

SUPERGROUP WIDEBAND DATA SYSTEMS

(RESTORED POLAR)

2-POINT PRIVATE LINE

DESCRIPTION

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types of data transmission use the coordination channel for low-speed data or control signals when required by the customer.

1. GENERAL

1.01 This section describes the transmission facilities and equipment arrangements of Supergroup Wideband Data Systems.

1.02 When this section is reissued, the reason for reissue will be given in this paragraph.

1.03 Transmission facilities for supergroup circuits are limited to LMX-type multiplex, T carrier, and 4-wire repeatered cable loops. The wideband channel may consist of any one or a combination of the three facilities as shown in Fig. 1.

1.04 The wideband channel can handle 2-level synchronous data at 230.4 kb/s.

1.05 A voice-frequency coordination channel is provided in addition to the wideband channel. The customer uses this circuit to coordinate his data operations. The voice channel is also used to coordinate tests of the wideband channel. Some

2. DESCRIPTION OF SYSTEM

2.01 The Supergroup Wideband Data System provides a full-duplex wideband transmission system for high-speed data. The serial data signal originating in the customer business machine (either synchronous or asynchronous) is modified so that the lowest frequencies and dc components are removed in the data set baseband transmitter and restored at the receiving data set. This transmitted signal is termed restored polar.

2.02 The transmitted signal has a band of interest of 10 to 170 kHz. The WLR-4 equalizes and amplifies the signal, providing the necessary bandwidth when used with 4-wire cable. The bandwidth is provided over T1 carrier facilities when T1WM-1 or T1WM-4 or when T1WB-1, -2, or -3 terminals are used. The bandwidth is provided for on L-type multiplex facilities when the LWM-2 is used. In this case, the transmitted baseband signal is translated to the supergroup frequency spectrum of 312 to 552 kHz, hence the term, supergroup wideband data.

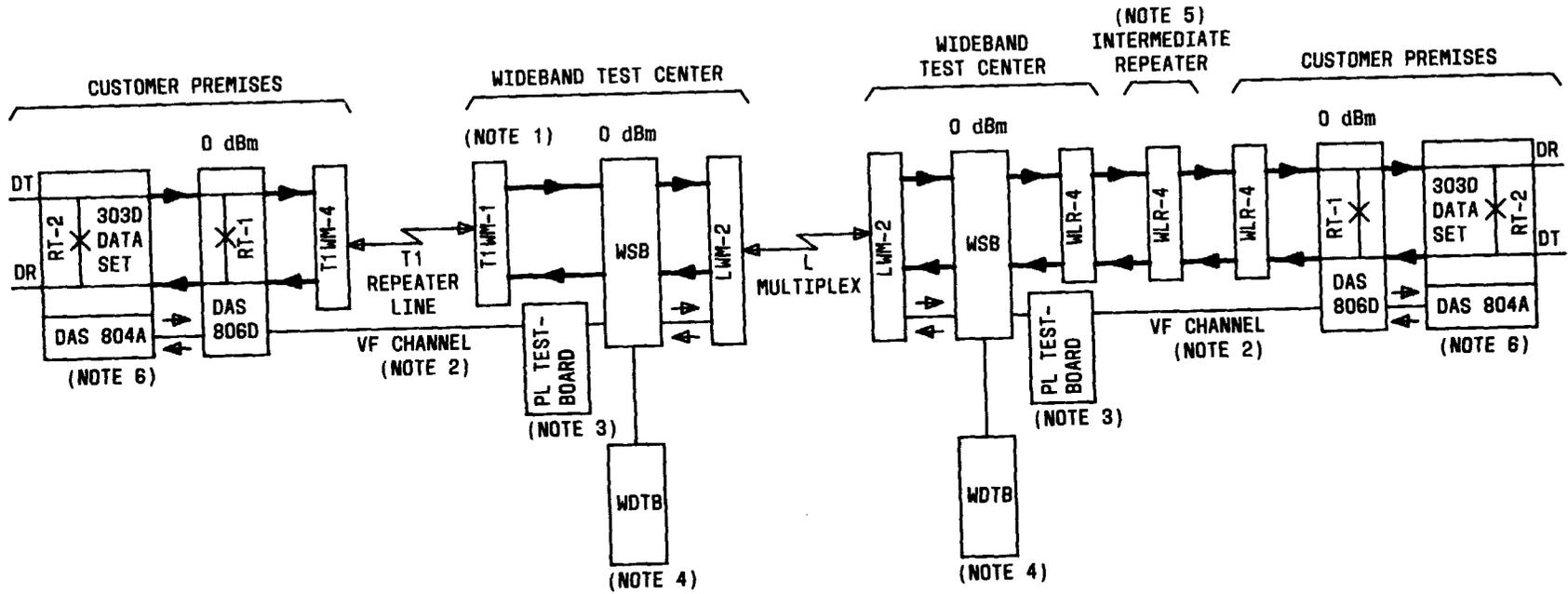
3. 303-TYPE STATION EQUIPMENT

3.01 The 303D data set couples customer business machines to the wideband channel. The data set accepts both synchronous and asynchronous data. (In the case of synchronous data, it is scrambled and clocked before being transmitted by the baseband transmitter.)

3.02 The supergroup wideband data station requires two data auxiliary sets (DAS). The

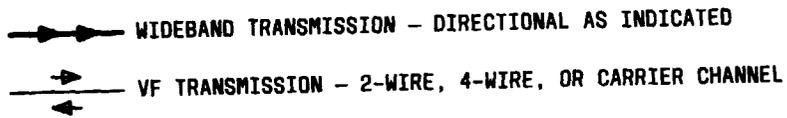
NOTICE

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NOTES:

1. TERMINAL MAY ALSO BE T1WB-1, -2, OR -3.
2. VOICE-FREQUENCY CHANNEL MAY BE EITHER 2- OR 4-WIRE OR CARRIER CHANNEL.
3. PRIVATE LINE TESTBOARD FOR MAINTENANCE OF VF CHANNEL.
4. WIDEBAND DATA TEST BAY (WDTB) MAY NOT BE INCLUDED IN SOME OFFICES.
5. WLR-4 REPEATER MAY BE LOCATED IN A MANHOLE, A CENTRAL OFFICE, OR IT MAY BE POLE MOUNTED.
6. DAS 804A MAY BE OMITTED IF NOT REQUIRED.



DR DATA RECEIVE
 DT DATA TRANSMIT
 RT-1/2 REMOTE TEST 1/2

Fig. 1—Typical Supergroup Wideband Data System

806B or 806D DAS provides test access to the customer loop facilities. It also provides remote test 1 (RT1) and remote test 2 (RT2) via the RT1 and RT2 loopback relays. The RT1 loopback loops only the station line while the RT2 loopback includes the 303 data set with the station line. (See Fig. 1.) These loopbacks are accomplished by applying 2800 Hz on the voice-frequency coordination channel at the test center. Voice communication over the voice-frequency coordination channel and control of the data station operations are provided by the 804A DAS. In some states, on an intraexchange basis, voice coordination is not tariffed and the 804A DAS is excluded.

4. TRANSMISSION FACILITIES

A. Station Lines

4.01 Wideband loop repeaters (WLR-4) are used between the wideband data station and the central office (or between two wideband data stations) for distances up to 4 miles using fine-gauge cables and up to 8 miles for the heavier gauges. In special cases, where the repeated line is the only facility connecting two data sets, this distance may be extended. The WLR-4 has active attenuation equalization and can be optioned for pilot regulation.

4.02 The T1 Carrier System may be used between a central office and the customer premises. In this configuration, a T1WM-1 is used at the central office, and a T1WM-4 is used at the customer premises. The signal format applied to and received from the T-Carrier System is the baseband signal.

B. Interoffice Facilities

4.03 Interoffice facilities may be WLR-4 repeated cable, T carrier (short haul), or L-type multiplex systems (long haul). The repeated cable interoffice facility is the same design as that of the station line. The interoffice T-carrier line is also the same as its station line counterpart but will generally use T1WBs.

4.04 L-type multiplex supergroup facilities equipped with LWM-2 make up a long-haul link for transmission of supergroup data signals. The LWM-2 places a 100-Hz to 190-kHz baseband data signal and a single 4-kHz voice channel into the L multiplex basic supergroup band of 312 to 552 kHz. No additional circuitry is required for the

voice-frequency control channel when the wideband channel is riding broadband facilities (See Fig. 1.)

4.05 An interoffice facility may be composed of one supergroup and its associated terminal equipment, or it may be a number of supergroups interconnected at supergroup frequencies (312 to 552 kHz) by supergroup connectors. When tandemed, no more than six supergroup connectors may be used and must be the C2B or C3 connector. The C2B connector should be equipped with a 921A amplitude equalizer and a 932A delay equalizer. The newer C3 connector should be equipped with the 977A delay equalizer. (A plug-in amplitude equalizer is not required.)

4.06 Supergroups 1 and 3 in LMX-1 or supergroups 1, 2, 3, and 9 in LMX-2 should not be used for supergroup transmission because of either severe envelope delay distortion or severe attenuation distortion, or both. Directly formed supergroups, D25 through D28, may be used only twice. There are no restrictions in the remaining supergroups.

5. REFERENCES

5.01 The following Bell System Practices give more complete descriptive information on equipment referenced in this section:

SECTION	DESCRIPTION
314-601-120	J70168 Wideband Service Bay (WSB)
314-602-100	Data Systems Central Office—915A Wideband Data Test Bay
314-610-300	Supergroup Wideband Data Systems—Lineup Procedures
314-610-500	Supergroup Wideband Data Systems—General Maintenance
314-642-100	250-Kilobit Wideband Loop 1 to 250 kHz WLR-4 Repeater—Description
356-025-100	L Multiplex Terminals—Common Equipment—Supergroup Connectors—C1 and C2 Types—Description

SECTION 314-610-100

356-025-101	L Multiplex Terminals—Common Equipment—C3 Supergroup Connector—Description	365-120-100	T1WB-3/T1WB-3D Wideband Data Banks—Terminal Description
356-405-100	L-Type Multiplex 190 kHz Transmission System LWM-2 Wideband Modem—Description	365-121-100	T1WM-4 Wideband Modem—Terminal Description
365-118-100	T1WB-1 and -2 Wideband Bank—Terminal Description	593-012-100	Data Set 303 Type—Identification
365-119-100	T1WM-1 Wideband Modem—Terminal Description	593-800-100	Wideband Data Station—Using Data Set 303 Type—Description and Operation