

## Optisys ESA Solutions -----

Optisys' NAPA (Novel Active Phased Array) product line leverages our metal 3D printing antenna design expertise to create high-performance broadband antennas with integrated diplexers, thermal and structural features. Our approach to electronically scanned arrays gives customers the exact specifications they need.

## Performance -----

- High efficiency arrays with low power consumption, low heat, longer range
- High bandwidth of >2:1, high cross-pol discrimination across entire band
- Customizations to frequency, bandwidth, gain, etc. are simple and modular

## Key Benefits -----

- Initial offering in X, Ku, Ka-bands
- Hybrid 1-axis ESA for best balance of performance, power, and price
- High instantaneous bandwidth
- Modular antenna design
  - Scalable gain (2 in to  $\geq 72$  in aperture sizes)
- Temperature stability
  - Metal structure
  - High power capability
- Single-piece components
  - Integrated diplexers, polarizers, combiners, antenna
  - Embedded thermal management
  - Integrated mounting and structural features
- Transmit and receive in one aperture
  - Full duplex structures
  - High cross-pol discrimination and isolation
  - Tx and Rx beams aligned
  - Dual Polarization

### ESA Products:

- SATCOM (Aircraft)
- LEO/MEO/GEO (Satellite)
- On-the-Move (Vehicle)
- Radar / SAR
- 5G / Telecom

### Mass Customization:

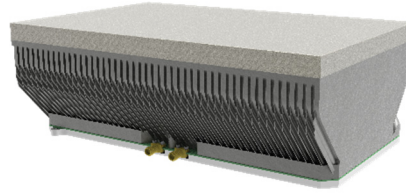
- Frequencies (6 - 43.5 GHz)
- Thermal Integration
- Structural Integration

### Features Overview:

- High Performance
- Fast-to-market
- Hybrid Designs
- Low DC Power

### Upcoming Designs:

- Above 43.5 GHz
- Dual Axis Scanning
- Multibeam Designs



## NAPA Performance (Novel Active Phased Array)

	C/X-Band		Ku-Band			K/Ka-Band		
Frequency Options	6 – 12 GHz		12 – 18 GHz			17.5 – 43.5 GHz		
# of Tiles	1	8	1	6	12	1	4	8
Rx Frequency (typ.)	7.25 – 7.75 GHz		10.95 – 12.75 GHz			17.7 – 21.2 GHz		
Tx Frequency (typ.)	7.90 – 8.40 GHz		13.75 – 14.50 GHz			27.5 – 31.0 GHz		
EIRP P1dB [dBW]	28.6	46.2	28	37	49	36	48	54
G/T Max [dBi/k]	4	12	7	12	17	6	12	15
Cosine Taper	≤ 1.3		≤ 1.3			≤ 1.3		
Aperture Efficiency	> 65%		> 65%			> 65%		
Integrated Diplexer	Yes		Yes			Yes		
Polarization	Dual Circular (RHCP and LHCP)		Dual Linear (H and V)			Dual Circular (RHCP and LHCP)		
Cross Pol Rejection	> 24		> 24			> 24		
Beam Width (typ.)	5.5	2	4	1.6	1.2	2.5	1.2	0.9
Aperture Bandwidth	> 2:1		> 2:1			> 2:1		
Pointing Accuracy [°]	< 0.5		< 0.2			< 0.2		
Azimuth	360°		360°			360°		
Elevation	0 – 75°		0 – 75°			0 – 75°		
Array Weight [lb.]	14	116	6	34	68	8	33	66
Aperture Size [in]	12 x 12 x 6	24 x 48 x 6	7 x 14 x 4	21 x 28 x 4	28 x 41 x 4	10 x 7 x 3	19 x 13 x 3	19 x 26 x 3
Number of elements	256	2048	512	3072	6144	1536	6144	12288
DC Power Consumption [W]	64	512	6	33	65	25	100	200

All values are customizable to customer requirements

