A valve amplifier to rival solid state?

The TVA-1 from British manufacturer Michaelson and Austin delivers 70 watts per channel from push-pull KT88s in the output.

THERE HAVE been many claims that the best valve amplifiers provide a more natural, uncoloured sound than do transistor amplifiers. The TVA-1 Thermionic Valve Amplifier gave us an opportunity to evaluate these claims.

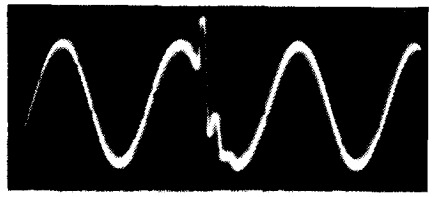
The unit is in no way revolutionary but is remarkable for its 32 kg (70lbs) weight, its beautiful chrome-plated chassis and the marvellous talking point of the power dissipated by those lovely heaters in each of the KT88 beam power tubes!

Ventilation is important

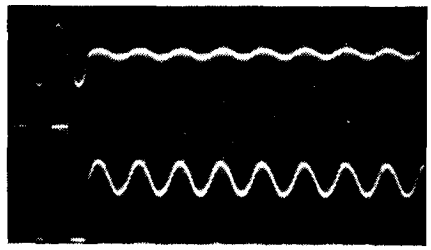
The TVA-1 amplifier, because of its size, weight and thermal dissipation should ideally be placed in a ventilated cupboard, on a shelf and most certainly in a position where the continual 150 W power dissipation would not be a problem, and used with a separate preamplifier (preferably a unit made by Michaelson & Austin) located near the record player, tape recorder or cassette deck.

The amplifier is about as attractive as a valve amplifier can be, with the chrome-plated chassis covered by a plastic escutcheon on the front lower edge, two coaxial sockets for input leads and four universal terminals for the speaker lead connections. The top cover, to protect the valves and transformers, is black perforated steel. The top of the chassis has all the valves mounted in a central group with two massive output matching transformers at one end and a slightly smaller but still large mains power transformer and electrolytic capacitors at the other.

The power output valves are KT88s, which were, in their day (circa 1959) amongst the most modern valves available in Europe. Valve technology has not, however, advanced significantly since that time.



Lux transient intermodulation test



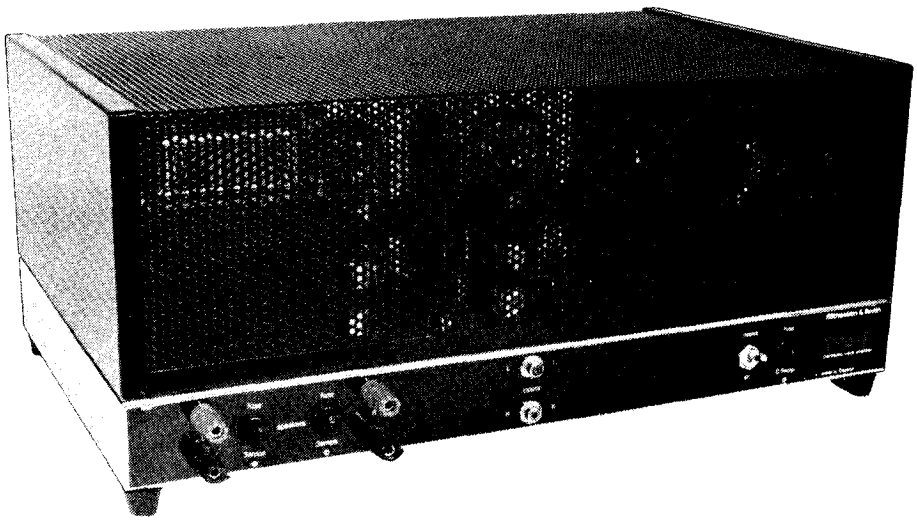
Transient overload recovery test

It was with trepidation that we started our evaluation and to some extent our feeling was justified. We initially blew fuses because of the amplifier's dislike of having inputs and outputs simultaneously earthed, but once we realised what was happening this was no longer a problem.

Our initial tests showed that the frequency response of the amplifier was exemplary – being 2.5 Hz to 52 kHz +0 -3 dB. The total harmonic distortion was reasonably low being typically -58 dB (ref. 1W into 8 ohms) and typically -47 dB (at 1 kHz for 70 W into 8 ohms).

Noise and hum levels were -61 dB unweighted and -76dB (A) weighted (ref. 1 watt). Maximum power output at the clipping point was 100 W into 8 ohms with a dynamic headroom of 1.5 dB.

Crosstalk between channels was also exemplary being -60 dB (ref. 1 W at 1 kHz) and -53 dB (ref. 1 W at 10 kHz).



Transient intermodulation distortion performance, whilst better than that of any other valve amplifier we have seen, still fell short of the best transistorised amplifiers currently on the market. Our objective laboratory investigations proved conclusively that all the manufacturer's stated performance figures were achieved.

We set up the amplifier with our monitor speakers and with a series of demonstration tapes from the International Electro-technical Commission. The subjective performance was gratifying with no distortion products detected in our testing. The amplifier provided a neutral characteristic to all the recorded programme material. We tried to detect the difference between this amplifier and our normal monitoring amplifiers but were unable to hear any signs of colouration on programme content.

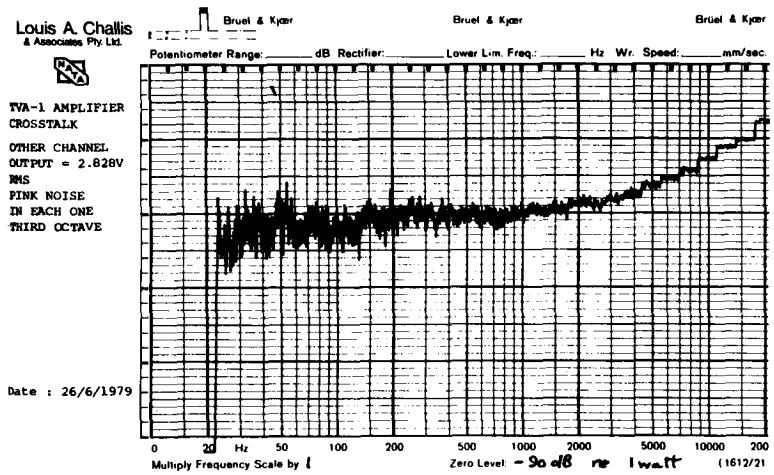
Summary

The primary claim made for class AB_1 amplifiers, be they valve or transistor, relates to the lower third order harmonic distortion components. These components are readily detectable in either the steady-state or transient distortion mode. **The third order distortion characteristics of this amplifier are so low as to be inconsequential.** It is this factor, together with the low levels of second order distortion, which make this amplifier much superior to the 'run of the mill' transistor amplifiers so common today.

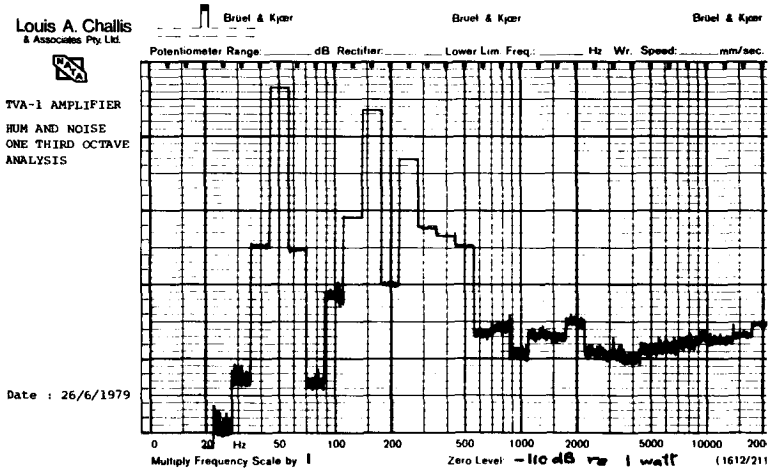
The TVA-1 meets all the manufacturer's claims. What more can one say?

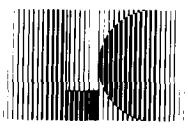
THE TVA-1 THERMIONIC VALVE AMPLIFIER

Dimensions: 460 mm x 300 mm x 100 mm
Weight: 32 kg Price unavailable at press time
Manufactured by Michaelson and Austin of London, UK. Review sample from Audio 2000, P.O. Box 107, Brookvale 2100.



It was not worth reproducing a frequency response chart that simply showed a straight line!





Louis A Challis and Associates Pty Ltd
Our Ref: E7

MEASURED PERFORMANCE OF
MICHAELSON & AUSTIN TVA-1 THERMIONIC VALVE AMPLIFIER
(No Serial Number on Case)

FREQUENCY RESPONSE:	2.5 Hz to 52 kHz		
			Ω
SENSITIVITY:	69 mV	1 W	8
	62 mV	1 W	4
	84 mV	1 W	16
IMPEDANCE:	Input Impedance:		95 k
	Output Impedance:		3Ω

TOTAL HARMONIC DISTORTION:

At 1 watt 8Ω :	100 Hz	1 kHz	6.3 kHz
2nd	-60 dB	-58 dB	-48 dB
3rd	-68 dB	-70 dB	-66 dB
4th	-96 dB	-99 dB	-
5th	-	-	-
THD	0.11%	0.13%	0.40%
At Rated Power (70 W 8Ω):			
2nd	-50 dB	-50.5 dB	-38 dB
3rd	-50 dB	-50 dB	-42.5 dB
4th	-64 dB	-61.5 dB	-
5th	-67 dB	-65 dB	-
THD	0.45%	0.45%	1.47%

TRANSIENT INTERMODULATION DISTORTION:
4.5% (see attached photograph)

NOISE AND HUM LEVELS: -76 dB (A) (see attached graph)
(re 1 watt) -61 dB (Lin)

MAXIMUM OUTPUT POWER AT CLIPPING POINT:
(1HF-A-202) 80 V p-p = 100 watts 8Ω

therefore, Dynamic Headroom = 1.5 dB

CROSSTALK: -60 dB re 1 watt at 1 kHz
-53 dB re 1 watt at 10 kHz

21 June 1979