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## ***SLC*<sup>®</sup>-2000 Access System**

### ***SPQ*<sup>®</sup>419 Quad Current Feed Coin Channel Unit — SAC1ARV**

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#### **Features/Functions**

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- Coin-first or dial-tone-first coin service
- Quad channel current feed unit
- On-hook transmission (OHT)
- No option switches
- Faceplate BUSY LED for each channel
- Faceplate test access to tip and ring for each channel
- Enhanced inventory readout
- Conforms to appropriate industry standards

#### **Description**

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This data sheet describes the *SPQ419* quad current feed channel unit (CU) (COMCODE 108057654) usable in a Release 4.2 (or higher) *SLC-2000* Access System remote terminal (RT), and in an optical network unit (ONU), and is intended for the end-user of the unit. The *SPQ419* CU can also be located in a multi-services distant terminal (MSDT). This data sheet is being reissued to update the latest CLEI Code and COMCODE information on the *SPQ419* channel unit and to update compatibility information. See Table 1 for compatible host terminals.

The *SPQ419* quad current feed channel unit is a 2-wire analog voice-frequency (VF) channel unit. The *SPQ419* quad current feed channel unit provides four channels of dial-tone-first (DTF) service using loop-start signaling or coin-first

service using ground-start signaling. Transmission parameters are fixed and the signaling mode is selected automatically. The channel unit stores a plug-in inventory record in non-volatile memory, readable when installed in a terminal that is part of the *SLC-2000* Access System. The inventory record includes 10-character *COMMON LANGUAGE*\* *CLEI* code, *COMCODE*, *ECl*, Function, Loss, and ID codes.

During a switch event to a protection line, the channel unit maintains the existing signaling state. In the event of a permanent carrier failure, the channel unit assumes the on-hook state.

Figure 1 shows the loop current profiles as a function of loop resistance plus telephone set resistance, with backplane battery voltage as a parameter. Figure 2 shows the faceplate diagram and edge connector functions for the *SPQ419* CU. See Table 1 for end-to-end compatibility. Table 2 lists the *SPQ419* CU's signaling and transmission specifications. Table 3 lists the power drain of the *SPQ419* CU and Table 4 lists the environmental specifications. Table 5 shows the edge connections for the *SPQ419* CU.

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

## Compatibility

The *SPQ419* quad current feed channel unit is compatible with all 1C/2C-type and 1D-type coin telephone sets, except that *SPQ419* usage with DTF coin sets is limited to sets with ground lifting.

The *SPQ419* channel unit is end-to-end compatible with *SLC*-2000 Access System *SPQ318* quad current sink channel units, *SPQ333* dual units, and the *AUA33()* and *WP12* (*SLC* 96) single channel units. The *SPQ419* CU is also compatible with local switches operating in TR-TSY-000008\* and TR-NWT-000303† modes. Table 1 gives the end-to-end compatibility for universal and integrated configurations.

For compatibility with host terminals not listed in Table 1, consult customer documentation for those terminals.

**Table 1. End-to-End Compatibility for *SPQ419* Quad Current Feed Coin CU.**

Universal Configurations				
COT	COT Release*	COT Channel Unit	Mode	Usable Channels†
<i>SLC</i> -2000	R3.3	<i>SPQ318</i>	TR-08, INA	4
<i>SLC</i> -2000	R3.3	<i>SPQ333</i>	TR-08, INA	2
<i>SLC</i> -2000	R3.1	<i>AUA33()</i>	TR-08, INA	1
<i>SLC</i> 96	---	<i>WP12</i>	TR-08	1

\* Entry means earliest release supporting channel unit listed.

† With straight-through cross-connects.

Optical Extension Configurations		
RT Release*	ONU	Usable Channels
4.2	MSDT	4
4.4	Narrow Band Shelf	4

\* Bellcore Technical Reference TR-TSY-000008, Issue 2, August 1987, and all Revisions and Supplements, "Digital Interface Between the *SLC*®96 Digital Loop Carrier System And A Local Digital Switch," Bell Communications Research.

† Bellcore Technical Reference GR-303-CORE Issue 1, September 1995, and all Revisions and Supplements, "Integrated Digital Loop Carrier System Generic Requirements, Objectives, and Interface," Bell Communications Research.

<b>Integrated Configurations</b>		
<b>5ESS<sup>®</sup> Interface</b>	<b>Mode</b>	<b>Usable Channels</b>
DCLU/IDCU	TR-08	2*
DCLU/IDCU	TR303	4

\* Second channel must be provisioned for ODD timeslot at switch; third and fourth channels are unusable.

## Specifications

The *SPQ419* quad current feed channel unit conforms to the appropriate criteria of ANSI\*, Bellcore, FCC, GTE, Rural Utilities Service (RUS), and UL† standards.

Table 2 gives the electrical and transmission specifications for the *SPQ419* channel unit. The end-to-end values are specified with an *SPQ318* CU at the COT end.

**Table 2. *SPQ419* Quad Coin CU Electrical and Transmission Specifications ‡**

Parameter	Value
Loop Range *	900 $\Omega$
1 kHz VF Loss, RT CU only	1.0 dB off-hook 4.0 dB on-hook
Input/output impedance (Structural impedance, hybrid impedance)	900 $\Omega$ + 2.16 $\mu$ F
Return loss at RT (reference Z of 900 ohms + 2.16 $\mu$ F) (COT terminated in 900 ohms + 2.16 $\mu$ F)	ERL > 18 dB, SRL > 10 dB
Return loss at COT (reference Z of 900 ohms + 2.16 $\mu$ F) (RT terminated in 900 ohms + 2.16 $\mu$ F)	ERL > 18 dB, SRL > 10 dB
Idle channel noise, end-to-end	$\leq$ 20 dBnc
Frequency response (loss relative to 1004 Hz) End to end, off-hook	at 400, 2800 Hz; - 0.5 dB to + 1.0 dB
End to end, on-hook	at 400, 2800 Hz; - 1.0 dB to + 2.0 dB
60 Hz rejection	$\geq$ 20 dB
Crosstalk (0 dBm0 input, 200 to 3400 Hz)	$\leq$ - 65 dBm0
Impulse noise at a threshold of 47 dBmC0 for 15 min.	$\leq$ 15 counts

\* Registered trademark of American National Standards Institute, Inc.

† Registered trademark of Underwriters Laboratories, Inc.

Parameter	Value
Data pulse distortion (PAR) End to end	$\geq 90$
Single frequency distortion with input of: 0 - 12 kHz, 0 dBm0 1004 - 1020 kHz, 0 dBm0	< - 28 dBm0 at 0 Hz to 12 kHz < - 40 dBm0 at 0 Hz to 4 kHz
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 at 1004 Hz, relative to 0dBm0 - 37 dBm0 to + 3 dBm0 - 50 dBm0 to - 37 dBm0 - 55 dBm0 to - 50 dBm0	$\pm 0.5$ dB max. ( $\pm 0.25$ dB avg.) $\pm 1.0$ dB max. ( $\pm 0.5$ dB avg.) $\pm 3.0$ dB max. ( $\pm 1.5$ dB avg.)
Intermodulation distortion (4-tone method, -13 dBm0 input)	A - B (R2) product > 43 dB 2A - B (R3) product > 44 dB
Overload at the COT and RT	$\leq 0.5$ dB increased loss at + 3 dBm0
Minimum longitudinal balance at the RT <sup>†</sup>	$\geq 58$ dB at 200 Hz, 500 Hz, 1000 Hz $\geq 53$ dB at 3000 Hz

\* Supplying > 23 mA into 550  $\Omega$  coin telephone set.

† Measured by IEEE Method 455-1976

**Table 3. Power drain for SPQ419 Quad Coin Current Feed CU**

Condition	Value
All channels idle	0.9 W
Each added channel active (T/R resistance 600 ohms)	1.4 W
Each added channel ringing	120 mW

‡ Note: Off hook unless specified. End-to-end performance with a SPQ318 CU at the COT.

Figure 1 shows the loop current profiles as a function of loop resistance plus telephone set resistance.

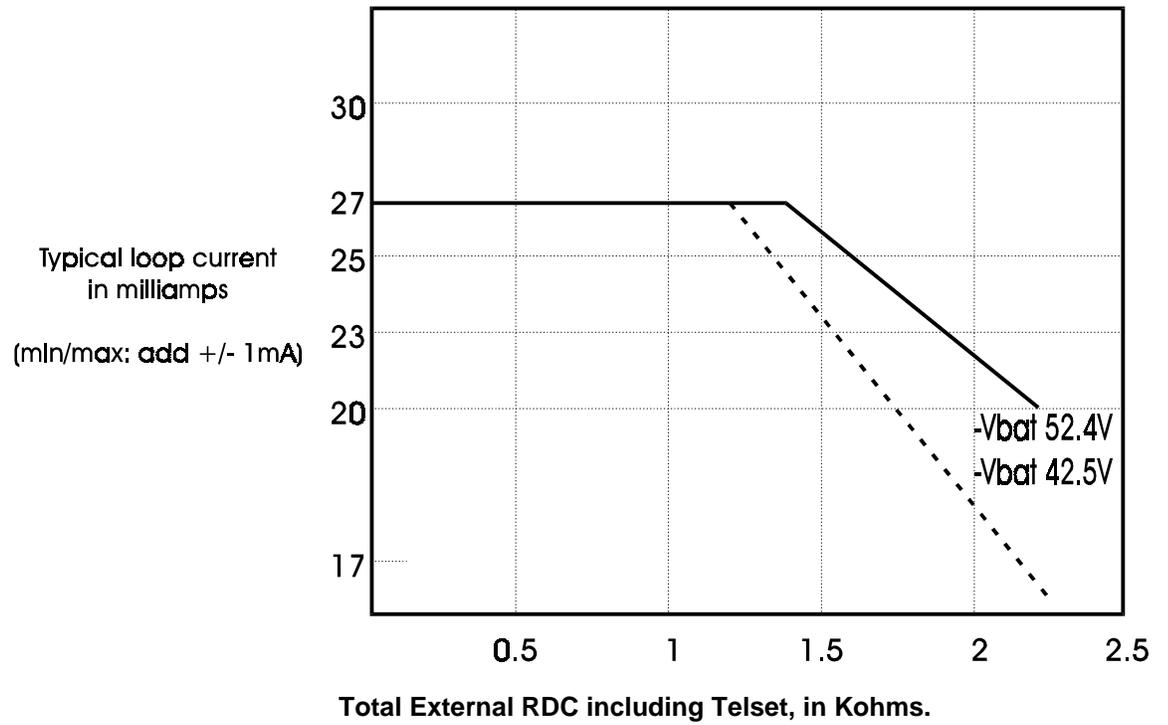


Figure 1. *SPQ419* CU Loop Current Profile

**Table 4. Environmental Specifications**

<p><b>A. Temperature Range (Ambient)</b></p> <ol style="list-style-type: none"> <li>1. Operating, per TR-NWT-000057<sup>*</sup>: in Lucent Technologies cabinet mounted RT, outside ambient temperatures of -40° F (-40° C) with no solar load to +115° F (46° C) with maximum solar load and maximum power dissipation. Lucent Technologies cabinets are designed to assure that the components within do not exceed their rated temperatures for the above conditions.</li> <li>2. Storage, per TR-NWT-000057: ambient temperatures of -40° to 140° F (-40° to 60° C).</li> </ol>
<p><b>B. Relative Humidity</b></p> <ol style="list-style-type: none"> <li>1. Operating, per TR-NWT-000057. For outside ambient temperature 84° F (29° C) or less, relative humidity of 5% to 95%. For ambient temperatures above 84° F (29° C), the relative humidity is limited to that corresponding to a specific humidity of 0.024 pounds of water per pound of dry air.</li> <li>2. Storage, per TR-NWT-000057: ambient temperatures 84° F (29° C) or less, 10% to 95%. For ambient temperatures above 84° F (29° C), the relative humidity is limited to that corresponding to a specific humidity of 0.024 pounds of water per pound of dry air.</li> </ol>

\* 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.

## **Installation and Testing**

There are no switches to set on this unit. Procedures for testing the unit are given in 363-208-001 *SLC -2000 Access System User/Service Manual*.

The SPQ419 CU, in all its applications, is compatible with mechanized loop testing (MLT) and the pair gain test controller (PGTC) and the extended test controller (XTC) test systems.

## Faceplate Features

The SPQ419 quad current feed channel unit faceplate is shown in Figure 2. The faceplate jack provides convenient test access to the tip and ring through a channel unit faceplate test cord adapter part number 400395M, available from Telecom Assistance Group, Inc., West Berlin, New Jersey; (1-800-824-7005). The following LED indicators are located on the faceplate:

**BUSY A** (Red LED): The A channel (channel 1) is busy when lit.

**BUSY B** (Red LED): The B channel (channel 2) is busy when lit.

**BUSY C** (Red LED): The C channel (channel 3) is busy when lit.

**BUSY D** (Red LED): The D channel (channel 4) is busy when lit.

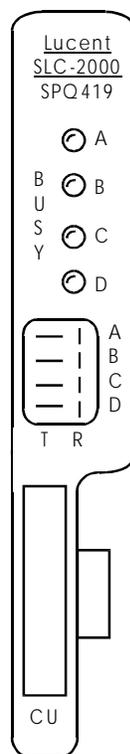


Figure 2. SPQ419 CU Faceplate Diagram

**Table 5. Edge Connections For SPQ419 Quad Current Feed Channel Unit**

<b>Finger</b>	<b>Function</b>
1	Frame Ground
2	Ringing Ground
3	T2 (3rd channel)
4	R2 (3rd channel)
5	T3 (4th channel)
6	R3 (4th channel)
13, 17, 19, 20, 21	Circuit Ground
22, 23, 25, 50	+5 Volts DC
26	-48 Volts DC
27	-RNG (20 Hz)
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*:

- |             |  |
|-------------|--|
| 363-205-004 | <i>SLC-2000 Multi-Services Distant Terminal Feature User/Service and Ordering Manual</i> |
| 363-208-000 | <i>SLC-2000 Access System Application, Planning, and Ordering Guide</i>                  |
| 363-208-001 | <i>SLC-2000 Access System User/Service Manual</i>  |

## Technical Assistance

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

## **Ordering Information**

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Additional copies of this document (363-005-340) are available from the Customer Information Center — call 1-888-582-3688.

## **Comments**

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