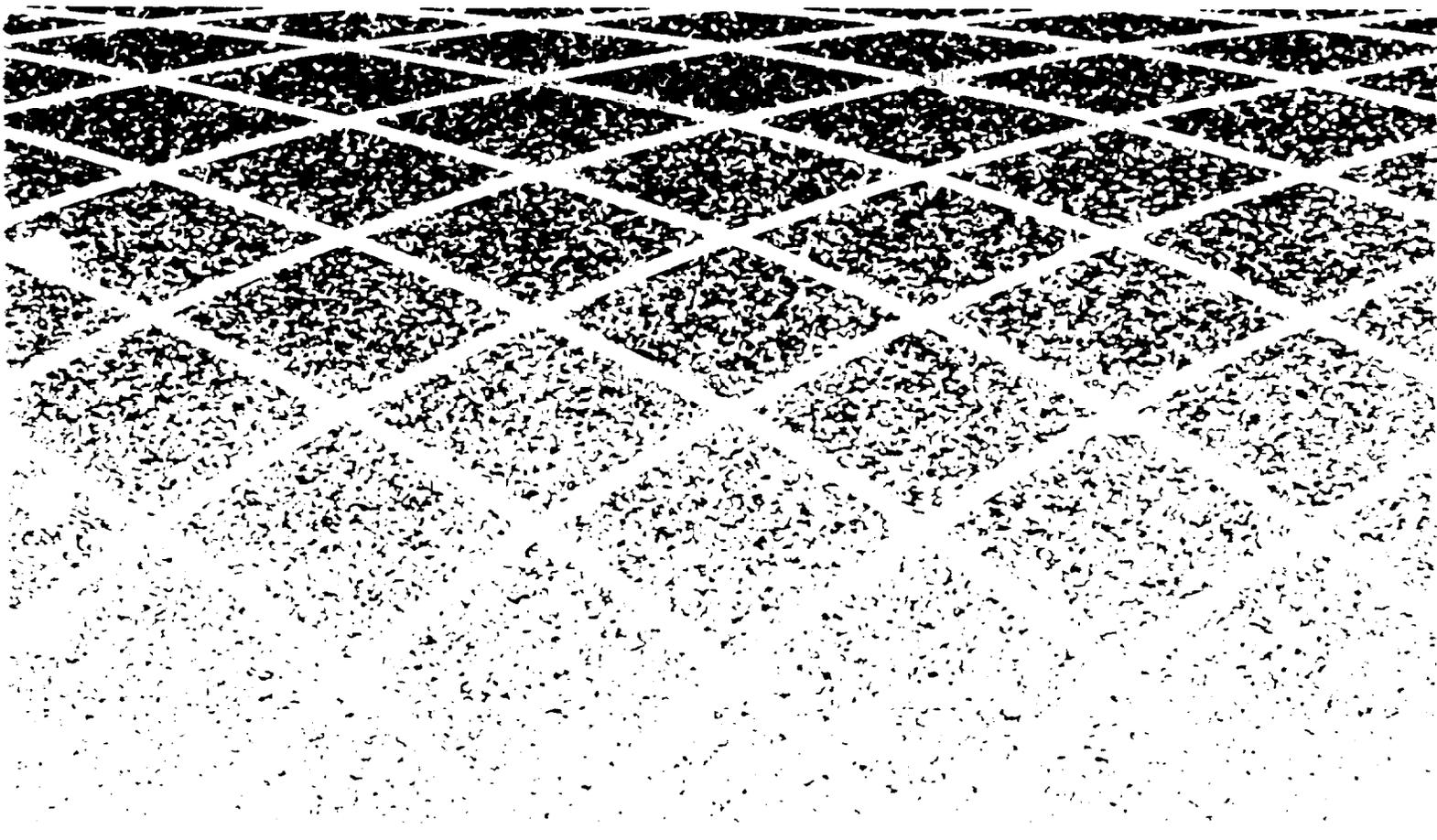




**AT&T 824-102-142**  
**Issue 3**  
**May 1992**

**Switched Access Remote  
Test System (SARTS)  
TA201:XL**

Technical Description



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This Technical Specification is published by AT&T to inform the industry of the interface between Switched Access Remote Test System (SARTS) and the Bell Communications Research, Inc. (Bellcore) Technical Reference TR-TSY-000834 for remote access and testing of Special Services. It is a preliminary document subject to review and changes. As such, future issues of this information may differ in content and format.

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## About This Document

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### Purpose/Scope

This AT&T manual is published as a guide to Test System Controllers and Remote Test Units (TSC/RTU) that interface with Switched Access Remote Test System (SARTS), through the TA201:XL Translator, for remote accessing and testing of:

- Voiceband Special Services circuits
- Voiceband data circuits
- Digital Data System circuits
- High Capacity Digital Services (DS1).

In particular, this document describes the SARTS commands and the corresponding TR-TSY-000834 messages that support the access and test functions.

### Intended Audiences

The intended audiences are the purchasers and suppliers of Test System Controllers and Remote Test Units (TSC/RTU) that interface with SARTS through the TA201:XL Translator.

## Reasons for Reissue

This issue is required to update Chapter 2 "SARTS COMMANDS." The changes reflect updates and changes in SARTS/TA201:XL capabilities to perform specific tests. Changes were made to the capabilities of existing commands (no new commands).

Specifically, the 704 command was added to DDS Services-Digital Testing and the 706 command was added to DDS Services-Loopback Qualification Tests. Several commands are explained in more detail.

## SARTS TA201:XL Translator

Standard interfaces are the key element of an open architecture that will support control of generic test system controllers by Operations Systems such as SARTS. Standard interfaces allow you to buy equipment and systems from different vendors, choosing what best suits your operating needs.

This flexibility can be provided only through an open architecture that adheres to international standards. AT&T firmly supports the development of standards as the key element of open architectures.

To make this open architecture a reality, we are taking the following steps:

- Facilitating the rapid specification of standard interfaces and protocols by the T1M1 committee, which has been chartered to develop standards for the U.S. telecommunications industry.
- Meeting standards specified by T1M1 as soon as possible for every system to which they apply.
- Reviewing Technical References (TRs) with Bellcore, consistent with operating company and AT&T interests, in order to present mutually acceptable positions to T1M1.

In addition to standard interfaces that meet T1M1 requirements, AT&T plans to offer interfaces based on Bellcore technical advisories (TAs) and technical references (TRs). This announcement describes a planned interface between SARTS and generic Test System Controller/Remote Test Units (TSC/RTUs). The protocol for this interface was originally specified by the TA-TSY-000201. This advisory has been incorporated in Technical Reference, TR-TSY-000834. Process controllers and TSC/RTUs conforming to the standard interface will allow you to mix and match remote testing and measurement equipment from multiple vendors.

## How to Use This Document

This document covers the SARTS commands and TR-TSY-000834 messages passing across the TA201:XL interface between SARTS and the TSC/RTU. It also highlights any command options not supported by the TA201:XL Translator.

The subjects in each chapter are broken down as follows:

- **Chapter 1, System Description:** Provides a brief description of the function that the TA201:XL Translator provides SARTS as follows:
  - Description of the interface from the TA201:XL Translator to the SARTS PC.
  - Description of the interface from the TA201:XL Translator to the various TSCs.
  - TA201:XL Translator capacity.
  - Detailed tables of SARTS commands with their corresponding TR-TSY-00834 messages that are supported by the TA201:XL Translator.
- **Chapter 2, SARTS Commands:** Provides the commands used at the SARTS Test Positions with respect to TA201:XL remote access/testing capabilities. The commands are broken down into the following categories:
  - DDS Command Set.
  - DDS Loop Qualification and Voiceband command set.
  - HCDS Command set.
  - Miscellaneous Command set.

Each of the commands from the tables in Chapter 1 are described by showing its SARTS prompter, its mapping to the TR-TSY-000834 message(s), and its limitations (if any).

- **Chapter 3, TR-TSY-000834 Command Options not Supported by TA201:XL:** Describes TR-TSY-000834 options not supported by the SARTS TA201:XL Translator.
- **Chapter 4, Notice of Modification or Change:** Describes the process for submitting enhancement requests and the process for notification of change.
- **Permuted Index:** Provides a permuted listing which will help when trying to identify where within the manual a specific subject may be located.

## Related Documentation/Training

The following AT&T Manuals and Customer Information Release provide additional information on SARTS and the TA201:XL Translator:

AT&T 666-610-100	SARTS General Description
AT&T 666-611-134	TA201:XL Administrator's Manual
AT&T 666-612-104	SARTS User's Manual — Test Commands
AT&T 666-612-105	SARTS User's Manual — Feature Loadable Test Commands (Available 2Q91)
AT&T 824-102-137	TA201:XL Engineering Manual
AT&T 666-099-046TD	SARTS TA201:XL Translator (Customer Information Release — Technical Description)

AT&T provides personnel with detailed hands-on training courses that will help in administering and maintaining the TA201:XL Translator. The course is taught at the AT&T NATIONAL PRODUCT TRAINING CENTER in Dublin, Ohio. An AT&T Customer Information Release document (666-099-024IR) has been published listing the SARTS (and related) courses available at the NATIONAL PRODUCT TRAINING CENTER.

If you need additional information, call the Training Manager, (614) 764-5386. Students can register today for any of the courses by calling toll free:

1-800-TRAINER  
(Select Option 2)  
In Canada, 1-800-221-1647

For additional information or assistance, please contact your AT&T Account Executive.

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# System Description

# 1

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# System Description

# 1

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## Technical Reference Overview

There are four key documents used as a guide in defining the SARTS TA201:XL to TSC/RTU interface for remote access and testing. These documents are:

Document Number	Function	Issue
TR-TSY-000834	Operations Application Messages: Network Maintenance and Testing Messages	Issue 2; Revision 2
TR-TSY-000476	Network Maintenance: Access and Testing Messages	Issue 2
TR-TSY-000828	Generic Operations Interface: OSI Communications Architecture	Issue 1
TR-TSY-000062	Protocol and Language for OS/NTE Interfaces	Issue 1

## Interfaces

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### SARTS Link

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The data link from the TA201:XL Translator to the SARTS PC is established through Permanent Virtual Circuits (PVCs) connected through either a public data packet network or through a direct private line. The link operates using an X.25 Level 3 protocol and operates up to 9600 baud.

SARTS PCs that are connected to the TA201:XL list the TA201:XL as a foreign PC in their data base. TSCs are listed in the SARTS data base as RTSS and RMS-Ds that are connected to this foreign PC. Data link communications between the SARTS PC and the TA201:XL use the inter-PC protocol.

### TSC Links

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The TA201:XL communicates with TSC/RTUs through X.25 PVCs or Switched Virtual Circuits (SVCs) through either a private line or an X.25 network. These links are designed with the following criteria:

1. The protocol governing translations on these links must conform to the ratified International Telegraph and Telephone Consultative Committee (CCITT) standard.
2. The protocol must be compatible with X.25, preferably Level 3, in accordance with TR-TSY-000062 and TR-TSY-000828.
3. Point-to-point communications over private lines, as well as packetized communications over virtual connections, are supported only to conform with the approved standards.

The TA201:XL can support a maximum of 80 virtual circuits (PVCs or SVCs) spread across 10 physical links off of the AT&T 3B2 model 600 computer. The physical links can be connected to a public data packet network or directly to the SARTS PCs and TSC/RTUs. A minimum of one of the 80 virtual circuits is reserved for the SARTS PC connection, thus a maximum of 79 virtual circuits can be available for TSC/RTU connections or for connections to other SARTS PCs or data packet networks.

### Terminal Interface

A terminal interface for an administrative console is required to enable the site managers to manipulate site dependent data and to initiate and control maintenance functions. Therefore, a simple interface is provided using an asynchronous link and ASCII protocol operating at 9600 baud.

### Printer Interface

A printer interface is provided for error messages and for administrative purposes. The printer operates at 4800 baud.

Table 1-1 summarizes all the TA201:XL interfaces.

Table 1-1. TA201:XL Translator Link Descriptions

Interface System/Unit	Link Type	Link Protocol	Baud Rate	Maximum Links	Maximum Link Length
SARTS PC	Synchronous	X.25,Level 3	Up to 9600	16(PVCs Only) Over up to 9 Physical Links	50 Feet (Without Modems)
TSC/RTU	Synchronous	X.25,Level 3	Up to 9600	79 (PVCs and SVCs)	50 Feet (Without Modems)
Administrative Console	Asynchronous	ASCII	9600	1	50 Feet (Without Modems)
Administrative Printer	Asynchronous		4800	1	50 Feet
Diagnostic Access	Asynchronous		1200	1	Unlimited (Via Modems)

## TA201:XL Capacity

The TA201:XL supports communications through 10 I/O ports. Each of these ports can provide a dedicated link to a SARTS PC or to a TSC or a network of SARTS PCs, TSCs, or RTUs.

A maximum of 80 virtual circuits spread across PCs and TSC/RTUs can be supported. However, the PCs and the TSC/RTUs cannot share the same physical link. Thus, the links must be configured prudently to obtain 80 virtual circuits.

Each TA201:XL must have at least one connection to a SARTS PC. If a network configuration is used, it can be connected to a maximum of 16 SARTS PCs through up to 9 physical links. Only PVCs can be used for the connection between the SARTS PC and the TA201:XL.

The minimum number of TSC/RTU virtual circuits is 1 and the maximum is 79. Any combination of PVCs and SVCs is allowable for the TSC/RTU connections.

Figure 1-1 illustrates the TA201:XL to TSC/RTU link alternatives. The third alternative, using a packet data network, takes the most advantage of the processing and connectivity power of the TA201:XL.

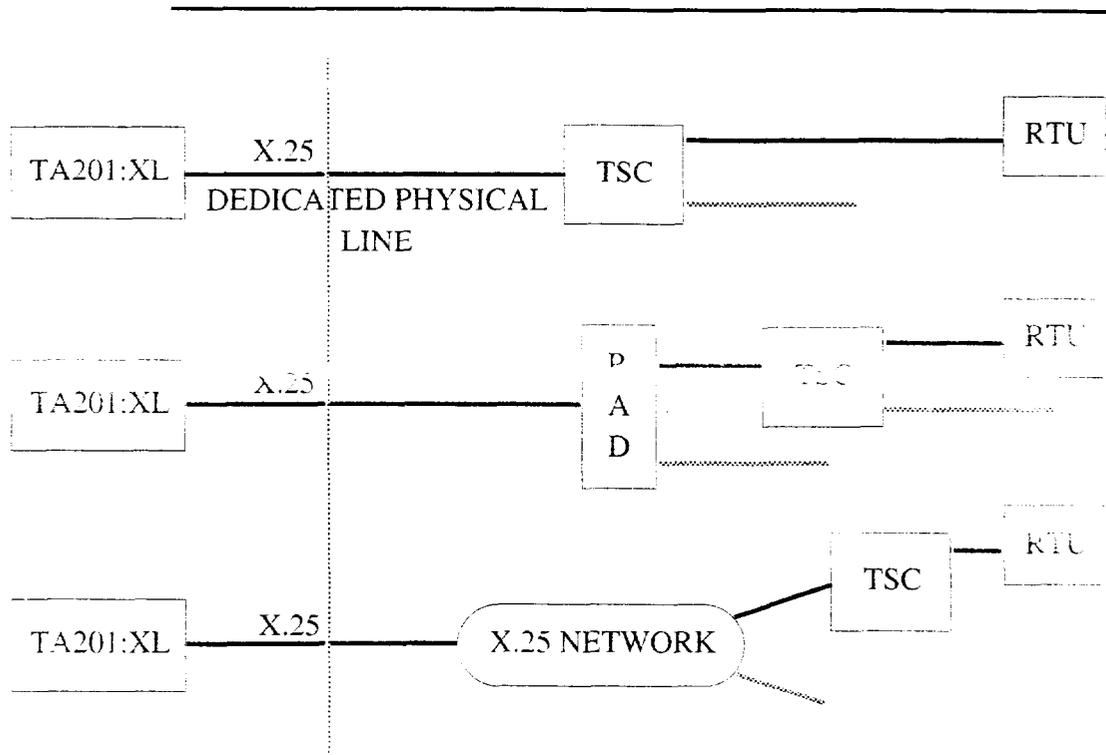


Figure 1-1. SARTS TA201:XL Translator Link Alternatives

## **SARTS/TA201:XL Command Translation**

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The purpose of this section is to provide a list of the SARTS commands and corresponding TR-TSY-000834 messages supported by the TA201:XL. The commands are divided into four categories:

1. DDS Services — Digital Test Commands.
2. DDS Services — Loop Qualification Test Commands.
3. HCDS — Test Commands.
4. Voiceband — Test Commands.

The TA201:XL provides the ability to translate messages received from SARTS into messages conforming to the TR-TSY-000834 specification. In most cases, these translations use a one-to-one mapping. However, for certain functions, a “store-and-forward” feature is used to compress and expand messages. These cases are highlights in the description section for the particular translation.

The translation of SARTS access and test commands into TR-TSY-000834 messages is outlined in the following tables. Specific TR-TSY-000834 command options not supported by the TA201:XL are documented in a separate section following the command translations.

**DDS Services - Digital Testing**

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SARTS Commands	Functions	TR-TSY-000834 Messages
704	Test Access	CONN-TACC-T0y
706	Test Access	CONN-TACC-T0y
D01	User Data Rate and Digital Monitor Circuit	CONN-TACC-T0y and MON-DDS
D02	Digital Loopback Test	TST-LPBK-DDS
D05	Transmit Pattern	TST-STRHTY-DDS
D08	Snapshot Monitor	MON-DDS
D09	Multipoint Junction Unit Branch Select	CHG-MJU-DDS
D10	Multipoint Junction Unit Control	CHG-MJU-DDS
D12	Latching Loopback Control	CHG-LTCHLPBK-DDS or CHG-MJU-DDS
D13	Transmit and Measure Code	TST-STRHTY-DDS
D14	Define Pattern	None*
D15	Secondary Channel Digital Measurement	TST-MJU-DDS
D17	Inject Errors	TST-INSERRBITS
D19	Measure Subrate Framing Errors	MON-DDS
DDS	DDS Macro	TST-LPBK-DDS
G02	Disconnect Test Point	DISC-TACC
G09	Restore Test Point	CHG-PTRST
G15	Terminate and Leave	CHG-TL

---

\* Pattern saved and used in D05 and D13.

DDS Services - Loop Qualification Test  
Commands

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<b>SARTS Commands</b>	<b>Functions</b>	<b>TR-TSY-000834 Messages</b>
701	Access Point Identification	CONN-TACC
703	Complete Circuit Access	CHG-PRTPAR
704	Access Point Identification	CONN-TACC
L01/L51	Loop Conditioning	CHG-SPLTSUPV
M01/M11	Voltage Measurement	MEAS-VG
M02/M12	Resistance Measurement	MEAS-RES
M03/M13	Measure Capacitance	MEAS-CAPNC
M04/M14	Current Measurement	MEAS-CUR
T01	Send Tone	CONN-TN
T03	Measure Level of Frequency	MEAS-TN
T04	Measure Noise	MEAS-NSE
T07	Remove Tone	DISC-TSTSIG
T08	Apply Signal	CONN-PARSIG
T09	Measure Impulse Noise	MEAS-IMPNSE
T10	Send Frequency	CONN-TN
G01	Test Direction	
G02	Disconnect Test Point	DISC-TACC
G09	Restore Test Point	CHG-PTRST
G11	Terminate Test & Report	DISC-MEAS
G12	Test Update	REPT-RSLT
G15	Terminate and Leave	CHG-TL

## System Description

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### HCDS Test Commands

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<u>SARTS Commands</u>	<u>Functions</u>	<u>TR-TSY-000834 Messages</u>
705	HCDS Access	CONN-TACC-T1
D31	Define/Change Pattern	CHG-TSTSIG-T1
D32	Digital Loopback Control	CHG-LPBK-T1
D33	Measure Pattern	MEAS-SIG-T1
D34	Change Pairs	CHG-PRS
D35	Inject Errors	TST-INSERRBITS
D36	Change HCDS Access Mode	CHG-ACCMD-T1
D39	Smart Repeater Loopback	RPTR-LPBK-T1*
G02	Disconnect Test Point	DISC-TACC
G11	Terminate Test & Report	DISC-MEAS
G15	Terminate and Leave	CHG-TL
G21	Retrieve DS1 PM Data	RTRV-PM-T1†

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\* This command is not supported by Bellcore but can be provided in agreement with a vendor at the request of a customer.

† TA-TSY-000200 Message.

**Voiceband Test Commands**

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<b>SARTS Commands</b>	<b>Functions</b>	<b>TR-TSY-000834 Messages</b>
701	Access Point Identification	CONN-TACC
702	No-Test Trunk Access	CONN-CALL*
703	Complete Circuit Access	CHG-PRTPAR
704	Access Point Identification	CONN-TACC
G01	Test Direction	
G02	Disconnect Test Point	DISC-TACC
G07	Establish Monitor or Talk Line	CONN-MONEST
G09	Restore Test Point	CHG-PTRST
G15	Terminate and Leave	CHG-TL
H11	Monitor Listen	CONN-MONLIST
H12	Split Talk and Listen	CONN-TLKSPLT
E01	E&M Conditioning	CHG-SPLTSUPV
E02	E&M Ringing in Split Direction	TST-RINGSGNL
E03	E&M Dial Pulsing	TST-OUTPLSE
E04	E&M Touch-Tone Pulsing	TST-OUTPLSE
L01/L51	Loop Conditioning	CHG-SPLTSUPV
L02	Loop Test Direction Ringing Signal	TST-RINGSGNL
L03	Loop Dial Pulsing	TST-OUTPLSE
L04	Loop Touch-Tone Dialing	TST-OUTPLSE
M01/M11	Voltage Measurement	MEAS-VG
M02/M12	Resistance Measurement	MEAS-RES
M03/M13	Measure Capacitance	MEAS-CAPNC
M04/M14	Current Measurement	MEAS-CUR

## System Description

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<b>SARTS Commands</b>	<b>Functions</b>	<b>TR-TSY-000834 Messages</b>
S01	Single Frequency Conditioning	CHG-SPLTSUPV
S02	Single Frequency Ringing	TST-RINGSGNL
S03	Single Frequency Dial Pulsing	TST-OUTPLSE
S04	Single Frequency Touch-Tone Dialing	TST-OUTPLSE
T01	Send Tone	CONN-TN
T03	Measure Level of Frequency	MEAS-TN
T04	Measure Noise	MEAS-NSE
T07	Remove Tone	DISC-TSTSIG
T08	Apply Signal	CONN-PARSIG
T09	Measure Impulse Noise	MEAS-IMPNSE
T10	Send Frequency	CONN-TN
X01/X51	Duplex Conditioning	CHG-SPLTSUPV
X02	Duplex Ringing	TST-RINGSGNL
X03	Duplex Dial Pulsing	TST-OUTPLSE
X04	Duplex Touch-Tone Dialing	TST-OUTPLSE

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\* TA-TSY-000202 Message.

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## Introduction

This chapter provides a brief description of the SARTS commands\* that are supported by the TA201:XL along with their mappings to the TR-TSY-000834 specified messages. Included also are descriptions of the differences of some of the options of the above commands when executed by TR-TSY-000834 supported remotes.

With each new release of TA201:XL, there will be three levels of service provided. These levels are: Voiceband (V), DDS (D), and Hicap (H). Commands that are only available under certain levels are noted in the text and in order for those commands to be used, that services option (V, D, H) will have to be purchased and enabled.

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\* For more detailed description of the SARTS testing commands, refer to "SARTS User's Manual — Test Commands" AT&T 666-612-104.

## DDS Services — Digital Testing

<u>SARTS Commands</u>	<u>Functions</u>	<u>TR-TSY-000834 Messages</u>
704	Test Access	CONN-TACC-T0y
706	Test Access	CONN-TACC-T0y
D01	User Data Rate and Digital Monitor Circuit	CONN-TACC-T0y and MON-DDS
D02	Digital Loopback Test	TST-LPBK-DDS
D05	Transmit Pattern	TST-STRHTY-DDS
D08	Snapshot Monitor	MON-DDS
D09	Multipoint Junction Unit Branch Select	CHG-MJU-DDS
D10	Multipoint Junction Unit Control	CHG-MJU-DDS
D12	Latching Loopback Control	CHG-LTCHLPBK-DDS or CHG-MJU-DDS
D13	Transmit and Measure Code	TST-STRHTY-DDS
D14	Define Pattern	None*
D15	Secondary Channel Digital Measurement	TST-MJU-DDS
D17	Inject Errors	TST-INSERRBITS
D19	Measure Subrate Framing Errors	MON-DDS
DDS	DDS Macro	TST-LPBK-DDS
G02	Disconnect Test Point	DISC-TACC
G09	Restore Test Point	CHG-PTRST
G15	Terminate and Leave	CHG-TL

---

\* Pattern saved and used in D05 and D13.

704 — Test Access

---

The 704 Command prompter has the following form:

```
CKT ACCESS 704/LOCN /SYS /ACCESS # /ORTN/CNFGN/TP #/SEG #/
```

LOCN	Is an 11-character CLLI* code which is mapped to the TID field of the CONN-TACC-T0y message
SYS	Is a 1- to 6-character system identifier
ACCESS	Is an access address of 1 to 17 characters
ORTN	Is EF or FE
CNFGN	Is DAB or DBA
TP	Test Point number, not used by TA201:XL
SEG#	Segment Number.

This command maps to the following message:

```
CONN-TACC-T0y:TID:AID:CTAG:TSN:ERRCOR;
```

TID	Mapped from field 1 of the 704 command
AID	Mapped from field 3 of the 704 command
CTAG	Correlation Tag
TSN	Test Session Number
ERRCOR	Is Y or N depending on the user data rate
Y	Always A

---

\* COMMON LANGUAGE is a registered trademark and CLEI, CLLI, CLCI, and CLFI are trademarks of Bell Communications Research, Inc.

**706 — Test Access**

---

The 706 Command prompter has the following form:

```
DIG AC 706/LOCN /SYS /ACCESS # /ORTN/UDR/TP #/SEG #/
```

LOCN	Is an 11-character CLLI code which is mapped to the TID field of the CONN-TACC-T0y message
SYS	Is a 1- to 6-character system identifier
ACCESS	Is an access address of 1 to 17 characters
ORTN	Is EF or FE
UDR	Is User Data Rate.
TP	Test Point number, not used by TA201:XL
SEG#	Segment Number.

## SARTS Commands

---

This command maps to the following message:

```
CONN-TACC-T0y:TID:AID:CTAG:TSN:ERRCOR;
```

TID Mapped from field 1 of the 704 command

AID Mapped from field 3 of the 704 command

CTAG Correlation Tag

TSN Test Session Number

ERRCOR and y Mapped from the RATE parameter as follows.

<u>y</u>	<u>e</u>	<u>RATE</u>
A	N	02.40
B	N	04.80
C	N	09.60
D	N	56.00*
E	N	64.00
L	N	19.20
L	Y	19.2E
U	N	38.4

**D01 — User Data Rate and Digital Monitor  
Circuit**

---

The D01 prompter has the following form:

```
MON CKT D01/2.4KB:4.8KB:9.6KB:56KB:64KB:USR/MIN/DATA RATE/
```

When the SARTS instruction is received, the data rate (y) and the Error Correction (e) mapped from the RATE field (see the following table) are compared with the most immediately preceding data rate (y) and Error Correction (e) used in the CONN-TACC-T0y instruction (used either for access or reaccess) with the same TSN. If the new y and e from the SARTS instruction are the same as those previously used for access, the successful response message (shown below) will be sent to SARTS. If not, the previous access will be disconnected and the new SARTS instruction will be mapped to CONN-TACC-T0y for reaccess by changing y and e from the previous CONN-TACC-T0y. If the reaccess fails, proper error messages will be sent to SARTS.

```
CONN-TACC-T0y:TID:AID,CTAG,TSN,ERRCOR;
```

TID	CLLI code from previous CONN-TACC-T0y
AID	Access # from previous CONN-TACC-T0y

## SARTS Commands

---

TSN            From previous    CONN-TACC-T0y

CTAG           From previous    CONN-TACC-T0y

ERRCOR and y Mapped from the RATE parameter as follows.

y	e	RATE
A	N	02.40
B	N	04.80
C	N	09.60
D	N	56.00*
E	N	64.00
L	N	19.20
L	Y	19.2E
U	N	38.4

In addition to providing the data rate for access, the D01 command effects a monitor of the circuit with the MON-DDS command as follows:

\* If the AID has an & in it, e=y

```
MON-DDS::TSN:CTAG:DIR,MOS,DUR,RI;
```

DIR            Both directions

MOS            M, monitor for control codes or customer data (Issue 2 of TR-834)  
                 SSM, snapshot monitor (Issue 3 of TR-834)

### ⇒ NOTE:

Issuance of the Issue 2 (M) or Issue 3 (SSM) is determined by the TA201:XL Administrator by setting the D01/D08 option in the SYSTEM PARAMETERS administrative command.

DUR            Duration mapped from D01 field 2

RI             Report interval is set to single report for a 5 second monitor (0 MIN duration); otherwise, it is set to 10 seconds.

## D02 — Digital Loopback Test

---

The D02 prompter has one of the following forms depending on the user data rate:

If the UDR is less than 56 kb;

```
LOOP-BACK TEST D02/E:F/DSU:CSU:OCU:I:I:HL222/5S:15S:5M:15M:LT/511:2047/
```

otherwise,

```
LOOP-BACK TEST D02/E:F/DSU:CSU:OCU:RP1:RP2:HL222/5S:15S:5M:15M:LT/511:2047/
```

TR-TSY-000834 does not allow for a HL222 loopback in the DDS-Loopback message (TST-LPBK-DDS). Therefore, specifying HL222 while testing with TR-TSY-000834 remotes will effect an HL96NY loopback.

TR-TSY-000834 remotes do not measure and report errored seconds or lost synchronizations. (Not a feature of TR-TSY-000834.) Therefore, the D02 command maps to TST-LPBK-DDS as follows:

```
TST-LPBK-DDS::TSN:CTAG:DIR,LPBKT,TDB,BEI,DUR,RI,THRSH;
```

## SARTS Commands

---

DIR E or F from the D02 prompter field 1

LPBKT This is mapped from field 2 of the D02 prompter as follows:

<u>Field 2</u>	<u>LPBKT</u>
DSU	D
CSU	C-n
OCU	O-1
RP1	R1
RP2	R2
HL222	H

Here n = 2 if the User data rate is 56 KB; n = 0 otherwise

TDB Is mapped according to field 4 of the D02 prompter to specify 511 or 2047 patterns

BEI N (No bit error correction)

DUR Duration, mapped from field 3 of the D02 prompter

RI Report Interval, assigned by SARTS according to the measurement duration as follows:

<u>Duration</u>	<u>Report Interval</u>
5 sec	Single report
15 sec	5 sec
5 min	20 sec
15 min	30 sec
24 hrs	1 min

THRSH Is set by a TA201:XL administrative command executed when setting up the data base.

### D05 — Transmit Pattern

The D05 command prompter has the following two forms:

If the data rate is less than 64 kb/s,

```
TRANSMIT CODE D05/E:F/511:2047:PAT:IDLE:MCOS:UMC:TST/
```

If the data rate is equal to 64 kb/s,

```
D05/E:F/511:2047:PAT:IDLE:MCOS:UMC:TST:2047R:ZEROS:TRSP/
```

TR-TSY-000834 requires that DDS pattern transmission be made in a timed fashion. SARTS supports transmission for an indefinite duration and automatically terminates the transmission when a test request necessitates this action. The D05 is mapped to TST-STRHTY-DDS as follows:

```
TST-STRHTY-DDS::TSN:CTAG:DIR,TF,TMP,BEI,DUR,THRSH;
```

DIR            Direction, mapped from the D05 prompter field 1.

TF            T, Transmit only

## SARTS Commands

---

TMP	Test Pattern mapped from field 2 of the D05 prompter.	
	D05 Field 2	MP
	511	5
	2047	2
	PAT	Pattern from D14
	IDLE	(hex FE)
	MCOS	(hex 9A)
	UMC	(hex 98)
	TST	(hex 9c)
	2047R	Option not supported
	ZEROS	Option not supported
	TRSP	Option not supported

The stress patterns and the 1-byte user-defined pattern are supported with the PAT option and by predefining these patterns with the D14 command which is a prerequisite command when a tester-defined pattern is selected in D05.

BEI	N, no bit error insertion.
DUR	90 sec. or 9999 sec (166-39). This value of duration parameter is set by a TA201:XL administrative command.
THRSH	Threshold Parameter, set by a TA201:XL administrative command.

## D08 — Snapshot Monitor

---

The D08 command has the following form:

```
RAW CIRCUIT MONITOR D08/MIN/
```

TR-TSY-000834 specified remotes return a single data type for each direction in each monitor report. Therefore, the data display for TR-TSY-000834 remotes shows a single byte. This command is mapped to MON-DDS as follows:

```
MON-DDS:::TSN:CTAG:DIR,MOS;DUR,RI;
```

DIR	B, Both directions
MOS	S, retrieve one byte samples S-18, retrieve multiple byte samples



**NOTE:**

Issuance of the Issue 2 (S) or Issue 3 (S-18) is determined by the TA201:XL Administrator by setting the D01/D08 option in the SYSTEM PARAMETERS administrative command.

DUR	Mapped from D08 prompter
RI	10 seconds except for snapshot monitor (0 MIN)

D09 — Multipoint Junction Unit Branch Select

The D09 command prompter has the following form:

```
MJU BRANCH SELECT D09 /E:F/ABS:REL/LEG#/LEG#/LEG#/LEG#/LEG#/LEG#/LEG#/LEG#/
```

There are no known limitations to this command. It is mapped to the CHG-MJU-DDS message as follows:

```
CHG-MJU-DDS : : TSN:CTAG:DIR, MJUF, BN;
```

DIR	From the D09 prompter
MJUF	S, Select branch
BN	Mapped from the LEG # parameters on D09 prompter

**D10 — Multipoint Junction Unit Control**

---

The D10 command prompter has the following form:

```
MJU CONTROL D10 /E:F/LBK:CLR:BLK:UNBLK:BLK-ALL-BUT:UNBLK-ALL-BUT-:RLS/LEG#/
```

The BLK-ALL-BUT and UNBLK-ALL-BUT options are not supported by the TR-TSY-000834 specifications. Furthermore, TR-TSY-000834 specified remotes do not return Hub IDs for any of the D10 command options. The mapping of this command is as follows:

```
CHG-MJU-DDS::TSN:CTAG:DIR,MJUF,BN;
```

DIR	Mapped from field 1 of the D10 prompter	
MJUF	Mapped from field 2 of the D10 prompter as follows:	
	Field 2	MJUF
	LBK	A (see D12)
	CLR	N
	UNBLK	U
	BLK	B
	BLK-ALL-BUT	Not defined in TR-TSY-000834
	UNBLK-ALL-BUT	Not defined in TR-TSY-000834
BN	Mapped from the LEG # parameter of the D10 prompter.	

**D12 — Latching Loopback Control**

The D12 command prompter has the following form:

```
LATCHING LOOP-BACK D12/E:F/DSU:CSU:OCU:HL222:DSDP:CSDP:NI/# IN TANDEM/ACT:RLS/
```

The CSDP Loopback is not supported by the TR-TSY-000834 specification. The number in the TANDEM parameter is the count of the device to be looped back in the specified direction while counting only the identical devices. This command is mapped to CHG-LTCHLPBK-DDS messages as follows:

```
CHG-LTCHLPBK-DDS::TSN:CTAG,DIR,OR,LSC;
```

Unless the DEVICE is MJ; in that case, it is mapped to:

```
CHG-MJU-DDS::d:e:f:g;
```

DIR	Mapped from the D12 prompter									
OR	Activate or Release, mapped from field 4 of the D12 prompter, and it is dependent on whether it is used with the CHG-LTCHLPBK or CHG-MJU as follows:									
	<table><tr><td>OR</td><td>g (CHG-LTCHLPBK)</td><td>g (CHG-MJU)</td></tr><tr><td>MJ</td><td>O</td><td>A</td></tr><tr><td>non-MJ</td><td>R</td><td>C</td></tr></table>	OR	g (CHG-LTCHLPBK)	g (CHG-MJU)	MJ	O	A	non-MJ	R	C
OR	g (CHG-LTCHLPBK)	g (CHG-MJU)								
MJ	O	A								
non-MJ	R	C								

LSC            Loopback Select Code, mapped according to field 2 of the D12 prompter as follows:

Field 2	LSC
DSU	2-111011
CSU	2-011000
OCU	n-101010
HL222	n-100011
DSDP	n-000010
CSDP	n-101101
NI	2-100000

Here n is the # in the TANDEM parameter of the D12 prompter minus 1.



**NOTE:**

Presently, the DSU, CSU, and NI codes begin with a 2. Beginning with Release 5, the 2 will have a default value that can be set by an option of the SYSTEM PARAMETERS administrative command and will have a range from 0-9. That value can then be superseded by the number in tandem parameter of the D12 prompter if one is entered.

**D13 — Transmit and Measure Code**

---

The D13 command has the following form:

If the data rate is less than 64 kb/s,

```
TRANSMIT & MEASURE D13/E:F/511:2047:PAT/5S:15S:5M:15M:LT/
```

If the data rate is equal to 64 kb/s,

```
D13/E:F/511:2047:PAT:2047R:ZEROS:TRSP/5S:15S:5M:15M:LT/
```

TR-TSY-000834 specified remotes do not measure lost synchronizations. Therefore, these results are absent. This command is mapped to the TST-STRHTY-DDS message as follows:

```
TST-STRHTY-DDS::TSN:CTAG:DIR,TF,TMP,BEI,DUR,THRSH,RI;
```

DIR            Mapped from field 1 of the D13 prompter

TF             B, both Transmit and Measure

TMP	Mapped according to field 2 of the D13 prompter as follows:	
	<u>D13 Field 2</u>	<u>TMP</u>
	511	5
	2047	2
	PAT	Pattern from D14
	2047R	Option not supported
	TRSP	Option not supported

The stress patterns and the 1-byte user-defined pattern are supported by predefining these patterns with the D14 command. The D14 command is a prerequisite command for the case where a tester-defined pattern is selected in the D13.

BEI If field 2 is 511 or 2047, BEI is N. If field 2 is anything else, BEI is not sent.

DUR	Mapped according to field 3 of the D13 prompter as follows:	
	<u>Field 3</u>	<u>DUR</u>
	5S	0-5
	15S	0-15
	5M	5-0
	15M	15-0
	LT	59-0

THRSH Mapped from SYSTEM PARAMETERS table as defined by administrator (range is 1-9999).

RI	Mapped according to field 3 of the D13 prompter as follows:	
	<u>Field 3</u>	<u>RI</u>
	5S	S
	15S	5
	5M, 15M, LT	20

## D14 — Define Pattern

---

The D14 command has the following form:

```
DEFINE PATTERN D14/NETWORK DATA:CUSTOMER DATA/
```

This prompter is followed by a mask that defines and stores specific byte patterns and pattern repetitions (user-defined pattern for the D05, D07, and D13 commands). For TR-TSY-000834 users (TA201 remotes), only the first byte that is defined in the NETWORK DATA (D14/1) will be transmitted. It will be transmitted once (001 repetitions).

**⇒ NOTE:**

Additional bytes may be defined and different numbers of repetitions may also be defined, but only the first byte will be sent and sent only once. This meets the Bellcore TL1 command test strategy.

## D15 — Secondary Channel Digital Measurement

The D15 command has the following form:

```
SECONDARY CHANNEL MEASUREMENT D15/E:F/5S:15S:5M:15M:LT/
```

If data rate is 56 kB,

```
D15/E:F/5S:15S:5M:15M:LT/MJU:511PS:2047PS:TCD511:TCD2047/TRANS:RCV:LBK/
```

If data rate is not 56 kB,

```
D15/E:F/5S:15S:5M:15M:LT/MJU:511PS:2047PS/TRANS:RCV:LBK/
```

The TR-TSY-000834 specification does not measure and report on:

- Lost Synchronization
- Elapsed Measurement Duration
- Circuit Type, i.e., whether a secondary channel MJU was detected or not.

Furthermore, TR-TSY-000834 specification does not support a timed measurement, but rather they allow the number of iterations to be specified. Therefore, an approximate mapping is made from frequencies to number of iterations. The command is mapped as follows: The older prompter maps to:

## SARTS Commands

---

TST-MJU-DDS : : TSN : CTAG : DIR , TR ;

DIR            Direction, mapped from field 1 of the D15 prompter

TSN            Test Session Number

CTAG          Correlation Tag

TR            Duration from field 2 of D15 translated into a number of iterations by allowing 5 seconds for each iteration.

The newer prompter (SARTS GI-5) maps as follows: if field 4 is TRANS or if field 3 is not MJU then it maps to:

TST-STRHTY-DDS : : TSN : CTAG : DIR , TF , TMP , [ BEI ] , DUR , [ THRSH ] [ , RI ] ;

TSN            Test Session Number

CTAG          Correlation Tag

DIR            E or F mapped from prompter

TF            B

TMP            Is mapped from field 3 of the prompter as shown

Field 3	TMP
2047PS	W
511PS	U
TCD511	T
TCD2047	V

BEI            N

DUR            Is mapped from field 2 of the prompter as S5, S15, M5, M15, or H24

THRSH        Is read from the data structure set by administrative command

RI            Is mapped from field 2 as S, 5, 15, 20, or 60.

For all other choices of fields 4 and 3, it maps to TST-MJU-DDS as shown above.

## D17 — Inject Errors

---

There are no limitations to this command. The Command has the following form:

```
D17/E:F/PRIMARY:SECONDARY/
```

The corresponding TR-TSY-000834 message is:

```
TST-INSERRBITS::d:e:f;
```

- d TST, Test Session Number
- e CTAG, Correlation Tag
- f BITERRS

The parameter f is not mapped from this instruction, but a single burst of bit errors is injected into the transmitted pattern of either D02, D05, D13, or D15 command.

**D19 — Measure Subrate Framing Errors**

---

The D19 prompter has the following form:

```
MEAS SUBRATE FRAMING ERRORS D19/5S:15S;5M:15M:LT/
```

The TR-TSY-000834 does not support the measurement of line speed or the errored second count on either side. Furthermore, a TA201:XL access requires the 704/D01 sequence to precede the execution of this command. The command is mapped to the MON-DDS message as follows:

```
MON-DDS::TSN:CTAG:DIR,MOS,DUR,RI;
```

DIR	B, both directions												
MOS	M, monitor for data bytes												
DUR	Duration, mapped from the D19 prompter												
RI	Report Interval, assigned by SARTS according to the measurement duration as follows:												
	<table><thead><tr><th>Duration</th><th>Report Interval</th></tr></thead><tbody><tr><td>5 sec</td><td>single report</td></tr><tr><td>15 sec</td><td>5 sec</td></tr><tr><td>5 min</td><td>20 sec</td></tr><tr><td>15 min</td><td>30 sec</td></tr><tr><td>24 hours</td><td>1 min</td></tr></tbody></table>	Duration	Report Interval	5 sec	single report	15 sec	5 sec	5 min	20 sec	15 min	30 sec	24 hours	1 min
Duration	Report Interval												
5 sec	single report												
15 sec	5 sec												
5 min	20 sec												
15 min	30 sec												
24 hours	1 min												

**DDS Macro**

---

The DDS Macro has the following form:

```
DDS MACRO DDS/E:F:BOTH/DSU? Y:N/# RPTRS/5S:15S;5M:15M/
```

The TR-TSY-000834 does not support the measurement and reporting of errored seconds or lost synchronizations. The DDS\_MACRO command is translated into multiple TST-LPBK-DDS messages as described under the D02 command.

**G02 — Disconnect Test Point**

---

This command has the following prompter:

```
TP CONTROL G02/ ACT OTHTP : DISC : INTCHG TPS : REC DISP/
```

The TR-TSY-000834 mapping is as follows:

```
DISC-TACC::d:e;
```

d (TSN) = Session Number  
e (CTAG) = Correlation Tag

**G09 — Restore Test Point**

---

The G09 command has the following form:

```
G09/ NO PARAMETER CHOICES /
```

The mapping to TR-TSY-000834 is as follows:

```
CHG-PTRST::d:e;
```

d (TSN)       = Session Number  
e (CTAG)      = Correlation Tag

G15 — Terminate and Leave

The G15 command has the following form:

```
TERMINATE & LEAVE G15/ TERM:RESTORE / A:B:AB, /
```

Mapping to TR-TSY-000834:

```
CHG-TL::d:e:f;
```

d (TSN) = Session Number  
e (CTAG) = Correlation Tag  
f (ACT) = Mapped from fields 1 and 2 of the G15 as follows:

<u>f 1</u>	<u>f 2</u>	<u>f (ACT)</u>
1	1	TERMA
1	2	TERMB
1	3	TERMAB
2	1	RLSA
2	2	RLSB
2	3	RLSAB

## DDS Services — Loop Qualification Tests

SARTS Commands	Functions	TR-TSY-000834 Messages
701	Access Point Identification	CONN-TACC
703	Complete Circuit Access	CHG-PRTPAR
704	Access Point Identification	CONN-TACC
L01/L51	Loop Conditioning	CHG-SPLTSUPV
M01/M11	Voltage Measurement	MEAS-VG
M02/M12	Resistance Measurement	MEAS-RES
M03/M13	Measure Capacitance	MEAS-CAPNC
M04/M14	Current Measurement	MEAS-CUR
T01	Send Tone	CONN-TN
T03	Measure Level of Frequency	MEAS-TN
T04	Measure Noise	MEAS-NSE
T07	Remove Tone	DISC-TSTSIG
T08	Apply Signal	CONN-PARSIG
T09	Measure Impulse Noise	MEAS-IMPNSE
T10	Send Frequency	CONN-TN
G01	Test Direction	
G02	Disconnect Test Point	DISC-TACC
G09	Restore Test Point	CHG-PTRST
G11	Terminate Test & Report	DISC-MEAS
G12	Test Update	REPT-RSLT
G15	Terminate and Leave	CHG-TL

701 — Access Point Identification

The 701 command has the following form:

```
AP ID 701/LOCN /SYS /SMAS# /ORTN/CNFGN/TP#/SEG/
```

LOCN	8-character CLLI code
SYS	2 alphanumeric characters
SMAS#	7 alphanumeric characters or dashes. This field has the access address for an analog access and test session.
ORTN	EF or FE
CNFGN	2WA, 2WB, 2EM, 4AB, 4BA, 22A*, 22B*, 24A*, 24B*, 42A*, 42B*, 26X*, 46X*, QAB*, QBA*, CAB, CBA, TST*, MAB, MBA, 6AB*, 6BA*, DFA*, DFB*, DF4*, 2CC*, 1TA*, 1TB*, 1RA*, 1RB*, DAB, DBA, 4WF, 2WC.

The mapping is as follows:

CONN-TACC:a:c:d:e[,f]:g,h:i,j,k,l:m,n,p[:q];

a (TID)	= Concatenation of LOCN and SYS
c (AID)	= SMAS#
d (CTAG)	= Correlation Tag
e (TSN)	= Session Number
f (DTSN)	= Not Used
g (ORTN)	= Orientation Code
h (CNFGRN)	= Configuration Code
i (SIG)	= NON
j (OPE)	= OT
k (OPF)	= OT
l (RNGDI)	= N
m (IMP)	= 33
n (TLPE)	= -05.0
p (TLPF)	= 00.0
q (TEL)	= TSV Number of Test Position

\* Not included in the TR-TSY-000834 specification.

### 703 — Complete Circuit Access

---

The 703 Command has the following form:

```
703 /SIG/OPA/OPZ/RNG/IMP/A-TLP/Z-TLP/
```

SIG	A 3-character code identifying signaling operation toward the A and Z ends of the circuit. The valid codes are: SFC, SFT, SFR, L2W, L4E, L4F, L4R, L4T, NON, 72W, 74F, 74E, 74T, 74R, EMF, EME, SMF, SME, DXX, DXE, DXF, 74S*, DXS*, L4S*, SFS*, SFD*.
OPA	A 2-character code denoting the signaling operation toward the A end of the circuit. Valid codes are: LN, GS, RD, AU, RB, OT, LR, BG, DR*.
OPZ	A 2-character code denoting the signaling operation toward the Z end of the circuit. Valid codes are: LN, GS, RD, AU, RB, OT, LR, BG, DR*.
RNG	A 1-character code identifying the direction in which the ringing signal is sent during normal operation. Valid codes are: N, E, F, and B.
IMP	A 2-character code identifying the nominal AC impedance level of the circuit. Valid inputs are 00, 11, 22, 33, and 44.
A-TLP, Z-TLP	Specify Transmission Level Points in the A and Z directions, respectively.

---

\* Not included in the TR-TSY-000834 specification.

The mapping to TR-TSY-000834 is as follows:

```
CHG-PRTPAR::d:e:f,g,h,i:j,k,l;
```

d (TSN)	= Session Number
e (CTAG)	= Correlation Tag
f (SIG)	= Signaling format. A 3-character code identifying signaling operation toward the A and Z ends of the circuit. The valid codes are: SFC, SFT, SFR, L2W, L4F, L4E, L4R, L4S, L4T, NON, 72W, 74F, 74S, 74E, 74T, 74R, EMF, EME, SFD, SFS, SMF, SME, DSE, DSG, DXS, DXX, DXE, DXF.
g (OPE)	= OPA or OPZ depending on whether the orientation is EF or FE respectively.
h (OPF)	= OPZ or OPA depending on whether the orientation is EF or FE respectively.
i (RNGDI)	= The ringing direction from the RNG parameter
j (IMP)	= The impedance value
k (TLPE)	= ATLP or ZTLP depending on whether the orientation is EF or FE respectively.
l (TLPF)	= ZTLP or ATLP depending on whether the orientation is EF or FE respectively.

**704 — Access Point Identification**

---

This will be available beginning with TA201:XL Release 5.1 and SARTS GI8 to facilitate digital access of metallic circuits.

The 704 Command prompter has the following form:

```
CKT ACCESS 704/LOCN /SYS /ACCESS # /ORTN/CNFGN/TP #/SEG #/
```

- LOCN        Is an 11-character CLLI code which is mapped to the TID field of the CONN-TACC message
- SYS        Is a 1- to 6-character system identifier
- ACCESS     Is an access address of 1 to 17 characters
- ORTN       Is EF or FE
- CNFGN      Is 4AB, 4BA, MAB, MBA, QAB, or QBA
- TP         Test Point number, not used by TA201:XL
- SEG#       Segment Number.

This command maps to the following message:

```
CONN-TACC:TID:AID:CTAG:TSN:ERRCOR;
```

- TID        Concatenation of field 1 and field 2 of the 704 command
- AID        Mapped from field 3 of the 704 command
- CTAG       Correlation Tag
- TSN        Test Session Number
- ERRCOR    Is Y or N depending on the user data rate
- Y          Always A

L01/L51 — Loop Conditioning

The L01/L51 command has the following 2-stage prompter:

```
LP SIG COND (L51) L01/BAT&GRD:LP/
```

If BAT&GRD option is selected, the following prompter follows:

```
LP SIG COND (L51) L01/BAT&GRD:LP/-48:72/NORM:REV/RL:FR/
```

If LP option is selected, instead of the above, the following prompter follows:

```
LP SIG COND (L51) L01/BAT&GRD:LP/OPN:CLSD:CLSD&GRD/RL:FR/
```

TR-TSY-000834 does not support a loading with resistance lamp.

The mapping of the L01 is as follows:

```
CHG-SPLTSUPV::d:e:f,g,h,[i],[j],k,l;
```

d (TSN) = Session Number  
e (CTAG) = Correlation Tag

f (SUPVE):

The mapping depends on the choices of values of fields 1 and 2, as shown. (Here 1=BAT&GND, 2=LP, etc.)

TEST DIR	f 1	f 2	SUPVE
E	1	1	LB4
E	1	2	LB7
E	2	1	LPO
E	2	2	LPC
E	2	3	LPG
F	-	-	LPO or previous

g (SUPVF):

TEST DIR	f 1	f 2	SUPVF
F	1	1	LB4
F	1	2	LB7
F	2	1	LPO
F	2	2	LPC
F	2	3	LPG
E	-	-	LPO or previous

h (SIGDIR) = E or F, depending on the test direction

i (LR) = Mapping depends on the values of fields 1, 2, and 4, as shown:

f 1	f 2	f 4	LR
1	-	1	200
1	-	2	400
2	1	-	200
2	2	-	400

j (PR) = For 2-wire and 4-wire (simplex) circuits, PR=SX

For 2-wire non simplex, PR is omitted

For 4-wire (non-SIMPLEX) circuits, PR is determined by prompter choice.

k (NRE):

TEST DIR	f 1	f 3	NRE
E	1	1	N
E	1	2	R
E	2	-	N
F	1	-	N or previous
F	2	-	N or previous

I (NRF):

<u>TEST DIR</u>	<u>f 1</u>	<u>f 3</u>	<u>NRF</u>
F	1	1	N
F	1	2	R
F	2	-	N
E	1	-	N or previous
E	2	-	N or previous

The mapping to L51 is similar to the above.

**M01/M11 — Voltage Measurement**

---

The M01/M11 commands have the following prompts:

For 2-wire circuits:

```
BRDGD VG MEASMT M01/T-GND:R-GND:R-T/AC:DC/NO DISCH:DISCH/  
SPLT VG MEASMT M11/T-GND:R-GND:R-T/E:F/AC:DC/NO DISCH:DISCH/
```

For 4-wire circuits:

```
BRDGD VG MEASMT M01/T-GND:R-GND:R-T/AC:DC/NO DISCH:DISCH/A:B/  
SPLT VG MEASMT M01/T-GND:R-GND:R-T/E:F/AC:DC/NO DISCH:DISCH/A:B/
```

The measurement procedure depends on the remote characteristics.

## SARTS Commands

---

The mappings are one-to-one. For example, for a 2-wire circuit, the mapping to TR-TSY-000834 is as follows:

```
MEAS-VG::d:e:f,g,h,i,{,j};
```

d(TSN)  
e (CTAG) = Correlation Tag  
f (MEASMODE)  
= AC or DC  
g (MEASLOC) = BRIDGD  
h (MEASLDS) = TG, RG, or RT directly from  
the SARTS prompter.  
i (MD) = S  
J (PR) = Pair that the measurement  
will be made on. Not used.

The mapping of M11 for 2-wire circuit is as follows:

```
MEAS-VG::d:e:f,g,h,i{,j};
```

d and e are as above  
f (MEASMODE)  
= AC or DC  
g (MEASLOC) = SPLTE or SPLTF depending  
on the given direction  
h (MEASLDS) = TG, RG or RT directly  
from the SARTS prompter  
i (MD) = S  
j (PR) = Pair that the measurement  
will be made on. Not used

**M02/M12 — Resistance Measurement**

---

These commands are also used for BRIDGED and SPLIT measurements, respectively. The prompts are as shown:

For 2-wire circuits:

```
BRDGD RES MEASMT M02/T-GND:R-GND:R-T/  
SPLT RES MEASMT M12/T-GND:R-GND:R-T/E:F/
```

For 4-wire circuits:

```
BRDGD RES MEASMT M02/T-GND:R-GND:R-T/A:B/  
SPLT RES MEASMT M12/T-GND:R-GND:R-T/E:F/A:B/
```

The mapping to TR-TSY-000834 is one-to-one with f (of the MEAS-RES message) = BRDGD or SLPTE - SPLTF, depending on the type of measurement.

**M03/M13 — Measure Capacitance**

---

Another pair used for BRIDGED and SPLIT measurements, respectively. The prompts are as shown:

For 2-wire circuits:

```
BRDGD CAPNC MEAS M03/T-GND:R-GND:R-T/  
SPLT CAPNC MEAS M13/T-GND:R-GND:R-T/E:F/
```

For 4-wire circuits:

```
BRDGD CAPNC MEAS M03/T-GND:R-GND:R-T/A:B/  
SPLT CAPNC MEAS M13/T-GND:R-GND:R-T/E:F/A:B/
```

Again the mapping is one-to-one with f (of the MEAS-CAPNC message) = BRDGD or SPLTE - SPLTF, depending on the type of measurement.

### M04/M14 — Current Measurement

Similarly, as with the previous measurement instructions, the first is used for BRIDGED and the second for SPLIT current measurements. The prompts are shown as follows:

For 2-wire circuits:

```
BRDGD CUR MEAS  M04/T:R/AC:DC/  
SPLT CUR MEAS  M14/T:R/AC:DC/E:F/
```

For 4-wire circuits:

```
BRDGD CUR MEAS  M04/T:R/AC:DC/A:B/  
SPLT CUR MEAS  M14/T:R/AC:DC/E:F/A:B/
```

The mappings are one-to-one similar to the above.

### **T01 — Send Tone**

---

The T01 command has the following form:

For 2-wire circuits:

```
T01/404:1004:2600:2713:2804/0:-10:-13:-16 DBM0/
```

For 4-wire circuits:

```
T01/404:1004:2600:2713:2804/A:B/0:-10:-13:-16 DBM0/
```

The mapping to `CONN-TN::d:e:f,g,h[,j]`; is as shown:

d(TSN)	= Session Number
e(CTAG)	= Correlation Tag
f(FREQ)	= 1, 2, 3, 4, or 5 depending on the selection of field 1 of the T01 command
g(LEV)	= 1, 2, 3, or 4 depending on the selection of field 2 of the T01 command.
h(DIR)	= E or F taken from the G01 command.
J(PR)	= A if parameter 1 of field 2 is selected or B if parameter 2 of field 2 is selected.

### T03 — Measure Level of Frequency

The T03 command has the following form:

For 2-wire circuit:

```
T03/LEV:FREQ:PAR:PH JTR:LF PH JTR:WB PH JTR/
```

For 4-wire circuit:

```
T03/LEV:FREQ:PAR:PH JTR:LF PH JTR:WB PH JTR/A:B/
```

The mapping to MEAS-TN::d:e:f:g[,h]; is one-to-one. In both cases (2-wire and 4-wire), f (MD) = S, and g (MEASLOC) = SPTLE or SPTLF, depending on the established test direction.

#### ⇒ NOTE:

This instruction (T03) can normally only be used to measure LEVEL and FREQUENCY of tones. It can be used to measure PAR (Peak-to-Average Ratio), PH JTR (Phase Jitter) or LF PH JTR (Low Frequency Phase Jitter), and/or WB PH JTR (Wide Band Phase Jitter), only if the Release 4 voiceband option is purchased and enabled. The WB PH JTR parameter option will only be available in SARTS releases GI-7.1 or newer.

The mapping for PAR will be to MEAS-PAR::d:e:f[,g]; where: parameter f (MEASLOC) = SPLTE or SPLTF depending on the test direction. Parameter g (PR) is only used for 4 wire circuits and is mapped directly.

Mapping for Phase Jitter will be to MEAS-PHJTR::d:e:f,g[,h]; where: parameter f (FREQBND) = LF if "PH JTR" is selected and HI if "WB PH JTR" is selected (LF PH JTR is not supported by TR-834) and, parameter g (MEASLOC) = SPLTE or SPLTF depending on the test direction. Parameter h (PR) is only used for 4 wire circuits and is mapped directly.

## SARTS Commands

---

### T04 — Measure Noise

---

This command has the following formats:

For 2-wire circuits:

```
MEAS NSE T04/C-NCH:15 KHZ FLT:3 KHZ FLT:PROG:50KB/
```

For 4-wire circuit:

```
MEAS NSE T04/C-NCH:15 KHZ FLT:3 KHZ FLT:PROG:50KB/A:B/
```

This is mapped to MEAS-NSE message as follows:

```
MEAS-NSE::d:e:f:g:h[,j];
```

## SARTS Commands

---

d (TNS) = Session Number

e (CTAG) = Correlation Tag

f (NET):

<u>T04 Option</u>	<u>NET</u>
C-NCH	CN
15 KHZ FLT	15
3 KHZ FLT	3
PROG	PRG
50 KB	50

g (MD) = S

h (MEASLOC) = SPLTE or SPLTF according  
to the established direction

J (PR) = Not used for 2-wire and A or B  
for 4-wire, as specified in the  
T04 command.

**T07 — Remove Tone**

---

This command has the following form:

```
RMV T07/A:B:A&B/
```

The mapping to the DISC-TSTSIG message is one-to-one as shown.

```
DISC-TSTSIG::d:e:f;
```

d (TNS) = Session Number  
 e (CTAG) = Correlation Tag  
 f (DIR) = mapped from field 1:

f1	f
1	F
2	E
3	B

Where TDA and TDB are determined by G01.

f1	TDA	TDB	f
1	F	E	F
1	F	F	*
1	E	E	*
1	E	F	E
2	F	E	E
2	F	F	*
2	E	E	*
2	E	F	F
3	-	-	B

\* Option not support by TSC/RTU.

## T08 — Apply Signal

---

This command has the following forms:

For 2-wire circuits:

```
T08/PAR:NLD:NLD S-N:PH JTR/
```

For 4-wire circuits:

```
T08/PAR:NLD:NLD S-N:PH JTR/
```



### NOTE:

The PAR (Peak-to-Peak Average Ratio) and PH JTR (Phase Jitter) options will only be available if the Release 4 voiceband option is purchased and enabled. The NLD and NLD S-N are not supported at this time. They are currently targeted for Release 6 of TA201:XL.

If enabled, mapping for the PAR option is as follows:

```
CONN-PARSIG::d:e:f:g[,h];
```

f (LEV)	= 16
g (DIR)	= E or F (depending on test direction)
h (PR)	= only used for 4-wire circuits and is mapped directly

Mapping for PHJTR is as follows:

```
CONN-TN::d:e:f:g:h[,j];
```

f (FREQ) = 1004  
g (LEV) = 16  
h (DIR) = E or F depending on test direction  
j (PR) = only used for 4-wire circuits and is mapped directly.

### T09 — Measure Impulse Noise

This command has the following forms:

For 2-wire circuits:

```
IMP NSE T09/3K:50K:CN:CM/DBRN/735T:600B:900B:LNG:135B:135T/MIN/7:200/
```

For 4-wire circuits:

```
IMP NSE T09/3K:50K:CN:CM/DBRN/735T:600B:LNG:135B:135T/MIN/7:200/A:B/
```

The mapping to the MEAS-IMPNSE message is as follows:

```
MEAS-IMPNSE::d:e:f,g,h,j,k[,m];
```

SARTS Commands

---

d (TSN) = Session Number

e (CTAG) = Correlation Tag

f (NET):

T09 Field 1	NET
3K	3K
50K	50
CN	CN
CM	CM

g (TH) = T09 field 2

h (TM) = T09 field 4

j (CTRATE):

T09 Field 5	CTRATE
7	8
200	1

k (MEASLOC):

Test Dir	T09 Field 3	MEASLOC
E	735T	SPLTE
F	735T	SPLTF
E	600B	BRDGD
F	600B	BRDGD
E	900B	BRDGD
F	900B	BRDGD
E	LNG	LONGE
F	LNG	LONGF
E	135B	BRDGD
F	135B	BRDGD
E	135T	SPLTE
F	135T	SPLTF

j (PR) = Pair that the measurement will be made on.  
 For 2-wire; A or B. For 4-wire; (directly from the T09). Not used.

T10 — Send Frequency

This command has the following form:

For 2-wire circuits:

```
SEND FREQ T10/KHZ/0:-10:-13:-16 DBM0/
```

For 4-wire circuits:

```
SEND FREQ T10/KHZ/A:B/0:-10:-13:-16 DBM0/
```

This is mapped as follows:

```
CONN-TN::d:e:f,g,h[,j];
```

d (TSN) = Session Number

e (CTAG) = Correlation Tag

f (FREQ):

T10 Field 1	FREQ
000.001	1
001.004	1004
002.600	2600
163.840	163840

## SARTS Commands

---

g (LEV) = Saved Level or mapped as follows:

<u>T10 Field 2</u>	<u>LEV</u>
0	0
-10	10
-13	13
-16	16

h (DIR) = E or F from G01

j (PR) = Not used for 2-wire and A or B for 4-wire

⇒ **NOTE:**

The TA201:XL saves the value of the T10 field 2 (LEVEL) for subsequent T10 commands.

## G01 — Test Direction

---

This command has the following prompts:

For 2-wire circuits:

```
TST DIRN G01/E:F/
```

For 4-wire circuits:

```
TST DIRN G01/E:F/A:B:A&B:SX/
```

**⇒ NOTE:**

The G01 command allows the tester to set a test direction for one or both pairs and specify the signaling lead configuration of simplex signaling on 4-wire circuits. The command does not map to any TR-834 commands but is used by the TA201:XL in commands executed thereafter.

**G02 — Disconnect Test Point**

---

This command has the following prompter:

```
TP CONTROL G02/ ACT OTHTP : DISC : INTCHG TPS : REC DISP/
```

The TR-TSY-000834 mapping is as follows:

```
DISC-TACC::d:e;
```

d (TSN) = Session Number  
e (CTAG) = Correlation Tag

**G09 — Restore Test Point**

---

The G09 command has the following form:

```
G09/ NO PARAMETER CHOICES /
```

The mapping to TR-TSY-000834 is as follows:

```
CHG-PTRST::d:e;
```

d (TSN) = Session Number  
e (CTAG) = Correlation Tag

**G11 — Terminate Test & Report**

---

This command has the following form:

```
TERM TST & REPT G11/ NO PARAMETER CHOICES /
```

The mapping to TR-TSY-000834 is as shown:

```
DISC-MEAS::d:e;
```

d (TSN)       = Session Number  
e (CTAG)      = Correlation Tag

G12 — Test Update

This command has the following form:

```
TEST UPDATE G12/NO PARAMETER CHOICES/
```

The mapping to TR-TSY-000834 is as shown:

REPT-RSLT::d:e;

d(TSN)       = Test Session Number  
e(CTAG)       = Correlation Tag.

**G15 — Terminate and Leave**

---

The G15 command has the following form:

```
TERMINATE & LEAVE G15/ TERM:RESTORE / A:B:AB /
```

Mapping to TR-TSY-000834:

```
CHG-TL::d:e:f;
```

d (TSN) = Session Number  
e (CTAG) = Correlation Tag  
f (ACT) = Mapped from fields 1 and 2 of the G15 as follows:

<u>f1</u>	<u>f2</u>	<u>f (ACT)</u>
1	1	TERMA
1	2	TERMB
1	3	TERMAB
2	1	RLSA
2	2	RLSB
2	3	RLSAB

## HCDS Services Testing

The following commands are supported with full functionality through the TA201:XL.

<u>SARTS Commands</u>	<u>Functions</u>	<u>TR-TSY-000834 Messages</u>
705	HCDS Access	CONN-TACC-T1
D31	Define/Change Pattern	CHG-TSTSIG-T1
D32	Digital Loopback Control	CHG-LPBK-T1
D33	Measure Pattern	MEAS-SIG-T1
D34	Change Pairs	CHG-PRS
D35	Inject Errors	TST-INSERRBITS
D36	Change HCDS Access Mode	CHG-ACCMD-T1
D39	Smart Repeater Loopback	RPTR-LPBK-T1*
G02	Disconnect Test Point	DISC-TACC
G11	Terminate Test & Report	DISC-MEAS
G15	Terminate and Leave	CHG-TL
G21	Retrieve DS1 PM Data	RTRV-PM-T1†

---

\* This command is not supported by Bellcore but can be provided in agreement with a vendor at the request of a customer.

† TA-TSY-000200 Message.

705 — HCDS Access

---

**PRE SARTS GI-6.1**

This command has the following form:

```
HCDS ACC 705/CLLI/SYS/AID/MON:SPLT:LP/E:F:A:B/
```

This maps to the following TR-TSY-000834 message:

```
CONN-TACC-T1:a:c:d:e:f;
```

- a (TID) = Concatenation of CLLI code and SYS from the 705 field 1 and 2.
- c (AID) = Field 3 of the 705
- d (CTAG) = Correlation Tag
- e (TSN) = Test Session Number
- f (MD) = Mapped from the last 2 fields of the 705 as follows:

Field 4	Field 5	MD
MON	E	MONE
MON	F	MONF
SPLT	A	SPLTA
SPLT	B	SPLTB
SPLT	E	SPLTE
SPLT	F	SPLTF
LP	E	LOOPE
LP	F	LOOPF

705 — HCDS Access

---

**GI-6.1 or newer**

This command has the following form:

```
HC AC 705/CLLI/SYS/AID/M:S:L/E:F:EF:A:B/OR/
```

This maps to the following TR-TSY-000834 message:

```
CONN-TACC-T1:a:c:d:e:f;
```

- a (TID) = Concatenation of CLLI code and SYS from the 705 field 1 and 2.
- c (AID) = Field 3 of the 705
- d (CTAG) = Correlation Tag
- e (TSN) = Test Session Number
- f (MD) = Mapped from the last 2 fields of the 705 as follows:

Field 4	Field 5	MD
MON	E	MONE
MON	F	MONF
MON	EF	NOT SUPPORTED BY TR-834
SPLT	A	SPLTA
SPLT	B	SPLTB
SPLT	E	SPLTE
SPLT	F	SPLTF
LP	E	LOOPE
LP	F	LOOPF

**⇒ NOTE:**  
**OR** maps to nothing and only impacts the way the circuit is displayed on the SARTS screen.

D31 — Define/Change Pattern

**Pre G.I. 6.0**

This command has the form shown:

```
DEF SIG T1 D31/QRS:8BT:16BT:24BT/UNFRAMED:SF:ESF/AMI:B8ZS/PATTERN/
```

Field 1 shows 4 patterns. If the 8 bit, 16 bit, or 24 bit is selected, then either the user specifies the appropriate zero's (0) and ones (1) in field 4 or field 4 is left blank. If field 4 is left blank then SARTS selects the PATTERN accordingly:

Field 1	Field 2	Field 4
8 bit	All choices	40
16 bit	All choices	4001
24 bit	NO FRAME	888000
24 bit	SF or ESF	440004

**⇒ NOTE:**

The last pattern (440004), called 3 in 24, contains the longest string of consecutive zeros with the lowest ones density.

The mapping to TR-TSY-000834 is as follows:

```
CHG-TSTSIG-T1::d:e:f,g,h;
```

d (TSN) = Test Session Number  
e (CTAG) = Correlation Tag

- f (TSTSIG): Mapped from fields 1 and 4 of the D31 as follows:
- If field 1 = QRS then f = QRS
  - If field 1 = 8 BT, 16 BT, or 24 BT then f = binary presentation (with ASCII 1s and 0s) of the hex parameter of field 4
- g (FR) = Direct mapping from field 2. U, S, or E depending on NO FRAME, SUPPER, or ESF
- h (LNCD) = Direct mapping from field 3. A or B depending on AMI or B8ZS.

**D31 — Define/Change Pattern**

---

**GI-6.1 or newer**

This command has the form shown:

```
DEF SIG D31/QRS:8:16:24:OTHER/UNFR:SF:ESF/AMI:B8ZS/PATTERN/
```

Field 1 shows 5 patterns. If the 8 bit, 16 bit, or 24 bit is selected, then either the user specifies the appropriate zero's (0) and ones (1) in field 4 or field 4 is left blank. If **OTHER** is selected, the user can specify an 8, 16, or 24 bit pattern. Beginning with Release 5 of the TA201:XL, odd patterns (i.e. 101) may be specified. If field 4 is left blank then SARTS selects the PATTERN accordingly:

Field 1	Field 2	Field 4
8 bit	All choices	40
16 bit	All choices	4001
24 bit	NO FRAME	888000
24 bit	SF or ESF	440004

**⇒ NOTE:**

The last pattern (440004), called 3 in 24, contains the longest string of consecutive zeros with the lowest ones density.

The mapping to TR-TSY-000834 is as follows:

```
CHG-TSTSIG-T1::d:e:f,g,h;
```

d (TSN) = Test Session Number  
 e (CTAG) = Correlation Tag

- f (TSTSIG): Mapped from fields 1 and 4 of the D31 as follows:
- If field 1 = QRS then f = QRS
  - If field 1 = 8 BT, 16 BT, or 24 BT then f = binary presentation (with ASCII 1s and 0s) of the hex parameter of field 4
- g (FR) = Direct mapping from field 2. U, S, or E depending on NO FRAME, SUPPER, or ESF
- h (LNCD) = Direct mapping from field 3. A or B depending on AMI or B8ZS.

**D32 — Digital Loopback Control**

---

**PRE SARTS GI-6.1**

This command has the following form:

```
HCDS CSU LPK D32/ACT:REL/UNFRAMED:SF:ESF/CSU:LINE:NI1:NI2:PLOAD/
```

The mapping to TR-TSY-000834 is as follows:

```
CHG-LPBK-T1::d:e:f,g;
```

d (TSN) = Test Session Number  
e (CTAG) = Correlation Tag  
f (LPSIG)

	f4	f3	f
1/2	1		A/R-1
1/2	2		A/R-3
1/2	3		A/R-2
1/2	4		A/R-4
1/2	5		A/R-5
1/2	6		A/R-NOT SUPPORTED BY TR-834

g (FR) = Framing pattern specification for signal to be transmitted.  
Direct mapping from field 2 of the D32, i.e., NO FRAME=U,  
SUPER=S and ESF=E.

**D32 — Digital Loopback Control**

---

**GI-6.1 or newer**

This command has the following form:

```
HCDS LPK D32/ACT:REL/UNFR:SF:ESF/CSU:ESF_CSU:NI:ESF_NI:ESF_PLOAD:RMUX/
```

The mapping to TR-TSY-000834 is as follows:

```
CHG-LPBK-T1::d:e:f,g;
```

d (TSN) = Test Session Number  
 e (CTAG) = Correlation Tag  
 f (LPSIG)

	f4	f3	f
	1/2	1	A/R-1
	1/2	2	A/R-3
	1/2	3	A/R-2
	1/2	4	A/R-4
	1/2	5	A/R-5
	1/2	6	A/R-NOT SUPPORTED BY TR-834

g (FR) = Framing pattern specification for signal to be transmitted.  
 Direct mapping from field 2 of the D32, i.e., NO FRAME=U,  
 SUPER=S and ESF=E.

**D33 — Measure Pattern**

---

The form is as shown:

```
MEAS SIG T1
D33/QSR:OTHER/UNFRAMED:SF:ESF/AMI:B8ZS/H:M/DUR/INTERVAL/
```

Although the user has the choice of entering H (hours) or M (minutes) in Field 4, the DUR (Field 5) parameter is converted to minutes by SARTS. However, it is not limited to a maximum value of 60 minutes.

The mapping to TR-TSY-000834 is as follows:

```
MEAS-SIG-T1::d:e:f,g,h,i,j;
```

d (TSN)	= Test Session Number
e (CTAG)	= Correlation Tag
f (TM)	= Time in Minutes mapped directly from field 5 (3 character long, maximum value = 999).
g (RI)	= Report Interval mapped directly from field 6.
h (TSTSIG)	= Expected Bit Pattern mapped from field 1, if QSR then h = Q and if OTHER then h = O.
i (FR)	= Expected Framing Pattern direct mapping from field 2, if NO FRAME then i = U, if SUPER then i = S and if ESF then i = E.
j (LNCD)	= Line Code direct mapping from field 3, if AMI then j = A and if B8ZS then j = B.

### D34 — Change Pairs

---

This command has the following form:

```
CHANGE PAIRS D34/INTERCHANGE PAIRS:RETURN PAIRS TO NORMAL/E:F/
```

This maps to the following TR-TSY-000834 message:

```
CHG-PRS::d:e:f,g;
```

d (TSN)	= Test Session number
e (CTAG)	= Correlation Tag
f (ACT)	= Action requested, mapped from field 1, either REV (INTERCHANGE) or NORM (RETURN TO NORMAL)

**D35 — Inject Errors**

---

The command form is as shown:

```
INJECT ERRORS D35/NUMBITS/
```

This maps to the following TR-TSY-000834 message:

```
TST-INSERRBITS::d:e:f;
```

d (TSN) = Test Session Number  
e (CTAG) = Correlation Code  
f (BITERRS) = Number of Error bits mapped from NUMBITS

**D36 — Change HCDS Access Mode**

---

**Pre G.I. 6.0**

Here is the form of this command:

```
CHG ACCESS D36/MON:SPLT:LOOP/E:F:A:B/
```

It maps to the following TR-TSY-000834 message:

```
CHG-ACCMD-T1::d:e:f;
```

d (TSN) = Test session Number  
e (CTAG) = Correlation Tag  
f (MD) = Access Mode mapped from fields 1 and 2 of the D36  
as shown below: (Here 1=MON, 2=SPLT, etc.)

f1	f2	f
1	1	MONE
1	2	MONF
2	3	SPLTA
2	4	SPLTB
2	1	SPLTE
2	2	SPLTF
3	1	LOOPE
3	2	LOOPF

D36 — Change HCDS Access Mode

**GI-6.1 or newer**

Here is the form of this command:

```
CHG ACCESS D36/MON:SPLT:LP/E:F:E&F:A:B/
```

It maps to the following TR-TSY-000834 message:

```
CHG-ACCMD-T1::d:e:f;
```

d (TSN) = Test session Number  
e (CTAG) = Correlation Tag  
f (MD) = Access Mode mapped from fields 1 and 2 of the D36  
as shown below: (Here 1=MON, 2=SPLT, etc.)

f 1	f 2	MD
1	1	MONE
1	2	MONF
1	3	NOT SUPPORTED BY TR-834
2	4	SPLTA
2	4	SPLTB
2	1	SPLTE
2	2	SPLTF
3	1	LOOPE
3	2	LOOPF

### D39 — Smart Repeater Loopback

---

Here is the form of this command:

```
SMART RPTR LPBK D39/ACT:REL/UFRM:SF:ESF/REPEATER NUMBER/
```

Due to a specific customer request and vendor agreement, it maps to the following TR-TSY-000834 LIKE message:

```
RPTR-LPBK-T1::d:e:f,[g],h;
```

d (TSN)	= Test session Number
e (CTAG)	= Correlation Tag (6 numeric, 000000-000255)
f (LR)	= Loop request up or down where 1=U and 2=D
g (RN)	= Mapped from field 3
h (FR)	= Mapped from field 2, where 1=U, 2=S, and 3=E

**G02 — Disconnect Test Point**

---

This command has the following prompter:

```
TP CONTROL G02/ ACT OTHTP : DISC : INTCHG TPS : REC DISP/
```

The TR-TSY-000834 mapping is as follows:

```
DISC-TACC::d:e;
```

d (TSN) = Session Number  
e (CTAG) = Correlation Tag

**G11 — Terminate Test & Report**

---

This command has the following form:

```
TERM TST & REPT G11/ NO PARAMETER CHOICES /
```

The mapping to TR-TSY-000834 is as shown:

```
DISC-MEAS::d:e;
```

d (TSN)       = Session Number  
e (CTAG)      = Correlation Tag

**G15 — Terminate and Leave**

---

The G15 command has the following form:

```
TERMINATE & LEAVE G15/ TERM:RESTORE / A:B:AB /
```

Mapping to TR-TSY-000834:

```
CHG-TL::d:e:f;
```

d (TSN) = Session Number  
e (CTAG) = Correlation Tag  
f (ACT) = Mapped from fields 1 and 2 of the G15 as follows:

<u>f1</u>	<u>f2</u>	<u>f (ACT)</u>
1	1	TERMA
1	2	TERMB
1	3	TERMAB
2	1	RLSA
2	2	RLSB
2	3	RLSAB

## SARTS Commands

---

<u>SARTS Commands</u>	<u>Functions</u>	<u>TR-TSY-000834 Messages</u>
S01	Single Frequency Conditioning	CHG-SPLTSUPV
S02	Single Frequency Ringing	TST-RINGSGNL
S03	Single Frequency Dial Pulsing	TST-OUTPLSE
S04	Single Frequency Touch-Tone Dialing	TST-OUTPLSE
T01	Send Tone	CONN-TN
T03	Measure Level of Frequency	MEAS-TN
T04	Measure Noise	MEAS-NSE
T07	Remove Tone	DISC-TSTSIG
T08	Apply Signal	CONN-PARSIG
T09	Measure Impulse Noise	MEAS-IMPNSE
T10	Send Frequency	CONN-TN
X01/X51	Duplex Conditioning	CHG-SPLTSUPV
X02	Duplex Ringing	TST-RINGSGNL
X03	Duplex Dial Pulsing	TST-OUTPLSE
X04	Duplex Touch-Tone Dialing	TST-OUTPLSE

---

\* TA-TSY-000202 Message.

**701 — Access Point Identification**

---

The 701 command has the following form:

```
AP ID 701/LOCN /SYS /SMAS# /ORTN/CNFGN/TP#/SEG/
```

LOCN	8-character CLLI code
SYS	2 alphanumeric characters
SMAS#	7 alphanumeric characters or dashes. This field has the access address for an analog access and test session.
ORTN	EF or FE
CNFGN	2WA, 2WB, 2EM, 4AB, 4BA, 22A*, 22B*, 24A*, 24B*, 42A*, 42B*, 26X*, 46X*, QAB*, QBA*, CAB, CBA, TST*, MAB, MBA, 6AB*, 6BA*, DFA*, DFB*, DF4*, 2CC*, 1TA*, 1TB*, 1RA*, 1RB*, DAB, DBA, 4WF, 2WC.

The mapping is as follows:

CONN-TACC:a:c:d:e[,f]:g,h:i,j,k,l:m,n,p[:q];

a (TID)	= Concatenation of LOCN and SYS
c (AID)	= SMAS#
d (CTAG)	= Correlation Tag
e (TSN)	= Session Number
f (DTSN)	= Not Used
g (ORTN)	= Orientation Code
h (CNFGRN)	= Configuration Code
i (SIG)	= NON
j (OPE)	= OT
k (OPF)	= OT
l (RNGDI)	= N
m (IMP)	= 33
n (TLPE)	= -05.0
p (TLPF)	= 00.0
q (TEL)	= TSV Number of Test Position

---

\* Not included in the TR-TSY-000834 specification.

## 702 — No-Test Trunk Access

---

The 702 command has the following form:

```
702/ LINE&EXT# / MF:DP /
```

This command provides additional test access information beyond what is provided by the 701 command for No Test Trunk Access.

The command maps to the following TA-TSY-000202 message:

```
CONN-CALL::TN=a,TNS=b:c:d:DIR=e,DTYPE=f,CB=g;
```

a	= Field 1 from the 702
b	= TSN
c	= CTAG
d	= null
e	= F
f	= Mapped from field 2 as follows: if f2 = DP then f = R; otherwise,
f	= M
g	= Field 8 of the 701 command

**703 — Complete Circuit Access**

---

The 703 Command has the following form:

703 /SIG/OPA/OPZ/RNG/IMP/A-TLP/Z-TLP/

SIG	A 3-character code identifying signaling operation toward the A and Z ends of the circuit. The valid codes are: SFC, SFT, SFR, L2W, L4E, L4F, L4R, L4T, NON, 72W, 74F, 74E, 74T, 74R, EMF, EME, SMF, SME, DXX, DXE, DXF, 74S*, DXS*, L4S*, SFS*, SFD*.
OPA	A 2-character code denoting the signaling operation toward the A end of the circuit. Valid codes are: LN, GS, RD, AU, RB, OT, LR, BG, DR*.
OPZ	A 2-character code denoting the signaling operation toward the Z end of the circuit. Valid codes are: LN, GS, RD, AU, RB, OT, LR, BG, DR*.
RNG	A 1-character code identifying the direction in which the ringing signal is sent during normal operation. Valid codes are: N, E, F, and B.
IMP	A 2-character code identifying the nominal AC impedance level of the circuit. Valid inputs are 00, 11, 22, 33, and 44.
A-TLP, Z-TLP	Specify Transmission Level Points in the A and Z directions, respectively.

---

\* Not included in the TR-TSY-000834 specification.

The mapping to TR-TSY-000834 is as follows:

```
CHG-PRTPAR::d:e:f,g,h,i:j,k,l;
```

d (TSN)	= Session Number
e (CTAG)	= Correlation Tag
f (SIG)	= Signaling format. A 3-character code identifying signaling operation toward the A and Z ends of the circuit. The valid codes are: SFC, SFT, SFR, L2W, L4F, L4E, L4R, L4S, L4T, NON, 72W, 74F, 74S, 74E, 74T, 74R, EMF, EME, SFD, SFS, SMF, SME, DSE, DSG, DXS, DXX, DXE, DXF.
g (OPE)	= OPA or OPZ depending on whether the orientation is EF or FE respectively.
h (OPF)	= OPZ or OPA depending on whether the orientation is EF or FE respectively.
i (RNGDI)	= The ringing direction from the RNG parameter
j (IMP)	= The impedance value
k (TLPE)	= ATLP or ZTLP depending on whether the orientation is EF or FE respectively.
l (TLPF)	= ZTLP or ATLP depending on whether the orientation is EF or FE respectively.

**704 — Access Point Identification**

---

This will be available beginning with TA201:XL Release 5.1 and SARTS GI8 to facilitate digital access of metallic circuits.

The 704 Command prompter has the following form:

```
CKT ACCESS 704/LOCN /SYS /ACCESS # /ORTN/CNFGN/TP #/SEG #/
```

LOCN	Is an 11-character CLLI code which is mapped to the TID field of the CONN-TACC message
SYS	Is a 1- to 6-character system identifier
ACCESS	Is an access address of 1 to 17 characters
ORTN	Is EF or FE
CNFGN	Is 4AB, 4BA, MAB, MBA, QAB, or QBA
TP	Test Point number, not used by TA201:XL
SEG#	Segment Number.

This command maps to the following message:

```
CONN-TACC:TID:AID:CTAG:TSN:ERRCOR;
```

TID	Concatenation of field 1 and field 2 of the 704 command
AID	Mapped from field 3 of the 704 command
CTAG	Correlation Tag
TSN	Test Session Number
ERRCOR	Is Y or N depending on the user data rate
Y	Always A

### G01 — Test Direction

This command has the following prompts:

For 2-wire circuits,

```
TST DIRN G01/E:F/
```

For 4-wire circuits,

```
TST DIRN G01/E:F/A:B:A&B: SX/
```

**⇒ NOTE:**

The G01 command allows the tester to set a test direction for one or both pairs and specify the signaling lead configuration of simplex signaling on 4-wire circuits. The command does not map to any TR-834 commands but is used by the TA201:XL in commands executed thereafter.

**G02 — Disconnect Test Point**

---

This command has the following prompter:

```
TP CONTROL G02/ ACT OTHTP : DISC : INTCHG TPS : REC DISP/
```

The TR-TSY-000834 mapping is as follows:

```
DISC-TACC::d:e;
```

d (TSN) = Session Number  
e (CTAG) = Correlation Tag

**G07 — Establish Monitor or Talk Line**

---

This command has the following form:

```
G07 / MON:TLK /
```

The mapping to the TR-TSY-000834 message `CONN-MONEST::d:e:f;` is one-to-one as shown:

d (TSN)	= Session Number
e (CTAG)	= Correlation Code
f (TEL)	= 10-digit Telephone Number

**G09 — Restore Test Point**

---

The G09 command has the following form:

```
G09/ NO PARAMETER CHOICES /
```

The mapping to TR-TSY-000834 is as follows:

```
CHG-Ptrst::d:e;
```

d (TSN)       = Session Number  
e (CTAG)      = Correlation Tag

### G15 — Terminate and Leave

---

The G15 command has the following form:

```
TERMINATE & LEAVE G15/ TERM:RESTORE / A:B:AB /
```

Mapping to TR-TSY-000834:

```
CHG-TL::d:e:f;
```

d (TSN) = Session Number  
e (CTAG) = Correlation Tag  
f (ACT) = Mapped from fields 1 and 2 of the G15 as follows:

<u>f 1</u>	<u>f 2</u>	<u>f (ACT)</u>
1	1	TERMA
1	2	TERMB
1	3	TERMAB
2	1	RLSA
2	2	RLSB
2	3	RLSAB

## H11 — Monitor Listen

For 2-wire circuits, the form is:

```
H11/E;F/
```

and for 4-wire circuits:

```
H11/E:F/A:B/
```

It maps to the following TR-TSY-000834 message as shown:

```
CONN-MONLIST::d:e:f,g;
```

d (TSN)	= Session Number
e (CTAG)	= Correlation Code
f (DIR)	= E or F mapped directly from the H11 prompter
g (PAIR)	= A or B (mapped from the prompter) or not used for 2-wire

## H12 — Split Talk and Listen

---

This command has the following form:

```
H12/ NO PARAMETER CHOICES /
```

It maps to the following TR-TSY-000834 message as shown:

```
CONN-TLKSPLT::d:e:f;
```

d (TSN)	= Test Session Number
e (CTAG)	= Correlation Tag
f (DIR)	= E or F mapped from the test direction parameter stored from the G01 command

**E01 — E&M Conditioning**

---

The prompter is as shown:

```
E01/E:M/E:F/OPN:BAT:GND/
```

This command maps to the following TR-TSY-000834 message:

```
CHG-SPLTSUPV::d:e:f,g,h,[i],[j],k,l;
```

d (TSN) = Session Number  
e (CTAG) = Correlation Code  
f (SUPVE) = Mapped from fields 1, 2, and 3  
of the prompter as follows:

f2	f1	f3	SUPVE
E	E	OPN	ELO
E	E	BAT	*
E	E	GND	ELG
E	M	OPN	MLO
E	M	BAT	MLB
E	M	GND	MLG
F	E	----	ELO
F	M	----	MLO

\* Option not supported by TSC/RTU.

g (SUPVF) = Mapped similarly as follows:

f2	f1	f3	SUPVF
F	E	OPM	ELO
F	E	BAT	*
F	E	GND	ELG
F	M	OPN	MLO
F	M	BAT	MLB
F	M	GND	MLG
E	E	----	ELO
E	M	----	MLO

\* Option not supported by TSC/RTU.

h (SIGDIR) = E or F mapped from field 2 of the E01

i (LR) = 00

j (PR) = E if field 1 = E; otherwise, j=M

k (NRE) = N

l (NRF) = N

Notice that not all the options of the i, j, k, and l parameters are supported by the SARTS - TA201:XL combination.

## E02 — E&M Ringing in Split Direction

The prompter is as follows:

```
E02/E:M/LN:LR:GS/#OF RINGS=NN/
```

Here is the TR-TSY-000834 mapping:

```
TST-RINGSGNL::d:e:f[,g][:h];
```

d (TSN)	= Session Number
e (CTAG)	= Correlation Tag
f (RSF)	= A
g (RCY)	= Number of Rings, mapped from field 3 of the E02
h (DIR)	= Ringing Direction mapped from field 4 of the 703 command as follows: if field 4 (RNG) of 703 is E or F then DIR = RNG; otherwise, if field 4 (RNG) of 703 is N or B then DIR = Test Direction stored from the G01 command.

### E03 — E&M Dial Pulsing

---

Prompter:

```
E03/E:M/S:A/TEL # /8:10:12PPS/45:58:70%BRK/
```

The mapping is as follows:

```
TST-OUTPLSE::d:e:f,g:h,i,j,k,l;
```

**⇒ NOTE:**

Not all the options of these parameters are supported by the SARTS - TA201:XL combination. Here are the details:

d (TSN)	= Session Number
e (CTAG)	= Correlation Code
f (STC)	= Mapped from field 2 of the E03 as follows: if f2=S then STC=DT and if f2=A then STC=blank.
g (ADD)	= Direct mapping from field 3
h (ADF)	= null
i (PF)	= Mapped from field 4 one-to-one
j (PB)	= Mapped from field 5 one-to-one
k (IDT)	= null
l (DIR)	= E or F

E04 — E&M Touch-Tone Pulsing

Prompter:

```
E04/S:A/TEL # /SUPVN E:SUPVN M/
```

This maps to the following TR-TSY-000834 message:

```
TST-OUTPLSE::d:e:f,g:h,i,j,k,l;
```

Not all the options of these parameters are supported by the SARTS - TA201:XL combination. Here are the details:

d (TSN)	= Session Number
e (CTAG)	= Correlation Tag
f (STC)	= DT if field 1 of the E04 is S; otherwise, f=blank
g (ADD)	= Direct mapping from field 2 of the E04
h (ADF)	= T
i (PF)	= null
j (PB)	= null
k (IDT)	= null
l (DIR)	= E or F

L01/L51 — Loop Conditioning

The L01/L51 command has the following 2-stage prompter:

```
LP SIG COND (L51) L01/BAT&GRD:LP/
```

If BAT&GRD option is selected, the following prompter follows:

```
LP SIG COND (L51) L01/BAT&GRD:LP/-48:72/NORM:REV/RL:FR/
```

If LP option is selected, instead of the above, the following prompter follows:

```
LP SIG COND (L51) L01/BAT&GRD:LP/OPN:CLSD:CLSD&GRD/RL:FR/
```

TR-TSY-000834 does not support a loading with resistance lamp.

The mapping of the L01 is as follows:

```
CHG-SPLTSUPV::d:e:f,g,h,[i],[j],k,l;
```

d (TSN) = Session Number  
e (CTAG) = Correlation Tag

f (SUPVE):

The mapping depends on the choices of values of fields 1 and 2, as shown. (Here 1=BAT&GND, 2=LP, etc.)

TEST DIR	f 1	f 2	SUPVE
E	1	1	LB4
E	1	2	LB7
E	2	1	LPO
E	2	2	LPC
E	2	3	LPG
F	-	-	LPO or previous

g (SUPVF):

TEST DIR	f 1	f 2	SUPVF
F	1	1	LB4
F	1	2	LB7
F	2	1	LPO
F	2	2	LPC
F	2	3	LPG
E	-	-	LPO or previous

h (SIGDIR)

= E or F, depending on the test direction

i (LR)

= Mapping depends on the values of fields 1, 2, and 4, as shown:

f 1	f 2	f 4	LR
1	-	1	200
1	-	2	400
2	1	-	200
2	2	-	400

j (PR) =

For 2-wire and 4-wire (simplex) circuits, PR=SX

For 2-wire non simplex, PR is omitted

For 4-wire (non-SIMPLEX) circuits, PR is determined by prompter choice.

k (NRE):

TEST DIR	f 1	f 3	NRE
E	1	1	N
E	1	2	R
E	2	-	N
F	1	-	N or previous
F	2	-	N or previous

I (NRF):

<u>TEST DIR</u>	<u>f 1</u>	<u>f 3</u>	<u>NRF</u>
F	1	1	N
F	1	2	R
F	2	-	N
E	1	-	N or previous
E	2	-	N or previous

The mapping to L51 is similar to the above.

L02 — Loop Test Direction Ringing Signal

There are two forms available as shown:

For 2-wire circuits and 4-wire SX circuits:

```
L02/# OF RINGS=NN/86V:105V/
```

For 4-wire non-SX circuits:

```
L02/# OF RINGS=NN/86V:105V/A:B/
```

The mapping to TR-TSY-000834 is as shown:

```
TST-RINGSGNL::d:e:f[,g][:h];
```

d (TSN)	= Session Number
e (CTAG)	= Correlation Number
f (RSF)	= Ringing Signal Format, mapped from field 2 of the L02 as follows: if f2=86V then f=8 and if f2=105V then f=9
g (RCY)	= Number of Rings, direct mapping from field 1
h (DIR)	= Ringing Direction, mapped from field 4 of the 703 command as follows: if field 4 of 703 is E or F then DIR=RNG; otherwise, if field 4 of 703 is N or B then DIR=Test Direction saved from the G01 command.

### L03 — Loop Dial Pulsing

---

This command has two forms available: one for 2-wire circuits and 4-wire SX circuits, and the other for 4-wire non-SX circuits, as shown:

For 2-wire circuits and 4-wire SX circuits:

```
L03/S:A/TEL # /LS:GST:BG/8:10;12PPS/45:58:70%BRK/
```

For 4-wire non-SX circuits:

```
L03/S:A/TEL # /LS:GST:BG/8:10:12PPS/45:58:70%BRK/A:B/
```

The mapping to TR-TSY-000834 is as follows:

```
TST-OUTPLSE::d:e:f,g:h,i,j,k,l;
```

d (TSN)	= Session Number
e (CTAG)	= Correlation Tag
f (STC)	= Special Timing Consideration, mapped from field 1 of the L03 as follows: if field 1 is S then f=DT; otherwise, f=blank
g (ADD)	= Digits to be outpulsed, direct mapping from field 2 of L03
h (ADF)	= Addressing format, blank

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---

i (PF)	= Outpulse Frequency, direct mapping from field 4 of the L03, that is, 8, 10, or 12.
j (PB)	= Percent Break, direct mapping from field 5, that is, 45, 58, or 70.
k (IDT)	= Interdigit interval, blank
l (DIR)	

### L04 — Loop Touch-Tone Dialing

This command has two forms: one for 2-wire circuits and 4-wire SX circuits, and the other for 4-wire non-SX circuits, as shown.

For 2-wire circuits and 4-wire SX circuits:

```
L04/S:A/ TEL # /LS:GST/
```

For 4-wire non-SX circuits:

```
L04/S:A/ TEL # /LS:GST/SUPV A:SUPV B/
```

This maps to the same TR-TSY-000834 message as the L03 and the mapping is identical except that the TR-TSY-000834 parameters i, j, and k are all blanks, while the parameter h = T.

**M01/M11 — Voltage Measurement**

---

The M01/M11 commands have the following prompts:

For 2-wire circuits,

```
BRDGD VG MEASMT M01/T-GND:R-GND:R-T/AC:DC/NO DISCH:DISCH/  
SPLT VG MEASMT M11/T-GND:R-GND:R-T/E:F/AC:DC/NO DISCH:DISCH/
```

For 4-wire circuits,

```
BRDGD VG MEASMT M01/T-GND:R-GND:R-T/AC:DC/NO DISCH:DISCH/A:B/  
SPLT VG MEASMT M01/T-GND:R-GND:R-T/E:F/AC:DC/NO DISCH:DISCH/A:B/
```

The measurement procedure depends on the remote characteristics.

The mappings are one-to-one. For example, for a 2-wire circuit, the mapping to TR-TSY-000834 is as follows:

```
MEAS-VG::d:e:f,g,h,i[,j];
```

d(TSN)  
e (CTAG) = Correlation Tag  
f (MEASMODE)  
          = AC or DC  
g (MEASLOC)= BRIDGD  
h (MEASLDS)= TG, RG, or RT directly from  
            the SARTS prompter.  
i (MD) = S  
J (PR) = Pair that the measurement  
          will be made on. Not used.

The mapping of M11 for 2-wire circuit is as follows:

```
MEAS-VG::d:e:f,g,h,i[,j];
```

d and e are as above  
f (MEASMODE)  
          = AC or DC  
g (MEASLOC)= SPLTE or SPLTF depending  
            on the given direction  
h (MEASLDS)= TG, RG or RT directly  
            from the SARTS prompter  
i (MD) = S  
j (PR) = Pair that the measurement  
          will be made on. Not used

**M02/M12 — Resistance Measurement**

---

These commands are also used for BRIDGED and SPLIT measurements, respectively. The prompters are as shown:

For 2-wire circuits:

```
BRDGD RES MEASMT M02/T-GND:R-GND:R-T/  
SPLT RES MEASMT M12/T-GND:R-GND:R-T/E:F/
```

For 4-wire circuits:

```
BRDGD RES MEASMT M02/T-GND:R-GND:R-T/A:B/  
SPLT RES MEASMT M12/T-GND:R-GND:R-T/E:F/A:B/
```

The mapping to TR-TSY-000834 is one-to-one with f (of the MEAS-RES message) = BRDGD or SLPTE - SPLTF, depending on the type of measurement.

**M03/M13 — Measure Capacitance**

---

Another pair used for BRIDGED and SPLIT measurements, respectively. The prompts are as shown:

For 2-wire circuits:

```
BRDGD CAPNC MEAS M03/T-GND:R-GND:R-T/  
SPLT CAPNC MEAS M13/T-GND:R-GND:R-T/E:F/
```

For 4-wire circuits:

```
BRDGD CAPNC MEAS M03/T-GND:R-GND:R-T/A:B/  
SPLT CAPNC MEAS M13/T-GND:R-GND:R-T/E:F/A:B/
```

Again the mapping is one-to-one with f (of the MEAS-CAPNC message) = BRDGD or SPLTE - SPLTF, depending on the type of measurement.

M04/M14 — Current Measurement

Similarly, as with the previous measurement instructions, the first is used for BRIDGED and the second for SPLIT current measurements. The prompts are shown as follows:

For 2-wire circuits:

```
BRDGD CUR MEAS  M04/T:R/AC:DC/  
SPLT CUR MEAS  M14/T:R/AC:DC/E:F/
```

For 4-wire circuits:

```
BRDGD CUR MEAS  M04/T:R/AC:DC/A:B/  
SPLT CUR MEAS  M14/T:R/AC:DC/E:F/A:B/
```

The mappings are one-to-one similar to the above.

**S01 — Single Frequency Conditioning**

This command applies only to 4-wire circuits, and the prerequisite is that the G01 must be executed prior to this to establish the required test direction.

The command has the following form:

```
S01/ON:OFF/A:B/
```

The mapping to TR-TSY-000834 is as follows:

```
CHG-SPLTSUPV::d:e:f,g,h,[i],[j],k,l;
```

d (TSN) = Session Number  
 e (CTAG) = Correlation Number  
 f (SUPVE) = Mapped from the previously established test direction and field 1 of the S01 as follows:

DIR	f 1	SUPVE
E	1	SFN
E	2	SFF
F	-	LPO or previous

g (SUPVF) = Mapped similarly as shown:

DIR	f 1	SUPVF
F	1	SFN
F	2	SFF
E	-	LPO or previous

## SARTS Commands

---

h (SIGDIR) = E or F  
i (LR) = 00  
j (PR) = A or B mapped directly from field 2 of the S01  
k (NRE) = N  
l (NRF) = N

⇒ **NOTE:**  
TA201:XL saves SUPVE and SUPVF for subsequent loop conditioning commands (L01, L51, S01, X01, E01, and X51).

## S02 — Single Frequency Ringing

This command applies only to 4-wire circuits. The prerequisite is that both the G01 and H12 commands must be executed prior to this command to specify the test direction and to provide the required split condition.

The prompter is as shown:

```
S02/LS:GST/# OF RINGS=NN/
```

It maps as follows:

```
TST-RINGSGNL::d:e:f[,g][:h]
```

d (TSN)	= Session Number
e (CTAG)	= Correlation Code
f (RSF)	
g (RCY)	= Number of Rings, direct mapping from field 2
h (DIR)	= Ringing Direction mapped from field 4 of the 703 command as follows: if field 4 of 703 is E or F then DIR=RNG; otherwise, if field 4 of 703 is N or B then DIR=test direction saved from the G01 command.

S03 — Single Frequency Dial Pulsing

This command applies only to 4-wire circuits. The prerequisite is that the G01, S01, and H12 commands must be executed prior to the S03 command. The G01 establishes the test direction while the S01 selects the A or B pair to apply the SF tone to. The H12 places the circuit in the split talk and listen state.

The prompter is as shown:

```
S03/S:A/ TEL # /8:10:12PPS/45:58:70%BPK/
```

Here is the mapping:

```
TST-OUTPLSE::d:e:f,g:h,i,j,k,l;
```

d (TSN)	= Session Number
e (CTAG)	= Correlation Tag
f (STC)	= DT if field 1 of S03 is S; otherwise, f=blank
g (ADD)	= Direct mapping from field 2 of S03
h (ADF)	= null
i (PF)	= Direct one-to-one mapping from field 3; that is, 8, 10, or 12
j (PB)	= Direct one-to-one mapping from field 4; that is, 45, 58, or 70
k (IDT)	= null
l (DIR)	= E or F

S04 — Single Frequency Touch-Tone Dialing

This command applies only to 4-wire circuits. The prerequisite is that the G01, S01, and H12 commands must be executed prior to the S03 command. The G01 establishes the test direction, the S01 selects the A or B pair to apply the tone to, while the H12 places the circuit in the split state.

The prompter is as follows:

```
S04/S:A/TEL # /
```

The mapping is as follows:

```
TST-OUTPLSE::d:e:f,g:h,i,j,k,l;
```

d (TSN)	= Session Number
e (CTAG)	= Correlation Code
f (STC)	= Mapped from field 1 of the S04 as follows: if field 1 is S then f=DT; otherwise, f=blank
g (ADD)	= Direct mapping from field 2
h (ADF)	= N
i (PF)	= null
j (PB)	= null
k (IDT)	= null
l (DIR)	= E or F

**T01 — Send Tone**

---

The T01 command has the following form:

For 2-wire circuits:

```
T01/404:1004:2600:2713:2804/0:-10:-13:-16 DBMO/
```

For 4-wire circuits:

```
T01/404:1004:2600:2713:2804/A:B/0:-10:-13:-16 DBMO/
```

The mapping to `CONN-TN::d:e:f,g,h[,j]`; is as shown:

d(TSN)	= Session Number
e(CTAG)	= Correlation Tag
f(FREQ)	= 1, 2, 3, 4, or 5 depending on the selection of field 1 of the T01 command
g(LEV)	= 1, 2, 3, or 4 depending on the selection of field 2 of the T01 command.
h(DIR)	= E or F taken from the G01 command.
J(PR)	= A if parameter 1 of field 2 is selected or B if parameter 2 of field 2 is selected.

### T03 — Measure Level of Frequency

---

The T03 command has the following form:

For 2-wire circuit:

```
T03/LEV:FREQ:PAR:PH JTR:LF PH JTR:WB PH JTR/
```

For 4-wire circuit:

```
T03/LEV:FREQ:PAR:PH JTR:LF PH JTR:WB PH JTR/A:B/
```

The mapping to MEAS-TN::d:e:f:g[,h]; is one-to-one. In both cases (2-wire and 4-wire), f (MD) = S, and g (MEASLOC) = SPTLE or SPTLF, depending on the established test direction.

**⇒ NOTE:**

This instruction (T03) can normally only be used to measure LEVEL and FREQUENCY of tones. It can be used to measure PAR (Peak-to-Average Ratio), PH JTR (Phase Jitter) or LF PH JTR (Low Frequency Phase Jitter), and/or WB PH JTR (Wide Band Phase Jitter), only if the Release 4 voiceband option is purchased and enabled. The WB PH JTR parameter option will only be available in SARTS releases GI-7.1 or newer.

The mapping for PAR will be to MEAS-PAR::d:e:f[,g]; where: parameter f (MEASLOC) = SPLTE or SPLTF depending on the test direction. Parameter g (PR) is only used for 4 wire circuits and is mapped directly.

Mapping for Phase Jitter will be to MEAS-PHJTR::d:e:f,g[,h]; where: parameter f (FREQBND) = LF if "PH JTR" is selected and HI if "WB PH JTR" is selected (LF PH JTR is not supported by TR-834) and, parameter g (MEASLOC) = SPLTE or SPLTF depending on the test direction. Parameter h (PR) is only used for 4 wire circuits and is mapped directly.

**T04 — Measure Noise**

---

This command has the following formats:

For 2-wire circuits:

```
MEAS NSE T04/C-NCH:15 KHZ FLT:3 KHZ FLT:PROG:50KB/
```

For 4-wire circuit:

```
MEAS NSE T04/C-NCH:15 KHZ FLT:3 KHZ FLT:PROG:50KB/A:B/
```

This is mapped to MEAS-NSE message as follows:

```
MEAS-NSE::d:e:f:g:h[,j];
```

d (TNS) = Session Number  
e (CTAG) = Correlation Tag

f (NET):

<u>T04 Option</u>	<u>NET</u>
C-NCH	CN
15 KHZ FLT	15
3 KHZ FLT	3
PROG	PRG
50 KB	50

g (MD) = S  
h (MEASLOC) = SPLTE or SPLTF according  
to the established direction  
J (PR) = Not used for 2-wire and A or B  
for 4-wire, as specified in the  
T04 command.

**T07 — Remove Tone**

---

This command has the following form:

```
RMV T07/A:B:A&B/
```

The mapping to the DISC-TSTSIG message is one-to-one as shown.

```
DISC-TSTSIG::d:e:f;
```

d (TNS) = Session Number  
e (CTAG) = Correlation Tag  
f (DIR) = mapped from field 1:

f1	f
1	F
2	E
3	B

Where TDA and TDB are determined by G01.

f1	TDA	TDB	f
1	F	E	F
1	F	F	*
1	E	E	*
1	E	F	E
2	F	E	E
2	F	F	*
2	E	E	*
2	E	F	F
3	-	-	B

\* Option not support by TSC/RTU.

## T08 — Apply Signal

---

This command has the following forms:

For 2-wire circuits:

```
T08/PAR:NLD:NLD S-N:PH JTR/
```

For 4-wire circuits:

```
T08/PAR:NLD:NLD S-N:PH JTR/
```

⇒ **NOTE:**

The PAR (Peak-to-Peak Average Ratio) and PH JTR (Phase Jitter) options will only be available if the Release 4 voiceband option is purchased and enabled. The NLD and NLD S-N are not supported at this time. They are currently targeted for Release 6 of TA201:XL.

If enabled, mapping for the PAR option is as follows:

```
CONN-PARSIG::d:e:f:g[,h];
```

f (LEV)	= 16
g (DIR)	= E or F (depending on test direction)
h (PR)	= only used for 4-wire circuits and is mapped directly

Mapping for PHJTR is as follows:

```
CONN-TN::d:e:f:g:h[,j];
```

f (FREQ)	= 1004
g (LEV)	= 16
h (DIR)	= E or F depending on test direction
j (PR)	= only used for 4-wire circuits and is mapped directly.

T09 — Measure Impulse Noise

This command has the following forms:

For 2-wire circuits:

```
IMP NSE T09/3K:50K:CN:CM/DBRN/735T:600B:900B:LNG:135B:135T/MIN/7:200/
```

For 4-wire circuits:

```
IMP NSE T09/3K:50K:CN:CM/DBRN/735T:600B:LNG:135B:135T/MIN/7:200/A:B/
```

The mapping to the MEAS-IMPNSE message is as follows:

```
MEAS-IMPNSE::d:e:f,g,h,j,k[,m];
```

## SARTS Commands

---

d (TSN) = Session Number  
e (CTAG) = Correlation Tag  
f (NET):

<u>T09 Field 1</u>	<u>NET</u>
3K	3K
50K	50
CN	CN
CM	CM

g (TH) = T09 field 2  
h (TM) = T09 field 4  
j (CTRATE):

<u>T09 Field 5</u>	<u>CTRATE</u>
7	8
200	1

k (MEASLOC):

<u>Test Dir</u>	<u>T09 Field 3</u>	<u>MEASLOC</u>
E	735T	SPLTE
F	735T	SPLTF
E	600B	BRDGD
F	600B	BRDGD
E	900B	BRDGD
F	900B	BRDGD
E	LNG	LONGE
F	LNG	LONGF
E	135B	BRDGD
F	135B	BRDGD
E	135T	SPLTE
F	135T	SPLTF

j (PR) = Pair that the measurement will be made on.  
For 2-wire; A or B. For 4-wire; (directly from  
the T09). Not used.

**T10 — Send Frequency**

---

This command has the following form:

For 2-wire circuits:

```
SEND FREQ T10/KHZ/0:-10:-13:-16 DBM0/
```

For 4-wire circuits:

```
SEND FREQ T10/KHZ/A:B/0:-10:-13:-16 DBM0/
```

This is mapped as follows:

```
CONN-TN::d:e:f,g,h[,j];
```

d (TSN) = Session Number

e (CTAG) = Correlation Tag

f (FREQ):

<u>T10 Field 1</u>	<u>FREQ</u>
000.001	1
001.004	1004
002.600	2600
163.840	163840

g (LEV) = Saved Level or mapped as follows:

<u>T10 Field 2</u>	<u>LEV</u>
0	0
-10	10
-13	13
-16	16

h (DIR) = E or F from G01

j (PR) = Not used for 2-wire and A or B for 4-wire

⇒ **NOTE:**

The TA201:XL saves the value of the T10 field 2 (LEVEL) for subsequent T10 commands.

x01/x51 — Duplex Conditioning

Both commands have the same form, as follows:

```
X01/ON HK:OFF HK/NORM:REV/
```

These commands map to the TR-TSY-000834 message CHG-SPLTSUP as follows:

```
CHG-SPLTSUPV::d:e:f,g,h,[i],[j],k,l;
```

d (TSN) = Session Number  
e (CTAG) = Correlation Tag  
f (SUPVE) = Mapped from field 1 of X01/X51 as follows:

TEST DIR	f 1	SUPVE
E	1	DNN
E	2	DFN
F	-	LPO or previous

g (SUPVF) = Similar mapping as above:

TEST DIR	f 1	SUPVF
F	1	DNN
F	2	DFN
E	-	LPO or previous

## SARTS Commands

---

h (SIGDIR) = E or F, direct mapping from the saved direction  
i (LR) = 1400  
j (PR) = SX  
k (NRE) = Mapped from field 2 of the X01/X51  
as follows:

TEST DIR	f 2	NRE
E	1	N
E	2	R
F	-	N or previous

l (NRF) = Similar mapping as above

TEST DIR	f 2	NRF
F	1	N
F	2	R
E	-	N or previous

**⇒ NOTE:**

TA201:XL saves SUPVE and SUPVF for subsequent supervision commands (L01/L51, E01, S01, X01/X51).

## x02 — Duplex Ringing

This command has the following prompter:

```
X02/LN:LR:GS/# OF RINGS = NN/
```

Where LN = Loop Normal — Signaling format of 2 seconds on,  
1.5 second off.

LR = Loop Reverse — Same signaling format.

GS = Ground start — Signaling format of 180 ms on,  
6 seconds off.

# OF RINGS — Maximum is 15 rings.

The mapping of TR-TSY-000834 is as follows:

```
TST-RINGSGNL::d:e:f[,g][:h];
```

d(TSN)	= Test Session Number
e(CTAG)	= Correlation Tag
f(RSF)	= Ringing Signal Format = A
g(RCY)	= Ringing cycles, mapped from Field 2 (NN)
h(DIR)	= Ringing Direction. This is mapped from field 4 of the 703 command as follows: if RNG (f4) of 703 is E or F then DIR = RNG; otherwise, if RNG is N or B then DIR = Test direction stored by the G01 command.

**x03 — Duplex Dial Pulsing**

---

This command has the following form:

```
X03/S:A/ TEL # /8:10:12PPS/45:58:70%BRK/
```

The mapping to TR-TSY-000834 is as follows:

```
TST-OUTPLSE::d:e:f,g:h,i,j,k,l;
```

d (TSN)	= Session Number
e (CTAG)	= Correlation Tag
f (STC)	= Direct map from field 1 of X03 as follows: if field 1 is S, then f=DT; otherwise, f=blank
g (ADD)	= Direct mapping from field 2 of the X03
h (ADF)	= null
i (PF)	= Direct one-to-one mapping from field 3 of the X03, that is, 8, 10, or 12
j (PB)	= Direct one-to-one mapping from field 4 of the X03, that is, 45, 58, or 70
k (IDT)	= null
l (DIR)	= E or F depending on the saved direction.

## X04 — Duplex Touch-Tone Dialing

This command has the following form:

```
X04/S:A/ TEL # /
```

The mapping to TR-TSY-000834 is as follows:

```
TST-OUTPLSE::d:e:f,g:h,i,j,k,l;
```

d (TSN)	= Session Number
e (CTAG)	= Correlation Tag
F (STC)	= Mapped from field 1 of X04 as follows: if field 1 is S, then f=DT; otherwise, f=blank
g (ADD)	= Direct mapping from field 2 of X04
h (ADF)	= T
i (PF)	= null
j (PB)	= null
k (IDT)	= null
l (DIR)	= E or F from the saved direction

---

**TR-TSY-000834 Command  
Options Not Supported by  
TA201:XL**

**3**

---

**Contents**

**General**

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---

# TR-TSY-000834 Command Options Not Supported by TA201:XL

# 3

---

## General

The following is a subset of TR-TSY-000834 specified commands that are translated by TA201:XL, but have command options that are not supported by SARTS/TA201:XL. Any command that is supported in general but not mentioned here is supported with full functionality.

```
CONN-TACC-T0y : : TID:AID, CTAG, TSN, ERRCOR;
```

TID	Is up to 19 characters instead of 20 and only alphanumerics or blanks (with none embedded are allowed). TID is the concatenation of the CLLI* code and ACCESS SYSTEM id in TA-TSY-000330 and on the 704 command.
AID	Is up to 17 characters instead of up to 30 as in TA-TSY-000330.

---

\* COMMON LANGUAGE is a registered trademark and CLFI, CLLI, CLCI, and CLEI are trademarks of Bell Communications Research, Inc.

On Response:

SFR            This parameter is not reported to the user.

MON-DDS: :TSN:CTAG:DIR, MOS, DUR, RI;

DIR            Always both directions are monitored. Single direction monitor is not allowed.

DUR            Duration specification to seconds is not supported. Only a snapshot monitor or duration in minutes is allowed.

RI             The continuous range of report intervals is not supported. Only a single report or one every 10 seconds is supported.

On Response:

DS1ERCN       This parameter is not reported to the tester if returned by a remote.

CHG-TL: :TSN:CTAG:ACT;

ACT            The options TERMC and RLSC are not available in SARTS. Also separate A and B control is provided with analog access; therefore, both the A and the B pairs are terminated or released by SARTS.

CHG-LTCHLPBK-DDS: :TSN:CTAG: , DIR, OR, LSC;

LSC            All 64 theoretically possible loopback codes are not supported. Loopbacks for only the following devices are supported: DSU, CSU, OCU, HL222, HL96NY, DS0DP.

TST-LPBK-DDS : : TSN:CTAG:DIR,LPBKT,TDB,BEI,DUR,RI,THRSH;

- BEI            This parameter is defaulted to No Bit Error insertion by TA201:XL.
- DUR            The continuous range of durations in the form of minutes-seconds is not available. Instead, the following selections are available: 5 Sec, 15 Sec, 5 Min, 15 Min, 24 H.
- RI             The continuous range of report intervals is not available. Only the following are: single response, 5 secs, 20 secs, 30 secs, 1 minute. Furthermore, these values are tied to the duration values above, respectively.
- THRSH         This parameter is defaulted to a large value defined in a table by the TA201:XL system administrator.

**On Response:**

- DS1ERCN       This parameter is not reported to the tester if returned by the remote.
- DS0BERCN      This parameter is not reported to the tester if returned by the remote.

TST-MJU-DDS : : TSN:CTAG:DIR,TR;

- TR             This number of iterations parameter is not directly specified by the tester. The tester specifies a measurement duration instead, and this is converted to number of iterations by the TA201:XL by allowing 5 secs for each iteration.

**On Response:**

- TSTIT          This number of iterations parameter is not reported according to the previous discussion.

TST-STRHTY-DDS::TSN:CTAG:DIR,TF,TMP,BEI,DUR,THRSH;

- BEI            This parameter is defaulted to No Bit Error insertion by the TA201:XL.
- DUR            The continuous range of durations in the form of minutes-seconds is not available. Instead, the following selections are available: 5 Sec, 15 Sec, 5 Min, 15 Min, 24 H. Furthermore, for the transmit only option, a timed transmission is not available. There are two modes in which a transmission only function is available. In the first one, the RTU continues to transmit the requested signal indefinitely until a following request that necessitates the termination of this transmission is received. Some RTUs support this mode by specifying DUR=C on input. These RTUs include Wiltron 9966 (verified in lab) and Hekimian 6302 (announced by vendor). For those RTUs that do not support DUR=C, a 90 sec transmission by default is available. The choice between the two modes is defined by the TA201:XL system administrator.
- RI             The continuous range of report intervals is not available. Only the following are: single response, 5 secs, 20 secs, 30 secs, 1 minute. Furthermore, these values are tied to the duration values above, respectively.
- THRSH         This parameter is defaulted to a large value defined in a table by the TA201:XL system administrator.

**On Response:**

- DS1ERCN      This parameter is not reported to the tester if returned by the remote.
- DS0BERCN     This parameter is not reported to the tester if returned by the remote.

**On Response:**

- BYTE          The sampled bytes are not reported to the tester in binary form. Only error counts based on these samples are presented.

## Command Options Not Supported

---

```
TST-INSERRBITS : : TSN : CTAG : BITERRS ;
```

**BITERRS**      This parameter is defaulted to 6 for DDS measurements by SARTS. For DS-1 measurements, this command is available with full flexibility.

```
CONN-TACC : : TID : AID : CTAG : TSN [ , DTSN ] : ORTN , CNFGRN  
: SIG , OPE , OPF , RNGDI : IMP , TLPE , TLPF : TEL ;
```

TID	Is up to 10 characters instead of 20 (TR-TSY-000834 specifies TID as a text string limited to 20 characters) and only alphanumerics or blanks (with none embedded) are allowed. TID is the concatenation of the CLLI code and ACCESS SYSTEM id in TA-TSY-000330 and on the 701 command.
AID	Is up to 7 characters instead of up to 30 as specified in TA-TSY-000330.
DTSN	Is not used by the TA201:XL.
IMP	Impedance value of 00 is not available.

On Response:

TLS            Terminate and Leave report is sent to the user only when both ends are terminated or left at the same time.

---

CHG-SPLTSUPV: : TSN:CTAG: SUPVE, SUPVF, SIGDIR, LR, PR, NRE, NRF;

PAIR            The options AB and SX are not used by SARTS.

LR             The continuous range of load resistances is not supported by SARTS, only 400 ohms is supported.

---

MEAS-VG: : TSN:CTAG: MEASMODE, MEASLOC, MEASLDS, MD, PR;

MEASLDS        The parameter value ALL, which requests multiple measurements, is not available with SARTS.

MD             Specification for multiple measurement mode is not available with SARTS.

---

MEAS-RES: : TSN:CTAG: MEASLOC, MEASLDS, MD[, PR];

MEASLDS        The parameter value ALL, which requests multiple measurements, is not available with SARTS.

## Command Options Not Supported

---

MD Specification for multiple measurement mode is not available with SARTS.

### On Response:

RES The resistance measured can be displayed by SARTS only to 5 significant digits instead of 7 returned by TR-TSY-000834 remotes.

---

```
MEAS-CAPNC : : TSN : CTAG : MEASLOC , MEASLDS , MD [ , PR ] ;
```

MEASLDS The parameter value ALL, which requests multiple measurements, is not available with SARTS.

MD Specification for multiple measurement mode is not available with SARTS.

---

```
CONN-TN : : TSN : CTAG : FREQ , LEV : DIR [ , PR ] ;
```

LEVEL The continuous range of level specifications for this parameter is not provided by SARTS. Instead, the following level values are available: 0 dbm0, -10 dbm0, -13 dbm0, -16 dbm0.

---

```
MEAS-TN : : TSN : CTAG : MODE : MEASLOC [ , PR ] ;
```

MEASLOC The value BRDGD, which indicates bridged measurement, is not provided by SARTS.

MD Specification for multiple measurement mode is not available with SARTS.

MEAS-NSE::TSN:CTAG:NET,MD:MEASLOC[,PR];

NET The value CM indicating C-Message weighting (without a notch) is not provided by SARTS.

MEASLOC The value BRDGD, which indicates bridged measurement, is not provided by SARTS.

MD Specification for multiple measurement mode is not available with SARTS.

MEAS-IMPNSE::TSN:CTAG:NET,TH,TM,CTRATE,MEASLOC[,PR];

NET The value 15 indicating 15 kHz flat weighting and PRG indicating program weighting are not provided by SARTS.

TH The threshold levels available are from -30 to -160 dBm. TR-TSY-000834 does not specify any range.

CTRATE The count rates of 8 and 100 per second are not provided by SARTS; instead, 7 and 200 are provided.

**On Response:**

SARTS user interface does not provide for three level threshold settings. Therefore, the following parameters that pertain to

## Command Options Not Supported

---

second and third level thresholds implicitly set by the remotes are not reported to the tester.

- CT2            This count is not reported to the user.
- CT3            This count is not reported to the user.

```
TST-RINGSGNL: :TSN:CTAG:RSF [,RCY] [:DIR];
```

- RCY            Ringing cycles. The ability to specify one continuous ring of variable length is not available with SARTS.

### On Response:

- RTD            Ring trip detection capability is not available with SARTS.

```
TST-OUTPULSE: :TSN:CTAG:STC,ADD:ADF,PF,PB,IDT,DIR;
```

- STC            The special timing considerations of delay outpulse, wink start, or immediate outpulse start are not available with SARTS.
- ADD            The option to ensure no dial tone presence is not available with SARTS.
- ADF            The multifrequency dialing is not supported by the Release 2 of the TA201:XL.
- PF             A continuous range of pulse frequencies is not available with SARTS. Only 8, 10, and 12 pulses per second are available.
- PB             A continuous range of percent breaks is not available with SARTS. Only 45, 58, and 70 percent are available.

## Command Options Not Supported

---

IDT            The specification of interdigit interval is not available by SARTS. The default (650 msec) is used instead.

### On Response:

RSM            Supervision Measurement is not returned by SARTS.

CDA            Call disposition analysis is not returned by SARTS.

---

```
MEAS-CURR::TSN:CTAG:MEASMODE,MEASLOC,MEASLD,MD[,PR];
```

MD            Multiple measurement mode with a single command is not available with SARTS.

---

**Notice of Modification or Change**

**4**

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## Notice of Modification or Change

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### General

This document describes the SARTS TA201:XL (Release 3.0) interface to TR-TSY-000834 (Issue 2, Version 2). TA201:XL Release 3 was made generally available in September 1990 and replaces all previous releases.

As a subscriber of this document, you will receive notification of any modifications to the TA201:XL interface package two months prior to the availability of new software.

In support of the SARTS TA201:XL, AT&T offers a service to remote equipment vendors to test TSC/RTU compatibility with the SARTS TA201:XL product. This service allows you to remotely or on-site test a TSC/RTU with the SARTS VAX\* 11/780 computer and the TA201:XL 3B2 model 600 computer located at the AT&T Red Hill facility.

AT&T  
SARTS/TA201:XL  
480 Red Hill Road,  
Middletown, NJ 07748

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\* Trademark of Digital Equipment Corporation.

Consultative services are also available. If you are interested in any of these services, please contact the WECARE Hotline toll free:

1-800-WE2-CARE  
1-800-932-2273

Information can be requested on SARTS TA201:XL vendor testing services.

## TA201:XL Enhancement Requests

This document describes the interface between the SARTS and BellCore technical reference TR-TSY-000834 for remote access and testing of special services. The TA201:XL currently supports the testing of the following:

- Voiceband special services
- Voiceband data circuits
- Digital data system circuits
- High capacity digital services (DS1).

AT&T is currently reviewing enhancement requests with Bell Operating Companies or Region off:liaks and remote test equipment vendors for future releases of TA201:XL. Enhancement requests may be submitted to your local AT&T Account Executive or mailed to:

AT&T  
Product Manager — TA201:XL  
Room HR 2H-192  
480 Red Hill Road  
Middletown, NJ 07748  
1-800-932-2273

---

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