21 May 1953

Memo. to W.J.G.

Subject: Government Tests of Antenna Coupler, Model TAC-1

1. The tests were conducted on 18 May 1953 at TMC Engineering Laboratory, and the following alterations were requested by the government engineer. In the opinion of the engineering department, these changes are advisable.

a. The output terminals on the rear of the unit will be spac d further apart, to accommodate a 600 ohm open line, which is frequently used.

b. The slider wheels on the tank coils will be re-designed, to give additional contact area, to lessen the chance of arcing due to poor contact.

c. The wire routing will be altered slightly, to shorten the lead length and improve mechanical stability.

d. The meters will be round and recessed from the front panel, with protective bezels on the panel.

2. The matter of hot impedance tests was discussed. As no Z-angle meter was available, the following check was made:

After a preliminary test on the General Radio impedance bridg , a hot check was made by tuning the transmitter, using a 73 ohm load connected directly to the output terminals of the transmitter, and observing the P.A. Plate tuning dial. This reading was in close agreemant with the tuning charts supplied with the BC-610.

The TAC-1 was then inserted between the load and the transmitter, and the P.A. plate re-tuned. The dial settings were observed to coincide with the previous readings, within ± 3 divisions, therefore indicating that the impedances are properly matched.

3. The tests were carried out using Ohmite non-inductive dummy loads of 52, 73, 300 and 600 ohms. The pertinent test data and efficiency curves ar attached. Because of the characteristics of the meters now used, a more

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accurate meter was used in the external dummy ant nna circuit, to check th power output in watts.

4. Since the TAC-1 will be given a field test at a government installation, the following is a brief description of the tuning controls:

a. COUPLING : This switch taps the coupling coils at the proper points for matching 75 ohms impedance at all frequencies.

b. BAL. - UNBAL. : For unbalanced loads, this switch removes one side of the coupling coil and gives all available power to the end of the circuit being used. Terminal #1 (left side) must be used for unbalanced loads.

c. BAND SWITCH : This control taps the coil in the tuned circuit to enable a single coil to tune the entire range from 2 to 18 Mc.

d. 2-3 Mc. 3-18 Mc. : For operations below 3Mc., the 50 mmf vacuum capacitors are used in parallel with the variabl capacitors in the tuned circuit.

e. CAPACITOR : This calibrated control tunes the variable capacitors in the tuned circuit. This control may vary slightly from the tuning charts, due to the slight loading effect of the antenna on the overall circuit.

f. ANT. TUNING : The cyclometer controls the sliding taps on the coils and is adjusted for a proper impedance match between the antenna in use, and the 75 ohm transmitter output. This also controls the proper balance for slightly unbalanced loads.

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