

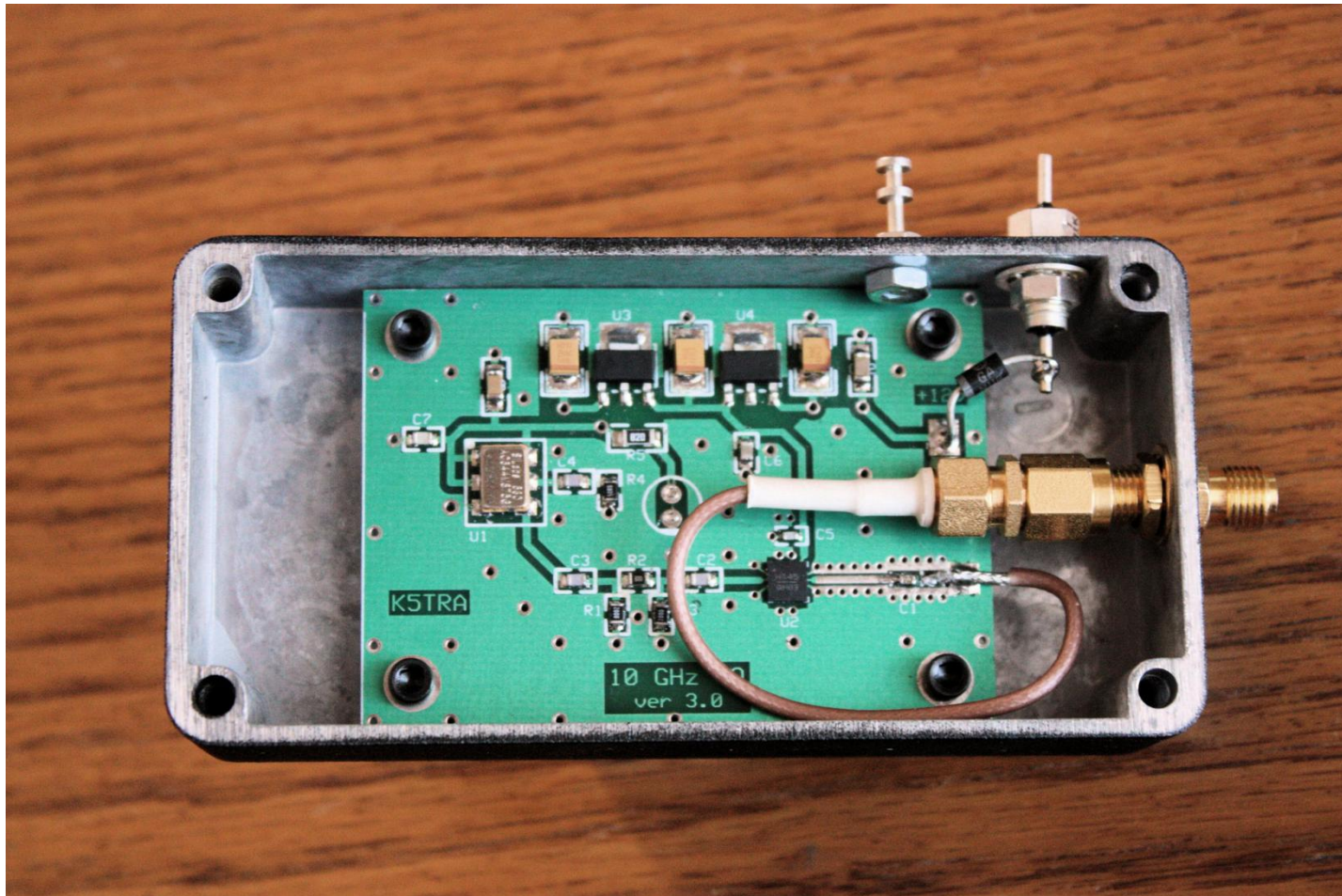
10 GHz LO

DESIGN AND CONSTRUCTION DETAILS

LO Module



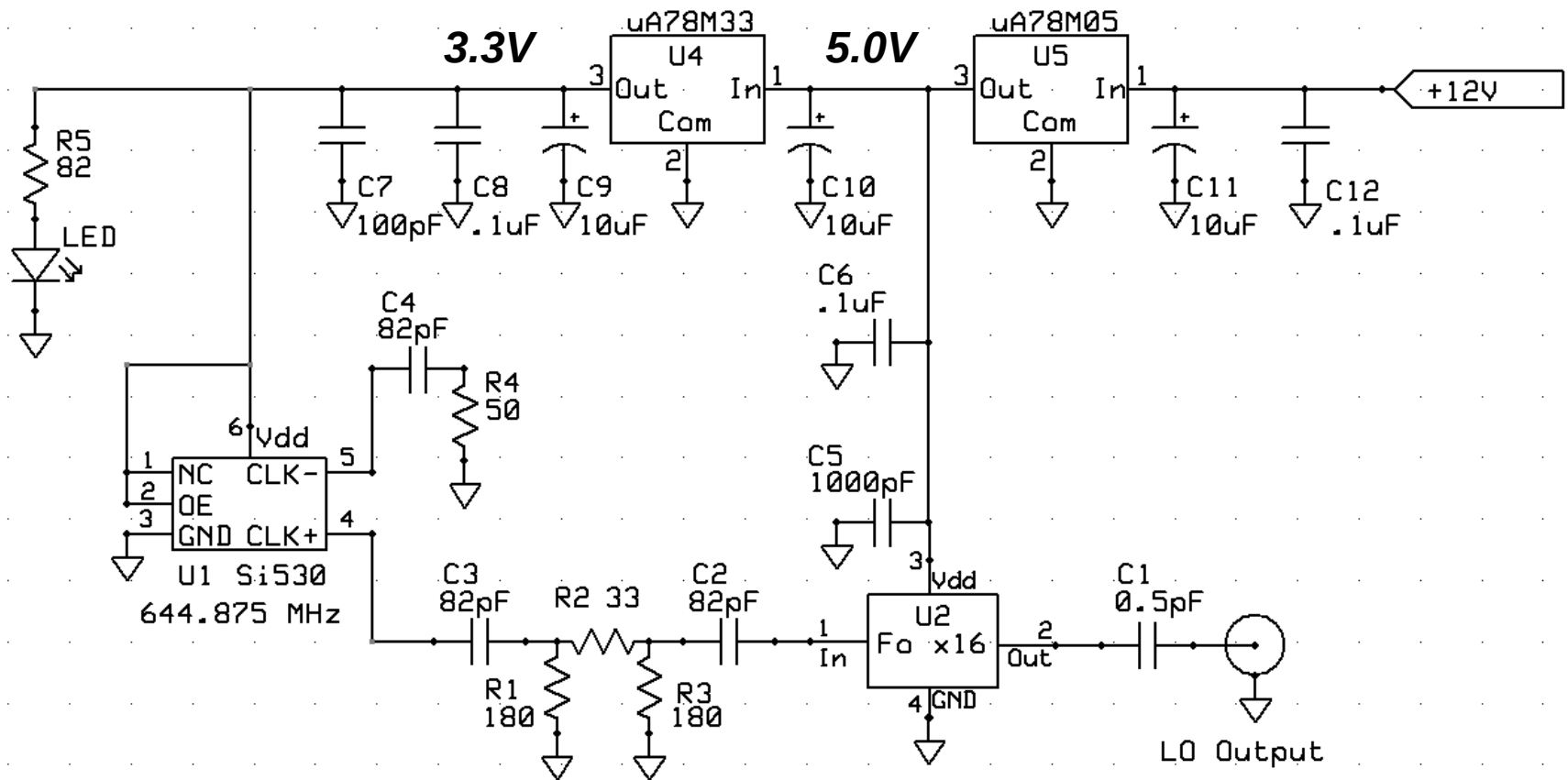
LO Module



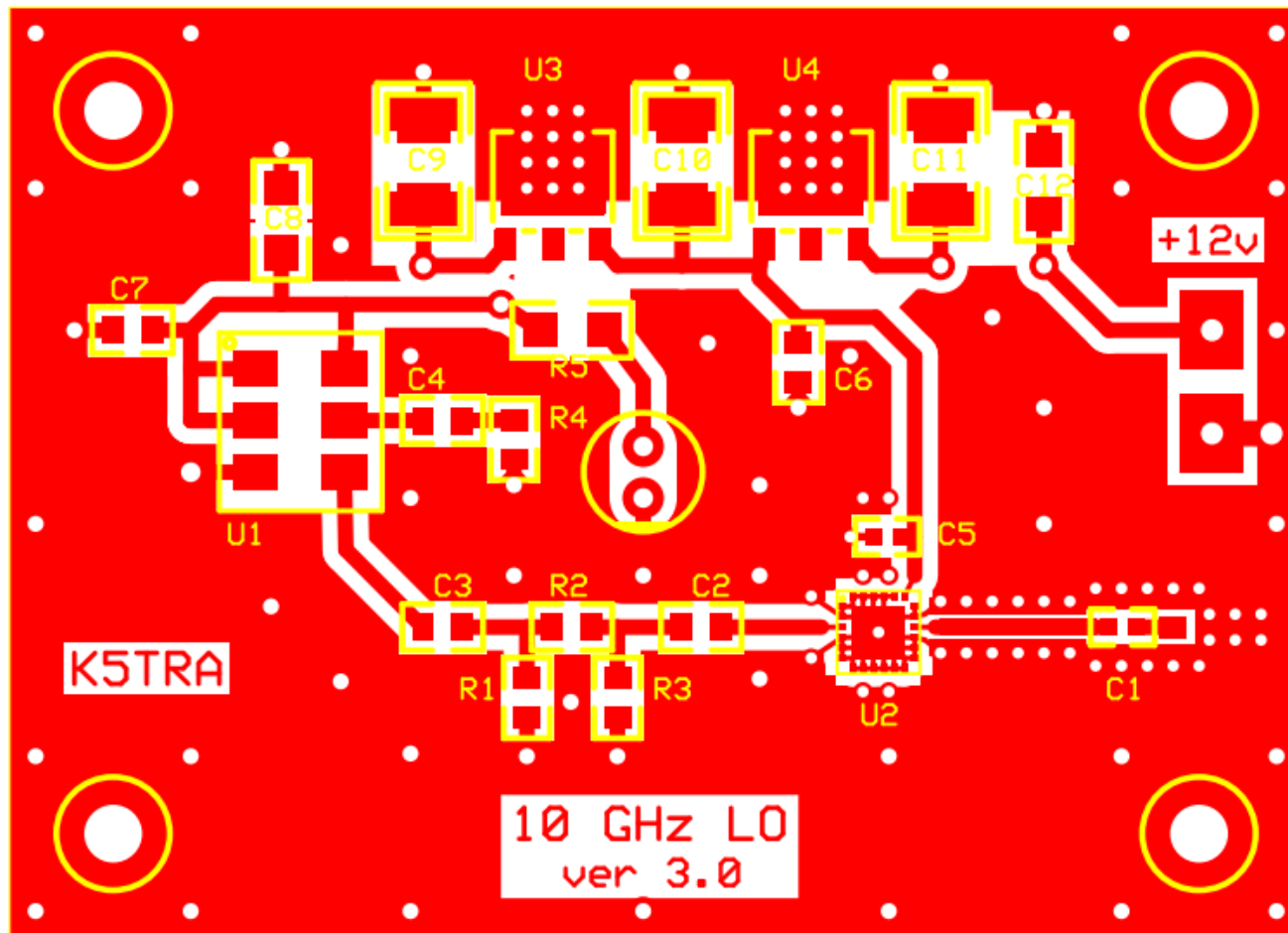
Frequency Plan

- IF frequency = 50 MHz
- LO frequency = 10,318 MHz (RF= 10,368.0 MHz)
- Silicon Labs **Si530** source at 644.875 MHz
- Hittite **HMC445LP4E** x16 frequency multiplier
- Si530 DC supply is double regulated for stability

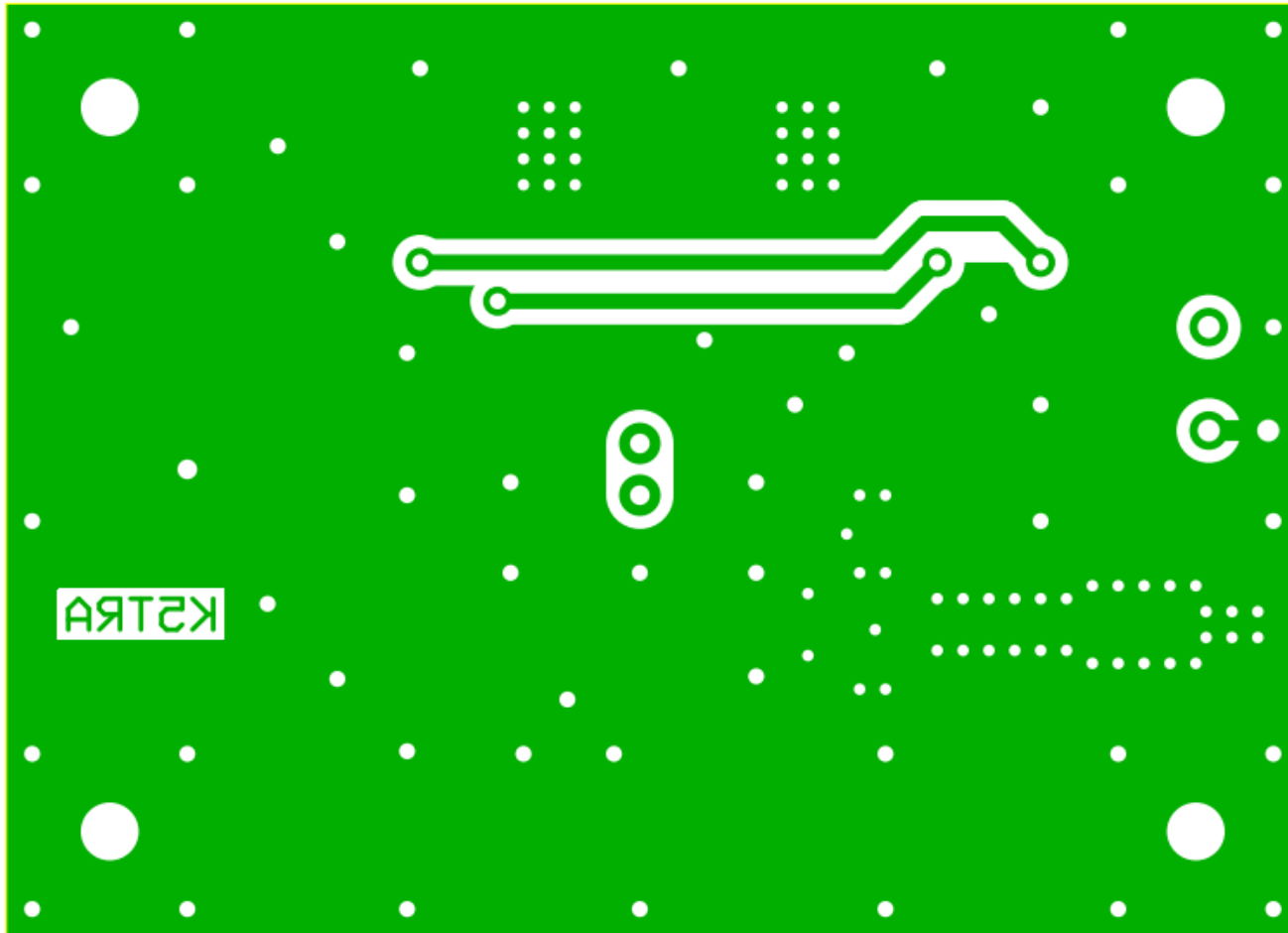
Schematic Diagram



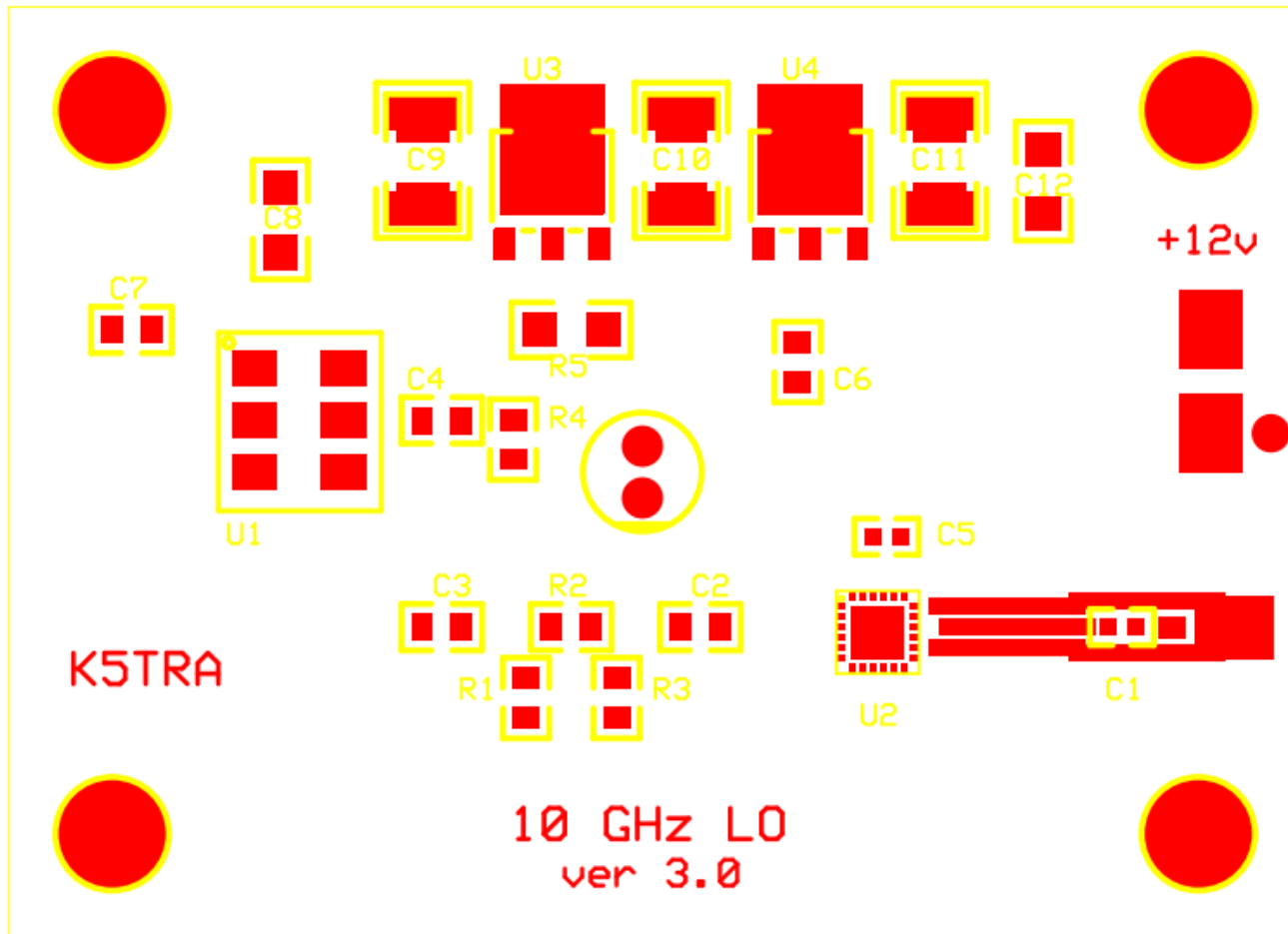
Board Top Layer



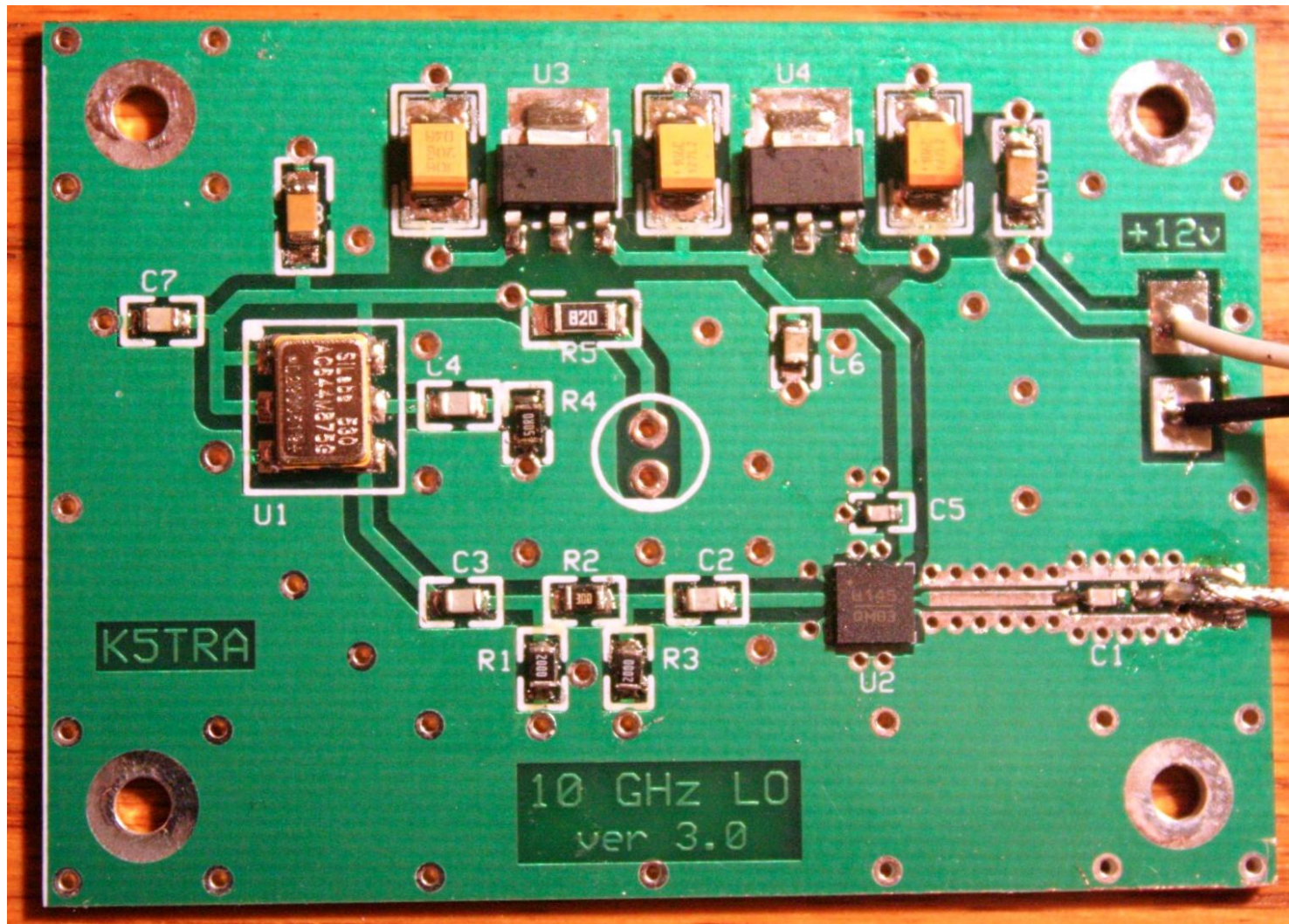
Board BottomLayer



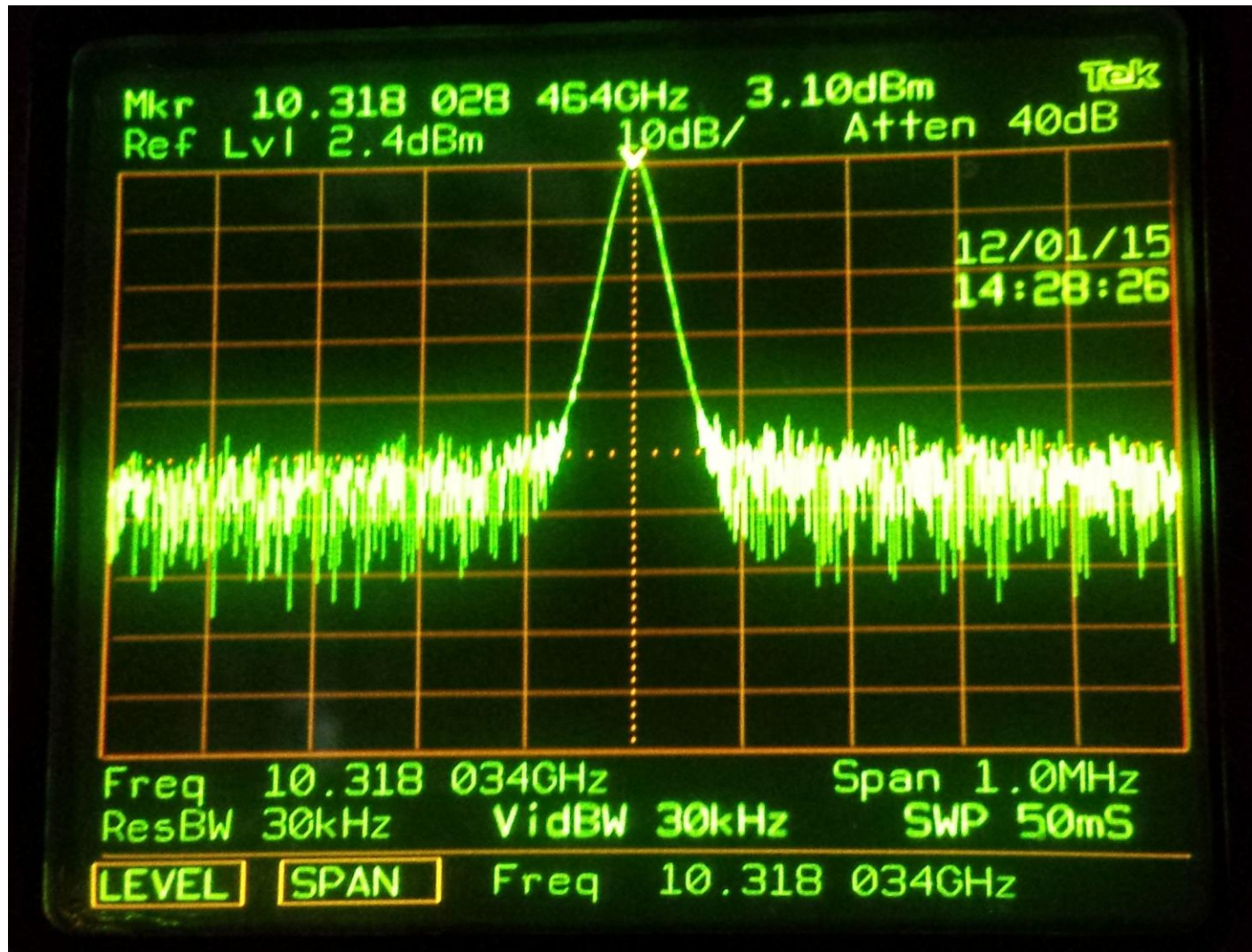
Board Pads



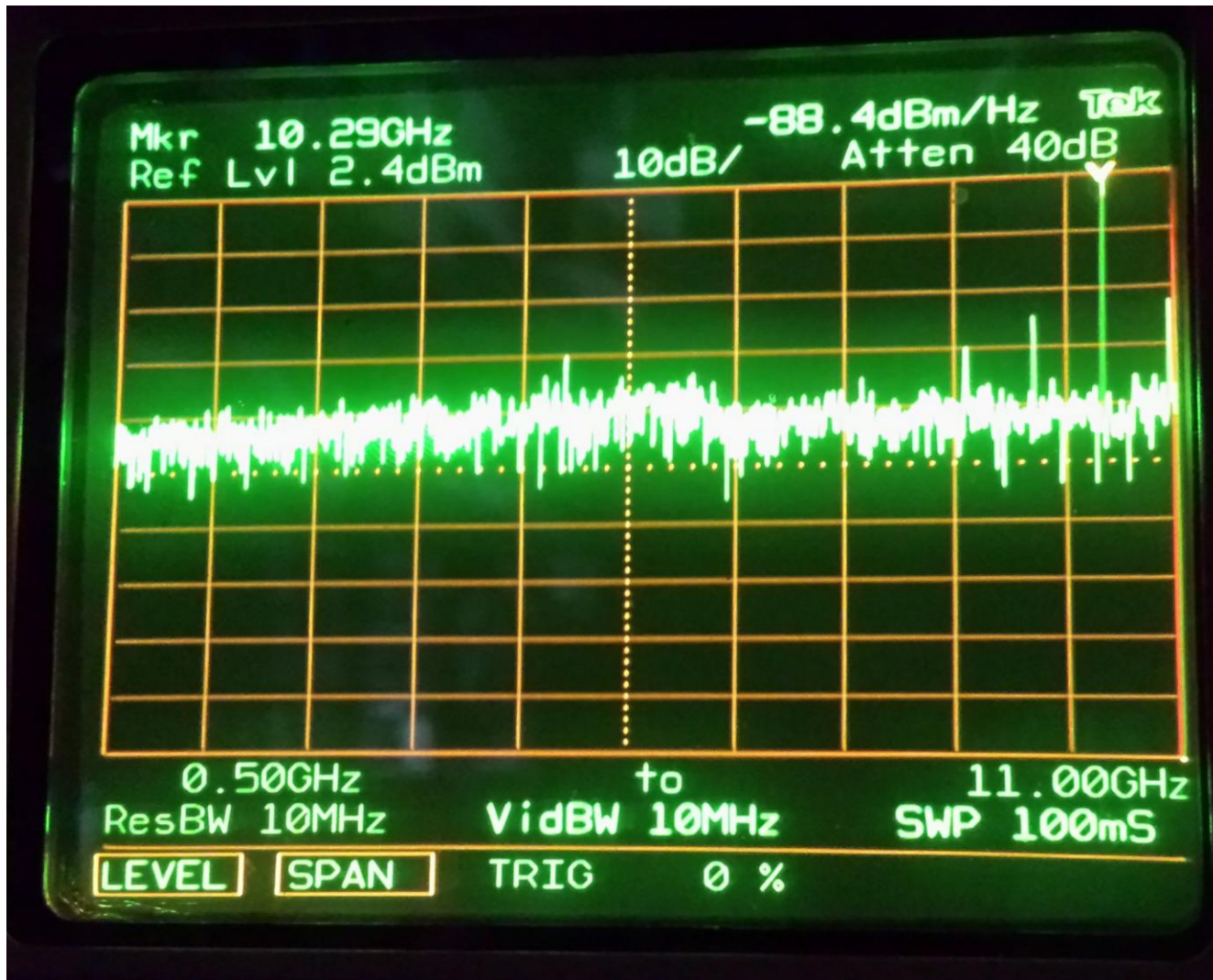
10 GHz LO Board



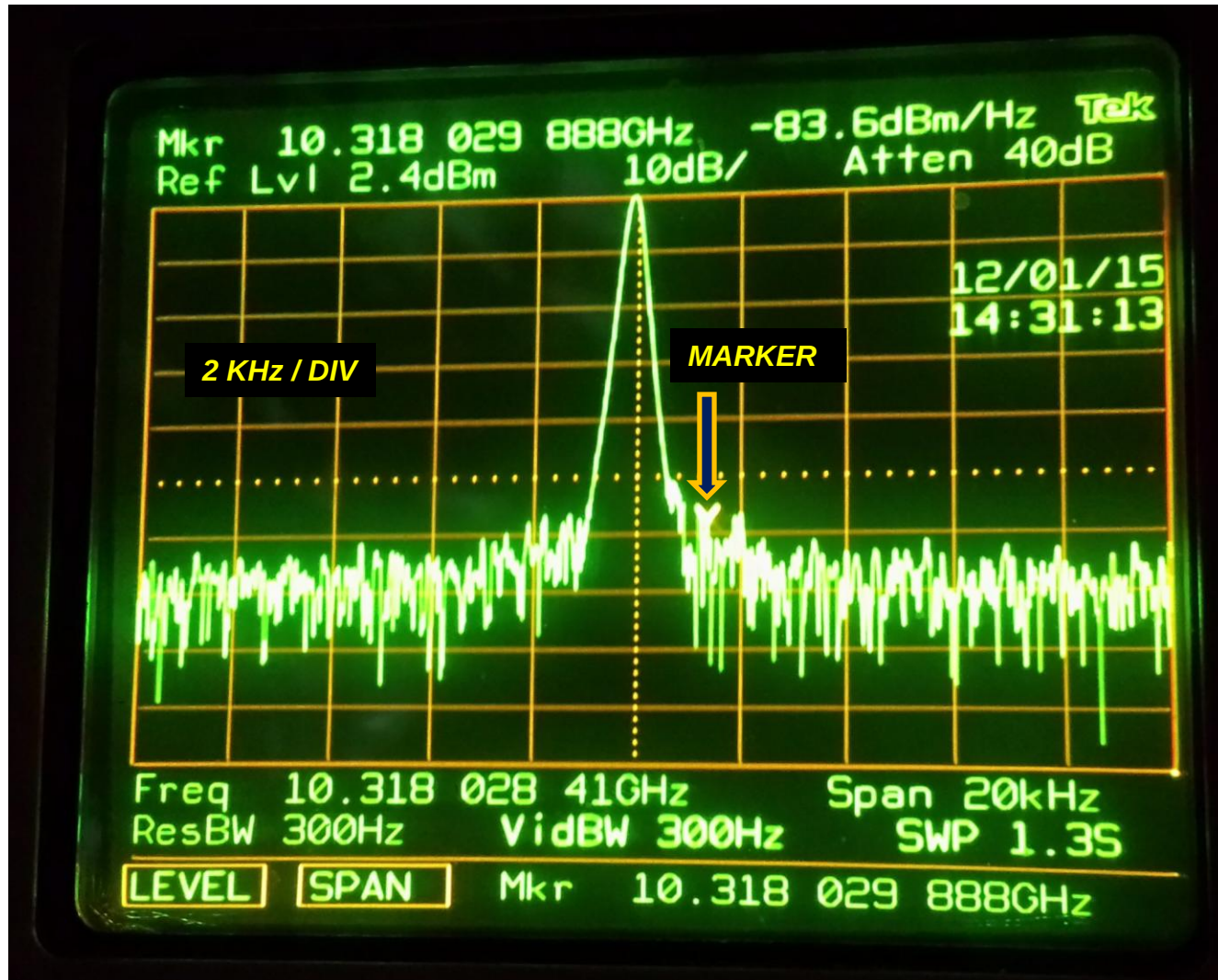
Output



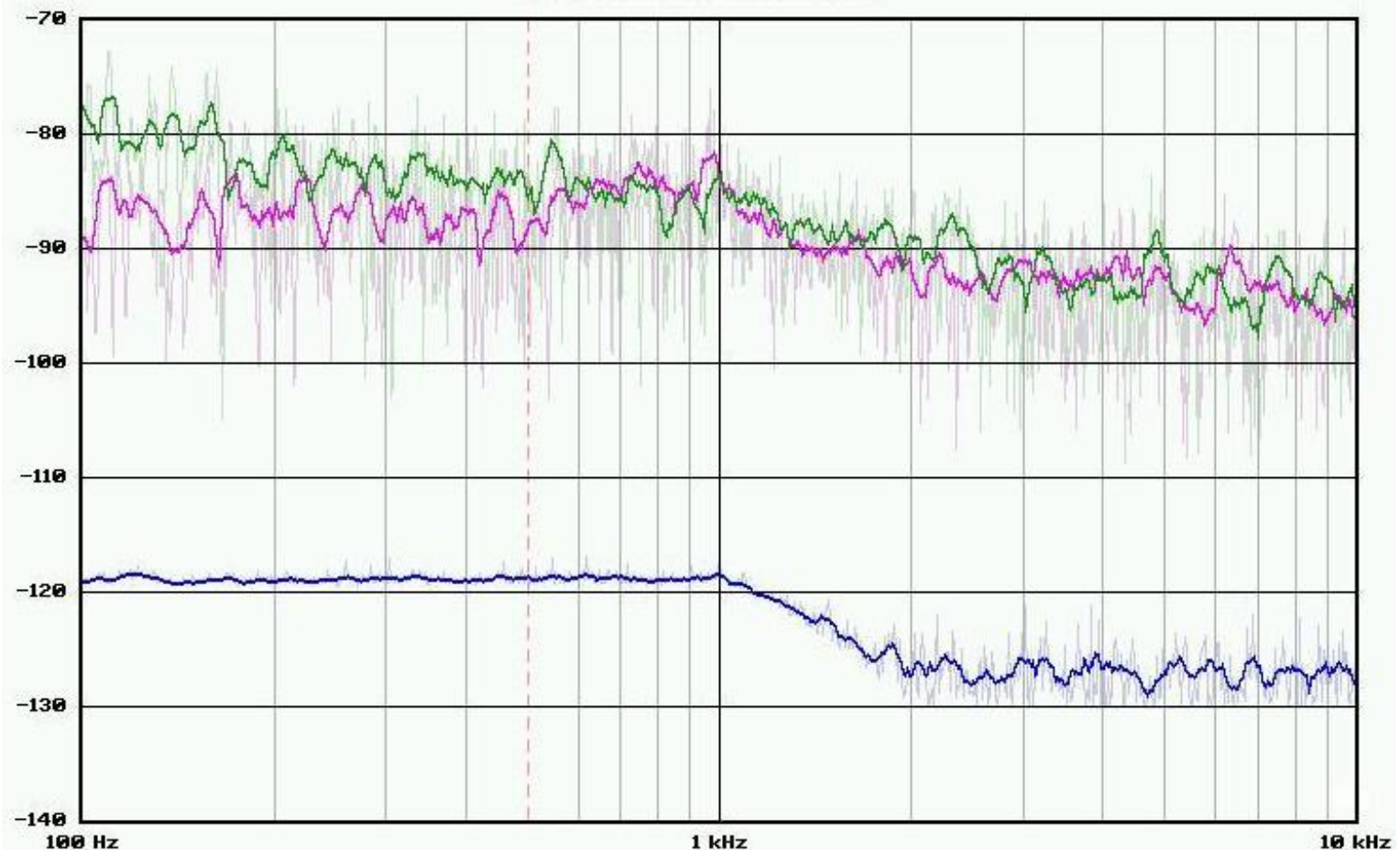
Wide Sweep Spectrum



Noise at $f_0 + 1$ KHz



Phase Noise in dBc/Hz



Trace	Carrier Hz	dBc/Hz at 500 Hz	Instrument
Instrument Noise Floor	10 318 000 000	-118.7	TEK/2782
K5TRA x16 LO No Comp	10 318 028 500	-87.5	TEK/2782
K5TRA x16 LO 10dB Comp	10 318 028 500	-84.7	TEK/2782

01 December 2015
K5TRA 3cm LO

Summary

- Good stability and phase noise performance
- Fundamental output is +3 dBm
- Phase noise at ± 500 Hz is -87.5 dBc/Hz
- Source (644.875 MHz) output is -63 dBc
- Half frequency output is -29 dBc
- Compact solution
- Trade-off is lack of reference lock capability
- Thanks to NO5K for helping with spectrum measurements

Questo è Tutto

