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**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**I. LOCAL TRANSPORT INTERFACE GROUPS**

Ten Interface Groups are provided for terminating the Local Transport at the customer's premises. Each Interface Group provides a specified premises interface code (e.g., two-wire, four-wire, DS1, etc.). At the option of the customer and where transmission facilities permit, the individual transmission path between the customer's premises and the first point of switching may be provided with optional features as set forth in Section 5, III.A. preceding.

As a result of the customer's access order and the type of Telephone Company transport facilities serving the customer's 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's premises. For example, if a voice frequency interface is ordered by the customer and the Telephone Company facilities serving the customer's premises are digital, then Telephone Company channel bank equipment must be placed at the customer's premises in order to provide the voice frequency interface ordered by the customer.

Interface Group 1 is provided with Type C Transmission Specifications, and Interface Groups 2 through 10 are provided with Type A or B Transmission Specifications, 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's premises. The premises interfaces codes associated with the Interface Groups may vary among Feature Groups. The various premises interfaces codes which are available with the Interface Groups, and the Feature Groups with which they may be used, are set forth in K. following.

For each of the ten Interface Groups described following, the transmission path between the point of termination at the customer's premises and the first point of switching may be comprised of any form or configuration of plant and equipment 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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**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
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**I. LOCAL TRANSPORT INTERFACE GROUPS (Continued)**

**A. Interface Group 1**

Interface Group 1 provides a two-wire voice frequency transmission path at the point of termination at the customer's premises. 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 can only provide four-wire terminations

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 will be reverse battery signaling. When FGB, FGC, or FGD access service is associated with a two-way calling interface, E&M signaling shall be used.

**B. Interface Group 2**

Interface Group 2 provides four-wire frequency transmission at the point of termination at the customer's premises. 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.

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**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**I. LOCAL TRANSPORT INTERFACE GROUPS (Continued)**

**C. Interface Group 3**

Interface Group 3 provides group level analog transmission at the point of termination at the customer's premises. The interface is capable of transmitting electrical signals between the frequencies of 60 to 180 kHz, with the capability to channelize up to 12 voice frequency transmission paths. Certain frequencies within the bandwidth of the Interface Group 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 12 transmission paths with a frequency bandwidth of approximately 300 to 3000 Hz.

The interface is provided with SF supervisory signaling for each individual transmission channel.

**D. Interface Group 4**

Interface Group 4 provides supergroup level analog transmission at the point of termination at the customer's premises. The interface is capable of transmitting electrical signals between the frequencies of 312 to 552 kHz, with the capability to channelize up to 60 voice frequency transmission paths. Certain frequencies within the bandwidth of the Interface Group 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 and channel bank equipment to derive 600 transmission paths with a frequency bandwidth of approximately 300 to 3000 Hz.

The interface is provided with SF supervisory signaling for each individual transmission channel.

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**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
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**I. LOCAL TRANSPORT INTERFACE GROUPS (Continued)**

**E. Interface Group 5**

Interface Group 5 provides mastergroup level analog transmission at the point of termination at the customer's premises. The interface is capable of transmitting electrical signals between the frequencies of 564 to 3084 kHz, with the capability to channelize up to 600 voice frequency transmission paths. Certain frequencies within the bandwidth of the Interface Group 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 and channel bank equipment to derive 600 transmission paths with a frequency bandwidth of approximately 300 to 3000 Hz.

The interface is provided with SF supervisory signaling for each individual transmission channel.

**F. Interface Group 6**

Interface Group 6 provides DS1 level digital transmission at the point of terminating at the customer's premises. The interface is capable of transmitting electrical signals at a nominal 1.544 Mbps, with the capability to channelize up to 24 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 24 transmission paths with 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, at the first point of switching, a DS1 signal in D3/D4 format.

The interface is provided with bit stream supervisory signaling for each individual transmission channel.

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**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
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**I. LOCAL TRANSPORT INTERFACE GROUPS (Continued)**

**G. Interface Group 7**

Interface Group 7 provides DS1C level digital transmission at the point of termination at the customer's premises. The interface is capable of transmitting electrical signals at a nominal 3.152 Mbps, with the capability to channelize up to 48 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 up to 48 voice frequency transmission paths with 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, at the first point of switching, DS1 signals in D3/D4 format.

The interface is provided with bit stream supervisory signaling for each individual transmission channel.

**H. Interface Group 8**

Interface Group 8 provides DS2, level digital transmission at the point of termination at the customer's premises. The interface is capable of transmitting electrical signals at a nominal 6.312 Mbps, with the capability to channelize up to 96 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 in its office to derive up to 96 transmission paths with 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, at the first point of switching, DS1 signals in D3/D4 format.

The interface is provided with bit stream supervisory signaling for each individual transmission channel.

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**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
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**I. LOCAL TRANSPORT INTERFACE GROUPS (Continued)**

**I. Interface Group 9**

Interface Group 9 provides DS3 level digital transmission at the point of termination at the customer's premises. The interface is capable of transmitting electrical signals at a nominal 44.736 Mbps, with the capability to channelize up to 672 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 up to 672 transmission paths with 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, at the first point of switching, DS1 signals in D3/D4 format.

The interface is provided with bit stream supervisory signaling for each individual transmission channel.

**J. Interface Group 10**

Interface Group 10 provides DS4 level digital transmission at the point of termination at the customer's premises. The interface is capable of transmitting electrical signals at a nominal 274.176 Mbps, with the capability to channelize up to 4032 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 up to 4032 transmission paths with 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, at the first point of switching, DS1 signals in D3/D4 format.

The interface is provided with bit stream supervisory signaling for each individual transmission channel.

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**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
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**I. LOCAL TRANSPORT INTERFACE GROUPS (Continued)**

**K. Available Premises Interface Codes**

Following is a matrix showing which premises interface codes are available for each Interface Group as a function of the Telephone Company switch supervisory signaling and Feature Group. For explanation of these codes, see the Glossary of Channel Interface Codes in III.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				
	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	
	EB, EC, RV RV	6EC3			X	X	
			2RV3-0		X	X	X

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
 AND CHANNEL CODES**

**I. LOCAL TRANSPORT INTERFACE GROUPS (Continued)**

**K. Available Premises Interface Codes (Continued)**

Following is a matrix showing which premises interface codes are available for each Interface Group as a function of the Telephone Company switch supervisory signaling and Feature Group. For explanation of these codes, see the Glossary of Channel Interface Codes in III.A. following.

Interface Group	Telephone Company Switch Supervisory Signaling	Premises Interface Code	Feature Group				
			A	B	C	D	
2	LO, GO	2RV3-T		X	X	X	
	LO, GO	4SF2	X				
	LO	4SF3	X				
	LO	4LS2	X				
	LO	4LS3	X				
	GO	6LS2	X				
	GO	4GS2	X				
	GO	4GS3	X				
	LO, GO	6GS2	X				
	LO, GO	4DX3	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				
			6EX2-B				
		RV, EA, 3B, 3C, RV	4SF2		X	X	X
		EA, EB, EC, RV, EA	4SF3		X		
		EB, EC, RV, EA, EB	4DX2		X	X	X
		EC, RV, EA, EB, EC	4DX3		X	X	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, EA	8EB2-E		X	X	X
		EB, EC, RV RV RV	8EB2-M		X	X	X
		RV	8EC2-M			X	X
			4RV2-0		X	X	X

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
 AND CHANNEL CODES**

**I. LOCAL TRANSPORT INTERFACE GROUPS (Continued)**

**K. Available Premises Interface Codes (Continued)**

Interface Group	Telephone Company Switch Supervisory Signaling	Premises Interface Code	Feature Group			
			A	B	C	D
3	LO, GO	4RV2-T		X	X	X
	RV, EA, EB, EC	4RV3-0		X	X	
		4RV3-T		X	X	
4	LO, GO	4AH5-B	X			
	RV, EA, EB, EC	4AH5-B		X	X	X
5	LO, GO	4AH6-C	X			
	RV, EA, EB, EC	4AH6-C		X	X	X
6	LO, GO	4AH6-D	X			
	LO, GO	4AH6-D		X	X	X
	RV, EA, EB, EC	4DS9-15	X			
	RV, EA, EB, EC	4DS9-15L	X			
7	LO, GO	4DS9-15		X	X	X
	RV, EA, EB, EC	4DS9-15L		X	X	X
	LO, GO	4DS9-31	X			
	RV, EA, EB, EC	4DS9-32		X	X	X
	LO, GO	4DS9-31L	X			
	RV, EA, EB, EC	4DS9-31L		X	X	X

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**I. LOCAL TRANSPORT INTERFACE GROUPS (Continued)**

**K. Available Premises Interface Codes (Continued)**

Interface Group	Telephone Company Switch Supervisory Signaling	Premises Interface Code	Feature Group			
			A	B	C	D
8	LO, GO	4DS0-63	X			
	LO, GO	4DS0-63L	X			
	RV, EA, EB, EC	4DS0-63		X	X	X
	RV, EA, EB, EC	4DS0-63L		X	X	X
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
10	LO, GO	4DS6-27	X			
	LO, GO	4DS6-27L	X			
	RV, EA, EB, EC	4DS6-27		X	X	X
	RV, EA, EB, EC	4DS6-27;		X	X	X

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**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**II. TRANSMISSION SPECIFICATIONS FOR SWITCHED ACCESS  
SERVICE**

The Telephone Company will maintain existing transmission specifications on functioning service configurations installed prior to the effective date of this tariff except that service configurations having performance specifications exceeding the standards listed in this provision will be maintained at performance levels specified in this tariff.

The transmission specifications contained in this Section are immediate action limits. Acceptance limits are set forth in Technical Reference TR-NPL-000334. This Technical Reference also provides the basis for determining Switched Access Service maintenance limits.

**A. Standard Transmission Specifications**

Following are descriptions of the three Standard Transmission Specifications available with Switched Access Services. The specific applications in terms of the Switched Access Arrangements and Interface Groups with which the Switched Access Arrangement Standard Transmission Specifications are provided are set forth in Section 5, II, preceding.

1. Type A Transmission Specifications

Type A Transmission Specifications is provided with the following parameters:

a. Loss Deviation

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

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**II. TRANSMISSION SPECIFICATIONS FOR SWITCHED ACCESS  
SERVICE (Continued)**

**A. Standard Transmission Specifications (Continued)**

1. Type A Transmission Specifications (Continued)

a. (Continued)

Type A Transmission Specifications is provided with the following parameters:

b. Attenuation Distortion

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

c. 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 dBmCO
51 to 100	34 dBmCO
101 to 200	37 dBmCO
201 to 400	40 dBmCO
401 to 1000	42 dBmCO

d. C-Notch Noise

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

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**II. TRANSMISSION SPECIFICATIONS FOR SWITCHED ACCESS  
SERVICE (Continued)**

**A. Standard Transmission Specifications (Continued)**

1. Type A Transmission Specifications (Continued)

e. 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 16	N/A 11
- Via Access Tandem	dB	dB

f. Standard Return Loss

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

<u>Echo Return Loss</u>	<u>Singing Return Loss</u>
5 dB Type B Transmission	2.5 dB

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**II. TRANSMISSION SPECIFICATIONS FOR SWITCHED ACCESS  
SERVICE (Continued)**

**A. Standard Transmission Specifications (Continued)**

2. Type B Transmission Specifications

Type B Transmission Specifications is provided with the following parameters:

a. Loss Deviation

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

b. Attenuation Distortion

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

c. 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

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**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**II. TRANSMISSION SPECIFICATIONS FOR SWITCHED ACCESS  
SERVICE (Continued)**

**A. Standard Transmission Specifications (Continued)**

2. Type B Transmission Specifications (Continued)

d. C-Notch Noise

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

e. 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 Switched Access Service, type of termination, and type of transmission path. They are greater than or equal to the following:

- \* 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 TR-NPL-000334.

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**II. TRANSMISSION SPECIFICATIONS FOR SWITCHED ACCESS  
SERVICE (Continued)**

**A. Standard Transmission Specifications (Continued)**

2. Type B Transmission Specifications (Continued)

e. Echo Control (Continued)

	<u>Echo Return Loss</u>	<u>Singing Return Loss</u>
POT to Access Tandem - Terminated in 4-Wire trunk	21 dB	14 dB
POT to End Office - Terminated in 2-Wire trunk	16 dB	11 dB
POT to End Office - Direct	16 dB	11 dB
- Via Access Tandem - For FCB 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 end office)	13 dB	6 dB

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**II. TRANSMISSION SPECIFICATIONS FOR SWITCHED ACCESS  
SERVICE (Continued)**

**A. Standard Transmission Specifications (Continued)**

2. Type B Transmission Specifications (Continued)

f. 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

3. Type C Transmission Specifications

Type C. Transmission Specifications is provided with the following parameters:

a. Loss Deviation

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

b. 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.

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**II. TRANSMISSION SPECIFICATIONS FOR SWITCHED ACCESS  
SERVICE (Continued)**

**A. Standard Transmission Specifications (Continued)**

3. Type C Transmission Specifications (Continued)

c. 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	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

d. C-Notch Noise

The maximum C-Notch Noise, utilizing a -16 dBmO 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 TR-NPL-000334.

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**II. TRANSMISSION SPECIFICATIONS FOR SWITCHED ACCESS  
SERVICE (Continued)**

**A. Standard Transmission Specifications (Continued)**

3. Type C Transmission Specifications (Continued)

d. 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)	13 dB	4 dB

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**II. TRANSMISSION SPECIFICATIONS FOR SWITCHED ACCESS  
SERVICE (Continued)**

**B. Data Transmission Parameters**

Two types of Data Transmission Parameters, (i.e., Type DA and Type DB), are provided for the Switched Access Service arrangements. The specific applications in terms of the Feature Groups with which they are provided are set forth in Section 5, II. preceding. In addition, the Combined Access Service Arrangement is provided with Data Transmission Parameters. Following are descriptions of each parameter.

1. Data Transmission Parameters Type DA

a. Signal to C-Notched Noise Ratio

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

b. Envelope Delay Distortion

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

604 to 2804 Hz

less than 30 route miles	500 microseconds
equal to or greater than 30 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

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**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
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**II. TRANSMISSION SPECIFICATIONS FOR SWITCHED ACCESS  
SERVICE (Continued)**

**B. Data Transmission Parameters (Continued)**

1. Data Transmission Parameters Type DA (Continued)

c. Impulse Noise Counts

The Impulse Noise Counts exceeding a 65 dBmCo threshold in 15 minutes is no more than 15 counts.

d. 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

e. Phase Jitter

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

f. Frequency Shift

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

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
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**II. TRANSMISSION SPECIFICATIONS FOR SWITCHED ACCESS  
SERVICE (Continued)**

**B. Data Transmission Parameters (Continued)**

2. Data Transmission Parameters Type DB

a. Signal to C-Notched Noise Ratio

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

b. 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

c. Impulse Noise Counts

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

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**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**II. TRANSMISSION SPECIFICATIONS FOR SWITCHED ACCESS  
SERVICE (Continued)**

**B. Data Transmission Parameters (Continued)**

2. Data Transmission Parameters Type DB (Continued)

d. Intermodulations 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

e. Phase Jitter

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

f. Frequency Shift

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

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES**

This section explains the Channel Interface codes and Network Channel codes that the customer must specify when ordering Special Access Service. Included is an example which explains the specific characters of the code, a glossary of Channel Interface codes, impedance levels, Network Channel codes and compatible Channel Interfaces.

Example: If the customer specifies a NT Network Channel Code and a 2DS8-3 Channel Interface at the customer's premises, the following is being requested:

NT	=	Metallic Circuit with a Predefined Technical Specification Package (1)
2	=	Number of physical wires at customer premises
DC	=	Facility interface for direct current or voltage
8	=	Variable impedance level
3	=	Metallic facilities (DC continuity) for direct current/low frequency control signals or slow speed data (30 baud)

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES**  
(Continued)

**A. Glossary of Channel Interface Codes and Option**

<u>Code</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 analog high capacity interface 60 kHz to 108 kHz (12 channels) 312 kHz
AH	to 552 kHz (60 channels) 564 kHz to 3084 kHz (600 channels) Centrex Tie Trunk Termination data stream in VF frequency band at customer's end user's point of termination data stream in VF frequency band at customer's point of termination VF for TG1 and TG2
- B	VF for 43 Telegraph Carrier type signals, TG1 and TG2 DC - direct current or voltage monitoring interface with series RC combination (McCulloh format)
- C	Telephone Company energized alarm channel Metallic facilities (DC continuity) for direct current/low frequency control signals or slow speed data (30 baud)
- D	DATAPHONE Select-A-Station (and TABS) interface at customer's point of termination DATAPHONE Select-A-Station (and TABS) interface at the customer's end user's point of termination digital hierarchy interface
CT	
DA	
DB	
- 10	
- 43	
- 1	
- 2	
- 3	
DD	
DE	1.544 Mbps (DS1) format per PUB 41451 plus D4 8-bit PCM encoded in one 64 kbps of the DS1 signal 8-bit PCM encoded in two 64 kbps of the DS1 signal
DS	15
	15E
	15F
	15G
	15H

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**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES**  
(Continued)

**A. Glossary of Channel Interface Codes and Option (Continued)**

<u>Code</u>	<u>Definition</u>
- 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 274.176 Mbps (DS4) 274.176 Mbps (DS4) with SF signaling 3.152 Mbps (DS1C) 3.152 Mbps (DS1C) with SF signaling
- 27	44.736 Mbps (DS3) 44.736 Mbps (DS3) with SF signaling
- 27L	6.312 Mbps (DS2) 6.312 Mbps (DS2) with signaling
- 31	digital access interface 2.4 kbps 4.8 kbps
- 31L	56.0 kbps 9.6 kbps
- 44	1.544 Mbps format per PUB 41451
- 44L	1.544 Mbps format per PUB 41451 plus D4
- 63	1.544 Mbps format per Pub 41451 plus extended framing format
- 63L	duplex signaling interface at customer's point of termination
DU	
- 24	duplex signaling interface at customer's end user's point of termination
- 48	type I E&M Lead Signaling.
- 56	Customer at POT or customer's end user at POT originates on E lead.
- 96	
- A	Type I E&M Lead Signaling. Customer at POT or customer's end user at POT originates on M Lead.
- B	
DX	C Type II E&M Lead Signaling. Customer at POT or customer's end user at POT originates on E Lead.
DY	
EA	E
EA	M
EM	E

INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES

III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES  
(Continued)

A. Glossary of Channel Interface Codes and Option (Continued)

<u>Code</u>		<u>Definition</u>
EB	M	Type II E&M Lead Signaling. Customer at POT or
EO	A	customer's end user at POT Type III E&M Signaling
EX		at customer POT tandem channel unit signaling for
		loop start or ground start and customer supplies open
		and (dial tone, etc.) functions tandem channel unit
		signaling for loop start or ground start and customer
EX	B	supplies closed end (dial pulsing, etc.) functions
		ground start loop signaling - open end functions by
		customer or customer's end user ground start loop
G		signaling - closed end function by customer or
		customer's end user E.I.A. (25 pin RS-232)
O		end user loop start loop signaling - Type A OPS
GS		registered port open end user loop start loop signaling -
		Type B OPS registered port open end user loop start
		loop signaling - Type C OPS registered port open end
IA		loop start loop signaling - open end function by
LA		customer or customer's end user 20 Hz automatic
		ringdown interface at customer with Telephone
LB		Company provided PLAR loop start loop signaling -
		closed end function by customer or customer's end
LC		user no signaling interface, transmission only
LO		
LR		
LS		
NO		

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**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES**  
(Continued)

**A. Glossary of Channel Interface Codes and Option (Continued)**

<u>Code</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 protective relaying*
PR	
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 telegraph/teletypewriter
TT	interface at either customer POT or customer's end user POT
-2	20.0 milliamperes 3.0 milliamperes
-3	62.5 milliamperes television interface
-6	combined (diplexed) video and one audio signal
-1	combined (diplexed) video and two audio signals
-2	video plus one (or two) audio 5 kHz signal(s) or
-5	one (or two) two wire video plus one (or two) audio 15 kHz signal(s) wideband bandwidth interface at customer's end
	limited bandwidth
	nominal passband from 29000 to 44000 Hz

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

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**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
 AND CHANNEL CODES**

**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES  
 (Continued)**

**A. Glossary of Channel Interface Codes and Option (Continued)**

<u>Code</u>	<u>Definition</u>
TV	
15	
WA	
POT	
1	
2	
WB	wideband data interface at customer POT
- 18S	18.75 kbps, synchronous up to 19.2
- 19A	synchronous 19.2 kbps synchronous up to
- 19S	230.4 kbps asynchronous 230.4 kbps,
- 23A	synchronous 40.8 kbps, synchronous up to
- 23S	50.0 asynchronous 50.0 kbps synchronous
- 40S	wideband data interface at customer's end user
- 50A	POT 18.75 kbps, synchronous for 12-wire
- 50S	interface: 19.2 kbps, synchronous for 10-wire
wide	interface: up to 19.2 kbps asynchronous up to
- 18	230.4 kbps, asynchronous 230.4 kbps,
- 19	synchronous 40.8 kbps, synchronous for 12-wire
- 23	interface: 50.0 kbps, synchronous for 10-wire
- 23S	interface: up to 50.0 kbps, asynchronous
- 40	wideband bandwidth interface at customer's POT
- 50	nominal passband from 300 to 18000 Hz nominal
	passband from 28000 to 44000 Hz nominal
	passband from 29000 to 44000 Hz
WD	
- 1	
- 2	
- 3	

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**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES**  
(Continued)

**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's POT, rather than a standard 900 ohm impedance the code (3) denotes a customer provided transmission equipment termination. Such termination were provided to customers in accordance with the FCC Docket No. 20099 Settlement Agreement.

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**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
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**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES**  
(Continued)

**C. Digital Hierarchy Channel Interface Codes (4DS)**

Customers selecting the multiplexed four-wire DSX-1 or higher facility interface option at the customer designated premises will be requested to provide subsequent system and channel assignment data. The various digital bit rates in the digital hierarchy employ the channel interface code 4DS8, 4DS9, 4DSO or 4DS6 plus the speed options indicated below:

<u>Interface Code and Speed Option</u>	<u>Nominal Bit Rate (Mbps)</u>	<u>Digital Hierarchy Level</u>
4DS8-15	1.544	DS1
4DS9-31	3.152	DS1C
4DSO-63	6.312	DS2
4DS6-44	44.736	DS3
4DS6-27	274.176	DS4

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**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES**  
(Continued)

**D. Service Designator/Network Channel Code Conversion Table**

The purpose of this table is to show the relationship between the service designator codes (e.g., VGC, MT2, etc.) and the network channel codes that are used for various administrative purposes.

<u>Service Designators</u> Code	<u>Network Channel</u> Code
MTC	MQ
MT1	NT
MT2	NU
MT3	NV
TGC	NQ
TG1	NW
TG2	NY
VGC	LQ
VG1	LB
VG2	LC
VG3	LD
VG4	LE
VG5	LF
VG6	LG
VG7	LH
VG8	LJ
VG9	LK
VG1	LN
VG1	LP
VG12	LR
APC	PQ
AP1	PE
AP2	PF
AP3	PJ
AP4	PK
TVC	TQ
TC1	TV
TV2	TW

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**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES**  
(Continued)

**D. Service Designator/Network Channel Code Conversion Table**  
(Continued)

Service Designators Code	Network Channel Code
WA1	WJ
WA1T	WQ
WA2	WL
WA2A	WR
WA3	WN
WA4	WP
WD1	WB
WD2	WE
WD3	WF
DA1	XA
DA2	XB
DA3	XG
DA4	XH
HCO	HS
HC1	HC
HC1C	HD
HC2	HE
HC3	HF
HC4	HG

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
 AND CHANNEL CODES**

**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES**  
 (Continued)

**E. Compatible Channel Interfaces**

1.	Metallic				
	Compatible CIs			Compatible CIs	
	4AH5-B 2DC8-1			4AH6-D 2DC8-2	
	4AH5-B 24C8-1			2DC8-1 2DC8-2	
	4AH6-C 2DC8-1			2DC8-3 2DC8-3	
	4AH6-C 2DC8-2			4DS9-* 2DC8-1	
	4AH6-D 2DC8-1			4DS9-* 2DC8-2	
2.	Telegraph Grade				
	Compatible eCIs	Compatible CIs		Compatible CIs	
	4AH5-B 10IA8	4AH6-D	4TT2-6	4DB2-43+	4TT2-2
	4AH5-B 2TT2-2	2DB2-10	10IA8	4DS9-*	10IA8
	4AH5-B 4TT2-2	2DB2-10	2TT2-2	4DS9-*	2TT2-2
	4AH5-B 2TT2-6	2DB2-10	4TT2-2	4DS9-*	4TT2-2
	4AH5-B 4TT2-6	2DB2-43+	10IA8	4DS9-*	2TT2-6
	4AH6-C 10IA8	2DB2-43+	2TT2-2	4DS9-*	4TT2-6
	4AH6-C 2TT2-2	2DB2-43+	2TT2-6	2TT2-2	2TT2-2
	4AH6-C 4TT2-2	2DB2-43+	4TT2-2	2TT2-3	2TT2-2
	4AH6-C 2TT2-6	4DB2-10	10IA8	2TT2-3	4TT2-2
	4AH6-C 4TT2-6	4DB2-10	2TT2-2	2TT2-6	2TT2-6
	4AH6-D 10IA8	4DG2-10	4TT2-2	2TT2-6	4TT2-2
	4AH6-D 2TT2-2	4DB2-43+	10IA8	4TT2-2	4TT2-2
	4AH6-D 4TT2-6	4DB2-43+	2TT2-6	2TT2-6	2TT2-6
	4AH6-D 2TT2-6				

\* See Section 6, VII.C. preceding for explanation.  
 + Supplemental Channel Assignment information required.

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES  
(Continued)**

**E. Compatible Channel Interfaces (Continued)**

3. Voice Grade

Compatible CIs		Compatible CIs		Compatible CIs	
4AB2	4AC2	4AH5-B	6DA2	4AH6-D	2DY2
4AB3	4AC2	4AH5-B	4DA2	4AH6-C	9DY2
4AB2	2AC2	4AH5-B	2DA2	4AHG-C	9DY3
4AB3	2AC2			4AH6-C	6DY2
2AB2	2AC2	4AH6-D	4DE2	4AH6-C	6DY3
2AB3	2AC2	4AH6-C	4DE2	4AH6-C	4DY2
		4AH5-B	4DE2	4AH6-C	2DY2
4AB2	4SF2	4AH6-D	2DE2	4AH5-B	9DY2
4AB3	4SF2	4AH6-C	2DE2	4AH5-B	9DY3
		4AH5-B	2DE2	4AH5-B	6DY2
4AH6-D	4AC2			4AH5-B	6DY3
4AH6-D	2AC2	4AH6-D	4DX3	4AH5-B	4DY2
4AH6-C	4AC2	4AH6-C	4DX3	4AH5-B	2DY2
4AH6-C	2AC2	4AH5-B	4DX3		
4AH5-B	4AC2	4AH6-D	4DX2	4AH6-D	9EA2
4AH5-B	2AC2	4AH6-C	4DX2	4AH6-D	9EA3
		4AH5-B	4DX2	4AH6-D	6EA2-E
4AH6-D	2CT3			4AH6-D	6EA2-M
				4AH6-D	6EA2-E
4AH6-C	2CT3			4AH6-D	4EA2-M
4AH5-B	2CT3			4AH6-C	9EA2
4AH6-D	6DA2			4AJ7-C	9EA3
4AH6-D	4DA2	4AH6-D	9DY2	4AH6-C	6EA2-E
4AH6-D	2DA2	4AH6-D	9DY3		
4AH6-C	6DA2	4AH6C6D	6DY2		
4AH6-C	4DA2	4AH&C4D	6DY3		
4AH6-C	2DA2	4AH6C2D	4DY2		

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**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
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**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES**  
 (Continued)

**E. Compatible Channel Interfaces (Continued)**

3. Voice Grade (Continued)

Compatible CIs		Compatible CIs		Compatible CIs	
4AH6-D	4NO2	4AH6-D	4TF2	2CT3	8EB2-E
4AB6-D	2NO2	4AJ7-D	2TF2	2CT3	8EB2-M
4AH6-C	4NO2	4AH6-C	4TF2		
4AH6-C	2NO2	4AH6-C	2TF2	2CT3	6482-E
4AH5-B	4NO2	4AH5-B	4TF2	2CT3	6EB2-M
4AH5-B	2NO2	4AH5-B	2TF2		
				2CT3	6EB3-E
		2CT3	4DS9-*		
				2CT3	8EC2
		2CT3	6DX2		
		2CT3	4DX2	2CT3	4SF2
		2CTS	4DX3	2CT3	4SF3
4AH6-D	4PR2	2CT3	9DY3	6DA2	6DA2
4AH6-D	2PR2	2CT3	6DY3	6DA2	4DA2
4AH6-C	4PR2	2CT3	9DT2	4DA2	4DA2
4AH6-C	2PR2	2CT3	6DY2		
4AH5-B	4PR2	2CT3	4DY3	4DB2	6DA2
4AH5-B	2PR2	2CT3	2DY2	4DB2	4DA2
				4DB2	2DA2
4AH6-D	4RV2-T	2CT3	9EA3	2DB3	2DA2
4AH6-D	2RV2-T	2CT3	9EA2	2DB2	2DA2
4AH6-C	4RV2-T	2CT3	6EA2-E	4DB2	4DB2
4AH6-C	2RV2-T	2CT3	6EA2-M	4DB2	4N02
4AH5-B	4TV2-T	2CT3	4EA2-E	4DB2	2N02
4AH5-B	2RV2-T	2CT3	4EA2-M	2DB2	2N02
4AH6-D	4SF2			4DB2	4PR2
4AH6-C	4SF2			4DB2	2PR2
4AH5-B	4SF2			2DB2	2PR2
4AH6-D	4SF3				
4AH6-C	4SF3				
4AH5-B	4SF3				

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
 AND CHANNEL CODES**

**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES**  
 (Continued)

**E. Compatible Channel Interfaces (Continued)**

3. Voice Grade (Continued)

Compatible CIs		Compatible CIs	
4DD3	4DE2	4D68*	9DY3
4DD3	2DE2	4DS8-*	9DY2
4DS8-*	4AC2	4DS8-*	6DY3
4DS8-*	2AC2	4DS8-*	6DY2
		4DS8-*	4DY2
		4DS8-*	2DY2
4DS8-*	6DA2		
4DS8-*	4DA2		
4DS8-*	2DA2	4DS8-*	9EA2
		4DS8-*	9EA3
4DS8-*	4DE2	4DS8-*	6EA2-E
4DS8-*	EDE2	4DS8-*	6EA2-M
		4DS8-*	4EA2-E
4DS8-*	4DX3	4DS8-*	4EA2-E
4DS8-*	4DX2		

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
 AND CHANNEL CODES**

**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES  
 (Continued)**

**E. Compatible Channel Interfaces (Continued)**

3. Voice Grade (Continued)

Compatible CIs		Compatible CIs		Compatible CIs	
4DS8-*	8EB2-E	4DS8-*	4N02	4DX3	9DY2
4DS8-*	8EB2-M	4DS8-*	2N02	4DX2	6DY3
4DS8-*	6EB2-E			4DX3	6DY3
4DS8-*	6EB2-M	4DS8-*	4PR2	4DX2	6DY2
		4DS8-*	2PR2	4DX3	6DY2
4DS8-*	2G02			4DX2	4DY2
4DS8-*	2G03	4DS8-*	4RV2-T	4DX3	4DY2
4DS8-*	6GS2	4DS8-*	2RV2-T	4DX2	2DY2
4DS8-*	4GS2			4DX3	2DY2
4DS8-*	2GS2	4DS8-*	4SF2		
4DS8-*	2GS3	4DS8-*	4SF3	6DX2	9EA3
				6DX2	9EA2
4DS8-*	2IA2	4DS8-*	4TF2	6DX2	6EA2-E
		4DS8-*	2TF2	6DX2	6EA2-M
4DS8-*	2LB2			6DX2	4EA2-E
		4DX2	4DX2	6DX2	4EA2-M
8DS8-*	2LC2	40X3	4DX2	4DX2	9EA2
		4DX3	4DX3	4DX3	9EA2
4DS8-*	2L02			4DX2	9EA3
4DS8-*	2L03	6DX2	9DY3	40X3	9EA3
		6DX2	9DY2	4DX2	6EA2-E
4DS8-*	4IS2	6DX2	6DY3	4DX3	6EA2-E
4DS8-*	2LR2	6DX2	6DY2	4DX2	6EA2-M
		6DX2	4DY2	4DX3	6EA2-M
4DS8-*	6LS2	6DX2	2DY2	4DX2	4EA2-E
4DS8-*	4LS2	4DX2	9DY3	4DX3	4EA2-E
4DS8-*	2LS2	4DX3	9DY3	4DX2	4EA2-M
4DS8-*	2LS3	4DX2	9DY2	40X3	4EA2-M

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
 AND CHANNEL CODES**

**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES**  
 (Continued)

**E. Compatible Channel Interfaces (Continued)**

3. Voice Grade (Continued)

Compatible CIs		Compatible CIs		Compatible CIs	
6DX2	8EB2-E	4DX2	6LS2	9DY2	6DY3
6DX2	8EB2-M	4DX3	6LS2	9DY3	4DY2
6DX2	6EB2-E	4DX3	4LS2	9DY2	4DY2
6DX2	6EB2-M	4DX2	4LS2	9DY2	2DY2
4DX2	8EB2-E	4DX3	2IS3	9DY3	2DY2
4DX2	8EB2-M	4DX2	2LS3	6DY3	6DY3
4DX3	8EB2-E	4DX3	2LS2	6DY3	6DY2
4DX3	8EB2-M	4DX2	2LS2	6DY2	6DY2
4DX2	6EB2-E	2DX3	2LS2	6DY3	4DY2
4DX2	6EB2-M	2DX3	2LS3	6DY3	2DY2
4DX3	6E82-E			6DY2	4DY2
4DX3	6EB2-M	4DX3	4RV2-T	6DY2	2DY2
		4DX2	4RV2-T	4DY2	2DY2
4DX2	2LA2	4DX3	2RV2-T	4DY2	4DY2
4DX3	2LA2	40X2	2RV2-T		
2DX3	2LA2			6EA2-E	4AC2
		6DX2	4SF2	6EA2-M	4AC2
4DX2	2LB2	4DX2	4SF2	6EA2-E	2AC2
4DX3	2LB2	40X3	4SF2	6EA2-M	2AC2
2DX3	2LB2	4DX2	4SF3		
		4DX3	4SF3	9EA2	9DY3
4DX2	2LC2			9EA2	9DY2
4DX3	2LC2	9DY3	9DY3	9EA2	6DY3
2DX3	2LC2	9DY3	9DY2	9EA2	6DY2
		9DY2	9DY2	9EA2	4DY2
4DX2	2L03	9DY3	6DY3	9EA2	2DY2
4DX3	2L03	9DY3	6DY2	9EA3	9DY3
2DX3	2L03	9DY2	6DY2		
4DS8-*	8EB2-E	4DS8-*	4N02	4DX3	9DY2

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES  
(Continued)**

**E. Compatible Channel Interfaces (Continued)**

3. Voice Grade (Continued)

Compatible CIs		Compatible CIs		Compatible CIs	
9EA3	9DY2	4EA2-M	9DY2	4EA3-E	9EA2
9EA3	6DY3	4EA2-M	6DY3	4EA3-E	9EA3
9EA3	6DY2	4EA2-M	6DY2	4EA2-M	4EA2-M
9EA3	4DY2	4EA2-M	4DY2		
9EA3	2DY2	4EA2M	2DY2	9EA2	8EA2-E
6EA2-E	9DY3			9EA2	8EB2-M
6EA2-E	9DY2	9EA2	9EA2	9EA2	6EB2-E
6EA2-E	6DY3	9EA2	9EA3	9EA2	6EB2-M
6EA2-E	6DY2	9EA2	6EA2-E	9EA3	8EB2-E
6EA2-E	4DY2	9EA2	6EA2-M	9EA3	8EB2-M
6EA2-E	2DY2	9EA2	4EA2-E	9EA3	6EB2-E
6EA2-M	9DY3	9EA2	4EA2-M	9EA3	6EB2-M
6EA2-M	9DY2	9EA3	9EA3	8EB2-E	8EB2-E
6EA2-M	6DY3	9EA3	6EA2-E	6EA2-E	8EB2-M
6EA2-M	6DY2	9EA3	6EA2-M	6EB2-E	6EB2-E
6EA2-M	4DY2	9EA3	4EA2-E	6EA2-E	6EB2-M
6EA2-M	2DY2	9EA3	4EA2-M	6EA2-M	8EB2-E
4EA2-E	9DY3	6EA2-E	6EA2-E	6EA2-M	8E82-M
4EA2-E	9DY2	6EA2-E	6EA2-M	6EA2-M	6EB2-E
4EA2-E	9DY2	6EA2-E	6EA2-M	6EA2-M	6EB2-M
4EA3-E	9DY3	6EA2-M	6EA2-M	6EA2-M	8EB2-E
4EA3-E	9DY2	6EA2-E	4EA2-E	4EA2-E	8EB2-M
4EA3-E	6DY3	6EA2-E	4EA2-M	8EB2-E	8EB2-E
4EA3-E	6DY2	6EA2-M	4EB-E8E	4EA3-E	8EB2-M
4EA3-E	4DY2	6EA2-M	4EA2-M	4EA3-E	6E82-E
4EA3-E	2DY2	4EA2-E	4EA2-E	4EA2-E	6EB2-M
4EA2-E	6DY3	4EA3-E	4EA2-E6E	4EA2-E	6EB2-E
4EA2-E	6DY2	4EA3-E	6EA2-M	4EA3-E	6EB2-M
4EA2-E	4DY2	6EB2-E	4EA2-E	6EB2-E	6EB2-E
4EA2-E	2DY2	4EA3-E	4EA2-M	4EA2-M	8EB2-E
4EA2-M	9DY3	4EA2-E	4EA2-M		

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**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES  
(Continued)**

**E. Compatible Channel Interfaces (Continued)**

3. Voice Grade (Continued)

Compatible CIs		Compatible CIs		Compatible CIs	
4EA2-M	8EB2-M	9EA3	43 F2	6EB3-E	9DY2
4EA2-M	6EB2-E	9EA2	4SF2	6EB3-E	9DY3
4EA2-M	6EB2-M	6EA2-E	4SF3	6EB2-E	6DY2
		6EA2-M	4SF3	6EB3-E	6DY2
6EA2-E	2LA2	6EA2-E	4SF2	6EB2-E	6DY3
6EA2-M	2LA2	6EA2-M	4SF2	6EB3-E	6DY3
		4EA3-E	4SF2	6EB2-E	4DY2
6EA2-E	2LB2	4EA2-E	4SF2	6EB3-E	2DY2
6EA2-M	2LB2	4EA2-M	4SF2	6EB3-E	4DY2
6EA2-E	2LC2	8EB2-E	4AC2	6EB2-M	9DY2
6EA2-M	2LC2	8EB2-M	4AC2	6EB2-M	9DY3
		8EB2-E	2AC2	6EB2-M	6DY2
6EA2-E	2L03	8EB2-M	2AC2	6EB2-M	6DY3
6EA2-M	2L03			6EB2-E	2DY2
		8EB2-E	9DY3	6EB2-M	2DY2
6EA2-E	6LS2	8EB2-E	9DY2	6EB3-E	9EA2
6EA2-M	6LS2	8EB2-E	6DY3	6EB3-E	9EA3
6EA2-E	4LS2	8EB2-E	6DY2	6EB3-E	6EA2-E
6EA2-M	4LS2	8EB2-E	4DY2	6EB3-E	6EA2-M
6EA2-E	2LS2	8EB2-E	2DY2	6EB3-E	4EA2-E
6EA2-M	2LS2	8EB2-M	9DY3	6EB3-E	4EA2-M
6EA2-E	2LS3	8EB2-M	9DY2	6EB3-E	8EB2-E
6EA2-M	2LS3	8EB2-M	6DY3	6EB3-E	8EB2-M
		8EB2-M	6DY2	6EB3-E	8EB2-3
6EA2-E	4RV2-T	8EB2-M	4DY2	8EB2-E	8EB2-M
6EA2-M	4RV2-T	8EB2-M	2DY2	6EB2-M	8EB2-M
6EA2-E	2RV2-T	6EB2-E	9DY2	6EB2-E	6EB2-E
6EA2-M	2RV2-T	6EB2-E	9DY3	8EB2-E	6EB2-M

INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES

III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES  
(Continued)

E. Compatible Channel Interfaces (Continued)

3. Voice Grade (Continued)

Compatible CIs		Compatible CIs		Compatible CIs	
8EB2-M	6EB2-M	8EB2-M	4RV2-T	8EC2	8EB2-M
8EB2-M	6EB2-M	8EB2-M	4RV2-T	8EC2	6EB2-E
6EB2-E	6EB2-E	8EB2-E	2RV2-T	8EC2	6EB2-M
6EB2-E	6EB2-M	8EB2-M	2RV2-T	8EC2	4SF2
6EB3-E	8EB2-E		4SF2	6EX2-B	2G03
6EB3-E	8EB2-M	8EB2-E	4SF2	6EX2-A	6CS2
6EB2-M	6EB2-M	8EB2-M	4SF3	6EX2-A	4GS2
		83B22-E	4SF3	6EX2-A	2GS2
8EB2-E	2LA2	8EB2-M	4SF2	6EX2-A	2GS3
8EB2-M	2LA2	6EB3-E	4SF2		
		63B2-E	4SF2	6EX2-B	2LA3
8EB2-E	2LB2	6EB2-M	9DY2	6EX2-B	2LB2
8EB2-M	2LB2		9DY3		
		8EC2	6DY2	63X2-B	2LC2
8EB2-E	2LC2	8EC2	6DY3		
8EB2-M	2LC2	2LC2	4DY2	6EX2-B	2L02
		84C2	2DY2	6EX2-B	2L03
8EB2-E	2L03	8EC2	9EA2	6EX2-B	4LR2
8EB2-M	2L03	8EC2	93A3	6EX2-B	2LR2
8EB2-E	6LS2	8EC2	6EA2-E		
8EB2-M	6LS2	8EC2	6EA2-M	6EX2-A	6LS2
8EB2-E	4LS2	8EC2	4EA2-E	6EX2-A	4LS2
8EB2-M	4LS2	8EC2	4EA2-M	6EX2-A	2LS2
8EB2-E	2LS2	8EC2		6EX2-A	2LS3
8EB2-M	2LS2	8EC2	8EB2-E		
8EB2-E	2LS3				
8EB2-M	2LS3	8EC2			

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES  
(Continued)**

**E. Compatible Channel Interfaces (Continued)**

3. Voice Grade (Continued)

Compatible CIs		Compatible CIs		Compatible CIs	
6EX2-A	4SF2	6L02	6LS2	4LR2	4SF2
6EX2-B	4SF2	6L02	4LS2	4LR3	4SF2
		6L02	2LS2		
6G02	6GS2	6L02	2LS3	6LS2	2LA2
6G02	4GS2	4L02	6LS2	4LS2	2LA2
6G02	2GS2	4L02	4LS2	4LS3	2LA2
6G02	2GS3	4L03	6LS2	2LS2	2LA2
4G02	6GS2	4L03	4LS2	2LS3	2LA2
4G03	6GS2	4L03	2LS3		
4G02	4GS2	4L03	2LS2	6LS2	2LB2
4G03	4GS2	4L02	2LS2	4LS2	2LB2
4G02	2CS2	4L02	2LS3	4LS3	2LB2
4G02	2GS3	2L03	2LS3	2LS2	2LB2
4G03	2GS2	2L03	2LS2	2LS3	2LB2
4G03	2GS3	2L02	2LS2		
2G02	2GS2	2L02	2LS3	6LS2	2LC2
2G03	2GS2			4LS2	2LC2
2G02	2GS3	6L02	4SF2	4LS3	2LC2
2G03	2GS3	4L02	4SF2	2LS2	2LC2
		4L03	4SF2	2LS3	2LC2
6G02	4SF2				
4G02	4SF2	4LR2	4LR1	6LS2	2L03
4G03	4SF2	4LR3	24J32	6LS2	2L02
		4LR2	4LR2	4LS2	2L02
6GS2	2G02	4LR2	2LR2	4LS2	2L03
4GS2	2G02	2LR2	2LR2	4LS3	2L02
4GS3	2G02	2LR3	2LR2	4LS3	2L03
4GS2	2G03				

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
 AND CHANNEL CODES**

**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES**  
 (Continued)

**E. Compatible Channel Interfaces (Continued)**

4. Program Audio

<u>Compatible CIs</u>		<u>Compatible CIs</u>		<u>Compatible CIs</u>	
4AH5-B	2PG1-3	4AH6-D	2PG1-3	4DS8-15F	2PG2-5
4AH5-B	2PG1-5	4AH6-D	2PG1-5	4DS8-15G	2PG2-8
4AH5-B	2PG1-8	4AH6-D	2PG1-8	4DS8-15H	2PG2-1
4AH5-B	2PG2-3	4AH6-D	2PG2-3	2PG1-1	2PG1-1
4AH5-B	2PG2-5	4AH6-D	2PG2-5	2PG2-1	2PG2-1
4AH5-B	2PG2-8	4AH6-D	2PG2-8	2PG2-3	2PG1-3
4AH6-C	2PG1-3	4DS8-15E	2PG1-3	2PG2-3	2PG2-3
4AH6-C	2PG1-5	4DS8-15F	2PG1-5	2PG1-5	2PG1-5
4AH6-C	2PG1-8	4DS8-15G	2PG1-8	2PG2-5	2PG2-5
4AH6-C	2PG2-3	4DS8-15H	2PG1-1	2FG23CBB	2PG1-8
8AH6-C	2PG2-5	4DS8-15E	2PG2-3	2PG2-8	2PG2-8

5. Video

<u>Compatible CIs</u>		<u>Compatible CIs</u>	
2TV6-1	4TV6-15	4TV7-5	4TV6-5
	4TV7-15		4TV7-5
2TV6-2	6TV6-15	4TV7-15	4TV6-15
	6TV7-15		4TV7-15
2TV7-1	4TV6-15	6TV6-5	6TV6-5
	4TV7-15		6TV7-5
2TV7-2	6TV6-15	6TV6-15	6TV6-15
	6TV7-15		6TV7-15
4TV6-5	4TV6-5	6TV7-5	6TV6-5
		4TV7-5	6TV7-5
4TV6-15	4TV6-15	6TV7-15	4TV6-15
	4TV7-15		6TV7-15

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES  
(Continued)**

**E. Compatible Channel Interfaces (Continued)**

6. Wideband Analog

<u>Compatible CIs</u>		<u>Compatible CIs</u>		<u>Compatible CIs</u>	
4AH5-B	4AH5-B				
4AH6-C	4AH5-B	4WD5-1	4WD5-2	4WD5-3	4WA5-1
4AH6-C	4AH6-C	4AH6-D	4AH6-D		4WA5-1
	4AH6-D		4DS8-15	4DUB-A, B or C	
		4AH5-B		4AH5-B	
		4AH6-C	4AH5-B		
		4DU8-A, B or C			
		4AH6-D	4DUA-A, B or C		

7. Wideband Data

<u>Compatible CIs</u>		<u>Compatible CIs</u>		<u>Compatible CIs</u>	
8WB5-18S	12WC6-18	10WC6-23		8WB5-50A	10WC6-50
8WB5-19A	10WC6-19	12W6-23S		8WB5-50S	12WB6-50
8WB5-19S	12WC6-19	198WB5-40			
		8WB5-23A			
		8WB5-23S			
		8WB5-40S			

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES**  
(Continued)

**E. Compatible Channel Interfaces (Continued)**

8. Digital Data

<u>Compatible CIs</u>		<u>Compatible CIs</u>		<u>Compatible CIs</u>	
		4DS8-15		6DU5-48	
4DS8-15	4DU8-15+	4DS8-15	6DU5-56	4DU5-96	4DU5-96
4DS8-15	4DU8-24	4DS8-15	6DU5-96	6DU5-24	6DU5-24
4DS8-15	4DU8-48	4DU5-24	4DU5-24	6DU5-48	6DU5-48
4DS8-15	4DU8-56	4DU5-48	4DU5-48	6DU5-56	6DU5-56
4DS8-15	6DU5-96	4DU8-56	4DU5-56	6DU5-96	6DU5-96
4DS8-15	6DU5-24				

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

**INTERFACE GROUPS, TRANSMISSION SPECIFICATIONS  
AND CHANNEL CODES**

**III. CHANNEL INTERFACE AND NETWORK CHANNEL CODES  
(Continued)**

**E. Compatible Channel Interfaces (Continued)**

9. High Capacity

Compatible CIs		Compatible CIs	
		4DS8-15	4DU8-8
4DS0-63	4DS0-63	4DS8-15J	6DU8-A
4DS0-63	6DU8-A, B or C	4DS8-15J	4DU8-A
4DS0-63	4DU8-A, B or C	4DS8-15K	6DU8-B
4DS6-27	4DS6-27	4DS8-15K	4DU8-B
4DS6-27	6DU8-A, BorC	4DS8-15K	6DU8-C
4DS6-27	4DU8-A, BorC	4DS8-15K	4D78-C
4DS6-44	4DS6-44	4DS9-31	4DS9-31
4DS6-44	6DU8-A, BorC	4DS9-31	6DU8-A, B or C
4DS6-44	4DU8-A, BorC	4DS9-4DU8-A, BorC	
4DS8-15	4DS8-15+	4DU9-A, B or C	4DU8- A, BorC
4DS8-15	6DU8-B		

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