

FINAL REPORT NUMBER 201U-MGA-05-06

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

**HONDA OF AMERICA, MFG.
2005 Acura TL 4-Door Sedan
NHTSA No. C55301**

**MGA RESEARCH CORPORATION
446 Executive Drive
Troy, Michigan 48083**



**Test Dates: June 14-16, 2005
Report Date: June 17, 2005**

FINAL REPORT

PREPARED FOR:

**U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
400 SEVENTH STREET, SW
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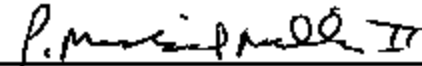
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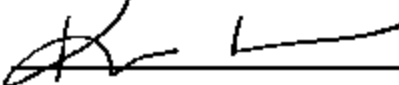

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16. Abstract A compliance test series was conducted on the subject 2005 Acura TL 4-Door Sedan, NHTSA No. C65301, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-201U-01 for the determination of FMVSS 201U compliance. The testing was conducted at MGA Research Corporation in Troy, Michigan on June 14-16, 2005. Test failures identified were as follows: None The data recorded seems to indicate that the 2005 Acura TL 4-Door Sedan tested appears to comply with the requirements for FMVSS 201U which were set forth by the National Highway Traffic Safety Administration.			
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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 2005 Acura TL 4-Door Sedan, meets the upper interior performance requirements of FMVSS 201, Occupant Protection.

Tests were conducted during June 14-16, 2005 on a 2005 Acura TL 4-Door Sedan, manufactured by American Honda Motor Co., Inc.

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 March 20, 2003.

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 March 20, 2003.

2.0 COMPLIANCE TEST DATA SUMMARY

The 2005 Acura TL 4-Door Sedan was equipped with A, B, and rear-pillars, a grab handle located on the side rail above each door, an adjustable seat belt anchorage on each B-pillar, and a sunroof and light console in the upper roof zone.

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 Acura. Targets were chosen which appeared most likely to give high HIC(d) values. The twelve (12) targets chosen were:

AP2	BP2	RH	UR3
AP3	BP4	UR1	UR4
BP1	RP2	UR2	UR6

The 2005 Acura TL 4-Door Sedan tested appears to comply with the performance criteria for FMVSS 201U. 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: 2005 Acura TL 4-Door Sedan

VEH. NHTSA NO.: C55301 VIN: 19UUA66275A014409 COLOR: Black

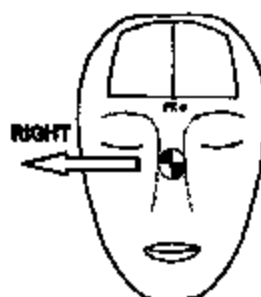
VEH. BUILD DATE: November, 2004 TEST DATES: June 14-16, 2005

TEST LABORATORY: MGA Research Corporation

OBSERVERS: David Gotwals, Nicholas Brzuch, Bryan Hood, Matt Kerr

TARGET	VEHICLE SIDE	HORIZONTAL ANGLE (deg)	VERTICAL ANGLE (deg)	VELOCITY (kph)	HIC(d)	FMH HIC	IMPACT ON FMH (mm)	
							Above	Left/Right
AP2	Left	205	50	19.1	521	469	27	5 Left
AP3	Right	156	48	19.1	508	452	25	8 Left
BP1	Right	90	10	19.2	609	453	96	9 Left
BP2	Left	270	18	24.0	826	874	22	5 Left
BP4	Right	160	-8	23.9	471	403	30	0
RP2	Right	45	15	24.3	406	317	31	11 Left
RH	Left	0	50	24.0	484	421	12	7 Left
UR1	Left	270	49	23.5	664	527	25	0
UR2	Left	270	35	23.8	851	908	57	4 Left
UR3	Left	270	37	23.8	556	516	36	0
UR4	Right	90	45	23.9	501	443	30	5 Left
UR6	Right	90	46	23.9	644	633	34	4 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.

BP4 Right: B-pillar trim was displaced.

RP2 Right: Rear pillar trim cracked.

UR1 Left: Headliner deformation.

UR4 Right: Headliner displacement.

UR6 Right: Headliner deformation.

REMARKS:

The targets listed were impacted in the following order:

Right: AP3, UR4, BP1, BP4, RP2, UR6

Left: AP2, UR1, BP2, UR2, UR3, RH

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

RECORDED BY: Nicholas J. Brzuch

DATE: June 16, 2005

APPROVED BY: David G. Gotwale

TABLE 2-2

GENERAL TEST AND VEHICLE PARAMETER DATA

VEH. MOD YR/MAKE/MODEL/BODY: 2005 Acura TL 4-Door SedanVEH. NHTSA NO.: C55301 VIN: 19UUA66275A014409 COLOR: BlackVEH. BUILD DATE: November, 2004 TEST DATES: June 14-16, 2005TEST LABORATORY: MGA Research CorporationOBSERVERS: David Gotwals, Nicholas Brzuch, Bryan Hood, Matt Kerr

INTERIOR TRIM INFORMATION: A, B, and rear pillars, a grab handle located on the side rail above each door, an adjustable seat belt anchorage on each B-pillar, and a sunroof and light console in the upper roof zone.

SUNROOF INFORMATION:

Installed: X Yes NoOperation: X Electric Manual

ROLL-BAR INFORMATION:

Installed: Yes X NoPadded: Yes X NoBraces: Yes X No

GENERAL INFORMATION:

Date Received: March 30, 2005; Odometer Reading 41 miles

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured By: Honda of America, Mfg.Date of Manufacture: November, 2004; VIN: 19UUA66275A014409GVWR: 2052.5 kg; GAWR FRONT: 1131.7 kg;GAWR REAR: 941.2 kg

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load:

FRONT: 220 kpa REAR: 220 kpaRecommended Tire Size: P235/45R71

Recommended Cold Tire Pressure:

FRONT: 220 kpa REAR: 220 kpaSize of Tire on Test Vehicle: P235/45R17Type of Spare Tire: T135/80R16 Saver; X; Standard

VEHICLE CAPACITY DATA:

Type of Front Seats: Bench ; Bucket X; Split Bench Number of Occupants: Front 2; Rear 3; TOTAL 5VEHICLE CAPACITY WEIGHT (VCW) = 395No. of Occupants x 68 kg = 340 kgRated Cargo/Luggage Weight (RCLW) = 55 kg (difference) (121 lbs.)

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

Right Front = 495.0 kg Right Rear = 307.5 kgLeft Front = 500.5 kg Left Rear = 315.5 kgTOTAL FRONT = 995.5 kg TOTAL REAR = 623.0 kg% Total Weight = 61.5 % % Total Weight = 38.5 %TOTAL DELIVERED WEIGHT = 1618.5 kg

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight = 1618.5 kgMax. Test Cargo/Luggage Weight = 55.0 kgTarget Test Weight = 1673.5 kg

WEIGHT OF TEST VEHICLE FULLY LOADED:

Right Front =	<u>494.0</u> kg	Right Rear =	<u>334.0</u> kg
Left Front =	<u>500.0</u> kg	Left Rear =	<u>342.0</u> kg
TOTAL FRONT =	<u>994.0</u> kg	TOTAL REAR =	<u>676.0</u> kg
% Total Weight =	<u>59.5</u> %	% Total Weight =	<u>40.5</u> %
TOTAL TEST WEIGHT = <u>1670.0</u> kg			
Weight of ballast secured in vehicle's cargo area = <u>51.5</u> kg			

TEST VEHICLE ATTITUDE:

AS DELIVERED: Right Front 691 mm; Left Front 693 mm;
 Right Rear 689 mm; Left Rear 689 mm;
 Pitch Angle at Right Door Sill = -0.3 Rear higher
 Pitch Angle at Left Door Sill = 0.8 Rear higher
 Roll Angle at Front Bumper = 0.2 Left higher
 Roll Angle at Rear Bumper = -0.5 Left higher

FULLY LOADED: Right Front 698 mm; Left Front 691 mm;
 Right Rear 685 mm; Left Rear 682 mm;
 Pitch Angle at Right Door Sill = -0.2 Rear higher
 Pitch Angle at Left Door Sill = 0.6 Rear higher
 Roll Angle at Front Bumper = 0.3 Left higher
 Roll Angle at Rear Bumper = -0.4 Left higher

AS TARGETED: Right Front 875 mm; Left Front 878 mm;
 Right Rear 876 mm; Left Rear 877 mm;
 Pitch Angle at Right Door Sill = -0.2 Rear higher
 Pitch Angle at Left Door Sill = 0.8 Rear higher
 Roll Angle at Front Bumper = 0.2 Left higher
 Roll Angle at Rear Bumper = -0.5 Left higher

AS TESTED ON RIGHT SIDE:

Pitch Angle at Right Door Sill = -0.2 Rear higherPitch Angle at Left Door Sill = 0.8 Rear higherRoll Angle at Front Bumper = 0.2 Left higherRoll Angle at Rear Bumper = -0.5 Left higher

AS TESTED ON LEFT SIDE:

Pitch Angle at Right Door Sill = -0.3 Rear higherPitch Angle at Left Door Sill = 0.8 Rear higherRoll Angle at Front Bumper = 0.2 Left higherRoll Angle at Rear Bumper = -0.4 Left higherVEHICLE WHEELBASE = 2745 mm

REMARKS: The seat travel distance was measured to be 240 mm for the driver front seat and 220 mm for the passenger front seat.

RECORDED BY: Nicholas J. BrzuchDATE: June 7, 2005APPROVED BY: David G. Gotwals

TABLE 2-3
HORIZONTAL IMPACT ANGLE RANGE FOR A AND B PILLARS

VEH. MOD YR/MAKE/MODEL/BODY: 2005 Acura TL 4-Door Sedan

VEH. NHTSA NO.: C55301 VIN: 19UUA66275A014409 COLOR: Black

VEH. BUILD DATE: November, 2004 TEST DATES: June 14-16, 2005

TEST LABORATORY: MGA Research Corporation

OBSERVERS: David Gotwals, Nicholas Brzuch, Bryan Hood, Matt Kerr

HORIZONTAL IMPACT ANGLE RANGE FOR A AND B PILLARS

	HORIZONTAL ANGLE SPECIFIED RANGE	MINIMUM HORIZONTAL ANGLE	MAXIMUM HORIZONTAL ANGLE
A-PILLAR	L 195°-255°	L 204.4°	L 251.7°
	R 105°-165°	R 108.8°	R 156.0°
B-PILLAR	L 195°-345°	L 199.5°	L 286.4°
	R 15°-165°	R 74.2°	R 160.9°

AS DETERMINED USING THE PROCEDURES SPECIFIED IN S8.13.4.1

REMARKS:

RECORDED BY: Nicholas J. Brzuch

DATE: June 7, 2005

APPROVED BY: David G. Gotwals

TABLE 2-4

VERTICAL IMPACT ANGLE RANGES

VEH. MOD YR/MAKE/MODEL/BODY: 2005 Acura TL 4-Door SedanVEH. NHTSA NO.: C55301 VIN: 19UUA66275A014408 COLOR: BlackVEH. BUILD DATE: November, 2004 TEST DATES: June 14-16, 2005TEST LABORATORY: MGA Research CorporationOBSERVERS: David Gotwale, Nicholas Brzuch, Bryan Hood, Matt Kerr

VERTICAL IMPACT ANGLE RANGES

		VERTICAL ANGLE SPECIFIED RANGE	MINIMUM VERTICAL ANGLE	MAXIMUM VERTICAL ANGLE
FRONT HEADER	FH1	L 0°-50°	L 0°	L 50°
		R 0°-50°	R 0°	R 50°
	FH2	L 0°-50°	L 0°	L 50°
		R 0°-50°	R 0°	R 50°
SIDE RAIL	SR1	L 0°-50°	L 0°	L 36°
		R 0°-50°	R 0°	R 43°
	SR2A	L 0°-50°	L 0°	L 44°
		R 0°-50°	R 0°	R 46°
	SR2B	L 0°-50°	L 0°	L 46°
		R 0°-50°	R 0°	R 43°
	SR3-1	L 0°-50°	L 0°	L 35°
		R 0°-50°	R 0°	R 33°
	SR3-2	L 0°-50°	L 0°	L 40°
		R 0°-50°	R 0°	R 34°
REAR HEADER	RH	L 0°-50°	L 0°	L 50°
		R 0°-50°	R 0°	R 50°

		VERTICAL ANGLE SPECIFIED RANGE	MINIMUM VERTICAL ANGLE	MAXIMUM VERTICAL ANGLE
A-PILLAR	AP1	L -5°-50°	L -5°	L 30°
		R -5°-50°	R -5°	R 30°
	AP2	L -5°-50°	L -5°	L 50°
		R -5°-50°	R -5°	R 50°
	AP3	L -5°-50°	L -5°	L 48°
		R -5°-50°	R -5°	R 48°
B-PILLAR	BP1	L -10°-50°	L -10°	L 11°
		R -10°-50°	R -10°	R 10°
	BP2*	L 0°-50°	L 0°	L 18°
		R 0°-50°	R 0°	R 17°
	BP3	L -10°-50°	L -10°	L 0°
		R -10°-50°	R -10°	R 3°
	BP4	L -10°-50°	L -10°	L -4°
		R -10°-50°	R -10°	R -8°
REAR PILLAR	RP1	L -10°-50°	L -10°	L 16°
		R -10°-50°	R -10°	R 12°
	RP2	L -10°-50°	L -10°	L 16°
		R -10°-50°	R -10°	R 15°
UPPER ROOF 1		0°-50°	0°	49°
UPPER ROOF 2		0°-50°	0°	35°
UPPER ROOF 3		0°-50°	0°	37°
UPPER ROOF 4		0°-50°	0°	45°
UPPER ROOF 5		0°-50°	0°	43°
UPPER ROOF 6		0°-50°	0°	46°

As determined using the Procedures specified in S8.13.4.2. *Target BP2 is a seat belt anchorage location.

RECORDED BY: Nicholas J. Brzuch

DATE: June 7, 2005

APPROVED BY: David G. Gotwals

TABLE 2-5

TARGET MEASUREMENTS

VEH. MOD YR/MAKE/MODEL/BODY: 2005 Acura TL 4-Door SedanVEH. NHTSA NO.: C55301 VIN: 19UUA66275A014409 COLOR: BlackVEH. BUILD DATE: November, 2004 TEST DATES: June 14-16, 2005TEST LABORATORY: MGA Research CorporationOBSERVERS: David Gotwals, Nicholas Brzuch, Bryan Hood, Matt Kerr

Measurement	Description	Left Side	Right Side
M	Seat Fore/Aft Travel (Front seats)	240 mm	220 mm
T°	Horizontal < {CG-F1 (Left Seat) to (Right A-Pillar)}	108.3°	--
A1°	360° - T°	251.7°	--
W°	Horizontal < {CG-2 (Left Seat) to (Left A-Pillar)}	204.4°	--
A2°	A2° = W°	204.4°	--
U°	Horizontal < {CG-2 (Left Seat) to (Left B-Pillar)}	286.4°	--
B1°	B1° = U°	286.4°	--
V°	Horizontal < {CG-R (Left Seat) to (Left B-Pillar)}	199.5°	--
B2°	B2° = V°	199.5°	--
W° (right)	Horizontal < {CG-F2 (Right Seat) to (Right A-Pillar)}	--	156.0°
A1° (right)	A1° (right) = W° (right)	--	156.0°
T° (right)	Horizontal < {CG-F1 (Right Seat) to (Left A-Pillar)}	--	251.2°
A2° (right)	360° - T° (right)	--	108.8°
V° (right)	Horizontal < {CG-R (Right Seat) to (Right B-Pillar)}	--	160.9°
B1° (right)	B1° (right) = V° (right)	--	160.9°
U° (right)	Horizontal < {CG-F2 (Right Seat) to (Right B-Pillar)}	--	74.2°
B2° (right)	B2° (right) = U° (right)	--	74.2°
J	A-Pillar {(Plane 3) - (Plane 5)}	313.7 mm	319.5 mm
J/2	J + 2	156.8 mm	159.8 mm
D1	Upper Roof {(Plane A) - (Plane B)}	1610.0 mm	
D1/2	D1 + 2	805.0 mm	
D2	Upper Roof {(Plane C) - (Plane D)}	1219.9 mm	

Measurement	Description	Left Side	Right Side
D2/2	D2 ÷ 2	610.0 mm	
.35D1	.35 x D1	563.5 mm	
.35D2	.35 x D2	427.0 mm	
N	B-Pillar ((BPR) - (lowest point on daylight opening forward of B-Pillar))	387.7 mm	390.3 mm
N/2	B-Pillar ((BP3) - (lowest point on daylight opening forward of B-Pillar))	183.9 mm	186.2 mm
N/4	B-Pillar ((BP4) - (lowest point on daylight opening forward of B-Pillar))	97.0 mm	97.6 mm
D	R-Pillar (Point 7 – Point M)	710.0 mm	710.0 mm
3D/7	3D / 7	304.3 mm	304.3 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
Front	1480.2	-377.6	223.0	1480.1	377.3	223.0
Rear Row	2305.6	-352.7	248.1	2305.5	352.1	248.1

CG Locations (world coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	z
CGF1	1400.2	-377.6	883.0	1420.1	377.3	883.0
CGF2	1640.2	-377.6	883.0	1640.1	377.3	883.0
CGR	2465.6	-352.7	908.1	2465.5	352.1	908.1

REFERENCE FOR WORLD COORDINATE SYSTEM (measured in millimeters):

Driver, upper door striker bolt (x, y, z) = 1622.0, -802.0, 397.8

Driver, outboard, front seat bolt anchorage (x, y, z) = 1157.9, -560.1, 3.2

Passenger, upper door striker bolt (x, y, z) 1613.0, 794.8, 395.1

REMARKS: Coordinates were not provided for a vehicle coordinate system.
Measurements for the seating reference points were provided referencing the driver outboard front seat bolt anchorage.

RECORDED BY: Nicholas J. Brzuch

DATE: June 7, 2005

APPROVED BY: David G. Gotwals

TABLE 2-6

SUMMARY OF TARGETING RESULTS

VEH. MOD YR/MAKE/MODEL/BODY: 2005 Acura TL 4-Door SedanVEH. NHTSA NO.: C55301 VIN: 19UUA66275A014409 COLOR: BlackVEH. BUILD DATE: November, 2004 TEST DATES: June 14-16, 2005TEST LABORATORY: MGA Research CorporationOBSERVERS: David Gotwals, Nicholas Brzuch, Bryan Hood, Matt Kerr

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	1281.9	-550.0	1005.4	--	--	Yes	--	--
REL	1272.1	-561.2	987.0	251	30	--	1	No
AP2	1146.0	-605.2	918.3	206	50	No	--	Yes
AP3	1001.1	-645.8	847.7	205	48	No	--	No
A-Pillar Right Side								
AP1	1259.3	549.6	1004.7	--	--	Yes	--	--
REL	1266.8	655.7	987.0	109	30	--	1	No
AP2	1156.4	602.5	917.7	156	50	No	--	No
AP3	1001.8	642.0	844.6	156	48	No	--	Yes
B-Pillar Left Side								
BP1	1753.6	-482.0	1063.4	--	--	Yes	--	--
REL	1765.7	-457.2	1068.5	270	11	--	1	No
BP2	1738.4	-587.8	857.0	270	18	No	--	Yes
BP3	1693.7	-600.8	888.2	270	0	No	--	No
BP4	1776.3	-648.2	772.3	200	-4	No	--	No
B-Pillar Right Side								
BP1	1760.5	482.1	1059.9	--	--	Yes	--	--
REL	1769.3	456.2	1065.9	90	10	--	1	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					
BP2	1740.7	585.5	853.7	90	17	No	—	No
BP3	1692.1	600.2	864.7	90	3	No	—	No
BP4	1776.2	647.0	766.9	160	-8	No	—	Yes
Rear Pillar Left Side								
RP1	2559.1	-510.9	1022.0	280	16	No	—	No
RP2	2557.4	-601.0	872.7	—	—	Yes	—	—
REL	2533.0	-583.6	908.9	315	16	—	2	No
Rear Pillar Right Side								
RP1	2554.5	508.6	1011.5	80	12	No	—	No
RP2	2565.0	598.5	861.6	—	—	Yes	—	—
REL	2538.3	583.3	901.2	45	15	—	2	Yes
Front Header Left Side								
FH1	1175.1	-440.2	1040.1	—	—	Yes	—	—
REL	1174.3	-414.7	1038.3	180	50	—	1	No
FH2	1152.1	-269.6	1044.3	180	50	No	—	No
Front Header Right Side								
FH1	1172.8	438.8	1035.0	—	—	Yes	—	—
REL	1171.5	413.4	1036.8	180	50	—	1	No
FH2	1149.1	291.0	1038.4	180	50	No	—	No
Side Rail Left Side								
SR1	1411.3	-509.1	1053.6	—	—	Yes	—	—
REL	1403.6	-500.5	1031.8	270	36	—	1	No
SR2A	1581.4	-490.8	1041.6	270	44	No	—	No
SR2B	1452.9	-517.2	1059.0	—	—	Yes	—	—
REL	1487.8	-493.7	1030.7	270	46	—	2	No
SR3-1	2143.3	-482.7	1041.3	270	35	No	—	No
SR3-2	2334.2	-488.2	1027.6	270	40	No	—	No
Side Rail Right Side								
SR1	1409.0	510.1	1049.7	—	—	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					
REL	1407.7	502.9	1029.0	90	43	--	1	No
SR2A	1559.1	490.9	1037.1	90	46	No	--	No
SR2B	1460.2	514.7	1057.5	--	--	Yes	--	--
REL	1504.8	490.4	1030.7	90	43	--	2	No
SR3-1	2142.8	481.3	1039.1	90	33	No	--	No
SR3-2	2335.8	488.5	1024.1	90	34	No	--	No
Rear Header Left Side								
RH	2539.2	-352.7	1068.1	0	50	No	--	Yes
Upper Roof Left Side								
UR1	1417.4	-417.9	1069.0	270	49	No	--	Yes
UR2	1758.8	-424.1	1070.3	270	35	No	--	Yes
UR3	2447.5	-418.6	1073.4	270	37	No	--	Yes
Upper Roof Right Side								
UR4	1331.3	418.6	1069.5	90	45	No	--	No
UR5	1565.0	416.5	1069.9	90	43	No	--	Yes
UR6	2145.4	422.0	1061.3	90	46	No	--	Yes

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

REMARKS: Targets AP1, AP2, AP3, BP1, RP1, SR1, SR2A, SR2B, SR3-1, and SR3-2 are located in the curtain airbag zone and subject to a reduced velocity impact.

RECORDED BY: Nicholas J. Brzuch

DATE: June 7, 2005

APPROVED BY: David G. Gotwals

Impact Testing
G0517-001.6
2005 NHTSA ACURA TL
FMVSS 201U - UPPER INTERIOR
TEST #7 C55301 LEFT AP2
H/V IMPACT ANGLE= 205 / 50
FM5225 PRE-TEST

6/15/05

Impact Testing

6/15/05

GC817-0016

2005 NHTSA ACURA TL

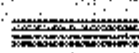
FMVSS 201U - UPPER INTERIOR

TEST #7 C55301 LEFT AP2

HV IMPACT ANGLE = 205 / 50

FM5225

POST-TEST

 nhtsa

Impact Testing

6/15/05

G0517-001.8

2005 NHTSA ACURA TL
FMVSS 201U - UPPER INTERIOR
TEST #7 G55301 LEFT AP2
H/V IMPACT ANGLE= 205 / 50
FM5225 POST-TEST

MICHIGAN OPERATIONS
DATE: 2/8/01
SUPERCEDES: MGAIP207210.2

DOC. NO.: MGAIP207210.3
REVISION NO.: 2
PAGE 1 OF 1

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G0517-001.6 VEHICLE YR/MAKE/MODEL:2005/NHTSA/ACURA TL

GENERAL TEST PARAMETERS:

Test Number:#7

Target (Vehicle Side): AP2 Left

Temperature:22C

MGA Test Reference No.:FM5225

Humidity:55%

Approach Horizontal Angles:205°

Time of Test:11:46 AM

Approach Vertical Angles:50°

FMH Serial No:[037]

Additional Description:

TEST RESULTS:

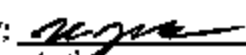
HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
521	489	6.5	19.1	27	5 L

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35800	-98.4	1.44	1.44
Y	6	J35841	95.7	1.54	1.54
Z	7	J35791	89.5	1.39	1.39

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

No visible damage

Recorded By:  Approved By:  Date: 6/14/05

*Only necessary for NHTSA (Government) Compliance testing.

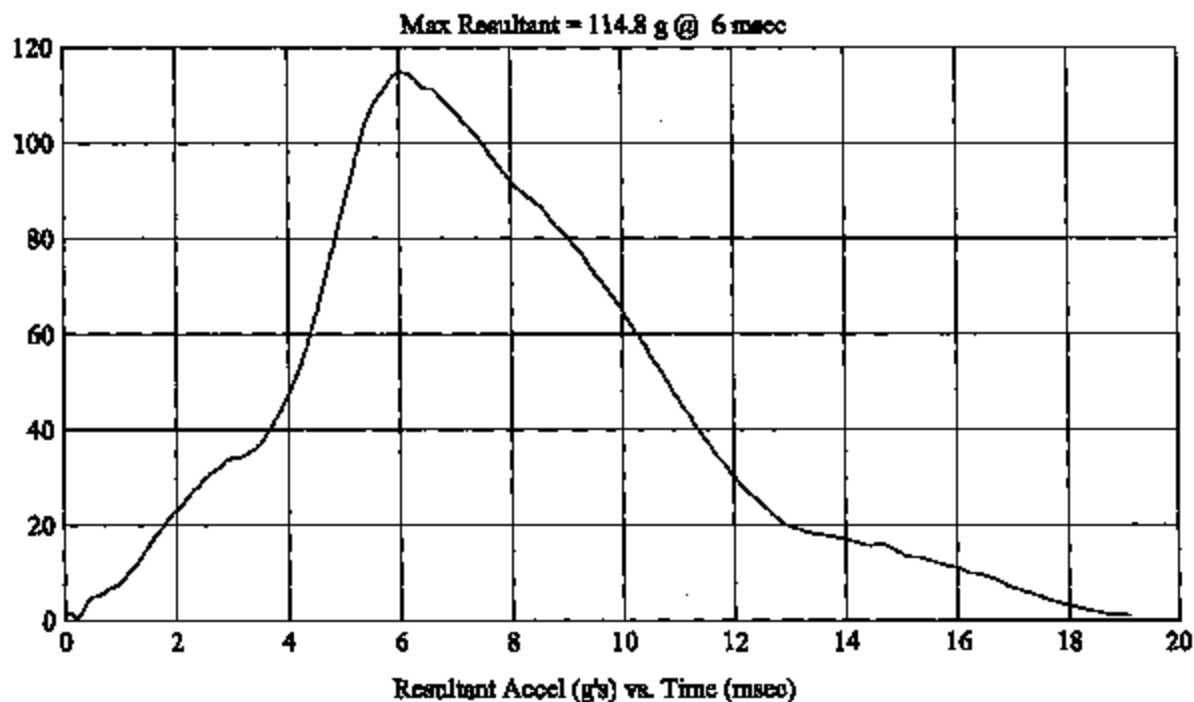
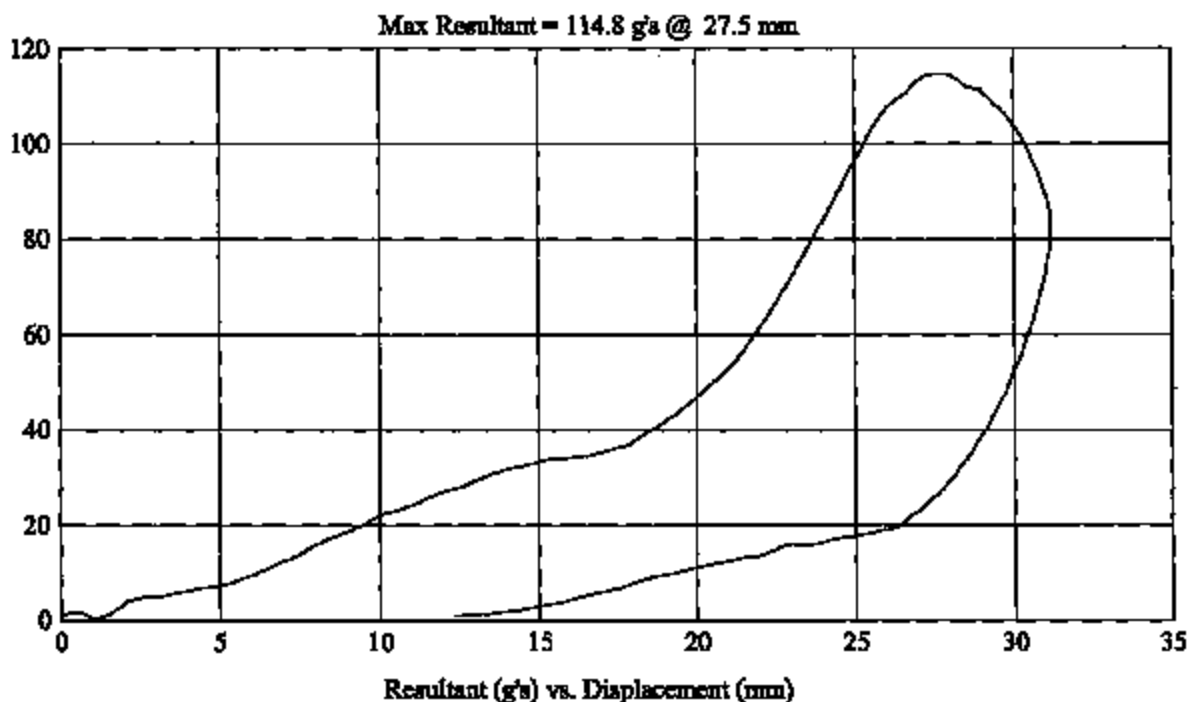
FMH
G05I7-001.6Customer: NHTSA
Test # 7
FM5225
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target: AP2
Vehicle Side: Left
Horz/Vert Angle: 205/50

HIC(15) = 521, HIC = 469, Delta T = 6.5 msec



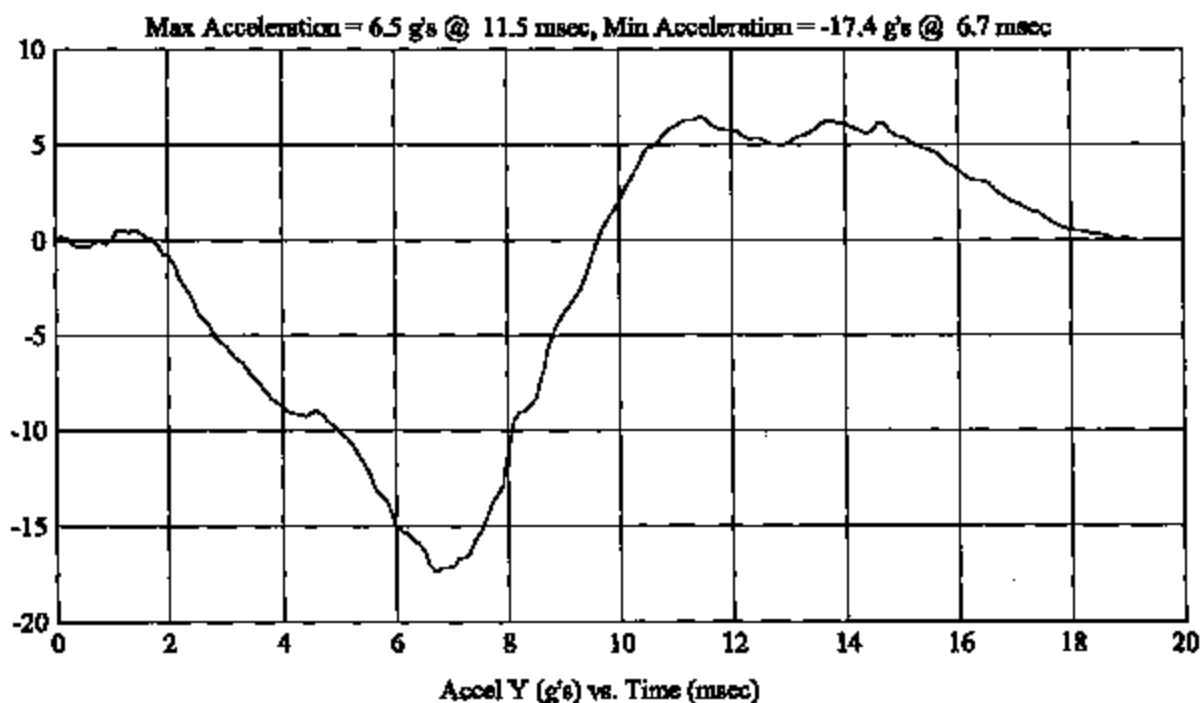
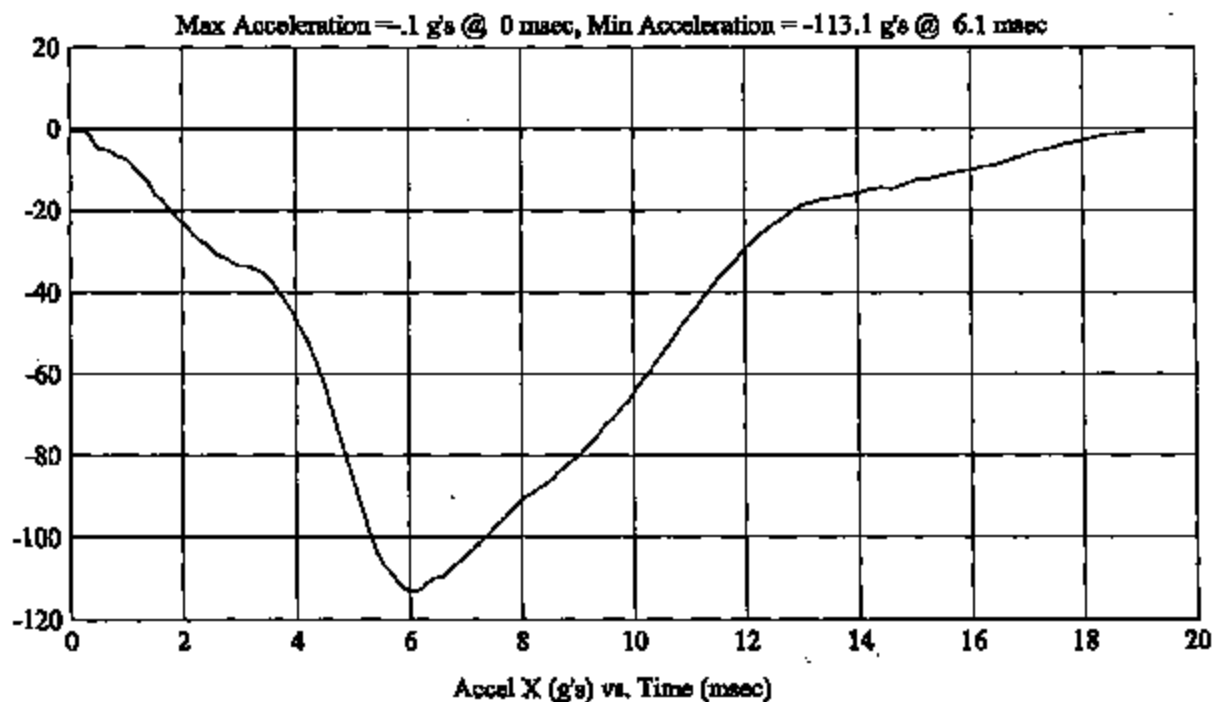
FMH
G05I7-001.6Customer: NHTSA
Test # 7
FM5225
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target: AP2
Vehicle Side: Left
Horz/Vert Angle: 205/50

HIC(d) = 521, HIC = 469, Delta T = 6.5 msec



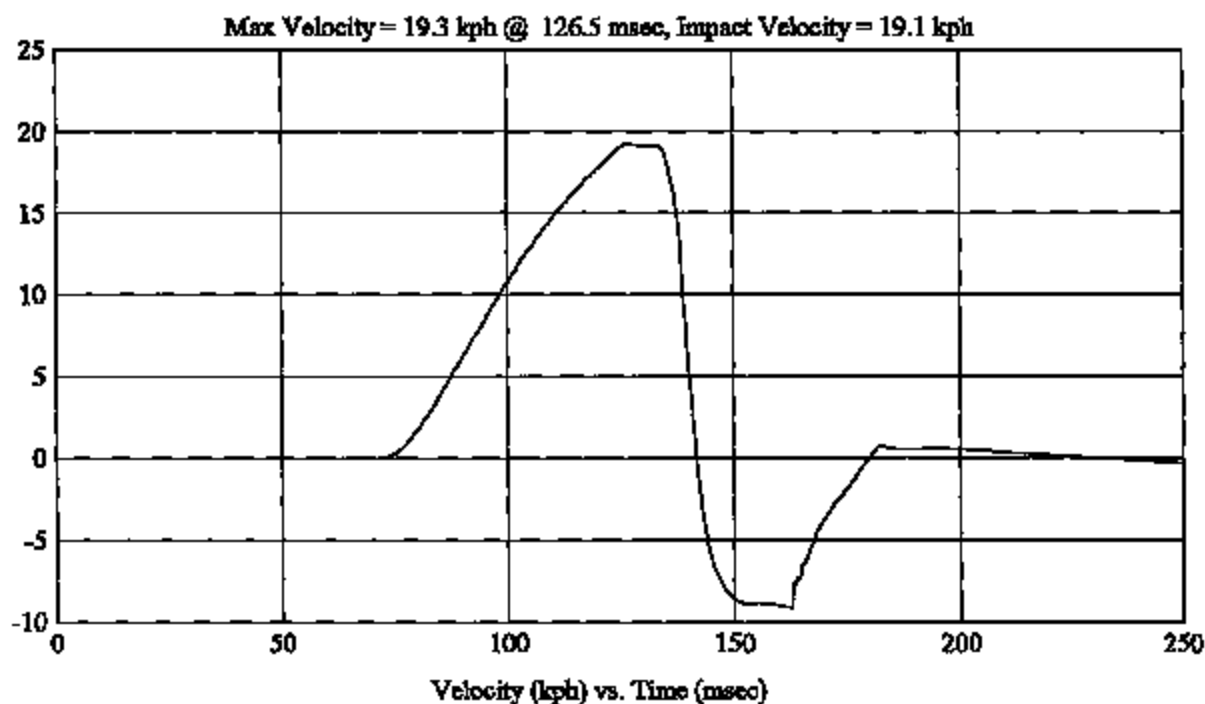
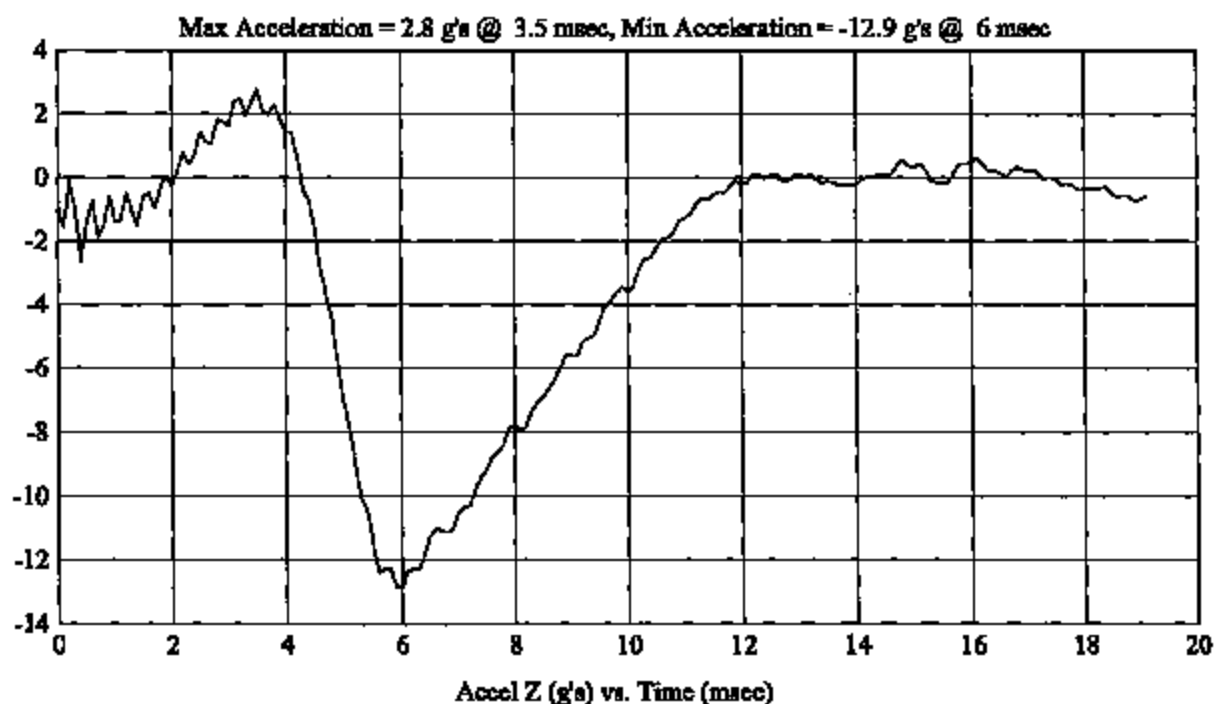
FMH
G05I7-001.6Customer: NHTSA
Test # 7
FM5225
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target: AP2
Vehicle Side: Left
Horz/Vert Angle: 205/50

HIC(d) = 521, HIC = 469, Delta T = 6.5 msec



FME
G0517-001.6

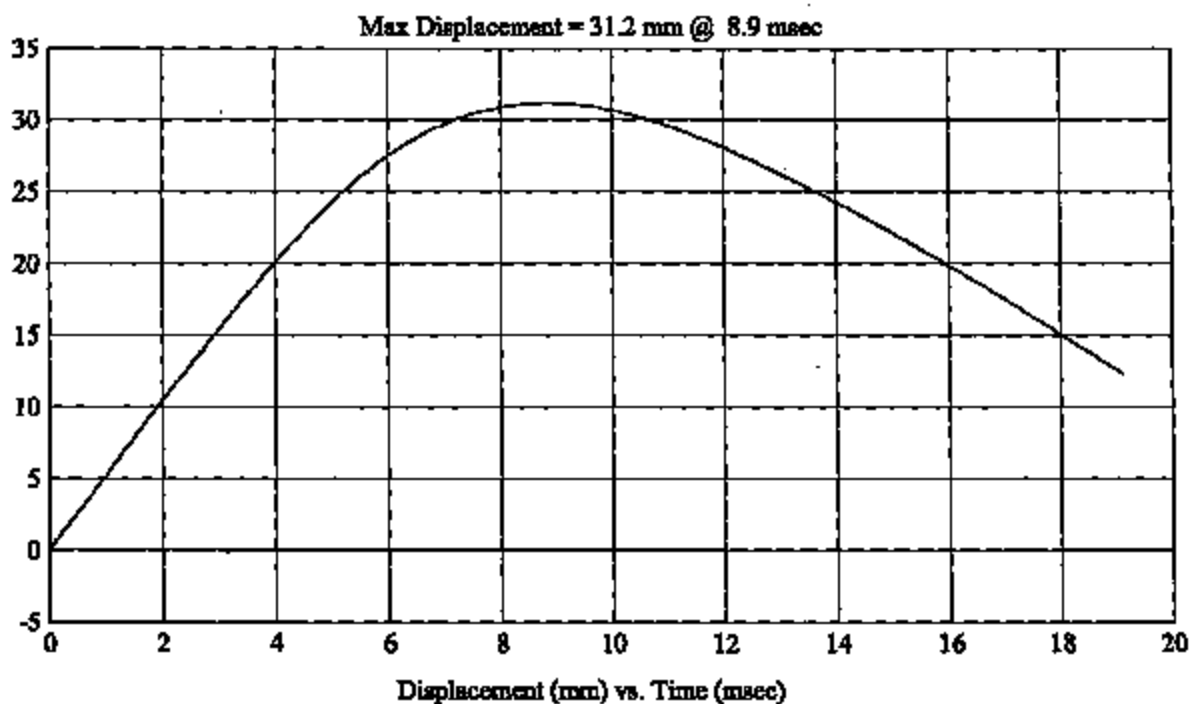
Customer: NHTSA
Test # 7
FM5225
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target: AP2
Vehicle Side: Left
Horz/Vert Angle: 205/50

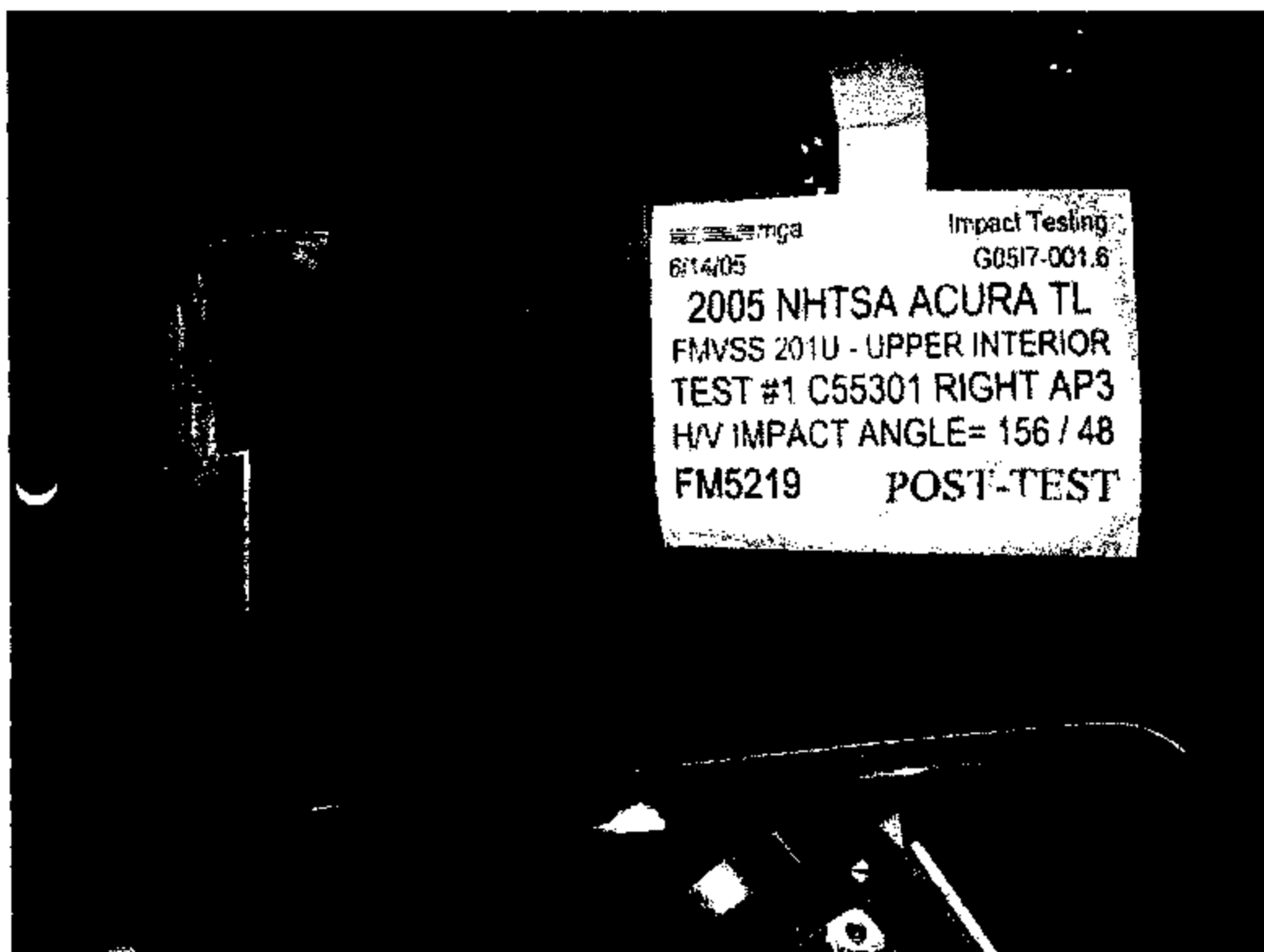
HIC(d) = 521, HIC = 469, Delta T = 6.5 msec



FMVSS 2010
FMVSS 2010

Impact Testing
G06 7 001 6

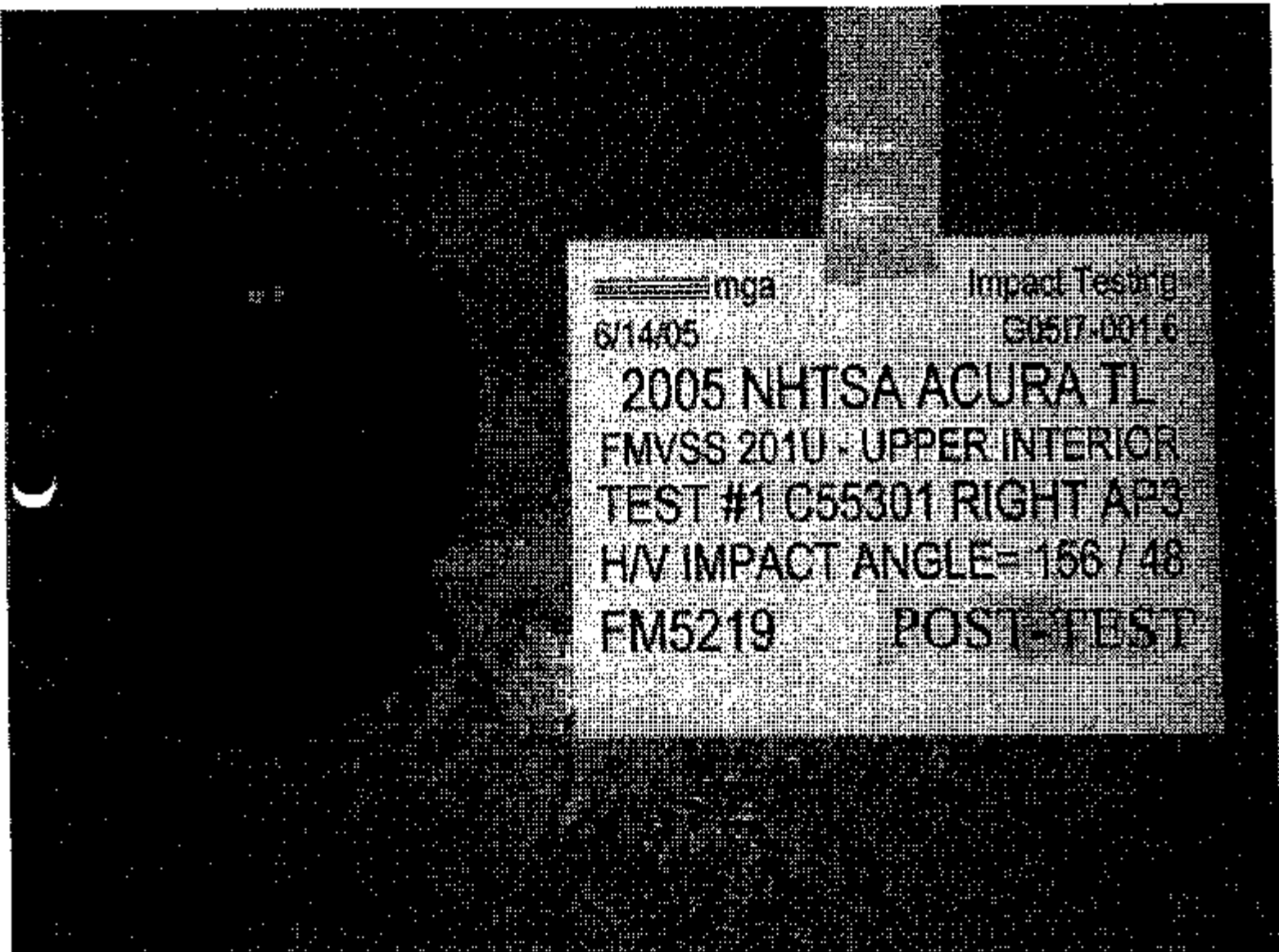
2005 NHTSA ACURA TL
FMVSS 2010 - UPPER INTERIOR
TEST #1 C55301 RIGHT AP3
HIV IMPACT ANGLE= 156 / 48
FM5219 PRE-TEST



6/14/05

Impact Testing
G0517-001.6

2005 NHTSA ACURA TL
FMVSS 2010 - UPPER INTERIOR
TEST #1 C55301 RIGHT AP3
HV IMPACT ANGLE= 156 / 48
FM5219 POST-TEST



mga

6/14/05

Impact Testing

G0517-001.6

2005 NHTSA ACURA TL
FMVSS 2010U - UPPER INTERIOR
TEST #1 C55301 RIGHT AP3
H/V IMPACT ANGLE= 156 / 48
FM5219 POST-TEST

MICHIGAN OPERATIONS
DATE: 2/1/01
SUPERCEDES: MOATP207210.2

DOC. NO.: MGATP207210.3
REVISION NO.: 2
PAGE 1 OF 1

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G0517-001.6 VEHICLE YR/MAKE/MODEL:2005/NHTSA/ACURA TL

GENERAL TEST PARAMETERS:

Target (Vehicle Side): AP3 Right

MGA Test Reference No.:FM5219

Approach Horizontal Angles:155°

Approach Vertical Angles:48°

Additional Description:

Test Number: #1

Temperature:22 C

Humidity:53 %

Time of Test:11:54 AM

FMH Serial No:035

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
508	452	7.0	19.1	25	8 L

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35824	-91.8	1.44	1.44
Y	6	J35919	97.0	1.54	1.54
Z	7	J22664	95.6	1.39	1.39

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

No visible damage

Recorded By:  Approved By*:  Date: 6/14/05

*Only necessary for NHTSA (Government) Compliance testing.

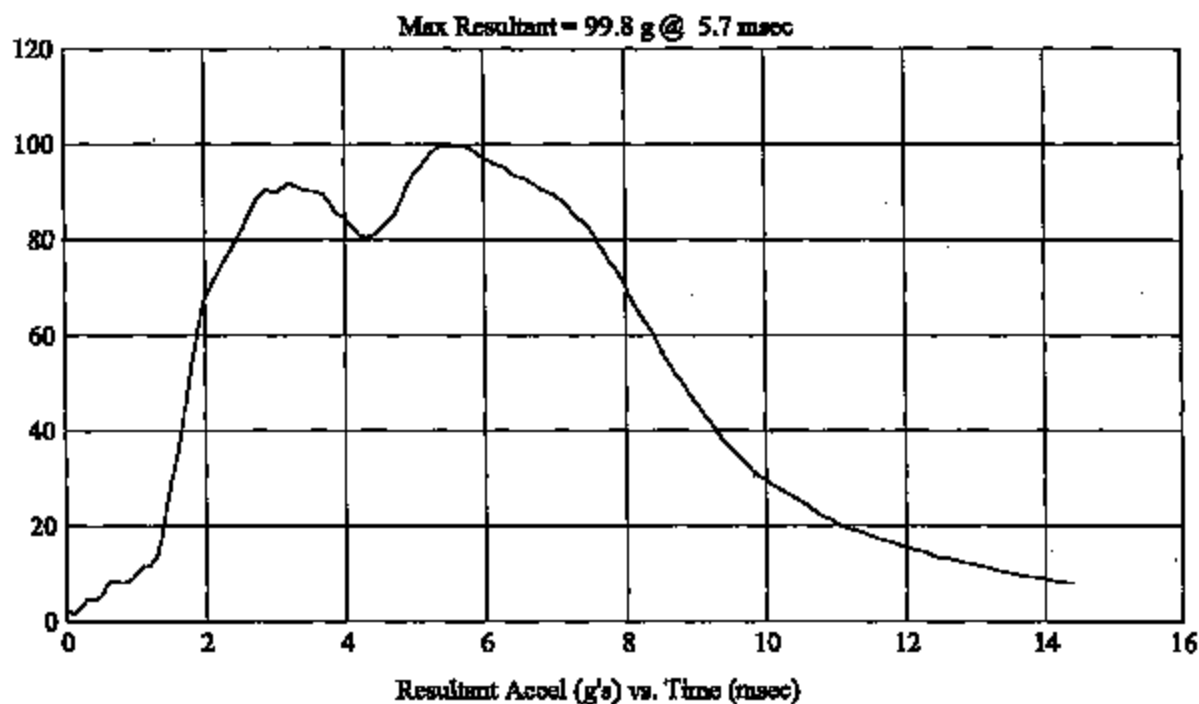
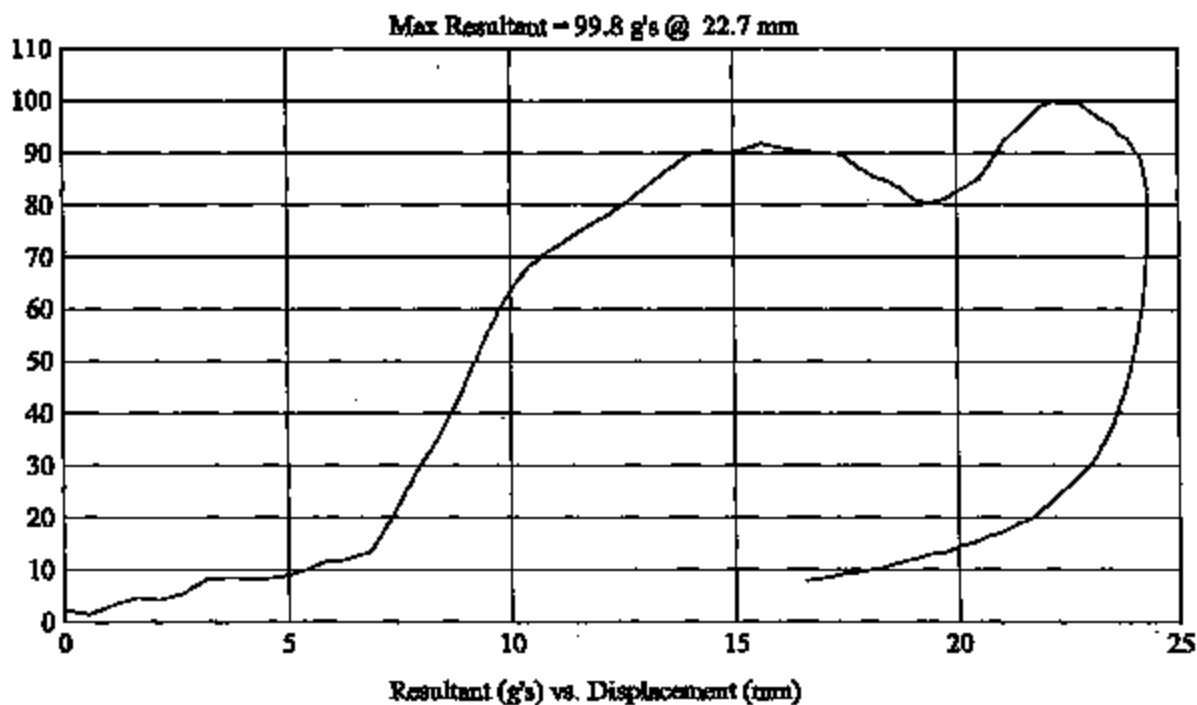
FMH
G0517-001.6Customer: NHTSA
Test # 1
FM5219
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target: AP3
Vehicle Side: Right
Horz/Vert Angle: 156/48

HIC(d) = 508, HIC = 452, Delta T = 7 msec



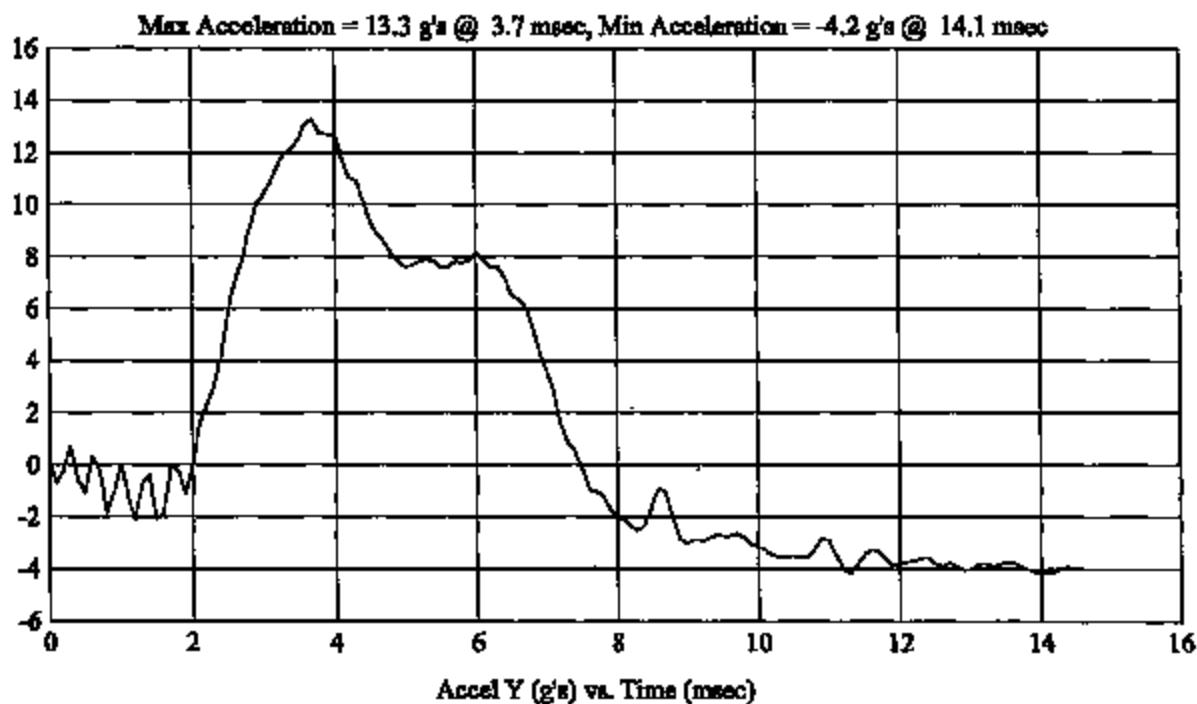
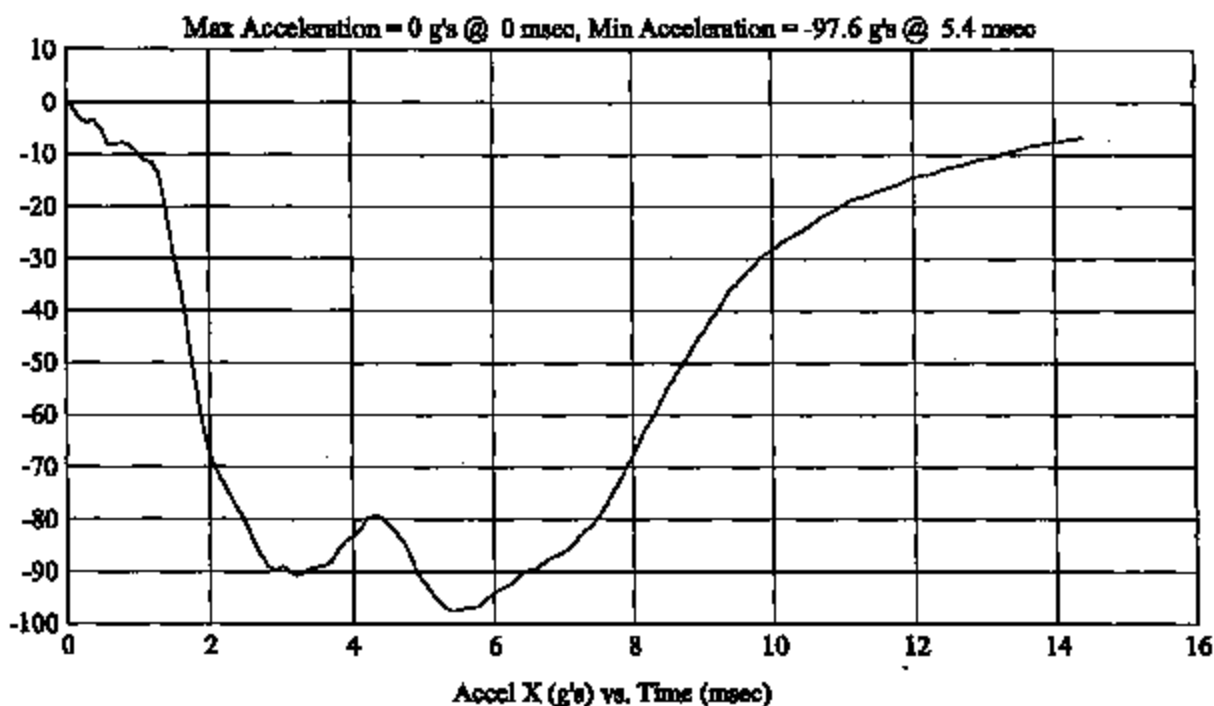
FMH
G0517-001.6Customer: NHTSA
Test # 1
FM5219
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target: AP3
Vehicle Side: Right
Horz/Vert Angle: 156/48

HIC(d) = 508, HIC = 452, Delta T = 7 msec



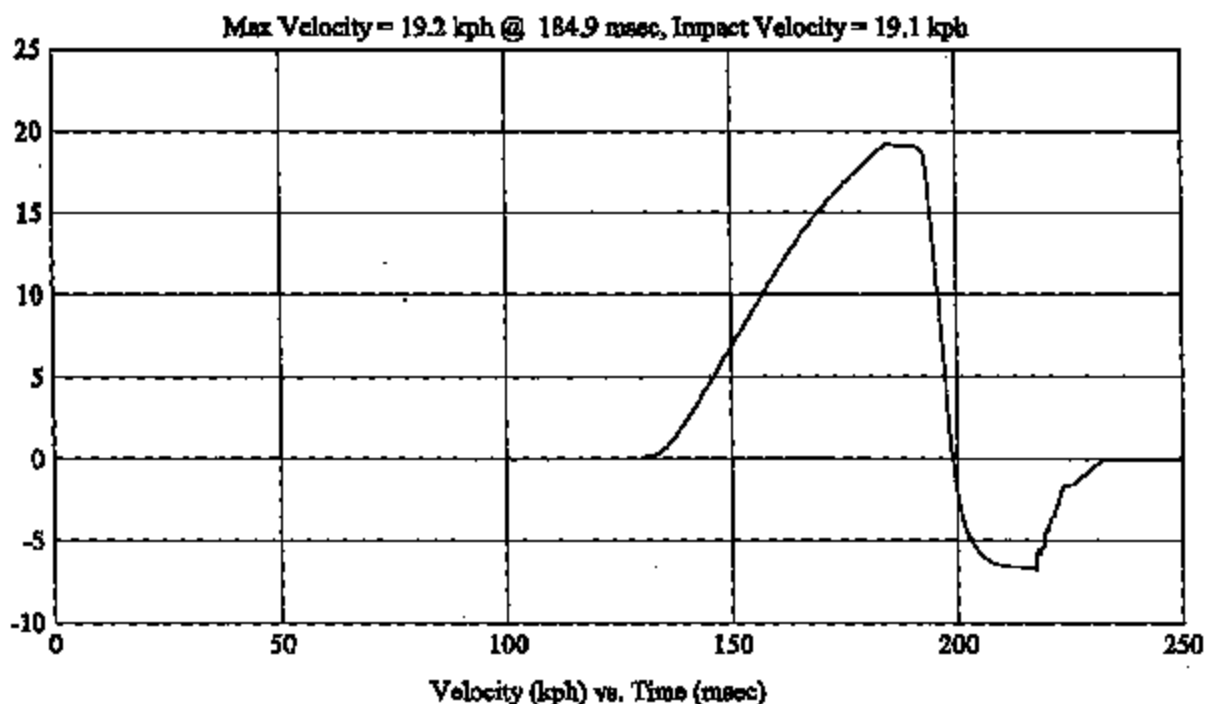
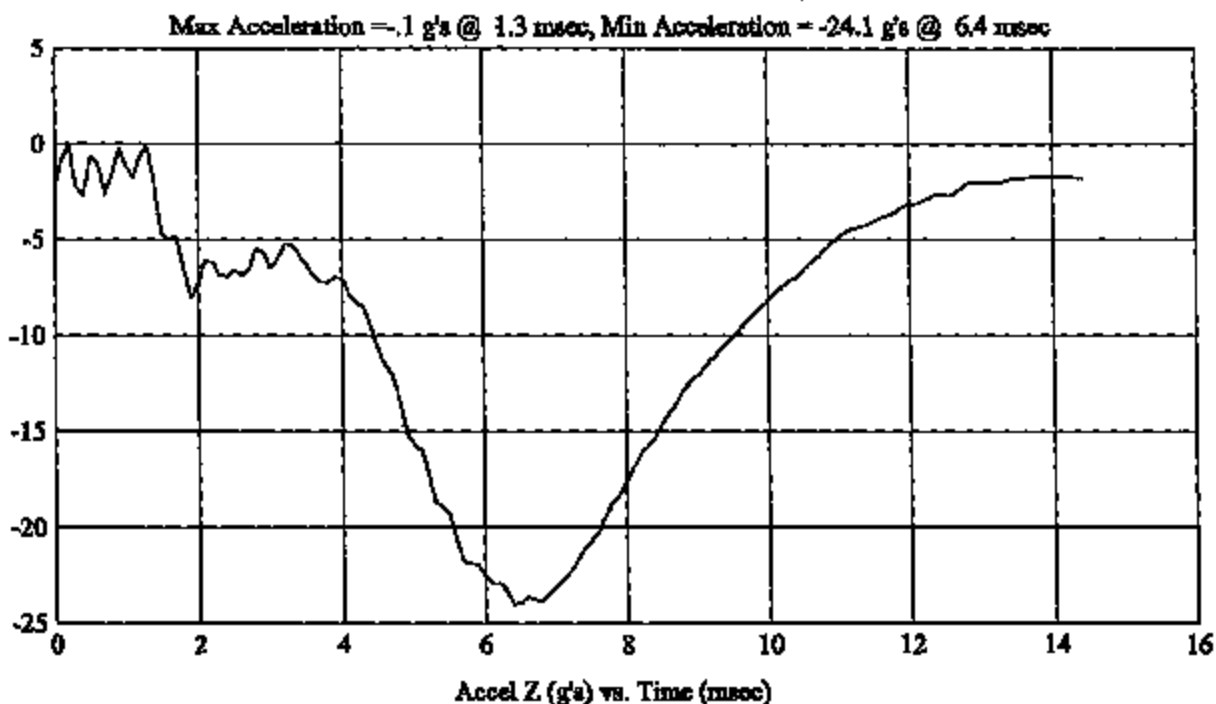
FMH
G0517-001.6Customer: NHTSA
Test # 1
FM5219
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target: AP3
Vehicle Side: Right
Horz/Vert Angle: 156/48

HIC(d) = 508, HIC = 452, Delta T = 7 msec



=====mga

Impact Testing

6/14/05

G0517-001.6

2005 NHTSA ACURA TL
FMVSS 201U - UPPER INTERIOR
TEST #3 C55301 RIGHT BP1
H/V IMPACT ANGLE= 90 / 10
FM5221 POST-TEST

6/14/05

6/14/05

Impact Testing

G0517-00115

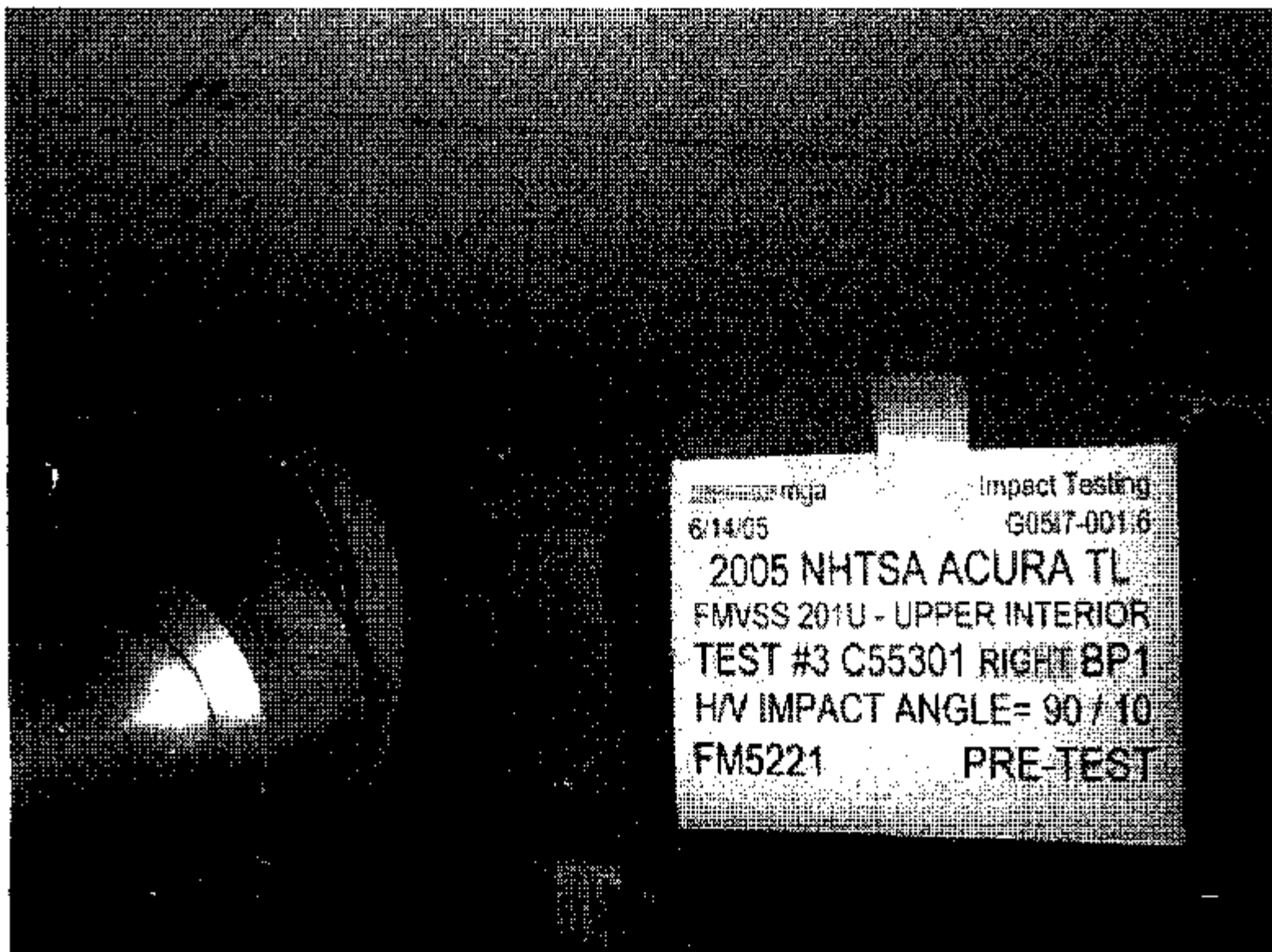
2005 NHTSA ACURA TL

FMVSS 201U - UPPER INTERIOR

TEST #3 C55301 RIGHT BP1

HV IMPACT ANGLE= 90°/10°

FM5221 POST-TEST



mja

Impact Testing

6/14/05

G0517-001.6

2005 NHTSA ACURA TL

FMVSS 201U - UPPER INTERIOR

TEST #3 C55301 RIGHT 8P1

H/V IMPACT ANGLE= 90 / 10

FM5221

PRE-TEST

FMH
G05I7-00L6

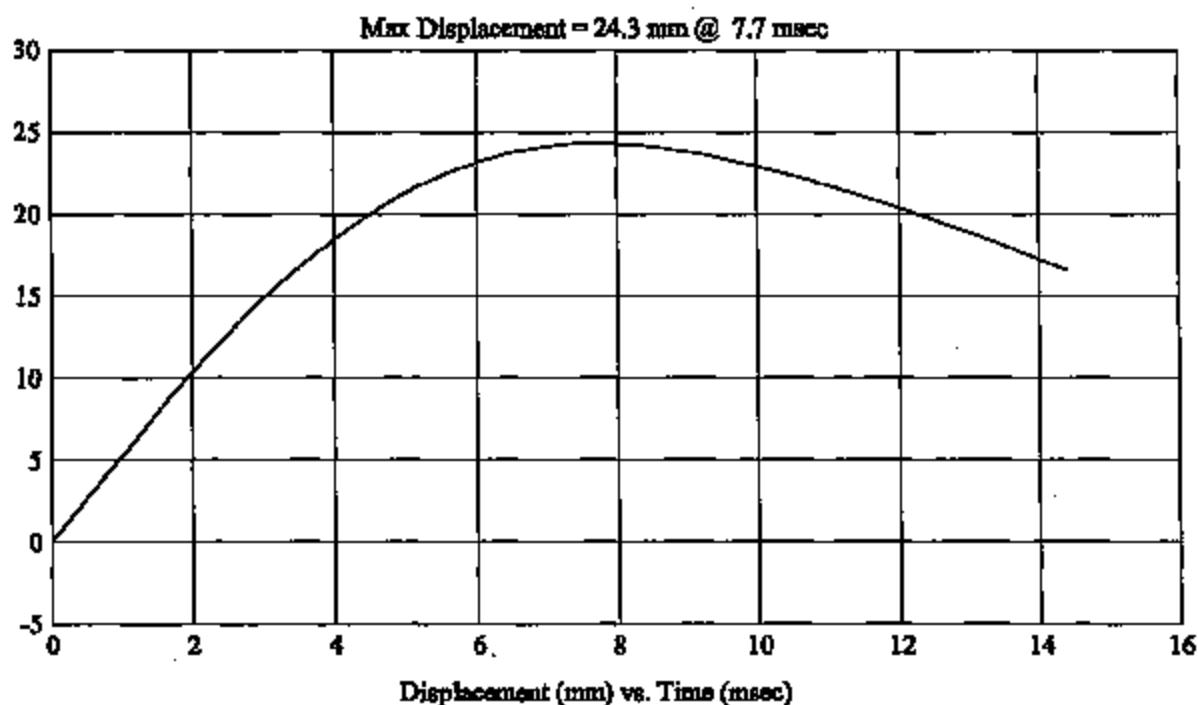
Customer: NHTSA
Test # 1
FM5219
Additional Desc: N/A

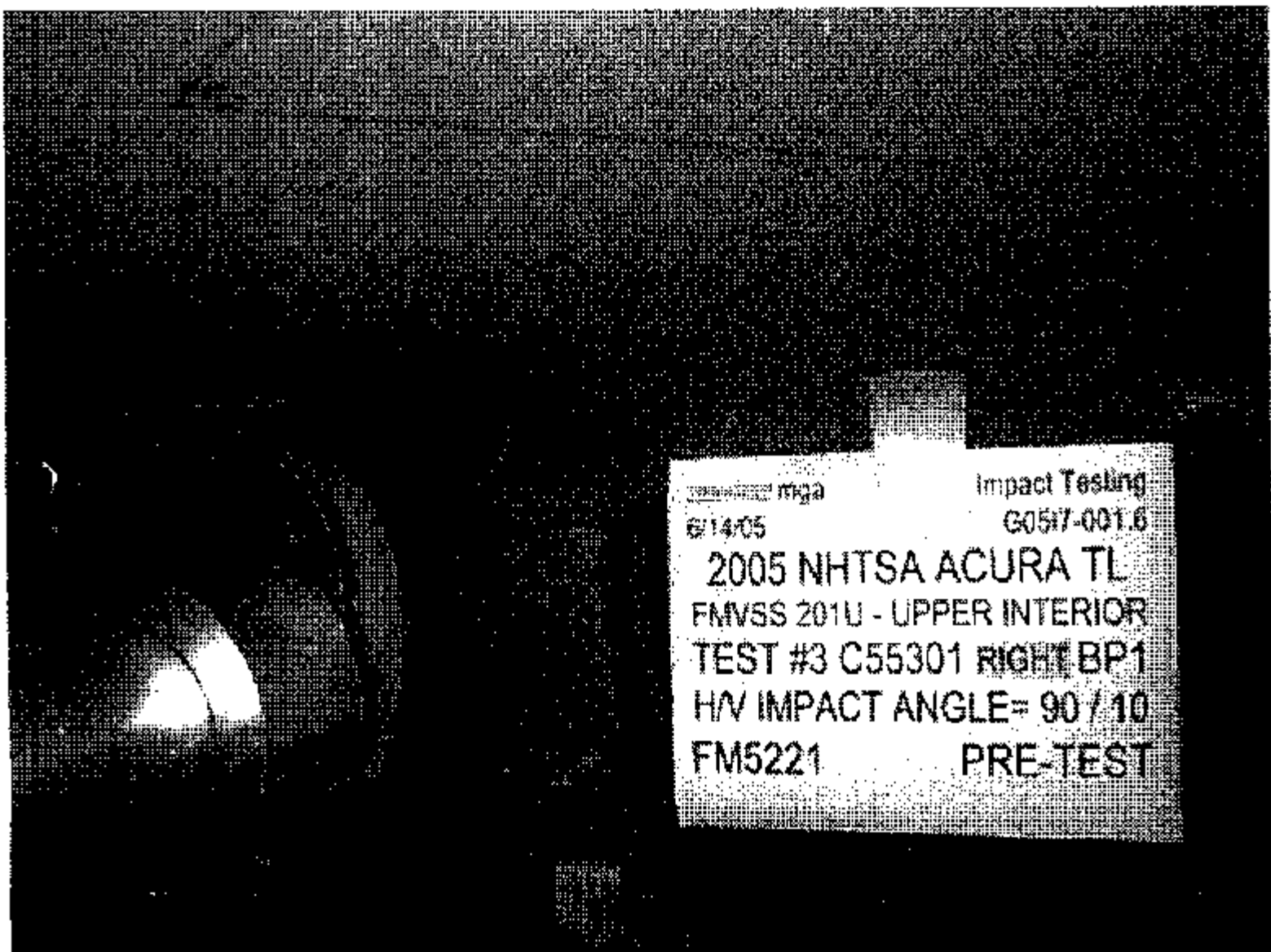
Vehicle Program : ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target: AP3
Vehicle Side: Right
Horz/Vert Angle: 156/48

HIC(d) = 508, HIC = 452, Delta T = 7 msec





6/14/05

Impact Testing

6/14/05

G0517-001.6

2005 NHTSA ACURA TL

FMVSS 201U - UPPER INTERIOR

TEST #3 C55301 RIGHT BP1

H/V IMPACT ANGLE= 90 / 10

FM5221

PRE-TEST

6/14/05

6/14/05

Impact Test

G017-0000

2005 NHTSA ACURA TL
FMVSS 201U - UPPER INTERIOR
TEST #3 C55301 RIGHT SIDE
HV IMPACT ANGLE=90°
FM5221 POST-IMPACT

mga Impact Testing
6/14/05 C057-017
2005 NHTSA ACURA TL
FMVSS 201U - UPPER INTERIOR
TEST #3 C55301 RIGHT OFI
HV IMPACT ANGLE=90/30
FM5221 POST TEST

MICHIGAN OPERATIONS
DATE: 2/8/01
SUPERCEDES: MGATP207210.2

DOC. NO.: MGATP207210.3
REVISION NO.: 2
PAGE 1 OF 1

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G05I7-001.6

VEHICLE YR/MAKE/MODEL: 2005/NHTSA/ACURA TL

GENERAL TEST PARAMETERS:

Test Number: #3

Target (Vehicle Side): BP1 Right

Temperature: 22C

MGA Test Reference No.: FM5221

Humidity: 53%

Approach Horizontal Angles: 90°

Time of Test: 2:25 PM

Approach Vertical Angles: 10°

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
509	453	6.1	19.2	96	9 L

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J36187	-106.9	1.44	1.44
Y	6	J36183	102.8	1.54	1.54
Z	7	J36353	98.8	1.39	1.39

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

No visible damage

Recorded By:  Approved By*:  Date: 6/14/05

*Only necessary for NHTSA (Government) Compliance testing.

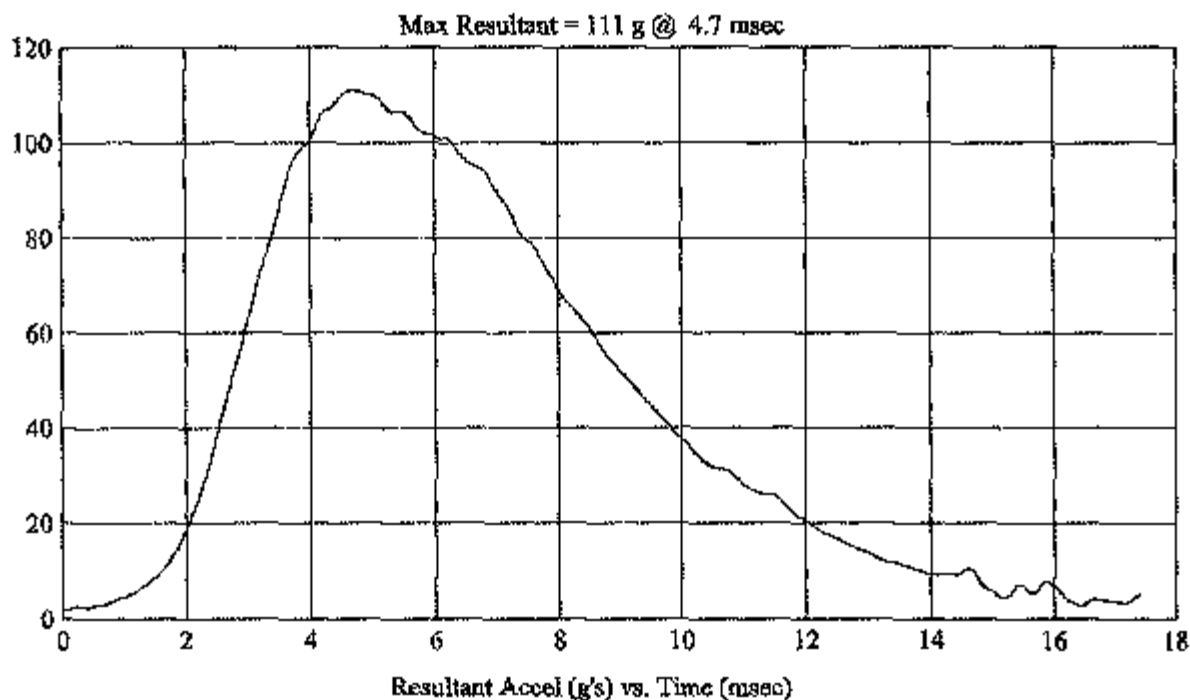
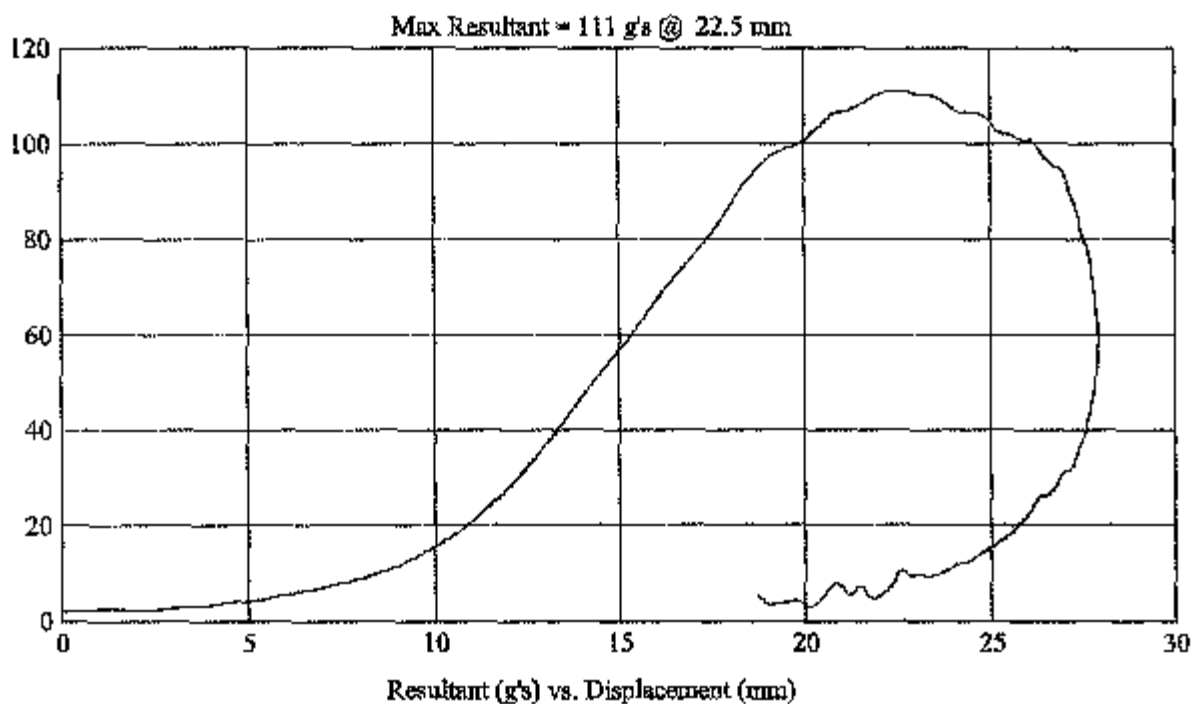
FMH
G0517-001.6Customer: NHTSA
Test # 3
FM5221
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target: BP1
Vehicle Side: Right
Horz/Vert Angle: 90/10

HIC(d) = 509, HIC = 453, Delta T = 6.1 msec



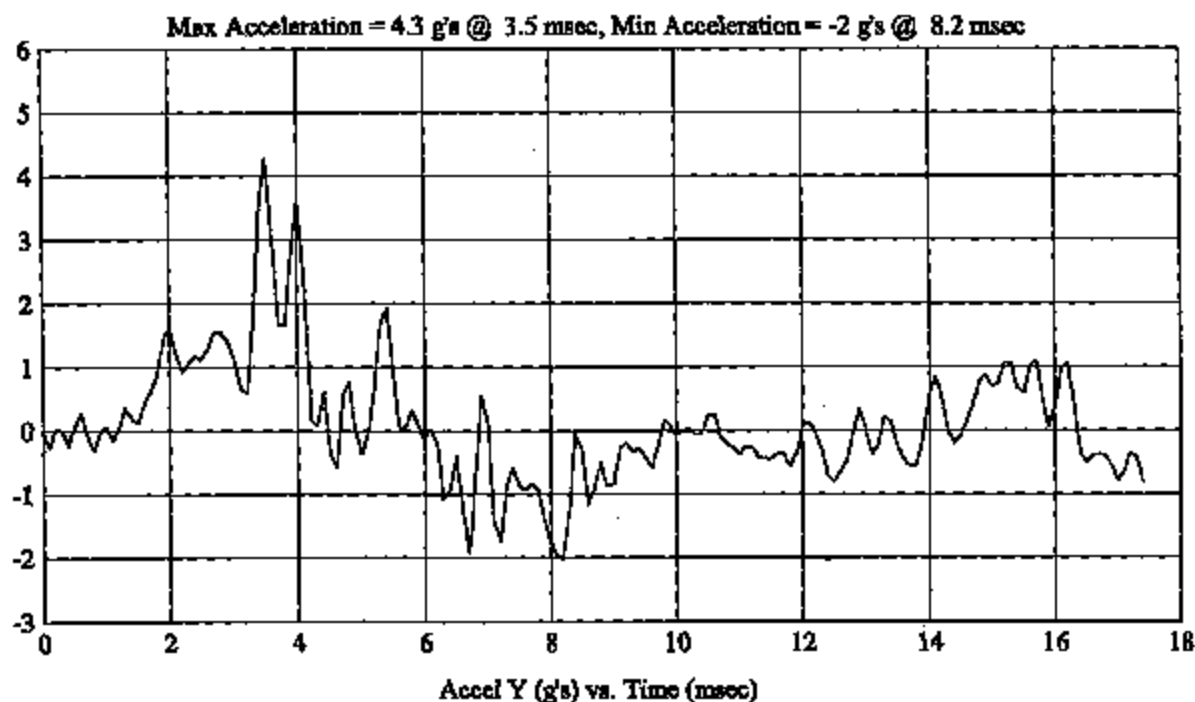
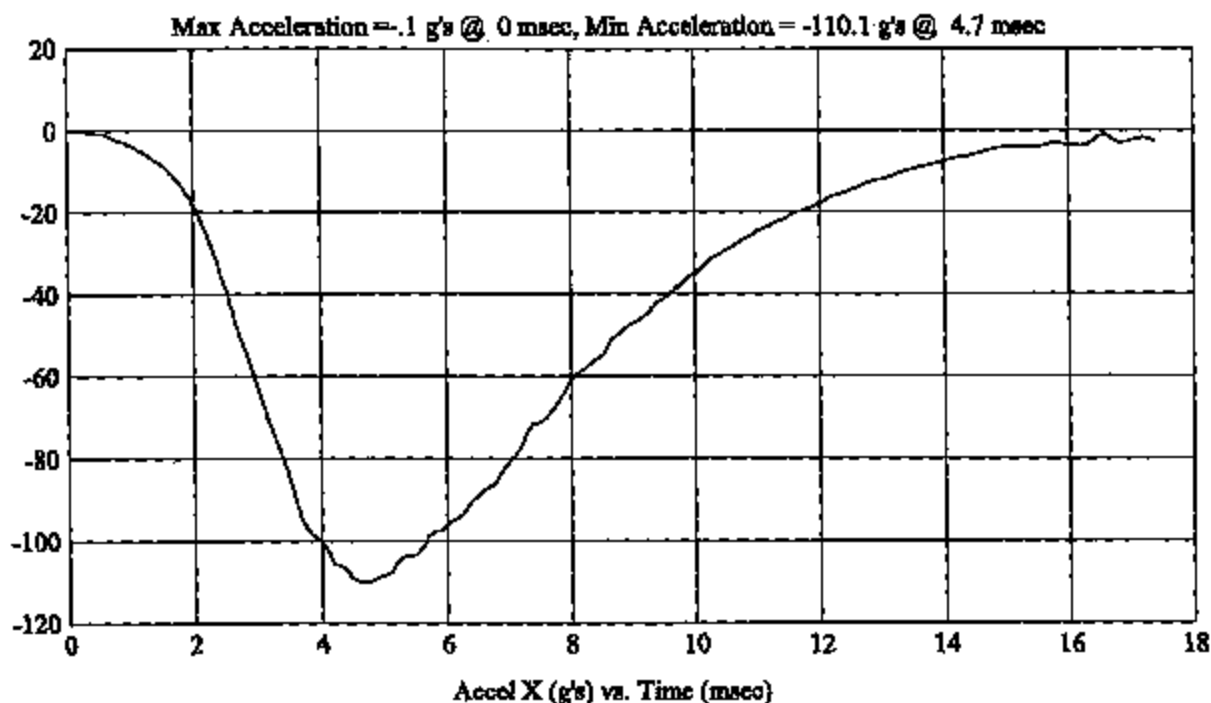
FMH
G05I7-001.6Customer: NHTSA
Test # 3
FMS221
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target: BP1
Vehicle Side: Right
Horz/Vert Angle: 90/10

HIC(d) = 509, HIC = 453, Delta T = 6.1 msec



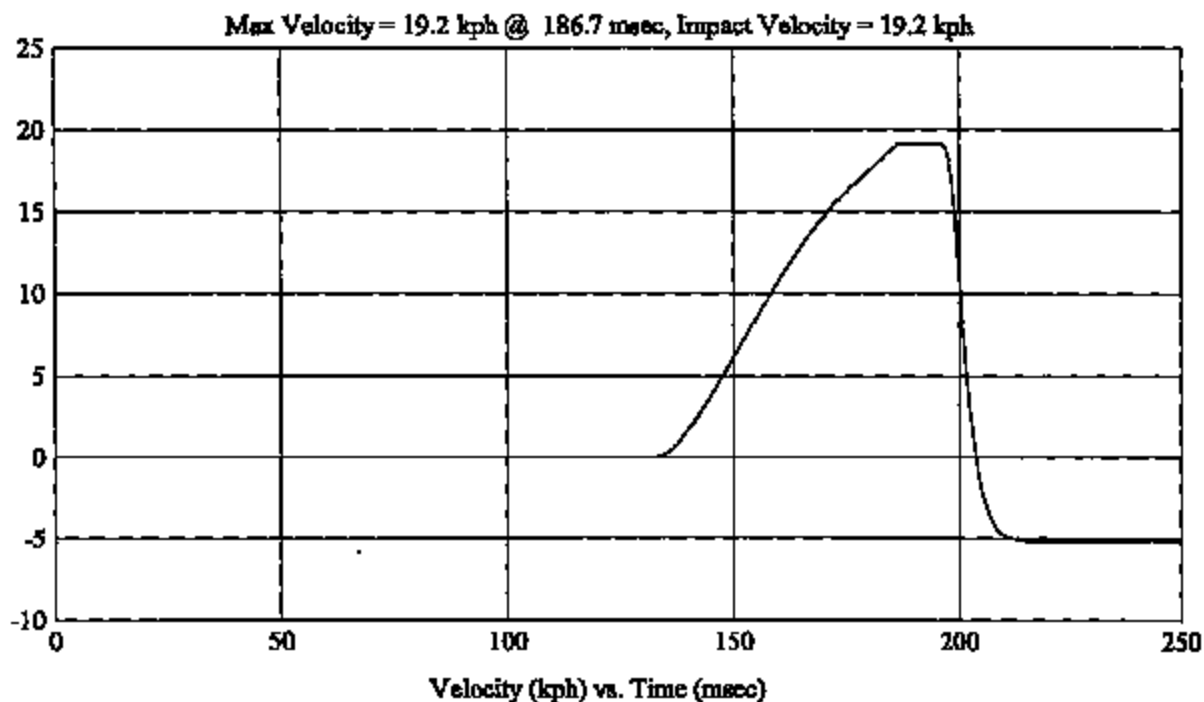
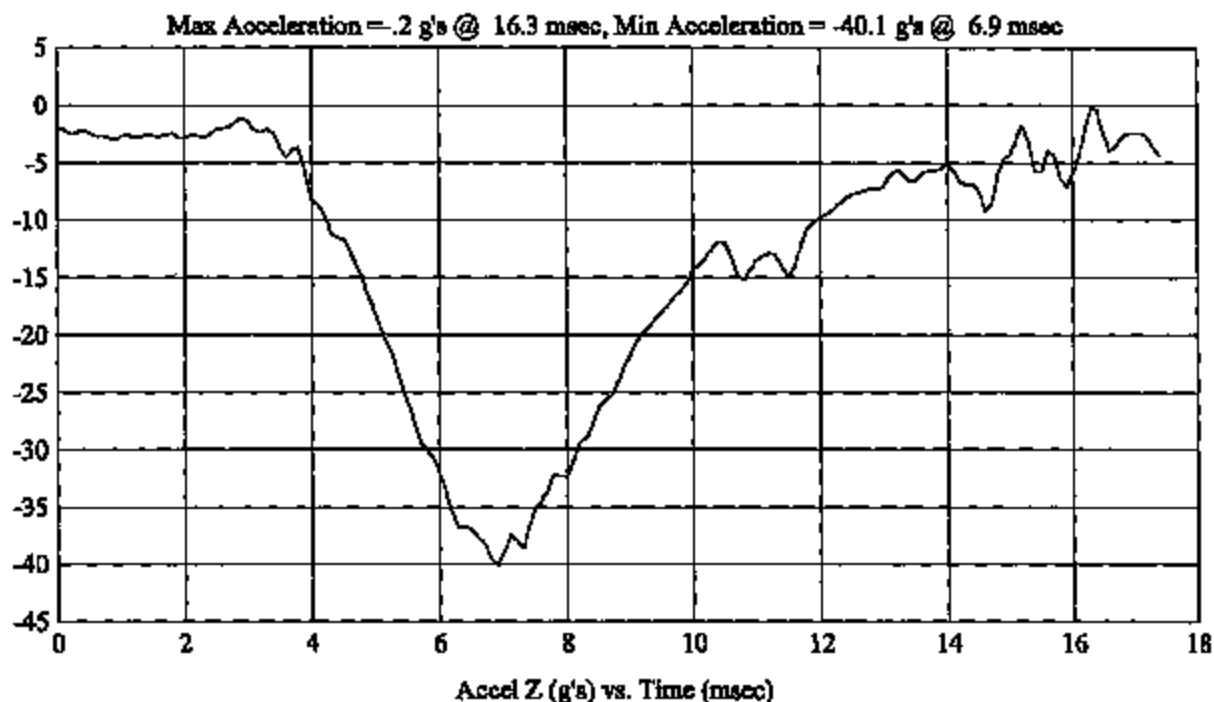
FMH
G05T7-001.6Customer: NHTSA
Test # 3
FM5221
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target BP1
Vehicle Side: Right
Horz/Vert Angle: 90/10

HIC(d) = 509, HIC = 453, Delta T = 6.1 msec



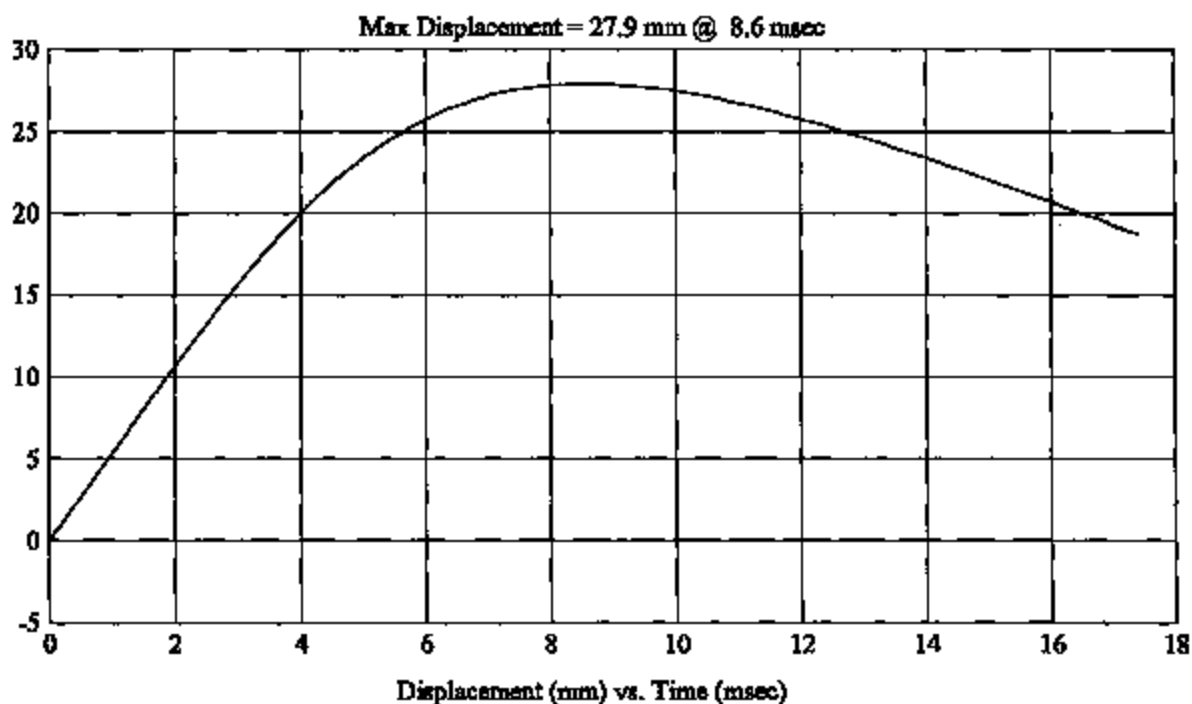
FMH
G0517-001.6Customer: NHTSA
Test # 3
FM5221
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target: BP1
Vehicle Side: Right
Horz/Vert Angle: 90/10

HIC(d) = 509, HIC = 453, Delta T = 6.1 msec



mga

Impact Testing

6/15/05

G0537-001 B

2005 NHTSA ACURA TL
FMVSS 201U - UPPER INTERIOR
TEST #9 C55301 LEFT BP2
H/V IMPACT ANGLE = 270 / 18
FM5227 PRE-TEST

0530
1000
1015
1030

Mga

Impact Testing

6/15/05

G0615-0016

2005 NHTSA ACURA TL

FMVSS 2010 - UPPER INTERIOR

TEST #9 C55301 LEFT BP2

H/V IMPACT ANGLE= 270 / 18

FM5227 POST-TEST



mga

6/15/05

Impact Testing

G0517-001.6

2005 NHTSA ACURA TL
FMVSS 201U - UPPER INTERIOR
TEST #9 C55301 LEFT BP2
H/V IMPACT ANGLE= 270 / 18
FM5227 POST-TEST

MICHIGAN OPERATIONS
DATE: 2/8/01
SUPERCEDES: MGATP207210.2

DOC. NO.: MGATP207210.3
REVISION NO.: 2
PAGE 1 OF 1

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G0517-001.6 VEHICLE YR/MAKE/MODEL: 2005/NHTSA/ACURA TL

GENERAL TEST PARAMETERS:

Target (Vehicle Side): BP2 Left

MGA Test Reference No.: FM5227

Approach Horizontal Angles: 270°

Approach Vertical Angles: 18°

Additional Description:

Test Number: #9

Temperature: 22C

Humidity: 55%

Time of Test: 2:43 PM

FMH Serial No.: [035]

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
826	874	6.1	24.0	22	5 L

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35924	-91.8	1.44	1.44
Y	6	J35919	97	1.54	1.54
Z	7	J22864	95.6	1.39	1.39

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

No visible damage.

Recorded By:  Approved By:  Date: 6/15/05

*Only necessary for NHTSA (Government) Compliance testing.

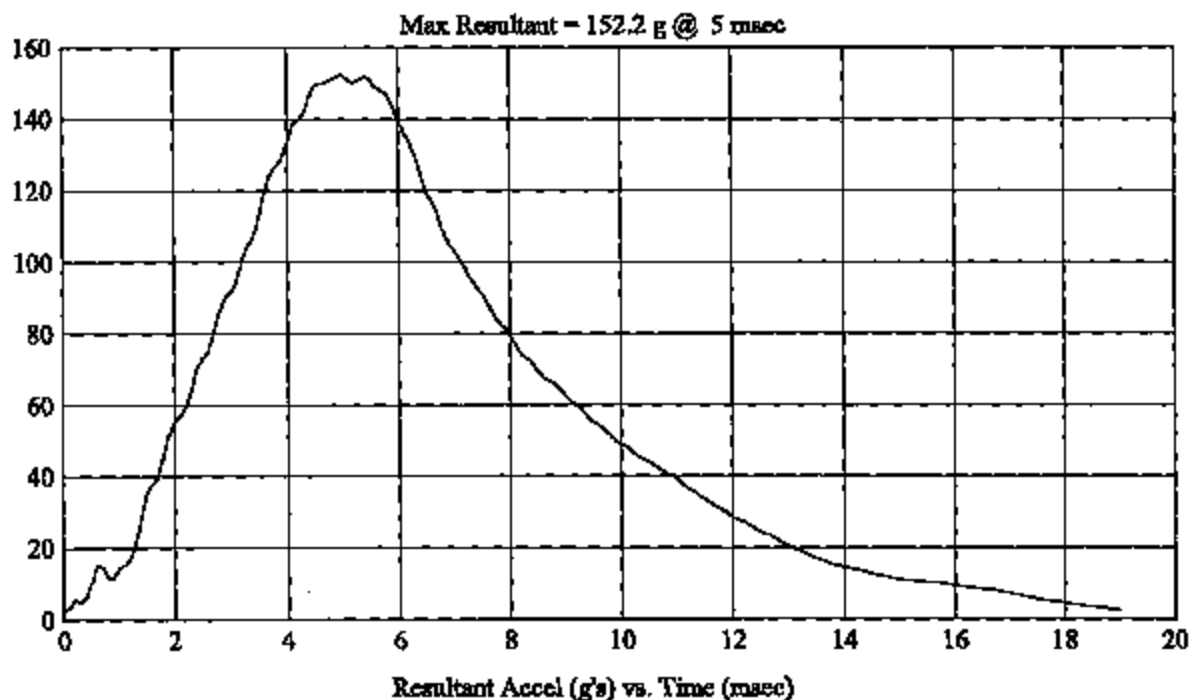
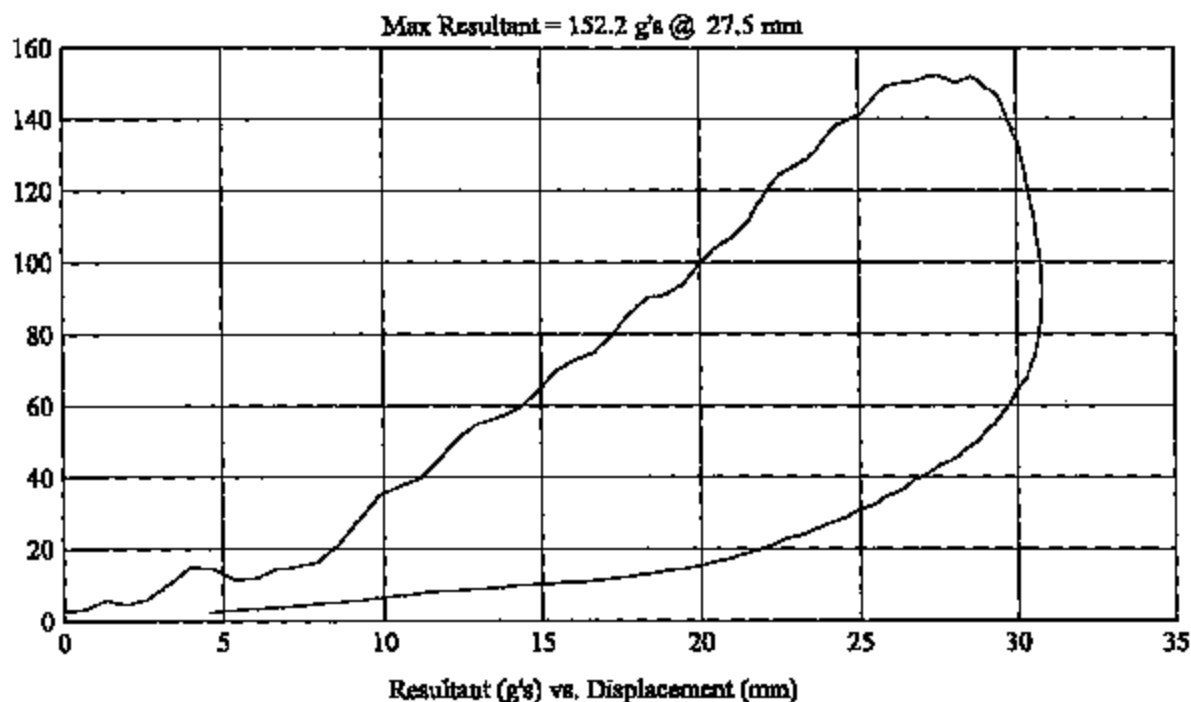
FMH
G05I7-001.6Customer: NHTSA
Test # 9
FMS227
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/15/05

Model Year: 2005
Target: BP2
Vehicle Side: Left
Horz/Vert Angle: 270/18

HIC(d) = 826, HIC = 874, Delta T = 6.1 msec



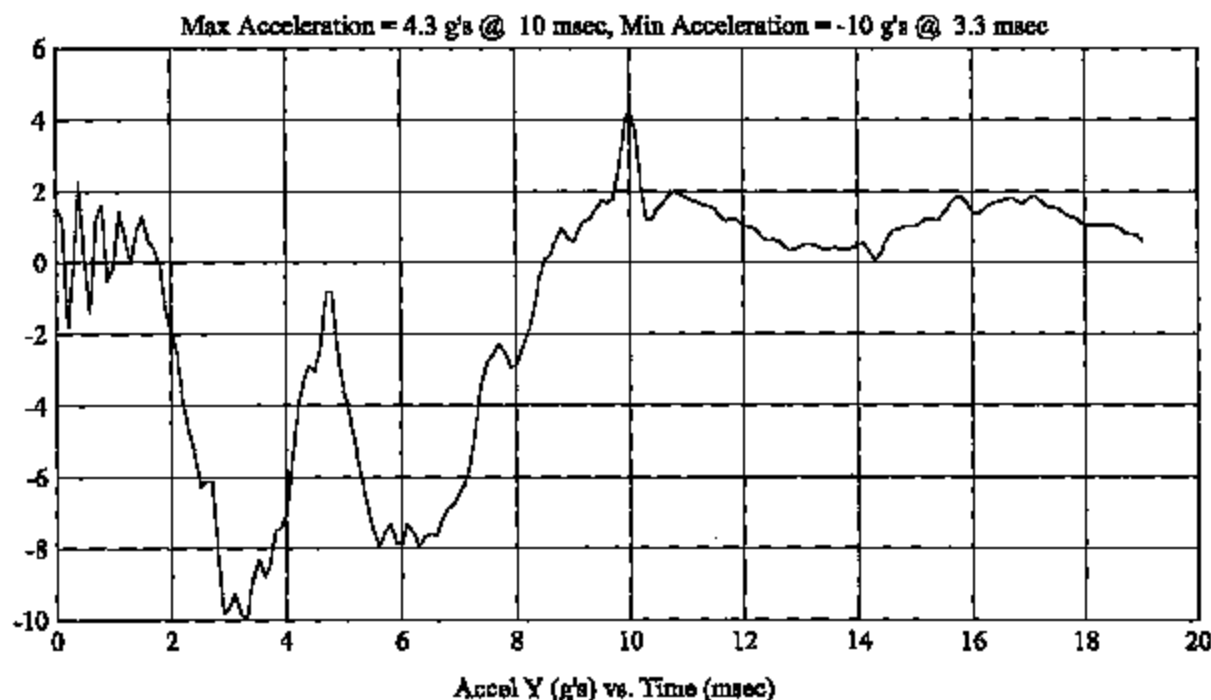
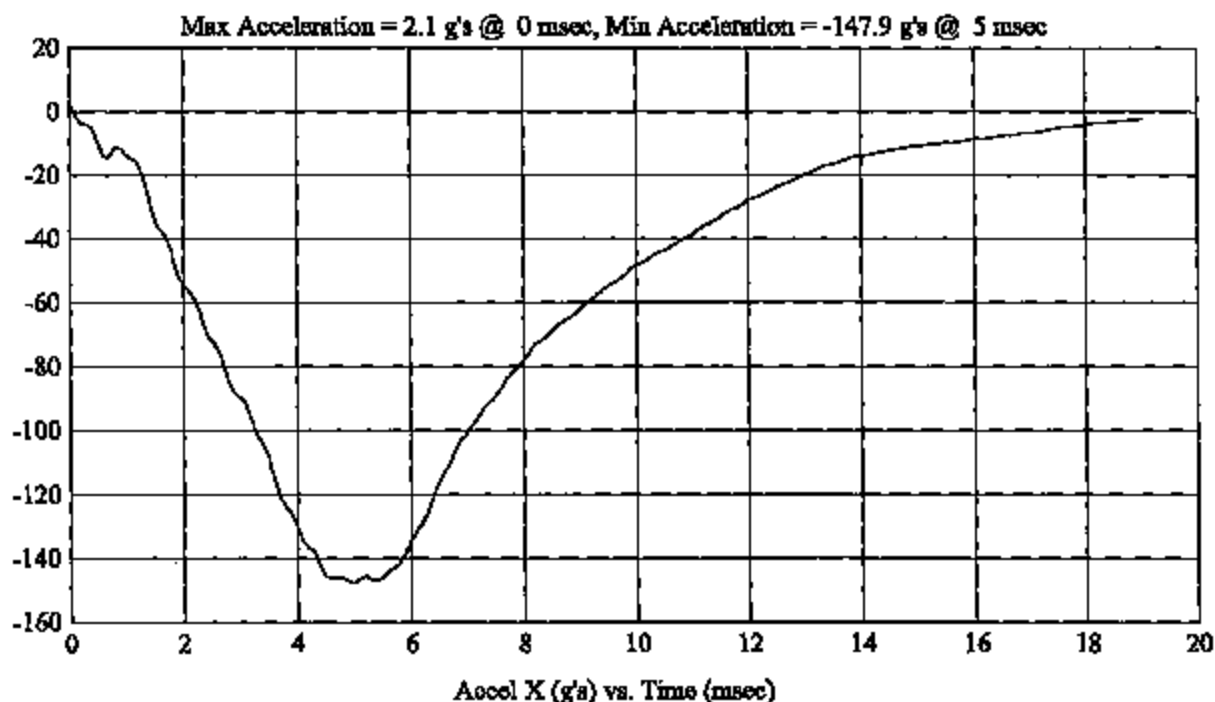
FMH
G05I7-001.6Customer: NHTSA
Test # 9
FM5227
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/15/05

Model Year: 2005
Target: BP2
Vehicle Side: Left
Horz/Vert Angle: 270/18

HIC(d) = 826, HIC = 874, Delta T = 6.1 msec



FMH
G05I7-001.6

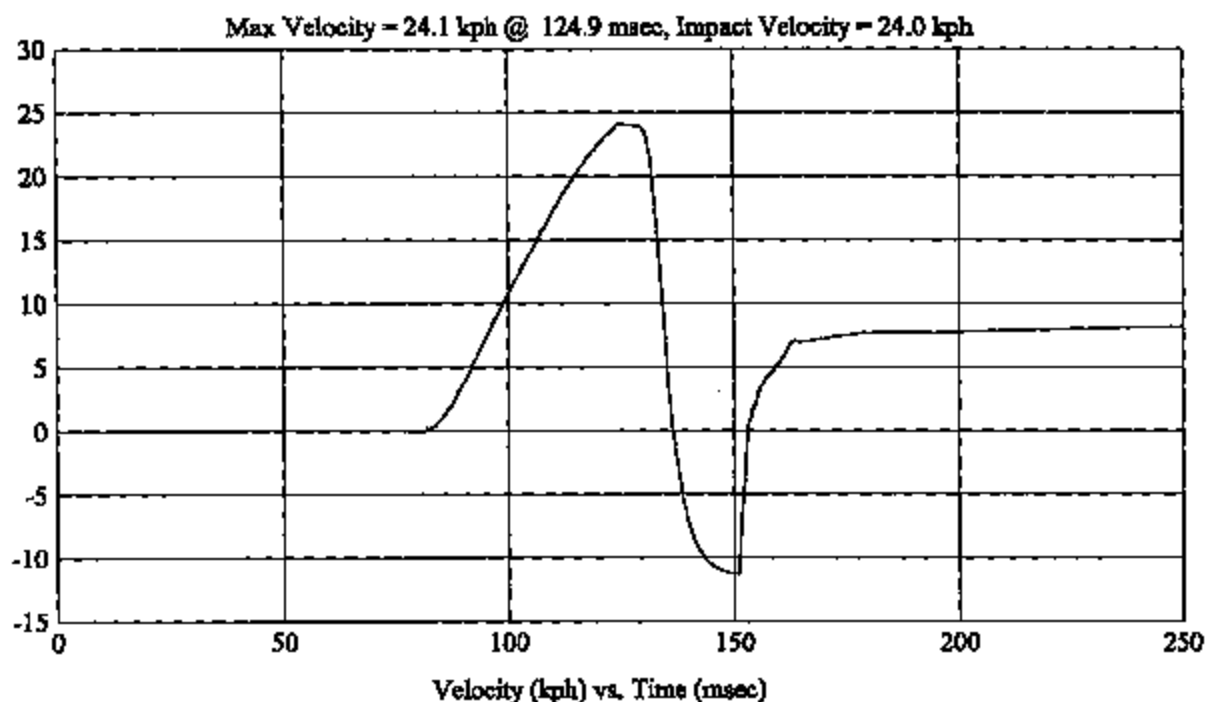
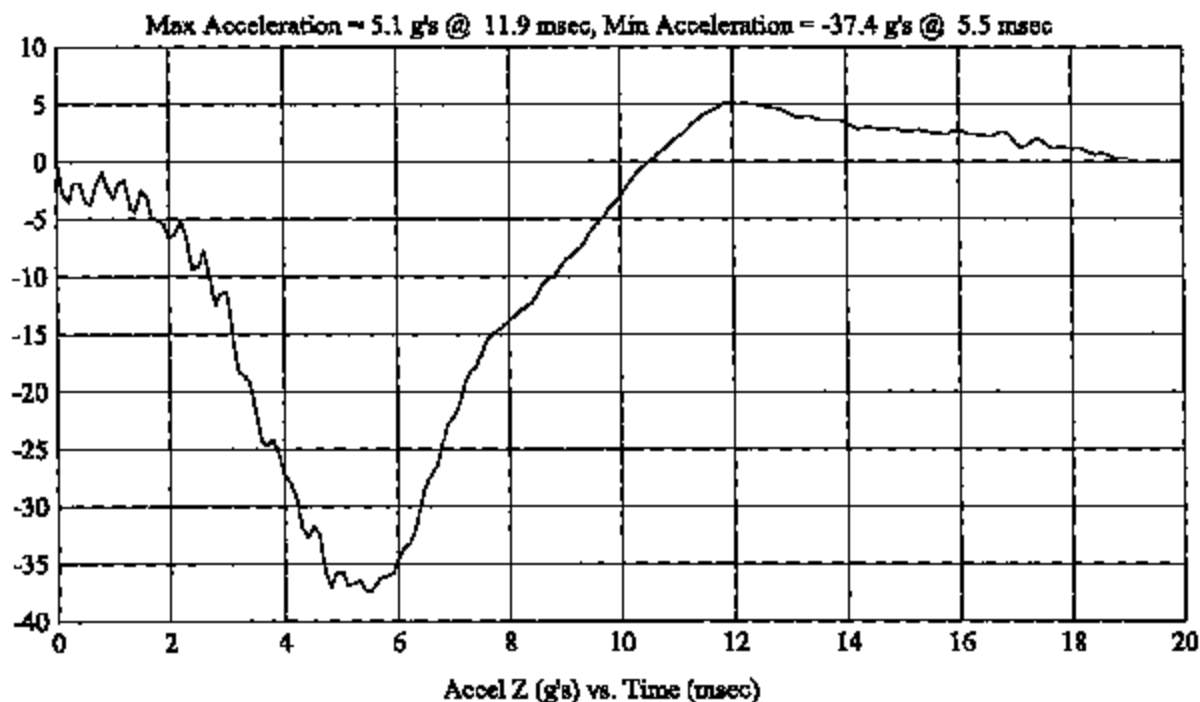
Customer: NHTSA
Test # 9
FM5227
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/15/05

Model Year: 2003
Target: BP2
Vehicle Side: Left
Horz/Vert Angle: 270/18

HXC(d) = 826, HIC = 874, Delta T = 6.1 msec



FMH
G0517-001.6

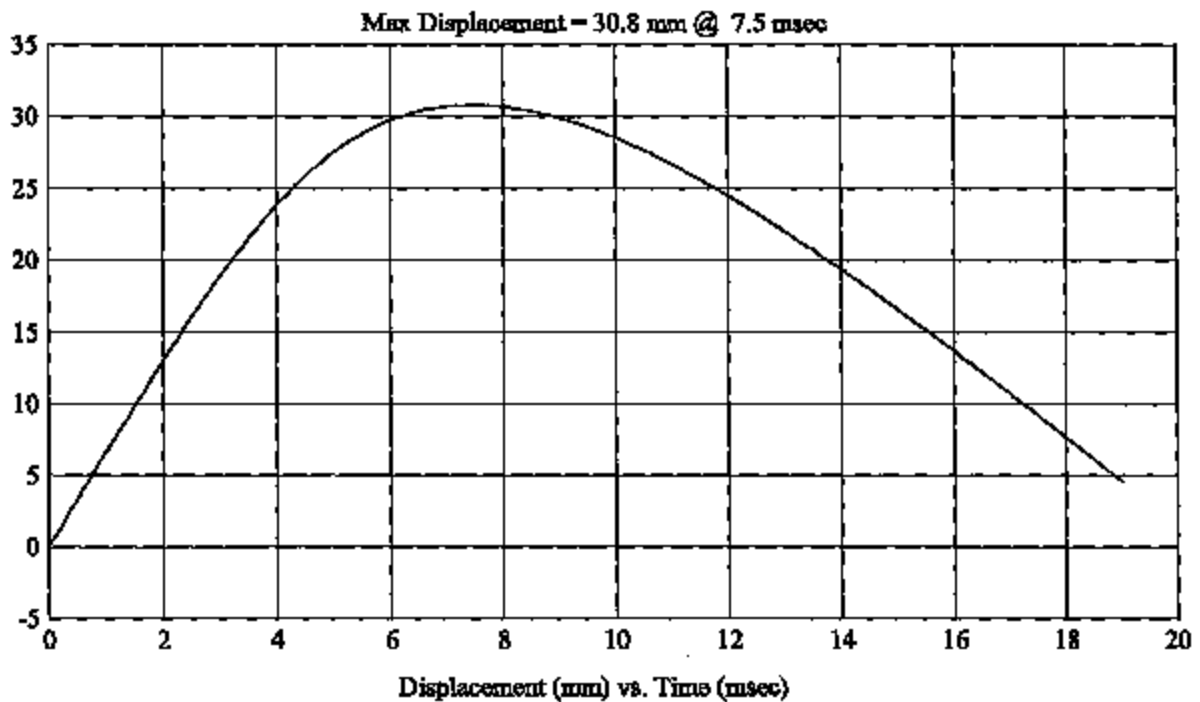
Customer: NHTSA
Test # 9
FMS227
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/15/05

Model Year: 2005
Target: BP2
Vehicle Side: Left
Horz/Vert Angle: 270/18

HIC(d) = 826, HIC = 874, Delta T = 6.1 msec



mga

Impact Testing

6/14/05

G0517-001.6

2005 NHTSA ACURA TL

FMVSS 2010 - UPPER INTERIOR

TEST #4 C55301 RIGHT BP4

HV IMPACT ANGLE= 160 / -8

FM5222 PRE-TEST

mga

Impact Testing

6/14/05

G0517-001.6

2005 NHTSA ACURA TL

FMVSS 201U - UPPER INTERIOR

TEST #4 C55301 RIGHT BP4

H/V IMPACT ANGLE= 160 / -8

FM5222

POST-TEST

 mga

6/14/05

Impact Testing

G0517-001.6

2005 NHTSA ACURA TL
FMVSS 201U - UPPER INTERIOR
TEST #4 C55301 RIGHT BR4
H/V IMPACT ANGLE= 160 / -8
FM5222 POST-TEST

MICHIGAN OPERATIONS
DATE: 2/8/01
SUPERCEDES: MGATP207210.2

DOC. NO.: MGATP207210.3
REVISION NO.: 2
PAGE 1 OF 1

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G0617-001.6 VEHICLE YR/MAKE/MODEL:2005/NHTSA/ACURA TL

GENERAL TEST PARAMETERS:

Test Number:#4

Target (Vehicle Side): BP4 Right

Temperature:22C

MGA Test Reference No.:FM5222

Humidity:53%

Approach Horizontal Angles:160°

Time of Test:3:40 PM

Approach Vertical Angles:-8°

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
471	403	6.1	23.9	30	0

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35924	-91.8	1.43	1.44
Y	6	J35919	97	1.54	1.54
Z	7	J22664	95.6	1.39	1.39

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

B-pillar trim was displaced

Recorded By:  Approved By*:  Date: 6/14/06

*Only necessary for NHTSA (Government) Compliance testing.

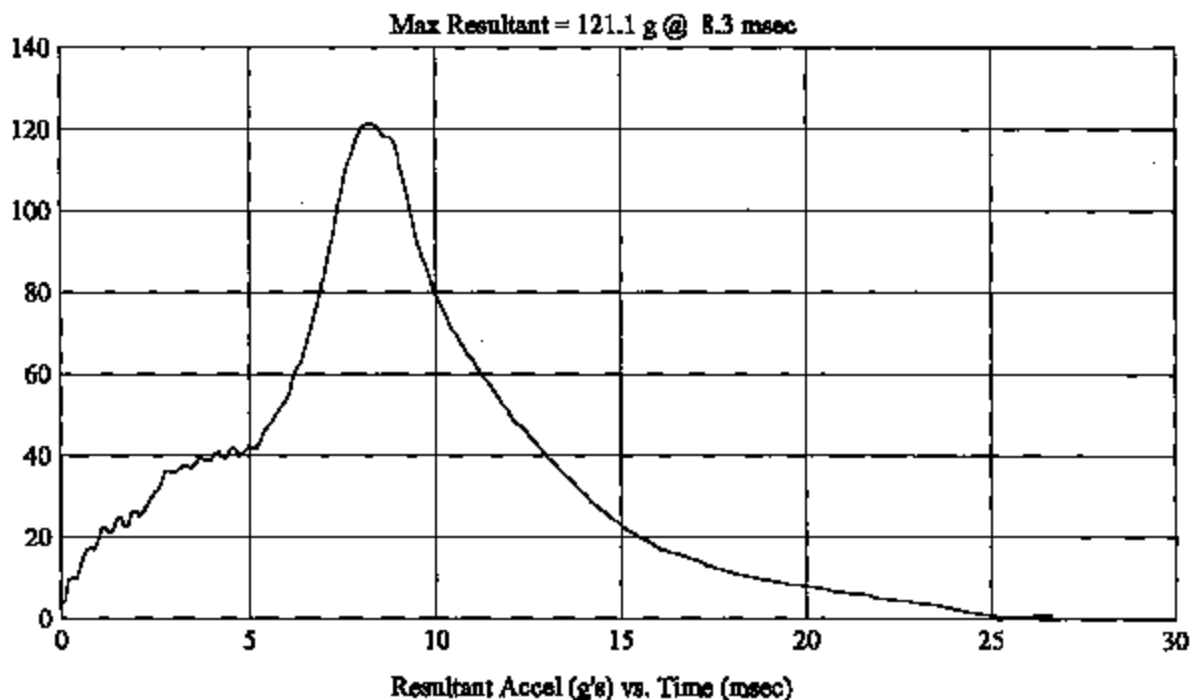
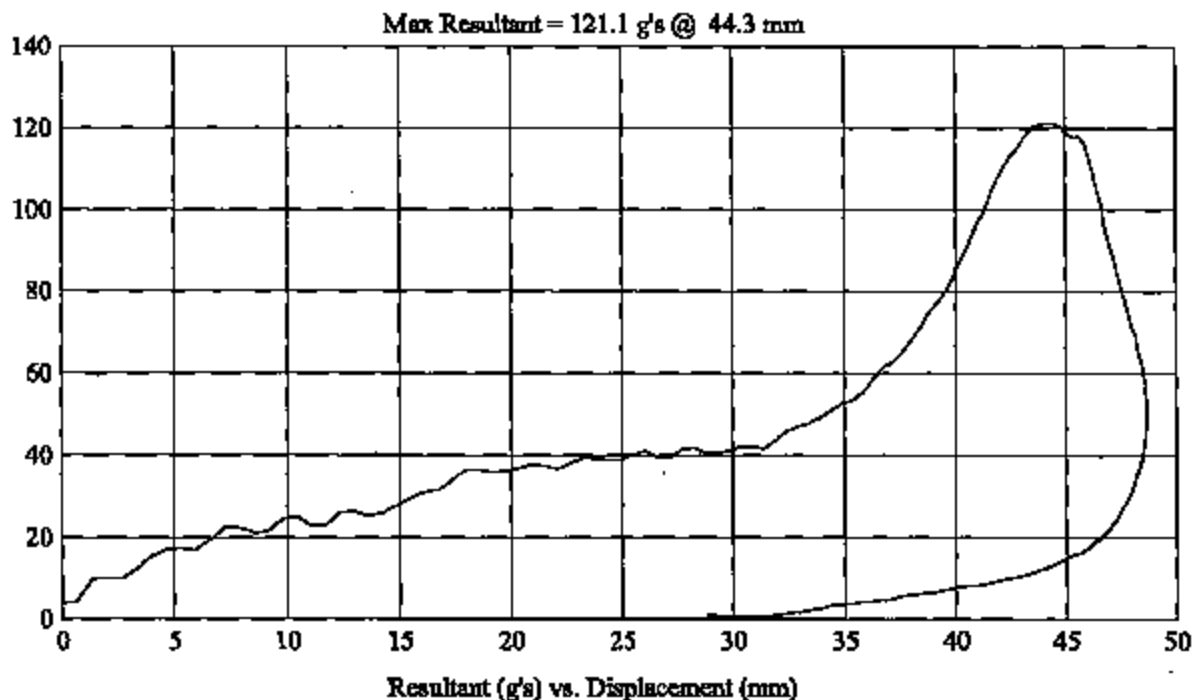
FMH
G05I7-001.6Customer: NETSA
Test # 4
FM5222
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/14/03

Model Year: 2005
Target: BP4
Vehicle Side: Right
Horz/Vert Angle: 160/-8

HIC(d) = 471, HIC = 403, Delta T = 6.1 msec



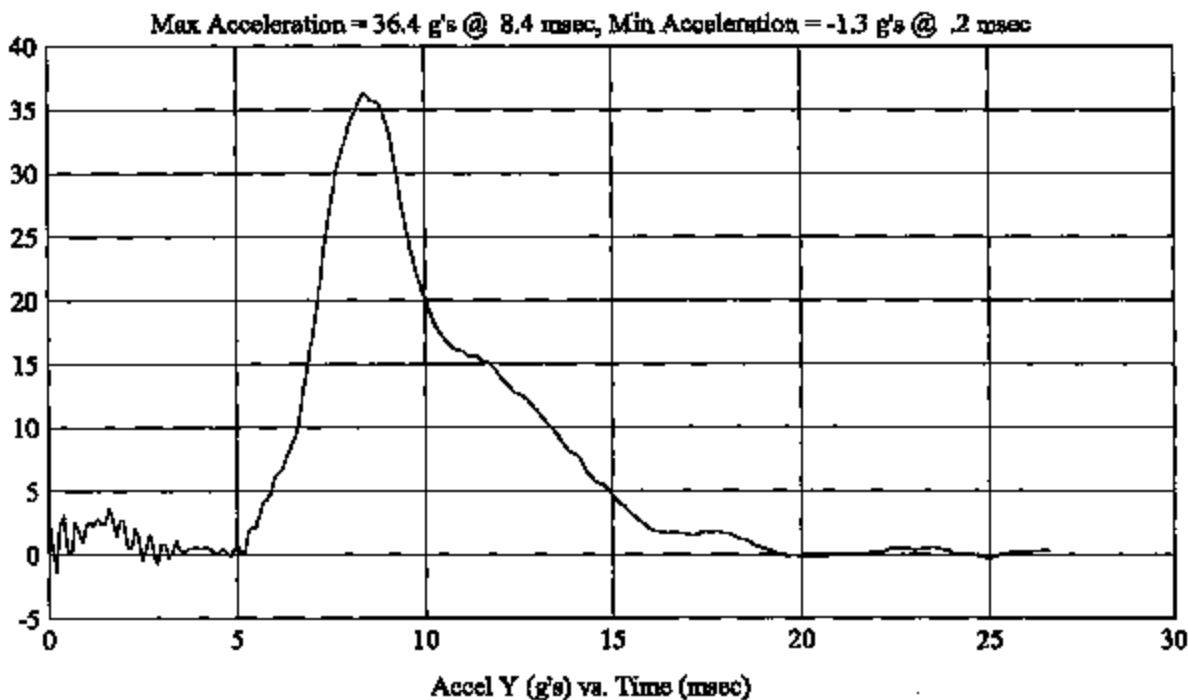
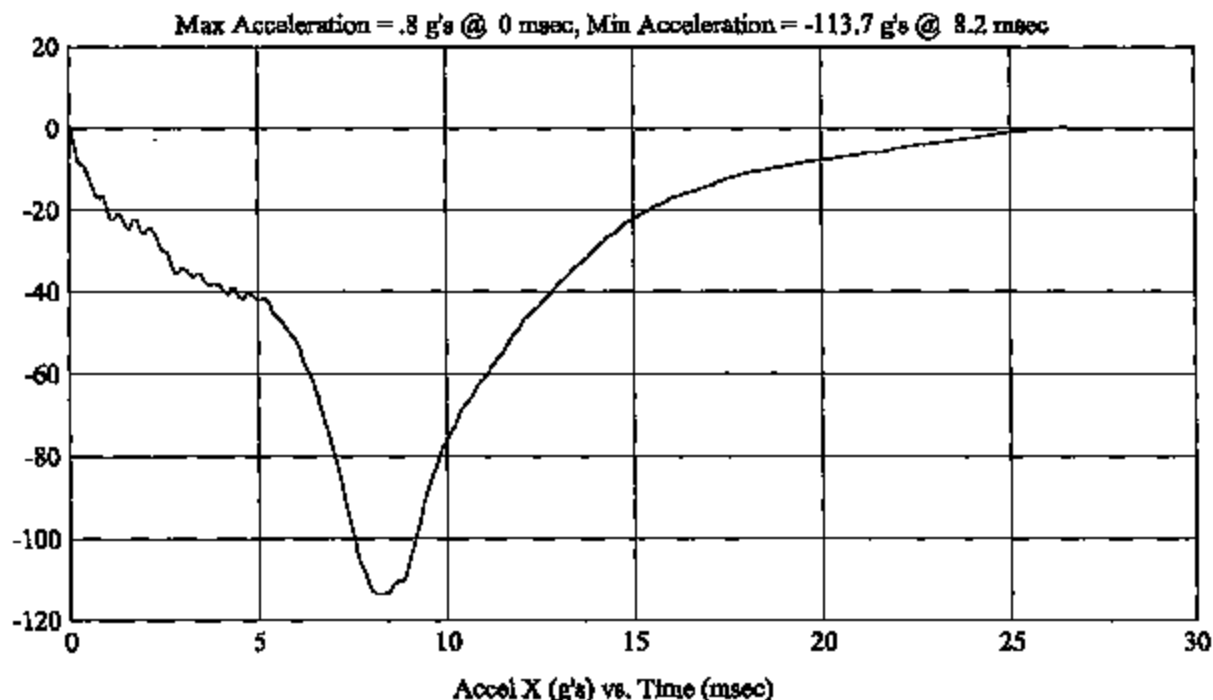
FMH
G0517-001.6Customer: NHTSA
Test # 4
FM5222
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target: BP4
Vehicle Side: Right
Horz/Vert Angle: 160/-8

HIC(d) = 471, HIC = 403, Delta T = 6.1 msec



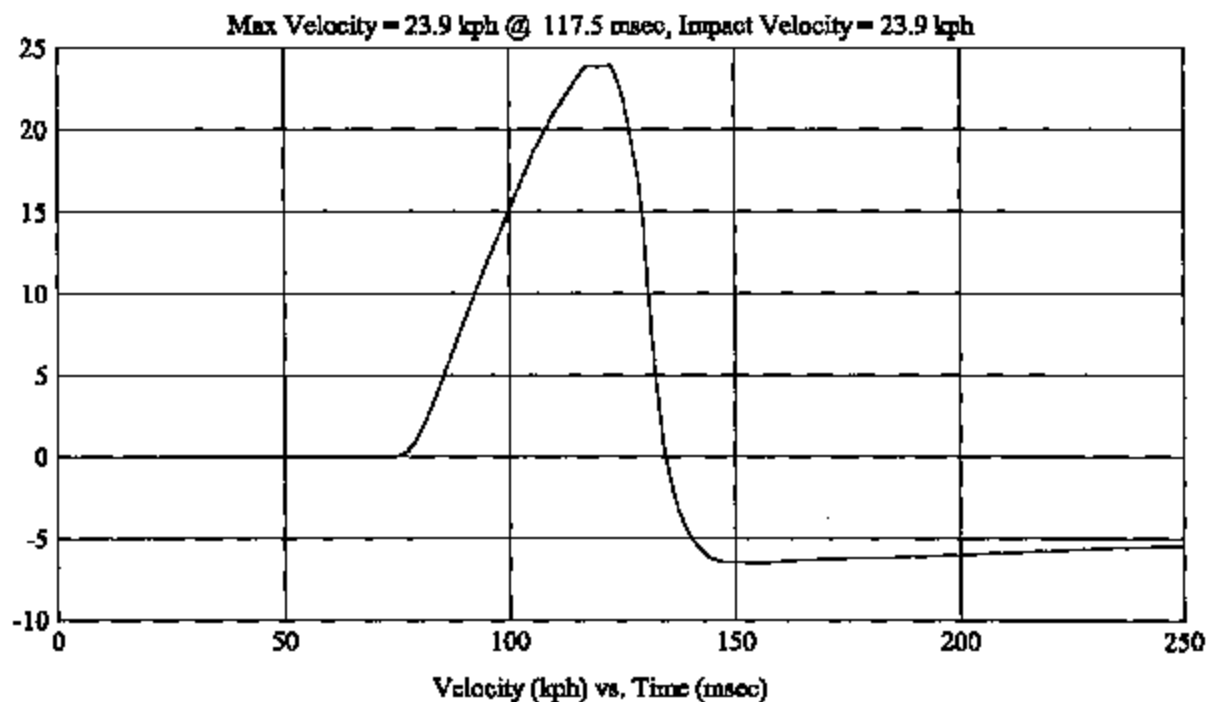
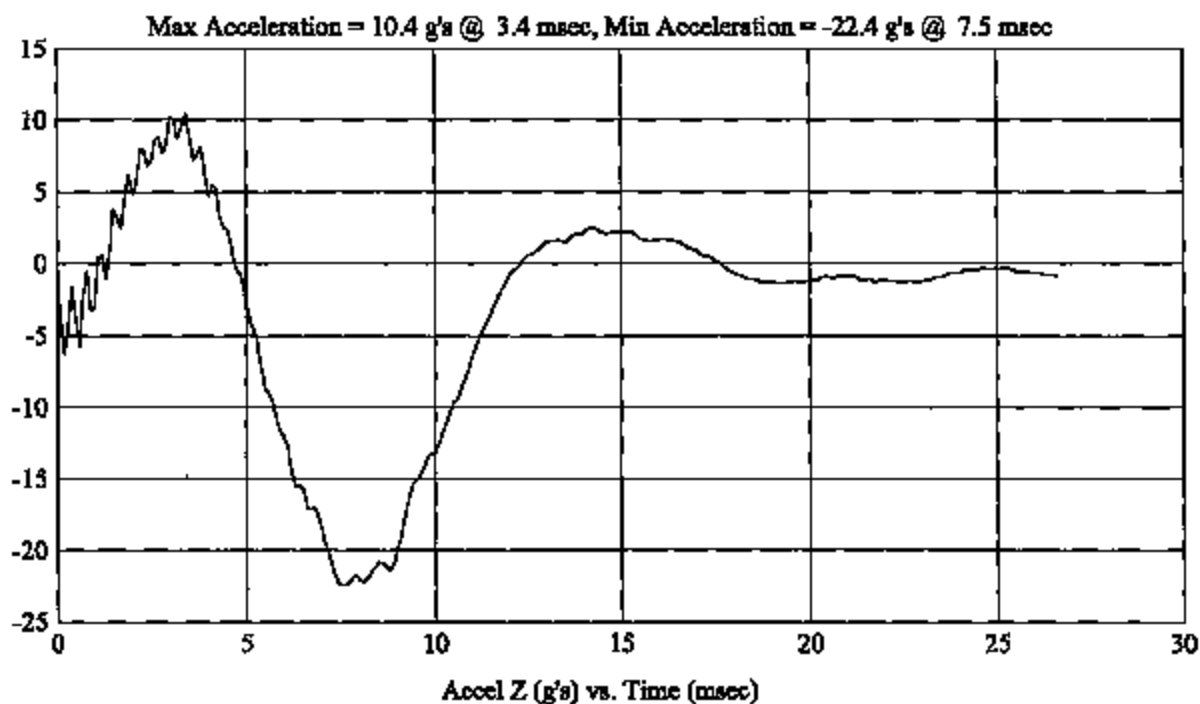
FMH
G0517-001.6Customer: NHTSA
Test # 4
FMS222
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target: BP4
Vehicle Side: Right
Horz/Vert Angle: 160/-8

HIC(d) = 471, HIC = 403, Delta T = 6.1 msec



FMH
G05I7-001.6

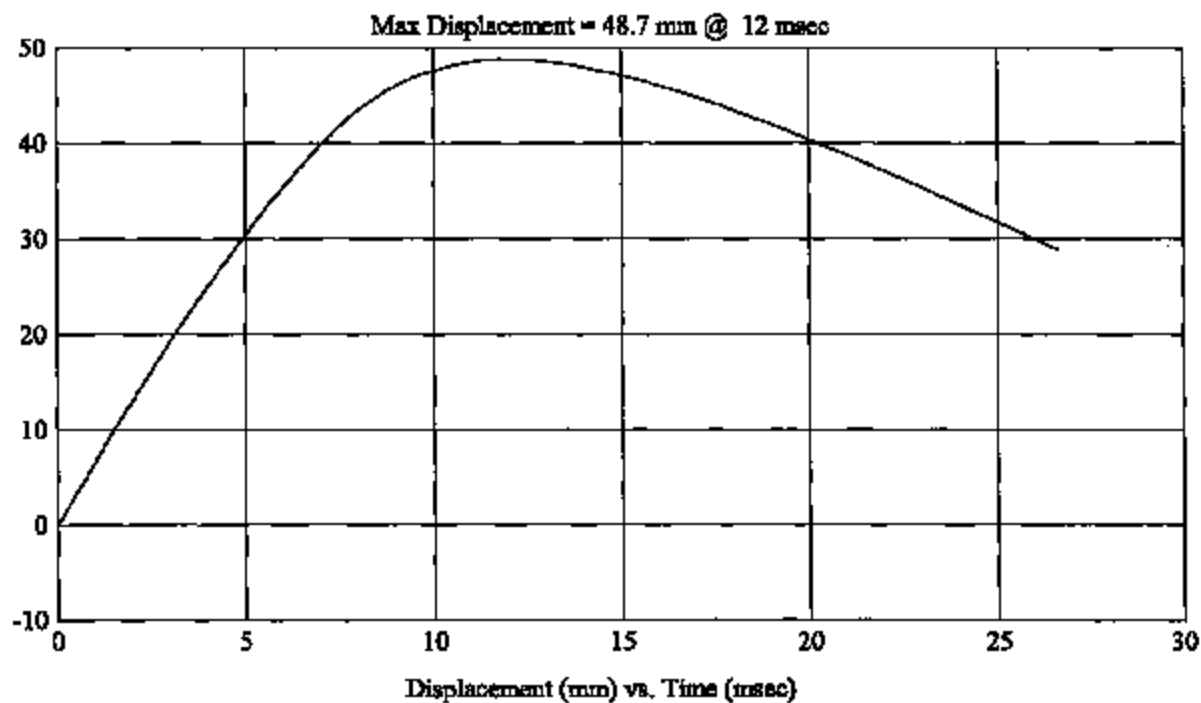
Customer: NHTSA
Test # 4
FM5222
Additional Desc: N/A

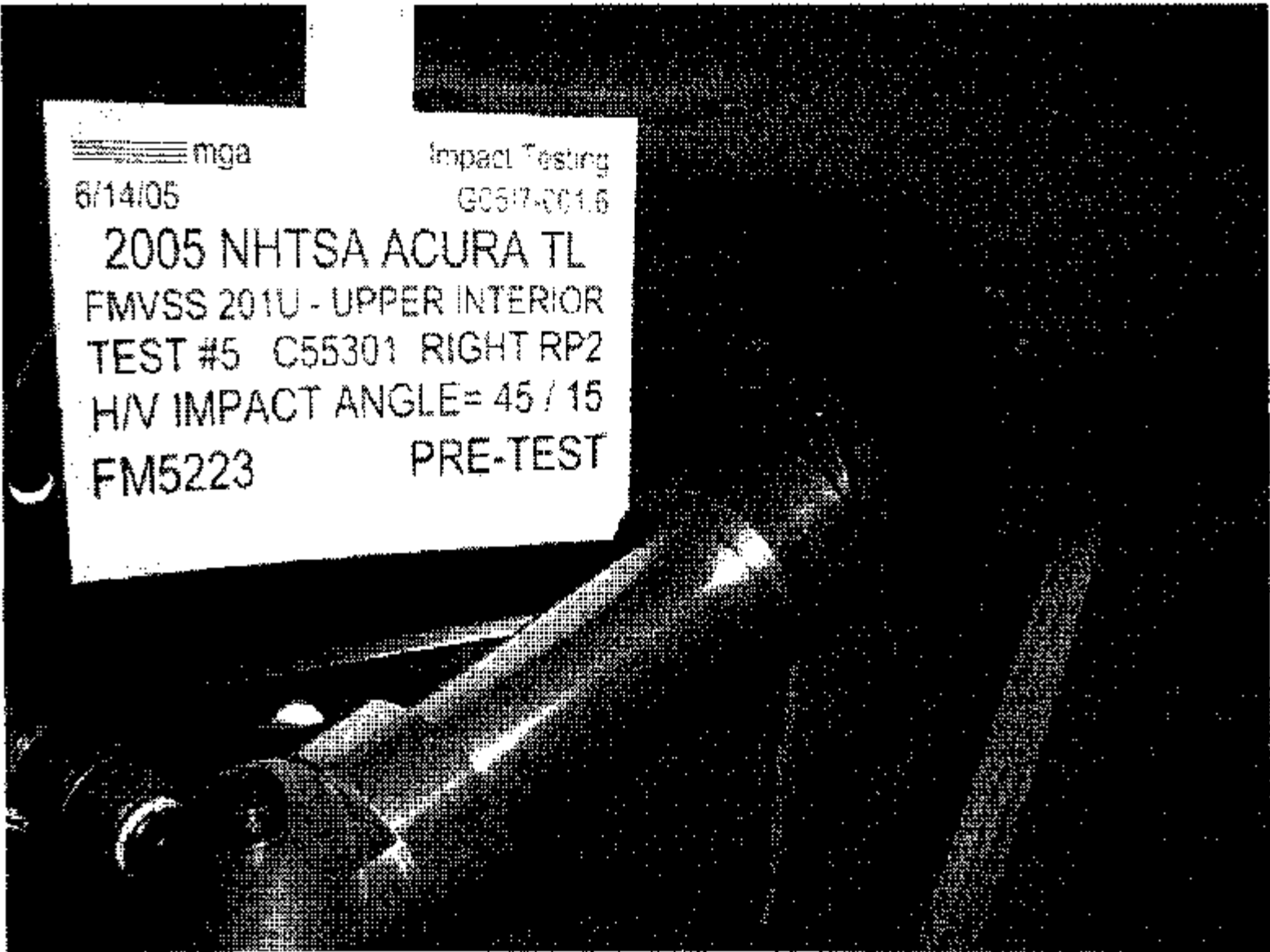
Vehicle Program : ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target: BP4
Vehicle Side: Right
Horz/Vert Angle: 160/-8

HIC(d) = 471, HIC = 403, Delta T = 6.1 msec





mga

6/14/05

Impact Testing

GC617-001.6

2005 NHTSA ACURA TL

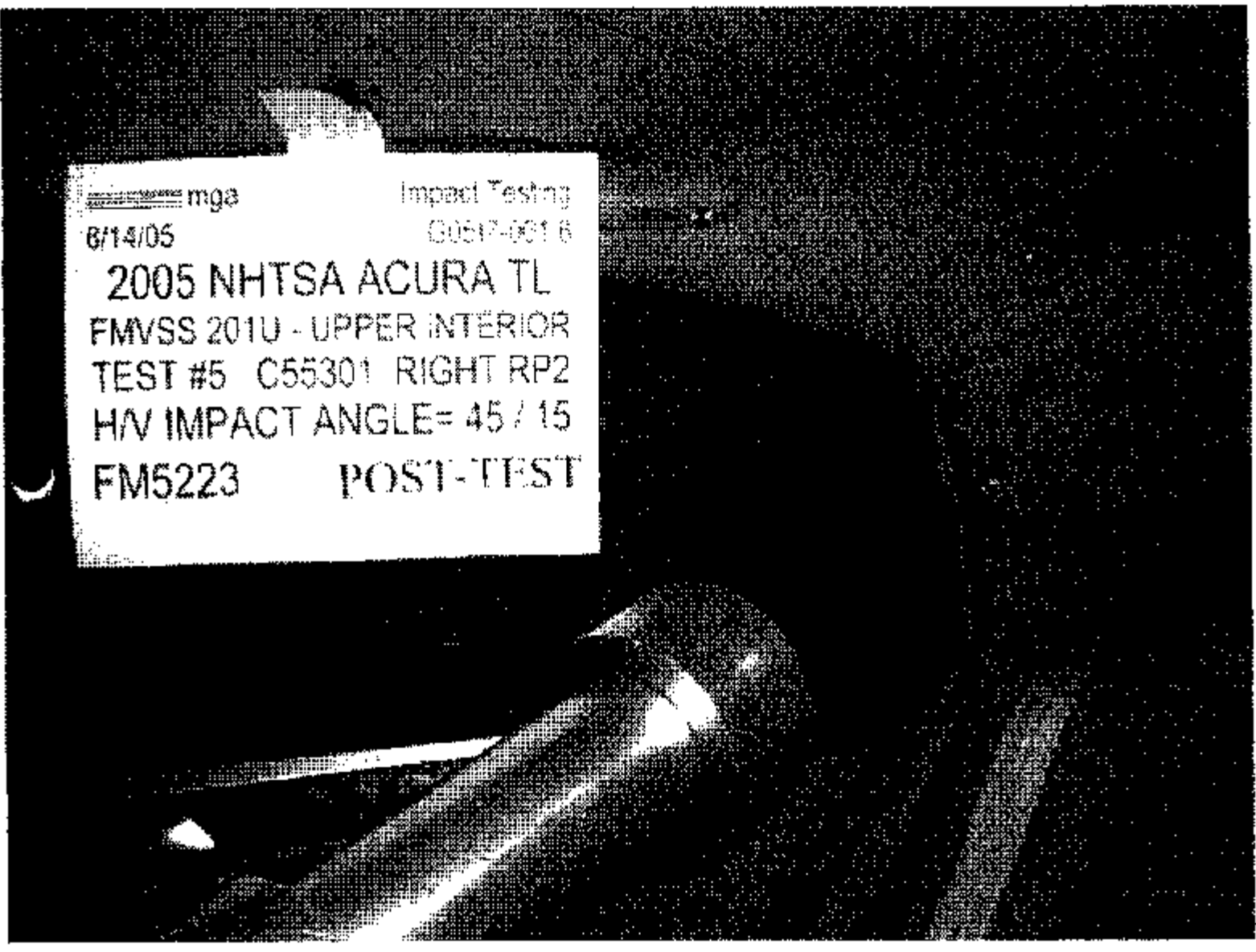
FMVSS 201U - UPPER INTERIOR

TEST #5 C55301 RIGHT RP2

H/V IMPACT ANGLE= 45 / 15

FM5223

PRE-TEST



mga

8/14/05

Impact Testing

G0517-001.6

2005 NHTSA ACURA TL

FMVSS 2010 - UPPER INTERIOR

TEST #5 C55301 RIGHT RP2

H/V IMPACT ANGLE= 45 / 15

FM5223

POST-TEST



mga

6/14/05

Impact Testing

G0517-001.6

2005 NHTSA ACURA TL
FMVSS 201U - UPPER INTERIOR
TEST #5 C55301 RIGHT RP2
H/V IMPACT ANGLE= 45 / 15
FM5223 POST-TEST

MICHIGAN OPERATIONS
DATE: 2/8/01
SUPERCEDES: MGATP207210.2

DOC. NO.: MGATP207210.3
REVISION NO.: 2
PAGE 1 OF 1

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G0517-001.6 VEHICLE YR/MAKE/MODEL:2005/NHTSA/ACURA TL

GENERAL TEST PARAMETERS:

Target (Vehicle Side): RP2 Right
MGA Test Reference No.:FM5223
Approach Horizontal Angles:45°
Approach Vertical Angles:15°
Additional Description:

Test Number:#5

Temperature:22C

Humidity:53%

Time of Test:4:40 PM

FMH Serial No:[037]

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above PL O	Left/Right PL O
406	317	13.5	24.3	31	11 L

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35800	-98.4	1.44	1.44
Y	6	J35841	95.7	1.54	1.54
Z	7	J35791	89.5	1.39	1.38

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

Rear pillar trim cracked

Recorded By: [Signature] Approved By*: [Signature] Date: 6/14/05
*Only necessary for NHTSA (Government) Compliance testing.

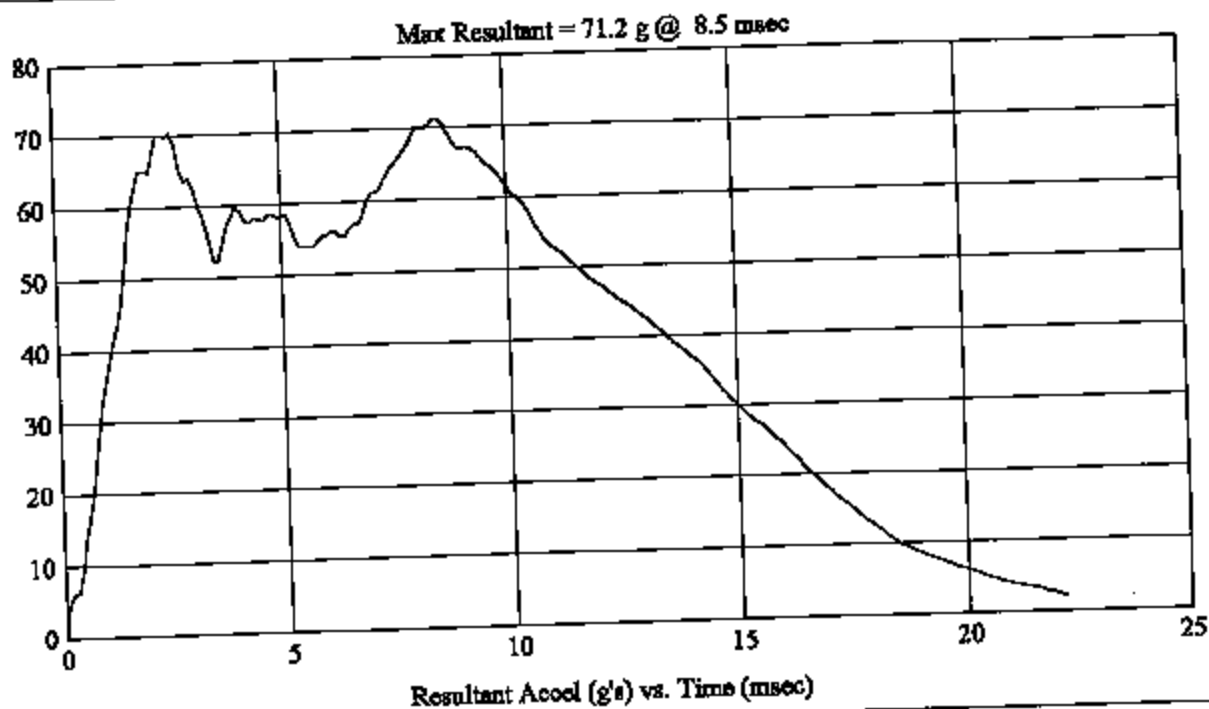
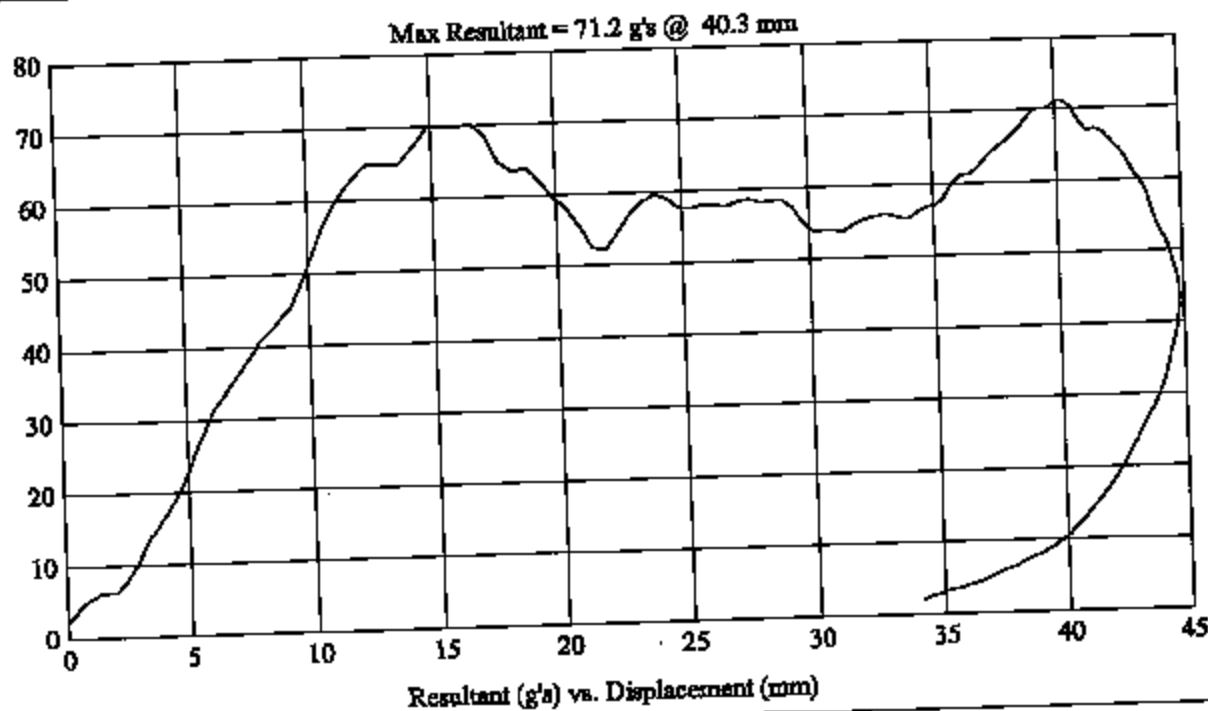
FMH
G0517-001.6Customer: NHTSA
Test # 5
FM5223
Additional Desc: N/A

Vehicle Program: ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target: RP2
Vehicle Side: Right
Horz/Vert Angle: 45/15

HIC(d) = 406, HIC = 317, Delta T = 13.5 msec



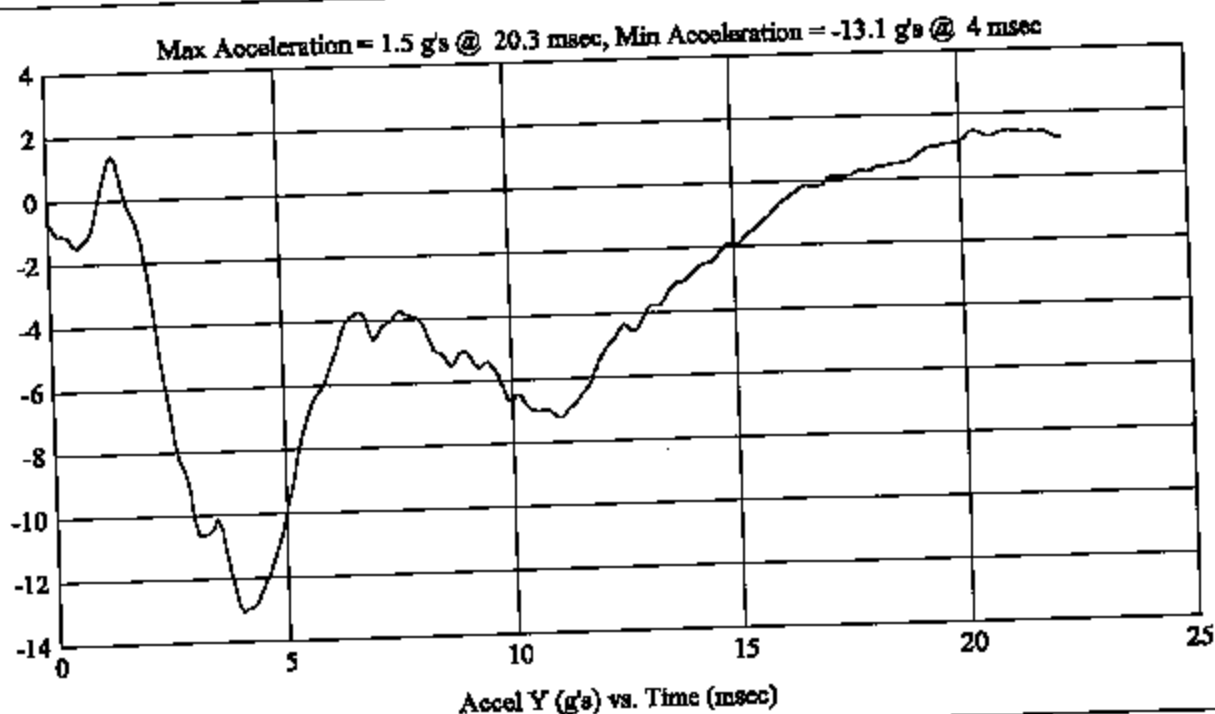
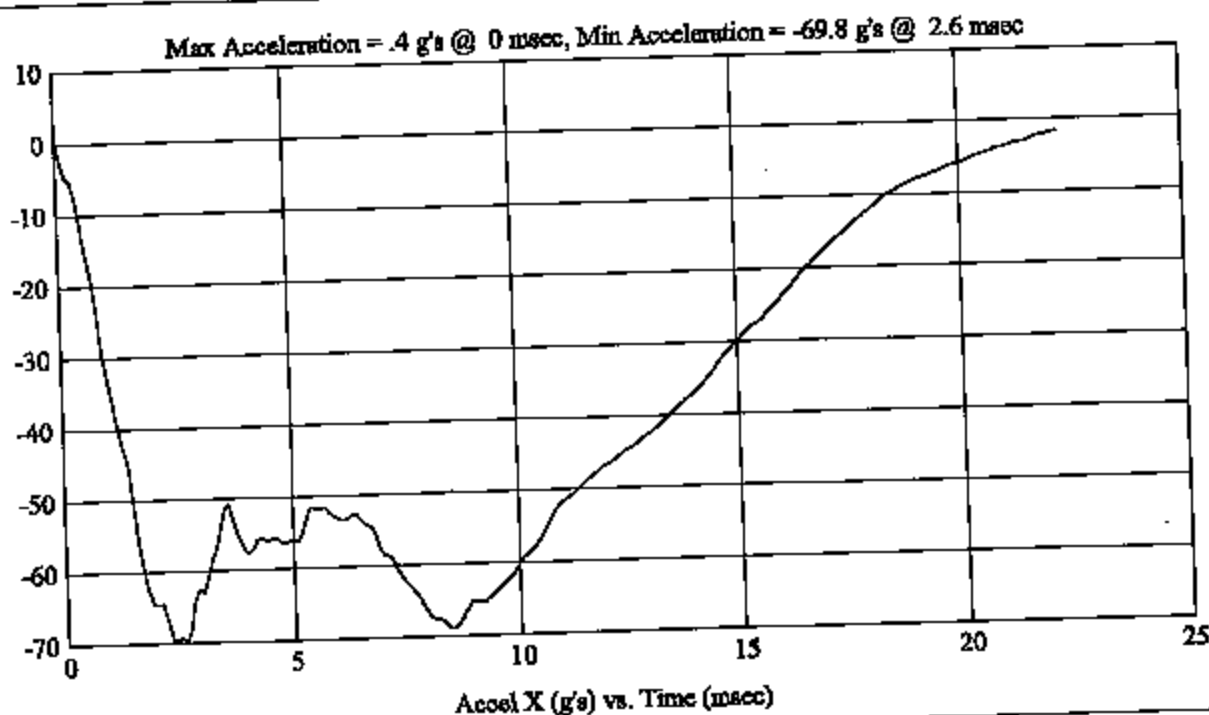
FMH
G0517-001.6Customer: NHTSA
Test # 5
FMS223
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target: RP2
Vehicle Side: Right
Horz/Vert Angle: 45/15

HIC(d) = 406, HIC = 317, Delta T = 13.5 msec



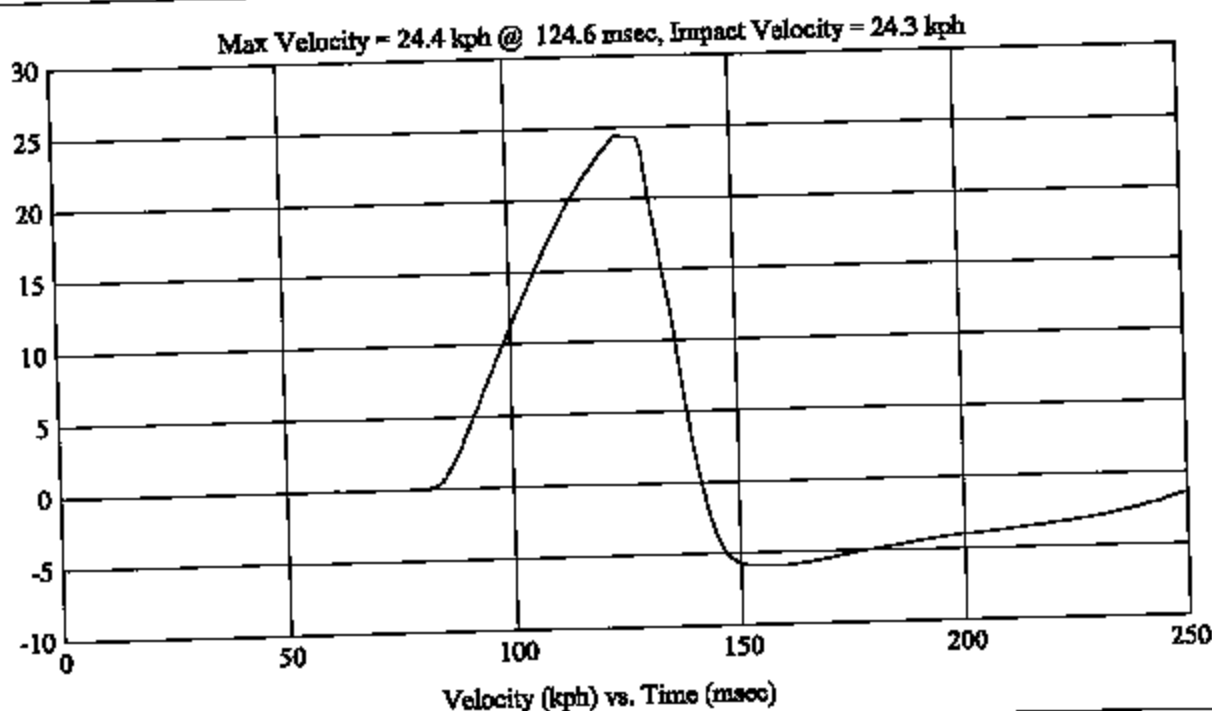
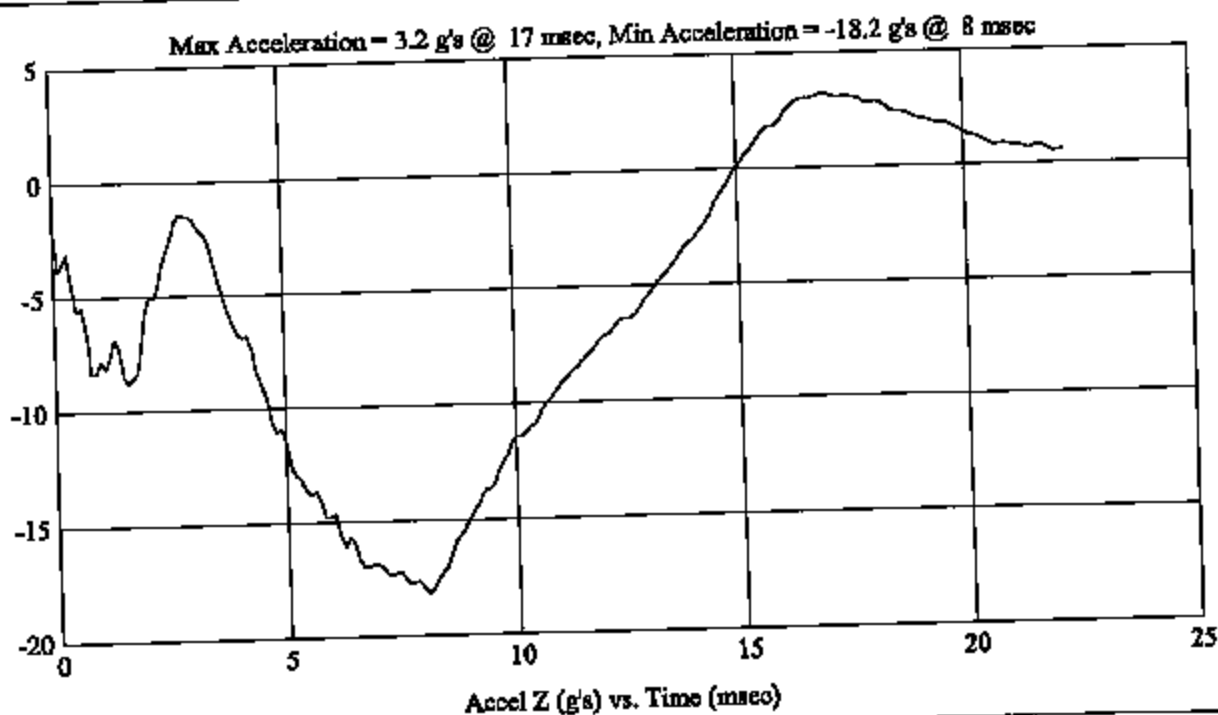
FMH
G0517-001.6Customer: NHTSA
Test # 5
FM5223
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target: RP2
Vehicle Side: Right
Horz/Vert Angle: 45/15

HIC(d) = 406, HIC = 317, Delta T = 13.5 msec



FMH
G05I7-001.6

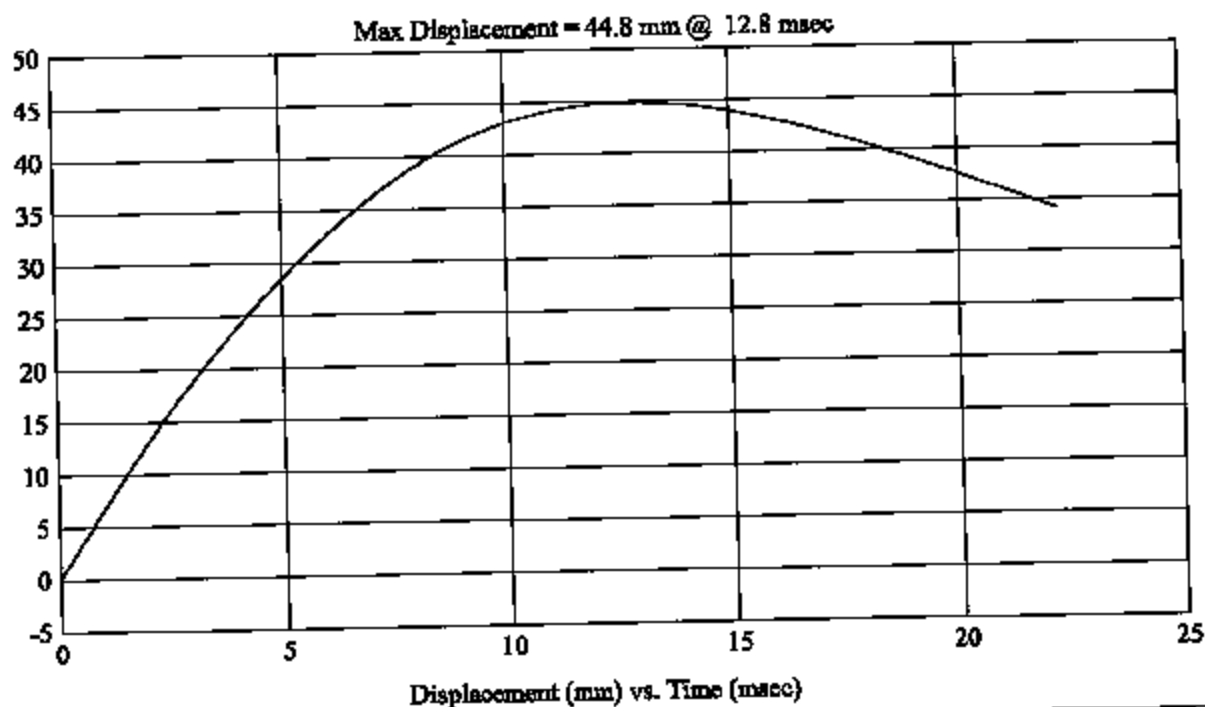
Customer: NHTSA
Test # 5
FM5223
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target: RP2
Vehicle Side: Right
Horz/Vert Angle: 45/15

HIC(d) = 406, HIC = 317, Delta T = 13.5 msec



C55301
FM5230
RH L/S
0.50

Impact Testing
00017-0016

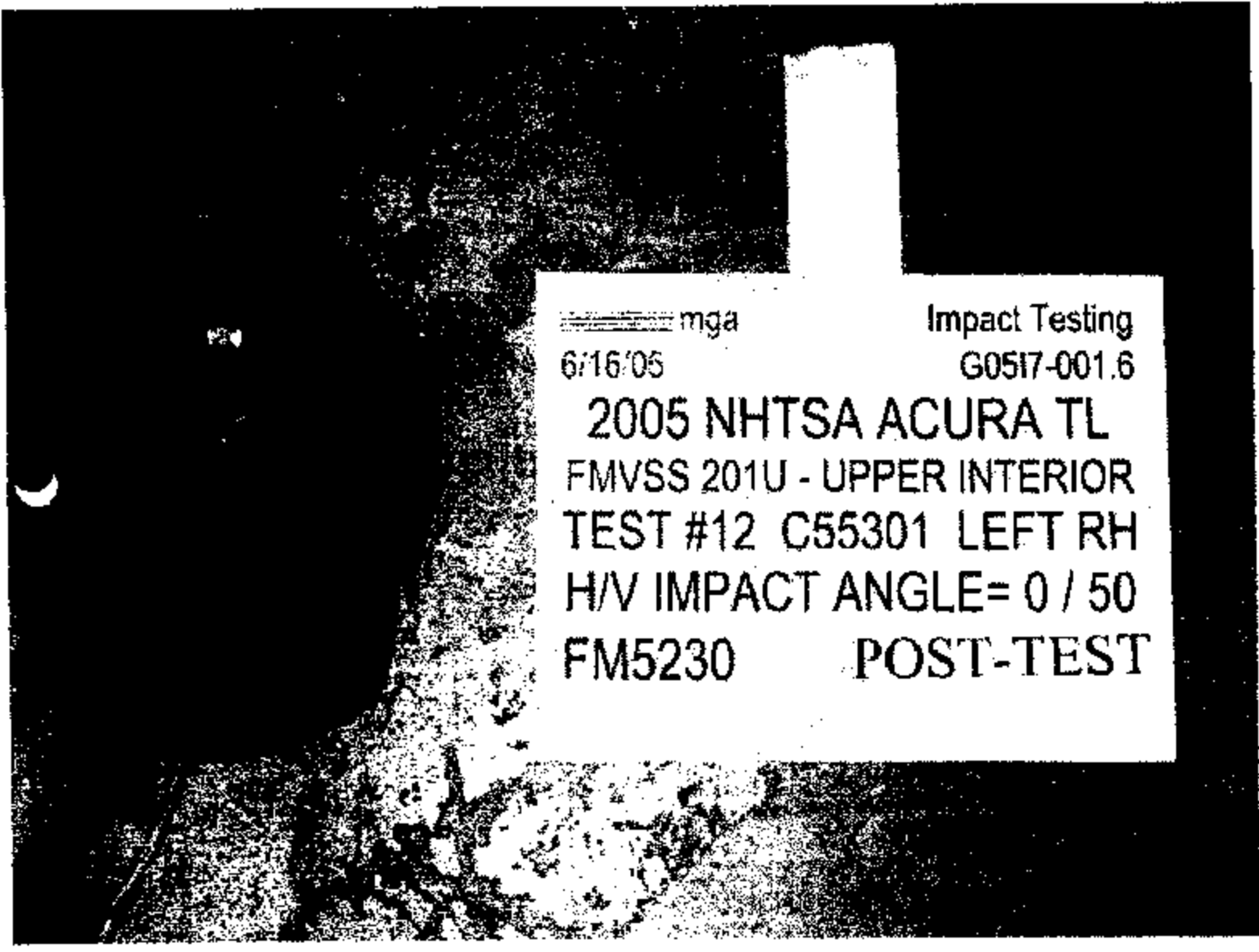
2005 NHTSA ACURA TL
FMVSS 201U - UPPER INTERIOR
TEST #12 C55301 LEFT RH
H/V IMPACT ANGLE= 0 / 50
FM5230 PRE-TEST

C55301
FM5230
RH LS
0/50

Impact Testing
2-8-00

QC517-001.6

2005 NHTSA ACURA TL
FMVSS 2010 - UPPER INTERIOR
TEST #12 C55301 LEFT RH
H/V IMPACT ANGLE= 0 / 50
FM5230 POST-TEST



mga

6/16/05

Impact Testing

G0517-001.6

2005 NHTSA ACURA TL
FMVSS 201U - UPPER INTERIOR
TEST #12 C55301 LEFT RH
H/V IMPACT ANGLE= 0 / 50
FM5230 POST-TEST

MICHIGAN OPERATIONS
 DATE: 2/8/01
 SUPERCEDES: MGATP207210.2

DOC. NO.: MGATP207210.3
 REVISION NO.: 2
 PAGE 1 OF 1

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G0517-001.6 VEHICLE YR/MAKE/MODEL:2005/NHTSA/ACURA TL

GENERAL TEST PARAMETERS:

Target (Vehicle Side): RH Left

MGA Test Reference No.:FM5230

Approach Horizontal Angles:0°

Approach Vertical Angles:60°

Additional Description:

Test Number:#12

Temperature:22C

Humidity:50%

Time of Test:8:57 AM

FMH Serial No:[035]

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
484	421	7.7	24.0	12	7 L

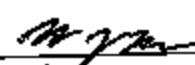
INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35924	-91.8	1.44	1.44
Y	6	J35919	97	1.54	1.54
Z	7	J22664	95.6	1.39	1.39

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

No visible damage

Recorded By: 

Approved By*: 

Date: 6/16/05

*Only necessary for NHTSA (Government) Compliance testing.

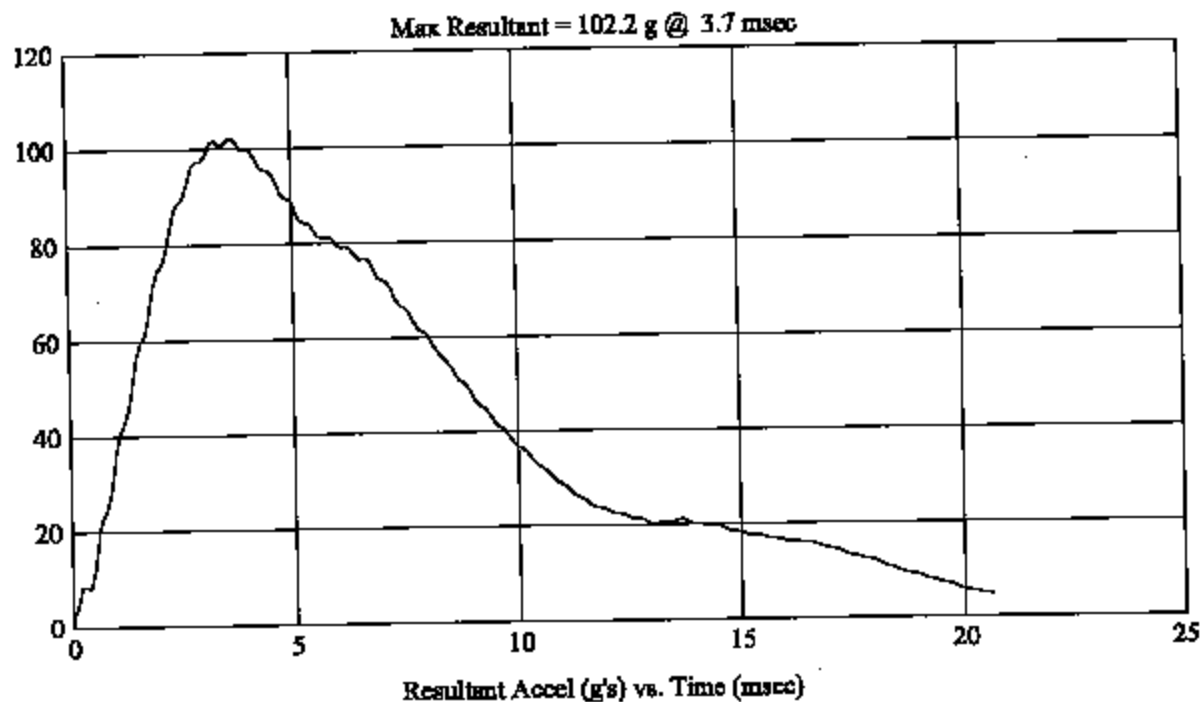
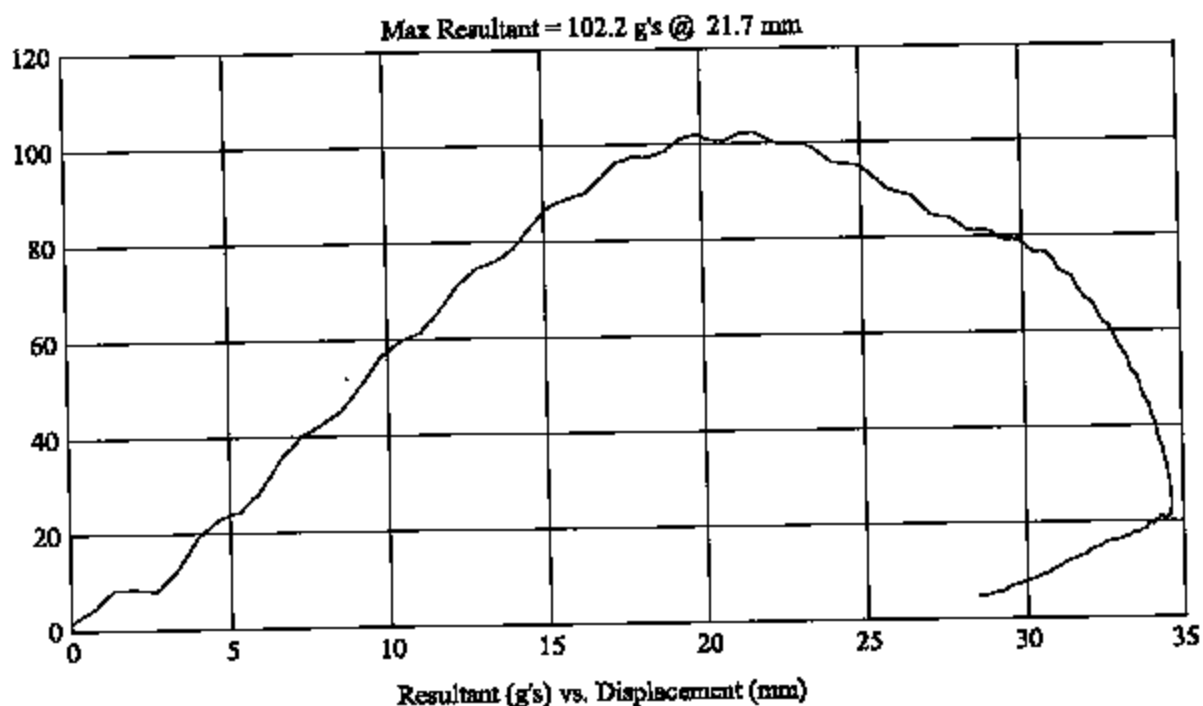
FMH
G05I7-001.6Customer: NHTSA
Test # 12
FM5230
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/16/05

Model Year: 2005
Target: RH
Vehicle Side: Left
Horz/Vert Angle: 0/50

HIC(d) = 484, HIC = 421, Delta T = 7.7 msec



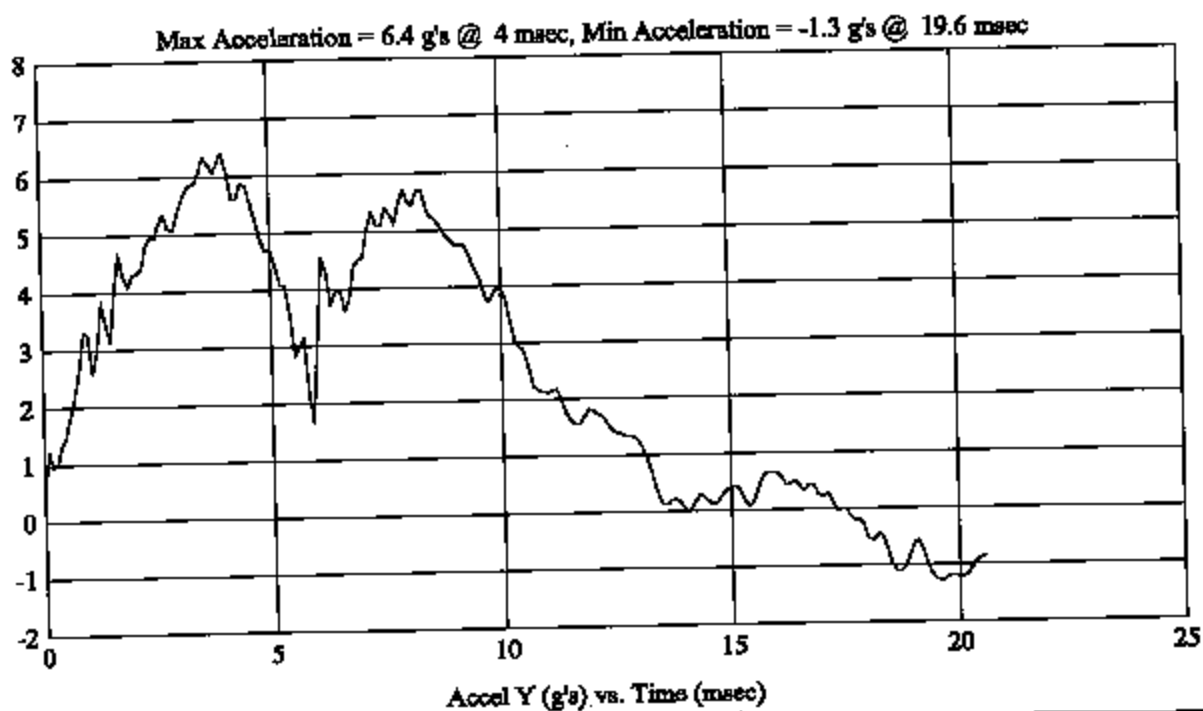
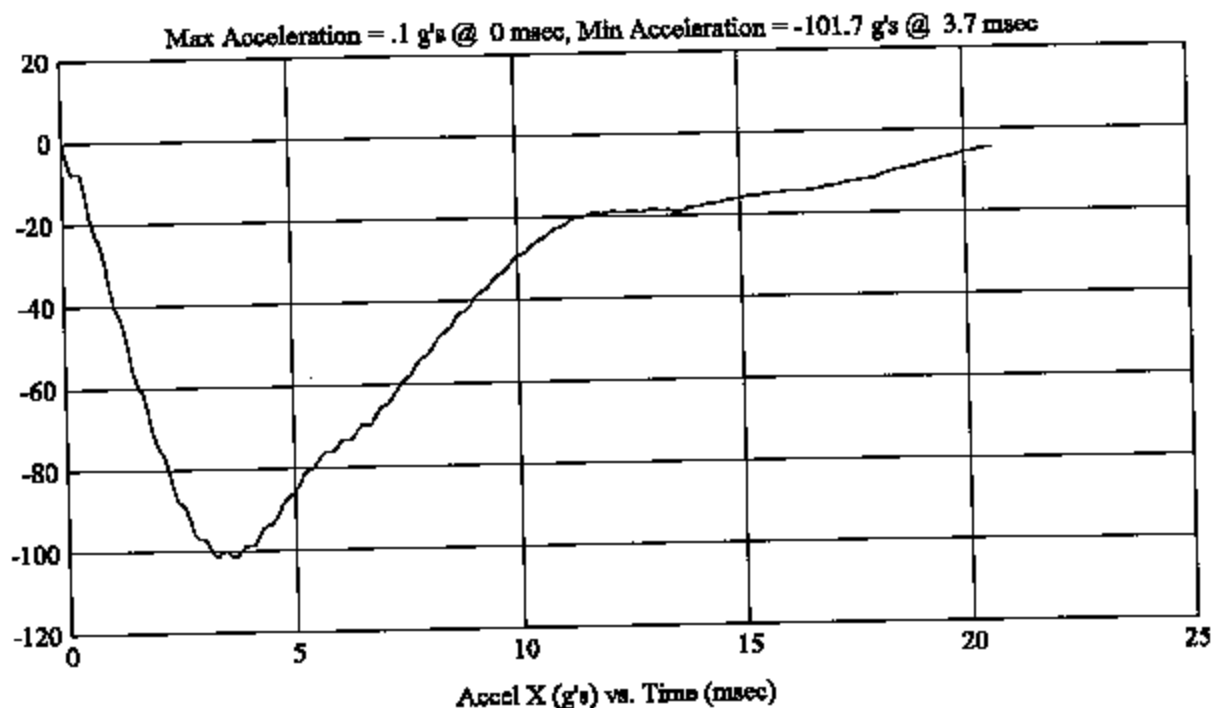
FMH
G0517-001.6Customer: NHTSA
Test # 12
FMS230
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/16/05

Model Year: 2005
Target: RH
Vehicle Side: Left
Horz/Vert Angle: 0/50

HIC(d) = 484, HIC = 421, Delta T = 7.7 msec



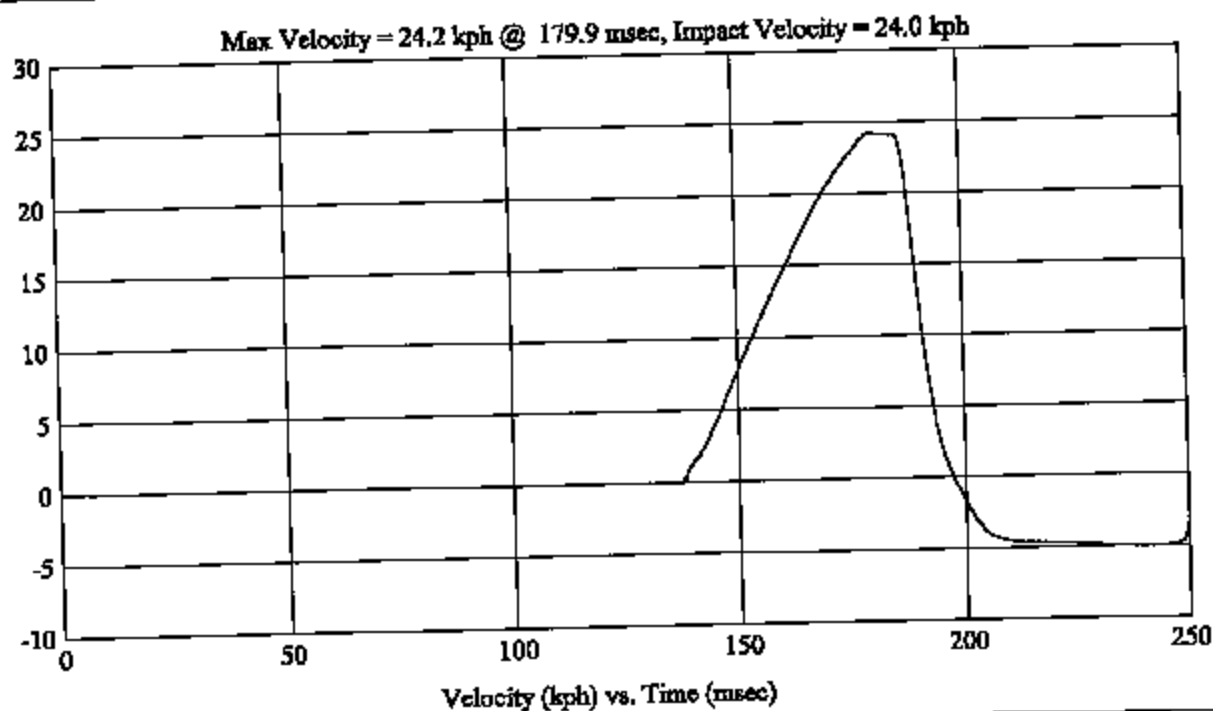
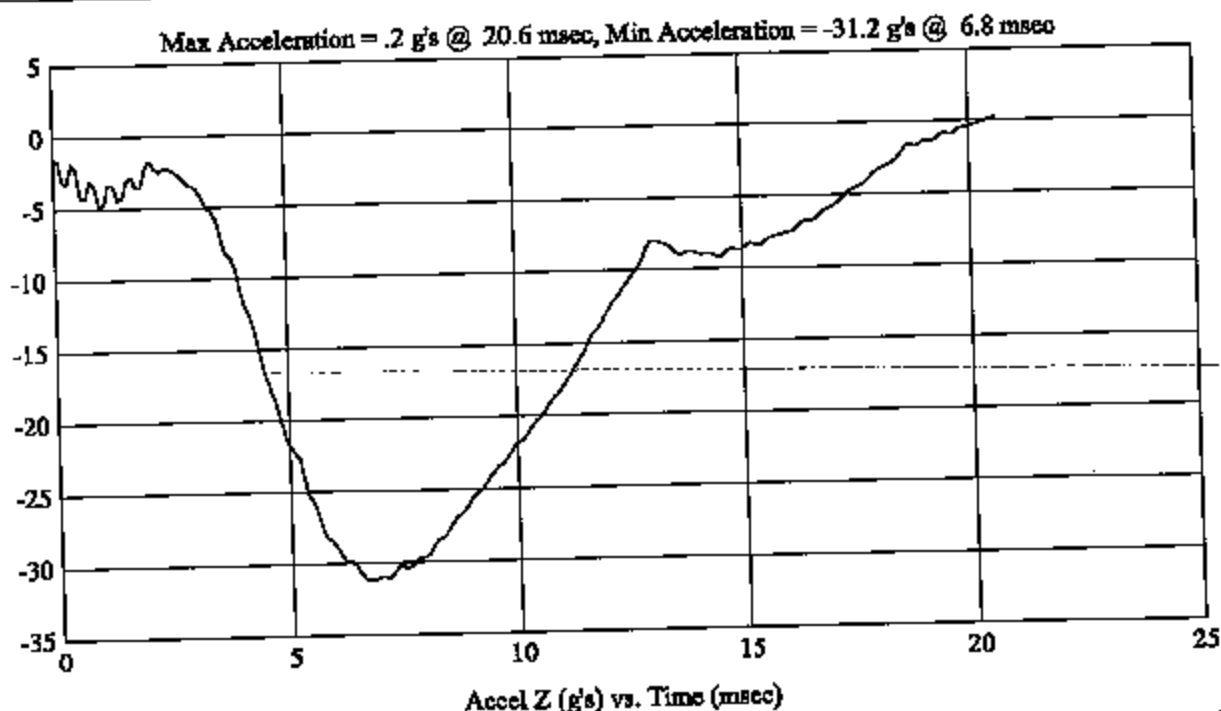
FMH
G05I7-001.6Customer: NHTSA
Test # 12
FM5230
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/16/05

Model Year: 2005
Target: RH
Vehicle Side: Left
Horz/Vert Angle: 0/50

HIC(d) = 484, HIC = 421, Delta T = 7.7 msec



FMH
G05I7-001.6

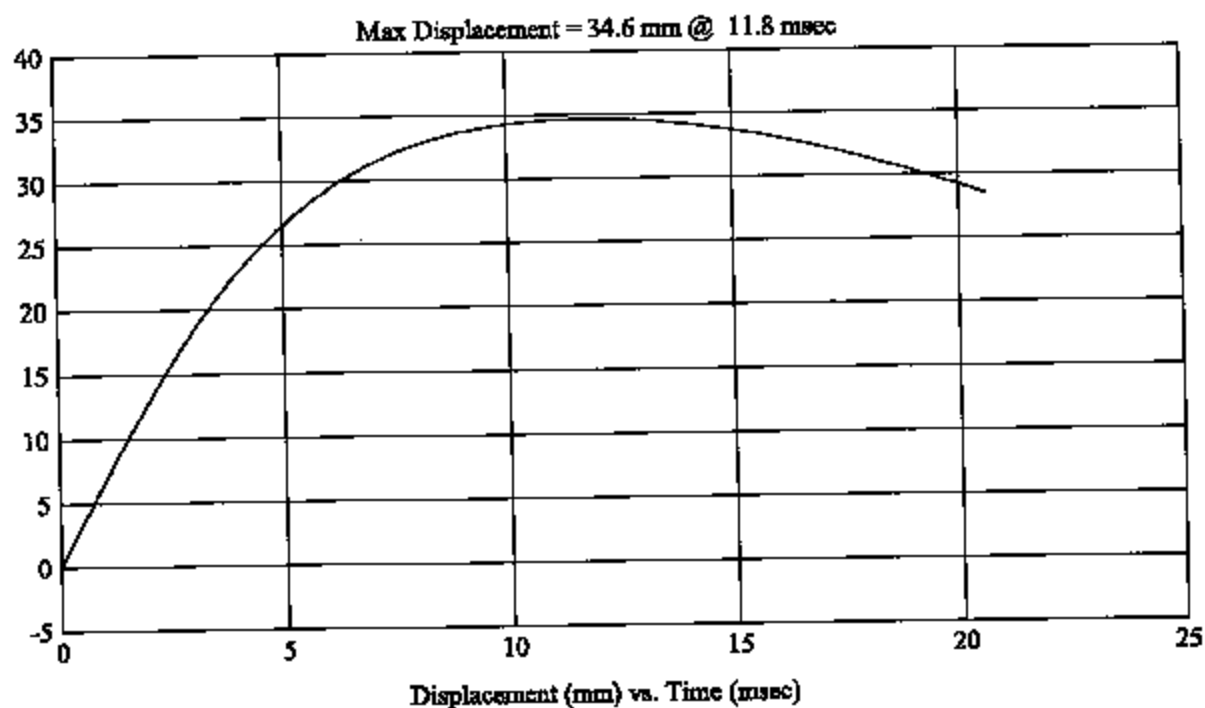
Customer: NHTSA
Test # 12
FM5230
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/16/05

Model Year: 2005
Target: RH
Vehicle Side: Left
Horz/Vert Angle: 0/50

HIC(d) = 484, HIC = 421, Delta T = 7.7 msec



6/15/05

6/15/05

Impact Testing

G6507-01/6

2005 NHTSA ACURA TL

FMVSS 2010 - UPPER INTERIOR

TEST #8 C55301 LEFT UR1

H/V IMPACT ANGLE= 270 / 49

FM5226

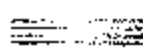
PRE-TEST

6/15/05

Impact Testing
C55301

2005 NHTSA ACURA TL
FMVSS 201J - UPPER INTERIOR
TEST #8 C55301 LEFT UR1
H/V IMPACT ANGLE= 270 / 49
FM5226 POST-TEST

C55301
FM5226
UR1 L/C
270 49

 mga

Impact Testing

6/15/05

G0517-001.6

2005 NHTSA ACURA TL
FMVSS 201U - UPPER INTERIOR
TEST #8 C55301 LEFT UR1
H/V IMPACT ANGLE= 270 / 49
FM5226 POST-TEST

MICHIGAN OPERATIONS
DATE: 2/8/01
SUPERCEDES: MGATP207210.2

DOC. NO.: MGATP207210.3
REVISION NO.: 2
PAGE 1 OF 1

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G0517-001.6 VEHICLE YR/MAKE/MODEL: 2005/NHTSA/ACURA TL

GENERAL TEST PARAMETERS:

Target (Vehicle Side): UR1 Left

MGA Test Reference No.: FM6226

Approach Horizontal Angles: 270°

Approach Vertical Angles: 49°

Additional Description:

Test Number: #8

Temperature: 22C

Humidity: 55%

Time of Test: 1:37 PM

FMH Serial No.: [D38]

TEST RESULTS:

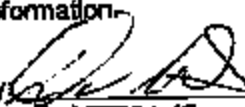
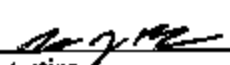
HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
564	527	10	23.5	25	0

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

Axls	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J36197	-106.9	1.44	1.44
Y	6	J36193	102.8	1.54	1.54
Z	7	J36353	98.8	1.39	1.39

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

Headliner deformation

Recorded By:  Approved By:  Date: 6/15/05

*Only necessary for NHTSA (Government) Compliance testing

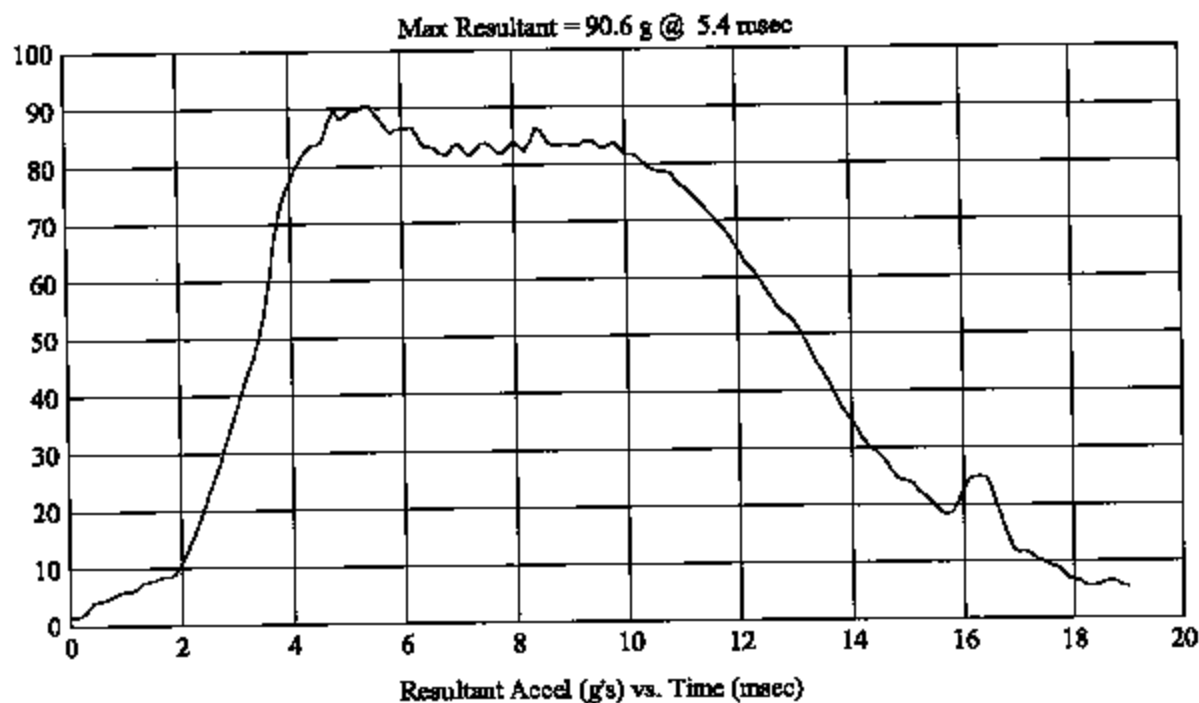
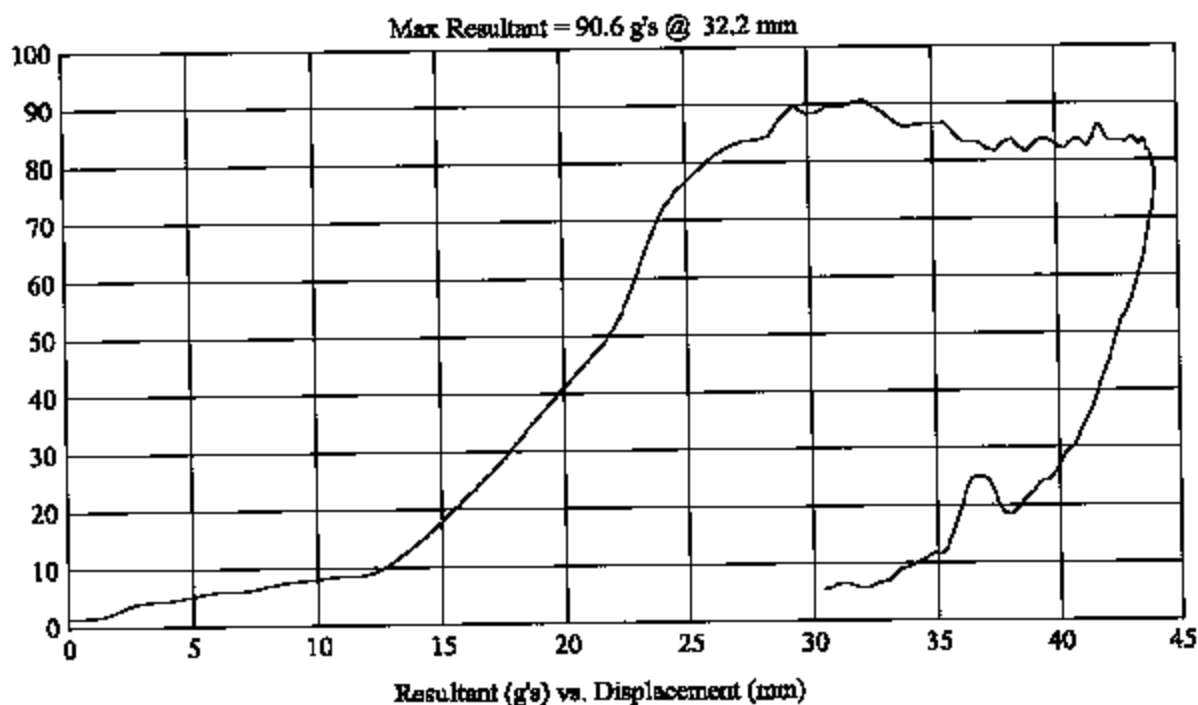
FMH
G0517-001.6Customer: NHTSA
Test # 8
FM5226
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/15/05

Model Year: 2005
Target: UR1
Vehicle Side: Left
Horz/Vert Angle: 270/49

HIC(d) = 564, HIC = 527, Delta T = 10 msec



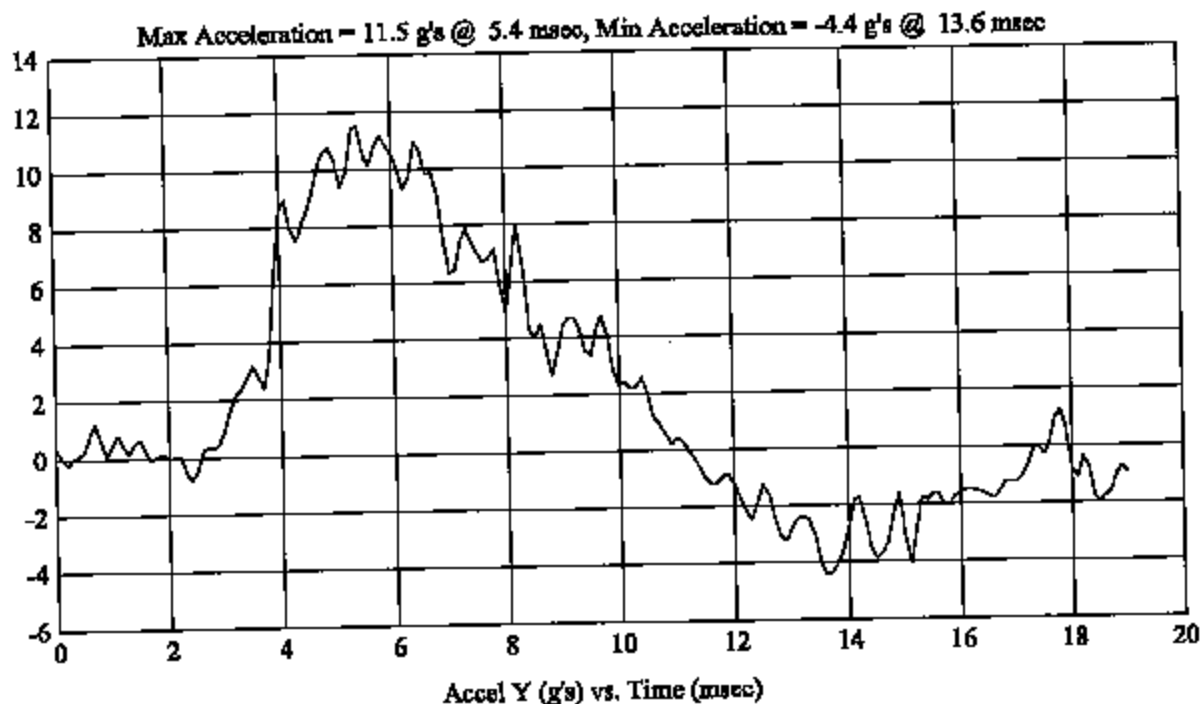
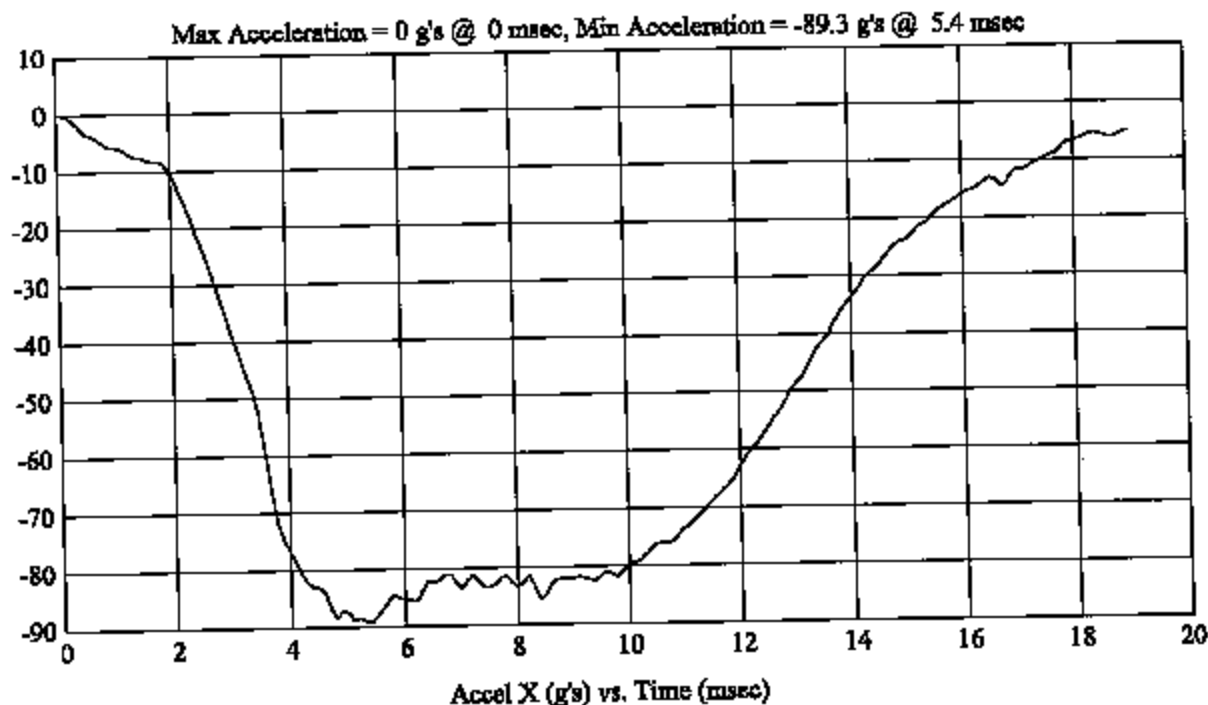
FMH
G0517-001.6Customer: NHTSA
Test # 8
FM5226
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/15/05

Model Year: 2005
Target: UR1
Vehicle Side: Left
Horz/Vert Angle: 270/49

HIC(d) = 564, HIC = 527, Delta T = 10 msec



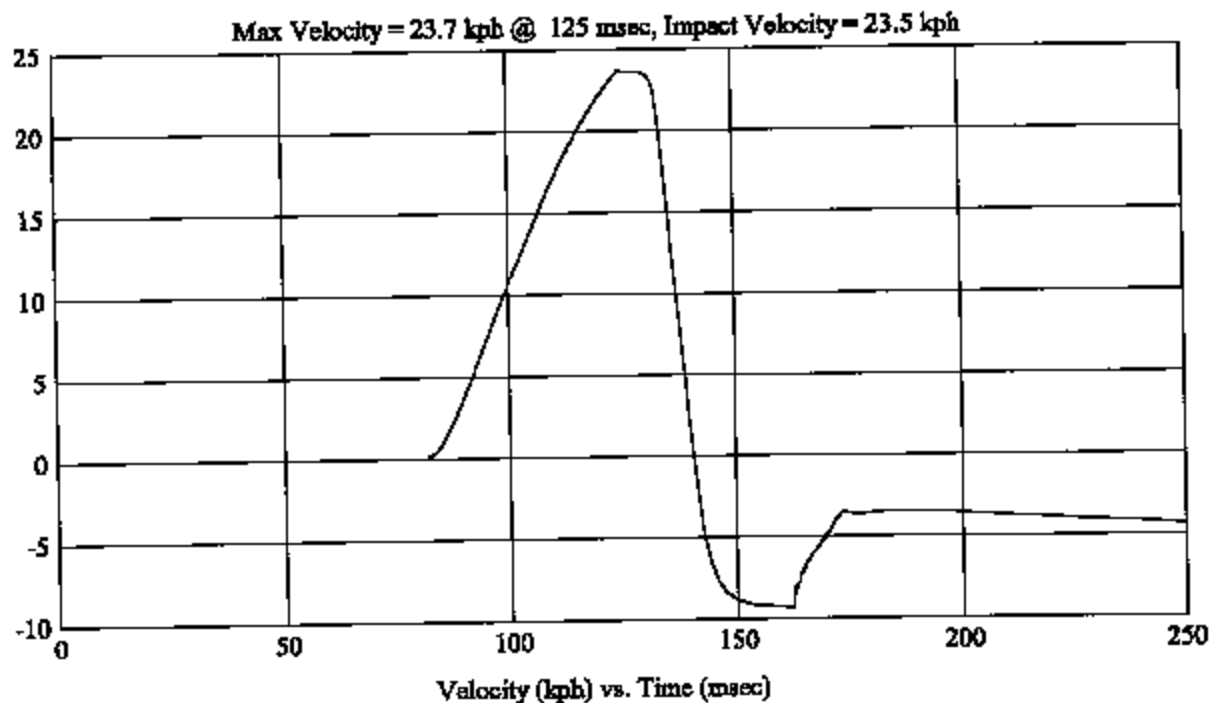
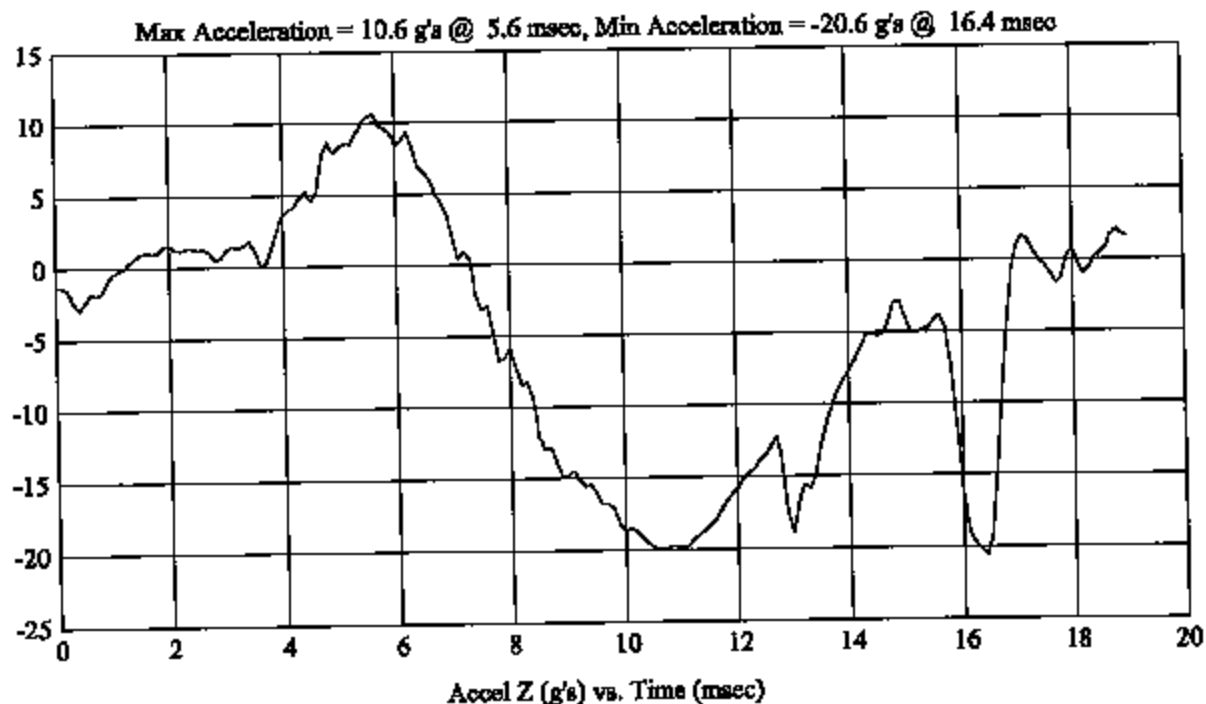
FMH
G0517-001.6Customer: NHTSA
Test # 8
FM5226
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/15/05

Model Year: 2005
Target: UR1
Vehicle Side: Left
Horz/Vert Angle: 270/49

HIC(d) = 564, HIC = 527, Delta T = 10 msec



FMH
G0517-001.6

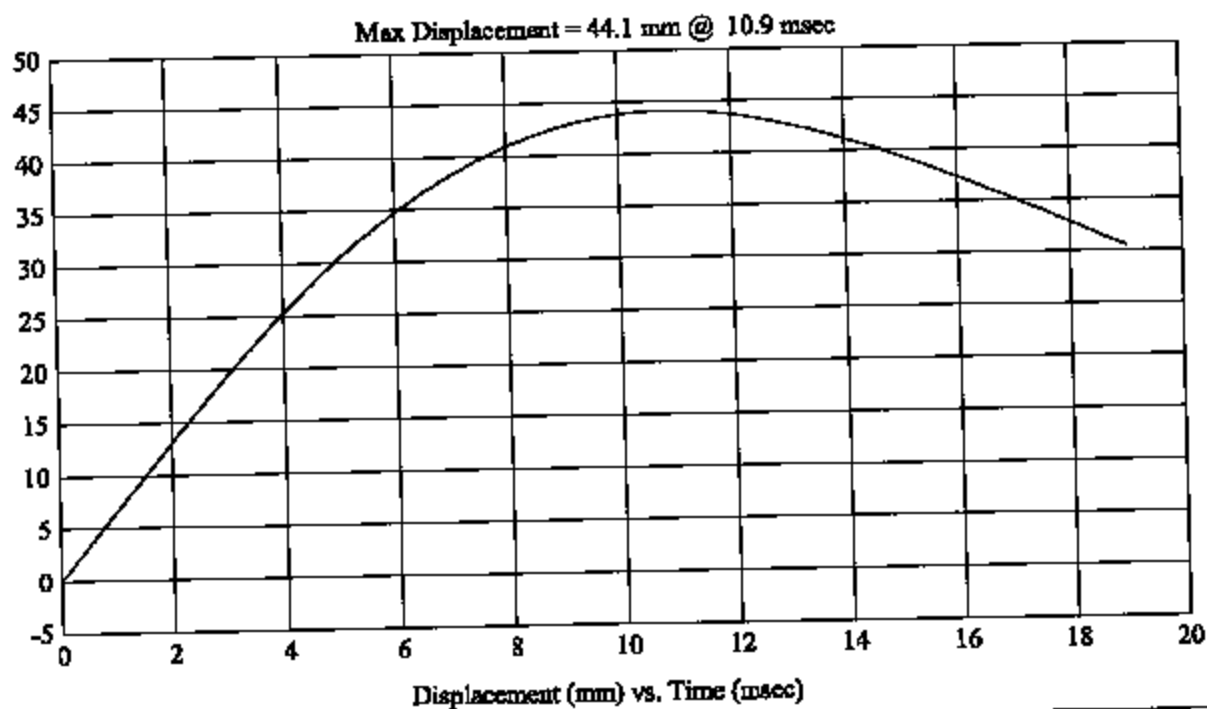
Customer: NHTSA
Test # 8
FM5226
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/15/05

Model Year: 2005
Target: UR1
Vehicle Side: Left
Horz/Vert Angle: 270/49

HIC(d) = 564, HIC = 527, Delta T = 10 msec



2005 NHTSA ACURA TL
FMVSS 201 - DRIVER INTERIOR
TEST # 10 - NEW LEFT LR2
H/V IMPACT ANGLE = 27.5 / 35
FM5228 PRE-TEST

C55301
FM5228

INTERIOR

2005 NHTSA ACURA TL
FMVSS 2010 - UPPER INTERIOR
TEST # 10 CB53M LEFT UR2
H/V IMPACT ANGLE = 270 / 35
FM5228 POST-TEST

CB53M
FM5228
LEFT UR2
270/35

mga

Impact Testing

6/15/05

G0517-001.6

2005 NHTSA ACURA TL

FMVSS 201U - UPPER INTERIOR

TEST # 10 C55301 LEFT UR2

H/V IMPACT ANGLE= 270 / 35

FM5228

POST-TEST

MICHIGAN OPERATIONS
DATE: 2/8/01
SUPERCEDES: MGATP207210.2

DOC. NO.: MGATP207210.3
REVISION NO.: 2
PAGE 1 OF 1

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G0517-001.6 VEHICLE YR/MAKE/MODEL: 2005/NHTSA/ACURA TL

GENERAL TEST PARAMETERS:

Target (Vehicle Side): UR2 Left

MGA Test Reference No.: FM5228

Approach Horizontal Angles: 270°

Approach Vertical Angles: 35°

Additional Description:

Test Number: #10

Temperature: 22C

Humidity: 55%

Time of Test: 3:23 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
851	908	5.3	23.8	57	4 L

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35800	-98.4	1.43	1.43
Y	6	J35841	95.7	1.54	1.54
Z	7	J35791	89.5	1.39	1.39

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

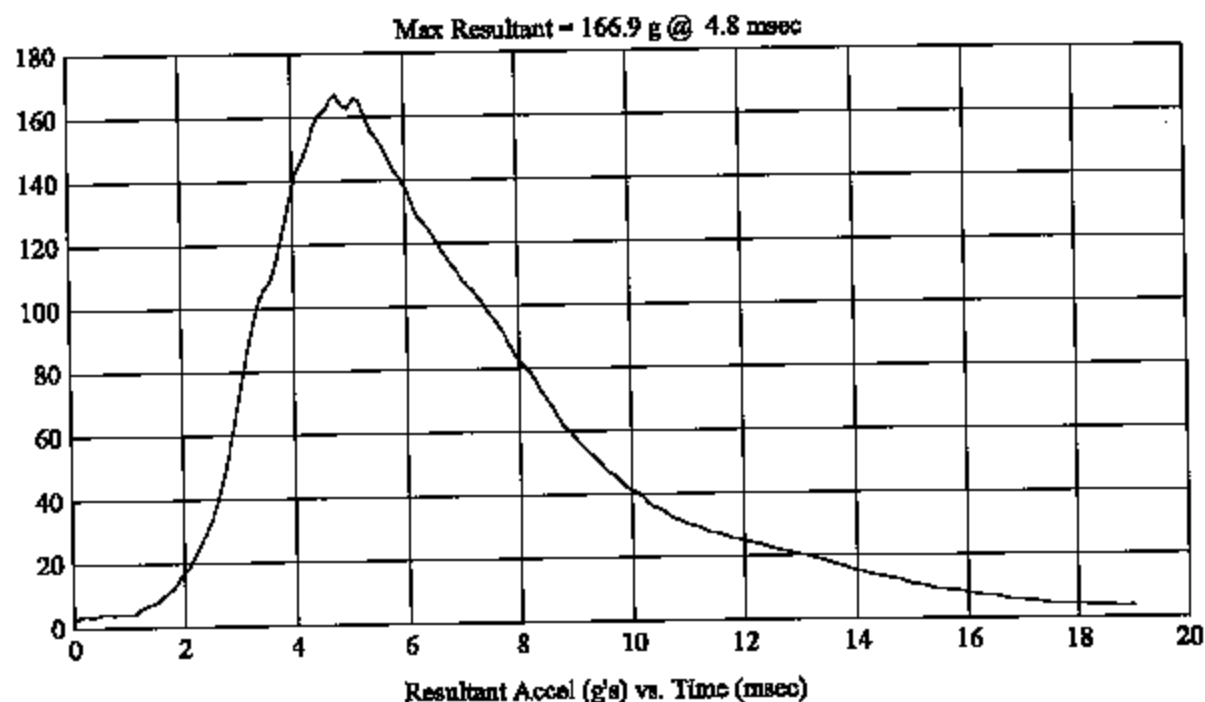
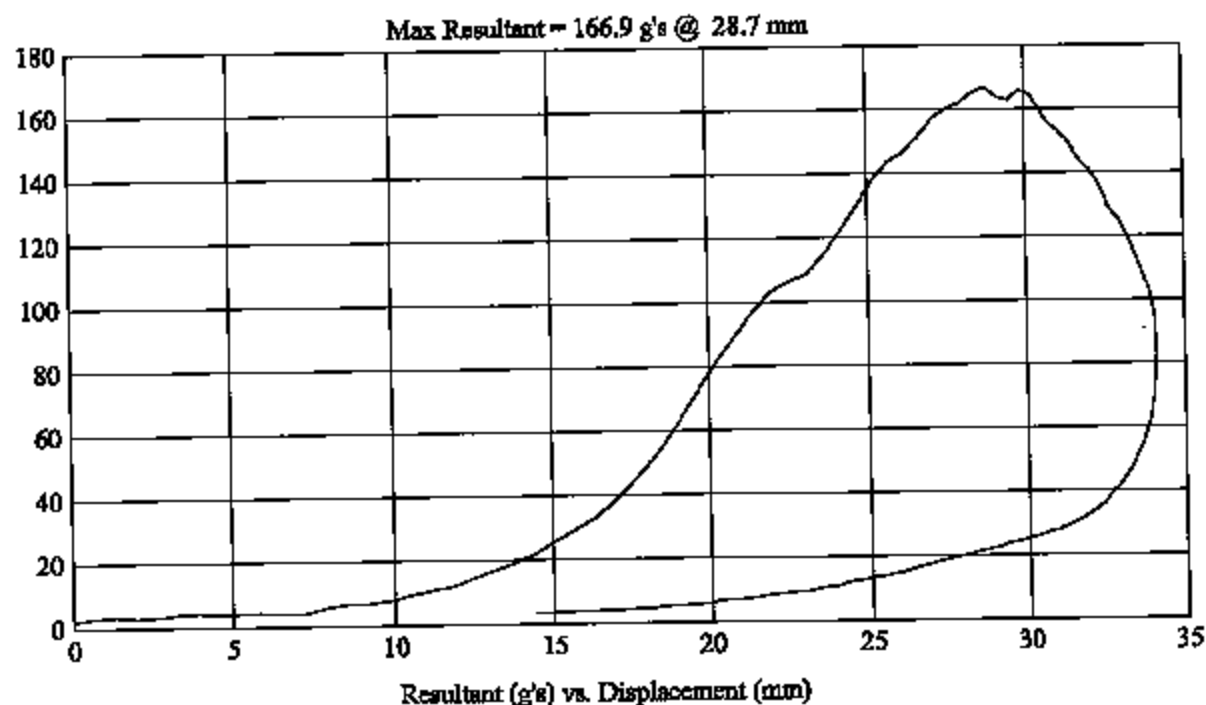
No visible damage.

Recorded By:  Approved By:  Date: 6/15/05
*Only necessary for NHTSA (Government) Compliance testing.

FMH
Q0517-001.6Customer: NHTSA
Test # 10
FM5228
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/15/05

Model Year: 2005
Target: UR2
Vehicle Side: Left
Horz/Vert Angle: 270/35 $HIC(d) = 851$, $HIC = 908$, $\Delta T = 5.3 \text{ msec}$ 

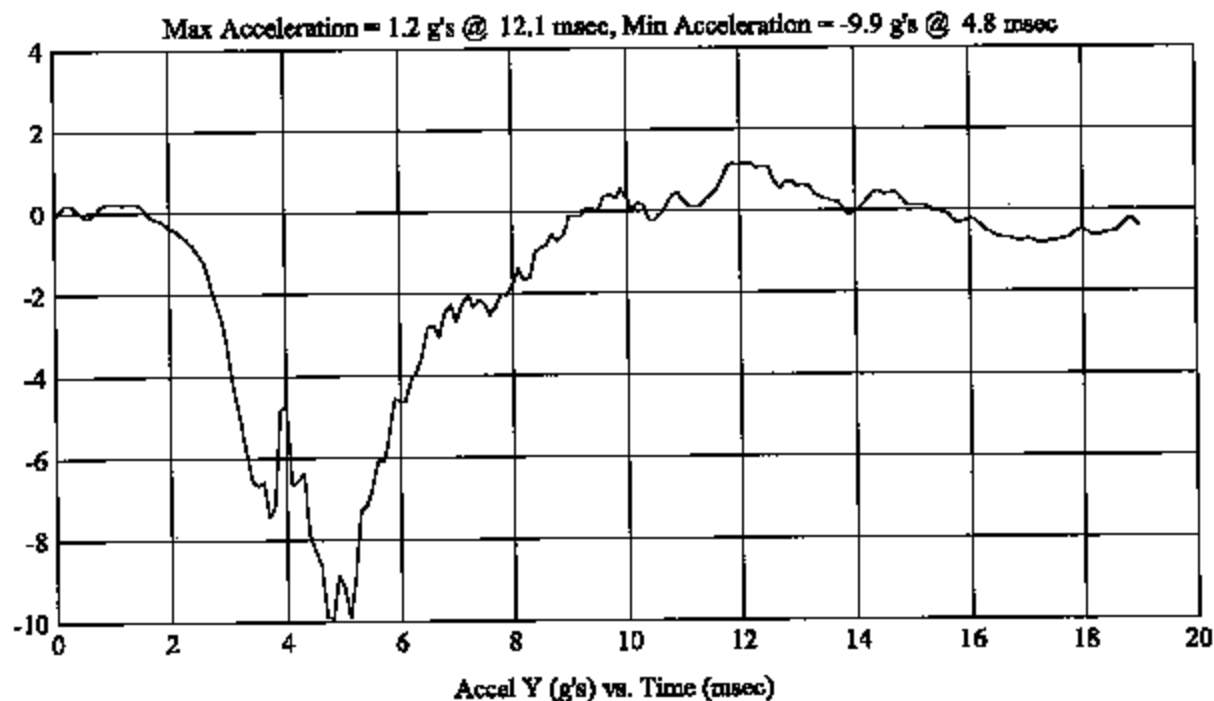
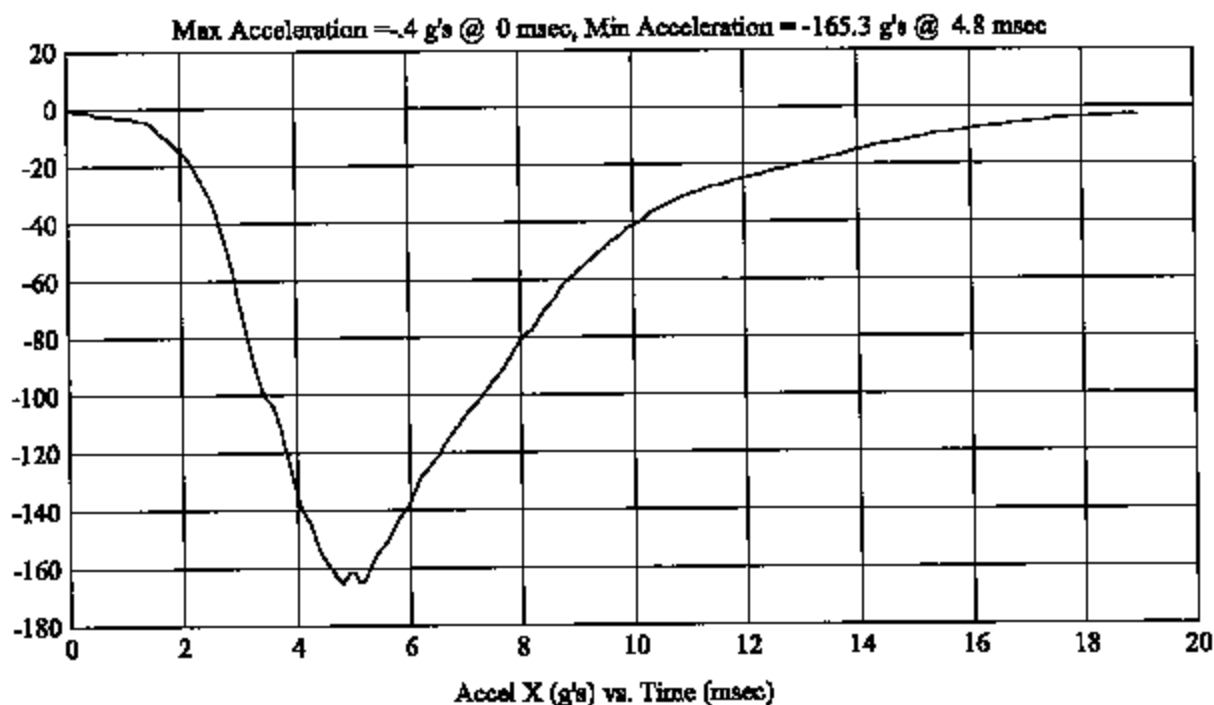
FMH
G0517-001.6Customer: NHTSA
Test # 10
FM5228
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/15/05

Model Year: 2005
Target: UR2
Vehicle Side: Left
Horz/Vert Angle: 270/35

HIC(d) = 851, HIC = 908, Delta T = 5.3 msec



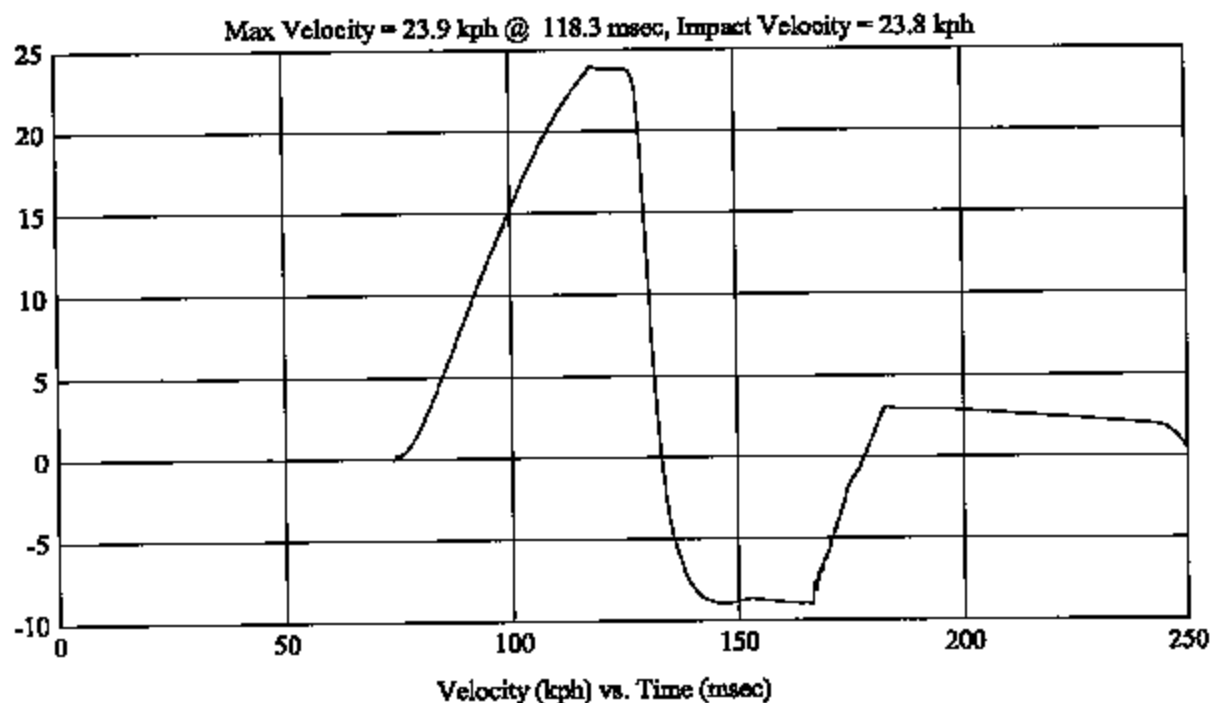
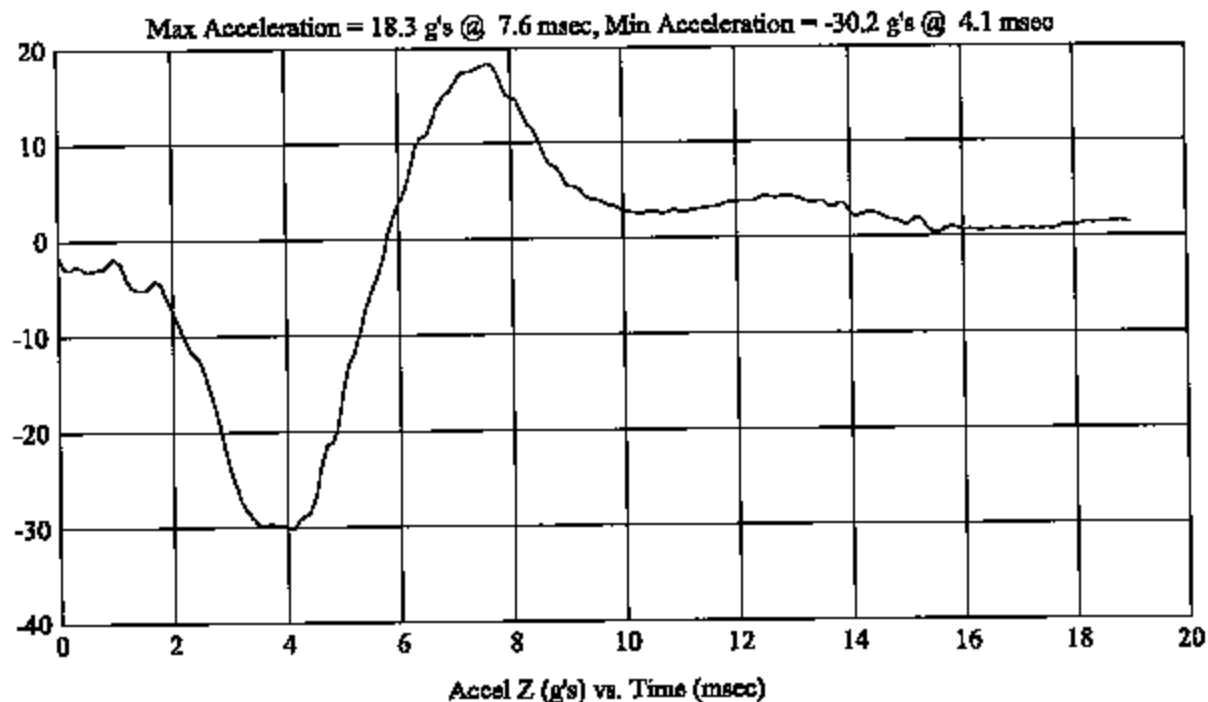
FMH
G0517-001.6Customer: NHTSA
Test # 10
FMS228
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/15/05

Model Year: 2005
Target: UR2
Vehicle Side: Left
Horz/Vert Angle: 270/35

HIC(d) = 851, HIC = 908, Delta T = 5.3 msec



FMH
G05I7-001.6

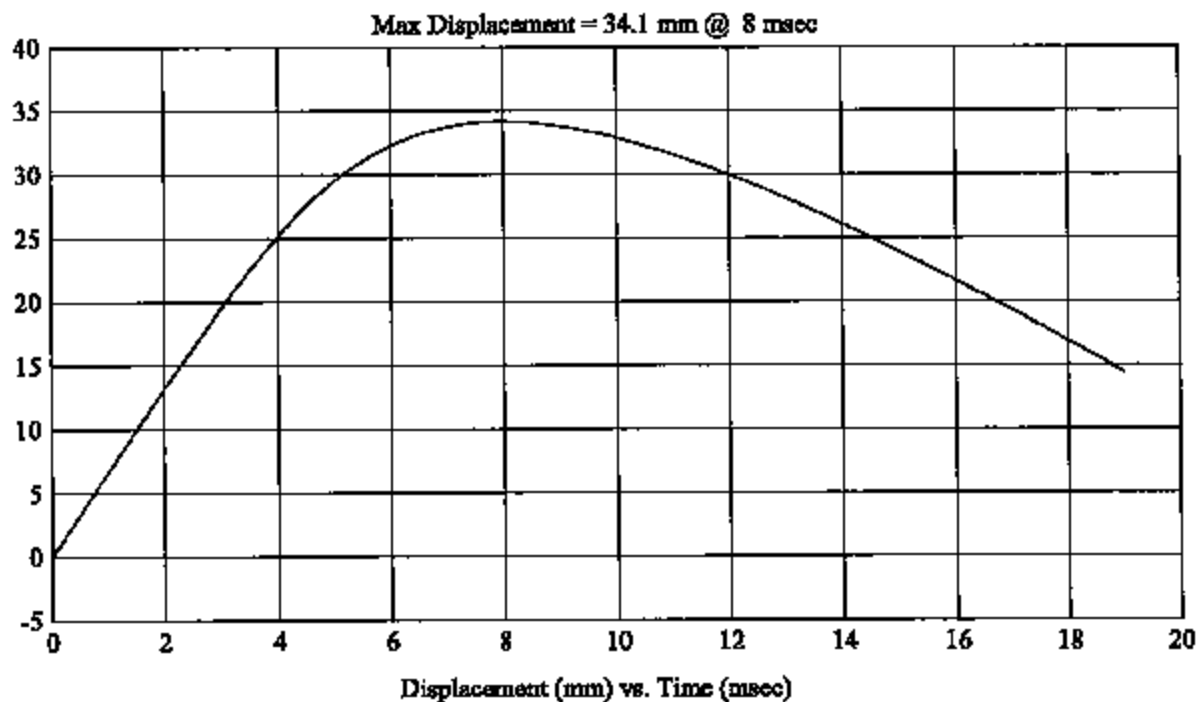
Customer: NHTSA
Test # 10
FM5228
Additional Desc: N/A

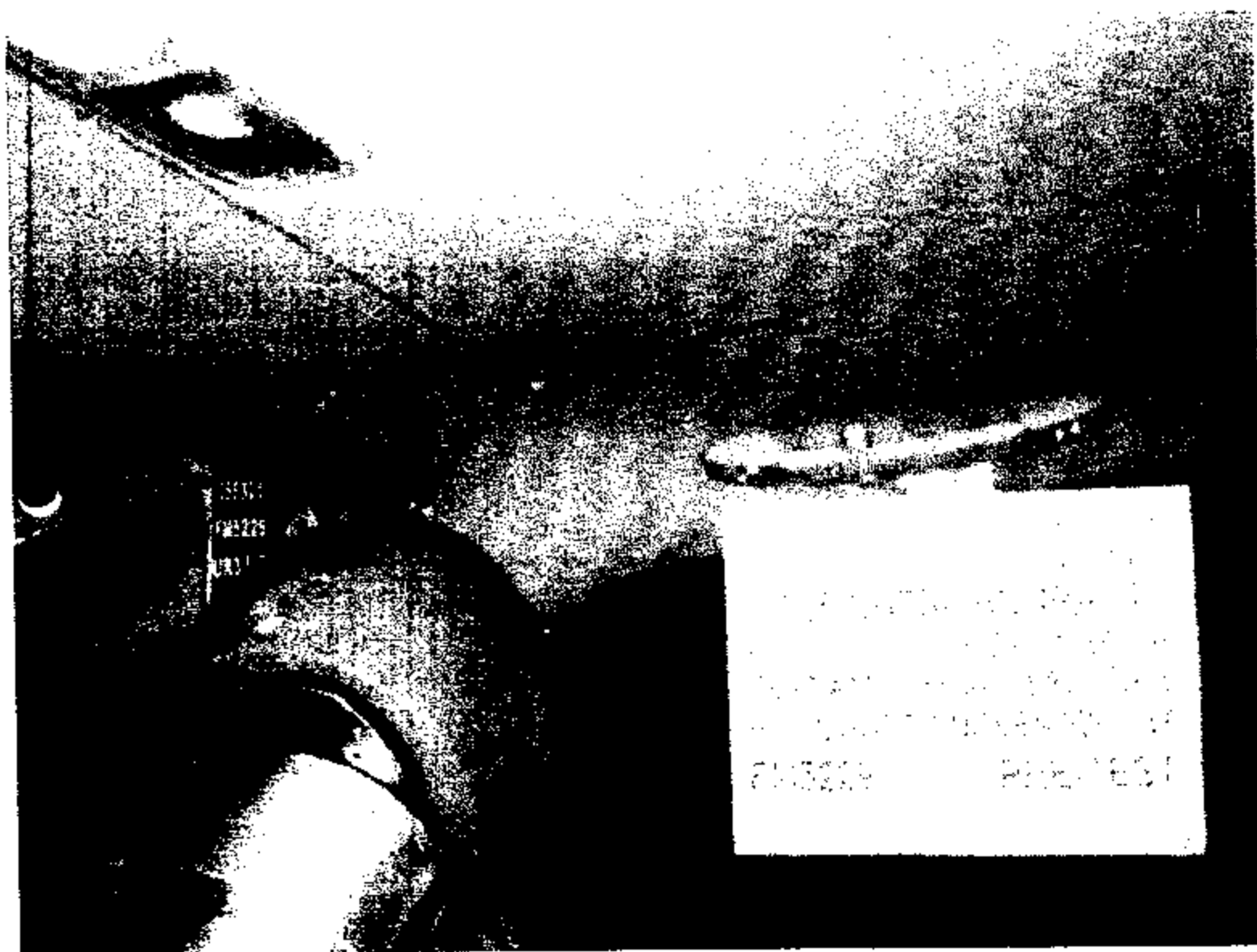
Vehicle Program : ACURA TL

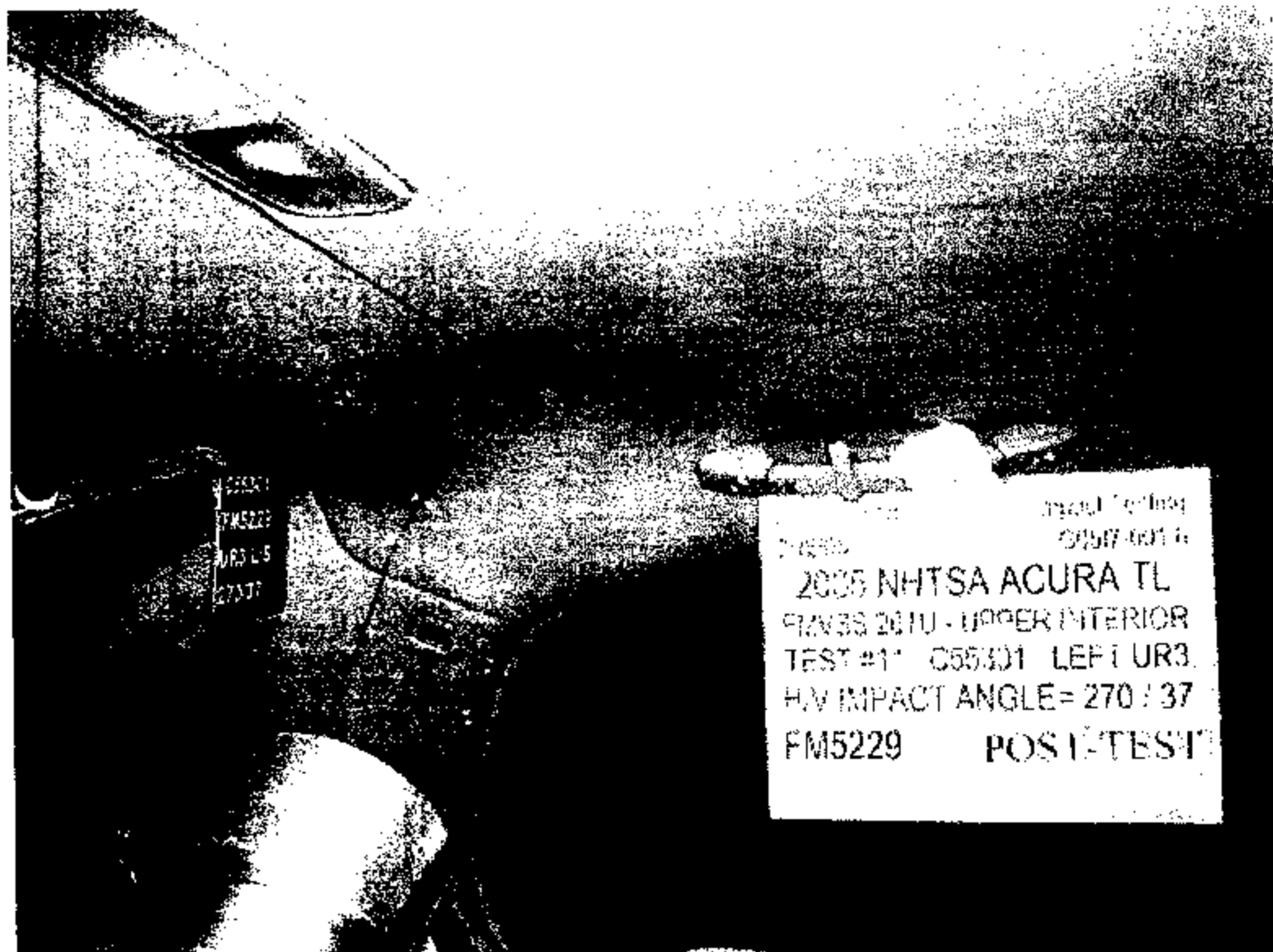
Test Date: 6/15/05

Model Year: 2005
Target: UR2
Vehicle Side: Left
Horz/Vert Angle: 270/35

HIC(d) = 851, HIC = 908, Delta T = 5.3 msec

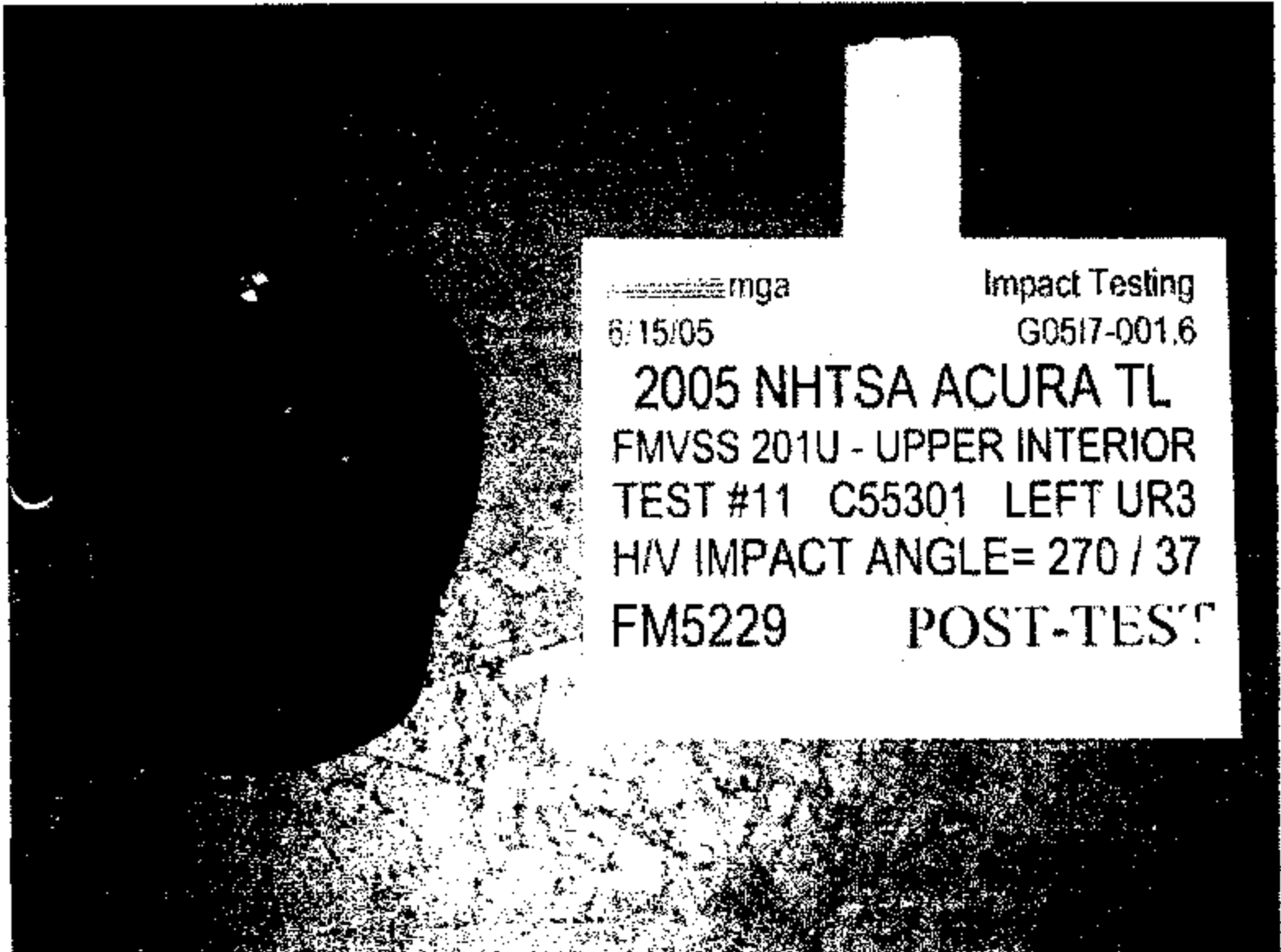






055301
FM5229
UR3 L5
27337

055301
FM5229
2005 NHTSA ACURA TL
SEATS 2010 - UPPER INTERIOR
TEST #1 - 055301 LEFT UR3
HV IMPACT ANGLE = 270 / 37
FM5229 POST-TEST



~~6/15/05~~ mga

Impact Testing

6/15/05

G0517-001.6

2005 NHTSA ACURA TL
FMVSS 201U - UPPER INTERIOR
TEST #11 C55301 LEFT UR3
H/V IMPACT ANGLE= 270 / 37
FM5229 POST-TEST

MICHIGAN OPERATIONS
DATE: 2/8/01
SUPERCEDES: MGATP207210.2

DOC. NO.: MGATP207210.3
REVISION NO.: 2
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SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G0517-001.6 VEHICLE YR/MAKE/MODEL: 2005/NHTSA/ACURA TL

GENERAL TEST PARAMETERS:

Target (Vehicle Side): UR3 Left

MGA Test Reference No.: FM5229

Approach Horizontal Angles: 270°

Approach Vertical Angles: 37°

Additional Description:

Test Number: #11

Temperature: 22C

Humidity: 53%

Time of Test: 4:47 PM

FMH Serial No.: [036]

TEST RESULTS:

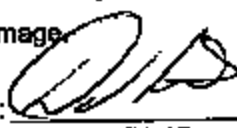
HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
556	516	9.5	23.8	38	0

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J36197	-106.9	1.44	1.44
Y	6	J36193	102.8	1.54	1.54
Z	7	J36353	98.8	1.39	1.39

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

No visible damage.

Recorded By: 

Approved By: 

Date: 6/15/05

*Only necessary for NHTSA (Government) Compliance testing

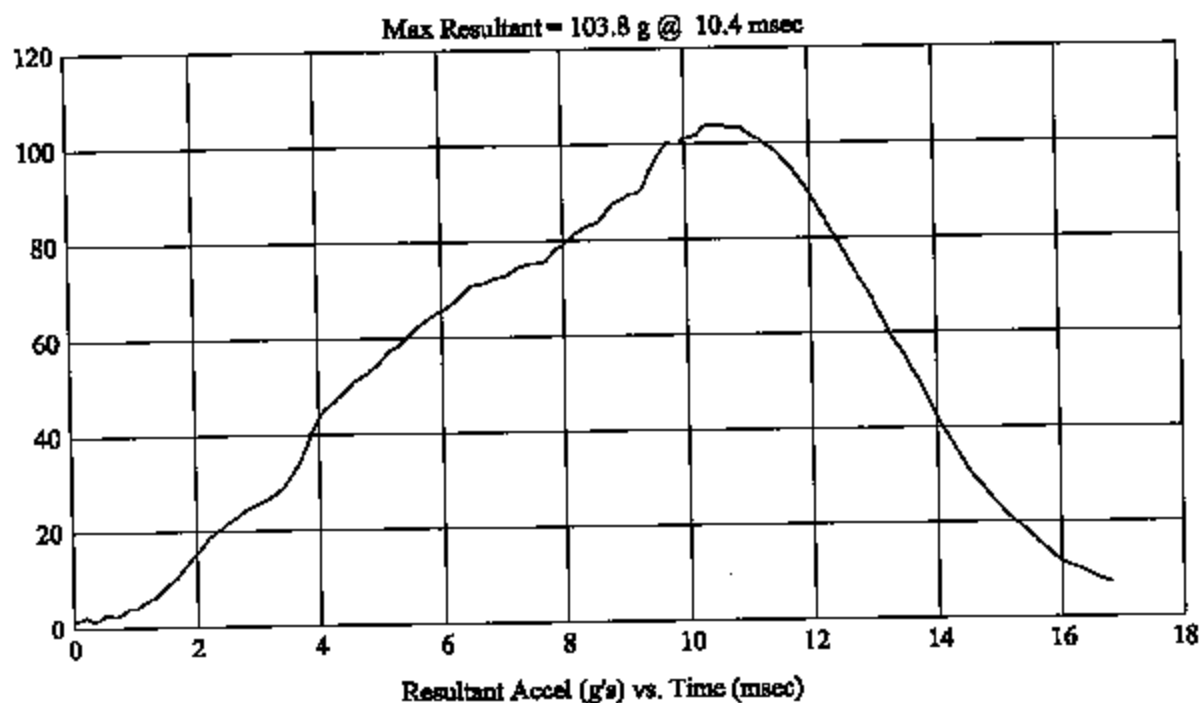
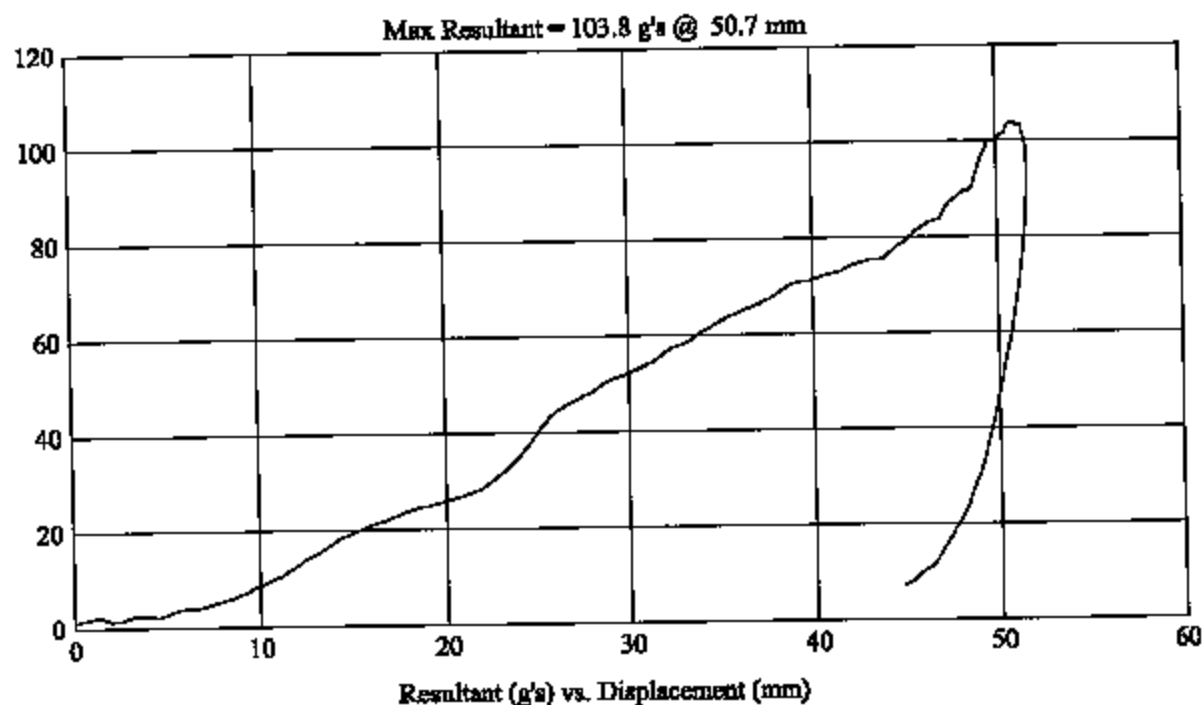
FMH
G0517-001.6Customer: NHTSA
Test # 11
PM5229
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/15/05

Model Year: 2005
Target: UR3
Vehicle Side: Left
Horz/Vert Angle: 270/37

HIC(d) = 556, HIC = 516, Delta T = 9.5 msec



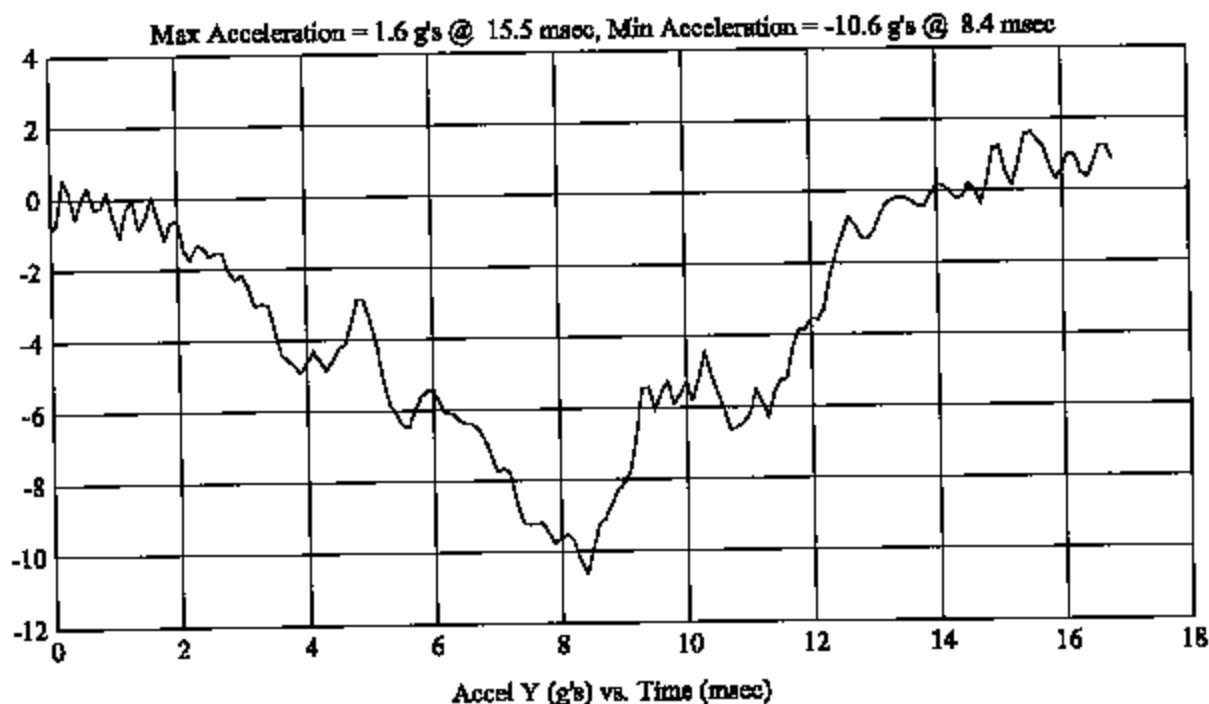
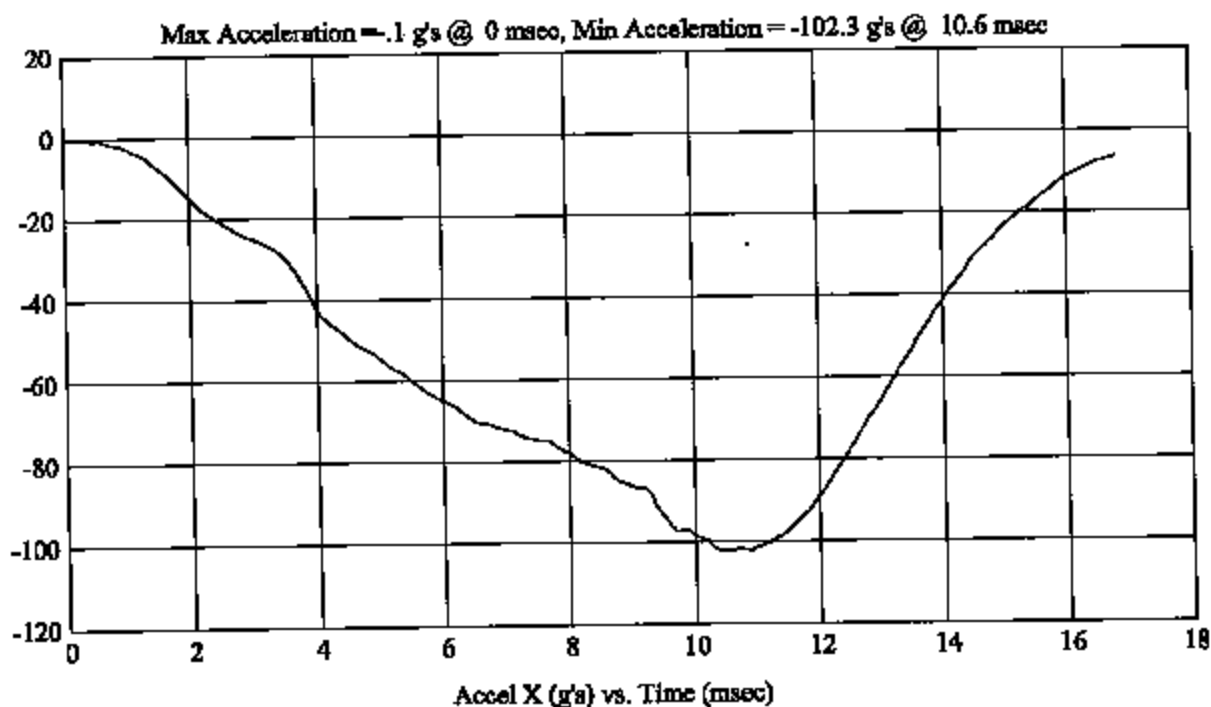
FMH
G0517-001.6Customer: NHTSA
Test # 11
FMS229
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/15/05

Model Year: 2005
Target: UR3
Vehicle Side: Left
Horz/Vert Angle: 270/37

HIC(d) = 556, HIC = 516, Delta T = 9.5 msec



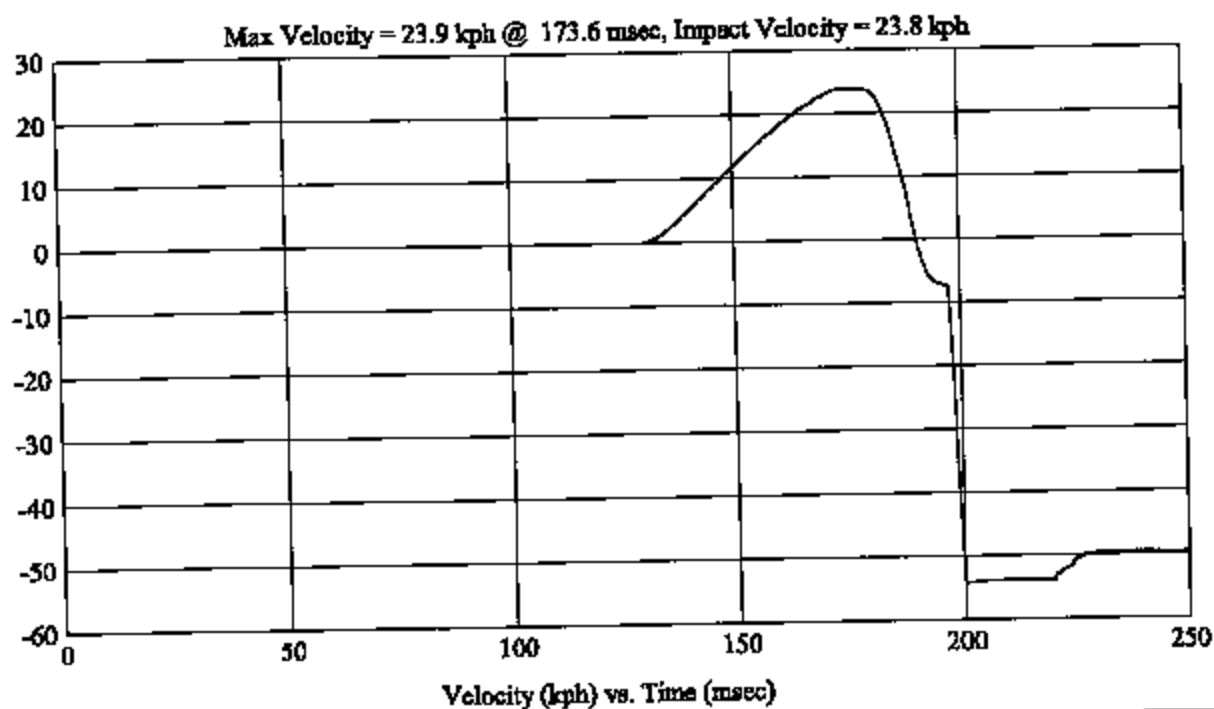
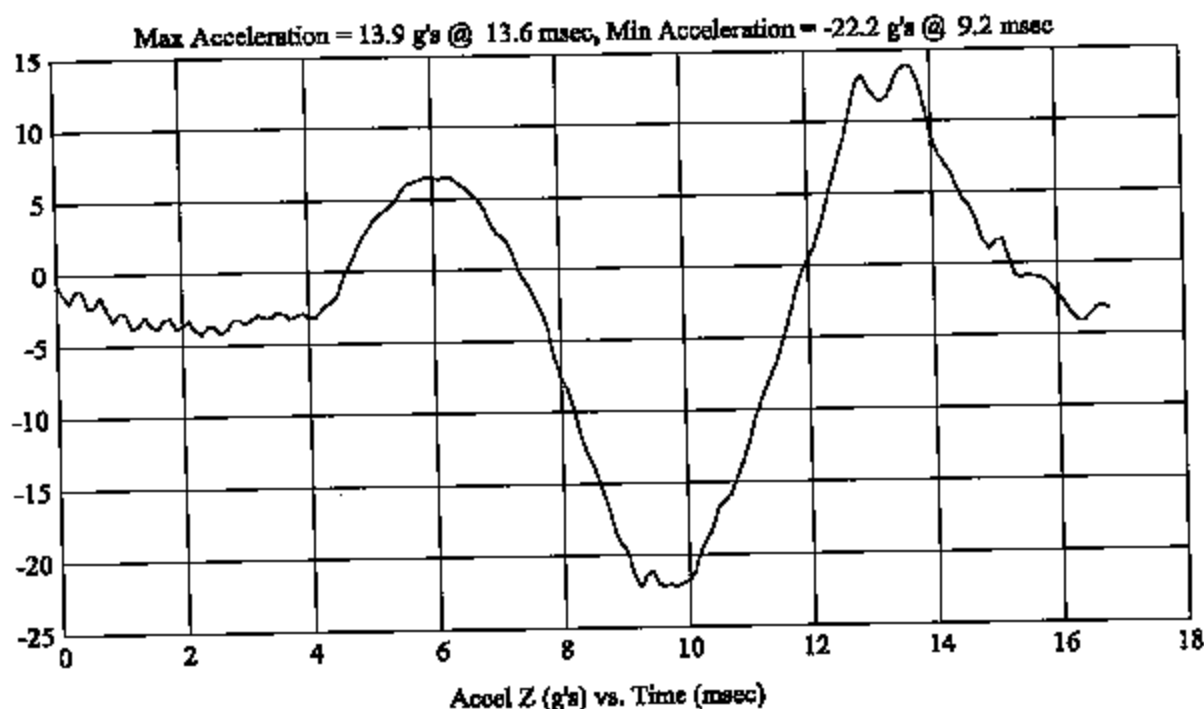
FMH
G05I7-001.6Customer: NHTSA
Test # 11
FM5229
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/15/05

Model Year: 2005
Target: UR3
Vehicle Side: Left
Horz/Vert Angle: 270/37

HIC(d) = 556, HIC = 516, Delta T = 9.5 msec



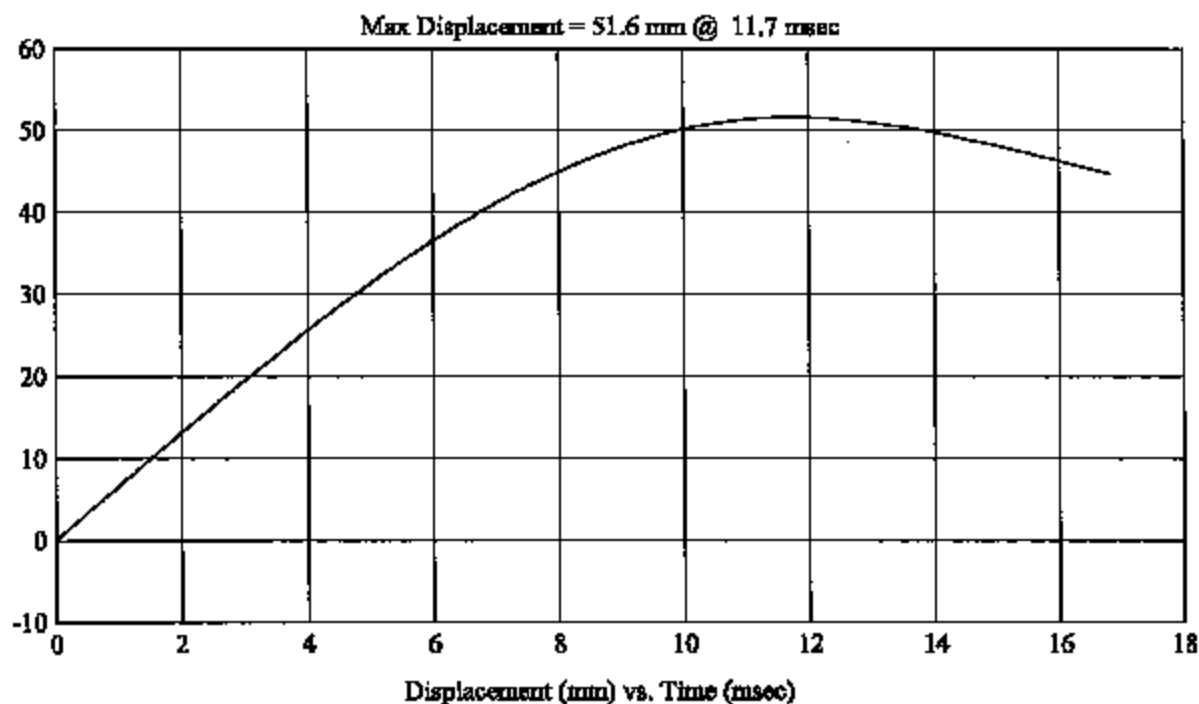
FMH
G05I7-001.6Customer: NHTSA
Test # 11
FM5229
Additional Desc: N/A

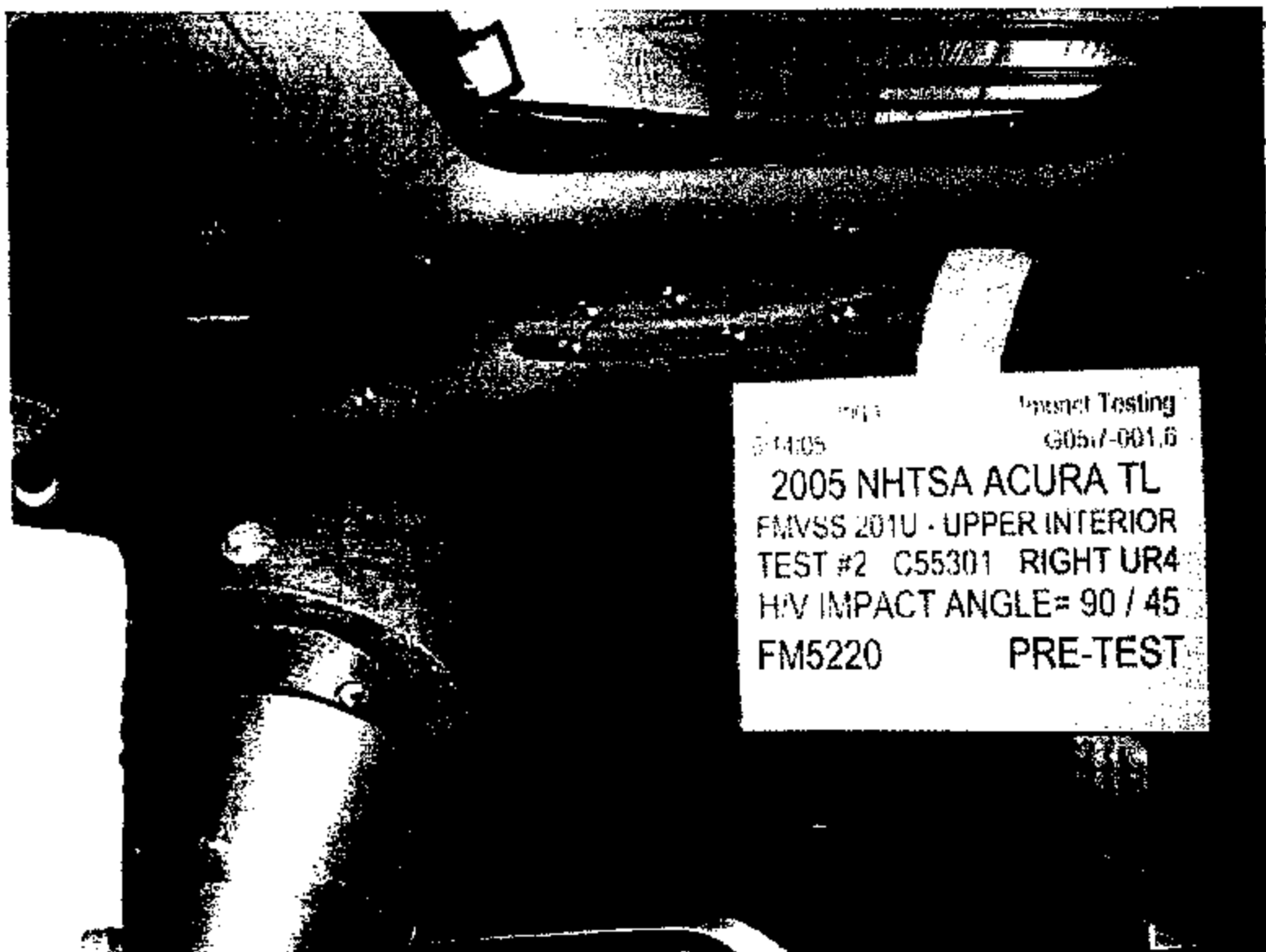
Vehicle Program : ACURA TL

Test Date: 6/15/05

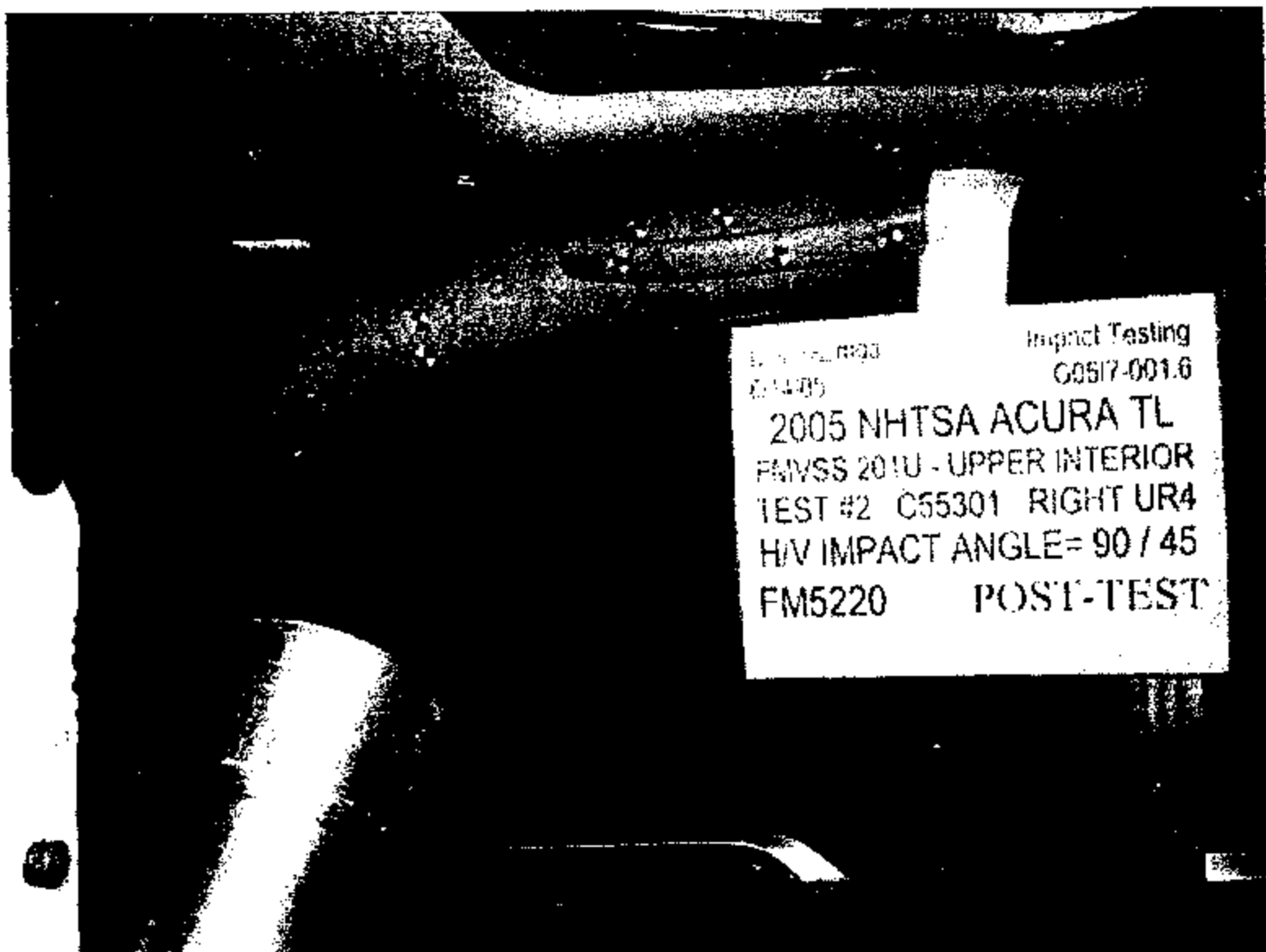
Model Year: 2005
Target: UR3
Vehicle Side: Left
Horz/Vert Angle: 270/37

HIC(d) = 556, HIC = 516, Delta T = 9.5 msec





Impact Testing
G0517-001.6
2005 NHTSA ACURA TL
FMVSS 2010 - UPPER INTERIOR
TEST #2 C55301 RIGHT UR4
H/V IMPACT ANGLE= 90 / 45
FM5220 PRE-TEST



mga

Impact Testing

6/14/05

G0517-001.6

2005 NHTSA ACURA TL

FMVSS 201U - UPPER INTERIOR

TEST #2 C55301 RIGHT UR4

H/V IMPACT ANGLE= 90 / 45

FM5220 POST-TEST

MICHIGAN OPERATIONS
DATE: 2/8/01
SUPERCEDES: MGATP207210.2

DOC. NO.: MGATP207210.3
REVISION NO.: 2
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SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G0517-001.6 VEHICLE YR/MAKE/MODEL:2005/NHTSA/ACURA TL

GENERAL TEST PARAMETERS:

Target (Vehicle Side): UR4 Right

MGA Test Reference No.:FM5220

Approach Horizontal Angles:90°

Approach Vertical Angles:45°

Additional Description:

Test Number:#2

Temperature:22 C

Humidity:53 %

Time of Test:1:41 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
501	443	12	23.9	30	5 L

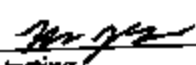
INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35800	-98.4	1.44	1.44
Y	6	J35841	95.7	1.54	1.64
Z	7	J35791	89.5	1.39	1.39

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

Headliner displacement

Recorded By: 

Approved By: 

Date: 6/14/05

*Only necessary for NHTSA (Government) Compliance testing.

FMH
G05I7-001.6Customer: NHTSA
Test # 2
FM5220
Additional Desc: N/A

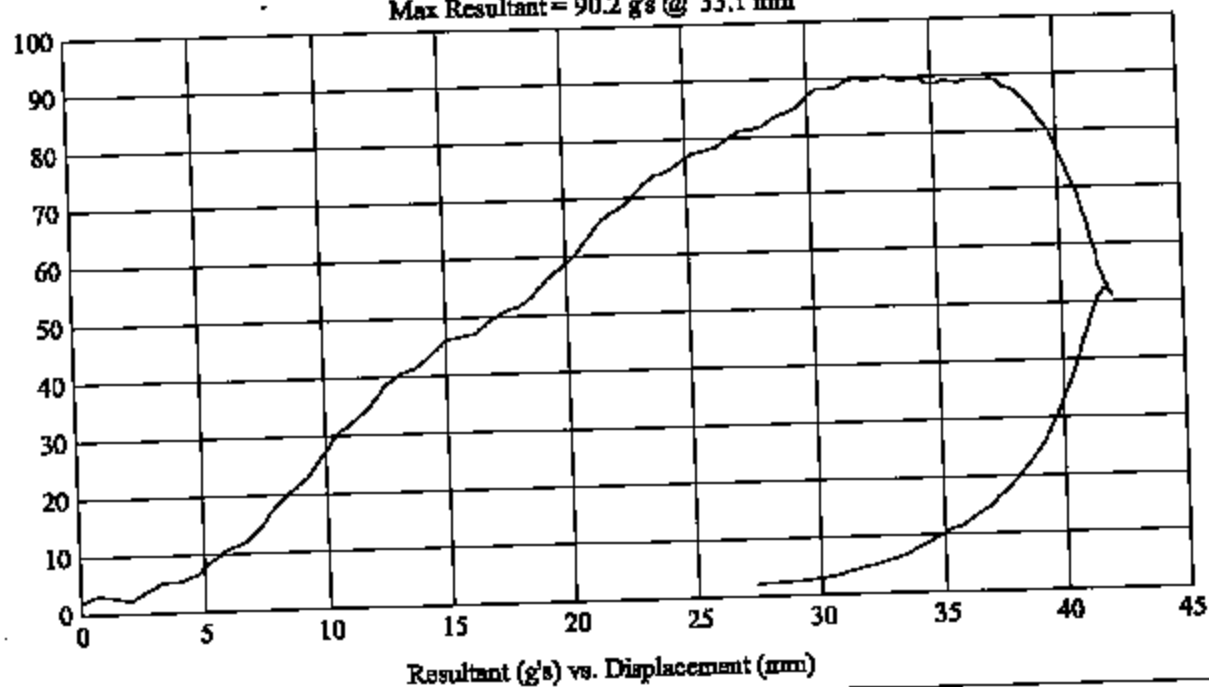
Vehicle Program : ACURA TL

Test Date: 6/14/05

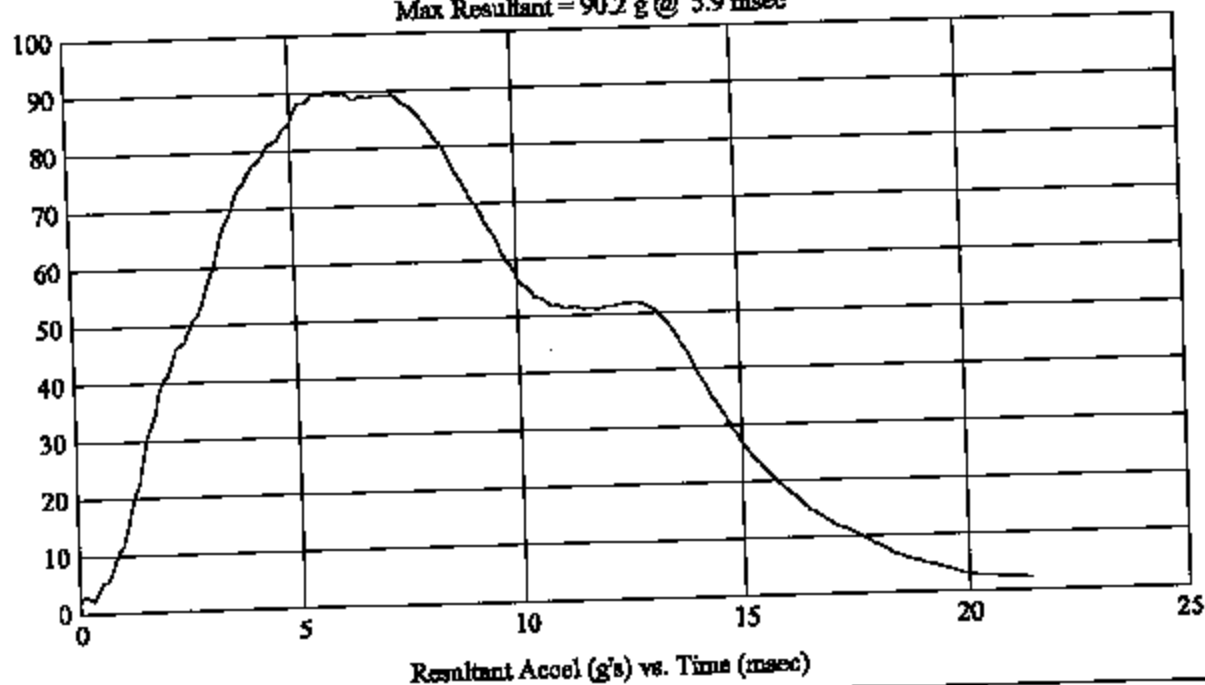
Model Year: 2005
Target: UR4
Vehicle Side: Right
Horz/Vert Angle: 90/45

HIC(d) = 501, HIC = 443, Delta T = 12 msec

Max Resultant = 90.2 g's @ 33.1 mm



Max Resultant = 90.2 g @ 5.9 msec



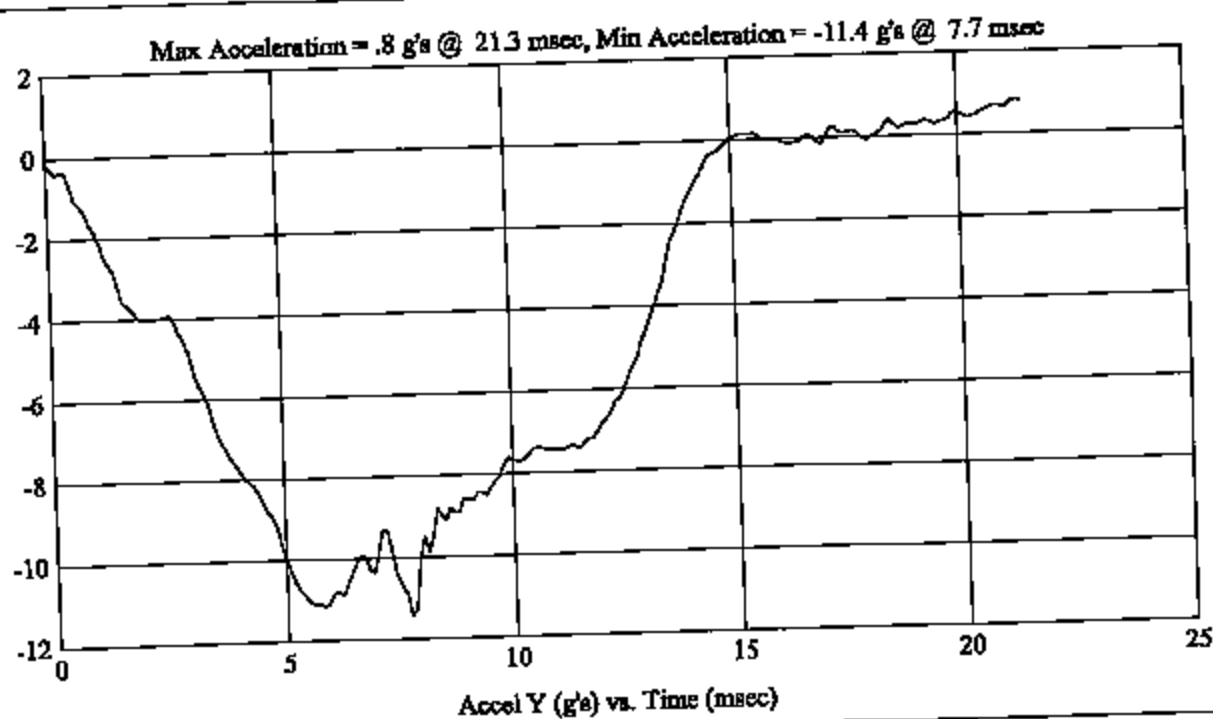
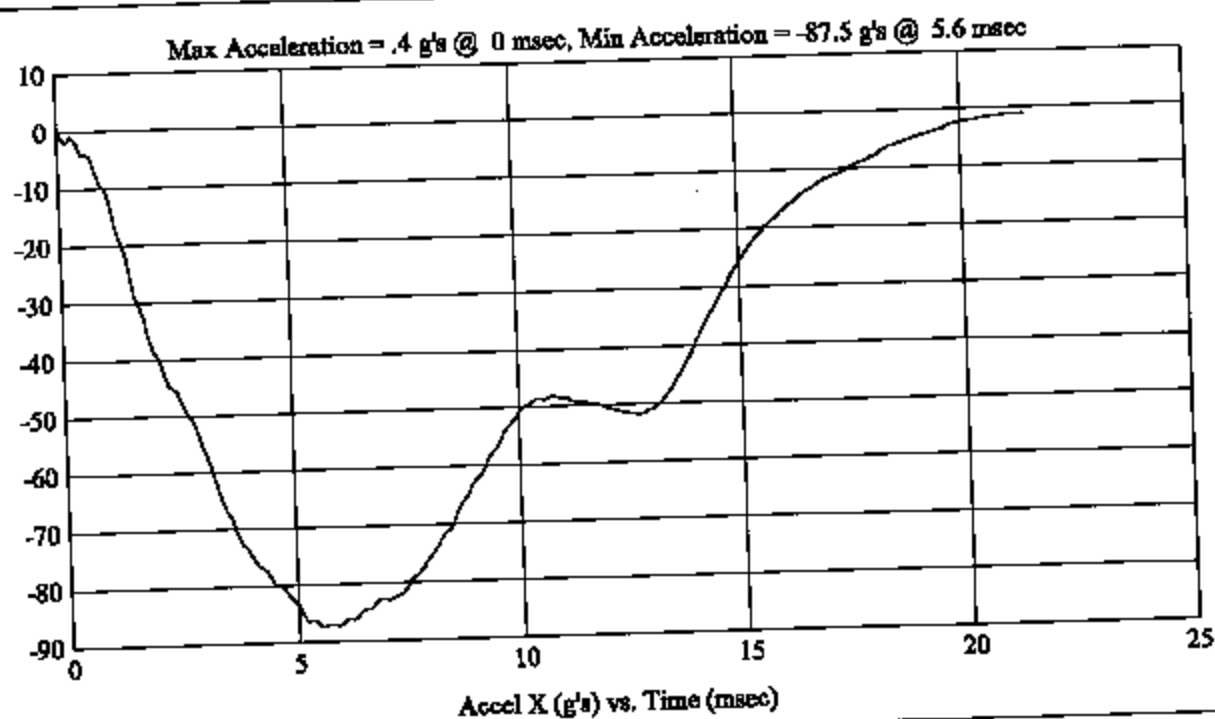
PMH
G05I7-001.6Customer: NHTSA
Test # 2
FMS220
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target: UR4
Vehicle Side: Right
Horz/Vert Angle: 90/45

HIC(d) = 501, HIC = 443, Delta T = 12 msec



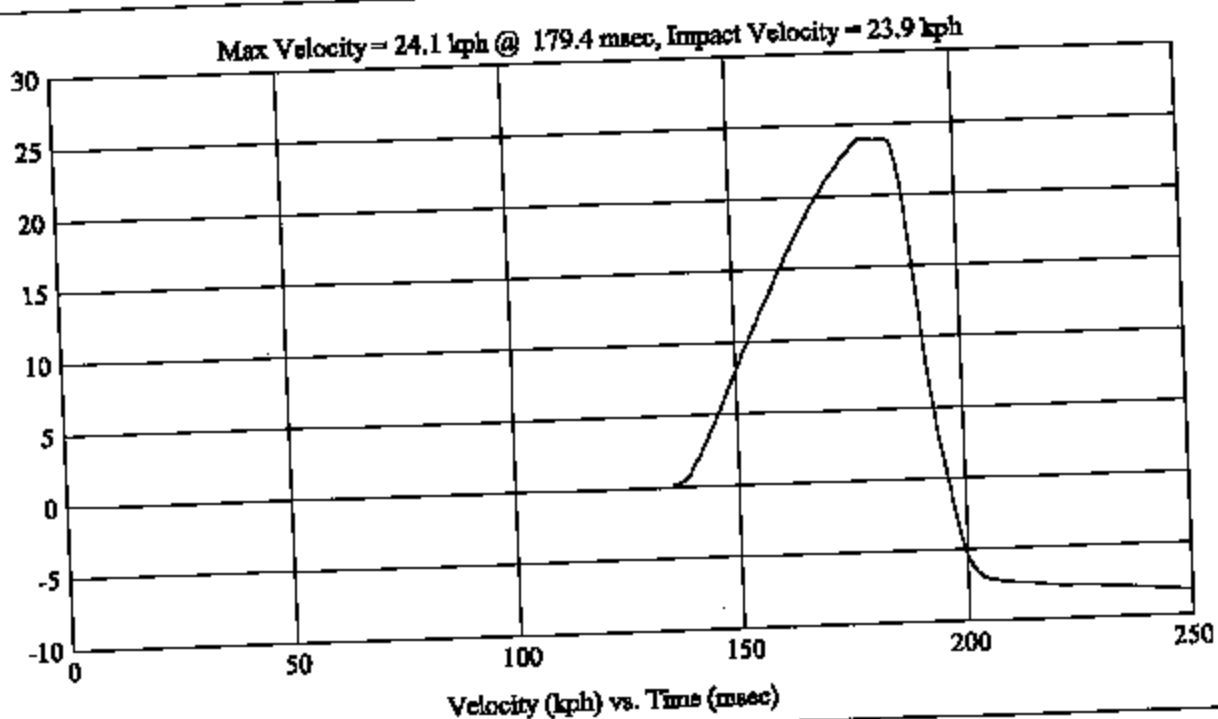
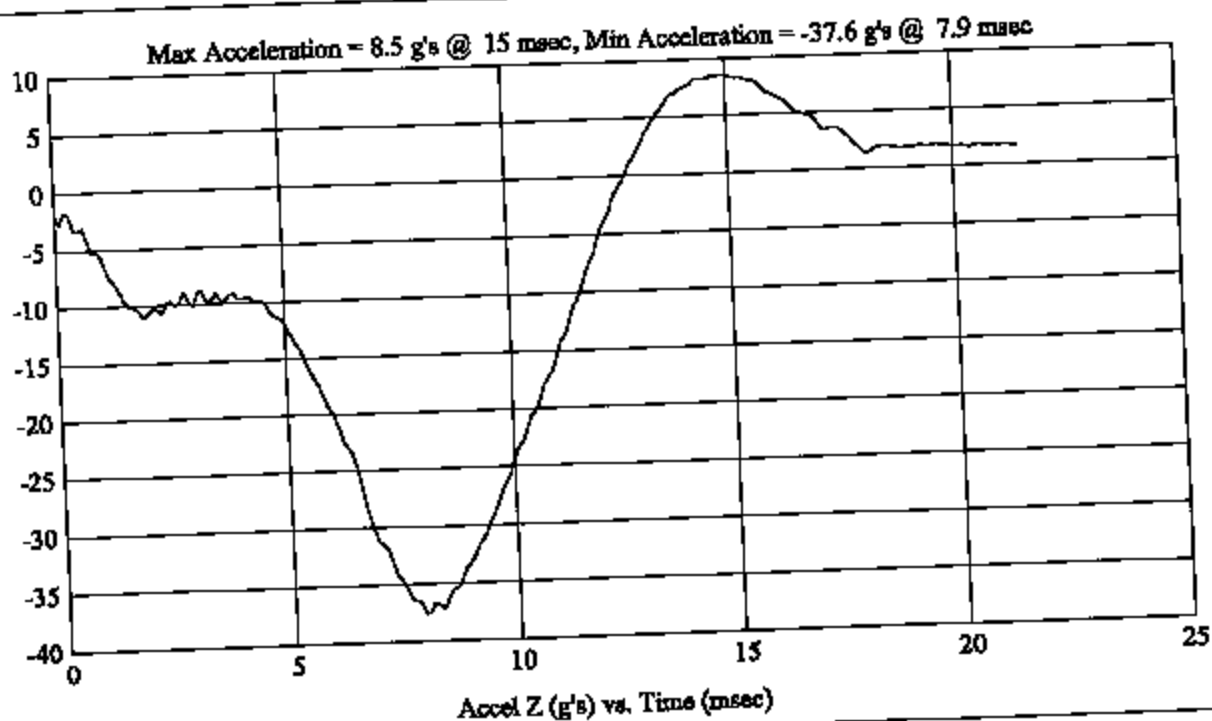
FMH
G0517-001.6Customer: NHTSA
Test # 2
FM5220
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target: UR4
Vehicle Side: Right
Horz/Vert Angle: 90/45

HIC(d) = 501, HIC = 443, Delta T = 12 msec



FMH
G0517-001.6

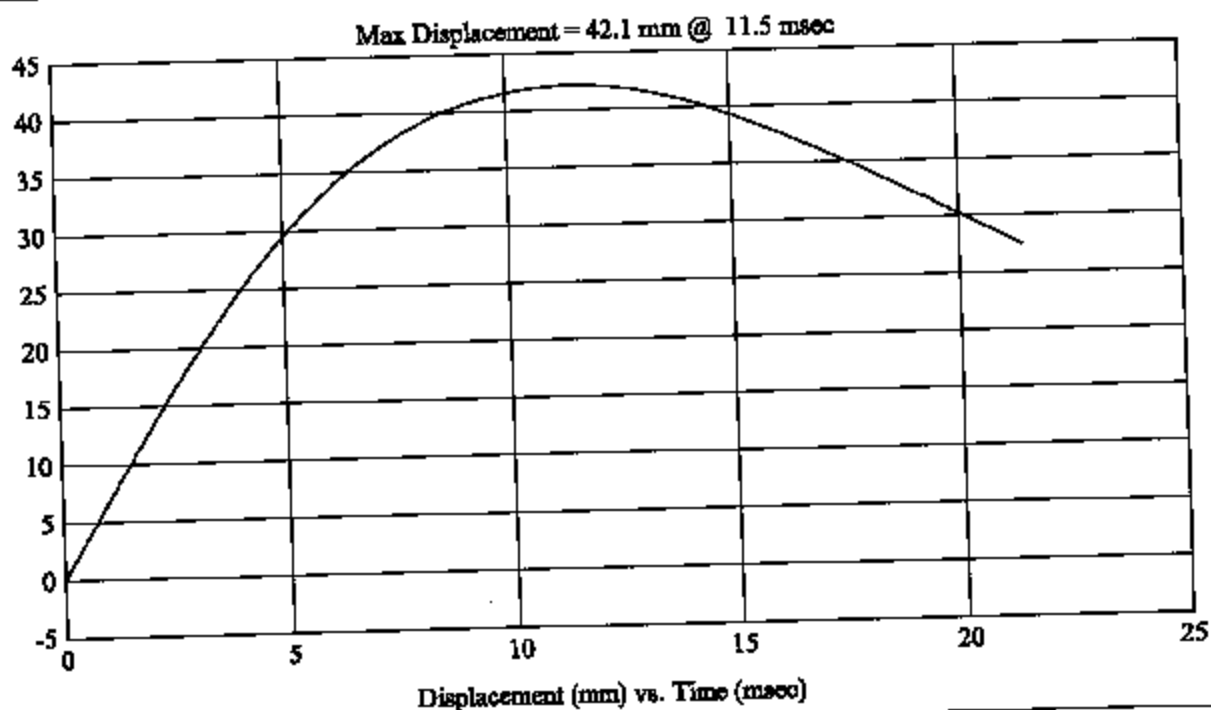
Customer: NHTSA
Test # 2
FM5220
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/14/05

Model Year: 2005
Target: UR4
Vehicle Side: Right
Horz/Vert Angle: 90/45

HIC(d) = 501, HIC = 443, Delta T = 12 msec



1001 1001 1001
6/15/04 6/15/04 6/15/04

2005 NHTSA ACURA TL
FMVSS 2010 - UPPER INTERIOR
TEST #6 C55301 RIGHT UR6
H/V IMPACT ANGLE = 90 / 46
FM5224 PRE-TEST

6/15/05

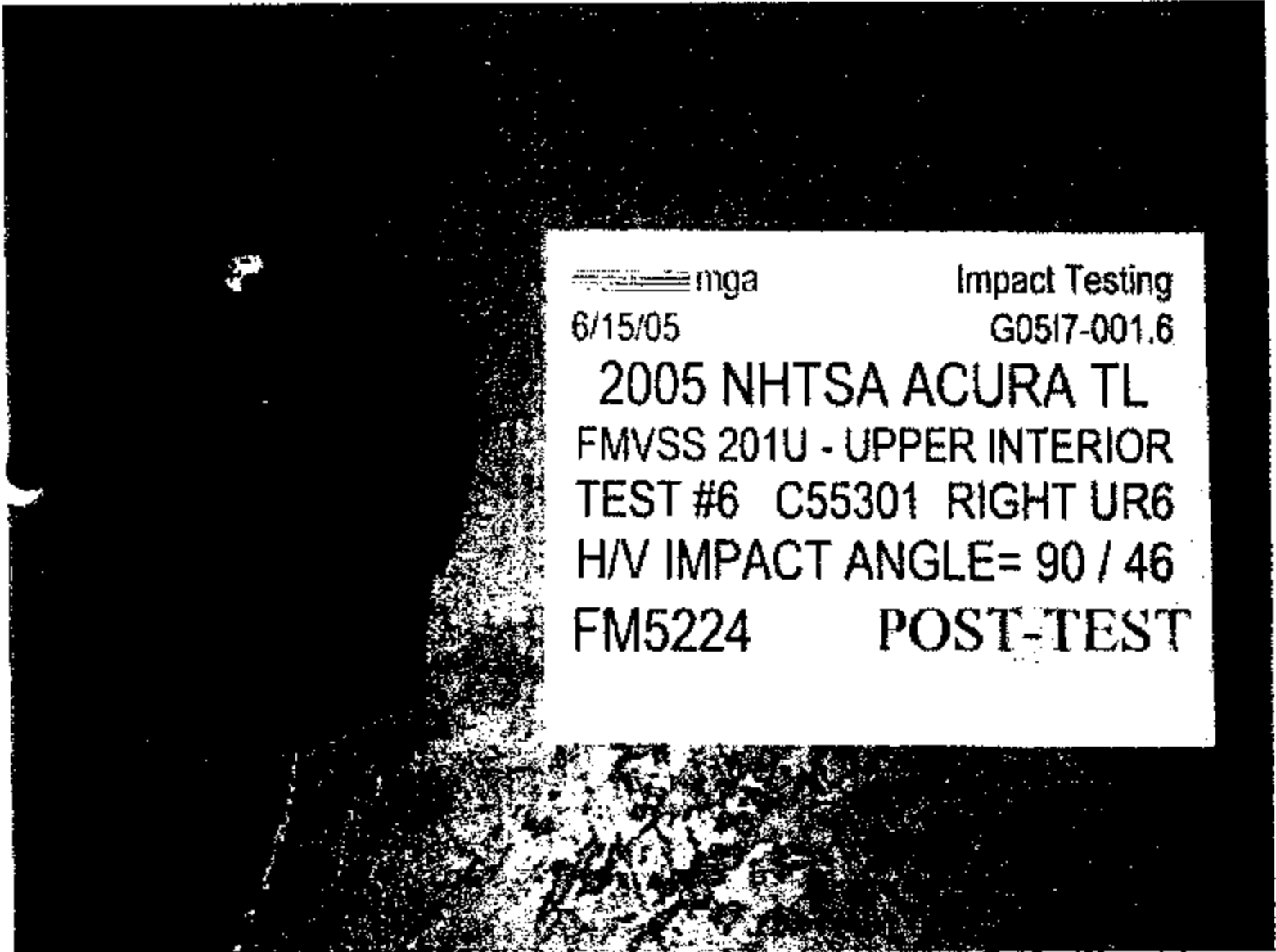
2005 NHTSA ACURA TL
FMVSS 2010 - UPPER INTERIOR
TEST #6 C55301 RIGHT UR6
H/V IMPACT ANGLE= 90 : 46
FM5224 POST TEST

C55301

FM5224

UR6 R5

E046



~~FMVSS 201U~~ mga

6/15/05

Impact Testing

G0517-001.6

2005 NHTSA ACURA TL
FMVSS 201U - UPPER INTERIOR
TEST #6 C55301 RIGHT UR6
H/V IMPACT ANGLE= 90 / 46
FM5224 POST-TEST

MICHIGAN OPERATIONS
DATE: 2/8/01
SUPERCEDES: MGATP207210.2

DOC. NO.: MGATP207210.3
REVISION NO.: 2
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SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G0517-001.6 VEHICLE YR/MAKE/MODEL:2005/NHTSA/ACURA TL

GENERAL TEST PARAMETERS:

Test Number:#8

Target (Vehicle Side): UR5 Right

Temperature:22C

MGA Test Reference No.:FM5224

Humidity:52%

Approach Horizontal Angles:90°

Time of Test:9:00 AM

Approach Vertical Angles:46°

FMH Serial No:[035]

Additional Description:

TEST RESULTS:

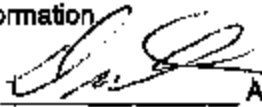
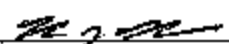
HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
644	633	9.1	23.9	34	4 L

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35924	-91.8	1.44	1.44
Y	6	J35818	97	1.54	1.54
Z	7	J22664	95.6	1.39	1.39

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

Headliner deformation

Recorded By:  Approved By:  Date: 6/15/05

*Only necessary for NHTSA (Government) Compliance testing.

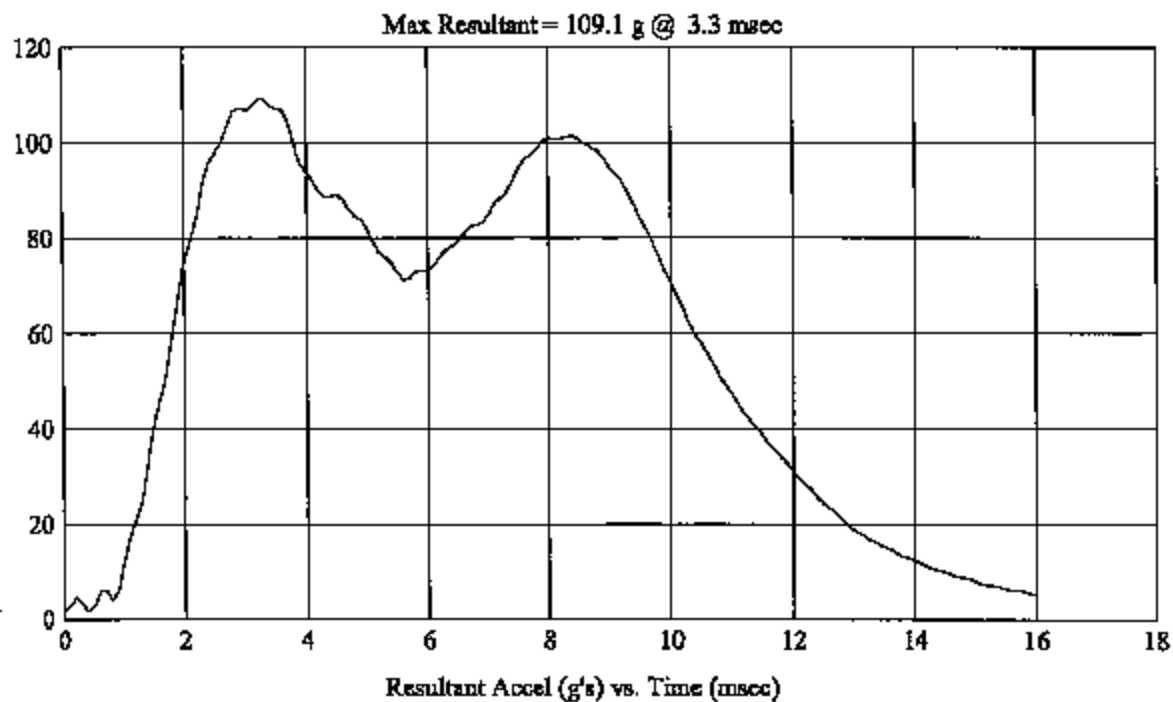
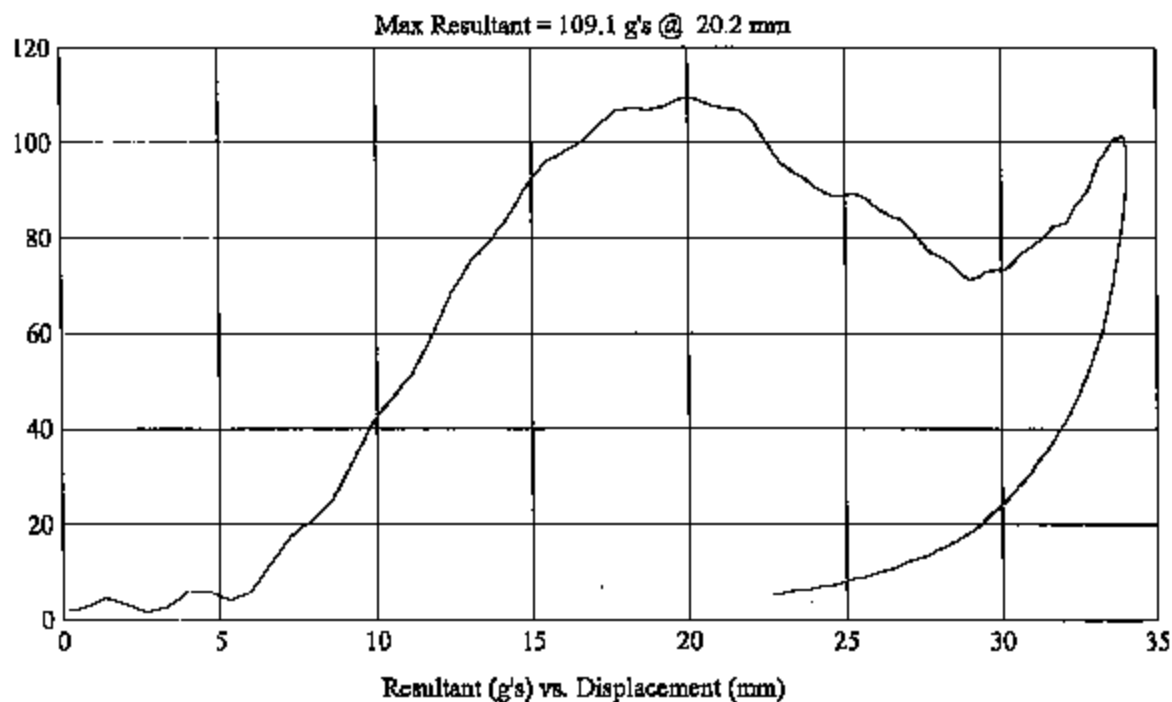
FMH
G0517-001.6Customer: NHTSA
Test # 6
FM5224
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/15/05

Model Year: 2005
Target: UR6
Vehicle Side: Right
Horz/Vert Angle: 90/46

HIC(d) = 644, HIC = 633, Delta T = 9.1 msec



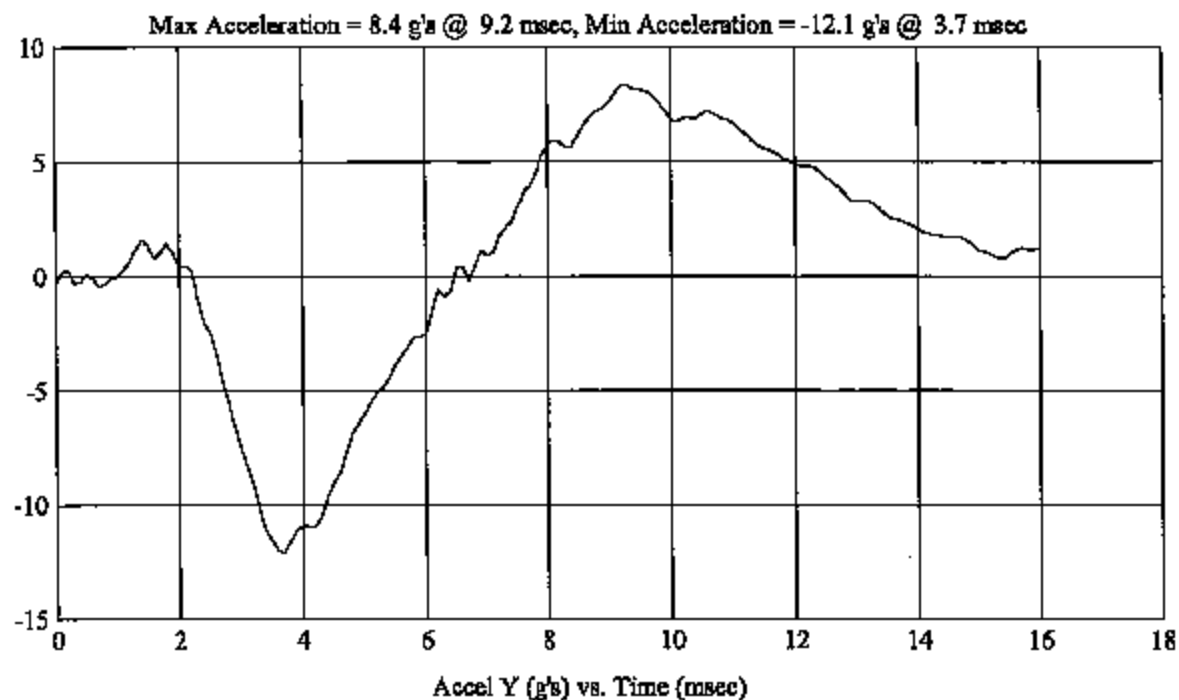
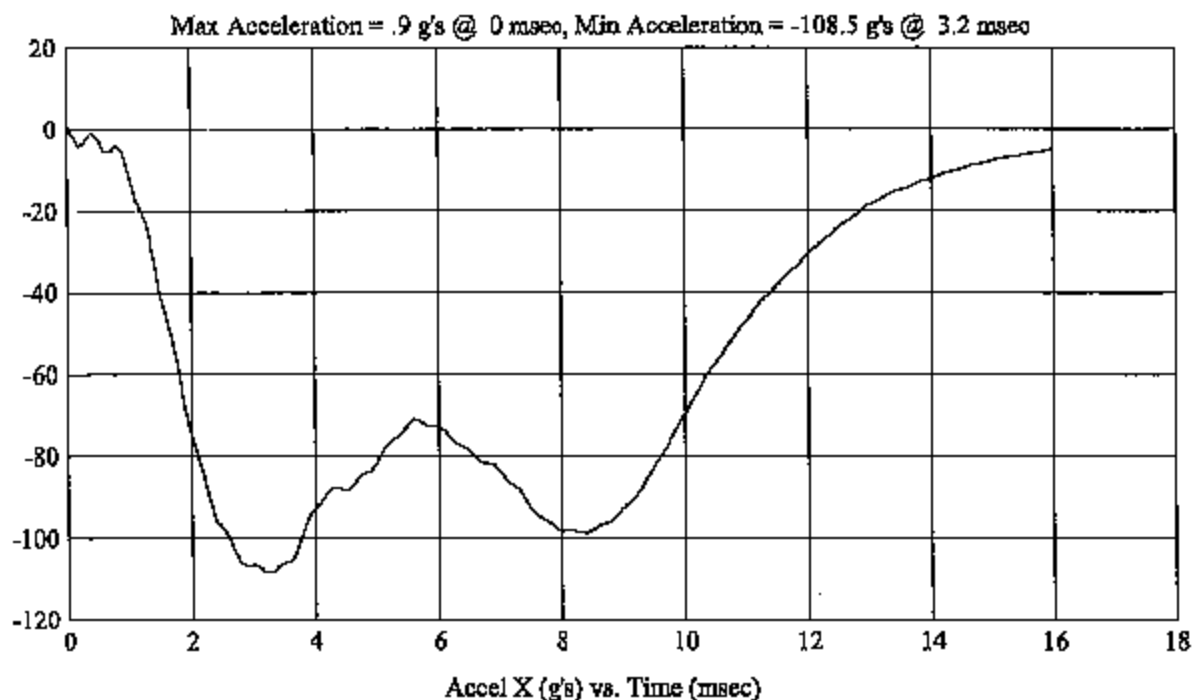
FMH
G0517-001.6Customer: NHTSA
Test # 6
FM5224
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/15/05

Model Year: 2005
Target: UR6
Vehicle Side: Right
Horz/Vert Angle: 90/46

HIC(d) = 644, HIC = 633, Delta T = 9.1 msec



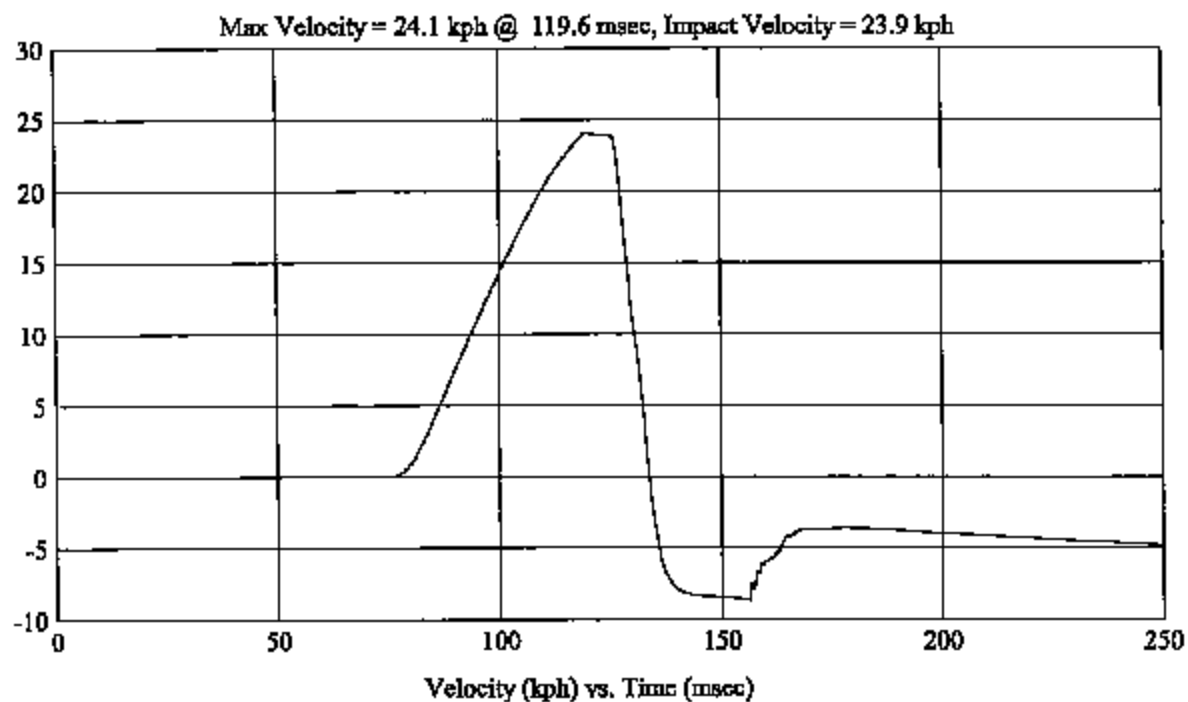
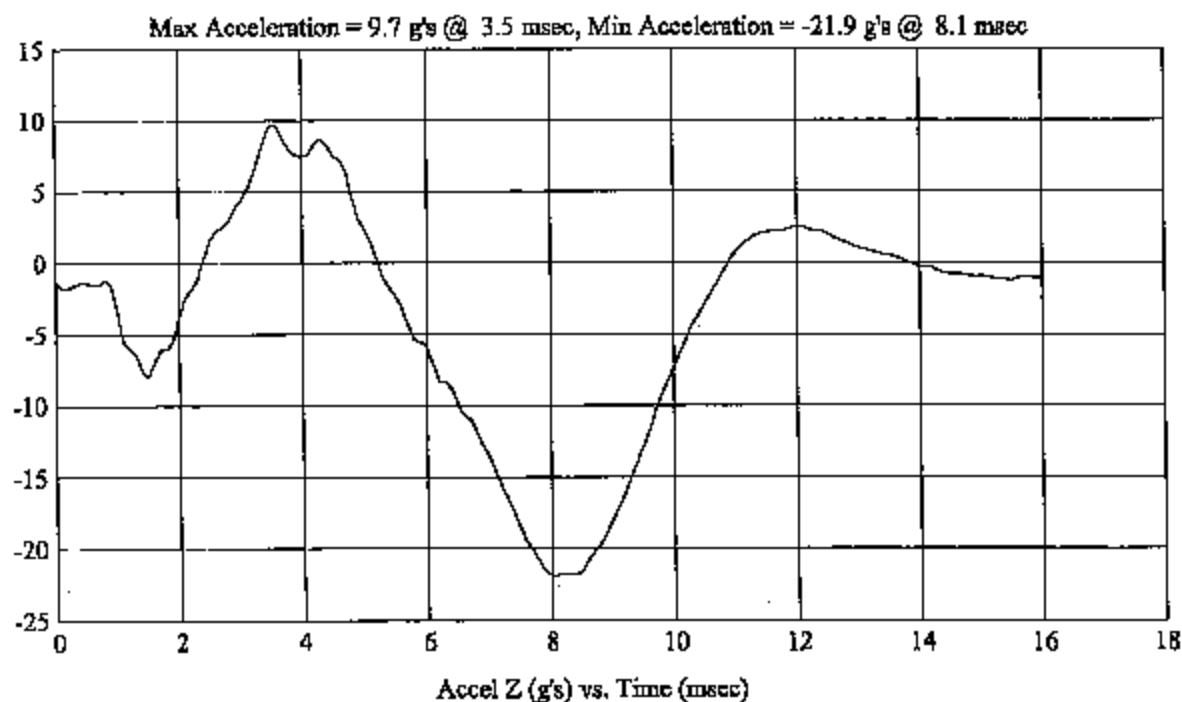
FMH
G0517-001.6Customer: NHTSA
Test # 6
FM5224
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/15/05

Model Year: 2005
Target: UR6
Vehicle Side: Right
Horz/Vert Angle: 90/46

HIC(d) = 644, HIC = 633, Delta T = 9.1 msec



FMH
G05I7-001.6

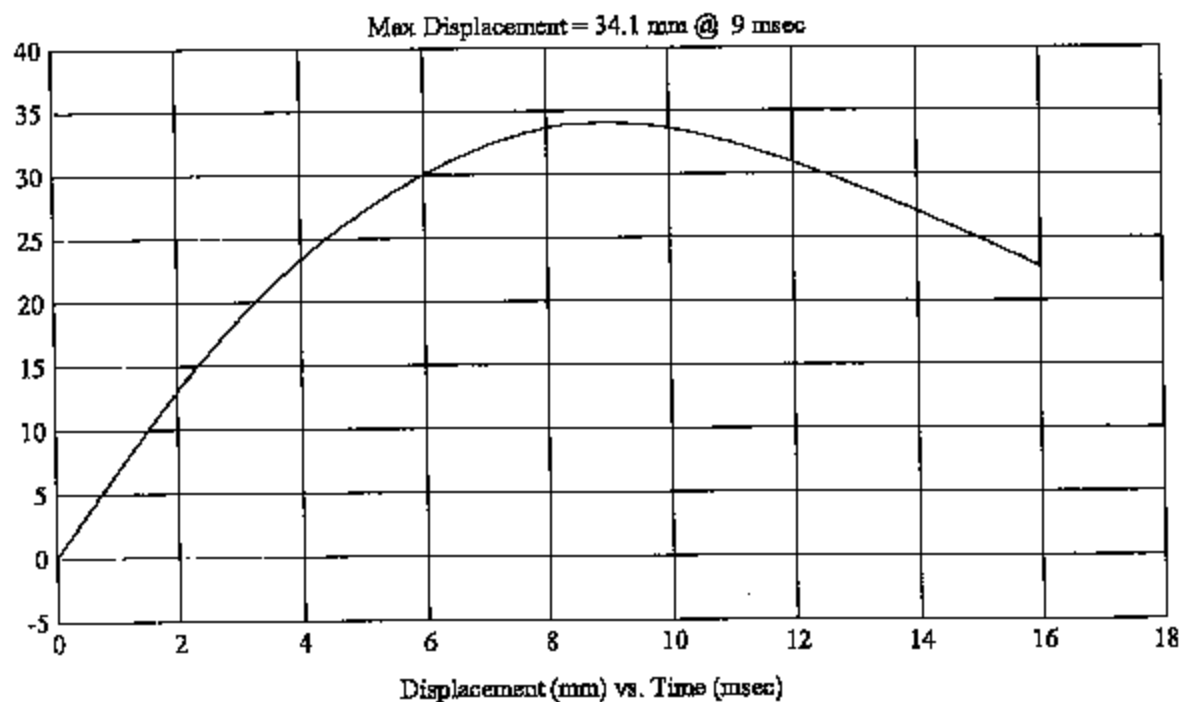
Customer: NHTSA
Test # 6
FM5224
Additional Desc: N/A

Vehicle Program : ACURA TL

Test Date: 6/15/05

Model Year: 2005
Target: UR6
Vehicle Side: Right
Horz/Vert Angle: 90/46

HIC(d) = 644, HIC = 633, Delta T = 9.1 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 66°F and 78°F (19°C - 26°C) 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
*Digital Inclinometer	Mitutoyo	PRO 360 (MGA00072)	Set Angle of FMH/Targeting	0.1°	Annual
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	Redlake	HGLE	Record Event	N/A	N/A
*FARO™	Faro Technologies	G08020203122	Targeting	0.1 mm	Annual
Measuring Devices: - Tape Measure - Plumb Bobs - Protractor	Jonnason N/A Pro 360	458 - MGA00072	Measurement Targeting FMH setup Horizontal Measurement	1 mm N/A 0.5°	Annual
*Vehicle Scale	Intercomp	26032389	Weighing Vehicle	± .5 kg	Annual
* Scale	Detecto	AP-20 (MGA00081)	Weigh FMH Head	± 0.01 lb	Annual
*Temperature Recorder	Dickson	TM-325 (MGA00146)	Record Temp. & Humidity	± 1°C ± 1% RH	Annual

TABLE 4-2 FMH CALIBRATION SUMMARY DATA SUMMARY TABLE

FMH Serial #		Weight (lbs)	Temp (°C)	% Humidity	Peak Resultant Acceleration (G's)	Peak Lateral Acceleration (G's)	Unimodal
Pre	#35	10.02	23	53	255.4	3.8	Yes
Post	#35	10.02	22	49	246.5	9.7	Yes
Pre	#37	9.96	23	49	253.8	10.6	Yes
Post	#37	9.96	22	49	252.0	13.7	Yes
Pre	#38	9.92	23	51	243.8	9.4	Yes
Post	#38	9.92	23	49	249.0	11.6	Yes

RECORDED BY: Nicholas J. BrzuchDATE: June 16, 2005APPROVED BY: David G. Gotwals

MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATP EDT.5

DOC. NO.: MGATP201UHD
REVISION NO.: 6
PAGE 6 OF 7

HEAD DROP TEST SUMMARY PART 572L

HEADFORM SERIAL NUMBER: <u>035</u> CALIBRATION DATE: <u>6-13-05</u>		
TEST PARAMETER	SPECIFICATION	TEST RESULTS
Weight	9.90 to 10.10 lbs.	10.02
Temperature	19° C to 26° C	23
Relative Humidity	10% to 70%	53
Peak Resultant Acceleration	225 G's to 275 G's	255.4
Peak Lateral Acceleration	15 G's Maximum	3.8
Unimodal Acceleration Curve	YES	Yes

FMH INSTRUMENTATION					
HEAD ACCELEROMETERS					
Channel Number	Manufacturer	Model Number	Serial Number	Date of Last Calibration	Date of Next Calibration
5	ENDEVCO	7264-2000	J35924	5-2-05	11-2-05
6	ENDEVCO	7264-2000	J35919	5-2-05	11-2-05
7	ENDEVCO	7264-2000	J22664	5-2-05	11-2-05

REMARKS:

RECORDED BY: [Signature]

DATE: 6-13-05

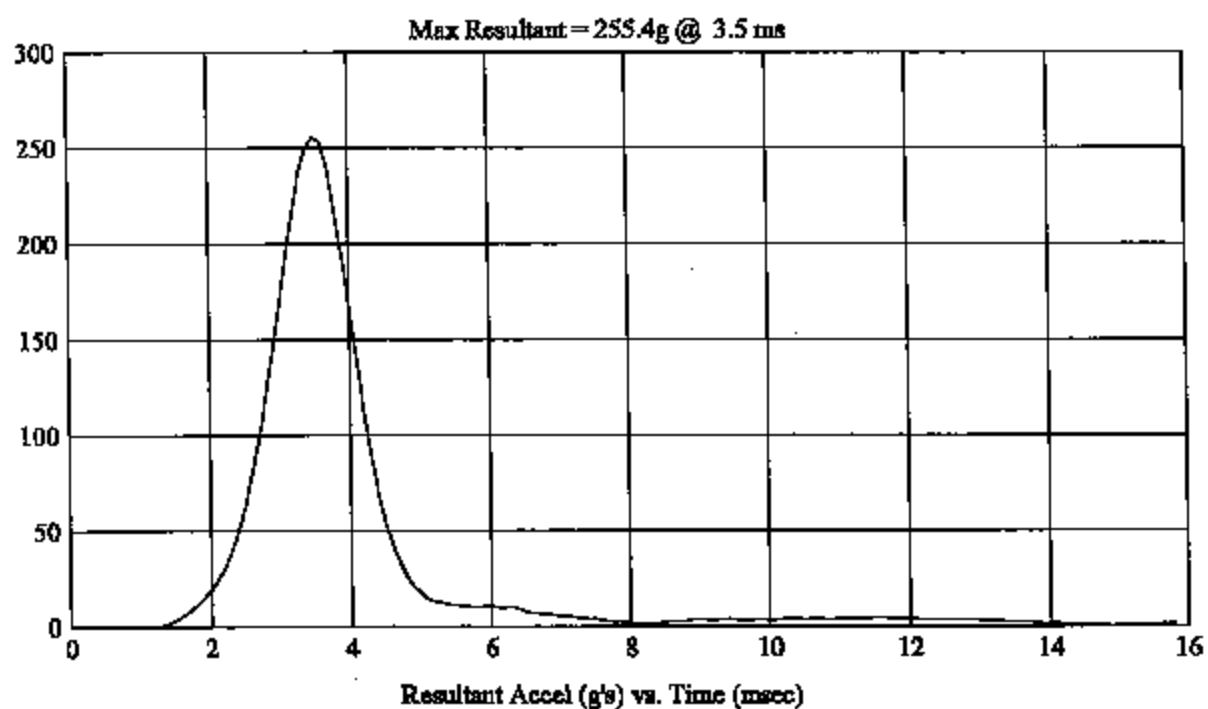
APPROVED BY: [Signature]

Head Drop
(Preliminary Test Report)

Test Number: H35300
Test Description: 10.02

MGA Job Number: G0517-001.6

Test Date: 6/14/05
Head #: 035

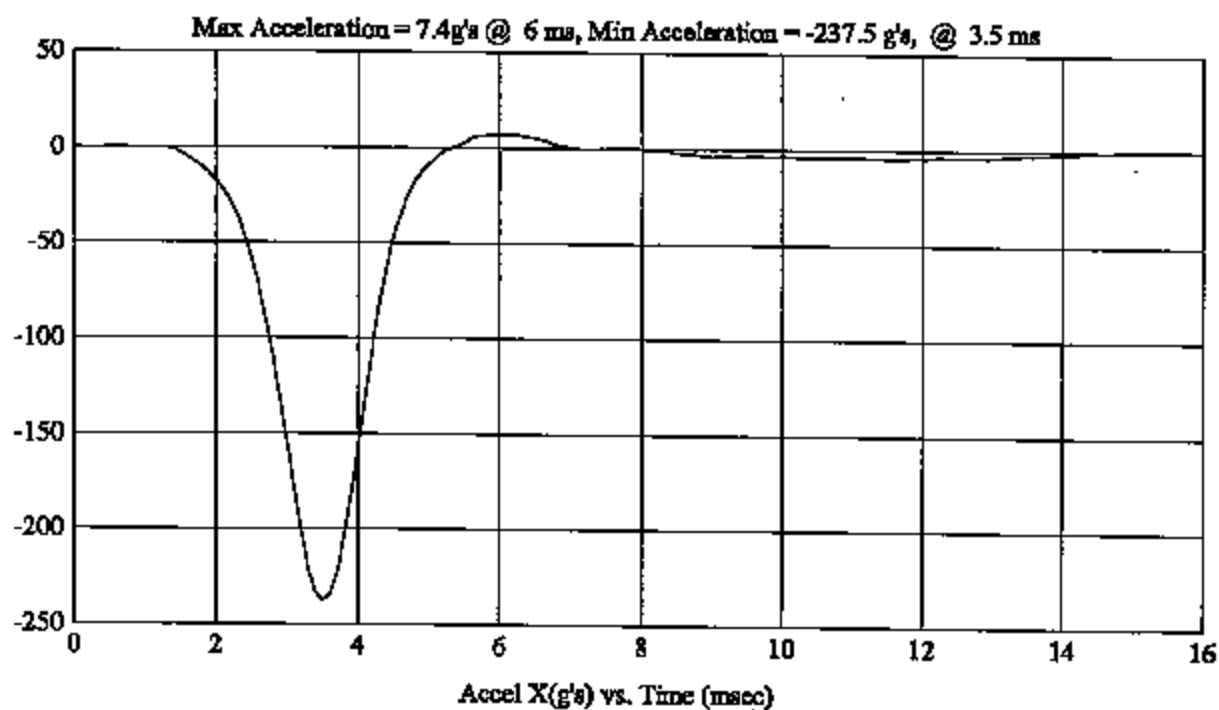
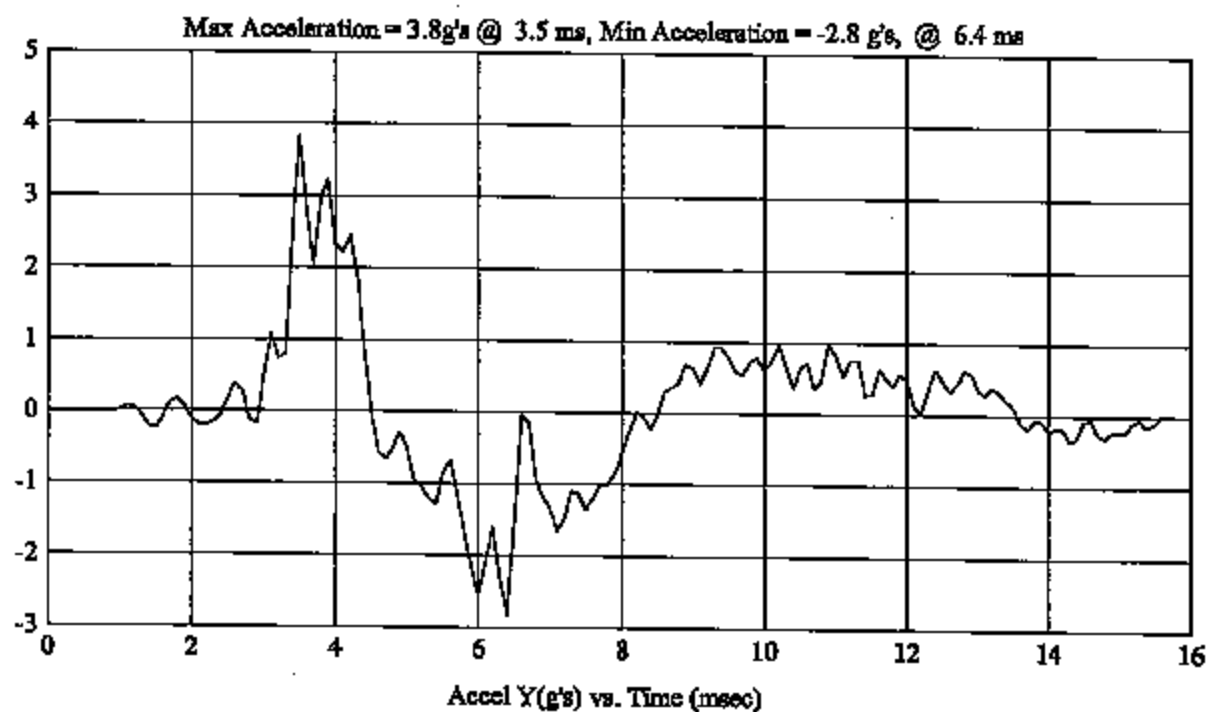


Head Drop
(Preliminary Test Report)

Test Number: H35300
Test Description: 10.02

MGA Job Number: G0517-001.6

Test Date: 6/14/05
Head #: 035

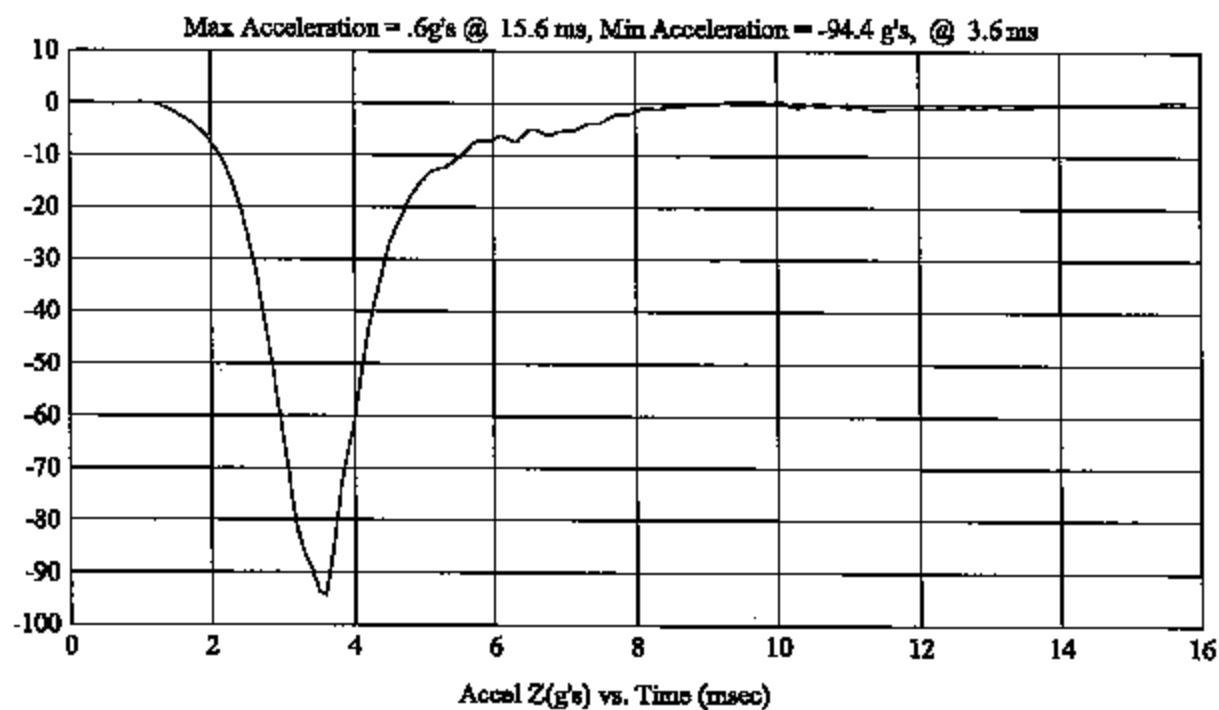


Head Drop
(Preliminary Test Report)

Test Number: H35300
Test Description: 10.02

MGA Job Number: G0517-001.6

Test Date: 6/14/05
Head #: 035



MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATPHDT.5

DOC. NO.: MGATP201UHD
REVISION NO.: 6
PAGE 6 OF 7

HEAD DROP TEST SUMMARY PART 572L

HEADFORM SERIAL NUMBER: <u>035</u>		CALIBRATION DATE: <u>6-16-05</u>
TEST PARAMETER	SPECIFICATION	TEST RESULTS
Weight	9.90 to 10.10 lbs.	10.02
Temperature	19° C to 26° C	22
Relative Humidity	10% to 70%	49
Peak Resultant Acceleration	225 G's to 275 G's	246.5
Peak Lateral Acceleration	15 G's Maximum	9.7
Unimodal Acceleration Curve	YES	Yes

FMH INSTRUMENTATION					
HEAD ACCELEROMETERS					
Channel Number	Manufacturer	Model Number	Serial Number	Date of Last Calibration	Date of Next Calibration
5	ENDEVCO	7264-2000	J35924	5-2-05	11-2-05
6	ENDEVCO	7264-2000	J35919	5-2-05	11-2-05
7	ENDEVCO	7264-2000	J22664	5-2-05	11-2-05

REMARKS:

RECORDED BY: [Signature]

DATE: 6-16-05

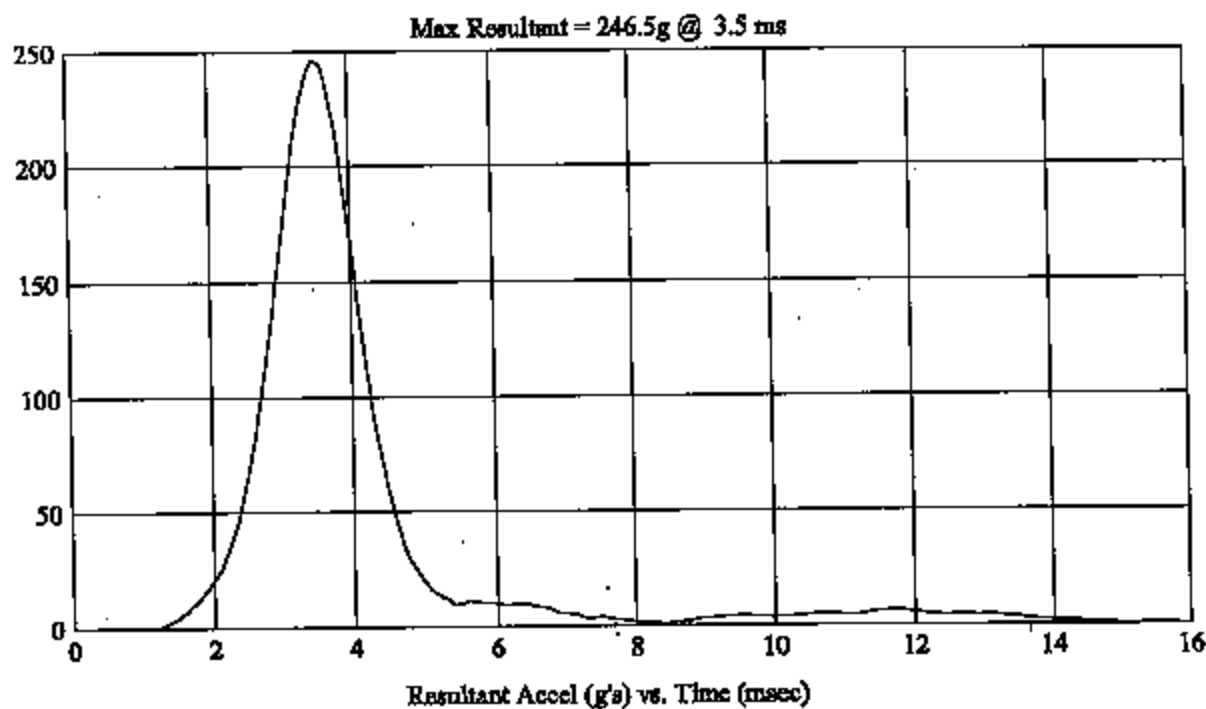
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Head Drop
(Preliminary Test Report)

Test Number: H35301
Test Description: 10.02

MGA Job Number: G0517-001.6

Test Date: 6/16/05
Head #: 35

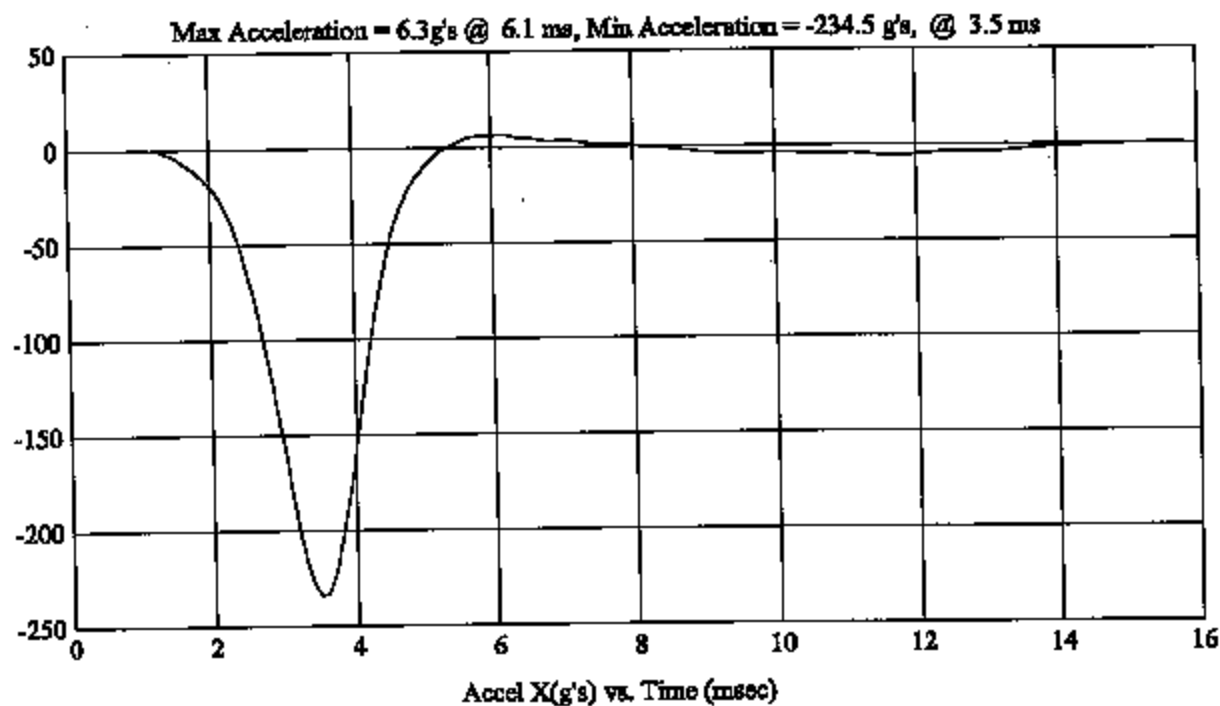
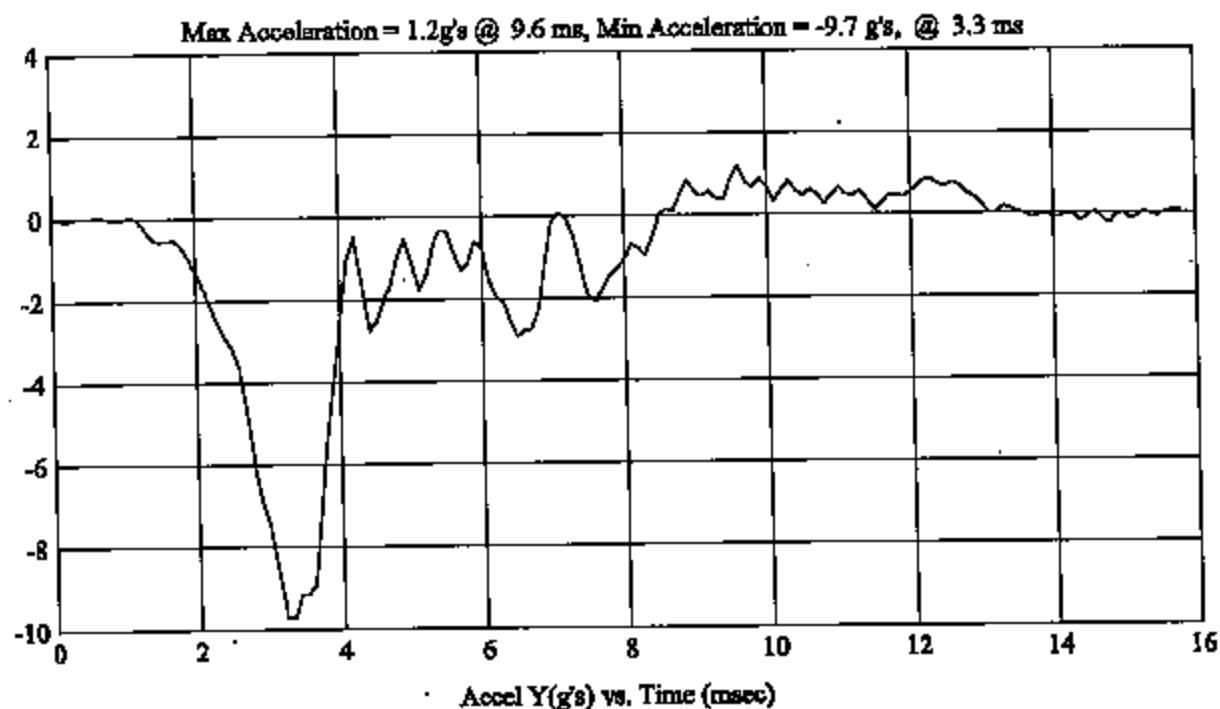


Head Drop
(Preliminary Test Report)

Test Number: H35301
Test Description: 10.02

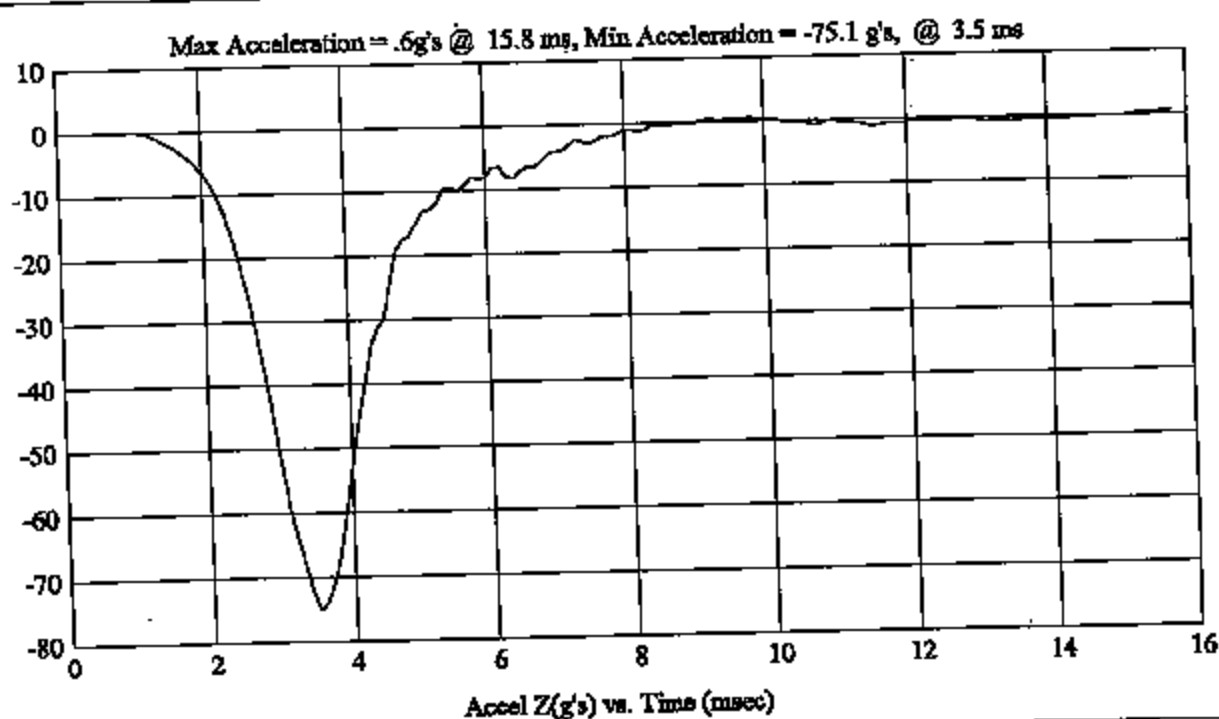
MGA Job Number: G05I7-001.6

Test Date: 6/16/05
Head #: 35



Head Drop
(Preliminary Test Report)Test Number: H35301
Test Description: 10.02

MGA Job Number: G05I7-001.6

Test Date: 6/16/05
Head #: 35

MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATPHD7.5

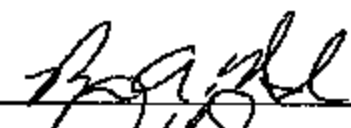
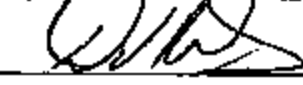
DOC. NO.: MGATP201UHD
REVISION NO.: 6
PAGE 6 OF 7

HEAD DROP TEST SUMMARY PART 572L

HEADFORM SERIAL NUMBER: <u>037</u>		CALIBRATION DATE: <u>6-14-05</u>
TEST PARAMETER	SPECIFICATION	TEST RESULTS
Weight	9.90 to 10.10 lbs.	<u>9.96</u>
Temperature	19° C to 26° C	<u>23</u>
Relative Humidity	10% to 70%	<u>49</u>
Peak Resultant Acceleration	225 G's to 275 G's	<u>253.8</u>
Peak Lateral Acceleration	15 G's Maximum	<u>10.6</u>
Unimodal Acceleration Curve	YES	<u>Yes</u>

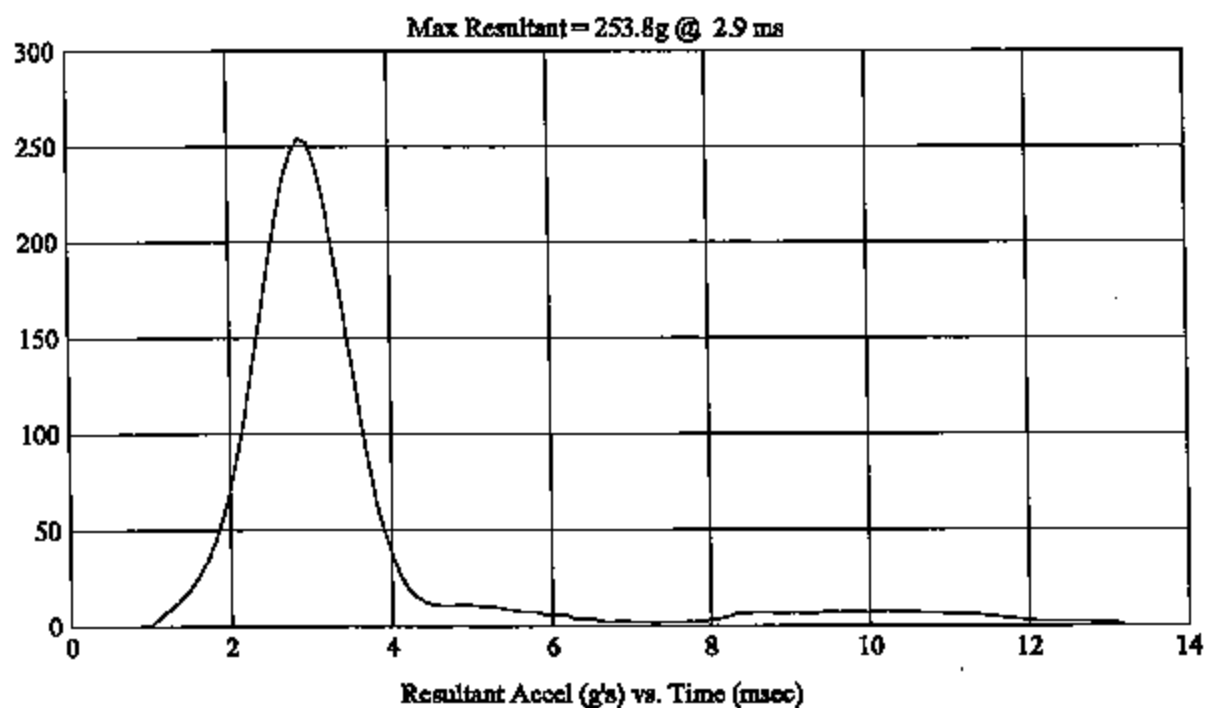
FMH INSTRUMENTATION					
HEAD ACCELEROMETERS					
Channel Number	Manufacturer	Model Number	Serial Number	Date of Last Calibration	Date of Next Calibration
<u>5</u>	ENDEVCO	7264-2000	<u>535800</u>	<u>5-2-05</u>	<u>11-2-05</u>
<u>6</u>	ENDEVCO	7264-2000	<u>535841</u>	<u>5-2-05</u>	<u>11-2-05</u>
<u>7</u>	ENDEVCO	7264-2000	<u>535791</u>	<u>5-2-05</u>	<u>11-2-05</u>

REMARKS:

RECORDED BY: DATE: 6-14-05APPROVED BY: 

Head Drop
(Preliminary Test Report)Test Number: H37171
Test Description: 9.96

MGA Job Number: G05I7-001.6

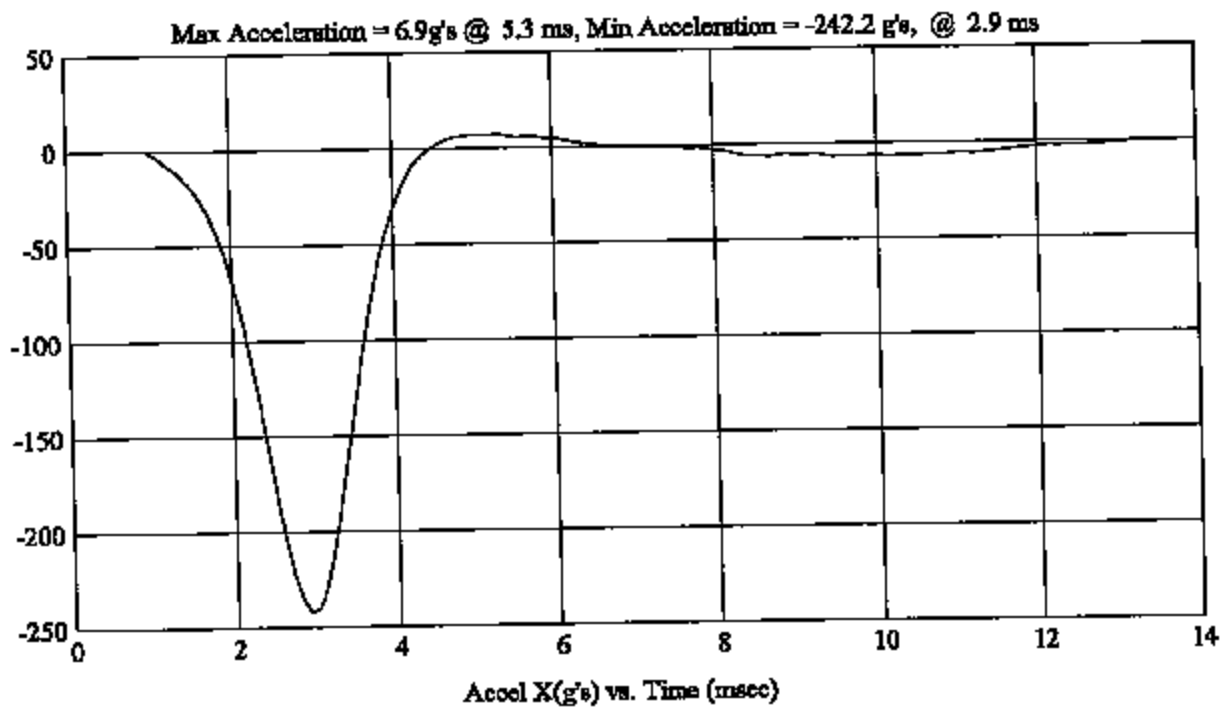
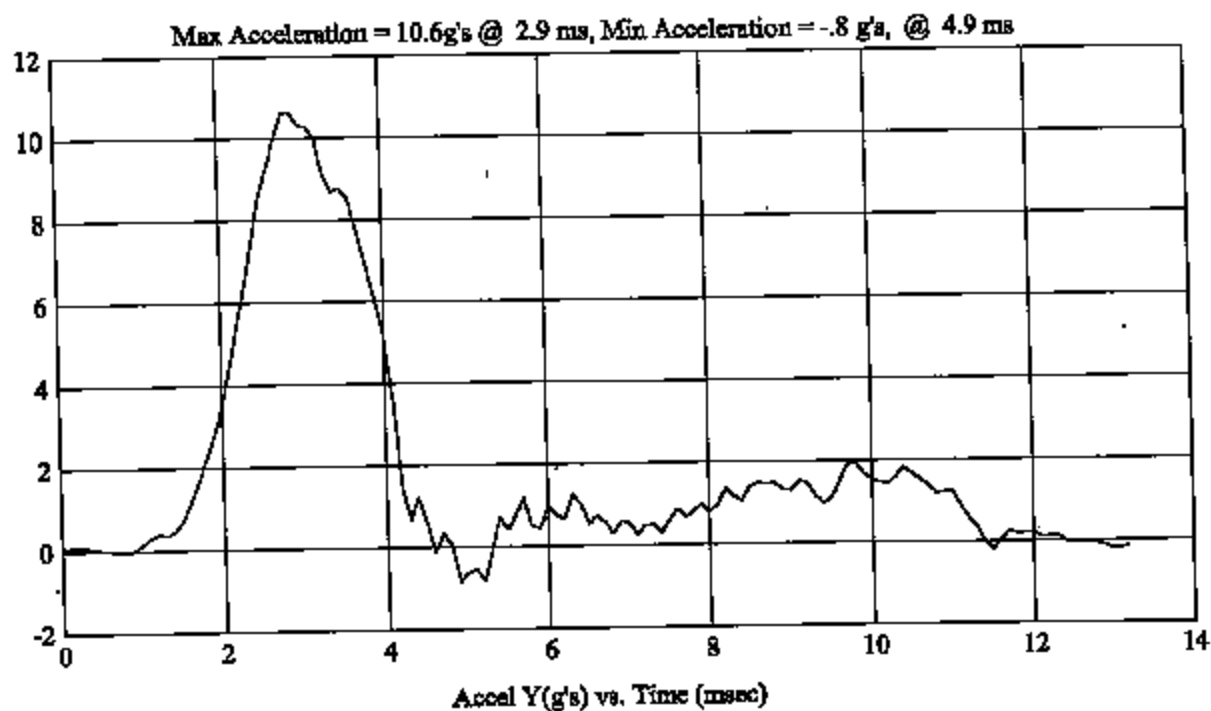
Test Date: 6/14/05
Head #: 037

Head Drop
(Preliminary Test Report)

Test Number: H37171
Test Description: 9.96

MGA Job Number: G05X7-001.6

Test Date: 6/14/05
Head #: 037

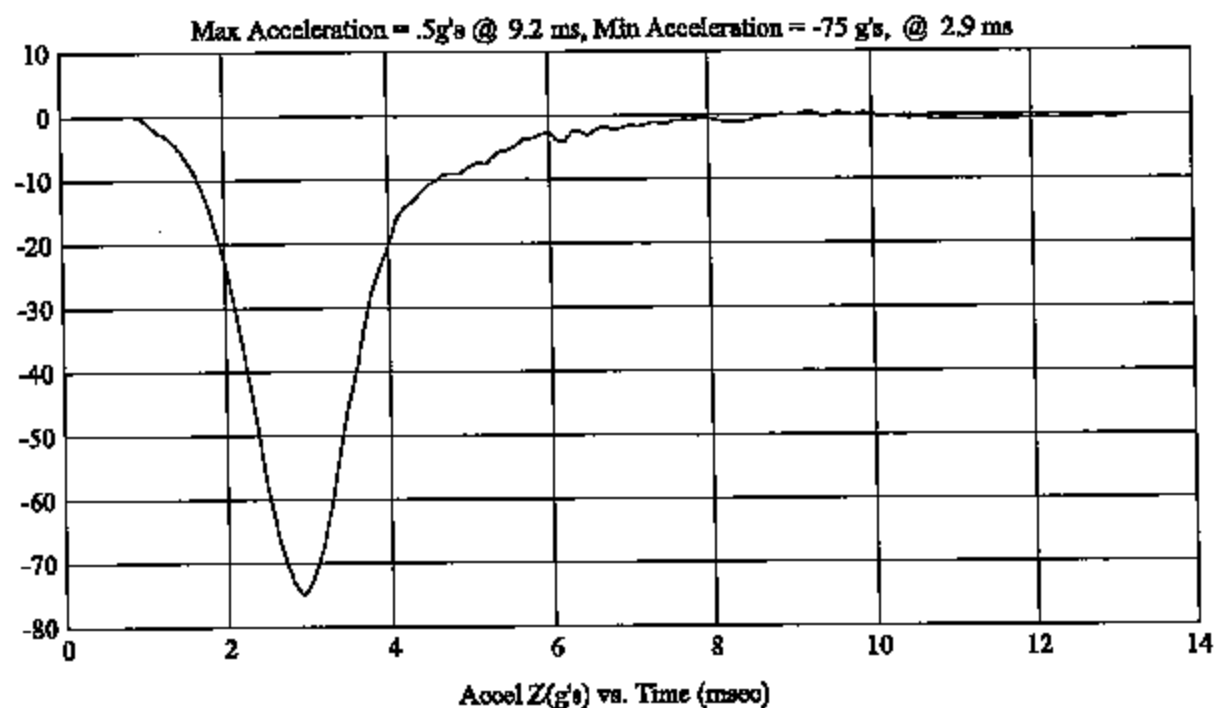


Head Drop
(Preliminary Test Report)

Test Number: H37171
Test Description: 9.96

MGA Job Number: G0517-001.6

Test Date: 6/14/05
Head #: 037



MICHIGAN OPERATIONS
DATE: 3/2003
SUPERCEDES: MGATPHDT.5

DOC. NO.: MGATP201UHD
REVISION NO.: 6
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HEAD DROP TEST SUMMARY PART 572L

HEADFORM SERIAL NUMBER: <u>037</u> CALIBRATION DATE: <u>6-16-05</u>		
TEST PARAMETER	SPECIFICATION	TEST RESULTS
Weight	9.90 to 10.10 lbs.	9.96
Temperature	19° C to 26° C	22
Relative Humidity	10% to 70%	49
Peak Resultant Acceleration	225 G's to 275 G's	252.0
Peak Lateral Acceleration	15 G's Maximum	13.7
Unimodal Acceleration Curve	YES	Yes

FMH INSTRUMENTATION					
HEAD ACCELEROMETERS					
Channel Number	Manufacturer	Model Number	Serial Number	Date of Last Calibration	Date of Next Calibration
5	ENDEVCO	7264-2000	J35800	5-2-05	11-2-05
6	ENDEVCO	7264-2000	J35841	5-2-05	11-2-05
7	ENDEVCO	7264-2000	J35791	5-2-05	11-2-05

REMARKS:

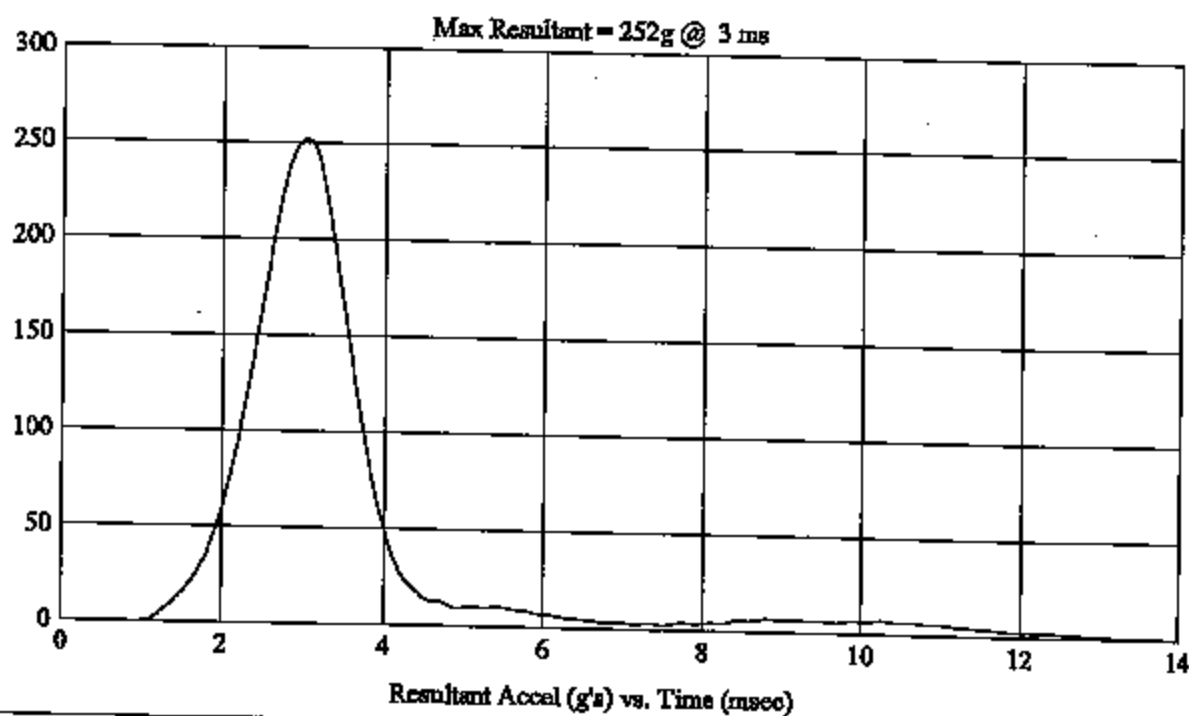
RECORDED BY: R.A. H

DATE: 6-16-05

APPROVED BY: Wjm

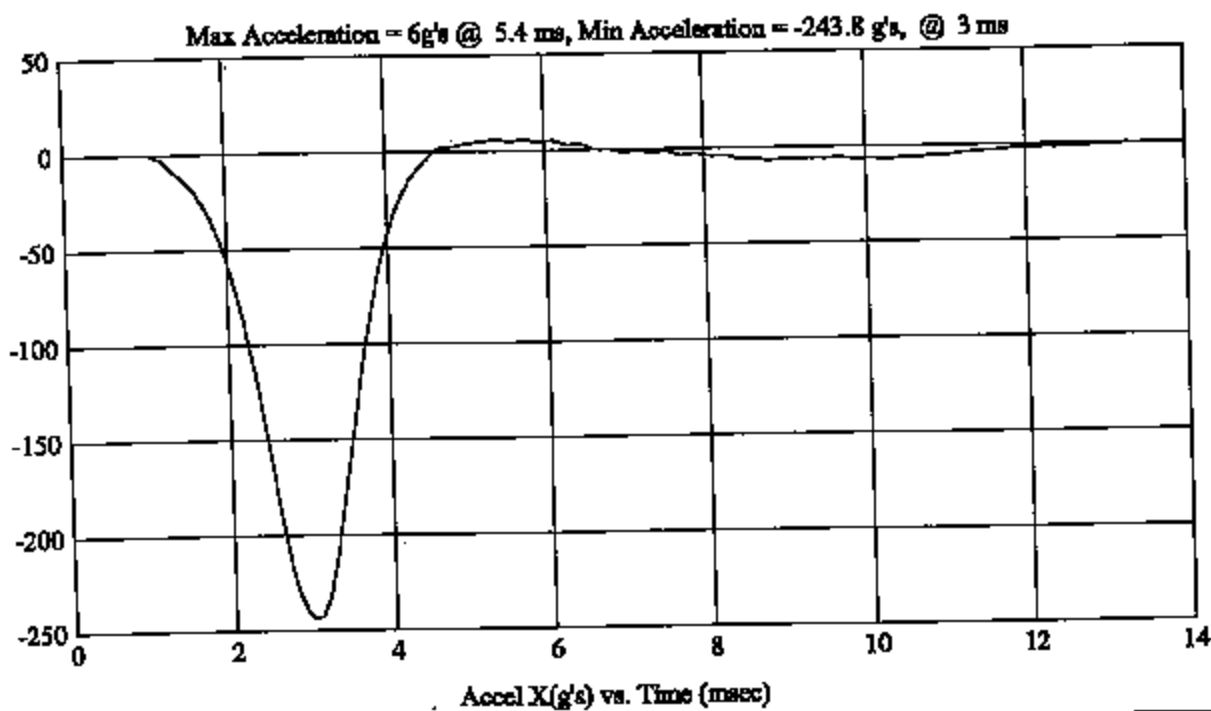
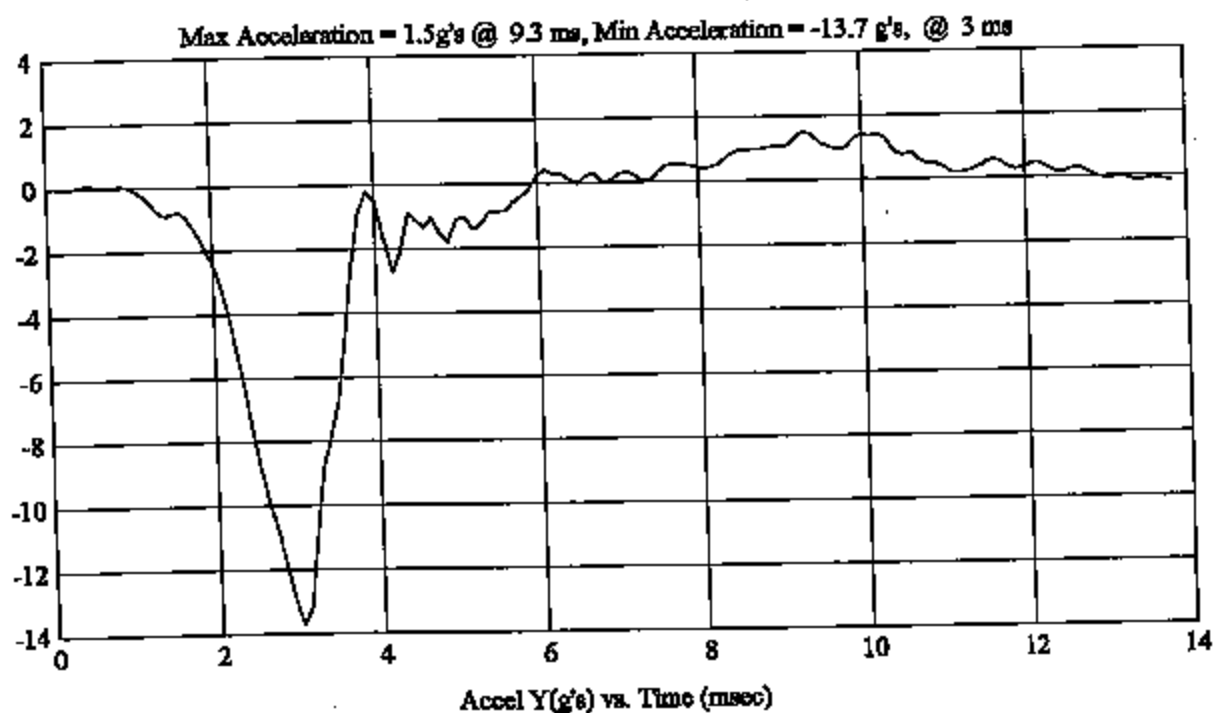
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(Preliminary Test Report)Test Number: H37172
Test Description: 9.96

MGA Job Number: G0517-001.6

Test Date: 6/16/05
Head #: 37

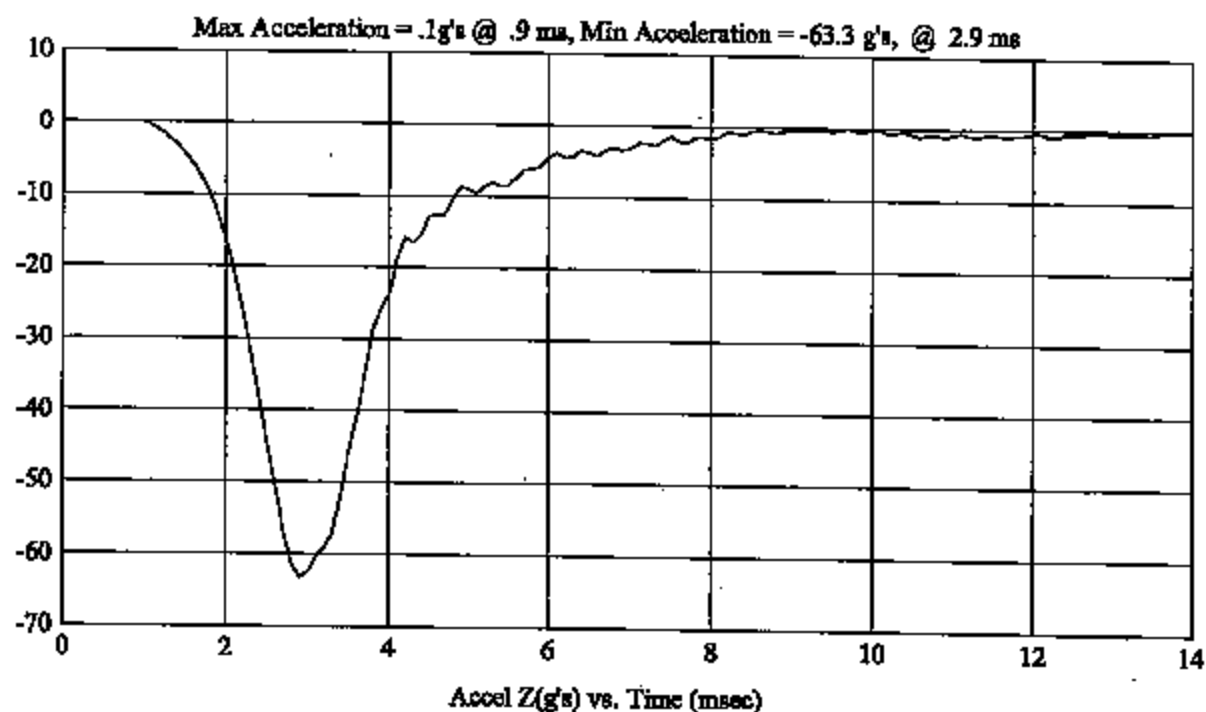
Head Drop
(Preliminary Test Report)Test Number: H37172
Test Description: 9.96

MGA Job Number: GOSI7-001.6

Test Date: 6/16/05
Head #: 37

Head Drop
(Preliminary Test Report)Test Number: H37172
Test Description: 9.96

MGA Job Number: G0517-001.6

Test Date: 6/16/05
Head #: 37

MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATPHDT.5

DOC. NO.: MGATP201UHD
REVISION NO.: 6
PAGE 6 OF 7

HEAD DROP TEST SUMMARY PART 572L

HEADFORM SERIAL NUMBER: <u>38</u>		CALIBRATION DATE: <u>6/14/05</u>
TEST PARAMETER	SPECIFICATION	TEST RESULTS
Weight	9.90 to 10.10 lbs.	9.92
Temperature	19° C to 26° C	23
Relative Humidity	10% to 70%	51
Peak Resultant Acceleration	225 G's to 275 G's	243.8
Peak Lateral Acceleration	15 G's Maximum	9.4
Unimodal Acceleration Curve	YES	Yes

FMH INSTRUMENTATION					
HEAD ACCELEROMETERS					
Channel Number	Manufacturer	Model Number	Serial Number	Date of Last Calibration	Date of Next Calibration
5	ENDEVCO	7264-2000	536197	5-2-05	11-2-05
6	ENDEVCO	7264-2000	536193	5-2-05	11-2-05
7	ENDEVCO	7264-2000	536353	5-2-05	11-2-05

REMARKS:

RECORDED BY: [Signature]

DATE: 6-14-05

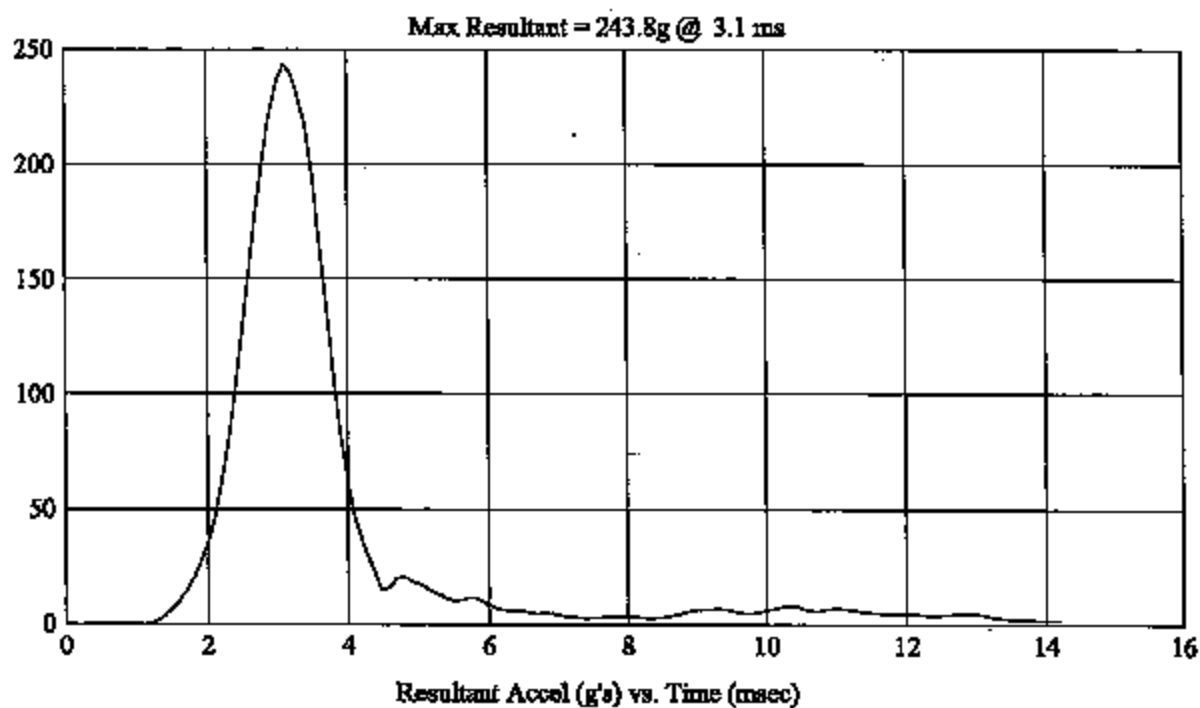
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Head Drop
(Preliminary Test Report)

Test Number: H38280
Test Description: 9.92

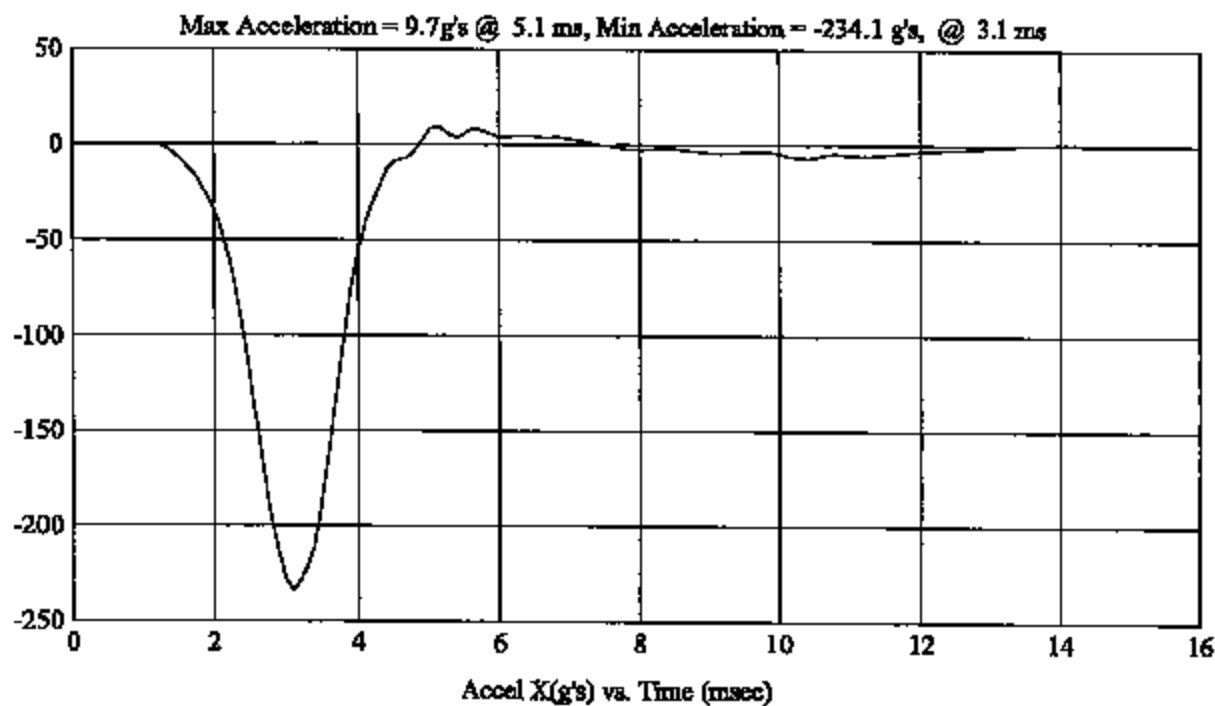
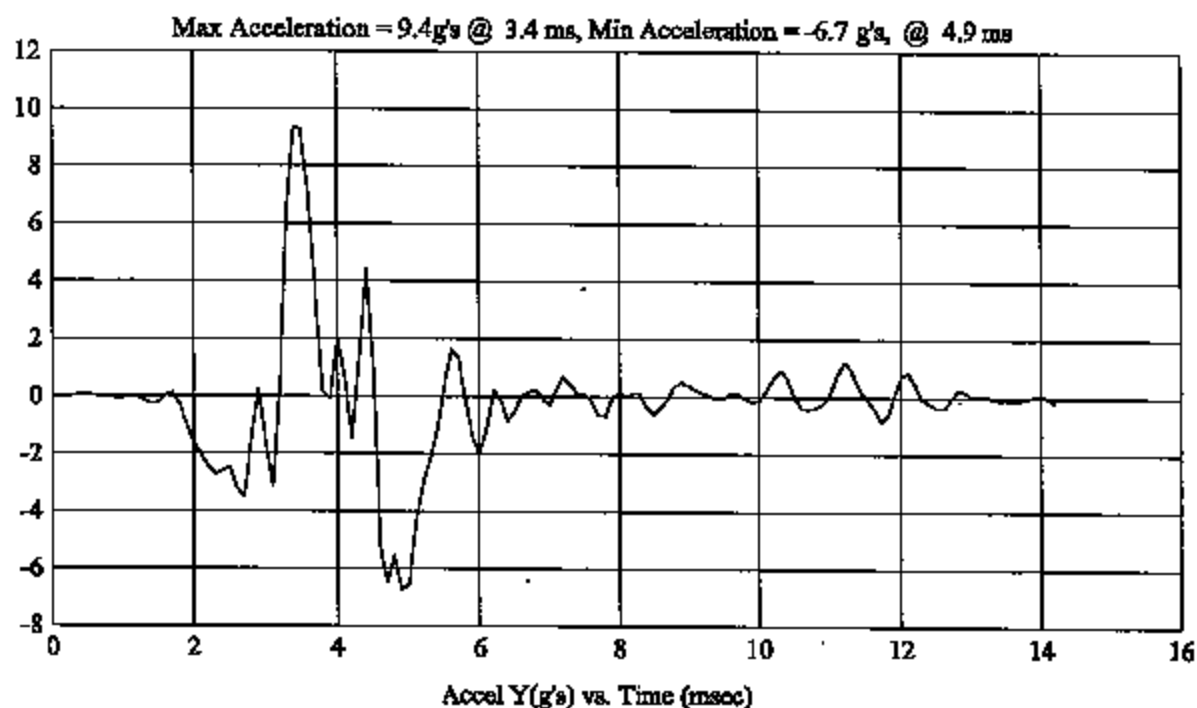
MGA Job Number: G05I7-001.6

Test Date: 6/14/05
Head #: 038



Head Drop
(Preliminary Test Report)Test Number: H38280
Test Description: 9.92

MGA Job Number: G0517-001.6

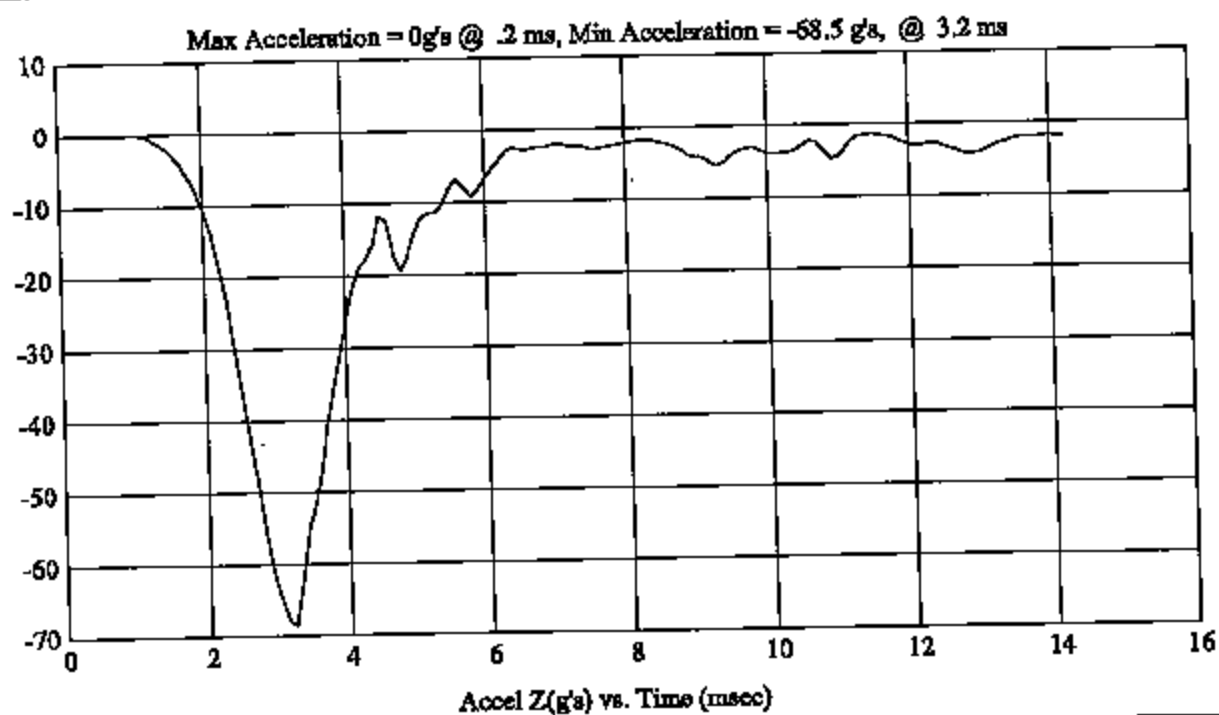
Test Date: 6/14/05
Head #: 038

Head Drop
(Preliminary Test Report)

Test Number: H38280
Test Description: 9.92

MGA Job Number: G0517-001.6

Test Date: 6/14/05
Head #: 03B



MICHIGAN OPERATIONS
 DATE: 3/20/03
 SUPERCEDES: MGATPHDT.5

DOC. NO: MGATP201UHD
 REVISION NO.: 6
 PAGE 6 OF 7

HEAD DROP TEST SUMMARY PART 572L

HEADFORM SERIAL NUMBER: <u>038</u> CALIBRATION DATE: <u>6-16-05</u>		
TEST PARAMETER	SPECIFICATION	TEST RESULTS
Weight	9.90 to 10.10 lbs.	9.92
Temperature	19° C to 26° C	23
Relative Humidity	10% to 70%	49
Peak Resultant Acceleration	225 G's to 275 G's	248.0
Peak Lateral Acceleration	15 G's Maximum	11.6
Unimodal Acceleration Curve	YES	Yes

FMH INSTRUMENTATION					
HEAD ACCELEROMETERS					
Channel Number	Manufacturer	Model Number	Serial Number	Date of Last Calibration	Date of Next Calibration
5	ENDEVCO	7264-2000	536197	5-2-05	11-2-05
6	ENDEVCO	7264-2000	536193	5-2-05	11-2-05
7	ENDEVCO	7264-2000	536353	5-2-05	11-2-05

REMARKS:

RECORDED BY: Randa

DATE: 6-16-05

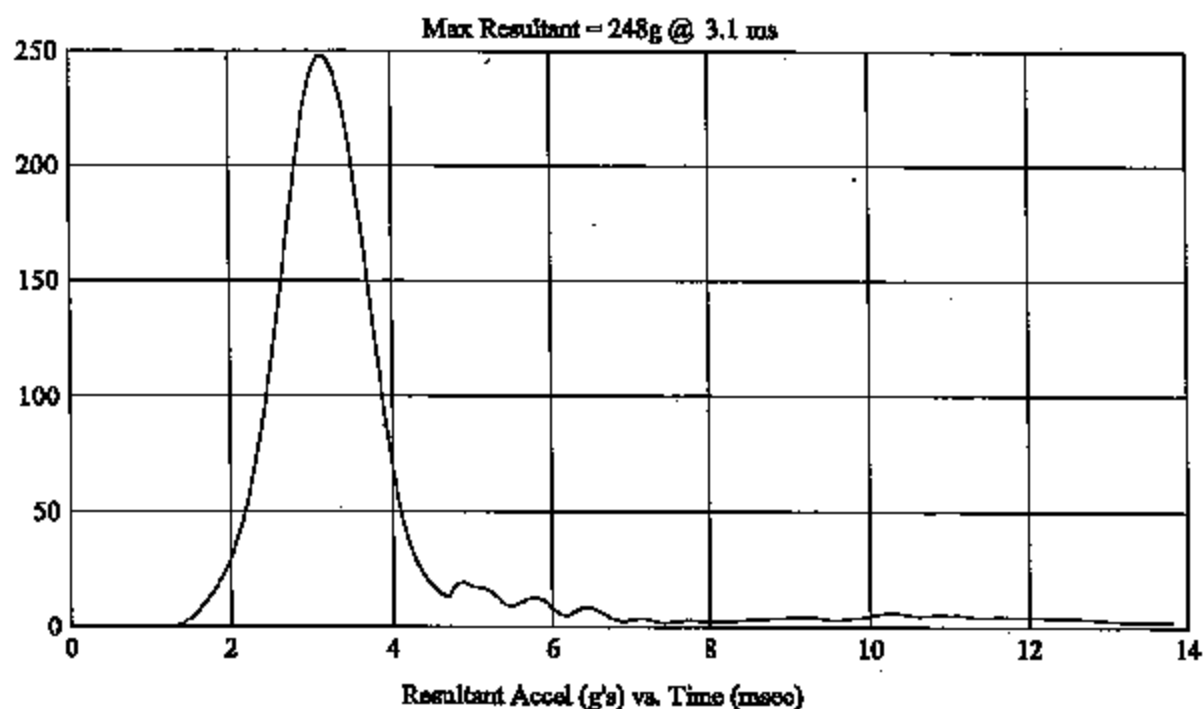
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Head Drop
(Preliminary Test Report)

Test Number: H38281
Test Description: 9.92

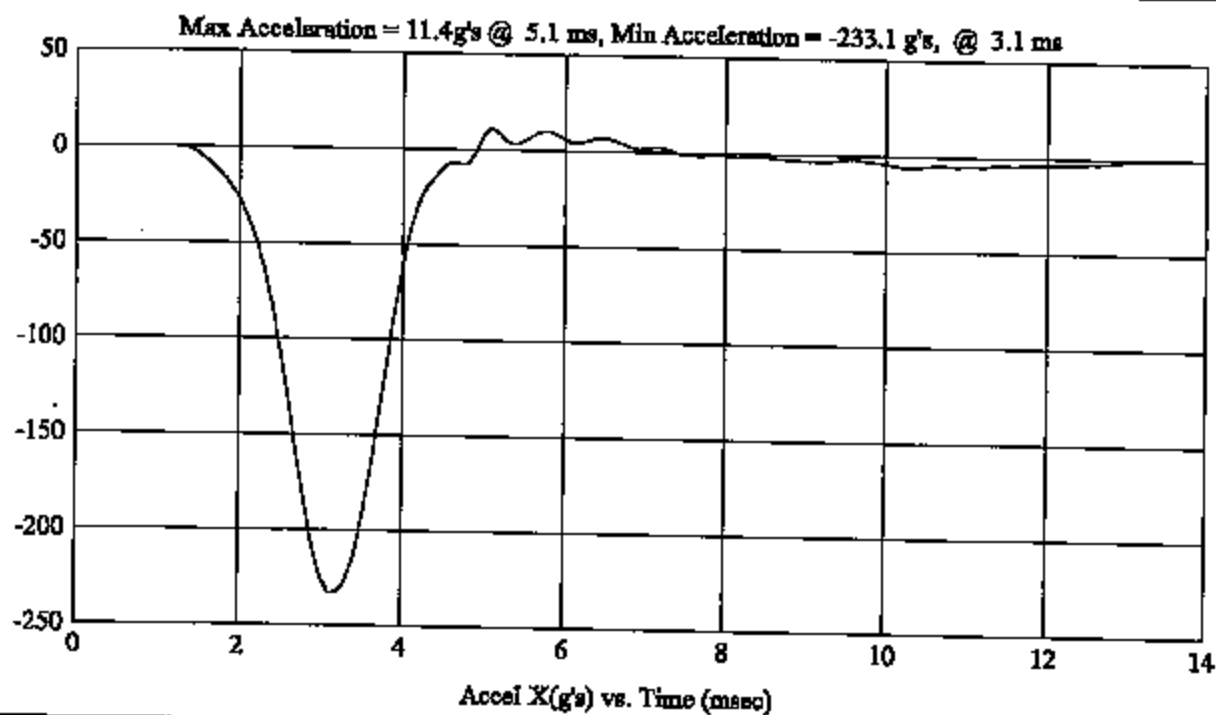
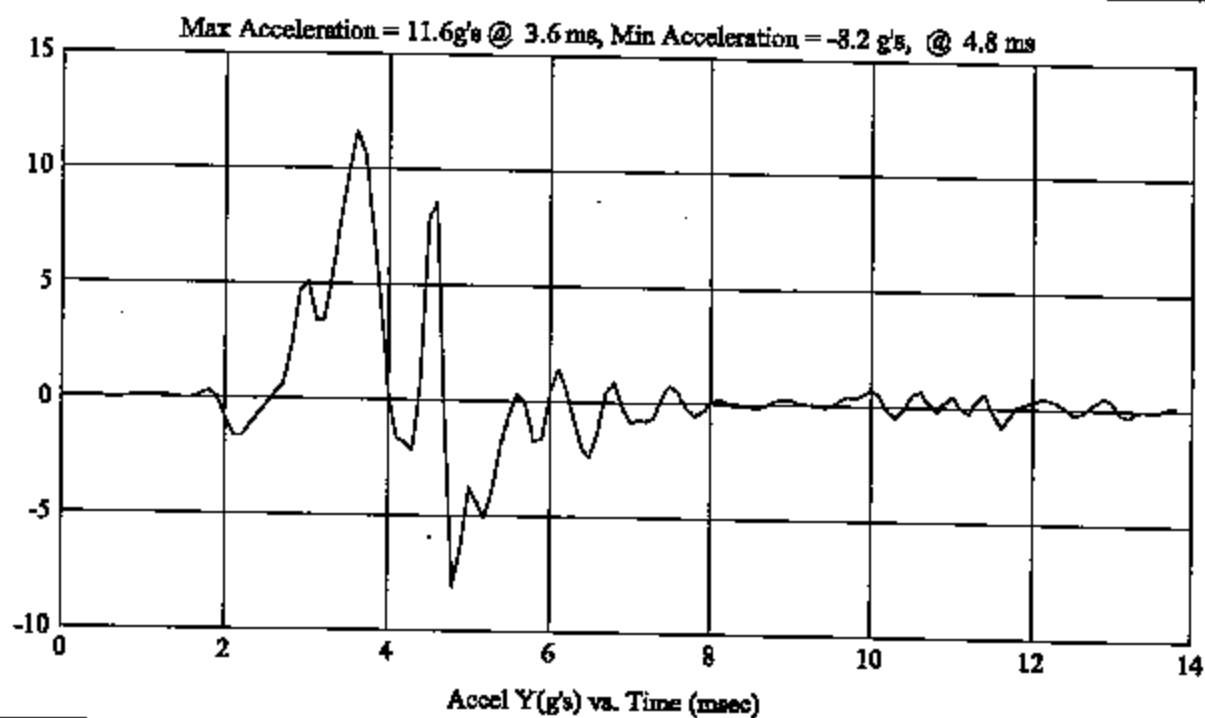
MGA Job Number: G0517-001.6

Test Date: 6/16/05
Head #: 38



Head Drop
(Preliminary Test Report)Test Number: H38281
Test Description: 9.92

MGA Job Number: G0517-001.6

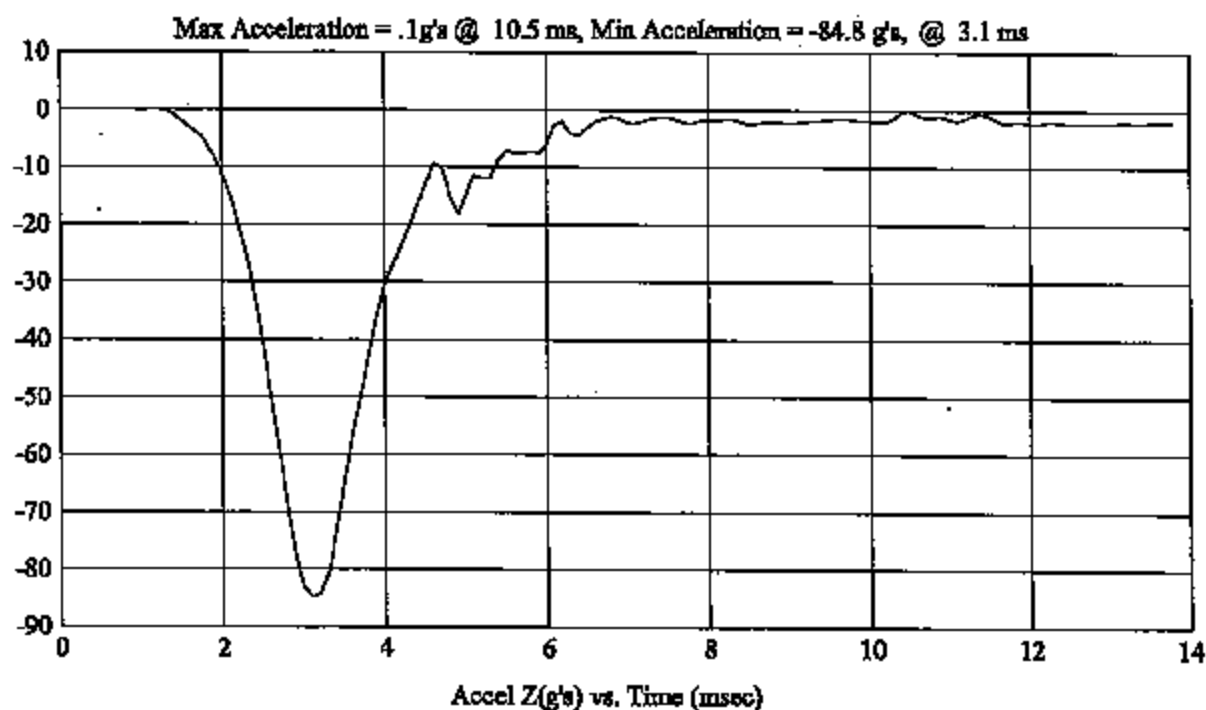
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Head #: 38

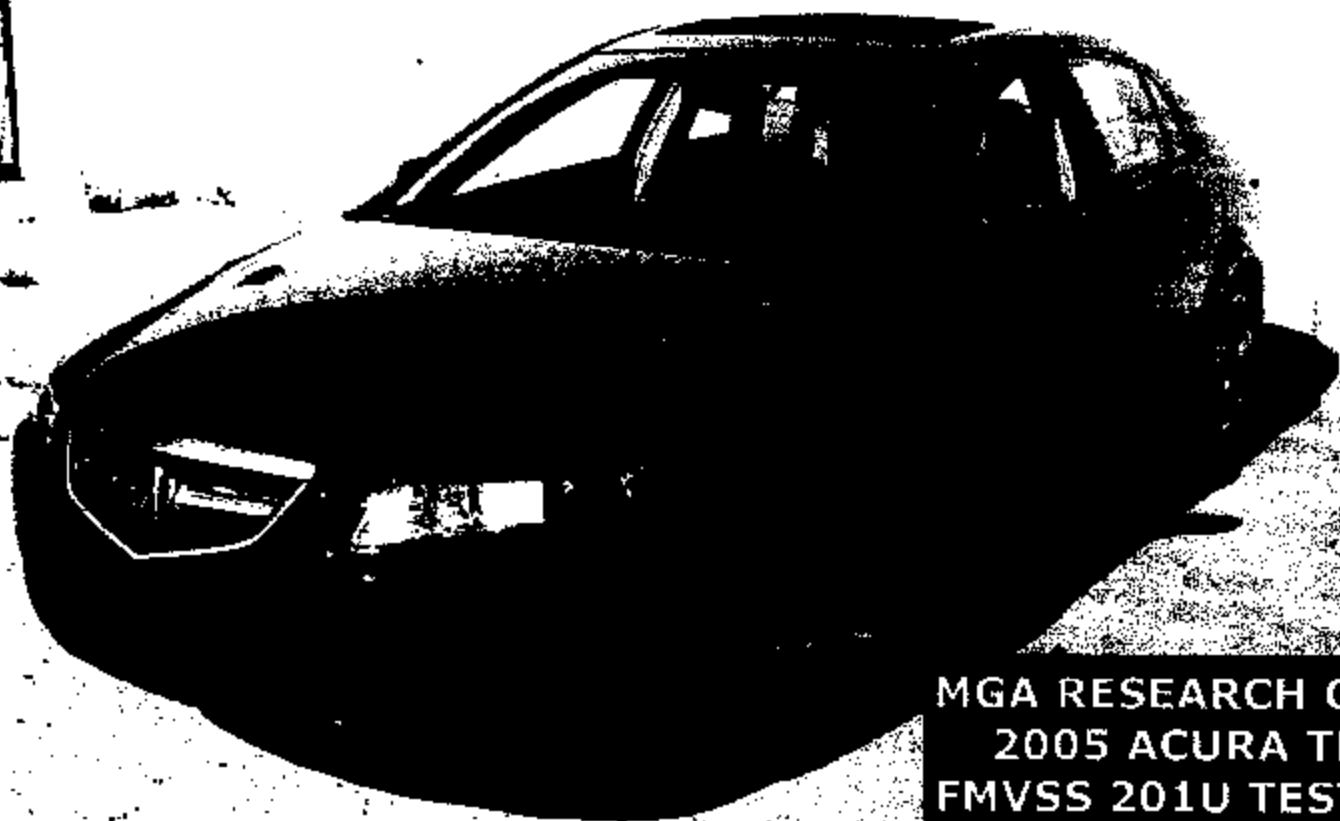
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Test Number: H38281
Test Description: 9.92

MGA Job Number: G0517-001.6

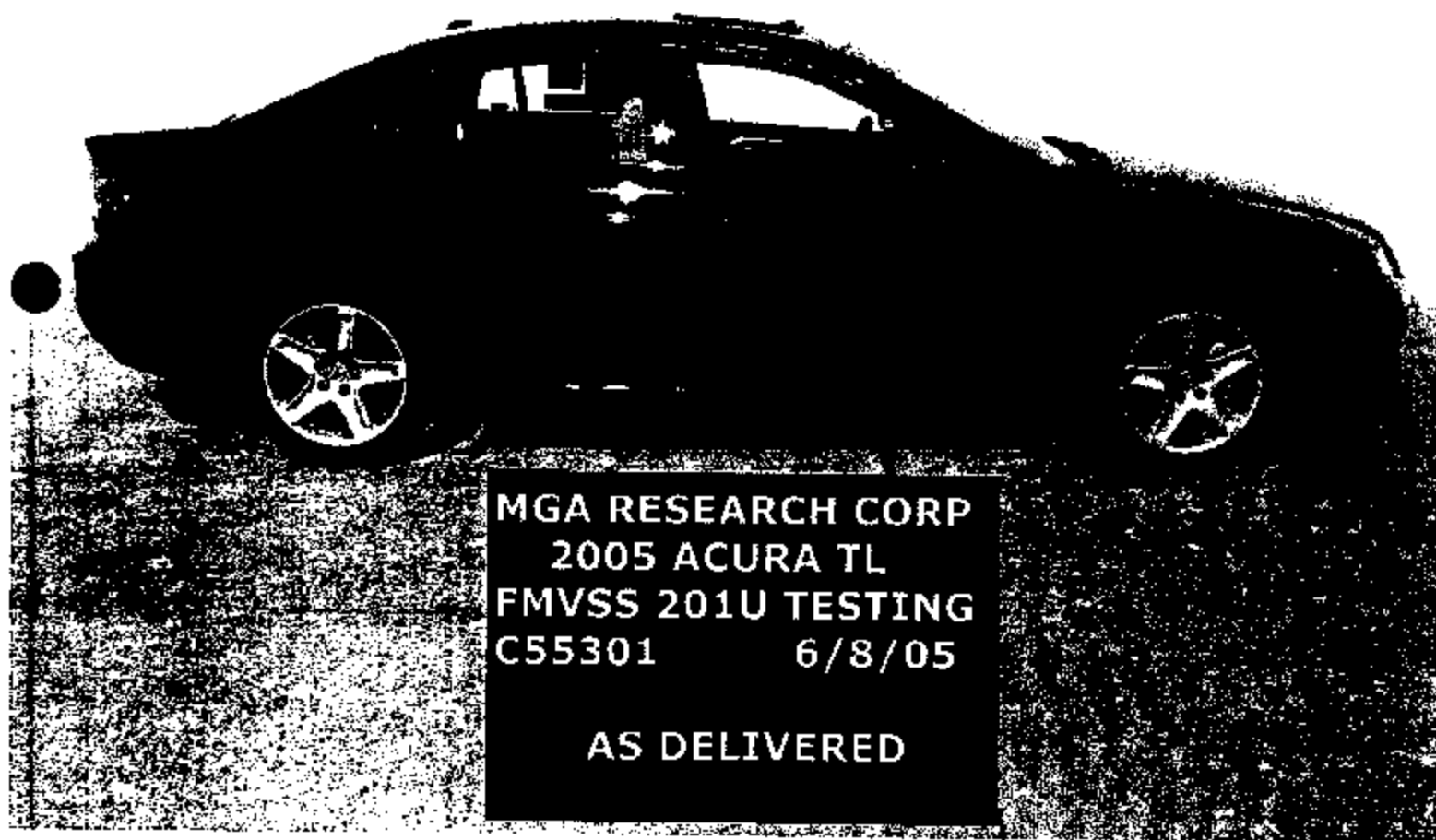
Test Date: 6/16/05
Head #: 38





MGA RESEARCH CORP
2005 ACURA TL
FMVSS 201U TESTING
C55301 6/8/05

AS DELIVERED



MGA RESEARCH CORP
2005 ACURA TL
FMVSS 201U TESTING
C55301 6/8/05

AS DELIVERED



MGA RESEARCH CORP
2005 ACURA TL
FMVSS 201U TESTING
C55301 6/8/05

AS DELIVERED



MGA RESEARCH CORP
2005 ACURA TL
FMVSS 201U TESTING
C55301 6/8/05

AS DELIVERED



TIRE AND LOADING INFORMATION

SEATING CAPACITY : TOTAL 5 : FRONT 2 : REAR 3

The combined weight of occupants and cargo should never exceed 395kg or 850lbs

ORIGINAL TIRE SIZE	COLD TIRE INFLATION PRESSURE	
P235/45R17 93W	FRONT	220kPa, 32PSI
	REAR	220kPa, 32PSI
COMPACT SPARE TIRE	COLD TIRE INFLATION PRESSURE	
T135/80R16 101M	420kPa, 60PSI	

SEE OWNER'S
MANUAL FOR
ADDITIONAL
INFORMATION

P0

MFD. BY HONDA OF AMERICA MFG., INC. 10/1/88

GVWR 4525LBS GAWR F 2495LBS R 2075LBS

THIS VEHICLE CONFORMS TO ALL APPLICABLE
FEDERAL MOTOR VEHICLE SAFETY, BUMPER,
AND THEFT PREVENTION STANDARDS IN EFFECT
ON THE DATE OF MANUFACTURE SHOWN ABOVE

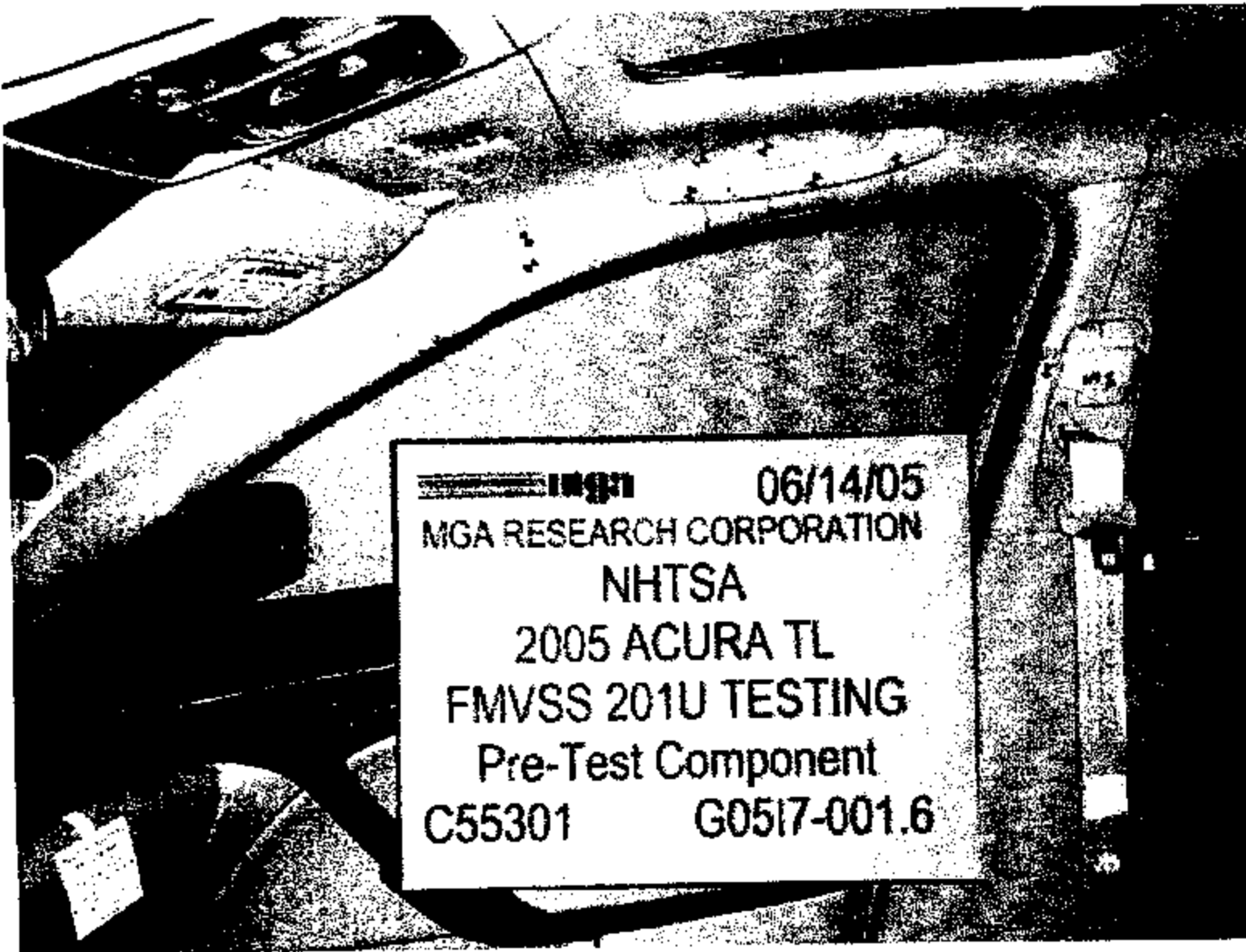
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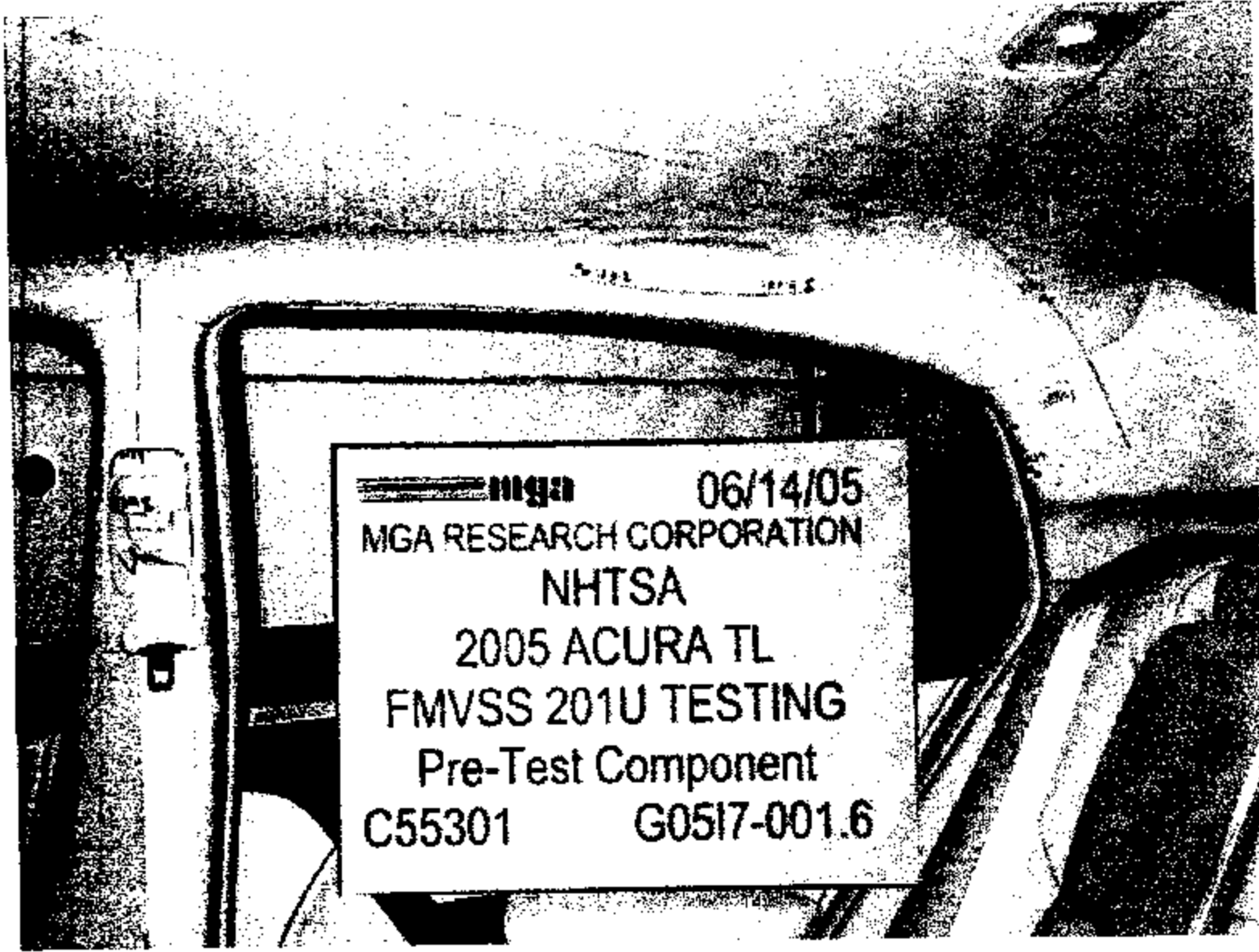
PASSENGER CAR

 06/14/05
MGA RESEARCH CORPORATION
NHTSA
2005 ACURA TL
FMVSS 201U TESTING
Pre-Test Component
C55301 G0517-001.6

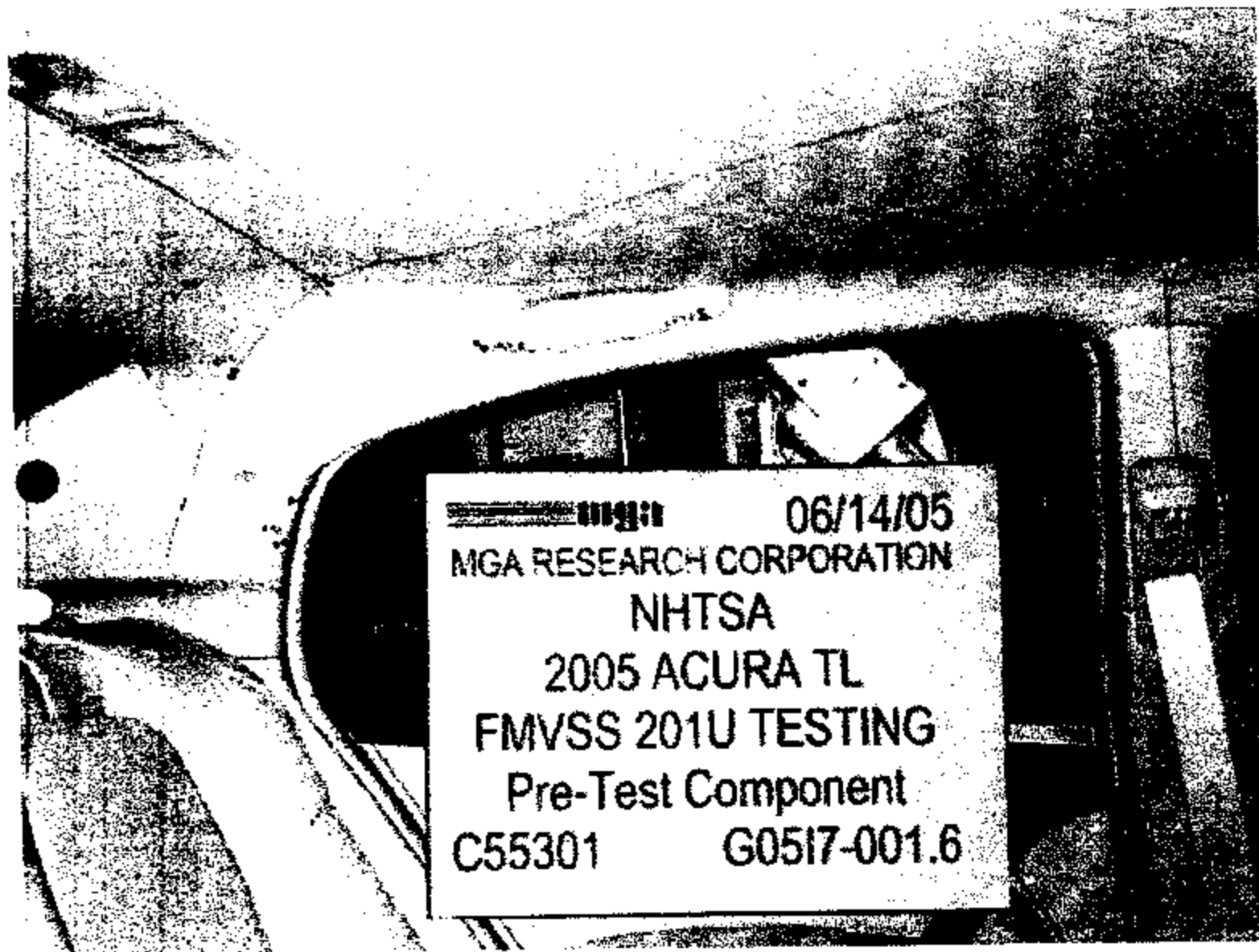
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NHTSA
2005 ACURA TL
FMVSS 201U TESTING
Pre-Test Component
C55301 G0517-001.6



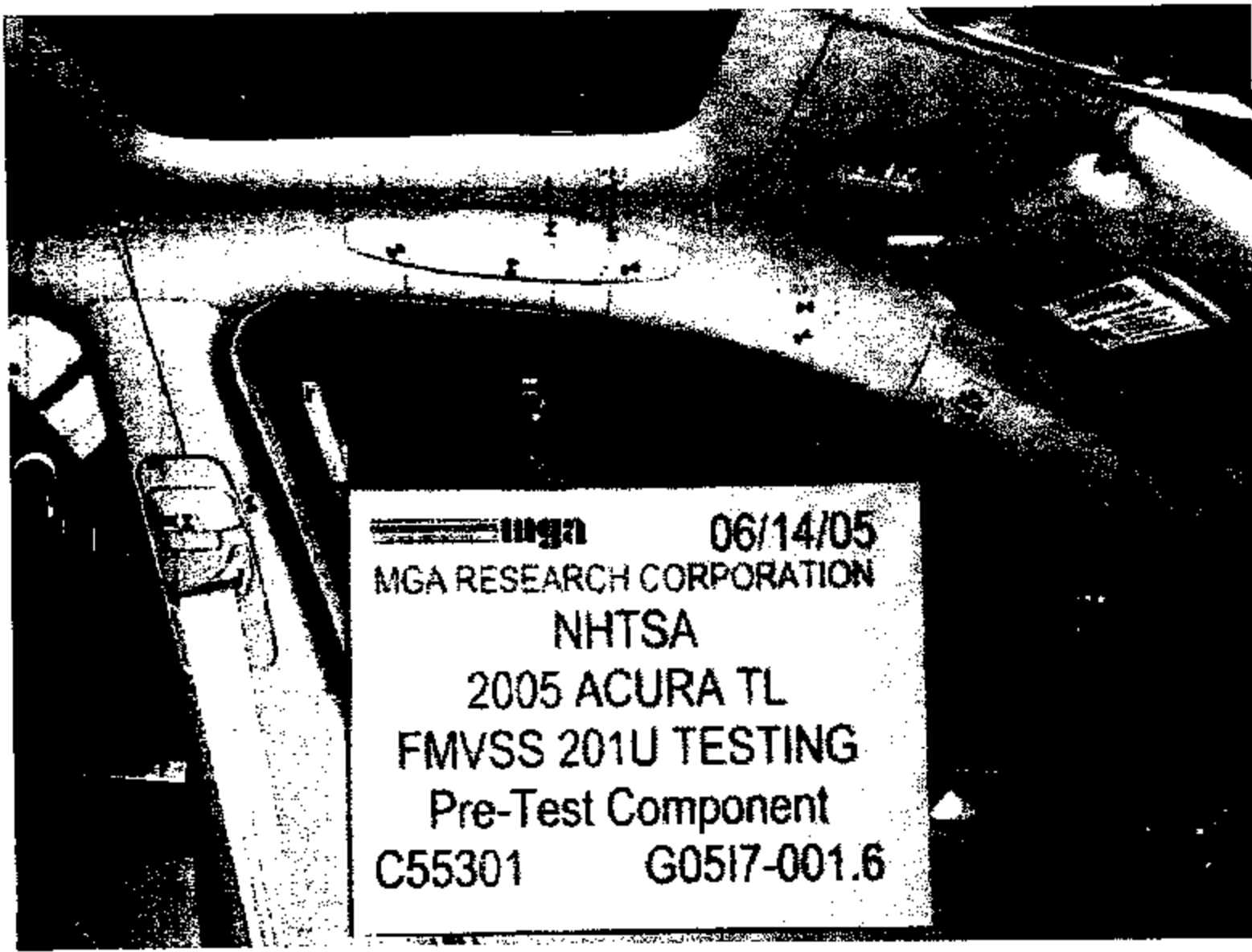
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C55301 G0517-001.6

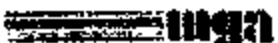


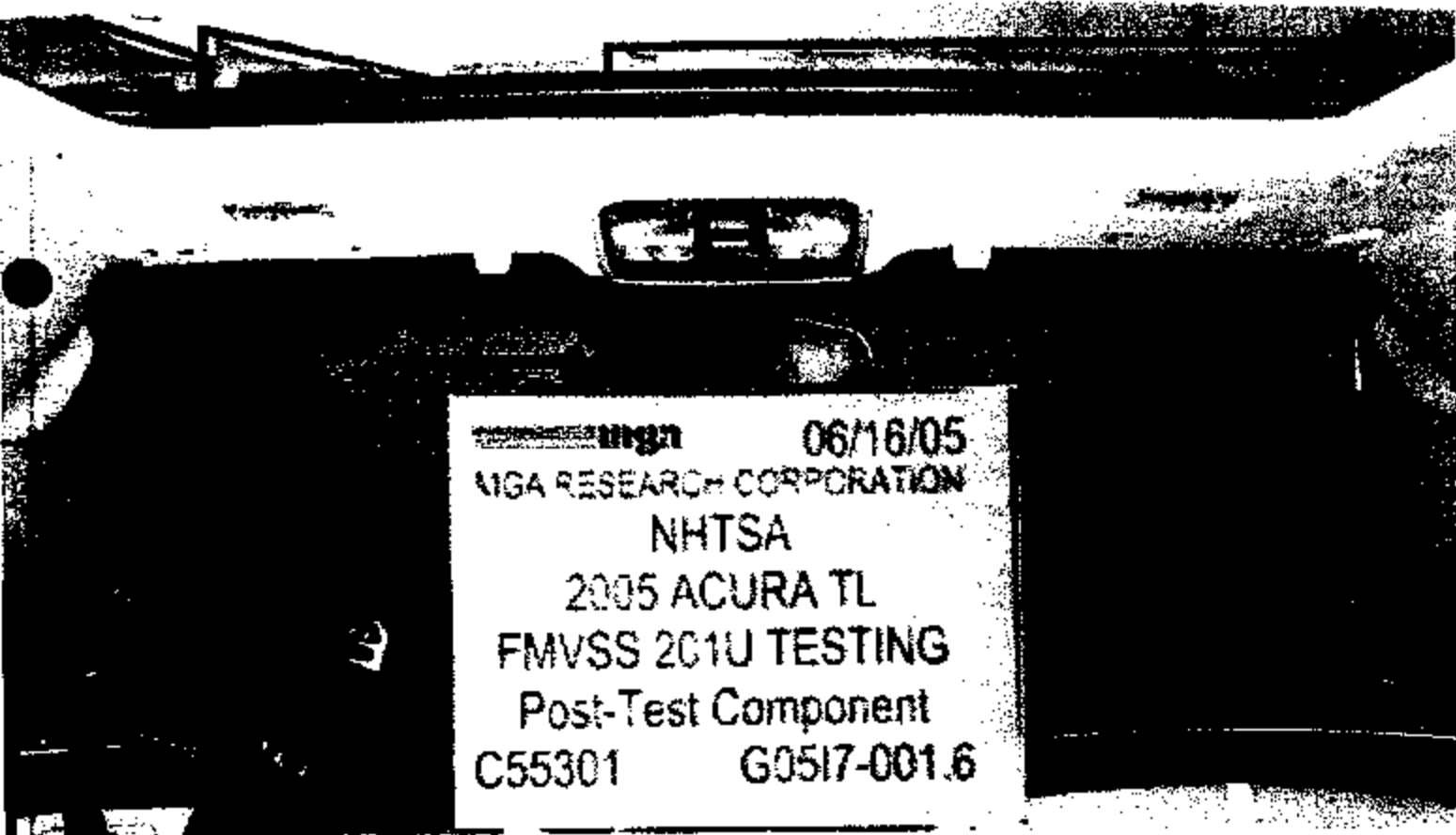
 **mga** 06/14/05
MGA RESEARCH CORPORATION
NHTSA
2005 ACURA TL
FMVSS 201U TESTING
Pre-Test Component
C55301 G0517-001.6



06/14/05
MGA RESEARCH CORPORATION
NHTSA
2005 ACURA TL
FMVSS 201U TESTING
Pre-Test Component
C55301 G0517-001.6



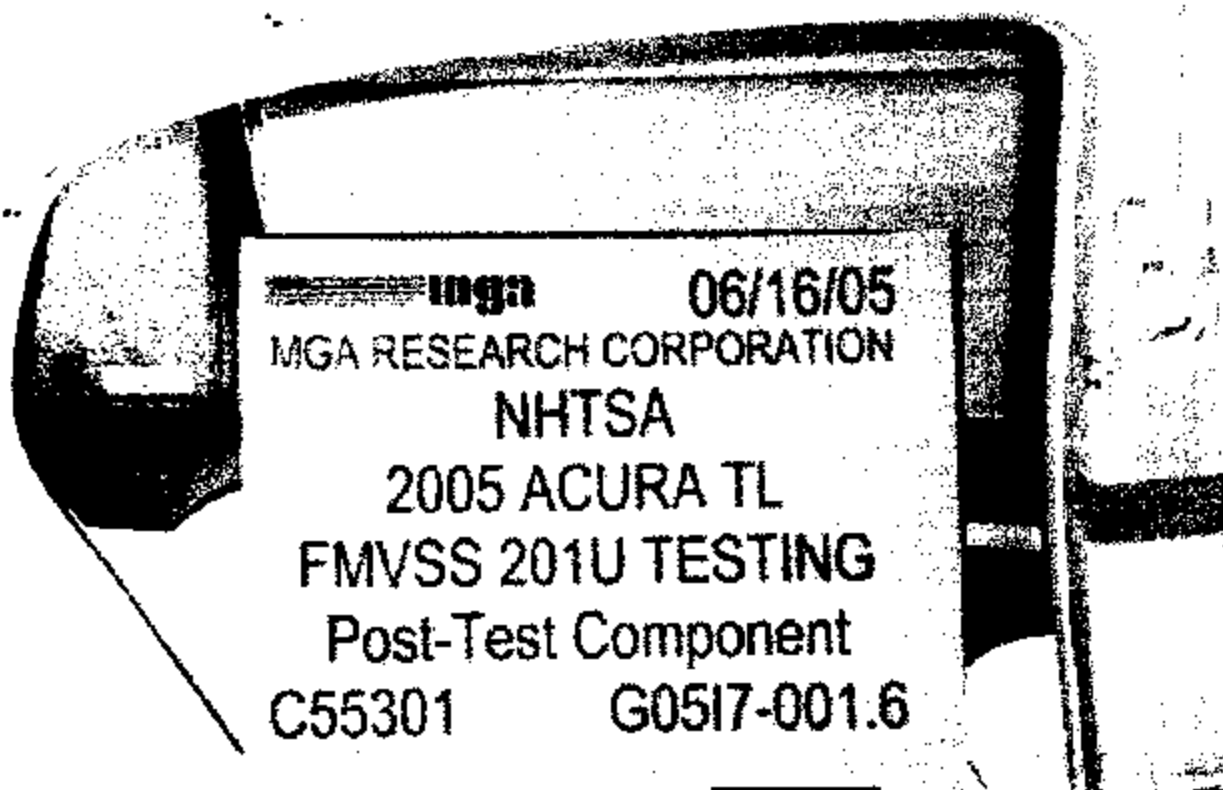
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MGA RESEARCH CORPORATION
NHTSA
2005 ACURA TL
FMVSS 201U TESTING
Pre-Test Component
C55301 G0517-001.6



06/16/05
NHTSA
2005 ACURA TL
FMVSS 201U TESTING
Post-Test Component
C55301 G0517-001.6

 06/16/05
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NHTSA
2005 ACURA TL
FMVSS 201U TESTING
Post-Test Component
C55301 G0517-001.6

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NHTSA
2005 ACURA TL
FMVSS 201U TESTING
Post-Test Component
C55301 G0517-001.6



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MGA RESEARCH CORPORATION
NHTSA
2005 ACURA TL
FMVSS 201U TESTING
Post-Test Component
C55301 G0517-001.6

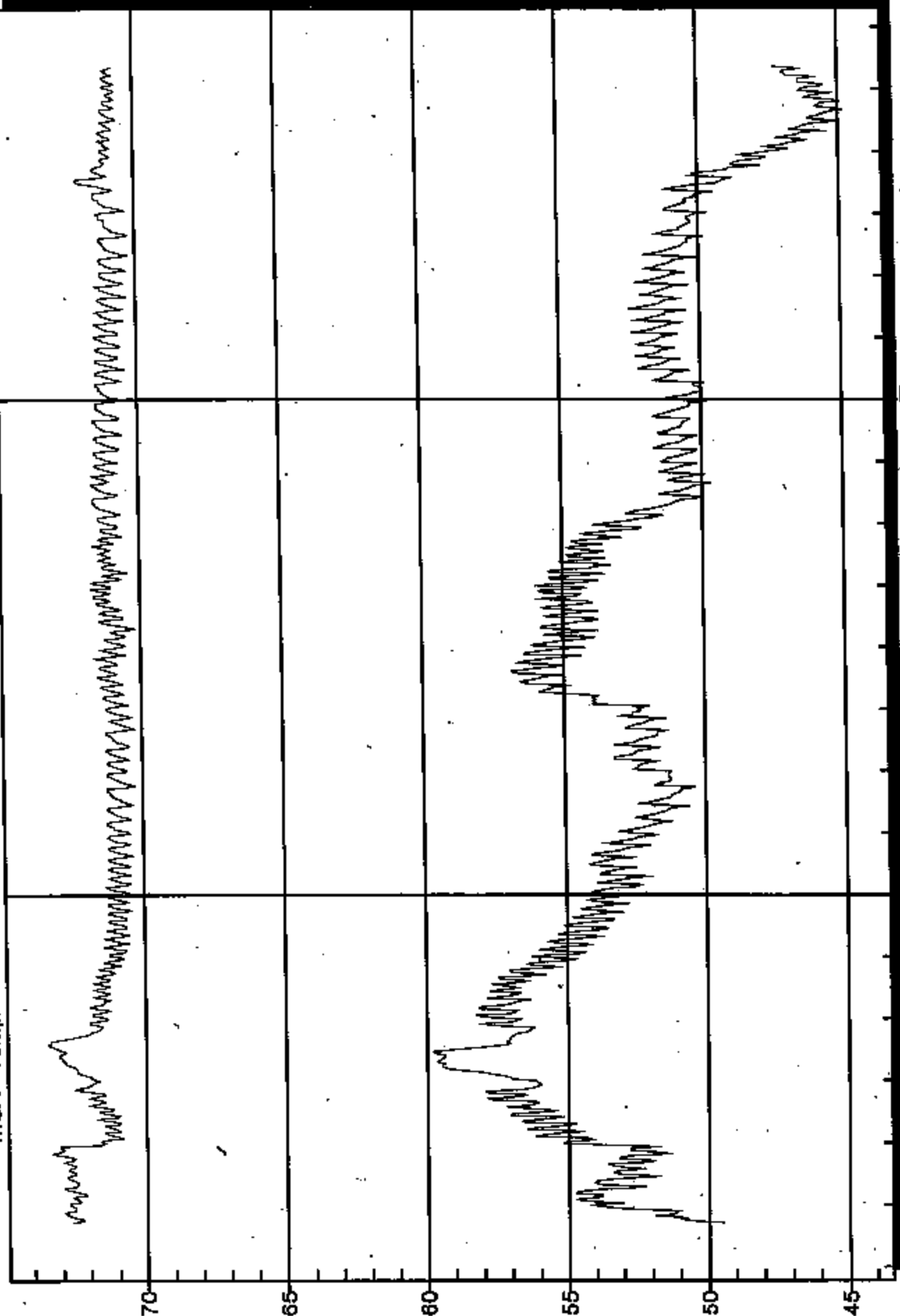
mga 06/16/05
MGA RESEARCH CORPORATION
NHTSA
2005 ACURA TL
FMVSS 201U TESTING
Post-Test Component
C55301 G0517-001.6

C55301 2006 ACURA TL

JUNE 14-16, 2005

MGA -RH/% Min: 44.9 Max: 59.8 Avg: 52.7

MGA -Temp/°F Min: 70.2 Max: 73.5



16 Thu

Date/Time

15 Wed

Jun 2005

A-1



mga research corporation

CALIBRATION CERTIFICATE

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	Name: <i>Reference Accelerometer</i>
Model: 7264-2000	Model: 301M09/484B
S/N: J35924	S/N: 862/247
Capacity: 2000 G	Capacity: 170 G
Calibration Date: 05/02/2005	Calibration Date: 05/11/2004
	Calibrated By: <i>Chris Vega/PCB Piezotronics, Inc.</i>

Test Reference Number: A0512

New DLR (100k , Units:G): 91.8

StdDeviation (%): 0.1

% Difference in DLR (New vs. Old): -2.461

Temperature (°F): 70

Humidity (%): 27

Performed By:

Todd Deane

Approved By:

Heena Kalita

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is ±0.1%.
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.

446 executive drive • troy, mi 48063

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CALIBRATION CERTIFICATE

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	Name: <i>Reference Accelerometer</i>
Model: 7264-2000	Model: 301M09/484B
S/N: J35919	S/N: 862/247
Capacity: 2000 G	Capacity: 170 G
Calibration Date: 05/02/2005	Calibration Date: 05/11/2004
	Calibrated By: <i>Chris Vega/PCB Piezotronics, Inc.</i>

Test Reference Number: A0512

New DLR (100k, Units:G): 97.0

StdDeviation (%): 0.556

% Difference in DLR (New vs. Old): 2.899

Temperature (°F): 70

Humidity (%): 27

Performed By:

Todd Deane

Approved By:

Donald Kalito

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is $\pm 0.1\%$.
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 $k=2$.

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CALIBRATION CERTIFICATE

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	Name: Reference Accelerometer
Model: 7264-2000	Model: 301M09/484B
S/N: J22664	S/N: 862/247
Capacity: 2000 G	Capacity: 170 G
Calibration Date: 05/02/2005	Calibration Date: 05/11/2004
	Calibrated By: Chris Vega/PCB Piezotronics, Inc.

Test Reference Number: A0512

New DLR (100k, Units:G): 95.6

StdDeviation (%): 0.511

% Difference in DLR (New vs. Old): 3.075

Temperature (°F): 70

Humidity (%): 27

Performed By:

Todd W. Wink

Approved By:

Donald Kalito

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is $\pm 4.1\%$.
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 $k=2$.

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CALIBRATION CERTIFICATE

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	Name: <i>Reference Accelerometer</i>
Model: 7264-2000	Model: 301M09/484B
S/N: J35800	S/N: 862/247
Capacity: 2000 G	Capacity: 170 G
Calibration Date: 05/02/2005	Calibration Date: 05/11/2004
	Calibrated By: <i>Chris Vega/PCB Piezotronics, Inc.</i>

Test Reference Number: A0513

New DLR (100k, Units:G): 98.4

StdDeviation (%): 0.323

% Difference in DLR (New vs. Old): -0.053

Temperature (°F): 70

Humidity (%): 27

Performed By:

Todd Decker

Approved By:

Heidi Kalito

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is $\pm 0.1\%$.
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.

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CALIBRATION CERTIFICATE

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	Name: <i>Reference Accelerometer</i>
Model: 7264-2000	Model: 301M09/484B
S/N: J35841	S/N: 862/247
Capacity: 2000 G	Capacity: 170 G
Calibration Date: 05/02/2005	Calibration Date: 05/11/2004
	Calibrated By: <i>Chris Vega/PCB Piezotronics, Inc.</i>

Test Reference Number: A0513

New DLR (100k, Units:G): 95.7

StdDeviation (%): 0.399

% Difference in DLR (New vs. Old): 3.367

Temperature (°F): 70

Humidity (%): 27

Performed By:

Todd Wenzel

Approved By:

Charles Kalito

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is $\pm 4.1\%$. 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 $k=2$.

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CALIBRATION CERTIFICATE

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	Name: <i>Reference Accelerometer</i>
Model: 7264-2000	Model: 301M09/484B
S/N: J35791	S/N: 862/247
Capacity: 2000 G	Capacity: 170 G
Calibration Date: 05/02/2005	Calibration Date: 05/11/2004
	Calibrated By: <i>Chris Vega/PCB Piezotronics, Inc.</i>

Test Reference Number: A0513

New DLR (100k , Units:G): 89.5

StdDeviation (%) 0.261

% Difference in DLR (New vs. Old): 0.777

Temperature (°F): 70

Humidity (%): 27

Performed By:

Todd Deane

Approved By:

Donald Kalito

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is $\pm 1.1\%$. 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 $k=2$.



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CALIBRATION CERTIFICATE

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	Name: <i>Reference Accelerometer</i>
Model: 7264-2000	Model: 301M09/484B
S/N: J36197	S/N: 862/247
Capacity: 2000 G	Capacity: 170 G
Calibration Date: 05/02/2005	Calibration Date: 05/11/2004
	Calibrated By: <i>Chris Vega/PCB Piezotronics, Inc.</i>

Test Reference Number: A0513

New DLR (100k , Units:G): 106.9

StdDeviation (%) 0.303

% Difference in DLR (New vs. Old): -2.83

Temperature (°F): 70

Humidity (%): 27

Performed By:

Todd Deane

Approved By:

David Kalito

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is $\pm 4.1\%$.
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.

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mga research corporation

CALIBRATION CERTIFICATE

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	Name: Reference Accelerometer
Model: 7264-2000	Model: 301M09/484B
S/N: J36193	S/N: 862/247
Capacity: 2000 G	Capacity: 170 G
Calibration Date: 05/02/2005	Calibration Date: 05/11/2004
	Calibrated By: Chris Vega/PCB Piezotronics, Inc.

Test Reference Number: A0513

New DLR (100k , Units:G): 102.8

StdDeviation (%) 0.197

% Difference in DLR (New vs. Old): 0.926

Temperature (°F): 70

Humidity (%): 27

Performed By:

Todd Danner

Approved By:

Donald Kalito

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is $\pm 4.1\%$.
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 research corporation****CALIBRATION CERTIFICATE**

Sensor Information	Reference Sensor Information
Name: 2000 G Accelerometer	Name: <i>Reference Accelerometer</i>
Model: 7264-2000	Model: 301M09/484B
S/N: J36353	S/N: 862/247
Capacity: 2000 G	Capacity: 170 G
Calibration Date: 05/02/2005	Calibration Date: 05/11/2004
	Calibrated By: <i>Chris Vega/PCB Piezotronics, Inc.</i>

Test Reference Number: A0513

New DLR (100k , Units:G): 98.8

StdDeviation (%) 0.28

% Difference in DLR (New vs. Old): 2.204

Temperature (°F): 70

Humidity (%): 27

Performed By:

Todd Denny

Approved By:

Helen A. Kalito

All calibrations are traceable to the National Institute of Standards and Technology. Estimated uncertainty of the measurement is ±4.1%.
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.

~Certificate of Calibration~

Model Number: 484B	NLR.T. Project #: 8720512
Serial Number: 2478	Calibration Date: 06H 1/20/94
Description: Signal Conditioner	Recalibration Date:
Test Procedure: AT-108-1	Calibration Technician: Chris Vega <i>CV</i> #36
Temperature: 74° F	Relative Humidity: 42%

<u>TESTS</u>	<u>BEFORE</u>	<u>AFTER</u>
INPUT VOLTAGE ($24 \pm 0.1V$)	24.02	24.02
ICP CURRENT ($4 \pm 0.6mA$)	3.97	3.97
DC OFFSET A.C. MODE (volts)	-.001	-.001
GAIN (REF 1 VRMS, 1kHz)	1.0000	NOT ADJUSTABLE
DRIFT (DC MODE)	< 2mV/min.	NOT ADJUSTABLE
FREQUENCY RESPONSE 10 Vp-p, 1 kHz REFERENCE	FLAT TO 200kHz	NOT ADJUSTABLE

As Received: In tolerance

As Left: In tolerance

Special Notes: MGA Research

This document certifies that the equipment referenced above meets published specifications. The calibration procedure is in compliance with ISO 10012-1, and former MIL-STD-18002A and is traceable to NIST. Measurement uncertainty (95% confidence level) coverage factor of 2 for scale factors is $\pm 0.2\%$.

This certificate may not be reproduced, except in full, without written approval of

~ Calibration Certificate ~

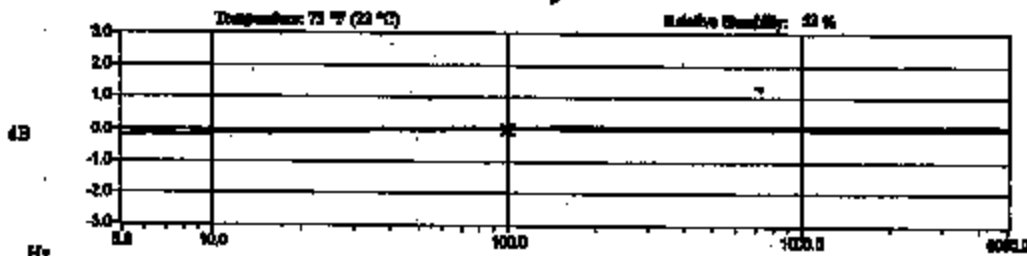
Per ISO 10002-21

Model Number: 301MB9/404B (994M) SYSTEMSerial Number: 862/2478Description: ICPB AccelerometerMethod: Back-to-Back Comparison CalibrationManufacturer: PCB

Calibration Data

Sensitivity @ 100.0 Hz: 31.17 mV/g Output Bias: 0.6 VDC
(3.179 mV/m/s²) Temperature Sensitivity: 3.0 %

Sensitivity



Data Points

Frequency (Hz)	Dev. (%)	Frequency (Hz)	Dev. (%)	Frequency (Hz)	Dev. (%)
5.0	-2.5	REF. FREQ.	0.0	5000.0	1.1
10.0	-1.9	300.0	0.7		
15.0	-1.4	500.0	0.8		
30.0	-0.6	1000.0	1.0		
50.0	-0.2	3000.0	1.1		

Mounting Surface: Substrate (without stress coating) Mount: and tape

Amplifier Load Imp.: 50 Ω (50.1 mΩ)

The properties listed may be subject to change without notice. PCB Piezotronics, Inc. warrants that the calibration was performed in accordance with the specifications of the calibration agency. The properties listed are for information only. The calibration agency is: 1 g = 9.80665 m/s².

Condition of Unit

As Found: In Tolerance, No Adjustment NecessaryAs Left: In Tolerance

Notes

1. Calibration is NIST Traceable thru Project 822/267400 and PTB Traceable thru Project 1055.
2. This certificate shall not be reproduced, except in full, without written approval from PCB Piezotronics, Inc.
3. Calibration is performed in compliance with ISO 9001, ISO 10012-1, ANSI/NCSL Z540-1-1994 and ISO 17025.
4. See Manufacturer's Specification Sheet for a detailed listing of performance specifications.
5. Measurement uncertainty (95% confidence level with coverage factor of 2) for frequency ranges tested during calibration are as follows: 5-9 Hz: $\pm 2.0\%$, 10-99 Hz: $\pm 1.5\%$, 100-1999 Hz: $\pm 1.0\%$, 2-10 kHz: $\pm 2.5\%$.

Technician: Chris DiMaggio CTSDate: 05/13/04

Cert No: 0002.04

PCB PIEZOTRONICS

VIBRATION DIVISION

2425 Walden Avenue Depew, NY 14043

TEL: 716-694-0013 FAX: 716-694-0005 www.pcb.com

PAGE 1 OF 2

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Interim Certification Document

Part Description: Gage Certification Date: 08/17/05 Expiry: 03/03-03-03/12
 Single Point 2 Sigma: 000-02-44-001mm (44-00007) Certificate: 030112206405
 Linear Displacement 2 Sigma: 000-02-44-072mm (44-00007) Ambient Temperature: 23°C +/- 3°C
 Measurement Standards: N.I.S.T., U.K.A.S. Traceability
 Ball-Yard Level Ball Bar Kit: Kit Number: 148 ASTM E1005 Cert No: 1101040601 Date: 08/18/05

Therm Shop Gauge, Midway Corporation Code No.: 815-744 N.I.S.T. Cert No: 11010728 Date: 10/09/03
 Asset No.: 883 U.K.A.S. Cert No: 144891 Date: 11/20/03

Measuring ranges: 1.2m

*These items have been selected with due regard to their use in the field and are not intended for use in the laboratory. The use of these items in the field is at the user's risk. The user is responsible for the accuracy of the results obtained in the field.

Certification Results

A single bar quadrate certificate included with all FARO Arms and composed of 2 vertical level single point repeatability test in 4 quadrants with 6 repeats from 4 directions
 Single Gauge Test in 4 quadrants, 3 orientations per quadrant
 3 Length, 3 Position (one ball bar test in 4 quadrants)
 Calibration and certificate used are to procedures developed in accordance with ASME B89.4.20-2002

Instrument conditions as received

Not within specifications

Instrument condition outgoing

Within specifications

Technician: Mike [Signature] Date: 2-2-05 01/05

David Edwards

This certificate shall not be reproduced, copied or in any way used for purposes other than those indicated on the certificate.

The holder of this certificate indemnifies FARO Technologies, Inc.

FARO Technologies, Inc.
 Michigan Regional Office
 P.O. Box 240-000-0020

48000 Magellan Drive
 Warren, MI 48090
 USA

FAROCERT-000-0000

FARO

LABORATORY
 ACCREDITATION
 BUREAU
 ISO/IEC 17025 Accredited



4700 Barden Court S.E. • Kentwood, MI 48612 • Telephone: 616.898.5124 • Fax: 616.898.2304



Certificate of Calibration

380A Research
486 Executive Drive
Troy, MI 48063

Gage Number: 380A48072
Gage Desc: Digital Protractor
Manufacturer: Pro 330
Model Number: N/A
Serial Number: N/A

Order Number: 43332
Report Number: 668064067
Page: 1 of 1

Customer PO: 87-84-0234
Last Calibration: 1/23/94
Calibration Date: 2/2/95
Next Calibration: 2/2/96

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 Prot. No. CP-045 and complies with the ANSI/NCSL Z540-1 and ISO/IEC 17025 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 this calibration item to drift out of calibration before the recommended interval has expired. Statements of compliance made using simple acceptance rule.

Standard Used
Gage Rkr Set S&M 941326
DoAll Size Bar ID#1879

Cal Date
2/14/95
120904

Exp Date
2/14/98
120905

Traceable No.

821270003-04 & 3806040570

Calibration Procedure
Uncertainty Expressed at
95% confidence 0.002
± 0.0019 degrees

Results:

	Nominal	As Found Readings	
		Actual	Deviation
Stroke	5.00	5.0	0.00
Decimal Deg.	10.00	10.0	0.00
	20.00	20.0	0.00
Tolerance	30.00	29.9	-0.10
±.2° Maximum Error	40.00	40.0	0.00

Reference Level Checks: Within ±.1 degrees

	Nominal	As Left Readings	
		Actual	Deviation
	5.00	5.0	0.00
	10.00	10.0	0.00
	20.00	20.0	0.00
	30.00	29.9	-0.10
	40.00	40.0	0.00

Reference Level Checks: Within ±.1 degrees

Comments: Environmental conditions during calibration: 66 deg. F., 54 % RH
No adjustments required.

[Signature]
Jesse Hilschky
Calibration Technician

Issued: 2-2-95

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



Certificate Number: 20050092Cal

Detroit Testing Laboratory, Inc.



7111 E. 17 Mile Road, Warren, MI 48090-8700 • (588) 784-0000 • FAX (588) 784-0045 • www.dtl-inc.com

Certificate of Calibration

Equipment Information

Customer: MGA Research Corporation
446 Executive Drive
Troy, MI 48063

Model: TM325
Serial Number: 04065532
Manufacturer: Eltek
Description: Thermohygrometer

System ID: MGA00146

Customer Asset No.:

Calibration Information

Calibration Date: 1/14/05
Calibration Due: 1/14/06
Calibration Interval: 12 Month
Rec'd In Test: Yes/Pass
Returned In Test: Yes/Pass
Performed On Site: No
Calibration Limitation:

Procedure Used: 3SK5-4-84-1/98, MFR
Calibrated to: $\pm 0.8^\circ\text{F}$, $\pm 2\%\text{RH}$
Temperature: 23 $^\circ\text{C}$
Humidity: 35 $\%\text{RH}$

The Uncertainty of the Measurements Pertaining to This Calibration are Estimated to be: 0.79°F , 1.16RH

Pass/Fail or In/Out of Tolerance statements are opinions only of the person performing the calibration based on data from measurements at the time they were made, procedure utilized, professional experience, and the uncertainty associated with the calibration. It is ultimately up to the user of this equipment to determine if this item meets their specific requirements for accuracy for

Calibration Standards Used

System ID:	Model:	Serial:	Manufacturer:	Description:	Date Due:
07683	5690	10434	Bruce-Hart	TEMP. PROBE	3/26/05
09324		09324	DTL	ASTM Salt Solutions	1/27/05
10545	A2/HP101A-K	516193516	Rotunk	Calibrator Thermohygrometer	3/22/05

Any calibration interval and due date of this device, if stated, is at the request of the customer. Due to the fact that many variables may affect drift of reported values over time there is no assurance implied that this item will maintain its stated accuracy through the end of this interval.

This Calibration has been performed per requirements of ISO 17025:1999. Reported results are from standards with uncertainty that are traceable to the International System of Units (SI), derived from physical constants, or to measurement, national measurement standards, or recognized measurement standards. Measurement uncertainty is expressed as a confidence level of approximately 95% (coverage factor

Signature: <u>Jerry Wells</u> Jerry Wells Technician	Date: <u>1-17-05</u>	Approved: <u>Paul W.</u> Paul W. Date: <u>1-18-05</u>
Date Printed: 01/17/05	Printed By: Jerry Wells	Page: 1 of 2 QPC 104B-1 Rev 4/17/03

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Detroit Testing Laboratory, Inc.

CALIBRATION DATA SHEET

Date: 04/05
 DTL ID: M3A00446
 Cert. No. 2005000234

Cal Point Applied Temp °F	Reading as Found °F	Reading as Left °F	Deviation as Found °F	Deviation as Left °F	% of Allowed Dev as Found	% of Allowed Dev as Left
std	std	std				
60.08	60.4	60.4	0.32	0.32	40.0	40.0
70.68	71.1	71.1	0.27	0.27	33.7	33.7
82.65	82.3	82.3	-0.25	-0.25	-31.3	-31.3
Applied Humidity						
% RH	% RH	% RH	% RH	% RH		
32.9	34.1	34.1	1.2	1.2	60.0	60.0
75.3	77.0	77.0	1.7	1.7	85.0	85.0

MICHIGAN OPERATIONS
DATE: 2/20/04
SUPERVISOR: MEGATYING

DOC. NO. MESA0006
REV. 00000000000000000000
PAGE 3 OF 3

Tape Measure Calibration Certificate

Reference Steel Rule

Brand: Jordan
S/N: 106800122
Calibration Date: 4/8/04

Subject Tape Measure

Brand: STANLEY
S/N: 458
Calibration Date: 3/17/04

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

If all differences are $\pm 1/32$ of an inch (1 mm), then the tape measure is acceptable.

Pass X Fail Maximum Difference = 0

Date: 3/7/05 Performed By: DJ/M/K

All calibrations are traceable to the National Institute of Standards and Technology. National uncertainty of the measurement is ± 0.001 .
All certification data and equipment are on file for inspection at any request. Best uncertainty represents expanded uncertainty
expressed at approximately 95% confidence level using a coverage factor k=2.

3-7-05

