

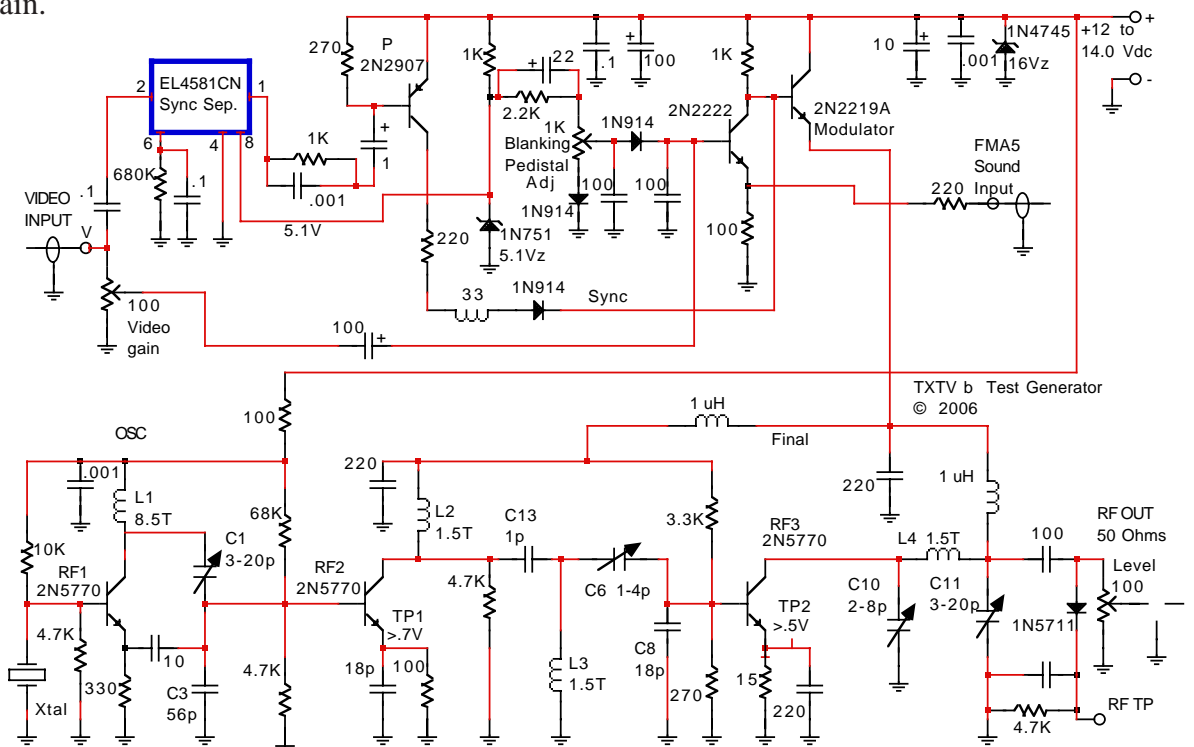
TXTVb - 70cm ATV Test Generator

A low cost (\$30), low power 70cm ATV generator can have many uses in the shack and for demo's. The TXTVb board will put out 1 to 10 milliwatts with DC inputs of 8 to 14 Vdc @ 40 mA. For portable, it can run on a 9V alkaline battery for over 8 hours.

Any time you think your receive system isn't working or you want to do some fine tweaking, fire up the test generator and you have a solid crystal controlled signal - no need to have to wait until a local ATVer is around to send a picture your way. Put the board in a Hammond 1590C die cast aluminum box, run the DC through a feed thru cap, and bypass the video in jack with a 33 pF cap with short leads to prevent too much radiated RF from being stronger than what comes out of the RF jack. It would take about 60 dB attenuation to get down to P4-P5 levels with a direct connection to the receiver - tough to get inside the box with resistors. A low cost solution is putting a 50 Ohm resistor to ground with short leads directly on the RF Jack and playing with the placement of a short "gimmick" pick up wire on the center pin of the jack for the desired level. More practical would be to make a RG174 coax connection between the board and jack, then a good fixed or variable attenuator in the external coax line then you can use the generator full power for other uses.

Want to play with ATV antennas? Connect the 10 mW from the board directly to the RF jack. Put the test generator on top of your car with a ground plane or dipole, park it down the street at least 75 yards to make sure it is in the far field, and that you have line of sight with no other cars in between. Set up a TV on an extension cord at the curb and a connect a DC voltmeter to the AGC then tweak away or compare gain if you have a step attenuator you can put in the coax line so you can set for the same AGC voltage as with a reference antenna of known gain.

The board comes stuffed and soldered up to a point as it was originally designed to drive 144 MHz transverters for higher bands. Contact International Crystal Mfg. ordering catalog #473370, crystal frequency is $F_0/4$ MHz - 800-725-1426. Example, for 439.25, crystal is 109.8125 MHz type HC-50U,



TXTVbTG Parts Kit includes: L1 = 8.5 turns #22 buss wound on a 10-24 screw as a form, L2,3,4 = 1.5 turns; RF1, 2, 3 = 2N5770; C3 = 56 pF, C8 = 18pF; RF2 emitter bypass replaced with a 18 pF; C13 is replaced with a 1 pF; C10 and replace with 2-8 pF variable cap. W6ORG © 5/2014

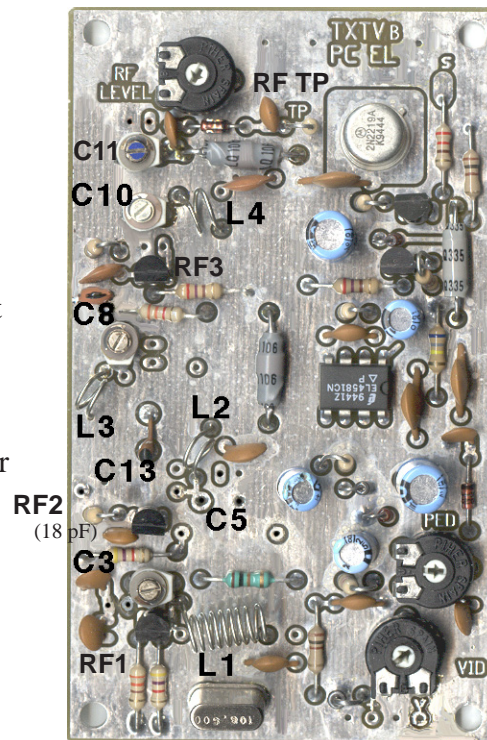


TXTVb - 70cm ATV Test Generator

ASSEMBLY PROCEDURE:

Refer to the board pictorial on right

1. Remove trimmer caps C5, C10 and C13.
2. Install and solder the kit of parts in their respective locations:
 - A. Install the 8.5 turn coil at L1 and the 1.5 turn coils in L2,3 and 4 and space the bottom of the coils 1/16" above the board. After soldering, verify that L1,2 and 4 read greater than 1K with respect to ground with an ohm meter and adjust if a short is found.
 - B. The 2N5770 are inserted into the board with the flat side facing toward the crystal end.
 - C. Install the 18pF disc caps at C8 and replace the 220 or .001 emitter bypass cap with one at the emitter of RF2.
 - D. Install the 56pf disc cap at C3. Install the 1pF disc cap at C13. Install the 2-8 pF variable cap at C10.
 - E. Install the 100 Ohm carbon trim pot at the video input or run 3 wires to a panel mounted 100 Ohm carbon pot.
 - F. Connect the output coax to a RF Jack or antenna. Fold back the braid and attach to the connector in the same manner as we have done on the board. Do not use pigtailed. Solder directly to the ground of the jack as close to the center as possible. We suggest only using a Type N or BNC at 70cm. Check for 100 ohm reading.



TUNE UP:

Plug in a HC-50U crystal for the desired 70cm frequency. Output frequency is crystal frequency times 4.

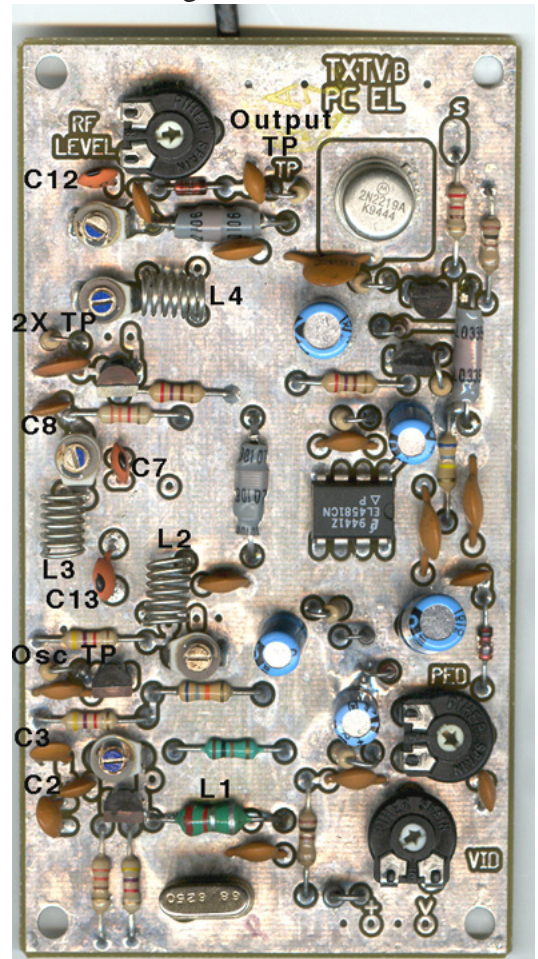
1. Preset the PEDestal pot to full CCW and the RF LEVEL to full CW. No video plugged in. Connect RF out to a 50 ohm load.
2. Turn on +12 to 13.8 Vdc and peak C1 at TP1 with a DC Voltmeter. It should read greater than .5 Vdc.
3. Peak C8 first, then C10 and C11 for maximum DC voltage at the RF OUTPUT test point (top of 4.7K). Then go back and fine peak each. DC voltage should be about .3Vdc. Note this voltage then multiply it by .75. Set the Pedestal Pot to this calculated voltage. Once set, it should not be readjusted unless you want to repeak the trimmer caps or change the DC applied voltage more than 1/2V in which case always start over at step 1.
4. Plug in the video source and adjust the VIDEO gain pot for best picture without white smearing.



TXTVb - ATV Exciter for 2 Meter Transverters

The TXTV ATV exciter board is designed to generate 10 to 100 milliwatts on various frequencies depending on selection of inductors and capacitors. 2 meter input Transverters for higher bands can add the ATV mode with this board. Sound can be added by running a short RG174 coax from the output of a FMA5-G 4.5 MHz sound subcarrier board to the solder pad marked S on the TXTV board. The board(s) should be mounted in a die cast aluminum box to prevent stray radiation on cable channels 16 to 18.

The board comes stuffed and soldered up to a point with a kit of parts for the 2 meter application. Stuff and solder the respective parts in the board as shown at right: RF1, 2, 3 = 2N5770, L1=.22uH, L2,3,4=6.5 turn coil - space above the board 1/16" and verify no short to the ground plane with an Ohm meter, C2=22 pF, C3=100 pF, C7=10 pF, C8=22 pF, C12=10 pF and variable cap C13 is removed and replaces with a 4.7 pF fixed cap. Solder the RG174 50 ohm coax from the RF OUT solder pad on the bottom of the board to a RF chassis mount jack and check for shorts. Run a wire from the + solder pad to a 1000 pF feedthrough capacitor or a jack that is bypassed with 1000 pF. Run a wire from the V solder pad to a Video in jack. Plug in a crystal selected for the right ATV output frequency - ie. 1289.25 in a 144.0 to 1296.0 transverter would be 68.675 MHz and outputting times 2 on 137.25 MHz. Do not transmit ATV on weak signal frequencies.



Tune up: No video plugged in, output pot full CCW, and the pedestal pot full CCW, +13.8V, connect a DC voltmeter to the test point (top of 100 ohm resistor) and peak the oscillator trimmer cap. Then peak the next two trimmer caps for maximum at the doubler 2X test point. Finally peak the two output trimmer caps at the output RF test point. Connect the output to the transverter and adjust the RF output pot for 90% of the rated output of the transverter or final amp. Fine peak the last to trimmer caps for maximum output, then reset the pot to 90% power. Note this power and then set the pedestal pot for 60% of that. This sets the video to sync ratio and compensates for any system gain compression. Plug in the video and adjust video gain for best pix.

