

# Drake 2880 Downconverter

## 2.4 GHz ~2.7 GHz CONVERTER MANUAL

This converter is usable from 2.4 to 2.7 GHz

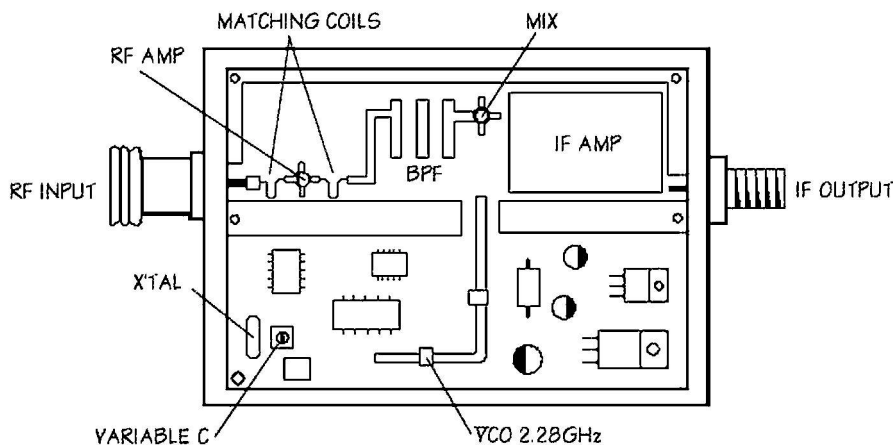
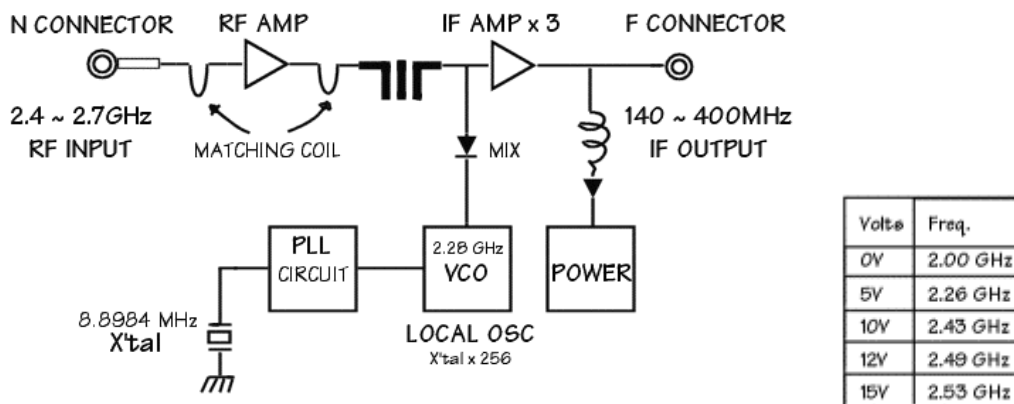
Increasing sensitivity for 2.4 to 2.5GHz

This .pdf file and the associated diagrams courtesy of NONSV

### SPECIFICATIONS:

- OPERATING FREQUENCY: 2.4 ~ 2.7GHz (RF Input Frequency)
- IF OUTPUT FREQUENCY: 140 ~ 400MHz
- LNB GAIN: 24db Typical
- NF 3db Typical
- LOCAL OSC. 2.28GHz Typical PLL (Drift +/- 30Hz)
- POWER: +12v~24v190mA Typical (From IF Output – Coax Cable)
- OTHER: Aluminum Case – Waterproof – Mast Type Mount

### BLOCK DIAGRAM:



RF AMP – MIX – IF AMP CHARACTERISTICS: (Unmodified)

RF IN FREQ	RF IN LEVEL	RFAMP OUT LEVEL	RF AMP GAIN	IF OUT FREQ	IF OUT LEVEL	LNB GAIN
2.3GHz	-50dBm	-42dBm	+ 8dB	-	-	-
2.4GHz	-50dBm	-39dBm	+11dB	120MHz	-43dBm	+ 7dB
2.5GHz	-50dBm	-37dBm	+13dB	220MHz	-27dBm	+23dB
2.6GHz	-50dBm	-37dBm	+13dB	320MHz	-26dBm	+24dB
2.7GHz	-50dBm	-37dBm	+13dB	420MHz	-28dBm	+22dB
2.8GHz	-50dBm	-37dBm	+13dB	-	-	-
3.0GHz	-50dBm	-38dBm	+12dB	-	-	-
3.5GHz	-50dBm	-39dBm	+11dB	-	-	-

(Local Osc: 2.28GHz)

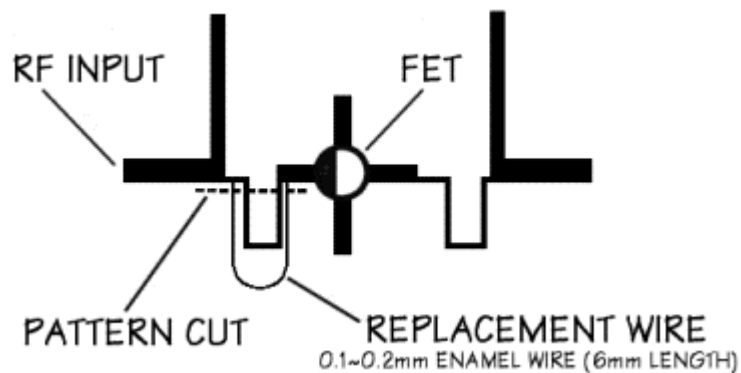
LOCAL OSC. CHARACTERISTICS: (Unmodified)

- OUTPUT LEVEL: +12Dbm
- LOCAL FREQUENCY: 2.28ghZ (XTAL 8.898MHz x 256 = 2277.9904MHz)
- NOISE LEVEL: fo +/-40kHz / -45dB
- SPURIOUS: 2fo -20dB, 3fo -40dB
- DRIFT: fo +/-30Hz
- FREQ.. ADJUSTMENT: -500kHz, +1 MHz (via Trimmer)

RF AMP MODIFICATION TO 2.4GHz:

Original RF AMP gain of 2.4GHz is 11dB, so we can modify it to increase gain. It is not necessary to do this modification because it is only 2Db.

1. PATTERN CUT FOR RF AMP SECTION (MATCHING COIL)
2. REPLACE WITH 0.1~0.2 ENAMEL WIRE "U" MATCHING COIL (6mm LENGTH)

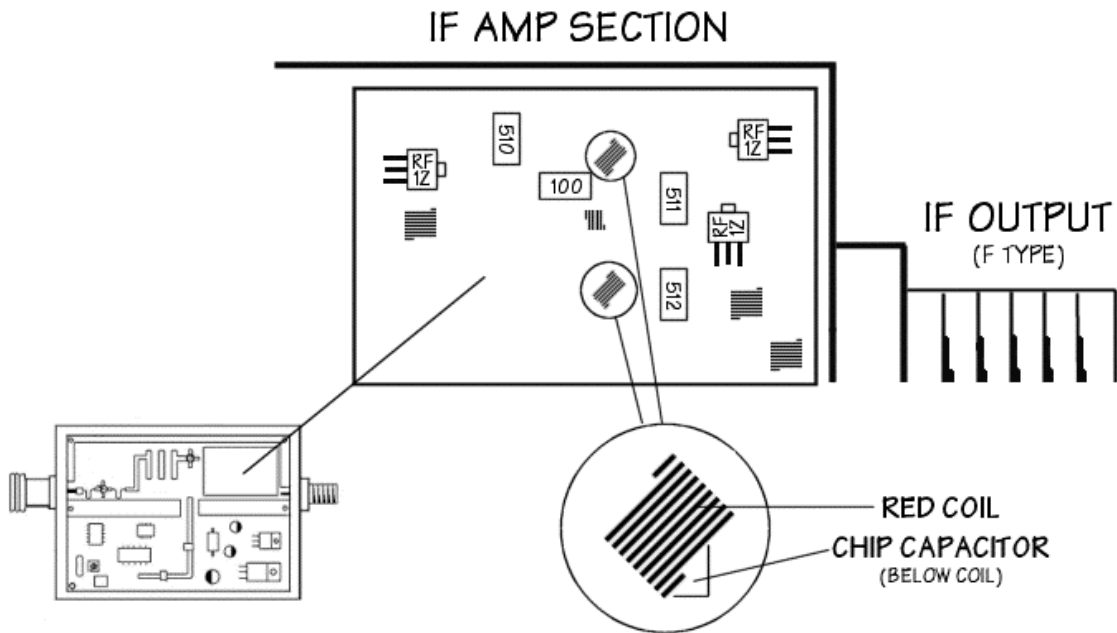


### IF AMP MODIFICATION (Necessary)

To increase the gain of the unit for RF under 200MHz and an IF of 2.4GHz.

Remove the 2 red coils and 2 chip capacitors under the red coils. IF output before this modification is -43dBm and typically -28dBm after the modification with an RF IN of -50dBm. (an increase of 15dBm)

At this point we can change the X'tal from the standard 8.8984MHz to a 8.8125MHz for  $(2400\text{MHz} - 144\text{MHz}) / 256 = 8.8125\text{MHz}$



### POWER SUPPLY MODIFICATIONS

This modification is not necessary if you have an inline power supply or if your rig can supply power via the feedline.

