Concept Tech GmbH:

Investigation of the Influences of Friction within the Inverse Certification Test Setup of the FlexPLI - Lower Legform Impactor
Frictional Effects – FlexPLI Inverse Certification

« Initial Information – Boundary Conditions of the Inverse Certification Test Procedure:
from ECE/TRAN/WP.29/GRSP/2011/13

« Initial Information – Acceleration and Displacement values at Inverse Certification:

« Estimation of acting frictional forces in „moving ram“:

⇒ based on Concept experiences with development and construction of test-equipment for automotive safety tests (e.g. several guided impactors, such as in an ejection mitigation EMI test system)

⇒ \( F, \text{fric.} \sim 100[N] \)
Simulation-setup to approximate the FlexPLI inverse certification:

- the EEVC legform has been used as approximation of the FlexPLI!

Simulations:
(A) Impact with guided honeycomb impactor without friction
(B) with constant friction force on guided "ram": $F_{fric} = 100 \text{ N}$
in opposite direction of $v_0$
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- Results of Simulations with the EEVC-Lower-Legform

- Test video – FlexPLI Inverse Certification

- Comparison of legform acceleration

  Comparable kinematics!

  Comparable legform acceleration!
GTR9-5-26
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Results of Simulations:

Influence of friction force on signal max. values < 5 %!
Summary:

The frictional forces in the inverse certification test setup will most probably influence the measured displacements and bending moments in the legform and should therefore be specified within the description of the test procedure.

As first suggestion:
If the frictional forces could be limited to values < 100 to 120 N, any influences on the signals would most probably be below 5%.