

Patch Antennas

Patch Antenna Attributes

Small Footprint - Dimensions for antennas from 1 GHz to 3 GHz are from 13mm to 50mm square (excluding the ground plane).

Low Profile - Antennas designed with higher dielectric values are typically <8mm in height and depending upon your bandwidth requirement can be as low as 4mm.

Lightweight - These small antennas can be worn on people with little notice.

Versatile - Antennas not only transmit and receive circularly polarized signals but also linearly polarized signals.

Low Cost - Our antenna elements are very affordable in small and large volume.

Flexible - Antennas can be tuned and optimized very easily making prototyping quick and cost effective.

Omni-directional - Antenna radiation patterns provide excellent gain across all elevation angles but can also be manipulated for more focused requirements.

Performance - These passive devices offer typical gain response from 0 dBi to 3 dBi for half-power beamwidths of 110 degrees. Gain at boresite (90 degrees elevation) can exceed 6 dBi depending upon the proper selection of a ground plane.

Military - We have extensive experience in building hardened military designs.

Testing - All of our products are tested 100% on custom testing systems to ensure quality performance.

Key Factors

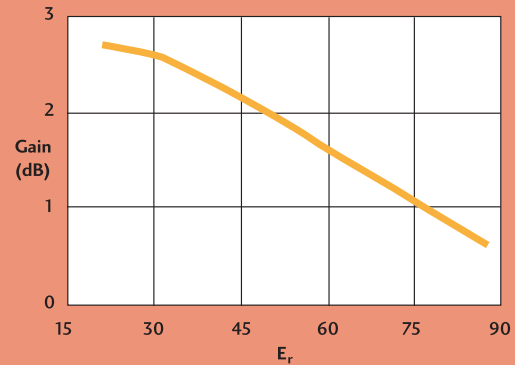
Ground plane - During the design process, consideration must be given to the size and configuration of the ground plane. The ground plane has substantial effects on the performance of the antenna. These effects include frequency shift, gain, axial ratio and radiation pattern.

Element Size - The amount of space available for the antenna element determines not only the material required but also the related performance that can be expected. The element size relates to the material that will be selected, the shape of the element, and the metallization pattern. Each of these has a substantial effect on electrical performance.

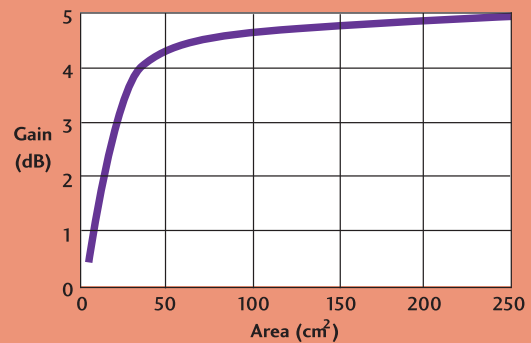
Assembly Configuration - The final assembly configuration also affects element performance. The position of other components, etc. affects the overall performance of the element.

The items mentioned above are areas in which Spectrum Advanced Specialty Products' engineering staff can assist in developing an optimized antenna element to fit your needs.

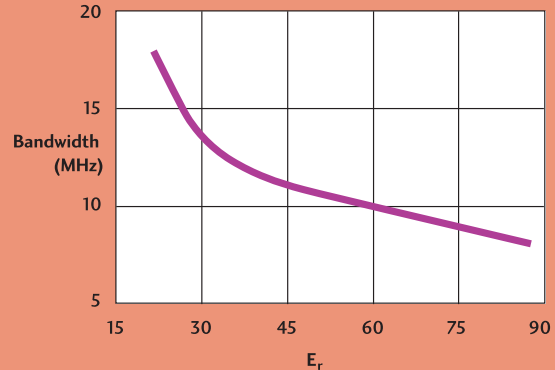
Gain vs. Dielectric Constant (f=1575 MHz)



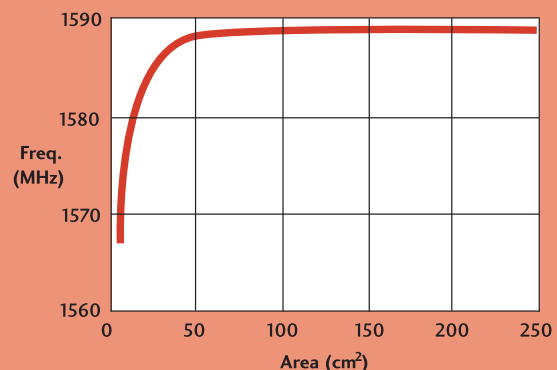
Gain vs. groundplane size (25 mm patch)



10 dB return loss bandwidth vs. dielectric constant (f = 1575 MHz)



Center frequency vs. groundplane size (25 mm patch)



Patch Antenna Elements



RoHS
COMPLIANT

Features

- Temperature stable (-40°C to +105°C)
- Low return loss
- Uniform dielectric constant
- Offset single-point feeding method
- Custom designs available (900 MHz to 5.8 GHz)
- Silver plated electrode and probe
- Surface mount
- 50 Ohm impedance
- RoHS parts available

Ordering Information - Standard Single Frequency Patch Element

PA	25	-	1575	-	008	S	A
Class	Size		Center Frequency (MHz)		Bandwidth (MHz)	Configuration	Series
Patch Antennas	2 digits in mm		Use 4 digits		Use 3 digits	S = Square	Assigned by factory

Application	Part #	Polarization	Center Frequency (MHz)	2:1 VSWR Bandwidth (MHz)	Gain (dB)	Tested ground plane (mm)
GPS	PA13-1580-005SA	RHCP	1580	8	2.5	30X30
GPS	PA18-1580-010SA	RHCP	1580	15	0.0	50X50
GPS-military (L2)	PA25-1227-008SA	RHCP	1227	20	0.0	60X60
GPS	PA25-1575-008SA	RHCP	1575	20	2.5	35X35
GPS	PA25-1579-008SA	RHCP	1579	20	2.5	35X35
Globalstar	PA25-1615-025SA	LHCP	1615	25	3.0	60X60
Iridium	PA25-1621-025SA	RHCP	1621	25	4.0	60X60
ISM	PA28-2450-120SA	RHCP	2450	120	4.0	45X45
Inmarsat	PA45-1592-175SA	RHCP	1592	125	5.0	60X60
RFID	PA780915030SALF	LHCP	915	30	3.0	101.6X101.6

In most cases to order RoHS versions, remove dashes in part number and add "LF" to the end of the part. Ex: PA251575008SALF (RoHS version) Consult Factory for custom parts or optimized center frequencies for your specific applications.

Dual Frequency SMD Patch Element

Spectrum Advanced Specialty Products offers an innovative solution for dual frequency applications. Our individual SMD antennas can be mounted on a single ground plane to address both frequencies at once.

Part #	Application	Ground Plane Test Size (mm)	Reference Outline
PA451615-1575SA	Globalstar & GPS (Comm)	63X63	LHCP
PA451621-1575SA	Iridium & GPS (Comm)	63X63	RHCP
PA451592175SLLF	Thuraya	63X63	LHCP

Consult Factory for full product details.

