

**TRANSMISSION ZONING OF
CUSTOMER STATION APPARATUS**

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1. GENERAL

1.01 This practice discusses procedures for the transmission zoning of customer station apparatus.

1.02 This practice has been reissued to:

- (a) Eliminate Zone 5-2.
- (b) Add 500-type set with 238-A Amplifier and 507 and 509 Long Loop type sets for use in Zone L.
- (c) Eliminate reference to F4 and F5-type handsets.
- (d) Eliminate all substitutes formerly considered reasonable for 500-type set in Zone 5.
- (e) Revise information pertaining to PBX station sets.

Due to the extensive revision, the usual marginal arrows used to denote changes have been omitted.

1.03 Transmission zoning is the designation of certain areas within a central office area wherein various types of subscriber station apparatus may be used. Zoning procedures not only apply to set installations in connection with inward station movement but also to any station visit where the station set is of lower efficiency

than the zone calls for. Such mis-zoned sets should be changed out even to the extent of establishing definite replacement programs.

1.04 Zoning plays a very important part in the grade of transmission being provided in a central office area. Improper station equipment can be one of the major contributing factors of customer transmission complaints and low volume index rating. Sets of lower efficiency located in the more distant zones can cause as much as 5 db degradation.

1.05 Normally, information as to zone boundaries is developed by the engineering forces and forwarded to the plant assignment people who in turn post their assignment records (see Section M24.70). Each service order is marked with the zone code of the terminal to which the service is assigned. The zone code on the service order indicates to the telephone craftsman the type of station apparatus which will meet transmission objectives for each location (see Section C38.003). Upon completion of the installation, the line card is posted with the zone code and type of apparatus placed (see Section F38.001). In the case of modified or special station equipment, information such as the type of transmitter, receiver, handle, etc, is recorded. This information is necessary for day-to-day maintenance operations. It also serves as a ready source of data for various station equipment studies, such as requirements for apparatus studies in connection with area cuts, replacement programs, etc.

1.06 In rural exchange areas, loops may consist of short cable and long open wire lines. The replacement of the open wire sections with cable may require the changing of a zone boundary. With the zoning procedures as provided in this practice, except for area cuts, the above will generally be the only reason for having to readjust zone boundaries.

2. ZONE BOUNDARIES AND RECOMMENDED EQUIPMENT

2.01 The zone codes and boundaries and recommended equipment for each are as follows:

Zone 2 — From the central office to a loop length of 10 kilofeet. 300, 400 and 5300-type sets equipped with F-type handsets (generally referred to as F1A sets) are adequate from a transmission standpoint.

Zone 5 — Zone beyond 10 kilofeet in which the 500-type set must be used. (In referring to the "500-type set" throughout this practice also includes its transmission equivalents, such as 600 and 700-type sets.)

Zone L — All loops extending beyond the point where the normal central office battery supply provides less than 23 mils of line current to the station. This generally occurs at about 1500 ohms. 500-type sets equipped with a 238-A Amplifier or long loop type sets are required.

Table I lists the recommended equipment and Table II reasonable substitutes in more detail. Information on the zoning of PBX station sets is provided in Part 4 and Table III.

2.02 Party-Line Zoning: Occasionally some of the stations on a party line may fall in Zone L while other stations are still within Zone 5. No special considerations are necessary as long as the station or stations located in Zone L, on such a party line, are provided with common battery sets equipped with the 238-A Amplifier or the 507- or 509-type long loop sets. It is not advisable to have common battery and local battery sets on the same party line.

2.03 Repeatered Loops: It is becoming more prevalent to equip long loops with E-type repeaters in order to provide satisfactory transmission. The use of E-type repeaters does not alter the zoning requirements in Paragraph 2.01. If in a given area a sufficient number of long rural loops require repeaters it might be advisable to locally establish a special Zone LR. The Plant Department must be informed so that the assignment records can be posted and the service orders properly marked.

3. MISCELLANEOUS EQUIPMENT

3.01 Unequalized 500-Type Sets: Sets of the 500J- and K-type without transmission equalizers may produce undesirable crosstalk and sidetone effects when used on short loops. Restricting their use to only Zone 5 will generally avoid this problem. Unequalized 500-type sets should be returned to the distributing house for reconditioning and modification (add equalizers).

3.02 5300-Type Sets: Depending upon the extent of conversion, 5300-type sets were equipped with either F-type or G-type handsets. In either case the internal circuit remained a 300-type set. As shown in Tables A and B, 5300-type sets should not be used in Zone 5 even when equipped with G-type handsets. Restricting these sets to Zone 2 may produce some crosstalk and sidetone problems where the G-type handset has been provided. To avoid this problem 5300-type sets equipped with the G-type handset should be used on loops having at least 400-ohm loop resistance but under 10 KF in length.

3.03 Amplifier Sets: When an amplifier set is required in any zone, a 500-type set should be provided and equipped with:

- (a) a G6AR-handset for impaired hearing.
- (b) a G7AR-handset for impaired speech.

Each of these handsets contain a single stage transistorized amplifier with a volume control. The unit is assembled on two printed wiring boards which are mounted in the handset handle. *In no case* should these amplifier handsets be used to offset loop transmission deficiencies. Any such loop irregularities should be corrected so that proper station equipment may be used.

3.04 Sets for Noisy Locations: At locations where higher than average room noise conditions are encountered, a 535-type set may be used. The handset provided with the 535-type set contains a push-to-listen switch which permits its use in extremely noisy locations. An alternate arrangement when the push-to-listen switch operation is objectionable is the provision of a Confidencer Unit. This is a noise cancelling transmitter unit.

3.05 Long Loop Sets: For stations located in Zone L (former local battery talking set zone), 500-type sets equipped with a 238-A Amplifier should be used. This single stage, fixed gain transistorized amplifier is assembled on a small printed circuit board which is mounted on the back of a modified plastic transmitter clip. This arrangement is a replacement of the 507 and 509 long loop common battery sets containing a 151-type transistorized amplifier, and which in turn replaced the local battery talking sets. The 238-A Amplifier arrangement, not having the polarity guard circuit of the long loop type sets, can only be used on loops equipped with central office long line equipment circuits. The transmission characteristics of a telephone set equipped with the 238-A Amplifier are similar to those of the long loop sets.

3.06 Coin Stations: Coin stations should be equipped with the same type transmitter, receiver, handle and transmission network as required for noncoin stations in same zone. Coin station sets equipped with fixed positioned 635-type transmitters are no longer permissible. A definite replacement program of such sets is highly recommended.

4. PBX STATION SETS

4.01 PBX station sets should be provided according to the information in Table III. Further information pertaining to the transmission aspects of PBX stations is provided in other AB practices on PBX design.

4.02 Attendant's Sets: The 52-type and 53-type operators' headsets should be provided at all cord type PBX switchboards. At cordless

boards, the attendant's set should be a 500-type set. In the newer attendant's consoles, either the headset or G-type handset can be used. These consoles contain a transistorized amplifier together with a modified network so that when the headset is being used the transmitting branch transmission is comparable to that provided by a 500-type set. Consoles for use with No. 5 XBar CENTREX C.O. are arranged for 4-wire operation with amplifiers in both the transmit and receive directions.

TRANSMISSION ZONING OF SUBSCRIBER STATION APPARATUS

TABLE I

Recommended Equipment

ZONE	TYPE TEL. SET	HANDLE	TRANS.	REC.
2	300-400-5300	F1	F1	HA1
5	500-600-700	G1	T1	U1
L	500-600-700	G1*	T1	U1

* Must be equipped with 238-A Amplifier.

TABLE II

Recommended Substitute

ZONE	TYPE TEL. SET	HANDLE	TRANS.	REC.
2	500-600-700	G1	T1	U1
5	None			
L	507-509	G1	T1	U1

TABLE III
Recommended Equipment

ZONE OF PBX	PBX STATION LOCATION	48 VOLT PBX's OTHER THAN 101 ESS	LOWER VOLTAGE PBX's	CENTREX C.O. AND 101 ESS
2	On-Premise	See Note 1 below	500-600-700	500-600-700
2	Off-Premise	500-600-700	500-600-700	500-600-700
5	On or Off Premise Stations	500-600-700	500-600-700	500-600-700

L Zone L station equipment should not be used for PBX stations. These cases should be referred to the appropriate group for special design.

Note 1: 500-600 or 700 sets are preferable and should normally be used for new installations. However, existing 300-, 400- or 5300 are acceptable.