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## Justification for new DCR about SMA2.9 interface

This new DCR is to correct the mistake of the previous DCR 770 and also to take into account SMA2.9mm interface of other family products such as attenuators and loads.

As explained in previous DCR, K-type or SMA2.9 connectors for use up to 40GHz can refer to several definitions and standards:

- SMA2.9mm interface given as defined in ESCC specification
- SMK connector as defined by MIL-STD-348
- 2.92mm connector as defined by IEEE std 287-2007

Space equipment manufacturers use both SMA and or K-type connectors on current payloads. K-type connectors are primarily used for frequencies above 20 or 22GHz while SMA is usually preferred for lower frequencies.

The situation is more complicated for the Ka Tx band as both SMA and K-type connectors can provide good RF performances. At these frequencies, some manufacturers can use both types of connectors so our customers can be in the situation where they have to connect a cable with an SMA male connector to equipment with K-type female connectors or vice versa.

In that particular case, the definition of the SMA 2.9mm interface as given in existing ESCC Detail specifications (3402/021, 3402/022, 3402/023, 3403/008 and 3403/009) could result in a compatibility problem:

Indeed the socket drilling depth of female SMA2.9 is 2.4 mm minimum while the maximum pin length of SMA male given in MIL-STD-348 is 2.54 mm.

Therefore the modification proposed in the DCR770 consisted in an increase of the socket drilling depth of female interface and of the pin length of male interface in order to become fully compatible with SMK interface defined by MIL STD-348 and to avoid any risk in case of mating with an SMA connector.

⇒ Socket drilling depth becomes 2.8 to 3.2 mm instead of 2.4 to 2.6 mm.

⇒ Pin length becomes 1.5 to 1.6 mm instead of 1.3 to 1.4 mm.

In this DCR 770, SMA2.9mm interface of attenuators and load ( 3403/008 and 3403/009) have been forgotten.

Moreover in the DCR 770 other dimensions of the interface were impacted by the modification and Radiall has forgotten to modify also these dimensions.

It is really minor and has no impact on RF performances. It has already been implemented on space range of Radiall SMA2.9mm connectors since end 2011 without any problem.

The SMA2.9mm connectors under ECSS specification before and after the modification are fully compatible together.