

RG174 BC-Shielded & RTK031

RF performance in aged conditions

Sven Bergdolt, M.Sc.

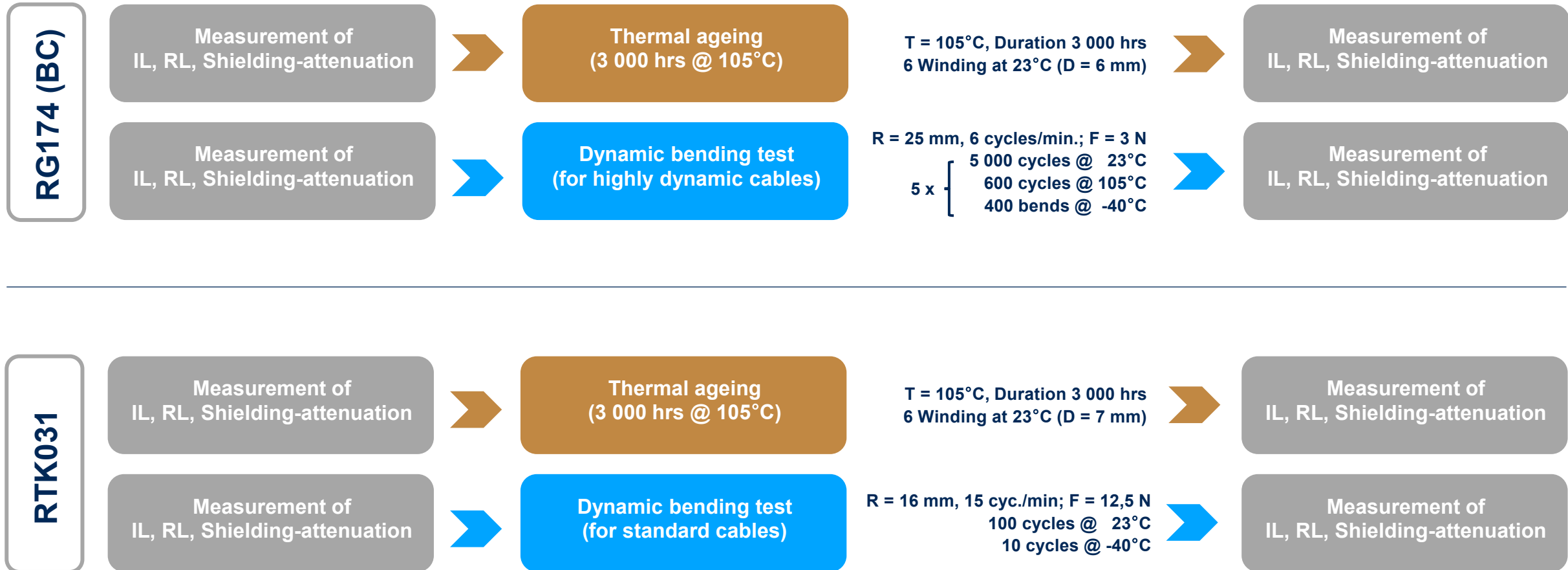
2025-08-21

Supported by: Broadcom (Mehmet Tazebay)

Purpose and Procedures

Thermal & Mechanical Ageing

Test Procedures



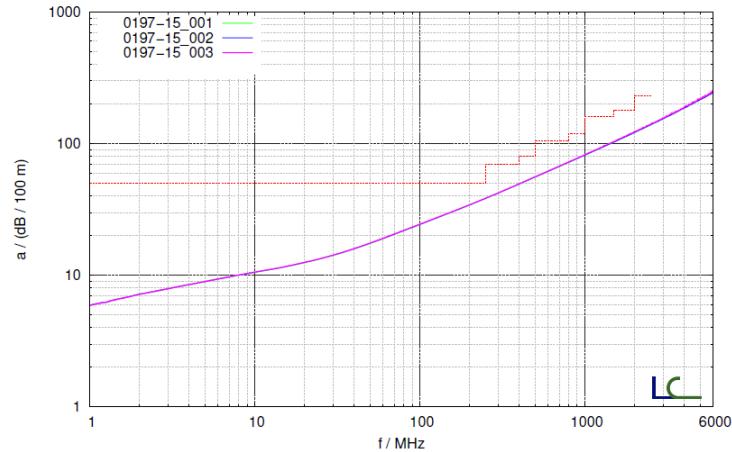
CX174d / RG174 (BC-Shielded)

Thermal & Mechanical Ageing

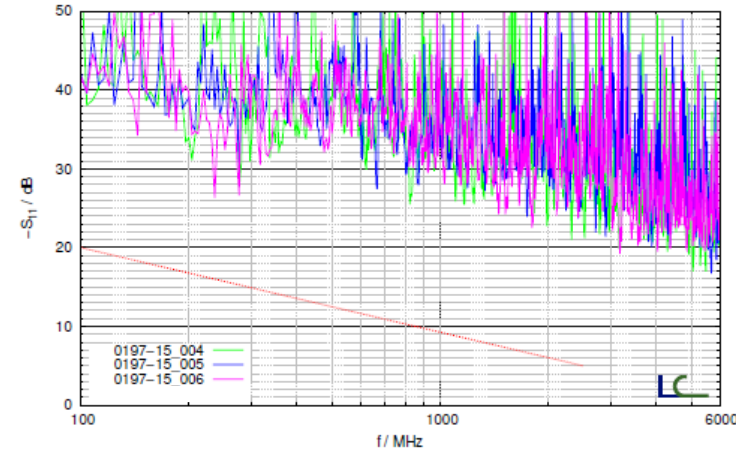
Thermal Ageing

Delivered Condition

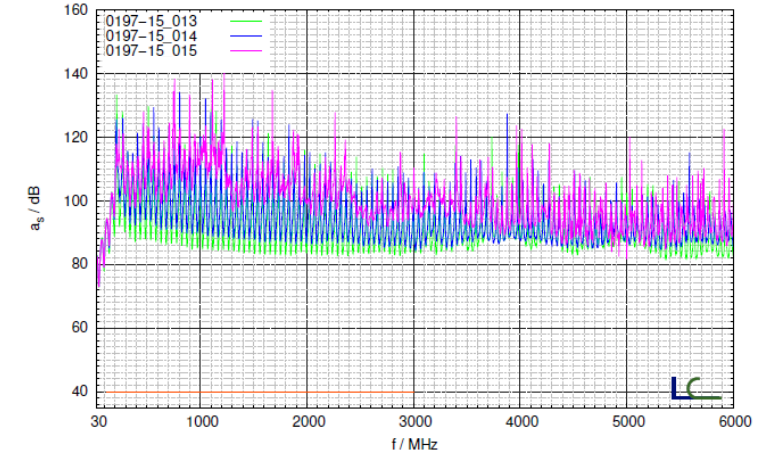
Insertion Loss



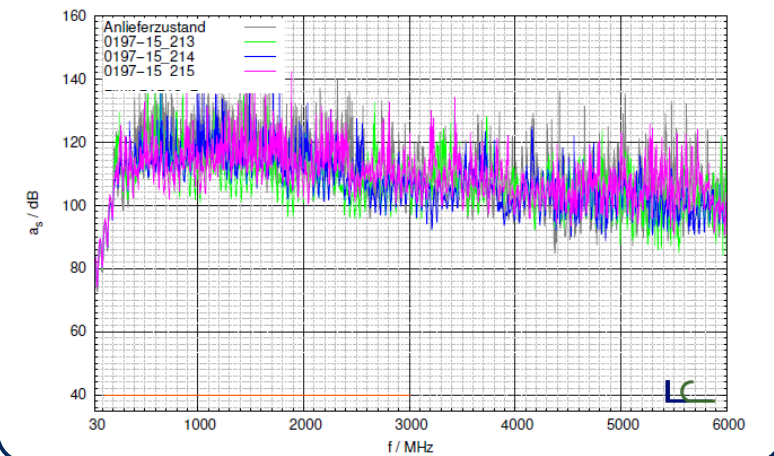
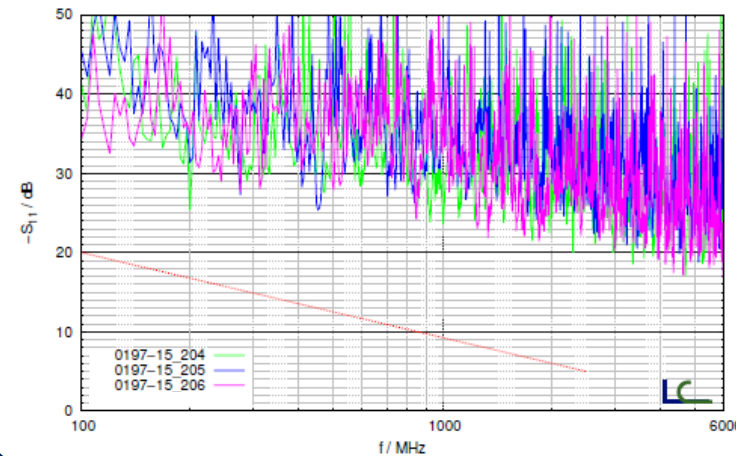
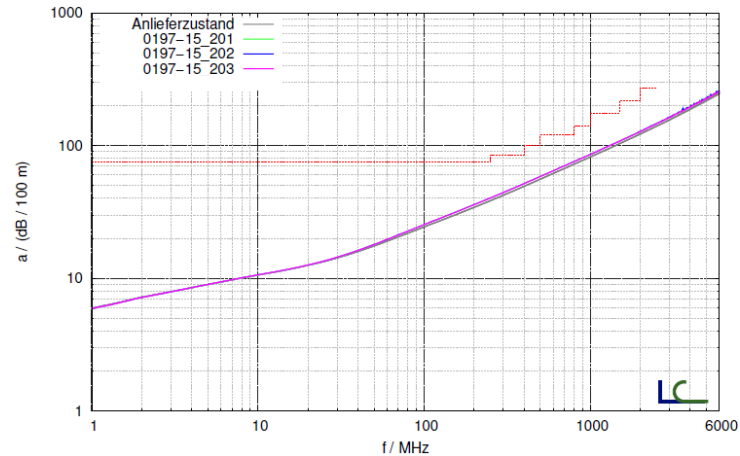
Return Loss



Shielding Attenuation



After thermal ageing

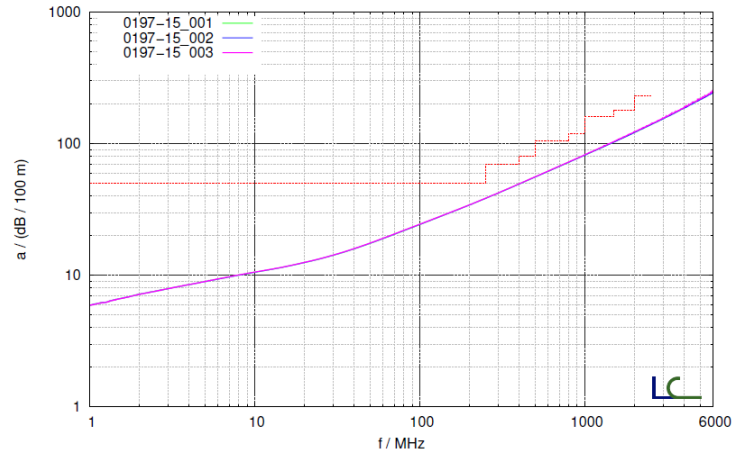


Almost no degradation after thermal ageing observed on RG174 (BC-shielded)

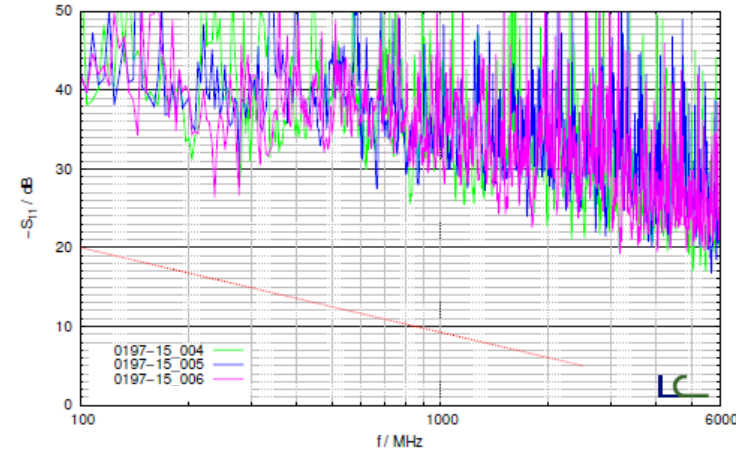
Mechanical Ageing

Delivered Condition

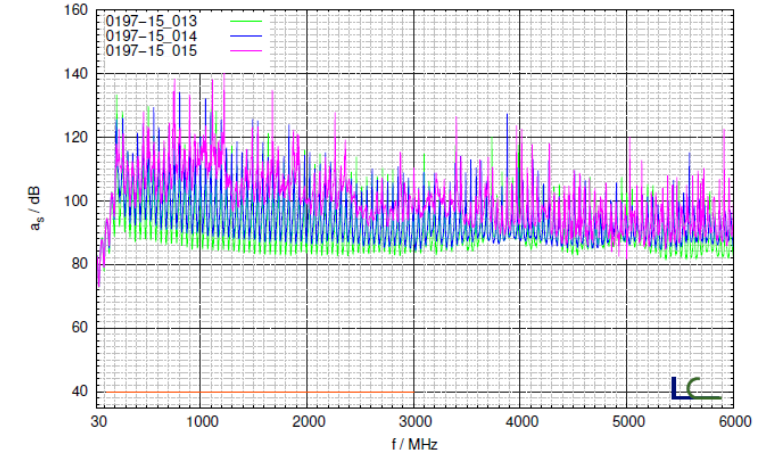
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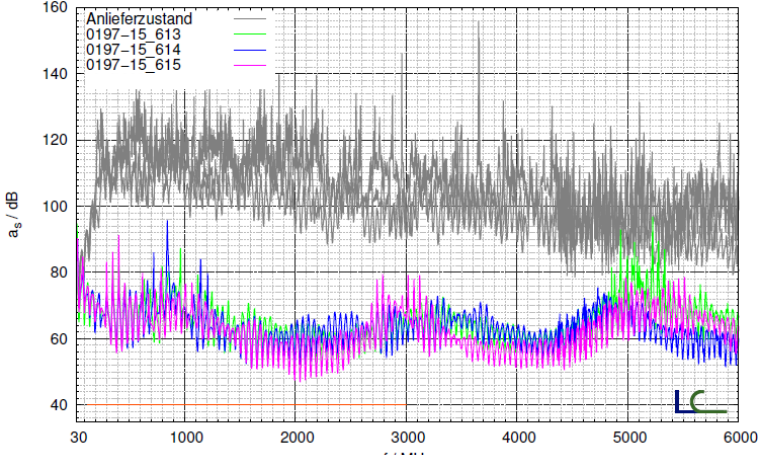
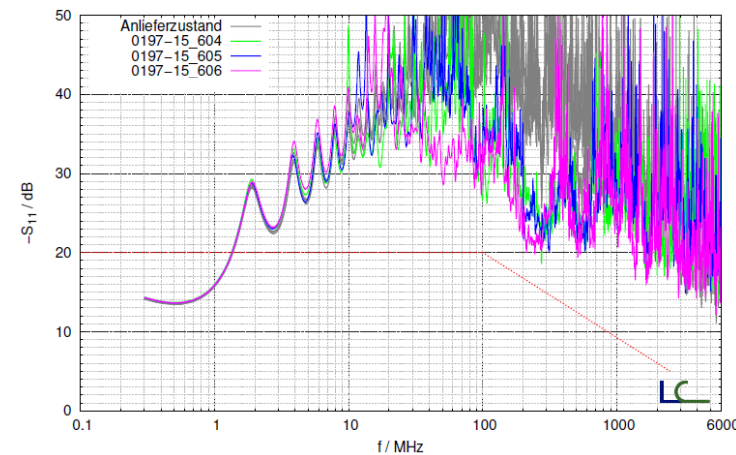
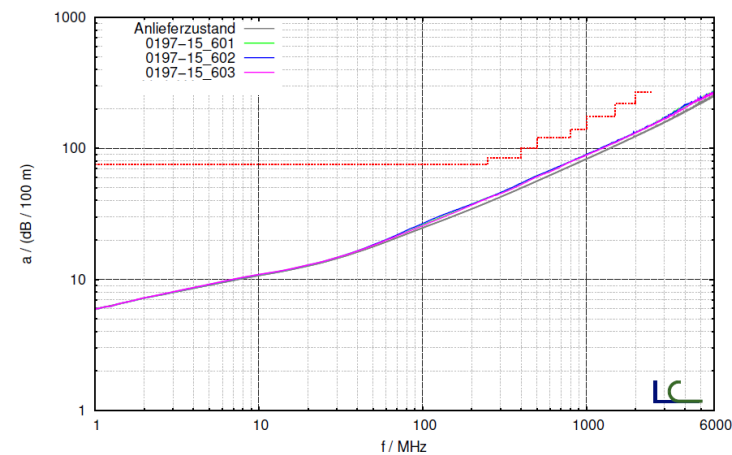
Return Loss



Shielding Attenuation



After Bending (30.000 cycles)



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

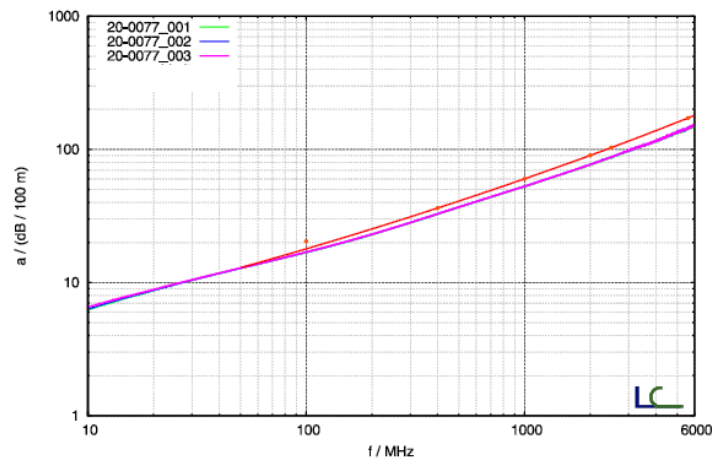
CX31a / RTK031

Thermal & Mechanical Ageing

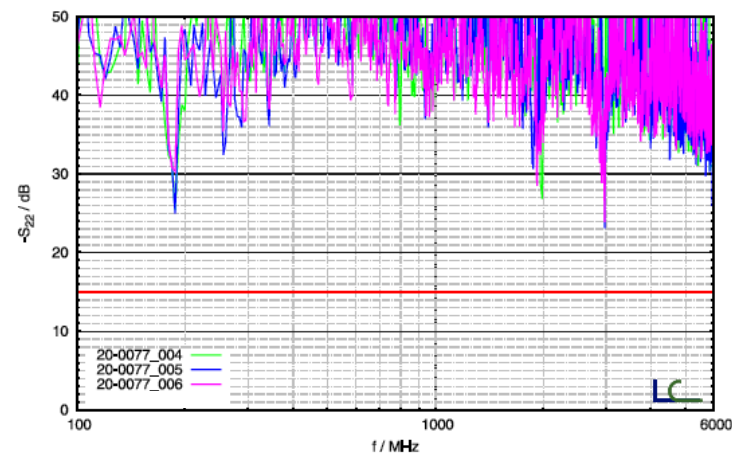
Thermal Ageing

Delivered Condition

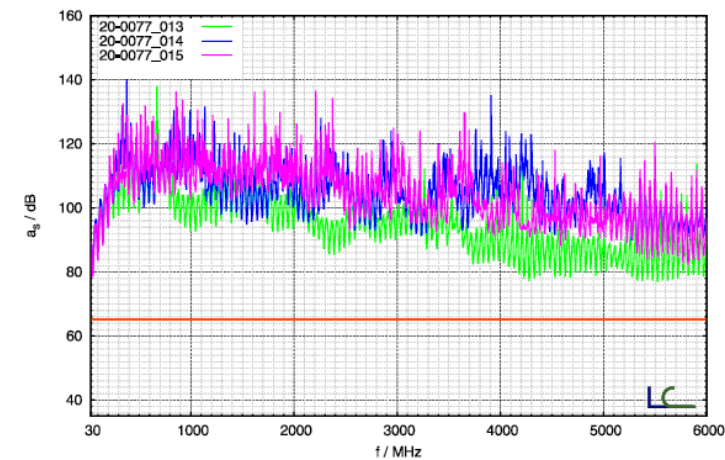
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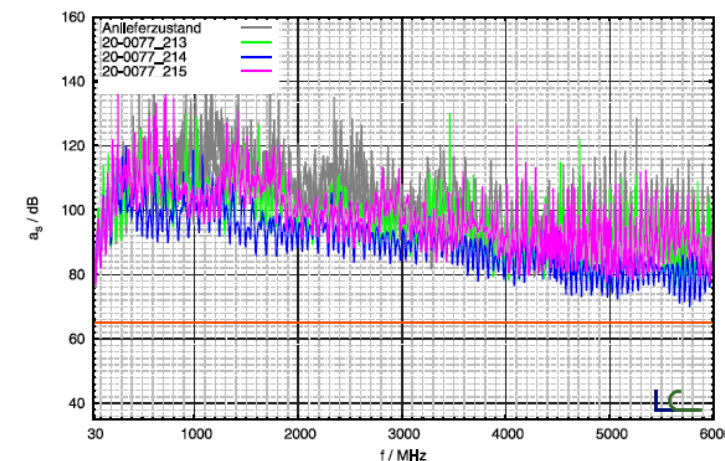
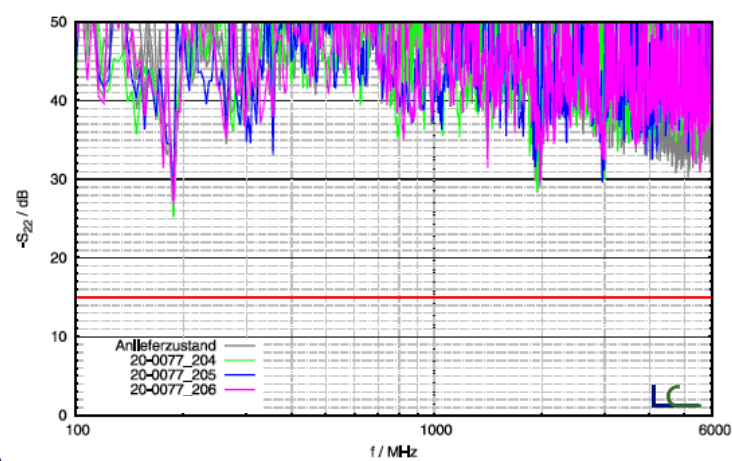
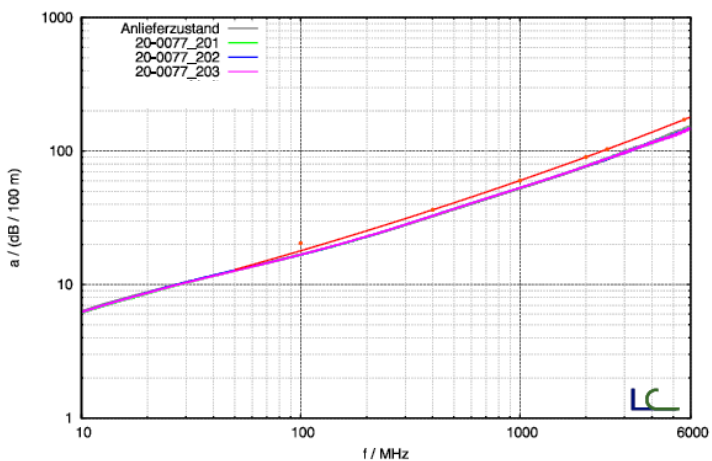
Return Loss



Shielding Attenuation



After thermal ageing

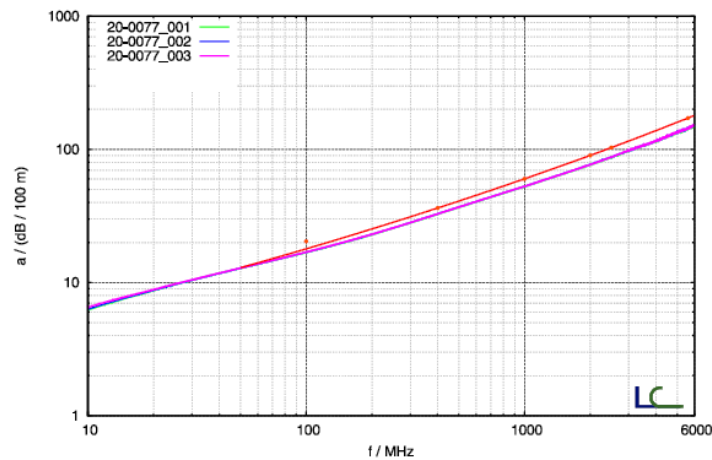


Almost no degradation after thermal ageing observed on RTK031, slight degradation of EMC

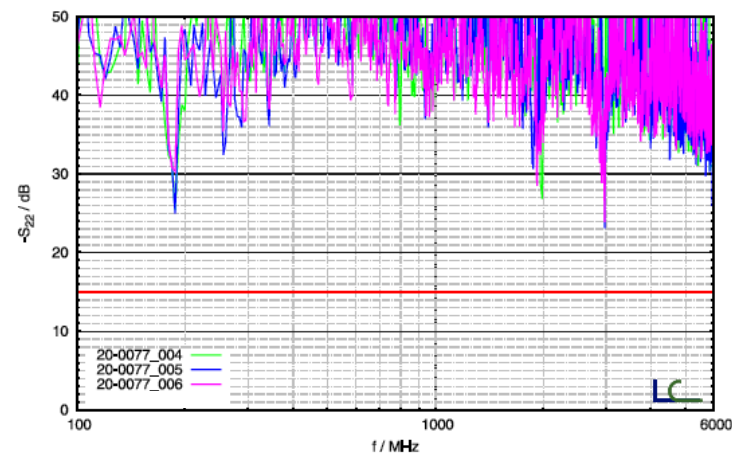
Mechanical Ageing

Delivered Condition

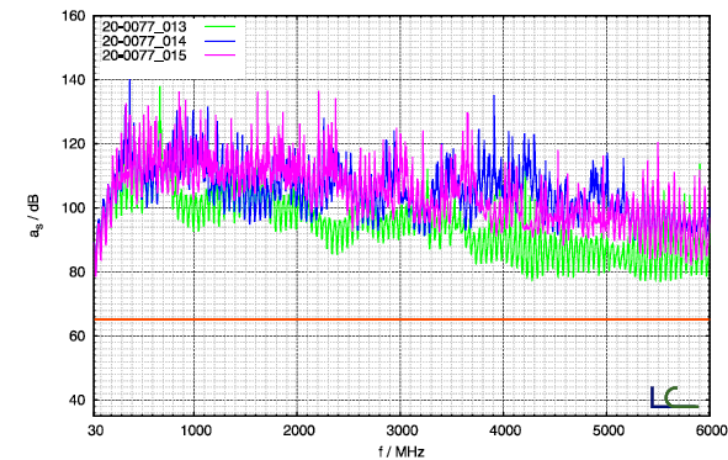
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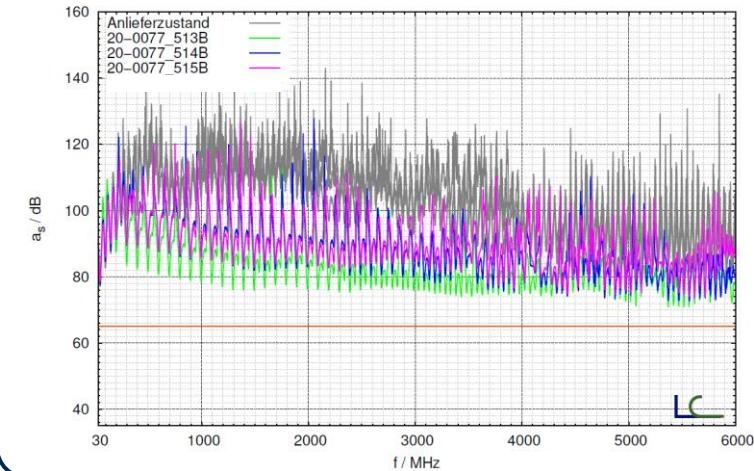
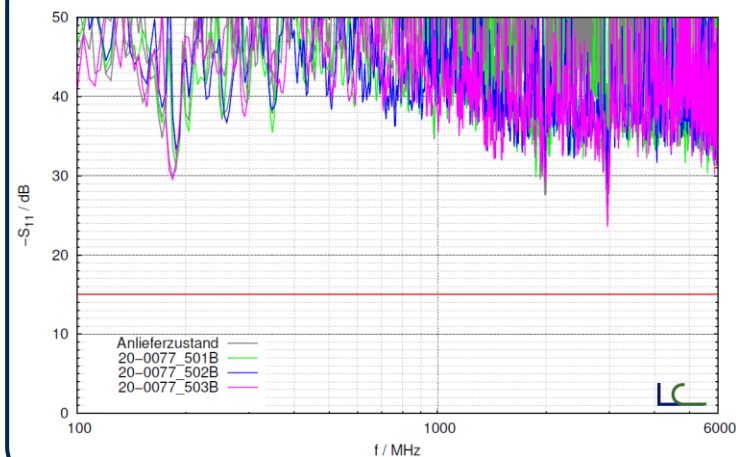
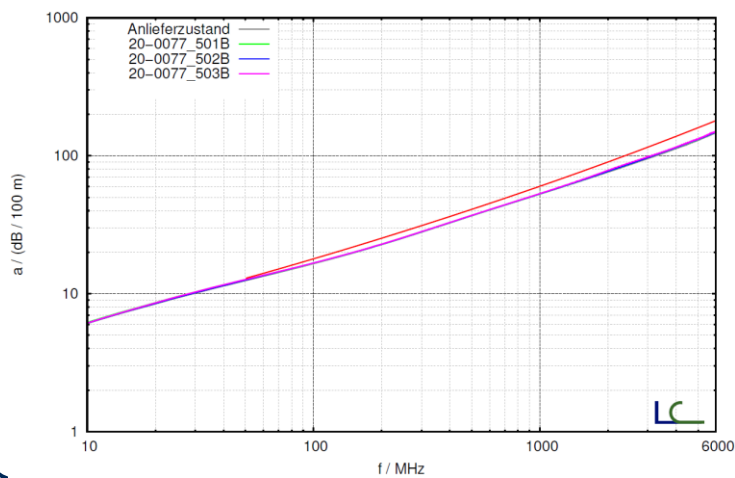
Return Loss



Shielding Attenuation



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 properties and EMC capabilities

Thank you for your attention.

www.leonicables.com

Your contact



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