Telephony 101 – Tests and Measurements March 27, 2013

Hello All,

As always, please send any questions about the reading assignment directly to me at oldtimetelephones@goeaston.net. I will bundle questions if necessary, repeat the questions, and give answers in an e-mail to the TCI List Server before moving on to the next reading assignment. This way everyone will benefit from these questions and answers. By sending questions directly to me, we will avoid unnecessary clutter on the List Server. Previous reading assignments, notes, questions, and answers are available in the TCI Library at http://www.telephonecollectors.info/index.php/telephony101 (this is a new URL, but the old one will eventually get you there).

Please read Chapter 21, Tests and Measurements, on pages 193 through 199. There is a typographical error in this chapter in the upper right-hand margin of pages 195, 197, and 199 where it should say "Tests and Measurements" instead of "Mechanical Restoration."

This chapter discusses how to test telephone components using an inexpensive (about $30) analog multimeter or a more expensive digital multimeter. Of course you can accomplish more with the digital meter, but you can do a surprising amount of testing – even testing condensers – with the analog meter.

The thing I want to highlight about this chapter is the versatile test set shown in Fig. 21-3. This set was made from an old standard TT desk set (a non-WE clone in this case), and its capability was made possible by a peculiar property of the early TT dials. On these old dials, if you simultaneously press two or more buttons in a row or a column, you get the single pure frequency of that row or that column. Used in this way, the phone behaves like an audio signal generator with 7 different frequencies (see Fig. 7-7 on page 48) right in the useful audio range. Using the simple circuit additions shown in Fig. 21-4 and very inexpensive components you get a test set that will:

+ Generate audio tones
+ Generate electrical signals at audio frequencies
+ Work as a LB phone
+ Work as a self-powered CB phone into which you can plug another CB phone

I have used this test set extensively and am a little surprised that I haven't heard of anyone else making one. I would tape the receiver of the test set to the transmitter in a telephone circuit that I wanted to test with a controlled audio input. I used electrical signals to measure turns ratios of coils. The electrical signals provide a quick way of checking if a receiver works well. And the LB and CB features will let you test another LB or CB phone to see if they are working. It's really cool. Of course it won't ring ringers, but just set up a magneto on your test board for this.

If there are any questions about the current reading assignment, we will deal with the questions before moving on to the next reading assignment. We're almost done.

Ralph