DATA SETS 108H AND 108J

DESCRIPTION

CONTENTS PAGE

1. GENERAL

1.01 This section contains the physical and functional description for data sets (DSs) 108H and J (Fig. 1) in private line service.

Fig. 1—Data Set 108H (Similar to Data Set 108J)

1.02 Whenever this section is reissued, the reason for reissue will be contained in this paragraph.

1.03 The DS 108H and J differ only in send and receive frequencies. The different send and receive frequencies of DS 108H and J complement each other.

1.04 The DS 108H or J provides 20-mA current interface between a 2-wire private line facility and terminal equipment [either customer-provided equipment (CPE) or Bell System teletypewriters (TTYs)] for serial, low-speed (0 to 150 baud), asynchronous half- or full-duplex operation.

DS 108F OR G IN STATION ARRANGEMENT WITH DATA AUXILIARY SET (DAS) 830C-L1A

1.05 The DS 108F or G with DAS 830-L1A provides a 20-mA current interface between a 2- or 4-wire private line facility and terminal equipment for serial, low-speed (up to 150 baud), asynchronous, full-duplex operation.

CRITERIA FOR SELECTING DS 108F OR G WITH DAS 830C-L1A IN LIEU OF DS 108H OR J

1.06 The DS 108F or G with DAS 830C-L1A ***must*** be used when any of the following are required:

- Connection to a 4-wire facility
- Carrier squelch on carrier fail feature
- Broadcast feature
- Remote operate of test mode
- Carrier on (CO) indicator lamp
- Receiver sensitivity of -42 dBm rather than -36 dBm

- Carrier detection characteristics of DS 108F and G required. The DS 108F or G enters the data mode upon receipt of the appropriate carrier frequency (f1 mark or space for DS 108G, f2 mark for DS 108F) for at least 300- ms. The data set remains in the data mode until loss of carrier occurs or the signal level drops below approximately -45 dBm.

1.07 The technical specification for DS 108H or J follows:

AC Power: 117 volts ±10 percent, 60 Hz ±5 percent. The power outlet should be a conventional 3-wire grounded outlet.

Operation: Low-speed, asynchronous, binary, serial.

Operating Mode: Half- or full-duplex.

Data Rates: Up to 150 baud.

Line Impedance: 600 ohms.

Operating Frequencies: The DS 108H transmits in the f1 band (mark—1270 Hz, space—1070 Hz) and receives in the f2 band (mark—2225 Hz, space—2025 Hz). DS 108J transmits in the f2 band and receives in the f1 band.

Line Compatibility: The DS 108H, an "originate" mode set, is compatible with DS 103F (in the answer mode), 108A, 108E, 108G and 108J. DS 108J, and "answer" mode set, is compatible with DS 103F (in the originate mode), 108B, 108C, 108D, 108F, and 108H.

Environmental Requirements:

- Ambient temperature range from 40 to 120°F.

- Relative humidity from 20 to 95 percent with no condensation.

2. PHYSICAL DESCRIPTION

2.01 The DS 108H and J consist of a single circuit pack (Fig. 2), a plastic housing (Fig. 3), and a KS-21239-L4 or -L5 transformer (Fig. 4). Overall dimensions are approximately 4.7 inches wide, 7.1 inches long, and 2 inches high. The set weighs approximately 1 pound, and the KS-21239-L4 or -L5 transformer weighs approximately 1 pound.

2.02 The DS 108H or J may be wall mounted using the adhesive pad or two screws shipped with the data set or it may be desk or table-top mounted.

2.03 The housing is similar in appearance to the housing used for the 1000-type data coupler. The housing assembly consists of a plastic basepan to which the circuit pack is attached and a plastic cover. No interface assembly or electrical connections are provided since all connections are to screw terminals mounted on the circuit pack. A single D6AB mounting cord is recommended for KS-21239-L4 or -L5 transformer and telephone line interface connections. The housing cover incorporates a rocker switch labeled TST (test).

2.04 The TST switch initiates the digital loopback test. In this digital loopback test mode, the data set ignores the output of the terminal equipment and, with option F installed, outputs a steady mark to the terminal equipment to inhibit local copy.

3. FUNCTIONAL DESCRIPTION

3.01 This part contains information pertaining to DS 108H or J modulation, transmission, reception, digital loopback test mode, and options. Because of functional similarity, all references to DS 108H and J will be to "data set" only. The full designation will be used to indicate dissimilar functions. Figure 5 is a simplified diagram of the data sets.

General

3.02 The data set provides the interface between a 2-wire private line telephone facility and terminal equipment requiring 2-, 3-, or 4-wire 20 mA interface.

Modulation

3.03 The data set employs frequency-shift keying (FSK) with a shift of +100 Hz for a mark and -100 Hz for a space. DS 108H converts the dc signals at the customer interface into ac signals in the f1 frequency band (see Table A) for

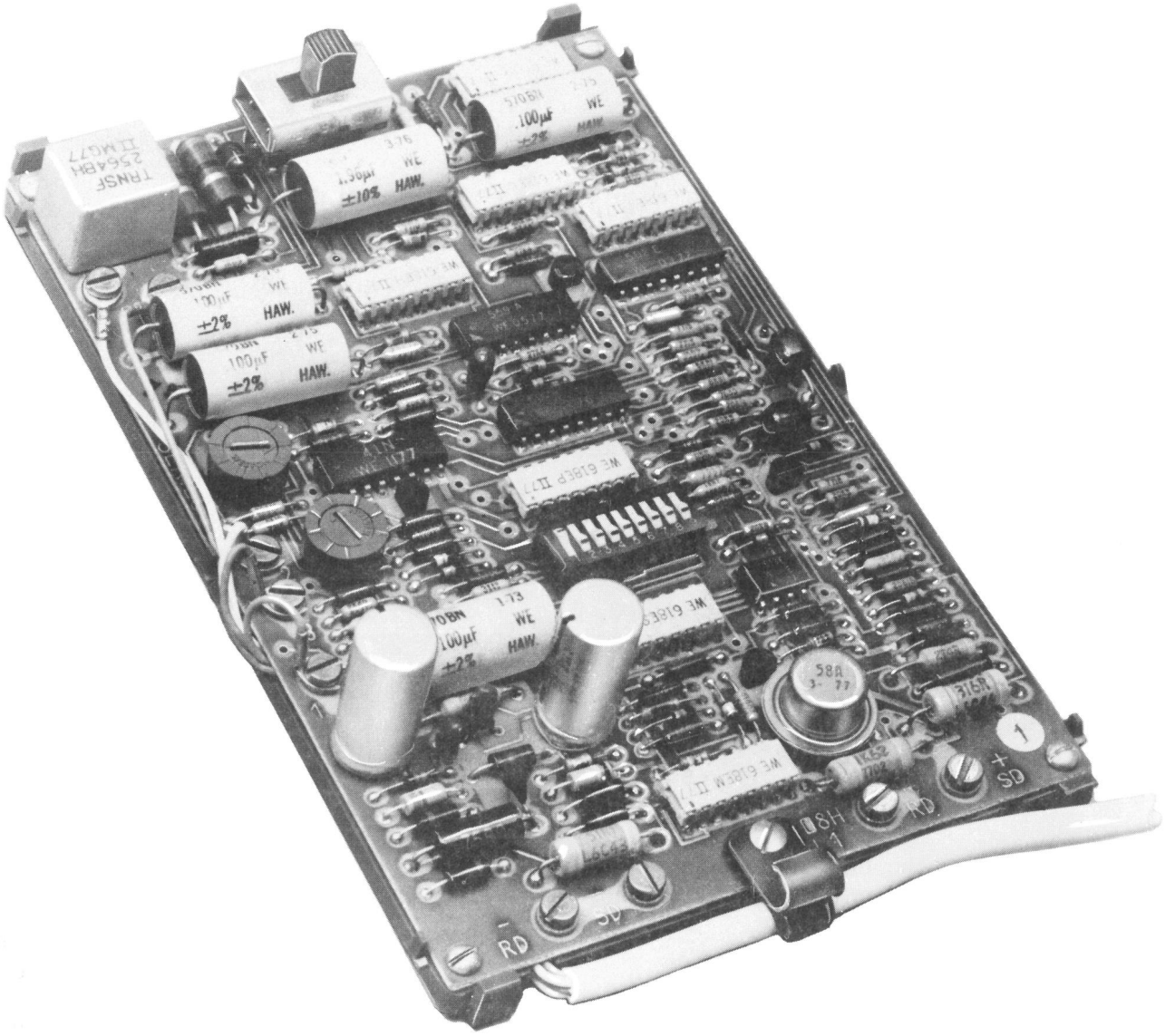


Fig. 2—Circuit Pack of DS 108H (Similar to DS 108J Circuit Pack)

transmission over the frequency band for conversion to dc signals and output to the customer interface. DS 108J transmits in the f2 band and receives in the f1 band (see Table A).

Transmission

3.04 The data set FSK modulates data signals at an output power range of nominally -1 to -15 dBm into a 600-ohm 2-wire line. The data set transmit level is adjustable in 2-dB steps (refer to Section 591-043-200 for procedures for setting output level).

Reception

3.05 The data set enters the data mode upon receipt of the appropriate carrier frequency (f1 band for DS 108J, f2 band for DS 108H) for at least 90 ms. The data set remains in the data mode until loss of carrier occurs or the signal level drops below approximately -36 dBm. The

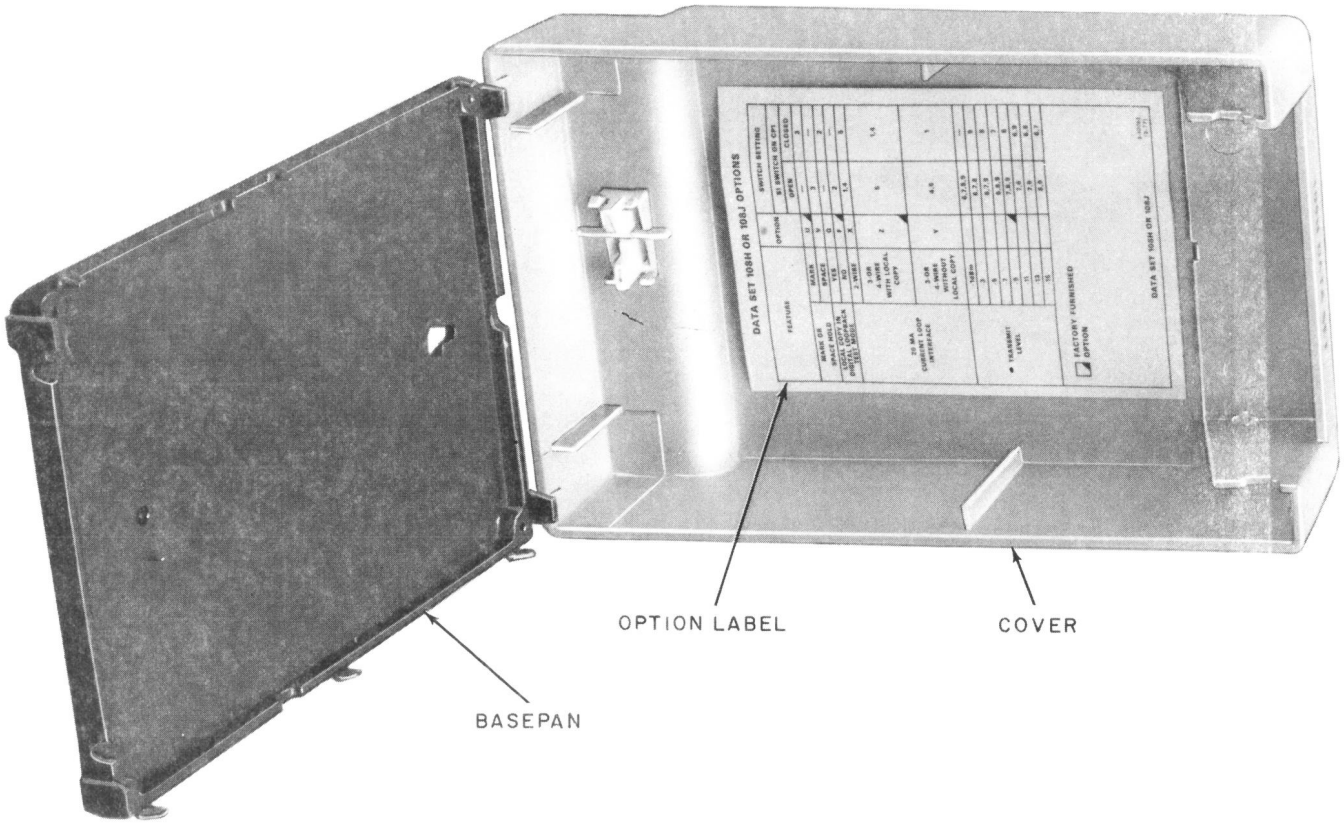


Fig. 3—DS 108H or J Housing

data set will enter the data mode on a mark, space, or any data signal in the appropriate band.

Digital Loopback Test Mode

3.06 Depressing the TST switch places the data set in the digital loopback test mode. This mode internally loops the receiver output to the transmitter. When a data connection is established between the test center and the data set, this mode enables the test center to measure round trip data distorton.

Options

3.07 Data set options are listed in Table B. Refer to Section 591-043-200 for a description of these options.

4. REFERENCES

4.01 The following Bell System Practices provide additional information on DS 108H and J:

SECTION	TITLE
591-043-200	Data Sets 108H and 108J—Installation and Connections
591-043-500	Data Sets 108H and 108J—Test Procedures

4.02 The following schematic drawings (SDs) and circuit descriptions (CDs) contain information on DS 108H and J:

NUMBER	TITLE
SD-&CD-1D287-01	Data Set 108H
SD-&CD-1D284-01	Data Set 108J

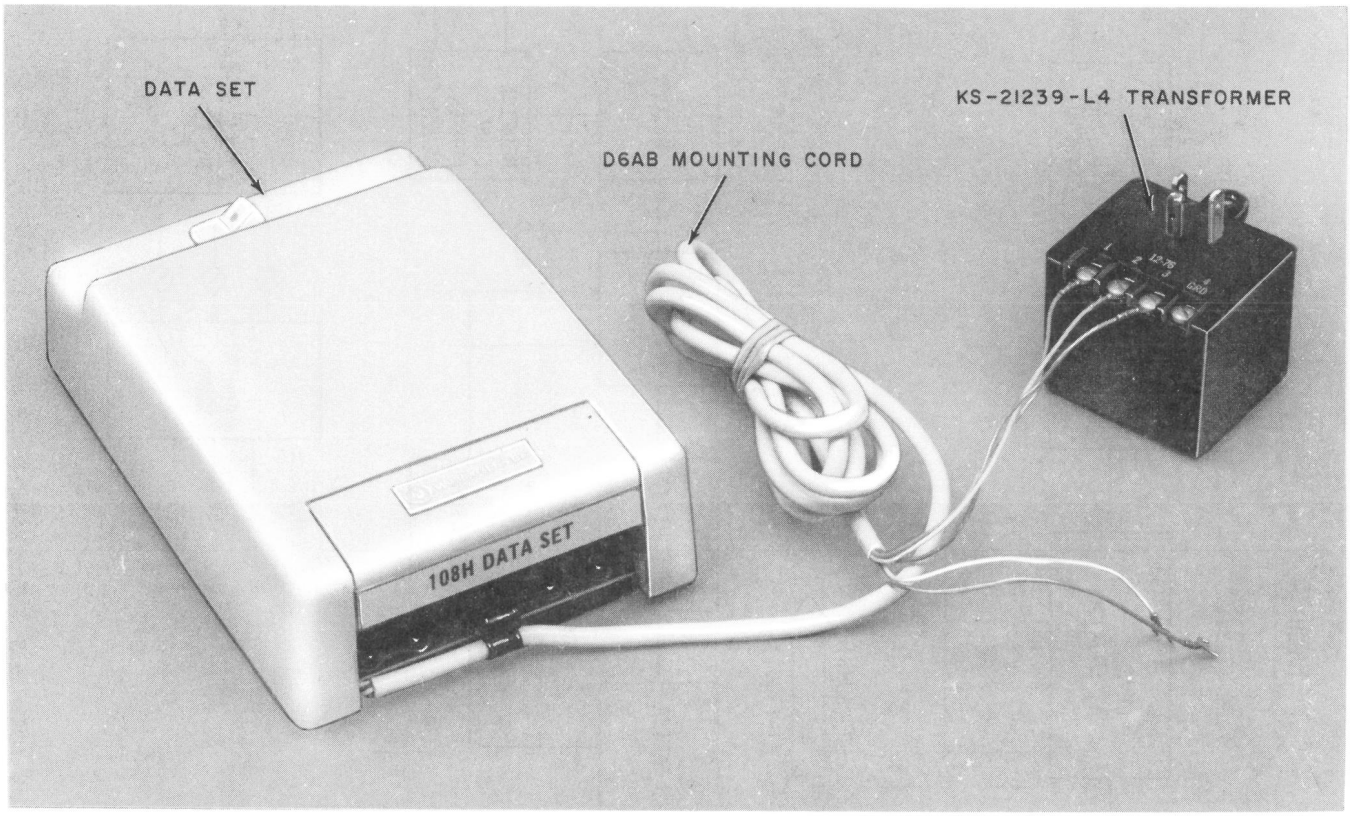
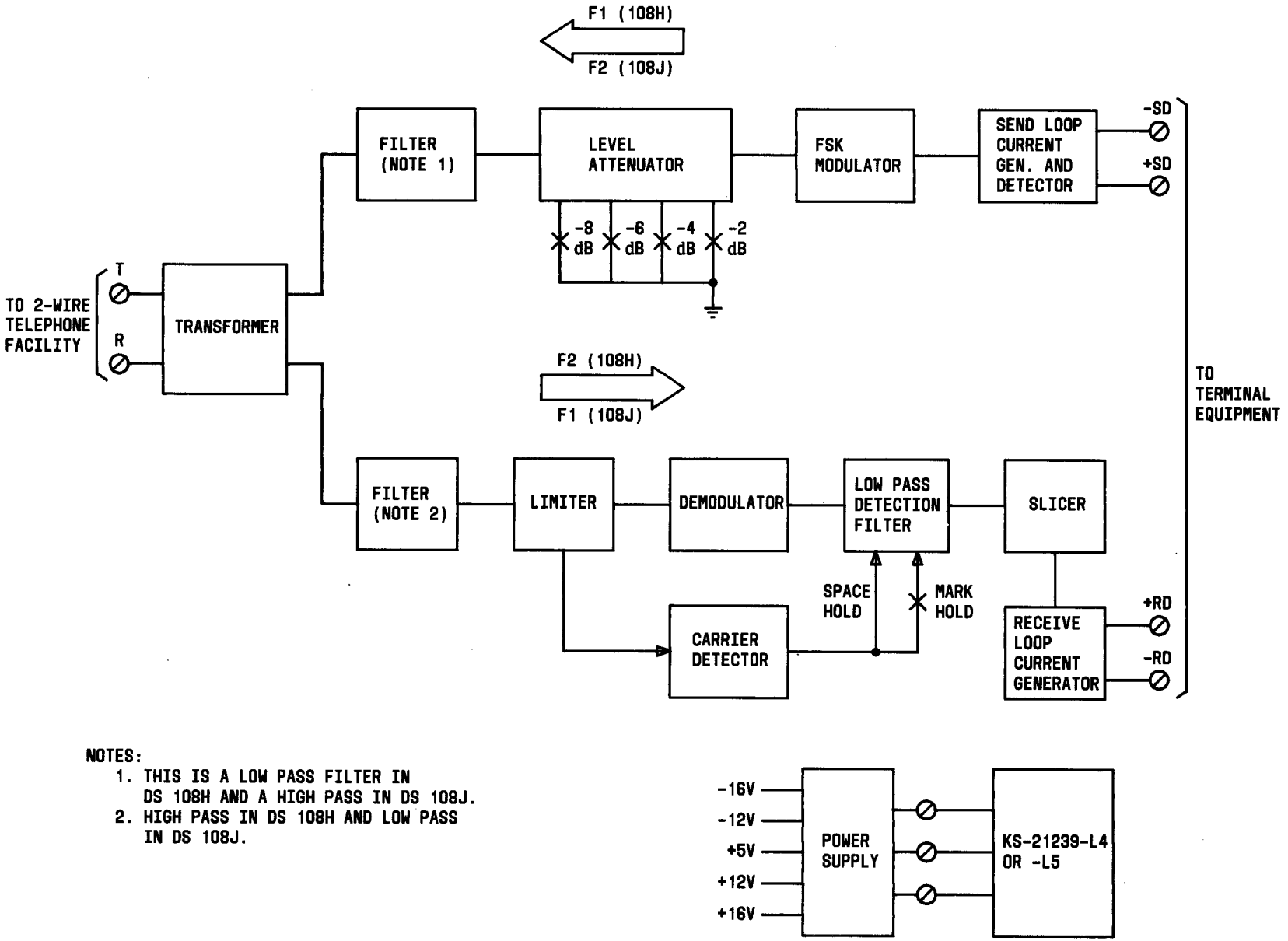


Fig. 4—DS 108H Shown Connected to KS-21239-L4 or -L5 Transformer



NOTES:
1. THIS IS A LOW PASS FILTER IN DS 108H AND A HIGH PASS IN DS 108J.
2. HIGH PASS IN DS 108H AND LOW PASS IN DS 108J.

Fig. 5—DS 108H and J Simplified Diagram

TABLE A

DATA SET FREQUENCY DATA

DATA SET	TRANSMIT			RECEIVE		
	FREQ BAND	MARK	SPACE	FREQ BAND	MARK	SPACE
108H	F1	1270	1070	F2	2225	2025
108J	F2	2225	2025	F1	1270	1070

TABLE B

DS 108H OR J OPTIONS

FEATURE		OPTION
Mark or Space Hold	Mark	U*
	Space	V
Local Copy in Digital Loopback Test Mode	Yes	G
	No	F*
20 mA Current Loop Interface	2 - Wire	X
	3 - or 4 - Wire With Local Copy	Z*
	3 - or 4 - Wire Without Local Copy	Y

* Factory furnished option.