U.H.F. MIXER MX1/508

Introduction

The MX1/508 is a balanced u.h.f. mixer using a 3-dB directional coupler and with diodes providing the non-linear mixing elements. A printed-circuit board is used.

General Description

The circuit diagram is given in Fig. 1. The 3-dB coupler has the property that a signal fed to one input (say A in Fig. 1) will divide and two equal components will appear at the outputs B and C. Output C is in phase with the input, output B lags 90^{o}. The length of the coupling elements is $\frac{\lambda}{4}$ at the frequency concerned and the spacing (for 3-dB coupling) is 0·02 in.

of three main components:

(a) f_{lo}

(b) $f_{lo} + f_{if}$

(c) $f_{lo} - f_{if}$

If it is required to pass the sum or difference frequency only, then a filter, e.g., an FL2/533 or an FL2/534, will be required on the output.

As a down converter, an unwanted input (signal or noise) at the sum or difference frequency will give an i.f. output. This results in a noise performance up to 3-dB worse than the optimum. A filter at the input eliminates the trouble, but as the filter has some loss (typically 1 dB) the full improvement cannot be obtained.

The two capacitors are part of the printed circuit

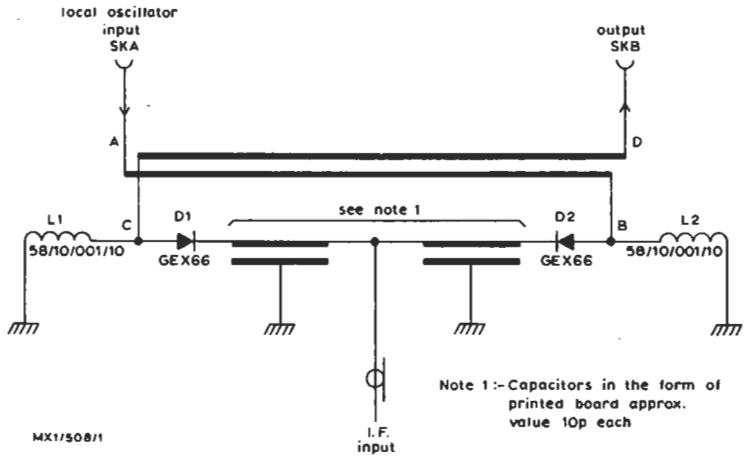

Fig. 1 Circuit of the U.H.F. Mixer MX1/508

The complete mixer can be used for converting i.f. to u.h.f. (up conversion) or u.h.f. to i.f. (down conversion) depending on the direction of connection of the mixing diodes. Fig. 1 shows the up conversion condition. For down conversion, D1 or D2 would be reversed and the u.h.f. input would replace the i.f. input. The conversion loss is 8 to 10 dB.

As an up converter the u.h.f. output will consist and ensure maximum local oscillator drive to the diodes. The chokes provide return paths for the diodes.

There are no adjustments and maintenance is not required.

Reference

1. Designs Department Specification No. 4.54(69)

AIB 9/70