

FINAL REPORT NUMBER 201U-MGA-04-03

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

GENERAL MOTORS CORPORATION
2004 CHEVROLET ASTRO VAN
NHTSA No. C40108

MGA RESEARCH CORPORATION
446 Executive Drive
Troy, Michigan 48083



Test Dates: March 23-26, 2004
Report Date: March 29, 2004

FINAL REPORT

PREPARED FOR:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
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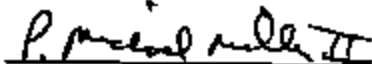
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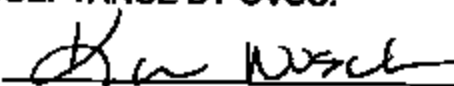


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16. Abstract A compliance test was conducted on the subject 2004 Chevrolet Astro Van, NHTSA No. C40108, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-201U-01 for the determination of FMVSS 201U compliance. The test was conducted at MGA Research Corporation in Troy, Michigan on March 23-26, 2004. Test failures identified were as follows: NONE The data recorded seems to indicate that the 2004 Chevrolet Astro Van 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 2004 Chevrolet Astro Van, meets the performance requirements of FMVSS 201U, Occupant Protection in Interior Impact - Upper Interior Head Impact Protection.

Tests were conducted on March 23-26, 2004 on a 2004 Chevrolet Astro Van, manufactured by General Motors Corporation.

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 2004 Chevrolet Astro Van was equipped with A, B, C, and rear-pillars, an adjustable seat belt anchorage on each B-pillar, a fixed seat belt anchorage on the driver side C-pillar, a fixed seat belt anchorage on the side rail between the C and rear-pillars on each side, a fixed seat belt anchorage mounted on the headliner forward of the passenger C-pillar, an assist handle located on the passenger side of the A and B-pillars, a speaker located in each rear-pillar, and two overhead lighting consoles.

Upon completion of targeting the test vehicle, ten (10) targets were chosen to be impacted based upon engineering judgment and certification test data provided by General Motors Corporation. Targets were chosen which appeared most likely to give high HIC(d) values. The ten (10) targets chosen were:

AP1	BP2	SR1	UR4 (SR2A)
AP2	BP3	SR2A	
BP1	OP1	SR3-1	

The 2004 Chevrolet Astro Van 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: 2004 Chevrolet Astro Van

VEH. NHTSA NO.: C40108 VIN: 1GNDM19X84B1 COLOR: Grey

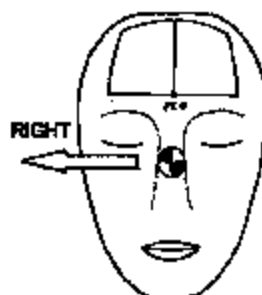
VEH. BUILD DATE: September, 2003 TEST DATES: March 23-26, 2004

TEST LABORATORY: MGA Research Corporation

OBSERVERS: David Gotwals, Nicholas Brzuch, Scott Kreiger

TARGET	VEHICLE SIDE	HORIZONTAL ANGLE (deg)	VERTICAL ANGLE (deg)	VELOCITY (kph)	HIC(d)	FMH HIC	IMPACT ON FMH (mm)	
							Above	Left/Right
AP1	Left	249	24	23.8	493	433	25	2 Left
AP2	Right	156	30	23.8	629	614	12	14 Left
BP1	Left	270	30	23.8	494	435	32	8 Right
BP2	Right	90	1	23.9	685	687	9	20 Left
BP3	Left	280	-7	23.6	494	435	12	2 Left
OP1	Left	270	8	24.0	571	536	22	1 Left
SR1	Right	90	45	23.5	655	648	10	10 Left
SR2A	Left	270	35	23.7	561	522	19	3 Left
SR3-1	Left	270	38	24.0	507	451	15	3 Left
UR4 (SR2A)	Right	90	50	23.4	652	644	23	5 Left

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



POST TEST COMMENTS:

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

AP2 Right: A-Pillar trim cracked during impact.

BP1 Left: B-Pillar trim separated from pillar.

BP3 Left: The B-Pillar trim cracked during impact.

UR4 Right: Slight headliner deformation.

No damage was observed for any other targets.

REMARKS:

The targets listed were impacted in the following order:

Right: BP2, UR4 (SR2A), SR1, AP2

Left: AP1, SR2A, BP3, BP1, SR3-1, OP1

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

RECORDED BY: David G. Gotwals

DATE: March 26, 2004

APPROVED BY: Helen A. Kaleto

TABLE 2-2
GENERAL TEST AND VEHICLE PARAMETER DATA

VEH. MOD YR/MAKE/MODEL/BODY: 2004 Chevrolet Astro Van

VEH. NHTSA NO.: C40108 VIN: 1GNDM19X84B XXXXXXXXXX COLOR: Gray

VEH. BUILD DATE: September, 2003 TEST DATES: March 23-26, 2004

TEST LABORATORY: MGA Research Corporation

OBSERVERS: David Gotwals, Nicholas Brzuch, Scott Kreiger

INTERIOR TRIM INFORMATION: A, B, C, and rear-pillars, an adjustable seat belt anchorage on each B-pillar, a fixed seat belt anchorage on the driver side C-pillar, a fixed seat belt anchorage on the side rail between the C and rear-pillars on each side, and a fixed seat belt anchorage mounted on the headliner forward of the passenger C-pillar, an assist handle located on the passenger side A and B-pillars, a speaker located in each rear-pillar, and two overhead lighting consoles.

SUNROOF INFORMATION:

Installed: Yes X No
Operation: Electric Manual

ROLL-BAR INFORMATION:

Installed: Yes X No
Padded: Yes X No
Braces: Yes X No

GENERAL INFORMATION:

Date Received: 3/19/04; Odometer Reading: 26 miles

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured By: General Motors Corporation

Date of Manufacture: September, 2003; VIN: 1GNDM19X84B104278

GVWR: 2676 kg;GAWR FRONT: 1270 kg;GAWR REAR: 1406 kg

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load:

FRONT: 260 kpaREAR: 260 kpaRecommended Tire Size: P215/70R16

Recommended Cold Tire Pressure:

FRONT: 260 kpaREAR: 260 kpaSize of Tire on Test Vehicle: P215/70R16Type of Spare Tire: T155/80D18; Space Saver: X; Standard

VEHICLE CAPACITY DATA:

Type of Front Seats: Bench ; Bucket X; Split Bench Number of Occupants: Front 2; Rear 6; TOTAL 8VEHICLE CAPACITY WEIGHT (VCW) = 623 kgNo. of Occupants x 68 kg = 544 kgRated Cargo/Luggage Weight (RCLW) = 79 kg (difference)

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

Right Front = 544.5 kg Right Rear = 479.0 kgLeft Front = 546.5 kg Left Rear = 467.0 kgTOTAL FRONT = 1091.0 kg TOTAL REAR = 946.0 kg% Total Weight = 54.0 % % Total Weight = 46.0 %TOTAL DELIVERED WEIGHT = 2037.0 kg

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight = 2037.0 kgRated Cargo/Luggage Weight = 136.0 kgTarget Test Weight = 2173.0 kg

WEIGHT OF TEST VEHICLE:

Right Front =	<u>546.5</u> kg	Right Rear =	<u>548.0</u> kg
Left Front =	<u>547.0</u> kg	Left Rear =	<u>530.5</u> kg
TOTAL FRONT =	<u>1093.5</u> kg	TOTAL REAR =	<u>1078.5</u> kg
% Total Weight =	<u>50.3</u> %	% Total Weight =	<u>49.7</u> %
TOTAL TEST WEIGHT = <u>2172.0</u> kg			
Weight of ballast secured in vehicle's cargo area = <u>136.0</u> kg			

TEST VEHICLE ATTITUDE:

AS DELIVERED: Right Front 796.0 mm; Left Front 791.0 mm;
 Right Rear 838.0 mm; Left Rear 828.0 mm;
 Pitch Angle at Right Door Sill = 1.0 Rear higher
 Pitch Angle at Left Door Sill = 1.4 Rear higher
 Roll Angle at Front Bumper = 0.7 Left higher
 Roll Angle at Rear Bumper = 0.3 Left higher

FULLY LOADED: Right Front 767.0 mm; Left Front 774.0 mm;
 Right Rear 797.0 mm; Left Rear 794.0 mm;
 Pitch Angle at Right Door Sill = 0.6 Rear higher
 Pitch Angle at Left Door Sill = 1.0 Rear higher
 Roll Angle at Front Bumper = 0.6 Left higher
 Roll Angle at Rear Bumper = 0.2 Left higher

AS TARGETED: Right Front 978.0 mm; Left Front 982.0 mm;
 Right Rear 1003.0 mm; Left Rear 1008.0 mm;
 Pitch Angle at Right Door Sill = 0.6 Rear higher
 Pitch Angle at Left Door Sill = 1.1 Rear higher
 Roll Angle at Front Bumper = 0.6 Left higher
 Roll Angle at Rear Bumper = 0.2 Left higher

AS TESTED ON RIGHT SIDE:

Pitch Angle at Right Door Sill = 0.6 Rear higher
 Pitch Angle at Left Door Sill = 1.1 Rear higher
 Roll Angle at Front Bumper = 0.6 Left higher
 Roll Angle at Rear Bumper = 0.2 Left higher

AS TESTED ON LEFT SIDE:

Pitch Angle at Right Door Sill = 0.7 Rear higherPitch Angle at Left Door Sill = 1.1 Rear higherRoll Angle at Front Bumper = 0.6 Left higherRoll Angle at Rear Bumper = 0.2 Left higherVEHICLE WHEELBASE = 2830 mm

REMARKS: The seat travel distance was measured to be 195 mm for the driver front seat and 152.5 mm for the passenger front seat.

RECORDED BY: David G. GotwalsDATE: March 19, 2004APPROVED BY: Helen A. Kaletq

TABLE 2-3

HORIZONTAL IMPACT ANGLE RANGE FOR A AND B PILLARS

VEH. MOD YR/MAKE/MODEL/BODY: 2004 Chevrolet Astro VanVEH. NHTSA NO.: C40108 VIN: 1GNDM19X84B [REDACTED] COLOR: GreyVEH. BUILD DATE: September, 2003 TEST DATES: March 23-26, 2004TEST LABORATORY: MGA Research CorporationOBSERVERS: David Gotwals, Nicholas Brzuch, Scott Krelger

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 201.8°	L 249.7°
	R 105°-165°	R 111.0°	R 156.9°
B-PILLAR	L 195°-345°	L 198.1°	L 280.4°
	R 15°-165°	R 78.5°	R 150.9°

AS DETERMINED USING THE PROCEDURES SPECIFIED IN S8.13.4.1

REMARKS:

RECORDED BY: David G. GotwalsDATE: March 19, 2004APPROVED BY: Helen A. Kaleto

TABLE 2-4

VERTICAL IMPACT ANGLE RANGES

VEH. MOD YR/MAKE/MODEL/BODY: 2004 Chevrolet Astro VanVEH. NHTSA NO.: C40108 VIN: 1GNDM19X84B COLOR: GreyVEH. BUILD DATE: September, 2003 TEST DATES: March 23-26, 2004TEST LABORATORY: MGA Research CorporationOBSERVERS: David Gotwals, Nicholas Brzuch, Scott Kreiger

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 45°
		R 0°-50°	R 0°	R 45°
	SR2A	L 0°-50°	L 0°	L 35°
		R 0°-50°	R 0°	R 35°
	SR2B	L 0°-50°	L 0°	L 35°
		R 0°-50°	R 0°	R 35°
	SR3-1	L 0°-50°	L 0°	L 38°
		R 0°-50°	R 0°	R 50°
	SR3-2*	L 0°-50°	L 0°	L 0°
		R 0°-50°	R 0°	R 0°
A-PILLAR	AP1	L -5°-50°	L -5°	L 24°
		R -5°-50°	R -5°	R 22°
	AP2	L -5°-50°	L -5°	L 33°
		R -5°-50°	R -5°	R 30°
	AP3	L -5°-50°	L -5°	L 36°
		R -5°-50°	R -5°	R 35°

		VERTICAL ANGLE SPECIFIED RANGE	MINIMUM VERTICAL ANGLE	MAXIMUM VERTICAL ANGLE
B-PILLAR	BP1	L -10°-50°	L -10°	L 30°
		R -10°-50°	R -10°	R 34°
	BP2*	L 0°-50°	L 0°	L 0°
		R 0°-50°	R 0°	R 1°
	BP3	L -10°-50°	L -10°	L -7°
		R -10°-50°	R -10°	R -7°
	BP4	L -10°-50°	L -10°	L -10°
		R -10°-50°	R -10°	R 5°
OTHER-PILLAR	OP1*	L 0°-50°	L 0°	L 8°
		R 0°-50°	R 0°	R 44°
	OP2	L -10°-50°	L -10°	L -6°
		R -10°-50°	R -10°	R -8°
REAR-PILLAR	RP1	L -10°-50°	L -10°	L 16°
		R -10°-50°	R -10°	R 14°
	RP2	L -10°-50°	L -10°	L -6°
		R -10°-50°	R -10°	R -5°
REAR HEADER	RH	L 0°-50°	L 0°	L 50°
		R 0°-50°	R 0°	R 50°
SLIDING DOOR	SD	R 0°-50°	R 0°	R 37°
UPPER ROOF 1		0°-50	0°	50°
UPPER ROOF 2		0°-50	0°	50°
UPPER ROOF 3		0°-50	0°	50°
UPPER ROOF 4		0°-50	0°	50°
UPPER ROOF 5		0°-50	0°	50°
UPPER ROOF 6		0°-50	0°	50°

As determined using the Procedures specified in SB.13.4.2. *Targets BP2, OP1, and SR3-2 are seat belt anchorage locations.

RECORDED BY: David G. Gotwals

DATE: March 19, 2004

APPROVED BY: Helen A. Kalet

TABLE 2-5

TARGET MEASUREMENTS

VEH. MOD YR/MAKE/MODEL/BODY: 2004 Chevrolet Astro VanVEH. NHTSA NO.: C40108 VIN: 1GNDM19X84B COLOR: GreyVEH. BUILD DATE: September, 2003 TEST DATES: March 23-26, 2004TEST LABORATORY: MGA Research CorporationOBSERVERS: David Gotwals, Nicholas Brzuch, Scott Kreiger

Measurement	Description	Left Side	Right Side
M	Seat Fore/Aft Travel (Front seats)	195.0 mm	152.5 mm
T°	Horizontal < {CG-F1 (Left Seat) to (Right A-Pillar)}	110.3°	—
A1°	360° - T°	249.7°	—
W°	Horizontal < {CG-2 (Left Seat) to (Left A-Pillar)}	201.8°	—
A2°	A2° = W°	201.8°	—
U°	Horizontal < {CG-2 (Left Seat) to (Left B-Pillar)}	280.4°	—
B1°	B1° = U°	280.4°	—
V°	Horizontal < {CG-R (Left Seat) to (Left B-Pillar)}	198.1°	—
B2°	B2° = V°	198.1°	—
W° (right)	Horizontal < {CG-F2 (Right Seat) to (Right A-Pillar)}	—	156.9°
A1° (right)	A1° (right) = W° (right)	—	156.9°
T° (right)	Horizontal < {CG-F1 (Right Seat) to (Left A-Pillar)}	—	249.0°
A2° (right)	360° - T° (right)	—	111.0°
V° (right)	Horizontal < {CG-R (Right Seat) to (Right B-Pillar)}	—	150.9°
B1° (right)	B1° (right) = V° (right)	—	150.9°
U° (right)	Horizontal < {CG-F2 (Right Seat) to (Right B-Pillar)}	—	78.5°
B2° (right)	B2° (right) = U° (right)	—	78.5°
J	A-Pillar {(Plane 3) - (Plane 5)}	504.8 mm	509.1 mm
J/2	J ÷ 2	252.4 mm	254.6 mm
D1	Upper Roof {(Plane A) - (Plane B)}	3040.0 mm	
D1/2	D1 ÷ 2	1520.0 mm	
D2	Upper Roof {(Plane C) - (Plane D)}	1439.2 mm	
D2/2	D2 ÷ 2	719.6 mm	
.35D1	.35 x D1	1064.0 mm	
.35D2	.35 x D2	503.7 mm	

Measurement	Description	Left Side	Right Side
N	B-Pillar {(BPR) - (lowest point on daylight opening forward of B-Pillar)}	538.8 mm	549.8 mm
N/2	B-Pillar {(BP3) - (lowest point on daylight opening forward of B-Pillar)}	269.4 mm	274.9 mm
N/4	B-Pillar {(BP4) - (lowest point on daylight opening forward of B-Pillar)}	134.7 mm	137.5 mm
Q	O-Pillar (Plane 13 – Plane 14)	515.2 mm	500.9 mm
Q/2	R / 2	257.6 mm	250.5 mm
MM	Sliding Door (widest opening)	–	1030.2 mm
MM / 2	MM / 2	–	515.1 mm

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

SgRP Locations (vehicle coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	z
Front	1989.0	-456.0	1144.0	1989.0	456.0	1144.0
2 nd Row	2954.0	-517.0	1172.0	2954.0	301.0	1172.0
3 rd Row	3792.0	-409.0	1172.0	3792.0	409.0	1172.0

SgRP Locations (world coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	z
Front	1438.9	-455.1	2444.0	1439.3	456.1	2443.7
2 nd Row	2402.7	-516.4	2471.1	2403.1	300.9	2470.8
3 rd Row	3239.8	-409.0	2470.1	3240.1	408.3	2469.8

CG Locations (world coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	z
CGF1	1403.9	-455.1	3104.0	1446.8	456.1	3103.7
CGF2	1598.9	-455.1	3104.0	1599.3	456.1	3103.7
CGR (2 nd Row)	2562.7	-516.4	3131.1	2563.1	300.9	3130.8
CGR (3 rd Row)	3399.8	-409.0	3130.1	3400.1	408.3	3129.8

REFERENCE FOR VEHICLE COORDINATE SYSTEM:

Door striker plate hole (x, y, z) = (Driver: 2244.9, -874.1, 1200.0; Pass: 2244.5, 874.1, 1200.0)

Front outboard anchorage (x, y, z) = (1780.0, -619.0, 800.0)

REMARKS: None

RECORDED BY: David G. Gotwals

DATE: March 19, 2004

APPROVED BY: Helen A. Kalato

TABLE 2-6

SUMMARY OF TARGETING RESULTS

VEH. MOD YR/MAKE/MODEL/BODY: 2004 Chevrolet Astro VanVEH. NHTSA NO.: C40108 VIN: 1GNDM19X84B COLOR: GrayVEH. BUILD DATE: September, 2003 TEST DATES: March 23-26, 2004TEST LABORATORY: MGA Research CorporationOBSERVERS: David Gotwals, Nicholas Brzuch, Scott Kreiger

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	1680.4	-632.5	1962.1	-	-	Yes	-	-
REL	1696.9	-645.9	1920.5	249	24	-	2	Yes
AP2	1633.1	-671.0	1869.1	202	33	No	-	No
AP3	1454.1	-717.4	1703.0	202	36	No	-	No
A-Pillar Right Side								
AP1	1677.2	633.1	1964.8	-	-	Yes	-	-
REL	1692.2	648.8	1927.4	111	22	-	2	No
AP2	1630.7	677.8	1879.9	156	30	No	-	Yes
AP3	1493.5	721.5	1711.7	156	35	No	-	No
B-Pillar Left Side								
BP1	2282.5	-567.0	1989.8	270	30	No	-	Yes
BP2	2240.4	-723.4	1737.9	270	0	No	-	No
BP3	2199.3	-749.8	1724.3	280	-7	No	-	Yes
BP4	2329.3	-817.3	1584.4	-	-	Yes	-	-
REL	2303.2	-769.8	1664.6	210	-10	-	4	No
B-Pillar Right Side								
BP1	2242.0	582.7	2004.6	-	-	Yes	-	-
REL	2246.8	591.7	1980.0	79	34	-	1	No
BP2	2237.2	724.0	1739.8	90	1	-	-	Yes
BP3	2196.7	751.6	1726.1	88	-7	-	-	No
BP4	2298.1	792.3	1594.0	-	-	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	2333.2	752.0	1702.6	135	5	—	5	No
Other Pillar Left Side								
OPR	3366.6	-601.9	1992.3	—	—	—	—	—
OP1	3369.8	-682.5	1873.3	270	8	No	—	Yes
OP2	3372.4	-781.9	1732.8	270	-6	No	—	No
Other Pillar Right Side								
OPR	3366.9	579.1	1985.7	—	—	—	—	—
OP1	3366.9	579.1	1985.7	—	—	Yes	—	—
REL	3395.4	561.0	1975.8	90	44	—	1	No
OP2	3395.2	769.3	1735.8	90	-8	No	—	No
Rear Pillar Left Side								
RP1	4240.8	-605.8	1927.8	310	16	No	—	No
RP2	4284.9	-692.1	1777.7	320	-8	No	—	No
Rear Pillar Right Side								
RP1	4244.2	614.3	1930.2	50	14	No	—	No
RP2	4319.5	659.4	1779.3	40	-5	No	—	No
Front Header Left Side								
FH1	1573.4	-512.5	1947.8	180	50	No	—	No
FH2	1550.8	-384.3	1955.0	180	50	No	—	No
Front Header Right Side								
FH1	1571.9	516.2	1952.9	180	50	No	—	No
FH2	1550.5	366.5	1959.8	180	50	No	—	No
Side Rail Left Side								
SR1	1829.4	-584.4	1976.2	270	45	No	—	No
SR2A	1979.1	-591.9	1993.9	270	35	No	—	Yes
SR2B	1961.8	-568.3	1988.0	270	35	No	—	No
SR3-1	2411.5	-619.5	1976.3	270	38	No	—	Yes
SR3-2	4063.3	-702.7	1842.0	270	0	No	—	No
Side Rail Right Side								
SR1	1826.7	587.4	1979.6	90	45	No	—	Yes
SR2A	1976.5	594.5	1997.1	90	35	No	—	No
SR2B	1942.2	596.4	1996.2	90	35	No	—	No

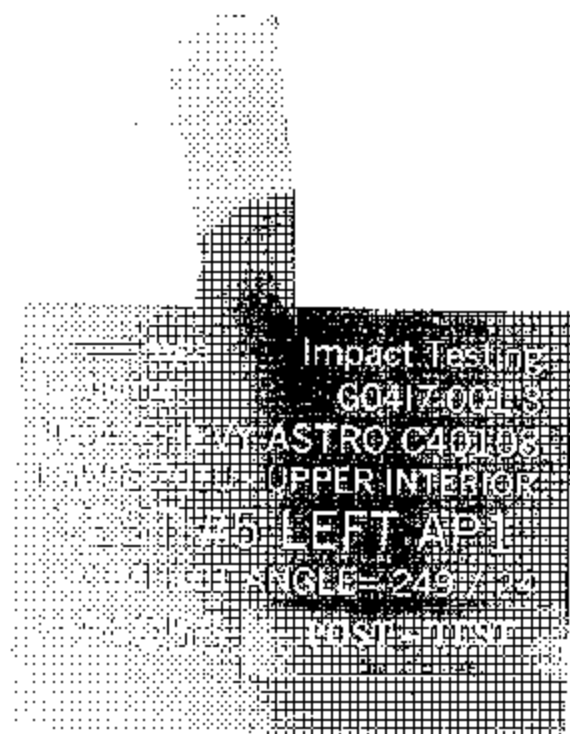
SUMMARY OF TARGETING RESULTS

Target	Location (mm)			Horizontal Angle (deg)	Vertical Angle (deg)	Relocation (Yes/No)	Extension (# of 25 mm Spheres)	Impact (Yes/No)
	x	y	z					
SR3-1	2391.4	591.4	1984.6	90	50	No	—	No
SR3-2	4088.2	698.3	1848.7	90	0	No	—	No
Rear Header Left Side								
RH	4302.6	-408.1	1930.8	0	50	No	—	No
Rear Header Right Side								
RH	4296.5	408.8	1935.3	0	50	No	—	No
Sliding Door Right Side								
SD	2818.8	613.8	2012.8	—	—	Yes	—	—
REL	2821.6	619.1	1995.2	90	37	—	1	No
Upper Roof Left Side								
UR1	1919.7	-493.6	2016.8	270	50	No	—	No
UR2	2259.9	-493.2	2013.6	270	50	No	—	No
UR3	3352.0	-490.3	2023.6	270	50	No	—	No
Upper Roof Right Side								
UR4	1921.4	503.2	2022.5	90	50	No	—	Yes
UR5	2194.6	504.5	2023.4	90	50	No	—	No
UR6	3330.8	500.6	1973.8	90	50	No	—	No

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

REMARKS:

RECORDED BY: David G. GotwalsDATE: March 19, 2004APPROVED BY: Helen A. Kaler



3/25/04
2004 CE
FMVSS
TEST
H/V
FM40

MICHIGAN OPERATIONS
DATE: 1/20/03
SUPERCEDES: MGATP201U_FRAME #2.4

DOC. NO.: MGATP201U_FRAME #2
REVISION NO.: 5
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C40108 VEHICLE YR/MAKE/MODEL: 2004 CHRY ASXO

GENERAL TEST PARAMETERS: Test Number: 5

Target (Vehicle Side): Left/Right API Temperature: 23 °F/°C

MGA Test Reference No.: F44055 Humidity: 45 %

Approach Angles: Horizontal 249 ° Time of Test: 2:00 am/pm

Vertical 24 ° FMH Serial No: 36

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
493	433	7.7	23.8	25	2

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35523	-99.2	1.20	1.20
Y	6	J35516	99.6	1.23	1.23
Z	7	J35510	99.1	1.51	1.51

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

NO VISIBLE DAMAGE

Recorded By: [Signature] Approved By: Helen A. Valente Date: 3/25/04

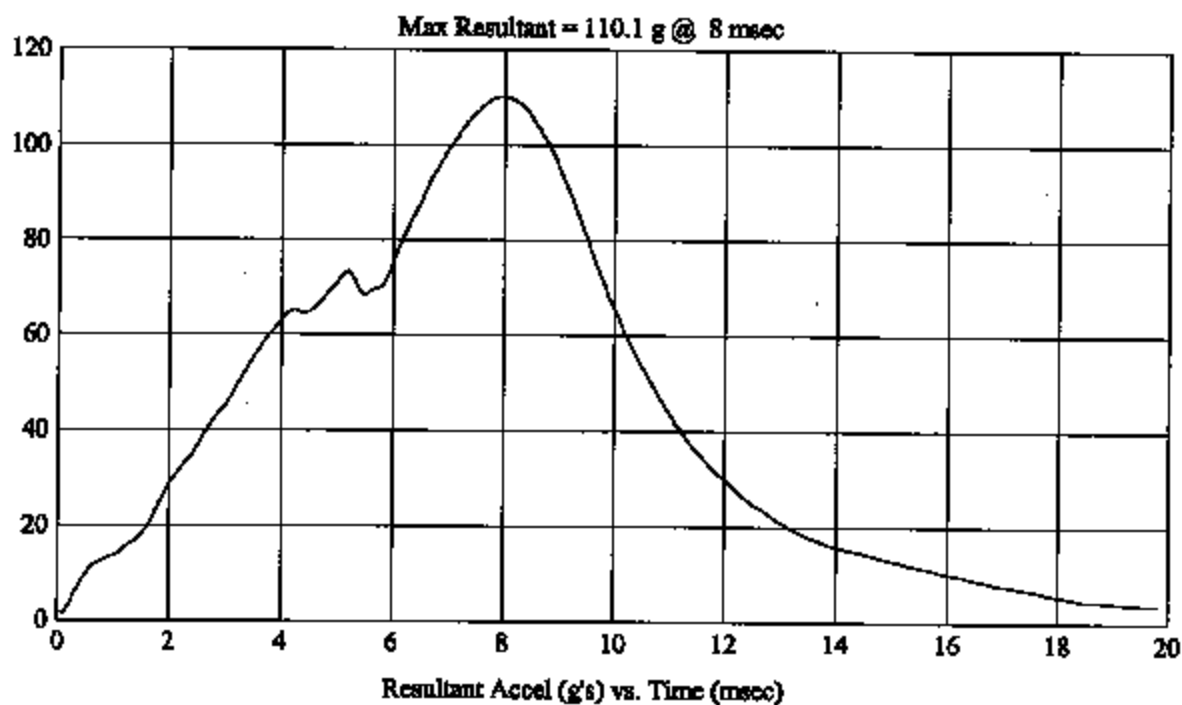
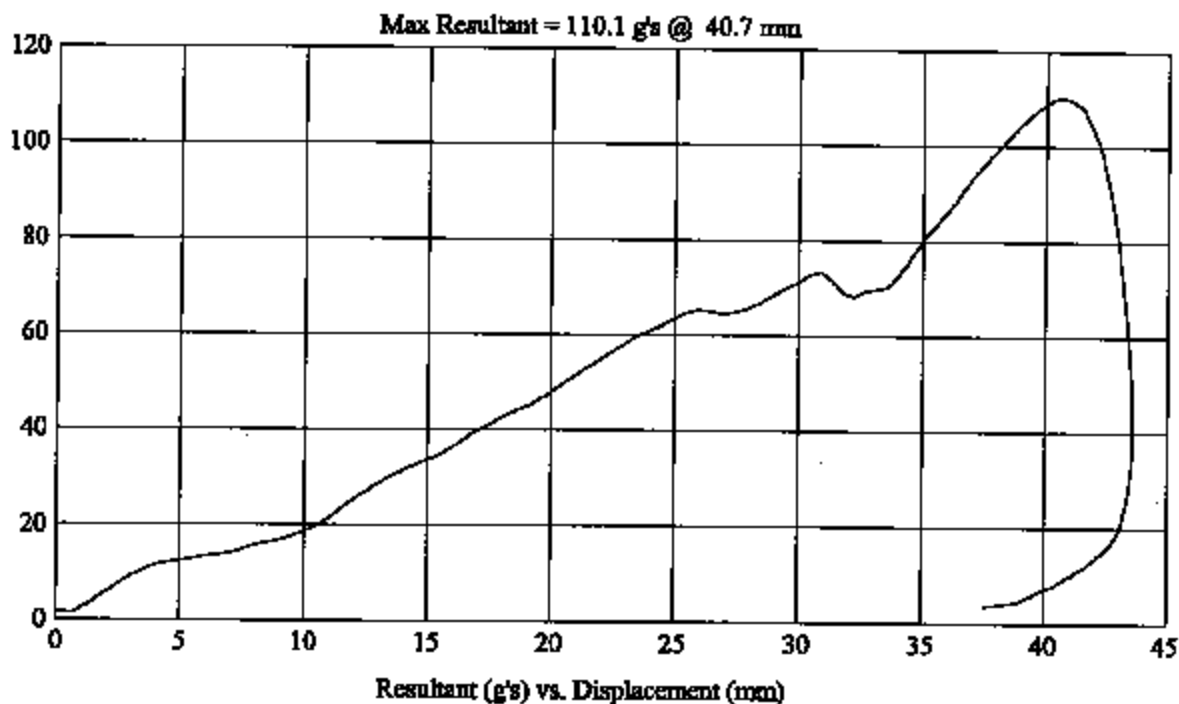
*Only necessary for NHTSA (Government) Compliance testing.

FMH
G0417-001.3Customer: CHEVY
Test # 5
FM4055
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: AP1
Vehicle Side: Left
Horz/Vert Angle: 249/24

HIC(d) = 493, HIC = 433, Delta T = 7.7 msec

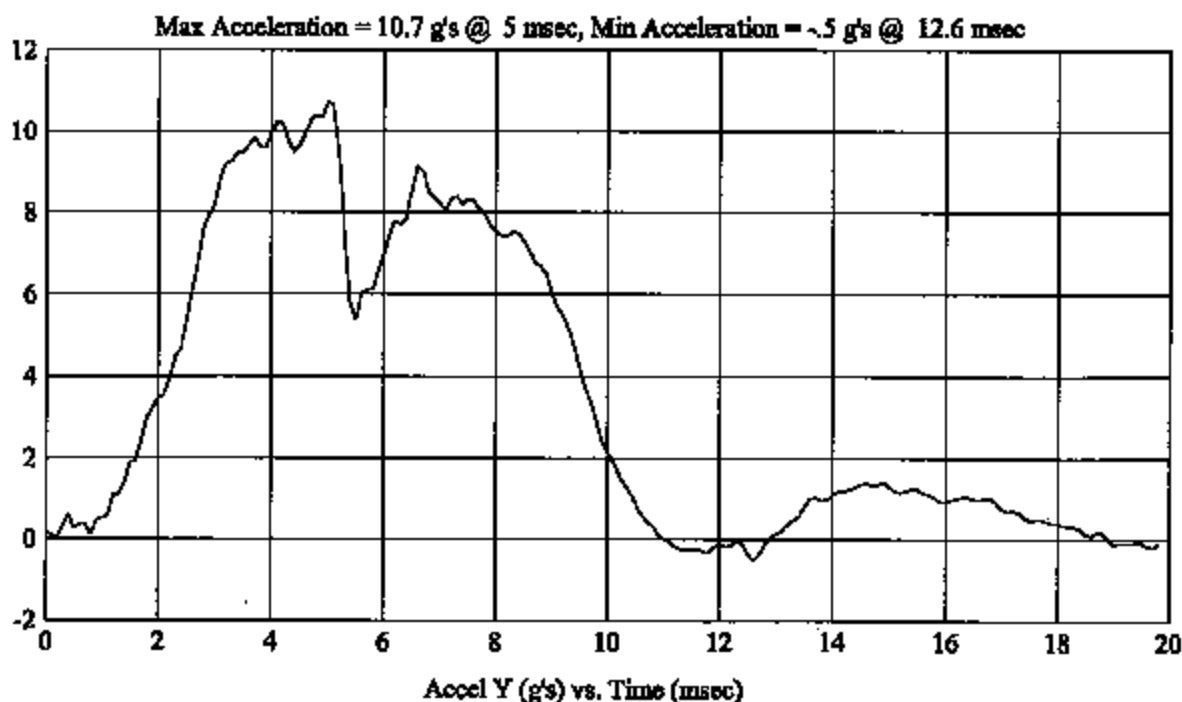
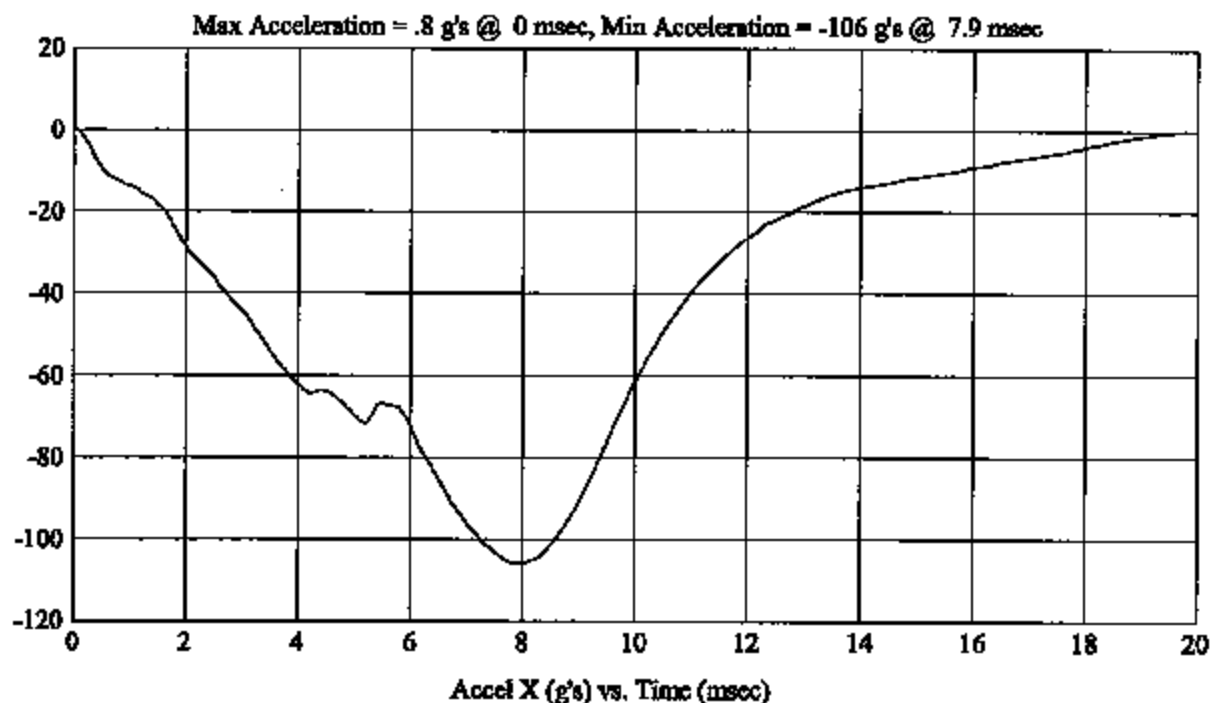


FMH
G04I7-001.3Customer: CHEVY
Test # 5
FM4055
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: AP1
Vehicle Side: Left
Horz/Vert Angle: 249/24

HIC(d) = 493, HIC = 433, Delta T = 7.7 msec



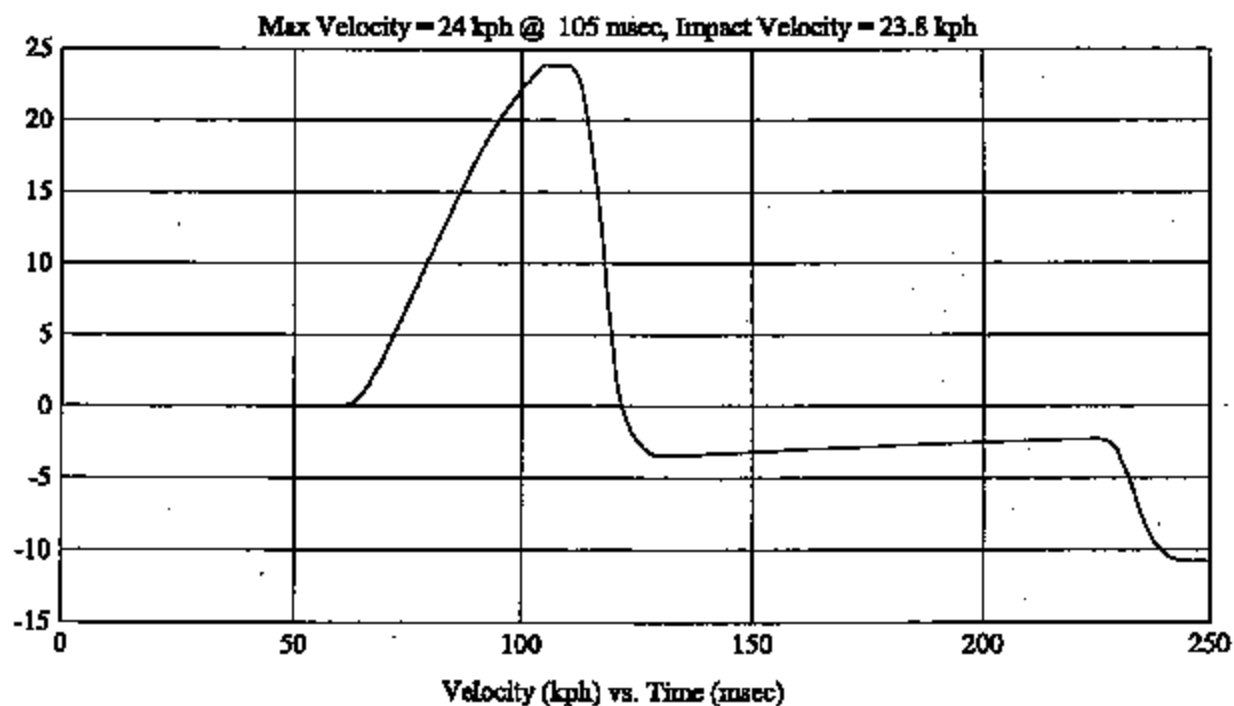
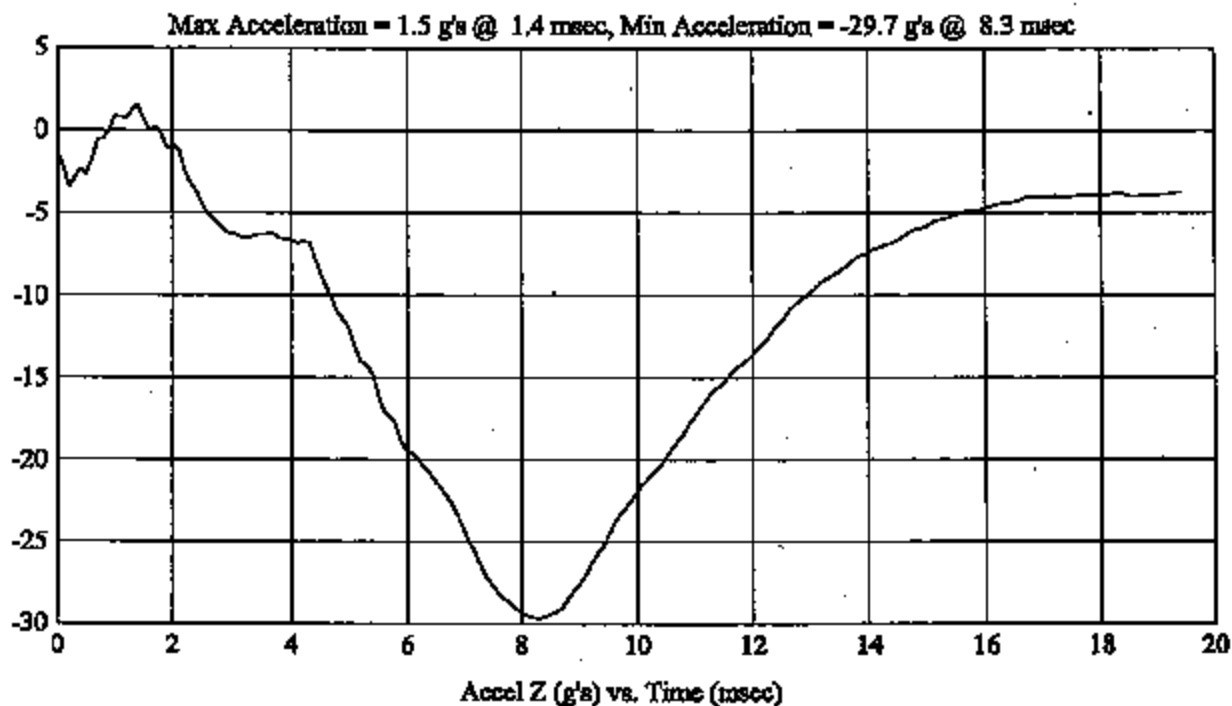
FMH
G0417-001.3Customer: CHEVY
Test # 5
FM4055
Additional Desc: N/A

Vehicle Program : ASTRO

Test Date: 3/25/04

Model Year: 2004
Target: AP1
Vehicle Side: Left
Horz/Vert Angle: 249/24

HIC(d) = 493, HIC = 433, Delta T = 7.7 msec



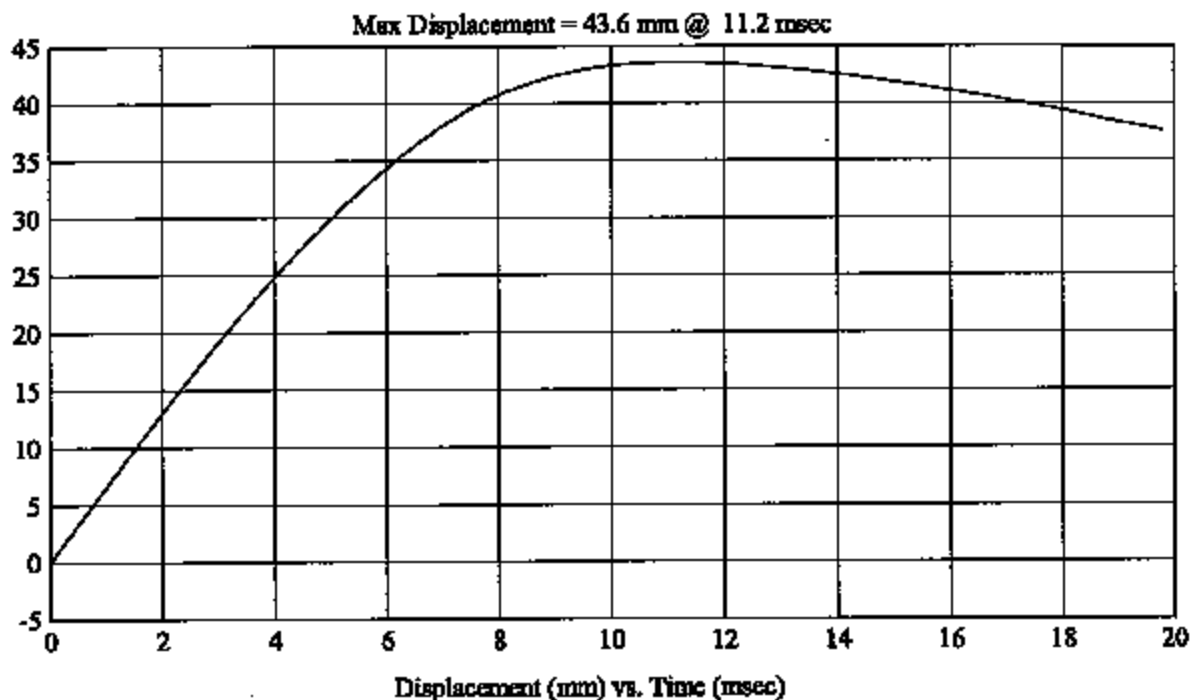
FMH
G0417-001.3

Customer: CHEVY
Test # 5
FM4055
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: AP1
Vehicle Side: Left
Horz/Vert Angle: 249/24

HIC(d) = 493, HIC = 433, Delta T = 7.7 msec



1122 IMPACT
3/23/04 GOLF
2004 CHEVY ASTRO COOPER
HWSS 2011U-02
TEST #4 RIGHT
IMPACT ANGLE
HW4054 POST

MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATP201U_FRAME #2.4

DOC. NO.: MGATP201U_FRAME #2
REVISION NO.: 5
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C40108 VEHICLE YR/MAKE/MODEL: 2004 CHEVY ASTRO

GENERAL TEST PARAMETERS:

Test Number: 4

Target (Vehicle Side): left/right APZ

Temperature: 22 °F °C

MGA Test Reference No.: FMV054

Humidity: 41 %

Approach Angles: Horizontal 156 °

Time of Test: 4-20 am/pm

Vertical 30 °

FMH Serial No: 35

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
<u>629</u>	<u>614</u>	<u>8.8</u>	<u>23.6</u>	<u>12</u>	<u>14</u>

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>J35924</u>	<u>-91.8</u>	<u>1.20</u>	<u>1.20</u>
<u>Y</u>	<u>6</u>	<u>J35911</u>	<u>93.5</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J351001</u>	<u>93.5</u>	<u>1.51</u>	<u>1.51</u>

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

A-PULVER TRIM CALLED DURING IMPACT

Recorded By: [Signature] Approved By*: Heleen D. Kales Date: 3/23/07

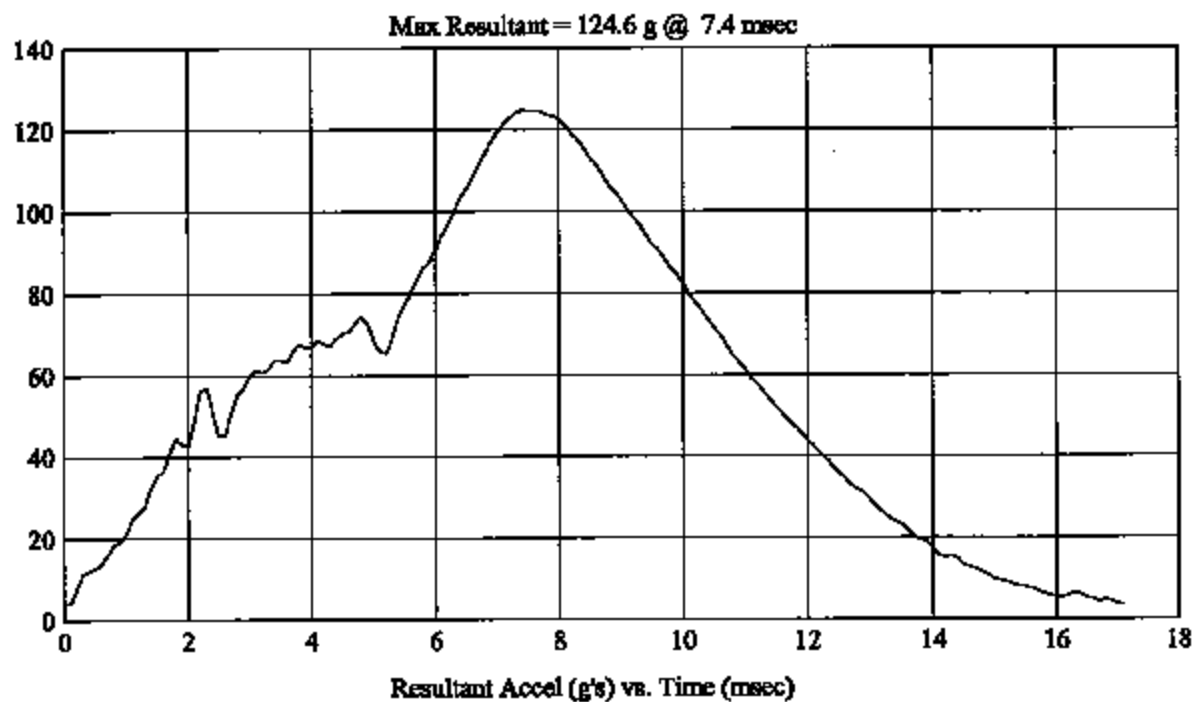
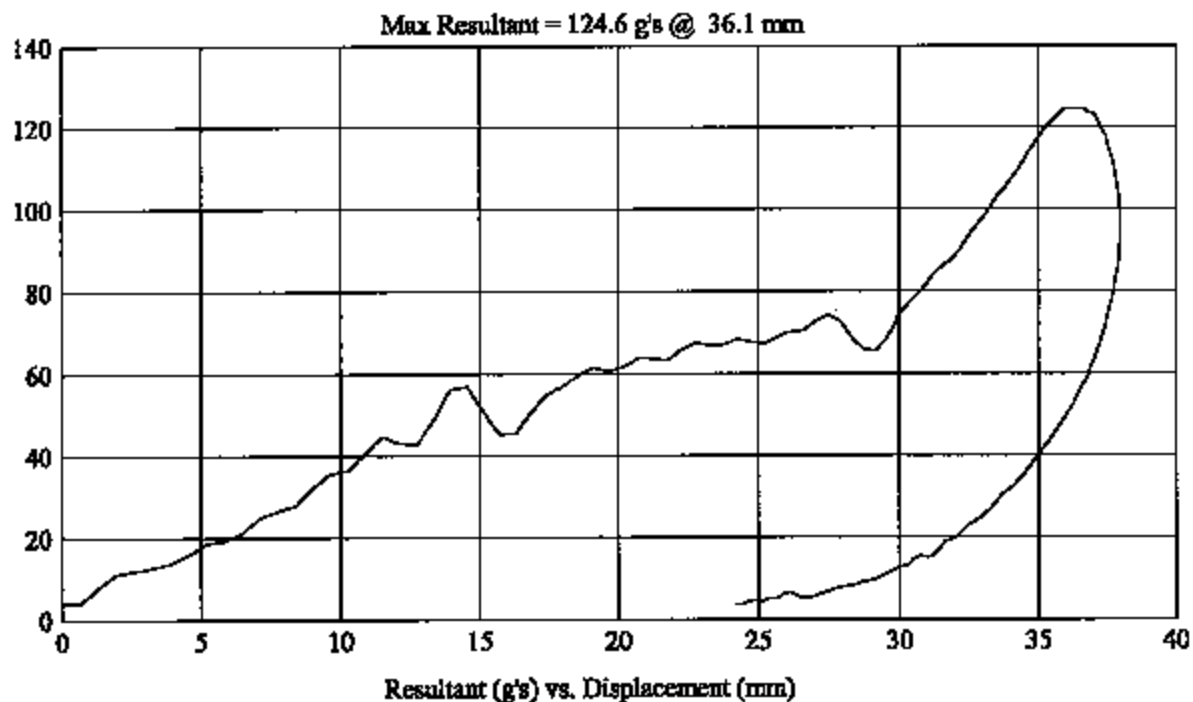
*Only necessary for NHTSA (Government) Compliance testing.

FMH
G04I7-001.3Customer: CHEVY
Test # 4
FM4054
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: AP2
Vehicle Side: Right
Horz/Vert Angle: 156/30

HIC(d) = 629, HIC = 614, Delta T = 8.8 msec

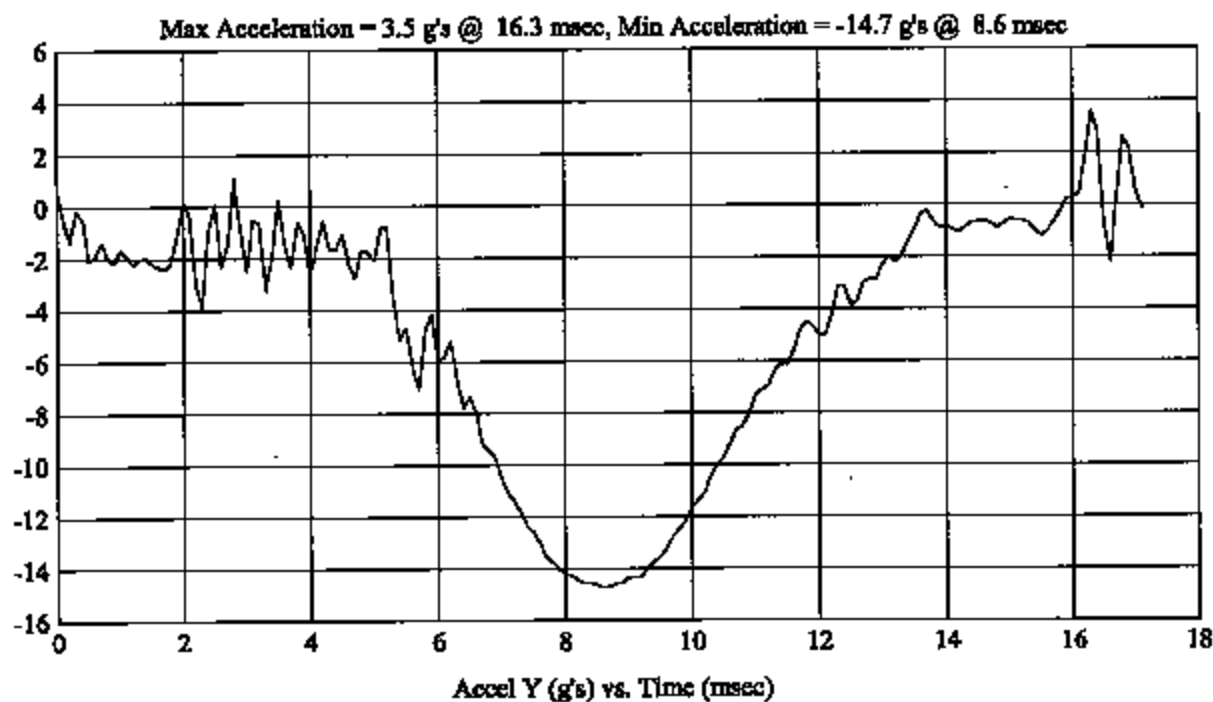
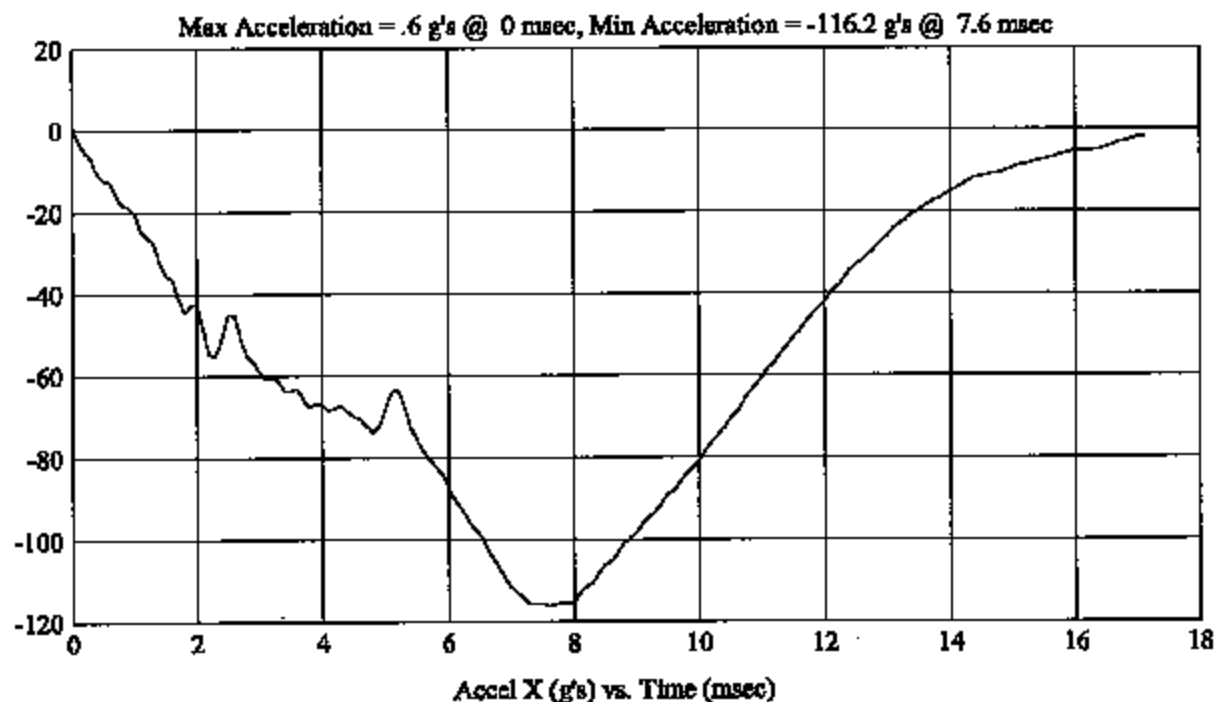


FMH
G04I7-001.3Customer: CHEVY
Test # 4
FM4054
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: AP2
Vehicle Side: Right
Horz/Vert Angle: 156/30

HIC(d) = 629, HIC = 614, Delta T = 8.8 msec



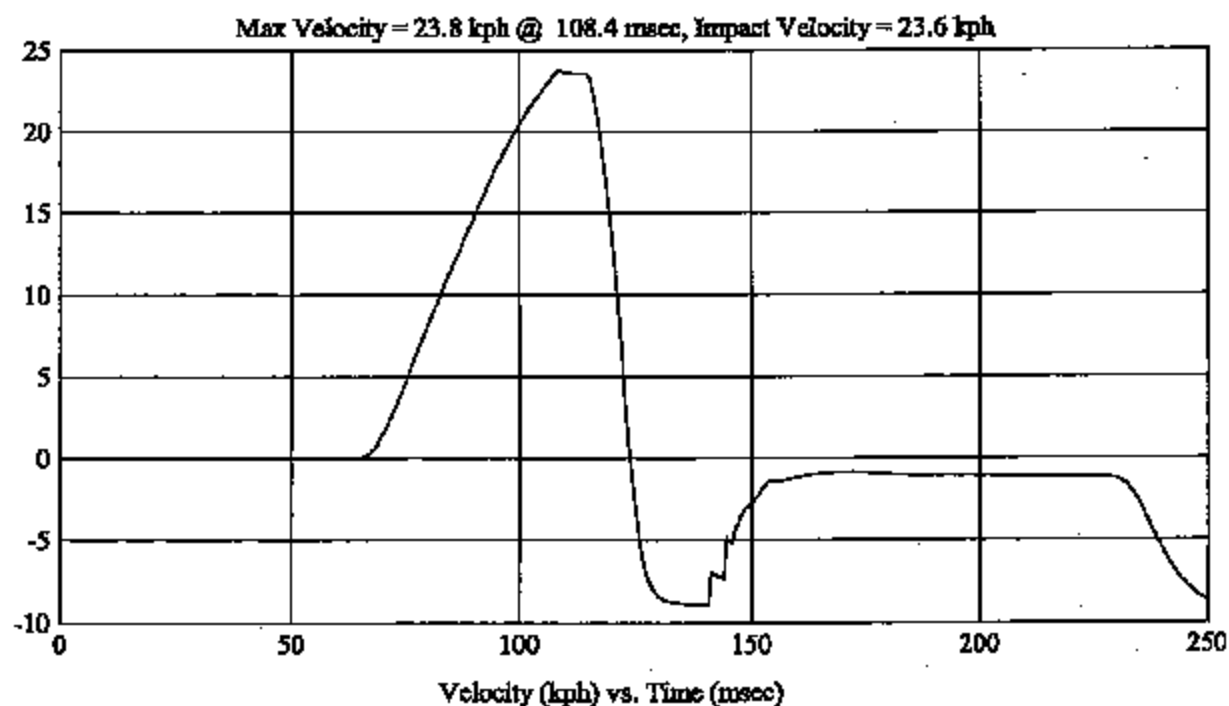
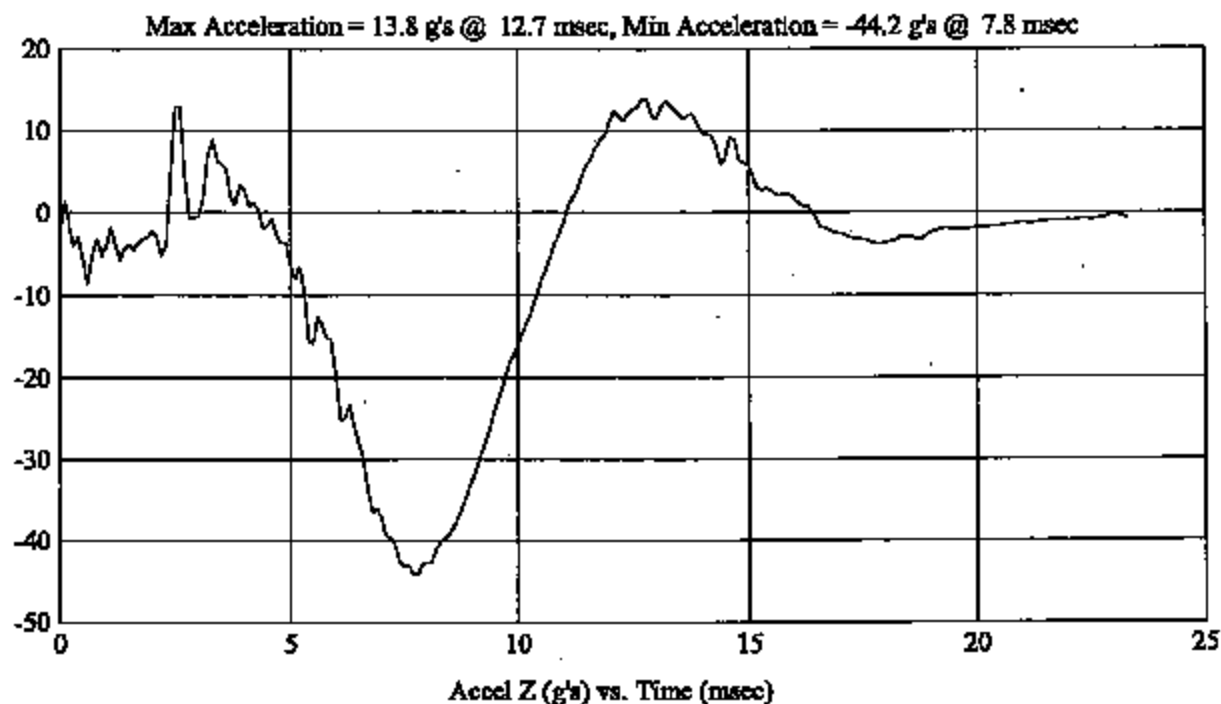
FMH
G04I7-001.3Customer: CHEVY
Test # 4
FM4054
Additional Desc: N/A

Vehicle Program : ASTRO

Test Date: 3/23/04

Model Year: 2004
Target: AP2
Vehicle Side: Right
Horz/Vert Angle: 156/30

HIC(d) = 629, HIC = 614, Delta T = 8.8 msec

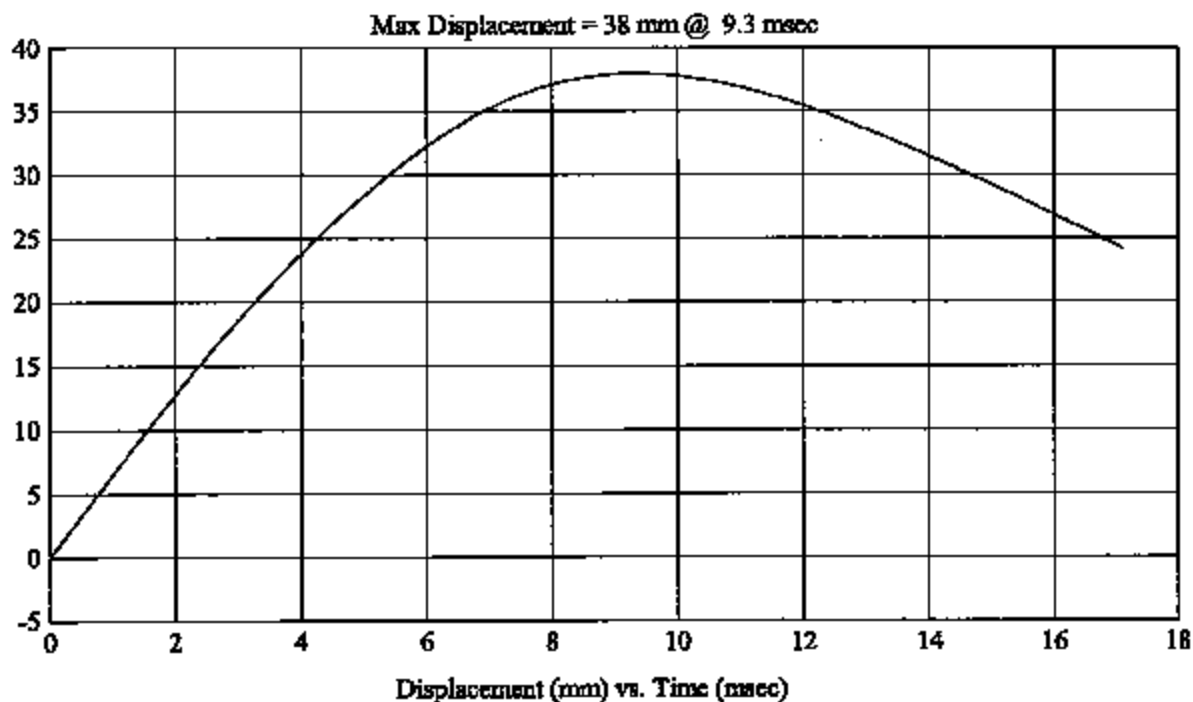


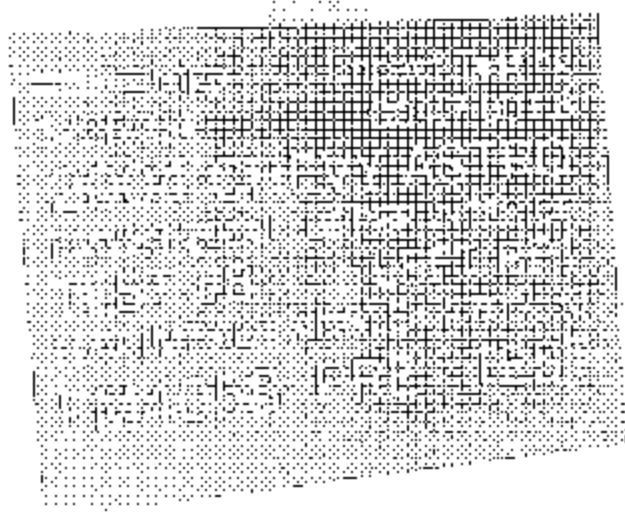
FMH
G04I7-001.3Customer: CHEVY
Test # 4
FM4054
Additional Desc: N/A

Vehicle Program : ASTRO

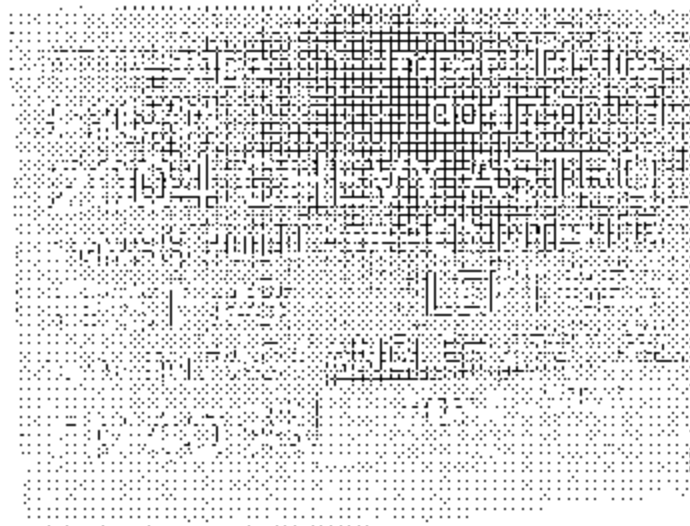
Model Year: 2004
Target: AP2
Vehicle Side: Right
Horz/Vert Angle: 156/30

HIC(d) = 629, HIC = 614, Delta T = 8.8 msec





Impact Test #8
3/26/04 60417-01-13
2004 CHEVY ASTRO
FMVSS 2010 UPPER INTERIOR
TEST #8 LEFT BPI
H/V IMPACT ANGLE= 270 / 30
FM4058 POST-TEST



MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATP201U_FRAME #2.4

DOC. NO.: MGATP201U_FRAME #2
REVISION NO.: 3
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C40108VEHICLE YR/MAKE/MODEL: 2004 CHEVY ASTRO

GENERAL TEST PARAMETERS:

Test Number: 8Target (Vehicle Side) Left Right BDITemperature: 22 °F/CMGA Test Reference No.: Fm4050Humidity: 45 %Approach Angles: Horizontal 270 °Time of Test: 9:15 am/pmVertical 30 °FMH Serial No: 36

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
494	435	10.9	23.8	32	G

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35923	-99.2	1.20	1.20
Y	6	J35916	99.6	1.23	1.23
Z	7	J35910	99.1	1.51	1.51

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

B-PILAN TRIM SEPARATED FROM PILLARRecorded By: [Signature]Approved By: [Signature] Date: 3/26/03

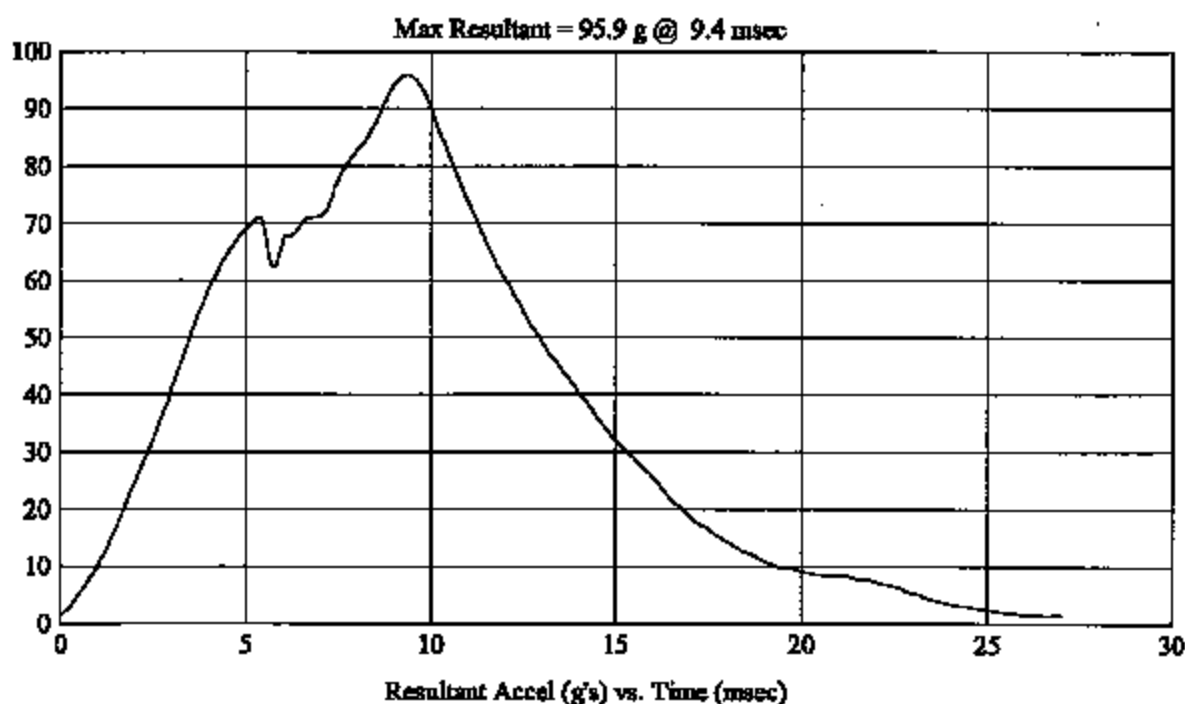
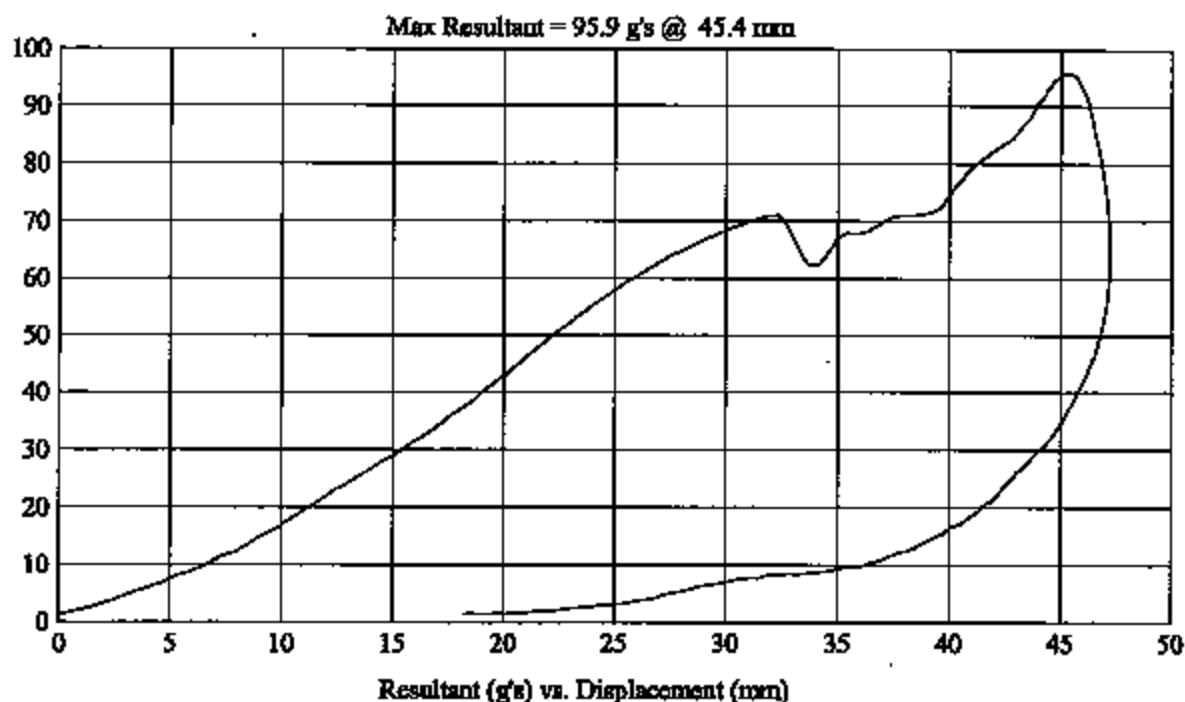
*Only necessary for NHTSA (Government) Compliance testing.

FMH
G0417-001.3Customer: CHEVY
Test # 8
FM4058
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: BP1
Vehicle Side: Left
Horz/Vert Angle: 270/30

HIC(d) = 494, HIC = 435, Delta T = 10.9 msec

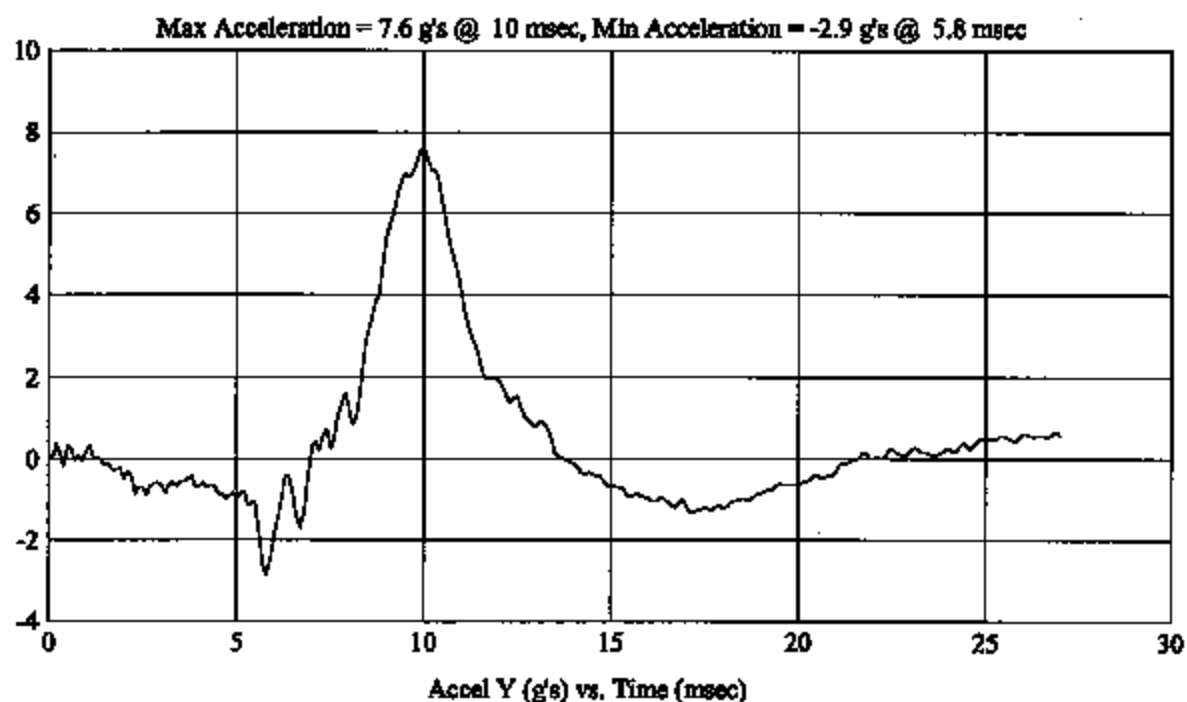
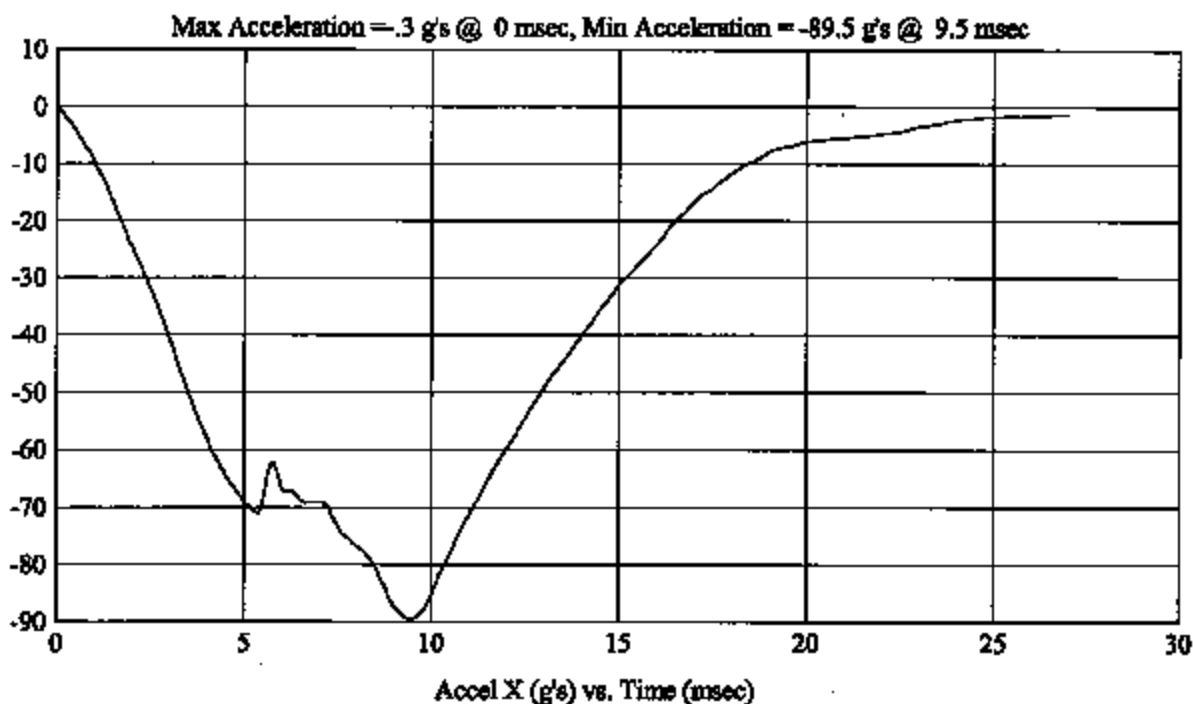


FMH
G04I7-001.3Customer: CHEVY
Test # 8
FM4058
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: BP1
Vehicle Side: Left
Horz/Vert Angle: 270/30

HIC(d) = 494, HIC = 435, Delta T = 10.9 msec



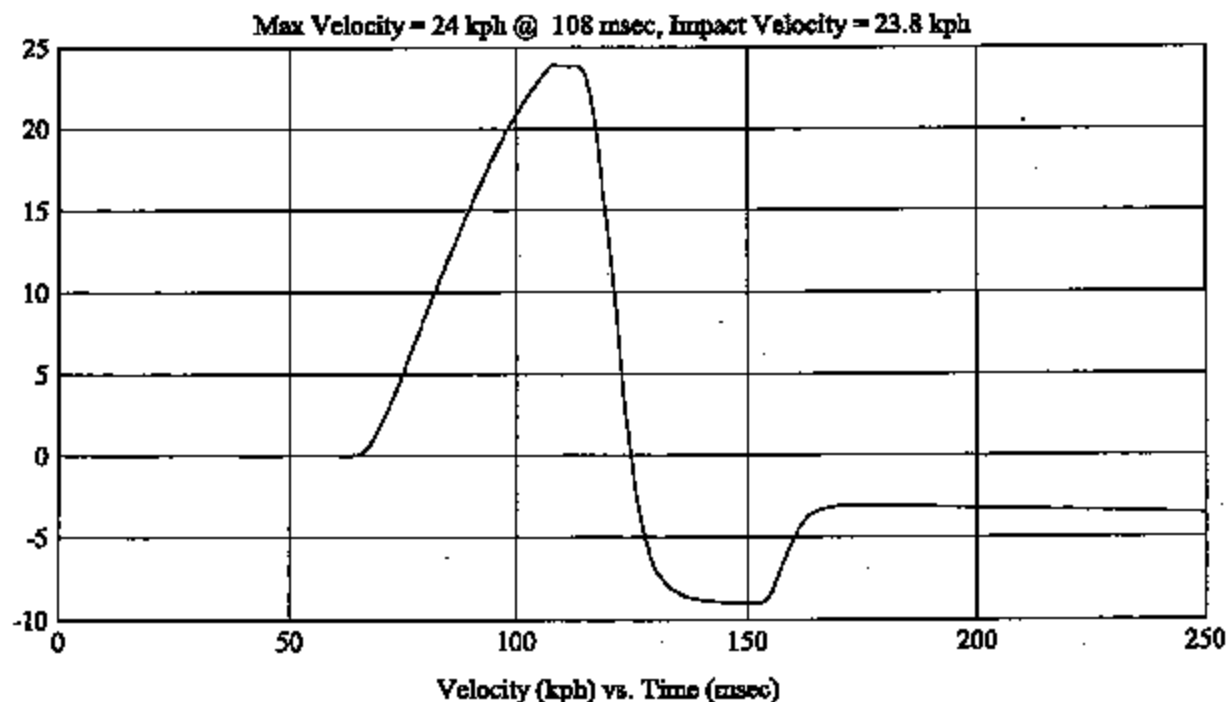
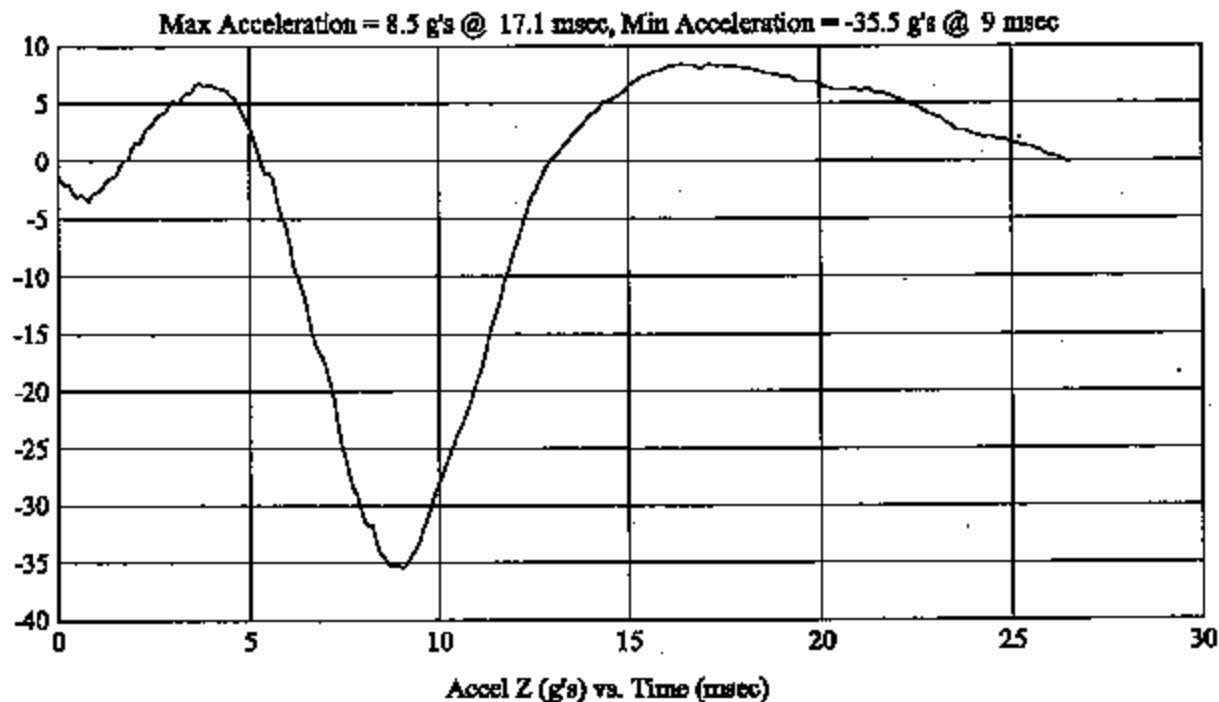
FMH
G04I7-001.3Customer: CHEVY
Test # 8
FM4058
Additional Desc: N/A

Vehicle Program : ASTRO

Test Date: 3/26/04

Model Year: 2004
Target: BP1
Vehicle Side: Left
Horz/Vert Angle: 270/30

HIC(d) = 495, HIC = 435, Delta T = 10.9 msec

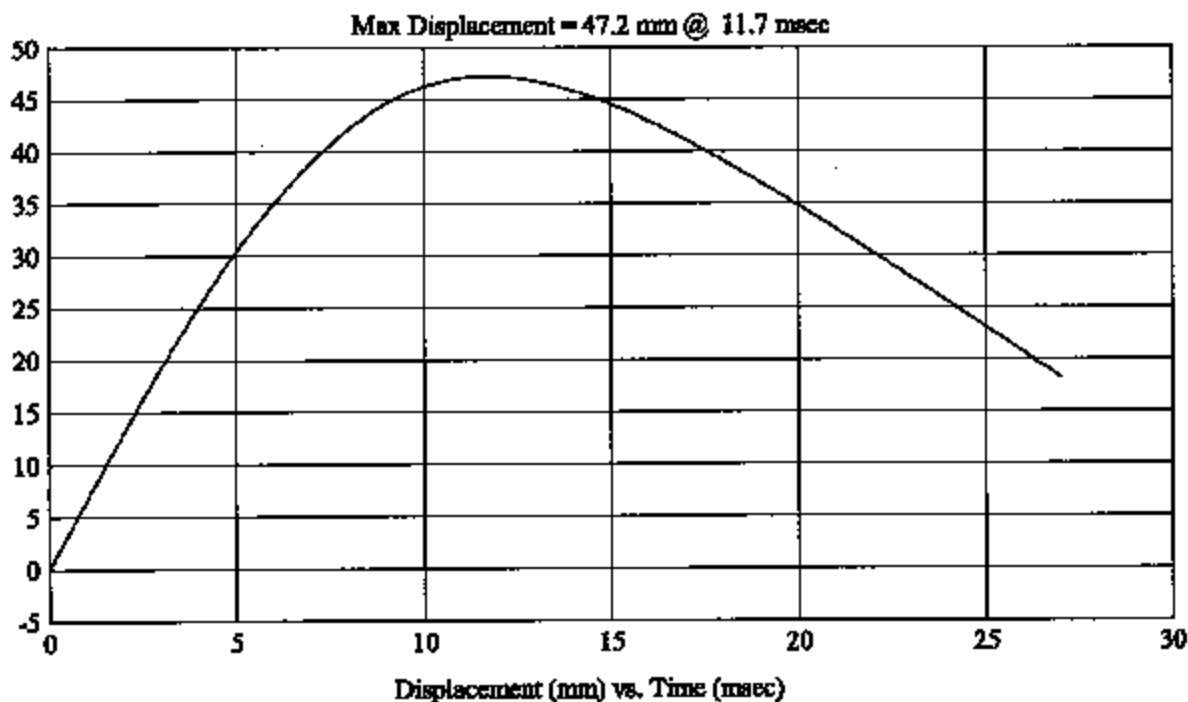


FMH
G04I7-001.3Customer: CHEVY
Test # 8
FM4058
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: BP1
Vehicle Side: Left
Horz/Vert Angle: 270/30

HIC(d) = 494, HIC = 435, Delta T = 10.9 msec







m33

2/23/04

2004 CHEVY AS

EVN552010

TEST#1 REC

HAY IMPACT AREA

FM4051

MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATP201U_FRAME #2.4

DOC. NO.: MGATP201U_FRAME #2
REVISION NO.: 3
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C40103 VEHICLE YR/MAKE/MODEL: 2004 CHRYSLER ASTRO

GENERAL TEST PARAMETERS:

Target (Vehicle Side): left/right BPZ

MGA Test Reference No.: FM4051

Approach Angles: Horizontal 90 °

Vertical 1 °

Test Number: 1

Temperature: 22 °C

Humidity: 41 %

Time of Test: 1:15 am/pm

FMH Serial No: 35

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
685	687	4.3	23.9	9	20

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35924	-91.0	1.20	1.20
Y	6	J35911	93.5	1.23	1.23
Z	7	J31061	93.5	1.51	1.51

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

NO VISIBLE DAMAGE

Recorded By: [Signature] Approved By: Heena Kalita Date: 5/23/04

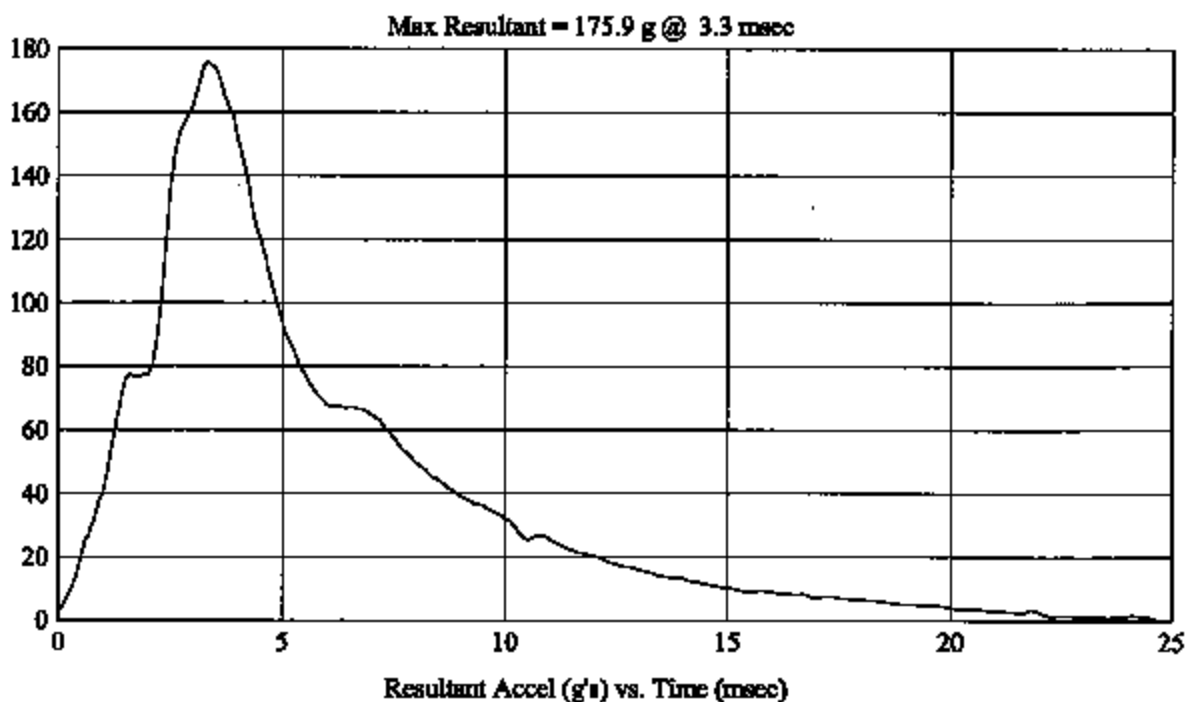
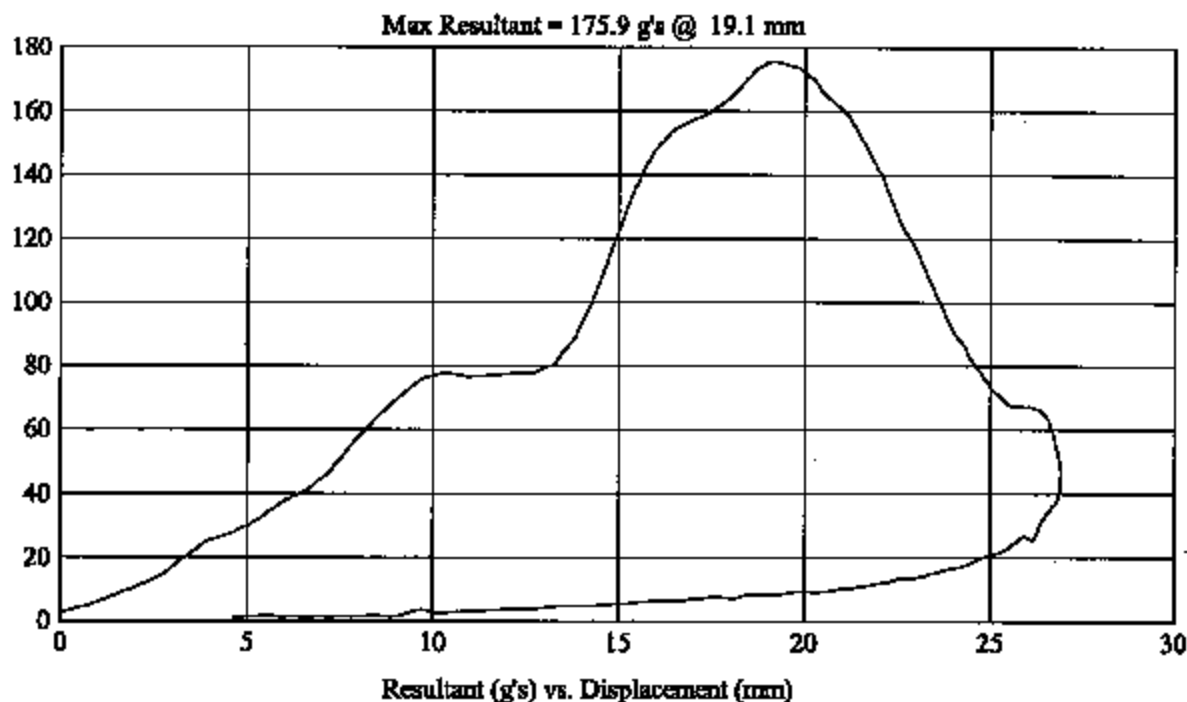
*Only necessary for NHTSA (Government) Compliance testing.

FMH
G04I7-001.3Customer: CHEVY
Test # 1
FM4051
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: BP2
Vehicle Side: Right
Horz/Vert Angle: 90/1

HIC(d) = 685, HIC = 687, Delta T = 4.3 msec

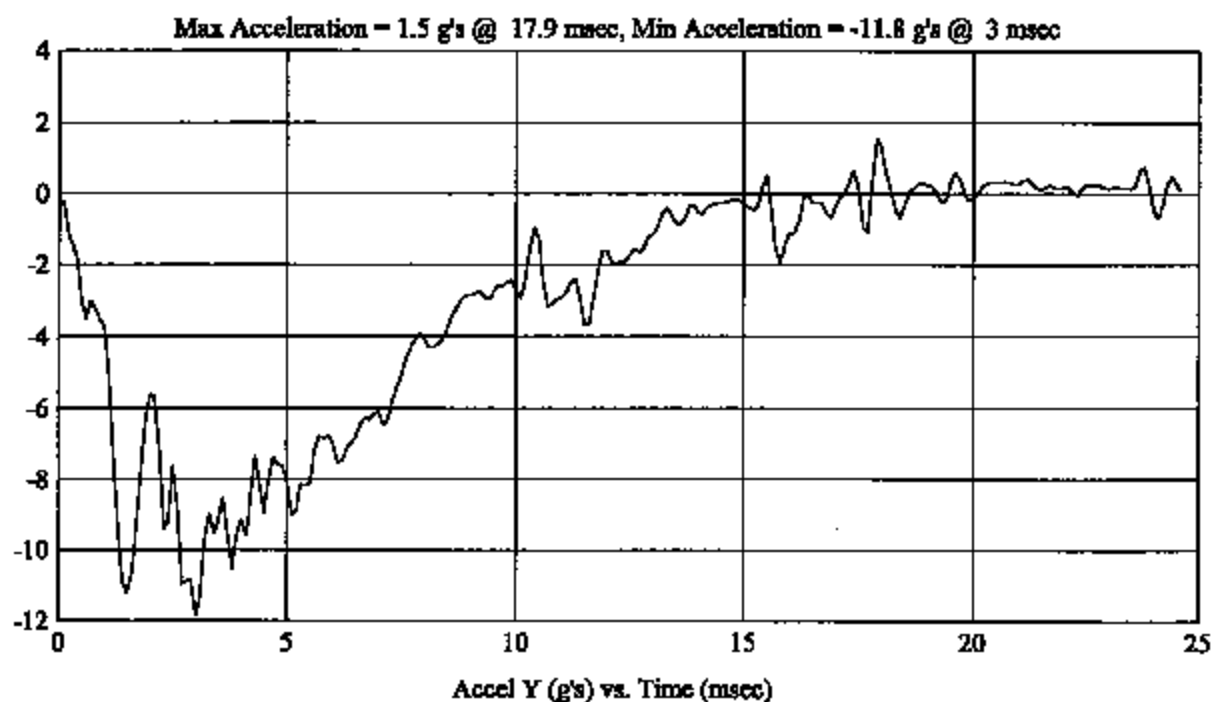
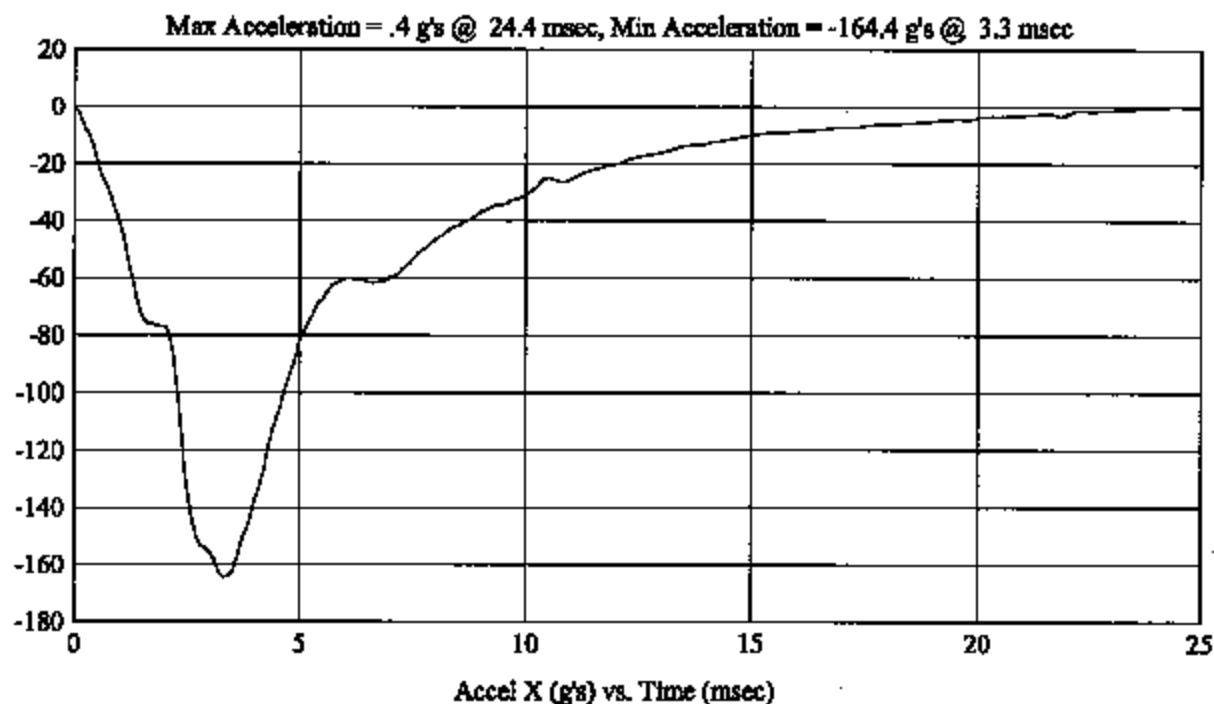


FMH
G04I7-001.3Customer: CHEVY
Test # 1
FM4051
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: BP2
Vehicle Side: Right
Horz/Vert Angle: 90/1

HIC(d) = 685, HIC = 687, Delta T = 4.3 msec



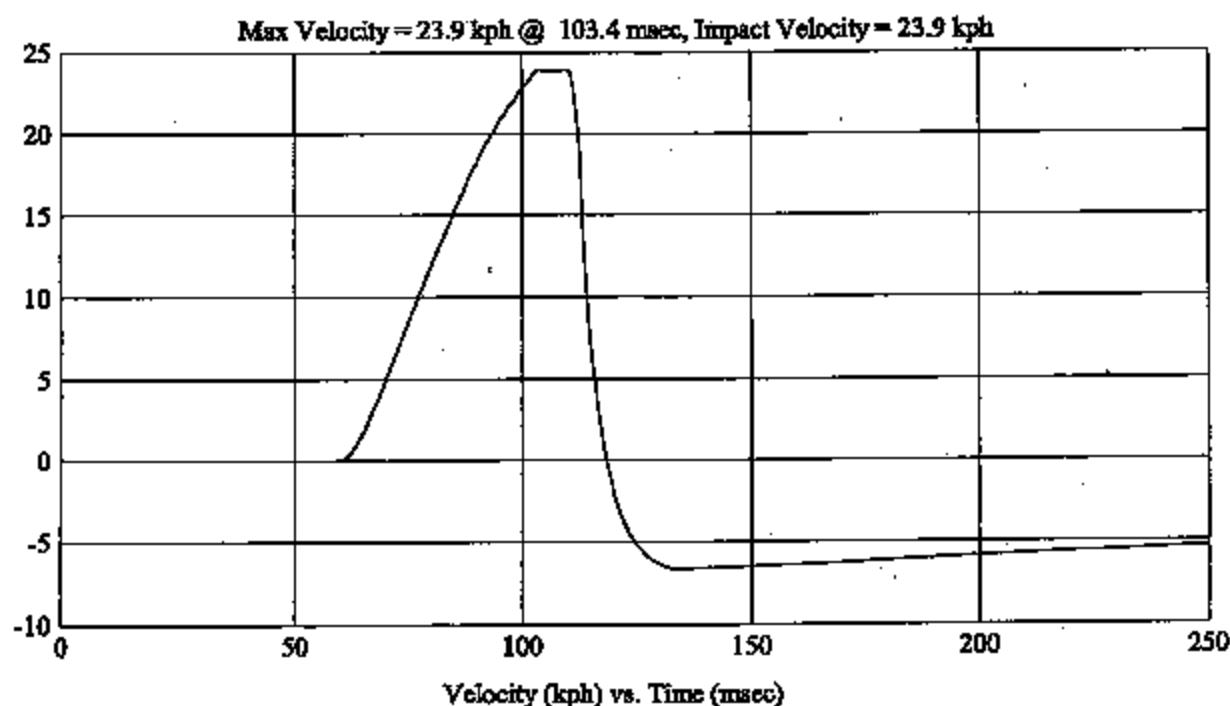
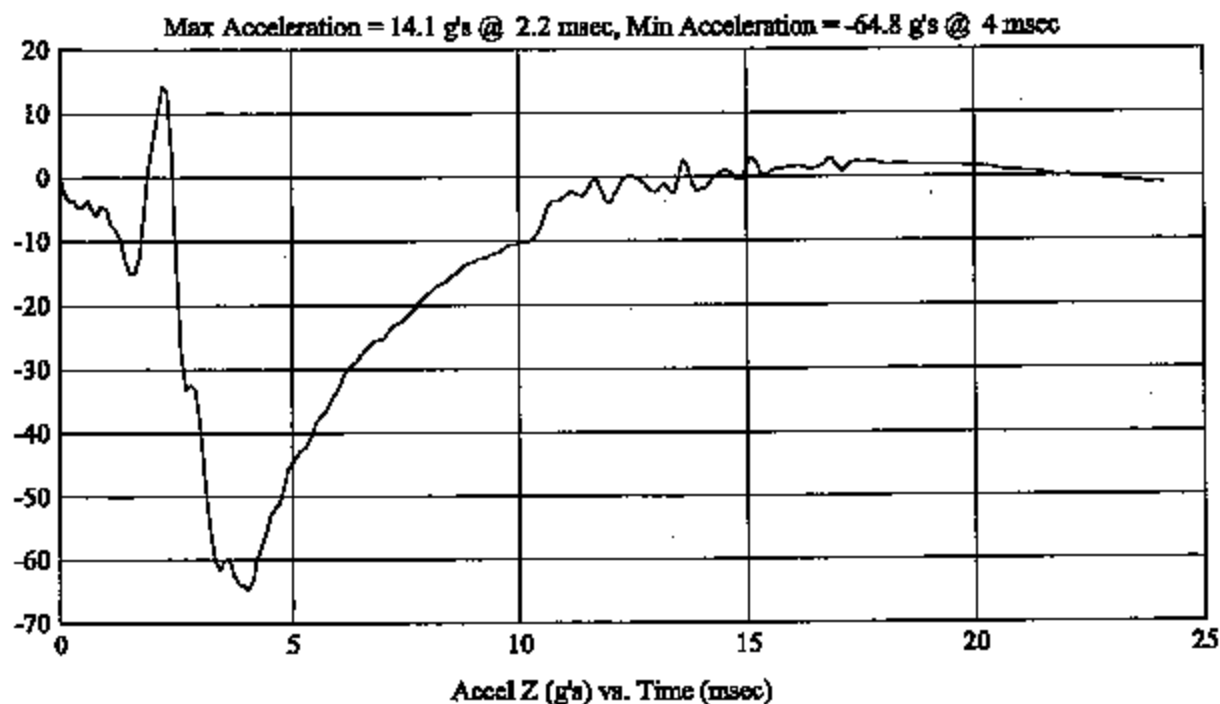
FMH
G04I7-001.3

Customer: CHEVY
Test # 1
FM4051
Additional Desc: N/A

Vehicle Program : ASTRO

Test Date: 3/23/04

Model Year: 2004
Target: BP2
Vehicle Side: Right
Horz/Vert Angle: 90/1

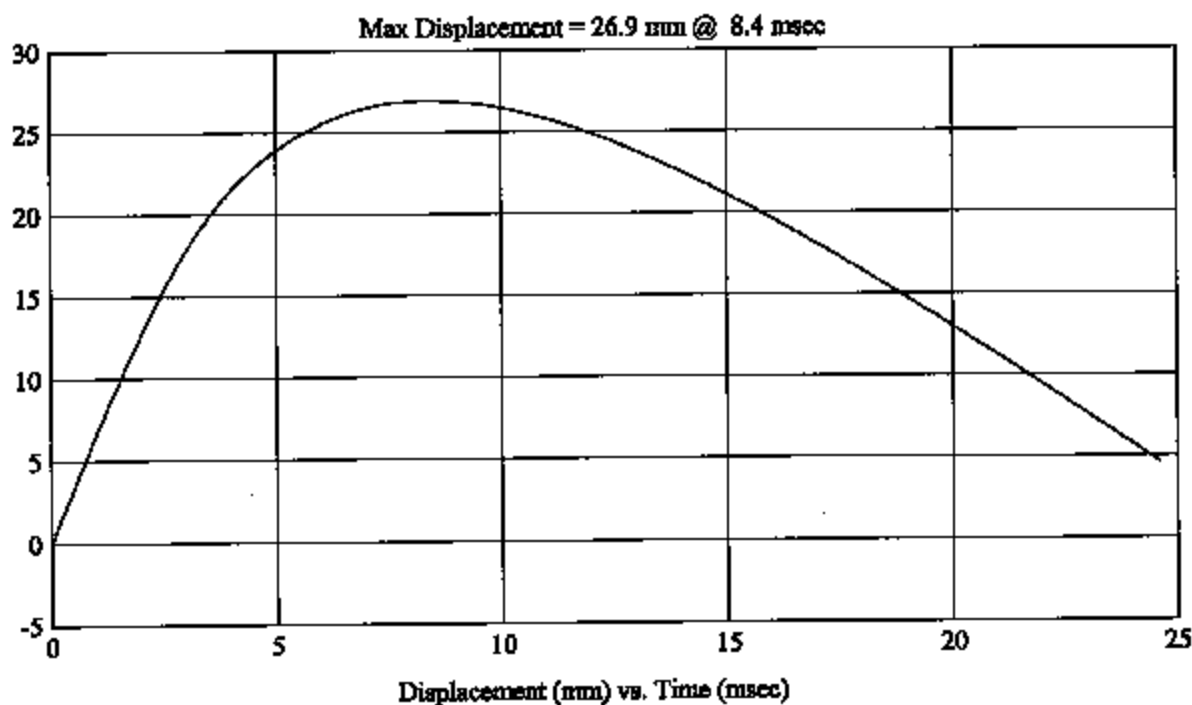
 $HIC(d) = 685$, $HIC = 688$, $\Delta T = 4.3$ msec

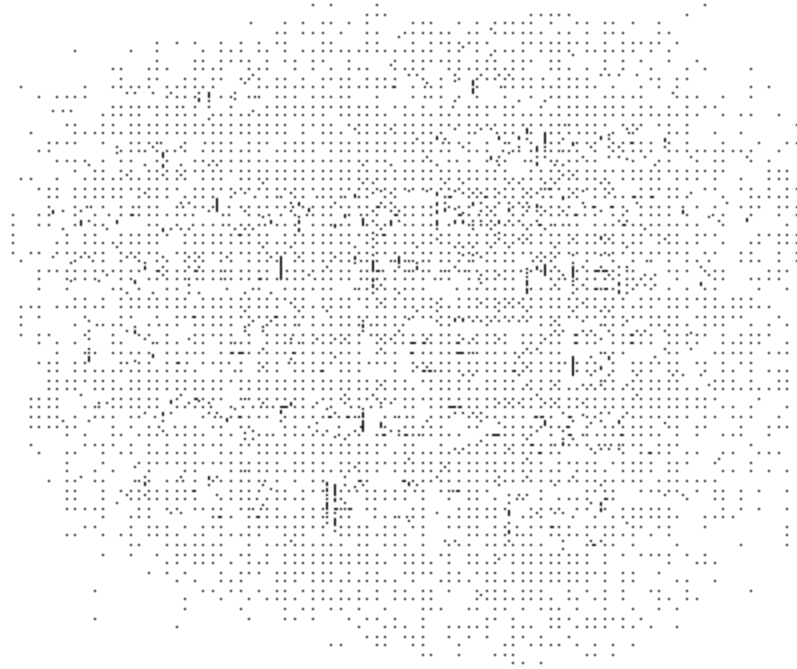
FMH
G04I7-001.3Customer: CHEVY
Test # 1
FM4051
Additional Desc: N/A

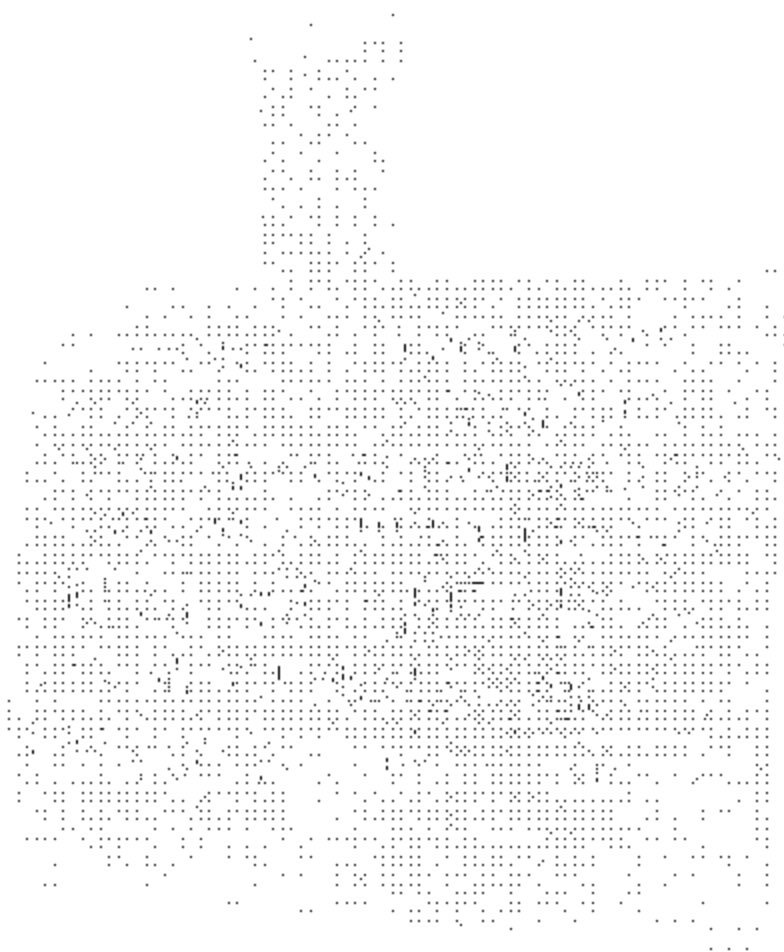
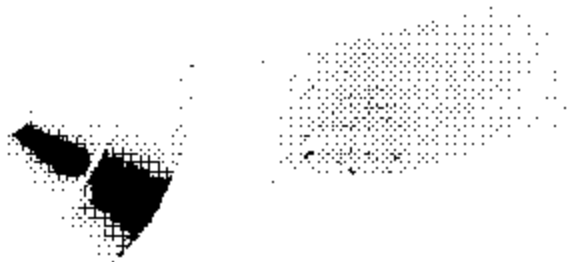
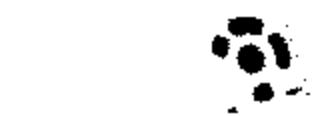
Vehicle Program : ASTRO

Model Year: 2004
Target: BP2
Vehicle Side: Right
Horz/Vert Angle: 90/1

HIC(d) = 685, HIC = 687, Delta T = 4.3 msec







[illegible]

MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATP201U_FRAME #2.4

DOC. NO.: MGATP201U_FRAME #2
REVISION NO.: 5
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C401008 VEHICLE YR/MAKE/MODEL: 2004 CHEVY ASTRO

GENERAL TEST PARAMETERS:

Test Number: 7

Target (Vehicle Side) Left/Right BP3

Temperature: 22 °F/°C

MGA Test Reference No.: FM4057

Humidity: 45 %

Approach Angles: Horizontal 200 °

Time of Test: 4:30 am/pm

Vertical -7 °

FMH Serial No: 35

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
494	435	9.1	23.6	12	2

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35927	-71.8	1.20	1.20
Y	6	J35919	93.5	1.23	1.23
Z	7	J31051	93.5	1.51	1.51

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

B-Pillar TRIM CRACKED DURING IMPACT.

Recorded By: [Signature] Approved By: [Signature] Date: 3/25/04

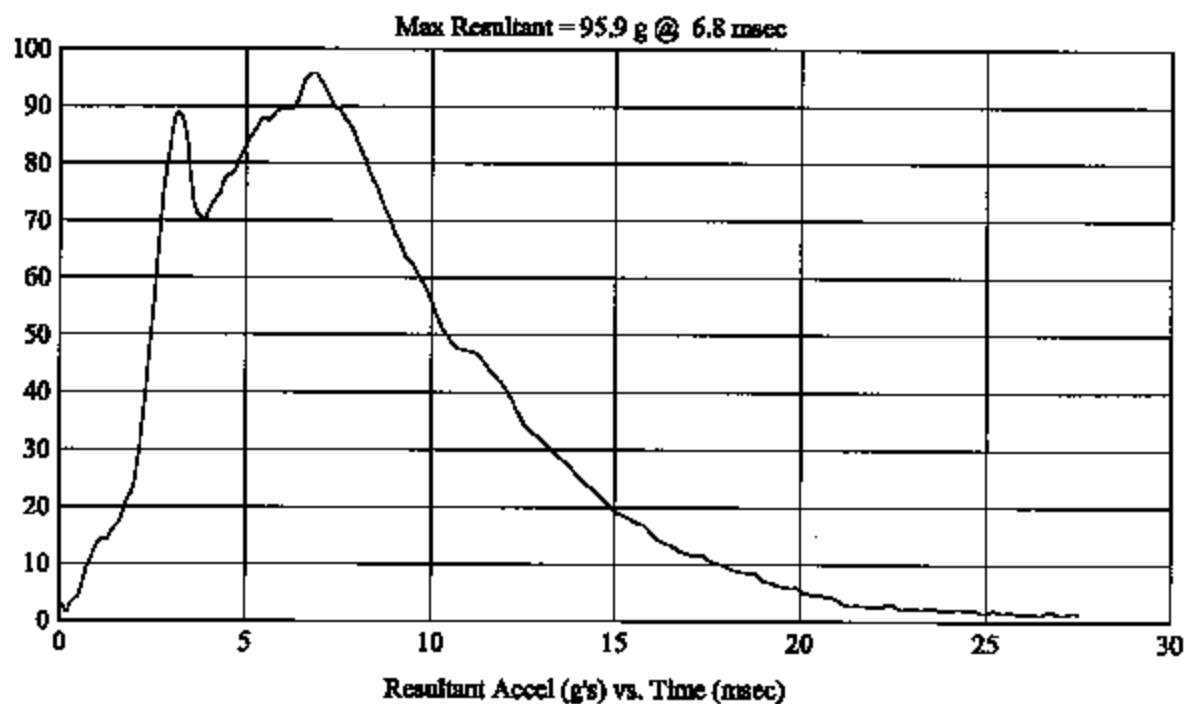
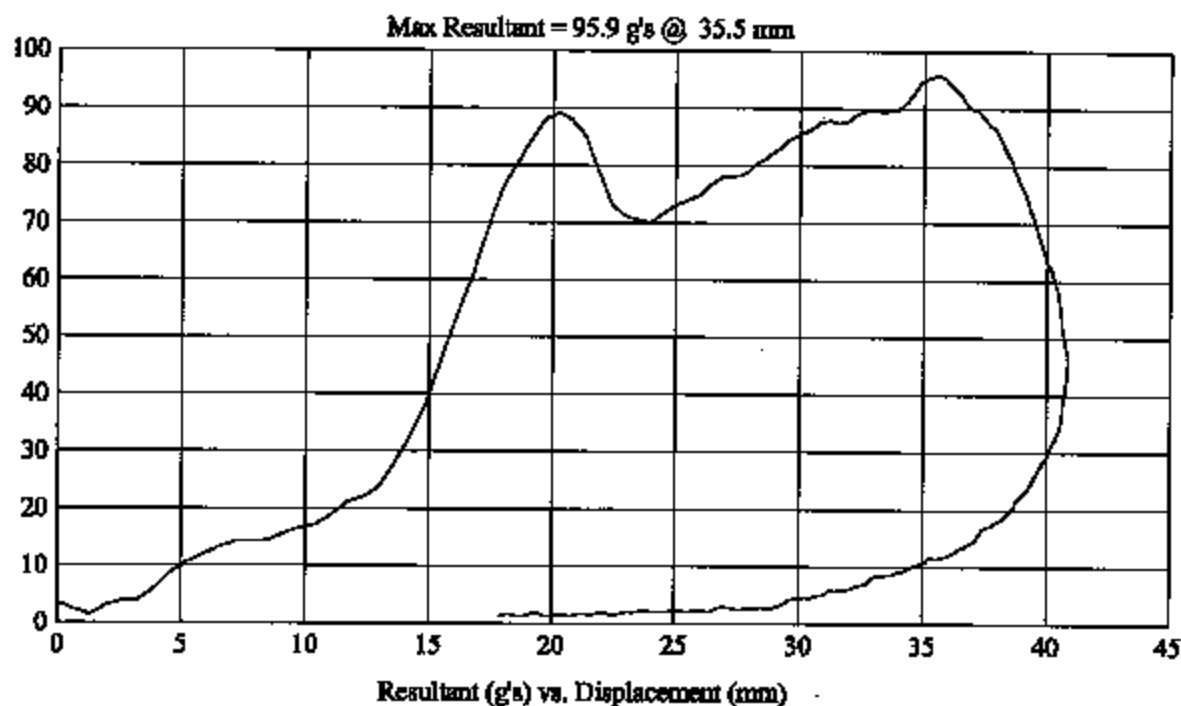
*Only necessary for NHTSA (Government) Compliance testing.

FMH
G04I7-001.3Customer: CHEVY
Test # 7
FM4057
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: BP3
Vehicle Side: Left
Horz/Vert Angle: 280/-7

HIC(d) = 494, HIC = 435, Delta T = 9.1 msec

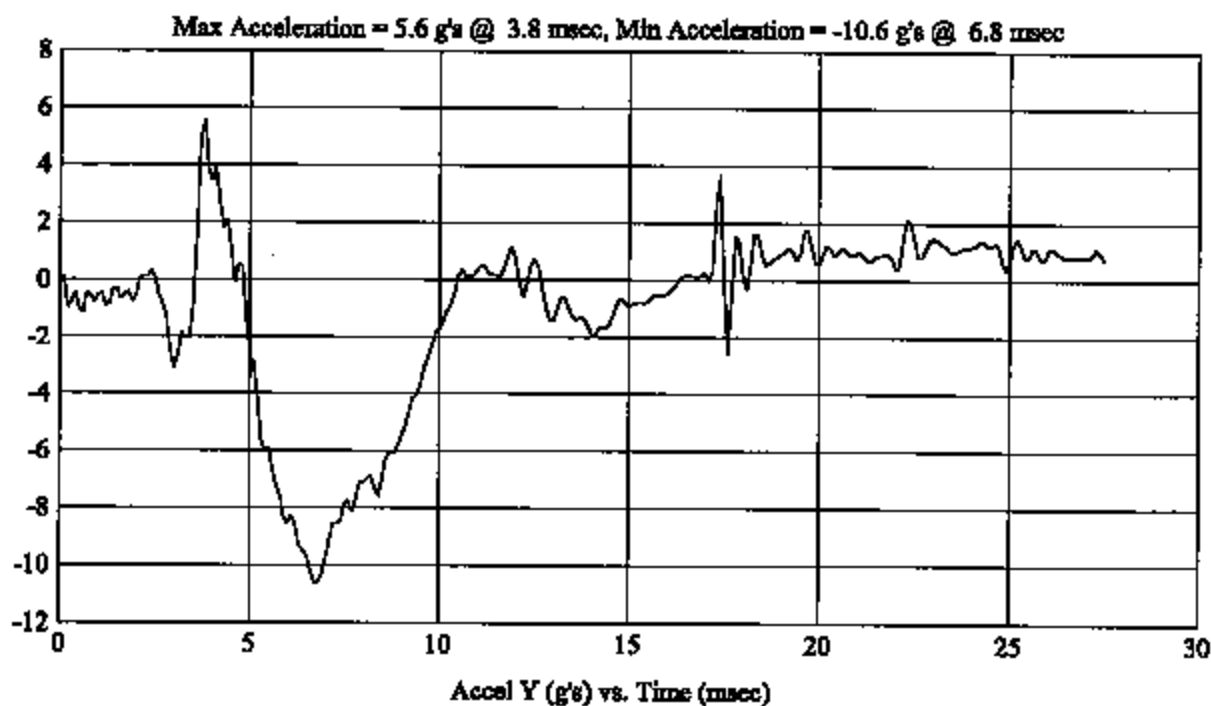
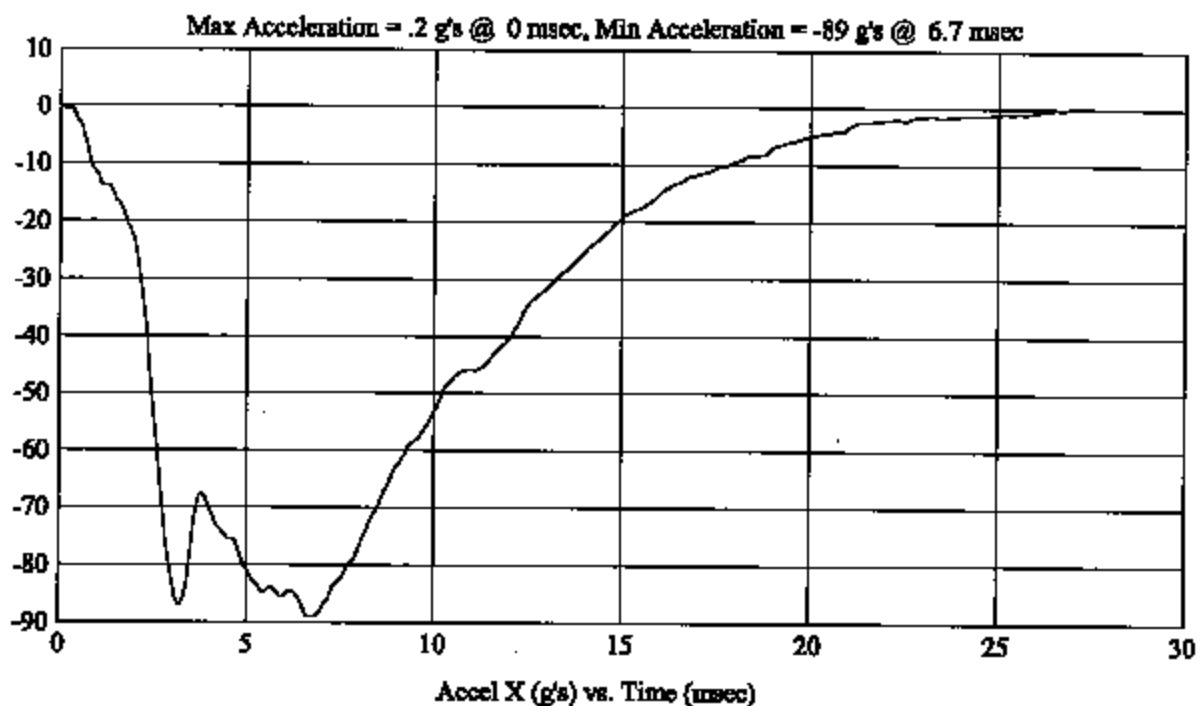


FMH
G0417-001.3Customer: CHEVY
Test # 7
FM4057
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: BP3
Vehicle Side: Left
Hnz/Vert Angle: 280/-7

HIC(d) = 494, HIC = 435, Delta T = 9.1 msec



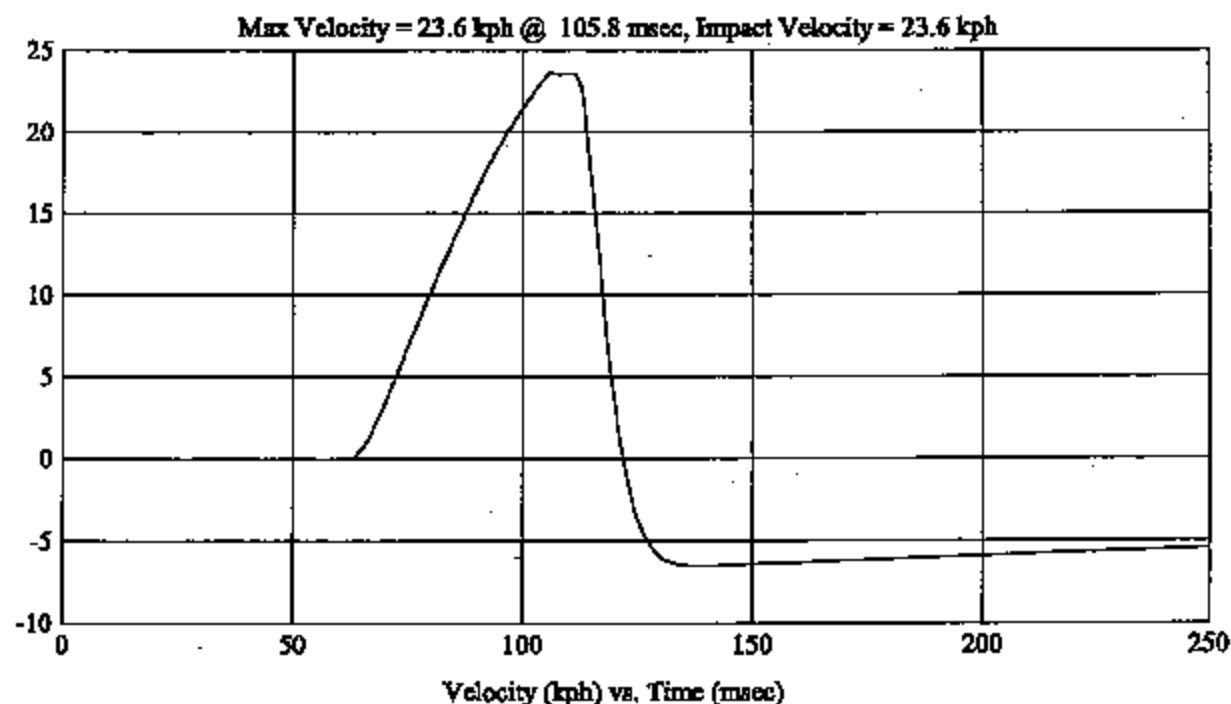
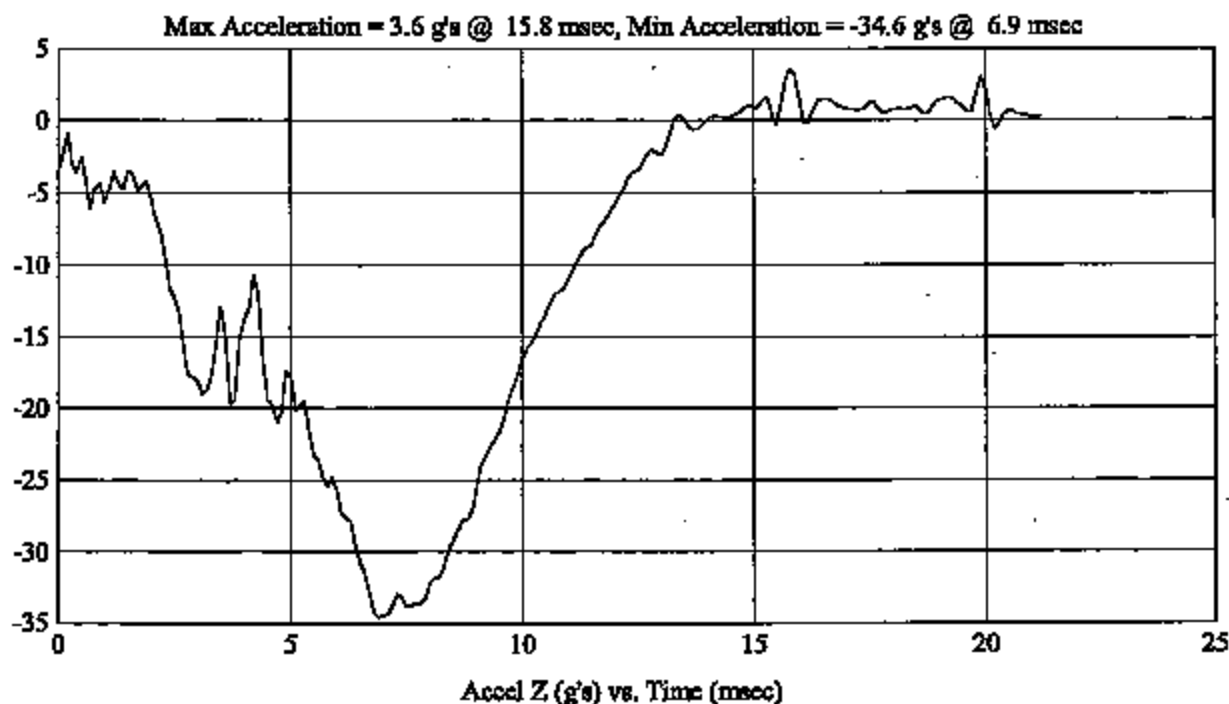
FMH
G04I7-001.3Customer: CHEVY
Test # 7
FM4057
Additional Desc: N/A

Vehicle Program : ASTRO

Test Date: 3/25/04

Model Year: 2004
Target: BP3
Vehicle Side: Left
Horz/Vert Angle: 280/-7

HIC(d) = 494, HIC = 435, Delta T = 9.1 msec

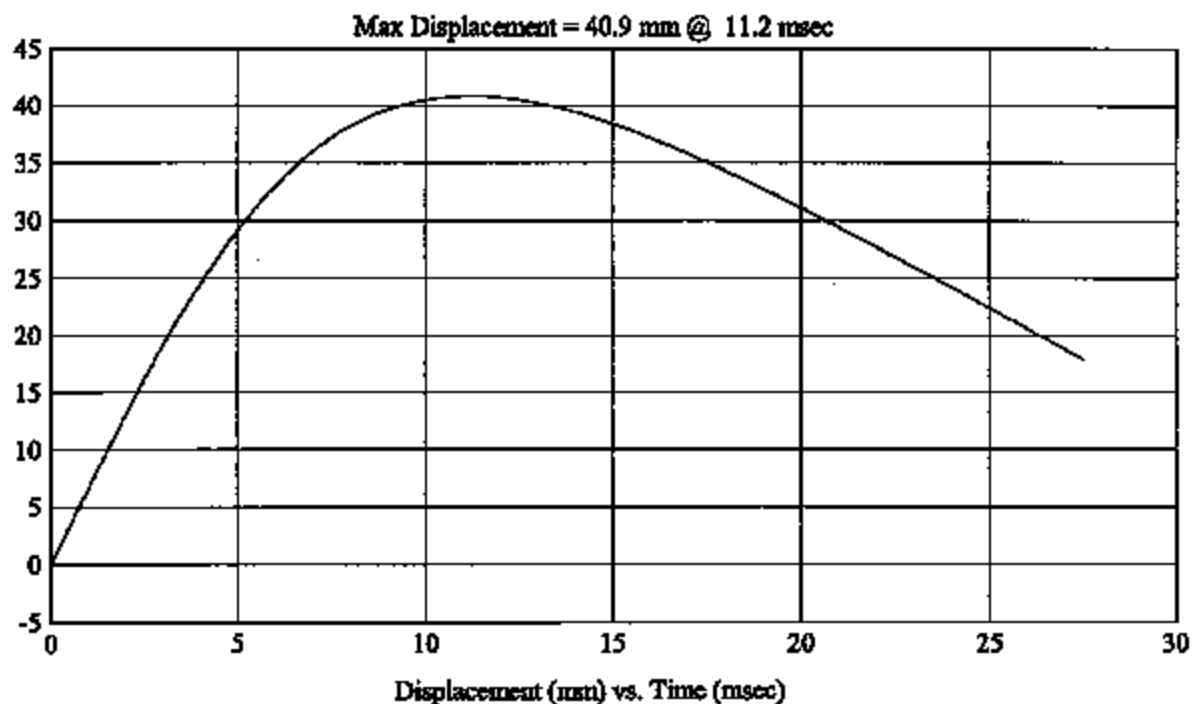


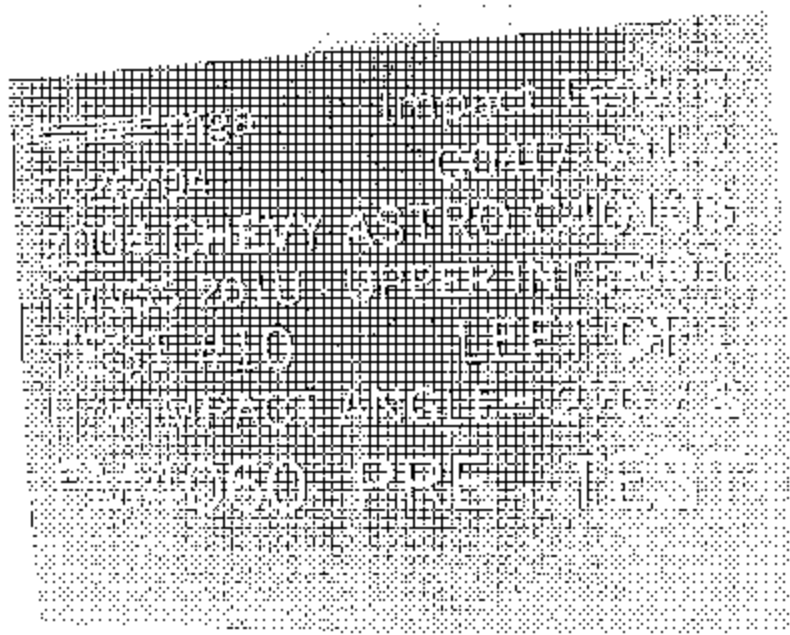
FMH
G0417-001.3Customer: CHEVY
Test # 7
FM4057
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: BP3
Vehicle Side: Left
Horz/Vert Angle: 280/-7

HIC(d) = 494, HIC = 435, Delta T = 9.1 msec





m32 Impact Test
1/26/04 G0417 GH
2004 CHEVY ASTRO C401
FMVSS 2010 UPPER INTER
TEST #10 LEFT
WAY IMPACT ANGLE = 27°
FM4060 POSITION



.....

MICHIGAN OPERATIONS
DATE: 3/20/93
SUPERCEDES: MGATP201U_FRAME #2.4

DOC. NO.: MGATP201U_FRAME #2
REVISION NO.: 5
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C40108 VEHICLE YR/MAKE/MODEL: 2004 CHRYSLER ASTRO

GENERAL TEST PARAMETERS:

Test Number: 10

Target (Vehicle Side) Left Right OP1

Temperature: 22 °F °C

MGA Test Reference No.: FM4060

Humidity: 45 %

Approach Angles: Horizontal 270 °

Time of Test: 11:30 am pm

Vertical 8 °

FMH Serial No: 35

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
<u>571</u>	<u>586</u>	<u>7.1</u>	<u>24.0</u>	<u>22</u>	<u>1</u>

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>J35924</u>	<u>-91.8</u>	<u>1.20</u>	<u>1.20</u>
<u>Y</u>	<u>6</u>	<u>J35919</u>	<u>93.5</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J31081</u>	<u>93.5</u>	<u>1.51</u>	<u>1.51</u>

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

NO VISIBLE DAMAGE

Recorded By: [Signature] Approved By: Helen D. Kales Date: 3/26/97

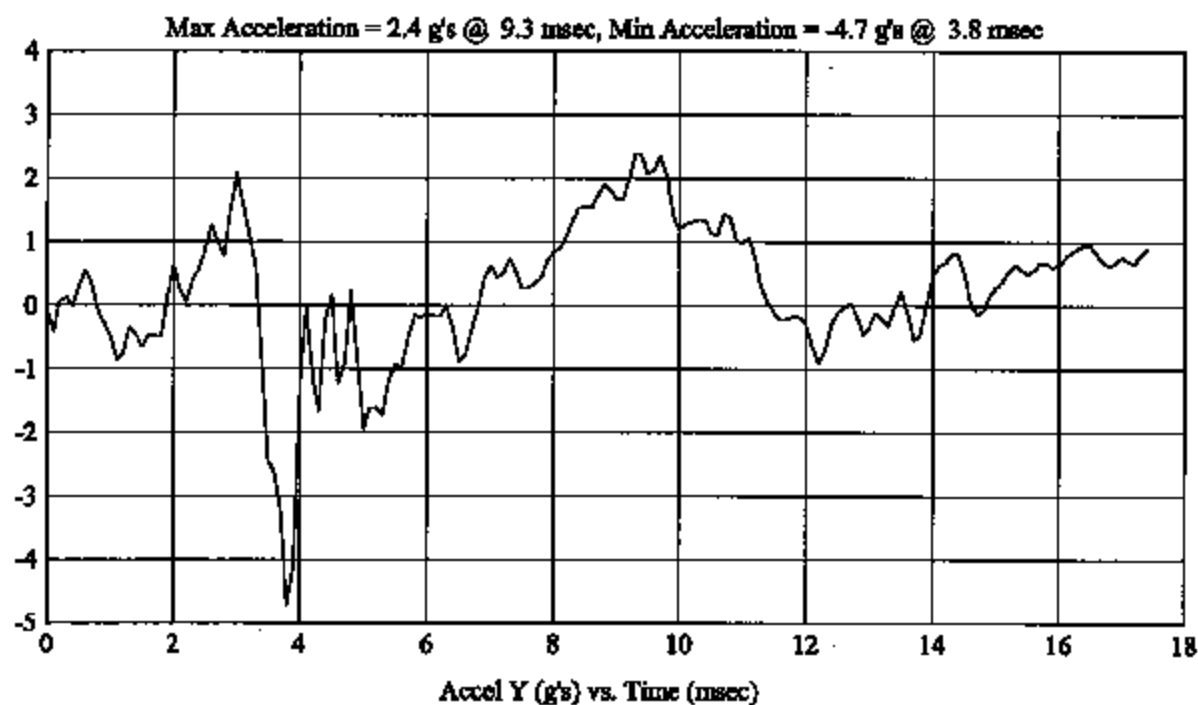
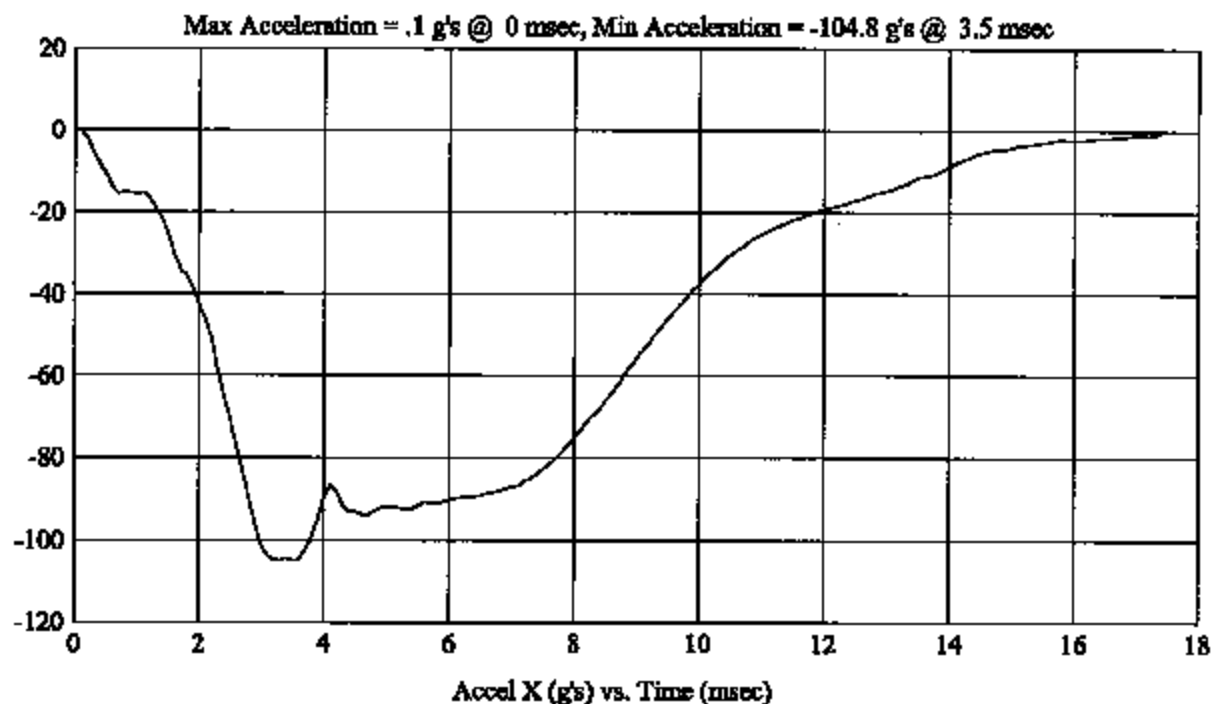
*Only necessary for NHTSA (Government) Compliance testing.

FMH
G04I7-001.3Customer: CHEVY
Test # 10
FM4060
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: OP1
Vehicle Side: Left
Horz/Vert Angle: 270/8

HIC(d) = 571, HIC = 536, Delta T = 7.1 msec



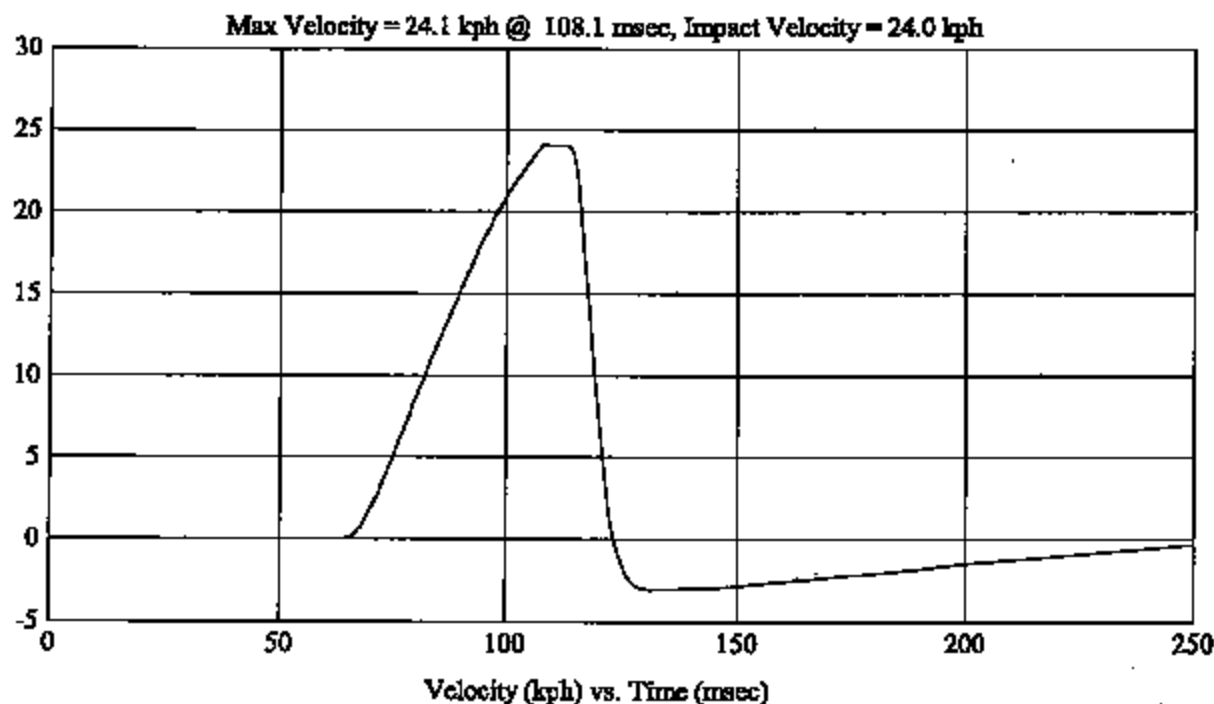
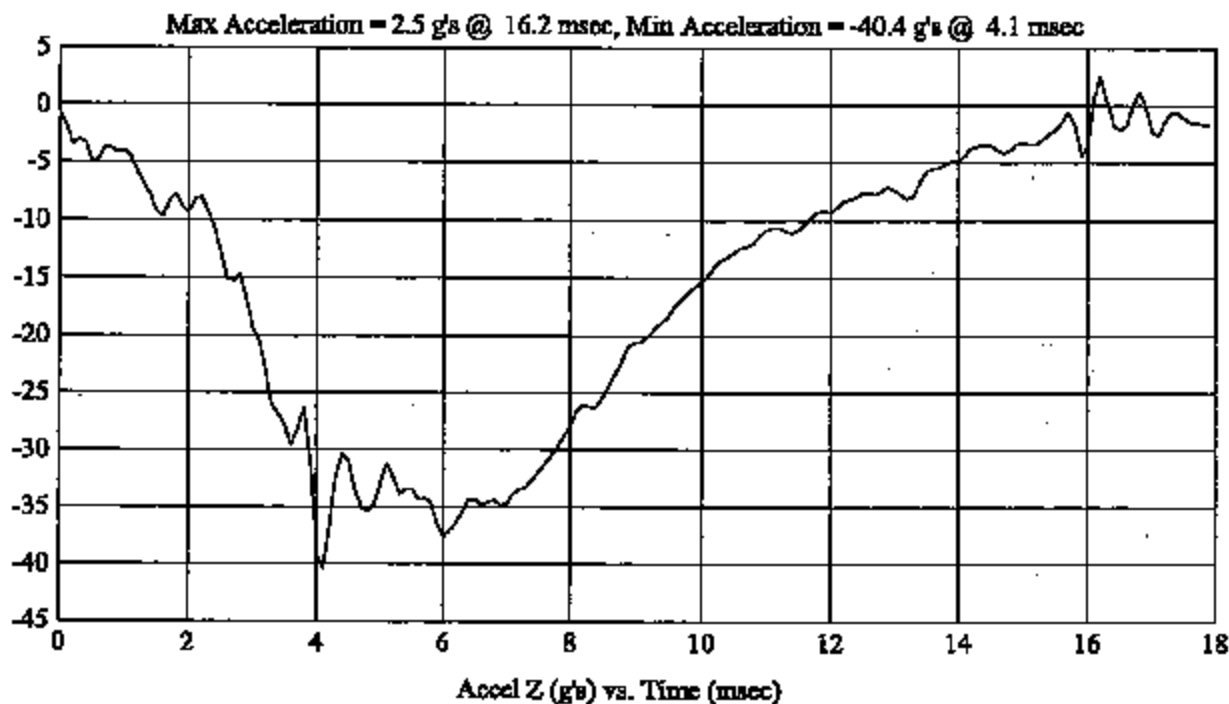
FMH
G04I7-001.3Customer: CHEVY
Test # 10
FM4060
Additional Desc: N/A

Vehicle Program : ASTRO

Test Date: 3/26/04

Model Year: 2004
Target: OP1
Vehicle Side: Left
Horz/Vert Angle: 270/8

HIC(d) = 571, HIC = 536, Delta T = 7.1 msec



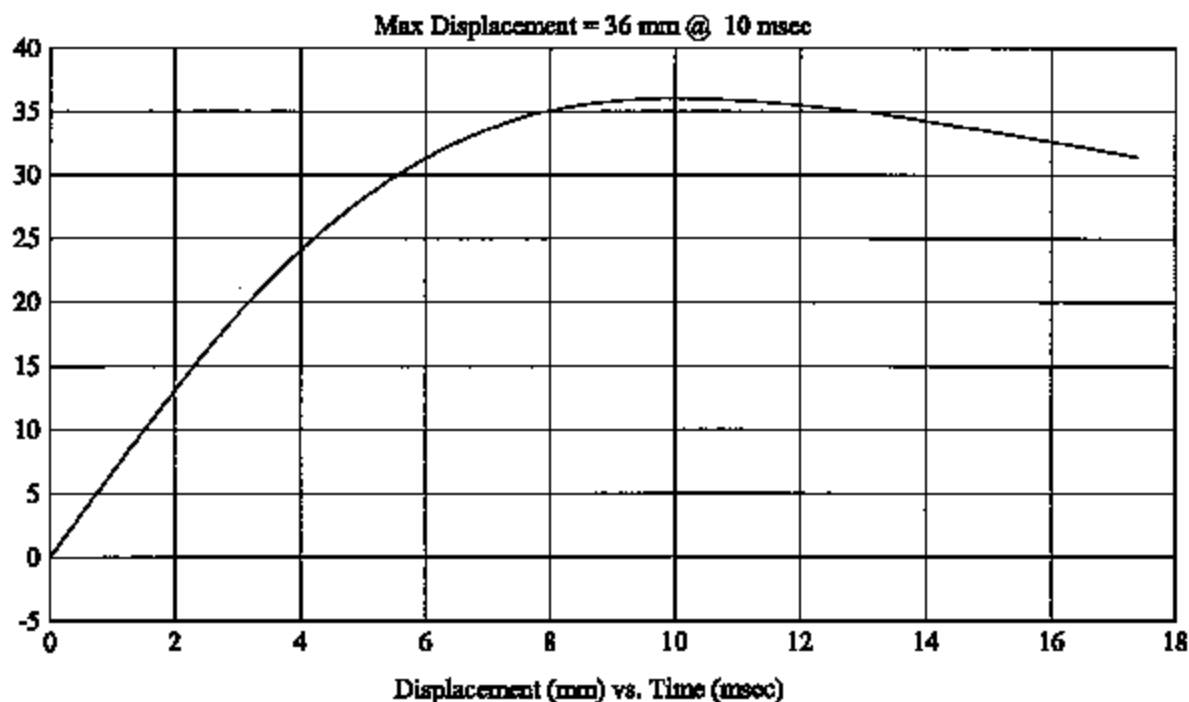
FMH
G04I7-001.3

Customer: CHEVY
Test # 10
FM4060
Additional Desc: N/A

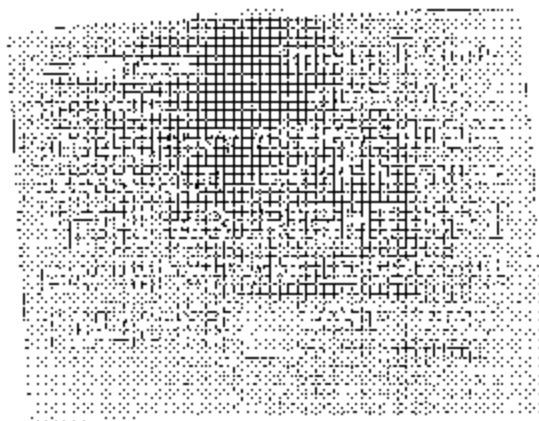
Vehicle Program : ASTRO

Model Year: 2004
Target: OP1
Vehicle Side: Left
Horz/Vert Angle: 270/8

HIC(d) = 571, HIC = 536, Delta T = 7.1 msec



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 100. [REDACTED]



07/23/04
 2004 CHEVY ACAP50H115
 10/23/2016 0000000000
 TEST #3 0100000000
 0000000000
 0000000000
 0000000000

MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATP201U_FRAME #2.4

DOC. NO.: MGATP201U_FRAME #2
REVISION NO.: 3
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO.: C40100 VEHICLE YR/MAKE/MODEL: 2004 CHEVY ASTRO

GENERAL TEST PARAMETERS:

Test Number: 3

Target (Vehicle Side): left (right) SM

Temperature: 22 °F (C)

MGA Test Reference No.: FMH053

Humidity: 41 %

Approach Angles: Horizontal 90 °

Time of Test: 2:30 am/pm (m)

Vertical 45 °

FMH Serial No: 38

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
<u>GSS</u>	<u>648</u>	<u>8.6</u>	<u>23.5</u>	<u>10</u>	<u>10</u>

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>J36197</u>	<u>-107.3</u>	<u>1.20</u>	<u>1.20</u>
<u>Y</u>	<u>6</u>	<u>J36193</u>	<u>101.1</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J36353</u>	<u>97.1</u>	<u>1.51</u>	<u>1.51</u>

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

NO VISIBLE DAMAGE

Recorded By: [Signature] Approved By: Heleen A. Kalito Date: 3/25/04

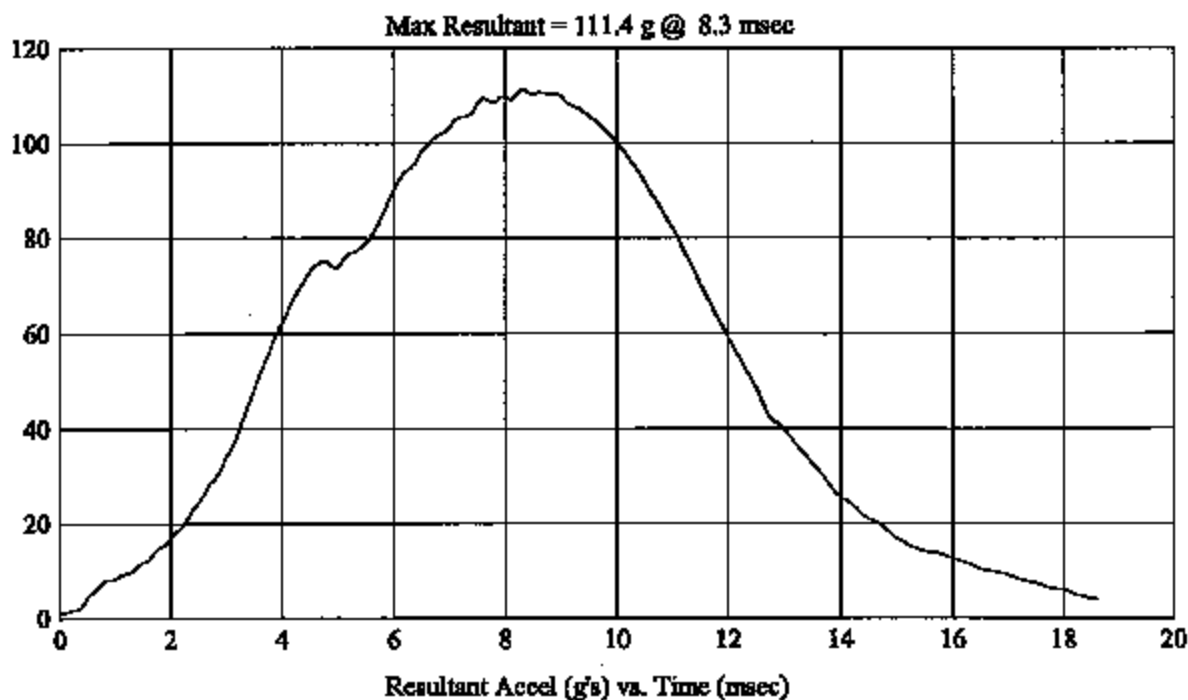
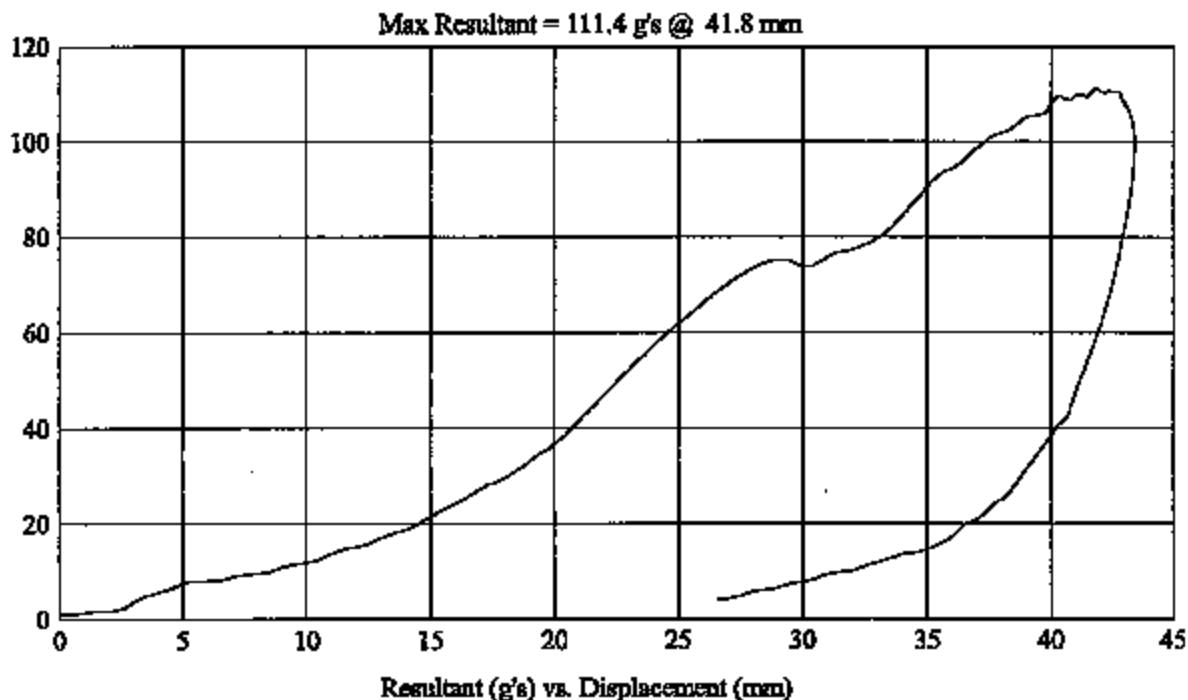
*Only necessary for NHTSA (Government) Compliance testing.

FMH
G04I7-001.3Customer: CHEVY
Test # TEST #3
FM4053
Additional Desc: N/A

Vehicle Program: ASTRO

Model Year: 2004
Target: SR1
Vehicle Side: Right
Horz/Vert Angle: 90/45

HIC(d) = 655, HIC = 648, Delta T = 8.6 msec

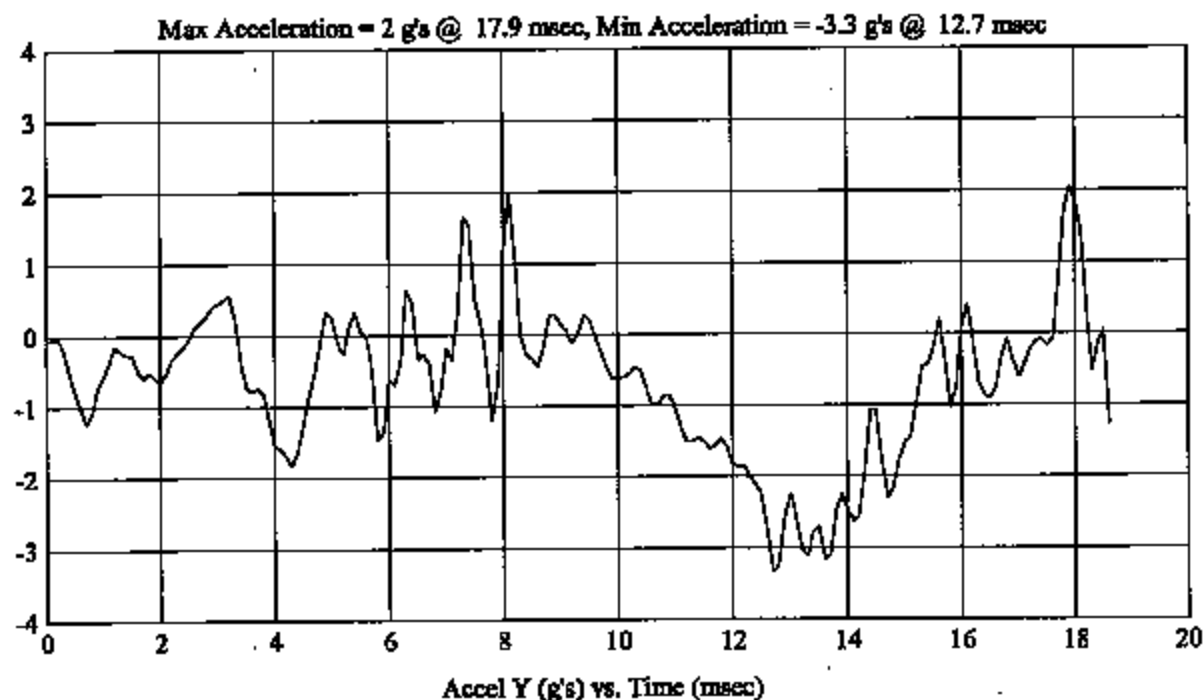
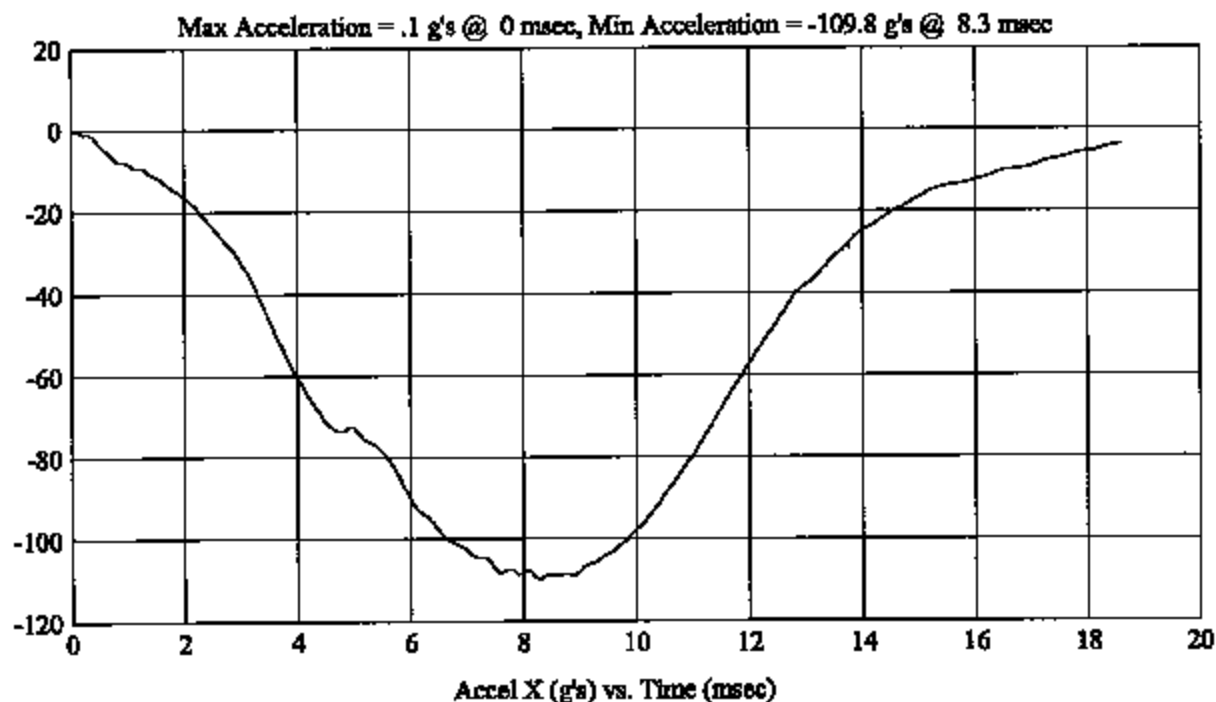


FMH
G04I7-001.3Customer: CHEVY
Test # TEST #3
FM4053
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: SR1
Vehicle Side: Right
Horz/Vert Angle: 90/45

HIC(d) = 655, HIC = 648, Delta T = 8.6 msec



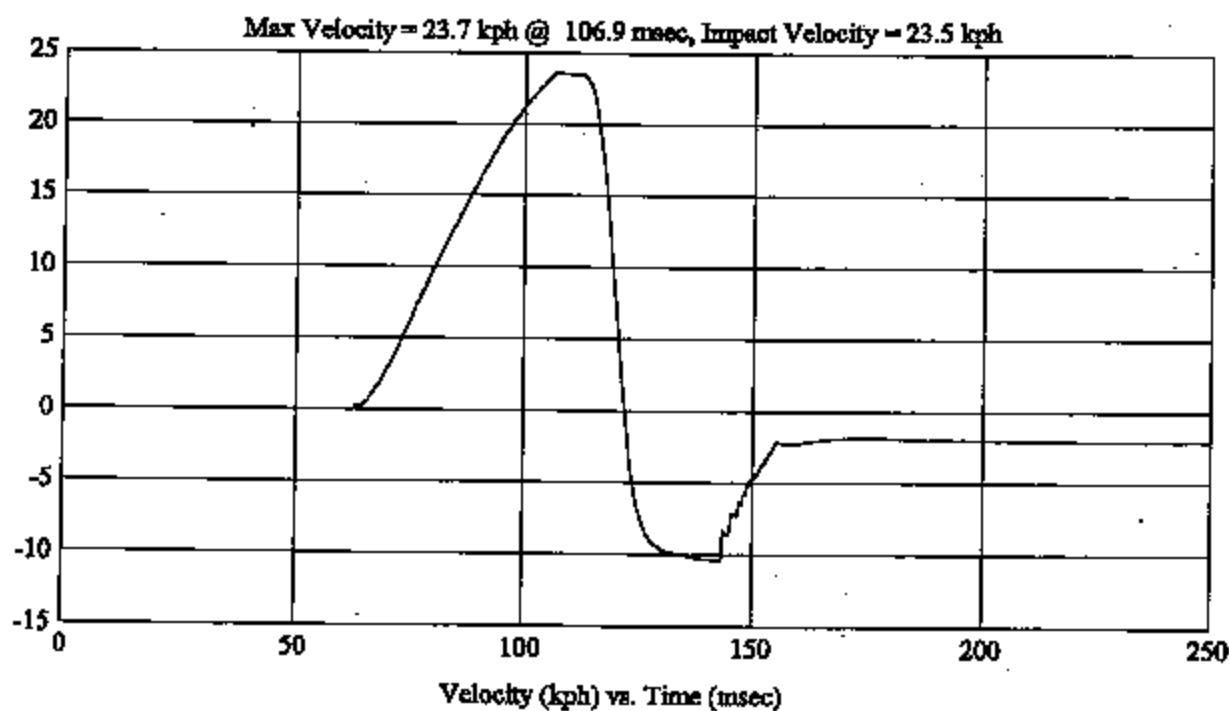
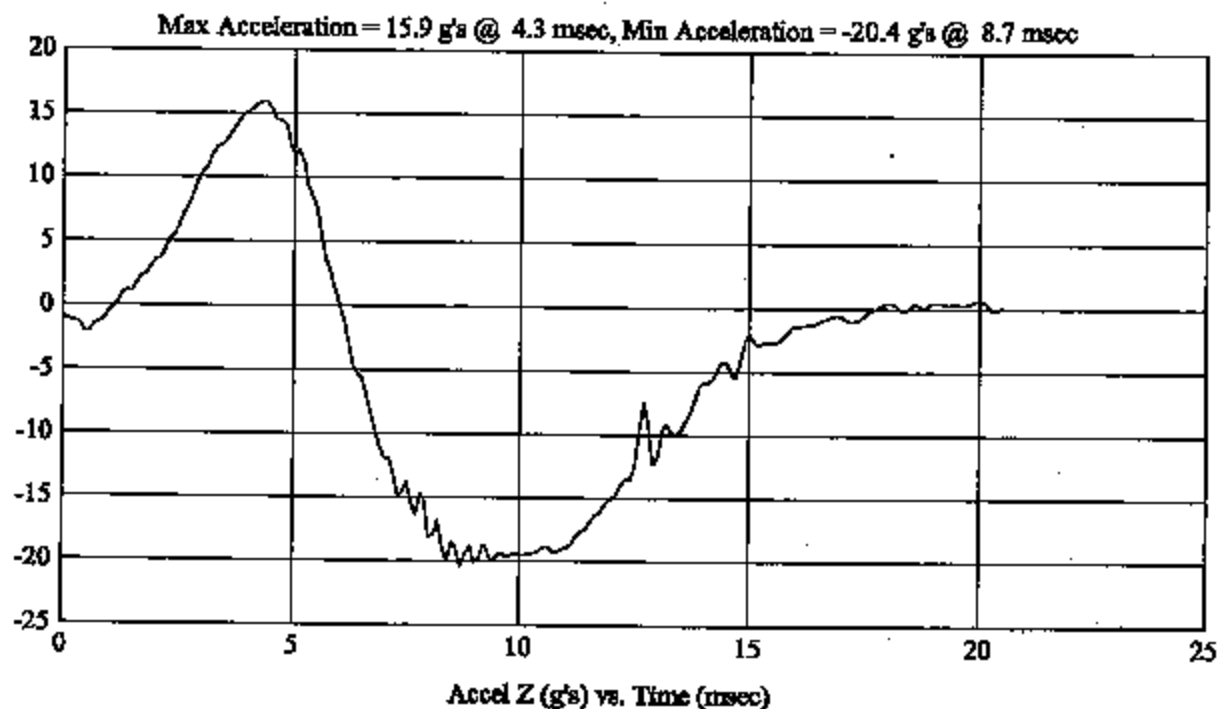
FMH
G04I7-001.3Customer: CHEVY
Test # TEST #3
FM4053
Additional Desc: N/A

Vehicle Program : ASTRO

Test Date: 3/23/04

Model Year: 2004
Target: SR1
Vehicle Side: Right
Horz/Vert Angle: 90/45

HIC(3) = 655, HIC = 648, Delta T = 8.6 msec

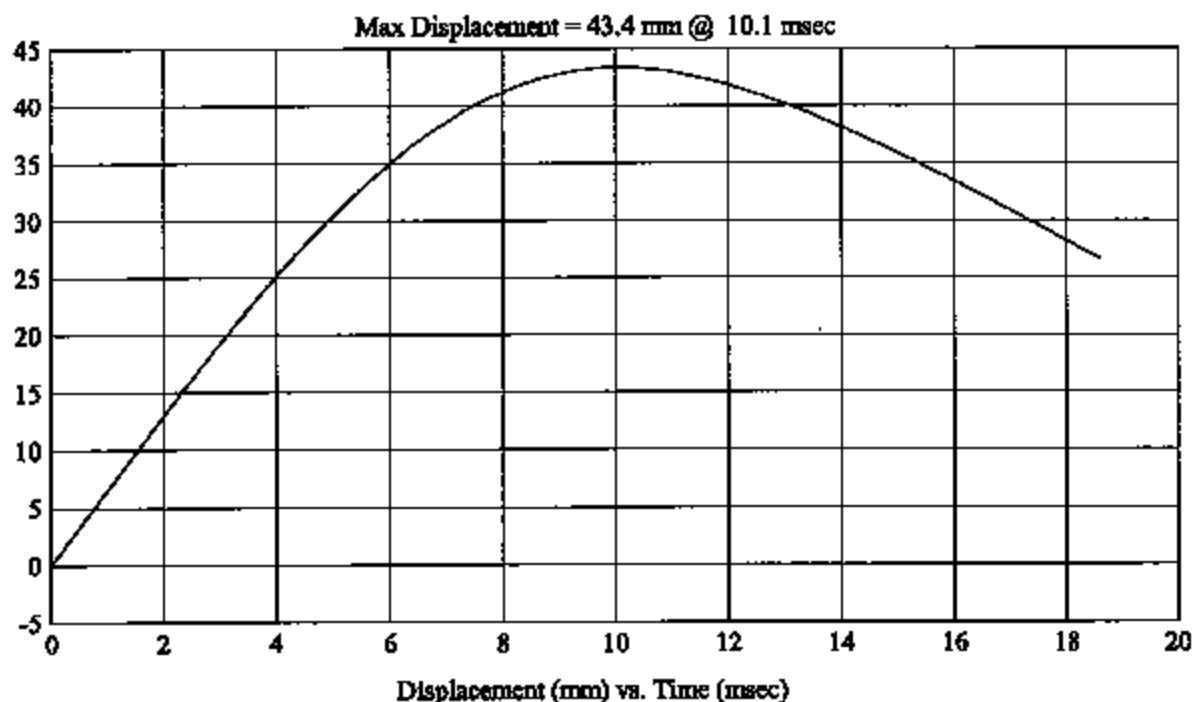


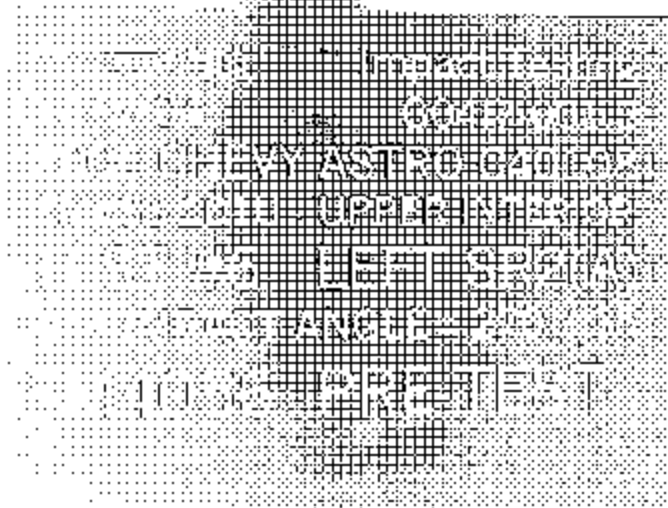
FMH
G04I7-001.3Customer: CHEVY
Test # TEST #3
FM4053
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: SR1
Vehicle Side: Right
Horz/Vert Angle: 90/45

HIC(d) = 655, HIC = 648, Delta T = 8.6 msec







MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATP201U_FRAME #24

DOC. NO.: MGATP201U_FRAME #2
REVISION NO.: 5
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C40108 VEHICLE YR/MAKE/MODEL: 2004 CHEVY ASPRO

GENERAL TEST PARAMETERS:

Test Number: 6

Target (Vehicle Side): Left/Right SL2A

Temperature: 22 °F (C)

MGA Test Reference No.: FM4056

Humidity: 45 %

Approach Angles: Horizontal 270 °

Time of Test: 3:10 am (pm)

Vertical 35 °

FMH Serial No: 38

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
<u>561</u>	<u>522</u>	<u>7.8</u>	<u>23.7</u>	<u>19</u>	<u>3</u>

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>J36197</u>	<u>-107.3</u>	<u>1.20</u>	<u>1.20</u>
<u>Y</u>	<u>6</u>	<u>J36193</u>	<u>101.1</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J36353</u>	<u>97.1</u>	<u>1.51</u>	<u>1.51</u>

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

NO VISIBLE DAMAGE

Recorded By: [Signature] Approved By*: [Signature] Date: 3/25/04

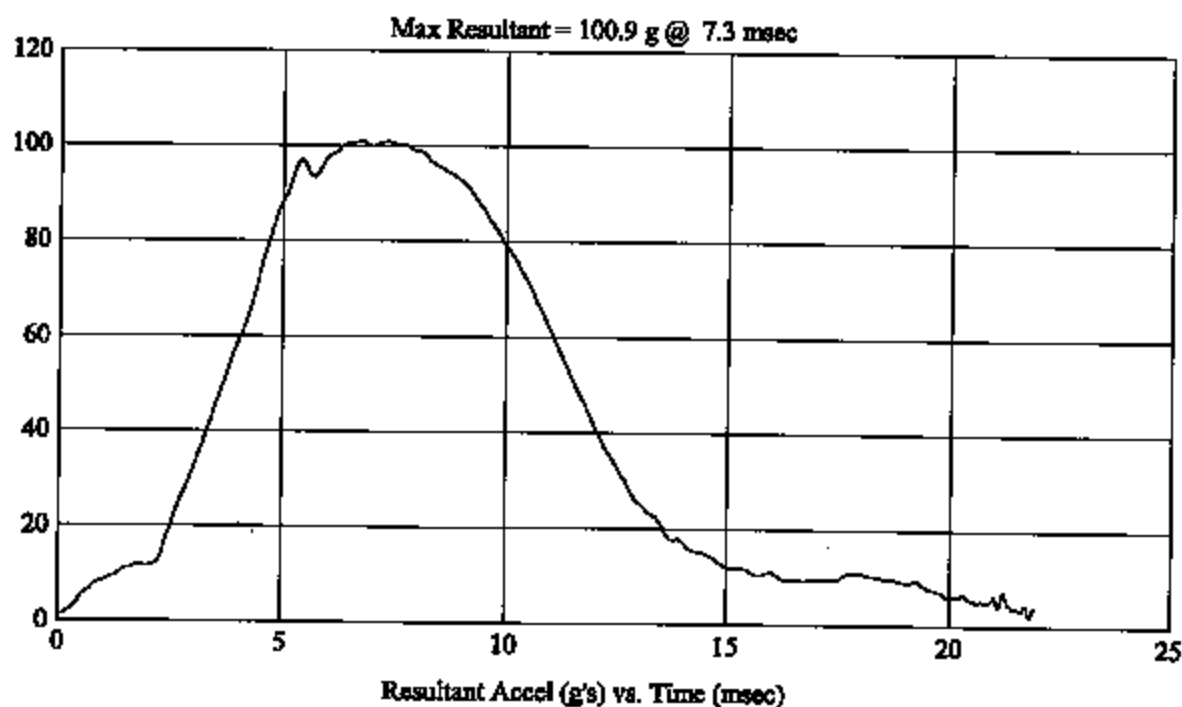
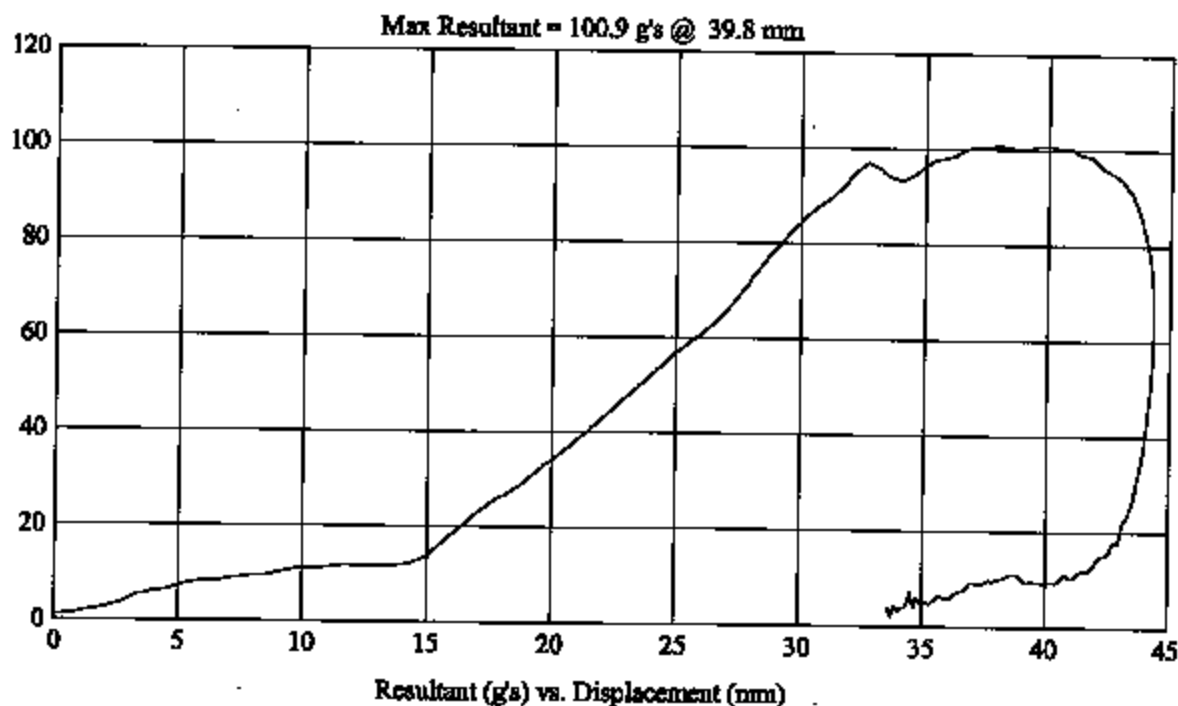
*Only necessary for NHTSA (Government) Compliance testing.

FMH
G04I7-001.3Customer: CHEVY
Test # 6
FM4056
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: SR2(a)
Vehicle Side: Left
Horz/Vert Angle: 270/35

HIC(d) = 561, HIC = 522, Delta T = 7.8 msec

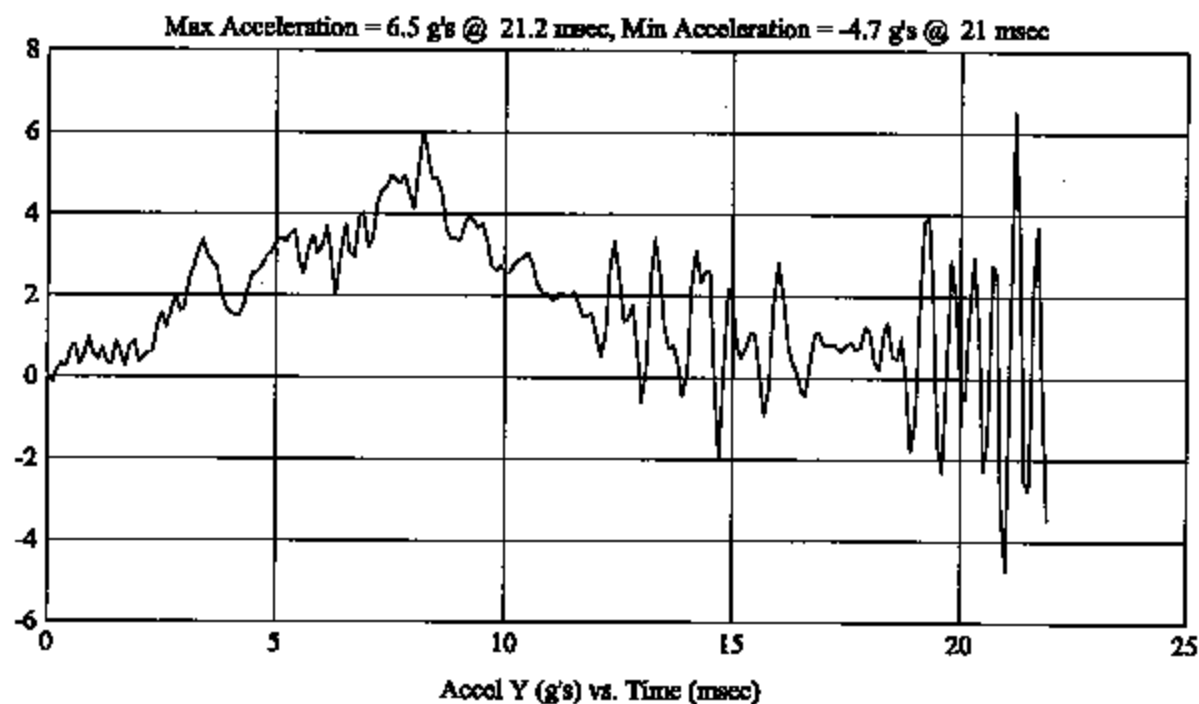
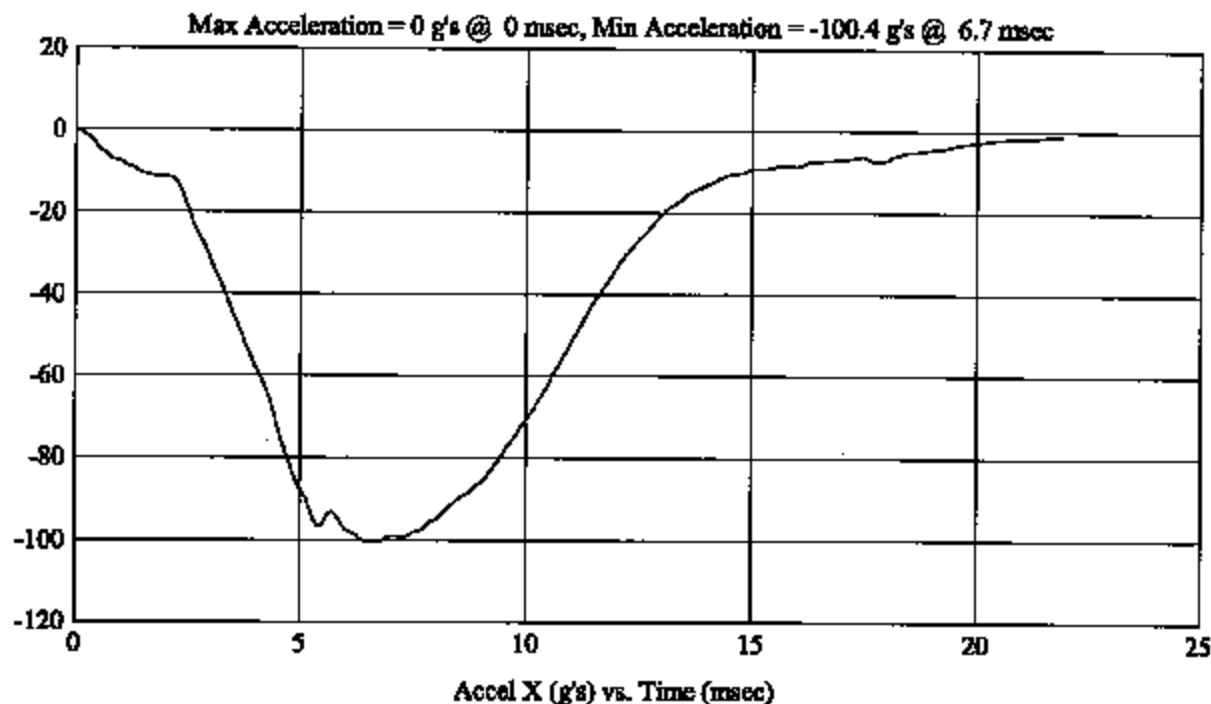


FMH
G04I7-001.3Customer: CHEVY
Test # 6
PM4056
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: SR2(a)
Vehicle Side: Left
Horz/Vert Angle: 270/35

HIC(d) = 561, HIC = 522, Delta T = 7.8 msec



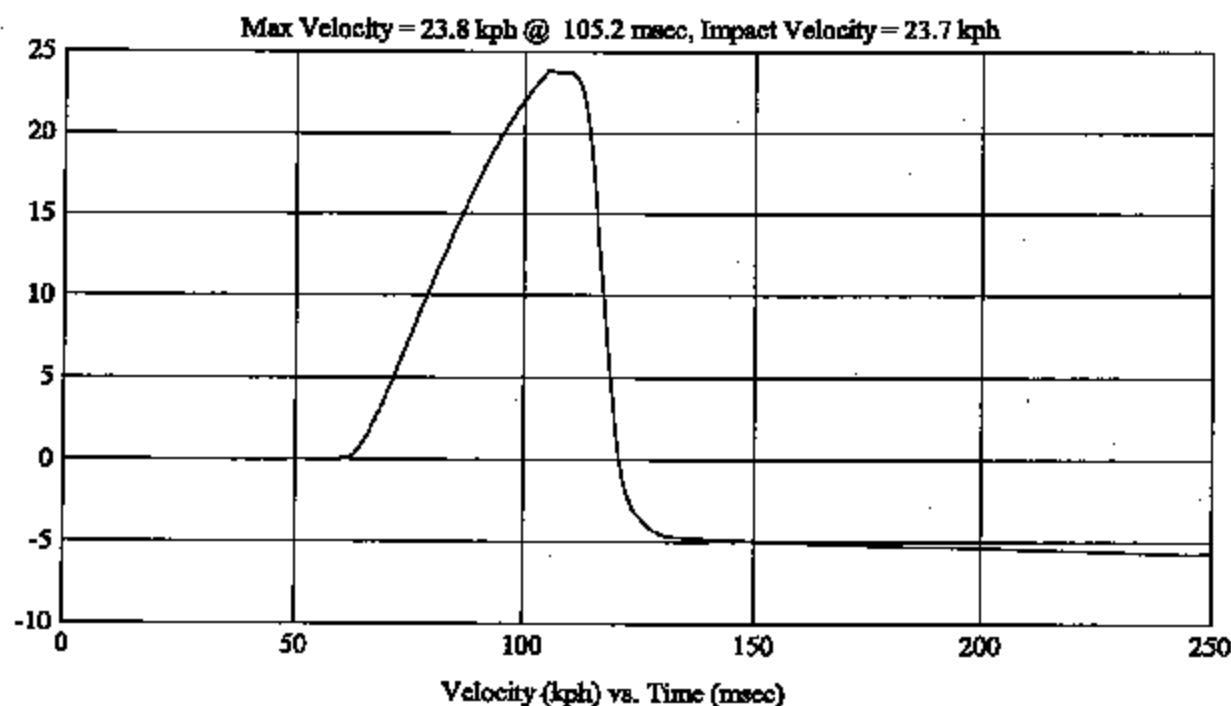
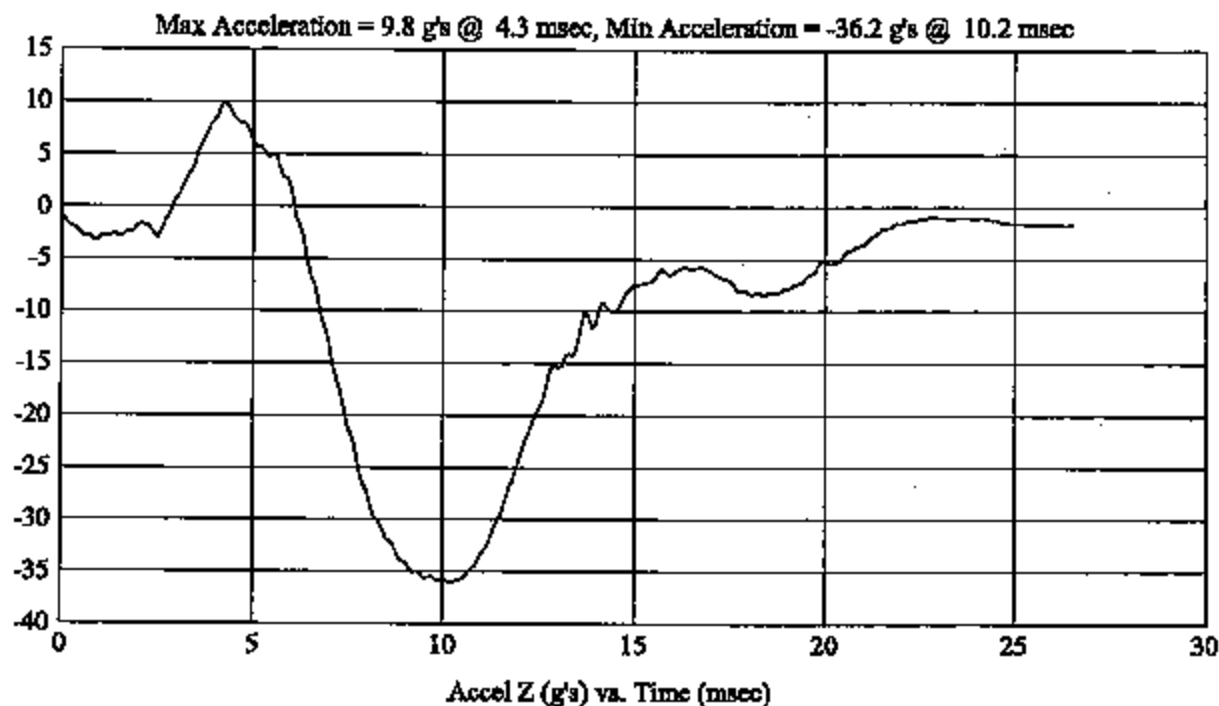
FMH
G04E7-001.3Customer: CHEVY
Test # 6
FM4056
Additional Desc: N/A

Vehicle Program : ASTRO

Test Date: 3/25/04

Model Year: 2004
Target: SR2(a)
Vehicle Side: Left
Horz/Vert Angle: 270/35

HIC(d) = 561, HIC = 522, Delta T = 7.8 msec

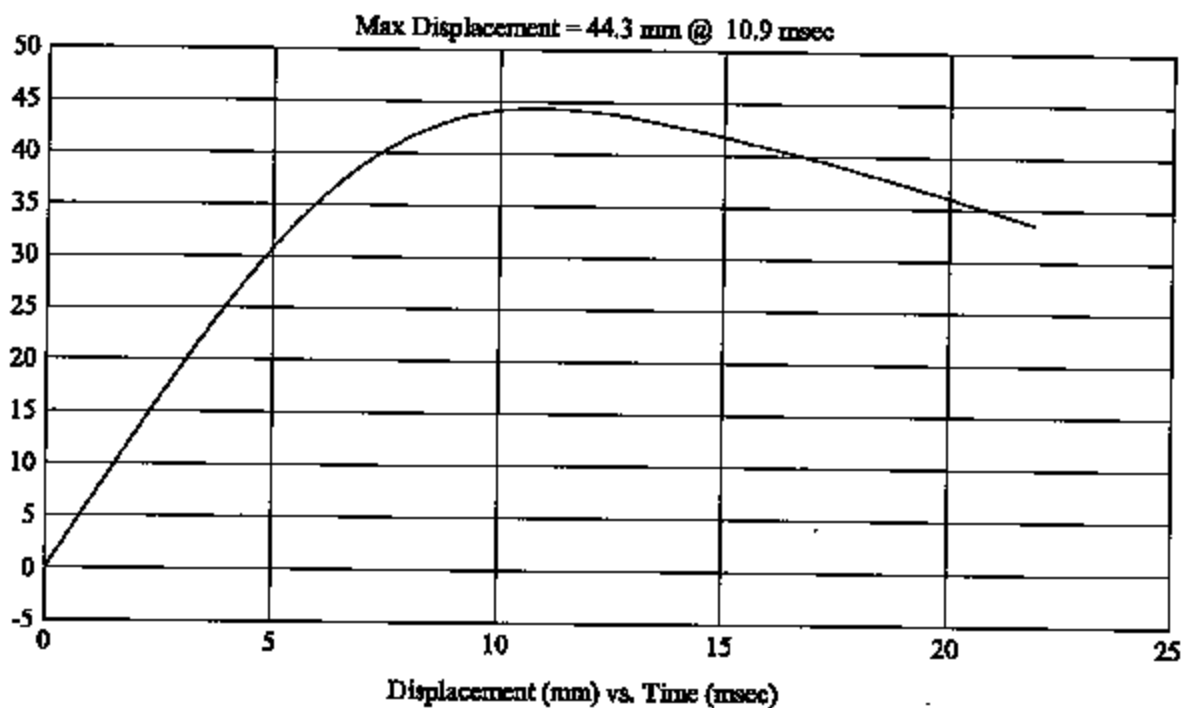


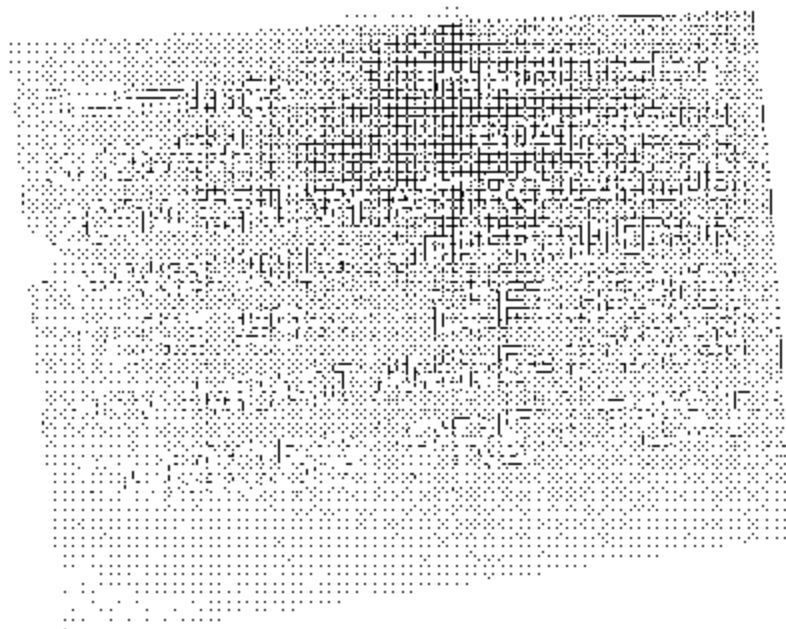
FMH
G0417-001.3Customer: CHEVY
Test # 6
FM4056
Additional Desc: N/A

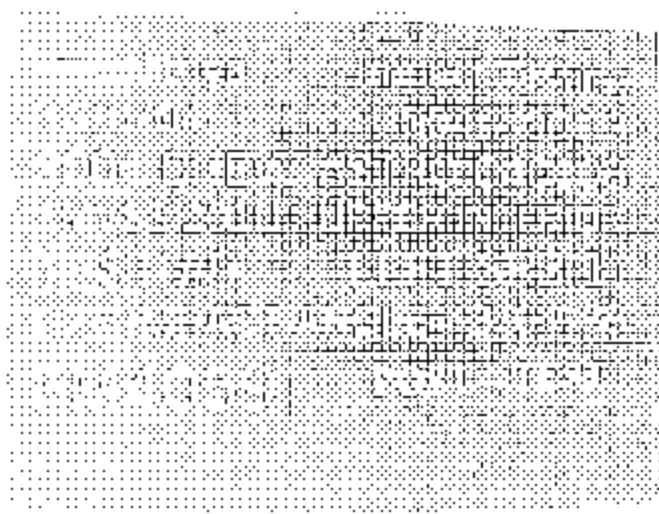
Vehicle Program : ASTRO

Model Year: 2004
Target: SR2(a)
Vehicle Side: Left
Horz/Vert Angle: 270/35

HIC(d) = 561, HIC = 522, Delta T = 7.8 msec







msa

3/26/04

2004 CHEVY ASTER

FMVSS 2010 UPPER

TEST #9 LEFT

H/V IMPACT ANGLE

FM4059

MICHIGAN OPERATIONS
 DATE: 3/20/03
 SUPERCEDES: MGATP201U_FRAME #2.4

DOC. NO.: MGATP201U_FRAME #2
 REVISION NO.: 3
 PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C40108 VEHICLE YR/MAKE/MODEL: 2004 CHRYSLER PT CRU

GENERAL TEST PARAMETERS:

Test Number: 9

Target (Vehicle Side): Left/Right SR3-1

Temperature: 22 °F (C)

MGA Test Reference No.: FM4059

Humidity: 45 %

Approach Angles: Horizontal 270 °

Time of Test: 10:00 @/pm

Vertical 30 °

FMH Serial No: 30

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
507	451	7.5	24.0	15	3

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J36197	107.3	1.20	1.20
Y	6	J36193	101.1	1.23	1.23
Z	7	J36353	97.1	1.51	1.51

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

NO VISIBLE DAMAGE

Recorded By: [Signature] Approved By: Debra Q. Kallala Date: 3/26/07

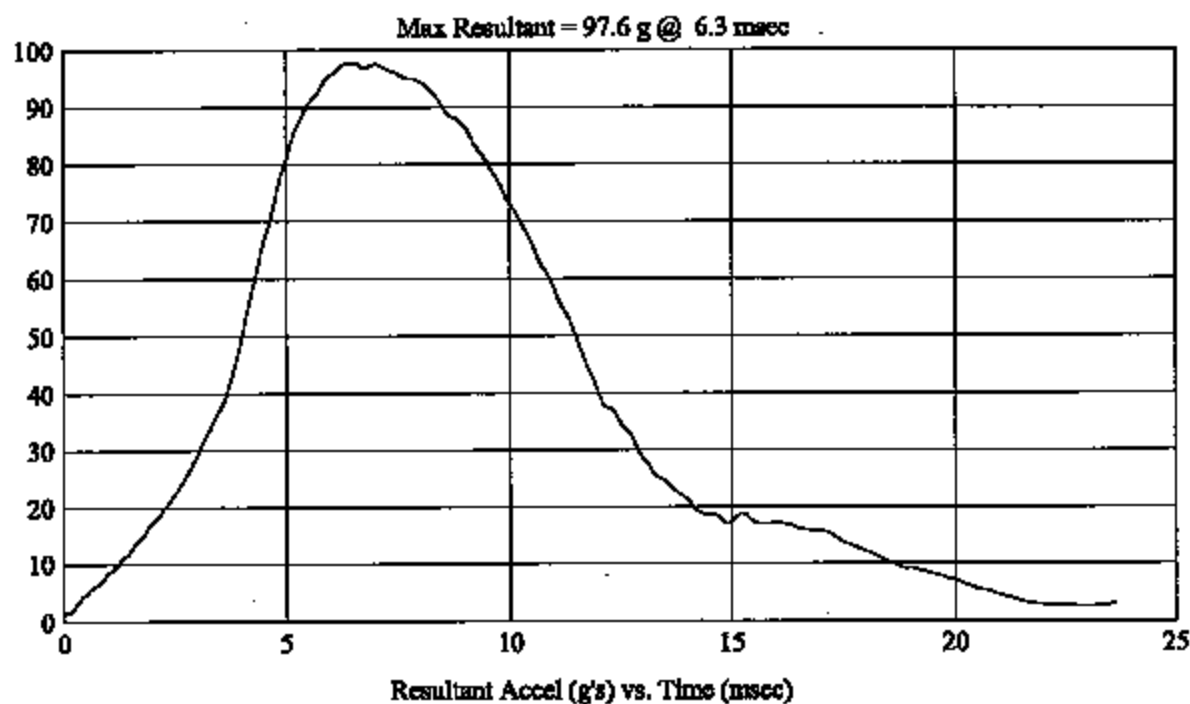
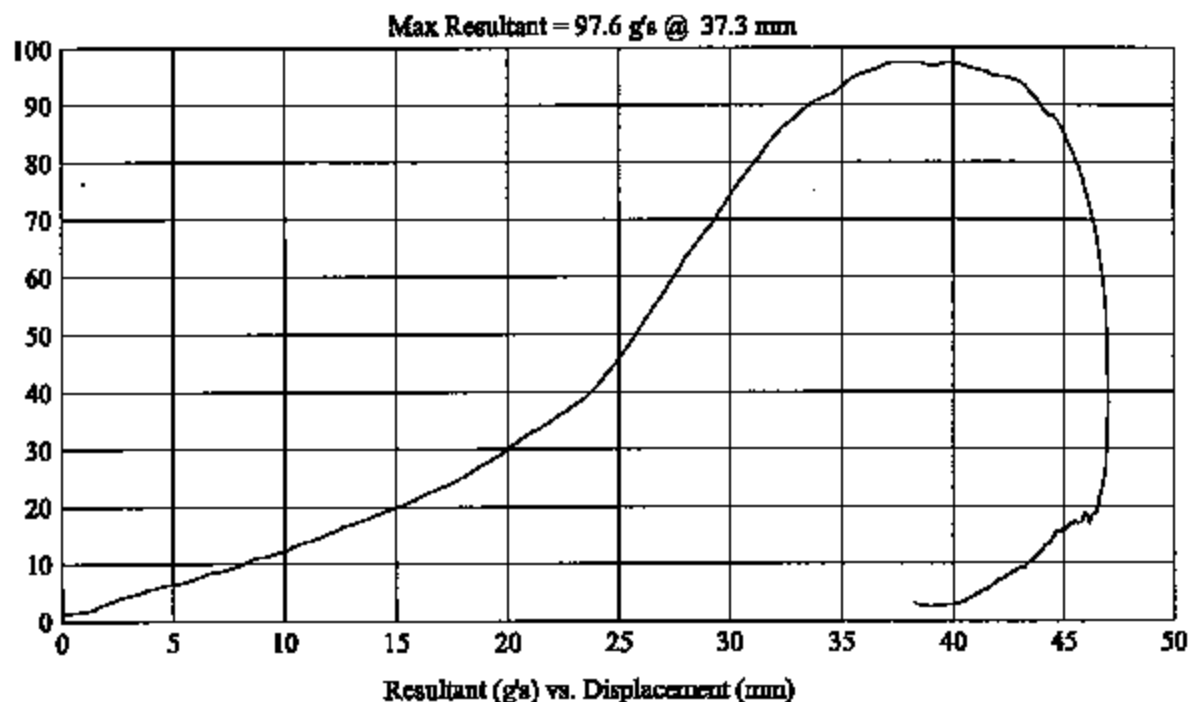
*Only necessary for NHTSA (Government) Compliance testing.

FMH
G04I7-001.3Customer: CHEVY
Test # 9
FM4059
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: SR3(1)
Vehicle Side: Left
Horz/Vert Angle: 270/38

HIC(d) = 507, HIC = 451, Delta T = 7.5 msec

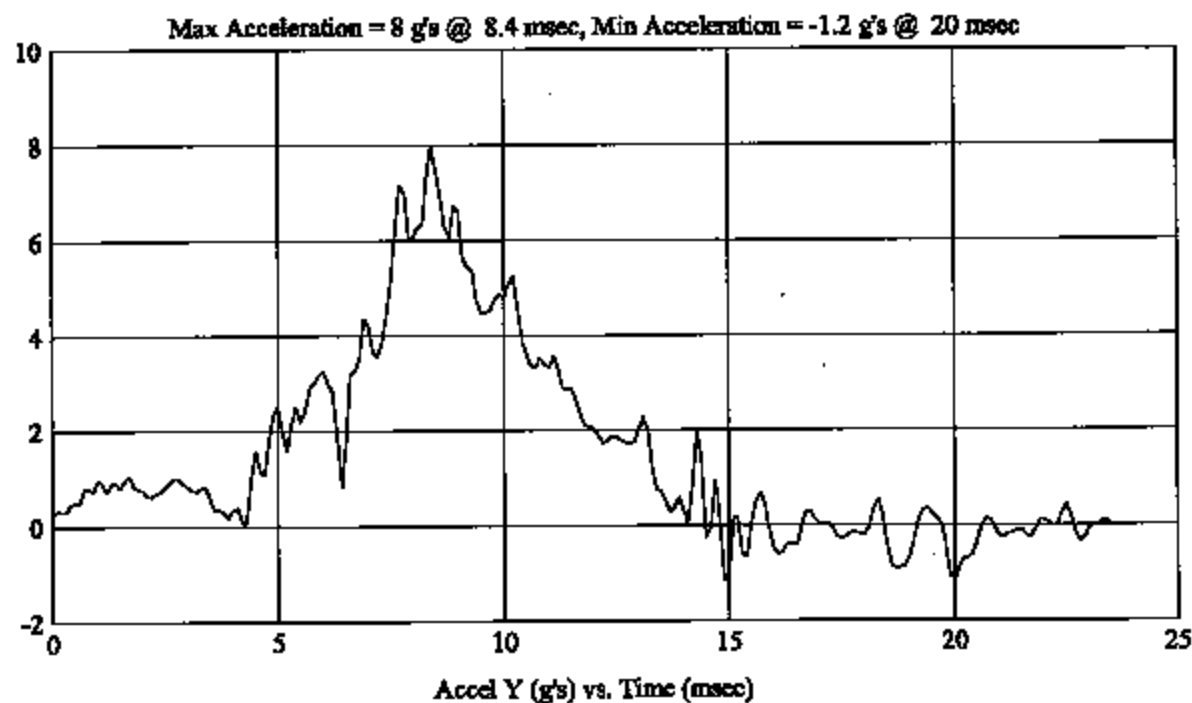
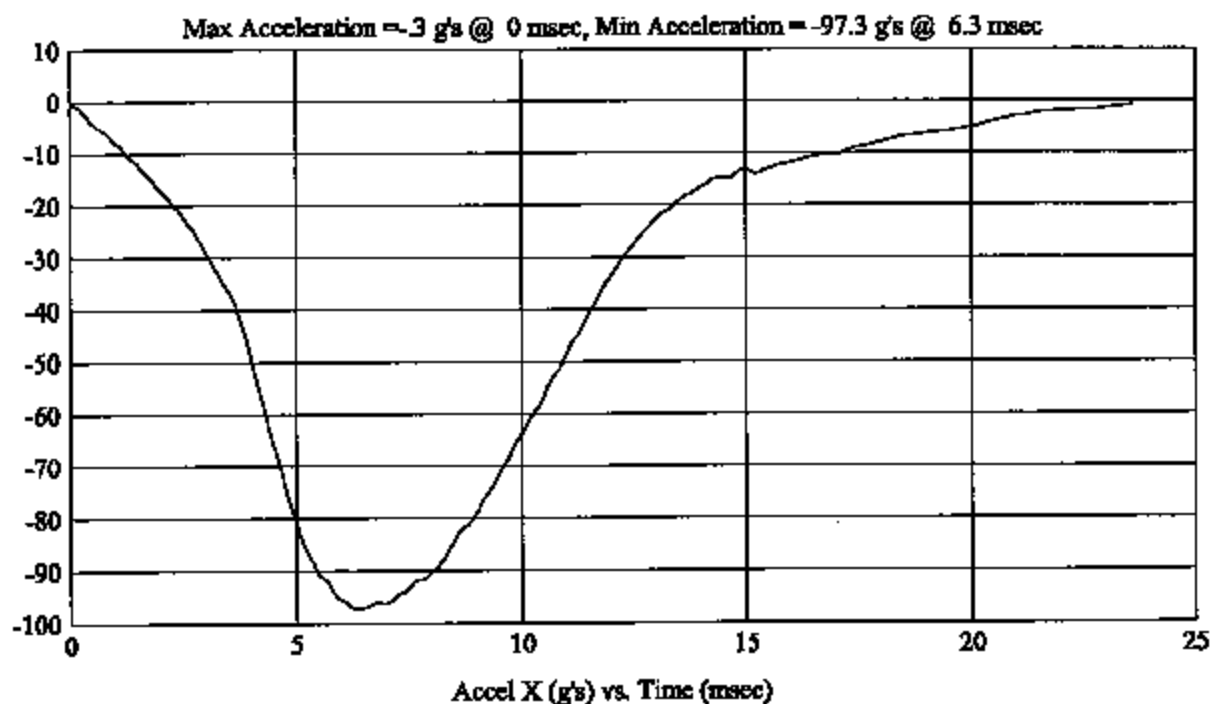


FMI
G04I7-001.3Customer: CHEVY
Test # 9
FM4059
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: SR3(1)
Vehicle Side: Left
Horz/Vert Angle: 270/38

HIC(d) = 507, HIC = 451, Delta T = 7.5 msec



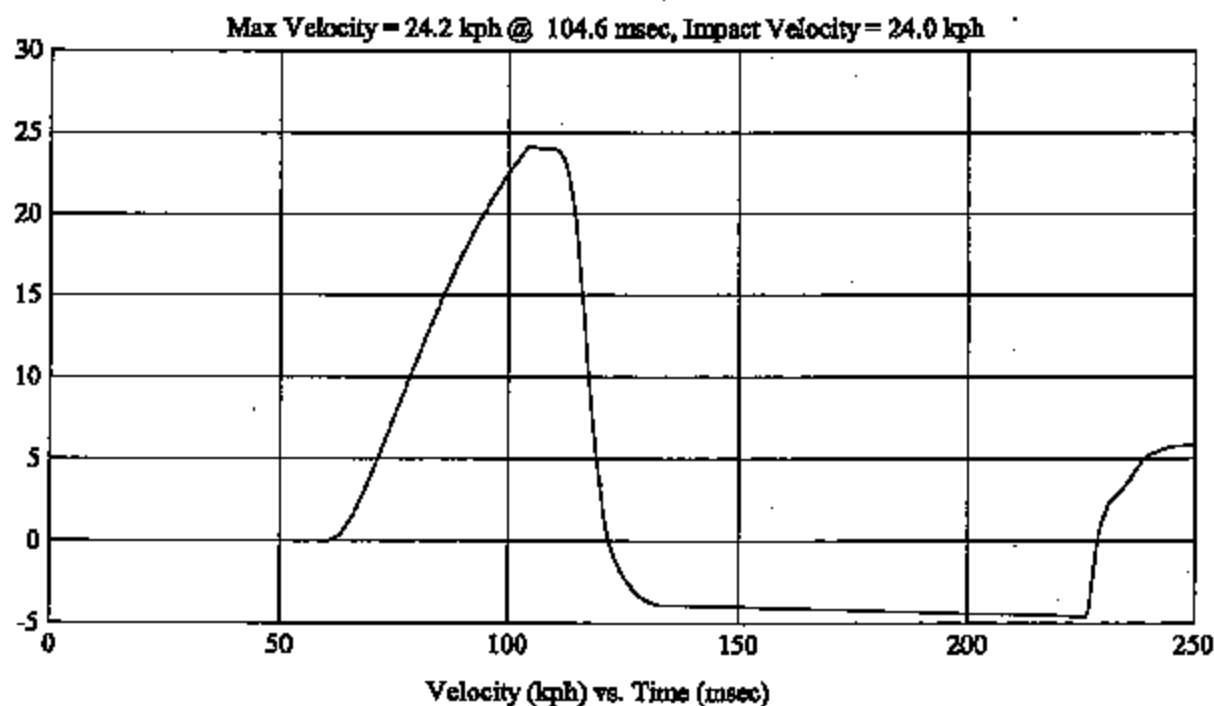
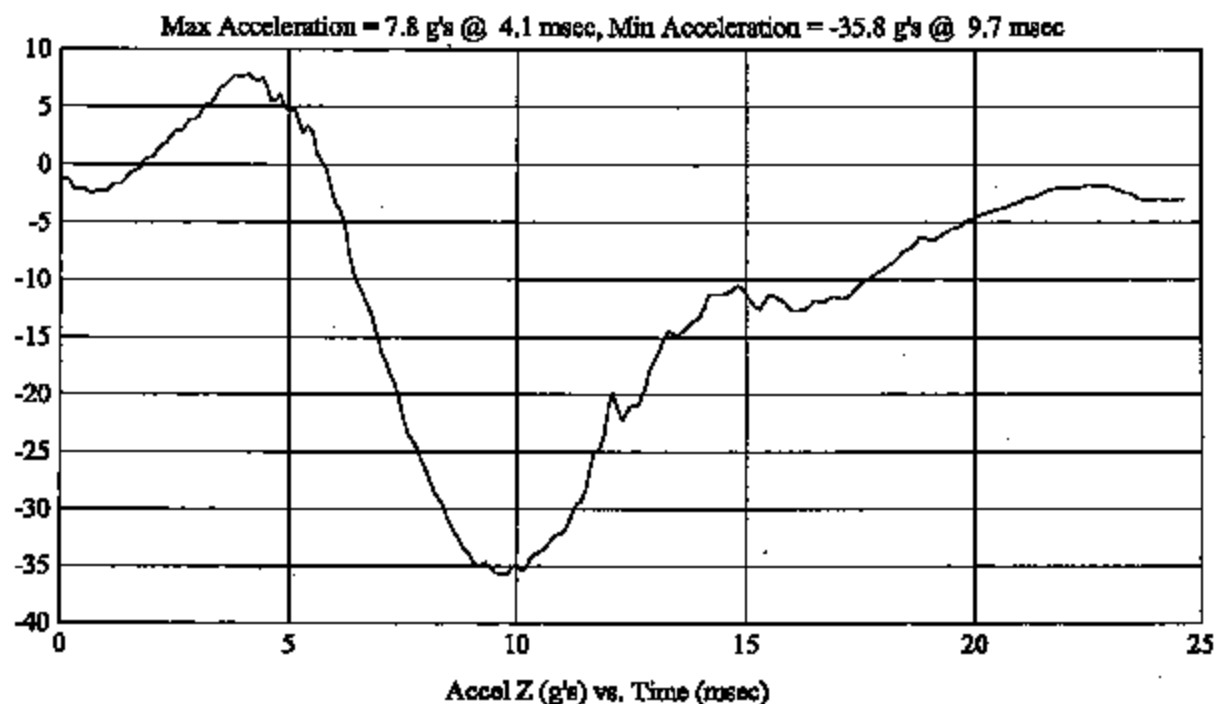
FMH
G0417-001.3Customer: CHEVY
Test # 9
FM4059
Additional Desc: N/A

Vehicle Program: ASTRO

Test Date: 3/26/04

Model Year: 2004
Target: SR3(1)
Vehicle Side: Left
Horz/Vert Angle: 270/38

HIC(d) = 507, EIC = 451, Delta T = 7.5 msec

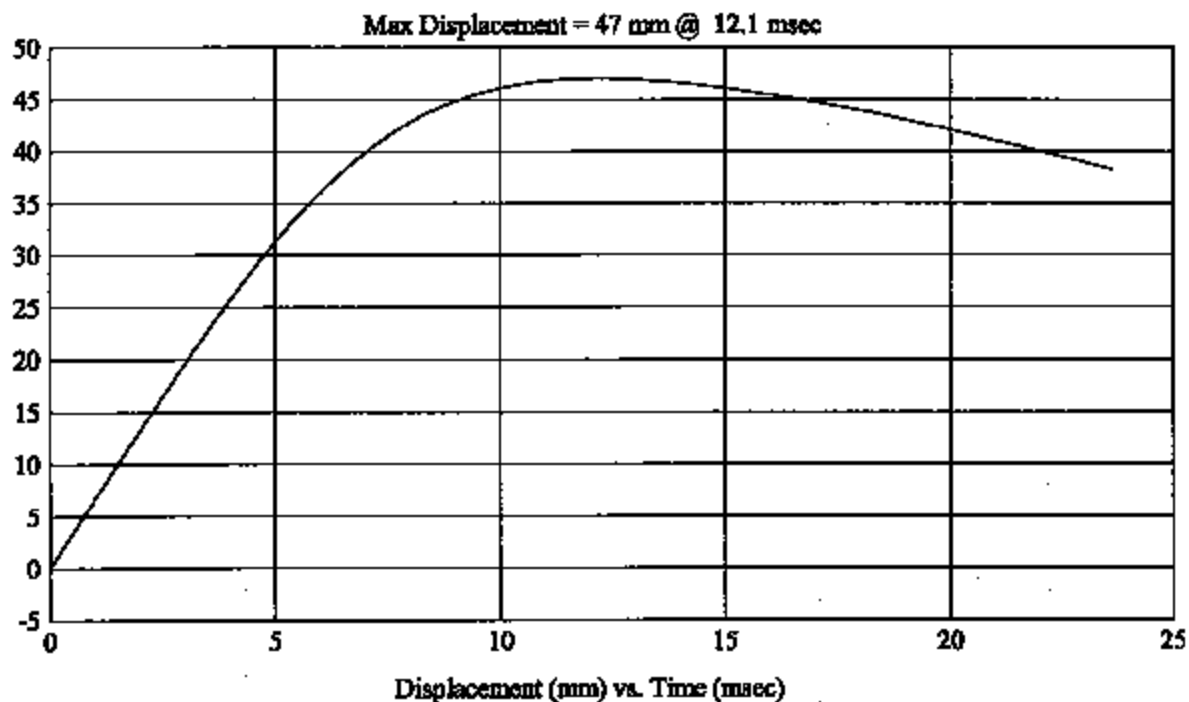


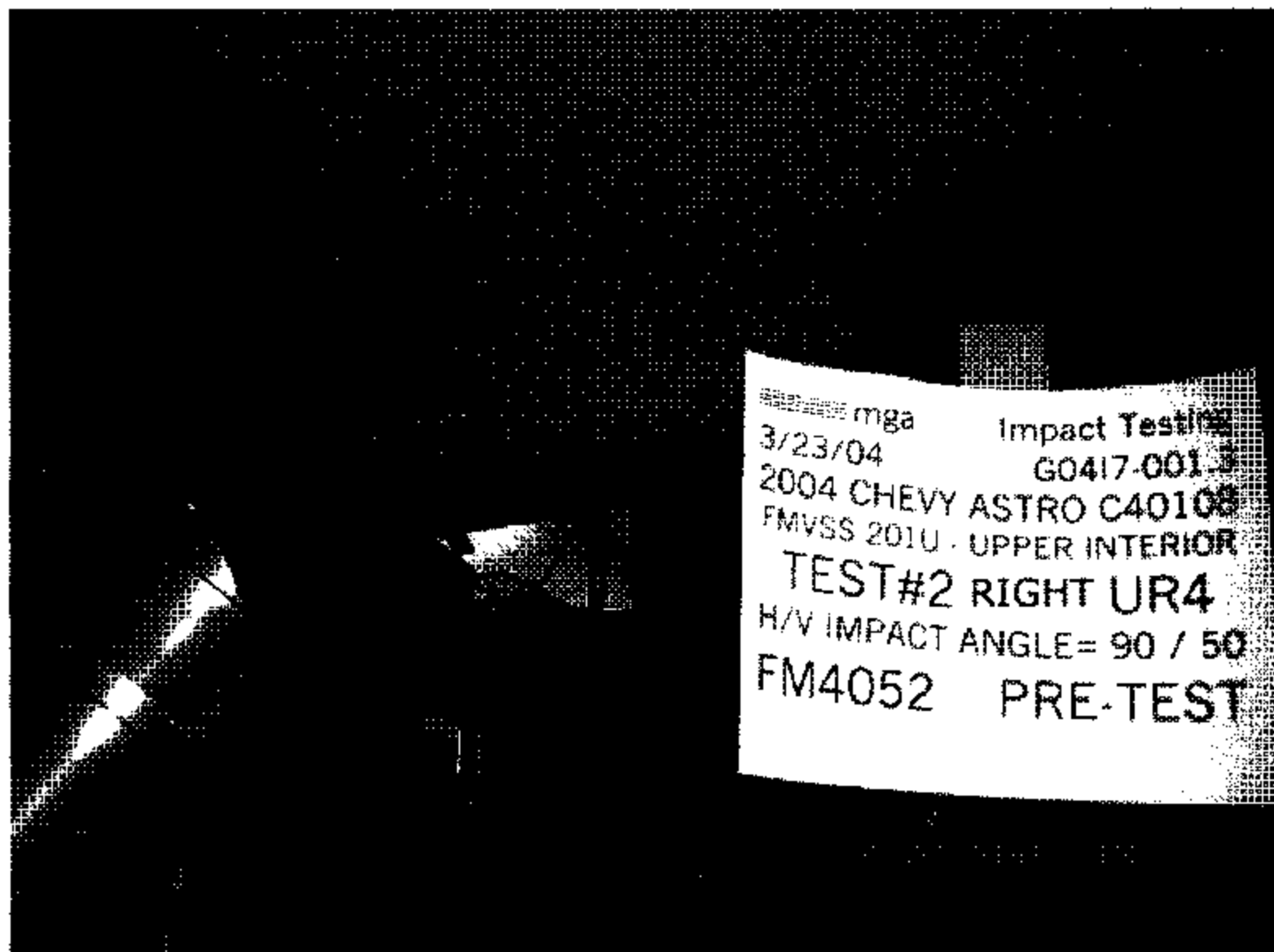
FMH
G04I7-001.3Customer: CHEVY
Test # 9
FM4059
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: SR3(1)
Vehicle Side: Left
Horz/Vert Angle: 270/38

HIC(d) = 507, HIC = 451, Delta T = 7.5 msec





mga Impact Test
3/23/04 G0417:001-3
2004 CHEVY ASTRO CA0108
FMVSS 201U - UPPER INTERIOR
TEST#2 RIGHT UR4
H/V IMPACT ANGLE= 90 V 50
FM4052 POST: 1155

1036

3/23/04

2004 CHEVY

FVSS 20

TEST 2

H/V IMPACTED

FM 4050

MICHIGAN OPERATIONS
DATE: 3/20/03
SUPERCEDES: MGATP201U_FRAME #2.4

DOC. NO.: MGATP201U_FRAME #2
REVISION NO.: 3
PAGE 9 OF 9

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: CY0108VEHICLE YR/MAKE/MODEL: 2004 CHEV ASTRO

GENERAL TEST PARAMETERS:

Test Number: 2Target (Vehicle Side): left light URYTemperature: 22 °F (C)MGA Test Reference No.: FM452Humidity: 41 %Approach Angles: Horizontal 90 °Time of Test: 2:15 am (pm)Vertical 50 °FMH Serial No: 36

TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
<u>652</u>	<u>644</u>	<u>7.9</u>	<u>23.4</u>	<u>23</u>	<u>S</u>

INSTRUMENTAION INFORMATION: (all accelerometers are Endevco 7284-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>J35923</u>	<u>-99.2</u>	<u>1.20</u>	<u>1.20</u>
<u>Y</u>	<u>6</u>	<u>J35916</u>	<u>99.6</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J35918</u>	<u>99.1</u>	<u>1.51</u>	<u>1.51</u>

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

SLIGHT HEADLINEA DEFORMATIONRecorded By: [Signature]Approved By: [Signature]Date: 3/24/04

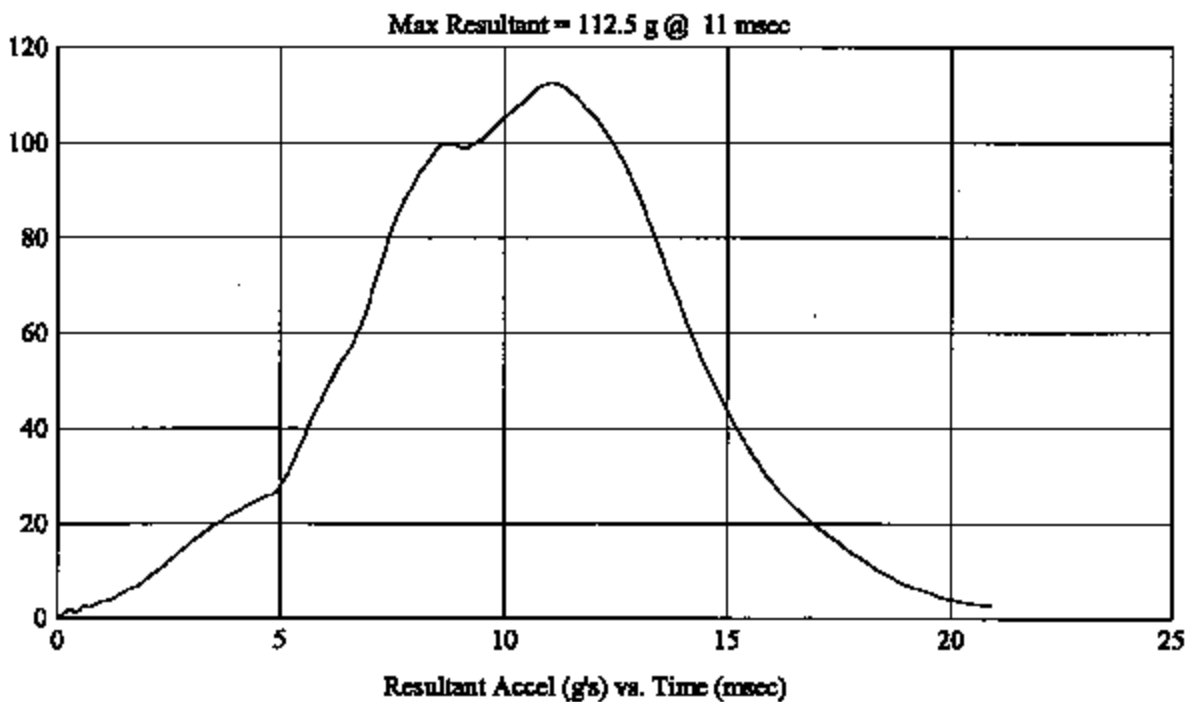
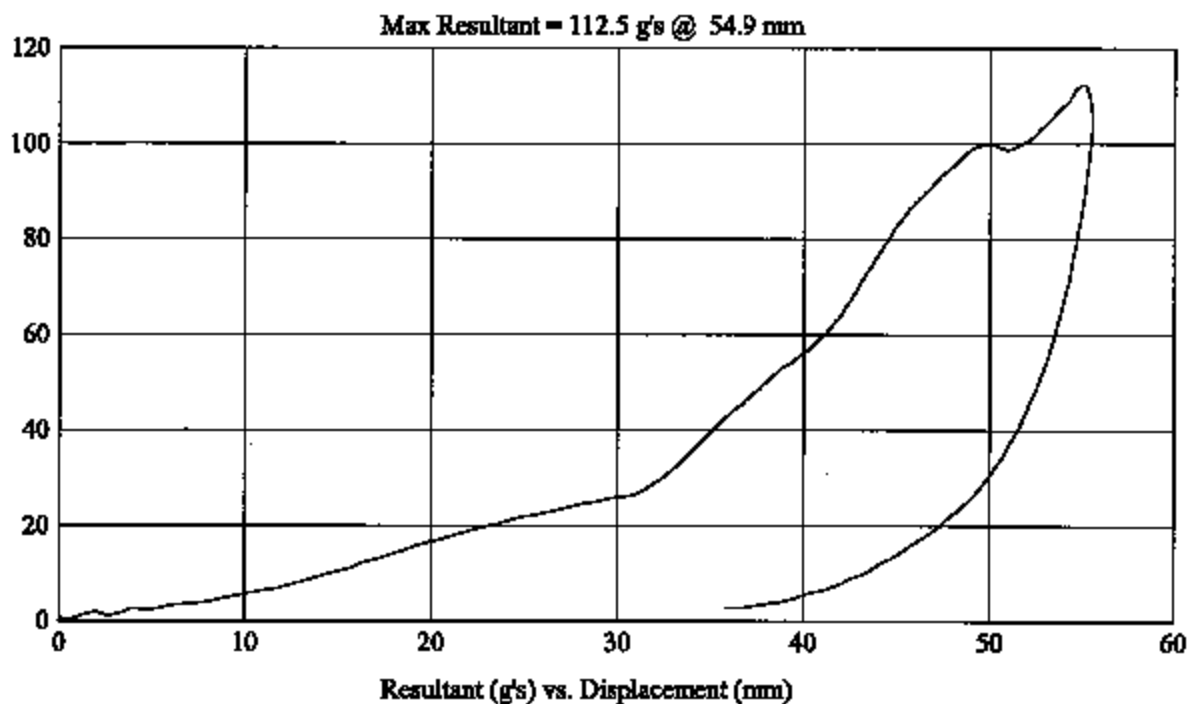
*Only necessary for NHTSA (Government) Compliance testing.

FMH
G04I7-001.3Customer: CHEVY
Test # 2
FM4052
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: UR4
Vehicle Side: Left
Horz/Vert Angle: 90/50

HIC(d) = 652, HIC = 644, Delta T = 7.9 msec

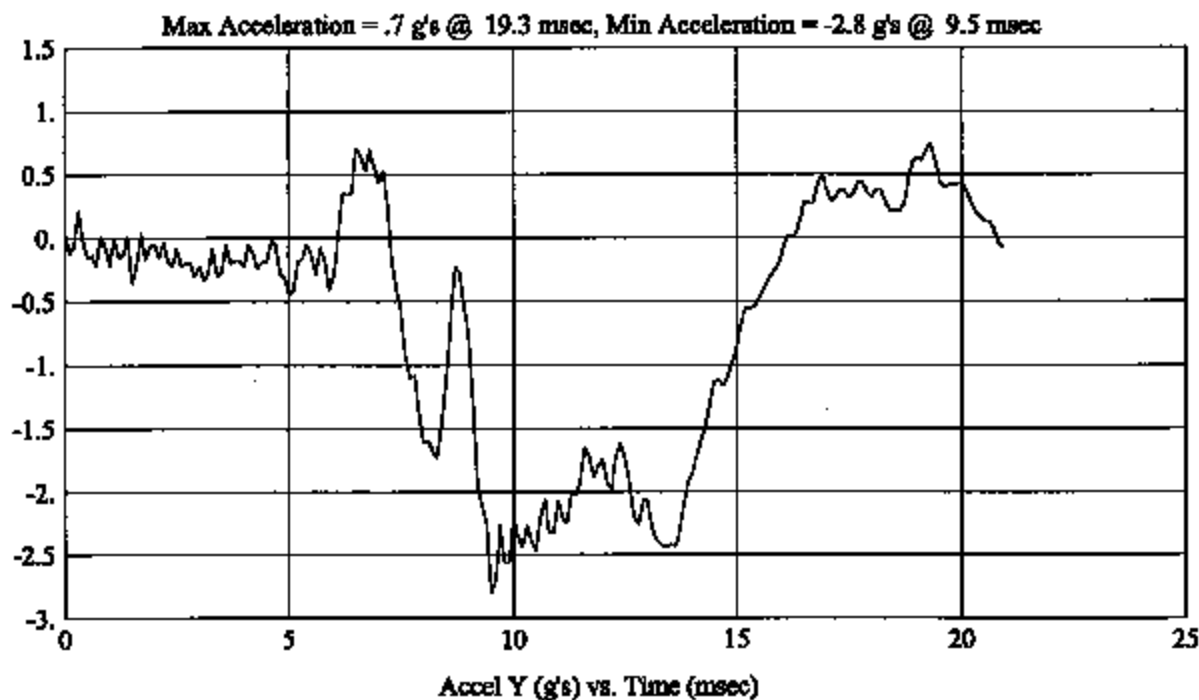
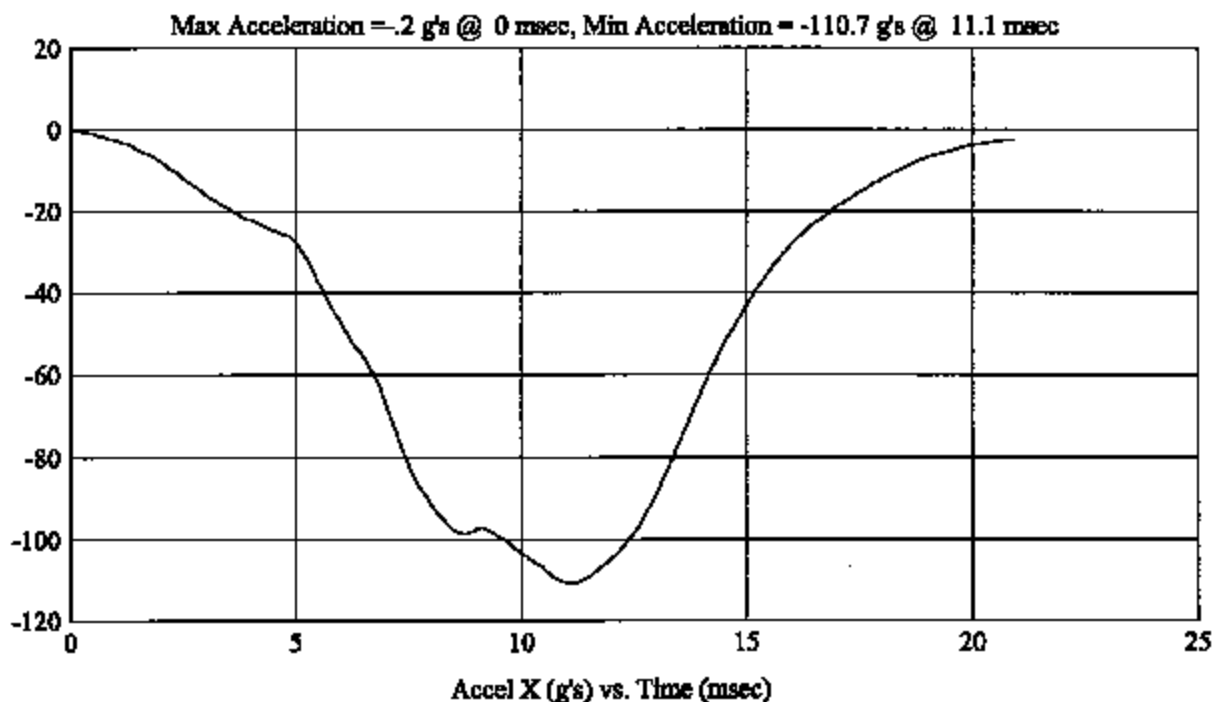


FMH
G04I7-001.3Customer: CHEVY
Test # 2
FM4052
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: UR4
Vehicle Side: Left
Horz/Vert Angle: 90/50

HIC(d) = 652, HIC = 644, Delta T = 7.9 msec



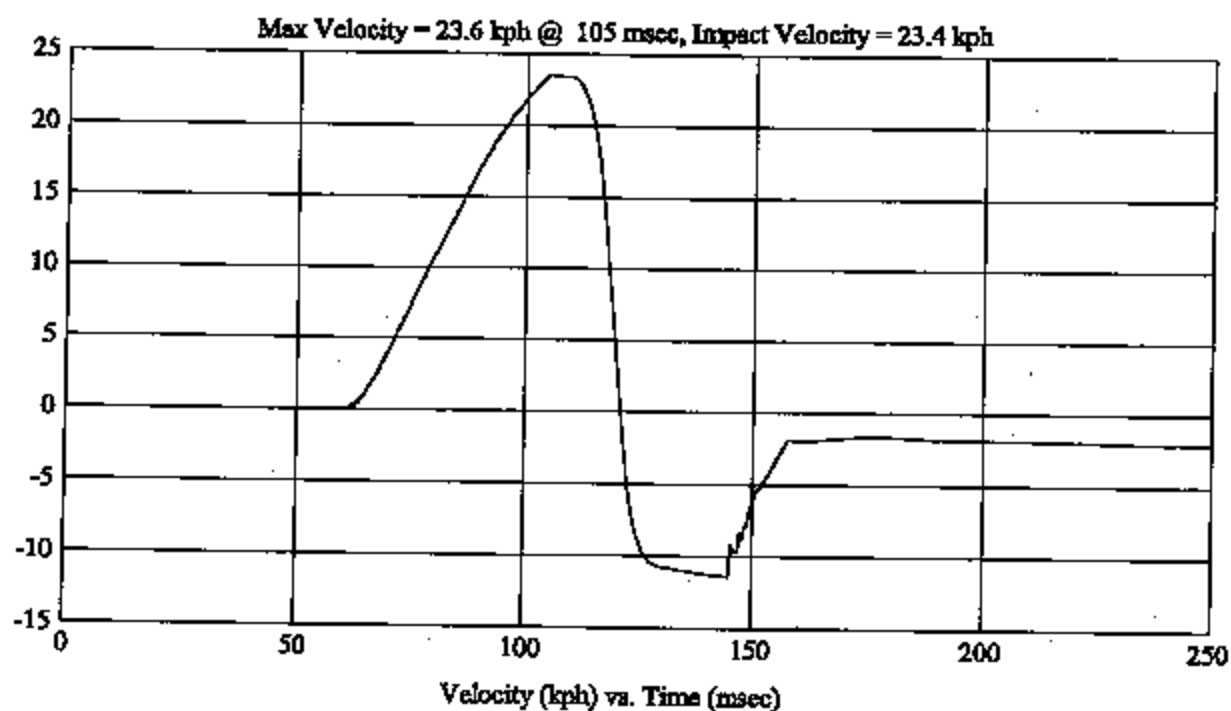
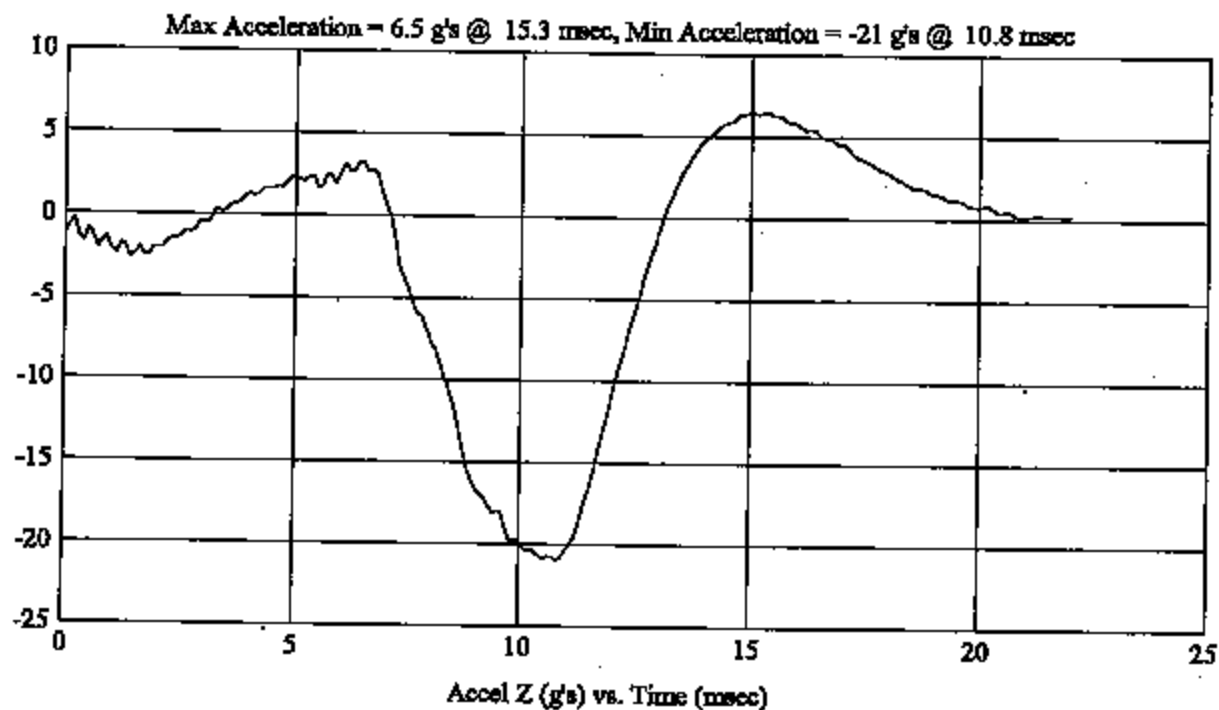
FMH
G04T7-001.3Customer: CHEVY
Test # 2
FM4052
Additional Desc: N/A

Vehicle Program : ASTRO

Test Date: 3/23/04

Model Year: 2004
Target: UR4
Vehicle Side: Left
Horz/Vert Angle: 90/50

HIC(d) = 652, HIC = 644, Delta T = 7.9 msec

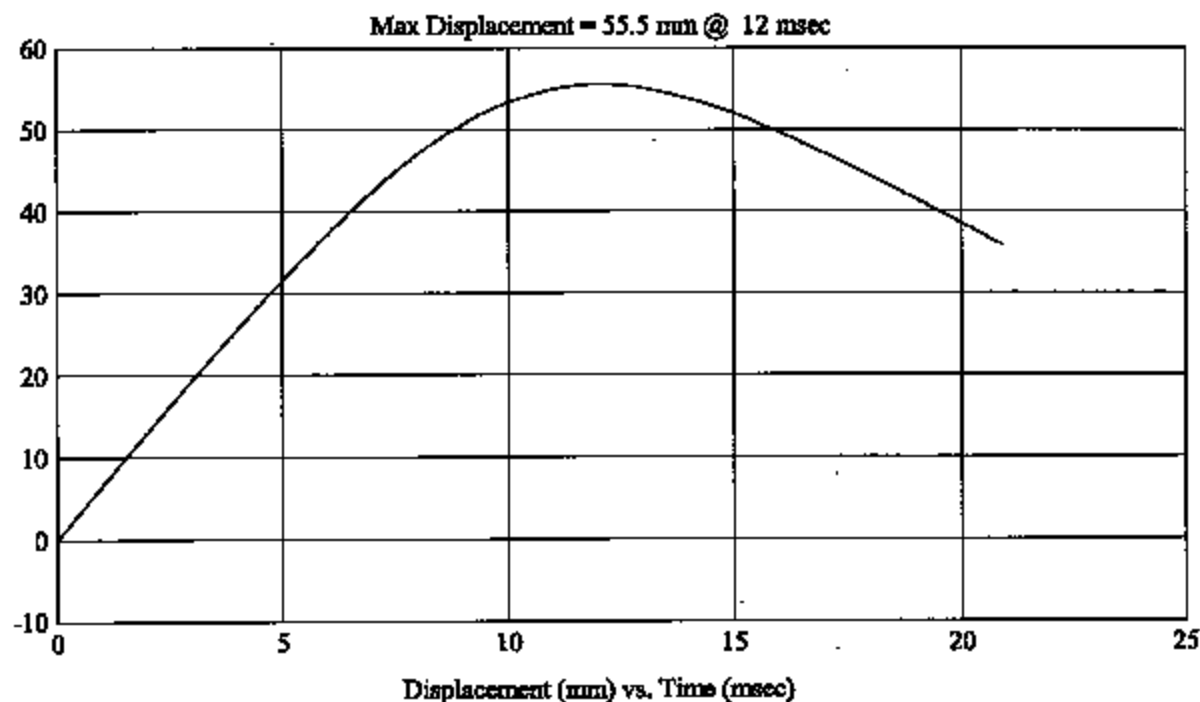


FMH
G04I7-001.3Customer: CHEVY
Test # 2
FM4052
Additional Desc: N/A

Vehicle Program : ASTRO

Model Year: 2004
Target: UR4
Vehicle Side: Left
Horz/Vert Angle: 90/50

HIC(d) = 652, HIC = 644, Delta T = 7.9 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.

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	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	035 036 038	Test Device	N/A	Pre and Post-Test Series
High Speed Video	Kodak	RO1000	Record Event	N/A	N/A
*FARO™	Faro Technologies	S08059801273	Targeting	0.1 mm	Annual
Measuring Devices: - Tape Measure - Plumb Bobs - Protractor	Stanley N/A Craftsman	33-215 — —	Measurement Targeting FMH setup Horizontal Measurement	1 mm N/A 0.5°	Annual
*Vehicle Scale 9804-022/9805-175	Cardinal	8950F	Weighing Vehicle	± .5 kg	Annual
* Scale	Detecto	AP-20	Weigh FMH Head	± 0.01 lb	Annual
*Temperature Recorder	Dickson	TH8-24C	Record Temperature and Humidity	± 1°C ± 1% RH	Annual

TABLE 4-2 FMH CALIBRATION SUMMARY DATA SUMMARY TABLE

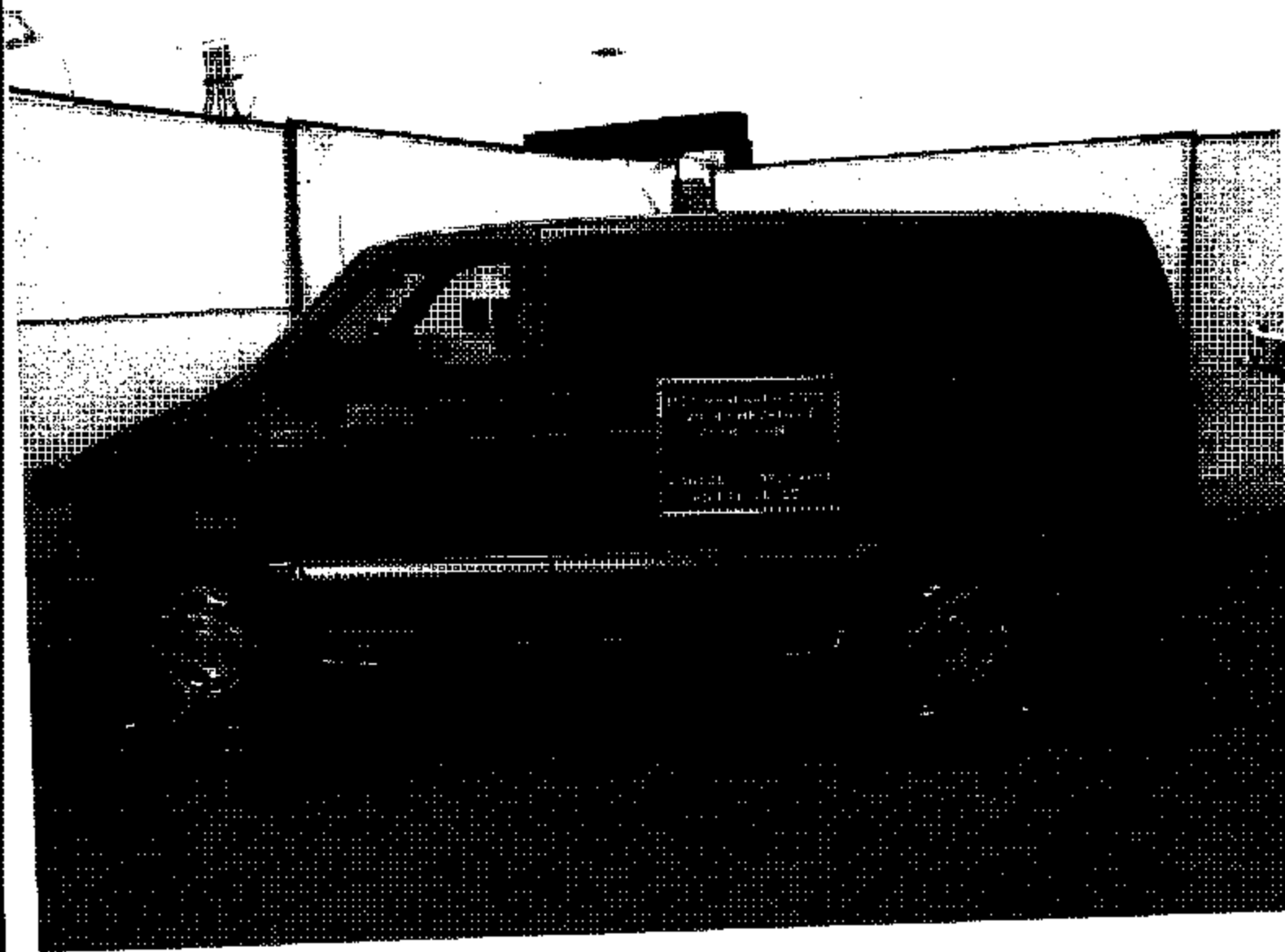
FMH Serial #		Weight (lbs)	Temp (°C)	% Humidity	Peak Resultant Acceleration (G's)	Peak Lateral Acceleration (G's)	Unimodal
Pre	#35	10.02	22.0	38.0	237.6	2.0	Yes
Post	#35	10.02	24.0	35.0	238.4	5.6	Yes
Pre	#36	10.03	22.0	38.0	239.7	3.5	Yes
Post	#36	10.03	24.0	35.0	255.9	10.5	Yes
Pre	#38	9.99	22.0	38.0	234.8	3.3	Yes
Post	#38	9.99	22.0	50.0	260.3	3.7	Yes

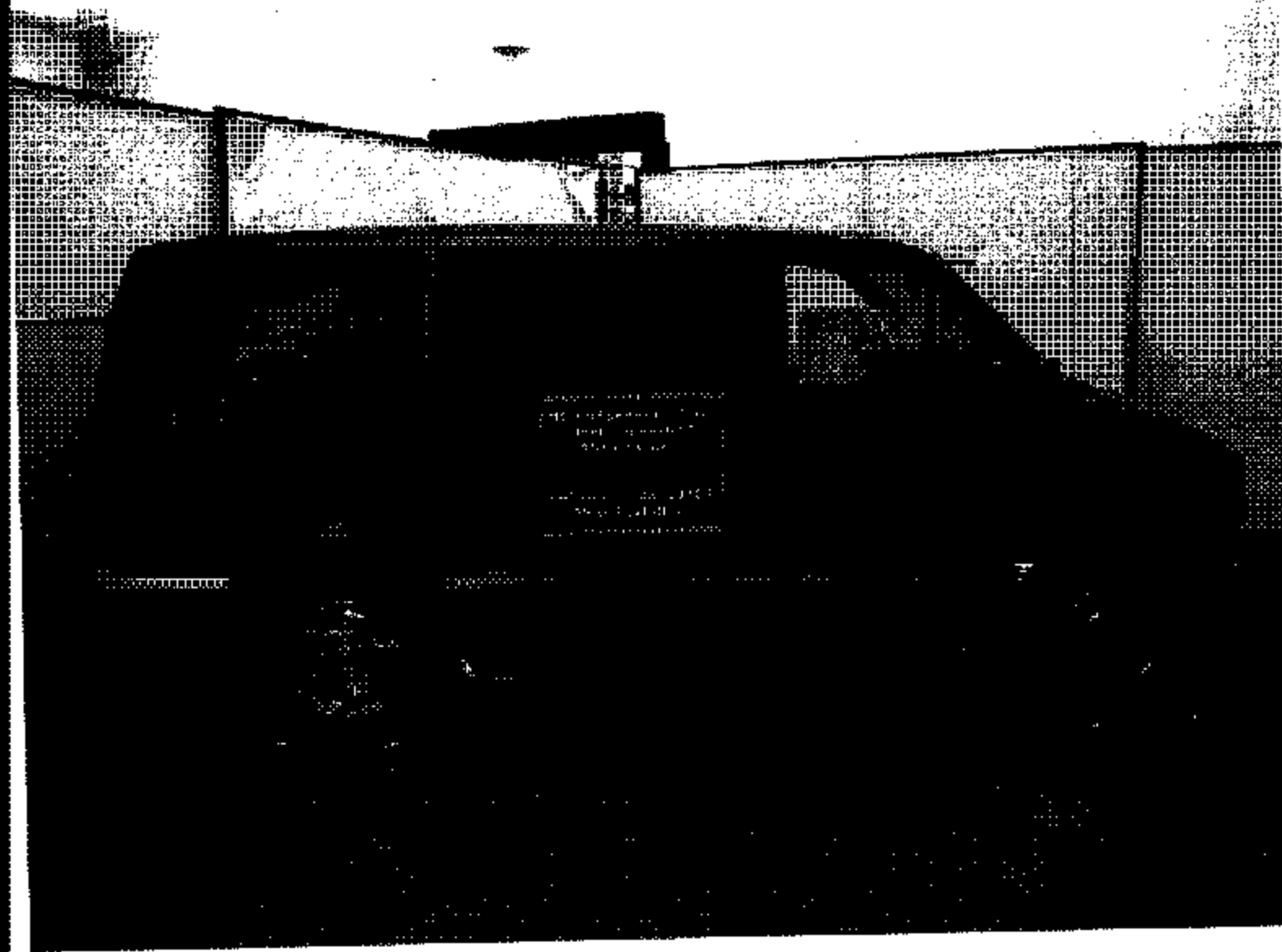
Calibration certificates and headform calibration information can be found in the P572L Performance Calibration report which accompanies this report.

RECORDED BY: David G. Gotwals

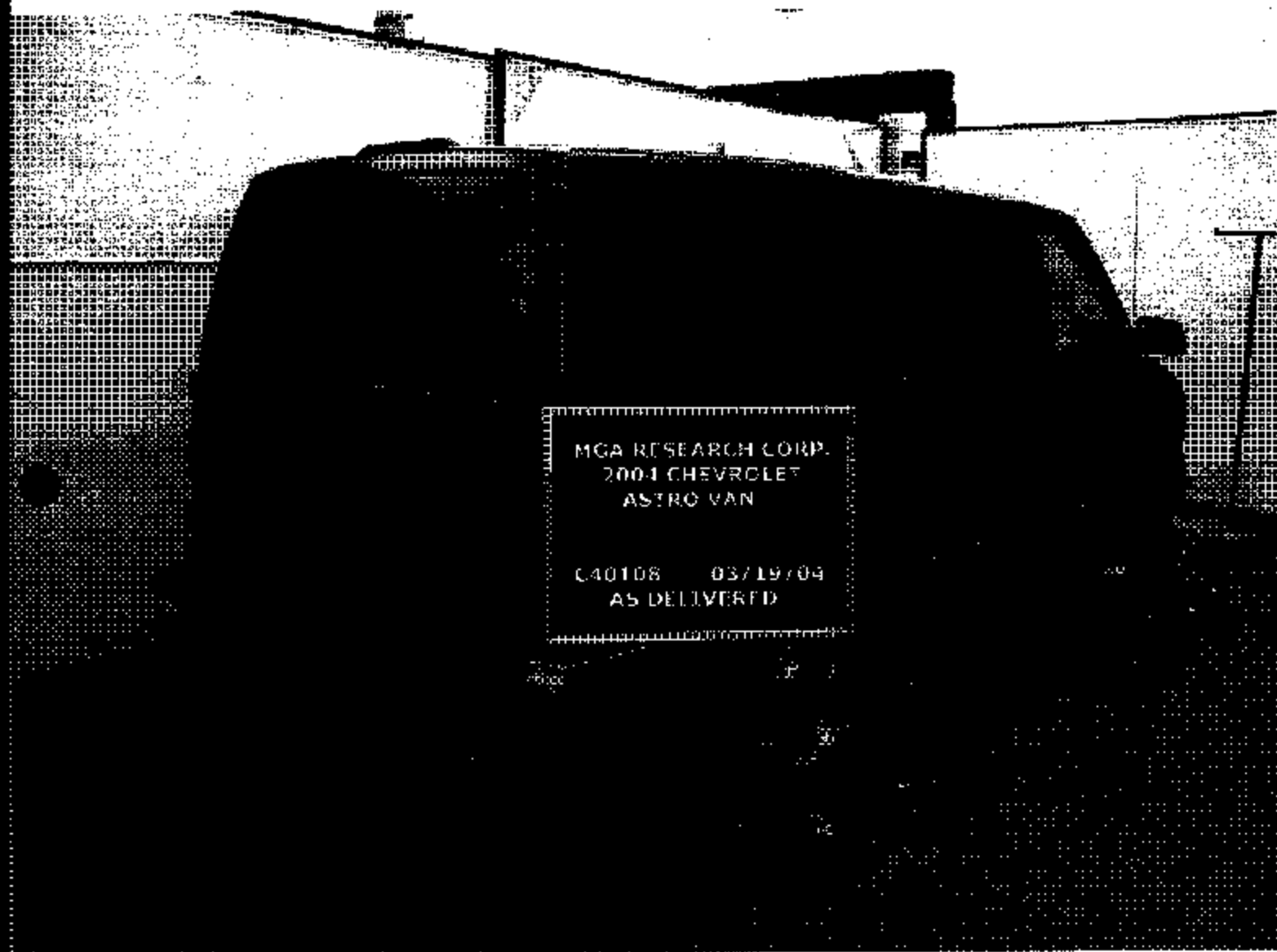
DATE: March 30, 2004

APPROVED BY: Helen A. Kaleto











03/23/04

TOILET ASTRO

Marian

TESTING

RECEIVED

03/23/04

12/23/04
PELLETTASTRO
Minivan
TESTING
COMPONENT
C0417.001

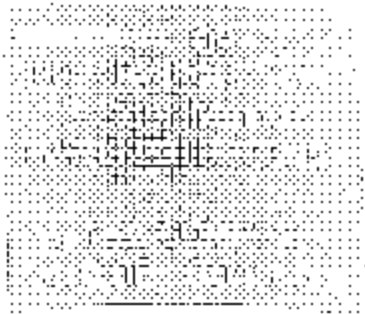
03/23/04
2004 CHEVROLET ASTRO
3-Door Minivan
FMVSS 201U TESTING
Pre-Test COMPONENT
340108 G0417-001

03/21/11
2004 CHEVROLET
3-Door Minivan
FMVSS 201U TEST
Pre-Test COMPON
C40108 G0417 #1

03/23/04
2004 CHEVROLET ASTRO
3-Door Minivan
EMVSS 201U TESTING
Test COMPONENT
G04108 G0417-001

03/23/11
2004 CHVEROLET AS
3-Door Minivan
FMVSS 201U TEST
Pre-Test COMPONENT
C40108 G041701

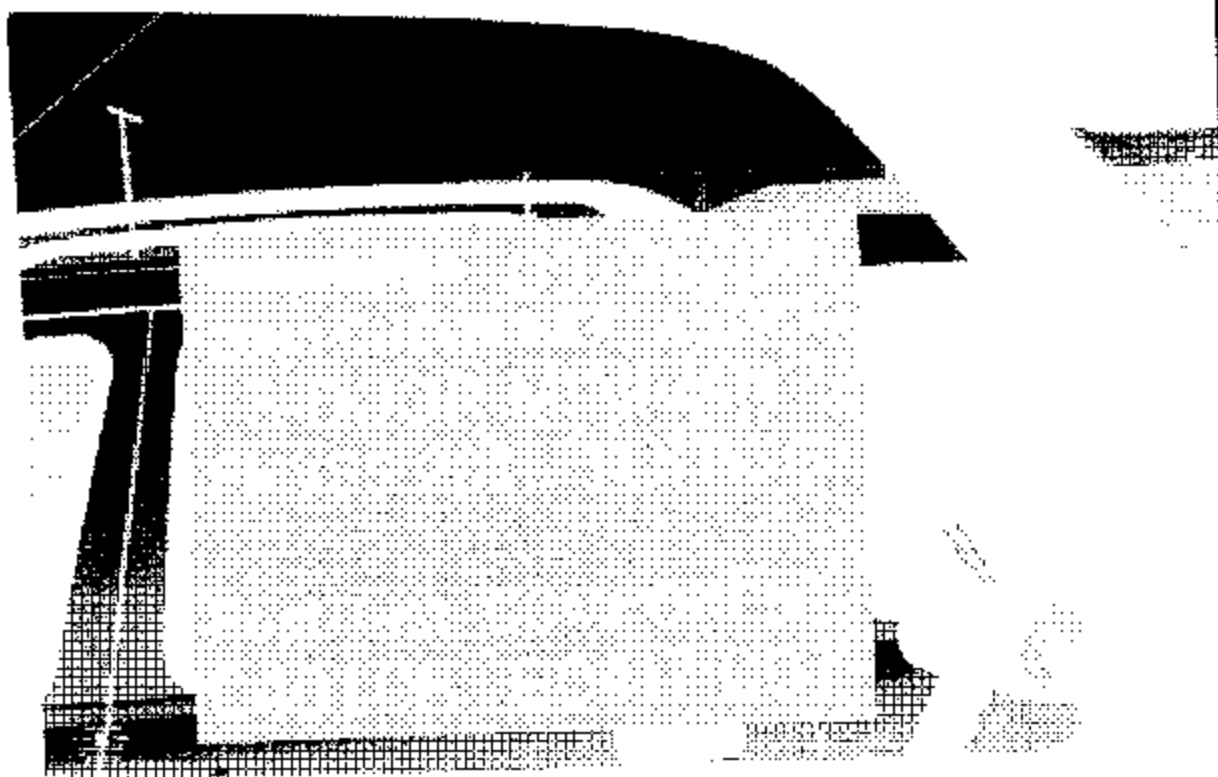
03/23/04
VEROLET ASTRO
300r Minivan
201U TESTING
COMPONENT
C0417.001



03/23/04
2004 CHEVROLET ASTER
3-Door Minivan
FMVSS 201U TESTING
Pre-Test COMPONENT
C40108 G041740

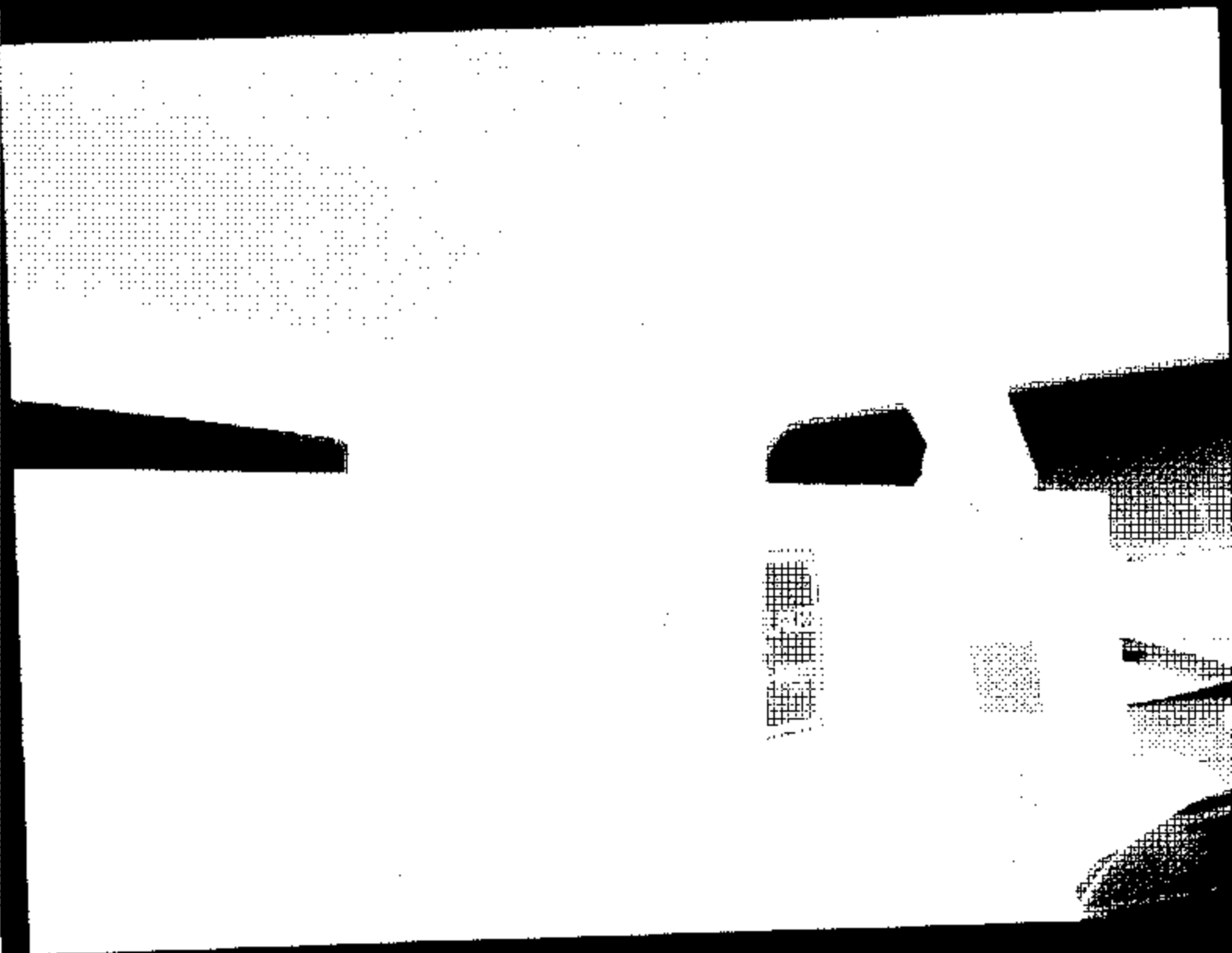
RECEIVED
FBI - NEW YORK
JUN 20 1964
COMMUNICATIONS SECTION
JUN 20 1964

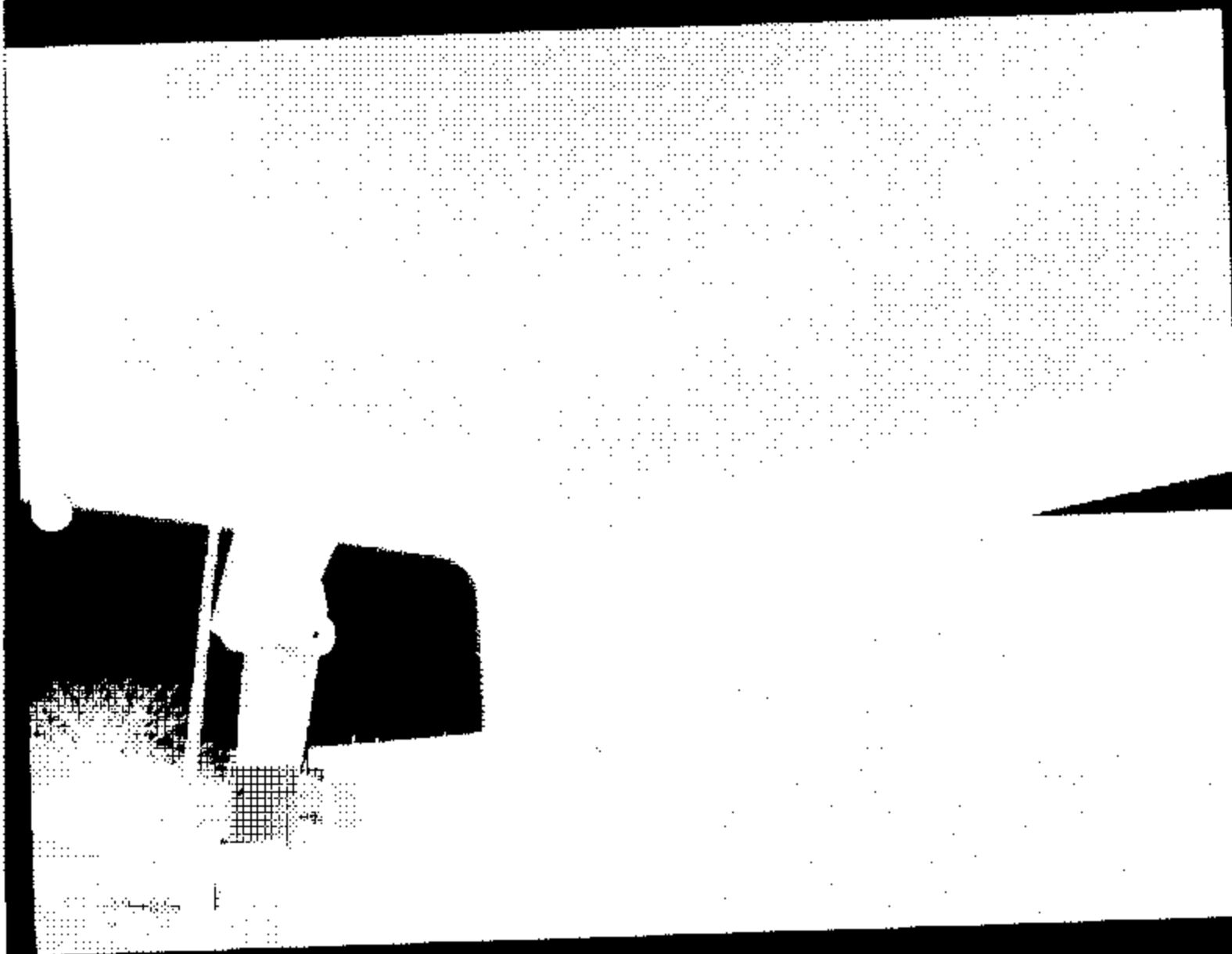
03/24/08
2004 CHVEROLET
3-Door Mini-van
FMVSS 2010
Pre-Test COME
C40108 004 PM

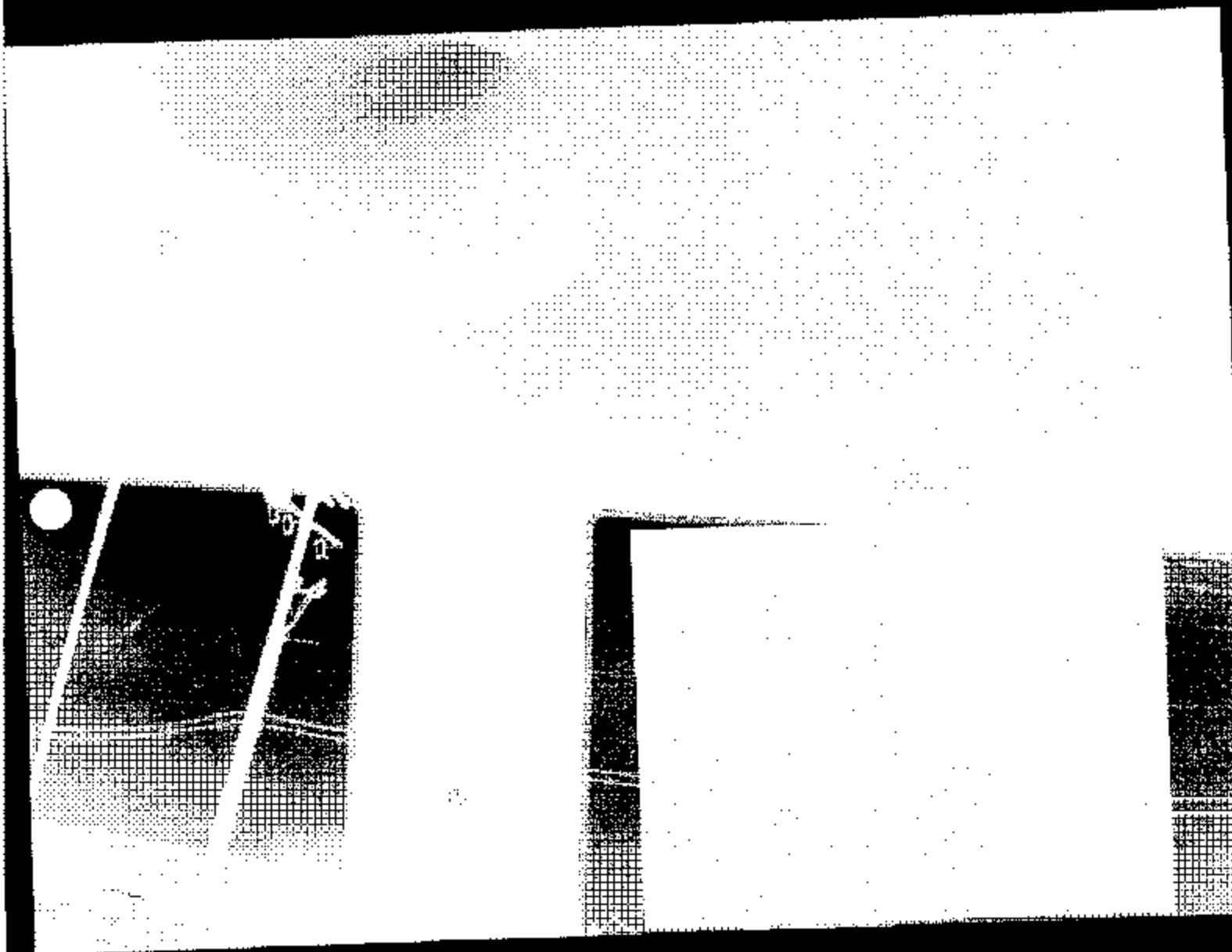




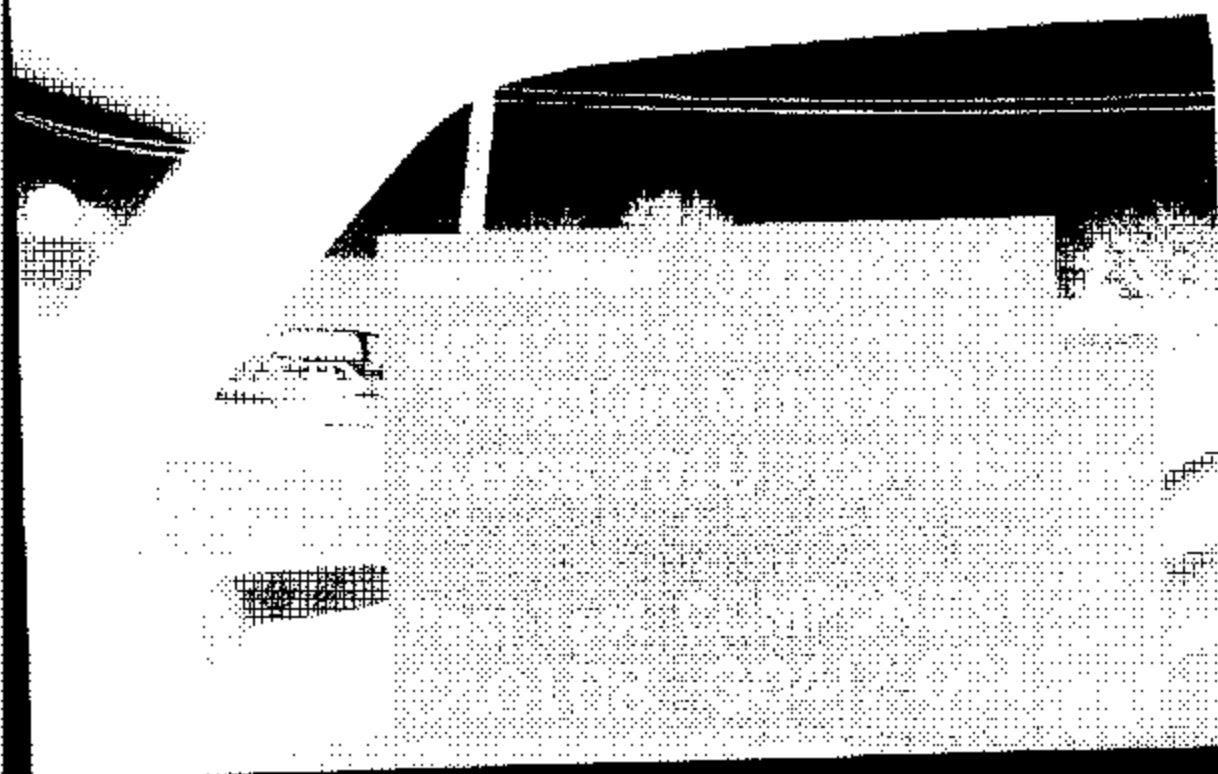


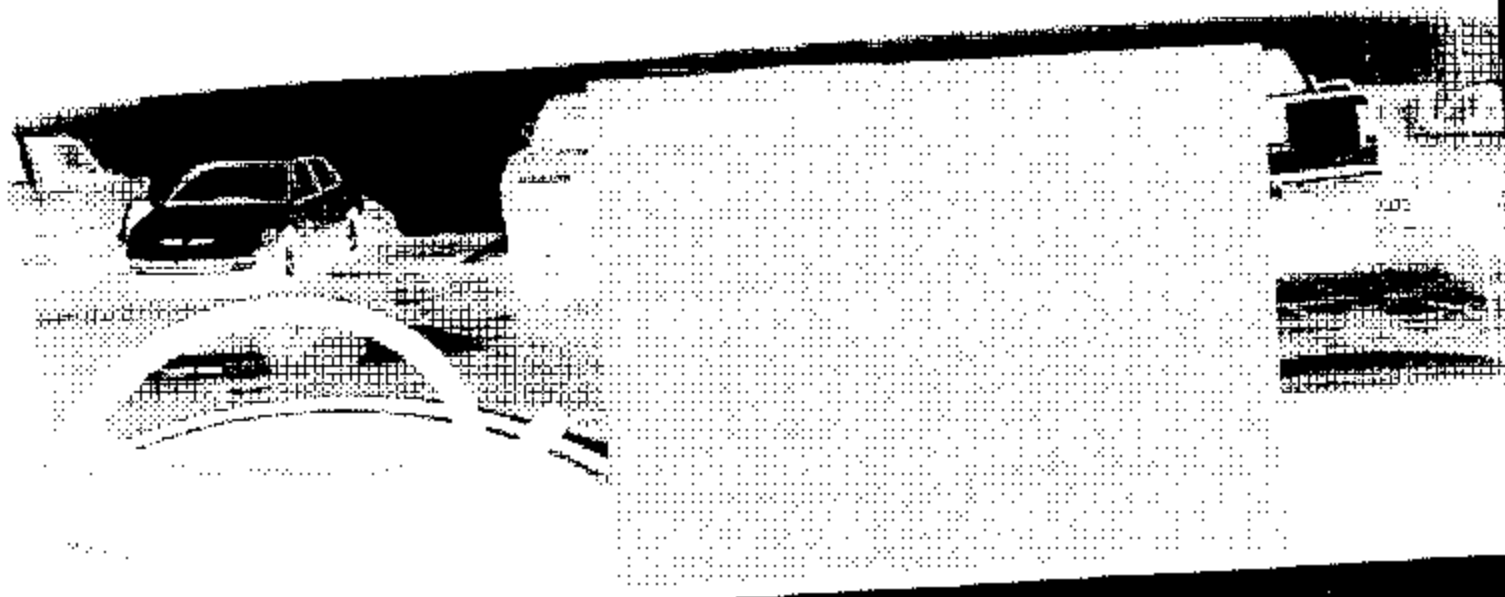












C40108 Temperature Trace
3/19-30/04

