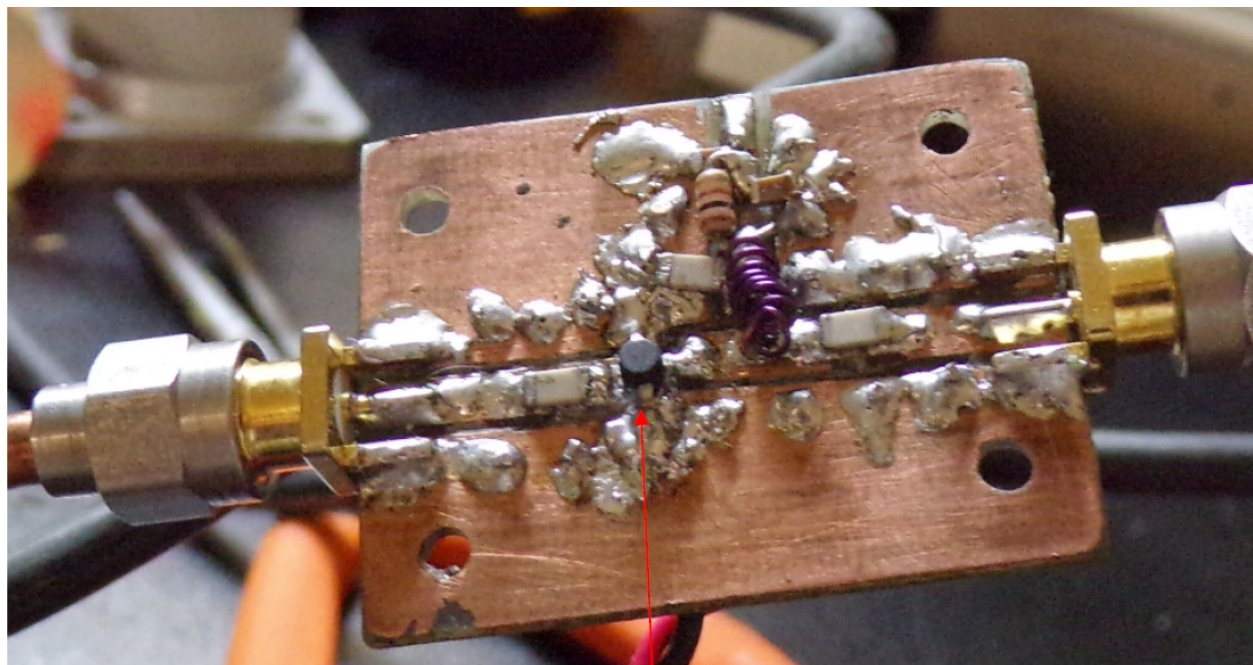


Initial Investigation: MMIC Microwave OSC-1

INTRO:

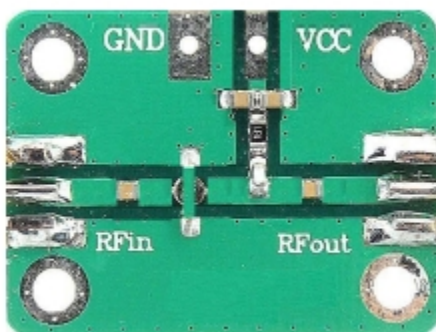
Several years ago when I started experimenting with mmic RF amplifiers (see photo below of my 2nd unit built) this mmic amplifier OSCed when the input was not terminated to its required 50 ohm load. The 1st unit is identical to the 2nd unit (see photo below) also oscillates as 2nd unit,

2nd unit built: my EXPERIMENTAL NOTES 21 June 19



NLB-310 MMIC

The above photo layout was based on the layout design found on eBay mmic amplifiers modifying the pad layout ie:

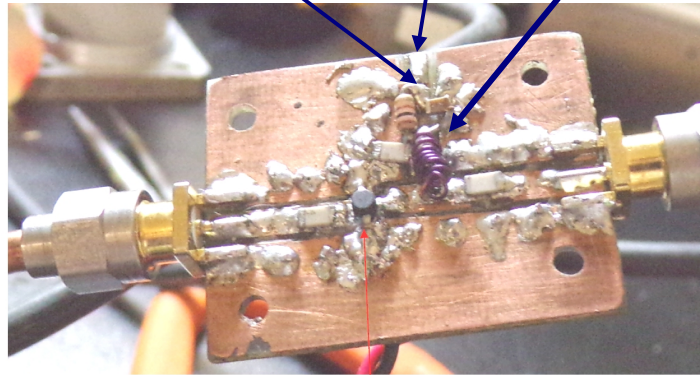


Current Limiting Resistor 100ohm
plus external 68ohm not shown

PWR IN 9VDC

RFC

IN



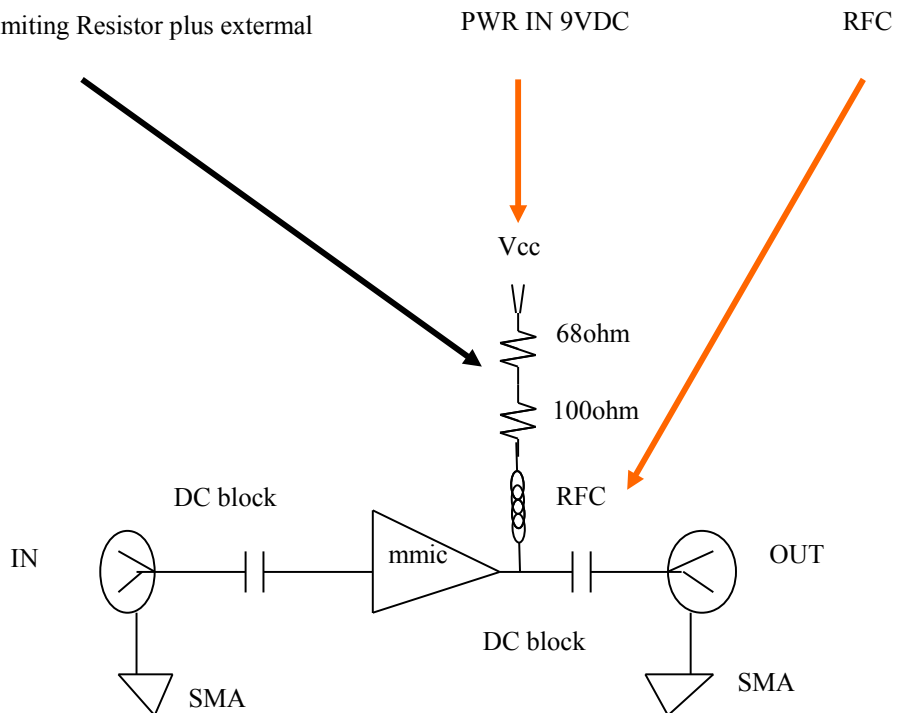
OUT

NLB-310 MMIC

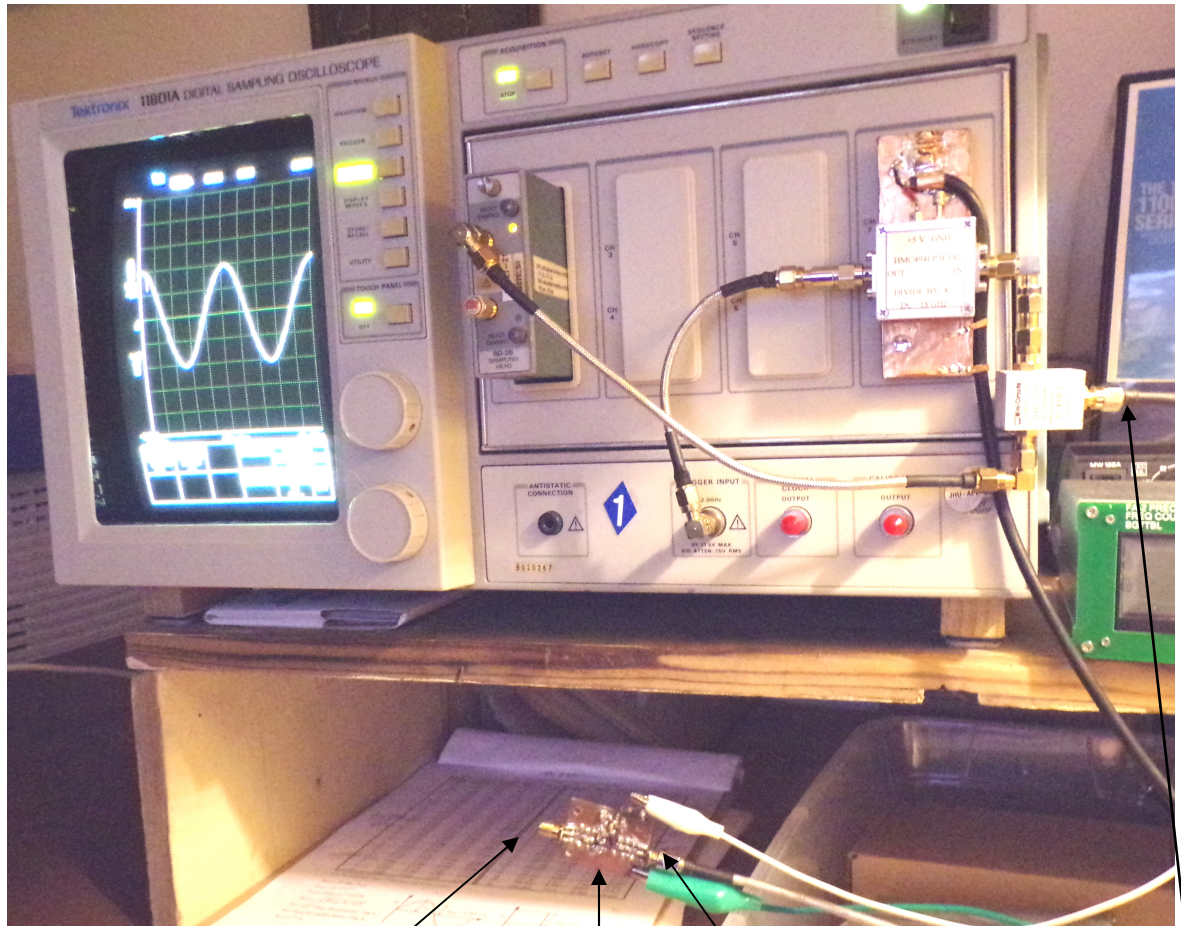
Current Limiting Resistor plus external
68ohm

PWR IN 9VDC

RFC



The top photo shows the TEK 11801A measuring the 2nd UNT oscillation parameters:



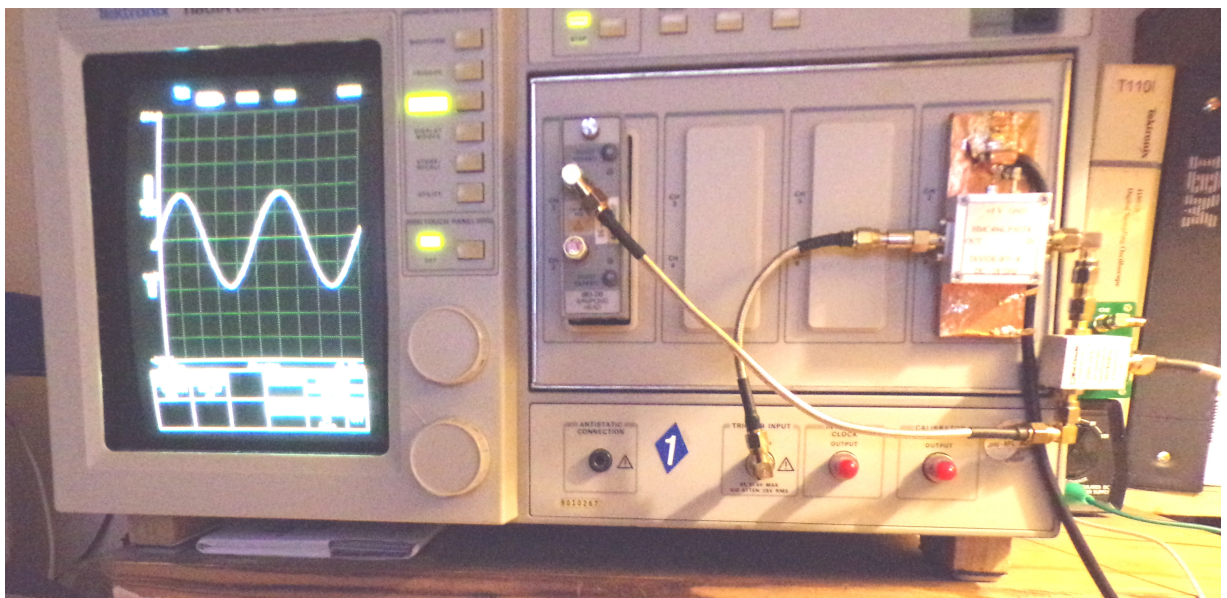
INPUT not terminated

2nd UNIT

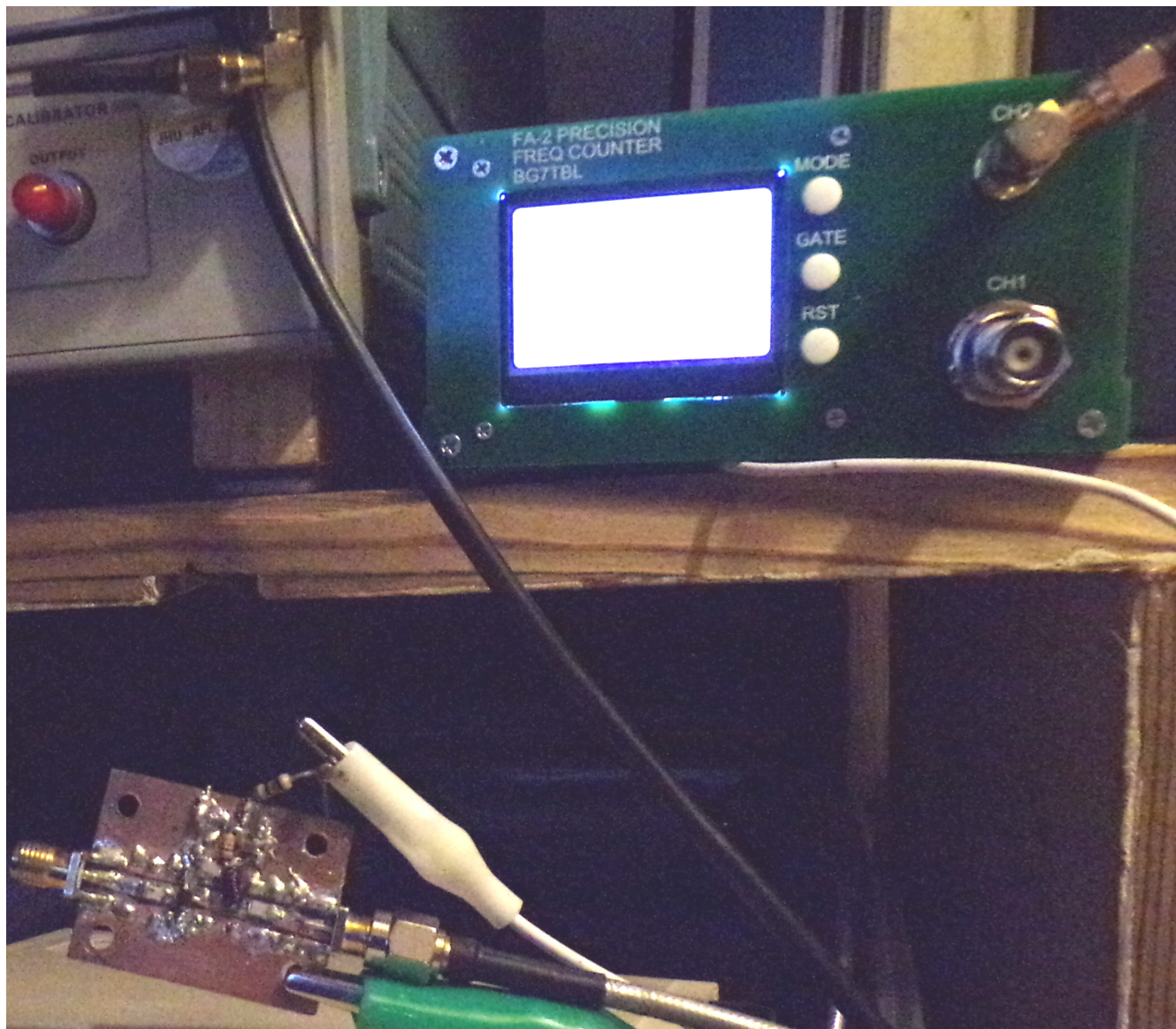
OUTPUT connected to the scope vertical input

Measurements : ~ 9.9 GHz , V_{pp} 204 mv

Closer look front view

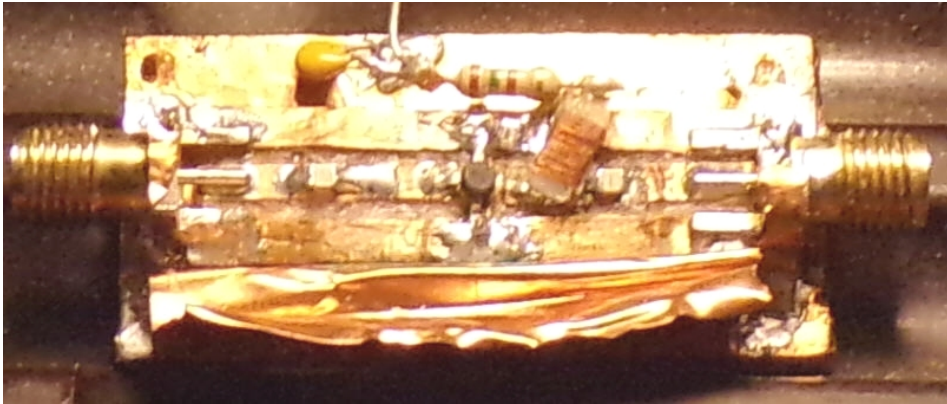


Measure frequency with FA-2 PRECISION FREQ COUNTER for reference



FREQ measured most of the time 9.985 GHz sometimes locks to 9.8 GHz ; the LCD screen washed out the numbers; camera settings needs to be adjusted ; seems close to the DSO.

Next Example: Another unit built about 1 year later; note that the pad spacing corresponds to 50ohm impedance. The item identification is given as: UNIT C for convenience.; see photo below:

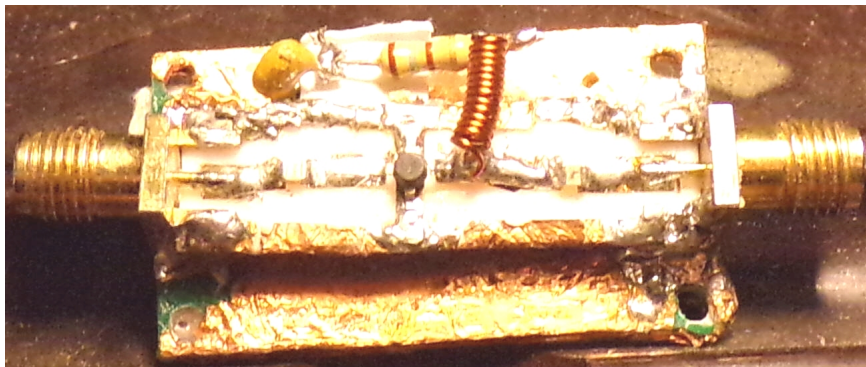


MEASUREMENTS UNIT C:

11801A => ~7ghZ 672 mv

FA-2 Frequency Counter => 7028MHz

HP PWR Meter => 11dbm ==> ! Getting close to max PWR in to SD-27 without two way splitter's attenuation

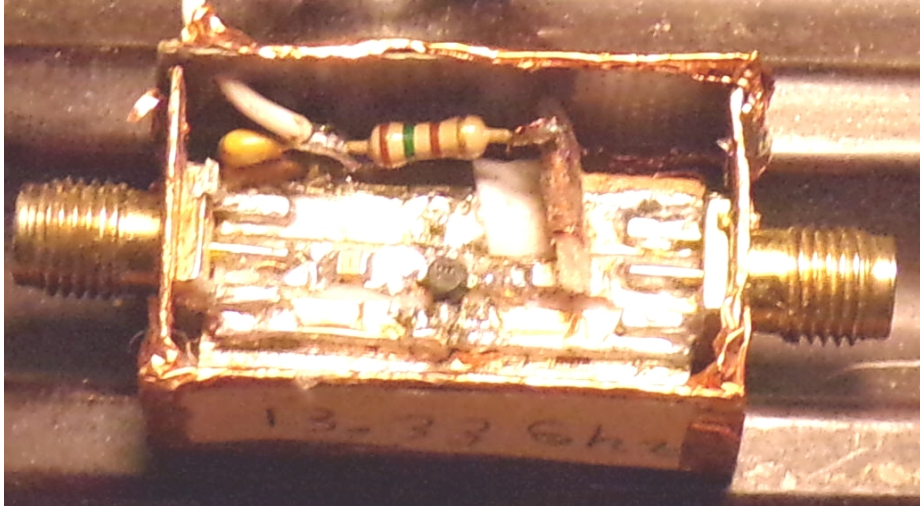


MEASUREMENTS UNIT D:

11801A => ~1 0ghZ 232 mv => some what unstable when physical is changed

FA-2 Frequency Counter => 10157MHz

HP PWR Meter => unstable ~ 0 dbm ==> ! Getting close to max PWR in to SD-27 without two way splitter's attenuation



MEASUREMENTS UNIT E:

11801A => ~1 3.39 ghZ 240 mv

FA-2 Frequency Counter => 13329MHz

HP PWR Meter => unstable ~ 0 dbm