RF Connectors

RF CONNECTORS

- Coax cable connectors, often called RF connectors are in widespread use. Wherever radio frequency or RF connections need to be made there is the possibility of using coaxial connectors. Where signals reach frequencies above a few million Hertz, these coaxial connectors need to be used. The need for their use arises because it is necessary to transfer radio frequency, RF, energy from one place to another using a transmission line. The most convenient, and hence the most commonly used form of transmission line is coaxial cable which consists of two concentric conductors, an inner conductor and an outer conductor, often called the screen. Between these two conductors there is an insulating dielectric.

- Coaxial cable has a number of properties, one of which is the characteristic impedance. In order that the maximum power transfer takes place from the source to the load, the characteristic impedances of both should match. Thus the characteristic impedance of a feeder is of great importance. Any mismatch will result in power being reflected back towards the source.

- It is also important that RF coaxial cable connectors have a characteristic impedance that matches that of the cable. If not, a discontinuity is introduced and losses may result

SMA connector

- The workhorse **microwave** connector. Small size, but works well to > 20 GHz.By microwave standards, moderately priced.

- This sub-miniature RF and microwave coaxial cable connector takes its name from the words Sub-Miniature A connector. It finds many applications for providing connectivity for RF assemblies within equipment. It is often used for providing RF connectivity between boards, and many microwave components including filters, attenuators, mixers and oscillators, use SMA connectors.

- The connectors have a threaded outer coupling interface that has a hexagonal shape, allowing it to be tightened with a spanner. The SMA connector was originally designed for use with 141 semi-rigid coax cable. However its use extended to other flexible cables, and connectors with centre pins were introduced.

N-type connector

- The N-type connector is a high performance RF coaxial connector used in many RF applications. This coax connector was designed by Paul Neill of Bell Laboratories, and it gained its name from the first letter of his surname.

- The N-type coaxial connector is used for many radio frequency applications including broadcast and communications equipment where its power handling capability enables it to be used for medium power transmitters, however it is also used for many receivers and general RF applications.

- The **original** microwave connector. Good performance (up to 18GHz), and

- moderate cost, but large (about 2 cm in

- diameter) ! However, can handle greater

- **power** than SMA.

UHF CONNECTOR

- Low Coast Copy of N type

- The UHF connector, also sometimes known as the Amphenol coaxial connector was designed in the 1930s by a designer in the Amphenol company for use in the radio industry. The plug may be referred to as a PL259 coaxial connector, and the socket as an SO239 connector. These are their original military part numbers

- These coaxial connectors have a threaded coupling, and this prevents them from being removed accidentally. It also enables them to be tightened sufficiently to enable a good low resistance connection to be made between the two halves

BNC connector

- The BNC coax connector is widely used in professional circles being used on most oscilloscopes and many other laboratory instruments, although it is widely used for many other RF applications. The BNC connector has a bayonet fixing to prevent accidental disconnection while being easy to disconnect when necessary. This RF connector was developed in the late 1940s

- The workhorse **RF** connector. Relatively small and cheap, and easy to connect. Don't use this connector past 2 GHz

F Connector

- A poorman's BNC. The RF connector used on most consumer products such as **TV**s. Cheap, but difficult to connect and not reliable