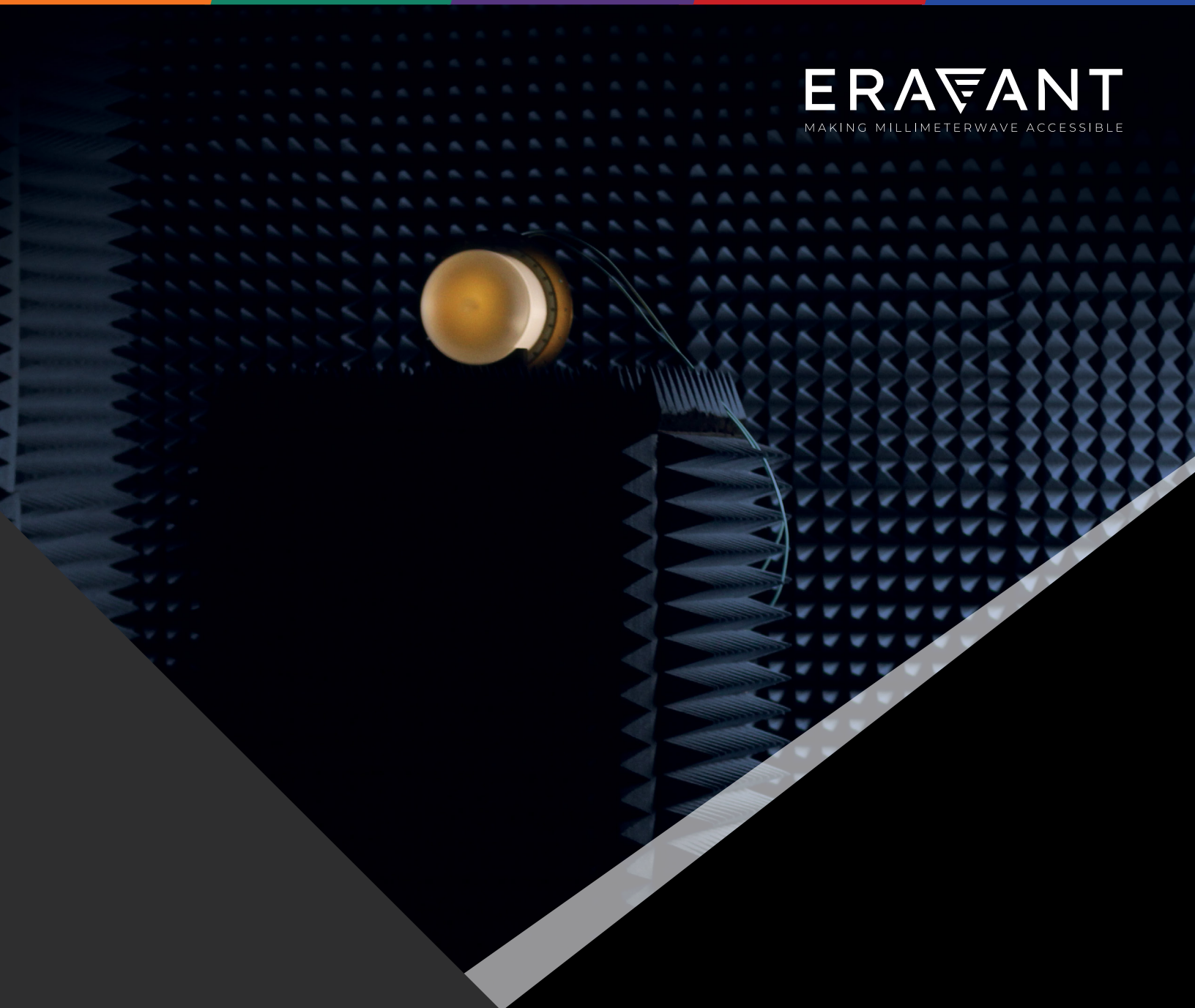
MILITARY A&D | COMMUNICATIONS | SEMICONDUCTORS | RADAR & SENSING | APPLIED SCIENCE

ERAVANT

MAKING MILLIMETERWAVE ACCESSIBLE



mmWave & Sub-THz

ANTENNAS

FOR CUTTING-EDGE APPLICATIONS

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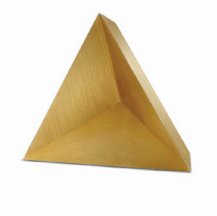
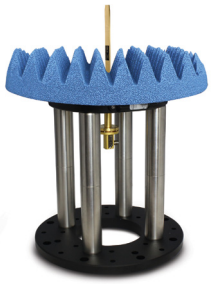
ANTENNAS FOR CUTTING-EDGE APPLICATIONS

Eravant offers a comprehensive portfolio of standard and custom millimeter-wave antennas covering a combined frequency range from 0.7 GHz to 330 GHz to support today's most demanding applications. Eravant's antennas are designed and manufactured with precision, reliability, and performance in mind. They are suitable for use in a wide range of industries, such as aerospace and defense, semiconductors, telecom and SATCOM, radar and sensors, and applied sciences and physics. This brochure highlights the diversity of antenna types offered. Eravant also performs in-house antenna measurements using a spectrum of methods, such as near-field, compact range, and traditional far-field, to fully characterize antenna performance.



CORNER REFLECTORS

SAJ series Corner Reflectors are retroreflectors that are composed of two or more equally sized, perpendicular, intersecting, flat reflective surfaces. Corner reflectors reflect all radiated signals back to their source. The most used reflector shape is a trihedral, though dihedral reflectors are also used. Corner reflectors are used to simulate targets in radar system calibration.



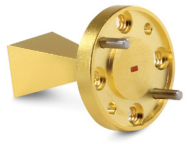
OPEN-ENDED PROBE ANTENNAS

SAP series probe antennas are straight rectangular waveguide sections with an open end on one side. The open end is chamfered to reduce the RCS and probe reflections for better measurement accuracy. Probe antennas are used for near-field antenna range system measurements and calibration.

The SAP series also can be configured with mounting cage and absorber shield under the **STY-MAA-AP series**. These assemblies are designed to be mounted directly on polarization positioners used in antenna ranges.

CONICAL HORNS

SAC series conical horns are circular tapered horns with circular waveguide interface, which can support both linear and circular polarization. Conical horns are used as simple, cost-effective feeds for antenna systems where circular polarized signals need to be transmitted or received.



PYRAMIDAL GAIN HORNS

SAR series gain horns are pyramidal tapered horns with standard rectangular waveguide interfaces. With a calibrated gain chart, these horns are commonly used as reference horns to measure the gain of other antennas via substitution method.

SAZ series standard gain horns are constructed following the design method developed and published by W.T. Slayton of the US Naval Research Laboratory in 1954. Because of their high efficiency, high return loss, symmetrical antenna beam, and low ripple vs frequency, they are universally accepted as the reference gain standard of choice for microwave and mm-wave frequencies.

The SAZ series also can be configured with mounting cage and absorber shield under the **STY-MAA-AZ series**. These assemblies are designed to be mounted directly on polarization positioners used in antenna ranges.

CORRUGATED HORNS

SAF series corrugated scalar horns are horn antennas with intricate machined parallel internal slots and grooves. Compared to other horn types, corrugated horns offer wider bandwidth, lower cross polarization, lower sidelobes and higher beam symmetry. They are commonly used as antenna feeds in high performance reflector antennas for telecommunications and SATCOM applications.

SAH series corrugated choke flange horns are horn antennas with intricate machined perpendicular internal slots and grooves. They have a very wide beamwidth angle and are used as the feed to illuminate large parabolic reflectors in center-fed or offset-fed configurations, such as that of a compact antenna range system.

SPOT FOCUS ANTENNAS

SAQ series spot focus antennas are conical horns with specially designed convex lenses that focus electromagnetic radiation onto a small spot in front of the antenna. Spot focus antennas are used in test labs for material analysis via free space method to characterize the material's permittivity and permeability properties.

LENS-CORRECTED ANTENNAS

SAL series lens-corrected antennas are horn antennas with an attached dielectric lens that provide phase correction for higher gain and efficiency and lower sidelobes. The lens also acts as a basic radome and dust shield for the antenna in outdoor environments. Lens antennas are used in applications such as radar, SATCOM, and telecommunications where high gain, compact size, and weather resistance are required.

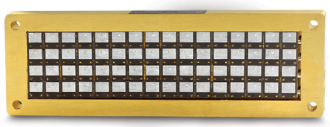
SAG series Gaussian lens-corrected antennas are larger-scale versions of the SAL series for very high gain applications where it becomes cost-prohibitive to manufacture large diameter horn bodies as a single piece. The Gaussian antenna utilizes sturdy, low cost extruded metal tubing to provide structural support for the lens. A corrugated scalar horn is employed as the feed for low cross-polarization, low sidelobes, and high beam symmetry.

OMNIDIRECTIONAL ANTENNAS

SAO series omnidirectional antennas are symmetric, donut-shaped antennas that provide equal-strength, complete 360-degree coverage in all horizontal directions on the azimuth plane. The antennas come with waveguide or coaxial port interfaces and an integrated lens that acts as a radome and dust shield for outdoor applications. They can be attached to a power amplifier directly to boost signal strength. Omnidirectional antennas are used in applications where signal coverage in all directions is required, such as 5G/6G wireless communications.

SECTOR ANTENNAS

SAE series sectoral antennas provide a fan-shaped radiation pattern that allows for 60 to 180 degrees coverage in the azimuth. Compared to omnidirectional antennas, they provide higher gain due to their narrower coverage area. Multiple sector antennas can be combined in an array to provide up to 360-degree coverage in all directions. Sectoral antennas are commonly used individually or in groups to provide wireless network coverage over a large



MICROSTRIP PATCH ARRAY ANTENNAS

SAM series microstrip patch antennas are low-profile, linear-polarized antennas with radiating patch elements that are printed on low loss, soft, microwave dielectric substrate. Patch antennas are lightweight, cost-effective, and easy to fabricate. Some models have individual feeds for each radiating patch, which allows the array to be beam-steered by controlling the phase into each patch, while other models feature a fixed array of patches with only one feed for higher gain. They are used for radar and sensor applications and space/satellite communication applications.

SLOTTED WAVEGUIDE ARRAY ANTENNAS

SAW series slotted waveguide arrays are low-profile, linear polarized antennas with radiating slot elements cut into the broadwall of a waveguide. They deliver exceptional antenna efficiency and can handle much higher power levels compared to other low-profile antennas such as microstrip patch arrays. Slotted waveguide arrays are used in military radar and SATCOM applications.

CASSEGRAIN ANTENNAS

SAY series Cassegrain antennas are parabolic antennas that use a dual-reflector system to focus signals. The antenna consists of the main reflector dish, subreflector dish, corrugated scalar feed, and supporting structures to mount the subreflector. Cassegrain reflector antennas offer the highest gain of all antenna types. Smaller diameter dishes are precision machined from a single block, while larger diameter dishes are constructed from lightweight materials such as fiberglass and carbon fiber. Cassegrain antennas are widely used for ground stations and satellite communications.

MONOPULSE ANTENNAS

SAY-MP series monopulse antennas are special Cassegrain antennas with a monopulse feed network. The monopulse antenna uses four quadrant antennas and a comparator network to gather and calculate the distance and angular position of a target with a single pulse. Monopulse antennas are specifically designed for military radar tracking applications.

BROADBAND RIDGED HORN ANTENNAS

SAV series broadband dual ridged and quad-ridged antennas are horn antennas with internal ridges that allow them to operate over very wide, multiple octave bandwidths. Dual-ridged horns have one coaxial port and are single linear polarized, while quad-ridged horns have two coaxial ports and are dual linear polarized. A quad-ridged horn can also support circular or elliptical polarizations when connected to a 90-degree hybrid coupler. Some models include lens correction for higher gain and lower sidelobes, and all models can be configured with a radome for outdoor applications. Broadband ridged horn antennas are used as source and reference antennas for antenna ranges for testing a wide range of frequencies.

ORTHOMODE TRANSDUCERS(OMT)

SAT series orthomode transducers, or OMTs, are passive devices that provide two separate paths for vertical and horizontal polarizations. They are used to split a single signal into its two orthogonal components or combine two separate polarized signals into a single signal. Due to the OMT's high port isolation, it is commonly used as a polarization duplexer in antenna systems, i.e. it can simultaneously transmit and receive signals that are linear polarized and orthogonal to each other.

OMTs can be added to the back-end of any antenna with a circular or square waveguide interface to convert it into a dual-polarized antenna. Some of the models in the SAF, SAC, SAR, SAL, SAG, SAY, SAF, and SAH series are configured with OMTs to provide dual-polarization capabilities.

LINEAR TO CIRCULAR POLARIZERS

SAS series linear to circular polarizers are passive devices that convert a linearly polarized waveform into a circularly polarized waveform and vice versa. The rotation of the circularly polarized waveform (left-handed or right-handed) is dependent on the orientation of the signal and the polarizer. Manually adjustable and programmable motorized versions are also available for lab and system integrations where the polarization needs to be switched from linear to RHCP or LHCP without disassembling the setup each time.

ROTARY JOINTS

SAN series waveguide rotary joints are passive devices that enable mechanical rotation of rectangular or circular waveguide sections while maintaining continuous, uninterrupted signal transmission. The rotary joints are designed with contactless waveguide coupling structures to enable high power handling, low loss, and low amplitude and phase variation. The rectangular rotary joints are available in standard U-style, inline-style, and L-style configurations, while circular joints are available only in inline-style. Rotary joints are commonly used in applications with a rotating antenna on one end and a fixed backend feed system on the other, such as scanning radar systems, antenna test ranges and telemetry systems.

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For more information on Eravant's products, applications, or services, please visit: www.eravant.com
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