TARIFF DISTRIBUTION

FILE PACKAGE NO.: AL-17-0063

DATE: October 14, 2017

STATE: ALABAMA

EFFECTIVE DATE: 10/14/2017

TYPE OF DISTRIBUTION: Approved

PURPOSE: FCC Wire Center Trial Withdrawal (Carbon Hill, Alabama) (State

Access)

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BELLSOUTH

EFFECTIVE: October 14, 2017

E7. SPECIAL ACCESS (A.K.A. BELLSOUTH SPA) SERVICE

E7.2 Service Description (Cont'd)

E7.2.2 Telegraph (a.k.a. BellSouth SPA Telegraph) Grade Service (Cont'd)

- **Optional Features and Functions**
 - Telegraph Bridging (two-wire and four-wire)

The following table shows the technical specifications packages with which the optional features and functions are available.

> **Available with Technical** Specifications Package TG-2

Telegraph Bridging

E7.2.3 Voice Grade (a.k.a. BellSouth SPA DS0 VG) Service¹

X X

A. Basic Channel Description

A Voice Grade (a.k.a. BellSouth SPA DS0 VG) channel is a channel which provides voice frequency transmission capability in the normal frequency range of 300 to 3000 Hz and may be terminated two-wire or four-wire. Voice Grade (a.k.a. BellSouth SPA DS0 VG) channels are provided between customer designated premises or between a customer designated premises and a Company Hub.

Voice Grade (a.k.a. BellSouth SPA DS0 VG) Channels are classified as Voice Grade/Voice or Voice Grade/Data depending on the suitability of the technical specification package requested by the customer. Voice Grade (a.k.a. BellSouth SPA DS0 VG) Technical Specification Packages 1,2,3,4,5,7,8,9,11 and 12 are suitable for Voice Grade/Voice. The Technical Specification Packages 6 and 10 are suitable for Voice Grade/Data Service.

> Note 1: Effective October 14, 2017, Voice Grade (a.k.a. BellSouth SPA DSO VG) service in the Carbon Hill, Alabama Telephone Company wire center is no longer available.

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E7. SPECIAL ACCESS (A.K.A. BELLSOUTH SPA) SERVICE

E7.2 Service Description (Cont'd)

E7.2.3 Voice Grade (a.k.a. BellSouth SPA DS0 VG) Service¹ (Cont'd)

B. Technical Specifications Packages

								Package VG-				
Parameter	1	2	3	4	5	6	7	8	9	10	11	12
Attenuation Distortion	X	X	X	X	X	X	X	X	X	X	X	X
C-Message Noise	X	X	X	X	X	X	X	X	X	X	X	X
Echo Control	X	X	X		X		X	X			X	X
Envelope Delay												
Distortion						X	X	X	X	X	X	X
Frequency Shift						X	X	X	X	X	X	X
Impulse Noise					X	X	X	X	X	X	X	X
Intermodulation												
Distortion						X	X	X	X	X	X	
Loss Deviation	X	X	X	X	X	X	X	X	X	X	X	X
Phase Jitter						X	X	X	X	X	X	
Signal-to-C												
Message Noise				X								
Signal-to-C												
Notch Noise					X	X	X	X	X	X	X	X

The technical specifications for these parameters are delineated in Technical Reference TR-NPL-000335 and associated Addendum.

> Note 1: Effective October14, 2017, Voice Grade (a.k.a. BellSouth SPA DSO VG) service in the Carbon

Hill, Alabama Telephone Company wire center is no longer available.

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ISSUED: September 14, 2017

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E7. SPECIAL ACCESS (A.K.A. BELLSOUTH SPA) SERVICE

E7.2 Service Description (Cont'd)

E7.2.3 Voice Grade (a.k.a. BellSouth SPA DS0 VG) Service⁴ (Cont'd)

C. Channel Interfaces

The following channel interfaces for Voice Grade (a.k.a. BellSouth SPA DS0 VG) service do not require signaling capability: DA, DB, DD, DE, DS, NO, PR and TF.

The following channel interfaces for Voice Grade (a.k.a. BellSouth SPA DS0 VG) service require signaling capability: AB, AC, CT, DX, EA, EB, EC, EX, GO, GS, LA, LB, LC, LO, LR, LS, RV and SF.

Compatible channel interfaces are set forth in Technical Reference TR-NPL-000054-A and associated addendum following.

D. Optional Features and Functions

- 1. Central Office Bridging Capability
 - a. Voice Bridging (two-wire and four-wire)¹
 - b. Data Bridging (two-wire and four-wire)²
 - c. Telephoto Bridging (two-wire and four-wire)³
 - d. Telemetry and Alarm Bridging
 - Split Band, Active Bridging

2. Conditioning

Conditioning provides more specific transmission characteristics for Voice Grade (a.k.a. BellSouth SPA DS0 VG) services. C-Type conditioning controls attenuation distortion and envelope delay distortion. Sealing Current helps maintain continuity on dry metallic loops.

In addition, a customer may desire that either the attenuation distortion or the envelope delay distortion, or both, be improved to more stringent specifications than those provided for C-Type conditioning. In such cases the customer has the option of ordering either Improved Attenuation Distortion or Improved Envelope Delay Distortion, or both, as desired.

For two-point services, the parameters apply to each service. For multipoint services, the parameters apply to each mid link or end link. C-Type conditioning and D-conditioning may be combined on the same service.

Note 1:	Voice Bridging is intended for use with VG2, 5 and 12. However, it may be used on VG6 and
	VG10 at a customers request.

- **Note 2:** Data Bridging is intended for use with VG6 and VG10. However, it may be used on VG2, 5 and 12 at a customers request.
- **Note 3:** Telephoto Bridging is intended for use on VG11.
- Note 4: Effective October 14, 2017, Voice Grade (a.k.a. BellSouth SPA DSO VG) service in the

Carbon Hill, Alabama Telephone Company wire center is no longer available.

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E7. SPECIAL ACCESS (A.K.A. BELLSOUTH SPA) SERVICE

E7.2 Service Description (Cont'd)

Birmingham, Alabama

E7.2.3 Voice Grade (a.k.a. BellSouth SPA DS0 VG) Service¹ (Cont'd)

- **D.** Optional Features and Functions (Cont'd)
 - 2. Conditioning (Cont'd)
 - a. C-Type Conditioning

C-Type Conditioning is provided for the additional control of attenuation distortion and envelope delay distortion on data services. The attenuation distortion and envelope delay distortion specifications for C-Type Conditioning are:

Attenuation Distortion (Frequency Response) Relative to 1004 Hz

Frequency	Variation
Range (Hz)	(dB)
504 - 2804	-1.0 to + 3.0
304 - 3004	-2.0 to $+6.0$

Envelope Delay Distortion

Frequency	Variation
Range (Hz)	(micro-seconds)
1004 - 2604	Less Than 501
604 - 2604	Less Than 1501
504 - 2804	Less Than 3001

b. Improved Attenuation Distortion

Improved attenuation distortion is provided for additional control of attenuation distortion. The improved attenuation distortion specifications are:

Attenuation Distortion (Frequency Response) Relative to 1004 Hz

Frequency	Variation
Range (Hz)	(dB)
404-2804	-1.0 to +2.0
304-3004	-1.0 to +3.0
3004-3204	-2.0 to $+6.0$

Note 1: Effective October 14, 2017, Voice Grade (a.k.a. BellSouth SPA DSO VG) service in the

Carbon Hill, Alabama Telephone Company wire center is no longer available.

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EFFECTIVE: October 14, 2017

TELECOMMUNICATIONS ALABAMA ISSUED: September 14, 2017 BY: President - Alabama Birmingham, Alabama

BELLSOUTH

E7. SPECIAL ACCESS (A.K.A. BELLSOUTH SPA) SERVICE

E7.2 Service Description (Cont'd)

E7.2.3 Voice Grade (a.k.a. BellSouth SPA DS0 VG) Service¹ (Cont'd)

- Optional Features and Functions (Cont'd)
 - Conditioning (Cont'd)
 - c. Improved Envelope Delay Distortion

Improved envelope delay distortion is provided for additional control of envelope distortion. The improved envelope delay distortion specifications are:

Envelope Delay Distortion

Frequency	Variation			
Range (Hz)	(micro-seconds)			
1001-2604	Less Than 101			
604-2604	Less Than 301			
504-2804	Less Than 3001			

d. Sealing Current Conditioning

Sealing Current Conditioning is provided to help maintain continuity on dry metallic loops. It is usually associated with four-wire DA or NO type channel interfaces.

Customer Specified Premises Receive Level

This option allows the customer to specify the receive level at the Point of Termination. The level must be within a specific range of effective four-wire transmission. The ranges are delineated in Technical Reference TR-NPL-000335.

> Note 1: Effective October 14, 2017, Voice Grade (a.k.a. BellSouth SPA DSO VG) service in the Carbon Hill, Alabama Telephone Company wire center is no longer available.

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E7. SPECIAL ACCESS (A.K.A. BELLSOUTH SPA) SERVICE

E7.2 Service Description (Cont'd)

E7.2.3 Voice Grade (a.k.a. BellSouth SPA DS0 VG) Service¹ (Cont'd)

- **D.** Optional Features and Functions (Cont'd)
 - 4. Echo Control
 - a. ELEPL 2 ((Equal Level Echo Path Loss)

On Effective Two-Wire Transmission at Four-Wire Point of Termination (applicable to each two-wire port): Provides for a fixed 600 ohm impedance, variable level range and simplex reversal. Company equipment is required at the customer's premises where this option is ordered. Improved Return Loss parameters are delineated in Technical Reference TR-NPL-000335.

b. Improved Return Loss

On Effective Two-Wire Transmission at Two -Wire Point of Termination: provides for more stringent Echo Control specifications. In order for this option to be applicable, the transmission path must be two-wire at one Point of Termination (POT) and two-wire at the other POT. Placement of Company equipment may be required at the customer's premises with two-wire POT. The Improved Return Loss parameters are delineated in Technical Reference TR-NPL-000335.

5. D-Conditioning

D-Conditioning provides transmission characteristics suitable for data communications. Specifically, D-Conditioning provides for the control of Signal to C-Notched Noise Ratio and intermodulation distortion. It is available for two-point services or multipoint services.

The signal to C-Notched Noise Ratio and intermodulation distortion parameters for D-Conditioning are:

- Signal to C-Notched Noise Ratio is equal to or greater than 32dB
- Intermodulation distortion:
- Signal to second order modulation products (R2) is equal to or greater than 38dB
- Signal to third order modulation products (R3) is equal to or greater than 42dB

When a service equipped with D-Conditioning is used for voice communications, the quality of the voice transmission may not be satisfactory. D-Conditioning Transmission characteristics are described in Technical Reference TR-NPL-000335 under the name Data Capability.

6. Telephoto Conditioning

Telephoto Conditioning provides transmission characteristics suitable for telephotographic communications. Specifically, Telephoto Conditioning is provided for the control of attenuation distortion and envelope delay distortion on Telephotographic services. The attenuation distortion and envelope delay distortion parameters for telephoto conditioning are:

Note 1: Effective October 14, 2017, Voice Grade (a.k.a. BellSouth SPA DSO VG) service in the Carbon Hill, Alabama Telephone Company wire center is no longer available.

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EFFECTIVE: October 14, 2017

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E7. SPECIAL ACCESS (A.K.A. BELLSOUTH SPA) SERVICE

E7.2 Service Description (Cont'd)

E7.2.3 Voice Grade (a.k.a. BellSouth SPA DS0 VG) Service¹ (Cont'd)

- **D.** Optional Features and Functions (Cont'd)
 - 6. Telephoto Conditioning (Cont'd)

Attenuation Distortion (1004 Hz Reference)

Frequency	Variation
Range (Hz)	(dB)
500 - 3000	-0.5 to + 1.5
300 - 3200	-1.0 to + 2.5
Envelope Del	ay Distortion
Frequency	Variation
Range (Hz)	(mcs)
1000 - 2600	Less Than 111
800 - 2800	Less Than 181

7. Signaling Capability

Signaling Capability provides for the process by which one customer premises alerts another customer premises on the same service with which it wishes to communicate.

Note 1: Effective October 14, 2017, Voice Grade (a.k.a. BellSouth SPA DSO VG) service in the

Carbon Hill, Alabama Telephone Company wire center is no longer available.

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EFFECTIVE: October 14, 2017

E7. SPECIAL ACCESS (A.K.A. BELLSOUTH SPA) SERVICE

E7.2 Service Description (Cont'd)

E7.2.3 Voice Grade (a.k.a. BellSouth SPA DS0 VG) Service¹ (Cont'd)

- **D.** Optional Features and Functions (Cont'd)
 - 8. Improved Termination

The Improved Termination option provides a fixed 600 ohm impedance, a variable level range and simplex reversal, when applicable, at the point of termination. Company equipment is required at the customer's premises when this option is ordered. The Improved Termination parameters are delineated in Technical Reference TR-NPL-000335.

- 9. Simplex Reversal
 - The Simplex Reversal option physically turns over the simplex DC path presented at the four-wire point of termination when LO, LS, GO, GS, & DX signaling is provided at the point of termination.
- 10. BellSouth Customer Network Management Service

BellSouth Customer Network Management Service provides the customer the ability to monitor and reconfigure Voice Grade (a.k.a. BellSouth SPA DS0 VG) service provided by the Company. BellSouth Customer Network Management Service is described in E7.4.12 following. Charges for this feature are contained in E7.5.16 following.

Note 1: Effective October 14, 2017, Voice Grade (a.k.a. BellSouth SPA DSO VG) service in the Carbon Hill, Alabama Telephone Company wire center is no longer available.

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EFFECTIVE: October 14, 2017

E7. SPECIAL ACCESS (A.K.A. BELLSOUTH SPA) SERVICE

E7.2 Service Description (Cont'd)

E7.2.3 Voice Grade (a.k.a. BellSouth SPA DS0 VG) Service¹ (Cont'd)

D. Optional Features and Functions (Cont'd)

The following table shows the technical specifications packages with which the optional features and functions are available.

	C		•			Δv	ailah	ıle w	rith T	Гесhr	ical	
											VG-	
	1	2	3	4	5	6			9	10	11	12
C-Type Conditioning	•	-	3	•	X	X	•	X	-	X		12
Improved Attenuation							11		11	11		
Distortion					X	X	X	X	X	X		
Improved Envelope												
Delay Distortion					X	X	X	X	X	X		
Sealing Current												
Conditioning					X	X						
D-Conditioning						X	X			X		
Central Office												
Bridging Capability		X			X	X				X	X	X
Customer Specified												
Premises Receive												
Level		X	X				X	X	X			
Echo Control												
Improved Return												
Loss		X	X				X					
ELEPL2	X	X	X		X		X					
BellSouth Customer Network Management Service	X	X	X	2	X	X	X	X	X	X	X	
Improved Termination	X	X	X	2	X	X	X	X	X	X	X	X
Simplex Reversal	X	X	X				X	X	X			
Signaling Capability	X	X	X				X	X	X			
Telephoto												
Conditioning										X		

Note 1: Effective October 14, 2017, Voice Grade (a.k.a. BellSouth SPA DSO VG) service in the Carbon Hill, Alabama Telephone Company wire center is no longer available.

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EFFECTIVE: October 14, 2017

E7. SPECIAL ACCESS (A.K.A. BELLSOUTH SPA) SERVICE

E7.2 Service Description (Cont'd)

E7.2.3 Voice Grade (a.k.a. BellSouth SPA DS0 VG) Service¹ (Cont'd)

E. Four-Wire/Two-Wire Conversions

When a customer requests that an effective four-wire channel be terminated with a two-wire channel interface at the customer designated premises, a four-wire to two-wire conversion is required. The rate for the conversion is included as part of the basic Local Channel rate.

- F. WATS Access Line (WAL) (a.k.a. BellSouth SPA WATS Line) service
 - 1. Basic Channel Description

A WATS Access Line (a.k.a. BellSouth SPA WATS Line) service (WAL) provides a channel for voice frequency transmission capability. The service provides a connection between a customer designated premises and a WATS serving office associated with the closed end of BellSouth SWA 8XX Toll Free Dialing Ten Digit Screening Service, WATS (a.k.a. BellSouth SPA WATS Line) or similar services. It is provided for use with BellSouth SWA FGD in the originating and terminating direction and BellSouth SWA FGA or BellSouth SWA FGB in the terminating direction and BellSouth SWA service arrangement features as set forth in Section E6. preceding. The Company is currently unable to provide originating WATS (a.k.a. BellSouth SPA WATS Line) service through BellSouth SWA FGA or BellSouth SWA FGB. Such service will be provided as specified in 2. and 3. following.

The following shall apply to the Company's provision of WATS Access Line (a.k.a. BellSouth SPA WATS Line) service:

- a. When the end user's serving wire center is not a WATS serving office, channel mileage charges will apply for a WATS access line (a.k.a. BellSouth SPA WATS Line) extension (WALE) between the end user's serving wire center and the nearest WATS serving office.
- b. When a customer, other than AT&T, orders originating WATS Access Line (a.k.a. BellSouth SPA WATS Line) service and the end user's serving wire center is a WATS serving office which is not equipped with equal access, the Company will provide the WAL service to the nearest equal access WATS serving office by use of a WALE and the channel mileage charges for the WALE will be waived.
- c. When a customer other than AT&T orders originating WATS Access Line (a.k.a. BellSouth SPA WATS Line) service and the end user's serving wire center is not a WATS serving office and the nearest WATS (serving office is not equipped with equal access, channel mileage charges for a WALE to the nearest WATS (serving office will apply, as indicated in 1. preceding, but the Company will provide an additional WALE to the nearest WATS serving office equipped with equal access and the channel mileage charge for the additional WALE will be waived.

WATS Access Line (a.k.a. BellSouth SPA WATS Line) service is arranged for either originating calling or terminating calling. It is provided with either rotary dial or dual tone multifrequency address signaling and either loop start, ground start, E & M or reverse battery supervisory signaling. The choice of the type of signaling is at the option of the customer and subject to the technical limitations identified in the Technical Reference TR-NPL-000334. WATS Access Line (a.k.a. BellSouth SPA WATS Line) service is provided as an effective two-wire, an effective four-wire or a DS1 (i.e., 1.544 Mbps) transmission path. The DS1 WAL is only available as a trunk side termination on suitably equipped electronic switch, e.g., 1/1A ESS with Digital Carrier Termination (DCT) or DMS-100 with a Line Trunk Unit (LTU).

Note 1: Effective October 14, 2017, Voice Grade (a.k.a. BellSouth SPA DSO VG) service in the Carbon Hill, Alabama Telephone Company wire center is no longer available.

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EFFECTIVE: October 14, 2017

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E7. SPECIAL ACCESS (A.K.A. BELLSOUTH SPA) SERVICE

E7.2 Service Description (Cont'd)

E7.2.3 Voice Grade (a.k.a. BellSouth SPA DS0 VG) Service¹ (Cont'd)

- F. WATS Access Line (WAL) (a.k.a. BellSouth SPA WATS Line) service (Cont'd)
 - 2. Technical Specification Packages

	Package WAL -
Parameters	1 2 3
Attenuation Distortion	X X
Bit error rate	X
C-Message Noise	X X
Echo Control	X X
Envelope Delay Distortion	X X
Frequency Shift	X X
Impulse Noise	X X
Intermodulation Distortion	X X
Loss Deviation	X X
Phase Jitter	X X
Signal-to-C Notch Noise	X X

The technical specifications are delineated in Technical Reference TR-NPL-000334.

3. The following interfaces are available with WAL Service:

LO, LS, DS, GO, GS, RV, EA, EB

Compatible channel interfaces are set forth in Technical Reference TR-NPL-000334

- 4. Optional Features and Functions
 - a. Two-wire and four-wire Central Office bridging capability.
 - b. Improved two-wire voice transmission specifications.
 - c. Certain other options associated with WAL services such as WATS (a.k.a. BellSouth SPA WATS Line) Access Line Nonchargeable Termination Options and Common Switching Optional Features are available as defined in Section E6. preceding.
 - d. One-way or Two-way Capability

E7.2.4 Wired Music Service²

A. Basic Channel Description

A Wired Music channel is a channel specified in bandwidth for the transmission of a complex signal voltage. The actual bandwidth is a function of the channel interface selected by the customer. Only one-way transmission is provided. Wired Music channels are provided between customer designated premises and a Company Hub.

Note 1: Effective October 14, 2017, Voice Grade (a.k.a. BellSouth SPA DSO VG) service in the

Carbon Hill, Alabama Telephone Company wire center is no longer available.

Note 2: Effective October 14, 2016, Wired Music Service in the Carbon Hill, Alabama Telephone Company wire center is no longer available.

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