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ROUGH DRAFT

Hold until R+D Lab budget is returned.

16 November 1956

TO : Chief, Supplemental Programs Division, OC

FROM : Chief, Communications Engineering Division

SUBJ : Reference Oscillator

REF : Memo to Chief, OC-E dated 11 October 1956, SPM-6-606

1. With reference to paragraph 2 of the above memorandum, a determination has been made as to the feasibility of employing the unijunction transistor circuitry developed by the R&D Laboratory in an audio reference oscillator.

2. Our experimental data indicates:

a. Frequency stability of one to two percent.

b. Continuous frequency variation over a ten to one range

c. Pulse or saw tooth output wave form.

d. Small number of associated components.

e. Optimum "B" voltage in the order of 45V.

3. At the present time there seems to be considerable variation in the characteristics of individual transistors. This makes it necessary to tailor three of the components in each oscillator to obtain the required frequency and stability.

4. It should be possible to produce a 1000 cycle reference wave oscillator in a package 3" x 2" x 1". This oscillator would have an over-all frequency stability of ± 1% over the temperature range of from 0 to 50° C.

5. Note is made in paragraph 2 of the reference memorandum that the unijunction oscillator would be used as a reference source with the

(14)

This document is part of an integrated file. If separated subjected to

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Minifon recorder. ~~Speed variations are cited. Included~~
Speed variation
~~here is~~ data taken on this type recorder is forwarded herewith for your information.

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Dec 16 1912

The General Electric ZJ-14 unijunction transistor has been tested here at the laboratory to determine what can be expected from them in audio oscillator applications. The most important features of this transistor are:

1. Frequency stability of one to two percent.
2. Continuous frequency variations of the order of ten to one.
3. Pulse or sawtooth wave shape.
4. Small number of components required.

At the present time there seems to be considerable variations in the characteristics of individual units. This makes it necessary to tailor the components in each oscillator to obtain the required frequency accuracy and stability.

It should be possible to produce a 1000 cycle reference oscillator in a package of approximately 3x2x1. This oscillator could have an overall frequency stability of ±1% over the temperature range of 0 to 50 degrees Centigrade.

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PROJECT INITIATION FORM
R&D LABORATORY

PROJECT TITLE: Fixed Frequency Reference Oscillator (ELINT) Newark

DATE DIRECTIVE RECEIVED: 17 Oct. 1956 NOMENCLATURE: OA-3

DATE WORK STARTED ON PROJECT: 1 Nov. 56 DATE REQUIRED: No Specific Date

PROJECT NUMBER: 2517-1 REPORT CLASSIFICATION: N.A.

EQUIPMENT CLASSIFICATION: Unclassified AUTHORITY: SPM 6-606 (10-11-56) SP/MR 6-845 (12-3-56)

SOURCE OF REQUEST: SPD

LIAISON CONTACT: [redacted] QUANTITY REQUIRED: 10 STAT

PRIORITY: #3 SPD

TYPE OF EVALUATION: "C" ASSIGNED TO: Design

DATE SUSPENDED OR CANCELLED: N.A.

DESCRIPTION OF PROJECT:

1. Fabricate ten Reference Oscillators based on the tuning fork prototype constructed under project 2517.
2. Incorporate the features outlined in Memo SPM 6-606.
3. Construct one additional unit for laboratory retention.

PROJECT FOLDER FILED: Room # _____ Safe # _____ Drawer # _____

Man-Hours Expended:
Mechanical _____
Electrical _____

SIGNED [redacted] STAT

DATE 12-27-56

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