| 2 | Signal |
| 3 | Ground |

Mechanical Drawings - SL1300 Passive Antenna



RoHS Compliance Statement



SARANTEL LTD
Unit 2, Wendel Point
Ryle Drive, Park Farm South
Wellingborough, NN8 6BA
England.
Tel: +44 1933 670560
Fax: +44 1933 401155
Email: enquiry@sarantel.com
Web: www.sarantel.com

RoHS/Lead-Free Compliance

Dear Sir / Madam:

This letter is intended to answer questions from our customers, partners and suppliers regarding the compliance of Sarantel Ltd products with the following EU directives:

- 2006/96: Waste Electrical and Electronic Equipment (WEEE)
- 2000/53: End of Life Vehicle (ELV)
- 2002/95: Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS); (**effective 1st July 2006**)

The directives aim is to avoid or limit the use of hazardous materials such as lead, mercury, cadmium and hexavalent chromium, as well as brominated substances - PBDE (polybrominated diphenyl ethers) and PBB (polybrominated biphenyls).

Sarantel has shipped compliant product since **1st January 2006** and incorporated the requirements of 2002/95 into the product/technology development roadmaps. We are committed to the supply of lead-free/RoHS compliant devices in current and future product introductions.

Please contact your local sales representative should further information be required.

Handwritten signature of David Wither in blue ink.

David Wither
Chief Executive Officer (CEO)

Handwritten signature of Bill Taylor in blue ink.

Bill Taylor
Chief Operating Officer (COO)

Handwritten signature of Andrew Christie in blue ink.

Andrew Christie
VP of Engineering

Handwritten signature of Ian Gerry in blue ink.

Ian Gerry
Director of Quality

Registered Office as above address.

6th June 2006

About Sarantel

Sarantel designs and manufactures dielectrically loaded antennas based on patented PowerHelix® filtering antenna technology. Sarantel's antennas are ideal for applications in which the radio device is small, handheld, or body-worn, or in devices with multiple transceivers and high levels of common mode noise. Sarantel antennas can be mounted externally or easily embedded within a device.

Sarantel antennas are protected by US patents 5854608, 5181297, 6424316, 5859621, 6369776; UK Patents 2297638, 2326532, 2326533, 2310543; and other granted or pending international patents.

GeoHelix®, PowerHelix®, and the Sarantel logo are registered trademarks of Sarantel Ltd.

Contact Sarantel

Sarantel Ltd. (HQ)
Unit 2, Wendel Point
Ryle Drive, Park Farm South
Wellingborough, NN8 6BA
United Kingdom
Ph: +44 1933 670564
Fax: +44 1933 401155
Email: info@sarantel.com
Web: www.sarantel.com

Sarantel Asia/Pacific
Email: info-asia@sarantel.com

Sarantel USA
New York.
Ph: +1 212 729 6052
Email: info-usa@sarantel.com

Global Distributors & Representatives
www.sarantel.com/wheretobuy

Application Support

Sarantel are committed to our customers' success, and so offer a variety of support options for customers designing RF products.

Check the Sarantel web site at sarantel.com/technology for the latest production specifications, technical notes, and application guides for solutions to the most common antenna integration issues.

Contact our applications support group by email at info@sarantel.com, info-asia@sarantel.com, or info-usa@sarantel.com for detailed product specifications, including mechanical drawings, surface mount pad layout, embedding recommendations, and other application questions not answered in the technical literature.

For further support options, please contact your local sales representative at www.sarantel.com/wheretobuy.

Ordering Information

The SL1300 is designed to work without any sleeves.