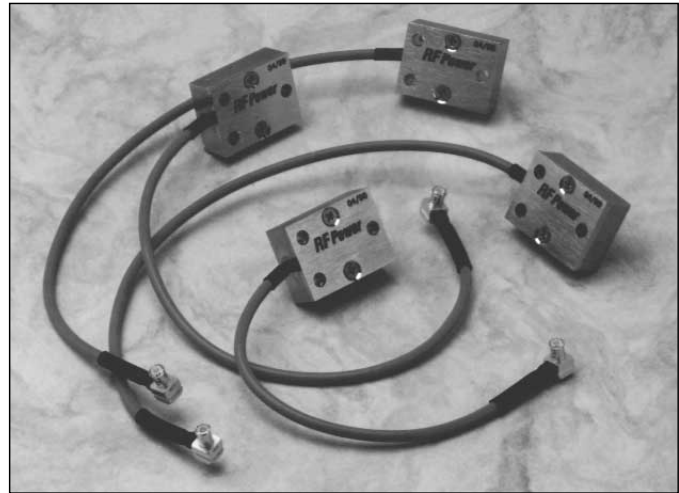


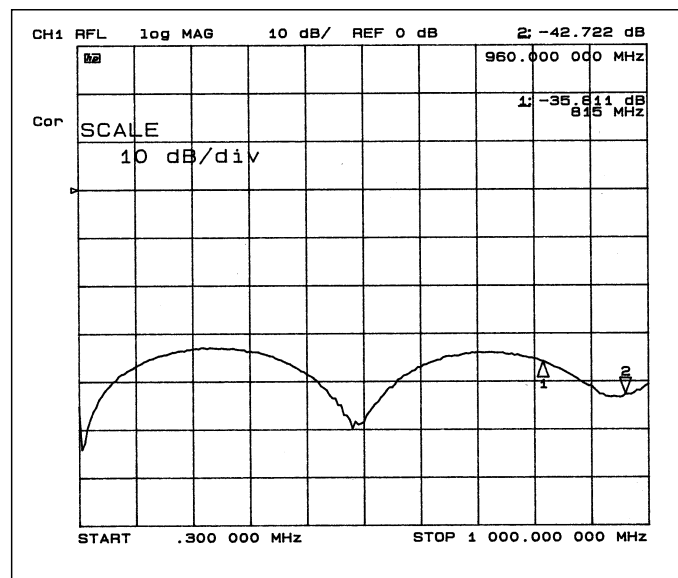
RF Power has made a wide range of high performing custom cable terminations for a variety of customers. Designers of power amplifiers and equipment are under constant pressure to increase efficiencies and reduce the size of their products. Thermal management has become a major concern as active and passive power components are forced into close proximity with each other.

When heat-generating components are placed in close proximity, the concentration can cause an overloading of the heat sink and cause temperatures to rise above acceptable levels. This problem is compounded when you take into account that most power components suffer a loss in efficiency and a reduced time-to-failure with increasing temperature. In the worst case, this type of arrangement can lead to thermal runaway.



RF terminations often dissipate hundreds of watts of power and can put large burdens on thermal management systems. RF Power cable terminations provide an excellent solution for moving large power dissipating RF terminations (which are not directly in the RF path) away from pressure sensitive devices like RF power transistors, absorptive filters and ferrite isolators, thus improving the efficiency and reliability of the whole system.

RF Power cable terminations are also a good choice when low VSWR is necessary. All cable terminations have been designed to take full advantage of the added ability to match the RF performance over the band of interest and greatly improve the VSWR beyond what is normally available with soldered down or flanged terminations. Most flanged terminations have VSWR specifications from 20 to 25 dB return loss. Return losses into the mid-thirties are achievable by matching the ceramic termination, the cable and the connector (see performance graph).



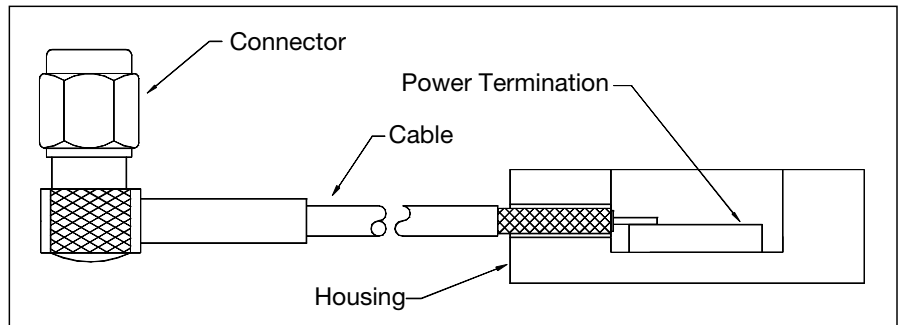
# Cable & Coaxial Terminations

# Anaren

## RF Power

RF Power cable terminations consist of a length of coaxial cable, with an RF Power termination enclosed in a housing on one end of the cable, and an RF connector attached to the other end. This allows the designer to attach a connector to the temperature sensitive component area of the equipment and thus cable to the termination, located where the high temperatures generated by the termination will not affect the other components. This approach may sound simple, but it's a very effective way of keeping temperatures down around sensitive devices.

The cable terminations are constructed using materials with very low thermal resistance. The basic termination consists of a thick film resistor on a Beryllium Oxide (BeO) or Aluminum Nitride (AlN) ceramic substrate. BeO has a higher thermal conductivity (280 W/mK) than AlN (190 W/mK), AlN ceramics are the best alternative



when government regulation prohibits the use of BeO ceramic. RF Power cable terminations use a resistor film based only on Rhenium or Tantalum Nitride as opposed to resistor films based on Nichrome (NiCr). This avoids the increased Intermodulation Distortion (IMD) products created by the Nickel component in NiCr film. The ceramic termination is attached to the floor of a copper housing using a high temperature solder. The copper housing, with its high thermal conductivity (390W/mK), acts as a heat spreader for the ceramic termination. This arrangement provides a low thermal resistance between the resistor film and the heatsink onto which they are mounted.

RF Power can provide cable terminations with a variety of cable and connector types to meet your desired level of power and maintenance. A flexible coaxial cable is desirable as to allow ease of assembly. The coaxial cable is inserted through the wall of the housing with the center pin connected to the ceramic termination and the shield of the cable attached to the housing for ground. This is done to prevent RF leakage and to avoid EMI problems that could cause oscillations or interference with control circuits.



Cable terminations do cost a little more than conventional flanged terminations, but save money in the long run due to the less elaborate thermal management required, lower critical component temperatures, higher reliability and higher efficiencies.

[www.anaren.com](http://www.anaren.com)

to locate data sheets and s-parameters

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