

RG174 BC-Shielded & RTK031

RF performance in aged conditions

Sven Bergdolt, M.Sc.

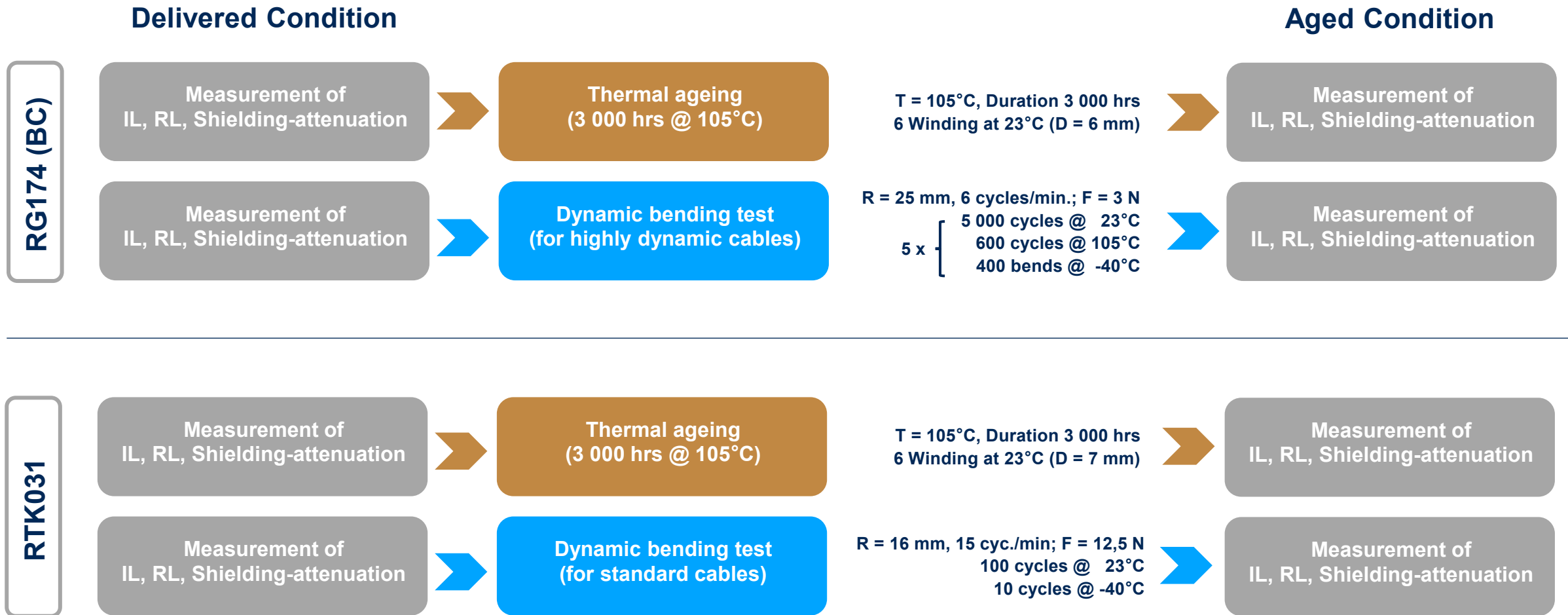
2025-08-21

Supporters: Mehmet Tazebay (Broadcom)

Purpose and Procedures

Thermal & Mechanical Ageing

Test Procedures



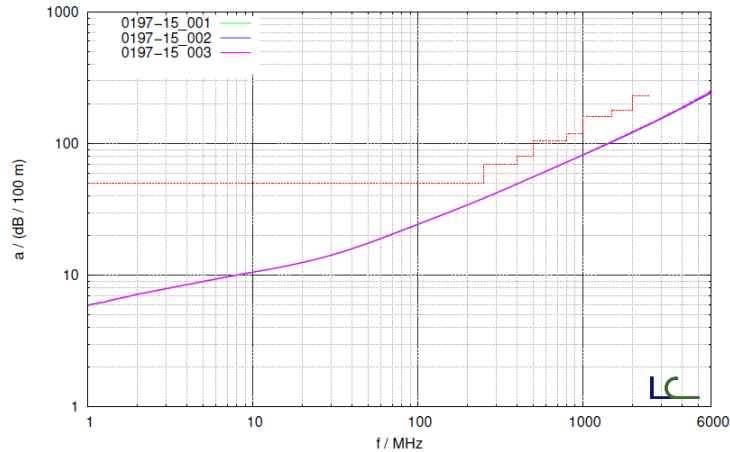
CX174d / RG174 (BC-Shielded)

Thermal & Mechanical Ageing

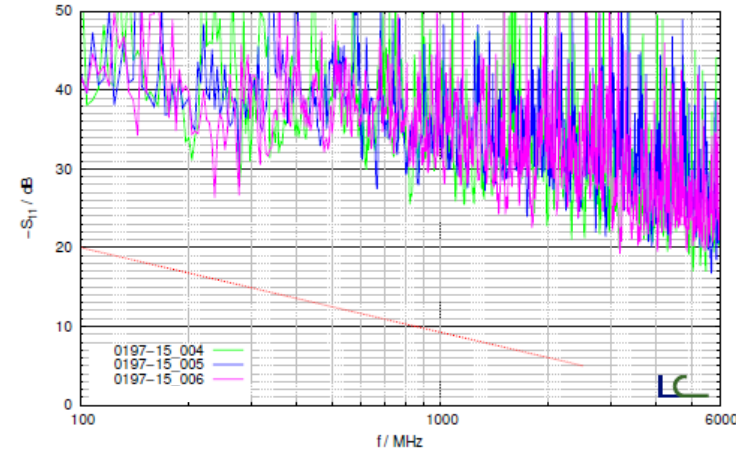
Thermal Ageing

Delivered Condition

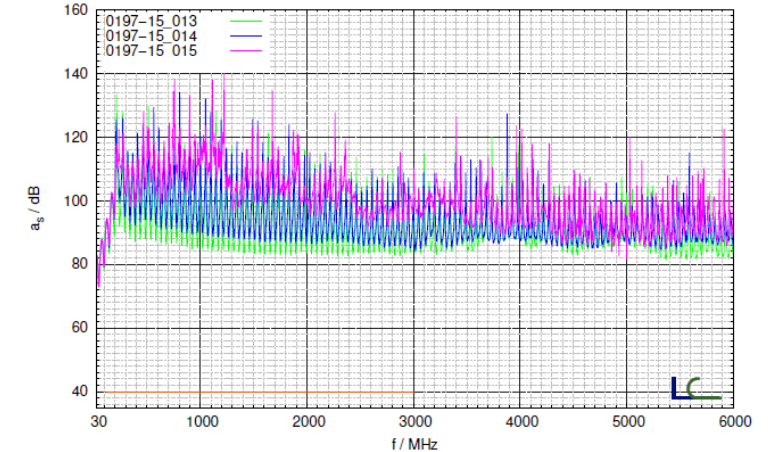
Insertion Loss



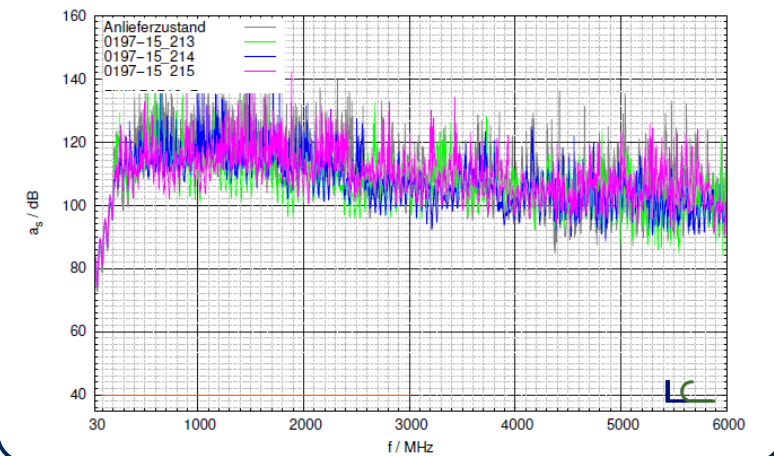
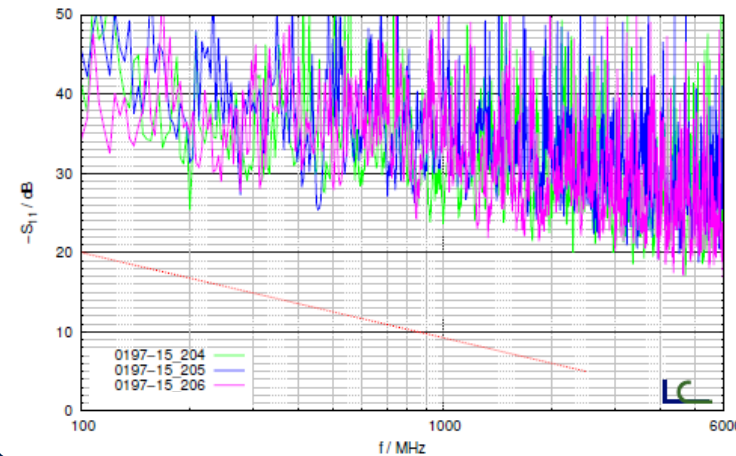
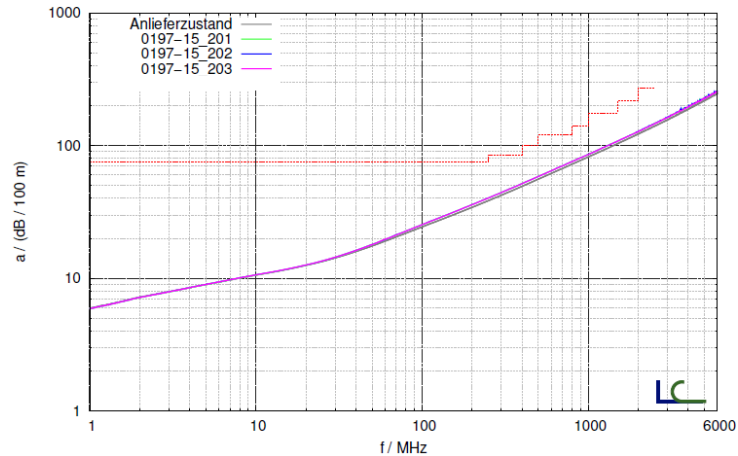
Return Loss



Shielding Attenuation



After thermal ageing

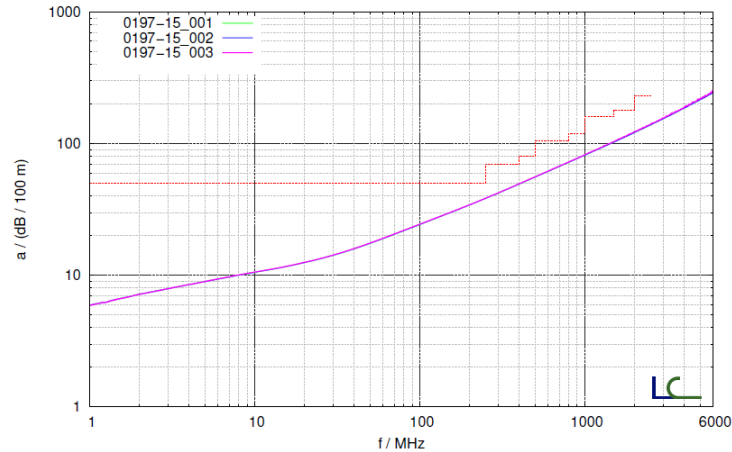


Almost no degradation after thermal ageing observed on RG174 (BC-shielded)

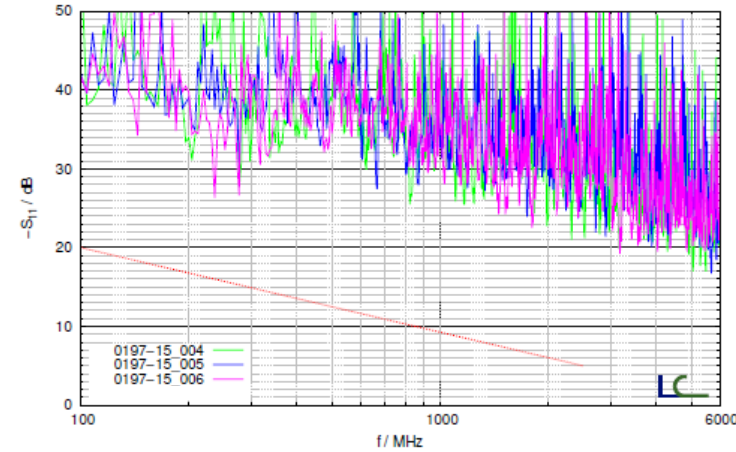
Mechanical Ageing

Delivered Condition

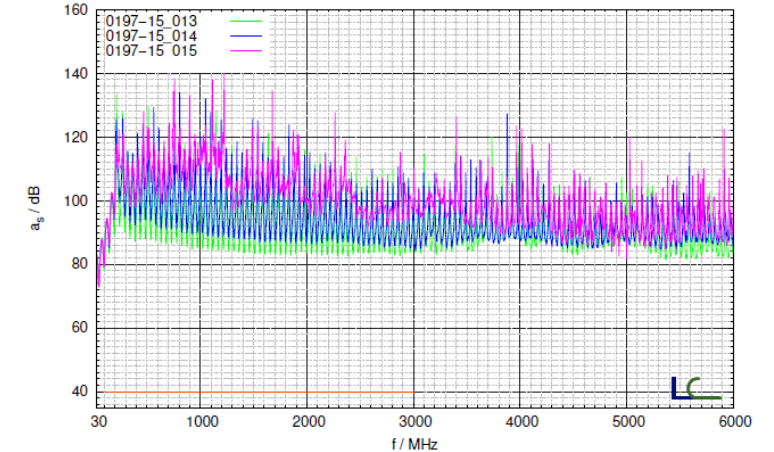
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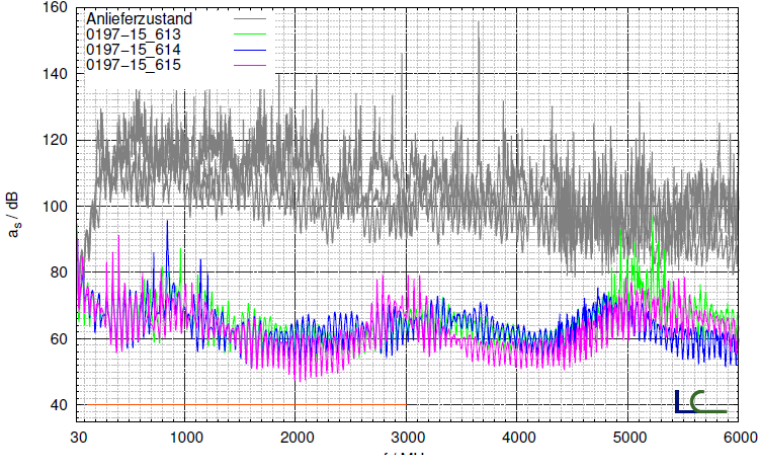
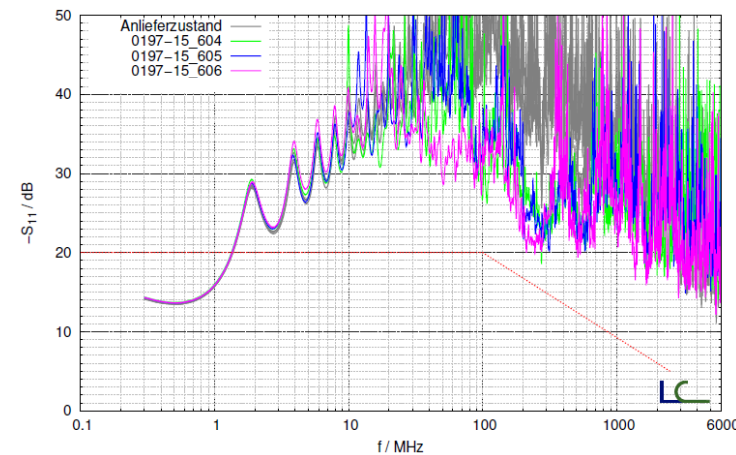
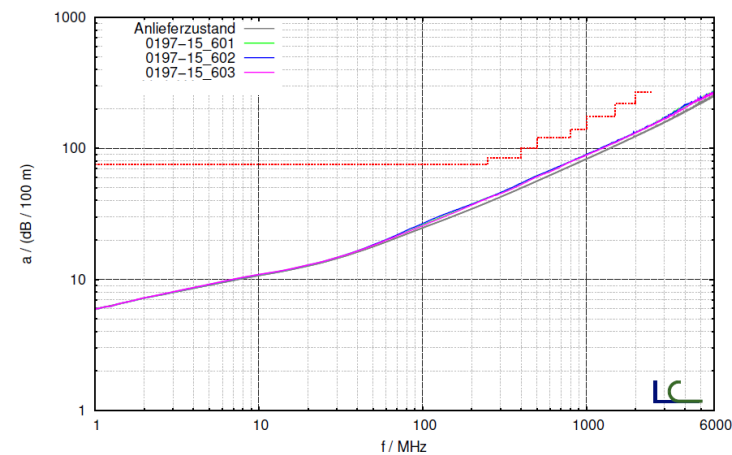
Return Loss



Shielding Attenuation



After Bending (30.000 cycles)



Highly dynamic bending can affect IL + RL behavior and shielding properties of cable

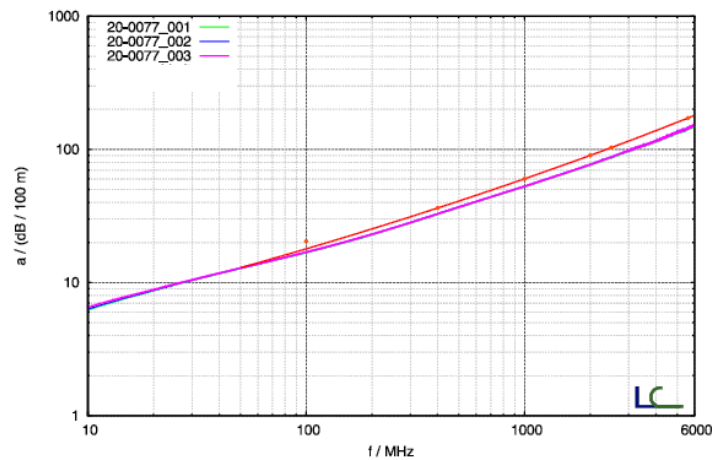
CX31a / RTK031

Thermal & Mechanical Ageing

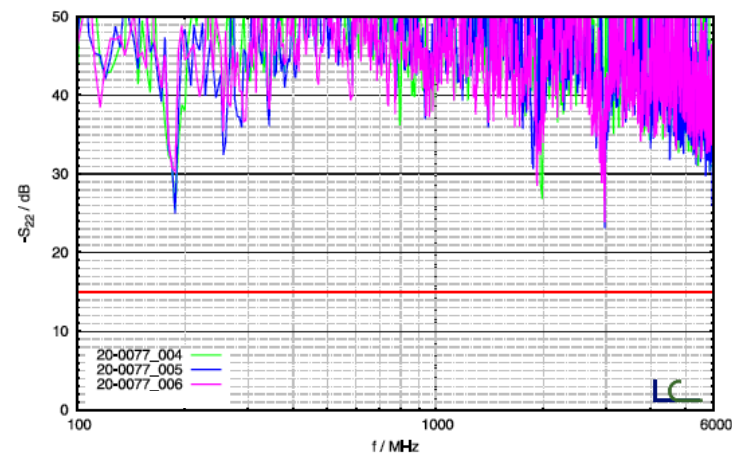
Thermal Ageing

Delivered Condition

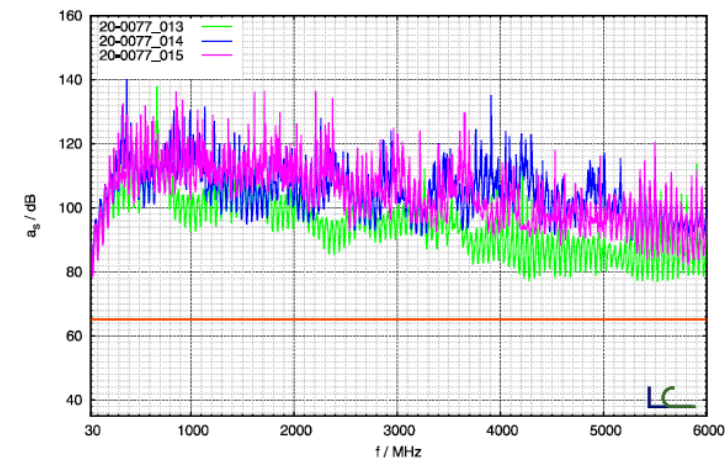
Insertion Loss



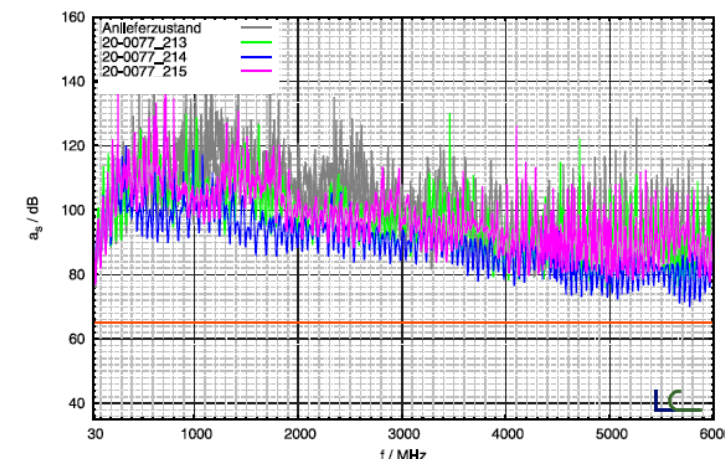
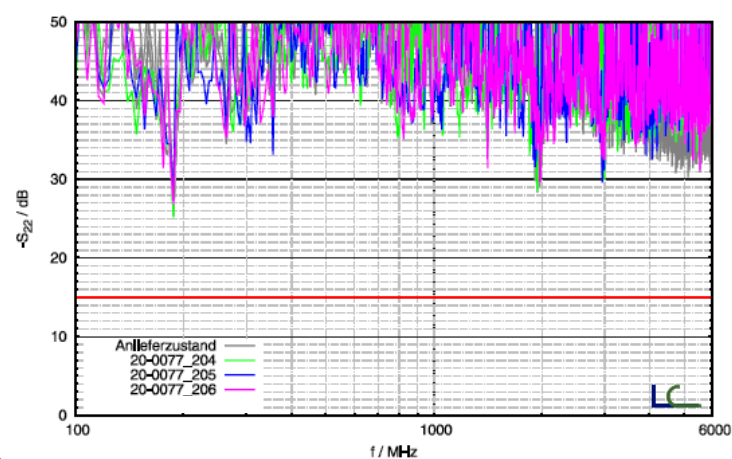
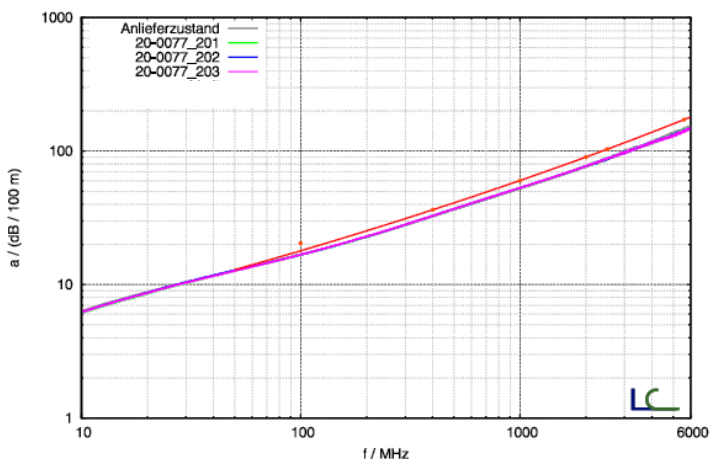
Return Loss



Shielding Attenuation



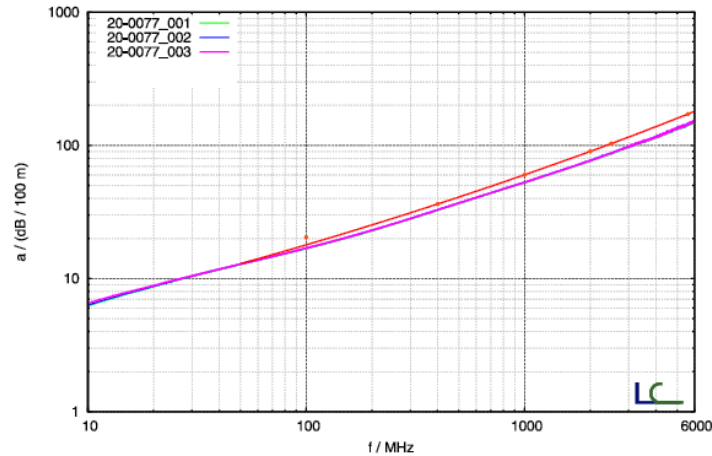
After thermal ageing



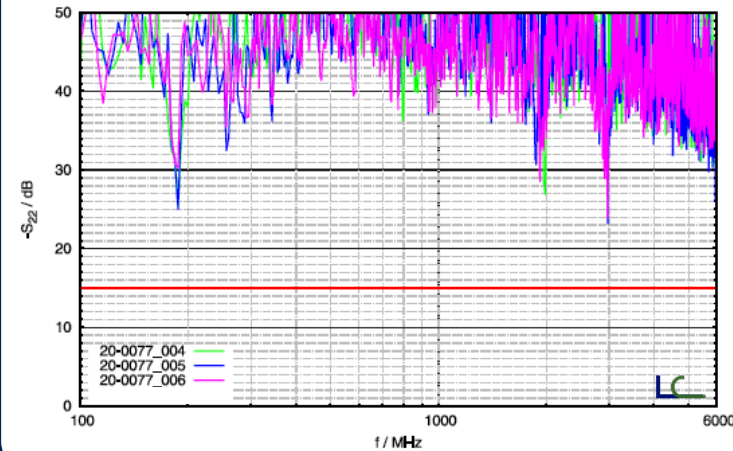
Almost no degradation after thermal ageing observed on RTK031, slight degradation of EMC

Mechanical Ageing

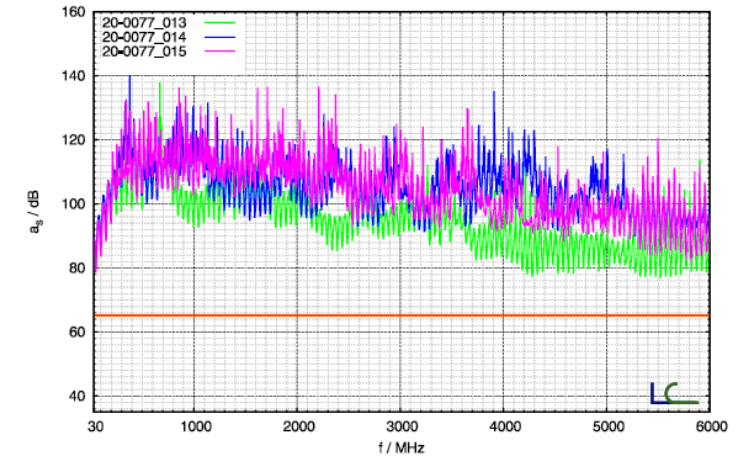
Insertion Loss



Return Loss

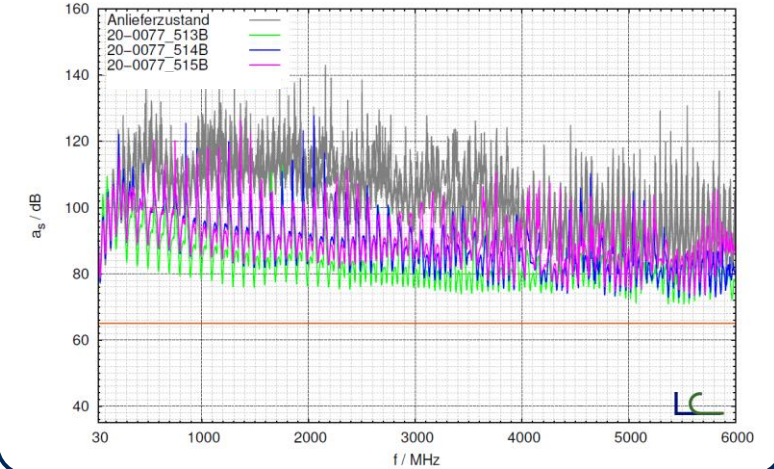
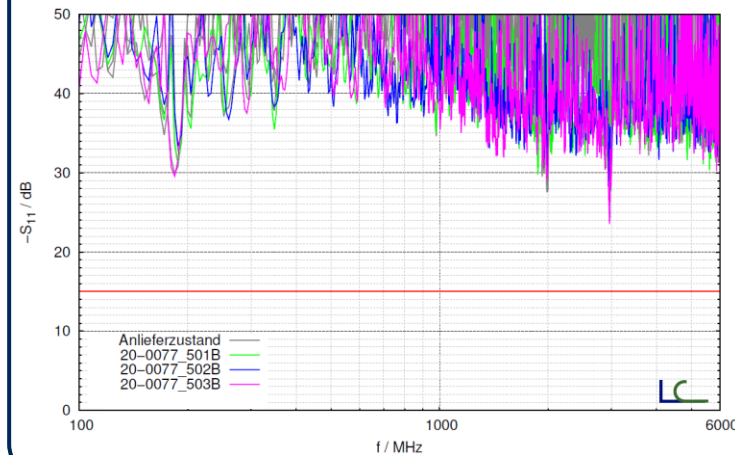
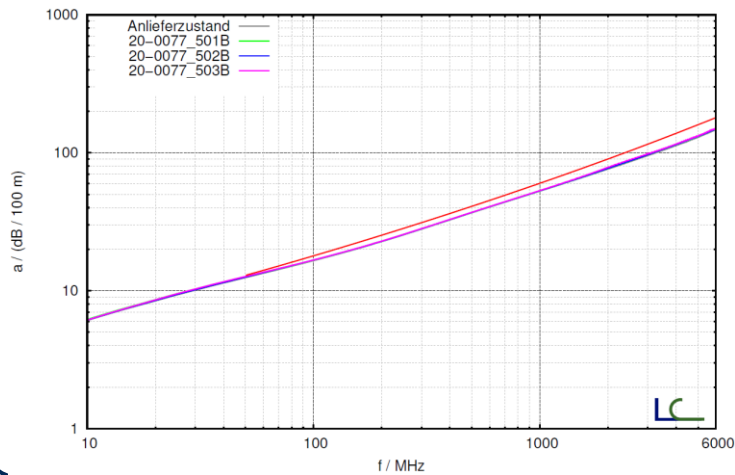


Shielding Attenuation



Delivered Condition

Dynamic bending (standard cables)



Bending (110 cycles) can affect EMC performance of RTK031 cable; IL + RL almost not affected

Conclusion

Influence of ageing on RG174 (BC) and RTK031

Conclusion

- Coax cable types described in ISO 19642-11 are well known and in overall use in the automotive market
 - RG174 (BC-shielded) → ISO Type CX174d/e
 - RTK031 → ISO Type CX31a
- Double screened cables like RG174 (BC-shielded) or RTK031 are quite robust against thermal ageing
- Mechanical stress, especially highly dynamic bending/torsion will impact the cable's RF and EMC properties

Thank you for your attention.

www.leonicables.com

Your contact



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