

I. TITLE: Introduction to the AN/SGC-1A Keyer/Converter.

II. OBJECTIVES: When the student completes this lesson he will be able to:

- A. STATE the characteristics of the AN/SGC-1A tone shift Keyer/Converter
- B. LOCATE, IDENTIFY and STATE the functions of the external controls and indicators of the AN/SGC-1A tone shift Keyer/Converter.

A. Characteristics of the AN/SGC-1A.

1. Terminal equipment

Name applied to that equipment which terminates a radio path signal to DC for use with a teletypewriter, such as, Keyers converters or multiplexing equipment.

KEYER - CONVERTS DC TO AC
CONVERTER - CONVERTS AC TO DC

★ 2. Simplex

Device that can send or receive but not at the same time. (not simultaneously)

3. Keyer/Converter

★ Keyer - CHANGES DC TO AUDIO

★ Converter - CHANGES AUDIO TO DC

FREQUENCIES PRODUCED.

★ SPACE 500 Hz

★ MARK 700 Hz

4. Primary use - Short Range UHF APTS, RATT. APTS (Audio Freq Tone Shift) (NOT RECS)

5. Requires a Voice modulated or AM transmitter.

B. Functions of the external controls and indicators of the AN/SGC-1A

1. REC LEVEL control -

Adjusts level of received signal from a receiver.

2. REC BIAS -

Corrects bias when the time interval is not equal between marks and spaces

- DO NOT USE PHONES (GET ZAPPED)
3. TTY Monitor jack -
For TTY DC monitoring.
 4. Loop Current Adjustment -
adjusts current in loop,
to be adjusted for 60 MA,
in a CLOSED circuit
condition.
 5. SEND BIAS -
corrects bias when the time
interval is not equal
between marks and spaces,
when the TTY causes distortion.
 6. Power indicator light -
Indicates when power is ON.
 7. Receive indicator light -
Indicates that equipment
is in a receive condition.
 8. Transmit indicator light -
indicates that equipment
is in a transmit condition.
 9. Control Switch ..

EQUIP. IS IN RECEIVE UNLESS YOU
ARE TRANSMITTING. AFTER YOU STOP
XMITTING, 4 SECOND DELAY TO GO BACK
TO RECEIVE. WHEN XMITTING, INSTANTLY
SWITCHES TO XMIT.

TRS TRANSMIT ONLY
AUTO XMIT OR REC

★ NORMALLY OPERATED
IN AUTO POSITION.

REC STBY RECEIVE ONLY
ADJ FREQ. USED BY MAINTENANCE PERSONNEL

10. Meter
enables reading of signal
selected from meter switch.
11. Meter switch.
OFF - Disconnects meter
LOOP CURR - Loop current monitor
~~SEND LEVEL~~ - Used for PMS
★ SEND BIAS - Monitor send bias
and to correct if
necessary
REC LEVEL - monitors receive
signal and adjust
if necessary
~~PLATE CURR~~ - Used for PMS
REC BIAS - Monitor rec bias
and to correct if necessary

READ 60 MA

REPEATED
SEND SPACES ON TTY, TURN TO SEND
BIAS, ADJUST, TURN OFF, RELEASE REPEAT

MUST TURN TO OFF AFTER
ADJUSTMENT. LOCKS UP THE
TTY AND IT WILL NOT PRINT.

12. 115V AC.
utility outlet for 115V AC
13. Power switch - energize and
de-energize equipment.

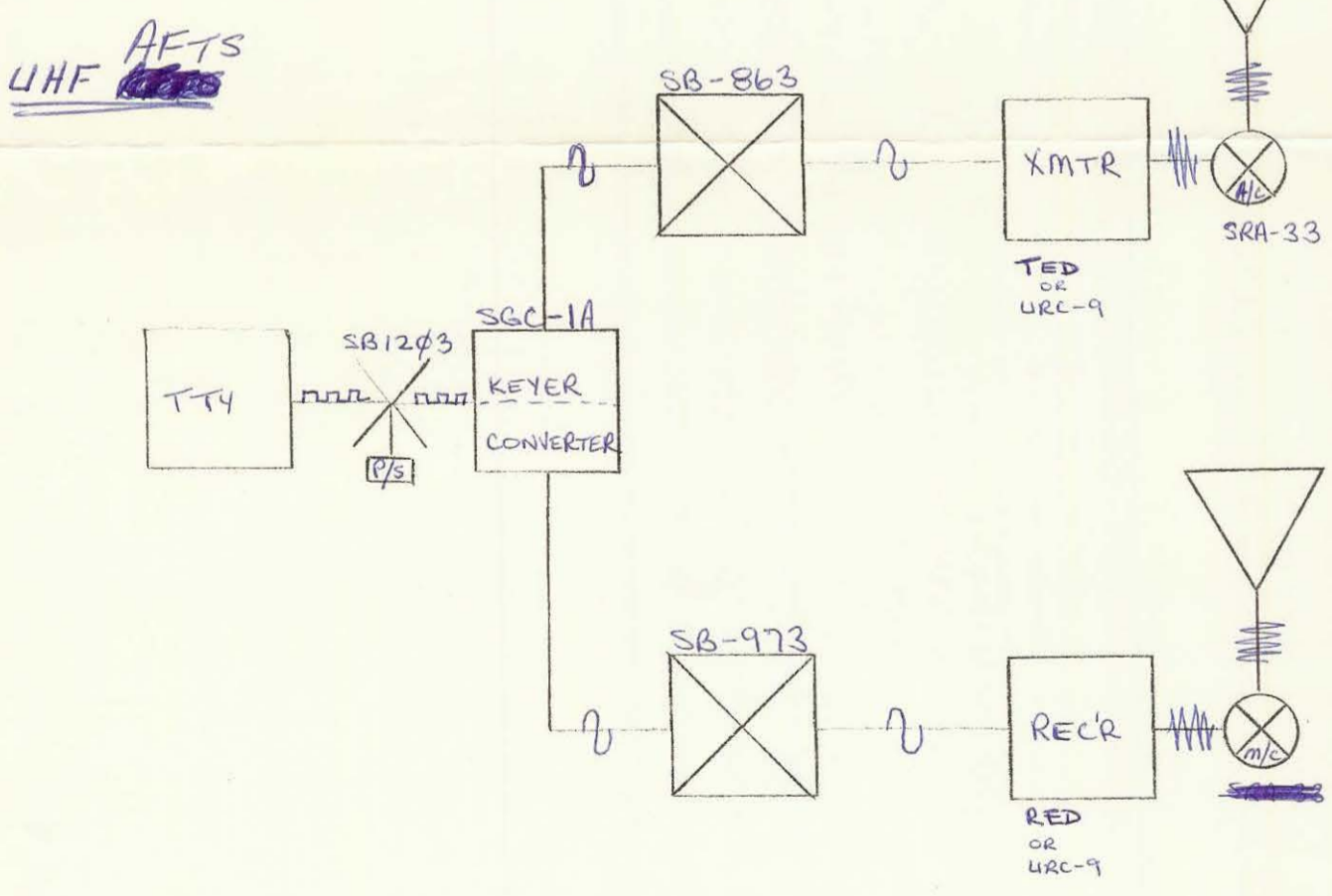
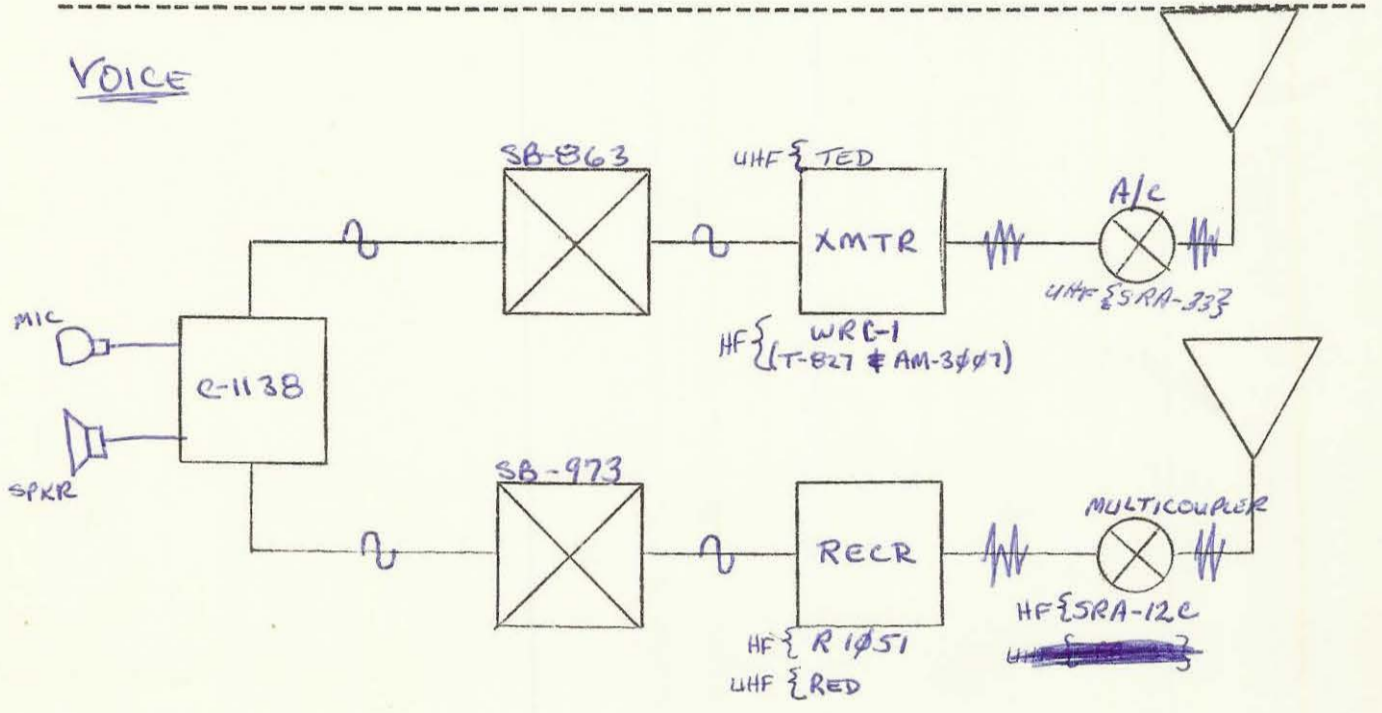
I. TITLE: Introduction to a VOICE and AFTS communications systems

II. OBJECTIVES: When the student completes this lesson he will be able to:

KNOW

A. DRAW and EXPLAIN the block diagram of an Unclassified UHF VOICE communication system

B. DRAW and EXPLAIN a block diagram of an Unclassified UHF AFTS communications system



I. TITLE: Introduction to VHF Transmitters and Receivers

II. OBJECTIVES: When the student completes this lesson he will be able to:

A. STATE the characteristics and capabilities of the AN/URT-7 Transmitter.

B. STATE the characteristics and capabilities of the AN/URR-27 Receiver.

I. The AN/URT-7 Transmitter

A. Characteristics of the AN/URT-7 Transmitter

1. Description SAME AS TED EXCEPT AN EXTRA KNOB ON RF SIDE (RIGHT SIDE) #
SHORT RANGE VHF XMITR
2. Freq. Range 115-156 MHz
3. Freq. Control CRYSTAL
4. Modes of Emission:
MCW - 1000 Hz TONE
PHONE - ANY AUDIO INPUT
5. Power Output 30 WATTS

NOTE: THE FREQUENCY MARKED ON THE URT-7 TRANSMITTER CRYSTAL IS THE OSCILLATOR FREQUENCY. THE TRANSMITTER OUTPUT FREQUENCY IS 6 TIMES THE OSCILLATOR FREQUENCY.

B. Under normal conditions a Radioman will be advised to bring up a certain frequency. In this case for the AN/URT-7 divide the desired frequency by 6

Example: What is the Crystal oscillator frequency for 121.5Mhz

$$\begin{array}{r} 20.25 \\ 6 \overline{) 121.5} \\ \underline{12} \\ 0 \\ \underline{0} \\ 0 \\ \underline{0} \\ 0 \end{array}$$

20.25

C. Capabilities of the AN/URT-7

1. The AN/URT-7 has the same capabilities as the TED and has the same front panel controls, with one exception

- a. In the R.F. section of the AN/URT-7 there is an added tuning control. The

PA GRID TUNING

and the

PA GRID TUNING LOCK

- b. The AN/URT-7 is tuned and operated in a similar manner as the TED transmitter.

II. The AN/URR-27 Receiver.

A. Characteristics of the AN/URR-27 Receiver

1. Description: SHORT

RANGE VHF RECEIVER

2. Freq. Range: 145 - 190 MHz

3. Types of Freq. Control:

CRYSTAL

VARIABLE MANUAL

4. Modes of Reception

MCW

PHONE

NOTE: TO CALCULATE THE DESIRED FREQUENCY FROM THE CRYSTAL FREQUENCY USE FOLLOWING FORMULA:

$$\text{CRYSTAL FREQ.} \times 6 - 18.6\text{MHz} = \text{Desired Freq.}$$

- B. Under normal conditions a Radioman will be advised to bring up a desired Freq. in this case the crystal to be used would have to be determined by the following example:

BRING UP 121.5MHz

$$\begin{array}{r} 20.25 \\ 6 \end{array} \overline{) 121.5} \quad \text{and then } \underline{\text{ADD}} \quad 18.6\text{MHz} = 39.85 \left\{ \begin{array}{l} \text{CRYSTAL} \\ \text{FREQ.} \end{array} \right.$$

C. Capabilities of the AN/URR-27 Receiver

1. All capabilities and operations are the SAME as used with the AN/URR-35.

UHF SYSTEMS
AN/SGC -1A
KEYER/CONVERTER

Tuning and operation of the AN/SGC-1A

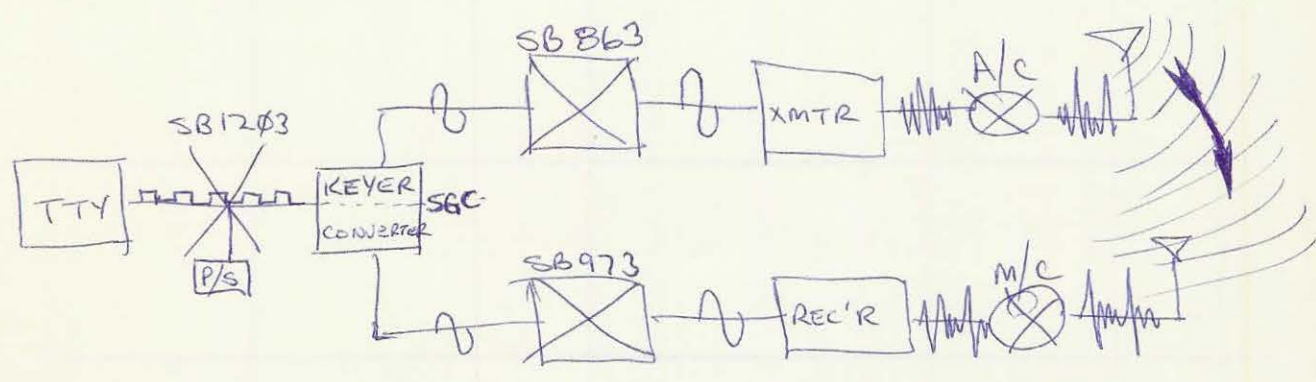
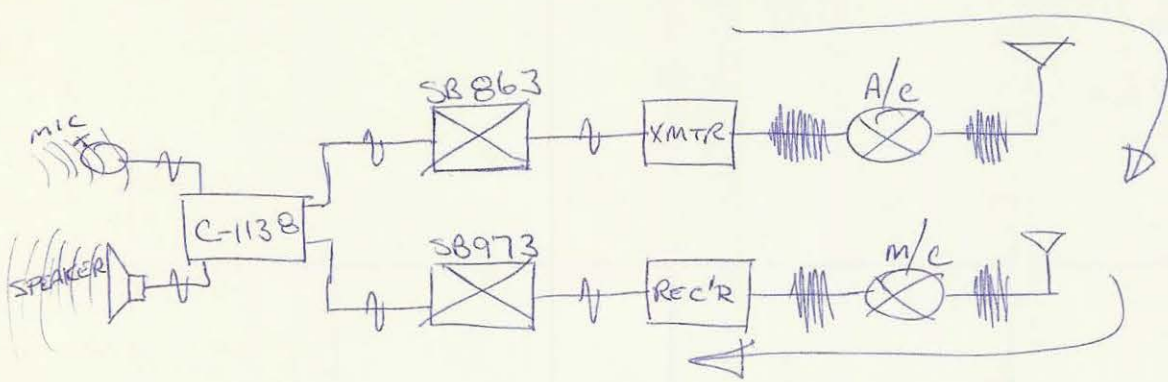
SEND SIDE

1. Turn power switch to on position.
2. Turn CONTROL SWITCH to TRS position. (This closes the loop.)
3. Turn meter switch to LOOP CURR. (This tells your meter to read loop current)
4. Adjust the control marked LOOP CURR until the meter reads 60 on the upper scale. (If you cannot adjust it to 60: A. Make sure that the control switch is in TRS.
 - B. Make sure that the channel on the SB-1203 is fully clockwise.
 - C. Make sure that the external power supply to the SB-1203 is energized.)
5. Turn TTY machine on and unlock the keyboard.
6. Adjust send bias as follows:
 - a. Hold down space bar and repeat key. (Keep held down thru step e.)
 - b. Turn METER SWITCH to SEND BIAS. *BIAS - TIMING OF TTY SIGNAL*
 - c. Adjust SEND BIAS control approx half way. (This adjustment would be to zero on the upper scale if more than one TTY were being used.)
 - d. Turn CONTROL switch to AUTO.
 - e. Turn METER SWITCH to OFF.
 - f. Release the SPACE BAR and REPEAT key. (This completes the send side)

RECEIVE SIDE:

1. Ensure that you have a signal coming into the SGC that you are using. This signal must be continuous spaces of the TTY machine. (While you are in this room your instructor will have AN/URR-35 #7 tuned to a signal of this description. To use it just patch the SGC that you are using to URR-35 #7.)
2. Turn METER SWITCH to REC LEVEL. (REC LEVEL is the strength of the incoming signal)
3. Adjust the REC LEVEL control to 0 on the lower scale. (The lower scale is divided into decibels) (To get this reading exactly on 0, adjust the AF level control on the receiver.)
4. Turn METER SWITCH to REC BIAS. (TTY machine should stop typing.)
5. Adjust REC BIAS control to 0 on the UPPER scale.
6. Turn METER SWITCH to OFF. (TTY should start spacing across the page.)

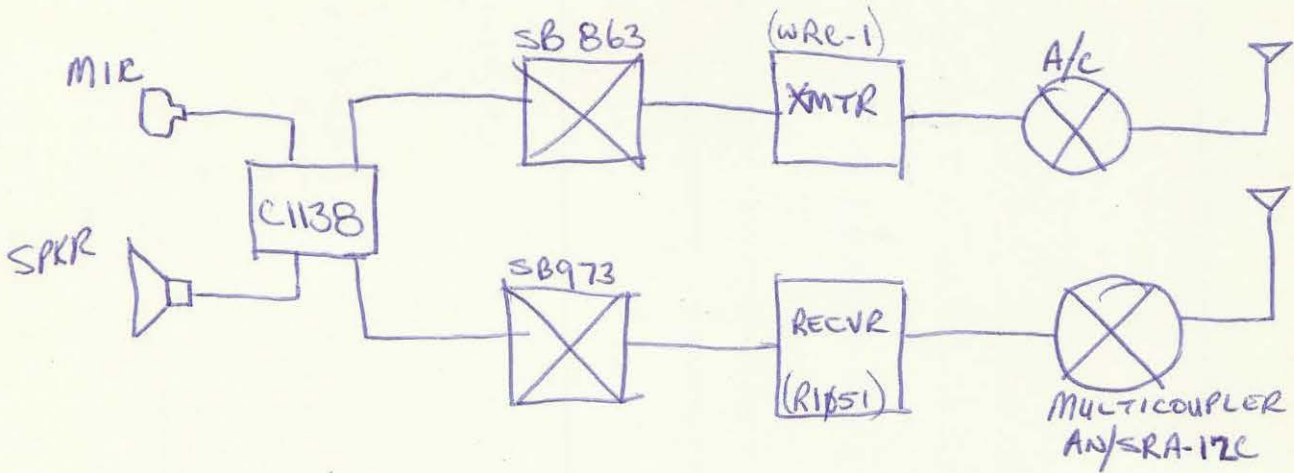
LANCER



FOR WEEK 14 TEST, KNOW:

LANE, L.
72-44

HF VOICE SYSTEM



44F AFTS SYSTEM