

## ACCESS SERVICE

## 15. Access Service Interfaces and Transmission Specifications

15.1 Contains Switched Access Service Options (which are comprised of Interface Groups, Supervisory Signaling, Entry Switch Receive Level and Local Transport Termination) and Transmission Specifications. 15.2 describes Special Access Service Network Channel (NC) codes and Network Channel Interface (NCI) codes.

## 15.1 Switched Access Service

Three Interface Groups are provided for terminating the Local Transport Entrance Facility at the customer's designated premises. Each Interface Group provides a specified premises interface (e.g., two-wire, four-wire, DS1, etc.). Where transmission facilities permit, and at the option of the customer, the Entrance Facility may be provided with optional features as set forth in 15.1.1 following. C

As a result of the customer's access order and the type of Telephone Company transport facilities serving the customer designated premises, the need for signaling conversions or two-wire to four-wire conversions, or the need to terminate digital or high frequency facilities in channel bank equipment may require that Telephone Company equipment be placed at the customer designated premises. For example, if a voice frequency interface is ordered by the customer and the Telephone Company facilities serving the customer designated premises are digital, then Telephone Company channel bank equipment must be placed at the customer designated premises in order to provide the voice frequency interface ordered by the customer. C

## 15.1.1 Local Transport Interface Groups

Interface Groups are combinations of technical parameters which describe the Telephone Company handoff at the point of termination at the customer designated premises. The technical specifications concerning the available interface groups are set forth in (A) through (C) following.

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.1 Switched Access Service (Cont'd)

## 15.1.1 Local Transport Interface Group (Cont'd)

Interface Group 1 is provided with Type C Transmission Specifications, as set forth in 15.1.2(C) following, and Interface Groups 2 and 6 are provided with Type A or B Transmission Specifications, as set forth respectively in 15.1.2(D) and (E) following, depending on the Feature Group and whether the Access Service is routed directly or through an access tandem. All Interface Groups are provided with Data Transmission Parameters.

Only certain premises interfaces are available at the customer designated premises. The premises interfaces associated with the Interface Groups may vary among Feature Groups.

## (A) Interface Group 1

Interface Group 1, except as set forth in the following, provides two-wire voice frequency transmission at the point of termination at the customer designated premises. The interface is capable of transmission of voice and associated telephone signals within the frequency bandwidth of approximately 300 to 3000 Hz.

Interface Group 1 is not provided in association with FGC and FGD when the first point of switching is an access tandem. In addition, Interface Group 1 is not provided in association with FGB, FGC or FGD when the first point of switching provides only four-wire terminations.

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.1 Switched Access Service (Cont'd)

## 15.1.1 Local Transport Interface Groups (Cont'd)

## (A) Interface Group 1 (Cont'd)

The transmission path between the point of termination at the customer designated premises and the customer's serving wire center may be comprised of any form or configuration of plant capable of and typically used in the telecommunications industry for the transmission of voice and associated telephone signals within the frequency bandwidth of 300 to 3000 Hz.

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The interface is provided with loop supervisory signaling. When the interface is associated with FGA, such signaling will be loop start or ground start signaling. When the interface is associated with FGB, FGC or FGD, such signaling, except for two-way calling which is E&M signaling, will be reverse battery signaling.

## (B) Interface Group 2

Interface Group 2 provides four-wire voice frequency transmission at the point of termination at the customer designated premises. The interface is capable of transmission of voice and associated telephone signals within the frequency bandwidth of approximately 300 to 3000 Hz.

The transmission path between the point of termination at the customer designated premises and the customer's serving wire center may be comprised of any form or configuration of plant capable of and typically used in the telecommunications industry for the transmission of voice and associated telephone signals within the frequency bandwidth of approximately 300 to 3000 Hz.

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## ACCESS SERVICE

## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.1 Switched Access Service (Cont'd)

## 15.1.1 Local Transport Interface Groups (Cont'd)

## (B) Interface Group 2 (Cont'd)

The interface is provided with loop supervisory signaling. When the interface is associated with FGA, such signaling will be loop start or ground start signaling. When the interface is associated with FGB, FGC or FGD, such signaling, except for two-way calling which is E&M signaling, will be reverse battery signaling.

## (C) Interface Group 6

Interface Group 6 provides digital transmission at the point of termination at the customer designated premises. The various interfaces are capable of transmitting electrical signals at the nominal bit rates illustrated following, with the capability to channelize voice frequency transmission paths. Before the first point of switching, when analog switching utilizing analog terminations is provided, the Telephone Company will provide multiplex and channel bank equipment to derive transmission paths of a frequency bandwidth of approximately 300 to 3000 Hz. When digital switching or analog switching with digital carrier terminations is provided, the Telephone Company will provide a DS1 signal(s) in D3/D4 format.

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The interface is provided with individual transmission path bit stream supervisory signaling.

<u>Interface Group Identification No.</u>	<u>Nominal Bit Rate (Mbps)</u>	<u>Digital Hierarchy Level</u>	<u>Max. No. of Channelized Voice Freq. Trans. Paths</u>
6	1.544	DS1	24

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.1 Switched Access Service (Cont'd)

## 15.1.1 Local Transport Interface Groups (Cont'd)

## (D) Local Transport Optional Features

Where transmission facilities permit, the Telephone Company will, at the option of the customer, provide the following features in association with Local Transport. An Access Order Charge as specified in 17.4.1(A) following is applicable on a per order basis when nonchargeable optional features are added subsequent to the installation of service.

- Customer Specified Entry Switch Receive Level

Customer Specified Entry Switch Receive Level allows the customer to specify the receive transmission level at the first point of switching. The range of transmission levels which may be specified is described in Technical Reference TR-NPL-000334. This feature is available with Interface Groups 2 and 6 for Feature Groups A and B.

- Customer Specification of Local Transport Termination

Customer Specification of Local Transport Termination allows the customer to specify, for Feature Group B routed directly to an end office or access tandem, a four-wire termination of the Local Transport at the first point of switching in lieu of a Telephone Company selected two-wire termination. This option is available only when the Feature Group B arrangement is provided with Type B Transmission Specifications.

- Supervisory Signaling

Supervisory Signaling allows the customer to order an optional supervisory signaling arrangement for each transmission path provided where the transmission parameters permit, and where signaling conversion is required by the customer to meet its signaling capability.

## ACCESS SERVICE

## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.1 Switched Access Service (Cont'd)

## 15.1.1 Local Transport Interface Groups (Cont'd)

## (D) Local Transport Optional Features (Cont'd)

The Interface Groups, as described in (A) through (C) preceding, represent industry standard arrangements. Where transmission parameters permit, the customer may select the following optional signaling arrangements in place of the signaling arrangements standardly associated with the Interface Groups.

- For Interface Groups 1 and 2 associated with FGB, FGC or FGD

DX Supervisory Signalling,,  
E&M Type I Supervisory Signaling,  
E&M Type II Supervisory Signaling, or  
E&M Type III Supervisory Signaling

- For Interface Group 2 associated with FGB, FGC or FGD and in addition to the preceding

SF Supervisory Signaling, or Tandem Supervisory Signaling

- For Interface Group 6

This Interface Group may, at the option of the customer, be provided with individual transmission path SF supervisory signaling where such signaling is available in Telephone Company central offices. Generally such signaling is available only where the first point of switching provides an analog (i.e., non digital) interface to the transport termination.

These optional Supervisory Signaling arrangements are not available in combination with the SS7 optional feature as described in 6.8.2(C)(2) preceding.

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Additionally, in (E) following, there is a matrix of available Premises Interface Codes as a function of Interface Group, Telephone Company Switch Supervisory Signaling and Feature Group.

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.1 Switched Access Service (Cont'd)

## 15.1.1 Local Transport Interface Groups (Cont'd)

## (E) Available Premises Interface Codes

Following is a matrix showing premises interface codes which are available for each Interface Group. Their availability is a function of the Telephone Company switch supervisory signaling and Feature Group. For explanations of these codes, see the Parameter Codes and Options as set forth in 15.2.2(A) following.

Interface Group	Telephone Company		Premises Interface Code	Feature Group				
	Switch	Supervisory Signaling		A	B	C	D	
1	LO		2LS2	X				
	LO		2LS3	X				
	GO		2GS2	X				
	GO		2GS3	X				
	LO, GO		2DX3	X				
	LO, GO		4EA3-E	X				
	LO, GO		4EA3-M	X				
	LO, GO		6EB3-E	X				
	LO, GO		6EB3-M	X				
	RV, EA, EB, EC		2DX3		X	X	X	
	RV, EA, EB, EC		4EA3-E		X	X	X	
	RV, EA, EB, EC		4EA3-M		X	X	X	
	RV, EA, EB, EC		6EB3-E		X	X	X	
	RV, EA, EB, EC		6EB3-M		X	X	X	
	EA, EB, EC		6EC3				X	X
	RV		2RV3-0		X	X	X	
	RV		2RV3-T		X	X	X	
SS7		2NO2				X	X	
2	LO, GO		4SF2	X				
	LO, GO		4SF3	X				
	LO		4LS2	X				
	LO		4LS3	X				
	LO		6LS2	X				

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.1 Switched Access Service (Cont'd)

## 15.1.1 Local Transport Interface Groups (Cont'd)

## (E) Available Premises Interface Codes (Cont'd)

Interface Group	Telephone Company		Premises Interface Code	Feature Group				
	Switch	Supervisory Signaling		A	B	C	D	
2 (Cont'd)	GO		4GS2	X				
	GO		4GS3	X				
	GO		6GS2	X				
	LO, GO		4DX2	X				
	LO, GO		4DX3	X				
	LO, GO		6EA2-E	X				
	LO, GO		6EA2-M	X				
	LO, GO		8EB2-E	X				
	LO, GO		8EB2-M	X				
	LO, GO		6EX2-B	X				
	RV, EA, EB, EC		4SF2		X	X	X	
	RV, EA, EB, EC		4SF3		X			
	RV, EA, EB, EC		4DX2		X	X	X	
	RV, EA, EB, EC		4DX3		X			
	RV, EA, EB, EC		6DX2			X		
	RV, EA, EB, EC		6EA2-E		X	X	X	
	RV, EA, EB, EC		6EA2-M		X	X	X	
	RV, EA, EB, EC		8EB2-E		X	X	X	
	RV, EA, EB, EC		8EB2-M		X	X	X	
	EA, EB, EC		8EC2-M			X	X	
	RV		4RV2-O		X	X	X	
	RV		4RV2-T		X	X	X	
	RV		4RV3-0		X	X		
	RV		4RV3-T		X	X		
	SS7		4NO2					N
	6	LO, GO		4DS9-15	X			
		LO, GO		4DS9-15L	X			
RV, EA, EB, EC			4DS9-15		X	X	X	
RV, EA, EB, EC			4DS9-15L		X	X	X	
SS7			4DS9-15			X	X	N

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.1 Switched Access Service (Cont'd)

## 15.1.2 Standard Transmission Specifications

Descriptions of the transmission specifications available with each Feature Group as a function of the Interface Group selected by the customer, are set forth in (A) through (C) following. Descriptions of each of these Standard Transmission Specifications and the two Data Transmission Parameters mentioned are set forth respectively in (D) through (F) and 15.1.3(A) following:

## (A) Feature Group A

FGA is provided with either Type B or Type C Transmission Specifications. The specifications for the associated parameters are guaranteed to the first point of switching. Type C Transmission Specifications are provided with Interface Group 1 and Type B is provided with Interface Groups 2 and 6. Type DB Data Transmission Parameters are provided with FGA to the first point of switching.

## (B) Feature Group B

FGB is provided with either Type B or Type C Transmission Specifications. The specifications for the associated parameters are guaranteed to the end office when routed directly or to the first point of switching when routed via an access tandem. Type C Transmission Specifications are provided with Interface Group 1 and Type B is provided with Interface Groups 2 and 6. Type DB Data Transmission Parameters are provided with FGB to the first point of switching.



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15. Access Service Interfaces and Transmission Specifications (Cont'd)

15.1 Switched Access Service (Cont'd)

15.1.2 Standard Transmission Specifications (Cont'd)

(D) Feature Group D

FGD is provided with either Type A, Type B or Type C Transmission Specifications as follows:

- when routed to the end office either Type B or C is provided.
- when routed to an access tandem only Type A is provided.
- Type A is provided on the transmission path from the access tandem to the end office.

Type C Transmission Specifications are provided with Interface Group 1. Type A and Type B Transmission Specifications are provided with Interface Groups 2 and 6.

Type DB Data Transmission Parameters are provided with FGD for the transmission path between the customer designated premises and the end office when directly routed to the end office. Type DA Data Transmission Parameters are provided for the transmission path between the customer designated premises and the access tandem and between the access tandem and the end office when routed via an access tandem.

(E) Type A Transmission Specifications

Type A Transmission Specifications is provided with the following parameters:

(1) Loss Deviation

The maximum Loss Deviation of the 1004 Hz loss relative to the Expected Measured Loss (EML) is  $\pm 2.0$  dB.

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## ACCESS SERVICE

## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.1 Switched Access Service (Cont'd)

## 15.1.2 Standard Transmission Specifications (Cont'd)

## (E) Type A Transmission Specifications (Cont'd)

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## (2) Attenuation Distortion

The maximum Attenuation Distortion in the 404 to 2804 Hz frequency band relative to the loss at 1004 Hz is -1.0 dB to +3.0 dB.

## (3) C-Message Noise

The maximum C-Message Noise for the transmission path at the route miles listed is less than or equal to:

<u>Route Miles</u>	<u>C-Message Noise</u>
less than 50	32 dBrnCO
51 to 100	34 dBrnCO
101 to 200	37 dBrnCO
201 to 400	40 dBrnCO
401 to 1000	42 dBrnCO

## (4) C-Notch Noise

The maximum C-Notch Noise, utilizing a -16 dBmO holding tone, is less than or equal to 45 dBrnCO.

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.1 Switched Access Service (Cont'd)

## 15.1.2 Standard Transmission Specifications (Cont'd)

## (E) Type A Transmission Specifications (Cont'd)

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## (5) Echo Control

Echo Control, identified as Equal Level Echo Path Loss, and expressed as Echo Return Loss and Singing Return Loss, is dependent on the routing, i.e., whether the service is routed directly from the customer's point of termination (POT) to the end office or via an access tandem. It is equal to or greater than the following:

	<u>Echo Return Loss</u>	<u>Singing Return Loss</u>
POT to Access Tandem	21 dB	14 dB
POT to End Office		
- Direct	N/A	N/A
- Via Access Tandem	16 dB	11 dB

## (6) Standard Return Loss

Standard Return Loss expressed as Echo Return Loss and Singing Return Loss on two-wire ports of a four-wire point of termination shall be equal to or greater than:

<u>Echo Return Loss</u>	<u>Singing Return Loss</u>
5 dB	2.5 dB

## ACCESS SERVICE

## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.1 Switched Access Service (Cont'd)

## 15.1.2 Standard Transmission Specifications (Cont'd)

## (F) Type B Transmission Specifications

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Type B Transmission Specifications are provided with the following parameters:

## (1) Loss Deviation

The maximum Loss Deviation of the 1004 Hz loss relative to the Expected Measured Loss (EML) is  $\pm 2.5$  dB.

## (2) Attenuation Distortion

The maximum Attenuation Distortion in the 404 to 2804 Hz frequency band relative to loss at 1004 Hz is -2.0 dB to +4.0 dB.

## (3) C-Message Noise

The maximum C-Message Noise for the transmission path at the route miles listed is less than or equal to:

<u>Route Miles</u>	<u>C-Message Noise*</u>	
	<u>Type B1</u>	<u>Type B2</u>
less than 50	32 dBrnCO	35 dBrnCO
51 to 100	33 dBrnCO	37 dBrnCO
101 to 200	35 dBrnCO	40 dBrnCO
201 to 400	37 dBrnCO	43 dBrnCO
401 to 1000	39 dBrnCO	45 dBrnCO

## (4) C-Notch Noise

The maximum C-Notch Noise, utilizing a -16 dBm0 holding tone is less than or equal to 47 dBrnCO.

\* For Feature Group C and D only Type B2 will be provided. For Feature Groups A and B, Type B1 or B2 will be provided as set forth in Technical Reference TR-NPL-000334.

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## ACCESS SERVICE

## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.1 Switched Access Service (Cont'd)

## 15.1.2 Standard Transmission Specifications (Cont'd)

## (F) Type B Transmission Specifications (Cont'd)

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## (5) Echo Control

Echo Control, identified as Impedance Balance for FGA and FGB and Equal Level Echo Path Loss for FGC and FGD, and expressed as Echo Return Loss (ERL) and Singing Return Loss (SRL), is dependent on the routing, i.e., whether the service is routed directly from the customer's point of termination (POT) to the end office or via an access tandem. The ERL and SRL also differ by Feature Group, type of termination, and type of transmission path. They are greater than or equal to the following:

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	<u>Echo</u> <u>Return Loss</u>	<u>Singing</u> <u>Return Loss</u>
POT to Access Tandem		
- Terminated in		
4-Wire trunk	21 dB	14 dB
- Terminated in		
2-Wire trunk	16 dB	11 dB
POT to End Office		
- Direct	16 dB	11 dB
- Via Access Tandem		
. For FGB access	8 dB	4 dB
. For FGC access		
(Effective		
4-Wire trans-		
mission path		
at end office)	16 dB	11 dB
. For FGC access		
(Effective		
2-Wire trans-		
mission path		
at end office)	13 dB	6 dB

## ACCESS SERVICE

## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.1 Switched Access Service (Cont'd)

## 15.1.2 Standard Transmission Specifications (Cont'd)

## (F) Type B Transmission Specifications (Cont'd) T

## (6) Standard Return Loss

Standard Return Loss, expressed as Echo Return Loss and Singing Return Loss, on two-wire ports of a four-wire point of termination shall be equal to or greater than:

Echo Return LossSinging Return Loss

5 dB

2.5 dB

## (G) Type C Transmission Specifications T

Type C Transmission Specifications are provided with the following parameters:

## (1) Loss Deviation

The maximum Loss Deviation of the 1004 Hz loss relative to the Expected Measured Loss (EML) is  $\pm 3.0$  dB.

## (2) Attenuation Distortion

The maximum Attenuation Distortion in the 404 to 2804 Hz frequency band relative to loss at 1004 Hz is -2.0 dB to +5.5 dB.

## ACCESS SERVICE

## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.1 Switched Access Service (Cont'd)

## 15.1.2 Standard Transmission Specifications (Cont'd)

## (G) Type C Transmission Specifications (Cont'd)

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## (3) C-Message Noise

The maximum C-Message Noise for the transmission path at the route miles listed is less than or equal to:

<u>Route Miles</u>	<u>C-Message Noise*</u>	
	<u>Type C1</u>	<u>Type C2</u>
less than 50	32 dBrnCO	38 dBrnCO
51 to 100	33 dBrnCO	39 dBrnCO
101 to 200	35 dBrnCO	41 dBrnCO
201 to 400	37 dBrnCO	43 dBrnCO
401 to 1000	39 dBrnCO	45 dBrnCO

## (4) C-Notch Noise

The maximum C-Notch Noise, utilizing a -16 dBm0 holding tone is less than or equal to 47 dBrnCO.

\* For Feature Group C and D only Type C2 will be provided. For Feature Groups A and B, Type C1 or C2 will be provided as set forth in Technical Reference TR-NPL-000334.

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## ACCESS SERVICE

## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.1 Switched Access Service (Cont'd)

## 15.1.2 Standard Transmission Specifications (Cont'd)

## (G) Type C Transmission Specifications (Cont'd)

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## (5) Echo Control

Echo Control, identified as Return Loss and expressed as Echo Return Loss and Singing Return Loss is dependent on the routing, i.e., whether the service is routed directly from the customer's point of termination (POT) to the end office or via an access tandem. It is equal to or greater than the following:

	<u>Echo Return Loss</u>	<u>Singing Return Loss</u>
POT to Access Tandem	13 dB	6 dB
POT to End Office		
- Direct	13 dB	6 dB
- Via Access Tandem (for FGB only)	8 dB	4 dB

## ACCESS SERVICE

## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.1 Switched Access Service (Cont'd)

## 15.1.3 Data Transmission Parameters

Two types of Data Transmission Parameters, i.e., Type DA and Type DB, are provided for the Feature Group arrangements. Type DB is provided with Feature Groups A, B and C and also with Feature Group D when Feature Group D is directly routed to the end office. Type DA is only provided with Feature Group D and only when routed via an access tandem. Following are descriptions of each.

## (A) Data Transmission Parameters Type DA

## (1) Signal to C-Notched Noise Ratio

The Signal to C-Notched Noise Ratio is equal to or greater than 33 dB.

## (2) Envelope Delay Distortion

The maximum Envelope Delay Distortion for the frequency bands and route miles specified is:

604 to 2804 Hz

less than 50 route miles	500 microseconds
equal to or greater than 50 route miles	900 microseconds

1004 to 2404 Hz

less than 50 route miles	200 microseconds
equal to or greater than 50 route miles	400 microseconds

Material previously appearing on this page now appears on Original Page 15-18.02.



## ACCESS SERVICE

## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.1 Switched Access Service (Cont'd)

## 15.1.3 Data Transmission Parameters (Cont'd)

## (B) Data Transmission Parameters Type DB

## (1) Signal to C-Notched Noise Ratio

The signal to C-Notched Noise Ratio is equal to or greater than 30 dB.

## (2) Envelope Delay Distortion

The maximum Envelope Delay Distortion for the frequency bands and route miles specified is:

	<u>604 to 2804 Hz</u>
less than 50 route miles	800 microseconds
equal to or greater than 50 route miles	1000 microseconds
	<u>1004 to 2404 Hz</u>
less than 50 route miles	320 microseconds
equal to or greater than 50 route miles	500 microseconds

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Material appearing on this page formerly appeared on Original Page 15-18.

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15. Access Service Interfaces and Transmission Specifications (Cont'd)

15.1 Switched Access Service (Cont'd)

15.1.3 Data Transmission Parameters (Cont'd)

(B) Data Transmission Parameters Type DB (Cont'd)

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(3) Impulse Noise Counts

The Impulse Noise Counts exceeding a 67 dBrnC0 threshold in 15 minutes is no more than 15 counts.

(4) Intermodulation Distortion

The Second Order (R2) and Third Order (R3) Intermodulation Distortion products are equal to or greater than:

Second Order (R2)	31 dB
Third Order (R3)	34 dB

(5) Phase Jitter

The Phase Jitter over the 4-300 Hz frequency band is less than or equal to 7 peak-to-peak.

(6) Frequency Shift

The maximum Frequency Shift does not exceed -2 to +2 Hz.

## ACCESS SERVICE

## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service

This section explains and lists the codes that the customer must specify when ordering Special Access Service, Switched Access Entrance Facilities, and Voice Grade and High Capacity Direct-Trunked Transport. These codes provide a standardized means to relate the services being ordered to Special Access Service offerings contained in Section 7. preceding. C

When ordering, the type of Special Access Service, Switched Access Entrance Facility or Direct-Trunked Transport is described by two code sets, the Network Channel (NC) code and the Network Channel Interface (NCI) codes. C

The Network Channel (NC) code consists of two elements. Element one is a Channel Service Code (character positions 1 and 2) that describes the channel service type in an abbreviated form. Element two is an Optional Feature Code (character positions 3 and 4) that identifies option codes available for each channel service code, such as C-conditioning or Improved Return Loss. C

The Network Channel Interface (NCI) is used to identify interface specifications associated with a particular channel. This code describes the total wires, protocol, impedance, protocol options and transmission level point(s) reflecting physical and electrical characteristics between the Telephone Company and the customer.

On the following 3 pages are examples which explain the specific characters of the codes and which reference matrices and charts used in developing the codes. Included in the matrices are Service Designator (SD) codes which are used to identify variations of service within service types. The SD and NC codes are displayed as components of the matrices designated as Technical Specifications Packages in (A) through (D) following. Through the use of these matrices, SD codes may be converted to NC codes for service ordering purposes.

A chart is also provided in 15.2.2(A) following which contains information necessary to develop NCI codes.

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service (Cont'd)

Comprehensive lists of allowed Network Channel (NC) and Network Channel Interface (NCI) codes are contained in Special Report SR-ISD-000307. However, not all services contained in this Special Report may be offered by the Telephone Company at this time.

Lastly, 15.2.2(C) following provides a list of compatible Network Channel Interfaces inasmuch as the Network Channel Interfaces associated with a given service need not always be the same, but all must be compatible.

Example No. 1: If the customer wishes to order a 4-wire voice grade circuit with 600 Ohms impedance, capable of data transmission, and with improved return loss, the customer might specify the following:

<u>NC</u>	<u>NCI</u>	<u>SECNCI</u>
LG-R	04DB2	04DA2-S

## NC Code:

LG = Voice Grade Channel Service, VG6  
-R = Improved Return Loss

## NCI Code:

04 = Number of physical wires at CDP  
DB = Data stream in VF frequency band at the customer designated main terminal location  
2 = 600 Ohms impedance

## SECNCI (Secondary NCI Code):

04 = Number of physical wires at CDP  
DA = Data stream in VG frequency at the customer designated secondary terminal location  
2 = 600 Ohms impedance  
S = Sealing current option for 4-wire transmission

In the above example the NCI (Network Channel Interface) code is the interface requested at the customer's POT (Point of Termination) and the SECNCI (Secondary Network Channel Interface) code represents the interface at the end office serving the End User.

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service (Cont'd)

Example No. 2: If the customer wishes to order a FX circuit to a station, with 600 Ohms impedance, loop start signaling, which is 4-wire at the CDP and 2-wire at the end-user, the customer might specify:

<u>NC</u>	<u>NCI</u>	<u>SECNCI</u>
LC--	04LO2	02LS2

## NC Code:

LC = Voice Grade Channel Service, VG2  
-- = No Optional Features

## NCI Code:

04 = Number of physical wires at CDP  
LO = Loop start, loop signaling - open end  
2 = 600 Ohms impedance

## SECNCI (Secondary NCI Code):

02 = Number of physical wires at CDP  
LS = Loop start signaling - closed end  
2 = 600 Ohms impedance

Example No. 3: If the customer wishes to order a 1.544 Mbps Hi-cap facility with no channel options such as CO multiplexing, the customer might specify the following:

<u>NC</u>	<u>NCI</u>	<u>SECNCI</u>
HC--	04DS9-15	04DS9-15

## NC Code:

HC = High Capacity Channel Service, HC1  
-- = No Optional Features

## NCI, SECNCI Code:

04 = Number of physical wires at CDP  
DS = Digital hierarchy interface  
9 = 100 Ohms impedance  
15 = 1.544 Mbps (DS1) format

The preceding three examples use information contained in Special Report SR-ISD-000307.

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service (Cont'd)

## 15.2.1 Network Channel (NC) Codes

In order to determine the NC code appropriate for the service to be ordered, the type of Special Access Service the customer wishes must be identified. This identification is accomplished by a Service Designator (SD) code. The broad categories of Service Designator codes (e.g., VG, etc.) are set forth in Section 7. preceding. Variations within service type (e.g., VG1, etc.) are described in the various Technical Publications cited in (A) through (D) following.

Having determined the specific service type to be ordered and its SD code, and having used the appropriate Technical Publication, the customer should match the SD code to the NC code using the following matrices. Once the NC code has been determined the Network Channel Interface (NCI) code may be developed using the information set forth in 15.2.2 following and the guidelines concerning specific parameters available for each service type as set forth in the specified Technical Publication.

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service (Cont'd)

## 15.2.1 Network Channel (NC) Codes (Cont'd)

## (A) Technical Specifications Packages Voice Grade Service

SD Code	Packase VG-												W	
	C*	1	2	3	4	5	6	7	8	9	10	11		12
NC Code	LQ	LB	LC	LD	LE	LF	LG	LH	LJ	LK	LN	LP	LR	SE
<u>Parameter</u>														
Attenuation														
Distortion	X	X	X	X	X	X	X	X	X	X	X	X	X	X
C-Message Noise	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Echo Control	X	X	X	X		X		X	X			X	X	X
Envelope Delay														
Distortion	X						X	X	X	X	X	X	X	X
Frequency Shift	X						X	X	X	X	X	X	X	X
Impulse Noise	X					X	X	X	X	X	X	X	X	X
Intermodulation														
Distortion	X						X	X	X	X	X	X		X
Loss Deviation	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Phase Hits, Gain Hits, and Dropouts														
Phase Jitter	X						X	X	X	X	X	X		X
Signal-to-C														
Message Noise					X									
Signal-to-C														
Notch Noise	X					X	X	X	X	X	X	X	X	X

The technical specifications for these parameters (except for dropouts, phase hits, and gain hits) are described in Technical References TR-NPL-000334 and TR-NPL-000335. The technical specifications for dropouts, phase hits, and gain hits are described in Technical Reference PUB 41004, Table 4.

\* The desired parameters are selected by the customer from the list of available parameters.

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service (Cont'd)

## 15.2.1 Network Channel (NC) Codes (Cont'd)

(A) Technical Specifications Packages Voice Grade Service  
(Cont'd)

SD Code	Package VG-												W	
	C*	1	2	3	4	5	6	7	8	9	10	11		12
NC Code	LQ	LB	LC	LD	LE	LF	LG	LH	LJ	LK	LN	LP	LR	SE
<u>Optional Features and Functions</u>														
Central Office Bridging Capability	X		X			X	X				X	X	X	
Central Office Multiplexing	X						X							
Conditioning:														
. C-Type	X					X	X	X	X	X	X			
. Improved Attenuation Distortion	X					X	X	X	X	X	X			
. Improved Envelope Delay Distortion	X					X	X	X	X	X	X			
. Data Capability	X						X	X			X			
. Telephoto Capability	X												X	
Improved Return Loss for Effective Four-Wire Transmission	X	X	X	X	X	X	X	X	X	X	X	X	X	X
For Effective Two-Wire Transmission	X		X	X				X						
Selective Signaling Arrangement	X		X			X	X				X	X	X	
Signaling Capability	X	X	X	X				X	X	X				
Transfer Arrangement	X	X	X	X	X	X	X	X	X	X	X	X	X	X

## ACCESS SERVICE

## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service (Cont'd)

## 15.2.1 Network Channel (NC) Codes (Cont'd)

(B) Technical Specifications Packages Program Audio  
Service

	SD Code NC Code	Package			
		APC*	AP1	AP2	AP3
		PQ	PE	PF	PJ
<u>Parameter</u>					
Actual Measured Loss		X	X	X	X
Amplitude Tracking		X			
Crosstalk		X	X	X	X
Distortion Tracking		X			
Gain/Frequency					
Distortion		X	X	X	X
Group Delay		X			
Noise		X	X	X	X
Phrase Tracking		X			
Short-Term Gain					
Stability		X			
Short-Term Loss		X			
Total Distortion		X	X	X	X

The technical specifications are described in  
Technical Reference TR-NPL-000337.

\* The desired parameters are selected by the customer from the list of  
available parameters.

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15. Access Service Interfaces and Transmission Specifications (Cont'd)

15.2 Special Access Service (Cont'd)

15.2.1 Network Channel (NC) Codes (Cont'd)

(C) Technical Specifications Packages Digital Data Service

	<u>Package</u>			
	<u>D1</u>	<u>D2</u>	<u>D3</u>	<u>D4</u>
SD Code	<u>D1</u>	<u>D2</u>	<u>D3</u>	<u>D4</u>
NC Code	<u>XA</u>	<u>XB</u>	<u>XG</u>	<u>XH</u>
 <u>Parameter</u>				
Error-Free Seconds	X	X	X	X

The Telephone Company will provide a channel capable of meeting a monthly average performance equal to or greater than 99.875% error-free seconds (if provided through a Digital Data hub) while the channel is in service, if it is measured through a CSU equivalent which is designed, manufactured, and maintained to conform with the specifications, in Technical Reference PUC 62310.

Voltages which are compatible with Digital Data Service are delineated in Technical Reference PUB 62507.

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## ACCESS SERVICE

## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service (Cont'd)

## 15.2.1 Network Channel (NC) Codes (Cont'd)

(D) Technical Specifications Packages High Capacity  
Service

	<u>Package</u>
SD Code	<u>HC1</u>
NC Code	<u>HC</u>
 <u>Parameters</u>	
Error-Free Seconds	X
 <u>Optional Features and Functions</u>	
Central Office Multiplexing:	
DS1 to Voice	X

A channel with technical specifications package HC1 will be capable of an error-free second performance of 98.75% over a continuous 24 hour period as measured at the 1.544 Mbps rate through a CSU equivalent which is designed, manufactured, and maintained to conform with the specifications contained in Technical Reference PUB 62411.

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## 15.2.2 Network Channel Interface (NCI) Codes

The electrical interface with the Telephone Company for Special Access Services, is defined by an interface code. There are interface codes for both the customer designated premises and the point of termination. Three examples of NCI codes are found in 15.2 preceding.

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## ACCESS SERVICE

## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service (Cont'd)

## 15.2.2 Network Channel Interface (NCI) Codes (Cont'd)

## (A) Parameter Codes and Options

Parameter

<u>Code</u>	<u>Option</u>	<u>Definition</u>
AB	-	accepts 20 Hz ringing signal at customer's point of termination
AC	-	accepts 20 Hz ringing signal at customer's end user's point of termination
DA	-	data stream in VF frequency band at customer's end user's point of termination
DB	-	data stream in VF frequency band at customer's point of termination
DC	-	direct current or voltage
	- 1	monitoring interface with series RC combination (McCulloh format)
	- 2	Telephone Company energized alarm channel

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DS -	digital hierarchy interface
- 15	1.544 Mbps (DS1) format per PUB 41451 plus D4
- 15E	8-bit PCM encoded in one 64 kbps of the DS1 signal
- 15F	8-bit PCM encoded in two 64 kbps of the DS1 signal
- 15G	8-bit PCM encoded in three 64 kbps of the DS1 signal
- 15H	14/11-bit PCM encoded in six 64 kbps of the DS1 signal
- 15J	1.544 Mbps format per PUB 41451
- 15K	1.544 Mbps format per PUB 41451 plus extended framing format
- 15L	1.544 Mbps (DS1) with SF signaling
DU -	digital access interface
- 24	2.4 kbps
- 48	4.8 kbps
- 56	56.0 kbps
- 96	9.6 kbps
- A	1.544 Mbps format per PUB 41451
- B	1.544 Mbps format per PUB 41451 plus D4
- C	1.544 Mbps format per PUB 41451 plus extended framing format
DX -	duplex signaling interface at customer's point of termination

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## ACCESS SERVICE

## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service (Cont'd)

## 15.2.2 Network Channel Interface (NCI) Codes (Cont'd)

## (A) Parameter Codes and Options (Cont'd)

Parameter (Cont'd)

<u>Code</u>	<u>Option</u>	<u>Definition</u>
DY -		duplex signaling interface at customer's end

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user's point of termination

EA - E Type I E&M Lead Signaling. Customer at POT or customer's end user at POT originates on E Lead.

EA - M Type I E&M Lead Signaling. Customer at POT or customer's end user at POT originates on M Lead.

EB - E Type II E&M Lead Signaling. Customer at POT or customer's end user at POT originates on E Lead.

EB - M Type II E&M Lead Signaling. Customer at POT or customer's end user at POT originates on M Lead.

EC - Type III E&M signaling at customer POT

EX - A tandem channel unit signaling for loop start or ground start and customer supplies open end (dial tone, etc.) functions.

EX - B tandem channel unit signaling for loop start or ground start and customer supplies closed end (dial pulsing, etc.) functions.

GO - ground start loop signaling - open end function by customer or customer's end user

GS - ground start loop signaling - closed end function by customer or customer's end user

IA - E.I.A. (25 pin RS-232)

LA - end user loop start loop signaling - Type A OPS registered port open end

LB - end user loop start loop signaling - Type B OPS registered port open end

LC - end user loop start loop signaling - Type C OPS registered port open end

LO - loop start loop signaling - open end function by customer or customer's end user

LR - 20 Hz automatic ringdown interface at customer with Telephone Company provided PLAR

LS - loop start loop signaling - closed end function by customer or customer's end user

NO - no signaling interface, transmission only

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service (Cont'd)

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## 15.2.2 Network Channel Interface (NCI) Codes (Cont'd)

## (A) Parameter Codes and Options (Cont'd)

Parameter (Cont'd)

<u>Code</u>	<u>Option</u>	<u>Definition</u>
PG	-	program transmission - no dc signaling
	- 1	nominal frequency from 50 to 15000 Hz
	- 3	nominal frequency from 200 to 3500 Hz
	- 5	nominal frequency from 100 to 5000 Hz
	- 8	nominal frequency from 50 to 8000 Hz
PR		protective relaying*
RV	- 0	reverse battery signaling, one way operation, originate by customer
	- T	reverse battery signaling, one way operation, terminate function by customer or customer's end user
SF	-	single frequency signaling with VF band at either customer POT or customer's end user POT
TF	-	telephotograph interface

\* Available only for the transmission of audio tone protective relaying signals used in the protection of electric power systems during fault conditions.

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service (Cont'd)

## 15.2.2 Network Channel Interface (NCI) Codes (Cont'd)

## (B) Impedance

The nominal reference impedance with which the channel will be terminated for the purpose of evaluating transmission performance:

<u>Value (ohms)</u>	<u>Code(s)</u>
110	0
150	1
600	2
900	3+
135	5
75	6
124	7
Variable	8
100	9

+ For those interface codes with a 4-wire transmission path at the customer designated POT, rather than a standard 900 ohm impedance the code (3)

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denotes a customer provided transmission equipment termination. Such terminations were provided to customers in accordance with the F.C.C. Docket No. 20099 Settlement Agreement.

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service (Cont'd)

## 15.2.2 Network Channel Interface (NCI) Codes (Cont'd)

## (C) Compatible Network Channel Interfaces

## (1) Voice Grade

<u>Compatible Cis</u>		<u>Compatible Cis</u>		<u>Compatible CIs</u>	
2AB2	2AC2	2DB2	2DA2	2LR2	2LR2
2AB3	2AC2	2DB3	2DA2	2LR3	2LR2
2CT3	2DY2	2DX3	2LA2	2LS	2GS
	4DS8		2LB2		2LS
	4DX2		2LC2		4GS
	4DX3		2LO3		4LS
	4DY2		2LS2		
	4EA2-E		2LS3	2LS2	2LA2
	4EA2-M				2LB2
	4SF2	2G02	2GS2		2LC2
	4SF3		2GS3		
	6DX2			2LS3	2LA2
	6DY2	2G03	2GS2		2LB2
	6DY3		2GS3		2LC2
	6EA2-E				
	6EA2-M	2GS	2GS	2NO2	2DA2
	6EB2-E		2LS		2NO2
	6EB2-M		4GS		
	6EB3-E		4LS	2NO3	2NO2
	8EB2-E				2PR2
	8EB2-M	2L02	2LS2		
	8EC2		2LS3	2TF3	2TF2
	9DY2				

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9DY3	2L03	2LS2
9EA2		2LS3
9EA3		

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service (Cont'd)

## 15.2.2 Network Channel Interface (NCI) Codes (Cont'd)

## (C) Compatible Network Channel Interfaces (Cont'd)

## (1) Voice Grade (Cont'd)

<u>Compatible CIs</u>	<u>Compatible CIs</u>	<u>Compatible CIs</u>	<u>Compatible CIs</u>
4AB2	2AC2		
	4AB2		
	4AC2		
	4SF2		
4AB3	2AC2		
	4AC2		
	4SF2		
4AC2	2AC2		
	4AC2		
		4DS8-	4DG2
		2AC2	4LR2
		2DA2	4LS2
		2DY2	4NO2
		2GO2	

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4DA2	4DA2	2GO3	4PR2
		2GS2	4RV2-T
4DB2	2DA2	2GS3	4SF2
	2NO2	2LA2	4SF3
	2PR2	2LB2	4TF2
	4DA2	2LC2	6DA2
	4DB2	2LO2	6DY2
	4NO2	2LO3	6DY3
	4PR2	2LR2	6EA2-E
	6DA2	2LS2	6EA2-M
		2LS3	6EB2-E
4DD3	2DE2	2NO2	6EB2-M
	4DE2	2PR2	6GS2
		2RV2-T	6LS2
		2TF2	8EB2-E
		4AC2	8EB2-M
		4DA2	9DY2
		4DE2	9DY3
		4DX2	9EA2
		4DX3	9EA3
		4DY2	
		4EA2-E	
		4EA2-M	

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service (Cont'd)

## 15.2.2 Network Network Channel Interface (NCI) Codes (Cont'd)

## (C) Compatible Network Channel Interfaces (Cont'd)

## (1) Voice Grade (Cont'd)

<u>Compatible Cis</u>		<u>Compatible Cis</u>		<u>Compatible CIs</u>	
4DX2	2DY2	4DX2	8EB2-E	4DX3	6DY2
	2LA2		8EB2-M		6DY3
	2LB2		9DY2		6EA2-E
	2LC2		9DY3		6EA2-M
	2LO3		9EA2		6EB2-E

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2LS2		9EA3		6EB2-M
2LS3				6LS2
2RV2-T	4DX3	2DY2		8EB2-E
4DX2		2LA2		8EB2-M
4DY2		2LB2		9DY2
4EA2-E		2LC2		9DY3
4EA2-M		2LO3		9EA2
4LS2		2LS2		9EA3
4RV2-T		2LS3		
4SF2		2RV2-T	4DY2	2DY2
4SF3		4DX2		4DY2
6DY2		4DX3		
6DY3		4DY2		
6EA2-E		4EA2-E		
6EA2-M		4EA2-M		
6EB2-E		4LS2		
6EB2-M		4RV2-T		
6LS2		4SF2		
		4SF3		

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service (Cont'd)

## 15.2.2 Network Channel Interface (NCI) Codes (Cont'd)

## (C) Compatible Network Channel Interfaces (Cont'd)

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## (1) Voice Grade (Cont'd)

<u>Compatible Cis</u>		<u>Compatible Cis</u>		<u>Compatible CIs</u>	
4EA2-E	2DY2	4EA3-E	2DY2	4GO2	2GO2
	4DY2		4DY2		2GO3
	4EA2-E		4EA2-E		2GS2
	4EA2-M		4EA2-M		2GS3
	4SF2		4SF2		4GS2
	6DY2		6DY2		4SF2
	6DY3		6DY3		6GS2
	6EB2-E		6EA2-E		
	6EB2-M		6EA2-M	4G03	2GO2
	8EB2-E		6EB2-E		2GS2
	8EB2-M		6EB2-M		2GS3
	9DY2		8EB2-E		4GS2
	9DY3		8EB2-M		4SF2
			9DY2		6GS2
4EA2-M	2DY2		9DY3		
	4DY2		9EA2		
	4EA2-M		9EA3	4GS	2GS
	4SF2				2LS
	6DY2				4GS
	6DY3				4LS
	6EB2-E				
	6EB2-M				
	8EB2-E				
	8EB2-M				
	9DY2				
	9DY3				

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service (Cont'd)

## 15.2.2 Network Channel Interface (NCI) Codes (Cont'd)

## (C) Compatible Network Channel Interfaces (Cont'd)

## (1) Voice Grade (Cont'd)

<u>Compatible Cis</u>		<u>Compatible Cis</u>		<u>Compatible CIs</u>	
4LO2	2LS2	4LS3	2LA2	4SF2	2LO3
	2LS3		2LB2		2LR2
	4LS2		2LC2		2LS2
	4SF2		2LO2		2LS3
	6LS2		2L03		2RV2-T
			4SF2		4AC2
4L03	2LS2				4DY2
	2LS3	4NO2	2DA2		4LS2
	4LS2		2DE2		4RV2-T
	4SF2		2NO2		4SF2
	6LS2		4DA2		6DY2
			4DE2		6DY3
4LR2	2LR2		4NO2		6GS2
	4LR2		6DA2		9DY2
	4SF2				9DY3
		4RV2-0	2RV2-T		
4LR3	2LR2		4RV2-T	4SF3	2DY2
	4LR2		4SF2		2G03
	4SF2				2GS2
					2GS3
4LS	2GS	4SF2	2AC2		2LA2
	2LS		2DY2		2LB2
	4GS		2GS2		2LC2
	4LS		2GS3		2LO3
			2LA2		2LR2
4LS2	2LA2		2LB2		
	2LB2		2LC2		
	2LC2				
	2LO2				
	2LO3				

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service (Cont'd)

## 15.2.2 Network Channel Interface (NCI) Codes (Cont'd)

## (C) Compatible Network Channel Interfaces (Cont'd)

## (1) Voice Grade (Cont'd)

<u>Compatible Cis</u>		<u>Compatible Cis</u>		<u>Compatible CIs</u>	
4SF3	2LS2	6DA	4DA2	6DY3	2DY2
	2LS3		6DA2		4DY2
	2RV2-T				6DY2
	4DY2	6DX2	2DY2		6DY3
	4EA2-E		4DY2		
	4EA2-M		4EA2-E	6EA2-E	2AC2
	4GS2				
	4LR2		4EA2-M		2DY2
	4LS2		4SF2		2LA2
	4RV2-T		6DY2		2LB2
	4SF2		6DY3		2LC2
	4SF3		6EA2-E		2LO3
	6DY2		6EA2-M		2LS2
	6DY3		6EB2-E		2LS3
	6EB2-E		6EB2-M		2RV2-T
	6EB2-M		8EB2-E		4AC2
	6GS2		8EB2-M		4DY2
	6LS2		9DY2		4EA2-E
	9DY2		9DY3		4EA2-M
	9DY3		9EA2		4LS2
	9EA2		9EA3		4RV2-T
	9EA3				4SF2
		6DY2	2DY2		4SF3
4TF2	2TF2		4DY2		6DY2
	4TF2		6DY2		6DY3
					6EA2-E
					6EA2-M

Issued: April 2, 1990

Effective: July 1, 1990

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Issued: April 2, 1990

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service (Cont'd)

## 15.2.2 Network Channel Interface (NCI) Codes (Cont'd)

## (C) Compatible Network Channel Interfaces (Cont'd)

## (1) Voice Grade (Cont'd)

<u>Compatible Cis</u>		<u>Compatible Cis</u>		<u>Compatible CIs</u>	
6EA2-E	6EB2-E	6EA2-M	6DY2	6EB3-E	2DY2
	6EB2-M		6DY3		4DY2
	6LS2		6EA2-M		4EA2-E
	8EB2-E		6EB2-E		4EA2-M
	8EB2-M		6EB2-M		4SF2
	9DY2		6LS2		6DY2
	9DY3		8EB2-E		6DY3
			8EB2-M		6EA2-E
6EA2-M	2AC2		9DY2		6EA2-M
	2DY2		9DY3		8EB2-E
	2LA2				8EB2-M
	2LB2	6EB2-E	2DY2		9DY2
	2LC2		4DY2		9DY3
	2LO3		4SF2		9EA2
	2LS2		6DY2		9EA3
	2LS3		6DY3		
	2RV2-T		6EB2-E	6EX2-A	2GS2
	4AC2		6EB2-M		2GS3
	4DY2		9DY2		2LS2
	4EA2-E		9DY3		2LS3
	4EA2-M				4GS2

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4LS2	6EB2-M	2DY2	4LS2
4RV2-T		4DY2	4SF2
4SF2		4SF2	6GS2
4SF3		6DY2	6LS2
		6DY3	
		6EB2-M	
		9DY2	
		9DY3	

Issued: April 2, 1990

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service (Cont'd)

## 15.2.2 Network Channel Interface (NCI) Codes (Cont'd)

## (C) Compatible Network Channel Interfaces (Cont'd)

## (1) Voice Grade (Cont'd)

<u>Compatible Cis</u>		<u>Compatible Cis</u>		<u>Compatible CIs</u>	
6EX2-B	2G03	8EB2-E	2AC2	8EB2-M	2AC2
	2LA2		2DY2		2DY2
	2LB2		2LA2		2LA2
	2LC2		2LB2		2LB2
	2LO2		2LC2		2LC2
	2LO3		2LO3		2LO3
	2LR2		2LS2		2LS2
	4LR2		2LS3		2LS3
	4SF2		2RV2-T		2RV2-T
			4AC2		4AC2
6G02	2G02		4DY2		4DY2

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	2GS2	4LS2	4LS2
	2GS3	4RV2-T	4RV2-T
	4GS2	4SF2	4SF2
	4SF2	4SF3	4SF3
	6GS2	6DY2	6DY2
		6DY3	6DY3
6LO2	2LS2	6EB2-E	6EB2-E
	2LS3	6EB2-M	6EB2-M
	4LS2	6LS2	6LS2
	4SF2	8EB2-E	8EB2-M
	6LS2	8EB2-M	9DY2
		9DY2	9DY3
6LS2	2LA2	9DY3	
	2LB2		
	2LC2		
	2LO2		
	2LO3		
	4SF2		

Issued: April 2, 1990

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## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service (Cont'd)

## 15.2.2 Network Channel Interface (NCI) Codes (Cont'd)

## (C) Compatible Network Channel Interfaces (Cont'd)

## (1) Voice Grade (Cont'd)

<u>Compatible Cis</u>		<u>Compatible Cis</u>		<u>Compatible CIs</u>	
8EC2	2DY2	9DY2	2DY2	9EA3	2DY2

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4DY2		4DY2	4DY2
4EA2-E		6DY2	4EA2-E
4EA2-M		6DY3	4EA2-M
4SF2		9DY2	6DY2
6DY2			6DY3
6DY3	9DY3	2DY2	6EA2-E
6EA2-E		4DY2	6EA2-M
6EA2-M		6DY2	6EB2-E
6EB2-E		6DY3	6EB2-M
6EB2-M		9DY2	8EB2-E
8EB2-E		9DY3	8EB2-M
8EB2-M			9DY2
9DY2	9EA2	2DY2	9DY3
9DY3		4DY2	9EA3
9EA2		4EA2-E	
9EA3		4EA2-M	
		6DY2	
		6DY3	
		6EA2-E	
		6EA2-M	
		6EB2-E	
		6EB2-M	
		8EB2-E	
		8EB2-M	
		9DY2	
		9DY3	
		9EA2	
		9EA3	

Issued: April 2, 1990

Effective: July 1, 1990

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## ACCESS SERVICE

## 15. Access Service Interfaces and Transmission Specifications (Cont'd)

## 15.2 Special Access Service (Cont'd)

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## 15.2.2 Network Channel Interface (NCI) Codes (Cont'd)

## (C) Compatible Network Channel Interfaces (Cont'd)

## (2) Program Audio

<u>Compatible Cis</u>		<u>Compatible CIs</u>	
2PG2-1	2PG1-1 2PG2-1	4DS8-15E	2PG1-3 2PG2-3
2PG2-3	2PG1-3 2PG2-3	4DS8-15F	2PG1-5 2PG2-5
2PG2-5	2PG1-5 2PG2-5	4DS8-15G	2PG1-8 2PG2-8
2PG2-8	2PG1-8 2PG2-8	4DA8-15H	2PG1-1 2PG2-1

## (3) Digital Data

<u>Compatible Cis</u>		<u>Compatible Cis</u>		<u>Compatible CIs</u>	
4DS8-15	4DS8-15+ 4DU5-24 4DU5-48 4DU5-56 4DU5-96 6DU5-24 6DU5-48 6DU5-96	4DU5-24	4DU5-24 4DU5-48 4DU5-96	6DU5-24	6DU5-24 6DU5-48 6DU5-56 6DU5-96

+ Available only as a cross connect of two digital channels at appropriate digital speeds at a Telephone Company hub.

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Issued: April 2, 1990

Effective: July 1, 1990

321 N. First Street  
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Issued: April 2, 1990

Effective: July 1, 1990

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15. Access Service Interfaces and Transmission Specifications (Cont'd)

15.2 Special Access Service (Cont'd)

15.2.2 Network Channel Interface (NCI) Codes (Cont'd)

(C) Compatible Network Channel Interfaces (Cont'd)

(4) High-Capacity

Compatible Cis

Compatible Cis

4DS8-15 4DS8-15+  
4DU8-B  
6DU8-8

4DU8-A,B  
or C

.  
4DU8-A,B or C

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+ Available only as a cross connect of two individual channels of 1.544 Mbps facilities at a Telephone Company hub.

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Issued: April 2, 1990

Effective: July 1, 1990

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Issued: April 2, 1990

Effective: July 1, 1990

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