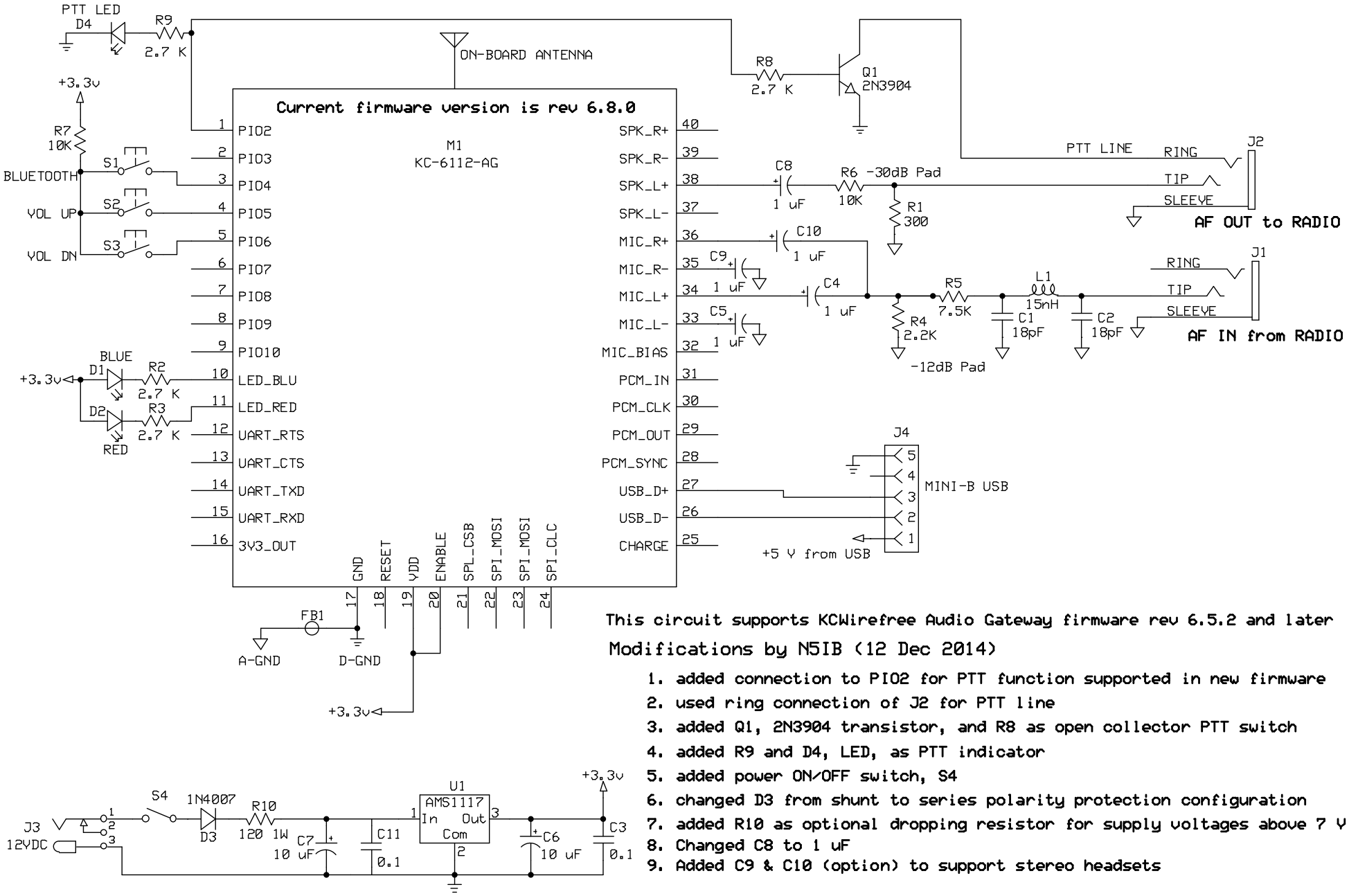
Bill of Materials, Bluetooth headset adapter (from *QST* August 2013) Designed by KG4JJH

M1	KC-6112-AG Bluetooth module, Audio Gateway firmware rev 6.8.0 ($25.00) http://kcwirefree.com/kc6112.html	
C1, C2	15 or 18 pF 50 V C0G SMT 1206	Mouser # 80-C1206C150K5G
C3, C11	0.1 µF 50 V SMT X7R 1206	Mouser # 80-C1206C104K5R
C4, C5, C8, C9, C10	1 µF Tantalum 16 V SMT 1206	Mouser # 581-TAJA105K020
C6, C7	10 µF Tantalum 25 V SMT 1206	Mouser # 647-F931D106KAA
D1	BLUE LED SMT 1206	eBay item # 170702961651
D2	RED LED SMT 1206	eBay item # 170702967718
D3	1N4007 Rectifier SMT 1206	eBay item # 121367220447
D4	GREEN LED SMT 1206	eBay item # 170702974501
FB1	Ferrite bead FB43-101	Kits and Parts #FB-43-101, 100 for $5.00
J1, J2	3.5 mm Stereo jack, thru-hole	eBay item # 321099207333
J3	5.5 x 2.1 mm panel-mount coaxial power jack	eBay item # 331156433300
J4	MINI-B USB jack, thru-hole	eBay item # 310901801245
L1	15nH inductor SMT 1210	Mouser # 871-B82422A3150k100
Q1	2N3904 NPN transistor SMT SOT-23	eBay item # 371082848200
R1	300 Ω 5% SMT 1206	Mouser # 71-CRCW1206J-300-E3
R2, R3, R8, R9	2.7 K 5% SMT 1206	Mouser # 71-CRCW1206J-2.7K-E3
R4	2.2 K 5% SMT 1206	Mouser # 71-CRCW1206J-2.2K-E3
R5	7.5 K 5% SMT 1206	Mouser # 71-CRCW1206J-7.5K-E3
R6, R7	10 K 5% SMT 1206	Mouser # 71-CRCW1206J-10K-E3
R10	150 Ω 1W thru-hole	Mouser # 660-MOS1CT52R151J
S1, S2, S3	SPST momentary pushbutton switch	Mouser # 655-FSMRA4JH
S4	DPDT latching pushbutton switch	Marlin P Jones # 18017 SW
U1	AMS1117-3.3, 3.3V regulator, SMT SOT-23	eBay item # 261486113503
Enclosure	Hammond 1593LGY, gray	Mouser # 546-1593LBK or 1593LGY
Header connector shells	2 position, black plastic, fits pins below	Mouser # 538-70107-0001
Connector crimp pins		Mouser # 538-16-02-0102
Header	2 pin, male, right angled pin header	
Printed Circuit Board		



This circuit supports KCWirefree Audio Gateway firmware rev 6.5.2 and later

Modifications by N5IB (12 Dec 2014)

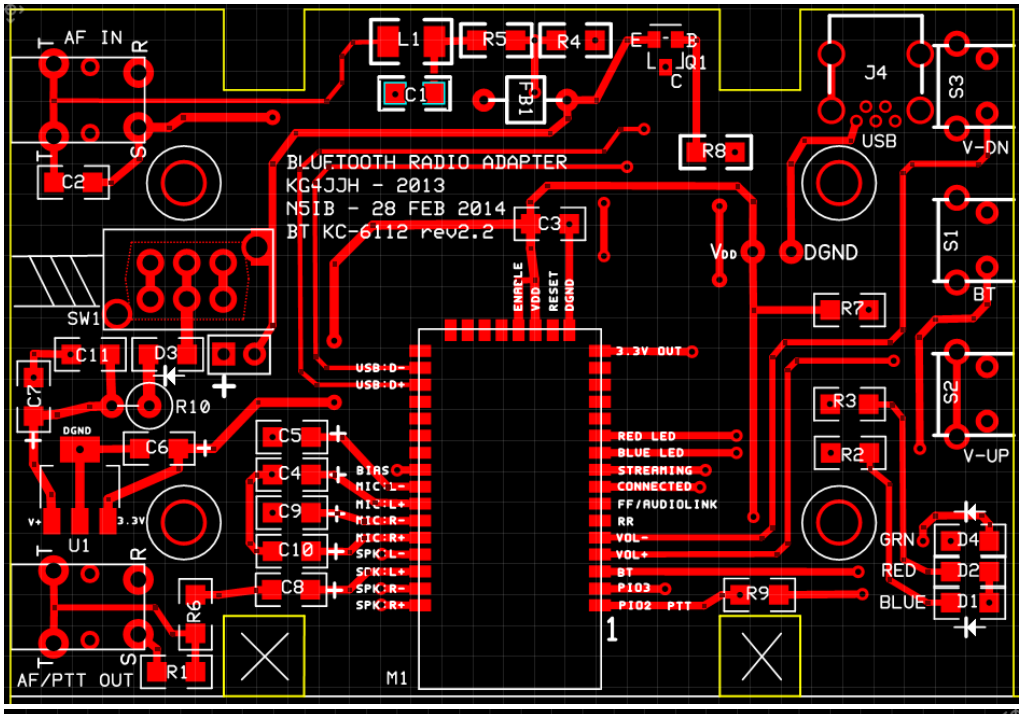
1. added connection to PIO2 for PTT function supported in new firmware
2. used ring connection of J2 for PTT line
3. added Q1, 2N3904 transistor, and R8 as open collector PTT switch
4. added R9 and D4, LED, as PTT indicator
5. added power ON/OFF switch, S4
6. changed D3 from shunt to series polarity protection configuration
7. added R10 as optional dropping resistor for supply voltages above 7 V
8. Changed C8 to 1 uF
9. Added C9 & C10 (option) to support stereo headsets

NOTES

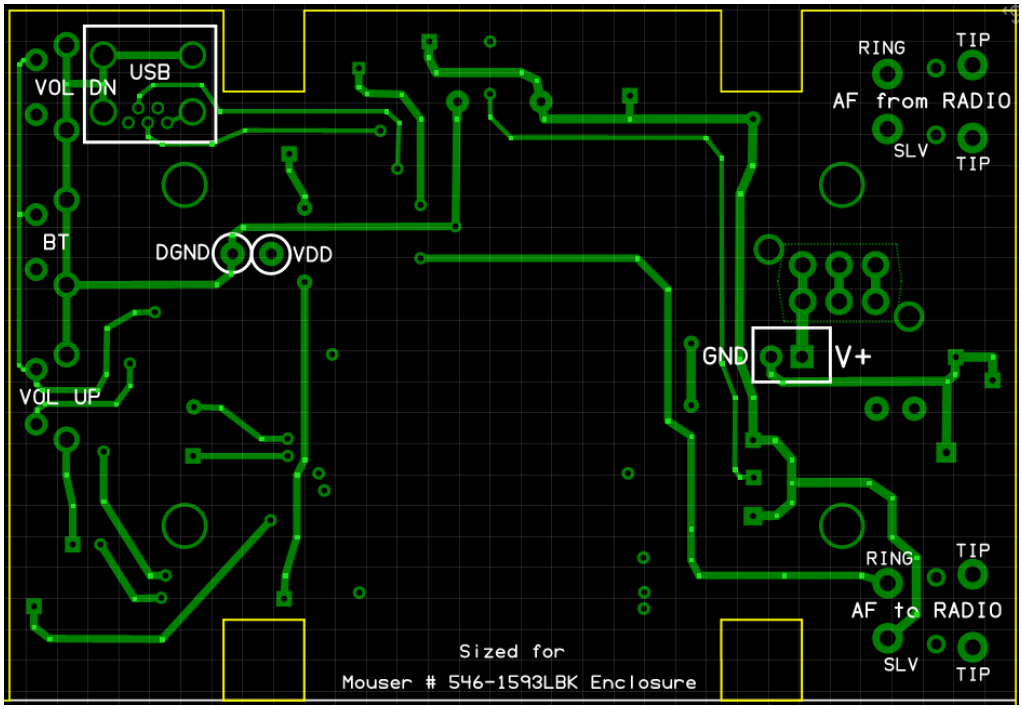
1. FT-857 volume at 100%=2Vrms; 50%=1Vrms (0dBv)
2. U1 audio input: 0.4Vrms maximum, use 4:1 voltage divider

E&M Solutions, LLC		
Bluetooth Radio-to-Headset Adapter from August 2013 issue of QST		
orig. des: A.Baker, KG4JJH mods: J Giammanco, N5IB	Rev 2.2 1 MAR 2015	Page 1 of 2

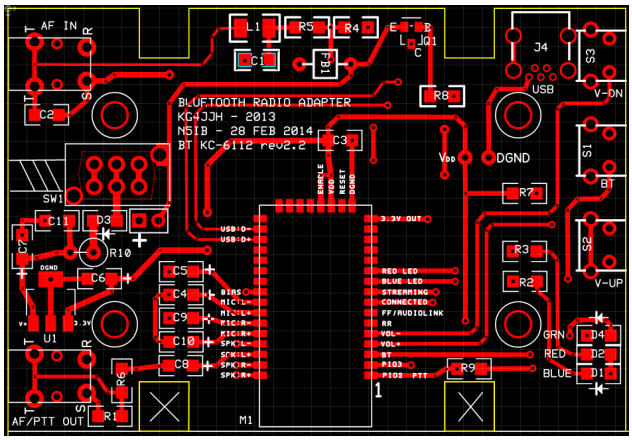
TOP

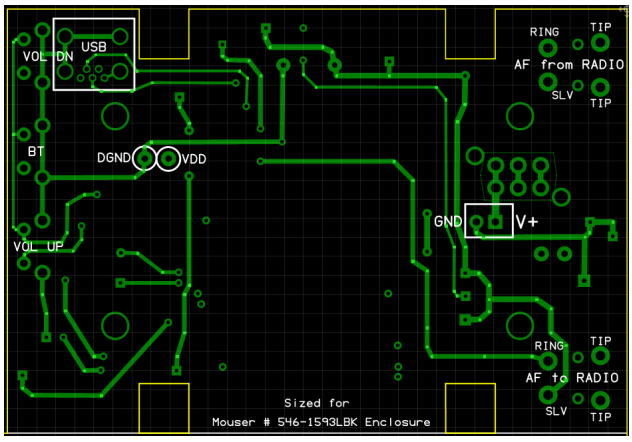


BOTTOM



APPROXIMATE ACTUALSIZE

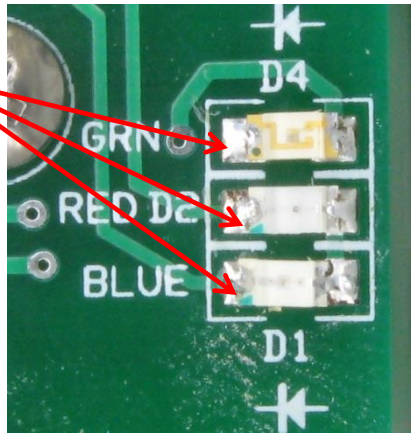




Build Notes:

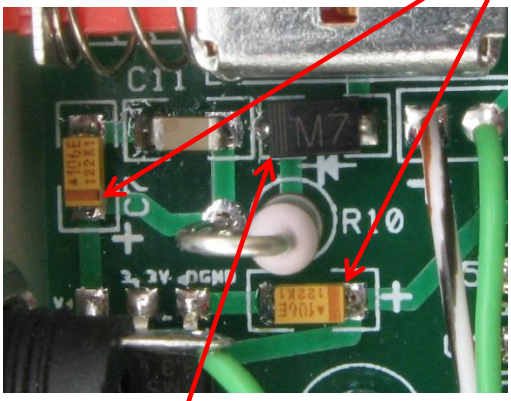
R10 can be as large as 150 Ω if a supply of at least 12 V is used. 120 Ω is a better choice. For operation on supplies of 9 V or less, reduce R10 or replace it with a jumper.

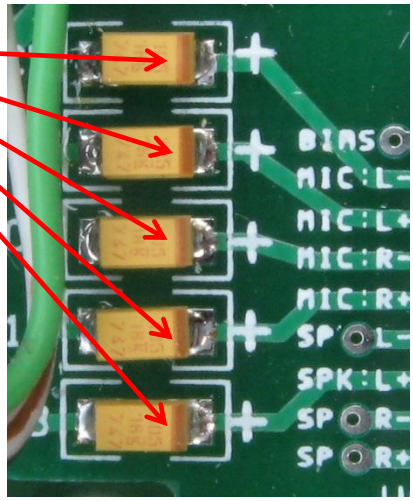
The LEDs each have a small dot on the case that indicates the minus (cathode, or bar in the symbol) side of the diode. The dot should be oriented farthest from the edge of the PC board.



The color of the dot **does not indicate the color** of the LED

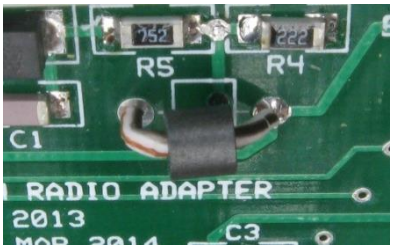
The bars on the tantalum electrolytic capacitors indicate the positive sides.



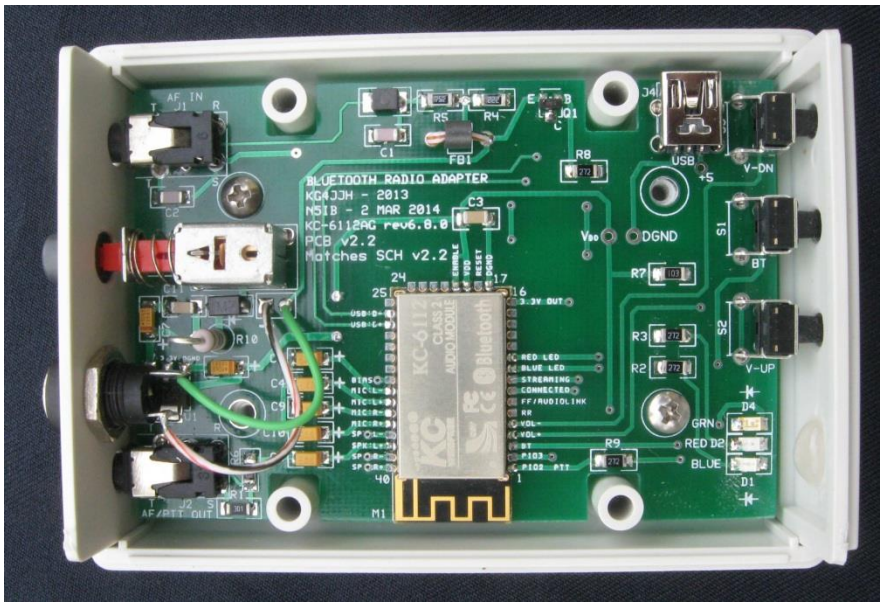


The polarity protection diode, a 1N4007, marked "**M7**" has a grey striped bar that identifies its cathode (-) terminal.

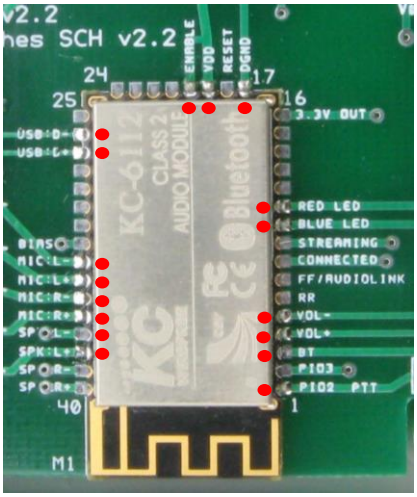
Install the ferrite bead by inserting a short piece of insulated wire through the center. Strip the ends and solder. Alternatively a piece of bare wire, such as a discarded resistor lead, could be used.



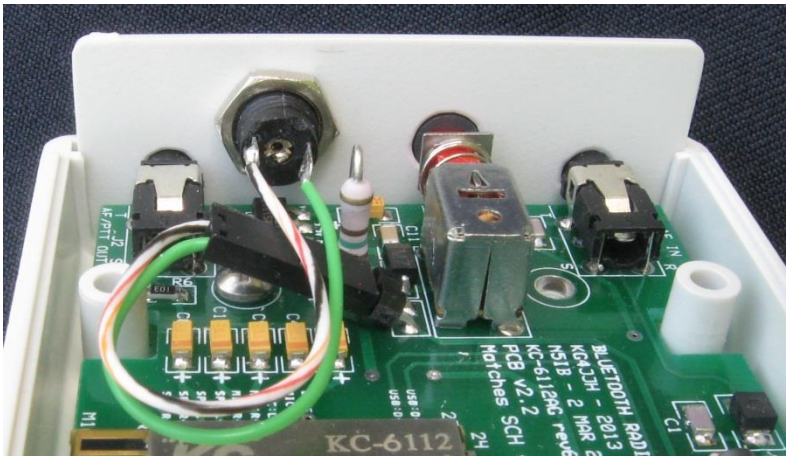
To allow the LEDs to be seen from outside the case, a window is made using hot glue. After creating the opening, cover the outside with a small piece of aluminum foil that has been coated with a film of cooking oil. Secure the foil in place with masking tape. Flow hot glue onto the opening from the inside, forming a small raised bump. Allow the glue to cool completely, and then peel off the tape and foil.



It is not necessary to solder all of the connections to the Bluetooth transceiver module. The ones that must be soldered are identified by red dots in the photo at right. The others signals are made available for possible future experimentation or upgrades.



Power supply connection. If you wish, instead of soldering direct to the PC board (as in the photo above), a 2-pin, right angled pin-header can be installed to bring power to the board. If the pin-header is used, solder it in place such that it tips upward a bit so that the connector shell can slip on and not be interfered with by nearby components. It might be necessary to bend the pins slightly. See the photo below.



Fitting the controls and connectors.

Use the supplied template to mark the end panels for drilling. Be sure to measure the 3” x 4” printed rectangle to be sure your printer reproduces the template to correct scale. If necessary, adjust the scale factor of the print.

After drilling the end panels according to the template supplied, dry fit the four switches and two jacks with the PCB set into the enclosure and the end panels. When satisfied with the fit. Tack solder a corner of each, recheck the fit, then solder the rest of the pins. It should not be necessary to pre-fit the coaxial power jack, there is plenty of clearance.

Panel label decals:
Water Transfer
A clear overspray is recommended.

VOL+ BT VOL-

AF IN AF/PTT OUT 12V ON

BLUETOOTH HEADSET ADAPTER
***QST* August 2013**
Designed by KG4JJH

End panels as seen from INSIDE the enclosure
dimensions in inches
Use outer rectangle to check printer scale