

RQ13-004

HYUNDAI-KIA

3-3-2014

RESPONSE TO REQUEST 8

9 PAGE 6

10 PAGE 70

11 PAGE 92

12 PAGE 327

13 PAGE 542

14 PAGE 556

15 PAGE 572

16 PAGE 581

RQ13-004

HYUNDAI-KIA

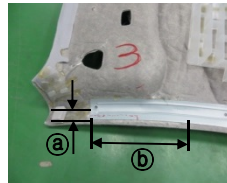
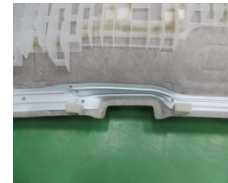
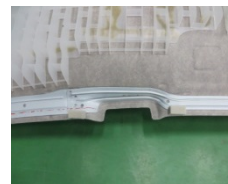
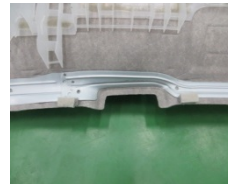
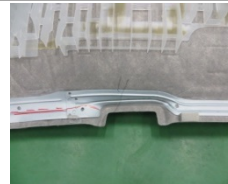
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RESPONSE TO REQUEST 8

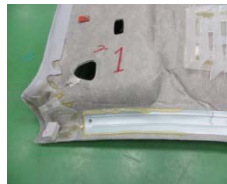
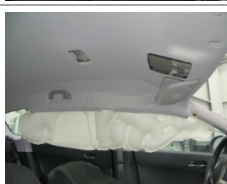
Hyundai Response to RQ13-004

Request 8

Elantra Touring CAB deployment verification test – (2/12/14)

NO	DATE	CASE	RESULT	PICTURE OF DEPLOYMENT TEST		
				Side view	Front	Center
1	2014. 2/12	• Production support bracket adhesion • Production hot melt application	Support bracket remained attached to headliner substrate.			
2	2/12	• Production support bracket adhesion • Hot melt adhesive not applied to ends of support bracket.	Support bracket remained attached to headliner substrate.			
3	2/12	• Lower area (10mm) of support bracket edge separated along 100mm of forward end of support bracket. • Hot melt adhesive not applied to ends of support bracket.	Support bracket remained attached to headliner substrate.			
4	2/12	• Lower area (10mm) of support bracket edge separated along 450mm of forward end of support bracket. • Hot melt adhesive not applied to ends of support bracket.	Support bracket remained attached to headliner substrate.			
5	2/12	• Lower area (20mm) of support bracket edge separated along 100mm of forward end of support bracket. • Hot melt adhesive not applied to ends of support bracket.	Support bracket remained attached to headliner substrate.			
6	2/12	• Lower area (20mm) of support bracket edge separated along 450mm of forward end of support bracket. • Hot melt adhesive not applied to ends of support bracket.	Support bracket remained attached to headliner substrate.			

Elantra Touring CAB deployment verification test – (2/13/14)

NO	DATE	CASE	RESULT	PICTURE OF DEPLOYMENT TEST		
				Side view	Front	Center
1	2014. 2/13	• Production support bracket adhesion • Production hot melt application	Support bracket remained attached to headliner substrate.			
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4	2/13	• Lower area (10mm) of support bracket edge separated along 450mm of forward end of support bracket. • Hot melt adhesive not applied to ends of support bracket.	Support bracket remained attached to headliner substrate.			
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RQ13-004

HYUNDAI-KIA

3-3-2014

RESPONSE TO REQUEST 9

Engineering Orders for Elantra Touring headliner

2014. 2. 21

Page 2

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Page 3

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Page 4

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Page 5

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Page 7

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Page 8

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Page 9

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Page 10

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Page 111

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Page 12

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Page 13

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Page 14

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Page 15

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Page 16

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Page 17

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Page 18

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Page 19

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Engineering Orders for Veracruz headliner (Sunroof)

2014. 2. 21

Page 2

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Page 3

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Page 4

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Page 5

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Page 7

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Page 8

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Page 9

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Page 10

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Page 111

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Page 12

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Page 39

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Page 40

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Page 41

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Page 42

{Entire Page Redacted}

Page 43

{Entire Page Redacted}

Page 44

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RQ13-004

HYUNDAI-KIA

3-3-2014

RESPONSE TO REQUEST 10

Material Safety Data Sheet



OKONG BOND® No.SJ2004

SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

TRADE NAMES/SYNONYMS : No. SJ2004
 EMERGENCY TELEPHONE NUMBER : 82-32-822-5050 (SOUTH KOREA)
 8L-14B,Namdong industrial Complex
 Namchon-dong, Namdong-gu,Inchon-city, 405-846,South Korea
 SUBSTANCE: Hotmelt adhesive
 CREATION DATE: OCT 07 1998
 REVISION DATE:

SECTION 2 COMPOSITION, INFORMATION ON INGREDIENTS

Ingredients	CAS No	content(%)
1.ETHYLENE-VINYLACETATE COPOLYMER	24937-78-8	15
2.POLYPROPYLENE	9003-07-0	50
3. PETROLEUM HYDROCARBON RESIN	64742-16-1	30
4. HIGH-DENSITY POLYETHYLENE	9002-88-4	5

SECTION 3 HAZARDS IDENTIFICATION

Danger immediate, harm information

Ingredients	NFPA RATINGS (SCALE 0-4)	FIRE	HEALTH	REACTIVITY
1.ETHYLENE-VINYLACETATE COPOLYMER		1	1	0
2.POLYPROPYLENE		1	1	
2. PETROLEUM HYDROCARBON RESIN		1	1	0
3. HIGH-DENSITY POLYETHYLENE		1	1	0

EYE CONTACT

Short-term effects : No data available

Long-term effects : No data available

SKIN CONTACT

Short-term effects :The stimulus can be happended.

Long-term effects : No data available

INHALATION

Short-term effects :Can cause stimulus and vomiting.

Long-term effects : No data available

ENGESTION

Short-term effects : No data available

Long-term effects : No data available

CARCINIGEN STATUS:

OSHA : N

NTP : N

IARC : N

ACGIH : N

SECTION 4 FIRST AID MEASURES

EYE CONTACT : Wash eyes immediately with large amousts of water. get medical attention immediately.

SKIN CONTACT : Remove contaminated clothing and shoes immediately. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least

15-20 minute). Get medical attention immediately.

INHALATION : Remove from exposure area to fresh air immediately. Perform artificial respiration if necessary. Keep person warm and at rest. Treat symptomatically and supportively. Get medical attention if needed.

INGESTION : If vomiting occurs, keep head lower than hips to help prevent aspiration. Treat symptomatically and supportively. Get medical attention if needed.

INFORMATION TO DOCTOR : No known detoxificants. Treat according to symptoms.

SECTION 5 FIRE FIGHTING MEASURES

FLASH POINT : 271 °C (OC)

SPONTANEOUS COMBUSTION POINT : No data available

MINIMUM FLAMMABLE LIMITS : No data available

MAXIMUM FLAMMABLE LIMITS : No data available

FLAMMABILITY CLASS(OSHA) : No data available

FIREFIGHTING : Move container from fire area if you can do it without risk. Do not scatter spilled material with high-pressure water streams. Dike fire-control water for later disposal. Use agents suitable for type of surrounding fire. Avoid breathing hazardous vapors, keep upwind.

HARZARDOUS COMBUSTION PRODUCTS : Combustion will produce CO₂, water, sand, regulated foam

TOXIC MATERIAL ON BURNING : Chemical toxic carbon combination may be included.

THE FIRE EXTINGUISHER NOT TO BE USED : Information provided

SECTION 6 ACCIDENTAL RELEASE MEASURES

STEP TO BE TAKEN TO PROTECT FROM BODILY HARM : Keep unnecessary people away.

STEP TO BE TAKEN TO PROTECT ENVIRONMENT : Collect spilled material in appropriate for later disposal
keep out of water supplies and sewers. keep unnecessary
people away isolate hazard area deny entry.

SECTION 7 HANDLING AND STORAGE

HANDLLING : Observe all federal, state and local regulations when storing this substance.

STORAGE : Store in a dry place. Store in tightly closed container.

SECTION 8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

ENGINEERING CONTROLS : Use adequate ventilation to keep airborne concentration low.

EYE PROTECTION : Operator should wear splash resistant or particle resistant safety goggles to avoid eye contact with chemical material.

An emergency eye wash fountain and quick drench shower should be installed in the immediate work area.

RESPIRATORY PROTECTION : The following respiratory protection equipment is recommended by information obtained from various data sources related to toxicity and health.

The listed respiratory protection equipment are ranked in the order of minimum requirements to maximum requirements.

The selected respiratory protection equipment should be based on pollution levels and production processes in the working area, and should not exceed the maximum operating limits of the respiratory protection equipment.

Products should be approved by NIOSH/MSHA

: Respiratory protective equipment for particles and mist.

Supplied air purifying respiratory protective equipment with high efficiency particle filter

: Supplied air purifying respiratory protective equipment with particle and mist filter.

: C type air supply(ventilating type) respiratory protective equipment with pressure-demand or positive-pressure mode.

Self-contained respiratory equipment.

PROTECTIVE BODY AND GLOVES : Operator should wear appropriate(imprevious) protective clothing to avoid repetitive or long-term contact with chemical material.

EXPOSURE LIMITS

ETHYLENE-VINYLACETATE COPOLYMER : No standard or limits listed by OSHA, ACGIH, or NIOSH

POLYPROPYLENE : No standard or limits listed by OSHA, ACGIH, or NIOSH

PETROLEUM HYDROCARBON RESIN : 5 mg/m3(15 mppcf) OSHA TWA(respirable dust)

15 mg/m3(50 mppcf) OSHA TWA(total dust)

HIGH-DENSITY POLYETHYLENE : No standard or limits listed by OSHA, ACGIH, or NIOSH

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE : Yeloowish block

Odor : faint smell

pH : No data available

SOLVENT SOLUBILITY : No data available

BOILING POINT/RANGE : No data available

MELTING POINT : 130~150℃

VAPOR PRESSURE : No data available

VAPOR DENSITY : No data available

SECIFIC GRAVITY : 0.98

MOLECULAR WEIGHT : No data available

DISTRIBUTING COEFFICIENT : No data available

VISCOSITY : 6000cps/180℃

SECTION 10 STABILITY AND REACTIVITY

CHEMICAL STABILITY : Stable under normal temperatures and pressures.

CONDITIONS TO AVOID : Avoid all possible sources of ignition (spark or flame)

HAZARDOUS DECOMPOSITION PRODUCTS : carbon oxides(CO, CO2)

HAZARDOUS POLYMERIZATION : No data available

SECTION 11 TOXICOLOGICAL INFORMATION

ETHYLENE-VINYLACETATE COPOLYMER

TOXICITY DATA : Inhalation : No data available

: Oral : No data available

: Skin : No data available

CARCINOGEN STATUS : OHSA - None

: NTP - None

: IARC - None

ACUTE TOXICITY DATA : No data available

CHRONIC DATA : No data available

MUTAGENIC DATA : No data available

REPRODUCTIVE EFFECTS DATA : No data available

POLYPROPYLENE

TOXICITY DATA : Inhalation : No data available

: Oral : No data available

: Skin : No data available

CARCINOGEN STATUS : OHSA - None

: NTP - None

: IARC - None

ACUTE TOXICITY DATA : No data available

CHRONIC DATA : No data available

MUTAGENIC DATA : No data available

REPRODUCTIVE EFFECTS DATA : No data available

PETROLEUM HYDROCARBON RESIN

TOXICITY DATA : Inhalation : No data available

: Oral, rat : LD50 = 7g/kg

: Skin : No data available

CARCINOGEN STATUS : OSHA - None

: NTP - None

: IARC - None

ACUTE TOXICITY LEVEL : No data available

CHRONIC DATA : No data available

MUTAGENIC DATA : No data available

REPRODUCTIVE EFFECTS DATA : No data available

HIGH-DENSITY POLYETHYLENE

TOXICITY DATA : Inhalation : No data available

: Oral : No data available

: Skin : No data available

CARCINOGEN STATUS : OSHA - None

: NTP - None

: IARC - None

ACUTE TOXICITY LEVEL : No data available

CHRONIC DATA : No data available

MUTAGENIC DATA : No data available

REPRODUCTIVE EFFECTS DATA : No data available

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY : No data available

ENVIRONMENTAL FATE : No data available

PERSISTENCE/DEGRADABILITY : No data available

BIOACCUMULATIVE POTENTIAL : No data available

SECTION 13 DISPOSAL CONSIDERATIONS

WASTE INFORMATION : Dispose of in accordance with applicable local and national regulations. Avoid contact of spill material and runoff with soil and surface waterways. Consult an environmental professional to determine if local, regional or national regulations would classify spilled or contaminated material as hazardous waste. Use only approved transporters, recyclers, treatment, storage or disposal facilities.

SECTION 14 TRANSPORT INFORMATION

No classification currently assigned.

SECTION 15 REGULATORY INFORMATION

No data available

SECTION 16 OTHER INFORMATION

THE SOURCE OF DATA: This MSDS is for the purpose of providing references to other enterprises which asking the MSDS by the Industrial Safety and Health Law, the 41st article. Therefore the O-Kong Adhesives (Co.) does not take any responsibility about any technical or legal responsible for this document

Characteristics

- Polyolefin-based hotmelt adhesives with excellent processing and bonding characteristics.
- Good heat resistance.
- Very good hot-tack.
- Excellent bond strength on various substrates.

Field of application

- Assembly of the Automobile interior felt and parts

Physical properties

Color :	Yellow block
Viscosity(Brookfield) :	6,000±1,000cps@180℃
Softening point(R&B) :	140±10℃

Application

- Melt SJ2004 for approx. 30minutes.
- Recommended working temperature range is 160~190℃.

Caution

- Store in a dark, dry and cool place
- Heat must be avoided before use to prevent a possible deformation of OPS500H.
- Pre-tests should be carried out because of the variety of substrates available.

Packaging

- 20kg box

The information contained herein is accurate to the best of the knowledge and belief of OKONG Corporation.

However, due to variations in conditions, methods, and equipments used, full scale testing and end product performance are the responsibility of the users. If you have any problems, please contact us. We will provide every possible support for you to achieve successful results.

OKONG Corporation

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FAX : +82-32-812-5050
Homepage : www.okong.com

MATERIAL SAFETY DATA SHEET (MSDS)

SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

- Product Name : DC-710SP
- General Chemical Characteristic : chloroprene rubber type adhesive based upon resin.
- Analysis of Noxiousness : chronic exposure and contact may cause noxiousness.
- Usages : automobile adhesive.
- Information of Manufacturer
 - D. K. C
 - 859. CHANG PYUNG-RI, BUKYEU-MYEON, GUNWI-GUN, GYEONGSANGBUK-DO, KOREA
 - Tel: 82-54-382-9880~1 Fax: 82-54-382-9882
- . Dated Prepared :Oct.31,2006.

SECTION 2. INFORMATION ON INGREDIENTS

Name	Trade Name/ Synonyms	CAS No.	Content(%)
CHLOROPRENE RUBBER	-	9010-98-4	20~22
TOLUENE	METHYL BENZENE	108-88-3	20~30
ACETONE	2_PROPANONE	67-64-1	20
OTHERS(ISO-HEPTANE)		31394-54-4	15~35

SECTION 3. HAZARD IDENTIFICATION

Necessary Information in emergency

NFPA rating(scale 0-4) : Health=2 Fire=3 Reactivity=0

Potential Health Effects

- Eye : may cause irritation and side effects may bring.
- Skin : may cause irritation.
- Inhalation : may cause irritation, headache, breathing difficulty, stomach pain.
- Ingestion : may cause vomit, breathing difficulty, headache, liver/kidney damage and ingestion.
- Chronic Effects : liver/kidney and brain damage, heart failure, convulsions, paralysis
- Signs & Symptoms : nausea, drowsiness, dilated pupils, headache, vomit, yellowing of skin and eys

SECTION 4. FIRST AID MEASURES

. Eye : Wash eyes immediately with clean water and norsal saline until no evidence of chemical remains

(at least 10-15 minutes). Get medical attention immediately.

. Skin : Remove contaminated clothing and shoes. Wash with soap or mild detergent and water until no evidence of chemical remains (at least 10 minutes). Get medical attention immediately.

. Inhalation : Move to fresh air area immediately. Keep the person warm and rest.

Get medical attention immediately.

- . Ingestion : Perform the personal vomit of it. Gastric lavage should be performed by qualified medical doctor.
- . Note to Physician : no specific antidote, treat symptomatically and supportively.

SECTION 5. FIRE FIGHTING MEASURES

- . Flash point : $-4^{\circ}\text{F}(-20^{\circ}\text{C})$
- . Auto-ignition : $473^{\circ}\text{F}(245^{\circ}\text{C})$
- . Flammable class : OSHA : IB
- . Extinguishing media : dry chemical, carbon dioxide, water spray or regular foams.
(In case of large fire, use water spray, fog, regular foams)
- . Fire fighting : use water in flooding quantities as fog.
In case of large fires, use unmanned hose holder or monitor nozzles.
- . Hazardous combustion products : thermal decomposition products may include toxic oxide of carbon and various hydrocarbon.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- . Necessary points to protect human body : isolate hazard area & restrict entry.
- . Necessary points to protect ecology : prevent diffusion & flow of spilled material using soil or sandbag.
- . Defecation or remove : take up with sand, cement powder or other absorbents.

SECTION 7. HANDLING & STORAGE

- . Handling : handle at the place instilled ventilation facility,
do not use at source of ignition, avoid contact eyes, skin.
- .Storage : keep in tightly closed container and store at room temperature.
keep away from source of ignition.

SECTION 8. INFORMATION OF PERSONAL PROTECTION & EXPOSURE CONTROL

- . Engineering control : general(including local) ventilation to meet published.
- . Respiration protection : wear a gas mask if work at maximum concentration place.
- . Eye protection : safety goggles.
- . Hand protection : PE gloves.
- . Body protection : avoid long term skin contact. If necessary, put on protection wear.
- . Caution : do not eat on work.
- . Max. concentration : no data.

SECTION 9. PHYSICAL / CHEMICAL CHARACTERISTICS

Appearance	blue liquid		
Odor	aromatic odor		
pH	no data	Solvent solubility	insoluble in water
Boiling point	Min. 74°C	Melting point	no data
Explosion	no data	Oxidative	no data
Vapor pressure	no data	Specific Gravity	–
Distribution coefficient	no data	Vapor density	no data
Viscosity	① 700±100(CPS/25°C)	Molecular weight	–

SECTION 10. STABILITY AND REACTIVITY

- . Chemical stability : stable at room temperature and high pressure.
- . Conditions to avoid : avoid heat, flames, other sources of ignition.
- . Substances to avoid : no data.
- . Hazardous decomposition : thermal decomposition products may include toxic oxide of carbon and various hydrocarbon.

SECTION 11. TOXICOLOGICAL INFORMATION

- . Influence to eye : may cause irritation(especially to eyes)
- . Influence to skin : may cause irritation.
- . Acute oral : no data.
- . Acute suction : no data.
- . Toxicity of generation : no data.
- . Chronic : no data.

SECTION 12. ECOLOGICAL INFORMATION

- . Ecological contaminant :
- . Transfer to soil : no data.
- . Degradability & Persistency : no data.
- . Bio-concentration possibility : no data.

SECTION 13. DISPOSAL CONSIDERATION

- Waste disposal regulation : this waste materials must comply with all applicable state & local regulations.
- Waste disposal method : -
- US EPA RCRA hazardous waste number : -

SECTION 14. TRANSPORTATION INFORMATION

- US department of transportation shipping name-I.D. number : -
- Regulation & classification by ICAO/IATA,ADR,RID : -
- Cautions when transport : -

SECTION 15. REGULATORY INFORMATION

- Sara hazardous categories : -
- TSCA(Toxic Substance Control Act) : -
- Others : -

SECTION 16. OTHER INFORMATION

- Source of the information : Korea Industrial Safety Cooperation, MDL Information System Inc. Co.(USA).
- This MSDS does not cover any dispute , please contact us for more information.

DKC

859 Changpyeong, Bugye, Gunwi, Gyeongsangbuk-do 716-833/Tell(054)382-9880~1/Fax(054)382-9882

DC-710SP(Product feature)

DC-710SP is a spray type, Neoprene adhesive which shows excellent adhesive property for various materials, in particular, has an excellent feature on thermal resistance and initial adhesive strength.

1. The main use and features

1) For interior material of automobile

Glued on manufactured components such as Resin felt, Hard board, Wood chip, ABS, PC, PP, etc and various epidermal textile such as PP foam, polyester cloth, Wool, etc.

2) Excellent adhesive property on various interior materials which specially need thermal resistance and M/Pocket(PP manufactured components/Polyester cloth)

2. Characters

Classification	Product Standard	Others
Exterior	Green Liquid	
Viscosity	700±100 CPS/25℃	Brookfield
Solidity powder(%)	23±2 %	
Stability(Month)	For 6 months	

3. How to use

- 1) Clean the surface to be glued.
- 2) Apply adhesive on the both side of surface(both sides according to quality of the material)
- 3) Dry for proper time, then fully press the surface together.

4. Cautions when handling the product

- 1) It contains organic solvent. Avoid firearm and use in a well-ventilated place.
- 2) If you are not using, always seal and keep in a cold place.(20-25c room temperature)

Page 1

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Page 2

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Page 1

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Page 1

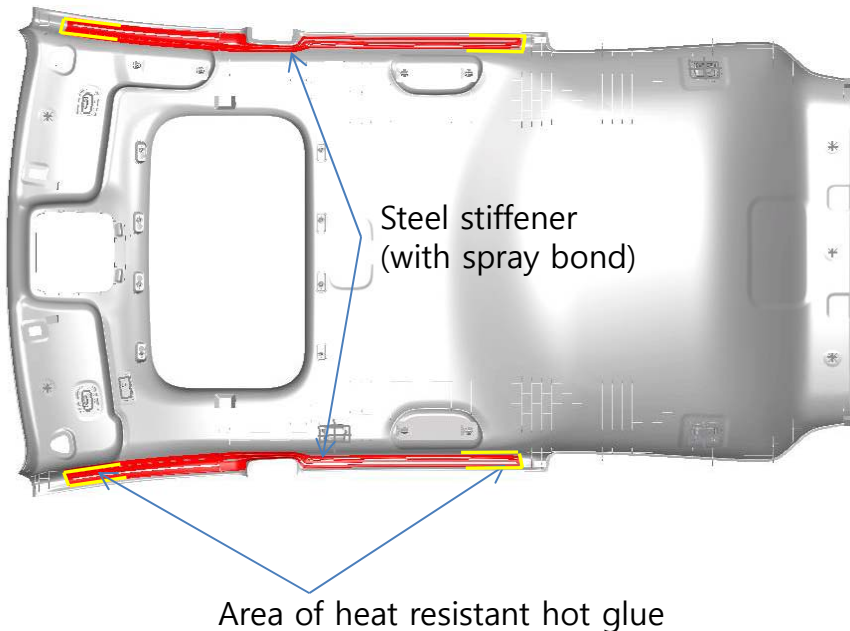
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Page 2

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Adhesive on support brackets for FD (Elantra Touring) Headliner

Adhesive specification



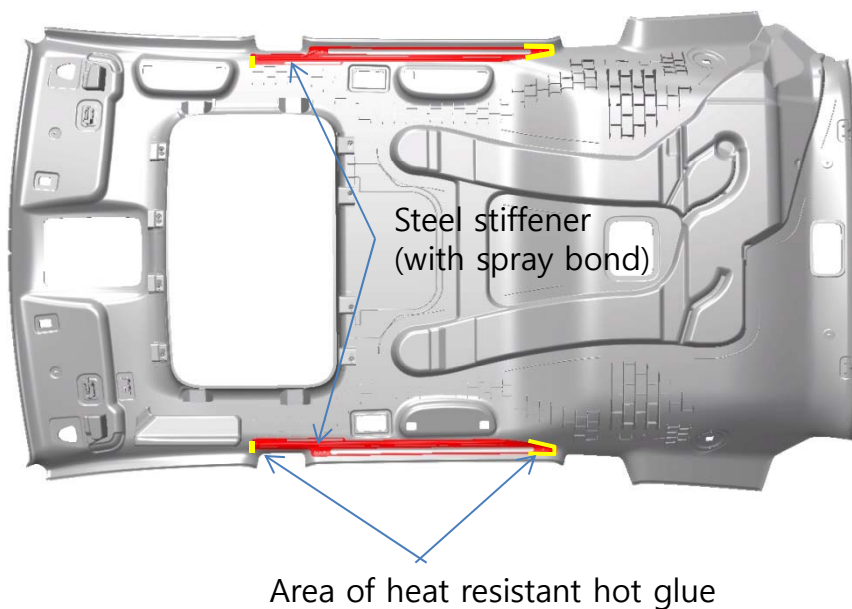
Assembly process summary:

1. Press the steel stiffener
2. Apply spray bond to the stiffener
3. Press headlining assembly with the stiffener
4. Apply hot glue to end areas

Adhesive	Picture	Name	Purpose	Integrand	Supplier	Performance Report
Hot-glue		SJ-2004	For interior trim of vehicle	polypropylene	(OKONG)	Attached 10_RQ13-004 Hot Melt Technical Data Sheet.pdf Attached 10_RQ13-004 Hot Melt MSDS.pdf
Spray bond		DC-710SP	For interior trim of vehicle	ISO-HEPTANE	(DKC)	Attached 10_RQ13-004 Spray Bond Technical Data Sheet.pdf Attached 10_RQ13-004 Spray Bond MSDS.pdf

Adhesive on support brackets for EN (Veracruz) Headliner

Adhesive specification



Assembly flows

1. Press the steel stiffener
2. Apply spray bond to the stiffener
3. Press headlining assembly with the stiffener

※ Hyundai did not specify Hot Melt for the Veracruz headliner. Hyundai has learned the supplier, NVH Korea, initiated the application of Hot Melt on the ends of the Veracruz support brackets.

Adhesive	Picture	Name	Purpose	Supplier	Performance Report
Hot-glue		SJ-2004	For interior trim of vehicle	(OKONG)	Attached 10_RQ13-004 Hot Melt Technical Data Sheet.pdf Attached 10_RQ13-004 Hot Melt MSDS.pdf
Spray bond		DC-710SP	For interior trim of vehicle	(DKC)	Attached 10_RQ13-004 Spray Bond Technical Data Sheet.pdf Attached 10_RQ13-004 Spray Bond MSDS.pdf

Page 1

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Page 1

{Entire Page Redacted}

Page 2

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Page 3

{Entire Page Redacted}

RQ13-004

HYUNDAI-KIA

3-3-2014

RESPONSE TO REQUEST 11

Page 1

{Entire Page Redacted}

Page 2

{Entire Page Redacted}

Page 3

{Entire Page Redacted}

Page 4

{Entire Page Redacted}

Page 5

{Entire Page Redacted}

Page 6

{Entire Page Redacted}

Page 7

{Entire Page Redacted}

Page 8

{Entire Page Redacted}

Page 9

{Entire Page Redacted}

Page 10

{Entire Page Redacted}

Page 111

{Entire Page Redacted}

Page 12

{Entire Page Redacted}

Page 13

{Entire Page Redacted}

Page 14

{Entire Page Redacted}

Page 15

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Page 16

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Page 21

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Page 22

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Page 23

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Page 24

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Page 25

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Page 26

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RQ13-004

HYUNDAI-KIA

3-3-2014

RESPONSE TO REQUEST 12

Hyundai Response to Request 12

NHTSA RQ13-004

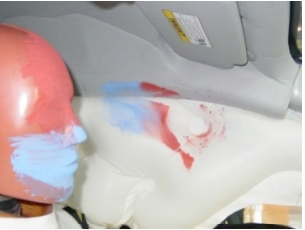
Elantra Touring Side-Impact Test Summary

■ Elantra Touring Curtain Airbag Test List

● Curtain Airbag deployment Test - Full car crash test list

No	Market	Test mode	Step	Sunroof or None	Test Place	Test Date (YY-MM-DD)
1	US	62kph 27deg side	P1	non-sunroof	HMC Namyang Lab.	07-04-20
2			F1	↑	↑	07-08-11
3			P1	↑	↑	08-03-19
4			P1	↑	↑	08-05-31
5			M	↑	↑	08-08-18
6		50kph side	F1	↑	↑	07-06-27
7	EU	50kph side	P2	↑	↑	07-06-12
8			P2	↑	↑	07-09-14
9			M	↑	↑	08-08-04
10			P1	↑	↑	08-09-09
11			P2	↑	↑	07-04-13
12			P2	↑	↑	07-03-20
13			P2	↑	↑	07-03-08
14		29kph side pole	M	↑	↑	08-07-10
15			P2	↑	↑	07-06-19
16			P2	↑	↑	07-04-06
17			P1	↑	↑	07-01-25
18	Common	25kph side	P1	↑	↑	07-08-09
19			P2	↑	↑	07-06-04
20			P1	↑	↑	07-01-10
21		32kph side	P1	↑	↑	07-08-06
22			P2	↑	↑	07-06-07
23			M1	↑	↑	07-03-31
24			P1	↑	↑	07-01-17

■ Elantra Touring CAB deployment test photographs

item		SINCAP (62kph US 27deg Side)				
		1.P1_WGN	2.F1_WGN	3.P1_WGN	4.P1_WGN	5.M_WGN
Test Date (YY-MM-DD)		07-04-20	07-08-11	08-03-19	08-05-31	08-08-18
Sunroof or None		Non-sunroof	Non-sunroof	Non-sunroof	Non-sunroof	Non-sunroof
Test place		HMC Namyang Lab.	HMC Namyang Lab.	HMC Namyang Lab.	HMC Namyang Lab.	HMC Namyang Lab.
FRT	Inner					
	Outer					

■ Elantra Touring CAB deployment test photographs

		50kph Side				
item		7.P2_EU	6.F1_WGN_US	8.P2_WGN_EU	9.M_EU	10.P1(EU)
Test Date (YY-MM-DD)		07-06-12	07-06-27	07-09-14	08-08-04	08-09-09
Sunroof or None		Non-sunroof	Non-sunroof	Non-sunroof	Non-sunroof	Non-sunroof
Test place		HMC Namyang Lab.	HMC Namyang Lab.	HMC Namyang Lab.	HMC Namyang Lab.	HMC Namyang Lab.
FRT	Inner					
	Outer					

■ Elantra Touring CAB deployment test photographs

item		50kph Side			25kph Side	
		11.P2	12.P2	13.P2	18.P1_WGN	19.P2
Test Date (YY-MM-DD)		07-04-13	07-03-20	07-03-08	07-08-09	07-06-04
Sunroof or None		Non-sunroof	Non-sunroof	Non-sunroof	Non-sunroof	Non-sunroof
Test place		HMC Namyang Lab.	HMC Namyang Lab.	HMC Namyang Lab.	HMC Namyang Lab.	HMC Namyang Lab.
FRT	Inner					
	Outer					

■ Elantra Touring CAB deployment test photographs

item		25kph SIDE	32kph SIDE			
		20.P1	21.P1_WGN	22.P2	23.M1	24.P1
Test Date (YY-MM-DD)		07-01-10	07-08-06	07-06-07	07-03-31	07-01-17
Sunroof or None		Non-sunroof	Non-sunroof	Non-sunroof	Non-sunroof	Non-sunroof
Test place		HMC Namyang Lab.	HMC Namyang Lab.	HMC Namyang Lab.	HMC Namyang Lab.	HMC Namyang Lab.
FRT	Inner					
	Outer					

■ Elantra Touring CAB deployment test photographs

		29kph SIDE Pole			
item		14.M_WGN	15.P2	16.P2	17.P1
Test Date (YY-MM-DD)		08-07-10	07-06-19	07-04-06	07-01-25
Sunroof or None		Non-sunroof	Non-sunroof	Non-sunroof	Non-sunroof
Test place		HMC Namyang Lab.	HMC Namyang Lab.	HMC Namyang Lab.	HMC Namyang Lab.
FRT	Inner				
	Outer				

ADR 72/00
VEHICLE COMPLIANCE TESTING OF
DYNAMIC SIDE IMPACT OCCUPANT PROTECTION
HYUNDAI I30 HATCHBACK 09MY

REPORT NO. : L4-FD-084
TEST DATE : MAR. 8, 2007
REPORT DATE : MAR. 15, 2007

PREPARED BY CRASH PERFORMANCE DEVELOPMENT TEAM 1
HYUNDAI MOTOR COMPANY

CIRCULATION : CAR BODY ENGINEERING TEAM 1
CHASSIS & POWERTRAIN ENGINEERING TEAM 1
TRIM ENGINEERING TEAM 1
CHASSIS & SAFETY CONTROL DESIGN TEAM
QUALITY STRATEGY TEAM
CERTIFICATION & REGULATION TEAM

MODEL / YEAR : i30 HATCHBACK/ 2009

VEHICLE NO. :

TEST & SPECIFICATION : ADR 72/00

" DYNAMIC SIDE IMPACT OCCUPANT PROTECTION"

TEST RESULT : PASS

I hereby certify that the contents of this report are true and correct to the best of my knowledge.



PREPARED BY

(S.Y.LEE)



APPROVED BY

(Y.H.BACK)



APPROVED BY

(M.S.KIM)

MAR. 15, 2007

DATE

TABLE OF CONTENTS

	PAGE
1. PURPOSE -----	4/6
2. TEST PROCEDURE -----	4/6
2.1 Requirements	
2.2 Test Procedure Utilized	
2.3 Test Preparation	
3. TEST RESULTS -----	6/6
4. CONCLUSION -----	6/6

APPENDIX

A. DATA SHEETS

B. VEHICLE AND EURO-SID RESPONSE DATA

C. PHOTOGRAPHS

D. CALIBRATION SHEET

E. SUMMARY OF EVIDENCE REPORT

1. PURPOSE

The purpose of this compliance test was to determine whether a HYUNDAI I30 HATCHBACK conducted a 50kph dynamic side impact occupant protection test with the **mid dummy's position** would meet the requirements of ADR 72/00 "Dynamic Side Impact Occupant Protection".

2. TEST PROCEDURE

2.1 Dynamic performance requirements

2.1.1 HPC

The Head performance criterion(HPC) shall be less than or equal to 1000 ; when there is no head contact, then the HPC shall not be measured or calculated but recorded as "No head contact".

2.1.2 Thorax

The thorax performance criteria shall be ;

- (a) Rib Deflection Criterion (RDC) less than or equal to 42 mm ;
- (b) soft tissue criterion ($V \cdot C$) less than or equal to 1.0 m/sec.

2.1.3 Pelvis

The pelvis performance criterion shall be :.

Pubic Symphysis Peak Force (PSPF) less than or equal to 6 kN.

2.1.4 Abdomen

Abdominal peak force (APF) less than or equal to 2.5 kN internal force(equivalent to external force of 4.5kN)..

2.1.5 Particular requirements :

2.1.5.1 No door must open during the test.

2.1.5.2 After impact test, it shall be possible without the use of tools :

- (a) to open sufficient of doors provided for normal entry and exit of passengers to allow evacuation of all occupants ;
- (b) to release the dummy from the protective system ;
- (c) to remove the dummy from the vehicle.

2.1.5.3 No interior device or component must become detached in such a way as noticeably to increase the risk of injury from sharp projections or jagged edges.

2.1.5.4 Ruptures resulting from permanent deformation are acceptable ; provided these do not increase the risk of injury.

2.1.5.5 If there is continuous leakage of liquid from the fuel-feed installation after the collision, the rate of leakage must not exceed 30g/min; if the liquid from the fuel-feed system mixes with liquids from the other systems and the various liquids cannot easily be separated and identified,

all the liquids collected must be taken into account in evaluating the continuous leakage.

2.2 Test procedure utilized

Refer to the IMPACT TEST PROCEDURE of ADR 72/00

2.3 Test preparation

3-D H machine was seated in the front seating position on the struck side of the car according to dummy placement instruction specified in the PROCEDURE FOR DETERMINING THE "H" POINT AND THE ACTUAL TORSO ANGLE FOR SEATING POSITIONS IN MOTOR VEHICLE of ANNEX 3.

And Euro-sid dummy was seated in the front seating position with the mid position

The other front seat was adjusted to the same position as the seat containing the dummy and the steering wheel was positioned to the mid-travel location.

The test dummy was restrained using available belt system.

All test vehicle doors were fully closed and latched but not locked.

The fuel tank was filled 90 % of its rated capacity with water.

The test vehicle's struck side windows and opposite side windows were placed in the fully closed location .

The transmission was placed in neutral and the parking brake was disengaged.

3. TEST RESULTS

All portion of the test dummy remained within the passenger compartment throughout the test.

3.1 ADR 72/00 “Dynamic Side Impact Occupant Protection”

3.1.1 Injury Criteria

ITEMS		ALLOWED RESULTS PER SIDE IMPACT	DUMMY
HPC (Head Performance Criterion)		1000	42.41
RDC (Rib Deflection Criterion)	UPPER	42 mm	20.17
	MID		14.40
	LOWER		18.27
VC (Viscous Criterion)	UPPER	1.0 m/s	0.15
	MID		0.10
	LOWER		0.13
APF (Abdominal Peak Force)		2.5 kN	0.92
PSPF (Pubic Symphysis Peak Force)		6.0 kN	1.47

3.1.2 Particular information

REQUIREMENT ITEMS		ALLOWED RESULTS PER SIDE IMPACT	MEASUREMENTS
Impact Point		± 25 mm	LOW 0 mm, LEFT 7 mm
Door Opening	During the test	Not open	PASS
	After the impact	Open a sufficient number of doors	PASS
Sharp Projection or Jagged Edges		No Jagged edges	PASS
Fuel Leakage		30 g/m	PASS

4. CONCLUSION

The HYUNDAI I30 HATCHBACK 09MY conducted at the rate of 50 kph with the mid dummy's position for the European side impact test met the requirements of the ADR 72/00 "Dynamic Side Impact Occupant Protection".

APPENDIX "A"

DATA SHEETS

TEST VEHICLE INFORMATION AND TEST DATA

	PAGE
1 GENERAL TEST VEHICLE PARAMETER DATA -----	A – 2/14
2 H POINT LOCATION AND ACTUAL TORSO ANGLE CHECK -----	A - 6/14
3 TEST VEHICLE SUMMARY OF RESULTS -----	A – 7/14
4 MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS -----	A – 9/14
5 POST DATA OBSERVATIONS -----	A – 10/14
6 SID INSTRUMENTATION DATA -----	A – 12/14
7 SID LONGITUDINAL CLEARANCE DIMENSIONS -----	A – 13/14
8 SID LATERAL CLEARANCE DIMENSIONS -----	A – 14/14

DATA SHEET 1
GENERAL TEST VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

TEST FACILITY : T03284(150, HyundaiYeonguso-ro, Hwaseong-si, Gyeonggi-do, 445-706, Korea)

MODEL YEAR/MAKE/MODEL: 2009/HMC/i30BODY STYLE: 5 DOOR HATCHBACK VIN : _____BUILD DATE: MAR. 2007ENGINE DATA: 4 cylinders; _____ CID; _____ Liter; 1600 ccPlacement _____ longitudinal; or ☐ lateralTRANSMISSION: 5 speed; ☐ manual; _____ automatic; ☐ overdriveFINAL DRIVE: _____ rear wheel drive; ☐ front wheel drive; _____ four wheel driveODOMETER READING: 16 km.OPTIONS: ☐ A/C; ☐ pwr. steering; ☐ pwr. brakes; ☐ pwr. windows**DATA RECORDED FROM VEHICLE'S TIRE PLACARD:**TIRE PRESSURE (AT CAPACITY): 30 psi , Front; 30 psi RearRECOMMENDED TIRE SIZE: 205/55R16TIRES ON VEHICLE: 195/R16 Mfr.: KUMHO**VEHICLE CAPACITY DATA:**Number of Occupants: 2 front; 3 rear 5 TotalType of Front Seat(s): ☐ buckets; _____ bench; _____ split benchType of Front Seat Back: _____ fixed; ☐ adjustable with lever

Vehicle Maximum Capacity Loading = _____ kg. (A)

Number of Occupants X 68.0 kg. = 340 kg. (B)

Vehicle Cargo Capacity = _____ kg.

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Right Front = 421 kg. Right Rear = 259 kg.
 Left Front = 440 kg. Left Rear = 255 kg.
 Total Front = 861 kg. Total Rear = 514 kg.
 TOTAL WEIGHT = 1375 kg.

Percent of Total Weight --

Percent Front = 62.6% Percent Rear = 37.4 %

CALCULATION OF TEST VEHICLE TARGET WEIGHT:Total Vehicle Delivered Weight/Max. Fluids = 1435 kg. (A)Mass of measuring apparatus = 20 kg. (B)

Weight of Side Impact Dummies (SIDs)
 (1 or 2 x (instrumented SID weight) kg.) = 80 kg. (C)

TEST VEHICLE TARGET WEIGHT (A + B + C) = 1535 kg.**FULLY LOADED TEST VEHICLE (UDVW + 1 or 2 SID(s) + CARGO):**

Right Front = kg. Right Rear = kg.
 Left Front = kg. Left Rear = kg.
 Total Front = kg. Total Rear = kg.
 Percent Front = Percent Rear =
 TOTAL WEIGHT = kg.

AS TESTED WT. OF VEH. (1 or 2 SID(s) + CARGO + EQUIP. & INSTRUMENTATION):

Right Front = 470 kg. Right Rear = 326 kg.
 Left Front = 504 kg. Left Rear = 325 kg.
 Total Front = 974 kg. Total Rear = 651 kg.
 TOTAL WEIGHT = 1625 kg.
 Percent Front = 60.0 % Percent Rear = 40.0 %

TEST VEHICLE ATTITUDE:**AS DELIVERED****FULLY LOADED****READY FOR TEST**Right Front = 663 mmRight Front = mmRight Front = 649 mmLeft Front = 659 mmLeft Front = mmLeft Front = 643 mmRight Rear = 674 mmRight Rear = mmRight Rear = 663 mmLeft Rear = 674 mmLeft Rear = mmLeft Rear = 661 mmTest Vehicle Wheelbase = 2650 mmC.G. = 1060 mm rearward of front wheel centerline

Total Vehicle Length:

Centerline = 4245 mm**FRONT SEAT CUSHION PLACEMENT:**Total Length of Adjustment Travel = 240 mmTotal Number of Adjustment Positions or Detents = 24**FRONT SEAT BACK ADJUSTMENT POSITION:**Seat Back Torso Angle = 21 degrees**ADJUSTABLE STEERING COLUMN POSITION:****WINDOW POSITIONS:**Right Front = closedRight Rear = closedLeft Front = closedLeft Rear = closed

AMOUNT OF WATER IN FUEL TANK:

Volume = 50 liters (90% of Useable Capacity)

REMARKS:

RECORDED BY: _____ DATE: : MAR. 15, 2007

APPROVED BY: _____

DATA SHEET 2
H POINT LOCATION AND ACTUAL TORSO ANGLE CHECK

MODEL YEAR/MAKE/MODEL: 2009/HMC/Elantra GT

BODY STYLE: 5 DOOR HATCHBACK VIN: _____

BUILD DATE : MAR, 2007 TEST DATE: MAR, 8, 2007

RELATIONSHIP BETWEEN MEASURED DATA AND DESIGN SPECIFICATION

H-POINT

	REQUIREMENT	DESIGN SPEC	MEASURED DATA	RELATIVE POSITION
T	± 25	231	241	10
L	± 25	422	422	0
H	± 25	211	202	9

TORSO ANGLE

REQUIREMENT	DESIGN ANGLE	MEASURED ANGLE	RELATIONSHIP
$\pm 5^\circ$	21°	21°	0°

RECORDED BY: _____ DATE: : MAR. 15, 2007

APPROVED BY: _____

DATA SHEET 3
TEST VEHICLE SUMMARY OF RESULTS

MODEL YEAR/MAKE/MODEL: 2009/HMC/I30

BODY STYLE: 5 DOOR HATCHBACK VIN: _____

BUILD DATE : MAR, 2007 TEST DATE: MAR, 8, 2007

Vehicle Overall Length = 4245 mm Vehicle Overall Width = 1775 mm

VEHICLE TEST WEIGHT (Pretest):

Left Front = 504 kg. Left Rear = 325 kg.

Right Front = 470 kg. Right Rear = 326 kg.

TOTAL Front = 974 kg. TOTAL Rear = 651 kg.

TOTAL Vehicle Test Weight = 1625 kg.

Wheelbase = 2650 mm

Longitudinal C.G. from center of front axle = 1060 mm

IMPACT POINT:

Actual Impact Point = 7 mm [**forward** or forward] of nominal impact ref. line
(LATERAL)

Actual Impact Point = 0 mm [above or **below**] nominal impact point
(VERTICAL)

TEST TEMPERATURE

Temperature of the test dummy at the time of impact test = 21 °C

MOVING BARRIER VELOCITY

Trap No 1 = 50.2 kph : Trap No 2 = 50.2 kph

MEASURED BY LASER BASED VELOCITY MEASUREMENT ;
20041110 : SERIAL NO. : K.M.L.I. : MODEL & MAKER

OCCUPANTS:

DRIVER

Dummy ID: EURO-SID # 97Restraint Used: MANUAL SEAT BELT**INSTRUMENTATION:**Number of Data Channels = 50

Number of Cameras:

Onboard = 0Offboard = 5Total Cameras = 5

REMARKS:

RECORDED BY: _____ DATE: MAR.15, 2007

APPROVED BY: _____

DATA SHEET 4
MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

MDB SPECIFICATIONS:

Overall Width of Framework Carriage = _____ mm

Overall Length of MDB = _____ mm (including honeycomb impact face)

Wheelbase of Frame work Carriage (front and rear) = _____ mm

C.G. location (rearward of front axle) = _____ mm

MDB WEIGHT:

Left Front = _____ kg. Left Rear = _____ kg.

Right Front = _____ kg. Right Rear = _____ kg.

Total Front = _____ kg. Total Rear = _____ kg.

TOTAL WEIGHT OF MDB = _____ kg.

Impact Angle (MDB centerline to target vehicle centerline) = 90 degreesImpact Speed = 50.2 km/hrRECORDED BY: _____ DATE: MAR,15, 2007

APPROVED BY: _____

DATA SHEET 5 POST TEST OBSERVATIONS

TEST VEHICLE: 130

VISIBLE DUMMY CONTACT POINTS:

	DUMMY
HEAD	CURTAIN AIR BAG
UPPER TORSO	SIDE AIR BAG
LOWER TORSO	SIDE AIR BAG
LEFT KNEE	NO CONTACT
RIGHT KNEE	DOOR TRIM PANEL

VEHICLE INFORMATION

		MEASUREMENTS
Door Opening	During the test	NONE
	After the impact	OPEN
Sharp Projection or Jugged Edges		NONE
Fuel Leakage		NONE

SEAT MOVEMENT:

Front = NONE

Rear = NONE

GLAZING DAMAGE:

Window: FRONT AND REAR RIGHT WINDOW SIDE BREAKAGE

PILLAR PERFORMANCE:

☐

NO FAILURE

SILL SEPARATION:

NO SEPARATION

OTHER NOTABLE IMPACT EFFECTS:

REMARKS:

RECORDED BY: _____ DATE: : MAR.15, 2007

APPROVED BY: _____

DATA SHEET 6 **SID INSTRUMENTATION DATA**

TEST VEHICLE: I30

		SID ID#			
		Positive		Negative	
		max	Time (msec)	max	Time (msec)
Head Performance Criterion ®		No Head Contact			
Thorax Performance Criteria					
Chest Deflection (mm)	UPPER	20.17	59		
	MID	14.40	57.9		
	LOWER	18.27	35.8		
Viscous Criterion (m/s)	UPPER	0.15	52.7		
	MID	0.10	53.5		
	LOWER	0.13	20.4		
Abdominal Protection Criterion (kN)		0.92	50.2		
Pelvis Performance Criterion (kN)		1.47	43.5		

REFERENCE:

Positive Direction: Longitudinal (X) = Rearward

 Lateral (Y) = To Right

 Vertical (Z) = Up

Negative Direction: Longitudinal (X) = Forward

 Lateral (Y) = To Left

 Vertical (Z) = Down

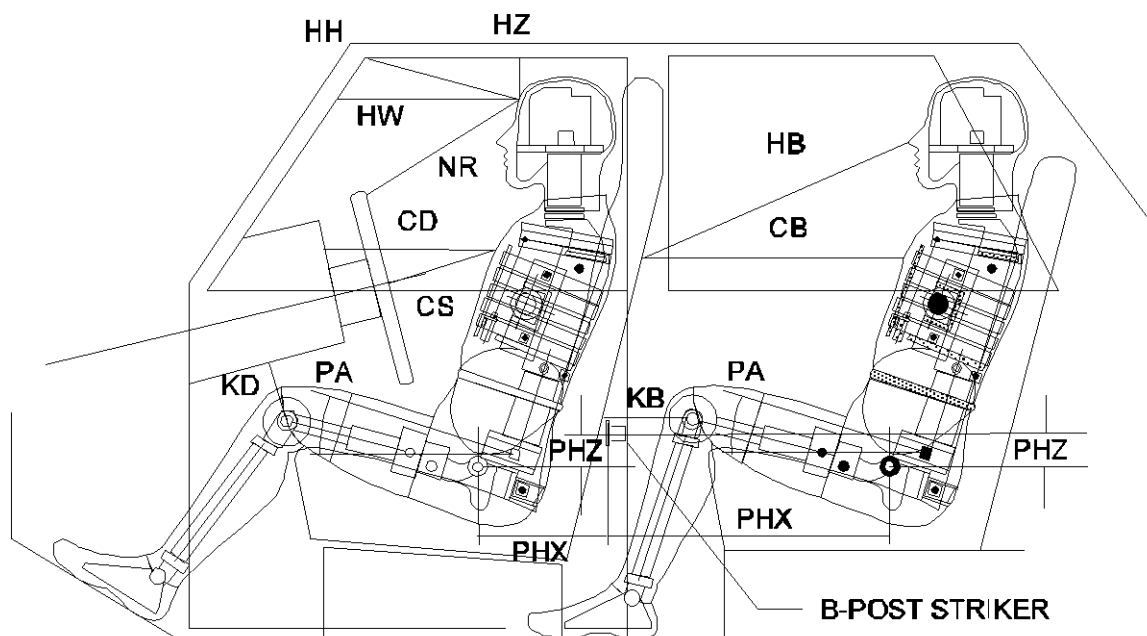
REMARKS:

RECORDED BY: _____ DATE: : MAR.15, 2007

APPROVED BY: _____

DATA SHEET 8 **SID LONGITUDINAL CLEARANCE DIMENSIONS**

TEST VEHICLE: 130

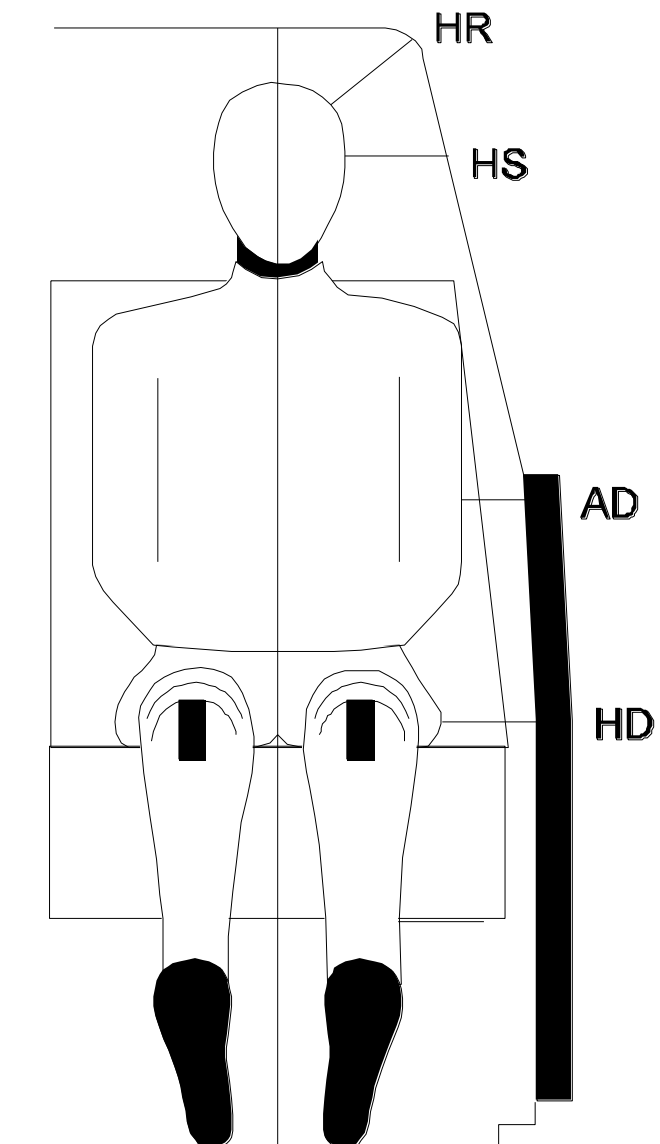


LEFT SIDE VIEW

NOTE: 2-DOOR VEHICLE SHOWN.
 REAR DUMMY PHX & PHZ
 MEASUREMENTS FOR A 4-DOOR
 VEHICLE WOULD USE THE C-POST
 STRIKER AS A REFERENCE POINT

MEASUREMENT (mm)	DUMMY ID# <u>97</u>
HH	128
HW	586
HZ	140
NR	439
CD/CB	561
CS	319
KDL/KDR	182/145
PA	
PHX	241
PHZ	202

DATA SHEET 9

EURO-SID LATERAL CLEARANCE DIMENSIONSTEST VEHICLE: 130

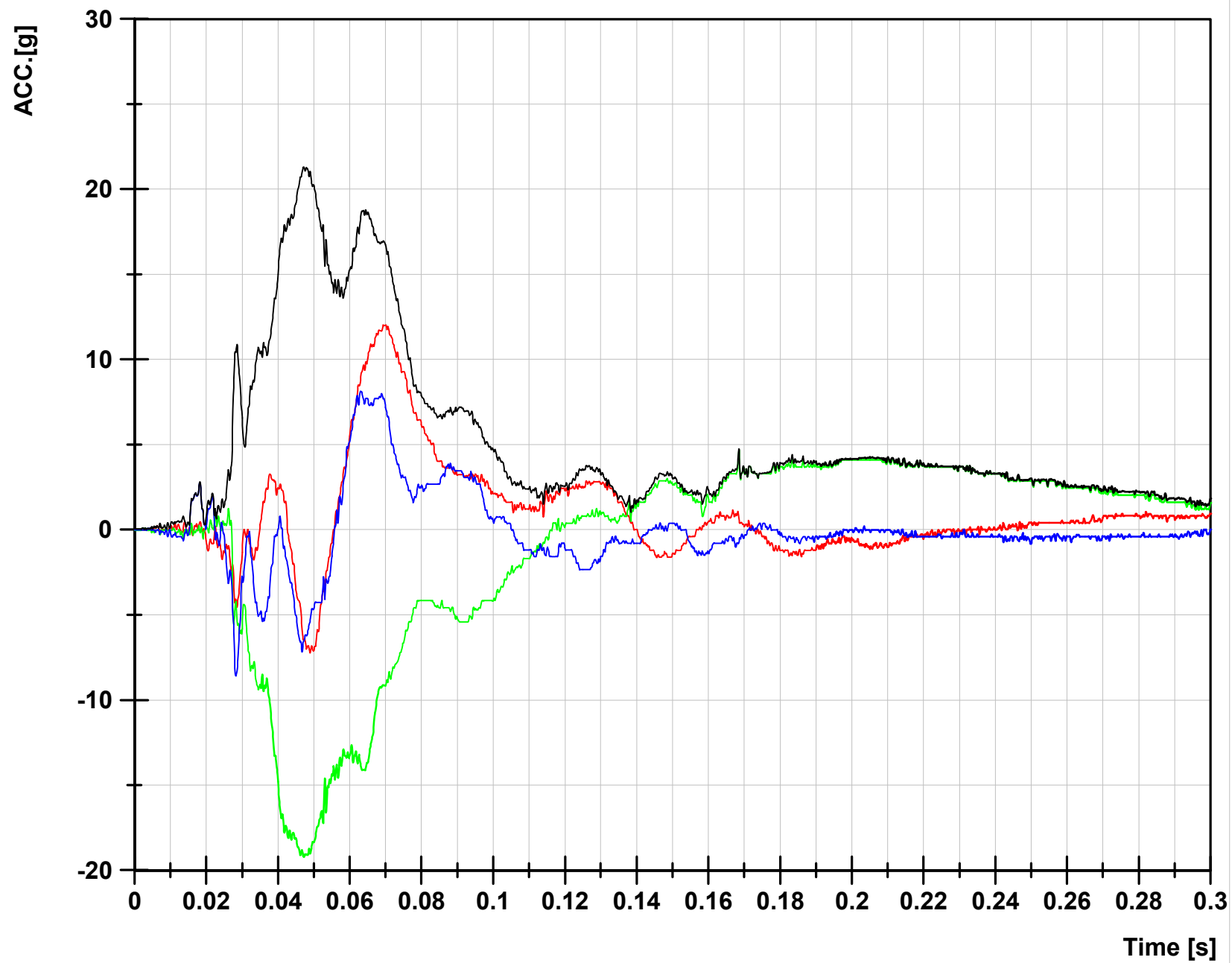
MEASUREMENT(mm)	DUMMY ID# <u>97</u>
HR	235
HS	324
AD	101
HD	163

APPENDIX "B" DATA PLOTS

1. DR_Head_acc.
2. RIB DISP.
3. RIB VC
4. ABDOMEN Force
5. PUBIC Force

Test No. : c070308a

Test Date :



DRV Head_Acc

— 21HEADCG00E2ACXA

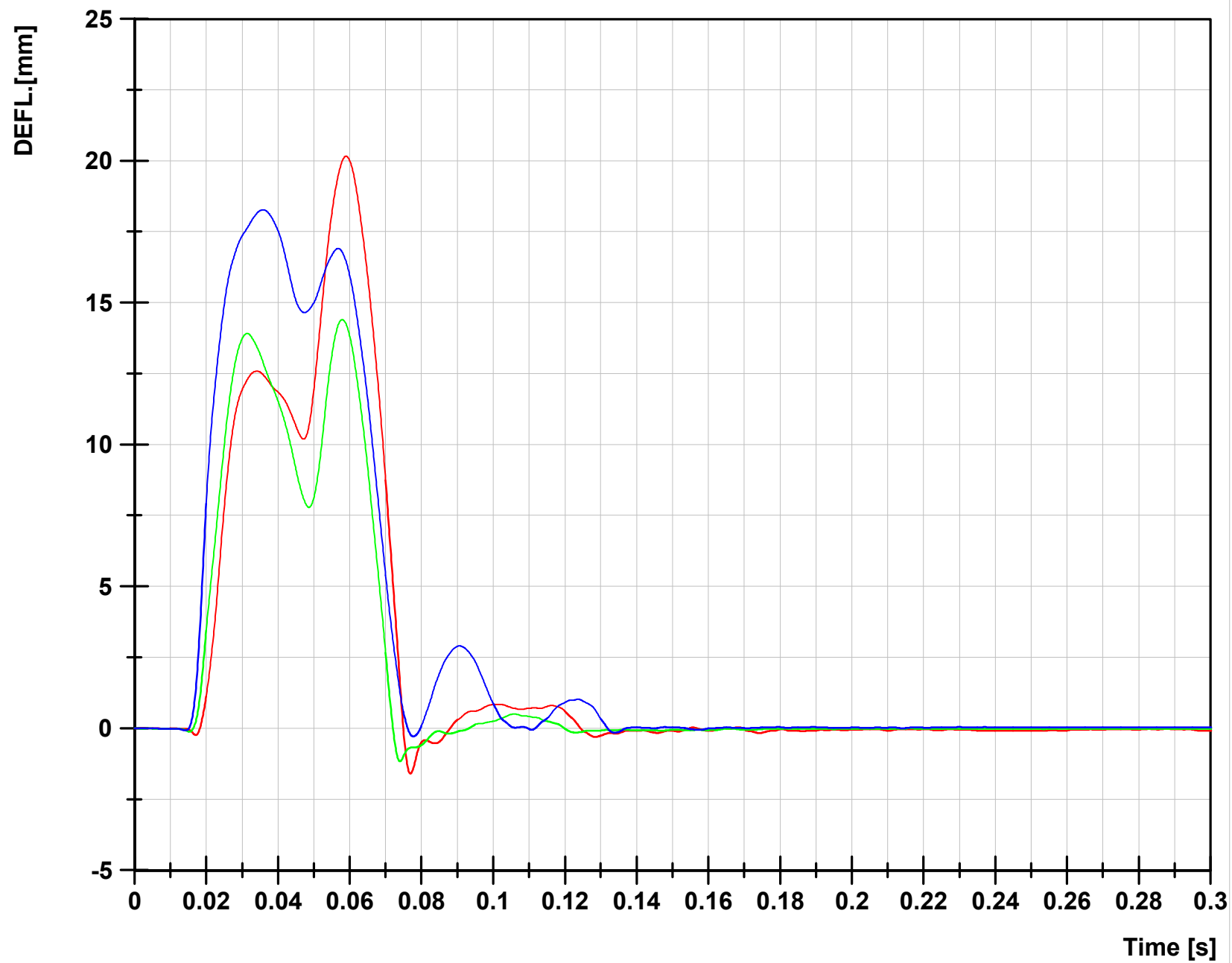
— 21HEADCG00E2ACYA

— 21HEADCG00E2ACZA

— 21HEADCG00E2ACRA

Test No. : c070308a

Test Date :



RIB Displacement

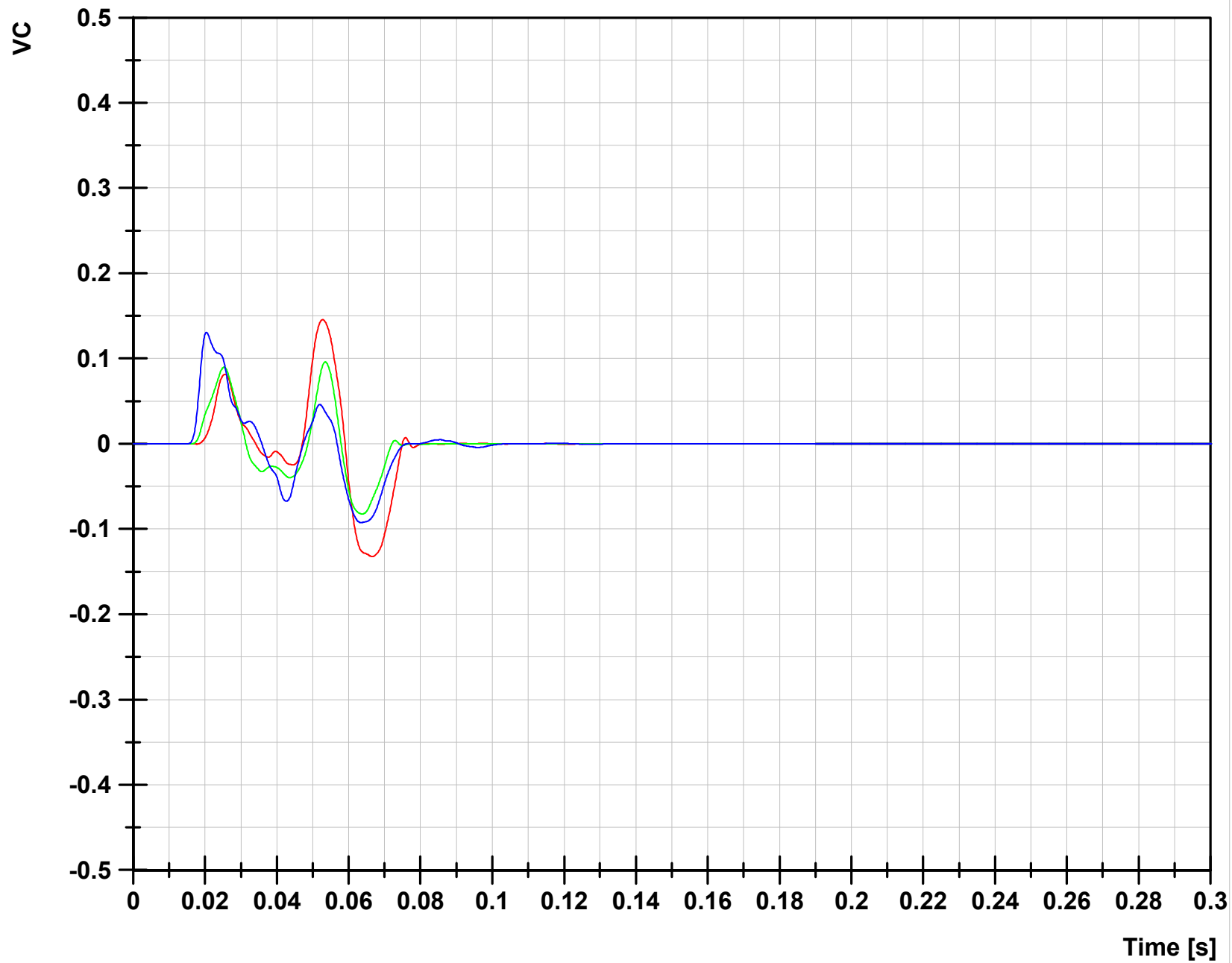
— 21RIBSUP00E2DSYC

— 21RIBSMI00E2DSYC

— 21RIBSLO00E2DSYC

Test No. : c070308a

Test Date :



RIB VC

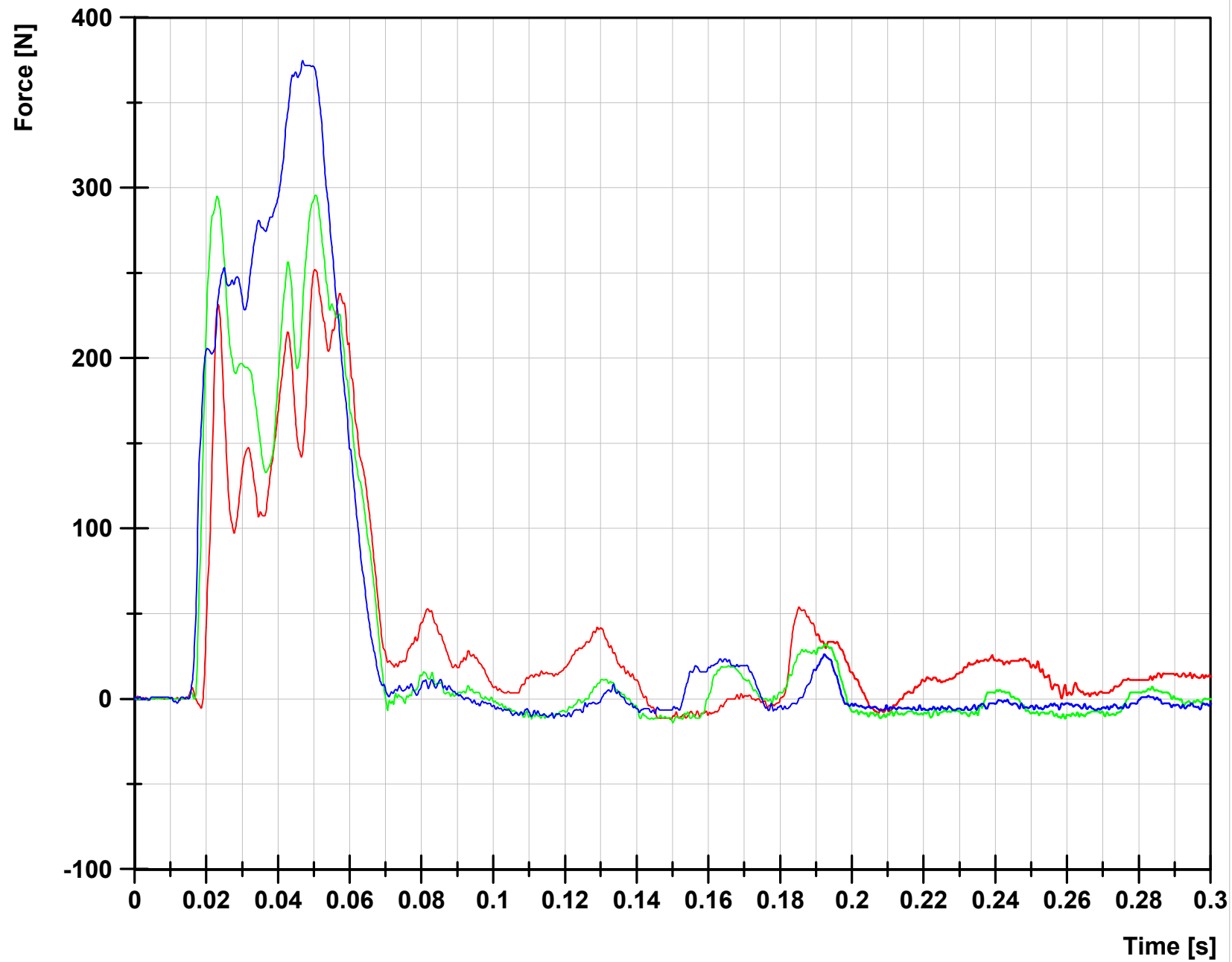
— DR_RIB_UPR_VC

— DR_RIB_MID_VC

— DR_RIB_LWR_VC

Test No. : c070308a

Test Date :



ABDOMEN

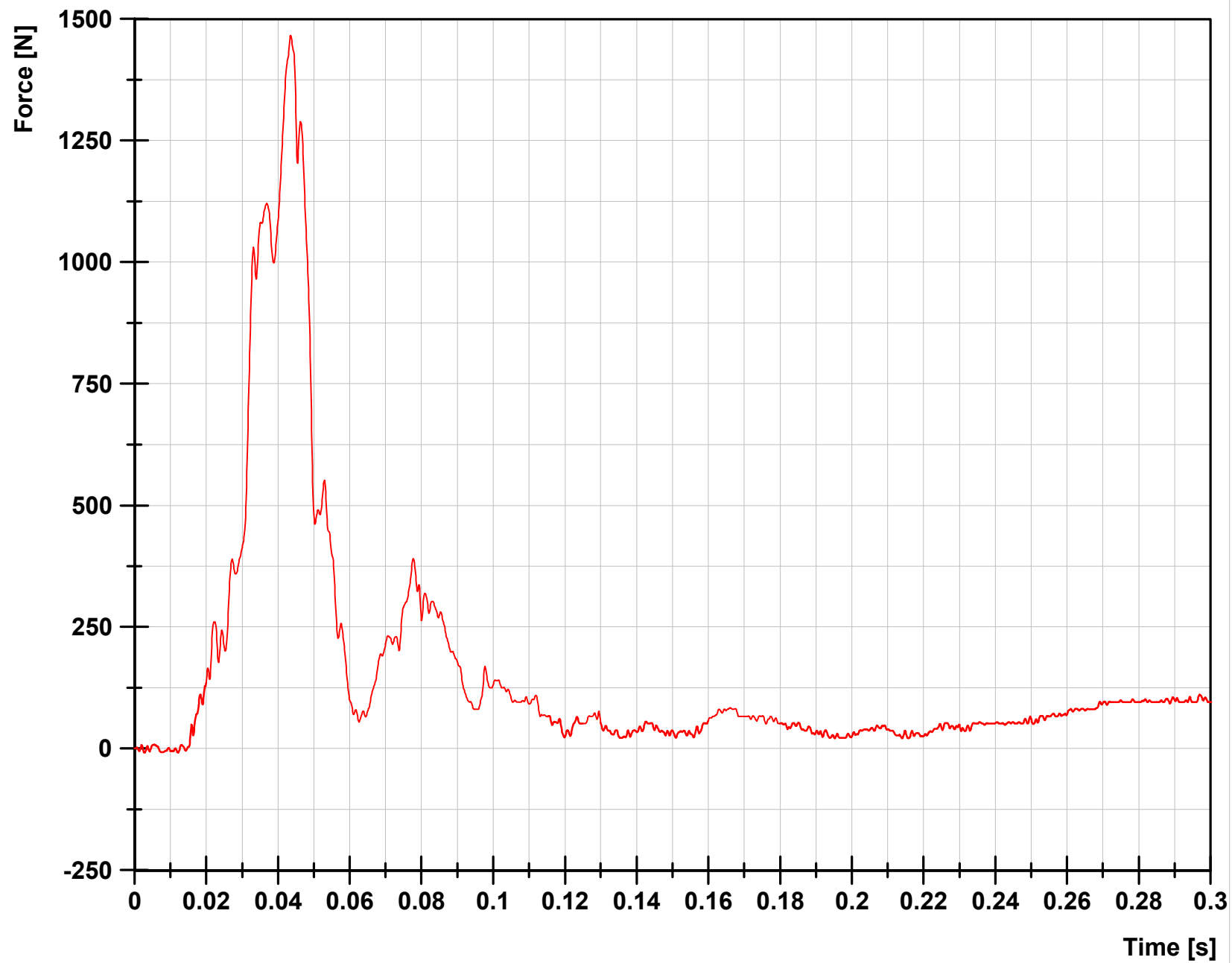
— 21ABDOFR00E2FOYB

— 21ABDOMI00E2FOYB

— 21ABDORE00E2FOYB

Test No. : c070308a

Test Date :

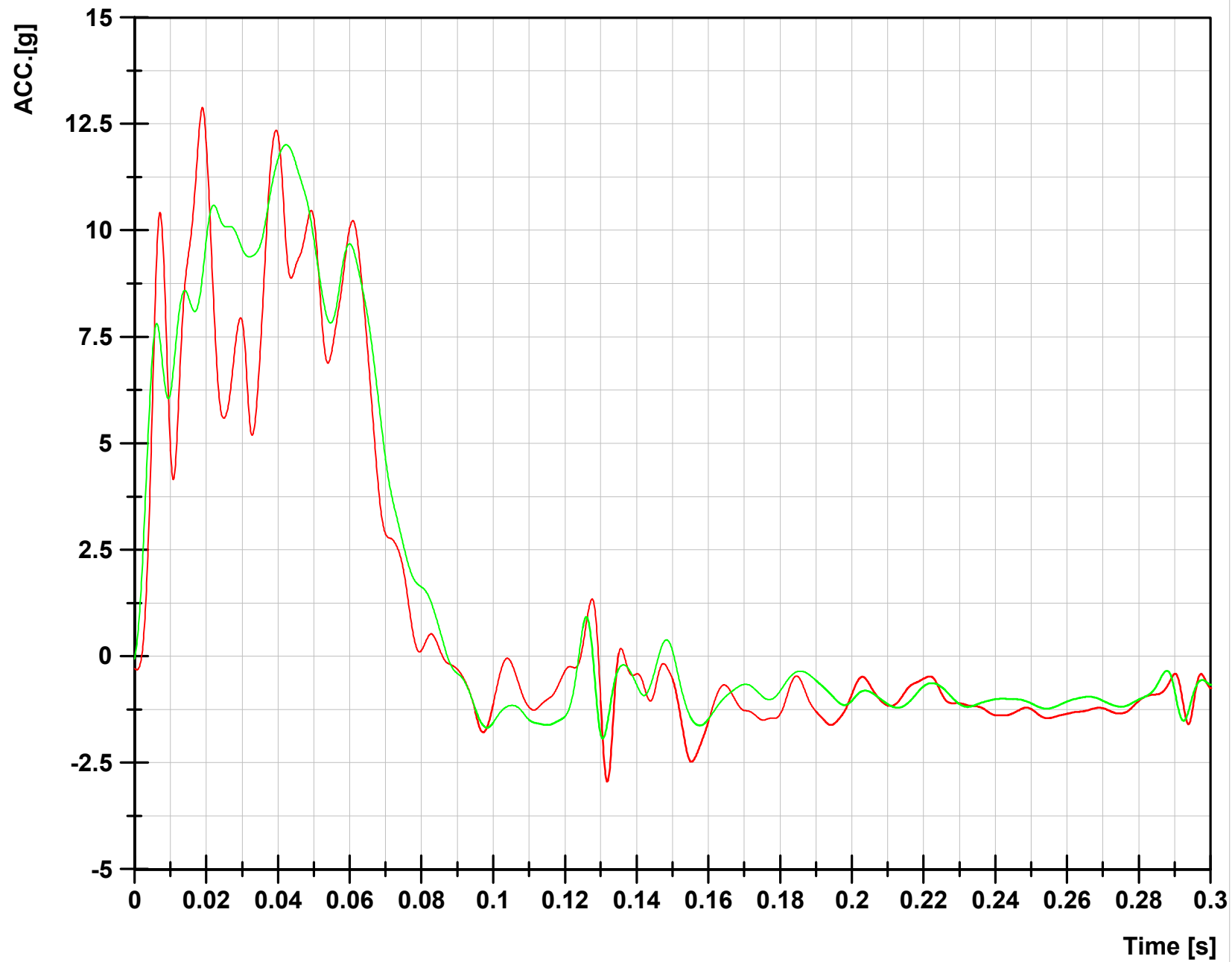


PUBIC

— 21PUBC0000E2FOYB

Test No. : c070308a

Test Date :



BODY LH/RH Pulse
(B-PLR LWR)

APPENDIX “C”

PHOTOGRAPHS

		PAGE
1	FRONT & ENGIN COMPARTMENT VIEW -----	C – 2/9
2	REAR QUARTER VEIW -----	C – 3/9
3	LEFT SIDE VIEW -----	C – 4/9
4	RIGHT SIDE VIEW -----	C – 5/9
5	FRONT UNDERBODY VIEW -----	C – 6/9
6	REAR UNDERBODY VEIW -----	C – 7/9
7	DRIVER DUMMY AND DOOR OPEN VIEW -----	C - 8/9
8	CLOSEUP VIEW OF IMPACT POINT -----	C – 9/9



1. Pretest Front & Engine Compartment View



2. Post Test Front & Engine Compartment View



3. Pretest Rear Quarter View



4. Post test Quarter View



5. Pretest Left Side View



6. Post test Left Side View



7. Pretest Right Side View



8. Post test Right Side View



9. Pretest Front Underbody View



10. Post test Front Underbody View



11. Pretest Rear Underbody View



12. Post test Rear Underbody View



13. Pretest Driver Dummy View



14. Post test Driver Dummy View



15. Prestest Closeup View of Impact Point



16. Post test Closeup View of Impact Point

FMVSS 214 “ SIDE IMPACT PROTECTION ”
FMVSS 301 “FUEL SYSTEM INTEGRITY”
VEHICLE COMPLIANCE TESTING OF
38.5 mph 27° SIDE IMPACT TEST
(EQUIPPED WITH SIDE AIRBAGS)
HYUNDAI ELANTRA TOURING 2009MY

REPORT NO. : L4-FDW-066
TEST DATE : AUG. 18, 2008
REPORT DATE : AUG. 30, 2008

PREPARED BY CRASH PERFORMANCE DEVELOPMENT TEAM
NAMYANG RESEARCH & DEVELOPMENT CENTER
LOCATED IN NAMYANG
HYUNDAI MOTOR COMPANY

CIRCULATION : BODY ENGINEERING TEAM 2,
CHASSIS & POWER TRAIN ENGINEERING TEAM 2,
TRIM ENGINEERING TEAM 2,
RESIDENT ENGINEERING TEAM 2,
QUALITY STRATEGY TEAM
CERTIFICATION & REGULATION TEAM

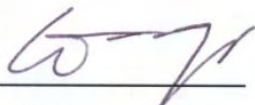
MODEL / YEAR : ELANTRA TOURING / 2009 MY

VEHICLE NO. :

TEST & SPECIFICATION : FMVSS 214 "SIDE IMPACT PROTECTION"
FMVSS 301 "FUEL SYSTEM INTEGRITY"

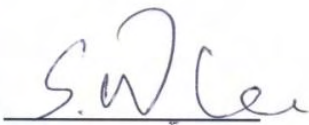
TEST RESULT : PASS

I hereby certify that the contents of this report are true and correct to the best of my knowledge.



PREPARED BY

(S. Y. LEE)



APPROVED BY

(S. W. LEE)



APPROVED BY

(Y. H. BAEK)

AUG. 30. 2008
DATE

TABLE OF CONTENTS

	PAGE
1. PURPOSE -----	4/7
2. TEST PROCEDURE -----	4/7
2.1 Requirements	
2.2 Test Procedure Utilized	
2.3 Test Preparation	
3. TEST RESULTS -----	6/7

APPENDICES

A. Check Lists

B. Data Plots

C. Photographs

1. PURPOSE

The purpose of this compliance test was to determine whether the HYUNDAI ELATRA TOURING conducted a 38.5 mph side impact test (equipped with side airbags) would meet the requirements of FMVSS 214 with regard to the "SIDE IMPACT PROTECTION" and FMVSS 301 with regard to the "FUEL SYSTEM INTEGRITY".

2. TEST PROCEDURE

2.1 Requirements

2.1.1 Dynamic Performance Requirements

2.1.1.1 Thorax

The TTI(Thoracic Trauma Index) shall not exceed 85g's for passenger cars with 4 side doors, and shall not exceed 90g's for passenger cars with 2 side doors.

2.1.1.2 The peak lateral acceleration of pelvis shall not exceed 130 g's.

2.1.1.3 Door opening

Any side door, which is struck by the moving deformable barrier, shall not separate totally from the car.

Any door (including a rear hatchback or tailgate), which is not struck by the moving deformable barrier, shall meet the following requirements.

The latch shall not separate from the striker and hinge components shall not separate from each other or from their attachment to the vehicle.

Neither the latch nor the hinge systems of the door shall pull out of their anchorages.

2.1.2 FMVSS 301 "FUEL SYSTEM INTEGRITY"

2.1.2.1 Barrier crash

Fuel spillage in moving barrier crash test shall not exceed 1 ounce(28 g) by weight from impact until motion of the vehicle has ceased, and shall not exceed a total of 5 ounces(142 g) by weight in the 5-minute period following cessation of motion.

For the subsequent 25-minute period, fuel spillage during any 1-minute interval

shall not exceed 1 ounce(28 g) by weight.

2.1.2.2 Static Rollover Test

Fuel spillage in any rollover test, from the onset of rotational motion, shall not exceed a total of 5 ounces(142 g) by weight for the first 5 minutes of testing at each successive 90° increment.

For the remaining testing period, at each increment of 90 ° fuel spillage during 1-minute interval shall not exceed 1 ounce(28 g) by weight.

2.2 Test Procedure Utilized

Refer to the laboratory test procedure No. TP-214D-08 and TP-301-03.

2.3 Test Preparation

Two Part 572, subpart F dummies were seated in the front and rear outboard seating positions on the struck side of the car according to dummy placement instruction specified in the laboratory test procedure of No. TP-214D-08.

Both dummies were instrumented with rib, spine, and pelvis accelerations oriented to measure accelerations in the lateral direction.

The test dummies were restrained using all available belt systems in all seating position.

All test vehicle doors, including any rear hatchback or tailgate, were fully closed and latched but not locked.

The fuel tank was filled 93 % of its rated capacity with stoddard solvent.

The test vehicle's struck side windows and opposite side windows were placed in the fully closed location.

For a vehicle equipped with an automatic transmission, the transmission was placed in neutral.

For all vehicle the parking brake was engaged.

After the vehicle impact, fuel system Stoddard water leakage is checked and conducted static rollover.

3. TEST RESULTS

All portion of the Part 572, subpart F dummies remained within the passenger compartment throughout the test. There was no Stoddard Solvent leakage after impact.

3.1 214 "SIDE IMPACT PROTECTION"

3.1.1 All portions of the part 572, subpart F dummies remained within the passenger compartment throughout the test.

3.1.2 Injury Criteria

	ALLOWED RESULTS PER FMVSS 214	FRONT DUMMY	REAR DUMMY*
Thoracic Trauma Index (TTI)	90 g	69.6	67.6
Pelvic Peak Lateral Acceleration	130 g	72.9	82.4

* This data is for informational purposes only, SID couldn't be seated according to TP-214D-08 so this position is exempt from performance requirement.

3.1.3 Vehicle door opening information

	STRUCK SIDE		OPPOSITE SIDE	
	PASS	FAILURE	PASS	FAILURE
FRONT DOOR	○		○	

3.2 FMVSS 301 "FUEL SYSTEM INTEGRITY"

There was no fuel spillage from the fuel system and/or tank.

3.2.1 Barrier Crash

	Actual Spillage	Maximum Allowable Spillage
From impact until motion of vehicle ceased	0	28 g
For 5-minute period following cessation of motion	0	142 g

For the subsequent 25-minute period	0	28 g / min.
-------------------------------------	---	-------------

3.2.2 Static Rollover Test

	First 5 minutes	6th minute	7th minute
Max. Allowable Spillage	142 g	28 g	28 g
0° to 90°	0	0	0
90° to 180°	0	0	0
180° to 270°	0	0	0
270° to 360°	0	0	0

APPENDIX A

CHECK LISTS

	PAGE
1 GENERAL TEST VEHICLE PARAMETER DATA -----	A – 2
2 TEST VEHICLE SUMMARY OF RESULTS -----	A – 6
3 MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS -----	A – 8
4 POST TEST OBSERVATIONS -----	A – 9
5 SID INSTRUMENTATION DATA -----	A – 11
6 VEHICLE PRETEST AND POST TEST MEASUREMENTS -----	A – 12
7 SID LONGITUDINAL CLEARANCE DIMENSIONS -----	A – 14
8 SID LATERAL CLEARANCE DIMENSIONS -----	A – 16
9 VEHICLE SIDE MEASUREMENTS -----	A – 17
10 VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS -----	A – 18
11 VEHICLE DAMAGE PROFILE DISTANCES -----	A – 20
12 EXTERIOR STATIC CRUSH FOR IMPACTOR FACE -----	A – 22
13 TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY ---	A – 24
14 MDB ACCELEROMETER LOCATIONS AND DATA SUMMARY -----	A – 27
15 HIGH SPEED CAMERA LOCATIONS AND DATA -----	A – 28
16 FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA -----	A – 29
17 STATIC ROLLOVER DATA SHEET -----	A – 30

DATA SHEET 1

GENERAL TEST VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

MODEL YEAR/MAKE/MODEL: 2009 / HMC / ELANTRA TouringBODY STYLE/COLOR: WAGON / WHITE VIN: TEST NO.: C080818A BUILD DATE: ENGINE DATA: 4 cylinders; CID; 2.0 Liter; 2000 ccPlacement longitudinal; or O lateralTRANSMISSION: 4 speed; manual; O automatic; overdriveFINAL DRIVE: O rear wheel drive; front wheel drive; four wheel driveODOMETER READING: 20 km.OPTIONS: O A/C; O pwr. steering; O pwr. brakes; O pwr. windows

DATA RECORDED FROM VEHICLE'S TIRE PLACARD:

TIRE PRESSURE (AT CAPACITY): 30 psi Front; 30 psi RearTIRE PRESSURE (AT TEST): 30 psi Front; 30 psi RearRECOMMENDED TIRE SIZE: Front:205/55R16, Rear:205/55R16TIRES ON VEHICLE: Front:205/55R16, Rear:205/55R16 Mfr.:

VEHICLE CAPACITY DATA:

Number of Occupants: 2 front; 3 rear 5 TotalType of Front Seat(s): O buckets; bench; split benchType of Front Seat Back: fixed; O adjustable with O lever or knobVehicle Maximum Capacity Loading = kg. (A)Number of Occupants X 68.04 kg. = 340 kg. (B)Vehicle Cargo Capacity (A-B) = kg.

Data Sheet 1....Continued

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Right Front = 385 kg. Right Rear = 288 kg.Left Front = 449 kg. Left Rear = 252 kg.Total Front = 834 kg. Total Rear = 540 kg.TOTAL WEIGHT = 1374 kg.

Percent of Total Weight --

Percent Front = 61%Percent Rear = 39%

CALCULATION OF TEST VEHICLE TARGET WEIGHT:

Total Vehicle Delvd Weight/Max. Fluids = 1429 kg. (A)Max. Cargo Carrying Cap. of Vehicle = 20 kg. (B)

Weight of Side Impact Dummies (SIDs)

(1 or 2 x (instrumented SID weight) kg.) = 160 kg. (C)TEST VEHICLE TARGET WEIGHT (A + B + C) = 1609 kg.

FULLY LOADED TEST VEHICLE (UDVW + 1 or 2 SID(s) + CARGO):

Right Front = _____ kg. Right Rear = _____ kg.

Left Front = _____ kg. Left Rear = _____ kg.

Total Front = _____ kg. Total Rear = _____ kg.

Percent Front = _____ % Percent Rear = _____ %

TOTAL WEIGHT = _____ kg.

AS TESTED WT. OF VEH. (1 or 2 SID(s) + CARGO + EQUIP. & INSTRUMENTATION):

Right Front = 424 kg. Right Rear = 334 kg.Left Front = 512 kg. Left Rear = 339 kg.Total Front = 936 kg. Total Rear = 673 kg.TOTAL WEIGHT = 1609 kg.Percent Front = 58.2%Percent Rear = 41.8%

Data Sheet 1....Continued

TEST VEHICLE ATTITUDE:

AS DELIVERED

FULLY LOADED

READY FOR TEST

Right Front = 684 mmRight Front = 669 mmRight Front = 669 mmLeft Front = 674 mmLeft Front = 654 mmLeft Front = 654 mmRight Rear = 682 mmRight Rear = 666 mmRight Rear = 666 mmLeft Rear = 683 mmLeft Rear = 652 mmLeft Rear = 652 mmTest Vehicle Wheelbase = 2650 mmC.G. = 1060 mm rearward of front wheel centerline

Total Vehicle Length:

Right Side = mmLeft Side = mmCenterline = 4245 mm

FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel = 240 mmTotal Number of Adjustment Positions or Detents = 24 detents
(with the forward-most detent defined 0)

FRONT SEAT BACK ADJUSTMENT POSITION:

14 degrees along the head rest poleSeat Back Torso Angle = 23 degreesADJUSTABLE STEERING COLUMN POSITION: Mid. position

WINDOW POSITIONS:

Right Front = closedRight Rear = noneLeft Front = openedLeft Rear = opened

Data Sheet 1....Continued

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

Volume = 50 liters (92% to 94% of Useable Capacity)

LOCATION OF IMPACT POINT ON TEST VEHICLE SIDE TO BE IMPACTED:

Wheelbase = 2650 mm

Impact Point is 385 mm rearward of front axle centerline

Actual Impact Point is 377 mm rearward of front axle centerline

REMARKS:

DATA SHEET 2

TEST VEHICLE SUMMARY OF RESULTS

MODEL YEAR/MAKE/MODEL: 2009 / HMC / ELATRA TOURINGBODY STYLE: WAGON VIN: KMHHT66DXAU000326TEST NO.: C080818A BUILD DATE: _____TEST DATE: AUG. 18. 2008Vehicle Overall Length = 4245 mm Vehicle Overall Width 1775 mm

VEHICLE TEST WEIGHT (Pretest):

Left Front = 512 kg. Left Rear = 339 kg.Right Front = 424 kg. Right Rear = 334 kg.TOTAL Front = 936 kg. TOTAL Rear = 673 kg.TOTAL Vehicle Test Weight = 1609 kg.Wheelbase = 2650 mm

Longitudinal C.G. from center of front axle = _____ mm

Impact Angle with respect to impactor = 90 degrees

IMPACT POINT:

Actual Impact Point = 8 mm [rearward or **forward**] of nominal impact ref. line (LATERAL)Actual Impact Point = 0 mm [above or below] nominal impact point (VERTICAL)

MAXIMUM EXTERIOR STATIC CRUSH:

LEVEL 1 (260 mm above ground) = _____ mmLEVEL 2 (462 mm above ground) = _____ mmLEVEL 3 (661 mm above ground) = _____ mmLEVEL 4 (925 mm above ground) = _____ mm

Data Sheet 2...Continued

LEVEL 5 (1299 mm above ground) = _____ mm

Maximum Post Test Intrusion = _____ mm

OCCUPANTS:

DRIVER

PASSENGER

Dummy ID: SID# 338SID# 359Restraint Used: SEAT BELT +CAB+SABSEAT BELT

INSTRUMENTATION:

Number of Data Channels = 10 ch

Number of Cameras:

Onboard = 0Offboard = 3Total Cameras = 3

REMARKS:

DATA SHEET 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

MDB SPECIFICATIONS:

Overall Width of Framework Carriage = 1250 mmOverall Length of MDB = 4115 mm (including honeycomb impact face)Wheelbase of Frame work Carriage (front and rear) = 2591 mmC.G. location (rearward of front axle) = 1123 mm

MDB WEIGHT:

Left Front = 402 kg.Left Rear = 284 kg.Right Front = 370 kg.Right Rear = 305 kg.Total Front = 772 kg.Total Rear = 589 kg.TOTAL WEIGHT OF MDB = 1361 kg.Impact Angle (MDB centerline to target vehicle centerline) = 90 degreesImpact Speed = 62.2 km/hr

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

A. ROW A at center of bumper level = mmB. ROW B at top of bumper level = mmC. ROW C at mid level = mmD. ROW D at top of stack level = mm

INSTRUMENTATION:

Number of MDB data channels = 0

DATA SHEET 4

POST TEST OBSERVATIONS

TEST VEHICLE: 2009 HYUNDAI ELANTRA TOURING TEST NO.: C080818A

VISIBLE DUMMY CONTACT POINTS:

	FRONT SID	REAR SID
HEAD	CAB	Head removed
UPPER TORSO	SAB	Rear quarter trim panel
LOWER TORSO	SAB	Armrest
LEFT KNEE	Door trim panel	Rear quarter trim panel
RIGHT KNEE	Left knee	Left knee

DOOR OPENING:

	LEFT SIDE	RIGHT SIDE
FRONT	Remained latched	Remained latched
REAR	Not applicable	Not applicable

ARM REST LOCATION:

Front = Mid. Level of frt door trim panelRear = Mid. Level of rear quarter trim panel

SEAT MOVEMENT:

Front = NoneRear = None

GLAZING DAMAGE:

Windshield: NoneWindow: Impacted front door

Data Sheet 4....Continued

PILLAR PERFORMANCE:

_____None_____

SILL SEPARATION:

_____None_____

OTHER NOTABLE IMPACT EFFECTS:

REMARKS:

DATA SHEET 5

SID INSTRUMENTATION DATA

TEST VEHICLE: 2009 HYUNDAI ELANTRA TOURING TEST NO.: C080818A

	FRONT SID ID# <u>338</u>				REAR SID ID# <u>359</u>			
	Positive		Negative		Positive		Negative	
	max (g)	time (msec)	max (g)	time (msec)	max (g)	time (msec)	max (g)	time (msec)
RIB ACCELERATIONS								
Left Upper Rib (LUR) Y	88.20	20	41.55	25	57.43	41	7.02	114
Left Lower Rib (LLR) Y	73.99	20	8.27	51	78.08	39	11.82	114
SPINE ACCELERATIONS								
Lower Lateral Y	52.67	38	11.91	56	57.17	41	25.29	71
PELVIS ACCELERATIONS								
Lateral Y	72.86	28	20.33	287	82.42	33	6.90	76

REFERENCE:

Positive Direction: Longitudinal (X) = Rearward

Lateral (Y) = To Right

Vertical (Z) = Up

Negative Direction: Longitudinal (X) = Forward

Lateral (Y) = To Left

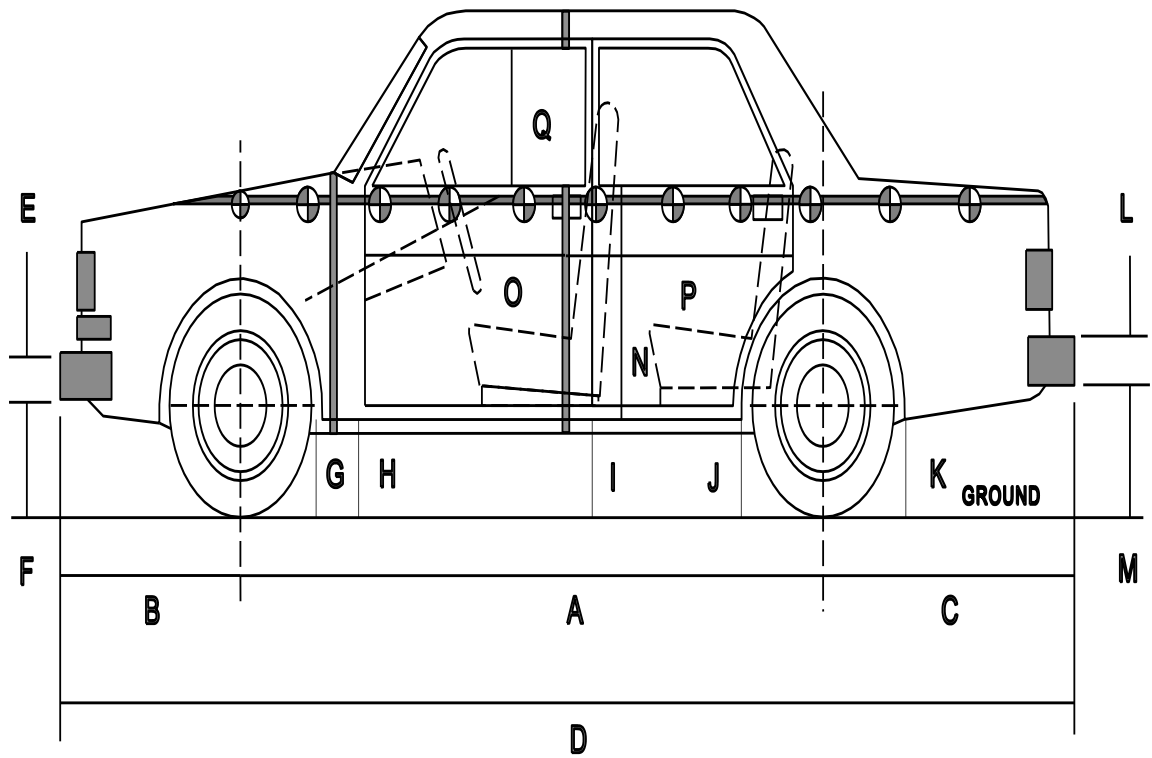
Vertical (Z) = Down

REMARKS:

DATA SHEET 6

VEHICLE PRETEST AND POST TEST MEASUREMENTS

TEST VEHICLE: 2009 HYUNDAI ELANTRA TOURING TEST NO.: C080818A



LEFT SIDE VIEW

All MEASUREMENTS IN MILLIMETERS (mm) WITH TOLERANCE OF ± 3 mm

	PRETEST	POST TEST	Δ CHANGE
A			
B			
C			
D			
E			

(Continued on next page)

Data Sheet 6...Continued

	PRETEST	POST TEST	Δ CHANGE
*F			
*G			
*H			
*I			
*J1/J2			
*K			
L			
*M			
O			
P			
Q			

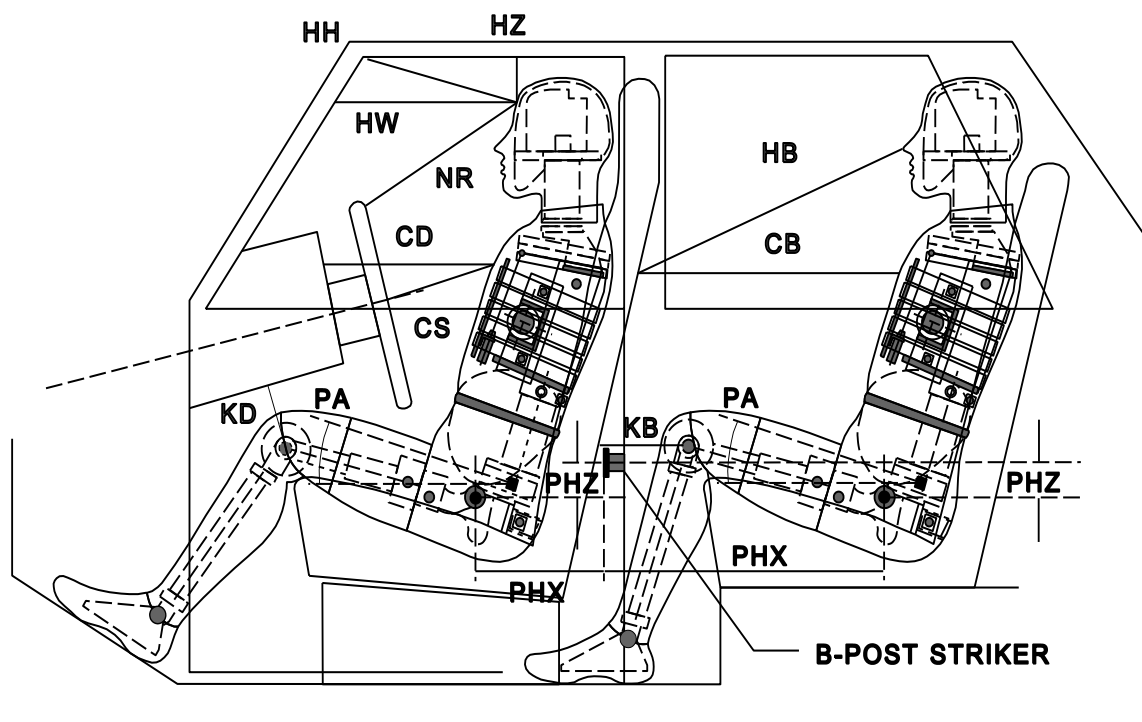
D = Length at Centerline
 E & L = Bumper thickness
 J1 = To Pinch Weld
 J2 = To Sill
 R = Right Side Length
 S = Left Side Length
 T = Width at B-Post

* THESE MEASUREMENTS ARE TO BE TAKEN IN THE "AS DELIVERED" AND IN THE "AS TESTED" CONFIGURATION (WHICH INCLUDES DUMMIES, INSTRUMENTATION, CAMERAS, ETC.)

REMARKS:

DATA SHEET 7

SID LONGITUDINAL CLEARANCE DIMENSIONS

TEST VEHICLE: 2009 HYUNDAI ELANTRA TOURING TEST NO.: C080818A

LEFT SIDE VIEW

NOTE: 2-DOOR VEHICLE SHOWN.
 REAR DUMMY PHX & PHZ
 MEASUREMENTS FOR A 4-DOOR
 VEHICLE WOULD USE THE C-POST
 STRIKER AS A REFERENCE POINT

MEASUREMENT (mm)	DRIVER SID ID# <u>338</u>	PASSENGER SID ID# <u>359</u>
HH	318	-
HW	549	-
HZ	158	200
NR/HB	412(17°)	619(16°)
CD/CB	536	548
CS	288	-

(Continued on next page)

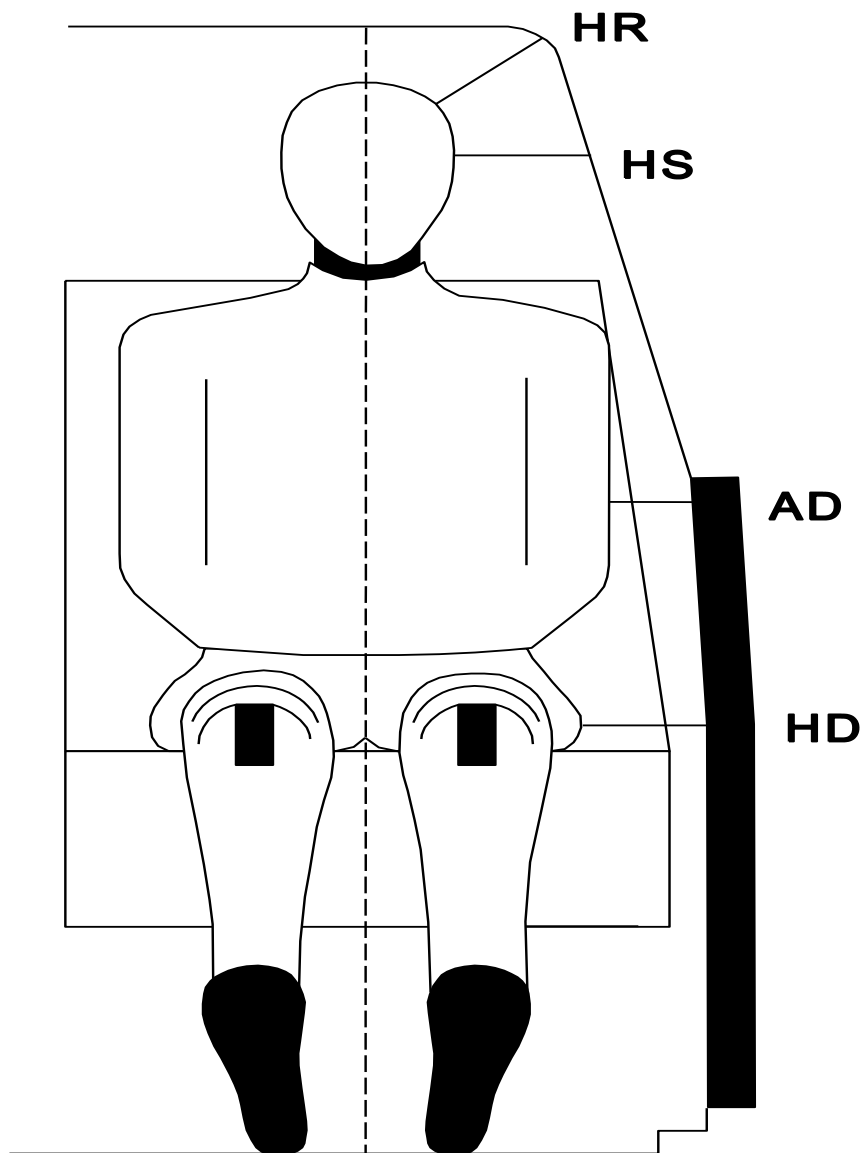
Data Sheet 7...Continued

MEASUREMENT (mm)	DRIVER SID ID# <u>338</u>	PASSENGER SID ID# <u>359</u>
KDL(KDA°)/KBL(KDA°)	211(12°)	263(-°)
KDR(KBA°)/KBR(KBA°)	160	262
PA°	22	22
PHX	216	240
PHZ	210	203

REMARKS:

DATA SHEET 8

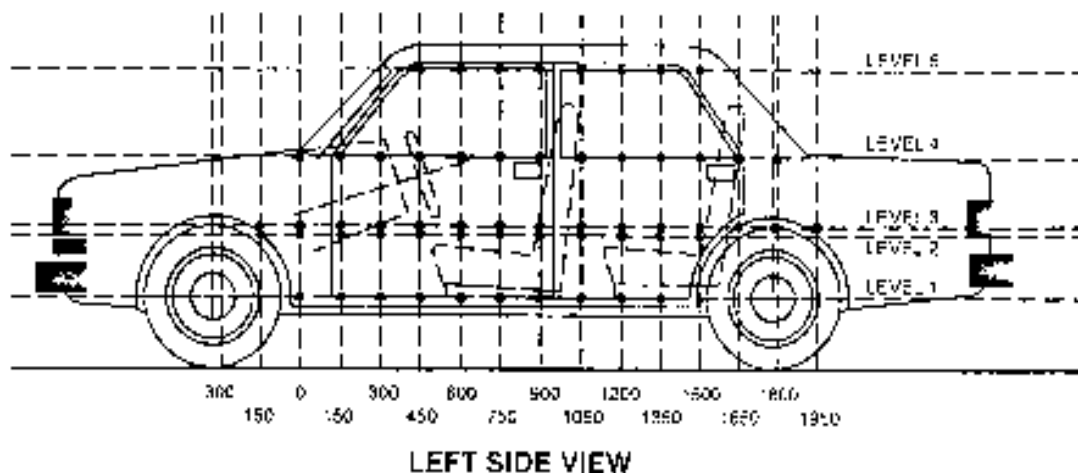
SID LATERAL CLEARANCE DIMENSIONS

TEST VEHICLE: 2009 HYUNDAI ELANTRA TOURING TEST NO.: C080818A

MEASUREMENT(mm)	DRIVER SID ID# <u>338</u>	PASSENGER SID ID# <u>359</u>
HR	234	243
HS	228	332
AD	102	99
HD	153	183

DATA SHEET 9

VEHICLE SIDE MEASUREMENTS

TEST VEHICLE: 2009 HYUNDAI ELANTRA TOURING TEST NO.: C080818A

NOTE: All measurements are in millimeters (mm)

LEVEL 5 - WINDOW TOP
 LEVEL 4 - WINDOW SILL
 LEVEL 3 - MID-DOOR
 LEVEL 2 - OCCUPANT H-POINT
 LEVEL 1 - AXLE CENTERLINE HEIGHT OR SILL TOP HEIGHT

MEASUREMENTS ALONG THE VERTICAL 750 mm. LINE SHOWN ABOVE:

LEVEL 5 @ Window Top = _____ mm

LEVEL 4 @ Window Sill = _____ mm

LEVEL 3 @ Mid Door = _____ mm

LEVEL 2 @ Occupant H-Point = _____ mm

LEVEL 1 @ Axle Centerline Height = _____ mm
(or Sill Top Height)

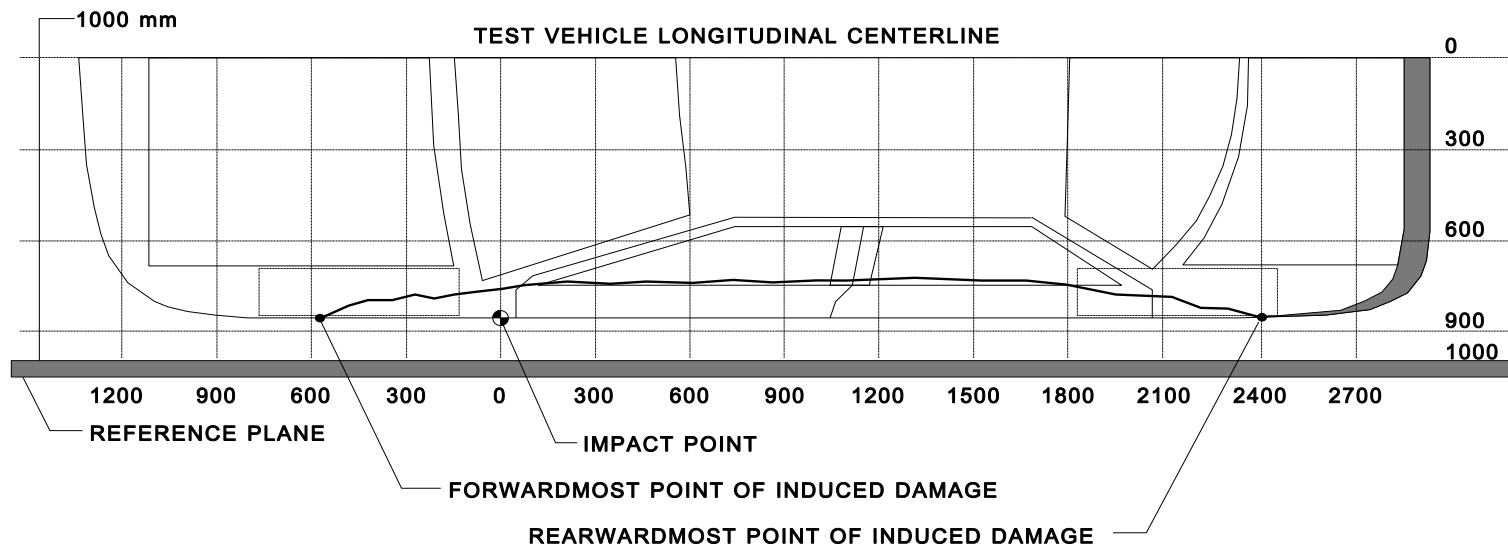
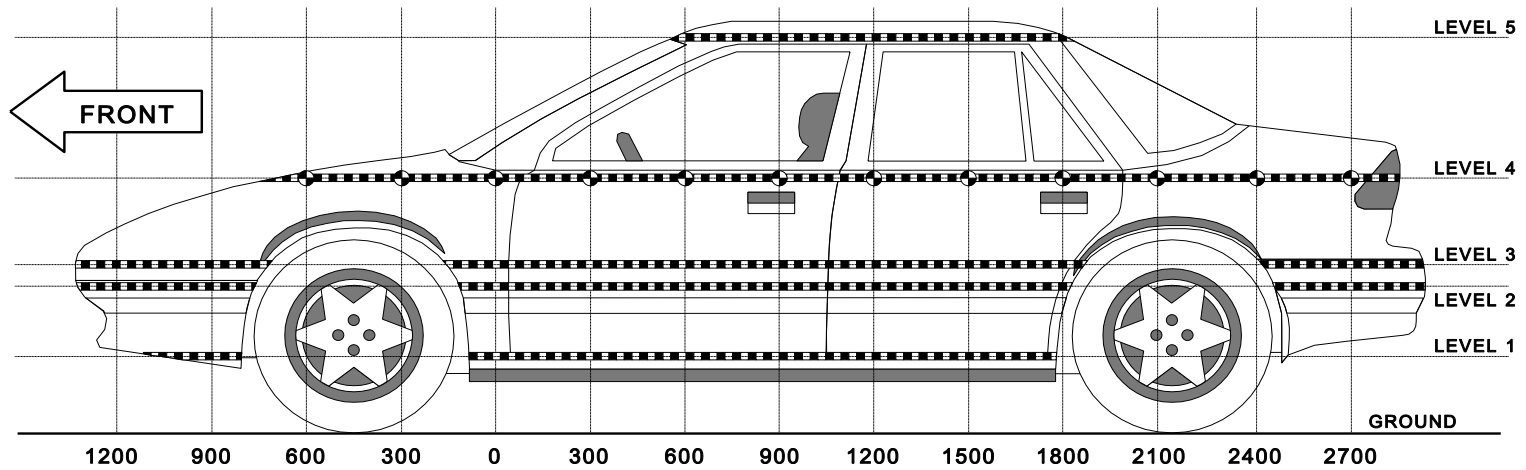
DATA SHEET 10

VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS

NOTE: Due to limited space the following table only indicates measurements from -150 mm to 1800 mm, however, tape should be applied along the entire length of target vehicle and measurements made every 150 mm, across span of induced damage (see graphic on next page). **Measurements should be accurate to ± 3 mm.**

			DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT													
LOCATION	HEIGHT		-150	0	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800
LEVEL 1		PRE		114	132	140	144	145	146	147	146	143	139	132	123	108
SIDE		POST		130	163	185	193	203	211	214	217	216	215	213	214	170
SILL		CRUSH		16	31	45	49	58	65	67	71	73	76	81	91	62
LEVEL 2		PRE		92	96	100	101	103	104	105	104	102	98	93	88	80
H-		POST		175	249	289	319	336	349	348	347	353	360	362	358	299
POINT		CRUSH		83	153	189	218	233	245	243	243	251	262	269	270	219
LEVEL 3		PRE	82	94	96	97	97	97	97	96	95	93	91	88	87	84
MID-		POST	128	167	255	273	289	315	308	302	309	307	316	328	345	328
DOOR		CRUSH	46	73	159	176	192	218	211	206	214	214	225	240	258	244
LEVEL 4		PRE	153	153	152	152	153	156	158	162	165	169	175	184	194	202
WINDOW		POST	168	171	183	206	225	251	259	261	267	277	281	332	311	294
SILL		CRUSH	15	18	31	54	72	95	101	99	102	108	106	148	117	92
LEVEL 5		PRE							362	354	352	355	357	362	370	382
WINDOW		POST							377	371	375	382	388	398	408	409
TOP		CRUSH							15	17	23	27	31	36	38	27

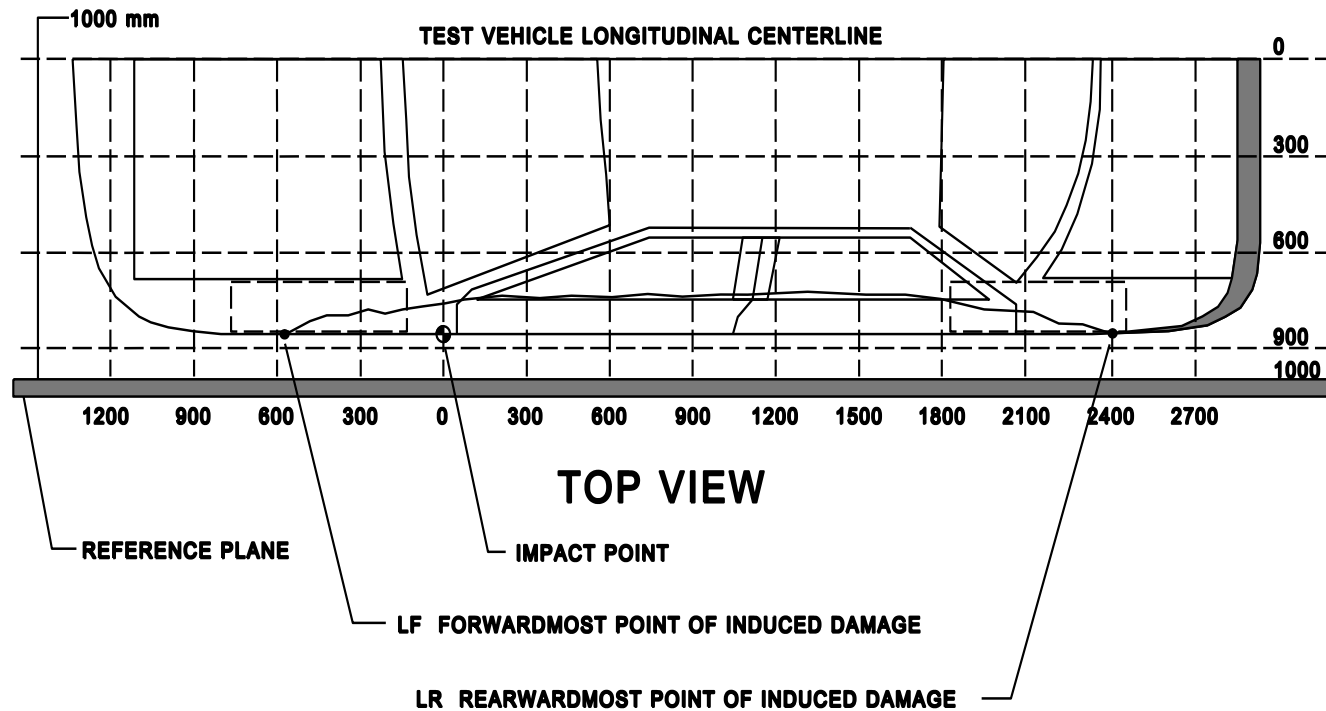
Data Sheet 10....Continued



NOTE: All measurements are in millimeters (mm)

DATA SHEET 11

VEHICLE DAMAGE PROFILE DISTANCES

**MEASUREMENT CONVENTIONS:**

Forward of the impact point (towards front of vehicle) is considered negative (-).

Rearward of the impact point (toward rearend of vehicle) is considered positive (+).

NOTE: All measurements are in millimeters (mm) and should be accurate to 3mm.

DATA SHEET 11....Continued

DPD MEASUREMENTS	POST TEST (mm)	PRETEST (mm)	STATIC CRUSH (mm)
1 (LF = ____ mm)	-		-
2			
3			
4			
5			
6 (LR = ____ mm)	-		-

REMARKS:

DATA SHEET 12

EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

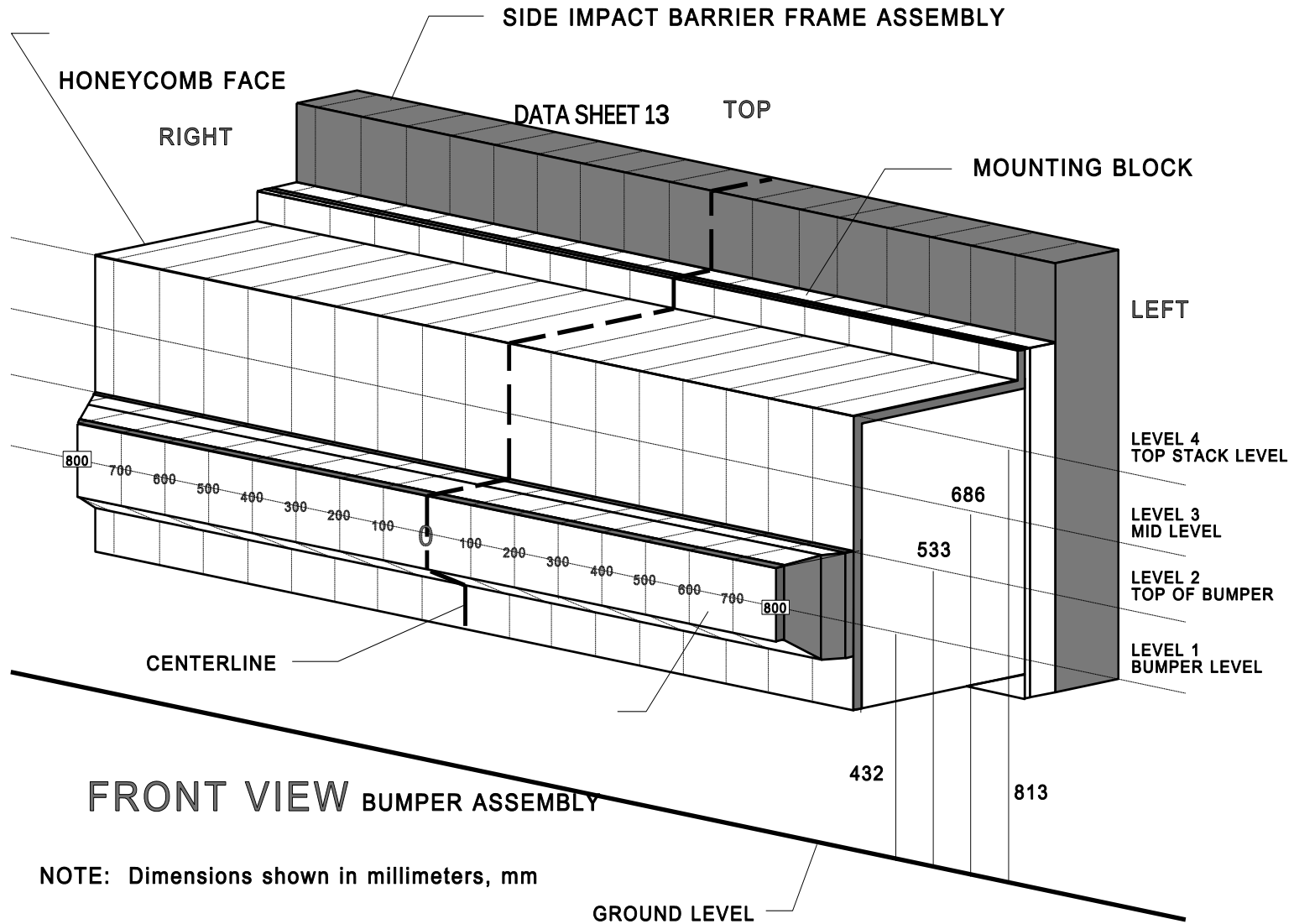
TEST VEHICLE: 2009 HYUNDAI ELANTRA TOURING TEST NO.: C080818AAll measurements shall be made in millimeters and should have a tolerance of ± 3 mm

LOCATION	HEIGHT AT CL*	DISTANCE RIGHT OF CENTER (mm)								0	DISTANCE LEFT OF CENTER (mm)							
		800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
Top Stack Level Level 4																		
Mid Stack Level Level 3																		
Top Bumper Level Level 2																		
Mid Bumper Level Level 1																		

NOTE: See next page for Barrier Face Graphic

REMARKS:

DATA SHEET 12....Continued

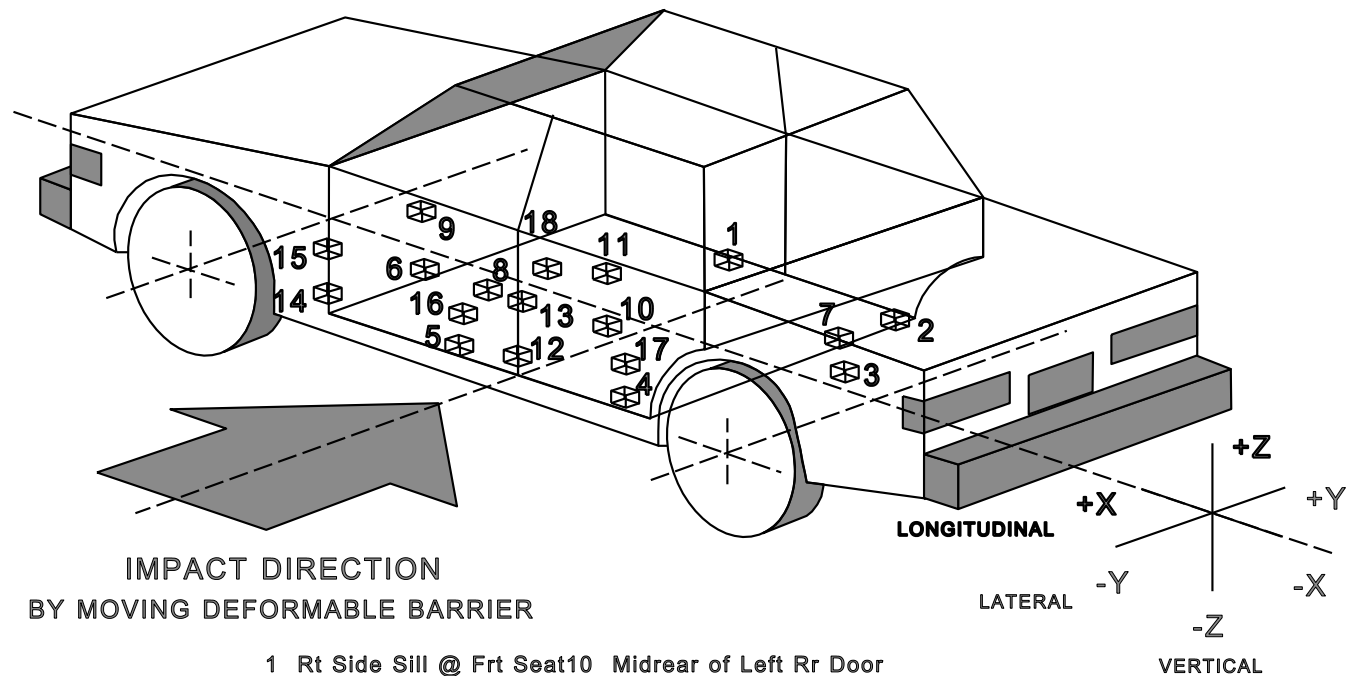


DATA SHEET 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST VEHICLE: 2009 HYUNDAI ELANTRA TOURING TEST NO.: C080818A

VEHICLE ACCELEROMETER LOCATIONS



IMPACT DIRECTION
BY MOVING DEFORMABLE BARRIER

- | | |
|-------------------------------|----------------------------|
| 1 Rt Side Sill @ Frt Seat | 10 Midrear of Left Rr Door |
| 2 Rt Side Sill @ Rr Seat | 11 Left Rr Door Up C/Line |
| 3 Rr Floorpan Above Axle | 12 Left Lwr BPost |
| 4 Left Side Sill @ Rr Seat | 13 Left Middle BPost |
| 5 Left Side Sill @ Frt Seat | 14 Left Lwr APost |
| 6 Left Frt Door on Centerline | 15 Left Middle APost |
| 7 Rt Rr Occ Compartment | 16 Frt Seat Track |
| 8 Midrear of Left Frt Door | 17 Rr Seat Track |
| 9 Left Frt Door Up C/Line | 18 Vehicle C.G. |

DATA SHEET 13....Continued

ACCEL NO.	LOCATION	COORDINATES (mm) $\pm$ 3 mm				LONGITUDINAL (X)		LATERAL (Y)		VERTICAL (Z)		RESULTANT	
		X	Y	Z		Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
1	Right Front Sill at Front Seat				Pos. Neg.					-	-		
2	Right Rear Sill at Rear Seat				Pos. Neg.					-	-		
3	Rear Floorpan Above Axle				Pos. Neg.								
4	Left Side Sill at Rear Seat				Pos. Neg.								
5	Left Side Sill at Front Seat				Pos. Neg.								
6	Left Front Door on Centerline				Pos. Neg.								
7	Right Rear Occupant Compartment				Pos. Neg.								
8	Mid-Rear of Left Front Door				Pos. Neg.								
9	Left Front Door Upper Centerline				Pos. Neg.								
10	Mid-Rear of Left Rear Door				Pos. Neg.								
11	Left Rear Door Upper Centerline				Pos. Neg.			-	-				

(Continued on next page)

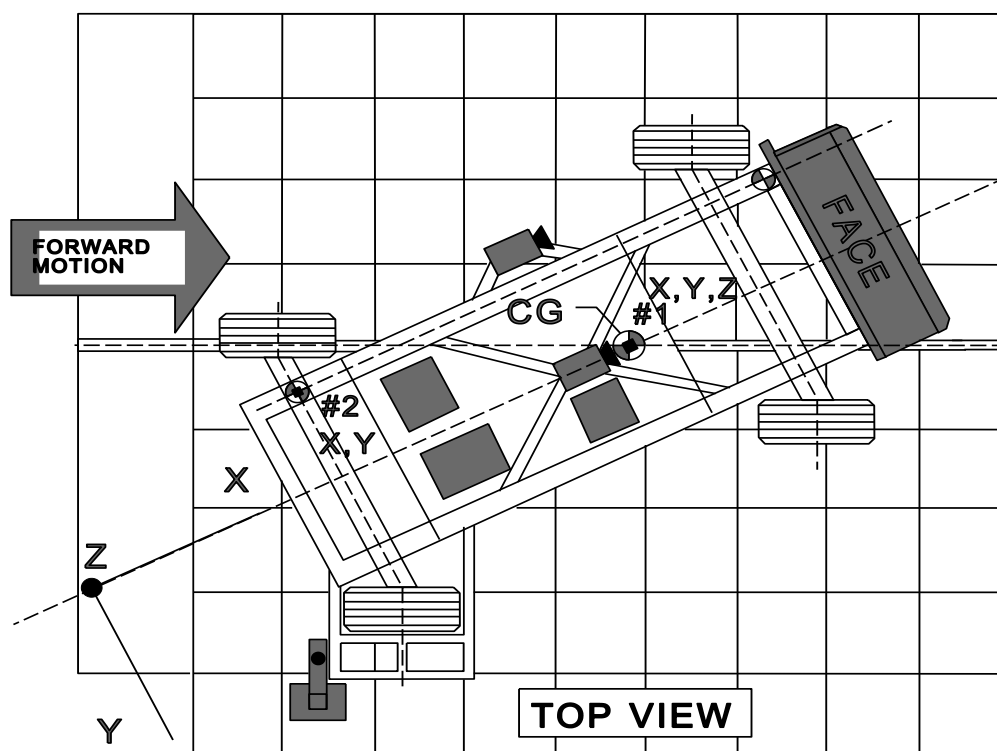
DATA SHEET 13....Continued

ACCEL NO.	LOCATION	COORDINATES (mm) $\pm$ 3 mm				LONGITUDINAL (X)		LATERAL (Y)		VERTICAL (Z)		RESULTANT	
		X	Y	Z		Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
12	Left Lower B-Post				Pos. Neg.								
13	Left Middle B-Post				Pos. Neg.								
14	Left Lower A-Post				Pos. Neg.								
15	Left Middle A-Post				Pos. Neg.								
16	Front Seat Track				Pos. Neg.								
17	Rear Seat Track				Pos. Neg.								
18	Vehicle C.G.				Pos. Neg.								

REMARKS:

DATA SHEET 14

MDB ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST VEHICLE: 2009 HYUNDAI ELANTRA TOURING TEST NO.: C080818A

ACCEL No.	COORDINATES (mm)			LOCATION	(+) POSITIVE		(-) NEGATIVE	
	X*	Y*	Z*		MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1				MDB CENTER OF GRAVITY				
				Longitudinal (X)				
				Lateral (Y)				
				Vertical (Z)				
				Resultant (R)				
2				REAR FRAME MEMBER				
				Longitudinal (X)				
				Lateral (Y)				

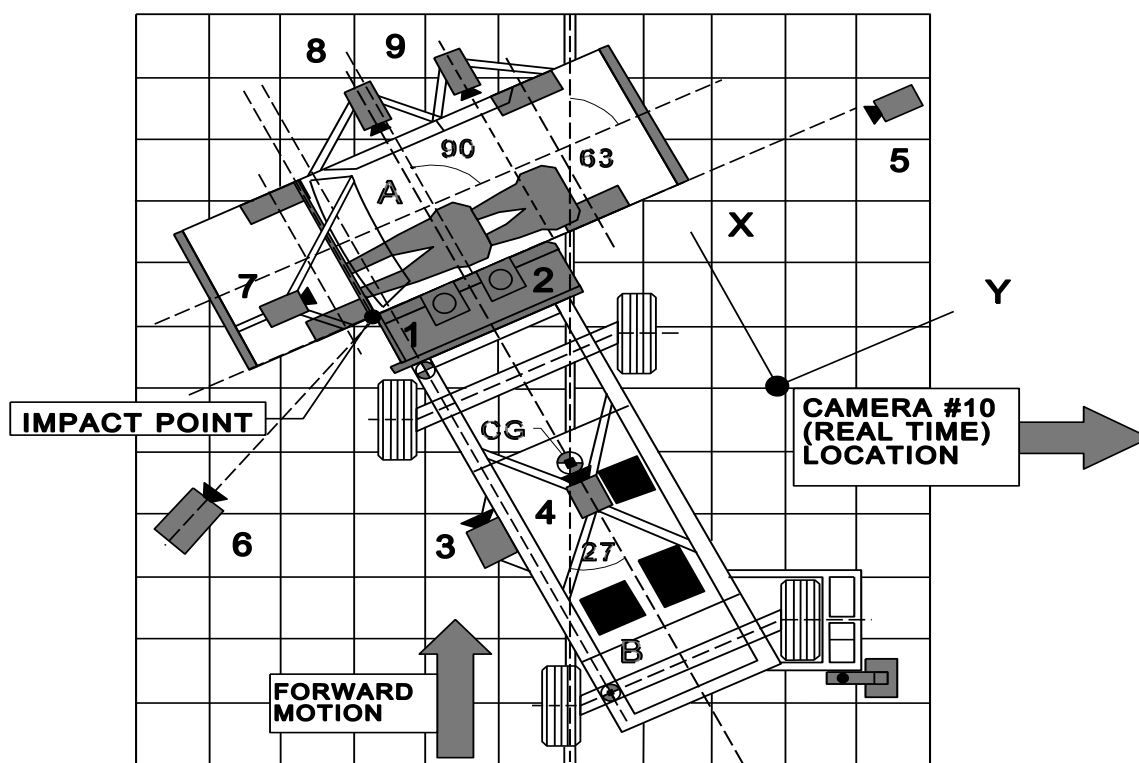
* All measurements accurate to within ± 3 mm.

REFERENCE: + X = Rearward, + Y = To Right, + Z = Up

DATA SHEET 15

HIGH SPEED CAMERA LOCATIONS AND DATA

CAMERA LOCATIONS



CAMERA No.	VIEW	COORDINATES (mm)			ANGLE	LENS (mm)	MIN.FILM SPEED (fps)
		X*	Y*	Z*			
1	Overhead view of test vehicle						
2	Overhead closeup view of impact plane						
3	MDB onboard closeup view of Impact point						
4	MDB onboard view of driver dummy						
5	Right side ground level -- overall view					ZOOM	1000
6	Left side ground level -- overall view					ZOOM	1000
7	Test vehicle driver -- front view					ZOOM	1000
8	Test vehicle onboard driver -- side view						
9	Test vehicle onboard passenger -- side view						
10	Real-time (24 fps) film coverage of test						

* All measurements accurate to ± 6 mm.

REFERENCE (from Point of Impact): + X = Rearward, + Y = To Right, + Z = Up

DATA SHEET 16

FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

TEST VEHICLE: 2009 HYUNDAI ELANTRA TOURING TEST NO.: C080818AVEHICLE YEAR/MAKE/MODEL/BODY STYLE : 2009 / HMC / ELANTRA TOURING / WAGONTYPE OF IMPACT : 38.5mph SIDE IMPACT TEST

STODDARD SOLVENT SPILLAGE MEASUREMENT:

A. From impact until vehicle motion ceases —

Actual = 0 g. (Maximum Allowable = 28.3g)

B. For 5 minute period after vehicle motion ceases —

Actual = 0 g. (Maximum Allowable = 141.7g)

C. For next 25 minutes —

Actual = 0 g. (Maximum Allowable = 28.3 g./minute)

D. Provide Spillage Details:

REMARKS:

DATA SHEET 17

STATIC ROLLOVER DATA SHEET

A. TEST PHASE = 0° TO 90°

Determination of Stoddard Solvent Collection Time Period:

1. Rollover Fixture 90° Rotation

Time = 1 minutes, 50 seconds

(Specified Range is 1 to 3 minutes)

2. FMVSS 301 Position Hold

Time = 5 minutes, 0 seconds

3. TOTAL = 6 minutes, 50 seconds

4. NEXT WHOLE MINUTE INTERVAL = 7 minutes

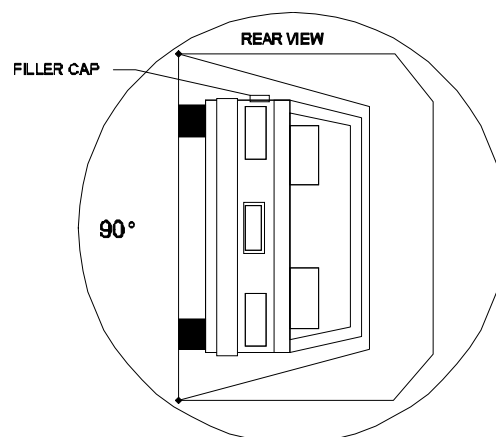
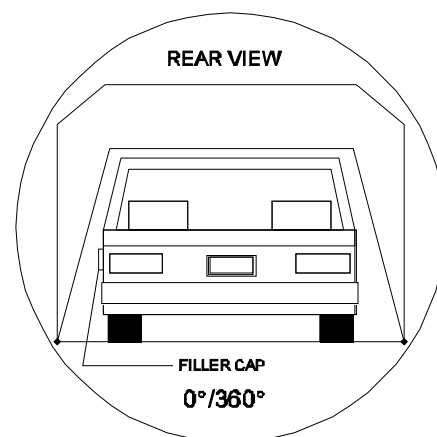
Actual Test Vehicle Stoddard Solvent Spillage:

1. First 5 minutes from onset of rotation = 0 g. (142 g. allowed)

2. 6th minute = 0 g.
(28 g. allowed)

3. 7th minute = 0 g.
(28 g. allowed)

4. 8th minute (if required) = g.
(28 g. allowed)



Provide Details of Stoddard Solvent Spillage Locations –

B. TEST PHASE = 90° TO 180°

Determination of Stoddard Solvent Collection
Time Period:

1. Rollover Fixture 90 Rotation

Time = 1 minutes, 50 seconds

(Specified Range is 1 to 3 minutes)

2. FMVSS 301 Position Hold

Time = 5 minutes, 0 seconds

3. TOTAL = 6 minutes, 50 seconds

4. NEXT WHOLE MINUTE INTERVAL = 7 minutes

Actual Test Vehicle Stoddard Solvent Spillage:

1. First 5 minutes from onset of

rotation = 0 g. (142 g. allowed)

2. 6th minute = 0 g.

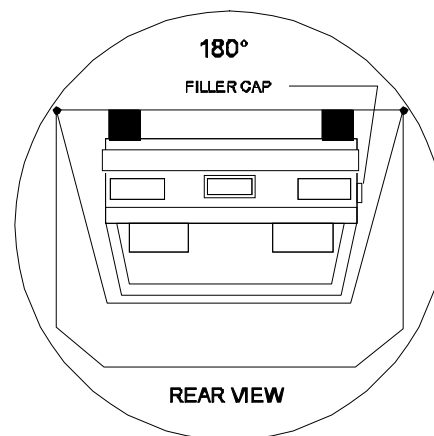
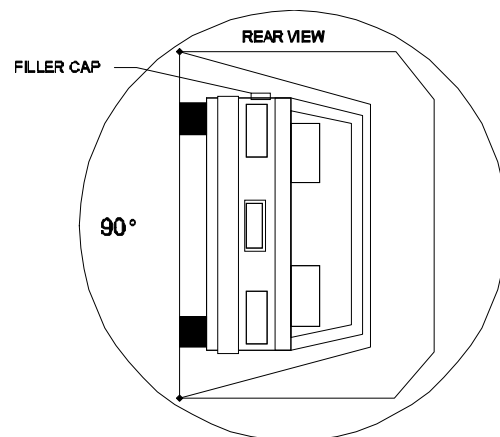
(28 g. allowed)

3. 7th minute = 0 g.

(28 g. allowed)

4. 8th minute (if required) = g.

(28 g. allowed)



Provide Details of Stoddard Solvent Spillage Locations –

C. TEST PHASE = 180° TO 270°

Determination of Stoddard Solvent Collection
Time Period:

1. Rollover Fixture 90 Rotation

Time = 1 minutes, 50 seconds

(Specified Range is 1 to 3 minutes)

2. FMVSS 301 Position Hold

Time = 5 minutes, 0 seconds

3. TOTAL = 6 minutes, 50 seconds

4. NEXT WHOLE MINUTE INTERVAL = 7 minutes

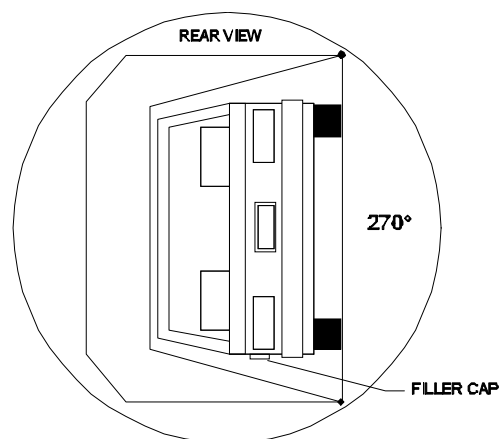
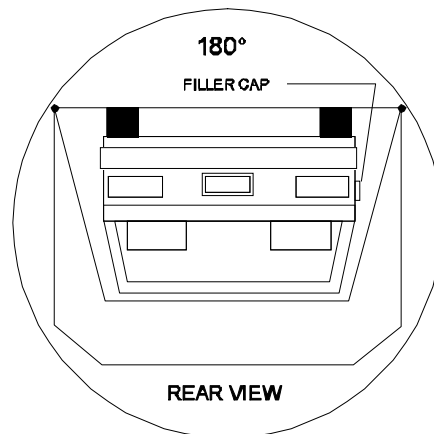
Actual Test Vehicle Stoddard Solvent Spillage:

1. First 5 minutes from onset of rotation = 0 g (142 g. allowed)

2. 6th minute = 0 g.
(28 g. allowed)

3. 7th minute = 0 g.
(28 g. allowed)

4. 8th minute (if required) = g.
(28 g. allowed)



Provide Details of Stoddard Solvent Spillage Locations –

D. TEST PHASE = 270° TO 360°

Determination of Stoddard Solvent Collection
Time Period:

1. Rollover Fixture 90 Rotation

Time = 1 minutes, 50 seconds

(Specified Range is 1 to 3 minutes)

2. FMVSS 301 Position Hold

Time = 5 minutes, 0 seconds

3. TOTAL = 6 minutes, 50 seconds

4. NEXT WHOLE MINUTE INTERVAL = 7 minutes

Actual Test Vehicle Stoddard Solvent Spillage:

1. First 5 minutes from onset of

rotation = 0 g. (142 g. allowed)

2. 6th minute = 0 g

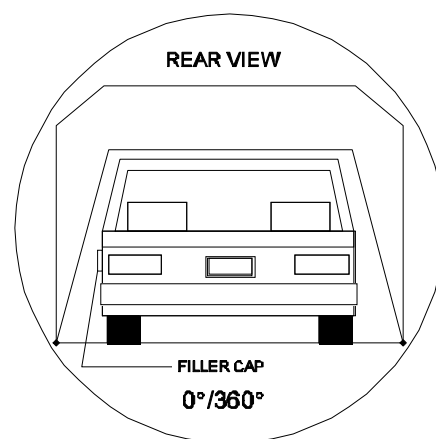
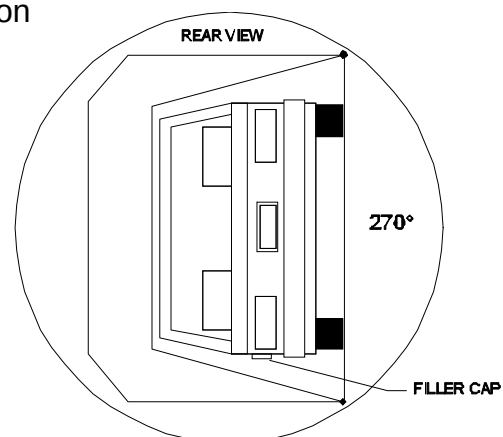
(28 g. allowed)

3. 7th minute = 0 g

(28 g. allowed)

4. 8th minute (if required) = g.

(28 g. allowed)



Provide Details of Stoddard Solvent Spillage Locations –

APPENDIX B

DATA PLOTS

TABLE OF DATA PLOTS

DRIVER AND PASSENGER DUMMY INSTRUMENTATION PLOTS

No.		Page
1	Driver Upper Rib Y Acceleration vs. time	B-2
2	Driver Lower Rib Y Acceleration vs. time	B-2
3	Driver Lower Spine Y Acceleration vs. time	B-2
4	Driver Pelvis Y Acceleration vs. time	B-2
5	Passenger Upper Rib Y Acceleration vs. time	B-3
6	Passenger Lower Rib Y Acceleration vs. time	B-3
7	Passenger Lower Spine Y Acceleration vs. time	B-3
8	Passenger Pelvis Y Acceleration vs. time	B-3

TEST VEHICLE INSTRUMENTATION PLOTS

9	Right Side Sill at Front Seat(Y) Acceleration vs. Time	B-4
10	Right Side Sill at Rear Seat(Y) Acceleration vs. Time	B-4

Test No : C080818A

Vehicle Model : Elantra Touring

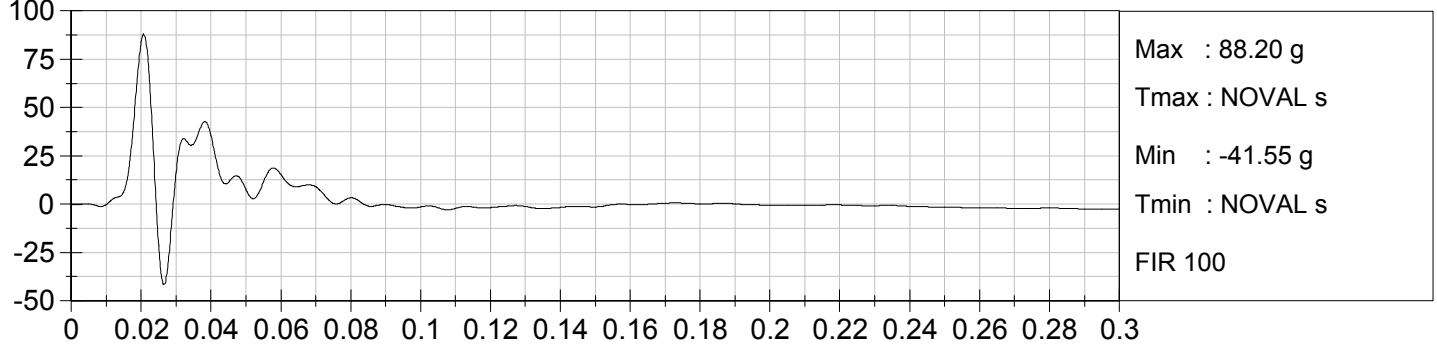
Test Date : 8/18/2008

Test Weight : 1609 kg

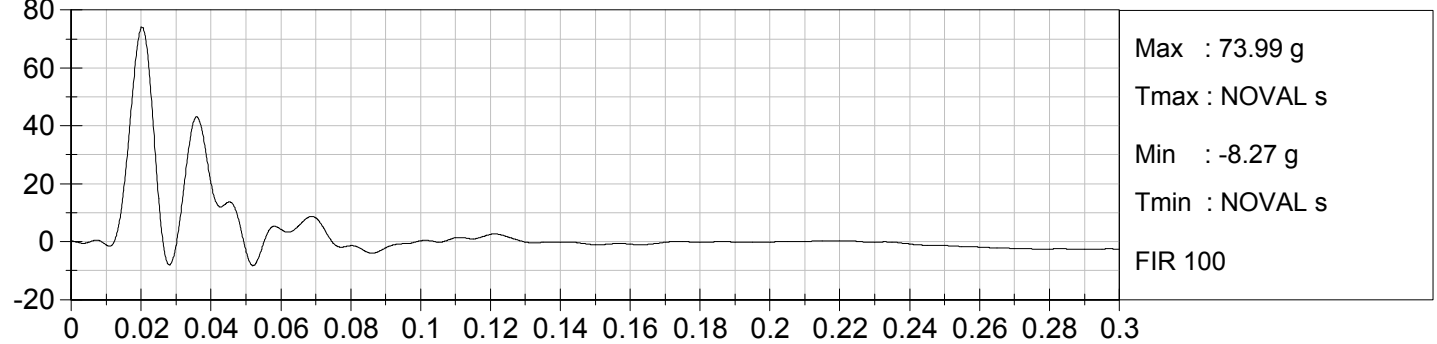
Test Title : 62kph US SIDE

Impact Speed : 62.2 kph

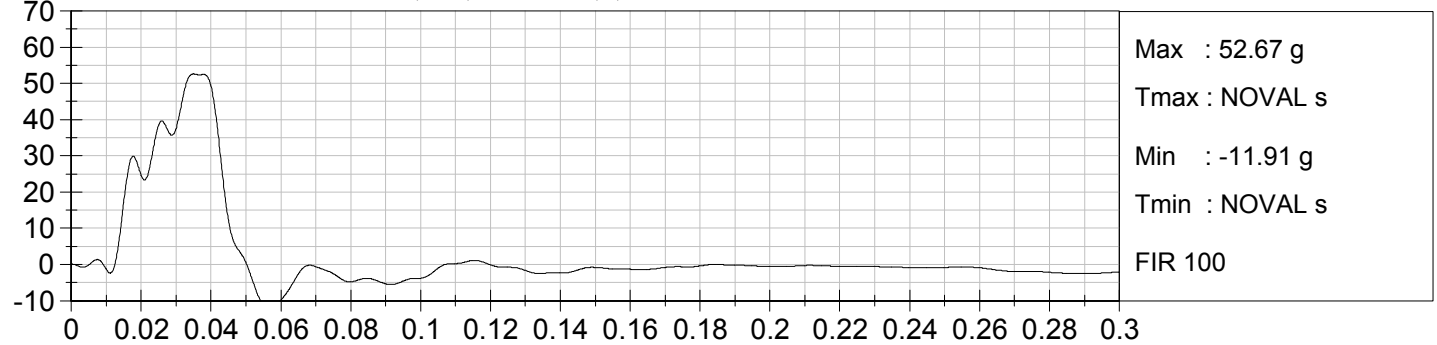
DRIVER UPPER RIB Y (G's) vs TIME(s)



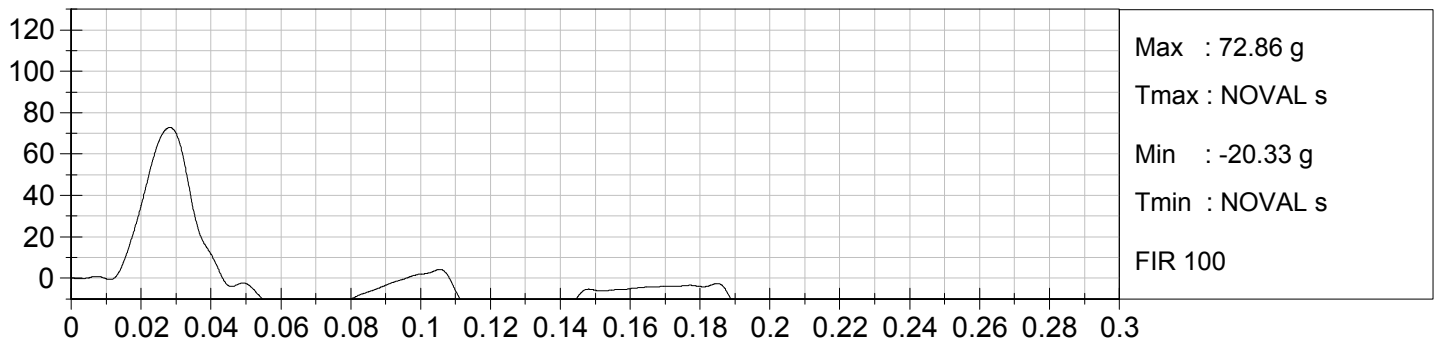
DRIVER LOWER RIB Y (G's) vs TIME(s)



DRIVER LOWER SPINE Y (G's) vs TIME(s)



DRIVER PELVIS Y (G's) vs TIME(s)



Test No : C080818A

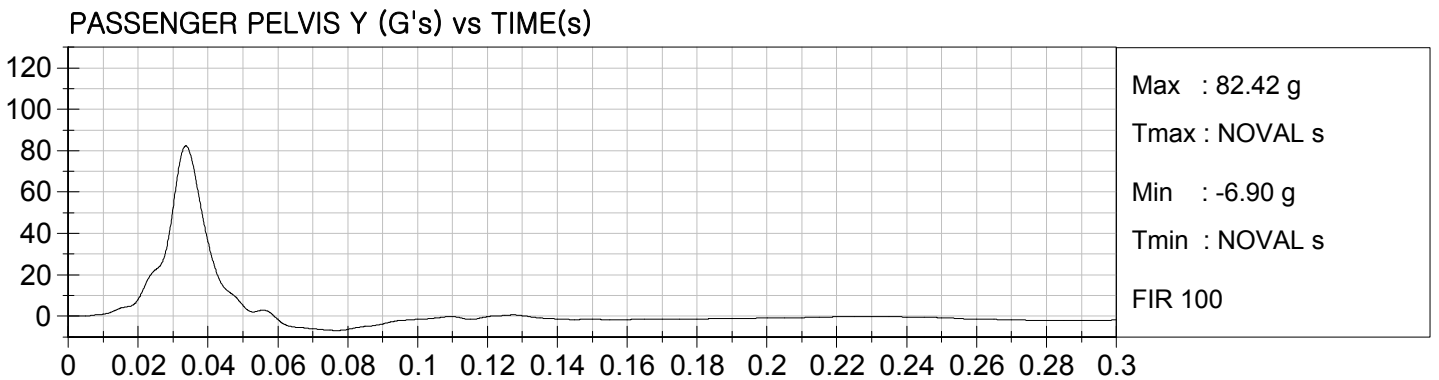
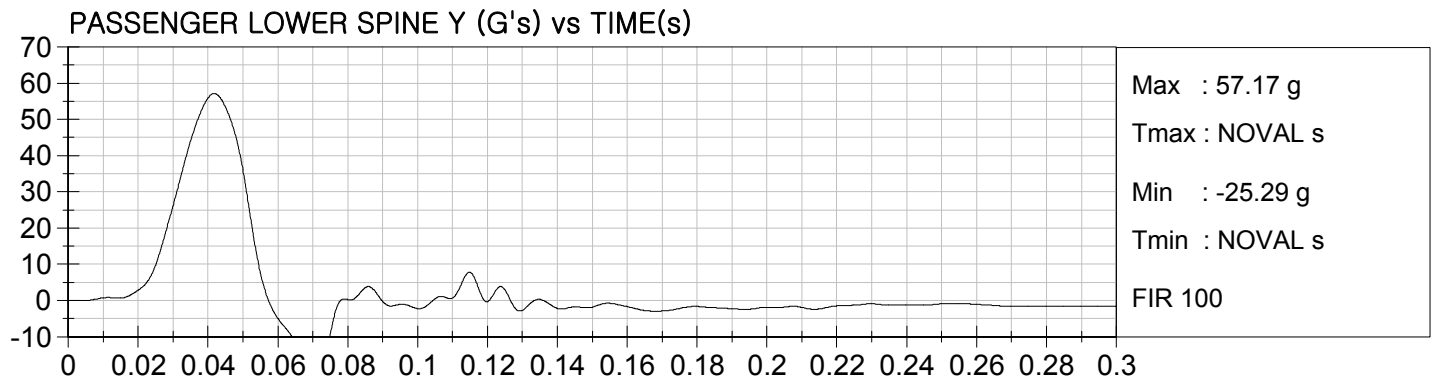
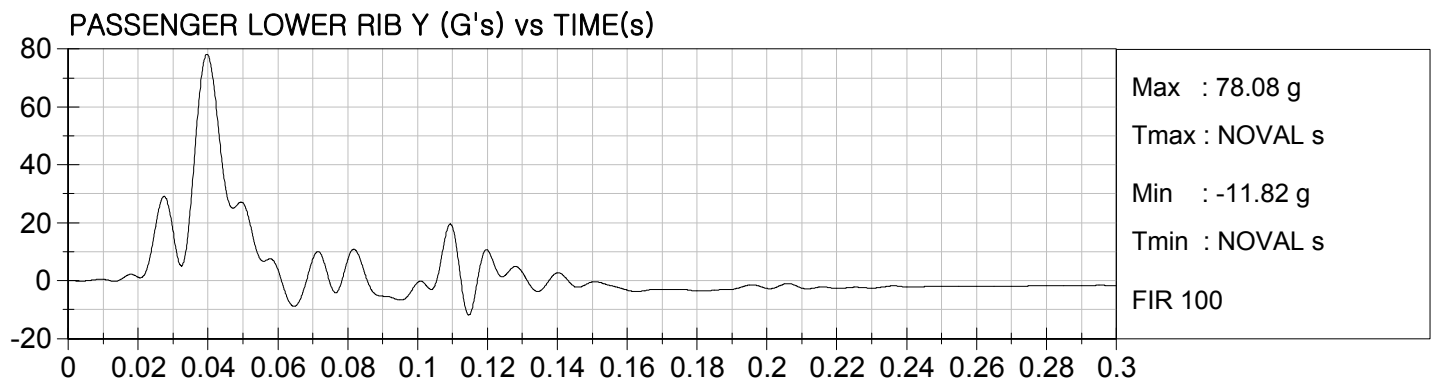
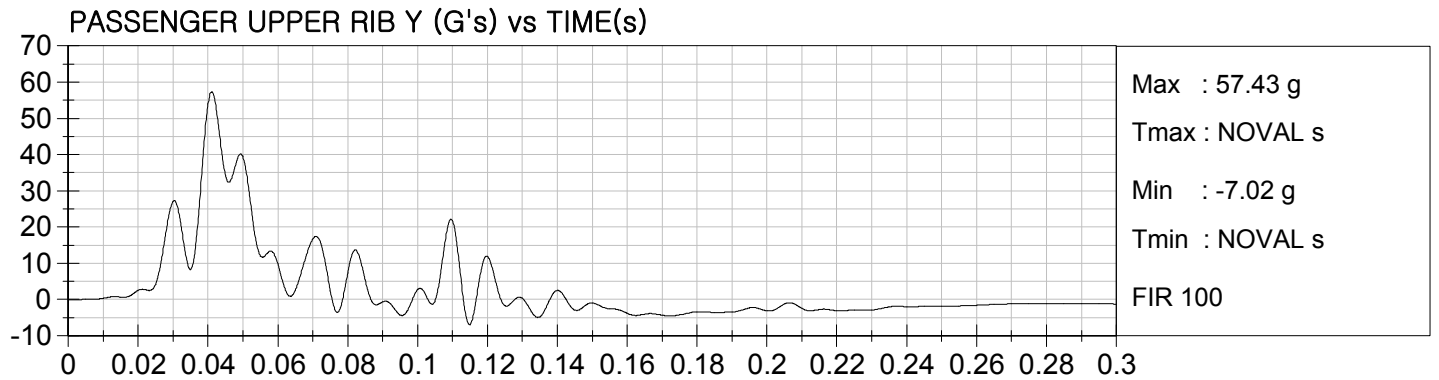
Vehicle Model : Elantra Touring

Test Date : 8/18/2008

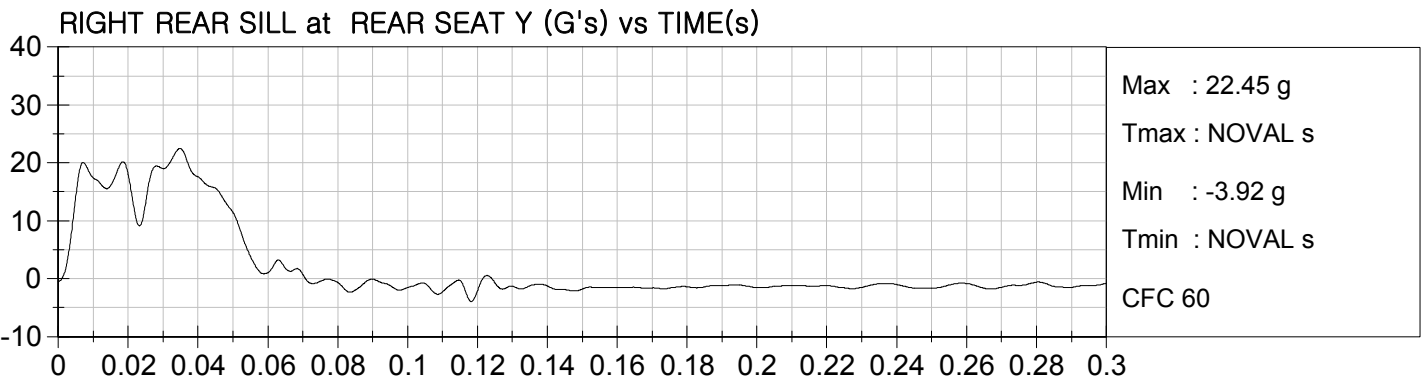
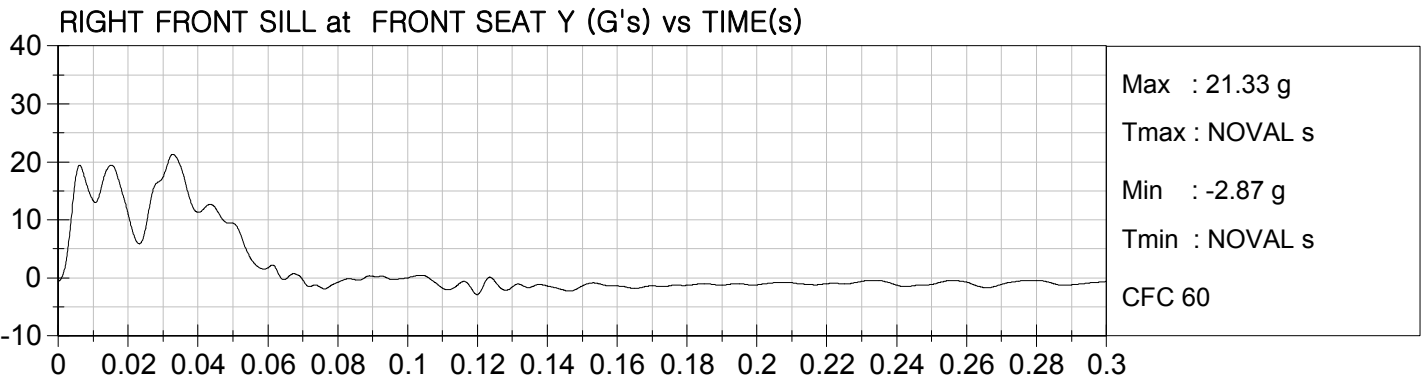
Test Weight : 1609 kg

Test Title : 62kph US SIDE

Impact Speed : 62.2 kph



Test No : C080818A	Vehicle Model : Elantra Touring
Test Date : 8/18/2008	Test Weight : 1609 kg
Test Title : 62kph US SIDE	Impact Speed : 62.2 kph



APPENDIX C

PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

No.		Page
1	Pre-Test Front View of Test Vehicle	C-2
2	Post-Test Front View of Test Vehicle	C-2
3	Pre-Test Engine Compartment View of Test Vehicle	C-3
4	Post-Test Engine Compartment View of Test Vehicle.....	C-3
5	Pre-Test Left Side View of Test Vehicle	C-4
6	Post-Test Left Side View of Test Vehicle	C-4
7	Pre-Test Right Side View of Test Vehicle.....	C-5
8	Post-Test Right Side View of Test Vehicle	C-5
9	Pre-Test Front Underbody View of Test Vehicle	C-6
10	Post-Test Front Underbody View of Test Vehicle.....	C-6
11	Pre-Test Rear Underbody View of Test Vehicle	C-7
12	Post-Test Rear Underbody View of Test Vehicle	C-7
13	Pre-Test Unimpacted Side View of Driver Dummy.....	C-8
14	Post-Test Unimpacted Side View of Driver Dummy	C-8
15	Pre-Test Unimpacted Side View of Passenger Dummy	C-9
16	Post-Test Unimpacted Side View of Passenger Dummy.....	C-9
17	Pre-Test Fuel Cap View	C-10
18	Post-Test Fuel Cap View.....	C-10
19	Pre-Test Target View.....	C-11
20	Post-Test Target View	C-11



PRE-TEST : TARGET VIEW



POST-TEST : TARGET VIEW

FMVSS 201 "OCCUPANT PROTECTION IN INTERIOR IMPACT"
VEHICLE COMPLIANCE TESTING OF
18 MPH RIGID POLE SIDE IMPACT TEST
(EQUIPPED WITH SIDE AIRBAGS)
HYUNDAI ELANTRA TOURING 2009MY

REPORT NO. : L4-FDW-065
TEST DATE : JUL. 10, 2008
REPORT DATE : JUL. 20, 2008

PREPARED BY CRASH PERFORMANCE DEVELOPMENT TEAM
NAMYANG RESEARCH & DEVELOPMENT CENTER
LOCATED IN NAMYANG
HYUNDAI MOTOR COMPANY

CIRCULATION : BODY ENGINEERING TEAM 1,
CHASSIS & POWER TRAIN ENGINEERING TEAM 1,
TRIM ENGINEERING TEAM 1,
RESIDENT ENGINEERING TEAM 1,
QUALITY STRATEGY TEAM
CERTIFICATION & REGULATION TEAM

MODEL / YEAR : ELANTRA TOURING WAGON / 2009 MY

VEHICLE NO. : KMHDC86E57U000228

TEST & SPECIFICATION : FMVSS 201 : RIGID POLE SIDE IMPACT

TEST RESULT : PASS

I hereby certify that the contents of this report are true and correct to the best of my knowledge.



PREPARED BY
(S. Y. LEE)



APPROVED BY
(S. W. Lee)



APPROVED BY
(Y. H. BAEK)

JUL. 20. 2008
DATE

TABLE OF CONTENTS

	PAGE
1. PURPOSE -----	4/5
2. TEST PROCEDURE -----	4/5
2.1 Dynamic Performance Requirements	
2.2 Test Procedure Utilized	
2.3 Test Preparation	
3. TEST RESULTS -----	5/5

APPENDICES**A. Check Lists****B. Data Plots****C. Photographs**

1. PURPOSE

The purpose of this test was to evaluate occupant protection in interior impact in a 2009 ELANTRA TOURING(equipped with side airbags) manufactured by HYUNDAI.

The rigid pole side impact test was conducted in accordance with the Office of Vehicle Safety Compliance's Laboratory Test Procedure(TP-201-P00, dated AUG.19, 1999).

2. TEST PROCEDURE

2.1 Dynamic Performance Requirements

2.1.1 HIC

The HIC(d) shall not exceed 1000 when calculated in accordance with the Following formula :

$$HIC = \left[\frac{1}{(t_2 - t_1)} \int_{t_1}^{t_2} a dt \right]^{2.5} (t_2 - t_1)$$

For the part 572, subpart M, anthropomorphic test dummy : HIC(d)=HIC.

2.2 Test Procedure Utilized

Refer to the Office of Vehicle Safety Compliance (OVSC) laboratory test procedure of No. TP-201-P00.

2.3 Test Preparation

Part 572, subpart M dummy was seated in the front outboard seating positions on the struck side of the car according to dummy placement instruction specified in the laboratory test procedure of No. TP-201-P00.

Dummy was instrumented with head, rib, spine, and pelvis accelerations oriented to measure accelerations in the lateral direction.

The test dummy was restrained using all available belt systems in all seating position. All test vehicle doors, including any rear hatchback or tailgate, were fully closed and latched but not locked.

All the test vehicle's side windows that are adjustable shall be fully open.

If so equipped, the test vehicle's sunroof shall be closed.

The key shall be in the ignition and switched to the "on" position.

The fuel tank was filled 93 % of its rated capacity with stoddard solvent.

Automatic transmissions shall be placed in neutral.

For all vehicle the parking brake was engaged.

3. TEST RESULTS

The portion of the Part 572, subpart M dummy remained within the passenger compartment throughout the test. There was no Stoddard Solvent leakage after impact.

3.1 FMVSS 201 “RIGID POLE SIDE IMPACT TEST”

3.1.1 Injury criteria

	ALLOWED RESULTS PER FMVSS 201	FRONT DUMMY
HIC	1000	585.2

3.1.2 Vehicle door opening information

	STRUCK SIDE		OPPOSITE SIDE	
	PASS	FAILURE	PASS	FAILURE
FRONT DOOR	○		○	
REAR DOOR	N/A		N/A	

APPENDIX A

CHECK LISTS

		PAGE
1	GENERAL TEST VEHICLE PARAMETER DATA -----	A – 2
2	TEST VEHICLE SUMMARY OF RESULTS -----	A – 6
3	POST TEST OBSERVATIONS -----	A – 8
4	SID INSTRUMENTATION DATA -----	A – 10
5	VEHICLE PRETEST AND POST TEST MEASUREMENTS -----	A – 11
6	SID LONGITUDINAL CLEARANCE DIMENSIONS -----	A – 13
7	SID LATERAL CLEARANCE DIMENSIONS -----	A – 15
8	VEHICLE SIDE MEASUREMENTS -----	A – 16
9	VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS -----	A – 17
10	VEHICLE DAMAGE PROFILE DISTANCES -----	A – 19
11	EXTERIOR STATIC CRUSH FOR IMPACTOR FACE -----	A – 21
12	TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY ---	A – 22
13	HIGH SPEED CAMERA LOCATIONS AND DATA -----	A – 25

DATA SHEET 1**GENERAL TEST VEHICLE PARAMETER DATA****TEST VEHICLE INFORMATION:**MODEL YEAR/MAKE/MODEL: 2009 / HMC / ELANTRA TOURING WAGONBODY STYLE/COLOR: WAGON/WHITE VIN: KMHDC86E57U000228TEST NO.: C080710A BUILD DATE: _____ENGINE DATA: 6 cylinders; _____ CID; 1.6 Liter; 1600 ccPlacement _____ longitudinal; or O lateralTRANSMISSION: 4 speed; _____ manual; O automatic; _____ overdriveFINAL DRIVE: _____ rear wheel drive; O front wheel drive; _____ four wheel driveODOMETER READING: 18 km.OPTIONS: O A/C; O pwr. steering; O pwr. brakes; O pwr. windows**DATA RECORDED FROM VEHICLE'S TIRE PLACARD:**TIRE PRESSURE (AT CAPACITY): 30 psi Front; 30 psi RearTIRE PRESSURE (AT TEST): 30 psi Front; 30 psi RearRECOMMENDED TIRE SIZE: 205/55R16TIRES ON VEHICLE: 195/45R16 Mfr.: _____**VEHICLE CAPACITY DATA:**Number of Occupants: 2 front; 3 rear 5 TotalType of Front Seat(s): _____ buckets; O bench; _____ split benchType of Front Seat Back: _____ fixed; O adjustable with O lever or _____ knob

Vehicle Maximum Capacity Loading = _____ kg. (A)

Number of Occupants X 68.0 kg. = 340 kg. (B)

Vehicle Cargo Capacity (A-B) = _____ kg.

Data Sheet 1...Continued**TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:**Right Front = 394 kg. Right Rear = 270 kg.Left Front = 415 kg. Left Rear = 262 kg.Total Front = 809 kg. Total Rear = 532 kg.TOTAL WEIGHT = 1341 kg.

Percent of Total Weight --

Percent Front = 60.3%Percent Rear = 39.7%**CALCULATION OF TEST VEHICLE TARGET WEIGHT:**Total Vehicle Delivered Weight/Max. Fluids = 1341 kg. (A)Max. Cargo Carrying Cap. of Vehicle = 35 kg. (B)

Weight of Side Impact Dummies (SIDs)

(1 or 2 x (instrumented SID weight) kg.) = 78 kg. (C)TEST VEHICLE TARGET WEIGHT (A + B + C) = 1454 kg.**FULLY LOADED TEST VEHICLE (UDVW + 1 or 2 SID(s) + CARGO):**Right Front = 435 kg. Right Rear = 306 kg.Left Front = 477 kg. Left Rear = 315 kg.Total Front = 912 kg. Total Rear = 621 kg.Percent Front = 59.4% Percent Rear = 40.6%TOTAL WEIGHT = 1533 kg.**AS TESTED WT. OF VEH. (1 or 2 SID(s) + CARGO + EQUIP. & INSTRUMENTATION):**Right Front = 435 kg. Right Rear = 306 kg.Left Front = 477 kg. Left Rear = 315 kg.Total Front = 912 kg. Total Rear = 621 kg.TOTAL WEIGHT = 1533 kg.Percent Front = 59.3%Percent Rear = 40.6%

Data Sheet 1_Continued**TEST VEHICLE ATTITUDE:**

AS DELIVERED

FULLY LOADED

READY FOR TEST

Right Front = 690 mmRight Front = 667 mmRight Front = 667 mmLeft Front = 688 mmLeft Front = 663 mmLeft Front = 663 mmRight Rear = 689 mmRight Rear = 668 mmRight Rear = 668 mmLeft Rear = 690 mmLeft Rear = 656 mmLeft Rear = 656 mmTest Vehicle Wheelbase = 2650 mmC.G. = 1076 mm rearward of front wheel centerline

Total Vehicle Length:

Right Side = _____ mm

Left Side = _____ mm

Centerline = 4245 mm**FRONT SEAT CUSHION PLACEMENT:**Total Length of Adjustment Travel = 240 mmTotal Number of Adjustment Positions or Detents = 24 detents
(with the forward-most detent defined 0)**FRONT SEAT BACK ADJUSTMENT POSITION:**Seat Back Torso Angle = 23 degrees**ADJUSTABLE STEERING COLUMN POSITION:** Mid. position**WINDOW POSITIONS:**Right Front = openedRight Rear = N/ALeft Front = openedLeft Rear = N/A

Data Sheet 1...Continued**AMOUNT OF STODDARD SOLVENT IN FUEL TANK:**

Volume = 39 liters (100% of Useable Capacity)

LOCATION OF IMPACT POINT ON TEST VEHICLE SIDE TO BE IMPACTED:

Wheelbase = 2650 mm

Impact Point is mm rearward of front axle centerline

Actual Impact Point is mm rearward of front axle centerline

REMARKS:

DATA SHEET 2**TEST VEHICLE SUMMARY OF RESULTS**MODEL YEAR/MAKE/MODEL: 2009 / HMC / ELANTRA TOURING WAGONBODY STYLE: WAGON VIN: KMHDC86E57U000228TEST NO.: C80710A

BUILD DATE: _____

TEST DATE: JUL. 10. 2008Vehicle Overall Length = 4245 mmVehicle Overall Width 1775 mm**VEHICLE TEST WEIGHT (Pretest):**Left Front = 477 kg.Left Rear = 315 kg.Right Front = 435 kg.Right Rear = 306 kg.TOTAL Front = 912 kg.TOTAL Rear = 621 kg.TOTAL Vehicle Test Weight = 1533 kg.Wheelbase = 2650 mm

Longitudinal C.G. from center of front axle = _____ mm

Impact Angle with respect to impactor = 90 degrees**IMPACT POINT:**Actual Impact Point = 2 mm [rearward or forward] of nominal impact ref. line (LATERAL)Actual Impact Point = _____ mm [above or below] nominal impact point (VERTICAL)**MAXIMUM EXTERIOR STATIC CRUSH:**

LEVEL 1 (_____ mm above ground) = _____ mm

LEVEL 2 (_____ mm above ground) = _____ mm

LEVEL 3 (_____ mm above ground) = _____ mm

LEVEL 4 (_____ mm above ground) = _____ mm

Data Sheet 2...Continued

LEVEL 5 (___ mm above ground) = _____ mm

Maximum Post Test Intrusion = _____ mm

OCCUPANTS:**DRIVER**Dummy ID : SID# 339Restraint Used : SEAT BELT +CAB**INSTRUMENTATION:**Number of Data Channels = 18 ch

Number of Cameras:

Onboard = 0Offboard = 5Total Cameras = 5

REMARKS:

DATA SHEET 3**POST TEST OBSERVATIONS**TEST VEHICLE: 2009 HYUNDAI ELANTRA TOURING WAGON TEST NO.: C080710A**VISIBLE DUMMY CONTACT POINTS:**

	FRONT SID
HEAD	CAB
UPPER TORSO	
LOWER TORSO	
LEFT KNEE	FRT DR TRIM PANEL
RIGHT KNEE	LEFT KNEE

DOOR OPENING:

	LEFT SIDE
FRONT	NONE
REAR	N/A

ARM REST LOCATION:Front = Mid. Level of frt door trim panel**SEAT MOVEMENT:**Front = None**GLAZING DAMAGE:**Windshield: Left Upper SideWindow: Left Front Window

Data Sheet 3...Continued

PILLAR PERFORMANCE:

None

SILL SEPARATION:

None

OTHER NOTABLE IMPACT EFFECTS:

REMARKS:

DATA SHEET 4**SID INSTRUMENTATION DATA**TEST VEHICLE: 2009 HYUNDAI ELANTRA TOURING WAGON TEST NO.: C080710A

FRONT SID ID# 338				
Positive		Negative		
max (g)	time (msec)	max (g)	time (msec)	
RIB ACCELERATIONS				
Left Upper Rib (LUR) Y	52.36	27	22.71	39
Left Lower Rib (LLR) Y	59.09	26	6.89	39
SPINE ACCELERATIONS				
Lower Lateral Y	37.02	27	12.55	67
PELVIS ACCELERATIONS				
Lateral Y	38.66	37	9.25	82

REFERENCE:

Positive Direction: Longitudinal (X) = Rearward

Lateral (Y) = To Right

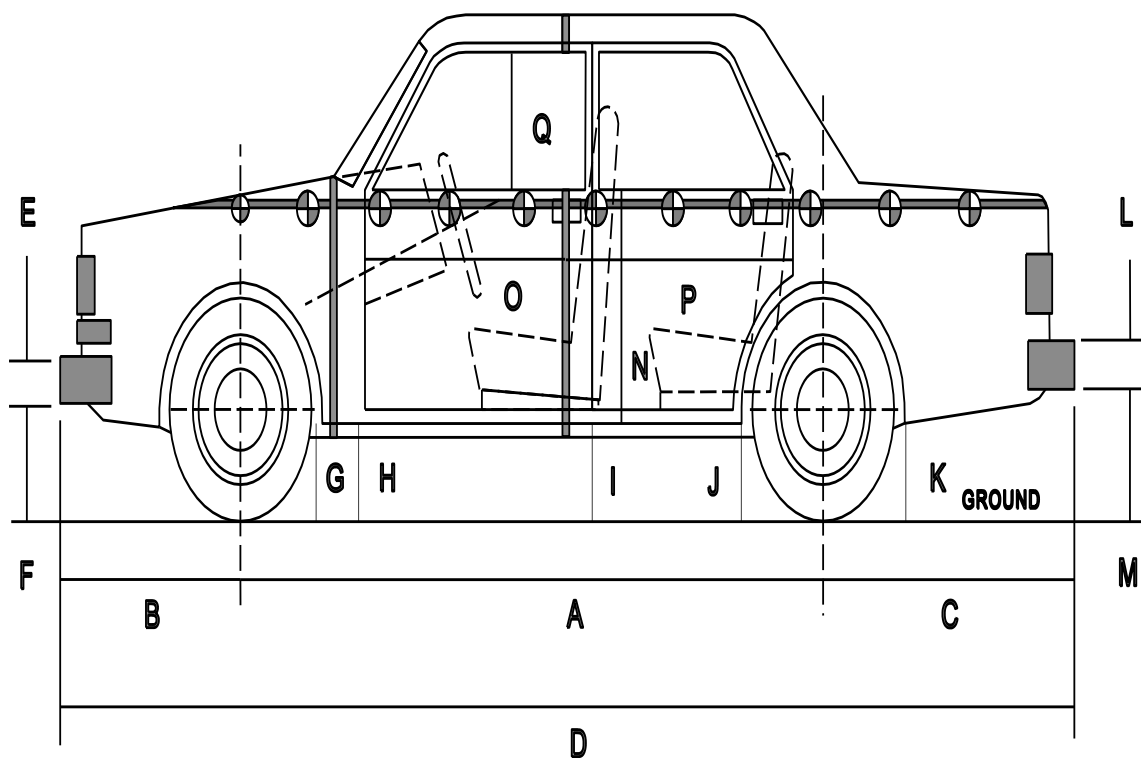
Vertical (Z) = Up

Negative Direction: Longitudinal (X) = Forward

Lateral (Y) = To Left

Vertical (Z) = Down

REMARKS:

DATA SHEET 5**VEHICLE PRETEST AND POST TEST MEASUREMENTS**TEST VEHICLE: 2009 HYUNDAI ELANTRA TOURING WAGON TEST NO.: C080710A**LEFT SIDE VIEW**All MEASUREMENTS IN MILLIMETERS (mm) WITH TOLERANCE OF ± 3 mm

	PRETEST	POST TEST	Δ CHANGE
A			
B			
C			
D			
E			

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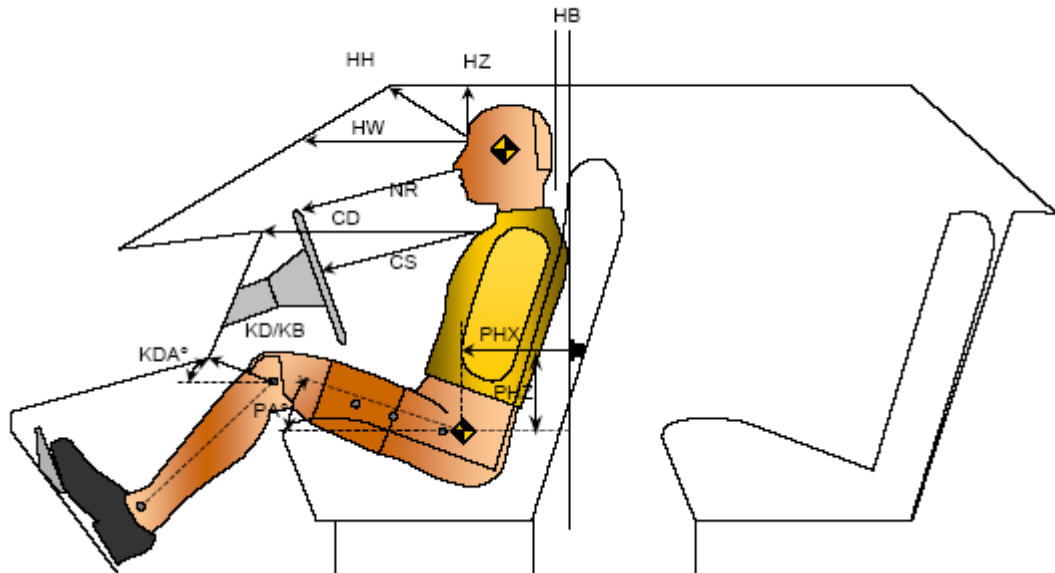
Data Sheet 5...Continued

	PRETEST	POST TEST	Δ CHANGE
*F			
*G			
*H			
*I			
*J1/J2			
*K			
L			
*M			
O			
P			
Q			

D = Length at Centerline
 E & L = Bumper thickness
 J1 = To Pinch Weld
 J2 = To Sill
 R = Right Side Length
 S = Left Side Length
 T = Width at B-Post

*** THESE MEASUREMENTS ARE TO BE TAKEN IN THE "AS DELIVERED" AND IN THE "AS TESTED" CONFIGURATION (WHICH INCLUDES DUMMIES, INSTRUMENTATION, CAMERAS, ETC.)**

REMARKS:

DATA SHEET 6**SID LONGITUDINAL CLEARANCE DIMENSIONS**TEST VEHICLE: 2009 HYUNDAI ELANTRA TOURING WAGON TEST NO.: C080710A

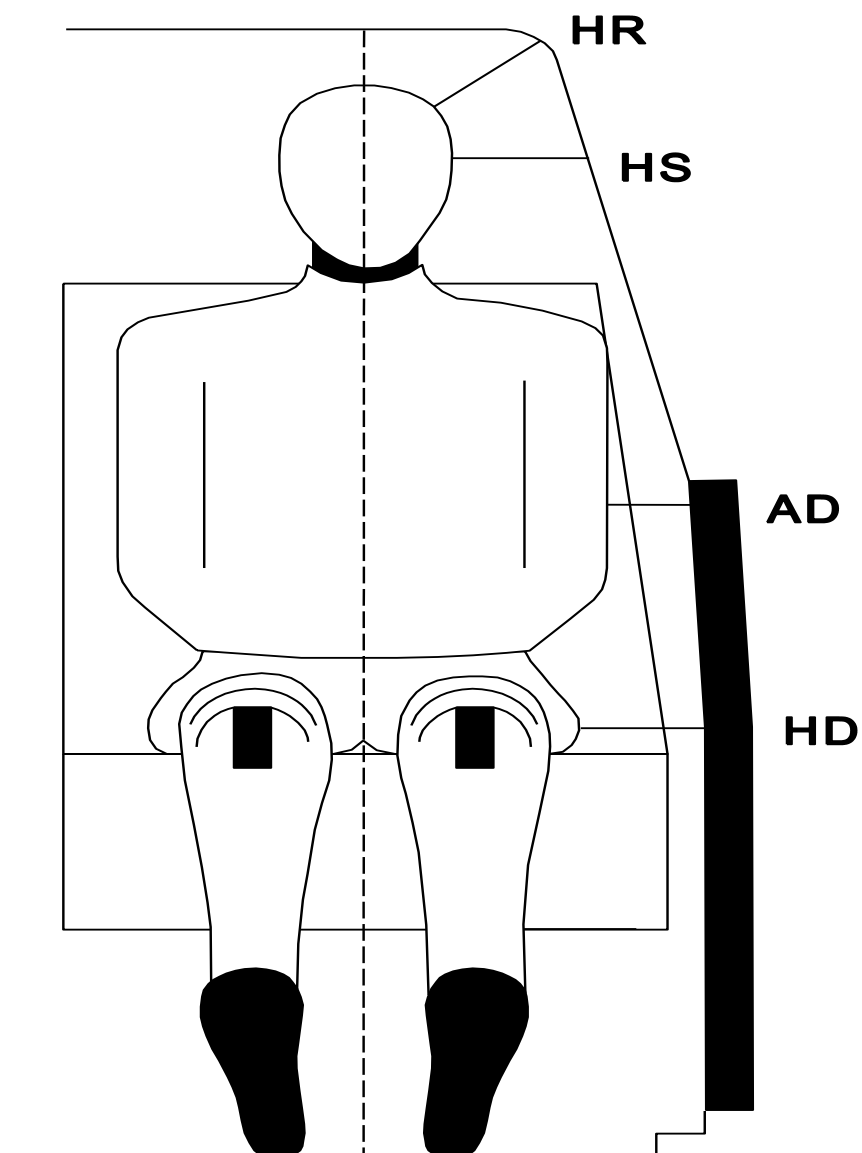
MEASUREMENT (mm)	DRIVER SID ID# <u>339</u>
HH	320
HW	585
HZ	165
NR	411
CD	539
CS	290

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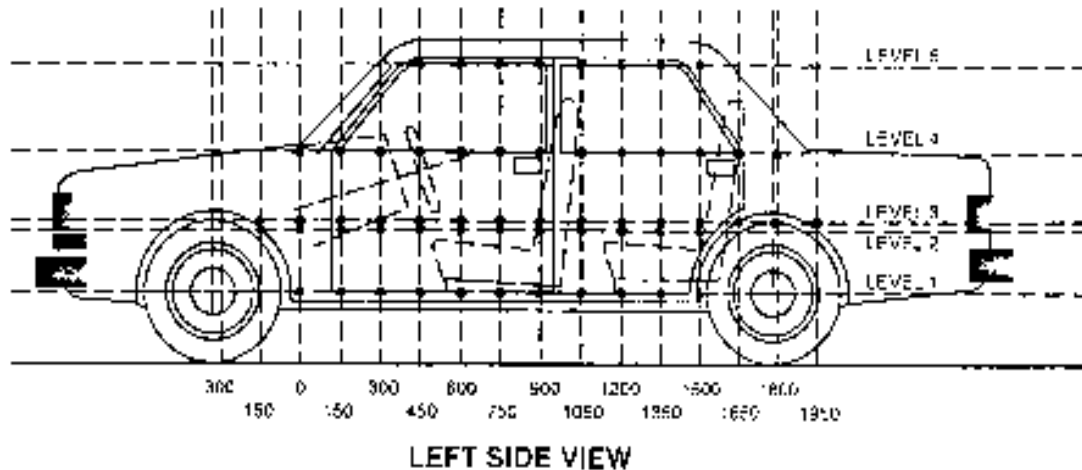
Data Sheet 6...Continued

MEASUREMENT (mm)	DRIVER SID ID# <u>339</u>
KDL(KDA°)/KBL(KDA°)	231(18°)
KDR(KBA°)/KBR(KBA°)	185(°)
PA°	22
PHX	
PHZ	

REMARKS:

DATA SHEET 7**SID LATERAL CLEARANCE DIMENSIONS**TEST VEHICLE: 2009 HYUNDAI ELANTRA TOURING WAGON TEST NO.: C080710A

MEASUREMENT(mm)	DRIVER SID ID# <u>339</u>
HR	237
HS	334
AD	122
HD	160

DATA SHEET 8**VEHICLE SIDE MEASUREMENTS**TEST VEHICLE: 2009 HYUNDAI ELANTRA TOURING WAGON TEST NO.: C080710A

NOTE: All measurements are in millimeters (mm)

LEVEL 5 - WINDOW TOP
 LEVEL 4 - WINDOW SILL
 LEVEL 3 - MID-DOOR
 LEVEL 2 - OCCUPANT H-POINT
 LEVEL 1 - AXLE CENTERLINE HEIGHT OR SILL TOP HEIGHT

MEASUREMENTS ALONG THE VERTICAL 750 mm. LINE SHOWN ABOVE:

LEVEL 5 @ Window Top = _____ mm

LEVEL 4 @ Window Sill = _____ mm

LEVEL 3 @ Mid Door = _____ mm

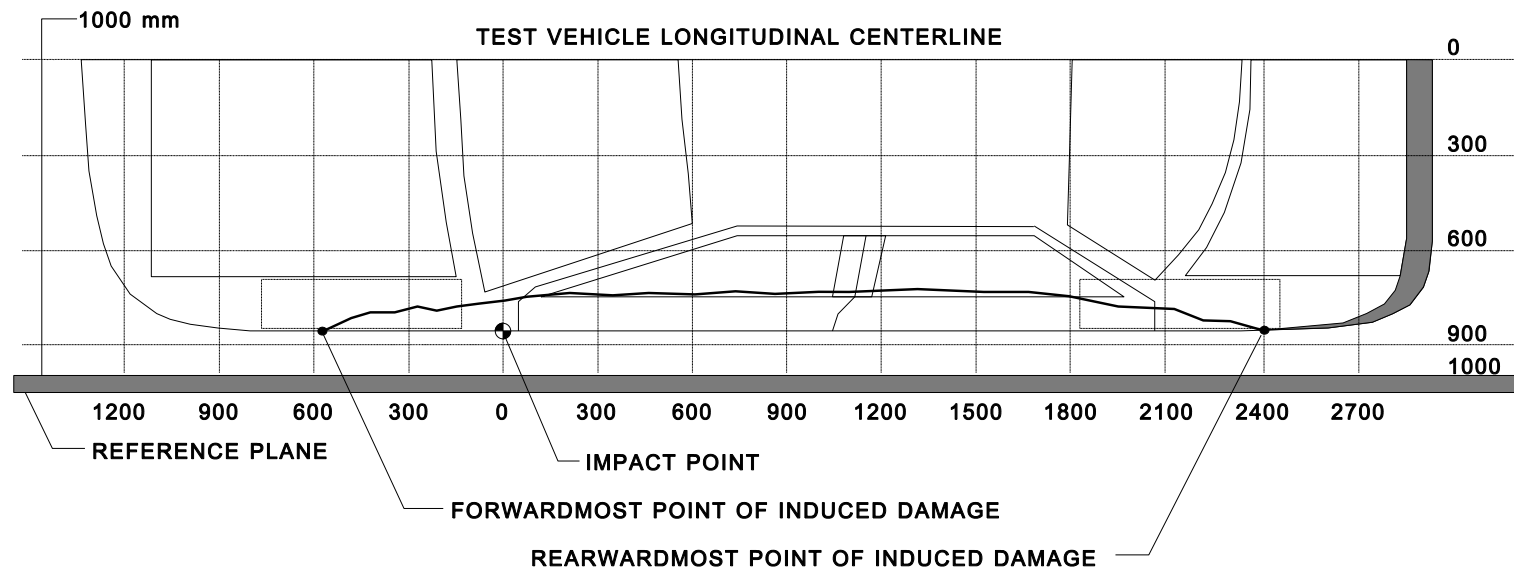
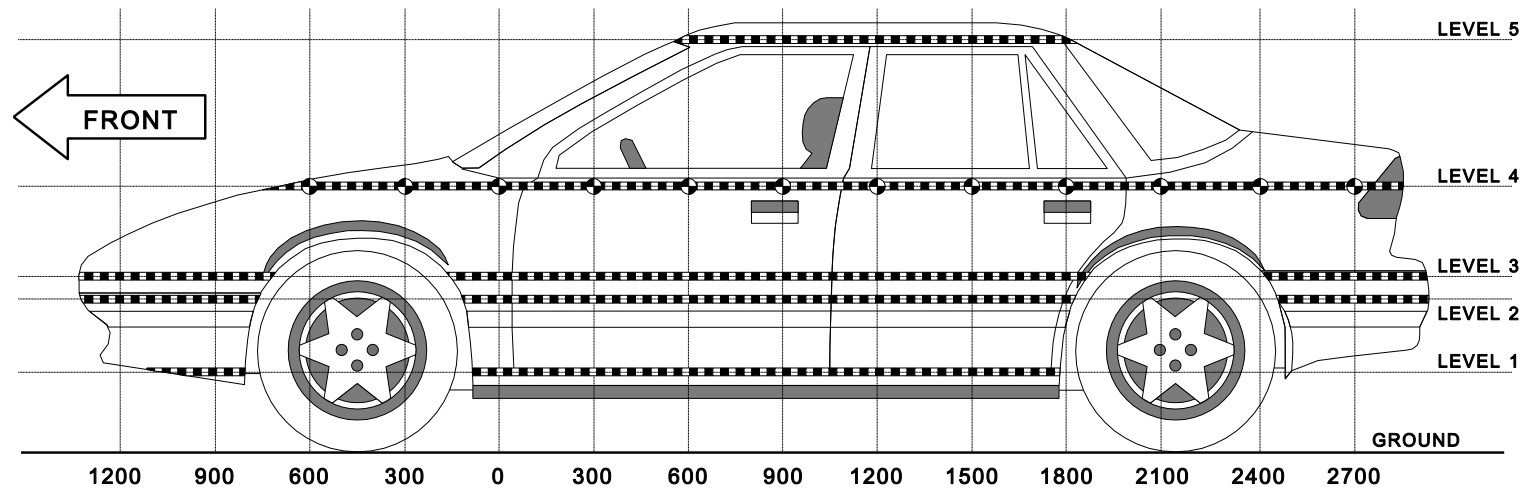
LEVEL 2 @ Occupant H-Point = _____ mm

LEVEL 1 @ Axle Centerline Height = _____ mm
(or Sill Top Height)

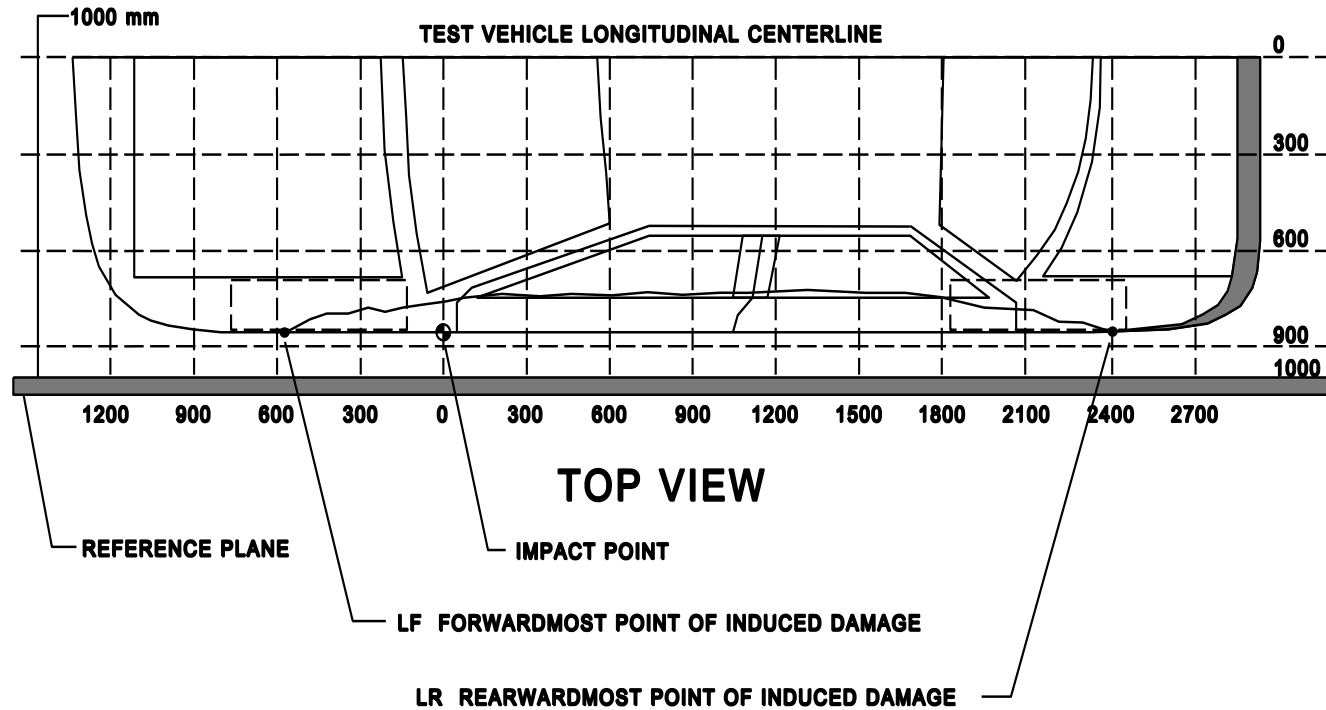
DATA SHEET 9**VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS**

NOTE: Due to limited space the following table only indicates measurements from -150 mm to 1800 mm, however, tape should be applied along the entire length of target vehicle and measurements made every 150 mm, across span of induced damage (see graphic on next page). **Measurements should be accurate to ± 3 mm.**

			DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT													
LOCATION	HEIGHT		-150	0	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800
LEVEL 1 SIDE SILL		PRE														
		POST														
		CRUSH														
LEVEL 2 H- POINT		PRE														
		POST														
		CRUSH														
LEVEL 3 MID- DOOR		PRE														
		POST														
		CRUSH														
LEVEL 4 WINDOW SILL		PRE														
		POST														
		CRUSH														
LEVEL 5 WINDOW TOP		PRE														
		POST														
		CRUSH														



NOTE: All measurements are in millimeters (mm)

DATA SHEET 10**VEHICLE DAMAGE PROFILE DISTANCES****MEASUREMENT CONVENTIONS:**

Forward of the impact point (towards front of vehicle) is considered negative (-).

Rearward of the impact point (toward rearend of vehicle) is considered positive (+).

NOTE: All measurements are in millimeters (mm) and should be accurate to 3mm.

DATA SHEET 10...Continued

DPD MEASUREMENTS	POST TEST (mm)	PRETEST (mm)	STATIC CRUSH (mm)
1 (LF = ____ mm)	-		-
2			
3			
4			
5			
6 (LR = ____ mm)	-		-

REMARKS:

DATA SHEET 11**EXTERIOR STATIC CRUSH FOR IMPACTOR FACE**

TEST VEHICLE: 2009 HYUNDAI ELANTRA TOURING WAGON TEST NO.: C080710A

All measurements shall be made in millimeters and should have a tolerance of ± 3 mm

LOCATION	HEIGHT AT CL'	DISTANCE RIGHT OF CENTER (mm)								0	DISTANCE LEFT OF CENTER (mm)							
		800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
Top Stack Level Level 4																		
Mid Stack Level Level 3																		
Top Bumper Level Level 2																		
Mid Bumper Level Level 1																		

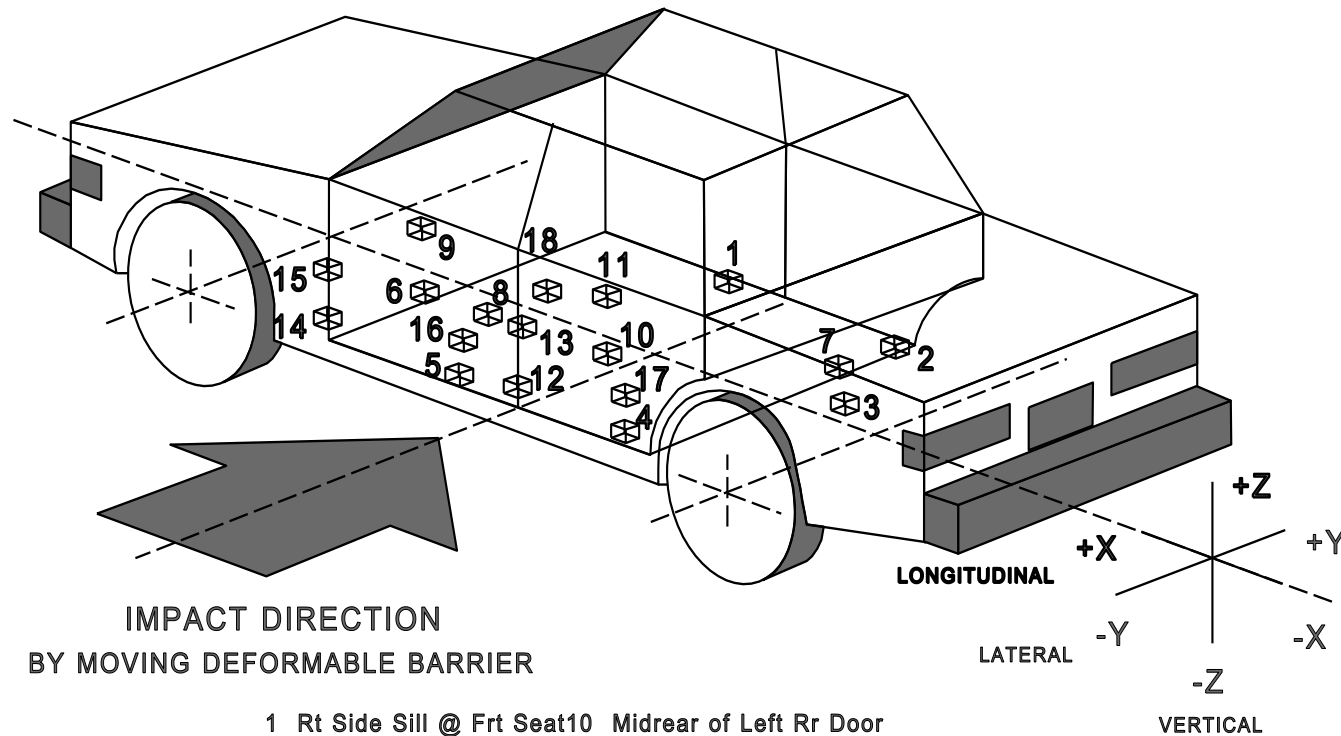
REMARKS:

DATA SHEET 12
TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST VEHICLE: 2009 HYUNDAI ELANTRA TOURING WAGON

TEST NO.: C080710A

VEHICLE ACCELEROMETER LOCATIONS



**IMPACT DIRECTION
BY MOVING DEFORMABLE BARRIER**

- | | |
|-------------------------------|----------------------------|
| 1 Rt Side Sill @ Frt Seat | 10 Midrear of Left Rr Door |
| 2 Rt Side Sill @ Rr Seat | 11 Left Rr Door Up C/Line |
| 3 Rr Floorpan Above Axle | 12 Left Lwr BPost |
| 4 Left Side Sill @ Rr Seat | 13 Left Middle BPost |
| 5 Left Side Sill @ Frt Seat | 14 Left Lwr APost |
| 6 Left Frt Door on Centerline | 15 Left Middle APost |
| 7 Rt Rr Occ Compartment | 16 Frt Seat Track |
| 8 Midrear of Left Frt Door | 17 Rr Seat Track |
| 9 Left Frt Door Up C/Line | 18 Vehicle C.G. |

DATA SHEET 12...Continued

ACCEL NO.	LOCATION	COORDINATES (mm) ± 3 mm				LONGITUDINAL (X)		LATERAL (Y)		VERTICAL (Z)		RESULTANT	
		X	Y	Z		Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
1	Right Front Sill at Front Seat				Pos. Neg.			15.26 -0.42	19 286	-	-		
2	Right Rear Sill at Rear Seat				Pos. Neg.			15.60 -0.32	19 290	-	-		
3	Rear Floorpan Above Axle				Pos. Neg.								
4	Left Side Sill at Rear Seat				Pos. Neg.								
5	Left Side Sill at Front Seat				Pos. Neg.								
6	Left Front Door on Centerline				Pos. Neg.								
7	Right Rear Occupant Compartment				Pos. Neg.								
8	Mid-Rear of Left Front Door				Pos. Neg.								
9	Left Front Door Upper Centerline				Pos. Neg.								
10	Mid-Rear of Left Rear Door				Pos. Neg.			-	-				
11	Left Rear Door Upper Centerline				Pos. Neg.			-	-				

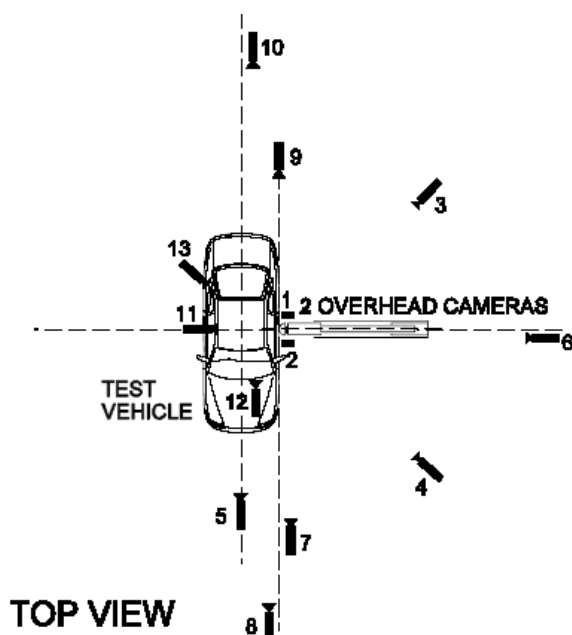
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DATA SHEET 12...Continued

ACCEL NO.	LOCATION	COORDINATES (mm) $\pm$ 3 mm				LONGITUDINAL (X)		LATERAL (Y)		VERTICAL (Z)		RESULTANT	
		X	Y	Z		Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
12	Left Lower B-Post				Pos. Neg.								
13	Left Middle B-Post				Pos. Neg.								
14	Left Lower A-Post				Pos. Neg.								
15	Left Middle A-Post				Pos. Neg.								
16	Front Seat Track				Pos. Neg.								
17	Rear Seat Track				Pos. Neg.								
18	Vehicle C.G.				Pos. Neg.								

REMARKS:

DATA SHEET 13 HIGH SPEED CAMERA LOCATIONS AND DATA



CAMERA No.	VIEW	COORDINATES (mm)			ANGLE	LENS (mm)	MIN.FILM SPEED (fps)
		X*	Y*	Z*			
1	Overhead Overall view of test vehicle					ZOOM	1000
2	Overhead closeup view of impact plane						
3	Left Side 45° Rearward Pole View						
4	Left Side 45° Forward Pole View					ZOOM	1000
5	Real Time						
6	Left Side Rear Pole View						
7	Front Ground Level Vehicle/Pole Impact					ZOOM	1000
8	Front Ground Level Vehicle Roof Targets and Vehicle/Pole Impact					ZOOM	1000
9	Rear Ground Level Vehicle/Pole Impact						
10	Rear Ground Level					ZOOM	1000
11	Test Vehicle Onboard Driver Side View						
12	Test Vehicle Onboard Driver front view						
13	Test Vehicle Onboard Driver 3/4 Rear View						

* All measurements accurate to ± 6 mm.

REFERENCE (from Point of Impact): + X = Rearward, + Y = To Right, + Z = Up

APPENDIX B**DATA PLOTS****TABLE OF DATA PLOTS****DRIVER AND PASSENGER DUMMY INSTRUMENTATION PLOTS**

No.		Page
1	Driver - Head X Acceleration vs. time	B-2
2	Driver - Head Y Acceleration vs. time	B-2
3	Driver - Head Z Acceleration vs. time	B-2
4	Driver - Head Resultant Acceleration vs. Time	B-2
5	Driver - Upper Rib (Y) Acceleration vs. time	B-3
6	Driver - Lower Rib (Y) Acceleration vs. time	B-3
7	Driver - Spine (Y) Acceleration vs. time	B-3
8	Driver - Pelvis (Y) Acceleration vs. time	B-3

TEST VEHICLE INSTRUMENTATION PLOTS

9	Right Side Sill at Front Seat (Y) Acceleration vs. Time	B-4
10	Right Side Sill at Rear Seat (Y) Acceleration vs. Time	B-4

Test No : C080710A

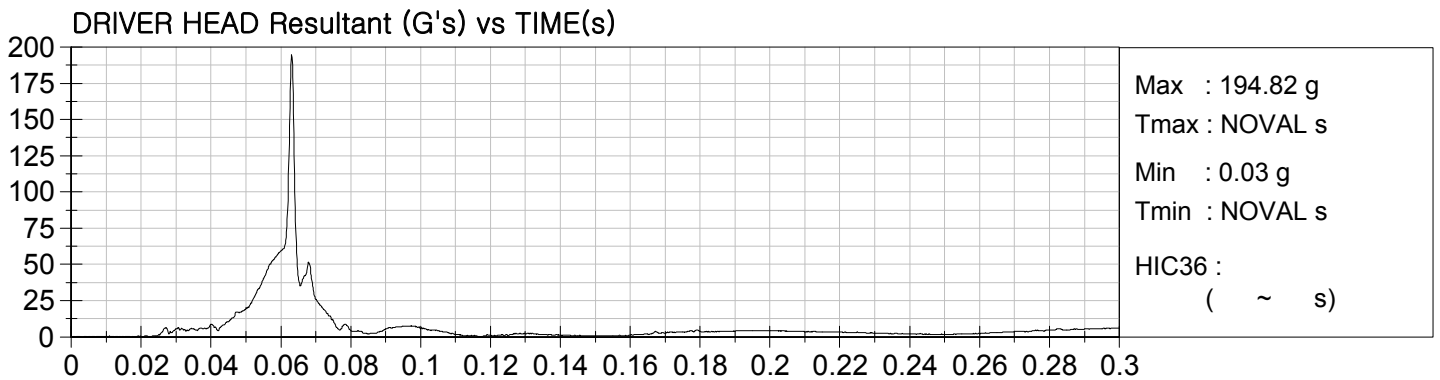
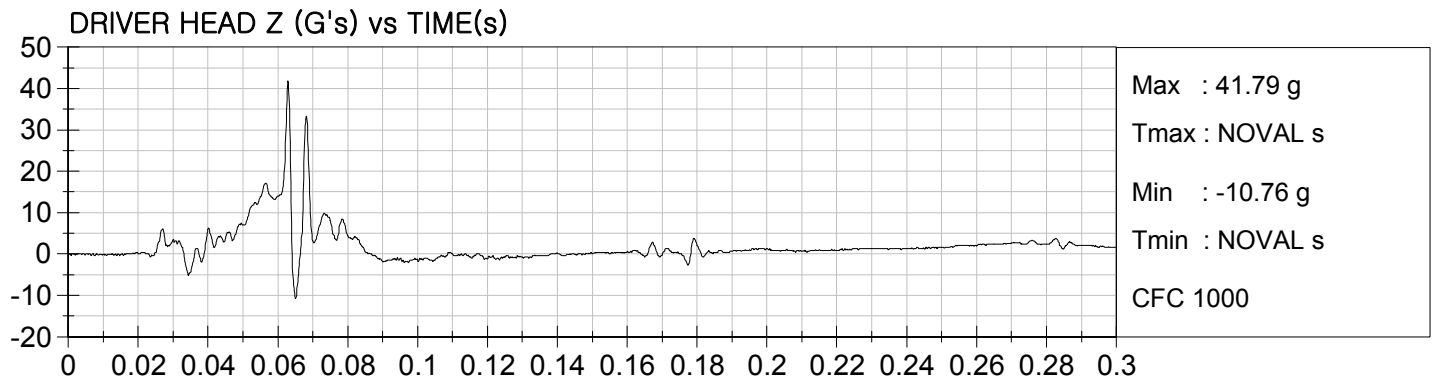
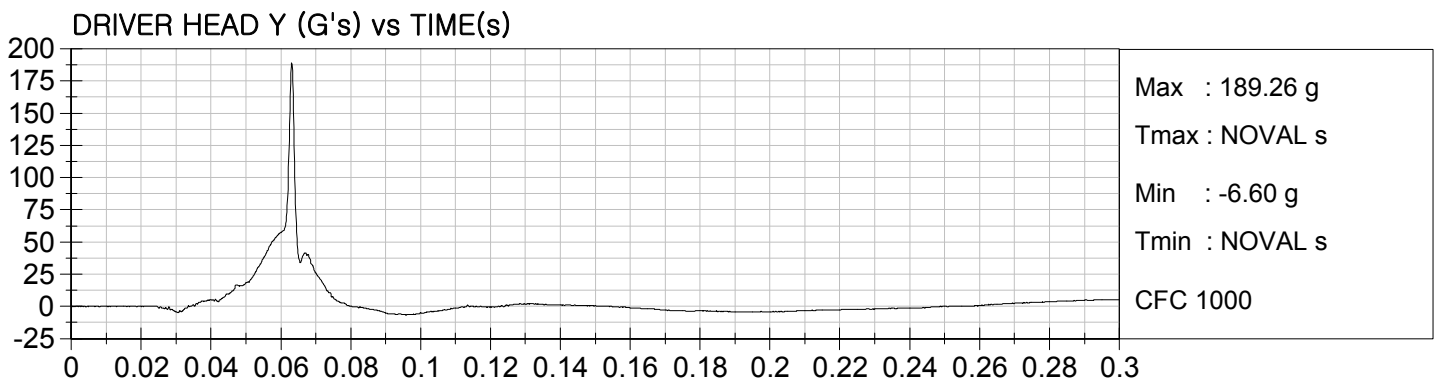
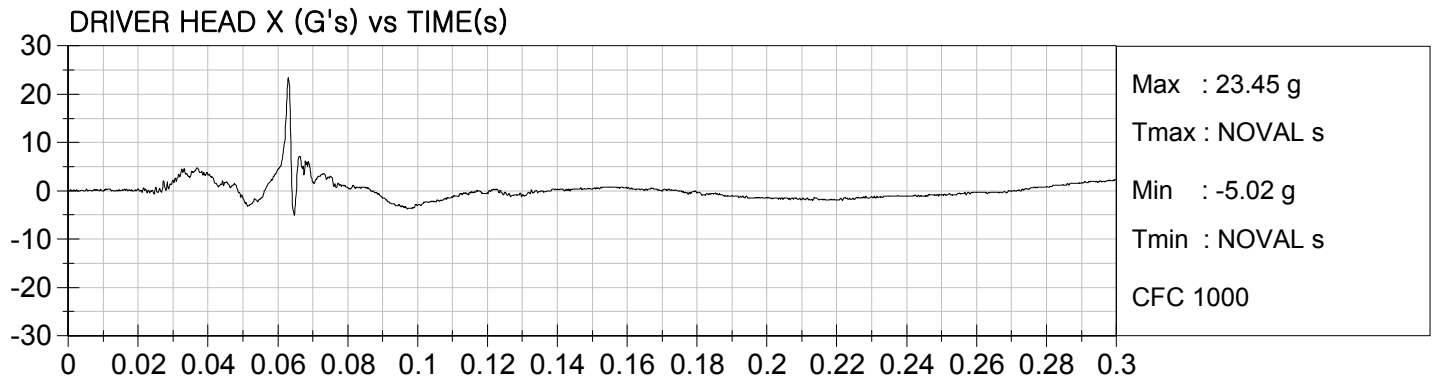
Vehicle Model : ELANTRA TOURING

Test Date : 7/10/2008

Test Weight : 1533 kg

Test Title : 29KPH SIDE POLE

Impact Speed : 32 kph



Test No : C080710A

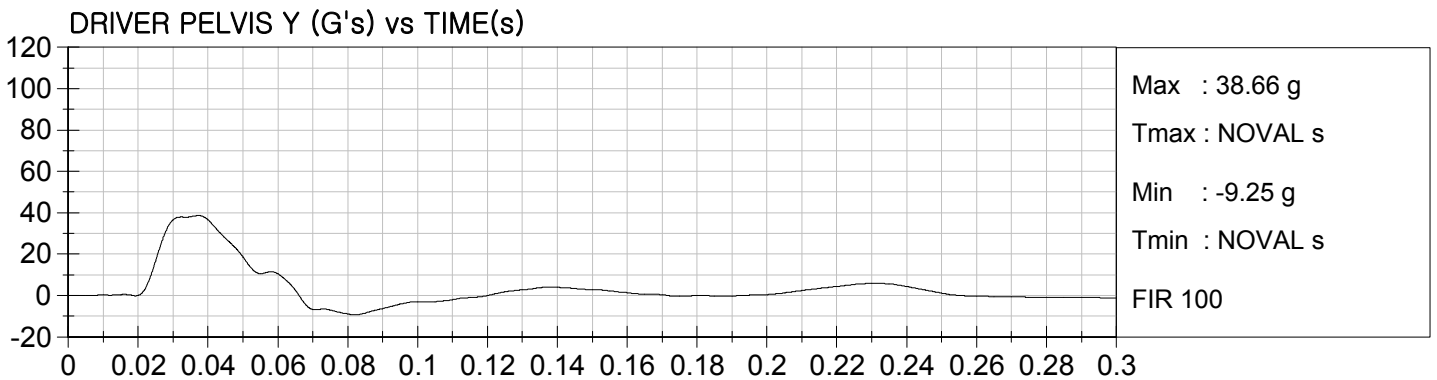
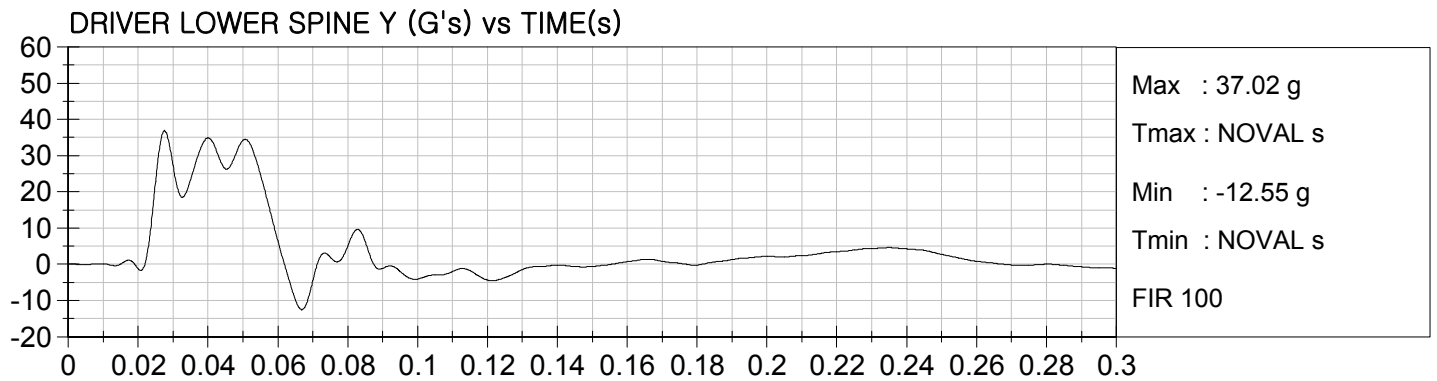
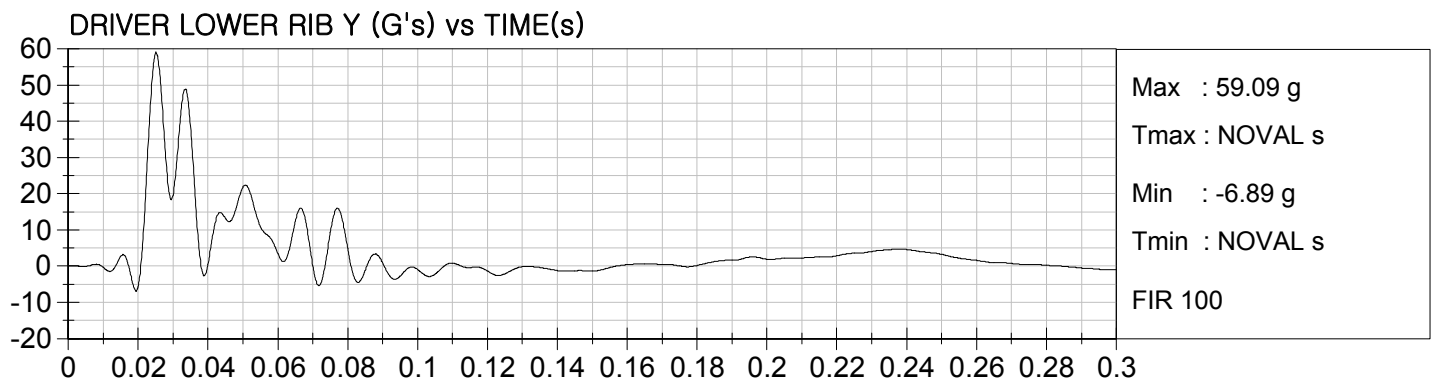
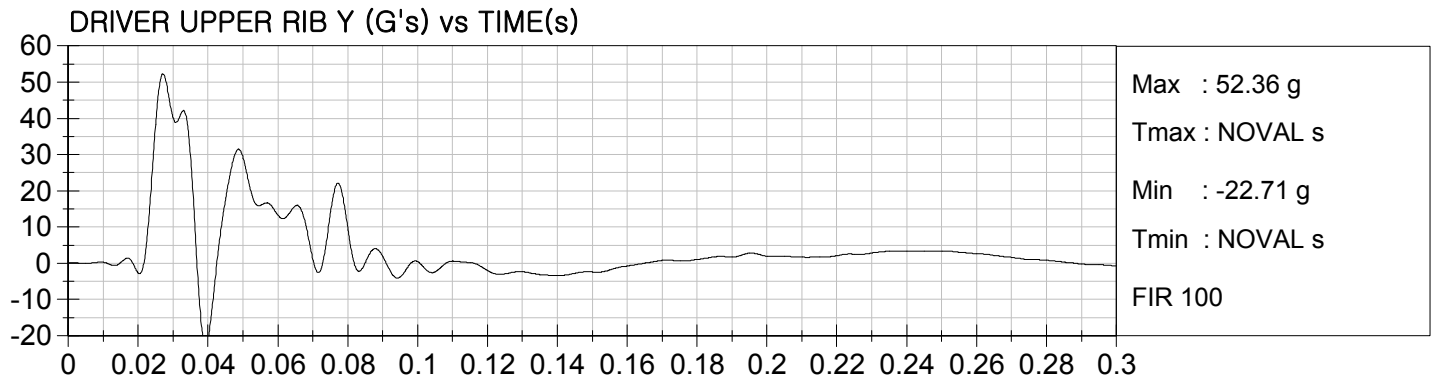
Vehicle Model : ELANTRA TOURING

Test Date : 7/10/2008

Test Weight : 1533 kg

Test Title : 29KPH SIDE POLE

Impact Speed : 32 kph



Test No : C080710A

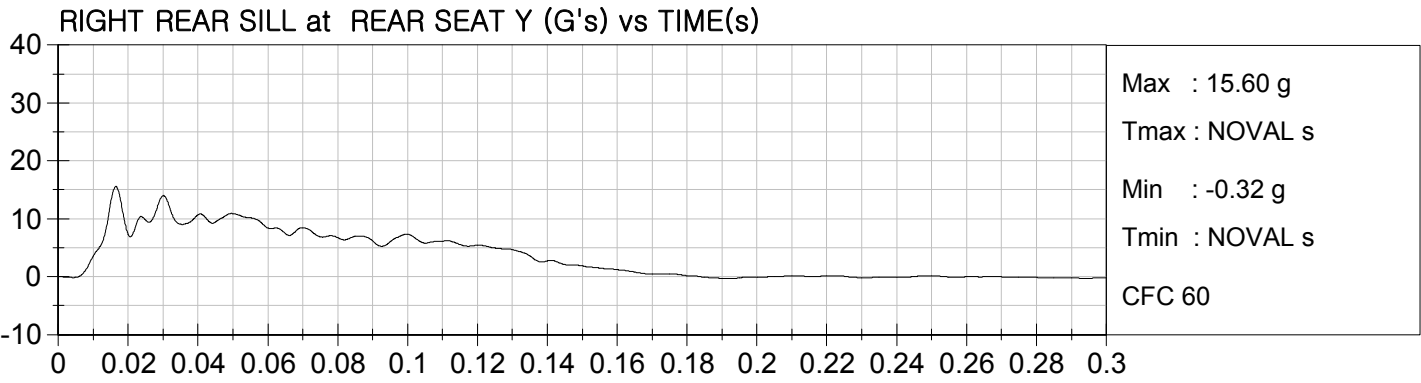
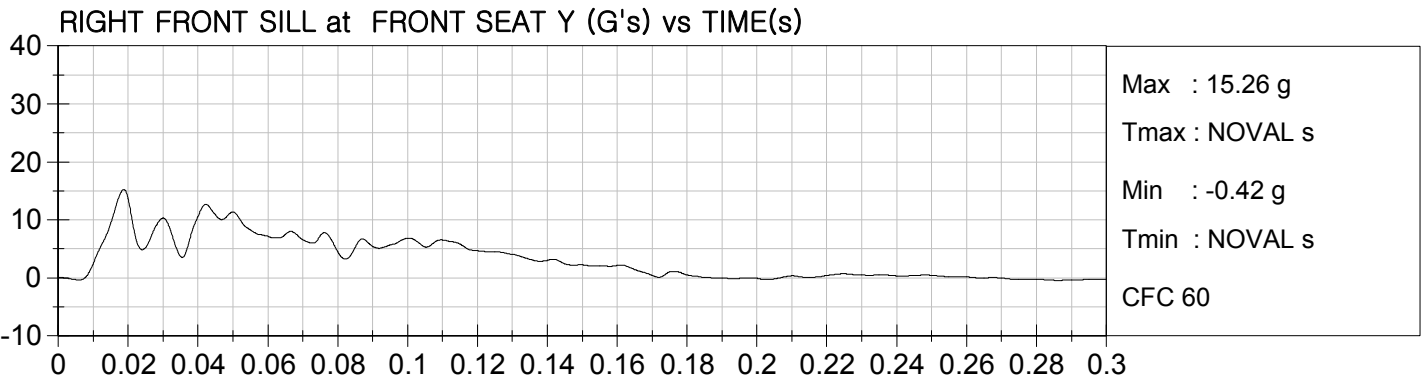
Test Date : 7/10/2008

Test Title : 29KPH SIDE POLE

Vehicle Model : ELANTRA TOURING

Test Weight : 1533 kg

Impact Speed : 32 kph



APPENDIX C**PHOTOGRAPHS****TABLE OF PHOTOGRAPHS**

No.		Page
1	Pre-Test Front View of Test Vehicle	C-2
2	Post-Test Front View of Test Vehicle	C-2
3	Pre-Test Engine Compartment View of Test Vehicle	C-3
4	Post-Test Engine Compartment View of Test Vehicle.....	C-3
5	Pre-Test Left Side View of Test Vehicle	C-4
6	Post-Test Left Side View of Test Vehicle	C-4
7	Pre-Test Front Underbody View of Test Vehicle	C-5
8	Post-Test Front Underbody View of Test Vehicle.....	C-5
9	Pre-Test Rear Underbody View of Test Vehicle	C-6
10	Post-Test Rear Underbody View of Test Vehicle	C-6
11	Pre-Test Unimpacted Side View of Driver Dummy.....	C-7
12	Post-Test Unimpacted Side View of Driver Dummy	C-7
13	Pre-Test Windshield View of Test Vehicle	C-8
14	Post-Test Windshield View of Test Vehicle	C-8
15	Post-Test Head Contact View of Driver Dummy.....	C-9
16	Post-Test Rib Contact View of Driver Dummy.....	C-9



POST-TEST : HEAD CONTACT VIEW



POST-TEST : RIB CONTACT VIEW

FMVSS 214 "SIDE IMPACT PROTECTION"
VEHICLE COMPLIANCE TESTING OF
33.5mph SIDE IMPACT TEST (CURTAIN/SIDE AIRBAG)
HYUNDAI VERACRUZ 5 DOOR SUV 2007 MY

REPORT NO. : L4 - EN - 121
TEST DATE : OCT. 10, 2006
REPORT DATE : OCT. 20, 2006

PREPARED BY TEST 4 TEAM
LOCATED IN NAMYANG
HYUNDAI MOTOR COMPANY

CIRCULATION : CRA BODY ENGINEERING TEAM 1
TRIM ENGINEERING TEAM 1
CHASSIS & POWERTRAIN ENGINEERING TEAM 1
CHASSIS & SAFETY CONTROL DESIGN TEAM,
VEHICLE INFORMATION TEAM
CERTIFICATION & REGULATION TEAM

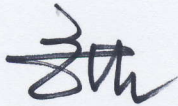
MODEL / YEAR : HYUNDAI VERACRUZ 5 DOOR SUV / 2007

VEHICLE NO. : KM8NU71C18U000276

TEST & SPECIFICATION : FMVSS 214 "SIDE IMPACT PROTECTION"

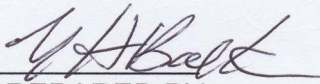
TEST RESULT : PASS

I hereby certify that the contents of this report are true and correct to the best of my knowledge.



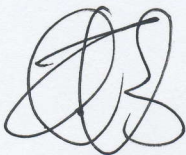
PREPARED BY

(J.P.YOON)



PREPARED BY

(Y.H,BAEK)



APPROVED BY

(O.S.KO)

OCT. 20, 2006
DATE

MODEL / YEAR : HYUNDAI VERACRUZ 5 DOOR SUV / 2007

VEHICLE NO. : KM8NU71C18U000276

TEST & SPECIFICATION : FMVSS 214 "SIDE IMPACT PROTECTION"

TEST RESULT : PASS

I hereby certify that the contents of this report are true and correct to the best of my knowledge.

PREPARED BY
(J.P.YOON)

PREPARED BY
(Y.H,BAEK)

APPROVED BY
(O.S.KO)

OCT. 20, 2006
DATE

TABLE OF CONTENTS

		PAGE
1.	PURPOSE	4 / 5
2.	TEST PROCEDURE	4 / 5
3.	TEST RESULTS	5 / 5
4.	CONCLUSION	5 / 5

APPENDICES

A. DATA SHEETS

B. VEHICLE AND SID RESPONSE DATA

C. PHOTOGRAPHS

D. SID CONFIGURATION AND PERFORMANCE VERIFICATION TEST DATA SHEETS

1. PURPOSE

The purpose of these compliance tests was to determine whether a HYUNDAI VERACRUZ 5 DOOR SUV 07MY (Equipped with curtain/side airbag) conducted a 33.5 mph side impact test would meet the requirements of FMVSS 214 "SIDE IMPACT PROTECTION".

2. TEST PROCEDURE

2.1 Dynamic performance requirements

2.1.1 Thorax

The TTI (Thoracic Trauma Index) shall not exceed 85 g's for passenger cars with 4 side doors, and shall not exceed 90 g's for passenger cars with 2 side doors.

2.1.2 Pelvis

The peak lateral acceleration of pelvis shall not exceed 130 g's.

2.1.3 Door opening

Any side door, which is struck by the moving deformable barrier, shall not separate totally from the car. Any door (including a rear hatchback or tailgate), which is not struck by the moving deformable barrier, shall meet the following requirements; The door shall not disengage from the latched position. The latch shall not separate from the striker and hinge components shall not separate from each other or from their attachment to the vehicle. Neither the latch nor the hinge systems of the door shall pull out of their anchorages.

2.2 Test procedure utilized

Refer to the Office of Vehicle Safety Compliance (OVSC) laboratory test procedure No. TP-214D-04.

2.3 Test preparation

Two Part 572, subpart F dummies were seated in the front and rear outboard seating positions on the struck side of the car according to dummy placement instruction specified in the laboratory test procedure TP-214D-04. Both dummies were instrumented with rib, spine, and pelvis accelerations oriented to measure accelerations in the lateral direction. The test dummies were restrained using all available belt systems in all seating position. All test vehicle doors, including any rear hatchback or tailgate, were fully closed and latched but not locked. The fuel tank was filled 93 % of its rated capacity with stoddard solvent. The test vehicle's struck side windows and opposite side windows were placed in the fully closed location. For a vehicle equipped with an automatic transmission, the transmission was placed in neutral. For all vehicle the parking brake was engaged.

3. TEST RESULTS

All portion of the Part 572, subpart F dummies remained within the passenger compartment throughout the test.

3.1 FMVSS 214 "SIDE IMPACT PROTECTION"

3.1.1 Injury criteria

	ALLOWED RESULTS PER FMVSS 214	FRONT DUMMY	REAR DUMMY
Thoracic Trauma Index (TTI)	85 G'S (4 DOOR)	19.7	26.2
	90 G'S (2 DOOR)		
Pelvic peak Lateral acceleration	130 G'S	30	41.3

3.1.2 Vehicle door opening information

	STRUCK SIDE		OPPOSITE SIDE	
	PASS	FAILURE	PASS	FAILURE
FRONT DOOR	○		○	
REAR DOOR	○		○	

4. CONCLUSION

The HYUNDAI VERACRUZ 5 DOOR SUV 07 MY(Equipped with curtain/side airbag) conducted a 54.2kph side impact test met the requirements of the FMVSS 214 "SIDE IMPACT PROTECTION"

APPENDIX "A"

DATA SHEETS

TEST VEHICLE INFORMATION AND TEST DATA

	PAGE
1. GENERAL TEST VEHICLE PARAMETER DATA -----	A – 2/23
2. TEST VEHICLE SUMMARY OF RESULTS -----	A – 6/23
3. MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS -----	A – 8/23
4. POST DATA OBSERVATIONS -----	A – 9/23
5. SID INSTRUMENTATION DATA -----	A – 11/23
6. SID LONGITUDINAL CLEARANCE DIMENSIONS -----	A – 12/23
7. SID LATERAL CLEARANCE DIMENSIONS -----	A – 14/23
8. VEHICLE EXTERIOR CRUSH PROFILES – ALL LEVELS -----	A – 15/23
9. EXTERIOR STATIC CRUSH FOR IMPACTOR FACE -----	A – 18/23
10. MDB ACCELEROMETER LOCATIONS AND DATA SUMMARY -----	A – 20/23
11. HIGH SPEED CAMERA LOCATIONS AND DATA -----	A – 21/23

DATA SHEET 1
GENERAL TEST VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

MODEL YEAR/MAKE / MODEL : 2007 / HMC / VERACRUZBODY STYLE / COLOR : 5 DOOR SUV / SP VIN : KM8NU71C18U000276

BUILD DATE :

ENGINE DATA : 6 cylinders; CID; Liter; 3,800 ccPlacement longitudinal; or 0 lateralTRANSMISSION: 6 speed; manual; 0 automatic; overdriveFINAL DRIVE: rear wheel drive; 0 front wheel drive; four wheel driveODOMETER READING: 7 km.OPTIONS: 0 A/C; 0 pwr. steering; 0 pwr. brakes; 0 pwr. windows

DATA RECORDED FROM VEHICLE'S TIRE PLACARD:

TIRE PRESSURE (AT CAPACITY): 30 psi Front; 30 psi RearRECOMMENDED TIRE SIZE : 245 / 65 R17TIRES ON VEHICLE: 245/65 R17 Mfr.: HANKOOK

VEHICLE CAPACITY DATA:

Number of Occupants: 2 front; 3 2nd 2 3rd 7 TotalType of Front Seat(s): 0 buckets; bench; split benchType of Front Seat Back: fixed; 0 adjustable with 0 lever or knobVehicle Maximum Capacity Loading = 526 kg. (A)Number of Occupants X 68 kg. = 476 kg. (B)Vehicle Cargo Capacity (A-B) = 50 kg.

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Right Front = 588 kg. Right Rear = 427 kg.
 Left Front = 563 kg. Left Rear = 453 kg.
 Total Front = 1151 kg. Total Rear = 880 kg.
 TOTAL WEIGHT = 2031 kg.

Percent of Total Weight –

Percent Front = 57% Percent Rear = 53%

CALCULATION OF TEST VEHICLE TARGET WEIGHT:

Total Vehicle Delvd Weight/Max. Fluids = 2095 kg. (A)

Max. Cargo Carrying Cap. of Vehicle = 50 kg. (B)

Weight of Side Impact Dummies (SIDs)

(1 or 2 x (instrumented SID weight) kg.) = 156 kg. (C)

TEST VEHICLE TARGET WEIGHT (A + B + C) = 2301 kg.

FULLY LOADED TEST VEHICLE (UDVW + 1 or 2 SID(s) + CARGO):

Right Front = kg. Right Rear = kg.
 Left Front = kg. Left Rear = kg.
 Total Front = kg. Total Rear = kg.
 Percent Front = Percent Rear =
 TOTAL WEIGHT = kg.

AS TESTED WT. OF VEH. (1 or 2 SID(s) + CARGO + EQUIP. & INSTRUMENTATION):

Right Front = 646 kg. Right Rear = 464 kg.
 Left Front = 658 kg. Left Rear = 533 kg.
 Total Front = 1304 kg. Total Rear = 997 kg.
 TOTAL WEIGHT = 2301 kg.
 Percent Front = 57% Percent Rear = 53%

TEST VEHICLE ATTITUDE:

AS DELIVERED	FULLY	LOADED	READY	FOR TEST
--------------	-------	--------	-------	----------

Right Front = <u>803</u> mm	Right Front = <u> </u> mm	Right Front = <u>786</u> mm
-----------------------------	--------------------------------	-----------------------------

Left Front = <u>806</u> mm	Left Front = <u> </u> mm	Left Front = <u>778</u> mm
----------------------------	-------------------------------	----------------------------

Right Rear = <u>834</u> mm	Right Rear = <u> </u> mm	Right Rear = <u>821</u> mm
----------------------------	-------------------------------	----------------------------

Left Rear = <u>830</u> mm	Left Rear = <u> </u> mm	Left Rear = <u>809</u> mm
---------------------------	------------------------------	---------------------------

Test Vehicle Wheelbase = 2805 mm

C.G. = 1215 mm rearward of front wheel centerline

Total Vehicle Length:

Right Side = mm

Left Side = mm

Centerline = 4840 mm

FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel = 240 mm

FRONT SEAT BACK ADJUSTMENT POSITION:

Seat back torso angle: 23 degrees

ADJUSTABLE STEERING COLUMN POSITION: mid position

WINDOW POSITIONS:

Right Front = <u>opened</u>	Right Rear = <u>opened</u>
-----------------------------	----------------------------

Left Front = <u>closed</u>	Left Rear = <u>closed</u>
----------------------------	---------------------------

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

Volume = 78 liters (92% to 94% of Useable Capacity)

LOCATION OF IMPACT POINT ON TEST VEHICLE SIDE TO BE IMPACTED:

Wheelbase = 2805 mm

Impact Point is 462.5 mm rearward of front axle centerline

Actual Impact Point is 472.5 mm rearward of front axle centerline

REMARKS:

DATA SHEET 2
TEST VEHICLE SUMMARY OF RESULTS

MODEL YEAR/MAKE/MODEL: 2007 / HMC / VERACRUZ

BODY STYLE: 5 DOOR SUV VIN: KM8NU71C18U000276

BUILD DATE:

TEST DATE: OCT. 10, 2006

Vehicle Overall Length = 4840 mm Vehicle Overall Width 1934 mm

VEHICLE TEST WEIGHT (Pretest):

Right Front = 646 kg. Right Rear = 464 kg.

Left Front = 658 kg. Left Rear = 533 kg.

Total Front = 1304 kg. Total Rear = 997 kg.

TOTAL WEIGHT = 2301 kg.

Wheelbase = 2805 mm

Longitudinal C.G. from center of front axle = 1215 mm

Impact Angle with respect to impactor = 90 degrees

IMPACT POINT:

Actual Impact Point = 10 mm [rearward or forward] of nominal impact ref. line
(LATERAL)

Actual Impact Point = 0 mm [above or below] nominal impact point
(VERTICAL)

MAXIMUM EXTERIOR STATIC CRUSH:

LEVEL 1 (363 mm above ground) = 148 mm

LEVEL 2 (730 mm above ground) = 244 mm

LEVEL 3 (808 mm above ground) = 238 mm

LEVEL 4 (1113 mm above ground) = 93 mm

LEVEL 5 (1664 mm above ground) = 15 mm

Maximum Post Test Intrusion = 244 mm

OCCUPANTS:

DRIVER

PASSENGER

Dummy ID: SID# 341

SID# 359

Restraint Used: CAB + SAB + 3 POINT MANUAL SEAT BELT

INSTRUMENTATION:

Number of Data Channels = 18

Number of Cameras:

Onboard =

Offboard = 5

Total Cameras = 5

REMARKS:

DATA SHEET 3
MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

MDB SPECIFICATIONS:

Overall Width of Framework Carriage = 1251 mm

Overall Length of MDB = 4114 mm (including honeycomb impact face)

Wheelbase of Frame work Carriage (front and rear) = 2591 mm

C.G. location (rearward of front axle) = 1134 mm

MDB WEIGHT:

Left Front = 376 kg. Left Rear = 303 kg.

Right Front = 387 kg. Right Rear = 291 kg.

Total Front = 763 kg. Total Rear = 594 kg.

TOTAL WEIGHT OF MDB = 1357 kg.

Impact Angle (MDB centerline to target vehicle centerline) = 90 degrees

Impact Speed = 33.7 mph(54.2kph)

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

A. ROW A at center of bumper level = 432 mm

B. ROW B at top of bumper level = 533 mm

C. ROW C at mid level = 686 mm

D. ROW D at top of stack level = 810 mm

INSTRUMENTATION:

Number of MDB data channels = 5

DATA SHEET 4
POST TEST OBSERVATIONS

TEST VEHICLE: VERACRUZ 5 DOOR SUV

VISIBLE DUMMY CONTACT POINTS:

	FRONT SID	REAR SID
HEAD	CURTAIN AIRBAG	CURTAIN AIRBAG
UPPER TORSO	SIDE AIRBAG	DOOR TRIM PANEL
LOWER TORSO	SIDE AIRBAG	DOOR TRIM PANEL
LEFT KNEE	DOOR TRIM PANEL	DOOR TRIM PANEL
RIGHT KNEE	-	-

DOOR OPENING:

	LEFT SIDE	RIGHT SIDE
FRONT	Remained Closed	Remained Closed
REAR	Remained Closed	Remained Closed

ARM REST LOCATION:

Front = MID LEVEL OF DOOR TRIM PANEL

Rear = MID LEVEL OF DOOR TRIM PANEL

SEAT MOVEMENT:

Front = NONE

Rear = NONE

GLAZING DAMAGE:

Windshield : NO DAMAGE

Window : LEFT SIDE WINDOW BROKEN

PILLAR PERFORMANCE:

NO FAILURE

SILL SEPARATION:

NO SEPARATION

OTHER NOTABLE IMPACT EFFECTS:

REMARKS:

DATA SHEET 5
SID INSTRUMENTATION DATA

TEST VEHICLE: VERACRUZ 4 DOOR SEDAN

NHTSA NO.:

	FRONT SID ID# <u>341</u>				REAR SID ID# <u>359</u>			
	Positive		Negative		Positive		Negative	
	max (g)	time (msec)	max (g)	time (msec)	Max (g)	time (msec)	Max (g)	time (msec)
RIB ACCELERATIONS								
Left Upper Rib (LUR) Y	16.77	63.13			27.21	55.00		
Left Lower Rib (LLR) Y	19.04	54.38			32.07	52.5		
SPINE ACCELERATIONS								
Lower Lateral Y			20.35	51.25			20.26	55.63
PELVIS ACCELERATIONS								
Lateral Y			29.92	43.75			41.3	47.5

REFERENCE:

Positive Direction: Longitudinal (X) = Rearward

Lateral (Y) = To Right

Vertical (Z) = Up

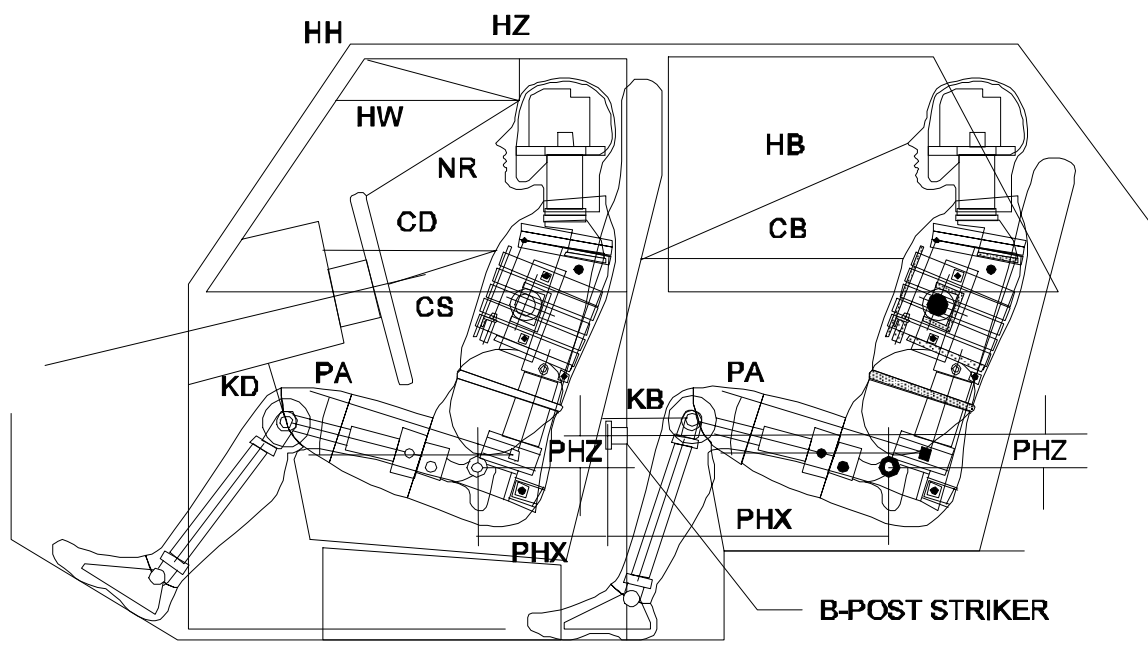
Negative Direction: Longitudinal (X) = Forward

Lateral (Y) = To Left

Vertical (Z) = Down

REMARKS:

SID LONGITUDINAL CLEARANCE DIMENSIONS

TEST VEHICLE: VERACRUZ 5 DOOR SUV

LEFT SIDE VIEW

NOTE: 2-DOOR VEHICLE SHOWN.
 REAR DUMMY PHX & PHZ
 MEASUREMENTS FOR A 4-DOOR
 VEHICLE WOULD USE THE C-POST
 STRIKER AS A REFERENCE POINT

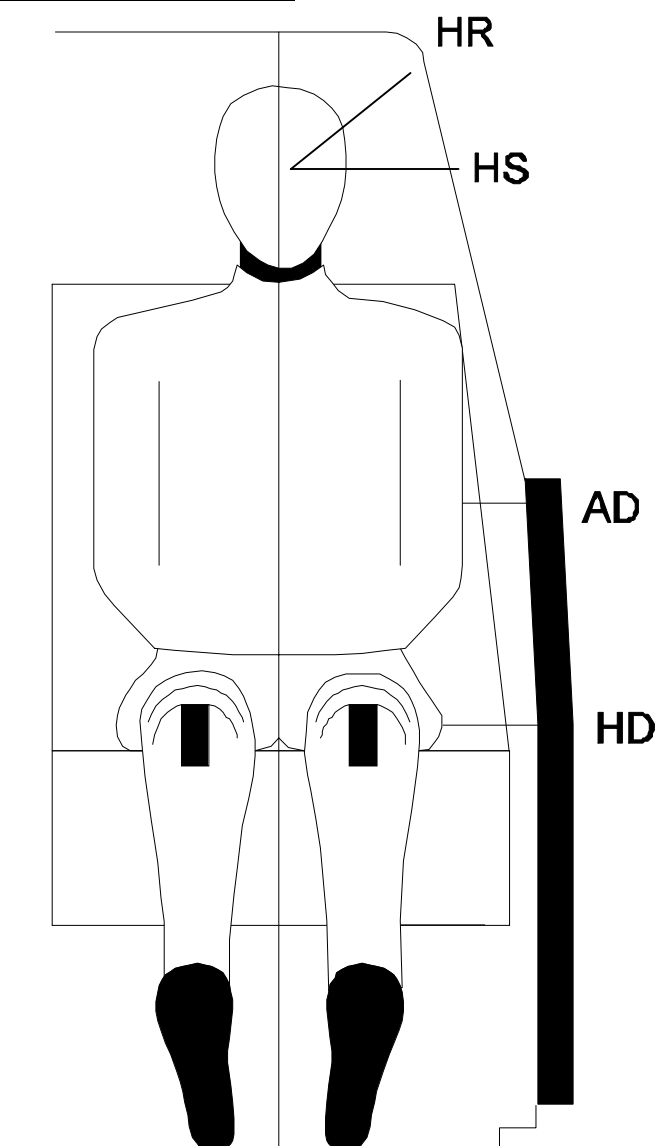
MEASUREMENT (mm)	DRIVER SID ID# <u>341</u>	PASSENGER SID ID# <u>359</u>
HH 364		-
HW 575		-
HZ 169		214
NR/NB 430		616
CD/CB 535		534
CS 266		-

MEASUREMENT (mm)	DRIVER SID ID# <u>341</u>	PASSENGER SID ID# <u>359</u>
KDL(KDA)/KBL(KDA)	110 / (27°)	250/ (20°)
KDR(KBA)/KBR(KBA)	105 / ()	260
PA	-	-
PHX -		-
PHZ -		-

REMARKS:

DATA SHEET 7
SID LATERAL CLEARANCE DIMENSIONS

TEST VEHICLE: VERACRUZ 5 DOOR SUV



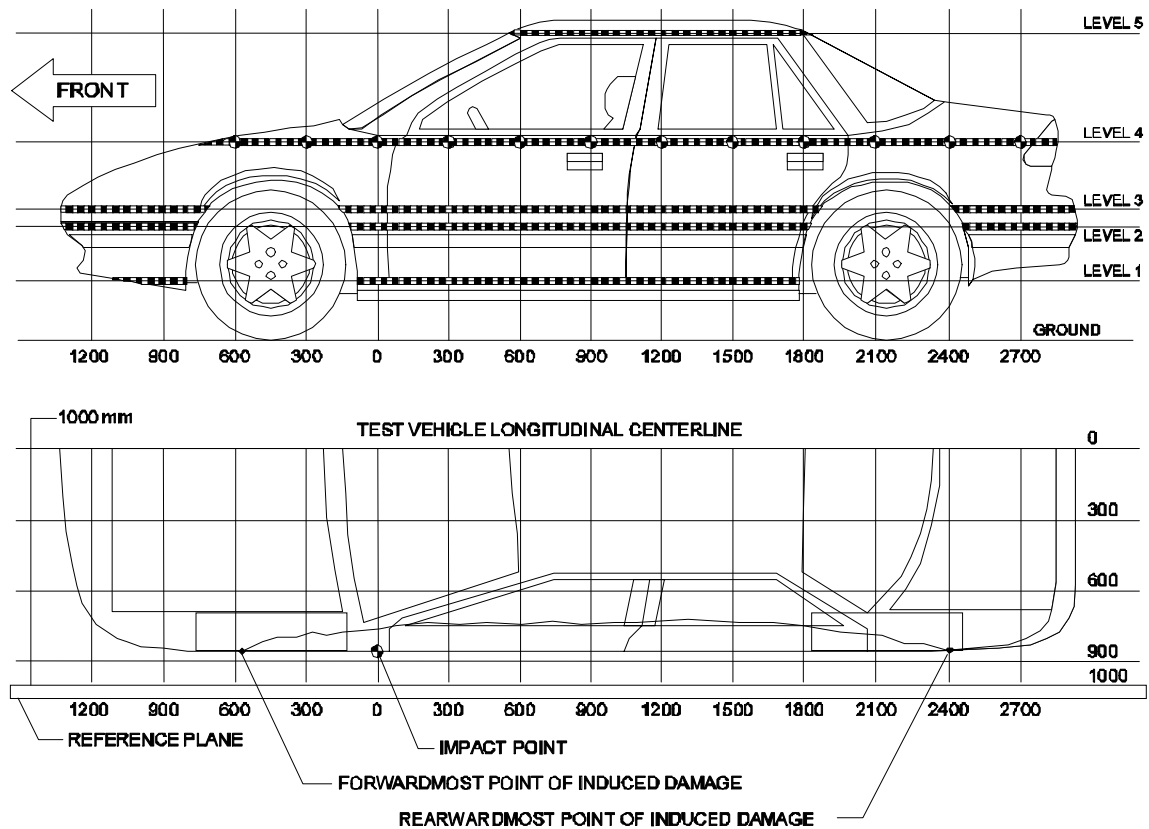
MEASUREMENT(mm)	DRIVER SID ID# <u>341</u>	PASSENGER SID ID# <u>359</u>
HR 266		270
HS 351		348
AD 123		140
HD 198		172

DATA SHEET 8
VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS

NOTE: Due to limited space the following table only indicates measurements from -150 mm to 1800 mm, however, tape should be applied along the entire length of target vehicle and measurements made every 150 mm, across span of induced damage (see graphic on next page). Measurements should be accurate to ± 3 mm.

LOCATION	HEIGHT		DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT (Measurements Continued On Next Page)							
			-150	0	150	300	450	600	750	900
LEVEL 1 SIDE 274 SILL		PRE		587 600	604 605 606 607					608
		POST		622 682	693 702 710 718					726
		CRUSH		35 82 89 97				104	111	118
LEVEL 2 H- 540 POINT		PRE	531	534 539	543 544 544 544					543
		POST	561	601 696	716 739 756 752					762
		CRUSH	30	67	157 173	195 212 218				230
LEVEL 3 MID- 619 324DOOR		PRE	532	536 540	543 543 542 541					540
		POST	550	579 675	726 746 759 759					777
		CRUSH	23	43	135 183	203 217 226				237
LEVEL 4 WINDOW SILL	936	PRE	656	645 642	641 636 631 625					619
		POST	659	658 640	652 657 663 670					682
		CRUSH	3	13	2	11 21 32 45				63
LEVEL 5 WINDOW 1430 TOP		PRE							872	
		POST							873	
		CRUSH							1	

			DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT					
LOCATION	HEIGHT		1050	1200	1350	1500	1650	1800
LEVEL 1 SIDE SILL	274	PRE	609	611 612 613	612			602
		POST	735	742 747 754	759			750
		CRUSH	126	131 135 141	147			148
LEVEL 2 132H- 188POINT	540	PRE	542	542 543 542	541			538
		POST	771	767 785 786	781			750
		CRUSH	229	220 239 244	240			212
LEVEL 3 MID- DOOR	619	PRE	539	539 539 539	538			536
		POST	772	771 789 789	776			757
		CRUSH	233	232 250 250	238			221
LEVEL 4 WINDOW SILL	936	PRE	614	608 602 597	590			586
		POST	696	721 708 690	667			654
		CRUSH	82	113	106	93	77	68
LEVEL 5 940WINDOW TOP	1430	PRE	72	857 847 844	843			841
		POST	873	763 760 857	856			853
		CRUSH	1	6	13 13 15			13



EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

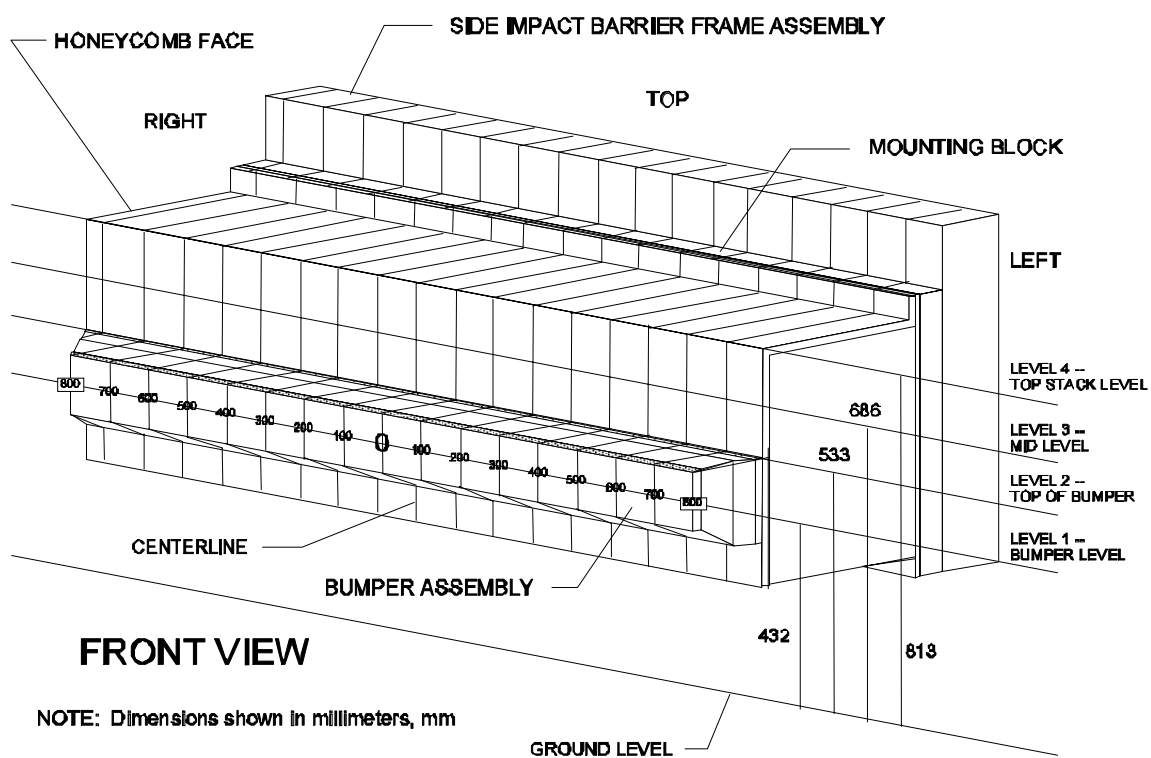
TEST VEHICLE: VERACRUZ 5 DOOR SUVAll measurements shall be made in millimeters and should have a tolerance of ± 3 mm

		DISTANCE RIGHT OF CENTER (mm)								
LOCATION	HEIGHT AT CL*	800	700	600	500	400	300	200	100	0
Top Stack Level Level 4	810mm	330 346		364	372	371	360	337	356	369
Mid Level Level 3	686mm	329 352		360	366	365	358	355	359	369
Top Bumper Level Level 2	533mm	311 322		328	331	334	329	332	336	336
Mid Bumper Level Level 1	432mm	336 362		372	376	376	375	375	375	374

		DISTANCE LEFT OF CENTER (mm)								
LOCATION	HEIGHT AT CL*	0	100	200	300	400	500	600	700	800
Top Stack Level Level 4	810mm		363	359 353	347 339 329	300				258
Mid Level Level 3	686mm		367	367 367	363 352 337	322				287
Top Bumper Level Level 2	533mm		335	333 333	331 327 325	320				313
Mid Bumper Level Level 1	432mm		373	373 371	370 368 362	354				329

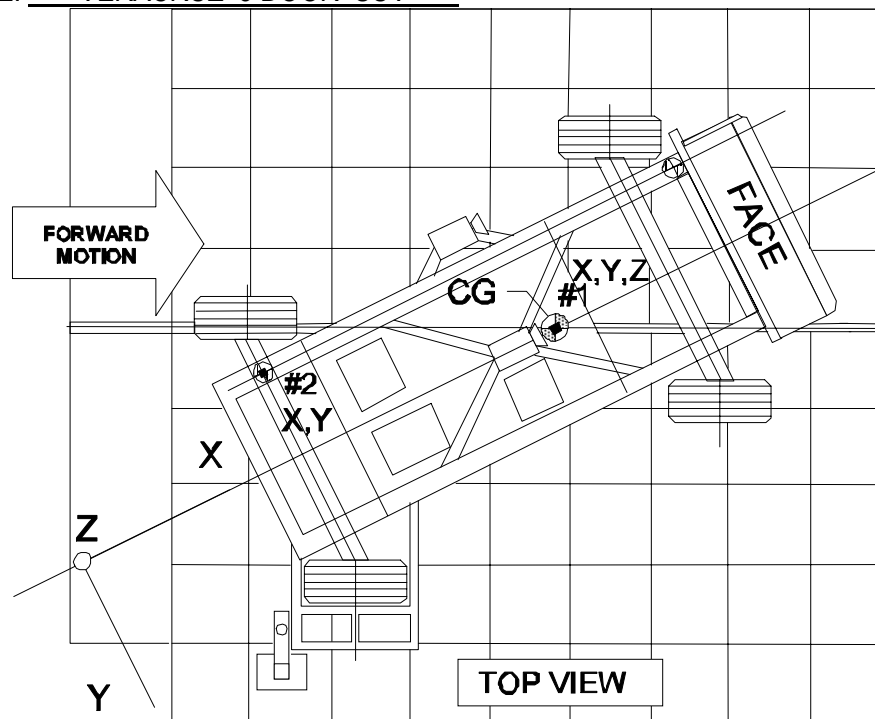
NOTE: See next page for Barrier Face Graphic

REMARKS:



DATA SHEET 10
MDB ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST VEHICLE: VERACRUZ 5 DOOR SUV

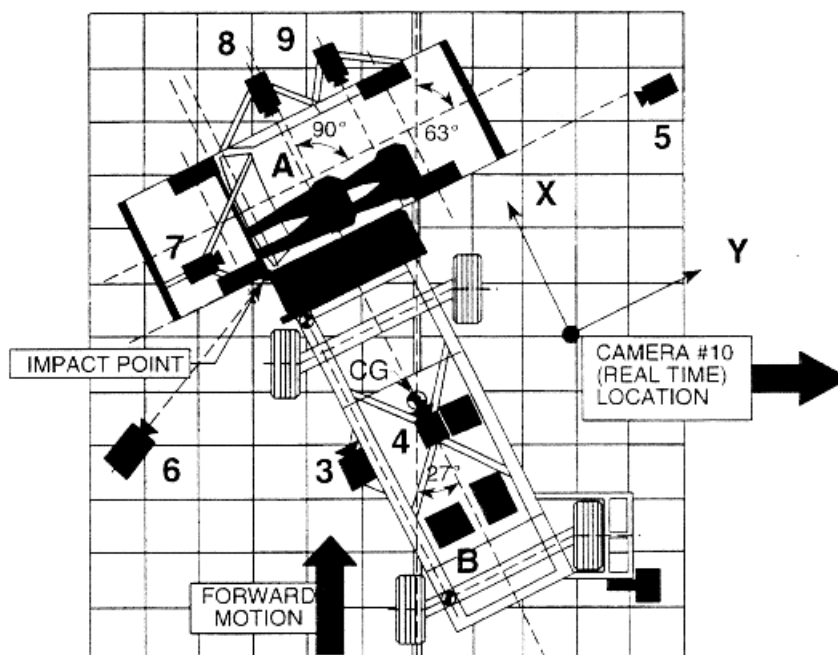


ACCEL No.	COORDINATES (mm)			LOCATION	(+) POSITIVE		(-) NEGATIVE	
	X*	Y*	Z*		MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	1134 0		485	MDB CENTER OF GRAVITY				
				Longitudinal (X)	1.54	88.2	22.48	40.3
				Lateral (Y)	2.02	106	7.04	14.9
				Vertical (Z)	15.8	19.6	21.2	34.4
				Resultant (R)	28.15	34.3		
2	2590 636		629	REAR FRAME MEMBER				
				Longitudinal (X)	1.02	100	19.88	40.4
				Lateral (Y)	2.08	105.5	12.82	36.3

* All measurements accurate to within ± 3 mm.

REFERENCE: + X = Rearward, + Y = To Right, + Z = Up

DATA SHEET 12 HIGH SPEED CAMERA LOCATIONS AND DATA



CAMERA No.	VIEW	COORDINATES (mm)			ANGLE	LENS (mm)	MIN.FILM SPEED (fps)
		X*	Y*	Z*			
1	Overhead View					ZOOM	1000
5	Right side ground level -- overall view	0	13000	1200		ZOOM	1000
6	Left side ground level -- overall view (45 Deg.)	0	-11000	1200		ZOOM	1000
6'	Left side ground level -- overall view	-4800	-8000	1200		ZOOM	1000
7	Test vehicle offboard driver -- front view	600	-2500	3300		ZOOM	1000

* All measurements accurate to ± 6 mm.

REFERENCE (from Point of Impact): + X = Rearward, + Y = To Right, + Z = Up

APPENDIX “B”

VEHICLE AND SID RESPONSE DATA

	PAGE
1. SETUP DATA	B – 2 / 7
2. BODY FRONT AND REAR ACCELERATIONS	B – 3 / 7
3. FRONT DUMMY INJURY DATA	B – 4 / 7
4. REAR DUMMY INJURY DATA	B – 6 / 7

SETUP DATA

Test Tile : VERACRUZ 5DOOR SUV
Test Type : Compliance(FMVSS 214)
Test Date : OCTOBER/10/2006
Test Speed : 54.2 km/h

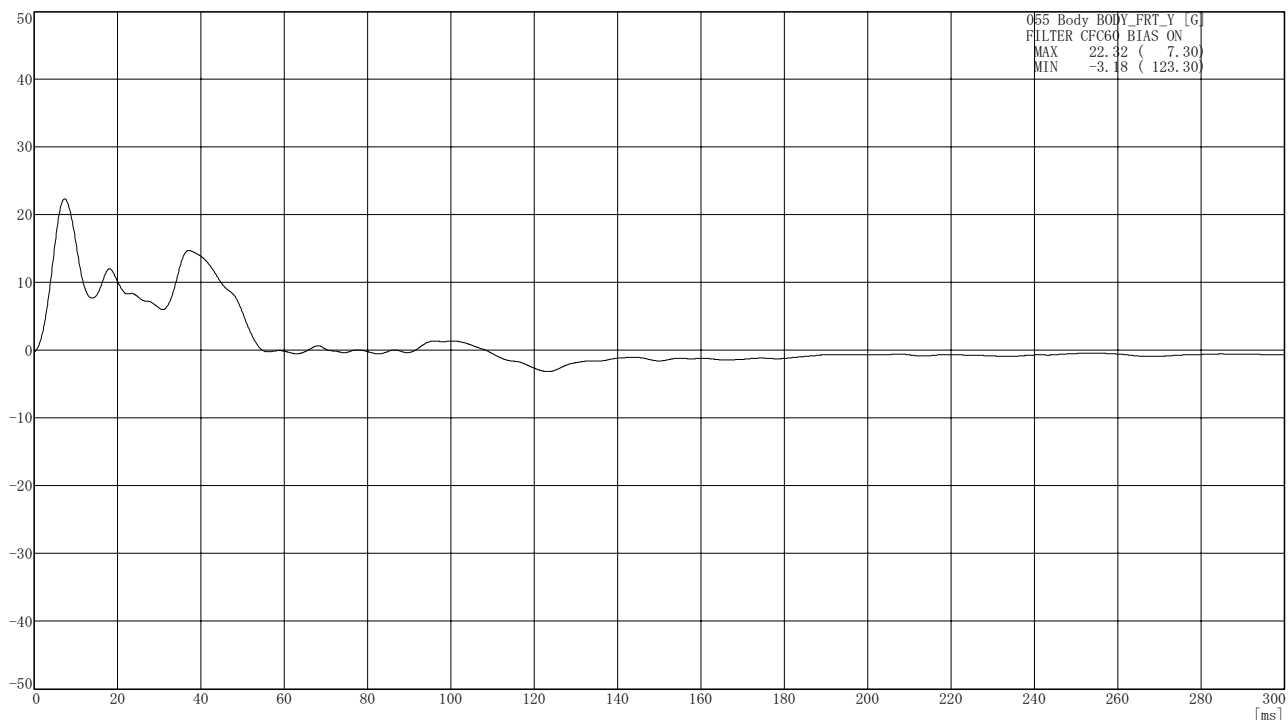
CH No.	Part Name	Unit
1	Right Side Sill at Front Seat Acc.	G
2	Right Side Sill at Rear Seat Acc.	G
3	Driver – Head Acc. X	G
4	Driver – Head Acc. Y	G
5	Driver – Head Acc. Z	G
6	Driver – Rib Acc. UPR	G
7	Driver – Rib Acc. UPR(sub)	G
8	Driver – Rib Acc. LWR	G
9	Driver – Rib Acc. LWR(sub)	G
10	Driver – Rib Acc. SPINE	G
11	Driver – Rib Acc. SPINE(sub)	G
12	Driver – Pelvic Acc.	G
13	Passenger – Head Acc. X	G
14	Passenger – Head Acc. Y	G
15	Passenger – Head Acc. Z	G
16	Passenger – Rib Acc. UPR	G
17	Passenger – Rib Acc. UPR(sub)	G
18	Passenger – Rib Acc. LWR	G
19	Passenger – Rib Acc. LWR(sub)	G
20	Passenger – Rib Acc. SPINE	G
21	Passenger – Rib Acc. SPINE(sub)	G
22	Passenger – Pelvic Acc.	G

Right Side Sill at Front Seat(Y) Acceleration vs. Time

Test No. :C061010A
Test Date :2006/10/10
Test Title :EN 54KPH US SIDE(LH) TEST
Test Type :

Vehicle Model:EN
Dest./Spec.:USA
Weight :2301 kg
Closing Speed:54.2 km/h 0 deg

055 Body BODY_FRT_Y [G]
FILTER CFC60 BIAS ON
MAX 22.32 (7.30)
MIN -3.18 (123.30)

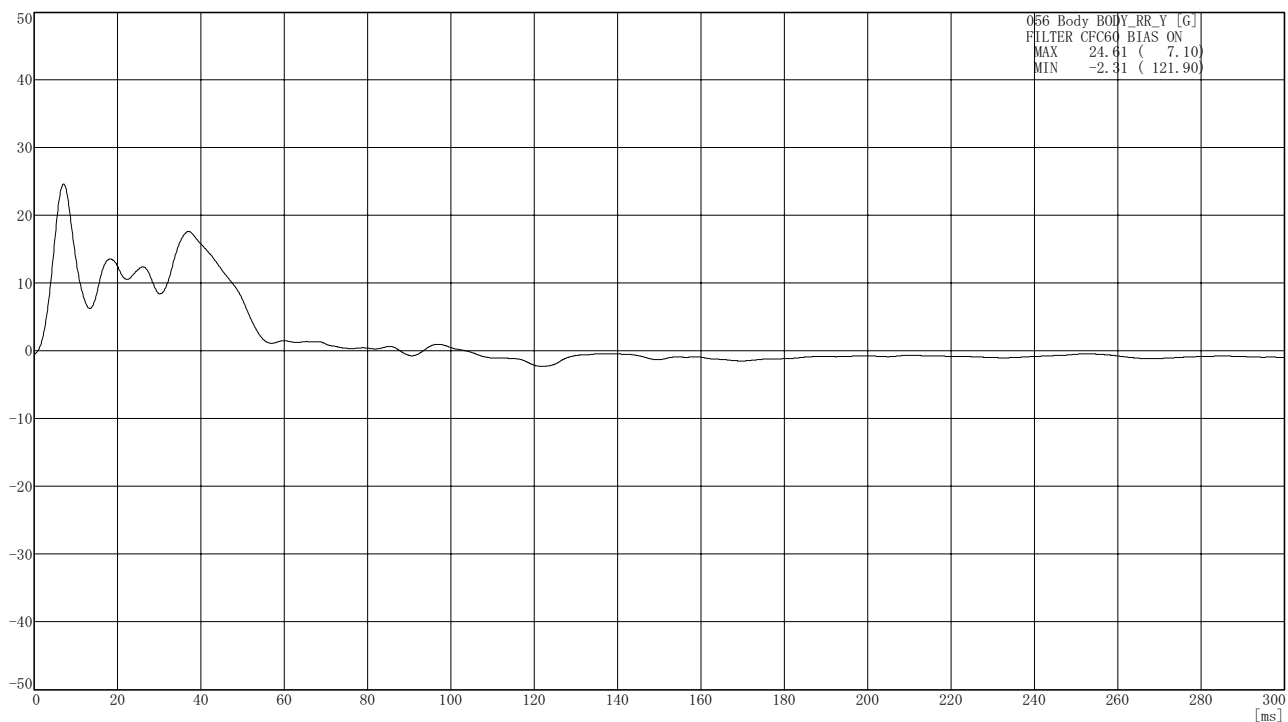


Right Side Sill at Rear Seat(Y) Acceleration vs. Time

Test No. :C061010A
Test Date :2006/10/10
Test Title :EN 54KPH US SIDE(LH) TEST
Test Type :

Vehicle Model:EN
Dest./Spec.:USA
Weight :2301 kg
Closing Speed:54.2 km/h 0 deg

056 Body BODY_RR_Y [G]
FILTER CFC60 BIAS ON
MAX 24.61 (7.10)
MIN -2.31 (121.90)

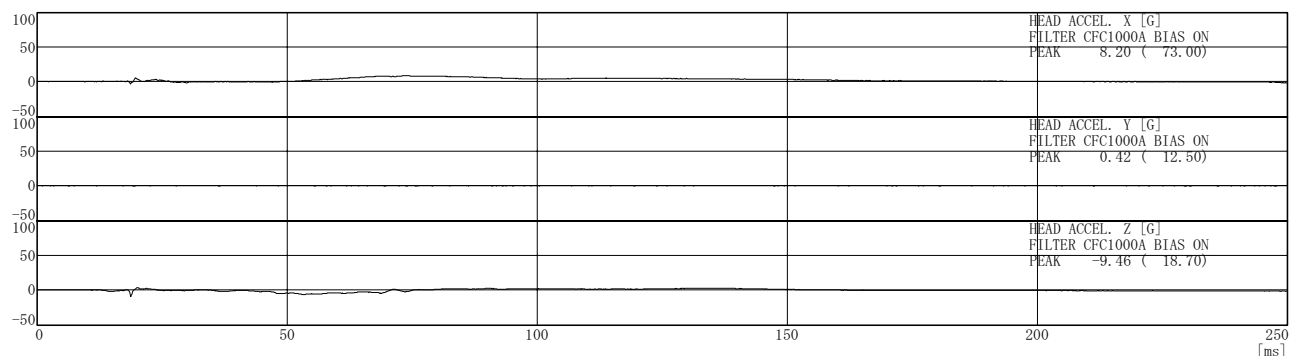
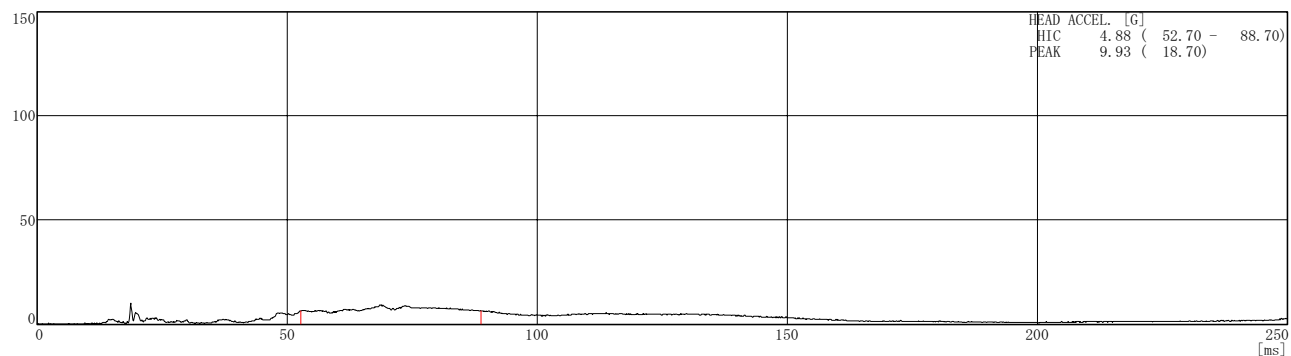


Driver HEAD ACCEL.

Page:1

Test No. :C061010A
Test Date :2006/10/10
Test Title :EN 54KPH US SIDE(LH) TEST
Test Type :

Vehicle Model:EN
Dest./Spec. :USA
Weight :2301 kg
Closing Speed:54.2 km/h 0 deg

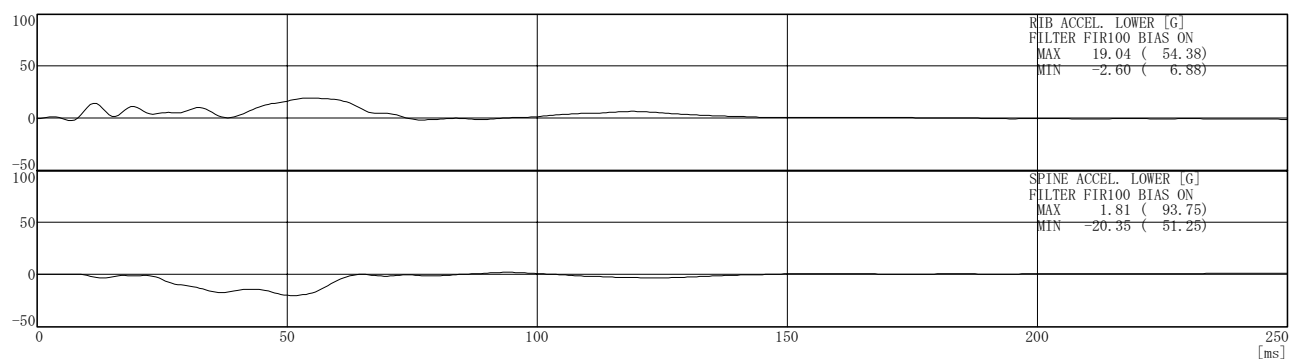
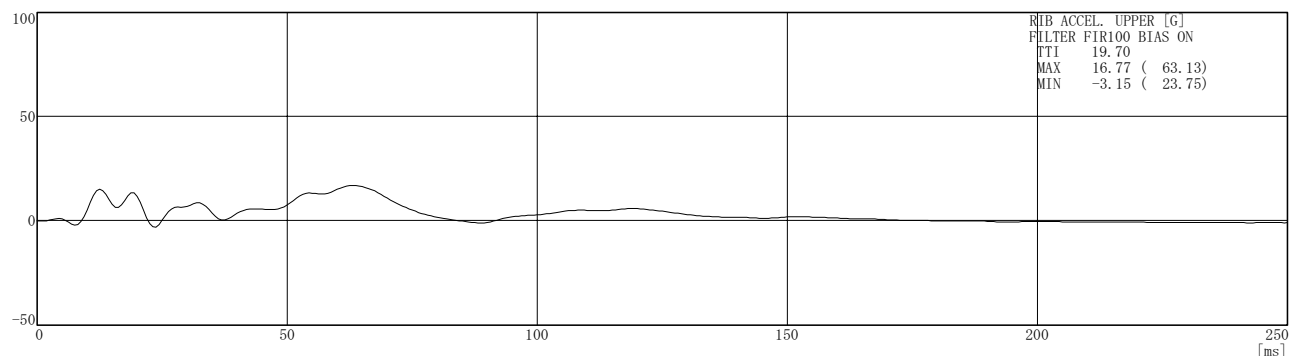


Driver RIB ACCEL. 1

Page:2

Test No. :C061010A
Test Date :2006/10/10
Test Title :EN 54KPH US SIDE(LH) TEST
Test Type :

Vehicle Model:EN
Dest./Spec. :USA
Weight :2301 kg
Closing Speed:54.2 km/h 0 deg

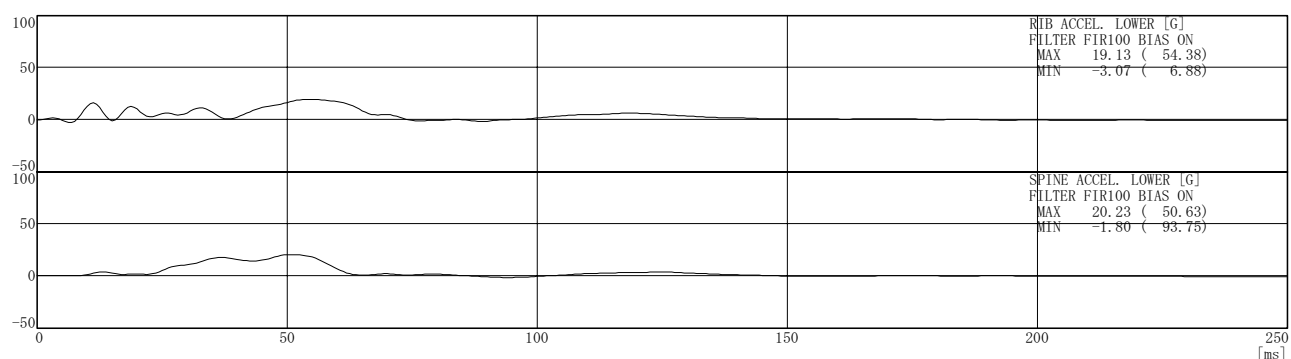
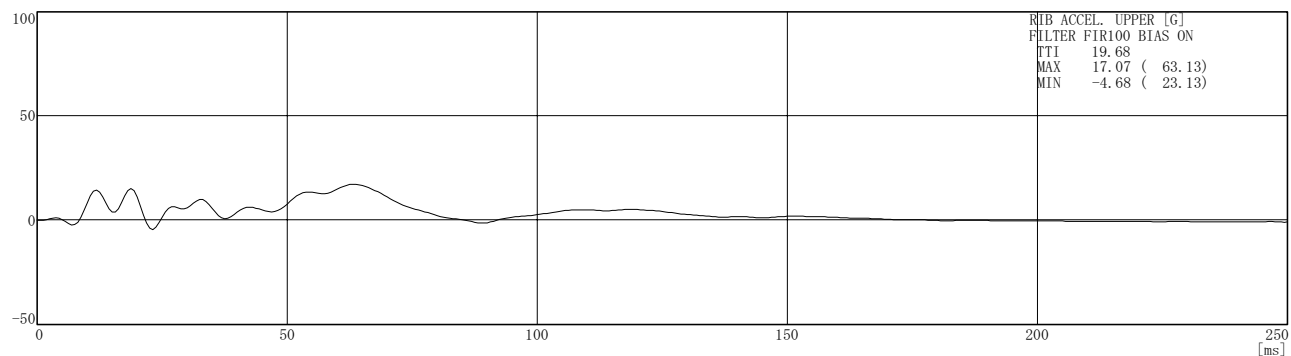


Driver RIB ACCEL. 2

Page:3

Test No. :C061010A
Test Date :2006/10/10
Test Title :EN 54KPH US SIDE(LH) TEST
Test Type :

Vehicle Model:EN
Dest./Spec. :USA
Weight :2301 kg
Closing Speed:54.2 km/h 0 deg

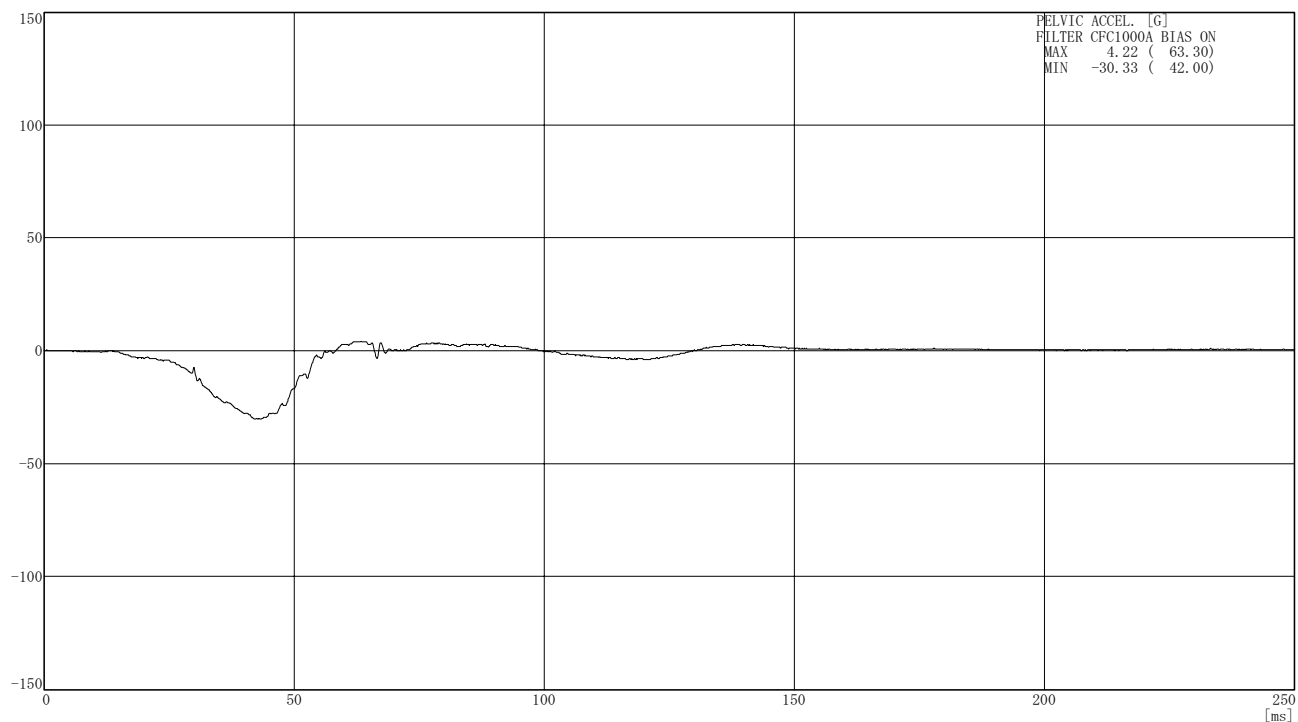


Driver PELVIC ACCEL.

Page:4

Test No. :C061010A
Test Date :2006/10/10
Test Title :EN 54KPH US SIDE(LH) TEST
Test Type :

Vehicle Model:EN
Dest./Spec. :USA
Weight :2301 kg
Closing Speed:54.2 km/h 0 deg

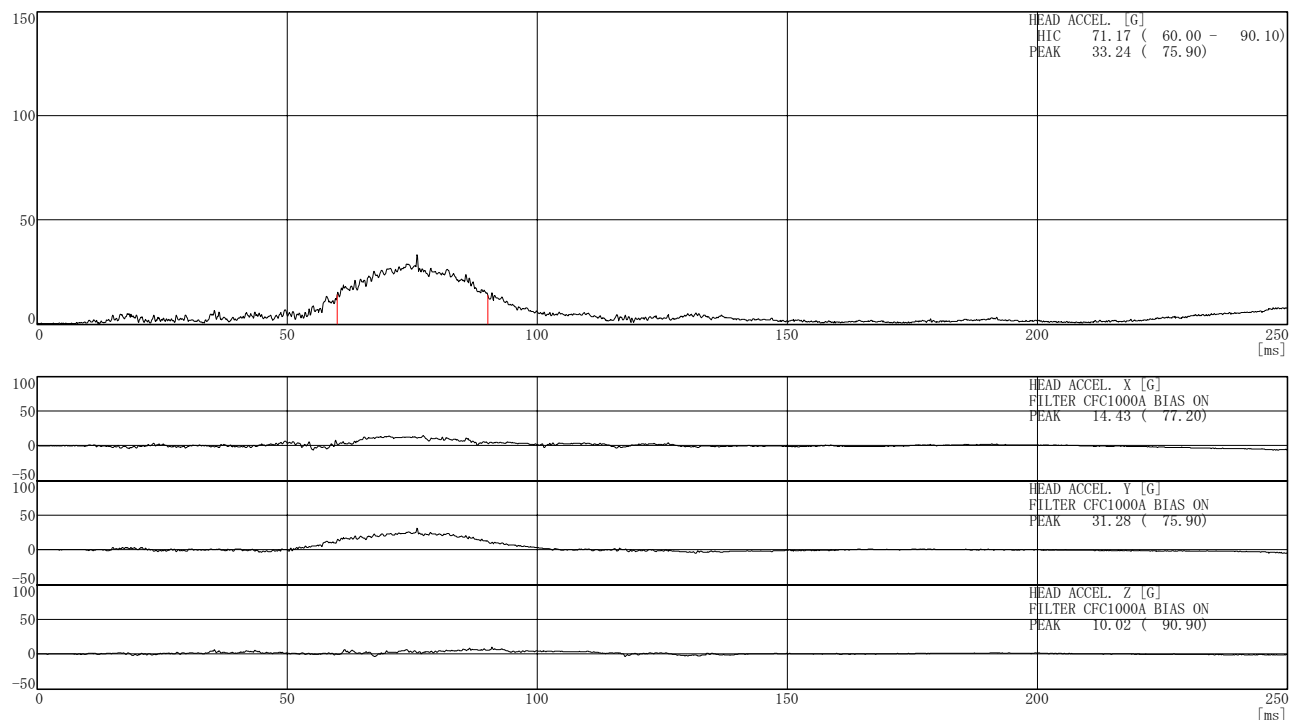


Rear Left HEAD ACCEL.

Page:5

Test No. :C061010A
Test Date :2006/10/10
Test Title :EN 54KPH US SIDE(LH) TEST
Test Type :

Vehicle Model:EN
Dest./Spec. :USA
Weight :2301 kg
Closing Speed:54.2 km/h 0 deg

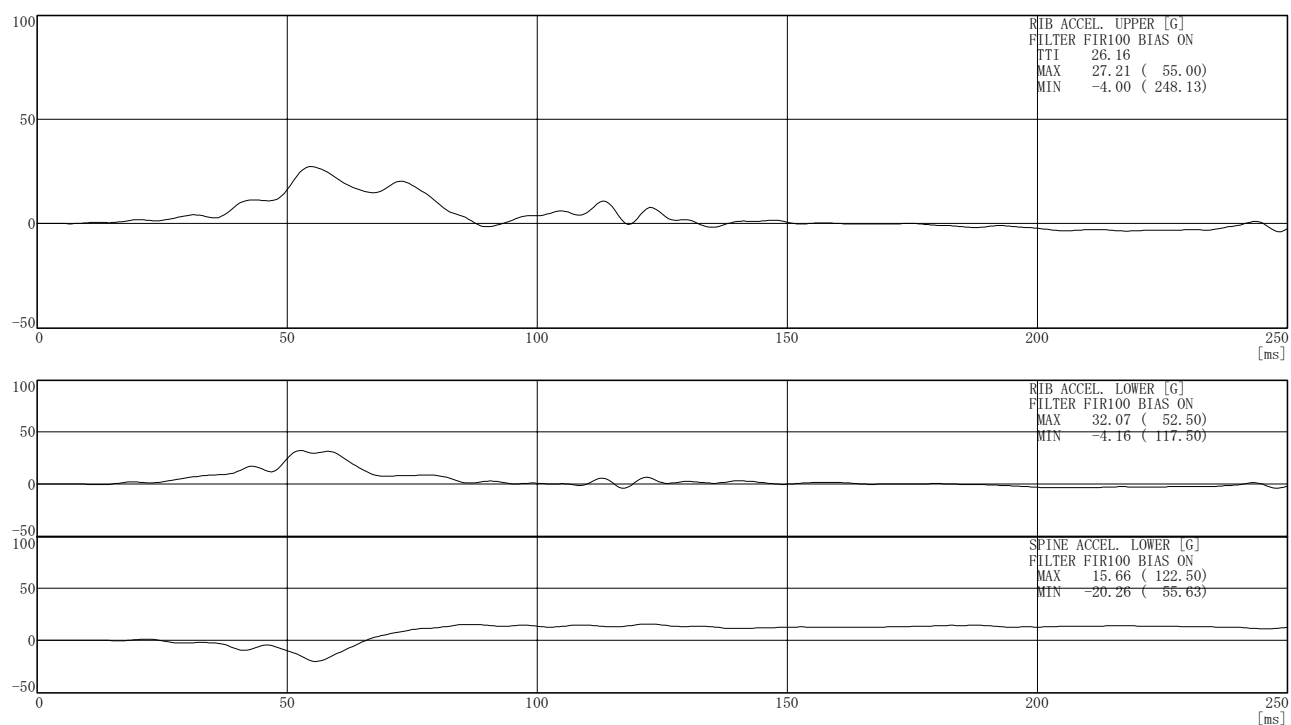


Rear Left RIB ACCEL. 1

Page:6

Test No. :C061010A
Test Date :2006/10/10
Test Title :EN 54KPH US SIDE(LH) TEST
Test Type :

Vehicle Model:EN
Dest./Spec. :USA
Weight :2301 kg
Closing Speed:54.2 km/h 0 deg

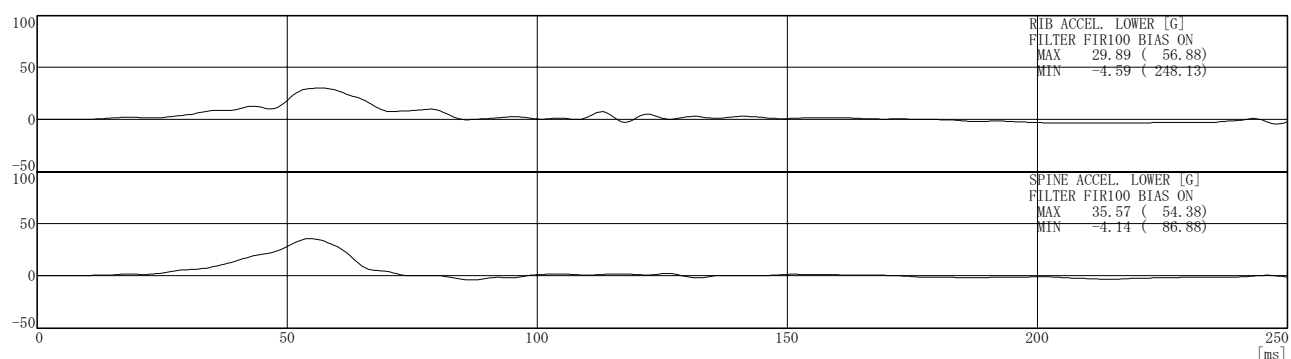
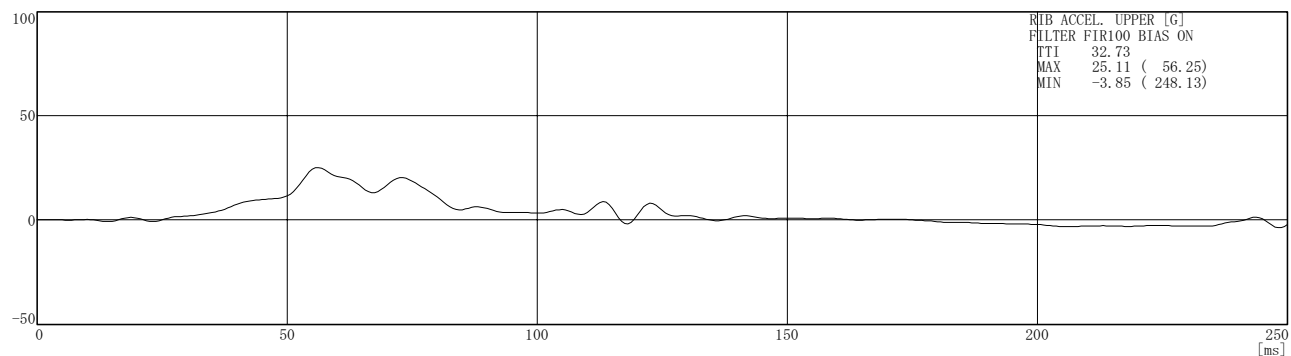


Rear Left RIB ACCEL. 2

Page:7

Test No. :C061010A
Test Date :2006/10/10
Test Title :EN 54KPH US SIDE(LH) TEST
Test Type :

Vehicle Model:EN
Dest./Spec. :USA
Weight :2301 kg
Closing Speed:54.2 km/h 0 deg

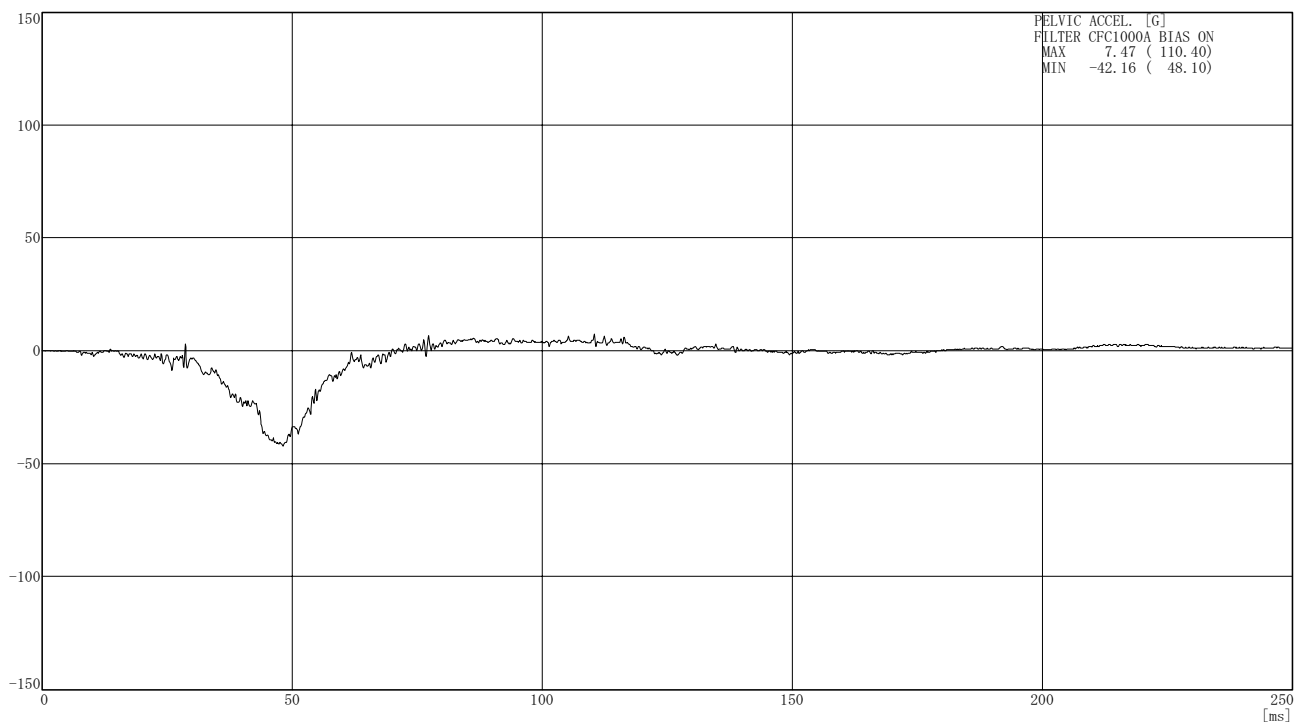


Rear Left PELVIC ACCEL.

Page:8

Test No. :C061010A
Test Date :2006/10/10
Test Title :EN 54KPH US SIDE(LH) TEST
Test Type :

Vehicle Model:EN
Dest./Spec. :USA
Weight :2301 kg
Closing Speed:54.2 km/h 0 deg



APPENDIX "C"

PHOTOGRAPHS

	PAGE
1. FRONT & REAR QUARTER VIEW OF TEST VEHICLE	C – 2 / 8
2. ENGINE COMPARTMENT VIEW OF TEST VEHICLE	C – 3 / 8
3. FUEL FILLER CAP VIEW	C – 3 / 8
4. LEFT & RIGHT SIDE VIEW OF TEST VEHICLE	C – 4 / 8
5. FRONT & REAR UNDERBODY VIEW OF TEST VEHICLE	C – 5 / 8
6. FRONT & REAR VIEW OF IMPACTOR FACE	C – 6 / 8
7. OCCUPANT OPPOSITE SIDE VIEW SHOWING FRONT & REAR SID	C – 7 / 8
8. OVERHEAD VIEW OF TEST VEHICLE AT IMPACT LOCATION & CLOSEUP VIEW OF IMPACT POINT	C – 8 / 8



PRE-TEST : FRONT QUARTER VIEW OF VEHICLE



PRE-TEST : REAR QUARTER VIEW OF VEHICLE



POST-TEST : FRONT QUARTER VIEW OF VEHICLE



POST-TEST : REAR QUARTER VIEW OF VEHICLE



PRE-TEST : ENGINE COMPARTMENT VIEW



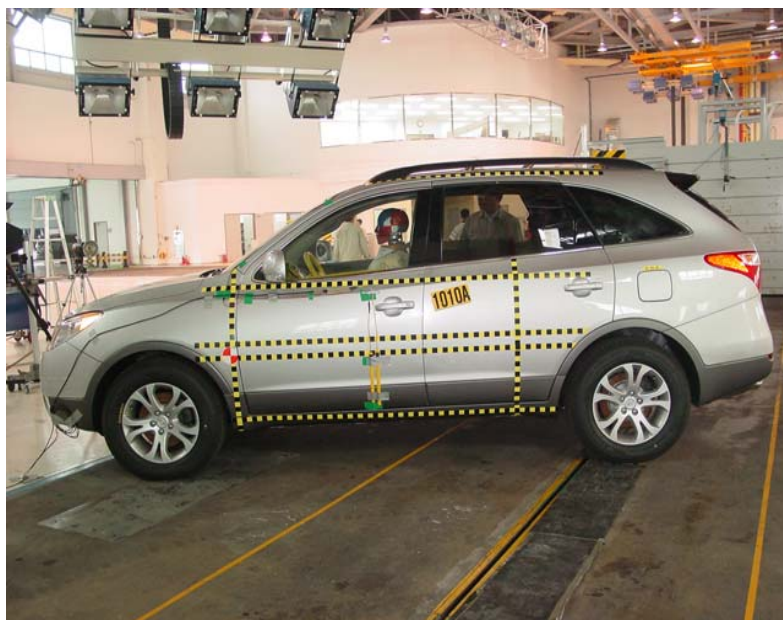
PRE-TEST : FUEL FILLER CAP VIEW



POST-TEST : ENGINE COMPARTMENT VIEW



POST-TEST : FUEL FILLER CAP VIEW



PRE-TEST : LEFT SIDE VIEW OF VEHICLE



PRE-TEST : RIGHT SIDE VIEW OF VEHICLE



POST-TEST : LEFT SIDE VIEW OF VEHICLE



POST-TEST : RIGHT SIDE VIEW OF VEHICLE



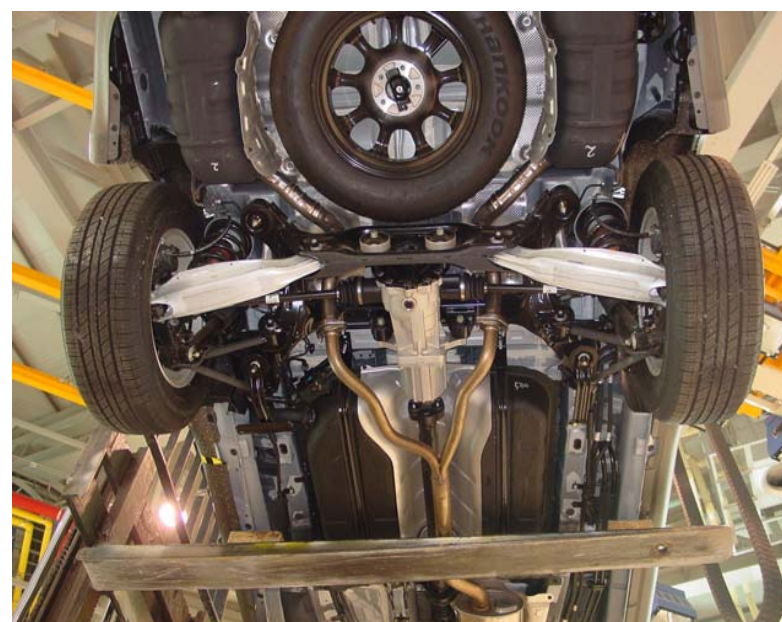
PRE-TEST : FRONT UNDERBODY VIEW OF VEHICLE



PRE-TEST : REAR UNDERBODY VIEW OF VEHICLE



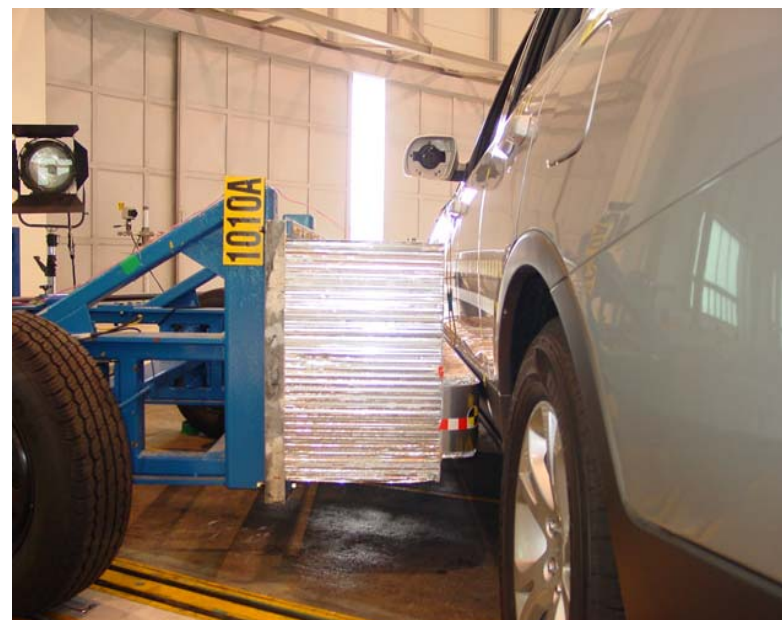
POST-TEST : FRONT UNDERBODY VIEW OF VEHICLE



POST-TEST : REAR UNDERBODY VIEW OF VEHICLE



PRE-TEST : FRONT VIEW OF IMPACTOR FACE



PRE-TEST : REAR VIEW OF IMPACTOR FACE



POST-TEST : FRONT VIEW OF IMPACTOR FACE



POST-TEST : REAR VIEW OF IMPACTOR FACE



PRE-TEST : OCCUPANT COMPARTMENT VIEW SHOWING
FRONT SID



PRE-TEST : OCCUPANT COMPARTMENT SIDE VIEW OF
REAR SID



POST-TEST : OCCUPANT COMPARTMENT VIEW SHOWING FRONT
SID



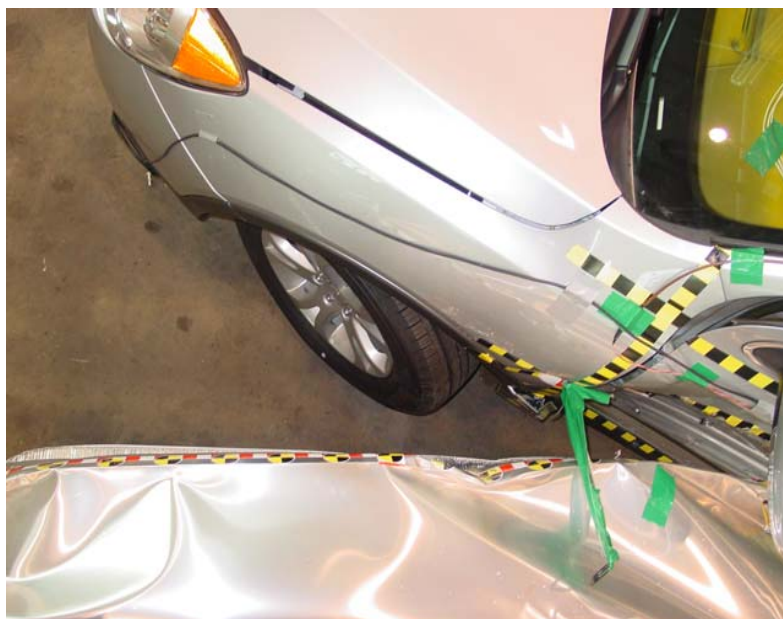
POST-TEST : OCCUPANT COMPARTMENT SIDE VIEW OF
REAR SID



PRE-TEST : OVERHEAD VIEW OF TEST VEHICLE AT IMPACT LOCATION



PRE-TEST : CLOSEUP VIEW OF IMPACT POINT



POST-TEST : OVERHEAD VIEW OF TEST VEHICLE AT IMPACT LOCATION



POST-TEST : CLOSEUP VIEW OF IMPACT POINT

Hyundai Response to Request 12

NHTSA RQ13-004

Veracruz Side-Impact Test Summary

■ Veracruz Curtain Airbag Test List (2007~)

● Curtain Airbag deployed Test Full car crash test list

No	local	Test mode	Step	Sunroof or None	Trouble	Test Place	Test Date (YY-MM-DD)	비고
1	US Selling Made in KOR	IIHS SIDE	JOB	None	None	HKMC Hwaseong Lab.	07-06-13	JOB Confirm Test
2		SINCAP	P1	None		HKMC Hwaseong Lab.	09-11-20	P1 Confirm Test
3		32KPH SIDE POLE	P1	None		HKMC Hwaseong Lab.	09-12-12	P1 Confirm Test
4		30KPH SIDE	P2	None		HKMC Hwaseong Lab.	10-08-13	P2 Confirm Test
5		22KPH SIDE POLE	P2	None		HKMC Hwaseong Lab.	10-08-16	P2 Confirm Test
6		SINCAP	P2	None		HKMC Hwaseong Lab.	10-08-17	P2 Confirm Test
7		32KPH SIDE POLE	P2	None		HKMC Hwaseong Lab.	10-08-18	P2 Confirm Test
8		32KPH SIDE POLE	M	Sunroof		HKMC Hwaseong Lab.	10-10-22	M Confirm Test
9		SINCAP	M	None		HKMC Hwaseong Lab.	10-08-30	M Confirm Test
10	Korea selling	29KPH SIDEPOLE	JOB	None		HKMC Hwaseong Lab.	07-12-18	JOB Confirm Test

■ Veracruz Test Photo

Item		SINCAP (62kph US 27deg Side)			IIHS SIDE (50kph side)	Side POLE NCAP (32kph US 75deg side Pole)
		2.P1	6.P2	9.M	1.JOB	3.P1
Test Date (YY-MM-DD)		09-11-20	10-08-17	10-08-30	07-06-13	09-12-12
Sunroof or None		None	None	None	None	None
Test place		HKMC Hwaseong Lab.	HKMC Hwaseong Lab.	HKMC Hwaseong Lab.	HKMC Hwaseong Lab.	HKMC Hwaseong Lab.
STEEL BRKT Seperation		None	None	None	None	None
FRT	Inner					
	Outer					

■ Veracruz Test Photo

item		Side POLE NCAP (32kph US 75deg side Pole)		Sensing- 30KPH SIDE	Sensing- 22KPH side pole	29KPH 90deg side pole
		7.P2	8.M	4.P2	5.P2	10.JOB
Test Date (YY-MM-DD)		10-08-18	10-10-22	10-08-13	10-08-16	07-12-18
Sunroof or None		None	Sunroof	None	None	None
Test place		HKMC Hwaseong Lab	HKMC Hwaseong Lab	HKMC Hwaseong Lab	HKMC Hwaseong Lab	HKMC Hwaseong Lab
STEEL BRKT Seperation		None	None	None	None	None
FRT	Inner					
	Outer					

FMVSS 214 "SIDE IMPACT PROTECTION"
VEHICLE COMPLIANCE TESTING OF
33.5mph SIDE IMPACT TEST (CURTAIN/SIDE AIRBAG)
HYUNDAI VERACRUZ 5 DOOR SUV 2007 MY

REPORT NO. : L4 - EN - 121
TEST DATE : OCT. 10, 2006
REPORT DATE : OCT. 20, 2006

PREPARED BY TEST 4 TEAM
LOCATED IN NAMYANG
HYUNDAI MOTOR COMPANY

CIRCULATION : CRA BODY ENGINEERING TEAM 1
TRIM ENGINEERING TEAM 1
CHASSIS & POWERTRAIN ENGINEERING TEAM 1
CHASSIS & SAFETY CONTROL DESIGN TEAM,
VEHICLE INFORMATION TEAM
CERTIFICATION & REGULATION TEAM

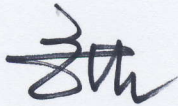
MODEL / YEAR : HYUNDAI VERACRUZ 5 DOOR SUV / 2007

VEHICLE NO. : KM8NU71C18U000276

TEST & SPECIFICATION : FMVSS 214 "SIDE IMPACT PROTECTION"

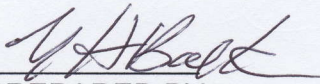
TEST RESULT : PASS

I hereby certify that the contents of this report are true and correct to the best of my knowledge.



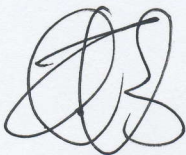
PREPARED BY

(J.P.YOON)



PREPARED BY

(Y.H,BAEK)



APPROVED BY

(O.S.KO)

OCT. 20, 2006
DATE

MODEL / YEAR : HYUNDAI VERACRUZ 5 DOOR SUV / 2007

VEHICLE NO. : KM8NU71C18U000276

TEST & SPECIFICATION : FMVSS 214 "SIDE IMPACT PROTECTION"

TEST RESULT : PASS

I hereby certify that the contents of this report are true and correct to the best of my knowledge.

PREPARED BY
(J.P.YOON)

PREPARED BY
(Y.H,BAEK)

APPROVED BY
(O.S.KO)

OCT. 20, 2006
DATE

TABLE OF CONTENTS

		PAGE
1.	PURPOSE	4 / 5
2.	TEST PROCEDURE	4 / 5
3.	TEST RESULTS	5 / 5
4.	CONCLUSION	5 / 5

APPENDICES

A. DATA SHEETS

B. VEHICLE AND SID RESPONSE DATA

C. PHOTOGRAPHS

D. SID CONFIGURATION AND PERFORMANCE VERIFICATION TEST DATA SHEETS

1. PURPOSE

The purpose of these compliance tests was to determine whether a HYUNDAI VERACRUZ 5 DOOR SUV 07MY (Equipped with curtain/side airbag) conducted a 33.5 mph side impact test would meet the requirements of FMVSS 214 "SIDE IMPACT PROTECTION".

2. TEST PROCEDURE

2.1 Dynamic performance requirements

2.1.1 Thorax

The TTI (Thoracic Trauma Index) shall not exceed 85 g's for passenger cars with 4 side doors, and shall not exceed 90 g's for passenger cars with 2 side doors.

2.1.2 Pelvis

The peak lateral acceleration of pelvis shall not exceed 130 g's.

2.1.3 Door opening

Any side door, which is struck by the moving deformable barrier, shall not separate totally from the car. Any door (including a rear hatchback or tailgate), which is not struck by the moving deformable barrier, shall meet the following requirements; The door shall not disengage from the latched position. The latch shall not separate from the striker and hinge components shall not separate from each other or from their attachment to the vehicle. Neither the latch nor the hinge systems of the door shall pull out of their anchorages.

2.2 Test procedure utilized

Refer to the Office of Vehicle Safety Compliance (OVSC) laboratory test procedure No. TP-214D-04.

2.3 Test preparation

Two Part 572, subpart F dummies were seated in the front and rear outboard seating positions on the struck side of the car according to dummy placement instruction specified in the laboratory test procedure TP-214D-04. Both dummies were instrumented with rib, spine, and pelvis accelerations oriented to measure accelerations in the lateral direction. The test dummies were restrained using all available belt systems in all seating position. All test vehicle doors, including any rear hatchback or tailgate, were fully closed and latched but not locked. The fuel tank was filled 93 % of its rated capacity with stoddard solvent. The test vehicle's struck side windows and opposite side windows were placed in the fully closed location. For a vehicle equipped with an automatic transmission, the transmission was placed in neutral. For all vehicle the parking brake was engaged.

3. TEST RESULTS

All portion of the Part 572, subpart F dummies remained within the passenger compartment throughout the test.

3.1 FMVSS 214 "SIDE IMPACT PROTECTION"

3.1.1 Injury criteria

	ALLOWED RESULTS PER FMVSS 214	FRONT DUMMY	REAR DUMMY
Thoracic Trauma Index (TTI)	85 G'S (4 DOOR)	19.7	26.2
	90 G'S (2 DOOR)		
Pelvic peak Lateral acceleration	130 G'S	30	41.3

3.1.2 Vehicle door opening information

	STRUCK SIDE		OPPOSITE SIDE	
	PASS	FAILURE	PASS	FAILURE
FRONT DOOR	○		○	
REAR DOOR	○		○	

4. CONCLUSION

The HYUNDAI VERACRUZ 5 DOOR SUV 07 MY(Equipped with curtain/side airbag) conducted a 54.2kph side impact test met the requirements of the FMVSS 214 "SIDE IMPACT PROTECTION"

APPENDIX "A"

DATA SHEETS

TEST VEHICLE INFORMATION AND TEST DATA

	PAGE
1. GENERAL TEST VEHICLE PARAMETER DATA -----	A – 2/23
2. TEST VEHICLE SUMMARY OF RESULTS -----	A – 6/23
3. MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS -----	A – 8/23
4. POST DATA OBSERVATIONS -----	A – 9/23
5. SID INSTRUMENTATION DATA -----	A – 11/23
6. SID LONGITUDINAL CLEARANCE DIMENSIONS -----	A – 12/23
7. SID LATERAL CLEARANCE DIMENSIONS -----	A – 14/23
8. VEHICLE EXTERIOR CRUSH PROFILES – ALL LEVELS -----	A – 15/23
9. EXTERIOR STATIC CRUSH FOR IMPACTOR FACE -----	A – 18/23
10. MDB ACCELEROMETER LOCATIONS AND DATA SUMMARY -----	A – 20/23
11. HIGH SPEED CAMERA LOCATIONS AND DATA -----	A – 21/23

DATA SHEET 1
GENERAL TEST VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

MODEL YEAR/MAKE / MODEL : 2007 / HMC / VERACRUZBODY STYLE / COLOR : 5 DOOR SUV / SP VIN : KM8NU71C18U000276

BUILD DATE :

ENGINE DATA : 6 cylinders; CID; Liter; 3,800 ccPlacement longitudinal; or 0 lateralTRANSMISSION: 6 speed; manual; 0 automatic; overdriveFINAL DRIVE: rear wheel drive; 0 front wheel drive; four wheel driveODOMETER READING: 7 km.OPTIONS: 0 A/C; 0 pwr. steering; 0 pwr. brakes; 0 pwr. windows

DATA RECORDED FROM VEHICLE'S TIRE PLACARD:

TIRE PRESSURE (AT CAPACITY): 30 psi Front; 30 psi RearRECOMMENDED TIRE SIZE : 245 / 65 R17TIRES ON VEHICLE: 245/65 R17 Mfr.: HANKOOK

VEHICLE CAPACITY DATA:

Number of Occupants: 2 front; 3 2nd 2 3rd 7 TotalType of Front Seat(s): 0 buckets; bench; split benchType of Front Seat Back: fixed; 0 adjustable with 0 lever or knobVehicle Maximum Capacity Loading = 526 kg. (A)Number of Occupants X 68 kg. = 476 kg. (B)Vehicle Cargo Capacity (A-B) = 50 kg.

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Right Front = 588 kg. Right Rear = 427 kg.
 Left Front = 563 kg. Left Rear = 453 kg.
 Total Front = 1151 kg. Total Rear = 880 kg.
 TOTAL WEIGHT = 2031 kg.

Percent of Total Weight –
 Percent Front = 57% Percent Rear = 53%

CALCULATION OF TEST VEHICLE TARGET WEIGHT:

Total Vehicle Delvd Weight/Max. Fluids = 2095 kg. (A)

Max. Cargo Carrying Cap. of Vehicle = 50 kg. (B)

Weight of Side Impact Dummies (SIDs)
 (1 or 2 x (instrumented SID weight) kg.) = 156 kg. (C)

TEST VEHICLE TARGET WEIGHT (A + B + C) = 2301 kg.

FULLY LOADED TEST VEHICLE (UDVW + 1 or 2 SID(s) + CARGO):

Right Front = kg. Right Rear = kg.
 Left Front = kg. Left Rear = kg.
 Total Front = kg. Total Rear = kg.
 Percent Front = Percent Rear =
 TOTAL WEIGHT = kg.

AS TESTED WT. OF VEH. (1 or 2 SID(s) + CARGO + EQUIP. & INSTRUMENTATION):

Right Front = 646 kg. Right Rear = 464 kg.
 Left Front = 658 kg. Left Rear = 533 kg.
 Total Front = 1304 kg. Total Rear = 997 kg.
 TOTAL WEIGHT = 2301 kg.
 Percent Front = 57% Percent Rear = 53%

TEST VEHICLE ATTITUDE:

AS DELIVERED	FULLY	LOADED	READY	FOR TEST
--------------	-------	--------	-------	----------

Right Front = <u>803</u> mm	Right Front = <u> </u> mm	Right Front = <u>786</u> mm
-----------------------------	------------------------------	-----------------------------

Left Front = <u>806</u> mm	Left Front = <u> </u> mm	Left Front = <u>778</u> mm
----------------------------	-----------------------------	----------------------------

Right Rear = <u>834</u> mm	Right Rear = <u> </u> mm	Right Rear = <u>821</u> mm
----------------------------	-----------------------------	----------------------------

Left Rear = <u>830</u> mm	Left Rear = <u> </u> mm	Left Rear = <u>809</u> mm
---------------------------	----------------------------	---------------------------

Test Vehicle Wheelbase = 2805 mm

C.G. = 1215 mm rearward of front wheel centerline

Total Vehicle Length:

Right Side = mm

Left Side = mm

Centerline = 4840 mm

FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel = 240 mm

FRONT SEAT BACK ADJUSTMENT POSITION:

Seat back torso angle: 23 degrees

ADJUSTABLE STEERING COLUMN POSITION: mid position

WINDOW POSITIONS:

Right Front = <u>opened</u>	Right Rear = <u>opened</u>
-----------------------------	----------------------------

Left Front = <u>closed</u>	Left Rear = <u>closed</u>
----------------------------	---------------------------

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

Volume = 78 liters (92% to 94% of Useable Capacity)

LOCATION OF IMPACT POINT ON TEST VEHICLE SIDE TO BE IMPACTED:

Wheelbase = 2805 mm

Impact Point is 462.5 mm rearward of front axle centerline

Actual Impact Point is 472.5 mm rearward of front axle centerline

REMARKS:

DATA SHEET 2
TEST VEHICLE SUMMARY OF RESULTS

MODEL YEAR/MAKE/MODEL: 2007 / HMC / VERACRUZ

BODY STYLE: 5 DOOR SUV VIN: KM8NU71C18U000276

BUILD DATE:

TEST DATE: OCT. 10, 2006

Vehicle Overall Length = 4840 mm Vehicle Overall Width 1934 mm

VEHICLE TEST WEIGHT (Pretest):

Right Front = 646 kg. Right Rear = 464 kg.

Left Front = 658 kg. Left Rear = 533 kg.

Total Front = 1304 kg. Total Rear = 997 kg.

TOTAL WEIGHT = 2301 kg.

Wheelbase = 2805 mm

Longitudinal C.G. from center of front axle = 1215 mm

Impact Angle with respect to impactor = 90 degrees

IMPACT POINT:

Actual Impact Point = 10 mm [rearward or forward] of nominal impact ref. line
(LATERAL)

Actual Impact Point = 0 mm [above or below] nominal impact point
(VERTICAL)

MAXIMUM EXTERIOR STATIC CRUSH:

LEVEL 1 (363 mm above ground) = 148 mm

LEVEL 2 (730 mm above ground) = 244 mm

LEVEL 3 (808 mm above ground) = 238 mm

LEVEL 4 (1113 mm above ground) = 93 mm

LEVEL 5 (1664 mm above ground) = 15 mm

Maximum Post Test Intrusion = 244 mm

OCCUPANTS:

DRIVER

PASSENGER

Dummy ID: SID# 341SID# 359Restraint Used: CAB + SAB + 3 POINT MANUAL SEAT BELT

INSTRUMENTATION:

Number of Data Channels = 18

Number of Cameras:

Onboard =

Offboard = 5Total Cameras = 5

REMARKS:

DATA SHEET 3
MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

MDB SPECIFICATIONS:

Overall Width of Framework Carriage = 1251 mmOverall Length of MDB = 4114 mm (including honeycomb impact face)Wheelbase of Frame work Carriage (front and rear) = 2591 mmC.G. location (rearward of front axle) = 1134 mm

MDB WEIGHT:

Left Front = 376 kg. Left Rear = 303 kg.Right Front = 387 kg. Right Rear = 291 kg.Total Front = 763 kg. Total Rear = 594 kg.TOTAL WEIGHT OF MDB = 1357 kg.Impact Angle (MDB centerline to target vehicle centerline) = 90 degreesImpact Speed = 33.7 mph(54.2kph)

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

A. ROW A at center of bumper level = 432 mmB. ROW B at top of bumper level = 533 mmC. ROW C at mid level = 686 mmD. ROW D at top of stack level = 810 mm

INSTRUMENTATION:

Number of MDB data channels = 5

DATA SHEET 4
POST TEST OBSERVATIONS

TEST VEHICLE: VERACRUZ 5 DOOR SUV

VISIBLE DUMMY CONTACT POINTS:

	FRONT SID	REAR SID
HEAD	CURTAIN AIRBAG	CURTAIN AIRBAG
UPPER TORSO	SIDE AIRBAG	DOOR TRIM PANEL
LOWER TORSO	SIDE AIRBAG	DOOR TRIM PANEL
LEFT KNEE	DOOR TRIM PANEL	DOOR TRIM PANEL
RIGHT KNEE	-	-

DOOR OPENING:

	LEFT SIDE	RIGHT SIDE
FRONT	Remained Closed	Remained Closed
REAR	Remained Closed	Remained Closed

ARM REST LOCATION:

Front = MID LEVEL OF DOOR TRIM PANEL

Rear = MID LEVEL OF DOOR TRIM PANEL

SEAT MOVEMENT:

Front = NONE

Rear = NONE

GLAZING DAMAGE:

Windshield : NO DAMAGE

Window : LEFT SIDE WINDOW BROKEN

PILLAR PERFORMANCE:

NO FAILURE

SILL SEPARATION:

NO SEPARATION

OTHER NOTABLE IMPACT EFFECTS:

REMARKS:

DATA SHEET 5
SID INSTRUMENTATION DATA

TEST VEHICLE: VERACRUZ 4 DOOR SEDAN

NHTSA NO.:

	FRONT SID ID# <u>341</u>				REAR SID ID# <u>359</u>			
	Positive		Negative		Positive		Negative	
	max (g)	time (msec)	max (g)	time (msec)	Max (g)	time (msec)	Max (g)	time (msec)
RIB ACCELERATIONS								
Left Upper Rib (LUR) Y	16.77	63.13			27.21	55.00		
Left Lower Rib (LLR) Y	19.04	54.38			32.07	52.5		
SPINE ACCELERATIONS								
Lower Lateral Y			20.35	51.25			20.26	55.63
PELVIS ACCELERATIONS								
Lateral Y			29.92	43.75			41.3	47.5

REFERENCE:

Positive Direction: Longitudinal (X) = Rearward

Lateral (Y) = To Right

Vertical (Z) = Up

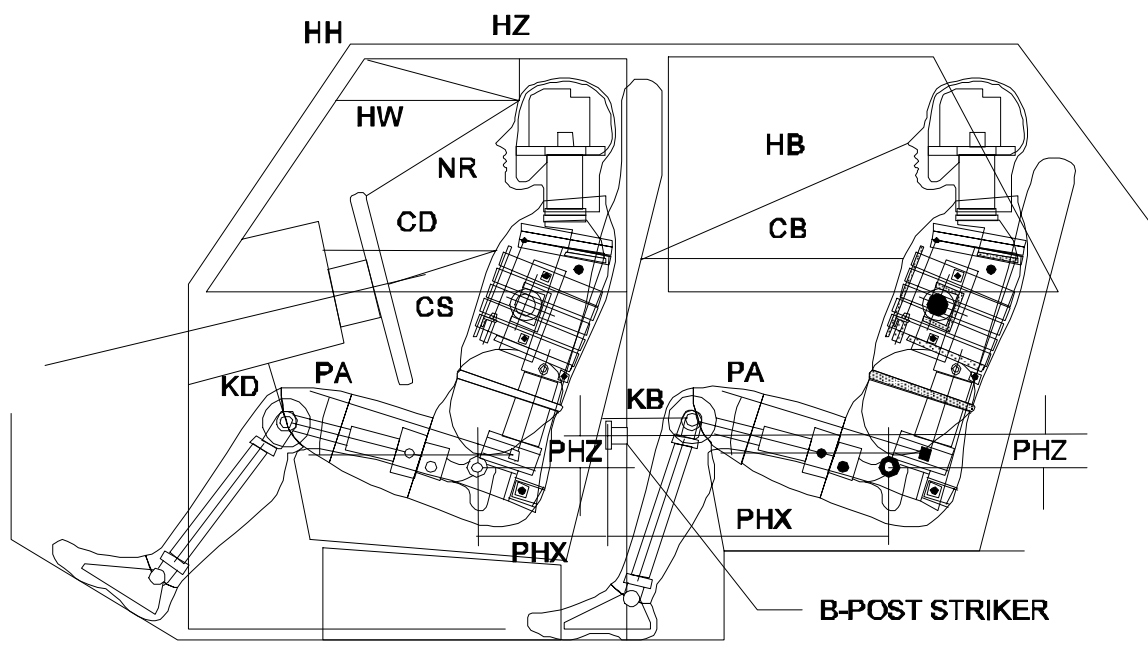
Negative Direction: Longitudinal (X) = Forward

Lateral (Y) = To Left

Vertical (Z) = Down

REMARKS:

SID LONGITUDINAL CLEARANCE DIMENSIONS

TEST VEHICLE: VERACRUZ 5 DOOR SUV

LEFT SIDE VIEW

NOTE: 2-DOOR VEHICLE SHOWN.
 REAR DUMMY PHX & PHZ
 MEASUREMENTS FOR A 4-DOOR
 VEHICLE WOULD USE THE C-POST
 STRIKER AS A REFERENCE POINT

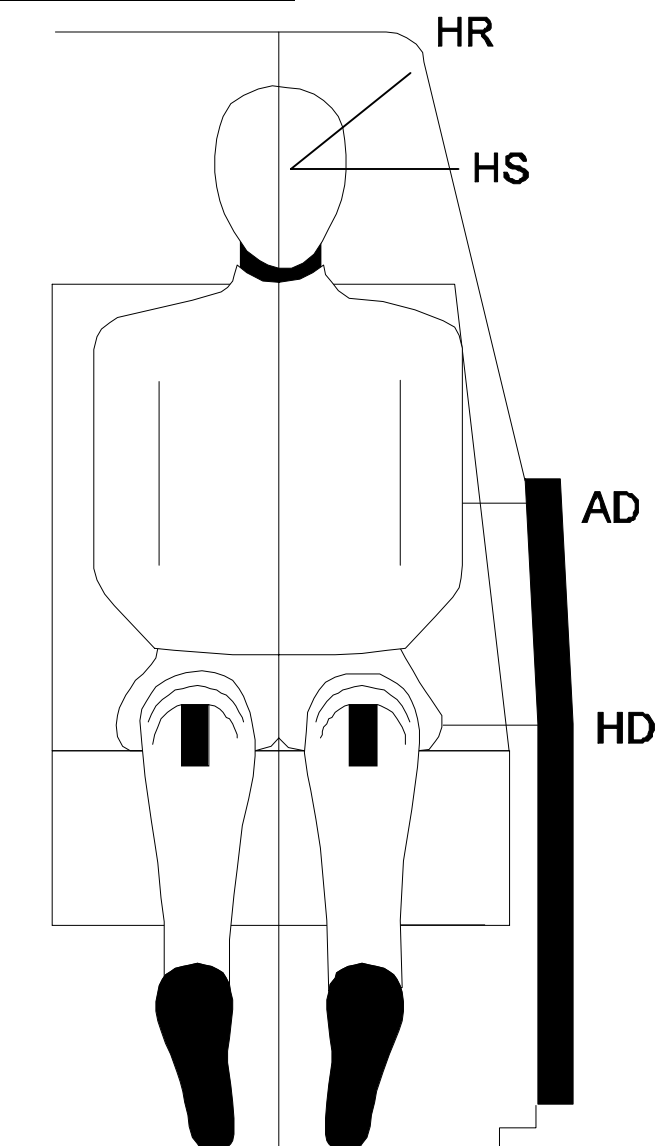
MEASUREMENT (mm)	DRIVER SID ID# <u>341</u>	PASSENGER SID ID# <u>359</u>
HH 364		-
HW 575		-
HZ 169		214
NR/NB 430		616
CD/CB 535		534
CS 266		-

MEASUREMENT (mm)	DRIVER SID ID# <u>341</u>	PASSENGER SID ID# <u>359</u>
KDL(KDA)/KBL(KDA)	110 / (27°)	250/ (20°)
KDR(KBA)/KBR(KBA)	105 / ()	260
PA	-	-
PHX -		-
PHZ -		-

REMARKS:

DATA SHEET 7
SID LATERAL CLEARANCE DIMENSIONS

TEST VEHICLE: VERACRUZ 5 DOOR SUV



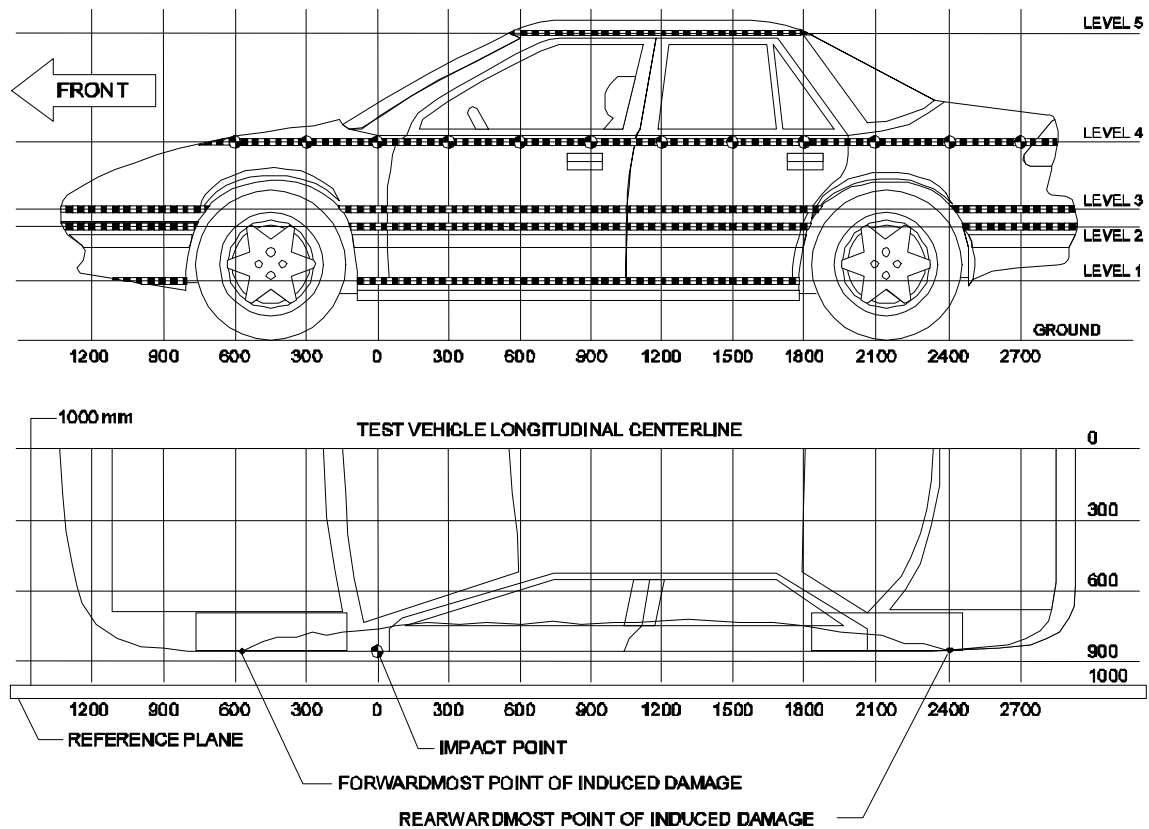
MEASUREMENT(mm)	DRIVER SID ID# <u>341</u>	PASSENGER SID ID# <u>359</u>
HR 266		270
HS 351		348
AD 123		140
HD 198		172

DATA SHEET 8
VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS

NOTE: Due to limited space the following table only indicates measurements from -150 mm to 1800 mm, however, tape should be applied along the entire length of target vehicle and measurements made every 150 mm, across span of induced damage (see graphic on next page). Measurements should be accurate to ± 3 mm.

LOCATION	HEIGHT		DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT (Measurements Continued On Next Page)							
			-150	0	150	300	450	600	750	900
LEVEL 1 SIDE 274 SILL		PRE		587 600	604 605 606 607					608
		POST		622 682	693 702 710 718					726
		CRUSH		35 82 89 97				104	111	118
LEVEL 2 H- 540 POINT		PRE	531	534 539	543 544 544 544					543
		POST	561	601 696	716 739 756 752					762
		CRUSH	30	67	157 173	195 212 218				230
LEVEL 3 MID- 619 324DOOR		PRE	532	536 540	543 543 542 541					540
		POST	550	579 675	726 746 759 759					777
		CRUSH	23	43	135 183	203 217 226				237
LEVEL 4 WINDOW SILL	936	PRE	656	645 642	641 636 631 625					619
		POST	659	658 640	652 657 663 670					682
		CRUSH	3	13	2	11 21 32 45				63
LEVEL 5 WINDOW 1430 TOP		PRE							872	
		POST							873	
		CRUSH							1	

			DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT					
LOCATION	HEIGHT		1050	1200	1350	1500	1650	1800
LEVEL 1 SIDE SILL	274	PRE	609	611 612 613	612			602
		POST	735	742 747 754	759			750
		CRUSH	126	131 135 141	147			148
LEVEL 2 132H- 188POINT	540	PRE	542	542 543 542	541			538
		POST	771	767 785 786	781			750
		CRUSH	229	220 239 244	240			212
LEVEL 3 MID- DOOR	619	PRE	539	539 539 539	538			536
		POST	772	771 789 789	776			757
		CRUSH	233	232 250 250	238			221
LEVEL 4 WINDOW SILL	936	PRE	614	608 602 597	590			586
		POST	696	721 708 690	667			654
		CRUSH	82	113	106	93	77	68
LEVEL 5 940WINDOW TOP	1430	PRE	72	857 847 844	843			841
		POST	873	763 760 857	856			853
		CRUSH	1	6	13 13 15			13



EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

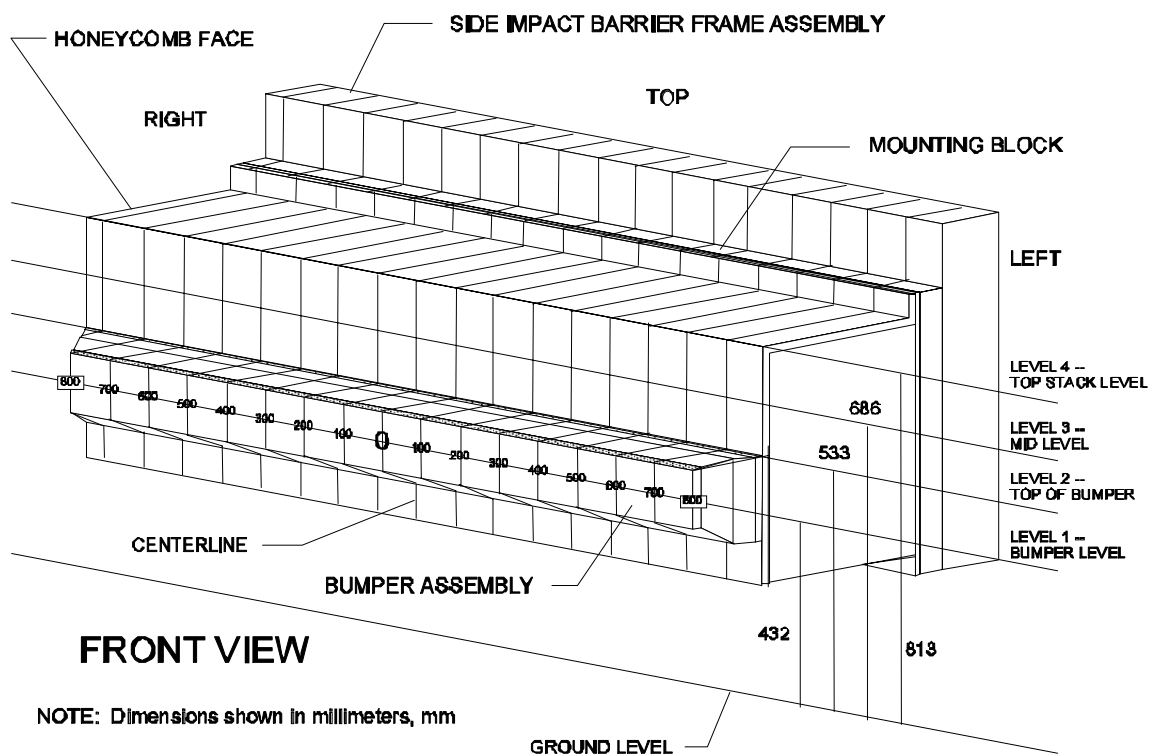
TEST VEHICLE: VERACRUZ 5 DOOR SUVAll measurements shall be made in millimeters and should have a tolerance of ± 3 mm

		DISTANCE RIGHT OF CENTER (mm)								
LOCATION	HEIGHT AT CL*	800	700	600	500	400	300	200	100	0
Top Stack Level Level 4	810mm	330 346		364	372	371	360	337	356	369
Mid Level Level 3	686mm	329 352		360	366	365	358	355	359	369
Top Bumper Level Level 2	533mm	311 322		328	331	334	329	332	336	336
Mid Bumper Level Level 1	432mm	336 362		372	376	376	375	375	375	374

		DISTANCE LEFT OF CENTER (mm)								
LOCATION	HEIGHT AT CL*	0	100	200	300	400	500	600	700	800
Top Stack Level Level 4	810mm		363	359 353	347 339 329	300				258
Mid Level Level 3	686mm		367	367 367	363 352 337	322				287
Top Bumper Level Level 2	533mm		335	333 333	331 327 325	320				313
Mid Bumper Level Level 1	432mm		373	373 371	370 368 362	354				329

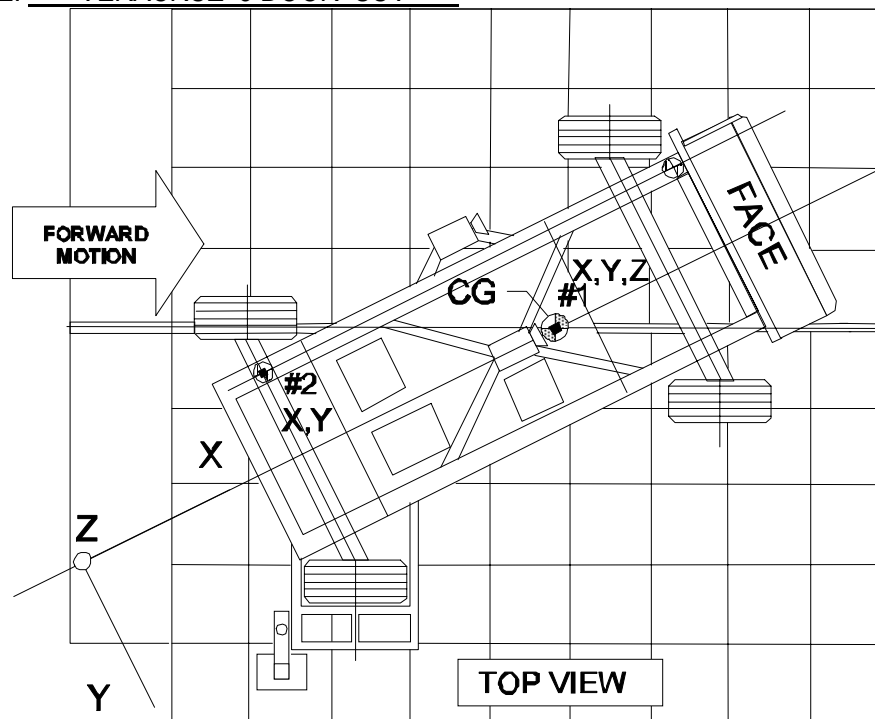
NOTE: See next page for Barrier Face Graphic

REMARKS:



DATA SHEET 10
MDB ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST VEHICLE: VERACRUZ 5 DOOR SUV

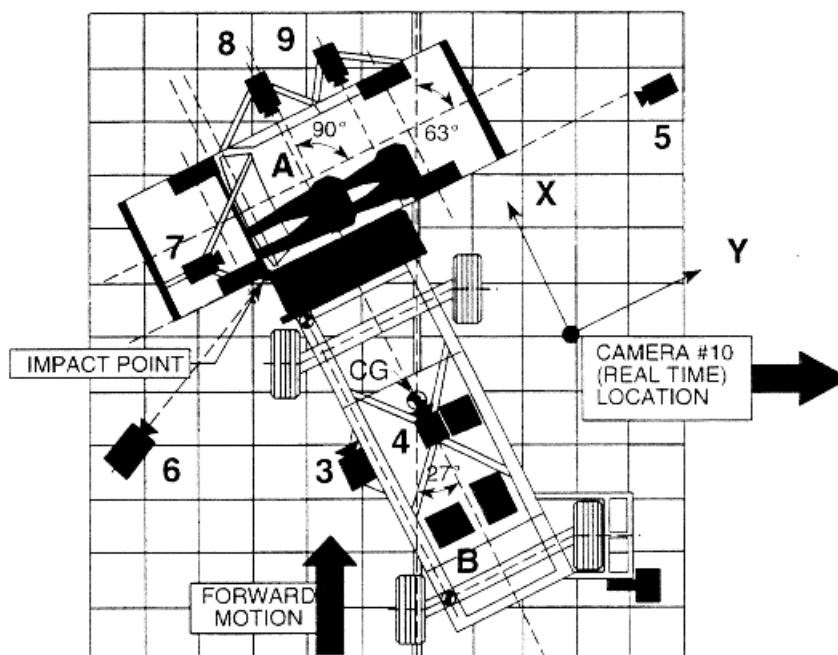


ACCEL No.	COORDINATES (mm)			LOCATION	(+) POSITIVE		(-) NEGATIVE	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	1134 0		485	MDB CENTER OF GRAVITY				
				Longitudinal (X)	1.54	88.2	22.48	40.3
				Lateral (Y)	2.02	106	7.04	14.9
				Vertical (Z)	15.8	19.6	21.2	34.4
				Resultant (R)	28.15	34.3		
2	2590 636		629	REAR FRAME MEMBER				
				Longitudinal (X)	1.02	100	19.88	40.4
				Lateral (Y)	2.08	105.5	12.82	36.3

* All measurements accurate to within ± 3 mm.

REFERENCE: + X = Rearward, + Y = To Right, + Z = Up

DATA SHEET 12 HIGH SPEED CAMERA LOCATIONS AND DATA



CAMERA No.	VIEW	COORDINATES (mm)			ANGLE	LENS (mm)	MIN.FILM SPEED (fps)
		X*	Y*	Z*			
1	Overhead View					ZOOM	1000
5	Right side ground level -- overall view	0	13000	1200		ZOOM	1000
6	Left side ground level -- overall view (45 Deg.)	0	-11000	1200		ZOOM	1000
6'	Left side ground level -- overall view	-4800	-8000	1200		ZOOM	1000
7	Test vehicle offboard driver -- front view	600	-2500	3300		ZOOM	1000

* All measurements accurate to ± 6 mm.

REFERENCE (from Point of Impact): + X = Rearward, + Y = To Right, + Z = Up

APPENDIX “B”

VEHICLE AND SID RESPONSE DATA

	PAGE
1. SETUP DATA	B – 2 / 7
2. BODY FRONT AND REAR ACCELERATIONS	B – 3 / 7
3. FRONT DUMMY INJURY DATA	B – 4 / 7
4. REAR DUMMY INJURY DATA	B – 6 / 7

SETUP DATA

Test Tile : VERACRUZ 5DOOR SUV
Test Type : Compliance(FMVSS 214)
Test Date : OCTOBER/10/2006
Test Speed : 54.2 km/h

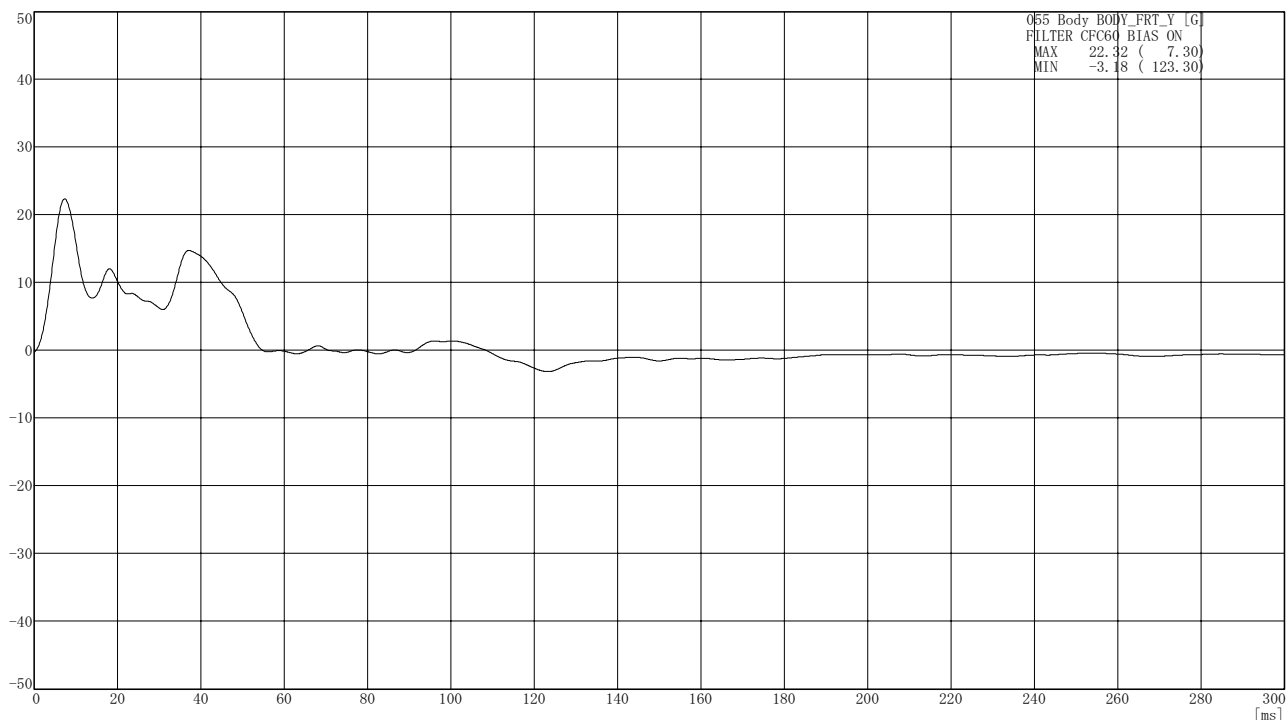
CH No.	Part Name	Unit
1	Right Side Sill at Front Seat Acc.	G
2	Right Side Sill at Rear Seat Acc.	G
3	Driver – Head Acc. X	G
4	Driver – Head Acc. Y	G
5	Driver – Head Acc. Z	G
6	Driver – Rib Acc. UPR	G
7	Driver – Rib Acc. UPR(sub)	G
8	Driver – Rib Acc. LWR	G
9	Driver – Rib Acc. LWR(sub)	G
10	Driver – Rib Acc. SPINE	G
11	Driver – Rib Acc. SPINE(sub)	G
12	Driver – Pelvic Acc.	G
13	Passenger – Head Acc. X	G
14	Passenger – Head Acc. Y	G
15	Passenger – Head Acc. Z	G
16	Passenger – Rib Acc. UPR	G
17	Passenger – Rib Acc. UPR(sub)	G
18	Passenger – Rib Acc. LWR	G
19	Passenger – Rib Acc. LWR(sub)	G
20	Passenger – Rib Acc. SPINE	G
21	Passenger – Rib Acc. SPINE(sub)	G
22	Passenger – Pelvic Acc.	G

Right Side Sill at Front Seat(Y) Acceleration vs. Time

Test No. :C061010A
Test Date :2006/10/10
Test Title :EN 54KPH US SIDE(LH) TEST
Test Type :

Vehicle Model:EN
Dest./Spec. :USA
Weight :2301 kg
Closing Speed:54.2 km/h 0 deg

055 Body BODY_FRT_Y [G]
FILTER CFC60 BIAS ON
MAX 22.32 (7.30)
MIN -3.18 (123.30)

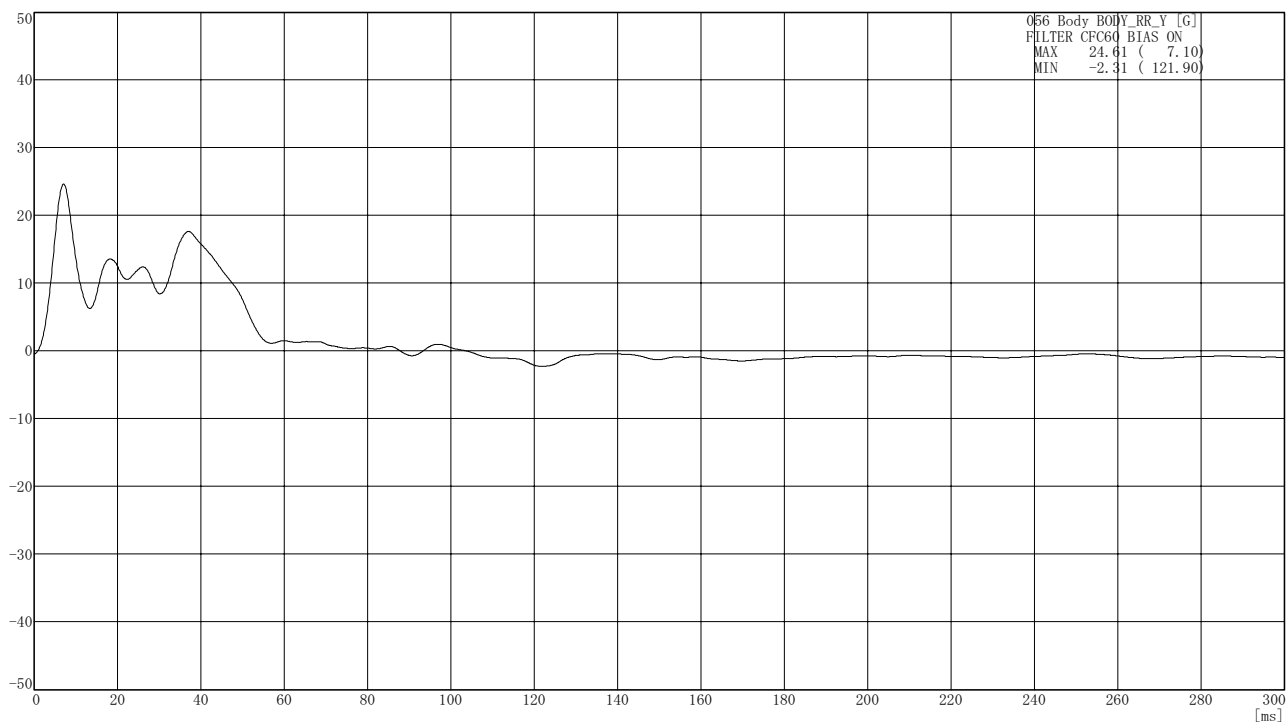


Right Side Sill at Rear Seat(Y) Acceleration vs. Time

Test No. :C061010A
Test Date :2006/10/10
Test Title :EN 54KPH US SIDE(LH) TEST
Test Type :

Vehicle Model:EN
Dest./Spec. :USA
Weight :2301 kg
Closing Speed:54.2 km/h 0 deg

056 Body BODY_RR_Y [G]
FILTER CFC60 BIAS ON
MAX 24.61 (7.10)
MIN -2.31 (121.90)

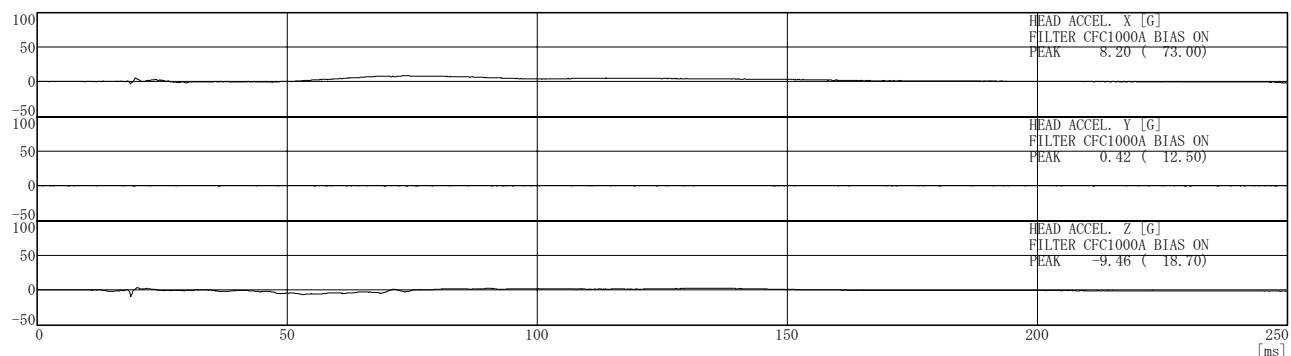
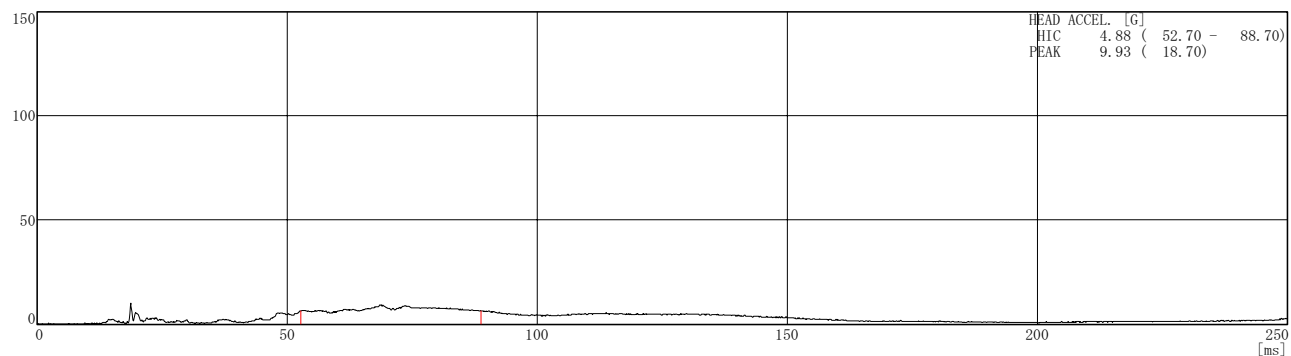


Driver HEAD ACCEL.

Page:1

Test No. :C061010A
Test Date :2006/10/10
Test Title :EN 54KPH US SIDE(LH) TEST
Test Type :

Vehicle Model:EN
Dest./Spec. :USA
Weight :2301 kg
Closing Speed:54.2 km/h 0 deg

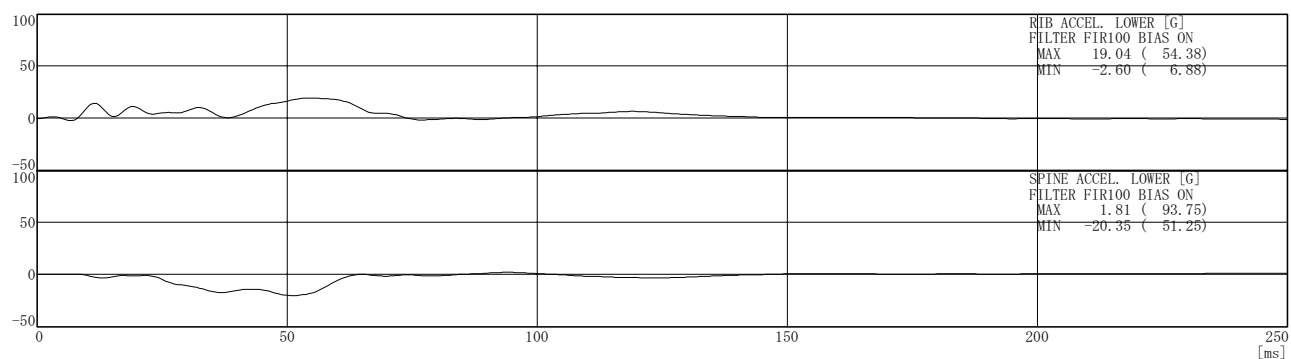
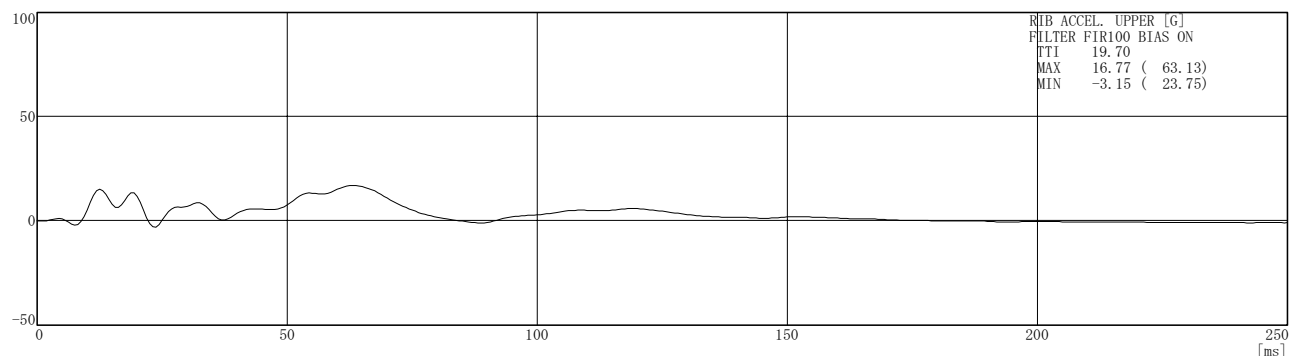


Driver RIB ACCEL. 1

Page:2

Test No. :C061010A
Test Date :2006/10/10
Test Title :EN 54KPH US SIDE(LH) TEST
Test Type :

Vehicle Model:EN
Dest./Spec. :USA
Weight :2301 kg
Closing Speed:54.2 km/h 0 deg

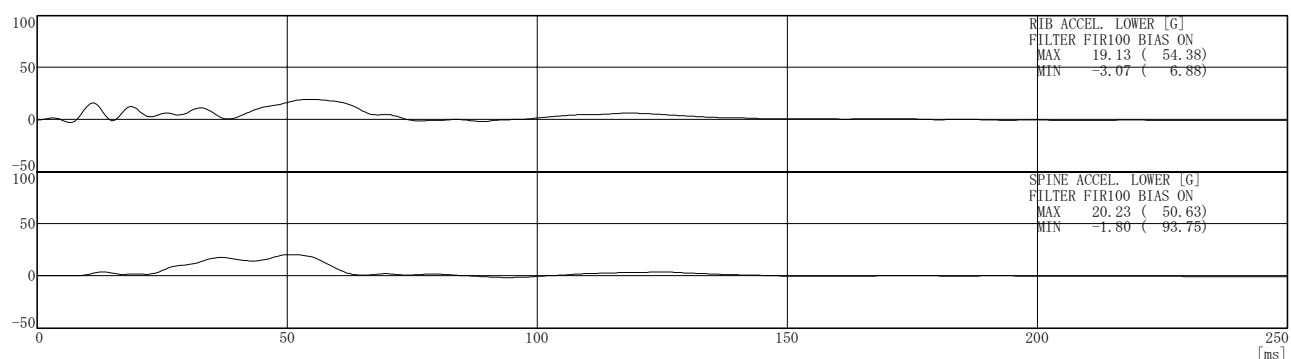
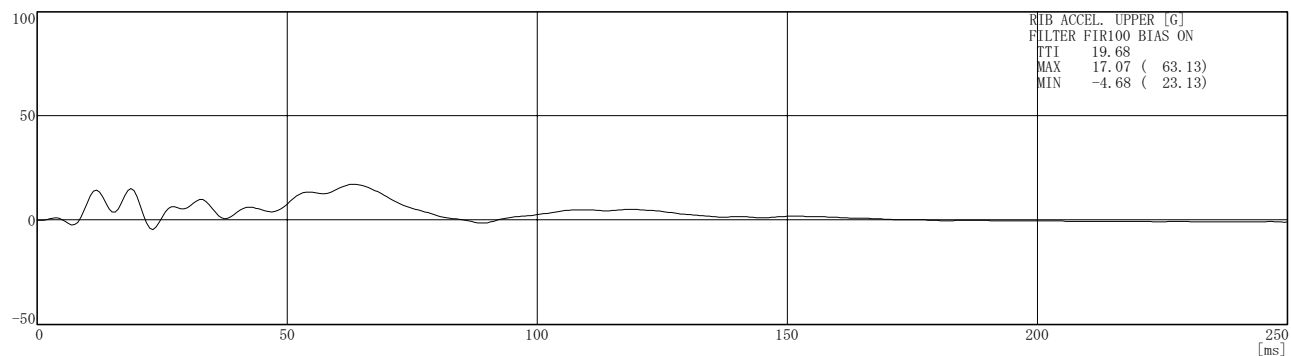


Driver RIB ACCEL. 2

Page:3

Test No. :C061010A
Test Date :2006/10/10
Test Title :EN 54KPH US SIDE(LH) TEST
Test Type :

Vehicle Model:EN
Dest./Spec. :USA
Weight :2301 kg
Closing Speed:54.2 km/h 0 deg

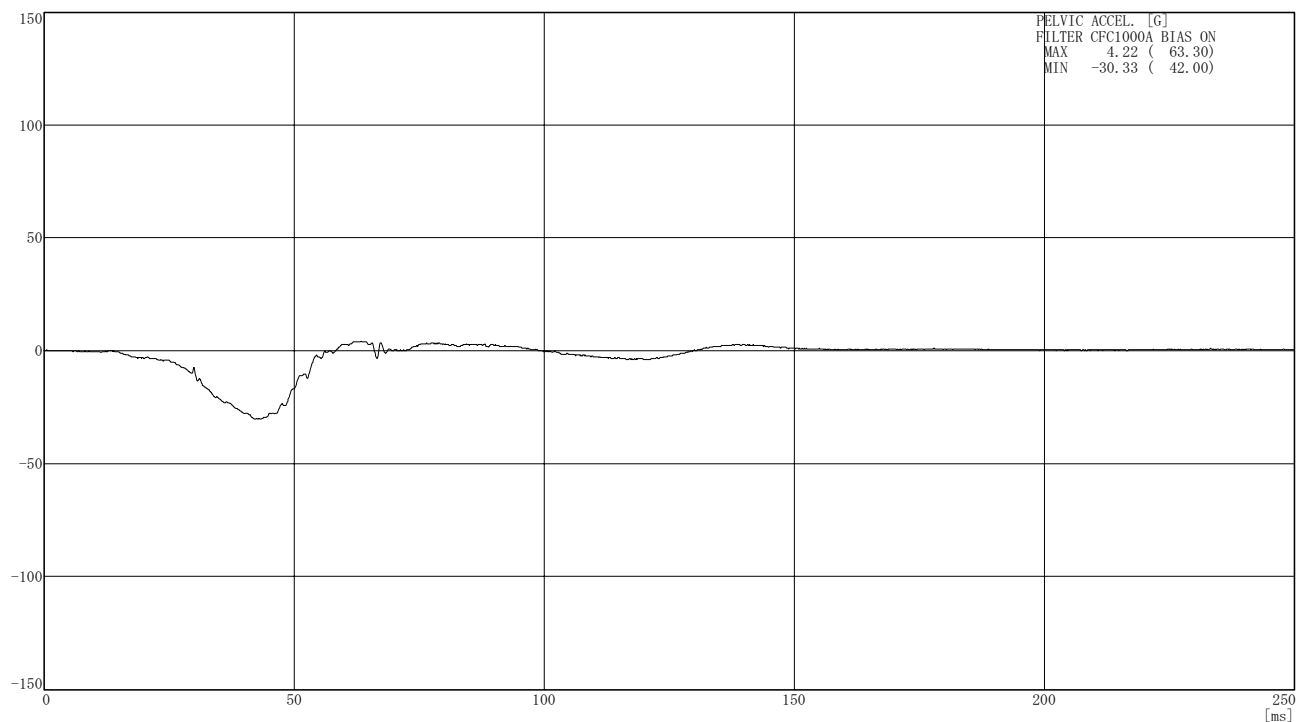


Driver PELVIC ACCEL.

Page:4

Test No. :C061010A
Test Date :2006/10/10
Test Title :EN 54KPH US SIDE(LH) TEST
Test Type :

Vehicle Model:EN
Dest./Spec. :USA
Weight :2301 kg
Closing Speed:54.2 km/h 0 deg

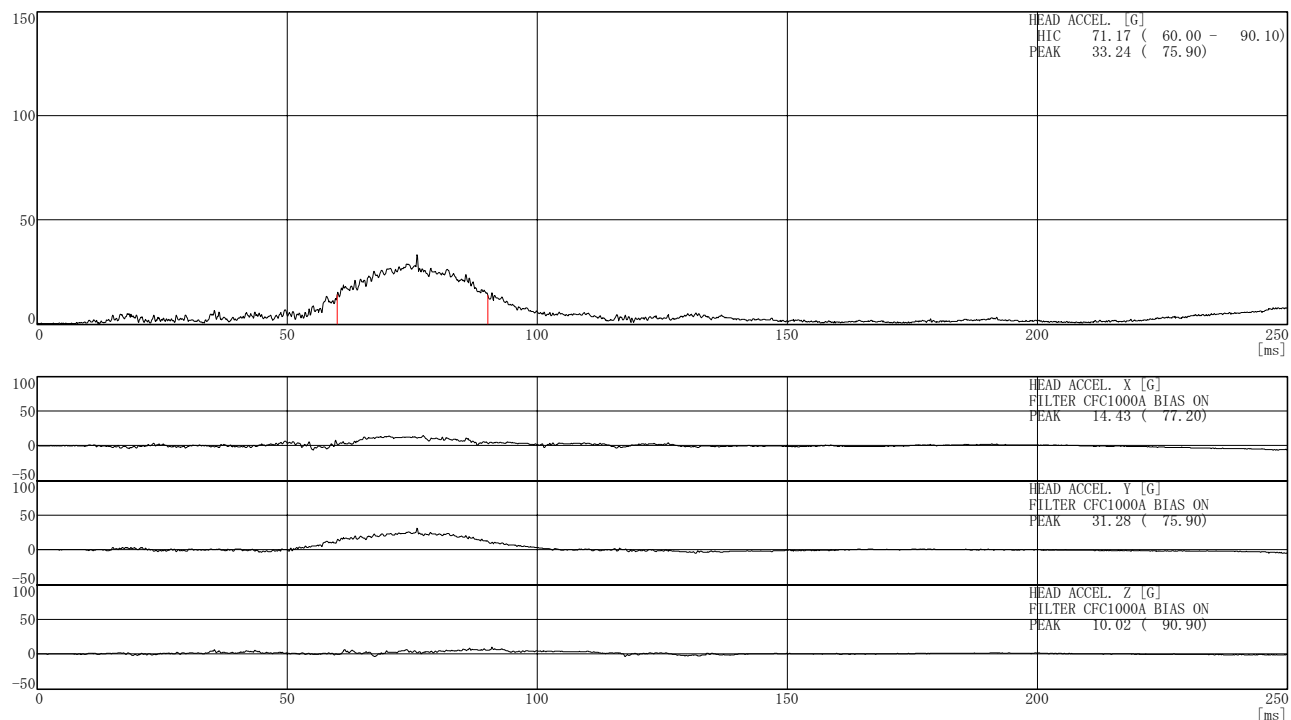


Rear Left HEAD ACCEL.

Page:5

Test No. :C061010A
Test Date :2006/10/10
Test Title :EN 54KPH US SIDE(LH) TEST
Test Type :

Vehicle Model:EN
Dest./Spec. :USA
Weight :2301 kg
Closing Speed:54.2 km/h 0 deg

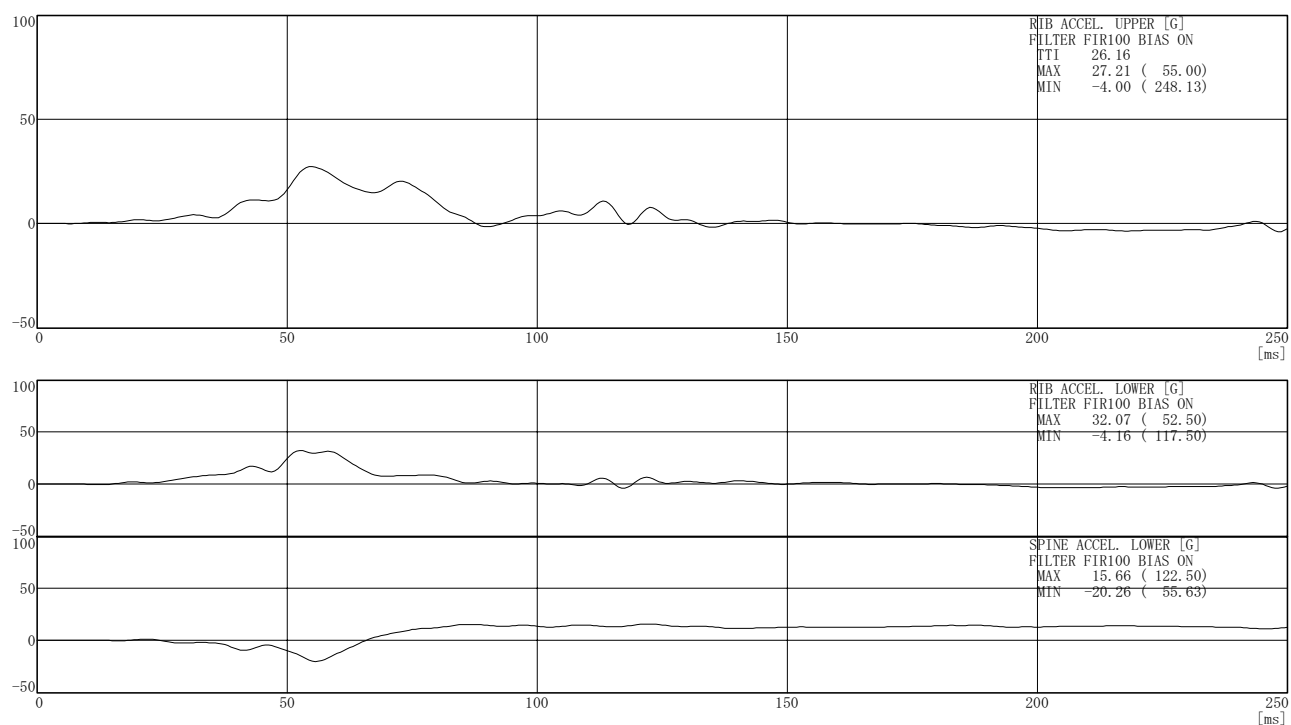


Rear Left RIB ACCEL. 1

Page:6

Test No. :C061010A
Test Date :2006/10/10
Test Title :EN 54KPH US SIDE(LH) TEST
Test Type :

Vehicle Model:EN
Dest./Spec. :USA
Weight :2301 kg
Closing Speed:54.2 km/h 0 deg

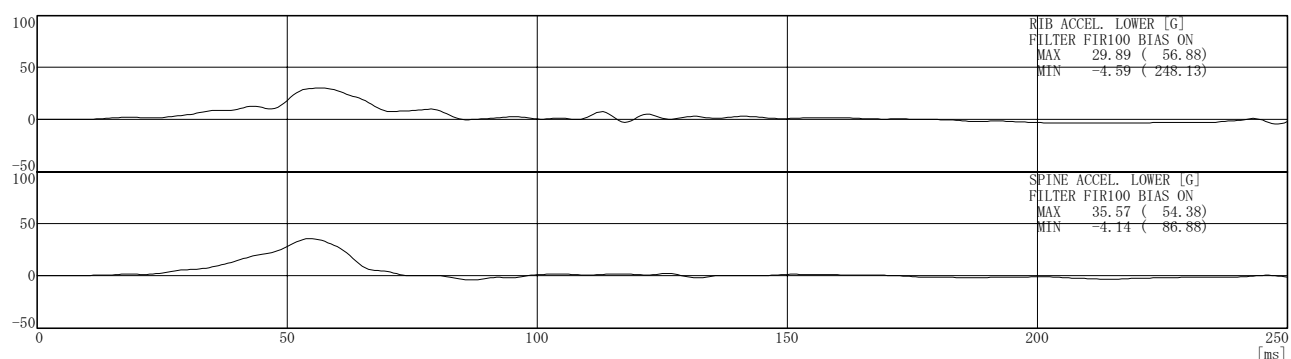
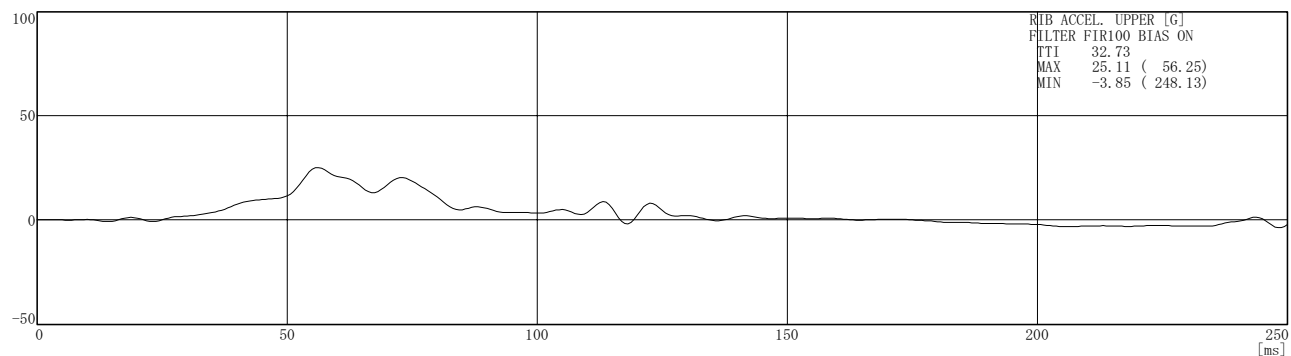


Rear Left RIB ACCEL. 2

Page:7

Test No. :C061010A
Test Date :2006/10/10
Test Title :EN 54KPH US SIDE(LH) TEST
Test Type :

Vehicle Model:EN
Dest./Spec. :USA
Weight :2301 kg
Closing Speed:54.2 km/h 0 deg

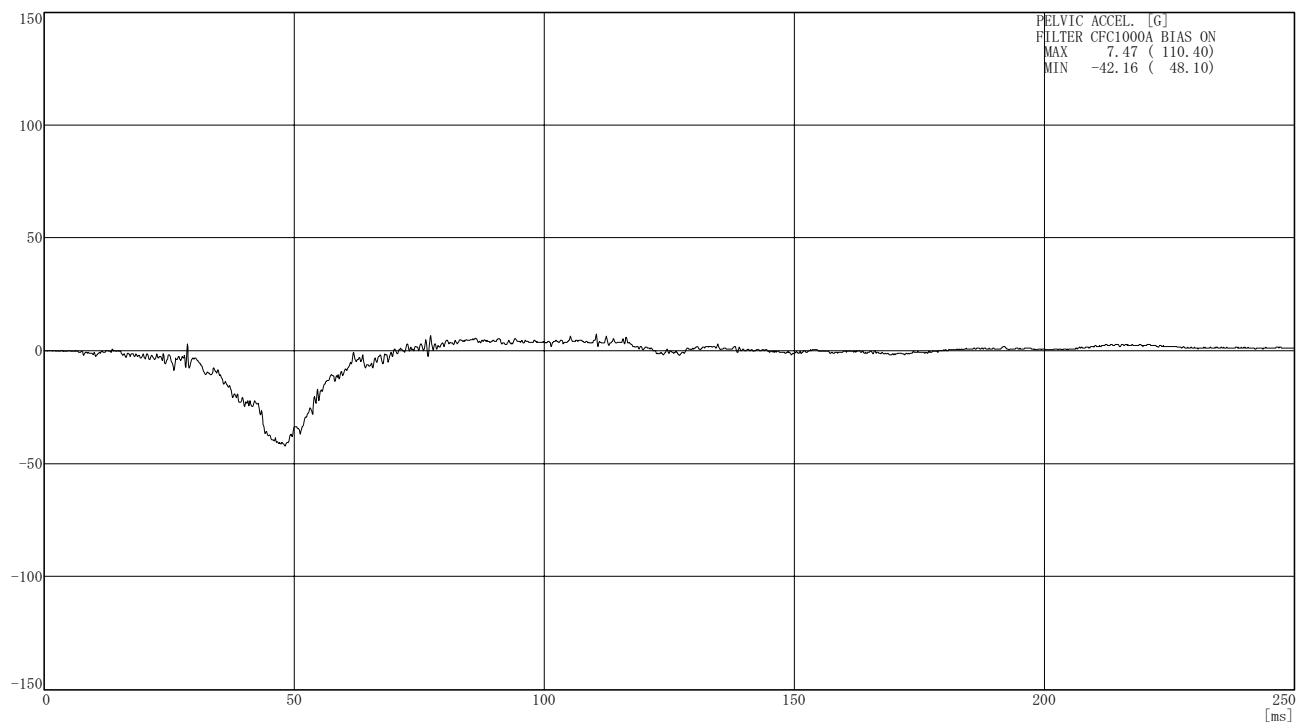


Rear Left PELVIC ACCEL.

Page:8

Test No. :C061010A
Test Date :2006/10/10
Test Title :EN 54KPH US SIDE(LH) TEST
Test Type :

Vehicle Model:EN
Dest./Spec. :USA
Weight :2301 kg
Closing Speed:54.2 km/h 0 deg



APPENDIX "C"

PHOTOGRAPHS

	PAGE
1. FRONT & REAR QUARTER VIEW OF TEST VEHICLE	C – 2 / 8
2. ENGINE COMPARTMENT VIEW OF TEST VEHICLE	C – 3 / 8
3. FUEL FILLER CAP VIEW	C – 3 / 8
4. LEFT & RIGHT SIDE VIEW OF TEST VEHICLE	C – 4 / 8
5. FRONT & REAR UNDERBODY VIEW OF TEST VEHICLE	C – 5 / 8
6. FRONT & REAR VIEW OF IMPACTOR FACE	C – 6 / 8
7. OCCUPANT OPPOSITE SIDE VIEW SHOWING FRONT & REAR SID	C – 7 / 8
8. OVERHEAD VIEW OF TEST VEHICLE AT IMPACT LOCATION & CLOSEUP VIEW OF IMPACT POINT	C – 8 / 8



PRE-TEST : FRONT QUARTER VIEW OF VEHICLE



PRE-TEST : REAR QUARTER VIEW OF VEHICLE



POST-TEST : FRONT QUARTER VIEW OF VEHICLE



POST-TEST : REAR QUARTER VIEW OF VEHICLE



PRE-TEST : ENGINE COMPARTMENT VIEW



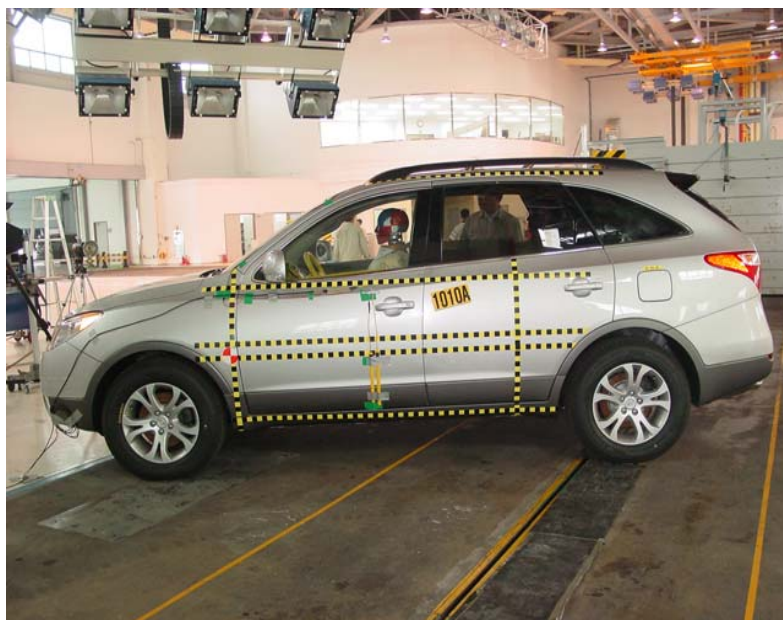
PRE-TEST : FUEL FILLER CAP VIEW



POST-TEST : ENGINE COMPARTMENT VIEW



POST-TEST : FUEL FILLER CAP VIEW



PRE-TEST : LEFT SIDE VIEW OF VEHICLE



PRE-TEST : RIGHT SIDE VIEW OF VEHICLE



POST-TEST : LEFT SIDE VIEW OF VEHICLE



POST-TEST : RIGHT SIDE VIEW OF VEHICLE



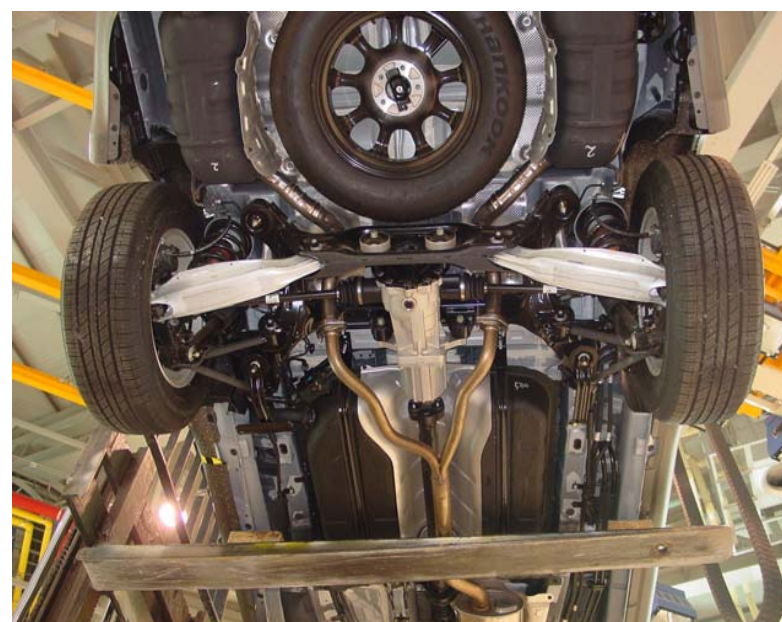
PRE-TEST : FRONT UNDERBODY VIEW OF VEHICLE



PRE-TEST : REAR UNDERBODY VIEW OF VEHICLE



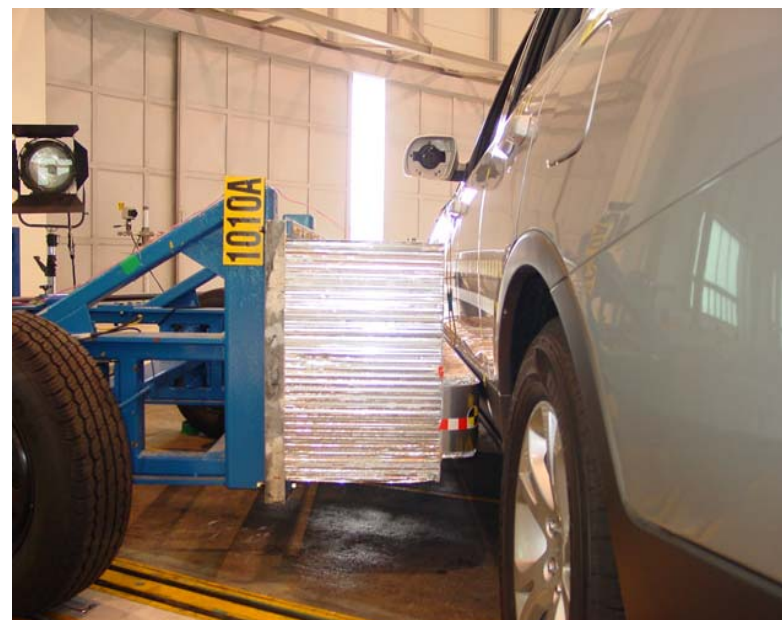
POST-TEST : FRONT UNDERBODY VIEW OF VEHICLE



POST-TEST : REAR UNDERBODY VIEW OF VEHICLE



PRE-TEST : FRONT VIEW OF IMPACTOR FACE



PRE-TEST : REAR VIEW OF IMPACTOR FACE



POST-TEST : FRONT VIEW OF IMPACTOR FACE



POST-TEST : REAR VIEW OF IMPACTOR FACE



PRE-TEST : OCCUPANT COMPARTMENT VIEW SHOWING
FRONT SID



PRE-TEST : OCCUPANT COMPARTMENT SIDE VIEW OF
REAR SID



POST-TEST : OCCUPANT COMPARTMENT VIEW SHOWING FRONT
SID



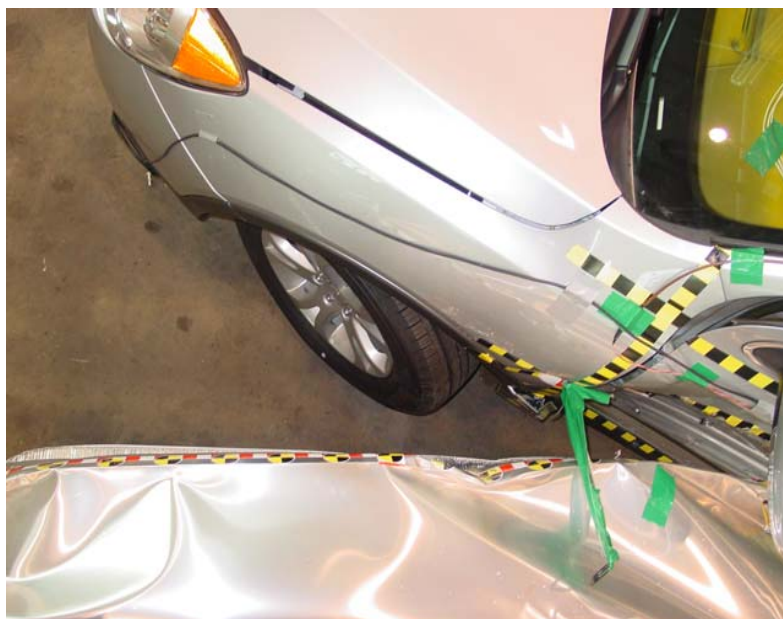
POST-TEST : OCCUPANT COMPARTMENT SIDE VIEW OF
REAR SID



PRE-TEST : OVERHEAD VIEW OF TEST VEHICLE AT IMPACT LOCATION



PRE-TEST : CLOSEUP VIEW OF IMPACT POINT



POST-TEST : OVERHEAD VIEW OF TEST VEHICLE AT IMPACT LOCATION



POST-TEST : CLOSEUP VIEW OF IMPACT POINT

RQ13-004

HYUNDAI-KIA

3-3-2014

RESPONSE TO REQUEST 13

Page 1

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Page 2

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ELANTRA TOURING HEADLINER (NO SUNROOF) PHOTOGRAPHS



Close-up

ELANTRA TOURING HEADLINER (WITH SUNROOF) PHOTOGRAPHS



Close-up

Page 1

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Page 2

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Page 1

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Page 2

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VERACRUZ SUNROOF HEADLINER PHOTOGRAPHS



Close-up

Page 1

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Page 1

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Page 2

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Page 3

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RQ13-004

HYUNDAI-KIA

3-3-2014

RESPONSE TO REQUEST 14

Hyundai Response to Request 14

RQ13-004

14-a. Type, description, specification, manufacturer, and photographs of the tool used to apply the adhesive to the stiffener

ADHESIVE SPRAY TOOL



SPRAY GUN
TYPE :3S

	Model : W-77-3S
Type of feed	Suction
Fluid nozzle orifice (mm)	2.5
Spray distance(mm)	250
Atomizing air pressure(MPa)	0.34
Air consumption(L/mm)	325
Fluid output (mL/min)	435
Pattern width(mm)	280
Required air compressor(kW)	2.2
Mass(g)	550
Standard container or cup	Container PC-1(1000mL) PCL-10B-3(1000mL) PCL-7B-3(700mL) PC-19R(1000mL)

14-a. Type, description, specification, manufacturer, and photographs of the tool used to apply the adhesive to the stiffener

ADHESIVE SPRAY TOOL

ADHESIVE TANK



	Pressurized tank 40L
Weight	27kg
Pressure	4/cm2
Volume	40L
Type	Manual/Auto Stirring
Discharge Port	2EA
Size	730x 405 φ

14-a. Type, description, specification, manufacturer, and photographs of the tool used to apply the adhesive to the stiffener

ADHESIVE SPRAY TOOL

COMPRESSOR
MODEL : GRH2-35A



	Model : GRH-35A	
COMPRESSORS	Type	OIL FLOODED SINGLE STAGE ROTARY SCREW COMPRESSOR
	Air Discharge Volume (m ³ /min)	7Kgf/cm ² 2.5
		8.5Kgf/cm ² 250
		9.9Kgf/cm ² 0.34
	Driven	Poly Belt Drive
	Suction Condition	Atmospheric Pressure
	Discharge Condition	Ambient Temperature + 15°C
	Lubricant Charge	15
	Discharge Pipe Diameter	25
MOTOR	Output (Kw)	27
	Voltage(V)	220/380/440
	Frequency(Hz)	50/60
	Starting System	Y - Δ
DIMENSIONS & WEIGHT	Width(mm)	1300
	Depth(mm)	950
	Height(mm)	1320
	Weight(Kg)	840

Page 1

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Page 2

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Page 3

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Page 5

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Page 6

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Page 7

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Page 8

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Page 9

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Page 10

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Page 111

{Entire Page Redacted}

RQ13-004

HYUNDAI-KIA

3-3-2014

RESPONSE TO REQUEST 15

Hyundai Response to Request 15

RQ13-004

15. For each model and model year of the subject vehicles, describe in detail the process used to apply the hot-melt glue to the ends of the stiffener and headliner including, but not limited to, the following information

a. Type, description, specification, manufacturer, and photographs of the tool used to apply the hot glue to the stiffener

TOOL : HOT MELT APPLICATOR



TYPE	APPLICATOR SYSTEM
DESCRIPTION	Using Hot melt adhesive
SPECIFICATION	◆ VISCOSITY : 50,000 CPS ◆ TANK capacity : 20 Kg (44 lbs) ◆ MELT RATE : 25 Kg / hr ◆ OPERATING TEMPERATURE RANGE : 230 °C
MANUFACTURER	PHAL BOK SYSTEM CO.,LED.
Hot GLUE information	See included MSDS

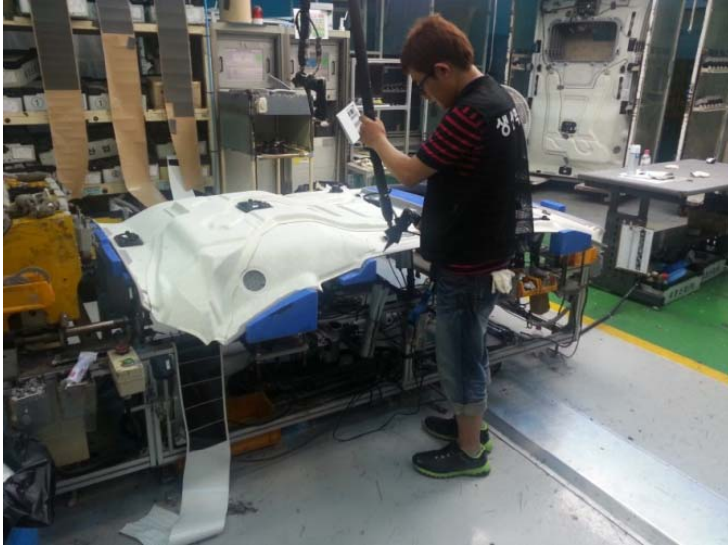
15. For each model and model year of the subject vehicles, describe in detail the process used to apply the hot-melt glue to the ends of the stiffener and headliner including, but not limited to, the following information:

b. Process for applying the hot glue to the stiffener, and whether the process is conducted by a human operator or a robotic device; and

c. Process for handling and storing the hot glue materials, including all procedures specified by the adhesive supplier.

In addition, produce copies of all documents related to this request.

◆ Process used to apply the hot glue to the ends of the Support Bracket

PHOTOS	 A photograph showing a worker in a black shirt and jeans applying hot-melt glue to the side bracket of a vehicle. The vehicle is white with blue accents. The worker is standing on a platform, and the glue is being applied to the edge of the bracket.  A close-up photograph showing the hot-melt glue being applied to the side bracket of the vehicle. The glue is being applied in a line along the edge of the bracket.
EXPLANATION	◆ Process Apply hot-melt on the side-bracket edges. (FRT/RR_LH/RH) : Human operator -Checking applied-condition of hot-melt in comparison with the master sample. -Making sure that the adhesive is properly applied to the bracket at both ends ◆ TOOL: HOT MELT APPLICATOR SYSTEM (Same tool is used for Elantra Touring and Veracruz)

Material Safety Data Sheet



OKONG BOND® No.SJ2004

SECTION 1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

TRADE NAMES/SYNONYMS : No. SJ2004
 EMERGENCY TELEPHONE NUMBER : 82-32-822-5050 (SOUTH KOREA)
 8L-14B,Namdong industrial Complex
 Namchon-dong, Namdong-gu,Inchon-city, 405-846,South Korea
 SUBSTANCE: Hotmelt adhesive
 CREATION DATE: OCT 07 1998
 REVISION DATE:

SECTION 2 COMPOSITION, INFORMATION ON INGREDIENTS

Ingredients	CAS No	content(%)
1.ETHYLENE-VINYLACETATE COPOLYMER	24937-78-8	15
2.POLYPROPYLENE	9003-07-0	19
3. PETROLEUM HYDROCARBON RESIN	64742-16-1	26
4. HIGH-DENSITY POLYETHYLENE	9002-88-4	2
5. etc	-	38

SECTION 3 HAZARDS IDENTIFICATION

Danger immediate, harm information

Ingredients	NFPA RATINGS (SCALE 0-4)	FIRE	HEALTH	REACTIVITY
1.ETHYLENE-VINYLACETATE COPOLYMER		1	1	0
2.POLYPROPYLENE		1	1	
2. PETROLEUM HYDROCARBON RESIN		1	1	0
3. HIGH-DENSITY POLYETHYLENE		1	1	0
4. etc		1	1	0

EYE CONTACT

Short-term effects : No data available

Long-term effects : No data available

SKIN CONTACT

Short-term effects :The stimulus can be happended.

Long-term effects : No data available

INHALATION

Short-term effects :Can cause stimulus and vomiting.

Long-term effects : No data available

ENGESTION

Short-term effects : No data available

Long-term effects : No data available

CARCINIGEN STATUS:

OSHA : N

NTP : N

IARC : N

ACGIH : N

SECTION 4 FIRST AID MEASURES

EYE CONTACT : Wash eyes immediately with large amoumts of water. get medical attention immediately.

SKIN CONTACT : Remove contaminated clothing and shoes immediately. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minute). Get medical attention immediately.

INHALATION : Remove from exposure area to fresh air immediately. Perform artificial respiration if necessary. Keep person warm and at rest. Treat symptomatically and supportively. Get medical attention if needed.

INGESTION : If vomiting occurs, keep head lower than hips to help prevent aspiration. Treat symptomatically and supportively. Get medical attention if needed.

INFORMATION TO DOCTOR : No known detoxificants. Treat according to symptoms.

SECTION 5 FIRE FIGHTING MEASURES

FLASH POINT : 271 °C (OC)

SPONTANEOUS COMBUSTION POINT : No data available

MINIMUM FLAMMABLE LIMITS : No data available

MAXIMUM FLAMMABLE LIMITS : No data available

FLAMMABILITY CLASS(OSHA) : No data available

FIREFIGHTING : Move container from fire area if you can do it without risk. Do not scatter spilled material with high-pressure water streams. Dike fire-control water for later disposal. Use agents suitable for type of surrounding fire. Avoid breathing hazardous vapors, keep upwind.

HARZARDOUS COMBUSTION PRODUCTS : Combustion will produce CO₂, water, sand, regulated foam

TOXIC MATERIAL ON BURNING : Chemical toxic carbon combination may be included.

THE FIRE EXTINGUISHER NOT TO BE USED : Information provided

SECTION 6 ACCIDENTAL RELEASE MEASURES

STEP TO BE TAKEN TO PROTECT FROM BODILY HARM : Keep unnecessary people away.

STEP TO BE TAKEN TO PROTECT ENVIRONMENT : Collect spilled material in appropriate for later disposal
keep out of water supplies and sewers. keep unnecessary
people away isolate hazard area deny entry.

SECTION 7 HANDLING AND STORAGE

HANDLLING : Observe all federal, state and local regulations when storing this substance.

STORAGE : Store in a dry place. Store in tightly closed container.

SECTION 8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

ENGINEERING CONTROLS : Use adequate ventilation to keep airborne concentration low.

EYE PROTECTION : Operator should wear splash resistant or particle resistant safety goggles to avoid eye contact with chemical material.

An emergency eye wash fountain and quick drench shower should be installed in the immediate work area.

RESPIRATORY PROTECTION : The following respiratory protection equipment is recommended by information obtained from various data sources related to toxicity and health.

The listed respiratory protection equipment are ranked in the order of minimum requirements to maximum requirements.

The selected respiratory protection equipment should be based on pollution levels and production processes in the working area, and should not exceed the maximum operating limits of the respiratory protection equipment.

Products should be approved by NIOSH/MSHA

: Respiratory protective equipment for particles and mist.

Supplied air purifying respiratory protective equipment with high efficiency particle filter

: Supplied air purifying respiratory protective equipment with particle and mist filter.

: C type air supply(ventilating type) respiratory protective equipment with

pressure-demand or positive-pressure mode.

Self-contained respiratory equipment.

PROTECTIVE BODY AND GLOVES : Operator should wear appropriate(imprevous) protective clothing to avoid repetitive or long-term contact with chemical material.

EXPOSURE LIMITS

ETHYLENE-VINYLACETATE COPOLYMER : No standard or limits listed by OSHA, ACGIH, or NIOSH

POLYPROPYLENE : No standard or limits listed by OSHA, ACGIH, or NIOSH

PETROLEUM HYDROCARBON RESIN : 5 mg/m3(15 mppcf) OSHA TWA(respirable dust)

15 mg/m3(50 mppcf) OSHA TWA(total dust)

HIGH-DENSITY POLYETHYLENE : No standard or limits listed by OSHA, ACGIH, or NIOSH

ETC : No standard or limits listed by OSHA, ACGIH, or NIOSH

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE : Yeloowish block

Odor : faint smell

pH : No data available

SOLVENT SOLUBILITY : No data available

BOILING POINT/RANGE : No data available

MELTING POINT : 100~120℃

VAPOR PRESSURE : No data available

VAPOR DENSITY : No data available

SECIFIC GRAVITY : 0.98

MOLECULAR WEIGHT : No data available

DISTRIBUTING COEFFICIENT : No data available

VISCOSITY : 4000cps/180℃

SECTION 10 STABILITY AND REACTIVITY

CHEMICAL STABILITY : Stable under normal temperatures and pressures.

CONDITIONS TO AVOID : Avoid all possible sources of ignition (spark or flame)

HAZARDOUS DECOMPOSITION PRODUCTS : carbon oxides(CO, CO2)

HAZARDOUS POLYMERIZATION : No data available

SECTION 11 TOXICOLOGICAL INFORMATION

ETHYLENE-VINYLACETATE COPOLYMER

TOXICITY DATA : Inhalation : No data available

: Oral : No data available

: Skin : No data available

CARCINOGEN STATUS : OHSA - None

: NTP - None

: IARC - None

ACUTE TOXICITY DATA : No data available

CHRONIC DATA : No data available

MUTAGENIC DATA : No data available

REPRODUCTIVE EFFECTS DATA : No data available

POLYPROPYLENE

TOXICITY DATA : Inhalation : No data available

: Oral : No data available

: Skin : No data available

CARCINOGEN STATUS : OHSA - None

: NTP - None

: IARC - None

ACUTE TOXICITY DATA : No data available

CHRONIC DATA : No data available

MUTAGENIC DATA : No data available
 REPRODUCTIVE EFFECTS DATA : No data available

PETROLEUM HYDROCARBON RESIN

TOXICITY DATA : Inhalation : No data available

: Oral, rat : LD50 = 7g/kg

: Skin : No data available

CARCINOGEN STATUS : OSHA - None

: NTP - None

: IARC - None

ACUTE TOXICITY LEVEL : No data available

CHRONIC DATA : No data available

MUTAGENIC DATA : No data available

REPRODUCTIVE EFFECTS DATA : No data available

HIGH-DENSITY POLYETHYLENE

TOXICITY DATA : Inhalation : No data available

: Oral : No data available

: Skin : No data available

CARCINOGEN STATUS : OSHA - None

: NTP - None

: IARC - None

ACUTE TOXICITY LEVEL : No data available

CHRONIC DATA : No data available

MUTAGENIC DATA : No data available

REPRODUCTIVE EFFECTS DATA : No data available

ETC

TOXICITY DATA : Inhalation : No data available

: Oral : No data available

: Skin : No data available

CARCINOGEN STATUS : OSHA - None

: NTP - None

: IARC - None

ACUTE TOXICITY DATA : No data available

CHRONIC DATA : No data available

MUTAGENIC DATA : No data available

REPRODUCTIVE EFFECTS DATA : No data available

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY : No data available

ENVIRONMENTAL FATE : No data available

PERSISTENCE/DEGRADABILITY : No data available

BIOACCUMULATIVE POTENTIAL : No data available

SECTION 13 DISPOSAL CONSIDERATIONS

WASTE INFORMATION : Dispose of in accordance with applicable local and national regulations. Avoid contact of spill material and runoff with soil and surface waterways. Consult an environmental professional to determine if local, regional or national regulations would classify spilled or contaminated material as hazardous waste. Use only approved transporters, recyclers, treatment, storage or disposal facilities.

SECTION 14 TRANSPORT INFORMATION

No classification currently assigned.

SECTION 15 REGULATORY INFORMATION

No data available

SECTION 16 OTHER INFORMATION

THE SOURCE OF DATA: This MSDS is for the purpose of providing references to other enterprises which asking the MSDS by the Industrial Safety and Health Law, the 41st article. Therefore the O-Kong Adhesives (Co.) does not take any responsibility about any technical or legal responsible for this document

RQ13-004

HYUNDAI-KIA

3-3-2014

RESPONSE TO REQUEST 16

Hyundai Response to Request 16

RQ13-004

16. For each model and model year of the subject vehicles, describe in detail each type of quality control check, inspection, test, or analysis performed during the manufacture and assembly of the subject components for the subject vehicles, and specifically with respect to the adhesion of the stiffener to the headliner, the application of adhesive to the stiffener, and the application of the hot-melt glue material to the headliner. For each check, test, inspection, etc., describe the types of information or data collected and the frequency they are collected at. Explain the pass-fail criteria for each check, test, inspection, etc. In addition, produce copies of all documents related to this request.

How to check Quality Problem about Headliner

No	PROCESS & INSPECTION	DESCRIBE	Test type	Pass/fail	FREQUENCY	Attach.
1	Spray adhesive and inspection	Checking status of sprayed adhesive (compared to the master sample)	Visual	The adhesive is sprayed more than OK master sample	Total Inspection	X
2	Side bracket inspection	Side bracket inspection	Visual	No deformity, burr etc.	Sampling inspection	X
3	FORMING PRESS (LH SIDE BRACKET ATTACH)	Making shape and attach side-bracket LH.	Visual	No delamination, broken, wrinkle etc.	Total Inspection	X
4	COVERING PRESS (RH SIDE BRACKET ATTACH)	Attached RH SIDE BRACKET and skin	Visual	No Delamination, broken, wrinkle etc.	Total Inspection	X
5	TRIMMING	TRIMMING OUT LINE	Visual	No delamination, broken, wrinkle etc.	Total Inspection	X

16. For each model and model year of the subject vehicles, describe in detail each type of quality control check, inspection, test, or analysis performed during the manufacture and assembly of the subject components for the subject vehicles, and specifically with respect to the adhesion of the stiffener to the headliner, the application of adhesive to the stiffener, and the application of the hot-melt glue material to the headliner. For each check, test, inspection, etc., describe the types of information or data collected and the frequency they are collected at. Explain the pass-fail criteria for each check, test, inspection, etc. In addition, produce copies of all documents related to this request.

No	PROCESS & INSPECTION	DESCRIBE	Test type	pass-fail criteria	FREQUENCY	Attach.
6	FIRST/MIDDLE/LAST CHECK	FIRST/MIDDLE/LAST product inspection	Visual	No delamination, broken, wrinkle etc.	3times / day	X
7	Process inspection data	Daily defective List (process forming/covering/trimming)	Visual	No delamination, broken, wrinkle etc.	Every day	X
8	headliner inspection	Trimming headliner Inspection	Visual	No delamination, broken, wrinkle etc.	Incoming inspection	X
9	Hot melt apply	Apply the hot-melt on the side-bracket edges	Visual	Apply at both ends of the bracket until the bracket so that it overlaps with the hot melt is applied	Total Inspection	X
10	Final inspection	Module headliner inspection	Visual	No delamination, broken, wrinkle etc.	Total Inspection	X

MASTER SAMPLE



OK : Normal condition



NG : Insufficient spray(overall)



NG : Partial Insufficient spray



FINAL INSPECTION SHEET

결재	담당	검토	검토	승인
	VH324			

작성일자 : 2014년 3월 31일

별표 : 불량 내용은 단순히 표기(예: OHC LAMP 이종, FRT오염, RR원단 박리...등)

검사자: 서경남

Inspection			Repair			QA		
Vehicle	Detail	Quantity	Worker	Detail	Lighting test	Inspector		
DATE			DATE	SEQ.	Replacement		Result	
2/21	EN J83	1	2/21 장영아	14-01-21-006	Repair	부	2/21 장영아	OK
1. 최종 검사자는 불량 P/T에 적지하는 불량품은 반드시 일지에 기재한다.(단, 정상적 검사 C/T내에서 간단히 수정하는 불량은 기재하지 않는다.) 2. 바코드에 의한 F/P 시스템으로 검사하는 부품을 교체하는 경우는 반드시 제작일 검사 시스템을 가지고 재검번호(F/P)를 기재하여야 한다. 3. 부품 교체 작업시 생산 일련 번호, 내용을 상세히 기재한다.(생산 일련 번호 : 01-0003, 내용 예시 : RH RR A-POL 교체, CHC LAMP T08 교체) 4. 부품 교체시(전 3행) 반드시 제작일 이종 검사 시스템으로 재검번호 기재 후, 품질팀에 검사를 요청 해야한다.(재검 번호예: 11-20-01) 5. 검사 완료된 제품은 재검사 합격리벨을 품질팀에서 부착후 생산팀에 제품을 인계해야한다.								

성현산업(주)

(FINAL INSPECTION SHEET

결재	담당	점주	점보	승인
	박기원			

작성일자 : 2013년 2월 28일

범례 : 불량 내용은 단순히 표기(예: OHC LAMP 이종, FRT오염, RR원단 박리...등)

검사자 : 김동희

Inspection				Repair				QA			
Vehicle		Quantity		Worker		Lighting test		Inspector			
DATE	Detail	DATE	SEQ.	Detail	Replacement	DATE	Result				
2/27	17D 21 Contamination	2/27	1	Repair	X	2/28	OK				
"	047 A/H Scratch	2/28	1	Replacement	O	"	↑				
주 기 1. 최종 검사자는 불량 PLT에 적지하는 불량품은 반드시 일지에 기재한다.(단, 정상적 검사 C/T내에서 간단히 수정하는 불량은 기재하지 않는다.) 2. 바코드에 의한 F/P 시스템으로 검사하는 부품은 교체하는 경우는 반드시 제작업 검사 시스템을 거치고 재검번호(R/P)를 기재하여야 한다. 3. 부품 교체 작업시 생산 일련 번호, 내용을 상세하게 기재한다. (생산 번호: 01-0003, 내용 예시: RH RH A/HDL 교체, OHC LAMP T08 교체) 4. 부품 교체시(전 3행) 반드시 제작업 이종 검사 시스템으로 재검번호 기재 후, 품질팀에 검사요청 해야한다.(재검 번호예: 11-20-01) 5. 검사 완료된 제품은 재검사 합격라벨을 품질팀에서 부착후 생산팀에 제품을 인계해야한다.											

성현산업(주)

EN SRF SIDE BRACKET INSPECTION REPORT

수입검사 정보 내역 Inspection

NVH Korea Co. Ltd

Page 1 of 1

Inspection Number	INE2120040	Stock No.	TRE2110014	Date of stock	2014-02-11
기Code드	21022	Supplier	N.A.P 주식회사	Quantity	200
Part number	85454-3J009	Part name	SIDE RH BRKT(EN S/R)	최Result	OK품
Number of sample	5	LOT NO		Inspection method	Sampling
Date of inspection	2014-02-12	Inspector	정경수	OK	200
				NG	0
특채의뢰자		특채수량	0	특채사유	
개선대책접수여부	N	개선대책접수일자		유효성확인일자	
불량통보서발송일자		비고사항			

Results

Items	Specifications	Upper	Lower	1	2	3	4	5	6	7	8	9	10
Appearance 오염	NO BURR	0	0	OK	OK	OK	OK	OK					
Appearance 외관	NO missing holes, NO distortion			OK	OK	OK	OK	OK					
Appearance 외관	NO uncoated bond	0	0	OK	OK	OK	OK	OK					
DIM'S	Width	578.1	578.600 577.600	578.6	578.1	578.6	578.6	578.1					
DIM'S	Length	802.3	802.800 801.800	802.3	802.8	802.3	802.8	802.3					
DIM'S	thickness	0.8	0.810 0.790	0.8	0.8	0.8	0.8	0.8					

FD NO_SRF SIDE BRACKET INSPECTION REPORT

수입검사 정보 내역 Inspection

NVH Korea Co. Ltd

Page 1 of 1

Inspection Number	INC2170042	Stock No.	TRC2170039	Date of stock	2012-02-17
개 Code 드	21022	Supplier	N.A.P 주식회사	Quantity	200
Part number	85371-2L409	Part name	FDW STD LHD BRKT-RE	최 Result	합격품
Number of sample	5	LOT NO		Inspection method	Sampling
Date of inspection	2012-02-17	Inspector	이기범	OK	200
				NG	0
특재의뢰자		특재수량	0	특재사유	
개선대책접수여부	N	개선대책접수일자		유효성확인일자	
불량통보서발송일자		비고사항			

Results

Items	구분	Specifications	Upper	Lower	1	2	3	4	5	6	7	8	9	10
Appearance	염	NO BURR	0	0	OK	OK	OK	OK	OK					
DIM'S	Width	27.5	28.000	27.000	27.6	27.5	27.7	27.7	27.6					
DIM'S	Length	1138.9	1139.400	1138.400	1138.9	1139.0	1138.9	1139.0	1138.9					
DIM'S	thickness	0.8	0.810	0.790	0.8	0.8	0.8	0.8	0.8					

FD SRF SIDE BRACKET INSPECTION REPORT

수입검사 정보 내역 Inspection

NVH Korea Co. Ltd

Page 1 of 1

Inspection Number	NB1130018	Stock No.	TRB1130007	Date of stock	2011-01-13
가Code	21022	Supplier	N.A.P 주식회사	Quantity	150
Part number	35470-2L409	Part name	FD 5DR S/R BRKT-REINF	최Result	합격품
Number of sample	5	LOT NO		Inspection method	Sampling
Date of inspection	2011-01-13	Inspector	차병목	OK	150
				NG	0
특채의뢰자		특채수량	0	특채사유	
개선대책접수여부	N	개선대책접수일자		유효성확인일자	
불량통보서발송일자		비고사항			

Results

Items	Specifications	Upper	Lower	1	2	3	4	5	6	7	8	9	10
외관Appearance	NO BURR	0	0	OK	OK	OK	OK	OK					
DIM'S ㄱ Width	34.6	35.100	34.100	34.5	34.5	34.5	34.5	34.5					
DIM'S ㄷ Length	1037	1037.500	1036.500	1037.0	1037.5	1037.5	1037.0	1037.5					
DIM'S ㄴ thickness	0.8	0.810	0.790	0.8	0.8	0.8	0.8	0.8					

Inspection Standard : FORMING

((공전)최종) 검사기준서 Inspection Standard

Process : Forming

Vehicle	ALL	Part name	Headliner	품 번	-
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Peel off



Rip



Bent



Stripe



Bent G/mat

No	Items	Specifications	Test methods	Inspection cycle
1	Appearance	There should be no problems.	Visual Inspection	Total inspection
	Peel off			
	Rip			
	Bent			
	Stripe			
Bent G/mat				
Date of preparation				
2008-12-04				
작성	이 기 범	2	08.12.04	Add 'Bent G/mat' distribution
검 토	서 용 득	1	07.11.01	
승 인	이 동 일	개정 NO	개정일자	개 정 내 용
				작 성
				검 토
				승 인

Operation(PROCESS) Condition Check Sheet_ Forming

EN

Operation condition check sheet

체크자 : 주간 (이영민) 아간 (이영민) 작성 : 주/아, 체크시간 : 4위단위

No	Proc ess	Check items	Standard	Date											
				9 월 8 일				10 일				11 일			
				Vehicle				Vehicle				Vehicle			
1	Formir	Mold surface temperature (Upper)	140±7℃	140	141	142	143	140	141	142	143	140	141	142	143
2			142	143	144	145	142	143	144	145	142	143	144	145	
3			141	142	143	144	145	142	143	144	145	142	143	144	145
2	Formir	Mold surface temperature (Lower)	140±7℃	143	142	141	140	143	142	141	140	143	142	141	140
2			142	141	140	143	142	141	140	143	142	141	140		
3			140	141	142	143	144	145	142	143	144	145	142	143	144
3	Formir	Pressure	50±10kgf/cm²	50	50	50	50	50	50	50	50	50	50	50	50
2			15	15	15	15	15	15	15	15	15	15	15	15	
3			20	20	20	20	20	20	20	20	20	20	20	20	20
4	Formir	Primary	15±3초	15	15	15	15	15	15	15	15	15	15	15	15
2			15	15	15	15	15	15	15	15	15	15	15	15	
3			20	20	20	20	20	20	20	20	20	20	20	20	
5	Formir	Secondary	20±3초	20	20	20	20	20	20	20	20	20	20	20	20
2			20	20	20	20	20	20	20	20	20	20	20	20	
3			20	20	20	20	20	20	20	20	20	20	20	20	

Administrators confirm

조치 내용
※ 이상발생시에는 △표출하고
조치내용은 기록할 것.

1 2 3

※ 온도변화 있을시까지 CHECK
(공차 ± 10℃)

QP-0920-03 rev.0

엔브이에이치코리아주식회사

FD

Operation condition check sheet

체크자 : 주간 (이영민) 아간 (이영민) 작성 : 주/아, 체크시간 : 4위단위

No	Proc ess	Check items	Standard	Date											
				10 월 8 일				11 일				12 일			
				Vehicle				Vehicle				Vehicle			
1	Formir	Mold surface temperature (Upper)	140±7℃	140	141	142	143	140	141	142	143	140	141	142	143
2			142	143	144	145	142	143	144	145	142	143	144	145	
3			141	142	143	144	145	142	143	144	145	142	143	144	145
2	Formir	Mold surface temperature (Lower)	140±7℃	143	142	141	140	143	142	141	140	143	142	141	140
2			142	141	140	143	142	141	140	143	142	141	140		
3			140	141	142	143	144	145	142	143	144	145	142	143	144
3	Formir	Pressure	50±10kgf/cm²	50	50	50	50	50	50	50	50	50	50	50	50
2			15	15	15	15	15	15	15	15	15	15	15	15	
3			20	20	20	20	20	20	20	20	20	20	20	20	
4	Formir	Primary	15±3초	15	15	15	15	15	15	15	15	15	15	15	15
2			15	15	15	15	15	15	15	15	15	15	15	15	
3			20	20	20	20	20	20	20	20	20	20	20	20	
5	Formir	Secondary	20±3초	20	20	20	20	20	20	20	20	20	20	20	20
2			20	20	20	20	20	20	20	20	20	20	20	20	
3			20	20	20	20	20	20	20	20	20	20	20	20	

Administrators confirm

조치 내용
※ 이상발생시에는 △표출하고
조치내용은 기록할 것.

1 2 3

※ 온도변화 있을시까지 CHECK
(공차 ± 10℃)

QP-0920-03 rev.0

엔브이에이치코리아주식회사

OPERATION CONDITION CHECK SHEET_ Covering

EN

Operation condition check sheet

제조자 : 주안 (주안) 야간 (주안)

공정명 : PU#3 인착공정

Date : 2018. 06. 14

Proc ess	Check items	Standard	Vehicle				Vehicle				Vehicle			
			10월 14일	10월 15일	10월 16일	10월 17일	10월 18일	10월 19일	10월 20일	10월 21일	10월 22일	10월 23일	10월 24일	
Covering	Mold surface temperature (Upper)	140±7℃	142	142	142	141	141	141	141	141	141	141	141	
	Mold surface temperature (Lower)	140±7℃	140	140	140	140	140	140	140	140	140	140	140	
	Pressure	50±10kgf/cm²	50	50	50	50	50	50	50	50	50	50	50	
Trimming	Primary	20±3초	20	20	20	20	20	20	20	20	20	20	20	
	Secondary	24±3초	24	24	24	24	24	24	24	24	24	24	24	
	Heat time	18±3초	18	18	18	18	18	18	18	18	18	18	18	

Administrators confirm

조치 내용 : *이상발생시에는 스프레이하고 조치내용은 기록함.

QP-0920-03 rev.0

FD

Operation condition check sheet

제조자 : 주안 (주안) 야간 (주안)

공정명 : PU#2 인착공정

Date : 2018. 06. 14

Proc ess	Check items	Standard	Vehicle				Vehicle				Vehicle			
			10월 14일	10월 15일	10월 16일	10월 17일	10월 18일	10월 19일	10월 20일	10월 21일	10월 22일	10월 23일	10월 24일	
Covering	Mold surface temperature (Upper)	140±7℃	142	142	142	141	141	141	141	141	141	141	141	
	Mold surface temperature (Lower)	140±7℃	140	140	140	140	140	140	140	140	140	140	140	
	Pressure	50±10kgf/cm²	50	50	50	50	50	50	50	50	50	50	50	
Trimming	Primary	20±3초	20	20	20	20	20	20	20	20	20	20	20	
	Secondary	24±3초	24	24	24	24	24	24	24	24	24	24	24	
	Heat time	18±3초	18	18	18	18	18	18	18	18	18	18	18	

Administrators confirm

조치 내용 : *이상발생시에는 스프레이하고 조치내용은 기록함.

QP-0920-03 Rev.0

Inspection Standard _ TRIMMING

(공정, **최종**) 검사기준서

Inspection Standard

Process : Trimming

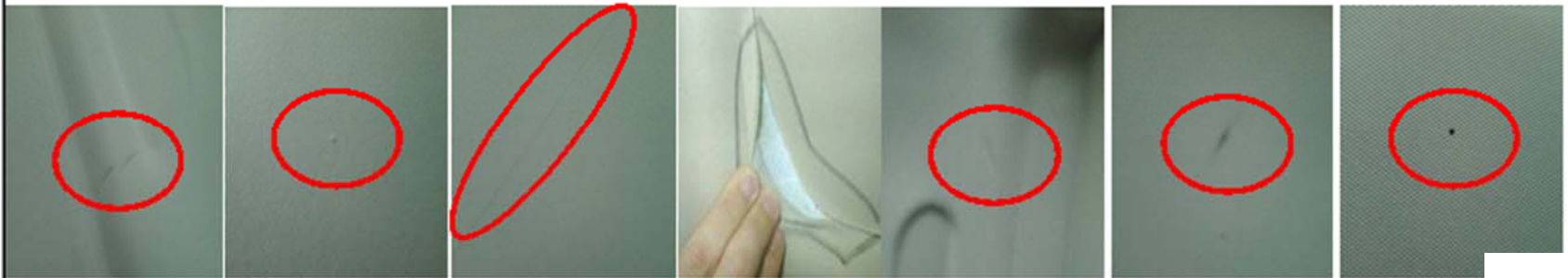
Vehicle

ALL

Part name

Headliner

품 번



Bent

Rip

Stripe

Peel off

Pressed mark

Contamination

Spot

No	Items	Specifications	Test methods	Inspection cycle
1	Appearance - Bent - Rip - Stripe - Peel off - Pressed mark - Contamination - Spot	There should be no problems. 압착구간 강제 박리시 이상없을것	Visual Inspection	Total inspection 3 Times/day

ate of preparation 2009-06-30

preparation					Add destructive testing distribution			
작 성	이 기 범	2	09.06.30					
검 토	서 용 득	1	07.11.01					
승 인	이 동 인	개정 NO	개정일자	개 정 내 용		작 성	검 토	승 인

QP-1010-03 rev.0

엔 브 이 에 이 치 코 리 아 쉘

A3(420×297mm)

SET-UP & FIRST,MIDDLE, LAST PRODUCT INSPECTION REPORT

SET-UP/First,Middle,Last Product inspection List											결	작성	검토	승인	
DATE	2012. 1. 13										재	2012. 1. 13			
Vehicle	Setting Time	차종	Items	First	Middle	Last	Problem & Countermeasure	Check			비고				
				○	×	○		×	○	×		○	×		
EP STD	8:00 ~	ALL	Bent, Peel off, Contamination	○	○	○	Nothing	First	○	○	○				
		KNIT	RIP, Stripe, Pressed mark, Spot					Middle	○	○	○				
		Nonwoven	Print fall out, Burr	○	○	○	Nothing	Last	○	○	○				
H STD	13:00 ~	ALL	Bent, Peel off, Contamination	○	○	○	Nothing	First	○	○	○				
		KNIT	RIP, Stripe, Pressed mark, Spot	○	○	○	Nothing	Middle	○	○	○				
		Nonwoven	Print fall out, Burr					Last	○	○	○				
EH S/R	11:00 ~	ALL	Bent, Peel off, Contamination	○	○	○	Nothing	First	○	○	○				
		KNIT	RIP, Stripe, Pressed mark, Spot	○	○	○	Nothing	Middle	○	○	○				
		Nonwoven	Print fall out, Burr					Last	○	○	○				

장식PC09-09 연보이메이치코리아(주) AM(297*210mm)

SET-UP/First,Middle,Last Product inspection List											결	작성	검토	승인	
DATE	2012. 3. 23										재	2012. 3. 23			
Vehicle	Setting Time	차종	Items	First	Middle	Last	Problem & Countermeasure	Check			비고				
				○	×	○		×	○	×		○	×		
M/D STD	08:00 ~	ALL	Bent, Peel off, Contamination	○	○	○	Nothing	First	○	○	○				
		KNIT	RIP, Stripe, Pressed mark, Spot					Middle	○	○	○				
		Nonwoven	Print fall out, Burr	○	○	○	Nothing	Last	○	○	○				
GDH S/R	13:00 ~	ALL	Bent, Peel off, Contamination	○	○	○	Nothing	First	○	○	○				
		KNIT	RIP, Stripe, Pressed mark, Spot	○	○	○	Nothing	Middle	○	○	○				
		Nonwoven	Print fall out, Burr					Last	○	○	○				
FDW STD	15:00 ~	ALL	Bent, Peel off, Contamination	○	○	○	Nothing	First	○	○	○				
		KNIT	RIP, Stripe, Pressed mark, Spot					Middle	○	○	○				
		Nonwoven	Print fall out, Burr	○	○	○	Nothing	Last	○	○	○				

장식PC09-09 연보이메이치코리아(주) AM(297*210mm)

SET-UP/First,Middle,Last Product inspection List											결	작성	검토	승인	
DATE	2012. 3. 27										재	2012. 3. 27			
Vehicle	Setting Time	차종	Items	First	Middle	Last	Problem & Countermeasure	Check			비고				
				○	×	○		×	○	×		○	×		
M/D STD	08:00 ~	ALL	Bent, Peel off, Contamination	○	○	○	Nothing	First	○	○	○				
		KNIT	RIP, Stripe, Pressed mark, Spot					Middle	○	○	○				
		Nonwoven	Print fall out, Burr	○	○	○	Nothing	Last	○	○	○				
LM STD	13:30 ~	ALL	Bent, Peel off, Contamination	○	○	○	Nothing	First	○	○	○				
		KNIT	RIP, Stripe, Pressed mark, Spot					Middle	○	○	○				
		Nonwoven	Print fall out, Burr	○	○	○	Nothing	Last	○	○	○				
FDW S/R	16:00 ~	ALL	Bent, Peel off, Contamination	○	○	○	Nothing	First	○	○	○				
		KNIT	RIP, Stripe, Pressed mark, Spot					Middle	○	○	○				
		Nonwoven	Print fall out, Burr	○	○	○	Nothing	Last	○	○	○				

장식PC09-09 연보이메이치코리아(주) AM(297*210mm)

Daily Nonconformance List

[illegible][illegible]

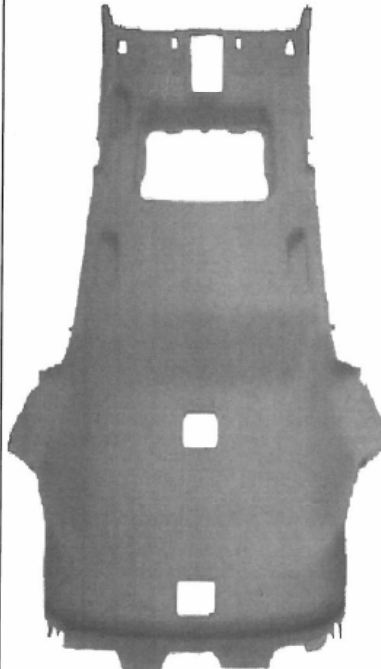
Part Inspection Report

EN (Veracruz) SRF

2014 (01) 월

Part Inspection Report

결재	작성	검토	검토	승인
	lar			

Vehicle	EN	Supplier	NVH-K	Item	Detail												
Part NO.	85411-3J200 6T 외			1	NO Contamination, scratch, discolor												
Part Name	SRF H/LINING			Appearance	NO peel off												
SKETCH				3	NO BRKT deformation												
N O				LOT NO	Quantity	inspection					검사현황		Detail	항	Check	비고	
				X1	X2	X3	X4	X5	Result		검사						
						OK	NG										
1				2014/02	15	OK	OK	OK	OK	OK	OK		5/0			lar	
2				2014/02	25	OK	OK	OK	OK	OK	OK		5/0			lar	
3				2014/02	70	OK	OK	OK	OK	OK	OK		5/0			lar	
4				2014/02	25	OK	OK	OK	OK	OK	OK		5/0			lar	
5				2014/02	20	OK	OK	OK	OK	OK	OK		5/0			lar	
6				2014/02	15	OK	OK	OK	OK	OK	OK		5/0			lar	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	

FD (Elantra Touring) Wagon STD

2011년 (03) 일

Part Inspection Report

결재	작성	검토	검토	승인
	<i>love</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>

[illegible]

Part Inspection Report

FD (Elantra Touring) Wagon SRF

2011년(03)월

Part Inspection Report

결재	작성	검토	검토	승인
	Lee			#g

Vehicle	FD WGN	Supplier	NVH-K	Item	NO Contamination, scratch, discolor	Detail	용											
Part NO.	85420-2L000외			1														
Part Name	SRF H/LINING			Appearance	NO peel off													
SKETCH 	N	LOT	QC	Quantity	inspection					검사현황		Detail	항	Check	비고			
					X1	X2	X3	X4	X5	Result						검	사	
											OK	NG						
	1	20110704		46	OK	OK	OK	OK	OK	OK			5/6				Lee	
	2	20110707		54	OK	OK	OK	OK	OK	OK			5/6				Lee	
	3	20110708		56	OK	OK	OK	OK	OK	OK			5/6				Lee	
	4	20110709		76	OK	OK	OK	OK	OK	OK			5/6				Lee	
	5	20110711		84	OK	OK	OK	OK	OK	OK			5/6				Lee	
	6	20110716		64	OK	OK	OK	OK	OK	OK			5/6				Lee	
	7	20110717		76	OK	OK	OK	OK	OK	OK			5/6				Lee	
	8	20110722		66	OK	OK	OK	OK	OK	OK			5/6				Lee	
	9	20110725		86	OK	OK	OK	OK	OK	OK			5/6				Lee	
	10																	
	11																	
	12																	
	13																	
14																		
15																		
16																		

HOT MELT APPLICATION PROCESS: APPLY AND INSPECTION BASED ON MASTER SAMPLE

EN-CAR MASTER SAMPLE



FDW-CAR MASTER SAMPLE

