

# FRF-154-4447-10W DATA SHEET



**FRF-154-4447-10W**  
**Transmit/Receive High Power Amplifier**

## Description:

The FRF-154-4447-10W is a high power, high linearity, passively cooled, transmit-receive module. This module is packaged in a very compact 6.5 inch x 4.5 inch x by 2.5 inch rugged package. This Tx/Rx module operates over the Military C Band Frequency Range and provides TDMA data and/or RADAR applications.

The system operates in transmit or receive mode at any given time but not simultaneously. The transmit front end has 44dB gain with the power amplifier being capable of outputting 10 watts of RF power with duty cycles as high as 100%.

The transmit amplifier is designed for high linearity communications at 2 watts RF, with linearity's exceeding -34dB EVM across the entire 4.4GHz to 5.0Ghz band. The transmit system utilizes state of the art GaN amplifier for efficiencies as high as 49% at 10watts and 22% at 2watts. In Rx mode, the module provides a low noise front-end that includes out of band filtering, a high power limiter (40dBm pulsed input power survivability), low-noise amplification, a receive gain of +22dB. The receive module can achieve linearity's exceeding -55dB EVM.

The amplifier module is ESD safe at the RF antenna connectors up to 2k volts, and 30k at the Tx/Rx output and input ports. The eight pin MIL-STD circular connector is used for DC power, high

speed Tx/Rx control pins. Standard features include sub microsecond switching speeds between Rx and Tx operation, output short and open circuit protection, over and under voltage protection, receiver protection, as well as fully internally regulated DC power. This unit operates from a single 10v - 20Vdc power supply and can survive temperatures of +85°C base plate temperature. This high performance power head module includes bias tees to optionally supply the unit with DC power and Tx/Rx switching through the RF Tx and Rx ports.

## RF Performance Overview:

### Transmit Performance

4.4GHz to 4.7GHz Filter Limited Bandwidth  
System Gain: 44dB  
Maximum Output Power: 10W CW  
Error Vector Magnitude @ 2W: -34dB  
Filtering at 5.0GHz: -70dB  
Rx Isolation: Better than 90 dB

### Rx Performance

4.4 to 4.9GHz Filter Limited Bandwidth  
Maximum Survivable RF input: 3W CW  
Maximum output power: 100mW  
System Gain: 22dB  
Error Vector Magnitude @ -15dBm: -50dB

## Environmental:

Fully environmentally sealed option  
Temperature: -40°C to +60°C Operational  
Temperature: -40°C C to +90°C Storage

## Mechanical Overview:

Connectors: Rx RF Output – Type-N Female  
Tx RF Input – Type-TNC Female  
Antenna Tx/Rx – Type-N Male

Multiple Mounting options Available  
Physical Dimensions: 6.5"x4.5"x2.5"  
Amplifier Weight: 3.0 lbs.

ESD Safe: Class 1C