

Configuration Manual

EDACS[®] Station GETC[™]

19D901868G3 and G4

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TABLE OF CONTENTS

<u>Section/Paragraph</u>	<u>Page</u>
TABLE OF CONTENTS.....	3
LIST OF FIGURES	4
LIST OF TABLES	5
INTRODUCTION.....	7
COMPATIBILITY	7
Software.....	7
Hardware.....	7
RELATED PUBLICATIONS	7
DESCRIPTION	8
OPERATION	8
CONTROL CHANNEL.....	8
Control Channel Jamming.....	8
WORKING CHANNEL	9
TRUNKED FAILSOFT OPERATION	9
STATION CONTROL.....	10
CONFIGURATION	10
HARDWARE INSTALLATION.....	11
GETC Logic Board Installation	11
Turbo Board Installation.....	11
Rockwell Modem Installation	11
Jumper Installation.....	12
Upgrading to 344A9607G4 Software	12
FIRMWARE INSTALLATION	14
Upgrading to 344A9607G4 Software	14
Multisite Digital Voice or Digital Data.....	14
Installation Procedure	14
Failsoft Systems	14
Trunked Systems.....	15
Satellite Receivers.....	15
TURBO BOARD SOFTWARE INSTALLATION.....	16
Equipment Required	16
Load1e Utility	16
PERSONALITY PROGRAMMING	17
Programming a Personality Through J100.....	17
Programming a Personality Through J104.....	18
OPERATIONAL CHECKOUT	21

TABLE OF CONTENTS

<u>Section/Paragraph</u>	<u>Page</u>
Fully Trunked System	21
Failsoft System.....	21
Satellite Site Receiver	22
INTERFACE SIGNALS	22
TROUBLESHOOTING.....	23
FAILURE MODE	23
CHANNEL ACTIVITY LOGGER.....	23
IN CASE OF DIFFICULTY	23
PARTS LIST.....	27
GETC CABLE 19C336863G1.....	27
INTERCONNECT DIAGRAMS	28
APPENDIX A - 800 MHZ DIP SWITCH SETTINGS.....	A-1
APPENDIX B - 900 MHZ DIP SWITCH SETTINGS.....	B-1

LIST OF FIGURES

<u>Figure</u>	<u>Title</u>	<u>Page</u>
Figure 1 - Typical EDACS Site Block Diagram.....		9
Figure 2 - Typical Five Channel Repeater Cabinet.....		11
Figure 3 - GETC Phone Line Level Adjustments.....		12
Figure 4 - Station GETC (19D904266) Jumper and Test Point Locations.....		13
Figure 5 - System Hook-Up Using J100.....		17
Figure 6 - DIP Switch Settings		18
Figure 7 - System Hook-Up Using J104.....		18

LIST OF TABLES

<u>Table</u>	<u>Title</u>	<u>Page</u>
Table 1 - Indicators in Programming Mode Using J100		18
Table 2 - Indicators in Programming Mode Using J104		18
Table 3 - Sample Station Personality		19
Table 3 - Sample Station Personality (Continued)		20
Table 4 - LED Indicators for Trunked Idle Channels.....		21
Table 5 - LED Indicators for Trunked Assigned Channels		21
Table 6 - LED Indicators for Failsoft Idle Channels		22
Table 7 - LED Indicators for Failsoft Assigned Channels.....		22
Table 8 - LED Indicators for Satellite Site Receivers		22
Table 9 - Failure Modes		23
Table 10 - Interface Status During Various States		24

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INTRODUCTION

This manual provides instructions for configuring the Ericsson **GE Trunking Card Shelf (GETC™)**, part number 19D901868G3 and G4, for station or repeater operation. The manual is applicable to GETC 1e 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, firmware and software installed in the GETC.

The GETC 1e platform consists of the following sub-assemblies:

- Logic Board 19D904266G1 (used with Group 3) or 19D904266G4 (used with Group 4).
- 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)

All references to GETC in this manual refer GETC 1e platform and the combination of GETC Logic board and Turbo board installed in the GETC Shelf.

COMPATIBILITY

Software

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

WideBand 9600 Baud Stations and Satellite Receivers

GETC LOGIC BOARD EPROM, U2	TURBO BOARD SOFTWARE
349A9607G1	344A4414G2 (or later)
349A9607G2	344A4414G3 (or later)
349A9607G4	344A4414G4 (or later)

Narrow Band 4800 Baud Stations

GETC LOGIC BOARD EPROM, U2	TURBO BOARD SOFTWARE
19A705595G8	344A4414G1
349A9607G4	344A4414G4 (or later)

Narrow Band 9600 Baud Stations, Satellite Receivers, & 4800 Baud ETSI Station

GETC LOGIC BOARD EPROM, U2	TURBO BOARD SOFTWARE
349A9607G4	344A4414G4 (or later)

Refer to SRN1060, SRN1061 and SRN1062 for compatibility of GETC 1e with other EDACS platforms. 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.

NOTE

Software used in the GETC is subject to changes resulting from improvements or enhancements. When upgrading the software, the procedures provided in the accompanying Software Release Notes take precedence over this manual.

Hardware

The hardware configuration depends on the following EPROM firmware:

Wideband 9600 Baud Applications using 349A9607G2 (or earlier)

Logic Board	19D904266G1
Turbo Board	19D903536P1

Narrow Band 9600 Baud Applications using 19A705595G8

Logic Board	All
Turbo Board	All

Wideband and Narrow Band 9600 or 4800 Baud Applications using 349A9607G4 (or later)

Logic Board	19D904266G4
Turbo Board	19D903536P1

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-38812	- EDACS Interface Panel Maintenance 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.
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

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 of the Station GETCs has the ability to function as a Control Channel in the event the current Control Channel GETC fails.

In a Fully Trunked EDACS network or system (Figure 1), the Station GETC's 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 GETC's 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 GETC's assumes the Control Channel function. The end result is reliable, high performance trunked communication.

The Site Downlink GETC provides the communication path between the site and the Integrated Multisite and Console Controller (IMC) or the Console Electronics Controller (CEC).

OPERATION

The Station GETC's communicate 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 continuously provides 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

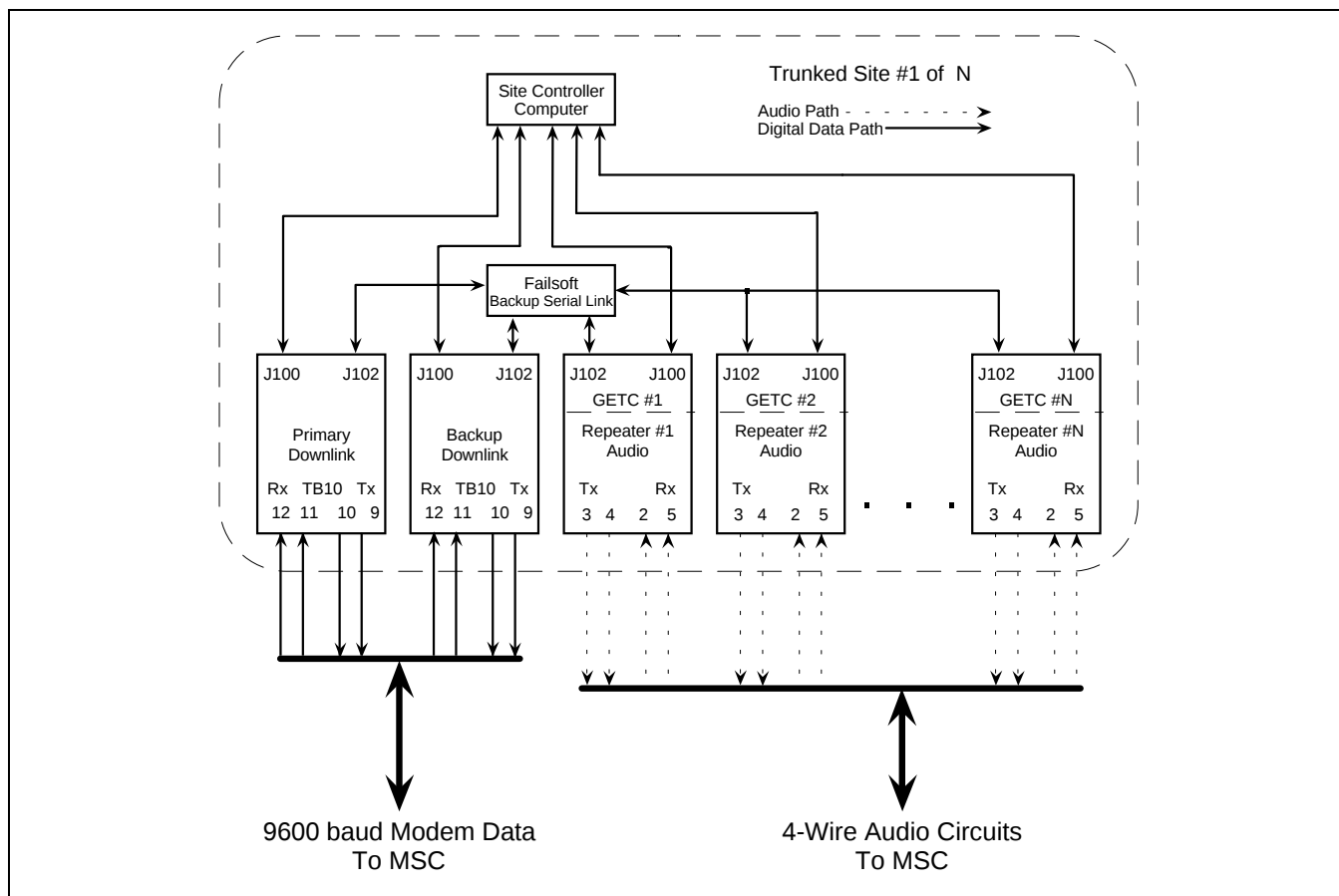


Figure 1 - Typical EDACS Site Block Diagram

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 GETC's. 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's control 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 10 .

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. Firmware Installation - The Firmware Installation procedure provides instructions for installing the GETC operating firmware.
3. Software Installation - The Software Installation procedure provides instructions for installing the Turbo Board software.
4. Personality Programming - This step 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 high (one rack unit) by 19 inches wide.

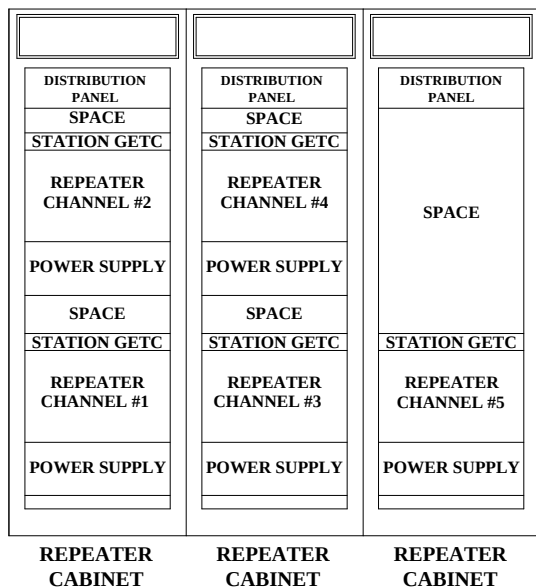


Figure 2 - Typical Five Channel Repeater Cabinet

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.

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 for any reason the GETC Logic board is suspect, refer to LBI-38894 for detailed instructions for removing, replacing, and testing the GETC Logic Board or the Regulator Board.

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 suspect refer to LBI-38822 and SRN-1060 or 1062 for detailed instructions for removing, replacing, and testing the Turbo Board.

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.

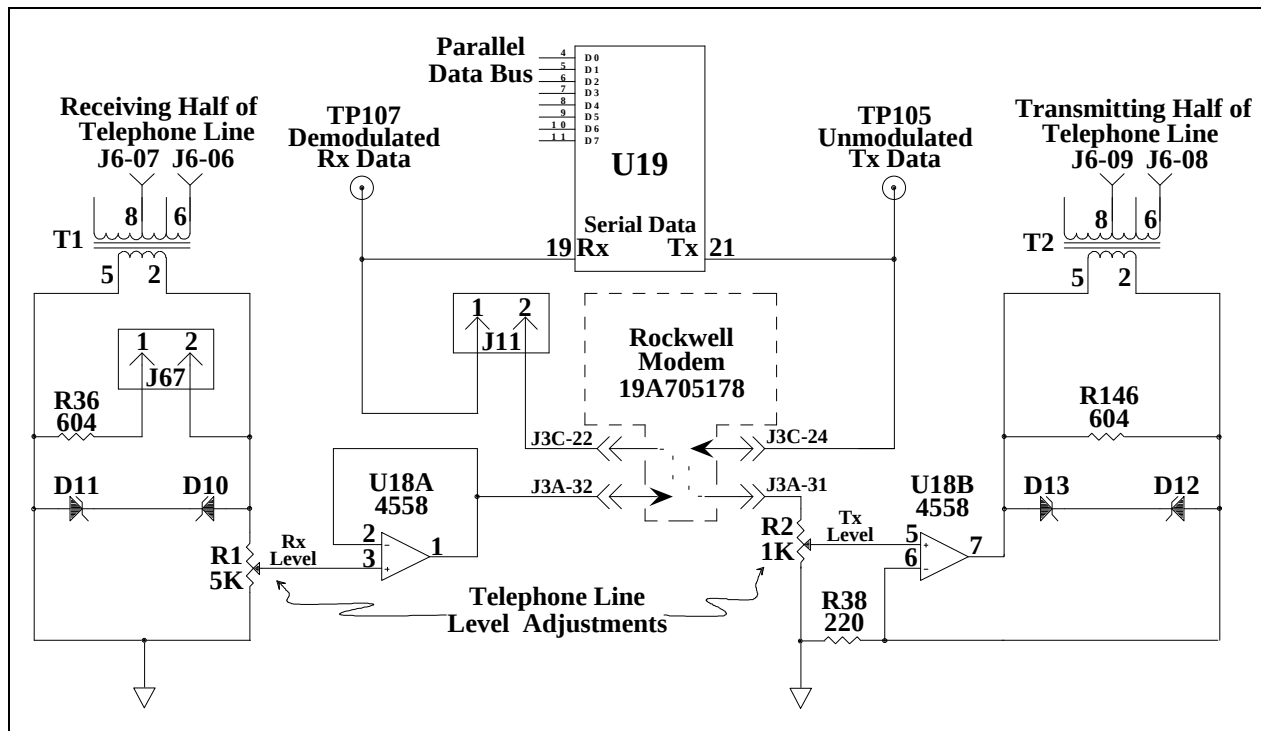


Figure 3 - GETC Phone Line Level Adjustments

- 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).
- Verify the presence of demodulated signal data at TP107.
- 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.
- 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 to the

intended GETC application. The location of the jumpers may be found using the board layout diagram in Figure 4.

Upgrading to 344A9607G4 Software

GETC Shelves 19D901868G3 which are upgrading to the 344A9607G4 software must also upgrade their hardware (the 19D901868G4 GETC Shelf is upgraded at the factory). Upgrading the hardware involves three elements:

- The microprocessor U1, 19A705557P1 (80C32), is replaced with a faster microprocessor RYT 121 6060/A (80C320).
- Changing the modem chips U4 and U19 to the TI 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. Replacement of the modem chips is necessary, they must be ordered separately.

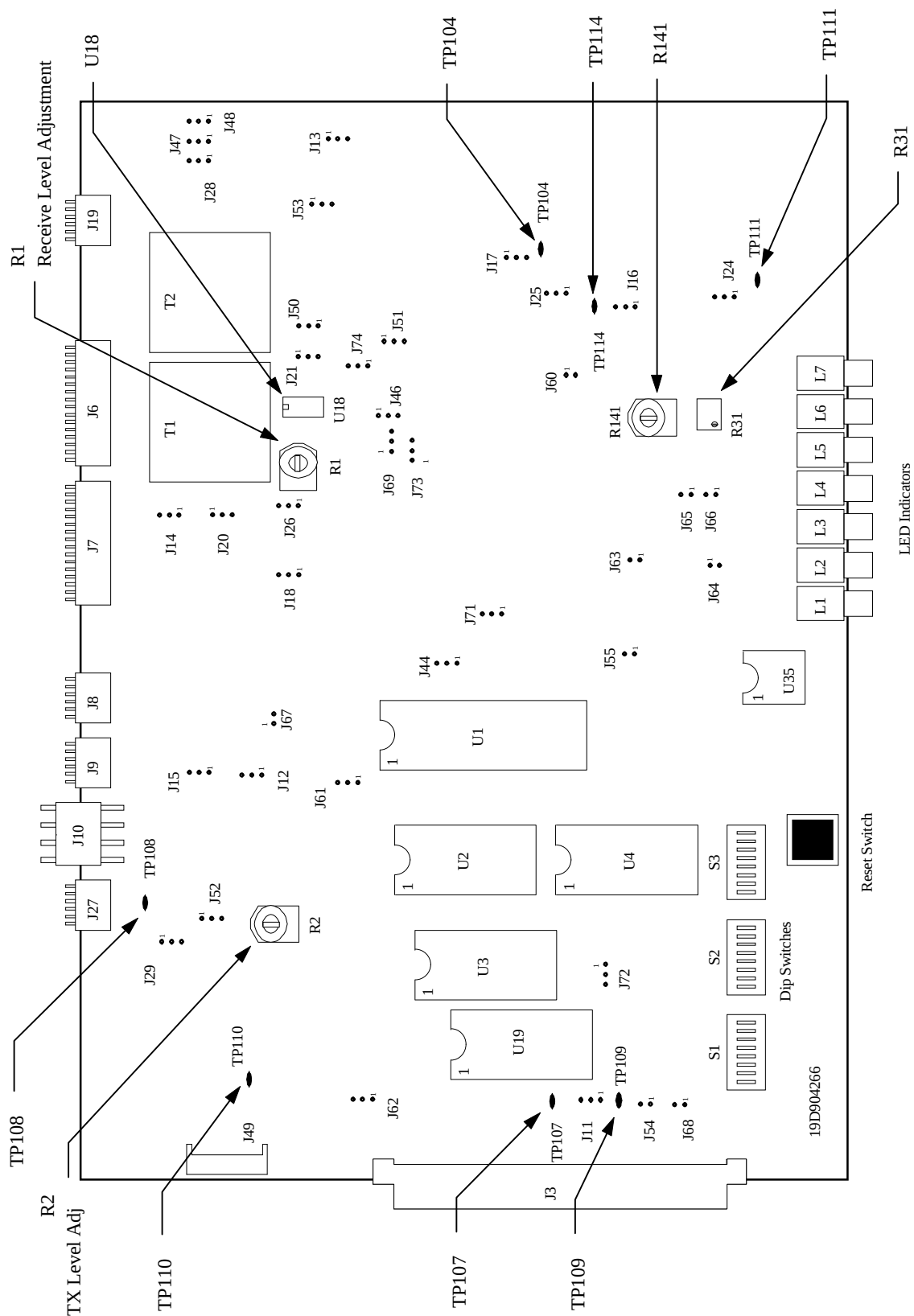


Figure 4 - Station GETC (19D904266) Jumper and Test Point Locations

FIRMWARE INSTALLATION

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

Upgrading to 344A9607G4 Software

With the release of 344A9607G4 software, both Wideband 9600 baud functionality and Narrow Band 4800 baud functionality have been merged together. This release also includes 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 TQ3357 version 4.0 (344A3466G5).

NOTE

Refer to SRN1060 to determine the compatibility of this software with the software used in other EDACS equipment.

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 version 4 (or later).

Installation Procedure

The following procedures provide instructions for installing the firmware when the GETC functions in a Failsoft System, a Fully Trunked System, or Satellite Receiver:

CAUTION



Observe precautions
for handling
**ELECTROSTATIC
SENSITIVE DEVICES**

Failsoft Systems

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

NOTE

Upgrading to Group 4 software is backward compatible in functionality with 344A9607G1 & G2 and 19A149256G18 thru G21 software in the Failsoft operation. However, ensure the GETC is also upgraded to include the Turbo Board with 344A4414G4 software and Ferrite Toroid, 80C320 microprocessor (U1), and 19A704727P4 Modem (U4 & U19).

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 19A704272P4. Required when upgrading to Group 4 (or later), replace if necessary.
4. Ensure microprocessor U1 is the faster 80C320 (RYT 121 6060/A) device. This processor is required when upgrading to Group 4 (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. Power up the channel.

9. Download the proper Turbo software. Refer to SRN1060, SRN1062, and LBI-38822.
10. Program the GETC's personality and perform an operational checkout using the procedures contained in this manual and the detailed instructions contained in TQ3357 and SRN1060.

Trunked Systems

Perform the following steps when installing the firmware 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).

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. Place one channel into Channel Test. Place group and individual calls on the channel to verify correct setup of the test radios.
4. Power down the channel and place the GETC in the service position. Refer to LBI-38894 if necessary.
5. If upgrading from 19A149256G21 (or earlier) software, remove RAM chip U3 and install the Turbo Board. Refer to LBI-38822 for instructions.
6. Ensure Modem chips U4 and U19 are 19A704272P4. Required when upgrading to Group 4 (or later), replace if necessary.
7. Ensure microprocessor U1 is the faster 80C320 (RYT 121 6060/A) device. This processor is required when upgrading to Group 4 (or later). Processor is included in the Speedy Upgrade Kit SPK9505. Replace if necessary. Refer to LBI-38894 for installation instructions.
8. 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.

9. Remove the old software EPROM (U2) from the GETC Logic Board.
10. Install the new EPROM into the XU2 socket, being sure to properly orient the chip.
11. Power up the channel.
12. Download the proper Turbo software. Refer to SRN1060, SRN1062, and LBI-38822.
13. Program the GETC's personality and perform an operational checkout using the procedures contained in this manual and the detailed instructions contained in TQ3357 and SRN1060.

NOTE

When upgrading from 344A9607G1 or G2 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

For voted systems which use 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.

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.

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

NOTE

We 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 19A704272P4. Required when upgrading to Group 4 (or later), replace if necessary.
4. Ensure microprocessor U1 is the faster 80C320 (RYT 121 6060/A) device. This processor is required when upgrading to Group 4 (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. Power up the channel.
9. Download the proper Turbo software. Refer to SRN1060, SRN1062, and LBI-38822.
10. Program the GETC's personality and perform an operational checkout using the procedures contained in this manual and the detailed instructions contained in TQ3357 and SRN1060.

TURBO BOARD SOFTWARE INSTALLATION

This procedure provides instructions for downloading the Turbo software. The software is included in the Station Turbo media kit, 344A4414. The installation process involves downloading the GETC1E utilities to an IBM compatible personal computer (PC), and an interconnecting cable (TQ-3360) to download the new software to the Turbo Board.

When downloading 344A4414 Group 3 (and earlier) software, the PC reads data from the files on the 344A4414 diskette and transfers the data to the Turbo Board microprocessors through connectors J103 and J104 at the rear of the GETC Shelf.

If the PC Programmer TQ3357 version 4 (or later) is available, both the Turbo software and GETC personality may be downloaded without changing setups. In addition, the 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.

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.
- Software distribution diskette 344A4414G2 (or later), refer to SRN1060 and SRN1062 for software compatibility.

Load1e Utility

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

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.)

Loading Turbo Software with TQ3357 Version 4 (or later)

1. Using the TQ3357's LOAD utility, copy the Station Turbo software (344A4414) into the PC Programmer's working directories.
2. Refer to TQ3357 "Upgrading Firmware With The LOAD1E Utility" for complete instructions on running load1e utility.

Loading the Turbo Software from DOS

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

- 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.

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.

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.

We recommend using the TQ3357 version 4 software when programming the GETC's personality. Version 4 must

be used to enable any of the new features available in the 344A9607G4 software. The TQ-3357 version 4 also allows you to upload the GETC's Personality without changing the DIP switch settings.

Programming a Personality Through J100

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

- One end of the serial programming cable (TQ-3360) should be connected to the computer. The other end of the serial cable connects to the GETC Shelf connector J100, see Figure 5.
- Set the GETC DIP switches S1, S2, and S3 for the programming mode as shown in Figure 6. DIP switches S1-S3 are located near the front of the GETC Shelf, see Figure 4.

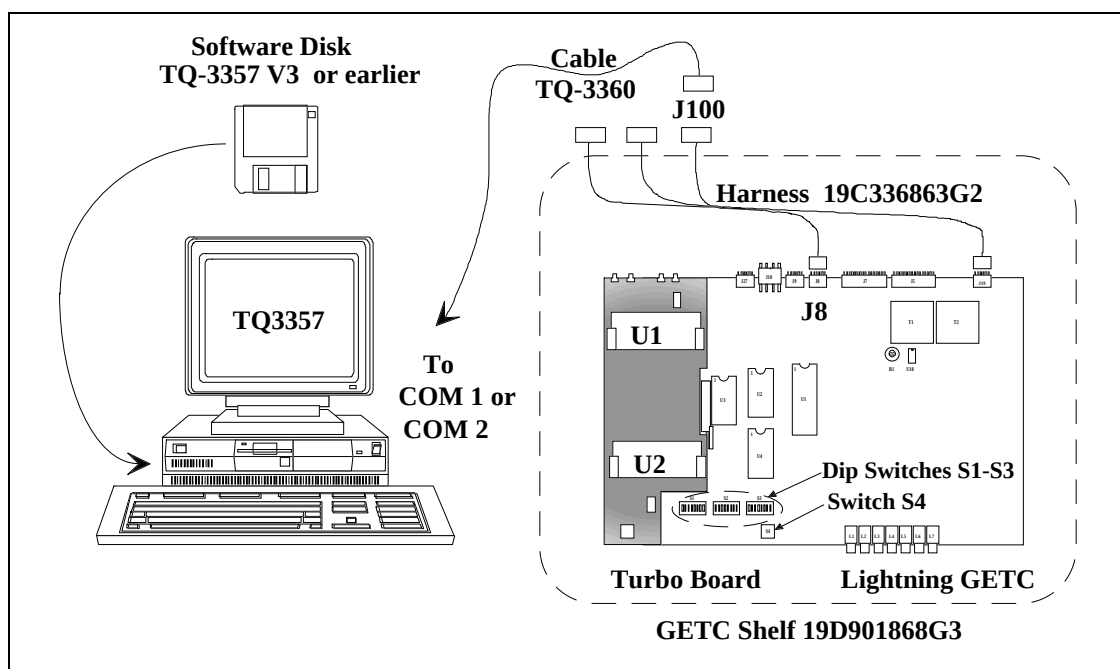


Figure 5 - System Hook-Up Using J100

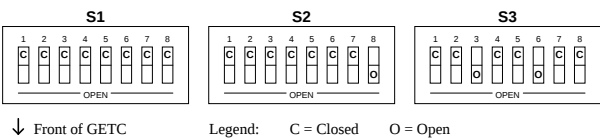


Figure 6 - DIP Switch Settings

- 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 1. This indicates the GETC is ready for programming.

Table 1 - Indicators in Programming Mode Using J100

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

Legend: ○ = OFF ● = ON * = FLASHING

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

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

Programming a Personality Through J104

When using TQ-3357 version 4 (or later) program the personality through J104.

- 1. One end of the serial programming cable (TQ-3360) should be connected to the computer. The other end of the serial cable connects 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.
- 3. Verify that front panel LEDs L6 and L7 are flashing, as shown in Table 2. This indicates the GETC is ready for programming.

Table 2 - Indicators in Programming Mode Using J104

LED Indicators	L1	L2	L3	L4	L5	L6	L7
Programming Mode	○	○	○	○	○	*	*

Legend: ○ = OFF ● = ON * = FLASHING

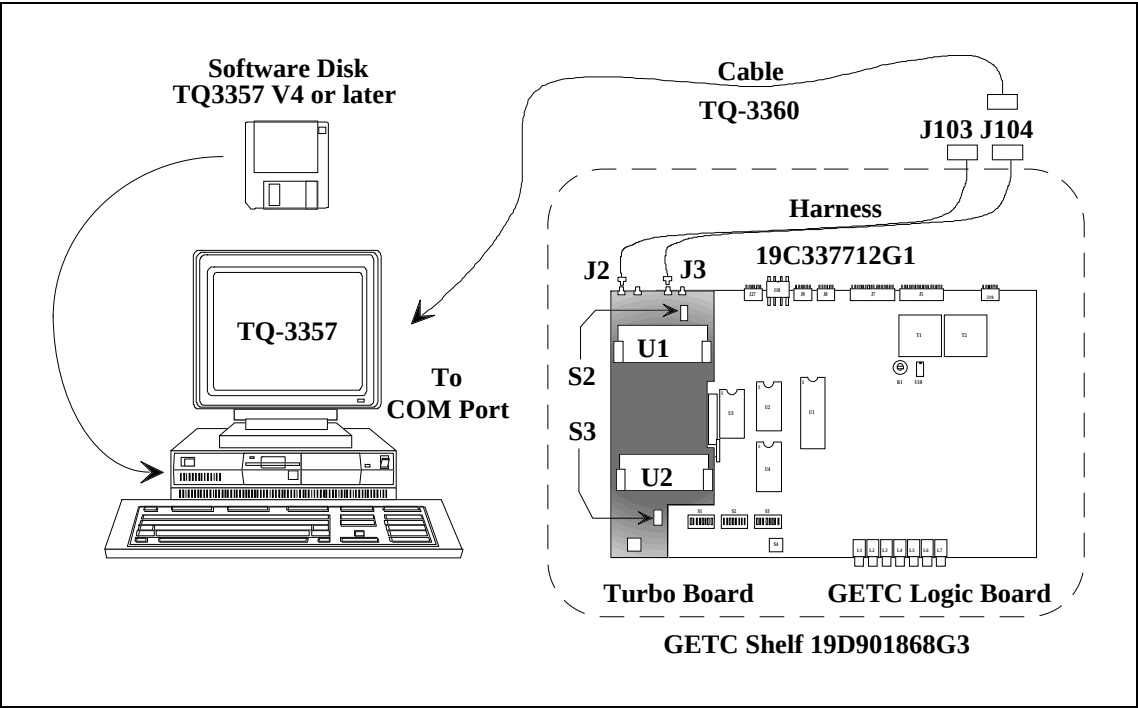


Figure 7 - System Hook-Up Using J104

Table 3 - Sample Station Personality

Personality: C:\GE\GTC\PERS\SAMPLE.GTC

Personality Description

This is a sample personality for
a Station GETC.

Channel Allocations

Channel Number	1234	56789	11111	11111	22222	22222	333
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 Update : One Slot	Indv. Call Hang : 0
IMC Platform : IMC/CEC	Multisite Syst.: Yes
Wideband Pwr Sense: Disabled	Group Call Hang : 0
Jamming Threshold : 0	Simulcast Syst.: No
Rem Site DV Delay : 0	Telephn Call Hang: 30
Max Interconnects : 4	CTIS(Telephone): No
	Dig. Voice Hang : 0
	Voter System : No
	Emerg. Call Hang : 0
	SCAT : No
	Sys All Call Hang: 0
	LIDs>8192 : Yes
	TX Trunked Timer : 60
	Msg Trunked Timer: 120
	Morse Intvl Timer: 15

Table 3 - Sample Station Personality (Continued)

CONFIRMED CALL ENABLES STATUS:						Conventional Network Interface Data	
		Clear Voice		Digital Voice			
		-----		-----			
Group Calls:	No			No			
Indiv Calls:	No			No			
Teleph Calls:	No			No			
						Conventional Network Logical ID : 0	
						C.N.I Group ID	C.N.I Channel Guard Tone

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.

OPERATIONAL CHECKOUT

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

1. Set the GETC dip switches S1, S2, and S3 according to the GETC's application, channel, and frequency. Refer to SRN1060 for DIP switch settings, Appendix A for wideband frequencies, and Appendix B for narrow band frequencies.

NOTE

Be sure the DIP switch settings correspond to the Personality data created.

NOTE

For MASTR III stations, set DIP switches S1-1 through S1-7 and S2-1 through S2-4 to the CLOSED position.

2. Reset the GETC by pressing S4.
3. 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 4.

Table 4 - 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

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.
3. Verify LED indicators are correct, as shown in Table 5, for the trunked channels assigned Clear Voice and Digital Voice calls.

Table 5 - 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 6.

Table 6 - 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.

- Place Clear Voice calls on both wideband or narrowband channels and Digital Voice calls on the wideband channels to verify correct operation.
- Verify LED indicators are correct, as shown in Table 7, for the Failsoft Wideband channel(s) assigned Clear Voice and Digital Voice calls and Failsoft Narrow Band channel(s) assigned Clear Voice calls.
- Repeat for all channels.

Table 7 - 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 8.

Table 8 - 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	●	●	○	○	○	○	●

Legend: ○ = OFF ● = ON ✱ = FLASHING

INTERFACE SIGNALS

Table 10 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 TQ3357, 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 GETC with a known good unit properly configured for this application.

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 9 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, phoneline 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 TQ3357 PC Programmer (version 4 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 9 - 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 10 - Interface Status During Various States

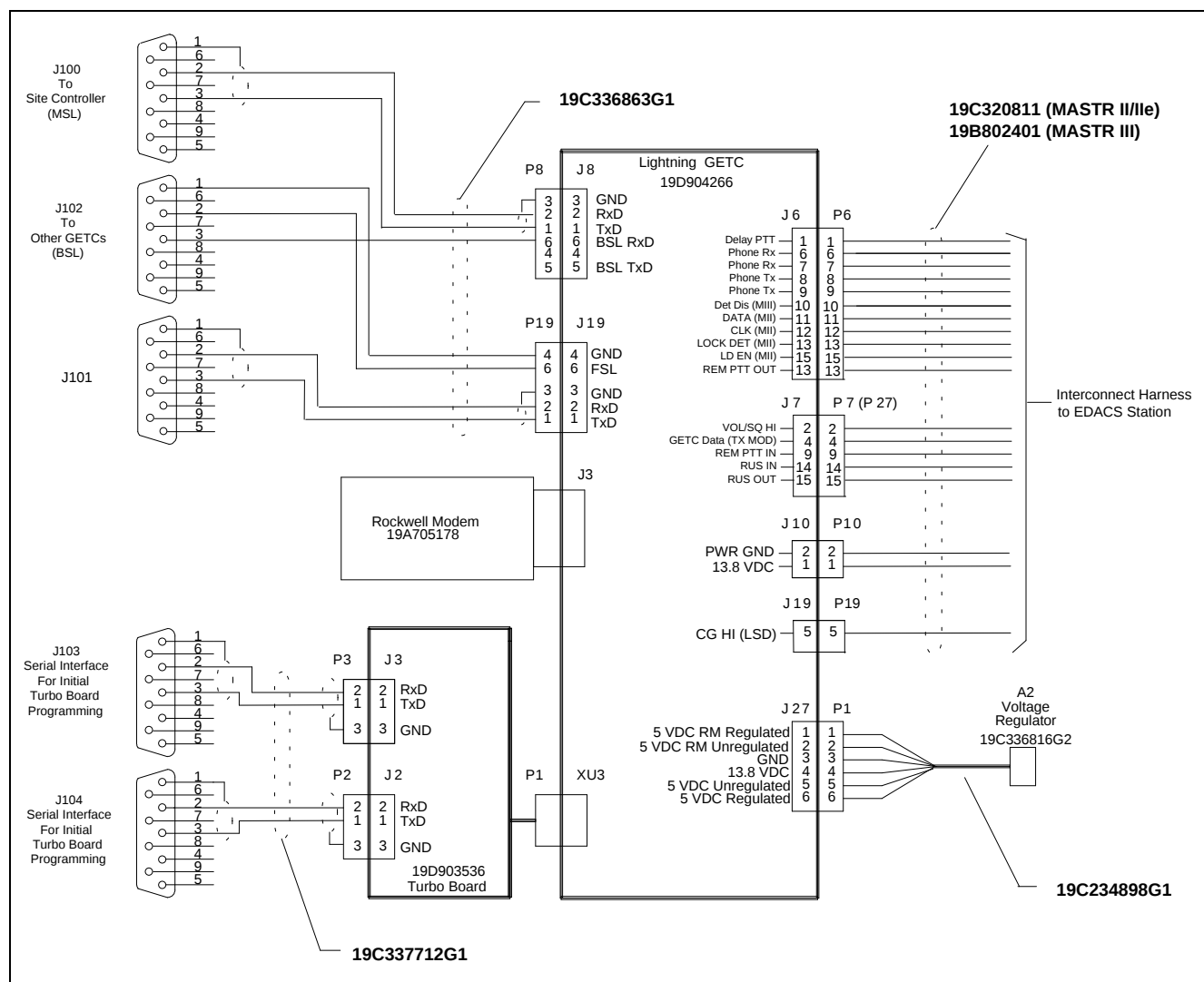
SIGNAL	STATE	STATUS
Control Channel:		
Vol/Sq (J7-2)	Data	High Speed signaling is being routed to the HSD Detector.
RUS In (J7-14)	High	Receiver is unquelled and watching carrier activity for the presence (present = Low) of an interfering signal (without valid signaling).
Rus Out (J7-15)	Low	GETC is 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 10 - Interface Status During Various States (Continued)

SIGNAL	STATE	STATUS
Working Channel (Active): <u>Handshake Mode</u>		
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): <u>During Analog Call</u>		
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 10 - 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.

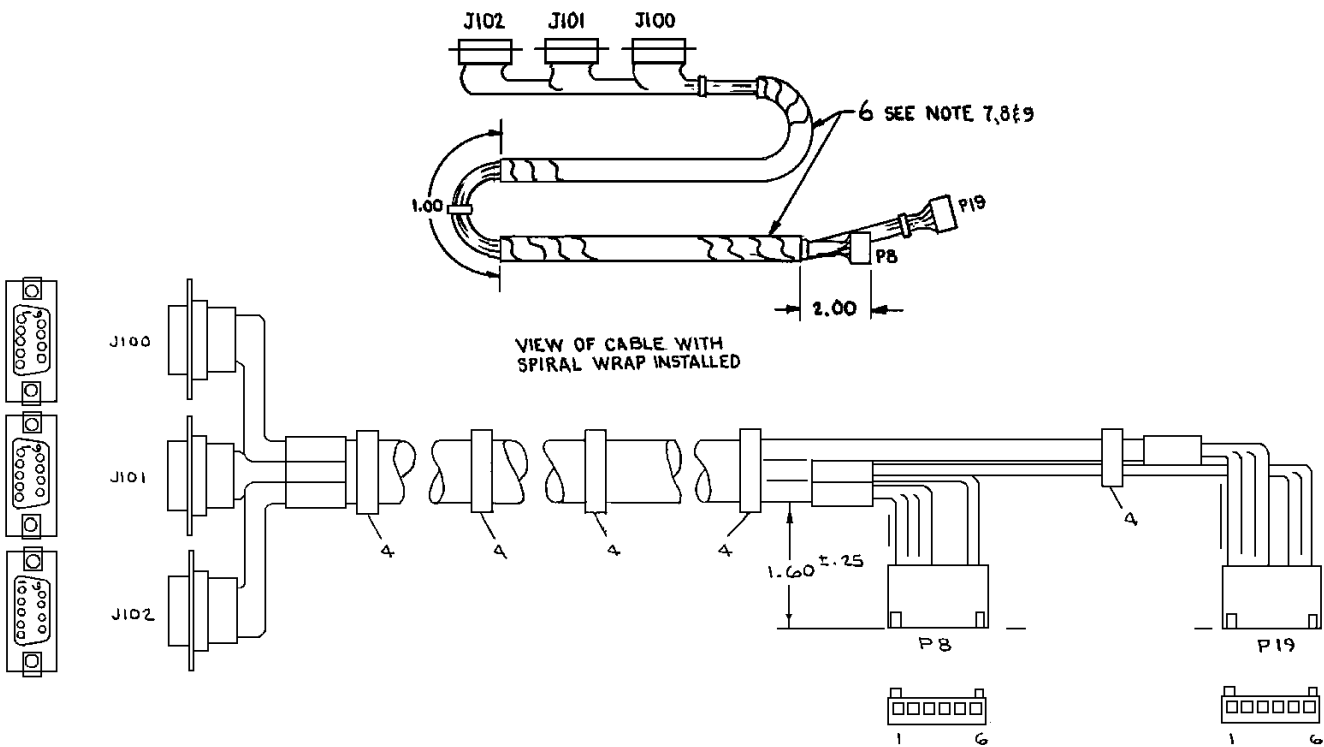
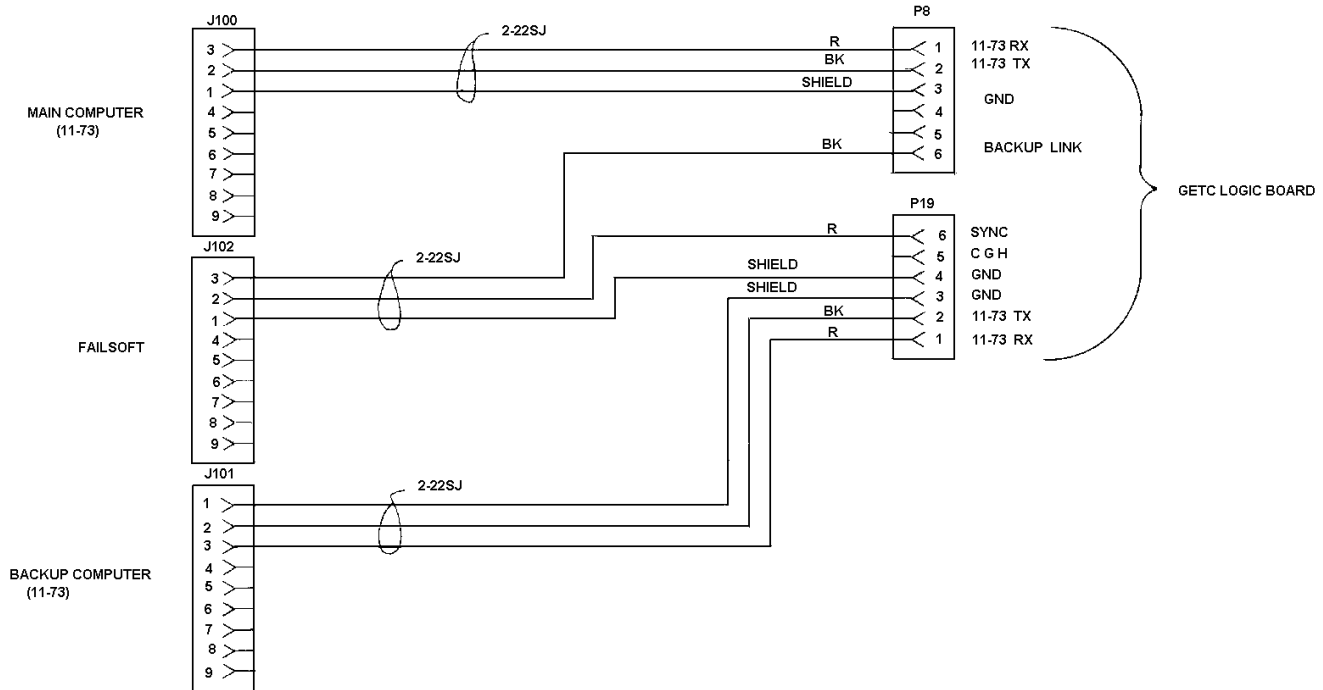


GETC CABLE
19C336863G1

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.

SYMBOL	PART NUMBER	DESCRIPTION
4	19J706152P5	Retainer strap: sim to Panduit Corp. SST-1.
6	19A149502P3	Sleeving, spiral.
13	19B209727P9	Machine Screw.

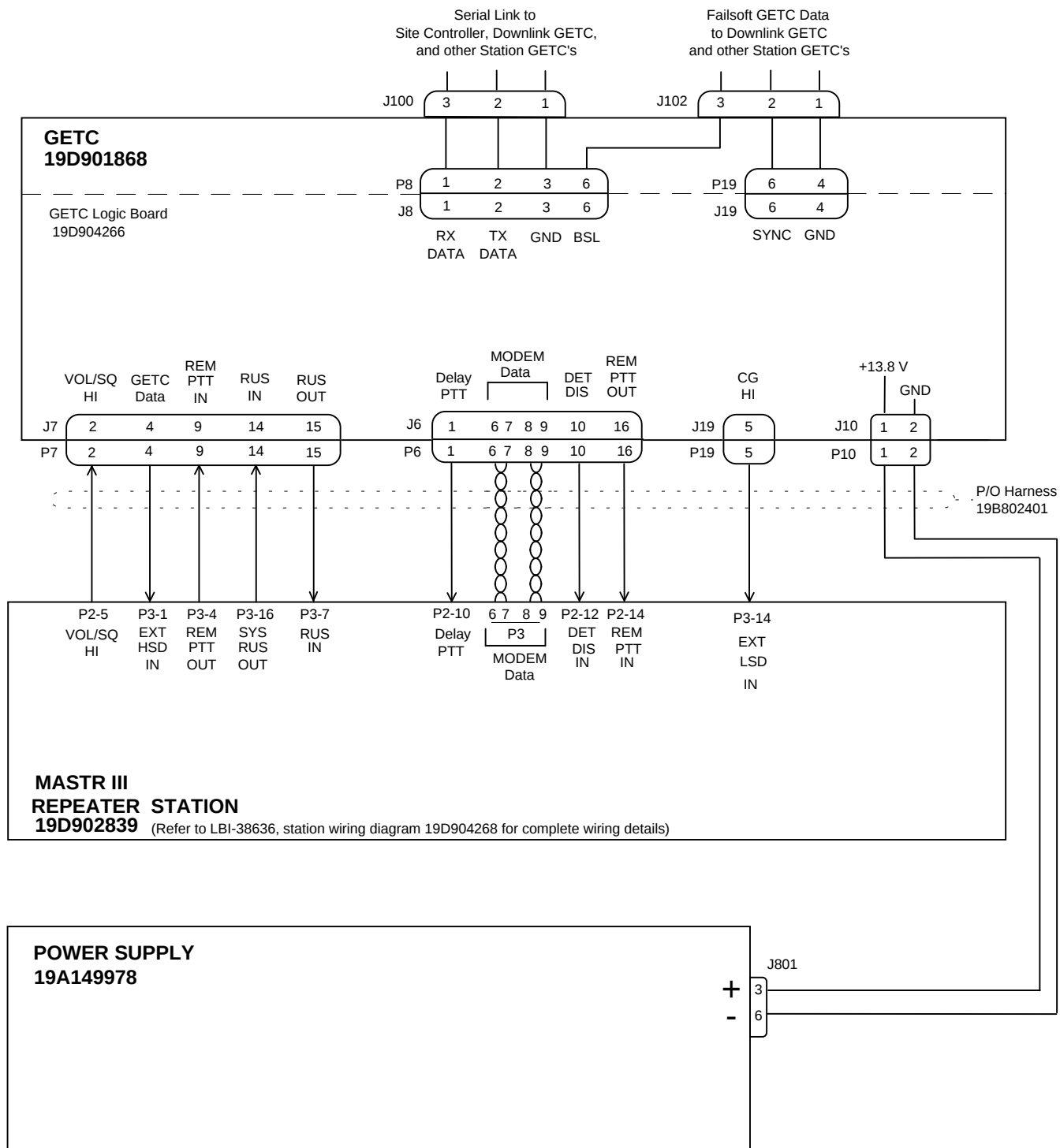
GETC SHELF INTERCONNECT DIAGRAM



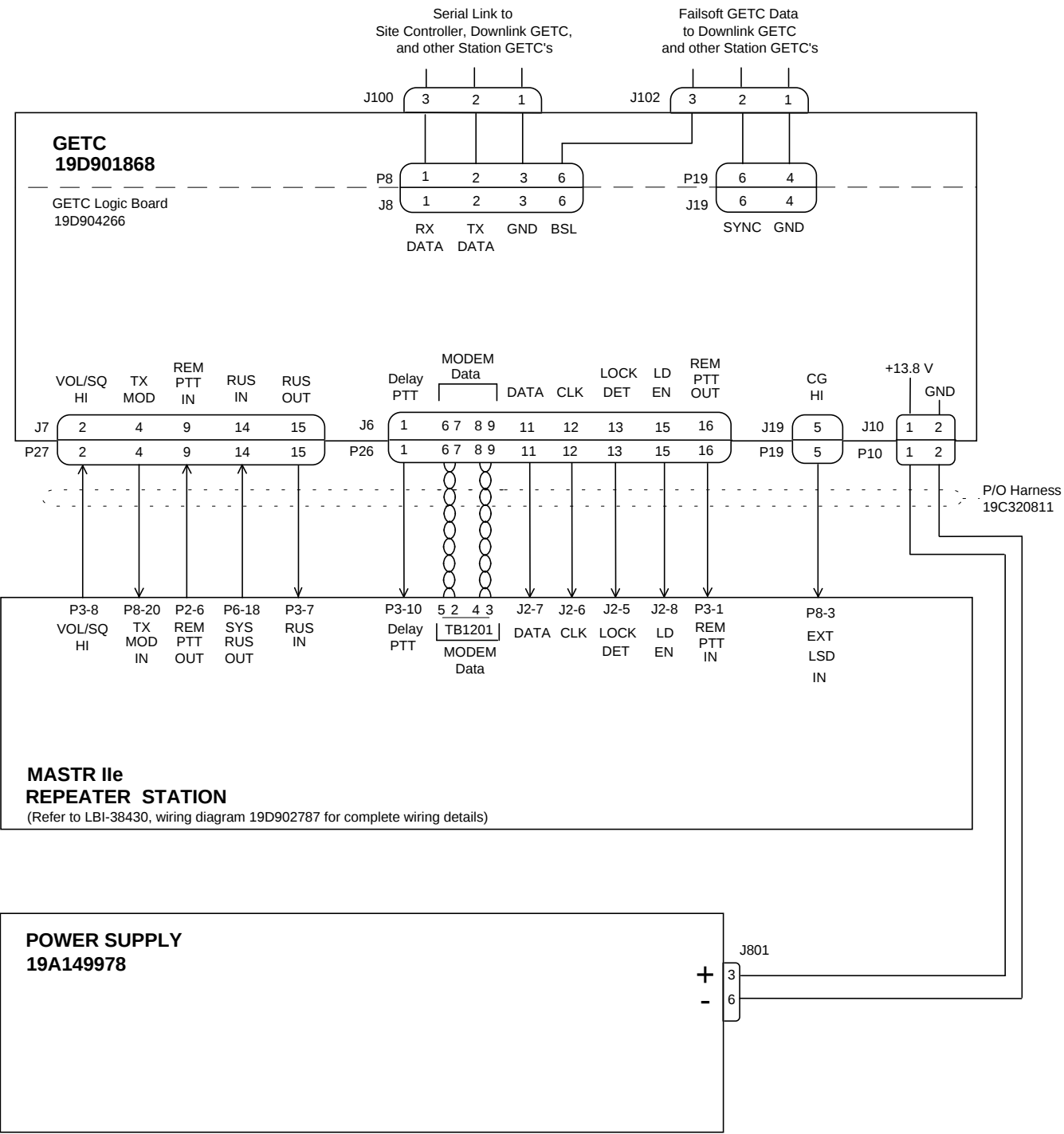
GETC CABLE

19C336863G1

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



MASTR III STATION INTERCONNECT



MASTR IIE STATION INTERCONNECT

APPENDIX A

800 MHZ EDACS APPLICATIONS FREQUENCY SELECTIONS GETC DIP SWITCH SETTINGS

NOTE

For MASTR IIe Only.

For MASTR III set 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
851 MHz			851.5250	0101100	1000	852 MHz		
851.0125	1000111	0000	851.5375	1101100	1000	852.0000	0000001	1000
851.0250	0100111	0000	851.5500	0011100	1000	852.0125	1000001	1000
851.0375	1100111	0000	851.5625	1011100	1000	852.0250	0100001	1000
851.0500	0010111	0000	851.5750	0111100	1000	852.0375	1100001	1000
851.0625	1010111	0000	851.5875	1111100	1000	852.0500	0010001	1000
851.0750	0110111	0000	851.6000	0000010	1000	852.0625	1010001	1000
851.0875	1110111	0000	851.6125	1000010	1000	852.0750	0110001	1000
851.1000	0001111	0000	851.6250	0100010	1000	852.0875	1110001	1000
851.1125	1001111	0000	851.6375	1100010	1000	852.1000	0001001	1000
851.1250	0101111	0000	851.6500	0010010	1000	852.1125	1001001	1000
851.1375	1101111	0000	851.6625	1010010	1000	852.1250	0101001	1000
851.1500	0011111	0000	851.6750	0110010	1000	852.1375	1101001	1000
851.1625	1011111	0000	851.6875	1110010	1000	852.1500	0011001	1000
851.1750	0111111	0000	851.7000	0001010	1000	852.1625	1011001	1000
851.1875	1111111	0000	851.7125	1001010	1000	852.1750	0111001	1000
851.2000	0000000	1000	851.7250	0101010	1000	852.1875	1111001	1000
851.2125	1000000	1000	851.7375	1101010	1000	852.2000	0000101	1000
851.2250	0100000	1000	851.7500	0011010	1000	852.2125	1000101	1000
851.2375	1100000	1000	851.7625	1011010	1000	852.2250	0100101	1000
851.2500	0010000	1000	851.7750	0111010	1000	852.2375	1100101	1000
851.2625	1010000	1000	851.7875	1111010	1000	852.2500	0010101	1000
851.2750	0110000	1000	851.8000	0000110	1000	852.2625	1010101	1000
851.2875	1110000	1000	851.8125	1000110	1000	852.2750	0110101	1000
851.3000	0001000	1000	851.8250	0100110	1000	852.2875	1110101	1000
851.3125	1001000	1000	851.8375	1100110	1000	852.3000	0001101	1000
851.3250	0101000	1000	851.8500	0010110	1000	852.3125	1001101	1000
851.3375	1101000	1000	851.8625	1010110	1000	852.3250	0101101	1000
851.3500	0011000	1000	851.8750	0110110	1000	852.3375	1101101	1000
851.3625	1011000	1000	851.8875	1110110	1000	852.3500	0011101	1000
851.3750	0111000	1000	851.9000	0001110	1000	852.3625	1011101	1000
851.3875	1111000	1000	851.9125	1001110	1000	852.3750	0111101	1000
851.4000	0000100	1000	851.9250	0101110	1000	852.3875	1111101	1000
851.4125	1000100	1000	851.9375	1101110	1000	852.4000	0000011	1000
851.4250	0100100	1000	851.9500	0011110	1000	852.4125	1000011	1000
851.4375	1100100	1000	851.9625	1011110	1000	852.4250	0100011	1000
851.4500	0010100	1000	851.9750	0111110	1000	852.4375	1100011	1000
851.4625	1010100	1000	851.9875	1111110	1000	852.4500	0010011	1000
851.4750	0110100	1000				852.4625	1010011	1000
851.4875	1110100	1000				852.4750	0110011	1000
851.5000	0001100	1000				852.4875	1110011	1000
851.5125	1001100	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.

800 MHZ FREQUENCY SELECTIONS

LBI-38988

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
852.5000	0001011	1000	853 MHz			853.5125	1001110	0100
852.5125	1001011	1000				853.5250	0101110	0100
852.5250	0101011	1000	853.0000	0000100	0100	853.5375	1101110	0100
852.5375	1101011	1000	853.0125	1000100	0100	853.5500	0011110	0100
852.5500	0011011	1000	853.0250	0100100	0100	853.5625	1011110	0100
852.5625	1011011	1000	853.0375	1100100	0100	853.5750	0111110	0100
852.5750	0111011	1000	853.0500	0010100	0100	853.5875	1111110	0100
852.5875	1111011	1000	853.0625	1010100	0100	853.6000	0000001	0100
852.6000	0000111	1000	853.0750	0110100	0100	853.6125	1000001	0100
852.6125	1000111	1000	853.0875	1110100	0100	853.6250	0100001	0100
852.6250	0100111	1000	853.1000	0001100	0100	853.6375	1100001	0100
852.6375	1100111	1000	853.1125	1001100	0100	853.6500	0010001	0100
852.6500	0010111	1000	853.1250	0101100	0100	853.6625	1010001	0100
852.6625	1010111	1000	853.1375	1101100	0100	853.6750	0110001	0100
852.6750	0110111	1000	853.1500	0011100	0100	853.6875	1110001	0100
852.6875	1110111	1000	853.1625	1011100	0100	853.7000	0001001	0100
852.7000	0001111	1000	853.1750	0111100	0100	853.7125	1001001	0100
852.7125	1001111	1000	853.1875	1111100	0100	853.7250	0101001	0100
852.7250	0101111	1000	853.2000	0000010	0100	853.7375	1101001	0100
852.7375	1101111	1000	853.2125	1000010	0100	853.7500	0011001	0100
852.7500	0011111	1000	853.2250	0100010	0100	853.7625	1011001	0100
852.7625	1011111	1000	853.2375	1100010	0100	853.7750	0111001	0100
852.7750	0111111	1000	853.2500	0010010	0100	853.7875	1111001	0100
852.7875	1111111	1000	853.2625	1010010	0100	853.8000	0000101	0100
852.8000	0000000	0100	853.2750	0110010	0100	853.8125	1000101	0100
852.8125	1000000	0100	853.2875	1110010	0100	853.8250	0100101	0100
852.8250	0100000	0100	853.3000	0001010	0100	853.8375	1100101	0100
852.8375	1100000	0100	853.3125	1001010	0100	853.8500	0010101	0100
852.8500	0010000	0100	853.3250	0101010	0100	853.8625	1010101	0100
852.8625	1010000	0100	853.3375	1101010	0100	853.8750	0110101	0100
852.8750	0110000	0100	853.3500	0011010	0100	853.8875	1110101	0100
852.8875	1110000	0100	853.3625	1011010	0100	853.9000	0001101	0100
852.9000	0001000	0100	853.3750	0111010	0100	853.9125	1001101	0100
852.9125	1001000	0100	853.3875	1111010	0100	853.9250	0101101	0100
852.9250	0101000	0100	853.4000	0000110	0100	853.9375	1101101	0100
852.9375	1101000	0100	853.4125	1000110	0100	853.9500	0011101	0100
852.9500	0011000	0100	853.4250	0100110	0100	853.9625	1011101	0100
852.9625	1011000	0100	853.4375	1100110	0100	853.9750	0111101	0100
852.9750	0111000	0100	853.4500	0010110	0100	853.9875	1111101	0100
852.9875	1111000	0100	853.4625	1010110	0100			
			853.4750	0110110	0100			
			853.4875	1110110	0100			
			853.5000	0001110	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
854 MHz			854.5125	1001000	1100	855 MHz		
854.0000	0000011	0100	854.5250	0101000	1100	855.0000	0000110	1100
854.0125	1000011	0100	854.5375	1101000	1100	855.0125	1000110	1100
854.0250	0100011	0100	854.5500	0011000	1100	855.0250	0100110	1100
854.0375	1100011	0100	854.5625	1011000	1100	855.0375	1100110	1100
854.0500	0010011	0100	854.5750	0111000	1100	855.0500	0010110	1100
854.0625	1010011	0100	854.5875	1111000	1100	855.0625	1010110	1100
854.0750	0110011	0100	854.6000	0000100	1100	855.0750	0110110	1100
854.0875	1110011	0100	854.6125	1000100	1100	855.0875	1110110	1100
854.1000	0001011	0100	854.6250	0100100	1100	855.1000	0001110	1100
854.1125	1001011	0100	854.6375	1100100	1100	855.1125	1001110	1100
854.1250	0101011	0100	854.6500	0010100	1100	855.1250	0101110	1100
854.1375	1101011	0100	854.6625	1010100	1100	855.1375	1101110	1100
854.1500	0011011	0100	854.6750	0110100	1100	855.1500	0011110	1100
854.1625	1011011	0100	854.6875	1110100	1100	855.1625	1011110	1100
854.1750	0111011	0100	854.7000	0001100	1100	855.1750	0111110	1100
854.1875	1111011	0100	854.7125	1001100	1100	855.1875	1111110	1100
854.2000	0000111	0100	854.7250	0101100	1100	855.2000	0000001	1100
854.2125	1000111	0100	854.7375	1101100	1100	855.2125	1000001	1100
854.2250	0100111	0100	854.7500	0011100	1100	855.2250	0100001	1100
854.2375	1100111	0100	854.7625	1011100	1100	855.2375	1100001	1100
854.2500	0010111	0100	854.7750	0111100	1100	855.2500	0010001	1100
854.2625	1010111	0100	854.7875	1111100	1100	855.2625	1010001	1100
854.2750	0110111	0100	854.8000	0000010	1100	855.2750	0110001	1100
854.2875	1110111	0100	854.8125	1000010	1100	855.2875	1110001	1100
854.3000	0001111	0100	854.8250	0100010	1100	855.3000	0001001	1100
854.3125	1001111	0100	854.8375	1100010	1100	855.3125	1001001	1100
854.3250	0101111	0100	854.8500	0010010	1100	855.3250	0101001	1100
854.3375	1101111	0100	854.8625	1010010	1100	855.3375	1101001	1100
854.3500	0011111	0100	854.8750	0110010	1100	855.3500	0011001	1100
854.3625	1011111	0100	854.8875	1110010	1100	855.3625	1011001	1100
854.3750	0111111	0100	854.9000	0001010	1100	855.3750	0111001	1100
854.3875	1111111	0100	854.9125	1001010	1100	855.3875	1111001	1100
854.4000	0000000	1100	854.9250	0101010	1100	855.4000	0000101	1100
854.4125	1000000	1100	854.9375	1101010	1100	855.4125	1000101	1100
854.4250	0100000	1100	854.9500	0011010	1100	855.4250	0100101	1100
854.4375	1100000	1100	854.9625	1011010	1100	855.4375	1100101	1100
854.4500	0010000	1100	854.9750	0111010	1100	855.4500	0010101	1100
854.4625	1010000	1100	854.9875	1111010	1100	855.4625	1010101	1100
854.4750	0110000	1100				855.4750	0110101	1100
854.4875	1110000	1100				855.4875	1110101	1100
854.5000	0001000	1100				855.5000	0001101	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.

800 MHZ FREQUENCY SELECTIONS

LBI-38988

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
855.5125	1001101	1100	856 MHz			856.5125	1001010	0010
855.5250	0101101	1100				856.5250	0101010	0010
855.5375	1101101	1100		856.0000	0000000 0010	856.5375	1101010	0010
855.5500	0011101	1100		856.0125	1000000 0010	856.5500	0011010	0010
855.5625	1011101	1100		856.0250	0100000 0010	856.5625	1011010	0010
855.5750	0111101	1100		856.0375	1100000 0010	856.5750	0111010	0010
855.5875	1111101	1100		856.0500	0010000 0010	856.5875	1111010	0010
855.6000	0000011	1100		856.0625	1010000 0010	856.6000	0000110	0010
855.6125	1000011	1100		856.0750	0110000 0010	856.6125	1000110	0010
855.6250	0100011	1100		856.0875	1110000 0010	856.6250	0100110	0010
855.6375	1100011	1100		856.1000	0001000 0010	856.6375	1100110	0010
855.6500	0010011	1100		856.1125	1001000 0010	856.6500	0010110	0010
855.6625	1010011	1100		856.1250	0101000 0010	856.6625	1010110	0010
855.6750	0110011	1100		856.1375	1101000 0010	856.6750	0110110	0010
855.6875	1110011	1100		856.1500	0011000 0010	856.6875	1110110	0010
855.7000	0001011	1100		856.1625	1011000 0010	856.7000	0001110	0010
855.7125	1001011	1100		856.1750	0111000 0010	856.7125	1001110	0010
855.7250	0101011	1100		856.1875	1111000 0010	856.7250	0101110	0010
855.7375	1101011	1100		856.2000	0000100 0010	856.7375	1101110	0010
855.7500	0011011	1100		856.2125	1000100 0010	856.7500	0011110	0010
855.7625	1011011	1100		856.2250	0100100 0010	856.7625	1011110	0010
855.7750	0111011	1100		856.2375	1100100 0010	856.7750	0111110	0010
855.7875	1111011	1100		856.2500	0010100 0010	856.7875	1111110	0010
855.8000	0000111	1100		856.2625	1010100 0010	856.8000	0000001	0010
855.8125	1000111	1100		856.2750	0110100 0010	856.8125	1000001	0010
855.8250	0100111	1100		856.2875	1110100 0010	856.8250	0100001	0010
855.8375	1100111	1100		856.3000	0001100 0010	856.8375	1100001	0010
855.8500	0010111	1100		856.3125	1001100 0010	856.8500	0010001	0010
855.8625	1010111	1100		856.3250	0101100 0010	856.8625	1010001	0010
855.8750	0110111	1100		856.3375	1101100 0010	856.8750	0110001	0010
855.8875	1110111	1100		856.3500	0011100 0010	856.8875	1110001	0010
855.9000	0001111	1100		856.3625	1011100 0010	856.9000	0001001	0010
855.9125	1001111	1100		856.3750	0111100 0010	856.9125	1001001	0010
855.9250	0101111	1100		856.3875	1111100 0010	856.9250	0101001	0010
855.9375	1101111	1100		856.4000	0000010 0010	856.9375	1101001	0010
855.9500	0011111	1100		856.4125	1000010 0010	856.9500	0011001	0010
855.9625	1011111	1100		856.4250	0100010 0010	856.9625	1011001	0010
855.9750	0111111	1100		856.4375	1100010 0010	856.9750	0111001	0010
855.9875	1111111	1100		856.4500	0010010 0010	856.9875	1111001	0010
				856.4625	1010010 0010			
				856.4750	0110010 0010			
				856.4875	1110010 0010			
				856.5000	0001010 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	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
857 MHz			857.5125	1001111	0010	858 MHz		
857.0000	0000101	0010	857.5250	0101111	0010	858.0000	0000010	1010
857.0125	1000101	0010	857.5375	1101111	0010	858.0125	1000010	1010
857.0250	0100101	0010	857.5500	0011111	0010	858.0250	0100010	1010
857.0375	1100101	0010	857.5625	1011111	0010	858.0375	1100010	1010
857.0500	0010101	0010	857.5750	0111111	0010	858.0500	0010010	1010
857.0625	1010101	0010	857.5875	1111111	0010	858.0625	1010010	1010
857.0750	0110101	0010	857.6000	0000000	1010	858.0750	0110010	1010
857.0875	1110101	0010	857.6125	1000000	1010	858.0875	1110010	1010
857.1000	0001101	0010	857.6250	0100000	1010	858.1000	0001010	1010
857.1125	1001101	0010	857.6375	1100000	1010	858.1125	1001010	1010
857.1250	0101101	0010	857.6500	0010000	1010	858.1250	0101010	1010
857.1375	1101101	0010	857.6625	1010000	1010	858.1375	1101010	1010
857.1500	0011101	0010	857.6750	0110000	1010	858.1500	0011010	1010
857.1625	1011101	0010	857.6875	1110000	1010	858.1625	1011010	1010
857.1750	0111101	0010	857.7000	0001000	1010	858.1750	0111010	1010
857.1875	1111101	0010	857.7125	1001000	1010	858.1875	1111010	1010
857.2000	0000011	0010	857.7250	0101000	1010	858.2000	0000110	1010
857.2125	1000011	0010	857.7375	1101000	1010	858.2125	1000110	1010
857.2250	0100011	0010	857.7500	0011000	1010	858.2250	0100110	1010
857.2375	1100011	0010	857.7625	1011000	1010	858.2375	1100110	1010
857.2500	0010011	0010	857.7750	0111000	1010	858.2500	0010110	1010
857.2625	1010011	0010	857.7875	1111000	1010	858.2625	1010110	1010
857.2750	0110011	0010	857.8000	0000100	1010	858.2750	0110110	1010
857.2875	1110011	0010	857.8125	1000100	1010	858.2875	1110110	1010
857.3000	0001011	0010	857.8250	0100100	1010	858.3000	0001110	1010
857.3125	1001011	0010	857.8375	1100100	1010	858.3125	1001110	1010
857.3250	0101011	0010	857.8500	0010100	1010	858.3250	0101110	1010
857.3375	1101011	0010	857.8625	1010100	1010	858.3375	1101110	1010
857.3500	0011011	0010	857.8750	0110100	1010	858.3500	0011110	1010
857.3625	1011011	0010	857.8875	1110100	1010	858.3625	1011110	1010
857.3750	0111011	0010	857.9000	0001100	1010	858.3750	0111110	1010
857.3875	1111011	0010	857.9125	1001100	1010	858.3875	1111110	1010
857.4000	0000111	0010	857.9250	0101100	1010	858.4000	0000001	1010
857.4125	1000111	0010	857.9375	1101100	1010	858.4125	1000001	1010
857.4250	0100111	0010	857.9500	0011100	1010	858.4250	0100001	1010
857.4375	1100111	0010	857.9625	1011100	1010	858.4375	1100001	1010
857.4500	0010111	0010	857.9750	0111100	1010	858.4500	0010001	1010
857.4625	1010111	0010	857.9875	1111100	1010	858.4625	1010001	1010
857.4750	0110111	0010				858.4750	0110001	1010
857.4875	1110111	0010				858.4875	1110001	1010
857.5000	0001111	0010				858.5000	0001001	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.

800 MHZ FREQUENCY SELECTIONS

LBI-38988

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
858.5125	1001001	1010	859 MHz			859.5125	1001100	0110
858.5250	0101001	1010				859.5250	0101100	0110
858.5375	1101001	1010		859.0000	0000111 1010	859.5375	1101100	0110
858.5500	0011001	1010		859.0125	1000111 1010	859.5500	0011100	0110
858.5625	1011001	1010		859.0250	0100111 1010	859.5625	1011100	0110
858.5750	0111001	1010		859.0375	1100111 1010	859.5750	0111100	0110
858.5875	1111001	1010		859.0500	0010111 1010	859.5875	1111100	0110
858.6000	0000101	1010		859.0625	1010111 1010	859.6000	0000010	0110
858.6125	1000101	1010		859.0750	0110111 1010	859.6125	1000010	0110
858.6250	0100101	1010		859.0875	1110111 1010	859.6250	0100010	0110
858.6375	1100101	1010		859.1000	0001111 1010	859.6375	1100010	0110
858.6500	0010101	1010		859.1125	1001111 1010	859.6500	0010010	0110
858.6625	1010101	1010		859.1250	0101111 1010	859.6625	1010010	0110
858.6750	0110101	1010		859.1375	1101111 1010	859.6750	0110010	0110
858.6875	1110101	1010		859.1500	0011111 1010	859.6875	1110010	0110
858.7000	0001101	1010		859.1625	1011111 1010	859.7000	0001010	0110
858.7125	1001101	1010		859.1750	0111111 1010	859.7125	1001010	0110
858.7250	0101101	1010		859.1875	1111111 1010	859.7250	0101010	0110
858.7375	1101101	1010		859.2000	0000000 0110	859.7375	1101010	0110
858.7500	0011101	1010		859.2125	1000000 0110	859.7500	0011010	0110
858.7625	1011101	1010		859.2250	0100000 0110	859.7625	1011010	0110
858.7750	0111101	1010		859.2375	1100000 0110	859.7750	0111010	0110
858.7875	1111101	1010		859.2500	0010000 0110	859.7875	1111010	0110
858.8000	0000011	1010		859.2625	1010000 0110	859.8000	0000110	0110
858.8125	1000011	1010		859.2750	0110000 0110	859.8125	1000110	0110
858.8250	0100011	1010		859.2875	1110000 0110	859.8250	0100110	0110
858.8375	1100011	1010		859.3000	0001000 0110	859.8375	1100110	0110
858.8500	0010011	1010		859.3125	1001000 0110	859.8500	0010110	0110
858.8625	1010011	1010		859.3250	0101000 0110	859.8625	1010110	0110
858.8750	0110011	1010		859.3375	1101000 0110	859.8750	0110110	0110
858.8875	1110011	1010		859.3500	0011000 0110	859.8875	1110110	0110
858.9000	0001011	1010		859.3625	1011000 0110	859.9000	0001110	0110
858.9125	1001011	1010		859.3750	0111000 0110	859.9125	1001110	0110
858.9250	0101011	1010		859.3875	1111000 0110	859.9250	0101110	0110
858.9375	1101011	1010		859.4000	0000100 0110	859.9375	1101110	0110
858.9500	0011011	1010		859.4125	1000100 0110	859.9500	0011110	0110
858.9625	1011011	1010		859.4250	0100100 0110	859.9625	1011110	0110
858.9750	0111011	1010		859.4375	1100100 0110	859.9750	0111110	0110
858.9875	1111011	1010		859.4500	0010100 0110	859.9875	1111110	0110
				859.4625	1010100 0110			
				859.4750	0110100 0110			
				859.4875	1110100 0110			
				859.5000	0001100 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	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
860 MHz			860.5125	1001011	0110	861 MHz		
860.0000	0000001	0110	860.5250	0101011	0110	861.0000	0000100	1110
860.0125	1000001	0110	860.5375	1101011	0110	861.0125	1000100	1110
860.0250	0100001	0110	860.5500	0011011	0110	861.0250	0100100	1110
860.0375	1100001	0110	860.5625	1011011	0110	861.0375	1100100	1110
860.0500	0010001	0110	860.5750	0111011	0110	861.0500	0010100	1110
860.0625	1010001	0110	860.5875	1111011	0110	861.0625	1010100	1110
860.0750	0110001	0110	860.6000	0000111	0110	861.0750	0110100	1110
860.0875	1110001	0110	860.6125	1000111	0110	861.0875	1110100	1110
860.1000	0001001	0110	860.6250	0100111	0110	861.1000	0001100	1110
860.1125	1001001	0110	860.6375	1100111	0110	861.1125	1001100	1110
860.1250	0101001	0110	860.6500	0010111	0110	861.1250	0101100	1110
860.1375	1101001	0110	860.6625	1010111	0110	861.1375	1101100	1110
860.1500	0011001	0110	860.6750	0110111	0110	861.1500	0011100	1110
860.1625	1011001	0110	860.6875	1110111	0110	861.1625	1011100	1110
860.1750	0111001	0110	860.7000	0001111	0110	861.1750	0111100	1110
860.1875	1111001	0110	860.7125	1001111	0110	861.1875	1111100	1110
860.2000	0000101	0110	860.7250	0101111	0110	861.2000	0000010	1110
860.2125	1000101	0110	860.7375	1101111	0110	861.2125	1000010	1110
860.2250	0100101	0110	860.7500	0011111	0110	861.2250	0100010	1110
860.2375	1100101	0110	860.7625	1011111	0110	861.2375	1100010	1110
860.2500	0010101	0110	860.7750	0111111	0110	861.2500	0010010	1110
860.2625	1010101	0110	860.7875	1111111	0110	861.2625	1010010	1110
860.2750	0110101	0110	860.8000	0000000	1110	861.2750	0110010	1110
860.2875	1110101	0110	860.8125	1000000	1110	861.2875	1110010	1110
860.3000	0001101	0110	860.8250	0100000	1110	861.3000	0001010	1110
860.3125	1001101	0110	860.8375	1100000	1110	861.3125	1001010	1110
860.3250	0101101	0110	860.8500	0010000	1110	861.3250	0101010	1110
860.3375	1101101	0110	860.8625	1010000	1110	861.3375	1101010	1110
860.3500	0011101	0110	860.8750	0110000	1110	861.3500	0011010	1110
860.3625	1011101	0110	860.8875	1110000	1110	861.3625	1011010	1110
860.3750	0111101	0110	860.9000	0001000	1110	861.3750	0111010	1110
860.3875	1111101	0110	860.9125	1001000	1110	861.3875	1111010	1110
860.4000	0000011	0110	860.9250	0101000	1110	861.4000	0000110	1110
860.4125	1000011	0110	860.9375	1101000	1110	861.4125	1000110	1110
860.4250	0100011	0110	860.9500	0011000	1110	861.4250	0100110	1110
860.4375	1100011	0110	860.9625	1011000	1110	861.4375	1100110	1110
860.4500	0010011	0110	860.9750	0111000	1110	861.4500	0010110	1110
860.4625	1010011	0110	860.9875	1111000	1110	861.4625	1010110	1110
860.4750	0110011	0110				861.4750	0110110	1110
860.4875	1110011	0110				861.4875	1110110	1110
860.5000	0001011	0110				861.5000	0001110	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.

800 MHZ FREQUENCY SELECTIONS

LBI-38988

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
861.5125	1001110	1110	862 MHz			862.5125	1001000	0001
861.5250	0101110	1110				862.5250	0101000	0001
861.5375	1101110	1110	862.0000	0000011	1110	862.5375	1101000	0001
861.5500	0011110	1110	862.0125	1000011	1110	862.5500	0011000	0001
861.5625	1011110	1110	862.0250	0100011	1110	862.5625	1011000	0001
861.5750	0111110	1110	862.0375	1100011	1110	862.5750	0111000	0001
861.5875	1111110	1110	862.0500	0010011	1110	862.5875	1111000	0001
861.6000	0000001	1110	862.0625	1010011	1110	862.6000	0000100	0001
861.6125	1000001	1110	862.0750	0110011	1110	862.6125	1000100	0001
861.6250	0100001	1110	862.0875	1110011	1110	862.6250	0100100	0001
861.6375	1100001	1110	862.1000	0001011	1110	862.6375	1100100	0001
861.6500	0010001	1110	862.1125	1001011	1110	862.6500	0010100	0001
861.6625	1010001	1110	862.1250	0101011	1110	862.6625	1010100	0001
861.6750	0110001	1110	862.1375	1101011	1110	862.6750	0110100	0001
861.6875	1110001	1110	862.1500	0011011	1110	862.6875	1110100	0001
861.7000	0001001	1110	862.1625	1011011	1110	862.7000	0001100	0001
861.7125	1001001	1110	862.1750	0111011	1110	862.7125	1001100	0001
861.7250	0101001	1110	862.1875	1111011	1110	862.7250	0101100	0001
861.7375	1101001	1110	862.2000	0000111	1110	862.7375	1101100	0001
861.7500	0011001	1110	862.2125	1000111	1110	862.7500	0011100	0001
861.7625	1011001	1110	862.2250	0100111	1110	862.7625	1011100	0001
861.7750	0111001	1110	862.2375	1100111	1110	862.7750	0111100	0001
861.7875	1111001	1110	862.2500	0010111	1110	862.7875	1111100	0001
861.8000	0000101	1110	862.2625	1010111	1110	862.8000	0000010	0001
861.8125	1000101	1110	862.2750	0110111	1110	862.8125	1000010	0001
861.8250	0100101	1110	862.2875	1110111	1110	862.8250	0100010	0001
861.8375	1100101	1110	862.3000	0001111	1110	862.8375	1100010	0001
861.8500	0010101	1110	862.3125	1001111	1110	862.8500	0010010	0001
861.8625	1010101	1110	862.3250	0101111	1110	862.8625	1010010	0001
861.8750	0110101	1110	862.3375	1101111	1110	862.8750	0110010	0001
861.8875	1110101	1110	862.3500	0011111	1110	862.8875	1110010	0001
861.9000	0001101	1110	862.3625	1011111	1110	862.9000	0001010	0001
861.9125	1001101	1110	862.3750	0111111	1110	862.9125	1001010	0001
861.9250	0101101	1110	862.3875	1111111	1110	862.9250	0101010	0001
861.9375	1101101	1110	862.4000	0000000	0001	862.9375	1101010	0001
861.9500	0011101	1110	862.4125	1000000	0001	862.9500	0011010	0001
861.9625	1011101	1110	862.4250	0100000	0001	862.9625	1011010	0001
861.9750	0111101	1110	862.4375	1100000	0001	862.9750	0111010	0001
861.9875	1111101	1110	862.4500	0010000	0001	862.9875	1111010	0001
			862.4625	1010000	0001			
			862.4750	0110000	0001			
			862.4875	1110000	0001			
			862.5000	0001000	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.

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
863 MHz			863.5125	1001101	0001	864 MHz		
863.0000	0000110	0001	863.5250	0101101	0001	864.0000	0000000	1001
863.0125	1000110	0001	863.5375	1101101	0001	864.0125	1000000	1001
863.0250	0100110	0001	863.5500	0011101	0001	864.0250	0100000	1001
863.0375	1100110	0001	863.5625	1011101	0001	864.0375	1100000	1001
863.0500	0010110	0001	863.5750	0111101	0001	864.0500	0010000	1001
863.0625	1010110	0001	863.5875	1111101	0001	864.0625	1010000	1001
863.0750	0110110	0001	863.6000	0000011	0001	864.0750	0110000	1001
863.0875	1110110	0001	863.6125	1000011	0001	864.0875	1110000	1001
863.1000	0001110	0001	863.6250	0100011	0001	864.1000	0001000	1001
863.1125	1001110	0001	863.6375	1100011	0001	864.1125	1001000	1001
863.1250	0101110	0001	863.6500	0010011	0001	864.1250	0101000	1001
863.1375	1101110	0001	863.6625	1010011	0001	864.1375	1101000	1001
863.1500	0011110	0001	863.6750	0110011	0001	864.1500	0011000	1001
863.1625	1011110	0001	863.6875	1110011	0001	864.1625	1011000	1001
863.1750	0111110	0001	863.7000	0001011	0001	864.1750	0111000	1001
863.1875	1111110	0001	863.7125	1001011	0001	864.1875	1111000	1001
863.2000	0000001	0001	863.7250	0101011	0001	864.2000	0000100	1001
863.2125	1000001	0001	863.7375	1101011	0001	864.2125	1000100	1001
863.2250	0100001	0001	863.7500	0011011	0001	864.2250	0100100	1001
863.2375	1100001	0001	863.7625	1011011	0001	864.2375	1100100	1001
863.2500	0010001	0001	863.7750	0111011	0001	864.2500	0010100	1001
863.2625	1010001	0001	863.7875	1111011	0001	864.2625	1010100	1001
863.2750	0110001	0001	863.8000	0000111	0001	864.2750	0110100	1001
863.2875	1110001	0001	863.8125	1000111	0001	864.2875	1110100	1001
863.3000	0001001	0001	863.8250	0100111	0001	864.3000	0001100	1001
863.3125	1001001	0001	863.8375	1100111	0001	864.3125	1001100	1001
863.3250	0101001	0001	863.8500	0010111	0001	864.3250	0101100	1001
863.3375	1101001	0001	863.8625	1010111	0001	864.3375	1101100	1001
863.3500	0011001	0001	863.8750	0110111	0001	864.3500	0011100	1001
863.3625	1011001	0001	863.8875	1110111	0001	864.3625	1011100	1001
863.3750	0111001	0001	863.9000	0001111	0001	864.3750	0111100	1001
863.3875	1111001	0001	863.9125	1001111	0001	864.3875	1111100	1001
863.4000	0000101	0001	863.9250	0101111	0001	864.4000	0000010	1001
863.4125	1000101	0001	863.9375	1101111	0001	864.4125	1000010	1001
863.4250	0100101	0001	863.9500	0011111	0001	864.4250	0100010	1001
863.4375	1100101	0001	863.9625	1011111	0001	864.4375	1100010	1001
863.4500	0010101	0001	863.9750	0111111	0001	864.4500	0010010	1001
863.4625	1010101	0001	863.9875	1111111	0001	864.4625	1010010	1001
863.4750	0110101	0001				864.4750	0110010	1001
863.4875	1110101	0001				864.4875	1110010	1001
863.5000	0001101	0001				864.5000	0001010	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.

800 MHZ FREQUENCY SELECTIONS

LBI-38988

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
864.5125	1001010	1001	865 MHz			865.5125	1001111	1001
864.5250	0101010	1001				865.5250	0101111	1001
864.5375	1101010	1001		865.0000	0000101 1001	865.5375	1101111	1001
864.5500	0011010	1001		865.0125	1000101 1001	865.5500	0011111	1001
864.5625	1011010	1001		865.0250	0100101 1001	865.5625	1011111	1001
864.5750	0111010	1001		865.0375	1100101 1001	865.5750	0111111	1001
864.5875	1111010	1001		865.0500	0010101 1001	865.5875	1111111	1001
864.6000	0000110	1001		865.0625	1010101 1001	865.6000	0000000	0101
864.6125	1000110	1001		865.0750	0110101 1001	865.6125	1000000	0101
864.6250	0100110	1001		865.0875	1110101 1001	865.6250	0100000	0101
864.6375	1100110	1001		865.1000	0001101 1001	865.6375	1100000	0101
864.6500	0010110	1001		865.1125	1001101 1001	865.6500	0010000	0101
864.6625	1010110	1001		865.1250	0101101 1001	865.6625	1010000	0101
864.6750	0110110	1001		865.1375	1101101 1001	865.6750	0110000	0101
864.6875	1110110	1001		865.1500	0011101 1001	865.6875	1110000	0101
864.7000	0001110	1001		865.1625	1011101 1001	865.7000	0001000	0101
864.7125	1001110	1001		865.1750	0111101 1001	865.7125	1001000	0101
864.7250	0101110	1001		865.1875	1111101 1001	865.7250	0101000	0101
864.7375	1101110	1001		865.2000	0000011 1001	865.7375	1101000	0101
864.7500	0011110	1001		865.2125	1000011 1001	865.7500	0011000	0101
864.7625	1011110	1001		865.2250	0100011 1001	865.7625	1011000	0101
864.7750	0111110	1001		865.2375	1100011 1001	865.7750	0111000	0101
864.7875	1111110	1001		865.2500	0010011 1001	865.7875	1111000	0101
864.8000	0000001	1001		865.2625	1010011 1001	865.8000	0000100	0101
864.8125	1000001	1001		865.2750	0110011 1001	865.8125	1000100	0101
864.8250	0100001	1001		865.2875	1110011 1001	865.8250	0100100	0101
864.8375	1100001	1001		865.3000	0001011 1001	865.8375	1100100	0101
864.8500	0010001	1001		865.3125	1001011 1001	865.8500	0010100	0101
864.8625	1010001	1001		865.3250	0101011 1001	865.8625	1010100	0101
864.8750	0110001	1001		865.3375	1101011 1001	865.8750	0110100	0101
864.8875	1110001	1001		865.3500	0011011 1001	865.8875	1110100	0101
864.9000	0001001	1001		865.3625	1011011 1001	865.9000	0001100	0101
864.9125	1001001	1001		865.3750	0111011 1001	865.9125	1001100	0101
864.9250	0101001	1001		865.3875	1111011 1001	865.9250	0101100	0101
864.9375	1101001	1001		865.4000	0000111 1001	865.9375	1101100	0101
864.9500	0011001	1001		865.4125	1000111 1001	865.9500	0011100	0101
864.9625	1011001	1001		865.4250	0100111 1001	865.9625	1011100	0101
864.9750	0111001	1001		865.4375	1100111 1001	865.9750	0111100	0101
864.9875	1111001	1001		865.4500	0010111 1001	865.9875	1111100	0101
				865.4625	1010111 1001			
				865.4750	0110111 1001			
				865.4875	1110111 1001			
				865.5000	0001111 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
866 MHz			866.5125	1001001	0101	867 MHz		
866.0000	0000010	0101	866.5250	0101001	0101	867.0000	0000111	0101
866.0125	1000010	0101	866.5375	1101001	0101	867.0125	1000111	0101
866.0250	0100010	0101	866.5500	0011001	0101	867.0250	0100111	0101
866.0375	1100010	0101	866.5625	1011001	0101	867.0375	1100111	0101
866.0500	0010010	0101	866.5750	0111001	0101	867.0500	0010111	0101
866.0625	1010010	0101	866.5875	1111001	0101	867.0625	1010111	0101
866.0750	0110010	0101	866.6000	0000101	0101	867.0750	0110111	0101
866.0875	1110010	0101	866.6125	1000101	0101	867.0875	1110111	0101
866.1000	0001010	0101	866.6250	0100101	0101	867.1000	0001111	0101
866.1125	1001010	0101	866.6375	1100101	0101	867.1125	1001111	0101
866.1250	0101010	0101	866.6500	0010101	0101	867.1250	0101111	0101
866.1375	1101010	0101	866.6625	1010101	0101	867.1375	1101111	0101
866.1500	0011010	0101	866.6750	0110101	0101	867.1500	0011111	0101
866.1625	1011010	0101	866.6875	1110101	0101	867.1625	1011111	0101
866.1750	0111010	0101	866.7000	0001101	0101	867.1750	0111111	0101
866.1875	1111010	0101	866.7125	1001101	0101	867.1875	1111111	0101
866.2000	0000110	0101	866.7250	0101101	0101	867.2000	0000000	1101
866.2125	1000110	0101	866.7375	1101101	0101	867.2125	1000000	1101
866.2250	0100110	0101	866.7500	0011101	0101	867.2250	0100000	1101
866.2375	1100110	0101	866.7625	1011101	0101	867.2375	1100000	1101
866.2500	0010110	0101	866.7750	0111101	0101	867.2500	0010000	1101
866.2625	1010110	0101	866.7875	1111101	0101	867.2625	1010000	1101
866.2750	0110110	0101	866.8000	0000011	0101	867.2750	0110000	1101
866.2875	1110110	0101	866.8125	1000011	0101	867.2875	1110000	1101
866.3000	0001110	0101	866.8250	0100011	0101	867.3000	0001000	1101
866.3125	1001110	0101	866.8375	1100011	0101	867.3125	1001000	1101
866.3250	0101110	0101	866.8500	0010011	0101	867.3250	0101000	1101
866.3375	1101110	0101	866.8625	1010011	0101	867.3375	1101000	1101
866.3500	0011110	0101	866.8750	0110011	0101	867.3500	0011000	1101
866.3625	1011110	0101	866.8875	1110011	0101	867.3625	1011000	1101
866.3750	0111110	0101	866.9000	0001011	0101	867.3750	0111000	1101
866.3875	1111110	0101	866.9125	1001011	0101	867.3875	1111000	1101
866.4000	0000001	0101	866.9250	0101011	0101	867.4000	0000100	1101
866.4125	1000001	0101	866.9375	1101011	0101	867.4125	1000100	1101
866.4250	0100001	0101	866.9500	0011011	0101	867.4250	0100100	1101
866.4375	1100001	0101	866.9625	1011011	0101	867.4375	1100100	1101
866.4500	0010001	0101	866.9750	0111011	0101	867.4500	0010100	1101
866.4625	1010001	0101	866.9875	1111011	0101	867.4625	1010100	1101
866.4750	0110001	0101				867.4750	0110100	1101
866.4875	1110001	0101				867.4875	1110100	1101
866.5000	0001001	0101				867.5000	0001100	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.

800 MHZ FREQUENCY SELECTIONS

LBI-38988

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
867.5125	1001100	1101	868 MHz			868.5125	1001011	1101
867.5250	0101100	1101				868.5250	0101011	1101
867.5375	1101100	1101		868.0000	0000001 1101	868.5375	1101011	1101
867.5500	0011100	1101		868.0125	1000001 1101	868.5500	0011011	1101
867.5625	1011100	1101		868.0250	0100001 1101	868.5625	1011011	1101
867.5750	0111100	1101		868.0375	1100001 1101	868.5750	0111011	1101
867.5875	1111100	1101		868.0500	0010001 1101	868.5875	1111011	1101
867.6000	0000010	1101		868.0625	1010001 1101	868.6000	0000111	1101
867.6125	1000010	1101		868.0750	0110001 1101	868.6125	1000111	1101
867.6250	0100010	1101		868.0875	1110001 1101	868.6250	0100111	1101
867.6375	1100010	1101		868.1000	0001001 1101	868.6375	1100111	1101
867.6500	0010010	1101		868.1125	1001001 1101	868.6500	0010111	1101
867.6625	1010010	1101		868.1250	0101001 1101	868.6625	1010111	1101
867.6750	0110010	1101		868.1375	1101001 1101	868.6750	0110111	1101
867.6875	1110010	1101		868.1500	0011001 1101	868.6875	1110111	1101
867.7000	0001010	1101		868.1625	1011001 1101	868.7000	0001111	1101
867.7125	1001010	1101		868.1750	0111001 1101	868.7125	1001111	1101
867.7250	0101010	1101		868.1875	1111001 1101	868.7250	0101111	1101
867.7375	1101010	1101		868.2000	0000101 1101	868.7375	1101111	1101
867.7500	0011010	1101		868.2125	1000101 1101	868.7500	0011111	1101
867.7625	1011010	1101		868.2250	0100101 1101	868.7625	1011111	1101
867.7750	0111010	1101		868.2375	1100101 1101	868.7750	0111111	1101
867.7875	1111010	1101		868.2500	0010101 1101	868.7875	1111111	1101
867.8000	0000110	1101		868.2625	1010101 1101	868.8000	0000000	0011
867.8125	1000110	1101		868.2750	0110101 1101	868.8125	1000000	0011
867.8250	0100110	1101		868.2875	1110101 1101	868.8250	0100000	0011
867.8375	1100110	1101		868.3000	0001101 1101	868.8375	1100000	0011
867.8500	0010110	1101		868.3125	1001101 1101	868.8500	0010000	0011
867.8625	1010110	1101		868.3250	0101101 1101	868.8625	1010000	0011
867.8750	0110110	1101		868.3375	1101101 1101	868.8750	0110000	0011
867.8875	1110110	1101		868.3500	0011101 1101	868.8875	1110000	0011
867.9000	0001110	1101		868.3625	1011101 1101	868.9000	0001000	0011
867.9125	1001110	1101		868.3750	0111101 1101	868.9125	1001000	0011
867.9250	0101110	1101		868.3875	1111101 1101	868.9250	0101000	0011
867.9375	1101110	1101		868.4000	0000011 1101	868.9375	1101000	0011
867.9500	0011110	1101		868.4125	1000011 1101	868.9500	0011000	0011
867.9625	1011110	1101		868.4250	0100011 1101	868.9625	1011000	0011
867.9750	0111110	1101		868.4375	1100011 1101	868.9750	0111000	0011
867.9875	1111110	1101		868.4500	0010011 1101	868.9875	1111000	0011
				868.4625	1010011 1101			
				868.4750	0110011 1101			
				868.4875	1110011 1101			
				868.5000	0001011 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	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
869 MHz			869.5125	1001110	0011			
869.0000	0000100	0011	869.5250	0101110	0011			
869.0125	1000100	0011	869.5375	1101110	0011			
869.0250	0100100	0011	869.5500	0011110	0011			
869.0375	1100100	0011	869.5625	1011110	0011			
869.0500	0010100	0011	869.5750	0111110	0011			
869.0625	1010100	0011	869.5875	1111110	0011			
869.0750	0110100	0011	869.6000	0000001	0011			
869.0875	1110100	0011	869.6125	1000001	0011			
869.1000	0001100	0011	869.6250	0100001	0011			
869.1125	1001100	0011	869.6375	1100001	0011			
869.1250	0101100	0011	869.6500	0010001	0011			
869.1375	1101100	0011	869.6625	1010001	0011			
869.1500	0011100	0011	869.6750	0110001	0011			
869.1625	1011100	0011	869.6875	1110001	0011			
869.1750	0111100	0011	869.7000	0001001	0011			
869.1875	1111100	0011	869.7125	1001001	0011			
869.2000	0000010	0011	869.7250	0101001	0011			
869.2125	1000010	0011	869.7375	1101001	0011			
869.2250	0100010	0011	869.7500	0011001	0011			
869.2375	1100010	0011	869.7625	1011001	0011			
869.2500	0010010	0011	869.7750	0111001	0011			
869.2625	1010010	0011	869.7875	1111001	0011			
869.2750	0110010	0011	869.8000	0000101	0011			
869.2875	1110010	0011	869.8125	1000101	0011			
869.3000	0001010	0011	869.8250	0100101	0011			
869.3125	1001010	0011	869.8375	1100101	0011			
869.3250	0101010	0011	869.8500	0010101	0011			
869.3375	1101010	0011	869.8625	1010101	0011			
869.3500	0011010	0011	869.8750	0110101	0011			
869.3625	1011010	0011	869.8875	1110101	0011			
869.3750	0111010	0011	869.9000	0001101	0011			
869.3875	1111010	0011	869.9125	1001101	0011			
869.4000	0000110	0011	869.9250	0101101	0011			
869.4125	1000110	0011	869.9375	1101101	0011			
869.4250	0100110	0011	869.9500	0011101	0011			
869.4375	1100110	0011	869.9625	1011101	0011			
869.4500	0010110	0011	869.9750	0111101	0011			
869.4625	1010110	0011	869.9875	1111101	0011			
869.4750	0110110	0011						
869.4875	1110110	0011						
869.5000	0001110	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 IIe Only.

For MASTR III set 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
935 MHz			935.5250	0101010	0000	936 MHz		
935.0125	1000000	0000	935.5375	1101010	0000	936.0000	0000101	0000
935.0250	0100000	0000	935.5500	0011010	0000	936.0125	1000101	0000
935.0375	1100000	0000	935.5625	1011010	0000	936.0250	0100101	0000
935.0500	0010000	0000	935.5750	0111010	0000	936.0375	1100101	0000
935.0625	1010000	0000	935.5875	1111010	0000	936.0500	0010101	0000
935.0750	0110000	0000	935.6000	0000110	0000	936.0625	1010101	0000
935.0875	1110000	0000	935.6125	1000110	0000	936.0750	0110101	0000
935.1000	0001000	0000	935.6250	0100110	0000	936.0875	1110101	0000
935.1125	1001000	0000	935.6375	1100110	0000	936.1000	0001101	0000
935.1250	0101000	0000	935.6500	0010110	0000	936.1125	1001101	0000
935.1375	1101000	0000	935.6625	1010110	0000	936.1250	0101101	0000
935.1500	0011000	0000	935.6750	0110110	0000	936.1375	1101101	0000
935.1625	1011000	0000	935.6875	1110110	0000	936.1500	0011101	0000
935.1750	0111000	0000	935.7000	0001110	0000	936.1625	1011101	0000
935.1875	1111000	0000	935.7125	1001110	0000	936.1750	0111101	0000
935.2000	0000100	0000	935.7250	0101110	0000	936.1875	1111101	0000
935.2125	1000100	0000	935.7375	1101110	0000	936.2000	0000011	0000
935.2250	0100100	0000	935.7500	0011110	0000	936.2125	1000011	0000
935.2375	1100100	0000	935.7625	1011110	0000	936.2250	0100011	0000
935.2500	0010100	0000	935.7750	0111110	0000	936.2375	1100011	0000
935.2625	1010100	0000	935.7875	1111110	0000	936.2500	0010011	0000
935.2750	0110100	0000	935.8000	0000001	0000	936.2625	1010011	0000
935.2875	1110100	0000	935.8125	1000001	0000	936.2750	0110011	0000
935.3000	0001100	0000	935.8250	0100001	0000	936.2875	1110011	0000
935.3125	1001100	0000	935.8375	1100001	0000	936.3000	0001011	0000
935.3250	0101100	0000	935.8500	0010001	0000	936.3125	1001011	0000
935.3375	1101100	0000	935.8625	1010001	0000	936.3250	0101011	0000
935.3500	0011100	0000	935.8750	0110001	0000	936.3375	1101011	0000
935.3625	1011100	0000	935.8875	1110001	0000	936.3500	0011011	0000
935.3750	0111100	0000	935.9000	0001001	0000	936.3625	1011011	0000
935.3875	1111100	0000	935.9125	1001001	0000	936.3750	0111011	0000
935.4000	0000010	0000	935.9250	0101001	0000	936.3875	1111011	0000
935.4125	1000010	0000	935.9375	1101001	0000	936.4000	0000111	0000
935.4250	0100010	0000	935.9500	0011001	0000	936.4125	1000111	0000
935.4375	1100010	0000	935.9625	1011001	0000	936.4250	0100111	0000
935.4500	0010010	0000	935.9750	0111001	0000	936.4375	1100111	0000
935.4625	1010010	0000	935.9875	1111001	0000	936.4500	0010111	0000
935.4750	0110010	0000				936.4625	1010111	0000
935.4875	1110010	0000				936.4750	0110111	0000
935.5000	0001010	0000				936.4875	1110111	0000
935.5125	1001010	0000				936.5000	0001111	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.

900 MHZ FREQUENCY SELECTIONS

LBI-38988

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
936.5125	1001111	0000	937 MHz			937.5125	1001001	1000
936.5250	0101111	0000				937.5250	0101001	1000
936.5375	1101111	0000		937.0000	0000010 1000	937.5375	1101001	1000
936.5500	0011111	0000		937.0125	1000010 1000	937.5500	0011001	1000
936.5625	1011111	0000		937.0250	0100010 1000	937.5625	1011001	1000
936.5750	0111111	0000		937.0375	1100010 1000	937.5750	0111001	1000
936.5875	1111111	0000		937.0500	0010010 1000	937.5875	1111001	1000
936.6000	0000000	1000		937.0625	1010010 1000	937.6000	0000101	1000
936.6125	1000000	1000		937.0750	0110010 1000	937.6125	1000101	1000
936.6250	0100000	1000		937.0875	1110010 1000	937.6250	0100101	1000
936.6375	1100000	1000		937.1000	0001010 1000	937.6375	1100101	1000
936.6500	0010000	1000		937.1125	1001010 1000	937.6500	0010101	1000
936.6625	1010000	1000		937.1250	0101010 1000	937.6625	1010101	1000
936.6750	0110000	1000		937.1375	1101010 1000	937.6750	0110101	1000
936.6875	1110000	1000		937.1500	0011010 1000	937.6875	1110101	1000
936.7000	0001000	1000		937.1625	1011010 1000	937.7000	0001101	1000
936.7125	1001000	1000		937.1750	0111010 1000	937.7125	1001101	1000
936.7250	0101000	1000		937.1875	1111010 1000	937.7250	0101101	1000
936.7375	1101000	1000		937.2000	0000110 1000	937.7375	1101101	1000
936.7500	0011000	1000		937.2125	1000110 1000	937.7500	0011101	1000
936.7625	1011000	1000		937.2250	0100110 1000	937.7625	1011101	1000
936.7750	0111000	1000		937.2375	1100110 1000	937.7750	0111101	1000
936.7875	1111000	1000		937.2500	0010110 1000	937.7875	1111101	1000
936.8000	0000100	1000		937.2625	1010110 1000	937.8000	0000011	1000
936.8125	1000100	1000		937.2750	0110110 1000	937.8125	1000011	1000
936.8250	0100100	1000		937.2875	1110110 1000	937.8250	0100011	1000
936.8375	1100100	1000		937.3000	0001110 1000	937.8375	1100011	1000
936.8500	0010100	1000		937.3125	1001110 1000	937.8500	0010011	1000
936.8625	1010100	1000		937.3250	0101110 1000	937.8625	1010011	1000
936.8750	0110100	1000		937.3375	1101110 1000	937.8750	0110011	1000
936.8875	1110100	1000		937.3500	0011110 1000	937.8875	1110011	1000
936.9000	0001100	1000		937.3625	1011110 1000	937.9000	0001011	1000
936.9125	1001100	1000		937.3750	0111110 1000	937.9125	1001011	1000
936.9250	0101100	1000		937.3875	1111110 1000	937.9250	0101011	1000
936.9375	1101100	1000		937.4000	0000001 1000	937.9375	1101011	1000
936.9500	0011100	1000		937.4125	1000001 1000	937.9500	0011011	1000
936.9625	1011100	1000		937.4250	0100001 1000	937.9625	1011011	1000
936.9750	0111100	1000		937.4375	1100001 1000	937.9750	0111011	1000
936.9875	1111100	1000		937.4500	0010001 1000	937.9875	1111011	1000
				937.4625	1010001 1000			
				937.4750	0110001 1000			
				937.4875	1110001 1000			
				937.5000	0001001 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	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
938 MHz			938.5125	1001100	0100	939 MHz		
938.0000	0000111	1000	938.5250	0101100	0100	939.0000	0000001	0100
938.0125	1000111	1000	938.5375	1101100	0100	939.0125	1000001	0100
938.0250	0100111	1000	938.5500	0011100	0100	939.0250	0100001	0100
938.0375	1100111	1000	938.5625	1011100	0100	939.0375	1100001	0100
938.0500	0010111	1000	938.5750	0111100	0100	939.0500	0010001	0100
938.0625	1010111	1000	938.5875	1111100	0100	939.0625	1010001	0100
938.0750	0110111	1000	938.6000	0000010	0100	939.0750	0110001	0100
938.0875	1110111	1000	938.6125	1000010	0100	939.0875	1110001	0100
938.1000	0001111	1000	938.6250	0100010	0100	939.1000	0001001	0100
938.1125	1001111	1000	938.6375	1100010	0100	939.1125	1001001	0100
938.1250	0101111	1000	938.6500	0010010	0100	939.1250	0101001	0100
938.1375	1101111	1000	938.6625	1010010	0100	939.1375	1101001	0100
938.1500	0011111	1000	938.6750	0110010	0100	939.1500	0011001	0100
938.1625	1011111	1000	938.6875	1110010	0100	939.1625	1011001	0100
938.1750	0111111	1000	938.7000	0001010	0100	939.1750	0111001	0100
938.1875	1111111	1000	938.7125	1001010	0100	939.1875	1111001	0100
938.2000	0000000	0100	938.7250	0101010	0100	939.2000	0000101	0100
938.2125	1000000	0100	938.7375	1101010	0100	939.2125	1000101	0100
938.2250	0100000	0100	938.7500	0011010	0100	939.2250	0100101	0100
938.2375	1100000	0100	938.7625	1011010	0100	939.2375	1100101	0100
938.2500	0010000	0100	938.7750	0111010	0100	939.2500	0010101	0100
938.2625	1010000	0100	938.7875	1111010	0100	939.2625	1010101	0100
938.2750	0110000	0100	938.8000	0000110	0100	939.2750	0110101	0100
938.2875	1110000	0100	938.8125	1000110	0100	939.2875	1110101	0100
938.3000	0001000	0100	938.8250	0100110	0100	939.3000	0001101	0100
938.3125	1001000	0100	938.8375	1100110	0100	939.3125	1001101	0100
938.3250	0101000	0100	938.8500	0010110	0100	939.3250	0101101	0100
938.3375	1101000	0100	938.8625	1010110	0100	939.3375	1101101	0100
938.3500	0011000	0100	938.8750	0110110	0100	939.3500	0011101	0100
938.3625	1011000	0100	938.8875	1110110	0100	939.3625	1011101	0100
938.3750	0111000	0100	938.9000	0001110	0100	939.3750	0111101	0100
938.3875	1111000	0100	938.9125	1001110	0100	939.3875	1111101	0100
938.4000	0000100	0100	938.9250	0101110	0100	939.4000	0000011	0100
938.4125	1000100	0100	938.9375	1101110	0100	939.4125	1000011	0100
938.4250	0100100	0100	938.9500	0011110	0100	939.4250	0100011	0100
938.4375	1100100	0100	938.9625	1011110	0100	939.4375	1100011	0100
938.4500	0010100	0100	938.9750	0111110	0100	939.4500	0010011	0100
938.4625	1010100	0100	938.9875	1111110	0100	939.4625	1010011	0100
938.4750	0110100	0100				939.4750	0110011	0100
938.4875	1110100	0100				939.4875	1110011	0100
938.5000	0001100	0100				939.5000	0001011	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.

900 MHZ FREQUENCY SELECTIONS

LBI-38988

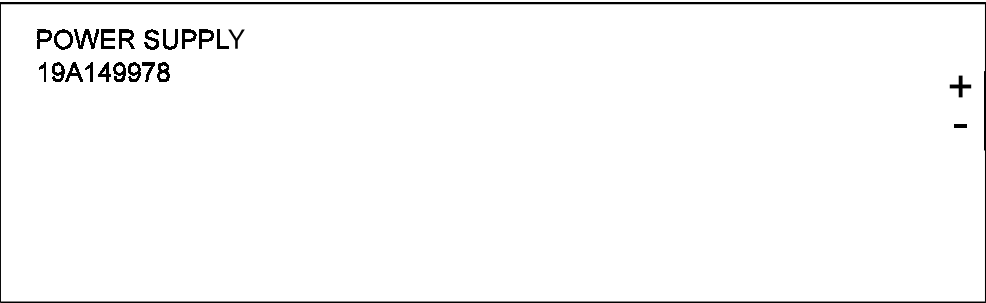
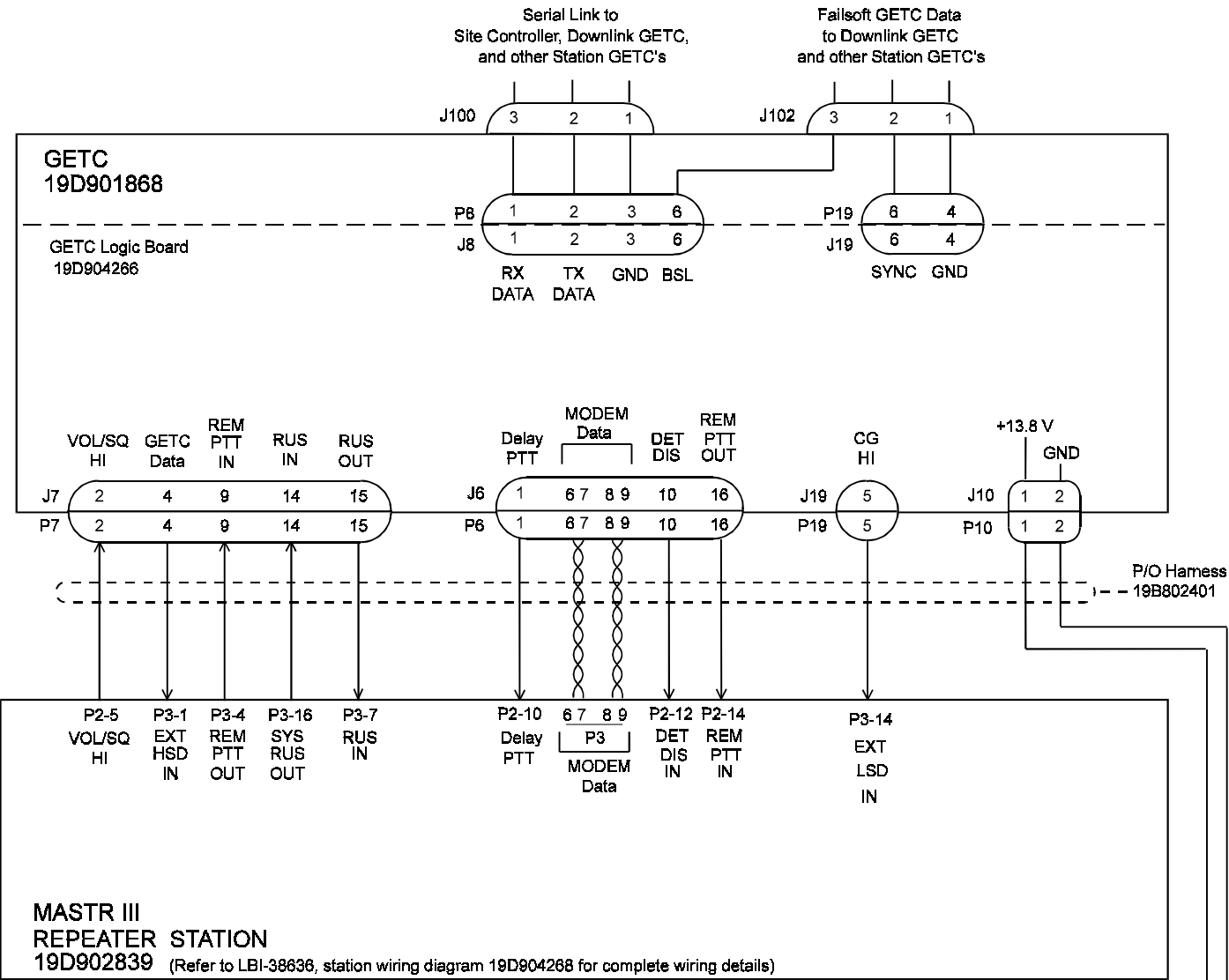
TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4	TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4	TX FREQ (MHz)	S1-1 Thru S1-7	S2-1 Thru S2-4
939.5125	1001011	0100						
939.5250	0101011	0100						
939.5375	1101011	0100						
939.5500	0011011	0100						
939.5625	1011011	0100						
939.5750	0111011	0100						
939.5875	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

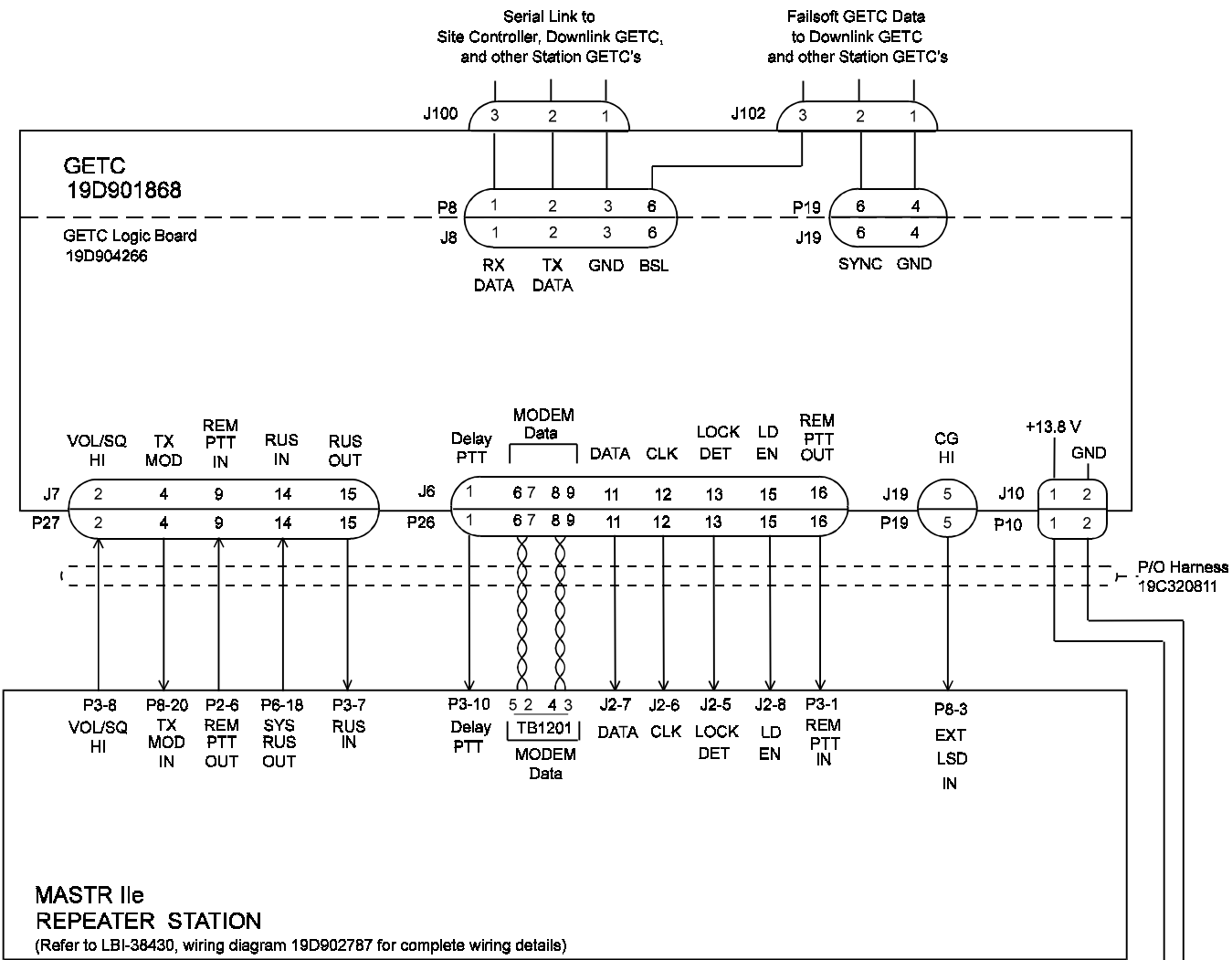
NOTE: For MASTR III - set all switches (S1-1 thru S1-7 and S2-1 thru S2-4) to the CLOSED position.

APPENDIX D

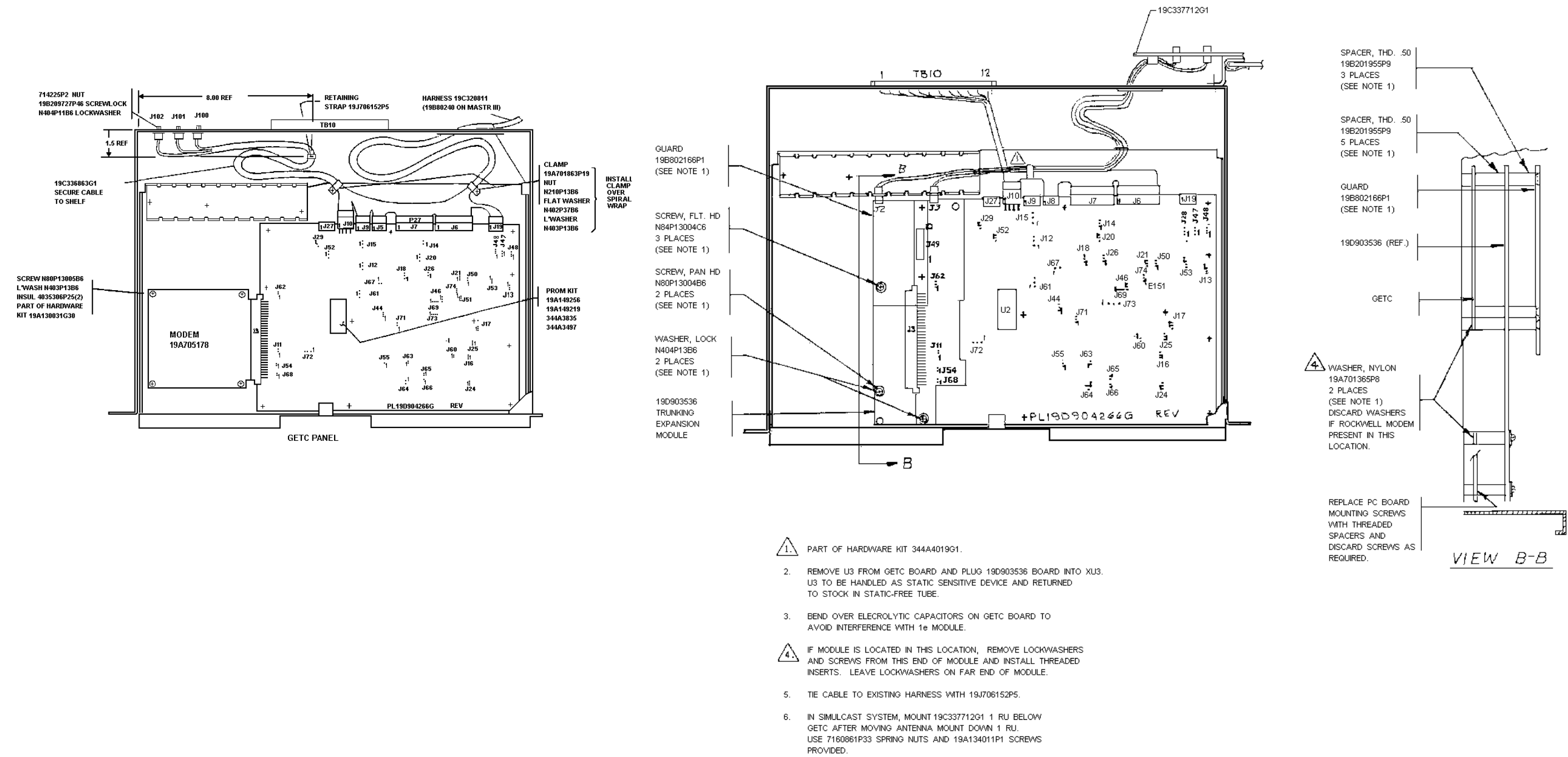
INTERCONNECTION DIAGRAMS



MASTR III STATION INTERCONNECT

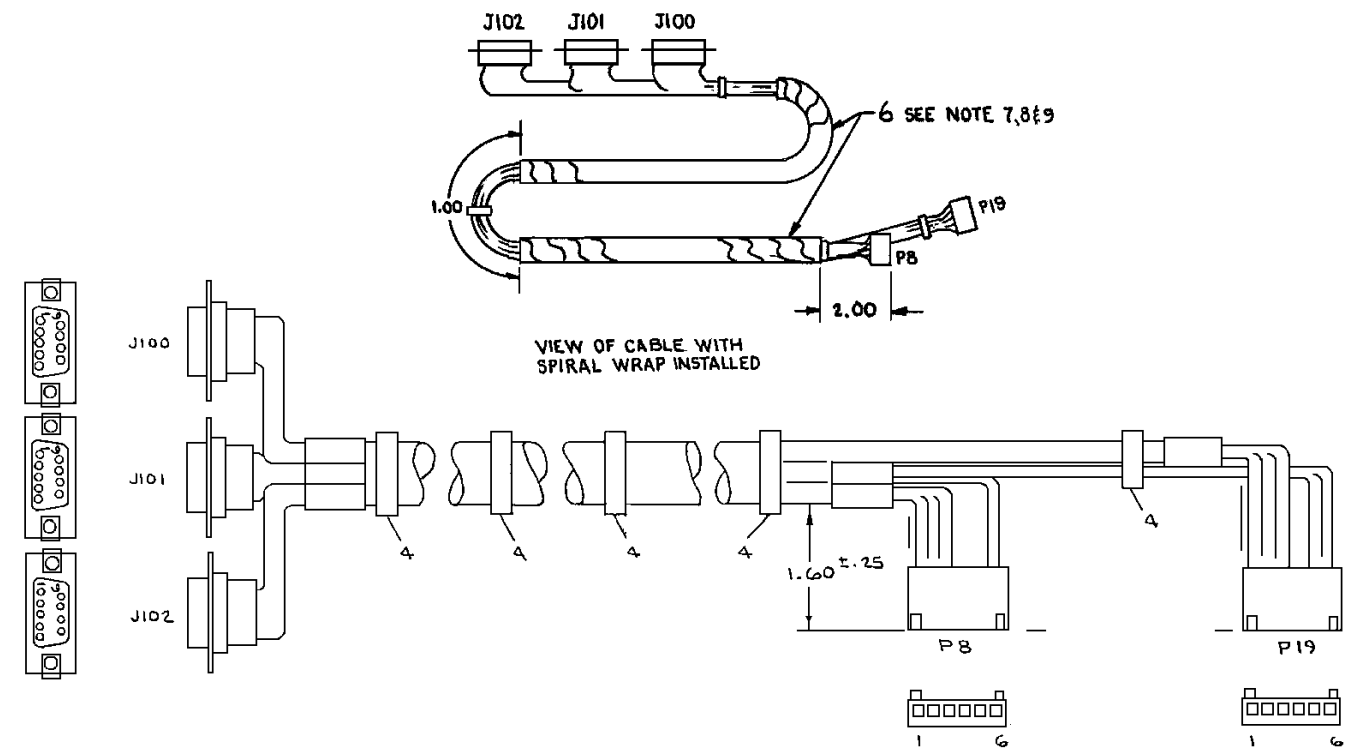
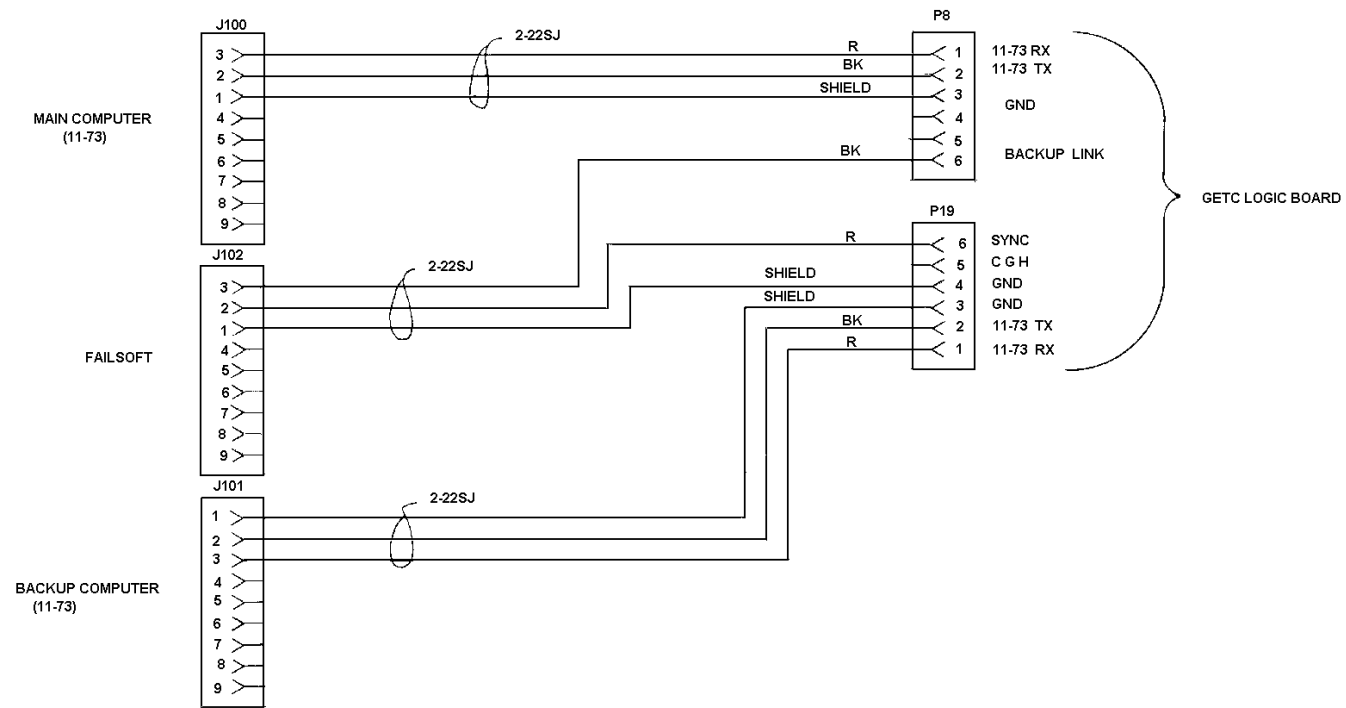


MASTR IIe STATION INTERCONNECT



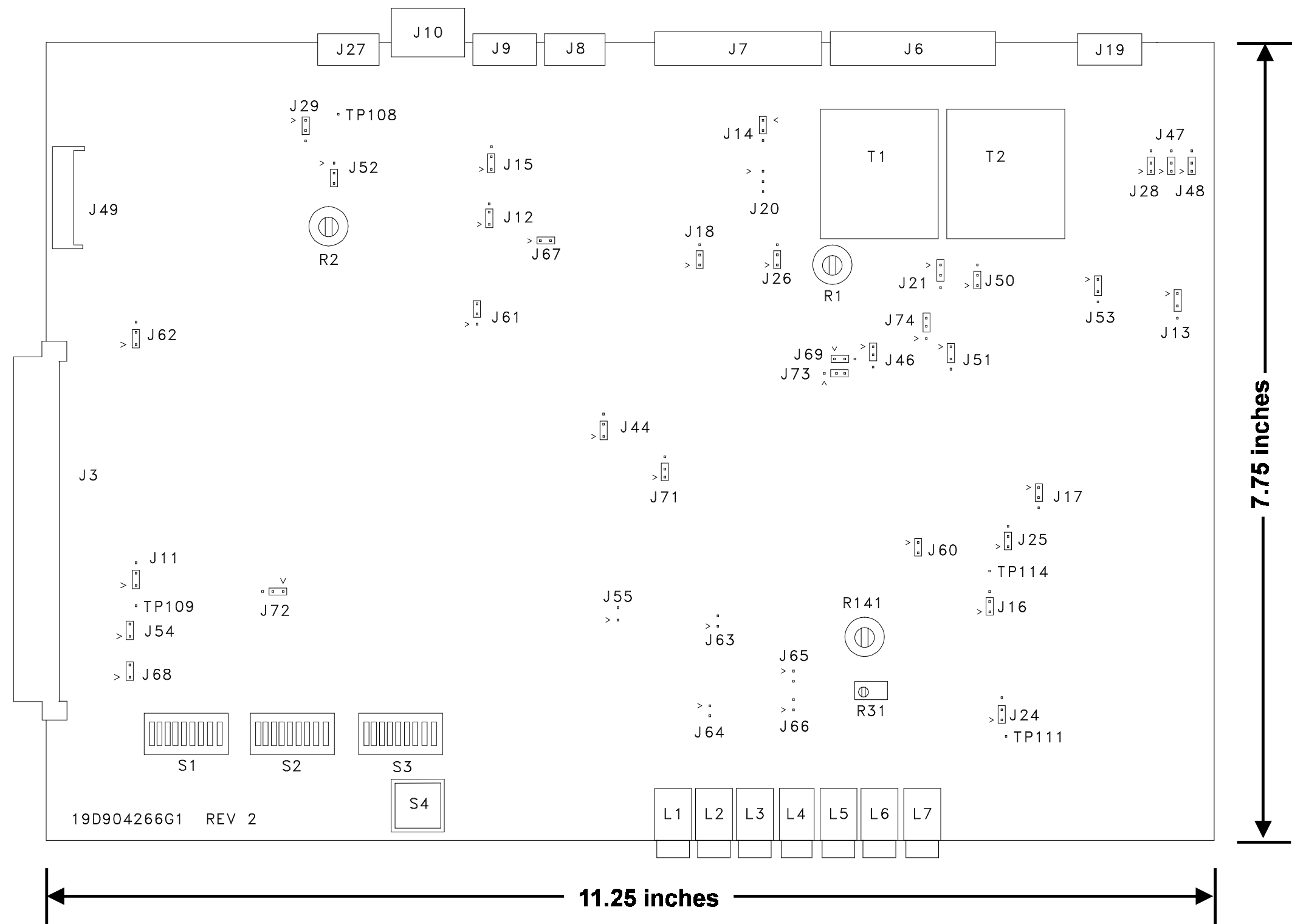
GETC SHELF
19D901868G3

(19D417483, Sh. 12, Rev. 27/19D438125, Sh. 3, Rev. 7)



GETC CABLE
19C336863G1

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



- NOTES:
- 1. The symbol (>) denotes pin 1.
 - 2. This diagram is drawn to scale, copy to the dimensions indicated when making a plastic jumper overlay.

STATION GETC JUMPERS

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