GROUND ZERO WORKSHEET INSTRUCTIONS.

Use this worksheet to keep track of the switch positions you try and the corresponding noise level at each position. Under the Connected Components column make a list of which of your components are connected to which switch group; SW1, SW2, or SW3. In the Wall Outlet Cable row write which Switch group this cable is connected to. The Misc. Variable row is for you to add your own variable condition. In the Noise Measurement row you will note the noise reading for the corresponding switch and cable positions. Ground Zero will let you test dozens of different impedance positions in minutes, while other methods would take days to do this many tests.

You will probably get different noise measurements by moving the wall outlet cable to different wall outlets and by connecting it to different switch groups. In some systems the wall outlet cable may not give any variation in the noise. The use of this cable is optional. We do highly recommend using the wall outlet cable if you are also using "cheater plugs" or any other power cord or device that defeats the chassis ground of any individual component in your system. We also recommend it if you are using a 3-prong power cord that has the ground pin removed. The wall outlet

LEFT CHANNEL NOISE MEASUREMENT

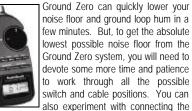
RIGHT CHANNEL NOISE MEASUREMENT

BASE=

BASE=



cable can be connected to various different available wall outlets to change the ground impedance of the system. The wall outlet cable allows you to change the ground impedance without removing the ground connection. Use the wall outlet that gives you the lowest noise reading.



Ground Zero component cables to different switch groups. This worksheet has several tables so that you can try as many combinations as you have time and patience for. The Ground Zero is a universal ground loop hunter and it will find your ground loop and give you the lowest possible noise floor when you get the optimum switch and cable positions. Before you install Ground Zero take a base noise measurement reading to give you a reference point to measure your further test results against. You can use your ears to evaluate your noise test results. But, we recommend you use a Radio Shack SPL meter, or any other brand of meter, for better objective results.

Mount the SPL meter on a camera tripod and place the microphone close to the woofer cone of your speaker, as shown in the photo below. The Radio Shack digital model is nice because it gives you a



digital number to write in on this worksheet. It's just faster and simpler. More advanced technicians can use an accurate AC voltmeter and measure the noise level right at the speaker terminals with an electrical type decibel meter, rather than an SPL decibel meter. Your portable Radio Shack AC voltmeter will not have a low enough residual noise floor for this option. You will need something that can measure AC voltage down into the microvolts range below 0.001 volts AC. This type of meter will allow measurements below the threshold of the Radio Shack SPL meters. The Hewlett Packard Model 400E or 400EL decibel meter works good for this and can be found used on Ebay for \$20 to \$70. But, these require a little more knowledge to use and the right cables & adapters to connect to your speaker terminals. This HP meter would not be for beginners.

Ground Zero is designed to eliminate ground loop hum and other noise that is a result of poor grounding or ground impedance differential. It will not get rid of noise from other causes such as tape hiss, tube hiss, thermal noises, mechanical noises, fan noises, internal component noise, or motor noise.

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CONNECTED C		SWITCH POSITIONS (H = HIGH M = MEDIUM L = LOW																										
	POWER SW1	Н	Н	Н	Н	Н	Н	Н	Н	Н	М	М	М	М	Μ	М	М	М	М	L	L	L	L	L	L	L	L	L
	PREAMP SW2	Н	Μ	L	L	М	L	Н	М	Н	Н	М	L	L	М	L	Н	М	Н	Н	М	L	L	М	L	Н	М	Н
	SOURCE SW3	Н	М	L	М	L	Н	L	Н	М	Н	М	L	М	L	Н	L	Η	М	Η	М	L	М	L	Η	L	Η	Μ
	(GREEN TIP) WALL OUTLET CABLE																											
	MISC. VARIABLE																											
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CONNECTED COMPONENTS SWITCH GROUP			SWITCH POSITIONS (H = HIGH M = MEDIUM L = LOW)																									
	POWER SW1	Н	Н	Н	Н	Н	Η	Н	Н	Н	М	М	М	М	Μ	М	М	М	М	L	L	L	L	L	L	L	L	L
	PREAMP SW2	Н	Μ	L	L	М	L	Н	М	Н	Н	М	L	L	М	L	Н	М	Н	Н	М	L	L	М	L	Н	М	Н
	SOURCE SW3	Н	М	L	М	L	Н	L	Н	М	Н	М	L	М	L	Н	L	Η	М	Η	М	L	М	L	Η	L	Η	М
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	PREAMP SW2	Н	М	L	L	М	L	Н	М	Н	Н	М	L	L	М	L	Н	М	Н	Н	М	L	L	М	L	Н	М	Н
	SOURCE SW3	Н	М	L	М	L	Н	L	Н	М	Н	М	L	М	L	Н	L	Н	М	Н	М	L	М	L	Н	L	Н	М
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	PREAMP SW2	Н	Μ	L	L	М	L	Н	М	Н	Н	М	L	L	М	L	Н	М	Н	Н	М	L	L	М	L	Н	М	Н
	SOURCE SW3	Η	М	L	М	L	Η	L	Η	М	Н	М	L	М	L	Η	L	Η	М	Н	М	L	М	L	Н	L	Η	М
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	PREAMP SW2	Η	М	L	L	М	L	Н	М	Н	Н	М	L	L	М	L	Η	М	Н	Н	М	L	L	М	L	Η	М	Н
	SOURCE SW3	Н	М	L	М	L	Η	L	Н	М	Η	М	L	М	L	Η	L	Η	М	Η	М	L	М	L	Н	L	Н	М
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	POWER SW1	Н	Н	Н	Н	Н	Н	Н	Н	Н	М	М	М	М	М	М	М	М	М	L	L	L	L	L	L	L	L	L
	PREAMP SW2	Н	М	L	L	М	L	Н	М	Н	Н	М	L	L	М	L	Н	М	Н	Н	М	L	L	М	L	Н	М	Н
	SOURCE SW3	Н	М	L	М	L	Н	L	Н	Μ	Н	М	L	М	L	Н	L	Н	М	Н	М	L	М	L	Н	L	Н	М
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