APPLICATION NOTE

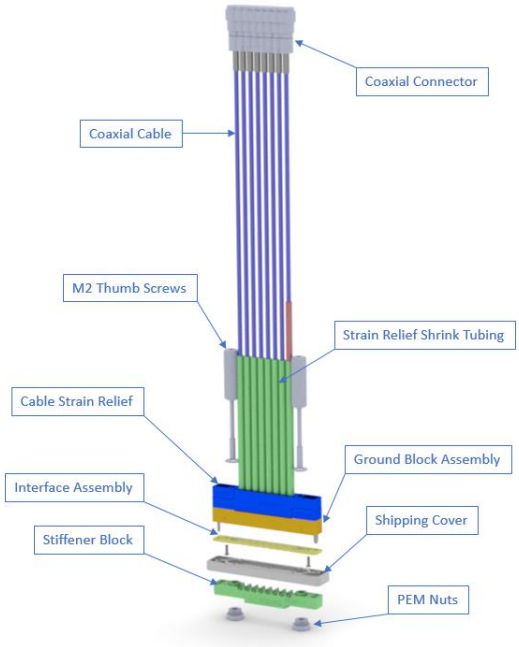
Anatomy of a TR Multicoax™ Series

Purpose:

The purpose of this document is to give a visual of the TR Multicoax and give a name to all of the pieces that make up a TR.

Anatomy:

Shown to the right is a TR Multicoax connector with the parts labeled. Below is some more in-depth information about the labeled pieces.



- Stiffener Block (a.k.a Board Stiffener)-
  - Presses into underside of the PCB
  - Tooling details for use are included in the TR Footprint
  - Provides mechanical support for PCB
  - **Must** be used with PCBs less than 93 mils thick
  - Can be used with all PCBs with 55 mils thickness or greater
  - For PCB applications thinner than 55 mils please consult factor for custom stiffener design
  - At 93 mils and thicker customers can press PEM-Nuts directly into the PCB if desired
- Shipping Cover-
  - Only used for shipping to protect interface from damage
- Interface Assembly-
  - TR40 and TR70 Products Interface:
    - Metal Top and Bottom plates with Signal Insulator and Spring Probe contacts (RC05-01)
  - TR20 Products Interface:
    - Plastic Interposer with Connect-R contacts (CR08-062)
  - For all TR series the interface assembly is replaceable using a 000 series driver
- Ground Block Assembly-
  - Contains coaxial cables and holds interface assembly
- Cable Strain Relief-
  - Prevents forces on the cables from damaging the ground block/coaxial cable assembly
- M2 Thumb Screws-
  - Secures TR device to PCB being captive within the Stiffener block
- Coaxial Cable-
  - Highly flexible microcoax style cable
  - Predominately Teledyne 047 Storm Flex
  - TR Device is cable agnostic, we can use alternative cables, our design is not cable dependent
- Coaxial Cable Connector-
  - SMA M/F up to 20 GHz (TR20)
  - SMK (2.92 mm) M/F up to 40 GHz (TR40)
  - SMV (1.85 mm) M/F up to 70 GHz (TR70)
  - Consult factory for custom applications
- PEM Nuts-
  - Press into the back of the stiffener block if the PCB thickness is greater than 93 mils, we recommend just the PEM nuts and no stiffener block. This helps with planarity and rigidity.

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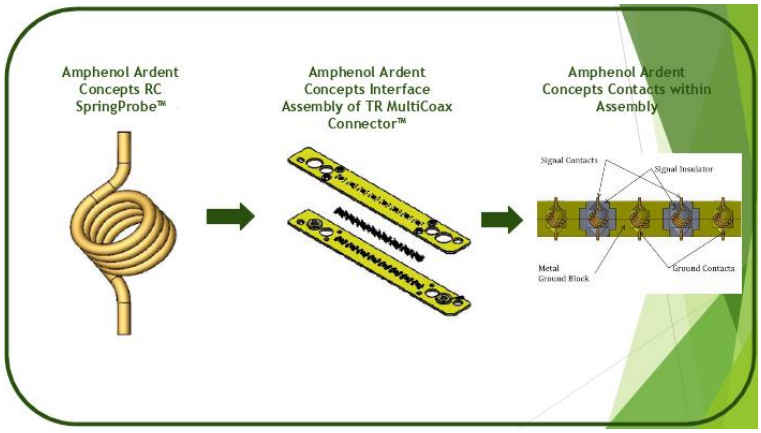
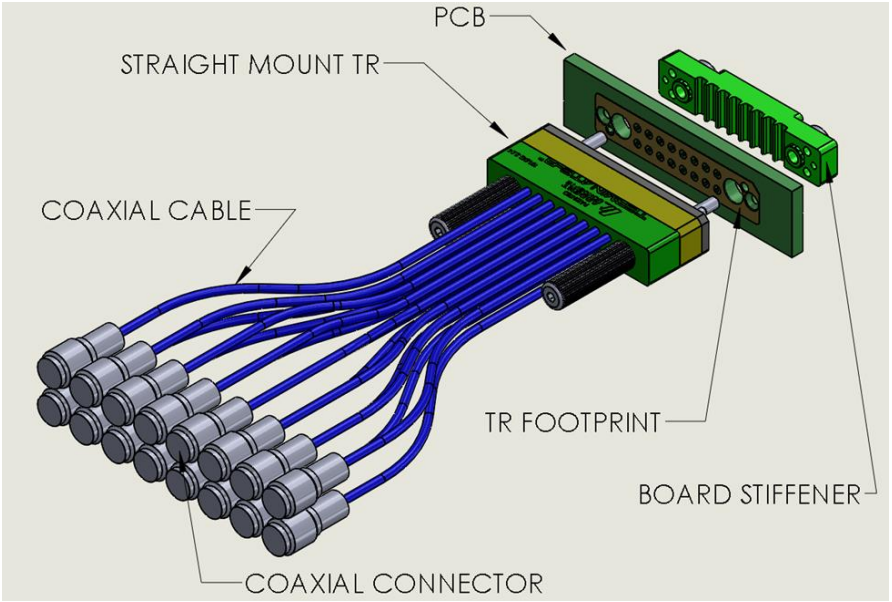
The spring probe is a critical part of the design and below is an example of our spring probe housed within the interface assembly:



Mating with PCB:

Another thing to consider when looking at the TR Multicoax series is how it mates to a PCB. Below is an image of a TR mating:

TR Multicoax™ Mating to PCB

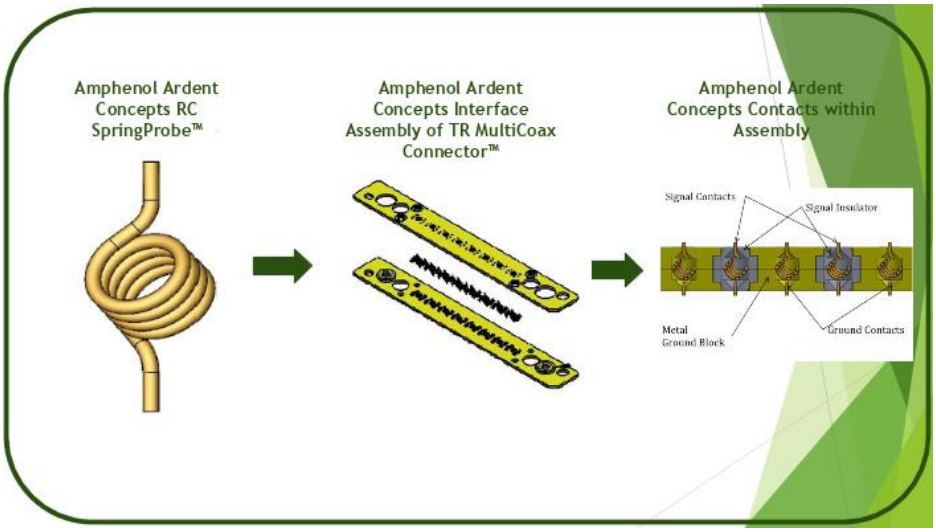


As you can see the interface, which houses the contacts is replaceable by itself so if one of the contacts is bent the whole TR is useless. For mounting the TR to a PCB, the dowel pins on the Ground Block Assembly will match up with the locating dowel holes on the PCB. The compression mount TR will then press against the PCB and the screws will go through the mounting holes in the PCB and into a Board Stiffener. The Board Stiffener will hold the screws, while also giving the PCB the support it needs.

Application Note Summary:

Main Parts of a TR:

- Stiffener Block (Board Stiffener)
- Shipping Cover
- Interface Assembly
- Ground Block Assembly
- Coaxial Cable
- Cable Strain Relief
- Coaxial Cable Connector



Who Is Amphenol Ardent Concepts?

Amphenol Ardent Concepts is a leading designer and manufacturer of high performance multicoax and coaxial assemblies, connectors, and sockets used in the development of next generation semiconductors and electronics systems. Our core technology is the smallest, fastest, most electrically efficient compression mount connector technology worldwide. As data rate requirements increase and devices and systems shrink, Ardent's products deliver superior signal integrity in a dense footprint that can be reusable across programs to maximize cost savings.