Comparison of the ILA 550 to the HILT 9000

The following is a comparison of the obsolete ILA 550 Conflict Monitor Tester to the current production HILT 9000 model. ATSI or your local distributor will take the older ILA 550 in trade towards the purchase of the current HILT 9000 Model. Contact ATSI or your local distributor for details and a quote.

One difference is that the HILT uses standard 9 volt alkaline batteries. There are no expensive rechargeable batteries to replace.

Another important difference between these two units is Q (or how it is measured):

1. ILA

The ILA-550 measures the best case scenario for Q, assuming that an ideal inductor with measured resistance is placed in ideal environment (in the space, far-far away from any object such as cars, traffic cabinets, planets, stars, and etc.). Q is calculated based on measured inductance, DC resistance and the oscillating frequency (whatever that frequency is).

2. HILT

The HILT measures the actual Q as it is based on a phase shift between voltage and current in the inductor (loop), as it is required by the definition of Q.

Why it is important:

Since the ILA measures the best possible Q, for low DC resistance the Q will be very high even if there is a short in the loop.

Reason #1:

The HILT can measure inductance L and Q even if Q is low (less than 2).

The HILT can measure L and Q for different frequencies. (seen Scenario #2 for details).

Scenario #1:

Detector does not detect cars. Technician comes to the intersection and brings ILA-550 and QC-330. He (or she) measures the parameters of the loop. It shows (for example) Q=45, low DC resistance and some inductance. The technician then plugs the detector in to the QC-330 and verifies that it works too. Plugs detector back in the rack… does not work. Is it the detector problem or the loop problem? He takes a new detector, plugs it into the cabinet – the loop starts working. He ends up replacing a detector.

…A month later the new detector stops giving calls because the loop does not oscillate anymore. The technician tries to measure parameters of the loop and he/she gets no inductance and Q readings at all only the DC resistance.

Here is why this happened. Originally, two adjacent wires in the loop got shorted, and it resulted in low Q. The Q was too low for the old detector and was right on the edge for the new detector. Remember, from observations it looked like the detector was bad. In one month the Q dropped further and even the new detector could not oscillate.

This happened because the ILA reported the maximum possible Q where as the actual Q was (and can be) 10 times lower.

The HILT would display the actual Q of 4.5 and not 45. (As a matter of fact, the HILT has enough tools in it to be able to calculate the maximum possible Q like the ILA does, but it is pointless).

Scenario #2:

Loop-detector does not work. Technician comes to the intersection and brings ILA-550 and QC-330. He (or she) measures the parameters of the loop. It shows Q=7 even though the detector should work with Q down to 5.

Why could this happen? Q depends of the frequency at with the measurements are conducted. Apparently, the ILA had capacitance lower than that of the detector which resulted in higher oscillating frequency and as a result higher Q of the loop.

The HILT has the ability to select frequencies from 20 KHz up to 80 KHz with 1 KHz increment. This could be used during preventive maintenance as follows.

The test leads of the HILT are connected to the loop while the loop is connected to the detector. First, we record the frequency by pressing one button. Second, we unplug the detector. Third, we press another button and measure parameters of the loop. The result is the Q which is measured for the oscillating frequency.