

## RELATIVE LEVELS FOR TELEPHONE CIRCUITS

### 1. GENERAL.

1.1 For any telephone circuit whether it be 2-wire, 4-wire or 2-wire/4-wire in the switched telephone network, relative levels at both ends of the telephone circuit for the send direction of transmission are specified. When the telephone circuit loss for each direction of transmission has been determined the receive relative levels can then be specified.

1.2 The relative levels used in a telephone network play an important role in determining the absolute power levels applied to transmission systems. Incorrect levels can result in either-

(i) transmission systems being overloaded; or

(ii) transmission systems operating below their design loading capability with a consequent degradation in telephone circuit noise performance.

1.3 For definitions of terms used in this E.I. refer to E.I. Long Line Equipment, Transmission A 1000 "Definitions of Terms Used in Line Transmission Practice."

### 2. SEND RELATIVE LEVEL.

2.1 A very broad outline of our basic network configuration is illustrated in Fig. 1. Send relative levels have been chosen which take into consideration appropriate transmission system loading, and which are compatible with this basic network configuration.

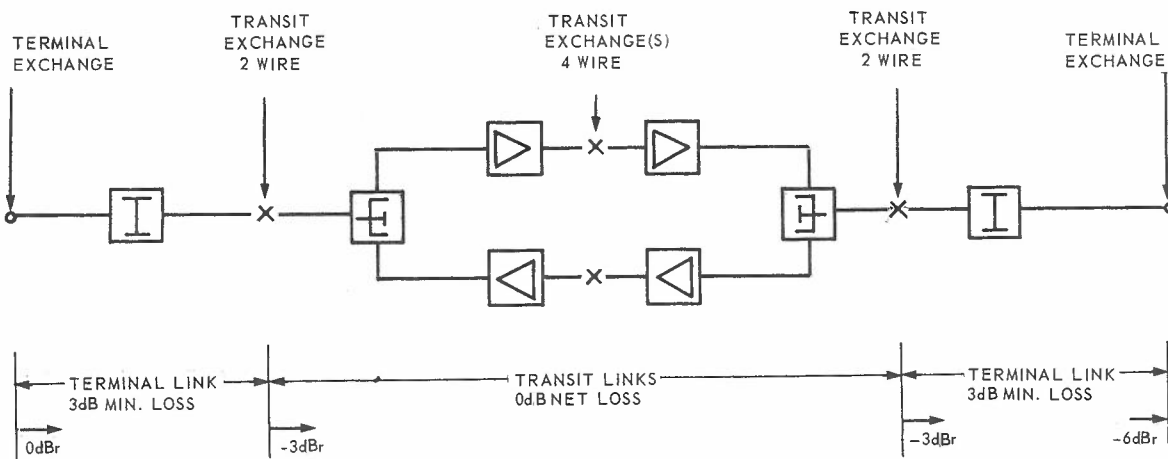


FIG. 1. SIMPLIFIED BASIC NETWORK.

2.2 The send relative levels which shall apply at the exchange reference point are-

- |                              |                      |
|------------------------------|----------------------|
| (i) Terminal exchange        | 0dBr (by definition) |
| (ii) 2-wire transit exchange | -3dBr                |

- (iii) 4-wire transit exchange (ARM) +1dBr
- (iv) Tail-eating transit exchange (Note) 0dBr

Note : The 3dB switchable pad must be in circuit and the send relative level is for sending 2-wire. For sending 4-wire the send relative level is -6dBr.

2.3 In the existing network there will be situations where terminal and transit exchange switching functions cannot be separated at a particular exchange. A typical case is a magneto country exchange where links from a transit exchange are switched either directly to subscribers lines or to terminal links serving outlying R.A.X's. Exchanges of this type shall be treated as 2-wire transit exchanges and accordingly the send relative level shall be -3dBr.

### 3. RECEIVE RELATIVE LEVEL.

3.1 The receive relative levels for a particular telephone circuit are dependent on

- (i) The net loss requirements of the terminal or transit link to which the telephone circuit belongs.
- (ii) Whether the telephone circuit is switched at transit or terminal exchanges.
- (iii) The type of exchange switching equipment used at a transit exchange.

As the send relative levels have been fixed the receive relative levels will be known once these factors have been ascertained.

3.2 Normally when a telephone circuit is designed by the State Planning Branch these factors are known, and the receive relative levels will be specified. In some cases where either-

- (i) The actual loss of the physical line is not precisely known, or
- (ii) the circuit employs N.I.R's. and the gain setting is not continuously variable and may also be dependent on line conditions,

only an approximate value of receive relative levels can be given.

END.