

AVTECH ELECTROSYSTEMS LTD.

**NANOSECOND WAVEFORM ELECTRONICS
ENGINEERING . MANUFACTURING**

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INSTRUCTIONS

Model AVI-L1 Pulse Generator

S.N.:

WARRANTY

Avtech Electrosystems Ltd. warrants products of its manufacture to be free from defects in material and workmanship under conditions of normal use. If, within one year after delivery to the original owner, and after prepaid return by the original owner, this Avtech product is found to be defective, Avtech shall at its option repair or replace said defective item. This warranty does not apply to units which have been disassembled, modified or subjected to conditions exceeding the applicable specifications or ratings. This warranty is the extent of the obligation or liability assumed by Avtech with respect to this product and no other warranty or guarantee is either expressed or implied.

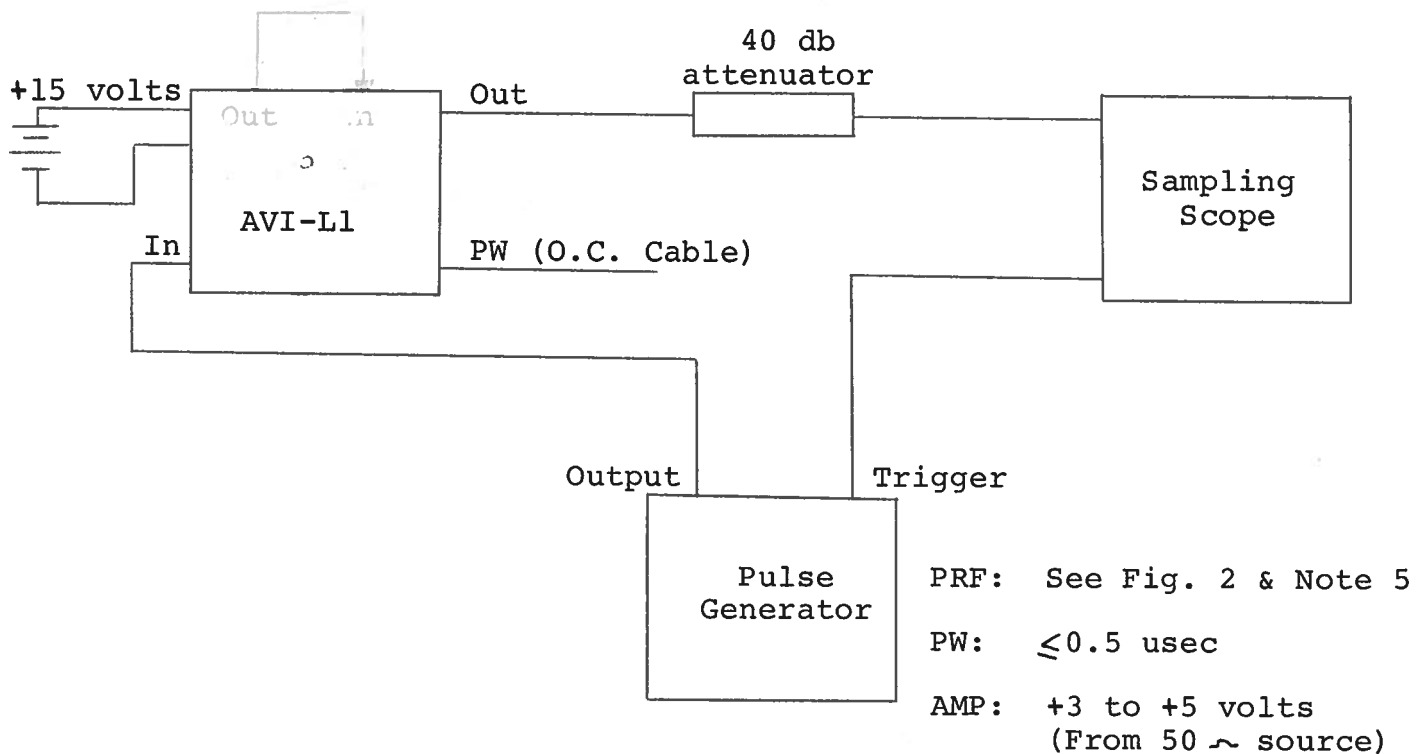
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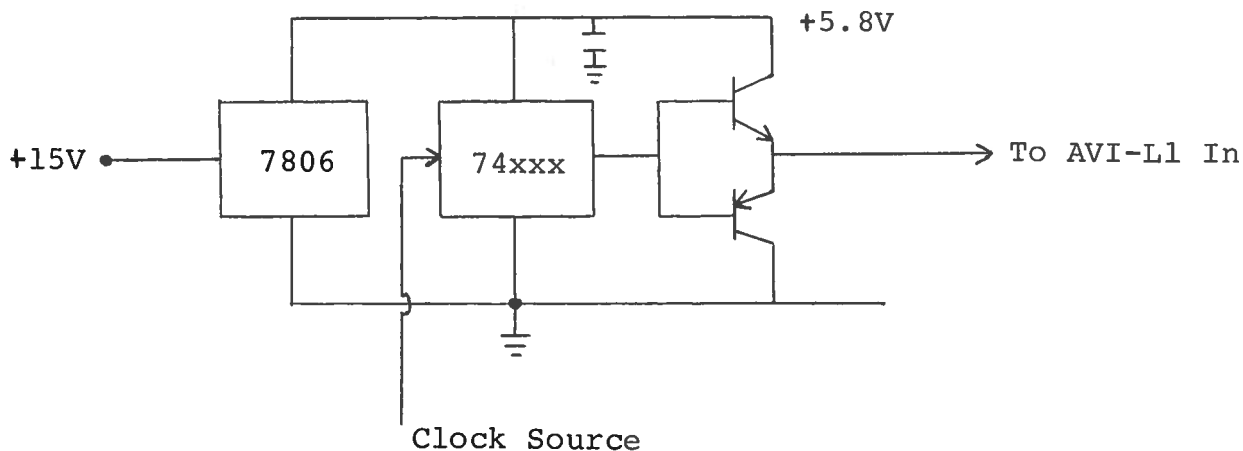
MODEL AVI-L1 PULSE GENERATOR TEST ARRANGEMENT



Notes:

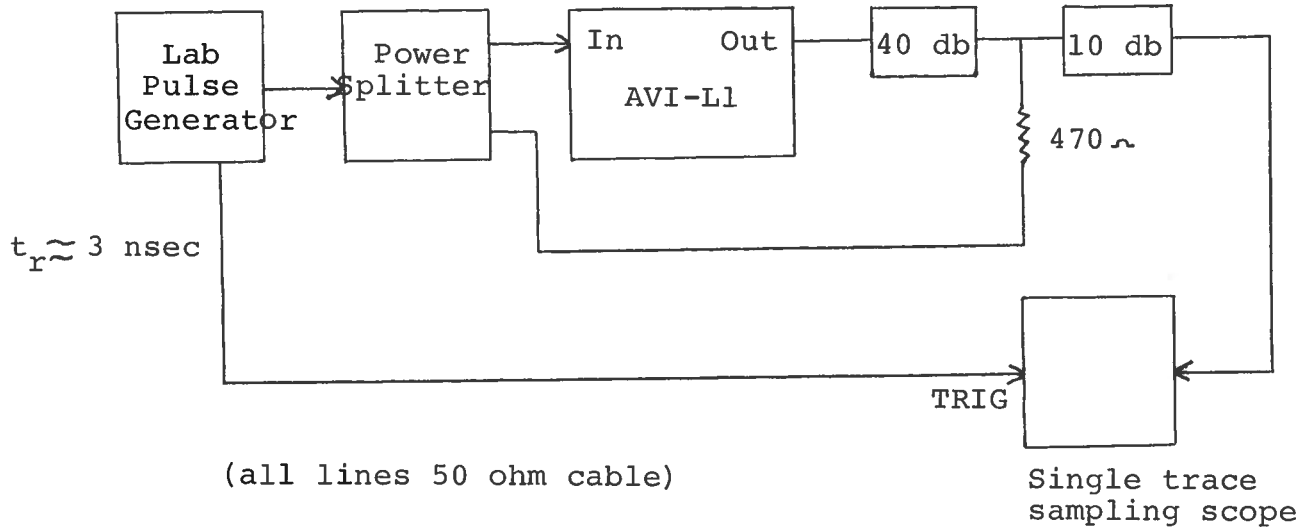
- 1) The bandwidth capability of components and instruments used to display the pulse generator output signal (attenuators, cables, connectors, etc.) should exceed several gigahertz.
- 2) The use of a 40 db attenuator will insure a peak input signal to the sampling scope of less than one volt.
- 3) In general, the pulse generator trigger delay control should be set in the 100 nsec range. Other settings should be as shown in the above diagram. The Avtech pulse generator output is delayed with respect to the trigger input signal by about 10 nsec (typically).

- 4) The Model AVI-L1 output pulse width is a linear function of the length of open circuited coaxial cable connected to the "PW" port (see Fig. 1). The open circuited delay line should be formed from high-quality semi-rigid 50 ohm coaxial cable (eg. 0.085 inch copper 50 ohm semi-rigid). Miniature flexible coaxial cable such as RG 173 may be used but will result in a degraded fall time. In the absence of an external cable connected to the tune port, Model AVI-L1 outputs an impulse of pulse width less than 1.0 nsec.
- 5) The minimum pulse repetition frequency period is related to the delay line cable length (or pulse width) as shown in Fig. 2. If the PRF period for a given cable length is less than that specified in Fig. 2, the output pulse amplitude will be less than the specified value and prolonged operation in this mode could result in damage to the unit. Therefore, operation in or beyond the shaded region should be avoided.
- 6) The Model AVI pulse generator can withstand an infinite VSWR on the output port.
- 7) The AVI-L1 is designed to be triggered by a 50 ohm source such as a lab pulse generator. The unit can be triggered from TTL logic if a double emitter follower circuit (see below) is used as a buffer:



- 8) To maintain a constant propagation delay time, it is recommended that the unit be heatsunk by connecting to the two 2-56 holes on the bottom of the chassis.

- 9) The dependence of propagation delay on PRF was checked using the following measurement set-up:



This arrangement allows the simultaneous display of the AVI-L1 input and output waveforms. No change of propagation delay could be detected when the PRF was varied over the range of about 20 Hz to 40 KHz (but it is to be noted that the 3 nsec rise time of the lab pulse generator output makes it relatively difficult to resolve extremely small propagation time variations).

FIG. 1

OUTPUT PULSE WIDTH VERSUS CABLE LENGTH

Model: AVI
S.N.:

(50 ohm 0.085 inch semi-rigid cable)

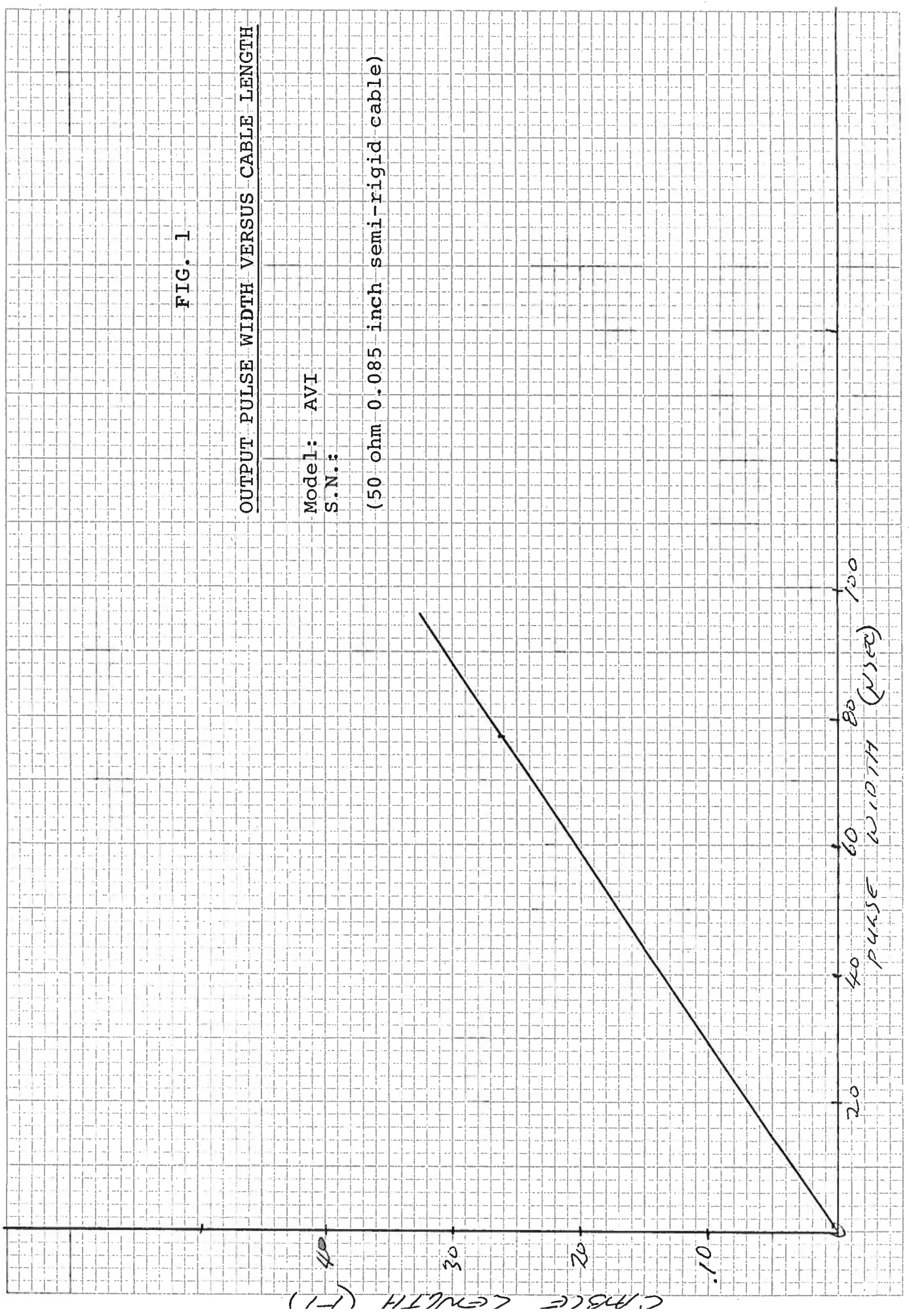


Fig. 1A

OUTPUT PULSE WIDTH VERSUS CABLE LENGTH

Model: AVI
S.N.:

(50 ohm 0.085 inch semi-rigid cable)

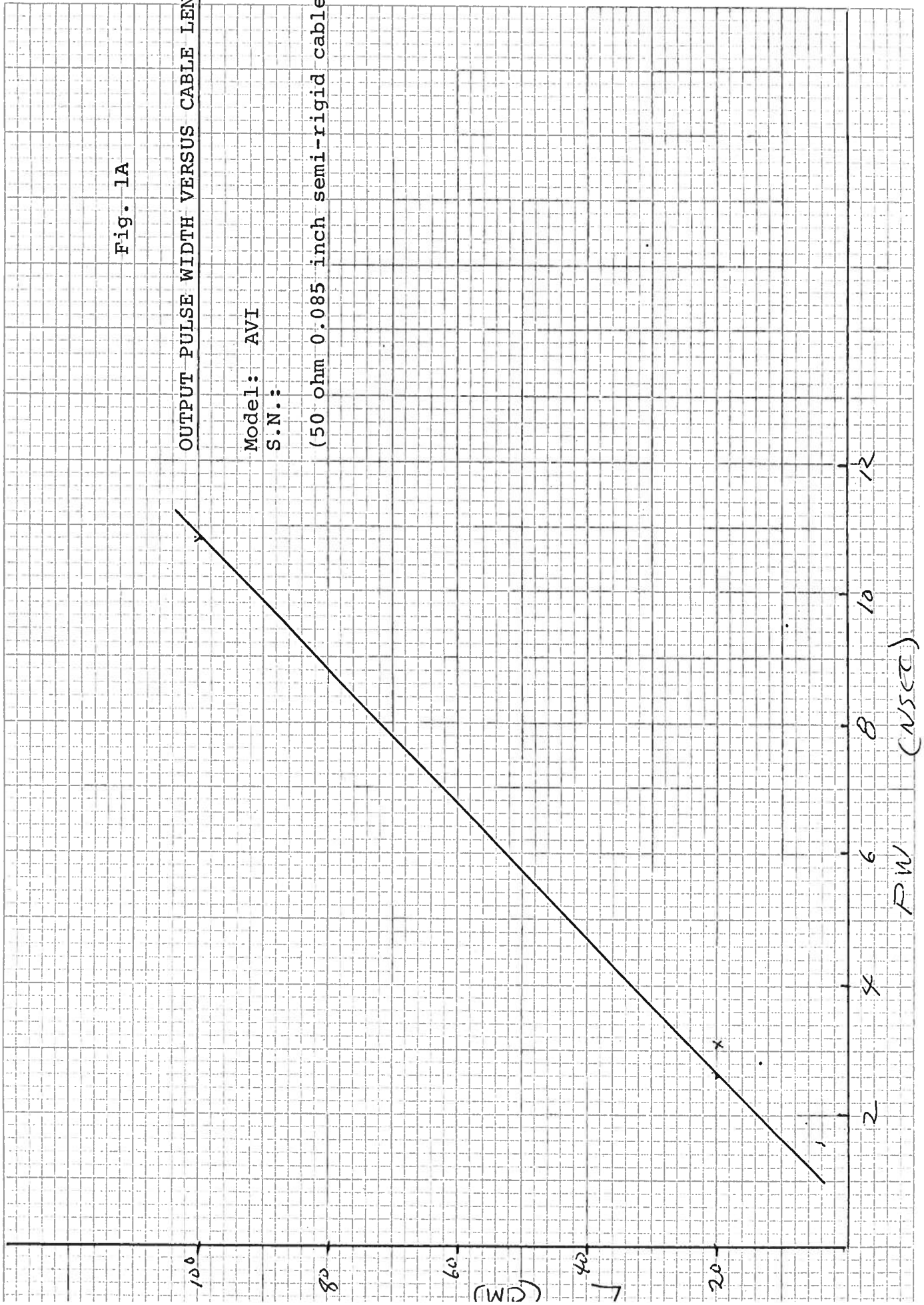


Fig. 2

DELAY LINE CABLE LENGTH VERSUS PULSE
REpetition FREQUENCY PERIOD (MINIMUM
PERIOD)

Model: AVI
S.N.:

(50 ohm 0.085 inch semi-rigid cable)

