

## VIDEO AMPLIFIER AM1/555

**Introduction**

The AM1/555 video amplifier accepts one input and provides two outputs. It has been specifically designed as an output amplifier for rebroadcast and monitoring receivers.<sup>1</sup> It consists of an 18-dB amplifier preceded by an independent low-pass filter.

The amplifier uses a printed board mounted in a CH1/12A chassis. All external connections are made via a 15-way Painton plug.

**General Specification (including input filter)**

<i>Gain</i>	17.2 dB $\pm$ 0.2 dB
<i>Input Level (video)</i>	138 mV p-p
<i>Output Level across 75 ohms</i>	1V p-p
<i>Input Impedance</i>	75 ohms nominal
<i>Output Impedance</i>	75 ohms
<i>Return Loss 10 kHz to 5.5 MHz</i>	greater than 30 dB
<i>Overload Point</i>	
One or both outputs terminated, 10 kHz to 5 MHz	greater than 3V
<i>Filter Amplitude/frequency Response</i>	see Fig. 2.

**Pulse and Bar Ratio**

2T pulse (T=0.1 $\mu$ s)	100%
1T pulse (T=0.1 $\mu$ s)	88%

**General Specification (Amplifier alone)**

<i>Gain</i>	18 dB $\pm$ 0.1 dB
<b>Pulse and Bar Ratio</b>	
2T pulse (T=0.1 $\mu$ s)	100%
1T pulse (T=0.1 $\mu$ s)	100% $\pm$ 1%
<i>Pulse Response</i>	No visible distortion
<b>Amplitude/frequency Response</b>	
50 Hz to 5.5 MHz	$\pm$ 0.1 dB

<i>Squarewave Tilt 50Hz</i>	less than 0.5 %
<i>Line-time Non-linearity</i>	less than 0.5%
<i>Differential Gain</i>	less than 0.4%
<i>Differential Phase</i>	less than 0.15°
<i>Chrominance/Luminance Delay Inequality</i>	less than 2ns
<i>Power Supply</i>	+17 volts -24 volts 3 watts
<i>Weight</i>	14 ozs
<i>Index Pegs</i>	9 and 44

**Circuit Description**

The circuit diagram is given in Fig. 1 on page 3. The input low pass filter is delay-corrected and has the amplitude/frequency response shown in Fig. 2. Its purpose is to remove all signal components outside the required pass band.

The amplifier consists of two common emitter stages with an output emitter follower. TR4 forms a constant-current load for the emitter of TR3.

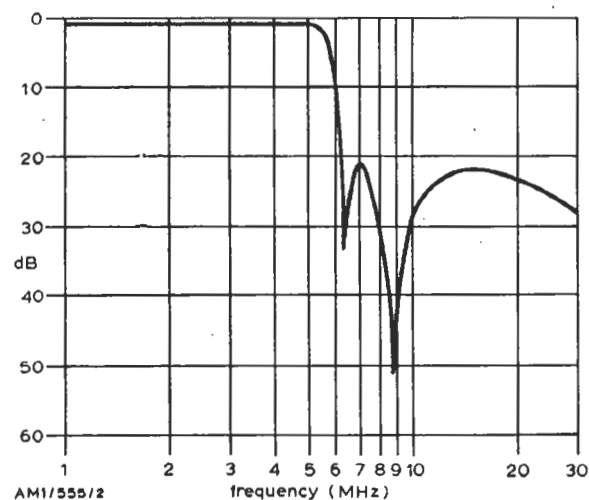


Fig. 2 Amplitude-frequency Response of Input Filter

Negative feedback is applied via R9 and R14, with C21 and C23 shaping the feedback characteristic at the high frequencies. D.C. feedback is applied by R16 and R15 to stabilise the d.c. potential of TR3 emitter at its working point, approximately 0 volts with respect to earth.

The output filters isolate the emitter follower from the output circuits, thus preventing a wrongly terminated, or open-circuited line from adversely affecting the operation of the amplifier.

The positive and negative supplies normally come from a stabilised source<sup>2</sup> but the additional stabilisers are used to ensure a very low supply impedance at the card itself. This is to prevent variation of the d.c. operating conditions of the amplifier.

### Maintenance

Routine maintenance is not required.

The preset adjustments of the input filter should not be disturbed as realignment is not possible without special equipment. Similarly the adjustment of the output filters should not be disturbed.

The following tests may be made occasionally, or if the performance becomes suspect.

1. With the amplifier removed from its associated equipment<sup>1</sup>, measure the resistance between pins 9 and 15. The value obtained using an Avo-

meter model 8, should be greater than 5 kilohms with the negative lead on pin 15.

2. With the amplifier connected to its power supplier<sup>2</sup> measure the voltage on the emitter of TR5. This should be +13 volts with respect to earth. It is adjusted by the A.O.T. resistor R40.
3. With conditions as in 2, measure the voltage on the emitter of TR10. This should be -11 volts with respect to earth and is adjusted by the A.O.T. resistor R39.
4. With the outputs unterminated, the voltage at TR3 emitter should be  $0 \pm 100\text{mV}$ . This is adjusted by the A.O.T. resistor R18.
5. The gain of the amplifier is set to  $18 \text{ dB} \pm 0.1 \text{ dB}$ . This is adjusted by the A.O.T. resistor R10, using the change-over method of measurement. If the value of R10 is changed, the test in 4 above must be repeated.
6. The amplitude/frequency response can be checked using the change-over method. It should be as per specification.

### References

1. Television U.H.F. Rebroadcast and Monitoring Receivers RC5M/501, DM1M/501
2. Power Supplier PS2/45
3. Designs Department Specification No. 6.123 (67)  
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