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. 15.3 contains Interface Group, Premises Interface Code and Standard Transmission Specifications applicable to Directory Access Service.

15.1 Switched Access Service

Ten 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) (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.

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 (D) following.

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)

Interface Group 1 is provided with Type C Transmission Specifications, as set forth in 15.1.2(C) following, and Interface Groups 2 through 10 are provided with Type A or B Transmission specifications, as set forth respectively in 15.1.2(E) and (F) following, depending on the Feature Group and whether the Access Service is routed directly or though 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.

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)

(A) Interface Groups 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. (C)

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. (C)

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.

Interface Groups 3 through 5

Interface Groups 3 through 5 provide analog transmission at the point of termination at the customer designated premises. The various interfaces are capable of transmitting electrical signals at the frequencies illustrated following, with the capability to channelize voice frequency transmission paths. Certain frequencies within the bandwidth of the Interface Groups are reserved for Telephone Company use, e.g., pilot and carrier group alarm tones. Before the first point of switching, the Telephone Company will provide multiplex equipment to derive the transmission paths of frequency bandwidth of approximately 300 to 3000 Hz.

The interfaces are provided with individual transmission path SF supervisory signaling.

Interface Group Identification No.	Transmission Frequency Bandwidth	Analog Hierarchy Level	Maximum No. of Channelized Voice Freq. Trans. Paths
3	60 - 108 kHz	Group	12
4	312 - 552 kHz	Supergroup	60
5	546 - 3084 kHz	Mastergroup	600

ACCESS SERVICE

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

15.1 Switched Access Service (Cont'd)

15.1.1 Local Transport Interface Groups (Cont'd)

(D) Interface Groups 6 through 10

Interface Groups 6 through 10 provide 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 of analog switching with digital carrier terminations is provided, the Telephone Company will provide, a DS1 signal(s) in D3/D4 format.

The interfaces are provided with individual transmission path bit stream supervisory signaling.

Interface Group Identification No.	Nominal Bit Rate (Mbps)	Digital Hierarchy Level	Max. No. of Channelized Voice Freq. Trans. Path	
6	1.544	DS1	24	(T)
7	3.152	DS1C	48	
8	6.312	DS2	96	
9	44.736	DS3	672	
10	274.176	DS4	4032	

ACCESS SERVICE

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

15.1 Switched Access Service (Cont'd)

15.1.1 Local Transport Interface Groups (Cont'd)

(E) 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 (with the exception of the addition of 64 Clear Channel Capability to an existing service). (C) (C)

When the 64 Clear Channel Capability optional feature is installed on an existing facility, the addition will be treated as a discontinuance and start of servoce and all associated nonrecurring charges will apply. (N) (N)

- 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 through 10 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 and 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 Groups 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 Interface and Transmission Specifications (Cont'd)

15.1 Switched Access Service (Cont'd)

15.1.1 Local Transport Optional Features (Cont'd)

(E) Local Transport Optional Features (Cont'd)

64 Clear Channel Capability allows the customer to transport voice or data signals over a 64 Kbps channel with no constraints on the quantity or sequence of ones and zero bits. This option employs the bipolar 8 Zero Suppression (B8ZS) technique to permit customers to use the full 64 Kbps bandwidth of a DS0 channel. It is only available in suitably equipped electronic end offices as identified in NATIONAL EXCHANGE CARRIER ASSOCIATION, INC. TARIFF No. 4. 64 Clear Channel Capability, as described in Technical Reference GR-334-CORE, is available with Interface Groups 6 and 9 for Feature Groups C and D with Signaling System 7 (SS7) signaling. (N)

The Interface Groups, as described in (A) through (D) preceding, represent industry standard arrangement. Where transmission parameters permit, the customer may select the following optional signaling arrangement 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 Signaling,
  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 Groups 3 through 5

  Optional Supervisory Signaling Not Available

- For Interface Groups 6 through 10

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(M) Material previously appearing on 2nd Revised Page 7 can now be found on Original Page 7.1. (M)

ACCESS SERVICE

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

15.1 Switched Access Service (Cont'd)

15.1.1 Local Transport Optional Features (Cont'd)

(E) Local Transport Optional Features (Cont'd)

These Interface Groups 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. (M)

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

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

(M) Material previously appearing on 2nd Revised Page 7 can now be found on this page.

ACCESS SERVICE

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

15.1 Switched Access Service (Cont'd)

15.1.1 Local Transport Interface Groups (Cont'd)

(F) 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 Switch Supervisory Signaling	Premises Interface Code	Feature Group A	B	C	D	
1	LO	2LS2	X				
	LO	2LS3	X				
	GO	2GS2	X				
	GO	2GS3	X				
	LO, GO	2DX3	X				(T)
	LO, GO	4EA3-E	X				(T)
	LO, GO	4EA3-M	X				(T)
	LO, GO	6EB3-E	X				(T)
	LO, GO	6EB3-M	X				(T)
	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				

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)

(F) Available Premises Interface Codes (Cont'd)

Interface Group	Telephone Company Switch Supervisory Signaling	Premises Interface Code	Feature Group 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-O		X	X		
	RV	4RV3-T		X	X		
	SS7	4NO2			X	X	(N)
3	LO, GO	4AH5-B	X				
	RV, EA, EB, EC	4AH5-B		X	X	X	
	SS7	4AH5-B			X	X	(N)
4	LO, GO	4AH6-C	X				
	RV, EA, EB, EC	4AH6-C		X	X	X	
	SS7	4AH6-C			X	X	(N)
5	LO, GO	4AH6-D	X				
	RV, EA, EB, EC	4AH6-D	X	X	X		
	SS7	4AH6-D			X	X	(N)

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)

(F) Available Premises Interface Codes (Cont'd)

Interface Group	Telephone Company Switch Supervisory Signaling	Premises Interface Code	Feature Group A	B	C	D	
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)
7	LO, GO	4DS9-31	X				
	LO, GO	4DS9-31L	X				
	RV, EA, EB, EC	4DS9-31		X	X	X	
	RV, EA, EB, EC	4DS9-31L		X	X	X	
	SS7	4DS9-31			X	X	(N)
8	LO, GO	4DSO-63	X				
	LO, GO	4DSO-63L	X				
	RV, EA, EB, EC	4DSO-63		X	X	X	
	RV, EA, EB, EC	4DSO-63L		X	X	X	
	SS7	4DSO-63			X	X	(N)
9	LO, GO	4DS6-44	X				
	LO, GO	4DS6-44L	X				
	RV, EA, EB, EC	4DS6-44		X	X	X	
	RV, EA, EB, EC	4DS6-44L		X	X	X	
	SS7	4DS6-44			X	X	(N)
10	LO, GO	4DS6-27	X				
	LO, GO	4DS6-27L	X				
	RV, EA, EB, EC	4DS6-27		X	X	X	
	RV, EA, EB, EC	4DS6-27L		X	X	X	
	SS7	4DS6-27			X	X	(N)

ACCESS SERVICE

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 (D) following. Descriptions of each of these Standard Transmission Specifications and the two Data Transmission Parameters mentioned are set forth respectively in (E) through (G) and 15.1.3(A) and (B) 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 through 10. 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 through 10. Type DB Data Transmission Parameters are provided with FGB to the first point of switching.

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)

(C) Feature Group C

FGC is provided with either Type B or Type C Transmission Specifications as follows:

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

Type C Transmission Specifications are provided with Interface Group 1 when routed directly to an end office. Type B is provided with Interface Groups 2 through 10, whether routed directly to an end office or to an access tandem.

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

ACCESS SERVICE

15. Access Service Interface 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 through 10.

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: (T)

(1) Loss Deviation

The maximum Loss Deviation of the 1004 Hz loss relative to the Expected Measured Loss (EML) is ± 2.0 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)

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

(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:

Route Miles	C-Message Noise
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.

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)

(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:

	Echo Return Loss	Singing Return Loss
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:

Echo Return Loss	Singing Return Loss
5 dB	2.5 dB

ACCESS SERVICE

15. Access Service Interface 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

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 ± 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:

Route Miles	C-Message Noise* Type B1	Type B2
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 Groups 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 GR-334-CORE. (C)

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)

(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 terminations, and type of transmission path. They are greater than or equal to the following:

	Echo Return Loss	Singing Return Loss
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 transmission path at end office)	16 dB	11 dB
. For FGC access (Effective 2-Wire transmission 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)

(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 Loss	Singing Return Loss
5 dB	2.5 dB

(G) Type C Transmission Specifications

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 ± 3.0 dB.

(2) Attenuation Distortion

The maximum Attenuation Distortion in the 404 to 28-04 Hz frequency band relative to loss at 1004 Hz is -2.0 db to +5.5 dB.

ACCESS SERVICE

15. Access Service Interface 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)

(3) C-Message Noise

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

Route Miles	C-Message Noise* Type C1	Type C2
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 Groups 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 GR-334-CORE. (C)

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)

(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:

	Echo Return Loss	Singing Return Loss
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

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-Noticed Noise Ratio is equal to or greater than 33 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 (Cont'd)

(A) Data Transmission Parameters Type DA (Cont'd)

(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

(3) Impulse Noise Counts

The Impulse Noise Counts exceeding a 65 dBrnCO 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)	33 dB
Third Order (R3)	37 dB

ACCESS SERVICE

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

15.1 Switched Access Service (Cont'd)

15.1.3 Data Transmission Parameters (Cont'd)

(A) Data Transmission Parameters Type DA (Cont'd)

(5) Phase Jitter

The Phase Jitter over the 4-300 Hz frequency band is less than or equal to 5° peak-to-peak.

(6) Frequency Shift

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

(B) Data Transmission Parameters Type DB

(1) Signal to C-Notched Noise Ratio

The Signal to C-Notched Noise Ration is equal to or greater than 30 dB. (T)

(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	800 microseconds
equal to or greater than 50 route miles	1000 microseconds

1004 to 2404 Hz

less than 50 route miles	320 microseconds
equal to or greater than 50 route miles	500 microseconds

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 (Cont'd)

(3) Impulse Noise Counts

The Impulse Noise Counts exceeding a 67 dBrnCO 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) | (C)

When ordering, the type of Special Access Service or 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) (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.

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 (e.g., TG1 = Telegraph). The SD and NC codes are displayed as components of the matrices designated as Technical Specifications packages in (A) through (G) 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.

ACCESS SERVICE

15. Access Service Interface 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 this Special Report SR-STS-000307. However, not all services contained in the Special Report may be offered by the Telephone Company at this time. (C)

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 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.

NC	NCI	SECNI
LG-R	04DB2	04DA2-S

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

NCI Code:
04 = Number of physical wires and 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.

ACCESS SERVICE

15. Access Service Interface 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:

NC	NCI	SECNI
LC--	04L02	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:

NC	NCI	SECNI
HC--	04DS9-15	04DS9-15

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

NCI, SECNCI Code:
04 = Number of physical wires and 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-STS-000307. (C)

ACCESS SERVICE

15. Access Service Interface 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, MT, TG, etc.) are set forth in Section 7. preceding. Variations within service type (e.g., VG1, MTC, TG2, etc.) are described in the various Technical Publications cited in (A) through (H) following. (C)

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.

(A) Technical Specifications Packages Metallic Service

	Package			
SD Code	MTC*	MT1	MT2	MT3
NC Code	MQ	NT	NU	NV
Parameter				
DC Resistance Between Conductors	X	X	X	
Loop Resistance	X			X
Shunt Capacitance	X			X
Optional Features and Functions				
Three Premises Bridging	X	X		X
Series Bridging	X		X	

The technical specifications are described in Technical Reference TR-NPL-000336.

* All parameters are available within ranges selected by the customer where technically feasible.

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 Telegraph Grade Service

	Package		
SD Code	TGC*	TG1	TG2
NC Code	NQ	NW	NY
Parameter			
Telegraph Distortion	X	X	X
Optional Features and Functions			
Telegraph Bridging	X	X	X

The technical specifications are described in Technical Reference TR-NPL-000336

* All parameters are available within ranges selected by the customer where technically feasible.

ACCESS SERVICE

15. Access Service Interface 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 Voice Grade Service

	Package VG-													
SD Code	C*	1	2	3	4	5	6	7	8	9	10	11	12	W
NC Code	LQ	LB	LC	LD	LE	LF	LG	LH	LJ	LK	LN	LP	LR	SE
Parameter														
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	X													
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

The technical specifications for these parameters (except for dropouts, phase hits, and gain hits) are described in Technical References GR-334-CORE and TR-TSY-000335. The technical specifications for dropouts, phase hits, and gain hits are described in Technical Reference PUB 41004, Table 4. (C)

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

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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)

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

	Package VG-													
SD Code	C*	1	2	3	4	5	6	7	8	9	10	11	12	W
NC Code	LQ	LB	LC	LD	LE	LF	LG	LH	LJ	LK	LN	LP	LR	SE
Optional Features and Functions														
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			
. Sealing Current	X						X							
. Data Capability	X						X	X			X			
. Telephoto Capability	X											X		
Customer Specified Premises Receive Level	X		X	X				X	X	X				
Improve Return Loss for Effective Four-Wire Transmission	X	X	X	X	X	X	X	X	X	X	X	X	X	
For Effective Two-Wire Transmission	X		X	X				X						
Improve Two-Wire Voice Transmission														X
PPSN Interface Arrangement	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	

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 Program Audio Service

	Package				
SD Code	APC*	AP1	AP2	AP3	AP4
NC Code	PQ	PE	PF	PJ	PK
Parameter					
Actual Measured Loss	X	X	X	X	X
Amplitude Tracking	X				
Crosstalk	X	X	X	X	X
Distortion Tracking	X				
Gain/Frequency Distortion	X	X	X	X	X
Group Delay	X				
Noise	X	X	X	X	X
Phrase Tracking	X				
Short-Term Gain Stability	X				
Short-Term Loss	X				
Total Distortion	X	X	X	X	X
Optional Features and Functions					
Central Office Bridging Capability	X	X	X	X	X
Gain Conditioning	X	X	X	X	X
Stereo	X				X

The technical specifications are described in Technical Reference TR-NPL-000337 and associated Addendum. (C)

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

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)

(E) Technical Specifications Packages Video Service

	Package		
SD Code	TVC*	TV1	TV2
NC Code	TQ	TV	TW
Video Parameters			
Insertion Gain	X	X	X
Field-Time Distortion	X	X	X
Line-Time Distortion	X	X	X
Short-Time Distortion	X	X	X
Chrominance-Luminance Gain Inequality	X	X	X
Chrominance-Luminance Delay Inequality	X	X	X
Amplitude/Frequency Characteristic	X	X	X
Luminance Non-Linear Distortion	X	X	X
Chrominance Non-Linear Gain Distortion	X	X	X
Chrominance Non-Linear Phase Distortion	X	X	X
Transient Synchronizing Signal Non-Linearty	X	X	X
Dynamic Gain Distortion			
- Picture Signal	X	X	X
- Synchronizing Signal	X	X	X
Differential Gain	X	X	X
Differential Phase	X	X	X
Chrominance-Luminance Intermodulation	X	X	X

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

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)

(E) Technical Specifications Packages Video Service (Cont'd)

	Package		
SD Code	TVC*	TV1	TV2
NC Code	TQ	TV	TW
Audio Channel Parameters Associated with Video Service			
Insertion Gain	X	X	X
Amplitude/Frequency Characteristic	X	X	X
Total Harmonic Distortion & Noise	X	X	X
Maximum Steady-State Test Levels	X	X	X
Gain Differential Between Channels	X	X	
Phase Differential Between Channels	X	X	
Crosstalk	X	X	X
Audio-To-Video Time Differential	X	X	X

The technical specifications are described in Technical Reference TR-NPL-000338.

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

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

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

(F) Technical Specifications Packages Digital Data Service (Cont'd)

	Package						
SD Code	DA1	DA2	DA3	DA4	DA5	DA6	(T)
NC Code	XA	XB	XG	XH	XE	YN	
Parameter/Hubbed							
Error-Free Sounds	X	X	X	X	X	X	
Optional Features and Functions/Hubbed							
Central Office Bridging Capability	X	X	X	X	X	X	
PPSN Interface Transfer Arrangement	X	X	X	X	X	X	
Transfer Arrangement	X	X	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 second (if provided through 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 specifications contained in Technical Reference PUB 62310.

Optional Features and Functions/Non-Hubbed			
Public Packet Data Arrangement	X	X	(T)

Voltages which are compatible with Digital Data Service are delineated in Technical Reference TR-NWT-000341.

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)

(G) Technical Specifications Packages High Capacity Service

	Package					
SD Code	HCO	HC1	HC1C	HC2	HC3	HC4
NC Code	HS	HC	HD	HE	HF	HG
Parameters						
Error-Free Seconds		X				
Optional Features and Functions						
Automatic Loop Transfer		X				
Central Office Multiplexing:						
DS4 to DS1						X
DS3 to DS1					X	
DS2 to DS1				X		
DS1C to DS1			X			
DS1 to Voice		X				
DS1 to DSO		X				
DSO to Subrate*	X					
Transfer Arrangement		X				
Clear Channel Capability		X				(N)

A channel with technical specifications package HC1 will be capable of an error-free second performance of 98.75% over a continuous 24 hours 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.

* Available only on a channel of 1.544 Mbps facility to a Telephone Company hub.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

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

(H) Technical Specifications Packages Synchronous Optical Channel Service

	Package	
SD Code	OC3	OC12
NC Code	OB	OD
Parameters		
Error-Free Sounds	X	X
Optional Features and Functions		
Customer Premises Multiplexing:		
OC12 to OC3		X
OC12 to OC3c		X
OC12 to DS3		X
OC12 to DS1		X
OC3 to STS-1	X	
OC3 to DS3	X	
OC3 to DS1	X	
Central Office Multiplexing:		
OC12 to OC3		X
OC12 to OC3c		X
OC3 to DS3	X	
OC3 to DS1	X	

Technical specifications are delineated in Technical Reference GR-253-CORE, GR-1374-CORE, ANSI T1.102-1993 and ANSI T1.105-1995.

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

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.

ACCESS SERVICE

15. Access Service Interface 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

Code	Option	Definition	
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	
AH -		analog high capacity interface	
-	B	60kHz to 108 kHz (12 channels)	
-	C	312 kHz to 552 khz (60 channels)	
-	D	564 kHz to 3084 kHz (600 channels)	
CT -		Centrex Tie Trunk Termination	
CS -		digital hierarchy interface at Digital Cross Connect System (DCS)	
-	15	1.544 Mbps (DS1) ANSI Extended Superframe (ESF) Format and B8ZS Clear Channel Capability.	(T)
-	15A	1.544 Mbps (DS1) Superframe (SF) format	(T)
-	15B	1.544 Mbps (DS1) Superframe (SF) format and B8ZS Clear Channel Capability	
-	15K	1.544 Mbps (DS1) Extended Superframe (ESF)	
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	
-	10	VF for TG1 and TG2	
-	43	VF for 43 Telegraph Carrier type signals, TG1 and TG2	
DC -		direct current or voltage	
-	1	monitoring interface with series RC combination (McCulloh format)	
-	2	Telephone Company energized alarm channel	
-	3	Metallic facilities (DC continuity) for direct current/low frequency control signals or slow speed data (30 baud)	
DD -		DATAPHONE Select-A-Station (and TABS) interface at customer's point of termination	
DE -		DATAPHONE Select-A-Station (and TABS) interface at the customer's end user's point of termination	

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)

Code	Option	Definition	
DS -		digital hierarchy interface	
-	15	1.544 Mbps (DS1) format per PUB 62411 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 62411	
-	15K	1.544 Mbps format per PUB 62411 plus extended framing format	
-	15L	1.544 Mbps (DS1) with SF signaling	
-	27	274.176 Mbps (DS4)	
-	27L	274.176 Mbps (DS4) with SF signaling	
-	31	3.152 Mbps (DS1C)	
-	31L	3.152 Mbps (DS1C) with SF signaling	
-	44	44.736 Mbps (DS3)	
-	44L	44.736 Mbps (DS3) with SF signaling	
-	63	6.312 Mbps (DS2)	
-	63L	6.312 Mbps (DS2) with SF signaling	
DU -		digital access interface	
-	24	2.4 kbps	
-	48	4.8 kbps	
-	19	19.2 Kbps	(N)
-	56	56.0 kbps	
-	96	9.6 kbps	
-	64	64.0 Kbps	(N)
-	A	1.544 Mbps format per PUB 62411	
-	B	1.544 Mbps format per PUB 62411 plus D4	
-	C	1.544 Mbps format per PUB 62411 plus extended farming format	
-	1KN	1.544 Mbps ANSI Extended Superframe (ESF) Format without line power	(N)
-	1SN	1.544 Mbps ANSI Extended Superframe (ESF)Format with B8ZS Clear Channel Capability and without line power	(N) (M)

Certain regulations formerly appearing on this page can now be found on 1st Revised Page 39.

ACCESS SERVICE

15. Access Service Interface 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)

Code	Option	Definition	
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.	
FC -		Fiber Optic Interface	(N)
-	B	OC3, OC3c	|
-	D	OC12	(N)
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	

ACCESS SERVICE

15. Access Service Interface 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)

Code	Option	Definition	
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's end user POT	
SO -		SONET Optical	(N) (M)
-	AB	Long Range Multilongitudinal Mode (LR1-MLM) Bidirectional Ring	
-	AU	LR1-MLM Unidirectional Ring	
-	BB	Long Range Single Longitudinal Mode (LR1-SLM) Bidirectional Ring	
-	BU	LR1-SLM Unidirectional Ring	
-	CB	Intermediate Range Multilongitudinal Mode (IR1-MLM) Bidirectional Ring	
-	CU	IR1-MLM Unidirectional Ring	
-	DB	Intermediate Range Single Longitudinal Mode (IR1-SLM) Bidirectional Ring	
-	DU	IR1-SLM Unidirectional Ring	
-	EB	Short Range Multilongitudinal Mode Light Emitting Diode (SR-MLM/LED) Bidirectional Ring	
-	EU	SR-MLM/LED Unidirectional Ring	
-	FB	Short Range Multilongitudinal Mode (SR-MLM) Bidirectional Ring	
-	FU	SR-MLM Unidirectional Ring	(N) (M)

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

(M) Certain material previously appearing on 1st Revised Page 15-40 now appears on Original Page 15-40.1.

ACCESS SERVICE

15. Access Service Interface 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)

Code	Option	Definition	
ST -		Synchronous Transmission Signal (STS)	(N)
-	A	STS1	(N)
TF -		telephotograph interface	(M)
TT -		telegraph/teletypewriter interface at either customer POT or customer's end user POT	
-	2	20.0 milliamperes	
-	3	3.0 milliamperes	
-	6	62.5 milliamperes	
TV -		television interface	
-	1	combined (diplexed) video and one audio signal	
-	2	combined (diplexed) video and two audio signals	
-	5	video plus one (or two) audio 5 kHz signal(s) or one (or two) two wire	
-	15	video plus one (or two) audio 15 kHz signal(s)	(M)

(M) Certain material formerly found on 1st Revised Page 15-40 now appears on this page.

ACCESS SERVICE

15. Access Service Interface 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 the channel will be terminated for the purpose of evaluating transmission performance:

Value (ohms)	Code(s)	
110	0	
150	1	
600	2	
900	3+	
135	5	
75	6	
124	7	
Variable	8	
100	9	
Fiber	F	(N)
Radio	R	(N)

\+ 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) 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.

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)

(C) Compatible Network Channel Interfaces

The following tables show the Network Channel Interface codes (NCIs) which are compatible:

(1) Metallic

Compatible CIs	
2DC8-1	2DC8-2
2DC8-3	2DC8-3
4DS8-	2DC8-1
4DS8-	2DC8-2

(2) Telegraph Grade

Compatible CIs		Compatible CIs	
2DB2-10	1OIA8	4DB2-10	1OIA8
	2TT2-2		2TT2-2
	4TT2-2		4TT2-2
2DB2-43*	1OIA8	4DB2-43*	1OIA8
	2TT2-2		2TT2-6
	2TT2-6		4TT2-2
	4TT2-2		4TT2-2
		4DS8-	1OIA8
2TT2-2	2TT2-2		2TT2-2
			2TT2-6
2TT2-3	2TT2-2		4TT2-2
	4TT2-2		4TT2-6
2TT2-6	2TT2-6	4TT2-2	4TT2-2
	4TT2-6		
		4TT2-6	2TT2-6

* Supplemental Channel Assignment information required.

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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)

(3) Voice Grade

Compatible CIs		Compatible CIs		Compatible CIs	
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	2GO2	2GS2		2LC2
	4SF3		2GS3		
	6DX2			2LS3	2LA2
	6DY2	2GO3	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	2LO2	2LS2		
	8EC2		2LS3	2TF3	2TF2
	9DY2				
	9DY3	2LO3	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)

(3) Voice Grade (Cont'd)

Compatible CIs		Compatible CIs		Compatible CIs	
4AB2	2AC2				
	4AB2				
	4AC2				
	4SF2				
4AB3	2AC2				
	4AC2				
	4SF2				
4AC2	2AC2				
	4AC2				
		4DS8-	2AC2	4DS8-	4DG2
			2DA2		4LR2
			2DY2		4LS2
			2GO2		4NO2
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 Channel Interface (NCI) Codes (Cont'd)

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

(3) Voice Grade (Cont'd)

Compatible CIs		Compatible CIs		Compatible CIs	
4DX2	2DY2	4DX2	8EB2-E	4DX3	6DY2
	2LA2		8EB2-M		6DY3
	2LB2		9DY2		6EA2-E
	2LC2		9DY3		6EA2-M
	2LO3		9EA2		6EB2-E
	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)

(3) Voice Grade (Cont'd)

Compatible CIs		Compatible CIs		Compatible CIs	
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	4GO3	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)

(3) Voice Grade (Cont'd)

Compatible CIs		Compatible CIs		Compatible CIs	
4LO2	2LS2	4LS3	2LA2	4SF2	2LO3
	2LS3		2LB2		2LR2
	4LS2		2LC2		2LS2
	4SF2		2LO2		2LS3
	6LS2		2LO3		2RV2-T
			4SF2		4AC2
4LO3	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-O	2RV2-T		
4LR3	2LR2		4RV2-T	4SF3	2DY2
	4LR2		4SF2		2GO3
	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				

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)

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

(3) Voice Grade (Cont'd)

Compatible CIs		Compatible CIs		Compatible CIs	
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

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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)

(3) Voice Grade (Cont'd)

Compatible CIs		Compatible CIs		Compatible CIs	
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
	4LS2	6EB2-M	2DY2		4LS2
	4RV2-T		4DY2		4SF2
	4SF2		4SF2		6GS2
	4SF3		6DY2		6LS2
			6DY3		
			6EB2-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)

(3) Voice Grade (Cont'd)

Compatible CIs		Compatible CIs		Compatible CIs	
6EX2-B	2GO3	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
6GO2	2GO2		4DY2		4DY2
	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				

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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)

(3) Voice Grade (Cont'd)

Compatible CIs		Compatible CIs		Compatible CIs	
8EC2	2DY2	9DY2	2DY2	9EA3	2DY2
	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		

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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) Program Audio

Compatible CIs		Compatible CIs	
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

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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)

(5) Video

Compatible CIs		Compatible CIs	
2TV6-1	4TV6-15 4TV7-15	4TV7-5	4TV6-5 4TV7-5
2TV6-2	6TV6-15 6TV7-15	4TV7-15	4TV6-15 4TV7-15
2TV7-1	4TV6-15 4TV7-15	6TV6-5	6TV6-5 6TV7-5
2TV7-2	6TV6-15 6TV7-15	6TV6-15	6TV6-15 6TV7-15
4TV6-5	4TV6-5 4TV7-5	6TV7-5	6TV6-5 6TV7-5
4TV6-15	4TV6-15 4TV7-15	6TV7-15	6TV6-15 6TV7-15

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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)

(6) Digital Data

Compatible CIs		Compatible CIs		Compatible CIs	
4DS8-15	4DS8-15+	4DU5-24	4DU5-24	6DU5-24	6DU5-24
	4DU5-24				
	4DU5-48	4DU5-48	4DU5-48	6DU5-48	6DU5-48
	4DU5-56				
	4DU5-96	4DU5-96	4DU5-96	6DU5-56	6DU5-56
	6DU5-24				
	6DU5-48	4DU5-56	4DU5-56	6DU5-96	6DU5-96
	6DU5-96				

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

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15. Access Service Interface 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

(7) High Capacity

Compatible CIs		Compatible CIs	
4DS0-63	4DS0-63 4DU8-A,B or C 6DU8-A,B or C	4DS8-15J	4DU8-A 6DU8-A
		4DS8-15K	4DU8-B 4DU8-C 6DU8-B 6DU8-C
4DS6-27	4DS6-27 4DU8-A,B or C 6DU8-A,B or C		
4DS6-44	4DS6-44 4DU8-A,B or C 6DU8-A,B or C	4DS8-31	4DS8-31 4DU-A,B or C 6DU8-A,B or C
4DS8-15	4DS8-15+ 4DU8-B 6DU8-8	4DU8-A,B or C	4DU8-A,B or C

(8) Synchronous Optical Channel Service

Compatible CIs		Compatible CIs		
4DS9-1S	4DU9-1S	2SOF-A	2SOF-A	(C)
4DS9-1K	4DU0-1K	2SOF-B	2SOF-B	|
		2SOF-C	2SOF-C	|
		2SOF-D	2SOF-D	|
		2SOF-E	2SOF-E	|
		2SOF-F	2SOF-F	(C)

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

15.2 Special Access Service (Cont'd)

15.3.1 Interface Group and Premise Interface Codes

When Directory Access Service is combined with Feature Group B, C or D Switched Access Service, the Premises Interface Code for the combination will be the available Premises Interface Code provided for the Feature Group B, C or D Switched Access Service ordered by the customer. Premises Interface Codes are described in 15.1.1(G) preceding.

When Directory Access Service is provided as a separate trunk group (not in combination with Switched Access Service) Interface Groups 2 through 10 as set forth in 15.1.1 preceding are available. Only the following Premises Interface Codes are available when Directory Access service is provided as a separate trunk group: (C)

4DS9-15	6EA2-E	4RV2-0
4DS9-31	6EA2-M	4AH5-B
4DS0-63	4SF3	4AH6-C
4DS6-44		4AH6-D
4DS6-27		

ACCESS SERVICE

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

15.3 Directory Access Service (Cont'd)

15.3.2 Standard Transmission Specifications

Following is a matrix illustrating the transmission specifications available with Directory Access Service. Descriptions of the Standard Transmission Specifications, Type A and B, are set forth respectively in 15.1.2(E) and (F) preceding.

Directory Access Service Provided in Combination with Switched Access Service	Transmission Specifications Type A	Type B
- Feature Group B (Interface Groups 2 through 10)		X
- Feature Group C		X
- Feature Group D	X	
Directory Access Service Not Combined with Switched Access Service		
- Routed Direct to DA location (Interface Groups 2 through 10)		X
- Routed via an access tandem (Interface Groups 2 through 10)	X	