

# SL1206 (GeoHelix®-S)

## Active GPS Antenna

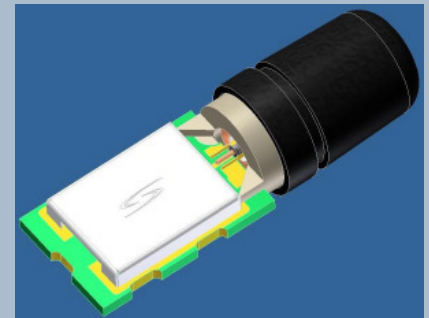
### Product Specification



#### Product Description

Built on patented PowerHelix® filtering antenna technology, the SL1206 surface-mount high-gain GPS antenna is the smallest active quadrifilar helix antenna available, providing high performance in difficult GPS applications. The SL1206 integrates a high-performance, high-gain, low-noise amplifier with Sarantel's GeoHelix®-P2 antenna for receivers requiring an active input. The SL1206 active 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;
- the GPS receiver requires 20dB or more of input pre-amplification;
- the orientation of the device is random; or
- the antenna will be embedded in the device.

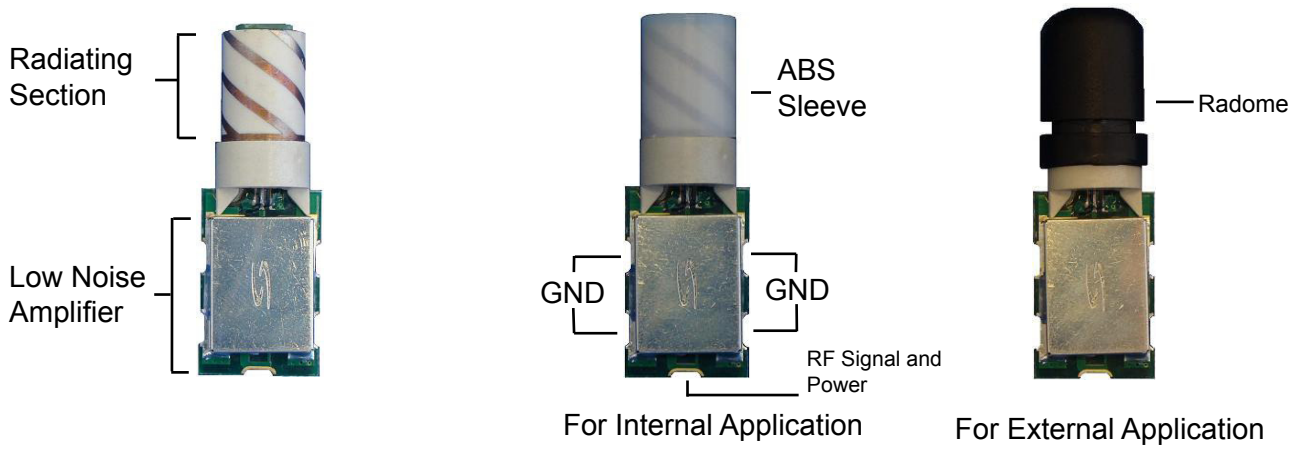


The SL1206 antenna is balanced, which isolates it from the device and enables the antenna to reject common mode noise resident on the device ground plane. The construction and materials of the antenna constrain its near-field to a very small volume, therefore materials near the antenna have negligible de-tuning effects and the antenna maintains its pattern and efficiency in the presence of dielectric loading. As a dielectrically-loaded antenna with a high-performance SAW filter, the SL1206 antenna effectively attenuates signals from common GSM and ISM frequencies by as much as 30dB, minimizing the need for additional filtering.

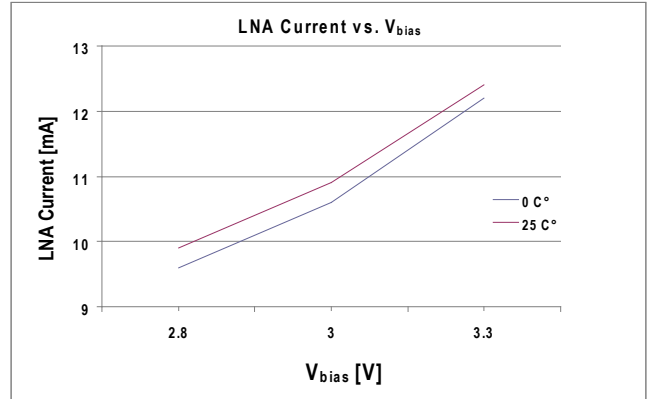
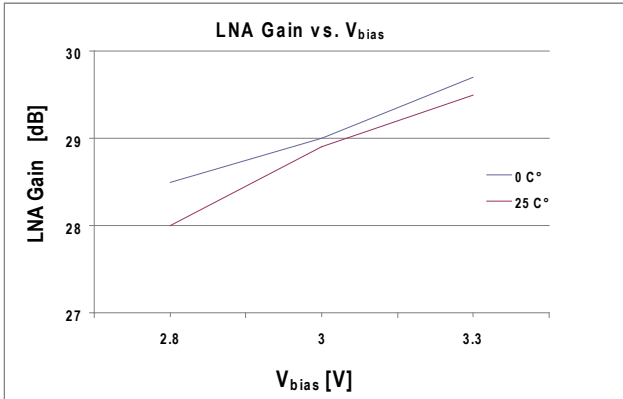
The SL1206 antenna may be deployed in an external, "stub-style" configuration, but it is also a simple antenna to embed due to its isolation properties. The antenna is deployed with either a black radome or an ABS plastic sleeve.

#### Specifications

	Minimum	Typical	Maximum	Unit
<b>Part Number</b>	SL1206(see page 4 for detailed part numbers)			Each
<b>Type</b>	Quadrifilar Helix			
<b>Frequency</b>	1573.42	1575.42	1577.42	MHz
<b>Polarization</b>	Right-hand circular polarized			
<b>Voltage</b>	2.8	3.3	3.6	V
<b>Current</b>		13	15	mA
<b>Gain</b>	+24	+25		dBic
<b>Beamwidth</b>		135		Degrees
<b>Bandwidth (3dB)</b>		20		MHz
<b>Axial Ratio</b>		<2.0		@Zenith
<b>VSWR</b>		<2.0:1	2.3:1	
<b>Impedance</b>		50		
<b>Noise Figure</b>		1.2	1.3	dB
<b>Input 3rd Order Intercept Point</b>		-10		dBm
<b>Operating Temperature</b>	-40	+20	+85	°C
<b>Element Dimensions</b>	10 (diameter) x 17 (length)			mm
<b>Overall Dimensions (w/radome)</b>	13 (dia) x 14.6 (width) x 44 (length)			mm
<b>Weight (excl radome or sleeve)</b>	8.4			grams
<b>Mounting</b>	SMT			



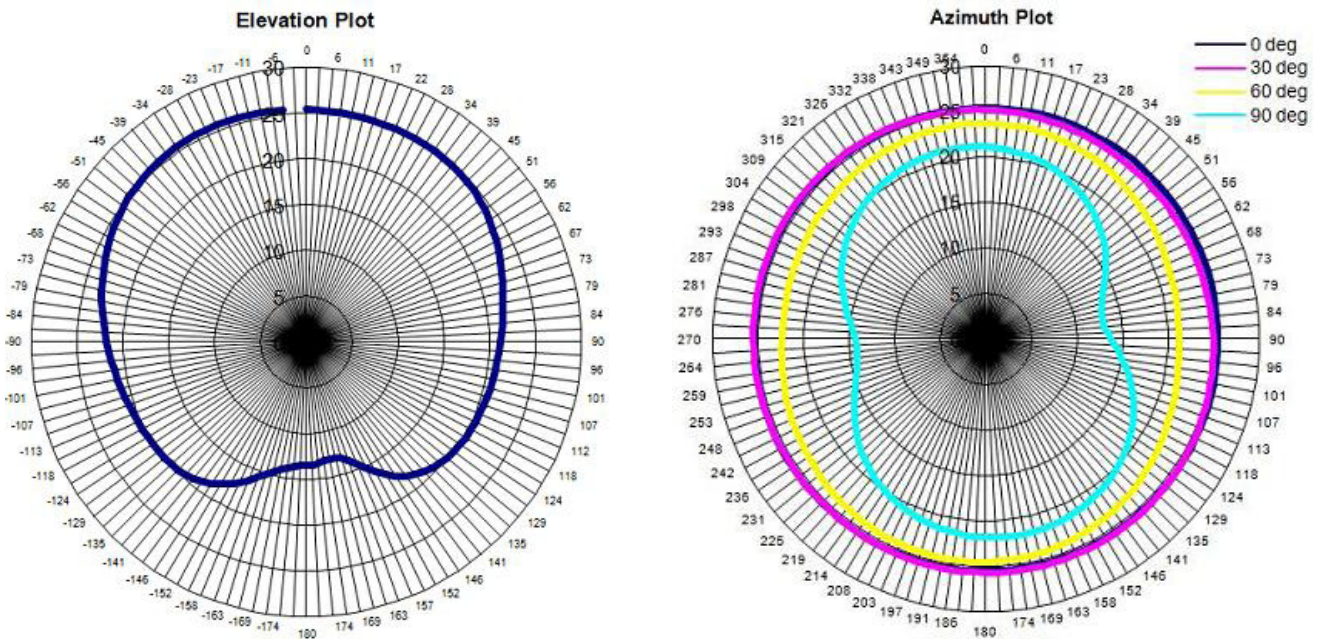
### Low Noise Amplifier Characteristics



The SL1206 high-gain, low-noise amplifier, optimized for 3Vdc, provides 25dB peak gain with less than 1.25dB insertion loss at a current draw of less than 14mA.

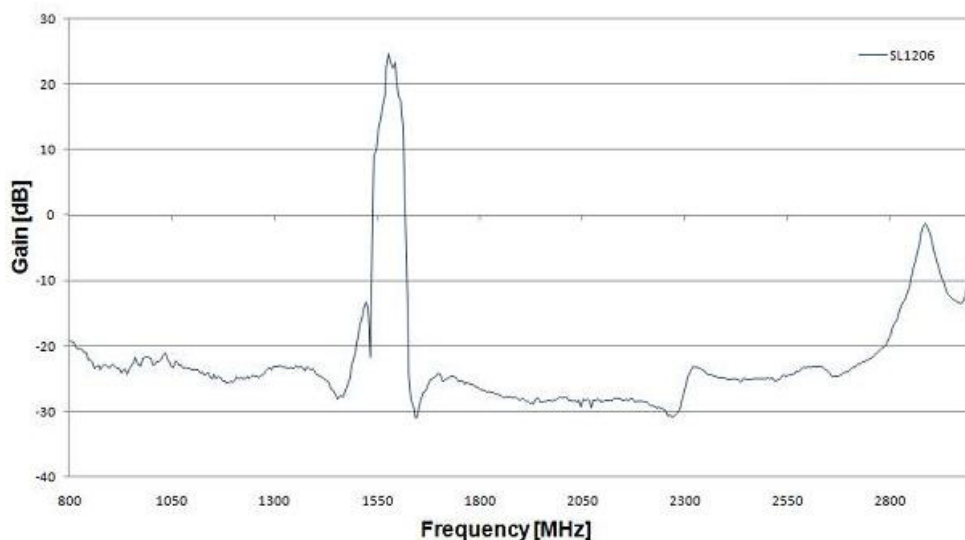
This antenna is ideal for receivers with an input gain spec of 20 to 30dB

### Radiation Patterns (dBic)



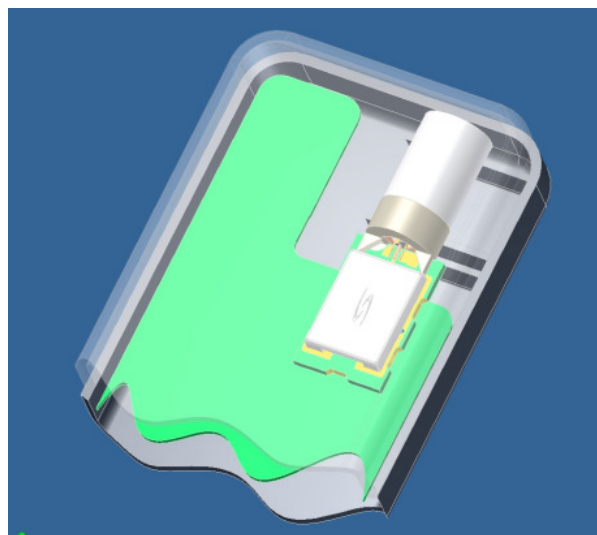
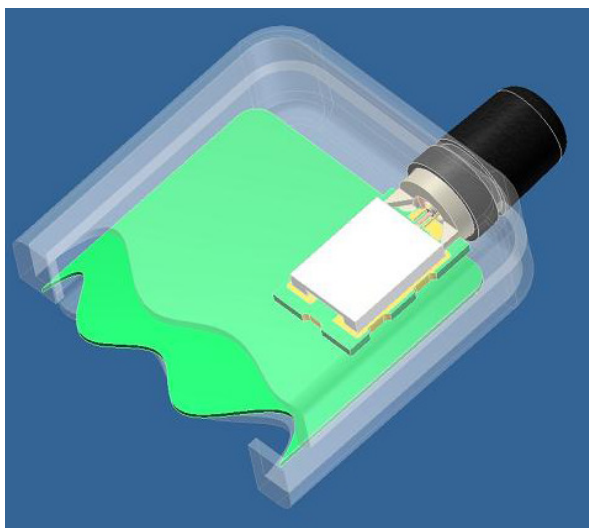
The strength of the PowerHelix antenna technology is its immunity to de-tuning in the presence of dielectric loading, like human tissues. The SL1206 antenna retains efficiency and polarization near the human body. Conventional antennas lose 5-10dB of gain in similar circumstances.

## Filtering Response



Frequency (MHz)		$S_{12}$ (dB)
860	GSM 900	-24
970		-24
1575.42	GPS (L1)	+25
1700	GSM 1800	-25
1800		-27
1900		-28
2450	Bluetooth/WiFi	-27

## Antenna Integration Options



The SL1206 antennas may be mounted externally or embedded within a device. External applications will give the antenna the greatest field of view, however embedded applications can be designed with minimal impact on antenna performance. When mounting externally, the groove in the radome should be used as a mechanical support. When mounting internally, the ABS sleeve must be used to ensure on-frequency performance. For further information on embedding the GeoHelix antenna, see the embedding guideline documents on Sarantel's website.

## Ordering Guide for the SL1206 antenna

<b>Part Number</b>	<b>Description</b>	<b>MOQ</b>	<b>Pack Size</b>
SL1206	GeoHelix® S Antenna	400	400
SL1206R	GeoHelix® S Antenna with Radome	400	400
SL1206SA	GeoHelix® S Antenna with Long Sleeve	400	400
SL1206SB	GeoHelix® S Antenna with Short Sleeve	400	400

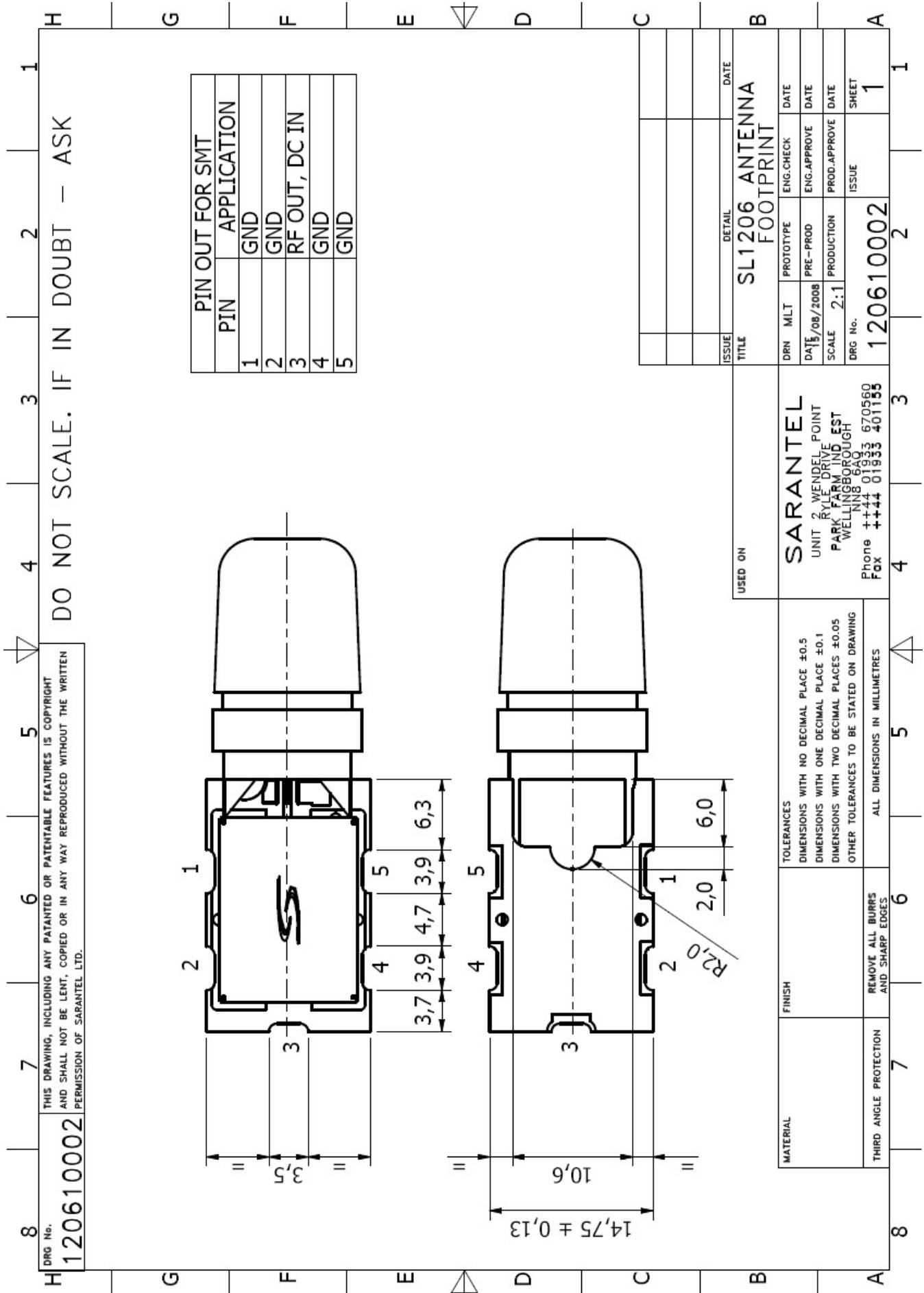
### Notes

1. Orders placed for below MOQ or not in multiples of pack quantities will be subject to a \$20 handling fee
2. SL1206SA should only be used in existing application where SL1206 with sleeve replaces the previous S-Type antenna. SL1206SA is not recommended for new designs, use SL1206SB.
3. For further guidance on selecting the correct part number please contact Sarantel distributors or [info@sarantel.com](mailto:info@sarantel.com)

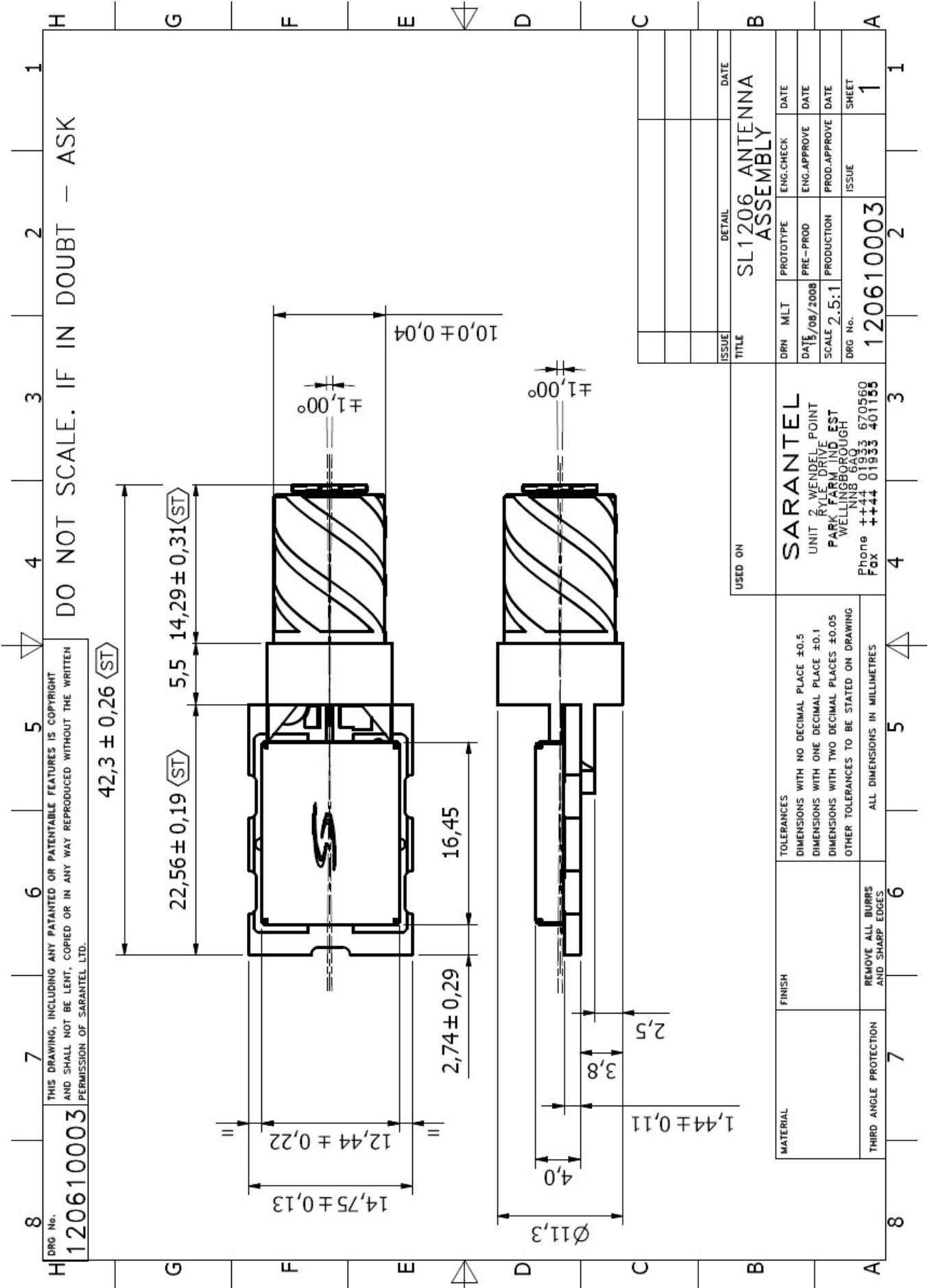


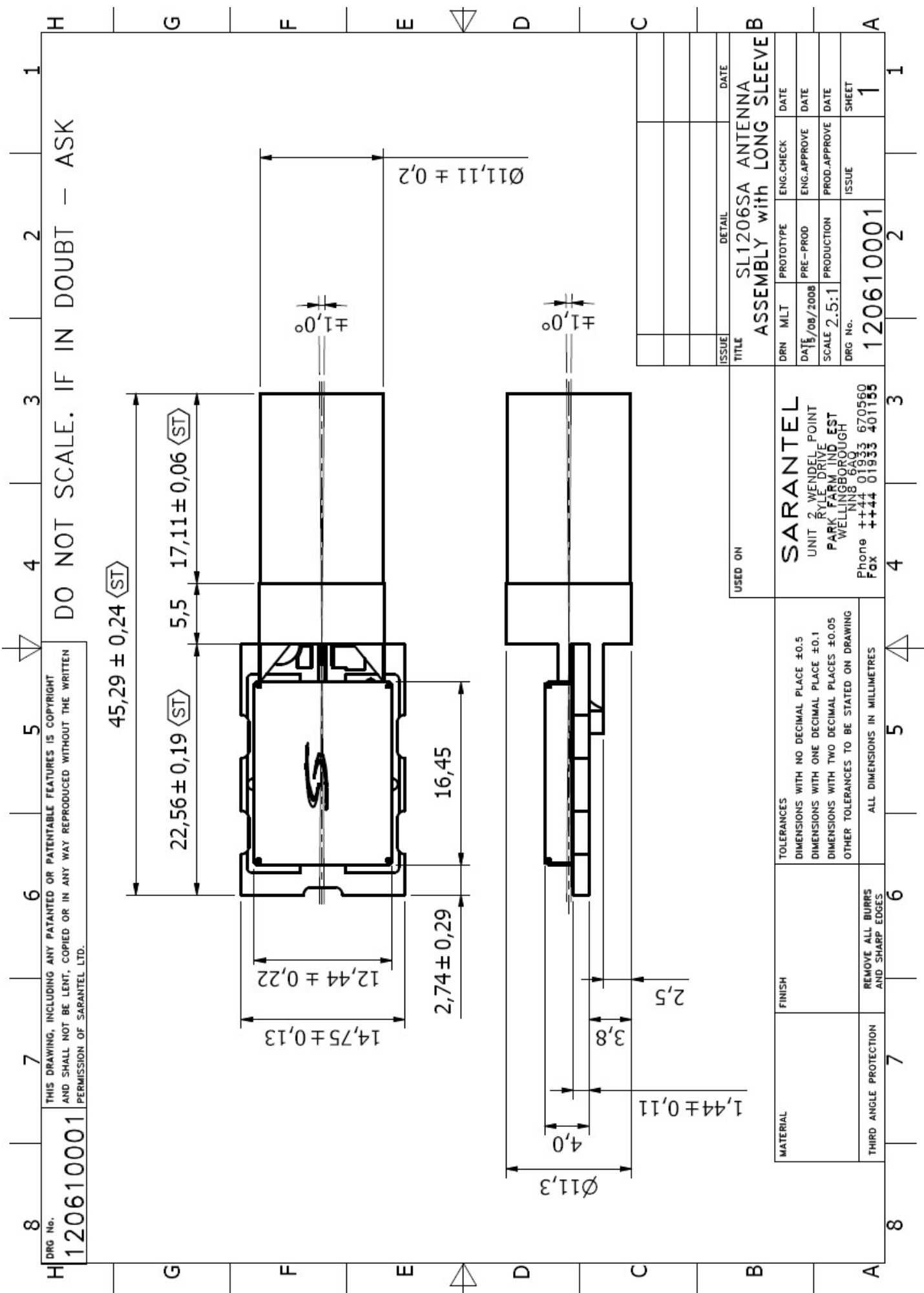


# Mechanical Drawings - Pinout



Mechanical Drawings - Without Radome





DRG No. **120610001**

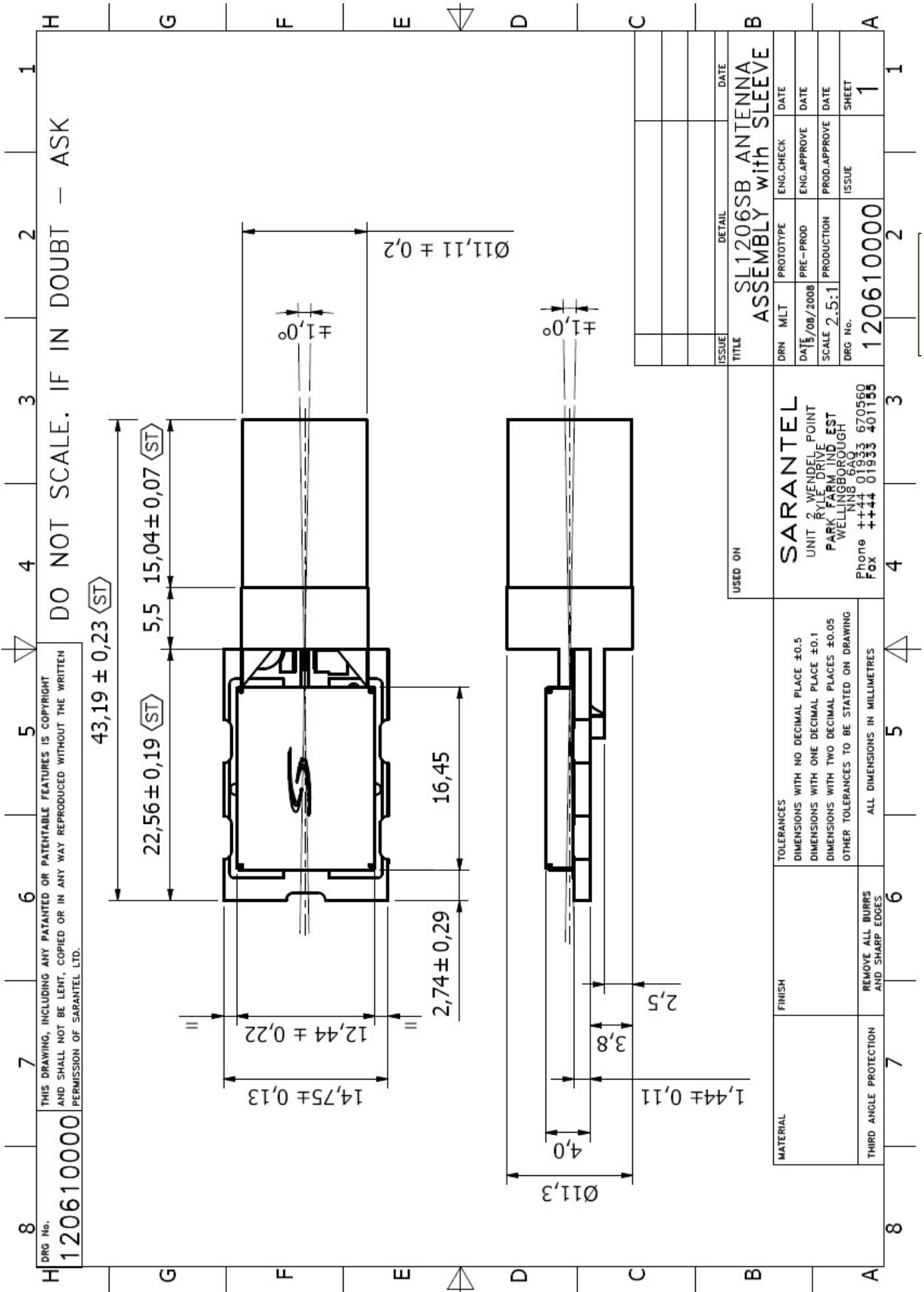
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DO NOT SCALE. IF IN DOUBT - ASK

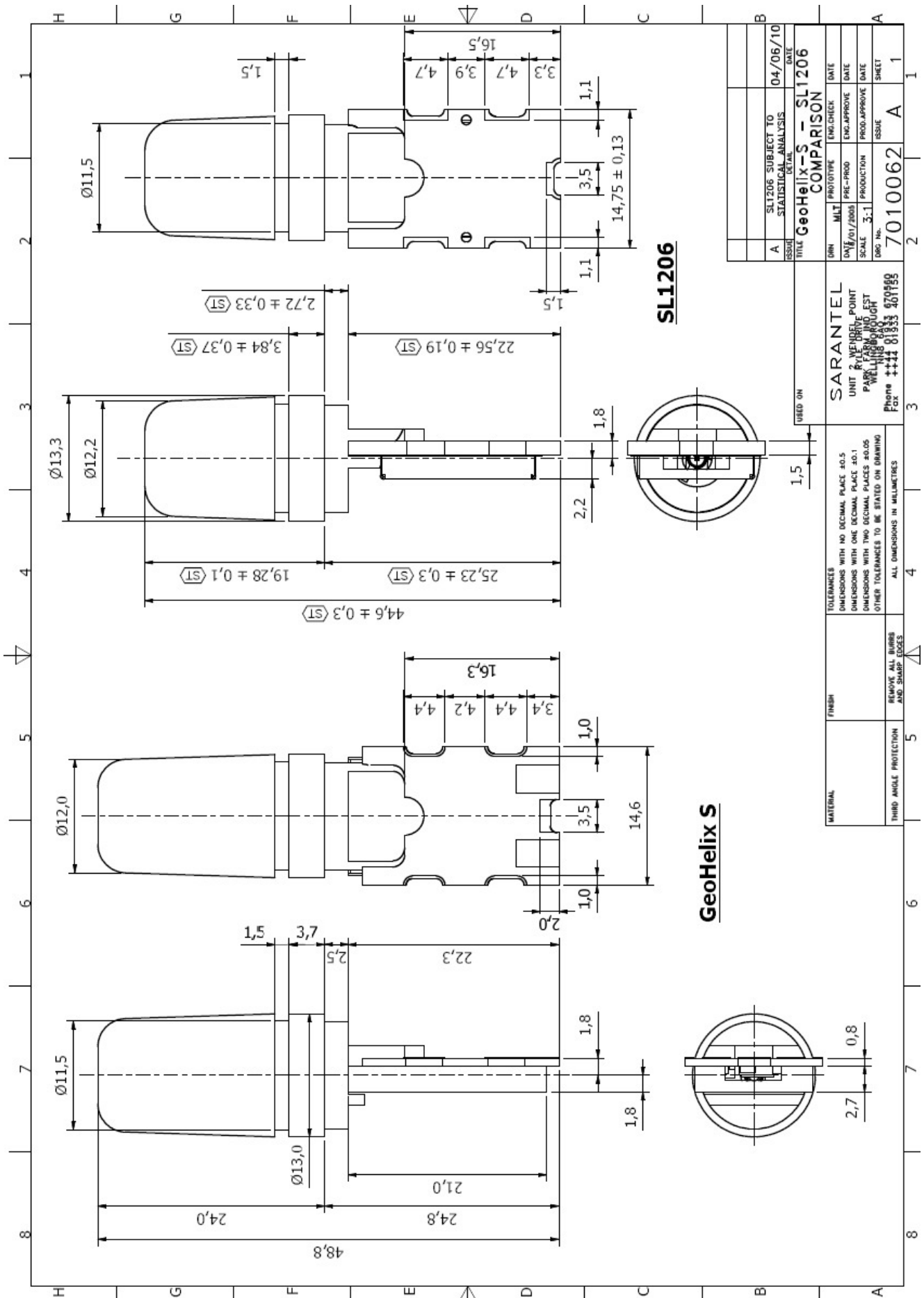
ISSUE	DETAIL	DATE
TITLE	SL1206SA ANTENNA ASSEMBLY with LONG SLEEVE	
DRN	MLT	PROTOTYPE
DATE	15/08/2008	PRE-PROD
SCALE	2.5:1	PRODUCTION
DRG No.	120610001	ISSUE
		SHEET
		1

USED ON	SARANTEL UNIT 2, WENDEL POINT RYLE DRIVE PARK FARM IND EST WELLINGBOROUGH NN8 6AQ Phone +44 01933 670560 Fax +44 01933 401155	
TOLERANCES	DIMENSIONS WITH NO DECIMAL PLACE $\pm 0.5$ DIMENSIONS WITH ONE DECIMAL PLACE $\pm 0.1$ DIMENSIONS WITH TWO DECIMAL PLACES $\pm 0.05$ OTHER TOLERANCES TO BE STATED ON DRAWING	
MATERIAL	FINISH	
THIRD ANGLE PROTECTION	REMOVE ALL BURRS AND SHARP EDGES	
	ALL DIMENSIONS IN MILLIMETRES	

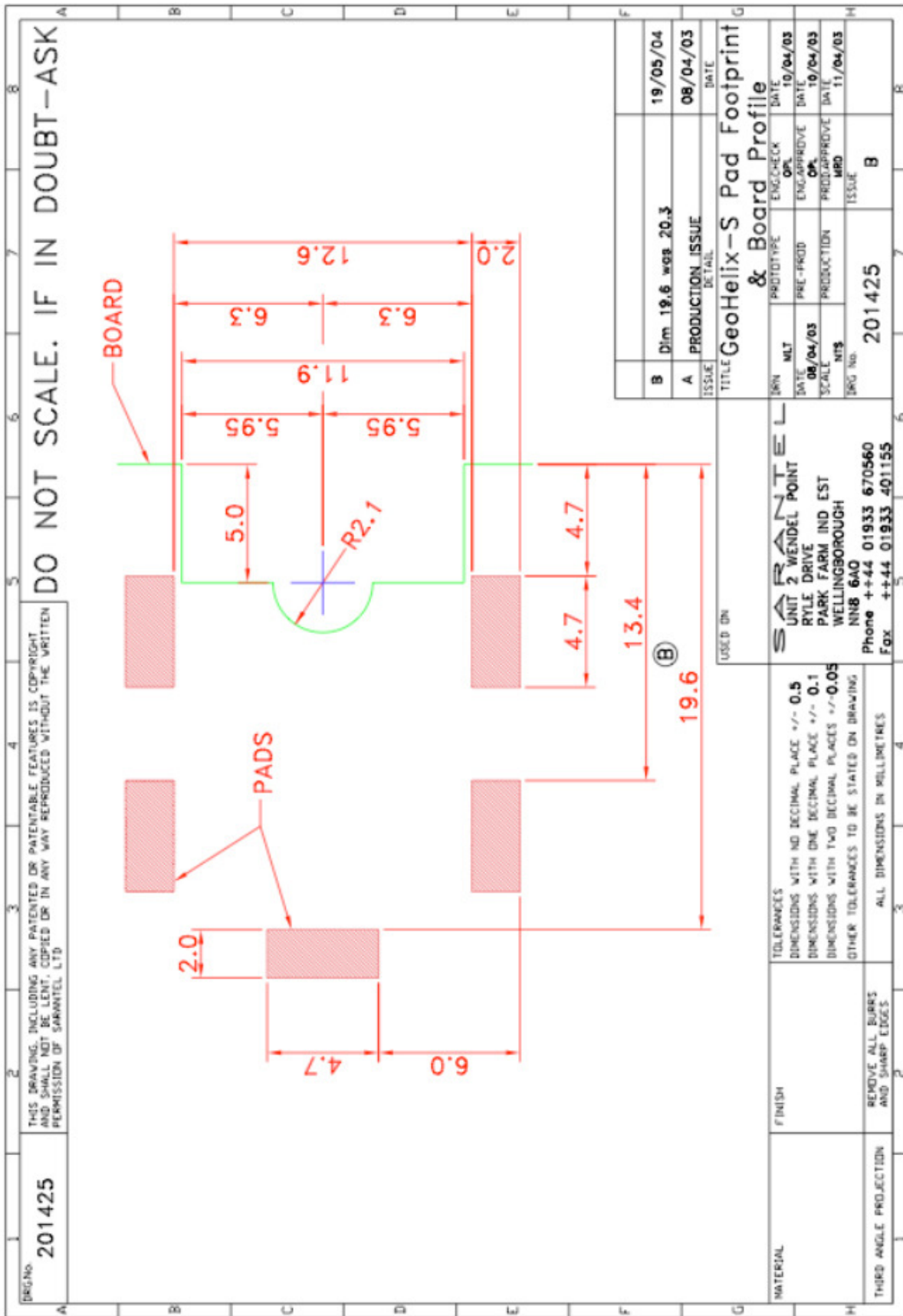




# Mechanical Drawings - Geohelix-S - SL1206 Comparison



# Mechanical Drawings - Pad Layout



## RoSH Compliance Statement



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Email: [enquiry@sarantel.com](mailto:enquiry@sarantel.com)  
Web: [www.sarantel.com](http://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 1<sup>st</sup> July 2006)
- 1907/2006 Regulation on the registration, evaluation and authorisation of Chemicals (REACH)

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 diphenol ethers) and PBB (polybrominated biphenyls).

Also in accordance with Article 33 of REACH we will supply relevant data on the composition of any Articles containing substances of Very High Concern (SVHCs).

Sarantel has shipped compliant product since 1<sup>st</sup> 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.

A handwritten signature in black ink, appearing to read 'David Wither', positioned above a horizontal dotted line.

David Wither  
Chief Executive Officer

Registration No.: 03960217

A handwritten signature in black ink, appearing to read 'Mark Dowsett', positioned above a horizontal dotted line.

Mark Dowsett  
Director of Quality

VAT No.: GB 754 6304 29

## 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 and other granted or pending international patents.

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

## Contact Sarantel

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Global Distributors & Representatives  
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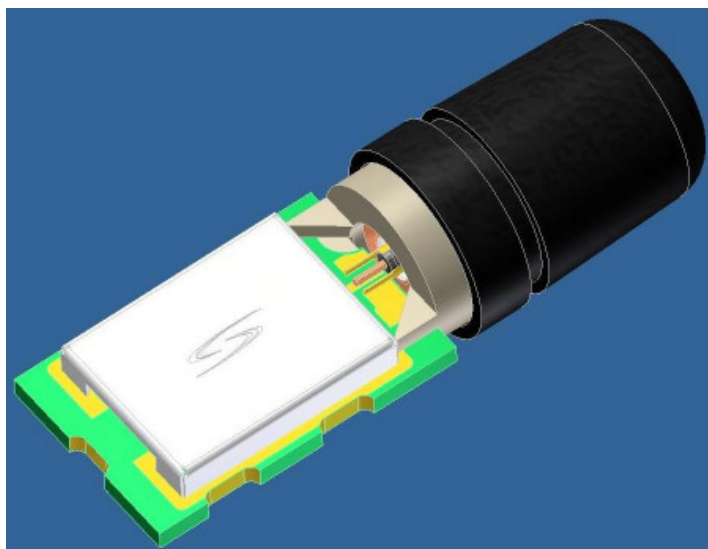
## Application Support

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/products](http://sarantel.com/products) 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](mailto:info@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](http://www.sarantel.com/wheretobuy).



**Sarantel strongly believes in the value of intellectual property and the right of entrepreneurs to protect what they have created. Sarantel demonstrates its commitment to this principle by continuously developing its technology and then filing patents in a number of regions around the world. Additionally, Sarantel is constantly filing new patent applications and has a substantial portfolio of pending applications.**

A list of Sarantel's granted patents:

**Australia:** 707488, 716542, 720873, 769570, 2004223229 **Austria:** 0791978 Brazil: PI9508769-9 **Canada:** 2198318, 2198375, 2245882, 2250790, 2272389, 2357041, 2373941, 2521493 **China:** ZL00136656.4, ZL00803562.8, ZL00808144.1, ZL95195772.4, ZL97181567.4, ZL97193099.6, ZL97194742.2, ZL99816387.2 **Denmark:** 0777922, 1088367 **Finland:** 0791978, 0876688, 0935826, 0941557, 1088367, 1098392, 1147571, 1153458, 1196963, 1609213 **France:** 0777922, 0791978, 0876688, 0935826, 0941557, 1081787, 1088367, 1098392, 1147571, 1153458, 1196963, 1609213 **Germany:** 60003157.8-0, 60029538.9-08, 60034042.2-08, 602004010085.4-08, 69535431.0-08, 69722590.9-0, 69723093.7-0, 69726177.8-0, 69730369.1-08, 69923558.8-08, 69930407.5-08 **India:** 193515, 193751, 193929, 195085, 206740 **Italy:** 0777922, 0791978, 0876688, 0935826, 1081787, 1088367, 1153458, 1196963 **Japan:** 3489684, 3489775, 3923530, 3946955, 4052800, 4057612, 4077197, 4099309, 4147260, 4159749, 4188412 **Malaysia:** MY-112473-A, MY-119077-A, MY-119465-A, MY-123075-A **Mexico:** 199890, 205239, 213947, 220048, 213633, 232437, 232438, 231633, 259577 **Netherlands:** 0791978, 1081787 **New Zealand:** 291852, 334614 **Philippines:** 1-1995-51169, 1-1997-55284, 1-1997-55978, 1-1997-58557, 1-1999-03167 **Russia:** 2173009, 2210146, 2339131 **Singapore:** 37745, 54891, 56480, 116791, 131698 **South Korea:** 348441, 366071, 446790, 458310, 523092, 625638, 650620, 650621, 650622, 663873, 667216, 667221, 709688, 767329 **Spain:** 0777922, 0791978, 1088367, 1196963 **Sweden:** 0777922, 0791978, 0876688, 0935826, 0941557, 1081787, 1088367, 1098392, 1147571, 1153458, 1196963, 1609213 **Switzerland:** 0791978, 1081787, 1196963 **Taiwan:** 094978, 108488, 123671, 144801, 156702, 285980, M 312023 **Thailand:** 17812, 19360, 19570, 23745 **United Kingdom:** 1081787, 1147571, 2292257, 2292638, 2309592, 2310543, 2311675, 2321785, 2326532, 2326533, 2338605, 2351850, 2356086, 2367429, 2383901, 2399948, 2419037 **USA:** 5854608, 5859621, 5945963, 5963180, 6181297, 6184845, 6300917, 6369776, 6424316, 6552693, 6690336, 6886237, 6914580, 7256752, 7372427, 7408515