

# **Report on Flex-G Car Test Results**

## **Purpose of the Test**

- (1) To determine change in measurement results following the change in impactor specifications.**
- (2) To conduct a feasibility study on the new impactor Flex-G.**

# Summary of Test Results

Max. values for leg bending moment;  
MCL values for knee ligament

	Flex- 04		Flex- G		TRL		
	MCL (mm)	Leg (Nm)	MCL (mm)	Leg (Nm)	Bending (°)	Shearing (mm)	G (G)
Production model	19.11	257.41	* 30.57	(190.98)	8.9	2.83	113.3
Measure-1	11.90	187.46	* 23.40	(251.23)	/	/	/
Measure-2	/	/	* 23.67	(372.72)	4.8	ND	115.0

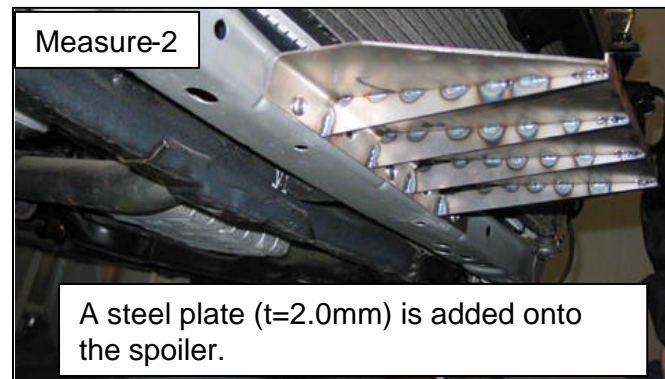
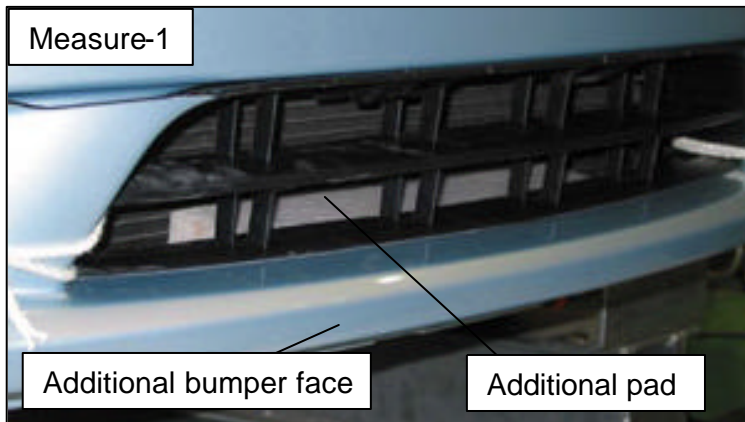
Exceed proposed protection criteria (Leg>350Nm, MCL>20mm)

Figures in ( ) indicate the maximum values before MCL exceed 200 mm.

\* Measurement was not possible due to overshooting.

## Vehicle Specifications

**Measure-1: Additional bumper face + Forward placement**  
**Measure-2: Additional plate below bumper**



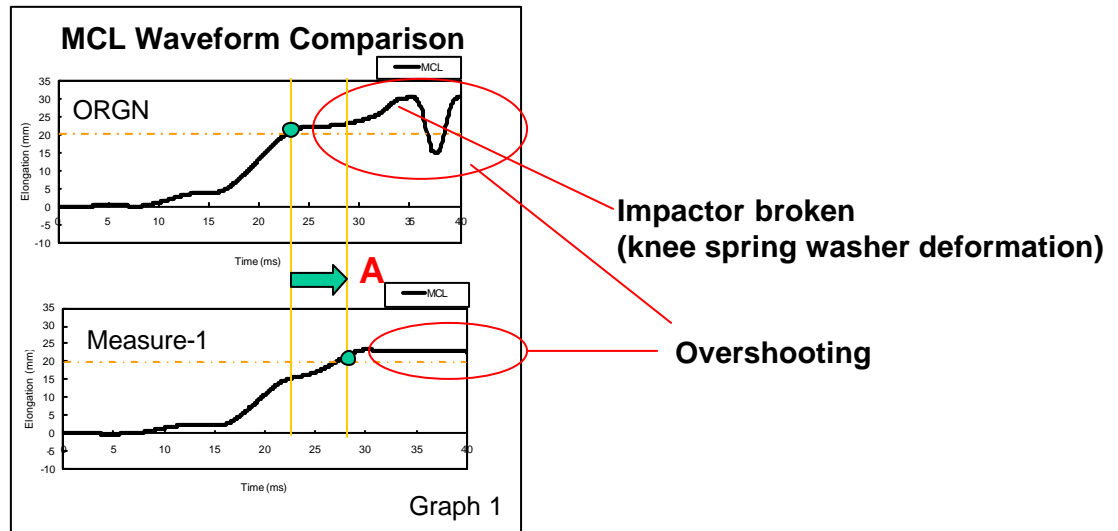
# Test Results and Proposal

## Test Results:

- (1) Flex-G recorded an excess elongation of knee ligament (overshooting) with the production-model, measure-1 and measure-2 vehicles.
- (2) Although the forward placement and reinforcement of a lower bumper structure appeared effective (see A), the quantitative prediction of effectiveness was difficult.

## Proposal:

JAMA proposes that Flex-G's measurement upper limit for knee ligament elongation be raised in order to widen the measurable ligament elongation range.



# Results

# Test Conditions

Same as 2004

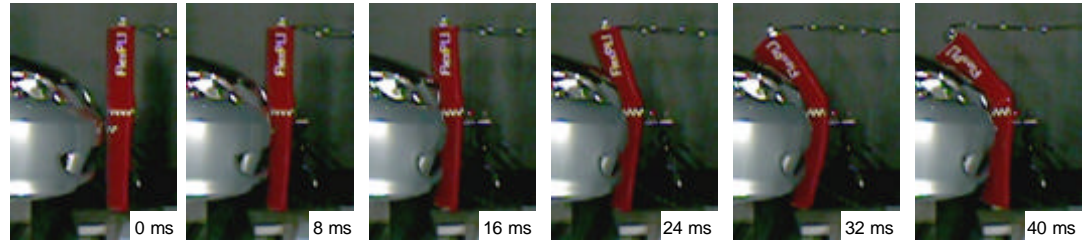


← Impact speed  
11.1 m/s

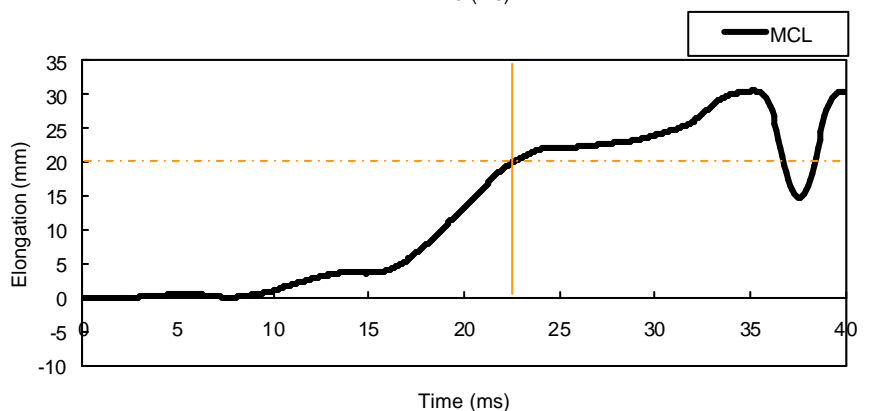
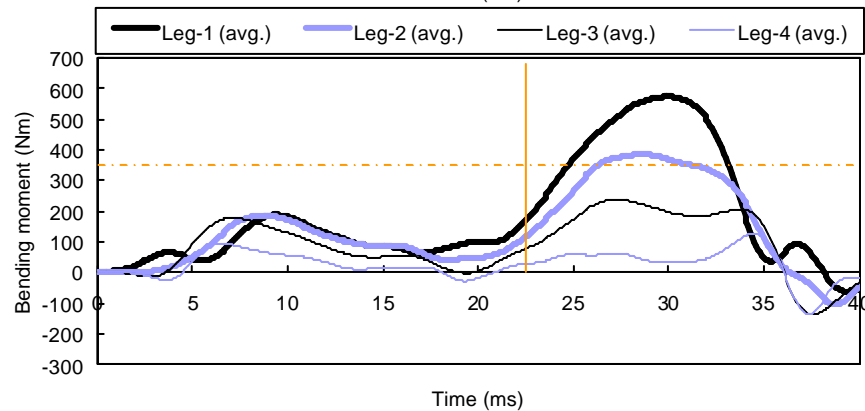
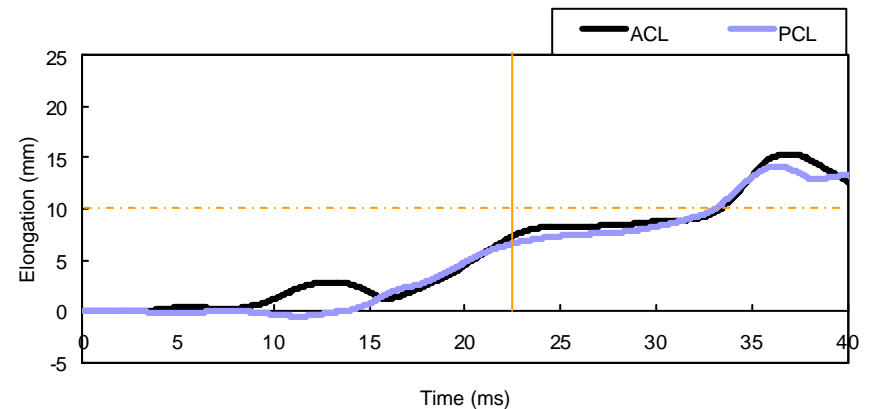
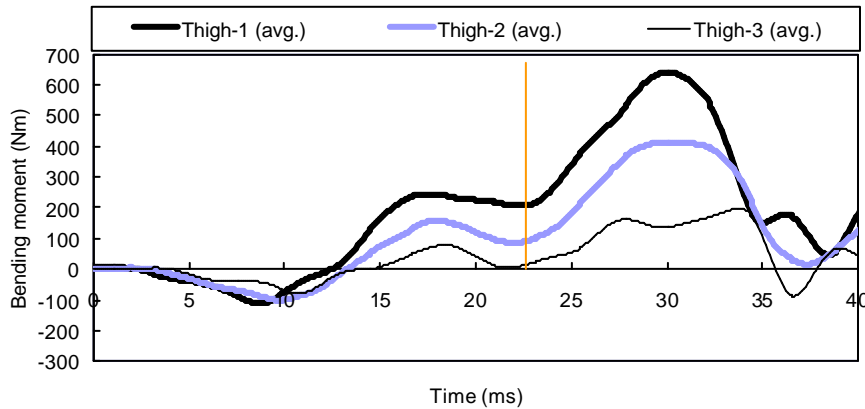
Impact point at vehicle center

+25mm      Ground level

# Production Model $\rightarrow$ Flex-G

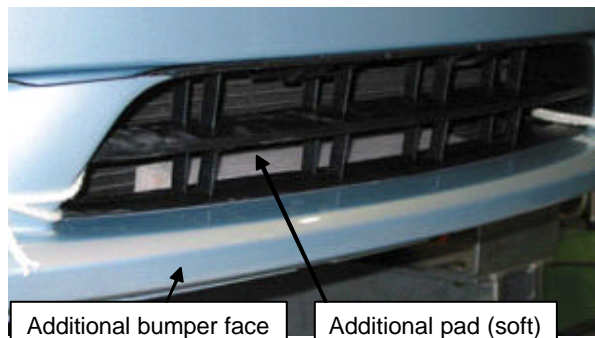


- - - : GTR tentative acceptance level     
 | : Initial injury detected timing  
 (based on the GTR tentative acceptance level)



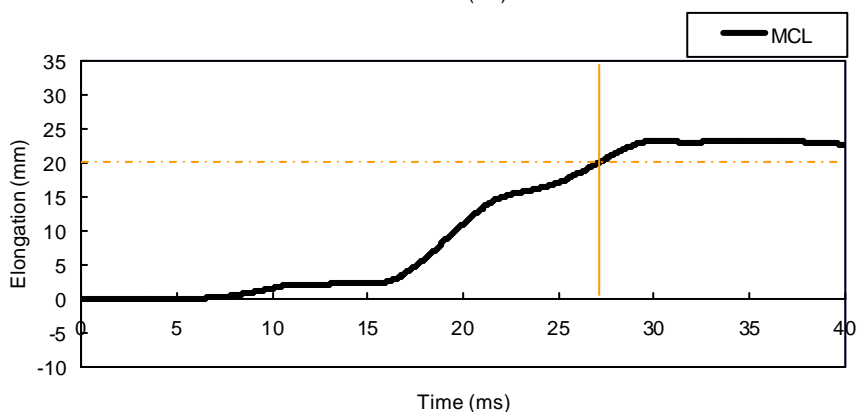
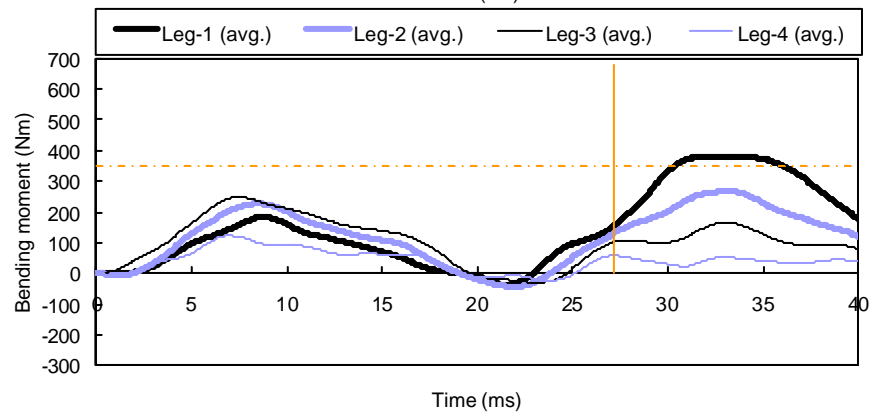
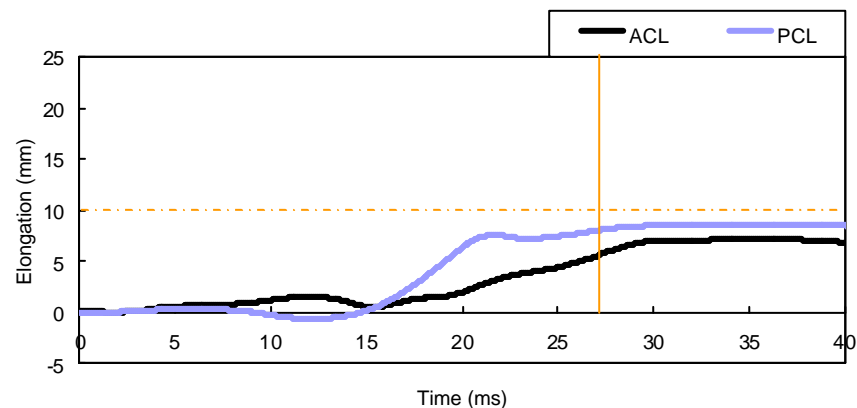
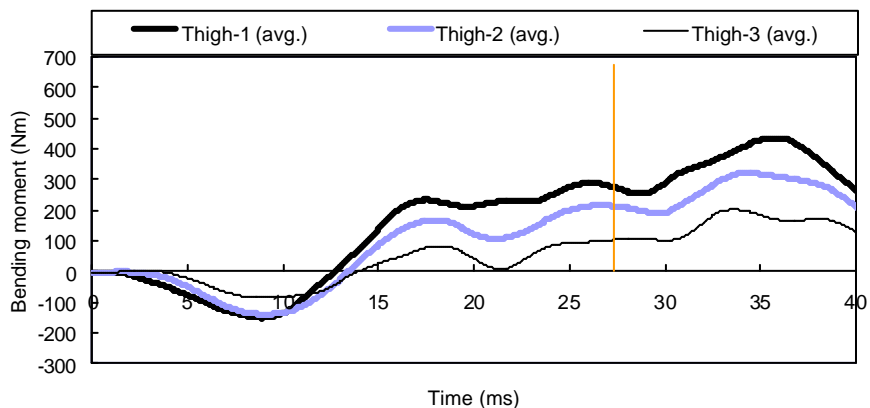
# Measure-1 Vehicle - Flex-G

## Attempted improvement



----- :GTR tentative acceptance level

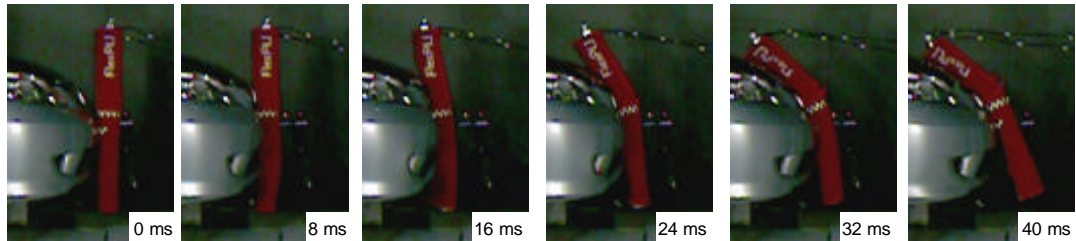
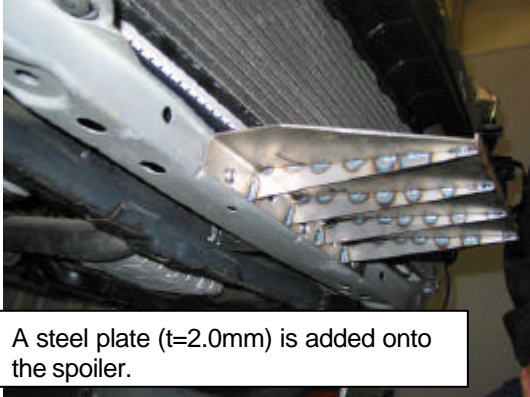
| : Initial injury detected timing (based on the GTR tentative acceptance level)



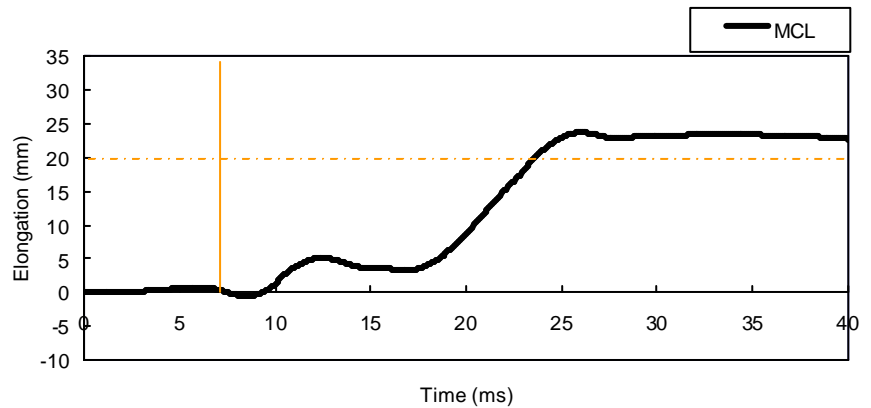
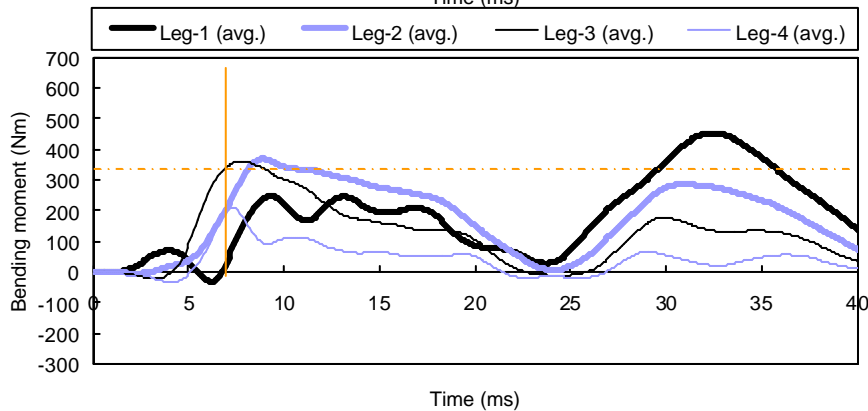
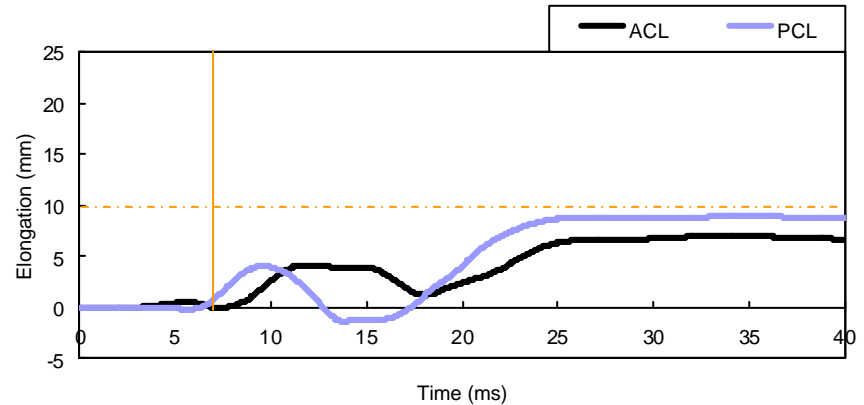
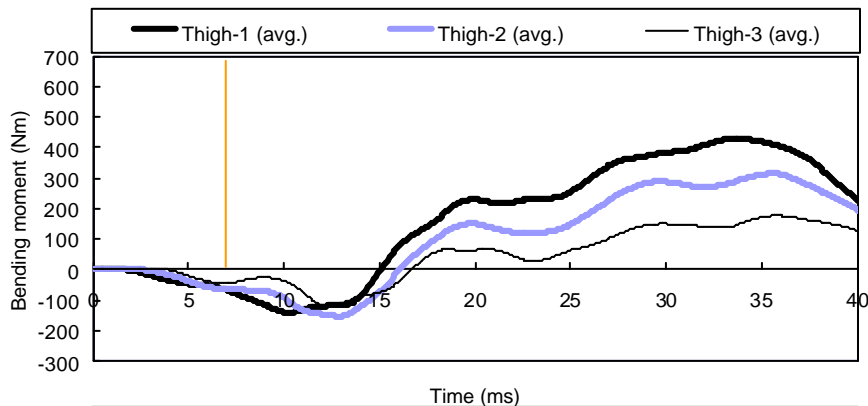


# Measure-2 Vehicle $\rightarrow$ Flex-G

## Attempted improvement

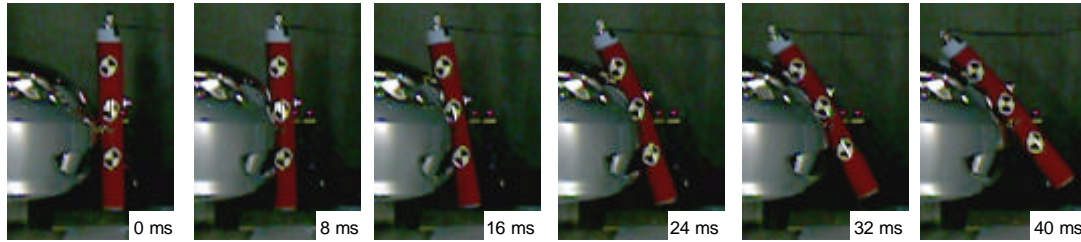
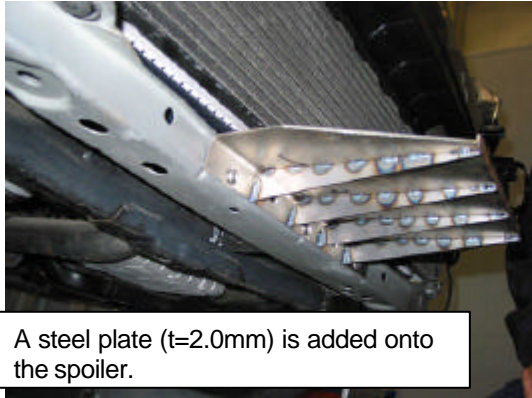


----- :GTR tentative acceptance level | : Initial injury detected timing (based on the GTR tentative acceptance level)



# Measure-2 Vehicle → TRL-LFI

## Attempted improvement



----- : GTR tentative acceptance level  
 | : Initial injury detected timing (based on the GTR tentative acceptance level)

