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**RESTRICTED**

**X-66135**

SERIAL NO.

**INSTRUCTION BOOK (PRELIMINARY)**  
**FREQUENCY MONITORING ASSEMBLY**  
**FOR**  
**AN/FGC-1A RADIO EQUIPMENT**  
*for RBP Receivers*



**AWAMM-37**  
Antique Wireless Museum, Bloomfield, NY

**MANUFACTURED BY**  
**WESTERN ELECTRIC CO.**  
NEW YORK, N. Y.  
ORDER NO- NXss-20953

**BELL TELEPHONE LABORATORIES**  
INCORPORATED  
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463 WEST STREET  
NEW YORK

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FOR  
AN/FGC-1A RADIO EQUIPMENT

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SECTION I - DESCRIPTION

## 1-1 INTRODUCTION

1.01 These instructions describe the Frequency Monitoring and the Receiver Control Equipment of AN/FGC-1A Radio Equipment and contain directions for installation, operation, and maintenance. They cover the modification of the radio receivers which are necessary for the connection of this equipment but do not cover the radio receiver itself except in so far as is necessary to explain the operation of the telegraph terminal equipment. Other instructions are available for the radio receivers and other components of the circuit.

## 1-2 DESCRIPTION

2.01 General Description. This equipment forms part of a two-tone radio telegraph system, the general circuit arrangement of which is indicated in Fig. 1. The receiving circuit is indicated schematically in the block diagram of Fig. 2. The radio transmitter sends out its normal frequency plus 425 cycles for dots or dashes (marks)\* and its normal frequency minus 425 cycles for spaces. These signals are received and amplified in the radio receiver and pass to the first intermediate frequency amplifier as 450 kilocycles  $\pm$  425 cycles. They are then converted to 50 kilocycles  $\pm$  425 cycles and amplified in the second intermediate frequency

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\*See the Glossary for definitions of unusual terms.

SECTION I - DESCRIPTION

amplifier. From the second intermediate frequency stage the signals pass through a converter which changes them to 2550  $\pm$  425 cycles. The order of the frequencies is now inverted, the marking frequency being 2125 cycles and the spacing frequency 2975 cycles. These voice frequency signals are rectified and passed to a tone keyer, from which they go to the receiving teletypewriter equipment as ordinary single-tone audio signals over an intermediate link, which may be either a land line or a radio circuit.

2.02 Signals are usually sent by telegraph printer keyboard or automatically by transmitter-distributor at 60 words per minute. They are received by printer or by typing reperforator. Other sending and receiving mechanisms may be used at speeds up to 200 words per minute if radio conditions permit.

2.03 The effect of radio fading is minimized by employing space diversity; two sets of receiving equipment are associated with two receiving antennas which are spaced several wavelengths apart, and thus the reliability of reception is greatly increased.

2.04 A 50 or 60 cycle, 103-126 volt a-c power supply is required. The additional power required for the Frequency Monitoring Bay and Receiver Control Unit CW-50136 is about 180 watts.

2.05 A location free from abnormal vibration and protected from outside weather conditions is necessary.

