mga research corporation

33.5 MPH 214/301 Side MDB
Test No.: 25101621
ATC Mobility LLC

ES2-re Right Front Passenger
SID IIs Right Rear Passenger

Test Date: October 16, 2025

Report Date: October 31, 2025

MGA Ref. No.: C25C3-062.2

FINAL REPORT

PREPARED FOR:

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PREPARED BY:

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SIGNATURE APPROVAL PAGE

Procedure Numbers: FMVSS 214/301 Dynamic Side
Rev. 9, Dated March 30, 2020

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The results presented in this report relate only to the specified test items as received. MGA does not endorse or certify products. The manufacturer's name appears solely for identification purposes.

TEST SUMMARY

A right side impact deformable barrier cart impacted a modified stationary 2024 Chevrolet Suburban at 54.07 km/h. The test was conducted at MGA Research Corporation on October 16, 2025.

Nine (9) high-speed cameras were used to document the impact event. High speed camera views are listed below.

Camera View	Frame Rate (fps)	Camera View	Frame Rate (fps)
Cart Close	1,000	Overheard Close	1,000
Cart Overall	1,000	Overheard Overall	1,000
Driver Profile	1,000	Passenger Profile	1,000
Front Oblique	1,000	Rear Oblique	1,000
		Rear	1,000

One (1) Part 572U ES2-re, 50th percentile male was placed in the front right seating position. One (1) SID-IIs, 5th percentile female dummy was placed in the right rear passenger seating position. The test dummies were belted.

TEST NOTES

The right-hand curtain airbag was observed twisted during deployment.

OCCUPANT INJURY SUMMARY

Injury Summary		FMVSS 214 50th Percentile Requirement	RF Passenger
HIC 36		1000	16
	T1 (ms)		38.0
	T2 (ms)		74.0
Upper Rib Displacement (mm)		44	10.5
Mid Rib Displacement (mm)		44	14.0
Lower Rib Displacement (mm)		44	18.2
Lower Spine Resultant (g)			12.9
Frontal Abdominal Force (N)			37.3
Mid Abdominal Force (N)			134.4
Rear Abdominal Force (N)			198.1
Summed Abdominal Force (N)		2500	273.8
Pubic Symphysis Force (N)		6000	288.8

OCCUPANT INJURY SUMMARY

Injury Summary		FMVSS 214 50th Percentile Requirement	RR Passenger
HIC 36		1000	41
	T1 (ms)		61.8
	T2 (ms)		97.8
Upper Thorax Deflection Rate (m/s)			9.5
Middle Thorax Deflection Rate (m/s)			9.0
Lower Thorax Deflection Rate (m/s)			3.2
Lower Spine Resultant (g)		82	21.6
Upper Abdomen Deflection Rate (m/s)			2.1
Lower Abdomen Deflection Rate (m/s)			3.4
Iliac Force (kN)			208.5
Acetabulum Force (kN)			120.6
Combined Acetabulum and Iliac Force (kN)		5525	2004.5

TEST VEHICLE INFORMATION

Model Year	2024	Driver Front Airbag	Yes
Make / Model / Trim Level	Chevrolet Suburban	Driver Knee Airbag	Yes
VIN No.	1GNSKBKD5RR213539	Driver Side Curtain Airbag	Yes
Body Style	MPV	Driver Seatbelt Pretensioner	Yes
Engine Displacement	5.3 L	Tilt / Telescope Steering Wheel	Yes
Engine Type/No. Cylinders	8	Passenger Front Airbag	Yes
Transmission Type	10 Speed	Passenger Knee Airbag	Yes
Final Drive	RWD	Passenger Side Curtain Airbag	Yes
Seating Positions	8	Pass. Seatbelt Pretensioner	Yes

TIRE DATA

Measured Parameter	Front	Rear
Cold Pressure	240	240
Tire Size on Vehicle	275/60R20	275/60R20
Tire Manufacturer	Continental	Continental

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) (Axle)		As Tested (ATW) (Axle)	
		Front	Rear	Front	Rear
Left	lbs	1461	1655	1590	1888
Right	lbs	1804	1625	1889	1763
Ratio	%	49.9	50.1	48.8	51.2
Totals	lbs	3265	3280	3479	3651
		6545		7130	

Weight of Ballast	492 LB
Location of Ballast	Rear Seat Floorboard
Vehicle Components Removed	None

Note: Ballast weight does not include instrumentation, video equipment and data acquisition system.

TEST VEHICLE ATTITUDES

	Units	Left	Right
Front	mm	950	990
Rear	mm	985	968

GENERAL MDB INFORMATION

Measurement Description	Units	Left	Right
Bottom of Honeycomb	mm	278	277
Bottom of MDB Bumper	mm	328	328
Top of MDB Bumper	mm	532	532
Top of Honeycomb	mm	837	837

SEAT POSITIONING INFORMATION

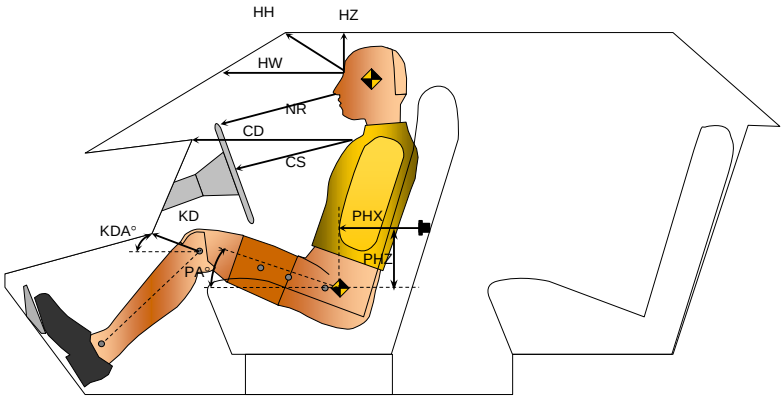
Adjustment	Parameter	Right Front Passenger
Seat Track	Adjustment Type	Power
	Fore/Aft Total Travel (mm)	255
	Total Number of Detents	
	Test Position (mm from Foremost)	127
	Test Position Detent (Foremost as 0)	
Seat Cushion Angle	Adjustment Type	Power
	Measurement Location	Seat Cushion Centerline
	Minimum Angle (°)	
	Maximum Angle (°)	
	Test Position Angle	Lowest
	Additional Description	
Seat Height	Adjustment Type	Power
	Minimum Height (mm)	
	Maximum Height (mm)	
	Test Position Height	Lowest
	Additional Description	
Seat Back Angle	Adjustment Type	Power
	Measurement Location	OB HRP
	Design Detent (Foremost as 0)	
	Design Angle (°)	N/A
	Test Position Detent (Foremost as 0)	
	Test Position Angle (°)	7.5
D-Ring	Total Adjustment Positions	4
	Test Position (Uppermost as 0)	0
Headrest	Test Position	Uppermost

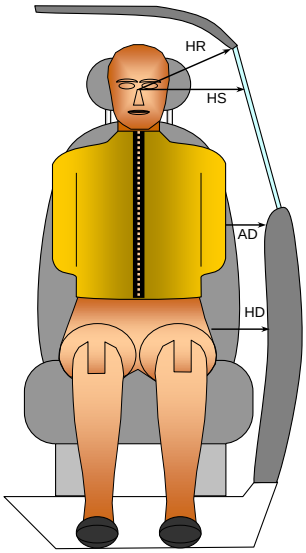
† Measured relative to ground

SEAT POSITIONING INFORMATION

Adjustment	Parameter	Right Rear Passenger
Seat Track	Adjustment Type	Manual
	Fore/Aft Total Travel (mm)	150 mm
	Total Number of Detents	15
	Test Position (mm from Foremost)	150
	Test Position Detent (Foremost as 0)	14
Seat Cushion Angle	Adjustment Type	Fixed
	Measurement Location	
	Minimum Angle (°)	
	Maximum Angle (°)	
	Test Position Angle	
	Additional Description	
Seat Height	Adjustment Type	Fixed
	Minimum Height (mm)	
	Maximum Height (mm)	
	Test Position Height	
	Additional Description	
Seat Back Angle	Adjustment Type	Manual
	Measurement Location	Seatback
	Design Detent (Foremost as 0)	N/A
	Design Angle (°)	N/A
	Test Position Detent (Foremost as 0)	0
	Test Position Angle (°)	21.9
D-Ring	Total Adjustment Positions	Fixed
	Test Position (Uppermost as 0)	
Headrest	Test Position	Lowest

ATD POSITIONING MEASUREMENTS

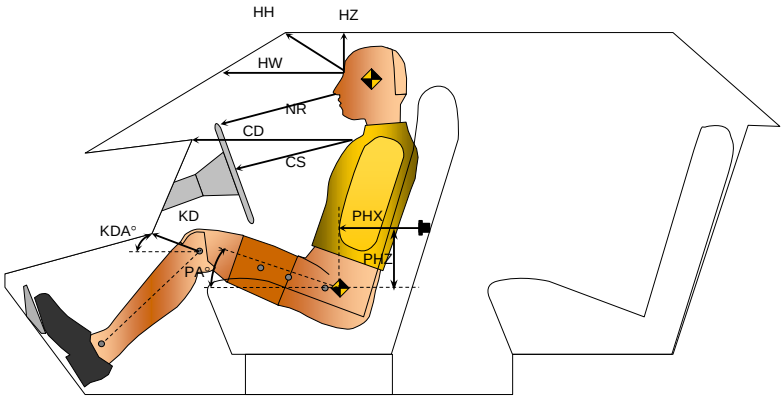


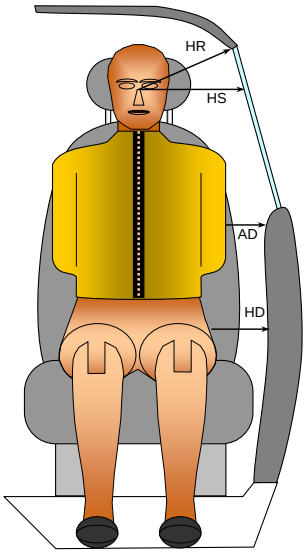


FRONT VIEW OF DUMMY

Code	Measurement Description	Right Front Passenger #198	
		Length (mm)	Angle (°)
HH	Head to Header	552	21.2
HW	Head to Windshield	906	
HZ	Head to Roof	230	
NR	Nose to Dash	673	22.2
CD	Chest to Dash	637	3.5
CS	Chest to Steering Wheel		
KDL	Left Knee to Dash	175	22.5
KDR	Right Knee to Dash	171	22.5
PAX	Pelvic Angle		29.5
PAY	Pelvis Tilt		0.4
PHX	H-Point to Striker (X-Axis)	165	
PHZ	H-Point to Striker (Z-Axis)	14	
-	Head Angle		
SBA	Seat Back Angle		7.5
HR	Head to Side Header	199	
HS	Head to Side Window	348	
AD	Arm to Door	70	
HD	H-Point to Door	192	
-	Neck Bracket		

ATD POSITIONING MEASUREMENTS





FRONT VIEW OF DUMMY

Code	Measurement Description	Right Rear Passenger #3699	
		Length (mm)	Angle (°)
HH	Head to Header		
HW	Head to Windshield		
HZ	Head to Roof	226	
NR	Nose to Rim	673	18.9
CD	Chest to Dash	612	5.6
CS	Chest to Steering Wheel		
KDL	Left Knee to Dash	263	16.1
KDR	Right Knee to Dash	268	16.0
PAX	Pelvic Angle		26.5
PAY	Pelvis Tilt		0.1
PHX	H-Point to Striker (X-Axis)	285	
PHZ	H-Point to Striker (Z-Axis)	18	
-	Head Angle		4.2
SBA	Seat Back Angle		22.4
HR	Head to Side Header	199	240
HS	Head to Side Window	348	375
AD	Arm to Door	70	35
HD	H-Point to Door	192	123
-	Neck Bracket	4 FWD	

POST-TEST OBSERVATIONS

DOOR OPENING INFORMATION

Description	Driver	Passenger
Pre-Test Door Condition	Unlocked	Unlocked
Post-Test Front Door Condition	Closed / Unlocked Opened without tools	Closed / Unlocked Opened without tools
Post-Test Rear Door Condition	Closed / Unlocked Opened without tools	Closed / Unlocked Opened without tools

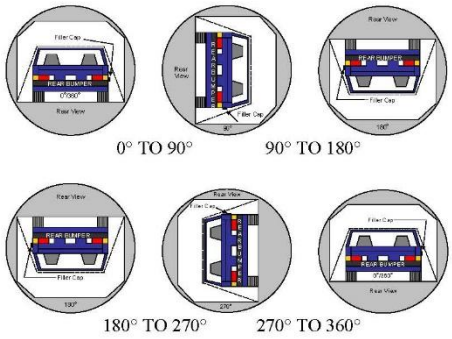
IMPACT POINT DATA

Measured Parameter	Units	Value
Horizontal Offset	mm	10 Forward
Vertical Offset	mm	2 Down

FMVSS 301 FUEL SYSTEM EVALUATION

A.	From impact until vehicle motion ceases: (Maximum Allowable = 1	0	oz.
B.	For the 5 minute period after motion ceases: (Maximum Allowable = 5	0	oz.
C.	For the following 25 minutes: (Maximum Allowable = 1 ounce / minute)	0	
D.	Spillage	None	

FMVSS 301 STATIC ROLLOVER RESULTS



1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard Solvent spillage: **None**

static rollover summary

Test Phase	Units	Rotation Time	Hold Time	Total Time
0° to 90°	s	**86**	**300**	**386**
90° to 180°	s	**84**	**300**	**384**
180° to 270°	s	**91**	**300**	**391**
270° to 360°	s	**86**	**300**	**386**

solvent collection SPILLAGE

Test Phase	Units	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° to 90°	oz	**0**	**0**	**0**	
90° to 180°	oz	**0**	**0**	**0**	
180° to 270°	oz	**0**	**0**	**0**	
270° to 360°	oz	**0**	**0**	**0**	

SOLVENT SPILLAGE LOCATION

Test Phase	Spillage Location Description
0° to 90°	**No Spillage**
90° to 180°	**No Spillage**
180° to 270°	**No Spillage**
270° to 360°	**No Spillage**