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

Type A Transmission Specifications is provided with the following parameters:

(1) Loss Deviation

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

(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-Notched Noise

The maximum C-Notched 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 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

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:

	C-Message Noise*	
Route Miles	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-Notched Noise

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

* For FGC and FGD only Type B2 will be provided. For FGA and FGB, Type B1 or B2 will be provided as set forth in Technical Reference GR-334-CORE.

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 termination, 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 Four-Wire trunk	21 dB	14 dB
- Terminated in Two-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 four-wire trans-mission path at end office)	16 dB	11 dB
· For FGC access (Effective two-wire trans-mission path at end office)	13 dB	6 dB

ACCESS SERVICE

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

15.1 Switched Access Service (Cont'd)

15.1.2 Standard Transmission Specifications (Cont'd)

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

(6) Standard Return Loss

Standard Return Loss, expressed as Echo Return Loss and Signing 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 2804 Hz frequency band relative to the loss at 1004 Hz is
-2.0 dB to +5.5 dB.

ACCESS SERVICE

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

15.1 Switched Access Service (Cont'd)

15.1.2 Standard Transmission Specifications (Cont'd)

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

(3) C-Message Noise

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

	C-Message Noise*	
Route Miles	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-Notched Noise

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

* For FGC and FGD only Type B2 will be provided. For FGA and FGB, Type B1 or B2 will be provided as set forth in Technical Reference GR-334-CORE.

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 (or FGB only)	8 dB	4 dB

ACCESS SERVICE

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

15.1 Switched Access Service (Cont'd)

15.1.3 Data Transmission Parameters

Two types of Data Transmission Parameters, (i.e., Type DA and Type DB, are provided for the Feature Group arrangements). Type DB is provided with FGA, FGB and FGC and also with FGD when FGD is directly routed to the end office. Type DA is only provided with FGD and only when routed via an access tandem. Following are descriptions of each.

(A) Data Transmission Parameters Type DA

(1) Signal to C-Notched Noise Ratio

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

(2) Envelope Delay Distortion

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

604 to 2804 Hz

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

1004 to 2404 Hz

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

(3) Impulse Noise Counts

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

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)

(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

(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.

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) Date Transmission Parameters Type DB

(1) Signal to C-Notched Noise Ratio

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

(2) Envelope Delay Distortion

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

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

(3) Impulse Noise Counts

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

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) Date Transmission Parameters Type DB (Cont'd)

(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, Voice Grade and High Capacity Direct Trunked Transport; and outlines the transmission performance requirements for the Switched Access Service and Special Access Service offerings contained in Sections 6 and 7 preceding.

Transmission performance requirements for Switched Access Service and Special Access Service are described in Section 15.2.1 following. Sections 15.2.2 through 15.2.4 following show the relationship between service designator codes and network channel codes, explains the facility interface (FI) codes that the customer can use when ordering Switched Access Service and Special Access Service and details the various combinations and the Switched Access Service and Special Access Service with which they may be ordered.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance

This section describes the transmission performance requirements for Special Access Services described in Sections 7.4 through 7.11 preceding.

(A) Narrowband Services

(1) Narrowband 1 (NB1)

- Leakage

Remedial action will be initiated when the dc resistance between the conductors in each customer pair or the resistance between individual serving pair conductors and ground is observed to be less than 30000 ohms.

(2) Narrowband 2 (NB2)

- Leakage

Remedial action will be initiated when the dc resistance between the conductors in each serving pair and the resistance between individual serving pair conductors and ground is observed to be less than 30000 ohms.

(3) Narrowband 3 (NB3)

Reserved For Future Use.

(4) Narrowband 4 (NB4)

- Telegraph Distortion

Remedial action will be initiated whenever the telegraph distortion is observed to exceed 9%.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(A) Narrowband Services (Cont'd)

(5) Narrowband 5 (NB5)

- Telegraph Distortion

Remedial action will be initiated whenever the telegraph distortion is observed to exceed 12%.

(6) Narrowband 6 (NB6)

- Telegraph Distortion

The terminal equipment shall deliver no more than 8% telegraph distortion and shall be capable of processing received data signals with up to 35% telegraph distortion.

(7) Narrowband 7 (NB7)

- Telegraph Distortion

The terminal equipment shall deliver no more than 5% telegraph distortion and shall be capable of processing received data signals with up to 40% telegraph distortion.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services

(1) Voice Grade 1 (VG1)

(a) C-Message Noise

The C-Message Noise shall be less than:

Route Miles	Limit (dBrnCO) *	
	Type V1	Type V2
0 - 50	32	38
51 - 100	33	39
101 - 200	35	41
201 - 400	37	43
401 - 1000	39	45

(b) Echo Control

Echo Control, identified as Equal Level Echo Path Loss at four-wire interfaces or Return Loss at two-wire interfaces, and expressed as Echo Return Loss and Singing Return Loss, at either the end user premises or IC terminal location shall not be less than the following limits:

* Where Facility network conditions will support the parameters, Type V1 will be provided. Where the Type V1 parameters cannot be supported, Type V2 will be provided.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(1) Voice Grade 1 (VG1) (Cont'd)

(b) Echo Control (Cont'd)

(i) Effective Two-Wire Transmission

(Four-wire interface at the IC terminal location, two-wire interface at the end user premises.)

	Echo Return Loss	Singing Return Loss
Standard Return Loss (at Two-Wire Interface)	5 dB	2.5 dB
Four-Wire Interface (Equal Level Echo Path Loss)	16 dB	11 dB

(ii) Effective Four-Wire Transmission

(Two-wire interface at the end user premises).

	Echo Return Loss	Singing Return Loss
Two-Wire Interface (Return Loss)	24 dB	18 dB
Four-Wire Interface (Equal Level Echo Path Loss) (For Centrex application, 2 dB pad is "in").	20 dB	14 dB

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(1) Voice Grade 1 (VG1) (Cont'd)

(c) Improved Return Loss

The Return Loss (RL), expressed as Echo Return Loss (ERL) and Singing Return Loss (SRL), on two-wire ports of a four-wire point of interface shall be equal to or greater than:

Standard RL	Improved RL
ERL 5 dB	ERL 20 dB
SRL 2.5 dB	SRL 13.5 dB

(d) Loss Variation

The long term loss variation from the nominal 1004 Hz EML shall not exceed ± 4.0 dB.

(e) Attenuation Distortion

The Attenuation Distortion between 404 Hz and 2804 Hz shall be within -2.0 dB and +10.0 dB with reference to the loss at 1004 Hz (minus equals less loss, plus equals more loss). The Attenuation Distortion between 504 Hz and 2504 Hz shall be within -2.0 dB and +8.0 dB and between 304 Hz and 3004 Hz shall be within -3.0 dB and +12.0 dB.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(2) Voice Grade 2 (VG2)

(a) C-Message Noise

The C-Message Noise shall be less than:

Route Miles	Limit (dBrnCO) *	
	Type V1	Type V2
0 - 50	32	38
51 - 100	33	39
101 - 200	35	41
201 - 400	37	43
401 - 1000	39	45

(b) Echo Control

Echo Control, identified as Equal Level Echo Path Loss at four-wire interfaces or Return Loss at two-wire interfaces, and expressed as Echo Return Loss and Singing Return Loss, at either the end user premises or IC terminal location shall not be less than the following limits:

* Where Facility network conditions will support the parameters, Type V1 will be provided. Where the Type V1 parameters cannot be supported, Type V2 will be provided.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(2) Voice Grade 2 (VG2) (Cont'd)

(b) Echo Control (Cont'd)

(i) Effective Two-Wire Transmission

(Four-wire interface at the IC terminal location, two-wire interface at the end user premises).

	Echo Return Loss	Singing Return Loss
Standard Return Loss (at Two-Wire Interface)	5 dB	2.5 dB
Improved Return Loss (at Two-Wire Interface)	13 dB	8 dB
Four-Wire Interface (Equal Level Echo Path Loss) (For Centrex application, 2 dB pad is "in")	16 dB	11 dB

(ii) Effective Four-Wire Transmission

(Two-wire interface at the end user premises).

	Echo Return Loss	Singing Return Loss
Two-Wire Interface (Return Loss)	24 dB	18 dB
Four-Wire Interface (Equal Level Echo Path Loss)	20 dB	14 dB

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(2) Voice Grade 2 (VG2) (Cont'd)

(c) Improved Return Loss

The Return Loss (RL), expressed as Echo Return Loss (ERL) and Singing Return Loss (SRL), on two-wire ports of a four-wire point of interface shall be equal to or greater than:

Standard RL	Improved RL
ERL 5 dB	ERL 20 dB
SRL 2.5 dB	SRL 13.5 dB

(d) Loss Variation

The long term loss variation from the nominal 1004 Hz EML shall not exceed ± 1.5 dB.

(e) Attenuation Distortion

The Attenuation Distortion between 404 Hz and 2804 Hz shall be within -1.0 dB and +4.0 dB with reference to the loss at 1004 Hz (minus equals less loss, plus equals more loss). The Attenuation Distortion between 304 Hz and 3004 Hz shall be within -1.0 dB and +5.0 dB.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(3) Voice Grade 3 (VG3)

(a) C-Message Noise

The C-Message Noise shall be less than:

Route Miles	Limit (dBrnCO) *	
	Type V1	Type V2
0 - 50	32	38
51 - 100	33	39
101 - 200	35	41
201 - 400	37	43
401 - 1000	39	45

(b) Echo Control

Echo Control, identified as Equal Level Echo Path Loss at four-wire interfaces or Return Loss at two-wire interfaces, and expressed as Echo Return Loss and Singing Return Loss, at either the end user premises or IC terminal location shall not be less than the following limits:

* Where facility network conditions will support the parameters, Type V1 will be provided. Where the Type V1 parameters cannot be supported, Type V2 will be provided.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(3) Voice Grade 3 (VG3) (Cont'd)

(b) Echo Control (Cont'd)

(i) Effective Two-Wire Transmission

(Four-wire interface at the IC terminal location, two-wire interface at the end user premises).

	Echo Return Loss	Singing Return Loss
Standard Return Loss (at Two-Wire Interface)	5 dB	2.5 dB
Improved Return Loss (at Two-Wire Interface)	13 dB	8 dB
Four-Wire Interface (Equal Level Echo Path Loss) (For Centrex application, 2 dB pad is "in").	16 dB	11 dB

(ii) Effective Four-Wire Transmission

(Two-Wire interface at the end user premises).

	Echo Return Loss	Singing Return Loss
Two-Wire Interface (Return Loss)	24 dB	18 dB
Four-Wire Interface (Equal Level Echo Path Loss)	20 dB	14 dB

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(3) Voice Grade 3 (VG3) (Cont'd)

(c) Improved Return Loss

The Return Loss (RL), expressed as Echo Return Loss (ERL) and Singing Return Loss (SRL), on two-wire ports of a four-wire point of interface shall be equal to or greater than:

Standard RL	Improved RL
ERL 5 dB	ERL 20 dB
SRL 2.5 dB	SRL 13.5 dB

(d) Loss Variation

The long term loss variation from the nominal 1004 Hz EML shall not exceed ± 1.5 dB.

(e) Attenuation Distortion

The Attenuation Distortion between 404 Hz and 2804 Hz shall be within -1.0 dB and +3.0 dB with reference to the loss at 1004 Hz (minus equals less loss, plus equals more loss). The Attenuation Distortion between 304 Hz and 3004 Hz shall be within -1.0 dB and +5.0 dB.

(4) Voice Grade 4 (VG4)

Reserved For Future Use.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(5) Voice Grade 5 (VG5)

(a) C-Message Noise

The C-Message Noise shall be less than:

Route Miles	Limit (dBrnCO) *	
	Type V1	Type V2
0 - 50	32	38
51 - 100	33	39
101 - 200	35	41
201 - 400	37	43
401 - 1000	39	45

(b) Echo Control

Echo Control, identified as Equal Level Echo Path Loss at four-wire interfaces or Return Loss at two-wire interfaces, and expressed as Echo Return Loss and Singing Return Loss, at either the end user premises or IC terminal location shall not be less than the following limits:

* Where Facility network conditions will support the parameters, Type V1 will be provided. Where the Type V1 parameters cannot be supported, Type V2 will be provided.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(5) Voice Grade 5 (VG5) (Cont'd)

(b) Echo Control (Cont'd)

(i) Effective Two-Wire Transmission

(Four-wire interface at the IC terminal location, two-wire interface at the end user premises).

	Echo Return Loss	Singing Return Loss
Standard Return Loss (At Two-Wire Interface)	5 dB	2.5 dB
Four-Wire Interface (Equal Level Echo Path Loss)	16 dB	11 dB

(ii) Effective Four-Wire Transmission

(Two-wire interface at the end user premises).

	Echo Return Loss	Singing Return Loss
Two-wire Interface (Return Loss)	24 dB	18 dB
Four-Wire Interface (Equal Level Echo Path Loss) (For Centrex application, 2 dB pad is "in").	20 dB	14 dB

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(5) Voice Grade 5 (VG5) (Cont'd)

(c) Improved Return Loss

The Return Loss (RL), expressed as Echo Return Loss (ERL) and Singing Return Loss (SRL), on two-wire ports of a four-wire point of interface shall be equal to or greater than:

Standard RL	Improved RL
ERL 5 dB	ERL 20 dB
SRL 2.5 dB	SRL 13.5 dB

(d) Loss Variation

The long term loss variation from the nominal 1004 Hz EML shall not exceed ± 1.5 dB.

(e) Attenuation Distortion

The Attenuation Distortion between 404 Hz and 2804 Hz shall be within -1.0 dB and +5.0 dB with reference to the loss at 1004 Hz (minus equals less loss, plus equals more loss).

(f) Signal-to-C-Notched Noise

The Signal-to-C-Notched Noise Ratio shall not be less than 26 dB.

(g) Impulse Noise

The number of impulse noise counts exceeding a threshold of 67 dBrnCO in 15 minutes shall be less than 15.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(6) Voice Grade 6 (VG6)

(a) C-Message Noise

The C-Message Noise shall be less than:

Route Miles	Limit (dBrnCO) *	
	Type V1	Type V2
0 - 50	32	38
51 - 100	33	39
101 - 200	35	41
201 - 400	37	43
401 - 1000	39	45

(b) Improved Return Loss

The Return Loss (RL), expressed as Echo Return Loss (ERL) and Singing Return Loss (SRL), on two-wire ports of a four-wire point of interface shall be equal to or greater than:

Standard RL	Improved RL
ERL 5 dB	ERL 20 dB
SRL 2.5 dB	SRL 13.5 dB

(c) Loss Variation

The long term loss variation from the nominal 1004 Hz EML shall not exceed ± 1.5 dB.

* Where Facility network conditions will support the parameters, Type V1 will be provided. Where the Type V1 parameters cannot be supported, Type V2 will be provided.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(6) Voice Grade 6 (VG6) (Cont'd)

(d) Attenuation Distortion

The Attenuation Distortion between 404 Hz and 2804 Hz shall be within -1.0 dB and +4.0 dB with reference to the loss at 1004 Hz (minus equals less loss, plus equals more loss). The Attenuation Distortion between 504 Hz and 2504 Hz shall be within -1.0 dB and +3.0 dB with reference to the loss at 1004 Hz. The Attenuation Distortion between 304 Hz and 3004 Hz shall be within -1.0 dB and +5.0 dB.

(e) Signal-to-C-Notched Noise

The Signal-to-C-Notched Noise Ratio shall not be less than 30 dB.

(f) Envelope Delay Distortion

The Envelope Delay Distortion (EDD) shall not exceed 700 microseconds between 800 and
2600 Hz.

(g) Impulse Noise

The number of impulse noise counts exceeding a threshold of 67 dBrnCO in 15 minutes shall be less than 15.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(6) Voice Grade 6 (VG6) (Cont'd)

(h) Intermodulation Distortion

The intermodulation distortion based upon the four-tone method shall be such that R2 is not less than 33 dB and R3 not less than 40 dB.

(i) Phase Jitter

The phase jitter over 20-300 Hz shall not exceed 5° peak-to-peak and over 4-300 Hz shall not exceed 10° peak-to-peak.

(j) Frequency Shift

The frequency shift shall not exceed ± 1 Hz.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(7) Voice Grade 7 (VG7)

(a) C-Message Noise

The C-Message Noise shall be less than:

Route Miles	Limit (dBrnCO) *	
	Type V1	Type V2
0 - 50	32	38
51 - 100	33	39
101 - 200	35	41
201 - 400	37	43
401 - 1000	39	45

(b) Echo Control

Echo Control, identified as Equal Level Echo Path Loss at four-wire interfaces or Return Loss at two-wire interfaces, and expressed as Echo Return Loss and Singing Return Loss, at either the end user premises or IC terminal location shall not be less than the following limits:

* Where Facility network conditions will support the parameters, Type V1 will be provided. Where the Type V1 parameters cannot be supported, Type V2 will be provided.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(7) Voice Grade 7 (VG7) (Cont'd)

(b) Echo Control (Cont'd)

(i) Effective Two-Wire Transmission

(Four-wire interface at the IC terminal location, two-wire interface at the end user premises).

	Echo Return Loss	Singing Return Loss
Standard Return Loss (at Two-Wire Interface)	5 dB	2.5 dB
Improved Return Loss (at Two-Wire Interface)	13 dB	8 dB
Four-Wire Interface (Equal Level Echo Path Loss) (For Centrex application, 2 dB pad is "in")	16 dB	11 dB

(ii) Effective Four-Wire Transmission

(Two-wire interface at the end user premises).

	Echo Return Loss	Singing Return Loss
Two-Wire Interface (Return Loss)	24 dB	18 dB
Four-Wire Interface (Equal Level Echo Path Loss)	20 dB	14 dB

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(7) Voice Grade 7 (VG7) (Cont'd)

(c) Improved Return Loss

The Return Loss (RL), expressed as Echo Return Loss (ERL) and Singing Return Loss (SRL), on two-wire ports of a four-wire point of interface shall be equal to or greater than:

Standard RL	Improved RL
ERL 5 dB	ERL 20 dB
SRL 2.5 dB	SRL 13.5 dB

(d) Loss Variation

The long term loss variation from the nominal 1004 Hz EML shall not exceed ± 1.5 dB.

(e) Attenuation Distortion

The Attenuation Distortion between 404 Hz and 2804 Hz shall be within -1.0 dB and +2.0 dB with reference to the loss at 1004 Hz (minus equals less loss, plus equals more loss). The Attenuation Distortion between 304 Hz and 3004 Hz shall be within -1.0 dB and +5.0 dB.

(f) Signal-to-C-Notched Noise

The Signal-to-C-Notched Noise Ratio shall not be less than 30 dB.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(7) Voice Grade 7 (VG7) (Cont'd)

(g) Envelope Delay Distortion

The Envelope Delay Distortion (EDD) shall not exceed 700 microseconds between 800 and 2600 Hz.

(h) Impulse Noise

The number of impulse noise counts exceeding a threshold of 67 dBrnCO in 15 minutes shall be less than 15.

(i) Intermodulation Distortion

The intermodulation distortion based upon the four-tone method shall be such that R2 is not less than 33 dB and R3 not less than 40 dB.

(j) Phase Jitter

The phase jitter over 20-300 Hz shall not exceed 5° peak-to-peak and over 4-300 Hz shall not exceed 10° peak-to-peak.

(k) Frequency Shift

The frequency shift shall not exceed ± 1 Hz.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(8) Voice Grade 8 (VG8)

(a) C-Message Noise

The C-Message Noise shall be less than:

Route Miles	Limit (dBrnCO) *	
	Type V1	Type V2
0 - 50	32	38
51 - 100	33	39
101 - 200	35	41
201 - 400	37	43
401 - 1000	39	45

(b) Echo Control

Echo Control, identified as Equal Level Echo Path Loss at four-wire interfaces or Return Loss at two-wire interfaces, and expressed as Echo Return Loss and Singing Return Loss, at either the end user premises or IC terminal location shall not be less than the following limits:

* Where Facility network conditions will support the parameters, Type V1 will be provided. Where the Type V1 parameters cannot be supported, Type V2 will be provided.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(8) Voice Grade 8 (VG8) (Cont'd)

(b) Echo Control (Cont'd)

(i) Effective Four-Wire Transmission

(Two-wire interface at the end user premises).

	Echo Return Loss	Singing Return Loss
Two-Wire Interface (Return Loss)	24 dB	18 dB
Four-Wire Interface (Equal Level Echo Path Loss) (For Centrex application, 2 dB pad is "in").	20 dB	14 dB

(c) Improved Return Loss

The Return Loss (RL), expressed as Echo Return Loss (ERL) and Singing Return Loss (SRL), on two-wire ports of a four-wire point of interface shall be equal to or greater than:

Standard RL	Improved RL
ERL 5 dB	ERL 20 dB
SRL 2.5 dB	SRL 13.5 dB

(d) Loss Variation

The long term loss variation from the nominal 1004 Hz EML shall not exceed ± 1.5 dB.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(8) Voice Grade 8 (VG8) (Cont'd)

(e) Attenuation Distortion

The Attenuation Distortion between 404 Hz and 2804 Hz shall be within -1.0 dB and +2.0 dB with reference to the loss at 1004 Hz (minus equals less loss, plus equals more loss). The Attenuation Distortion between 304 Hz and 3004 Hz shall be within -1.0 dB and +5.0 dB.

(f) Signal-to-C-Notched Noise

The Signal-to-C-Notched Noise Ratio shall not be less than 32 dB.

(g) Envelope Delay Distortion

The Envelope Delay Distortion (EDD) shall not exceed 700 microseconds between 800 and 2600 Hz.

(h) Impulse Noise

The number of impulse noise counts exceeding a threshold of 67 dBrnCO is 15 minutes shall be less than 15.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(8) Voice Grade 8 (VG8) (Cont'd)

(i) Intermodulation Distortion

The intermodulation distortion based upon the four-tone method shall be such that R2 is not less than 45 dB and R3 not less than 48 dB.

(j) Phase Jitter

The phase jitter over 20-300 Hz shall not exceed 4° peak-to-peak and over 4-300 Hz shall not exceed 9° peak-to-peak.

(k) Frequency Shift

The frequency shift shall not exceed ± 1 Hz.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(9) Voice Grade 9 (VG9)

(a) C-Message Noise

The C-Message Noise shall be less than:

Route Miles	Limit (dBrnCO) *	
	Type V1	Type V2
0 - 50	32	38
51 - 100	33	39
101 - 200	35	41
201 - 400	37	43
401 - 1000	39	45

(b) Improved Return Loss

The Return Loss (RL), expressed as Echo Return Loss (ERL) and Singing Return Loss (SRL), on two-wire ports of a four-wire point of interface shall be equal to or greater than:

Standard RL	Improved RL
ERL 5 dB	ERL 20 dB
SRL 2.5 dB	SRL 13.5 dB

(c) Loss Variation

The long term loss variation from the nominal 1004 Hz EML shall not exceed ± 1.5 dB.

* Where Facility network conditions will support the parameters, Type V1 will be provided. Where the Type V1 parameters cannot be supported, Type V2 will be provided.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(9) Voice Grade 9 (VG9) (Cont'd)

(d) Attenuation Distortion

The Attenuation Distortion between 404 Hz and 2804 Hz shall be within -1.0 dB and +2.0 dB with reference to the loss at 1004 Hz (minus equals less loss, plus equals more loss). The Attenuation Distortion between 304 Hz and 3004 Hz shall be within -3.0 dB and +12.0 dB.

(e) Signal-to-C-Notched Noise

The Signal-to-C-Notched Noise Ratio shall not be less than 34 dB.

(f) Envelope Delay Distortion

The Envelope Delay Distortion (EDD) shall not exceed 700 microseconds between 800 and 2600 Hz.

(g) Impulse Noise

The number of impulse noise counts exceeding a threshold of 67 dBrnCO in 15 minutes shall be less than 15.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(9) Voice Grade 9 (VG9) (Cont'd)

(h) Intermodulation Distortion

The intermodulation distortion based upon the four-tone method shall be such that R2 is not less than 50 dB and R3 not less than 54 dB.

(i) Phase Jitter

The phase jitter over 20-300 Hz shall not exceed 3° peak-to-peak and over 4-300 Hz shall not exceed 8° peak-to-peak.

(j) Frequency Shift

The frequency shift shall not exceed ± 1 Hz.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(10) Voice Grade 10 (VG10)

(a) C-Message Noise

The C-Message Noise shall be less than:

Route Miles	Limit (dBrnCO) *	
	Type V1	Type V2
0 - 50	32	38
51 - 100	33	39
101 - 200	35	41
201 - 400	37	43
401 - 1000	39	45

(b) Improved Return Loss

The Return Loss (RL), expressed as Echo Return Loss (ERL) and Singing Return Loss (SRL), on two-wire ports of a four-wire point of interface shall be equal to or greater than:

Standard RL	Improved RL
ERL 5 dB	ERL 20 dB
SRL 2.5 dB	SRL 13.5 dB

(c) Loss Variation

The long term loss variation from the nominal 1004 Hz EML shall not exceed ± 4 dB.

* Where Facility network conditions will support the parameters, Type V1 will be provided. Where the Type V1 parameters cannot be supported, Type V2 will be provided.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(10) Voice Grade 10 (VG10) (Cont'd)

(d) Attenuation Distortion

The Attenuation Distortion between 404 Hz and 2804 Hz shall be within -2.0 dB and +10.0 dB with reference to the loss at 1004 Hz (minus equals less loss, plus equals more loss). The Attenuation Distortion between 504 Hz and 2504 Hz shall be within -2.0 dB and +8.0 dB with reference to the loss at 1004 Hz. The Attenuation Distortion between 304 Hz and 3004 Hz shall be within -3.0 dB and +12.0 dB.

(e) Signal-to-C-Notched Noise

The Signal-to-C-Notched Noise Ratio shall not be less than 24 dB.

(f) Envelope Delay Distortion

The Envelope Delay Distortion (EDD) shall not exceed 1750 microseconds between 800 and 2600 Hz.

(g) Impulse Noise

The number of impulse noise counts exceeding a threshold of 71 dBrnCO is 15 minutes shall be less than 15.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(B) Voice Grade Services (Cont'd)

(10) Voice Grade 10 (VG10) (Cont'd)

(h) Intermodulation Distortion

The intermodulation distortion based upon the four-tone method shall be such that R2 is not less than 27 dB and R3 not less than 32 dB.

(i) Phase Jitter

The phase jitter over 20-300 Hz shall not exceed 10° peak-to-peak and over 4-300 Hz shall not exceed 15° peak-to-peak.

(j) Frequency Shift

The frequency shift shall not exceed ± 3 Hz.

(11) Voice Grade 11 (VG11)

Reserved For Future Use.

(12) Voice Grade 12 (VG12)

Reserved For Future Use.

(13) Voice Grade 13 (VG13)

Reserved For Future Use.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(C) Program Audio Services

(1) Program Audio 1 (AP1)

(a) Actual Measured Loss (AML)

When the service is initiated, the 1004 Hz AML will be less than 10 dB. With the addition of optional gain conditioning, the initial AML will be 0 ± 0.5 dB. Remedial action will be taken when the loss variation at 1004 Hz exceeds the initial AML by ± 4.0 dB.

(b) Gain/Frequency Distortion

Over the frequency band from 200 to 3500 Hz, the gain at any frequency will be within the range from +3.0 dB to -10.0 dB with respect to the gain 1004 Hz.

(c) Signal-to-Idle Circuit Noise

The ratio of received 1004 Hz signal power to the C-message weighted idle circuit noise will be at least 65 dB. The received signal power level is determined by subtracting the channel AML from +18 dBm (the instantaneous peak signal level).

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(C) Program Audio Services (Cont'd)

(2) Program Audio 2 (AP2)

(a) Actual Measured Loss (AML)

When the service is initiated, the 1004 Hz AML will be less than 32 dB. With the addition of optional gain conditioning, the initial AML will be 0 ± 0.5 dB. Remedial action will be taken when the loss variation at 1004 Hz exceeds the initial AML by ± 4.0 dB.

(b) Gain/Frequency Distortion

Over the frequency band from 100 to 5000 Hz, the gain at any frequency will be 1.0 dB of the gain at 1004 Hz.

(c) Signal-to-Idle Circuit Noise

The ratio of received 1004 Hz signal power to the 15 kHz flat weighted idle circuit noise will be at least 64 dB. The received signal power level is determined by subtracting the channel AML from +18 dBm (the instantaneous peak signal level).

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(C) Program Audio Services (Cont'd)

(3) Program Audio 3 (AP3)

(a) Actual Measured Loss (AML)

When the service is initiated, the 1004 Hz AML will be less than 32 dB. With the addition of optional gain conditioning, the initial AML will be 0 ± 0.5 dB. Remedial action will be taken when the loss variation at 1004 Hz exceeds the initial AML by ± 4.0 dB.

(b) Gain/Frequency Distortion

Over the frequency band from 50 to 8000 Hz, the gain at any frequency will be 1.0 dB of the gain at 1004 Hz.

(c) Signal-to-Idle Circuit Noise

The ratio of received 1004 Hz signal power to the 15 kHz flat weighted idle circuit noise will be at least 62 dB. The received signal power level is determined by subtracting the channel AML from +18 dBm (the instantaneous peak signal level).

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(C) Program Audio Services (Cont'd)

(4) Program Audio 4 (AP4)

(a) Actual Measured Loss (AML)

When the service is initiated, the 1004 Hz AML will be less than 32 dB. With the addition of optional gain conditioning, the initial AML will be 0 ± 0.5 dB. Remedial action will be taken when the loss variation at 1004 Hz exceeds the initial AML by 0 ±. 4.0 dB.

(b) Gain/Frequency Distortion

Over the frequency band from 50 to 15000 Hz, the gain at any frequency will be 1.0 dB of the gain 1004 Hz.

(c) Signal-to-Idle Circuit Noise

The ratio of received 1004 Hz signal power to the 15 kHz flat weighted idle circuit noise will be at least 67 dB. The received signal power level is determined by subtracting the channel AML from +18 dBm (the instantaneous peak signal level).

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(C) Program Audio Services (Cont'd)

(5) Program Audio 5 (AP5)

(a) Actual Measured Loss (AML)

When the service is initiated, the 1004 Hz AML will be less than 12 dB or with the optional gain will be 0 ± 0.5 dB.

(b) Gain/Frequency Distortion

For intraexchange channel, the gain at any frequency in the band 200-3000 Hz will be within 1 dB of the gain at 1004 Hz. For interexchange channels, the gain at any frequency will be within 3 dB of the gain at 1004 Hz.

(c) Signal-to-Idle Circuit Noise

The C-message weighted idle circuit noise will be at least 54 dB below the received power of a 0 dBrn 1004 Hz tone transmitted at the far end.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(C) Program Audio Services (Cont'd)

(6) Program Audio 6 (AP6)

(a) Actual Measured Loss (AML)

When the service is initiated, the 1004 Hz AML will be less than 32 dB or with the optional gain will be 0 ± 0.5 dB.

(b) Gain/Frequency Distortion

For intraexchange channel, the gain at any frequency in the band 100-5000 Hz will be within 1 dB of the gain at 1004 Hz. For interexchange channels, the gain at any frequency will be within 3 dB of the gain at 1004 Hz.

(c) Signal-to-Idle Circuit Noise

The 15KC flat weighted circuit noise will be at least 54 dB below the received power of a 0 dBrn 1004 Hz test tone transmitted at the far end. For interexchange channels, the noise will be at least 49 dB below the test tone level when T-digital carrier is used or 35 dB below when analog carrier is used.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(C) Program Audio Services (Cont'd)

(7) Program Audio 7 (AP7)

(a) Actual Measured Loss (AML)

When the service is initiated, the 1004 Hz AML will be less than 32 dB or with the optional gain will be 0 ± 0.5 dB.

(b) Gain/Frequency Distortion

For intraexchange channel, the gain at any frequency in the band 50-8000 Hz will be within 1 dB of the gain at 1004 Hz. For interexchange channels, the gain at any frequency will be within 3 dB of the gain at 1004 Hz.

(c) Signal-to-Idle Circuit Noise

The 15KC flat weighted circuit noise will be at least 54 dB below the received power of a 0 dBrn 1004 Hz test tone transmitted at the far end. For interexchange channels, the noise will be at least 49 dB below the test tone level when T-digital carrier is used or 35 dB below when analog carrier is used.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(C) Program Audio Services (Cont'd)

(8) Program Audio 8 (AP8)

(a) Actual Measured Loss (AML)

When the service is initiated, the 1004 Hz AML will be less than 32 dB or with the optional gain will be 0 ± 0.5 dB.

(b) Gain/Frequency Distortion

The gain at any frequency in the band from 50 Hz to 15000 Hz will be within 1 dB of the gain at 1004 Hz.

(c) Signal-to-Idle Circuit Noise

The 15KC flat weighted idle circuit noise will be at least 54 dB below the received power of a 0 dBrn 1004 Hz test tone transmitted at the far end.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(C) Program Audio Services (Cont'd)

(9) Program Audio 9 (AP9)

(a) Actual Measured Loss (AML)

When the service is initiated, the 1004 Hz AML will be less than 14 dB or with the optional gain will be 0 ± 0.5 dB.

(b) Gain/Frequency Distortion

The gain at any frequency in the band of 200-3000 Hz shall be within 4 dB of 1004 Hz loss.

(c) Signal-to-Idle Circuit Noise

The C-message weighted idle circuit noise will be less than 34 dBrn.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(C) Program Audio Services (Cont'd)

(10) Program Audio 10 (AP10)

(a) Actual Measured Loss (AML)

When the service is initiated, the 1004 Hz AML will be less than 14 dB or with the optional gain will be 0 ± 0.5 dB.

(b) Gain/Frequency Distortion

The gain at any frequency in the band of 100-5000 Hz shall be within 4 dB of 1004 Hz loss.

(c) Signal-to-Idle Circuit Noise

The C-message weighted idle circuit noise will be less than 34 dBrn.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(C) Program Audio Services (Cont'd)

(11) Program Audio 11 (AP11)

(a) Actual Measured Loss (AML)

When the service is initiated, the 1004 Hz AML will be less than 14 dB or with the optional gain will be 0 ± 0.5 dB.

(b) Gain/Frequency Distortion

The gain at any frequency in the band of 50-8000 Hz shall be within 9 dB of 1004 Hz loss.

(c) Signal-to-Idle Circuit Noise

The C-message weighted idle circuit noise will be at less than 34 dBrn.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(D) Wideband Analog Services

(1) Wideband Analog (WA1)

- Nominal Bandwidth

60 kHz to 108 kHz with pilot slot reserved at 104.08 kHz.

(2) Wideband Analog (WA2)

- Nominal Bandwith

312 kHz to 552 kHz with pilot slot reserved at 315.92 kHz.

(3) Wideband Analog to Digital (WA1T)

- Transmission Performance

Provides two Special Access WA1 channels each with the performance shown for WA1 in (1) preceding.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(E) WATS Access Line Services

(1) Standard Transmission Performance

(a) Loss Deviation

The maximum Loss Deviation of the 1004 Hz loss relative to the Expected Measured Loss (EML) is ±4.0 dB.

(b) Attenuation Distortion

The maximum Attenuation Distortion in the 404 to 2804 Hz frequency band relative to the loss at 1004 Hz is -3.0 dB to +9.0 dB.

(c) C-Message Noise

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

Route Miles	C-Message Noise
less than 50	35 dBrnCO
51 to 100	37 dBrnCO
101 to 200	40 dBrnCO
201 to 400	43 dBrnCO
401 to 1000	45 dBrnCO

(d) Echo Path Loss

When provided in association with a two-wire interface, the Echo Path Loss, expressed as Echo Return Loss (ERL) and Singing Return Loss (SRL), is equal to or greater than:

ERL	6.0 dB
SRL	3.0 dB

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(E) WATS Access Line Services (Cont'd)

(2) Data Transmission Parameters

(a) Signal-to-C-Notched Noise

The minimum Signal-to-C-Notched Noise Ratio is 30 dB.

(b) Envelope Delay Distortion

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

1000 microseconds	604 to 2804 Hz
500 microseconds	1000 to 2404 Hz

(c) Impulse Noise Counts

The Impulse Noise Counts exceeding a 67 dBrnCO 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)	31 dB
Third Order (R3)	34 dB

(e) Phase Jitter

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

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(E) WATS Access Line Services (Cont'd)

(2) Data Transmission Parameters (Cont'd)

(f) Frequency Shift

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

(3) Two-Wire Improved Voice Transmission Performance

(a) Loss Deviation

The maximum Loss Deviation of the 1004 Hz loss relative to the Expected Measured Loss (EML) is -4.0 dB to +4.0 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 +6.0 dB.

(c) C-Message Noise

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

Route Miles	C-Message Noise
less than 50	35 dBrnCO
51 to 100	37 dBrnCO
101 to 200	40 dBrnCO
201 to 400	43 dBrnCO
401 to 1000	45 dBrnCO

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(E) WATS Access Line Services (Cont'd)

(3) Two-Wire Improved Voice Transmission Performance (Cont'd)

(d) Return Loss

The Return Loss, expressed as Echo Return Loss (ERL) and Singing Return Loss (SRL), is equal to or greater than:

ERL	13.0 dB
SRL	6.0 dB

(4) Four-Wire Improved Voice Transmission Performance

(a) Loss Deviation

The maximum Loss Deviation of the 1004 Hz loss relative to the Expected Measured Loss (EML) is -4.0 dB to +4.0 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 +6.0 dB.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(E) WATS Access Line Services (Cont'd)

(4) Four-Wire Improved Voice Transmission Performance (Cont'd)

(c) C-Message Noise

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

Route Miles	C-Message Noise
less than 50	35 dBrnCO
51 to 100	37 dBrnCO
101 to 200	40 dBrnCO
201 to 400	43 dBrnCO
401 to 1000	45 dBrnCO

(d) Echo Path Loss

The Echo Path Loss, expressed as Echo Return Loss (ERL) and Singing Return Loss (SRL), is equal to or greater than:

ERL	16.0 dB
SRL	11.0 dB

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(F) Wideband Digital Services

(1) Wideband Digital (WD1)

- Error-Free Seconds

While in service, the monthly average of the error-free seconds will be equal to or greater than 98.75%.

(2) Wideband Digital (WD2)

- Error-Free Seconds

While in service, the monthly average of the error-free seconds will be equal to or greater than 98.75%.

(3) Wideband Digital (WD3)

- Error-Free Seconds

While in service, the monthly average of the error-free seconds will be equal to or greater than 98.75%.

(4) Wideband Digital (WD4)

- Error-Free Seconds

While in service, the monthly average of the error-free seconds will be equal to or greater than 98.75%.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(G) Digital Data Access Services

(1) Digital Data Access 1 (DA1)

- Error-Free Seconds

While in service, the monthly average of the error-free seconds will be equal to or greater than 99.875%.

(2) Digital Data Access 2 (DA2)

- Error-Free Seconds

While in service, the monthly average of the error-free seconds will be equal to or greater than 99.875%.

(3) Digital Data Access 3 (DA3)

- Error-Free Seconds

While in service, the monthly average of the error-free seconds will be equal to or greater than 99.875%.

(4) Digital Data Access 4 (DA4)

- Error-Free Seconds

While in service, the monthly average of the error-free seconds will be equal to or greater than 99.875%.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.1 Transmission Performance (Cont'd)

(H) High Capacity Services

(1) High Capacity 1 (HC1)

- Error-Free Seconds

While in service, 98.75% of the one-second intervals will be error-free measured over a continuous 24 hour period.

(2) High Capacity 2 (HC2)

Reserved For Future Use.

(3) High Capacity 3 (HC3)

Reserved For Future Use.

(4) High Capacity 4 (HC4)

Reserved For Future Use.

(5) High Capacity 1C (HC1C)

Reserved For Future Use.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.2 Service Designator/Network Channel Code Conversion Table

The following table shows the relationship between the service designator codes (i.e. VG1, NB2, etc.) and the network channel codes that are used for various administrative purposes.

Service Designator Code	Network Channel Code
NB1	NT
NB2	NU
NB4	NW
NB5	NY
NB6	TS
NB7	TT
VG1	LB
VG2	LC
VG3	LD
VG5	LF
VG6	LG
VG7	LH
VG8	LJ
VG9	LK
VG10	LN
AP1	PE
AP2	PF
AP3	PJ
AP4	PK
AP5	MT
AP6	MT
AP7	MT
AP8	MT
AP9	MT
AP10	MT
AP11	MT
WA1	WJ
WA1T	WQ
WA2	WL

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.2 Service Designator/Network Channel Code Conversion Table (Cont'd)

Service Designator Code	Network Channel Code
WALS (Standard)	SE
WALS (Improved)	SF
WD1	WB
WD2	WE
WD3	WF
WD4	WH
DA1	XA
DA2	XB
DA3	XG
DA4	XH
SR1	RB
SR2	RC
SR3	RD
HC1	HC
HC1C	HD
HC2	HE
HC3	HF
HC4	HG

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.3 Facility Interface Codes

This section explains the facility interface codes set forth in Section 15.2.4 following that the IC can specify when ordering Special Access Service. Included is an example which explains the specific characters of the code, a glossary of facility interface codes and impedance levels.

Example: If the IC specifies a 2DC8-3 facility interface at the IC terminal location, it is requesting the following:

2 =	Number of physical wires at IC terminal location
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)

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.3 Facility Interface Codes (Cont'd)

(A) Glossary of Facility Interface Codes and Options

Code		Option	Definition
AB	-		accepts 20 Hz ringing signal at IC point of interface
AC	-		accepts 20 Hz ringing signal at end user network interface
AH	-		analog high capacity interface
	-	B	60 kHz to 108 kHz (12 channels)
	-	C	312 kHz to 552 kHz (60 channels)
	-	D	564 kHz to 3084 kHz (600 channels)
DA	-		data stream in VF frequency band at end user network interface
DB	-		data stream in VF frequency band at IC point of interface location
	-	10	VF for NB4 and NB5
	-	43	VF for 43 Telegraph Carrier type signals, NB4 and NB5
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 IC point of interface
DE	-		DATAPHONE Select-A-Station (and TABS) interface at the end user NI
DO	-		digital interface at IC terminal at the digital signal level zero A (DS-OA)

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.3 Facility Interface Codes (Cont'd)

(A) Glossary of Facility Interface Codes and Options (Cont'd)

Code	Option	Definition
DS	-	digital hierarchy interface
	- 15	1.544 Mbps (DS1) format per PUB 41451 plus D4
	- 15E	8-bit PCM encoded in one 64 kbps of the DS1 signal
	- 15F	8-bit PCM encoded in two 64 kbps of the DS1 signal
	- 15G	8-bit PCM encoded in three 64 kbps of the DS1 signal
	- 15H	14/11-bit PCM encoded in six 64 kbps of the DS1 signal
	- 15J	1.544 Mbps format per PUB 41451
	- 15K	1.544 Mbps format per PUB 41451 plus extended framing format
	- 15L	1.544 Mbps (DS1) with SF signaling
	- 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
	- 56	56.0 kbps
	- 96	9.6 kbps
	- A	1.544 Mbps format per PUB 41451
	- B	1.544 Mbps format per PUB 41451 plus D4
	- C	1.544 Mbps format per PUB 41451 plus extended framing format

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.3 Facility Interface Codes (Cont'd)

(A) Glossary of Facility Interface Codes and Options (Cont'd)

Code		Option	Definition
DX	-		duplex signaling interface at IC POI
DY	-		duplex signaling interface at end user NI
EA	-	E	Type I E&M Lead Signaling. IC at POI or end user at NI originates on E Lead.
EA	-	M	Type I E&M Lead Signaling. IC at POI or end user at NI originates on M Lead.
EB	-	E	Type II E&M Lead Signaling. IC at POI or end user at NI originates on E Lead.
EB	-	M	Type II E&M Lead Signaling. IC at POI or end user at NI originates on M Lead.
EC	-		Type III E&M Signaling at IC terminal POI tandem
EX	-	A	channel unit signaling for loop start or ground start and IC supplies open end (dial tone, etc.) functions
EX	-	B	tandem channel unit signaling for loop start or ground start and IC supplies closed end (dial pulsing, etc.) functions
GO	-		ground start loop signaling - open end function by IC or end user
GS	-		ground start loop signaling - closed end function by IC or 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

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.3 Facility Interface Codes (Cont'd)

(A) Glossary of Facility Interface Codes and Options (Cont'd)

Code		Option	Definition
LC	-		end user loop start loop signaling - Type C OPS registered port open end
LO	-		loop start loop signaling - open end function by IC or end user
LR	-		20 Hz automatic ringdown interface at IC with Telephone Company provided PLAR
LS	-		loop start loop signaling - closed end function by IC or end user
NO	-		no signaling interface, transmission only
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
RV	-	0	reverse battery signaling, one-way operation, originate by IC
	-	T	reverse battery signaling, one-way operation, terminate by IC or end user
SF	-		single frequency signaling with VF band at either IC POI or end user NI
TF	-		telephotograph interface
TT	-		telegraph/teletypewriter interface at either IC POI or end user NI
	-	2	20.0 milliamperes
	-	3	3.0 milliamperes
	-	6	62.5 milliamperes

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.3 Facility Interface Codes (Cont'd)

(A) Glossary of Facility Interface Codes and Options (Cont'd)

Code	Option	Definition
WA -		wideband bandwidth interface at end user NI
-	1	limited bandwidth
-	2	nominal passband from 29000 to 44000 Hz
WB -		wideband data interface at IC POI
-	18S	18.75 kpbs, synchronous
-	19A	up to 19.2 kbps asynchronous
-	19S	19.2 kbps synchronous
-	23A	up to 230.4 kbps, asynchronous
-	23S	230.4 kbps, synchronous
-	40S	40.8 kbps, synchronous
-	50A	up to 50.0 kbps, asynchronous
-	50S	50.0 kbps, synchronous
-	64	64.0 kbps, restored polar
WC -		wideband data interface at end user NI
-	18	18.75 kbps, synchronous
-	19	for 12-wire interface: 19.1 kbps, synchronous for 10-wire interface: up to 19.2 kbps, asynchronous
-	23	up to 230.4 kbps, asynchronous
-	23S	230.4 kbps, synchronous
-	40	40.8 kbps, synchronous
-	50	for 12-wire interface: 50.0 kbps, synchronous for 10-wire interface: up to 50.0 kbps, asynchronous
WD -		wideband bandwidth interface at IC POI
-	1	nominal passband from 300 to 18000 Hz
-	2	nominal passband from 28000 to 44000 Hz
-	3	nominal passband from 29000 to 44000 Hz

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.3 Facility Interface Codes (Cont'd)

(B) Impedance

The nominal reference impedance with which the IC or end user will terminate the channel for the purpose of evaluation transmission performance:

Value (ohms)	Code(s)
110	0
150	1
600	2
900	3 *
1200	4
135	5
75	6
124	7
Variable	8
100	9

* For those interface codes with a four-wire transmission path at the POI at the IC's terminal location, rather than a standard 900 ohm impedance the code (3) denotes an IC provided transmission equipment termination. Such terminations were provided to ICs 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)

15.2.3 Facility Interface Codes (Cont'd)

(C) Digital Hierarchy Facility Interface Codes (4DS9-)

This facility interface is available only to ICs that select the multiplexed four-wire DSX-1 or higher facility interface option at the IC terminal location and provide subsequent system and channel assignment data. The various digital bit rates in the digital hierarchy employ the facility interface code 4DS9 plus the speed options indicated below:

Interface Code And Speed Option	Nominal Bit Rate (Mbps)	Digital Hierarchy Level
4DS9-15	1.544	DS1
4DS9-15L	1.544	DS1
4DS9-31	3.152	DS1C
4DS9-31L	3.152	DS1C
4DS0-63	6.312	DS2
4DS0-63L	6.312	DS2
4DS6-44	44.736	DS3
4DS6-44L	44.736	DS3
4DS6-27	274.176	DS4
4DS6-27L	274.176	DS4

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations

This section identifies the available Facility Interface (FI) Combinations for Special Access Services described in Sections 7.4 through 7.11 preceding.

(A) Narrowband Services

The following table shows the available Facility Interface (FI) Combinations and the Narrowband Services with which they may be ordered.

FI Combinations			Narrowband NB-					
IC		End User	1	2	4	5	6	7
2DC8-3		2DC8-3	X					
2DC8-2		2DC8-1		X				
2DC8-1		2DC8-2		X				
4DS9-	{1}	2DC8-1		X				
4DS9-	{1}	2DC8-2		X				
4AH6-D	{2}	2DC8-2		X				
4AH5-B	{2}	2DC8-1		X				
4AH5-B	{2}	2DC8-2		X				
4AH6-C	{2}	2DC8-2		X				
4AH6-D	{2}	2DC8-1		X				
4AH6-C	{2}	2DC8-1		X				
2TT2-2		2TT2-2			X			
2TT2-3		2TT2-2			X			
4TT2-2		4TT2-2			X			
2TT2-6		4TT2-2			X			
4TT2-6		2TT2-6			X			

{1} See Section 15.2.3(C) for explanation.

{2} Available only to ICs selecting the multiplexed four-wire High Capacity analog facility interface option at the IC terminal location and providing subsequent system and channel assignment data.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(A) Narrowband Services (Cont'd)

FI Combinations		Narrowband NB-					
IC	End User	1	2	4	5	6	7
2DB2-10	2TT2-2			X			
2DB2-43 {3}	2TT2-2			X			
4DB2-10	2TT2-2			X			
4DB2-43 {3}	2TT2-2			X			
2DB2-10	4TT2-2			X			
2DB2-43 {3}	4TT2-2			X			
4DB2-10	4TT2-2			X			
4DB2-43 {3}	4TT2-2			X			
2DB2-43 {3}	2TT2-6			X			
4DB2-43 {3}	2TT2-6			X			
4DS9- {1}	2TT2-2			X			
2DS9- {1}	4TT2-2			X			
4DS9- {1}	2TT2-6			X			
4DS9- {1}	4TT2-6			X			
4AH5-B {2}	2TT2-2			X			
4AH5-B {2}	4TT2-2			X			
4AH5-B {2}	2TT2-6			X			
4AH5-B {2}	4TT2-6			X			
4AH6-C {2}	2TT2-2			X			
4AH6-C {2}	4TT2-2			X			
4AH6-C {2}	2TT2-6			X			
4AH6-C {2}	4TT2-6			X			

{1} See Section 15.2.3(C) for explanation.

{2} Available only to ICs selecting the multiplexed four-wire High Capacity analog facility interface option at the IC terminal location and providing subsequent system and channel assignment data.

{3} Supplemental Channel Assignment information required.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(A) Narrowband Services (Cont'd)

FI Combinations		Narrowband NB-					
IC	End User	1	2	4	5	6	7
4AH6-D {2}	2TT2-2			X			
4AH6-D {2}	4TT2-2			X			
4AH6-D {2}	2TT2-6			X			
4AH6-D {2}	4TT2-6			X			
2DB2-10	10IA2				X		
4DB2-10	10IA2				X		
2DB2-43 {3}	10IA2				X		
4DB2-43 {3}	10IA2				X		
4DS9- {1}	10IA2				X		
4AH5-B {2}	10IA2				X		
4AH6-C {2}	10IA2				X		
4AH6-D {2}	10IA2				X		
2TT2	4TT2					X	
2TT2	2TT2					X	
4TT2	4TT2					X	
10IA2	10IA2						X

{1} See Section 15.2.3(C) for explanation.

{2} Available only to ICs selecting the multiplexed four-wire High Capacity analog facility interface option at the IC terminal location and providing subsequent system and channel assignment data.

{3} Supplemental Channel Assignment information required.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services

The following table shows the available Facility Interface (FI) Combinations and the Voice Grade Services with which they may be ordered.

FI Combinations		Voice Grade VG-								
IC	End User	1	2	3	5	6	7	8	9	10
4AB2	4AC2		X							
4AB3	4AC2		X							
4AB2	2AC2		X							
4AB3	2AC2		X							
2AB2	2AC2		X							
2AB3	2AC2		X							
4AB2	4SF2		X							
4AB3	4SF2		X							
4AH6-D {1}	4AC2		X							
4AH6-D {1}	2AC2		X							
4AHC-C {1}	4AC2		X							
4AH6-C {1}	2AC2		X							
4AH5-B {1}	4AC2		X							
4AH5-B {1}	2AC2		X							
4AH6-D {1}	6DA2					X				X
4AH6-C {1}	6DA2					X				X
4AH5-B {1}	6DA2					X				X
4AH6-D {1}	4DE2				X					
4AH6-C {1}	4DE2				X					
4AH5-B {1}	4DE2				X					

{1} Available only to ICs selecting the multiplexed four-wire High Capacity analog facility interface option at the IC terminal location and providing subsequent system and channel assignment data.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations			Voice Grade VG-							
IC		End User	1	2	3	5	6	7	8	9	10
4AH6-D	{1}	4DX3								X	
4AH6-C	{1}	4DX3								X	
4AH5-B	{1}	4DX3								X	
4AH5-D	{1}	4DX2								X	
4AH6-C	{1}	4DX2								X	
4AH5-B	{1}	4DX2								X	
4AH6-D	{1}	9DY2			X			X	X		
4AH6-D	{1}	9DY3			X			X	X		
4AH6-D	{1}	6DY2			X			X	X		
4AH6-D	{1}	6DY3			X			X	X		
4AH6-D	{1}	4DY2			X			X	X		
4AH6-D	{1}	2DY2			X			X	X		
4AH6-C	{1}	9DY2			X			X	X		
4AH6-C	{1}	9DY3			X			X	X		
4AH6-C	{1}	6DY2			X			X	X		
4AH6-C	{1}	6DY3			X			X	X		
4AH6-C	{1}	4DY2			X			X	X		
4AH6-C	{1}	2DY2			X			X	X		
4AH5-B	{1}	9DY2			X			X	X		
4AH5-B	{1}	9DY3			X			X	X		
4AH5-B	{1}	6DY2			X			X	X		
4AH5-B	{1}	6DY3			X			X	X		
4AH5-B	{1}	4DY2			X			X	X		
4AH5-B	{1}	2DY2			X			X	X		

{1} Available only to ICs selecting the multiplexed four-wire High Capacity analog facility interface option at the IC terminal location and providing subsequent system and channel assignment data.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations			Voice Grade VG-							
IC	End User	1	2	3	5	6	7	8	9	10
4AH6-D {1}	9EA2			X			X	X		
4AH6-D {1}	9EA3			X			X	X		
4AH6-D {1}	6EA2-E			X			X	X		
4AH6-D {1}	6EA2-M			X			X	X	X	
4AH6-D {1}	4EA2-E			X			X	X		
4AH6-D {1}	4EA2-M			X			X	X		
4AH6-C {1}	9EA2			X			X	X		
4AH6-C {1}	9EA3			X			X	X		
4AH6-C {1}	6EA2-E			X			X	X		
4AH6-C {1}	6EA2-M			X			X	X	X	
4AH6-C {1}	4EA2-E			X			X	X		
4AH6-C {1}	4EA2-M			X			X	X		
4AH5-B {1}	9EA2			X			X	X		
4AH5-B {1}	9EA3			X			X	X		
4AH5-B {1}	6EA2-E			X			X	X		
4AH5-B {1}	6EA2-M			X			X	X	X	
4AH5-B {1}	4EA2-E			X			X	X		
4AH5-B {1}	4EA2-M			X			X	X		
4AH6-D {1}	8EB2-E			X			X	X		
4AH6-D {1}	8EB2-M			X			X	X	X	
4AH6-D {1}	6EB2-E			X			X	X		
4AH6-D {1}	6EB2-M			X			X	X		
4AH6-C {1}	8EB2-E			X			X	X		
4AH6-C {1}	8EB2-M			X			X	X	X	

{1} Available only to ICs selecting the multiplexed four-wire High Capacity analog facility interface option at the IC terminal location and providing subsequent system and channel assignment data.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations		Voice Grade VG-								
IC	End User	1	2	3	5	6	7	8	9	10
4AH6-C {1}	6EB2-E			X			X	X		
4AH6-C {1}	6EB2-M			X			X	X		
4AH5-B {1}	8EB2-E			X			X	X		
4AH5-B {1}	8EB2-M			X			X	X	X	
4AH5-B {1}	6EB2-E			X			X	X		
4AH5-B {1}	6EB2-M			X			X	X		
4AH6-D {1}	2G02	X								
4AH6-C {1}	2G02	X								
4AH5-B {1}	2G02	X								
4AH6-D {1}	6GS2			X			X			
4AH6-D {1}	4GS2			X			X			
4AH6-D {1}	2GS3			X			X			
4AH6-D {1}	2GS2	X		X			X			
4AH6-C {1}	6GS2			X			X			

{1} Available only to ICs selecting the multiplexed four-wire High Capacity analog facility interface option at the IC terminal location and providing subsequent system and channel Assignment data.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations		Voice Grade VG-								
IC	End User	1	2	3	5	6	7	8	9	10
4AH6-C {1}	4GS2			X			X			
4AH6-C {1}	2GS3			X			X			
4AH6-C {1}	2GS2	X		X			X			
4AH5-B {1}	6GS2			X			X			
4AH5-B {1}	4GS2			X			X			
4AH5-B {1}	2GS3			X			X			
4AH5-B {1}	2GS2	X		X			X			
4AH6-D {1}	2LA2		X				X			
4AH6-C {1}	2LA2		X				X			
4AH5-B {1}	2LA2		X				X			
4AH6-D {1}	2LB2		X				X			
4AH6-C {1}	2LB2		X				X			
4AH5-B {1}	2LB2		X				X			
4AH6-D {1}	2LC2		X				X			
4AH6-C {1}	2LC2		X				X			
4AH5-B {1}	2LC2		X				X			
4AH6-D {1}	2LO3		X				X			
4AH6-D {1}	2LO2	X								
4AH6-C {1}	2LO3		X				X			
4AH6-C {1}	2LO2	X								
4AH5-B {1}	2LO3		X				X			
4AH5-B {1}	2LO2	X								

{1} Available only to ICs selecting the multiplexed four-wire High Capacity analog facility interface option at the IC terminal location and providing subsequent system and channel Assignment data.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations		Voice Grade VG-								
IC	End User	1	2	3	5	6	7	8	9	10
4AH6-D {1}	4LR2		X							
4AH6-D {1}	2LR2		X							
4AH6-C {1}	4LR2		X							
4AH6-C {1}	2LR2		X							
4AH5-B {1}	4LR2		X							
4AH5-B {1}	2LR2		X							
4AH6-D {1}	6LS2		X	X			X			
4AH6-D {1}	4LS2		X	X			X			
4AH6-D {1}	2LS2	X	X	X			X	X		
4AH6-D {1}	2LS3		X	X			X			
4AH6-C {1}	6LS2		X	X			X			
4AH6-C {1}	4LS2		X	X			X			
4AH6-C {1}	2LS2	X	X	X			X	X		
4AH6-C {1}	2LS3		X	X			X			
4AH5-B {1}	6LS2		X	X			X			
4AH5-B {1}	4LS2		X	X			X			
4AH5-B {1}	2LS2	X	X	X			X	X		
4AH5-B {1}	2LS3		X	X			X			
4AH6-D {1}	4NO2	X	X		X	X	X		X	
4AH6-D {1}	2NO2	X	X		X		X			
4AH6-C {1}	4NO2	X	X		X	X	X		X	
4AH6-C {1}	2NO2	X	X		X		X			
4AH5-B {1}	4NO2	X	X		X	X	X		X	
4AH5-B {1}	2NO2	X	X		X		X			

{1} Available only to ICs selecting the multiplexed four-wire High Capacity analog facility interface option at the IC terminal location and providing subsequent system and channel Assignment data.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations			Voice Grade VG-								
IC		End User	1	2	3	5	6	7	8	9	10
4AH6-D	{1}	4RV2-T			X			X			
4AH6-D	{1}	2RV2-T			X			X			
4AH6-C	{1}	4RV2-T			X			X			
4AH6-C	{1}	2RV2-T			X			X			
4AH5-B	{1}	4RV2-T			X			X			
4AH5-B	{1}	2RV2-T			X			X			
4AH6-D	{1}	4SF2		X	X			X	X	X	
4AH6-C	{1}	4SF2		X	X			X	X	X	
4AH5-B	{1}	4SF2								X	
4AH6-D	{1}	4SF3								X	
4AH6-C	{1}	4SF3								X	
4AH5-B	{1}	4SF3								X	
6DA2	{1}	6DA2									X
6DA2	{1}	4DA2									X
4DA2	{1}	6DA2									X
4DA2	{1}	4DA2									X
4DB2	{1}	6DA2						X			X
4DB2	{1}	4NO2					X				
4DD3	{1}	4DE2				X					
2DD3	{1}	2DE2				X					

{1} Available only to ICs selecting the multiplexed four-wire High Capacity analog facility interface option at the IC terminal location and providing subsequent system and channel Assignment data.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations			Voice Grade VG-								
IC		End User	1	2	3	5	6	7	8	9	10
4DS9-	{1}	4AC2		X							
4DS9-	{1}	2AC2		X							
4DS9-	{1}	6DA2					X				X
4DS9-	{1}	4DE2				X					
4DS9-	{1}	4DX3								X	
4DS9-	{1}	4DX2								X	
4DS9-	{1}	9DY3			X			X	X		
4DS9-	{1}	9DY2			X			X	X		
4DS9-	{1}	6DY3			X			X	X		
4DS9-	{1}	6DY2			X			X	X		
4DS9-	{1}	4DY2			X			X	X		
4DS9-	{1}	2DY2			X			X	X		
4DS9-	{1}	9EA2			X			X	X		
4DS9-	{1}	9EA3			X			X	X		
4DS9-	{1}	6EA2-E			X			X	X		
4DS9-	{1}	6EA2-M			X			X	X	X	
4DS9-	{1}	4EA2-E			X			X	X		
4DS9-	{1}	4EA2-M			X			X	X		
4DS9-	{1}	8EB2-E			X			X	X		
4DS9-	{1}	8EB2-M			X			X	X	X	
4DS9-	{1}	6EB2-E			X			X	X		
4DS9-	{1}	6EB2-M			X			X	X		
4DS9-	{1}	2GO2	X								

{1} See Section 15.2.3(C) for explanation.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations			Voice Grade VG-								
IC		End User	1	2	3	5	6	7	8	9	10
4DS9-	{1}	6GS2			X			X			
4DS9-	{1}	4GS2			X			X			
4DS9-	{1}	2GS2	X		X			X			
4DS9-	{1}	2GS3			X			X			
4DS9-	{1}	2LA2		X				X			
4DS9-	{1}	2LB2		X				X			
4DS9-	{1}	2LC2		X				X			
4DS9-	{1}	2LO2	X								
4DS9-	{1}	2LO3		X				X			
4DS9-	{1}	4LR2		X							
4DS9-	{1}	2LR2		X							
4DS9-	{1}	6LS2		X	X			X			
4DS9-	{1}	4LS2		X	X			X			
4DS9-	{1}	2LS2	X	X	X			X	X		
4DS9-	{1}	2LS3		X	X			X			
4DS9-	{1}	4NO2	X	X		X	X	X		X	
4DS9-	{1}	2NO2	X	X		X		X			
4DS9-	{1}	4RV2-T			X				X		
4DS9-	{1}	2RV2-T			X				X		
4DS9-	{1}	4SF2		X	X			X	X	X	
4DS9-	{1}	4SF3								X	

{1} See Section 15.2.3(C) for explanation.

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations		Voice Grade VG-								
IC	End User	1	2	3	5	6	7	8	9	10
4DX2	4DX2								X	
4DX3	4DX2								X	
4DX2	4DX3								X	
4DX3	4DX3								X	
6DX2	9DY3			X			X	X		
6DX2	9DY2			X			X	X		
6DX2	6DY3			X			X	X		
6DX2	6DY2			X			X	X		
6DX2	4DY2			X			X	X		
6DX2	2DY2			X			X	X		
4DX2	9DY3			X			X	X		
4DX3	9DY3			X			X	X		
4DX2	9DY2			X			X	X		
4DX3	9DY2			X			X	X		
4DX2	6DY3			X			X	X		
4DX3	6DY3			X			X	X		
4DX2	6DY2			X			X	X		
4DX3	6DY2			X			X	X		
4DX2	4DY2			X			X	X		
4DX3	4DY2			X			X	X		
4DX2	2DY2			X			X	X		
4DX3	2DY2			X			X	X		
6DX2	9EA3			X			X	X		
6DX2	9EA2			X			X	X		
6DX2	6EA2-E			X			X	X		
6DX2	6EA2-M			X			X	X		
6DX2	4EA2-E			X			X	X		
6DX2	4EA2-M			X			X	X		

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations		Voice Grade VG-								
IC	End User	1	2	3	5	6	7	8	9	10
4DX2	9EA2			X			X	X		
4DX3	9EA2			X			X	X		
4DX2	9EA3			X			X	X		
4DX3	9EA3			X			X	X		
4DX2	6EA2-E			X			X	X		
4DX3	6EA2-E			X			X	X		
4DX2	6EA2-M			X			X	X	X	
4DX3	6EA2-M			X			X	X	X	
4DX2	4EA2-E			X			X	X		
4DX3	4EA2-E			X			X	X		
4DX2	4EA2-M			X			X	X		
4DX3	4EA2-M			X			X	X		
6DX2	8EB2-E			X			X	X		
6DX2	8EB2-M			X			X	X		
6DX2	6EB2-E			X			X	X		
6DX2	6EB2-M			X			X	X		
4DX2	8EB2-E			X			X	X		
4DX2	8EB2-M			X			X	X	X	
4DX3	8EB2-E			X			X	X		
4DX3	8EB2-M			X			X	X	X	
4DX2	6EB2-E			X			X	X		
4DX2	6EB2-M			X			X	X		
4DX3	6EB2-E			X			X	X		
4DX3	6EB2-M			X			X	X		
4DX2	2LA2		X				X			
4DX3	2LA2		X				X			
2DX3	2LA2		X				X			
4DX2	2LB2		X				X			
4DX3	2LB2		X				X			
2DX3	2LB2		X				X			

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations		Voice Grade VG-								
IC	End User	1	2	3	5	6	7	8	9	10
4DX2	2LC2		X				X			
4DX3	2LC2		X				X			
2DX3	2LC2		X				X			
4DX2	2LO3		X				X			
4DX3	2LO3		X				X			
2DX3	2LO3		X				X			
4DX2	6LS2		X	X			X			
4DX3	6LS2		X	X			X			
4DX3	4LS2		X	X			X			
4DX2	4LS2		X	X			X			
4DX3	2LS3		X	X			X			
4DX2	2LS3		X	X			X			
4DX3	2LS2		X	X			X	X		
4DX2	2LS2		X	X			X	X		
2DX3	2LS2		X	X			X			
2DX3	2LS3		X	X			X			
4DX3	4RV2-T			X			X			
4DX2	4RV2-T			X			X			
4DX3	2RV2-T			X			X			
4DX2	2RV2-T			X			X			
6DX2	4SF2			X			X	X		
4DX2	4SF2		X	X			X	X	X	
4DX3	4SF2		X	X			X	X	X	
4DX2	4SF3								X	
4DX3	4SF3								X	
6EA2-E	4AC2		X							
6EA2-M	4AC2		X							
6EA2-E	2AC2		X							
6EA2-M	2AC2		X							

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations		Voice Grade VG-								
IC	End User	1	2	3	5	6	7	8	9	10
6EA2-E	4DX2								X	
6EA2-M	4DX2								X	
6EA2-E	4DX3								X	
6EA2-M	4DX3								X	
6EA2-E	9DY3			X			X	X		
6EA2-E	9DY2			X			X	X		
6EA2-E	6DY3			X			X	X		
6EA2-E	6DY2			X			X	X		
6EA2-E	4DY2			X			X	X		
6EA2-M	9DY3			X			X	X		
6EA2-M	9DY2			X			X	X		
6EA2-M	6DY3			X			X	X		
6EA2-M	6DY2			X			X	X		
6EA2-M	4DY2			X			X	X		
6EA2-M	2DY2			X			X	X		
6EA2-E	2DY2			X			X	X		
4EA3-E	9DY3			X			X			
4EA3-E	9DY2			X			X			
4EA3-E	6DY3			X			X			
4EA3-E	6DY2			X			X			
4EA3-E	4DY2			X			X			
4EA3-E	2DY2			X			X			

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations		Voice Grade VG-								
IC	End User	1	2	3	5	6	7	8	9	10
6EA2-E	9EA2			X			X	X		
6EA2-E	9EA3			X			X	X		
6EA2-M	9EA2			X			X	X		
6EA2-M	9EA3			X			X	X		
6EA2-E	6EA2-E			X			X	X		
6EA2-E	6EA2-M			X			X	X	X	
6EA2-M	6EA2-E			X			X	X		
6EA2-M	6EA2-M			X			X	X	X	
6EA2-E	4EA2-E			X			X	X		
6EA2-E	4EA2-M			X			X	X		
6EA2-M	4EA2-E			X			X	X		
6EA2-M	4EA2-M			X			X	X		
4EA3-E	6EA2-E			X			X			
4EA3-E	6EA2-M			X			X			
4EA3-E	4EA2-E			X			X			
4EA3-E	4EA2-M			X			X			
4EA3-E	9EA2			X			X			
4EA3-E	9EA3			X			X			
6EA2-E	8EB2-E			X			X	X		
6EA2-E	8EB2-M			X			X	X	X	
6EA2-E	6EB2-E			X			X	X		
6EA2-E	6EB2-M			X			X	X		
6EA2-M	8EB2-E			X			X	X		
6EA2-M	8EB2-M			X			X	X	X	
6EB3-E	6EB2-E			X			X			
6EB3-E	6EB2-M			X			X			
6EA2-M	6EB2-E			X			X	X		
6EA2-M	6EB2-M			X			X	X		
4EA3-E	8EB2-E			X			X			
4EA3-E	8EB2-M			X			X			
4EA3-E	6EB2-E			X			X			
4EA3-E	6EB2-M			X			X			

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations		Voice Grade VG-								
IC	End User	1	2	3	5	6	7	8	9	10
6EA2-E	2LA2		X				X			
6EA2-M	2LA2		X				X			
6EA2-E	2LB2		X				X			
6EA2-M	2LB2		X				X			
6EA2-E	2LC2		X				X			
6EA2-M	2LC2		X				X			
6EA2-E	2LO3		X				X			
6EA2-M	2LO3		X				X			
6EA2-E	6LS2		X	X			X			
6EA2-M	6LS2		X	X			X			
6EA2-E	4LS2		X	X			X			
6EA2-M	4LS2		X	X			X			
6EA2-E	2LS2		X	X			X	X		
6EA2-M	2LS2		X	X			X	X		
6EA2-E	2LS3		X	X			X			
6EA2-M	2LS3		X	X			X			
6EA2-E	4RV2-T		X				X			
6EA2-M	4RV2-T		X				X			
6EA2-E	2RV2-T		X				X			
6EA2-M	2RV2-T		X				X			
6EA2-E	4SF3								X	
6EA2-M	4SF3								X	
6EA2-E	4SF2		X	X			X	X	X	
6EA2-M	4SF2		X	X			X	X	X	
4EA3-E	4SF2			X			X			

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations		Voice Grade VG-								
IC	End User	1	2	3	5	6	7	8	9	10
8EB2-E	4AC2		X							
8EB2-M	4AC2		X							
8EB2-E	2AC2		X							
8EB2-M	2AC2		X							
8EB2-E	4DX2								X	
8EB2-M	4DX2								X	
8EB2-E	4DX3								X	
8EB2-M	4DX3								X	
8EB2-E	9DY3			X			X	X		
8EB2-E	9DY2			X			X	X		
8EB2-E	6DY3			X			X	X		
8EB2-E	6DY2			X			X	X		
8EB2-E	4DY2			X			X	X		
8EB2-E	2DY2			X			X	X		
8EB2-M	9DY3			X			X	X		
8EB2-M	9DY2			X			X	X		
8EB2-M	6DY3			X			X	X		
8EB2-M	6DY2			X			X	X		
8EB2-M	4DY2			X			X	X		
8EB2-M	2DY2			X			X	X		
6EB3-E	9DY2			X			X			
6EB3-E	9DY3			X			X			
6EB3-E	6DY2			X			X			
6EB3-E	6DY3			X			X			
6EB3-E	2DY2			X			X			
6EB3-E	4DY2			X			X			

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations		Voice Grade VG-								
IC	End User	1	2	3	5	6	7	8	9	10
8EB2-E	9EA2			X			X	X		
8EB2-E	9EA3			X			X	X		
8EB2-M	9EA2			X			X	X		
8EB2-M	9EA3			X			X	X		
8EB2-E	6EA2-E			X			X	X		
8EB2-E	6EA2-M			X			X	X	X	
8EB2-M	6EA2-E			X			X	X		
8EB2-M	6EA2-M			X			X	X	X	
8EB2-E	4EA2-E			X			X	X		
8EB2-E	4EA2-M			X			X	X		
8EB2-M	4EA2-E			X			X	X		
8EB2-M	4EA2-M			X			X	X		
6EB3-E	9EA2			X			X			
6EB3-E	9EA3			X			X			
6EB3-E	6EA2-E			X			X			
6EB3-E	6EA2-M			X			X			
6EB3-E	4EA2-E			X			X			
6EB3-E	4EA2-M			X			X			
8EB2-E	8EB2-E			X			X	X		
8EB2-E	8EB2-M			X			X	X	X	
8EB2-M	8EB2-E			X			X	X		
8EB2-M	8EB2-M			X			X	X	X	
6EB2-E	8EB2-E			X			X			
6EB2-E	8EB2-M			X			X			
6EB2-M	8EB2-E			X			X			
6EB2-M	8EB2-M			X			X			
6EB3-E	8EB2-E			X			X			
6EB3-E	8EB2-M			X			X			

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations		Voice Grade VG-								
IC	End User	1	2	3	5	6	7	8	9	10
8EB2-E	2LA2		X				X			
8EB2-M	2LA2		X				X			
8EB2-E	2LB2		X				X			
8EB2-M	2LB2		X				X			
8EB2-E	2LC2		X				X			
8EB2-M	2LC2		X				X			
8EB2-E	2LO3		X				X			
8EB2-M	2LO3		X				X			
8EB2-E	6LS2		X	X			X			
8EB2-M	6LS2		X	X			X			
8EB2-E	4LS2		X	X			X			
8EB2-M	4LS2		X	X			X			
8EB2-E	2LS2		X	X			X	X		
8EB2-M	2LS2		X	X			X	X		
8EB2-E	2LS3		X	X			X			
8EB2-M	2LS3		X	X			X			
8EB2-E	4RV2-T		X				X			
8EB2-M	4RV2-T		X				X			
8EB2-E	2RV2-T		X				X			
8EB2-M	2RV2-T		X				X			
8EB2-E	4SF2		X	X			X	X	X	
8EB2-M	4SF2		X	X			X	X	X	
8EB2-E	4SF3								X	
8EB2-M	4SF3								X	
6EB3-E	4SF2			X			X			

ACCESS SERVICE

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations		Voice Grade VG-								
IC	End User	1	2	3	5	6	7	8	9	10
8EC2	9DY2			X			X	X		
8EC2	9DY3			X			X	X		
8EC2	6DY2			X			X	X		
8EC2	6DY3			X			X	X		
8EC2	4DY2			X			X	X		
8EC2	2DY2			X			X	X		
8EC2	9EA2			X			X	X		
8EC2	9EA3			X			X	X		
8EC2	6EA2-E			X			X	X		
8EC2	6EA2-M			X			X	X		
8EC2	4EA2-E			X			X	X		
8EC2	4EA2-M			X			X	X		
8EC2	8EB2-E			X			X	X		
8EC2	8EB2-M			X			X	X		
8EC2	6EB2-E			X			X	X		
8EC2	6EB2-M			X			X	X		
8EC2	4SF2			X			X	X		
6EX2-A	6GS2			X			X			
6EX2-A	4GS2			X			X			
6EX2-A	2GS2			X			X			
6EX2-A	2GS3			X			X			
6EX2-B	2LA2		X				X			
6EX2-B	2LB2		X				X			
6EX2-B	2LC2		X				X			
6EX2-B	2LO2	X								
6EX2-B	2LO3		X				X			

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations		Voice Grade VG-								
IC	End User	1	2	3	5	6	7	8	9	10
6EX2-B	4LR2		X							
6EX2-B	2LR2		X							
6EX2-A	6LS2		X	X			X			
6EX2-A	4LS2		X	X			X			
6EX2-A	2LS2	X	X	X			X			
6EX2-A	2LS3		X	X			X			
6EX2-A	4SF2		X		X		X			
6EX2-B	4SF2		X							
6GO2	6CS2			X			X			
6GO2	4GS2			X			X			
6GO2	2GS2	X		X			X			
6GO2	2GS3			X			X			
4GO2	6GS2			X			X			
4GO3	6GS2			X			X			
4GO2	4GS2			X			X			
4GO3	4GS2			X			X			
4GO2	2GS2	X		X			X			
4GO2	2GS3			X			X			
4GO3	2GS2	X		X			X			
4GO3	2GS3			X			X			
2GO2	2GS2	X		X			X			
2GO3	2GS2	X		X			X			
2GO2	2GS3			X			X			
2GO3	2GS3			X			X			
6GO2	4SF2			X			X			
4GO2	4SF2			X			X			
4GO3	4SF2			X			X			

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations		Voice Grade VG-								
IC	End User	1	2	3	5	6	7	8	9	10
6GS2	2GO2	X								
4GS2	2GO2	X								
4GS3	2GO2	X								
2GS2	2GO2	X								
2GS3	2GO2	X								
6LO2	6LS2		X	X			X			
6LO2	4LS2		X	X			X			
6LO2	2LS2	X	X	X			X			
6LO2	2LS3		X	X			X			
4LO2	6LS2		X	X			X			
4LO2	4LS2		X	X			X			
4LO3	6LS2		X	X			X			
4LO3	4LS2		X	X			X			
4LO3	2LS3		X	X			X			
4LO3	2LS2	X	X	X			X			
4LO2	2LS2	X	X	X			X			
4LO2	2LS3		X	X			X			
2LO3	2LS3		X	X			X			
2LO3	2LS2	X	X	X			X	X		
2LO2	2LS2	X	X	X			X	X		
2LO2	2LS3		X	X			X			
6LO2	4SF2		X	X			X			
4LO2	4SF2		X	X			X			
4LO3	4SF2		X	X			X			

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations		Voice Grade VG-								
IC	End User	1	2	3	5	6	7	8	9	10
4LR3	4LR2		X							
4LR3	2LR2		X							
4LR2	4LR2		X							
4LR2	2LR2		X							
2LR2	2LR2		X							
2LR3	2LR2		X							
4LR2	4SF2		X							
4LR3	4SF2		X							
6LS2	2LA2		X				X			
4LS2	2LA2		X				X			
4LS3	2LA2		X				X			
2LS2	2LA2		X				X			
2LS3	2LA2		X				X			
6LS2	2LB2		X				X			
4LS2	2LB2		X				X			
4LS3	2LB2		X				X			
2LS2	2LB2		X				X			
2LS3	2LB2		X				X			
6LS2	2LC2		X				X			
4LS2	2LC2		X				X			
4LS3	2LC2		X				X			
2LS2	2LC2		X				X			
2LS3	2LC2		X				X			

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations		Voice Grade VG-								
IC	End User	1	2	3	5	6	7	8	9	10
6LS2	2L03		X				X			
6LS2	2L02	X								
4LS2	2L02	X								
4LS2	2L03		X				X			
4LS3	2L02	X								
4LS3	2L03		X				X			
2LS2	2L02	X								
2LS3	2L02	X								
2LS2	2L03		X				X			
2LS3	2L03		X				X			
6LS2	4SF2		X							
4LS3	4SF2		X							
4NO2	6DA2					X				X
4NO2	4DA2					X				X
4NO2	2DA2					X				
4NO2	4NO2	X	X		X	X	X		X	
4NO2	2NO2	X	X		X		X			
2NO2	2NO2	X	X		X		X			
2NO3	2NO2	X	X		X		X			
4RV2-O	4RV2-T			X			X			
4RV2-O	2RV2-T			X			X			
2RV2-O	2RV2-T			X			X			
4RV2-O	4SF2			X			X			

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

15.2 Special Access Service (Cont'd)

15.2.4 Available Facility Interface (FI) Combinations (Cont'd)

(B) Voice Grade Services (Cont'd)

FI Combinations		Voice Grade VG-								
IC	End User	1	2	3	5	6	7	8	9	10
4SF2	4AC2		X							
4SF3	4DX3								X	
4SF3	4DX2								X	
4SF2	4DX2								X	
4SF2	4DX3								X	
4SF3	9DY3			X			X	X		
4SF2	9DY2			X			X	X		
4SF3	9DY2			X			X	X		
4SF2	9DY3			X			X	X		
4SF3	6DY3			X			X	X		
4SF2	6DY2			X			X	X		
4SF2	6DY3			X			X	X		
4SF3	6DY2			X			X	X		
4SF2	4DY2			X			X	X		
4SF3	4DY2			X			X	X		
4SF3	2DY2			X			X	X		
4SF2	2DY2			X			X	X		