

QUADRATURE UNIT UN1/61

General Description

The UN1/61 is a phase-splitting unit producing two outputs differing in phase (Fig. 1) by  $90 \pm 10$  degrees over the frequency range 50 Hz to 1.5 kHz approximately, with an overall gain (Fig. 2) of about 0 dB. The unit was developed for eliminating certain effects of phase distortion in sound automatic monitors. This use of quadrature technique is explained in BBC Engineering Division Monograph No. 62 and the practical application of the unit is described in Instruction MN2/2-6.

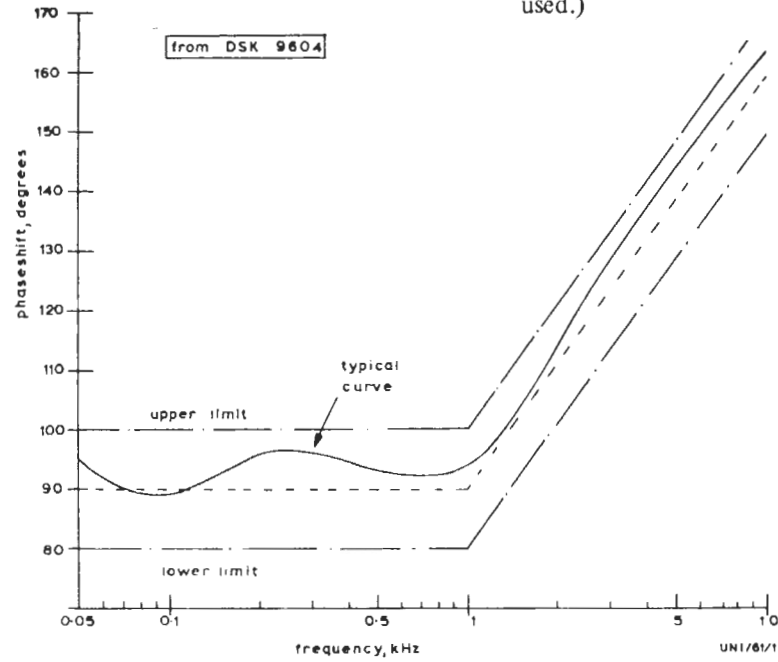


Fig. 1. Phase/Frequency Characteristic

The unit consists of a printed circuit board mounted on a chassis CH1/12A. Index peg numbers are 1 and 33.

Circuit Description (Fig. 3)

The circuit comprises a phase-splitting amplifier stage, TR1 and TR2, feeding an all-pass constant phase-shift lattice network made up of C5 to C10 and R8 to R13. This is followed by buffer amplifiers for each output (TR3 to TR5 and TR6 to TR8) giving an overall gain at 1 kHz of  $0 \pm 0.5$  dB.

Adjustment and Testing

1. Apply an input of zero-level tone at 1 kHz from a 600-ohm source, and adjust the overall gains to  $0 \pm 0.5$  dB by varying the feedback resistors R19 and R28, measuring the output into a high-impedance load, such as the high-Z input of an ATM/1.
2. With the same input, measure the levels at test points 1 and 2, and 3 and 4, which should be  $-13.9$  and  $-23.4$  dB respectively. (A high-impedance measuring circuit should again be used.)

3. Check the amplitude/frequency characteristic from the input of each output. The response should lie between the limits shown in Fig. 2. As the input impedance of the UN1/61 is high, measurement can be made in terms of gain. A 600-ohm source and a high-impedance measuring circuit should be used.

Note: Tests 2 and 3 are not necessary as routine test procedure, but are intended to assist in fault location.

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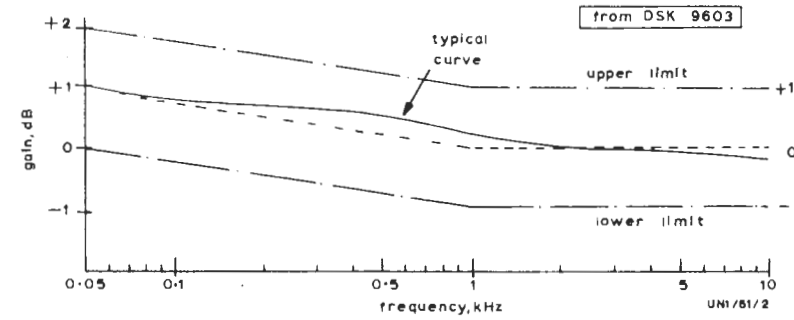


Fig. 2. Amplitude/Frequency Characteristic

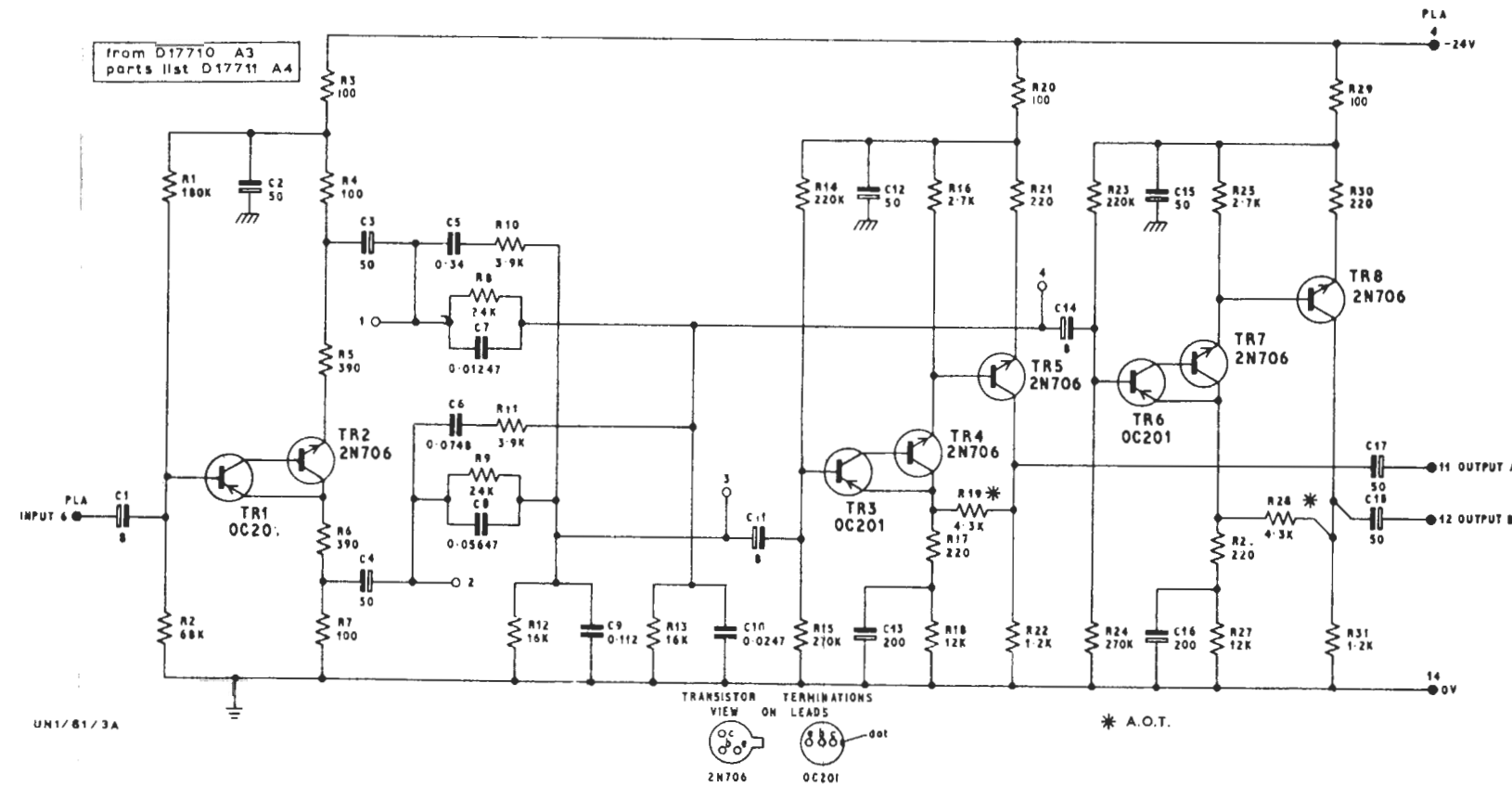


Fig. 3. Quadrature Unit UN1/61