Charles

Telecommunications Group

360-80 Intelligent Channel Bank Turn-Up and Acceptance Test Procedure

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1. GENERAL

1.1 Document Purpose

This document provides turn up and acceptance test procedures for the 360-80 Intelligent Channel Bank (ICB).

2. VERIFYING ELECTRICAL CONNECTIONS

2.1 Initial Installation Notes

Step	Action
1.	Shelf must already be mounted per documentation.
2.	Unit must already be wired for power from a fuse panel. Power should not be applied at this time.

2.2 19-inch and 23-inch Bays

If modules are already installed in the ICB, remove them before testing.

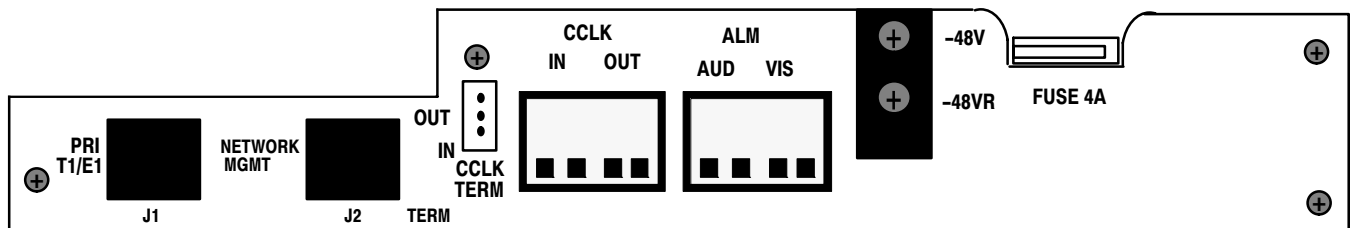| Step	Action
1.	Connect the audio and visual alarm leads to the removeable connector on the back of the ICB shelf. Reference the Shelf documentation for the proper procedure. Figure 1 displays the shelf rear panel.
2.	Apply power to the shelf.
3.	Locate the power terminal block on the rear (see Figure 1) of the ICB. Using a voltmeter connect the – (common) test lead to –48VR screw terminal. With the + test lead, measure the voltage at the –48V terminal. The voltage should be between –44 and –56 VDC. If voltages are not correct, inspect wiring for proper polarity, and/or check power source for proper settings (or output) and correct as required.

Figure 1. 360-80 Terminal Block

3. SYSTEM TURN-UP

Use the following steps to turn up the system. Only the T1 controller unit (T1-S) should be installed as instructed. Figure 2 displays the T1 Controller Unit Front Panel.

| Step	Action	Verification
1.	Insert the T1-S into the ICB. Do NOT connect the T1 to J1 at the rear of the T1-S.	The green LED on the T1-S should be lit, indicating that the T1-S is powered.
		When first plugged in, the AR, AY, TP and LP LEDs on the front panel of the T1-S will light and then extinguish. Approximately 5 seconds after power is applied, the 4 LEDs will flash simultaneously (LED test), indicating that the T1-S is initializing.
		Since a T1 line is not connected, approximately 2.5 seconds after the flashing LEDs have extinguished, the red AR LED will light, followed by the yellow TP LED, indicating that no T1 signal has been detected and trunk processing is in progress.
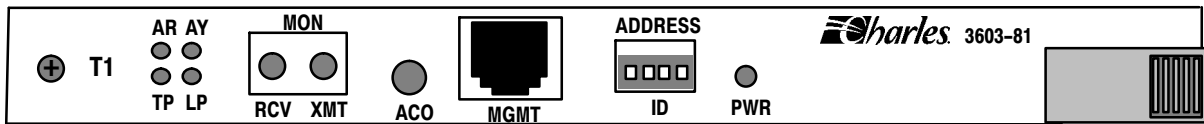
Figure 2. T1 Controller Unit Front Panel

4.   CONTROL VERIFICATION

To get the information displayed as shown, the control verification tests should be done with alarms active.

Control verification is done using the NMS or a craft terminal.

4.1   Control Verification Using a Craft Terminal

Refer to the Craft Terminal documentation while performing the following steps.

Step	Action	System Response
1.	Connect the VT100 terminal emulator to the MGMT jack on the front of the T1-S	
2.	Press <Enter> to activate the T1-S	Login prompt appears.
3.	Login with the user name `piad` and press <Enter>	Password prompt appears.

4.	Type `1234` as the password and press <Enter>	The following information should be displayed in the main menu:
		
		`Primary T1 Module  Plugged`
		`Halfsize Module    Unplugged`
		`Channel Card 1     Unplugged`
		`Channel Card 2     Unplugged`
		`User Administration`
		`Card Inventory Data`
		`SNMP Community Table`
		`Trap IP Table`
		`IP Address/Subnet Mask/MAC Gateway`
		`Address Message`
		`Logout`

Step	Action	System Response
5.	If the Network Management System (NMS) Software will be used, do the following. Otherwise, skip to the next step. a.　　Select the `IP Address` option b.　　Configure the IP Address and network for the controlling PC c.　　Select the Apply Changes button.	The system is automatically restarted and control verification is ended.
6.	Use the down arrow to move to `Logout` and press <Enter>.	The terminal emulator displays `Please Press ENTER to login`.

4.2   Control Verification Using the Network Management System (NMS)

The procedure *Control Verification Using a Craft Terminal*, located in this document, must be performed in order for the NMS software to communicate with the ICB. Refer to the NMS documentation while performing the following steps.

Step	Action	System Response
1.	Set all the switches for the Address ID to the down (zero) position. The address ID switches are located on the front panel of the T1-S.	
2.	Using a PC with the NMS software installed, connect the ethernet from the PC to the network control terminal J2 on the rear of the T1-S.	
3.	Activate the NMS software on the PC. The NMS may start with the window minimized.	
4.	Select Setup ▶ Supervisor Login.	
5.	Login as a Supervisor using the password `123`.	
6.	Select Database ▶ Equipment Management.	
7.	Enter the information for the fields as follows: Address　　=　　1 Description　　=　　To indicate bank identifier IP Address　　=　　*Same as the T1 Controller IP address*	
8.	Select the Close button.	The equipment description will appear on the NMS screen on both the left and right sides of the window.
9.	Double-click on the equipment description that appears on the right-side of the window.	The IAD Management System window will appear.
10.	In the ICB Management System, login using the following: ID　　=　　piad Password　　=　　1234.	The graphical user interface will display a representation of the ICB with the T1-S in the lower right-hand slot. The LED status of the unit will be displayed, and all the software options will be available.
11.	Perform a primary near-end line T1 loopback with either the craft terminal or NMS interface.	
12.	Close the loopback screen.	

Step	Action	System Response

13.	Once the trunk processing LED has extinguished, select Status ▶ Retrieve T1 Parameters.	The LP LED should turn on and the following information should be displayed:
		
		`Status of the Incoming Primary T1 Line`
		`Card Type:  T1`
		
		`Operation Mode: Normal Mode`
		
		`Timing Source: Internal Timing`
		`Frame Format:    ESF`
		`Line Code: B8ZS`
		`Automatic Detect Mode: No`
		
		`LBO: 0-110`
		`CGA Process Mode: Normal`
		`Remote Control Method: Using Facility Data Link`
		`Status:Loopback (Out of Service)`

14.	Release the T1 loopback.	Verification of the control system is complete.

5.   VERIFYING SYSTEM ALARMS

Use the following steps to verify system alarms.

Step	Action	System Response
1.	Perform a primary T1 near-end line loopback.	Verify that the TP LED is extinguished and no visual or audible alarms exist.
2.	Release the T1 loopback.	Verify that there are visual and audible alarms.
3.	View the alarm status on the craft terminal and/or NMS.	Display should show the correct alarm status.
4.	Press the ACO switch on the T1-S.	Verify that the audible alarm stops.

6.   VOICE CARD ACCEPTANCE TESTS

Use the following procedures to verify voice cards AFTER all the previous acceptance testing (electrical connections, system turn-up, control verification and system alarms) has been performed. Refer to the *T1 Controller with SNMP* document for T1 pinouts.

Note: All the following procedures are used for both audio and signaling.

6.1   FXS Card Acceptance Test

Step	Action	System Response
1.	Make sure that the ICB is turned up and operating.	
2.	Install the FXS card per its documentation.	All LEDs on the card should light, flash, and then turn off.
3.	Log in to the NMS or craft interface and verify that the FXS card is recognized in the proper chassis slot and the first-time boot-up configuration is FXS/LS.	

Step	Action	System Response
4.	For a <u>full-size</u> FXS, connect a test cable from a telephone to one of the TIP/RING pairs on the rear connector. For a <u>half-size</u> FXS, connect the test cable from a telephone to the front connector.	
5.	Place the telephone off-hook and verify that the appropriate chassis slot LED lights only when the telephone is off-hook.	
6.	Connect the T1 with the appropriate time slot to a T1 signaling test set or another D4 channel bank configured with an FXO at the far end which is then connected to a telephone (CO) switch or telephone line simulator.	Verify that a telephone call can be made through the FXS to the telephone switch or test set. Verify that a telephone call can be made from the telephone switch or test set to the FXS.

6.2   FXO Card Acceptance Test

Step	Action	System Response
1.	Make sure that the ICB is turned up and operating.	
2.	Install the FXO card per its documentation.	All LEDs should light, flash and then turn off. If the T1 is not in sync, the LEDs may light again.
3.	Log in to the NMS or craft interface and verify that the FXO card is recognized in the proper chassis slot and the first-time boot-up configuration is FXO/LS.	
4.	For a <u>full-size</u> FXO, connect a test cable from a telephone (CO) switch or telephone line simulator to one of the TIP/RING pairs on the rear connector. For a <u>half-size</u> FXO, connect the test cable from a telephone switch or telephone line simulator to the front connector.	
5.	Connect the T1 with the appropriate time slot to a T1 signalling test set or another D4 channel bank configured with an FXS and telephone at the far end.	Verify that a telephone call can be made from the switch through the FXO to the FXS. Verify that a telephone call can be made from the FXS through the FXO to the Telephone switch.

6.3   E&M Card Acceptance Test

Step	Action	System Response
1.	Make sure that the ICB is turned-up and operating.	
2.	Install the E&M card per its documentation.	All LEDs should light, flash and then turn off. If the T1 is not in sync, the LEDs may light again.
3.	Log in to the NMS or craft interface and verify the chassis/card configuration.	Verify the E&M card is recognized in the proper chassis slot and the first time boot up initialization configuration is E&M mode V.
4.	Enable the tone test function under for the channel to be tested. If using NMS, select Loopback of the E&M Card. If using the craft interface, select Tone Test.	Tone test success.
5.	E&M card acceptance test is complete.	

7. DATA CARD ACCEPTANCE TESTS

Use the following procedures to verify data cards after all the previous T1 unit acceptance testing (electrical connections, system turn-up, control verification and system alarms) has been completed.

7.1 ISDN Card Acceptance Test

Step	Action	System Response
1.	Make sure that the ICB is turned up and operating.	
2.	Insert the ISDN card into the appropriate slot of the ICB.	
3.	Enable the NMS or craft interface and verify the chassis/card configuration with a system that has been reset to the factory default.	Verify the ISDN card is recognized in the proper chassis slot and the configuration is 2B+D and LULT.
4.	Perform a software near-end line T1 loop back.	LOS and ALM LEDs should illuminate on the ISDN unit.
5.	Connect a test cable to the rear connector of the full size ISDN card (front connector for a half size ISDN card) and connect an ISDN NT1 test set (i.e. TPI 550B) to one of the tip/ring pairs.	Verify that the LOS and ALM LEDs turn "off" and that no bit errors occur on the test set for the channel being tested.
6.	Release the T1 loopback.	ISDN card acceptance test is complete.

7.2 DSU Card Acceptance Test

Step	Action	System Response
1.	Make sure that the ICB is turned up and operating.	
2.	Insert the DSU card into the appropriate slot of the ICB.	
3.	Enable the NMS or craft interface and verify the chassis/card configuration with a system that has been reset to the factory default.	Verify the DSU card is recognized in the proper chassis slot and the configuration is V.35, and that the data rate is 64K.
4.	Under DSU settings, enable the latching loopback option for one channel. Then under the loopback menu (listed under T1 settings for VT100 craft terminal), perform a DSU near-end latching loopback with a 2047 test pattern enabled.	Display should show "Map 0" with zero bit errors.
5.	Enter an "R" for release loopback if using a craft terminal interface. The GUI interface will automatically release loopback after 1 minute.	DSU loopback is removed.

7.3 64XN Card Acceptance Test

Step	Action	System Response
1.	Make sure that the ICB is turned up and operating.	
2.	Insert the 64xN card into the appropriate slot of the ICB.	
3.	Enable the NMS or craft interface and verify the chassis/card configuration with a system that has been reset to the factory default.	Verify the 64xN card is recognized in the proper chassis slot and that the configuration is time slot length of 2, V.35 and the data rate is 64K.
4.	Perform a software near-end line T1 loop back.	No system alarms.

Step	Action	System Response
5.	Connect the appropriate digital data cable to a DTE test set or equivalent. The test set should be capable of performing Bert tests. *Note: RTS must be enabled on the external test set or FORCE RTS on the external DSU unit.*	DTE test set should show a pattern sync and no bit errors should occur.
6.	Release the T1 loopback.	64XN card acceptance test is complete.

7.4   OCU Card Acceptance Test

Step	Action	System Response
1.	Make sure that the ICB is turned up and operating.	
2.	Insert the OCU card into the appropriate slot of the ICB.	
3.	Enable the NMS or craft interface and verify the chassis/card configuration with a system that has been reset to the factory default.	Verify the OCU card is recognized in the proper chassis slot and that the data rate is 64K.
4.	Perform a software near-end T1 loop back and then close/quit the loopback window.	No system alarms.
5.	Under OCU settings, enable the latching loopback option for one channel. Then under the loopback menu (listed under T1 settings for VT100 craft terminal), perform an OCU near-end latching loopback with 2047 test pattern enabled.	Display should show "Map 1" with zero bit errors. Loopback LED turns on.
6.	Enter an "R" to release loopback if using a craft terminal interface.	The GUI interface will automatically release loopback after 1 minute. Loopback LED turns off.
7.	Release the T1 loopback.	OCU card acceptance test is complete.

7.5   Router Card Acceptance Test

Step	Action	System Response
1.	Make sure that the ICB is turned-up and operating.	
2.	Insert the Router card into the appropriate slot of the ICB.	
3.	Enable the NMS or craft interface and verify the chassis/card configuration with a system that has been reset to factory default.	Verify the router is recognized in the proper chassis slot and the data rate is 64K for two time slots.
4.	Connect the Router's front panel RS232 to a PC via a straight thru-9 pin RS232 cable.	
5.	Open a hyper-terminal window. Use the same settings as the craft interface.	
6.	Press <Enter>.	
7.	For both the user and password enter, `admin`.	

8.	Enter the following:
	
	`system config restore factory`
	
	`system config save`
	
	`system restart`	

9.	Once restart is complete, press <Enter>	

Step	Action	System Response
10.	For both the user and password enter, `admin`.	
11.	Enter the following: `ip ping 192.168.0.1`	Verify that the ping is returned.

8. TECHNICAL ASSISTANCE

If technical assistance is required, contact Charles Industries' Technical Services Center at:

> 847-806-8500
> 847-806-8556 (FAX)
> 800-607-8500
> techserv@charlesindustries.com (e-mail)

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