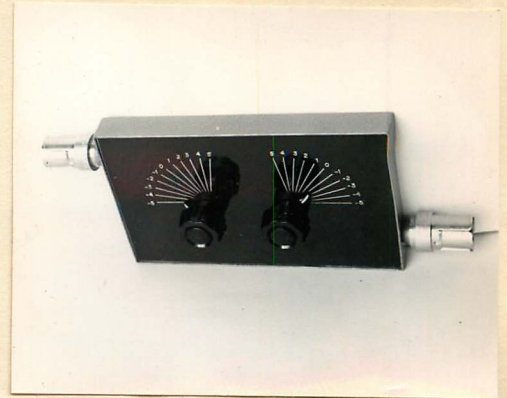


A NEW STRIPLINE IMPEDANCE MATCHER

The U.H.F. impedance matcher or tuner, shown in the photograph has been designed to overcome the disadvantages of tuners of the stub type. These are bandwidth, contact noise and size. When a tuner is correctly used, it is used to compensate not too large mismatches. In that case a stub tuner is adjusted for nearly a quarter wavelength, so a severe frequency dependence is introduced. As most measuring oscillators are not frequency stabilized, this is a disadvantage. In diagram 2 a comparison is given of the frequency dependence of the stripline tuner versus a double stub tuner, both adjusted for the same mismatch. Because of the type of circuit used, the bandwidth of the tuner increases with decreasing mismatch. From the diagram the large improvement in frequency insensitivity for small mismatches can be seen; the frequency dependence being comparable for standing wave ratio's of 2.6 or higher. This tuner has been designed for a centerfrequency of 400 mc/sec, but tuners based on the same principle can be constructed for other frequencies as well. For this frequency a coverage diagram is given in diagram 1. As can be seen, all mismatches with standing wave ratio's up to about 4.0 can be tuned out. This tuner can also be designed for the compensation of larger mismatches. However such large mismatches can better be reduced in the mismatched object itself. For frequencies far off from the centerfrequency, i.e. 300 and 500 mc/sec, the tuner is still useful, the maximum tunable V.S.W.R. beginning to reduce and being 1.5 and 2.4 respectively. To provide an easy resetting, indications are given corresponding with the settings of the tuner knobs. The insertion loss at a frequency of 400 mc/sec with the tuner in zero mismatch position is only 0.03 dB. Apart from the electrical advantages, the tuner has several mechanical features as well. In the first place there is no contact noise, secondly it is a small package and it is very suitable for building in any equipment. An advantage over a tuner incorporating a line stretcher is that the outer mechanical dimensions do not change when tuning, which is very inconvenient if the tuner has to be inserted in a testbench set-up. The connector is a General Radio type. Others can be provided on request.



COVERAGE DIAGRAM

$f = 400 \text{ mc/sec}$

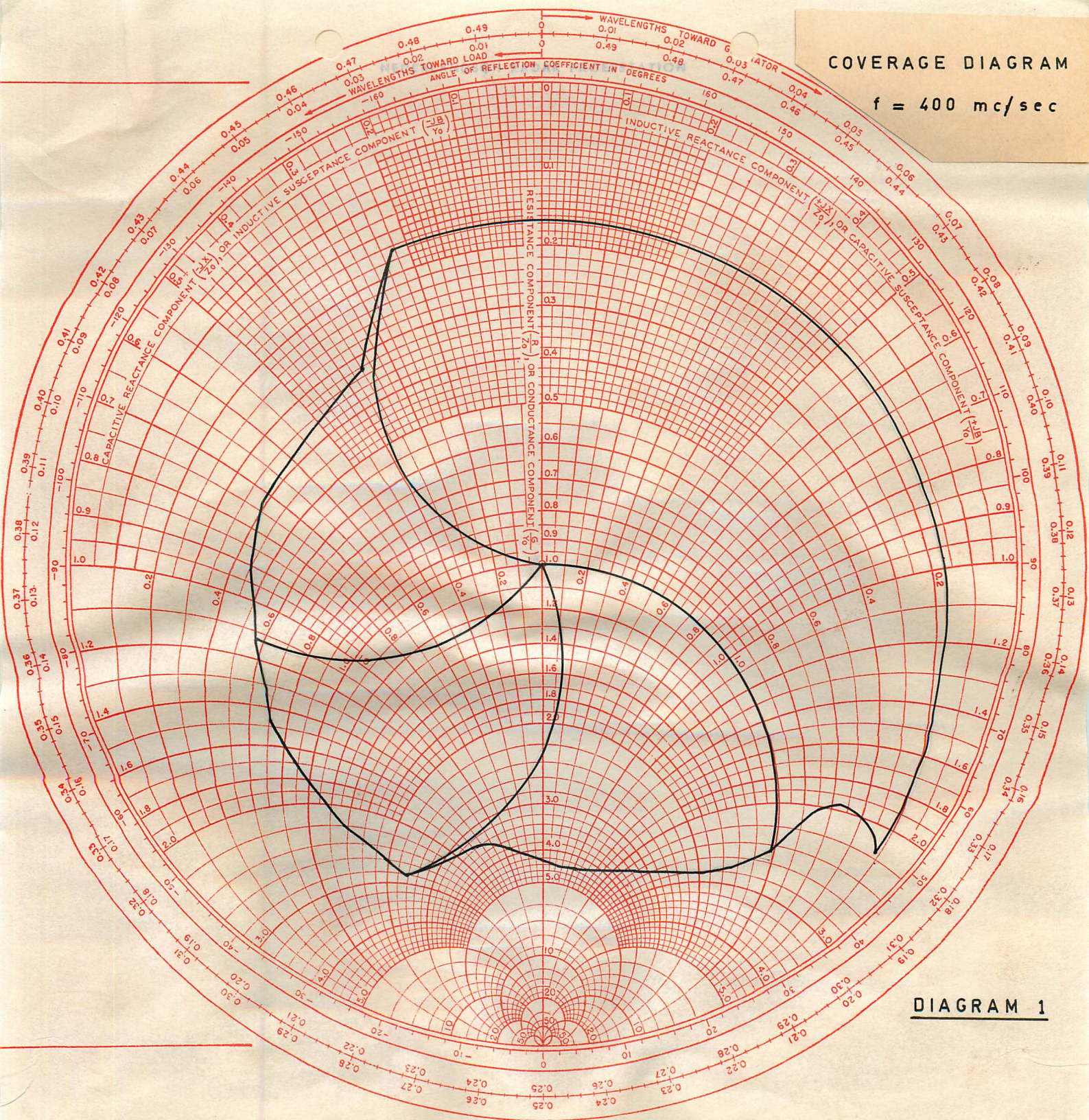


DIAGRAM 1

DIAGRAM 2

