

VIREO

Multi-beam Active Phased Array System



Vireo is a multi-beam active phased array system for high-throughput satellites. The design addresses the state-of-the-art performance requirements for constellations under aggressive SWaP-C targets.

A major feature of the Vireo design is its cutting-edge power usage and power saving capabilities. The system meets strict power consumption requirements during full-capacity operation and allows for power reduction with full per-element and per-beam control. In the transmit version, the power amplifier architecture was specifically designed to reduce the effects of active impedance presented by the antenna, as well as to address the complexities of taper implementation while maintaining high power-efficiency – a key to minimizing overall constellation cost.

To address the need for dynamic throughput management and maximization of capacity, Vireo also supports fast beam hopping, beam-weight storage, and the ability to run sequences of different beam patterns. This advanced digital control is critical for optimization of constellation performance.

Vireo's manufacturing is fully compatible with commercial mass production processes. This approach is the key to meeting cost targets because it eliminates the need for high-skilled labor and specialized manufacturing steps. In addition to being compatible with mass-production manufacturing, the design minimizes the number of unique subassemblies across the aperture and across the constellation. further lowering cost and assembly complexity.

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1. KEY FEATURES:

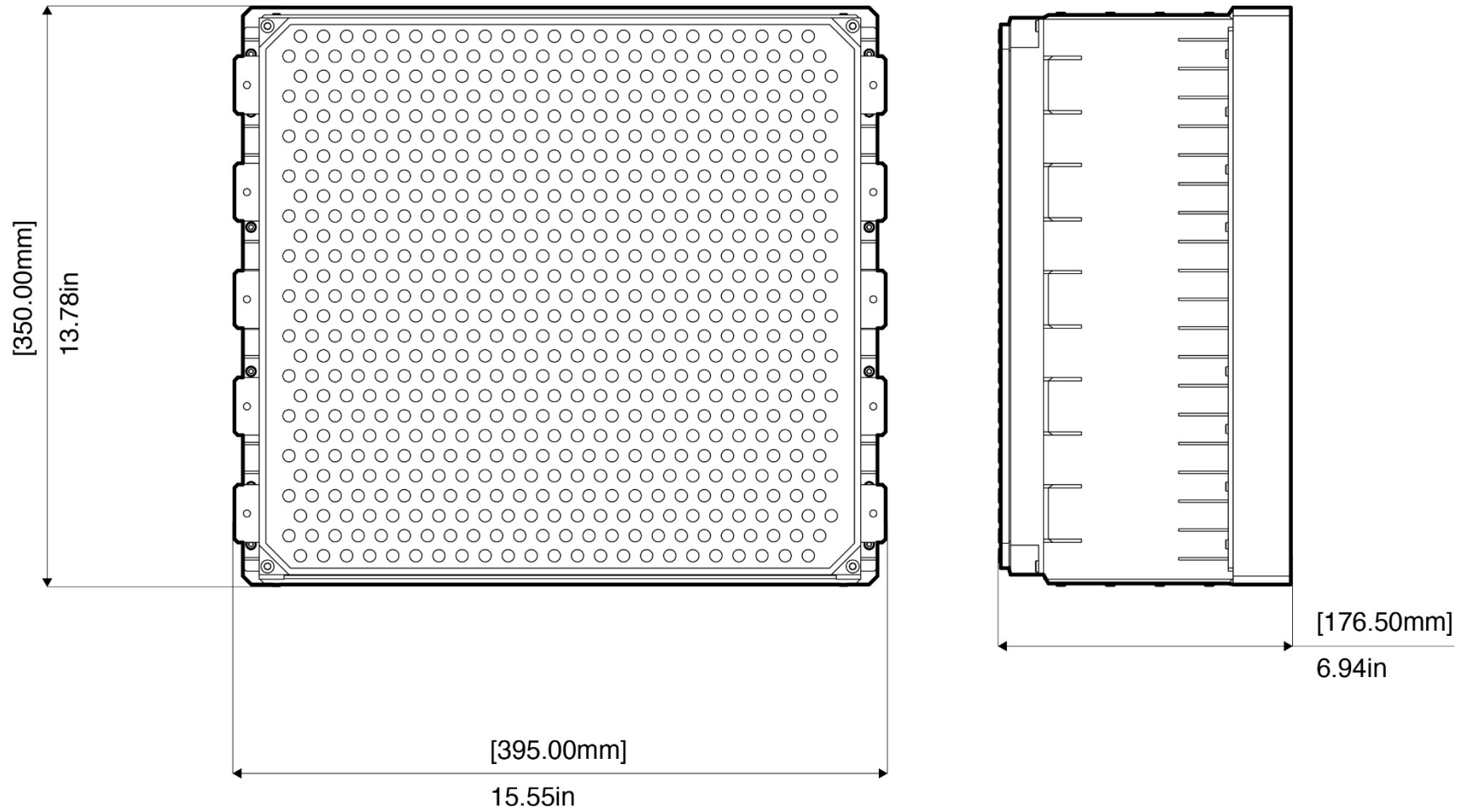
- Multi-beam operation:
- Example mission implementation: 16 fully independent beams
- Steering range: +/- 60 degrees in azimuth and elevation
- Example link budget parameters:
- Typical mission EIRP range: 50-55 dBW
- Typical mission G/T: 5-7 dB/K at input noise temperature of 300K
- RHCP and LHCP options
- Flexible beam dwell times
- Programmable hopping sequences
- Compatible with any on-board baseband processor
- On-board calibration
- Qualification temperature range: -25 C to 71 C at baseplate
- Interfaces: SpaceWire, Ethernet, CAN (other options available)
- On-board isolated power supply
- Suitable for both military and commercial applications on LEO satellites and airborne platforms
- Rad-tolerant and rad-hard options

2. PRODUCT SPECIFICATIONS:

Measurement data and additional details available under NDA.

Contact us at products@cesiumastro.com for more information

3. MECHANICAL VIEW:



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