



Products & Services
Brochure 2014-15

STEATITE
Q-PAR ANTENNAS

Microwave Antennas, Subsystems and Consultancy

About Us...



Steatite Q-par Antennas has been at the forefront of microwave antenna design and manufacture since 1973 and during 2013 became a trading division of Steatite Limited, which is part of Solid State PLC Group, quoted on the UK AIM market.

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Our expertise

The company excels in the research, design & manufacture of high specification Commercial-off-the-Shelf (COTS) & custom designed microwave antennas, subsystems and associated antenna components typically operating from 100 MHz up to 500 GHz.

Consultancy

Steatite regularly undertakes antenna related research, design and manufacture for military and civil clients including development studies, prototyping and technical concept studies. Technical consultancy and in-service support form part of its regular portfolio of activities. The Company has many years experience of providing innovative customised, wideband antennas and subsystems to the global defence, surveillance and sensor markets.

Complete in-house solutions

The Company's in-house microwave design and engineering capability, backed by antenna testing facilities, provides a comprehensive antenna and subsystem solution. Steatite uses leading commercial electromagnetic design software CST Microwave® along with dedicated in-house algorithms, enabling it to analyse and optimise a wide range of antenna and microwave component designs. Whilst mechanically, a mixture of design and analysis tools including SolidWorks®, Cosmos and FEA are used.

The Company has formal quality accreditation to ISO 9001:2008.

Our Markets...

Steatite provides a wide range of high specification wideband antenna products and antenna related services to the global EW, SIGINT, Test & Measurement markets.



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Test and Measurement

Steatite provides standard waveguide COTS antennas and custom wideband antenna solutions for precision measurement applications including EMC and radar sensors.

Steatite provides antennas that allow multi-octave frequency sweeps with a single unit, whilst high gain antennas offer low side lobes and consistent performance for applications such as EMC immunity testing.

The demand for high field strengths is catered for by a suite of HiRF antennas that produce an increase in field strengths of 3 to 4 dB. A unique focussing arrangement of the antennas means it is possible to produce fields of 3000 V / m over conventional horns using 3kW amplifiers, resulting in reduced system costs.

EW and SIGINT

Ultra wideband antennas (within the range 100 MHz to 500 GHz) supplied as COTS items or custom antenna subsystems are ideally suited to meet the challenging demands of land, sea and airborne platforms. Applications include: ELINT & COMINT Systems, radar and EW threat simulators, antennas used in Electronics Counter Measures (ECM), Radar Warning Receivers (RWR), spectrum management antenna arrays, and IED Jamming systems. A wide range of polarisations are offered including, single, dual polar, circular and dual circular. Steatite provides antennas and subsystems with shaped patterns, including directional, omni-directional, sectoral phase matching antenna arrays and high power antenna solutions for EW and radar simulation.

Consultancy...



Steatite provides microwave antenna consultancy in fields ranging from analysis of complex antenna subsystems to detailed studies of industrial processes. A team of highly qualified microwave, electronic and mechanical engineers are capable of solving a wide range of antenna related technical challenges.

Frequency Selective Surfaces (FSS): The Company has in-house software tools for the design of FSS and experience in the manufacture of FSS radomes and sub-reflectors (singly and doubly curved). This experience also extends to the design of circuit analogue materials and frequency selective radar absorbers and Salisbury screens.

Radar absorbent materials: Steatite has in-house expertise and applies state-of-the-art theory to the design of "optimal" (minimum thickness for a given level of performance) RAM. This includes the use of both electric and magnetic materials.

Stealth technology: Steatite has in-house expertise in the design of low radar cross section antennas and in methods to reduce the radar cross-section of vehicle sub-structures. This includes shaping radar absorbent materials, rough surface and inhomogeneous scattering.

New innovations in electromagnetic theory: The Company is frequently asked to provide advice on the practical uses of new research work. In the past this has ranged from the application of chaos theory and the statistical properties of electromagnetic fields to the use of metamaterials.

Surveillance and radar: Steatite has experience in the provision of narrow-band and ultra-wideband microwave antennas, both static and spinning. The Company advises on the optimum combination of antennas to meet customers' gain / coverage requirements.

Materials analysis and measurement: Theoretical studies into the microwave properties of single and multi-layer dielectric structures are carried out for such purposes as microwave windows, radomes and structural components. The dielectric properties of materials can also be measured.

Depth measurement: The Company has applied radar technology to the problem of measuring the depth within containers of corrosive liquids, grain and sewage.

Communications: Steatite can analyse communications requirements and provide advice on the most cost-effective solutions, whether it be low-power radio or millimetric technology.

Subsystems...

In-house microwave antenna design and engineering capability backed by antenna testing facilities, provides a comprehensive all weather antenna and subsystem solution to many demanding land, sea and airborne applications, EW & radar simulators, meteorological radar sensors, satellite monitoring, ELINT, COMINT and spectrum management systems.

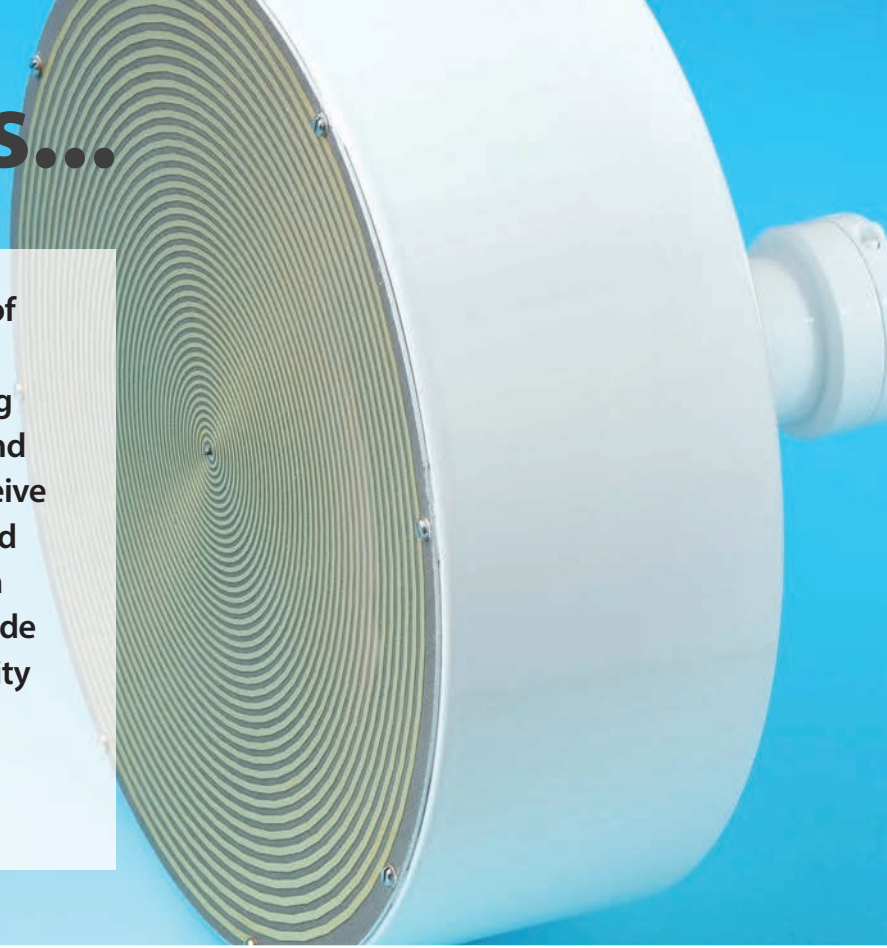
Steatite uses leading commercial EM design software from CST Microwave® along with dedicated in-house algorithms, enabling it to analyse and optimise a wide range of microwave antenna, and subsystem designs.

The Company uses a mixture of design and analysis tools for its mechanical design including SolidWorks®, Cosmos and FEA. Steatite designs and manufactures subsystems by integrating combinations of wideband antennas using custom mounting structures, mounted to COTS and custom designed multi-axis all weather positioners, housed in custom designed RF transparent radomes up to 40 GHz.



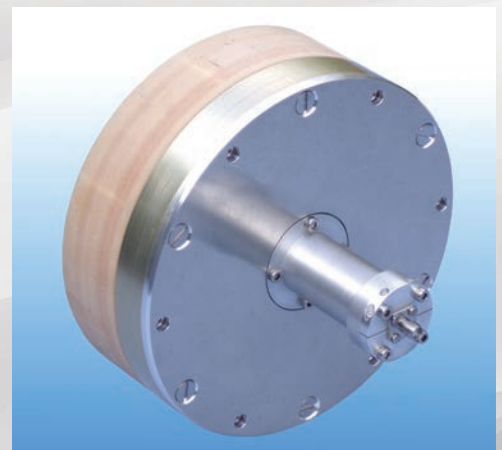
Products...

With more than 40 years of microwave engineering, design and manufacturing expertise of ultra wideband single and dual linear receive and transmit antennas and subsystems, Steatite has a proven capability to provide a wide range of high quality COTS antenna products generally not matched elsewhere.



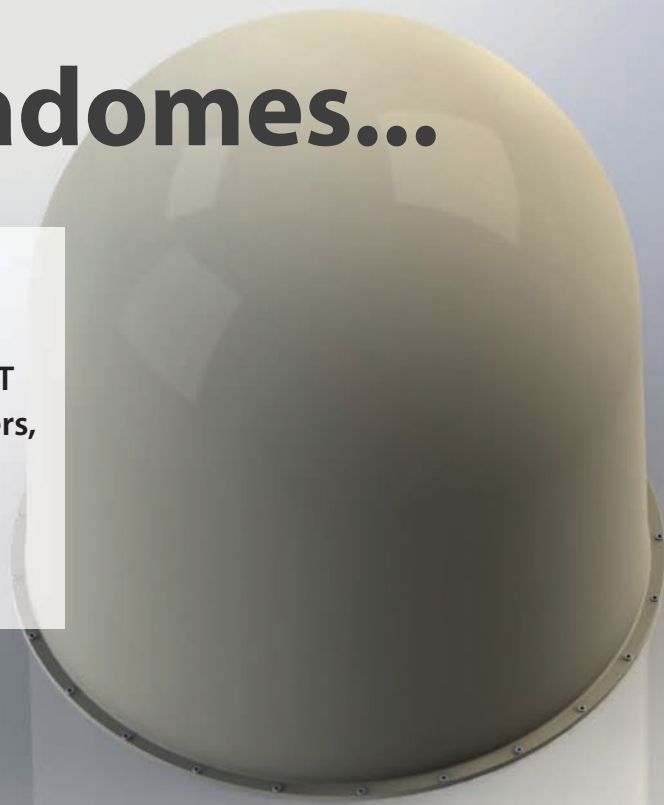
Introducing our Product Ranges...

Antenna Radomes	Page 7
Antenna Tripods	Page 8
Components	Page 9
Custom Horn Antennas	Page 10
EMC Antennas	Page 11
HiRF Antennas	Page 12
Horn Antennas	Page 13
Lensed Antennas	Page 15
Log Periodic Antennas	Page 16
L to KA Band Antenna Systems	Page 16
Omnidirectional Antennas	Page 17
Reflector Antennas	Page 18
Sinusoidal Antennas	Page 20
Spinning DF Antennas	Page 21
Spiral Antennas	Page 22
Slot Array Antennas	Page 23
Splashplate Antennas	Page 23



Antenna Radomes...

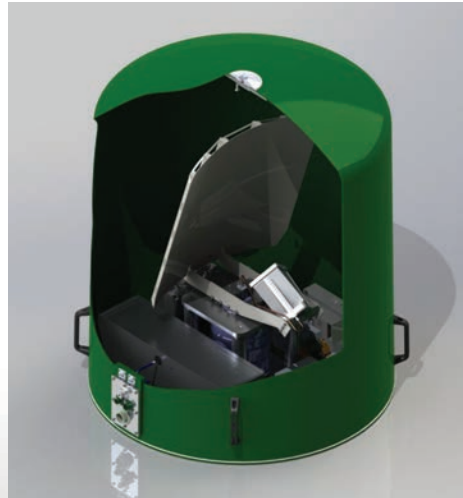
Steatite designs custom wideband low-loss, RF transparent radomes to 40 GHz using Ray Optics and CST Microwave® electromagnetic solvers, whilst FEA SolidWorks® simulation is used to determine wind load stress and deflection.



About our Antenna Radomes...

The radomes are manufactured using low loss materials laid up as a "C" sandwich. Multilayer radomes covering ELINT subsystems and reflector antennas typically up to 1.5m in diameter can be supplied. Steatite has in-house software tools for the design of FSS and experience in the making of FSS radomes and sub-reflectors (singly and doubly curved) and in the design of circuit analogue materials, frequency selective radar absorbers and salisbury screens.

Steatite carries out theoretical studies into the microwave properties of single and multi-layer dielectric structures for such purposes as microwave windows, radomes and structural components. The dielectric properties of materials can also be measured.



Antenna Tripods...

Steatite provides a range of high quality antenna tripods, customised antenna mounts, tripod brackets and positioners.



QTP-A antenna tripod

Features a single leg extension, minimising weight and improving portability. An included wooden tray fits between the tripod legs to house small items, and improve tripod stability. The tripod has adjustable feet to allow for use on uneven ground. It also offers the ability to set different leg spreads, or a spread to any set angle. The tripod mounting head has a standard 3/8" camera fixing.

QTP-B antenna tripod

Features a pan and tilt panoramic tripod mounting head. The head has a standard 3/8" (1/4" also available) camera fixing stud. All the features of the QTP-A tripod, but fitted with a pan/tilt panoramic head. Pan & tilt head provides: A pivoting tilt range of $\pm 90^\circ$; friction control for vertical pan; Integrated spirit levels, & quick clutch and interlock safety, Easy-to-read 360° scale.

QTP-C ruggedised antenna tripod

A rugged, lightweight, proven design, virtually maintenance free, customised mounting plates available to suit your requirements, supplied with heavy duty, polycarbonate carrying case, weather proofed design.



Components...

Steatite designs and manufactures a range of antenna components including high power waveguide transitions, high power dividers and waveguide components.

About our Components...

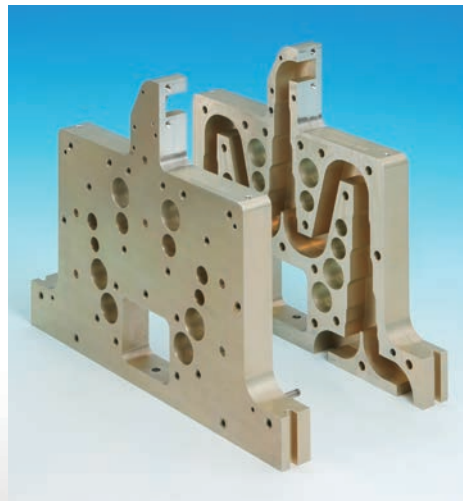
In addition to Steatite's antenna and subsystem offering, suitable antenna components can be provided from Steatite's own catalogue of parts or sourced from proven third party suppliers.

Catalogue number: QST-18-40-K

The 18 to 40 GHz waveguide-to-coaxial adaptor/transition provides interface between WRD180 directly to a K type coaxial connector with a minimum of loss, enabling millimetre wave test and measurement. VSWR typically: <1.6:1 and power handling 10W c.w.

Catalogue numbers: QST-6.5-18-N and QST-7.5-18-N

High power double ridged waveguide to coaxial adaptors/transitions are Ideal for interfacing high-power TWTs and antennas. WRD650 and WRD750 high Power adaptors are available, with power handling 500W across the band.



Custom Horn Antennas...



Steatite provides a custom design horn antenna capability, providing a flexible and responsive microwave engineering approach to satisfy customer specific horn antenna requirements.

Lensed Horns

Produce an improved gain figure, ideal for materials testing where a high field strength is achievable over the desired spot size, and can be an alternative to a reflector antenna solution. A lens may be retrofitted to existing horns and are useful for EMC / HiRF measurement systems. Lensed horns provide lower back-scatter and improved sidelobe performance. Applications include: Radar systems, EMC testing, point-to-point communication links, traffic control systems and many others.

Hog Horns

Can be a useful compact and rigid alternative for sectoral horns and standard pyramidal horns. One of the better known applications of a Hog (or Hogg) horn is by Bell Telephone Laboratories where they 'accidentally' discovered microwave background radiation existing when they were pointing to the sky, this provided support for the Big Bang theory and in 1978 Penzias and Wilson received the Nobel Peace Prize for their momentous discovery. The distinctive shape of the hog horn can be an advantage for many applications, especially where space-saving is important.

Dielectric Filled Horns

Have the advantage of providing operation as a horn antenna but at a lower frequency than the physical size of the antenna would suggest. Filling with dielectric material may also be beneficial for matching an antenna that is designed to launch microwaves into a medium other than free-space. The trade-off for size reduction using dielectric filling, is greater losses in the dielectric material reducing gain and limiting to lower power usage. Steatite has designed many dielectric filled antennas, mostly in the standard waveguide sizes, however many variants can be considered.

Sectoral Horns

Give a larger beamwidth in one plane in comparison to the other plane where it is very narrow. This is desirable in many applications such as in broadcasting where a few sectoral horns can be arranged, back to back, to cover 360 degrees in azimuth. A fan beam enables the concentration of microwave energy in a fan pattern, as the name suggests, without wasting energy in the orthogonal plane where coverage is not needed. Sectoral horns can be designed for all standard waveguide sizes and also encompasses ridged wideband designs. The 'flare' can be designed to be an E-plane or H-plane flare.

Low Sidelobe Diagonal Horns

May be useful to provide a solution when high gain and low sidelobes are required from an antenna. One major application is in radiometry work where the noise temperature of a target has to be measured with minimal contribution from sources outside the main beam, which may often be at a higher intensity than at the main beam. Generally Gaussian or corrugated horns are considered for this task however they may be expensive and of restricted bandwidth, both factors arising from the horn's complex internal structure. Diagonal horns give a very similar level of performance but are simpler to make and have a wider bandwidth.

EMC Antennas...



Steatite provides wideband waveguide COTS antennas 400 MHz to 40 GHz and custom antenna solutions for precision EMC radiated immunity and emissions testing.

EMC Antennas

Steatite's antennas allow multi-octave frequency sweeps with a single unit, whilst high gain antennas offer low side lobes and consistent performance. The demand for high field strengths is catered for by a suite of HiRF antennas that produce field strengths with near-field gains of 20 dBi. A unique focussing arrangement of the antennas means it is possible to produce fields of 3000 V / m using 3kW amplifiers, resulting in reduced system costs. As with other Steatite products, bespoke designs or modifications may be accommodated.

Ultra Wideband Double Ridged Horn Antennas

Double ridged horn antennas are the standard choice for ultra wideband performance over many octaves. Steatite provides a range of these for high and medium power applications. An interesting feature of some of these is the incorporation of a dielectric lens insert which is used to improve the antenna patterns and phase centre stability.

Wideband High Gain Horn Antennas

Steatite offers a range of high gain, larger aperture horn antennas for high and medium power applications with bandwidths less than an octave.

Pyrimidal Standard Gain Horn Antennas

Designed for applications where there are precise gain requirements.

HiRF Antennas

Horn antennas may be carefully configured in small arrays to focus energy in the near field without exceeding the power ratings of the individual antennas comprising the array. This configuration also provides a controlled energy distribution in the region of focus that is difficult to achieve with a single horn. Steatite provides such systems together with associated mechanical supports and controls.

Lensed Horn Antennas

An exciting development in antenna design is the use of dielectric inserts and lenses to control the radiated fields in ways which cannot be achieved using all-conductor antennas. New electromagnetic theories and advanced simulation tools have been used in the design of such antennas and Steatite is at the forefront of this practical application.

HiRF Antennas...

Steatite's family of eight antennas covering the frequency range 0.4 - 18 GHz are capable of reaching ultra-high field strengths in the near field, that are not attainable using traditional systems. Steatite uses antenna arrays, lenses and extended gain antennas to achieve this performance.

About our HiRF Antennas...

Steatite HiRF antennas are able to focus RF energy at short distances from the aperture. 3 kV / m at one metre can be achieved in free field tests with 3 dB spot sizes 150mm or greater. Focussing is achieved by using dielectric lenses or by dividing the aperture up into four cophased smaller horn antennas. Various mounting options are available ranging from fixed-mount to variable geometry. As with other Steatite products, bespoke designs or modifications may be accommodated.

Typical Specifications:

GHz	Catalogue No. / Description	Gain dBi at 1m	VSWR	Peak Power	Connector
0.4 to 1	QPA-SL-0.4-1-A-SG · 700 V/m at 1 metre with an input power of 1.1 kW	11.5 to 15.5	<1.5:1	13kW	7:16 DIN
1 to 1.6	QPA-SL-1-1.6-A-SG · 3,000 V/m at 1 metre with an input power of 3.8 kW	18.9 to 20.6	<1.5:1	13kW	7:16 DIN
1.5 to 2.6	QPA-SL-1.5-2.6-A-SG · 3,000 V/m at 1 metre with an input power of 2.8 kW	20.3 to 22.0	<1.5:1	13kW	7:16 DIN
2.6 to 4	QSH-SL-2.6-4-C-SG-R · 3000 V/m at 1 metre with an input power of 2.85 kW	20.0 to 20.9	<1.5:1	13kW	SC
4 to 6	QSH-SL-4-6-C-22-R · 3000 V/m at 1 metre with an input power of 2.3 kW	21.1 to 23.6	<1.5:1	13kW	SC
6 to 8	QSH-SL-6-8-C-22 · 3000 V/m at 1 metre with an input power of 2.0 kW	21.8 to 23.1	<1.5:1	10kW	SC
8 to 12	QSH-SL-8-12-F-23 · 3000 V/m at 1 metre with an input power of 2.5 kW	20.5 to 23.4	<1.5:1	10kW	WG16 (WR90) UBR100
12 to 18	QSH-SL-12-18-F-22 · 3000 V/m at 1 metre with an input power of 2.1 kW	21.6 to 23.2	<1.5:1	10kW	WG18 (WR62)

Horn Antennas...

Steatite provides a wide range of COTS and custom designed, standard gain and wideband horn antennas, 0.4 to 500 GHz, with typical gain values from 10 to 20 dBi. Higher gain horn antennas are also available typically >22 dBi.

About our Horn Antennas...

A variety of COTS and custom designed wideband-octave and multi-octave horn antennas are provided including rectangular, conical, multimode, sectoral, double & quad ridged, and dual polarised. Horn antennas can be adapted to meet customer specific requirements, for example waveguide-flanged and high power transition versions are available. The list below is not exhaustive and different connector versions are available. Applications include EW, SIGINT, Test & Measurement including EMC immunity and HiRF testing. As with other Steatite products, bespoke designs or modifications may be accommodated.

Typical specifications - (DL = Dual Polarised & SL=Linearly Polarised):

GHz	WR / WG	Catalogue No.	Gain dBi	W c.w.	VSWR	Connector
0.37 to 0.47	2300 / 00	QSH-SL-0.37-0.47-N-10	9.4 to 11.5	200	<1.6:1	N
0.40 to 1.0		QWH-SL-0.4-1-N-SG	12.5 to 14.5	500	<1.7:1	N
0.50 to 0.75	1500 / 2	QSH-SL-0.5-0.75-N-15	12.5 to 15.5	400	<1.5:1	N
0.50 to 2.0		QWH-SL-0.5-2-N-SG	7.4 to 14.5	250	<1.8:1	N
0.60 to 1.0	1150 / 3	QSH-SL-0.6-1-N-10	7.7 to 12.2	400	<1.5:1	N
0.75 to 1.1	975 / 4	QSH-SL-0.7-1.1-N-15	13.6 to 17.1	400	<1.6:1	N
0.80 to 4.0		QWH-DL-0.8-4-N-SG-L	7.2 to 13.5	40	<2.3:1	X2 N
0.90 to 1.4	770 / 5	QSH-SL-0.9-1.4-N-20	18.0 to 22.0	400	<1.6:1	N
0.90 to 18		QWH-DL-0.9-18-S-SG-R	0.3 to 13.0	40	<2.5:1	X2 SMA
1.0 to 4.2		QWH-SL-1.4-2-A-HG	13.6 to 18.4	1200	<2.0:1	7:16
1.0 to 8.0		QWH-SL-1-8-B-SG	6.0 to 17.0	1500	<1.4:1	7/8
1.0 to 18.0		QWH-SL-1-18-S-SG-R	1.3 to 12.8	40	<2.0:1	SMA
1.1 to 1.7	650 / 6	QSH-SL-1.1-1.7-N-20	18.8 to 21.7	300	<1.4:1	N

Horn Antennas (cont)

Typical specifications - (DL = Dual Polarised & SL=Linearly Polarised):

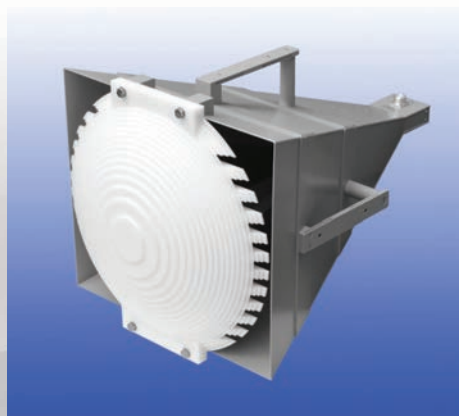
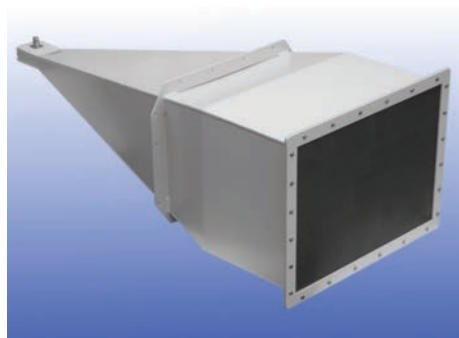
GHz	WR / WG	Catalogue No.	Gain dBi	W c.w.	VSWR	Connector
1.4 to 2.2	510 / 7	QSH-SL-1.4-2.2-N-20	18.0 to 20.5	400	<1.3:1	N
1.7 to 2.6	430 / 8	QSH-SL-1.7-2.6-A-20	18.4 to 21.8	1800	<1.3:1	7/16
2.0 to 4.0		QWH-SL-2-4-C-SG-R	16.4 to 18.1	750	<1.6:1	SC
2.0 to 8.0		QWH-SL-2-8-N-SG-R	10.9 to 14.3	500	<1.5:1	N
2.0 to 18.0		QWH-SL-2-18-N-SG-R	5.0 to 12.0	50	<2.5:1	N & SMA
2.0 to 18.0		QWH-SL-2-18-N-HG-R	10.0 to 22.0	80	<2.5:1	N & N
2.0 to 18.0		QWH-DL-2-18-N-SG-R	10.0 to 22.0	80	<2.5:1	N & N
2.0 to 18.0		QWH-DL-2-18-S-HG-R	10.0 to 22.0	80	<2.5:1	N & N
2.2 to 3.3	340 / 9A	QSH-SL-2.2-3.3-N-20	18.6 to 21.6	200	<1.4:1	SMA
2.5 to 7.5		QWH-SL-2.5-7.5-F-SG-R	10 to 14	2000	<1.3:1	WRD250
2.6 to 4.0	284 / 10	QSH-SL-2.6-4-N-20-R	18 to 21	200	<1.4:1	N
3.3 to 5.0	229 / 11A	QSH-SL-3-5-S-15	14 to 17	50	<1.3:1	SMA
3.9 to 5.9	187 / 12	QSH-SL-4-6-N-20	18.0 to 21.0	200	<1.6:1	N
4.0 to 8.0		QWH-SL-4-8-F-HG	18.0 to 20.0	2000	<1.3:1	WRD350
4.9 to 7.1	159 / 13	QSH-SL-5-7-S-20	18.0 to 21.0	60	<1.4:1	SMA
5.8 to 8.2	137 / 14	QSH-SL-6-8-S-20-R	18.0 to 21.0	50	<1.6:1	SMA
6.5 to 18.0		QWH-SL-6.5-18-F-HG-R	8.0 to 17.0	400	<1.8:1	N, WRD650
7.0 to 10.0	112 / 15	QSH-SL-7-10-S-20-R	18.0 to 21.0	50	<1.4:1	SMA
7.5 to 18.0		QWH-SL-7.5-18-F-20	19.0 to 21.0	2000	<1.3:1	WRD750
8.2 to 12.4	90 / 16	QSH-SL-8-12-S-15	13.0 to 17.0	40	<1.3:1	SMA
10.0 to 15.0	75 / 17	QSH-SL-10-15-S-20	18.0 to 21.0	40	<1.4:1	SMA
12.4 to 18.0	62 / 18	QSH-SL-12-18-S-20-R	18.0 to 21.0	40	<1.4:1	SMA
15.0 to 22.0	51 / 19	QSH-SL-15-22-S-20-R	17.0 to 21.0	20	<1.6:1	SMA
18.0 to 26.5	42 / 20	QSH-SL-18-26-S-20-R	18.0 to 20.9	20	<1.4:1	SMA
18.0 to 40.0		QWH-SL-18-40-K-SG-R	12.3 to 14.8	20	<1.7:1	K
18.0 to 40.0		QWH-DL-18-40-K-SG-R	12.0 to 16.9	20	<2.5:1	K
22.0 to 33.0	34 / 21	QSH-SL-22-33-K-20-R	18.0 to 21.0	40	<1.4:1	K
26.5 to 40.0	28 / 22	QSH-SL-26.5-40-K-20	18.0 to 21.0	20	<1.2:1	K
33.0 to 50.0	22 / 23	QSH-SL-33-50-V-20	18.0 to 21.0	5	<1.4:1	V
40.0 to 60.0	19 / 24	QSH-SL-40-60-V-20	18.0 to 21.0	10	<1.6:1	V
50.0 to 75.0	15 / 25	QSH-SL-50-75-V-20	18.0 to 21.0	5	<1.6:1	V
60.0 to 90.0	12 / 26	QSH-SL-60-90-F-20	20.0 to 22.0	200	<1.2:1	WG F
75.0 to 110.0	10 / 27	QSH-SL-75-110-F-20	20.0 to 22.0	200	<1.2:1	WG F
90.0 to 140.0	28 / 6	QSH-SL-90-140-F-20	20.0 to 22.0	100	<1.2:1	WG F
140.0 to 170.0	WR6.5	QSH-SL-140-170-F-20	25.0 to 27.20	50	<1.15:1	WG F
180.0 to 220.0	WR5.1	QSH-SL-180-220-F-20	25.0 to 27.20	50	<1.2:1	WG F
215.0 to 260.0	WR4.3	QSH-SL-215-260-F-20	25.0 to 27.20	20	<1.25:1	WG F
275.0 to 330.0	WR3.4	QSH-SL-275-330-F-20	25.0 to 27.20	10	<1.3:1	WG F
330.0 to 400.0	WR2.8	QSH-SL-330-400-F-20	25.0 to 27.20	5	<1.35:1	WG F
415.0 to 500.0	WR2.2	QSH-SL-415-500-F-20	25.0 to 27.20	5	<1.4:1	WG F

Lensed Antennas...

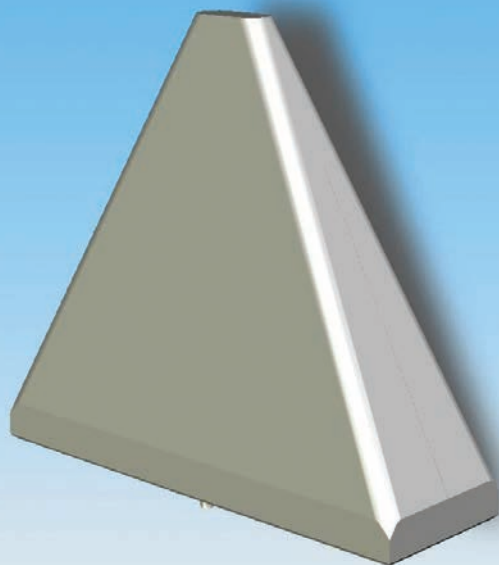
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About our Lensed Antennas...

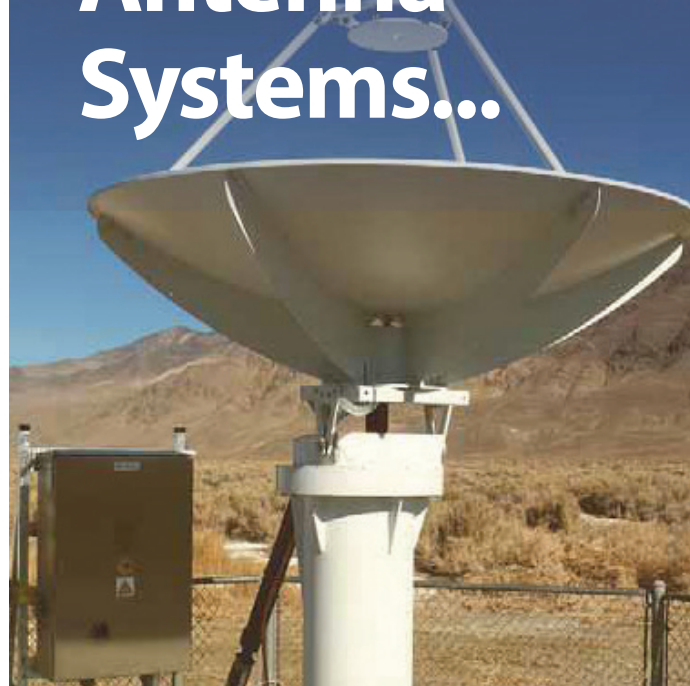
The Company is at the forefront of the practical application of new electromagnetic theories and advanced simulation tools for the design of Lensed Horns. These devices can provide a high field strength over a defined area and are therefore well suited to EMC testing and materials testing applications. Steatite offers COTs and custom designed Lensed Horn antennas.



Log Periodic Antennas...



L to KA Band Antenna Systems...



About our Log Periodic Antennas...

Steatite's COTS and custom designed dual and linearly polarised antennas are designed for wideband applications including Test and Measurement, Monitoring, Surveillance and feeds for parabolic reflectors. Supplied with integral lightweight radomes. As with other Steatite products, bespoke designs or modifications may be accommodated.

About our L to KA Band Antenna Systems...

Steatite provides 2 to 3 metre class antenna systems designed to operate from L band up to Ka band. The systems provide accurate reflector surfaces, precision pointing and an astronomy grade control system together with a pedestal that is particularly rigid and can be used in high wind conditions. A wide range of receive only feeds are available; an astronomy grade ethernet interface control system and tilt for keyhole elimination is available as an option. As with other Steatite products, bespoke designs or modifications may be accommodated.

Reflectors	Sizes from 2m to >3m · For use up to Ka band · F/D of 0.375 and surface accuracy of 0.38 mm RMS all causes.
Feeds	A wide variety are available, single band at L through to Ka band or wideband feeds for astronomy or surveillance .
Mechanical	Pointing accuracy: 0.010 degrees · Slew rate: up to 12 deg/sec maximum in azimuth Azimuth travel: Zero backlash single motor, 270° min up to +/-190° as an option Elevation travel: Precision zero backlash jack system, 6 to 88° Feed support: Prime focus, suitable up to 25kg, standard or custom plates and adaptors available.
Electrical	Control interface: Ethernet with 0.001 degree resolution · Power requirement: 200-240V 3 phase AC preferred although single phase AC or 48V DC are possible
Environment	Temperature range for full spec: -15 to +50°C · Temperature for survival: -30 to +60°C Wind speed: 50 km/h operational and 160 km/h survival in stowed position
Optional Items	Electrically controlled tilt axis adjuster for keyhole elimination and LEO applications Fibre Optic interface converter for Ethernet control port · Additional software options for satellite communications applications and tracking · Twin azimuth drive version for operation in extreme wind environments

Omnidirectional Antennas...

Steatite's COTS and custom designed Omnidirectional antennas provide wide bandwidth up to 40 GHz.

About our Omnidirectional Antennas...

Vertical and slant polarised antennas are available and suitable for EW, SIGINT, direction finding and spectrum management applications. As with other Steatite products, bespoke designs or modifications may be accommodated.

Typical specifications:

GHz	Catalogue No.	Gain dBi	Power	VSWR	Polarisation	Connector Type
0.01 to 1	QOM-SL-0.01-1-N-SG-R	0 to -14	Rx Only	<3.0:1	Vertical	N
0.5 to 2.5	QOM-SL-0.5-2.5-N-SG	>1 to horizon	100W c.w.	<2.5:1	Vertical	N
0.5 to 18	QOM-SL-0.5-18-N-SG-R	-2 to 7.5	50W c.w	<2.5:1	Vertical	N
0.5 to 18	QOM-ST-0.5-18-S-SG-R	-2.4 to 6.4	Rx Only	<3.0:1	Slant	SMA
0.8 to 40	QOM-SL-0.8-40-K-SG-L	-2.2 to 6.9	40W c.w	<3.2:1	Vertical	K
0.9 to 20	QOM-SL-0.9-20-S-SG-R	0 to 6.3	40W c.w	<3.2:1	Vertical	SMA
2 to 18	QOM-SL-2-18-S-SG-R	0.2 to 7.8	40W c.w	<2.5:1	Vertical	SMA
2 to 18	QOM-ST-2-18-S-SG-R	-4.3 to 8.4	50W c.w	<2.5:1	Slant	SMA
9 to 15	QOM-ST-9-15-K-SG-R	-1 to 2.5	40W c.w	<2.0:1	Slant	K
26 to 40	QOM-SL-26-40-K-SG-R	2 to 4	10W c.w	<2.0:1	Vertical	K

Reflector Antennas...

Steatite provides a wide range of COTS and custom designed prime focus, offset, solid, and segmented reflector/feed antenna combinations. Steatite reflector antennas provide high gain and low sidelobes with low VSWR levels, for receive and transmit applications including ELINT, EW, direction finding, threat emitters, meteorological sensors and communication systems.

About our Reflector Antennas...

COTS and custom designed linear, circular polarised and dual polar feeds are available either with SMA, N, K type and waveguide flanges. Additional offset and prime focus reflector/feed combinations can be supplied. As with other Steatite products, bespoke designs or modifications may be accommodated.

340mm Prime Focus Reflectors (152mm focal length):

GHz	Catalogue No.	Gain dBi	Beamwidth degrees 3dB	W c.w.
8-12	QSF-SL-8-12-S	26.3 to 30.9	4.4 to 7.5	40
6.5-18	QWF-SL-6.5-18-N-R	24 to 29.7	3.5 to 9	400
6.5-18	QWF-DL-6.5-18-S-R	24 to 29.7	3.5 to 9	400
7.5-18	QWF-SL-7.5-18-F-R	26 to 33.2	3 to 7	500
12-18	QSF-SL-12-18-S	30.5 to 33.4	3.5 to 4.5	20
18-26	QSF-SL-18-26-S	33 to 36.8	2 to 3	20
18-40	QWF-SL-18-40-K-R	32.9 to 39.5	1.5 to 3	30
18-40	QWF-DL-18-40-K-R	33 to 39	1.4 to 3.2	20
26-40	QSF-SL-26-40-F	36.8 to 40.5	1.5 to 2.1	5000

600mm Prime Focus Reflectors (228mm focal length):

GHz	Catalogue No.	Gain dBi	Beamwidth degrees 3dB	W c.w.
2-8	QWF-SL-2-8-N-R	22.3 to 31.9	3 to 11	400
6-8	QSF-SL-6-8-N-R	27.5 to 30.5	4 to 5.5	50
8-12	QSF-SL-8-12-S-R	31.5 to 35.4	2.5 to 3.5	40
2-18	QWF-SL-2-18-S-R	18 to 31.5	4 to 16	20
2-18	QWF-DL-2-18-S-R	18 to 36	2 to 18	20
6.5-18	QWF-SL-6.5-18-N-R	28 to 38.5	2 to 5	400
7.5-18	QWF-SL-7.5-18-N-R	31.2 to 38	2 to 3.9	400

600mm Prime Focus Reflectors (228mm focal length) continued:

GHz	Catalogue No.	Gain dBi	Beamwidth degrees 3dB	W c.w.
18-40	QWF-SL-18-40-K	38.5 to 43.6	1 to 2	40
18-40	QWF-DL-18-40-K-R	37 to 41.8	1.2 to 1.8	40

900mm Prime Focus Reflectors (337mm focal length):

GHz	Catalogue No.	Gain dBi	Beamwidth degrees 3dB	W c.w.
2-8	QWF-SL-2-8-N-R	22 to 31.2	2.7 to 10.4	400
2-18	QWF-DL-2-18-S-R	21 to 31.4	1.5 to 10.5	20
6.5-18	QWF-SL-6.5-18-N-R	32.4 to 40	1.5 to 3	400
18-40	QWF-SL-18-40-K	41 to 47	0.75 to 1.5	40
7.5-18	QWF-SL-7.5-18-N-R	33 to 39	2 to 3.5	40

1200mm Prime Focus Reflectors:

GHz	Catalogue No.	Gain dBi	Beamwidth degrees 3dB	W c.w.
2-8	QWF-SL-2-8-N-R	25.5 to 34.7	2.5 to 8	400
8-12	QSF-SL-8-12-S-R	37 to 41	1.4 to 2	40
2-18	QWF-SL-2-18-S-R	24.5 to 38	2 to 9	20
2-18	QWF-DL-2-18-S-R	25 to 41.5	1 to 7.5	40
6.5-18	QWF-SL-6.5-18-N-R	35.3 to 41.8	1.5 to 2.5	400
7.5-18	QWF-SL-7.5-18-N-R	37 to 44	1 to 2.2	400
18-40	QWF-DL-18-40-K-R	44 to 48.7	0.5 to 1	40

1800mm Prime Focus Reflectors:

GHz	Catalogue No.	Gain dBi	Beamwidth degrees 3dB	W c.w.
1-2	QWF-SL-1-2-N	22.5 to 28.7	6 to 11	500
2-8	QWF-SL-2-8-N-R	37.2 to 40.9	1.5 to 4	400
6-8	QSF-SL-6-8-N-R	38.3 to 40.6	1.4 to 1.7	50
2-18	QWF-DL-2-18-S-R	28 to 42	0.7 to 6	40

700mm Offset Reflectors:

GHz	Catalogue No.	Gain dBi	Beamwidth degrees 3dB	W c.w.
0.9-18	QSR700-A-OST & QWH-DL-0.9-18-S-SG-R	17.5 to 34.5	1.5 to 34 (Az) 1.5 to 27 (El)	40
2-18	QSR700-A-OST & QWH-DL-2-18-S-SG-R	16.7 to 38.2	2 to 13.2 (Az) 1.9 to 1.5 (El)	20

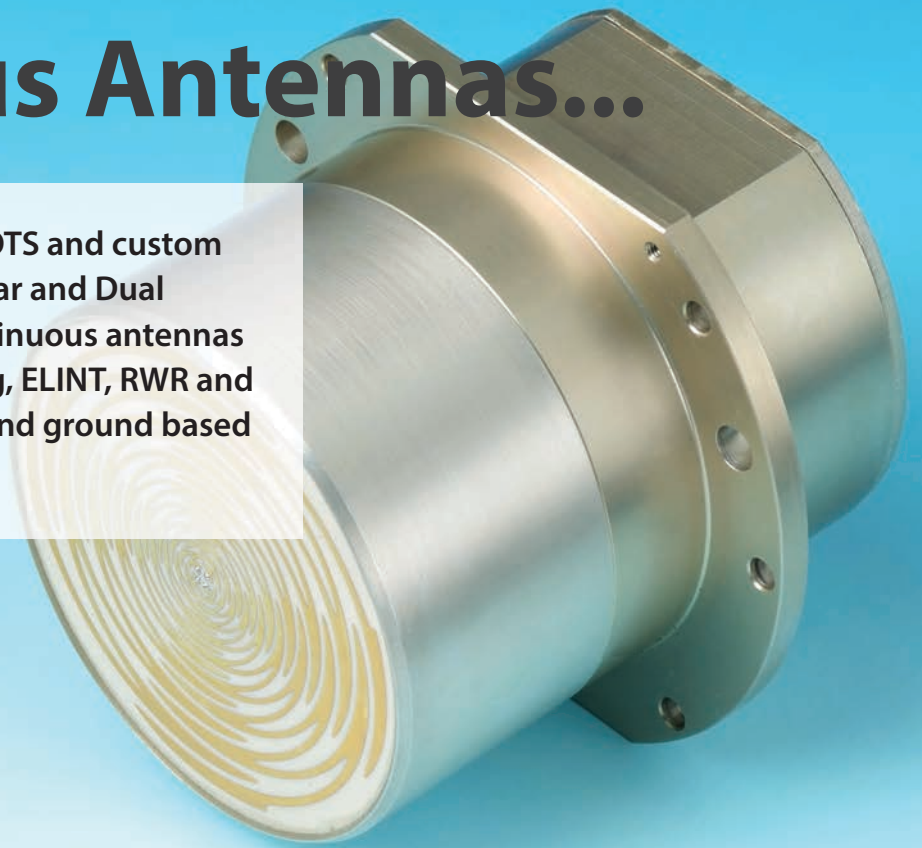
0.5-2GHz Reflectors:

Diameter (mm)	Catalogue No.	Gain dBi	Beamwidth degrees 3dB	W c.w.
1400 (P)	QSR-1400-A-546 & QWF-SL-0.5-2-N	14 to 24.2	6 to 35	400
3000 (P)	QSR-3000-A-1207 & QWF-SL-0.5-2-N-R	20.8 to 30	5.8 to 13.3	400
1200 (O)	QSR-1200-A-OST & QSF-SL-0.5-2-AR	12.5 to 25	8.7 to 47 (EL) 8.7 to 30 (AZ)	600

(P) = Prime Focus (O) = Offset Reflector

Sinuuous Antennas...

Steatite supplies COTS and custom designed Dual Linear and Dual Circular Polarised, sinuous antennas for direction finding, ELINT, RWR and ESM airborne, sea and ground based applications.



About our Sinuous Antennas...

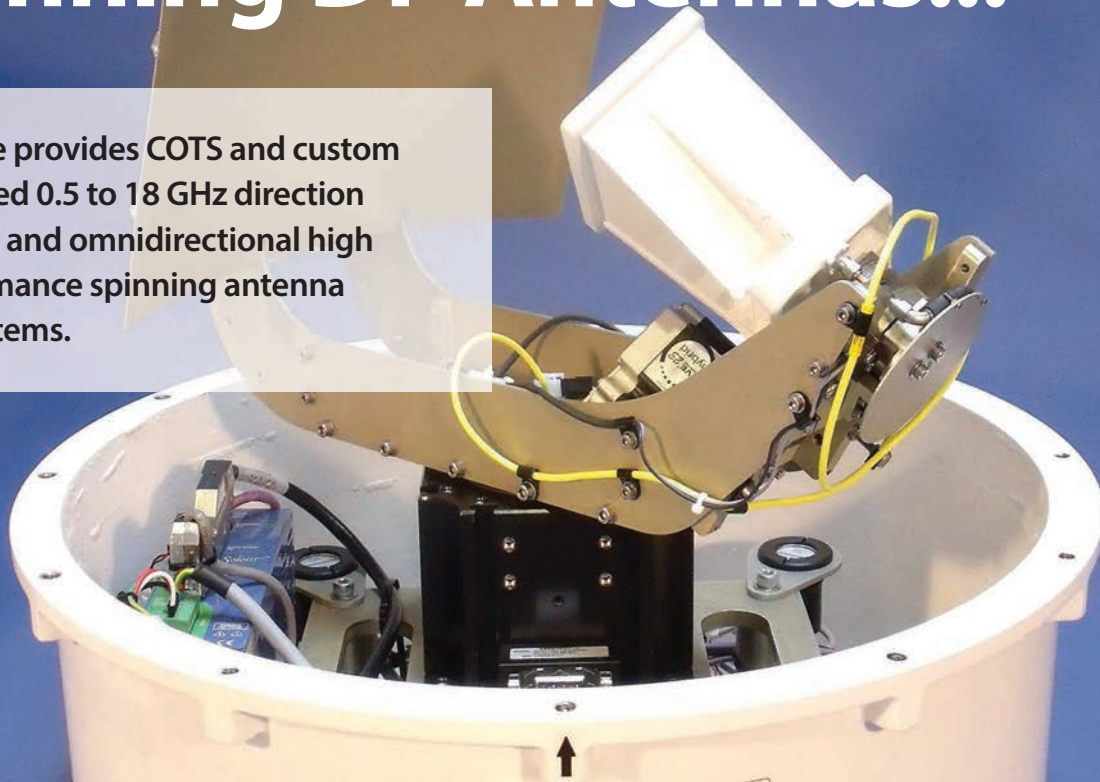
Steatite's family of sinuous antennas simultaneously handle signals of any two orthogonal linear polarisations, and in some cases, simultaneous left and right handed circular polarisations. This provides intercept opportunities for a wide range of arbitrarily polarised signals, from devices also giving a wide bandwidth and broad beamwidth. The sinuous antennas can also be used as feeds for reflector antennas where they give the advantage of a stable phase centre across the frequency band. As with other Steatite products, bespoke designs or modifications may be accommodated.

Typical specifications:

GHz	Catalogue No.	Polarisation	W c.w.	VSWR	Gain dBi	3dB Bandwidth	Isolation dB
0.2 to 2	QSI-DL-0.2-2-S-SG	Dual Linear	10	<3.0:1	-4.2 to 3.6	91.6 to 69°	>35
0.4 to 4	QSI-DL-0.4-2-N-SG-R	Dual Linear	2	<3.6:1	1.3 to 6.4	62 to 48°	>34
0.5 to 3	QSI-DL-0.5-3-S-SG-R	Dual Linear	2	<2:1	-0.2 to 5.8	56 to 96°	>40
0.7 to 4	QSI-DL-0.7-4-S-SG	Dual Linear	10	<2.6:1	0 to 4.1	55 to 94°	>34
2 to 18	QSI-DL-2-18-S-SG	Dual Linear	1	<3.2:1	-3.8 to 4.4	64 to 109°	>32
2 to 24	QSI-DL-2-24-S-SG	Dual Linear	2	<3:1	-8 to 3	145 to 60°	>30
0.5 to 4	QSI-DC-0.5-4-S-SG-R	Dual Circular	2	<1.5:1	-6 to 6 dBiC	62 to 102°	-7
0.7 to 4	QSI-DC-0.7-4-S-SG	Dual Circular	2	<1.4:1	-1 to 2.2 dBiC	102 to 56°	-7
2 to 18	QSI-DC-2-18-S-SG-L	Dual Circular	2	<2:1	-2.2 to 0.4 dBiC	142.6 to 95°	-7

Spinning DF Antennas...

Steatite provides COTS and custom designed 0.5 to 18 GHz direction finding and omnidirectional high performance spinning antenna subsystems.



About our Spinning DF Antennas...

The antennas are mounted on high speed rotating direct drive positioners with complex scan control and housed in RF-transparent, low-loss radomes. Cylindrical paraboloid reflectors are used, which provide a narrow azimuth beamwidth with broad elevation coverage.

Typical specifications:

GHz	0.5 to 18	0.5 to 18	1 to 18	2 to 18
Gain dBi	6-20	-2 to 22.1 - DF & -2.4 to 6.4 - Omni	10 to 23	13 to 24
Antenna Type	Reflector and Horn	Reflector and Omnidirectional	Cylindrical paraboloid	Cylindrical paraboloid
Polarisation	Slant linear 45°	Slant linear 45°	Slant linear 45°	Slant linear 45°
Azimuth beamwidth°	3 to 90	3.3 to 87	3 to 33	4 to 30
Elevation beamwidth°	66 to 30	15.3 to 81 - DF & 11 to 102 - Omni	42 to 20	20 to 35
Angular resolution°	<0.1	<0.1	<0.1	<0.1
VSWR	<2:1	<2:1 - DF & <3:1 - Omni	<2:1	<2.5:1
Rotational Velocity	100 rpm max	200 rpm max	200 rpm max	200 rpm max

Spiral Antennas...

Steatite's COTS cavity-backed spiral antennas cover the frequency range from 0.5 to 42 GHz and provide wideband performance with left or right hand circular polarisation.

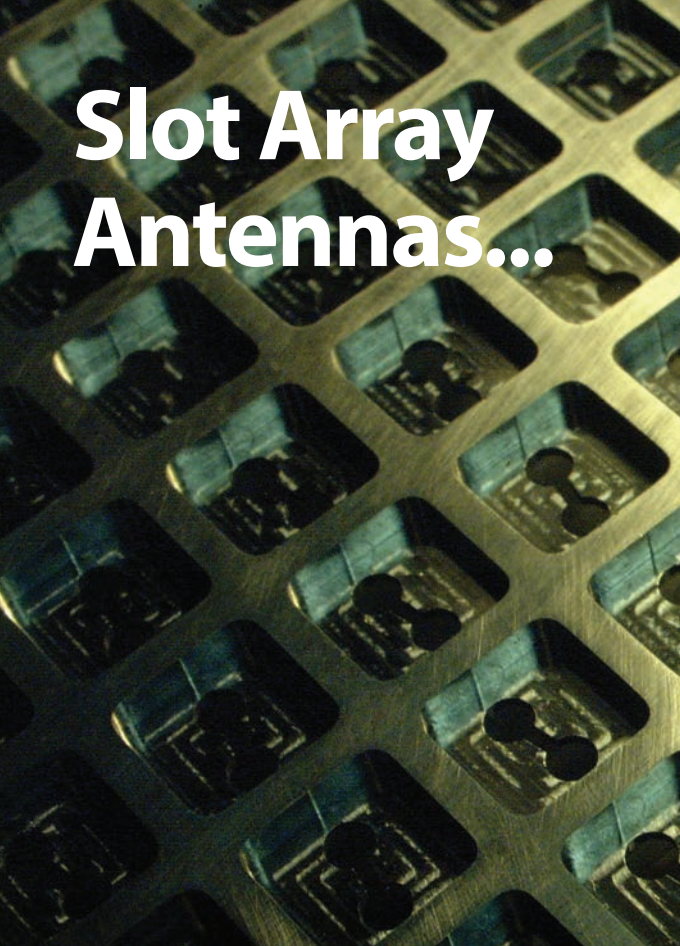
About our Spiral Antennas...

The performance of the Steatite spiral antennas provides broad beamwidth with low squint, smooth radiation patterns and purity of circular polarisation. Typical airborne and ground based applications include 360° direction finding, spectrum management, RWR and ESM. Steatite provides custom designed spiral antennas and if required, integrate lensed radomes to improve performance.

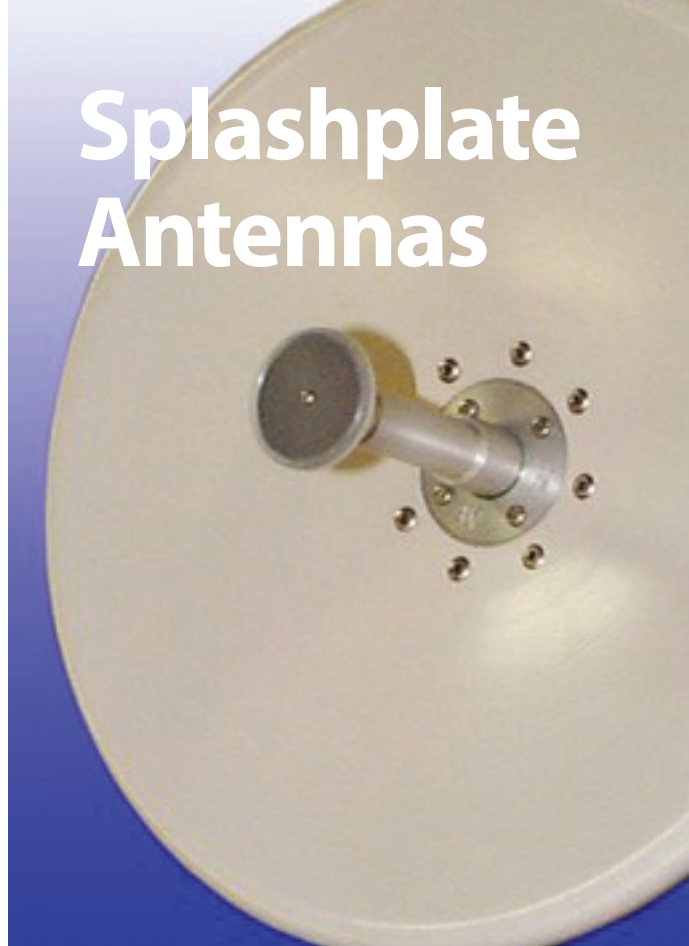
Typical specifications (RC=Right Hand):

GHz	Catalogue No.	Gain	3 dB beamwidth*	VSWR	W c.w.	Connector
0.5 to 22	QSP-RC-0.5-22-S-SG	0 to 5 dBiC	60 to 115	<1.5:1	2 W c.w.	SMA
1 to 18	QSP-RC-1-18-S-SG-R	0 to 7 dBiC	20 to 112	<2.5:1	2 W c.w.	SMA
2 to 18	QSP-RC-2-18-S-RH-R	-0.5 to 4.8 dBiC	60 to 120	<2.5:1	1 W c.w.	SMA
18 to 42	QSP-RC-18-42-K-SG	1 to 4.2 dBiC	47 to 94	<2.5:1	2 W c.w.	K
18 to 42	QSP-RC-18-42-K-SG-L	2.2 to 6.2 dBiC	30 to 80	<2.5:1	2 W c.w.	K

Slot Array Antennas...



Splashplate Antennas



About our Slot Array Antennas...

The Company has had a long involvement with the design and manufacture of both linear and planar waveguide slot array antennas. Typical examples include a simple six element UHF band linear array, a very high power 48 element L band planar array and a complex 32 by 32 element Ka band planar array. A variety of radiation pattern variants can be synthesised from maximum gain to suppressed sidelobes.

Various manufacturing methods are available ranging from sheet metal fabrication to CNC machining out of a solid billet when the precision demands. The arrays may be fitted with low loss radomes for full weather protection. Steatite's in-house computer programs and electromagnetic simulation package CST Microwave® coupled with SolidWorks® mechanical design enable Steatite to design slot arrays that work first time without costly re-development. The manufacture is supported by an extensive test facility enabling the antennas to be fully characterised for VSWR, gain and radiation patterns before packing and shipping.

About our Splashplate Antennas and Docking Feeds

Steatite provides a wide range of splash plate reflector antennas and selective band antenna docking feeds. The feeds are linear, dual linear or circularly polarised. The connector(s) location at the rear of the reflector provides an advantage over prime focus horn feeds which come with associated mounting legs and brackets. The most popular reflector sizes for these antennas are 0.6 m, 0.9 m and 1.2 m, although other reflector sizes are available. Fully enclosing radomes may be provided upon request. Typically feeds are supplied with 0.4 GHz bandwidth with VSWR of 2:1. As with other Steatite products, bespoke designs or modifications may be accommodated.

- Linear docking feeds covering 2 to 22 GHz
- Circularly polarised docking feeds covering 1.9 to 13.2 GHz
- Dual (Linear) polarised docking feeds covering 2 to 21 GHz

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