Setting SDH Transmit Parameters

This section describes how to set the transmit rate, specify the AU under test, set the payload mapping and content, and set the overhead bytes for SDH signals.

The CTS850 SDH/PDH Test Set contains independent transmitter and receiver modules. One set of parameters controls the transmitter module and another set controls the receiver module. You can set the parameters that control the transmitter independently or you can choose to link the parameters to the receiver settings.

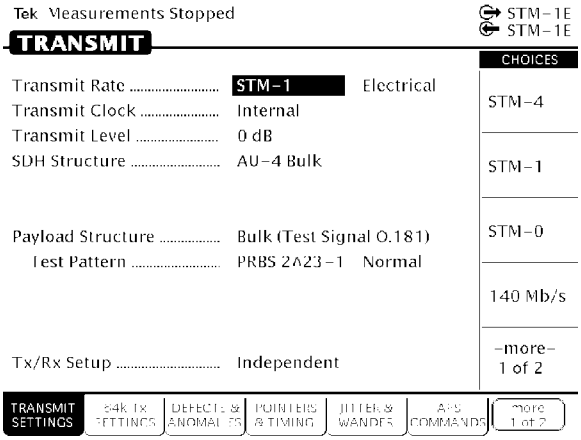

Figure 3 26: Transmit Settings Menu

Steps for Setting Parameters

The sequence of steps for setting transmit parameters varies with the type of signal to be transmitted. The figures that follow show the sequence of steps required to set the transmit parameters of an SDH signal without a mapped PDH signal and an SDH signal with a mapped PDH signal. See the next section for details on setting PDH signal parameters (for example 2 Mb/s).

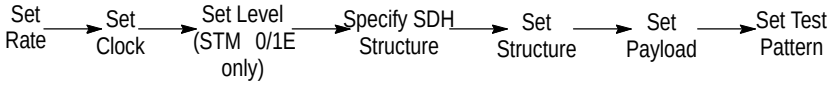

Figure 3 27: Sequence for Setting SDH Signal Parameters

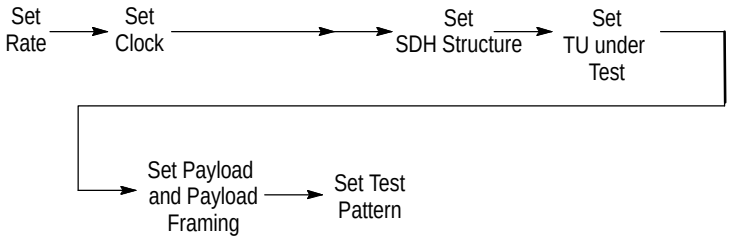

Figure 3 28: Sequence for Setting SDH Signal Parameters When Mapping a PDH Signal

Setting the Transmit Rate

To set the transmit rate:

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
TRANSMIT	TRANSMIT SETTINGS	Transmit Rate (see Figure 3 29 on page 3 74)	as appropriate

- Select **STM-1E or 0E**, **STM-1**, **STM-4**, **STM-0E**, or **STM-0** to transmit an SDH signal.
- Select **2 Mb/s**, **34 Mb/s**, **140Mb/s** to transmit a PDH signal. See the next section for details on setting PDH signal parameters.
- If your CTS 850 test set supports the **45 Mb/s** option, there is also a 45 Mb/s signal available for selection.

***NOTE**. Even though there are output connectors for both SDH and PDH signals on the CTS850 front panel, the CTS850 can transmit only one type of signal at a time.*

Independent Transmit and Receive Settings

Generally, you can set the transmit and receive settings independently. For example, you can receive an electrical signal at the STM-1E or 0E rate while simultaneously transmitting an optical signal at the STM-4 rate.

Coupling Transmit and Receive Settings

If your application requires that the transmit settings and receive settings be identical, you can save time by coupling them together. After they are coupled, any change you make to a parameter on the TRANSMIT SETTINGS page will also be made to the corresponding setting in the RECEIVE SETTINGS page of the RECEIVE menu. The inverse is also true.

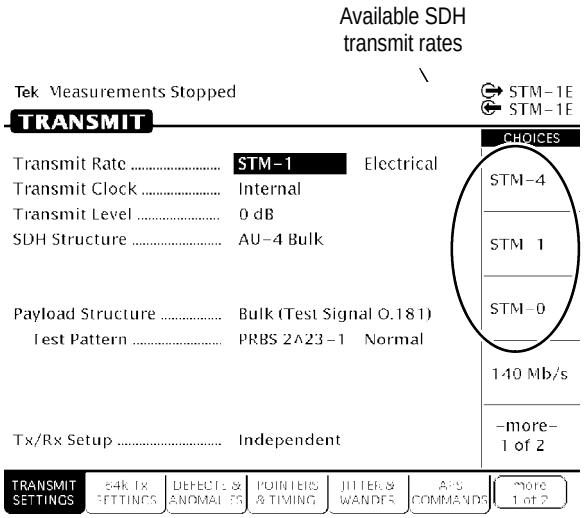

Figure 3 29: SDH Transmit Rates

To couple the transmit and receive settings together from the TRANSMIT SETTINGS page:

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
TRANSMIT	TRANSMIT SETTINGS	Tx/Rx Setup	Coupled

***NOTE**. When settings are coupled from the TRANSMIT SETTINGS page, the receive parameters are changed to match the transmit parameters. Conversely, when settings are coupled from the RECEIVE SETTINGS page, the transmit parameters are changed to match the receive parameters.*

Notice that the signal status icons, in the upper-right corner of the display, changed to reflect the coupling of the settings.

To change transmit and receive settings so that they are no longer coupled:

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
TRANSMIT	TRANSMIT SETTINGS	Tx/Rx Setup	Independent

Notice that the signal status icons, in the upper-right corner of the display, changed to indicate that the settings are no longer coupled.

Through Mode

Use Through Mode to monitor a signal without changing it. In Through Mode, the rate and content of the transmitted signal is that of the received signal. You cannot make changes to pointers or timing, overhead bytes, or insert alarms or errors when the CTS850 is in Through Mode. Through Mode does not perform clock recovery before retransmitting the recovered signal. Through Mode is used for nonintrusive performance monitoring of the active signal.

To put the CTS850 into Through Mode:

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
TRANSMIT	TRANSMIT SETTINGS	Tx/Rx Setup	Through Mode

To indicate when the CTS850 is in Through Mode, the transmit and receive icons at the upper-right corner of the display have an arrow linking them together and the parameters on the TRANSMIT SETTINGS page are replaced by a message stating that the CTS850 is in Through Mode (see Figure 3 30).

To take the CTS850 out of Through Mode:

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
TRANSMIT	TRANSMIT SETTINGS	Tx/Rx Setup	Independent

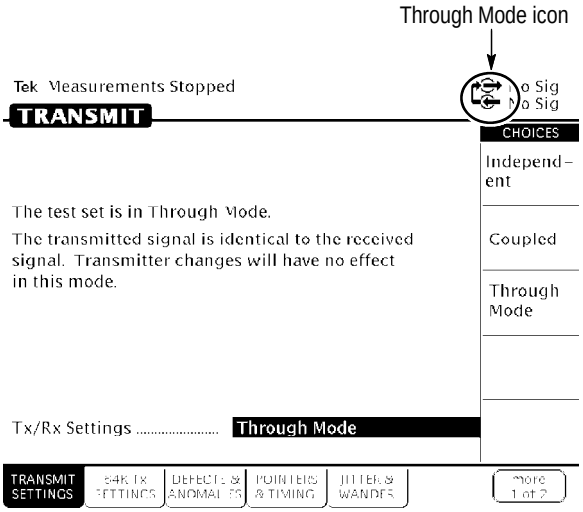

Figure 3 30: CTS850 in Through Mode

Setting the Transmit Clock

To specify the transmit clock:

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
TRANSMIT	TRANSMIT SETTINGS	Transmit Clock	Internal
			Recovered
			External 2 Mb/s 2 MHz
			External 1.5 Mb/s BITS

- Select **Internal** to set the transmit clock to the internal clock.
- Select **Recovered** to use the clock recovered from an incoming signal.
- Select **External 2 Mb/s 2 MHz** to use the clock signal from an external clock input (2 Mb/s or 2 MHz) data timing reference. Attach an external 2 Mb/s or 2 MHz reference to the External Clock Input connector on the rear panel.
- Select **External 1.5 Mb/s BITS** to use the clock signal from an external 1.5 Mb/s BITS reference.

Setting the Line Clock Offset

Line Clock offset is used for setting PDH Transmit Parameters. Range is ±100 ppm.

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
TRANSMIT	Transmit Settings	Line Clock Offset	Max: +100 ppm
			Stress: +20 ppm
			Stress 20 ppm
			Default 0 ppm
			User Defined

Setting the value through the front panel knob will change to support setting the full valid range.

Setting the Transmit Level

Transmit Level is an option for STM 1E and STM 0E. Transmit Level will not be displayed for other rates.

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
TRANSMIT	TRANSMIT SETTINGS	Transmit Level	0 dB
			6 dB

- Select **0 dB** to set the line level to high.
- Select **6 dB** to set the line level to the cross-connect level.

Specifying the AU to Test

AU under test is only displayed when the input rate is STM 4 and the signal structure is 1 x AU 4. To designate which AU to test:

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
TRANSMIT	TRANSMIT SETTINGS	AU Under Test	1, 2, 3, 4

Setting the SDH Structure

This selection sets the structure of the AU under Test (SDH input rates only). The VC4 4c choice requires a Transmit Rate of STM 4.

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
TRANSMIT	Transmit Settings	Structure STM 4	VC4 4c Bulk AU 4 Bulk AU 4 140 Mb/s TU 3 Async TU 12 Async
		STM 1	AU 4 Bulk AU 4 140 Mb/s TU 3 Async TU 12 Async
		STM 0	AU 3 Bulk

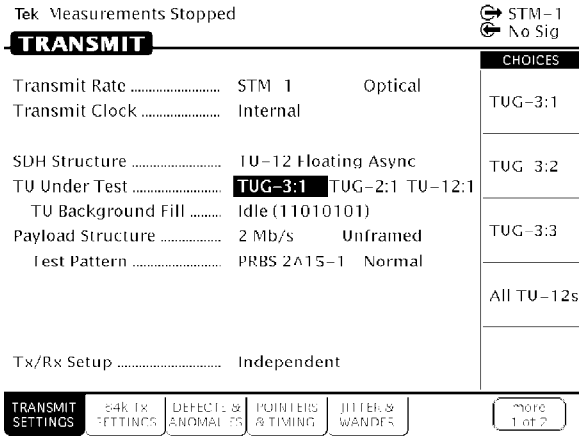

Figure 3 31: Chosing TU Under Test from SDH Structure

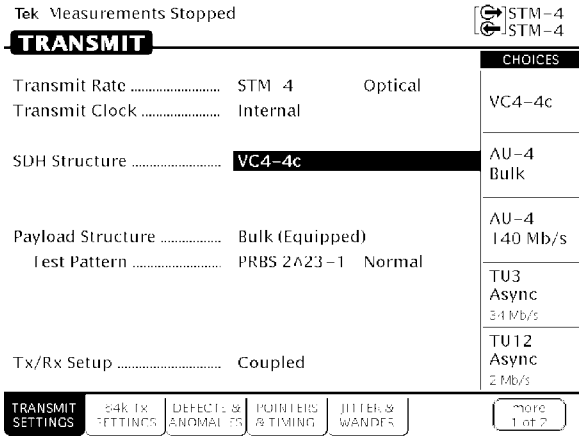

Figure 3 32: Chosing VC 4c from SDH Structure

TU Under Test

When STM 1 is chosen as the Transmit Rate, and TU 12 or TU 3 chosen as the Structure, the TU under test selection permits the choice of the following (Selections are mutually exclusive): exclusive.

TU 12:	TUG3: TUG3:1, TUG3:2, TUG3:3
	TUG2: 1,2,3,4,5,6,7
	TU 12: 1,2,3
TU 3:	TU 3: 1,2,3
	TU3:1, TU3:2, TU3:3

Setting the TU Background Fill

When STM 1 is chosen at the Transmit Rate, and TU 12 or TU 3 chosen as the SDH Structure, the TU Background Fill permits the user to select the pattern inserted into the inactive TU 12s. Supported values for TU 12 are PRBS 2^15 1 or IDLE. TU 3 background channels are always filled with the idle pattern.

Setting the SDH Ouput

SDH Output permits the test set to transmit a valid, bulk filled SDH signal when the primary test signal is PDH. The SDH output will be displayed whenever the Transmit Rate is 140 Mb/s or less. Output rate selections are STM 4, STM 1, STM 0 and Disabled. Output type is Optical or Electrical (Electrical is not available for STM 4).

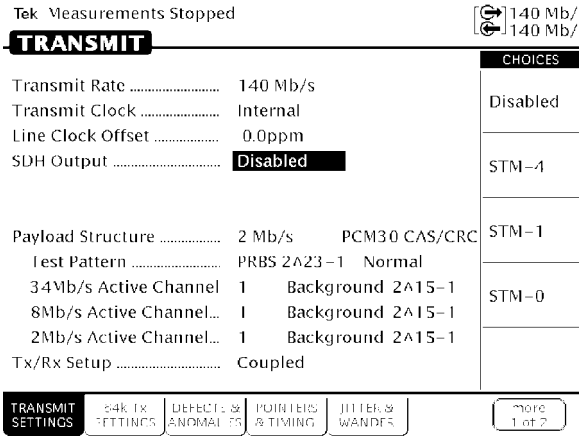

Figure 3 33: Choosing SDH Output

Setting the Payload Structure

Payload sets the signal generation base rate. Because of the number of selections available, the rate and framing parameters have been split. If the payload rate is not the same as the mapping (SDH) or transmit (PDH) rate, then multiplexing is implied.

Table 3 7: TX Rates and Structures

TX Rate	TX Structure	Multiplexing combinations
STM 4 STM 1	VC4 4c (only for STM 4) AU 4 TU 12 TU 3 140 Mb/s	Bulkfill (Equipped or Unequipped only) 2Mb/s, 64k 34Mb/s, 8Mb/s, 2Mb/s, 64k 140, 34, 8, 2 Mb/s, 64k
STM 0	AU 3	Bulk Equipped & Unequipped
140 Mb/s	Not Applicable	34Mb/s, 8Mb/s, 2Mb/s, 64k
34 Mb/s 45 Mb/s	Not Applicable	34 Mb/s, 8Mb/s, 2 Mb/s, 64k
2 Mb/s	Not Applicable	2Mb/s, 64k

Bulk fill of a TU 12, TU 3 or VC4 4c is not supported.
To set the payload:

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
TRANSMIT	TRANSMIT SETTINGS	Payload	As appropriate

Table 3 8: Payload Framing/ Source

Payload	Allowable choices
140 Mb/s	Framed, Unframed, External Add
34 Mb/s	Framed, Unframed, External Add
45 Mb/s	C Bit, M13, Unframed
8 Mb/s	Framed, Unframed
2 MB/s	Unframed, External Add Balanced, External Add Unbalanced, PCM 30 CAS/CRC, PCM31 CRC, PCM 30 CAS, PCM 31
64k	PCM 30 CAS/CRC, PCM31 CRC, PCM 30 CAS, PCM 31

When 64k is the payload, framing can also be set from the 64k Tx SETTING menu.

Setting the Test Pattern

Test pattern is selectable when the TX payload is not an externally added signal.

Table 3 9: Test Patterns, Background Patterns

Test Patterns	Applicable choices
PRBS 2^9 1	STM 4; STM 1; STM 0; 140Mb/s; 34 Mb/s; 8Mb/s; 2 Mb/s; 64k. Test Patterns: Normal (ITU); Inverted (Non ITU)
PRBS 2^11 1	140Mb/s; 34 Mb/s; 8Mb/s; 2 Mb/s; 64k. Test Patterns: Normal (ITU); Inverted (Non ITU)
PRBS 2^15 1	STM 4; STM 1; STM 0; 140Mb/s; 34 Mb/s; 8Mb/s; 2 Mb/s; 64k. Test Patterns: Normal (ITU); Inverted (Non ITU)
PRBS 2^20 1	STM 4; STM 1; STM 0; 140Mb/s; 34 Mb/s; 8Mb/s 2 Mb/s; 64k, Test Patterns: Normal (ITU); Inverted (Non ITU)

Table 3 9: Test Patterns, Background Patterns (Cont.)

Test Patterns	Applicable choices
PRBS 2^23 1	STM 4; STM 1; STM 0; 140Mb/s; 34 Mb/s; 8Mb/s; 2 Mb/s; 64k, Test Patterns: Normal (ITU); Inverted (Non ITU)
All Ones	STM 4; STM 1; STM 0; 140Mb/s; 34 Mb/s; 8Mb/s; 2 Mb/s; 64k
All Zeros	STM 4; STM 1; STM 0; 140Mb/s; 34 Mb/s; 8Mb/s; 2 Mb/s; 64k
10101010	140Mb/s; 34 Mb/s; 8Mb/s; 2 Mb/s; 64k
1 in 8	140Mb/s; 34 Mb/s; 8Mb/s; 2 Mb/s
8 bit fixed	STM 4; STM 1; STM 0; 140Mb/s; 34 Mb/s; 8Mb/s; 2 Mb/s
16 bit fixed	140Mb/s; 34 Mb/s; 8Mb/s; 2 Mb/s
24 bit fixed	140Mb/s; 34 Mb/s; 8Mb/s; 2 Mb/s
TS Idle	64k
1020 Hz 0 dBm	64k
Background Patterns	
PRBS 2^23 1	34Mb/s; 8Mb/s
PRBS 2^20 1	34Mb/s; 8Mb/s
PRBS 2^15 1	34Mb/s; 8Mb/s; 2 Mb/s
All Ones	34Mb/s; 8Mb/s; 2 Mb/s
All Zeros	34Mb/s; 8Mb/s; 2 Mb/s
10101010	34Mb/s; 8Mb/s; 2 Mb/s

Selecting the Tx/Rx Setup

Tx/Rx Setup permits the operator to couple Transmit and Receive settings, or select Through Mode. When coupled mode is selected, from the Transmit Setting menu, applicable Transmit Settings are copied to the Receive side of the tester.

Mapping a PDH Signal

To map a tributary signal, you first set the SDH Structure to the appropriate PDH mapping (as described in the previous section). When mapping a signal, you must also specify the payload. The payload can be either an external signal connected to the appropriate IN connector on the front panel or an internally generated signal.

When you use the TU12 Floating Async or TU3 Floating Async mapping, you must also specify the tributary unit under test and payload (see next Figure).

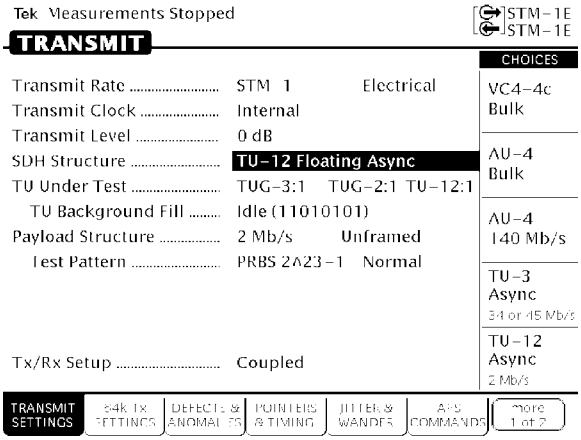

Figure 3 34: Mapping a Tributary Signal

To configure the CTS850 for mapping a signal:

1. Set the Structure as follows:

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
TRANSMIT	TRANSMIT SETTINGS	Structure	TU12 Async
			TU3 Async
			140 Mb/s

- Select **TU12 Async** to map an externally supplied or internally generated 2 Mb/s or 64k signal to the transmitted signal.
- Select **TU3 Async** to map an externally supplied or internally generated 34 Mb/s, 45 Mb/s, 8 Mb/s, 2 Mb/s or 64k signal to the transmitted signal.
- Select **140 Mb/s** to map an externally supplied or internally generated 140Mb/s, 34 Mb/s, 45 Mb/s, 8 Mb/s, 2 Mb/s, or 64k signal to the transmitted signal.

2. If the Structure is set to TU-12, specify the TU Under Test by first specifying the Tributary Unit Group (TUG) as follows:

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
		TU Under Test *(TUG3 #n)*	TUG3 #1
			TUG3 #2
			TUG3 #3
			All TU12s

3. If TU12 Async is the selected Structure, specify the Tributary Unit (TU) as follows:

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
		TU Under Test *(TU12 #n)*	*as appropriate*

4. If TU3 Async is the selected Structure, specify the Tributary Unit (TU) as follows:

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
		TU3	TU3 #1
			TU3 #2
			TU3 #3
			All TU 3

H Select **TU3 #1**, **TU3 #2**, or **TU3 #3** to specify the TU Under Test.

5. Specify the payload as follows:

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
		Payload	*as appropriate*

NOTE*. The choices available for Payload depend on the selected Structure.*

Setting the Test Pattern (User selectable)

You can select a test pattern to transmit in the TU.

To specify the test pattern to transmit (the choices available for Test Pattern depend on the selected Structure):

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
TRANSMIT	TRANSMIT SETTINGS	Test Pattern	*as appropriate*

- Select **1 in 8** to set the test pattern to 10000000.
- For PDH Payloads only, select **User Word 8 bit**, **User Word 16 bit**, or **User Word 24 bit** to set a test pattern different from the preset choices. If you choose User Word, the test pattern description changes to display the byte selected.

If you select User Word 8 bit/16 bit/24 bit for the test pattern, set the value of the User Word as follows:

1. Set the contents of the User Word Byte(s) as follows (see Figure 3 35):

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
		Test Pattern	Set to 00000000
			Set to 11111111
			Default 10101010
			EDIT BYTE/ Edit XX bits

2. Select **EDIT BYTE/Edit XX bits** to specify a value different from the preset choices.
3. Select **DONE** when you are finished editing the pattern.

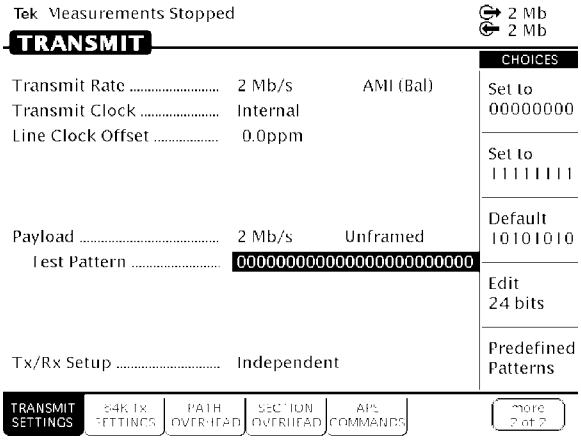

Figure 3 35: Editing the User Word Byte

Setting Overhead Bytes

To stress test a network, you sometimes need to simulate errors or alarms. Use the controls on the Defects & Anomalies page of the TRANSMIT menu to simulate errors or alarms. As an alternative, you can edit the transport overhead and path overhead bytes directly to simulate errors, alarms, and create other stress conditions. This section describes how to use the SECTION OVERHEAD and PATH OVERHEAD pages to edit overhead bytes.

How to Edit an Overhead Byte

The following procedure applies to editing either section overhead or path overhead bytes. However, when editing path overhead bytes, you must specify which overhead you want to edit (VC4, VC3, or VC12) before you can edit the overhead bytes.

To edit overhead bytes:

1. Display the section overhead as follows, then select the columns you wish to edit. Press MORE 2 of 2 to see the Section Overhead Page choice.

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
TRANSMIT	Section Overhead	Showing Overhead for	as appropriate

2. Turn the knob to highlight the byte you want to edit. See Figure 3 36.

When editing the S1 byte (shown in next figure), entering the following bits will result in the corresponding label in the line on the Section Overhead menu called Sync. Status Message (shown in next figure). This message line, showing the assignment of bit patterns, appears in both the **Transmit menu** and, and the **Receive menu** under the **Section Overhead** tab.

S1 bits b5 b8	Sync. Status Message
0000	Quality Unknown
0001	Reserved
0010	G.811 PRC
0011	Reserved
0100	G.812 transit
0101	Reserved
0110	Reserved
0111	Reserved
1000	G.812 local
1001	Reserved
1010	Reserved
1011	G.813 SETS (Synchronous Equipment Timing Source)
1100	Reserved
1101	Reserved
1110	Reserved
1111	Do not use

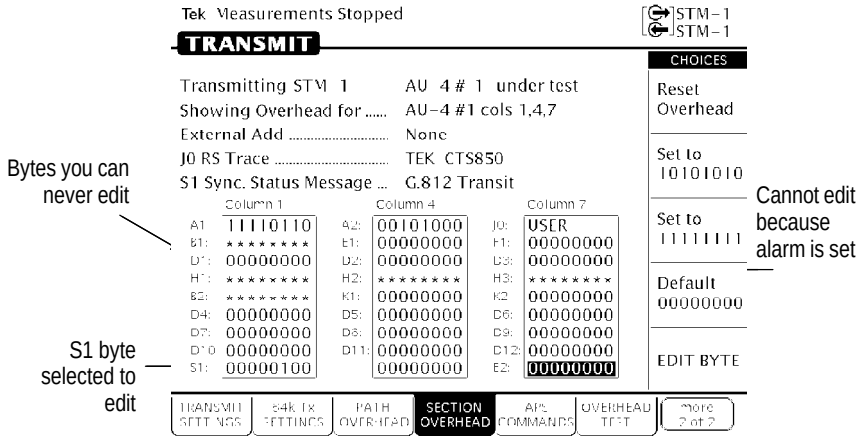

Figure 3 36: Editing the S1 Section Overhead Byte

There are several ways to edit the byte:

- Select **Reset Overhead** to set all bytes in the overhead to their individual default values. However, Reset Overhead does not remove simulated error conditions that have been set using controls in the Defects & Anomalies page. A simulated error condition overrides the default value of the overhead byte that signals that particular error condition.
- Select **Default (XXXXXXXX)** to set the selected byte to its default value. The specific default value depends on the selected byte and on the rate and structure of the signal.
- Select **EDIT BYTE** to define the byte as a value different from the preset choices.

3. To edit the selected byte to a value of your choice:

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
			EDIT BYTE

- Define your own byte with the buttons next to **1** and **0**. Use the left and right arrow buttons to move the cursor from one bit to the next. See Figure 3 37.
- When you finish editing the byte, select **DONE**.

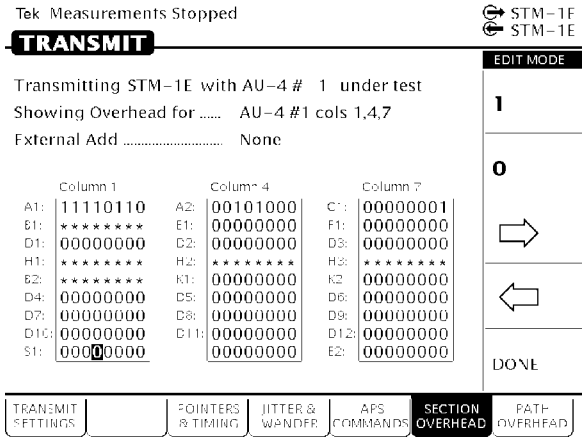

Figure 3 37: Editing an Overhead Byte

Editing the VC4, VC3, and VC12 Overhead Bytes

To edit the VC4, VC3 or VC12 overhead bytes:

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
RECEIVE	PATH OVERHEAD	Overhead View	VC4 Overhead
			VC3 Overhead
			VC12 Overhead

***NOTE**. The choices available depend on the signal Structure.*

If the signal Structure is set to TU-12, you can edit the V5, N2, and K4 bytes after displaying the VC12 Overhead. The J2 trace byte is fixed and cannot be edited. Note that only bits 5, 6, and 7 (the signal label bits) of the V5 byte are editable. See Table 3 10.

Table 3 10: Choices for Bits 5, 6, and 7 of the V5 Byte

Choice
Unequip (000)
Equipped (001)
Async (010)
Bit Sync (011)
Byte Sync (100)
Reserved (101)
TSS4 (110)
VC AIS

Bytes You Cannot Edit

Certain bytes in the section overhead and path overhead cannot be edited in the SECTION OVERHEAD or PATH OVERHEAD pages. These uneditable bytes have calculated values that are based on the payload and signal structure (see Table 3 11).

Table 3 11: Overhead Bytes That Cannot Be Edited

Overhead Byte	Function
B1	Section level parity byte
B2	MS level parity byte
B3	Path level parity byte
G1	Path status

Table 3 11: Overhead Bytes That Cannot Be Edited (Cont.)

Overhead Byte	Function
H1, H2, H3	Identify location of payload
H4	Multiframe indicator

The bytes that cannot be edited are marked with a line of asterisks on the SECTION OVERHEAD or PATH OVERHEAD pages (see Figure 3 36 on page 3 93).

In addition, there are bytes you may not be able to edit depending on parameter settings in the CTS850. As shown in Figure 3 36, a short text string replaces the binary values in the byte field of the SECTION OVERHEAD and PATH OVERHEAD pages when a byte cannot be edited. Table 3 12 shows the affected bytes, the text string, and a description of the parameter setting that prevents the byte from being edited.

Table 3 12: Bytes You Cannot Edit Due to Parameter Settings

Section and Path Overhead Byte(s)	Text String that Replaces the Binary Values	Parameter Setting Affecting Byte-Edit Capability
A1, A2	LOF SET	Loss of Frame Failure is being simulated
D1, D2, D3	EXT ADD	RS Data Communication Channel External Add is enabled
K1, K2	MS AIS SET	MS AIS is being simulated
	RDI SET	MS RDI is being simulated
D4, D5, D6, D7, D8, D9, D10, D11, D12	EXT ADD	MS Data Communication Channel External Add is enabled
S1	REI SET	MS REI is being simulated

Table 3 12: Bytes You Cannot Edit Due to Parameter Settings (Cont.)

Section and Path Overhead Byte(s)	Text String that Replaces the Binary Values	Parameter Setting Affecting Byte-Edit Capability
G1	HP RDI SET	HP RDI is being simulated
	HP REI SET	HP REI is being simulated
All path overhead bytes set to ones	AU AIS SET	AU AIS is being simulated

Editing the J1 Path Trace Byte

The J1 Path Trace Byte carries a fixed-length, 16 or 64-byte string intended for sending user messages. The Path Trace Byte is a string consisting of ASCII characters (rather than the ones and zeros used to edit the other overhead bytes); the 16 byte format includes a CRC byte. 16 byte and 64 byte are two different formats.

To edit the J1 Path Trace Byte:

1. Display the Path Trace Byte as follows:

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
TRANSMIT	PATH OVERHEAD	J1 *byte*	Reset Overhead
			64 byte Format
			16 byte Format
			Edit Trace
			Default Trace

The text string USER is shown in place of the actual byte value. There are five ways you can change the Path Trace message.

H Select **Reset Overhead** to set all bytes in the path overhead to their default values.

***NOTE**. Reset Overhead does not remove simulated error conditions that have been set using controls in the Defects & Anomalies page.*

- Select **Null Trace** to set all the J1 bytes in the string to the null character.
- Select **Default Trace** to set the J1 byte string to the default string “Tektronix CTS 850 SDH Test Set, hello, bonjour, guten tag.”
- Select **Default 64 Byte** to set the J1 byte string to the default string “Tektronix CTS 850 SDH Test Set, hello, bonjour, guten tag.”
- Select **User Trace** to set the J1 byte string to a string you can enter using the EDIT TRACE function.
- Select **Default 16 Byte** to set the J1 byte string to the string “Tek CTS 750” padded with spaces and ending with a carriage return/line feed.
- Select **EDIT TRACE** to define your own text string.

2. Select **EDIT TRACE** to edit the path trace message (see Figure 3 38).

   The string can contain a maximum of 64 characters, including spaces.

3. Select **DONE** when you have completed entering the string.

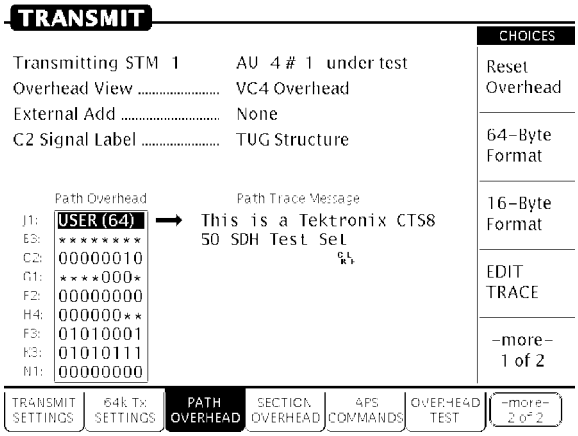

Figure 3 38: Editing the J1 Path Trace Byte

Adding DCC and User Channel Overhead Bytes

You can add data generated by an external protocol analyzer into the Data Communication Channel (DCC) and User Channel. The data from the protocol analyzer is added through the Overhead Add/Drop Port located on the rear panel. See *Appendix G* for detailed information on the port pin assignments.

To add external data into the DCC:

1. Connect an external protocol analyzer to the CTS850 using the Overhead Add/Drop Port on the rear panel of the CTS850.

2. To configure the CTS850 to add the external data bytes:

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
TRANSMIT	SECTION OVERHEAD	External Add	None
			D1 D3
			D4 D12
			F1
			E1
			E2
			E1 from Handset
			E2 from Handset

- Select **None** if you do not want to add external data.
- Select **D1 D3** to add data, generated by an external protocol analyzer, to the D1 D3 bytes of the DCC.
- Select **D4 D12** to add data, generated by an external protocol analyzer, to the D4 D12 bytes of the DCC.
- Select **F1** to add data, generated by an external protocol analyzer, to the F1 byte of the DCC.

As soon as you select which bytes to add data to, the CTS850 displays the words EXT ADD as the value for the selected bytes (see Figure 3 39).

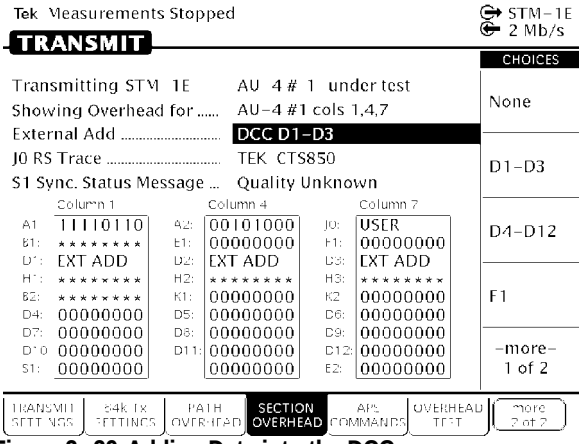

Figure 3 39: Adding Data into the DCC

To add external data into the User Channel:

1. Connect an external protocol analyzer to the CTS850 using the Overhead Add/Drop Port on the rear panel of the CTS850.
2. To configure the CTS850 to add the external data byte:

Press Menu Button	Select Menu Page	Highlight Parameter	Select Choice
TRANSMIT	PATH OVERHEAD	External Add	None
			F2

***NOTE**. The F2 byte cannot be externally generated for VC3 Overhead. However, the F2 byte can be edited from the PATH OVERHEAD page.*

- **H** Select **None** if you do not want to add external data.
- **H** Select **F2** to add data, generated by an external protocol analyzer, to the User Channel.

As soon as you select F2, the CTS850 displays the words EXT ADD as the value for F2 (see Figure 3 40).

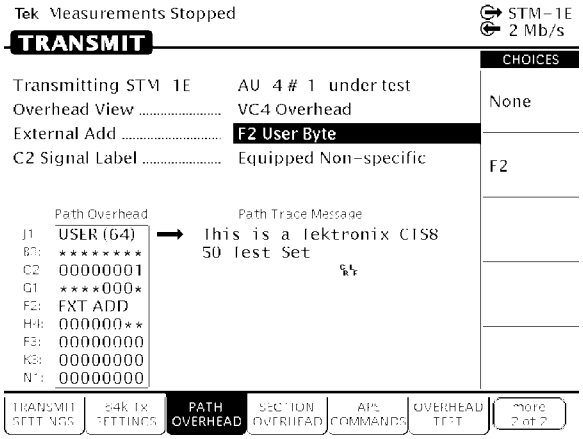

Figure 3 40: Adding Data into the User Channel

Trace Settings

The Trace Settings page available from the TRANSMIT Menu permits Trace Mismatch comparisons. This function is used for continuity testing. The J0 RS Trace can be chosen from the Section Overhead page of the TRANSMIT menu.

Table 3 13: Transmit TRACE SETTINGS Choices

Overhead Testing	Choices
Trace Select	Selects the trace for which information will be displayed. Valid selections depend on the current transmit and receive configurations. Values: J0, J1, J2
TX Trace	This displays the current TX trace.

Table 3 13: Transmit TRACE SETTINGS Choices (Cont.)

Overhead Testing	Choices
RX Trace	This displays the current RX trace. The display will be be updated as new data is received.
Expected Trace	This field displays the trace value used for trace mismatch comparisions. The user may edit the expected value trace, or copy the value from the value being transmitted or received. The J0 RS Trace can be chosen in the Section Overhead page of the TRANSMIT menu.

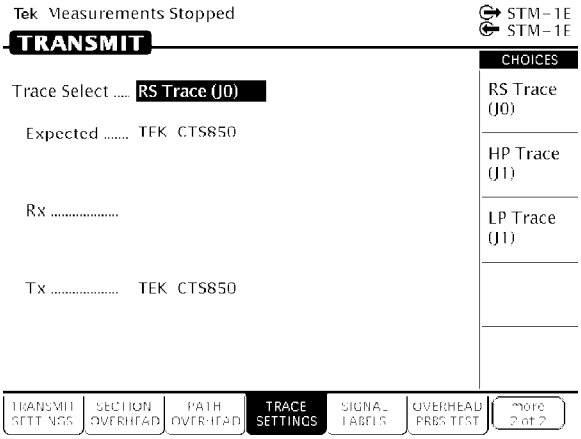

Figure 3 41: Choosing TRACE SETTINGS

Signal Labels

The Signal Labels page available from the TRANSMIT Menu permits selection of the C2 HP Signal Label. The different Signal Label settings have a dependance on the menus accessible from **TRANSMIT, Transmit Setting, SDH Structure** choices (STM 4: VC4 4c Bulk, AU 4 Bulk, AU 4 140 Mb/s, TU 3 Async 34 Mb/s, TU 12 Async 2 Mb/s) and the **TRANSMIT, Path Overhead, C2 Signal Label** choices (Unequipped; Equipped; TUG; TU n; 34 Mb/s; 140 Mb/s; ATM; MAN (DQDB); FDDI; O.181; VC AIS).

The C2 HP Signal Label choice (VC4 Overhead) is enabled when the HP Signal Label Mismatch Detection choice enabled at the RECEIVE, Analysis Config page. The C2 LP Signal Label choice (VC3 Overhead, TU3 Mapped) is enabled when the LP Signal Label Mismatch Detection choice enabled at the RECEIVE, Analysis Config page. The C2 V5 Signal Label choice (VC12 Overhead, TU12 Mapped) is enabled when the LP Signal Label Mismatch Detection choice enabled at the RECEIVE, Analysis Config page.

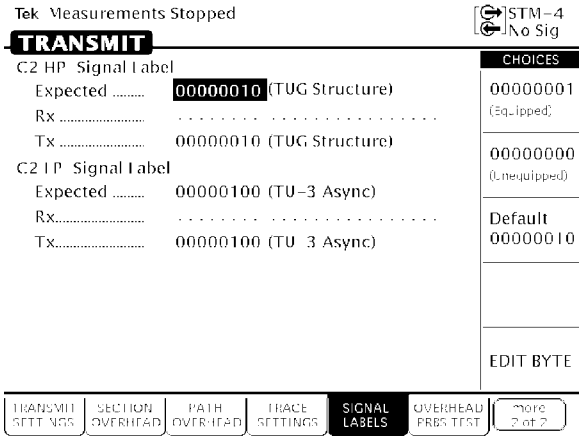

Figure 3 42: Choosing SIGNAL LABELS

Overhead PRBS Test

The Overhead PRBS Test page available from the TRANSMIT Menu permits PRBS insertion into a selected overhead byte. This function is used for continuity testing.

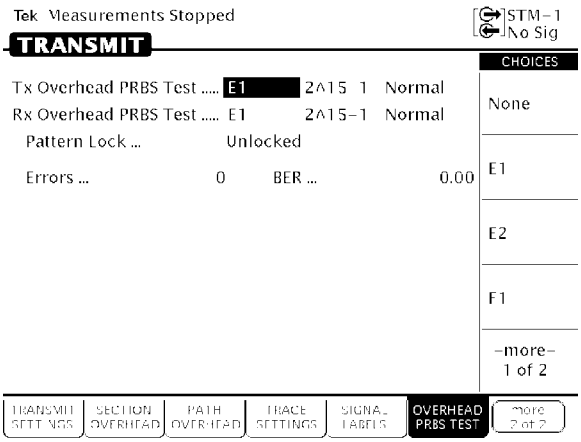

Figure 3 43: Choosing OVERHEAD PRBS TEST

Table 3 14: Transmit OVERHEAD PRBS TEST Choices

Overhead Testing	Choices
TX Overhead PRBS Test	Sets up PRBS insertion into a selected overhead byte for continuity testing. Three fields select the byte, PRBS pattern, and pattern inversion. Byte selections: None, D1 D3, D4 D12, E1, E2, F1, F2. Patterns: PRBS15, PRBS20, PRBS23. Inversion: Standard, Inverted.
RX Overhead PRBS Test	Sets up PRBS insertion into a selected overhead byte for continuity testing. Three fields select the byte, PRBS pattern, and pattern inversion. Byte selections: None, D1 D3, D4 D12, E1, E2, F1, F2. Patterns: PRBS15, PRBS20, PRBS23. Inversion: Standard, Inverted.