SLC®-2000 Access System

*SPQ*909( ) LP-POTS Channel Unit—
SAC1A00 (*SPQ*909)
SAC1DT0 (*SPQ*909B)

Features/Functions

- Conforms to appropriate industry standards
- Supports *CLASS** services
- Compatible with calling number delivery (CND) and calling name delivery (CNAM) services
- Enhanced inventory
- Extended range (*SPQ*909B)
- Faceplate test access to tip and ring for four channels
- Faceplate BUSY LEDs
- On-hook transmission (OHT)
- Fast forward disconnect
- No option switches
- UL† recognized

* Service mark of Bell Communications Research, Inc.

† Registered trademark of Underwriters Laboratories Inc.

Description

This data sheet describes the *SPQ*909( ) LP-POTS channel unit (COMCODE 107188179, and *SPQ*909B 107714594) and is intended for the end-user of the unit. This data sheet is reissued primarily to add information on the *SPQ*909B channel unit. The *SPQ*909 was designed for low-power (LP) consumption and short loops (tip/ring resistance of 450 ohms). The *SPQ*909B is designed for low-power consumption and longer loops (tip/ring resistance of 700 ohms). Loop range of the *SPQ*909B CU is a minimum of 3000 feet.

The *SPQ*909( ) channel unit is designed for 2-wire, loop-start POTS service, and provides four channels of service. The *SPQ*909( ) is a current feed (CF) channel

unit (CU) intended for operation when installed in a *SLC* -2000 multi-services distant terminal (MSDT), optical network unit (ONU) of the *SLC* -2000 switched digital video (SDV) broadband access system or DDM-2000 FiberReach Narrowband Shelf (NBS) system, or a network interface unit (NIU) of the HFC-2000™ broadband access system. The unit is intended to comply with TR-NWT-000909 and TA-NWT-000909 standards. The *SPQ*909( ) CU has nominal structural and hybrid balance impedances of 600 ohms, 4 dB receive loss, and 2 dB transmit loss.

The channel unit stores a plug-in inventory record in non-volatile memory for reading by a compatible operations support system. The inventory record includes 10-character *COMMON LANGUAGE** *CLEI*, COMCODE, ECI, Function, Loss, and ID codes.

Figure 1 shows the faceplate diagram for the *SPQ*909( ) CU. Table 1 shows the on-hook transmission compatibility. Table 2 lists the electrical and transmission specifications. Table 3 lists the environmental specifications and Table 4 lists the power drain of the *SPQ*909B CU. Table 5 lists the edge connections for the *SPQ*909( ) LP-POTS CU.

Compatibility

The *SPQ*909( ) channel unit is compatible with all current and higher releases of the *SLC*-2000 MSDT, SDV or NBS ONU and the HFC-2000 NIU. To enable the low power feature of the *SPQ*909 unit in MSDT applications, an appropriate MSDT with a low power PIU must be used. Either the AUA434 or AUA436 low power PIU can be used. The appropriate MSDT can be identified by the text, *Group 11 Low-Power modified*, located near the serial number on the front door of the cabinet. The *SPQ*909B CU must be supplied with low voltage, nominal -25 volts, on the backplane of its host.

The far-end termination can be any of the following units.

- *SLC*-2000 *SPQ*®300 channel unit
- *SLC*-2000 *SPQ*®340 channel unit, loop-start only
- AUA38( ) POTS CU
- AUA39 *SPOTS* CU, loop-start only
- *SLC* 96 WP10( ) POTS channel unit
- *SLC* 96 WP36( ) *SPOTS* channel unit, loop-start only
- *5ESS*® switch digital carrier line unit (DCLU)
- *5ESS* switch integrated digital carrier unit (IDCU)

* *COMMON LANGUAGE* is a registered trademark and *CLEI*, *CLLI*, *CLCI*, and *CLFI* are trademarks of Bell Communications Research, Inc.

Specifications

The Table 1 gives the on-hook transmission (OHT) compatibility for the *SPQ*909( ) CU.

Table 1. *SPQ*909( ) POTS CU — On-Hook Transmission Compatibility

ON-HOOK TRANSMISSION COMPATIBILITY			
CO Termination	**Signaling**	**Direction**	**OHT Services CND, MWI, MR**
WP10	LS	COT→RT	✔*
WP10B	LS	COT→RT	✔ *
WP10C	LS	COT→RT	✔*
WP10D	LS	COT↔RT	✔
WP36( )	LS	COT→RT	✔*
*SPQ*300	LS	COT↔RT	✔
*SPQ*340	LS	COT↔RT	✔
INTEGRATED:† POTS CU mode	LS	DCLU↔RT	✔

Legend:

CND — Calling name/number delivery (CND). Individual calling line identification (ICLID) feature of CND transmits number, using frequency shift keying (FSK), during silent ringing interval

MWI — Visual message waiting indication(MWI). Central office (CO) switch transmits FSK to turn on indicator during idle state.

MR — Meter reading.

LS — Loop start (LS) signaling.

* Meter must present off-hook termination when responding to poll.

† Digital carrier line unit (DCLU) or integrated digital carrier unit (IDCU) interface feature of *5ESS* Switch, or other switch with digital loop interface compliant with Bellcore TR-TSY-000008. (Compatibility for MWI on ground start circuits is not covered by TR8.)

Table 2 gives the electrical and transmission specifications for *SPQ*909( ) channel units. The parameters are off-hook unless specified otherwise. The end-to-end values are specified with an *SPQ*300 in the COT, terminated in 900 ohms plus 2 microfarads.

Table 2. *SPQ*909( ) Electrical and Transmission Specifications

Parameter	Value
DC supervisory range(including telset): *SPQ*909 *SPQ*909B	 450 ohms 700 ohms
Loop resistance: *SPQ*909 (up to 500 ft. of AWG 22) *SPQ*909B (up to 3000 ft. of AWG 26)	 0-20 ohms 0-270 ohms
Loop current: *SPQ*909( )	 20 mA to 25 mA
Nominal 1 kHz VF loss off-hook, from CO to RT CU: *SPQ*909( ) *SPQ*909( ) alone	 4 dB 4 dB
Nominal 1 kHz VF loss, off-hook, from RT CU to CO: *SPQ*909( ) *SPQ*909( ) alone	 2 dB 2 dB
Nominal 1 kHz VF loss, on-hook only, between CO and RT CU: *SPQ*909( ), COT-to-RT *SPQ*909( ) alone, RT-to-COT	 5.5 dB 3.5 dB
Return loss at COT (reference Z of 900 ohms + 2.16 µF, *SPQ*909( ) terminated at voice frequencies with 600 ohms. *SPQ*909( )	 ERL > 18 dB, SRL > 10 dB
Return loss at RT (reference Z of 600 ohms, CO terminated with 900 ohms + 2.16 µF: *SPQ*909( )	 ERL > 19 dB, SRL > 11 dB
Hybrid balance measured in bitstream; (RT terminated with 600 ohms): *SPQ*909( )	 ERL > 21 dB, SRL > 16 dB
Structural impedance (hybrid impedance, output impedance)	 600 ohms

Parameter	Value
Minimum longitudinal balance (measured by IEEE Method 455-1985): Frequency 200 Hz 500 Hz 1000 Hz 3000 Hz	 Longitudinal Balance ≥ 45 dB ≥ 45 dB ≥ 45 dB ≥ 40 dB
Idle channel noise	≤ 20 dBrnC
Frequency response (loss relative to 1004 Hz): End to end *SPQ*909( ) alone	 Frequency range 300-3000 Hz; -0.5 dB to +1.0 dB 3200 Hz: -0.5 dB to +1.5 dB 300-3000 Hz; -0.25 dB to +0.5 dB 3200 Hz: -0.25 dB to +0.75 dB
60 Hz Rejection (loss relative to 1004 Hz)	> 20 dB
Cross talk (0 dBm0 input, 200 Hz to 3400 Hz)	-65 dBm0
Impulse noise at a threshold of 47 dBrnC0 for 15 minutes	≤ 15 counts
Data pulse distortion, peak-to-average ratio (P/AR), end to end *SPQ*909( )	 > 90
Single frequency distortion with input of: 0 - 12 kHz, 0 dBm0 1004 - 1020 Hz, 0 dBm0	 < -28 dBm0* < -40 dBm0†
Signal-to-distortion with input of: 0 dBm0 to -30 dBm0 -30 dBm0 to -40 dBm0 -40 dBm0 to -45 dBm0	 > 33 dB > 27 dB > 22 dB
System generated tones 0 < f < 16 kHz	< -50 dBm0
Gain Tracking‡ (relative to gain at 0 dBm0) -37 dBm0 to +3 dBm0 -50 dBm0 to -37 dBm0 -55 dBm0 to -50 dBm0	 ± 0.5 dB max. (± 0.25 dB avg.) ± 1.5 dB max. (± 0.5 dB avg.) ± 3.0 dB max. (± 1.5 dB avg.)

* At any other frequency, 0 to 12 kHz.

† At any other frequency, 0 to 4 kHz.

‡ At 1004 Hz, off-hook.

Table 3 lists the environment specifications.

Table 3. Environmental Specifications

A. Temperature Range (Ambient) 1. Operating, per TR-NWT-000057*: in Lucent cabinet mounted RT, outside ambient temperatures of -40° F with no solar load to +115° F with maximum solar load and maximum power dissipation. Lucent cabinets are designed to assure that the components within do not exceed their rated temperatures for the above conditions. 2. Storage, per TR-NWT-000057: ambient temperatures of -40° to 140° F.
B. Relative Humidity 1. Operating, per TR-NWT-000057. For outside ambient temperature 84° F or less, relative humidity of 5% to 95%. For ambient temperatures above 84° F, the relative humidity is limited to that corresponding to a specific humidity of 0.024 pounds of water per pound of dry air. 2. Storage, per TR-NWT-000057: ambient temperatures 84° F or less, 10% to 95%. For ambient temperatures above 84° F, the relative humidity is limited to that corresponding to a specific humidity of 0.024 pounds of water per pound of dry air.

* Bellcore Technical Reference TR-NWT-000057, Issue 2, January 1993, and all Revisions and Supplements, "*Functional Criteria For Digital Loop Carrier Systems*," Bell Communications Research

Table 4. Power drain for *SPQ*909B POTS CU

Condition	Value
All channels idle MSDT* NIU/ONU†	 3.65 W 0.25 W
Each added channel active (T/R resistance 600 ohms) MSDT NIU/ONU	 0.0 W (average‡) 0.74 W
Each added channel ringing	12 mW

* In MSDT, provides full-time on-hook transmission (OHT).

† In NIU/ONU, provides OHT only following active ringing or open switching interval. Drain of 0.25 W applies when OHT is not provided. Add 0.85 W for each channel while it provides OHT.

‡ One channel active increases drain by 0.1 W; four channels active decreases drain by 0.4 W.

Installation and Testing

There are no switches to set on this unit. Procedures for testing the unit are given in AT&T 363-205-004, *SLC*-2000 *Multi-Services Distant Terminal — User/ Service Manual*.

The SPQ909( ) CU is compatible with mechanized loop testing (MLT) and the pair gain test controller (PGTC) and the extended test controller (XTC in PGTC mode), and in intergrated systems, the test bus control unit (TBCU).

The faceplate jack provides convenient test access to the tip (T) and ring (R) of all four channels (A, B, C, D) through the channel unit faceplate test cord adapter part number CiPT-5 from CI Network Products; (708-806-6300).

Faceplate Features

The *SPQ*909( ) LP-POTS channel unit faceplate is shown in Figure 1. The faceplate jack provides convenient test access to the tip and ring through a channel unit faceplate test cord, part number CiPT-5, available from CI Network Products; (708-806-6300). The following LED indicators are located on the faceplate:

The faceplate LEDs indicate as follows:

- **A BUSY** (Red LED): When lit, indicates that the A channel is busy.
- **B BUSY** (Red LED): When lit, indicates that the B channel is busy.
- **C BUSY** (Red LED): When lit, indicates that the C channel is busy
- **D BUSY** (Red LED): When lit, indicates that the D channel is busy

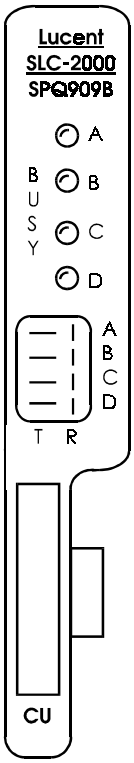

Figure 1. *SPQ*909B Faceplate Diagram

Table 5. Edge Connections For *SPQ*909( ) LP-POTS Channel Unit

Finger	Function
1	Frame Ground
2	Ringing Ground
3	T2 (3rd channel)
4	R2 (3rd channel)
5	T3 (4th channel)
6	R3 (4th channel)
12	LV Battery
13, 17, 19, 20, 21	Circuit Ground
22, 23, 25, 50	+5 Volts DC
26	-48 Volts DC
29	T1 (2nd channel)
30	R1 (2nd channel)
31	T (1st channel)
32	R (1st channel)
49	-5 Volts DC

References

The following documents provide additional information about the use of this channel unit in the *SLC*-2000 Access System, *SLC*-2000 Switched Digital Video System, and HFC-2000 Broadband Access System:

AT&T 363-205-004 *SLC*-2000 *Multi-Services Distant Terminal Feature — User/Service Manual*

AT&T 363-208-000 *SLC*-2000 *Access System Applications, Planning, and Ordering Guide*

AT&T 363-208-001 *SLC*-2000 *Access System User/Service Manual*

AT&T 363-208-200 *SLC*-2000 *Switched Digital Video System Applications, Planning, and Ordering Guide*

AT&T 363-208-202 *SLC*-2000 *Switched Digital Video System ONU User/ Service Manual*

AT&T 363-210-200 HFC-2000 *Broadband Access System Applications, Planning, and Ordering Guide*

AT&T 363-210-201 HFC-2000 *Broadband Access System User/Service Manual*

Technical Assistance

Follow local procedures for obtaining technical assistance. Lucent Technologies also provides in-hours or emergency out-of-hours help for the *SLC* Series 5 Carrier System and the *SLC*-2000 Access System. Call the Lucent Technologies Regional Technical Assistance Center at 1-800-225-RTAC.

Ordering Information

Additional copies of this document (363-005-295) are available from the Customer Information Center — call 1-888-582-3688.

Comments

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