Building the Simplified DQ Receiver

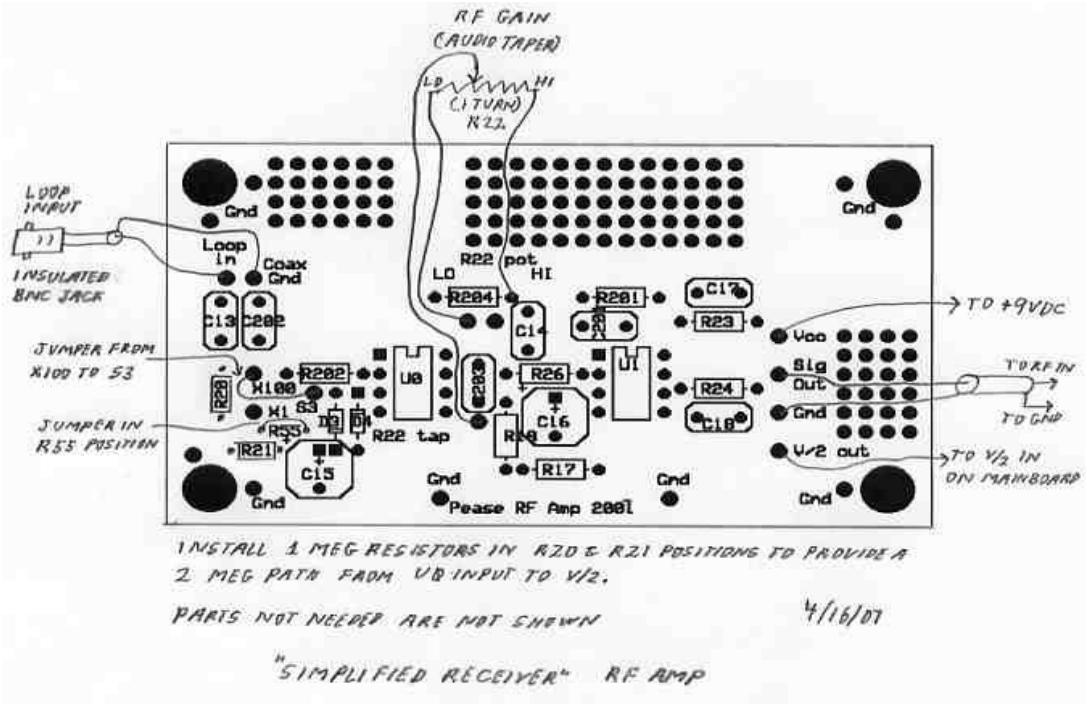
The Simplified Receiver is strictly an audio output device. It is just as sensitive as the Complete Receiver but has no provision for measuring signal strength. The unit shown has jacks wired to activate both elements of stereo headphones in parallel. It is better to use old "Lo-Fi" sensitive high impedance mono headphones if you can find them. The Audio Null pot shown is 1-turn, shunted with 2k Ohms to make tuning less critical. With a steady Beacon signal, the audio output varies about 1.3dB in amplitude (inaudible) as the signal drifts between receiver channels. The Complete Receiver Phase-Locks the signal into one channel to eliminate this problem and to provide a steady DC signal strength output.

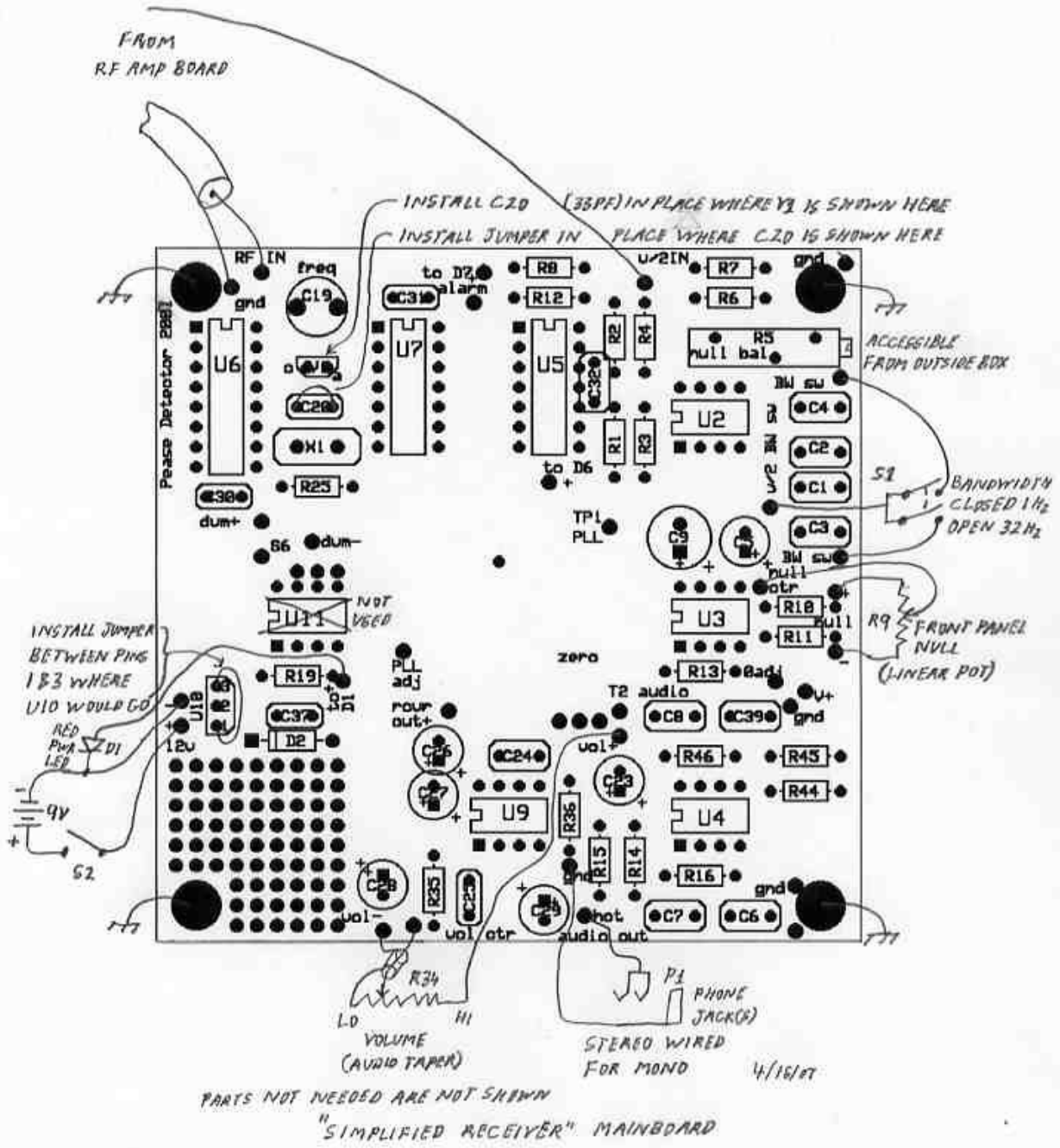
This receiver uses the same PC boards as the complete Antarctic DQ Receiver, and works with the same Beacons. The internal construction is the same. These simpler receivers are often used by cave divers, who obtain depth informsation from water pressure gauges.

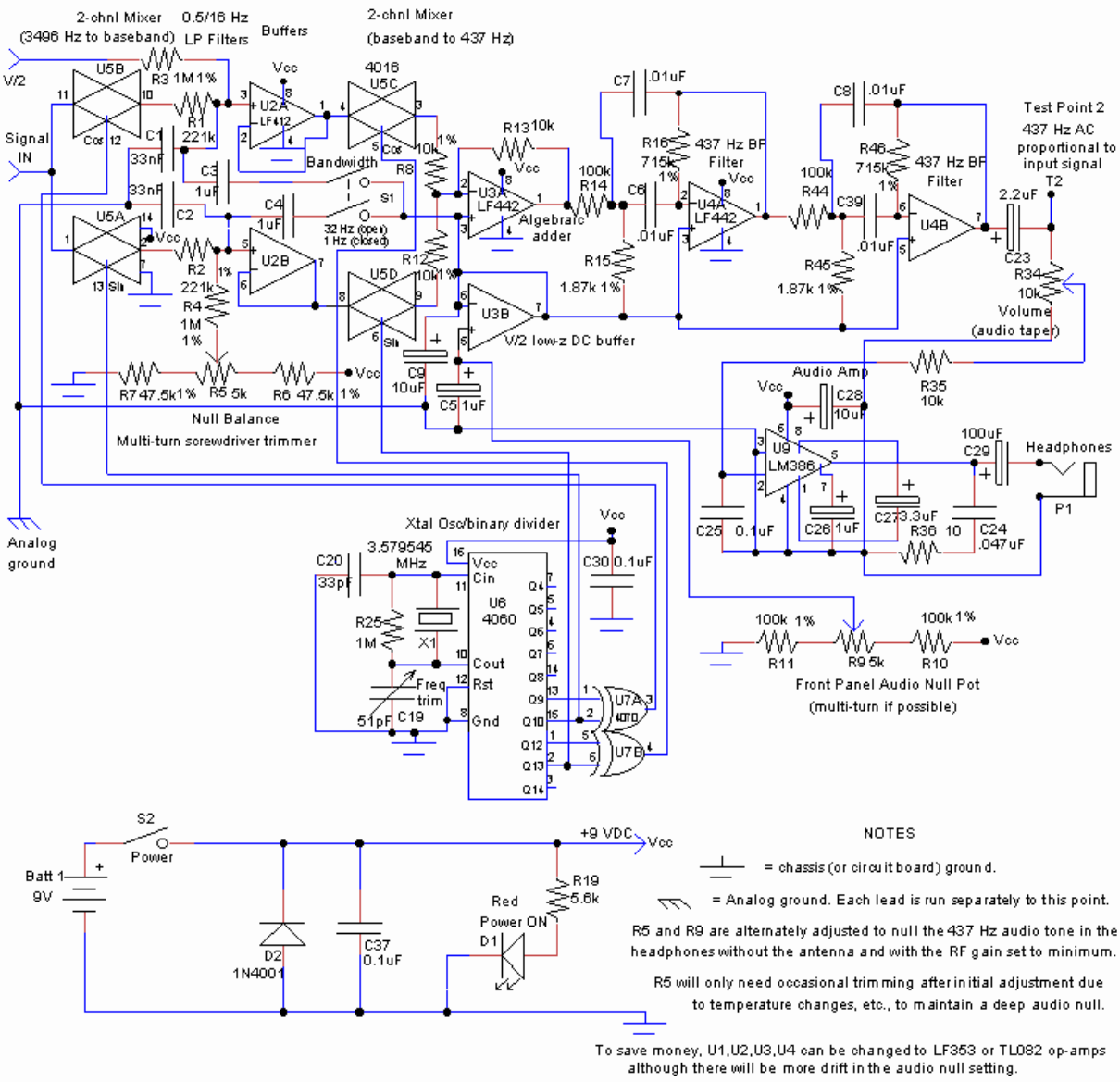
For the simplified receiver, on the RF amp board delete S3, R20A, R20B, R21, and R55. Solder a jumper between X100 and S3 to connect the loop input directly to U0. C31 and C32 (0.1uF B+ bypasses) were left off the Simplified Receiver schematic by mistake. They are shown correctly on the layout diagram.

- In the Simplified Receiver the Vcc power to the RF amp can be connected directly to the on/off switch.
- The Simplified Receiver uses one 9V alkaline or can use a 12V lead-acid without modification.
- Many items can be deleted from the "complete receiver" parts list. Delete on detector board: the DVM, U2, U12, C42, V1, U11 & SOCKET, R47, R48, R49, R50, R53, R54, U8 & SOCKET, R27, R28, R29, R30, R31, R32, R33, R37, C21 (A & B), C22, C38, R37, R39, R40, R41, R42, R43, D5, D7, S4, S6, PIEZO ALARM, R9 can be a 1-turn linear pot. Also delete one 9 Volt battery socket. This list may not be complete.

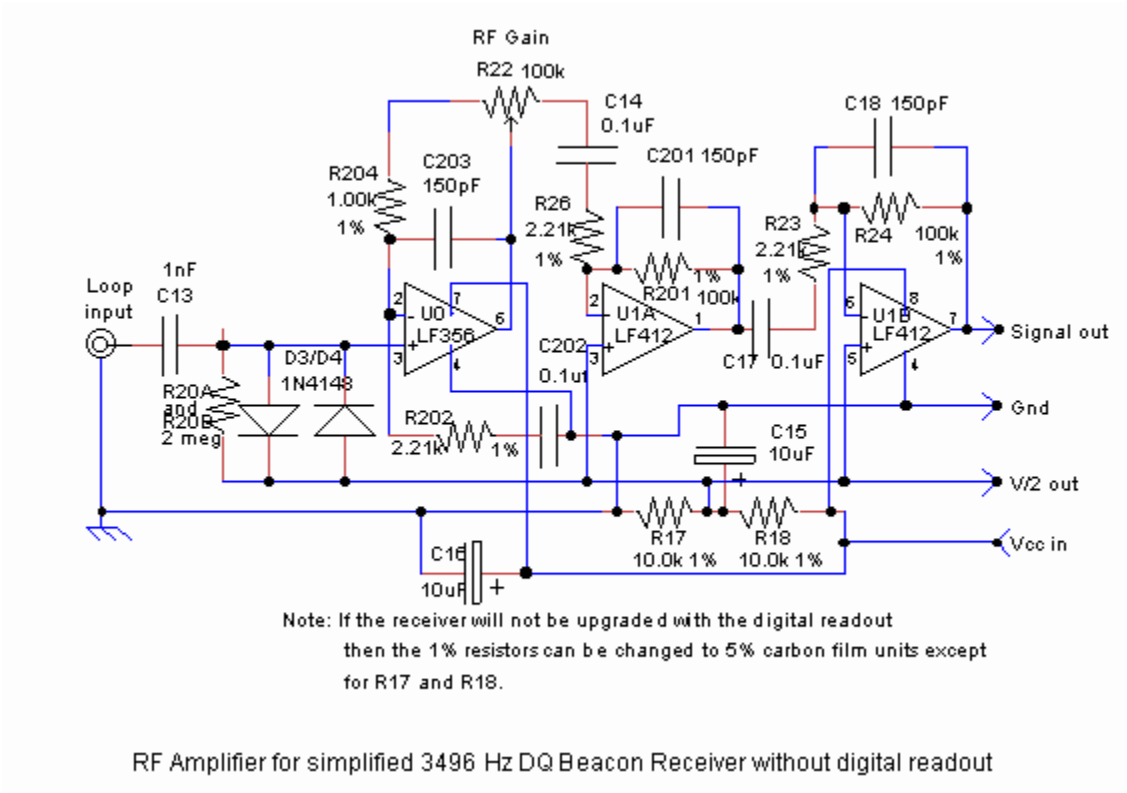
The complete Simplified Receiver and Loop. The18" loop (20" overall diameter) is wound with 1 Lb of #28 wire (350 turns) and tuned to 3496 Hz with ~13500 pF as described in the Notes. Any of the larger and higher performance receive loops can also be used. The Body is 2" building foam with a groove in rim, covered with a layer Epoxy and fiberglass cloth. The Cylindrical bubble level is on top (end-on). Feedline is RG-178. The headphones are cheap- stereo units from Walmart. The receiver neck strap is very handy while bushwacking.




FROM
RF AMP BOARD
INSTALL C20 (33PF) IN PLACE WHERE Y1 IS SHOWN HERE
INSTALL JUMPER IN PLACE WHERE C20 IS SHOWN HERE
RF IN
gnd
freq
C19
to D2 alarm
C31
R8
R12
u/2IN
R7
R6
gnd
R5
null bal
ACCESSIBLE FROM OUTSIDE BOX
U6
U7
U5
U2
R2
R4
R1
R3
C32
C20
X1
R25
C30
dum+
dum-
to D6
BW sw
C4
C2
C1
C3
S1
BANDWIDTH
CLOSED 1 Hz
OPEN 32 Hz
TP1
PLL
C9
C5
null
U11
NOT USED
U3
R10
R11
ctr
R9
FRONT PANEL NULL
(LINEAR POT)
INSTALL JUMPER BETWEEN PIN 8 & 3 WHERE U10 WOULD GO
R19
PLL adj
zero
R13
adj
T2 audio
C8
C39
V+
gnd
U10
C37
D2
RED PWR LED
D1
12v
C16
C24
vol+
C3
R46
R45
R44
U9
U4
R36
R15
R14
R16
9V
S2
C18
R35
C23
C17
gnd
hot
C7
C6
gnd
vol-
vol ctr
audio out
R34
LO
HI
VOLUME
(AUDIO TAPER)
P1
PHONE JACK(S)
STEREO WIRED FOR MONO
4/16/07
PARTS NOT NEEDED ARE NOT SHOWN
"SIMPLIFIED RECEIVER" MAINBOARD



Simplified DQ Receiver Mainboard Schematic



RF Amplifier for simplified 3496 Hz DQ Beacon Receiver without digital readout

Audio null and frequency adjustments are the same as the Antarctic Receiver except that there is no Phase-lock or DVM readout to worry about. See *Notes on the Construction and use of the DQ Receiver and Beacon.* The receiver is used in the same way as the Antarctic Receiver except that there is no readout of signal strength. The field angle method of depth measurement can be used, just like the Basic 1 &2 Radiolocators.