Configuration Manual

EDACS® Station GETC1e

19D901868G3 and G4

ERICSSON

REVISION HISTORY

REVISION	DATE	REASON FOR CHANGE
B	Sep-95	Updated to include Station GETC1e Release 5 software, 349A9607G5 and Turbo Board software, 344A4414G5.
A	Jan-95	Updated to include Station GETC1e Release 4 software, 349A9607G4 and instructions for using PC Programmer TQ-3357 V4.03.
	Jul-94	Original

NOTICE!

This manual covers Ericsson and General Electric products manufactured and sold by **Ericsson Inc**.

NOTICE!

Repairs to this equipment should be made only by an authorized service technician or facility designated by the supplier. Any repairs, alterations or substitution of recommended parts made by the user to this equipment not approved by the manufacturer could void the user's authority to operate the equipment in addition to the manufacturer's warranty.

NOTICE!

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INTRODUCTION

This manual provides instructions for configuring the Ericsson **GE T**runking **C**ard Shelf (GETC™), part number 19D901868G3 and G4, for Station (including repeater and SCAT), Satellite Site Receiver, and VDI Control operation.

This manual is applicable to GETC (pronounced "get-see") hardware platforms installed in wideband or narrow band 800 MHz, 900 MHz, UHF, and VHF stations. The information presented includes an operational description and procedures for installing, upgrading, and verifying the hardware and software installed in the GETC.

The Lightning GETC (GETC1e) platform consists of the following sub-assemblies:

- Logic Board 19D904266G1 (used with Group 3 shelf) or 19D904266G4 (used with Group 4 shelf).
- GETC Expansion Module (Turbo Board) 19D903536P1.
- Regulator Board 19C366861G2.
- Rockwell Modem 19A705178P1 (optional). (The modem is required when the GETC is used in an EDACS Voted or Simulcast System or if it is part of an EDACS Network)
- GETC EPROM (U2) 349A9607G5 (Ver. 5.04).

All references to GETC in this manual refer to the GETC1e platform and the combination of GETC Logic board and Turbo board installed in the GETC Shelf.

SOFTWARE FEATURES

The GETC software product is continuously being improved and upgraded to include new features. The following paragraphs provide brief descriptions of the new features introduced by recent software releases. Information is also provided when hardware or software issues affect the GETC's configuration.

For a complete description of the new or enhanced features and itsuse, refer to Software Release Notes (SRN) for the specific software release. For example, to review release notes covering 349A9607G4 software refer to SRN1060-4, for 349A9607G5 software refer to SRN1060-5, etc.

349A9607G5 SOFTWARE

The 349A9607G5 software release adds the following features to GETC operation:

- SCAT Data (Refer to LBI-38987)
- Pro-Sound
- Enhanced MultiSite Login
- Voted Digital Interconnect (Refer to LBI-39187)

SCAT Data

Release 5 Station GETC software adds SCAT functionality to the Station GETC. This includes the SCAT RF and Landline Data functions. The former SCAT GETC software 344A3835G2 is replaced with 349A9607G5 and its former Turbo software 344A4414G4 is replaced by Link Turbo software 344A4414G5.

NOTE

In conjunction with this software release, the SCAT Downlink GETC software 344A3835G2 and Turbo Board software 344A4414G4 is replaced by Link software 344A4895G5 and Turbo software 350A1121G5, respectively. Refer to LBI-38987 for details.

Configuration Considerations:

- Radio users must have SCAT options enabled.
- When selecting Landline data, a Rockwell modem must be installed and EDG must be set up (refer to EDG documentation).
- Configuration requires using PC Programmer V4.03 and Field Macro "**`gtc_9505.mac`**" to access applicable parameters.

Refer to LBI-38987 for complete details on configuring SCAT systems.

Pro-Sound

The GETC Group 5 Release adds the EDACS Pro-Sound Feature. Pro-Sound provides better end-to-end audio quality by providing radios with a list of alternative sites and their corresponding control channels through the use of "**adjacency information**".

The GETC has the following role in supporting the Pro-Sound Feature:

- Receive Adjacency information from the Site Controller or Downlink.
- Count the number of actual Adjacent Systems listed in the Adjacency Message.
- Build an Adjacencies Table Length Definition Message and send it.
- If a Priority System is defined, build a Priority System Definition Message and send it.
- For each Adjacent System, build an Adjacent System Definition Message and send it.
- The Control Channel expects an Adjacency Data update from the IMC every 25 seconds or sooner.
- The Control Channel will stop sending Adjacency Data if the Link to the IMC breaks, or if it waits longer than 30 seconds for an adjacency information update from the IMC.
- If the Link to the IMC breaks, after it recovers, the CC will wait for a fresh set of Adjacency Data before it will begin sending over-the-air (RF) Adjacency Data.

Radio users must ensure the radio's personality has "Pro-Sound" enabled and the radio feature encryption option "wide area scan" or "priority scan" is active.

Configuration Considerations

Pro-Sound does not require any hardware changes or special software configuration. The feature is activated from the MOM PC, which is connected to the IMC.

Enhanced Multi-Site Login

The Enhanced Multi-Site Login feature provides a method to enhance signaling integrity, on both the inbound Control Channel and Working Channel, in an environment where a distant site is operating with the same frequency set or where intermodulation interference is a consideration.

Enhanced Multi-Site Login is achieved by means of a digital "color code" on the inbound Control and Working Channel signaling. The CRC (BCH error correction), which is appended to the end of each message, is coded (by the radio) and decoded (by the GETC) in a unique way as determined by the color specified in the GETC personality. This allows the specified site (i.e. having the correct site color) to acknowledge the receiving a radio transmission in an area where many sites may also receive the transmission. This is implemented as follows:

1. A particular site color is programmed in the Control Channel GETC.
2. The outbound Control Channel messaging tells the radio which "color" to use on inbound transmissions.
3. Inbound transmissions from the radio to the Control and Working Channel are coded with correct color.

Users must have radio's software upgraded to support this feature.

Configuration Considerations

- The Enhanced Multi-Site Login feature does not require any hardware changes. However, it does require special configuration of the GETC software.
- To enable Enhanced Multi-Site Login, the "Site Color" parameter needs to be programmed into the GETC Personality. This feature is a Personality Extended Site Option loaded into the PC Programmer software via the Field Macro file "**`gtc_9505.mac`**." Refer to the Personality Programming section in this manual for additional information on Field Macro installation into the PC Programmer, TQ-3357.

NOTE

Only PC Programmer TQ-3357 V4.03 (or later) can be upgraded through the use of Field Macros. Current Field Macros may be downloaded from the accompanying Station Turbo Software distribution disk or from Ericsson's "One1Call" Electronic Information Retrieval system.

Voted Digital Interconnect

The Voted Digital Interconnect (VDI) feature allows Voted and Simulcast sites to have access to the digital Central Interconnect system, Jessica.

For a Voted (Non-Simulcast) system, an additional GETC per channel is required, making the configuration more like that of a Simulcast system. All GETCs attached to RF receivers will operate as Satellite Receivers, and the added Control GETC will take on transmit responsibilities similar to those of the Simulcast Control Point GETC. The main purpose of the additional GETC is to provide a synchronous data input port which can be connected to the output of the voter. This provides the Control GETC the

capability of listening to both the IMC and the Voter simultaneously.

For a Simulcast system, no additional equipment is required once the system is equipped for Digital Dispatch. A wiring modification is made to the digital path between the Voter Selector and the Control Point GETC to provide a continuous data path between them. The modification gives the Control Point GETC the capability of listening to both IMC and the Voter Simultaneously.

Configuration Considerations:

- Configuration of the GETC Personality requires using PC Programmer V4.03 and Field Macro "**`gtc_9505.mac`**" or V5.0.

Refer to LBI-39187 for complete details on configuring GETCs for VDI systems. Additional information on Voted Digital Interconnect is also available in the Voter and Simulcast Control Point Maintenance Manuals, LBI-39149 and 39186.

DIP Switch Changes

The functionality of the DIP switches S1, S2, S3 have been dramatically reduced. Many of these controls now reside within the GETC personality and may be modified using GETC PC programmer TQ-3357.

The following controls have been altered:

- Simulcast operation moved to personality space.
- Conventional Failsoft enable moved to personality space.
- Frequency selection moved to personality space.
- Personality programming through J104 only (J100 no longer used for programming).

In earlier software versions, the operating frequency for MII/IIe systems was set into the DIP switches. With the introduction of 349A9607G5 the MII/IIe and MIII systems frequency is programmed in personality. MII/IIe use this information for frequency synthesizer loading and Narrowband systems extract even/odd information. The PC programmer V4.03 does not accept UHF frequencies and, as a result, UHF systems must have a fixed offset of 500 MHz added since only the even or odd frequency information is needed.

349A9607G4 SOFTWARE

With the release of 349A9607G4 software, both Wideband 9600 baud functionality and Narrow Band 4800 baud functionality were merged together. This release also included three new features:

- Failsoft Patch
- Wideband Power Monitoring
- Channel Activity Logging

In addition, this software release was designed in conjunction with the GETC PC Programmer TQ-3357 V4.03 (344A3466G5).

Multisite Digital Voice or Digital Data

Digital Voice or Digital Data applications require installation of a Rockwell Modem. This allows the GETC to send and receive Digital Voice or Digital Data information, encoded as 9600 baud modem data, to the CEC/IMC using the four-wire audio line.

Additionally, the personality option for Wide Area Digital Voice must be ENABLED for proper operation. This can only be done using the PC Programmer V4.03 (or later).

RELATED PUBLICATIONS

It may be necessary to consult one or more of the following documents during the installation process. These manuals will also provide additional guidance if you encounter technical difficulties during the configuration process.

LBI-38430 - MASTR IIe Control Shelf Maintenance Manual.

LBI-38636 - MASTR III Base Station Installation Manual.

LBI-38822 - Turbo Board (GETC 1e) Maintenance Manual.

LBI-38894 - GETC Trunking Card Maintenance Manual.

LBI-38896 - EDACS Site Downlink and CEC/IMC Uplink Configuration Manual.

LBI-38985 - EDACS Site Controller Maintenance Manual.

LBI-38987 - EDACS SCAT & SCAT Downlink Configuration Manual.

LBI-39149 - EDACS Compact Vertical Voter Maintenance Manual.

LBI-39186 - EDACS Simulcast Control Point Maintenance Manual.

LBI-39187 - EDACS Voted Digital Interconnect Configuration Manual.

SRN-1010 - Software Release Notes for GETC Turbo Board Software, 344A4414G1 only.

SRN-1024 - Software Release Notes for GETC 900 MHz Software, 19A705595G8.

SRN-1060 - Software Release Notes for GETC 1e Software, 349A9607G1 (or later).

SRN-1062 - Software Release Notes for Turbo Board with GETC 1e Software, 344A4414G2 (or later).

TQ-3357 - GETC Shelf Programming Manual

SOFTWARE COMPATIBILITY

GETC EPROM and TURBO BOARD SOFTWARE COMPATIBILITY

The following software is required for GETCs used in the Station configurations:

Table 1 - GETC EPROM and Turbo Software Compatibility

GETC LOGIC BOARD EPROM, U2	TURBO BOARD SOFTWARE
349A9607G5	344A4414G5
349A9607G4	344A4414G4 (or later)
349A9607G2	344A4414G3 (or later)
349A9607G1 (800 MHz only)	344A4414G2 (or later)
19A705595G8 (900 MHz only)	344A4414G1
344A3835G2 (SCAT only)	344A4414G2

CAUTION

To ensure system compatibility, all repeaters and Satellite Receivers should have the same firmware versions installed. Also, for proper Voted or Simulcast operation, Test Unit Software 19A705272 Group 6 is required. Failure to observe these precautions could result in less than acceptable system operation.

NOTE

Software used in the GETC is subject to changes resulting from improvements or enhancements. Refer to release notes SRN1060, SRN1061 and SRN1062 for compatibility of GETC1e with other EDACS platforms. Software Release Notes take precedence over this manual.

EDACS COMPONENT SOFTWARE COMPATIBILITY

The data presented in Table 2 represents the minimum EDACS component software versions required to support the features indicated.

NOTE

If a system has Group 5 Link software and Group 11 IMC software, then the Site Controller must use Group 6 (or later) software.

RADIO COMPATIBILITY

Table 3 describes the minimum software requirements for radio products supporting the features included in this release.

Table 2 - EDACS Component Software Compatibility

EDACS COMPONENT	Required for SCAT Data	Required for Enhanced Multisite Login	Required for ProSound	Required for Voted Digital Interconnect	Required for Failsoft Patch Operation
C3 MAESTRO	N/A	344A3922G4	344A3922G4	344A3922G4	344A3922G4
IMC U58 U59 U3 MOM	344A3567G11 344A3568G11 344A3565G11 344A3630G11	344A3567G8 344A3568G8 344A3565G7 344A3630G4	344A3567G11 344A3568G11 344A3565G11 344A3630G11	344A3567G11 344A3568G11 344A3565G11 344A3630G11	344A3567G11 344A3568G11 344A3565G11 344A3630G11
Site Controller	N/A	344A3265G3	344A3265G6	344A3265G6	344A3265G2
VAX System Manager PDP System Manager	344A4583G2 19A149495G8	344A4583G2 19A149495G8	344A4583G2 19A149495G8	344A4583G2 19A149495G8	344A4583G2 19A149495G8
Link GETC Link Turbo	344A4895G5 350A1121G5	N/A	344A4895G5 350A1121G5	344A4895G5 350A1121G5	344A4895G4 350A1121G4
PC Programmer TQ-3357	Ver 4.03	Ver 4.03 (gtc_9505.mac)	Ver 4.03	Ver 4.03	Ver 4.03
Voter / Simulcast	N/A	19A149567G12	19A149567G12	19A149567G13	19A149567G12
Jessica PI	N/A	N/A	N/A	349A9982G3	349A9982G3
EDG Application 147 ROMs VC24 ROMs	350A1069G1 350A1101G1 350A1072G1	N/A	N/A	N/A	N/A

Table 3 - Radio Compatibility

FEATURE	MPA	MDX	MDR	MRK	ORION	Alpha FMD
ProSound	G15	G9	G8	G22	G22	N/A
Enhanced Multisite Login	G16	G10	N/A	G22	G22	G2
Modified Data Protocol	N/A	G10	N/A	G19	G19	G2
SCAT	G8	G1	G1	G19	G19	G1
SCAT Data	N/A	G10	N/A	G22	G22	G2
Interconnect	G10	G1	G1	G1	G1	G1
Digital Interconnect	G12	G1	N/A	G5	G1	G1

HARDWARE COMPATIBILITY

The GETC hardware compatibility depends on the version of EPROM installed on the Logic Board, refer to the following table:

Table 4 - GETC Hardware Compatibility

GETC LOGIC BOARD EPROM, U2	LOGIC BOARD	TURBO BOARD
349A9607G5	19D904266G4 19D904266G1	19D903536P1
349A9607G4	19D904266G4 19D904266G1	19D903536P1
349A9607G3	19D904266G1	19D903536P1
349A9607G2 (or earlier)	19D904266G1	19D903536P1
19A705595G8	19D904266G1	19D903536P1

NOTE

GETCs using EPROM 349A9607G4 or later must use Logic Board 19D904266G4 or upgrade the Logic Board 19D904266G1 with the Speedup (80C320) microprocessor and Amps Modem chips, U4 and U19 (19A704727P4). (Refer to *Upgrading Hardware* in the Hardware Installation section of this manual.)

GETCs using EPROM 349A9607G4 or later must also have the FerriShield Toroid (REG70469/1) installed around the Turbo Board's harness for EMI suppression, refer to LBI-28822 for details.

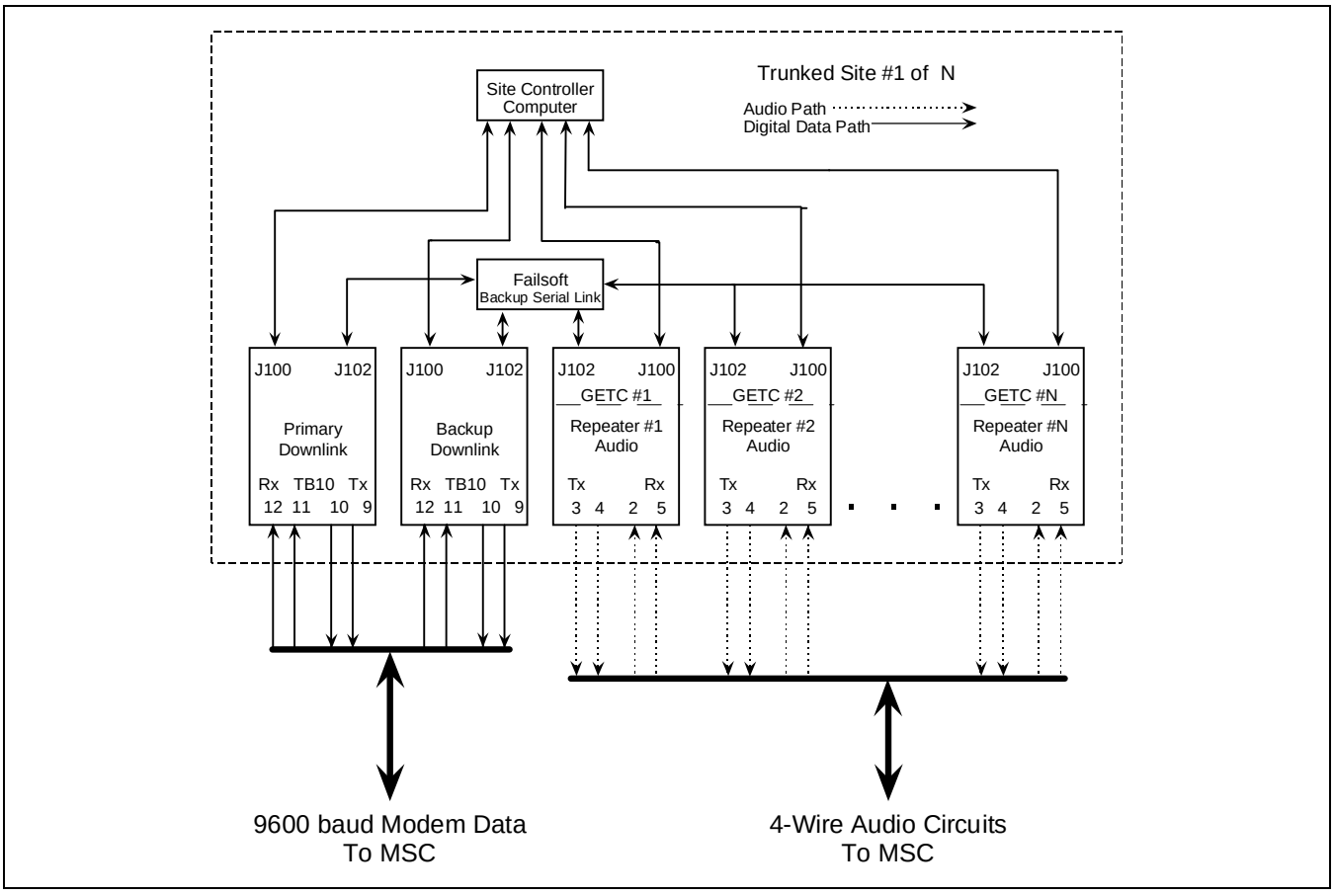


Figure 1 - Typical EDACS Site Block Diagram

DESCRIPTION

The **Station GETC** is the foundation of all EDACS trunking operations. It is capable of operating in the Trunked Failsoft mode or as part of a fully trunked system or network. In the Trunked Failsoft mode, one of the Station GETCs operates as the Control Channel GETC, providing the command and control link between the mobile radios and the EDACS system. The remaining station GETCs operate as Working Channel GETCs and enable or disable selected repeater channels for the actual voice or digital data communication. Each Station GETC has the ability to operate as a Control Channel if the operation of the current Control Channel GETC is interrupted.

In a Fully Trunked EDACS network or system (Figure 1), the Station GETCs function as either Control Channel or Working Channel GETCs. In this environment, the Site Controller Computer directs all communications, and designates the Control Channel and Working Channel GETC's. This allows EDACS to provide advanced features such as Dynamic Transmission/Message Trunking, Local Telephone Interconnect, Activity Logs, and Management functions.

However, should the Site Controller fail, the EDACS system defaults to the Trunked Failsoft mode. In this mode, one of the GETCs assumes the role of Control Channel GETC and directs Working Channel assignments using the Backup Serial Link (BSL). Should the Control Channel GETC fail, one of the other Working Channel GETCs assumes the Control Channel function. The end result is reliable, high performance trunked communication.

The **Downlink GETC** provides the communication path between the site and the Integrated Multisite and Console Controller (IMC) or the Console Electronics Controller (CEC) via the Uplink or Link GETC. Refer to LBI-38896 when configuring Downlink and Uplink GETCs.

OPERATION

The Station GETC communicates with the Site Controller through an RS-232C port (J100), see the Interconnect Diagrams, operating at 19.2K baud. Additional communications parameters are one start bit, eight data bits, and one stop bit.

The designated Control Channel GETC communicates with the Working Channel GETC's using a Sync line that indicates outbound Control Channel data and inbound mobile data. The Sync line is connected in a bus fashion to each Station GETC.

CONTROL CHANNEL

The Control Channel GETC provides continuous outbound Control Channel data. The data stream consists of message frames containing information such as Channel Assignments. The Channel Assignment message includes the originating mobile's LID, communication type, Trunking mode, communications channel, and the group or individual involved in the call.

The mobile radios synchronize their transmissions on the Control Channel to reduce Control Channel collisions. The designated Control Channel GETC processes the inbound data prior to passing the data along to the Site Controller. When operating in the Failsoft mode, the Control Channel GETC also produces the required Channel Assignments.

Control Channel Jamming

Whenever an invalid signal is present on the inbound Control Channel for longer than six seconds, the Control Channel GETC generates a jamming alarm . The Station sends the alarm to the Site Controller which can initiate corrective action such as re-assigning the Control Channel to a different operating frequency.

WORKING CHANNEL

Sub audible signaling or Low Speed Data (LSD) is present on the Working Channel along with the primary voice communication. The LSD indicates group call activity on other channels and also indicates a channel drop when appropriate.

The Working Channel operates in either the Transmission Trunked mode or Message Trunked mode. Transmission Trunking allows for an instantaneous channel drop upon receipt of an "unkey" message from the mobile radio. This is the most efficient use of channel resources.

Message Trunking provides hang time following the channel drop message. This mode is used when it is important to provide uninterrupted communication. When using Message Trunking, the user(s) occupy the same Working Channel until the message trunk timer expires.

TRUNKED FAILSOFT OPERATION

The Trunked Failsoft operating mode provides basic trunked communications. The designated Control Channel GETC makes all channel assignments and transmits the assignments over the BSL (J102-3) to each of the Working Channel GETCs. The Failsoft operating mode is entered

whenever the communications between the Site Controller and the Control Channel GETC is lost.

STATION CONTROL

The Station GETC controls the Repeater Station's radio through the following interface and control lines:

DELAY PTT (J6-1)	Station executes an EXTernal PTT sequence to key the station transmitter.
REM PTT OUT (J6-16)	Station executes a REMote PTT, used to control audio routing from the remote line input to the transmitter.
RUS OUT (J7-15)	Controls receiver (Vol/Sq) audio sent to the transmitter.
DET DIS (J6-10)	Detect Disable signal disables LSD while sending HSD to the transmitter.
PA FAIL (J7-13)	RF power amplifier failure sensing line.
SYNTH LOCK DET (J6-13)	Synthesizer-exciter lock detect indicator.
SYNTH CLK (J6-12)	Synthesizer-exciter clock line (MIIe - 800/900 MHz applications only).
SYNTH DATA (J6-11)	Synthesizer-exciter data line (MIIe - 800/900 MHz applications only).
SYNTH LD EN (J6-15)	Synthesizer-exciter load enable pulse line (MIIe - 800/900 MHz applications only).
TX MOD (J7-4)	Direct modulation input to the synthesizer-exciter (MIIe only).
GETC DATA (J7-5)	Input to the transmitter for filtered High Speed Data (HSD) to be transmitted.
VOL\SQ HI (J7-2)	Unfiltered receiver audio (9600 or 4800 baud data, voice, or Low Speed Data (LSD).
LSD TX (J19-5)	Low-Speed Data to be transmitted.
1950 DIS (J6-5)	Keeps line output active during absence of a clear voice, working channel call (EDACS Voting System).

For a complete description of the interface signals, and their activity during the various operating modes, refer to Table 15 .

The GETC uses the following lines to communicate with other GETCs and with the Site Controller:

TX DATA LINK	Serial link, transmit output, to the Site Controller.
RX DATA LINK	Serial link, received input from the Site Controller.
BSL	Backup Serial Link between Failsoft GETC's.
SYNC	Frame Sync Line (FSL) provides GETC synchronization in trunked stations.

CONFIGURATION

The configuration process involves the following procedures and should be completed in the order presented:

1. Hardware Installation - The Hardware Installation procedure verifies proper installation of GETC hardware.
2. GETC Software Installation - The GETC Software Installation procedure provides instructions for installing the GETC operating software, 349A9607.
3. Turbo Board Software Installation - This procedure provides instructions for installing the Turbo Board software, 344A1441.
4. Personality Programming - This procedure provides instructions for programming and storing system configuration data in the GETC.
5. Operational Checkout - The Operational Checkout procedure provides instructions for verifying the GETC operation when the configuration is complete.

HARDWARE INSTALLATION

Typically, a Station GETC is installed in an EDACS station cabinet just above each of the station's radio assemblies as shown in Figure 2. The assembly is mounted within a slide out shelf measuring 1.75 inches (one rack unit) high by 19 inches wide.

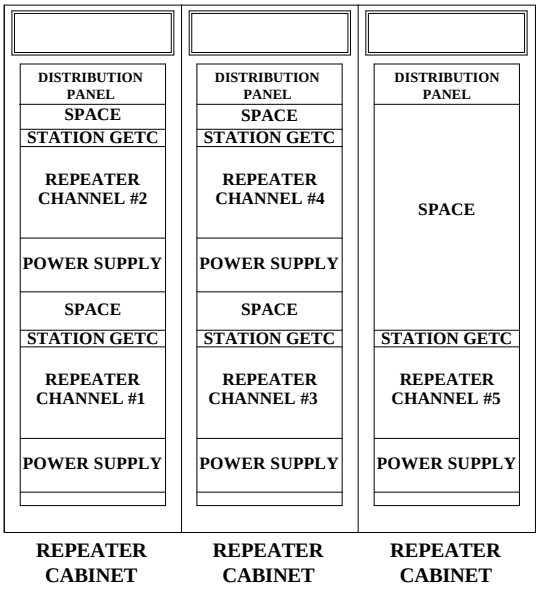


Figure 2 - Typical Five Channel Repeater Cabinet

Installation or removal of the shelf sub-assemblies involves sliding the GETC shelf out of the cabinet and into the service position. This position allows access to the shelf's sub-assemblies. Install all components with the appropriate screws, nuts, and washer hardware. Refer to the MASTR IIe (LBI-38430) or MASTR III (LBI-38636) Application Assembly Diagrams for detailed information on installing the GETC Shelf.

Observe basic safety precautions to prevent injury or equipment damage.

Upgrading Hardware

GETC Shelves 19D901868G3 which are upgrading to the 349A9607G4 or G5 software must ensure their hardware is upgraded to the proper level. (The 19D901868G4 GETC Shelf meets all Group 5 requirements.)

Upgrading the hardware involves three elements:

- The microprocessor U1, 19A705557P1 (80C32), is replaced with a faster “Speedy” microprocessor RYT 121 6060/A (80C320).
- Replacing the AMPS modem chips U4 and U19 with the TI AMPS modem chips 19A704727P4.
- Installing a Ferrite Toroid on the Turbo Board harness to suppress EMI spurs at 74 MHz.

The replacement microprocessor and Ferrite Toroid are available in the field installable upgrade kit SPK9505. If replacement of the modem chips is necessary, they must be ordered separately. Refer to LBI-38894 and LBI-38822 for complete installation instructions.

GETC Logic Board Installation

This manual assumes the GETC Logic Board (19D904266G1 or G4) is previously installed, setup for the default configuration (Wideband EDACS Station), and fully operational. If you suspect that the GETC Logic board is not operating properly, refer to the Troubleshooting section in this manual.

Turbo Board Installation

This manual assumes the Turbo Board is previously installed and fully functional. If, after installing or attempting to install the Turbo Software, the Turbo Board is not functioning properly, refer to the Troubleshooting section. Additional maintenance information is also available in LBI-38822, SRN1060 and SRN1062.

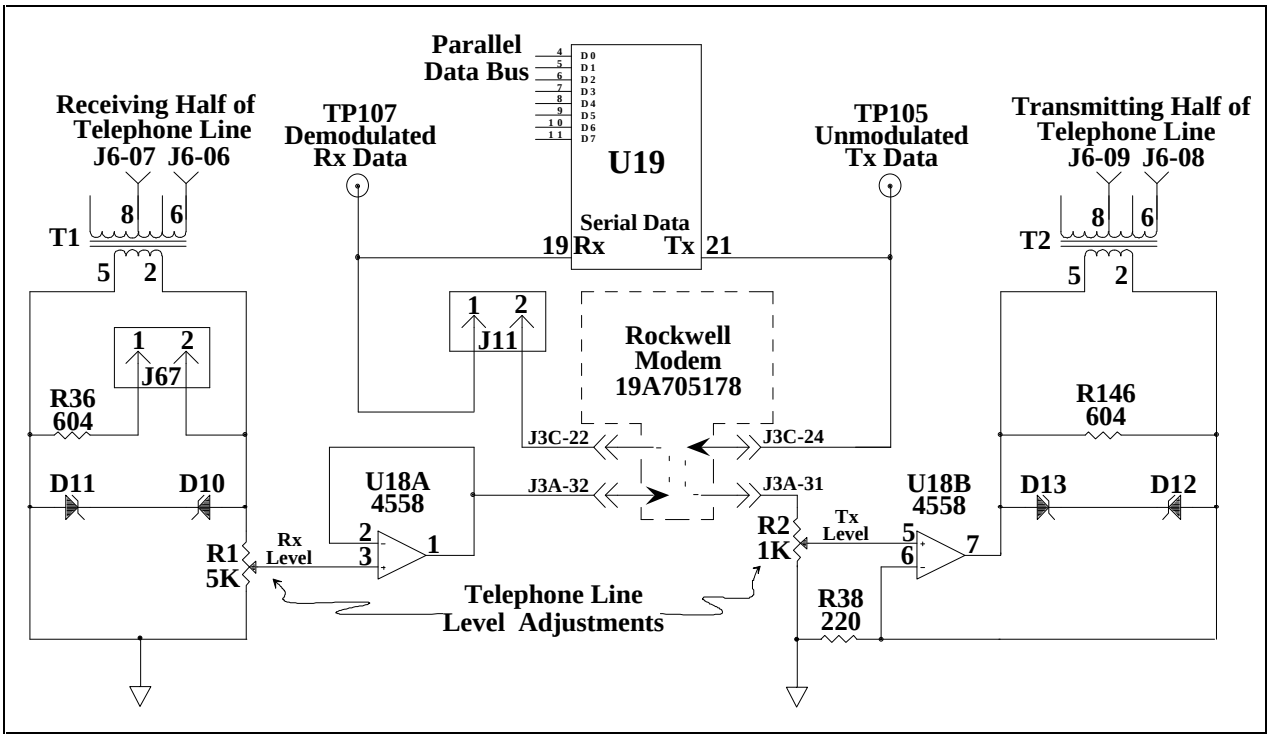


Figure 3 - GETC Phone Line Level Adjustments

Rockwell Modem Installation

The Rockwell Modem provides a high speed synchronous serial interface between the Station GETC and the CEC/IMC's Uplink GETC. The Station GETC uses the modem to send and receive serial digital data representing GID information, polling messages, keying messages, and channel assignments. Data transfer rates are 9600 bits per second (bps) using dedicated 3002 data grade four-wire audio lines. Technical specifications for the modem may be found in LBI-33031. Information on installing and testing the modem may be found in LBI-38894, and LBI-38822.

Modem Alignment

Use the following steps to set up the basic audio line levels. If the Station GETC is linked to a MultiSite system other than the CEC/IMC (i.e. Data Gateway), different levels may be required. Consult the applicable system installation manual for the required levels.

1. Ensure jumpers are installed on J11 pins 1 & 2 and J12 pins 1 & 2.
2. Apply power to the GETC.
3. Adjust the receive level by monitoring U18 pin 1 (refer to Figures 3 and 4) and adjusting the receive level potentiometer R1 (located on the GETC Logic Board) for 400 mVpp as measured with an oscilloscope (85 mVrms if using an RMS Voltmeter).
4. Verify the presence of demodulated signal data at TP107.
5. Adjust the transmit level potentiometer R2 for the maximum output level allowed by the phone line, microwave link, or equivalent communication line. For telephone lines linking the Station GETC to the CEC/IMC Uplink GETC, adjust R2 for .77 Vrms (0 dBm) measured across J6-8 and J6-9 (TB10-1 and 2). For microwave links, adjust R2 for -10 dBm across J6-8 and J6-9.
6. Initialize the modem by pressing S4 (on the GETC Logic Board) to reset the Station GETC or cycle the GETC Shelf's operating power.

Jumper Installation

There are a few jumpers on the GETC Logic Board which must be re-configured for different applications. To properly configure the GETC jumpers, refer to jumper tables in SRN1060 and install or remove jumpers according the intended GETC application. The location of the jumpers may be found using the board layout diagram in Figure 4.

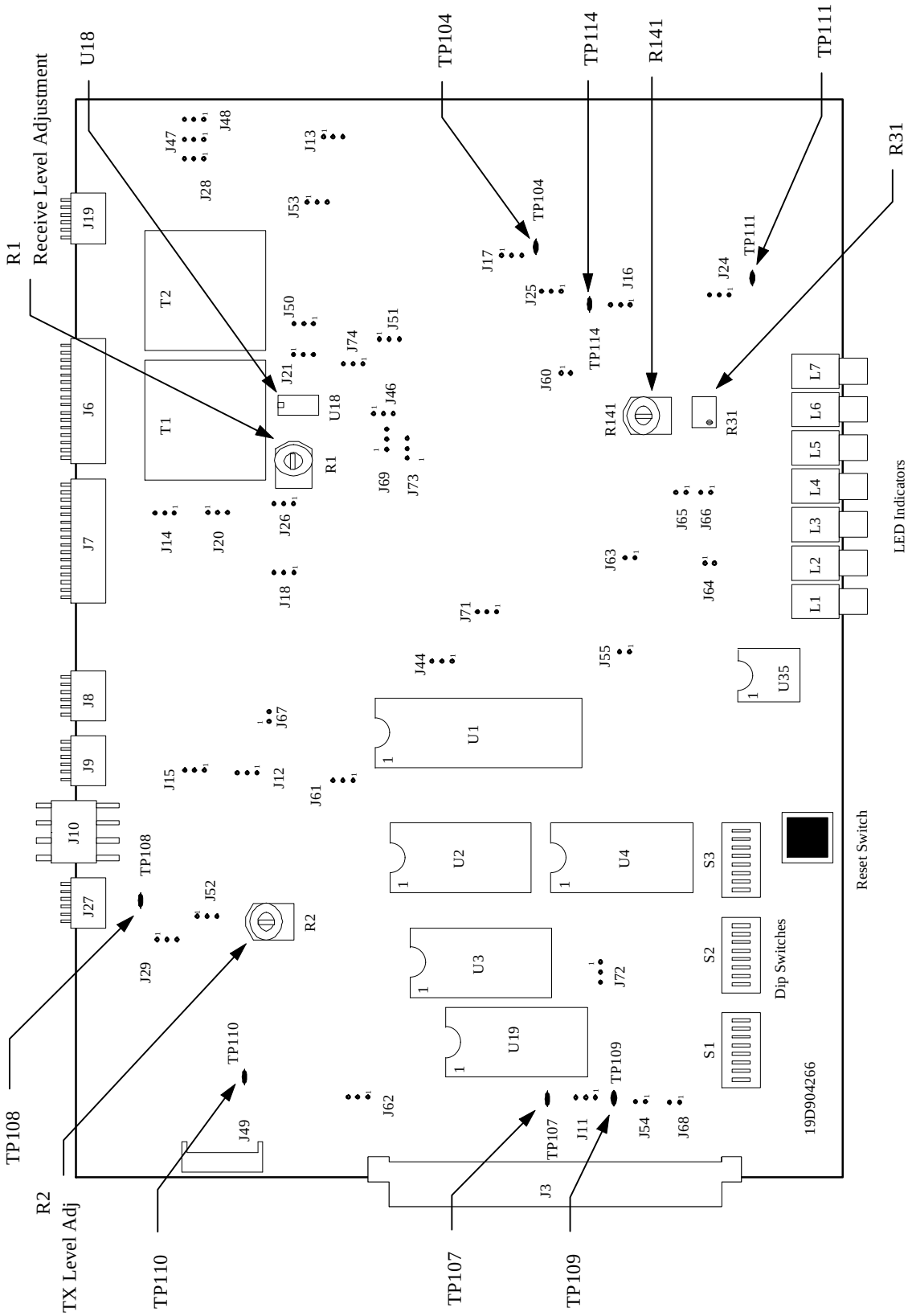


Figure 4 - Station GETC (19D904266) Jumper and Test Point Locations

GETC SOFTWARE INSTALLATION

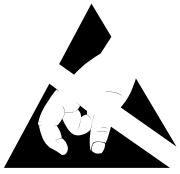
The GETC software installation procedure involves installing the latest version of the EPROM containing the GETC operating software.

NOTE

Download applicable Field Macros into the PC Programmer TQ-3357 prior to configuring the GETC software.

The following procedures provide instructions for installing the GETC software when the GETC functions in a Failsoft System, a Fully Trunked System, or a Satellite Site Receiver or Simulcast Remote Transmitter:

CAUTION



Observe precautions for handling **ELECTROSTATIC SENSITIVE DEVICES**

Trunked Failsoft System

Perform the following steps when installing the software in a GETC connected in a Trunked Failsoft system.

NOTE

Upgrading to Group 4 or Group 5 software is backward compatible in functionality with 349A9607G1 & G2 and 19A149256G18 thru G21 software in the Failsoft operation. However, the GETC hardware must be upgraded to include the Turbo Board with 344A4414G4 or Group 5 software, respectively, and Ferrite Toroid. The Logic board must be upgraded with the 80C320 microprocessor (U1), and 19A704727P4 Modem (U4 & U19), refer to the *Upgrading Hardware* section for details.

1. Power down the channel and place the GETC into the service position. Refer to LBI-38894 if necessary.
2. If upgrading from 19A149256G21 (or earlier) software, remove RAM chip U3 and install Turbo Board. Refer to LBI-38822 for instructions.
3. Ensure Modem chips U4 and U19 are TI AMPS modems 19A704272P4. TI Amps modems are required when upgrading to 349A9607G4 (or later), replace if necessary.
4. Ensure microprocessor U1 is the "Speedy" microprocessor 80C320 (RYT 121 6060/A). This processor is required when upgrading the software to 349A9607G4 (or later). The processor is available in the Speedy Upgrade Kit SPK9505. Replace if necessary. Refer to LBI-38894 for installation instructions.
5. Ensure Turbo Board harness has Ferrite Toroid installed. Toroid is included in the SPK9505 Speedy Upgrade Kit. Replace if necessary. Refer to LBI-38822 for installation instructions.
6. Remove the old EPROM (U2) from the GETC Logic Board.
7. Install the new EPROM into the XU2 socket, being sure to properly orient the chip.
8. Remove EEPROM U35, if necessary, from the Logic Board. The GETC personality will reside in the Turbo Board and this device is no longer required.
9. Power up the channel.
10. Place the Turbo processors U1 and U2 in the program mode by switching Turbo Board switches S2 and S3 toward the front of the Turbo Board.
11. Download the Turbo Board Software from the disk provided in the Turbo Media Kit, 344A4414. Refer the *Turbo Board Software Installation* section, SRN1060, SRN1062, and LBI-38822.
12. After downloading the Turbo Board software, move switches S2 and S3 toward the back of the Turbo Board and press the GETC Logic Board Reset button, S4.
13. The two LEDs on the Turbo Board should light.
14. Program the GETC's personality using the *Personality Programming* procedures contained in

this manual and the detailed instructions contained in TQ-3357 and SRN1060.

15. Perform an operational checkout using the *Failsoft System* checkout procedures.

Fully Trunked Systems

Perform the following steps when installing the software in a GETC connected in a fully trunked system. Following these procedures will allow upgrading the GETC without interrupting normal communications.

These procedures apply to all fully trunked sites with PDP System Manager Group 8 (or later), or VAX System Manager Group 1 (or later).

NOTE

If uninterrupted service is not an issue, skip steps 1 and 2.

1. Using the System Manager, place the channel into Channel Test (formerly 2nd partition). This allows the GETC to be tested for correct operation before the channel is placed back into service.

2. Enable the test radios (two required) to operate in Channel Test. This is done using the System Manager's Logical Unit Definition to change the Logical ID database. Also, enable a test group(s) for Channel Test by using the System Manager's Group Definition to change the Group ID database. Refer to LBI-38984.

3. Power down the channel and place the GETC into the service position. Refer to LBI-38894 if necessary.

4. If upgrading from 19A149256G21 (or earlier) software, remove RAM chip U3 and install Turbo Board. Refer to LBI-38822 for instructions.

5. Ensure Modem chips U4 and U19 are TI AMPS modems 19A704272P4. TI Amps modems are required when upgrading to 349A9607G4 (or later), replace if necessary.

6. Ensure microprocessor U1 is the "Speedy" microprocessor 80C320 (RYT 121 6060/A). This processor is required when upgrading the software to 349A9607G4 (or later). The processor is available in the Speedy Upgrade Kit SPK9505. Replace if necessary. Refer to LBI-38894 for installation instructions.

7. Ensure Turbo Board harness has Ferrite Toroid installed. Toroid is included in the SPK9505 Speedy Upgrade Kit. Replace if necessary. Refer to LBI-38822 for installation instructions.

8. Remove the old EPROM (U2) from the GETC Logic Board.

9. Install the new EPROM into the XU2 socket, being sure to properly orient the chip.

10. Remove EEPROM U35, if necessary, from the Logic Board. The GETC personality will reside in the Turbo Board and this device is no longer required.

11. Power up the channel.

12. Place the Turbo processors U1 and U2 in the program mode by switching Turbo Board switches S2 and S3 toward the front of the Turbo Board.

13. Download the Turbo Board Software from the disk provided in the Turbo Media Kit, 344A4414. Refer the *Turbo Board Software Installation* section, SRN1060, SRN1062, and LBI-38822.

14. After downloading the Turbo Board software, move switches S2 and S3 toward the back of the Turbo Board and press the GETC Logic Board Reset button, S4.

15. The two LEDs on the Turbo Board should light.

16. Program the GETC's personality using the *Personality Programming* procedures contained in this manual and the detailed instructions contained in TQ-3357 and SRN1060.

17. Perform an operational checkout using the *Fully Trunked System* checkout procedures.

NOTE

When upgrading from 349A9607G1 (or later) software, existing personality data is stored during the installation process. It will only be necessary to reprogram the personality if new features are being enabled.

Satellite Receivers & Simulcast Remote TX

Perform the following steps when installing the software in a GETC connected in a Voted system as a Satellite Site Receiver or at the Remote TX Site.

NOTE

For Voted systems using Satellite Site Receiver software, the Satellite Site Receiver software must be the same version as the Main/Control Site software before the channel will operate properly.

NOTE

For Simulcast systems, all Satellite Receivers of a channel must use the same software version, and the receiver software need not be the same as the Control Point software although it is recommended.

We also recommend upgrading the Satellite Site Receiver software before the Main/Control Site. Receiver sites are somewhat redundant in their operation, and changing one site has only a localized affect on the over all operation.

1. Power down the channel and place the GETC into the service position. Refer to LBI-38894 if necessary.

2. If upgrading from 19A149256G21 (or earlier) software, remove RAM chip U3 and install Turbo Board. Refer to LBI-38822 for instructions.

3. Ensure Modem chips U4 and U19 are TI AMPS modems 19A704272P4. TI Amps modems are required when upgrading to 349A9607G4 (or later), replace if necessary.

4. Ensure microprocessor U1 is the "Speedy" microprocessor 80C320 (RYT 121 6060/A). This processor is required when upgrading the software to 349A9607G4 (or later). Processor is available in Speedy Upgrade Kit SPK9505. Replace if necessary. Refer to LBI-38894 for installation instructions.

5. Ensure Turbo Board harness has Ferrite Toroid installed. Toroid is included in the SPK9505 Speedy Upgrade Kit. Replace if necessary. Refer to LBI-38822 for installation instructions.

6. Remove the old EPROM (U2) from the GETC Logic Board.

7. Install the new EPROM into the XU2 socket, being sure to properly orient the chip.

8. Remove EEPROM U35, if necessary, from the Logic Board. The GETC personality will reside in the Turbo Board and this device is no longer required.

9. Power up the channel.

10. Place the Turbo processors U1 and U2 in the program mode by switching Turbo Board switches S2 and S3 toward the front of the Turbo Board.

11. Download the Turbo Board Software from the disk provided in the Turbo Media Kit, 344A4414. Refer the *Turbo Board Software Installation* section, SRN1060, SRN1062, and LBI-38822.

12. After downloading the Turbo Board software, move switches S2 and S3 toward the back of the Turbo Board and press the GETC Logic Board Reset button, S4.

13. The two LEDs on the Turbo Board should light.

14. Program the GETC's personality using the *Personality Programming* procedures contained in this manual and the detailed instructions contained in TQ-3357 and SRN1060.

15. Perform an operational checkout using the *Satellite Receiver* checkout procedures.

Single Channel Autonomous Trunking (SCAT)

Detailed SCAT Installation Instructions for Station GETCs are available in LBI-38987. This manual also includes complete configuration instructions.

Voted Digital Interconnect (VDI)

Detailed VDI Installation Instructions for Station GETCs are available in LBI-39187. This manual also includes complete configuration instructions.

De-installing The GETC-1e Software

If a problem arises while upgrading or installing the new software, it may be necessary to de-install the software. Restoring the site to its original configuration will depend on which of the following the original hardware platform. The two cases are described below.

If the original equipment configuration was a GETC1e (GETC with Turbo) platform, then perform the following steps:

1. Replace Group 5 GETC PROM with original software.
2. Reload original Turbo software using PC Programmer.
3. If changes were made to the personality, then reload the previous parameters.
4. The Speedy microprocessor upgrade, if installed, does not need to be reversed.

If the original equipment was a GETC (GETC with no Turbo) platform, then perform the following steps:

1. Replace Group 5 GETC PROM with original software.
2. Disable the Turbo by sliding Turbo switches S2 and S3 toward the front of the GETC shelf.
3. Re-install the original personality EEPROM, if it was removed, else no change.
4. The Turbo upgrade, if installed, does **not** need to be reversed.
5. The Speedy microprocessor upgrade, if installed, does **not** need to be reversed, except for SCAT sites.

TURBO BOARD SOFTWARE INSTALLATION

This procedure provides instructions for downloading the Turbo software. The software is included in the Turbo Media Kit, 344A4414. The installation process involves downloading the GETC1E utilities to an IBM compatible personal computer (PC), and connecting the programming cable (TQ-3360) between the PC and the Turbo Board programming connector.

When using PC Programmer TQ-3357 V3 (or earlier) and downloading 344A4414G3 (and earlier) software, the data from the PC files is routed to the Turbo Board microprocessors through Turbo Board programming connector J100 at the rear of the GETC Shelf.

When using PC Programmer TQ-3357 V4.03 (or later), the Turbo software is downloaded to the Turbo Board microprocessors through Turbo Board programming connector J104. Programming through J104 also allows you to load the GETC personality without changing setups. In addition, the V4.03 PC Programmer will diagnose any problems between the PC and the GETC during the downloading process and simplify the handling and archiving of the Turbo software.

NOTE

PC Programmer TQ-3357 V4.03 must be used when upgrading to 349A9607G5 (or later). Only TQ-3357 V4.03 (or later) is capable of using Field Macros. When using 349A9607G5 software, the Field Macro "**`gtc_9505.mac`**" must be installed into TQ-3357 to access the new feature's parameters.

Equipment Required

- IBM PC/XT/AT or compatible with at least 640K memory, monitor and keyboard running MS-DOS version 3.0 or higher.
- Hard disk is recommended; but, not required.
- Serial Port configured as either COM1 or COM2.
- TQ-3360 programming cable.
- Male DB-25 to female DB-9 adapter or cable if the PC's serial port connector is a male DB-9 connector instead of a male DB-25 connector.
- Station Turbo Software distribution diskette 344A4414 (344A4414G5 required when installing 349A9607G5 GETC Software). Refer to SRN1060 and SRN1062 to verify software compatibility.
- Field Macro "**`gtc_9505.mac`**" (supplied with the Station Turbo Software distribution disk).

PC Programmer Setup

Prepare the PC for programming the GETC Turbo Board by performing the following steps:

TQ-3357 V4.03 (or later)

1. Connect the TQ-3360 programming cable from the PC's serial port connector to the GETC Shelf connector J104 (A DB-25 to DB-9 adapter may be needed.)

2. Using the TQ-3357's LOAD utility, copy the Station Turbo software (344A4414) into the PC Programmer's working directories.

3. Load the Field Macro "gtc_9505.mac" into the TQ-3357 PC Programmer using the instructions contained in Chapter 5 of the TQ-3357 manual.

4. Refer to TQ-3357 Chapter 5 *Load1E Utility* for complete instructions on downloading the Turbo software .

TQ-3357 V3 (or earlier)

1. Connect the TQ-3360 programming cable from the PC's serial port connector to the GETC Shelf connector J100 (A DB-25 to DB-9 adapter may be needed.)

2. Using standard DOS commands or a software file manager, create a directory named "**LOAD1E**" on the PC's hard drive.

3. Make "**LOAD1E**" the current directory and copy the following files from the software diskette into the "**LOAD1E**" directory:
   - load1e.exe
   - 1etop.hex
   - 1ecrc.hex
   - 1ebot.hex

4. Run the **load1e.exe** program. Follow the on screen instructions and program the Turbo Board. Additional programming instructions may be found in SRN1062 and LBI-38822.

NOTE

When using Turbo Board 344A4414 Group 2 (or later) software, re-programming the GETC Turbo Board will not alter previously stored Personality Data. When Personality Data is present, **"load1e.exe"** clears and performs CRC functions over the code portion of memory only.

PERSONALITY PROGRAMMING

Personality refers to the system configuration data stored in the GETC's memory. The GETC's Personality includes system configuration information such as channel frequencies, call parameters, operating modes, and identification information.

The Personality Programming process involves using the TQ-3357 GETC Shelf PC Programmer which includes the programming software to create the desired personality and transfer the Personality data to the battery backed-up RAM located on the Turbo Board.

NOTE

If installing GETC software 349A9607G4 (or later), you must use PC Programmer V4.03 (or later). Version 4.03 allows access to new G4 features. TQ-3357 V5.0 or V4.03 with Field Macro file GTC_9505.MAC is required to access 349A9607G5 features' parameters.

The TQ-3357 V4.03 (or later) also allows you to upload the GETC's Personality without changing the DIP switch settings.

NOTE

It is not necessary to recreate the personality when upgrading from Group 1 or Group 2 software to Group 4. However, to activate new features, read the existing personality and edit the personality as required.

Programming a Personality Using TQ-3357 V3 (or earlier)

When using TQ-3357 Version 3 (or earlier) you must program the personality through J100.

1. Connect one end of the serial programming cable (TQ-3360) to the computer. Connect the other end

of the serial cable to the GETC Shelf connector J100, see Figure 5.

2. Set the GETC DIP switches S1, S2, and S3 for the programming mode as shown in Figure 6. Set S2-8, S3-3 and S3-6 to OPEN. All other S3 positions should be CLOSED. Switches S1-1 thru S2-7 can be in any position and need not be changed. DIP switches S1-S3 are located near the front of the GETC Shelf, see Figure 4.

3. Reset the GETC by either applying power or pressing the GETC RESET switch S4, see Figure 4, located just below the DIP switches. Resetting the GETC, in combination with the DIP switch settings, places the GETC into the Personality Programming mode.

4. Verify that front panel LEDs L3, L4, and L5 are ON, as shown in Table 5. This indicates the GETC is ready for programming.

Table 5 - Indicators in Programming Mode Using J100

LED Indicators	L1	L2	L3	L4	L5	L6	L7
Programming Mode	❍	❍	●	●	●	❍	❍

Legend: ❍ = OFF ● = ON ❇ = FLASHING

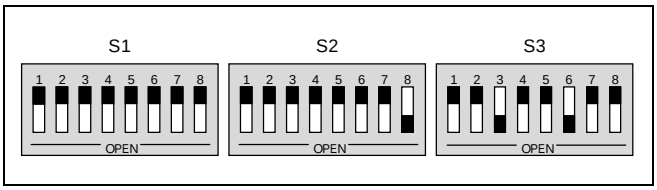


Figure 6 - Programming DIP Switch Settings

5. Proceed with the Personality programming as described in TQ-3357 Chapter 4.

6. After saving the personality and downloading it into the GETC, perform an operational checkout of the GETC.

Programming a Personality Using TQ-3357 Version 4.03 (or later)

When using TQ-3357 Version 4.03 (or later), program the personality through J104.

1. Connect one end of the serial programming cable (TQ-3360) to the computer. Connect the other end of the cable to the GETC Shelf connector J104. See Figure 7.

2. Move Switch S2 on the Turbo Board to the front placing the GETC into the Personality Programming mode. See Figure 7.

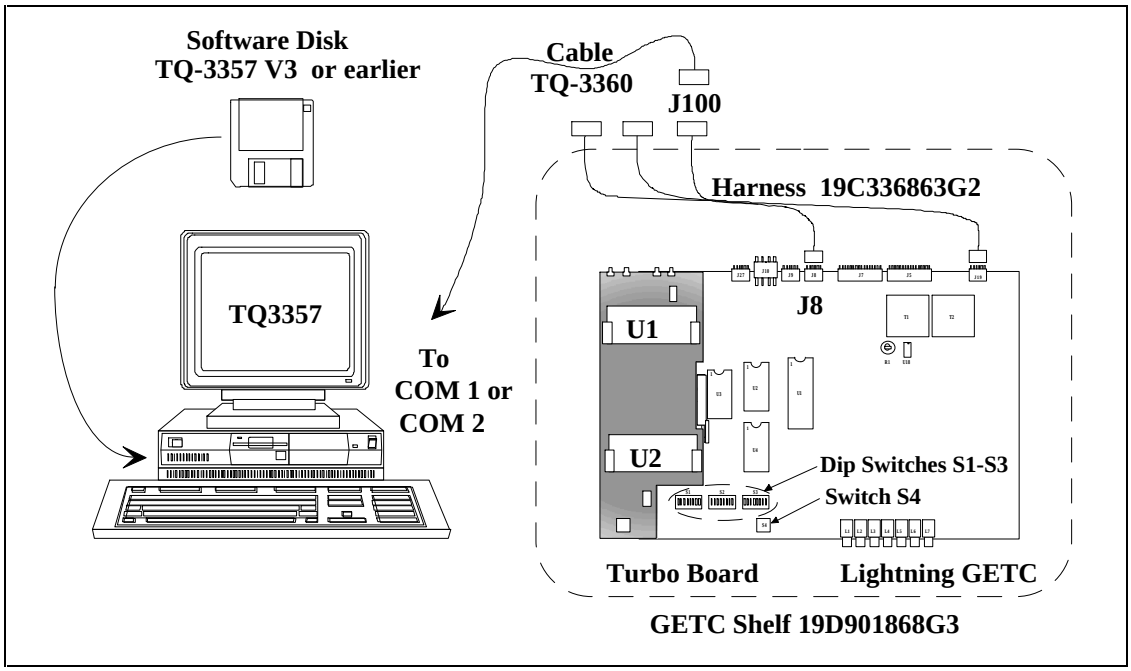


Figure 5 - System Hook-Up Using J100

3. Verify that front panel LEDs L6 and L7 are flashing, as shown in Table 6. This indicates the GETC is ready for programming.

Table 6 - Indicators in Programming Mode Using J104

LED Indicators	L1	L2	L3	L4	L5	L6	L7
Programming Mode	❍	❍	❍	❍	❍	❇	❇

Legend: ❍ = OFF ● = ON ❇ = FLASHING

4. Proceed with the Personality programming as described in TQ-3357.

5. After saving the personality and downloading it into the GETC, perform an operational checkout of the GETC.

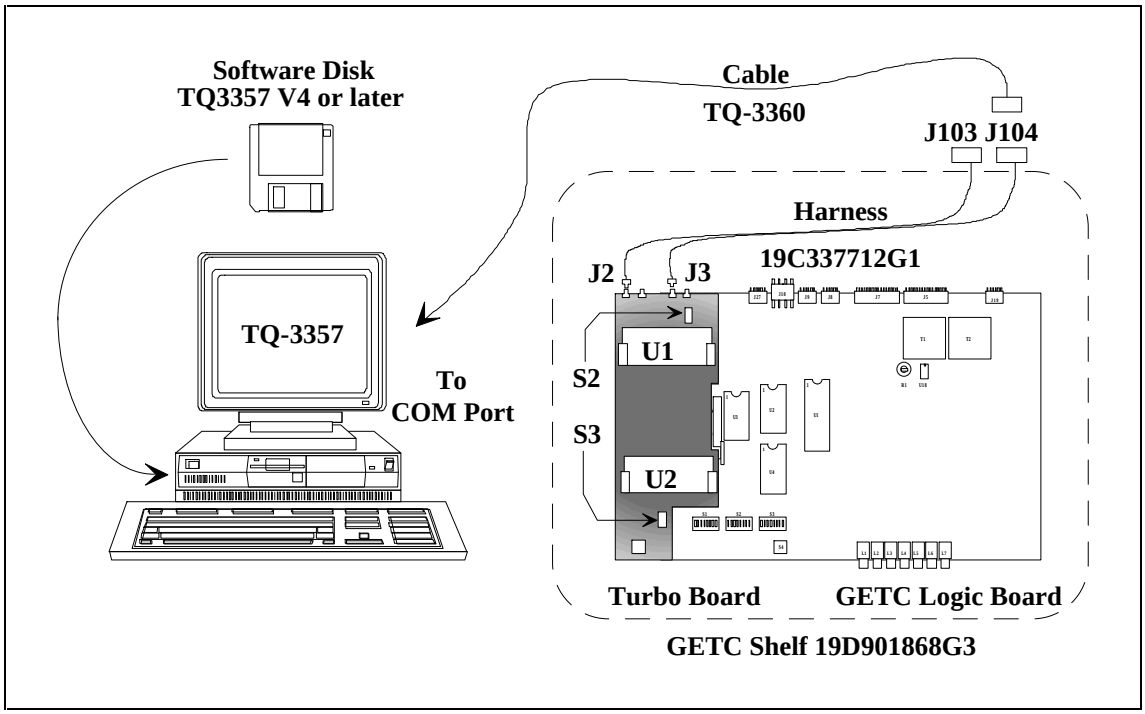


Figure 7 - System Hook-Up Using J104

Table 7 - Sample Station Personality

```
Personality: C:\GE\GTC\PERS\SAMPLE.GTC
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Personality Description
   This is a sample personality for
   a Station GETC.




Channel Allocations
                           11111 11111  22222 22222  333
Channel Number     1234 56789  01234 56789  01234 56789  012

Control Channel    YYYY YYYYY  YYYYY YYYYY  Y.... .....  ...
Clear Voice        YYYY YYYYY  YYYYY YYYYY  Y.... .....  ...
Digital Voice      YYYY YYYYY  YYYYY YYYYY  Y.... .....  ...
Data               YYYY YYYYY  YYYYY YYYYY  Y.... .....  ...
Pager (DnLink GETC).... YY...  ..... .....  ..... .....  ...
Interconnect       YYYY YYYYY  Y.... .....  ..... .....  ...
Allow DV Telephone YYYY YYYYY  Y.... .....  ..... .....  ...
Multisite Downlink .... .....  ..... .....  ..... ..YY.  ...
Downlink (to TSIN) .... .....  ..... .....  ..... YY...  ...

Channel Data

System Type : WIDE BAND

Ch # Freq (Mhz)         Ch # Freq (Mhz)         Ch # Freq ( Mhz)

  1  855.0125           10  858.0125           19  0.0000
  2  855.0250           11  858.0250           20  0.0000
  3  855.0375           12  858.0375           21  0.0000
  4  856.0125           13  0.0000             22  0.0000
  5  856.0250           14  0.0000             23  0.0000
  6  856.0375           15  0.0000             24  0.0000
  7  857.0125           16  0.0000             25  0.0000
  8  857.0250           17  0.0000
  9  857.0375           18  0.0000

Site Data

Site Name  : TESTSITEONE                  Site ID  :    4
Date       : 01/13/95                     Morse ID : WTST4
Channel Assignment: Ascending  Rotating Assign:  Yes  Indv. Call Hang  : 0
Indv. Call Update :  One Slot  Multisite Syst.:  Yes  Group Call Hang  : 0
IMC Platform      :  IMC/CEC   Simulcast Syst.:  No   Telephn Call Hang: 30
Wideband Pwr Sense:  Disabled  CTIS(Telephone):  No   Dig. Voice Hang  : 0
Jamming Threshold :       0    Voter System   :  No   Emerg. Call Hang : 0
Rem Site DV Delay :       0    SCAT           :  No   Sys All Call Hang: 0
Max Interconnects :       4    LIDs>8192      :  Yes  TX Trunked Timer : 60
                                                     Msg Trunked Timer: 120
                                                     Morse Intvl Timer: 15
```

Table 7 - Sample Station Personality (Continued)

CONFIRMED CALL ENABLES STATUS:

	Clear Voice	Digital Voice
Group Calls:	No	No
Indiv Calls:	No	No
Teleph Calls:	No	No

Conventional Network Interface Data

Conventional Network Logical ID : 0

C.N.I Group ID C.N.I Channel Guard Tone

Digital Voice Group ID

Group	ID	Group	ID	Group	ID
1	0	19	0	37	0
2	0	20	0	38	0
3	0	21	0	39	0
4	0	22	0	40	0
5	0	23	0	41	0
6	0	24	0	42	0
7	0	25	0	43	0
8	0	26	0	44	0
9	0	27	0	45	0
10	0	28	0	46	0
11	0	29	0	47	0
12	0	30	0	48	0
13	0	31	0	49	0
14	0	32	0	50	0
15	0	33	0	51	0
16	0	34	0	52	0
17	0	35	0	53	0
18	0	36	0	54	0

****GETC Personality Extended Options:**

CV C-Call Timeout	0
DV C-Call Timeout	0
Wide Area DV	No
Data Mode	RF Data
Polarity Invert	None
Baud Rate	9600
Dig.Voted Inter.	Unavail
Data Protocol	Normal
Data Queuing	Disabled
Msg Trunked Data	Disabled
DataCall Hangtime	0
FS Patch Enable	Disabled
LSTX Polarity	Normal
MII/IIe 900MHz?	No
Conv. FS Enable	Disabled
MS Confirmation	0

NOTE

** The contents of the ***GETC Personality Extended Options*** panel will display the parameters for new features when the Field Macro(s) is installed into the PC Programmer. Field Macros keep the programmer current until a fully upgraded PC Programmer which includes all features is made available. The Field Macros are supplied with the Turbo Software Media Kit and may be downloaded from Ericsson's "One1Call" retrieval system.

OPERATIONAL CHECKOUT

Verify that the GETC is operating correctly by performing the following steps:

DIP Switch Settings

Through imporvements in software and hardware, fewer changes in DIP switch settings are required. As a result more switch positions are being ignored and their functionality is being programmed into the GETC via the Personality Programming.

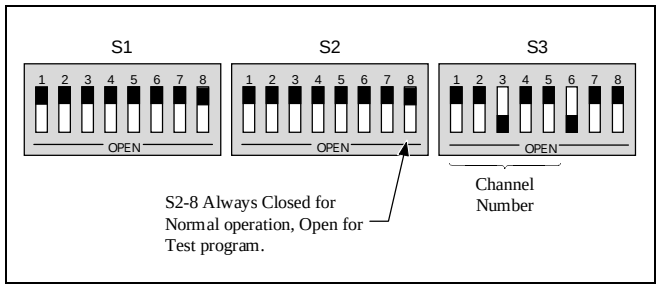


Figure 8 - Operational DIP Switch Settings

1. Set the GETC DIP switches S1-1 through S1-7 and S2-1 through S2-4 to the operating frequency. Refer to SRN1060, Appendix A for wideband frequencies, and Appendix B for narrow band frequencies.

NOTE

For MASTR II/IIe (using 349A9607G5 or later) and MASTR III stations, set DIP switches S1-1 through S1-7 and S2-1 through S2-4 to the CLOSED position. Frequency is selected via the Personality programming.

2. Set S1-8 to CLOSED for Satellite Receivers and Remote Simulcast Site operation. Open for all other operating modes.

3. Set S2-5 to CLOSED.

4. Set S2-6 to CLOSED enable Conventional Failsoft or OPEN to disable Conventional Failsoft. With software 349A9607G4 (or later) set S2-6 to CLOSED, use Personality Programming.

5. Set S2-7 and S2-8 to CLOSED.

6. Set S3-1 thru S3-5 to the Channel Address. Refer to Table 8.

7. Set S3-6 to CLOSED.

8. Set S3-7 OPEN for Simulcast or CLOSED for non-Simulcast. With software 349A9607G4 (or later) set S2-6 to CLOSED, use Personality Programming.

9. Set S3-8 to OPEN.

Table 8 - Channel Number Switch Settings

	GETC DIP SWITCH SW-3 SELECTION (LSB) (MSB)						GETC DIP SWITCH SW-3 SELECTION (LSB) (MSB)				
CH #	**1**	**2**	**3**	**4**	**5**	**CH #**	**1**	**2**	**3**	**4**	**5**
1	O	C	C	C	C	13	O	C	O	O	C
2	C	O	C	C	C	14	C	O	O	O	C
3	O	O	C	C	C	15	O	O	O	O	C
4	C	C	O	C	C	16	C	C	C	C	O
5	O	C	O	C	C	17	O	C	C	C	O
6	C	O	O	C	C	18	C	O	C	C	O
7	O	O	O	C	C	19	O	O	C	C	O
8	C	C	C	O	C	20	C	C	O	C	O
9	O	C	C	O	C	21	O	C	O	C	O
10	C	O	C	O	C	22	C	O	O	C	O
11	O	O	C	O	C	23	O	O	O	C	O
12	C	C	O	O	C	24	C	C	C	O	O

O = open switch position (1)
C = closed switch position (0)

1. Reset the GETC by pressing S4.

2. Complete the verification process for the specific GETC application, by using the procedure for:
   a. A Fully Trunked System
   b. A Failsoft System
   c. Satellite Site Receiver

Fully Trunked System

Perform the following steps to complete the operational checkout of a trunked GETC channel moved to the Channel Test during the Firmware Installation.

1. Verify correct LED indicators for the Trunked System Control Channel and the idle Working Channels as shown Table 9.

2. Place test calls from radios in Channel Test by keying one of the test radios and monitoring the audio from the other radio. Place Clear Voice calls and if programmed, Digital Voice calls.

Table 9 - LED Indicators for Trunked Idle Channels

LED Indicators	L1	L2	L3	L4	L5	L6	L7
Fully Trunked Idle WB Working Channel	❍	❍	❍	❍	❍	❍	●
Fully Trunked Idle NB Working Channel	❍	❍	●	❍	❍	❍	●
Fully Trunked WB Control Channel	❍	❍	❍	❍	❍	●	●
Fully Trunked NB Control Channel	❍	❍	●	❍	❍	●	●

Legend: ❍ = OFF ● = ON ❇ = FLASHING

3. Verify LED indicators are correct, as shown in Table 10, for the trunked channels assigned Clear Voice and Digital Voice calls.

Table 10 - LED Indicators for Trunked Assigned Channels

LED Indicators	L1	L2	L3	L4	L5	L6	L7
Fully Trunked Assigned WB Clear Call	❍	❍	❍	❍	❍	●	❍
Fully Trunked Assigned WB Digital Voice Call	❍	❍	❍	❍	❍	●	●
Fully Trunked Assigned NB Clear Call	❍	❍	●	❍	❍	●	❍

Legend: ❍ = OFF ● = ON ❇ = FLASHING

4. Using the System Manager, put channel back into service by taking it out of Channel Test.

5. Repeat for all channels.

Failsoft System

Perform the following steps to verify operation of a GETC used in a Failsoft System:

1. Verify the GETC LED indicators for the Failsoft Control Channel and idle Working Channels are correct as shown in Table 11.

Table 11 - LED Indicators for Failsoft Idle Channels

LED Indicators	L1	L2	L3	L4	L5	L6	L7
Failsoft Idle WB Working Channel	●	❍	❍	❍	❍	❍	●
Failsoft WB Control Channel	●	❍	❍	❍	❍	●	●
Failsoft Idle NB Working Channel	●	❍	●	❍	❍	❍	●
Failsoft NB Control Channel	●	❍	●	❍	❍	●	●

Legend: ❍ = OFF ● = ON ❇ = FLASHING

NOTE

To switch a GETC from the Control Channel operation to Working Channel operation, press and hold S4 on the Control Channel GETC. This causes the Failsoft System to re-assign the Control Channel responsibilities to the next functioning GETC. Release S4 and verify LEDs.

2. Place Clear Voice calls on both wideband or narrowband channels and Digital Voice calls on the wideband channels to verify correct operation.

3. Verify LED indicators are correct, as shown in Table 12, for the Failsoft Wideband channel(s) assigned Clear Voice and Digital Voice calls and Failsoft Narrow Band channel(s) assigned Clear Voice calls.

4. Repeat for all channels.

Table 12 - LED Indicators for Failsoft Assigned Channels

LED Indicators	L1	L2	L3	L4	L5	L6	L7
Failsoft Assigned WB Clear Call	●	❍	❍	❍	❍	●	❍
Failsoft Assigned WB Digital Voice Call	●	❍	❍	❍	❍	●	●
Failsoft Assigned NB Clear Call	●	❍	●	❍	❍	●	❍

Legend: ❍ = OFF ● = ON ❇ = FLASHING

Satellite Site Receiver

Verify proper operation of a GETC used in as a Satellite Site Receiver by observing the GETC LED indicators when the receiver is used as a Control Channel and idle or assigned Working Channel as shown in Table 13.

Table 13 - LED Indicators for Satellite Site Receivers

LED Indicators	L1	L2	L3	L4	L5	L6	L7
WB Working Channel Satellite Site Idle	●	❍	❍	❍	❍	❍	●
WB Working Channel Satellite Site Assigned	●	❍	❍	❍	❍	●	●
WB Control Channel Satellite Site	●	●	❍	❍	❍	❍	●
WB Working Channel Remote Simulcast Assigned	●	❍	❍	❍	❍	●	❍

Legend: ❍ = OFF ● = ON ❇ = FLASHING

INTERFACE SIGNALS

Table 15 describes the various interface signals between the GETC and the Station Repeater. For the specific location of these signals, refer to the Interconnect Diagrams.

TROUBLESHOOTING

The hardware used in the GETC is extremely reliable, making component failure the unlikely cause of most problems. The most common causes of problems are programming errors and interface connections.

Use the following guidelines when troubleshooting a GETC on site:

1. Verify the operation of front panel LEDs. This can be done by performing the Operational Checkout and verifying the LED indications. GETCs using 349A9607 Group 4 software may also indicate the specific cause of the failure, refer to *Failure Mode.*
2. Verify that all cables are properly connected and secure.
3. Verify the GETC's personality is properly programmed for the specific application. Refer to TQ-3357, PC Programmer and SRN1060 (SRN 1024 if using 19A705595G8 software).
4. Verify the Turbo Board is properly configured if applicable. Refer to LBI-38822 and SRN 1062.
5. If you suspect that the GETC has failed, replace the it with a known good unit properly configured for this application. Recheck all software and personality parameters and checkout the GETC's operation. If the GETC functions properly, repair or replace the malfunctioning GETC according to the instructions in LBI-38894.

FAILURE MODE

With the introduction of 349A9607 Group 4 software, the GETC is able to indicate a specific failure via the front panel LEDs. Prior to group 4 software, a failure is indicated by incorrect LEDs, but the GETC did not indicate the root cause. The failure modes listed in Table 14 describe the LED displays and their corresponding failure mode interpretation.

In all 3 failure modes, the channel is completely taken out of service. This allows the System Manager in Fully Trunked systems to display a channel failure. In Trunked Failsoft, the channel is removed from service to avoid using the bad channel.

CHANNEL ACTIVITY LOGGER

Another diagnostic feature introduced with the 349A9607 Group 4 software is the Channel Activity Logger. This feature allows the GETC to supply information about what it sees from its inputs: the RF receiver, phone line receiver, station interface I/O. Additionally, the GETC can supply internal event information about what the GETC is doing. For example, if the GETC tries to train its Rockwell modem, it will print a message "MODEM TRAINING STARTED," and when the modem becomes trained, it will print "MODEM TRAINING COMPLETED." In General, the information supplied by the Channel Activity Logger is EDACS specific and in some cases may need technical assistance for interpretation. For detailed instructions on using the Channel Activity Logger, refer to SRN1060 and PC Programmer TQ-3357 V4.03 (or later).

IN CASE OF DIFFICULTY

If you are unable to resolve a problem to your satisfaction, then contact the Ericsson Technical Assistance Center (TAC) at 1-800-528-7711 (outside USA, 804-528-7711).

Table 14 - Failure Modes

LED DISPLAY	FAILURE MODE	POSSIBLE FAILURE CAUSE
LED 7 (only) - Flashing Flashing rate = 1 second Quick synthesizer reload after every 5 flashes of LED 7 (quick flash of LEDs 3, 4, and 5)	GETC is unable to cause a synthesizer lock.	Bad synthesizer, Bad 10V Station Power Supply, incorrect operation of MASTER III Station Module, J26 Incorrect.
LED 6 (only) - Flashing Flashing rate = 1 second	GETC has detected a PA Low Power Alarm condition.	Bad PA, incorrect adjustment of R141, uncalibrated Power Sensor.
LED 6 & 7 (only) - Flashing simultaneously Flashing rate = 1 second	GETC has detected failure of Turbo Board.	Turbo Board switches not in operational position (toward rear of GETC), wrong turbo software, bad turbo card.

Table 15 - Interface Status During Various States

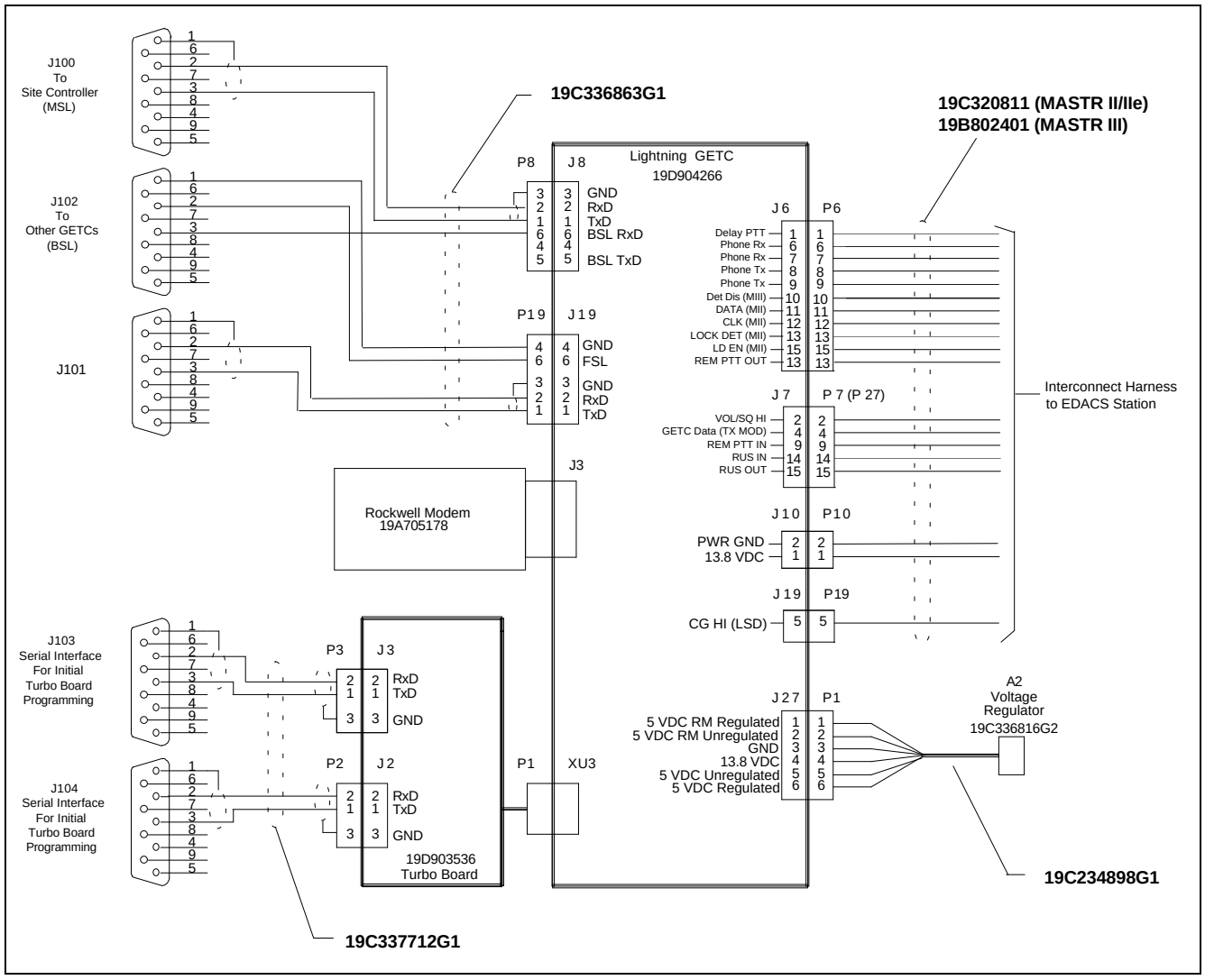
SIGNAL	STATE	STATUS
Control Channel:		
Vol/Sq (J7-2)	Data	High Speed signaling is being routed to the HSD Detector.
RUS In (J7-14)	High	Receiver is unsquelched and watching carrier activity for the presence (present = Low) of an interfering signal (without valid signaling).
Rus Out (J7-15)	Low	GETC is receiving HSD and mutes the receiver (no Receiver audio to the transmitter).
RPT Inhibit (1950 DIS) (J6-5)	Low	If a Voting system, this line is low during a Control Channel. The 1950 tone is present on the Line Output.
Rem PTT (J7-9)	High	No inbound calls from console or IMC.
Delay PTT (J6-1)	Low	Transmitting (HSD).
Rem PTT (J6-16)	High	No calls from the remote line allowed when Control Channel.
DET DIS (J6-10)	High	Transmitting high speed data, low speed data disabled.
MOD Out (J7-4)	Data	Control Channel Data to be transmitted is sent into the station on this line now. (Simulcast Transmit Site.)
CG HI (J7-4)	Data	No Low speed data during Control Channel signaling.
Phone lines (J6 6, 7, 8, & 9)	Analog	If Voter or Simulcast, these lines contain modem communication between the Voter and Main Site/Control Point GETCs, otherwise inactive.
Working Channel (Inactive):		
Vol/Sq (J7-2)	Data	Not Listening for data.
RUS In (J7-14)	High	Watching carrier activity for the presence (present = Low) of an interfering signal (without valid signaling).
Rus Out (J7-15)	Low	Receiver is muted (no Receiver audio to the transmitter).
RPT Inhibit (1950 DIS) (J6-5)	Low	If a Voting system, this line is low during a Control Channel. The 1950 tone is present on the Line Output.
Rem PTT (J7-9)	High	No inbound calls from console or IMC. Line not considered until channel is assigned.
Delay PTT (J6-1)	High	Not Transmitting.
Rem PTT (J6-16)	High	No calls from the remote line allowed until channel is assigned.
DET DIS (J6-10)	Low	High speed data disabled, low speed data enabled.
MOD Out (J7-4)	Data	No High speed data is sent to the station on this line now.
CG HI (J7-4)	Data	No Low speed data until channel is assigned.
Phone lines (J6 6, 7, 8, & 9)	Analog	If Voter or Simulcast, these lines contain modem communication between the Voter and Main Site/Control Point GETCs, otherwise inactive.

Table 15 - Interface Status During Various States (Continued)

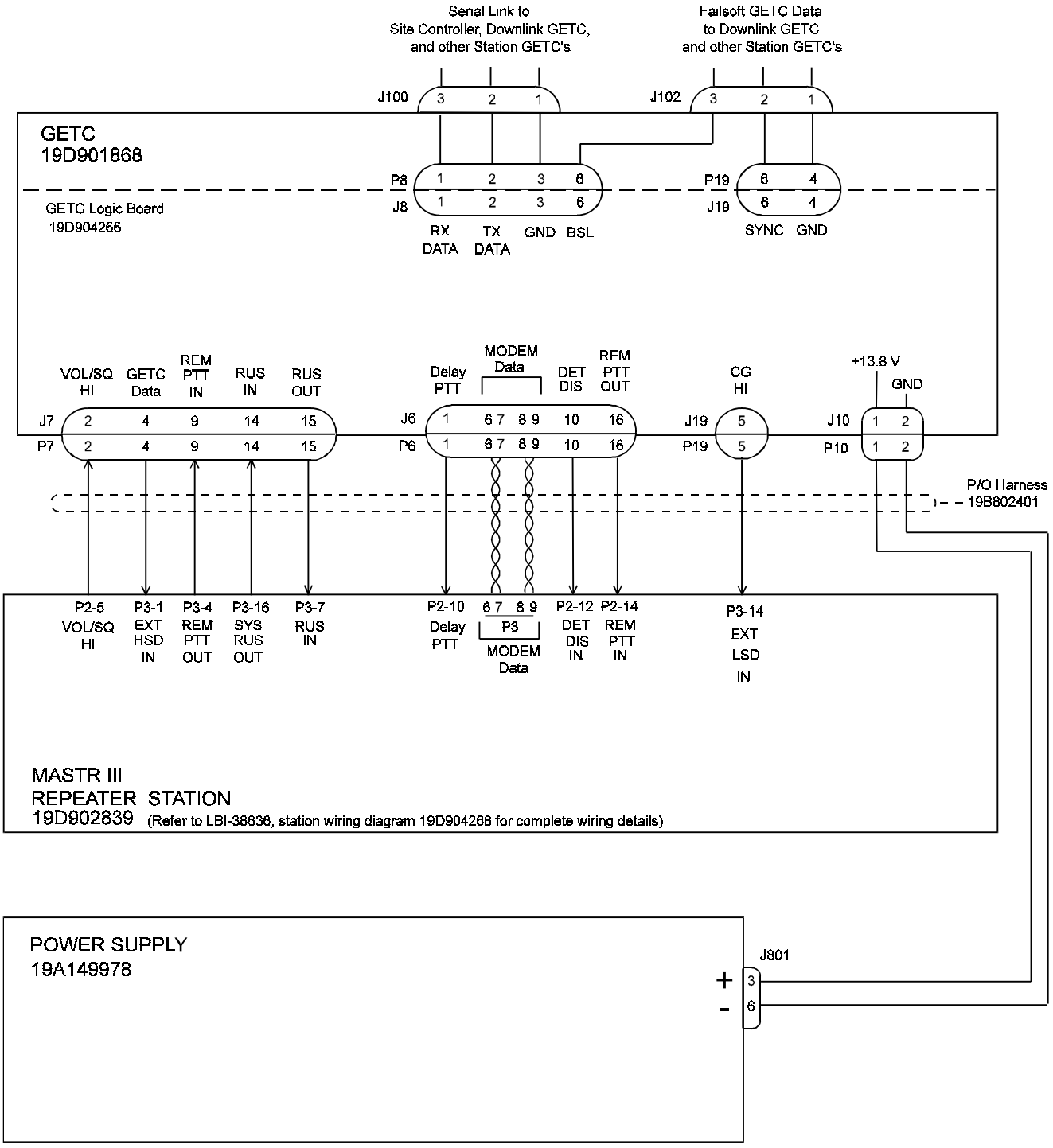
SIGNAL	STATE	STATUS
Working Channel (Active): Handshake Mode		
Vol/Sq (J7-2)	Data	Listening to High Speed handshake.
RUS In (J7-14)	N/A	RUS activity is being ignored during the handshake.
Rus Out (J7-15)	L/H	Receiver is muted (no receiver audio to the transmitter) until call is validated.
RPT Inhibit (1950 DIS) (J6-5)	Low	If a Voting system, this line is low during a Control Channel. The 1950 tone is present on the Line Output.
Rem PTT (J7-9)	N/A	If inbound call is from console or IMC this signal will be considered after channel is assigned.
Delay PTT (J6-1)	High	Transmitting High speed data (handshake).
Rem PTT (J6-16)	High	No calls from the remote line allowed until channel is assigned.
DET DIS (J6-10)	High	Transmitting high speed data, low speed data disabled.
MOD Out (J7-4)	Data	High speed data (handshake) to be transmitted is sent to the station on this line now. (Simulcast Remote Transmit Site.)
CG HI (J7-4)	Data	No Low speed data until channel is assigned.
Phone lines (J6 6, 7, 8, & 9)	Analog	If Voter or Simulcast, these lines contain modem communication between the Voter and Main Site/Control Point GETCs, otherwise inactive.
Working Channel (Active): During Analog Call		
Vol/Sq (J7-2)	Analog	Voice and Low speed data from the receiver on this line. GETC listening to Low speed data.
RUS In (J7-14)	Low	Carrier activity indicated.
Rus Out (J7-15)	High	Receiver is unmuted. Receiver audio is routed to the transmitter.
RPT Inhibit (1950 DIS) (J6-5)	High	If a Voting system, this line is high (+5 Vdc) during a Clear Voice Working Channel. The 1950 Hz tone is muted and voice audio is present on the Line Output.
Rem PTT (J7-9)	H/L	If inbound call from console or IMC this line is pulled low, after channel is assigned, as a result of 2175 Secur-it-Hold on the line input to the station.
Delay PTT (J6-1)	High	Transmitting.
Rem PTT (J6-16)	H/L	If call is from the remote line this line is Low which routes transmitter audio from the line input.
DET DIS (J6-10)	Low	High speed data disabled, low speed data enabled.
MOD Out (J7-4)	Data	No High speed data is sent to the station on this line now.
CG HI (J7-4)	Data	Low speed data is being transmitted for the duration of the call.
Phone lines (J6 6, 7, 8, & 9)	Analog	If Voter or Simulcast, these lines contain modem communication between the Voter and Main Site/Control Point GETCs, otherwise inactive.

Table 15 - Interface Status During Various States (Continued)

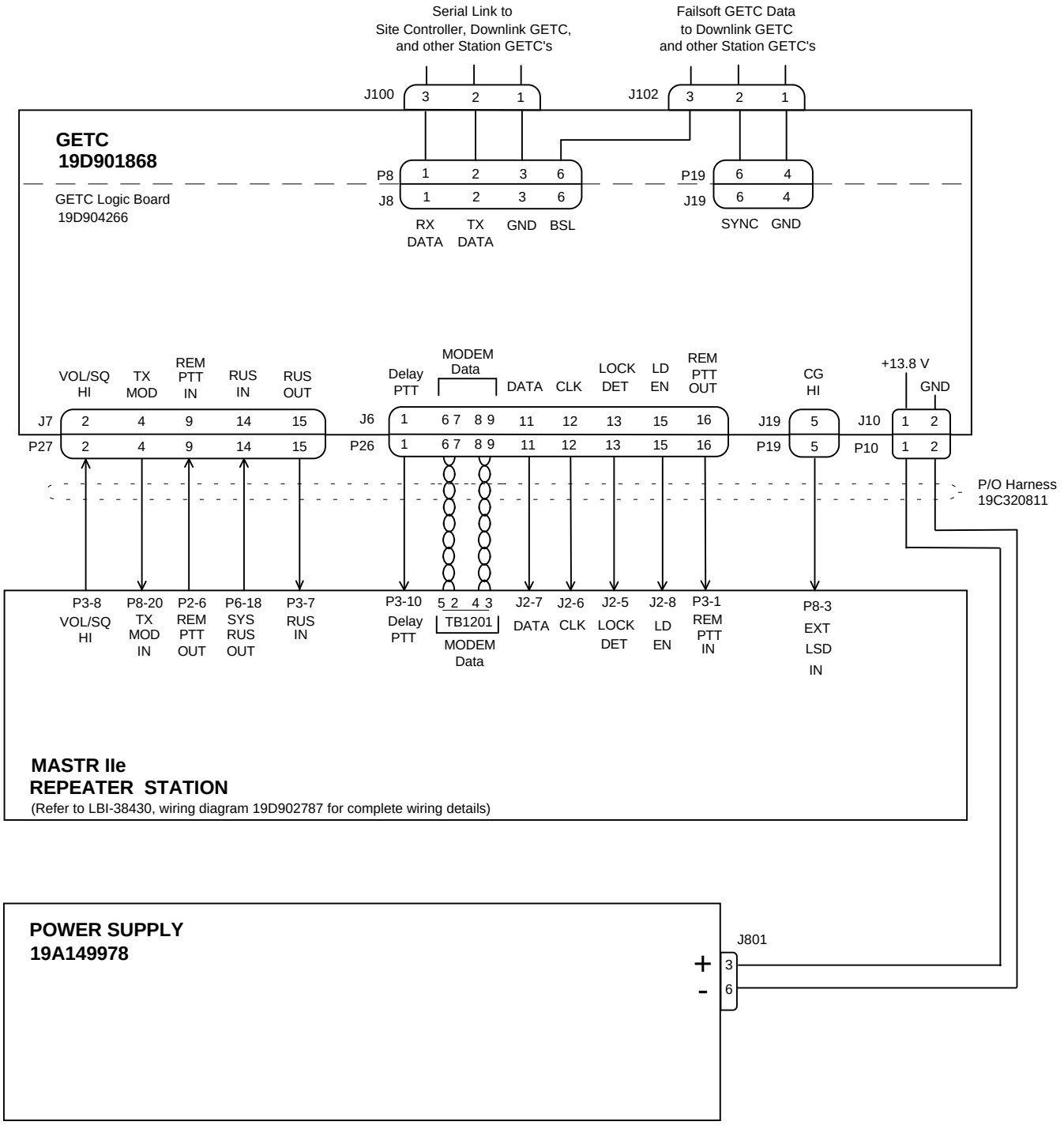
SIGNAL	STATE	STATUS
Working Channel (Active): During Digital Call		
Vol/Sq (J7-2)	Analog	Digital Voice data on this line.
RUS In (J7-14)	N/A	Carrier activity is ignored during Digital Voice call.
Rus Out (J7-15)	Low	Receiver is muted.
RPT Inhibit (1950 DIS) (J6-5)	Low	If a Voting system, this line is low during a Digital Voice call. The 1950 Hz tone is present on the Line Output.
Rem PTT (J7-9)	H/L	This line is normally High during a digital call. When digital call is from a console or IMC, Modem data is present on the line input. This looks like 2175 Secur-it to the station and this line is toggled Low.
Delay PTT (J6-1)	High	Transmitting Voice data.
Rem PTT (J6-16)	L/H	During a Digital Voice call this line is used by the GETC to indicate a valid Digital Voice remote call (console, IMC).
DET DIS (J6-10)	High	Transmitting high speed data, low speed data disabled.
MOD Out (J7-4)	Data	High speed data (Digital Voice) to be transmitted is sent to the station on this line now.
CG HI (J7-4)	Data	No Low speed data during Digital Voice call.
Phone lines (J6 6, 7, 8, & 9)	Analog	If call is from console or IMC this line contains the Digital Voice (Modem data). If Modem voting, Voice-Modem data present.



STATION GETC SHELF
INTERCONNECT DIAGRAM



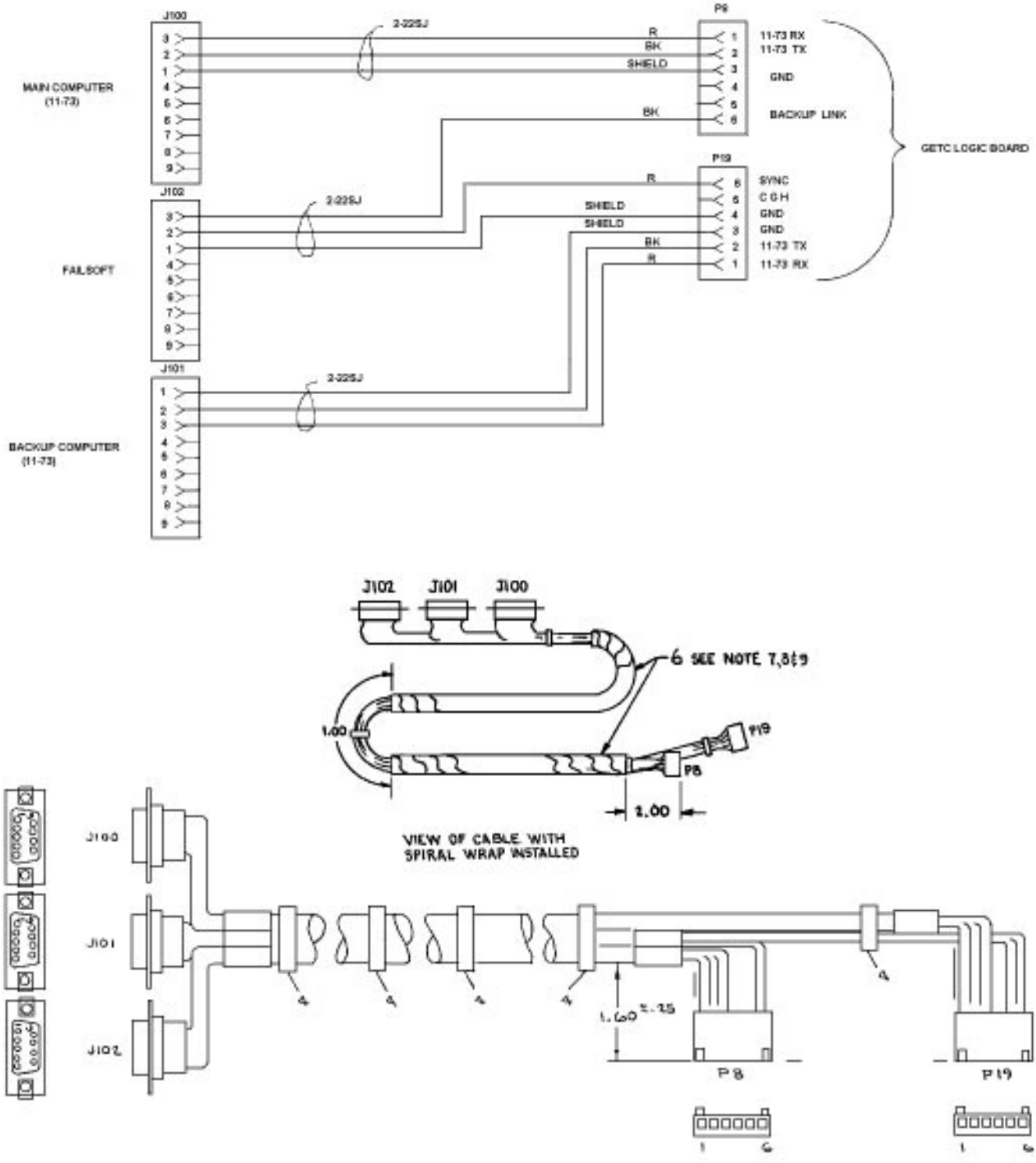
MASTR III STATION INTERCONNECT



MASTR IIE STATION INTERCONNECT

GETC CABLE
19C336863G1

SYMBOL	PART NUMBER	DESCRIPTION
		---------- JACKS ----------
J100 thru J102	19B209727P18	Connector: 9 contacts; sim to AMP 205203-1.
		---------- PLUGS ----------
P8	19A700041P32	Shell: 6-Position; sim to Molex 22-01-2065.
P19	19A700041P32	Shell: 6-Position; sim to Molex 22-01-2065.
		---------- MISCELLANEOUS----------
2	19B209727P11	Contact, electrical: sim to AMP 1-66504-0.
3	19A704779P26	Contacts: 22-30 AWG; sim to Molex 08-55-0101, Qty of 10.
4	19J706152P5	Retainer strap: sim to Panduit Corp. SST-1.
6	19A149502P3	Sleeving, spiral.
13	19B209727P9	Machine Screw.



GETC CABLE

19C336863G1

(19C336863, Sh. 1, Rev. 4; 19C336866, Sh. 1, Rev. 0)

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APPENDIX A

800 MHZ EDACS APPLICATIONS FREQUENCY SELECTIONS GETC DIP SWITCH SETTINGS

NOTE

For MASTR II/IIe using Station GETC software 349A9607G4 (or earlier) only.

For MASTR II, IIe, and III using 349A9607G5 (or later), set switches S1-1 thru S1-7 and S2-1 thru S2-4 to the CLOSED position

851 MHz

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
851.0125	1000111	0000
851.0250	0100111	0000
851.0375	1100111	0000
851.0500	0010111	0000
851.0625	1010111	0000
851.0750	0110111	0000
851.0875	1110111	0000
851.1000	0001111	0000
851.1125	1001111	0000
851.1250	0101111	0000
851.1375	1101111	0000
851.1500	0011111	0000
851.1625	1011111	0000
851.1750	0111111	0000
851.1875	1111111	0000
851.2000	0000000	1000
851.2125	1000000	1000
851.2250	0100000	1000
851.2375	1100000	1000
851.2500	0010000	1000
851.2625	1010000	1000
851.2750	0110000	1000
851.2875	1110000	1000
851.3000	0001000	1000
851.3125	1001000	1000
851.3250	0101000	1000
851.3375	1101000	1000
851.3500	0011000	1000
851.3625	1011000	1000
851.3750	0111000	1000
851.3875	1111000	1000
851.4000	0000100	1000
851.4125	1000100	1000
851.4250	0100100	1000
851.4375	1100100	1000
851.4500	0010100	1000
851.4625	1010100	1000
851.4750	0110100	1000
851.4875	1110100	1000
851.5000	0001100	1000
851.5125	1001100	1000
851.5250	0101100	1000
851.5375	1101100	1000
851.5500	0011100	1000
851.5625	1011100	1000
851.5750	0111100	1000
851.5875	1111100	1000
851.6000	0000010	1000
851.6125	1000010	1000
851.6250	0100010	1000
851.6375	1100010	1000
851.6500	0010010	1000
851.6625	1010010	1000
851.6750	0110010	1000
851.6875	1110010	1000
851.7000	0001010	1000
851.7125	1001010	1000
851.7250	0101010	1000
851.7375	1101010	1000
851.7500	0011010	1000
851.7625	1011010	1000
851.7750	0111010	1000
851.7875	1111010	1000
851.8000	0000110	1000
851.8125	1000110	1000
851.8250	0100110	1000
851.8375	1100110	1000
851.8500	0010110	1000
851.8625	1010110	1000
851.8750	0110110	1000
851.8875	1110110	1000
851.9000	0001110	1000
851.9125	1001110	1000
851.9250	0101110	1000
851.9375	1101110	1000
851.9500	0011110	1000
851.9625	1011110	1000
851.9750	0111110	1000
851.9875	1111110	1000

852 MHz

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
852.0000	0000001	1000
852.0125	1000001	1000
852.0250	0100001	1000
852.0375	1100001	1000
852.0500	0010001	1000
852.0625	1010001	1000
852.0750	0110001	1000
852.0875	1110001	1000
852.1000	0001001	1000
852.1125	1001001	1000
852.1250	0101001	1000
852.1375	1101001	1000
852.1500	0011001	1000
852.1625	1011001	1000
852.1750	0111001	1000
852.1875	1111001	1000
852.2000	0000101	1000
852.2125	1000101	1000
852.2250	0100101	1000
852.2375	1100101	1000
852.2500	0010101	1000
852.2625	1010101	1000
852.2750	0110101	1000
852.2875	1110101	1000
852.3000	0001101	1000
852.3125	1001101	1000
852.3250	0101101	1000
852.3375	1101101	1000
852.3500	0011101	1000
852.3625	1011101	1000
852.3750	0111101	1000
852.3875	1111101	1000
852.4000	0000011	1000
852.4125	1000011	1000
852.4250	0100011	1000
852.4375	1100011	1000
852.4500	0010011	1000
852.4625	1010011	1000
852.4750	0110011	1000

Legend: 0 = Closed, 1 = Open

NOTE: For MASTR III - set all switches (S1-1 thru S1-7 and S2-1 thru S2-4) to the CLOSED position.

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
852.4875	1110011	1000
852.5000	0001011	1000
852.5125	1001011	1000
852.5250	0101011	1000
852.5375	1101011	1000
852.5500	0011011	1000
852.5625	1011011	1000
852.5750	0111011	1000
852.5875	1111011	1000
852.6000	0000111	1000
852.6125	1000111	1000
852.6250	0100111	1000
852.6375	1100111	1000
852.6500	0010111	1000
852.6625	1010111	1000
852.6750	0110111	1000
852.6875	1110111	1000
852.7000	0001111	1000
852.7125	1001111	1000
852.7250	0101111	1000
852.7375	1101111	1000
852.7500	0011111	1000
852.7625	1011111	1000
852.7750	0111111	1000
852.7875	1111111	1000
852.8000	0000000	0100
852.8125	1000000	0100
852.8250	0100000	0100
852.8375	1100000	0100
852.8500	0010000	0100
852.8625	1010000	0100
852.8750	0110000	0100
852.8875	1110000	0100
852.9000	0001000	0100
852.9125	1001000	0100
852.9250	0101000	0100
852.9375	1101000	0100
852.9500	0011000	0100
852.9625	1011000	0100
852.9750	0111000	0100
852.9875	1111000	0100

853 MHz

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
853.0000	0000100	0100
853.0125	1000100	0100
853.0250	0100100	0100
853.0375	1100100	0100
853.0500	0010100	0100
853.0625	1010100	0100
853.0750	0110100	0100
853.0875	1110100	0100
853.1000	0001100	0100
853.1125	1001100	0100
853.1250	0101100	0100
853.1375	1101100	0100
853.1500	0011100	0100
853.1625	1011100	0100
853.1750	0111100	0100
853.1875	1111100	0100
853.2000	0000010	0100
853.2125	1000010	0100
853.2250	0100010	0100
853.2375	1100010	0100
853.2500	0010010	0100
853.2625	1010010	0100
853.2750	0110010	0100
853.2875	1110010	0100
853.3000	0001010	0100
853.3125	1001010	0100
853.3250	0101010	0100
853.3375	1101010	0100
853.3500	0011010	0100
853.3625	1011010	0100
853.3750	0111010	0100
853.3875	1111010	0100
853.4000	0000110	0100
853.4125	1000110	0100
853.4250	0100110	0100
853.4375	1100110	0100
853.4500	0010110	0100
853.4625	1010110	0100
853.4750	0110110	0100
853.4875	1110110	0100
853.5000	0001110	0100
853.5125	1001110	0100
853.5250	0101110	0100
853.5375	1101110	0100
853.5500	0011110	0100
853.5625	1011110	0100
853.5750	0111110	0100
853.5875	1111110	0100
853.6000	0000001	0100
853.6125	1000001	0100
853.6250	0100001	0100
853.6375	1100001	0100
853.6500	0010001	0100
853.6625	1010001	0100
853.6750	0110001	0100
853.6875	1110001	0100
853.7000	0001001	0100
853.7125	1001001	0100
853.7250	0101001	0100
853.7375	1101001	0100
853.7500	0011001	0100
853.7625	1011001	0100
853.7750	0111001	0100
853.7875	1111001	0100
853.8000	0000101	0100
853.8125	1000101	0100
853.8250	0100101	0100
853.8375	1100101	0100
853.8500	0010101	0100
853.8625	1010101	0100
853.8750	0110101	0100
853.8875	1110101	0100
853.9000	0001101	0100
853.9125	1001101	0100
853.9250	0101101	0100
853.9375	1101101	0100
853.9500	0011101	0100
853.9625	1011101	0100
853.9750	0111101	0100
853.9875	1111101	0100

Legend: 0 = Closed, 1 = Open

NOTE: For MASTR III - set all switches (S1-1 thru S1-7 and S2-1 thru S2-4) to the CLOSED position.

854 MHz

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
854.0000	0000011	0100
854.0125	1000011	0100
854.0250	0100011	0100
854.0375	1100011	0100
854.0500	0010011	0100
854.0625	1010011	0100
854.0750	0110011	0100
854.0875	1110011	0100
854.1000	0001011	0100
854.1125	1001011	0100
854.1250	0101011	0100
854.1375	1101011	0100
854.1500	0011011	0100
854.1625	1011011	0100
854.1750	0111011	0100
854.1875	1111011	0100
854.2000	0000111	0100
854.2125	1000111	0100
854.2250	0100111	0100
854.2375	1100111	0100
854.2500	0010111	0100
854.2625	1010111	0100
854.2750	0110111	0100
854.2875	1110111	0100
854.3000	0001111	0100
854.3125	1001111	0100
854.3250	0101111	0100
854.3375	1101111	0100
854.3500	0011111	0100
854.3625	1011111	0100
854.3750	0111111	0100
854.3875	1111111	0100
854.4000	0000000	1100
854.4125	1000000	1100
854.4250	0100000	1100
854.4375	1100000	1100
854.4500	0010000	1100
854.4625	1010000	1100
854.4750	0110000	1100
854.4875	1110000	1100
854.5000	0001000	1100
854.5125	1001000	1100
854.5250	0101000	1100
854.5375	1101000	1100
854.5500	0011000	1100
854.5625	1011000	1100
854.5750	0111000	1100
854.5875	1111000	1100
854.6000	0000100	1100
854.6125	1000100	1100
854.6250	0100100	1100
854.6375	1100100	1100
854.6500	0010100	1100
854.6625	1010100	1100
854.6750	0110100	1100
854.6875	1110100	1100
854.7000	0001100	1100
854.7125	1001100	1100
854.7250	0101100	1100
854.7375	1101100	1100
854.7500	0011100	1100
854.7625	1011100	1100
854.7750	0111100	1100
854.7875	1111100	1100
854.8000	0000010	1100
854.8125	1000010	1100
854.8250	0100010	1100
854.8375	1100010	1100
854.8500	0010010	1100
854.8625	1010010	1100
854.8750	0110010	1100
854.8875	1110010	1100
854.9000	0001010	1100
854.9125	1001010	1100
854.9250	0101010	1100
854.9375	1101010	1100
854.9500	0011010	1100
854.9625	1011010	1100
854.9750	0111010	1100
854.9875	1111010	1100

855 MHz

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
855.0000	0000110	1100
855.0125	1000110	1100
855.0250	0100110	1100
855.0375	1100110	1100
855.0500	0010110	1100
855.0625	1010110	1100
855.0750	0110110	1100
855.0875	1110110	1100
855.1000	0001110	1100
855.1125	1001110	1100
855.1250	0101110	1100
855.1375	1101110	1100
855.1500	0011110	1100
855.1625	1011110	1100
855.1750	0111110	1100
855.1875	1111110	1100
855.2000	0000001	1100
855.2125	1000001	1100
855.2250	0100001	1100
855.2375	1100001	1100
855.2500	0010001	1100
855.2625	1010001	1100
855.2750	0110001	1100
855.2875	1110001	1100
855.3000	0001001	1100
855.3125	1001001	1100
855.3250	0101001	1100
855.3375	1101001	1100
855.3500	0011001	1100
855.3625	1011001	1100
855.3750	0111001	1100
855.3875	1111001	1100
855.4000	0000101	1100
855.4125	1000101	1100
855.4250	0100101	1100
855.4375	1100101	1100
855.4500	0010101	1100
855.4625	1010101	1100
855.4750	0110101	1100
855.4875	1110101	1100

Legend: 0 = Closed, 1 = Open

NOTE: For MASTR III - set all switches (S1-1 thru S1-7 and S2-1 thru S2-4) to the CLOSED position.

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4	TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4	TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
855.5000	0001101	1100	**856 MHz**			856.5000	0001010	0010
855.5125	1001101	1100	856.0000	0000000	0010	856.5125	1001010	0010
855.5250	0101101	1100	856.0125	1000000	0010	856.5250	0101010	0010
855.5375	1101101	1100	856.0250	0100000	0010	856.5375	1101010	0010
855.5500	0011101	1100	856.0375	1100000	0010	856.5500	0011010	0010
855.5625	1011101	1100	856.0500	0010000	0010	856.5625	1011010	0010
855.5750	0111101	1100	856.0625	1010000	0010	856.5750	0111010	0010
855.5875	1111101	1100	856.0750	0110000	0010	856.5875	1111010	0010
855.6000	0000011	1100	856.0875	1110000	0010	856.6000	0000110	0010
855.6125	1000011	1100	856.1000	0001000	0010	856.6125	1000110	0010
855.6250	0100011	1100	856.1125	1001000	0010	856.6250	0100110	0010
855.6375	1100011	1100	856.1250	0101000	0010	856.6375	1100110	0010
855.6500	0010011	1100	856.1375	1101000	0010	856.6500	0010110	0010
855.6625	1010011	1100	856.1500	0011000	0010	856.6625	1010110	0010
855.6750	0110011	1100	856.1625	1011000	0010	856.6750	0110110	0010
855.6875	1110011	1100	856.1750	0111000	0010	856.6875	1110110	0010
855.7000	0001011	1100	856.1875	1111000	0010	856.7000	0001110	0010
855.7125	1001011	1100	856.2000	0000100	0010	856.7125	1001110	0010
855.7250	0101011	1100	856.2125	1000100	0010	856.7250	0101110	0010
855.7375	1101011	1100	856.2250	0100100	0010	856.7375	1101110	0010
855.7500	0011011	1100	856.2375	1100100	0010	856.7500	0011110	0010
855.7625	1011011	1100	856.2500	0010100	0010	856.7625	1011110	0010
855.7750	0111011	1100	856.2625	1010100	0010	856.7750	0111110	0010
855.7875	1111011	1100	856.2750	0110100	0010	856.7875	1111110	0010
855.8000	0000111	1100	856.2875	1110100	0010	856.8000	0000001	0010
855.8125	1000111	1100	856.3000	0001100	0010	856.8125	1000001	0010
855.8250	0100111	1100	856.3125	1001100	0010	856.8250	0100001	0010
855.8375	1100111	1100	856.3250	0101100	0010	856.8375	1100001	0010
855.8500	0010111	1100	856.3375	1101100	0010	856.8500	0010001	0010
855.8625	1010111	1100	856.3500	0011100	0010	856.8625	1010001	0010
855.8750	0110111	1100	856.3625	1011100	0010	856.8750	0110001	0010
855.8875	1110111	1100	856.3750	0111100	0010	856.8875	1110001	0010
855.9000	0001111	1100	856.3875	1111100	0010	856.9000	0001001	0010
855.9125	1001111	1100	856.4000	0000010	0010	856.9125	1001001	0010
855.9250	0101111	1100	856.4125	1000010	0010	856.9250	0101001	0010
855.9375	1101111	1100	856.4250	0100010	0010	856.9375	1101001	0010
855.9500	0011111	1100	856.4375	1100010	0010	856.9500	0011001	0010
855.9625	1011111	1100	856.4500	0010010	0010	856.9625	1011001	0010
855.9750	0111111	1100	856.4625	1010010	0010	856.9750	0111001	0010
855.9875	1111111	1100	856.4750	0110010	0010	856.9875	1111001	0010
			856.4875	1110010	0010			

Legend: 0 = Closed, 1 = Open

NOTE: For MASTR III - set all switches (S1-1 thru S1-7 and S2-1 thru S2-4) to the CLOSED position.

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4

857 MHz

857.0000	0000101	0010
857.0125	1000101	0010
857.0250	0100101	0010
857.0375	1100101	0010
857.0500	0010101	0010
857.0625	1010101	0010
857.0750	0110101	0010
857.0875	1110101	0010
857.1000	0001101	0010
857.1125	1001101	0010
857.1250	0101101	0010
857.1375	1101101	0010
857.1500	0011101	0010
857.1625	1011101	0010
857.1750	0111101	0010
857.1875	1111101	0010
857.2000	0000011	0010
857.2125	1000011	0010
857.2250	0100011	0010
857.2375	1100011	0010
857.2500	0010011	0010
857.2625	1010011	0010
857.2750	0110011	0010
857.2875	1110011	0010
857.3000	0001011	0010
857.3125	1001011	0010
857.3250	0101011	0010
857.3375	1101011	0010
857.3500	0011011	0010
857.3625	1011011	0010
857.3750	0111011	0010
857.3875	1111011	0010
857.4000	0000111	0010
857.4125	1000111	0010
857.4250	0100111	0010
857.4375	1100111	0010
857.4500	0010111	0010
857.4625	1010111	0010
857.4750	0110111	0010
857.4875	1110111	0010
857.5000	0001111	0010
857.5125	1001111	0010
857.5250	0101111	0010
857.5375	1101111	0010
857.5500	0011111	0010
857.5625	1011111	0010
857.5750	0111111	0010
857.5875	1111111	0010
857.6000	0000000	1010
857.6125	1000000	1010
857.6250	0100000	1010
857.6375	1100000	1010
857.6500	0010000	1010
857.6625	1010000	1010
857.6750	0110000	1010
857.6875	1110000	1010
857.7000	0001000	1010
857.7125	1001000	1010
857.7250	0101000	1010
857.7375	1101000	1010
857.7500	0011000	1010
857.7625	1011000	1010
857.7750	0111000	1010
857.7875	1111000	1010
857.8000	0000100	1010
857.8125	1000100	1010
857.8250	0100100	1010
857.8375	1100100	1010
857.8500	0010100	1010
857.8625	1010100	1010
857.8750	0110100	1010
857.8875	1110100	1010
857.9000	0001100	1010
857.9125	1001100	1010
857.9250	0101100	1010
857.9375	1101100	1010
857.9500	0011100	1010
857.9625	1011100	1010
857.9750	0111100	1010
857.9875	1111100	1010

858 MHz

858.0000	0000010	1010
858.0125	1000010	1010
858.0250	0100010	1010
858.0375	1100010	1010
858.0500	0010010	1010
858.0625	1010010	1010
858.0750	0110010	1010
858.0875	1110010	1010
858.1000	0001010	1010
858.1125	1001010	1010
858.1250	0101010	1010
858.1375	1101010	1010
858.1500	0011010	1010
858.1625	1011010	1010
858.1750	0111010	1010
858.1875	1111010	1010
858.2000	0000110	1010
858.2125	1000110	1010
858.2250	0100110	1010
858.2375	1100110	1010
858.2500	0010110	1010
858.2625	1010110	1010
858.2750	0110110	1010
858.2875	1110110	1010
858.3000	0001110	1010
858.3125	1001110	1010
858.3250	0101110	1010
858.3375	1101110	1010
858.3500	0011110	1010
858.3625	1011110	1010
858.3750	0111110	1010
858.3875	1111110	1010
858.4000	0000001	1010
858.4125	1000001	1010
858.4250	0100001	1010
858.4375	1100001	1010
858.4500	0010001	1010
858.4625	1010001	1010
858.4750	0110001	1010
858.4875	1110001	1010

Legend: 0 = Closed, 1 = Open

NOTE: For MASTR III - set all switches (S1-1 thru S1-7 and S2-1 thru S2-4) to the CLOSED position.

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
858.5000	0001001	1010
858.5125	1001001	1010
858.5250	0101001	1010
858.5375	1101001	1010
858.5500	0011001	1010
858.5625	1011001	1010
858.5750	0111001	1010
858.5875	1111001	1010
858.6000	0000101	1010
858.6125	1000101	1010
858.6250	0100101	1010
858.6375	1100101	1010
858.6500	0010101	1010
858.6625	1010101	1010
858.6750	0110101	1010
858.6875	1110101	1010
858.7000	0001101	1010
858.7125	1001101	1010
858.7250	0101101	1010
858.7375	1101101	1010
858.7500	0011101	1010
858.7625	1011101	1010
858.7750	0111101	1010
858.7875	1111101	1010
858.8000	0000011	1010
858.8125	1000011	1010
858.8250	0100011	1010
858.8375	1100011	1010
858.8500	0010011	1010
858.8625	1010011	1010
858.8750	0110011	1010
858.8875	1110011	1010
858.9000	0001011	1010
858.9125	1001011	1010
858.9250	0101011	1010
858.9375	1101011	1010
858.9500	0011011	1010
858.9625	1011011	1010
858.9750	0111011	1010
858.9875	1111011	1010

859 MHz

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
859.0000	0000111	1010
859.0125	1000111	1010
859.0250	0100111	1010
859.0375	1100111	1010
859.0500	0010111	1010
859.0625	1010111	1010
859.0750	0110111	1010
859.0875	1110111	1010
859.1000	0001111	1010
859.1125	1001111	1010
859.1250	0101111	1010
859.1375	1101111	1010
859.1500	0011111	1010
859.1625	1011111	1010
859.1750	0111111	1010
859.1875	1111111	1010
859.2000	0000000	0110
859.2125	1000000	0110
859.2250	0100000	0110
859.2375	1100000	0110
859.2500	0010000	0110
859.2625	1010000	0110
859.2750	0110000	0110
859.2875	1110000	0110
859.3000	0001000	0110
859.3125	1001000	0110
859.3250	0101000	0110
859.3375	1101000	0110
859.3500	0011000	0110
859.3625	1011000	0110
859.3750	0111000	0110
859.3875	1111000	0110
859.4000	0000100	0110
859.4125	1000100	0110
859.4250	0100100	0110
859.4375	1100100	0110
859.4500	0010100	0110
859.4625	1010100	0110
859.4750	0110100	0110
859.4875	1110100	0110

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
859.5000	0001100	0110
859.5125	1001100	0110
859.5250	0101100	0110
859.5375	1101100	0110
859.5500	0011100	0110
859.5625	1011100	0110
859.5750	0111100	0110
859.5875	1111100	0110
859.6000	0000010	0110
859.6125	1000010	0110
859.6250	0100010	0110
859.6375	1100010	0110
859.6500	0010010	0110
859.6625	1010010	0110
859.6750	0110010	0110
859.6875	1110010	0110
859.7000	0001010	0110
859.7125	1001010	0110
859.7250	0101010	0110
859.7375	1101010	0110
859.7500	0011010	0110
859.7625	1011010	0110
859.7750	0111010	0110
859.7875	1111010	0110
859.8000	0000110	0110
859.8125	1000110	0110
859.8250	0100110	0110
859.8375	1100110	0110
859.8500	0010110	0110
859.8625	1010110	0110
859.8750	0110110	0110
859.8875	1110110	0110
859.9000	0001110	0110
859.9125	1001110	0110
859.9250	0101110	0110
859.9375	1101110	0110
859.9500	0011110	0110
859.9625	1011110	0110
859.9750	0111110	0110
859.9875	1111110	0110

Legend: 0 = Closed, 1 = Open

NOTE: For MASTR III - set all switches (S1-1 thru S1-7 and S2-1 thru S2-4) to the CLOSED position.

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
860 MHz		
860.0000	0000001	0110
860.0125	1000001	0110
860.0250	0100001	0110
860.0375	1100001	0110
860.0500	0010001	0110
860.0625	1010001	0110
860.0750	0110001	0110
860.0875	1110001	0110
860.1000	0001001	0110
860.1125	1001001	0110
860.1250	0101001	0110
860.1375	1101001	0110
860.1500	0011001	0110
860.1625	1011001	0110
860.1750	0111001	0110
860.1875	1111001	0110
860.2000	0000101	0110
860.2125	1000101	0110
860.2250	0100101	0110
860.2375	1100101	0110
860.2500	0010101	0110
860.2625	1010101	0110
860.2750	0110101	0110
860.2875	1110101	0110
860.3000	0001101	0110
860.3125	1001101	0110
860.3250	0101101	0110
860.3375	1101101	0110
860.3500	0011101	0110
860.3625	1011101	0110
860.3750	0111101	0110
860.3875	1111101	0110
860.4000	0000011	0110
860.4125	1000011	0110
860.4250	0100011	0110
860.4375	1100011	0110
860.4500	0010011	0110
860.4625	1010011	0110
860.4750	0110011	0110
860.4875	1110011	0110
860.5000	0001011	0110
860.5125	1001011	0110
860.5250	0101011	0110
860.5375	1101011	0110
860.5500	0011011	0110
860.5625	1011011	0110
860.5750	0111011	0110
860.5875	1111011	0110
860.6000	0000111	0110
860.6125	1000111	0110
860.6250	0100111	0110
860.6375	1100111	0110
860.6500	0010111	0110
860.6625	1010111	0110
860.6750	0110111	0110
860.6875	1110111	0110
860.7000	0001111	0110
860.7125	1001111	0110
860.7250	0101111	0110
860.7375	1101111	0110
860.7500	0011111	0110
860.7625	1011111	0110
860.7750	0111111	0110
860.7875	1111111	0110
860.8000	0000000	1110
860.8125	1000000	1110
860.8250	0100000	1110
860.8375	1100000	1110
860.8500	0010000	1110
860.8625	1010000	1110
860.8750	0110000	1110
860.8875	1110000	1110
860.9000	0001000	1110
860.9125	1001000	1110
860.9250	0101000	1110
860.9375	1101000	1110
860.9500	0011000	1110
860.9625	1011000	1110
860.9750	0111000	1110
860.9875	1111000	1110
861 MHz		
861.0000	0000100	1110
861.0125	1000100	1110
861.0250	0100100	1110
861.0375	1100100	1110
861.0500	0010100	1110
861.0625	1010100	1110
861.0750	0110100	1110
861.0875	1110100	1110
861.1000	0001100	1110
861.1125	1001100	1110
861.1250	0101100	1110
861.1375	1101100	1110
861.1500	0011100	1110
861.1625	1011100	1110
861.1750	0111100	1110
861.1875	1111100	1110
861.2000	0000010	1110
861.2125	1000010	1110
861.2250	0100010	1110
861.2375	1100010	1110
861.2500	0010010	1110
861.2625	1010010	1110
861.2750	0110010	1110
861.2875	1110010	1110
861.3000	0001010	1110
861.3125	1001010	1110
861.3250	0101010	1110
861.3375	1101010	1110
861.3500	0011010	1110
861.3625	1011010	1110
861.3750	0111010	1110
861.3875	1111010	1110
861.4000	0000110	1110
861.4125	1000110	1110
861.4250	0100110	1110
861.4375	1100110	1110
861.4500	0010110	1110
861.4625	1010110	1110
861.4750	0110110	1110
861.4875	1110110	1110

Legend: 0 = Closed, 1 = Open

NOTE: For MASTR III - set all switches (S1-1 thru S1-7 and S2-1 thru S2-4) to the CLOSED position.

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
861.5000	0001110	1110
861.5125	1001110	1110
861.5250	0101110	1110
861.5375	1101110	1110
861.5500	0011110	1110
861.5625	1011110	1110
861.5750	0111110	1110
861.5875	1111110	1110
861.6000	0000001	1110
861.6125	1000001	1110
861.6250	0100001	1110
861.6375	1100001	1110
861.6500	0010001	1110
861.6625	1010001	1110
861.6750	0110001	1110
861.6875	1110001	1110
861.7000	0001001	1110
861.7125	1001001	1110
861.7250	0101001	1110
861.7375	1101001	1110
861.7500	0011001	1110
861.7625	1011001	1110
861.7750	0111001	1110
861.7875	1111001	1110
861.8000	0000101	1110
861.8125	1000101	1110
861.8250	0100101	1110
861.8375	1100101	1110
861.8500	0010101	1110
861.8625	1010101	1110
861.8750	0110101	1110
861.8875	1110101	1110
861.9000	0001101	1110
861.9125	1001101	1110
861.9250	0101101	1110
861.9375	1101101	1110
861.9500	0011101	1110
861.9625	1011101	1110
861.9750	0111101	1110
861.9875	1111101	1110

862 MHz

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
862.0000	0000011	1110
862.0125	1000011	1110
862.0250	0100011	1110
862.0375	1100011	1110
862.0500	0010011	1110
862.0625	1010011	1110
862.0750	0110011	1110
862.0875	1110011	1110
862.1000	0001011	1110
862.1125	1001011	1110
862.1250	0101011	1110
862.1375	1101011	1110
862.1500	0011011	1110
862.1625	1011011	1110
862.1750	0111011	1110
862.1875	1111011	1110
862.2000	0000111	1110
862.2125	1000111	1110
862.2250	0100111	1110
862.2375	1100111	1110
862.2500	0010111	1110
862.2625	1010111	1110
862.2750	0110111	1110
862.2875	1110111	1110
862.3000	0001111	1110
862.3125	1001111	1110
862.3250	0101111	1110
862.3375	1101111	1110
862.3500	0011111	1110
862.3625	1011111	1110
862.3750	0111111	1110
862.3875	1111111	1110
862.4000	0000000	0001
862.4125	1000000	0001
862.4250	0100000	0001
862.4375	1100000	0001
862.4500	0010000	0001
862.4625	1010000	0001
862.4750	0110000	0001
862.4875	1110000	0001

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
862.5000	0001000	0001
862.5125	1001000	0001
862.5250	0101000	0001
862.5375	1101000	0001
862.5500	0011000	0001
862.5625	1011000	0001
862.5750	0111000	0001
862.5875	1111000	0001
862.6000	0000100	0001
862.6125	1000100	0001
862.6250	0100100	0001
862.6375	1100100	0001
862.6500	0010100	0001
862.6625	1010100	0001
862.6750	0110100	0001
862.6875	1110100	0001
862.7000	0001100	0001
862.7125	1001100	0001
862.7250	0101100	0001
862.7375	1101100	0001
862.7500	0011100	0001
862.7625	1011100	0001
862.7750	0111100	0001
862.7875	1111100	0001
862.8000	0000010	0001
862.8125	1000010	0001
862.8250	0100010	0001
862.8375	1100010	0001
862.8500	0010010	0001
862.8625	1010010	0001
862.8750	0110010	0001
862.8875	1110010	0001
862.9000	0001010	0001
862.9125	1001010	0001
862.9250	0101010	0001
862.9375	1101010	0001
862.9500	0011010	0001
862.9625	1011010	0001
862.9750	0111010	0001
862.9875	1111010	0001

Legend: 0 = Closed, 1 = Open

NOTE: For MASTR III - set all switches (S1-1 thru S1-7 and S2-1 thru S2-4) to the CLOSED position.

863 MHz

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
863.0000	0000110	0001
863.0125	1000110	0001
863.0250	0100110	0001
863.0375	1100110	0001
863.0500	0010110	0001
863.0625	1010110	0001
863.0750	0110110	0001
863.0875	1110110	0001
863.1000	0001110	0001
863.1125	1001110	0001
863.1250	0101110	0001
863.1375	1101110	0001
863.1500	0011110	0001
863.1625	1011110	0001
863.1750	0111110	0001
863.1875	1111110	0001
863.2000	0000001	0001
863.2125	1000001	0001
863.2250	0100001	0001
863.2375	1100001	0001
863.2500	0010001	0001
863.2625	1010001	0001
863.2750	0110001	0001
863.2875	1110001	0001
863.3000	0001001	0001
863.3125	1001001	0001
863.3250	0101001	0001
863.3375	1101001	0001
863.3500	0011001	0001
863.3625	1011001	0001
863.3750	0111001	0001
863.3875	1111001	0001
863.4000	0000101	0001
863.4125	1000101	0001
863.4250	0100101	0001
863.4375	1100101	0001
863.4500	0010101	0001
863.4625	1010101	0001
863.4750	0110101	0001
863.4875	1110101	0001
863.5000	0001101	0001
863.5125	1001101	0001
863.5250	0101101	0001
863.5375	1101101	0001
863.5500	0011101	0001
863.5625	1011101	0001
863.5750	0111101	0001
863.5875	1111101	0001
863.6000	0000011	0001
863.6125	1000011	0001
863.6250	0100011	0001
863.6375	1100011	0001
863.6500	0010011	0001
863.6625	1010011	0001
863.6750	0110011	0001
863.6875	1110011	0001
863.7000	0001011	0001
863.7125	1001011	0001
863.7250	0101011	0001
863.7375	1101011	0001
863.7500	0011011	0001
863.7625	1011011	0001
863.7750	0111011	0001
863.7875	1111011	0001
863.8000	0000111	0001
863.8125	1000111	0001
863.8250	0100111	0001
863.8375	1100111	0001
863.8500	0010111	0001
863.8625	1010111	0001
863.8750	0110111	0001
863.8875	1110111	0001
863.9000	0001111	0001
863.9125	1001111	0001
863.9250	0101111	0001
863.9375	1101111	0001
863.9500	0011111	0001
863.9625	1011111	0001
863.9750	0111111	0001
863.9875	1111111	0001

864 MHz

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
864.0000	0000000	1001
864.0125	1000000	1001
864.0250	0100000	1001
864.0375	1100000	1001
864.0500	0010000	1001
864.0625	1010000	1001
864.0750	0110000	1001
864.0875	1110000	1001
864.1000	0001000	1001
864.1125	1001000	1001
864.1250	0101000	1001
864.1375	1101000	1001
864.1500	0011000	1001
864.1625	1011000	1001
864.1750	0111000	1001
864.1875	1111000	1001
864.2000	0000100	1001
864.2125	1000100	1001
864.2250	0100100	1001
864.2375	1100100	1001
864.2500	0010100	1001
864.2625	1010100	1001
864.2750	0110100	1001
864.2875	1110100	1001
864.3000	0001100	1001
864.3125	1001100	1001
864.3250	0101100	1001
864.3375	1101100	1001
864.3500	0011100	1001
864.3625	1011100	1001
864.3750	0111100	1001
864.3875	1111100	1001
864.4000	0000010	1001
864.4125	1000010	1001
864.4250	0100010	1001
864.4375	1100010	1001
864.4500	0010010	1001
864.4625	1010010	1001
864.4750	0110010	1001
864.4875	1110010	1001

Legend: 0 = Closed, 1 = Open

NOTE: For MASTR III - set all switches (S1-1 thru S1-7 and S2-1 thru S2-4) to the CLOSED position.

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4	TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4	TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
864.5000	0001010	1001	**865 MHz**			865.5000	0001111	1001
864.5125	1001010	1001	865.0000	0000101	1001	865.5125	1001111	1001
864.5250	0101010	1001	865.0125	1000101	1001	865.5250	0101111	1001
864.5375	1101010	1001	865.0250	0100101	1001	865.5375	1101111	1001
864.5500	0011010	1001	865.0375	1100101	1001	865.5500	0011111	1001
864.5625	1011010	1001	865.0500	0010101	1001	865.5625	1011111	1001
864.5750	0111010	1001	865.0625	1010101	1001	865.5750	0111111	1001
864.5875	1111010	1001	865.0750	0110101	1001	865.5875	1111111	1001
864.6000	0000110	1001	865.0875	1110101	1001	865.6000	0000000	0101
864.6125	1000110	1001	865.1000	0001101	1001	865.6125	1000000	0101
864.6250	0100110	1001	865.1125	1001101	1001	865.6250	0100000	0101
864.6375	1100110	1001	865.1250	0101101	1001	865.6375	1100000	0101
864.6500	0010110	1001	865.1375	1101101	1001	865.6500	0010000	0101
864.6625	1010110	1001	865.1500	0011101	1001	865.6625	1010000	0101
864.6750	0110110	1001	865.1625	1011101	1001	865.6750	0110000	0101
864.6875	1110110	1001	865.1750	0111101	1001	865.6875	1110000	0101
864.7000	0001110	1001	865.1875	1111101	1001	865.7000	0001000	0101
864.7125	1001110	1001	865.2000	0000011	1001	865.7125	1001000	0101
864.7250	0101110	1001	865.2125	1000011	1001	865.7250	0101000	0101
864.7375	1101110	1001	865.2250	0100011	1001	865.7375	1101000	0101
864.7500	0011110	1001	865.2375	1100011	1001	865.7500	0011000	0101
864.7625	1011110	1001	865.2500	0010011	1001	865.7625	1011000	0101
864.7750	0111110	1001	865.2625	1010011	1001	865.7750	0111000	0101
864.7875	1111110	1001	865.2750	0110011	1001	865.7875	1111000	0101
864.8000	0000001	1001	865.2875	1110011	1001	865.8000	0000100	0101
864.8125	1000001	1001	865.3000	0001011	1001	865.8125	1000100	0101
864.8250	0100001	1001	865.3125	1001011	1001	865.8250	0100100	0101
864.8375	1100001	1001	865.3250	0101011	1001	865.8375	1100100	0101
864.8500	0010001	1001	865.3375	1101011	1001	865.8500	0010100	0101
864.8625	1010001	1001	865.3500	0011011	1001	865.8625	1010100	0101
864.8750	0110001	1001	865.3625	1011011	1001	865.8750	0110100	0101
864.8875	1110001	1001	865.3750	0111011	1001	865.8875	1110100	0101
864.9000	0001001	1001	865.3875	1111011	1001	865.9000	0001100	0101
864.9125	1001001	1001	865.4000	0000111	1001	865.9125	1001100	0101
864.9250	0101001	1001	865.4125	1000111	1001	865.9250	0101100	0101
864.9375	1101001	1001	865.4250	0100111	1001	865.9375	1101100	0101
864.9500	0011001	1001	865.4375	1100111	1001	865.9500	0011100	0101
864.9625	1011001	1001	865.4500	0010111	1001	865.9625	1011100	0101
864.9750	0111001	1001	865.4625	1010111	1001	865.9750	0111100	0101
864.9875	1111001	1001	865.4750	0110111	1001	865.9875	1111100	0101
			865.4875	1110111	1001			

Legend: 0 = Closed, 1 = Open

NOTE: For MASTR III - set all switches (S1-1 thru S1-7 and S2-1 thru S2-4) to the CLOSED position.

866 MHz

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
866.0000	0000010	0101
866.0125	1000010	0101
866.0250	0100010	0101
866.0375	1100010	0101
866.0500	0010010	0101
866.0625	1010010	0101
866.0750	0110010	0101
866.0875	1110010	0101
866.1000	0001010	0101
866.1125	1001010	0101
866.1250	0101010	0101
866.1375	1101010	0101
866.1500	0011010	0101
866.1625	1011010	0101
866.1750	0111010	0101
866.1875	1111010	0101
866.2000	0000110	0101
866.2125	1000110	0101
866.2250	0100110	0101
866.2375	1100110	0101
866.2500	0010110	0101
866.2625	1010110	0101
866.2750	0110110	0101
866.2875	1110110	0101
866.3000	0001110	0101
866.3125	1001110	0101
866.3250	0101110	0101
866.3375	1101110	0101
866.3500	0011110	0101
866.3625	1011110	0101
866.3750	0111110	0101
866.3875	1111110	0101
866.4000	0000001	0101
866.4125	1000001	0101
866.4250	0100001	0101
866.4375	1100001	0101
866.4500	0010001	0101
866.4625	1010001	0101
866.4750	0110001	0101
866.4875	1110001	0101
866.5000	0001001	0101
866.5125	1001001	0101
866.5250	0101001	0101
866.5375	1101001	0101
866.5500	0011001	0101
866.5625	1011001	0101
866.5750	0111001	0101
866.5875	1111001	0101
866.6000	0000101	0101
866.6125	1000101	0101
866.6250	0100101	0101
866.6375	1100101	0101
866.6500	0010101	0101
866.6625	1010101	0101
866.6750	0110101	0101
866.6875	1110101	0101
866.7000	0001101	0101
866.7125	1001101	0101
866.7250	0101101	0101
866.7375	1101101	0101
866.7500	0011101	0101
866.7625	1011101	0101
866.7750	0111101	0101
866.7875	1111101	0101
866.8000	0000011	0101
866.8125	1000011	0101
866.8250	0100011	0101
866.8375	1100011	0101
866.8500	0010011	0101
866.8625	1010011	0101
866.8750	0110011	0101
866.8875	1110011	0101
866.9000	0001011	0101
866.9125	1001011	0101
866.9250	0101011	0101
866.9375	1101011	0101
866.9500	0011011	0101
866.9625	1011011	0101
866.9750	0111011	0101
866.9875	1111011	0101

867 MHz

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
867.0000	0000111	0101
867.0125	1000111	0101
867.0250	0100111	0101
867.0375	1100111	0101
867.0500	0010111	0101
867.0625	1010111	0101
867.0750	0110111	0101
867.0875	1110111	0101
867.1000	0001111	0101
867.1125	1001111	0101
867.1250	0101111	0101
867.1375	1101111	0101
867.1500	0011111	0101
867.1625	1011111	0101
867.1750	0111111	0101
867.1875	1111111	0101
867.2000	0000000	1101
867.2125	1000000	1101
867.2250	0100000	1101
867.2375	1100000	1101
867.2500	0010000	1101
867.2625	1010000	1101
867.2750	0110000	1101
867.2875	1110000	1101
867.3000	0001000	1101
867.3125	1001000	1101
867.3250	0101000	1101
867.3375	1101000	1101
867.3500	0011000	1101
867.3625	1011000	1101
867.3750	0111000	1101
867.3875	1111000	1101
867.4000	0000100	1101
867.4125	1000100	1101
867.4250	0100100	1101
867.4375	1100100	1101
867.4500	0010100	1101
867.4625	1010100	1101
867.4750	0110100	1101
867.4875	1110100	1101

Legend: 0 = Closed, 1 = Open

NOTE: For MASTR III - set all switches (S1-1 thru S1-7 and S2-1 thru S2-4) to the CLOSED position.

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
867.5000	0001100	1101
867.5125	1001100	1101
867.5250	0101100	1101
867.5375	1101100	1101
867.5500	0011100	1101
867.5625	1011100	1101
867.5750	0111100	1101
867.5875	1111100	1101
867.6000	0000010	1101
867.6125	1000010	1101
867.6250	0100010	1101
867.6375	1100010	1101
867.6500	0010010	1101
867.6625	1010010	1101
867.6750	0110010	1101
867.6875	1110010	1101
867.7000	0001010	1101
867.7125	1001010	1101
867.7250	0101010	1101
867.7375	1101010	1101
867.7500	0011010	1101
867.7625	1011010	1101
867.7750	0111010	1101
867.7875	1111010	1101
867.8000	0000110	1101
867.8125	1000110	1101
867.8250	0100110	1101
867.8375	1100110	1101
867.8500	0010110	1101
867.8625	1010110	1101
867.8750	0110110	1101
867.8875	1110110	1101
867.9000	0001110	1101
867.9125	1001110	1101
867.9250	0101110	1101
867.9375	1101110	1101
867.9500	0011110	1101
867.9625	1011110	1101
867.9750	0111110	1101
867.9875	1111110	1101

868 MHz

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
868.0000	0000001	1101
868.0125	1000001	1101
868.0250	0100001	1101
868.0375	1100001	1101
868.0500	0010001	1101
868.0625	1010001	1101
868.0750	0110001	1101
868.0875	1110001	1101
868.1000	0001001	1101
868.1125	1001001	1101
868.1250	0101001	1101
868.1375	1101001	1101
868.1500	0011001	1101
868.1625	1011001	1101
868.1750	0111001	1101
868.1875	1111001	1101
868.2000	0000101	1101
868.2125	1000101	1101
868.2250	0100101	1101
868.2375	1100101	1101
868.2500	0010101	1101
868.2625	1010101	1101
868.2750	0110101	1101
868.2875	1110101	1101
868.3000	0001101	1101
868.3125	1001101	1101
868.3250	0101101	1101
868.3375	1101101	1101
868.3500	0011101	1101
868.3625	1011101	1101
868.3750	0111101	1101
868.3875	1111101	1101
868.4000	0000011	1101
868.4125	1000011	1101
868.4250	0100011	1101
868.4375	1100011	1101
868.4500	0010011	1101
868.4625	1010011	1101
868.4750	0110011	1101
868.4875	1110011	1101

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
868.5000	0001011	1101
868.5125	1001011	1101
868.5250	0101011	1101
868.5375	1101011	1101
868.5500	0011011	1101
868.5625	1011011	1101
868.5750	0111011	1101
868.5875	1111011	1101
868.6000	0000111	1101
868.6125	1000111	1101
868.6250	0100111	1101
868.6375	1100111	1101
868.6500	0010111	1101
868.6625	1010111	1101
868.6750	0110111	1101
868.6875	1110111	1101
868.7000	0001111	1101
868.7125	1001111	1101
868.7250	0101111	1101
868.7375	1101111	1101
868.7500	0011111	1101
868.7625	1011111	1101
868.7750	0111111	1101
868.7875	1111111	1101
868.8000	0000000	0011
868.8125	1000000	0011
868.8250	0100000	0011
868.8375	1100000	0011
868.8500	0010000	0011
868.8625	1010000	0011
868.8750	0110000	0011
868.8875	1110000	0011
868.9000	0001000	0011
868.9125	1001000	0011
868.9250	0101000	0011
868.9375	1101000	0011
868.9500	0011000	0011
868.9625	1011000	0011
868.9750	0111000	0011
868.9875	1111000	0011

Legend: 0 = Closed, 1 = Open

NOTE: For MASTR III - set all switches (S1-1 thru S1-7 and S2-1 thru S2-4) to the CLOSED position.

869 MHz

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
869.0000	0000100	0011
869.0125	1000100	0011
869.0250	0100100	0011
869.0375	1100100	0011
869.0500	0010100	0011
869.0625	1010100	0011
869.0750	0110100	0011
869.0875	1110100	0011
869.1000	0001100	0011
869.1125	1001100	0011
869.1250	0101100	0011
869.1375	1101100	0011
869.1500	0011100	0011
869.1625	1011100	0011
869.1750	0111100	0011
869.1875	1111100	0011
869.2000	0000010	0011
869.2125	1000010	0011
869.2250	0100010	0011
869.2375	1100010	0011
869.2500	0010010	0011
869.2625	1010010	0011
869.2750	0110010	0011
869.2875	1110010	0011
869.3000	0001010	0011
869.3125	1001010	0011
869.3250	0101010	0011
869.3375	1101010	0011
869.3500	0011010	0011
869.3625	1011010	0011
869.3750	0111010	0011
869.3875	1111010	0011
869.4000	0000110	0011
869.4125	1000110	0011
869.4250	0100110	0011
869.4375	1100110	0011
869.4500	0010110	0011
869.4625	1010110	0011
869.4750	0110110	0011
869.4875	1110110	0011
869.5000	0001110	0011
869.5125	1001110	0011
869.5250	0101110	0011
869.5375	1101110	0011
869.5500	0011110	0011
869.5625	1011110	0011
869.5750	0111110	0011
869.5875	1111110	0011
869.6000	0000001	0011
869.6125	1000001	0011
869.6250	0100001	0011
869.6375	1100001	0011
869.6500	0010001	0011
869.6625	1010001	0011
869.6750	0110001	0011
869.6875	1110001	0011
869.7000	0001001	0011
869.7125	1001001	0011
869.7250	0101001	0011
869.7375	1101001	0011
869.7500	0011001	0011
869.7625	1011001	0011
869.7750	0111001	0011
869.7875	1111001	0011
869.8000	0000101	0011
869.8125	1000101	0011
869.8250	0100101	0011
869.8375	1100101	0011
869.8500	0010101	0011
869.8625	1010101	0011
869.8750	0110101	0011
869.8875	1110101	0011
869.9000	0001101	0011
869.9125	1001101	0011
869.9250	0101101	0011
869.9375	1101101	0011
869.9500	0011101	0011
869.9625	1011101	0011
869.9750	0111101	0011
869.9875	1111101	0011

Legend: 0 = Closed, 1 = Open

NOTE: For MASTR III - set all switches (S1-1 thru S1-7 and S2-1 thru S2-4) to the CLOSED position.

APPENDIX B

900 MHZ EDACS APPLICATIONS FREQUENCY SELECTIONS GETC DIP SWITCH SETTINGS

NOTE

For MASTR II/IIe using Station GETC software 349A9607G4 (or earlier) only.

For MASTR II, IIe, and III using 349A9607G5 (or later), set switches S1-1 thru S1-7 and S2-1 thru S2-4 to the CLOSED position

935 MHz

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
935.0125	1000000	0000
935.0250	0100000	0000
935.0375	1100000	0000
935.0500	0010000	0000
935.0625	1010000	0000
935.0750	0110000	0000
935.0875	1110000	0000
935.1000	0001000	0000
935.1125	1001000	0000
935.1250	0101000	0000
935.1375	1101000	0000
935.1500	0011000	0000
935.1625	1011000	0000
935.1750	0111000	0000
935.1875	1111000	0000
935.2000	0000100	0000
935.2125	1000100	0000
935.2250	0100100	0000
935.2375	1100100	0000
935.2500	0010100	0000
935.2625	1010100	0000
935.2750	0110100	0000
935.2875	1110100	0000
935.3000	0001100	0000
935.3125	1001100	0000
935.3250	0101100	0000
935.3375	1101100	0000
935.3500	0011100	0000
935.3625	1011100	0000
935.3750	0111100	0000
935.3875	1111100	0000
935.4000	0000010	0000
935.4125	1000010	0000
935.4250	0100010	0000
935.4375	1100010	0000
935.4500	0010010	0000
935.4625	1010010	0000
935.4750	0110010	0000
935.4875	1110010	0000
935.5000	0001010	0000
935.5125	1001010	0000
935.5250	0101010	0000
935.5375	1101010	0000
935.5500	0011010	0000
935.5625	1011010	0000
935.5750	0111010	0000
935.5875	1111010	0000
935.6000	0000110	0000
935.6125	1000110	0000
935.6250	0100110	0000
935.6375	1100110	0000
935.6500	0010110	0000
935.6625	1010110	0000
935.6750	0110110	0000
935.6875	1110110	0000
935.7000	0001110	0000
935.7125	1001110	0000
935.7250	0101110	0000
935.7375	1101110	0000
935.7500	0011110	0000
935.7625	1011110	0000
935.7750	0111110	0000
935.7875	1111110	0000
935.8000	0000001	0000
935.8125	1000001	0000
935.8250	0100001	0000
935.8375	1100001	0000
935.8500	0010001	0000
935.8625	1010001	0000
935.8750	0110001	0000
935.8875	1110001	0000
935.9000	0001001	0000
935.9125	1001001	0000
935.9250	0101001	0000
935.9375	1101001	0000
935.9500	0011001	0000
935.9625	1011001	0000
935.9750	0111001	0000
935.9875	1111001	0000

936 MHz

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
936.0000	0000101	0000
936.0125	1000101	0000
936.0250	0100101	0000
936.0375	1100101	0000
936.0500	0010101	0000
936.0625	1010101	0000
936.0750	0110101	0000
936.0875	1110101	0000
936.1000	0001101	0000
936.1125	1001101	0000
936.1250	0101101	0000
936.1375	1101101	0000
936.1500	0011101	0000
936.1625	1011101	0000
936.1750	0111101	0000
936.1875	1111101	0000
936.2000	0000011	0000
936.2125	1000011	0000
936.2250	0100011	0000
936.2375	1100011	0000
936.2500	0010011	0000
936.2625	1010011	0000
936.2750	0110011	0000
936.2875	1110011	0000
936.3000	0001011	0000
936.3125	1001011	0000
936.3250	0101011	0000
936.3375	1101011	0000
936.3500	0011011	0000
936.3625	1011011	0000
936.3750	0111011	0000
936.3875	1111011	0000
936.4000	0000111	0000
936.4125	1000111	0000
936.4250	0100111	0000
936.4375	1100111	0000
936.4500	0010111	0000
936.4625	1010111	0000
936.4750	0110111	0000
936.4875	1110111	0000

Legend: 0 = Closed, 1 = Open

NOTE: For MASTR III - set all switches (S1-1 thru S1-7 and S2-1 thru S2-4) to the CLOSED position.

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4	TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4	TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
936.5000	0001111	0000	**937 MHz**			937.5000	0001001	1000
936.5125	1001111	0000	937.0000	0000010	1000	937.5125	1001001	1000
936.5250	0101111	0000	937.0125	1000010	1000	937.5250	0101001	1000
936.5375	1101111	0000	937.0250	0100010	1000	937.5375	1101001	1000
936.5500	0011111	0000	937.0375	1100010	1000	937.5500	0011001	1000
936.5625	1011111	0000	937.0500	0010010	1000	937.5625	1011001	1000
936.5750	0111111	0000	937.0625	1010010	1000	937.5750	0111001	1000
936.5875	1111111	0000	937.0750	0110010	1000	937.5875	1111001	1000
936.6000	0000000	1000	937.0875	1110010	1000	937.6000	0000101	1000
936.6125	1000000	1000	937.1000	0001010	1000	937.6125	1000101	1000
936.6250	0100000	1000	937.1125	1001010	1000	937.6250	0100101	1000
936.6375	1100000	1000	937.1250	0101010	1000	937.6375	1100101	1000
936.6500	0010000	1000	937.1375	1101010	1000	937.6500	0010101	1000
936.6625	1010000	1000	937.1500	0011010	1000	937.6625	1010101	1000
936.6750	0110000	1000	937.1625	1011010	1000	937.6750	0110101	1000
936.6875	1110000	1000	937.1750	0111010	1000	937.6875	1110101	1000
936.7000	0001000	1000	937.1875	1111010	1000	937.7000	0001101	1000
936.7125	1001000	1000	937.2000	0000110	1000	937.7125	1001101	1000
936.7250	0101000	1000	937.2125	1000110	1000	937.7250	0101101	1000
936.7375	1101000	1000	937.2250	0100110	1000	937.7375	1101101	1000
936.7500	0011000	1000	937.2375	1100110	1000	937.7500	0011101	1000
936.7625	1011000	1000	937.2500	0010110	1000	937.7625	1011101	1000
936.7750	0111000	1000	937.2625	1010110	1000	937.7750	0111101	1000
936.7875	1111000	1000	937.2750	0110110	1000	937.7875	1111101	1000
936.8000	0000100	1000	937.2875	1110110	1000	937.8000	0000011	1000
936.8125	1000100	1000	937.3000	0001110	1000	937.8125	1000011	1000
936.8250	0100100	1000	937.3125	1001110	1000	937.8250	0100011	1000
936.8375	1100100	1000	937.3250	0101110	1000	937.8375	1100011	1000
936.8500	0010100	1000	937.3375	1101110	1000	937.8500	0010011	1000
936.8625	1010100	1000	937.3500	0011110	1000	937.8625	1010011	1000
936.8750	0110100	1000	937.3625	1011110	1000	937.8750	0110011	1000
936.8875	1110100	1000	937.3750	0111110	1000	937.8875	1110011	1000
936.9000	0001100	1000	937.3875	1111110	1000	937.9000	0001011	1000
936.9125	1001100	1000	937.4000	0000001	1000	937.9125	1001011	1000
936.9250	0101100	1000	937.4125	1000001	1000	937.9250	0101011	1000
936.9375	1101100	1000	937.4250	0100001	1000	937.9375	1101011	1000
936.9500	0011100	1000	937.4375	1100001	1000	937.9500	0011011	1000
936.9625	1011100	1000	937.4500	0010001	1000	937.9625	1011011	1000
936.9750	0111100	1000	937.4625	1010001	1000	937.9750	0111011	1000
936.9875	1111100	1000	937.4750	0110001	1000	937.9875	1111011	1000
			937.4875	1110001	1000			

Legend: 0 = Closed, 1 = Open

NOTE: For MASTR III - set all switches (S1-1 thru S1-7 and S2-1 thru S2-4) to the CLOSED position.

938 MHz

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
938.0000	0000111	1000
938.0125	1000111	1000
938.0250	0100111	1000
938.0375	1100111	1000
938.0500	0010111	1000
938.0625	1010111	1000
938.0750	0110111	1000
938.0875	1110111	1000
938.1000	0001111	1000
938.1125	1001111	1000
938.1250	0101111	1000
938.1375	1101111	1000
938.1500	0011111	1000
938.1625	1011111	1000
938.1750	0111111	1000
938.1875	1111111	1000
938.2000	0000000	0100
938.2125	1000000	0100
938.2250	0100000	0100
938.2375	1100000	0100
938.2500	0010000	0100
938.2625	1010000	0100
938.2750	0110000	0100
938.2875	1110000	0100
938.3000	0001000	0100
938.3125	1001000	0100
938.3250	0101000	0100
938.3375	1101000	0100
938.3500	0011000	0100
938.3625	1011000	0100
938.3750	0111000	0100
938.3875	1111000	0100
938.4000	0000100	0100
938.4125	1000100	0100
938.4250	0100100	0100
938.4375	1100100	0100
938.4500	0010100	0100
938.4625	1010100	0100
938.4750	0110100	0100
938.4875	1110100	0100
938.5000	0001100	0100
938.5125	1001100	0100
938.5250	0101100	0100
938.5375	1101100	0100
938.5500	0011100	0100
938.5625	1011100	0100
938.5750	0111100	0100
938.5875	1111100	0100
938.6000	0000010	0100
938.6125	1000010	0100
938.6250	0100010	0100
938.6375	1100010	0100
938.6500	0010010	0100
938.6625	1010010	0100
938.6750	0110010	0100
938.6875	1110010	0100
938.7000	0001010	0100
938.7125	1001010	0100
938.7250	0101010	0100
938.7375	1101010	0100
938.7500	0011010	0100
938.7625	1011010	0100
938.7750	0111010	0100
938.7875	1111010	0100
938.8000	0000110	0100
938.8125	1000110	0100
938.8250	0100110	0100
938.8375	1100110	0100
938.8500	0010110	0100
938.8625	1010110	0100
938.8750	0110110	0100
938.8875	1110110	0100
938.9000	0001110	0100
938.9125	1001110	0100
938.9250	0101110	0100
938.9375	1101110	0100
938.9500	0011110	0100
938.9625	1011110	0100
938.9750	0111110	0100
938.9875	1111110	0100

939 MHz

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
939.0000	0000001	0100
939.0125	1000001	0100
939.0250	0100001	0100
939.0375	1100001	0100
939.0500	0010001	0100
939.0625	1010001	0100
939.0750	0110001	0100
939.0875	1110001	0100
939.1000	0001001	0100
939.1125	1001001	0100
939.1250	0101001	0100
939.1375	1101001	0100
939.1500	0011001	0100
939.1625	1011001	0100
939.1750	0111001	0100
939.1875	1111001	0100
939.2000	0000101	0100
939.2125	1000101	0100
939.2250	0100101	0100
939.2375	1100101	0100
939.2500	0010101	0100
939.2625	1010101	0100
939.2750	0110101	0100
939.2875	1110101	0100
939.3000	0001101	0100
939.3125	1001101	0100
939.3250	0101101	0100
939.3375	1101101	0100
939.3500	0011101	0100
939.3625	1011101	0100
939.3750	0111101	0100
939.3875	1111101	0100
939.4000	0000011	0100
939.4125	1000011	0100
939.4250	0100011	0100
939.4375	1100011	0100
939.4500	0010011	0100
939.4625	1010011	0100
939.4750	0110011	0100
939.4875	1110011	0100

Legend: 0 = Closed, 1 = Open

NOTE: For MASTR III - set all switches (S1-1 thru S1-7 and S2-1 thru S2-4) to the CLOSED position.

TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4	TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4	TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
939.5000	0001011	0100						
939.5125	1001011	0100						
939.5250	0101011	0100						
939.5375	1101011	0100						
939.5500	0011011	0100						
939.5625	1011011	0100						
939.5750	0111011	0100						
939.5875	1111011	0100						
939.6000	0000111	0100						
939.6125	1000111	0100						
939.6250	0100111	0100						
939.6375	1100111	0100						
939.6500	0010111	0100						
939.6625	1010111	0100						
939.6750	0110111	0100						
939.6875	1110111	0100						
939.7000	0001111	0100						
939.7125	1001111	0100						
939.7250	0101111	0100						
939.7375	1101111	0100						
939.7500	0011111	0100						
939.7625	1011111	0100						
939.7750	0111111	0100						
939.7875	1111111	0100						
939.8000	0000000	1100						
939.8125	1000000	1100						
939.8250	0100000	1100						
939.8375	1100000	1100						
939.8500	0010000	1100						
939.8625	1010000	1100						
939.8750	0110000	1100						
939.8875	1110000	1100						
939.9000	0001000	1100						
939.9125	1001000	1100						
939.9250	0101000	1100						
939.9375	1101000	1100						
939.9500	0011000	1100						
939.9625	1011000	1100						
939.9750	0111000	1100						
939.9875	1111000	1100						

Legend: 0 = Closed, 1 = Open

NOTE: For MASTR III - set all switches (S1-1 thru S1-7 and S2-1 thru S2-4) to the CLOSED position.

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