

Lab 4.2.9a Fluke 620 Cable Tester – Wire Map – Instructor Version



Objective

- Learn the wire mapping features of the Fluke 620 LAN CableMeter or its equivalent.
- Learn how to use a cable tester to check for the proper installation of unshielded twisted-pair (UTP) Category 5 according to TIA/EIA-568 cabling standards in an Ethernet network.

Background / Preparation

Wire maps can be very helpful in troubleshooting cabling problems with UTP cable. A wire map allows the network technician to verify which pins on one end of the cable are connected to which pins on the other end.

Prior to starting the lab, the teacher or lab assistant should have several correctly wired Category 5 cables to test. The cables should be both straight-through and crossover. There should also be several Category 5 cables created with problems such as poor connections and split pairs to test. Cables should be numbered to simplify the testing process and to maintain consistency. A cable

tester should be available that can test at least continuity, cable length, and wire map. Work individually or in teams. The following resources will be required:

- Category 5 straight-wired cables of different colors
- Category 5 crossover-wired cable, which is T568A on one end and T568B on the other
- Category 5 straight-wired cables with open wire connections in the middle or one or more conductors shorted at one end of different colors and different lengths
- Category 5 straight-wired cable with a split pair mis-wire
- Fluke 620 LAN CableMeter or similar to test cable length, continuity, and wire map

Step 1

Turn the rotary switch selector on the tester to the WIRE MAP position. Press the **SETUP** button to enter the setup mode and observe the LCD screen on the tester. The first option should be CABLE. Press the **UP** or **DOWN** arrow buttons until the desired cable type of UTP is selected. Press **ENTER** to accept that setting and go to the next one. Continue pressing the UP/DOWN arrows and pressing **ENTER** until the tester is set to the following cabling characteristics:

Tester Option	Desired Setting – UTP
CABLE:	UTP
WIRING:	10BASE-T or EIA/TIA 4PR
CATEGORY:	CATEGORY 5
WIRE SIZE	AWG 24
CAL to CABLE?	NO
BEEPING:	ON or OFF
LCD CONTRAST	From 1 through 10 (brightest)

Step 2

Once the student has completed setting up the meter, press the "SETUP" button to exit setup mode.

For each cable to be tested use the following procedure. Place the near end of the cable into the RJ-45 jack labeled UTP/FTP on the tester. Place the RJ-45-RJ-45 female coupler on the far end of the cable, and then insert the cable Identifier into the other side of the coupler. The coupler and the cable identifier are accessories that come with the Fluke 620 LAN CableMeter.



Step 3

Using the tester Wire Map function and a Cable ID Unit, the wiring of both the near and far end of the cable can be determined. The top set of numbers displayed on the LCD screen is the near end, and

the bottom set is the far end. Perform a Wire Map test on each of the cables provided. Then fill in the following table based on the result for each Category 5 cable tested. For each cable, write down the number and color, whether the cable is straight-through or crossover, the tester screen test results, and what the problem is.

Cable No.	Cable Color	How cable is wired (straight-through or crossover)	Test Displayed Test Results (Note: Refer to the Fluke manual for detailed description of test results for wire map.)	Problem Description
1	<u>Answers will vary.</u>	<u>patch</u>	Top: <u>12364578</u> Bot: <u>12364578</u>	
2	<u>Answers will vary.</u>	<u>cross over</u>	Top: <u>12364578</u> Bot: <u>36124578</u>	
3	<u>Answers will vary.</u>	<u>cross over</u>	Top: <u>12<u>oo</u>4578</u> Bot: <u>36124578</u>	<u>Pins 3 and 6 are open somewhere in the first half of the cable</u>
4	<u>Answers will vary.</u>	<u>patch</u>	Top: <u>12364578</u> Bot: <u>12364<u>s</u>78</u>	<u>Pin 5 is shorted in the last half of the cable</u>
5	<u>Answers will vary.</u>	<u>patch</u>	Top: <u>1236<u>5</u>478</u> Bot: <u>1236<u>4</u>578</u>	<u>Miswire</u>

Answers for rows 3, 4, and 5 will vary depending on the types of problems the cables have, but they could be as shown.

