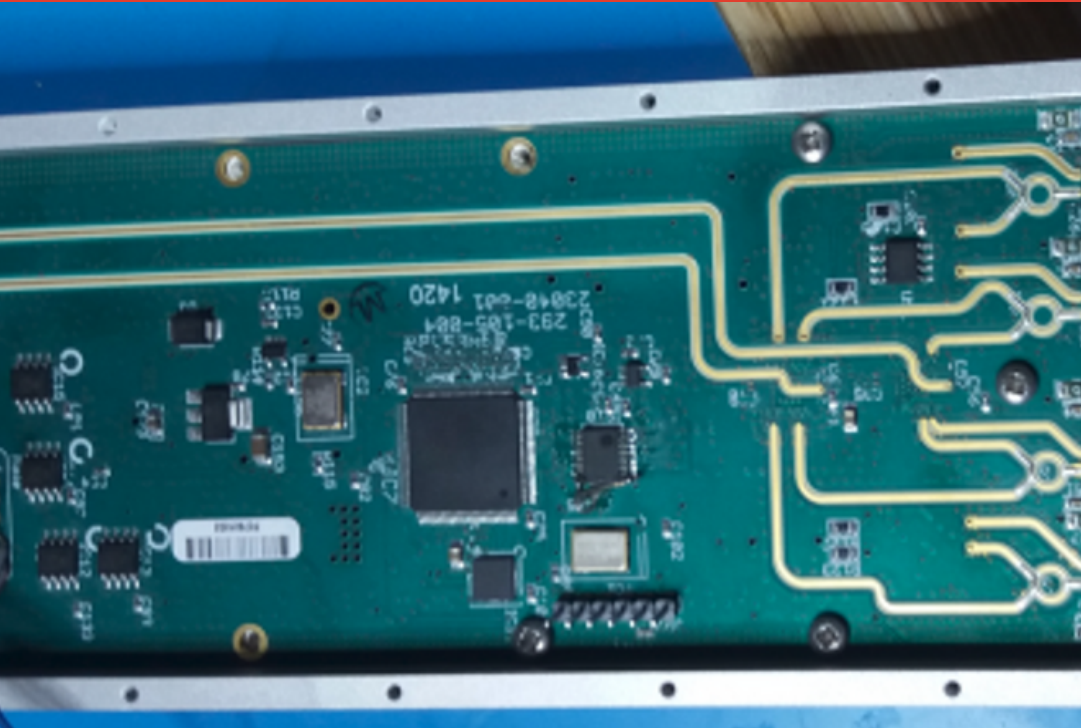


# X-Band TR module for AESA applications



## Key Features

- Independently controlled phase and amplitude for each channel
- Beam control by internal software control as well as external control
- Full transmit power control
- High speed serial interface (RS485)
- High speed TR switching
- Module stackability permits easily scalable antenna systems
- Double RX path permits appropriate weighting for monopulse radar systems

## Applications

This four channel transmit receive module is designed for use in X band active electrically scanned array (AESA). This unit is suitable for use in all time-domain duplexed systems (i.e. radar, terrestrial and space communications, etc.).

## Configurations

The operating band is 8.5 to 10.5 GHz. RF interface is a 50 ohm SMP coaxial connector. Array spacing is 1.8cm.

## Options

Operating frequency bands, connector type, single RX path



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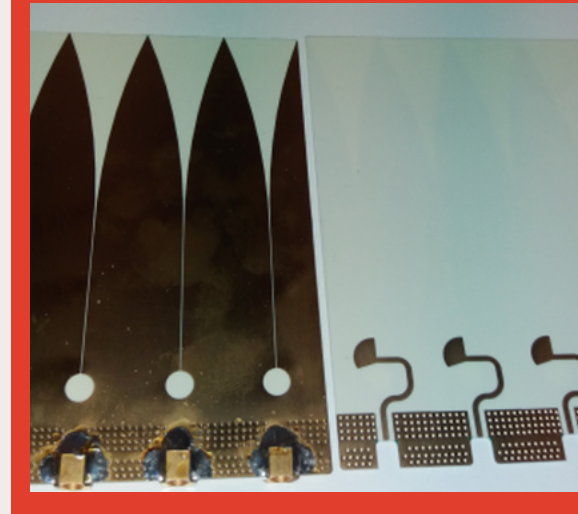
Orban Microwave Products N.V.  
Remylaan 4c-6  
3018 Leuven, Belgium  
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# X-Band TR module for AESA applications

## Specifications

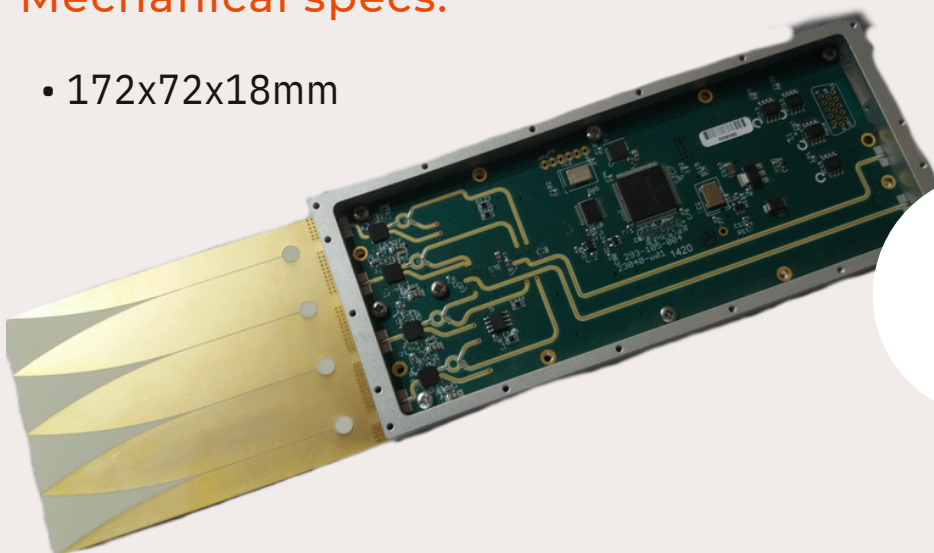
### *Electrical specs.*

- Frequency band: 9.4GHz  $\pm$  0.5GHz
- Tx power: 33dBm per channel
- Rx noise figure: 2.5dB
- Rx→Tx switching speed: 500ns (1% to 99%)
- Tx→Rx switching speed: 300ns (0% to 99%)
- RS485 data rate: 20Mbps NRZ, 1 stop bit, no parity differential signalling
- Differential control lines: Tx/Rx control, Tx beam-stepping, Rx beam stepping
- +40V DC power input
- Phase control range: 0-360 deg.
- Phase resolution: 2.8 deg.
- Amplitude control range: 31dB
- Gain resolution: 0.5dB
- Max Tx gain: 48dB (small signal), 40dB (saturated)
- Max Rx gain: 30dB



### *Mechanical specs.*

- 172x72x18mm



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## X-Band TR module for AESA applications

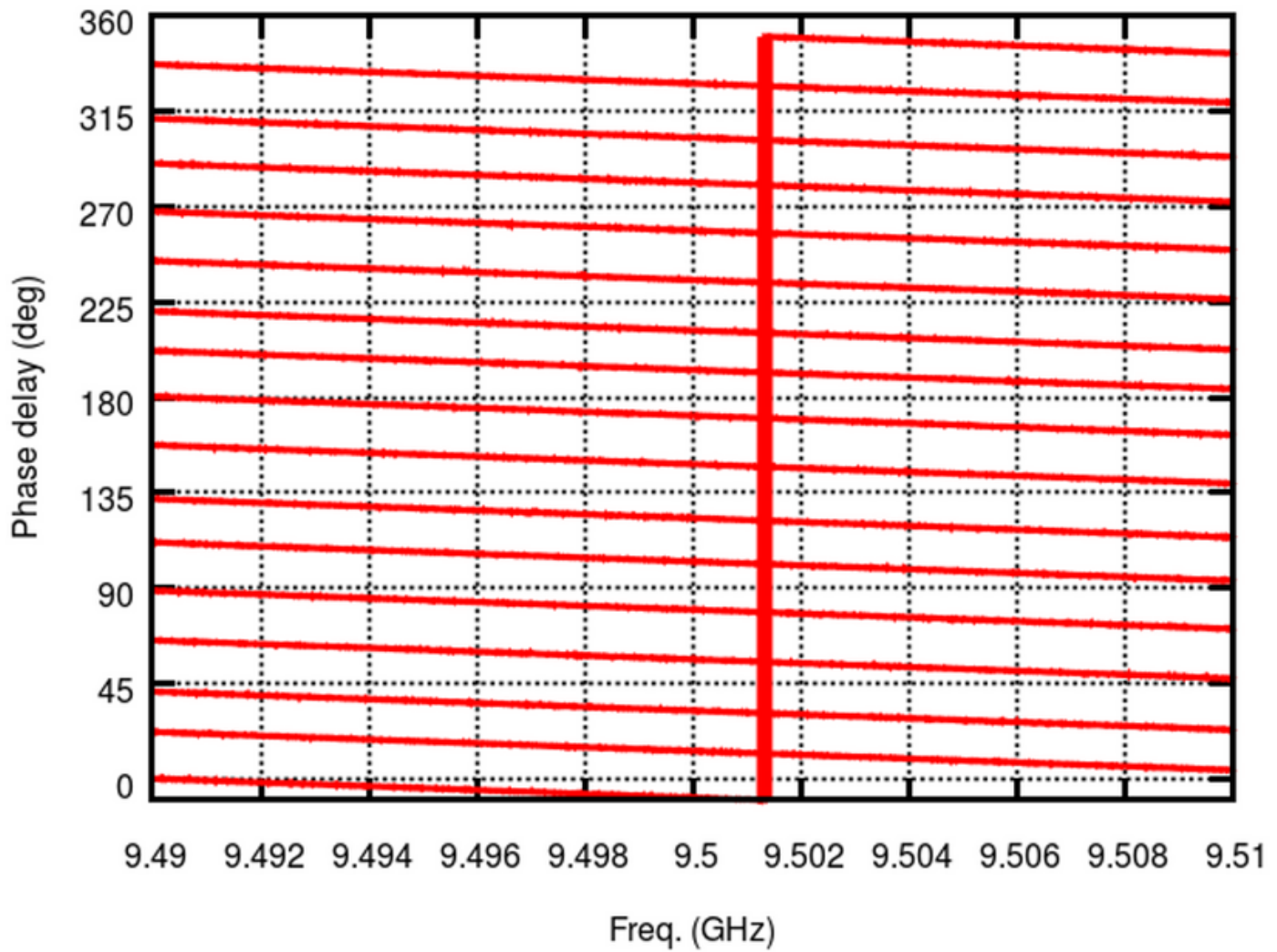
Description	Value	Notes
Frequency	9.0-10.0GHz	
# Antenna channels	4	
Spacing	1.8cm	
Rx/Tx common	1	Taylor weighting
Rx aux common	1	Bayliss weighting
Tx power	2W (33dBm)	per channel
Rx NF	3.0dB	
Tx gain	33dB	Small signal
Rx gain	25dB	
TR switch speed	<500ns	
Gain resolution	0.5dB	
Phase resolution	2.8°	
Gain range	31dB	
Phase range	360°	
Comms interface	RS485	3V differential
Comms. data rate	20Mbps	Synchronous signaling
T/R keying	RS485	3V differential
Power supply	26-32VDC	
Cooling		Forced air
Dimensions	17.2x7.2x1.8cm	LxWxH



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# X-Band TR module for AESA applications



Measured phase shift for 22.5 degree phase steps.

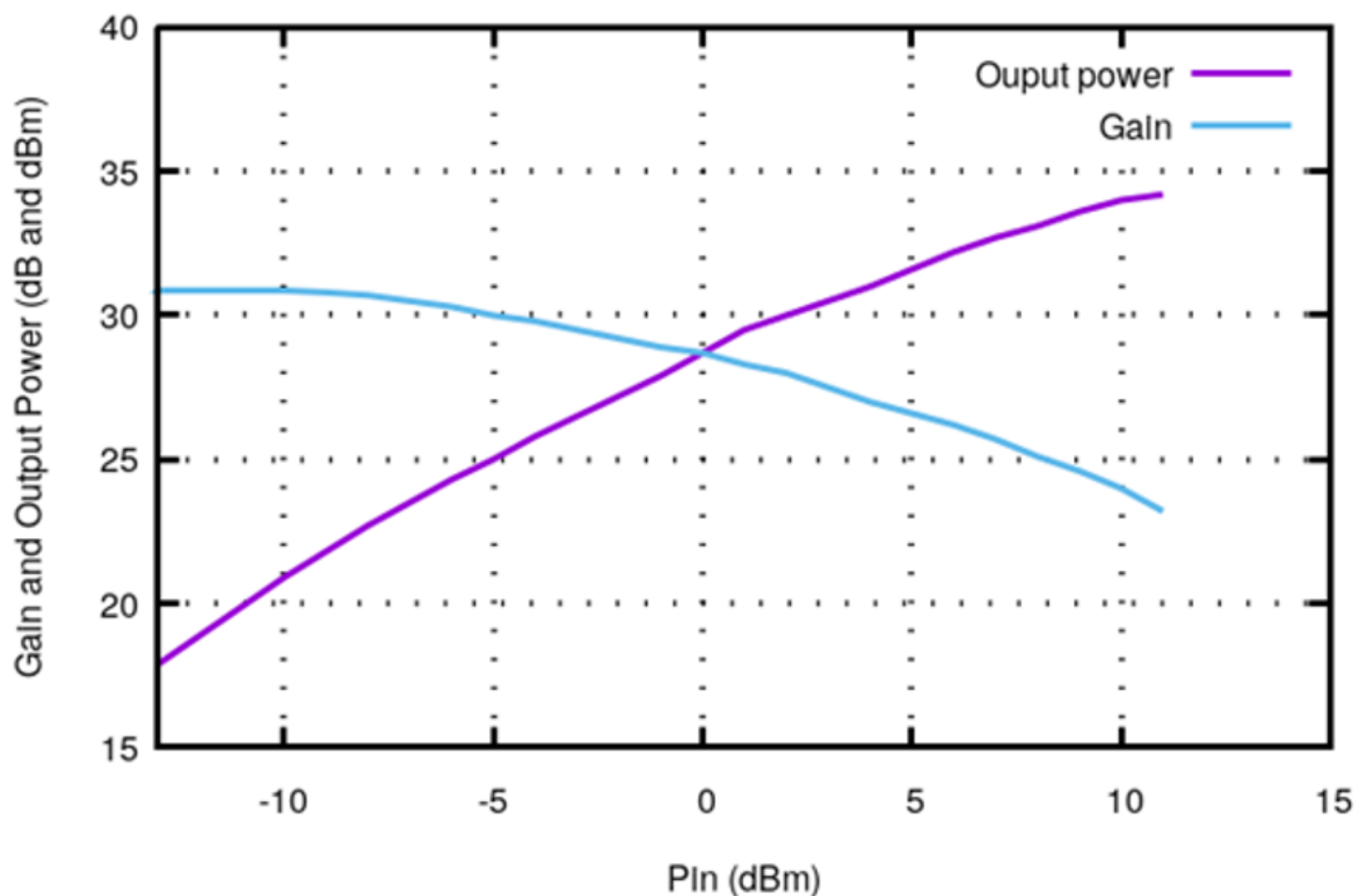


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# X-Band TR module for AESA applications

Transmitter power and gain



Measured gain and output power for one channel.



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## X-Band TR module for AESA applications

We know that our customers have needs beyond standard products, and we take pride in the fact that Orban Microwave is whom you come to when your application needs to go beyond the ordinary.

Our success relies upon world-class engineering expertise, a vast library of RF building block designs, simulation tools, and rapid prototyping capabilities. Our business has been meticulously thought out to reduce design timelines and deliver on budget.

Here at Orban Microwave, our model is to design 'at cost', acting as a true partner with our customers, profiting only once we've entered production with the final product. Unlike traditional design companies who part ways at the critical stage of production, we retain responsibility for the entire product lifecycle - all the way to integration into the final system. Since we are not a catalog manufacturer that depends on high-volume production, your custom order is our only priority. Have an idea or a specific product in mind? Let Orban Microwave Products help you achieve something extraordinary.

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- OMP designs and builds to customers' specifications
- We support products through their entire product lifecycle
- An extensive library of designs is used to create custom products
- OMP uses state-of-the-art circuit and 3D electromagnetic simulations tools
- OMP uses rapid prototyping for fast turnaround
- We will work with our customers on the integration of products designed
- We work with selected partners for agency approval.

**For more information:**  
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