I.F. SAMPLING UNIT UN1/616

Introduction

The UN1/616 is an i.f. sampling unit which accepts a modulated vision i.f. carrier at 37·5 MHz and gives four outputs: a repeat of the input, a 37·5-MHz burst occurring during the line sync period, a low-bandwidth video signal and a line-frequency gating pulse.

The unit is built on a printed card and mounted in a CH1/39A chassis with index pegs 45 and 67. The vision i.f. input and output connections and the burst output connection are made via BNC sockets mounted on the front panel. The video and gating pulse outputs are made via a rear mounted 15-way Painton plug which also carries the d.c. power supplies.

The unit has been designed for use as part of the RC5M/502 uhf Rebroadcast Television Receiver.

General Specification

Input Impedance	75 ohms nominal
Output Impedance	
Vision I.F. and Burst Signals	75 ohms nominal
Vision Signal Levels	
Input i.f.	50 mV r.m.s.
Output i.f.	50 mV ±5 mV r.m.s.
Burst Output	300 mV p-p
Power Requirements	145 mA at +12 V 70 mA at −12 V
Weight	2 lb 1 oz

Circuit Description

The circuit diagram is given in Fig. 1. The i.f. input is split and feeds two tuned amplifiers, both having emitter-follower inputs. TR18,TR19 is a wide-band amplifier with unity gain at 37·5 MHz and with a flat response between 30 MHz and 40 MHz (Fig. 2); it provides a repeat of the input signal. TR1,TR2,TR3 form a high-gain narrow-band amplifier at 37·5 MHz. It feeds the vision detector D1 and the burst gate IC1.

The video signal from D1 is passed by the complementary emitter follower TR4,TR5 to the video output PLA14 and to the sync-separator circuits. The value of R22 is set during manufacturing tests to give minimum distortion of the video signal and the correct level in the following unit (approximately 280 mV p-p at PLA14).

TR6,TR7 provide a gain of about 2 and feed the emitter followers TR8,TR9 which in turn feed the sync-separator TR10. TR10 conducts on the positive-going sync pulses. The negative-going pulses from the collector of TR10 are differentiated by C18 and R39 and the positive-going spikes removed by TR11.

The monostable multivibrator TR12,TR13 is triggered by the negative line spikes but is insensitive to the half-line pulses which occur in the middle of the unstable period. The negative-going line pulses at the collector of TR13 are differentiated by C20 and R45 and, via D3, trigger the monostable circuit TR14,TR15. The leading edge of the positive-going pulse at the emitter of TR16 is coincident with the leading edge of the line syncs from TR10 and the pulse duration is 2 μs. This pulse feeds the gating signal output PLA4 and also triggers the gate IC1. The gate is fed with 37·5-MHz i.f. carrier from TR3 and thus pulses of i.f. carrier, 2 μs in duration, are fed to the burst output during the line-sync period.

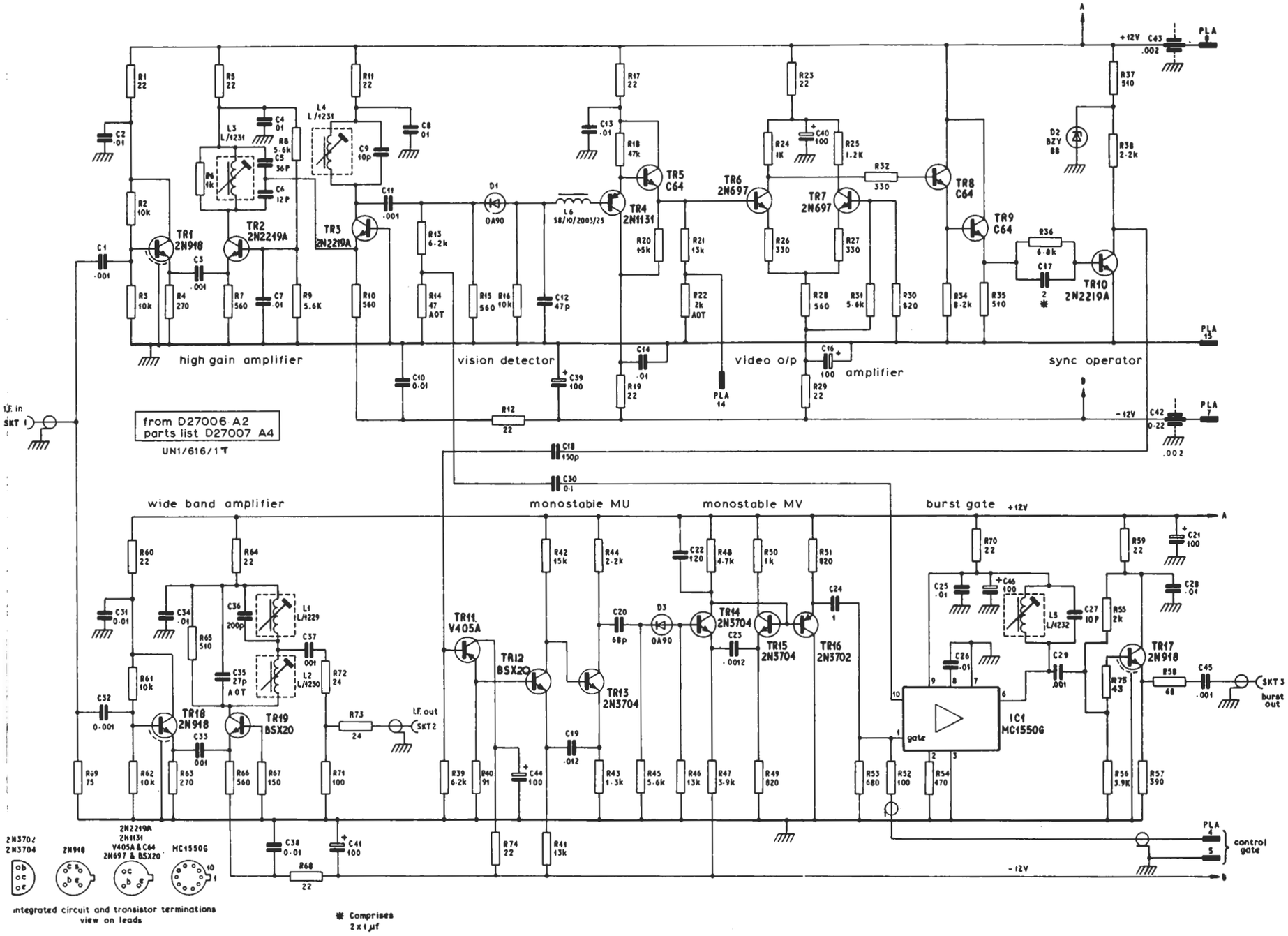

Fig.1 UN1/616: Circuit Diagram

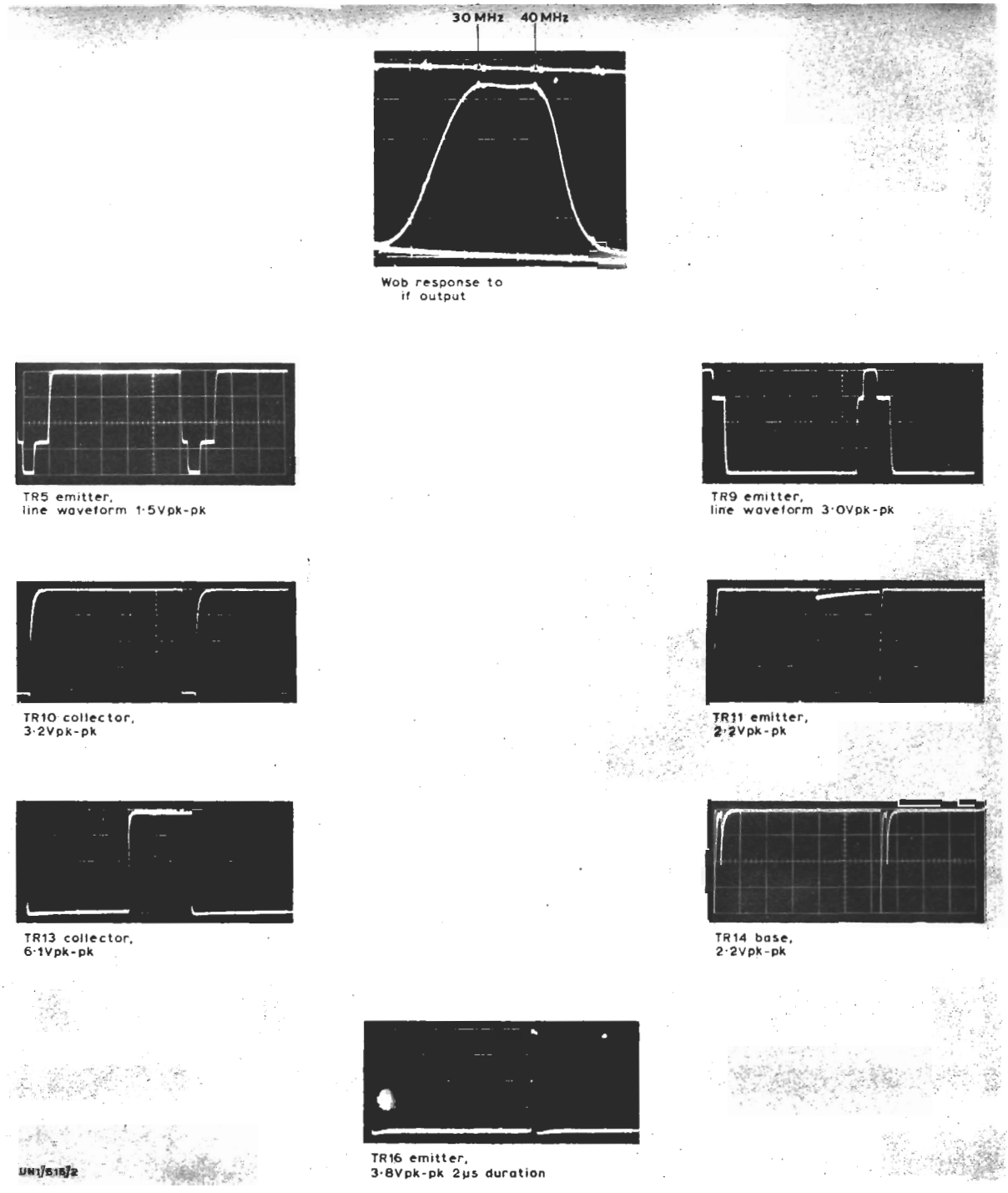

Fig.2 UN1/616: Typical Waveform Responses

Maintenance

The unit should be checked in the parent unit but the following points can be noted:

1. The gain between SKT1 and SKT2 is unity at 37·5 MHz
2. With a modulated i.f. input signal at 37·5 MHz and of not less than 50-mV amplitude, the line sync amplitude at the collector of TR10 should be 3·2 V p-p.
3. With 140-mV p-p input at 37·5 MHz, the burst output level should be 300 mV ±15 mV and the video output at PLA14 should be about 280 mV p-p.
4. Fig. 2 shows various waveforms through the unit.

Reference

1. Designs Department Specification No.6.157(70)

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