

3A AND 4A VARISTORS

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1. GENERAL

1.01 This section gives information concerning the methods to be used, and requirements to be met, when making transmission measurements on the 3A and the 4A varistors (previously coded as 93 and 94A resistances) which are used in operators' telephone circuits for the purpose of reducing acoustic disturbances.

1.02 No arrangements are available at the present time by which varistors already installed may be measured in place in the operator's telephone circuit. When a measurement is to be made it will be necessary to disconnect the varistor from the circuit.

1.03 Two methods for making transmission measurements on these varistors are available; one involves the use of a variable attenuator, and is designated "Method 1", the other, uses a fixed pad, and is designated "Method 2". Method 1 is the more desirable procedure, and should be used when an attenuator is available.

1.04 As the transmission loss of a varistor varies with temperature, it will be necessary to determine the room temperature at the time of measurement. The requirements are specified for room temperatures greater than 65°F.

2. TESTING METHODS

(A) Method 1 (Attenuator Method)

2.01 With this method, approximately 0.1 volt is impressed across the varistor when its transmission loss is being determined.

2.02 Apparatus:

3B transmission measuring set and associated oscillator, or a 1MW source of testing power and a 600 ohm db receiving meter.

1A attenuator.

2.03 Procedure:

(1) Connect the transmission measuring set, the attenuator and the varistor to be measured, as shown in Fig. 1.

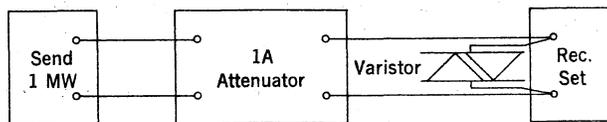


Fig. 1.

(2) Adjust the attenuator until the loss of the attenuator plus the loss of the varistor, as read on the transmission measuring set, is 17.8 db ± 0.3 db.

(3) The difference between the reading on the transmission measuring set and the setting of the attenuator is the measured loss of the varistor.

Requirements: The loss determined in (3) above should not exceed the value given below for the corresponding room temperature.

Room Temp. °F	Max. Loss db	Room Temp. °F	Max. Loss db
65	1.5	85	2.7
67	1.6	87	2.9
69	1.7	89	3.0
71	1.8	91	3.2
73	1.9	93	3.4
75	2.0	95	3.5
77	2.1	97	3.7
79	2.2	99	3.8
81	2.4	101	4.0
83	2.6	103	4.2
85	2.7	105	4.4

(B) Method 2 (Pad Method)

2.04 With this method, the voltage across the varistor when its transmission loss is being determined will be between 0.1 and 0.2 volt.

2.05 Apparatus:

3B transmission measuring set and associated oscillator, or a 1MW source of testing power and a 600 ohm db receiving meter.

12 db pad (600 ohm characteristic resistance) constructed from two

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19PF resistances, as shown in Fig. 2.

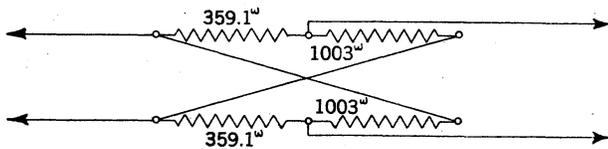


Fig. 2.

2.06 Procedure:

(1) Connect the transmission measuring set, the 12 db pad and the varistor to be measured as shown in Fig. 3.

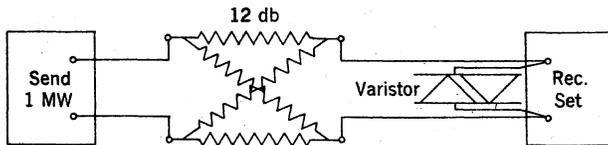


Fig. 3.

(2) Measure the loss of the pad and the varistor.

(3) The difference between the measured loss and 12 db is the transmission loss of the varistor.

Requirements: The loss determined in (3) above should not exceed the value given below for the corresponding room temperature.

Room Temp. F°	Max. Loss db	Room Temp. F°	Max. Loss db
65	1.9	85	3.1
67	2.0	87	3.2
69	2.1	89	3.4
71	2.2	91	3.5
73	2.3	93	3.6
75	2.4	95	3.8
77	2.5	97	3.9
79	2.7	99	4.1
81	2.8	101	4.2
83	2.9	103	4.4
85	3.1	105	4.5