HS 6372446

FINAL REPORT NUMBER 201U-MGA-04-05

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

NISSAN MOTOR CO., LTD.
2004 NISSAN TITAN KING CAB
NHTSA No. C45206

MGA RESEARCH CORPORATION
446 Executive Drive
Troy, Michigan 48083

Test Dates: April 6-7, 2004
Report Date: April 8, 2004

FINAL REPORT

PREPARED FOR:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF PLANNING, EVALUATION AND BUDGET
400 7TH STREET, S.W., ROOM 5208
WASHINGTON, D.C. 20590

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Approval Date: 6/23/04

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By: _____

Acceptance Date: 7/9/2004

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		6. Performing Organization Code MGA	
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9. Performing Organization Name and Address MGA Research Corporation 446 Executive Drive Troy, Michigan 48083		10. Work Unit No.	
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15. Supplementary Notes			
16. Abstract A compliance test was conducted on the subject 2004 Nissan Titan King Cab, NHTSA No. C45206, 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 the MGA Research Corporation in Troy, Michigan on April 6-7, 2004. Test failures identified were as follows: RP2 (Right) The data recorded seems to indicate that the 2004 Nissan Titan King Cab tested does not appear to comply with the requirements for FMVSS 201U which were set forth by the National Highway Traffic Safety Administration.			
17. Key Words Compliance Testing Safety Engineering FMVSS 201U 2004 Nissan Titan		18. Distribution Statement Copies of this report are available from: NHTSA Technical Reference Division, Mail Code: NPO-230 400 Seventh Street, SW Washington, D.C. 20590 Telephone No. (202) 366-4946	
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1.0 PURPOSE OF COMPLIANCE TEST

The purpose of this head impact compliance testing was to determine whether the subject vehicle, a 2004 Nissan Titan King Cab, meets the performance requirements of FMVSS 201U, Occupant Protection in Interior Impact - Upper Interior Head Impact Protection.

Tests were conducted during April 6-7, 2004 on a 2004 Nissan Titan King Cab, manufactured by Nissan Motor Co., Ltd. (Nissan).

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 Nissan Titan was equipped with A, DF, and Rear-pillars, a grab handle above the front passenger door, an adjustable seat belt anchor on each door frame, a fixed seat belt anchor on each Rear-pillar, an upper roof front center console, and hanger hooks on each rear side rail.

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 Nissan. Targets were chosen which appeared most likely to give high HIC(d) values. The ten (10) targets chosen were:

AP1	SR2-A	UR1	UR4
AP3	RH	UR2	
DF3	RP2	UR3	

The 2004 Nissan Titan tested does not appear to comply with the performance criteria for FMVSS 201U. The HIC(d) measured using the Part 572L (Free Motion Headform) was above 1000 for Target RP2 (Right), but was below 1000 for all other tested components.

TABLE 2-1

SUMMARY TABLE OF TEST RESULTS

VEH. MOD YR/MAKE/MODEL/BODY: 2004 Nissan Titan King Cab

VEH. NHTSA NO.: C45206 VIN: 1N6AA06A74N508862 COLOR: Silver

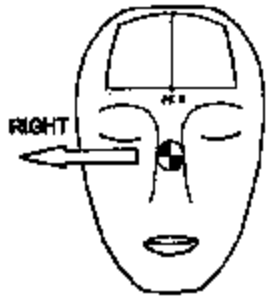
VEH. BUILD DATE: December, 2003 TEST DATES: April 6-7, 2004

TEST LABORATORY: MGA Research Corporation

OBSERVERS: David Gotwals, Nicholas Brzuch, Darrel Steger, George Baker, 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	Right	113	24	18.4	396	305	18	16 Right
AP3	Right	164	49	18.7	219	69	8	5 Left
DF3	Right	85	-10	23.8	443	368	20	8 Left
SR2-A	Right	90	50	18.9	531	483	13	8 Left
RH	Right	0	50	23.3	548	506	7	7 Left
RP2	Right	90	0	29.8	1042	1160	13	3 Right
UR1	Right	90	50	23.5	645	634	26	3 Left
UR2	Right	90	50	23.6	656	651	26	3 Left
UR3	Right	90	40	23.5	673	671	48	8 Right
UR4	Right	90	45	23.4	470	402	35	2 Left

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



POST TEST COMMENTS:

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

AP3 Right: The grab handle broke off during the impact.

RP2 Right: Apparent test failure.

No damage was observed for any other targets.

REMARKS:

The targets listed were impacted in the following order:

Right: DF3, UR3, UR2, AP3, AP1, UR1, SR2-A, UR4, RP2, RH

Left: None

Target DF3 was an indicate impact.

The following targets, located within the airbag zone, were impacted at the reduced velocity (19 kph).

Right: AP1, AP3, SR2-A

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: April 8, 2004

APPROVED BY: Helen A. Kaleto

TABLE 2-2

GENERAL TEST AND VEHICLE PARAMETER DATA

VEH. MOD YR/MAKE/MODEL/BODY: 2004 Nissan Titan King Cab

VEH. NHTSA NO.: C45206 VIN: 1N6AA06A74N508862 COLOR: Silver

VEH. BUILD DATE: December, 2003 TEST DATES: April 6-7, 2004

TEST LABORATORY: MGA Research Corporation

OBSERVERS: David Gotwals, Nicholas Brzuch, Darrel Steger, George Baker, Scott Kreiger

INTERIOR TRIM INFORMATION: A, DF, and Rear-pillars, a grab handle above the front passenger door, an adjustable seat belt anchor on each door frame, a fixed seat belt anchor on each Rear-pillar, an upper roof front center console, and hanger hooks on each rear side rail.

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: 2/20/04; Odometer Reading: 135 miles

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured By: Nissan Motor Co., Ltd.

Date of Manufacture: December, 2003; VIN: 1N6AA06A74N508862

GVWR: 6400 lb GAWR FRONT: 3300 lb

GAWR REAR: 3800 lb

DATA FROM TIRE PLACARD:

Tire Pressure with Maximum Capacity Vehicle Load:

FRONT: 240 kPa REAR: 240 kPa

Recommended Tire Size: P265/70R18

Recommended Cold Tire Pressure: P265/70R18

FRONT: 240 kPa REAR: 240 kPa

Size of Tire on Test Vehicle: P265/70R18

Type of Spare Tire: P265/70R18; Space Saver: ___; Standard X

VEHICLE CAPACITY DATA:

Type of Front Seats: Bench _____; Bucket X ; Split Bench _____

Number of Occupants: Front 2; Rear 3 ; TOTAL 5

VEHICLE CAPACITY WEIGHT (VCW) = 548 kg

No. of Occupants x 68 kg = 340 kg

Rated Cargo/Luggage Weight (RCLW) = 208 kg (difference)

Maximum Cargo/Luggage Weight (RCLW) = 136 kg

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

Right Front =	618.0 kg	Right Rear =	532.0 kg
Left Front =	625.5 kg	Left Rear =	527.5 kg
TOTAL FRONT =	1243.5 kg	TOTAL REAR =	1059.5 kg
% Total Weight =	54.0 %	% Total Weight =	46.0 %

TOTAL DELIVERED WEIGHT = 2303.0 kg

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Delivered Weight = 2303.0 kg

Rated Cargo/Luggage Weight = 136.0 kg

Target Test Weight = 2439.0 kg

WEIGHT OF TEST VEHICLE:

Right Front =	617.0 kg	Right Rear =	600.0 kg
Left Front =	623.0 kg	Left Rear =	597.0 kg
TOTAL FRONT =	1240.0 kg	TOTAL REAR =	1197.0 kg
% Total Weight =	50.9 %	% Total Weight =	49.1 %

TOTAL TEST WEIGHT = 2437.0 kg

Weight of ballast secured in vehicle's cargo area = 136.0 kg

TEST VEHICLE ATTITUDE:

AS DELIVERED: Right Front 931.0 mm; Left Front 925.0 mm;
Right Rear 985.0 mm; Left Rear 982.0 mm;

Pitch Angle at Right Door Sill = 1.2 Rear higher
Pitch Angle at Left Door Sill = 1.1 Rear higher
Roll Angle at Front Bumper = 0.4 Right-side higher
Roll Angle at Rear Bumper = 0.1 Right-side higher

FULLY LOADED: Right Front 943.0 mm; Left Front 945.0 mm;
Right Rear 965.0 mm; Left Rear 962.0 mm;

Pitch Angle at Right Door Sill = 0.9 Rear higher
Pitch Angle at Left Door Sill = 0.9 Rear higher
Roll Angle at Front Bumper = 0.4 Right-side higher
Roll Angle at Rear Bumper = 0.2 Right-side higher

AS TARGETED: Right Front 1034.0 mm; Left Front 1038.0 mm;
Right Rear 1070.0 mm; Left Rear 1081.0 mm;

Pitch Angle at Right Door Sill = 1.2 Rear higher
Pitch Angle at Left Door Sill = 1.1 Rear higher
Roll Angle at Front Bumper = 0.4 Right-side higher
Roll Angle at Rear Bumper = 0.2 Right-side higher

AS TESTED ON RIGHT SIDE: (only the right-side was tested)

Pitch Angle at Right Door Sill = 1.2 Rear higher
Pitch Angle at Left Door Sill = 1.1 Rear higher
Roll Angle at Front Bumper = 0.4 Right-side higher
Roll Angle at Rear Bumper = 0.2 Right-side higher

VEHICLE WHEELBASE = 3570 mm

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

RECORDED BY: David G. Gotwals DATE: April 8, 2004

APPROVED BY: Helen A. Kaleto

TABLE 2-3

HORIZONTAL IMPACT ANGLE RANGE FOR A AND B PILLARS

VEH. MOD YR/MAKE/MODEL/BODY: 2004 Nissan Titan King Cab

VEH. NHTSA NO.: C45206 VIN: 1N6AA06A74N508862 COLOR: Silver

VEH. BUILD DATE: December, 2003 TEST DATES: April 6-7, 2004

TEST LABORATORY: MGA Research Corporation

OBSERVERS: David Gotwals, Nicholas Brzuch, Darrel Steger, George Baker, Scott Kreiger

HORIZONTAL IMPACT ANGLE RANGE FOR A AND B PILLARS/DOOR FRAMES

	HORIZONTAL ANGLE SPECIFIED RANGE	MINIMUM HORIZONTAL ANGLE	MAXIMUM HORIZONTAL ANGLE
A-PILLAR	L 195°-255°	L 196.0°	L 247.2°
	R 105°-165°	R 112.3°	R 164.3°
DOOR FRAME	L 195°-345°	L 213.2°	L 282.4°
	R 15°-165°	R 77.1°	R 146.9°

AS DETERMINED USING THE PROCEDURES SPECIFIED IN S8.13.4.1

REMARKS:

RECORDED BY: David G. Gotwals DATE: April 8, 2004

APPROVED BY: Helen A. Kaleto

TABLE 2-4

VERTICAL IMPACT ANGLE RANGES

VEH. MOD YR/MAKE/MODEL/BODY: 2004 Nissan Titan King Cab

VEH. NHTSA NO.: C45206 VIN: 1N6AA06A74N508862 COLOR: Silver

VEH. BUILD DATE: December, 2003 TEST DATES: April 6-7, 2004

TEST LABORATORY: MGA Research Corporation

OBSERVERS: David Gotwals, Nicholas Brzuch, Darrel Steger, George Baker, Scott Kreiger

VERTICAL IMPACT ANGLE RANGES

		VERTICAL ANGLE SPECIFIED RANGE	MINIMUM VERTICAL ANGLE	MAXIMUM VERTICAL ANGLE
FRONT HEADER	FH1	R 0°-50°	R 0°	R 50°
	FH2	R 0°-50°	R 0°	R 50°
SIDE RAIL	SR1	R 0°-50°	R 0°	R 21°
	SR2A	R 0°-50°	R 0°	R 50°
	SR2R	R 0°-50°	R 0°	R 40°
A-PILLAR	AP1	R -5°-50°	R -5°	R 24°
	AP2	R -5°-50°	R -5°	R 37°
	AP3	R -5°-50°	R -5°	R 49°
DOOR FRAME	DF1	R -10°-50°	R -10°	R 17°
	DF2*	R 0°-50°	R 0°	R 0°
	DF3	R -10°-50°	R -10°	R -10°
	DF4	R -10°-50°	R -10°	R -10°
REAR PILLAR	RP1	R -10°-50°	R -10°	R 19°
	RP2*	R 0°-50°	R 0°	R 0°
REAR HEADER	RH	R -10°-50°	R -10°	R 50°
UPPER ROOF 1		0°-50	0°	50°
UPPER ROOF 2		0°-50	0°	50°
UPPER ROOF 3		0°-50	0°	40°
UPPER ROOF 4		0°-50	0°	45°

	VERTICAL ANGLE SPECIFIED RANGE	MINIMUM VERTICAL ANGLE	MAXIMUM VERTICAL ANGLE
UPPER ROOF 5	0°-50	0°	41°

As determined using the Procedures specified in S8.13.4.2. *Targets DF2 and RP2 are seat belt anchorage locations.

RECORDED BY: David G. Gotwals DATE: April 8, 2004

APPROVED BY: Helen A. Kaleto

TABLE 2-5

TARGET MEASUREMENTS

VEH. MOD YR/MAKE/MODEL/BODY: 2004 Nissan Titan King Cab

VEH. NHTSA NO.: C45206 VIN: 1N6AA06A74N508862 COLOR: Silver

VEH. BUILD DATE: December, 2003 TEST DATES: April 6-7, 2004

TEST LABORATORY: MGA Research Corporation

OBSERVERS: David Gotwals, Nicholas Brzuch, Darrel Steger, George Baker, Scott Kreiger

Measurement	Description	Left Side	Right Side
M	Seat Fore/Aft Travel (Front seats)	240.0 mm	240.0 mm
T°	Horizontal < {CG-F1 (Left Seat) to (Right A-Pillar)}	112.8°	--
A1°	360° - T°	247.2°	--
W°	Horizontal < {CG-2 (Left Seat) to (Left A-Pillar)}	196.0°	--
A2°	A2° = W°	196.0°	--
U°	Horizontal < {CG-2 (Left Seat) to (Left Door Frame)}	282.4°	--
D1°	B1° = U°	282.4°	--
V°	Horizontal < {CG-R (Left Seat) to (Left Door Frame)}	213.2°	--
D2°	B2° = V°	213.2°	--
W° (right)	Horizontal < {CG-F2 (Right Seat) to (Right A-Pillar)}	--	164.3°
A1° (right)	A1° (right) = W° (right)	--	164.3°
T ° (right)	Horizontal < {CG-F1 (Right Seat) to (Left A-Pillar)}	--	247.7°
A2° (right)	360°-T° (right)	--	112.3°
V ° (right)	Horizontal < {CG-R (Right Seat) to (Right Door Frame)}	--	146.9°
D1° (right)	B1° (right) = V° (right)	--	146.9°
U ° (right)	Horizontal < {CG-F2 (Right Seat) to (Right Door Frame)}	--	77.1°
D2° (right)	B2° (right) = U° (right)	--	77.1°
J	A-Pillar {(Plane 3) - (Plane 5)}	--	328.0 mm
J/2	J ÷ 2	--	164.0 mm
D1	Upper Roof {(Plane A) - (Plane B)}	1550.0 mm	
D1/2	D1 ÷ 2	775.0 mm	
D2	Upper Roof {(Plane C) - (Plane D)}	1425.4 mm	
D2/2	D2 ÷ 2	712.7 mm	
.35D1	.35 x D1	542.5 mm	
.35D2	.35 x D2	498.9 mm	

Measurement	Description	Left Side	Right Side
D	R-Pillar (Point 7 – Point M)	–	770 mm
D/2	D / 2	–	385 mm
DN	Door Frame (Plane D8 – Plane D9)	–	544.4 mm
DN/2	DN / 2 for Door Frame	–	272.2 mm
DN/4	DN / 4 for Door Frame	–	136.1 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	1527.8	-455.0	377.7	1527.8	455.0	377.7
Rear Row	2221.5	-455.0	377.7	2221.5	455.0	377.7

SgRP Locations (world coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	z
Front	1528.0	-454.2	378.3	1527.9	455.3	377.7
Rear Row	2222.1	-454.1	378.2	2222.0	455.4	377.7

CG Locations (world coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	Z
CGF1	1448.0	-454.2	1038.3	1447.9	455.3	1037.7
CGF2	1688.0	-454.2	1038.3	1687.9	455.3	1037.7
CGR	2382.1	-454.1	1038.2	2382.0	455.4	1037.7

REFERENCE FOR VEHICLE COORDINATE SYSTEM:

Driver seat bolt anchorage hole (x, y, z) = (1163.5, -675, 46.1 mm);

REMARKS: None

RECORDED BY: David G. Gotwals DATE: April 7, 2004

APPROVED BY: Helen A. Kaleto

TABLE 2-6

SUMMARY OF TARGETING RESULTS

VEH. MOD YR/MAKE/MODEL/BODY: 2004 Nissan Titan King Cab

VEH. NHTSA NO.: C45206 VIN: 1N6AA06A74N508862 COLOR: Silver

VEH. BUILD DATE: December, 2003 TEST DATES: April 6-7, 2004

TEST LABORATORY: MGA Research Corporation

OBSERVERS: David Gotwals, Nicholas Brzuch, Darrel Steger, George Baker, 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 Right Side								
AP1	1140.7	658.3	1145.3	113	24	No	--	Yes
AP2	1024.1	650.2	1057.0	167	37	No	--	No
AP3	905.2	665.3	982.1	184	49	No	--	Yes
Rear-Pillar Right Side								
RP1	2412.6	606.1	1223.5	30	19	No	--	No
RP2	2455.3	662.8	1120.8	90	0	No	--	Yes
Front Header Right Side								
FH1	1062.4	566.3	1195.9	--	--	Yes	--	--
REL	1068.4	517.1	1190.5	180	50	--	2	No
FH2	1067.8	416.4	1190.8	--	--	Yes	--	--
REL	1076.2	417.6	1186.5	180	50	--	1	No
Side Rail Left Side								
SR1	1289.7	596.1	1255.1	--	--	Yes	--	--
REL	1286.6	622.7	1212.6	90	21	--	2	No
SR2A	1440.7	597.7	1263.1	--	--	Yes	--	--
REL	1440.6	644.4	1217.2	90	50	--	3	Yes
SR2R	2112.0	591.7	1290.6	--	--	Yes	--	--
REL	2124.6	577.4	1279.3	90	40	--	1	No
Rear Header Right Side								
RH	2431.6	455.9	1240.7	--	--	Yes	--	--

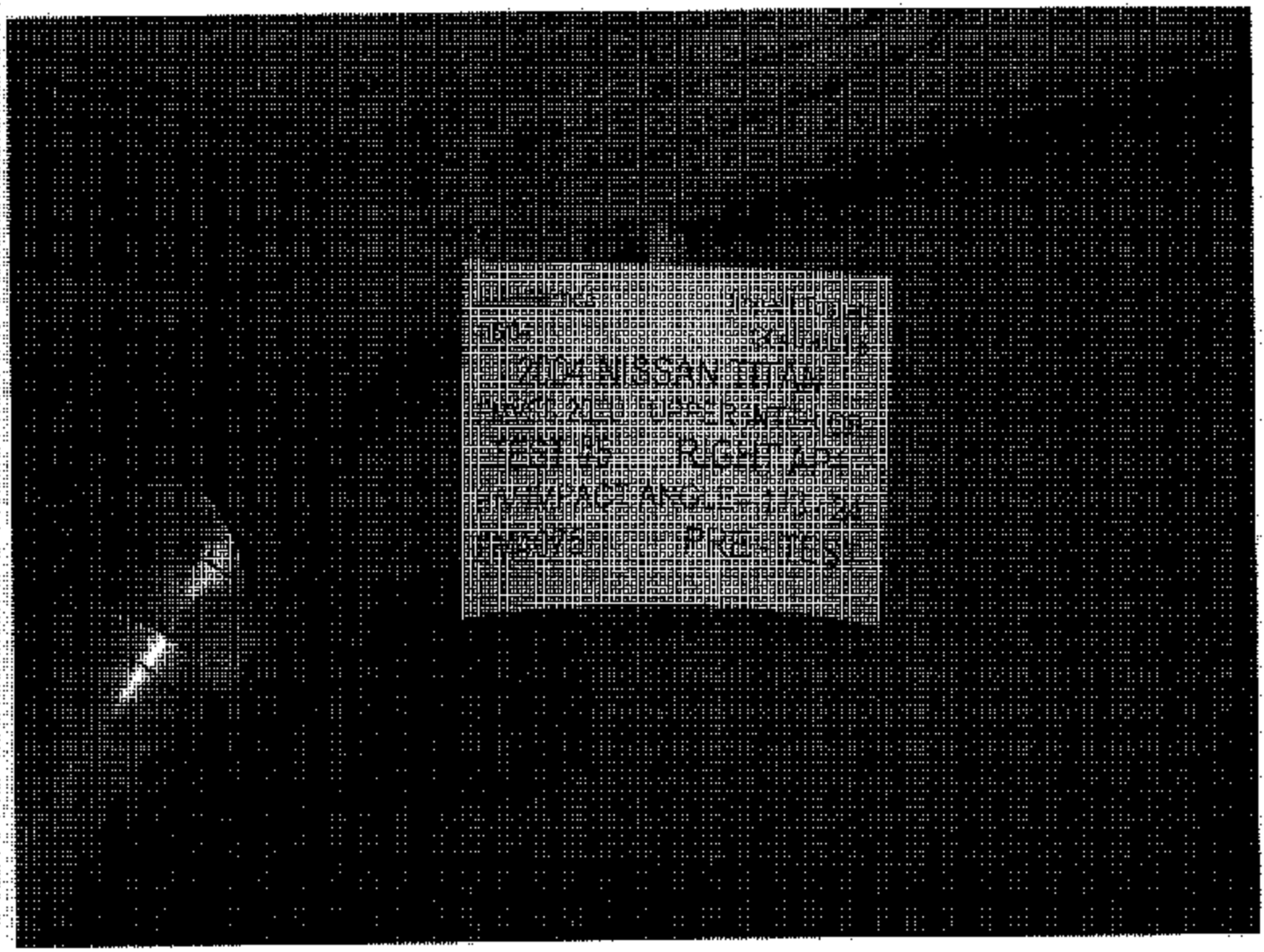
SUMMARY OF TARGETING RESULTS								
Target	Location (mm)			Horizontal Angle (deg)	Vertical Angle (deg)	Relocation (Yes/No)	Extension (# of 25 mm Spheres)	Impact (Yes/No)
	x	y	z					
REL	2409.2	458.7	1247.4	0	50	--	1	Yes
Door Frame Right Side								
DF1	1833.4	561.3	1299.3	--	--	Yes	--	No
REL	1834.8	586.1	1258.1	90	17	--	2	No
DF2	1816.2	698.7	1002.1	90	0	No	--	No
DF3	1741.5	729.8	1001.7	85	-10	No	--	Yes
DF4	1918.2	798.1	866.7	135	-10	No	--	No
Upper Roof Right Side								
UR1	1298.5	493.0	1243.6	90	50	No	--	Yes
UR2	1663.9	492.6	1303.3	90	50	No	--	Yes
UR3	1836.8	485.9	1312.1	90	40	No	--	Yes
UR4	2113.2	491.8	1321.6	90	45	No	--	Yes
UR5	2300.8	495.3	1307.4	40	41	No	--	No

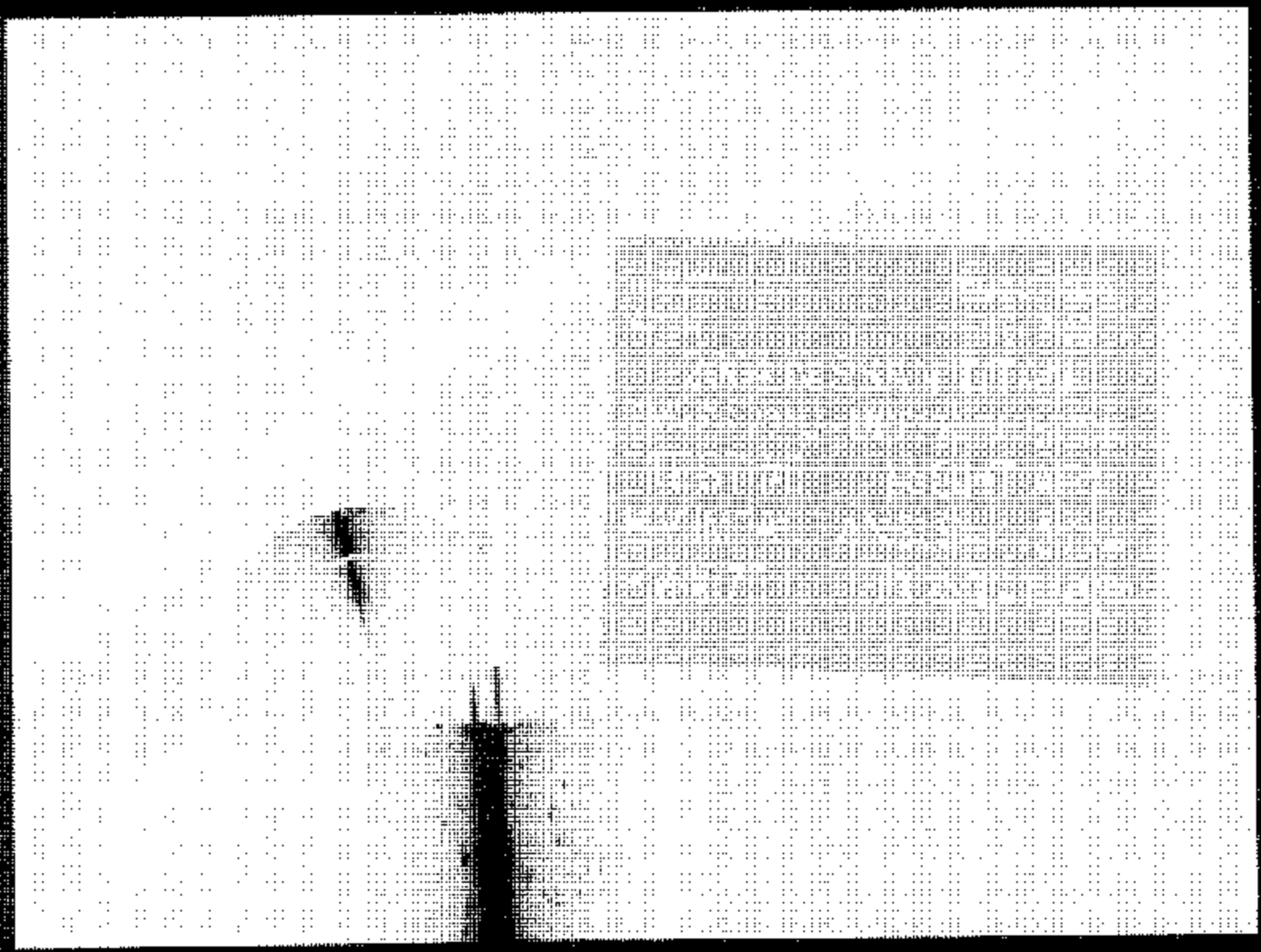
As determined using the Procedures specified in S10.1-10.13.

REMARKS: Only the right-side of the vehicle was targeted and tested.

RECORDED BY: David G. Gotwals DATE: April 7, 2004

APPROVED BY: Helen A. Kaleto





SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C45206 VEHICLE YR/MAKE/MODEL: 2004 / Nissan / Titan

GENERAL TEST PARAMETERS:

Test Number: 5

Target (Vehicle Side): left/(right) API

Temperature: 25 °F/(C)

MGA Test Reference No.: FM1095

Humidity: 19 %

Approach Angles: Horizontal 113 °

Time of Test: 5:30 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
396	305	8.6	18.4	18	16

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

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	1.25	1.23
Z	7	J35918	99.1	1.51	1.51

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.): NO VISIBLE DAMAGE

Recorded By: [signature] Approved By*: Henry A. Valeta Date: 4/6/04

*Only necessary for NHTSA (Government) Compliance testing.

FMH
G04I7-001.5

Customer: NISSAN
Test # 5
FM4075
Additional Desc: N/A

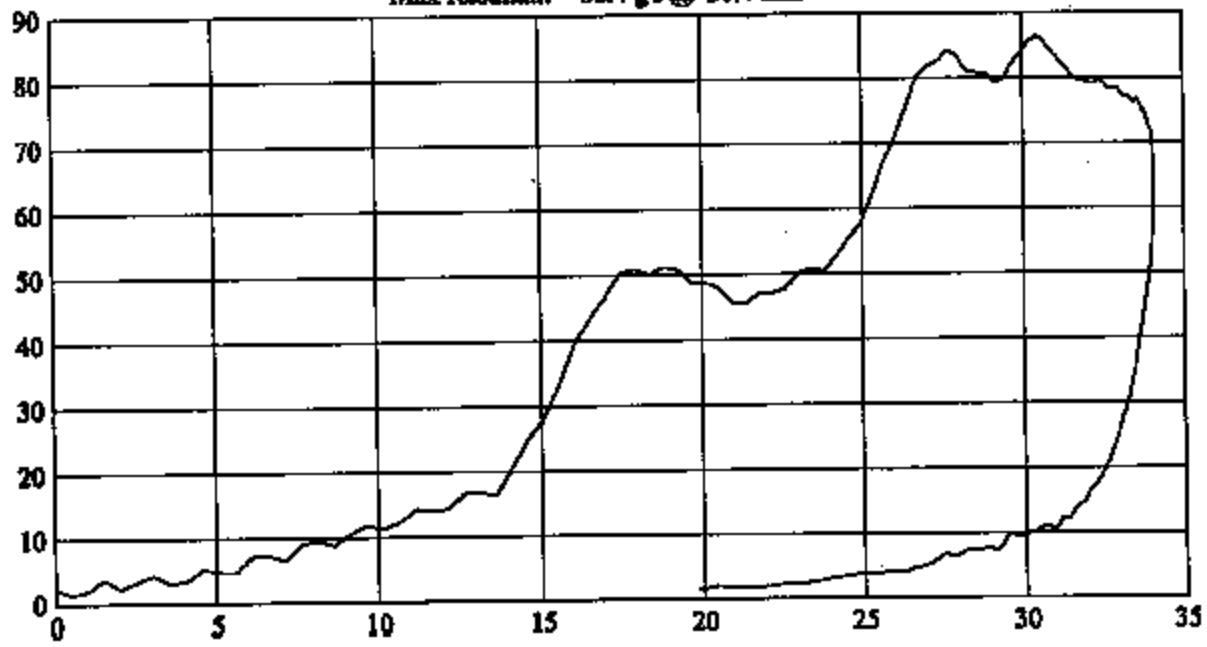
Vehicle Program : TITAN

Test Date: 4/6/04

Model Year: 2004
Target: AP1
Vehicle Side: Right
Horz/Vert Angle: 113/24

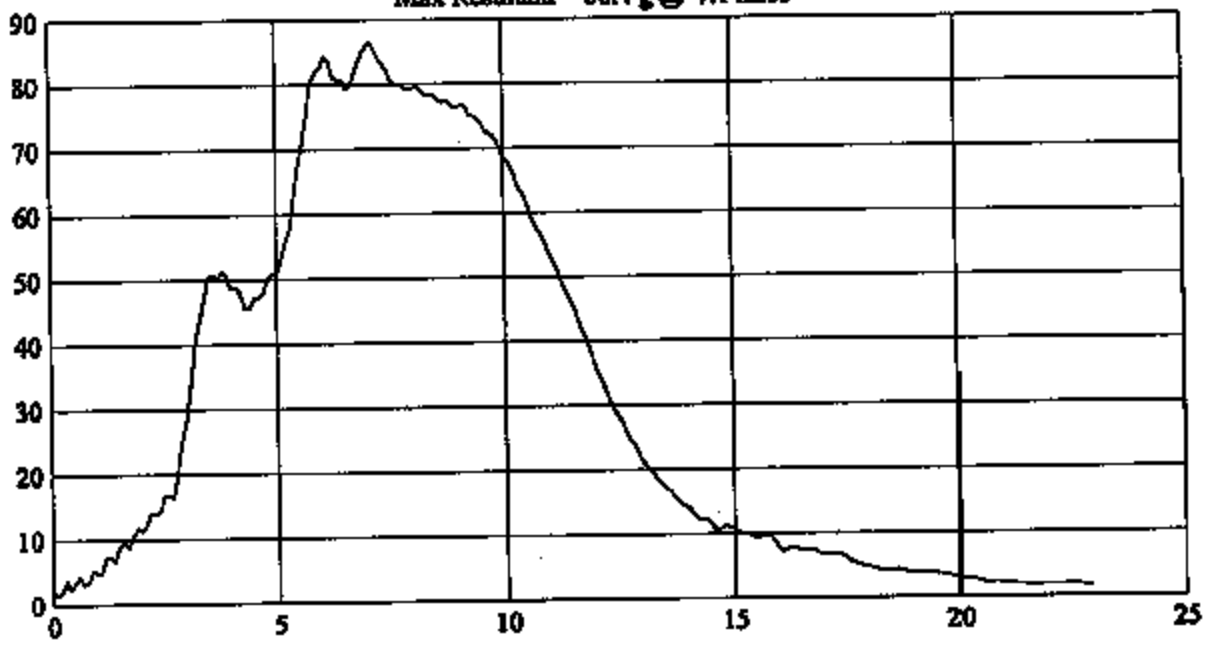
HIC(d) = 396, HIC = 305, Delta T = 8.6 msec

Max Resultant = 86.4 g's @ 30.4 mm



Resultant (g's) vs. Displacement (mm)

Max Resultant = 86.4 g @ 7.1 msec



Resultant Accel (g's) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 5
FM4075
Additional Desc: N/A

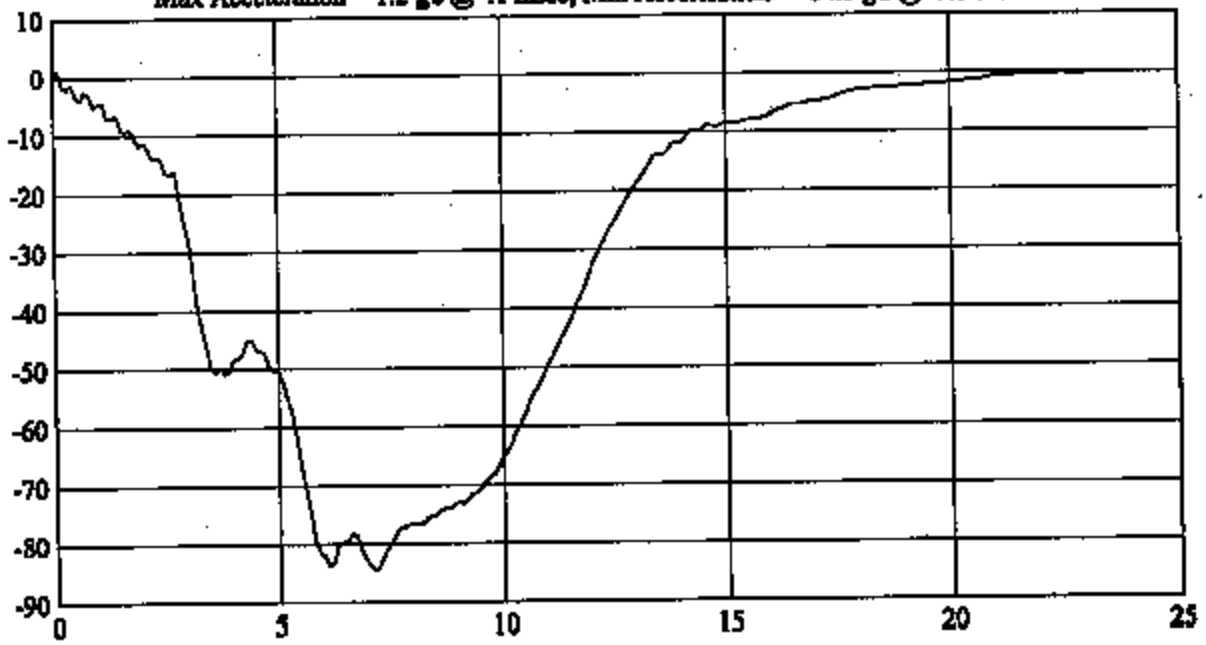
Vehicle Program : TITAN

Test Date: 4/6/04

Model Year: 2004
Target: AP1
Vehicle Side: Right
Horz/Vert Angle: 113/24

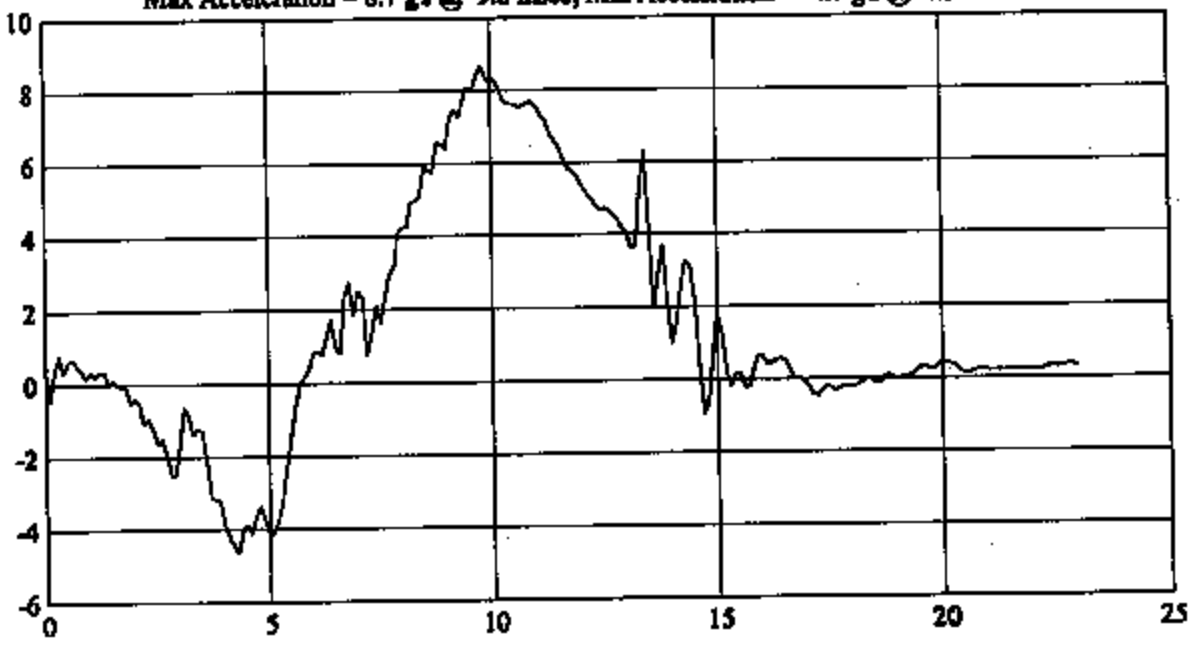
HIC(d) = 396, HIC = 305, Delta T = 8.6 msec

Max Acceleration = 1.2 g's @ .1 msec, Min Acceleration = -84.5 g's @ 7.1 msec



Accel X (g's) vs. Time (msec)

Max Acceleration = 8.7 g's @ 9.8 msec, Min Acceleration = -4.7 g's @ 4.3 msec



Accel Y (g's) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 5
FM4075
Additional Desc: N/A

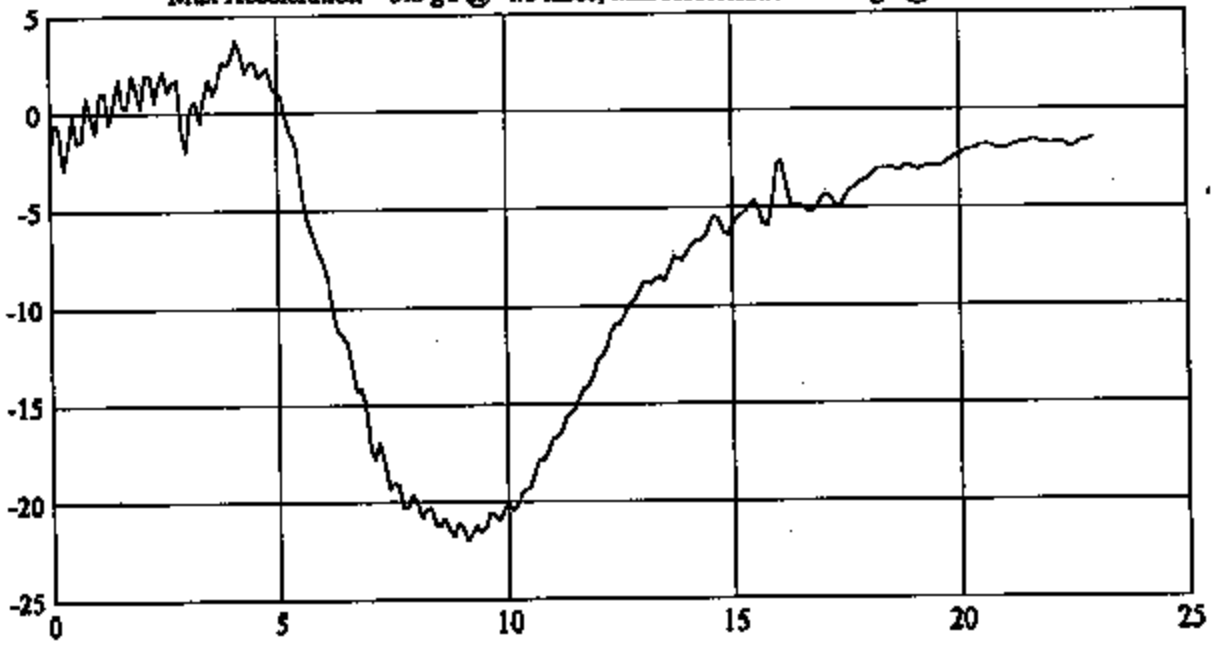
Vehicle Program : TITAN

Test Date: 4/6/04

Model Year: 2004
Target: AP1
Vehicle Side: Right
Horz/Vert Angle: 113/24

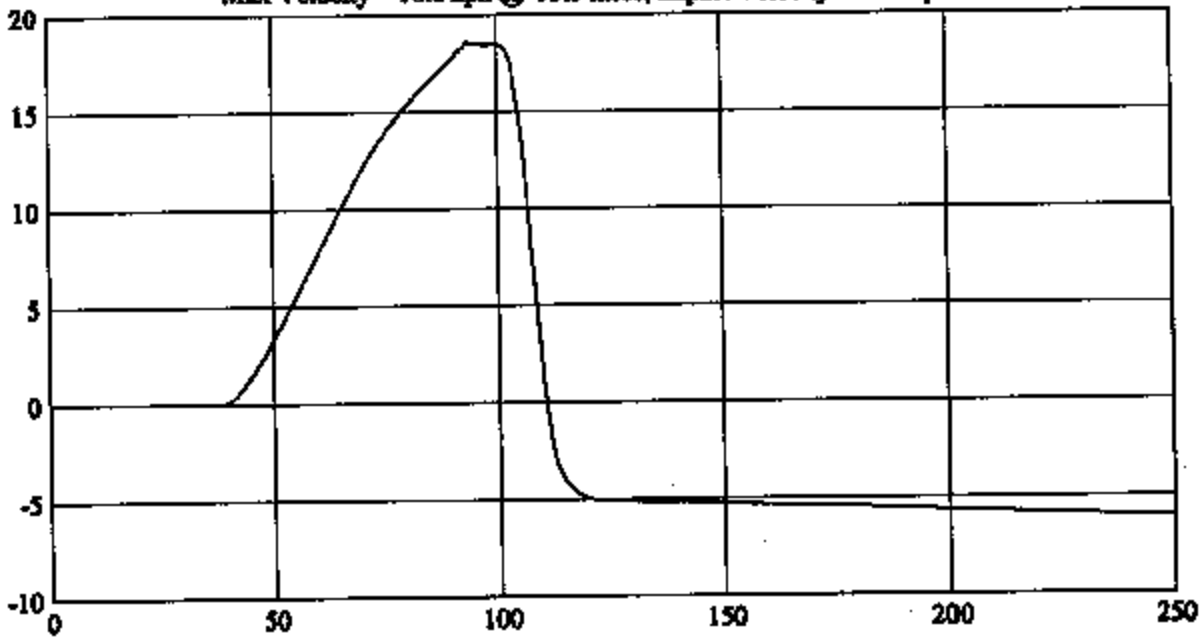
HIC(d) = 396, HIC = 305, Delta T = 8.6 msec

Max Acceleration = 3.8 g's @ 4.1 msec, Min Acceleration = -22 g's @ 9.1 msec



Accel Z (g's) vs. Time (msec)

Max Velocity = 18.6 kph @ 93.5 msec, Impact Velocity = 18.4 kph



Velocity (kph) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 5
FM4075
Additional Desc: N/A

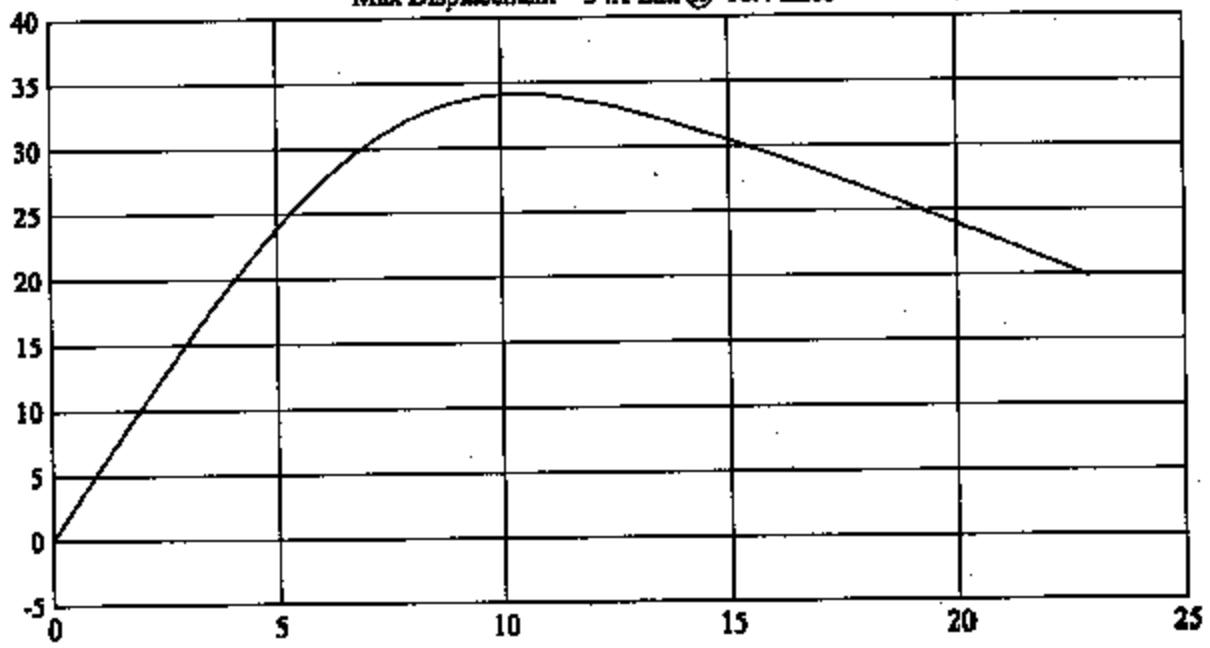
Vehicle Program : TITAN

Test Date: 4/6/04

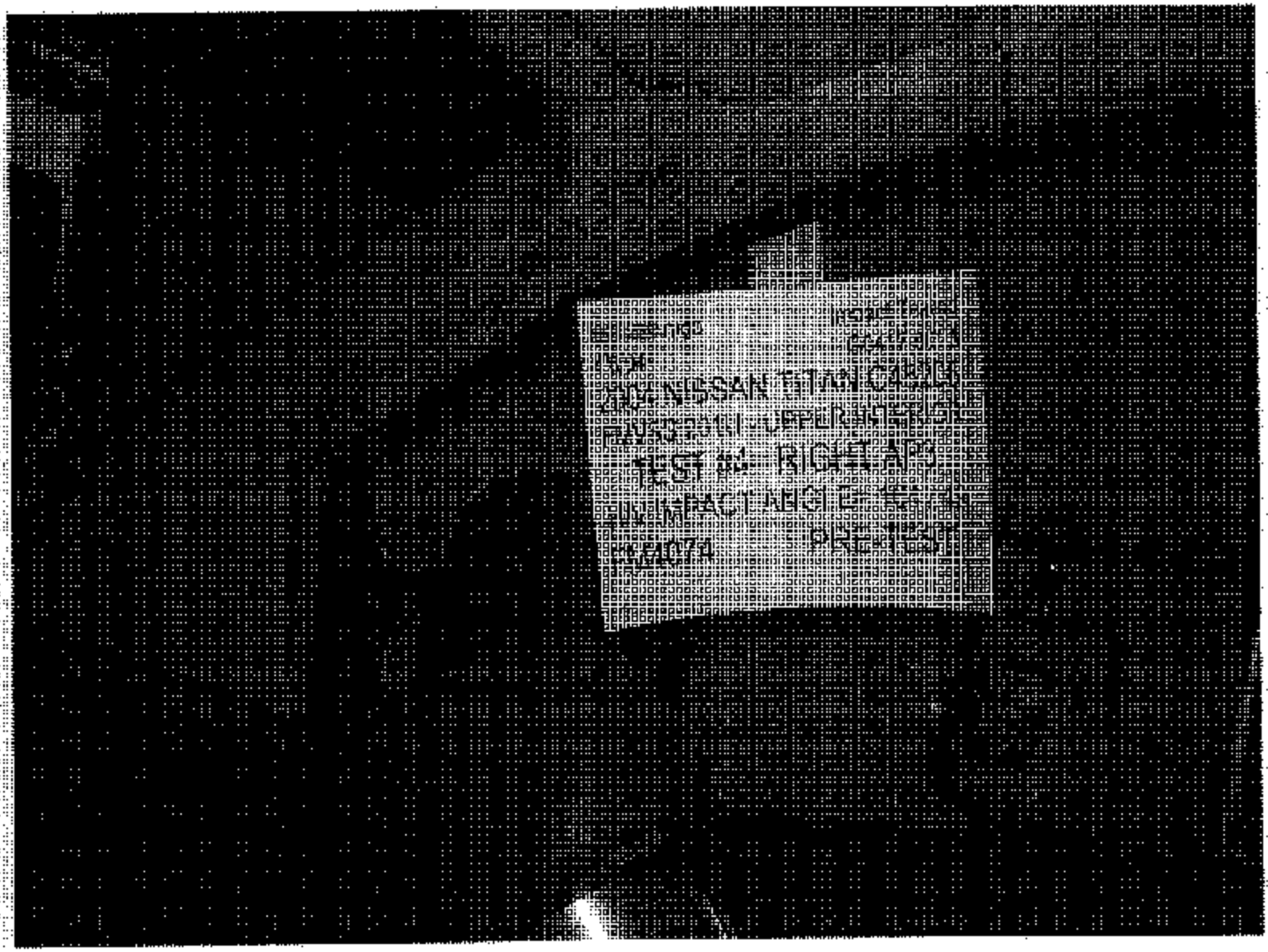
Model Year: 2004
Target: AP1
Vehicle Side: Right
Horz/Vert Angle: 113/24

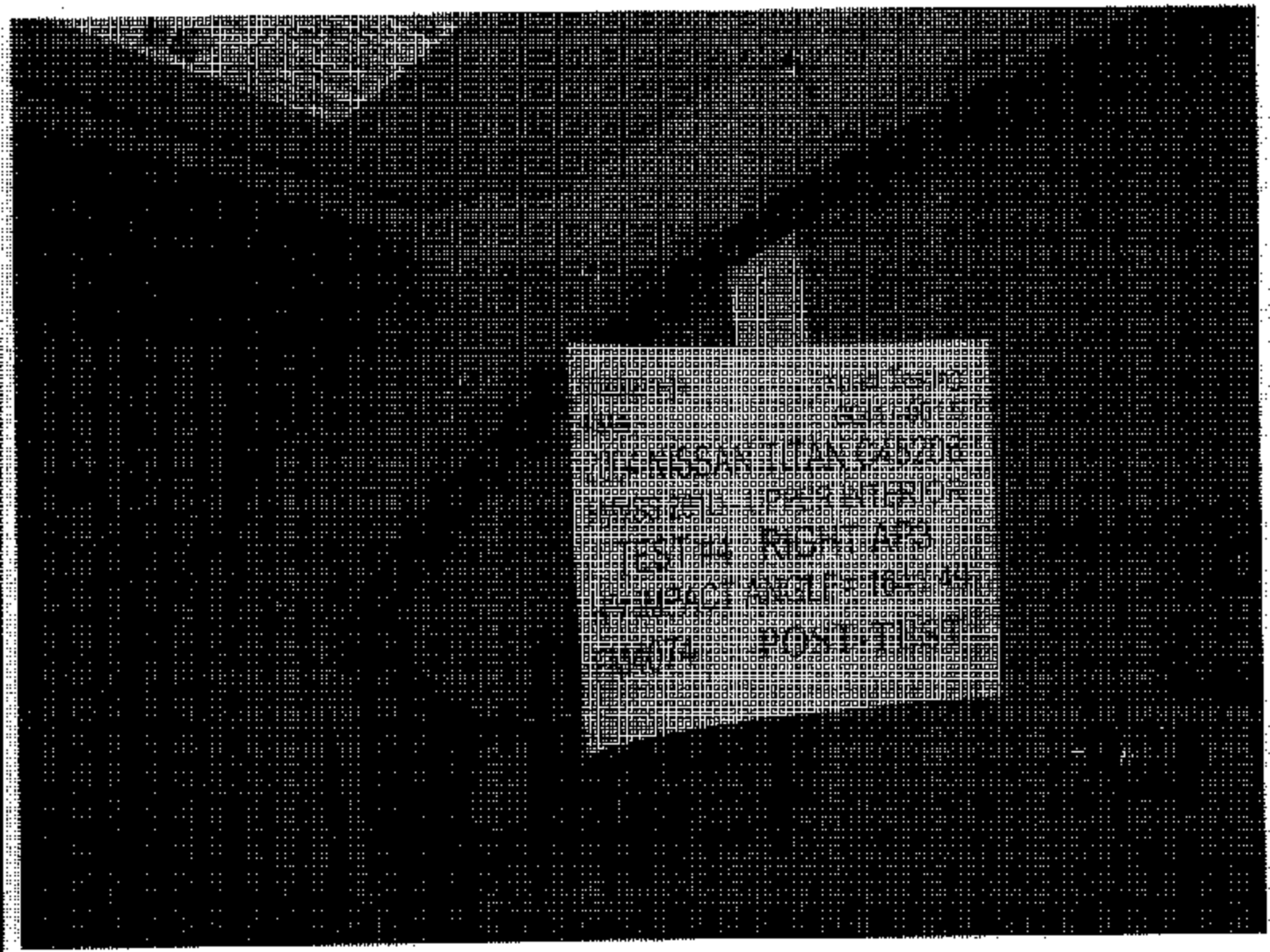
HIC(d) = 396, HIC = 305, Delta T = 8.6 msec

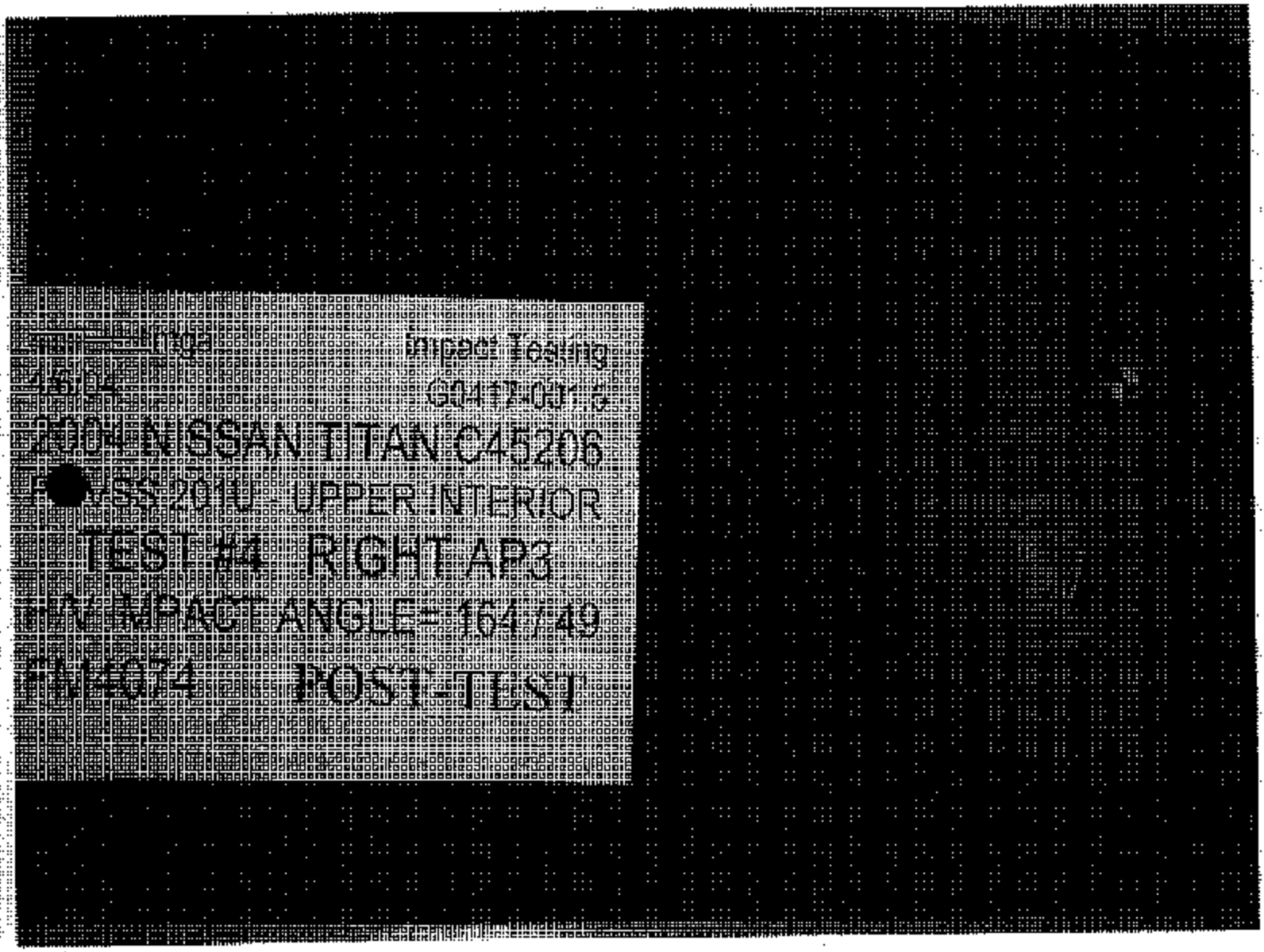
Max Displacement = 34.1 mm @ 10.4 msec



Displacement (mm) vs. Time (msec)


1994 NISSAN TITAN CREW
TEST #: RIGHT AP5
IMPACT ANGLE:
SPEED:




Impact Testing
6041-001.0
2004 NISSAN TITAN C45206
FMVSS 201U - UPPER INTERIOR
TEST #4 - RGHT AP3
IMPACT ANGLE=164/49
FMVSS74 - POST-TEST

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: C45206 VEHICLE YR/MAKE/MODEL: 2004/NISSAN/TITAN

GENERAL TEST PARAMETERS:

Test Number: 4

Target (Vehicle Side): left/right AB3

Temperature: 25 °F/(C)

MGA Test Reference No.: FM4074

Humidity: 19 %

Approach Angles: Horizontal 164 °

Time of Test: 1180 am/(pm)

Vertical 49 °

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
219	69	7.6	18.7	8	5

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35924	-91.6	1.20	1.20
Y	6	J35919	93.5	1.23	1.23
Z	7	J31051	98.5	1.51	1.51

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

grab handle broke off

Recorded By: _____ Approved By*: Helen A. Kaleto Date: 4/6/04

*Only necessary for NHTSA (Government) Compliance testing.

FMH
G04I7-001.5

Customer: NISSAN
Test # 4
FM4074
Additional Desc: N/A

Vehicle Program : TITAN

Test Date: 4/6/04

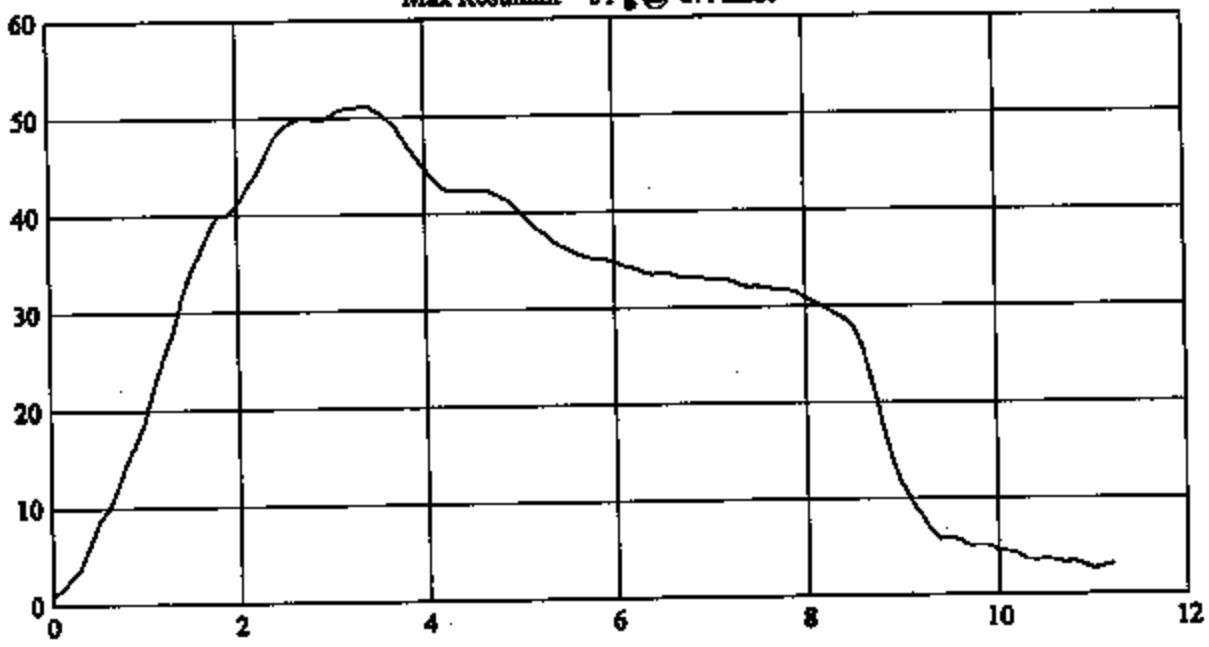
Model Year: 2004
Target: AP3
Vehicle Side: Right
Horz/Vert Angle: 164/49

HIC(d) = 219, HIC = 69, Delta T = 7.6 msec

Max Resultant = 51 g's @ 16.4 mm

Resultant (g's) vs. Displacement (mm)

Max Resultant = 51 g @ 3.4 msec



Resultant Accel (g's) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 4
FM4074
Additional Desc: N/A

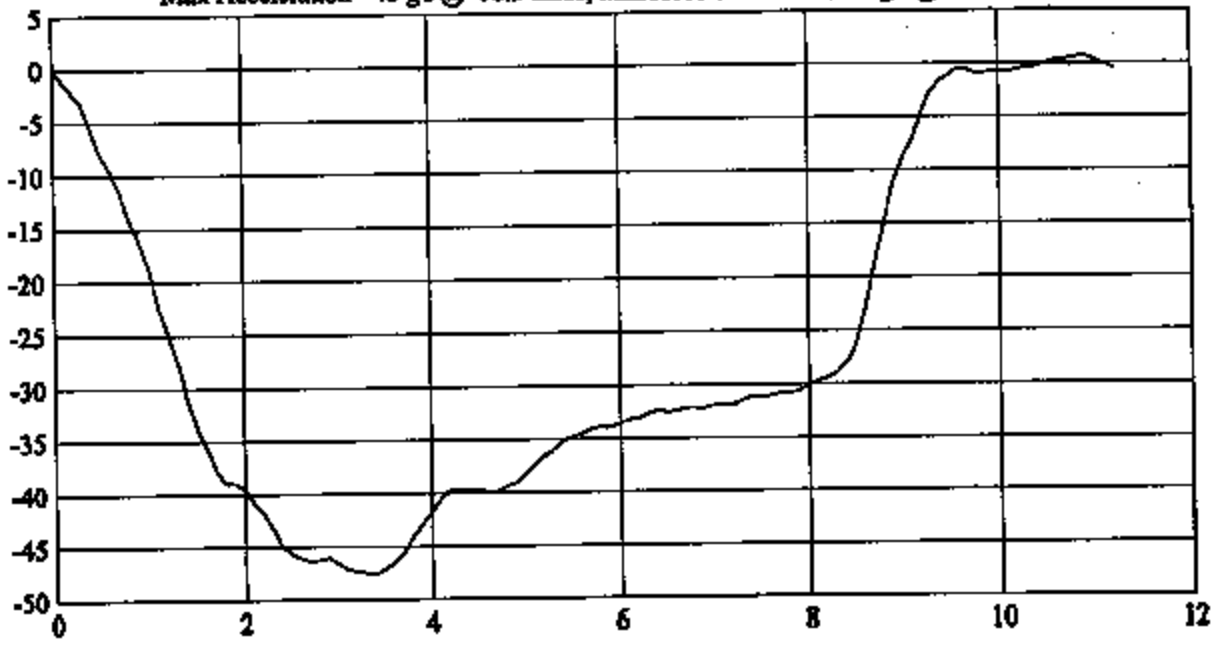
Vehicle Program : TITAN

Test Date: 4/6/04

Model Year: 2004
Target: AP3
Vehicle Side: Right
Horz/Vert Angle: 164/49

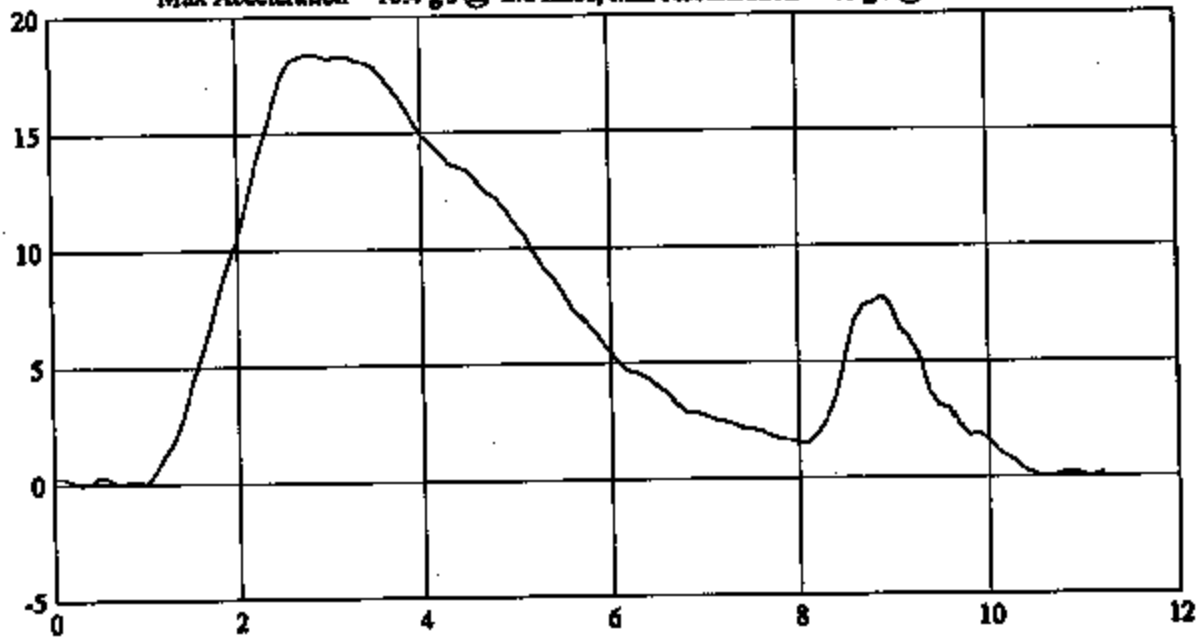
HIC(d) = 219, HIC = 69, Delta T = 7.6 msec

Max Acceleration = .6 g's @ 10.9 msec, Min Acceleration = -47.6 g's @ 3.4 msec



Accel X (g's) vs. Time (msec)

Max Acceleration = 18.4 g's @ 2.8 msec, Min Acceleration = -.1 g's @ .7 msec



Accel Y (g's) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 4
FM4074
Additional Desc: N/A

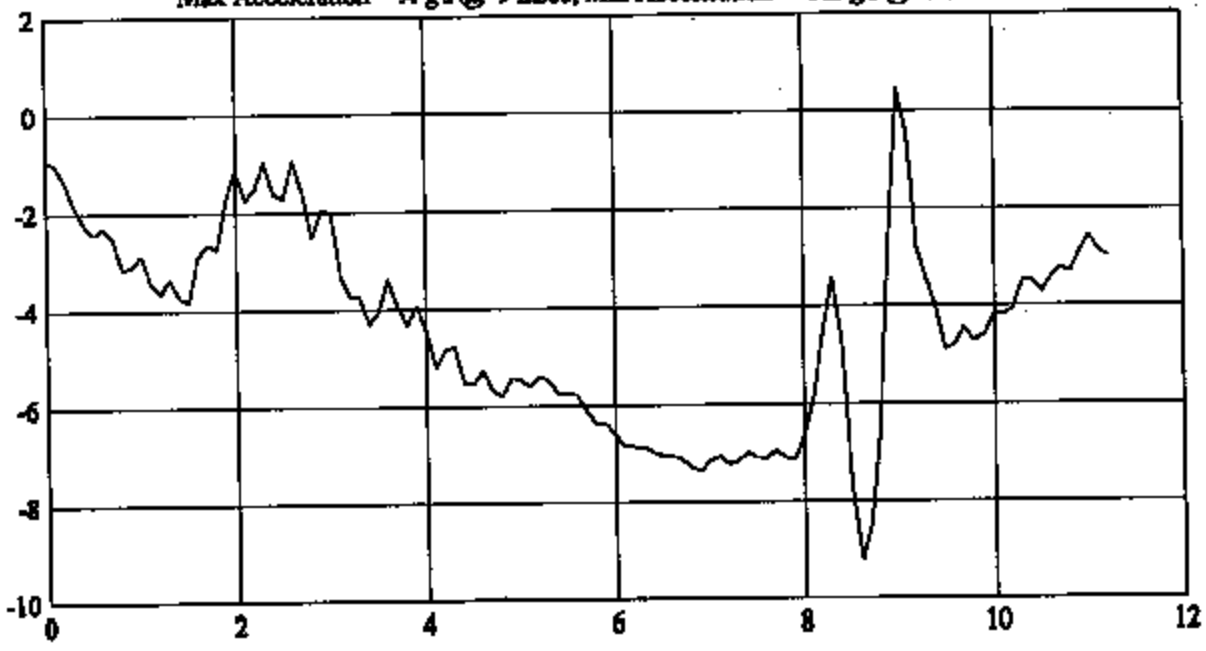
Vehicle Program : TITAN

Test Date: 4/6/04

Model Year: 2004
Target: AP3
Vehicle Side: Right
Horz/Vert Angle: 164/49

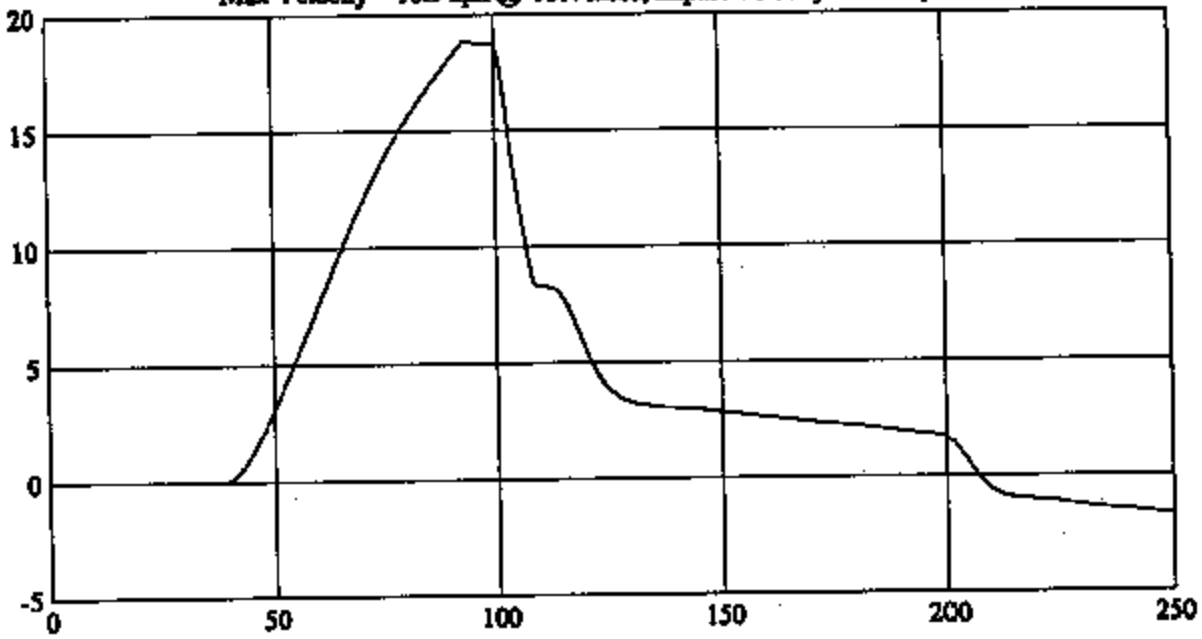
HIC(d) = 219, HIC = 69, Delta T = 7.6 msec

Max Acceleration = .4 g's @ 9 msec, Min Acceleration = -9.2 g's @ 8.6 msec



Accel Z (g's) vs. Time (msec)

Max Velocity = 18.9 kph @ 93.4 msec, Impact Velocity = 18.7 kph



Velocity (kph) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 4
FM4074
Additional Desc: N/A

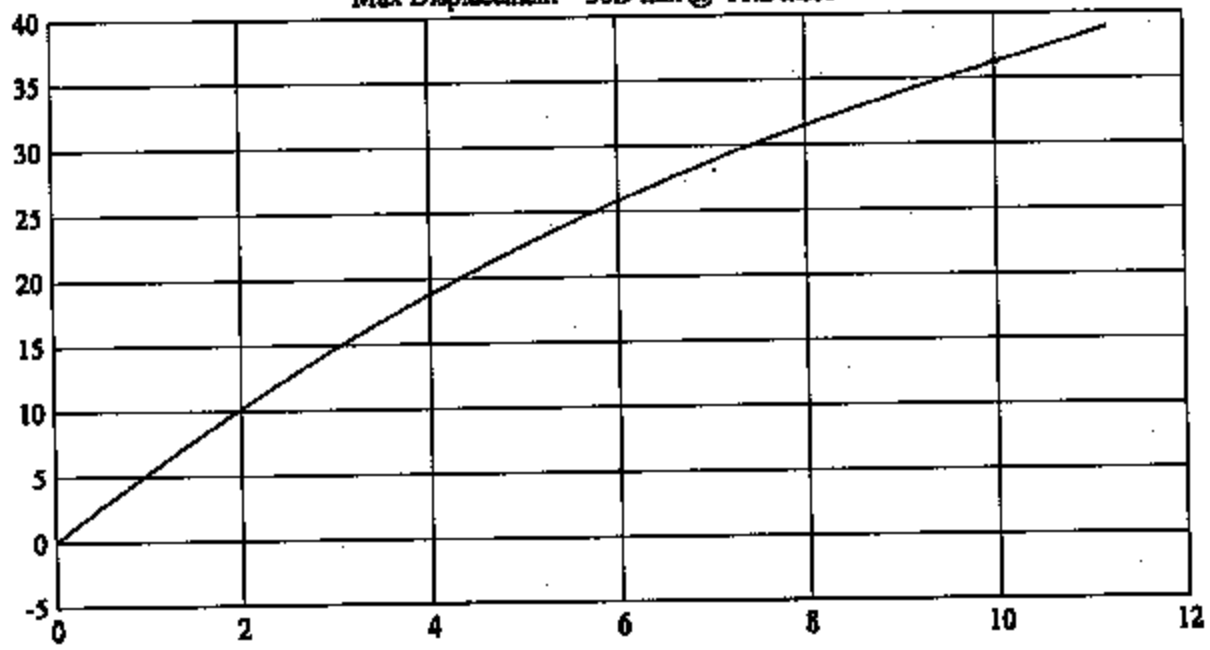
Vehicle Program : TITAN

Test Date: 4/6/04

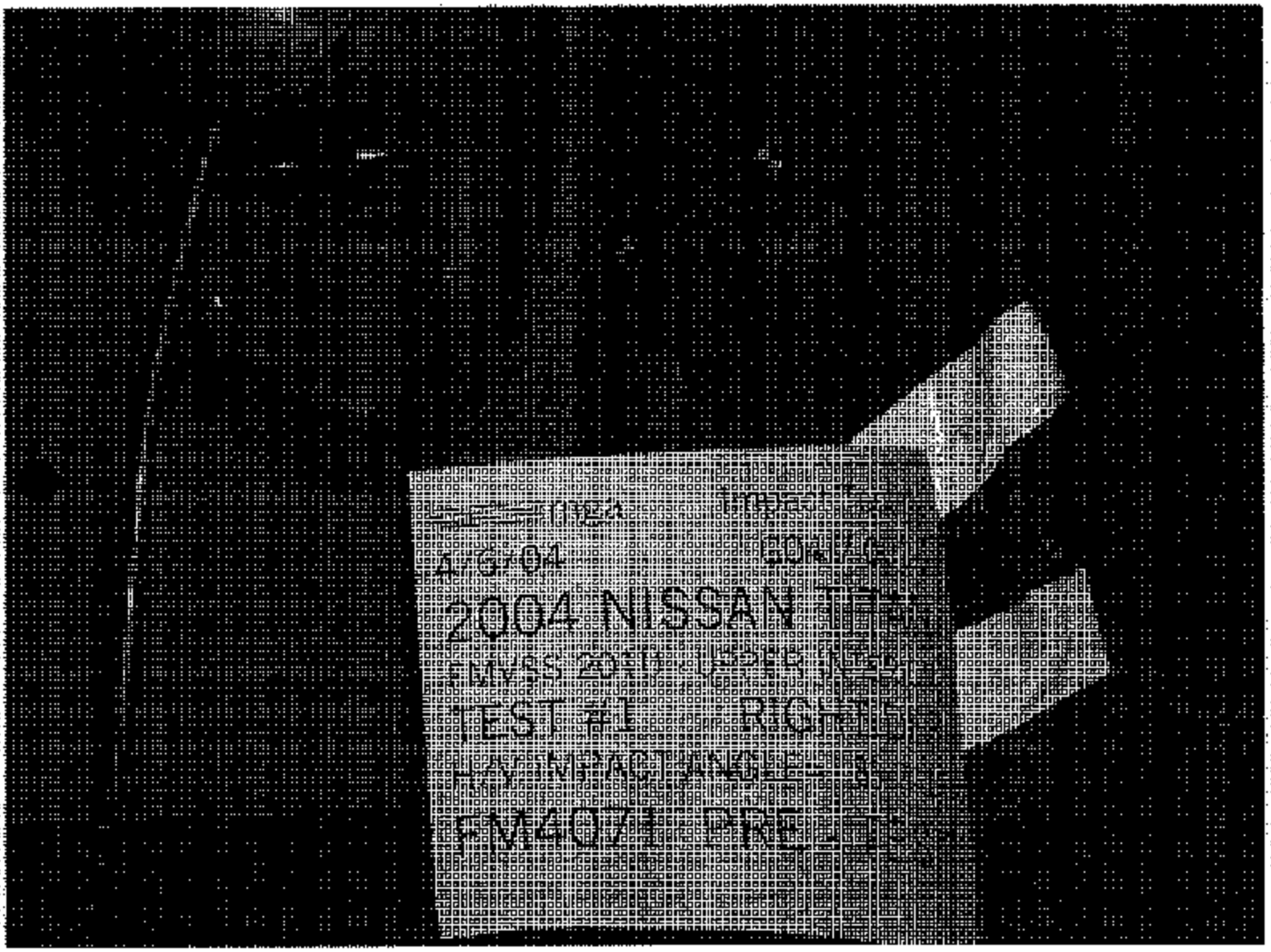
Model Year: 2004
Target: AP3
Vehicle Side: Right
Horz/Vert Angle: 164/49

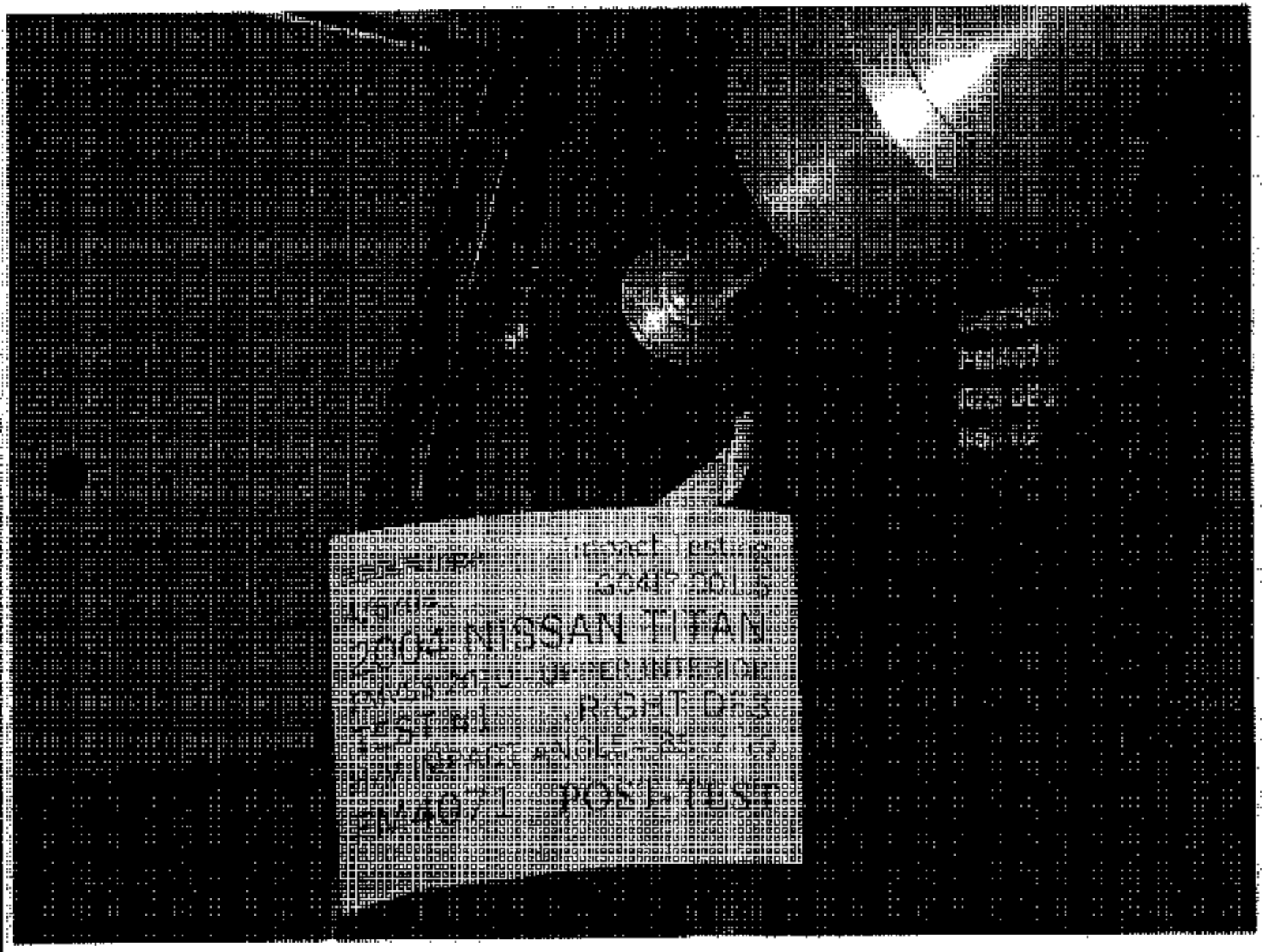
HIC(d) = 219, HIC = 69, Delta T = 7.6 msec

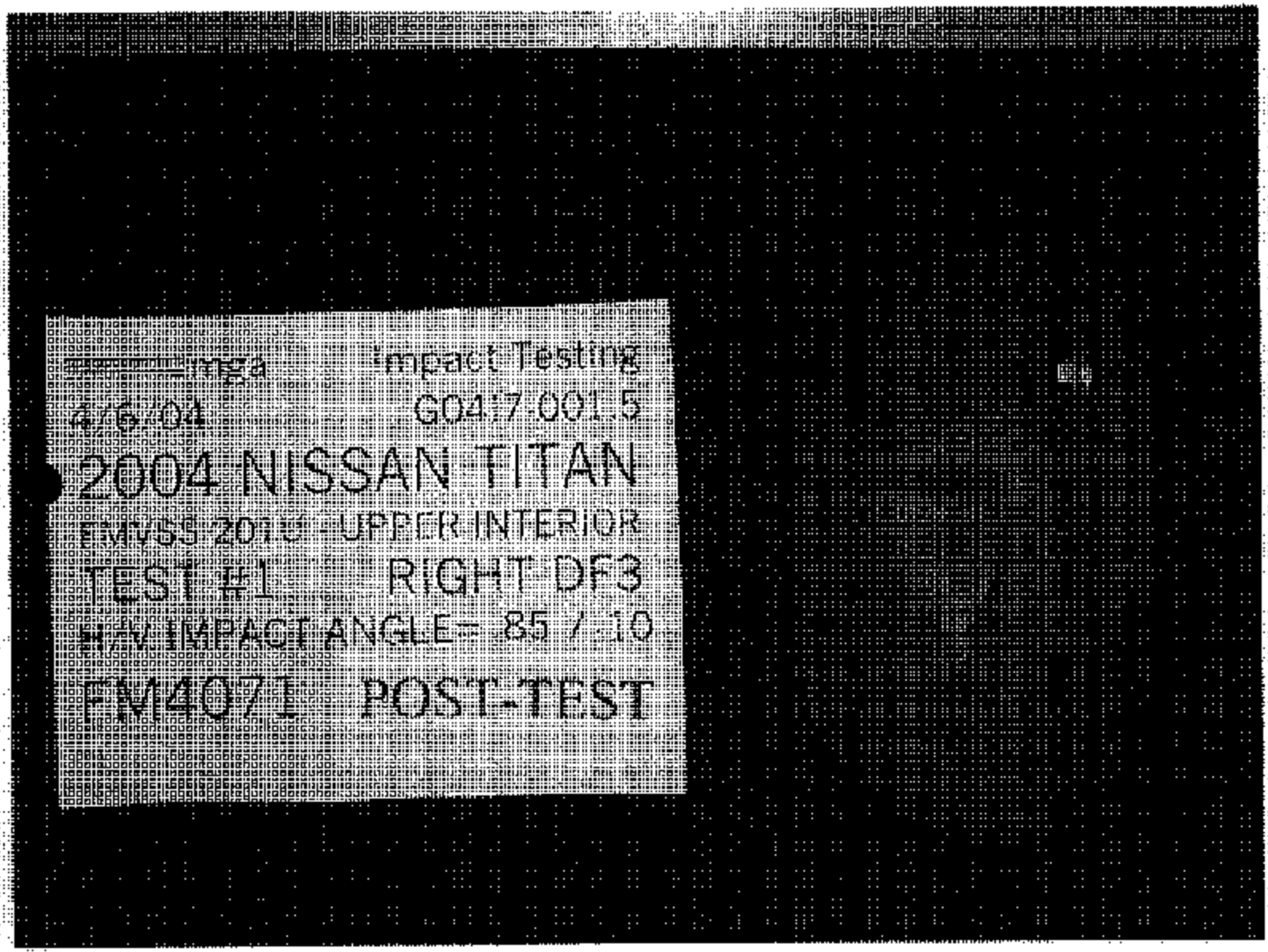
Max Displacement = 38.9 mm @ 11.2 msec



Displacement (mm) vs. Time (msec)


2004 NISSAN TITAN
TEST #1 RIGHT


2006 NISSAN TITAN


Impact Testing
G0417.001.5
4/16/04
2004 NISSAN TITAN
FMVSS 201U - UPPER INTERIOR
TEST #1 RIGHT DF3
IMPACT ANGLE= 85 / 10
FM4071 POST-TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: CH5206 VEHICLE YR/MAKE/MODEL: 2004 NISSAN TITAN

GENERAL TEST PARAMETERS:

Test Number: 1

Target (Vehicle Side): left/right DF3

Temperature: 24 °F/C

MGA Test Reference No.: FM4071

Humidity: 16 %

Approach Angles: Horizontal 85 °

Time of Test: 12:45 am/pm

Vertical -10 °

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
443	366	7.6	23.75	20	8

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35924	-91.8	1.20	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.):

NO VISIBLE DAMAGE
SUNROOF TRACK

Recorded By: [signature] Approved By*: Helen A. Kaleto Date: 4/6/04

*Only necessary for NHTSA (Government) Compliance testing.

FMH
G04I7-001.5

Customer: NISSAN
Test # 1
FM4071
Additional Desc: N/A

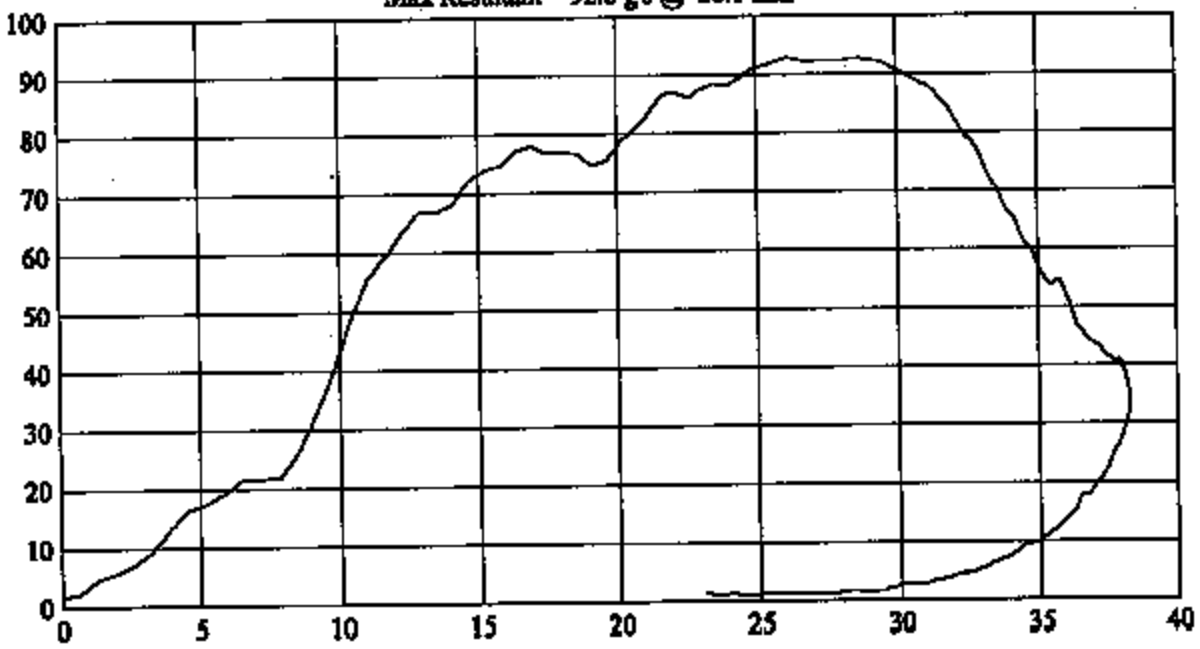
Vehicle Program : TITAN

Test Date: 4/6/04

Model Year: 2004
Target: DF3
Vehicle Side: Right
Horz/Vert Angle: 85/-10

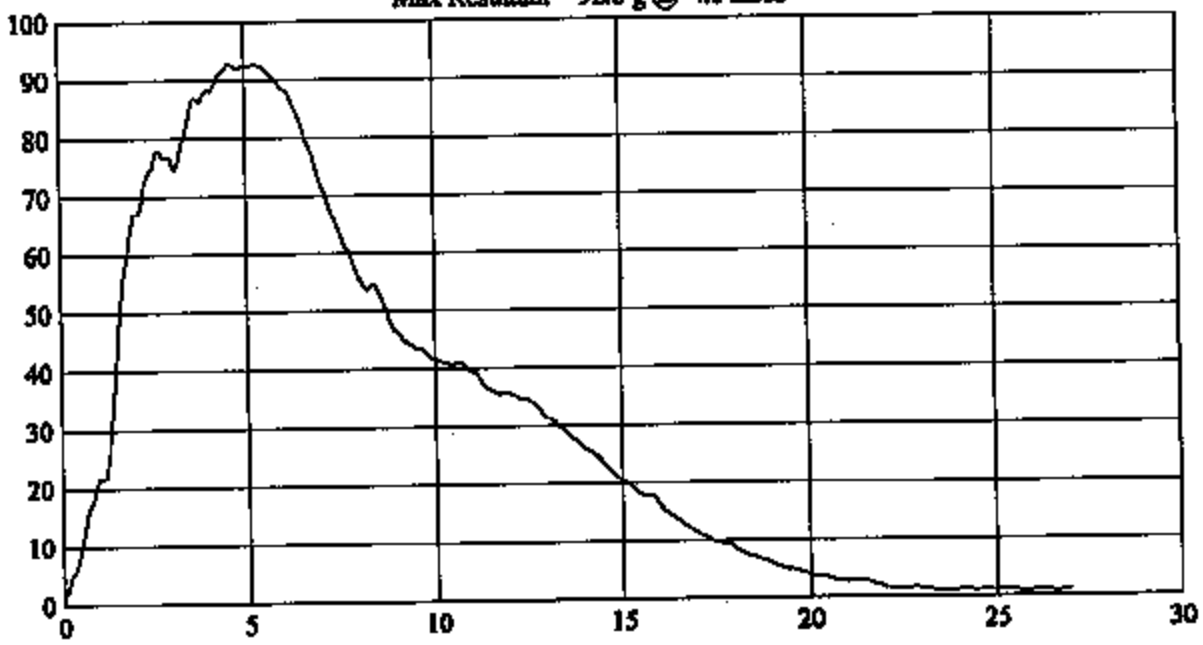
HIC(d) = 443, HIC = 366, Delta T = 7.6 msec

Max Resultant = 92.8 g's @ 26.1 mm



Resultant (g's) vs. Displacement (mm)

Max Resultant = 92.8 g @ 4.6 msec



Resultant Accel (g's) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 1
FM4071
Additional Desc: N/A

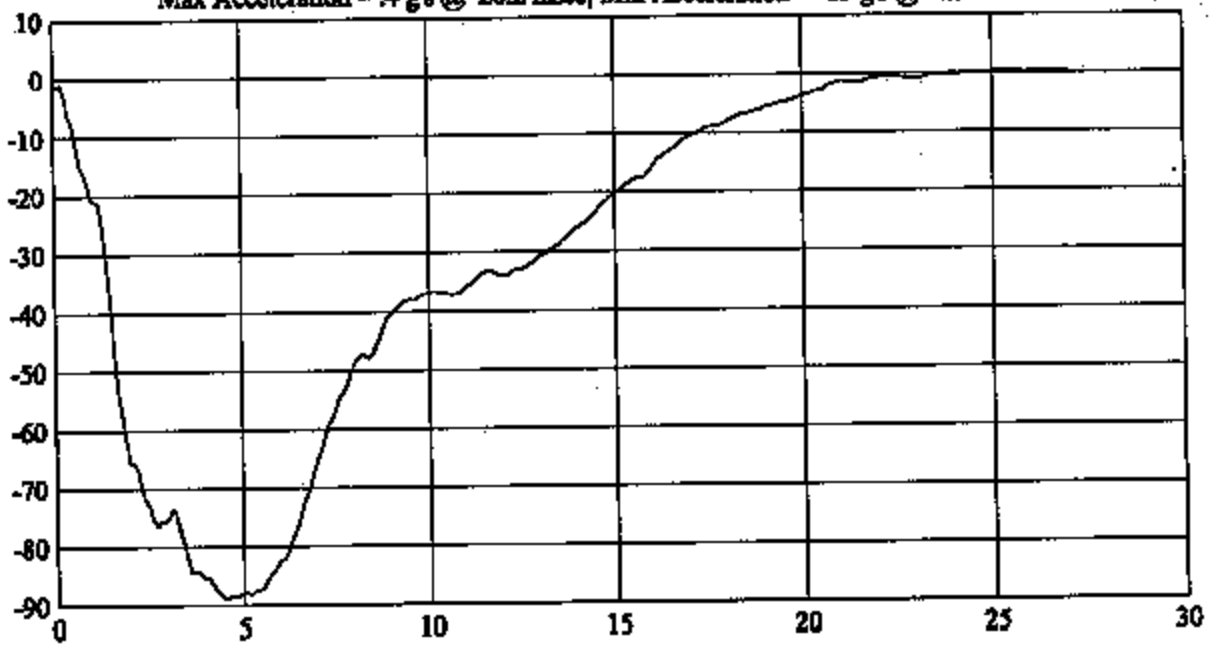
Vehicle Program : TITAN

Test Date: 4/6/04

Model Year: 2004
Target: DF3
Vehicle Side: Right
Horz/Vert Angle: 85/-10

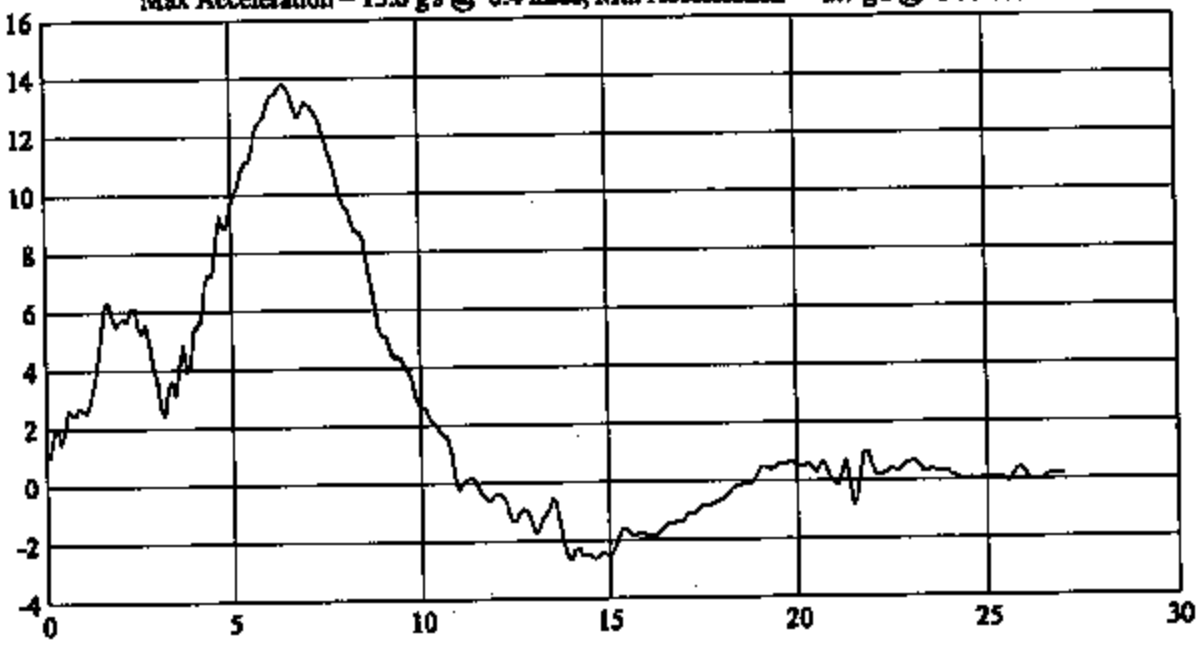
HIC(d) = 443, HIC = 366, Delta T = 7.6 msec

Max Acceleration = .4 g's @ 26.2 msec, Min Acceleration = -89 g's @ 4.5 msec



Accel X (g's) vs. Time (msec)

Max Acceleration = 13.8 g's @ 6.4 msec, Min Acceleration = -2.7 g's @ 14 msec



Accel Y (g's) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 1
FM4071
Additional Desc: N/A

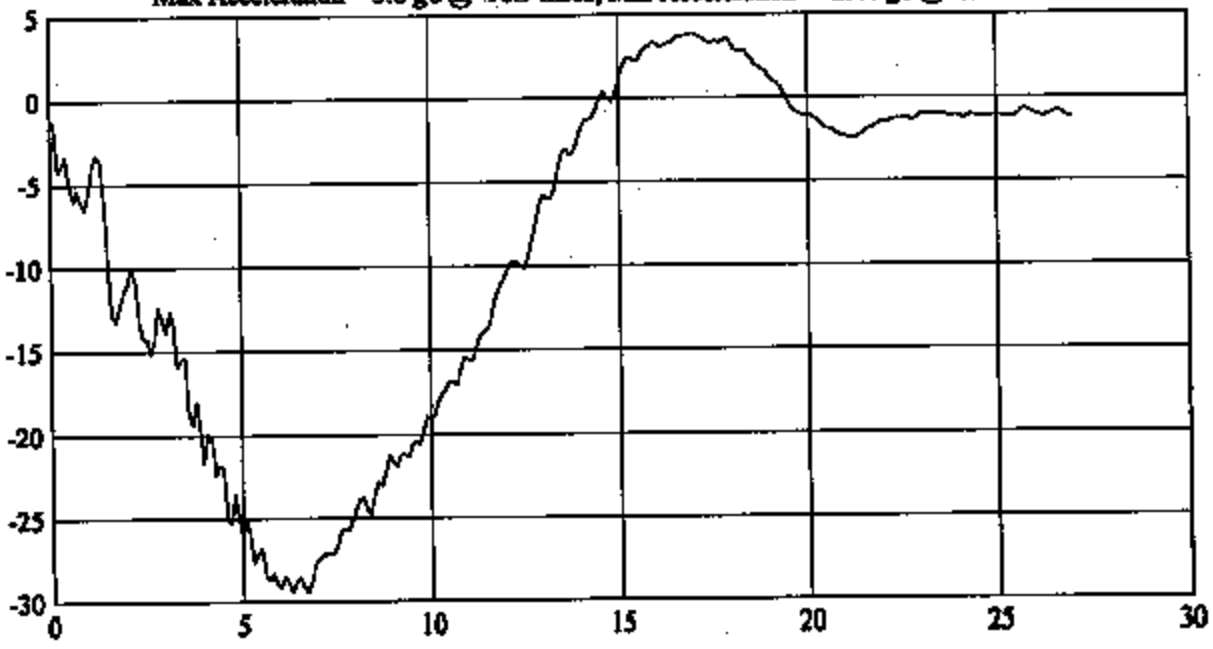
Vehicle Program : TITAN

Test Date: 4/6/04

Model Year: 2004
Target: DF3
Vehicle Side: Right
Horz/Vert Angle: 85/-10

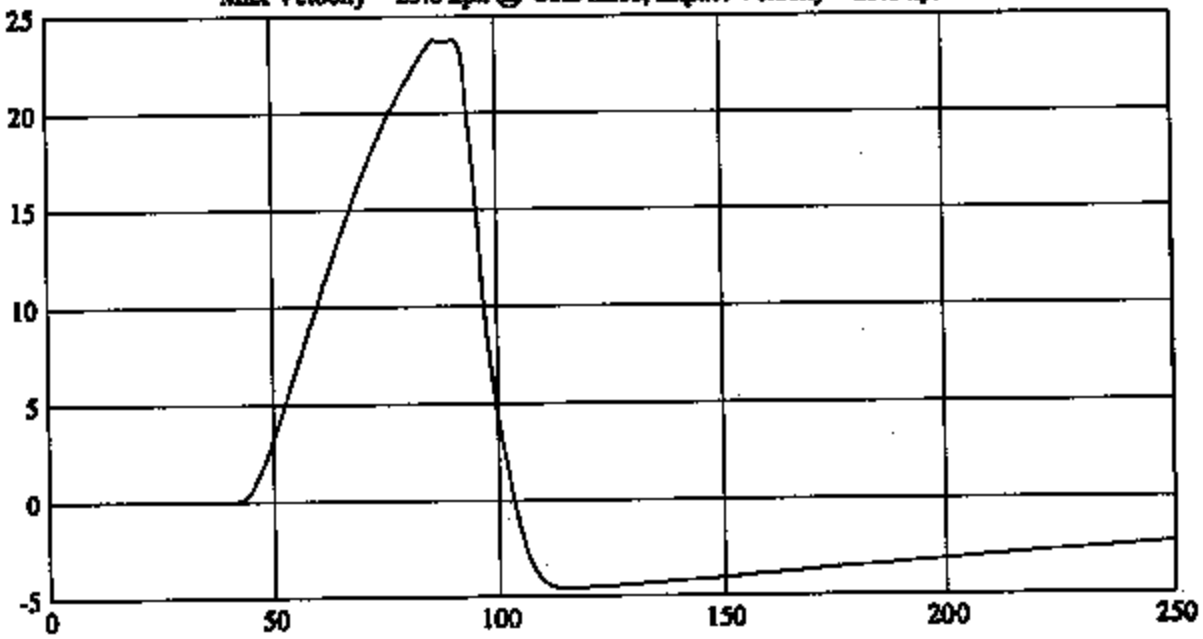
HIC(d) = 443, HIC = 366, Delta T = 7.6 msec

Max Acceleration = 3.8 g's @ 16.9 msec, Min Acceleration = -29.4 g's @ 6.3 msec



Accel Z (g's) vs. Time (msec)

Max Velocity = 23.8 kph @ 86.2 msec, Impact Velocity = 23.8 kph



Velocity (kph) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 1
FM4071
Additional Desc: N/A

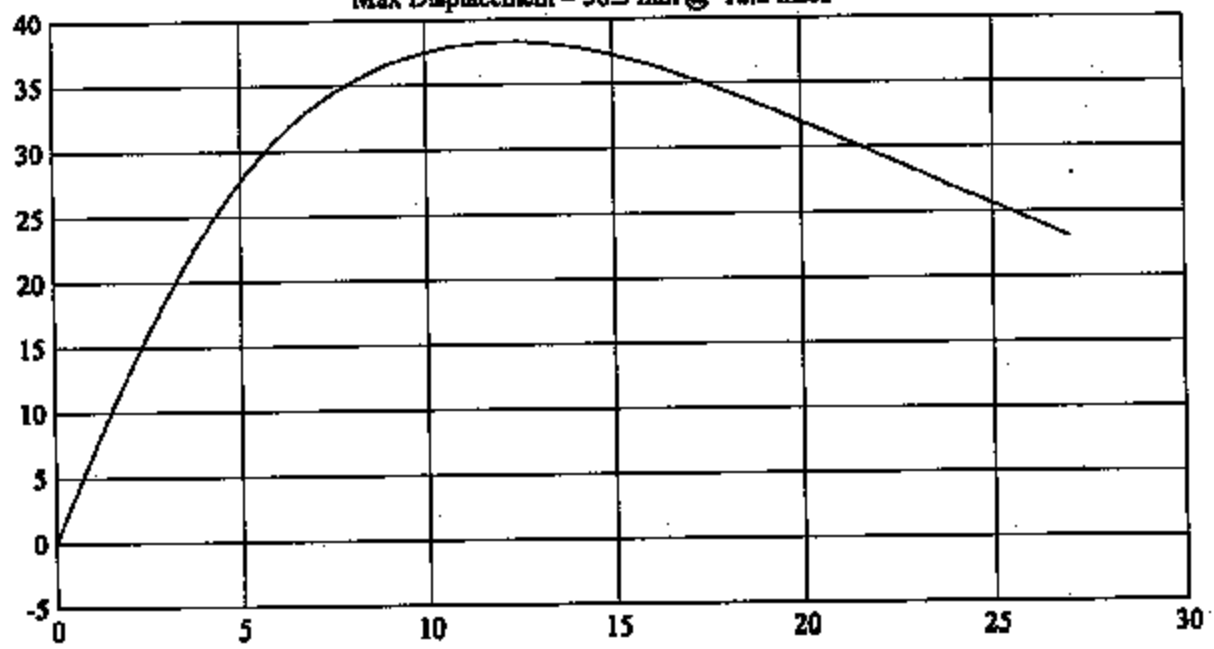
Vehicle Program : TITAN

Test Date: 4/6/04

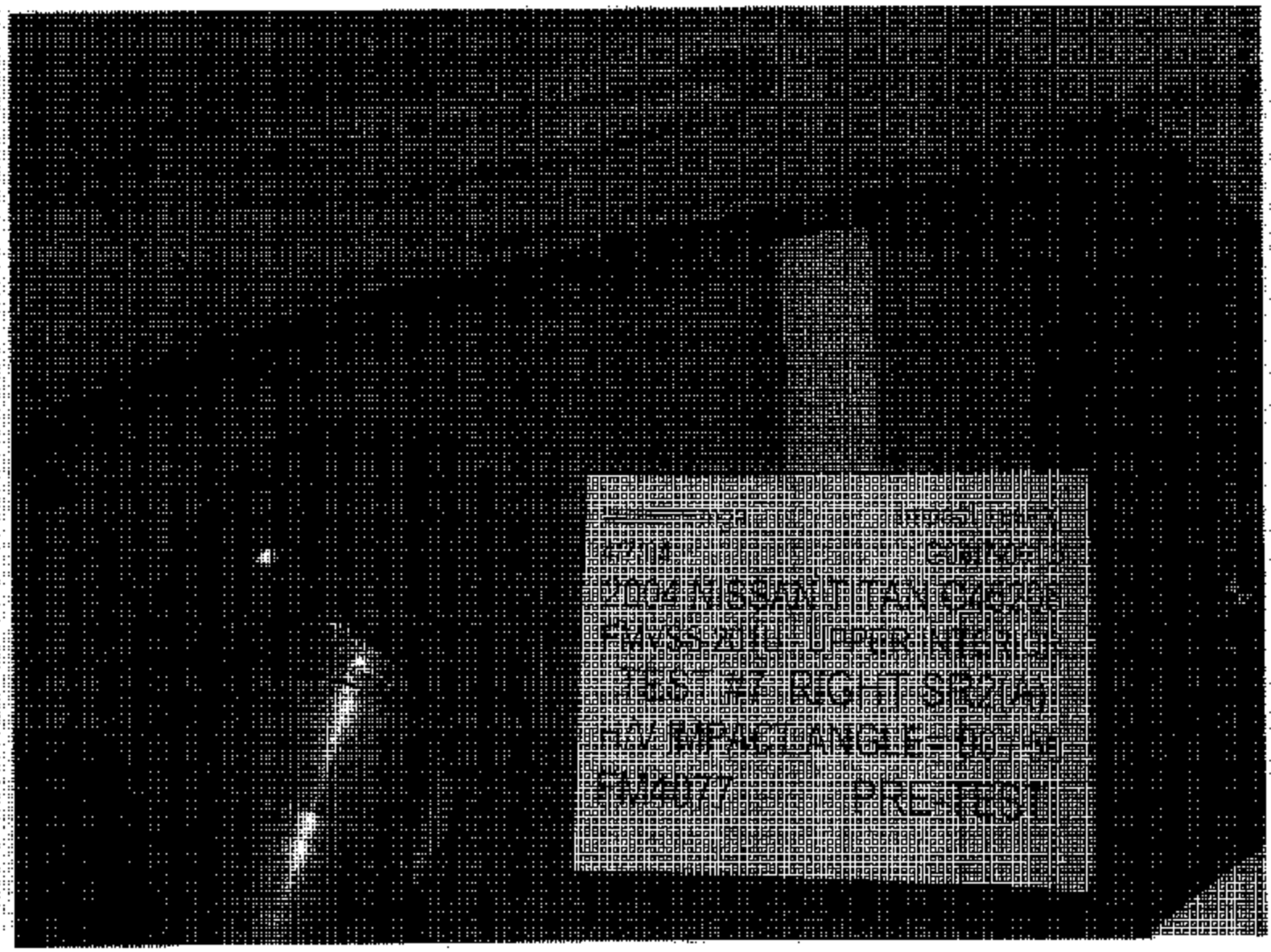
Model Year: 2004
Target: DF3
Vehicle Side: Right
Horz/Vert Angle: 85/-10

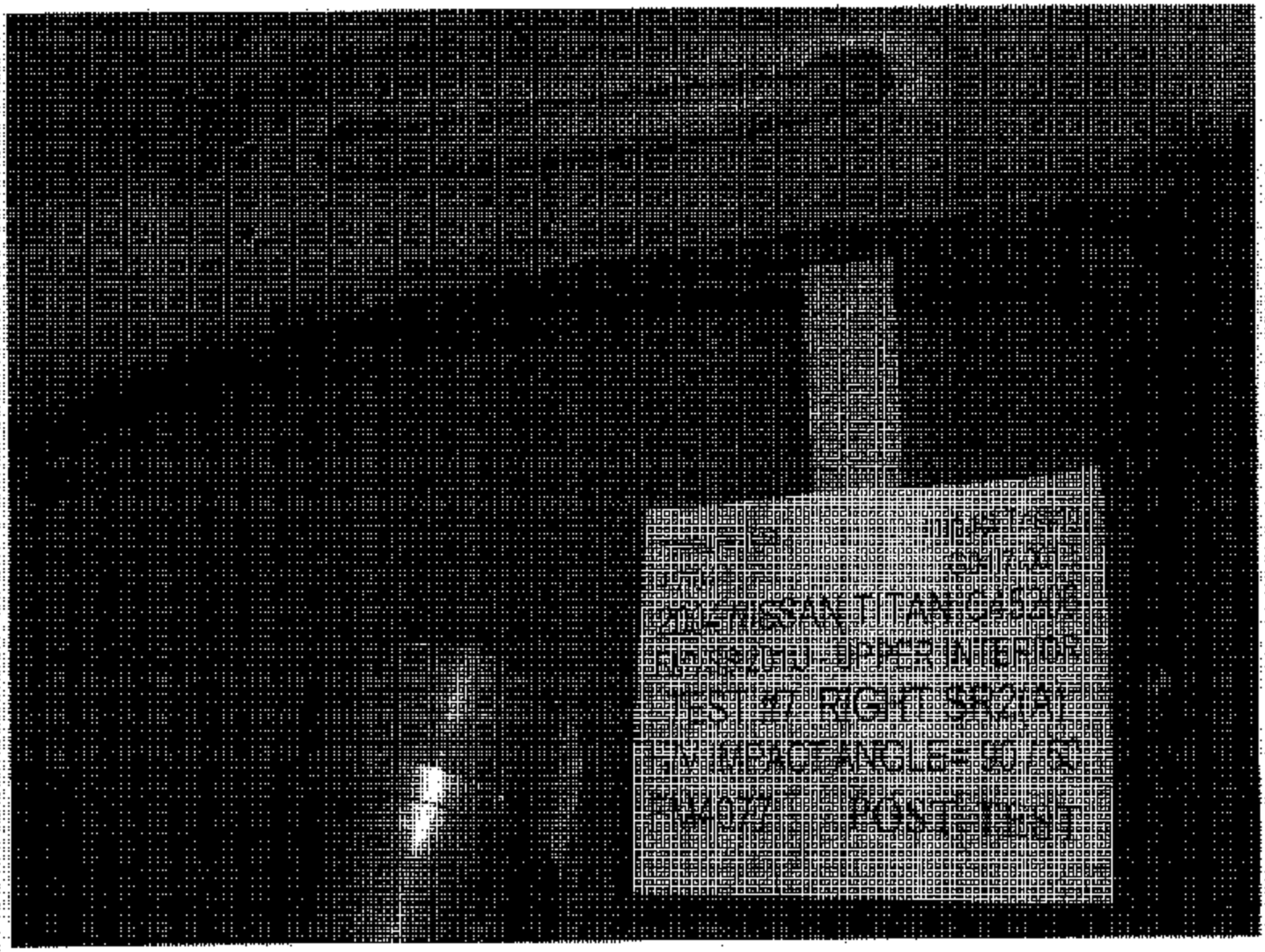
HIC(d) = 443, HIC = 366, Delta T = 7.6 msec

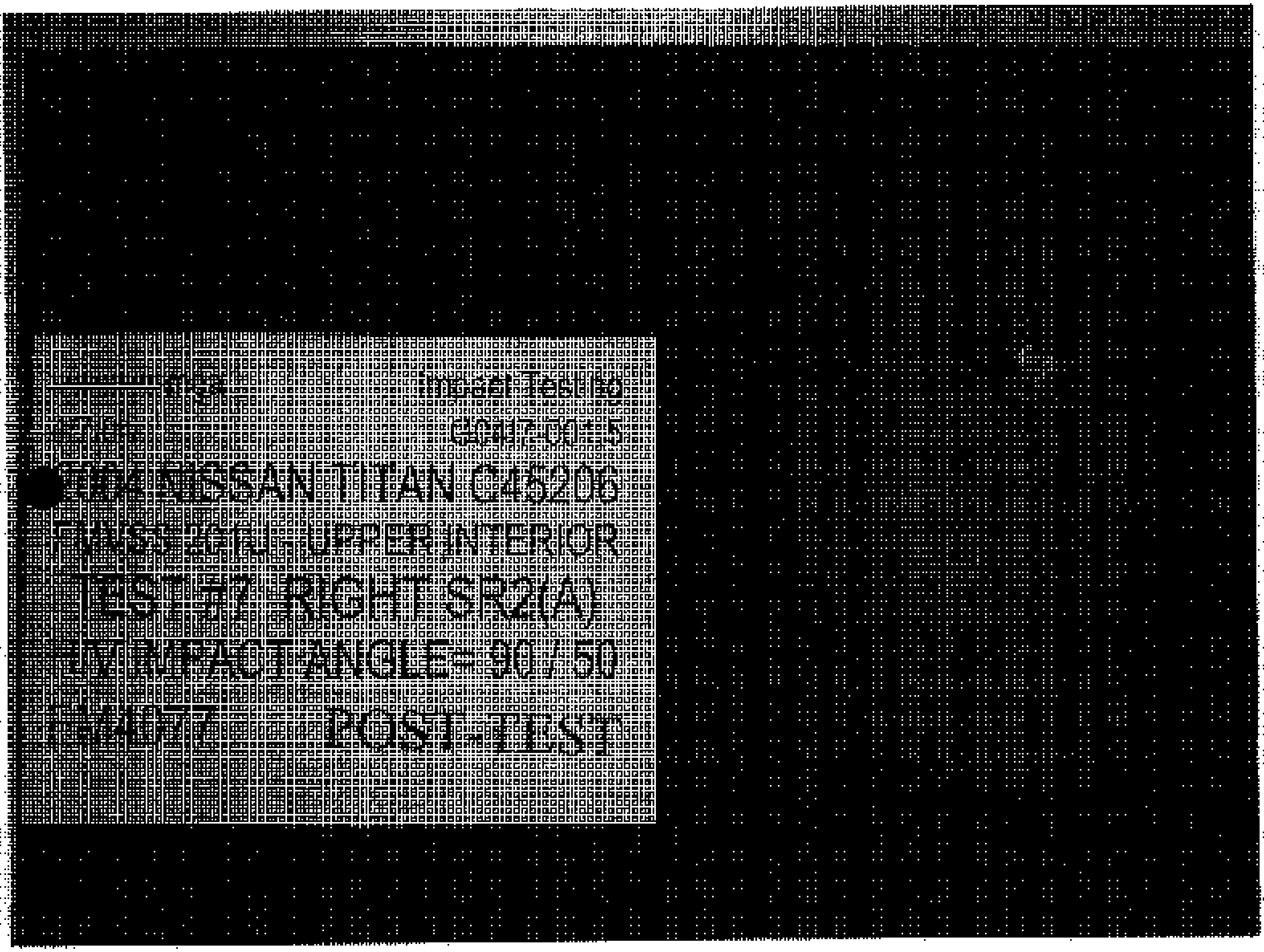
Max Displacement = 38.3 mm @ 12.2 msec



Displacement (mm) vs. Time (msec)






Impact Test No
NISSAN TITAN C45206
UPPER INTERIOR
RIGHT SR2(A)
IMPACT ANGLE = 90 / 50
POST-TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G0427-001.5 VEHICLE YR/MAKE/MODEL: 2004 / Nissan / Titan

GENERAL TEST PARAMETERS:

Test Number: 7

Target (Vehicle Side): left/right SR2-A

Temperature: 25 °F/(C)

MGA Test Reference No.: FM4077

Humidity: 24 %

Approach Angles: Horizontal 90 °

Time of Test: 10:00 am/pm

Vertical 50 °

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
531	483	11.5	18.9	13	8

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35924	-91.8	1.20	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.): no visible damage

Recorded By: [signature] Approved By*: Dale A. Kalata Date: 4-7-04

*Only necessary for NHTSA (Government) Compliance testing.

FMH
G04I7-001.5

Customer: NISSAN
Test # 7
FM4077
Additional Desc: N/A

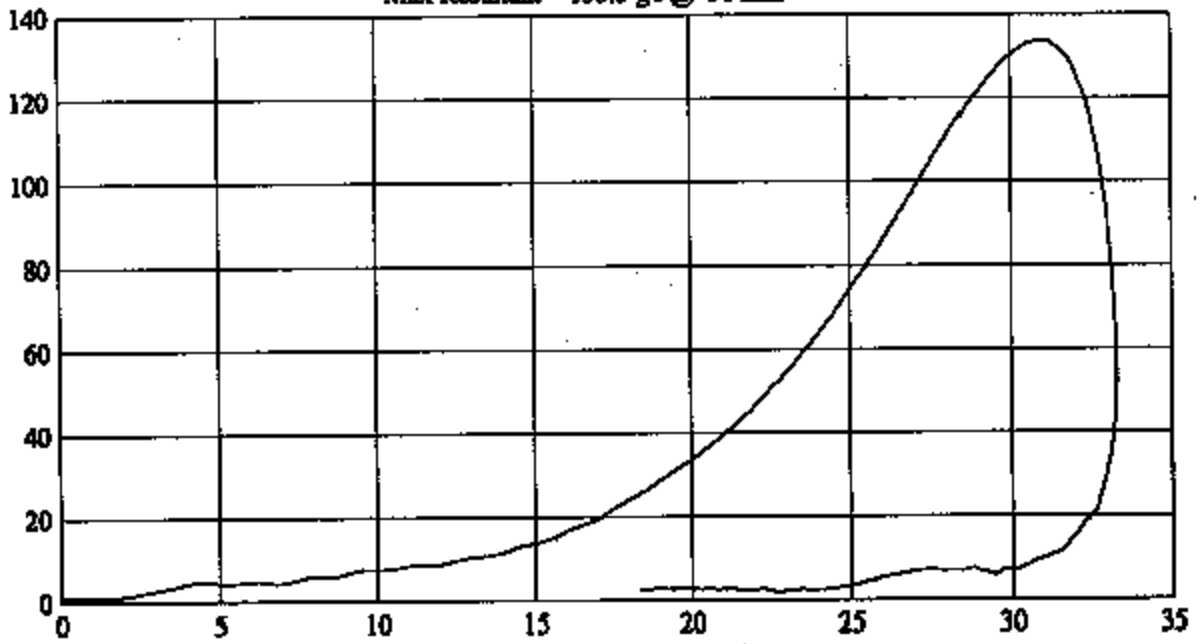
Vehicle Program : TITAN

Test Date: 4/7/04

Model Year: 2004
Target: SR2(a)
Vehicle Side: Right
Horz/Vert Angle: 90/50

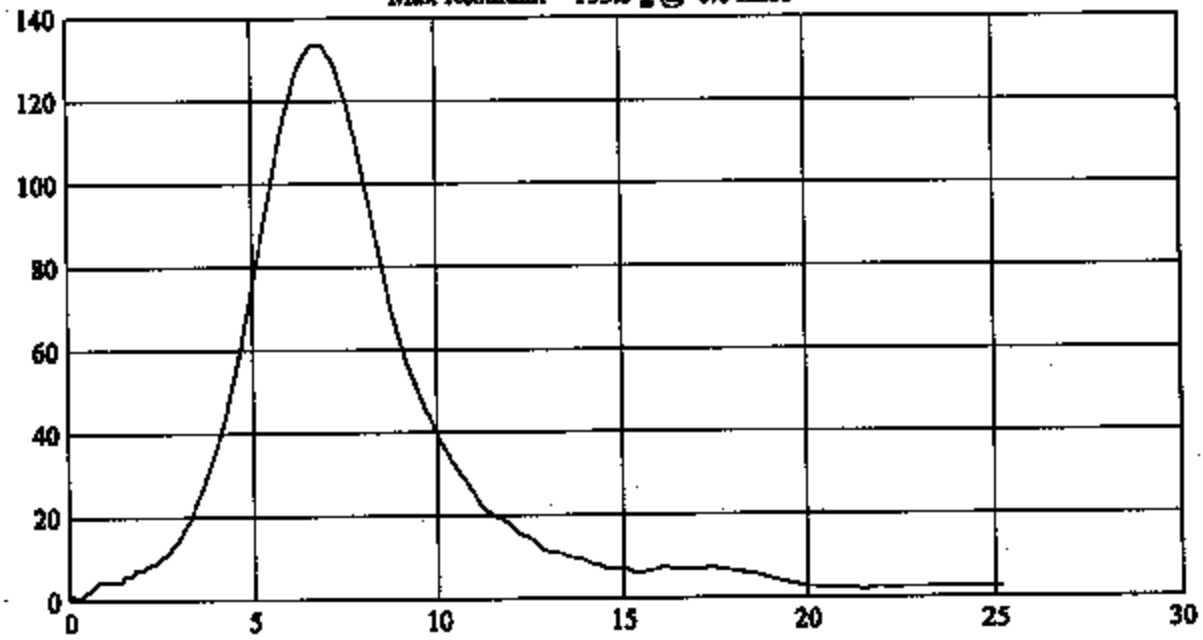
HIC(d) = 531, HIC = 483, Delta T = 4.3 msec

Max Resultant = 133.5 g's @ 31 mm



Resultant (g's) vs. Displacement (mm)

Max Resultant = 133.5 g @ 6.8 msec



Resultant Accel (g's) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 7
FM4077
Additional Desc: N/A

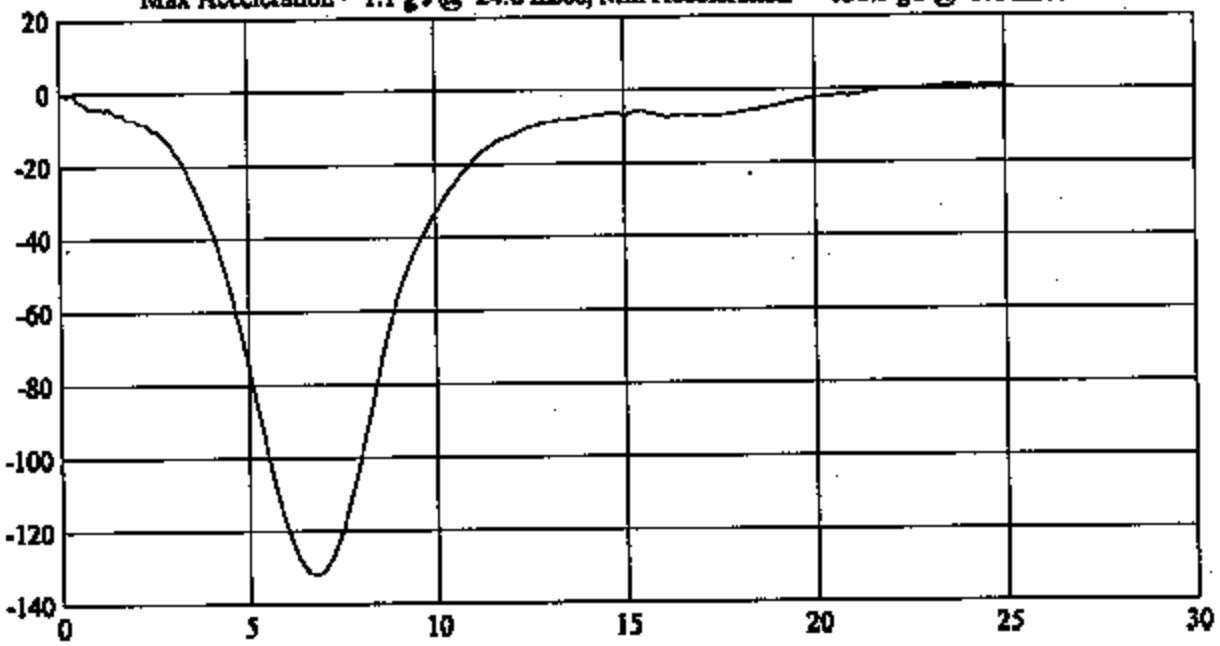
Vehicle Program : TITAN

Test Date: 4/7/04

Model Year: 2004
Target: SR2(s)
Vehicle Side: Right
Horz/Vert Angle: 90/50

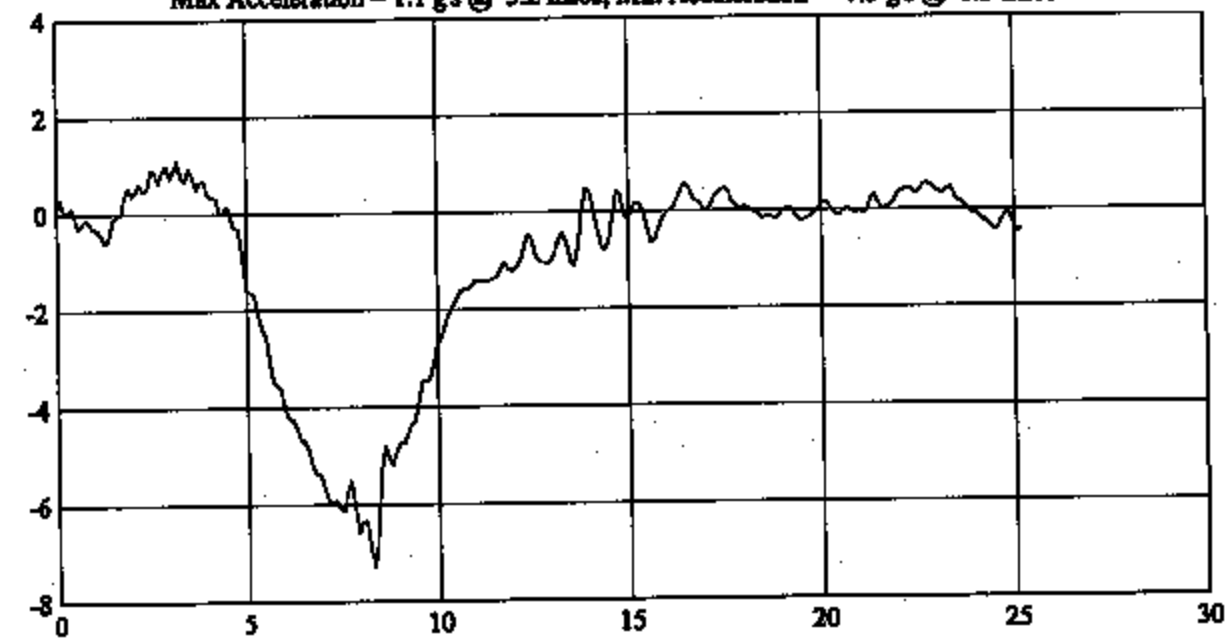
HIC(d) = 531, HIC = 483, Delta T = 4.3 msec

Max Acceleration = 1.1 g's @ 24.6 msec, Min Acceleration = -131.9 g's @ 6.8 msec



Accel X (g's) vs. Time (msec)

Max Acceleration = 1.1 g's @ 3.2 msec, Min Acceleration = -7.3 g's @ 8.3 msec



Accel Y (g's) vs. Time (msec)

FMH
G0417-001.5

Customer: NISSAN
Test # 7
FM4077
Additional Desc: N/A

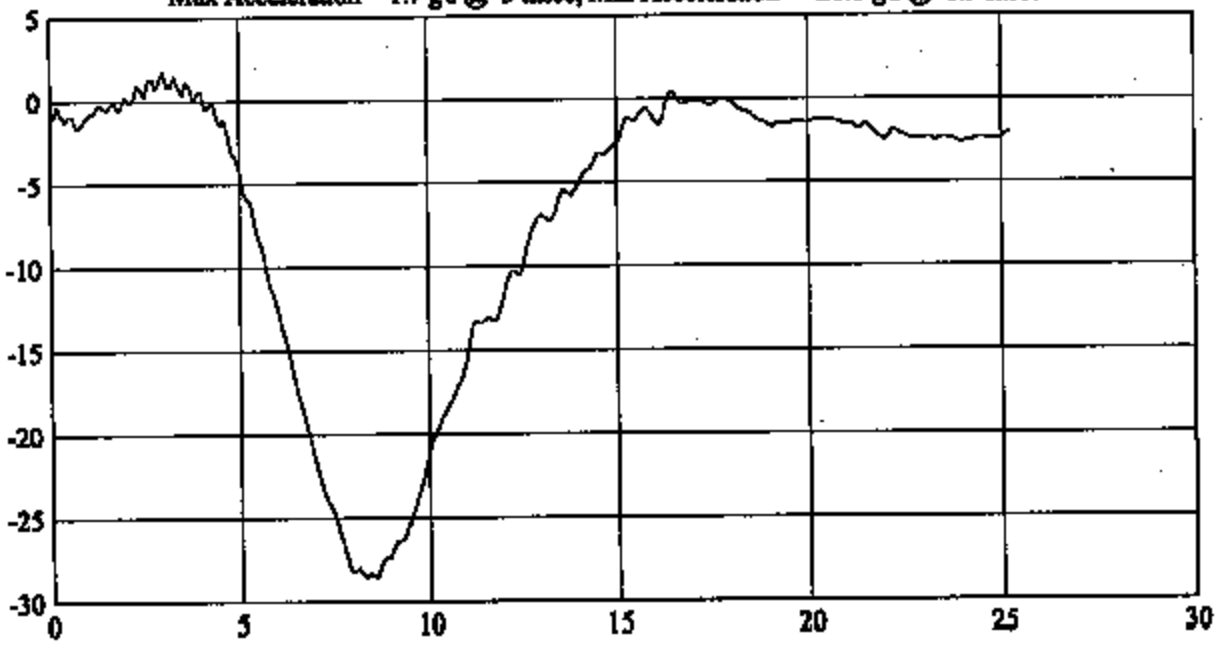
Vehicle Program : TITAN

Test Date: 4/7/04

Model Year: 2004
Target: SR2(a)
Vehicle Side: Right
Horz/Vert Angle: 90/50

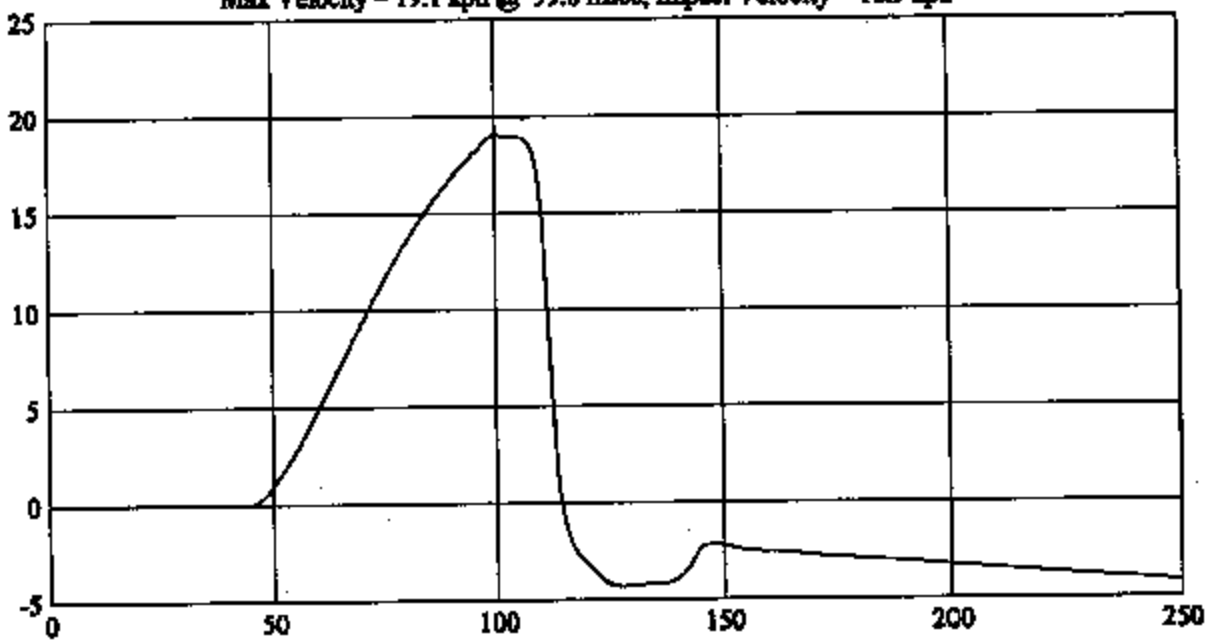
HIC(d) = 531, HIC = 483, Delta T = 4.3 msec

Max Acceleration = 1.7 g's @ 3 msec, Min Acceleration = -28.6 g's @ 8.3 msec



Accel Z (g's) vs. Time (msec)

Max Velocity = 19.1 kph @ 99.8 msec, Impact Velocity = 18.9 kph



Velocity (kph) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 7
FM4077
Additional Desc: N/A

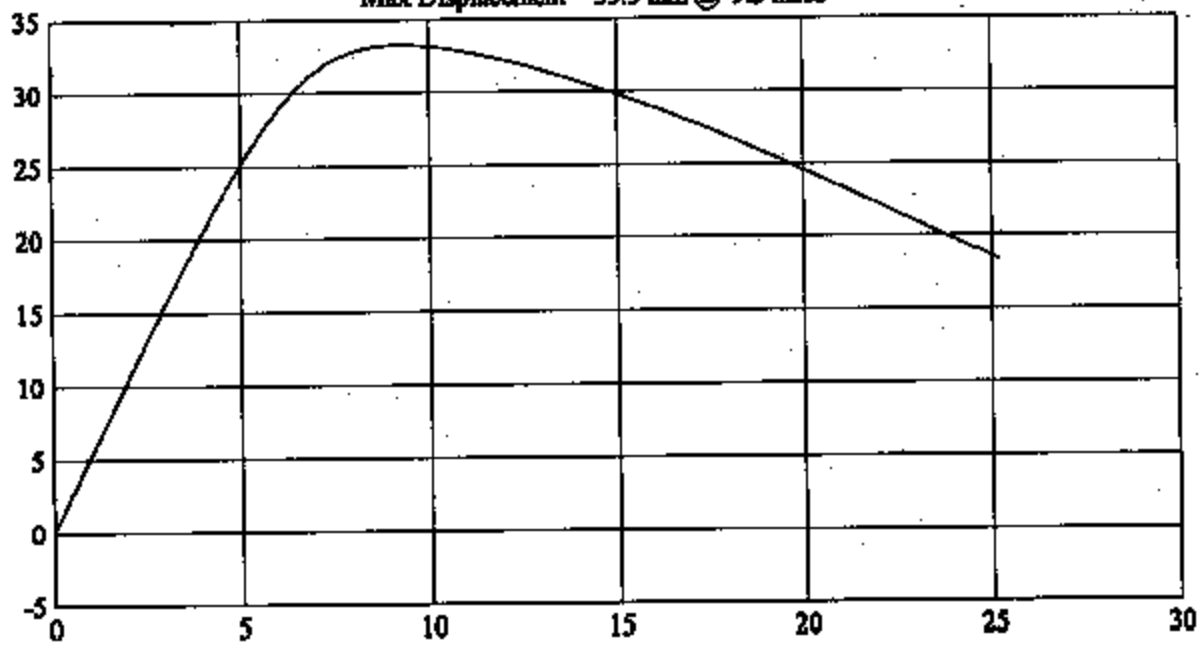
Vehicle Program : TITAN

Test Date: 4/7/04

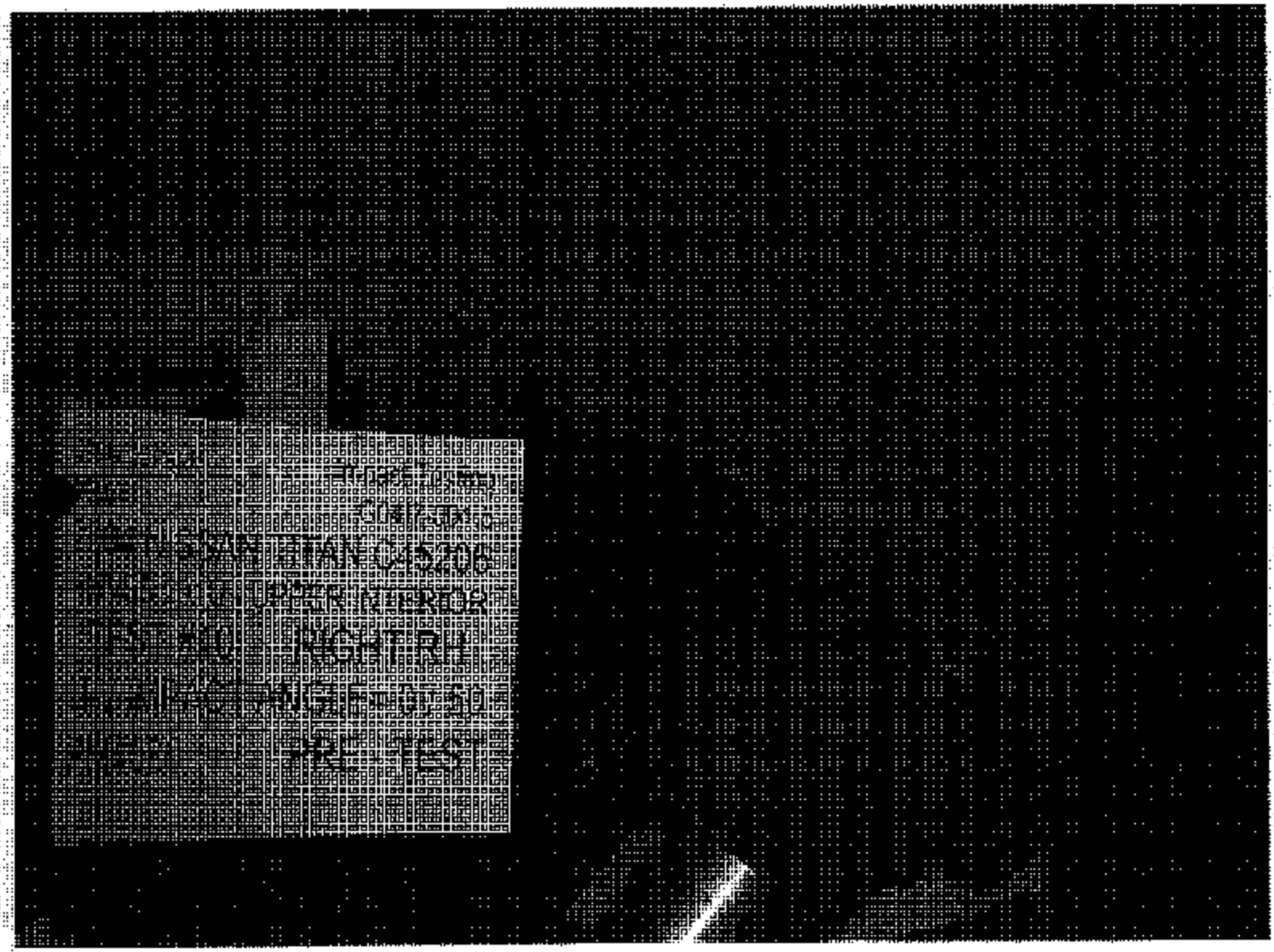
Model Year: 2004
Target: SR2(a)
Vehicle Side: Right
Horz/Vert Angle: 90/50

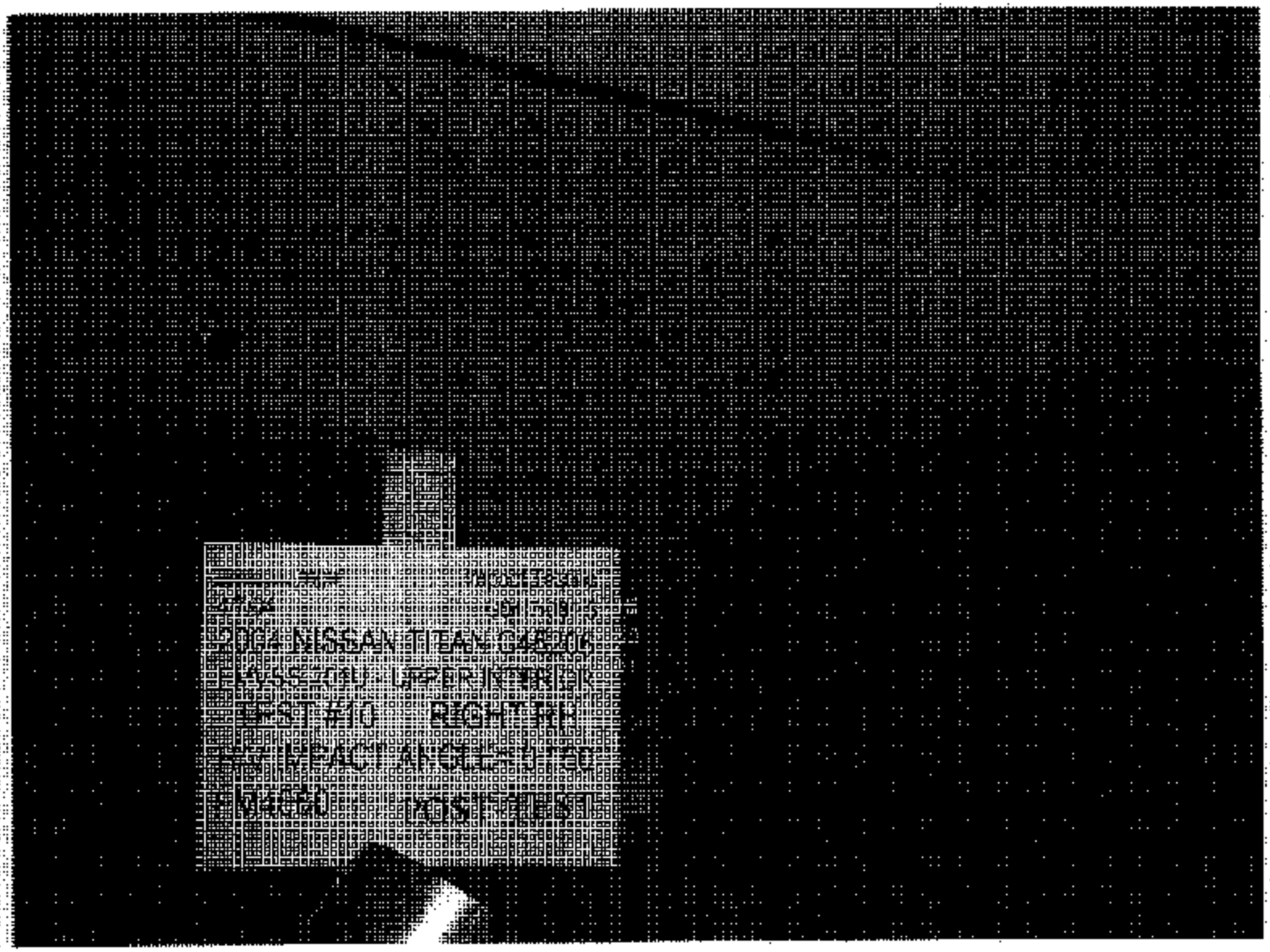
HIC(d) = 531, HIC = 483, Delta T = 4.3 msec

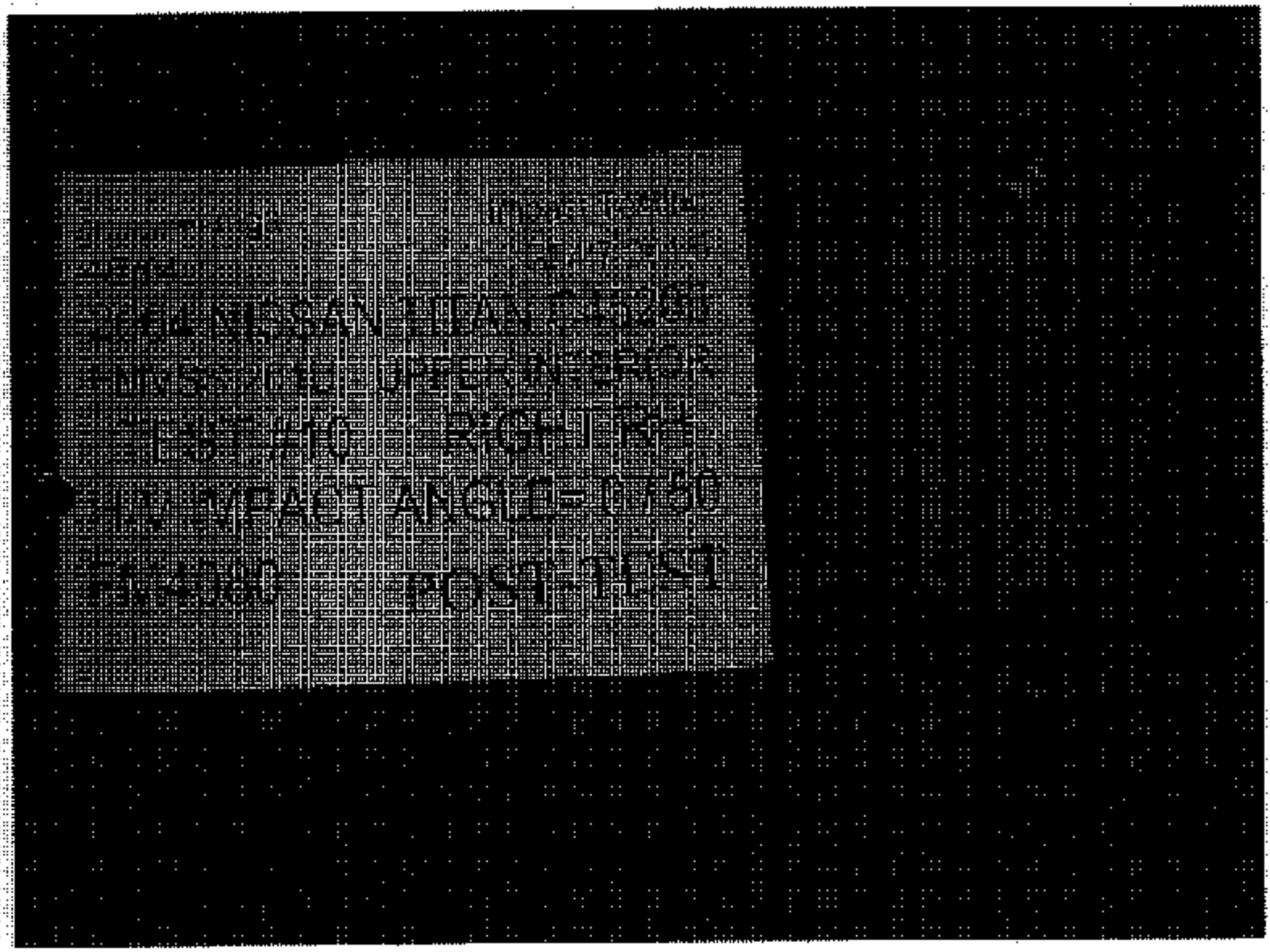
Max Displacement = 33.3 mm @ 9.3 msec



Displacement (mm) vs. Time (msec)







SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: G04T7-001.5 VEHICLE YR/MAKE/MODEL: 2004 / Nissan / Titan

GENERAL TEST PARAMETERS:

Test Number: 10

Target (Vehicle Side): left/(right) R.H

Temperature: 25 °F/(C)

MGA Test Reference No.: FMH080

Humidity: 24 %

Approach Angles: Horizontal 0 °

Time of Test: 4:00 am/(pm)

Vertical 50 °

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
548	506	11.7	23.3	7	7

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35924	-91.8	1.20	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.): no visible damage

Recorded By: [signature] Approved By*: [signature] Date: 4-8-04

*Only necessary for NHTSA (Government) Compliance testing.

FMH
G04I7-001.5

Customer: NISSAN
Test # 10
FM4080
Additional Desc: N/A

Vehicle Program : TITAN

Test Date: 4/7/04

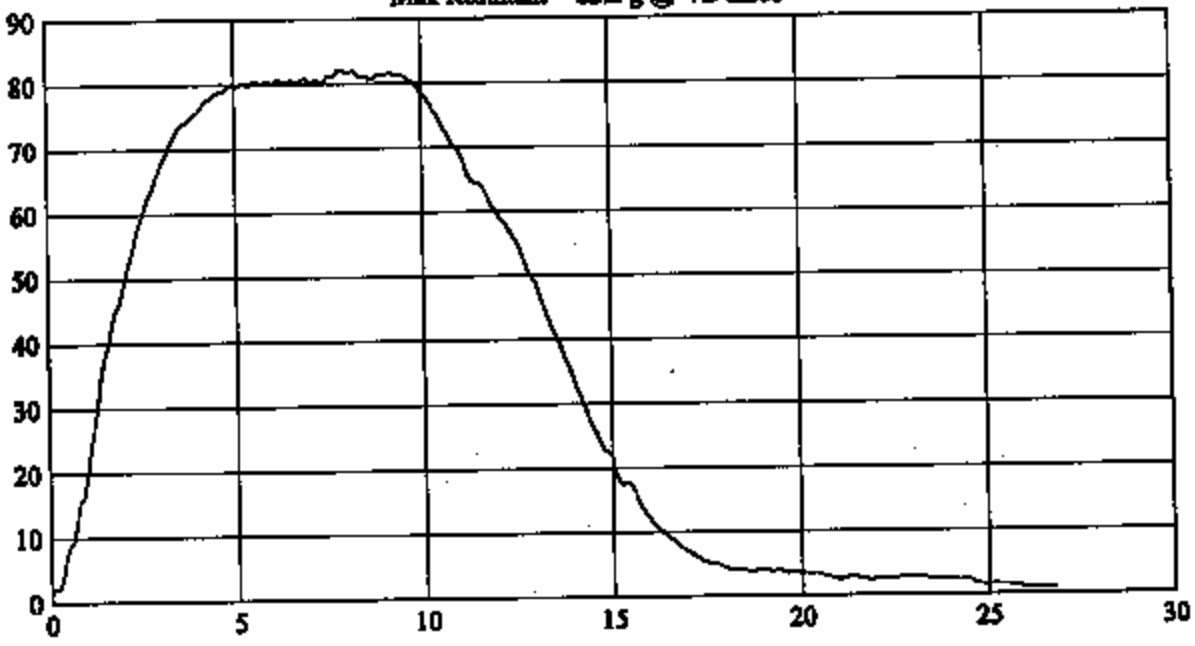
Model Year: 2004
Target: RH
Vehicle Side: Right
Horz/Vert Angle: 0/50

HIC(d) = 548, HIC = 506, Delta T = 11.7 msec

Max Resultant = 82.2 g's @ 35.8 mm

Resultant (g's) vs. Displacement (mm)

Max Resultant = 82.2 g @ 7.9 msec



Resultant Accel (g's) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 10
FM4080
Additional Deac: N/A

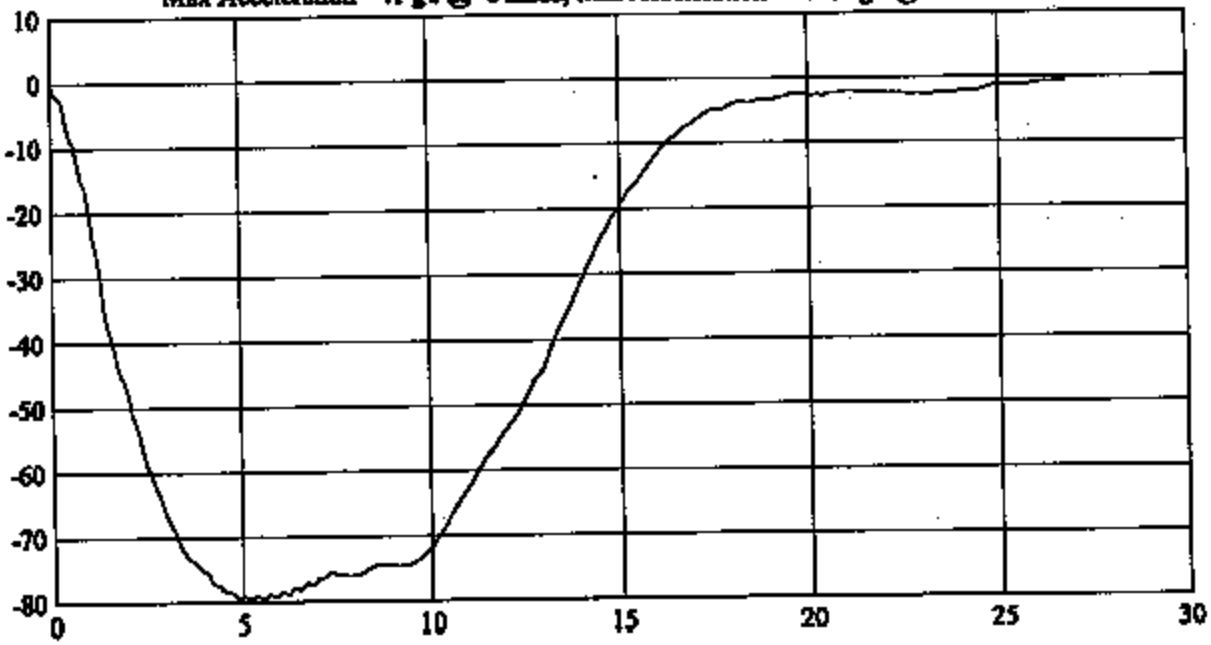
Vehicle Program : TITAN

Test Date: 4/7/04

Model Year: 2004
Target: RH
Vehicle Side: Right
Horz/Vert Angle: 0/50

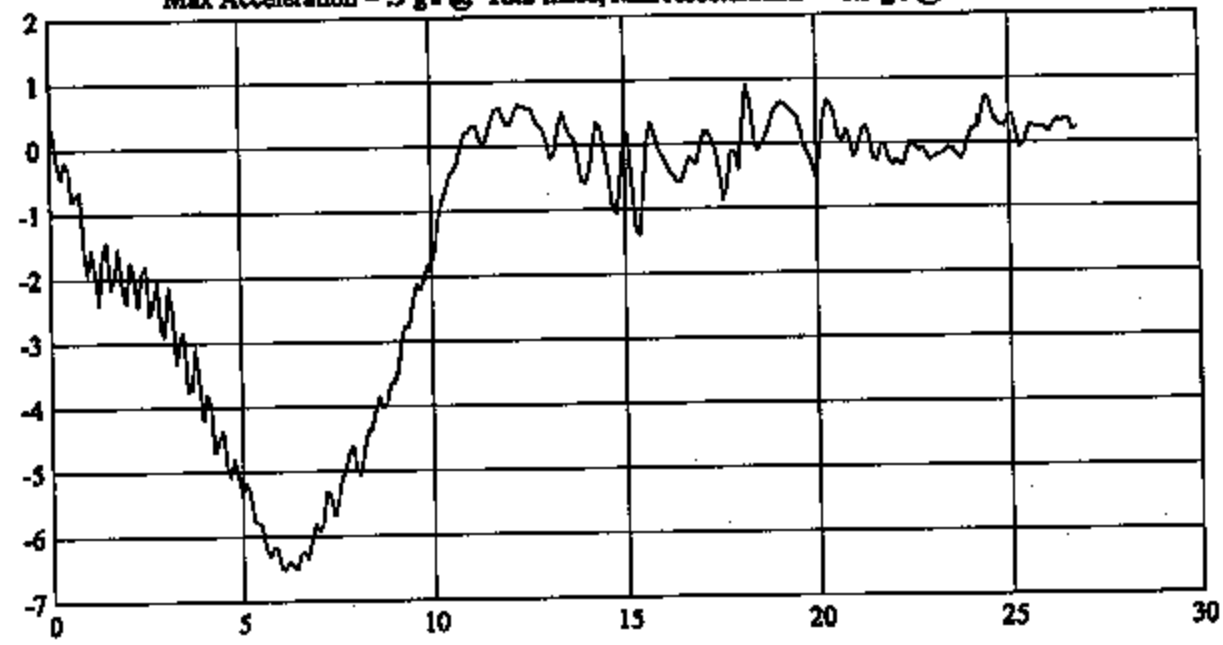
HIC(d) = 548, HIC = 506, Delta T = 11.7 msec

Max Acceleration = .1 g's @ 0 msec, Min Acceleration = -79.7 g's @ 5.6 msec



Accel X (g's) vs. Time (msec)

Max Acceleration = .9 g's @ 18.2 msec, Min Acceleration = -6.5 g's @ 6.1 msec



Accel Y (g's) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 10
FM4080
Additional Desc: N/A

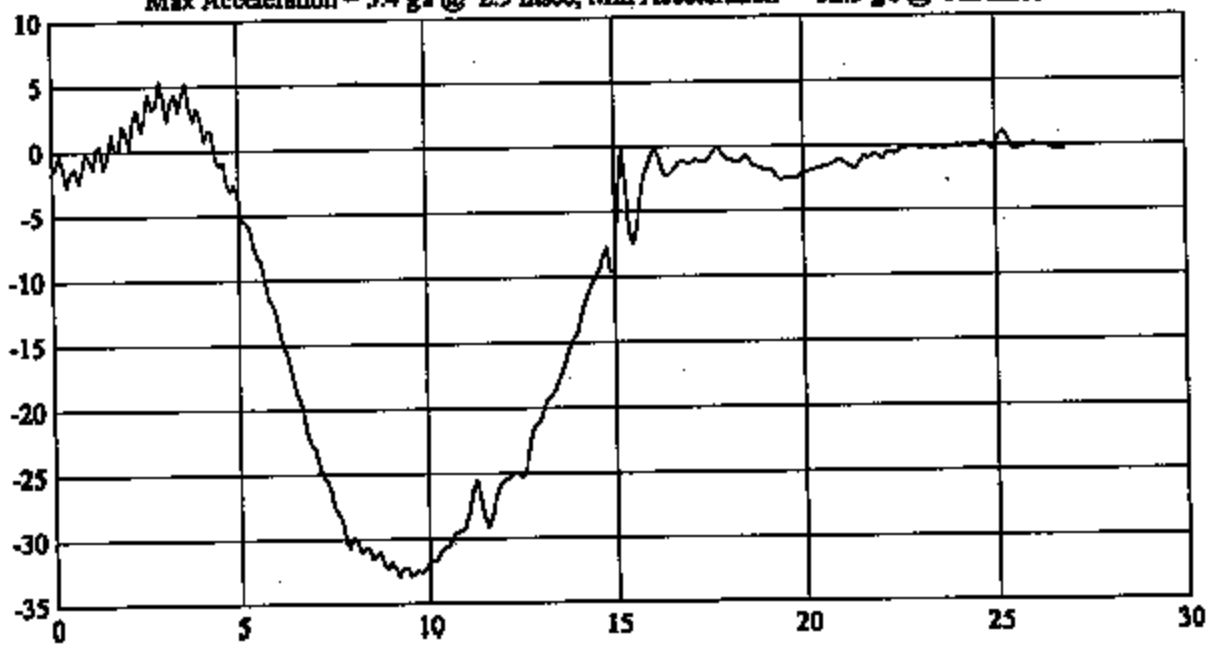
Vehicle Program : TITAN

Test Date: 4/7/04

Model Year: 2004
Target: RH
Vehicle Side: Right
Horz/Vert Angle: 0/50

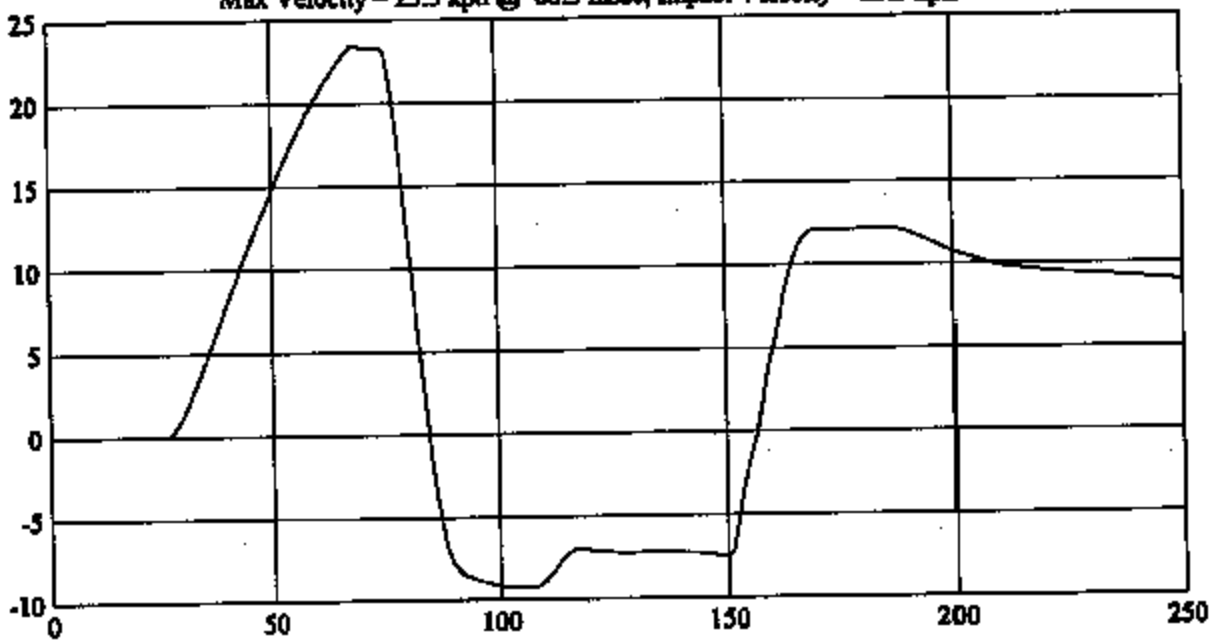
HIC(d) = 548, HIC = 506, Delta T = 11.7 msec

Max Acceleration = 5.4 g's @ 2.9 msec, Min Acceleration = -32.9 g's @ 9.2 msec



Accel Z (g's) vs. Time (msec)

Max Velocity = 23.5 kph @ 68.3 msec, Impact Velocity = 23.3 kph



Velocity (kph) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 10
FM4080
Additional Desc: N/A

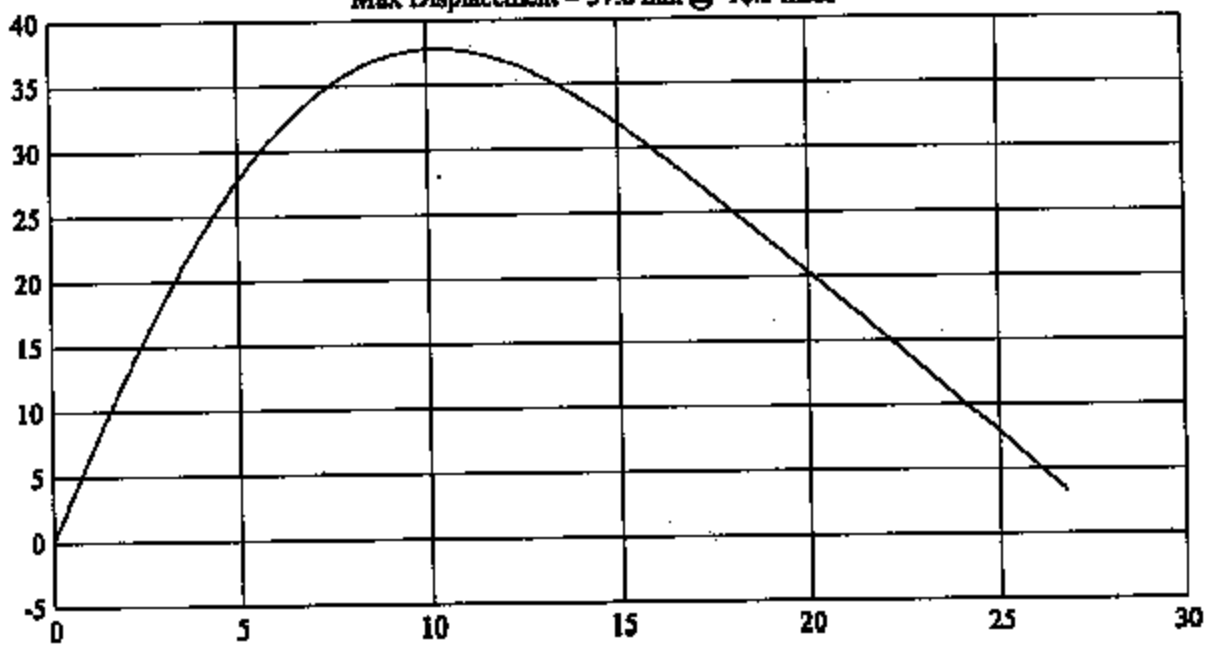
Vehicle Program : TITAN

Test Date: 4/7/04

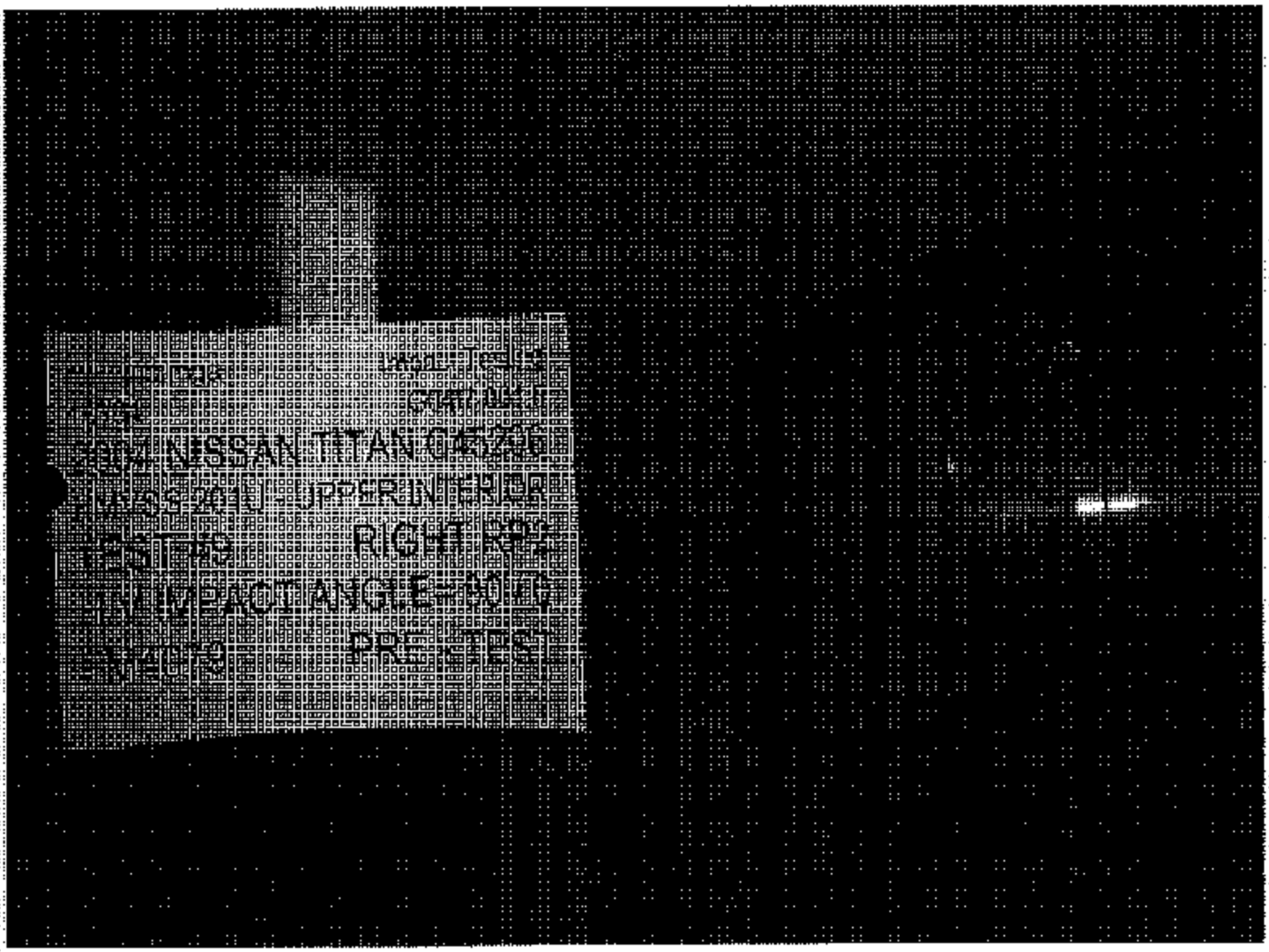
Model Year: 2004
Target: RH
Vehicle Side: Right
Horz/Vert Angle: 0/50

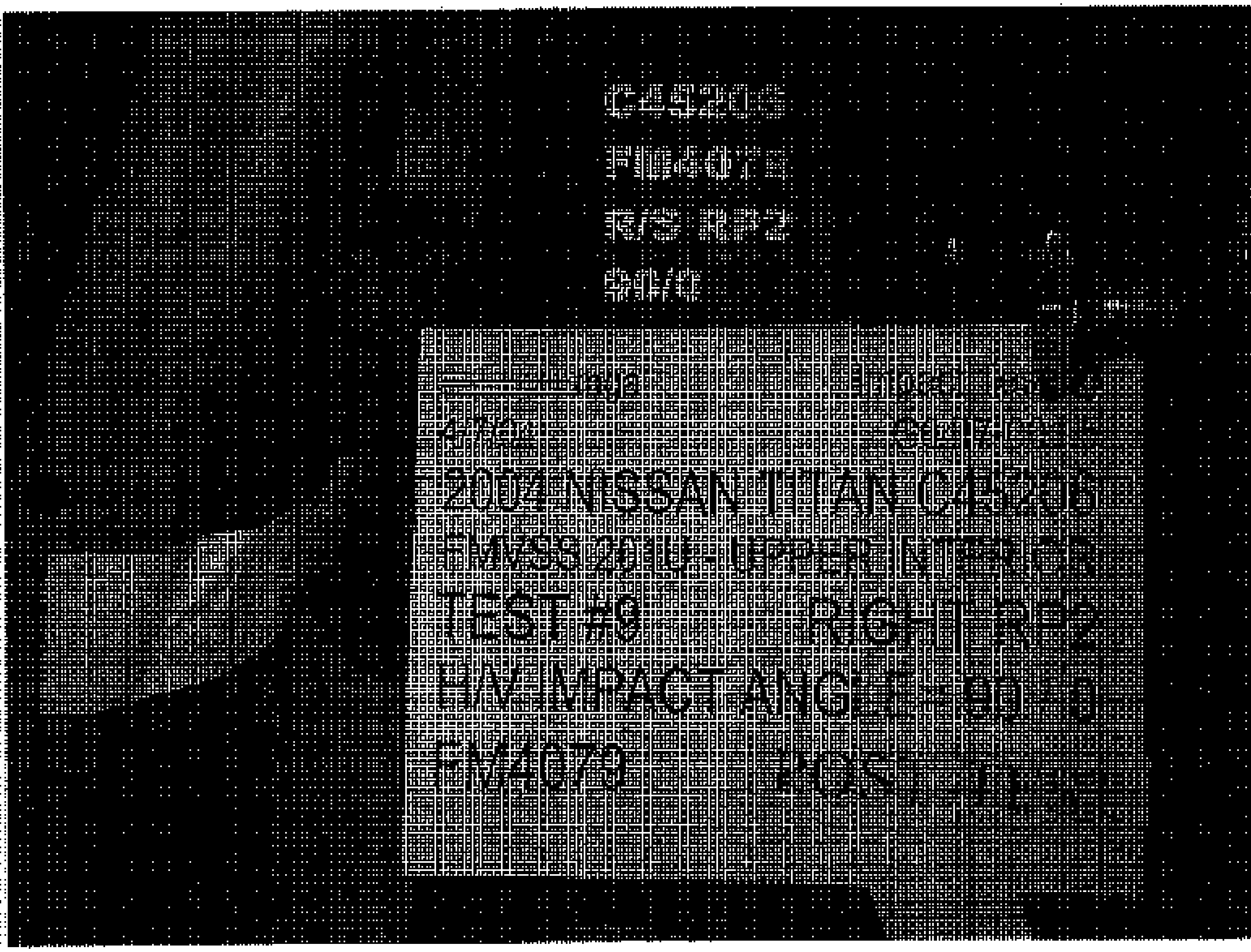
HIC(d) = 548, HIC = 506, Delta T = 11.7 msec

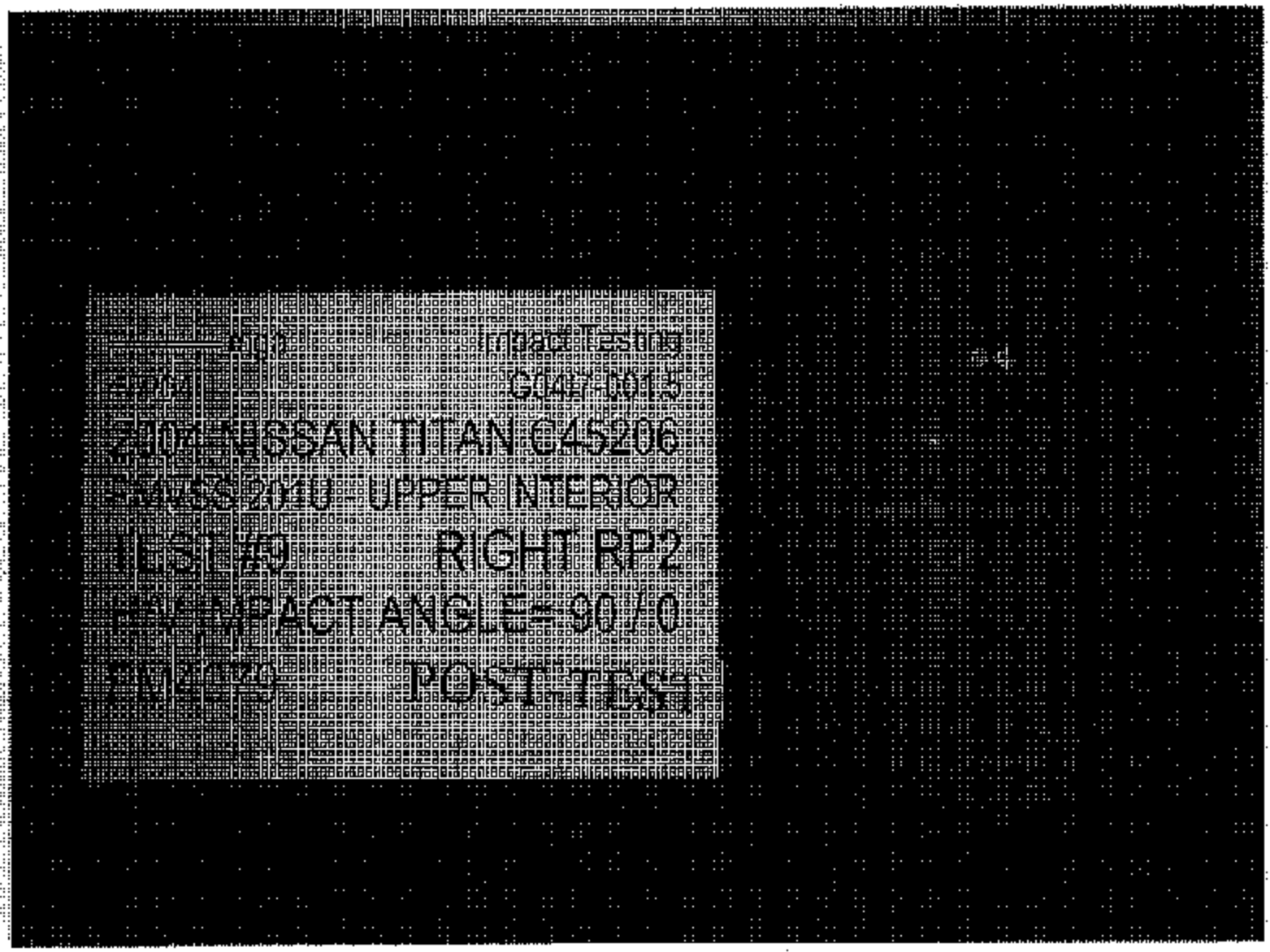
Max Displacement = 37.8 mm @ 10.3 msec

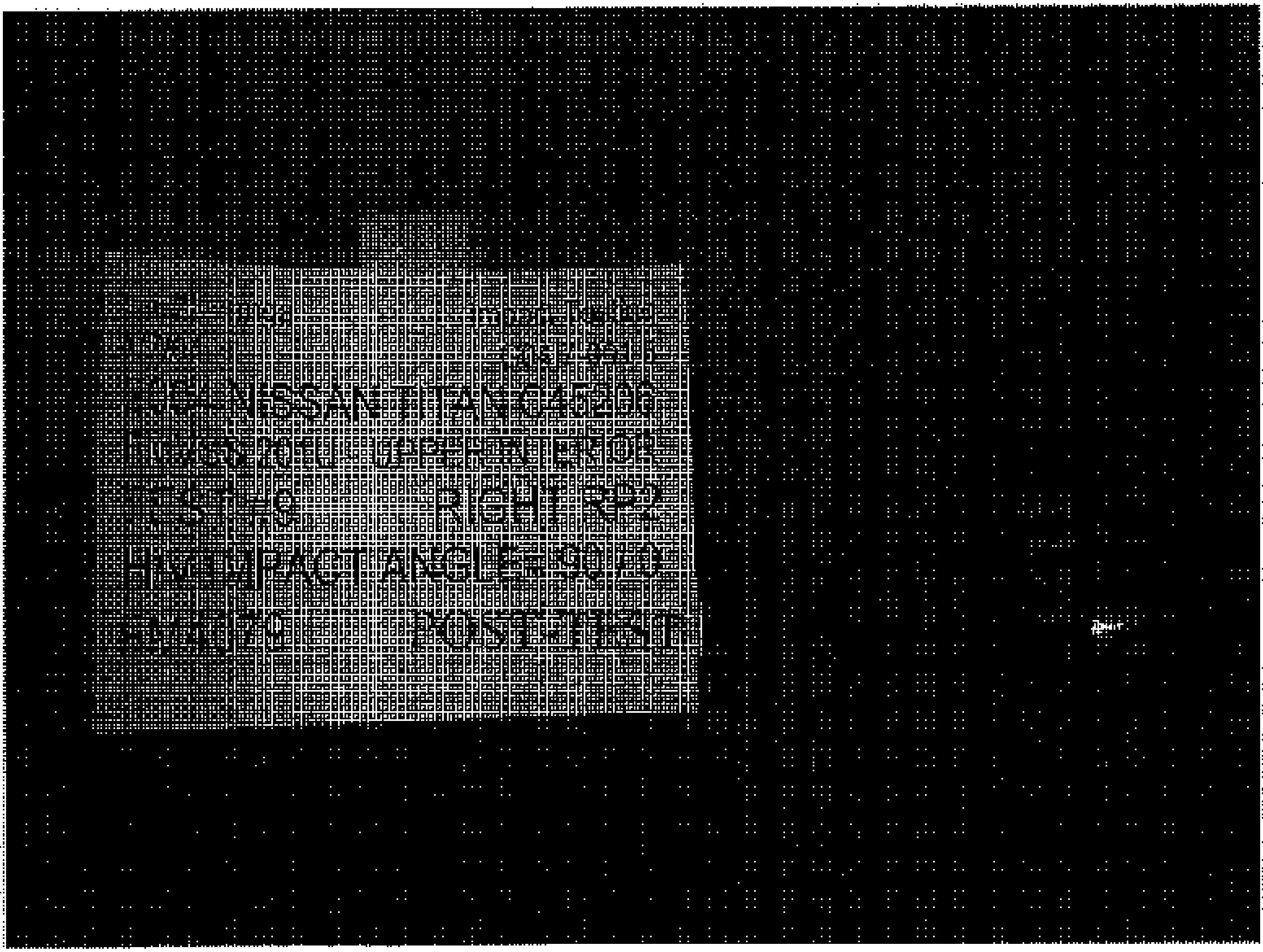


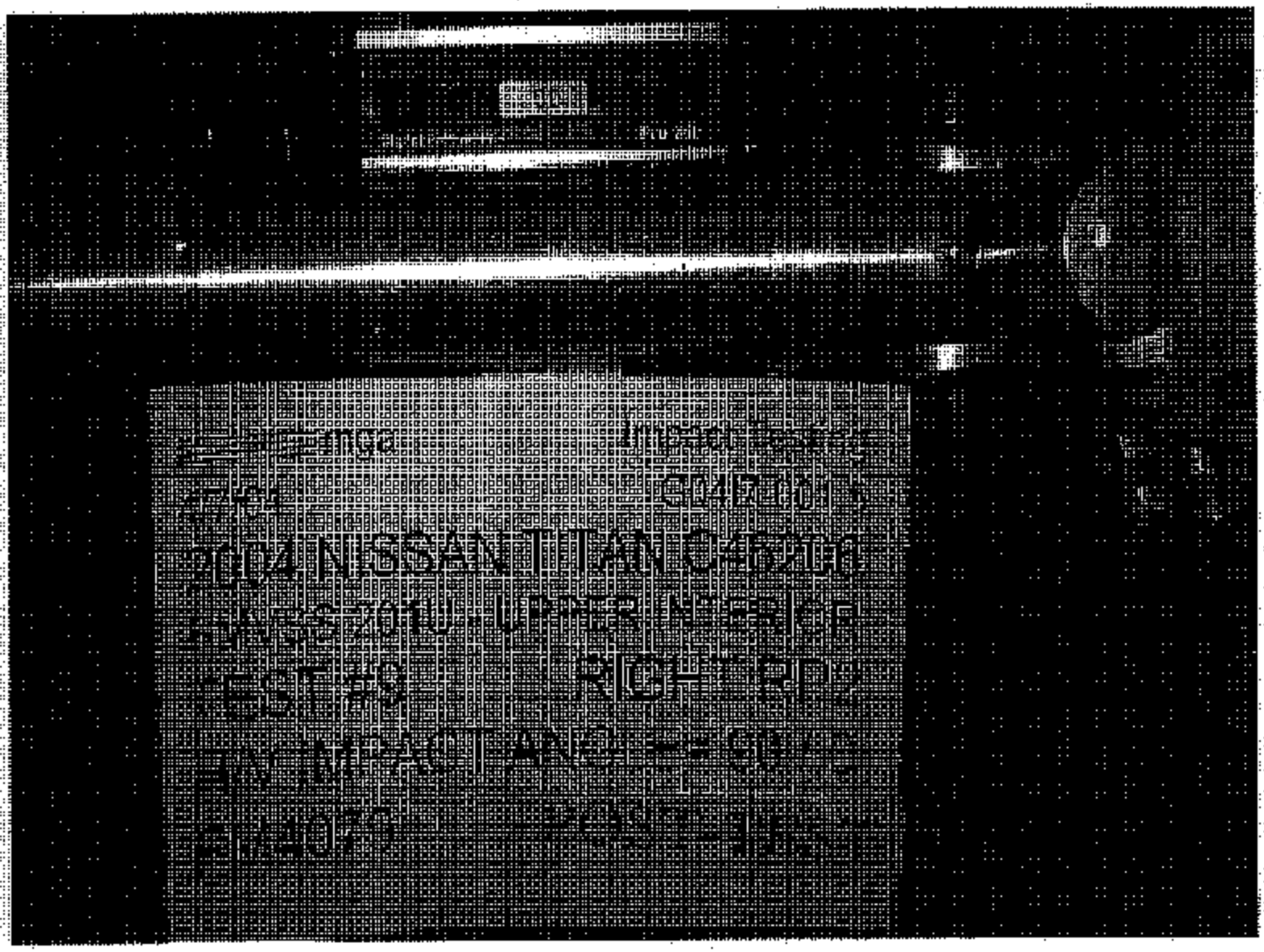
Displacement (mm) vs. Time (msec)

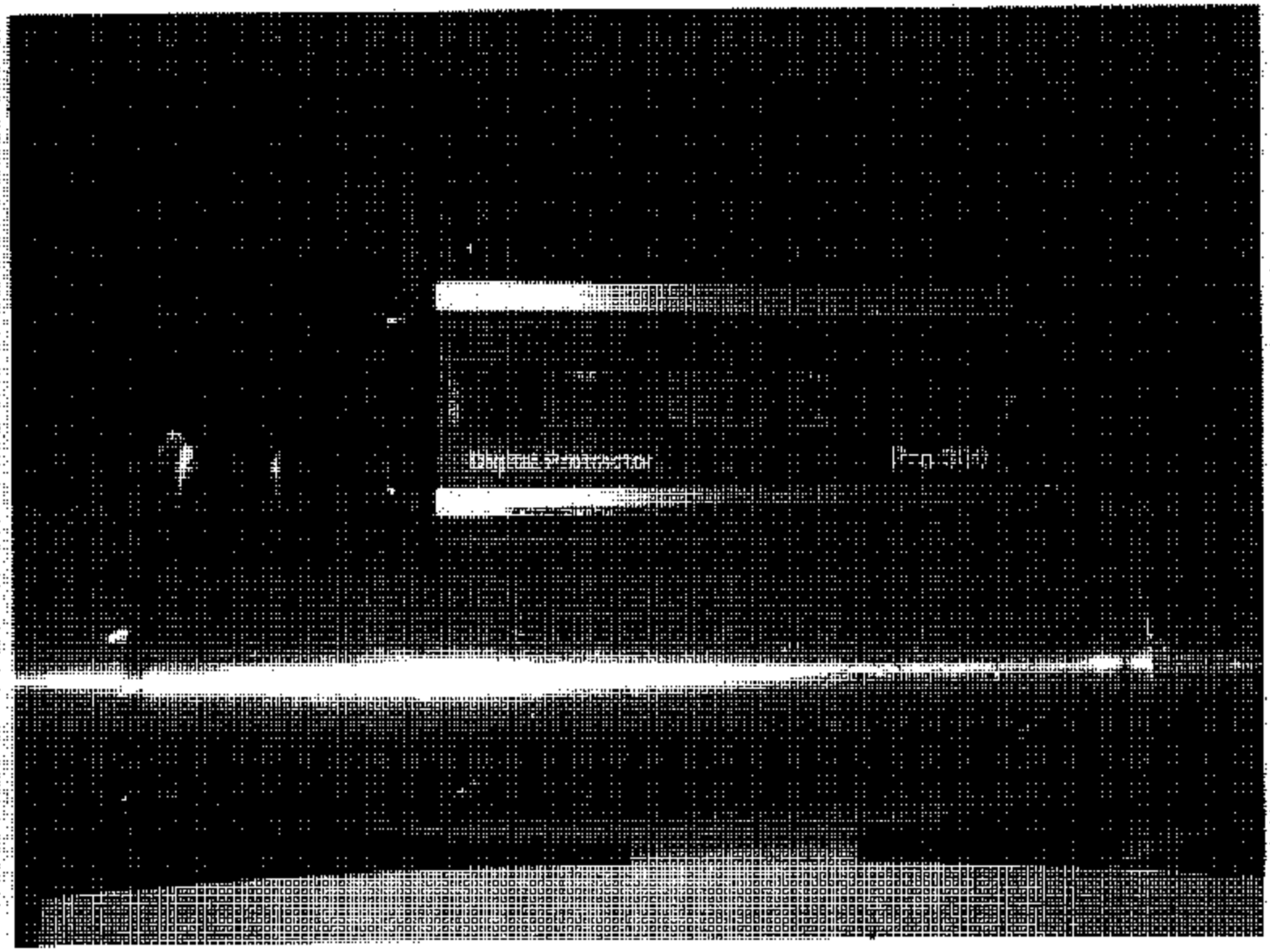

NISSAN TITAN
RIGHT
PRESS

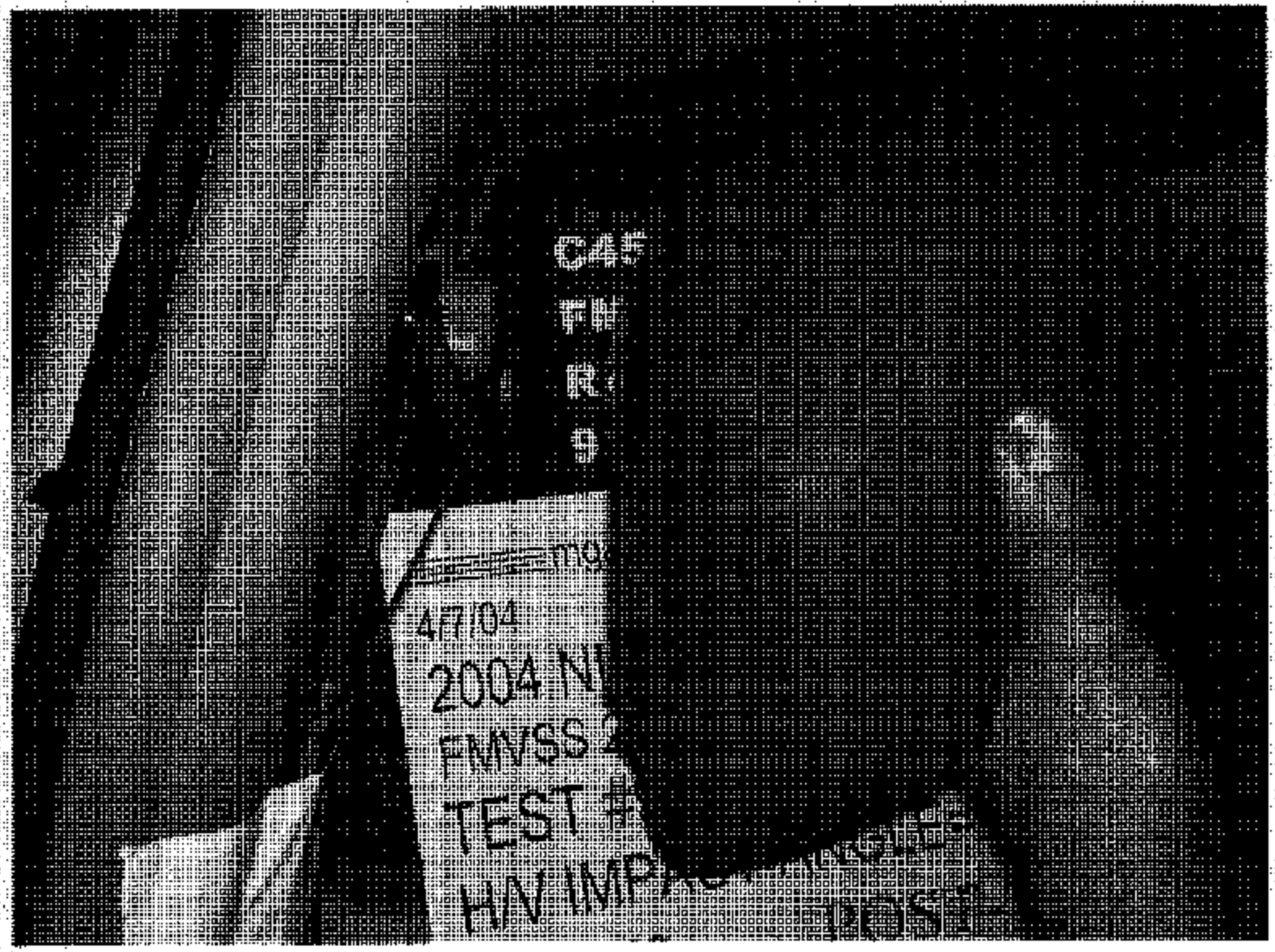

2004 NISSAN TITAN
TEST #9
FM4079

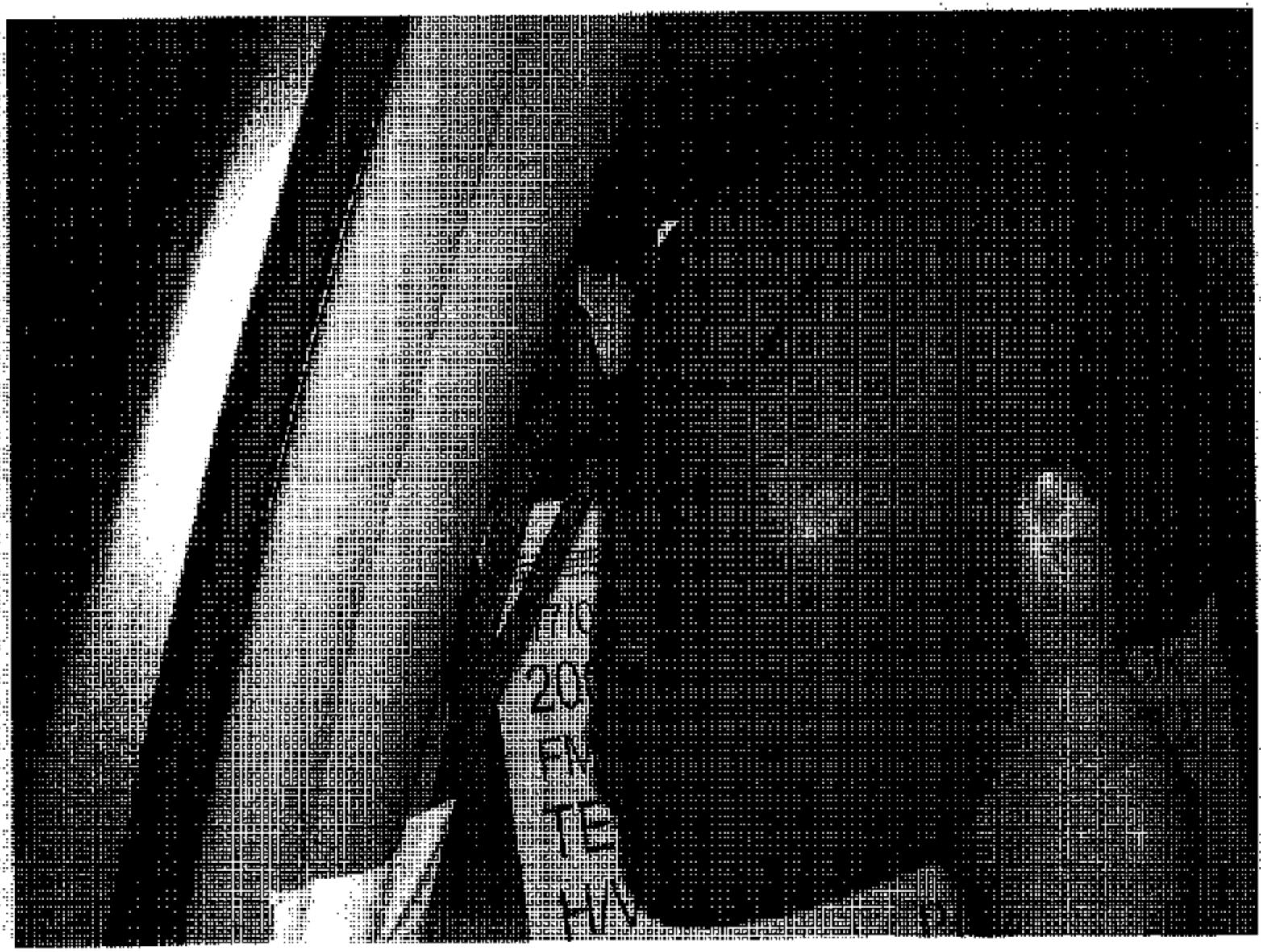

Impact Test
G047-0015
2004 NISSAN TITAN 045206
FMVSS 208 UPPER INTERIOR
TEST #9 RIGHT RP2
30 MPH IMPACT ANGLE=90/0
POST TEST


NISSAN TITAN
RIGHT
IMPACT ANGLE
POST TEST






C45
FF
R
9
4/7/04
2004 N
FMVSS
TEST
H/V IMP



SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: 60477-001.5 VEHICLE YR/MAKE/MODEL: 2004 / Nissan / Titan

GENERAL TEST PARAMETERS:

Test Number: 9

Target (Vehicle Side): left/(right) RP2

Temperature: 25 °F/(C)

MGA Test Reference No.: FM4079

Humidity: 24 %

Approach Angles: Horizontal 90 °

Time of Test: 3:00 am/(pm)

Vertical 0 °

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
1042	1160	4.0	23.8	13	3

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J36197	-109.3	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

APPROVED TEST FAILURE

Recorded By: [signature] Approved By*: [signature] Date: 4-7-04

*Only necessary for NHTSA (Government) Compliance testing.

FMH
G04I7-001.5

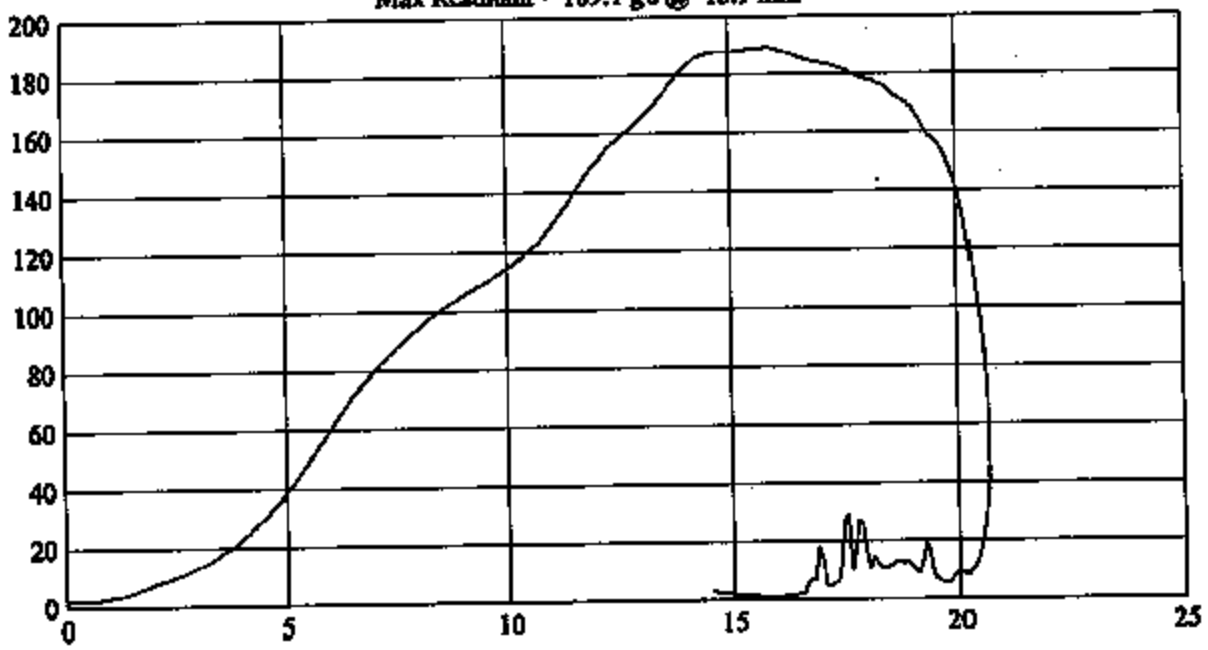
Customer: NISSAN
Test # 9
FM4079
Additional Desc: N/A

Vehicle Program : TITAN

Test Date: 4/7/04
HIC(d) = 1042, HIC = 1160, Delta T = 4 msec

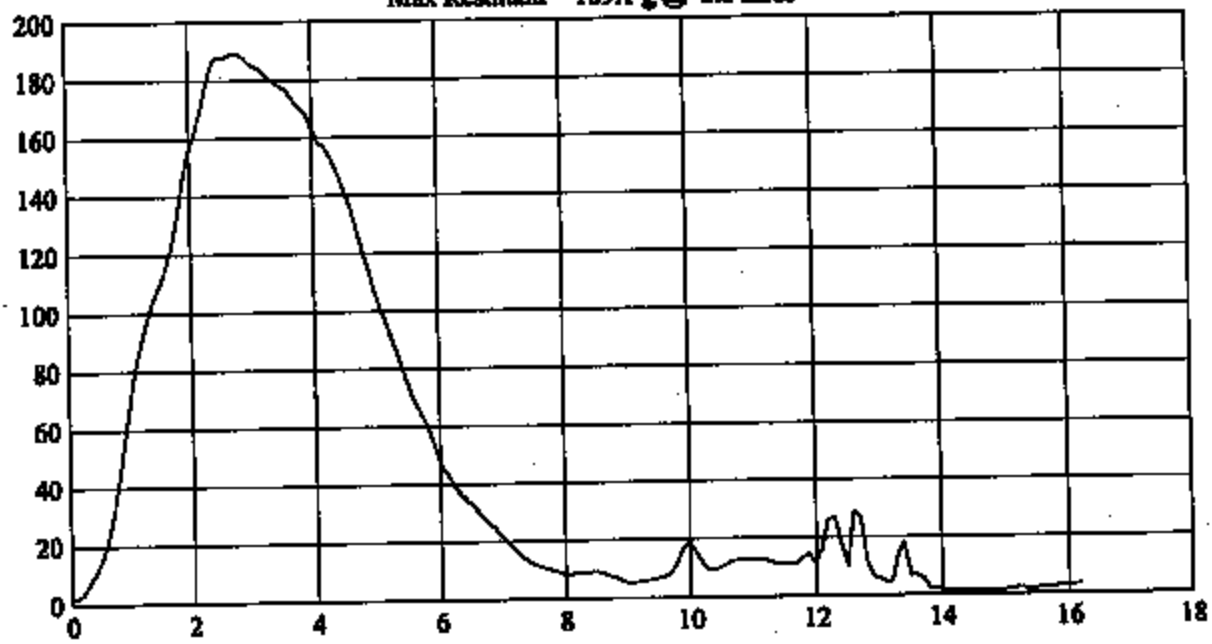
Model Year: 2004
Target: RP2
Vehicle Side: Right
Horz/Vert Angle: 90/0

Max Resultant = 189.1 g's @ 15.9 mm



Resultant (g's) vs. Displacement (mm)

Max Resultant = 189.1 g @ 2.8 msec



Resultant Accel (g's) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 9
FM4079
Additional Desc: N/A

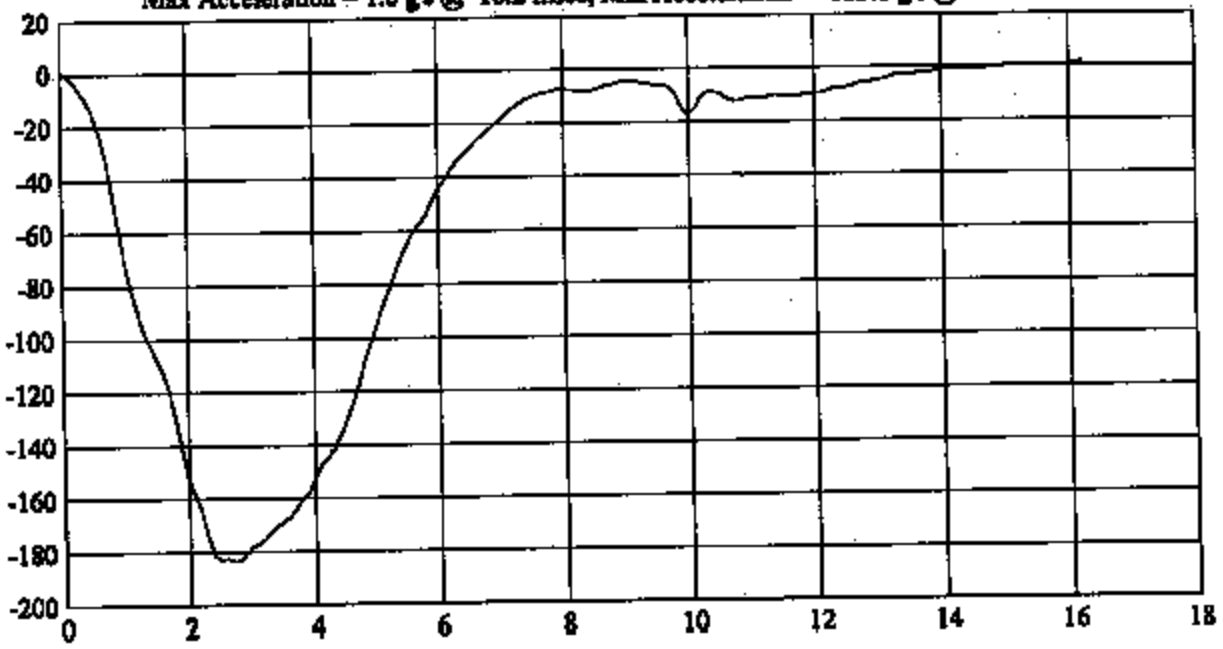
Vehicle Program : TITAN

Test Date: 4/7/04

Model Year: 2004
Target: RP2
Vehicle Side: Right
Horz/Vert Angle: 90/0

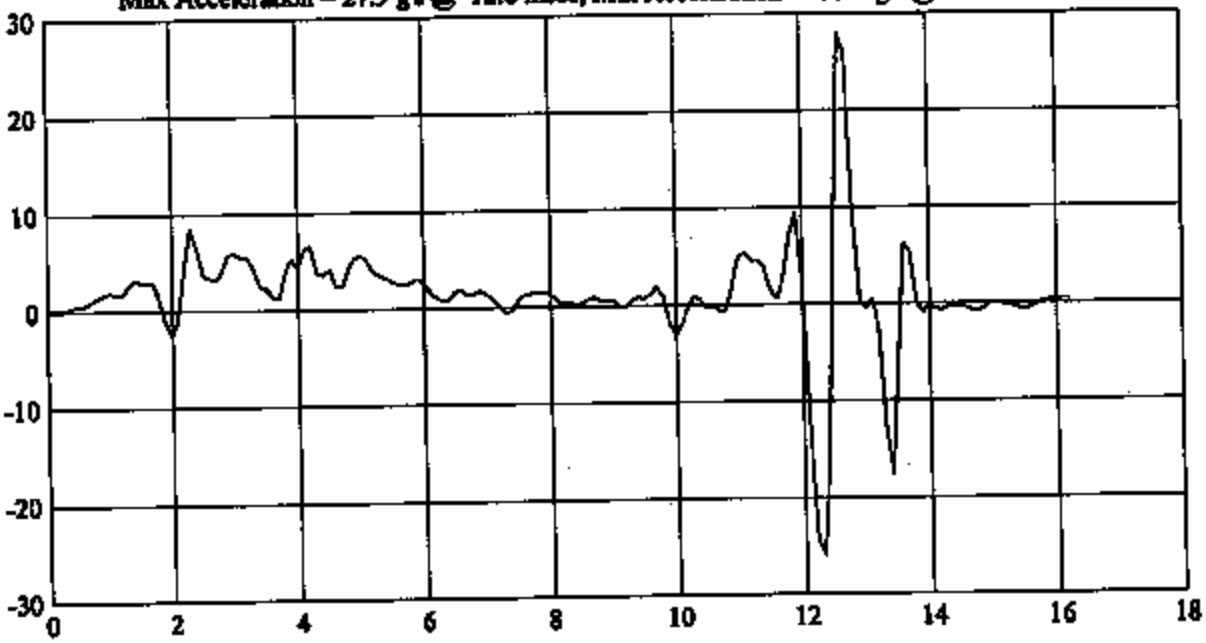
HIC(d) = 1042, HIC = 1160, Delta T = 4 msec

Max Acceleration = 1.6 g's @ 16.2 msec, Min Acceleration = -183.6 g's @ 2.7 msec



Accel X (g's) vs. Time (msec)

Max Acceleration = 27.9 g's @ 12.6 msec, Min Acceleration = -25.9 g's @ 12.3 msec



Accel Y (g's) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 9
FM4079
Additional Desc: N/A

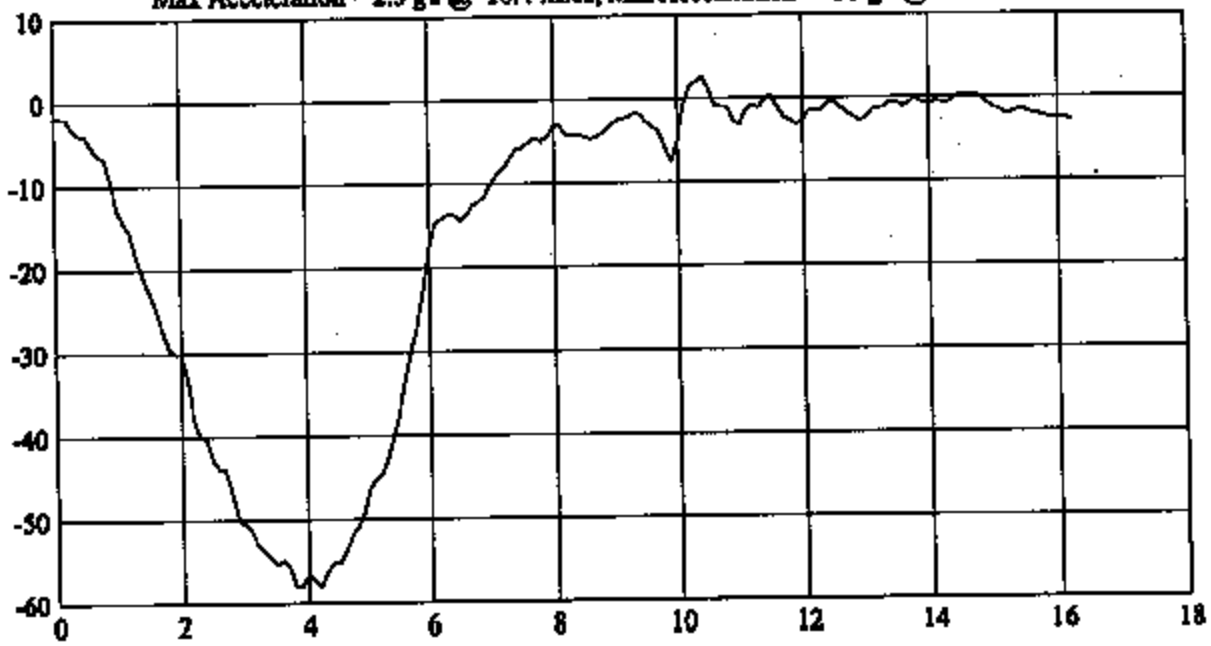
Vehicle Program : TITAN

Test Date: 4/7/04

Model Year: 2004
Target: RP2
Vehicle Side: Right
Horz/Vert Angle: 90/0

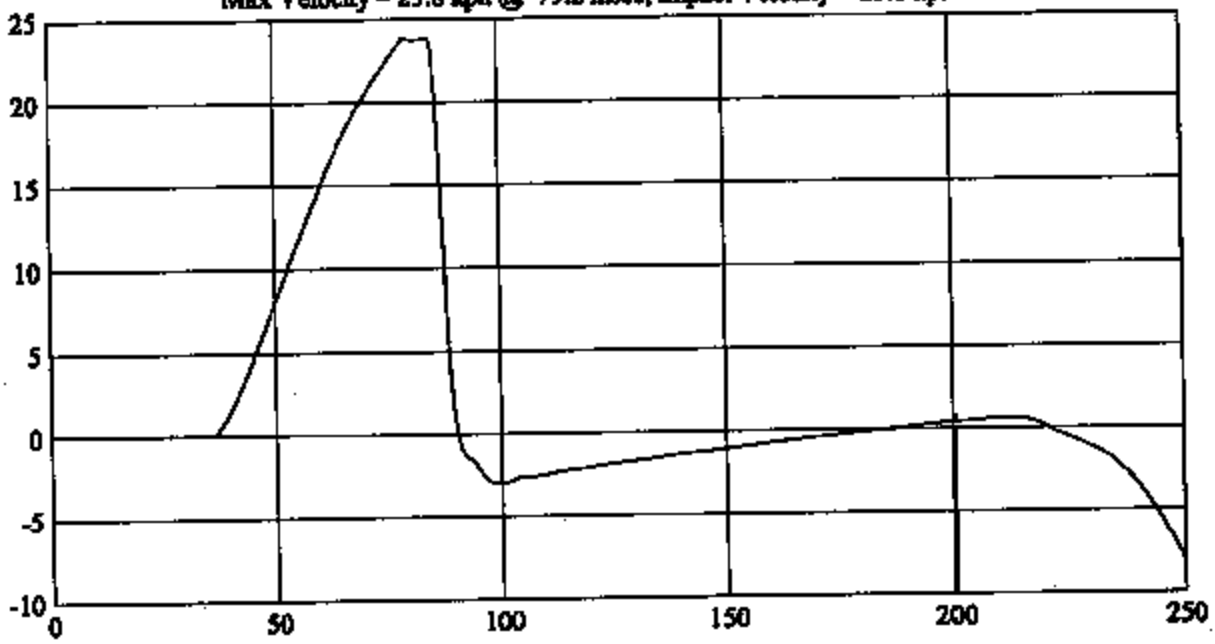
HIC(d) = 1042, HIC = 1160, Delta T = 4 msec

Max Acceleration = 2.5 g's @ 10.4 msec, Min Acceleration = -58 g's @ 4.2 msec



Accel Z (g's) vs. Time (msec)

Max Velocity = 23.8 kph @ 79.2 msec, Impact Velocity = 23.8 kph



Velocity (kph) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 9
FM4079
Additional Desc: N/A

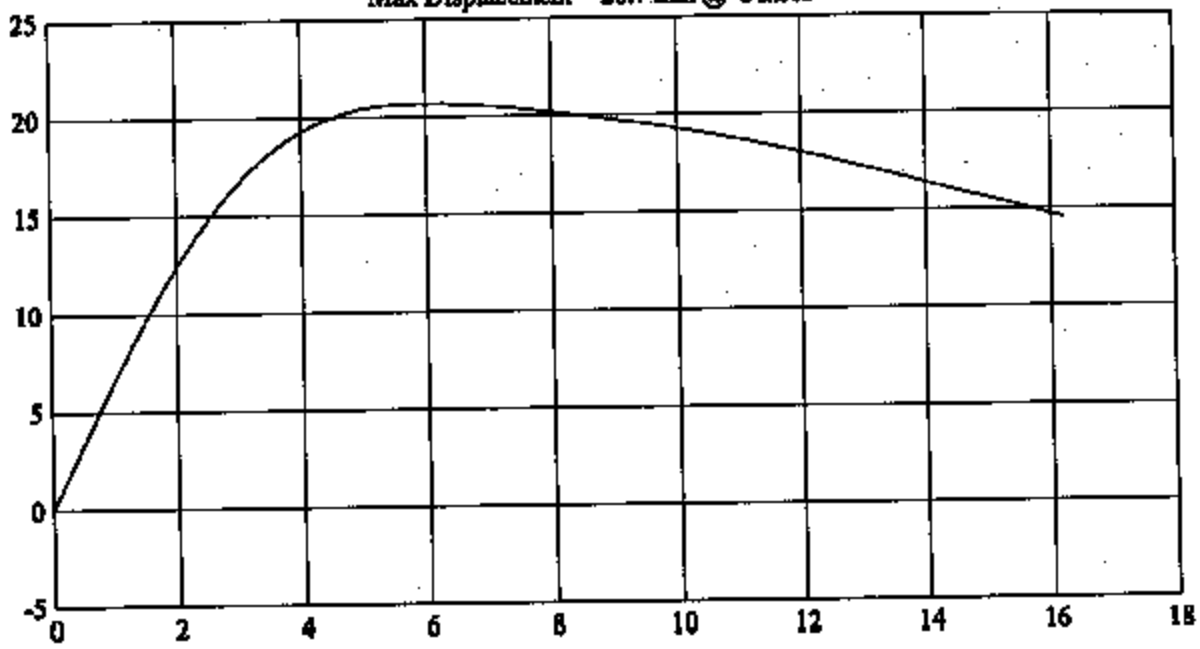
Vehicle Program : TITAN

Test Date: 4/7/04

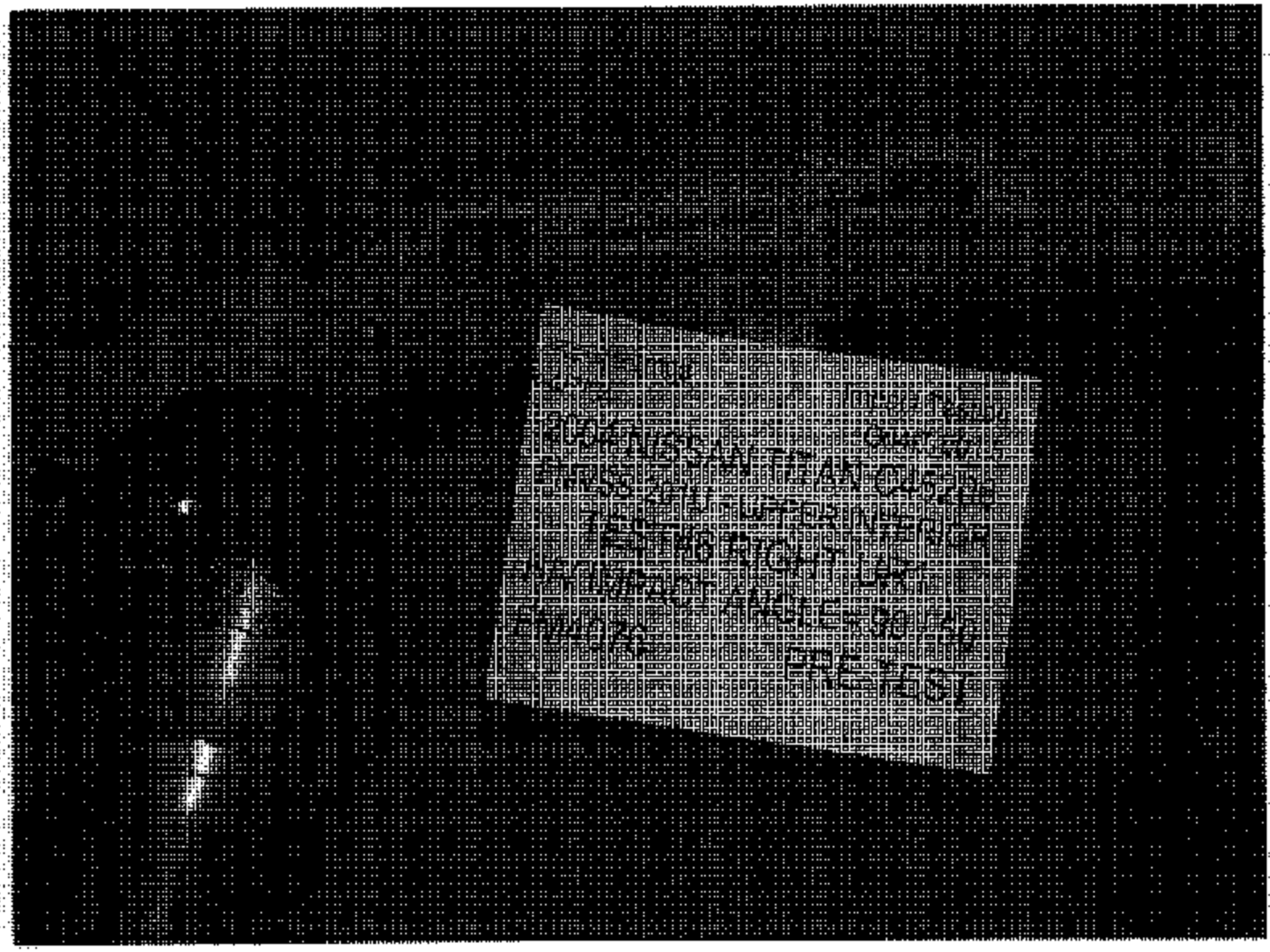
Model Year: 2004
Target: RP2
Vehicle Side: Right
Horz/Vert Angle: 90/0

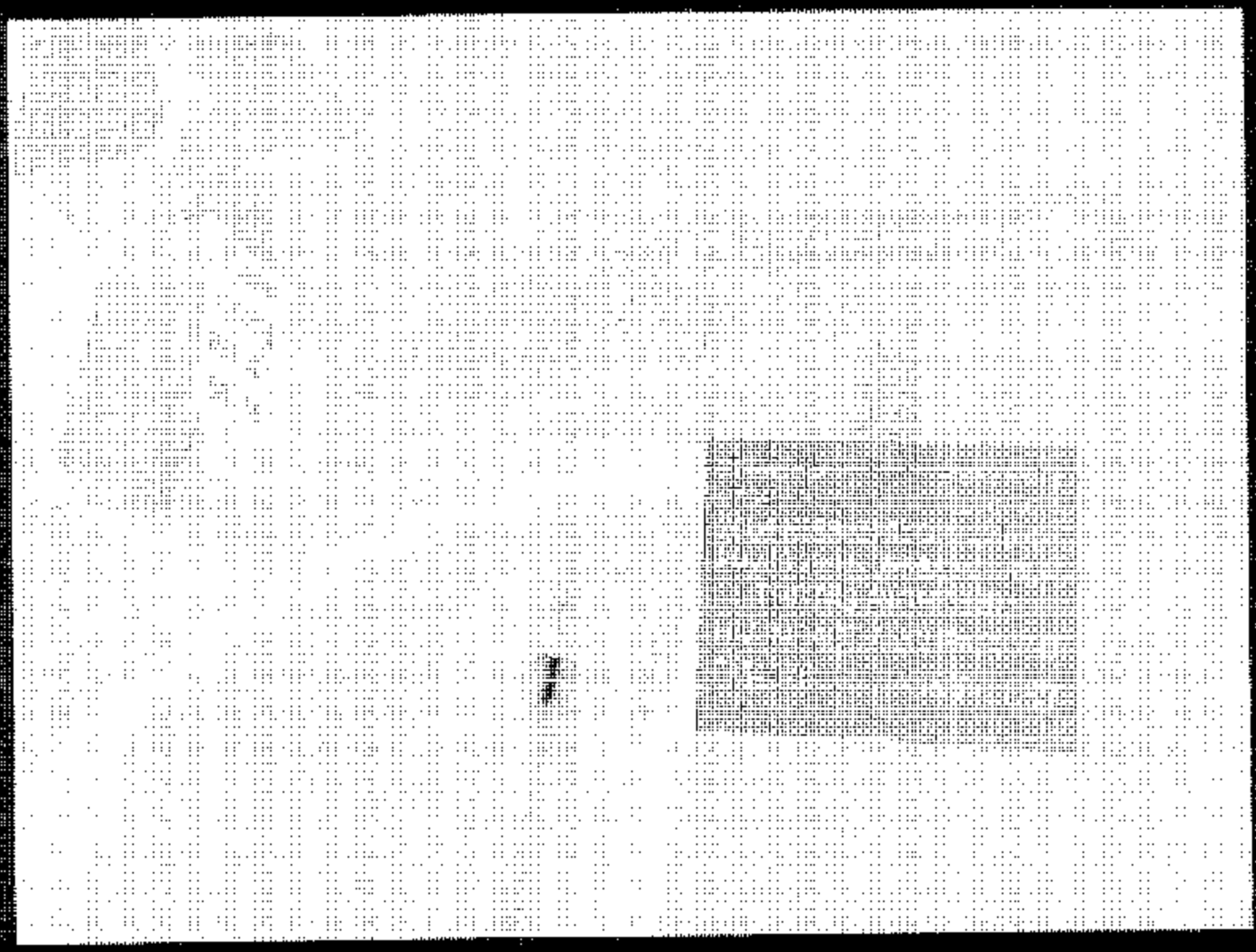
HIC(d) = 1042, HIC = 1160, Delta T = 4 msec

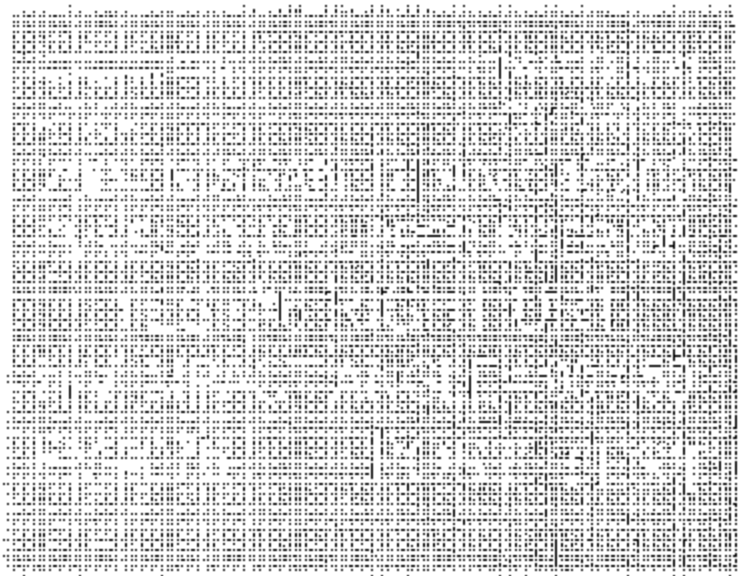
Max Displacement = 20.7 mm @ 6 msec



Displacement (mm) vs. Time (msec)







SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: CYS206 VEHICLE YR/MAKE/MODEL: 2004 NISSAN TITAN

GENERAL TEST PARAMETERS:

Test Number: 6

Target (Vehicle Side): left/right URI

Temperature: 24 °F/C

MGA Test Reference No.: FM4076

Humidity: 24 %

Approach Angles: Horizontal 90 °

Time of Test: 8:25 am/pm

Vertical 50 °

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
645	634	7.4	23.5	26	3

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

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

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

NO VISIBLE DAMAGE

Recorded By: [signature] Approved By*: Helen A. Kolitz Date: 4/7/04

*Only necessary for NHTSA (Government) Compliance testing.

FMH
G04I7-001.5

Customer: NISSAN
Test # 6
FM4076
Additional Desc: N/A

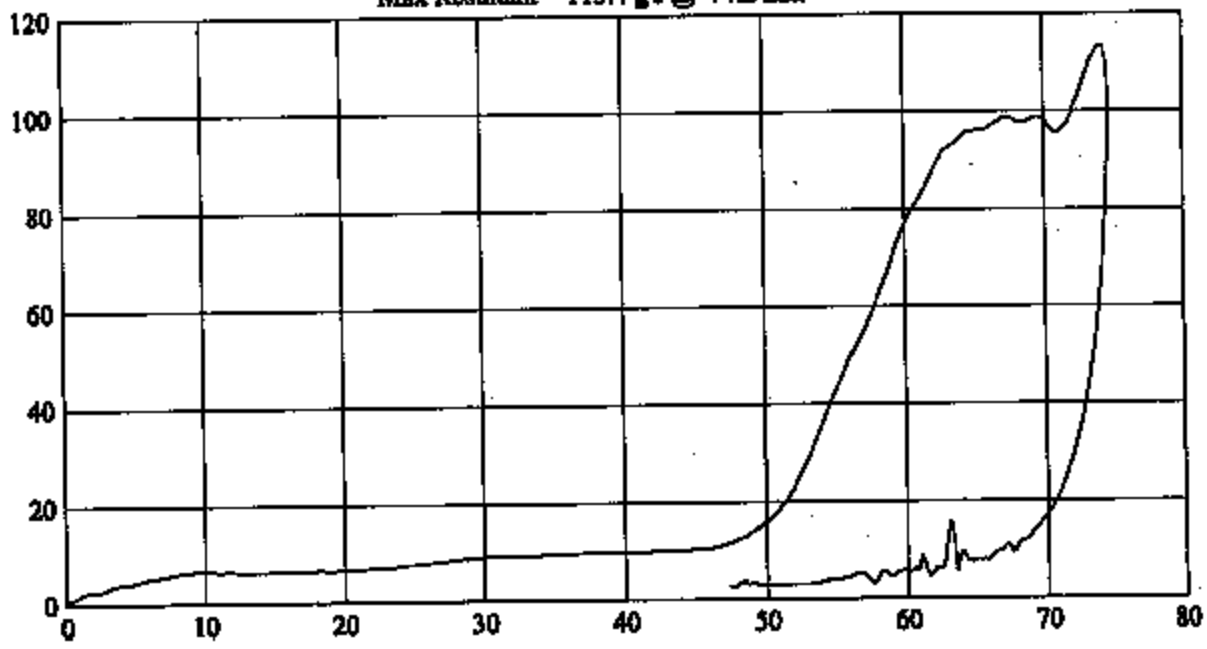
Vehicle Program : TITAN

Test Date: 4/7/04

Model Year: 2004
Target: UR1
Vehicle Side: Right
Horz/Vert Angle: 90/50

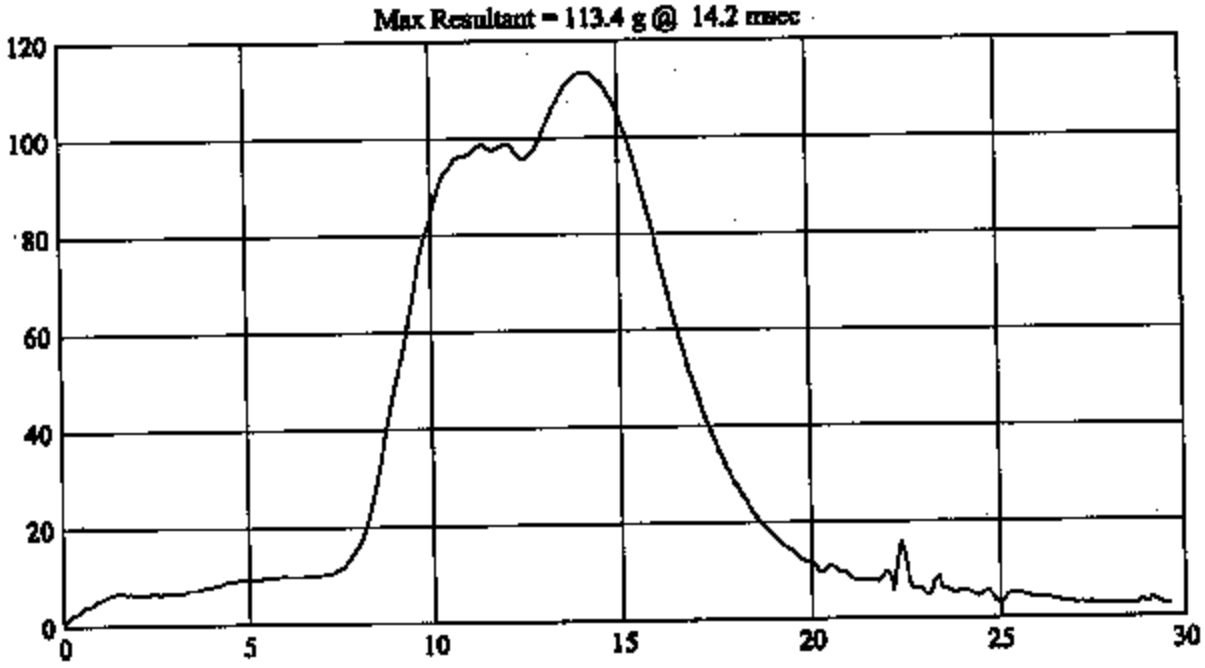
HIC(d) = 645, HIC = 634, Delta T = 7.4 msec

Max Resultant = 113.4 g's @ 74.2 mm



Resultant (g's) vs. Displacement (mm)

Max Resultant = 113.4 g @ 14.2 msec



Resultant Accel (g's) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 6
FM4076
Additional Desc: N/A

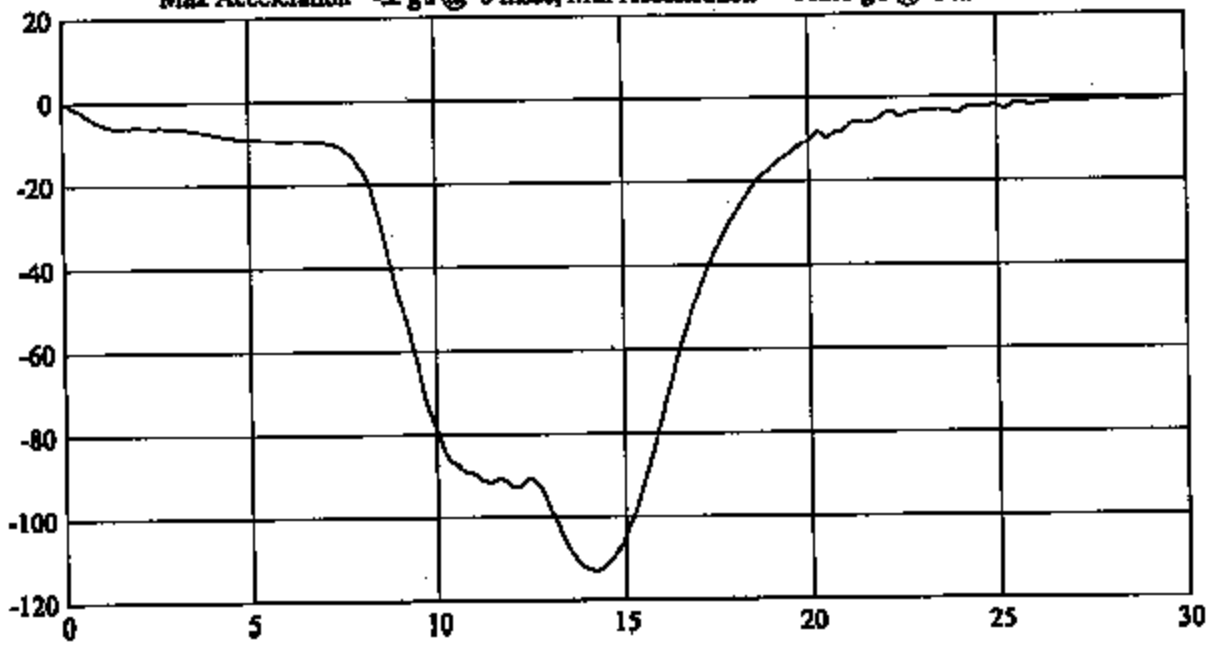
Vehicle Program : TITAN

Test Date: 4/7/04

Model Year: 2004
Target: UR1
Vehicle Side: Right
Horz/Vert Angle: 90/50

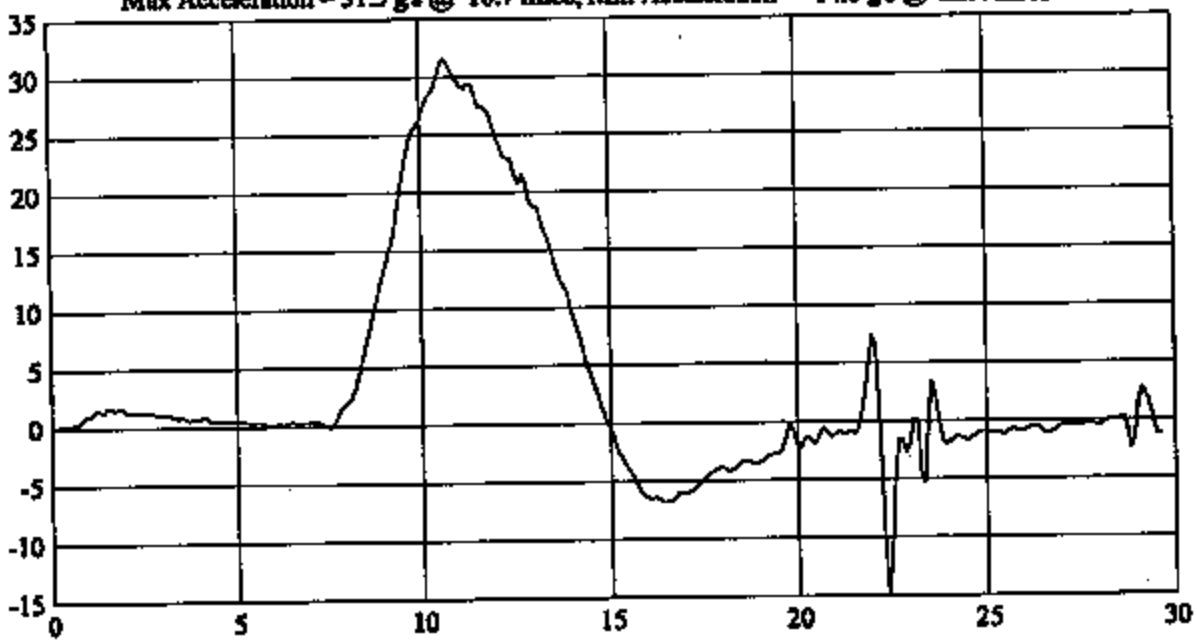
HIC(d) = 645, HIC = 634, Delta T = 7.4 msec

Max Acceleration = .2 g's @ 0 msec, Min Acceleration = -113.1 g's @ 14.2 msec



Accel X (g's) vs. Time (msec)

Max Acceleration = 31.5 g's @ 10.7 msec, Min Acceleration = -14.8 g's @ 22.4 msec



Accel Y (g's) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 6
FM4076
Additional Desc: N/A

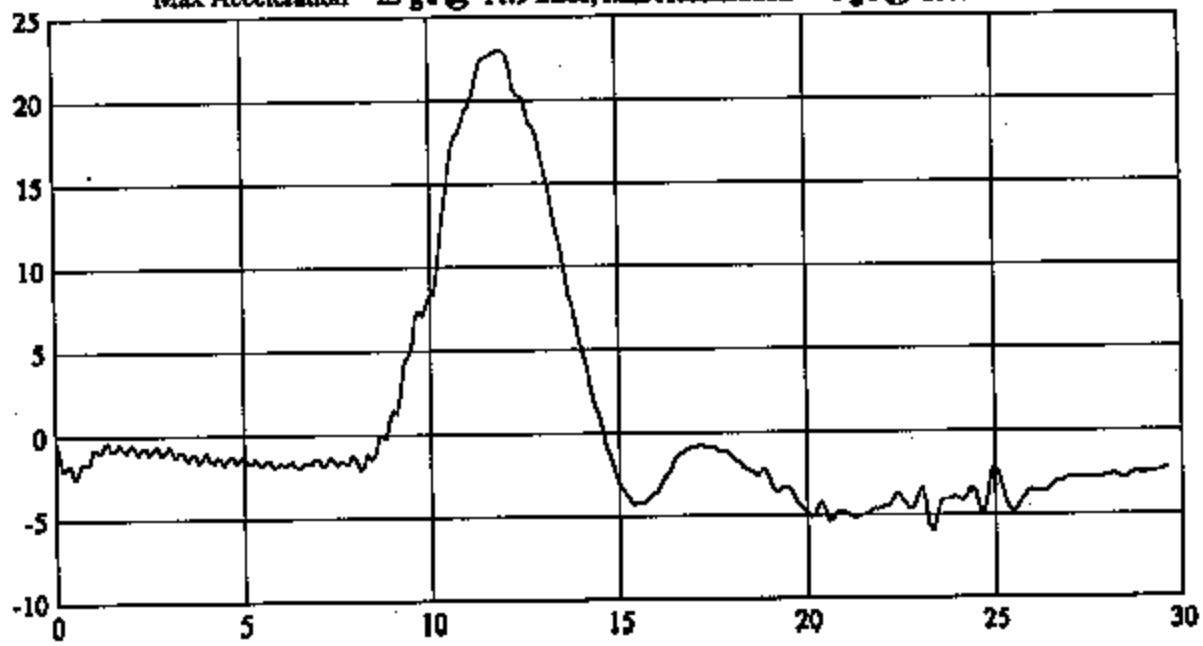
Vehicle Program : TITAN

Test Date: 4/7/04

Model Year: 2004
Target: UR1
Vehicle Side: Right
Horz/Vert Angle: 90/50

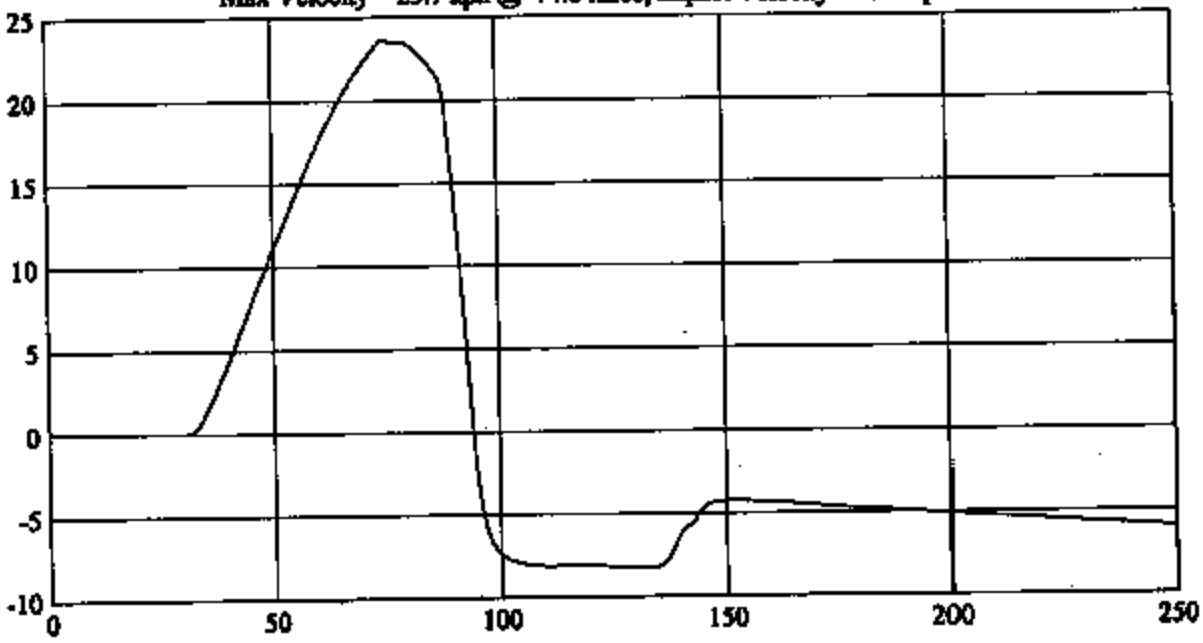
HIC(d) = 645, HIC = 634, Delta T = 7.4 msec

Max Acceleration = 23 g's @ 11.9 msec, Min Acceleration = -6 g's @ 23.4 msec



Accel Z (g's) vs. Time (msec)

Max Velocity = 23.7 kph @ 74.6 msec, Impact Velocity = 23.5 kph



Velocity (kph) vs. Time (msec)

FMH
G04F7-001.5

Customer: NISSAN
Test # 6
FM4076
Additional Desc: N/A

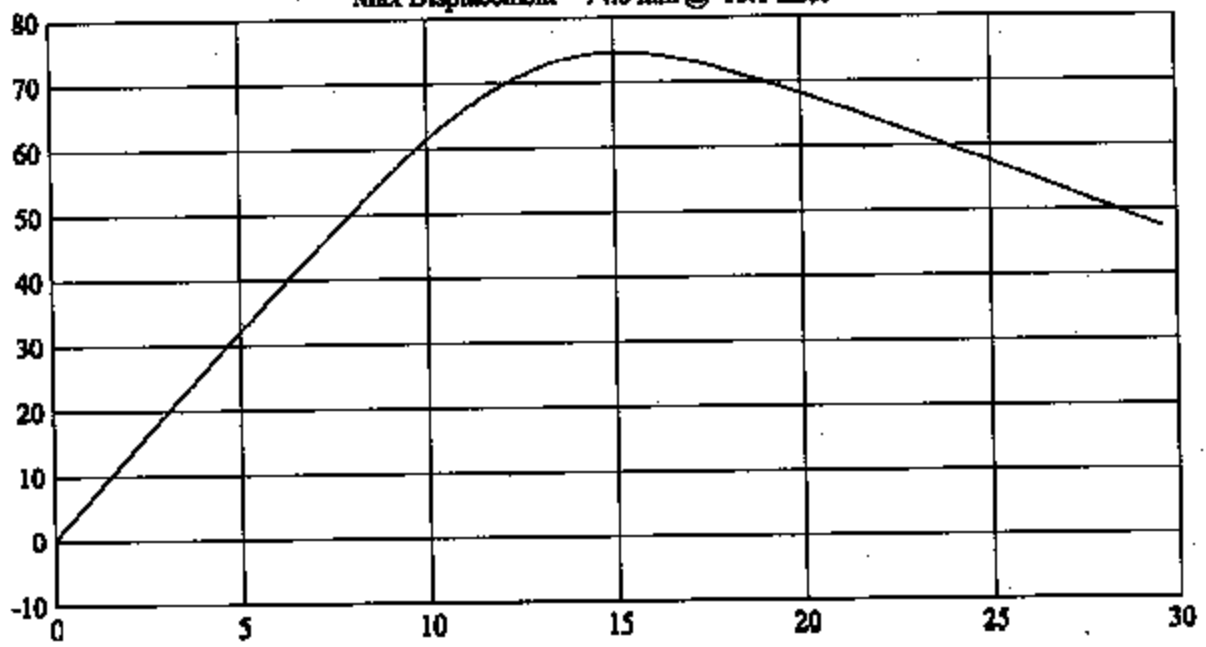
Vehicle Program : TITAN

Test Date: 4/7/04

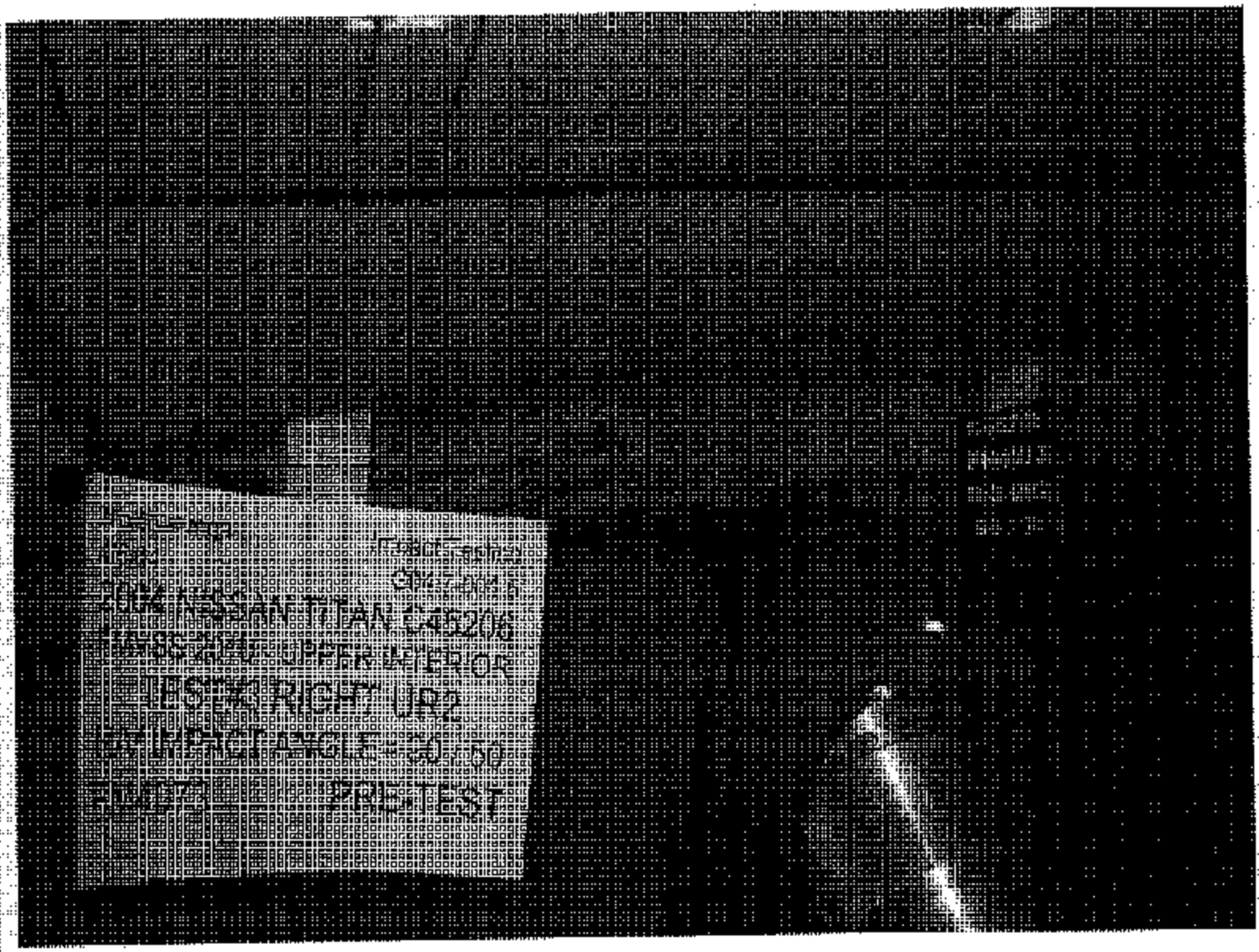
Model Year: 2004
Target: UR1
Vehicle Side: Right
Horz/Vert Angle: 90/50

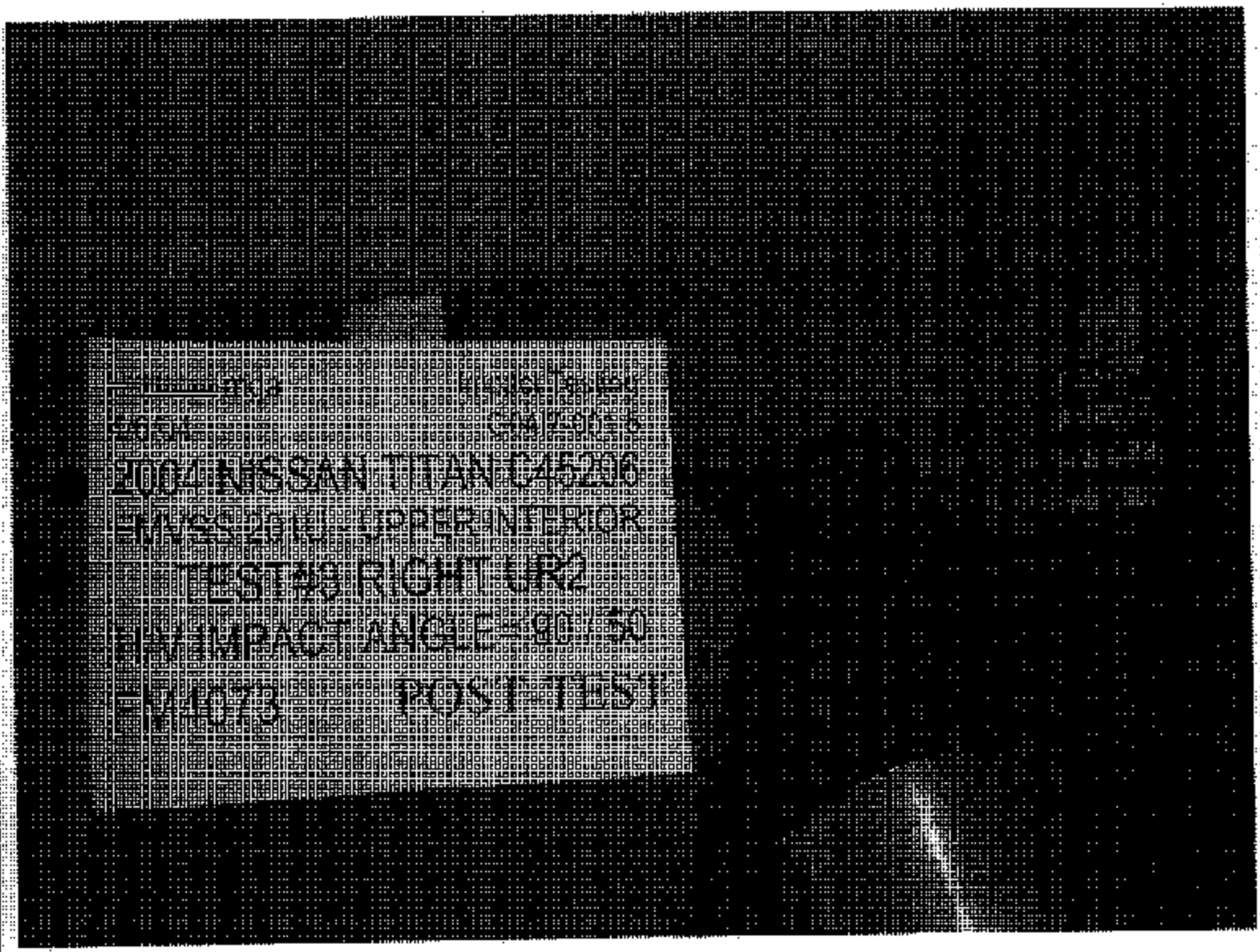
HIC(d) = 645, HIC = 634, Delta T = 7.4 msec

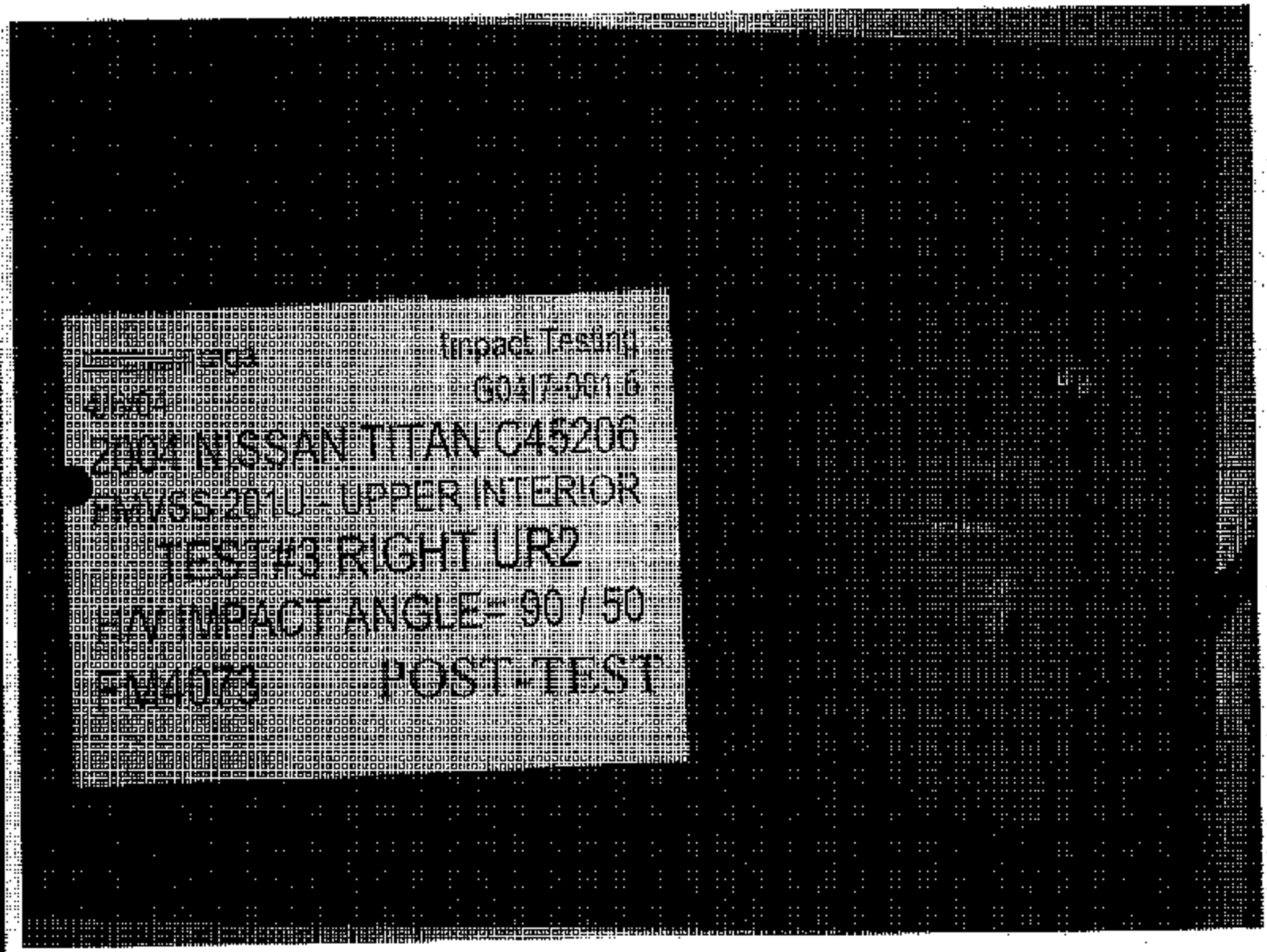
Max Displacement = 74.6 mm @ 15.1 msec



Displacement (mm) vs. Time (msec)




2004 NISSAN TITAN 245206
TEST 20 RIGHT SR2
POST TEST


Impact Test#3
G04F-0916
2004 NISSAN TITAN C45206
NHV66.201U - UPPER INTERIOR
TEST#3 RIGHT UR2
FMVSS 201U IMPACT ANGLE=90 / 50
FM4073 POST-TEST

SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C45206 VEHICLE YR/MAKE/MODEL: 2004 MONTANA

GENERAL TEST PARAMETERS:

Test Number: 3

Target (Vehicle Side): left/right URL

Temperature: 24 °F/C

MGA Test Reference No.: FM4073

Humidity: 17 %

Approach Angles: Horizontal 90 °

Time of Test: 2:30 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
658	651	7.8	23.6	26	3

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

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J36197	-1073	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 VEHICLE DAMAGE

Recorded By: [signature] Approved By*: Helen A. Kalisto Date: 4/6/04

*Only necessary for NHTSA (Government) Compliance testing.

FMH
G04I7-001.5

Customer: NISSAN
Test # 3
FM4073
Additional Desc: N/A

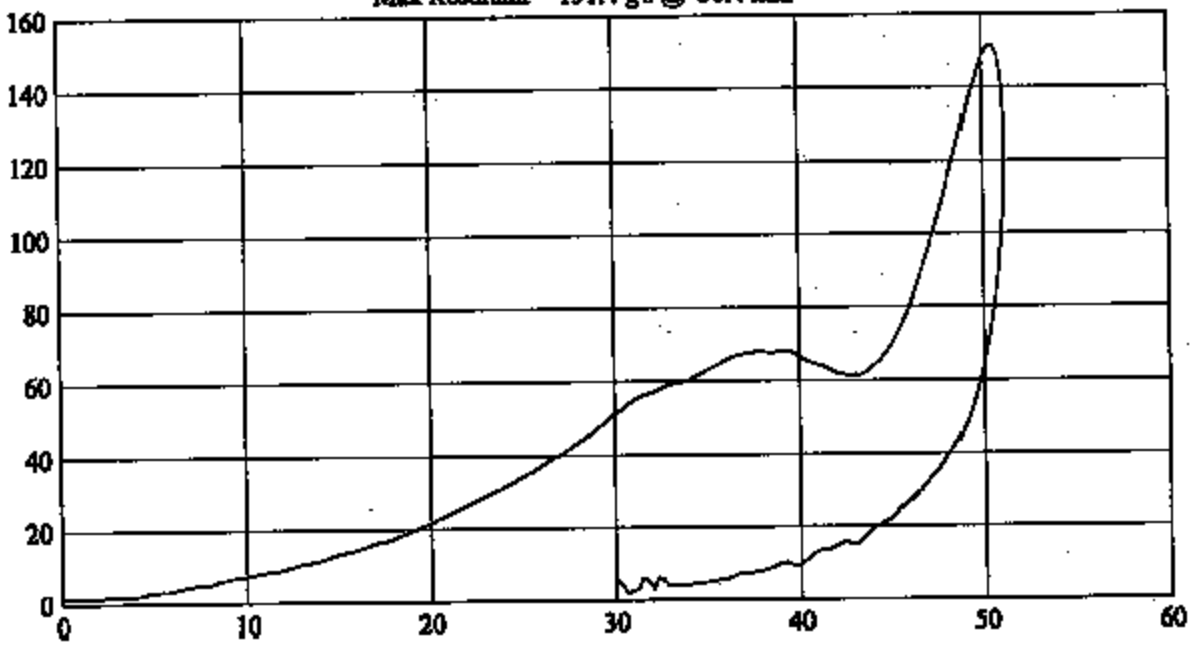
Vehicle Program : TITAN

Test Date: 4/6/04

Model Year: 2004
Target: UR2
Vehicle Side: Right
Horz/Vert Angle: 90/50

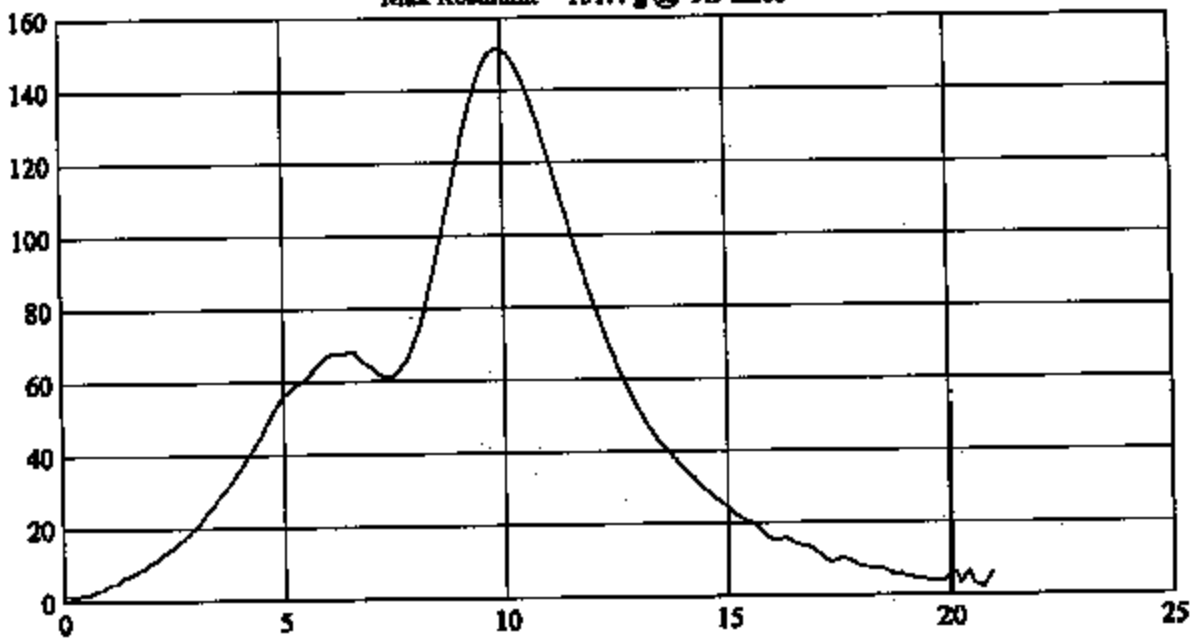
HIC(d) = 658, HIC = 651, Delta T = 7.8 msec

Max Resultant = 151.4 g's @ 50.4 mm



Resultant (g's) vs. Displacement (mm)

Max Resultant = 151.4 g @ 9.9 msec



Resultant Accel (g's) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 3
FM4073
Additional Desc: N/A

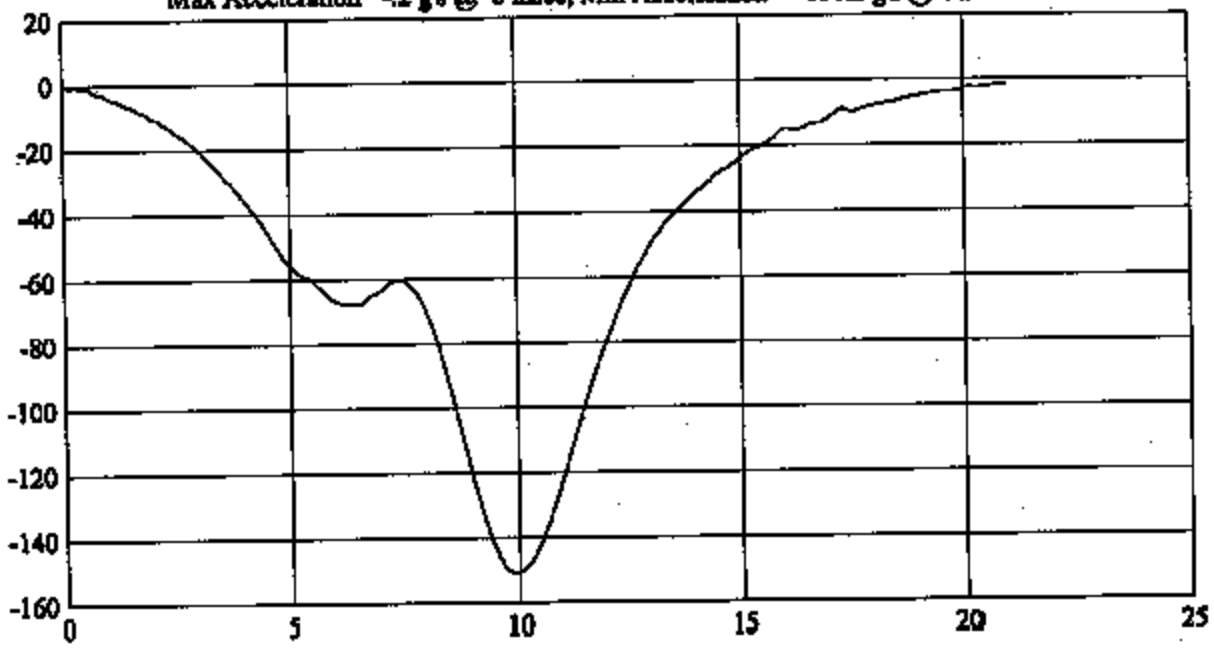
Vehicle Program : TITAN

Test Date: 4/6/04

Model Year: 2004
Target: UR2
Vehicle Side: Right
Horz/Vert Angle: 90/50

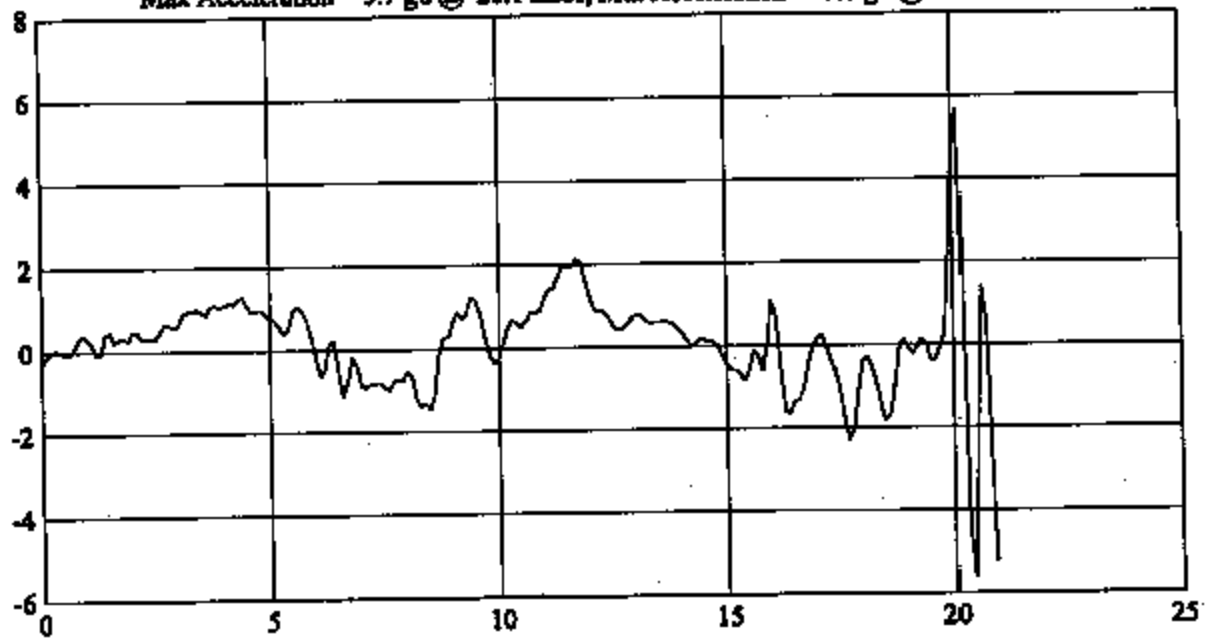
HIC(d) = 658, HIC = 651, Delta T = 7.8 msec

Max Acceleration = .2 g's @ 0 msec, Min Acceleration = -151.2 g's @ 9.9 msec



Accel X (g's) vs. Time (msec)

Max Acceleration = 5.7 g's @ 20.1 msec, Min Acceleration = -5.6 g's @ 20.4 msec



Accel Y (g's) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 3
FM4073
Additional Desc: N/A

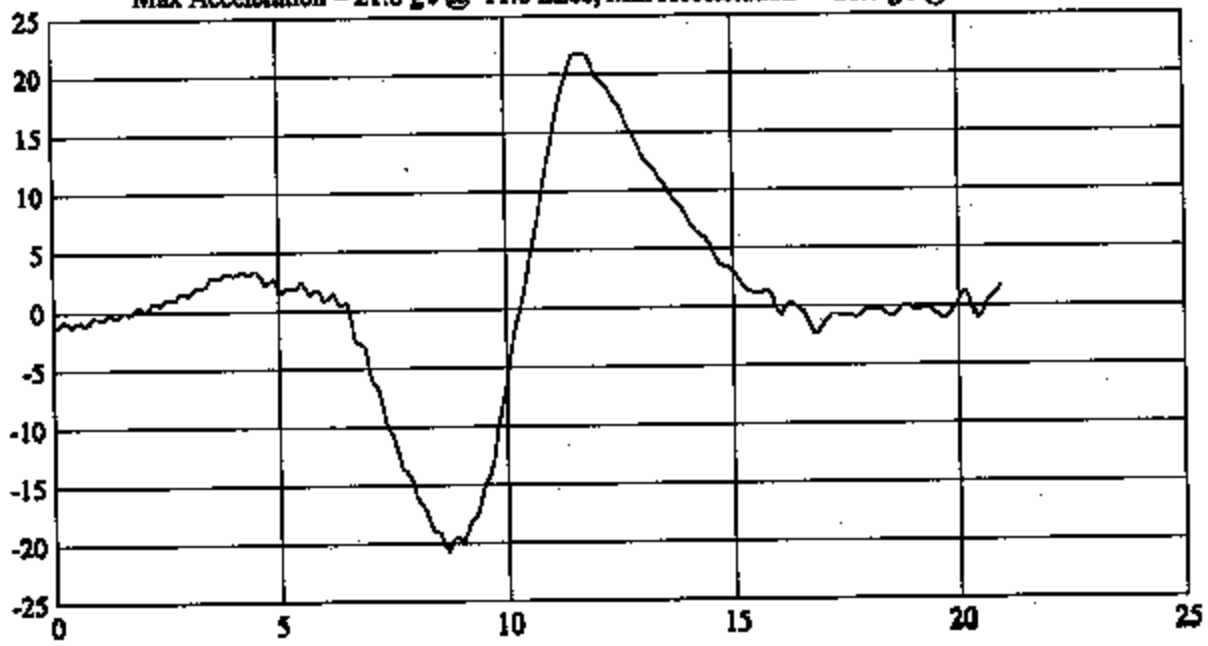
Vehicle Program : TITAN

Test Date: 4/6/04

Model Year: 2004
Target: UR2
Vehicle Side: Right
Horz/Vert Angle: 90/50

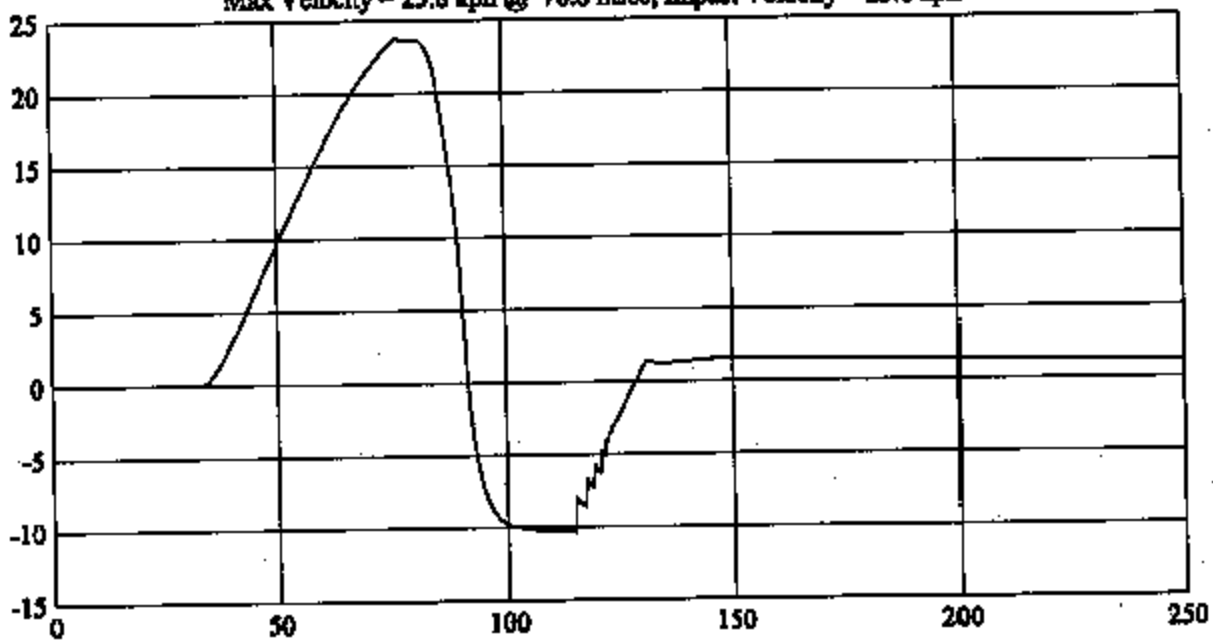
HIC(d) = 658, HIC = 651, Delta T = 7.8 msec

Max Acceleration = 21.8 g's @ 11.6 msec, Min Acceleration = -20.7 g's @ 8.7 msec



Accel Z (g's) vs. Time (msec)

Max Velocity = 23.8 kph @ 76.8 msec, Impact Velocity = 23.6 kph



Velocity (kph) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 3
FM4073
Additional Desc: N/A

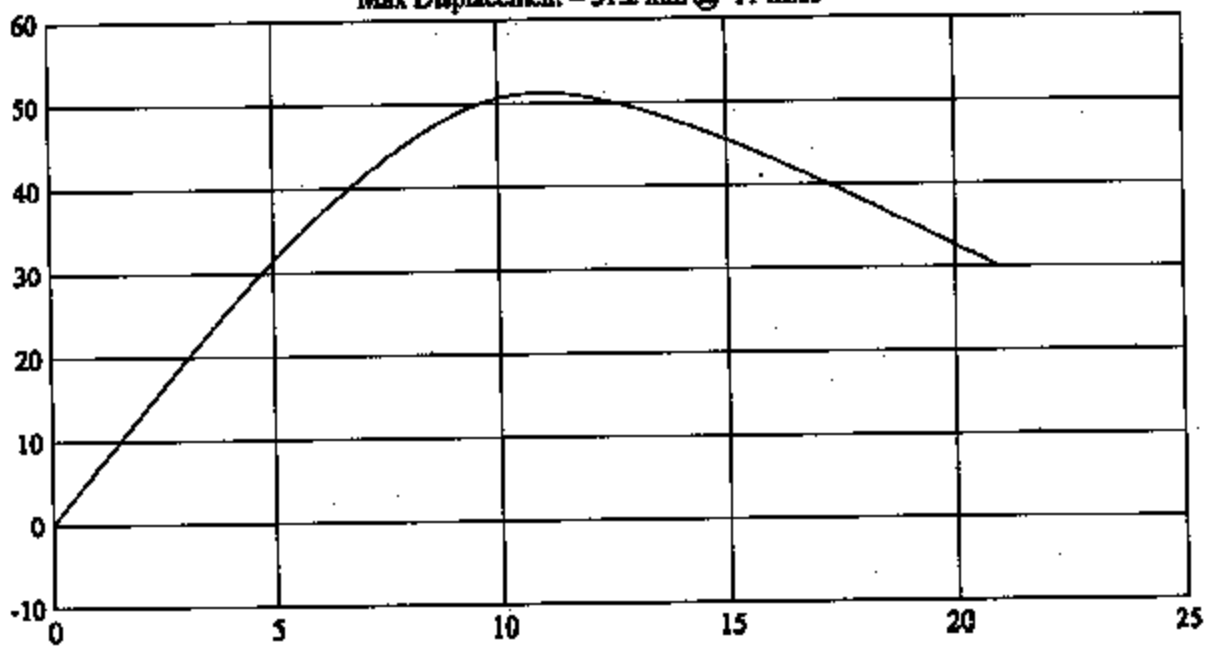
Vehicle Program : TITAN

Test Date: 4/6/04

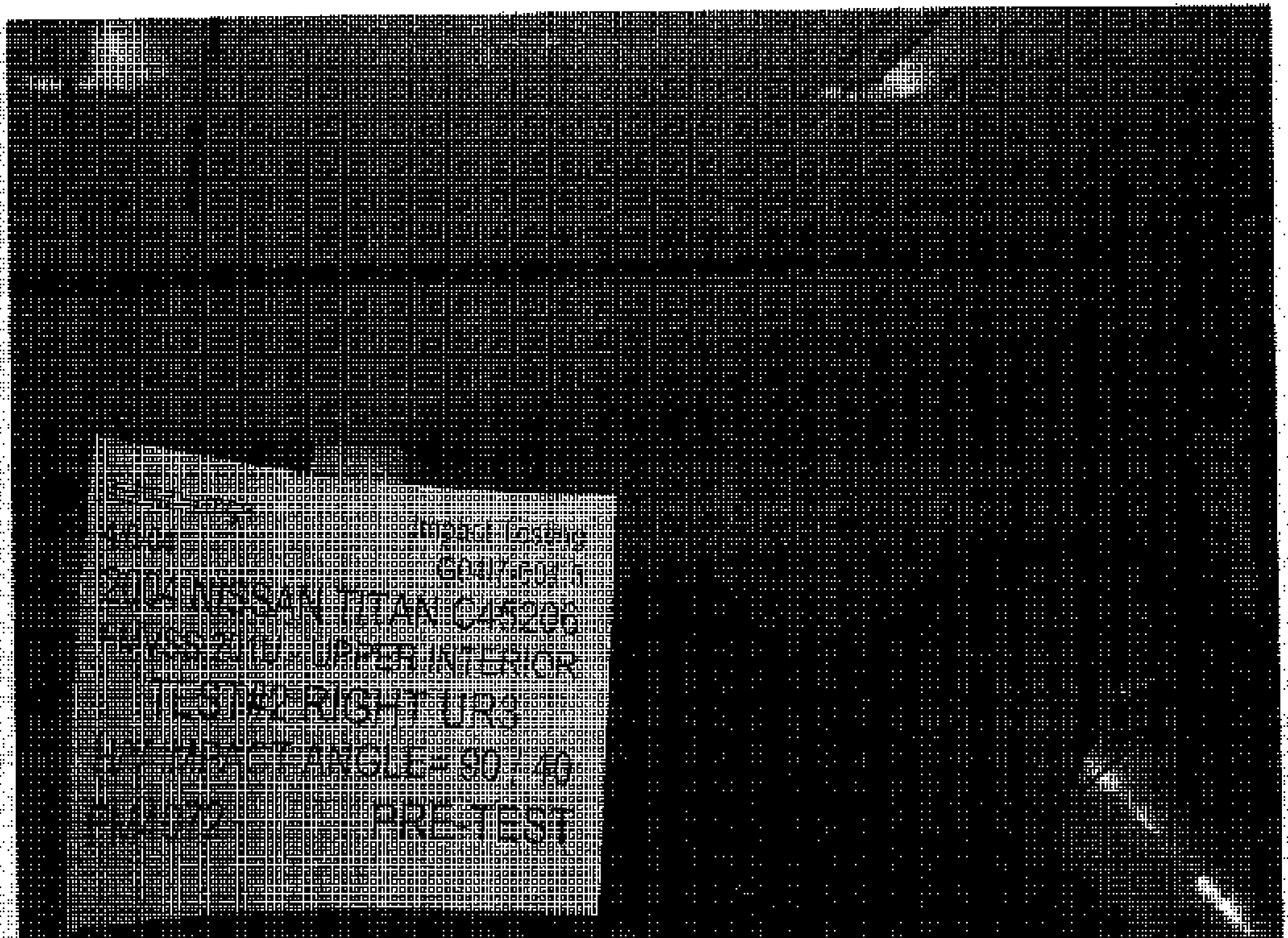
Model Year: 2004
Target: UR2
Vehicle Side: Right
Horz/Vert Angle: 90/50

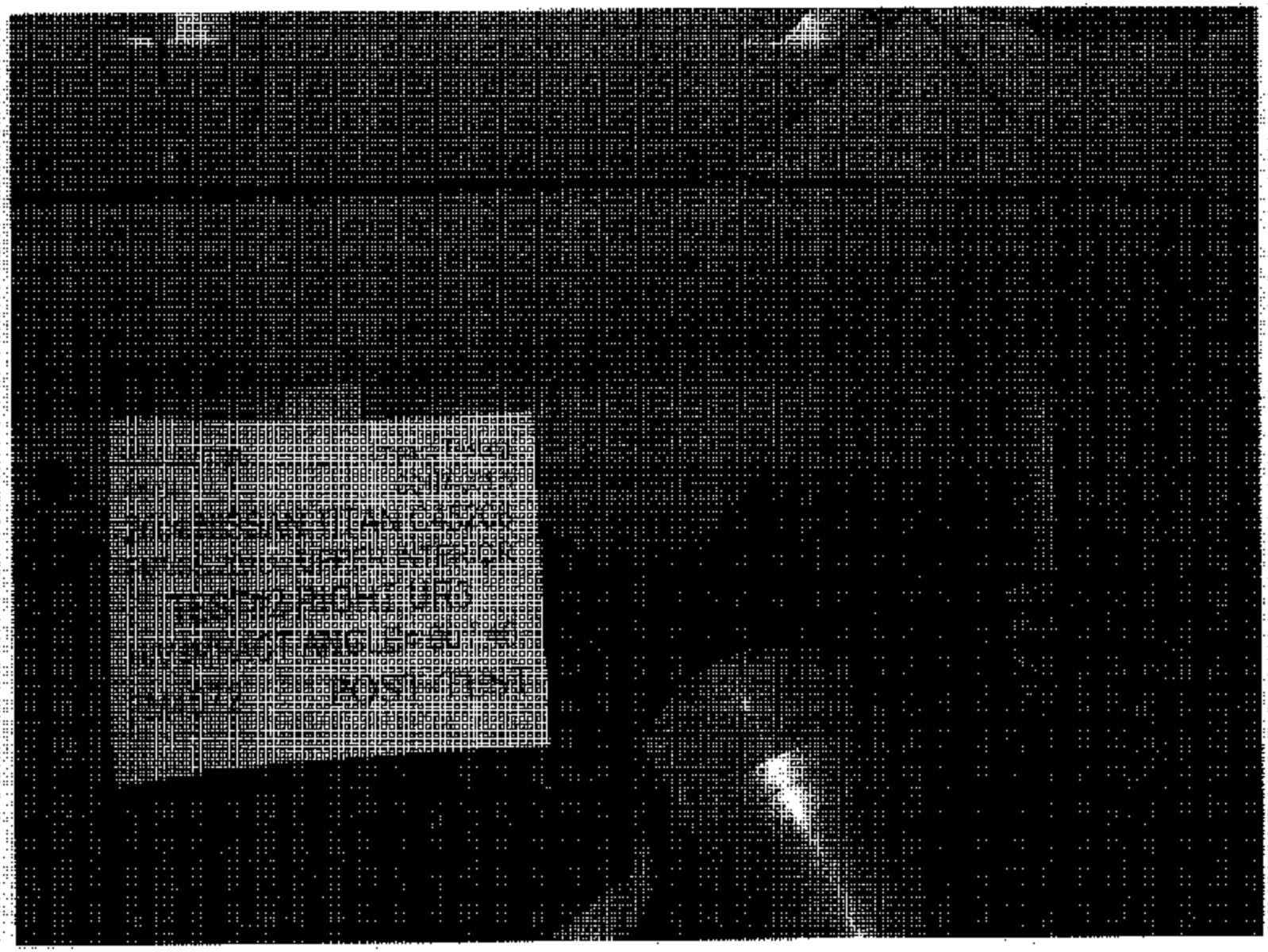
HIC(d) = 658, HIC = 651, Delta T = 7.8 msec

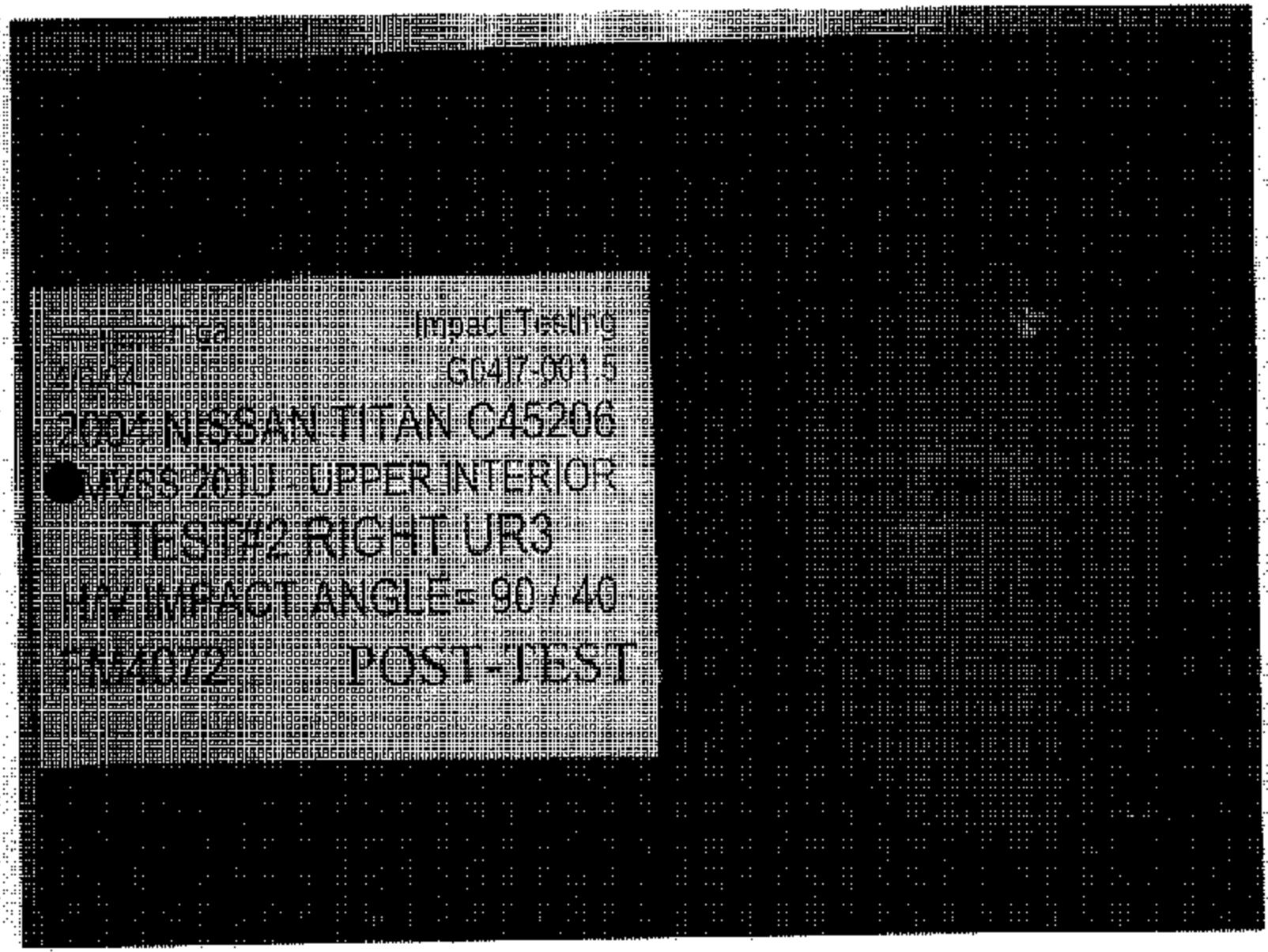
Max Displacement = 51.2 mm @ 11 msec



Displacement (mm) vs. Time (msec)


NISSAN TITAN C45206
UPPER INTERIOR
RIGHT UR3
PRE-TEST




ImpactTesting
G647-0015
2004 NISSAN TITAN C45206
W/SS/2NU UPPER INTERIOR
TEST#2 RIGHT UR3
IMPACT ANGLE= 90 / 40
POST-TEST

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: CY5206 VEHICLE YR/MAKE/MODEL: 2004 NISSAN TITAN

GENERAL TEST PARAMETERS:

Test Number: 2

Target (Vehicle Side): left/right UR3

Temperature: 24 °F/°C

MGA Test Reference No.: FM4022

Humidity: 16 %

Approach Angles: Horizontal 90 °

Time of Test: 1:40 am/pm

Vertical 40 °

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
673	671	8.6	23.5	48	8

INSTRUMENTAION 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	J35918	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. Kaleto Date: 4/6/04

*Only necessary for NHTSA (Government) Compliance testing.

FMH
G04I7-001.5

Customer: NISSAN
Test # 2
FM4072
Additional Desc: N/A

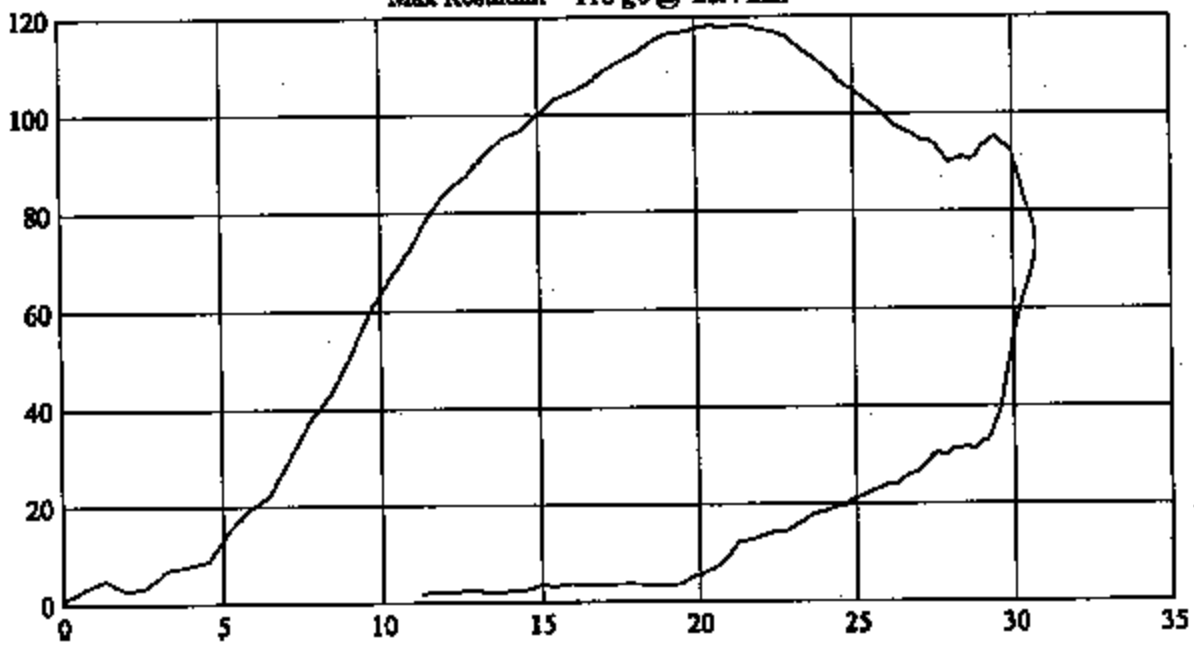
Vehicle Program : TITAN

Test Date: 4/6/04

Model Year: 2004
Target: UR3
Vehicle Side: Right
Horz/Vert Angle: 90/40

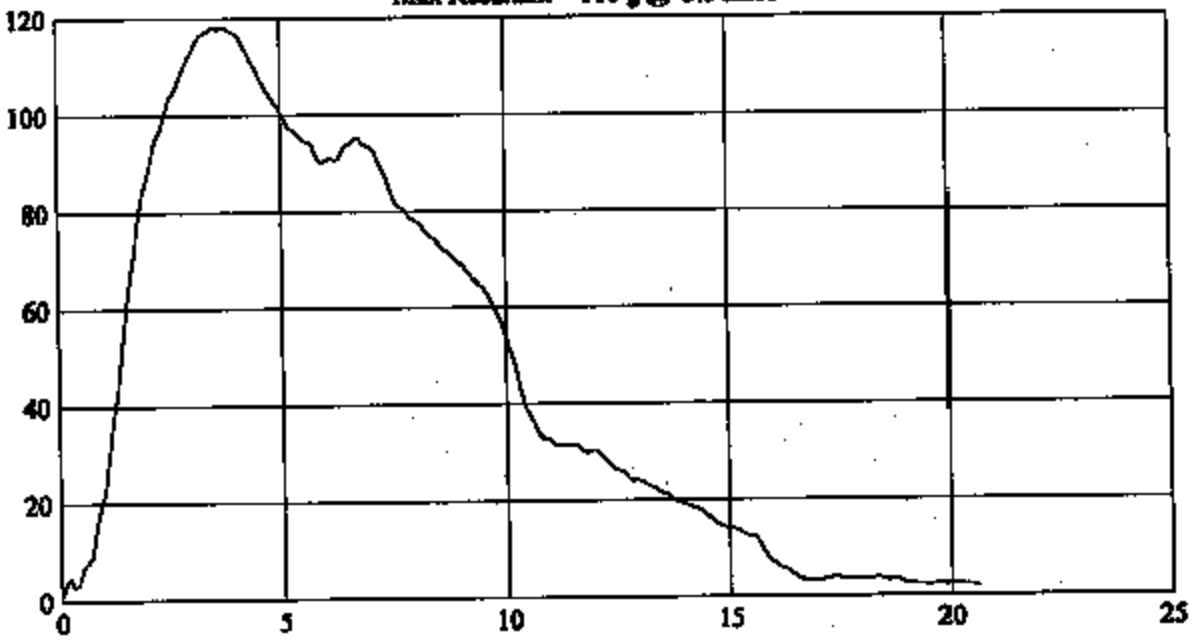
HIC(d) = 673, HIC = 671, Delta T = 8.6 msec

Max Resultant = 118 g's @ 20.4 mm



Resultant (g's) vs. Displacement (mm)

Max Resultant = 118 g @ 3.5 msec



Resultant Accel (g's) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 2
FM4072
Additional Desc: N/A

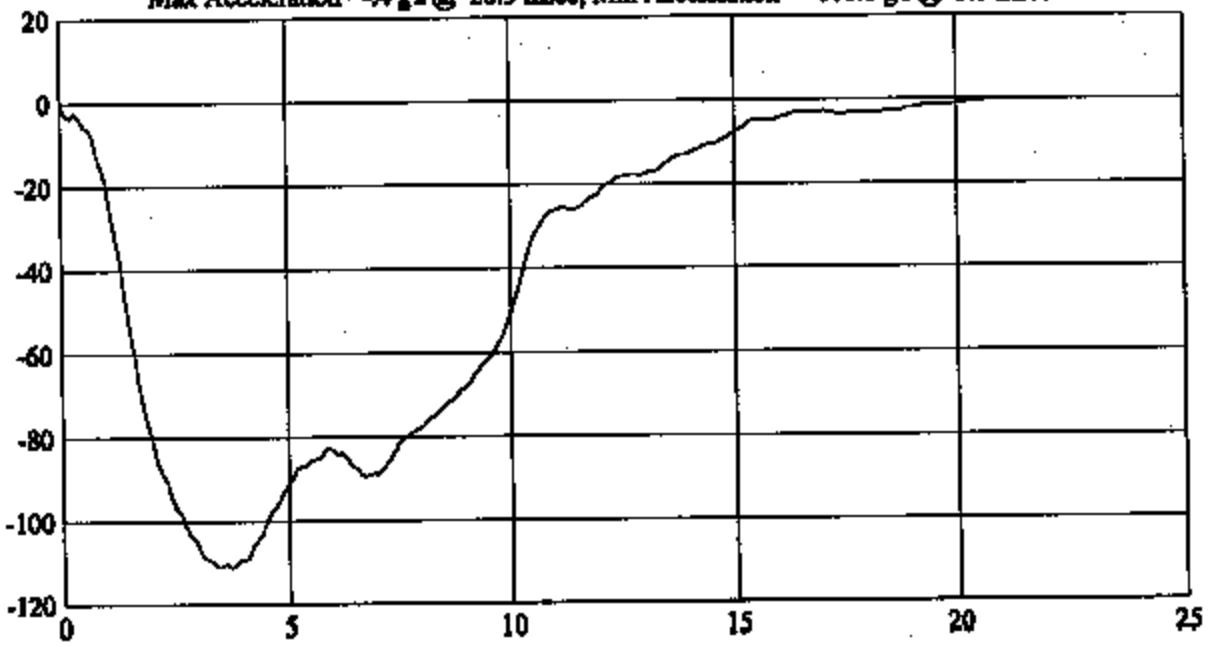
Vehicle Program : TITAN

Test Date: 4/6/04

Model Year: 2004
Target: UR3
Vehicle Side: Right
Horz/Vert Angle: 90/40

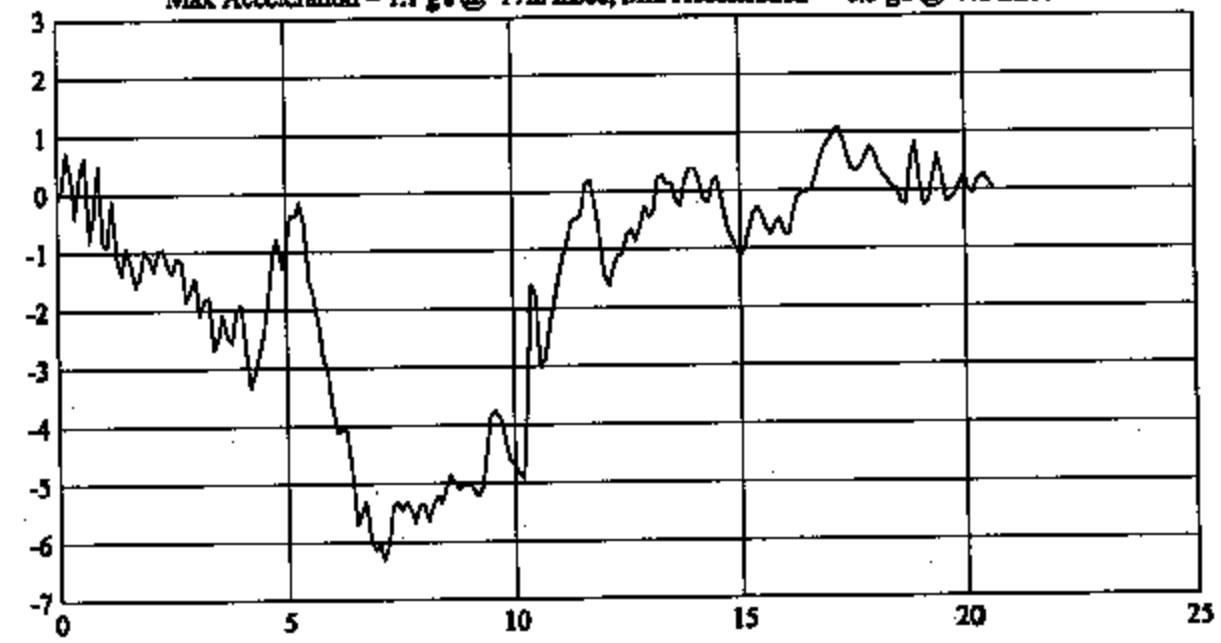
HIC(d) = 673, HIC = 671, Delta T = 8.6 msec

Max Acceleration = 4 g's @ 20.5 msec, Min Acceleration = -111.1 g's @ 3.7 msec



Accel X (g's) vs. Time (msec)

Max Acceleration = 1.1 g's @ 17.2 msec, Min Acceleration = -6.3 g's @ 7.1 msec



Accel Y (g's) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 2
FM4072
Additional Desc: N/A

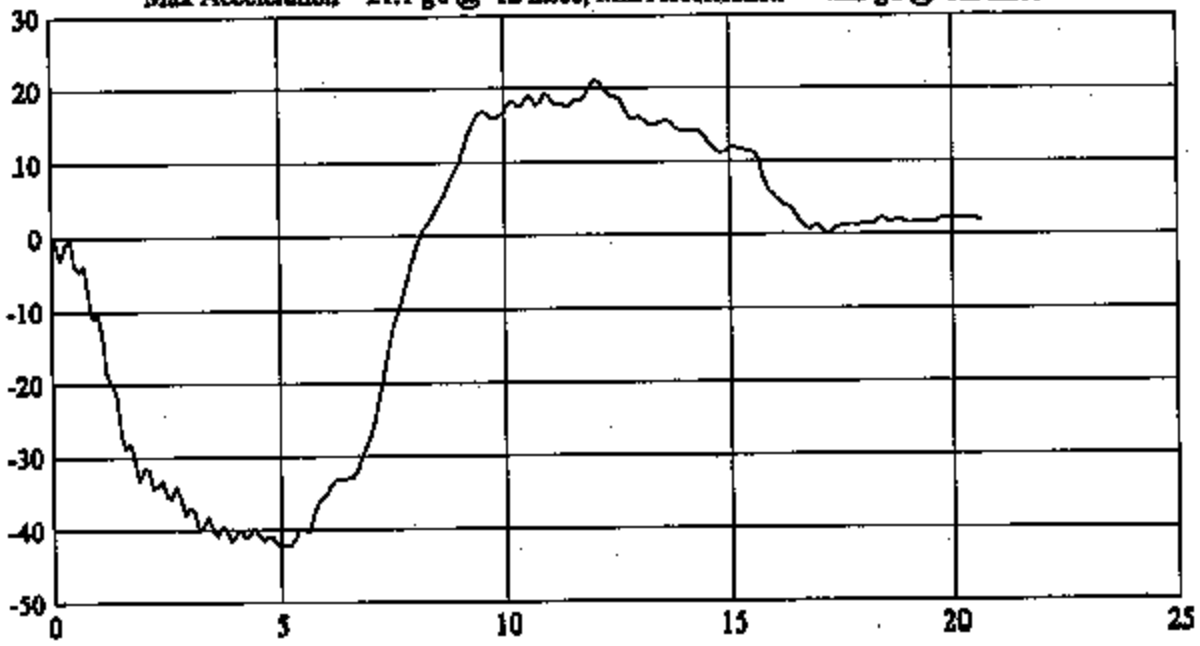
Vehicle Program : TITAN

Test Date: 4/6/04

Model Year: 2004
Target: UR3
Vehicle Side: Right
Horz/Vert Angle: 90/40

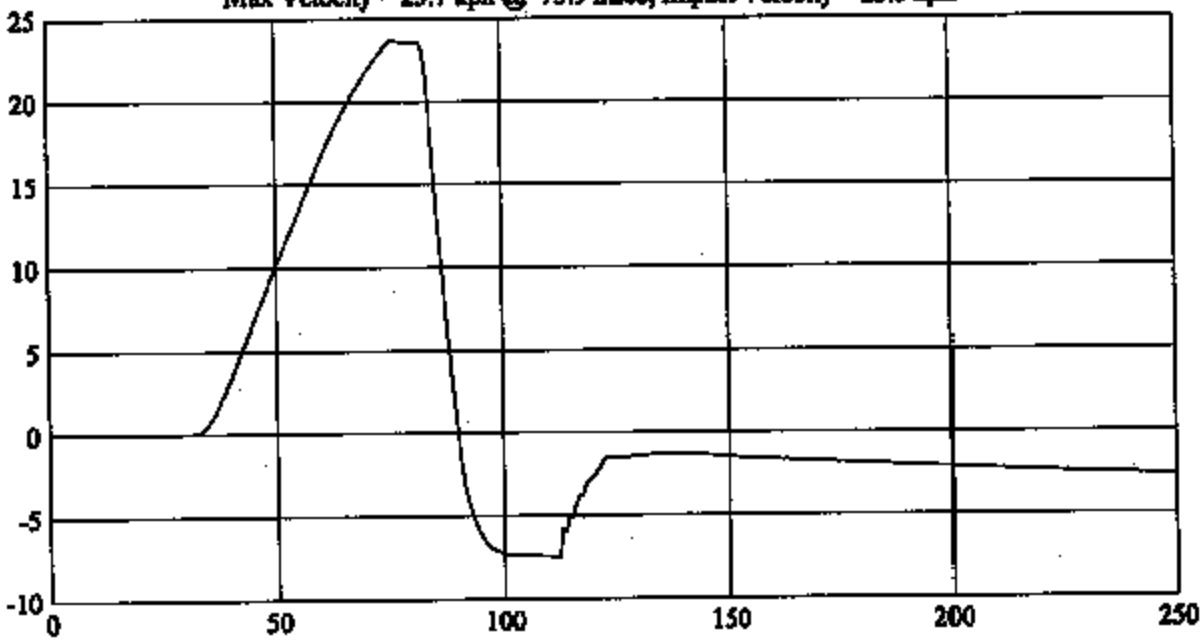
HIC(d) = 673, HIC = 671, Delta T = 8.6 msec

Max Acceleration = 21.1 g's @ 12 msec, Min Acceleration = -42.3 g's @ 5.2 msec



Accel Z (g's) vs. Time (msec)

Max Velocity = 23.7 kph @ 75.9 msec, Impact Velocity = 23.5 kph



Velocity (kph) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 2
FM4072
Additional Desc: N/A

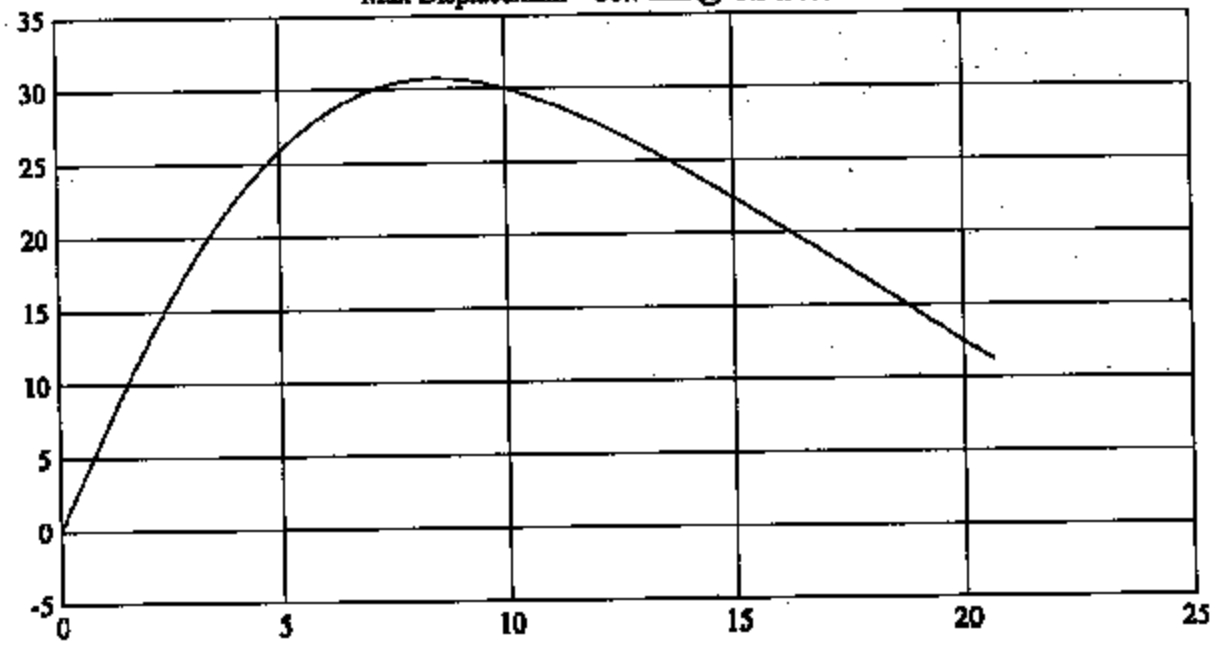
Vehicle Program : TITAN

Test Date: 4/6/04

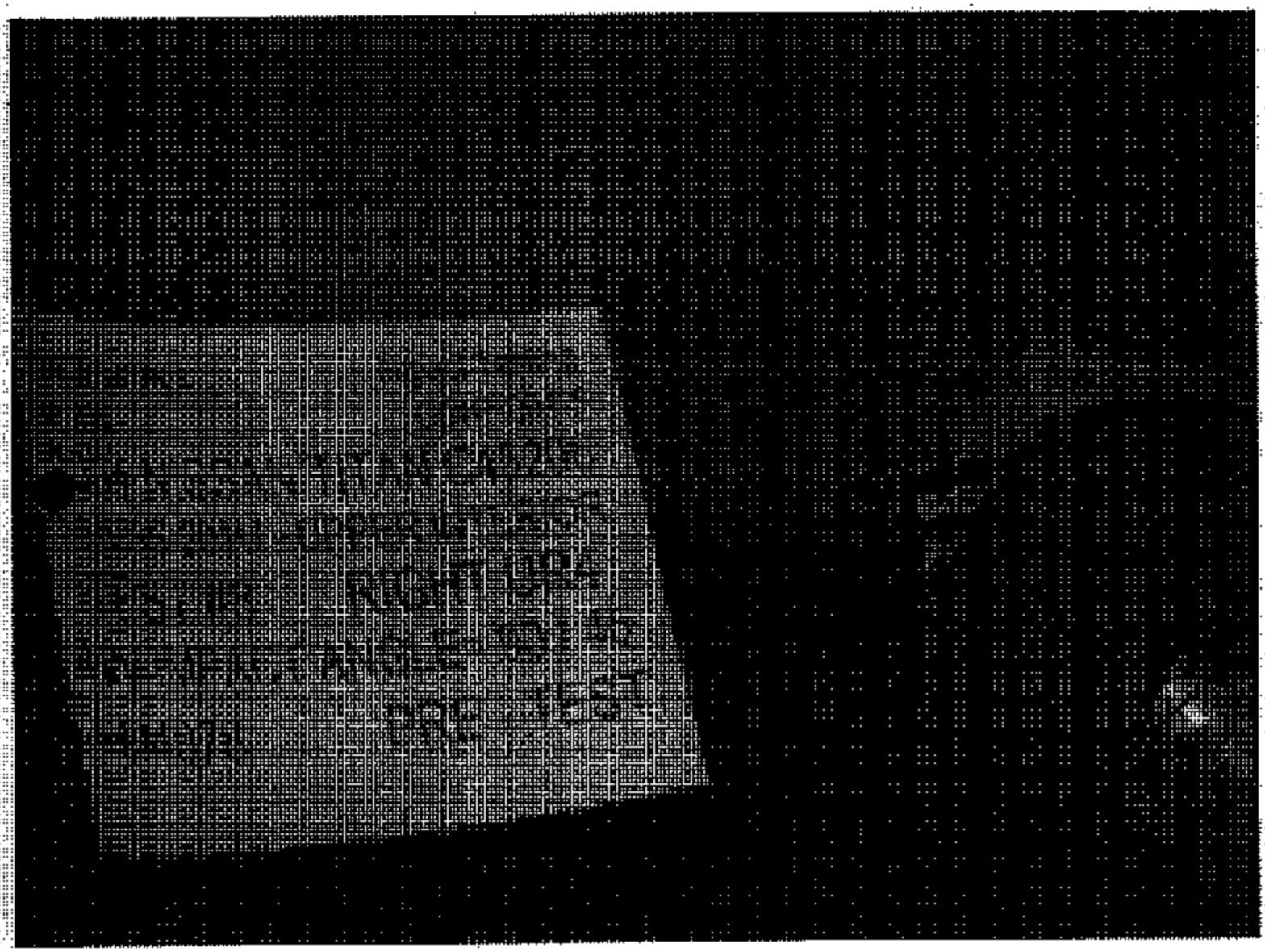
Model Year: 2004
Target: UR3
Vehicle Side: Right
Horz/Vert Angle: 90/40

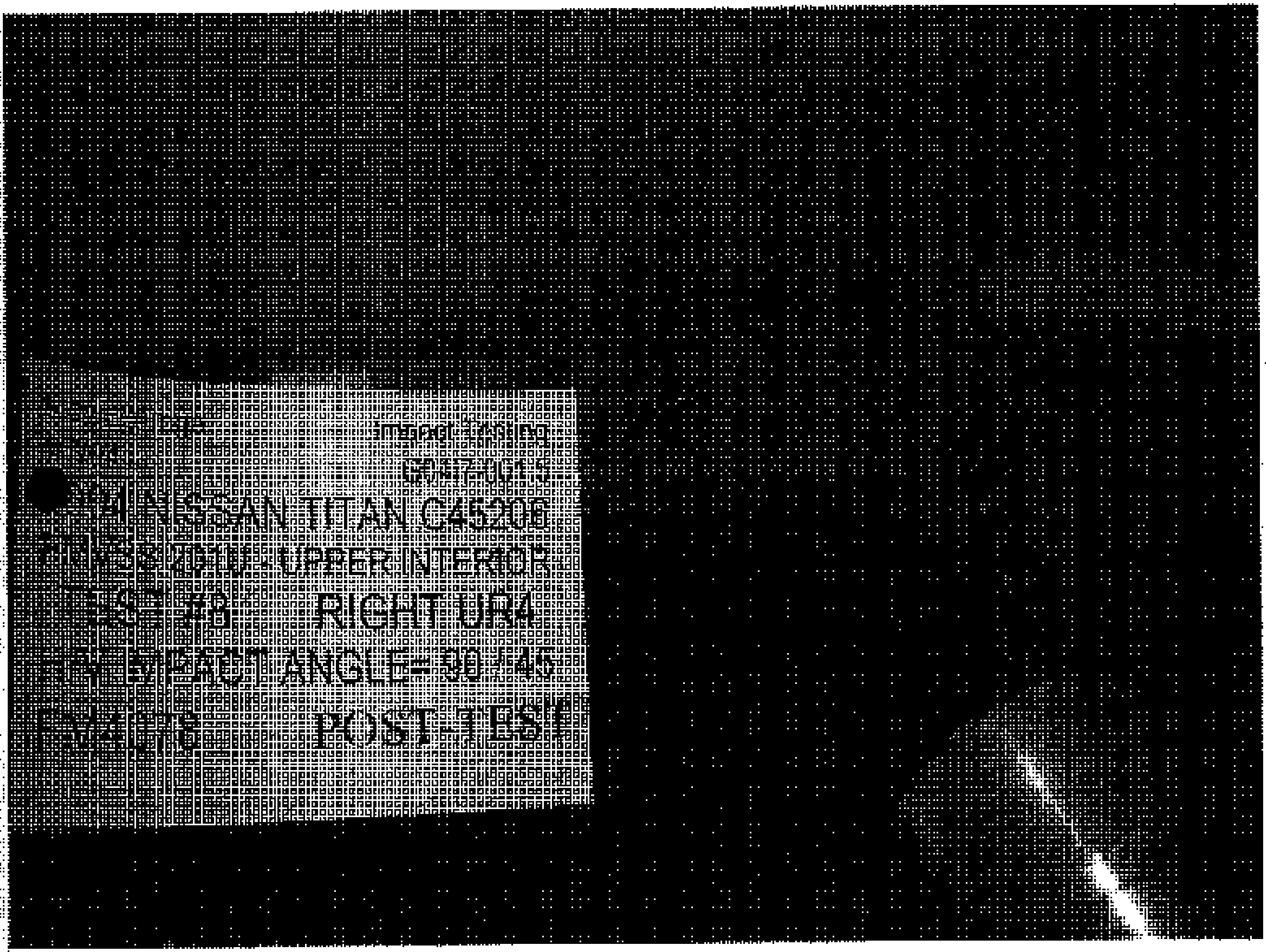
HIC(d) = 673, HIC = 671, Delta T = 8.6 msec

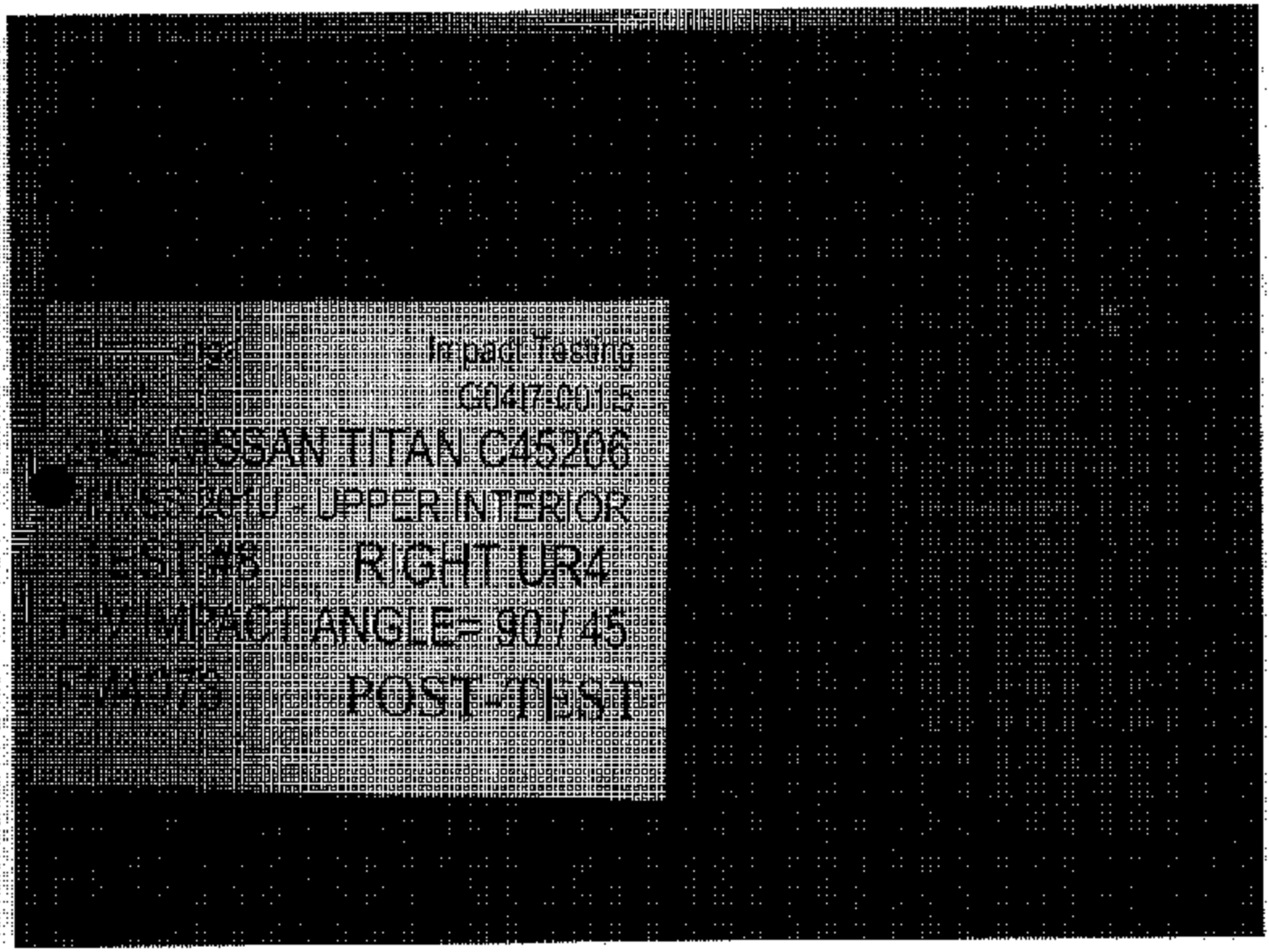
Max Displacement = 30.7 mm @ 8.5 msec



Displacement (mm) vs. Time (msec)




UPPER INTERIOR
RIGHT UR4
POST-TEST


Impact Testing
C047-C015
NISSAN TITAN C45206
TMS 2010 - UPPER INTERIOR
SI #3 RIGHT UR4
IMPACT ANGLE= 90 / 45
POST-TEST

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: G0437-001.5 VEHICLE YR/MAKE/MODEL: 2004/Nissan/Titan

GENERAL TEST PARAMETERS:

Test Number: 8

Target (Vehicle Side): left/(right) URH

Temperature: 25 °F/°C

MGA Test Reference No.: FMH078

Humidity: 24 %

Approach Angles: Horizontal 90 °

Time of Test: 2:00 am/(pm)

Vertical 45 °

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
470	402	10.1	23.4	35	2

INSTRUMENTAION 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	J35918	99.1	1.81	1.81

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

no visible damage

Recorded By: [signature] Approved By*: [signature] Date: 4-7-04

*Only necessary for NHTSA (Government) Compliance testing.

FMH
G04I7-001.5

Customer: NISSAN
Test # 8
FM4078
Additional Desc: N/A

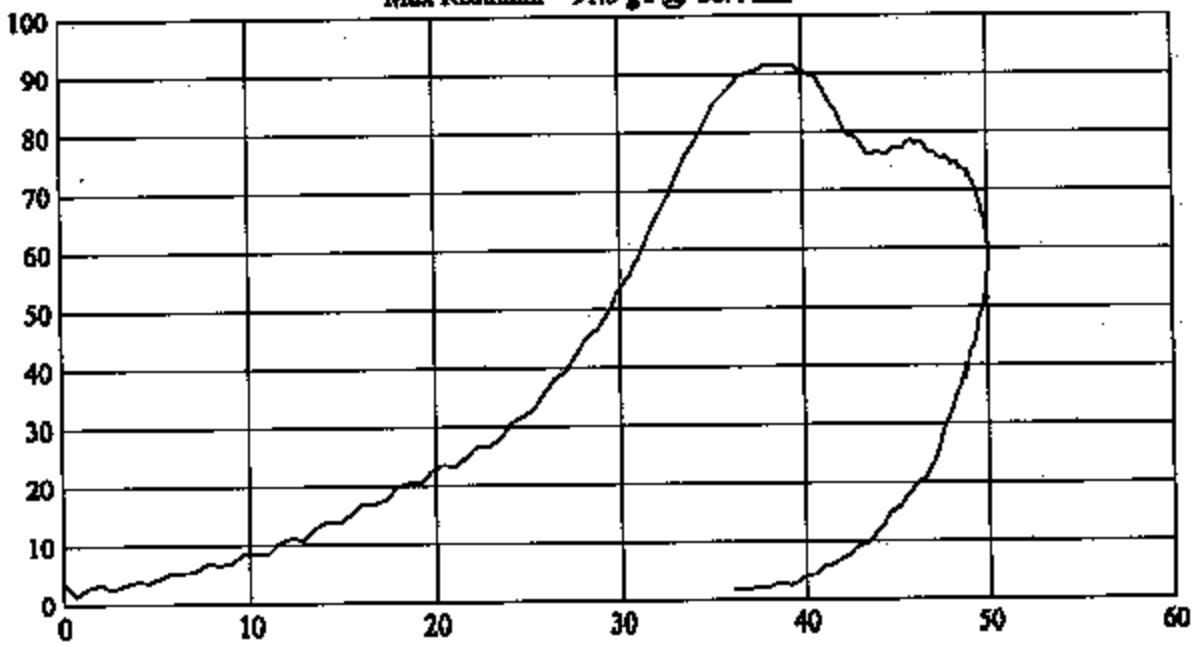
Vehicle Program : TITAN

Test Date: 4/7/04

Model Year: 2004
Target: UR4
Vehicle Side: Right
Horz/Vert Angle: 90/45

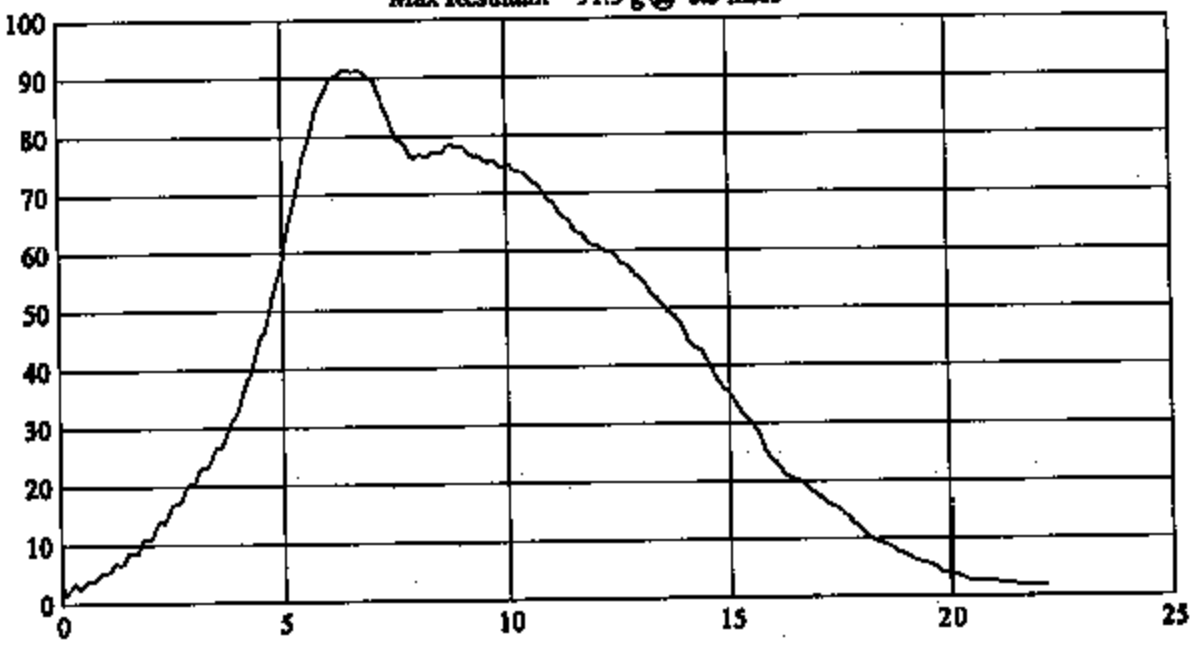
HIC(d) = 470, HIC = 402, Delta T = 10.1 msec

Max Resultant = 91.5 g's @ 38.4 mm



Resultant (g's) vs. Displacement (mm)

Max Resultant = 91.5 g @ 6.5 msec



Resultant Accel (g's) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 8
FM4078
Additional Desc: N/A

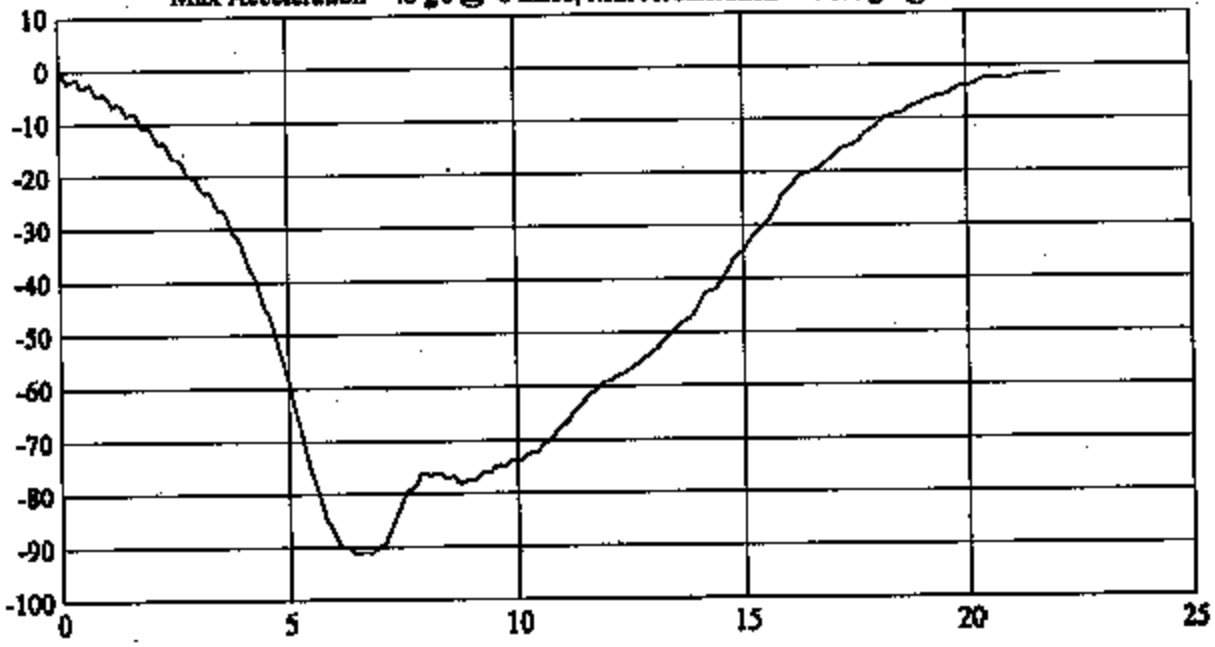
Vehicle Program : TITAN

Test Date: 4/7/04

Model Year: 2004
Target: UR4
Vehicle Side: Right
Horz/Vert Angle: 90/45

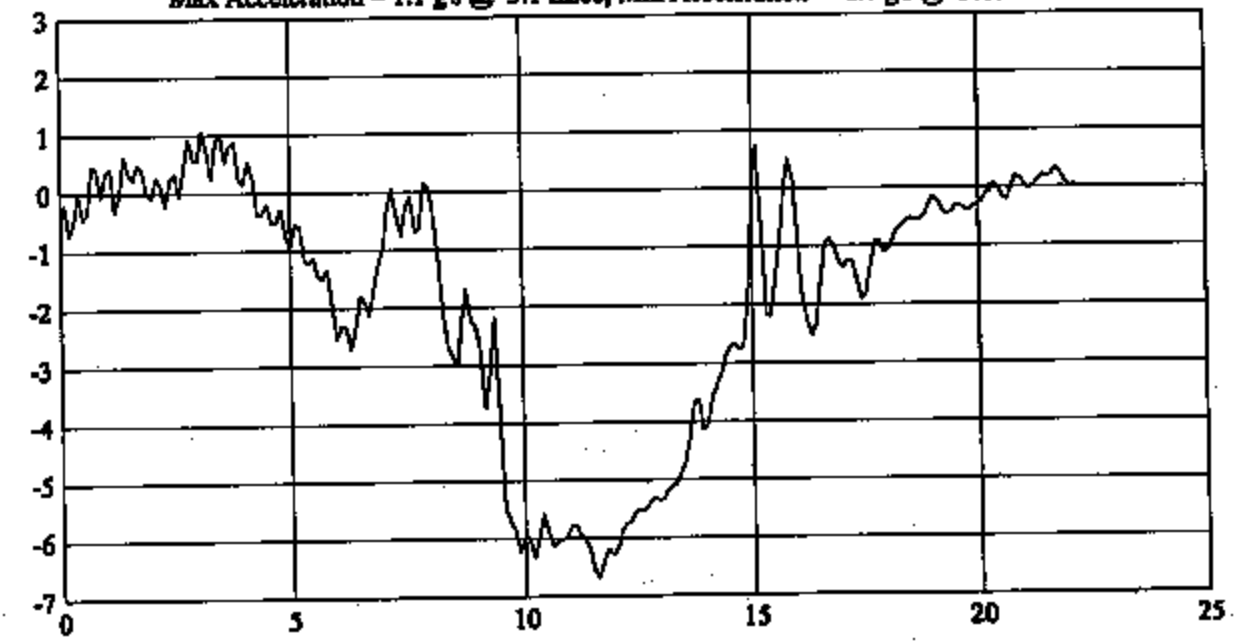
HIC(d) = 470, HIC = 402, Delta T = 10.1 msec

Max Acceleration = .8 g's @ 0 msec, Min Acceleration = -91.4 g's @ 6.5 msec



Accel X (g's) vs. Time (msec)

Max Acceleration = 1.1 g's @ 3.1 msec, Min Acceleration = -6.7 g's @ 11.6 msec



Accel Y (g's) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 8
FM4078
Additional Desc: N/A

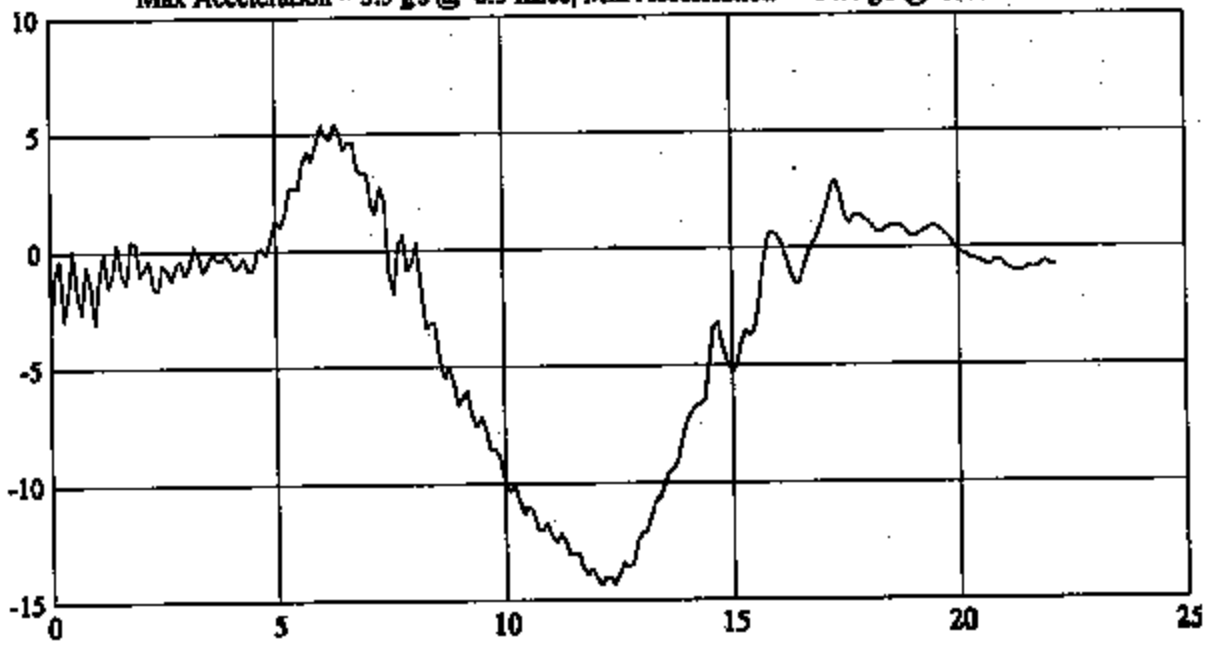
Vehicle Program : TITAN

Test Date: 4/7/04

Model Year: 2004
Target: UR4
Vehicle Side: Right
Horz/Vert Angle: 90/45

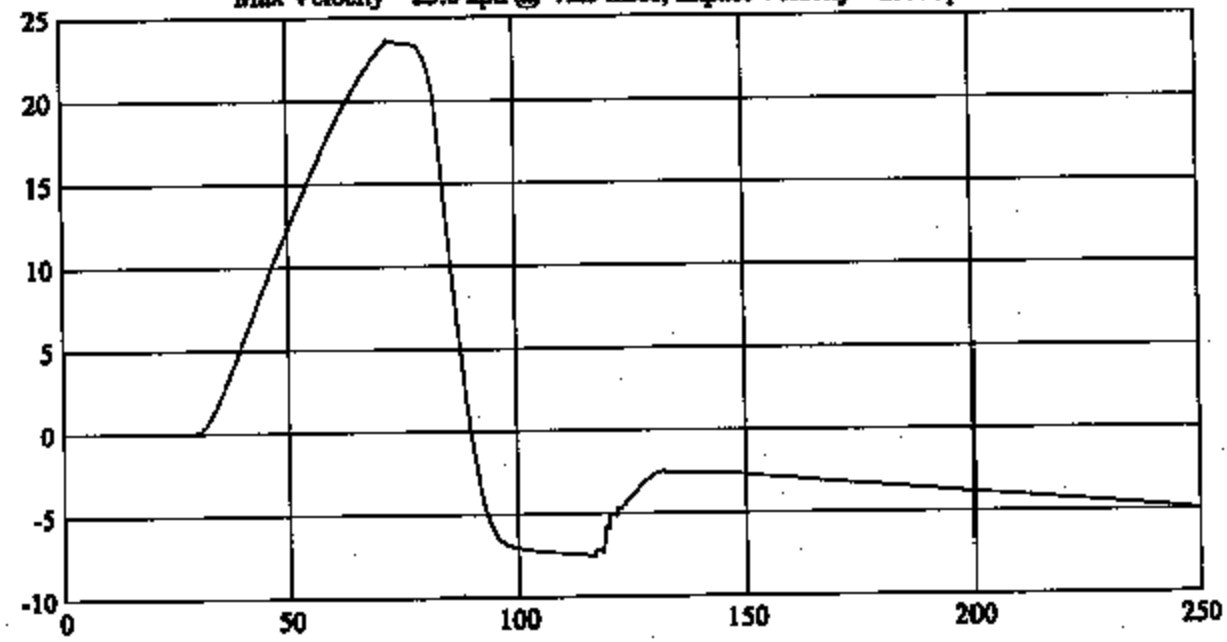
HIC(d) = 470, HIC = 402, Delta T = 10.1 msec

Max Acceleration = 5.5 g's @ 6.3 msec, Min Acceleration = -14.4 g's @ 12.1 msec



Accel Z (g's) vs. Time (msec)

Max Velocity = 23.6 kph @ 72.5 msec, Impact Velocity = 23.4 kph



Velocity (kph) vs. Time (msec)

FMH
G04I7-001.5

Customer: NISSAN
Test # 8
FM4078
Additional Desc: N/A

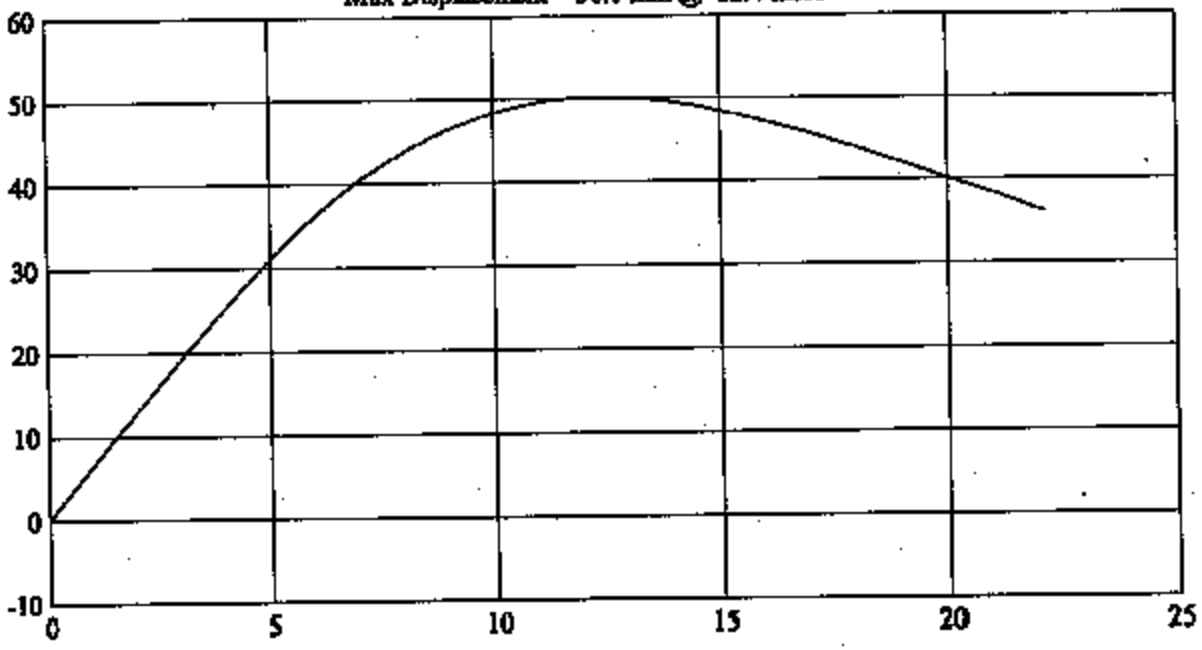
Vehicle Program : TITAN

Test Date: 4/7/04

Model Year: 2004
Target: UR4
Vehicle Side: Right
Horz/Vert Angle: 90/45

HIC(d) = 470, HIC = 402, Delta T = 10.1 msec

Max Displacement = 50.1 mm @ 12.4 msec



Displacement (mm) vs. Time (msec)

4.0 TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

The following section lists the test equipment for the compliance test series. Items marked with an asterisk are calibrated by an external lab. An additional summary table is given for the pre and post-test calibration data for the Free Motion Headforms. The temperature trace to confirm testing was conducted between 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 Craftsmen	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

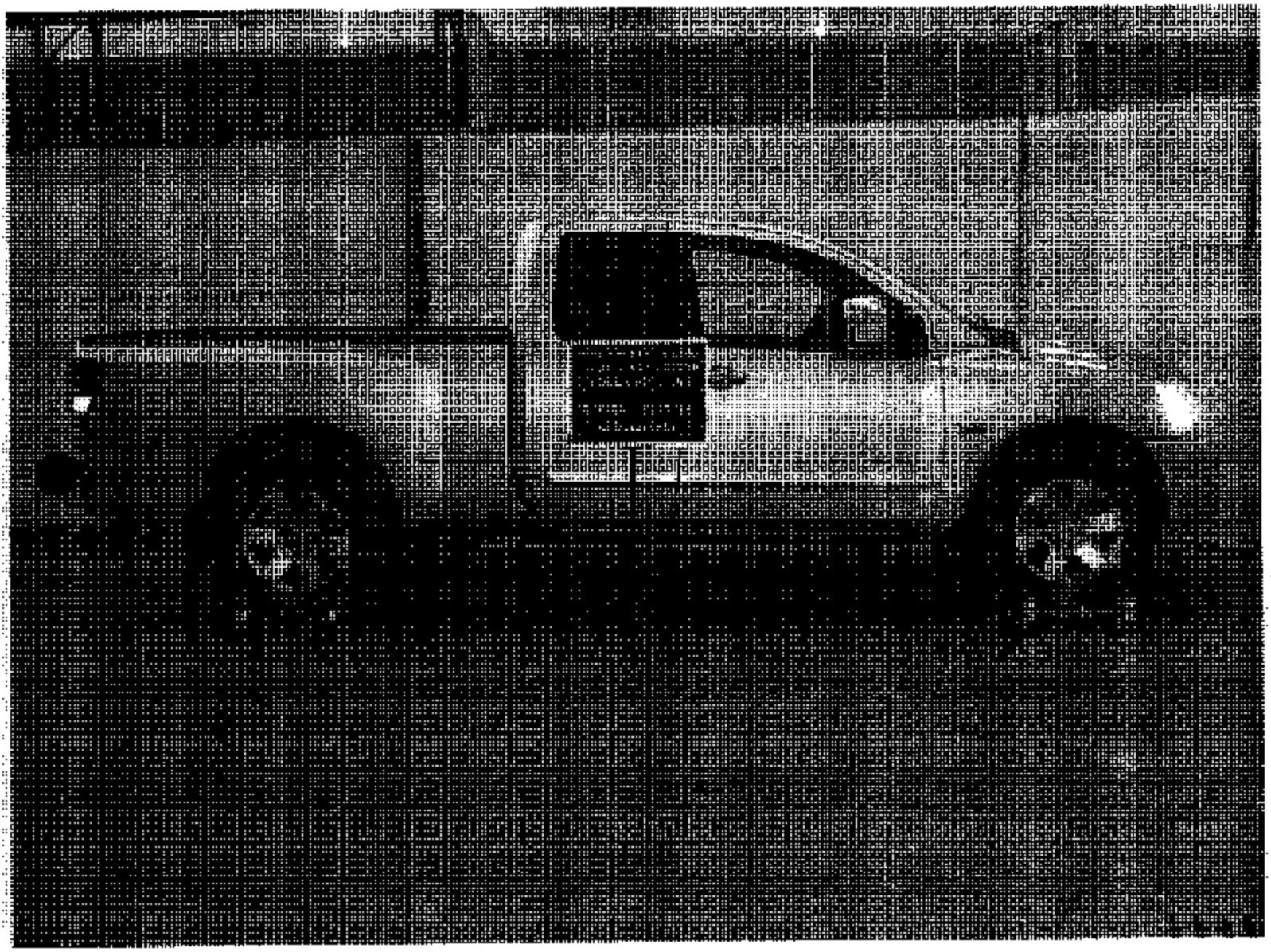
TABLE 4-2 FMH CALIBRATION SUMMARY DATA SUMMARY TABLE

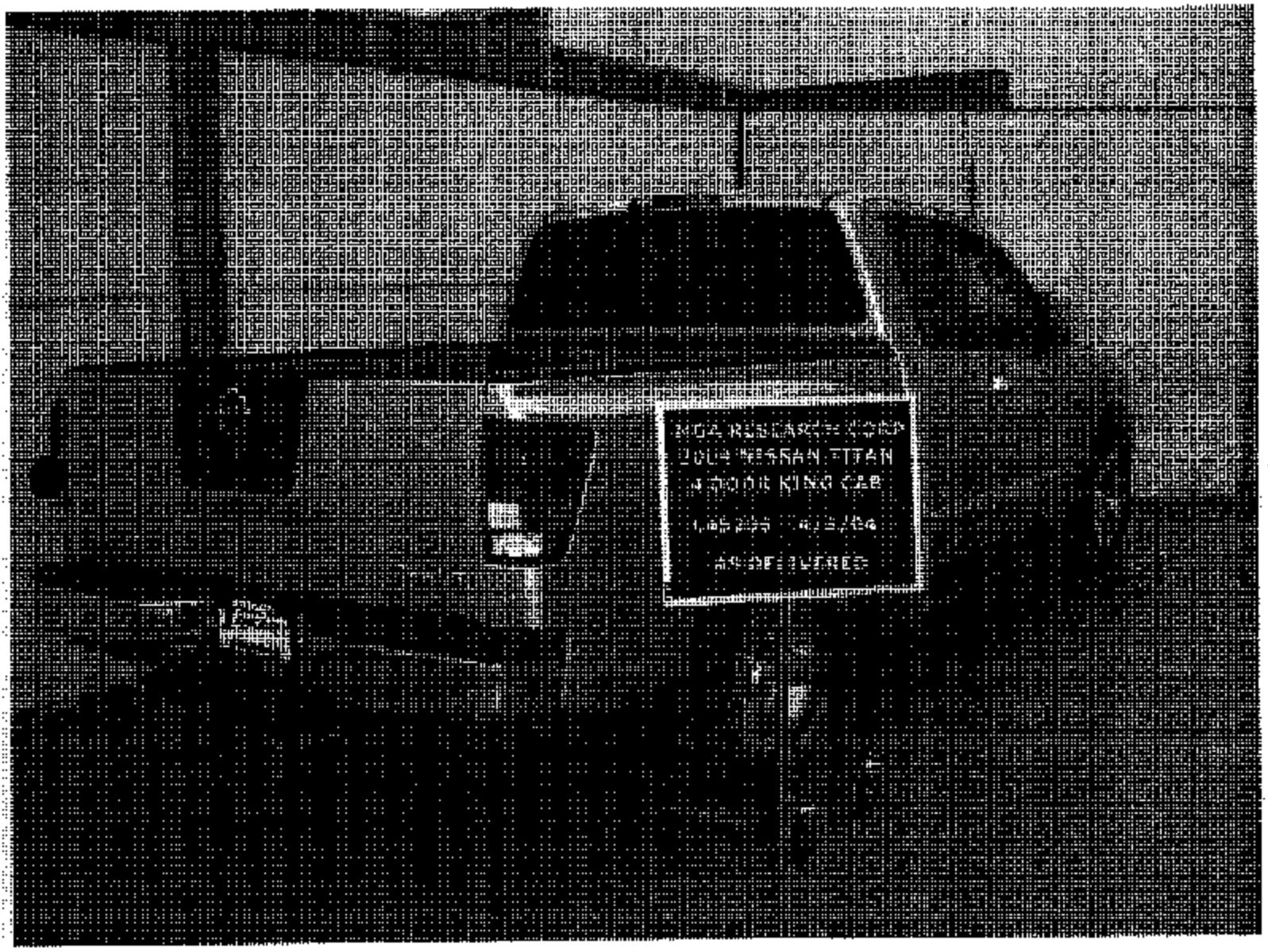
FMH Serial #		Weight (lbs)	Temp (°C)	% Humidity	Peak Resultant Acceleration (G's)	Peak Lateral Acceleration (G's)	Unimodal
Pre	#35	10.02	23.0	21.0	250.5	8.5	Yes
Post	#35	10.02	25.0	24.0	230.2	10.3	Yes
Pre	#36	10.03	23.0	21.0	267.1	10.2	Yes
Post	#36	10.03	26.0	24.0	255.9	12.1	Yes
Pre	#38	9.99	23.0	21.0	258.9	4.9	Yes
Post	#38	9.99	25.0	24.0	254.4	6.2	Yes

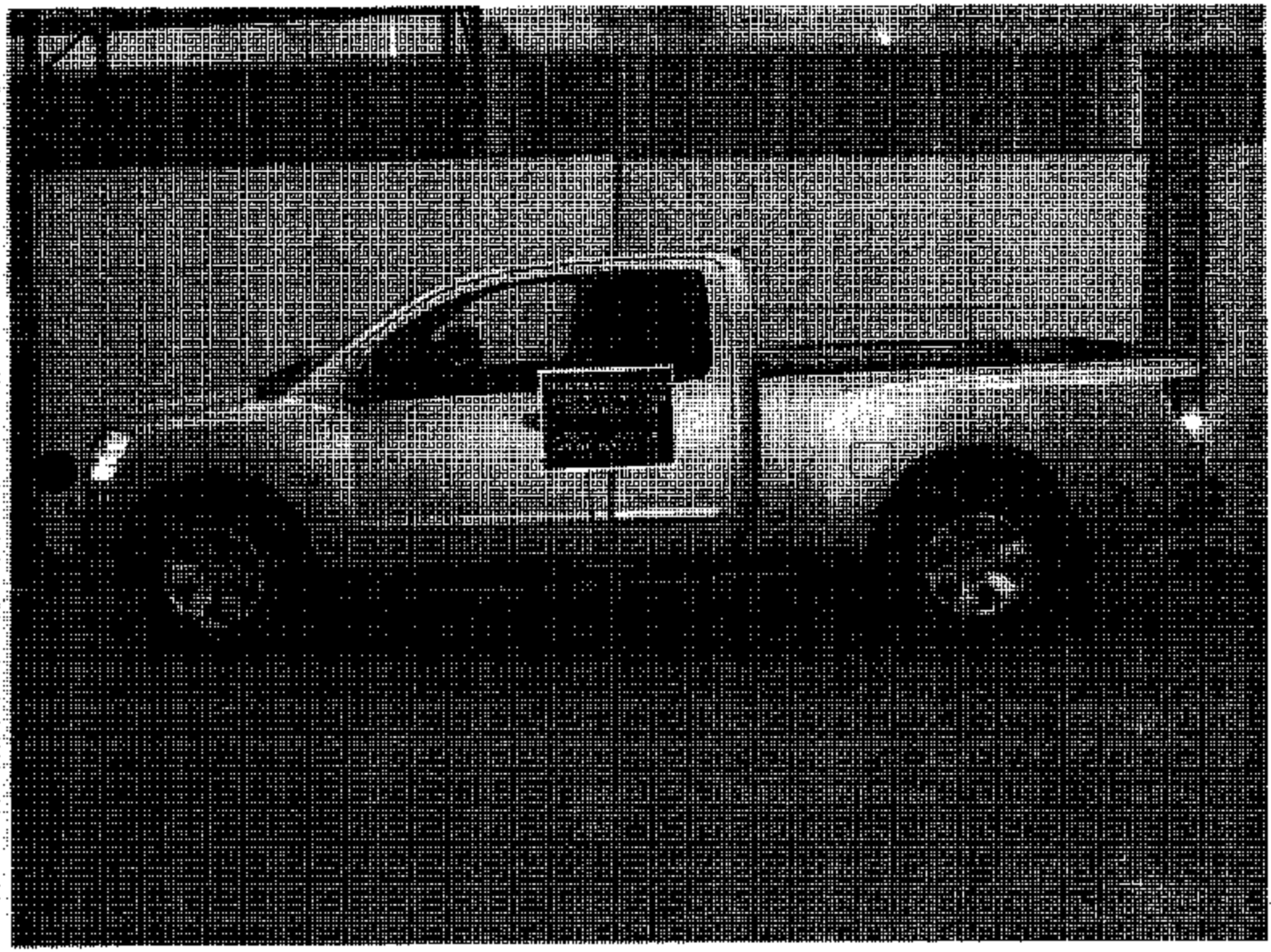
Calibration certificates and headform calibration information can be found in the P572L Performance Calibration report which accompanies this report.

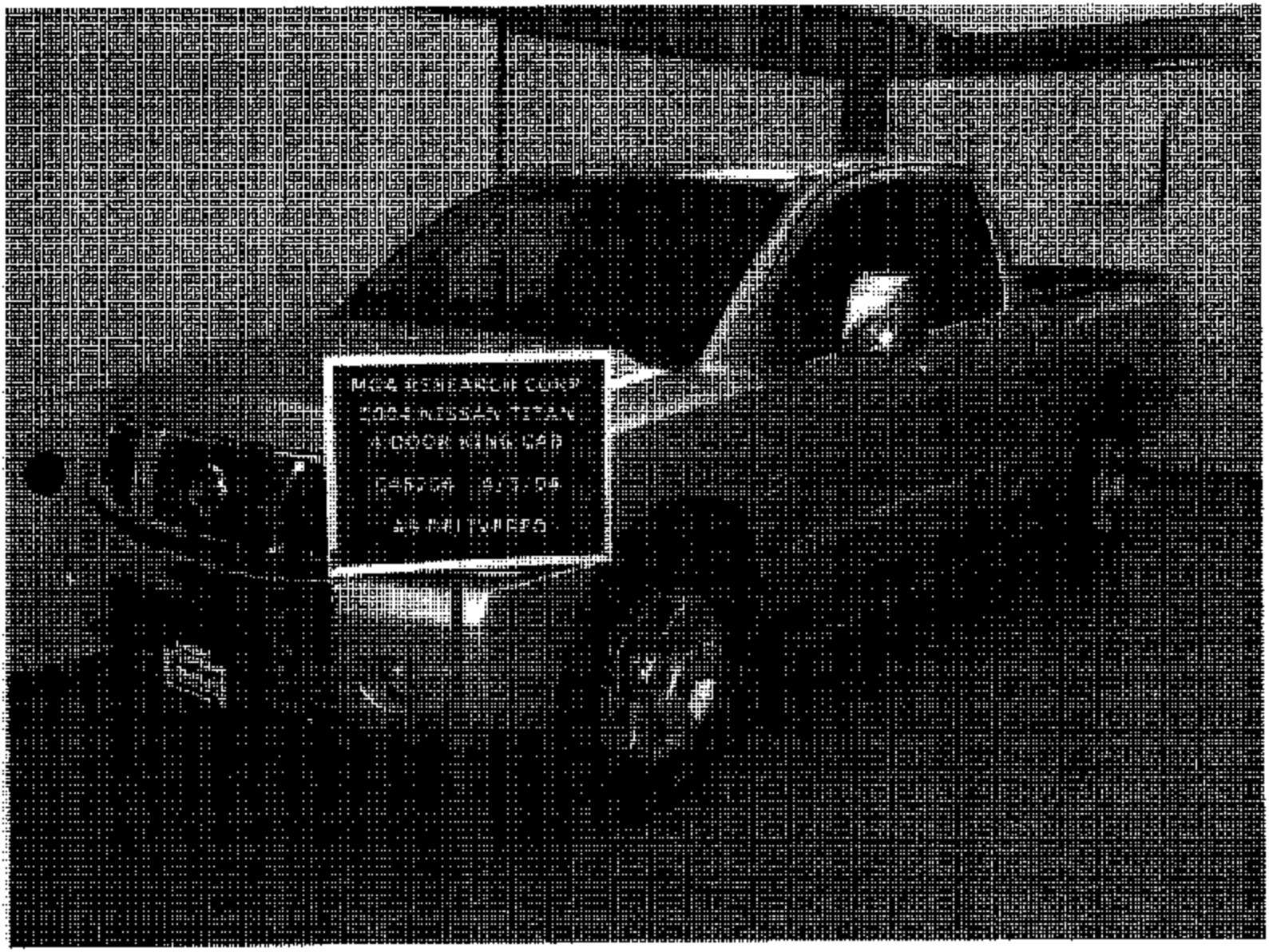
RECORDED BY: David G. Gotwals DATE: April 2, 2004

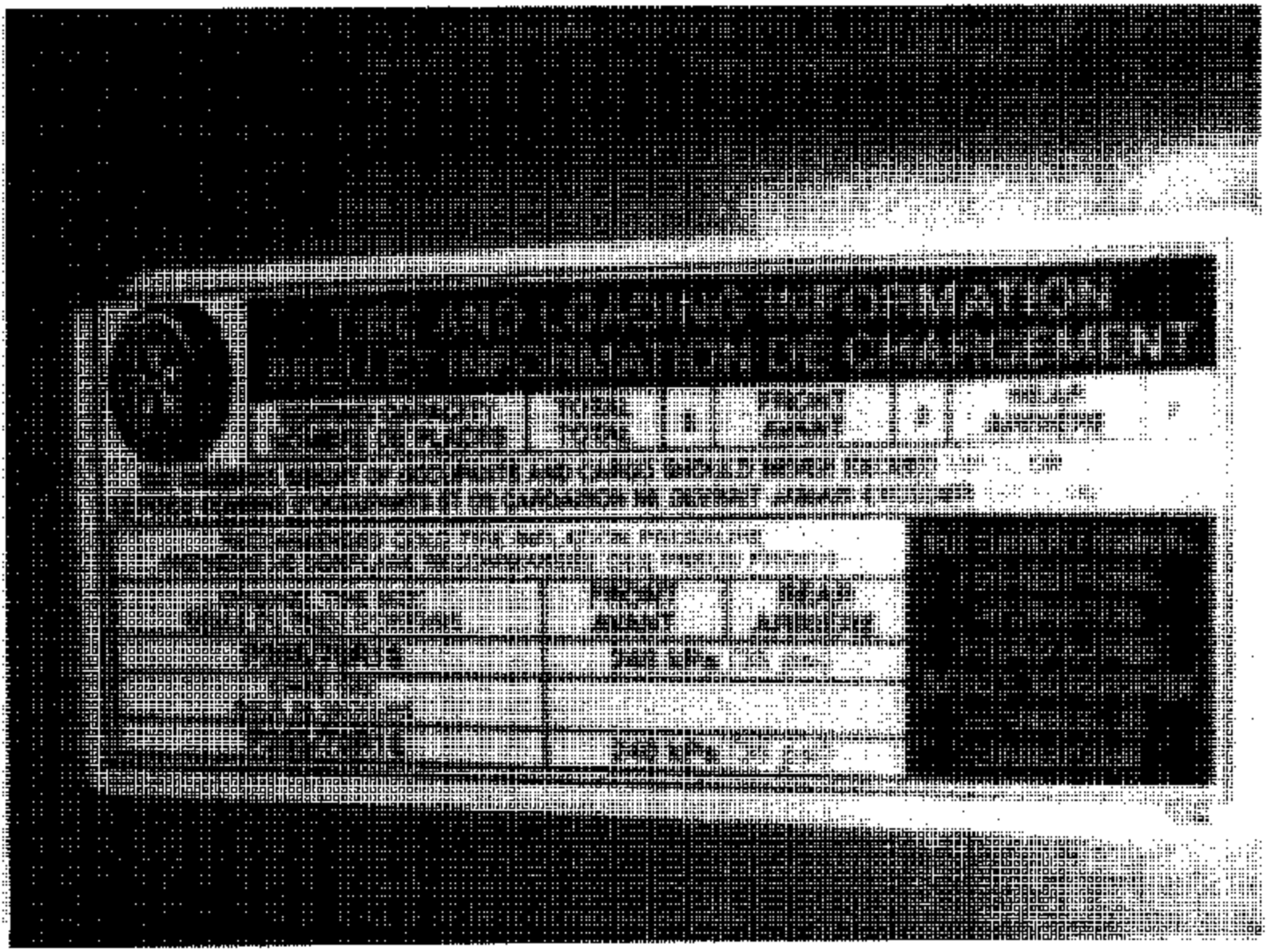
APPROVED BY: Helen A. Kaleto

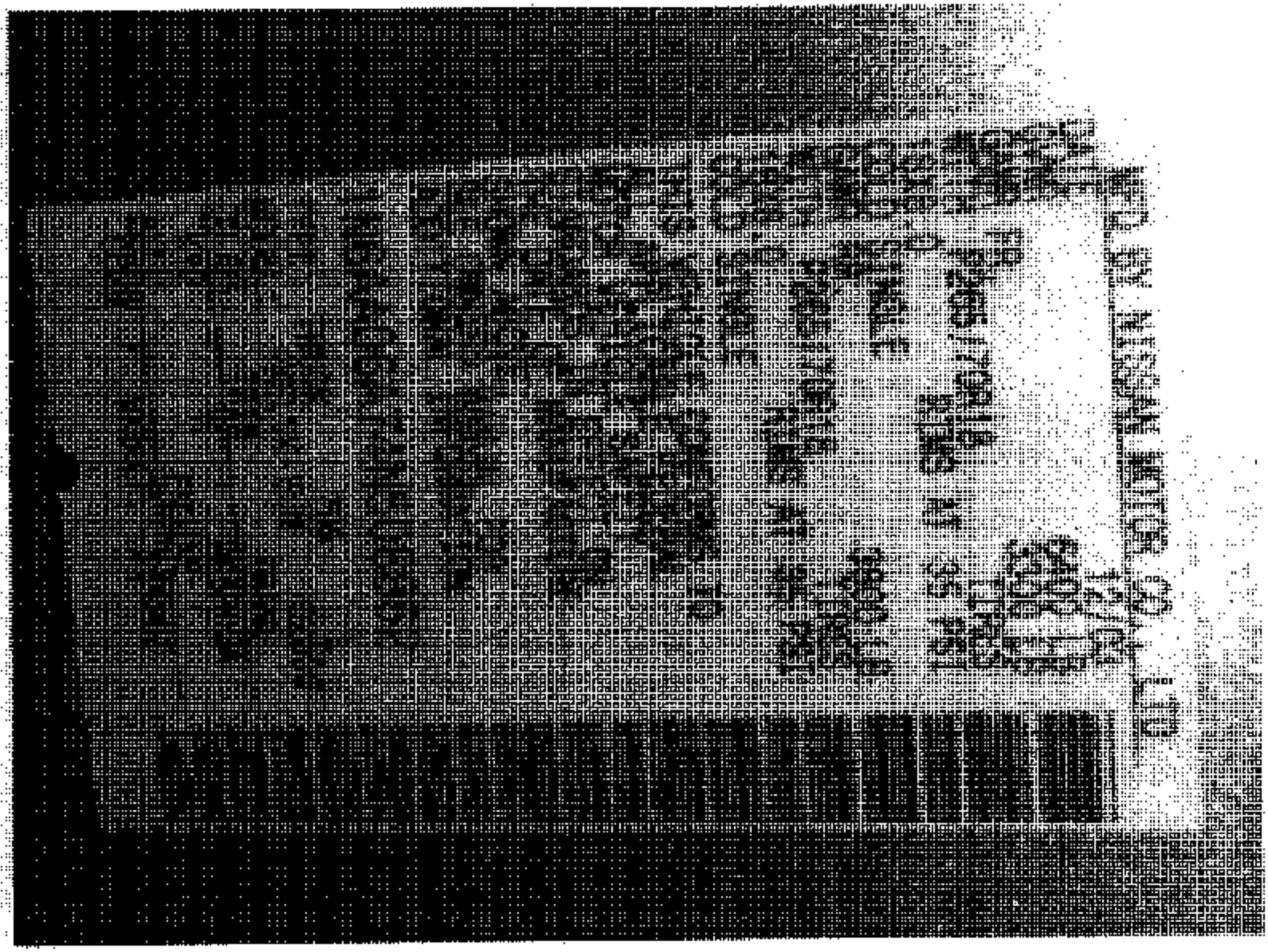


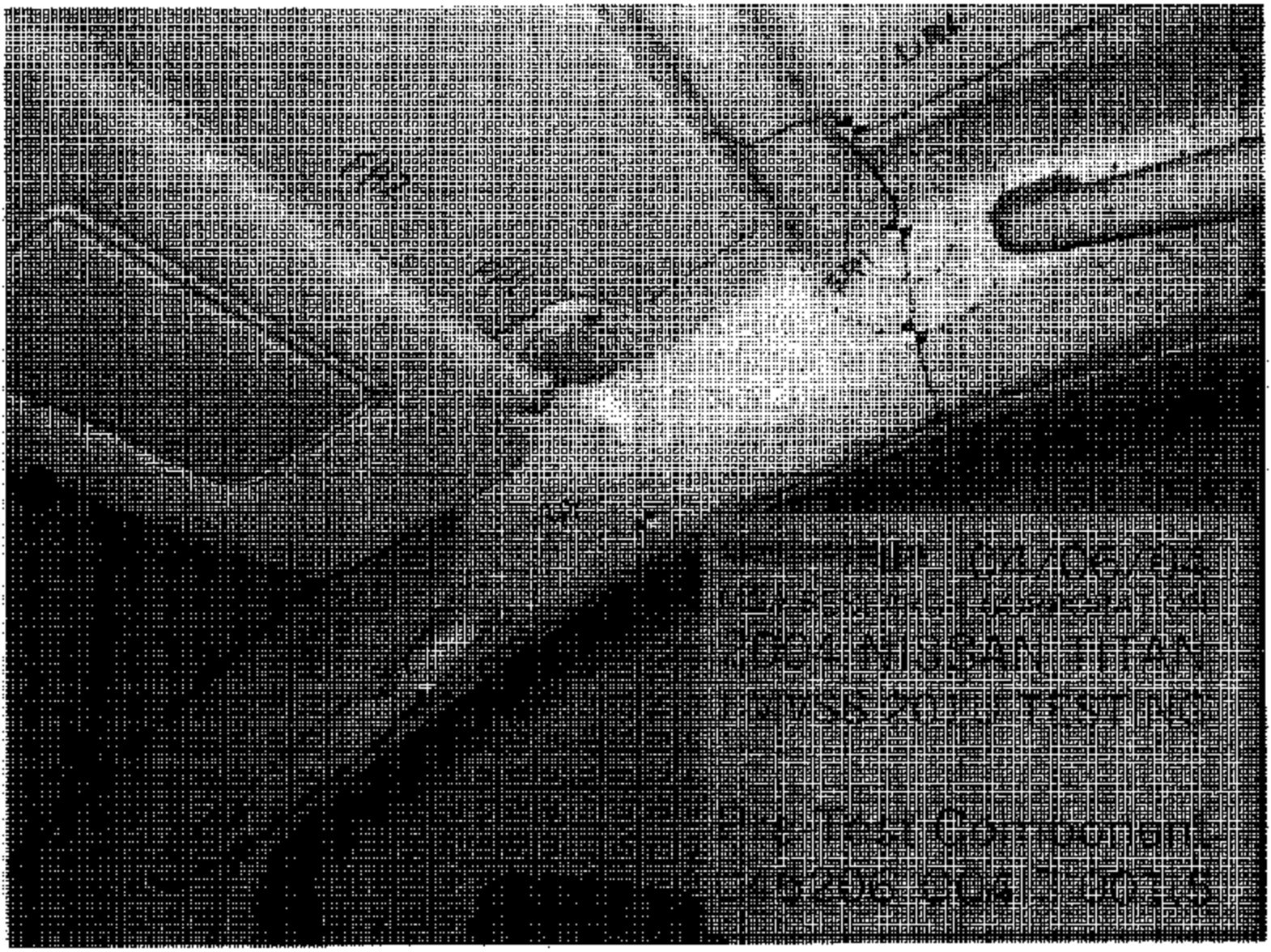

2004 NISSAN TITAN
4 DOOR KING CAB

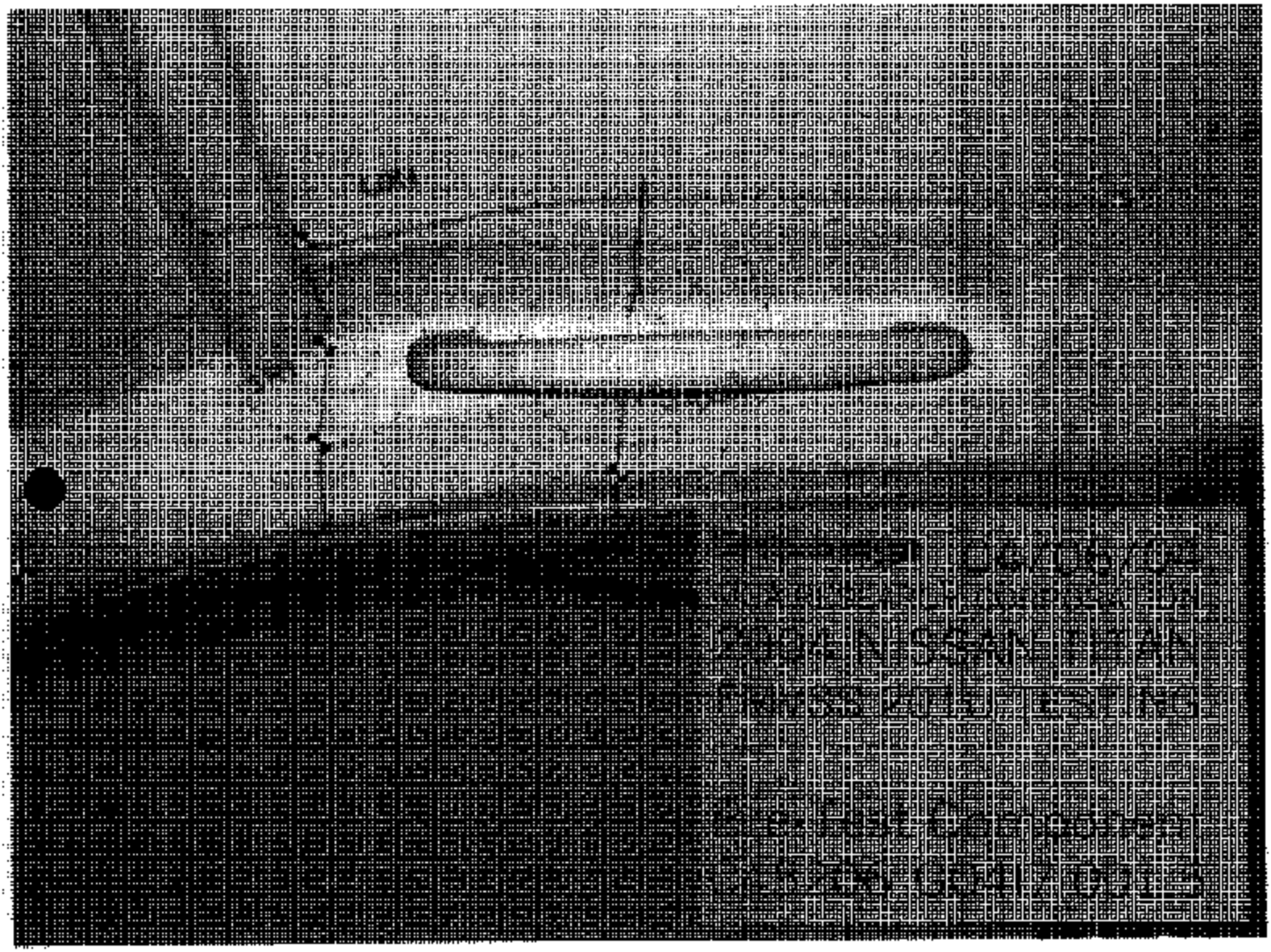


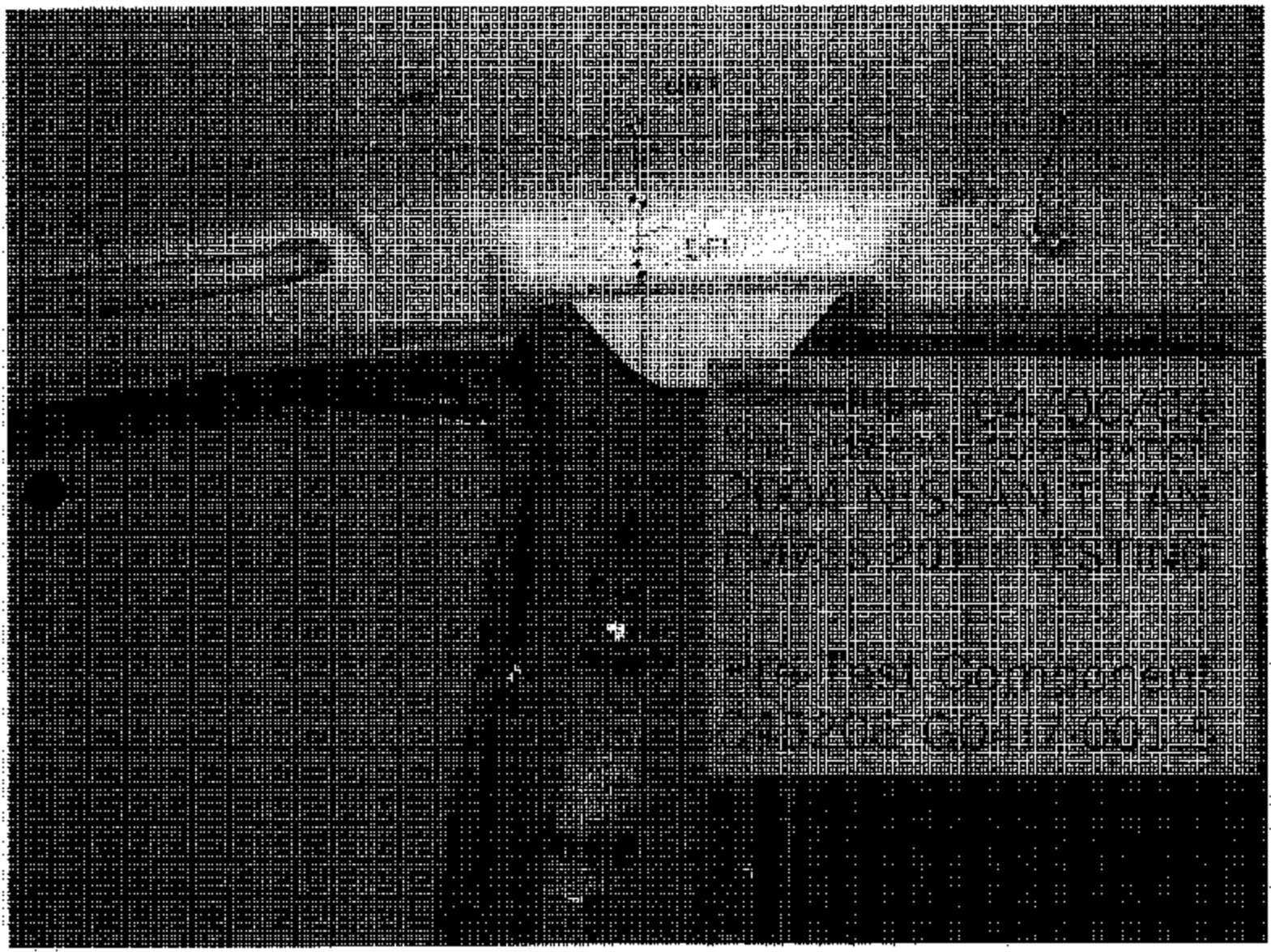


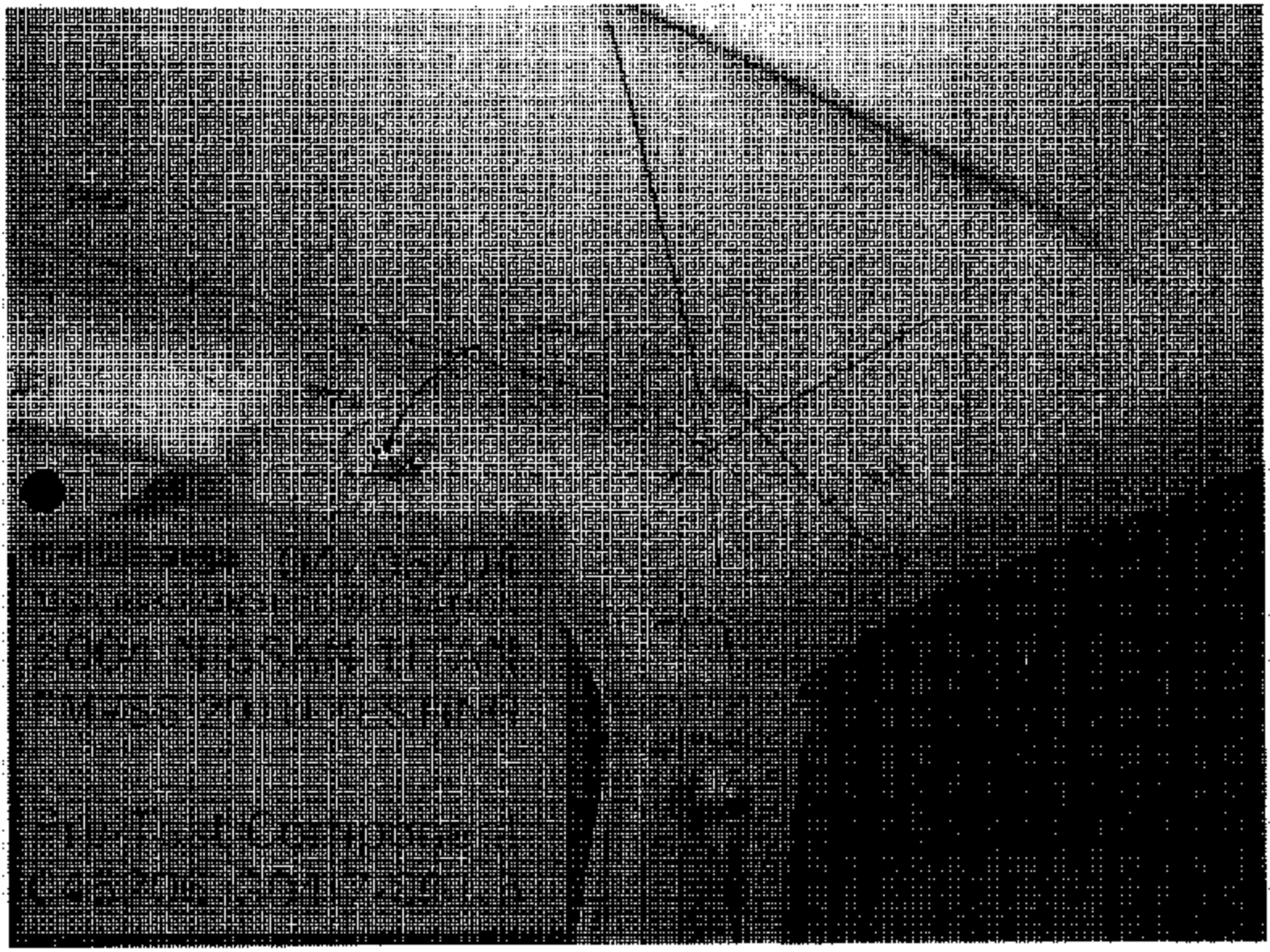


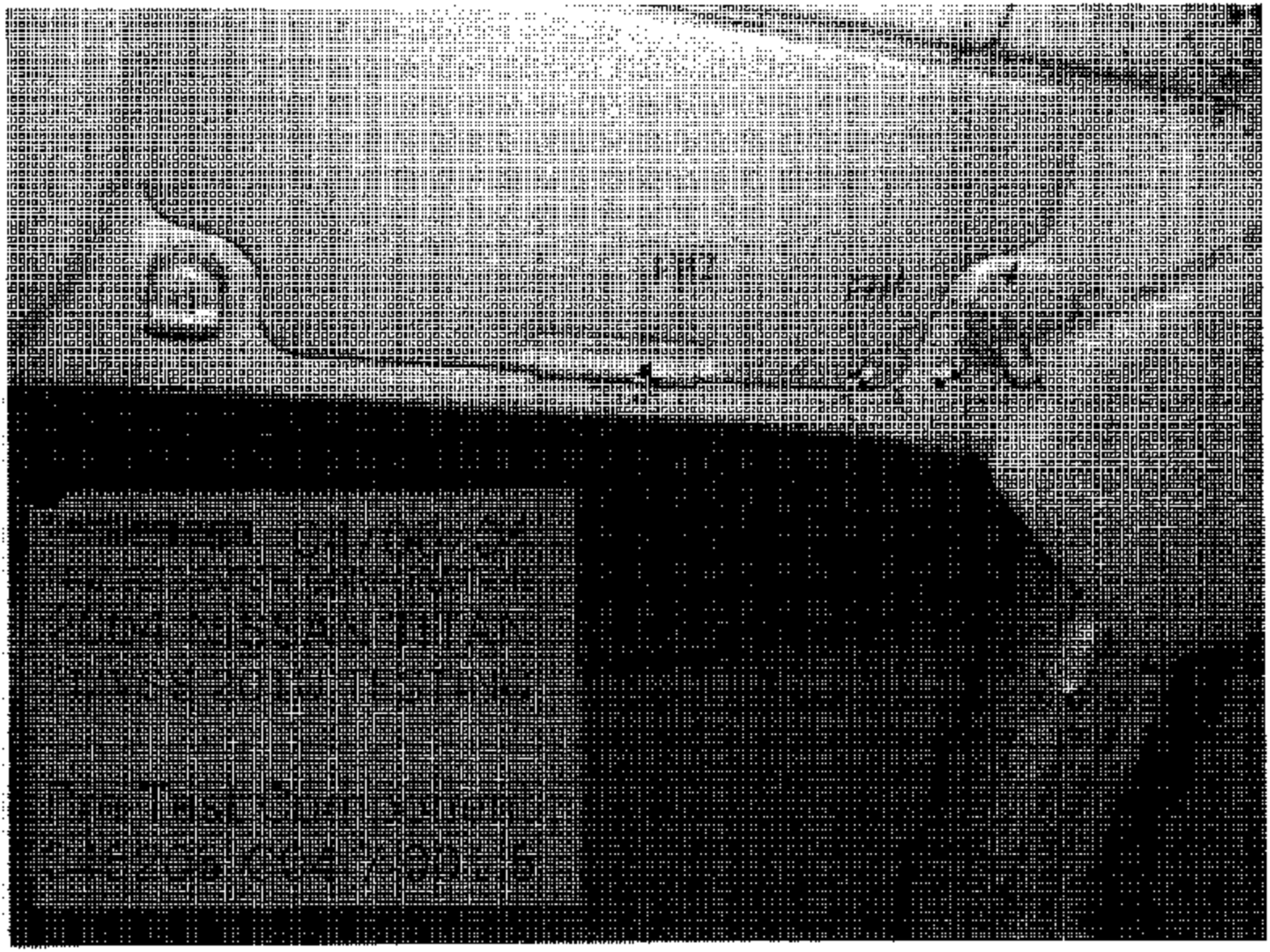


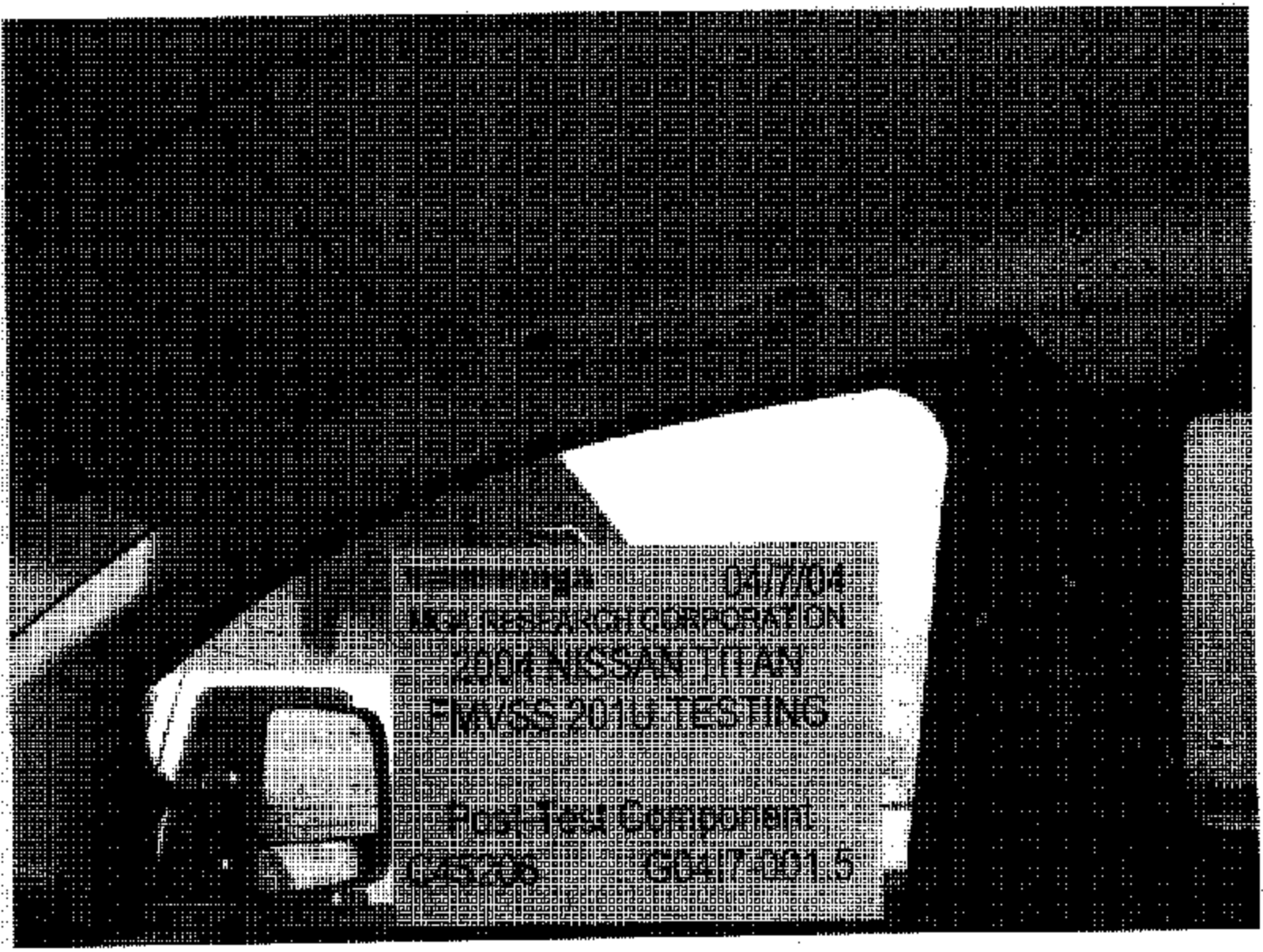


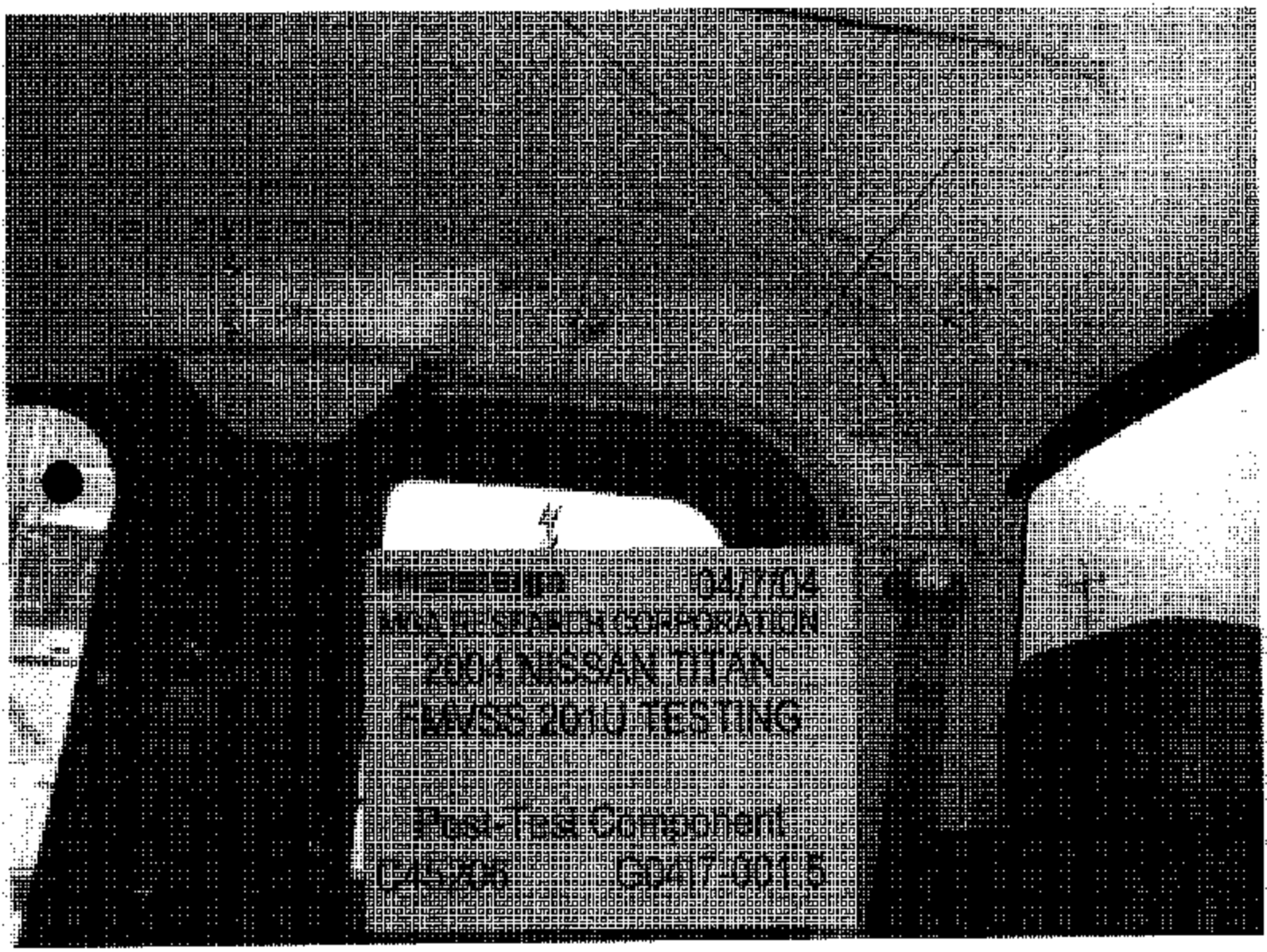









04/7/04
KOA RESEARCH CORPORATION
2004 NISSAN TITAN
FMVSS 201U TESTING
Post-Test Condition
DSC00
GMT-2015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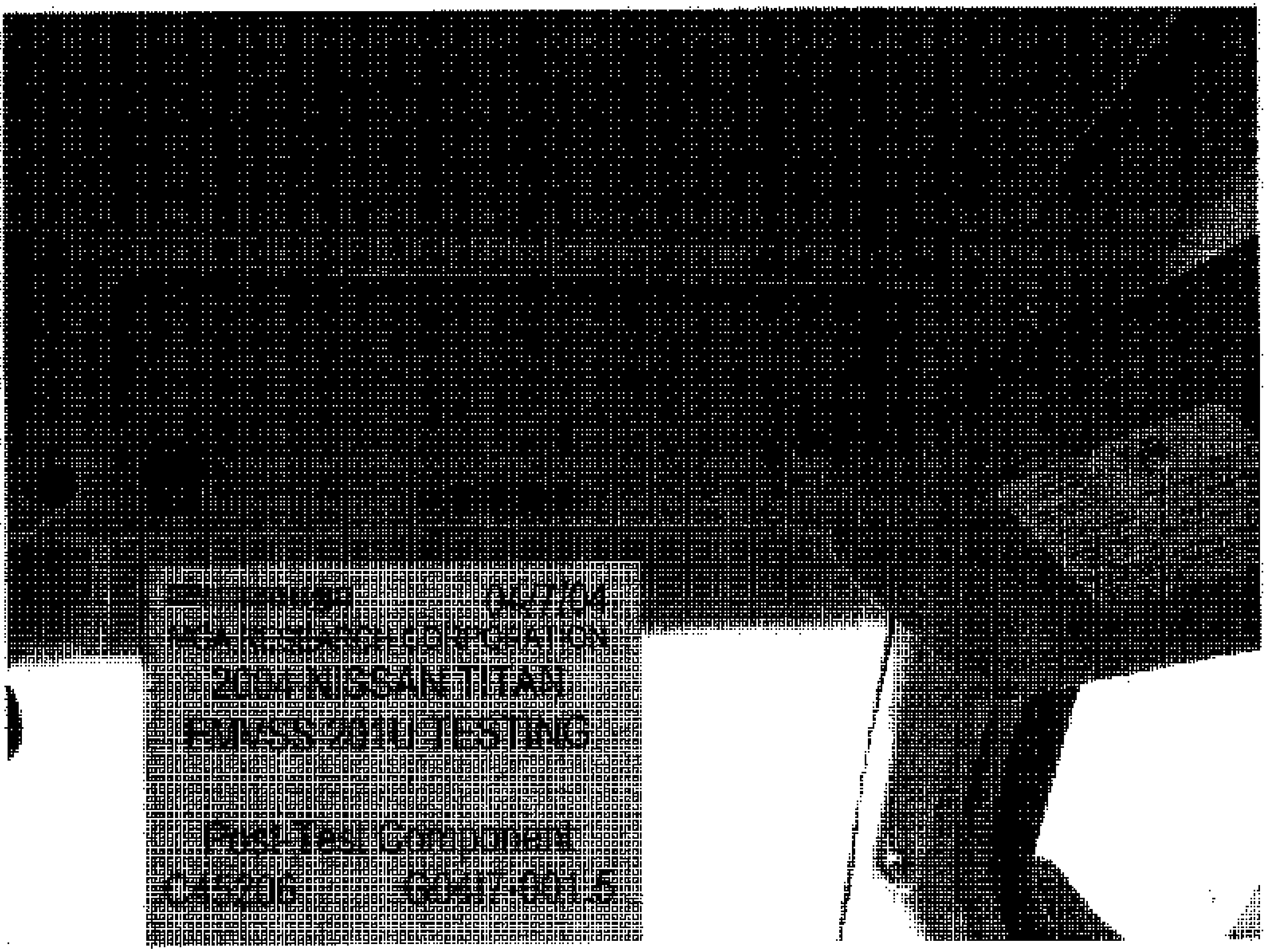
FMVSS 208 TESTING
Post-Test Component
Crash


2004 NISSAN TITAN
FMVSS 201U TESTING
Post-Test Component

16. FORMS....Continued

LABORATORY NOTICE OF APPARENT TEST FAILURE TO OVSC

FMVSS NO.: 201U TEST DATE: APRIL 7TH, 2004

LABORATORY: MGA RESEARCH CORPORATION

CONTRACT NO.: DTNH22-99-C-11005 ; DELV. ORDER NO.: DTNH22-04-P-01093

LABORATORY PROJECT ENGINEER'S NAME: DAVID GOTTLIEB

TEST SPECIMEN DESCRIPTION: 2004 NISSAN TITAN

VEHICLE NHTSA NO.: CYS206 VIN: 1N6AA06174N506862

MFR: NISSAN MOTOR CO. LTD

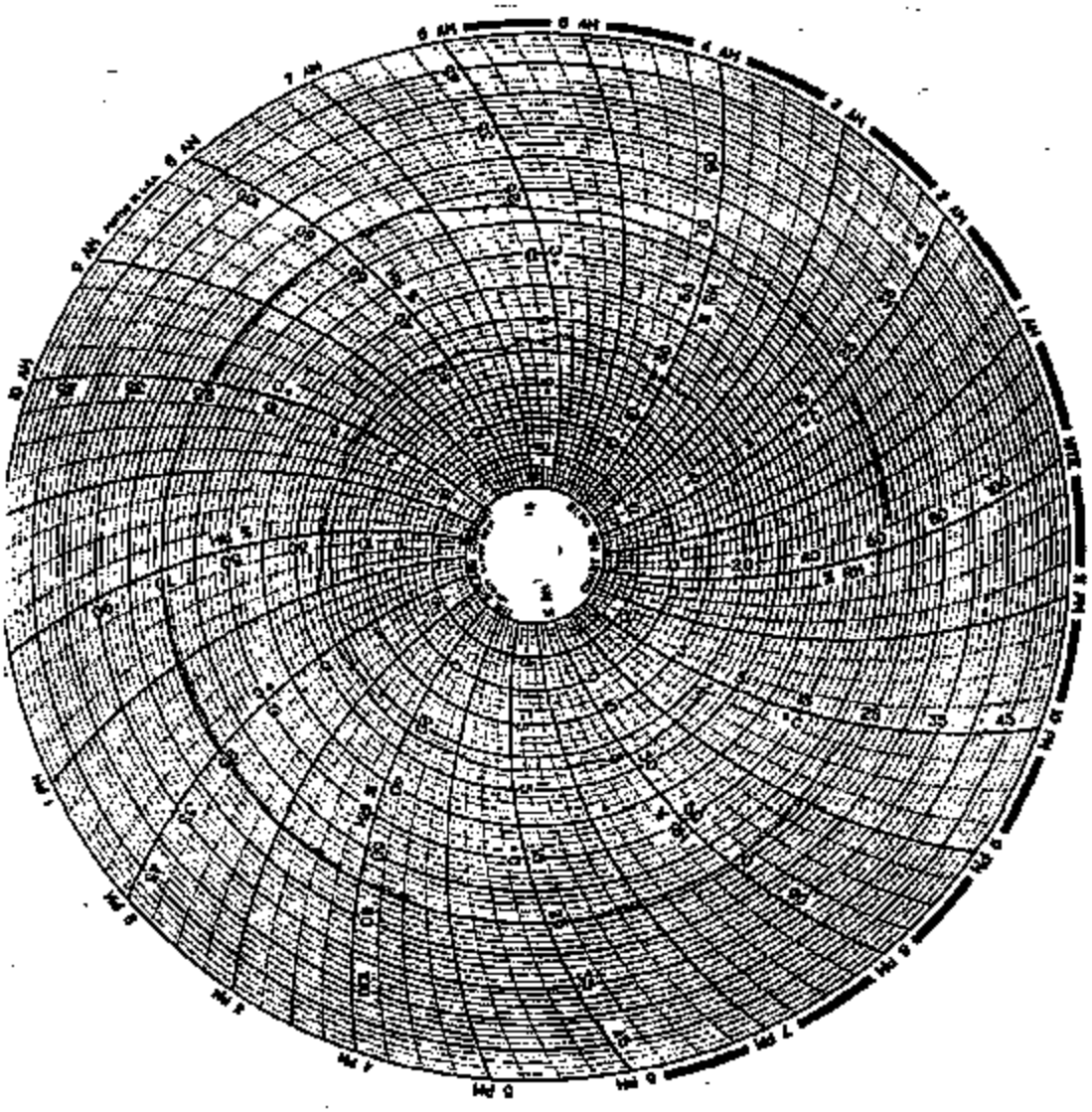
APPARENT TEST FAILURE DESCRIPTION: REAR PILLAR TARGET NUMBER 2 (RPZ), LOCATED ON THE COVER OF THE SOFT BEAT MECHANISM. THE HORIZONTAL AND VERTICAL ANGLES WERE 90 AND 0 DEGREES, RESPECTIVELY. THE CALCULATED HEAD IMPACT CRITERION (CI) WAS 1042, AT AN IMPACT VELOCITY OF 23.8 KPH.

FMVSS REQUIREMENT, PARAGRAPH S___ : THE HIC(d) SHALL NOT EXCEED 1000 WHEN CALCULATED IN ACCORDANCE WITH THE FOLLOWING FORMULA: $HIC(d) = 0.75446(HIC) + 166.4$ WITH $HIC = \left[\frac{1}{t_2 - t_1}\int_{t_1}^{t_2} A_R\, dt\right]^{2.5}(t_2 - t_1)$ WHERE $A_R = [A_x^2 + A_y^2 + A_z^2]^{1/2}$. t_1 AND t_2 ARE ANY TWO POINTS IN TIME DURING THE IMPACT EVENT SEPARATED BY NOT MORE THAN 36 MILLISECONDS.

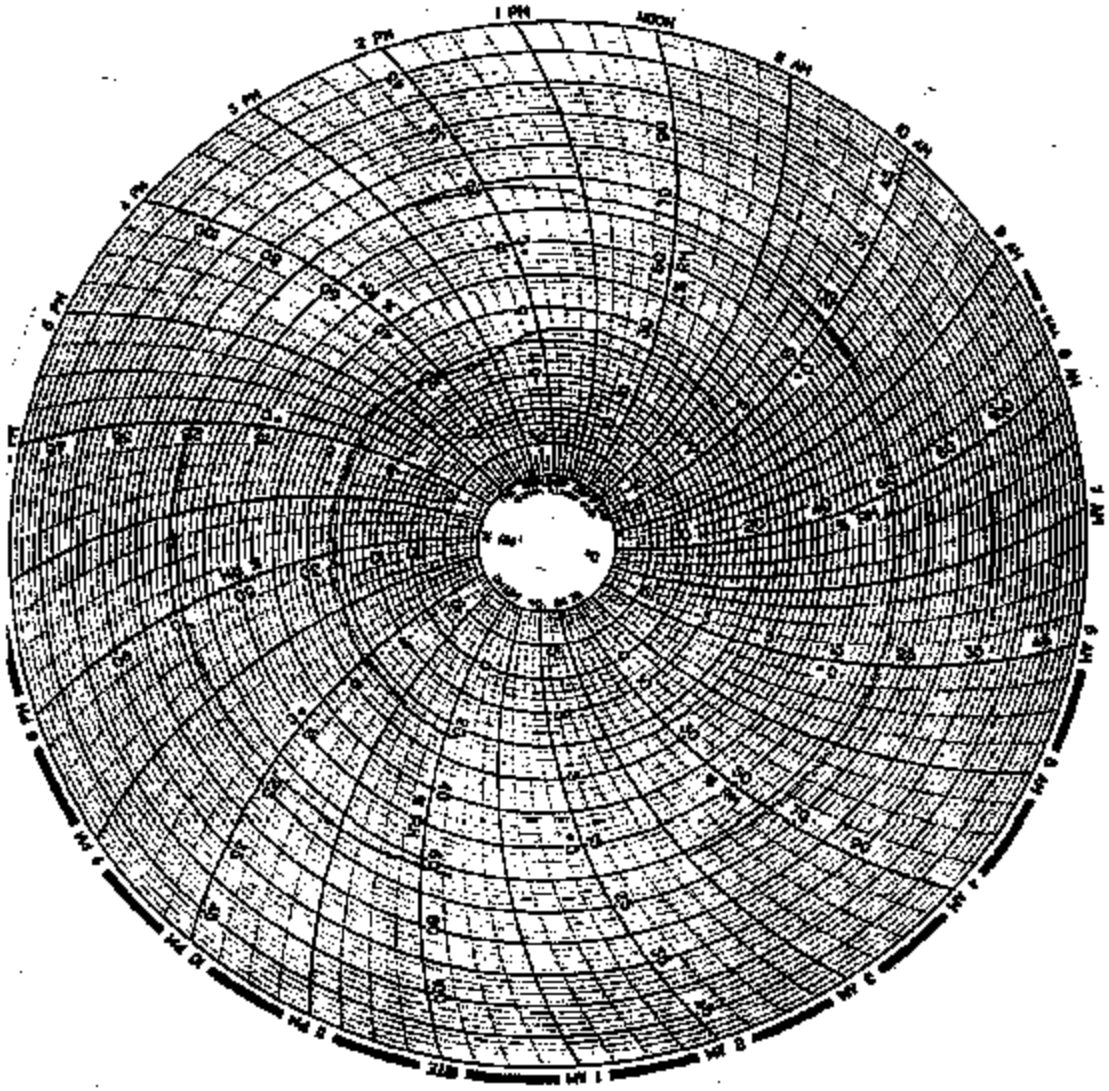
NOTIFICATION TO NHTSA (COTR): KAREN MICHELL

DATE: 4/9/04 BY: DAVID GOTTLIEB

REMARKS:



Test Dates: April 6-7, 2004



Test Dates: April 6-7, 2004