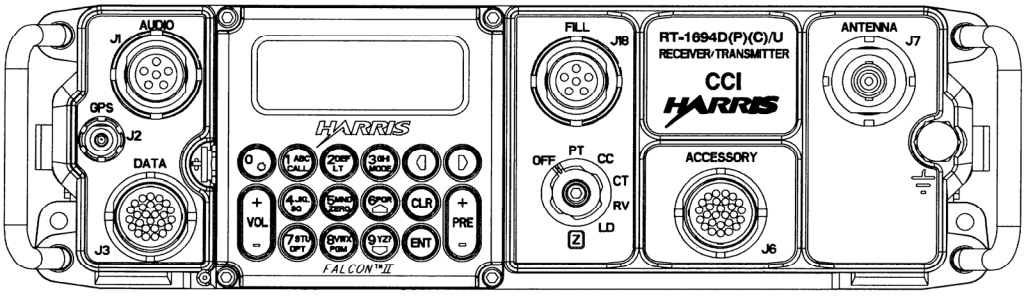
PUBLICATION NUMBER: 10515-0103-4001
AUGUST 2007
Rev. D

AN/PRC-150(C) OPERATOR REFERENCE GUIDE

TABLE OF CONTENTS

AN/PRC-150(C)


AUDIO
J1
GPS
J2
DATA
J3
HARRIS
VOL
PRE
CLR
ENT
FALCON™II
FILL
J18
OFF
PT
CC
CT
RV
LD
RT-1694D(P)(C)/U
RECEIVER/TRANSMITTER
CCI
HARRIS
ACCESSORY
J6
ANTENNA
J7

BASIC PROGRAMMING PROCEDURES

PURPOSE - This is a sequential guide and items should be programmed in the order presented as they apply to the operational scenario. While navigating through the radio menu structure, the Left/Right arrow keys on the KDU keypad are used to select the item to be programmed, and the Up/Down arrow keys are used to scroll through the available parameters for each item. Default settings on a zeroized radio for each item are shown in bold where applicable.

SELECTING RADIO MODE

FIX/ALE/HOP/3G/3G+ MODE: Press #3/**MODE** button on KDU until desired mode is displayed and press **ENT** or wait and the radio will automatically enter selected mode.

PLAIN/CIPHER TEXT (PT/CC/CT) OPERATION

Rotate function switch to desired position.

PROGRAM RADIO SETTINGS

1. Press **PGM**, Select **CONFIG, RADIO**.

a. Transmit Power (**HIGH**, MEDIUM, LOW)
b. Squelch (**OFF**, ON)
c. Squelch Level (HIGH, **MEDIUM**, LOW)
d. FM Squelch Type (NOISE, **TONE**)
e. Radio Silence (**OFF**, ON)
f. Internal Coupler (**ENABLED,** BYPASSED)
g. FM Deviation (**8.0 kHz**, 6.5 kHz, 5.0 kHz)
h. CW Offset (0 Hz, **1000 Hz**)
i. Rx Noise Blanking (**OFF**, ON)
j. Compression (OFF, **ON**)

k. 20 W AMP Coupler (**MEMORY TUNE**, LEARN TUNE, DISABLED)
l. Radio Self ID (**001 – 254**)
m. Error Beeps (**OFF**, ON)

PROGRAM PORT SETTINGS

1. Data Port (Only configure when connecting a DTE data device.)

a. Press **PGM**. Select **CONFIG. PORTS, DATA**.
b. Data Rate (19.2 kbps to 75 bps) **2400 bps**
c. Data Bits (**8**, 7)
d. Stop Bits (**1**, 2)
e. Parity (**NONE**, ODD, EVEN, MARK, SPACE)
f. Flow Control (**NONE**, XON/XOFF, HARDWARE)
g. Echo (**ON**, OFF)
h. Level (**RS232**, MIL-188)

i. TX Clock Source (**INTERNAL**, EXTERNAL, RECOVERED)
j. Keyline (**RTS**, AUX_AUDIO)

2. ASCII Port (Check if any PPP device will not communicate i.e. RPA, TAC CHAT)

a. Press **PGM**. Select **CONFIG, PORTS, ASCII.**
b. Data Rate (115.2 kbps to 75 bps) **115.2 kbps**
c. Data Bits (**8**,7)
d. Stop Bits (**1**, 2) **Note: Sometimes radio will default to 2 stop bits. Set to 1.**
e. Parity (**NONE**, ODD, EVEN)
f. Flow Control (**NONE**, XON/XOFF, HARDWARE)
g. Echo (ON, **OFF)**

FIXED FREQUENCY OPERATIONS

1. Scratch Pad (CH 000) Programming

a. With the radio in FIX mode, select the MANUAL preset.

b. Press the right arrow until DATA is highlighted and select a modem preset.
c. Press the right arrow until VOICE is highlighted and select a voice type.
d. Press the right arrow until KEY is highlighted and select a key and crypto type.
e. Press the 0/PAGE key to display the channel screen.
f. With the right arrow, move to the R frequency and press ENT.
g. Type in the desired frequency, and press ENT. The T frequency will change automatically.
h. Press the right arrow until MOD is highlighted and select a modulation type.

2. Channel Preset Operations

a. Enter desired channel number (000-199).
b. Enter desired **RX FREQUENCY**.
c. Enter desired **TX FREQUENCY**, or press **ENTER**.
d. Modulation (**USB**, AME, CW, FM, LSB)
e. AGC Speed (SLOW, **MED**, FAST, DATA, OFF)

f. IF Bandwidth **NOTE:** Options are dependent on modulation type selected.
   - USB or LSB (2.0 kHz, 2.4 kHz, 2.7 kHz, **3.0 kHz**)
   - AME (3.0 kHz Only)
   - CW (0.5 kHz, 0.35 kHz, 1.0 kHz, **1.5 kHz**)

g. RX Only (YES, **NO**)
h. Enable Hail TX NOTE**: Not available for channel 000** (YES, **NO**)
i. Max TX Power (**00** WATTS). This is the default, for maximum transmit power.
j. Enable SSB Scan (YES, **NO**) NOTE**:** Selecting **yes** automatically places current channel in scan list.
k. Repeat for the remaining channels to be programmed.

MODEM PROGRAMMING (Only required when sending data messages from a PC.)

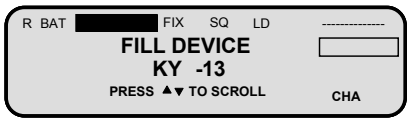
1. Press **PGM**. Select **MODE, PRESET, MODEM**. (Different modem types have different options available. Consult the radio operations manual for a detailed explanation of settings.)
   a. Select the modem preset name you wish to modify. **NOTE:** In a zeroized radio, modem presets are given default names **MDM1** to **MDM20**.
   b. Enter desired name up to 15 characters (e.g. 24SERIAL).
   c. Select MODEM TYPE (e.g. SERIAL).
   d. Select DATA RATE (e.g. 2400).
   e. Select INTERLEAVE: (e.g. SHORT).
   f. Select MODE: ASYNC (or SYNCHRONOUS, as required).
   g. Select DATA BITS: 8.
   h. Select STOP BITS: 1.
   i. Select PARITY: NONE.
   j. Select ENABLE? YES.

2. To program the next modem preset, press the Up arrow, select modem preset name and repeat Steps a – j.

COMSEC PROGRAMMING (*TYPE I* KEYS PROGRAMMING)

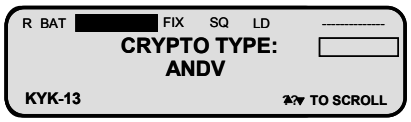
Type I Encryption keys are loaded with a U.S. COMSEC loader (e.g. KYK-13, KOI-18, and CYZ-10). The loaded keys are assigned to selected channels during the System Presets. If possible, the COMSEC keys should be loaded prior to creating the System Presets.

MOVE FUNCTION SWITCH TO “LD”.



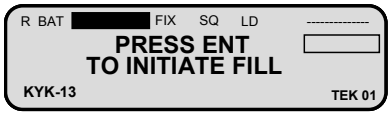
PRESS THE “▼” ONCE.

PRESS “ENT” ONCE.

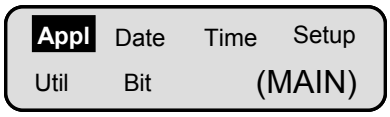


PRESS “▲▼” TO SELECT CRYPTO TYPE THEN PRESS “ENT”.

PRESS “▲▼” TO SELECT KEY TYPE THEN PRESS “ENT”; TYPE KEY NUMBER THEN PRESS “ENT”.

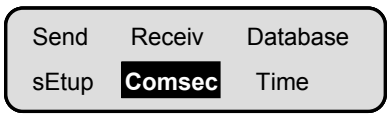


WAIT UNTIL ANCD IS READY

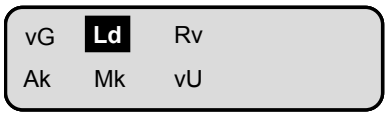


After power up, press “ENTR” while the cursor is on “Appl”.

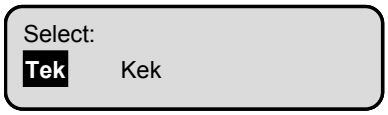
Press the “LOCK LTR” button, then press “▶”. Until “RADIO” is highlighted, then press “ENTR”.



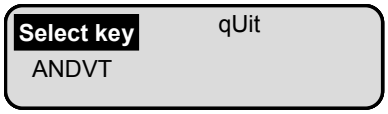
Press the “▼” then “▶” until “Comsec” is highlighted, then press “ENTR”.



Press the "►" until "Ld" is highlighted, then press "ENTR"



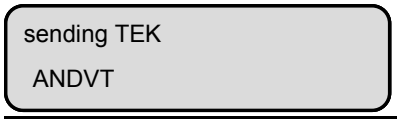
Press "ENTR" on "Tek"



Press "P UP" or "P DN" to select key, then press "ENTR"

Press “►” until “qUit” is highlighted, then press “ENTR”.

Press “ENTR”.



This screen will flash momentarily.

Press [LOAD] on RT

Press “ENTR” on ANCD, then press “ENT” ON THE RADIO!!!

Note: **If the radio displays “BAD FILL,” press “ENT” on the radio 3 more times.**

Note: **If more keys are needed to be loaded select “YES” on the next screen. If is the same CRYPTO TYPE, select the next key number. If the additional keys are a different CRYPTO TYPE, press “CLR” twice, select the proper CRYPTO TYPE, then proceed at step 2.**

COMSEC CONFIG PROGRAMMING (*TYPE I*)

The following are configuration options that may be set prior to operation but are not needed in every installation.

1. **ERASE EXISTING KEY**
   a. Press **PGM**, Select **COMSEC, TYPE I, KEYS, ENTER**.
   b. Use Up/Down arrows to select correct Crypto type to erase.
   c. Use Right/Left arrows to tab to Crypto key then use Up/Down arrows to select key to erase.
   d. Select **YES** to erase.
2. **VIEW SPECIAL KEYS**
   a. Press **PGM**, Select **COMSEC, TYPE I, KEYS, SPECIAL**.
   b. Use Up/Down arrows to view status of **SPECIAL** keys.

COMSEC PROGRAMMING (*CITADEL* KEYS PROGRAMMING)

1. **ENTERING A NEW KEY**
   a. Press **PGM**.
   b. Select **COMSEC**.
   c. Select **CITADEL**.
   d. Select **KEYS**.
   e. Select **ENTER**.
   f. Key Type (**RF-5800**, RF-5022/PRC-138).
   g. Enter Key Name. (Can be up to four alphanumeric characters long) or leave as default.
   h. Use alphanumeric keys to enter 32-character key.
   I. Load AVS Key (**NO**, YES). If yes enter 12-number key.
2. **UPDATE EXISTING KEY**
   a. Press **PGM**.

b. Select **COMSEC**.
c. Select **KEYS**.
d. Select **UPDATE**.
e. Use Up/Down arrows to select correct key to be updated.
f. Select **YES** to update.

3. ERASE EXISTING KEY

a. Press **PGM**.
b. Select **COMSEC**.
c. Select **KEYS**.
d. Select **ERASE**.
e. Use Up/Down arrows to select correct key to be erased.
f. Select **YES** to erase.

SYSTEM PRESET PROGRAMMING

1. **FIX MODE SYSTEM PRESET**
   a. Press **PGM**.
   b. Select **MODE**.
   c. Select **PRESET**.
   d. Select **SYSTEM**.
   e. System Preset To Change (On a zeroized radio, system presets are given default names of **SYSPRE1** to **SYSPRE75**). Use the Up/Down arrow keys to select the preset to change.
   f. Preset Name (Press the alphanumeric keys to enter a name up to nine characters in length.)
   g. Radio Mode (Select **FIX.**)
   h. Channel Number (Enter the channel number to associate with the preset.)
   i. Modem Preset (**OFF** or use the Up/Down arrow keys to enter a preconfigured Modem preset.)

j. Select **Encryption TYPE**. (TYPE I, CITADEL, NONE)
k. Select **Crypto MODE**. (e.g. KG-84R)
l. Select **Encryption KEY**. (e.g. TEK01)
m. Select **PT VOICE MODE**. (CLR, CVSD, AVS, DV6, DV24, ME6, ME24)
n. Select **CC/CT VOICE MODE**. (DV24, NONE, DV6, ME6, ME24)
o. Select **ENABLE**. (YES, NO)

2. **HOP MODE SYSTEM PRESET**
   a. Press **PGM**.
   b. Select **MODE**.
   c. Select **PRESET**.
   d. Select **SYSTEM**.
   e. System Preset To Change (On a zeroized radio, system presets are given default names of **SYSPRE1** to **SYSPRE75**). Use the Up/Down arrow keys to select the preset to change.

f. Preset Name (Press the alphanumeric keys to enter a name up to nine characters in length.)
g. Radio Mode (Select **HOP**.)
h. HOP Channel (Select HOP Channel to associate with this preset.)
i. Modem Preset (**OFF** or use the Up/Down arrow keys to enter a preconfigured Modem preset.)
j. Select **Encryption TYPE**. (TYPE I, CITADEL, NONE)
k. Select **Crypto MODE**. (e.g. KG-84R)
l. Select **Encryption KEY**. (e.g. TEK01)
m. Select **PT VOICE MODE**. (CLR, DV6, ME6)
n. Select **CC/CT VOICE MODE**. (DV6, ME6)
o. Select **ENABLE**. (YES, NO)

3. **ALE MODE SYSTEM PRESET**
   a. Press **PGM**.
   b. Select **MODE**.
   c. Select **PRESET**.
   d. Select **SYSTEM**.
   e. System Preset To Change (On a zeroized radio, system presets are given default names of **SYSPRE1** to **SYSPRE75**). Use the Up/Down arrow keys to select the preset to change.
   f. Preset Name (Press the alphanumeric keys to enter a name up to nine characters in length.)
   g. Radio Mode (Select **ALE**.)
   h. Associated Self (Select **Self Address** to associate with this preset.)
   i. Modem Preset (**OFF** or use the Up/Down arrow keys to enter a preconfigured Modem preset.)
   j. Select **Encryption TYPE**. (TYPE I, CITADEL, NONE)

k. Select **Crypto MODE**. (e.g. KG-84R)
l. Select **Encryption KEY**. (e.g. TEK01)
m. Select **PT VOICE MODE**. (CLR, AVS, DV6, DV24, ME6, ME24)
n. Select **CC/CT VOICE MODE**. (DV24, NONE, DV6, ME6, ME24)
o. Select **ENABLE**. (YES, NO)

AUTOMATIC LINK ESTABLISHMENT OPERATION (2G)

1. **CHANNEL GROUP PROGRAMMING**
   a. Press **PGM**, Select **MODE, ALE, CHAN_GROUP, ADD CHANNEL GROUP**.
   b. Enter desired **CHANNEL GROUP NUMBER**.
   c. Select **ADD CHANNEL**.
   d. Enter desired **CHANNELS** for channel group.
   e. To modify, review, or delete channel groups, at step **e** select **REVIEW** or **DELETE**. Use the Up/Down arrow keys to view options for each selection.

2. **SELF ADDRESS PROGRAMMING**
   a. Press **PGM**, Select **MODE, ALE, ADDRESS, SELF, ADD**. **NOTE:** You ***must*** enter a one to three character Self Address or ALE will not function. Example: 123 must be entered first, and then any operational self-address containing from 1-15 alphanumeric characters can be entered.
   b. Enter your own operational **SELF ADDRESS** (e.g. RAD1).
   c. Enter **CHANNEL GROUP** to associate with this address.
   d. To review or delete Self Addresses, at step **a,** select **REVIEW** or **DELETE**.
3. **INDIVIDUAL ADDRESS PROGRAMMING**
   a. Press **PGM**, Select **MODE, ALE, ADDRESS, INDIVIDUAL, ADD**.
   b. Enter an **INDIVIDUAL ADDRESS** (e.g. RAD2).
   c. Enter **CHANNEL GROUP** to associate with this address.
   d. Select correct **ASSOCIATED SELF** (e.g. RAD1) by pressing Up cursor.
   e. Repeat (b – d) for remaining **INDIVIDUAL ADDRESS(es)**.

f. To review or delete Individual Addresses, at step **a**, select **REVIEW** or **DELETE**.

4. **NET ADDRESS PROGRAMMING**
   a. Press **PGM**, Select **MODE, ALE, ADDRESS, NET, ADD**.
   b. Enter an **NET ADDRESS** (e.g. RT0).
   c. Enter **CHANNEL GROUP** to associate with this address.
   d. Select appropriate **ASSOCIATED SELF** (e.g. RAD1).
   e. **ADD NET MEMBERS.** (Ensure all net members are programmed in the **same order** on all radios used.)
   f. To review or delete Net Addresses, at step **a**, select **REVIEW** or **DELETE**.
5. **ALE CONFIGURATION PROGRAMMING**
   a. Press **PGM**, Select **MODE, ALE, CONFIG**.
   b. Max Scan Channels **NOTE:** This is a **critical** parameter. It must be set to the number of channels that have been programmed into the channel group to be scanned.

c. Listen Before TX (OFF, **ON**)
d. Key To Call (**OFF**, ON)
e. Max Tune Time **NOTE:** This is a **critical** parameter. It must be set to the worst-case tune time for any radio in the network.
f. Link Timeout (**OFF**, ON)
g. Link To Any Calls (**OFF**, ON**)**. When a station transmits the address **ANY**, any ALE-capable radio that receives the transmission will stop scanning and automatically responds to the call.
h. Link To All Calls (**OFF**, ON). When a station transmits the address **ALL**, any ALE-capable radio will stop scanning, but will not respond (transmit).
i. Link To Inlink Calls (**OFF**, ON). This will enable or disable the link to Inlink calls in receive. Operator can still place an Inlink call.
j. AMD Operation (**ENABLED**, DISABLED)
k. AMD Auto Display (**ENABLED**, DISABLED)
l. Scan Rate (**ASYNC**, 2, 5)

6. **ALE Scan Operation**
   a. Radio will begin scanning when ALE mode is selected.
   b. To stop scanning press **CLR**. To resume scanning press **CLR** again.
7. **Placing an ALE Call**.
   a. Press **CALL** key.
   b. Select CALL TYPE (MANUAL or AUTOMATIC). Manual call allows you to select a specific channel to call on and automatic will start calling on the channel with the highest LQA score.
   c. Select ADDRESS TYPE (INDIVIDUAL, NET, ANY, ALL).
8. **Terminating an ALE Link:** To terminate an ALE link press the **CLR** button. The radio will display "TERMINATE LINK". Scroll to **YES** and press **ENT.**
9. **AMD CREATE (TX MSG) (Not available in 3G or 3G+.)**
   a. Press **PGM**, Select **MODE**, **ALE, AMD, TX_MSG**.
   b. Select **TX_MSG (EDIT,** REVIEW, DELETE**).**
   c. Press **ENTER** twice.

d. Enter message using **KEYPAD**.
e. Press **ENTER** to save.
f. Press **CLR** to escape.

10. **AMD REVIEW/DELETE (RX MSG)**
    a. Press **PGM,** Select **MODE, ALE, AMD, RX_MSG**.
    b. Select **RX_MSG (REVIEW, DELETE, COPY)**.
    c. Press **ENTER**.

3G or 3G+ OPERATIONS

1. **3G ALE PROGRAMMING (Programming requires RF-6550H RPA.)**
2. **Channel Plan Selection**
    a. From the CHANNEL ### scanning screen, use the arrow keys to select the name of the current channel plan. Use the up arrow to scroll to the desired channel plan and press **ENT**.

3. **TOD SYNC Operation (All radios +/- 7 minutes of wristwatch sync)**
   a. If no GPS is available, ensure the radio is within 7 minutes of ZULU time. (Refer to TOD section.)
   b. With all radios in the same channel plan, the outstation must press the CALL button and select SYNC REQUEST or
   c. TOD Base Station must press the **CALL** button and select BROADCAST SYNC or
   d. All radios must be connected to a GPS PLGR and achieve SYNC.
4. **Placing a 3G Call**.
   a. Press the **CALL** key.
   b. Select CALL TYPE (MANUAL, AUTOMATIC or BEST). Manual call allows you to select a specific channel to call on and automatic will start calling on the channel with the highest LQA score.
   c. Select ADDRESS TYPE (INDIVIDUAL, NET,).
5. **Terminating a 3G Link:** To terminate an ALE link press the **CLR** button. The radio will display “TERMINATE LINK”. Scroll to **YES** and press **ENT.**

HOP PROGRAMMING NARROW BAND/WIDEBAND/LIST HOPPING

1. **NARROWBAND HOP PROGRAMMING**
   a. Press **PGM**, Select **MODE, HOP, CHANNEL, ADD**.
   b. Enter channel to be added (must be in the range 00-19).
   c. Hop Type, select (**NARROW,** WIDE, LIST).
   d. Enter **CENTER FREQ** in MHz.
   e. Press numeric keys to enter a 1 – 8 digit **HOP CHANNEL ID**.
   f. Press alphanumeric keys to enter up to 8 character **TOD MASK**.
   g. Autorespond (YES, **NO**)
2. **WIDEBAND HOP PROGRAMMING**
   a. Press **PGM**, Select **MODE, HOP, CHANNEL, ADD**.
   b. Enter channel to be added (must be in the range 00-19).
   c. Hop Type select **WIDE**.

d. Press numeric keys to enter **LOWER FREQ** in MHz.
e. Press numeric keys to enter **UPPER FREQ** in MHz.
f. Press numeric keys to enter a 1 – 8 digit **HOP CHANNEL ID**.
g. Press alphanumeric keys to enter up to 8 character **TOD MASK**.
h. Autorespond (YES, **NO**)

3. **LIST HOP PROGRAMMING**
   a. Press **PGM**, Select **MODE, HOP, CHANNEL, ADD**.
   b. Enter channel to be added (must be in the range 00-19).
   c. Hop Type select **LIST**.
   d. Select **ADD** List Members.
   e. Press numeric keys to enter frequencies in MHz. Must enter five frequencies minimum, 50 frequencies maximum between 2 and 29.000 MHz.
   f. Press **CLR** to exit Add Freq List menu.
   g. Select **NO** to exit Add List Members menu.

h. Press numeric keys for 1 – 8 digit **HOP CHANNEL ID**.
i. Press alphanumeric keys to enter up to 8 character **TOD MASK**.
j. Autorespond (YES, **NO**)

4. **HOP EXCLUSION BAND PROGRAMMING**
   a. Press **PGM**, Select **MODE, HOP, EXCLUDE, ADD**.
   b. Press numeric keys to enter the Exclude Band Number from 0 – 9.
   c. Press numeric keys to enter the Lower Freq.
   d. Press numeric keys to enter the Upper Freq.
5. **HOP CONFIGURATION PROGRAMMING**
   a. Press **PGM**, Select **MODE, HOP, CONFIG.** Use the Up/Down arrow keys to view available selections (shown in parenthesis with the default in bold) for each of the following:
      - Manual Sync (**YES**, NO)
      - Hail RX (**YES**, NO)

6. **HOP Operation**
   a. Press **MODE** button to select HOP.
   b. Press **PRE** button to select desired HOP preset.
7. **Manual Sync**.
   a. Press **CALL** key.
   b. Manual SYNC type (REQUEST, **BROADCAST**).

   NOTE: The easiest form of sync is Broadcast. Only one station in the net should perform the broadcast that will sync all listening stations. If your station does not receive a sync, you must send a Sync Request by selecting **REQUEST** and pressing **ENT**.

MESSAGE (ROUTING INCOMING DATA)

1. Press **PGM,** Select **CONFIG, MESSAGE**.

a. Route Modem Data To (DTE PORT, **RDP**, FILE) **NOTE:** When using an external sync device such as VIASAT, "Route Modem Data" must be set to DTE PORT.

b. Route ARQ Data To (DTE PORT, **RDP**, FILE)

SET RADIO TIME-OF-DAY (TOD)

1. Press **PGM**, Select **CONFIG, TOD**.

a. UTC Offset (Use Up/Down keys to select "+" or "-" offset. Use numeric keys to select correct offset value).

b. Time Format (12-HR, **24-HR**)

c. New TOD (Press numeric keys to enter TOD.)

d. Date Format (MM-DD-YY, DD-MM-YY, **YYYY-MM-DD**, ZULU)

e. New Date (Press numeric keys to enter new date.)

OPTIONS PROGRAMMING: The option menu is selected by pressing the **OPT** button on the KDU while in FIX, ALE, HOP, 3G, or 3G+ mode. The Option menu is mode specific. The following options are common to all modes of operation.

1. **GPS-TOD**: Displays GPS current status.
2. **RETUNE**: When selected will retune currently selected channel. Will not retune while scanning.
3. **RADIO**: Options are global and affect the entire range of channels and presets in use.
   a. Press **OPT**, Select **RADIO**.
   b. TX Power (LOW, MED, **HIGH**)
   c. BFO (**0**, +/- 4kHz in 10 Hz steps)
   d. Squelch Level (LOW, **MED**, HIGH)
   e. FM Squelch Type (**TONE**, NOISE)
   f. Radio Silence (ON, **OFF**)
   g. Internal Coupler (**ENABLED,** BYPASSED)

h. RX Noise Blanking (**OFF**, ON)
i. Radio Name: As per Comm plan.
j. CTI Autoreject (OFF, ON)

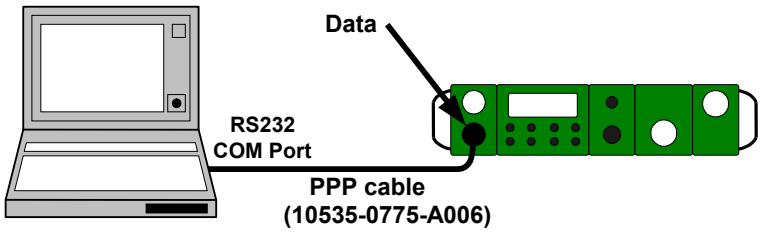
4. **SCAN OPTIONS**
   a. Press **OPT**.
   b. Select **SCAN**.
   c. Enable SSB scan (**NO**, YES).**NOTE:** Press the **CLR** key on KDU to start and stop scanning.
5. **TEST**: Multiple tests can be performed without test equipment by using this feature. Refer to the operation manual for a detailed description of each test available.
6. **GPS_MAINT**: Refer to operation manual.

NOTE: The following options are mode specific and are only available if the feature is installed in the radio and it is the current operating mode.

7. **ALE OPTIONS**
    a. Press **OPT**.
    b. Select **ALE**.
    c. Select **LQA**.
    d. EXCH or SOUND. **Use EXCHANGE** to perform a two-way link analysis between your radio and another radio or group of radios on all preprogrammed frequencies. Use **SOUND** as a passive, one-way transmission, from your radio to another radio or group of radios.
    e. Scores - Select an individual or net name and scroll through the channels and available scores.
    f. TX_MSG - Used to transmit pre-entered AMD messages.
    g. RX_MSG - Used to review received AMD messages.

PRC-150(C) TO TAC CHAT CONNECTION

Connect the radio to the computer using the serial PPP interface cable (Harris Part Number 10535-0775-A006).



Configuration

Radio

1. Using ARQ/XDL Modem
    a. Power-on radio.
    b. Turn radio mode switch to desired mode (PT, CC, CT).
    c. Set radio to desired Mode (FIX, ALE, HOP, 3G, 3G+).
2. Using ARQ/XDL Modem
    a. Route ARQ data to RDP (PGM\CFG\MSG\RDP).
3. Using Non-ARQ Modem
    a. Route Modem data to RDP (PGM\CFG\MSG\RDP).

COMSEC

COMSEC/MODEM MATRIX

COMSEC TYPE	MODEM TYPE			
	ARQ	**ANDVT/HF**	**SERIAL**	**XDL**
KG-84	2G/FIX/HOP		2G/FIX/HOP	3G, 3G+
ANDVT/HF		2G/FIX/HOP		
ANDVT/BD			2G/FIX/HOP	3G, 3G+

NOTE: ANDVT-BD (KY-100) recommended in all modes unless COMSEC type is required for interoperability.

Computer

1. Power on Computer.
2. Connect PPP cable between radio (J3) and PC (comm1).
3. Double click TAC CHAT on desktop (ICON).
4. Select Auto Save location (SAVE).
5. “Ready” is displayed when connection is established between PC and radio.
6. Set SELF Address to Radio Station Name (to verify radio address select OPT/RADIO/RADIO NAME).
7. Set Outstation to desired Radio Station Name (as per CEOI).

Operation

2G

1. Ensure computer/TAC CHAT is configured as per steps 1-7.
2. Place ALE call to Outstation from KDU (CALL).
3. Type Text Message then (Send).

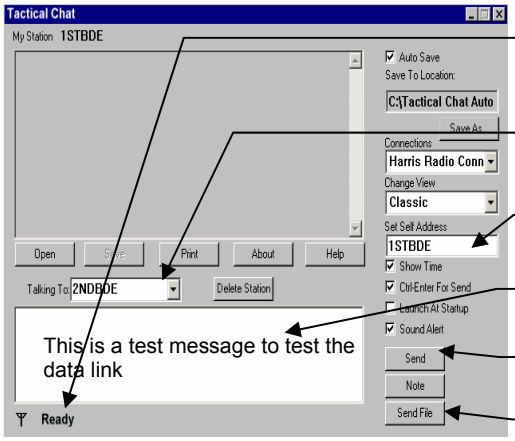
4. To Send File press (Send File button) then double click on selected file to send.

FIX/HOP

1. Ensure computer/TAC CHAT is configured as per steps 1-7.
2. Type Text Message then (Send)
3. To Send File, press (Send File button). Double click on selected file to send.

3G, 3G+

1. Ensure computer/TAC CHAT is configured as per steps 1-7.
2. Radios in the network must have achieved TOD Synchronization. (Refer to TOD Application.)
3. Type Text Message then (Send).
4. To Send File, press the (Send File button). Double click on selected file to send.



When the PPP connection is configured, "Ready" will be displayed in the lower left corner.

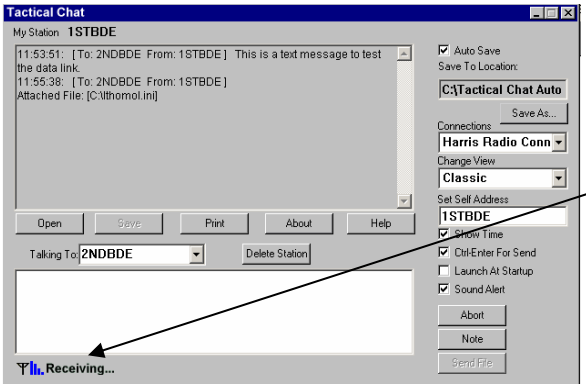
Insert the Outstation Radio Station Address

Insert your Radio Station Address.

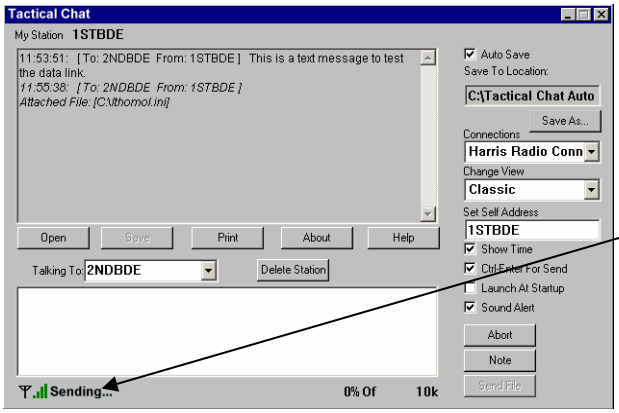
Enter text message in the data entry box.

Press the Send button to transmit text entered in the data entry box.

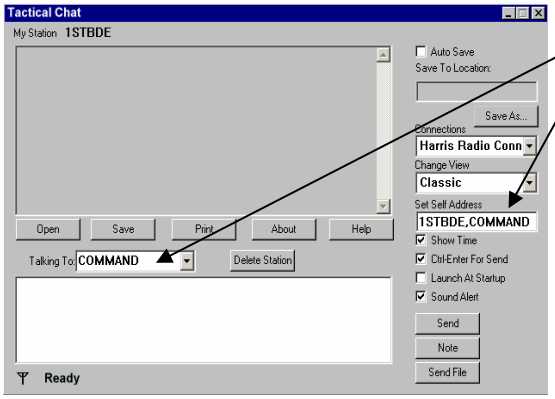
Press the Send File button, then select a data file attachment to transmit.



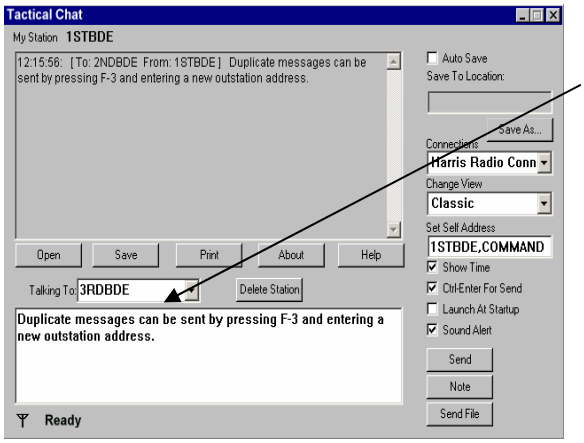
During reception of an incoming message, "Receiving…" is displayed.



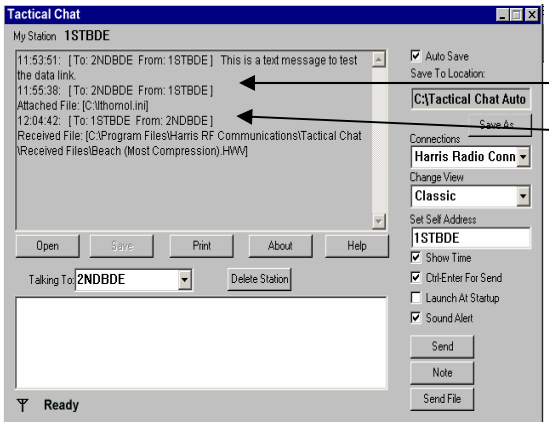
During transmission, the window is changed to "Sending…" with the percentage of completion.



When sending a message to the NET, you must input the NET address in the "Talking To" box. To receive a message directed to the NET, you must specify the NET address in the Set Self Address" box following your Self Address separated by a comma (,).



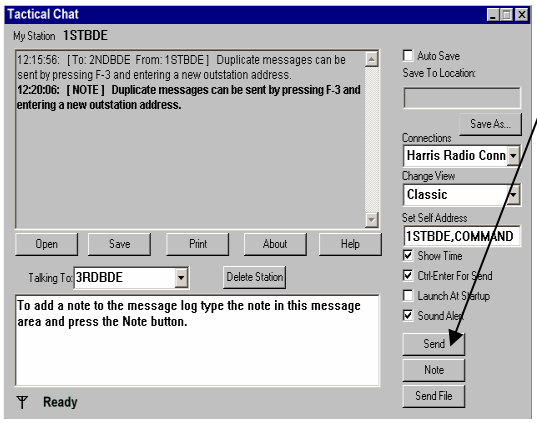
To send a duplicate message to another station, press F3 on the computer and type in a new outstation address, or select a preconfigured address from the drop down box.



Outgoing message log.

Incoming message log.

Press F6 to access the incoming File directory where the message is stored.



To save a note to the message log press the "Note" button. This message is only stored in the message log and is not transmitted.

NOTE:

1. **A connection must first be established in Mil-ALE prior to sending a text message or file attachment.**
2. **When using 3G/FIX/HOP modes, the TAC CHAT application will automatically establish the connection when the Send/Send File button is pressed.**

TOD SYNC

Initial Radio TOD Parameters

HOP TOD: +/- 90 seconds to send or receive TOD within Net.
3G TOD: +/- 7 minutes to send or receive 3G sync with Sync Broadcast or Sync Request.

Automatic GPS TOD Sync

1. **PLGR**
   a. Connect PLGR GPS cable to J2 on R/T.
   b. Go to setup menu on PLGR.
   c. Scroll to “Serial I/O”.
   d. Select “Standard”.
   e. Go to “Mode” screen.
   f. Select “Continuous” position and “Velocity” updates.
   g. Set PLGR GPS TFOM value range 1-6.

2. **Radio**
    a. Rotate function switch to (PT, CC, or CT).
    b. Ensure PLGR cable connected to J2 on R/T.
    c. PLGR searches until 4 satellites are acquired.
    d. KDU displays “AUTO” on KDU and sync meter will show 100% sync (full bar).

Manual TOD Sync

1. **Radio**
    a. Rotate function switch to (PT, CC, or CT)
    b. Press (OPT) key.
    c. Select 3G/TOD.
    d. Enter wristwatch time +/- 7 minutes of UTC for outstation.
    e. Enter wristwatch time +/- 15 seconds of UTC for TOD base.
    f. When an outstation radio receives TOD Broadcast from a TOD Base using GPS, “AUTO” is displayed.

g. When an outstation radio receives TOD Broadcast from a TOD Base using wristwatch, “MANUAL” is displayed.

Request Sync from TOD Base

1. **Auto Sync Request (3G)**
   a. Enter wristwatch time +/- 7 minutes of UTC for outstation.
   b. Auto Sync Request must be enabled in the RPA software application.
   c. When enabled, the radio will automatically place a Sync Request to the TOD Base.
   d. If successful, the Sync Meter will show full.
   e. If Sync fails, the radio will perform an Auto Sync every 15 minutes until Sync is achieved.

2. **Manual Sync Request (3G)**
   a. Place R/T in 3G Mode with sync status of “NONE”.
   b. Press (OPT) key.

c. Select 3G / TOD.
d. Enter wristwatch time +/- 7 minutes of UTC for outstation.
e. Press (CALL) key and select Sync Request.
f. If successful, the Sync Meter will show full.

3. **Manual Sync Request (HOP)**
   a. Place R/T in HOP Mode.
   b. Press (PGM) key.
   c. Select CONFIG/TOD.
   d. Enter UTC time.
   e. Press the (CALL) key and select REQUEST.
   f. If successful," MAN" will be displayed.

Broadcast Sync from TOD Base

1. **Transmit a Broadcast Sync (3G)**
   a. This is only performed from the TOD Base radio.
   b. Press the (CALL) key.
   c. Select BROADCAST SYNC (transmits on only one channel), or BROADCAST SYNC –ALL (transmits on all the channels).
2. **Schedule a Broadcast Sync (3G)**
   a. This is only performed from the TOD Base radio.
   b. Press (PGM).
   c. Select SCHED/ADD.
   d. OFFSET time relative to midnight.
   e. INTERVAL TIME between broadcasts.
3. **Transmit a Broadcast Sync (HOP)**
   a. This is only performed from the TOD Base radio.
   b. Place R/T in HOP Mode.

c. Press (PGM) key.
d. Select CONFIG/TOD.
e. Enter UTC time.
f. Press the (CALL) key and select “BROADCAST”.
g. If successful, “MAN” will be displayed.

Changing Sync State

1. **Reason to change include:**
   a. Base wants to acquire GPS sync from GPS and pass new time to outstations.
   b. Outstation wants to acquire GPS TOD sync from a manual sync state.

2. **GPS TOD to Manual TOD (3G)**
   a. Disconnect GPS cable from J2 on R/T.
   b. Press **OPT** key.
   c. Select 3G/Unsync.

d. Sync state displays “NONE”
e. Press (OPT) key.
f. Select 3G / TOD
g. Enter wristwatch time +/- 7 minutes of UTC for outstation.
h. Enter wristwatch time +/- 15 seconds of UTC for TOD base.
i. Outstation send Sync Request or Base sends Broadcast Sync.
j. “MANUAL” is now displayed.

3. **Manual TOD to GPS TOD (3G)**
   a. Press (OPT) key.
   b. Select 3G / Unsync.
   c. Sync status displays “NONE”.
   d. Connect GPS cable from J2 on R/T to GPS.

4. **Manual TOD to GPS TOD (HOP)**
   a. Press (CLR) key.
   b. Select UNSYNC on ALL CHANNELS.
   c. Sync status displays “NONE”.
   d. Connect GPS cable from J2 on R/T to GPS.

NOTE: After Sync is established and the radio is turned off, the radio’s internal clock will keep coarse wristwatch time accurate to one month. The operator should only have to Request Sync without having to check the radio’s clock for accuracy.

LAST DITCH VOICE (LDV) OPERATION

RADIO CONFIGURATION

1. Power on Radio.
2. Turn radio mode selector to desired setting. (PT, CC, or CT).
3. The radio must be loaded with a valid 3G Comm. plan from the RPA.
4. Select the 3G system preset by pressing the Pre +/- button.
5. Obtain 3G Sync using a PLGR GPS or manually from the TOD Base station.

SENDING LDV

1. Place call to desired station.
2. Use right arrow to select current voice option e.g. (ME 6,etc).
3. Use up arrow to scroll to LDV option (ENT).
4. Key handset and recite voice message, then unkey handset.
5. Radio will deliver voice message to outstation. When sent," MESSAGE COMPLETE" will be displayed at bottom of KDU.
6. Use the right arrow to select previous voice option.

RECEIVING LDV

1. Follow steps 1-5 from Radio Configuration.
2. “RECEIVING LDV MESSAGE “ is displayed at the bottom of KDU.
3. “LDV MESSAGE COMPLETE” “ is displayed at the bottom of KDU.
4. The “M” symbol in upper right corner of KDU is displayed when a LDV message has been received and stored.

LISTENING TO A LDV MESSAGE

1. Use the right arrow key to move cursor until the “M” is highlighted.
2. Press the **ENT** key.
3. Listen to the recorded message in the handset.
4. “DELETE LDV MESSAGE” is displayed on KDU.
5. Select “YES” to delete, “NO” to save message. **NOTE:** Saved LDV Message will be deleted when the next LDV message is received. Only one LDV message can be recorded and saved. LDV message is deleted when the radio is power cycled

PRC-150(C) OPERATION WITH KY-100 AIRTERM, AN/ARC-220

RADIO CONFIGURATION

1. Power on Radio.
2. Turn radio mode selector to desired setting. (PT or CT).
3. The radio must be loaded with a valid Mil-Std -188-141A Comm. plan from the RPA or manually. (Refer to Radio Guide.)
4. The only essential parameter that may affect interoperability is MAX SCAN CHANNELS and Station Name Length. That parameter dictates the duration of initial calling beacon and must be long enough to capture scanning receiving radios. Both the ARC-220 and the PRC-150© must ensure this setting is identical. Maximum Station Addresses may not exceed six alphanumeric characters.

Parameter/Capability Matrix

Parameter/Capability	AN/PRC-150© System	KY-100, AN/ARC-220 System
Frequency Range	1.6 – 59.9999 MHz	2 – 29.9999 MHz
Fixed Mode SSB PT Voice	USB, LSB, CW, AME, FM	USB, LSB, CW, AME
Fixed Mode SSB PT Data	Mil-Std-188-110A 75-4800 bps	Mil-Std-188-110A 75-4800 bps
Fixed Mode SSB CT Voice	2400 bps LPC-10	2400 bps LPC-10
Fixed Mode SSB CT Data	Mil-Std-188-110A 75 – 2400 bps	Mil-Std-188-110A 75 – 2400 bps
Mil-Std-188-141A ALE	Ind, Net, All, Any Call, LQA, AMD (PRC-150© does not support Selective All/Any calls, Group calls and does not provide LP.	Ind, Net, All, Any Call, LQA, AMD Selective All/Any Calls, Group Call Link Protection
Link Protection	Link Level 1	Link Level 1-3

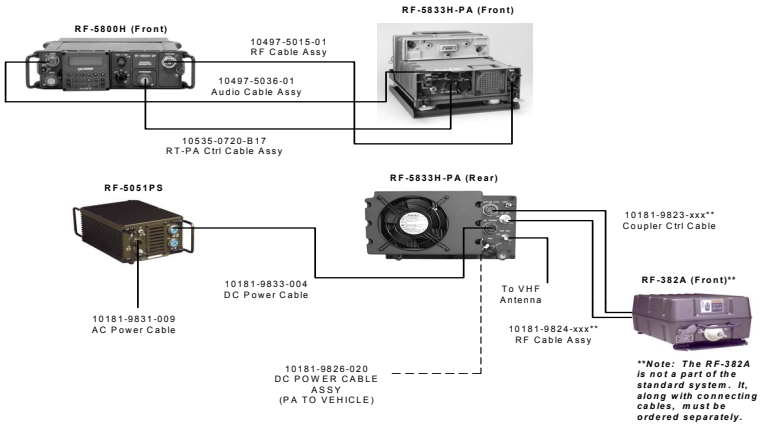
Interoperability Options

1. Ensure Squelch setting in the PRC-150(C) is set to OFF.
2. The Squelch setting level in the ARC-220 must be set to 4 or lower.
3. ARC-220 does not support AMD calls without an external controller.
4. PRC-150(C) will link to Group calls but will not Initiate Group calls.
5. The ARQ-220 does not support MELP or DV600. Only interoperable Voice mode is DV2400.
6. The ARC-220 and the PRC-150(C) are fully interoperable in LSB and USB in ALE and FIX mode.
7. Secure voice is possible between ARC-220 and the PRC-150(C) using the ANDVT-HF and ANDVT-BD. ANDVT-BD is recommended.
8. Frequency Hopping is not interoperable.
9. The PRC-150(C) does not currently support Link Protection Level 3.
10. Maximum station address length is six alphanumeric characters.

Link Protection

Link Protection (LP) must be disabled in the ARC-220 to use ALE to communicate with the PRC-150(C). LP can be disabled from the front panel of the ARC-220 or Rockwell HF-CPS comm planning software. The following procedure gives the basic steps to disable LP from the front panel of the ARC-220 radio.

a. Power on the radio.
b. Turn the mode selector to **STDBY**.
c. Press the **MIDDLE** arrow button on the right side of the display and select SETUP.
d. Press the **UP** arrow to select the Link Protection Menu.
e. Press the **Right** arrow to toggle LP to **OFF** then press **RETURN**.
f. Link Protection is now disabled.

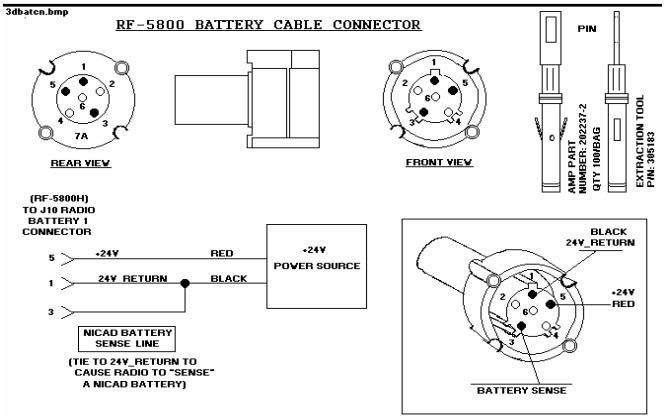

RF-5800H (Front)
RF-5833H-PA (Front)
10497-5015-01
RF Cable Assy
10497-5036-01
Audio Cable Assy
10535-0720-B17
RT-PA Ctrl Cable Assy
RF-5051PS
RF-5833H-PA (Rear)
10181-9823-xxx**
Coupler Ctrl Cable
RF-382A (Front)**
10181-9833-004
DC Power Cable
To VHF
Antenna
10181-9831-009
AC Power Cable
10181-9824-xxx**
RF Cable Assy
10181-9826-020
DC POWER CABLE
ASSY
(PA TO VEHICLE)
**Note: The RF-382A is not a part of the standard system. It, along with connecting cables, must be ordered separately.

CABLES AND CONNECTORS

NOTE: Connecting the radio directly to the vehicle battery is not recommended.

Interface	Cable	Description
PA	10535-0720	PA-R/T control cable
PA/Remote	10535-0730-A1	Y-cable, ASCII remote & PA control
Data	10535-0770-A006	Sync/Async RS-232 DTE Data
KDU	10511-0704-012	KDU extension
PPP Serial (RF-6710W/RF6750W), HF-RPA, IP Data	10535-0775-A006	Async RS-232 control/data (DB-9)
RF-5833-PA	10497-0300-01	150w Anc Connector Kit
GPS/PLUGGER	12005-0730-A006	Plugger cable

3dbatcn.bmp


RF-5800 BATTERY CABLE CONNECTOR
REAR VIEW
FRONT VIEW
PIN
AMP PART NUMBER: 282237-2
QTY 100/BAG
EXTRACTION TOOL P/N: 305183
(RF-5800H) TO J10 RADIO BATTERY 1 CONNECTOR
+24V
24V RETURN
RED
BLACK
+24V POWER SOURCE
NICAD BATTERY SENSE LINE
(TIE TO 24V_RETURN TO CAUSE RADIO TO "SENSE" A NICAD BATTERY)
BLACK 24V_RETURN
+24V RED
BATTERY SENSE

Radio Batteries at a Glance:

Battery Model	Chemistry	Capacity	Operating Temperature Range	Weight	Remarks
Rechargeable					
BB-390	Nickel Metal-Hydride Ni-MH	4.9 Ah @ 24V 9.8 Ah @ 12V	-20C to +55C -4F to +130F	1.76 kg 3.875 Lb	5 year shelf life
BB-490	Sealed Lead-Acid	1.8 Ah @ 24V 3.8 Ah @ 12V	-20C to +55C -4F to +130F	1.6 kg 3.5 Lb	5 year shelf life
BB-590	Nickel Cadmium Ni-Cd	2.4 Ah @ 24V 4.8 Ah @ 12V	-20C to +55C -4F to +130F	1.8 kg 3.94 Lb	5 year shelf life Must be recycled
BB-2590	Lithium-Ion	4.6 Ah @ 28.8V 9.2 Ah @ 14.4V	-30C to +60C -22F to +140F	1.18 - 1.36 kg 2.6 – 2.75 Lb	

Battery Model	Chemistry	Capacity	Operating Temperature Range	Weight	Remarks
Non-rechargeable					
BA-5590	Lithium Sulfur-Dioxide Li-SO2	7.5 Ah @ 30V 15 Ah @ 15V	-20C to +55C -4F to +130F	1.05 kg 2.25 Lb	5 year shelf life
BA-5390	Lithium Manganese Dioxide Li-MnO2	11 Ah @ 30V 22 Ah @ 15V	-30C to +72C -22F to +160F	1.3 kg 2.86 Lb	10 year shelf life

HF COMMUNICATIONS GUIDE

1. OPTIMIZING COMMUNICATION IN THE HIGH FREQUENCY BAND:

a. The reliability and effectiveness of radio communications in the high frequency range is dependent on several factors.
   1. Type of antenna used.
   2. Operating frequency.
   3. Terrain around transmitting site.
   4. Time of day.
   5. Geographic location and distance between stations.
   6. Atmospheric conditions.
   7. The effects of the ionosphere on radio waves.

b. The radio operator can control, to some degree, the first four of five factors. The antenna and frequency are the most important factors under operator control, and are selected to best suit the propagation characteristics and distance of the link.

Several frequencies will have been assigned from upper echelon. They will have been selected in various portions of the band in order to allow a frequency change when propagation conditions change.

2. ANTENNA SELECTION

a. The field environment, tactical situation, and range required determine the antenna selection. If the radio set is to be used while on the move, the whip antenna supplied with the antenna kit is used. For most short-range requirements using ground wave, the whip antenna will be satisfactory up to 10 miles over land.

b. If the tactical situation permits, a simple half-wave dipole, or the near vertical incidence skywave (NVIS) twin dipole antenna can be used between 2 and 12 MHz to extend the range of the radio considerably by utilizing the "skip" phenomenon. In this mode, the radio waves are bounced of the ionosphere and back to the earth's surface, providing coverage to 300 miles or more. The twin dipole may be used at frequencies above 12 MHz, but automatic tuning may not work at all frequencies.

The nature of the dipole of NVIS antenna optimizes the skip effect, but final results depend on existing propagation characteristics.

c. When using an antenna that has directional characteristic, try to orient the antenna. It is most sensitive in the direction toward the other station. For example, a dipole antenna is most effective in a direction perpendicular to the other station. The NVIS antenna is omni-directional, so orientation of the antenna is not important.

3. FREQUENCY SELECTION

a. The primary considerations when selecting and operating frequency are the distance between the sending and receiving stations, and the time of day.

b. Another consideration when selecting an operating frequency is the atmospheric condition. If precipitation is present, signals at the lower end of the HF band may be degraded by atmospheric noise, while the higher frequencies will be affected to a lesser degree. Therefore, the higher frequencies will provide more effective communications in inclement weather.

c. The most useful phenomenon in radio wave propagation is the "skip" effect. This effect occurs because the layers of the ionosphere become ionized by the UV radiation of the sun. This level of ionization determines the highest frequency for skip over a given distance. Generally, the higher the ionization level, the higher the frequency that can be used in "skip" mode and therefore the broader the range of frequencies available for use.
d. Site selection is particularly important for short-range ground wave communications. The existing tactical situation will determine how much of a selection is available. The best communications will generally be obtained if the transmitting site is clear of all obstructions, is located in an area with good ground conductivity and as high above ground as possible. Several locations in the same general vicinity should be checked at possible sites. A slight change in antenna location can make a substantial difference.
e. Avoid all areas near sources of electrical interference, such as power lines, radar sets, field hospitals with X-ray machines, etc. Also avoid large structures with

metallic contents: Bridges, tanks, steel reinforced buildings, etc. If enemy jamming is a possibility, the site should be selected so that a large object or terrain feature is situated between the radio and the jamming source. This minimized the effects of the jamming station, and makes it more difficult to locate your transmitter using DF equipment.

4. HF BAND SEGMENTS

The following is a breakdown of the HF band with a general description of the behavior of each segment.

a. **2 thru 5 MHz:** This band is useful during daylight hours for intermediate and short-range skywave communications and good for long range (several thousand miles) at night. The static level is highest during the summer.

b. **5 thru 10 MHz:** This band is similar to the 2 thru 5 MHz band, except long-range communications are possible during daylight hours under good conditions. The signals follow the darkness path bet, and during winter it is possible to communicate

with stations on the other side of the world. The winter months are better than the summer months because of the high summer static level, especially in equatorial parts of the world

c. **10 thru 15 MHz:** This band is best for reliable intermediate and long-range communication during all propagation conditions. During very low levels of sunspot activity, the band will not be useful at night but improves greatly at dawn and holds until dusk.

d. **15 thru 25 MHz:** this band is highly variable and quite dependent on sunspot activity. When conditions are good, it will be useful during day and early night, but if sunspot conditions are poor, it may not be usable at all. This band is suitable for short-range surface wave communications using a whip antenna.

f. **25 thru 30 MHz:** This band is used for very short-range communication and is excellent for long-range communications during good propagation conditions. It is generally unusable for intermediate range communications.

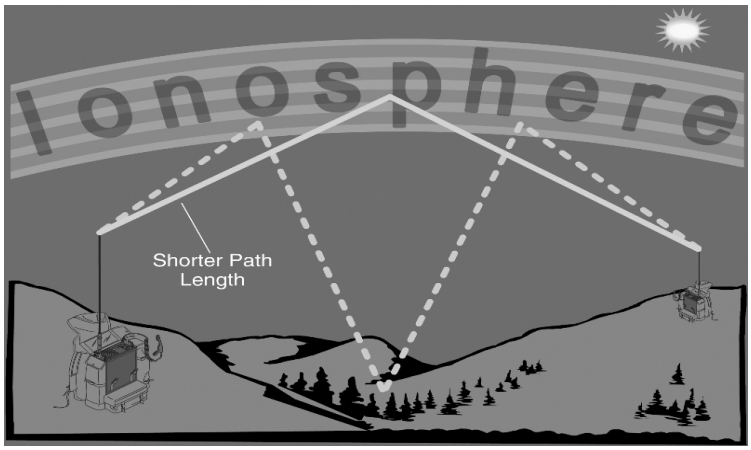
ANTENNA SECTION

FORMULA TO COMPUTE FIELD EXPEDIENT ANTENNA

¼ LENGTH IN FEET = 234 divided by FREQUENCY IN MHz
½ LENGTH IN FEET = 468 divided by FREQUENCY IN MHz
FULL LENGTH IN FEET = 936 divided by FREQUENCY IN MHz

HF ANTENNAS DEFINITIONS

BROADSIDE	Perpendicular to wire direction
ENDFIRE	Along the length of the wire
BALANCED	Single wire (+ or -)
UNBALANCED	COAX/Cobrahead (+ and -, alternating)
POLARIZATION	Direction the antenna radiates relative to the earth
GAIN	How much better than a standard antenna radiates, multiples of 1 (2x, 3x, etc.)


Ionosphere
Shorter Path
Length

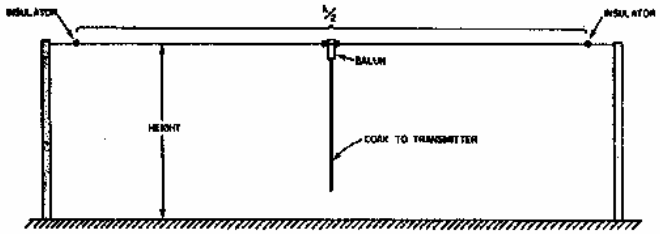
	GROUND WAVE	SHORT (< 500 miles)	MEDIUM (500 to 1200 miles)	LONG (> 1200 miles)	OMNIDIRECTIONAL	BIDIRECTIONAL	DIRECTIONAL
AS-2259/RF-1936		X			X		
VERTICAL WHIP	X				X		
HALF WAVE DIPOLE		X	X			X	
INVERTED VEE	X	X				X	
INVERTED L	X	X	X		X	X	
SLOPING WIRE	X		X			X	
SLOPING VEE			X	X			X
TERMINATED HALF RHOMBIC	X		X	X			X
REVERSE SCISSOR		X	X				X
FAN DIPOLE	X	X	X		X		
WAVE ANTENNA	X	X			X		

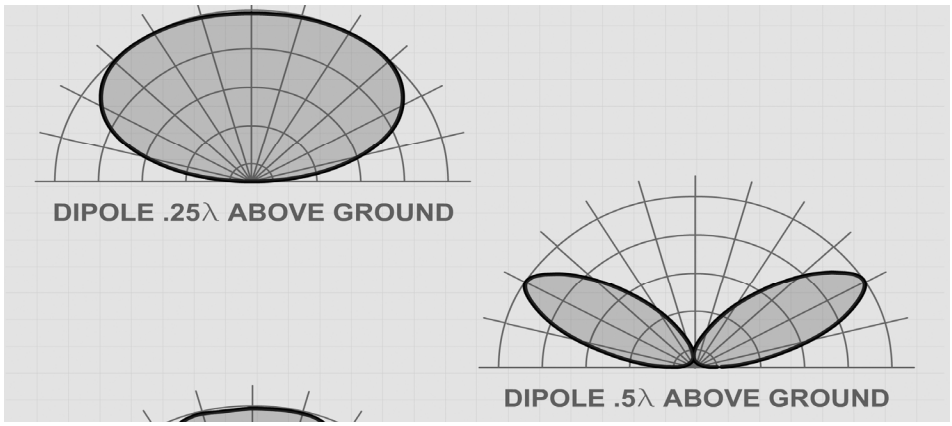
Antenna Matrix Table

Antennas

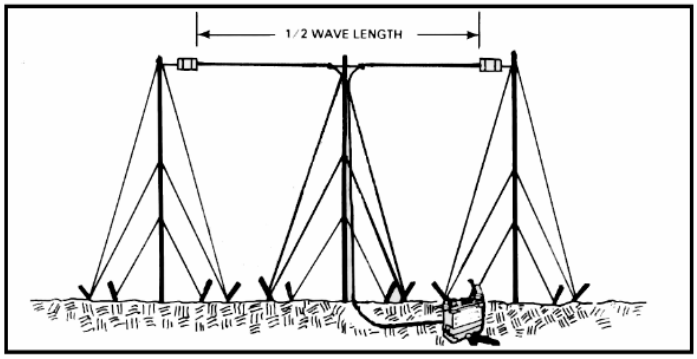
Half Wave Dipole

Very the height above the ground will change the angle of radiation and can improve reliability. Best performance is achieved at ½ wavelength but ¼ wavelength can also be used.

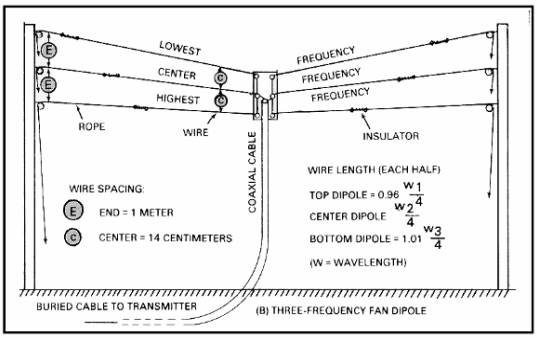



DIPOLE .25λ ABOVE GROUND
DIPOLE .5λ ABOVE GROUND

The three support Dipole configuration for HF.

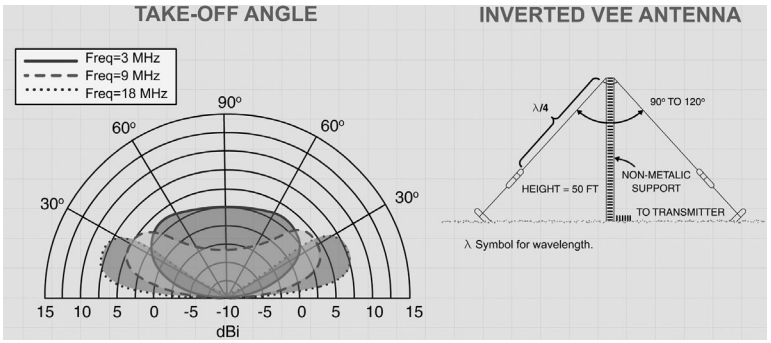


Fan Dipole (Spider)
When time and space permits this antenna provides resonance on multiple frequencies.



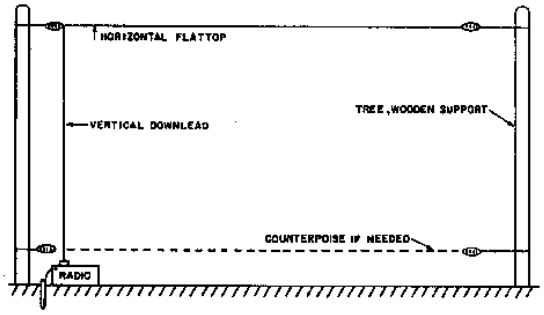
Inverted “V”

The Inverted V is technically a dipole with one supporting mast and the ends lowered in an inverted vee configuration.



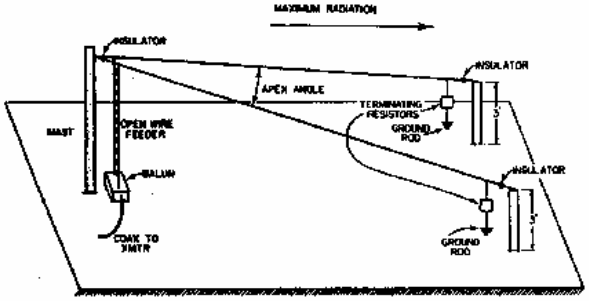
Inverted “L”

Maximum radiation is dependent on operating frequencies. If ¾ wavelength or below the signal is broadside, If more then ¾ wavelength the radiation will be towards the end of the antenna.

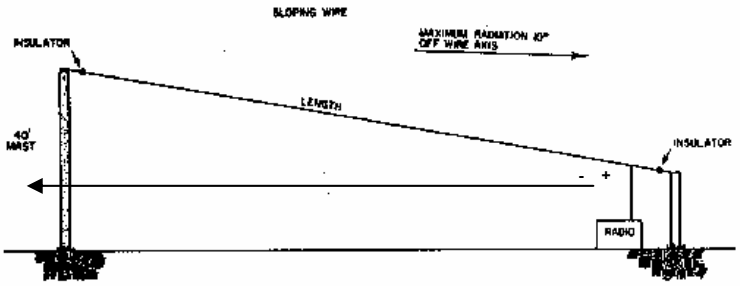


Sloping "V"

When using terminating resistors, they should be rated at 500-600 ohms and the wattage should be half the output power.

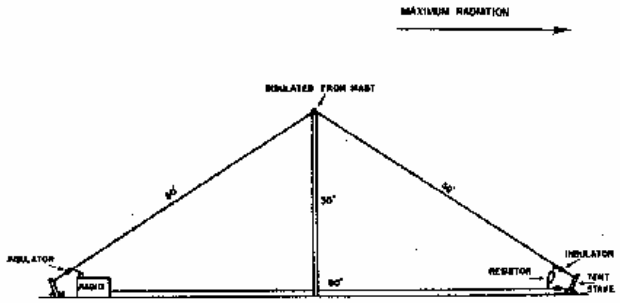


Reverse Scissor / Sloping Wire
This antenna works well when a counterpoise is laid under the radiating element. The range can be adjusted by elevating or lowering the distant end of the radiating element.

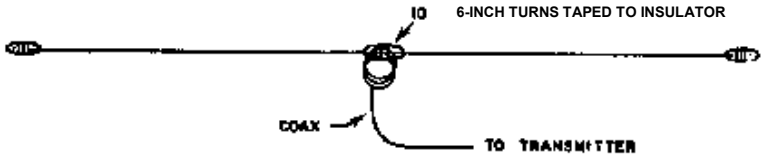


Terminated Half Rhombic

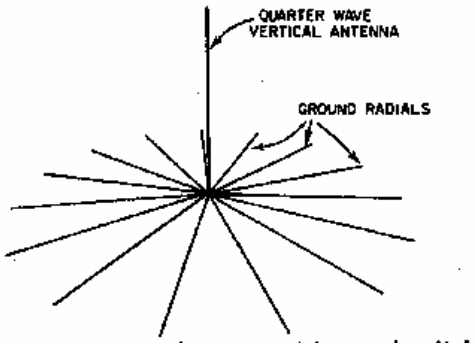
This antenna provides range extension for Fm as well as HF communications.



Field Expedient Balum
This is used to balance the signal on a dipole antenna and optimizes performance.



Ground Radials for Whip Should be Longer Than the Whip is Tall



These antenna configurations are used primarily for FM ground wave.

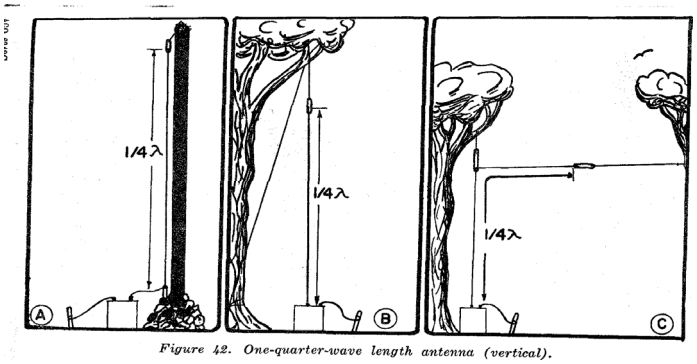


Figure 42. One-quarter-wave length antenna (vertical).

This is an HF antenna that radiates at 360 degrees and is used in areas where space is limited.

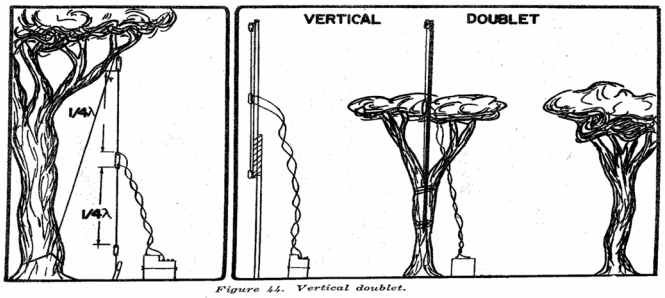
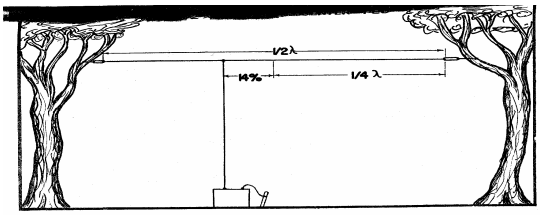
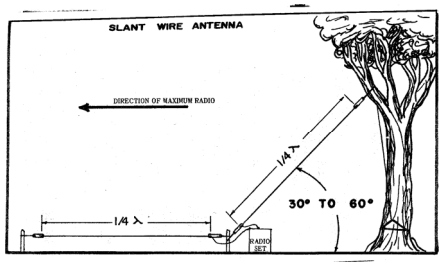


Figure 44. Vertical doublet.

This is a single wire antenna used when there is no suitable transmission line (coax, twisted pair) is available.





This antenna can be used to increase the transmission distances for FM as well as HF.

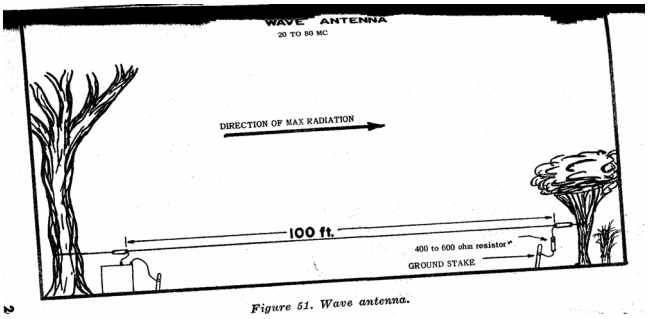
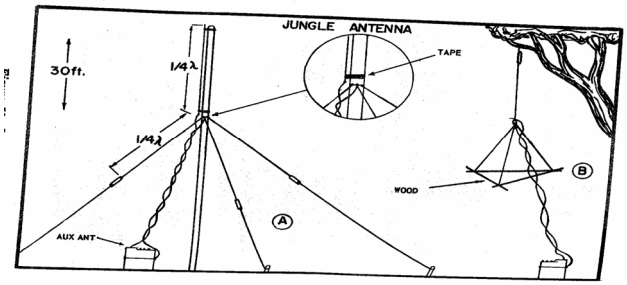


Figure 51. Wave antenna.

This antenna is used to increase the range of FM.



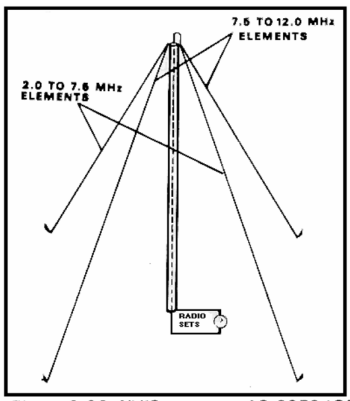
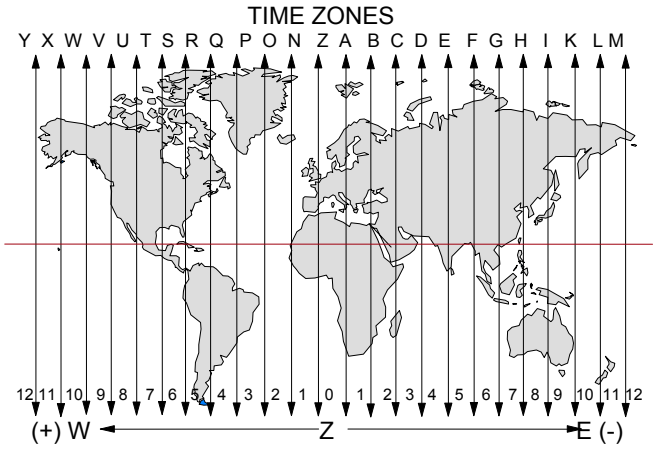


Figure 3-23. NVIS antenna, AS-2259/GR.

Near Vertical Incident Skywave (NVIS)
This antenna is good for a 300-mile radius. It tends to be lousy below 5 MHz and is designed for the 5 to 12 MHz frequency range. Increasing the length of the radiating elements will let you use the lower frequencies with added performance.

The Fan Dipole performs well, and it provides more frequency flexibility (for example, day, night, and transition period frequencies). For tactical communications, these dipoles can be easily deployed in a field expedient manner because they can be located close to the ground.


TIME ZONES
Y X W V U T S R Q P O N Z A B C D E F G H I K L M
12 11 10 9 8 7 6 5 4 3 2 1 0 1 2 3 4 5 6 7 8 9 10 11 12
(+) W
Z
E (-)

BITE FAULT CODE LISTINGS

V1.5.2.

Falcon II HF Manpack Radio Built-In Test Equipment (B.I.T.E.) Fault Code Listing

The following is a listing of B.I.T.E. faults displayed on the KDU (Keypad Display Unit). Any failure is displayed in the following format:

MODULE #: A1A4A1 Where "A1A4A1" is the faulty assembly (in this case, the Power Supply).

FAULT #: 02 Where "02" is the specific fault (in this case, a wrong detected voltage).

A1 SYSTEM FAULTS

01 NO SYSTEM ACKNOWLEDGE
02 FPGA INTERRUPT REQUEST ERROR
03 TRANSMIT PATH
04 TRANSMIT DATA
06 RECEIVE COMMAND
07 FPGA CLEAR TO SEND
08 RECEIVE DATA
09 KEY NOT SELECTED
10 NO START OF MESSAGE (LoopBack)
98

11 NO END OF MESSAGE (LoopBack)
12 COMSEC ABORT
13 TRANSMIT COMMAND
14 CONFIGURATION FAILED
15 FIRMWARE REVISION MISMATCH
16 CFG FILE NOT LOADED
17 CITADEL CAM CONFIG INVALID
21 DATA TERMINAL READY
22 RED DATA
31 CORRUPT EEPROM IMAGE
80 CIK EMPTY
81 CRYPTO SYNC
82 NO CIK DETECTED
83 CIK INVALID
84 CIK INTERFACE
85 FILL INTERFACE
88 TIMEOUT

89 AUDIO CALIBRATION
90 AUDIO TONE
95 ALARM PRESENT
96 ABORTED
97 TIMEOUT
98 TEST IN PROGRESS

100

A1A1A1 FRONT PANEL MOTHERBOARD FAULTS
30 EEPROM
Signal Processing Core Module (SPCM)
A1A2A1-A SPCM BIOP (BLACK INPUT/OUTPUT PROCESSOR) FAULTS
03 BLACK I/O FLASH ROM
04 BLACK I/O EXTERNAL DRAM
05 BLACK I/O NV RAM
96 ABORT
97 TIMEOUT
A1A2A1-B SPCM TARGET MONITOR FAULTS
V2.0
12/07/00 2 C:\TEMP\H_Bite.Doc
A1A2A1-C SPCM CDSP (CONTROL DSP) FAULTS
101 CDSP SERIAL PORT
102 CDSP INTERNAL DATA RAM
103 CDSP EXTERNAL DATA RAM
104 CDSP EXTERNAL PROGRAM RAM

165 CDSP CONTROL FPGA
166 CDSP TO CONTROL FPGA
167 CDSP TGC FEEDBACK A/D CONVERTER
168 CDSP DIGITAL IF ASIC
200 CDSP ROM FAULT

A1A2A3-A MODEM IOP (INPUT/OUTPUT PROCESSOR) FAULTS

40 NO COMMUNICATIONS WITH MODULE
41 MODEM IOP DUAL-PORT RAM
42 MODEM IOP INTERNAL PROGRAM RAM
43 MODEM IOP INTERNAL DATA RAM
44 MODEM IOP EXTERNAL PROGRAM RAM
45 MODEM IOP EXTERNAL DATA RAM
46 MODEM IOP D/A CONVERTER
47 MODEM IOP SAMPLE CLOCK
49 HPI (HOST PORT INTERFACE) BOOT FAULT

A1A2A3-B MODEM COP FAULTS
60 NO COMMUNICATIONS WITH MODULE
61 MODEM COP DUAL-PORT RAM
62 MODEM COP INTERNAL PROGRAM RAM
63 MODEM COP INTERNAL DATA RAM
64 MODEM COP EXTERNAL PROGRAM RAM
65 MODEM COP EXTERNAL DATA RAM
66 HPI (HOST PORT INTERFACE) BOOT FAULT
95 ALARM PRESENT
96 ABORT
97 TIMEOUT
A1A2A4-A INFOSEC COMSEC (COMMUNICATIONS SECURITY) FAULTS
01 NO COMMUNICATIONS WITH MODULE
02 COMSEC ROM
04 COMSEC RAM
05 COMSEC FPGA CONFIGURATION
06 COMSEC DUAL-PORT RAM

07 COMSEC DUAL-PORT RAM INTERRUPT REQUEST
08 COMSEC FPGA STATUS
09 COMSEC AUDIO LEVEL
10 COMSEC CIPHER SWITCH
11 COMSEC PLAIN-TEXT ALARM
12 COMSEC PLAIN-TEXT BYPASS
13 COMSEC REMOTE ALARM
14 COMSEC CRYPTOGRAPHIC INTERFACE
15 CRYPTO DETECTED

A1A2A4-B INFOSEC_FPGA FAULTS

A1A2A4-C INFOSEC VDP FAULTS

80 NO COMMUNICATIONS WITH MODULE
81 VDP INTERNAL RAM
82 VDP PROGRAM RAM
83 VDP DATA RAM

84 VDP BOOT ROM
85 VDP DUAL-PORT RAM
86 VDP APPLICATION CODE ROM
87 VDP RED ANALOG INTERFACE CIRCUIT (AIC)
88 VDP RED ANALOG INTERFACE CIRCUIT (AIC) CONTROL
89 VDP AUDIO PATH
90 VDP PLL RATE
91 VDP DUSART CHANNEL A DATA
92 VDP DUSART CHANNEL B DATA
93 VDP DUSART CHANNEL A INTERRUPT REQUEST
94 VDP DUSART CHANNEL B INTERRUPT REQUEST
95 ALARM PRESENT
96 ABORT
97 TIMEOUT

A1A2A5-A CRYPTO FAULTS

01 NO COMMUNICATIONS WITH MODULE
10 CRYPTO HARDWARE ALARM
11 CRYPTO “FAIL” SENSE LINE
12 CRYPTO COMMUNICATIONS TEST LINE
13 CRYPTO MISSING (AT POWER UP)
14 CRYPTO SOFTWARE
15 CRYPTO INCORRECT OR BAD
16 CRYPTO SHIPPING BOARD PRESENT
17 CRYPTO CIK NOT PRESENT
18 CRYPTO INVALID CIK
95 ALARM PRESENT
96 ABORT
97 TIMEOUT

RF CHASSIS
A1A3A1 HF/VHF RES (RECEIVER-EXCITER-SYNTHESIZER) FAULTS
01 RF CHASSIS SYNTHESIZER FREQUENCY LOCK
11 RF CHASSIS RECEIVE PATH S-METER
12 RF CHASSIS TRANSMIT PATH P-METER
13 RF CHASSIS TRANSMIT PATH, RES TRANSMIT POWER
17 RF CHASSIS HF/VHF RES FPGA LOOPBACK
95 ALARM PRESENT
96 ABORT
97 TIMEOUT
A1A3A2 INTERNAL RF PA FAULTS
16 RF CHASSIS INTERNAL RF POWER AMP FPGA LOOPBACK
A1A3A5 INTERNAL ANTENNA COUPLER FAULTS
14 RF CHASSIS COUPLER DETECTOR

A1A3A6 GPS RECEIVER FAULTS
01 NO COMMUNICATIONS WITH MODULE
02 GPS 1-PULSE-PER-SECOND SIGNAL
03 GPS ROM
04 GPS NOT INSTALLED
05 GPS RAM
06 GPS EEPROM
V2.0
12/07/00 4 C:\TEMP\H_Bite.Doc
08 GPS DSP
09 GPS REAL-TIME CLOCK
A1A4 POWER SUPPLY FAULTS
02 HOLD-UP BATTERY VOLTAGE
03 +6.5 VOLT SUPPLY
04 +13 VOLT SUPPLY
05 INFOSEC +6.5 VOLT SUPPLY
06 +3.3 VOLT SUPPLY

07 +5 VOLT SUPPLY
08 MAIN BATTERY VOLTAGE
09 GPS RECEIVER PREAMP POWER
10 REAL-TIME CLOCK
15 HF POWER SUPPLY FPGA LOOPBACK

A1A5-A KDU FAULTS

01 NO COMMUNICATIONS WITH MODULE
01 KDU RAM
02 KDU EPROM
04 KDU NON-VOLATILE CHARACTER SET
08 KDU EEPROM WRITE FAILURE
10 KDU LC DISPLAY DRIVER
20 KDU STATIC CSET
40 KDU BATTERY LEVEL
80 KDU CONTRAST CONTROL
100 EEPROM
1000 KDU MULTIPLE FAILURES

A4 EXTERNAL RF POWER AMPLIFIER FAULTS
01 NO COMMUNICATIONS WITH PA
02 EXTERNAL RF PA MICRO: INTERNAL RAM
03 EXTERNAL RF PA ROM
04 EXTERNAL RF PA EXTERNAL RAM
05 EXTERNAL RF PA +28V DC SUPPLY LOW
06 EXTERNAL RF PA D/A CONVERTER
07 EXTERNAL RF PA TEMPERATURE
08 EXTERNAL RF PA RF OUTPUT DETECTOR
09 EXTERNAL RF PA RF INPUT DETECTOR
10 EXTERNAL RF PA CURRENT SENSE
11 EXTERNAL RF PA “E-REFLECTED” DETECTOR
12 EXTERNAL RF PA “E-FORWARD” DETECTOR
13 EXTERNAL RF PA DC BIAS: NOT ON (20W)
14 EXTERNAL RF PA DC BIAS: NOT OFF (20W)
13 EXTERNAL RF PA DC BIAS CONTROL (400W)
14 EXTERNAL RF PA DC BIAS CONTROL (400W)

15 EXTERNAL PA HOP CLOCK (150W)
16 EXTERNAL RF PA RF DETECTOR
17 EXTERNAL RF PA FILTER
20 EXTERNAL RF PA LOW DC INPUT
21 EXTERNAL PA TEST CURRENT (150W)
23 EXTERNAL RF PA LAST FILTER
30 EXTERNAL PA RECIVE OVERLOAD (150W)
31 INTERNAL RF PA TRANSIENT OVERCURRENT
32 EXTERNAL PA AMBIENT TEMPERATURE (150W)
33 EXTERNAL PA PRE-POST SELECTOR (150W)
34 EXTERNAL PA PRE-POST SELECTOR BIAS (150W)
35 EXTERNAL PA PRE-POST SELECTOR FILTER (150W)
24 EXTERNAL PA TLC FAILURE 1 (400W)
25 EXTERNAL PA TLC FAILURE 2 (400W)
26 EXTERNAL PA TLC FAILURE 3 (400W)
27 EXTERNAL PA TLC FAILURE 4 (400W)

A5 AND A6 PRE/POSTSELECTOR FAULTS
01 NO COMMUNICATIONS WITH PRE-POSTSELECTOR
02 PRE/POSTSELECTOR MICRO: INTERNAL RAM
03 PRE/POSTSELECTOR ROM
04 PRE/POSTSELECTOR EXTERNAL RAM
21 PRE/POSTSELECTOR BANDPASS FILTER 1
22 PRE/POSTSELECTOR BANDPASS FILTER 2
23 PRE/POSTSELECTOR RF SWITCH
24 PRE/POSTSELECTOR GAIN
25 PRE/POSTSELECTOR TEMPERATURE
26 PRE/POSTSELECTOR BPF 1 COMMUNICATIONS (SHIFT REGISTER)
27 PRE/POSTSELECTOR BPF 2 COMMUNICATIONS (SHIFT REGISTER)
40 PRE/POSTSELECTOR TUNE POWER FAULT
50 PRE/POSTSELECTOR NO RF ON DETECTOR 2-A
51 PRE/POSTSELECTOR NO RF ON DETECTOR 2-B

52 PRE/POSTSELECTOR NO RF ON DETECTOR 2-C
53 PRE/POSTSELECTOR NO IN-BAND RF-1
54 PRE/POSTSELECTOR NO IN-BAND RF-2
55 PRE/POSTSELECTOR OUT-OF-BAND BANDPASS FILTER 1
56 PRE/POSTSELECTOR OUT-OF-BAND BANDPASS FILTER 2
57 PRE/POSTSELECTOR RF POWER TOO HIGH-A
58 PRE/POSTSELECTOR RF POWER TOO HIGH-B
59 PRE/POSTSELECTOR RF POWER TOO HIGH-C
60 PRE/POSTSELECTOR RF POWER TOO HIGH-D

RECOMMENDED METHOD FOR CCI SHIPMENTS TO HARRIS/RF

1. Be sure to **"Zeroize"** all COMSEC material being sent, if possible. When **Zeroizing** the AN/PRC-150 (C) (RT-1694), switch to the **"Z-All"** position. Once the radio display depicts **"Zeroize complete reset radio"**, rotate function switch to **"OFF"** position.

2. Deliver the COMSEC material to the appropriate COMSEC CUSTODIAN and have him/her create a form known as a **SF-153**. If the unit is being returned back within 60 days to the same COMSEC account, it is acceptable to Hand Receipt the item Rochester on the SF-153 form. When packing the material, tape all open edges of the container include the SF-153 detailing the material being shipped and a COMSEC account number or DODDAC number along with point of contact and phone number.

3. The package must be shipped via a **"Constant Surveillance"** method or via an approved carrier with tractability. The preferred method (for US) is Federal Express.

Other methods are EMERY (specify constant surveillance) and Registered Mail from the Post Office. When shipping COMSEC materials to Harris, please use the following addresses:

CLEARLY MARK THE OUTSIDE OF THE SHIPPING BOX "CCI MATERIAL"

INTERNAL USA:
Preferred Method:
Via FedEx overnight "Continuous Tracking"
Or EMERY, "Constant Surveillance" to:
HARRIS CORP/RF COMM. DIV.
CCI MANUFACTURING
570 CULVER ROAD
ROCHESTER, NY 14609
ATTN: COMSEC Custodian

- or -
If necessary,
Via U.S. Post Office Registered Mail to:
HARRIS CORP/RF COMM. DIV.
P.O. Box 10764
Rochester, NY 14610-0764
ATTN: COMSEC Custodian

The U.S. Post Office Registered Mail method may be used by U. S. facilities outside the CONUS. If shipping from non-U. S. S. facilities, outside CONUS, special arrangements must be made.

COMSEC Custodian: Darrell Bruder
COMSEC Account No: 871581
Phone: 585-242-4319
Fax: 585-242-4490
E-mail: dbrude01@harris.com

PRODUCT SERVICE Contact Info:
Phone: 585-242-3561
Phone (Toll Free) 866-264-8040
Fax: 585-242-4490
E-mail: rfcsrvc@harris.com

HARRIS CORPORATION RF COMMUNICATIONS DIVISION
1680 University Avenue Rochester, New York 14610-1887 USA
Tel: 585-244-5830. Fax: 585-242-4755. http://www.harris.com