ADR AUTOMOTIVE ENGINEERING PTY LTD

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Mr Mark Speelmeyer
National Sales Manager,
Option Audio
Unit 5 / 3-19 University Drive
Meadowbrook Qld 4131

Hi Mark,

Please find attached report on the size and strength requirements of ADR 22/00 for the head restraints Option Audio OA90HRDV/DVB.

We thank you for your business and look forward to being of further assistance to you in the future.

Regards,

Bruce Gearing
27 April 2011

Test Facility Details:

ADR Automotive Engineering Pty Ltd, 5 / 80 Ebbern Street, Darra 4076 TFID: T05868

Client: Option Audio Pty Ltd,

Unit 5, 3-19 University Drive, Meadowbrook Qld 4131

TEST ITEM IDENTIFICATION			
MAKE	Option Audio	**MODEL**	OA90HRDV/DVB

Test Details

ADR 22/00 Head Restraints test to Clause 22.5 on Option Audio aftermarket Headrest DVD player.
Note: This test is testing the strength of the supplied head restraint in a 'donor' seat. It is thus testing the strength of the head restraint itself. For that reason the maximum load was applied with the head restraint on its uppermost location notch to cover the greatest load situation.

Job No.: S31OA001
Test Date: 09/04/2011 Report Date: 09/04/2011

Test Equipment

GCS DAQBOX, Gefran Digital Displays and Yokogawa OR142-2 S2 PR 27D510656 417
(Blue) Load Cell Model No. STC-2.5T, Serial No. A86976
Hydraulic power-pack and cylinder.
Test equipment calibration via dead weight lift prior to test.

Uncertainty of Measurement

All readings have an uncertainty of measurement of ± 2%

REAR MOMENT TEST

Method

The Option Audio Head Rest DVD Player OA90HRDV/DVB was adjusted to width to suit a Toyota front seat. The leg diameter suited the seat head restraint fitting, so none of the supplied plastic inserts were used.
The H-Point machine was placed in the seat and a moment of 370Nm was applied to the seat back through the back of the manikin, and the displaced torso reference line was determined. The manikin was removed and a cylindrical headform of 165mm diameter was placed on the head restraint and loaded at a height of 635 mm above the H-point to a moment of 370 Nm about the Seating Reference Point. The load was then increased gradually to greater than 900 N and the displacement measured. The head restraint was then raised to the highest stop position of adjustment and tested again (simulating the worst case situation in use), and those results are given below.

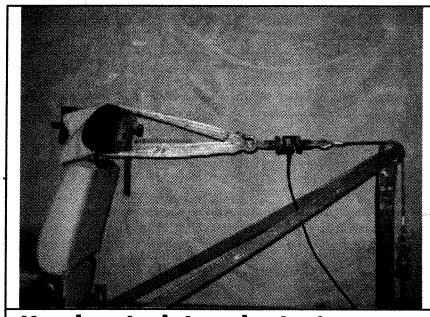
Certified Copy
Bruce Gearing, Supervisor
27 April 2011

Head restraint test results.

The physical dimensions of the head restraint are 250mm width and 180mm impact surface height.

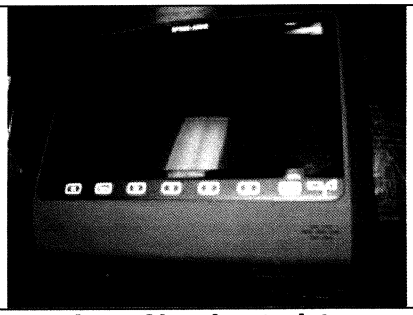
Seat Location	No. of Seating Positions	Displaced distance at 370Nm (mm)	Force Applied @ 635mm (kN)	Displacement at full load (mm)	Displacement from displaced extended torso reference line (mm)	Result
Front	1	35	1.1	56	21	Pass

Load was held at greater than 1000N for a duration of over 34 seconds. The seat here is a carrier only, to facilitate the head restraint being tested. This test was performed in a seat where none of the supplied plastic inserts were required, so there is no assessment of the suitability of these for use in other seats.



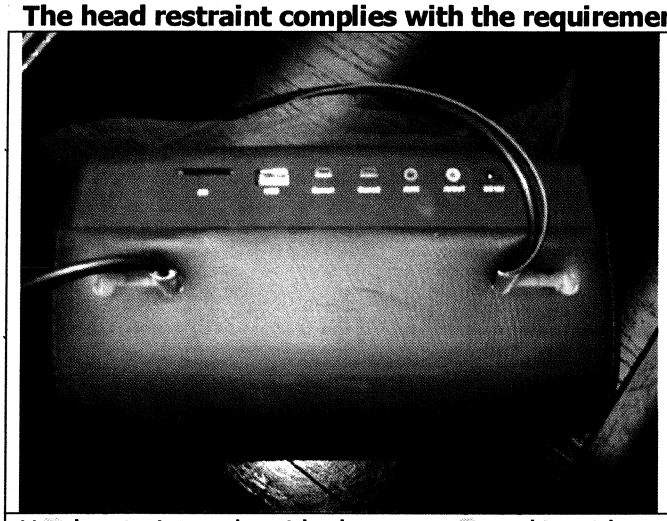
Head restraint under test

Front surface of head restraint

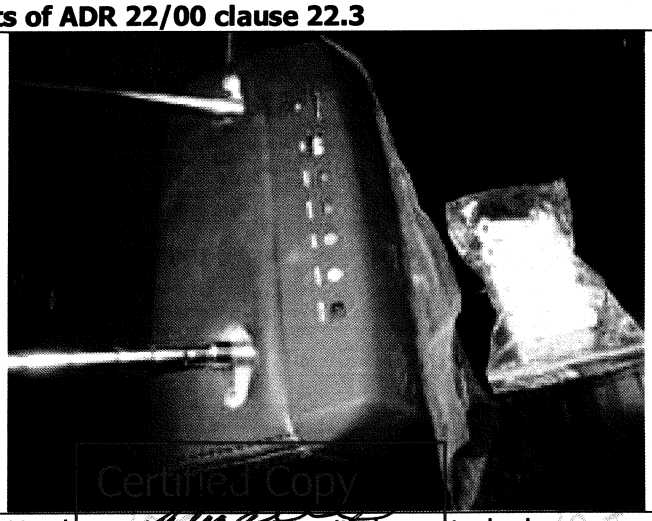


Rear face of head restraint

The head restraint complies with the requirements of ADR 22/00 for dimensions and strength.
The head restraint complies with the requirements of ADR 22/00 clause 22.3



Head restraint under-side: legs are screwed in with wires running through the hollow legs



Head restraint under-side with legs attached

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Bruce Gearing, Supervisor
27 April 2011

Note: No test was performed and no statement is given regarding energy absorption requirements of ADR 3/0x for the rear and upper surfaces of the head restraint, nor as to these areas being contactable.

Bruce Gearing
27 April, 2011

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