PRIVATE LINE DATA CHANNELS

MODIFIED 3002

DESCRIPTION/REQUIREMENTS

1. GENERAL

1.01 This section covers data channels described as "modified type 3002". It specifies transmission performance limits for these channels. No effort should be made to improve a channel beyond these limits.

1.02 It is reissued to present an updated version of how this service shall be provided.

Note: Marginal arrows used to denote changes are omitted.

2. DESCRIPTION

2.01 The "Modified 3002" channel allows the permissive transmission of baseband data, that may exceed the normal voiceband spectrum (see Table B) between customer-provided equipment (CPE) located within a single wire center area.

2.02 The channel consists of metallic facilities either entirely within the customer premises or routed through a single serving wire center. The facilities may, under the conditions stated in 3.03, terminate into 500Z Channel Protection Units (CPU). The CPU provides a 2-wire interface between the facility and the CPE. For a 4-wire interface, two CPUs may be required.

2.03 The provision of this channel is subject to the availability of facilities and does not include the construction of facilities expressly for this channel. The customer may request nonloaded facilities. If deloading is required, special construction charges will apply.

2.04 Orders to install these channels shall be accepted only after a Special Services Engineer has determined that:

- Suitable facilities are available for this service
- The facilities do not exceed the cable length limits of the CPE
- The CPE complies with Bell System Technical Reference, PUB 43401.

3. CHANNEL PARAMETERS

3.01 Table A lists the transmission limits for a "modified 3002" channel. The limits are basically those for a regular 3002-type data channel, but changed to allow dc continuity and a 1004 Hz loss of less than the normal 16 dB.

TABLE A

"MODIFIED 3002" CHANNEL PARAMETERS

Loss at 1004 Hz:	0 to 16 dB
Frequency Response: (referred to 1004 Hz loss)	500-2500 Hz: −2 to +8 dB 300-3000 Hz: −3 to +12 dB
Delay Distortion:	800-2600 Hz: 1750 μs
DC Continuity:	Provided, but no limit on loop resistance.
Measurement Impedance for Loss & Noise:	600 ohms
Message Noise:	31 dBrnc
Impulse Noise:	15 counts in 15 minutes at a threshold of 71 dBrnc

3.02 To prevent interference with other circuits, it is necessary to limit RMS voltages applied to a metallic circuit, particularly when the CPE is operating unbalanced (one wire grounded or with a ground return). Table B lists the maximum ***single*** frequency RMS voltage that can be applied to the "modified 3002" channel. Two or more frequencies cannot be applied simultaneously at the maximum values permitted for each individual frequency. Limits for multifrequency signals cannot be shown in a table. Calculations or measurements

must be done in each case to determine if that particular multifrequency signal exceeds interference limits. (See PUB 43401).

TABLE B

MAXIMUM CUSTOMER VOLTAGE

	MAXIMUM VOLTAGE (RMS)		
FREQUENCY (kHz)	BALANCED	1-WIRE GROUNDED	GROUND RETURN
.01	100	50	50
.1	100	10	5
1.0	2.2	0.22	0.11
1.2	1.7	0.17	0.083
2.4	0.53	0.053	0.027
3.6	0.27	0.027	0.014
4.8	0.17	0.017	0.0085
6.0	0.12	0.012	0.0058
7.2	0.086	0.086	0.0043
8.4	0.067	0.0067	0.0034
9.6	0.054	0.0054	0.0027
10 to 25	0.050	0.005	0.0025
25 to 40	0.012	0.0012	0.0006
Above 40	0.0025	0.00025	0.0013

3.03 Engineering shall determine from customer-provided information the maximum anticipated voltages at the metallic circuit interface. If these levels do not exceed 36 volts peak, tip to ring, or 54 volts peak, tip or ring to ground, then 500Z CPUs should be installed. For customer levels exceeding these volues, but less than those maximum specified in Table B or as specified in PUB 43401, then no 500Z CPUs should be provided.

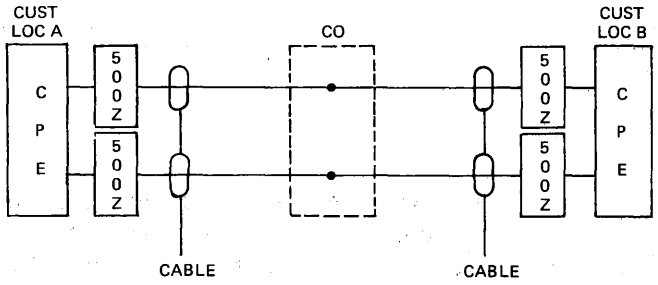
3.04 If a customer's terminal is suspected of producing signals which cause interference to other services in the same cable, notify DATEC (Data Technical Support).

3.05 It must be stressed that operation on these channels is permissive. If the channel meets the specified limits make *no* changes in the cable facilities or any other modification in an attempt to improve performance.

3.06 In case of interference to other services caused by CPE, the customer is responsible for bringing his equipment into conformance with PUB 43401. No attempt shall be made to mitigate the trouble by altering the channel.

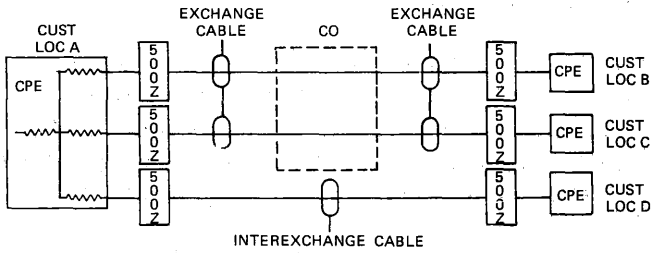
4. TYPICAL CHANNEL LAYOUTS

4.01 A typical layout for a 2-point 4-wire "modified 3002" channel is shown in Fig. 1.



2-Point 4-Wire Channel
Fig. 1

4.02 Normally multipoint circuits are not provided. However, when required, the customer can assemble a multipoint network from 2-point channels using customer-provided on-premise bridges as shown in Fig. 2. When this is not feasible, the service possibly can be supplied on a special assembly basis.



INTEREXCHANGE CABLE
2-point Channels Used for 4-point Network
Fig. 2

5. INSTALLATION/MAINTENANCE TESTS

5.01 The 500Z CPU installation tests are per Section 314-410-312. The CPUs will normally be optioned for dc operation.

5.02 The channel installation tests are per Sections 314-410-300 and 314-410-500 for basic (nonconditioned) channels with two exceptions:

- The 1004 Hz loss is not fixed at 16 dB (see Table A)
- All noise measurements are in absolute values rather than referenced to TLPs (see Table A).

6. REFERENCES

SECTION	SUBJECT
314-410-100	Voice Bandwidth Private Line Data Circuits — Description
314-410-300	Voice Bandwidth Private Line Data Circuits — Maintenance
314-410-312	Local Area Data Channels — Tests and Requirements
314-410-500	Voice Bandwidth Private Line Data Circuits — Tests and Requirements

Bell System Transmission Engineering Technical Reference — "Transmission Specifications for Private Line Metallic Circuits", PUB 43401, December, 1971.