

NEW VERSION OF COAXIAL ATTENUATORS and LOADS

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Despite the fact that a lot of people talk about "new space" and "low cost" constellations, satellite manufacturers keep asking for more powerful, very robust and highly reliable products. In order to meet this current market requirement Radiall has developed a new range of coaxial fixed attenuators and coaxial loads; guaranteeing better overall performance without increased cost. The new range features: improved RF performance, higher resistance to vibration and thermal cycles, and better power handling capability. To reflect all these improvements, it was essential to change the specifications so a DCR was submitted to propose evolutions of the corresponding ESCC generic specification: 3403 and the following details specifications: 3403/004-005-006-008-009.

The most significant improvement is the guaranteed VSWR, lower than 1.25 up to 22 GHz for the SMA version and lower than 1.25 up to 31.5 GHz for the SMA2.9 version, while the former specifications announced were only 1.5 in both cases.

These components include a specific microwave circuit. The new concept to fix the circuit inside the metal bodies contributes specifically to VSWR performance, but it also has influence on both the robustness and the thermal dissipation. To avoid any risk of soldering joint failure, our engineers developed new center contacts with new assembly and the outer contacts are now soldered instead of mechanically captivated. With these improvements, the power capability has been increased by a factor of two, which allows both random vibration (up to 50 grms) and mechanical shocks (up to 2,000 g) to become achievable without any risk.

These improvements now harmonize the generic specification 3403 with more recent ESCC generic specifications and comply with most customers' requirements, including: random vibrations replace sine vibrations during screening, 100 thermal cycles within the temperature range of -55°C to +125°C (performed during qualification), and a glitch free design (proven during qualification tests).

In conclusion, these new products are fully compatible with existing solutions and have been qualified according to these new specifications. These products have ESA QPL status and significant flight heritage, which make them ready for embedding.

The purpose of this presentation is to summarize the notable improvements in the specifications and explain more precisely the design changes.