FINAL REPORT NUMBER 201UI-MGA-11-10

SAFETY COMPLIANCE TESTING FOR FMVSS 201
Occupant Protection In Interior Impact
Upper Interior Head Impact Protection

HONDA MFG. OF ALABAMA, LLC
2011 Honda Odyssey 5DR LX
NHTSA No. CB5301

MGA RESEARCH CORPORATION
446 Executive Drive
Troy, Michigan 48083

Test Dates: May 26-27, 2011
Report Date: May 31, 2011

FINAL REPORT

PREPARED FOR:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
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Accepted By: _____

Acceptance Date: _____

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. 201UI-MGA-11-10	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Final Report of FMVSS 201 Compliance Testing of a 2011 Honda Odyssey 5DR LX NHTSA No. CB5301		5. Report Date May 31, 2011	
		6. Performing Organization Code MGA	
7. Author(s) Helen A. Kaleto, Project Manager Nathaniel Newth, Project Engineer		8. Performing Organization Report No. 201UI-MGA-11-10	
9. Performing Organization Name and Address MGA Research Corporation 446 Executive Drive Troy, Michigan 48083		10. Work Unit No.	
		11. Contract or Grant No. DTNH22-09-D-00131	
12. Sponsoring Agency Name and Address U.S. Department Of Transportation National Highway Traffic Safety Administration Enforcement Office of Vehicle Safety Compliance 1200 New Jersey Avenue, SE West Building, 4th Floor Washington, D.C. 20590		13. Type of Report and Period Covered Final Test Report	
		14. Sponsoring Agency Code NVS-220	
15. Supplementary Notes			
16. Abstract A compliance test series was conducted on the subject 2011 Honda Odyssey 5DR LX, NHTSA No. CB5301, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-201U-01 for the determination of FMVSS 201 compliance. The testing was conducted at MGA Research Corporation in Troy, Michigan on May 26-27, 2011. Test failures identified were as follows: None The data recorded indicates that the 2011 Honda Odyssey 5DR LX tested appears to comply with the upper interior requirements of FMVSS 201.			
17. Key Words Compliance Testing Safety Engineering FMVSS 201UI 2011 Honda Odyssey 5DR LX		18. Distribution Statement Copies of this report are available from: NHTSA Technical Reference Division, Mail Code: NPO-410 1200 New Jersey Avenue, SE West Building Washington, D.C. 20590	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 171	22. Price N/A

Form DOT F 1700.7 (8-69)

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1.0 PURPOSE OF COMPLIANCE TEST

The purpose of this head impact compliance test was to determine whether the subject vehicle, a 2011 Honda Odyssey 5DR LX, meets the performance requirements of FMVSS 201, Occupant Protection in Interior Impact - Upper Interior Head Impact Protection.

Tests were conducted on May 26-27, 2011 on a 2011 Honda Odyssey 5DR LX, manufactured by Honda Mfg. of Alabama, LLC.

All tests were conducted in accordance with the U. S. Department of Transportation, National Highway Traffic Safety Administration's Laboratory Test Procedure TP-201U-01 dated April 3, 1998 and the corresponding MGA Research Corporation's FMVSS 201U procedure number MGATP201U_FRAME#2 dated November 9, 2009.

All tests were conducted at MGA Research Corporation in Troy, Michigan and were performed by MGA engineers and technicians. The FMVSS 201U impactor test machine was used to conduct the testing. Target locations were determined by using a Coordinate Measurement Machine in conjunction with the MGA EZ-Target™ program and MGA procedure MGATP201U_Test Series dated November 9, 2009.

2.0 COMPLIANCE TEST DATA SUMMARY

The 2011 Honda Odyssey 5DR LX was equipped with A, B, O, and rear-pillars, an adjustable seat belt anchorage on each B-pillar, an adjustable seat belt anchorage on each O-pillar, a fixed seat belt anchorage on each rear pillar, a grab handle located on the side rail above each door (front and rear), and an assist handle located on each B-Pillar.

Upon completion of targeting the test vehicle, twelve (12) targets were chosen to be impacted based upon engineering judgment and certification test data provided by the manufacturer. The twelve (12) targets chosen were:

AP1	BP2	SR3-1	UR3@BP
AP2	BP4	UR1@SR1	UR4@SR3-2
BP1	OP1	UR2@SR2A	UR5@OP

The 2011 Honda Odyssey 5DR LX tested appears to comply with the upper interior performance criteria for FMVSS 201. The HIC(d) measured using the Part 572L (Free Motion Headform) was below 1000 for each tested component.

TABLE 2-1

SUMMARY TABLE OF TEST RESULTS

VEH. MOD YR/MAKE/MODEL/BODY: 2011 Honda Odyssey 5DR LX

VEH. NHTSA NO.:CB5301 VIN: 5FNRL5H21BB037144 COLOR: Alabaster Silver Met.

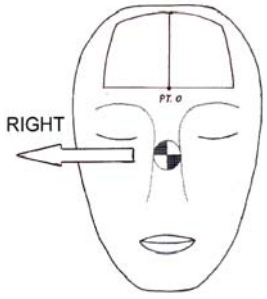
VEH. BUILD DATE: January, 2011 TEST DATES: May 26-27, 2011

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Helen Kaleto, Nathaniel Newth, Kevin McKenna, Sean Moran, Ryan Jones

TARGET	VEHICLE SIDE	HORIZONTAL ANGLE (deg)	VERTICAL ANGLE (deg)	VELOCITY (kph)	HIC(d)	FMH HIC	IMPACT ON FMH (mm)	
							Above	Left/Right
AP1	Right	109	41	18.6	389	295	10	8 Right
AP2	Left	206	50	18.9	348	240	13	2 Left
BP1	Right	90	39	18.7	588	559	15	3 Left
BP2	Left	270	8	23.9	688	691	16	2 Right
BP4	Right	160	-5	23.5	840	892	14	0
OP1	Left	270	11	24.1	701	708	13	5 Left
SR3-1	Right	90	48	18.8	292	166	12	4 Left
UR1@SR1	Left	270	50	23.6	526	476	31	6 Right
UR2@SR2A	Right	90	50	23.7	636	622	26	6 Left
UR3@BP	Left	270	50	23.7	624	606	33	0
UR4@SR3-2	Left	270	45	24.1	552	511	39	0
UR5@OP	Right	90	50	23.3	425	342	27	2 Left

Above and left/right refers to the position relative to reference pt. 0 where the target made contact with the Free Motion Headform. See the diagram below for details.



POST TEST COMMENTS:

The following description lists any post-test damage or other test observations for each target.

AP2 left: Pillar trim dislodged.

BP1 Right: Dislodged headliner.

BP2 Left: Adjustable anchorage compression.

OP1 Left: Adjustable anchorage compression; dislodged headliner.

UR1@SR1 Left: Dislodged headliner; headliner deformation.

UR2@SR2A Right: Dislodged headliner; headliner deformation.

UR3@BP Left: Dislodged headliner.

UR4@SR3-2 Left: Dislodged headliner; headliner deformation.

UR5@OP Right: Dislodged headliner.

REMARKS:

The targets listed were impacted in the following order:

Left: AP2, UR1@SR1, BP2, UR3@BP, UR4@SR3-2, OP1

Right: UR2@SR2A, AP1, BP1, SR3-1, BP4, UR5@OP

The 150 mm rule was observed for targets horizontal to each other and the 200 mm rule was observed for vertical components.

RECORDED BY: Nathaniel Newth DATE: May 27, 2011

APPROVED BY: Helen A. Kaleto

TABLE 2-2

GENERAL TEST AND VEHICLE PARAMETER DATA

VEH. MOD YR/MAKE/MODEL/BODY: 2011 Honda Odyssey 5DR LX

VEH. NHTSA NO.:CB5301 VIN: 5FNRL5H21BB037144 COLOR: Alabaster Silver Met.

VEH. BUILD DATE: January, 2011 TEST DATES: May 26-27, 2011

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Helen Kaleto, Nathaniel Newth, Kevin McKenna, Sean Moran, Ryan Jones

INTERIOR TRIM INFORMATION: A, B, O, and rear-pillars, an adjustable seat belt anchorage on each B-pillar, an adjustable seat belt anchorage on each O-pillar, a fixed seat belt anchorage on each rear pillar, a grab handle located on the side rail above each door (front and rear), and an assist handle located on each B-Pillar.

SUNROOF INFORMATION:

Installed:	_____Yes	_X_ No
Operation:	_____Electric	____ Manual

SIDE RAIL CURTAIN AIRBAG INFORMATION:

Installed:	_X_Yes	___ No

ROLL-BAR INFORMATION:

Installed:	_____Yes	_X_ No
Padded:	_____Yes	_X_ No
Braces:	_____Yes	_X_ No

GENERAL INFORMATION:

Date Received: March 8, 2011; Odometer Reading 47 miles

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured By: Honda Mfg. Alabama, LLC

Date of Manufacture: January, 2011; VIN: 5FNRL5H21BB037144

GVWR: 2730 kg; GAWR FRONT: 1320 kg;

GAWR REAR: 1450 kg;

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load:

FRONT: 230 kPa REAR: 230 kPa

Recommended Tire Size: P235/65R17

Recommended Cold Tire Pressure:

FRONT: 230 kPa REAR: 230 kPa

Size of Tire on Test Vehicle: P235/65R17

Type of Spare Tire: T135/80D17; Space Saver: X; Standard__

VEHICLE CAPACITY DATA:

Type of Front Seats: Bench__; Bucket X; Split Bench __

Number of Occupants: Front 2; Rear 5; TOTAL 7

VEHICLE CAPACITY WEIGHT:

Vehicle Capacity Weight (VCW) = 608 kg

No. of Occupants x 68 kg = 476 kg

Rated Cargo/Luggage Weight (RCLW) =132 kg (difference)

WEIGHT OF TEST VEHICLE AS DELIVERED AT LABORATORY: (with maximum fluids)

Right Front =	539.0 kg	Right Rear =	426.0 kg
Left Front =	574.5 kg	Left Rear =	416.0 kg
TOTAL FRONT =	1113.5 kg	TOTAL REAR =	842.0 kg
% Total Weight =	56.9%	% Total Weight =	43.1 %

TOTAL DELIVERED WEIGHT = 1955.5 kg

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight = 1955.5 kg

Max. Test Cargo/Luggage Weight = 132.0 kg

Target Test Weight = 2087.5 kg

WEIGHT OF TEST VEHICLE FULLY LOADED:

Right Front =	521.0 kg	Right Rear =	509.5 kg
Left Front =	557.5 kg	Left Rear =	499.0 kg
TOTAL FRONT =	1078.5 kg	TOTAL REAR =	1008.5 kg
% Total Weight =	51.7 %	% Total Weight =	48.3 %

TOTAL TEST WEIGHT = 2087.0 kg

Weight of ballast secured in vehicle's cargo area = 131.5 kg

TEST VEHICLE ATTITUDE:

AS DELIVERED: Right Front 777 mm; Left Front 772 mm;
Right Rear 778 mm; Left Rear 775 mm;
Pitch Angle at Right Door Sill = 0.5 Rear is higher
Pitch Angle at Left Door Sill = 0.1 Front is higher
Roll Angle at Front Bumper = 1.0 Right is higher
Roll Angle at Rear Bumper = 0.1 Left is higher

FULLY LOADED: Right Front 782 mm; Left Front 778 mm;
Right Rear 754 mm; Left Rear 753 mm;
Pitch Angle at Right Door Sill = 0.1 Front is higher
Pitch Angle at Left Door Sill = 0.6 Front is higher
Roll Angle at Front Bumper = 0.8 Right is higher
Roll Angle at Rear Bumper = 0.1 Right is higher

AS TARGETED: Right Front 914 mm; Left Front 913 mm;
Right Rear 887 mm; Left Rear 888 mm;
Pitch Angle at Right Door Sill = 0.0
Pitch Angle at Left Door Sill = 0.6 Front is higher
Roll Angle at Front Bumper = 0.9 Right is higher
Roll Angle at Rear Bumper = 0.0

AS TESTED ON RIGHT SIDE:

Pitch Angle at Right Door Sill =	0.1 Front is higher
Pitch Angle at Left Door Sill =	0.4 Front is higher
Roll Angle at Front Bumper =	0.8 Right is higher
Roll Angle at Rear Bumper =	0.1 Left is higher

AS TESTED ON LEFT SIDE:

Pitch Angle at Right Door Sill =	0.1 Front is higher
Pitch Angle at Left Door Sill =	0.6 Front is higher
Roll Angle at Front Bumper =	0.8 Right is higher
Roll Angle at Rear Bumper =	0.0

VEHICLE WHEELBASE = 3008 mm

REMARKS: The seat travel distance was measured to be 220 mm for the driver front seat and 200 mm for the passenger front seat.

RECORDED BY: Nathaniel Newth DATE: May 16, 2011

APPROVED BY: Helen A. Kaleto

TABLE 2-3

HORIZONTAL IMPACT ANGLE RANGE FOR A AND B PILLARS

VEH. MOD YR/MAKE/MODEL/BODY: 2011 Honda Odyssey 5DR LX

VEH. NHTSA NO.:CB5301 VIN: 5FNRL5H21BB037144 COLOR: Alabaster Silver Met.

VEH. BUILD DATE: January, 2011 TEST DATES: May 26-27, 2011

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Helen Kaleto, Nathaniel Newth, Kevin McKenna, Sean Moran, Ryan Jones

HORIZONTAL IMPACT ANGLE RANGE FOR A AND B PILLARS

	HORIZONTAL ANGLE SPECIFIED RANGE	MINIMUM HORIZONTAL ANGLE	MAXIMUM HORIZONTAL ANGLE
A-PILLAR	L 195º-255º	L 205.2º	L 251.5º
	R 105º-165º	R 108.7º	R 155.9º
B-PILLAR	L 195º-345º	L 199.4º	L 284.8º
	R 15º-165º	R 75.3º	R 160.8º

AS DETERMINED USING THE PROCEDURES SPECIFIED IN S8.13.4.1

REMARKS:

RECORDED BY: Nathaniel Newth DATE: May 16, 2011

APPROVED BY: Helen A. Kaleto

TABLE 2-4

VERTICAL IMPACT ANGLE RANGES

VEH. MOD YR/MAKE/MODEL/BODY: 2011 Honda Odyssey 5DR LX

VEH. NHTSA NO.:CB5301 VIN: 5FNRL5H21BB037144 COLOR: Alabaster Silver Met.

VEH. BUILD DATE: January, 2011 TEST DATES: May 26-27, 2011

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Helen Kaleto, Nathaniel Newth, Kevin McKenna, Sean Moran, Ryan Jones

VERTICAL IMPACT ANGLE RANGES

			VERTICAL ANGLE SPECIFIED RANGE	MINIMUM VERTICAL ANGLE	MAXIMUM VERTICAL ANGLE
FRONT HEADER	FH1	L	0º-50º	0º	50º
		R	0º-50º	0º	50º
	FH2	L	0º-50º	0º	50º
		R	0º-50º	0º	50º
SIDE RAIL	SR1	L	0º-50º	0º	41º
		R	0º-50º	0º	41º
	SR2A	L	0º-50º	0º	40º
		R	0º-50º	0º	40º
	SR2B	L	0º-50º	0º	50º
		R	0º-50º	0º	50º
	SR3-1	L	0º-50º	0º	48º
		R	0º-50º	0º	48º
	SR3-2	L	0º-50º	0º	48º
		R	0º-50º	0º	48º
	SR3-3	L	0º-50º	0º	50º
		R	0º-50º	0º	50º
SLIDING DOOR	SD	L	0º-50º	0º	50º
		R	0º-50º	0º	50º

		VERTICAL ANGLE SPECIFIED RANGE	MINIMUM VERTICAL ANGLE	MAXIMUM VERTICAL ANGLE
REAR HEADER	RH	L 0º-50º	L 0º	L 47º
		R 0º-50º	R 0º	R 50º
A-PILLAR	AP1	L -5º-50º	L -5º	L 41º
		R -5º-50º	R -5º	R 41º
	AP2	L -5º-50º	L -5º	L 50º
		R -5º-50º	R -5º	R 50º
	AP3	L -5º-50º	L -5º	L 50º
		R -5º-50º	R -5º	R 50º
B-PILLAR	BP1	L -10º-50º	L -10º	L 39º
		R -10º-50º	R -10º	R 39º
	BP2*	L 0º-50º	L 0º	L 8º
		R 0º-50º	R 0º	R 8º
	BP3	L -10º-50º	L -10º	L -10º
		R -10º-50º	R -10º	R -10º
	BP4	L -10º-50º	L -10º	L -5º
		R -10º-50º	R -10º	R -5º
OTHER PILLAR	OP1*	L 0º-50º	L 0º	L 11º
		R 0º-50º	R 0º	R 11º
	OP2	L -10º-50º	L -10º	L 11º
		R -10º-50º	R -10º	R 11º
REAR PILLAR	RP1	L -10º-50º	L -10º	L 2º
		R -10º-50º	R -10º	R 2º
	RP2*	L 0º-50º	L 0º	L 0º
		R 0º-50º	R 0º	R 0º
UPPER ROOF 1		0º-50º	0º	50º
UPPER ROOF 2		0º-50º	0º	50º
UPPER ROOF 3		0º-50º	0º	50º
UPPER ROOF 4		0º-50º	0º	45º
UPPER ROOF 5		0º-50º	0º	50º

	VERTICAL ANGLE SPECIFIED RANGE	MINIMUM VERTICAL ANGLE	MAXIMUM VERTICAL ANGLE
UPPER ROOF 6	0º-50º	0º	50º

As determined using the Procedures specified in S8.13.4.2. *Targets BP2, OP1, and RP2 are a seat belt anchorage locations.

RECORDED BY: Nathaniel Newth DATE: May 16, 2011

APPROVED BY: Helen A. Kaleto

TABLE 2-5

TARGET MEASUREMENTS

VEH. MOD YR/MAKE/MODEL/BODY: 2011 Honda Odyssey 5DR LX

VEH. NHTSA NO.:CB5301 VIN: 5FNRL5H21BB037144 COLOR: Alabaster Silver Met.

VEH. BUILD DATE: January, 2011 TEST DATES: May 26-27, 2011

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Helen Kaleto, Nathaniel Newth, Kevin McKenna, Sean Moran, Ryan Jones

Measurement	Description	Left Side	Right Side
M	Seat Fore/Aft Travel (Front seats)	220 mm	200 mm
Tº	Horizontal < {CG-F1 (Left Seat) to (Right A-Pillar)}	108.5º	--
A1º	360º - Tº	251.5º	--
Wº	Horizontal < {CG-2 (Left Seat) to (Left A-Pillar)}	205.2º	--
A2º	A2º = Wº	205.2º	--
Uº	Horizontal < {CG-2 (Left Seat) to (Left B-Pillar)}	284.8º	--
B1º	B1º = Uº	284.8º	--
Vº	Horizontal < {CG-R (Left Seat) to (Left B-Pillar)}	199.4º	--
B2º	B2º = Vº	199.4º	--
Wº (right)	Horizontal < {CG-F2 (Right Seat) to (Right A-Pillar)}	--	155.9º
A1º (right)	A1º (right) = Wº (right)	--	155.9º
T º (right)	Horizontal < {CG-F1 (Right Seat) to (Left A-Pillar)}	--	251.3º
A2º (right)	360º-Tº (right)	--	108.7º
V º (right)	Horizontal < {CG-R (Right Seat) to (Right B-Pillar)}	--	160.8º
B1º (right)	B1º (right) = Vº (right)	--	160.8º
U º (right)	Horizontal < {CG-F2 (Right Seat) to (Right B-Pillar)}	--	75.3º
B2º (right)	B2º (right) = Uº (right)	--	75.3º
J	A-Pillar {(Plane 3) – (Plane 5)}	335.0 mm	331.5 mm
J/2	J ÷ 2	167.5 mm	165.8 mm
D1	Upper Roof {(Plane A) – (Plane B)}	2764.0 mm	
D1/2	D1 ÷ 2	1382.0 mm	

Measurement	Description	Left Side	Right Side
D2	Upper Roof {(Plane C) – (Plane D)}	1452.3 mm	
D2/2	D2 ÷ 2	726.2 mm	
.35D1	.35 x D1	967.4 mm	
.35D2	.35 x D2	508.3 mm	
N	B-Pillar {(BPR) – (lowest point on daylight opening forward of B-Pillar)}	469.7 mm	469.9 mm
N/2	B-Pillar {(BP3) – (lowest point on daylight opening forward of B-Pillar)}	234.9 mm	235.0 mm
N/4	B-Pillar {(BP4) – (lowest point on daylight opening forward of B-Pillar)}	117.4 mm	117.5 mm
Q	O-Pillar (Plane 13 – Plane 14)	445.0 mm	440.9 mm
Q/2	Q / 2	222.5 mm	220.5 mm
D	R-Pillar (Point 7 – Point M)	1115.0 mm	1115.0 mm
3D/7	3*D / 7	477.9 mm	477.9 mm
MM	Sliding Door (Widest Opening)	963.9 mm	963.2 mm
MM/2	MM / 2	482.0 mm	481.6 mm

As determined using the Procedures specified in S10.1-10.13.

SgRP Locations (world coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	Z
1st Row	1300.0	-435.0	385.0	1300.0	435.0	385.0
2nd Row	2156.0	-475.0	418.9	2156.0	475.0	418.9
3rd Row	3120.0	-350.0	436.0	3120.0	350.0	436.0

SgRP Locations (vehicle coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	z
1st Row	1300.0	-435.0	385.0	1300.0	435.0	385.0
2nd Row	2156.0	-475.0	418.9	2156.0	475.0	418.9
3rd Row	3120.0	-350.0	436.0	3120.0	350.0	436.0

CG Locations (world coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	z
CGF1	1240.0	-435.0	1045.0	1260.0	435.0	1045.0
CGF2	1460.0	-435.0	1045.0	1460.0	435.0	1045.0
2nd Row CGR	2316.0	-475.0	1078.9	2316.0	475.0	1078.9
3rd Row CGR	3280.0	-350.0	1096.0	3280.0	350.0	1096.0

REFERENCE FOR VEHICLE COORDINATE SYSTEM (measured in millimeters):

Front driver seat front outboard anchor bolt (x, y, z) = 986.9, -647.5, 26.4

Front passenger seat front outboard anchor bolt (x, y, z) = 973.0, 647.5, 32.3

Front driver door upper striker anchor bolt (x, y, z) = 1492.0, -894.8, 412.1

REMARKS:

RECORDED BY: Nathaniel Newth DATE: May 16, 2011

APPROVED BY: Helen A. Kaleto

TABLE 2-6

SUMMARY OF TARGETING RESULTS

VEH. MOD YR/MAKE/MODEL/BODY: 2011 Honda Odyssey 5DR LX

VEH. NHTSA NO.:CB5301 VIN: 5FNRL5H21BB037144 COLOR: Alabaster Silver Met.

VEH. BUILD DATE: January, 2011 TEST DATES: May 26-27, 2011

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Helen Kaleto, Nathaniel Newth, Kevin McKenna, Sean Moran, Ryan Jones

SUMMARY OF TARGETING RESULTS								
Target	**Location (mm)**			**Horizontal Angle (deg)**	**Vertical Angle (deg)**	**Relocation (Yes/No)**	**Extension (# of 25 mm Spheres)**	**Impact (Yes/No)**
	x	**y**	**z**					
A-Pillar Left Side								
AP1	1113.2	-647.9	1149.7	252	41	No	--	No
AP2	919.8	-697.4	1060.8	206	50	No	--	Yes
AP3	752.4	-717.8	983.1	206	50	No	--	No
A-Pillar Right Side								
AP1	1115.2	651.9	1146.4	109	41	No	--	Yes
AP2	914.1	692.2	1059.4	155	50	No	--	No
AP3	751.2	717.7	981.6	155	50	No	--	No
B-Pillar Left Side								
BP1	1622.2	-549.7	1216.7	270	39	No	--	No
BP2	1591.3	-674.5	1009.0	270	8	No	--	Yes
BP3	1522.5	-715.0	982.6	284	-10	No	--	No
BP4	1716.7	-752.9	866.5	200	-5	No	--	No
B-Pillar Right Side								
BP1	1623.1	547.4	1217.6	90	39	No	--	Yes
BP2	1590.6	675.3	1003.3	90	8	No	--	No
BP3	1521.1	712.5	983.2	76	-10	No	--	No
BP4	1716.3	752.0	867.0	160	-5	No	--	Yes

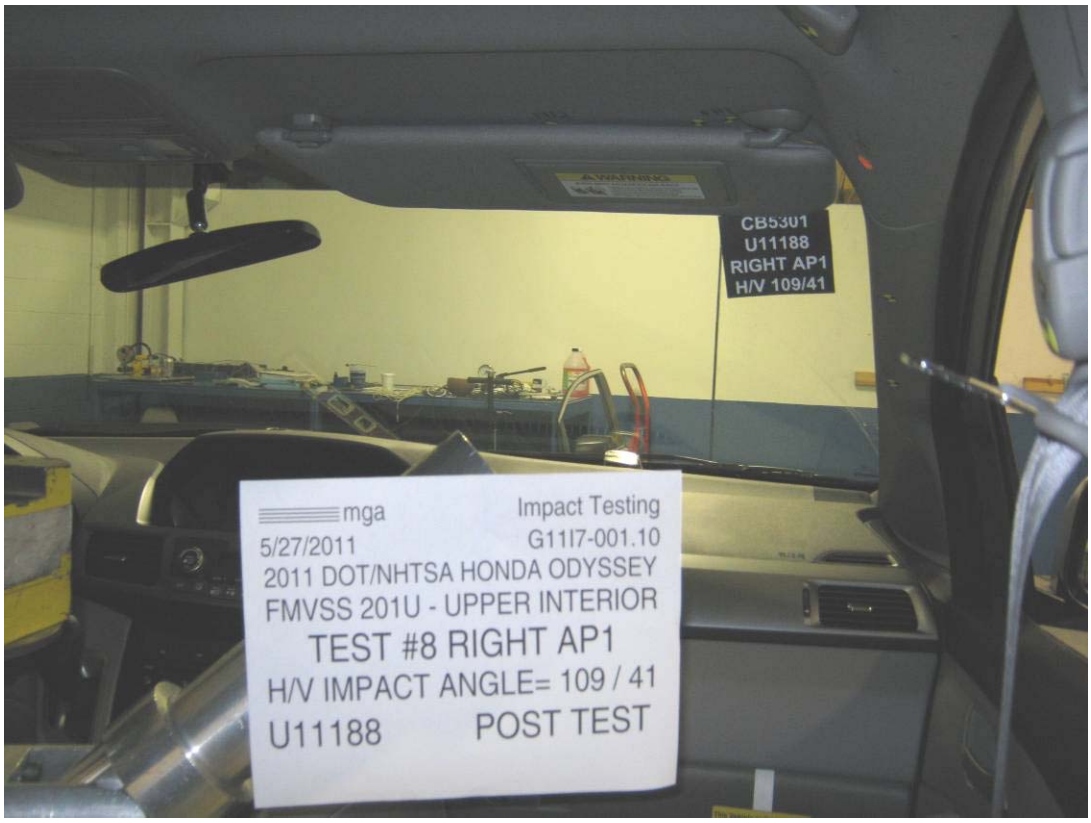
SUMMARY OF TARGETING RESULTS								
Target	**Location (mm)**			**Horizontal Angle (deg)**	**Vertical Angle (deg)**	**Relocation (Yes/No)**	**Extension (# of 25 mm Spheres)**	**Impact (Yes/No)**
	x	**y**	**z**					
Other Pillar Left Side								
OP1	2672.0	-690.9	989.5	270	11	No	--	Yes
OP2	2692.1	-714.5	1014.4	--	--	Yes	--	--
REL	2670.4	-685.0	1007.9	270	11	--	2	No
Other Pillar Right Side								
OP1	2670.4	689.6	994.5	90	11	No	--	No
OP2	2692.4	713.4	1015.5	--	--	Yes	--	--
REL	2670.3	685.0	1011.4	90	11	--	2	No
Rear Pillar Left Side								
RP1	3377.1	-585.9	1055.1	290	2	No	--	No
RP2	3543.4	-550.4	1063.6	270	0	No	--	No
Rear Pillar Right Side								
RP1	3378.2	587.6	1059.3	70	2	No	--	No
RP2	3545.2	554.0	1062.6	90	0	No	--	No
Front Header Left Side								
FH1	1017.0	-551.7	1192.1	--	--	Yes	--	--
REL	1012.1	-526.3	1189.6	180	50	--	1	No
FH2	983.9	-402.6	1191.7	180	50	No	--	No
Front Header Right Side								
FH1	1020.4	549.4	1195.0	--	--	Yes	--	--
REL	1015.0	525.8	1190.0	180	50	--	1	No
FH2	986.0	404.9	1193.0	180	50	No	--	No
Side Rail Left Side								
SR1	1264.0	-603.0	1199.6	270	41	No	--	No
SR2A	1414.0	-594.9	1218.2	270	40	No	--	No
SR2B	1321.7	-605.4	1231.5	--	--	Yes	--	--
REL	1308.5	-581.1	1214.8	270	50	--	2	No
SR3-1	2264.6	-555.2	1235.1	270	48	No	--	No
SR3-2	2424.4	-552.9	1231.9	270	48	No	--	No

SUMMARY OF TARGETING RESULTS								
Target	**Location (mm)**			**Horizontal Angle (deg)**	**Vertical Angle (deg)**	**Relocation (Yes/No)**	**Extension (# of 25 mm Spheres)**	**Impact (Yes/No)**
	x	**y**	**z**					
SR3-3	2847.5	-621.6	1188.8	270	50	No	--	No
Side Rail Right Side								
SR1	1266.1	602.9	1196.4	90	41	No	--	No
SR2A	1415.1	594.4	1217.6	90	40	No	--	No
SR2B	1323.9	606.6	1232.3	--	--	Yes	--	--
REL	1304.2	576.4	1215.6	90	50	--	2	No
SR3-1	2265.2	555.8	1233.8	90	48	No	--	Yes
SR3-2	2429.6	549.8	1230.9	90	48	No	--	No
SR3-3	2846.1	623.6	1190.0	90	50	No	--	No
Rear Header Left Side								
RH	3453.7	-349.7	1215.8	0	47	No	--	No
Rear Header Right Side								
RH	3428.7	351.0	1215.1	--	--	Yes	--	--
REL	3417.3	362.3	1208.7	0	50	--	1	No
Sliding Door Left Side								
SD	2136.1	-572.0	1226.8	270	50	No	--	No
Sliding Door Right Side								
SD	2133.7	570.4	1225.3	90	50	No	--	No
Upper Roof Left Side								
UR1@SR1	1302.3	-486.5	1252.3	270	50	No	--	Yes
UR3@BP	1637.6	-378.3	1305.5	270	50	No	--	Yes
UR4@SR3-2	2409.3	-418.4	1309.4	270	45	No	--	Yes
UR6@RP	3120.0	-389.8	1290.1	270	50	No	--	No
Upper Roof Right Side								
UR2@SR2A	1413.9	464.4	1275.9	90	50	No	--	Yes
UR5@OP	2717.2	401.5	1306.7	90	50	No	--	Yes

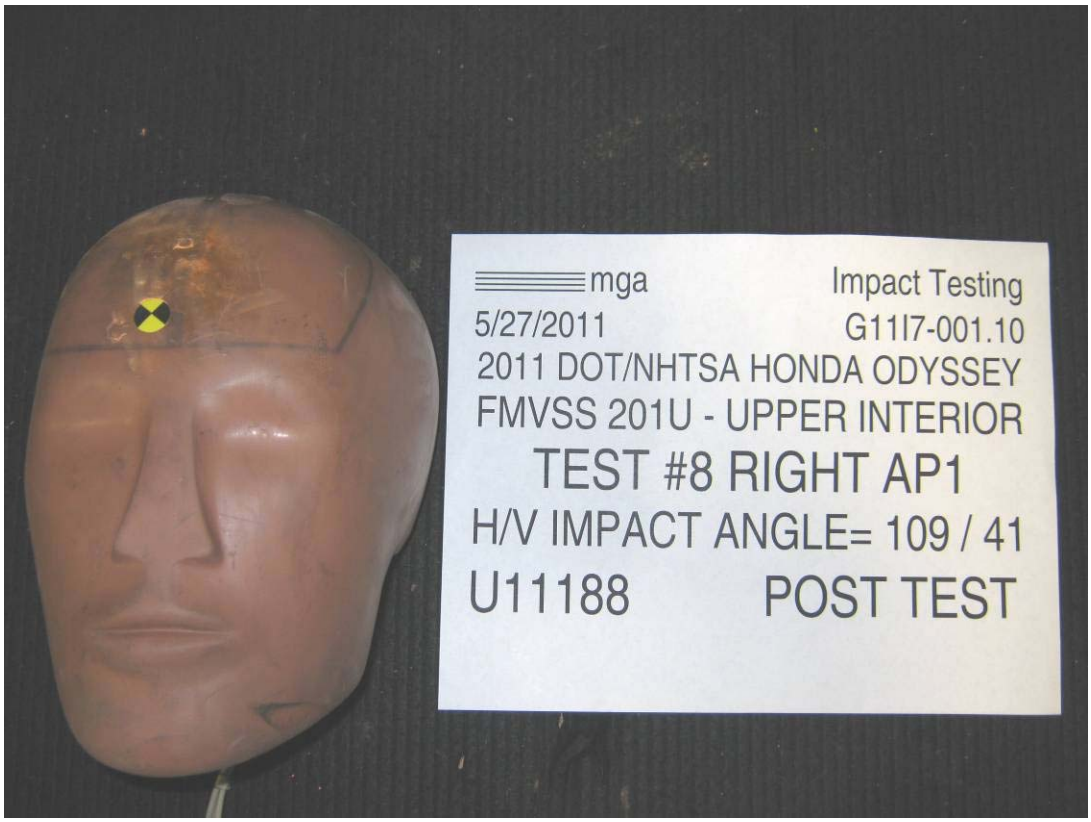
As determined using the Procedures specified in S10.1-10.13.

RECORDED BY: Nathaniel Newth DATE: May 16, 2011
APPROVED BY: Helen A. Kaleto

3.0 TEST DATA (Including Acceleration and Velocity Plots)


CB5301
U11188
RIGHT AP1
H/V 109/41
mga
Impact Testing
5/27/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #8 RIGHT AP1
H/V IMPACT ANGLE= 109 / 41
U11188
POST TEST


CB5301
U11188
RIGHT AP1
H/V 109/41
mga
Impact Testing
5/27/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #8 RIGHT AP1
H/V IMPACT ANGLE= 109 / 41
U11188
POST TEST


mga
Impact Testing
5/27/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #8 RIGHT AP1
H/V IMPACT ANGLE= 109 / 41
U11188
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G11I7-001.10 VEHICLE YR/MAKE/MODEL:2011/DOT/NHTSA/Honda Odyssey

GENERAL TEST PARAMETERS:

Test Number:#8

Target (Vehicle Side): AP1Right

Temperature:19.8C

MGA Test Reference No.:U11188

Humidity:50.7%

Approach Horizontal Angles:109º

Time of Test:8:48:53 AM

Approach Vertical Angles:41º

FMH Serial No:[037]

Additional Description:

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
389	295	8.4	18.6	10	8 Right

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J32177	-113.7	1.07	1.07
Y	6	J14103	93.9	0.85	0.85
Z	7	J35800	97.8	0.94	0.94

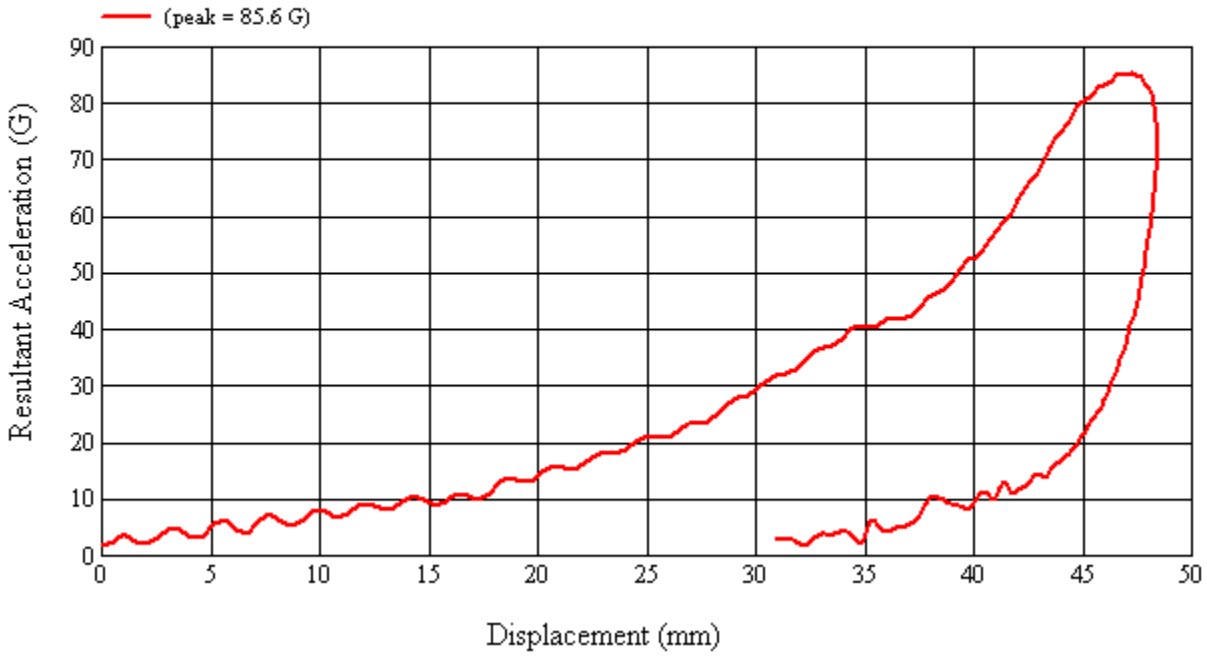
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

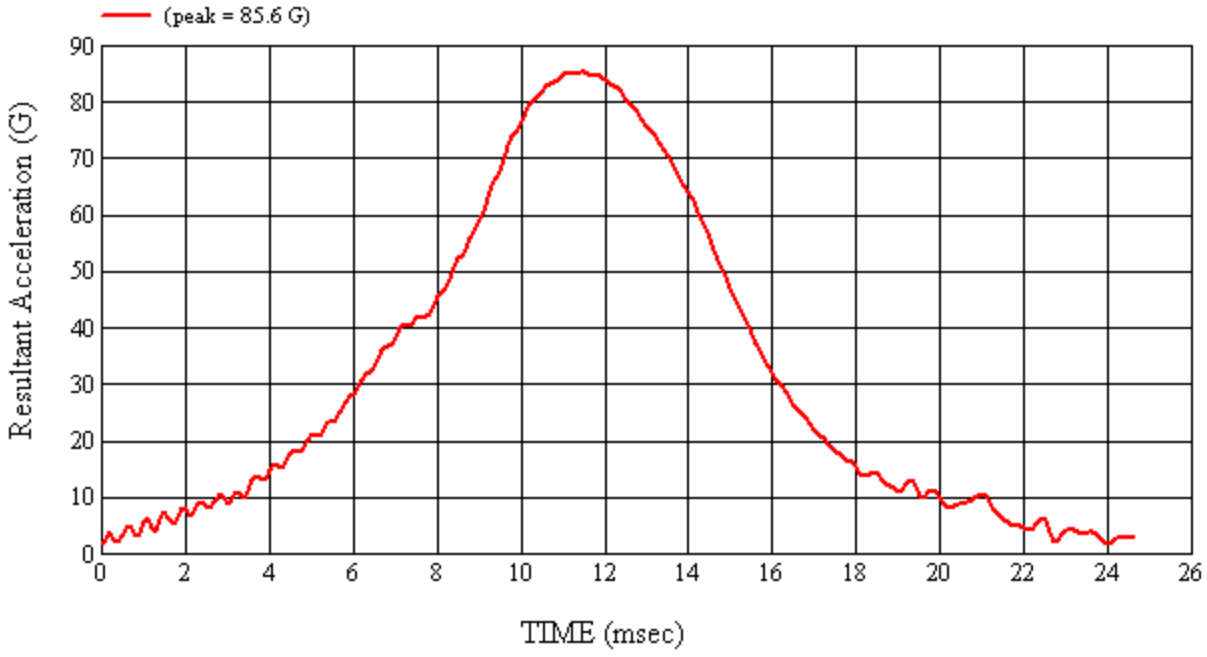
No visible damage

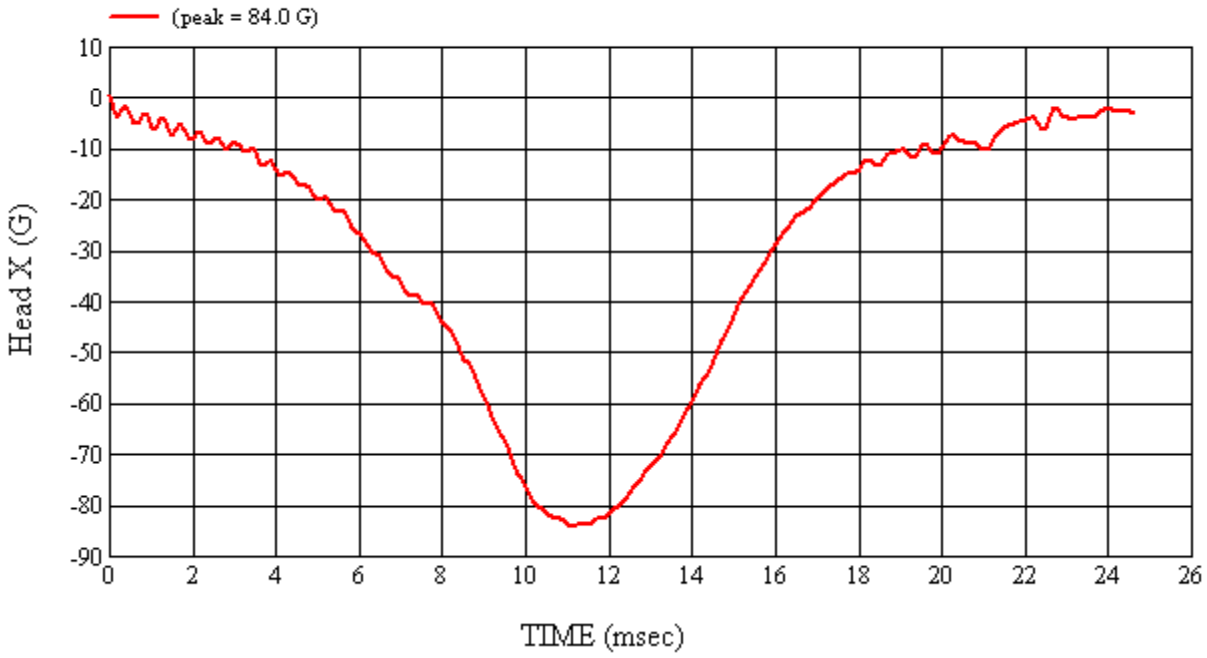
Recorded By: _____ Approved By*: _____ Date: 5/27/2011

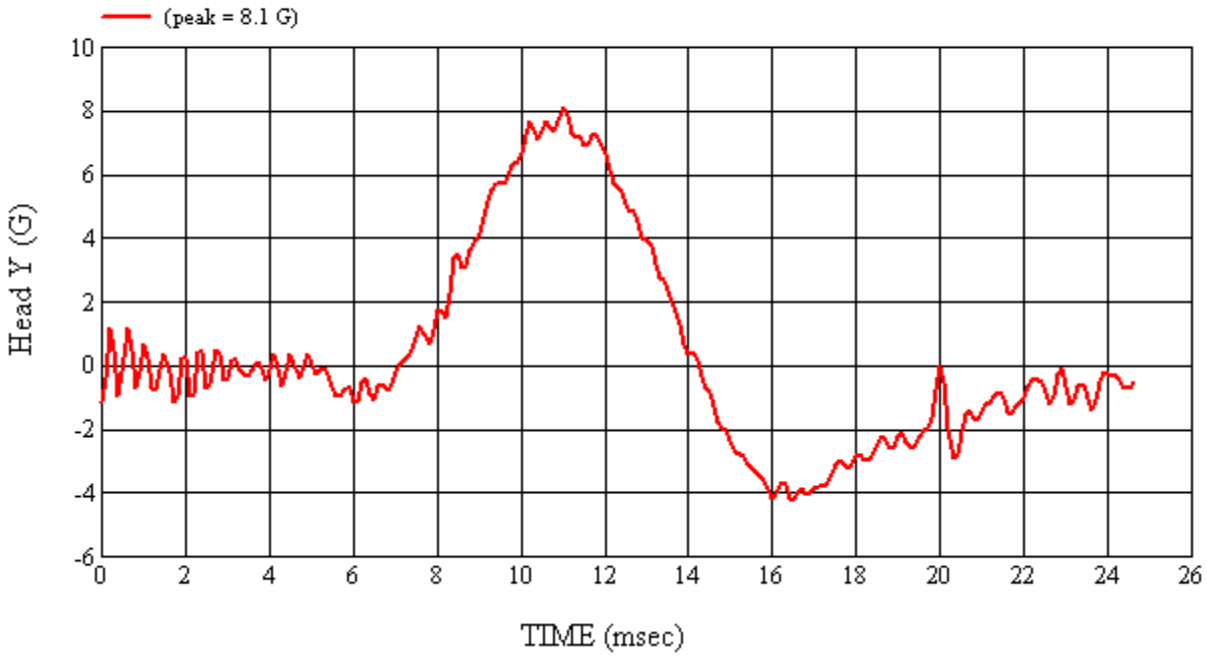
*Only necessary for NHTSA (Government) Compliance testing.

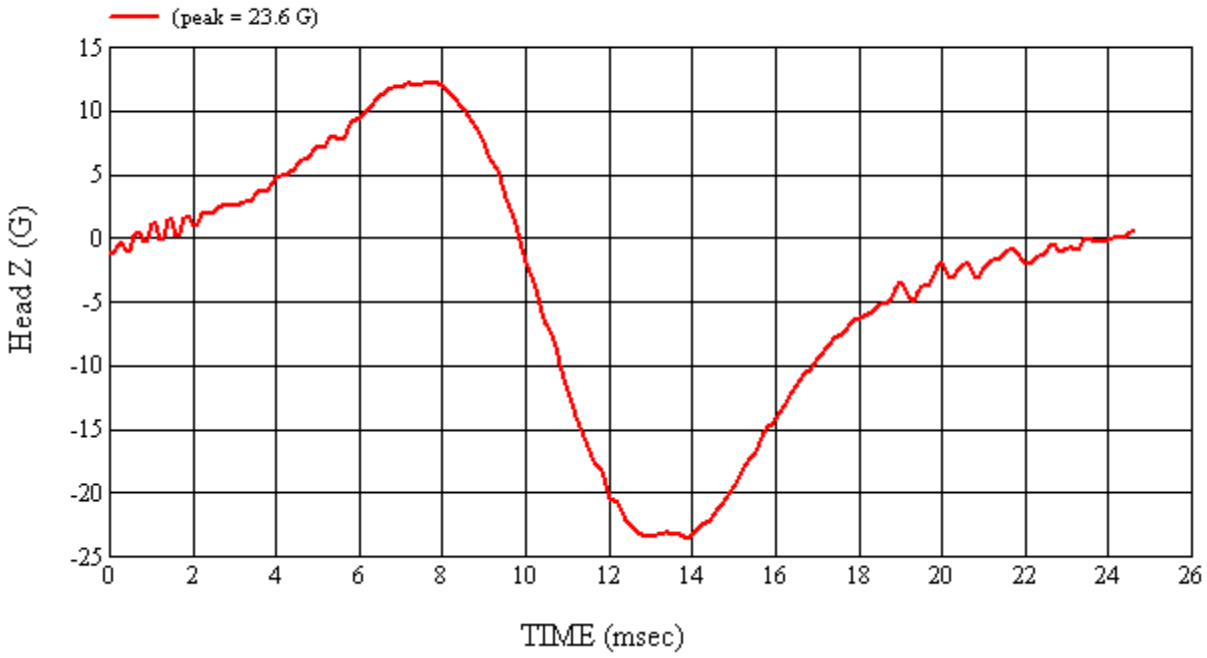
MGA Test #: U11188 Target Location: AP1, Right Side Test Date: 5/27/2011

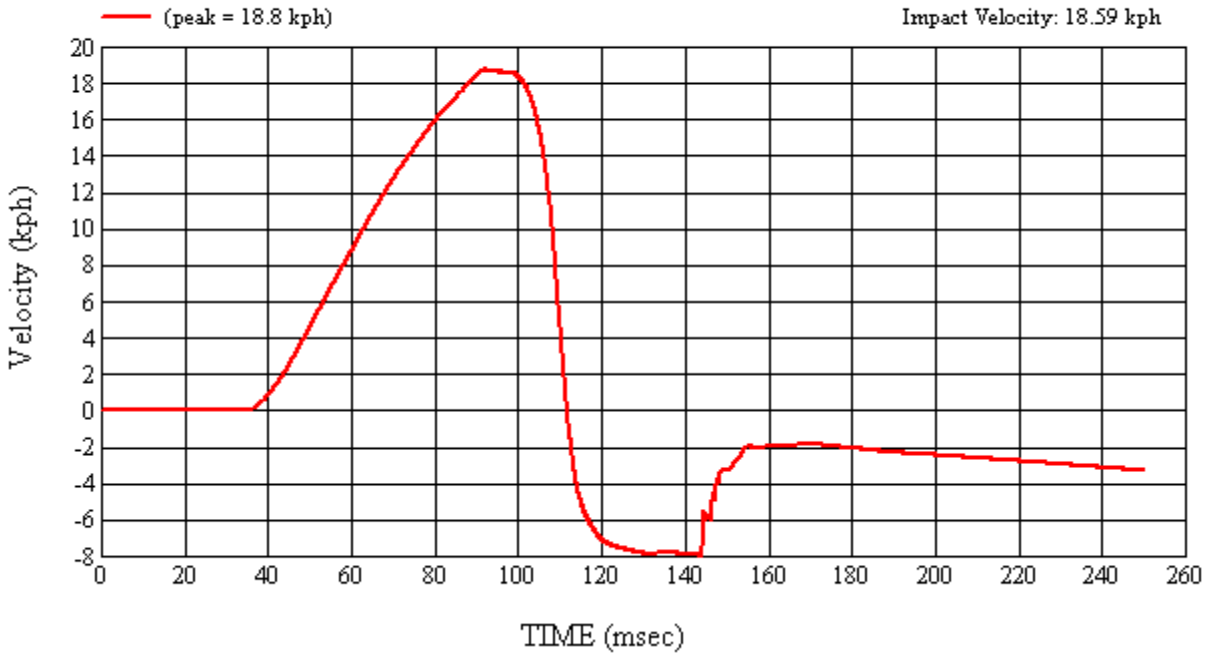


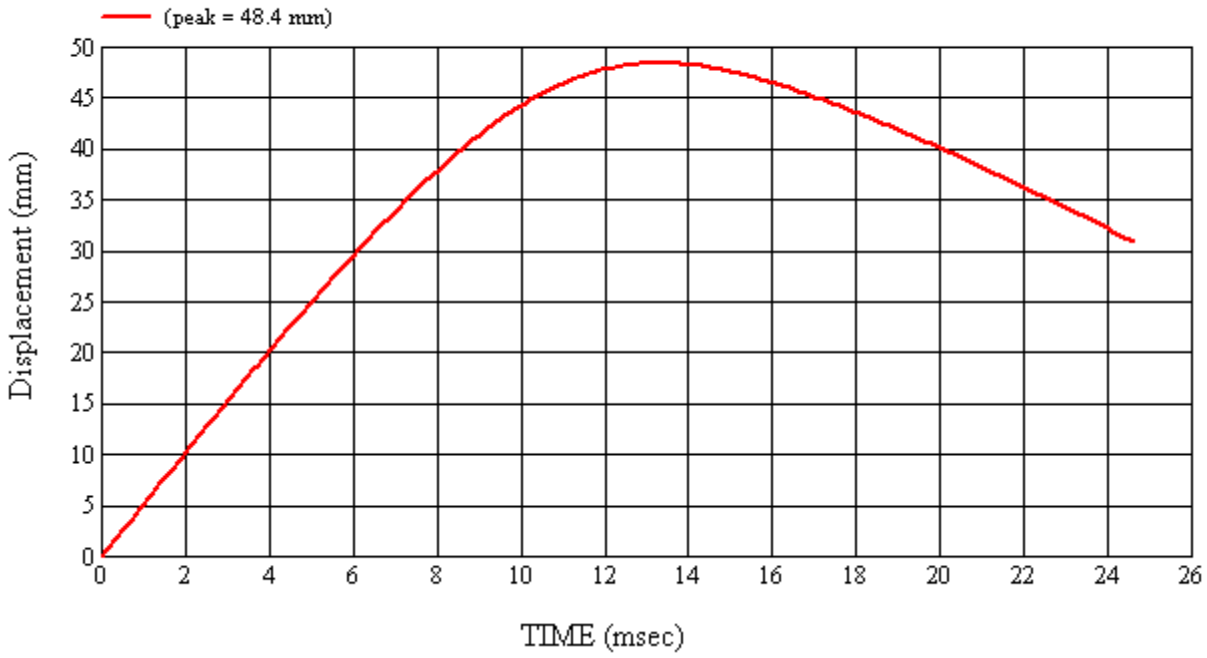


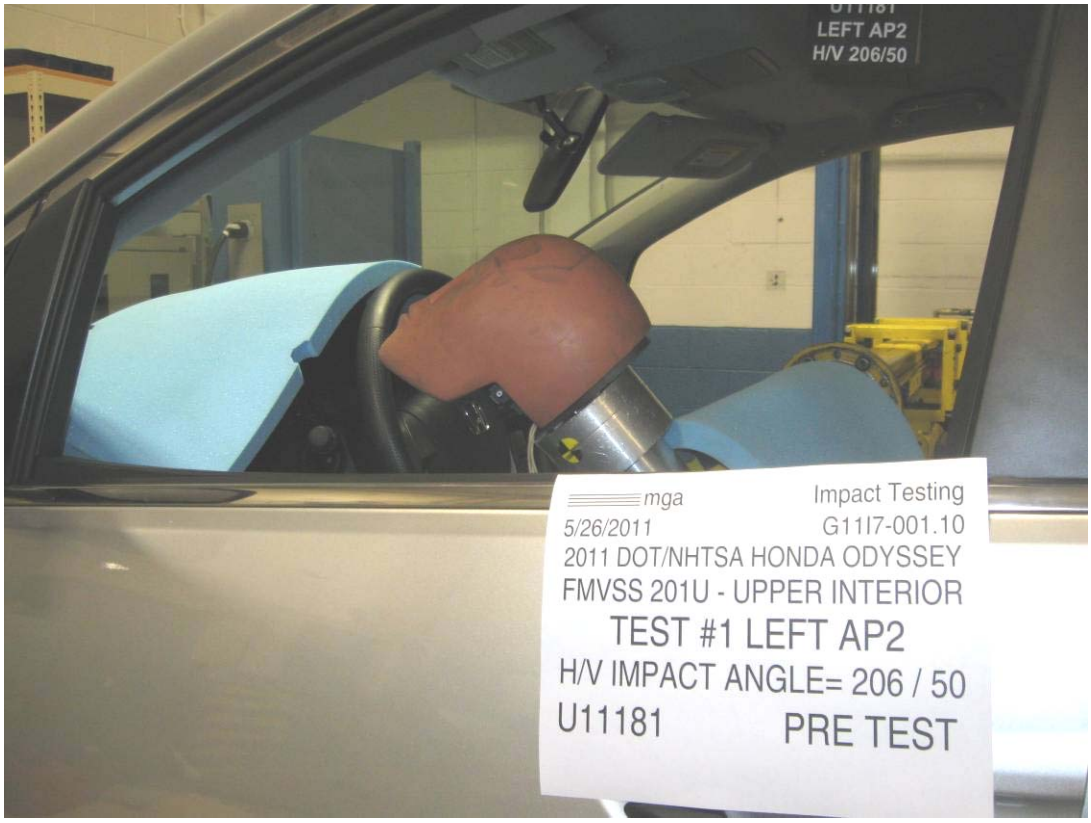

(peak = 84.0 G)
Head X (G)
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
0
2
4
6
8
10
12
14
16
18
20
22
24
26
TIME (msec)


(peak = 8.1 G)
Head Y (G)
10
8
6
4
2
0
-2
-4
-6
0
2
4
6
8
10
12
14
16
18
20
22
24
26
TIME (msec)


(peak = 23.6 G)
Head Z (G)
15
10
5
0
-5
-10
-15
-20
-25
0
2
4
6
8
10
12
14
16
18
20
22
24
26
TIME (msec)


(peak = 18.8 kph)
Impact Velocity: 18.59 kph
Velocity (kph)
20
18
16
14
12
10
8
6
4
2
0
-2
-4
-6
-8
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)


(peak = 48.4 mm)
Displacement (mm)
0
5
10
15
20
25
30
35
40
45
50
0
2
4
6
8
10
12
14
16
18
20
22
24
26
TIME (msec)


LEFT AP2
H/V 206/50
mga
Impact Testing
5/26/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #1 LEFT AP2
H/V IMPACT ANGLE= 206 / 50
U11181
PRE TEST


WARNING
mga
Impact Testing
5/26/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #1 LEFT AP2
H/V IMPACT ANGLE= 206 / 50
U11181
PRE TEST


LEFT AP2
H/V 206/50
mga
5/26/2011
Impact Testing
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #1 LEFT AP2
H/V IMPACT ANGLE= 206 / 50
U11181
POST TEST


CB5301
U11181
LEFT AP2
H/V 206/50
mga
5/26/2011
Impact Testing
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #1 LEFT AP2
H/V IMPACT ANGLE= 206 / 50
U11181
POST TEST


AP2


mga
Impact Testing
5/26/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #1 LEFT AP2
H/V IMPACT ANGLE= 206 / 50
U11181
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G11I7-001.10 VEHICLE YR/MAKE/MODEL:2011/DOT/NHTSA/Honda Odyssey

GENERAL TEST PARAMETERS:

Test Number:#1

Target (Vehicle Side): AP2Left

Temperature:21.8C

MGA Test Reference No.:U11181

Humidity:67.6%

Approach Horizontal Angles:206º

Time of Test:9:54:22 AM

Approach Vertical Angles:50º

FMH Serial No:[035]

Additional Description:

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
348	240	12.4	18.9	13	2 Left

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35919	-95.8	1.07	1.07
Y	6	J22664	94.2	0.85	0.85
Z	7	J35924	92.8	0.94	0.94

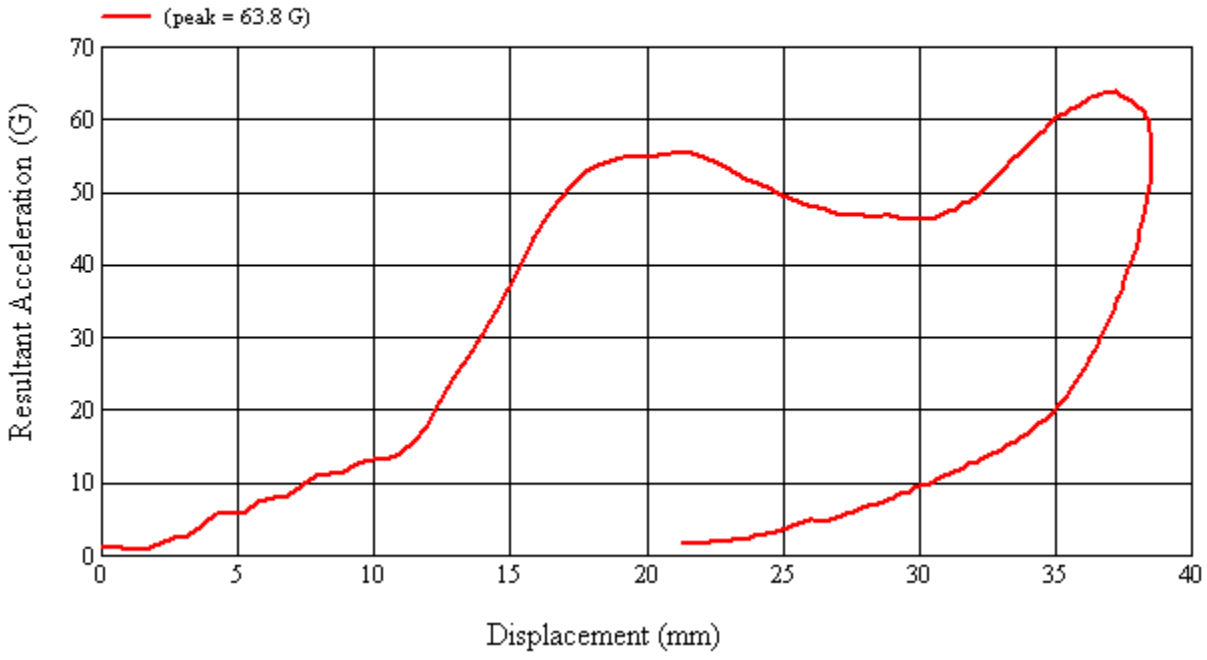
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

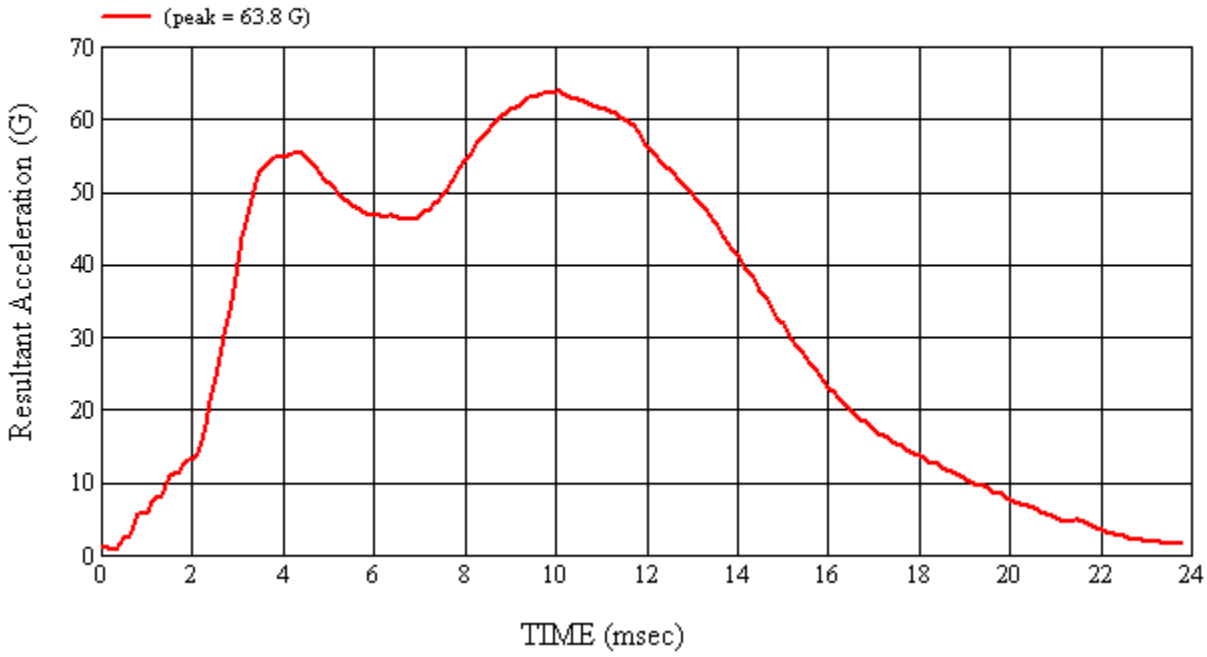
Pillar trim dislodged

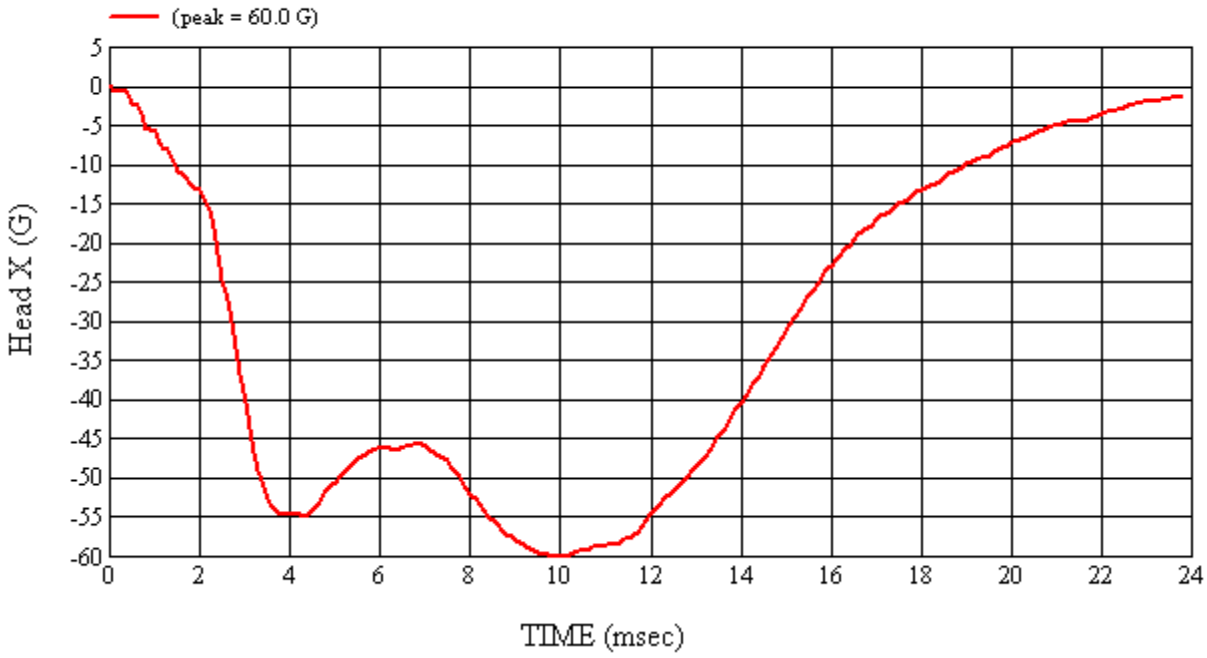
Recorded By: _____ Approved By*: _____ Date: 5/26/2011

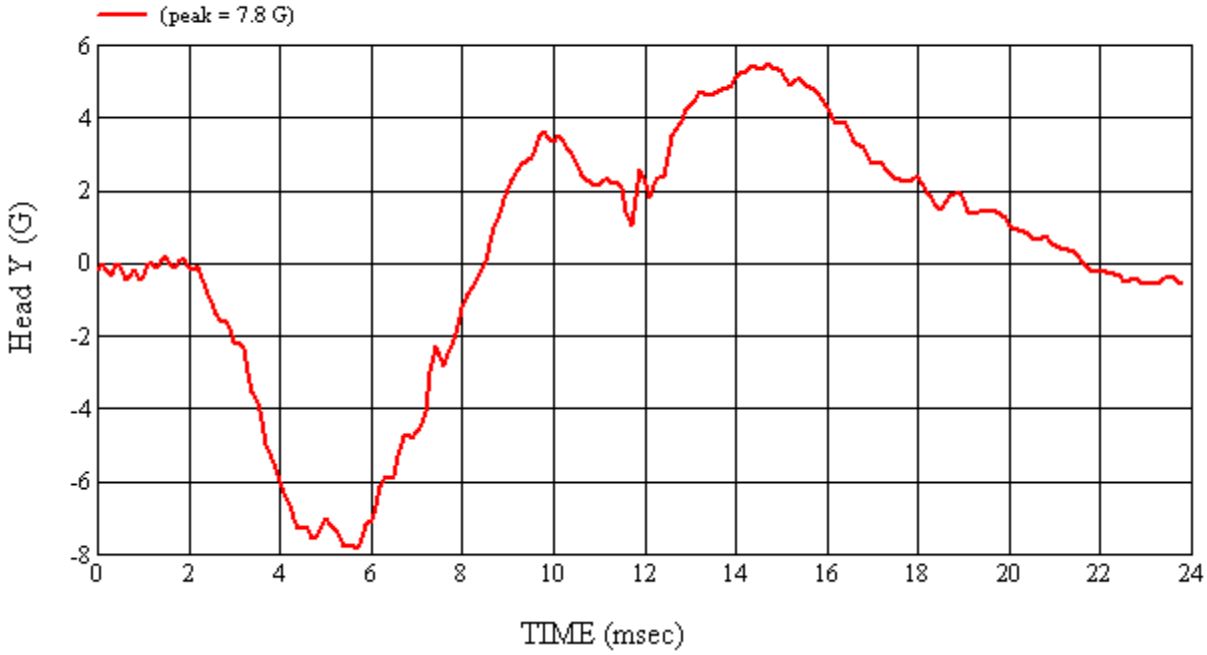
*Only necessary for NHTSA (Government) Compliance testing.

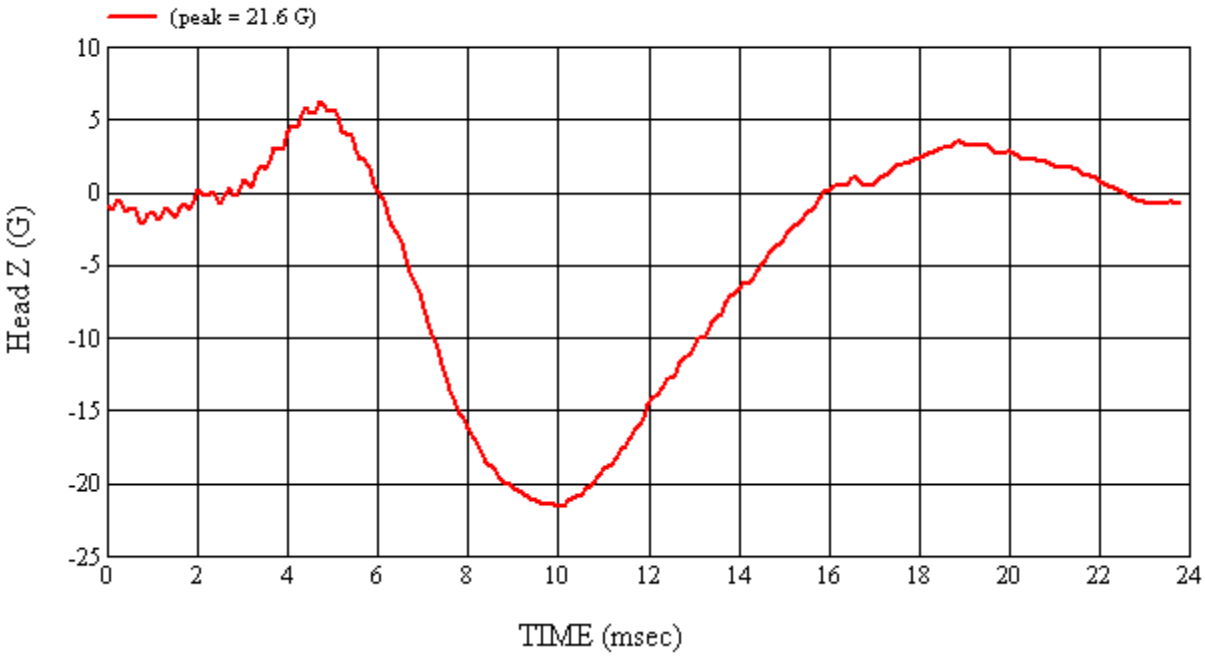
MGA Test #: U11181 Target Location: AP2, Left Side Test Date: 5/26/2011

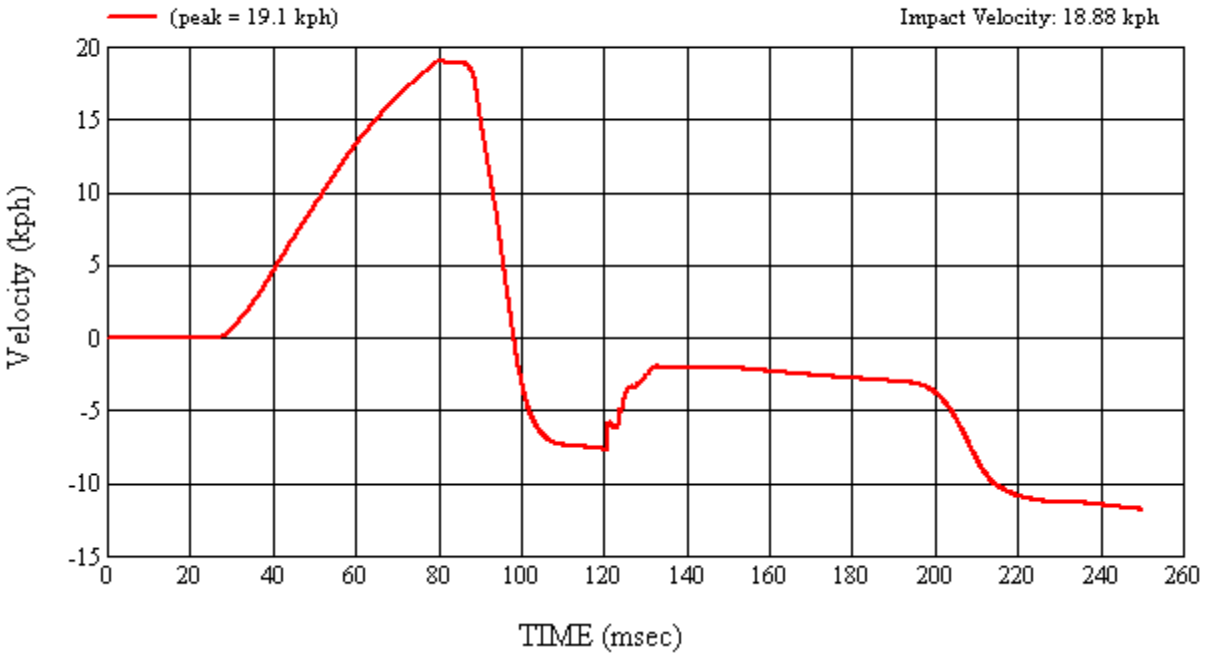


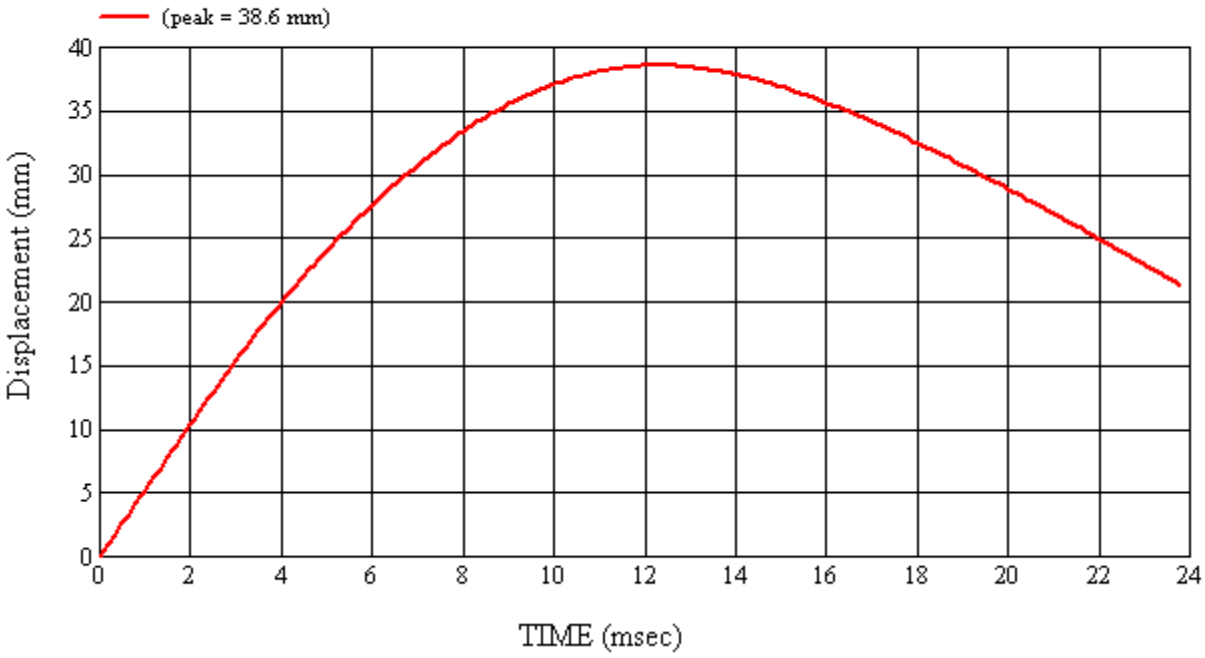



(peak = 60.0 G)
Head X (G)
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
-55
-60
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)


(peak = 7.8 G)
Head Y (G)
6
4
2
0
-2
-4
-6
-8
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)

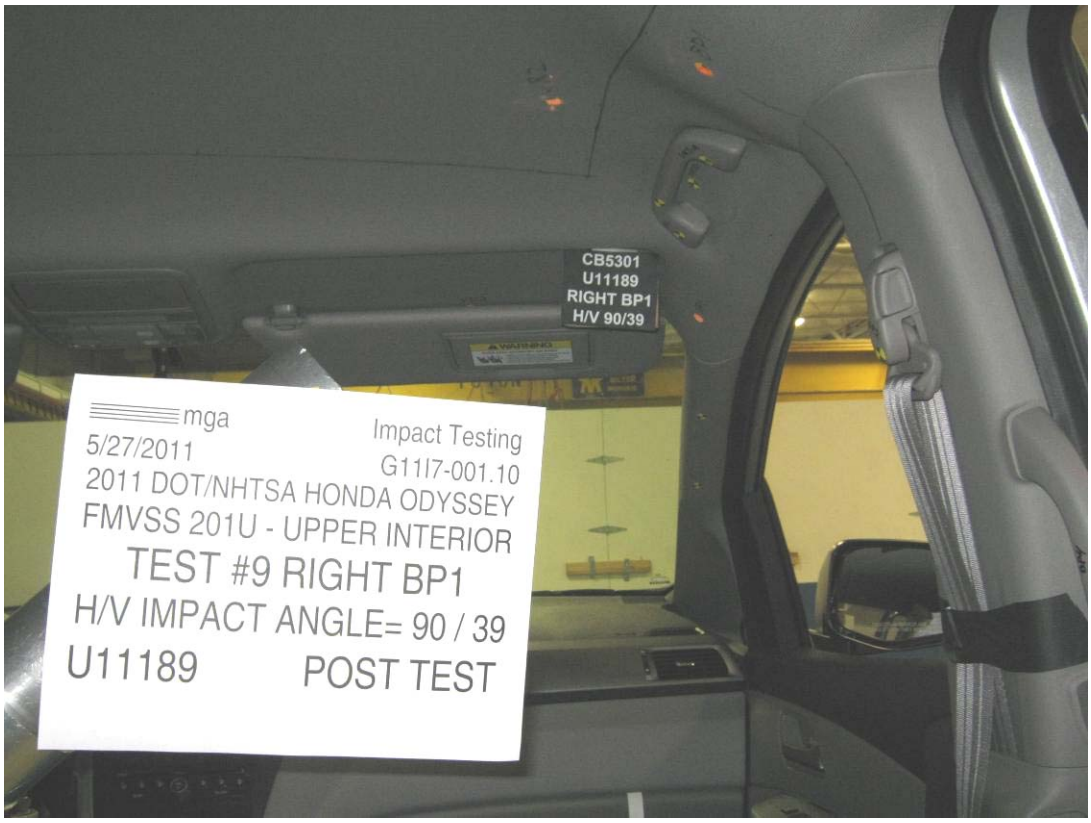

(peak = 21.6 G)
Head Z (G)
10
5
0
-5
-10
-15
-20
-25
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)


(peak = 19.1 kph)
Impact Velocity: 18.88 kph
Velocity (kph)
20
15
10
5
0
-5
-10
-15
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)

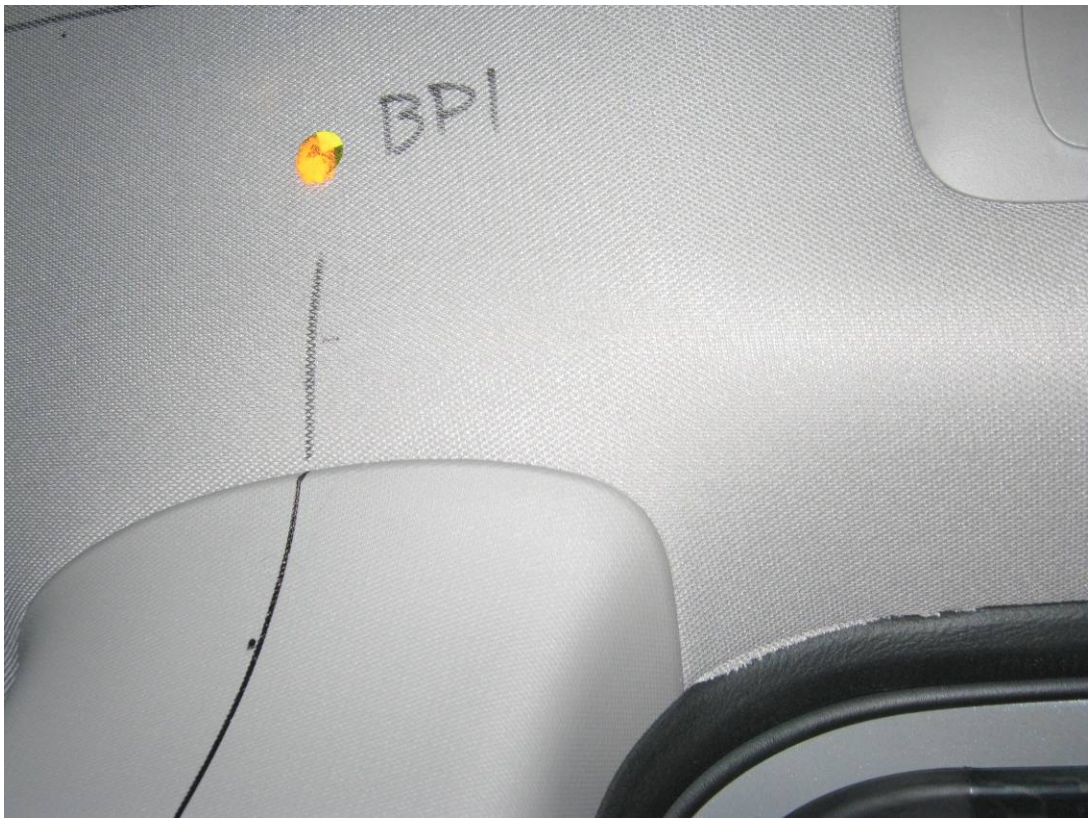

(peak = 38.6 mm)
Displacement (mm)
0
5
10
15
20
25
30
35
40
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)

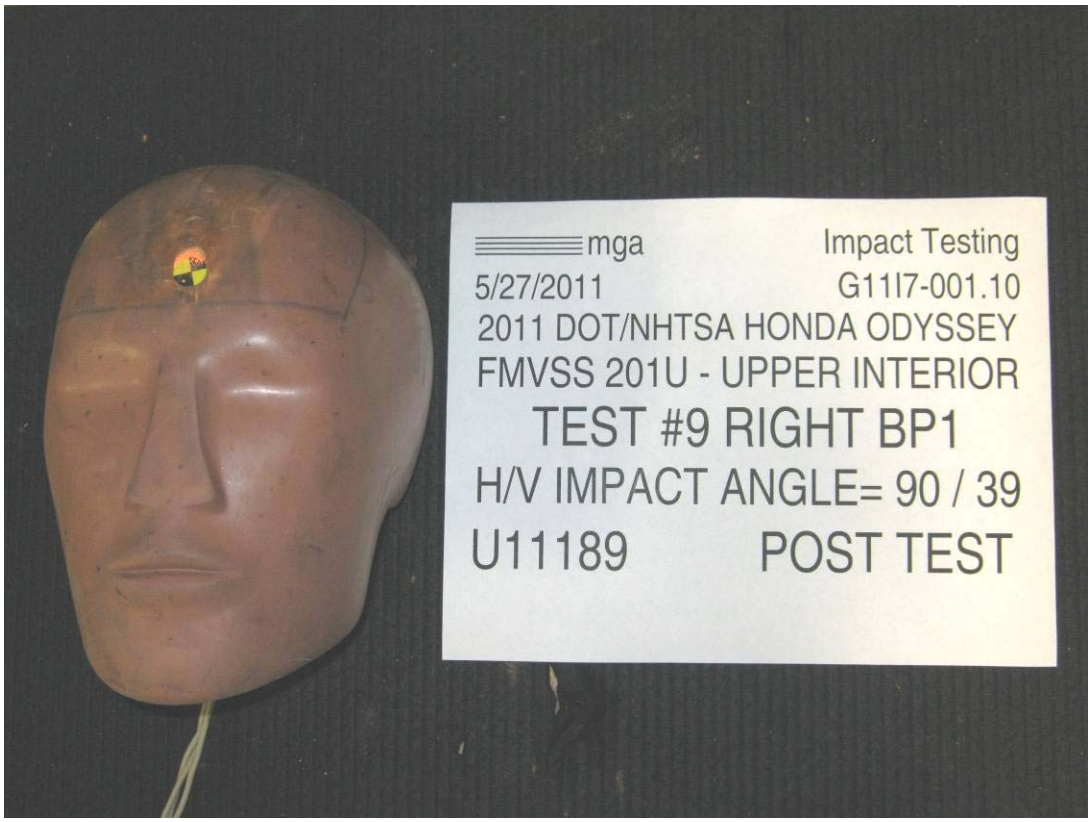

mga
Impact Testing
5/27/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #9 RIGHT BP1
H/V IMPACT ANGLE= 90 / 39
U11189
PRE TEST


BP1
mga
Impact Testing
5/27/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #9 RIGHT BP1
H/V IMPACT ANGLE= 90 / 39
U11189
PRE TEST


CB5301
U11189
RIGHT BP1
H/V 90/39
mga
5/27/2011
Impact Testing
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #9 RIGHT BP1
H/V IMPACT ANGLE= 90 / 39
U11189
POST TEST


BP1
mga
5/27/2011
Impact Testing
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #9 RIGHT BP1
H/V IMPACT ANGLE= 90 / 39
U11189
POST TEST


BP1


mga
Impact Testing
5/27/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #9 RIGHT BP1
H/V IMPACT ANGLE= 90 / 39
U11189
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G11I7-001.10 VEHICLE YR/MAKE/MODEL:2011/DOT/NHTSA/Honda Odyssey

GENERAL TEST PARAMETERS:

Test Number:#9

Target (Vehicle Side): BP1Right

Temperature:19.8C

MGA Test Reference No.:U11189

Humidity:50.7%

Approach Horizontal Angles:90º

Time of Test:9:28:48 AM

Approach Vertical Angles:39º

FMH Serial No:[038]

Additional Description:

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
588	559	5.7	18.7	15	3 Left

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J22700	-96.4	1.07	1.07
Y	6	J36197	108.7	0.85	0.85
Z	7	J36353	99.1	0.94	0.94

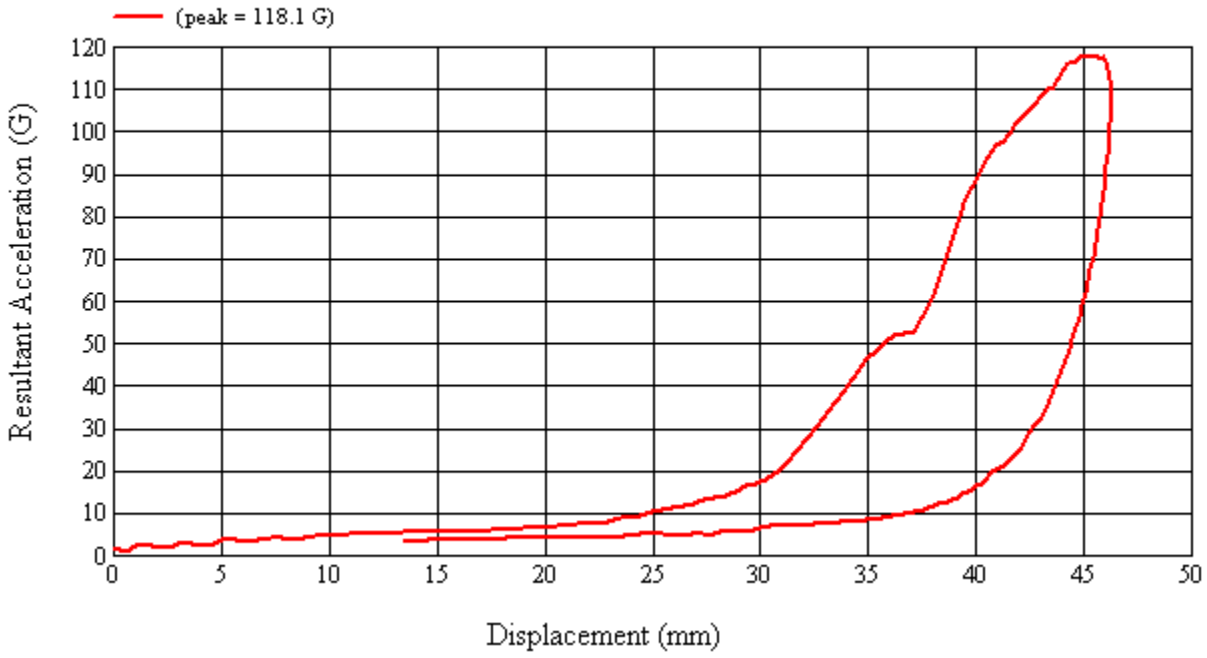
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

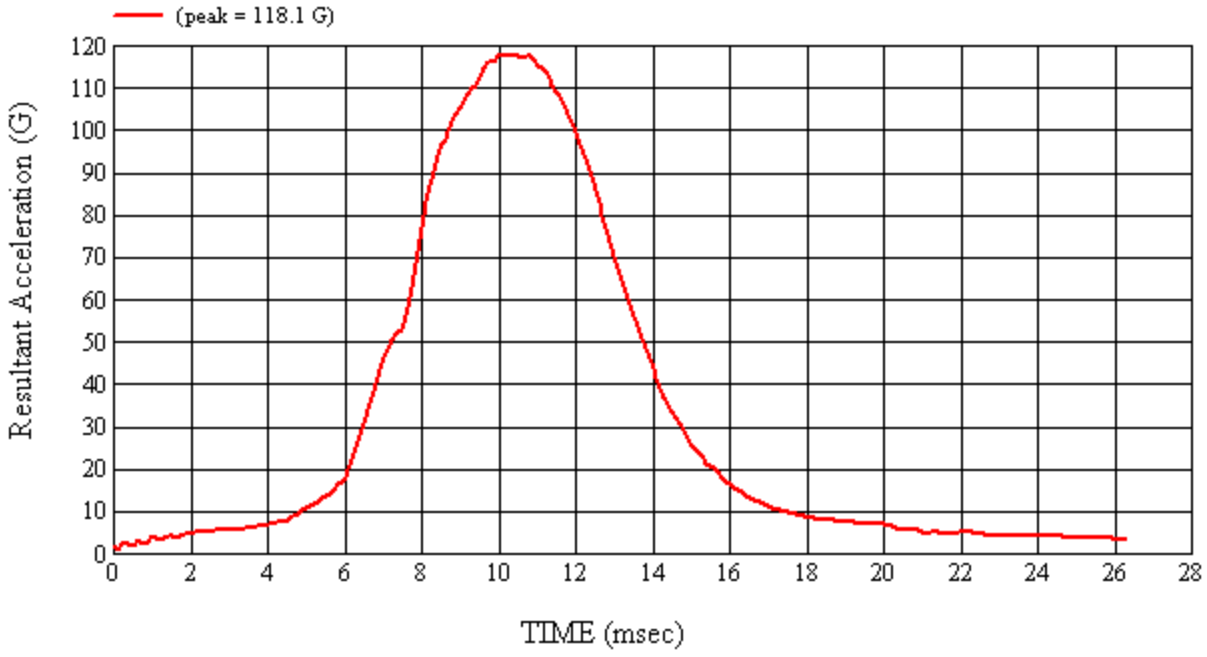
Dislodged headliner

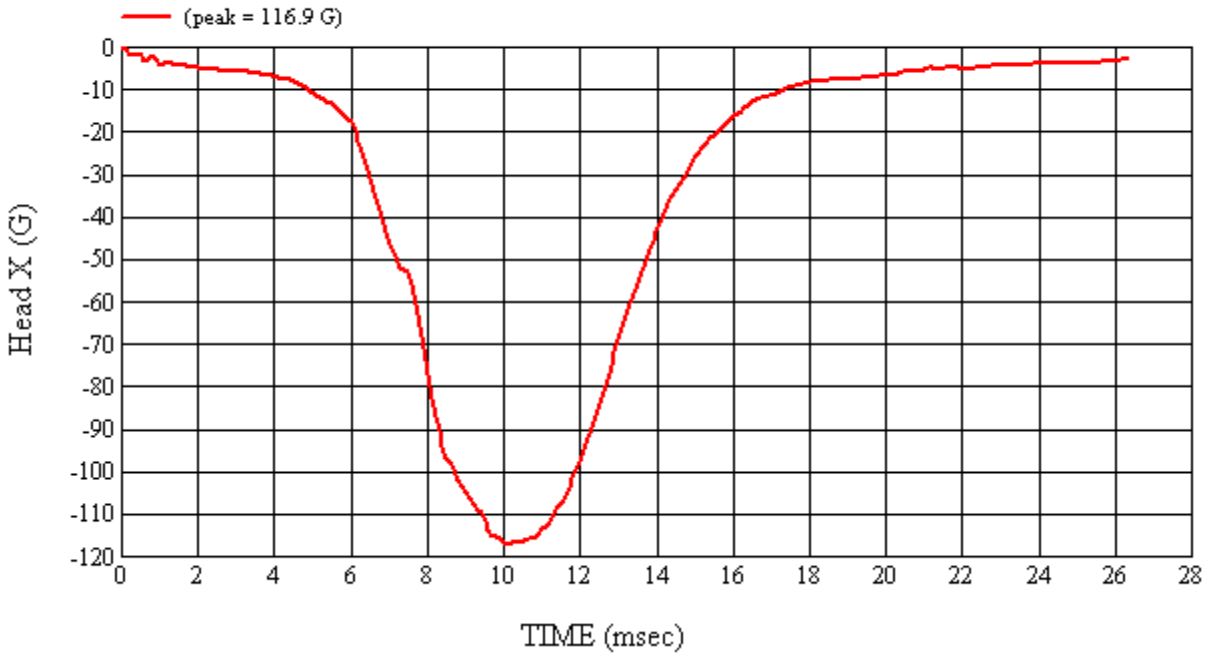
Recorded By: _____ Approved By*: _____ Date: 5/27/2011

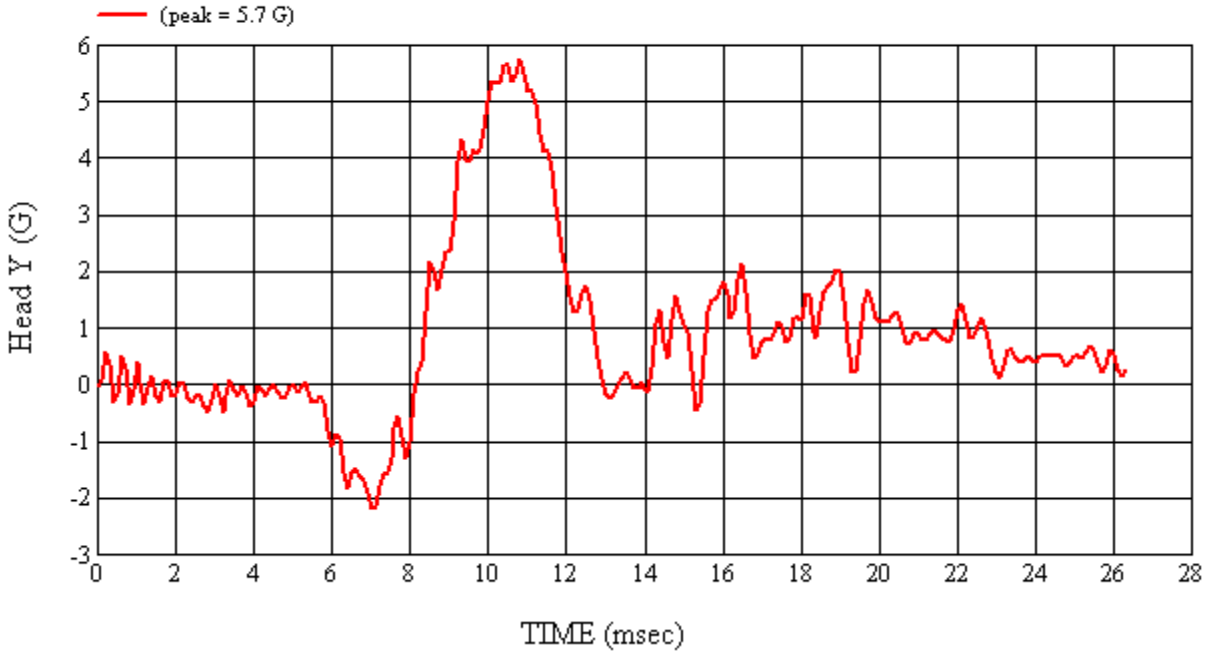
*Only necessary for NHTSA (Government) Compliance testing.

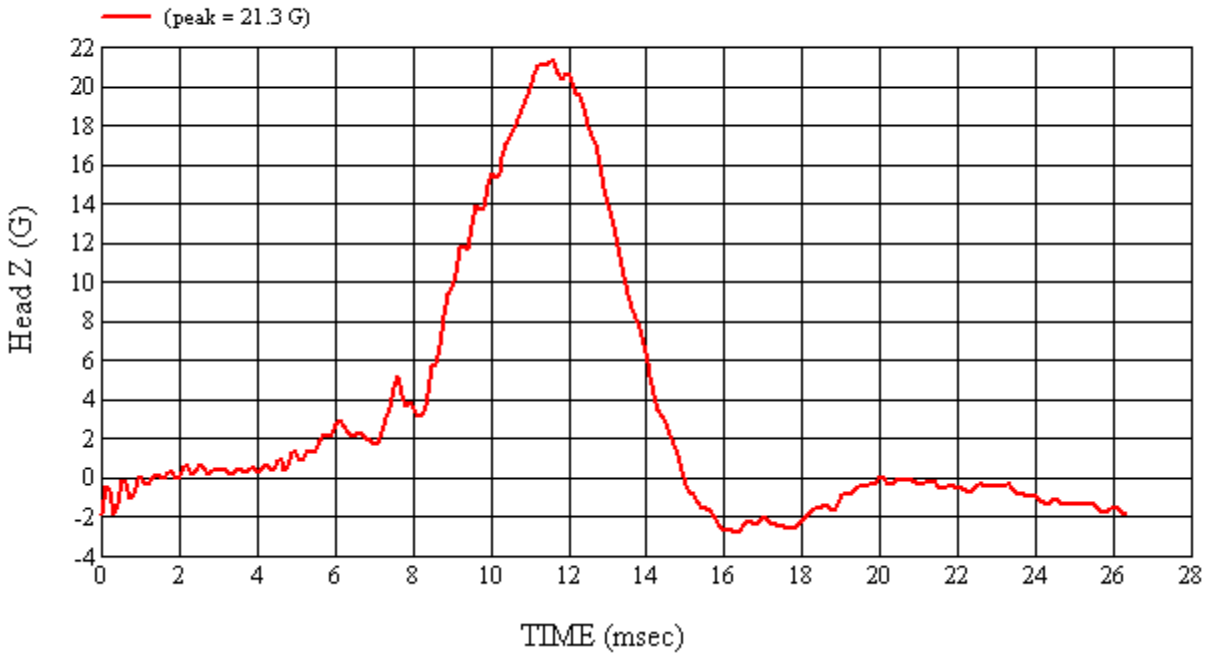
MGA Test #: U11189 Target Location: BP1, Right Side Test Date: 5/27/2011

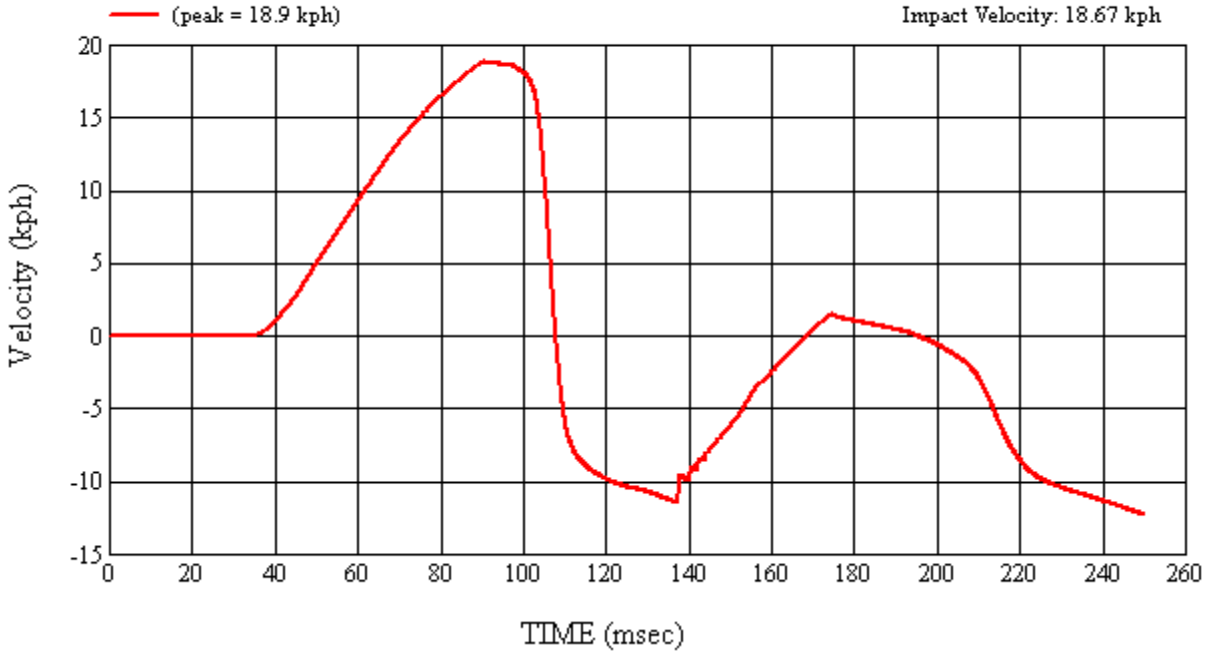


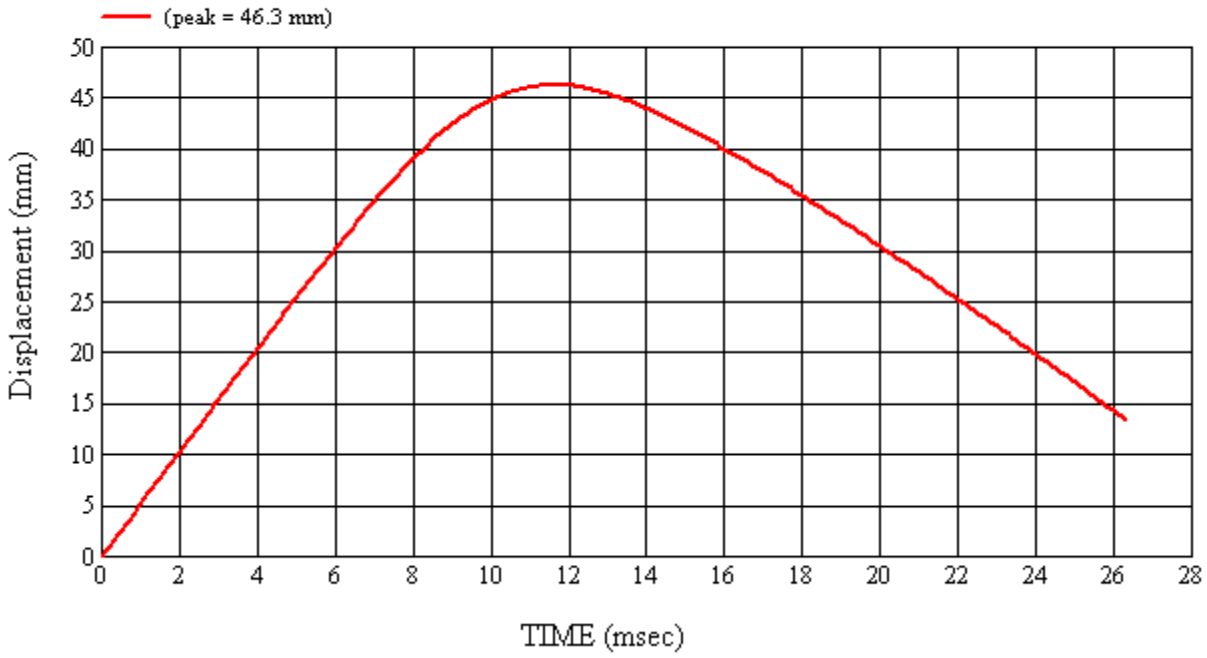



(peak = 116.9 G)
Head X (G)
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
TIME (msec)


(peak = 5.7 G)
Head Y (G)
6
5
4
3
2
1
0
-1
-2
-3
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
TIME (msec)


(peak = 21.3 G)
Head Z (G)
TIME (msec)


(peak = 18.9 kph)
Impact Velocity: 18.67 kph
Velocity (kph)
TIME (msec)


(peak = 46.3 mm)
Displacement (mm)
0
5
10
15
20
25
30
35
40
45
50
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
TIME (msec)

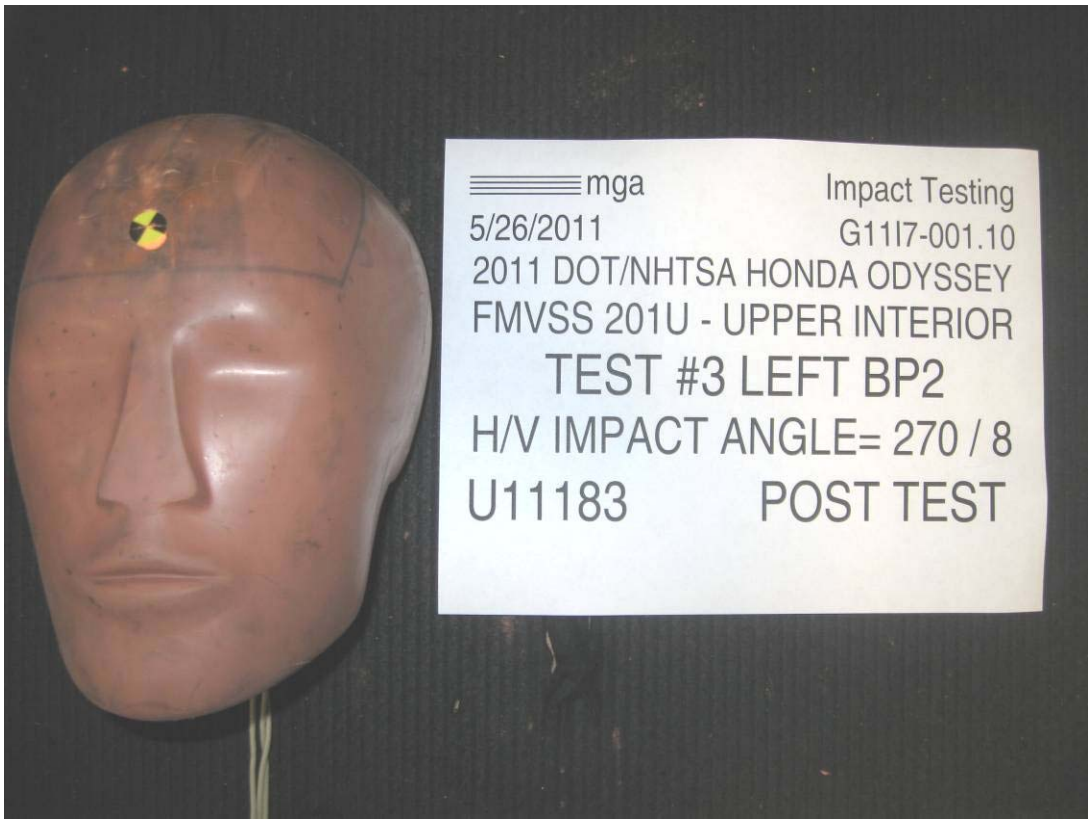

CB5301
U11183
mga
5/26/2011
Impact Testing
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #3 LEFT BP2
H/V IMPACT ANGLE= 270 / 8
U11183
PRE TEST


mga
5/26/2011
Impact Testing
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #3 LEFT BP2
H/V IMPACT ANGLE= 270 / 8
U11183
PRE TEST
CB5301
U11183
LEFT BP2
H/V 270/8


CB5301
U11183
LEFT BP2
H/V 270/8
mga
Impact Testing
5/26/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #3 LEFT BP2
H/V IMPACT ANGLE= 270 / 8
U11183
POST TEST


mga
Impact Testing
5/26/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #3 LEFT BP2
H/V IMPACT ANGLE= 270 / 8
U11183
POST TEST


CB53
U1118
LEFT B
H/V 27


mga
Impact Testing
5/26/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #3 LEFT BP2
H/V IMPACT ANGLE= 270 / 8
U11183
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G11I7-001.10 VEHICLE YR/MAKE/MODEL:2011/DOT/NHTSA/Honda Odyssey

GENERAL TEST PARAMETERS:

Test Number:#3

Target (Vehicle Side): BP2Left

Temperature:22.2C

MGA Test Reference No.:U11183

Humidity:67.5%

Approach Horizontal Angles:270º

Time of Test:11:16:50 AM

Approach Vertical Angles:8º

FMH Serial No:[038]

Additional Description:

TEST RESULTS:

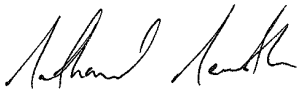
HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
688	691	8.3	23.9	16	2 Right

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J22700	-96.4	1.07	1.07
Y	6	J36197	108.7	0.85	0.85
Z	7	J36353	99.1	0.94	0.94

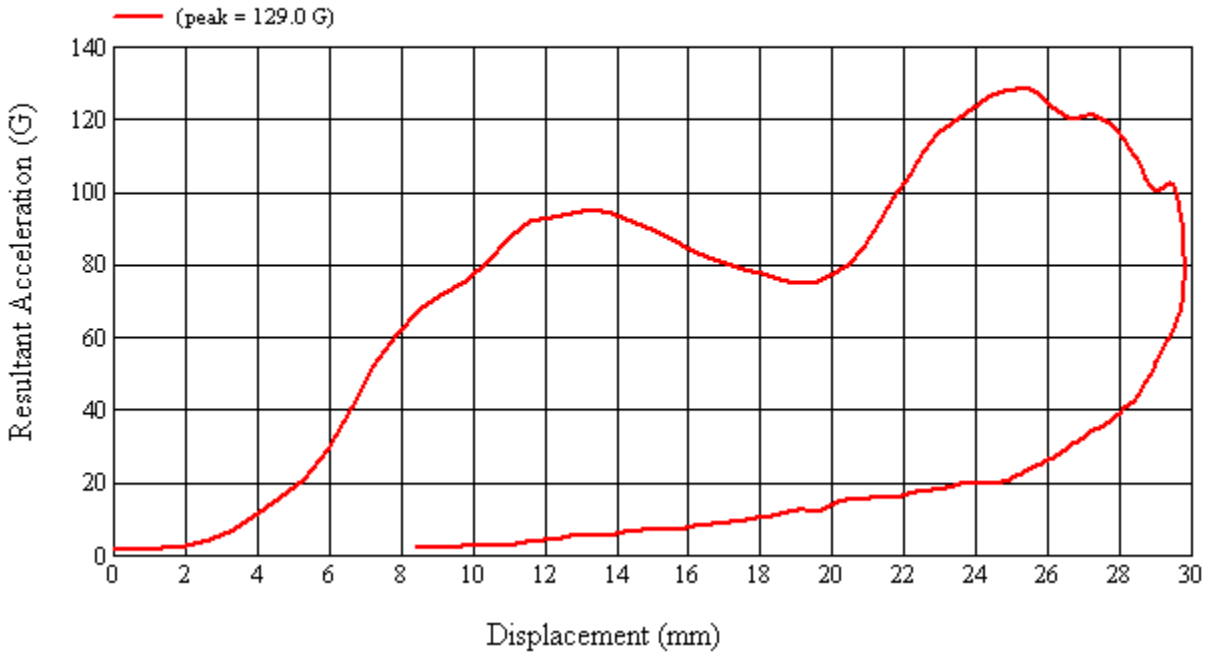
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

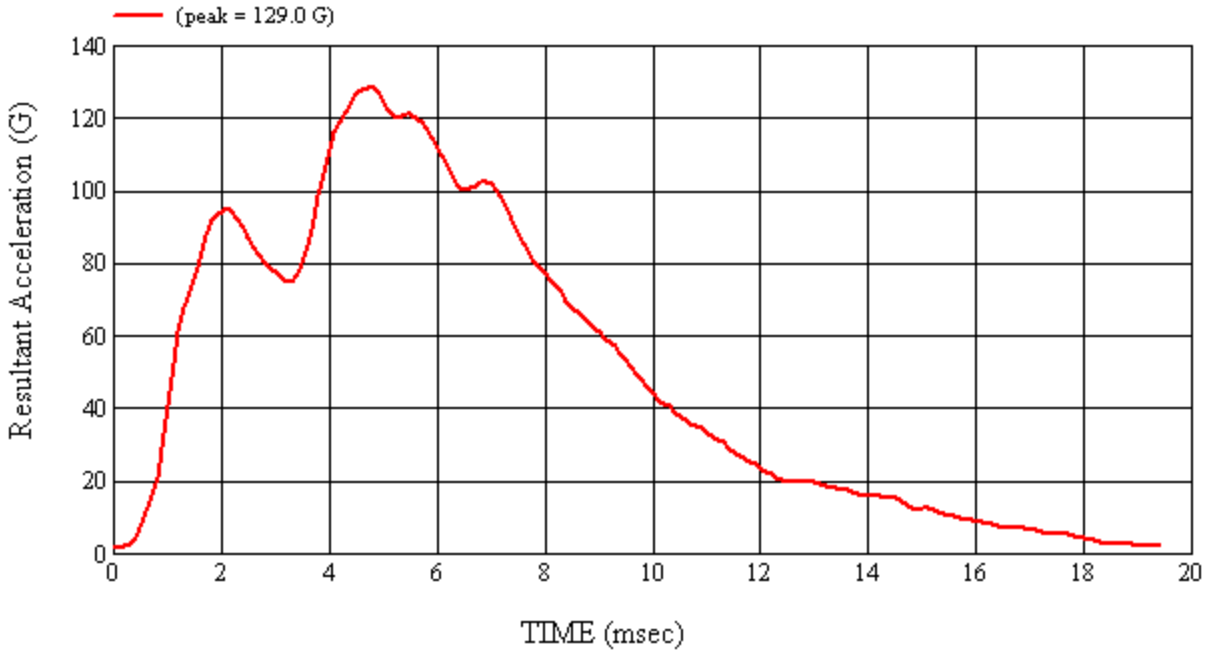
Adjustable anchorage compression

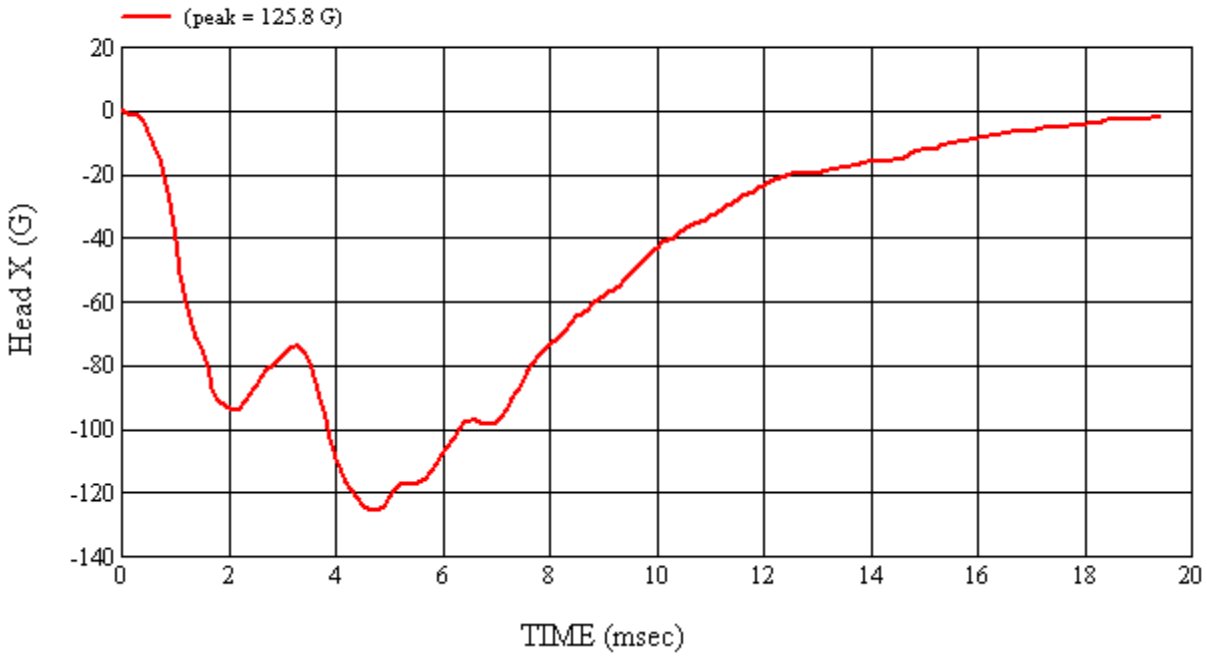
Recorded By:  Approved By*:  Date: 5/26/2011

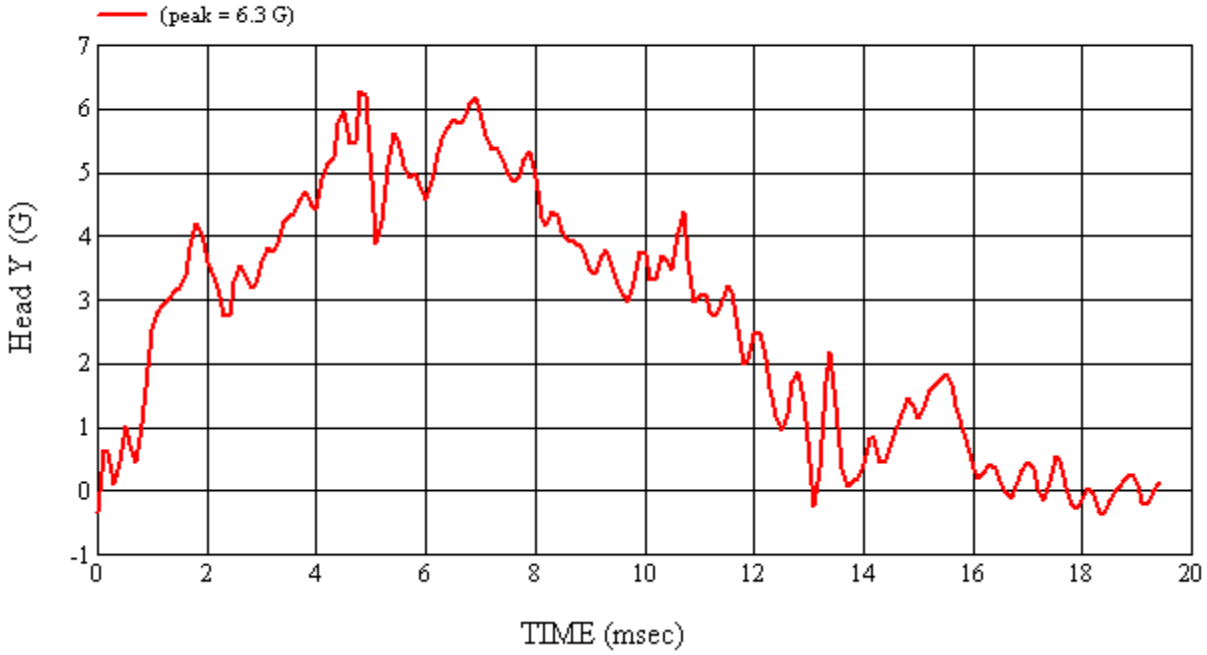
*Only necessary for NHTSA (Government) Compliance testing.

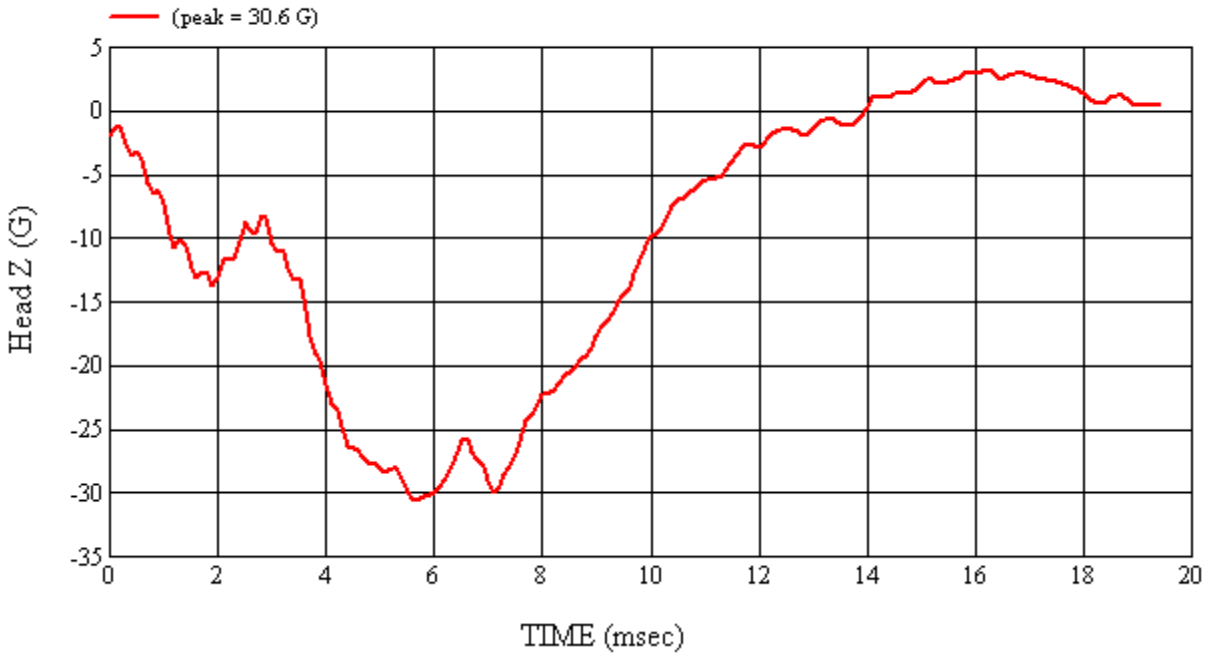
MGA Test #: U11183 Target Location: BP2, Left Side Test Date: 5/26/2011

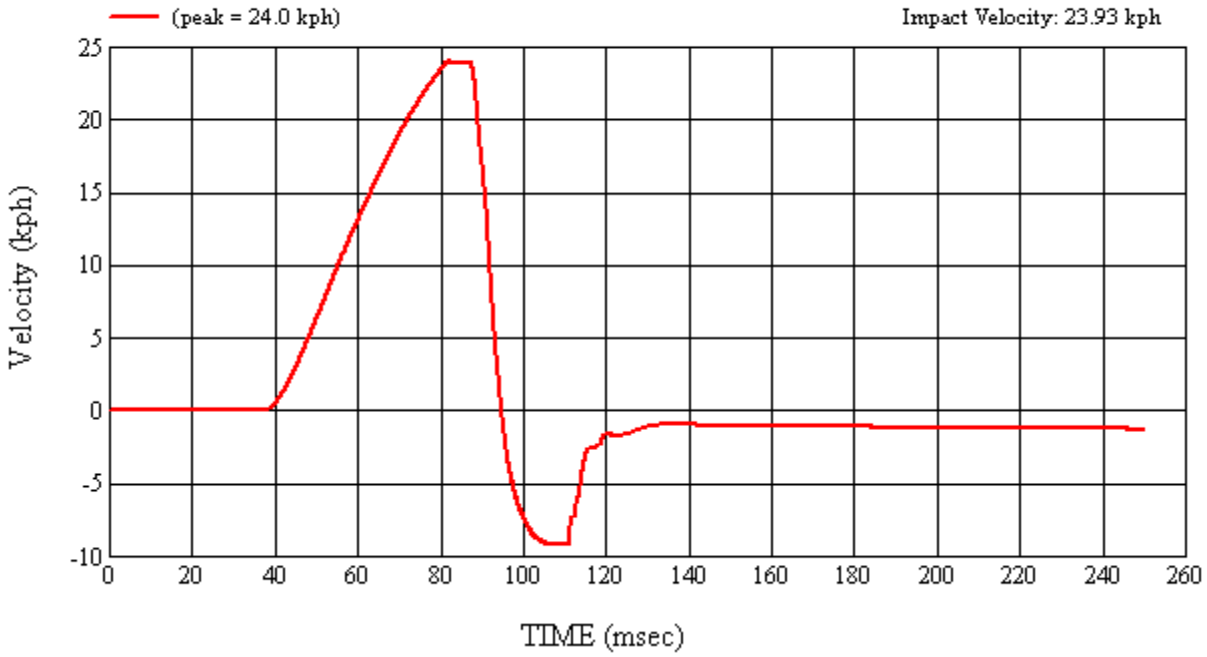


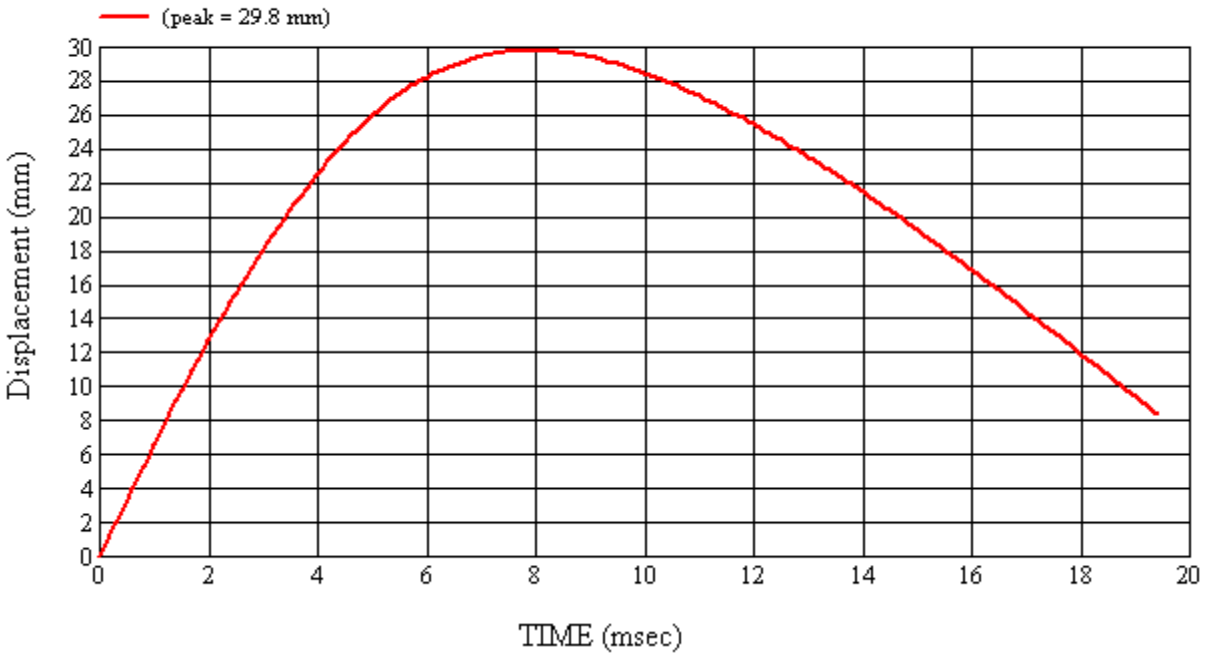



(peak = 125.8 G)
Head X (G)
20
0
-20
-40
-60
-80
-100
-120
-140
0
2
4
6
8
10
12
14
16
18
20
TIME (msec)


(peak = 6.3 G)
Head Y (G)
7
6
5
4
3
2
1
0
-1
0
2
4
6
8
10
12
14
16
18
20
TIME (msec)

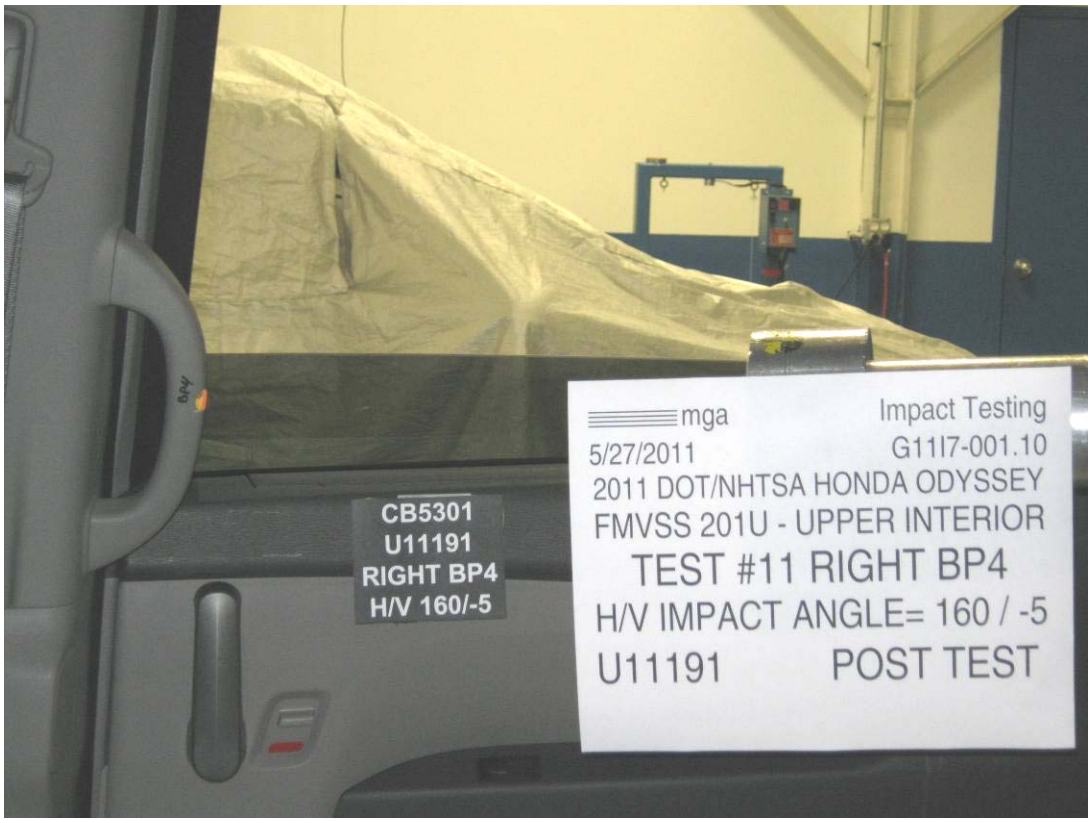

(peak = 30.6 G)
Head Z (G)
5
0
-5
-10
-15
-20
-25
-30
-35
0
2
4
6
8
10
12
14
16
18
20
TIME (msec)


(peak = 24.0 kph)
Impact Velocity: 23.93 kph
Velocity (kph)
25
20
15
10
5
0
-5
-10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)

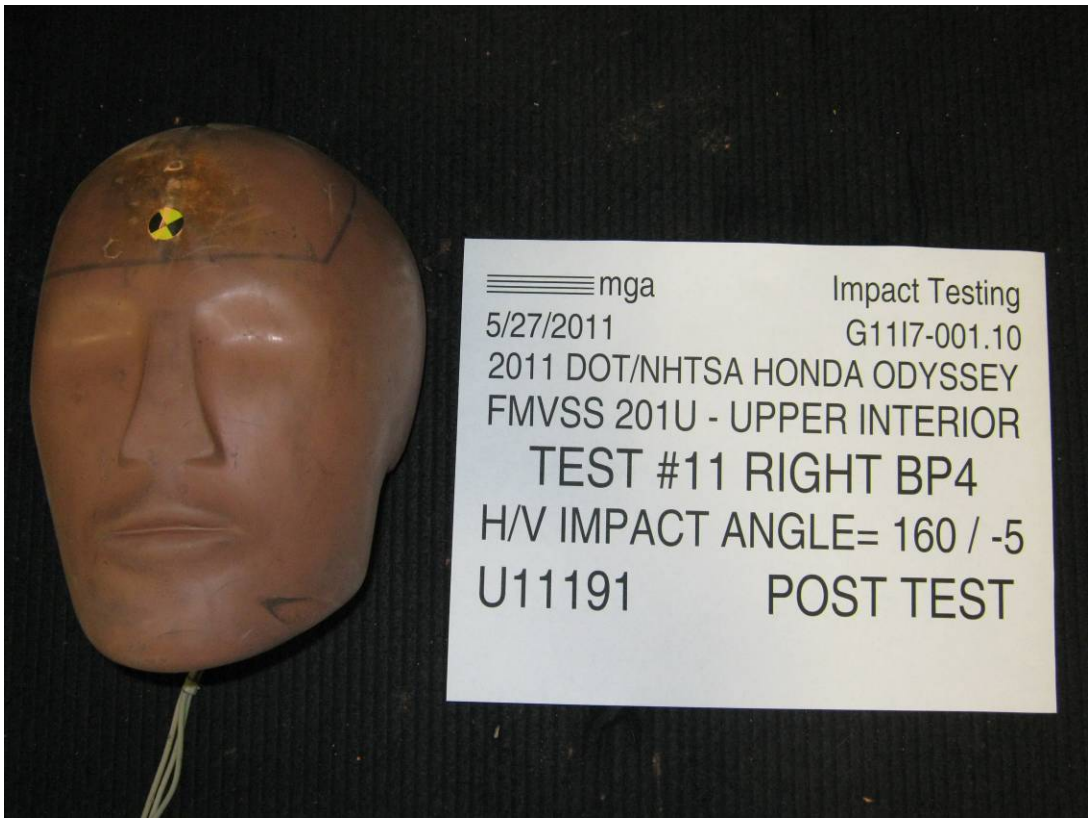

(peak = 29.8 mm)
Displacement (mm)
TIME (msec)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30


mga
Impact Testing
5/27/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #11 RIGHT BP4
H/V IMPACT ANGLE= 160 / -5
U11191
PRE TEST


mga
Impact Testing
5/27/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #11 RIGHT BP4
H/V IMPACT ANGLE= 160 / -5
U11191
PRE TEST


CB5301
U11191
RIGHT BP4
H/V 160/-5
mga
Impact Testing
5/27/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #11 RIGHT BP4
H/V IMPACT ANGLE= 160 / -5
U11191
POST TEST


CB5301
U11191
RIGHT BP4
H/V 160/-5
mga
Impact Testing
5/27/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #11 RIGHT BP4
H/V IMPACT ANGLE= 160 / -5
U11191
POST TEST


mga
Impact Testing
5/27/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #11 RIGHT BP4
H/V IMPACT ANGLE= 160 / -5
U11191
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G11I7-001.10 VEHICLE YR/MAKE/MODEL:2011/DOT/NHTSA/Honda Odyssey

GENERAL TEST PARAMETERS:

Test Number:#11

Target (Vehicle Side): BP4Right

Temperature:20.3C

MGA Test Reference No.:U11191

Humidity:53.3%

Approach Horizontal Angles:160º

Time of Test:1:19:52 PM

Approach Vertical Angles:-5º

FMH Serial No:[037]

Additional Description:

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
840	892	4.8	23.5	14	0

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J32177	-113.7	1.07	1.07
Y	6	J14103	93.9	0.85	0.85
Z	7	J35800	97.8	0.94	0.94

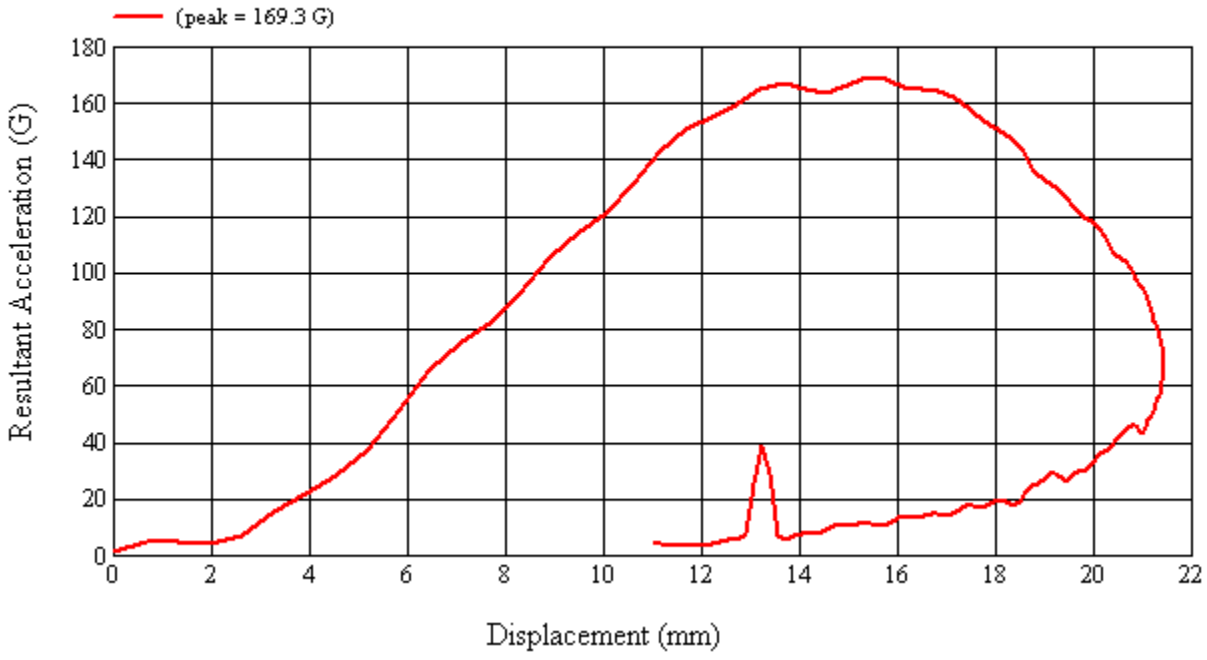
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

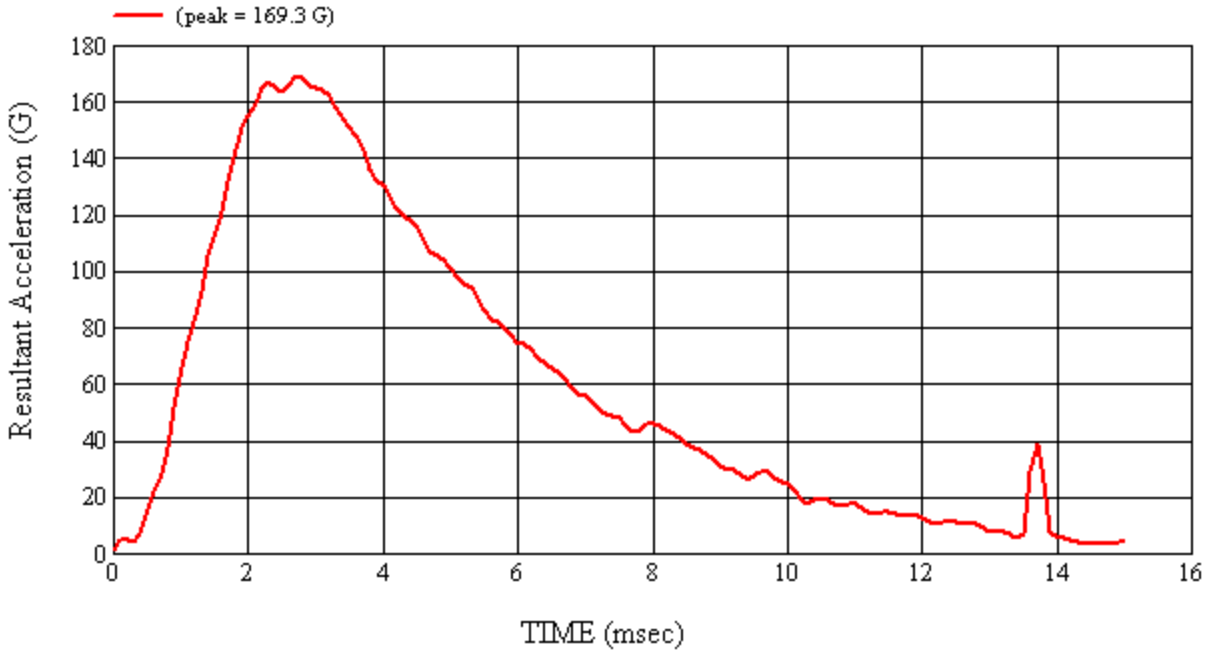
No visible damage

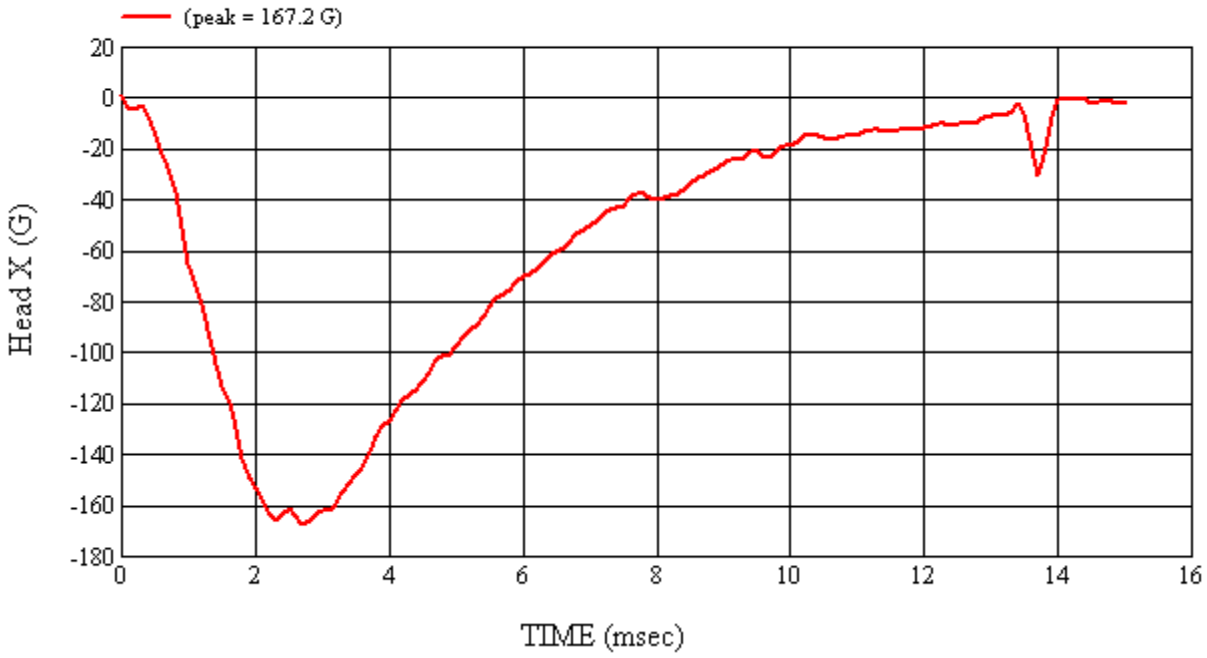
Recorded By: _____ Approved By*: _____ Date: 5/27/2011

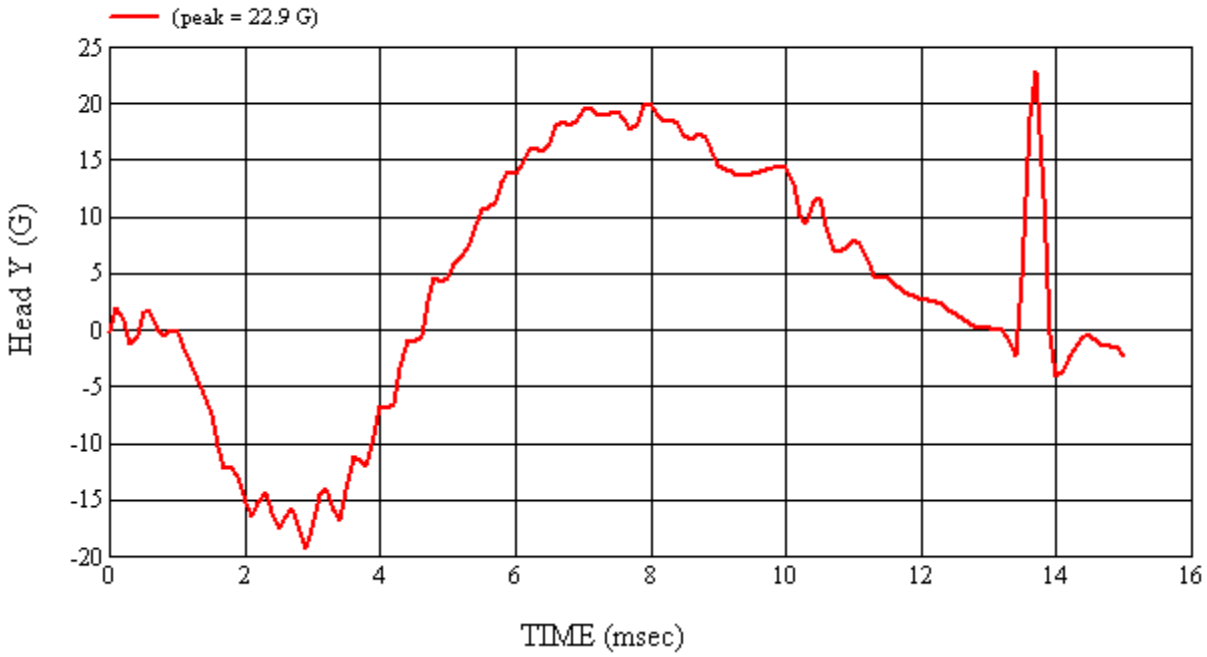
*Only necessary for NHTSA (Government) Compliance testing.

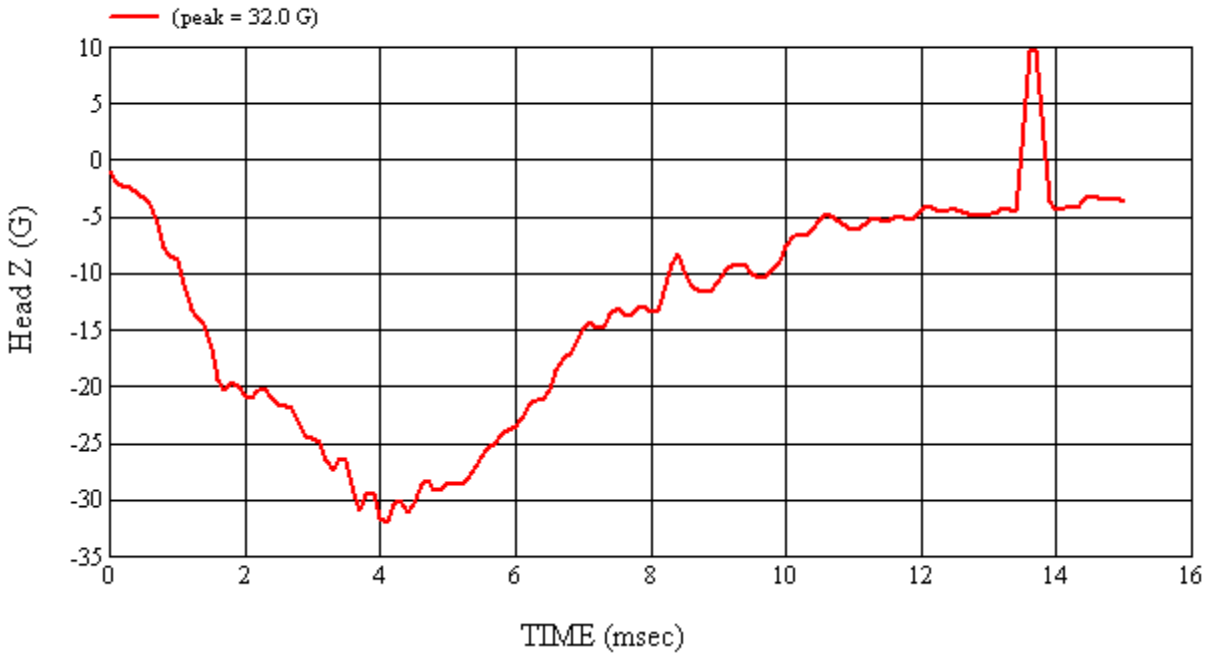
MGA Test #: U11191 Target Location: BP4, Right Side Test Date: 5/27/2011

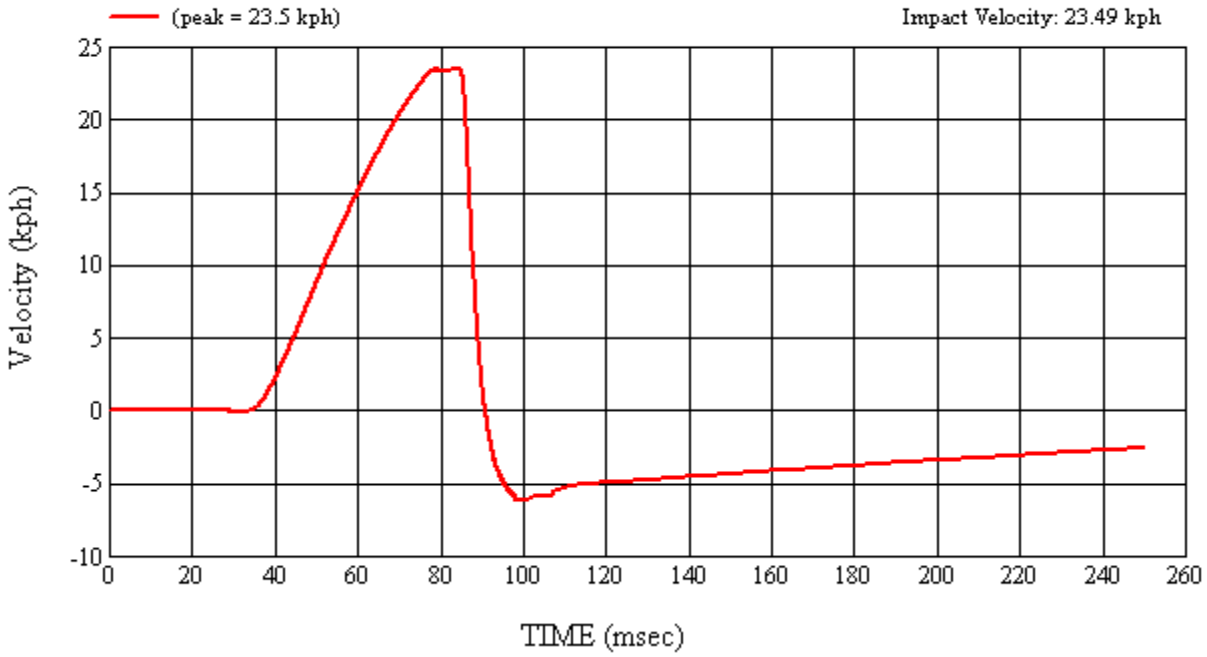


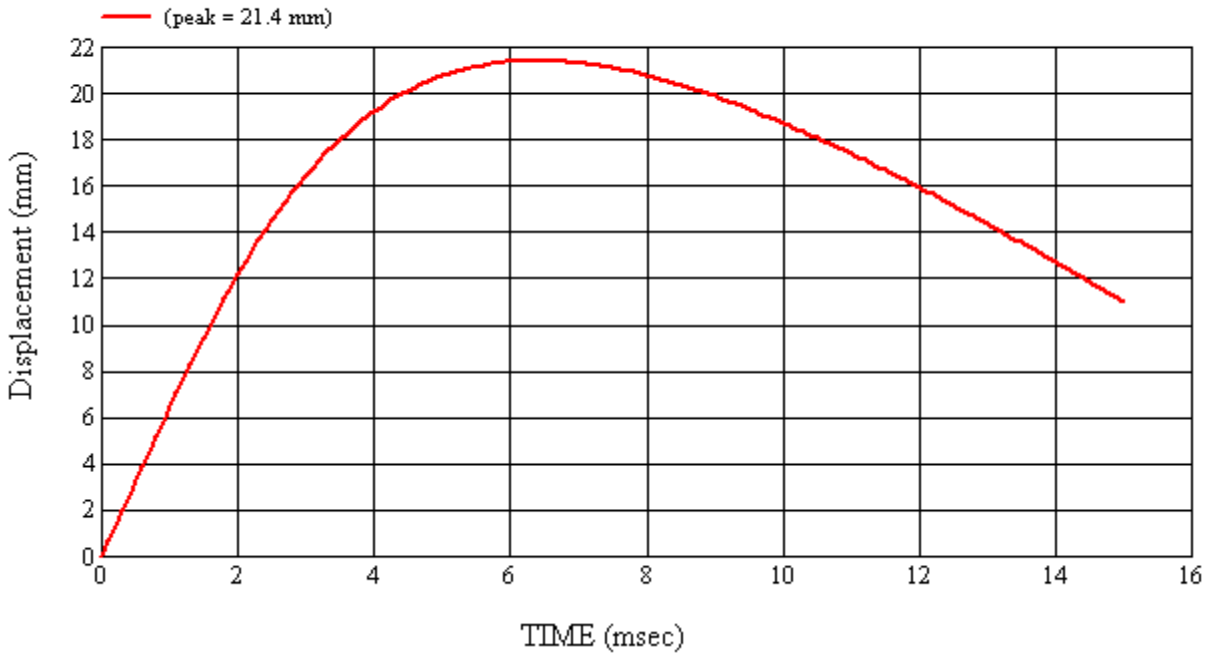



(peak = 167.2 G)
Head X (G)
20
0
-20
-40
-60
-80
-100
-120
-140
-160
-180
0
2
4
6
8
10
12
14
16
TIME (msec)


(peak = 22.9 G)
Head Y (G)
25
20
15
10
5
0
-5
-10
-15
-20
0
2
4
6
8
10
12
14
16
TIME (msec)


(peak = 32.0 G)
Head Z (G)
10
5
0
-5
-10
-15
-20
-25
-30
-35
0
2
4
6
8
10
12
14
16
TIME (msec)


(peak = 23.5 kph)
Impact Velocity: 23.49 kph
Velocity (kph)
25
20
15
10
5
0
-5
-10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)


(peak = 21.4 mm)
Displacement (mm)
TIME (msec)
0
2
4
6
8
10
12
14
16
18
20
22

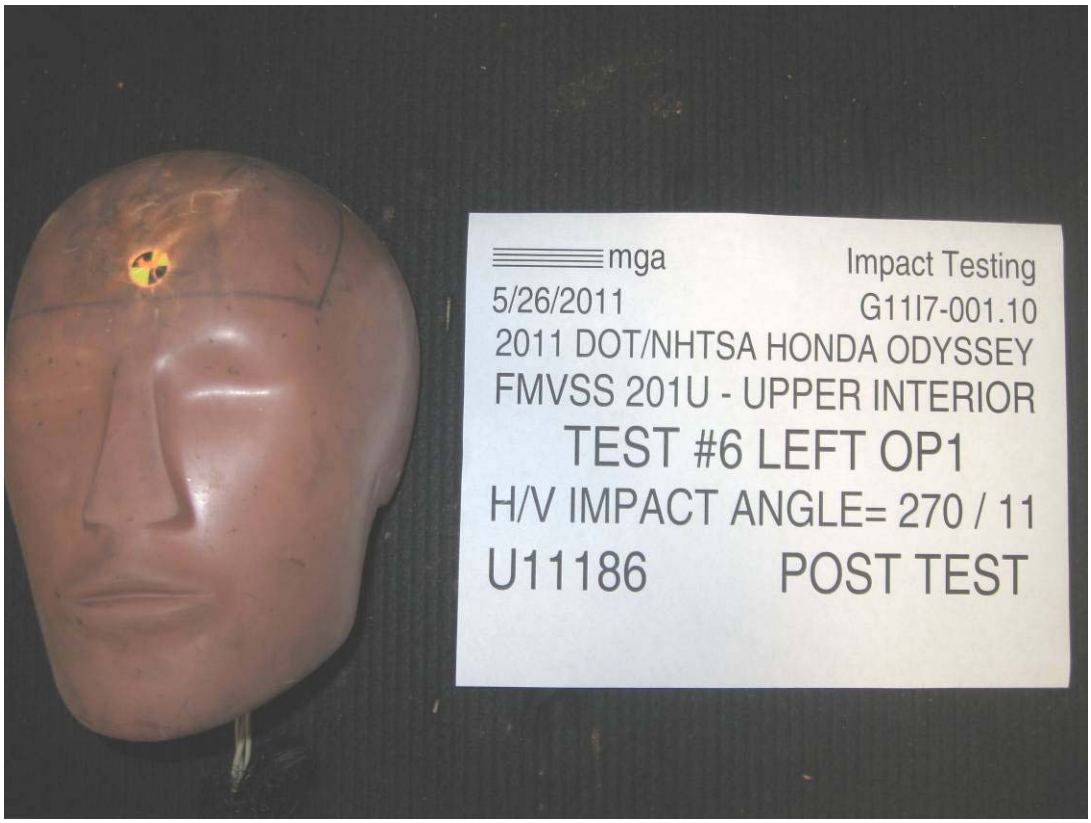

CB5301
U11186
LEFT OP1
H/V 270/11
mga
Impact Testing
5/26/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #6 LEFT OP1
H/V IMPACT ANGLE= 270 / 11
U11186
PRE TEST


mga
Impact Testing
5/26/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #6 LEFT OP1
H/V IMPACT ANGLE= 270 / 11
U11186
PRE TEST


CB5301
U11186
LEFT OP1
H/V 270/11
mga
Impact Testing
5/26/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #6 LEFT OP1
H/V IMPACT ANGLE= 270 / 11
U11186
POST TEST


CB5301
U11186
LEFT OP1
H/V 270/11
mga
Impact Testing
5/26/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #6 LEFT OP1
H/V IMPACT ANGLE= 270 / 11
U11186
POST TEST


OP2


mga
Impact Testing
5/26/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #6 LEFT OP1
H/V IMPACT ANGLE= 270 / 11
U11186
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G11I7-001.10 VEHICLE YR/MAKE/MODEL:2011/DOT/NHTSA/Honda Odyssey

GENERAL TEST PARAMETERS:

Test Number:#6

Target (Vehicle Side): OP1Left

Temperature:22.7C

MGA Test Reference No.:U11186

Humidity:64.1%

Approach Horizontal Angles:270º

Time of Test:3:14:03 PM

Approach Vertical Angles:11º

FMH Serial No:[038]

Additional Description:

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
701	708	8.5	24.1	13	5 Left

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J22700	-96.4	1.07	1.07
Y	6	J36197	108.7	0.85	0.85
Z	7	J36353	99.1	0.94	0.94

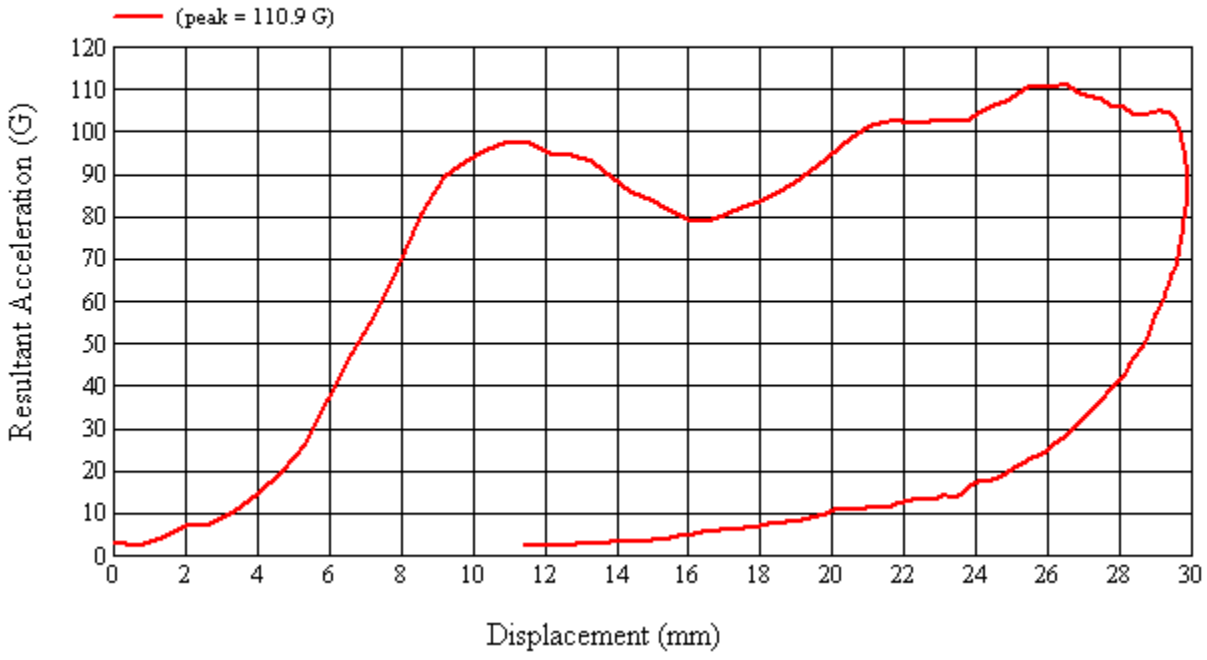
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

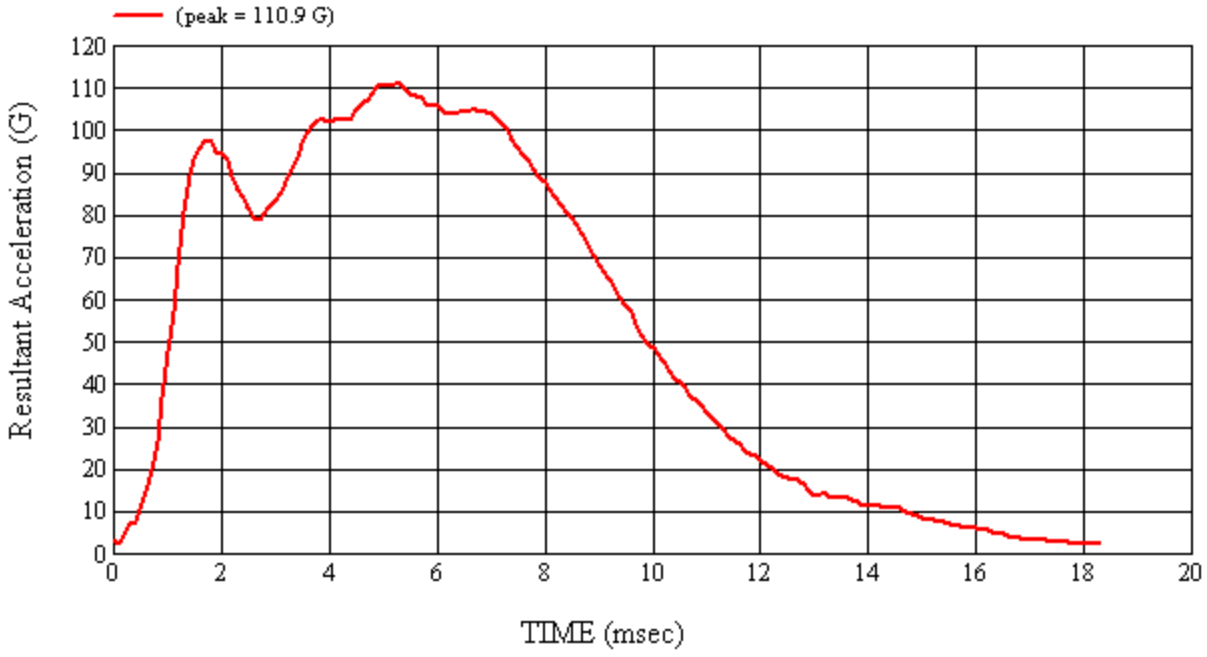
Adjustable anchorage compression, dislodged headliner

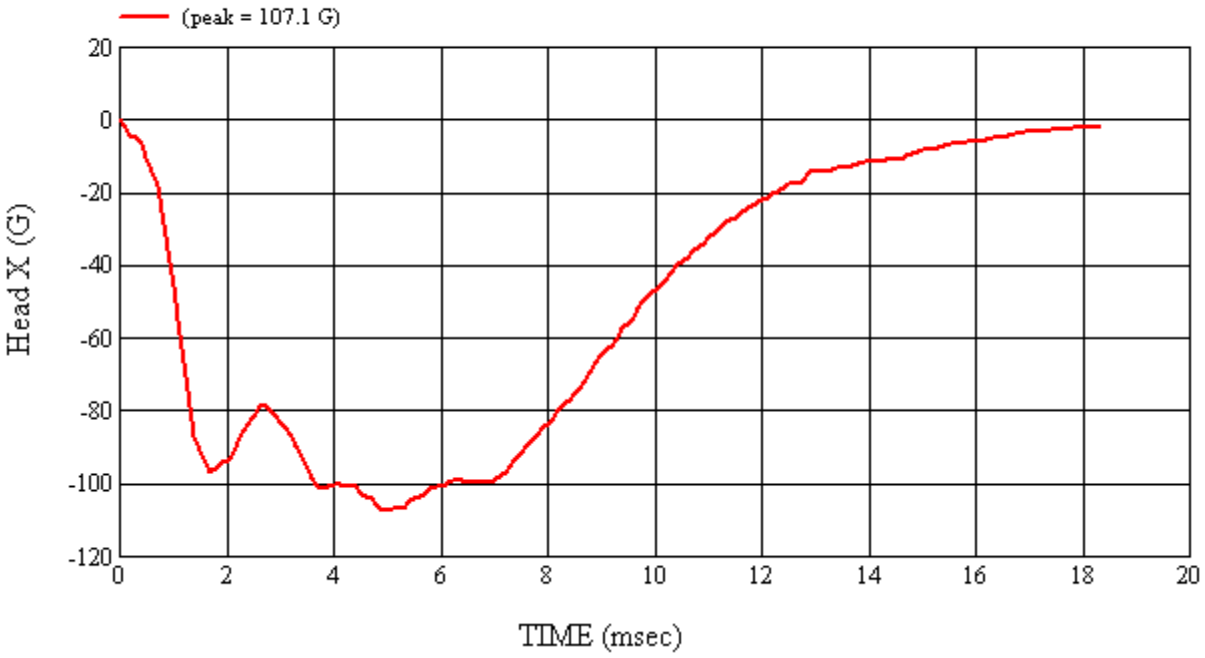
Recorded By: _____ Approved By*: _____ Date: 5/26/2011

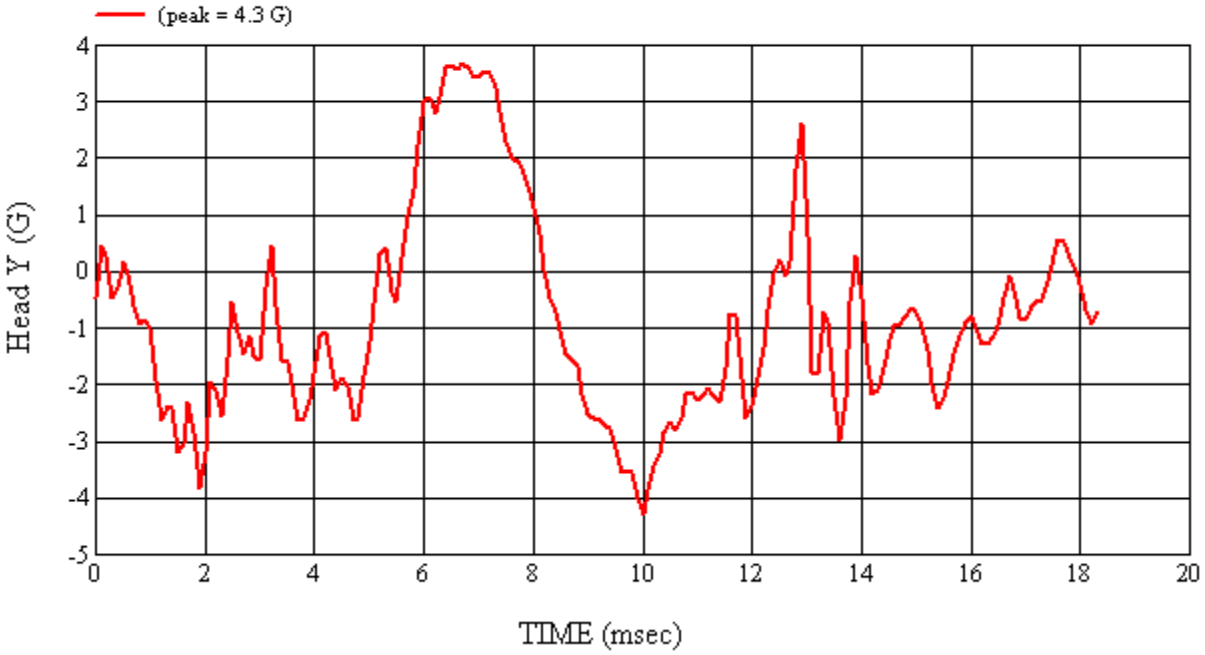
*Only necessary for NHTSA (Government) Compliance testing.

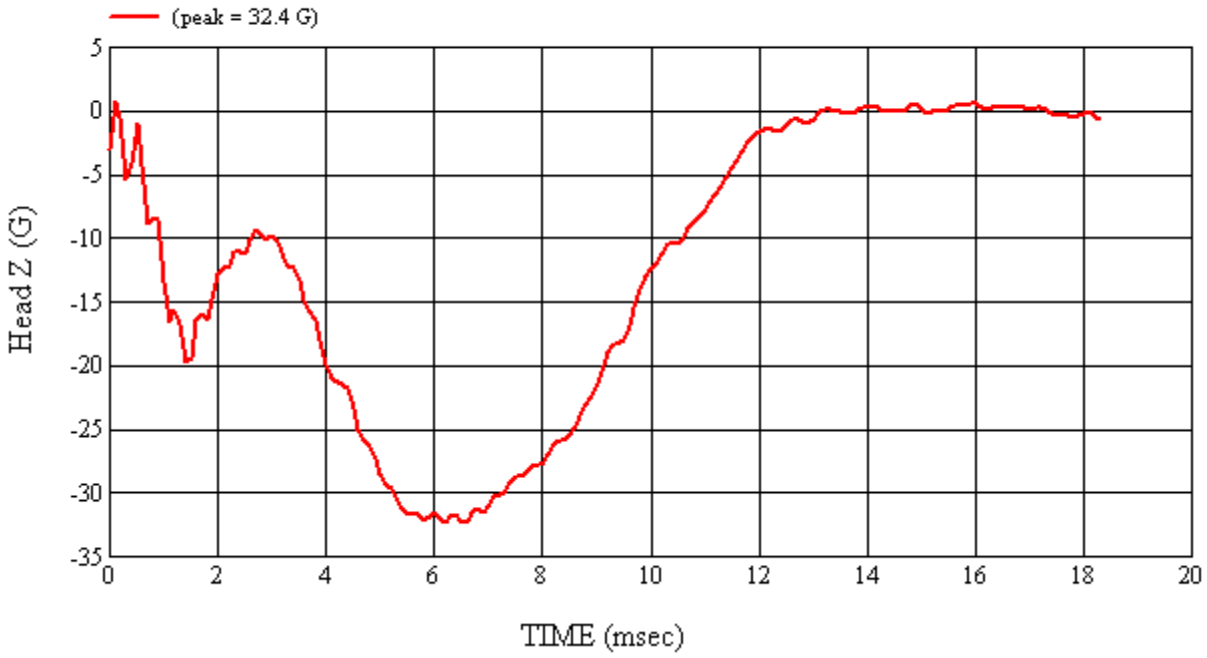
MGA Test #: U11186 Target Location: OP1, Left Side Test Date: 5/26/2011

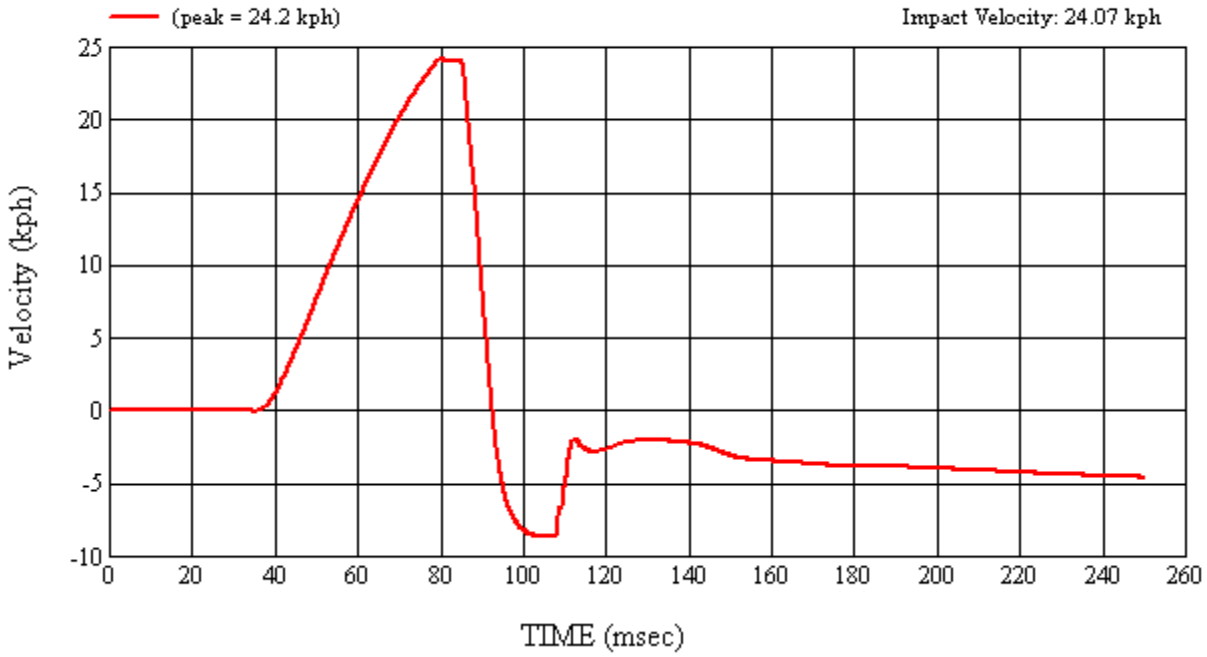


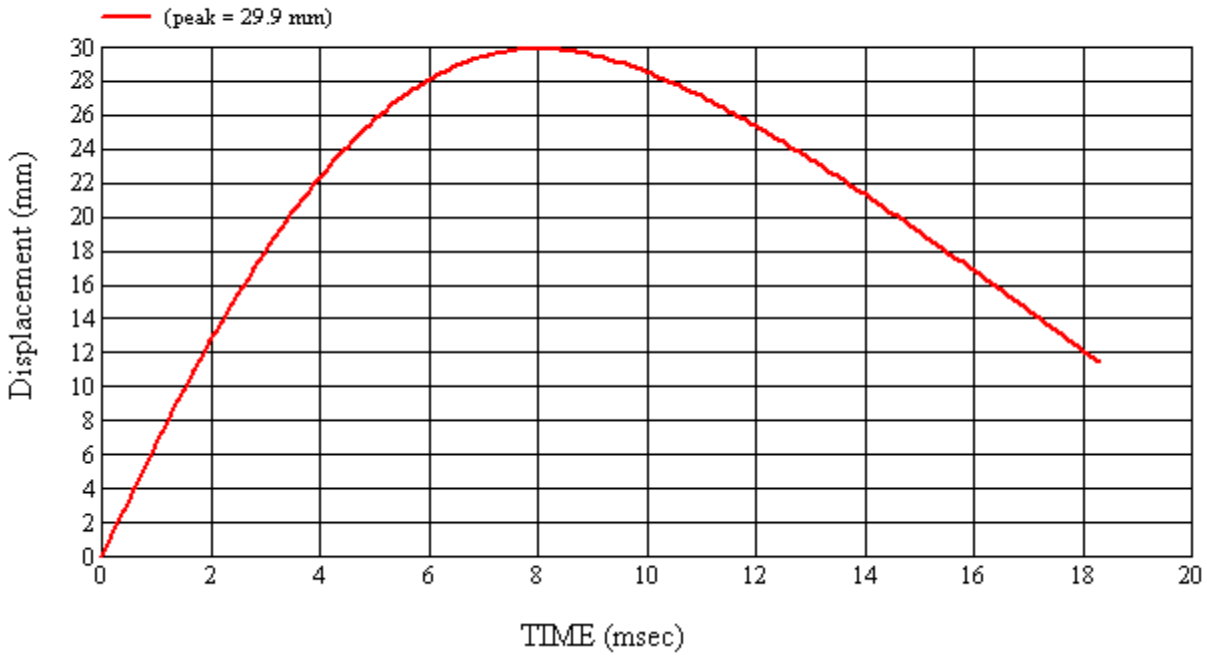



(peak = 107.1 G)
Head X (G)
20
0
-20
-40
-60
-80
-100
-120
0
2
4
6
8
10
12
14
16
18
20
TIME (msec)


(peak = 4.3 G)
Head Y (G)
4
3
2
1
0
-1
-2
-3
-4
-5
0
2
4
6
8
10
12
14
16
18
20
TIME (msec)


(peak = 32.4 G)
Head Z (G)
5
0
-5
-10
-15
-20
-25
-30
-35
0
2
4
6
8
10
12
14
16
18
20
TIME (msec)


(peak = 24.2 kph)
Impact Velocity: 24.07 kph
Velocity (kph)
25
20
15
10
5
0
-5
-10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)


(peak = 29.9 mm)
Displacement (mm)
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
0
2
4
6
8
10
12
14
16
18
20
TIME (msec)

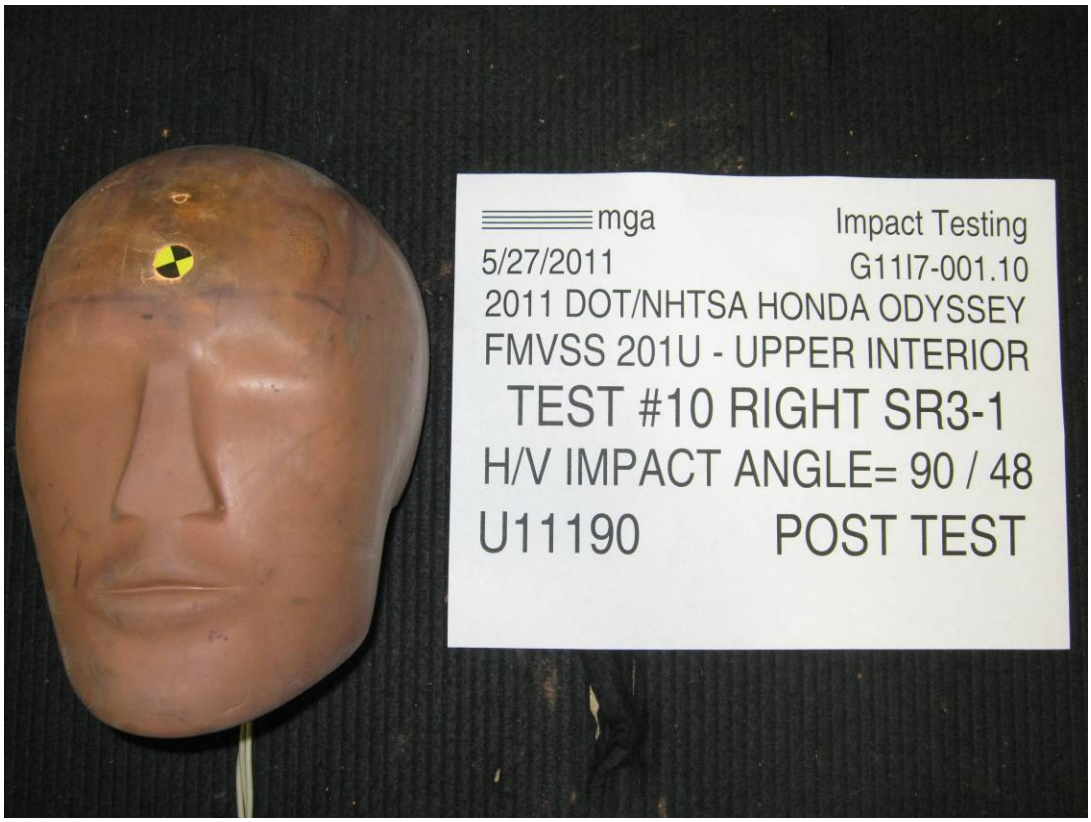

CB5301
U11190
RIGHT SR3-1
H/V 90/48
mga
Impact Testing
G11I7-001.10
5/27/2011
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #10 RIGHT SR3-1
H/V IMPACT ANGLE= 90 / 48
U11190
PRE TEST


mga
Impact Testing
G11I7-001.10
5/27/2011
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #10 RIGHT SR3-1
H/V IMPACT ANGLE= 90 / 48
U11190
PRE TEST


CB5301
U11190
RIGHT SR3-1
H/V 90/48
mga
Impact Testing
5/27/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #10 RIGHT SR3-1
H/V IMPACT ANGLE= 90 / 48
U11190
POST TEST


CB5301
U11190
RIGHT SR3-1
H/V 90/48
mga
Impact Testing
5/27/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #10 RIGHT SR3-1
H/V IMPACT ANGLE= 90 / 48
U11190
POST TEST


SR3-1
90
SR3-1


mga
Impact Testing
5/27/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #10 RIGHT SR3-1
H/V IMPACT ANGLE= 90 / 48
U11190
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G11I7-001.10 VEHICLE YR/MAKE/MODEL:2011/DOT/NHTSA/Honda Odyssey

GENERAL TEST PARAMETERS:

Test Number:#10

Target (Vehicle Side): SR3-1Right

Temperature:19.9C

MGA Test Reference No.:U11190

Humidity:53.7%

Approach Horizontal Angles:90º

Time of Test:10:03:23 AM

Approach Vertical Angles:48º

FMH Serial No:[035]

Additional Description:

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
292	166	15.5	18.8	12	4 Left

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35919	-95.8	1.07	1.07
Y	6	J22664	94.2	0.85	0.85
Z	7	J35924	92.8	0.94	0.94

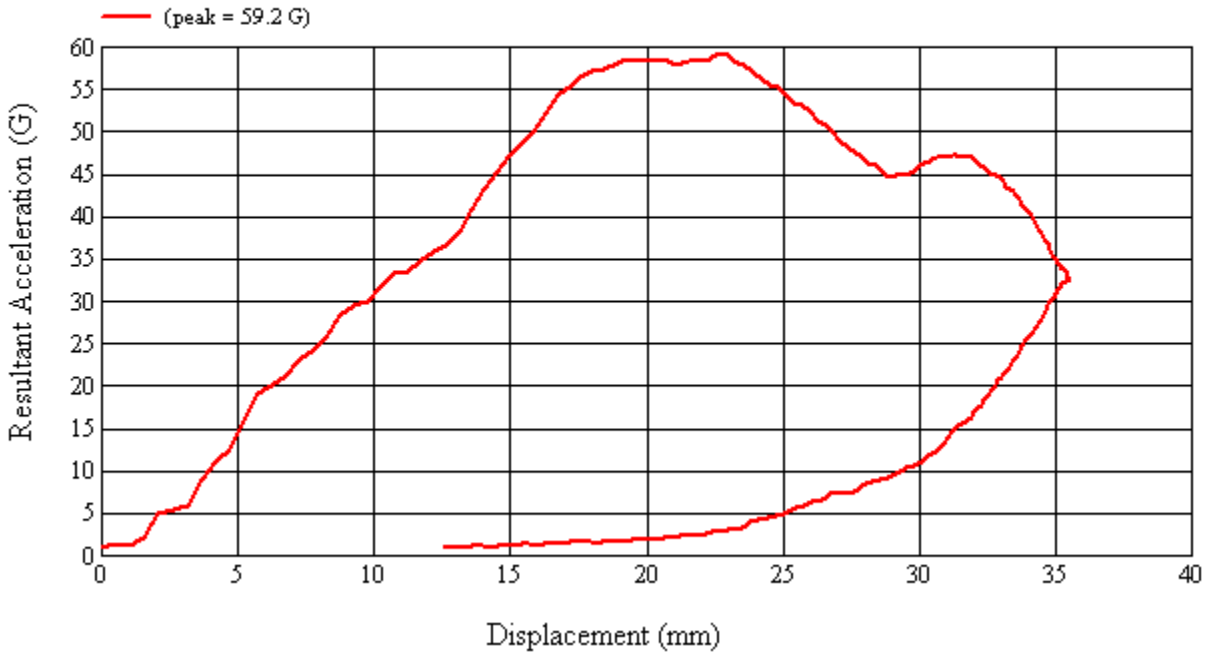
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

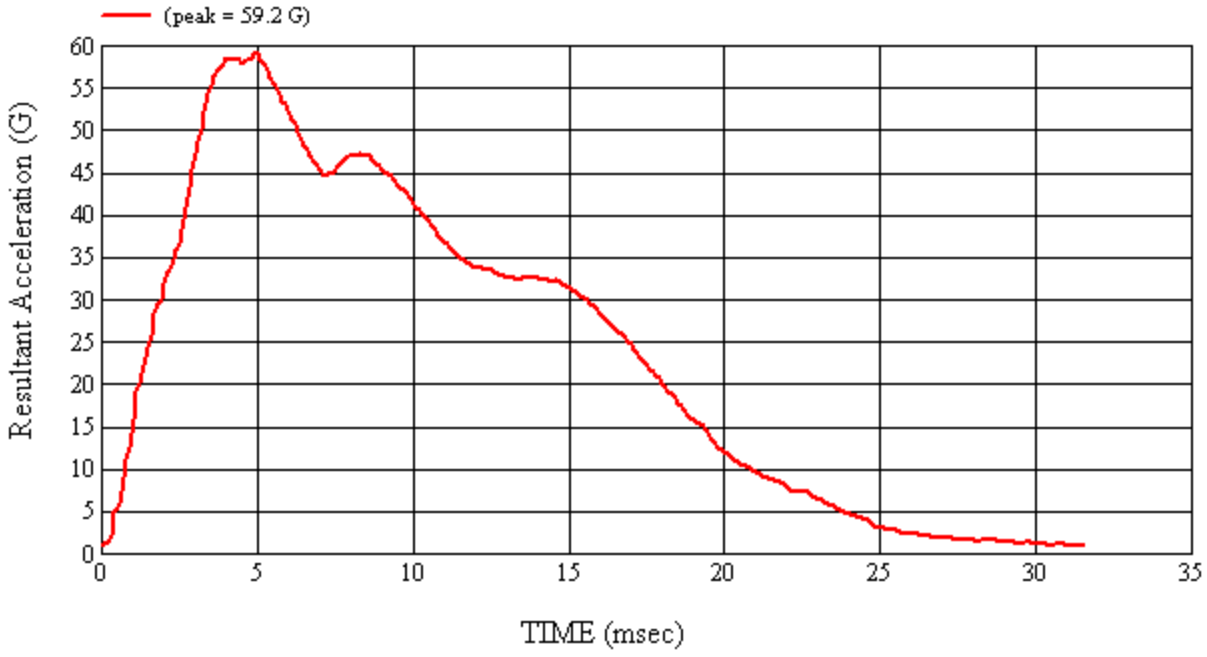
No visible damage

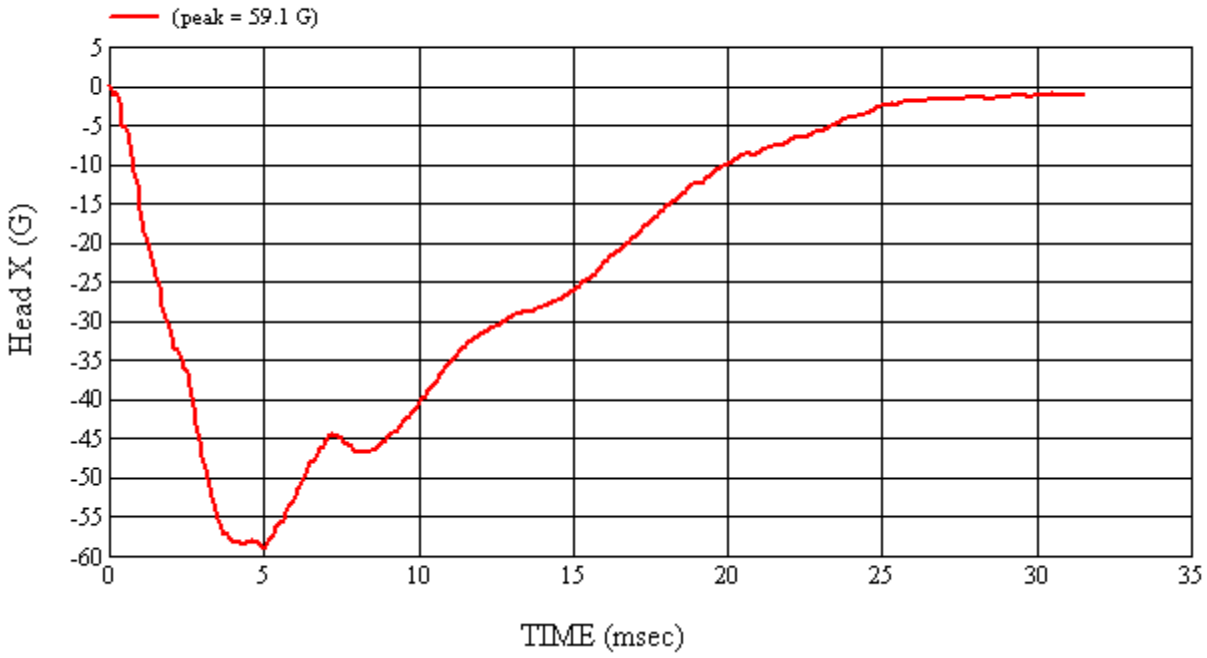
Recorded By: _____ Approved By*: _____ Date: 5/27/2011

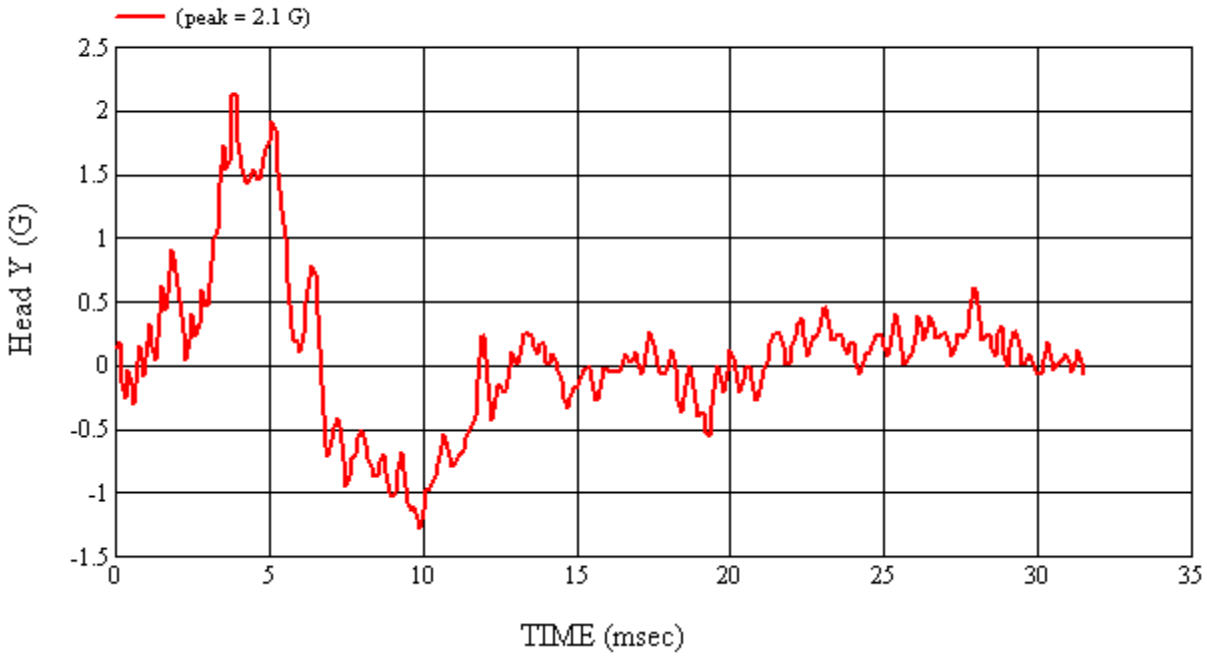
*Only necessary for NHTSA (Government) Compliance testing.

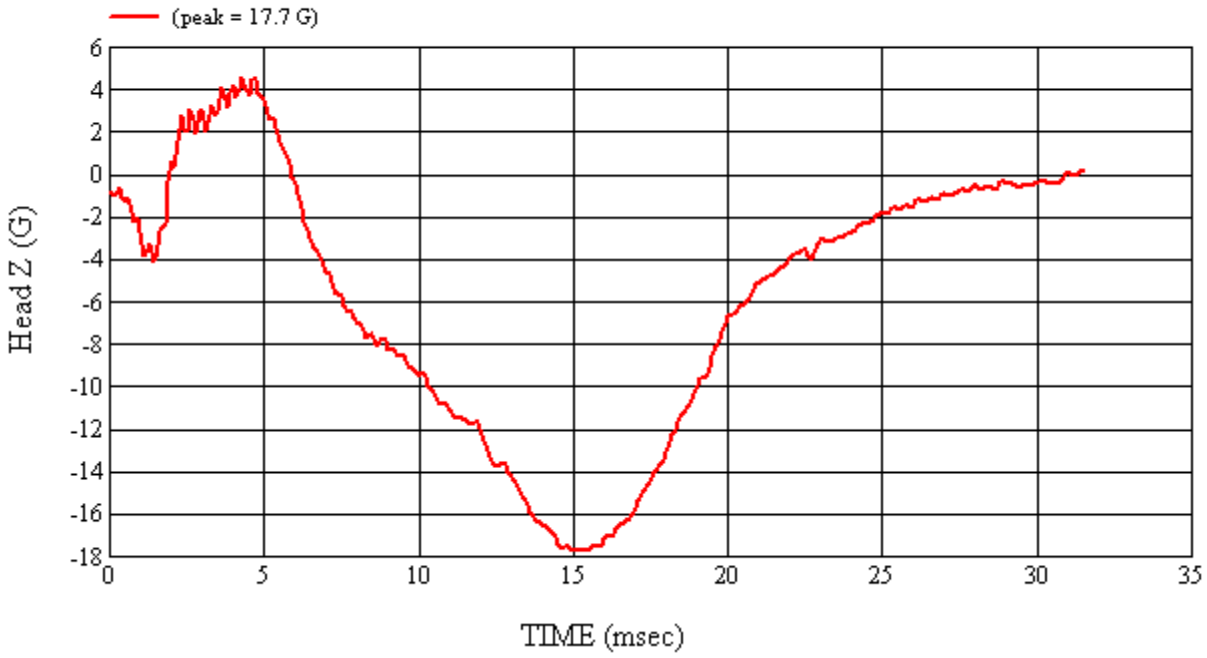
MGA Test #: U11190 Target Location: SR3-1, Right Side Test Date: 5/27/2011

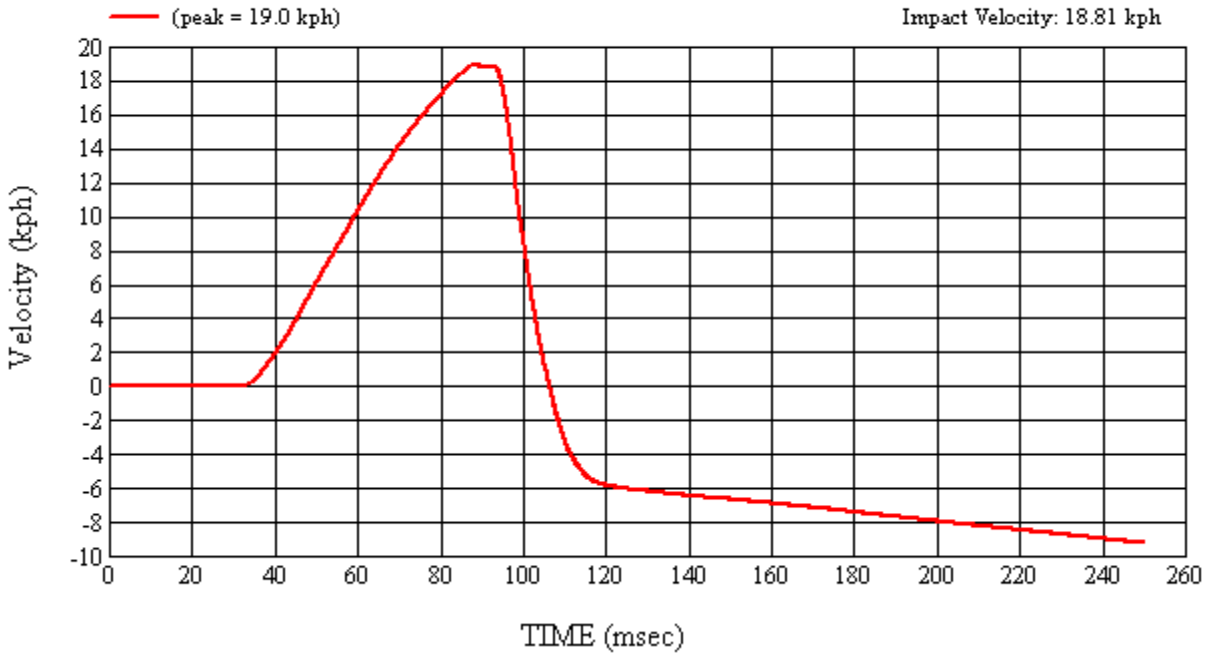


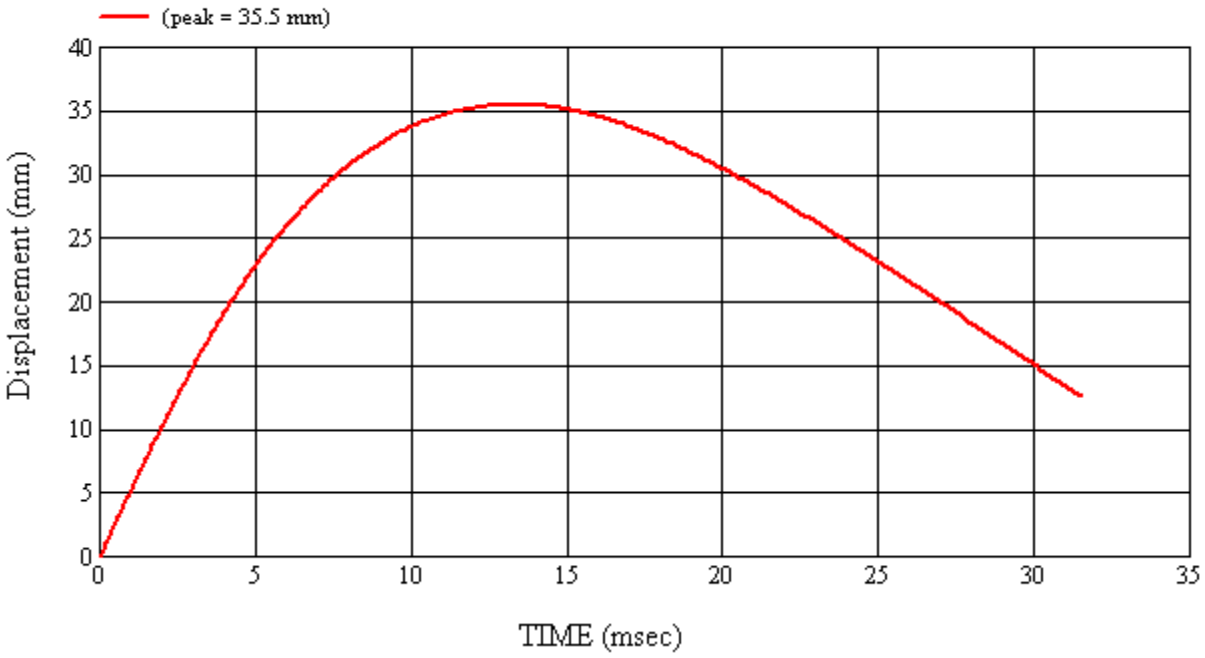



(peak = 59.1 G)
Head X (G)
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
-55
-60
0
5
10
15
20
25
30
35
TIME (msec)


(peak = 2.1 G)
Head Y (G)
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
0
5
10
15
20
25
30
35
TIME (msec)


(peak = 17.7 G)
Head Z (G)
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
0
5
10
15
20
25
30
35
TIME (msec)


(peak = 19.0 kph)
Impact Velocity: 18.81 kph
Velocity (kph)
20
18
16
14
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)


(peak = 35.5 mm)
Displacement (mm)
0
5
10
15
20
25
30
35
40
TIME (msec)

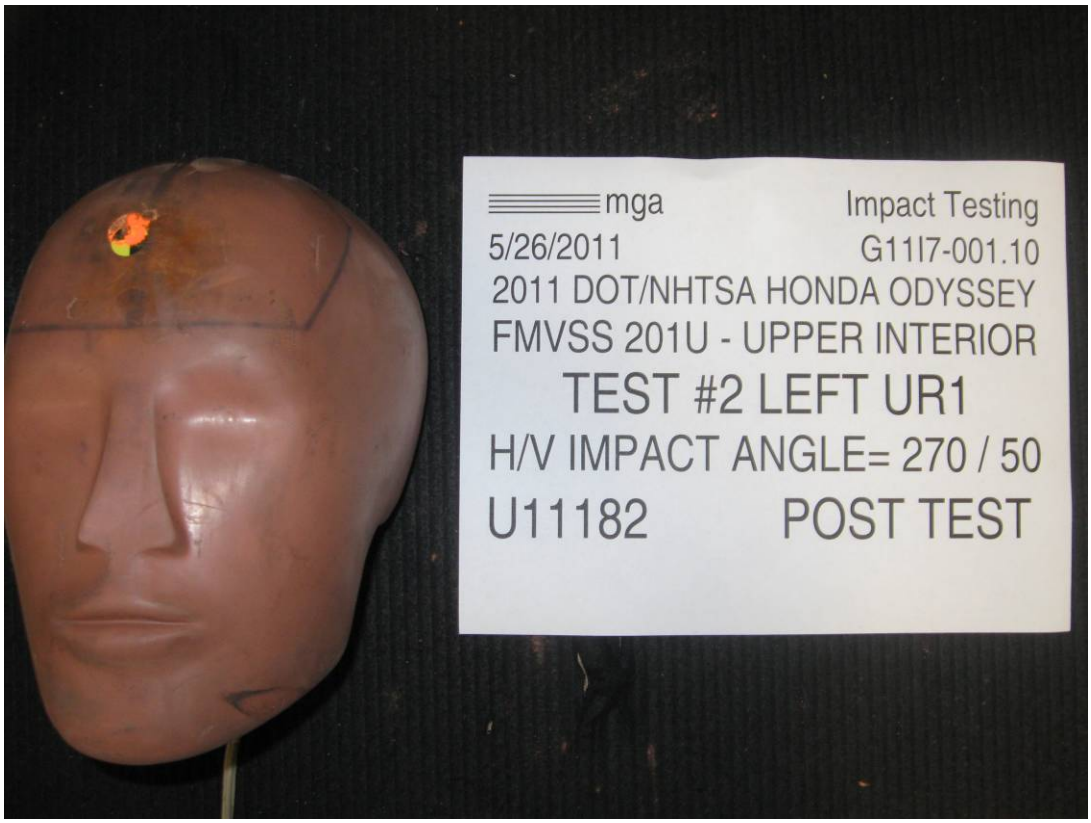

CB5301
U11182
LEFT UR1
H/V 270/50
mga
Impact Testing
G11I7-001.10
5/26/2011
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #2 LEFT UR1
H/V IMPACT ANGLE= 270 / 50
U11182
PRE TEST


mga
Impact Testing
G11I7-001.10
5/26/2011
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #2 LEFT UR1
H/V IMPACT ANGLE= 270 / 50
U11182
PRE TEST


UR1
AIR BAG WARNING
CB5301
U11182
LEFT UR1
H/V 270/50
mga
Impact Testing
G11I7-001.10
5/26/2011
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #2 LEFT UR1
H/V IMPACT ANGLE= 270 / 50
U11182
POST TEST


UR3
UR1
mga
Impact Testing
G11I7-001.10
5/26/2011
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #2 LEFT UR1
H/V IMPACT ANGLE= 270 / 50
U11182
POST TEST
CB5301
U11182
LEFT UR1
H/V 270/50


UR1
SR1
AP1


mga
Impact Testing
5/26/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #2 LEFT UR1
H/V IMPACT ANGLE= 270 / 50
U11182
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G11I7-001.10 VEHICLE YR/MAKE/MODEL:2011/DOT/NHTSA/Honda Odyssey

GENERAL TEST PARAMETERS:

Target (Vehicle Side): UR1Left

MGA Test Reference No.:U11182

Approach Horizontal Angles:270º

Approach Vertical Angles:50º

Additional Description:@ SR1

Test Number:#2

Temperature:22.1C

Humidity:66.4%

Time of Test:10:35:15 AM

FMH Serial No:[037]

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
526	476	10.2	23.6	31	6 Right

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J32177	-113.7	1.07	1.07
Y	6	J14103	93.9	0.85	0.85
Z	7	J35800	97.8	0.94	0.94

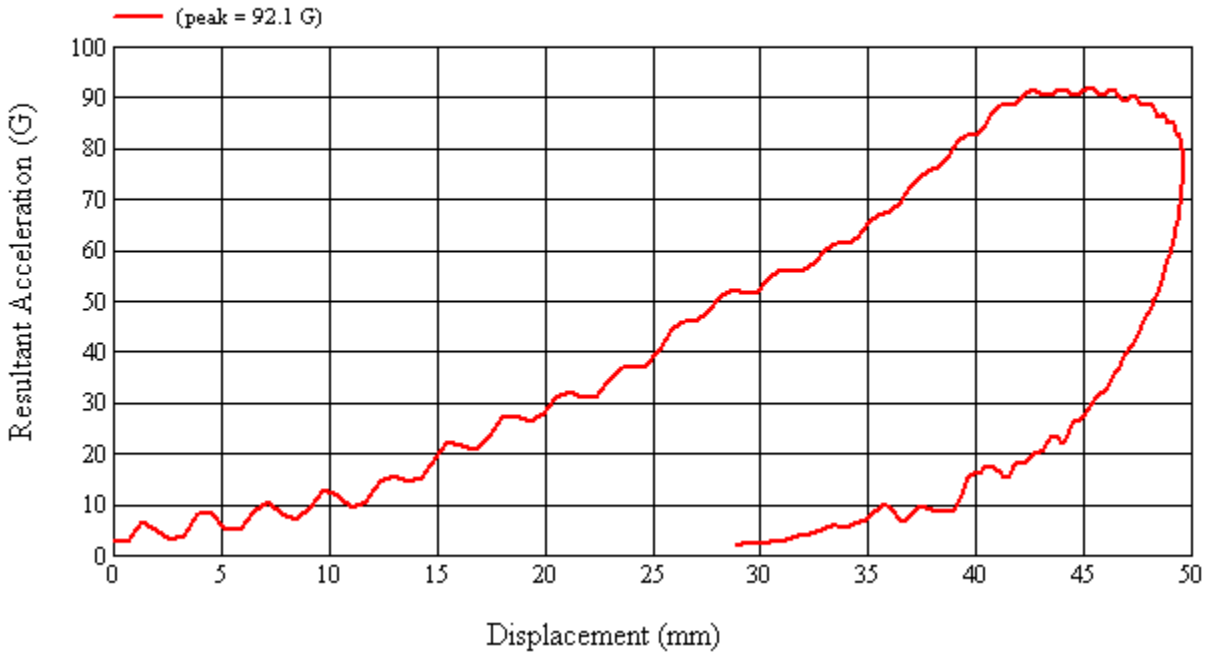
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

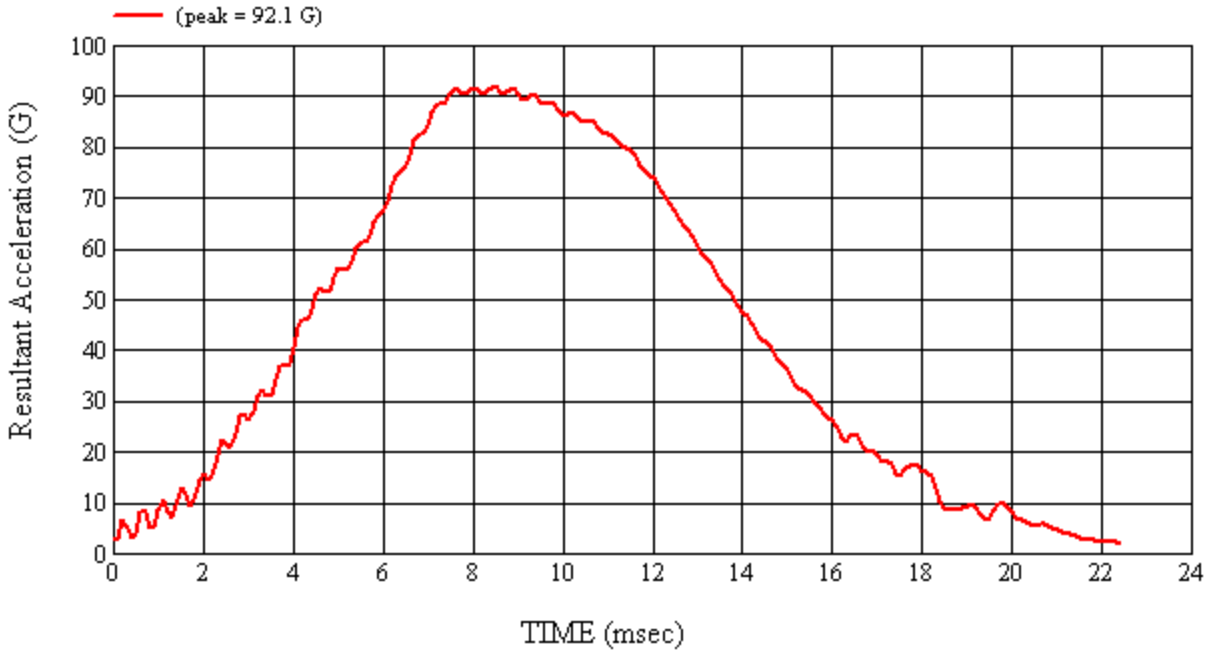
Dislodged headliner, headliner deformation

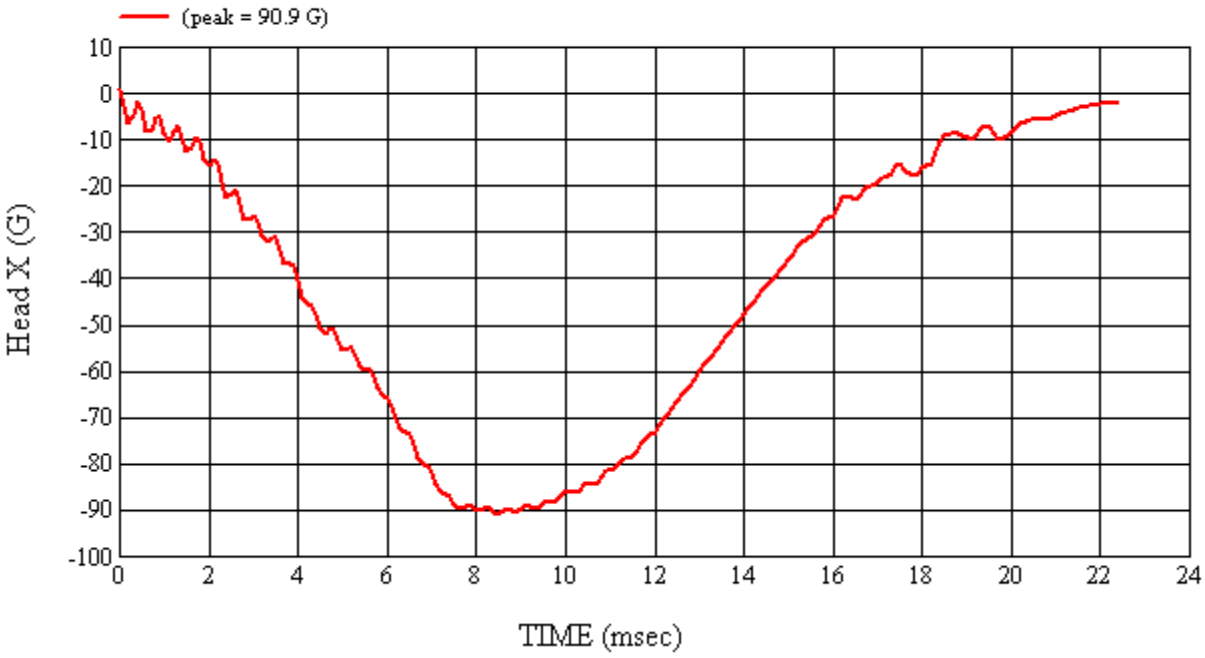
Recorded By: _____ Approved By*: _____ Date: 5/26/2011

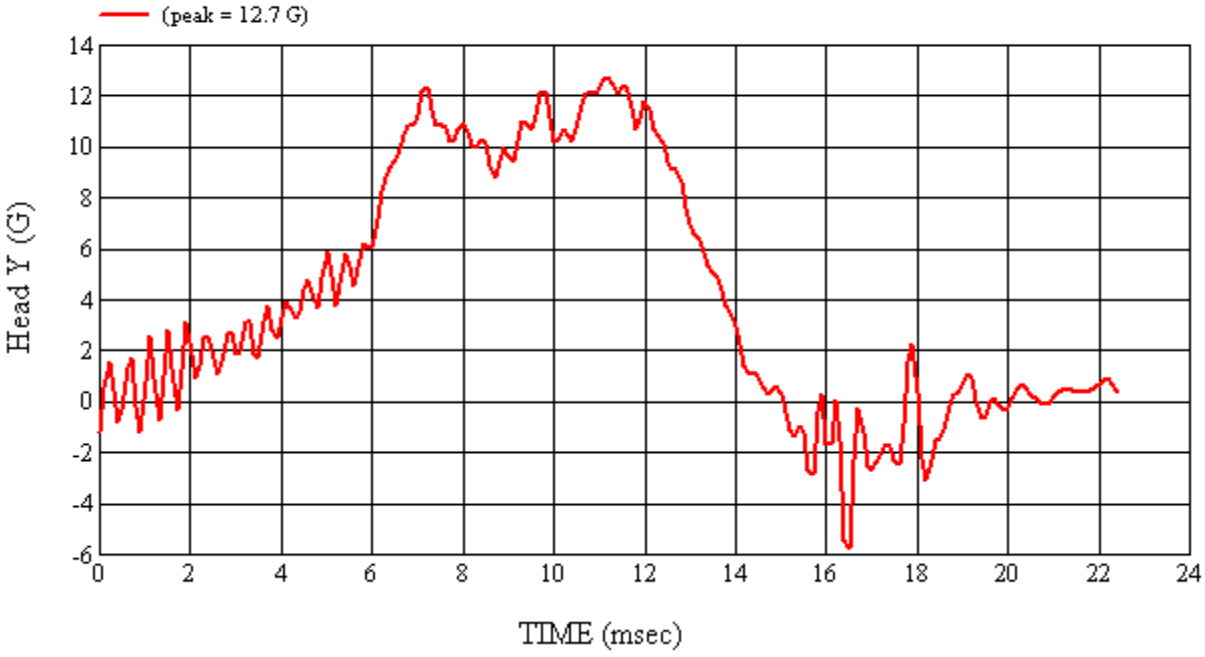
*Only necessary for NHTSA (Government) Compliance testing.

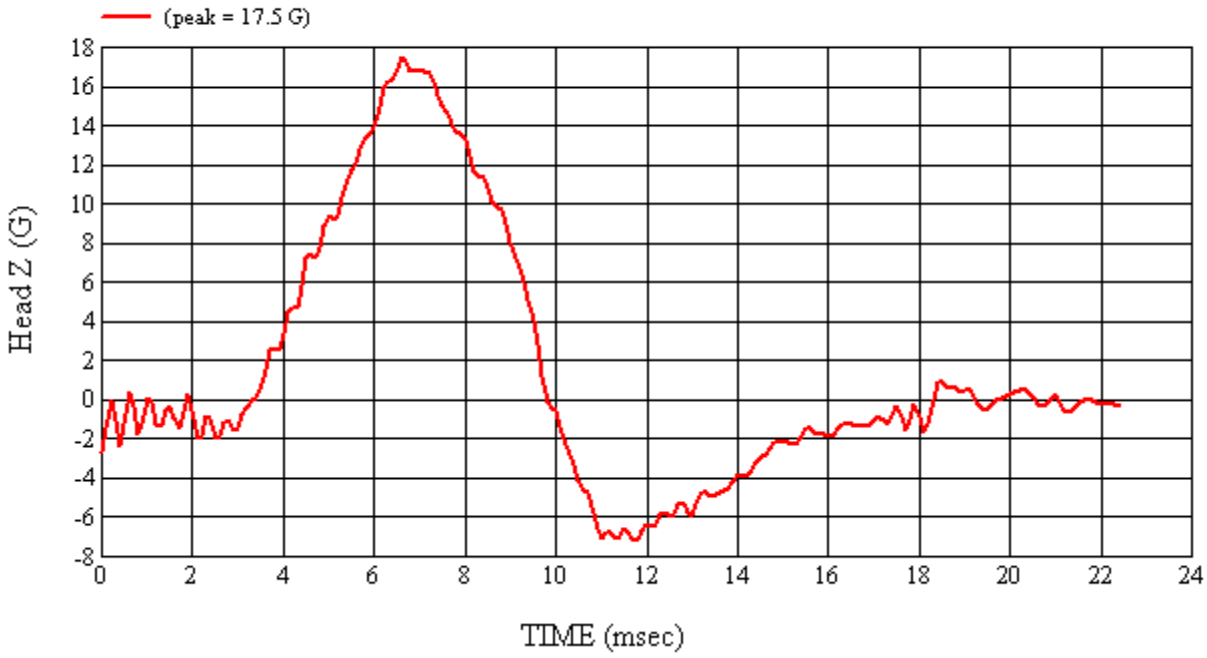
MGA Test #: U11182 Target Location: UR1, Left Side Test Date: 5/26/2011

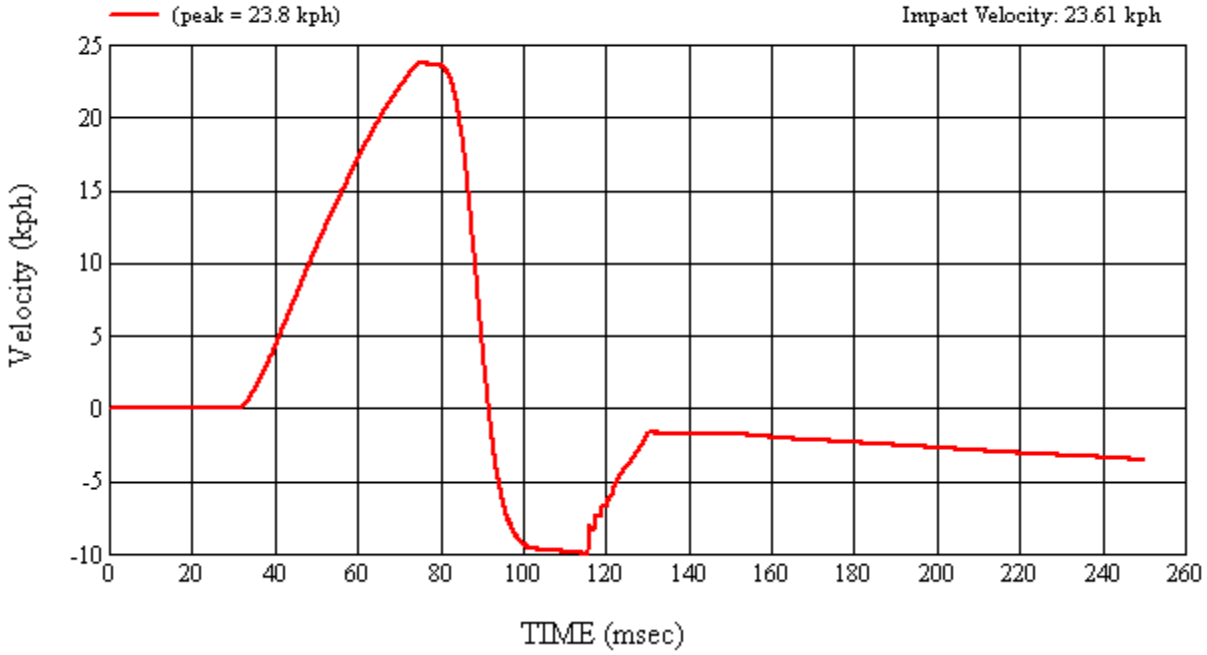


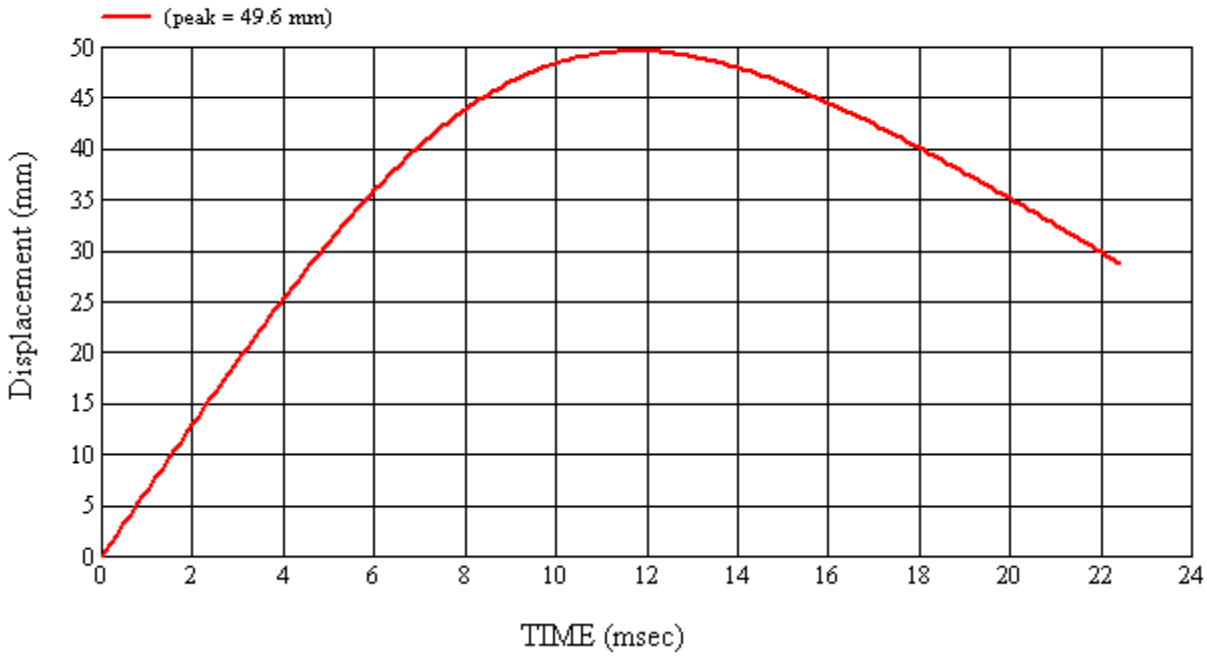



(peak = 90.9 G)
Head X (G)
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)

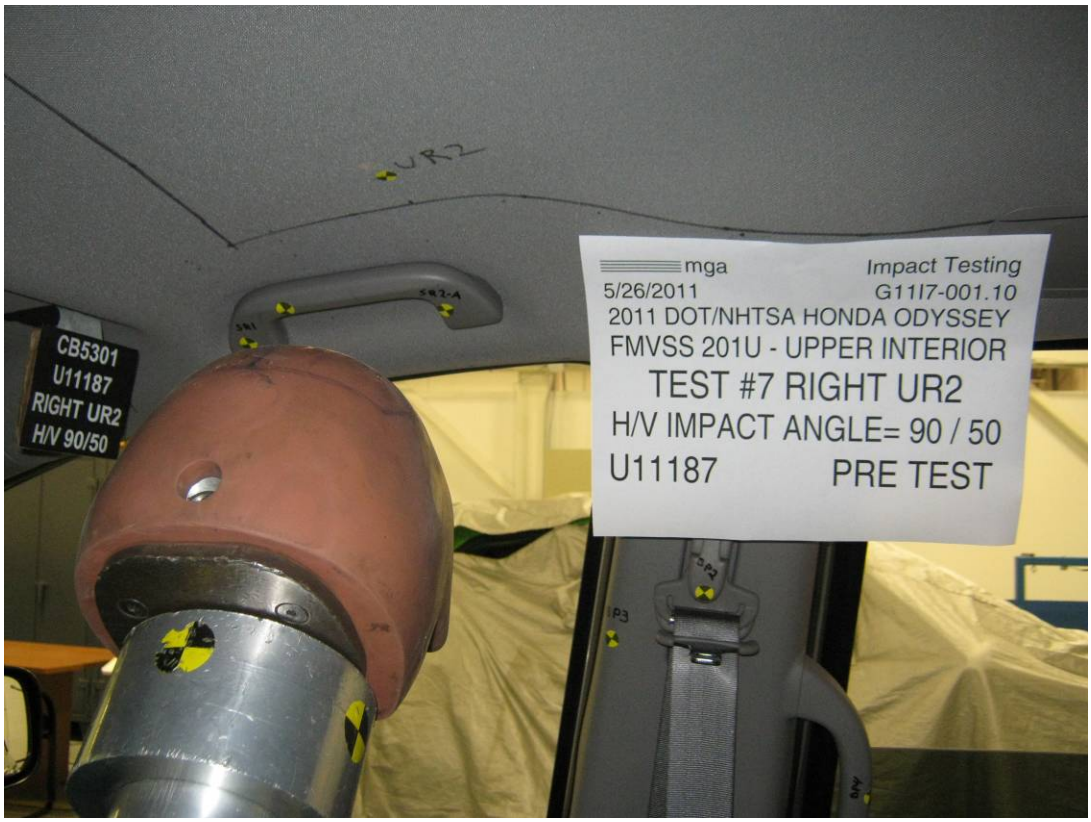

(peak = 12.7 G)
Head Y (G)
14
12
10
8
6
4
2
0
-2
-4
-6
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)


(peak = 17.5 G)
Head Z (G)
18
16
14
12
10
8
6
4
2
0
-2
-4
-6
-8
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)


(peak = 23.8 kph)
Impact Velocity: 23.61 kph
Velocity (kph)
25
20
15
10
5
0
-5
-10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)

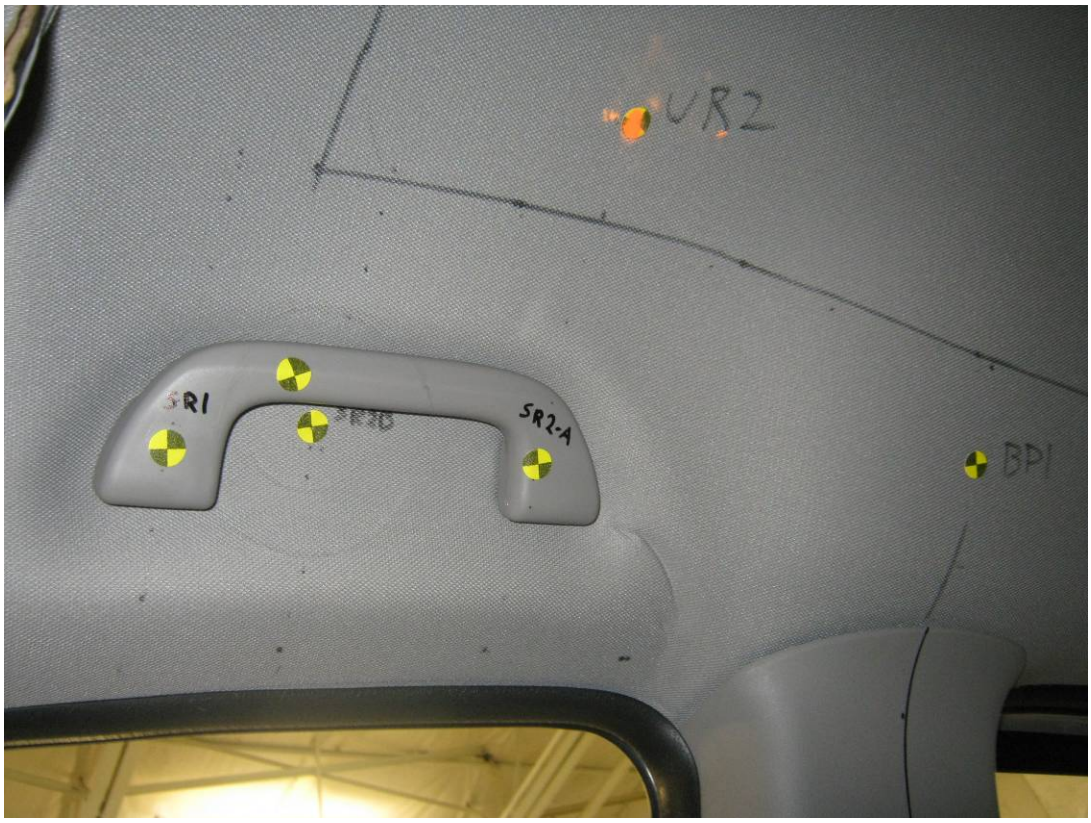

(peak = 49.6 mm)
Displacement (mm)
0
5
10
15
20
25
30
35
40
45
50
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)


CB5301
U11187
RIGHT UR2
H/V 90/50
mga
Impact Testing
5/26/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #7 RIGHT UR2
H/V IMPACT ANGLE= 90 / 50
U11187
PRE TEST


CB5301
U11187
RIGHT UR2
H/V 90/50
mga
Impact Testing
5/26/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #7 RIGHT UR2
H/V IMPACT ANGLE= 90 / 50
U11187
PRE TEST


CB5301
U11187
RIGHT UR2
H/V 90/50
mga
5/26/2011
Impact Testing
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #7 RIGHT UR2
H/V IMPACT ANGLE= 90 / 50
U11187
POST TEST


mga
5/26/2011
Impact Testing
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #7 RIGHT UR2
H/V IMPACT ANGLE= 90 / 50
U11187
POST TEST


UR2
5R1
5R2-A
BP1


mga
Impact Testing
5/26/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #7 RIGHT UR2
H/V IMPACT ANGLE= 90 / 50
U11187
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G11I7-001.10 VEHICLE YR/MAKE/MODEL:2011/DOT/NHTSA/Honda Odyssey

GENERAL TEST PARAMETERS:

Test Number:#7

Target (Vehicle Side): UR2Right

Temperature:22.5C

MGA Test Reference No.:U11187

Humidity:56.5%

Approach Horizontal Angles:90º

Time of Test:5:12:55 PM

Approach Vertical Angles:50º

FMH Serial No:[035]

Additional Description:@ SR2A

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
636	622	8.3	23.7	26	6 Left

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35919	-95.8	1.07	1.07
Y	6	J22664	94.2	0.85	0.85
Z	7	J35924	92.8	0.94	0.94

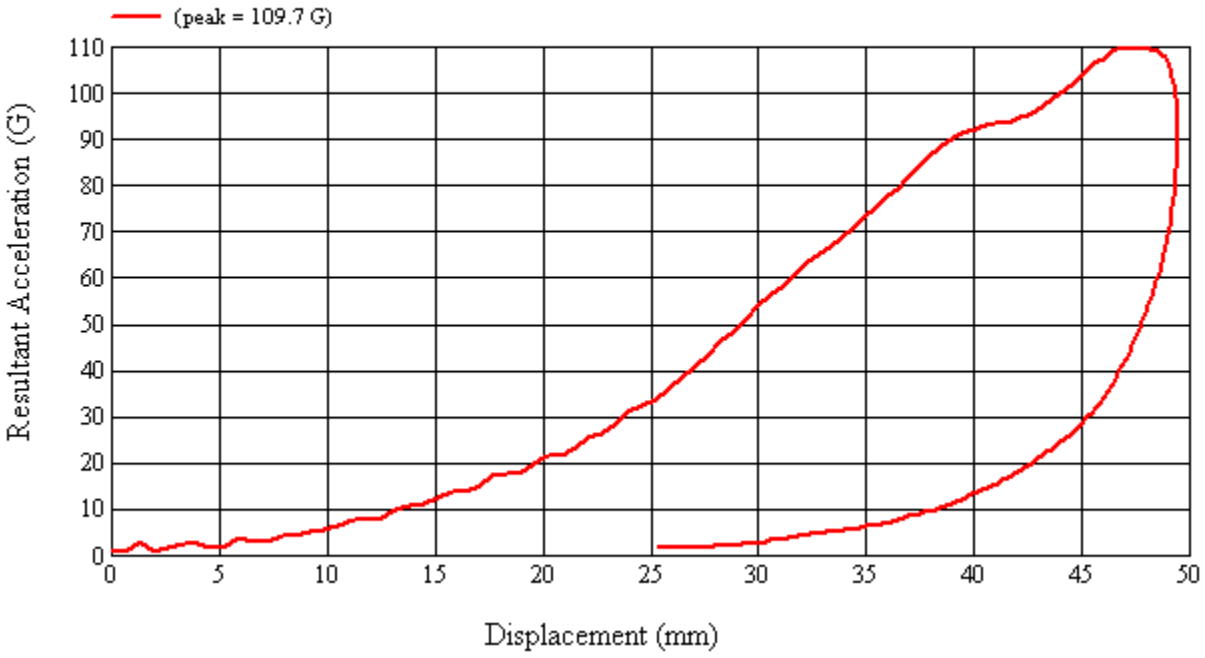
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

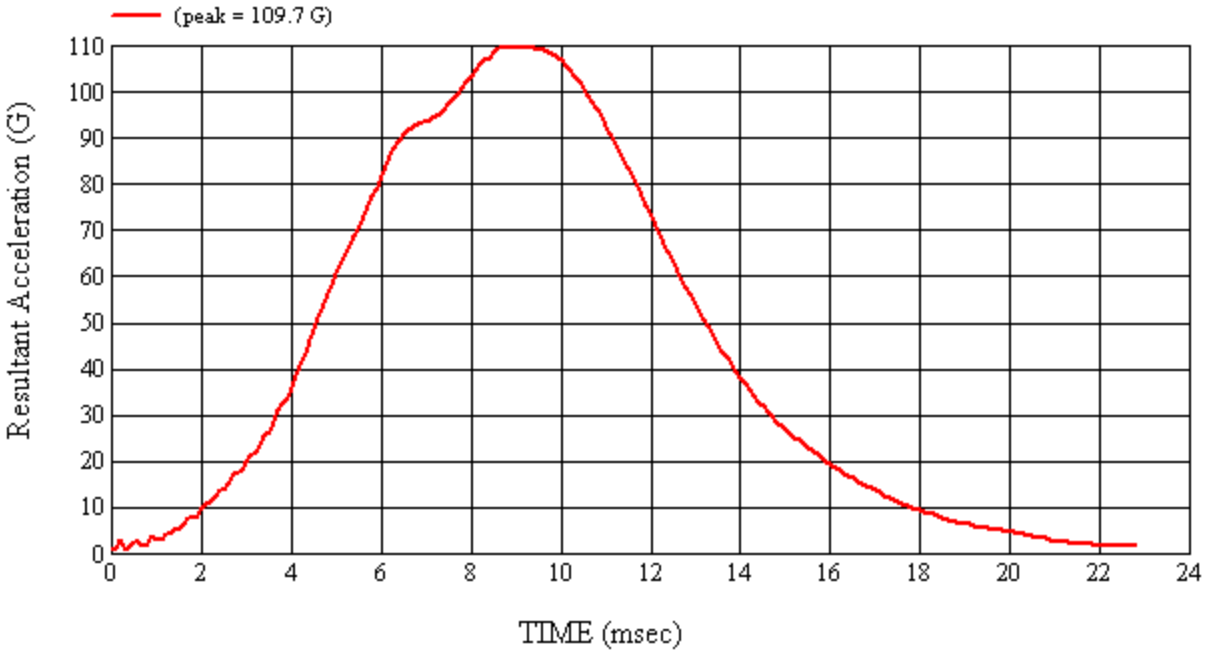
Dislodged headliner, headliner deformation

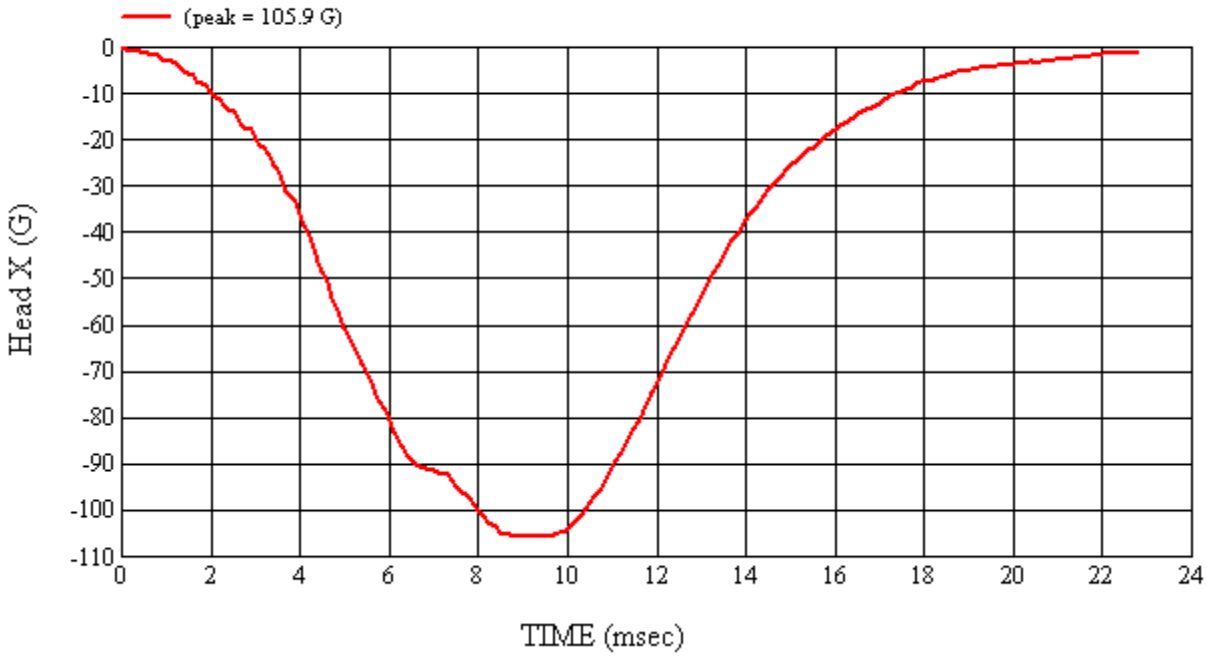
Recorded By: _____ Approved By*: _____ Date: 5/26/2011

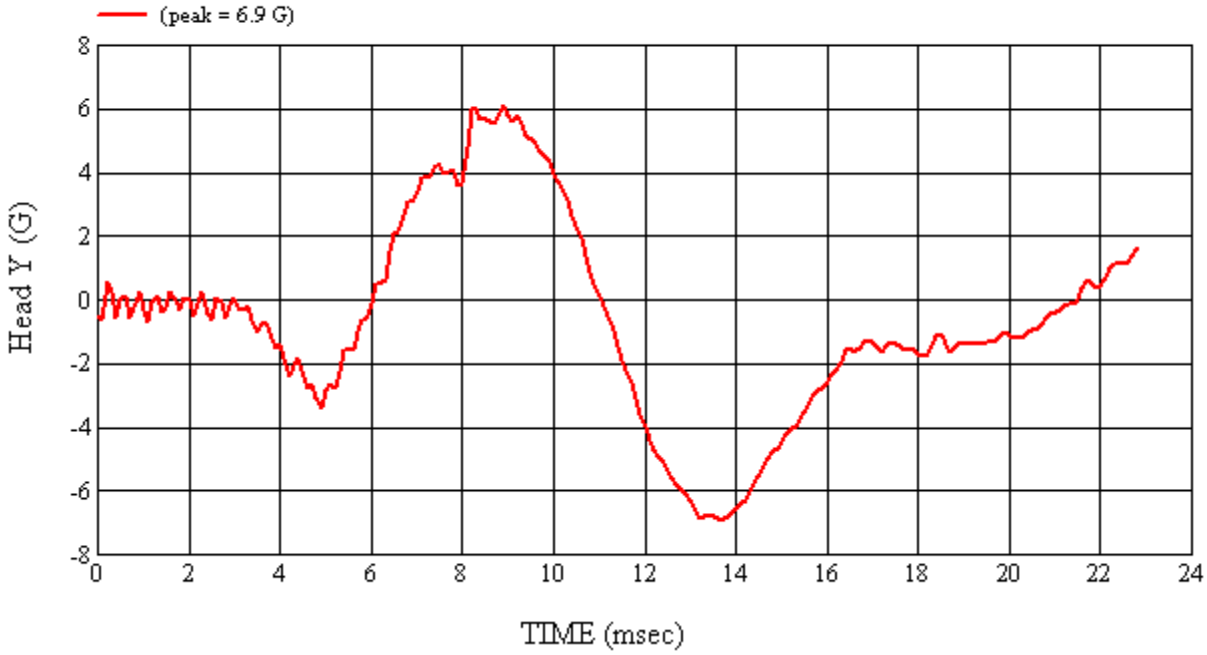
*Only necessary for NHTSA (Government) Compliance testing.

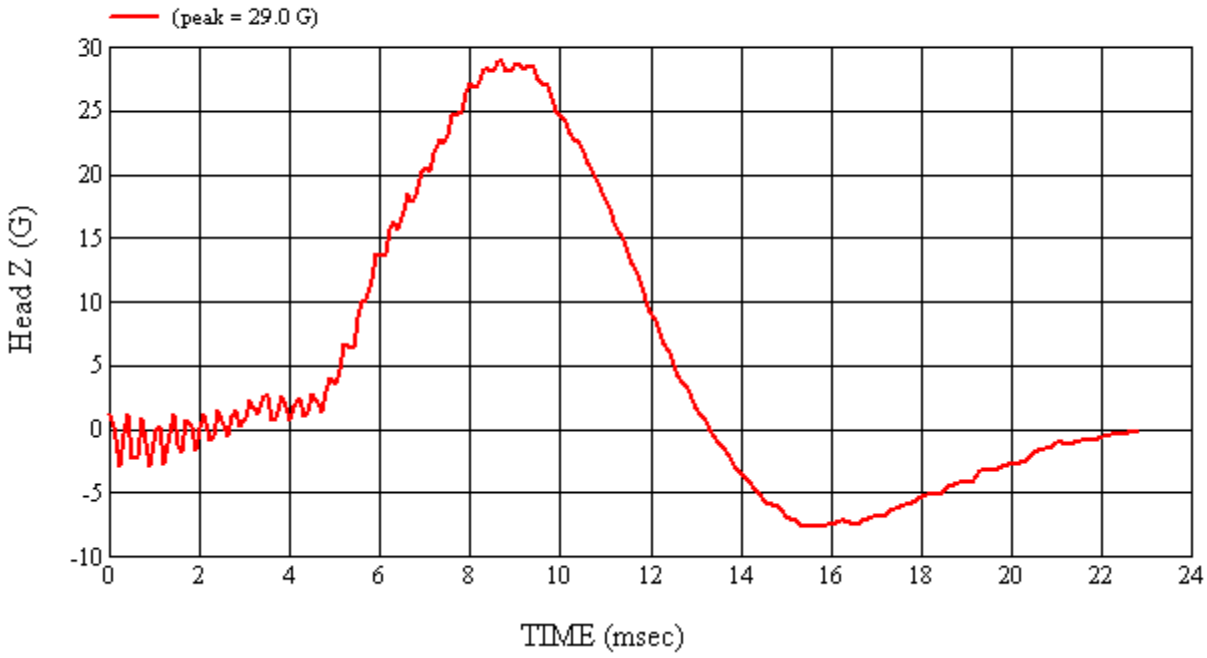
MGA Test #: U11187 Target Location: UR2, Right Side Test Date: 5/26/2011

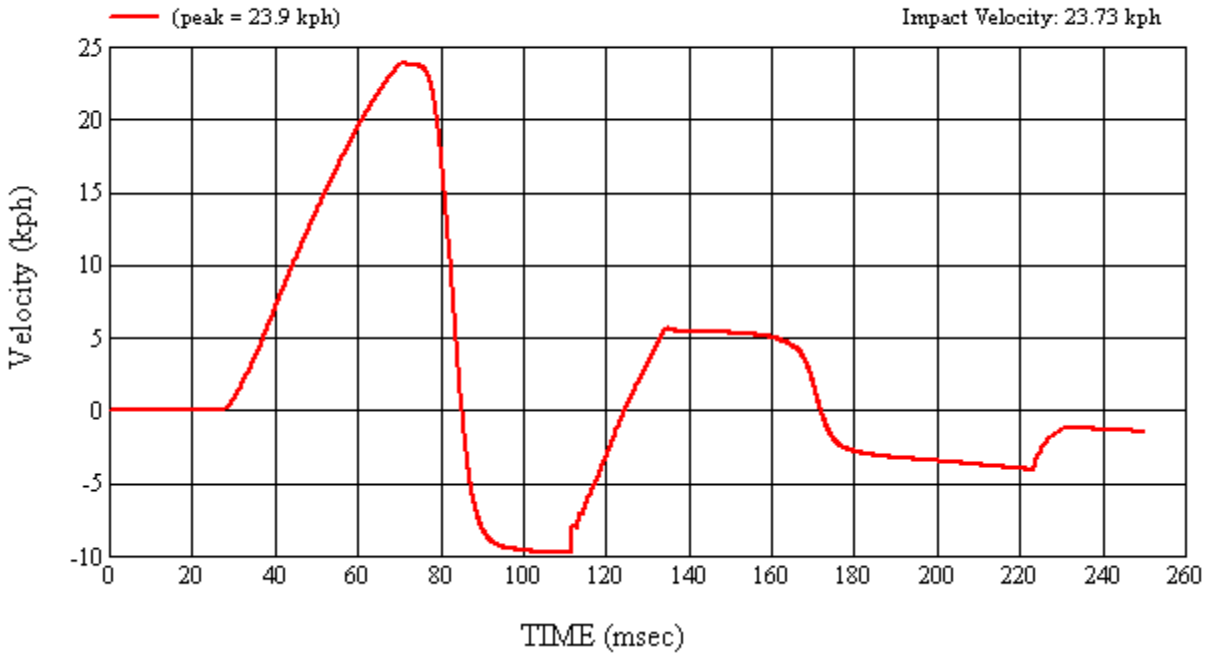


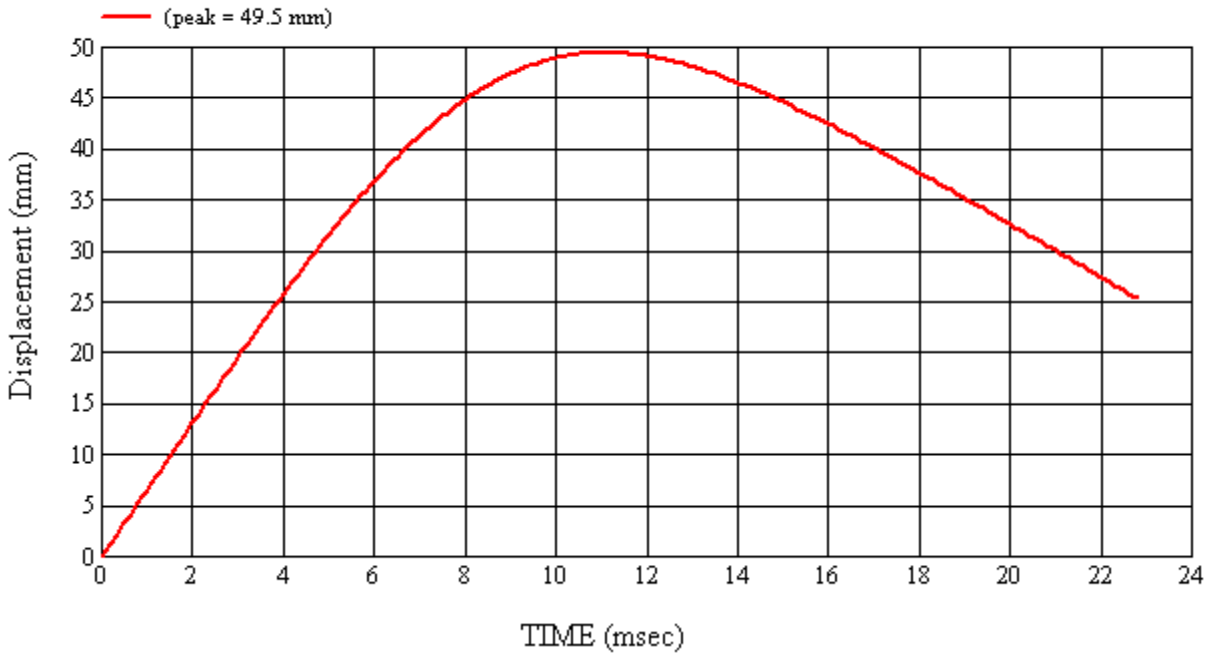



(peak = 105.9 G)
Head X (G)
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)


(peak = 6.9 G)
Head Y (G)
8
6
4
2
0
-2
-4
-6
-8
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)


(peak = 29.0 G)
Head Z (G)
30
25
20
15
10
5
0
-5
-10
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)


(peak = 23.9 kph)
Impact Velocity: 23.73 kph
Velocity (kph)
25
20
15
10
5
0
-5
-10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)

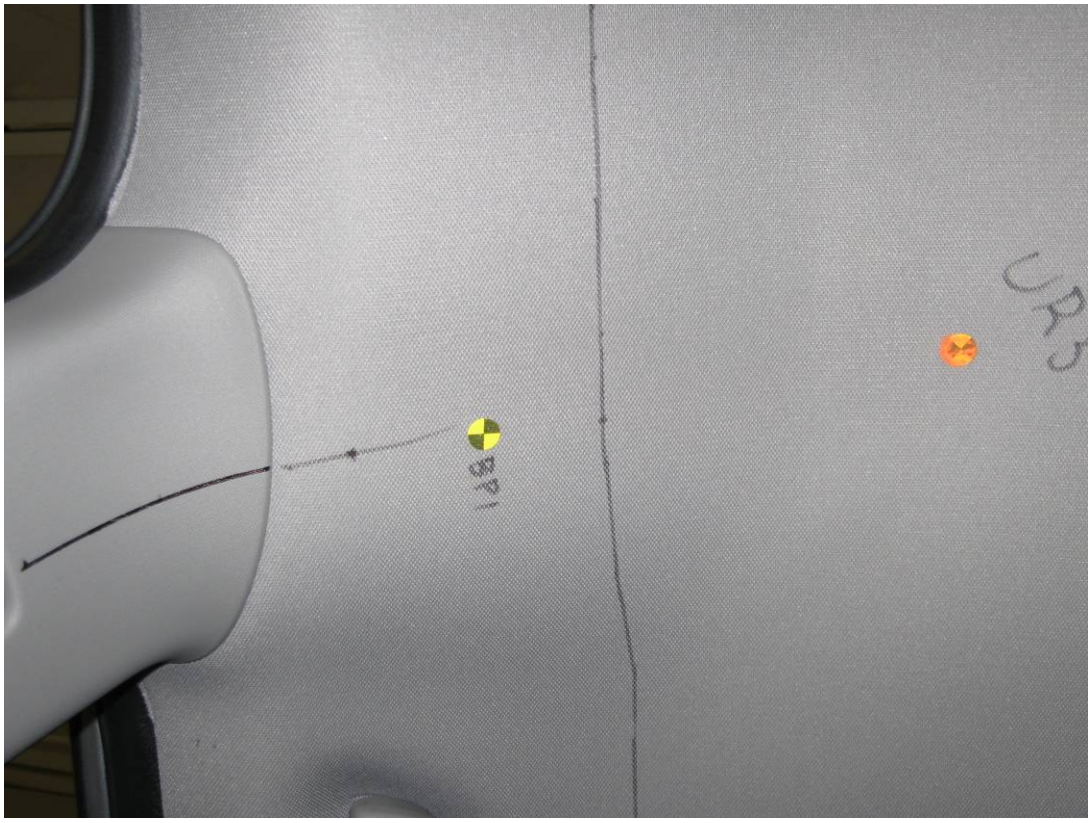

(peak = 49.5 mm)
Displacement (mm)
0
5
10
15
20
25
30
35
40
45
50
0
2
4
6
8
10
12
14
16
18
20
22
24
TIME (msec)

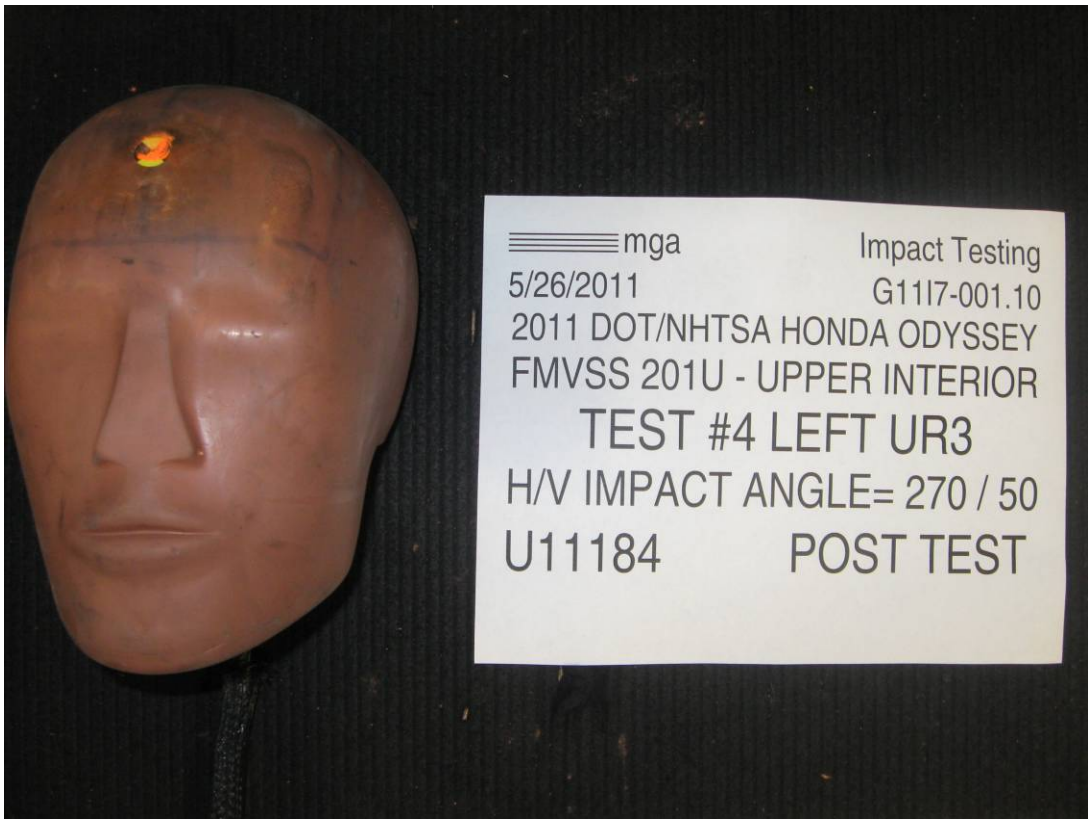

CB5301
U11184
LEFT UR3
H/V 270/50
mga
Impact Testing
5/26/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #4 LEFT UR3
H/V IMPACT ANGLE= 270 / 50
U11184
PRE TEST


mga
Impact Testing
5/26/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #4 LEFT UR3
H/V IMPACT ANGLE= 270 / 50
U11184
PRE TEST


UR3
mga
Impact Testing
G11I7-001.10
5/26/2011
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #4 LEFT UR3
H/V IMPACT ANGLE= 270 / 50
U11184
POST TEST


UR3
mga
Impact Testing
G11I7-001.10
5/26/2011
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #4 LEFT UR3
H/V IMPACT ANGLE= 270 / 50
U11184
POST TEST




mga
Impact Testing
5/26/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #4 LEFT UR3
H/V IMPACT ANGLE= 270 / 50
U11184
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G11I7-001.10 VEHICLE YR/MAKE/MODEL:2011/DOT/NHTSA/Honda Odyssey

GENERAL TEST PARAMETERS:

Test Number:#4

Target (Vehicle Side): UR3Left

Temperature:22.6C

MGA Test Reference No.:U11184

Humidity:68.9%

Approach Horizontal Angles:270º

Time of Test:1:12:01 PM

Approach Vertical Angles:50º

FMH Serial No:[035]

Additional Description:@ BP

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
624	606	7.4	23.7	33	0

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35919	-95.8	1.07	1.07
Y	6	J22664	94.2	0.85	0.85
Z	7	J35924	92.8	0.94	0.94

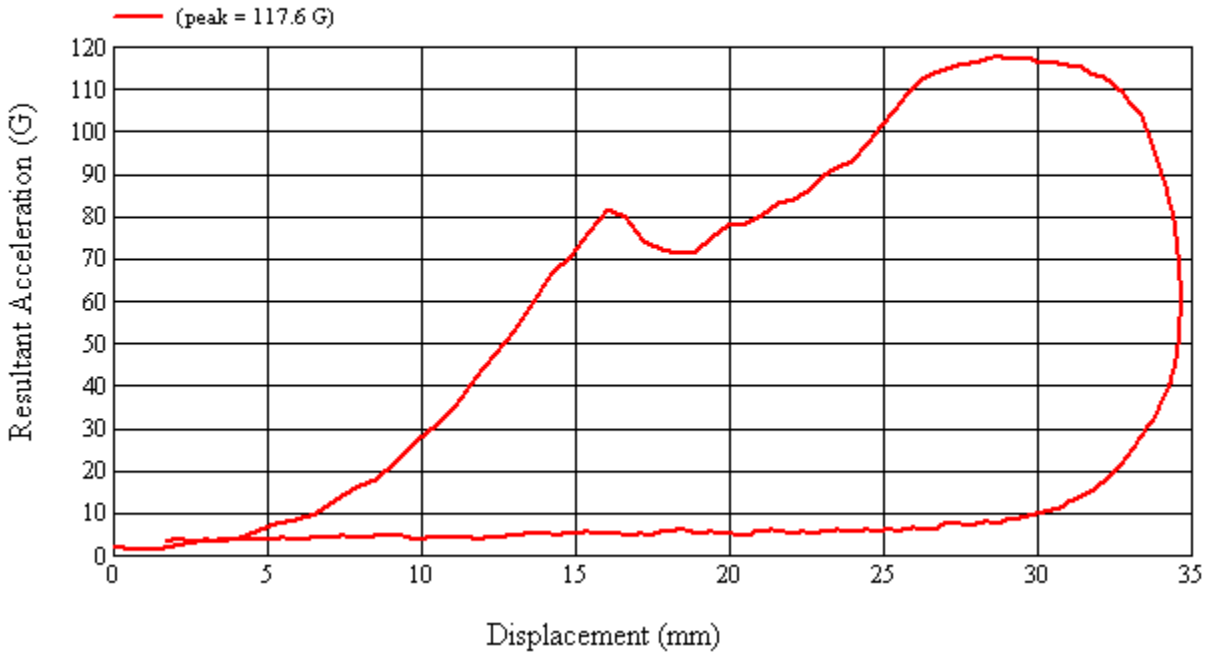
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

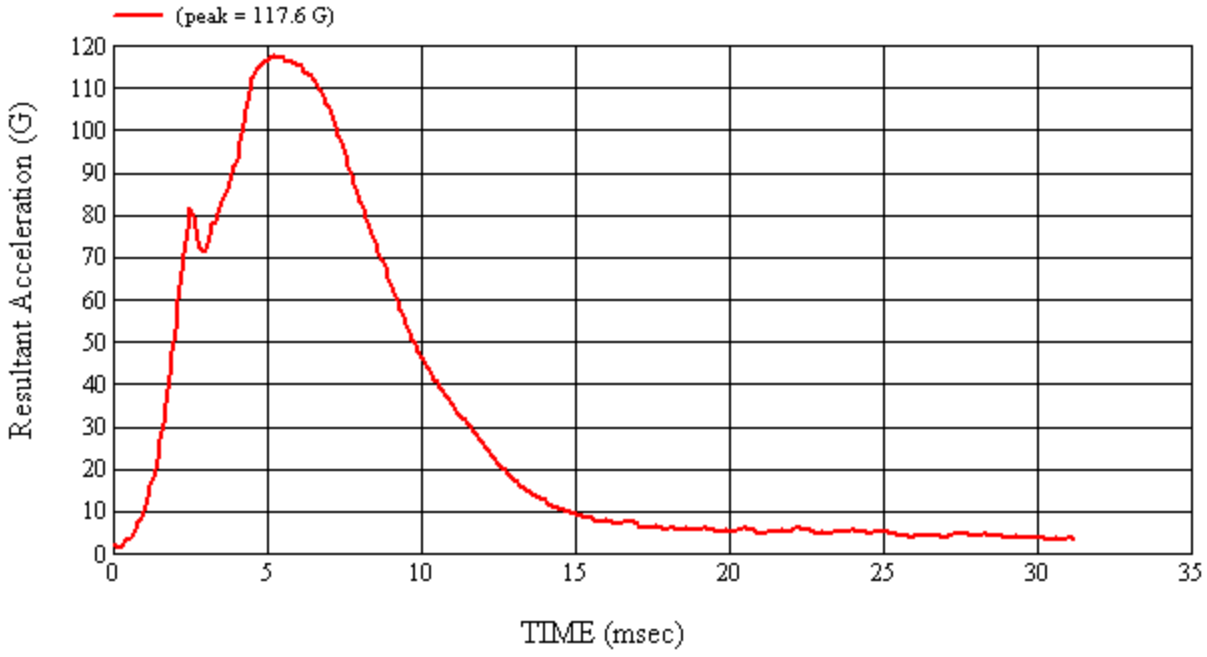
Dislodged headliner

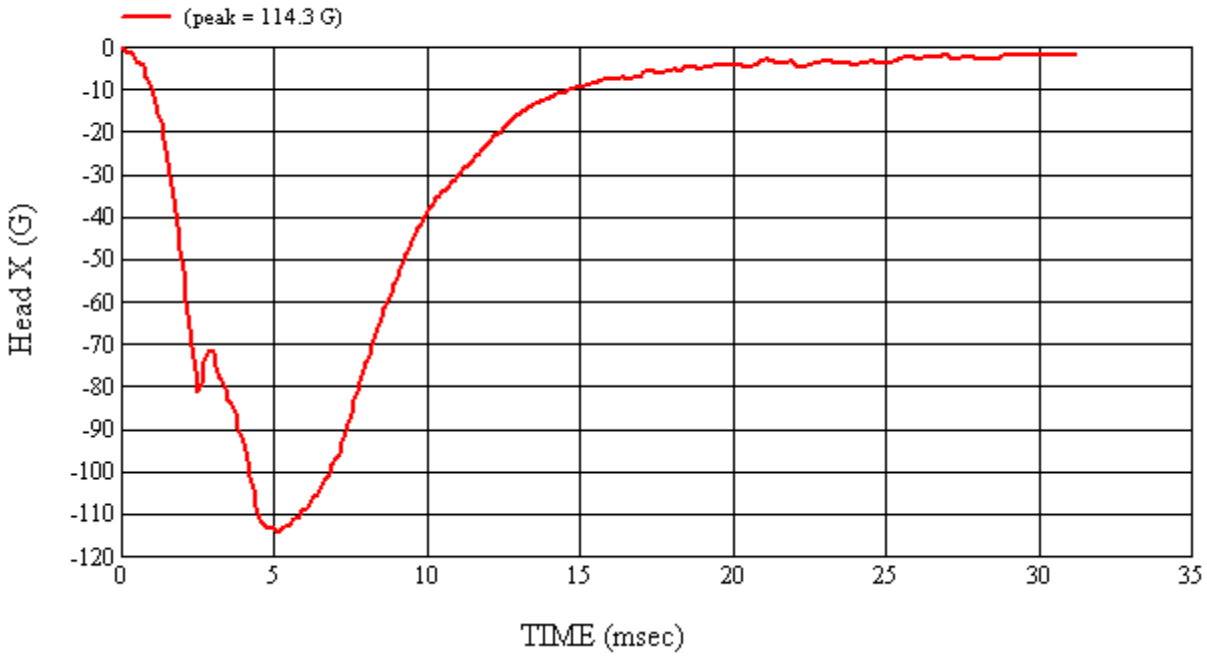
Recorded By: _____ Approved By*: _____ Date: 5/26/2011

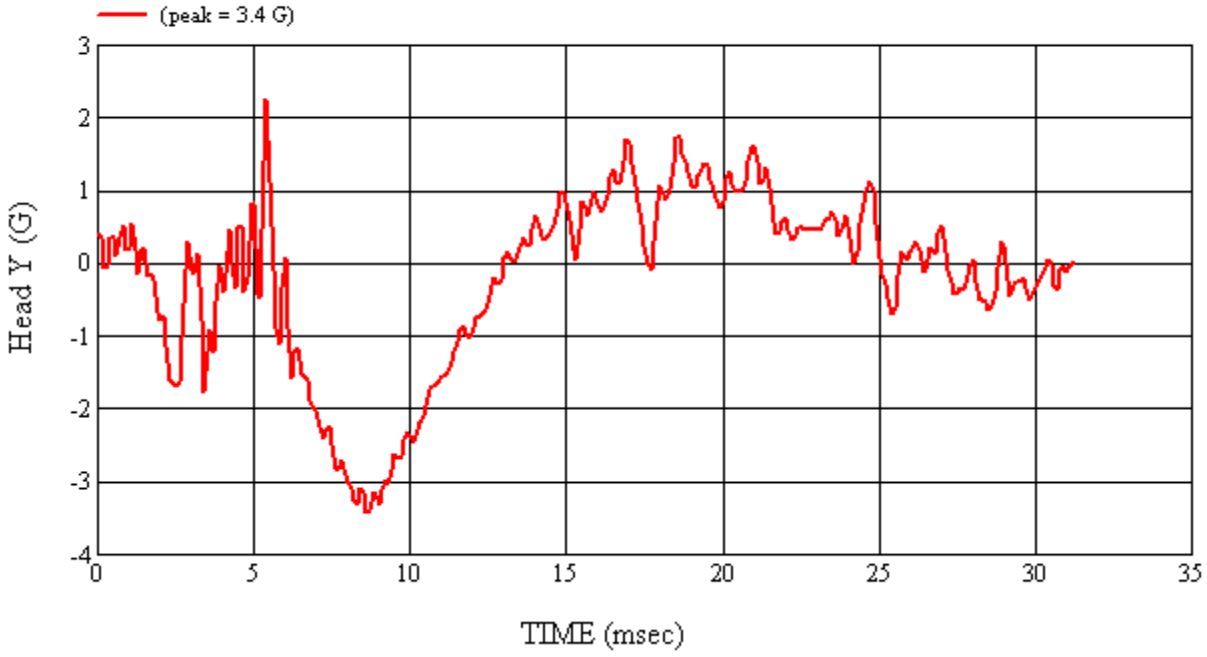
*Only necessary for NHTSA (Government) Compliance testing.

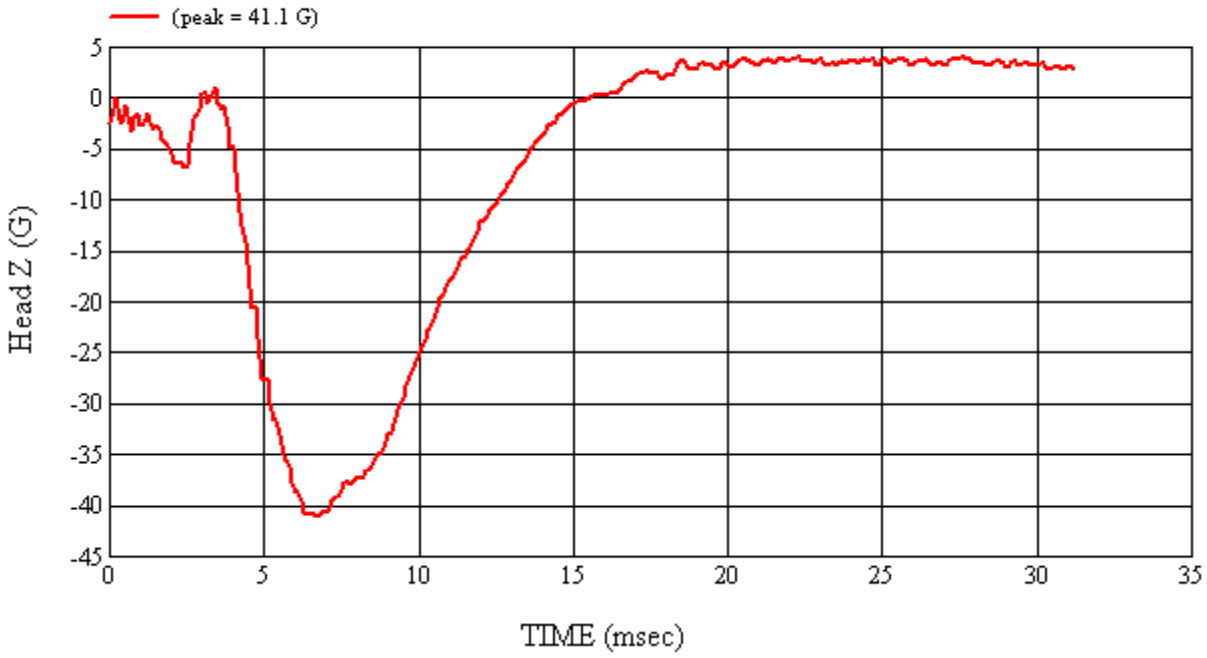
MGA Test #: U11184 Target Location: UR3, Left Side Test Date: 5/26/2011

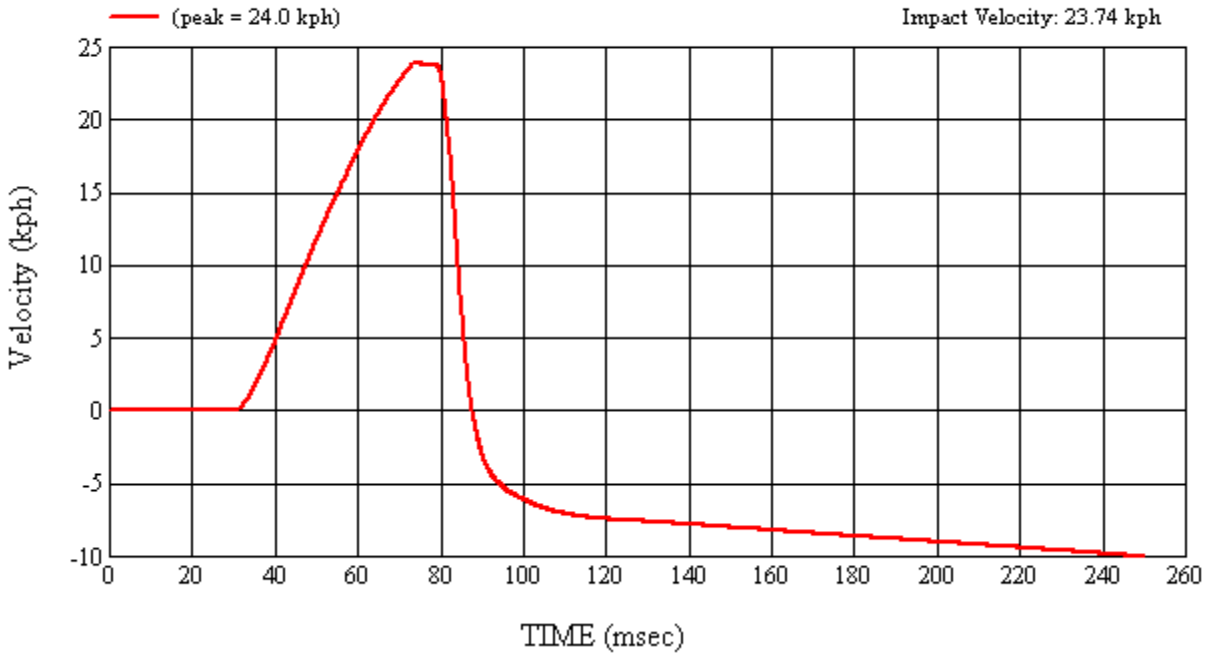


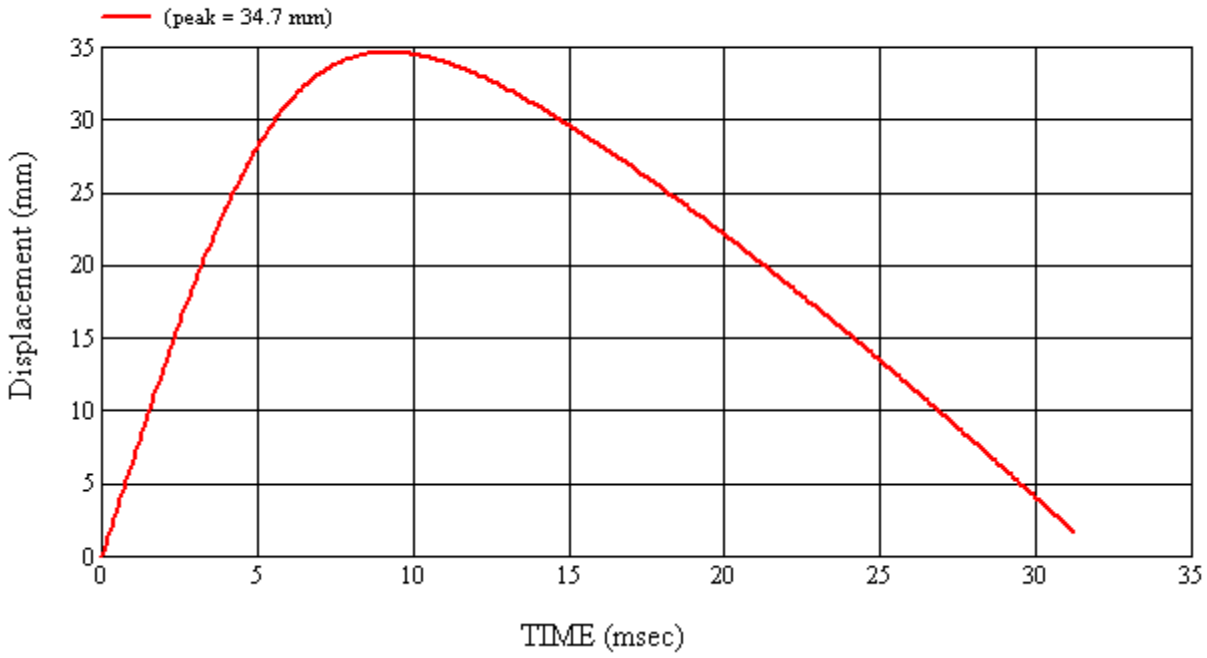



(peak = 114.3 G)
Head X (G)
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
0
5
10
15
20
25
30
35
TIME (msec)


(peak = 3.4 G)
Head Y (G)
3
2
1
0
-1
-2
-3
-4
0
5
10
15
20
25
30
35
TIME (msec)

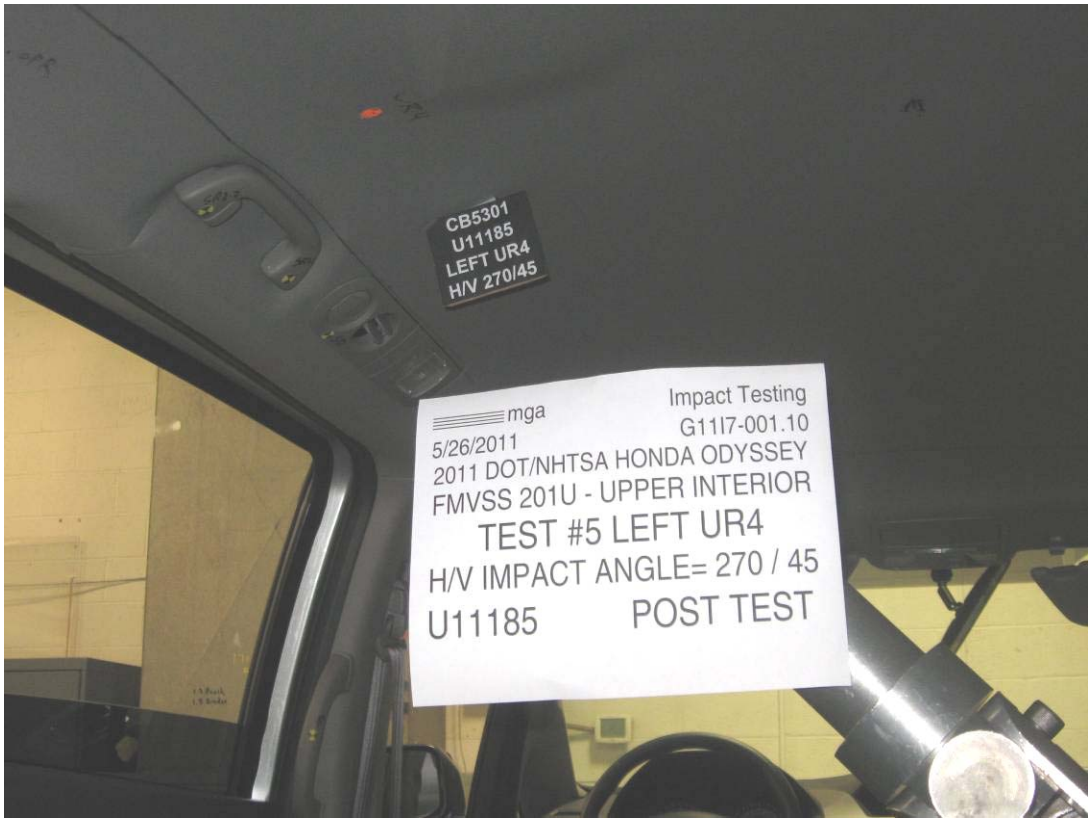

(peak = 41.1 G)
Head Z (G)
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
0
5
10
15
20
25
30
35
TIME (msec)


(peak = 24.0 kph)
Impact Velocity: 23.74 kph
Velocity (kph)
25
20
15
10
5
0
-5
-10
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)


(peak = 34.7 mm)
Displacement (mm)
0
5
10
15
20
25
30
35
TIME (msec)


mga
Impact Testing
5/26/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #5 LEFT UR4
H/V IMPACT ANGLE= 270 / 45
U11185
PRE TEST


mga
Impact Testing
5/26/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #5 LEFT UR4
H/V IMPACT ANGLE= 270 / 45
U11185
PRE TEST


CB5301
U11185
LEFT UR4
H/V 270/45
mga
Impact Testing
G11I7-001.10
5/26/2011
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #5 LEFT UR4
H/V IMPACT ANGLE= 270 / 45
U11185
POST TEST


UR4
mga
Impact Testing
G11I7-001.10
5/26/2011
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #5 LEFT UR4
H/V IMPACT ANGLE= 270 / 45
U11185
POST TEST


UR4
SR3.1
SR3.2


mga
Impact Testing
5/26/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #5 LEFT UR4
H/V IMPACT ANGLE= 270 / 45
U11185
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G11I7-001.10 VEHICLE YR/MAKE/MODEL:2011/DOT/NHTSA/Honda Odyssey

GENERAL TEST PARAMETERS:

Target (Vehicle Side): UR4Left

MGA Test Reference No.:U11185

Approach Horizontal Angles:270º

Approach Vertical Angles:45º

Additional Description:@ SR3-2

Test Number:#5

Temperature:22.8C

Humidity:67.5%

Time of Test:1:57:58 PM

FMH Serial No:[037]

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
552	511	11.1	24.1	39	0

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J32177	-113.7	1.07	1.07
Y	6	J14103	93.9	0.85	0.85
Z	7	J35800	97.8	0.94	0.94

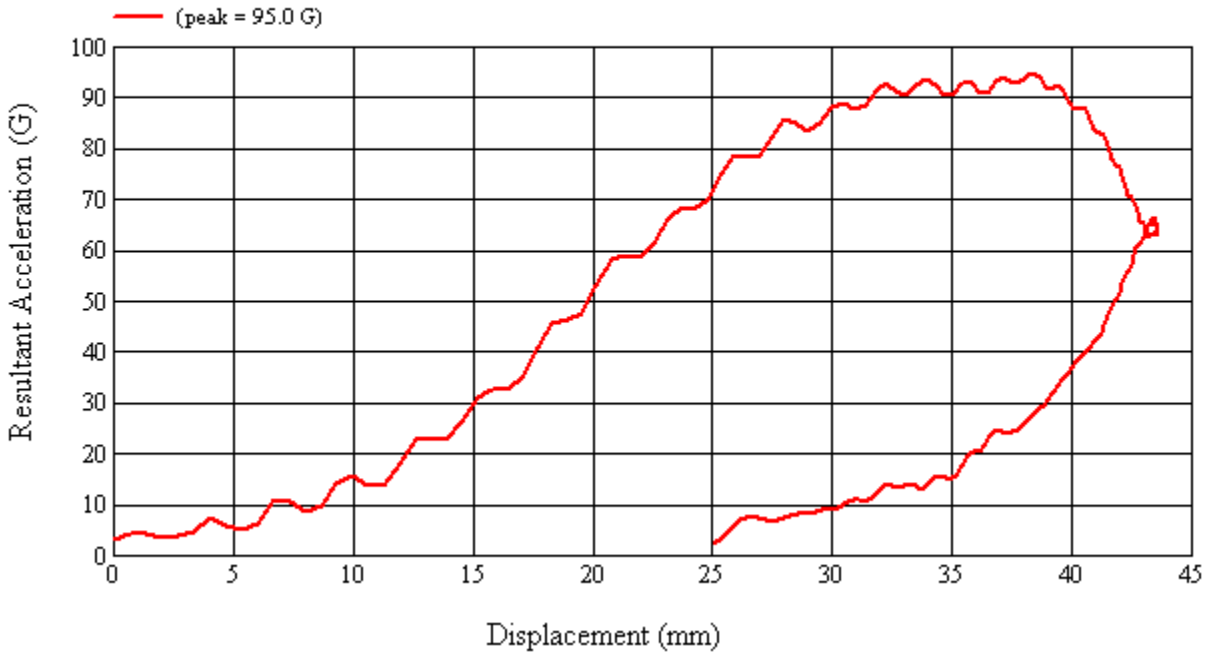
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

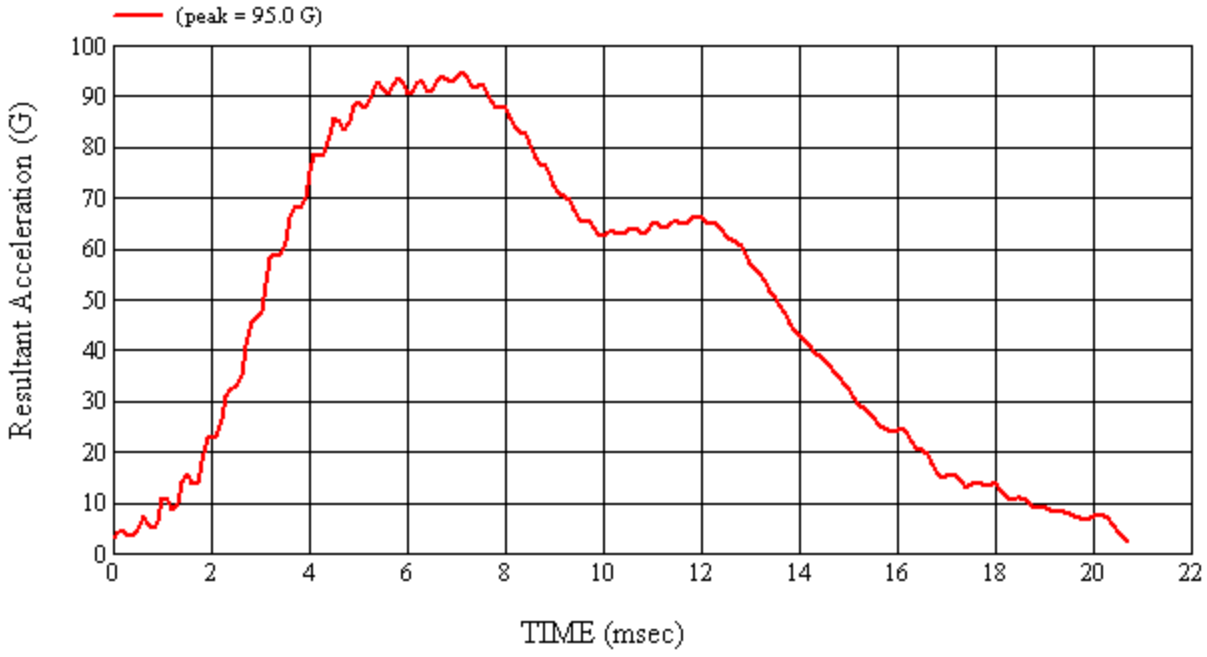
Dislodged headliner, headliner deformation

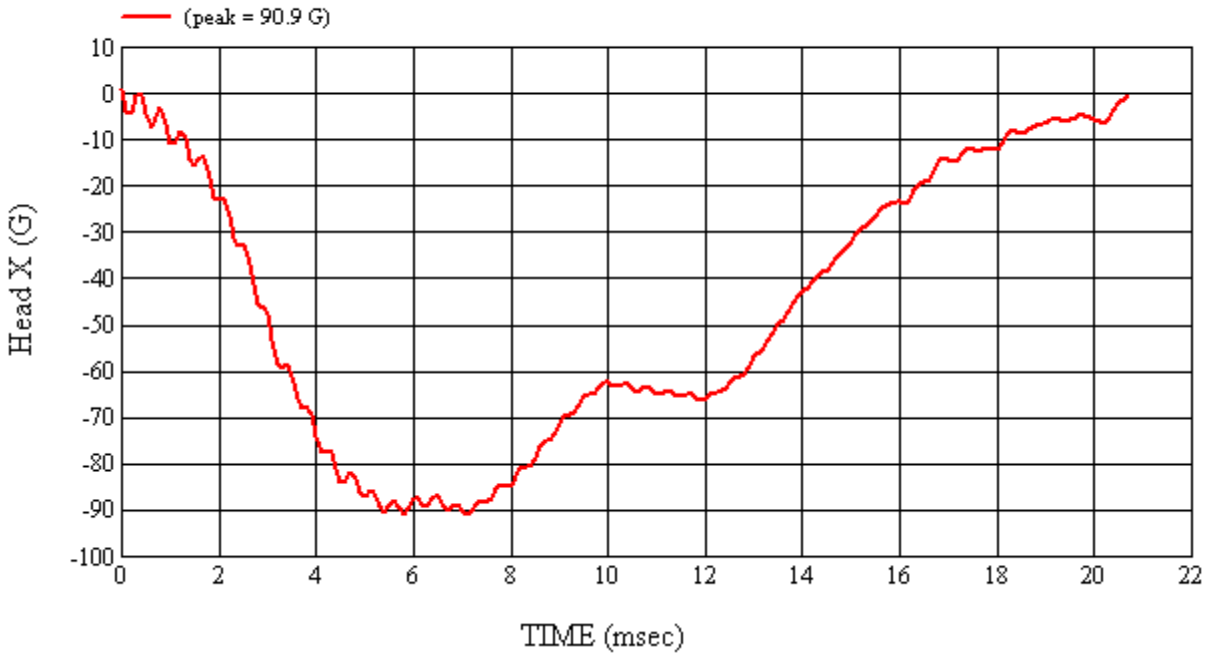
Recorded By: _____ Approved By*: _____ Date: 5/26/2011

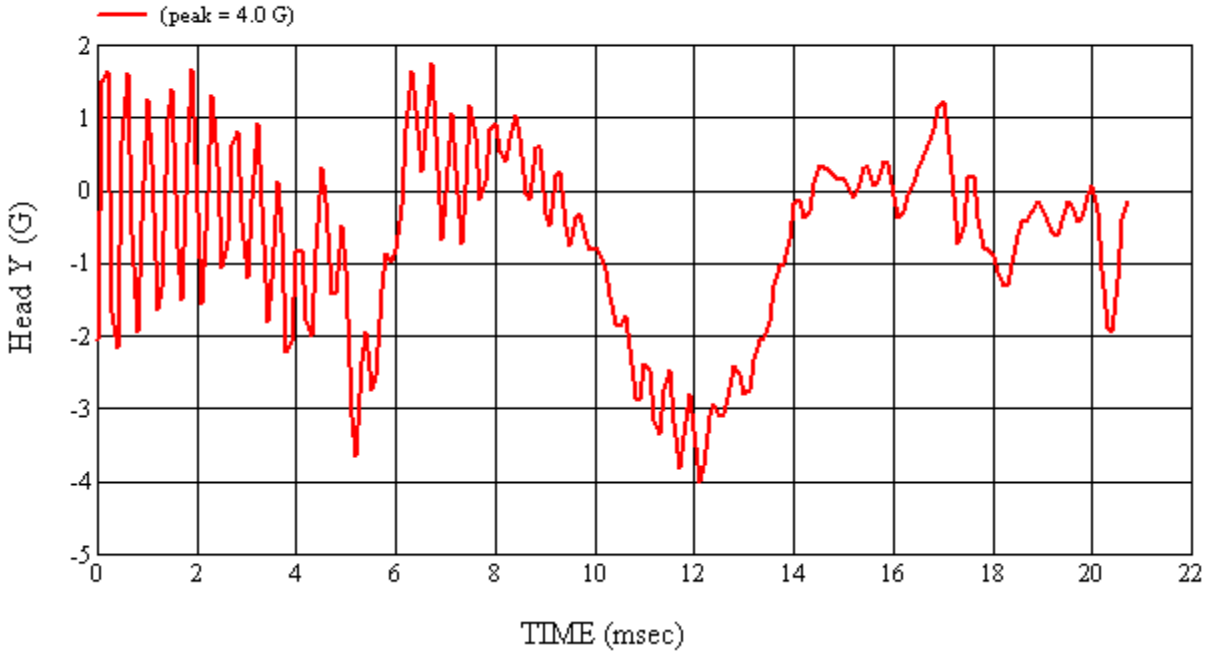
*Only necessary for NHTSA (Government) Compliance testing.

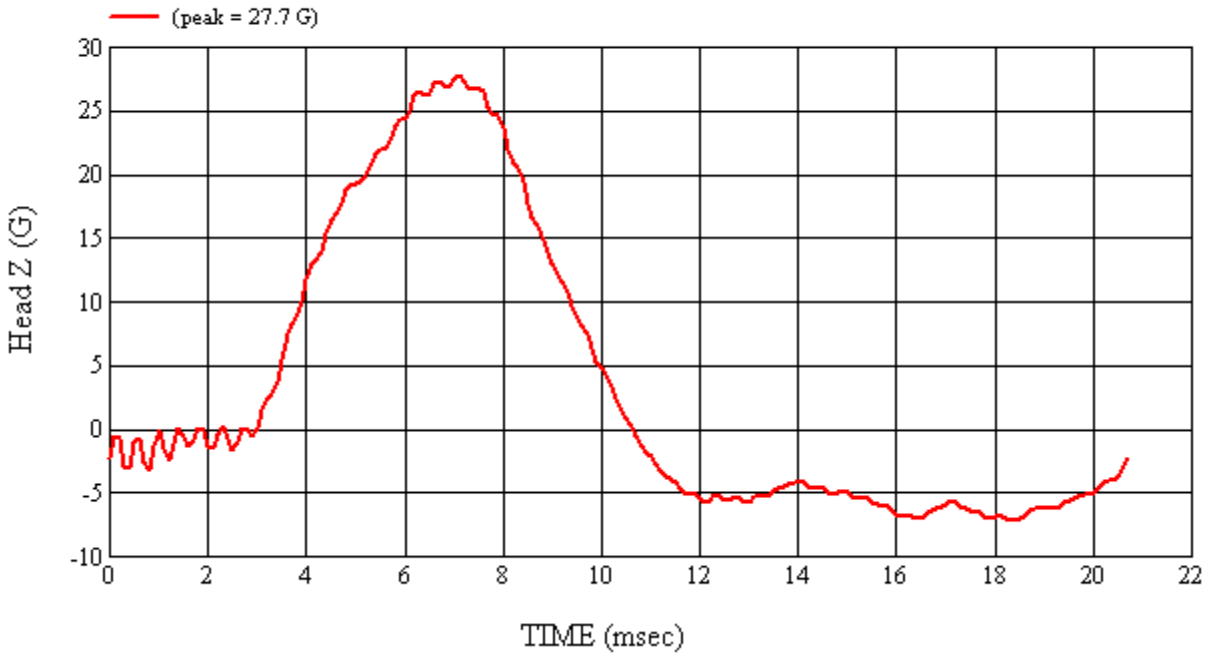
MGA Test #: U11185 Target Location: UR4, Left Side Test Date: 5/26/2011

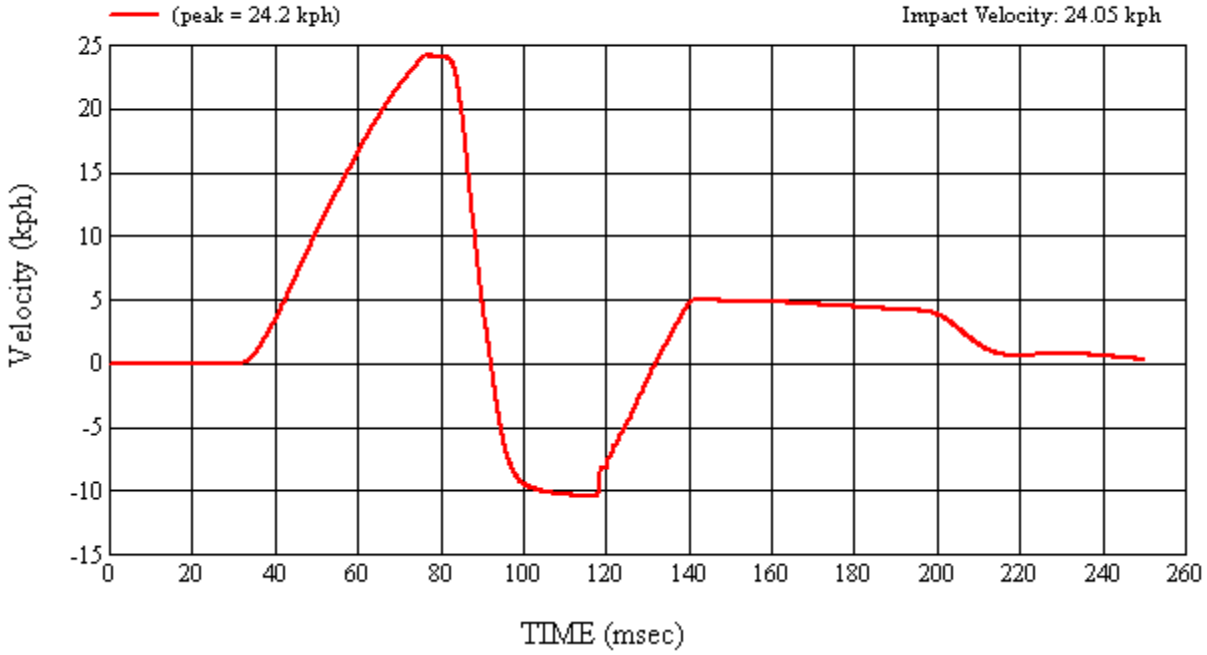


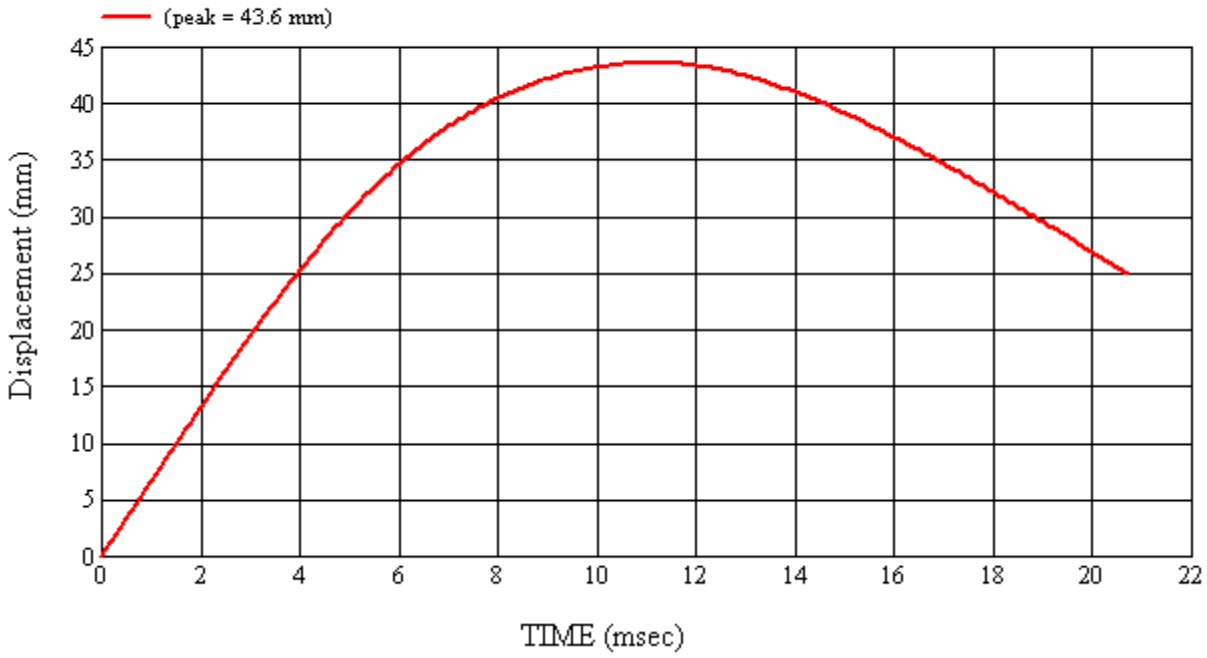



(peak = 90.9 G)
Head X (G)
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
0
2
4
6
8
10
12
14
16
18
20
22
TIME (msec)

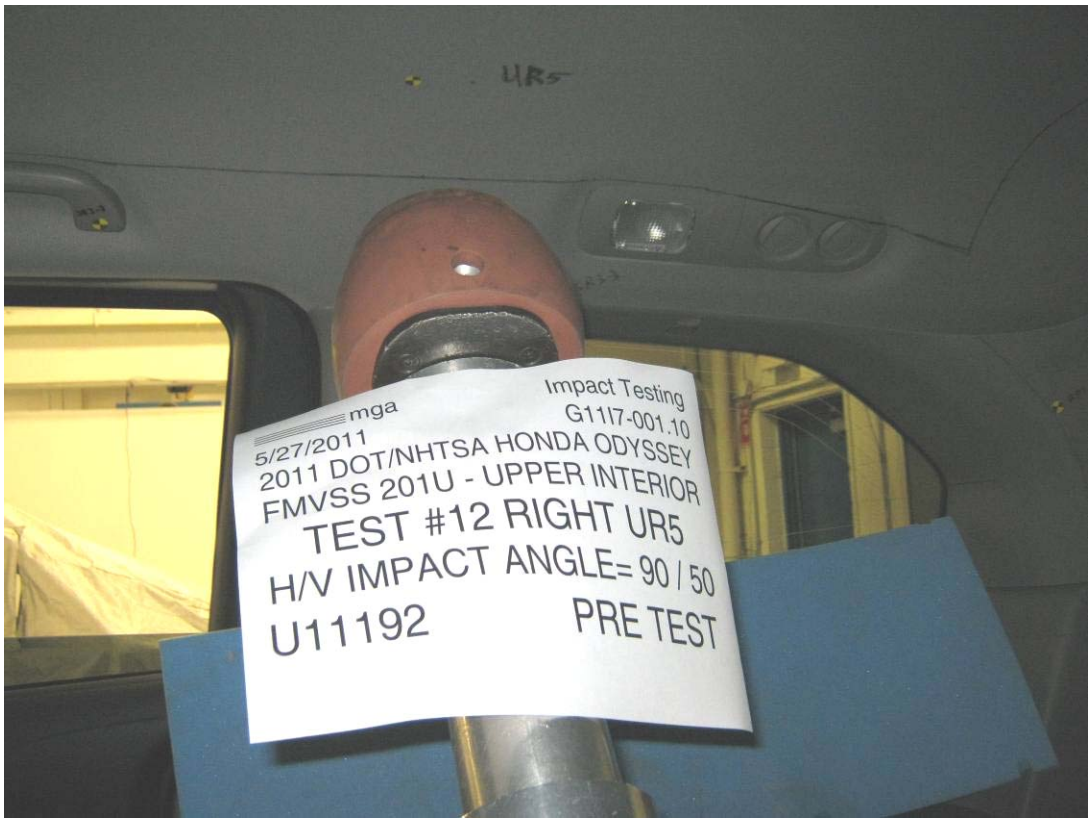

(peak = 4.0 G)
Head Y (G)
2
1
0
-1
-2
-3
-4
-5
0
2
4
6
8
10
12
14
16
18
20
22
TIME (msec)


(peak = 27.7 G)
Head Z (G)
30
25
20
15
10
5
0
-5
-10
0
2
4
6
8
10
12
14
16
18
20
22
TIME (msec)

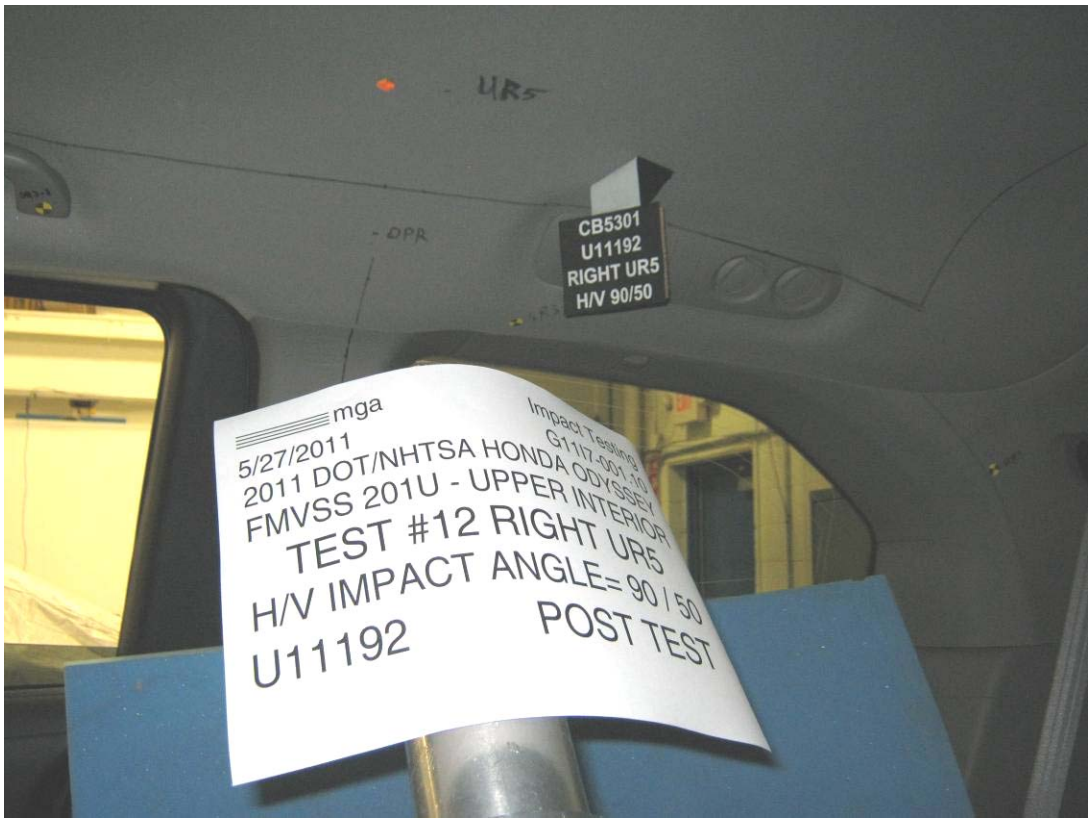

(peak = 24.2 kph)
Impact Velocity: 24.05 kph
Velocity (kph)
25
20
15
10
5
0
-5
-10
-15
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)


(peak = 43.6 mm)
Displacement (mm)
0
5
10
15
20
25
30
35
40
45
0
2
4
6
8
10
12
14
16
18
20
22
TIME (msec)


mga
Impact Testing
G11I7-001.10
5/27/2011
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #12 RIGHT UR5
H/V IMPACT ANGLE= 90 / 50
U11192
PRE TEST


UR5
mga
Impact Testing
G11I7-001.10
5/27/2011
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #12 RIGHT UR5
H/V IMPACT ANGLE= 90 / 50
U11192
PRE TEST


CB5301
U11192
RIGHT UR5
H/V 90/50
mga
Impact Testing
5/27/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #12 RIGHT UR5
H/V IMPACT ANGLE= 90 / 50
U11192
POST TEST


UR5
DPR
CB5301
U11192
RIGHT UR5
H/V 90/50
mga
5/27/2011
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #12 RIGHT UR5
H/V IMPACT ANGLE= 90 / 50
U11192
POST TEST


SIDE
CURTAIN
AIRBAG


mga
Impact Testing
5/27/2011
G11I7-001.10
2011 DOT/NHTSA HONDA ODYSSEY
FMVSS 201U - UPPER INTERIOR
TEST #12 RIGHT UR5
H/V IMPACT ANGLE= 90 / 50
U11192
POST TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G11I7-001.10 VEHICLE YR/MAKE/MODEL:2011/DOT/NHTSA/Honda Odyssey

GENERAL TEST PARAMETERS:

Test Number:#12

Target (Vehicle Side): UR5Right

Temperature:20.3C

MGA Test Reference No.:U11192

Humidity:55.2%

Approach Horizontal Angles:90º

Time of Test:2:18:25 PM

Approach Vertical Angles:50º

FMH Serial No:[038]

Additional Description:@ OP

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
425	342	9.9	23.3	27	2 Left

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J22700	-96.4	1.07	1.07
Y	6	J36197	108.7	0.85	0.85
Z	7	J36353	99.1	0.94	0.94

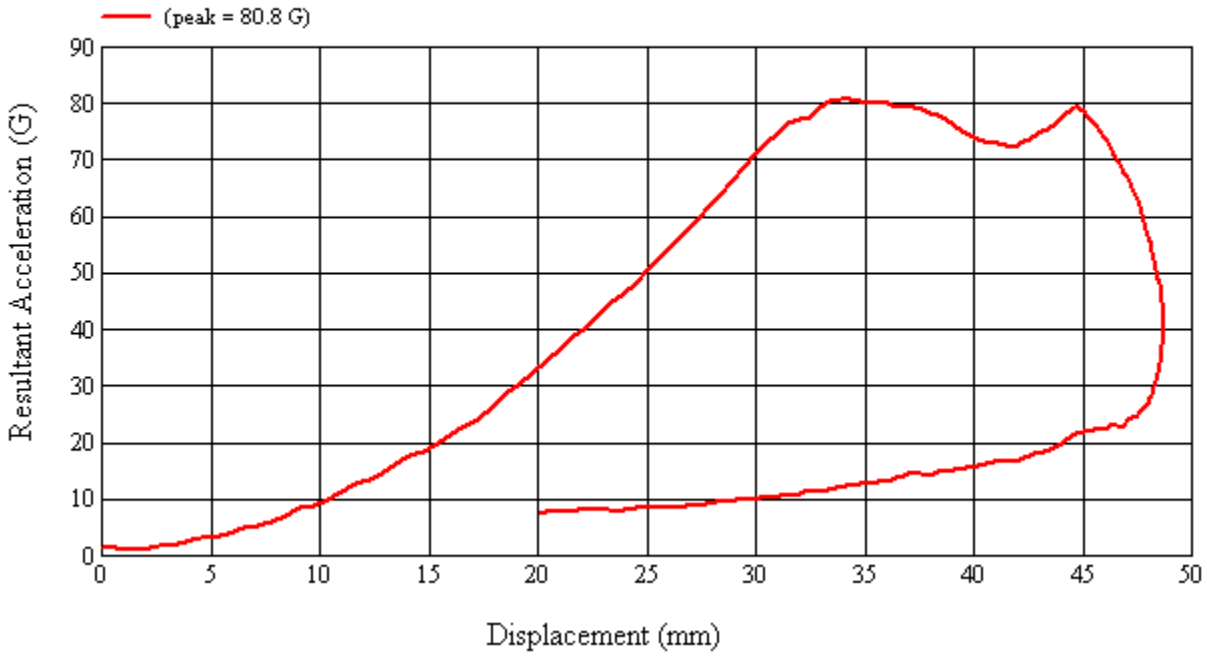
REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

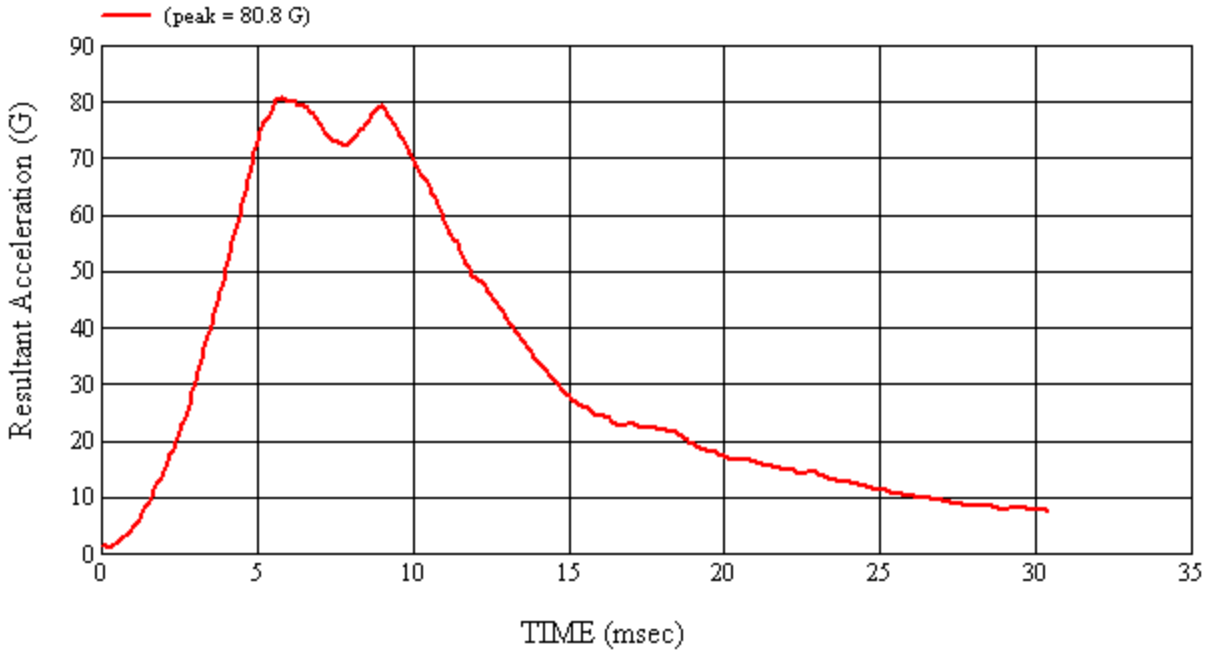
Dislodged headliner

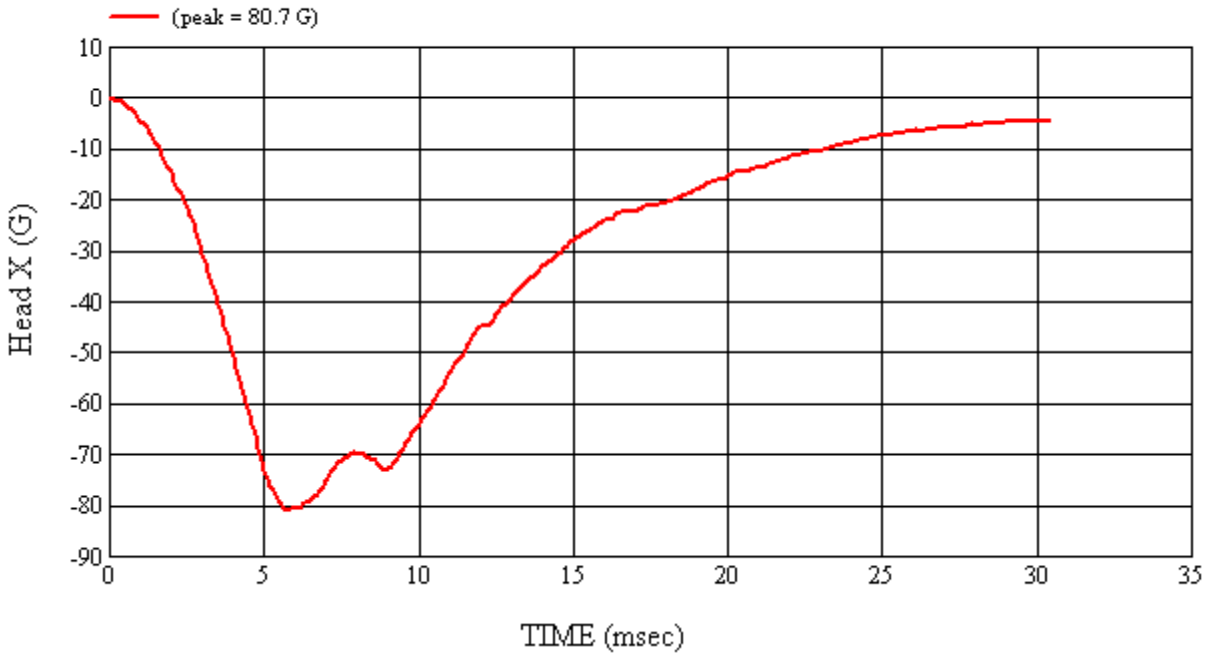
Recorded By: _____ Approved By*: _____ Date: 5/27/2011

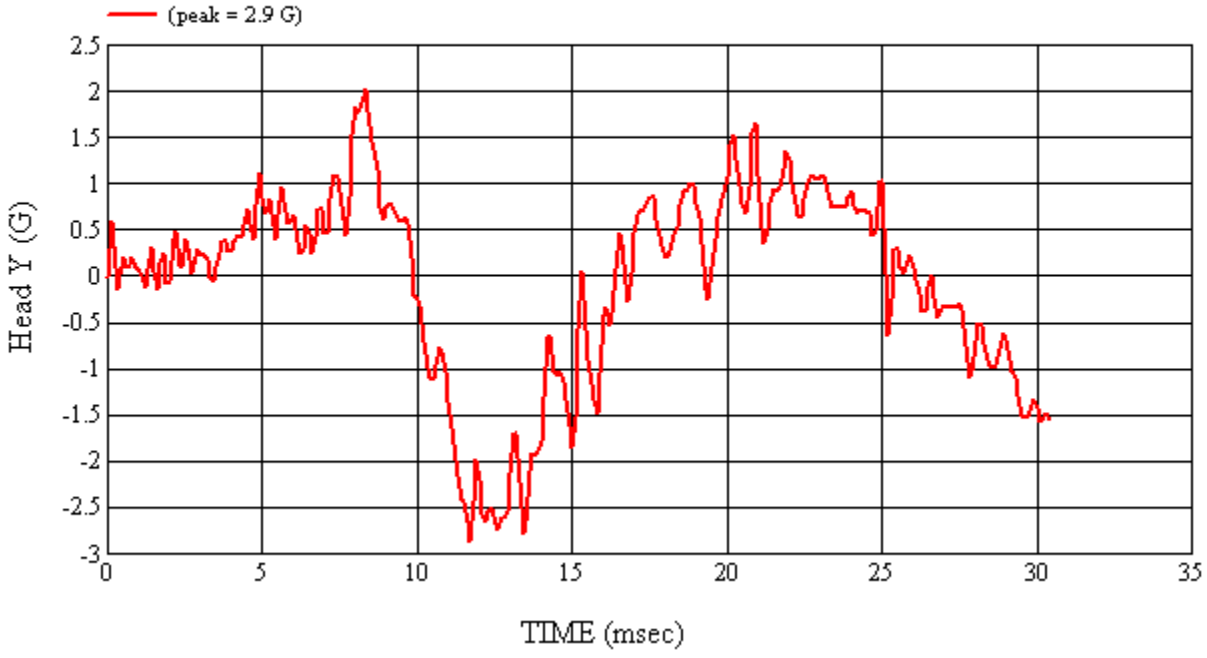
*Only necessary for NHTSA (Government) Compliance testing.

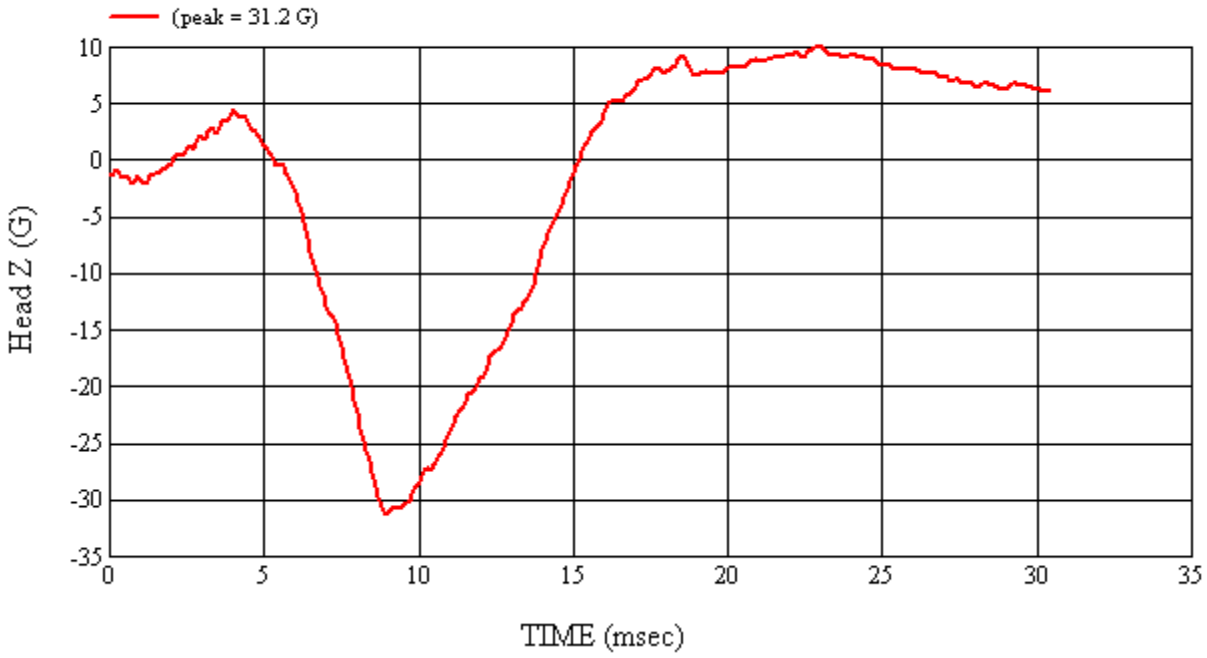
MGA Test #: U11192 Target Location: UR5, Right Side Test Date: 5/27/2011

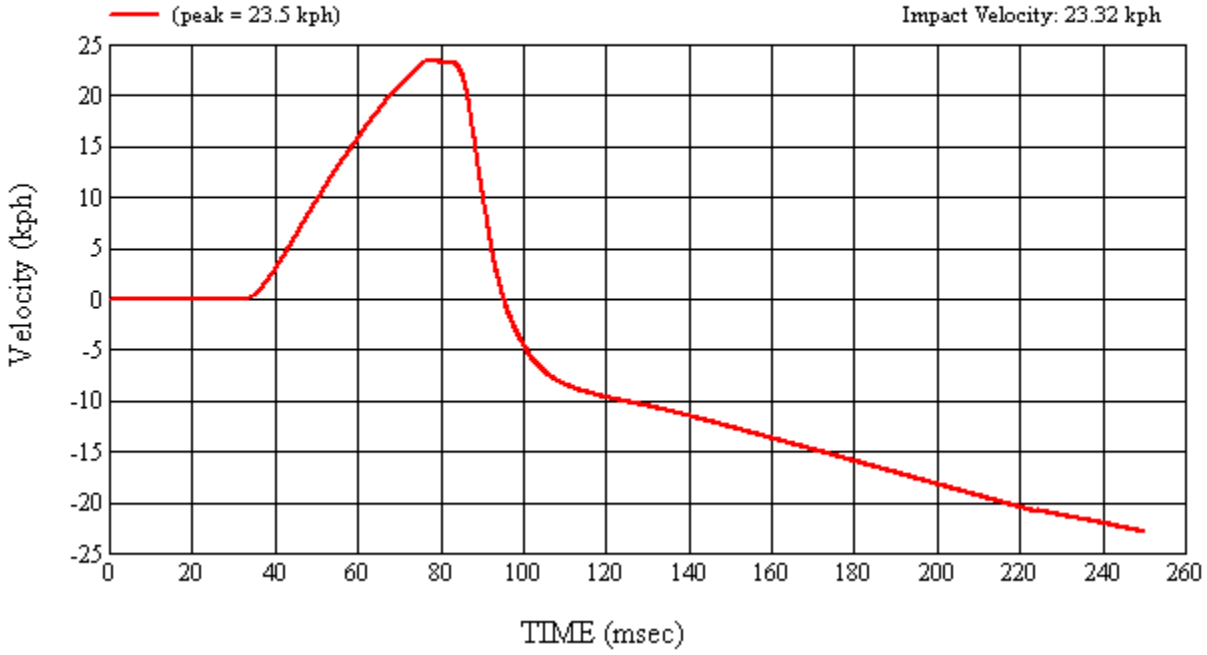


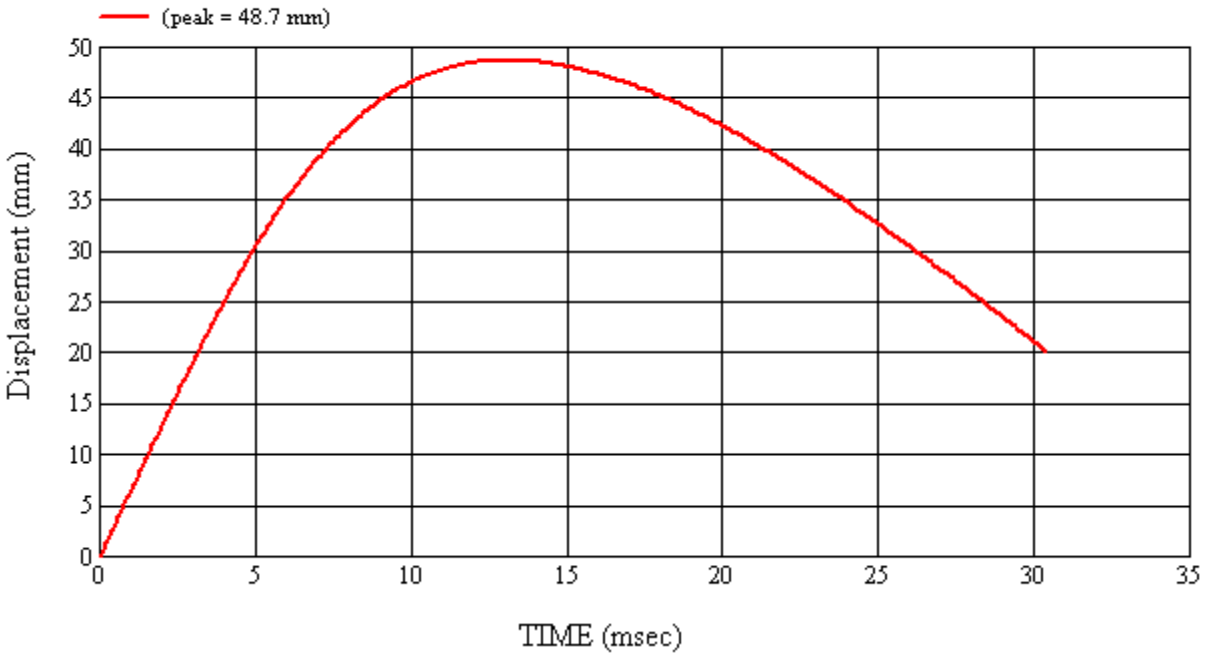



(peak = 80.7 G)
Head X (G)
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
0
5
10
15
20
25
30
35
TIME (msec)


(peak = 2.9 G)
Head Y (G)
2.5
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
-2.5
-3
0
5
10
15
20
25
30
35
TIME (msec)


(peak = 31.2 G)
Head Z (G)
10
5
0
-5
-10
-15
-20
-25
-30
-35
0
5
10
15
20
25
30
35
TIME (msec)


(peak = 23.5 kph)
Impact Velocity: 23.32 kph
Velocity (kph)
25
20
15
10
5
0
-5
-10
-15
-20
-25
0
20
40
60
80
100
120
140
160
180
200
220
240
260
TIME (msec)


(peak = 48.7 mm)
Displacement (mm)
0
5
10
15
20
25
30
35
40
45
50
0
5
10
15
20
25
30
35
TIME (msec)

4.0 TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

The following section lists the test equipment for the compliance test series. Items marked with an asterisk are calibrated by an external lab. An additional summary table is given for the pre and post-test calibration data for the Free Motion Headforms. The temperature trace to confirm testing was conducted between 66ºF and 78ºF (19ºC – 26ºC) is included in Appendix A. Calibration certificates can be found in Appendix B.

TABLE 4-1 LIST OF ITEMS USED

ITEM	MANUFACTURER NAME	MODEL #	FUNCTION OF ITEM	ACCURACY	CAL. INTERNAL
Head Drop Tower (includes test frame and DAS)	MGA Research Corp.	MGA-100-DC	FMH Calibration	N/A	N/A
Accelerometers	Endevco	7264-2000	Acceleration Data	±0.5%	6 months
FMVSS 201U Test Frame (includes the propulsion control system, actuator, test frame, and DAS)	MGA Research Corp.	MGA-100-FMH	Test System	N/A	N/A
Free Motion Headforms	UTAMA UTAMA UTAMA	035 037 038	Test Device	N/A	Pre and Post-Test Series
High Speed Video	Vision Research	Miro Ex4	Record Event	N/A	N/A
*FARO™	Faro Technologies	G10020001619	Targeting	0.1 mm	Annual
Measuring Devices: - Tape Measure - Plumb Bobs - Digital Protractor	 Stanley N/A Mitutoyo	 TPM112 -- MGA00749	 Measurement Targeting FMH setup Horizontal Measurement	 1 mm N/A 0.5°	Annual
*Temperature Recorder	Dickson	MGA00894	Record Temperature and Humidity	± 1°C ± 1% RH	Annual
* Scale	Detecto	MGA00081	Weigh FMH Head	± 0.01 lb	Annual
*Vehicle Scale	Intercomp	26032389	Weighing Vehicle	± .5 kg	Annual

Each headform was calibrated by an engineer after the headform had soaked in an environment of 66ºF to 78ºF (19ºC to 26ºC) for a period of at least four hours.

Each headform was found to comply with the performance criteria under Part 572L for pre and post-test calibrations. That is, the peak resultant acceleration was between 225 and 275 G's, the peak lateral acceleration was less than 15 G's, the headform weighed between 9.9 and 10.1 lbs., the pulse was determined to be unimodal, and there was no major damage to the headform.

TABLE 4-2 FMH CALIBRATION SUMMARY

FMH Serial #		Headform Calibration Date	Weight (lbs)	Temp (ºC)	% Humidity	Peak Resultant Acceleration (G's)	Peak Lateral Acceleration (G's)	Unimodal
Pre	#035	5/24/2011	9.90	22.4	55.8	251.5	3.3	Yes
Post	#035	6/1/2011	9.90	21.6	55.5	249.9	4.1	Yes
Pre	#037	5/24/2011	9.96	22.3	57.1	261.5	7.7	Yes
Post	#037	6/1/2011	9.96	21.5	54.7	266.2	4.7	Yes
Pre	#038	5/24/2011	9.90	22.4	57.2	264.3	12.6	Yes
Post	#038	6/1/2011	9.90	21.3	53.9	261.0	9.9	Yes

4-1 Pre-Test Calibration

HEAD DROP TEST SUMMARY
PART 572L

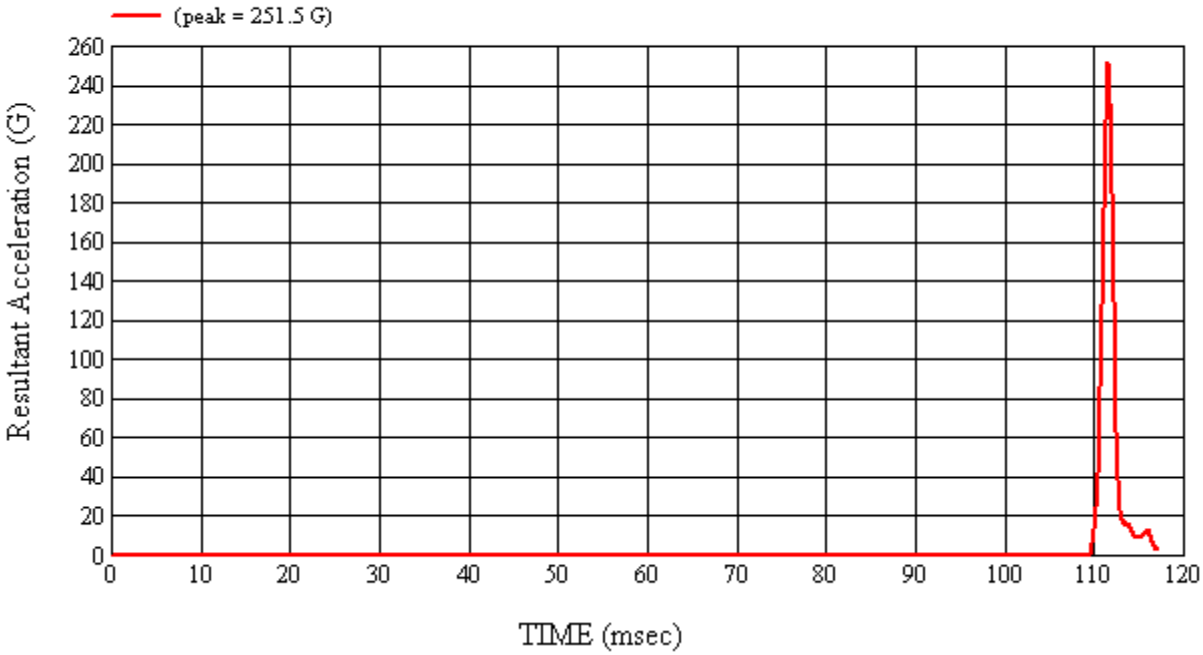
HEADFORM SERIAL NUMBER: 035	CALIBRATION DATE: 5/24/2011 CALIBRATION TIME: 2:09:50 PM	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
Weight	9.90 to 10.10 lbs.	9.90
Temperature	19° C to 26° C	22.4
Relative Humidity	10% to 70%	55.8
Peak Resultant Acceleration	225 G's to 275 G's	251.5
Peak Lateral Acceleration	15 G's Maximum	3.3
Unimodal Acceleration Curve	YES	YES

FMH INSTRUMENTATION					
HEAD ACCELEROMETERS					
Channel Number	**Manufacturer**	**Model Number**	**Serial Number**	**Date of Last Calibration**	**Date of Next Calibration**
1	ENDEVCO	7264-2000	J35919	02/04/11	08/04/11
2	ENDEVCO	7264-2000	J22664	02/04/11	08/04/11
3	ENDEVCO	7264-2000	J35924	02/04/11	08/04/11

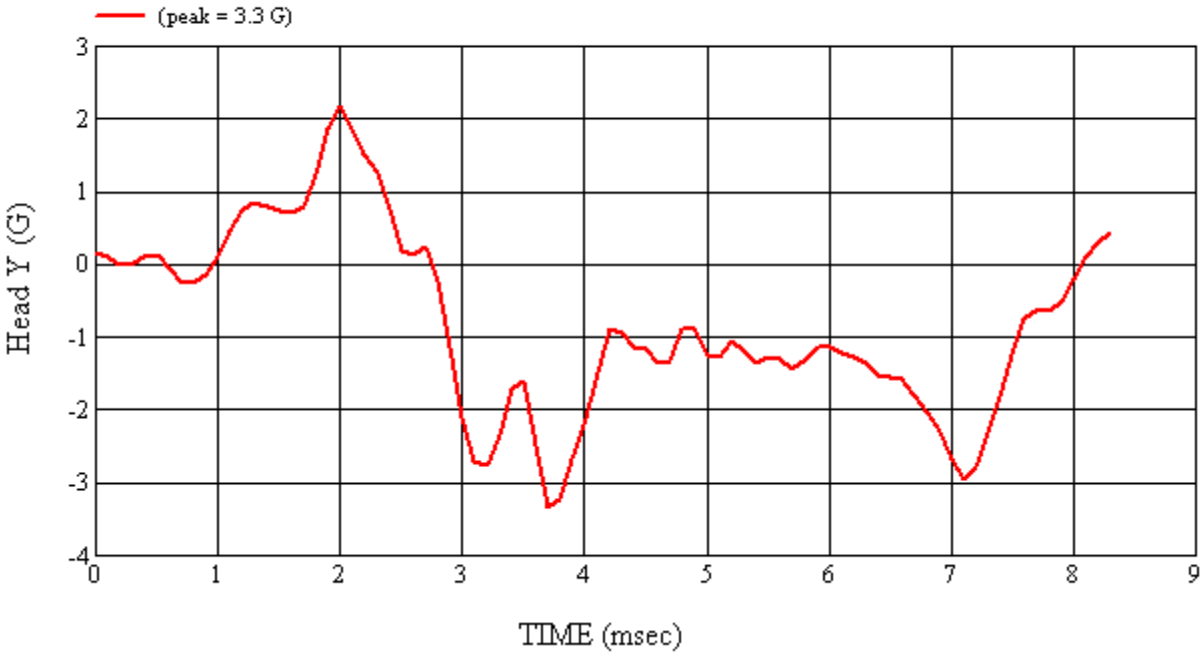
REMARKS:

RECORDED BY: _____ DATE: 5/24/2011

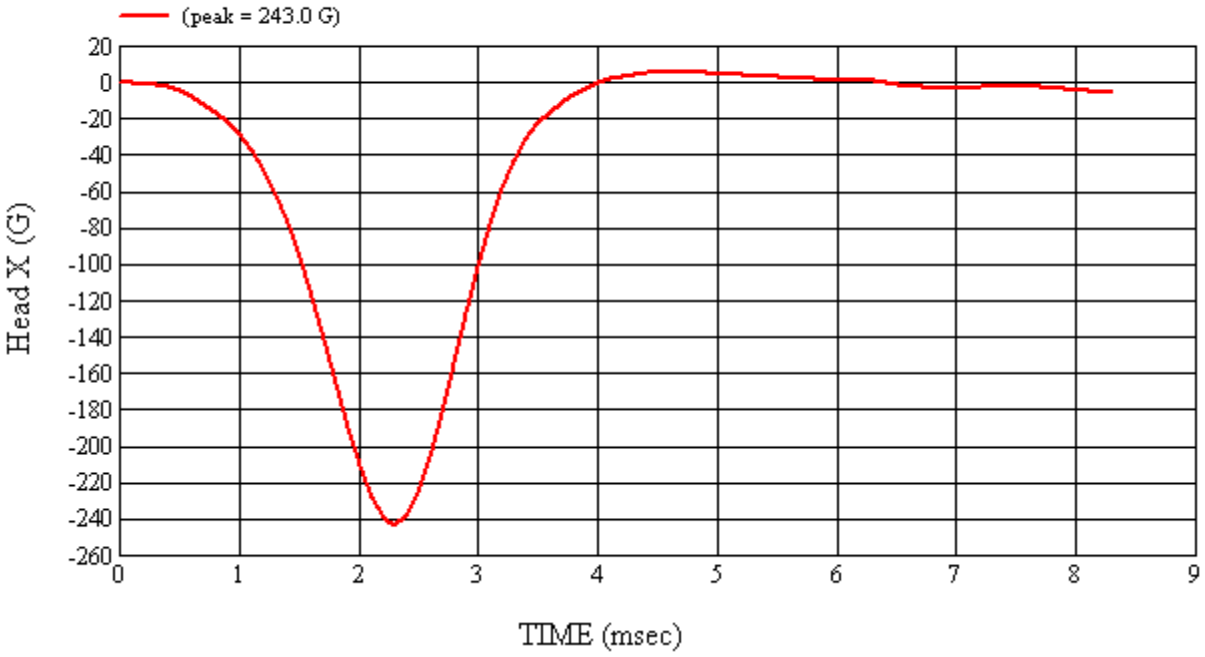
APPROVED BY: _____



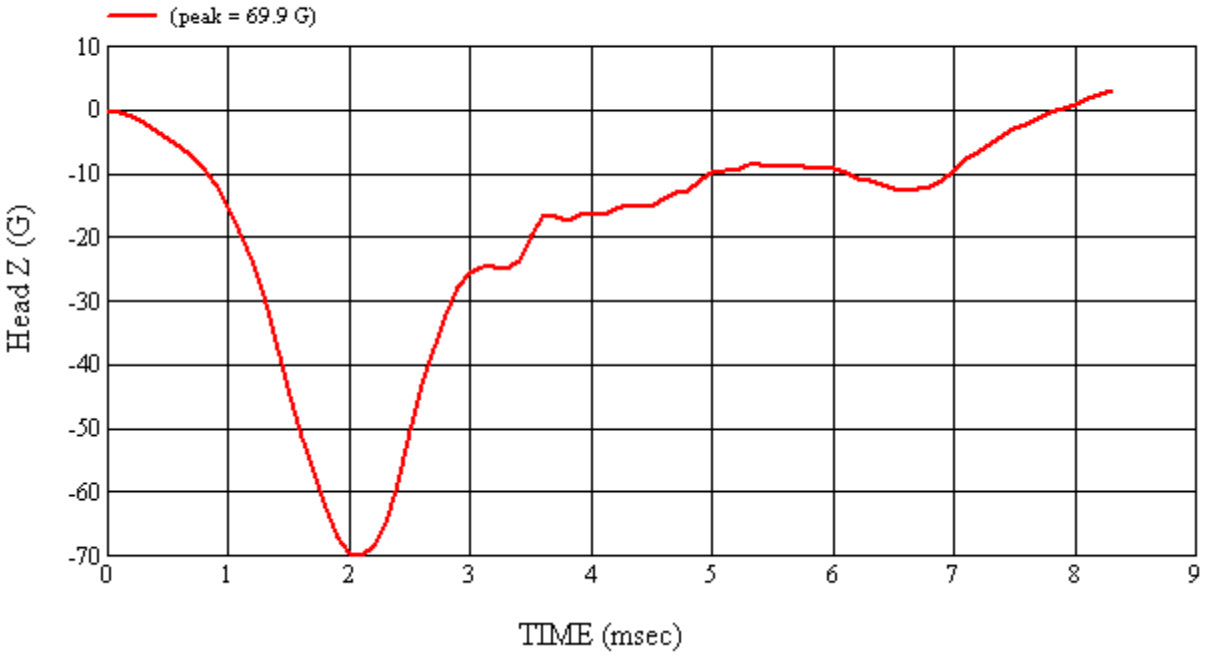
Head 035 (Pre) Calibration #H35023



Head 035 (Pre) Calibration #H35023



Head 035 (Pre) Calibration #H35023



Head 035 (Pre) Calibration #H35023

4-2 Post-Test Calibration

HEAD DROP TEST SUMMARY
PART 572L

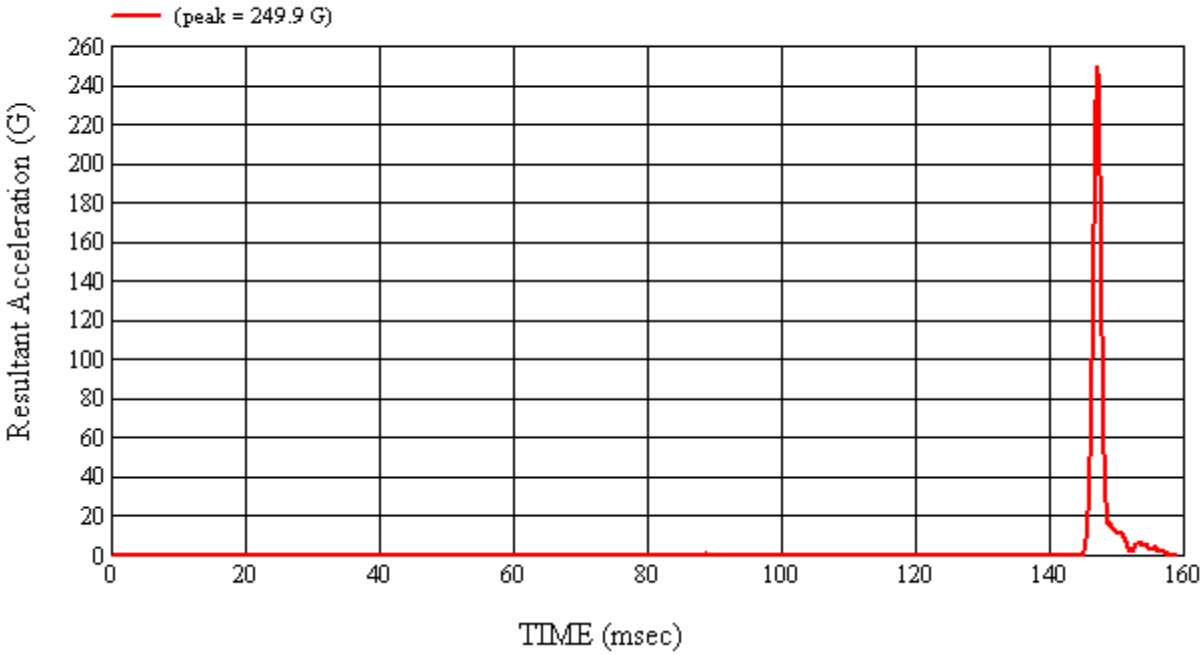
HEADFORM SERIAL NUMBER: 035	CALIBRATION DATE: 6/1/2011 CALIBRATION TIME: 8:40:46 AM	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
Weight	9.90 to 10.10 lbs.	9.90
Temperature	19° C to 26° C	21.6
Relative Humidity	10% to 70%	55.5
Peak Resultant Acceleration	225 G's to 275 G's	249.9
Peak Lateral Acceleration	15 G's Maximum	4.1
Unimodal Acceleration Curve	YES	YES

FMH INSTRUMENTATION					
HEAD ACCELEROMETERS					
Channel Number	**Manufacturer**	**Model Number**	**Serial Number**	**Date of Last Calibration**	**Date of Next Calibration**
1	ENDEVCO	7264-2000	J35919	02/04/11	08/04/11
2	ENDEVCO	7264-2000	J22664	02/04/11	08/04/11
3	ENDEVCO	7264-2000	J35924	02/04/11	08/04/11

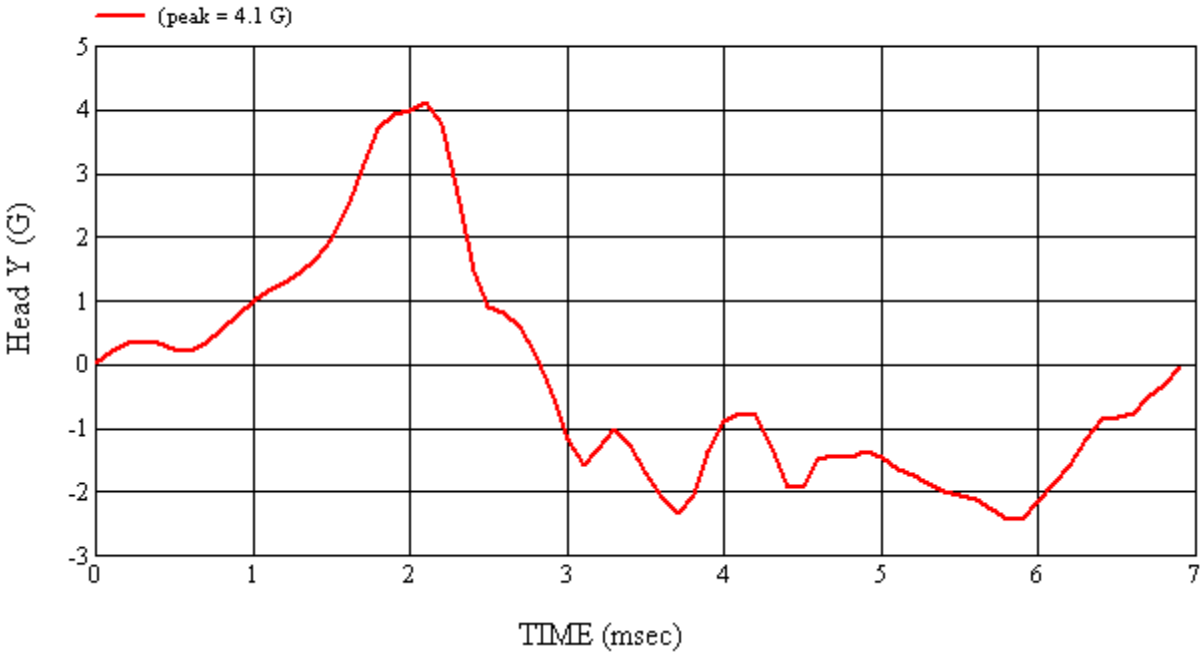
REMARKS:

RECORDED BY: _____ DATE: __6/01/2011____

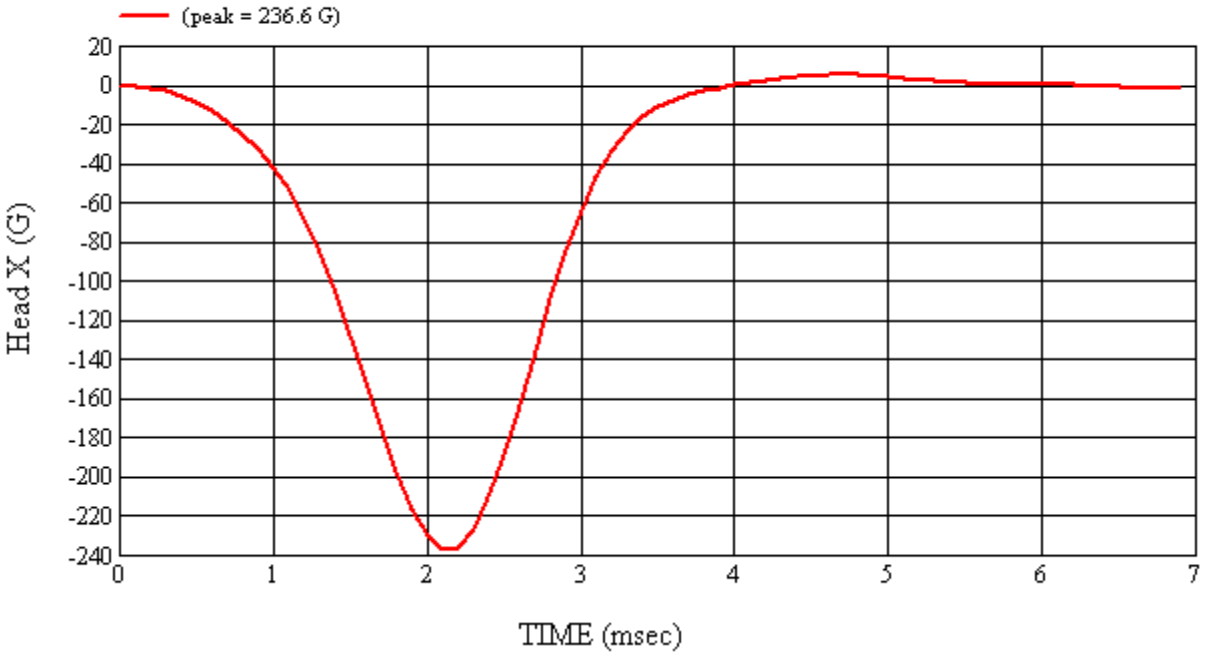
APPROVED BY: _____



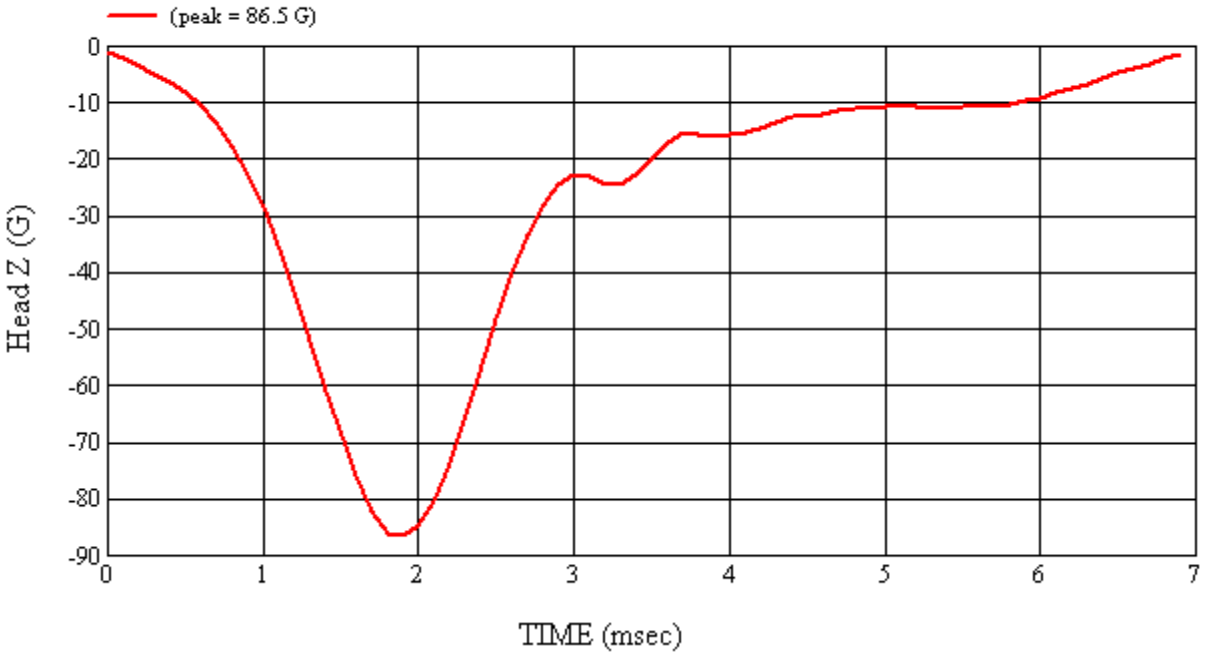
Head 035 (Post) Calibration #H35024



Head 035 (Post) Calibration #H35024



Head 035 (Post) Calibration #H35024



Head 035 (Post) Calibration #H35024

4-3 Pre-Test Calibration

HEAD DROP TEST SUMMARY
PART 572L

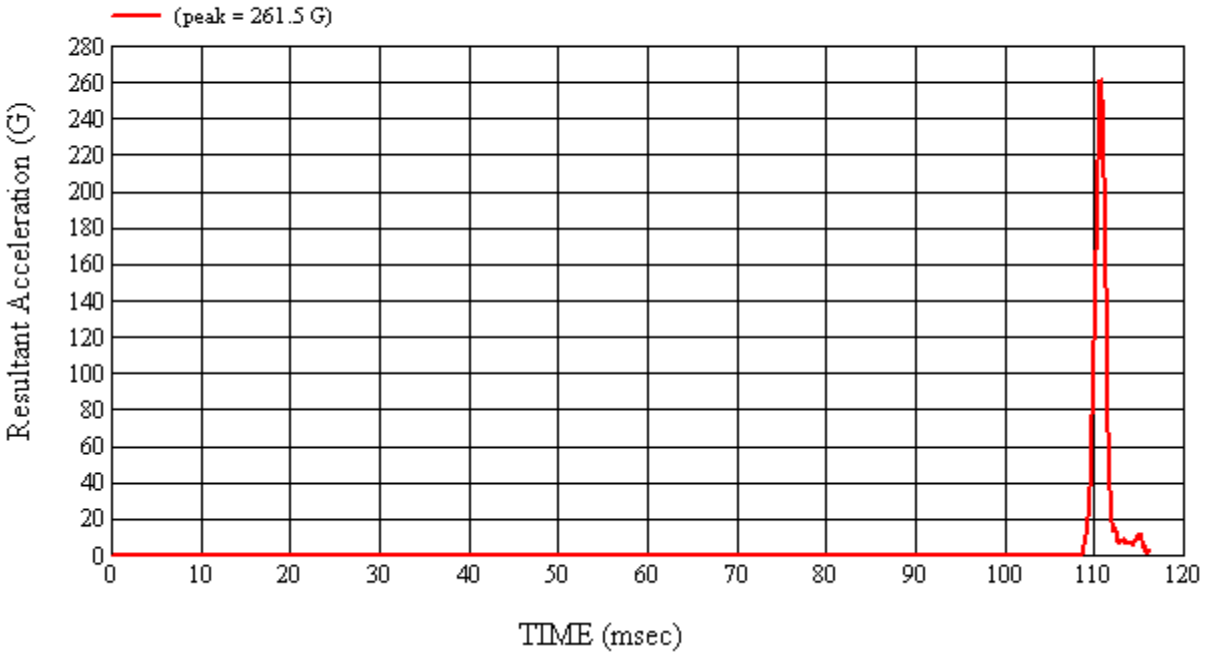
HEADFORM SERIAL NUMBER: 037	CALIBRATION DATE: 5/24/2011 CALIBRATION TIME: 2:28:52 PM	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
Weight	9.90 to 10.10 lbs.	9.96
Temperature	19° C to 26° C	22.3
Relative Humidity	10% to 70%	57.1
Peak Resultant Acceleration	225 G's to 275 G's	261.5
Peak Lateral Acceleration	15 G's Maximum	7.7
Unimodal Acceleration Curve	YES	YES

FMH INSTRUMENTATION					
HEAD ACCELEROMETERS					
Channel Number	**Manufacturer**	**Model Number**	**Serial Number**	**Date of Last Calibration**	**Date of Next Calibration**
1	ENDEVCO	7264-2000	J32177	02/04/11	08/04/11
2	ENDEVCO	7264-2000	J14103	02/04/11	08/04/11
3	ENDEVCO	7264-2000	J35800	02/04/11	08/04/11

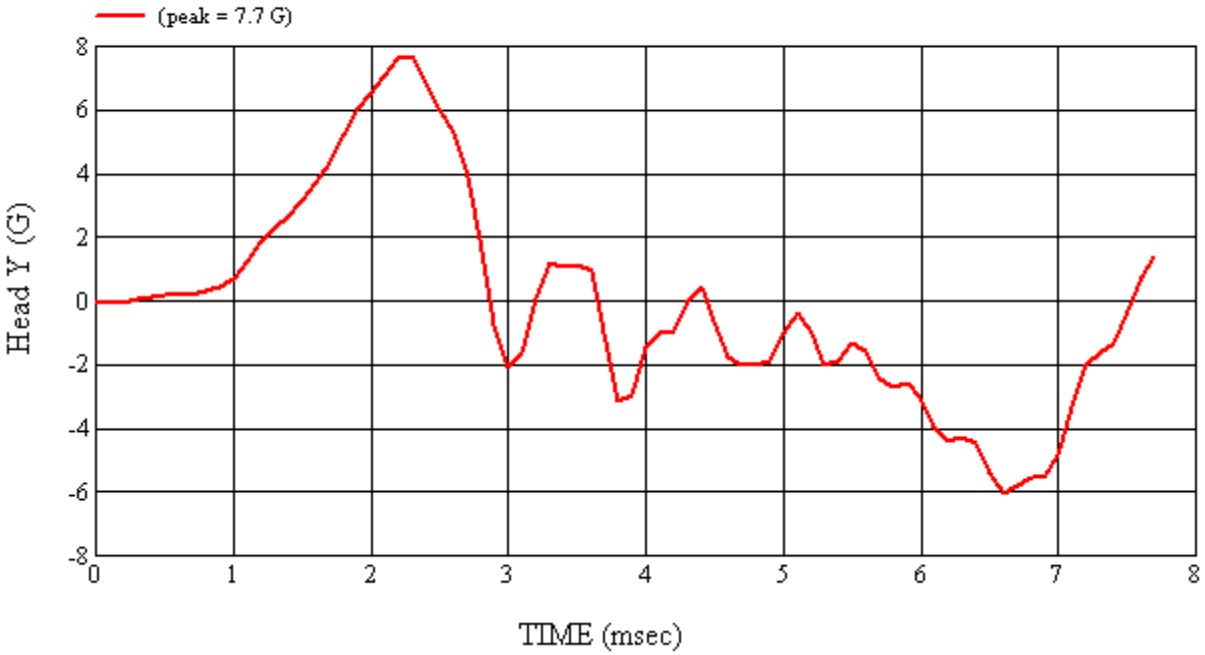
REMARKS:

RECORDED BY: _____ DATE: __5/24/2011____

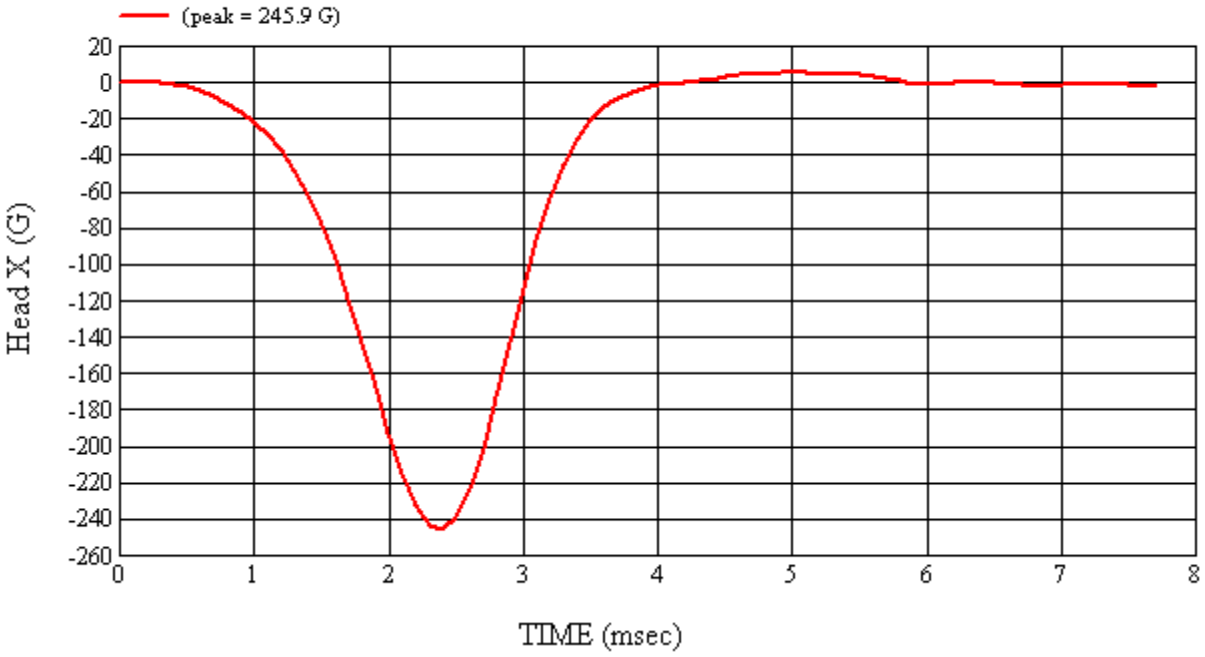
APPROVED BY: _____



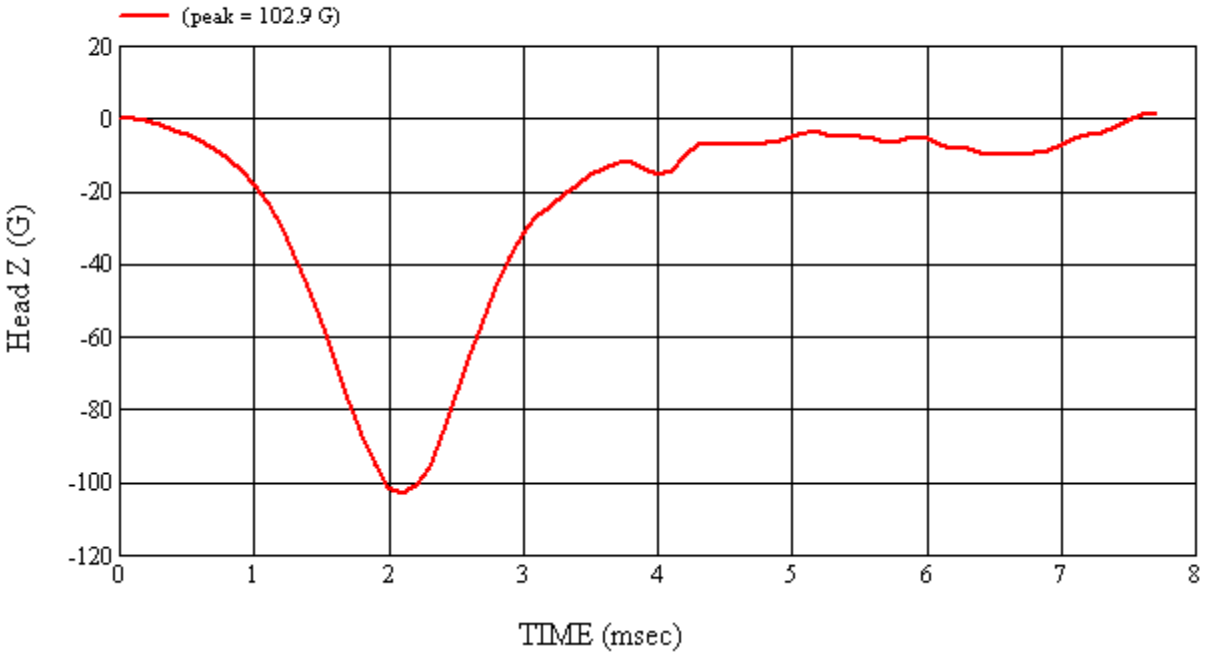
Head 037 (Pre) Calibration #H37023



Head 037 (Pre) Calibration #H37023



Head 037 (Pre) Calibration #H37023



Head 037 (Pre) Calibration #H37023

4-4 Post-Test Calibration

HEAD DROP TEST SUMMARY
PART 572L

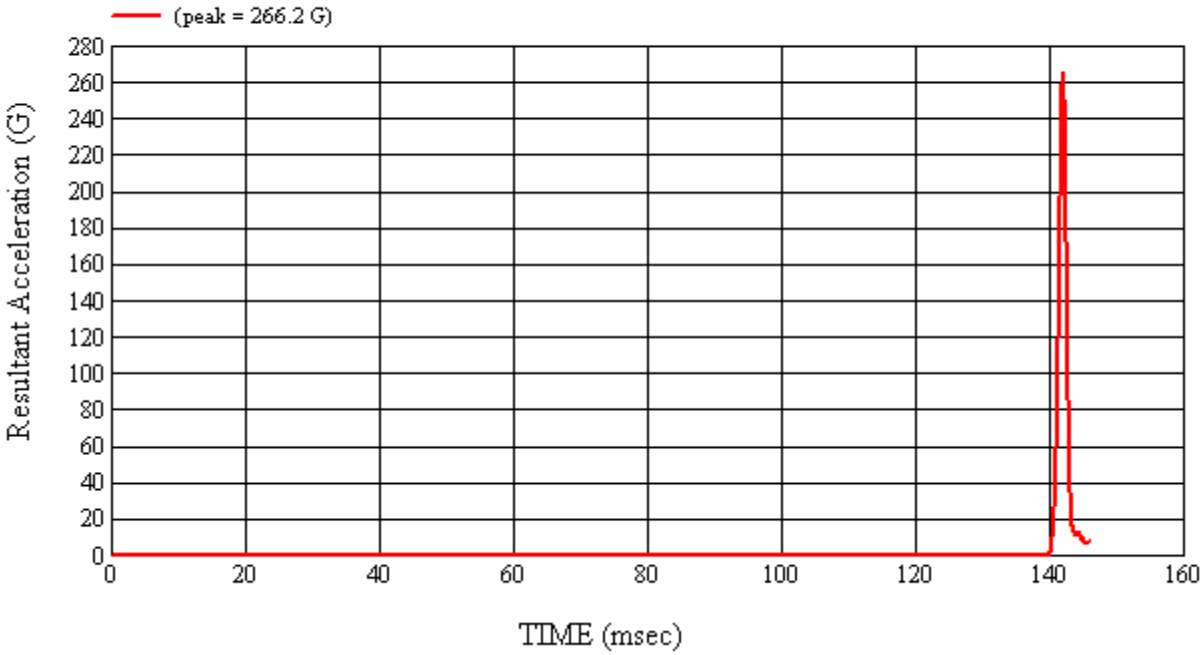
HEADFORM SERIAL NUMBER: 037	CALIBRATION DATE: 6/1/2011 CALIBRATION TIME: 8:59:46 AM	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
Weight	9.90 to 10.10 lbs.	9.96
Temperature	19° C to 26° C	21.5
Relative Humidity	10% to 70%	54.7
Peak Resultant Acceleration	225 G's to 275 G's	266.2
Peak Lateral Acceleration	15 G's Maximum	4.7
Unimodal Acceleration Curve	YES	YES

FMH INSTRUMENTATION					
HEAD ACCELEROMETERS					
Channel Number	**Manufacturer**	**Model Number**	**Serial Number**	**Date of Last Calibration**	**Date of Next Calibration**
1	ENDEVCO	7264-2000	J32177	02/04/11	08/04/11
2	ENDEVCO	7264-2000	J14103	02/04/11	08/04/11
3	ENDEVCO	7264-2000	J35800	02/04/11	08/04/11

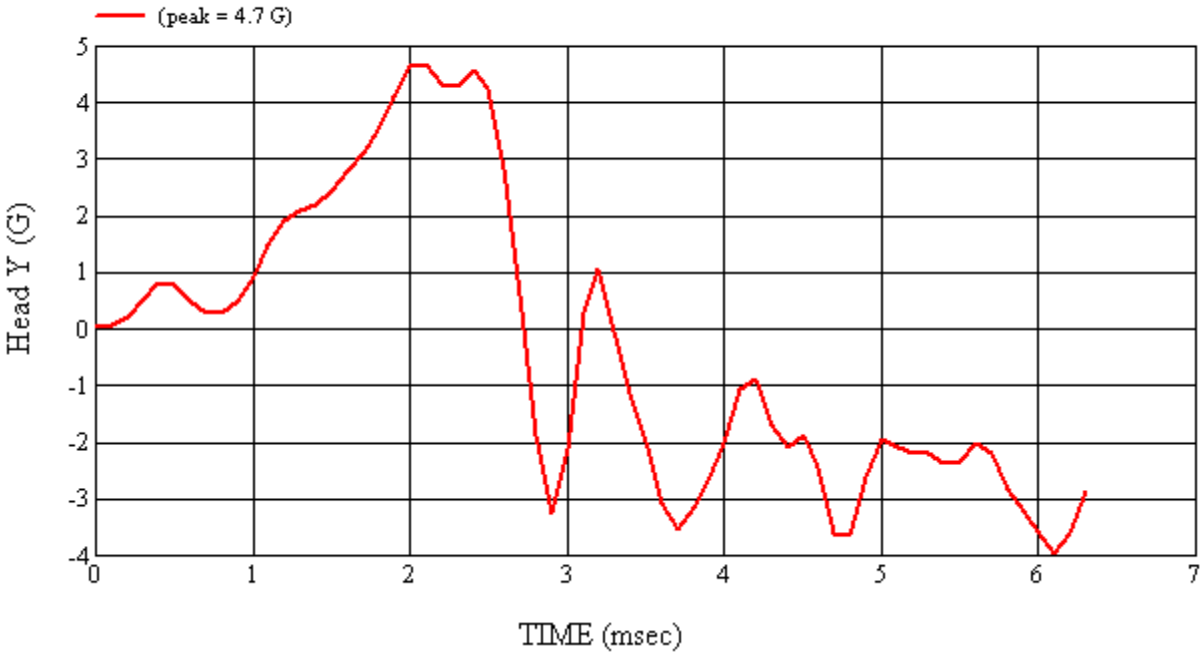
REMARKS:

RECORDED BY: _____ DATE: __6/01/2011____

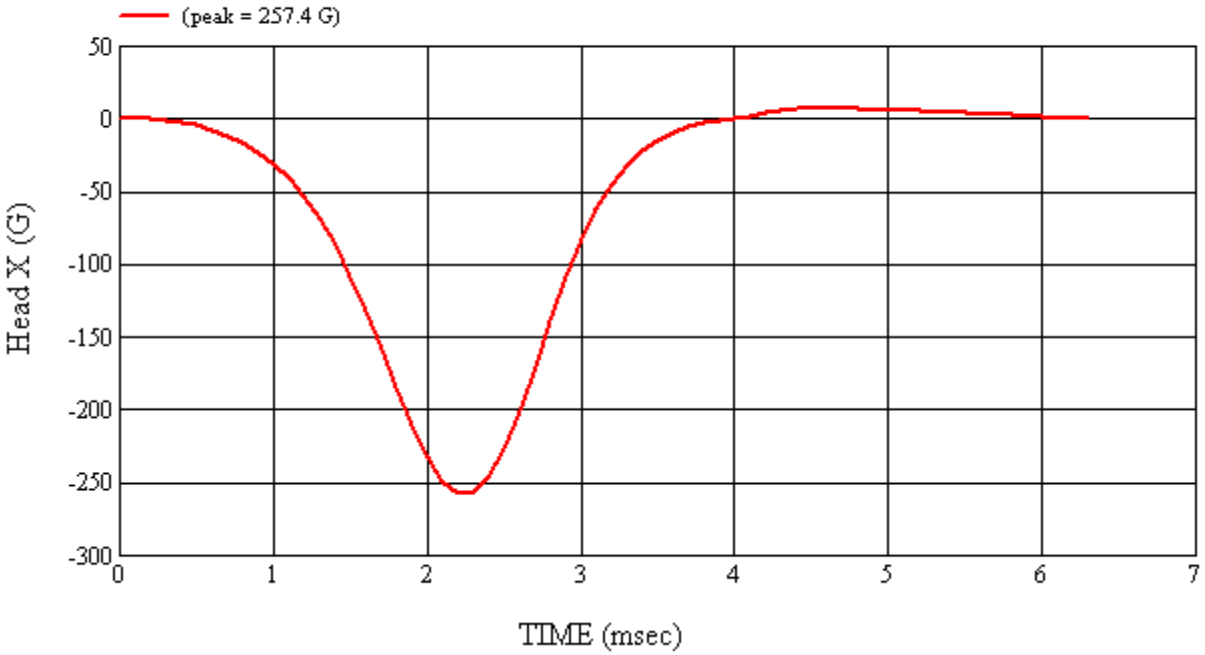
APPROVED BY: _____



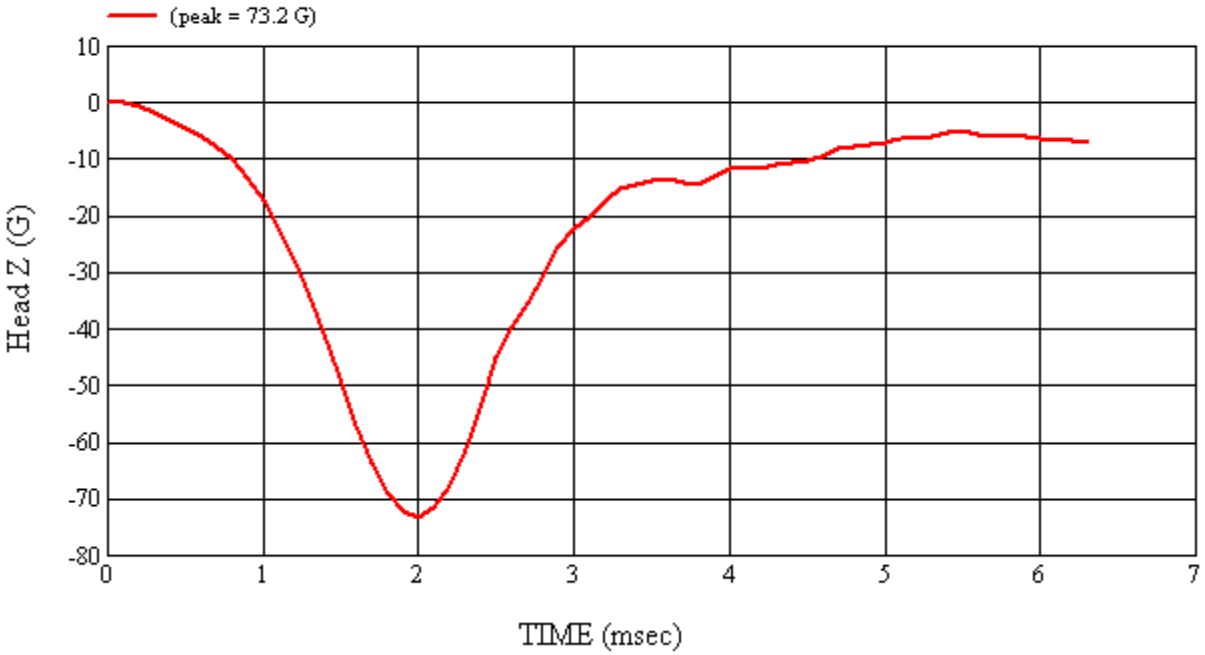
Head 037 (Post) Calibration #H37024



Head 037 (Post) Calibration #H37024



Head 037 (Post) Calibration #H37024



Head 037 (Post) Calibration #H37024

4-5 Pre-Test Calibration

HEAD DROP TEST SUMMARY
PART 572L

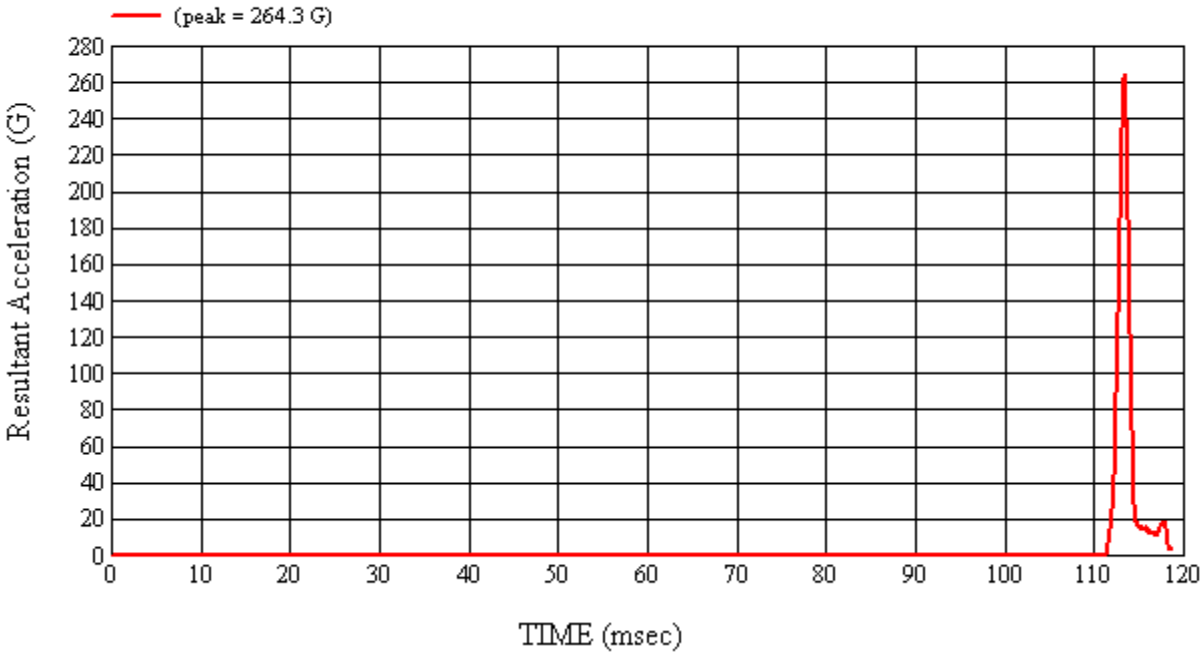
HEADFORM SERIAL NUMBER: 038	CALIBRATION DATE: 5/24/2011 CALIBRATION TIME: 2:49:18 PM	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
Weight	9.90 to 10.10 lbs.	9.90
Temperature	19° C to 26° C	22.4
Relative Humidity	10% to 70%	57.2
Peak Resultant Acceleration	225 G's to 275 G's	264.3
Peak Lateral Acceleration	15 G's Maximum	12.6
Unimodal Acceleration Curve	YES	YES

FMH INSTRUMENTATION					
HEAD ACCELEROMETERS					
Channel Number	**Manufacturer**	**Model Number**	**Serial Number**	**Date of Last Calibration**	**Date of Next Calibration**
1	ENDEVCO	7264-2000	J22700	02/07/11	08/07/11
2	ENDEVCO	7264-2000	J36197	02/07/11	08/07/11
3	ENDEVCO	7264-2000	J36353	02/07/11	08/07/11

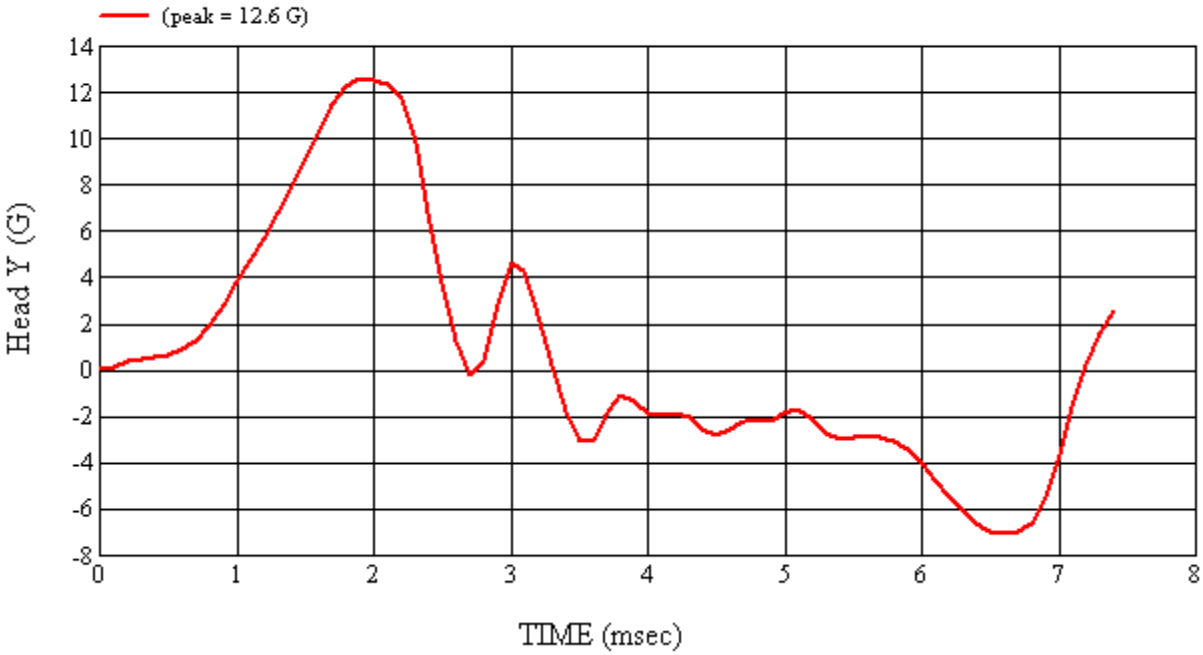
REMARKS:

RECORDED BY: _____ DATE: 5/24/2011

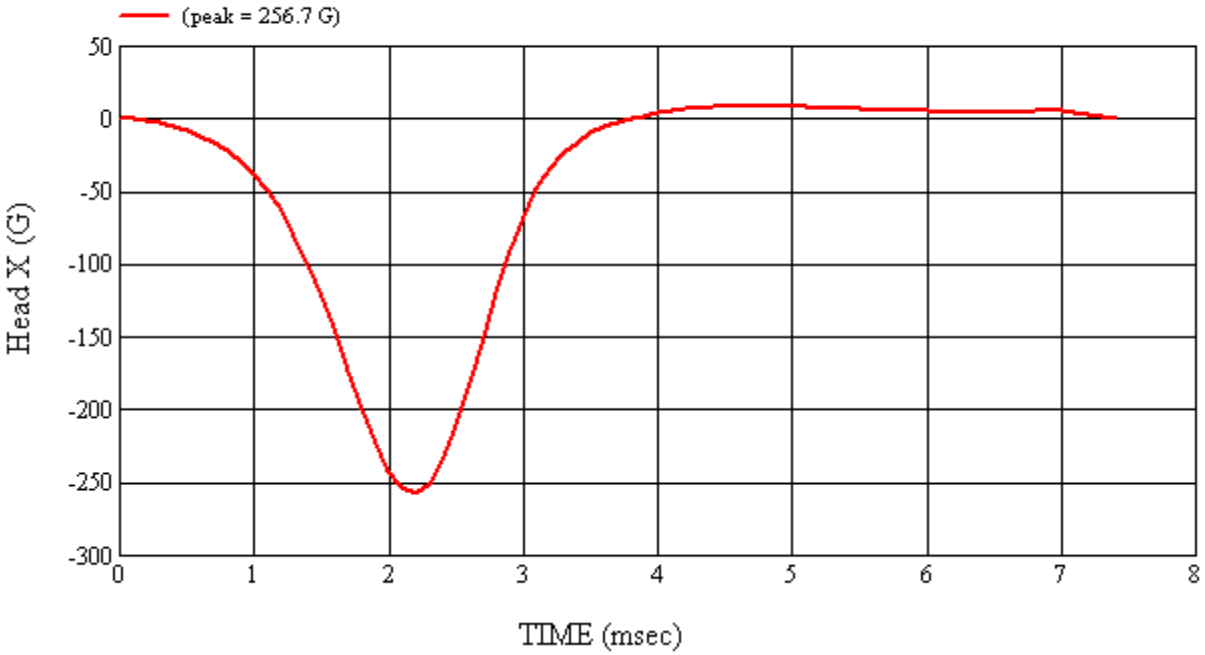
APPROVED BY: _____



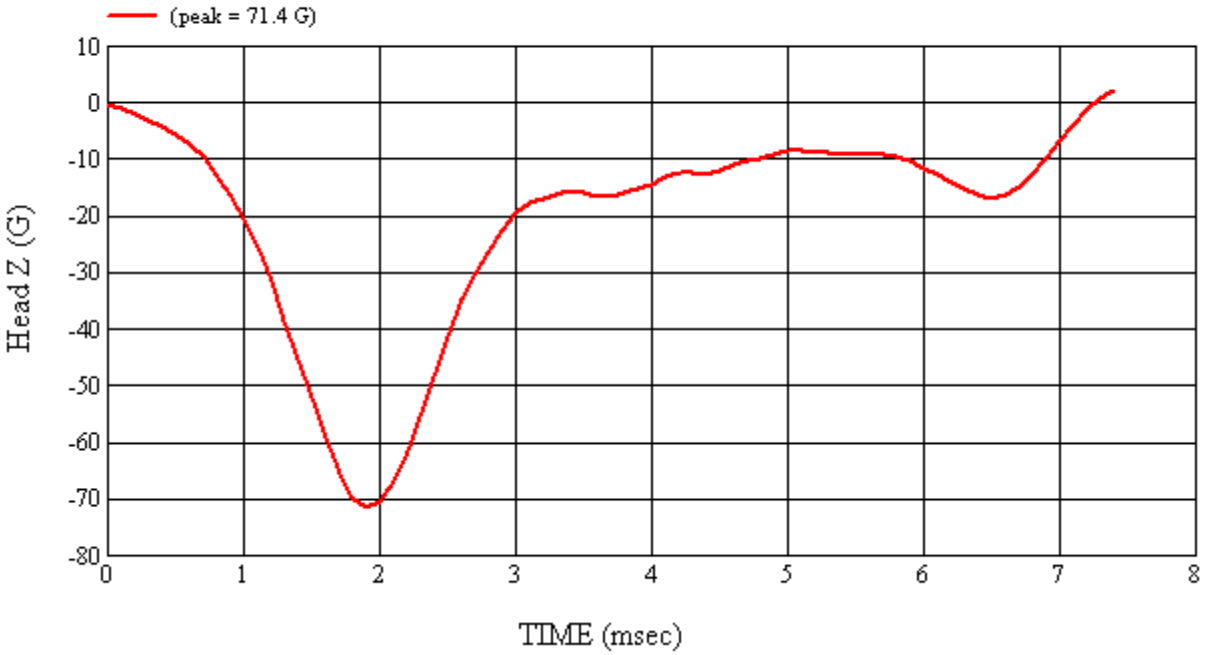
Head 038 (Pre) Calibration #H38023



Head 038 (Pre) Calibration #H38023



Head 038 (Pre) Calibration #H38023



Head 038 (Pre) Calibration #H38023

4-6 Post-Test Calibration

HEAD DROP TEST SUMMARY
PART 572L

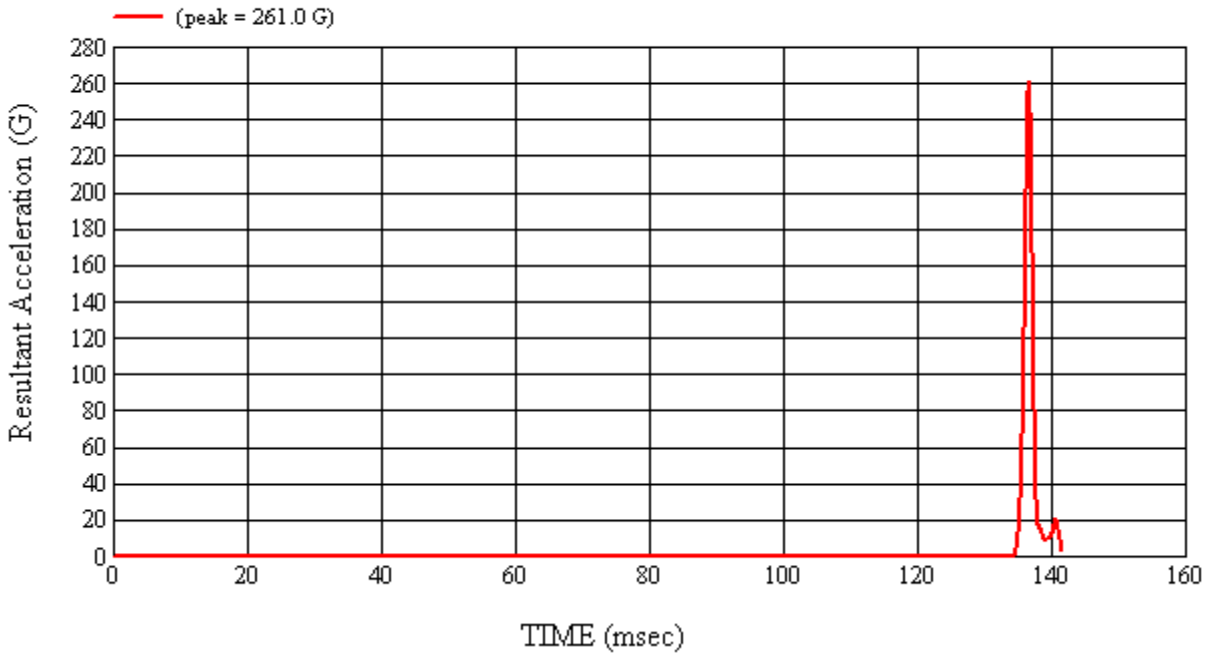
HEADFORM SERIAL NUMBER: 038	CALIBRATION DATE: 6/1/2011 CALIBRATION TIME: 9:12:48 AM	
TEST PARAMETER	**SPECIFICATION**	**TEST RESULTS**
Weight	9.90 to 10.10 lbs.	9.90
Temperature	19° C to 26° C	21.3
Relative Humidity	10% to 70%	53.9
Peak Resultant Acceleration	225 G's to 275 G's	261.0
Peak Lateral Acceleration	15 G's Maximum	9.9
Unimodal Acceleration Curve	YES	YES

FMH INSTRUMENTATION					
HEAD ACCELEROMETERS					
Channel Number	**Manufacturer**	**Model Number**	**Serial Number**	**Date of Last Calibration**	**Date of Next Calibration**
1	ENDEVCO	7264-2000	J22700	02/07/11	08/07/11
2	ENDEVCO	7264-2000	J36197	02/07/11	08/07/11
3	ENDEVCO	7264-2000	J36353	02/07/11	08/07/11

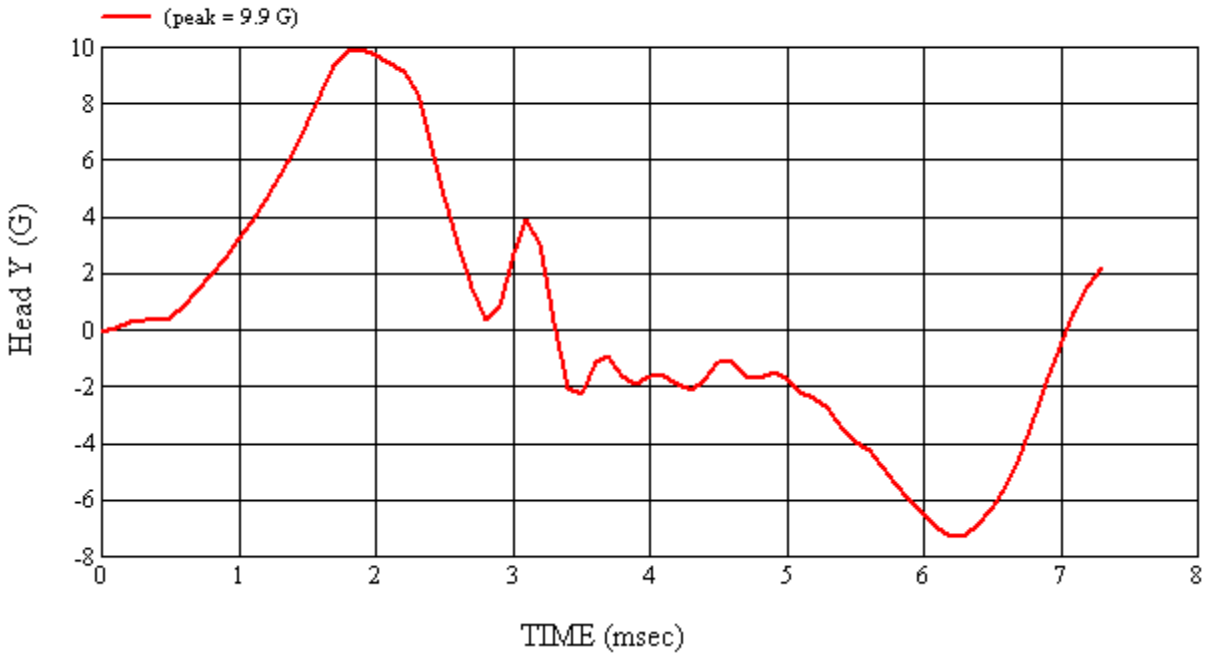
REMARKS:

RECORDED BY: _____ DATE: __6/01/2011____

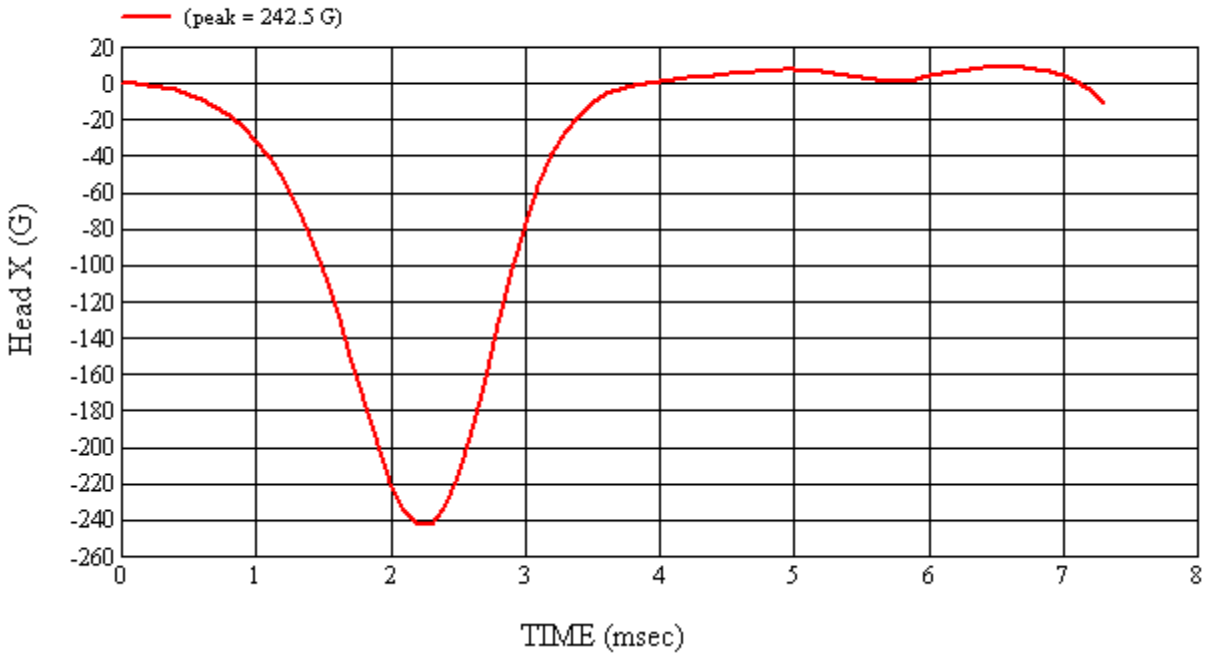
APPROVED BY: _____



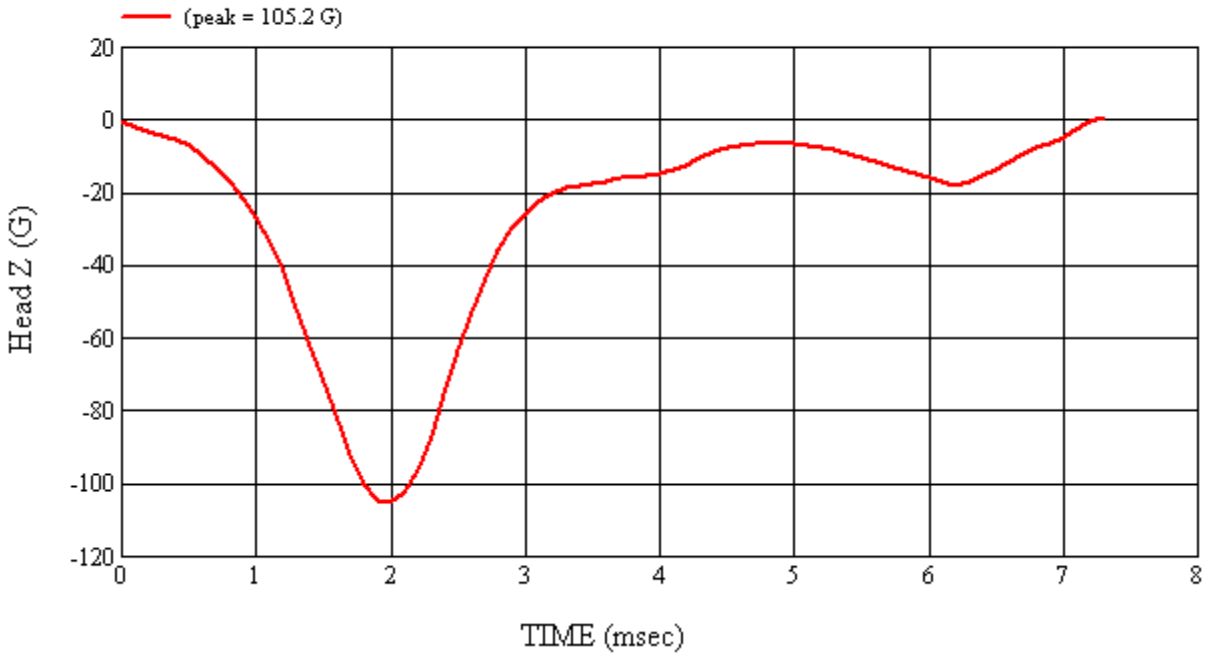
Head 038 (Post) Calibration #H38024



Head 038 (Post) Calibration #H38024



Head 038 (Post) Calibration #H38024



Head 038 (Post) Calibration #H38024

5.0 PHOTOGRAPHS

As Delivered – Left Side View

As Delivered – Right Side View

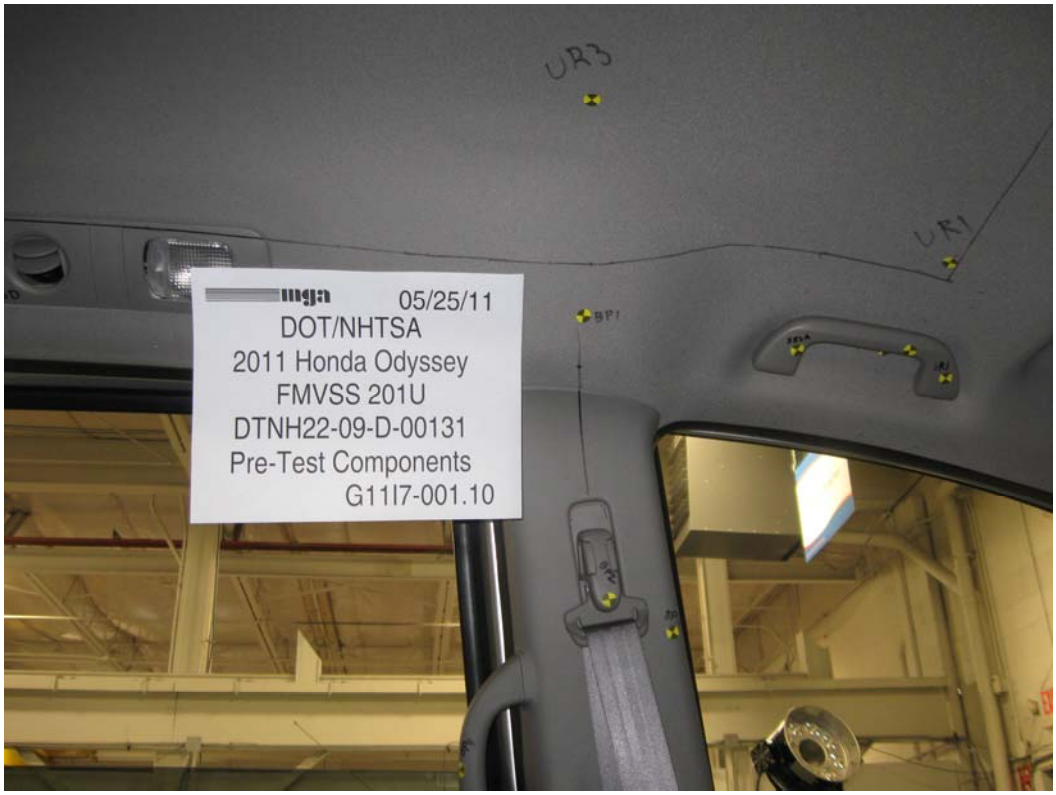
As Delivered – ¾ Front View From Left Side

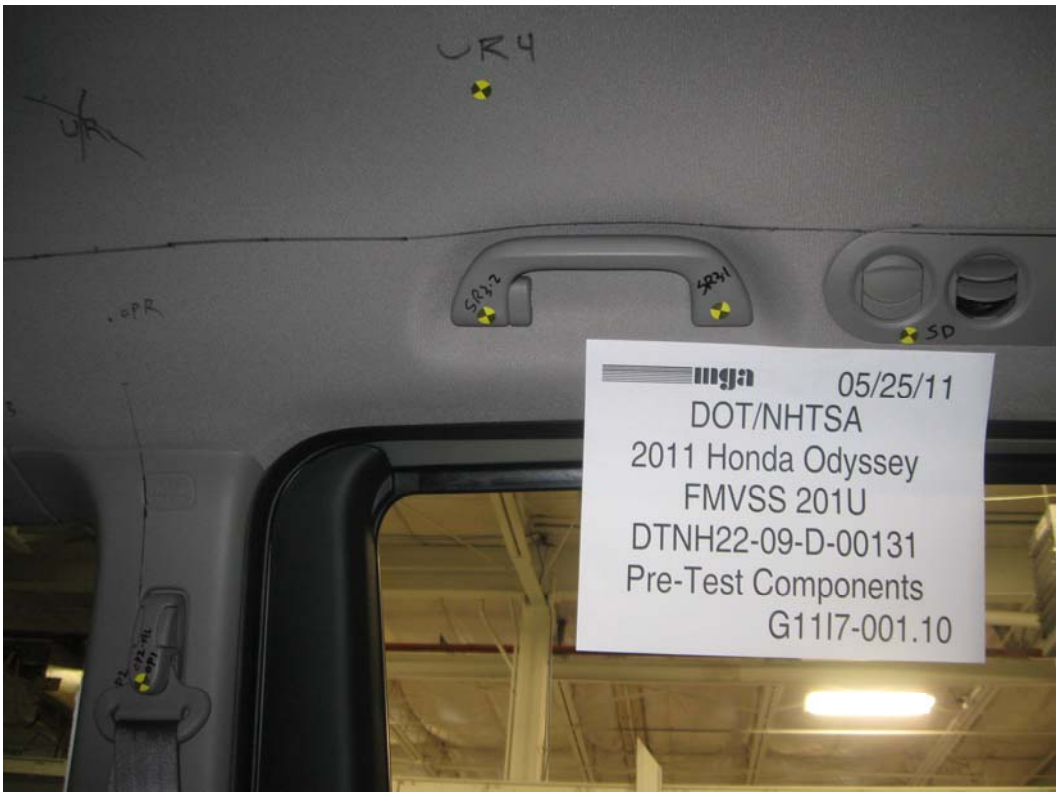
As Delivered – ¾ Rear View From Right Side

As Delivered – Vehicle's Certification Label

As Delivered – Vehicle's Tire Information Label

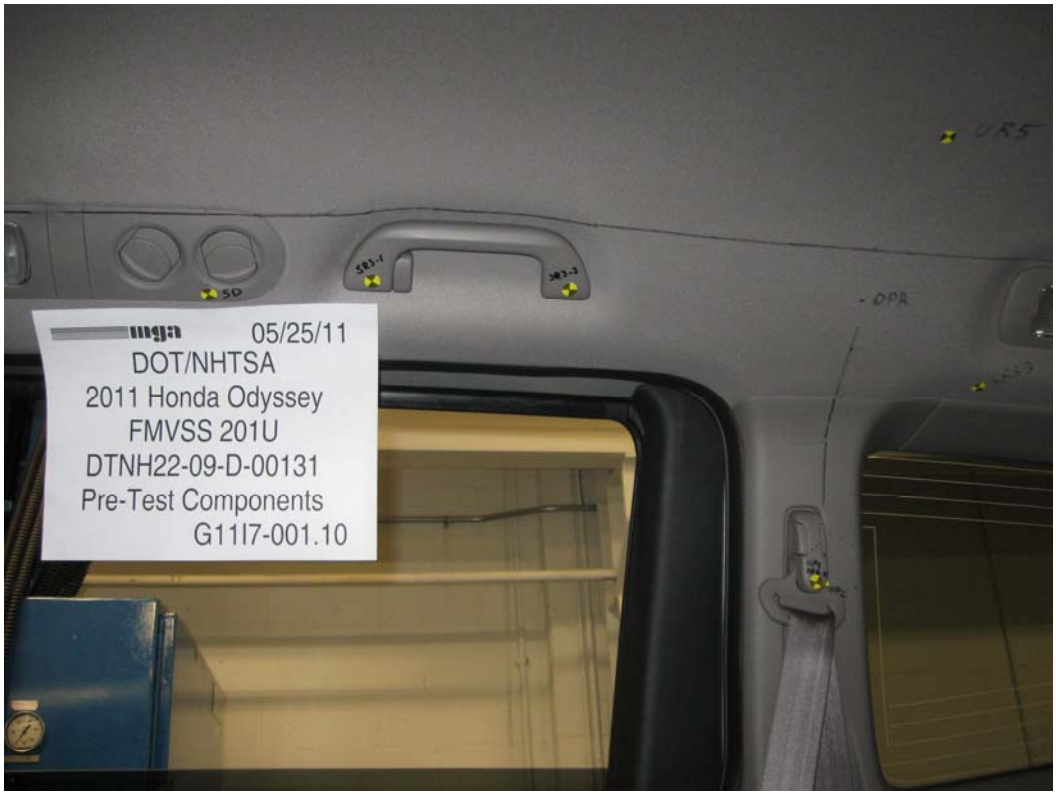
Pre-Test Component Photographs

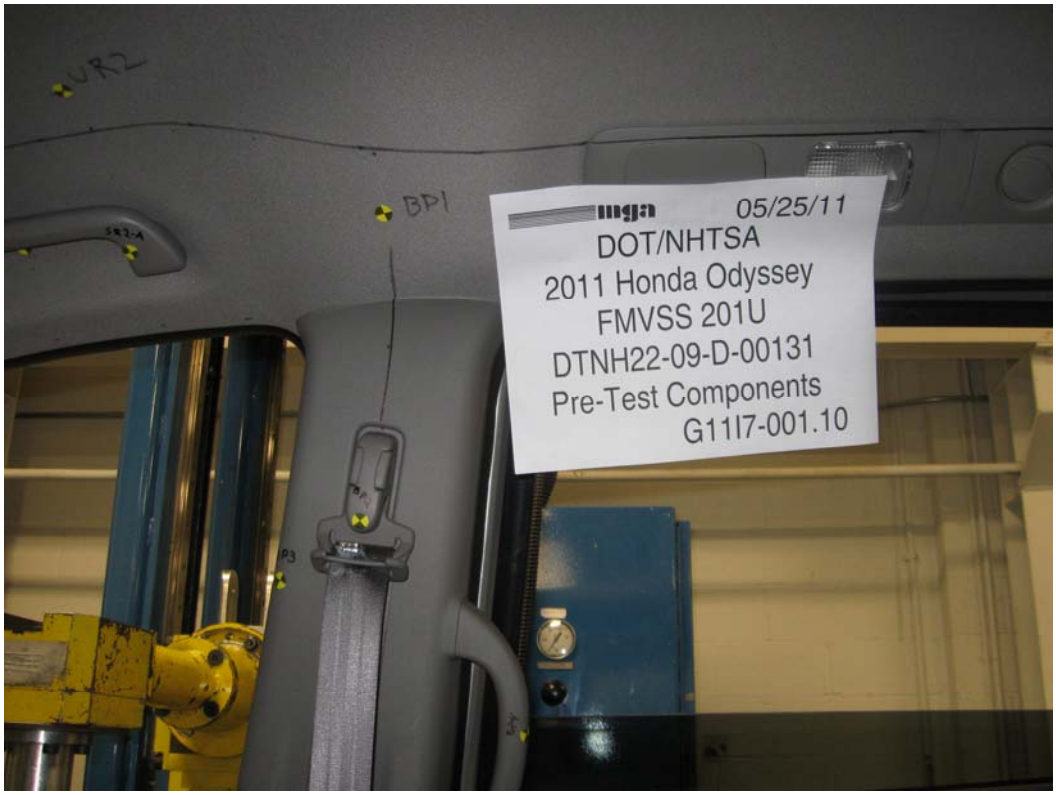

UR3
UR1
mga
05/25/11
DOT/NHTSA
2011 Honda Odyssey
FMVSS 201U
DTNH22-09-D-00131
Pre-Test Components
G11I7-001.10


UR4
UR
SR3.2
SR3.1
SD
mga
05/25/11
DOT/NHTSA
2011 Honda Odyssey
FMVSS 201U
DTNH22-09-D-00131
Pre-Test Components
G11I7-001.10


UR6
RH
SR3-5
RR2
RR1
05/25/11
DOT/NHTSA
2011 Honda Odyssey
FMVSS 201U
DTNH22-09-D-00131
Pre-Test Components
G11I7-001.10


UR5
- DPR
SR33
RR1
RR2
05/25/11
DOT/NHTSA
2011 Honda Odyssey
FMVSS 201U
DTNH22-09-D-00131
Pre-Test Components
G11I7-001.10

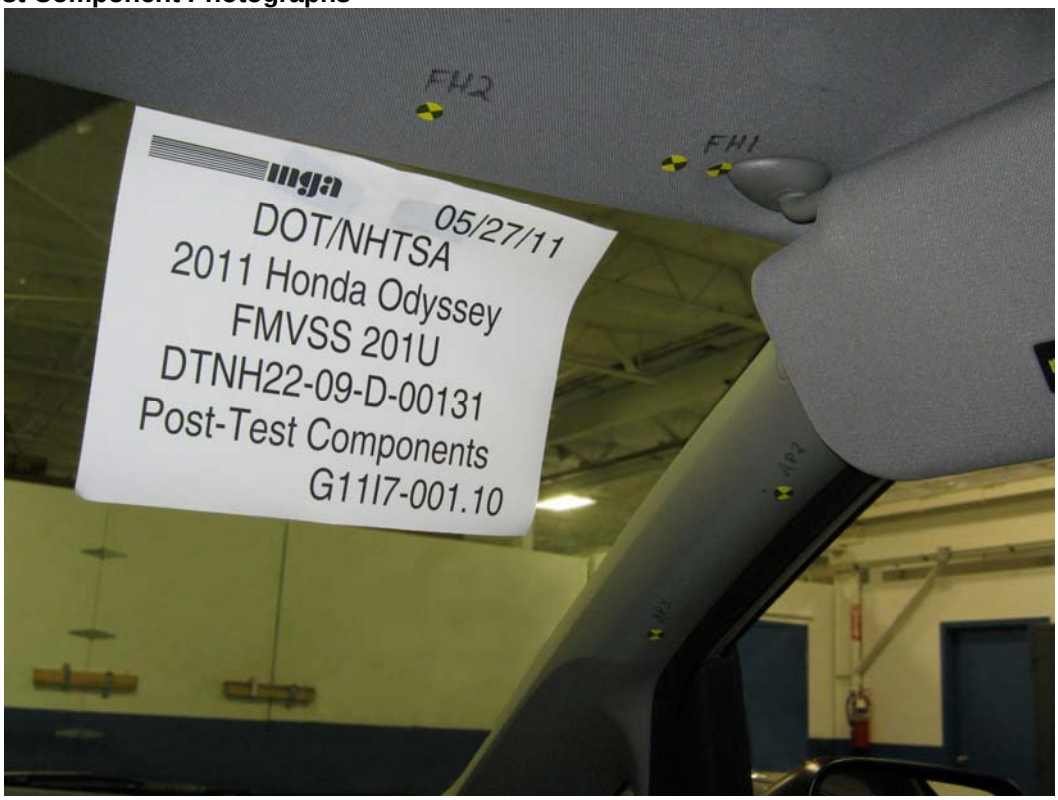

UR5
SD
SB3-1
SB3-2
DPR
mga
05/25/11
DOT/NHTSA
2011 Honda Odyssey
FMVSS 201U
DTNH22-09-D-00131
Pre-Test Components
G11I7-001.10

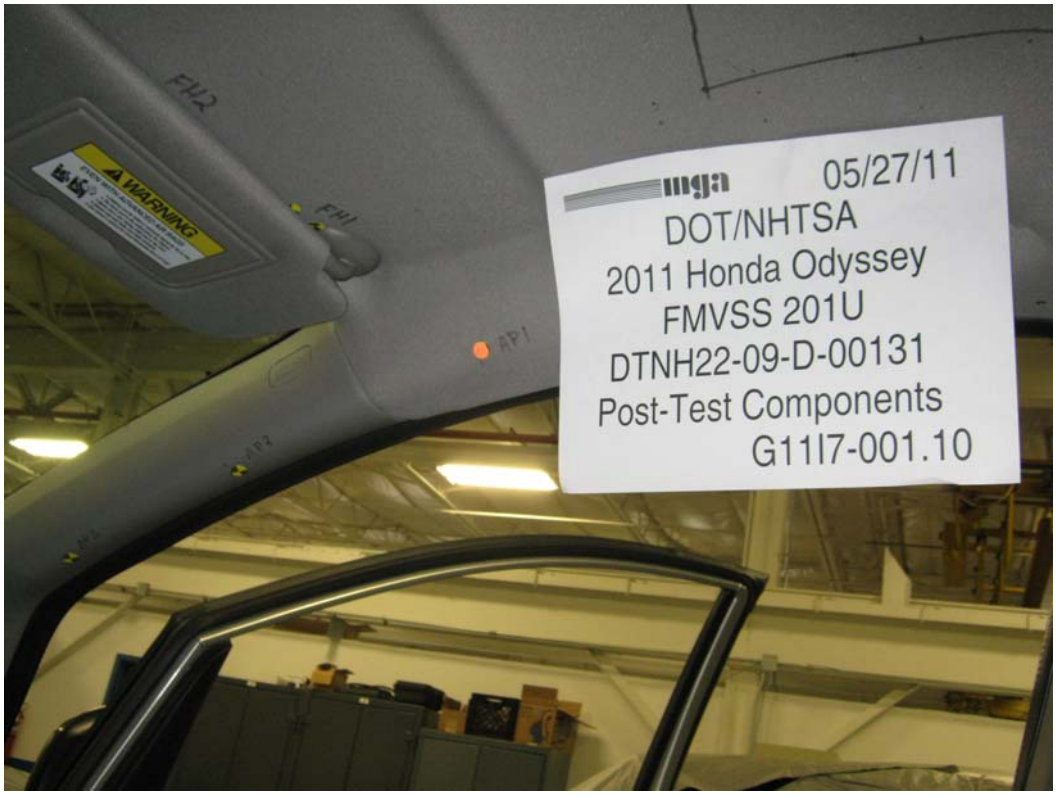

UR2
BP1
SB2-A
P3
mga
05/25/11
DOT/NHTSA
2011 Honda Odyssey
FMVSS 201U
DTNH22-09-D-00131
Pre-Test Components
G11I7-001.10


UR2
SR2-A
SR1
FH2
FH1
mga
05/25/11
DOT/NHTSA
2011 Honda Odyssey
FMVSS 201U
DTNH22-09-D-00131
Pre-Test Components
G11I7-001.10


FH2
FH1
SR1
SR2-A
mga
05/25/11
DOT/NHTSA
2011 Honda Odyssey
FMVSS 201U
DTNH22-09-D-00131
Pre-Test Components
G11I7-001.10

Post-Test Component Photographs






mga
05/27/11
DOT/NHTSA
2011 Honda Odyssey
FMVSS 201U
DTNH22-09-D-00131
Post-Test Components
G11I7-001.10


mga
05/27/11
DOT/NHTSA
2011 Honda Odyssey
FMVSS 201U
DTNH22-09-D-00131
Post-Test Components
G11I7-001.10


UR5
- DPR
LR33
nga
05/27/11
DOT/NHTSA
2011 Honda Odyssey
FMVSS 201U
DTNH22-09-D-00131
Post-Test Components
G11I7-001.10

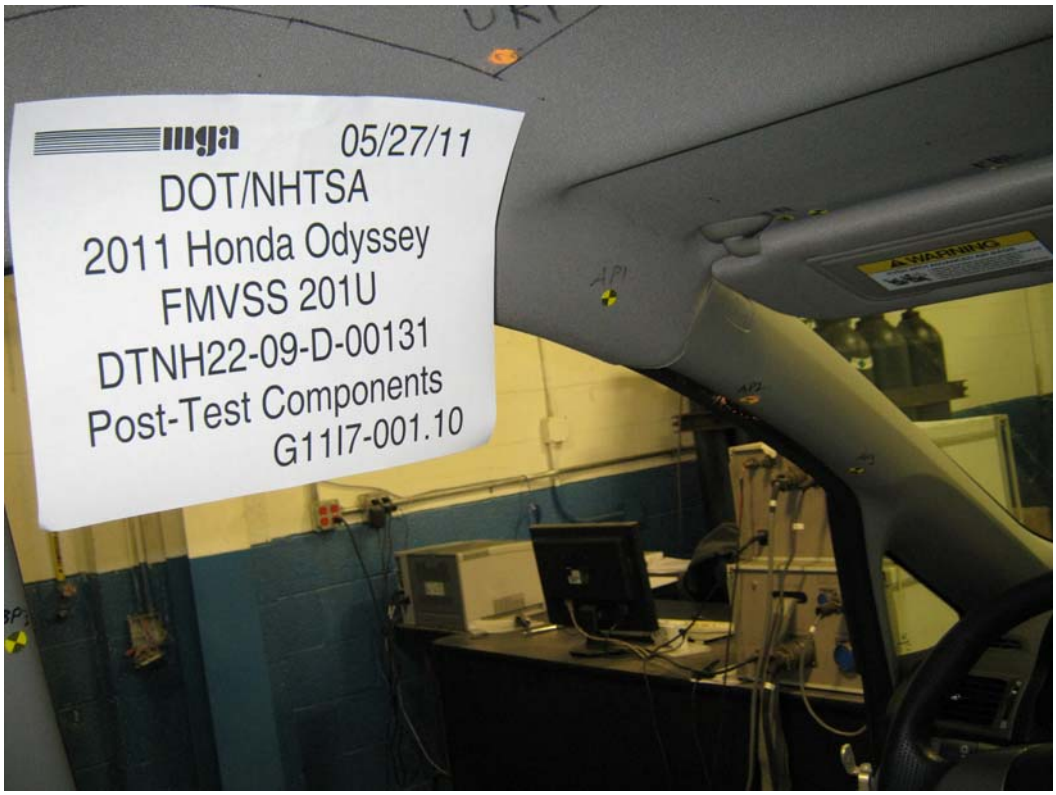

nga
05/27/11
DOT/NHTSA
2011 Honda Odyssey
FMVSS 201U
DTNH22-09-D-00131
Post-Test Components
G11I7-001.10


UR6
mga
05/27/11
DOT/NHTSA
2011 Honda Odyssey
FMVSS 201U
DTNH22-09-D-00131
Post-Test Components
G11I7-001.10
RH


UR6
mga
05/27/11
DOT/NHTSA
2011 Honda Odyssey
FMVSS 201U
DTNH22-09-D-00131
Post-Test Components
G11I7-001.10

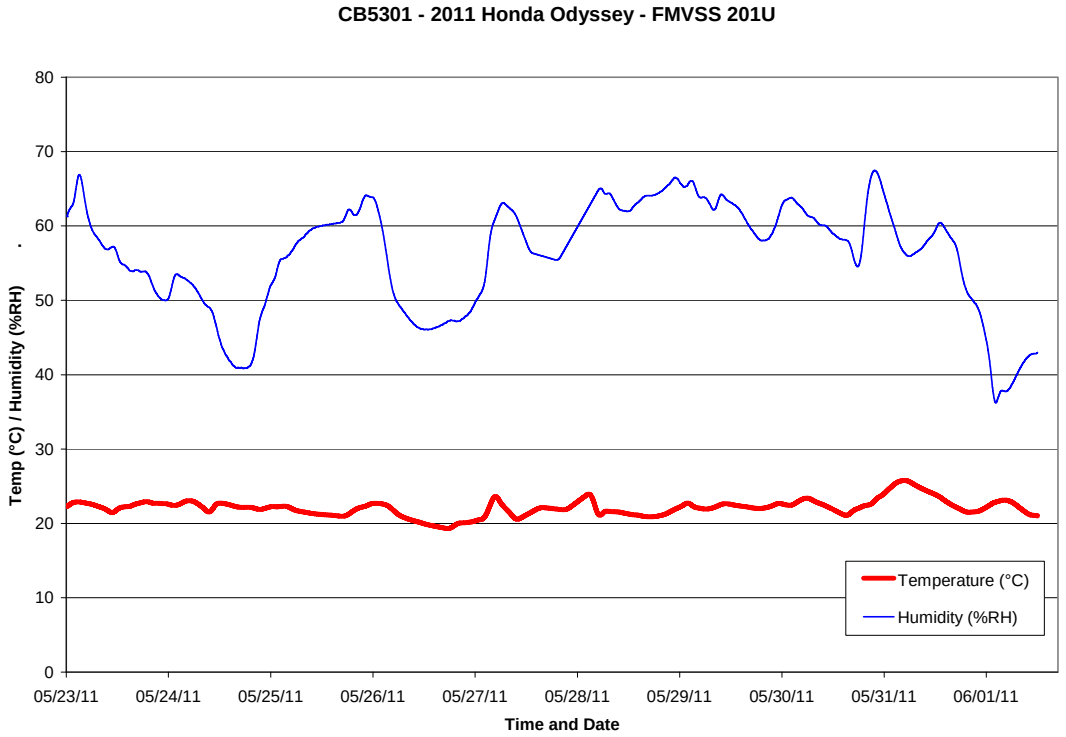

UR4
mga
05/27/11
DOT/NHTSA
2011 Honda Odyssey
FMVSS 201U
DTNH22-09-D-00131
Post-Test Components
G11I7-001.10


UR3
UR1
mga
05/27/11
DOT/NHTSA
2011 Honda Odyssey
FMVSS 201U
DTNH22-09-D-00131
Post-Test Components
G11I7-001.10


mga
05/27/11
DOT/NHTSA
2011 Honda Odyssey
FMVSS 201U
DTNH22-09-D-00131
Post-Test Components
G11I7-001.10


mga
05/27/11
DOT/NHTSA
2011 Honda Odyssey
FMVSS 201U
DTNH22-09-D-00131
Post-Test Components
G11I7-001.10

Appendix A – Temperature Trace



Appendix B – Calibration Certificates

MGA Research Corporation-Calibration Certificate

ACCELEROMETER

Reference	
Name:	Accel Standard
Model #	352C03
Serial #:	95980
Capacity:	G's:250
Calibration Date:	9/14/2010
Calibrated By:	Modal Shop

Sensor	
Name:	MGA MI
Manufacturer	Endevco
Model #:	7264-2000
Serial #:	J35919
Capacity/Range: (G's)	2,000

Calibration Date:	2/4/2011
New DLR(Units:G'S) [1] 100K SHUNT	95.8
Linearity:[2]	0.99951
New vs Old Sensitivit (% Difference)	0.7
Temperature:	72 °F
Humidity:	20 %
Sensitivity (mV/V/G):	0.025975
Calibrated By:	Ryan Jones

Signature: _____

Approved by: Edward A. Kalista

1. Actual data of reference and sensor instruments is found in calibration files

2. Linearity is defined as 1- (Standard Deviation/ Mean)

All calibrations are traceable to the National Institute of Standards and Technology

Calibration uncertainty no greater than 4.0 % at the 95% confidence level.

MGA Research Corporation-Calibration Certificate

ACCELEROMETER

Reference	
Name:	Accel Standard
Model #	352C03
Serial #:	95980
Capacity:	G's:250
Calibration Date:	9/14/2010
Calibrated By:	Modal Shop

Sensor	
Name:	MGA MI
Manufacturer	Endevco
Model #:	7264-2000
Serial #:	J22664
Capacity/Range: (G's)	2,000

Calibration Date:	2/4/2011
New DLR(Units:G'S) [1] 100K SHUNT	94.2
Linearity:[2]	0.99938
New vs Old Sensitivit (% Difference)	1.2
Temperature:	72 ^{0}F
Humidity:	20 %
Sensitivity (mV/V/G):	0.026447
Calibrated By:	Ryan Jones

Signature: _____

Approved by: Helen A. Kalata

1. Actual data of reference and sensor instruments is found in calibration files

2. Linearity is defined as 1- (Standard Deviation/ Mean)

All calibrations are traceable to the National Institute of Standards and Technology

Calibration uncertainty no greater than 4.0 % at the 95% confidence level.

MGA Research Corporation-Calibration Certificate

ACCELEROMETER

Reference	
Name:	Accel Standard
Model #	352C03
Serial #:	95980
Capacity:	G's:250
Calibration Date:	9/14/2010
Calibrated By:	Modal Shop

Sensor	
Name:	MGA MI
Manufacturer	Endevco
Model #:	7264-2000
Serial #:	J35924
Capacity/Range: (G's)	2,000

Calibration Date:	2/4/2011
New DLR(Units:G'S) [1] 100K SHUNT	92.8
Linearity:[2]	0.99947
New vs Old Sensitivit (% Difference)	1.2
Temperature:	72 °F
Humidity:	20 %
Sensitivity (mV/V/G):	0.026824
Calibrated By:	Ryan Jones

Signature: _____

Approved by: Steven A. Kaleto

1. Actual data of reference and sensor instruments is found in calibration files

2. Linearity is defined as 1- (Standard Deviation/ Mean)

All calibrations are traceable to the National Institute of Standards and Technology

Calibration uncertainty no greater than 4.0 % at the 95% confidence level.

MGA Research Corporation-Calibration Certificate

ACCELEROMETER

Reference	
Name:	Accel Standard
Model #	352C03
Serial #:	95980
Capacity:	G's:250
Calibration Date:	9/14/2010
Calibrated By:	Modal Shop

Sensor	
Name:	MGA MI
Manufacturer	Endevco
Model #:	7264-2000
Serial #:	J32177
Capacity/Range: (G's)	2,000

Calibration Date:	2/4/2011
New DLR(Units:G'S) [1] 100K SHUNT	113.7
Linearity:[2]	0.9997
New vs Old Sensitivit (% Difference)	-0.2
Temperature:	72 °F
Humidity:	20 %
Sensitivity (mV/V/G):	0.021883
Calibrated By:	Ryan Jones

Signature: _____

Approved by: Helen Q. Kaleto

1. Actual data of reference and sensor instruments is found in calibration files

2. Linearity is defined as 1- (Standard Deviation/ Mean)

All calibrations are traceable to the National Institute of Standards and Technology

Calibration uncertainty no greater than 4.0 % at the 95% confidence level.

MGA Research Corporation-Calibration Certificate

ACCELEROMETER

Reference	
Name:	Accel Standard
Model #	352C03
Serial #:	95980
Capacity:	G's:250
Calibration Date:	9/14/2010
Calibrated By:	Modal Shop

Sensor	
Name:	MGA MI
Manufacturer	Endevco
Model #:	7264-2000
Serial #:	J14103
Capacity/Range: (G's)	2,000

Calibration Date:	2/4/2011
New DLR(Units:G'S) [1] 100K SHUNT	93.9
Linearity:[2]	0.99955
New vs Old Sensitivit (% Difference)	-0.1
Temperature:	72 °F
Humidity:	20 %
Sensitivity (mV/V/G):	0.026479
Calibrated By:	Ryan Jones

Signature: _____

Approved by: Helen A. Kalata

1. Actual data of reference and sensor instruments is found in calibration files

2. Linearity is defined as 1- (Standard Deviation/ Mean)

All calibrations are traceable to the National Institute of Standards and Technology

Calibration uncertainty no greater than 4.0 % at the 95% confidence level.

MGA Research Corporation-Calibration Certificate

ACCELEROMETER

Reference	
Name:	Accel Standard
Model #	352C03
Serial #:	95980
Capacity:	G's:250
Calibration Date:	9/14/2010
Calibrated By:	Modal Shop

Sensor	
Name:	MGA MI
Manufacturer	Endevco
Model #:	7264-2000
Serial #:	J35800
Capacity/Range: (G's)	2,000

Calibration Date:	2/4/2011
New DLR(Units:G'S) [1] 100K SHUNT	97.8
Linearity:[2]	0.9995
New vs Old Sensitivit (% Difference)	0.6
Temperature:	72 °F
Humidity:	20 %
Sensitivity (mV/V/G):	0.025451
Calibrated By:	Ryan Jones

Signature: _____

Approved by: Howard Kaleto

1. Actual data of reference and sensor instruments is found in calibration files

2. Linearity is defined as 1- (Standard Deviation/ Mean)

All calibrations are traceable to the National Institute of Standards and Technology

Calibration uncertainty no greater than 4.0 % at the 95% confidence level.

MGA Research Corporation-Calibration Certificate

ACCELEROMETER

Reference	
Name:	Accel Standard
Model #	352C03
Serial #:	95980
Capacity:	G's:250
Calibration Date:	9/14/2010
Calibrated By:	Modal Shop

Sensor	
Name:	MGA MI
Manufacturer	Endevco
Model #:	7264-2000
Serial #:	J22700
Capacity/Range: (G's)	2,000

Calibration Date:	2/7/2011
New DLR(Units:G'S) [1] 100K SHUNT	96.4
Linearity: [2]	0.99966
New vs Old Sensitivit (% Difference)	0.5
Temperature:	70 °F
Humidity:	20 %
Sensitivity (mV/V/G):	0.025819
Calibrated By:	Chris Collins

Signature: Chris Collins

Approved by: Steven A. Kalette

1. Actual data of reference and sensor instruments is found in calibration files

2. Linearity is defined as 1- (Standard Deviation/ Mean)

All calibrations are traceable to the National Institute of Standards and Technology

Calibration uncertainty no greater than 4.0 % at the 95% confidence level.

MGA Research Corporation-Calibration Certificate

ACCELEROMETER

Reference	
Name:	Accel Standard
Model #	352C03
Serial #:	95980
Capacity:	G's:250
Calibration Date:	9/14/2010
Calibrated By:	Modal Shop

Sensor	
Name:	MGA MI
Manufacturer	Endevco
Model #:	7264-2000
Serial #:	J36197
Capacity/Range: (G's)	2,000

Calibration Date:	2/7/2011
New DLR(Units:G'S) [1] 100K SHUNT	108.7
Linearity:[2]	0.99976
New vs Old Sensitivit (% Difference)	0.9
Temperature:	70 °F
Humidity:	20 %
Sensitivity (mV/V/G):	0.022869
Calibrated By:	Chris Collins

Signature: Chris Collins

Approved by: Helen R. Kaleto

1. Actual data of reference and sensor instruments is found in calibration files

2. Linearity is defined as 1- (Standard Deviation/ Mean)

All calibrations are traceable to the National Institute of Standards and Technology

Calibration uncertainty no greater than 4.0 % at the 95% confidence level.

MGA Research Corporation-Calibration Certificate

ACCELEROMETER

Reference	
Name:	Accel Standard
Model #	352C03
Serial #:	95980
Capacity:	G's:250
Calibration Date:	9/14/2010
Calibrated By:	Modal Shop

Sensor	
Name:	MGA MI
Manufacturer	Endevco
Model #:	7264-2000
Serial #:	J36353
Capacity/Range: (G's)	2,000

Calibration Date:	2/7/2011
New DLR(Units:G'S) [1] 100K SHUNT	99.1
Linearity:[2]	0.99988
New vs Old Sensitivit (% Difference)	0.9
Temperature:	70 °F
Humidity:	20 %
Sensitivity (mV/V/G):	0.025114
Calibrated By:	Chris Collins

Signature: Chris Collins

Approved by: Helen R. Kaleto

1. Actual data of reference and sensor instruments is found in calibration files

2. Linearity is defined as 1- (Standard Deviation/ Mean)

All calibrations are traceable to the National Institute of Standards and Technology

Calibration uncertainty no greater than 4.0 % at the 95% confidence level.

THE MODAL SHOP INC
3149 East Kemper Rd.
Cincinnati, OH 45241
Ph: 513-351-9919
Fax: 513-458-2172
www.modalshop.com

~Calibration Certificate~

Sensor Information
Model Number: 352C03
Serial Number: 95980
Manufacturer: PCB
ID Number:
Description: ICP® Accelerometer

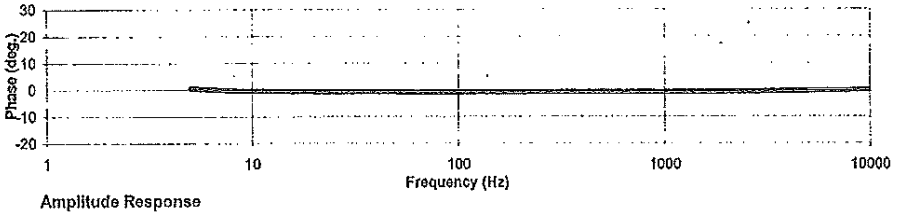
Calibration Data

Sensitivity @ 100 Hz:	9.94	mV/g
Phase @ 100 Hz:	-0.87	deg.
Test Level:	10.00	g

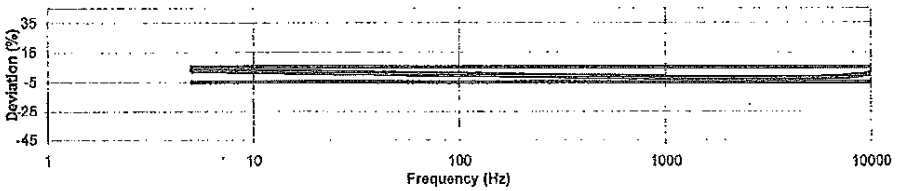
Transducer Specifications

Amp. Range:	± 500	g
Resolution:	0.0005	g
Resonant Freq:	≥ 50000	Hz
Temp. Range:	-54 to 121	°C
	-65 to 250	°F
Axis:	Uni-Axial	

Phase Response



Amplitude Response



Data Table

Freq. (Hz)	Deviation (%)	Phase (deg)
5	3.15	0.41
10	2.18	-0.36
30	0.99	-0.71
50	0.62	-0.68
100	0.00	-0.87
300	-0.88	-0.81
500	-1.29	-0.77
1000	-1.87	-0.77
2000	-2.45	-0.68
3000	-2.46	-0.61
4000	-2.59	-0.49
5000	-2.40	-0.40
6000	-2.09	-0.26
7000	-1.63	-0.23
8000	-1.10	-0.13
9000	-0.30	0.02
10000	0.76	-0.01

Notes
Results relate only to the items calibrated.
This certificate may not be reproduced except in full, without written permission.
Method: Calibration is performed in compliance with ISO 9001 and ISO 17025
This calibration was performed with TMS 9155C Calibration Workstation version 4.6.1
Calibration traceable to primary method which has been proficiency validated through interlaboratory comparison to NIST (project number 822/271196).
Back-to-Back Comparison Calibration per ISO16063-21 .
Procedure Used: PRD-P220
Measurement uncertainty (95% confidence level with coverage factor 2) for frequency ranges tested during calibration are as follows: 0.5-4.99 Hz; ± 3.00%, 5-9.99 Hz; ± 2.50%, 10-99 Hz; ± 1.70%, 100 Hz; ± 1.25%, 101-920 Hz; ± 1.40%, 921-5000 Hz; ± 1.70%, 5001-10,000 Hz; ± 2.20%, 10,001-15,000 Hz; ± 3.65%, 15,001-20,000 Hz; ± 4.75%.

Customer
MGA Research Corp.

User Notes

Unit Condition
As Found: In Tolerance
As Left: In Tolerance

Lab Conditions
Temperature: 73 (23) °F (°C)
Humidity: 32 %

Approval Information
Technician: Ed Devlin
Approval:

Cal Date: 9/14/2010
Due Date:

ACCREDITED

Cal ID: 15800 264901

THE MODAL SHOP INC
3149 East Kemper Rd.
Cincinnati, OH 45241
Ph: 513-351-9919
Fax: 513-458-2172
www.modalshop.com

~Calibration Certificate~

Sensor Information

Model Number	352C03
Serial Number	95980
Manufacturer	PCB
ID Number	

Note

This certificate may not be reproduced except in full, without written permission.

Standards and/or Equipment Used During Calibration

Description	Manufacturer	Model	Serial	Due Date
Data Aquisition Card	NI	4461	15004324	6/29/2011
Std Accelerometer	PCB	080A200	110553	12/8/2010
Air Bearing Shaker	PCB	396C11	603	n/a
Std Sig Conditioner	PCB	442A102	173	12/8/2010
SUT Signal Conditioner	PCB	443B101	379	9/19/2010
Power Amplifier	TMS	2100E21-C	1002	n/a

Technician: Ed Devlin

Cal Date: 9/14/2010

Customer: MGA Research Corp.

Due Date:

ACCREDITED

Cal ID: 16800 2849.01

Calibration Certificate

Part Description: Gold **Certification Date:** 6/23/2010 (MMDDYYYY) **Serial#:** G10-02-00-01619

Single Point - (Max-Min)/2 Specification: G10-02 .084mm (.0033") **Certificate#:** G0161940352

Volumetric (Max Deviation) Specification: G10-02 +/-.119mm (+/-.0047") **Temperature:** See attached data

Measurement Standards Traceability

Ball Bar Kit	Asset Number: 1041	Calibration Due: 8/10/2010	*SI Traceability: L20100310AB1
Thermometer	Asset Number: 668	Calibration Due: 1/22/2011	*SI Traceability: A2LA-1001080562
Reference Sphere	Asset Number: TQ225	Calibration Due: 10/17/2011	*SI Traceability: NIST 821/270114-04

The artifacts above have been calibrated with a device traceable to the International System of Units (SI) through a National Metrological Institute (NMI) or through an ISO17025 Accredited Laboratory.
Measurement uncertainty is 3.9 + 5.9X micrometers, where X = length in meters.
Uncertainty is expressed at approximately a 95% Level of Confidence using k=2.00.

Calibration Results*

3 Single Point Articulation Tests at <=20%, 20%-80% and >=80% range.	PASSED
1 Effective diameter sphere test.	PASSED
20 Volumetric ball bar tests in 4 quadrants and 2 orientations.	PASSED

*Calibration conforms to procedures developed in accordance with ASME B89.4.22-2004. See attached data for measurement results.

Instrument condition as received:
Within Specifications

Instrument condition outgoing:
Within specifications

Technician: Neil MacLean Date: 6/23/10

FARO Technologies, Inc.
Michigan Regional Office
PH1:248-669-8620

FAX:248-669-8656
L-A-B Cert Number:L1147.01-1

46998 Magellan Drive
Wixom, MI 48393
USA

FARO®

@ 6/28/10

LABORATORY ACCREDITATION BUREAU
ISO/IEC 17025 Accredited

LM-07FRM077-024.XLS
f:\control\records\05manufa\partspec\XH08-0495.eps Rev1 RevDate: 12/08/04

MICHIGAN OPERATIONS
DATE: 2/7/04
SUPERCEDES: MGATPTMC.5

DOC. NO.: MGATP_TMC
REVISION NO.: 6
PAGE 3 OF 3

Tape Measure Calibration Certificate

Reference Steel Rule

Brand: SWANSON
S/N: M6A00799
Calibration Date: 1/15/10

Subject Tape Measure

Brand: STANLEY
S/N: TPM112
Calibration Date: 12/13/10

Reference in (mm)	Subject Tape Measure	Difference	Reference in (mm)	Subject Tape Measure	Difference
0 (0)	0	0	18 (450)	450	0
1 (25)	25	0	19 (475)	475	0
2 (50)	50	0	20 (500)	500	0
3 (75)	75	0	21 (525)	525	0
4 (100)	100	0	22 (550)	550	0
5 (125)	125	0	23 (575)	575	0
6 (150)	150	0	24 (600)	600	0
7 (175)	175	0	25 (625)	625	0
8 (200)	200	0	26 (650)	650	0
9 (225)	225	0	27 (675)	675	0
10 (250)	250	0	28 (700)	700	0
11 (275)	275	0	29 (725)	725	0
12 (300)	300	0	30 (750)	750	0
13 (325)	325	0	31 (775)	775	0
14 (350)	350	0	32 (800)	800	0
15 (375)	375	0	33 (825)	825	0
16 (400)	400	0	34 (850)	850	0
17 (425)	425	0	35 (875)	875	0

If all differences are ± 1/32 of an inch (1 mm), then the tape measure is acceptable.
Pass X Fail ___ Maximum Difference = 0

Date: 12/13/2010 Performed By: RJ Mill

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is ± 0.2%. All certification data and equipment are on file for inspection at your request. Best uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor k=2.

MGA 00749 Digital Inclinometer

NovaStar SOLUTIONS

Calibration Certificate

ACCREDITED
CALIBRATION # 1277.01

Metrology Management Services
Remit to address:
35200 Plymouth Rd.
Livonia, MI 48150

Calibration Certificate #: Z52549:1300715528

DICKSON TM325 TEMP/HUMD DISP

SERIAL NUMBER:	N/A	WORK ORDER:	1300715528
ASSET NUMBER:	Z52549		
CUST. ASSET NUM:	MGA00894		
PROCEDURE NAME:	1012		
PROCEDURE REV:	A	TEST RESULT:	PASS
CALIBRATED BY:	JOE McCONNAUGHHAY	PERFORMED ON:	3/21/2011
CUSTOMER:	MGA RESEARCH 446 Executive Drive Troy, MI 48083	CAL DUE DATE:	3/21/2012
		DATA TYPE:	FOUND-LEFT
		TEMPERATURE:	21.00 °C
PRIMARY CONTACT:	BOB MILLER	HUMIDITY:	38 %

This instrument has been processed and calibrated in accordance with the NovaStar Solutions Quality System Manual and is traceable to the National Institute of Standards and Technology (NIST), or to NIST accepted intrinsic standards of measurement, or derived by the ratio type of self-calibration techniques. The NovaStar Solutions quality system is accredited to ISO/IEC 17025:2005 and ANSI/NCSL Z540-1-1994.

The results reported herein apply only to the calibration of the item described above. No sampling plan was used for this calibration.

The ratio of the tolerance of the instrument or parameter being calibrated to the expanded uncertainty of the standard (TUR) is greater than 4:1 unless otherwise specified. Expanded uncertainties are expressed at the approximate 95% level of confidence using a K=2.
Due to any number of factors, the recommended due date on the item does not imply continuing conformance to specifications during the recommended interval. Unless otherwise stated the unit under test meets or exceeds manufacturer specifications.

For range and best measurement capability specifications for the standards used to perform this calibration, see the most recent calibration report maintained by this calibration laboratory (available upon request).

As Received Condition: IN TOLERANCE **As Returned Condition:** IN TOLERANCE

Action Taken: FULL CALIBRATION

REMARKS:

Standards Used

Asset #	Cert#	Description	Cal Date	Due Date
1504	1504:1296548177	HART SCIENTIFIC 1502A THERMOMETER READOUT	2/7/2011	2/7/2012
1541	1541:1300372477	NEWPORT CT485AL HYGROTHERMOGRAPH	3/17/2011	3/17/2012
1717	1717:1297150241	HART SCIENTIFIC 5614 PRT	2/7/2011	2/7/2012
1917	1917:1296319659	VAISALA M170/HMP76 MEASUREMENT INDICATOR/PROBE	1/29/2011	1/29/2012

***** End of Certificate *****

@ 3/28/11

QA approved: Stan Hall **Date:** 3-22-11

Signature:

Asset Barcode:

MetroCal inc.

ACCREDITED
CALIBRATION CERT #0513.01

4700 Barden Court SE, Kentwood MI 49512, Telephone: 616-698-3124, Fax: 616-698-2364, www.metrocal.com

Certificate of Calibration

MGA Research
446 Executive Drive
Troy, MI 48083

Order Number: **69158**
Certificate Number: **100817600**
Page: **1 of 1**

Gauge Number: **MGA00081**
Gauge Desc: **0 to 20lb x 0.01lb Digital Scale**
Manufacturer: **Cardinal Detecto**
Model Number: **AP-20**
Serial Number: **E33603-0213**

Customer PO: **N/A**
Last Calibration: **7/29/09**
Calibration Date: **8/17/10**
Next Calibration: **8/17/11**

As Found Condition: **In Tolerance**

As Left Condition: **In Tolerance**

MetroCal Inc. maintains reference standards of measurement which are traceable to the National Institute of Standards and Technology, or other authorized National Standards. Calibration was performed in accordance with MetroCal Procedure CP042 and relevant sections of the manufacturer's manual. This calibration complies with ISO/IEC 17025 and ANSI/NCSL Z540-1 Standards. Results shall not be reproduced except in full without the written approval of MetroCal Inc. Results relate only to the item(s) calibrated. Any number of factors may cause the calibration item to drift out of calibration before the recommended interval has expired. Statements of compliance made using simple acceptance rule.

Standard Used	Cal. Date	Due Date	Traceable No.	Calibration Procedure Uncertainty Expressed at 95% confidence , (K=2)
Weight Set	9/3/08	9/3/10	ID# 2463	+/-0.001% of Load

Results:
Tolerance used: ± 0.02lb

Units: lbs **TI Division/Increment:** 0.01 lb

	As Found				As Left		
Weight Test	**Nominal**	**Indication**	**Deviation**		**Nominal**	**Indication**	**Deviation**
Zero	0.00	0.00	0.00		0.00	0.00	0.00
0-25% fs	5.00	5.00	0.00		5.00	5.00	0.00
26-50% fs	10.00	9.99	-0.01		10.00	9.99	-0.01
51-75% fs	15.00	14.99	-0.01		15.00	14.99	-0.01
76-100% fs	20.00	19.98	-0.02		20.00	19.98	-0.02
1/2 load test	10.00	9.99	-0.01		10.00	9.99	-0.01
return to zero	0.00	0.00	0.00		0.00	0.00	0.00
4 quad/Shift Test:	Pass			**4 quad/Shift Test:**	Pass		

Comments: Environmental conditions during calibration: 78 °F, 51 % RH.
No adjustment required.

Karen Shipley
Calibration Technician

Issued: 8/17/10

☐ Checked box indicate this calibration was performed at the customers facility.

@ 8/20/10

Sterling Scale Co., Inc.
20950 Boening St.
Southfield, MI 48076

Certificate of Calibration

F410/12-3
Rev. Date 11/23/05

calibration cert. 1448.01

Customer: MGA Research *Cert#* 10-6914 *Temp/Humidity:* ok
Location of Calibration: 2839 Elliot Rd Troy MI 48083
Calibration Date: 7/21/2010 *Due Date:* Jul-11 *Condition of Item:* Fair
Equipment Make: Intercomp *Model:* SW Deluxe *Serial Number* 26032389 *Capacity:* 2200 lb x 1 lb Per weigh pad
8800 lb x 1 lb Scale system total capacity

Applied Test Wt	*Before Adustment*	*Tolerance*	*In-Tolerance Y/N*	*After Adjustment*	*In-Tolerance Y/N*	*Unc*	
10 lb	9 lb	1 lb	y	n/a	y	0.002 lb	Right Rear Pad
100 lb	100 lb	1 lb	y	n/a	y	0.11 lb	
1000 lb	1000 lb	2 lb	y	n/a	y	0.14 lb	
10 lb	10 lb	1 lb	y	n/a	y	0.002 lb	Right Front Pad
100 lb	100 lb	1 lb	y	n/a	y	0.11 lb	
1000 lb	999 lb	2 lb	y	n/a	y	0.14 lb	

shift test
n/a

Platform #1	*Platform #2*	*Platform #3*
☐ Pass	☐ Pass	☐ Pass
☐ Fail	☐ Fail	☐ Fail

Tests performed: ☑ Repeatability ☑ Linearity ☐ Sensitivity ☑ Discrimination

Technician COMMENTS/ weights used: This scale is a wheel weigh system, there are a total of 4 wheel pads. Each pad has a capacity of 2200lb. A lb. All 4 pads together have a total capacity of 8800 lb. Scale passes tests sn on file

Page 2 of 2

☑ Scale Certified ☐ Scale Rejected

Sterling Scale Service Rep: E.Denny Date: 7/21/2010 1 of 1

The above item has been calibrated using the relevant EPO or OEM procedures utilizing test weights
Traceable to International Systems of Units (SI), through the Michigan Department of Agriculture.
Test numbers on file. Expanded uncertainty(k=2) confidence level of 95% as reported.
Results relate only to items listed.
The reported uncertainty is valid only for the environment in which it is determined.
Any number of factors may cause the item to drift out of calibration before recommended interval has expired
This report shall not be reproduced, except in full without approval of the laboratory
Tolerances followed are maintenance/acceptance per HB 44 or as detremined by the customer
Sterling Scale does not warranty calibration.