Volts A/C and D/C

Ohms

Opens

Capacitive **B**alance

Resistive **B**alance

Have you voobbed today? These tests will identify the most common causes for chronic U-verse before you fix the problem. These tests should also be completed after you fix the pair to ensure the work you performed was adequate.

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IT'S INDUCED MAN!

Volts

AC (alternating current)

This test for inductive balance!

Good readings! The tip and ring to ground readings are the same.

T-R= 0.0 VAC
R-G= 3.0 VAC
T-G= 3.0 VAC

This tells us if the pair is **INDUCTIVELY** balanced

Induction is a resistor to frequencies. An unbalanced line adds more resistance to u-verse frequencies. This one test tells us that the cable pair is twisting through the magnetic fields around it. We want both sides of a pair to have the same amount of induction. As long as they are equal, it is as if there is no induction on the pair. That is what it is all about! Reducing the resistance to the frequencies, so that the signal is as strong as possible when it gets to the other end of the circuit.

Poor readings! The tip and ring to ground readings are different.

T-R= 4.2 VAC
R-G= 7.2 VAC
T-G= 3.0 VAC

Common Causes

Gournds
Open one side
Flat drops (that don't twist)
Low Meg values on one side of the pair

STOP TOUCHING ME!

Volts

DC (direct current)

You cannot induce DC Voltage!

Good readings! We should expect to see little or no battery on a balanced pair.

T-R= 0.0 VDC
R-G= 0.0 VDC
T-G= 0.3 VDC

This tells us if the pair is **Touching** Another working pair

Cross battery is the result of a working line physically touching our pair. The magnetic field around DC Voltages are static. In order to induce a voltage from one pair to another you need a moving magnetic field (EMF Electro Motive Force). Example: 60Hz is the frequency used by the power company to power your home. The "60" in 60Hz tells the number of times per second the magnetic field expands and colapses, or moves across our pair.

Poor readings! Any cross battery is a problem for uverse.

T-R= 5.0 VDC
R-G= 4.0 VDC
T-G= 4.0 VDC

Common Causes

Wet splices
Insulation break down
Ant urine
Squire poop

OHMS NEED BALANCE TOO!

Ohms

Short readings
Ohms readings tell us if the tip and ring conductors are touching. 0 ohms would tell us that they are shorted together. 999 MEGA ohms lets us know that they are not touching.

Ground readings
The same goes for t and ring to ground readings. 0 ohms is a hard ground or the copper wire is touching the sheath of our cable. 999 MEGA ohms tells us that the copper wire is not touching the sheath or the ground.

Good readings! 20 Mega ohms or greater and equal values to ground.

T-R=
R-G=
T-G=

20 MEGA ohms or greater

This tells us if the pair is **Touching**
Shorted or grounded.

Poor readings! Less than 20 MEGA ohms or greater than 30% different between t and r to ground.

T-R=
R-G=
T-G=

Less than 20 MEGA ohms

Example:
T-R= 999M
T-G=100M
R-G=60M

Common Causes

Wet splices
Insulation break down
Ant urine
Squire poop
Technician mistakes

OPENS MEASUREMENT!

Opens

Opens measures Capacitance. Capacitance is defined as two conductors separated by insulation. A pair is a Capacitor. We want both sides of a pair to have the same amount of Capacitance to be balanced. But don't stop here. If the pair looks Capacitively balanced we have to verify by checking Longitudinal Balance. Hey, that's the next step!

Good readings! Tip to ground and ring to ground measure the same.

T-R= 1352'
R-G=1186'
T-G=1190'

Within 1% of each reading to Ground

This tells us if the pair **has the same amount of Capacitance on both sides of the pair.**

Poor readings! Tip to ground and Ring to ground are different.

T-R=130'
R-G=100'
T-G=80'

More than 1% difference

Common Causes

Open one side
Grounds
Split pair
Cross to a non-working pair

CAPACITIVE BALANCE!

Balance

This is simply an opens measurement. When we look at opens on our meter, it reads the Capacitance tip to ring and both to ground, then converts it to a footage. We want the amount of Capacitance to be the same on both sides of the pair when referencing the shield of the cable. T-G and R-G readings are used on a shielded cable and T-R reading on an unshielded cable (IW or ASW). A good longitudinal balance reading tells us that the signal is not affected by the Capacitance on the pair.

Good readings! Marginal is between 50-60 Good is 60db or greater.

55db

The signal is equal on both sides of the pair.

Poor readings! Any reading less than 50db.

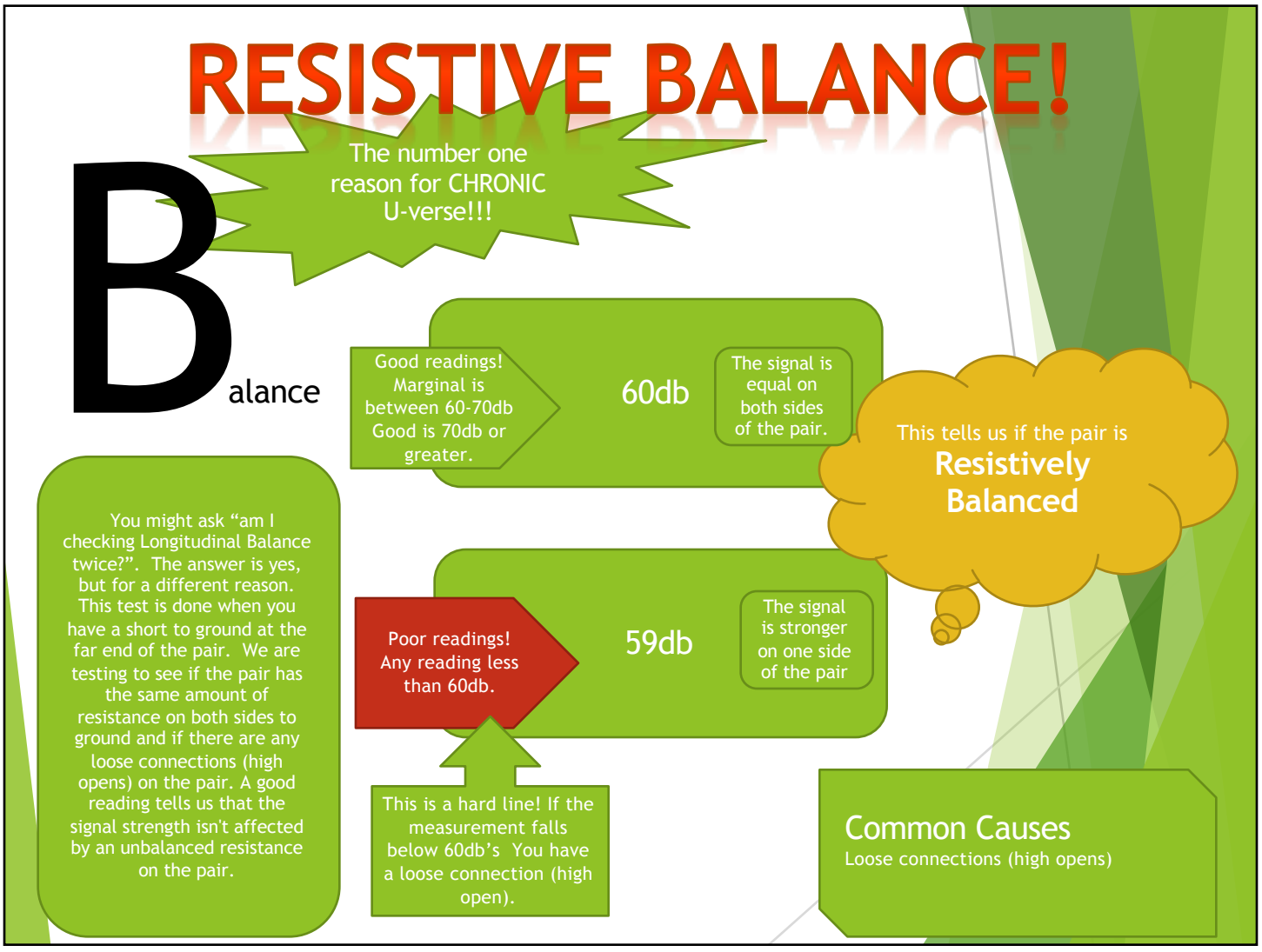
49db

The signal is stronger on one side of the pair

This tells us if the pair is **Capcitively Balanced**

Common Causes

Open one side
Grounds
Split pair
Cross to a non-working pair


RESISTIVE BALANCE!
The number one reason for CHRONIC U-verse!!!
Balance
Good readings! Marginal is between 60-70db Good is 70db or greater.
60db
The signal is equal on both sides of the pair.
This tells us if the pair is Resistively Balanced
You might ask "am I checking Longitudinal Balance twice?". The answer is yes, but for a different reason. This test is done when you have a short to ground at the far end of the pair. We are testing to see if the pair has the same amount of resistance on both sides to ground and if there are any loose connections (high opens) on the pair. A good reading tells us that the signal strength isn't affected by an unbalanced resistance on the pair.
Poor readings! Any reading less than 60db.
59db
The signal is stronger on one side of the pair
This is a hard line! If the measurement falls below 60db's You have a loose connection (high open).
Common Causes
Loose connections (high opens)