VISION DEMODULATOR DM2/504

Introduction

The DM2/504 is a vision demodulator used in u.h.f. television rebroadcast and monitoring receivers.[1] It accepts vision i.f. signals and gives one video output. There is also a high-impedance output for feeding an associated a.g.c. unit.[2]

A printed card is used, mounted in a CH1/39A chassis. The signal input is via a BNC socket on the front panel.

General Specification

Nominal Input and Output Impedances	75 ohms
Normal i.f. Input Level	50 mV r.m.s.
Input Carrier frequency	37·5 MHz
Normal Output Level	0·17V p-p video, −2dB +1 dB p-p video
Power Consumption	2·8 watts at + 25 V
Weight	1 lb 11 oz
Index Pegs	9 and 37

Circuit Description

The circuit diagram is given in Fig. 1. The input signal at 37·5 MHz is amplified by TR1 and TR2, both wide-band common-base stages, and L1 provides a matching coupling between them. TR2 is coupled to a push-pull stage by the wide-band transformer T1. TR3 and TR4 with the tuned transformer T2 form a push-pull common-base driver stage for the balanced rectifier circuit D1 and D2. The d.c. potential on the bases of TR3 and TR4 is stabilised by zener diode D3. The output from the rectifier circuit is fed via R17 (which sets the loading on T2) to a constant-resistance output filter network and to a high-impedance a.g.c. output. R21 prevents the following a.g.c. circuits from loading the rectifier. L7, along with the input capacity of the a.g.c. circuits, acts as a filter to remove i.f. carrier signals.

The filter network in the main output circuit removes the i.f. carrier and its second harmonic. The first part of the network, built round L2 and L5, is tuned to reject the second harmonic on 75 MHz, as is the series element L4/C15. The centre part of the network, built round L3 and L6, is tuned to reject the fundamental on 37·5 MHz. The complete network, when properly terminated, has a low-pass characteristic which is 0·2 dB ±0·1 dB down at 5 MHz.

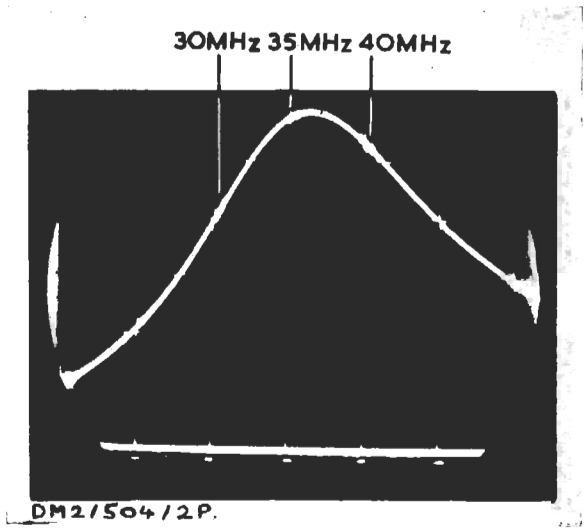

Fig. 2 Frequency Response of the DM2/504 as Measured at the Output of the Receiver[1]

Maintenance

Routine maintenance is not required.

The gain of the demodulator may be checked by feeding in a 37·5-MHz carrier modulated with a pulse and bar signal (20% residual carrier) at a level of 50 mV r.m.s. when the output video signal should have an amplitude of 0·17 V p-p +1 dB −2 dB. The swept frequency response from the DM2/504 input to the output of the complete receiver[1] should be as shown in Fig. 2. The bandwidth between 1-dB points is approximately 6·5 MHz.

The adjustment of the networks should not be disturbed.

References

1. U.H.F. Rebroadcast Receiver RC5M/501
2. Vision A.G.C. Unit UN1/564
3. Designs Department Specification No. 6.116(67) A1B 10/68

See overleaf for Fig. 1

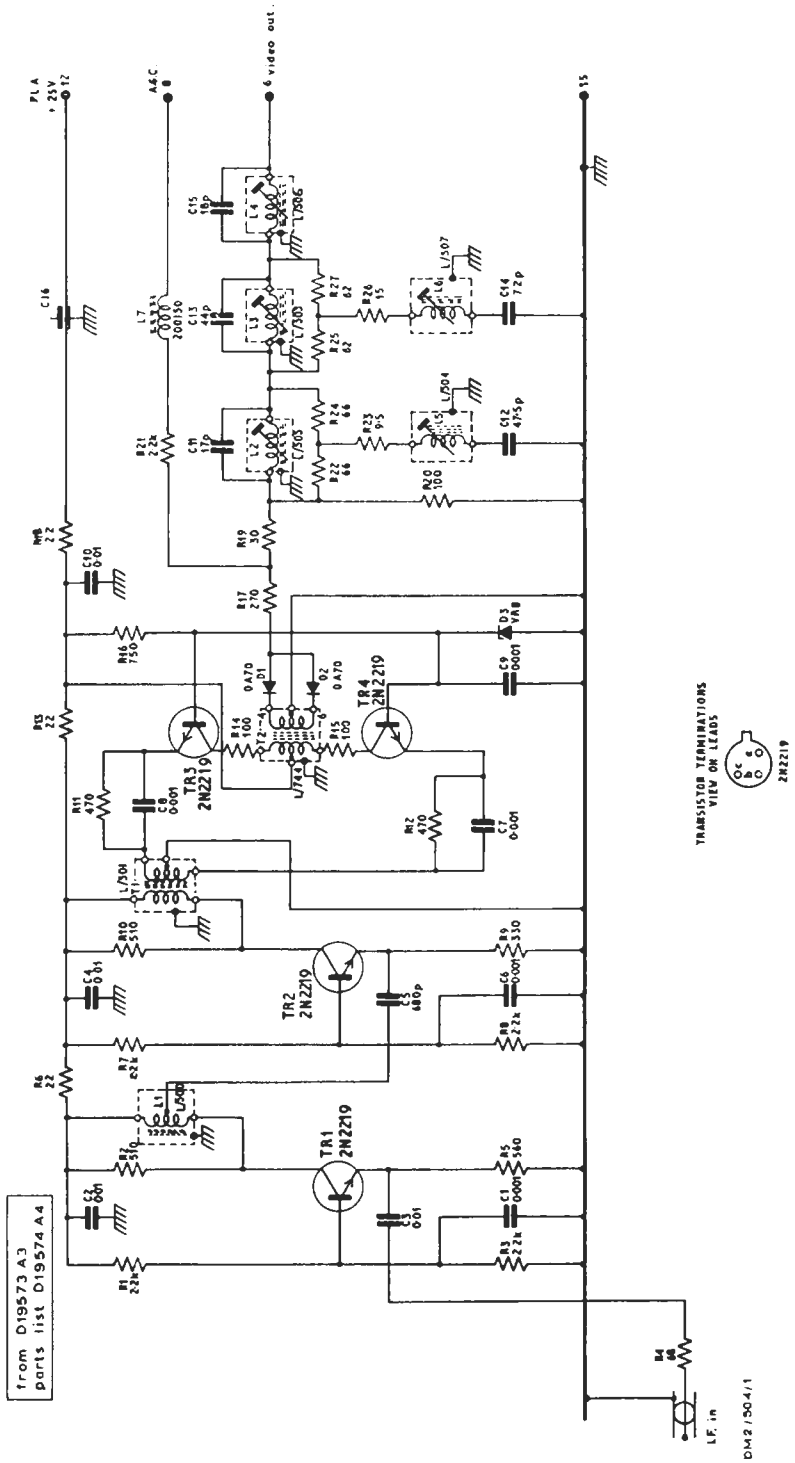

Fig. 1 Circuit of the DM2/504