

## ATMOSPHERIC ENVIRONMENT FOR TELEPHONE EQUIPMENT SPACE

### 1. GENERAL

1.01 This section outlines various atmospheric environments for telephone equipment as currently recommended by Bell Laboratories.

1.02 This section is reissued to add No. 5 Electronic Switching System (ESS) and DMS\*-10 Digital Exchange Switching System atmospheric environment limits. Also, recommendations have been added for wideband temperature operation (WBTO) with fan cycling. Revision arrows are used to emphasize the more significant changes.

### 2. RECOMMENDED ENVIRONMENT

2.01 In general, the recommended environment for telephone equipment that meets the requirements of Section 800-610-164 (and Bell System Technical Reference PUB 51001) "New Equipment-Building System (NEBS), General Equipment Requirements" is:

Operating temperatures: +40°F through  
100°F

Short-term temperature: Minimum +35°F

Short-term temperature: Maximum +120°F

Operating relative humidity: 20 percent  
through 55  
percent

Short-term relative humidity: Minimum 20  
percent

\*Registered trademark of Northern Telecom Ltd.

Short-term relative humidity: Maximum 80  
percent

(Maximum of 0.024 pound of water per pound  
of dry air.)

2.02 Table A lists recommended environments for  
specific systems.

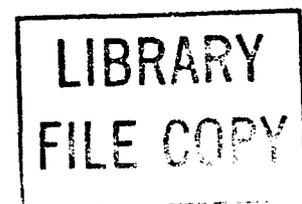
2.03 For air filtration requirements, see Section  
760-230-110.

2.04 The WBTO is recommended for all telephone  
equipment spaces. Under WBTO, no building  
heating or cooling will be provided when room ambi-  
ent temperature is between 65° to 80°F. However,  
during normal operation over the long-term, room  
ambient relative humidity will be controlled between  
20 to 55 percent.

2.05 Fan cycling is permitted in all telephone  
equipment except No. 4 ESS and D1 and D2  
channel banks which require a continuous fan opera-  
tion for proper functioning.

2.06 At present, System Letters SR 80-09-019 and  
RL 80-10-230 cover the details of WBTO. These  
details are being incorporated into Section 760-550-  
208†, which is due to be published in the first quarter  
of 1983.†

†Check Divisional Index 760 for availability.



**TABLE A**  
**RECOMMENDED ATMOSPHERIC ENVIRONMENTS**

TYPE OF EQUIPMENT	°F ROOM AMBIENT TEMPERATURE (NOTE 1)			% RELATIVE HUMIDITY		
	RECOMMENDED OPERATING RANGE	SHORT-TERM (NOTE 2)		RECOMMENDED OPERATING RANGE	SHORT-TERM (NOTE 2)	
		MIN	MAX		MIN	MAX
<b>NEBS (INCLUDES THE FOLLOWING)</b>  <b>SWITCHING</b>  No. 1 ESS 2 3 4 5 Traffic Service Position System (TSPS) Electronic Translator System (ETS) Common Channel Interoffice Signaling (CCIS)  <b>TRANSMISSION (Note 3)</b>  Analog & Digital Carrier Channel Banks Multiplex Office Repeater Line Terminating Loop Carrier & Range Extension VF Repeaters, Signaling, & Terminating Test & Maintenance  <b>RADIO (Note 4)</b>  AR6A TD-3 TH-3  <b>OPERATIONS SUPPORT SYSTEMS (Note 6)</b>  <b>POWER (Note 7)</b>  Inverters and Converters Rectifiers Distribution and Protection Engines and Turbines KS-20472 Batteries (Note 8)	40-100	35	120*	20-55	20	80

See notes at end of table.

\* See Section 800-610-164 and PUB 51001.

♦TABLE A♦ (Contd)

## RECOMMENDED ATMOSPHERIC ENVIRONMENTS

TYPE OF EQUIPMENT	°F ROOM AMBIENT TEMPERATURE (NOTE 1)			% RELATIVE HUMIDITY		
	RECOMMENDED OPERATING RANGE	SHORT-TERM (NOTE 2)		RECOMMENDED OPERATING RANGE	SHORT-TERM (NOTE 2)	
		MIN	MAX		MIN	MAX
<b>OTHER</b>						
TH-1 (Note 5)	70-80	60	90	20-55	20	80
TL	40-120	-20	140	20-55	0	80
TM	40-120	-20	140			
TJ	40-120	40	140			
Step-by-step	40-100	35	120	15-55	15	80
Crossbar	40-100	35	120	15-55	15	80
No. 101 ESS	40-100	35	115	20-55	20	80
DMS-10 Digital Exchange Switching System (Note 9)	55-85	40	120	20-55	20	80
Batteries (except KS-20472)	40-80	35	120	15-55	15	80

**Note 1:** Room ambient temperature is measured at a location 5 feet above the floor and 15 inches in front of the applicable equipment. (At the 7-foot level for NEBS equipment and the same frontal distance, the temperature should be less than 5°F above the specified upper temperature limits.)

**Note 2:** "Short-Term" is defined as a period of time not to exceed 72 consecutive hours and a total of not more than 15 days in 1 year.

**Note 3:** Transmission equipment shall include all transmission and radio equipment that can be or normally is housed in a Telephone Company building and is not specifically classified under the Radio Equipment. This specifically excludes remote terminal cabinets and outside plant structures which do not utilize humidity and temperature environmental control systems.

**Note 4:** These temperature and humidity ranges for TD-3, TH-3, and AR6A radio are acceptable as long as the channel dropping networks and filters are charged with dry air as provided by the KS-20183, KS-16001, or KS-161532 air dryers.

**Note 5:** Temperature of space for this equipment should not vary more than  $\pm 10^{\circ}\text{F}$  within the minimum and maximum limit allowable.

**Note 6:** Environmental requirements for commercial computer equipment associated with Operations Support Systems vary depending upon the manufacturer. For specific recommendations, see Section 760-150-155.

**Note 7:** When power equipment is mounted as an integral part of the user equipment, the limits for the user equipment apply to the associated power equipment.

**Note 8:** Lowering operating temperature reduces battery capacity. See Sections 157-601-701 and 157-629-701 for effect of temperature on battery capacity.

**Note 9:** Temperature in excess of 110°F may prevent taper drive operation temporarily but is not destructive.