MECHANIZED LOOP TEST - FAQ

Mechanized Loop Test (MLT) is a command issued from the Central Office (CO) switch to record the copper metrics of a telephone local loop.

Metallic Loop Test and Mechanized Line Test are also other product names for this test.

MLT can provide the following test results;

Loop Length

Dial Tone OK: Present/Not Present

Capacitive Balance
Longitudinal Balance

DC Results
Tip-to-Ground Resistance
Ring-to-Ground Resistance
Tip to Ring Resistance
Tip-to-Ground Voltage
Ring to Ground Voltage

AC Results
Tip to Ground Resistance
Ring to Ground Resistance
Tip to Ring Resistance

The MLT is required by the FCC (Federal Communication Commission) to be provided by the LEC (Local Exchange Carrier) to the CLEC (Competitive Local Exchange Carrier) to verify a line. Here is the FCC rule;

> *47 CFR section 51.319(h)(7)(i) Incumbent LECs must provide, on a nondiscriminatory basis, physical loop test access points to requesting carriers at the splitter, through a cross-connection to the competitor's collocation space, or through a standardized interface, such as an intermediate distribution frame or a test access server, for the purposes of loop testing, maintenance, and repair activities.*

The MLT system permits carriers to obtain a real-time actual measurement of sub-loops without having to go to the line to do the measurements. With MLT, the operator can open a web browser to start the test.

The MLT system breaks the connection between the loop and the central office line card (in our case it is a loop carrier box line card). It tests "outwards," measuring resistance, capacitance, impedance and voltage on the loop in the

direction of the end user. It also tests "inwards," checking for presence of dial tone at the loop terminals of the line card and the ability to "break" dial tone. When the test is finished the loop is reconnected to the line card. This is all done in an automated way and does not require any manual steps by CO personnel.

Testing Metrics
The **DC resistance-to-ground measurements,** which are in kilohms, reveal leakage if any. The values in this report, in excess of 3 megohms, are typical good values. Typically, loops are all in the range of 2.2 meg to 3.5 meg for tip-to-ground and ring-to-ground.

Voltage-to-ground values should be zero and in this case they are. All of our loops test "zero" for tip-to-ground and ring-to-ground. Nonzero values suggest a cross to another line.

DC tip-to-ring resistance, for a line that is on-hook, should be quite high. In this case the value is over 1 megohm which is fine. This ohmmeter also seems to top out at 3.5 megohms. Our loops all measure between 1.1 meg and 3.5 meg.

The **AC signature** results is impedance (rather than resistance) at 24 Hz. The tip-to-ground and ring-to-ground numbers for our loops are all in the range of 32 to 40. The tip-to-ring numbers for our loops are all in the range of 7 to 18.

Capacitive balance compares the capacitance-to-ground for the tip and ring wires and provides a percentage of the smaller to the larger. Loops are typically in the range of 98 to 99, with a pass/fail criterion of 95%.

Longitudinal balance is expressed in decibels (dB). The pass criterion is 50 dB.

The "central office" results in this report are "line ckt OK" for Line Circuit OK and "Dial tone OK." Dial tone OK refers to the MLT system heard a dial tone coming from the line card and was able to break the dial tone.

MLT calculates **loop length** from the AC capacitance measurements. Loop Length is only returned with a Test OK or an Open Out condition. Because MLT is calculating distance based on test measurements, circuits on Pair Gain must be interpreted differently [than loop length measurements for all-copper circuits].

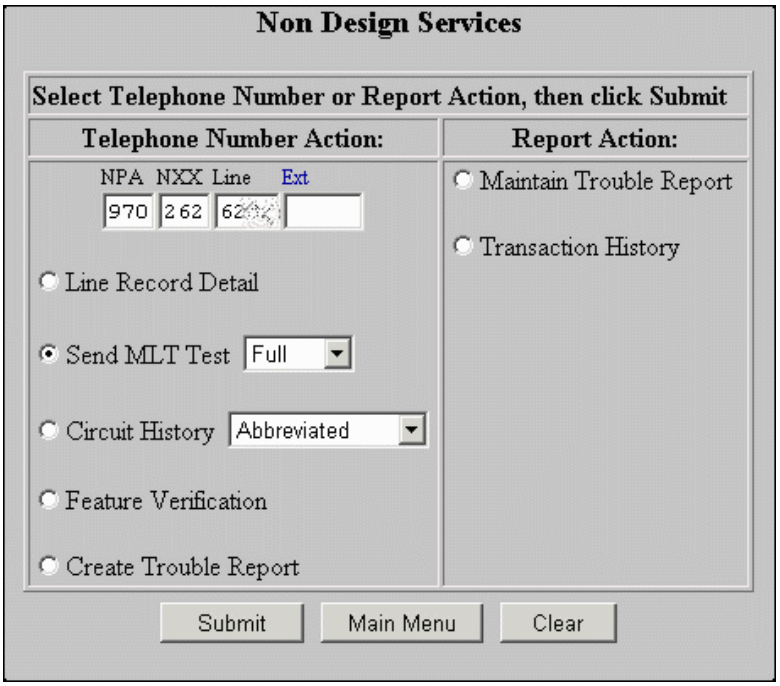
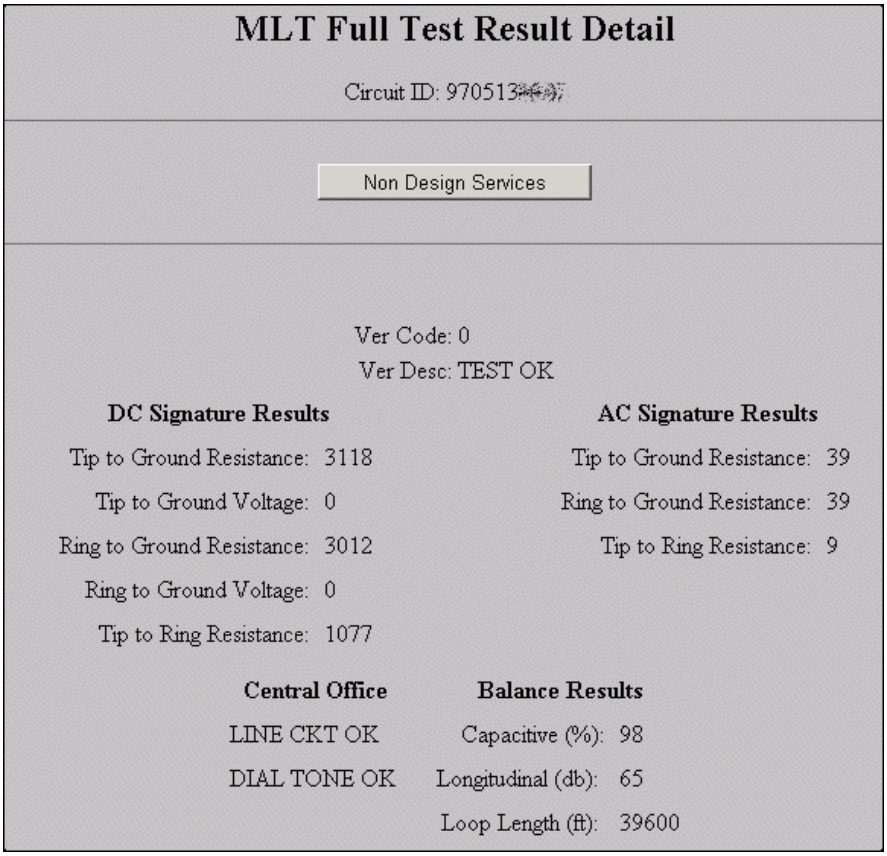


Figure 1: MLT Test Setup Request



MLT Full Test Result Detail

Circuit ID: 970513[redacted]

Non Design Services

Ver Code: 0
Ver Desc: TEST OK

DC Signature Results		AC Signature Results	
Tip to Ground Resistance:	3118	Tip to Ground Resistance:	39
Tip to Ground Voltage:	0	Ring to Ground Resistance:	39
Ring to Ground Resistance:	3012	Tip to Ring Resistance:	9
Ring to Ground Voltage:	0		
Tip to Ring Resistance:	1077		

Central Office	Balance Results	
LINE CKT OK	Capacitive (%):	98
DIAL TONE OK	Longitudinal (db):	65
	Loop Length (ft):	39600

Figure 2: MLT Test Results

Reference:

Lucent Technologies Mechanized Loop Testing (MLT-4) Test Results Guide (190-425-910)

Wilcom
P.O. Box 508, Laconia, NH 03247
Tel: 603/524-2622 • Fax: 603/524-3735
www.wilcominc.com