4. 965 SUBSCRIBER LOOP ANALYZER

A. Measurements

Function	Range	Resolution	Accuracy
AC Voltage:	0 to 75 VAC 75 to 250 VAC	0.1V 1.0V	0.7V 3%
DC Voltage:	0 to 100 VDC 100 to 350 VDC	0.1V 1.0V	0.5V 3%
DC Current:	0 to 100 mA DC (Zin = 430 Ohms)	0.1 mA	0.3 mA
Resistance[1]:	0 to 100M Ohms	100 Ohms @ 50K Ohms	1% @ 50K Ohms
Loss:	–40 to +10 dBm (Zin = 600 Ohms)	0.1 dB 0.2 dB 200 to 5,000 Hz	
Noise Metallic[2]:	10 to 50 dBrnC 0 to 10 dBrnC (Zin = 600 Ohms)	0.1 dB 0.3 dB	0.5 dB 2.0 dB
Noise to Ground:	40 to 100 dBrnC (Zin = 600 ohms)	0.1 dB	0.5 dB
Longitudinal Balance with Tone Option[3]:	62 to 51 dB 51 to 40 dB	0.1 dB 0.1 dB	2.0 dB 1.0 dB
Opens[1, 4]: (normal mode)	0 to 9.99 Kft 10K ft to 100 Kft	10 ft @ 10 Kft 100 ft	±1% +1/–10%
Tolerance to Leakage, Normal Mode:	>15K Ohm to ground / 190K Ohm to battery		
Opens[1, 4]: (special mode)	0 to 999 ft 1 Kft to 10 Kft	1 ft 100 ft @ 10 Kft	±1% +1/–10%
Tolerance to Leakage, Special Mode:	>1200 Ohms to ground / 18K Ohms to battery		
Frequency Measurement: (during Loss, single frequency only)	20 to 20,000 Hz	1 Hz	2 Hz

Measurements continued...

Function	Range	Resolution	Accuracy
Ground Resistance:	0 to 500 Ohms	1 Ohm	3 Ohms
Loop and C.O. Resistance:	0 to 5000 Ohms	1 Ohm	±10% + 50 Ohms

(read through the REG key assuming on-hook resistance is known)

Caller I.D. Option:	–4 dBm to –32 dBm

Note: 1 Perform a self-calibration before taking the readings.
2 C-message specifications have an additional frequency-dependent tolerance. Refer to "IEEE Standard 743-1984." The 965 far exceeds these tolerances. For most frequencies the total error is less than 0.7 dB.
3 The optional longitudinal balance function obtains a result in agreement with "IEEE STANDARD 455-1985 Standard Test Prodedure for Measuring Longitudinal Balance for Telephone Equipment Operating in the Voice Band" at the specified tolerance for power influence less than approximately 80 dBrnc. When power influence is above 80 dBrnc, the test set reverts to a hybrid of the IEEE method and the method of calculating longitudinal balance by taking the difference between power influence and noise metallic.
4 The splits function does not have accuracy tolerances.

B. Resistance Fault Locate

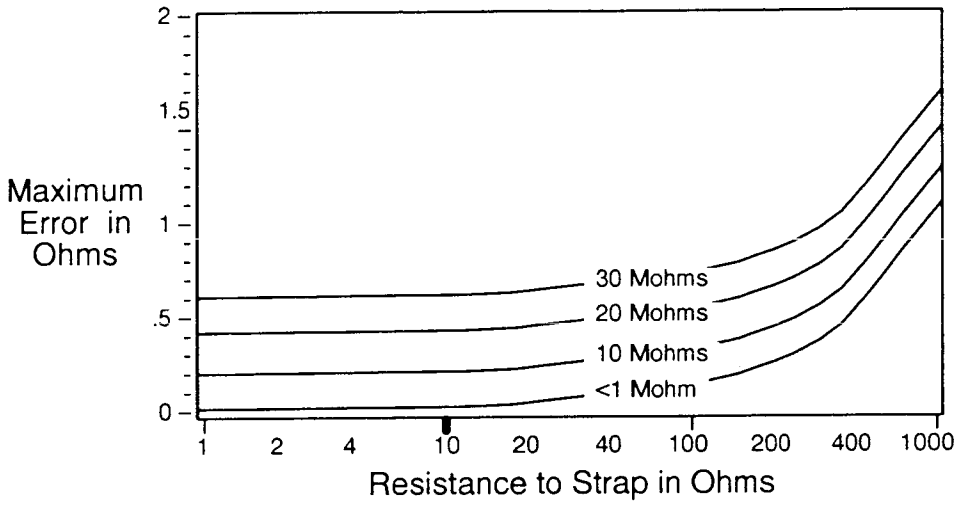
Note: *Accuracy is dependent on power influence noise; the resistance fault specifications are for low noise situations.*

Function	Range	Resolution	Accuracy[1,2]
Fault Range:	Up to 30 M Ohms		
Resistance to Fault:[3]	0 to 9 Ohms	0.01 Ohm	±0.1% RTS ±0.01 Ohm
(@ 70° no noise)	10 to 99 Ohms	0.01 Ohm	±0.1% RTS ±0.01 Ohm
	100 to 999 Ohms	0.1 Ohm	±0.2% RTS
	1K to 7K Ohms	1.0 Ohm	±1.0% RTS
Resistance to Feet Conversion Resolution:[4]	1 ft to 1,000 ft	0.1 ft	
	1K ft to 10K ft	1.0 ft	
	10K ft to 100K ft	10.0 ft	
Temperature Sensor:	0° to 140° F	1° F	±2° F
Noise Immunity:	7VAC limit for all frequencies		

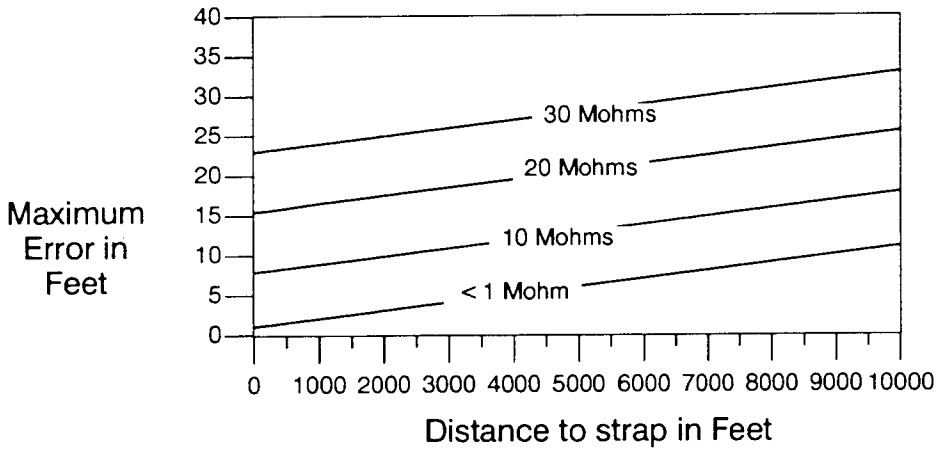
Note: 1 See figures next page for accuracies. All resistance to fault measurement accuracies have an added factor of (2×10^{-8}) RF Ohms.

2 Single pair hookup measurement accuracy is strictly dependent on whether the reference pair is exactly the same electrical length as the faulted pair. Accuracies are doubled for single pair hookup.

3 Accuracy depends on correct temperature setting as well as gauge accuracy of copper. The temperature can be read by the built-in sensor or can be operator-entered.



Accuracy in Ohms for Various Fault Resistances



Accuracy for 24 Gauge for Various Fault Resistances

C. Outputs

Tones	Frequency	Level	Impedance
Identification:	577.5 Hz	6V PK to PK	100 Ohms (Current limited to 6 mA)
Precision Tones:	404, 1004, 2804 ±1 Hz	0 dBm ± 0.2 dB	600 Ohm

Harmonic distortion: <45 dB (up to 10th harmonic)

User-Entered Tone:

Frequency Range	Resolution	Frequency Accuracy	Amplitude Accuracy
2 to 100 Hz	±0.1%	±1%	±1dB
100 to 1 KHz	±1.0%	±1%	±1dB
1 KHz to 20 KHz	±3.0%	±1%	±1dB

Harmonic distortion: <45 dB (up to 10th harmonic)

Dial	Frequency		Remarks
DTMF:	Standard		100 msec on 100 msec off

meets CCITT Q.23 Standard for frequency and amplitude
i.e. ±1 Hz @ –10 dBm ±1 dB

Dial Pulse:	10 pulses per sec	60 msec break 40 msec make 600 msec between digits	R–T

D. Environment

	Operation	Storage
Temperature:	0° to +140° F	–40° to 165° F
Humidity:	0 to 100% (condensing)	0 to 100% (condensing)
Altitude:	0 to 15,000 Feet	0 to 40,000 Feet
Shock:	Can withstand a drop onto a wood surface from a distance of approximately four feet	

E. Dimensions

Height	7.0 in.
Width	10.5 in.
Depth	7.5 in.
Weight	7.5 lbs
Cord length	5 ft

F. Battery Power

The operating time between battery change-out or charges depends on temperature of set and operation modes used.

For non-rechargeable batteries typical operating time is about 200 hours between battery change-out.

For rechargeable batteries typical operating time is about 80 hours between charges.