



This is to certify that a particular example of a
Original Front Row of Seats in a Mercedes Vito
has complied with the simulated frontal impact
requirements of EC Directive 76/115/EEC as
amended by 2005/41/EC & ECE Regulation 14.07 for
M1 category vehicles, when the vehicle original roof
skin and roof strengthening bearers had been
removed to accommodate a
Poptop Elevating Roof System
steel galvanised upper strengthening frame
manufactured by
Nulite Ltd

Certificate No: MMU 1552E1
Test Date: 13-12-2016
Test Ref : 1552 4732

Signature :

Michael Hughes
STATUS Manager



Manchester
Metropolitan
University



This is to certify that a particular example of a
Poptop Motorcaravan Double Seat / Bed
manufactured by Nulite Ltd

Part No NL BD2, seat mass 95.25kg,
seat belt type – 3 point,

has satisfied the strength and anchorage positional requirements of EC Directive 76/115/EEC as amended by 2005/41/EC & ECE Regulation 14.07 for M1 loading when mounted in a Mercedes Vito when the vehicle was fitted with a Poptop elevating roof system's upper strengthening frame, after the original roof skin and roof strengthening bearers had been removed.

Certificate No: MMU 1552E2
Test Date: 13-12-2016
Test Ref : 1552 4733

Signature : 

Michael Hughes
STATUS Manager



Manchester
Metropolitan
University



School of Engineering
Manchester Metropolitan University
Chester Street, Manchester M1 5GD

Tel: 0161 247 6240
E-mail: m.p.hughes@mmu.ac.uk
Web: www.status.mmu.ac.uk

Seat Belt Anchorage Test Report

Report Reference No: 1552E

For an In-Vehicle Test
To EC Directive 76/115/EEC
As Amended By 2005/41/EC.
& To ECE Regulation 14.07

CONFIDENTIAL



**Manchester
Metropolitan
University**

Client : Nulite
Unit 51 Hutton Close
Crowther Ind. Est.
District 3
Washington
Tyne Wear
NE38 0AH

Vehicle Type: Mercedes Vito based Motor Caravan

Test date: 13/12/2016

Objective:

To test the seat belt anchorages in the sample supplied of the above vehicle for compliance with the positional and strength requirements of EC Directive 76/115/EEC as amended by 2005/41/EC & ECE Regulation 14.07 for vehicle Category M1.

Conclusions:

The vehicle seat belt anchorages tested in the sample supplied complied with the positional requirements stipulated in section 4.4 of Annex 1 of Directive 76/115/EEC (as amended by 2005/41/EC) & section 5.4 of ECE Regulation 14.07 as demonstrated by the data in Appendix 1 and the strength requirements stipulated in section 5 of Annex 1 of Directive 76/115/EEC (as amended by 2005/41/EC) & section 6 of ECE Regulation 14.07 for vehicle Category M? as shown in the graphs in Appendix 2.

Report Authorised by: Michael Hughes **Position:** STATUS Manager

Signature:**Date:** 14/12/2016

Test Vehicle / Structure details:

The vehicle presented was a Mercedes Vito based Motor Caravan adaptation. The vehicle was fitted with a Poptop elevating roof system's steel galvanised upper strengthening frame, after the original roof skin and roof strengthening bearers had been removed.

The vehicles first row was as per original vehicle with a driver's seat and double passenger seat. .

In the rear of the vehicle, between the C-Pillar and D-Pillar, was fitted a Nulite NL BD2 folding double Seat / Bed. All anchorages were located on the seat.

Test Details:**Test Ref:** 1552_4732

Driver's seat and double passenger seat

Seat Vehicle Position		RH	C	LH
Vehicle row		Frontmost		
Seat Manufacturer		OE	OE	OE
Seat name		OE	OE	OE
Seat type		Single	Double	
Belt type		3 Point	3 Point	3 Point
Anchorages on seat		LB	All	LB
Seat weight (kg)		19.20	30.00	
Load applied (kN)	Lap	13.50	13.50	13.50
	Diagonal	13.50	13.50	13.50
	Seat C of G	3.77	2.94	2.94
Load Channel No	Lap	3	5	7
	Diagonal	4	6	8
	Seat C of G	10	2	1

Test Ref: 1552_4733

Nulite NL BD2 Double Seat/Bed

Seat Vehicle Position		RH	LH
Seat Manufacturer		Nulite	
Seat name		NL BD2	
Seat type		Double	
Belt type		3 Point	3 Point
Anchorage on seat		All	All
Seat weight (kg)		95.25	
Load applied (kN)	Lap	13.5	13.50
	Diagonal	13.50	13.50
	Seat C of G	9.34	9.34
Load Channel No	Lap	3	7
	Diagonal	4	8
	Seat C of G	10	1

Refer to the pre-test photographs shown in Appendix 3.

Results:**Effective anchorage positions**

Data showing the position of the seat 'R' point in relation to the effective belt anchorages, with regard to the requirements, is shown in Appendix 1.

Loads held

The loads held were as shown in the graphs found in Appendix 2:

Upper anchorage displacement

Test Ref: 1552_4732

Seat Vehicle position	RH	C	LH
Upper X displacement	-	215	-
X displacement limit	NA	400	NA
Upper Z displacement	-	0	-
Z displacement limit	NA	-92	NA
76/115/EC Result	PASS	PASS	PASS
ECE R14 Result	PASS	PASS	PASS

Test Ref: 1552_4733

Seat Vehicle position	RH	LH
Upper X displacement	340	315
X displacement limit	414	414
Upper Z displacement	15	15
Z displacement limit	-6.6	-6.6
76/115/EC Result	PASS	PASS
ECE R14 Result	PASS	PASS

Observations

Following each test the vehicle was visually examined; during this examination the condition of the vehicle and components were noted. The examination results in the following observations:

Test Ref	Observation
1552_4732	General mild deformation of seats and anchorages with noticeable deformation of the seat cross beam.
1552_4733	Floor deformed at rear with rear of vehicle lifting up. Some damage may be due to excessive rusting of the rearmost transverse panel.

See also Post-test photographs are shown in Appendix 4.

Test Equipment;

Tests were carried out on a VCA appraised seat belt anchorage test facility with all calibration of measurement instrumentation traceable to National standards in accordance with ISO17025. The uncertainty of measurement is included in the calibration records for all measurement equipment.

Seat R point positions were determined using a SAE 3D H point measurement machine and a 3D Coordinate measurement system.

Appendix 1: - Anchorage Positional Data**Test Ref: 1552_4732****Seat Measurement sheet Ref: 1552_003 Nulite NL BD2**

Measurement Datum XZ (0,0): Top left corner of seat back frame.				
Measurement	R Point	LNB	LB	Upper
X	-328.9	-128	-228	2
Y	0	191	-250	201
Z	-460.0	-681	-617	-3
Seat Back Angle (deg)			10	
Lower Anchorages	LNB Angle - $\alpha 1$ (deg)		48	
	LB Angle - $\alpha 2$ (deg)		57	
	Separation (mm)		440	PASS
	LNB offset (mm)		191	PASS
	LB offset (mm)		-250	PASS
Upper Anchorage	S Dimension (mm)		201	PASS
	Within Zone		PASS	

Appendix 2 - Load graphs

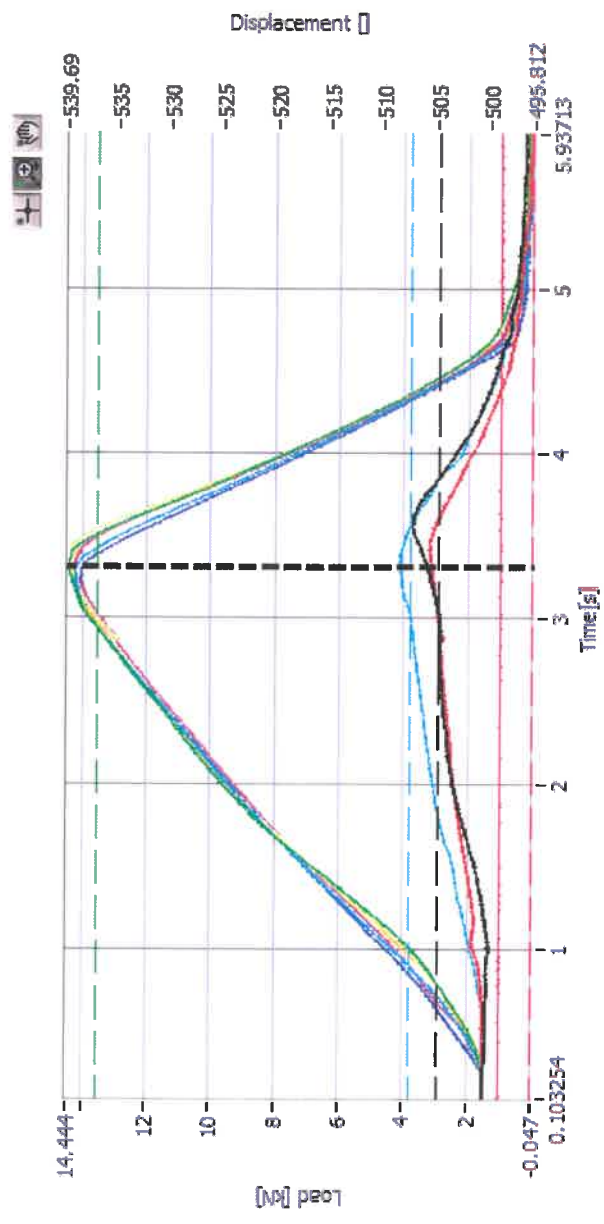
Test Title 1552_4732

Description Frontrow

Date 13/12/2016 10:34:30

Cursor Time (s) **3.304**

Overlay	Target Loads	Target	
Load 1		3.27	2.94
Load 2		3.16	2.94
Load 3		14.42	13.50
Load 4		14.22	13.50
Load 5		14.40	13.50
Load 6		14.24	13.50
Load 7		14.32	13.50
Load 8		13.99	13.50
Load 9		1.01	0.00
Load 10		4.10	3.77

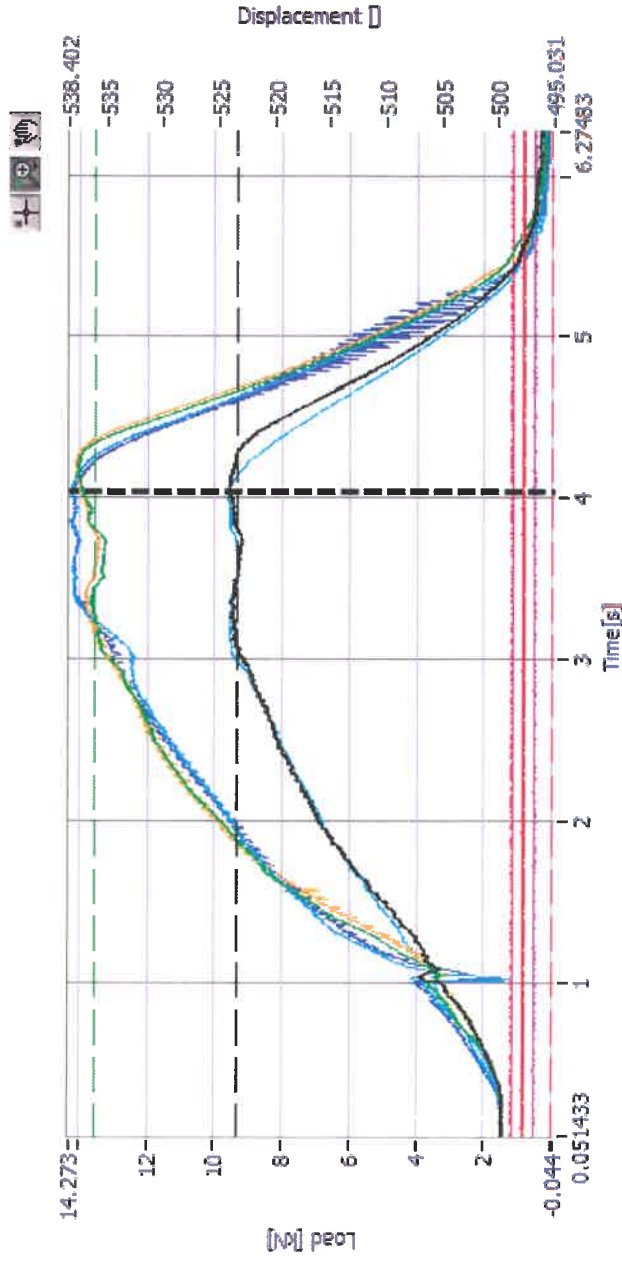


Test Title 1552_4733

Description Rock n roll double

Date 13/12/2016 11:45:25

Cursor Time (s)	4.037	Target
Overlay Target Loads		
Load 1	9.52	9.34
Load 2	0.87	0.00
Load 3	13.88	13.50
Load 4	14.18	13.50
Load 5	0.85	0.00
Load 6	0.51	0.00
Load 7	13.93	13.50
Load 8	14.15	13.50
Load 9	1.17	0.00
Load 10	9.62	9.34



Appendix 3 - Pre-test photographs



Figure 3.1 – 1552_4732



Figure 3.2 – 1552_4733