
नाम

Name : _____

अनुक्रमांक

Roll No : _____

प्राप्त अंक

Marks Awarded : _____

पाठ्यक्रम

Course : _____

दिनांक

Date : _____

अनुदेशक का अधाक्षर

Instructor Initial : _____

OBJECTIVE: At the end of the Lab session you will learn about the procedure of testing the characteristics of copper cables.

Following Tests are to be carried out to measure the characteristics of Transmission lines.

(1) INSULATION RESISTANCE TEST (MEGGERING)

(2) CONDUCTION TEST /LOOP RESISTANCE TEST

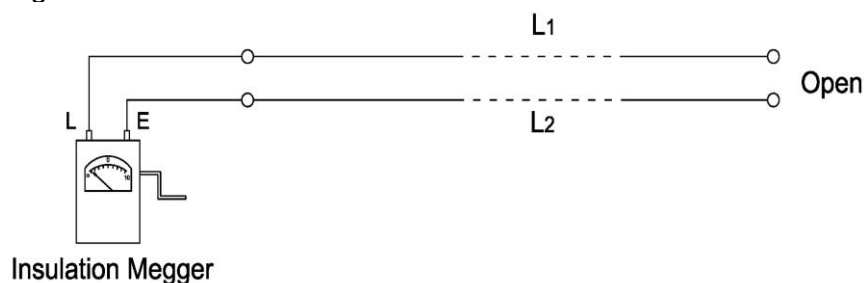
(3) TRANSMISSION LOSS TEST

1) INSULATION TEST:

- a. The aim of this test is to measure the Insulation Resistance of a transmission line.
- b. Both the ends of the conductors must be disconnected (isolated) from the circuit before carrying out the test.
- c. Insulation resistance tester or MEGGER to be used for carrying out the test.
Insulation resistance test must be carried out between:
 - i) The two conductors of the same pair.
 - ii) Each conductor to earth

a) Find out the Insulation Resistance between the two conductors.

Connection Diagram:



Measured value: L1 to L2 = _____ Ohms.

b) Find out the Insulation Resistance between L1 to Earth (or Sheath).

Connection Diagram:



Measured value: L1 to E = ----- Ohms

c) Find out the Insulation Resistance between L2 to Earth (or Sheath).

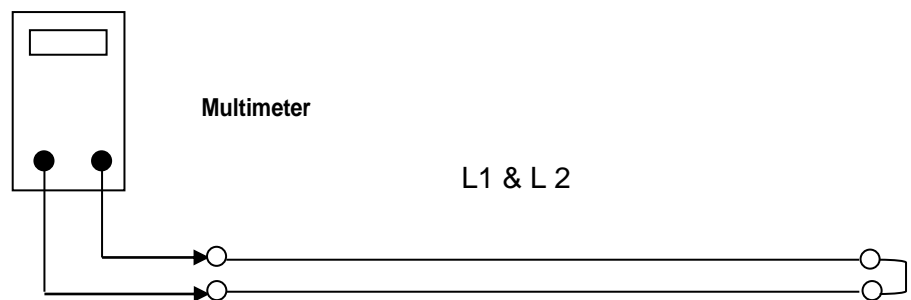
Measured value: L 2 to E = ----- Ohms.

2) CONDUCTION TEST /LOOP RESISTANCE TEST:

- a. The objective of this test is to measure the Ohmic resistance value of the transmission line.
- b. Ohm meter (Digital multi meter) is used to carry out the test.
- c. The transmission line must be disconnected from the circuit before carrying out the test

(i) The loop resistance of a pair: Connect the two limbs L1 & L2 of the pair to the connecting leads of the Multi meter at the near end and both the limbs must be looped at the far end as shown in the diagram and note down the reading

Connecting Diagram:

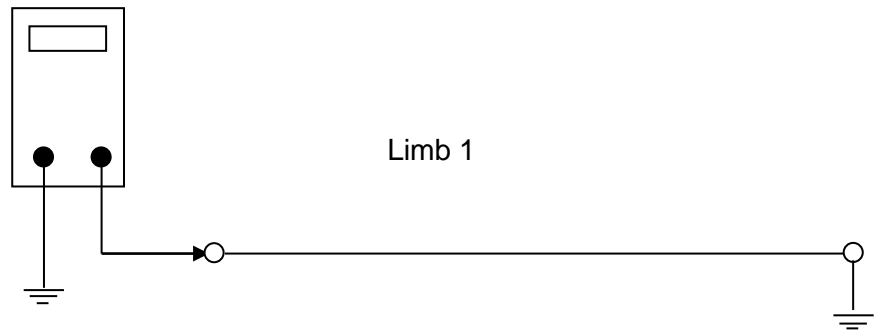


So the total resistance of the pair is: L1 + L2 (loop resistance) = ----- Ohms.

(ii) The resistance of limb 1: Follow the procedure given below to measure the resistance limb1:

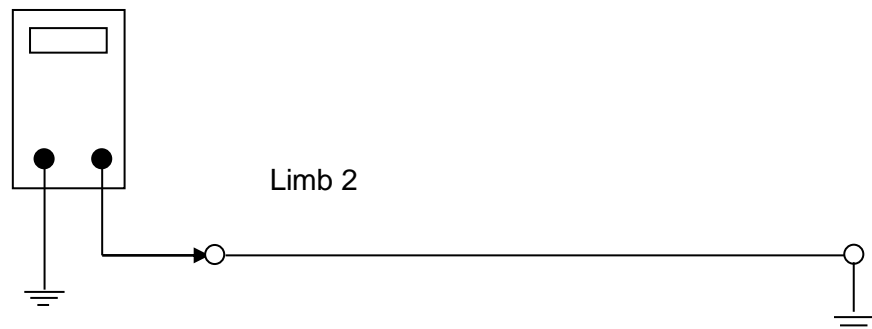
- a) Connect Near end of L1 to one terminal of the meter and Far end to the proper earth (metallic sheath can be used as earth) as given in the connecting diagram.
- b) Connect the second terminal on the meter to the proper earth (metallic sheath can be used as earth)
- c) Record the reading.

Connection diagram:



The resistance value of L1 = ----- Ohms

The resistance of Limb 2: Replace Line 1 with Line 2 and follow the same procedure and record the reading.

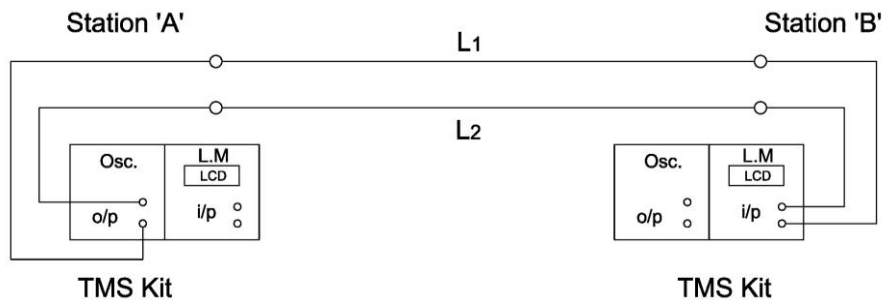


The resistance value of L2 = ----- Ohms

3) TRANSMISSION LOSS TEST: This test is carried out to measure the loss offered by a transmission line for voice frequency circuits.

Two Transmission Measuring Sets (TMS) meters are required to carry out this test

Use Transmission measuring set available in the lab (Make: Anu Vidyut, Model No: 368-B).



Connecting Procedure:

- (i) Connect the output of generator to the input of level meter with the supplied patch cord.
- (ii) Select the measuring frequency of 800 Hz by rotating the frequency selection switch.
- (iii) Select the measuring range from +20 to -20 dB.
- (iv) Select the power to 0 dBm
- (v) Switch ON the instrument and give 3 to 5 minutes warm up time.
- (vi) Adjust the level to 00.00 dBm with the help of trans level pot for its calibration.
- (vii) Check 0 dBm for all spot frequencies and adjust the pot if required.
- (viii) Now instrument is ready to measure the transmission loss.
- (ix) Connect the pair to be tested to the output of generator at the near end.
- (x) Connect the other end of the pair to be tested to the input of the level meter.

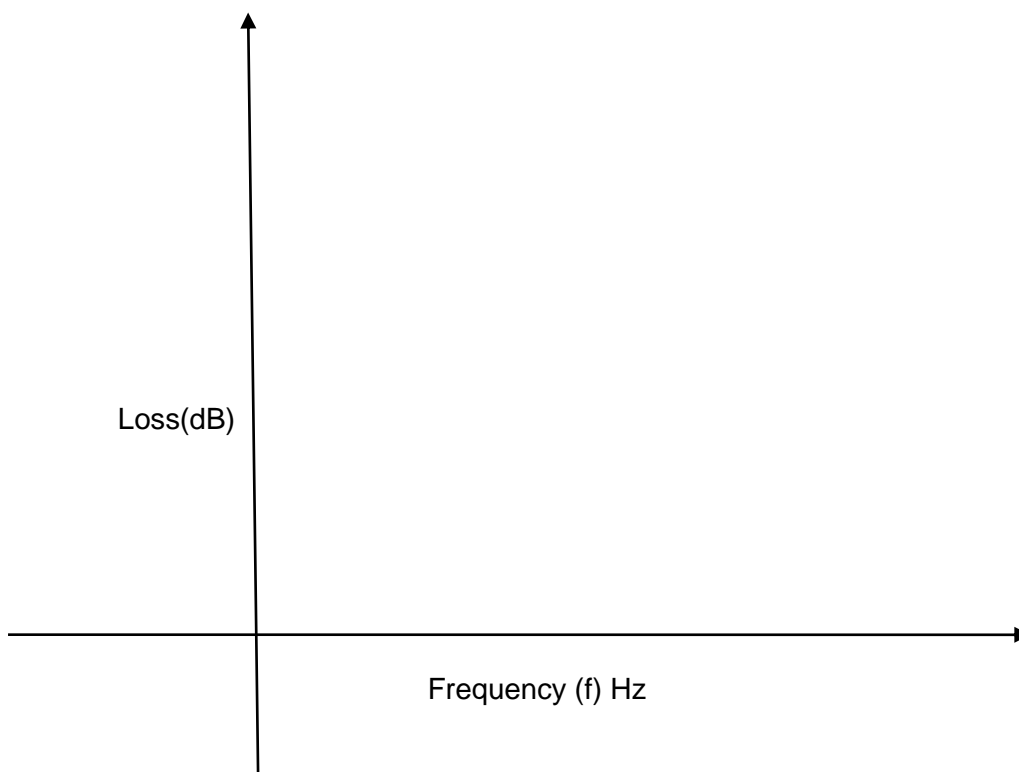
- (xi) Select the correct measuring range and record the reading as shown in the display of Digital Panel meter
- (xii) If Digital Panel Meter (D.P.M) shows under or over range, select the next range. The D.P.M directly shows the value of loss of the pair under test.

Conduct the test and measure the transmission losses on a VF circuit at different frequencies:-

Frequency	Input power in dBm	Output power in dBm	Loss in dB
800 Hz			
1000 Hz			
1200 Hz			
1600 Hz			
1800 Hz			
2400 Hz			
3000 Hz			
3500 Hz			
4000 Hz			
5000 Hz			

Q1. From the above table draw the graph between Frequency Vs Loss?

Ans:



Date:

Signature of Trainee