U.H.F. CONVERTER CO2/542

Introduction

The CO2/542 is designed for use in television rebroadcast receivers[1]. It accepts a u.h.f. signal and an input from a local oscillator[2] and provides an i.f. output containing both sound and vision signals. It comprises a u.h.f. amplifier[3], a broad-band crystal mixer and a pre-i.f. amplifier, each separately screened.

The unit is built on a printed board and mounted in a CH1/39A screened chassis with index pegs 17 and 23.

The r.f. and i.f. connections to the converter are made by means of BNC sockets on the front panel.

General Specification

Input Frequency	Preset to any 8-MHz channel in Bands IV and V
Output Frequency	
Vision carrier	37·5 MHz
Sound carrier	31·5 MHz
Local Oscillator Frequency	37·5 MHz above vision carrier
Input Signal from Local Oscillator	1 V r.m.s. across 50 ohms
Input VSWR Over Channel (relative to 50 ohms)	Equal to or less than 1·25
Maximum Input	5 mV r.m.s.
Maximum Output (across 75 ohms)	60 mV ±1 dB r.m.s.
Power Gain between Matched Impedances	18 dB ±2 dB
Amplitude/frequency Characteristic over 8 MHz Channel	Flat within ±0·25 dB
Noise Figure	Equal to or less than 7·5 dB
D.C. Power Requirements	20 mA at 12 V, negative earth
Weight	3½ lb

Circuit Description

The circuit is given in Fig. 1. The input signal, after amplification by the input amplifier, is passed to the crystal mixer via an attenuator pad type AT4/508 or Greenpar type 83013. This pad is chosen so that the input to the mixer does not exceed 60 mV ±1 dB r.m.s. with maximum input to the converter. This is to avoid overloading of following units. The attenuation of the pad is nominally 3 dB.

The crystal mixer is a Sage Laboratories balanced mixer type 2513R. The pad formed by R14, R13, R15 isolates the local oscillator from the mixer.

The pre-i.f. amplifier consists of TR2 and TR3 in a cascode circuit which, with the input and output networks, has a pass band from 30 MHz to 40 MHz. The input network C12, L6, T1, C13, C15 has a 0·1 dB Tchebyscheff response[4]; the output network is a heavily damped T-equivalent to a transformer where one arm is negligibly small. The gain of the pre-i.f. amplifier between 75-ohm impedances is about 23 dB.

Installation

It is important that the input amplifier is not overloaded. In areas of high signal strength an input attenuator must be used to limit the input signal to a maximum of 5 mV. Attention must be paid to this point when a mast-head pre-amplifier is in use.

Maintenance

Routine maintenance is not required. If faults develop which cannot be cleared on inspection the unit should be returned to Equipment Department for service.

References

1. Television U.H.F. Receiver RC5M/501.
2. Oscillator and Multiplier OS2/511.
3. Low Noise U.H.F. Pre-amplifier AM14/514.
4. Wireless World, Sept. 1954.

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See overleaf for Fig. 1

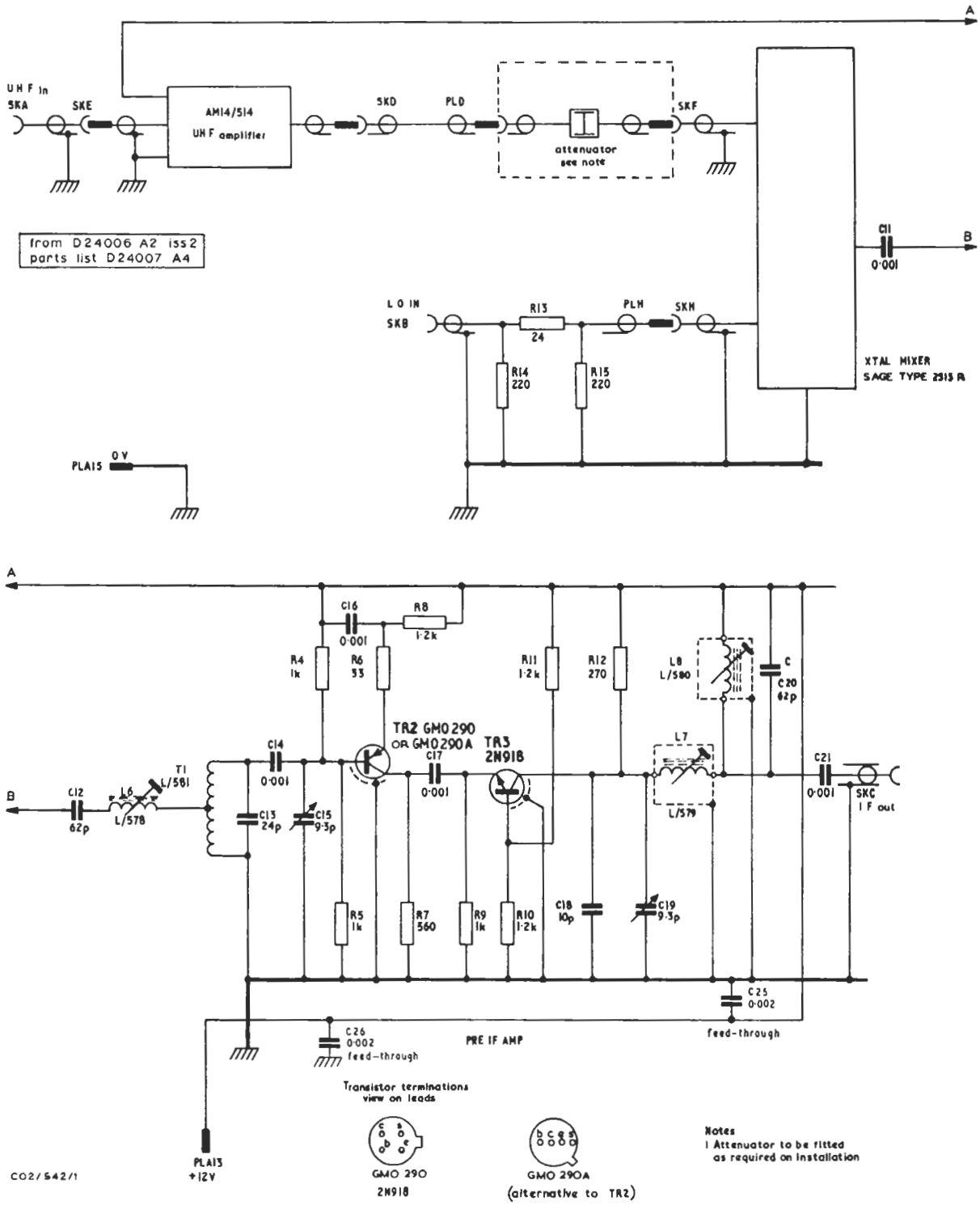

Fig. 1 Circuit of the UHF Converter CO2/542