

I.F. AMPLIFIER AM1/545

Introduction

The AM1/545 is a vision i.f. amplifier providing 2 outputs from one input. It has a manually-variable gain-control range of 12dB, preset within the range -1dB to 17dB . It also accepts a short line-frequency pulse for gating the i.f. signal.

It uses a printed board, mounted in a CH1/39A chassis with index peg numbers 22 and 23. Signal input and output connections are made through BNC 50-ohm connectors on the front panel.

General Specification

Vision i.f. Carrier	37.5MHz
Variable Gain Control Range	$12\text{dB} \pm 1\text{dB}$
Minimum Gain	$-1\text{dB} \pm 2\text{dB}$
Maximum Gain	$17\text{dB} \pm 2\text{dB}$
Input and Output Impedances	75 ohms
Input Level (syncs)	25mV r.m.s.
Maximum Output Level (syncs)	60mV r.m.s.
Frequency Response	$\pm 0.5\text{dB}$, 30MHz to 40MHz
Power Supply	-30 volts, 60mA
Weight	1.8 lb

Circuit Description

The circuit of the amplifier is given in Fig. 1 on page 3. TR1 and TR2 form a direct-coupled cascode circuit driving two common-emitter output stages. Continuously-variable gain control is effected by varying the emitter impedance of TR3

which is shunted across the signal. The range is about 6dB. A further 6-dB variation is available from a switched attenuator in the input circuit. Both of these controls are mounted on the front panel of the unit. A further 5-dB variation of gain is available by means of a 6-position switch mounted inside the unit and not available from the front panel. This is to compensate for gain differences in associated equipment to set the overall gain of any system of which the AM1/545 forms a part.¹

A 30-V 5- μs negative-going line-frequency pulse² is applied to the base of TR2 in parallel with the input i.f. signal. This suppresses the input signal and puts a pulse into the output signal which is used in associated equipment for depth-of-modulation measurement. The pulse occurs about 40 μs after the leading edge of the sync pulse.

Maintenance

Routine maintenance is not required. If the performance becomes suspect, the following checks may be made.

1. With the amplifier operating at full gain and -30 volt connected to PLA9, check that the voltage between L4 and D1 is $-20\text{ V} \pm 0.6\text{ V}$.
2. Check that the maximum gain is $17\text{ dB} \pm 2\text{ dB}$.
3. Check that the output level control gives a 5 to 6-dB variation of gain.
4. Check that the input attenuator gives a 6-dB step of gain.
5. If a Polyskop or similar instrument is available, check that the frequency response is level to within $\pm 0.5\text{dB}$ between 30 MHz and 40 MHz at all positions of the external gain control and to both outputs.

References

1. Television U.H.F. Transmitter Demodulator DM1M/501
2. Pulse Generator GE2/546
3. Designs Department Specification No. 6.121 (67)
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