

ELECTRICAL OUTLET EFFICIENCY REPORT

LOGO

YOUR COMPANY NAME

Your Street Address
City, State, Zip Code
(000) 123-4567
Fax (000) 123-4567
State License # 1234567
ASHI, AII, NAHI, CREIA#007

Inspection Number: _____

ELECTRICAL OUTLET EFFICIENCY REPORT

The **"Electrical Outlet Efficiency Test"** report is for your exclusive use in determining the condition of the 120 VAC outlet system of the property. Although a thorough inspection of the system was conducted, we wish to CAUTION you that conditions may change and equipment may become defective. The report should not be construed as a guarantee or warranty of the electrical system, or future uses thereof. Our Service Agreement provides additional details: PLEASE READ IT CAREFULLY.

The **"Electrical Outlet Efficiency Test"**, by definition, deals with an existing structure which may have older types of wiring in use. It is very probable that the electrical system would not meet present standards, although the system may have met the requirements at the time it was installed. This is not a code compliance comprehensive electrical inspection.

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WARNING.... This report cannot be sold or transferred! The Client agrees to indemnify, defend and hold harmless this inspection firm from third party claims relating to this report.

Date of the Inspection: _____ Time of Inspection: _____ Date Report Expires: _____

THIS REPORT IS FOR THE EXCLUSIVE USE OF, AND HAS BEEN PREPARED FOR:

Client Name: _____ Buyer Seller
Address: _____ Realtor Relocate
City: _____ State: _____ Zip: _____ Other: _____

Inspection Address: _____ City: _____

EXPLANATION OF TESTS AND FINDINGS

The **"Electrical Outlet Efficiency Test"** was performed to help identify electrical miswirings in the 120 volt system. The tests that were performed and the equipment used is described in detail below. Electrical miswirings are a major cause of building fires and personal injury. Identifying miswirings and having them corrected will help to improve the overall safety of the 120 volt portion of the electrical system. The scope of the evaluation is limited by the service agreement and our inspection protocols. We recommend that all repairs be performed by a licensed electrician due to the difficulty of evaluating, troubleshooting, and repairing the circuits.

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TEST DESCRIPTIONS

POLARITY & GROUNDING VERIFICATION - PASS = Outlet is correctly wired - The most common electrical receptacle miswirings include: 1) Open Ground, 2) Reversed Polarity, 3) Open Hot, 4) Hot Ground Reversed, 5) Open Neutral.

1) OPEN GROUND - Open ground conditions typically occur when the receptacle is wired with either a failed ground wire connection, or with no ground wire at all. Receptacles with open ground should have the circuit evaluated and repaired by a licensed electrician.

2) REVERSED POLARITY - Reversed polarity conditions typically occur when the receptacle is wired with the hot and neutral wires reversed. Reversed polarity can compromise the grounding of an appliance and cause some electrical equipment to operate improperly. Receptacles with reverse polarity should have the circuit evaluated and repaired by a licensed electrician.

3) OPEN HOT - Open hot conditions typically occur when the receptacle is wired with a failed hot wire connection. Receptacles with an open hot should have the circuit evaluated and repaired by a licensed electrician.

4) HOT/GROUND REVERSED - Hot/ground reversed conditions typically occur when the receptacle is wired with the hot and ground wires reversed. Hot/ground reversal is a rare condition that is very unsafe because it can cause shock or electrocution just by touching the case of a metal appliance. Receptacles with the hot/ground reversal should have the circuit evaluated and repaired by a licensed electrician.

5) OPEN NEUTRAL - Open neutral conditions typically occur when the receptacle is wired with a failed neutral wire connection. Receptacles with an open neutral should have the circuit evaluated and repaired by a licensed electrician.

BLADE TENSION TESTING - PASS = Tension greater than 4 ounces - The blade tension test was developed to have a method of quantifying the degree of sloppiness of plugs in a receptacle. Most people have experienced plugging an item into a receptacle and having the plug either fall out or easily work its way loose. The first point of wear in a receptacle is usually the tension of the spring contacts that grip the blades of a plug. Poor spring contact can result in overheating and the risk of fire. The blade tension test identifies receptacles with worn spring contacts. Receptacles not having acceptable blade retention when tested with a retention tester should be replaced with a new receptacle (National Fire Protection Association 73.2.9.8). Tension readings above 4 ounces indicate a serviceable receptacle that plugs should fit into securely.

FALSE GROUND TEST - PASS = No false ground reading is identified - False ground is defined as a short between the ground and neutral wires very close to the receptacle. Sometimes on older homes the 2-prong receptacles are replaced with 3-prong receptacles to accommodate 3-prong plugs. A short placed between ground and neutral on the back of the receptacle will test and appear to be a normal 3-wire circuit with standard outlet testers, yet this bootleg ground does not provide any real grounding protection. False grounds are not limited exclusively to older homes. False grounds can be a shock hazard downstream and should be repaired immediately. Any receptacle readings that identify a false ground condition indicates that further circuit investigation/repair is needed by a licensed electrician.

PLEASE NOTE: False positive results can occur when the receptacle is located within 15 feet of the neutral-ground bonding point at the panel, or if conduit is being used as the ground conductor.

VOLTAGE DROP TEST - PASS = 5% or less - The voltage drop measurement is tested under a full 15 and 20 ampere load without interruption to equipment on the circuit. The National Electrical Code recommends 5% as the maximum voltage drop for branch circuits for reasonable efficiency (NEC article 210-19. FPN 4). Any readings higher than 5% indicates that further investigation/repair is needed by a licensed Electrician.

PLEASE NOTE: Most homes have at least one outlet with a voltage drop reading between 5% and 10%. Readings in this range are questionable and although not excessive, they should still be further evaluated by a licensed Electrician.

At what % voltage drop does a circuit become hazardous? It is difficult to say at what point excess voltage drop will cause a fire, because it depends on how much current is flowing through the high resistance connection, what is the resistance of that connection, and because many factors must be considered regarding at what point ignition will occur. **Therefore, the standard used for our voltage drop testing protocol is the less than 5% recommended by the National Electrical Code.** In the report they will be reported with "**CAUTION**".

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Excessive voltage drop measurements are typically caused by any of the following: 1) Too much load on the branch circuit; 2) Too many outlets on the branch circuit; 3) The diameter of the wiring is too small for the length of the circuit. To troubleshoot this condition the Electrician will typically: 1) Check and tighten the connections at the receptacles; 2) Clean any corroded wires; 3) Replace the outlet or switch; 4) Replace the circuit breaker.

LINE VOLTAGE TEST – PASS = 108 to 132 volts - The line voltage measurement is considered acceptable if it is between 108 and 132 volts on the 120 VAC circuit. If the receptacle fails the line voltage measurement test, then the voltage drop test results will also fail. Any readings lower than 108 volts or higher than 132 volts indicate that further investigation/repair is needed by a licensed Electrician. High/Low Line Voltage Re typically caused by any of the following: 1) Too much load on the circuit; 2) Poor connections at the receptacle; 3) Supply voltage is too high/low. To troubleshoot the condition the Electrician will typically: 1) Check the receptacle connections to verify that they are both clean and tight; 2) If that doesn't resolve the condition and there are no other obvious flaws, then the power company should be consulted.

GROUND-TO-NEUTRAL TEST – PASS = Less than 2 volts - Ground-to-neutral voltage results from current flowing in the neutral conductor from other equipment on the circuit. High ground-to-neutral voltage indicates that the circuit may be loaded near its capacity or the neutral conductor may be shared or carrying harmonic distortion. A reading of less than 2 volts usually indicates a usable outlet. An excessive ground-to-neutral voltage may result in inconsistent or intermittent equipment performance. Any readings higher than 2 volts indicate that further investigation/repair is needed by a licensed Electrician.

Excessive ground to neutral voltage measurements greater than 2 volts typically is caused by current flowing to the neutral conductor. To troubleshoot this condition the licensed electrician will typically: 1) Locate and repair the source; 2) Install a surge suppressor.

GROUND IMPEDANCE TEST – PASS = .25 Ohms or less - The ground impedance measurement is obtained by simulating 15 amperes from hot to ground to ensure that the resistance is less than .25 Ohms. This test cannot be performed if there is an open ground condition at the receptacle. Any readings higher than 1 Ohm indicates that further investigation/repair is needed by a licensed Electrician. This test is not performed on GFCI receptacles.

Excessive ground impedance greater than .25 Ohms are typically caused by a loose ground connection. To troubleshoot this condition the Electrician will typically: 1) Check and tighten ground connections; 2) clean any corroded wires.

GFCI TEST - PASS = GFCI outlet or breaker trips - The Ground Fault Circuit Interrupter (GFCI) test is performed by manually depressing the built-in test button on the AFCI protection breaker. A functional GFCI will disconnect the power. This test cannot be performed if there is an open ground condition at the receptacle.

The GFCI is a safety device which helps to prevent shock and electrocution. The device monitors the difference between the current flowing through the hot and neutral wires of a receptacle. If there is an imbalance greater than 5 milliamps, the current will be cut off in less than a second. GFCI protection is recommended on building exteriors, in garages, on kitchen countertops, within 6 feet of sinks and wet bars, in bathrooms, in crawl spaces, and in an unfinished basement. Any GFCI that does not trip indicates that further investigation/repair is needed by a licensed Electrician.

Failure of a GFCI to trip is typically caused by the following: 1) GFCI may be installed incorrectly; 2) GFCI may be defective. To troubleshoot this condition the electrician will typically: 1) Check for correct connections; 2) Replace the GFCI outlet or breaker.

AFCI TEST - PASS = AFCI protection breaker trips - The Arc Fault Circuit Interrupter (AFCI) test is performed by manually depressing the built-in test button on the AFCI protection breaker. A functional AFCI will disconnect the power.

The AFCI is a newly designed safety device which helps prevent fires. The device monitors the wiring in bedroom circuits. In the event of an arc fault it trips automatically. A unit that fails to trip or reset will typically be replaced by a licensed electrician. AFCI protection is so new that the technology is still being improved by the manufacturers. As time goes by they will become more common place and retrofitting them into older structures will also become common place. For now, they are only found in newer structures.

ESTIMATED LOAD TEST – Over Zero = Non-dedicated circuit - OPTIONAL TEST (Vacant Homes Only) - The estimated load on line measurement test will help to identify if an outlet is on a dedicated circuit. Any reading above zero confirms that the receptacle under test is NOT on a dedicated circuit. A zero reading can mean either that the receptacle is on a dedicated circuit, or that nothing else is currently drawing power on the circuit. Most items do not require dedicated circuits, but some motors or sensitive electronics require dedicated circuits to operate as designed.

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E.O.E.T. TESTING EQUIPMENT

POLARITY VERIFICATION: A variety of tools were used to determine the wiring of the receptacles. The most common tools used were: The industry standard 3 light tester; The two-probe neon circuit tester; The voltage sensor; The advanced wiring and circuit analyzer.

FALSE GROUND TEST: SureTest ST-D1 and/or 61-155 Digital Wiring Analyzers.

LINE VOLTAGE TEST: SureTest ST-D1 and/or 61-155 Digital Wiring Analyzers.

15 & 20 AMP LOAD VOLTAGE DROP: SureTest ST-D1 and/or 61-155 Digital Wiring Analyzers.

GROUND-TO-NEUTRAL VOLTAGE: SureTest ST-D1 and/or 61-155 Digital Wiring Analyzers.

GROUND IMPEDANCE TEST: SureTest ST-D1 and/or 61-155 Digital Wiring Analyzers.

GFCI TEST: SureTest SureTest ST-D1 and/or 61-155 Digital Wiring Analyzers. The built-in manual "TEST" button was used to test the GFCI units. Using the built in "TEST" button was combined with a SureTest STD1 and/or 61-155, 3 prong, or two probe neon tester to verify the condition of the tripped circuit.

BLADE TENSION TEST: Daniel Woodhead Receptacle Tension Tester model 1760.

ELECTRICAL SERVICE

ELECTRICAL SERVICE - Underground Overhead Clearance is: Good Fair Poor
Service entry conductor: Copper Aluminum Service Amperage: _____ Amps
Main breaker / disconnect size: _____ Amps Voltage: _____ Panel Location: _____
Circuit breakers Fuses..... Labeled:..... Yes Some No
Wiring system is:..... 2-wire 3-wire Combination
Romex wiring BX Cable Knob & Tube Combination
15 & 20 amp breakers:.. Copper Aluminum Combination
House Ground connection appears to be:..... UFER Water Pipe Rod in Ground
Unable to locate house ground connection.
Visible wiring hazards:.....None apparent Yes - see Remarks

Remarks: _____

SUBPANEL #1 - Panel Location: _____ General Condition Good Repairs Needed
110 Volt Breakers: _____ 220 Volt Breakers: _____

Remarks: _____

SUBPANEL #3 - Panel Location: _____ General Condition Good Repairs Needed
110 Volt Breakers: _____ 220 Volt Breakers: _____

Remarks: _____

SUBPANEL #3 - Panel Location: _____ General Condition Good Repairs Needed
110 Volt Breakers: _____ 220 Volt Breakers: _____

Remarks: _____

SUBPANEL #4 - Panel Location: _____ General Condition Good Repairs Needed
110 Volt Breakers: _____ 220 Volt Breakers: _____

Remarks: _____

ELECTRICAL OUTLET EFFICIENCY REPORT

ROOM LOCATIONS & SKETCHES

ROOM: _____ LOCATION: _____	ROOM: _____ LOCATION: _____
ROOM: _____ LOCATION: _____	ROOM: _____ LOCATION: _____
ROOM: _____ LOCATION: _____	ROOM: _____ LOCATION: _____

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OUTLET TESTING RESULTS

Room - _____ Outlet - _____ <input type="checkbox"/> 2-Prong Result - <input type="checkbox"/> Pass <input type="checkbox"/> Fail = Repair _____ _____	Room - _____ Outlet - _____ <input type="checkbox"/> 2-Prong Result - <input type="checkbox"/> Pass <input type="checkbox"/> Fail = Repair _____ _____	Room - _____ Outlet - _____ <input type="checkbox"/> 2-Prong Result - <input type="checkbox"/> Pass <input type="checkbox"/> Fail = Repair _____ _____
Room - _____ Outlet - _____ <input type="checkbox"/> 2-Prong Result - <input type="checkbox"/> Pass <input type="checkbox"/> Fail = Repair _____ _____	Room - _____ Outlet - _____ <input type="checkbox"/> 2-Prong Result - <input type="checkbox"/> Pass <input type="checkbox"/> Fail = Repair _____ _____	Room - _____ Outlet - _____ <input type="checkbox"/> 2-Prong Result - <input type="checkbox"/> Pass <input type="checkbox"/> Fail = Repair _____ _____
Room - _____ Outlet - _____ <input type="checkbox"/> 2-Prong Result - <input type="checkbox"/> Pass <input type="checkbox"/> Fail = Repair _____ _____	Room - _____ Outlet - _____ <input type="checkbox"/> 2-Prong Result - <input type="checkbox"/> Pass <input type="checkbox"/> Fail = Repair _____ _____	Room - _____ Outlet - _____ <input type="checkbox"/> 2-Prong Result - <input type="checkbox"/> Pass <input type="checkbox"/> Fail = Repair _____ _____
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Room - _____ Outlet - _____ <input type="checkbox"/> 2-Prong Result - <input type="checkbox"/> Pass <input type="checkbox"/> Fail = Repair _____ _____	Room - _____ Outlet - _____ <input type="checkbox"/> 2-Prong Result - <input type="checkbox"/> Pass <input type="checkbox"/> Fail = Repair _____ _____	Room - _____ Outlet - _____ <input type="checkbox"/> 2-Prong Result - <input type="checkbox"/> Pass <input type="checkbox"/> Fail = Repair _____ _____

ABBREVIATIONS: "RP"- Reverse Polarity; "ON"- Open Neutral; "OH"- Open Hot; "OG"- Open Ground; "BT"- Blade Tension Test; "FG"-False Ground; "LV"- Line Voltage; "VD"- Voltage Drop; "GN"- Ground-to-Neutral; "EL"- Estimated Load; "GI"- Ground Impedance; "GFCI"- Ground Fault Circuit Interrupter; "AFCI"- Arc Fault Circuit Interrupter; "M"- Main Floor; "B"- Basement; "2" - Upstairs; "LH" = Left Hand; "RH" = Right Hand; "RF" = Right Front; "LR" – Left Rear, "RM" – Right Middle etc. (All Orientations are from the street, facing the structure)

ELECTRICAL OUTLET EFFICIENCY REPORT

E.O.E.T. SUMMARY

POLARITY & GROUNDING:	<input type="checkbox"/> PASS	<input type="checkbox"/> Repairs Needed = Review the report findings
BLADE TENSION TEST:	<input type="checkbox"/> PASS	<input type="checkbox"/> Repairs Needed = Review the report findings
FALSE GROUND TEST:	<input type="checkbox"/> PASS	<input type="checkbox"/> Repairs Needed = Review the report findings
LINE VOLTAGE TEST:	<input type="checkbox"/> PASS	<input type="checkbox"/> Repairs Needed = Review the report findings
VOLTAGE DROP TEST:	<input type="checkbox"/> PASS	<input type="checkbox"/> Repairs Needed = Review the report findings
GROUND TO NEUTRAL TEST:	<input type="checkbox"/> PASS	<input type="checkbox"/> Repairs Needed = Review the report findings
ESTIMATED LOAD TEST:	<input type="checkbox"/> PASS	<input type="checkbox"/> Repairs Needed = Review the report findings
GROUND IMPEDANCE TEST:	<input type="checkbox"/> PASS	<input type="checkbox"/> Repairs Needed = Review the report findings
GFCI TEST:	<input type="checkbox"/> PASS	<input type="checkbox"/> Repairs Needed = Review the report findings <input type="checkbox"/> NOT PRESENT = GFCI protection is not present.
AFCI TEST:	<input type="checkbox"/> PASS	<input type="checkbox"/> Repairs Needed = Review the report findings <input type="checkbox"/> NOT PRESENT = AFCI protection is not present.

WHO SHOULD MAKE ANY NEEDED REPAIRS?: **WARNING:** Although many property owners feel that they can make some or all of the needed electrical repairs, we feel that this type of diagnostic repair should only be done by licensed electricians familiar with troubleshooting and repairing these advanced circuit conditions. Not all electricians are familiar in troubleshooting and making these types of repairs. If a novice attempted to repair a bad outlet, they may not realize that the actual miswiring is upstream from the outlet where the miswiring condition was identified. This is the reason why all recommendations are for the entire circuit to be evaluated and not just the individual outlet where the miswiring was identified.

REPAIR BIDS: It is our strict policy **NOT** to provide repair bids. It is our recommendation that a licensed electrician be called upon to provide you accurate written estimates that you can hold them to when the work is performed. We feel that it would be a great disservice to our Clients to provide arbitrary "**Guesstimates**" and way beyond the scope of our Inspection services. Guessing does not provide you with reliable financial numbers to base your investment upon.

LEVEL OF NEEDED REPAIRS: None Few Several Major Repairs are recommended at this time.

PLEASE NOTE: Annual re-evaluations of the electrical system are recommended.

OTHER REMARKS: _____

PLEASE REMEMBER: Our service has been performed to help identify and document electrical miswirings in the 120 VAC system of the property. The "Electrical Outlet Efficiency Test" is not intended to be an "all inclusive" list of every electrical miswiring, condition, concealed condition, or full electrical service evaluation, but rather, to help identify the major 110 volt electrical issues that will require further evaluation by a licensed electrician. Our findings are limited to the conditions of the electrical system during the inspection. We rely upon our experience and test equipment readings to draw our conclusions and make recommendations. The readings may vary as different loads are applied to the circuits. It is not uncommon for the licensed electrician find more items needing repair as they troubleshoot the circuits.

Our service is **NOT** a warranty of the integrity of the 120 VAC electrical system of the property. No maintenance services, removal of cowlings, or destructive discovery was performed during the inspection process. In other words, there was a lot of the system that could not be seen and miswirings may be present inside the walls and out of visible sight. Outlet covers, switch covers, and light fixtures were not removed during the inspection process. Thank you for allowing our firm to perform your inspection.

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REPORT PREPARED BY: _____

PREPARED ON: _____

PAGE _____