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Justification for DCR about SMA2.9 interface

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) 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 DCR consists 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.

Other dimensions of the interface are not changed because the tolerances given by ESCC specification are more precise and included in the dimensions given by MIL-STD-348 for SMK connectors.

This modification is really minor and has no impact on RF performances. It has already been implemented on standard range of Radiall SMA2.9mm connectors since mid-2010 without any problem.
The SMA2.9mm connectors under ECSS specification before and after the modification are fully compatible together.