Raudive Diode "EVP" (Electronic Voice Phenomena) Receiver for smart-phones and Laptops - Wil Lindsay – July 2012

This project is based on two schematics published in:

Breakthrough: An Amazing Experiment in Electronic Communication with the Dead, written by Konstantin Raudive and translated to English in 1971. (Taplinger Publishing, NYC)

The original design was meant to isolate ethereal communications from audio noise when recording to an analog tape recorder. As such, only slight modification is needed to work with modern digital recording software on iPhones, Android phones, tablets and laptops. The intent here, is to allow new experimentation with an old idea, and create a starting point for modification, adaptation, or improvement to the original tools. It should be known that the author and creator of this design published it for this reason, and as such suggested in the appendix of this book that the components could be substituted based on empirical results.

With this in mind, the kit (and parts-list below) that I've provided allows for creation of either circuit, and mixing and matching with other components. The best advice I can give is : try it; test it, take it apart, and try something different.

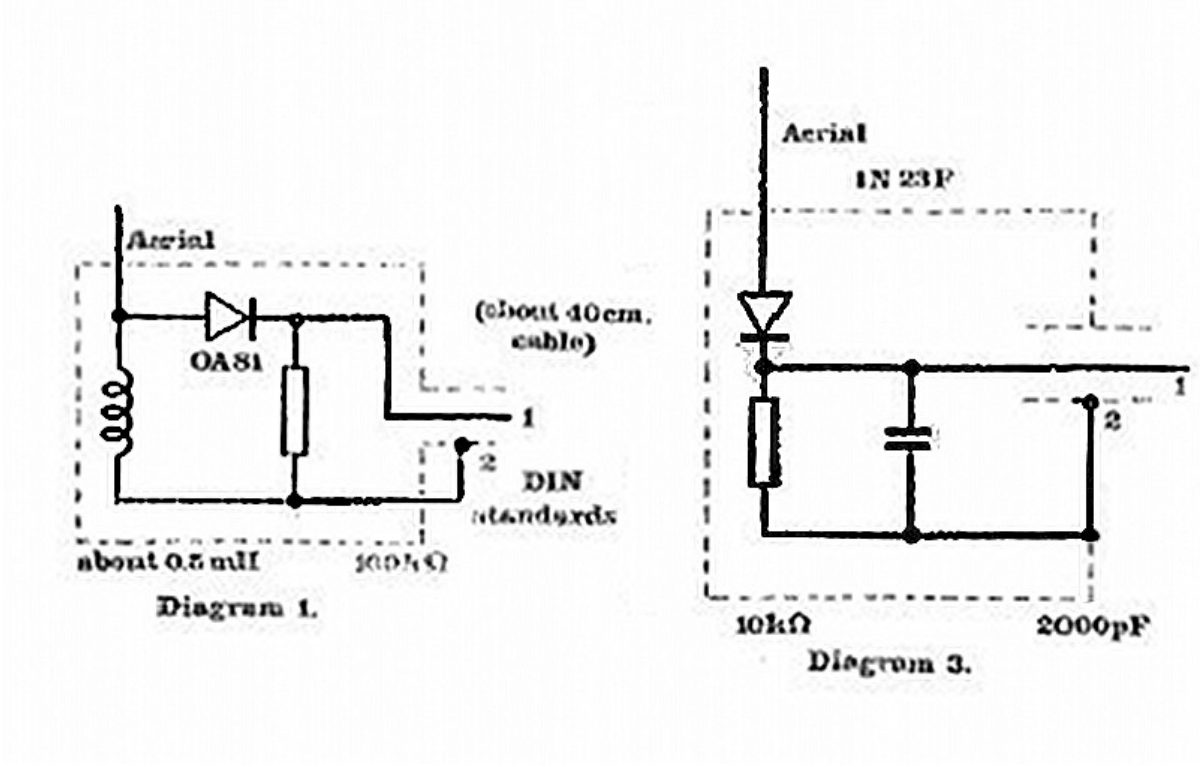
The following will outline how to build the device with the supplied parts. I hope that more confident electronics users can source similar parts and try their own versions of the device.

Parts:

	1N34A Germanium Diode	Small glass, 2-lead, barrel with a green or black stripe closer to one end. – The heart of the circuit! Replaces OA81 or 1N23F below.
	.5 mH coil	Copper wire coiled on a base with 2 leads
	100K Ohm resistor (approx)	Small tan, 2-lead, with stripes brown-black-yellow-gold – This is the original component in the design and can be substituted with near values.
	10K Ohm resistor	Small tan, 2-lead, with stripes brown-black-orange-gold – This should be used to replace the 100K with iPhone and some Android phones (see note below) or used in circuit 2 below.
	2000pF capacitor	Orange Disk, 2 leads marked 202k
	4 contact 1/8" audio jumper	(for smart-phones/iPhones)
	or	
	2 contact 1/8" mono cable	(for laptop)
	6-10cm wire	Serves as the receiving aerial or antenna

The Circuit:

Here are the original circuits as provided by Raudive's book:



Building the Device:

This simple circuit can be built without a circuit board and by folks with little soldering experience. Wires may simply be twisted together at junction points and tacked with a small amount of solder. None of the components are very susceptible to heat damage, so slight mistakes of learning can be tolerated. The circuit can also be taken apart and rebuilt with little harm to the components.

For those new to soldering, I recommend the excellent tutorial at
http://www.curiousinventor.com/guides/How_To_Solder
and this is one of the better documents I've seen:
http://www.dxzone.com/cgi-bin/dir/jump2.cgi?ID=17512
This project does not require anywhere near the precision demonstrated in those links.

Following the parts symbols, the device leads can be twisted together and soldered so that leads only touch where they are connected in the circuit diagram. I recommend the following order for a quick build and have notated some thoughts to look-out for when building. Simply align the parts, twist the wires and solder. Wire leads can be bent in any shape or angles needed without harm. Trim the leads only after the entire device is built (if at all).

Beginners may well wish to start with circuit 2 which is less complex. I"ve seen no evidence that either circuit works better or worse than the other.

Circuit 1

Aerial to coil : only one end of the aerial wire needs to be stripped. The aerial shape can be bent later. Either lead from the coil will work (no big deal if it's backwards)

Diode to Aerial-Coil junction : The stripe on the diode MUST be farthest from the lead used in this connection (see images at end). Connect to the junction you just soldered.

Resistor to Diode : Either lead of the 100K resistor to the not-yet-used lead of the diode. Solder close to the resistor body, as the remaining length of that lead will be used later. (This part should be replaced with the 10K resistor if you know a smart-phone will be used with the device. This will help the phone (especially iPhones) to switch to the external device instead of using the built-in microphone for recording. (see notes at end of document for more info)

Resistor to coil : The not-yet-used lead of the coil connects to the not-yet-used lead of the resistor. Solder close to the coil body leaving a length of coil lead sticking out like the resistor lead.

The 2 leads sticking out from the coil and resistor are now “1” and “2” in the diagram and will be connected to the audio cable. (jump to “Connecting to the Audio Jack” below), The resistor lead is connection “1”, and the thicker coil lead is connection “2”.

Circuit 2

Resistor to Capacitor : one lead of the capacitor to one lead of the resistor. Then connect the two not-yet-used leads to each other. Solder as close to the body of both as possible, as the extra length of the resistor leads become “1” and “2” in the diagram and will be connected to audio. The capacitor leads can eventually be trimmed away.

Diode to Resistor-Capacitor junction : The lead closest to the stripe on the diode is connected to either junction that you've just soldered. (both ends will work the same)

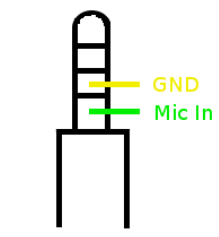
Aerial to Diode : only one end of the aerial wire needs to be stripped. The aerial shape can be bent later. Connect the stripped end of the wire to the not-yet-used lead of the Diode (farthest from the diode stripe).

The capacitor leads can now be trimmed. The resistor leads now become connectors “1” and “2”, such that the one closest to the Diode is connection “1”.

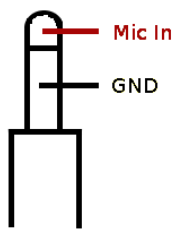
Connecting to the audio jack

You should now have a complete Raudive circuit with 2 leads known as connection “1” & connection “2”. All other leads can be trimmed at this time if you choose.

Either a 4-contact 1/8” jumper for smart-phones, or a 2 contact 1/8” plug for laptops can be used. Either circuit above can be used with either device and connector. Note the following diagrams for each type of plug. Cables found elsewhere may have different color wires. The needed colors can be determined with a continuity checker or multimeter.



Phone connector:
GND = Yellow Wire
MIC = Green Wire



Laptop connector:
GND = Black wire
MIC = Red Wire

Laptop plug:

The two needed connections are “Mic” and “GND.” First remove the outer casing on a small length of the cable end, exposing a red and black wire. Then remove the casing for a small distance of each of these, exposing the copper for your two solder connection.
Solder your circuit connection “1” to the “Mic” wire, and the connection “2” to the ground wire. A small bit of electrical tape can be used to make sure that the two leads do not touch each other or any of the other wires or parts.

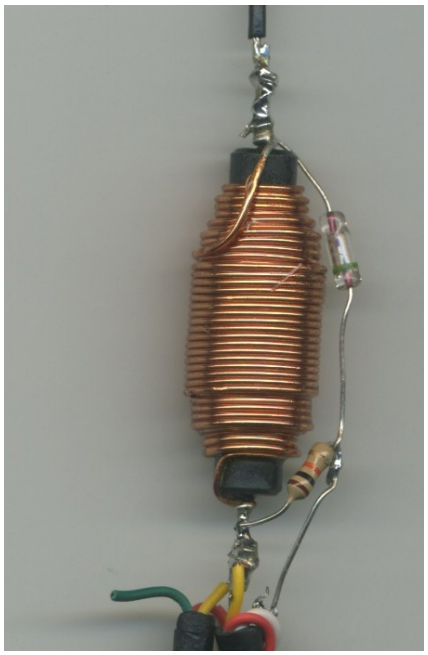
smart-phone Plug:

Ideally, one should be able to plug their headphones into the female end of the jumper and monitor the output during or after recording. To do this, roughly an inch of the jumper cables out casing needs to be removed without disturbing or cutting the wires within. Diagonal cutters or a small blade are best for this. The closer this slice and removal is made to the male end, the more physical stability the device will have when plugged in.

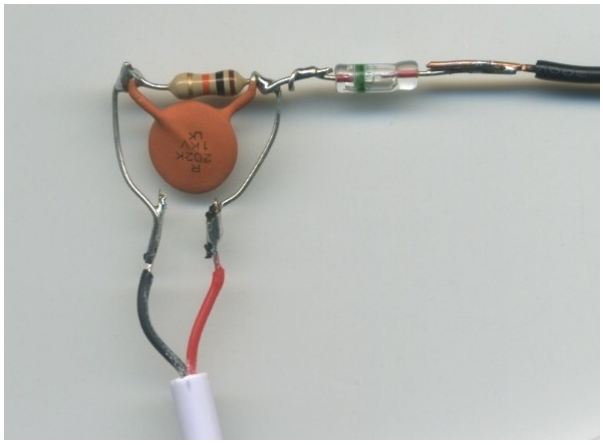
Once the 4 internal wires are exposed The “Mic” and “GND” wires may be cut and stripped. The male-side “Mic” wire will be soldered to your circuit's connection “1”, while the female-side “Mic” wire may be trimmed off or ignored. The Male AND female side “GND” wires will be soldered to your circuit's connection “2”. The two leads can be separated and wrapped with a small amount of electrical tape to prevent them from touching, and to encase the entire works. I've found that crimping a left-over piece of wire around the works greatly improves the sturdiness of the whole device as a hand-held “receiver” sticking out of the phone during use.

Bending the Aerial & Attaching for Use:

At this point the device can be made ready for use. Electrical tape, hot glue, and even attaching the device to a pencil-sized rod or non-conductive flat holder (in the case of the laptop version) are all fine. The aerial may be bent to any interesting shape. As there is no real known “best shape” to receive our intended signal, I recommend experimenting and changing it often until a best configuration is found. Diamonds, cork screws and small loops seem to be very popular amongst the TV Ghost hunting crowd.



<< Circuit 1 (aerial at top, stripe on diode toward bottom)



^ Circuit 2 (aerial to the right)

Using the Device:

Once connected to the microphone jack of your device, any recording software can be used. It's preferable to find a recording software that can "amplify" the final signal, as the results are often very feint and require some amount of amplifying and filtering. A "noisy" output is expected, and considered useful by many practitioners.

On smart-phones, it may be useful to find a recording software that allows the resulting files to be transferred to a computer for later processing. On iPhone, an odd "toy" recorder called "IsaidWhat?" (www.tapparatus.com/) has been a useful choice as it allows 500% amplification, selecting and re-ordering only the useful bits, and emailing final files to a computer.

On Mac, Linux and PC laptops, the fabulous "Audacity" (audacity.sourceforge.net/) does everything needed, plus additional filtering, and it's free and open-source.

Notes:

A "Faraday Cage" enclosure for the device:

As a final thought, the original designer intended the circuit to be in a grounded metal cage, screen or enclosure (the dotted line in the schematics) to reduce outside signal intrusion. Much discussion has been had on the actual usefulness of such an isolation case. As not having it allows extra noise (possibly useful noise), I've chosen to ignore the enclosure suggested in the original article. Experimentation is your prerogative! As always with home projects, a small mint-tin would work very well for this purpose, and should be attached to connection "2" in your circuit as seen in the schematics.

The 10K ohm resistor in circuit 2

iPhones, and some other smart-phones automatically select a plugged in mic (vs. the built in mic) based on the circuit attached. I've found that the normal 100K resistor won't trigger this switch in the circuit one as originally designed. Replacing that resistor with a 10K resolves this problem. This does not seem to be an issue in circuit 2, as a 10K resistor was originally used. Again, the original author seemed to suggest that the part values could be changed with little impact on the intention of the device.

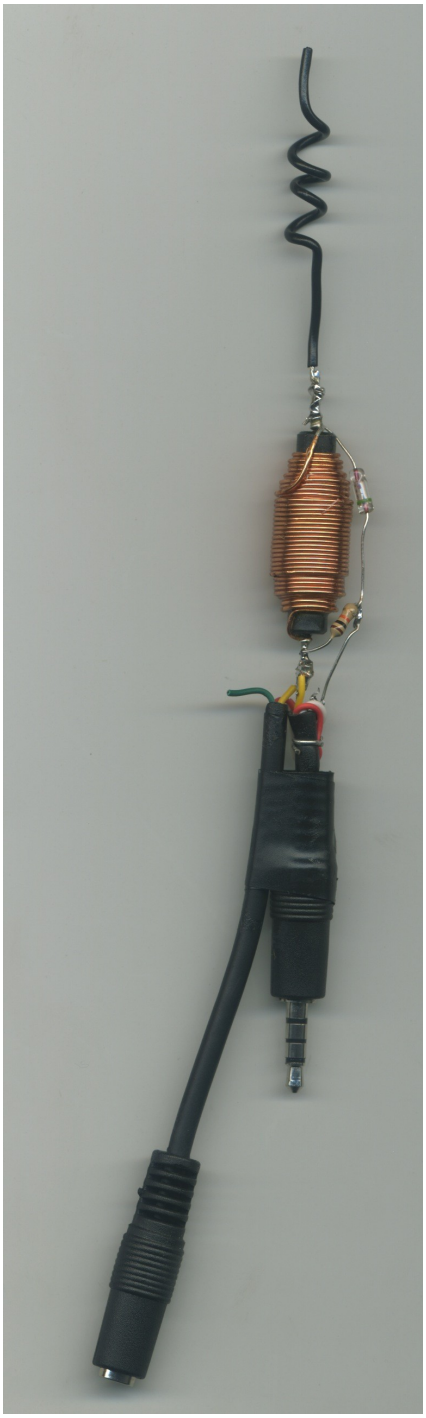
Additional Reading

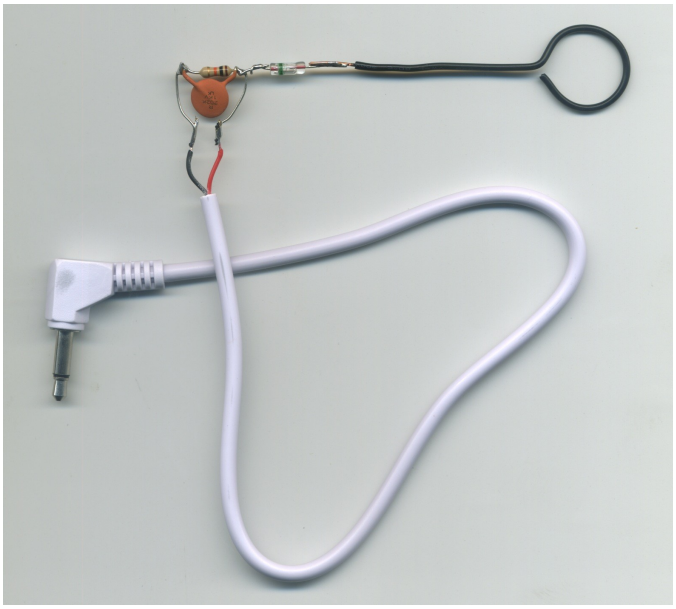
Beyond the book mentioned above, A *Popular Electronics* article from October of 1995, (pp. 37-41) covers some additional thoughts and the same basic device design.

Please drop me a line if you have made any interesting modifications, enclosures, or recordings related to this project. I'm always interested in where these projects go after they leave my workspace.
wil@straytechnologies.com

-enjoy!

Circuit 1 with phone connector ^ >>





<< circuit 2 with laptop connector