TD-3 MICROWAVE RADIO
OVERALL SYSTEM
GENERAL TEST INFORMATION

1. GENERAL

1.01 This section gives general information applicable to various overall system tests prescribed in the associated practices.

1.02 Unless otherwise indicated, the tests given in this series of practices are performed after first taking the channel out of service. Local practice for removing service from the channel should be followed. The tests on envelope delay distortion, channel net gain and baseband response, thermal noise and spurious tones, and noise loading, are intended to be made on each IF-to-IF switching section. However, the procedures are applicable to any number of switching sections in tandem; or they may be applied to any portion of a switching section, including a single radio hop, if desired. The DADE practice is applicable only to an IF-to-IF switching section, while the received carrier power practice basically represents a single radio hop test involving a radio transmitter and the next succeeding radio receiver. Differential phase and gain tests are typically made on the overall radio channel between the television operating centers, regardless of the number of switching sections involved; but they may be made on any portion of the radio channel if necessary.

1.03 For testing purposes, it is usually more convenient to use FM terminals other than the ones normally assigned to the channel under test. Accordingly, most of the practices in this series indicate the test connections being made using monitor, portable, or spare FM terminals. This procedure is not meant to preclude the use of the normally assigned terminals. It only recognizes the probable difficulties connected with removing those terminals from service.

1.04 When side legs or dropping points are to be tested simultaneously, local maintenance instructions should be consulted for methods of coordinating the tests with those on the through channel.

1.05 The tests covered in the associated practices assume that the maintenance personnel are familiar with the operation of the specified test equipment. Only the specific instructions for using the test equipment on a TD-3 channel are included, except when precautionary notes are given as a reminder or when simple operating instructions have been repeated for convenience. The standard instructions issued separately for each piece of test apparatus should be referred to for more detailed information.

1.06 Telephone or television signals are frequently transmitted over several TD-3 IF protection switching sections in tandem. In general, the overall radio channel between the head-end FM terminal transmitter and the far-end FM terminal receiver will provide the desired quality of transmission only when the performance of each switching section meets the requirements given in these practices.

1.07 The requirements given apply during periods of normal (non-faded) transmission conditions. Test results obtained during periods of deep fading in one or more radio hops may not give a true measure of the normal system performance. Thus testing during severe fading periods should be avoided as far as possible. This is particularly true of tests of thermal noise and spurious tones, and of received carrier power.

1.08 Typical telephone and television arrangements are shown in Fig. 1 and 2, respectively. Typical IF levels are shown in Fig. 3. Video monitoring arrangements are shown in Fig. 4 and 5.

1.09 ***Record of overall transmission tests:*** Form E-5913 lists appropriate columns to record net gain, baseband response, IF mop-up equalization, noise, and tone measurements. The contents of

the form are self-explanatory. The form is available in package units of 100 forms. Orders should be placed in multiples of 100 and worded as follows:

(Quantity) Form E-5913

Each company must authorize its local Western Electric distributing house to stock the new form because it will not be stocked automatically.

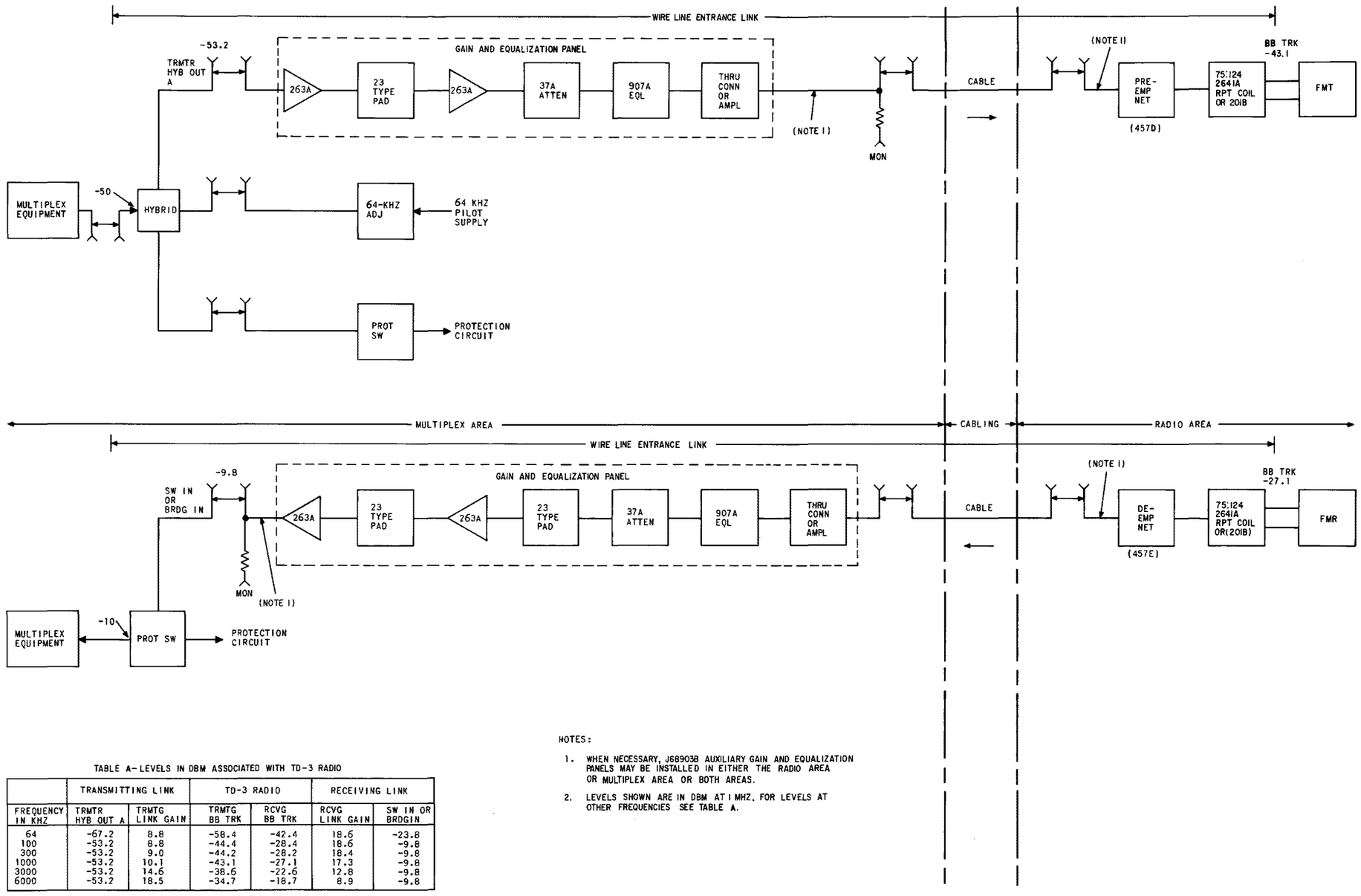


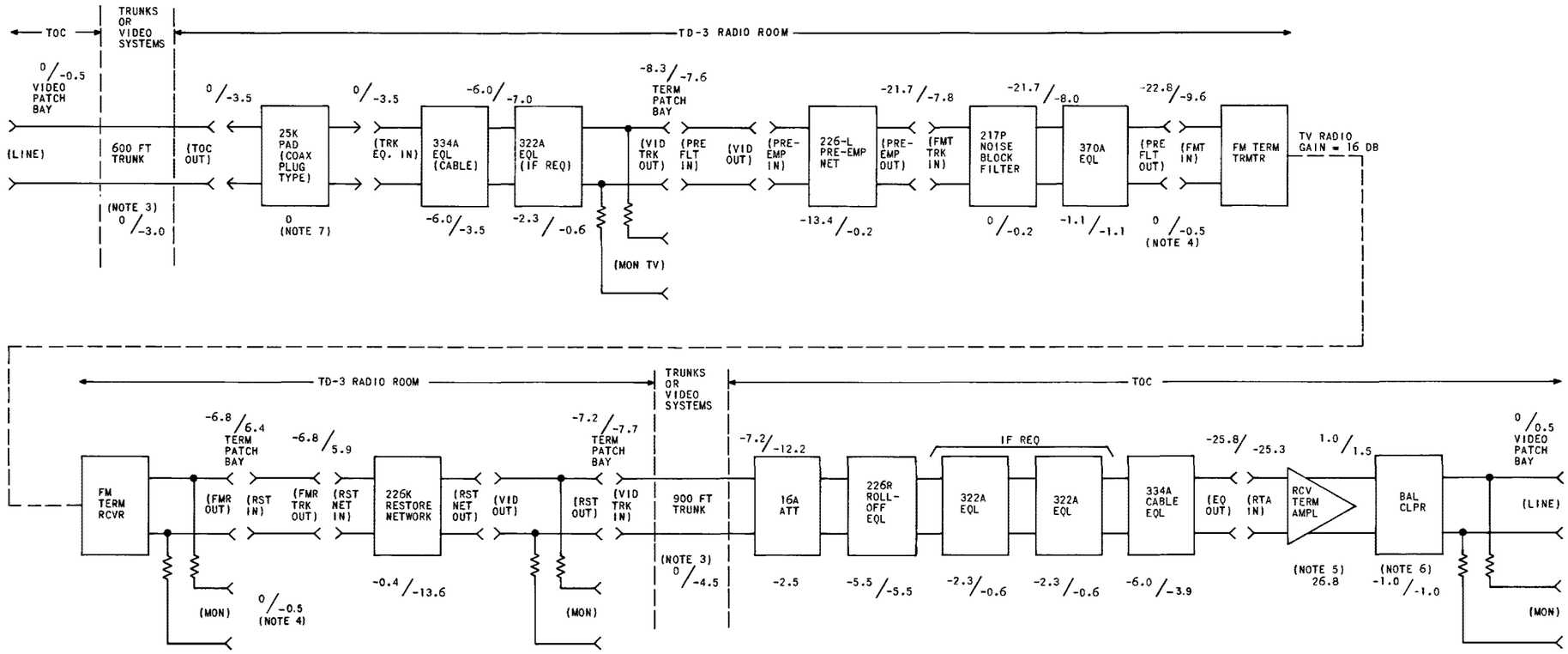
TABLE A—LEVELS IN DBM ASSOCIATED WITH TD-3 RADIO

	TRANSMITTING LINK		TD-3 RADIO		RECEIVING LINK	
FREQUENCY IN KHZ	TRMTR HYB OUT A	TRMTG LINK GAIN	TRMTG BB TRK	RCVG BB TRK	RCVG LINK GAIN	SW IN OR BRDGIN
64	-67.2	8.8	-58.4	-42.4	18.6	-23.8
100	-53.2	8.8	-44.4	-28.4	18.6	-9.8
300	-53.2	9.0	-44.2	-28.2	18.4	-9.8
1000	-53.2	10.1	-43.1	-27.1	17.3	-9.8
3000	-53.2	14.6	-38.6	-22.6	12.8	-9.8
6000	-53.2	18.5	-34.7	-18.7	8.9	-9.8

NOTES:

1. WHEN NECESSARY, J68903B AUXILIARY GAIN AND EQUALIZATION PANELS MAY BE INSTALLED IN EITHER THE RADIO AREA OR MULTIPLEX AREA OR BOTH AREAS.
2. LEVELS SHOWN ARE IN DBM AT 1 MHZ. FOR LEVELS AT OTHER FREQUENCIES SEE TABLE A.

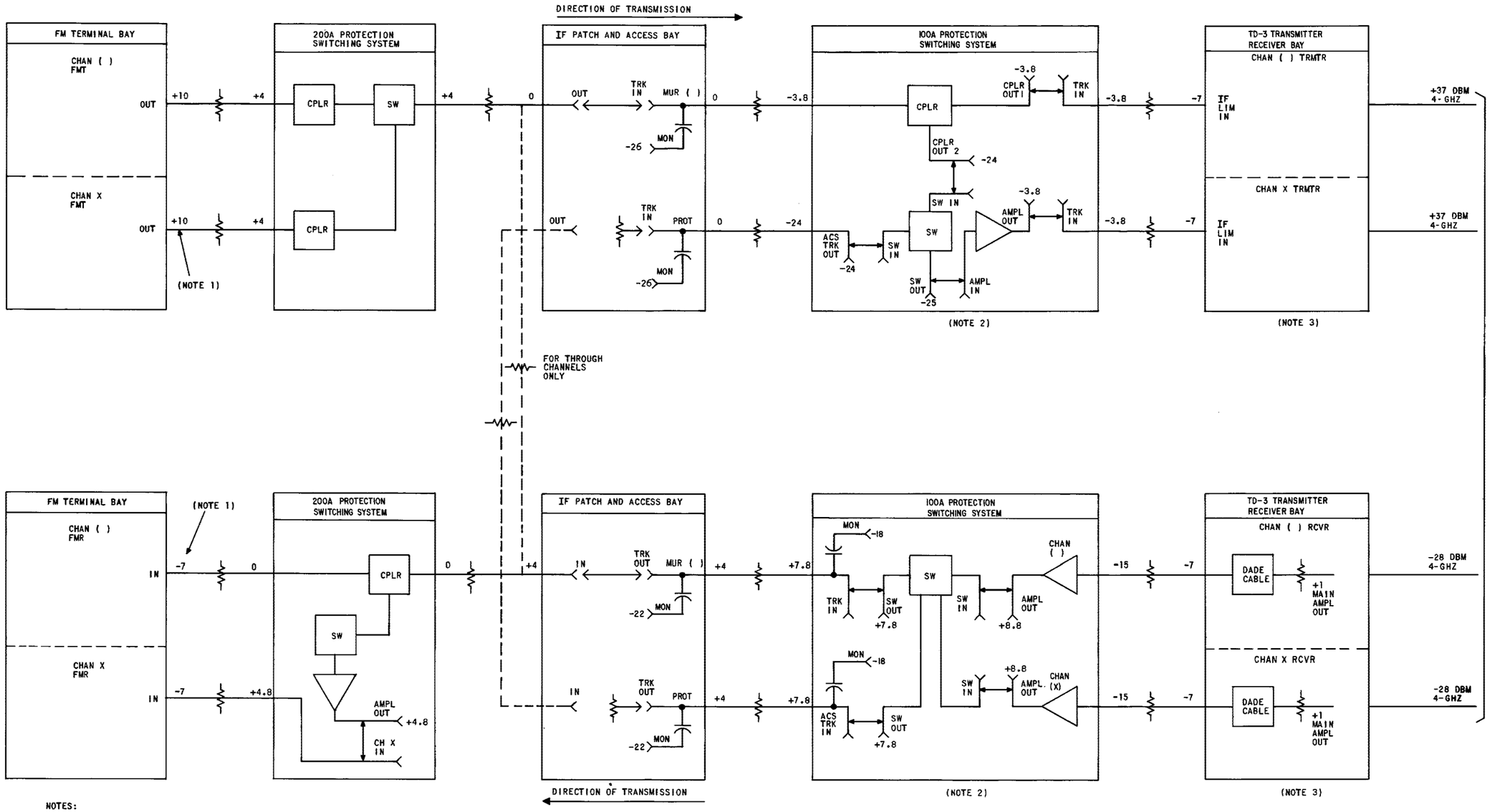
Fig. 1—Typical Telephone Layout on TD-3



NOTES:

1. -22.8 / -9.6 INDICATES REFERENCE LEVEL OR GAIN OR LOSS OF EQUIPMENT UNIT AT 10 KHZ / 4.5 MHZ IN DBV. WHERE BUT ONE NUMBER IS GIVEN, UNIT HAS FLAT CHARACTERISTIC.
2. AT 124Ω BALANCED POINTS: DBM = DBV.
3. VIDEO TRANSMISSION SYSTEM SUCH AS A2 OR A2A NORMALLY USED WHEN TRUNK LENGTHS ARE EXCEEDED.
4. THIS 0.5 DB LOSS AT 4.5 MHZ REPRESENTS ALL CABLE BETWEEN: (PRE FLT IN) JACKS AND THE FM TERM TRMTR, BETWEEN THE FM TERM RCVR AND THE (RST OUT) JACKS.
5. J44105E A2A RECEIVING TERMINAL AMPLIFIER INCLUDES OUTPUT JACKS.
6. J44107J BALANCED CLAMPER INCLUDES JACKS.
7. WHERE ONLY ONE CABLE EQUALIZER IS USED, A 25AE (2.3 DB) PAD IS REQUIRED.

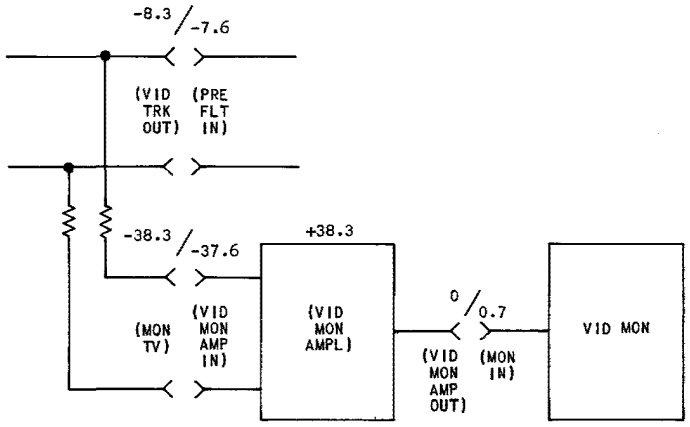
Fig. 2—Typical Television Layouts on TD-3



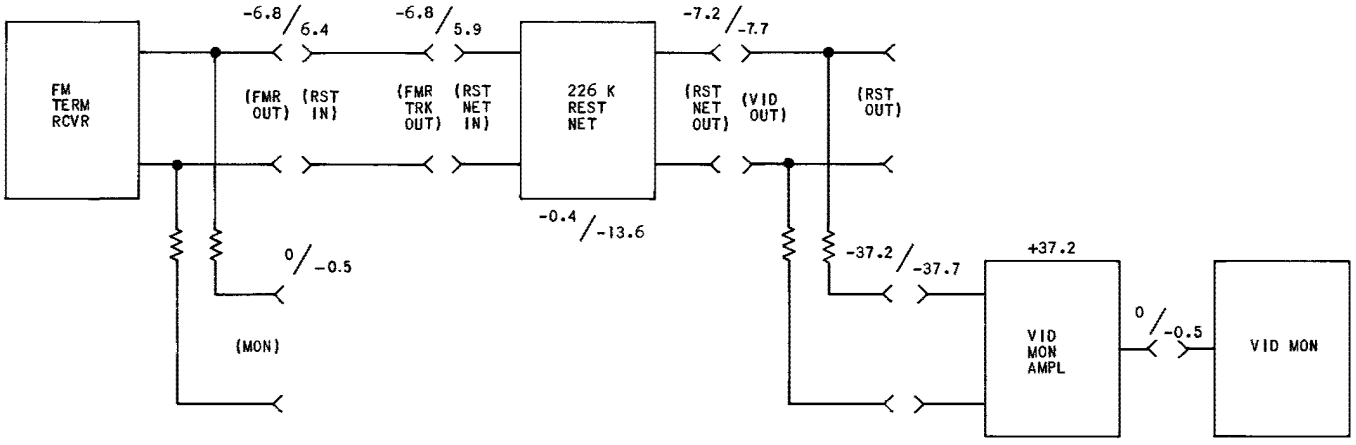
NOTES:

1. EXCEPT AS NOTED, ALL LEVELS ARE IN DBM AT 70 MHZ.
2. THE LEVELS SHOWN WITHIN THE 100A BAYS ARE FOR BAYS EQUIPPED WITH 8B GATES.
3. FOR LEVELS IN THE TD-3 TRANSMITTER-RECEIVER BAY, SEE SECTION 411-400-502.

Fig. 3—Typical IF Levels on TD-3

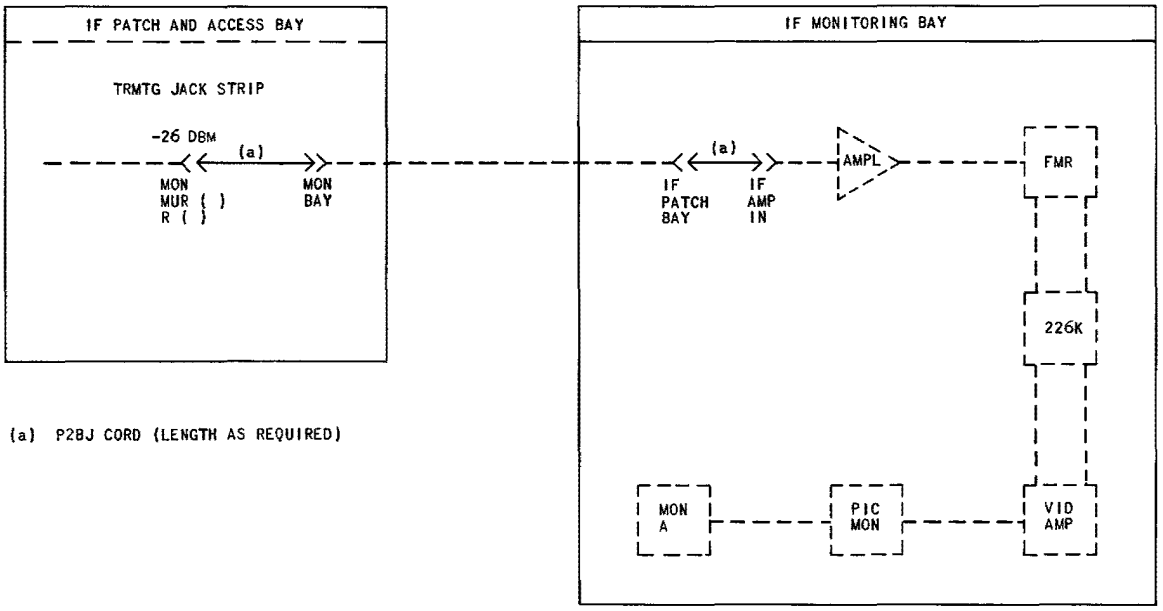


MONITORING FM TERMINAL TRANSMITTER



MONITORING FM TERMINAL RECEIVER

Fig. 4—Typical Video Monitoring Arrangements



(a) P28J CORD (LENGTH AS REQUIRED)

Fig. 5—Typical IF Monitoring Arrangements for Through Video Channels