

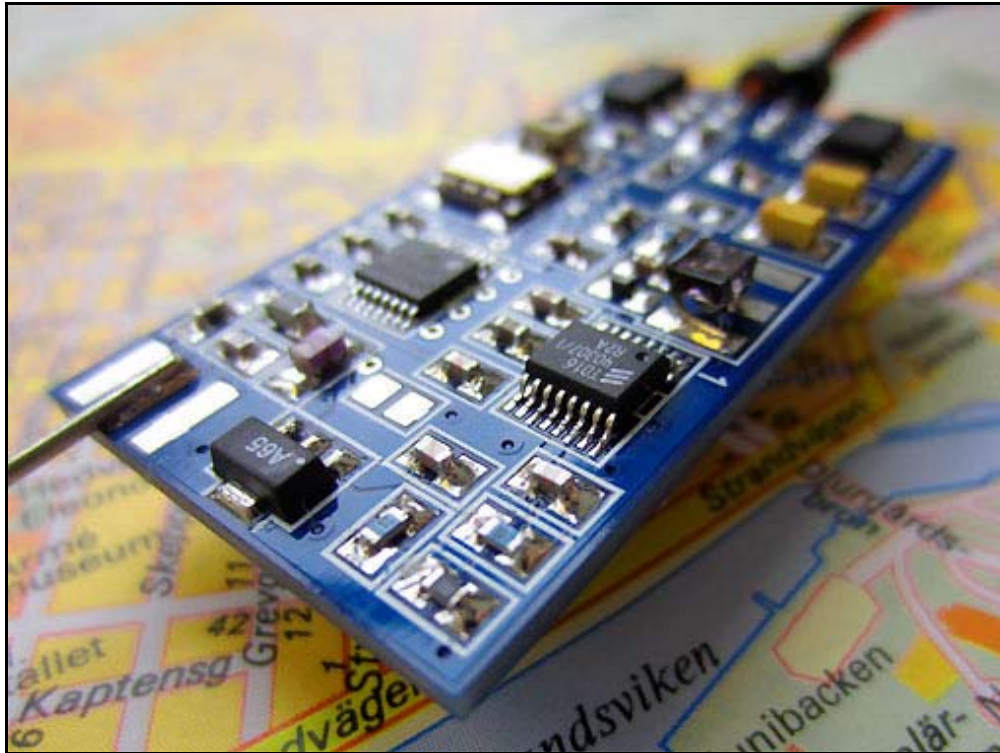
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# The Black Spot II

## GPS Jammer with 7.2W EQP

This manual will guide you how to assemble,  
test and tune this GPS jammer KIT.



### Features:

- Blocks all known GPS and trackers on the market.
- High accuracy RF system using PLL control
- High output power, equivalent power = 7.2 W
- Long Jamming range 2500 feet (800m)
- Small size 1" X 1.8" (25 mm x 46 mm)
- 7-12 V DC power supply, 9V battery is default
- Self-test with LED indication
- High frequency stability and accuracy  $\pm 10$  Hz
- Easy to build (one evening project)

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## Assembly instructions

Please follow the assembly instruction below.

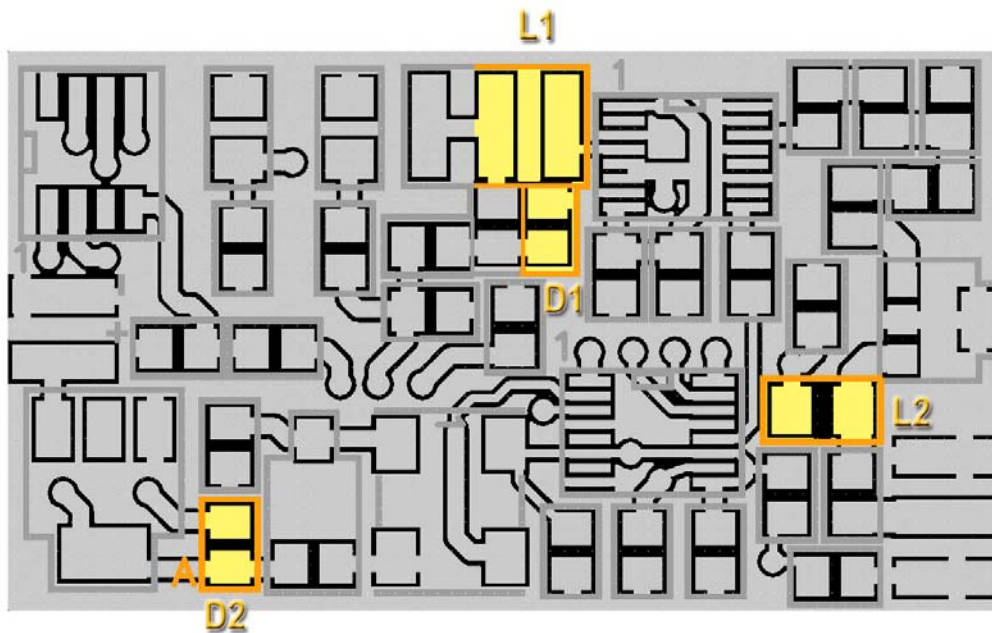
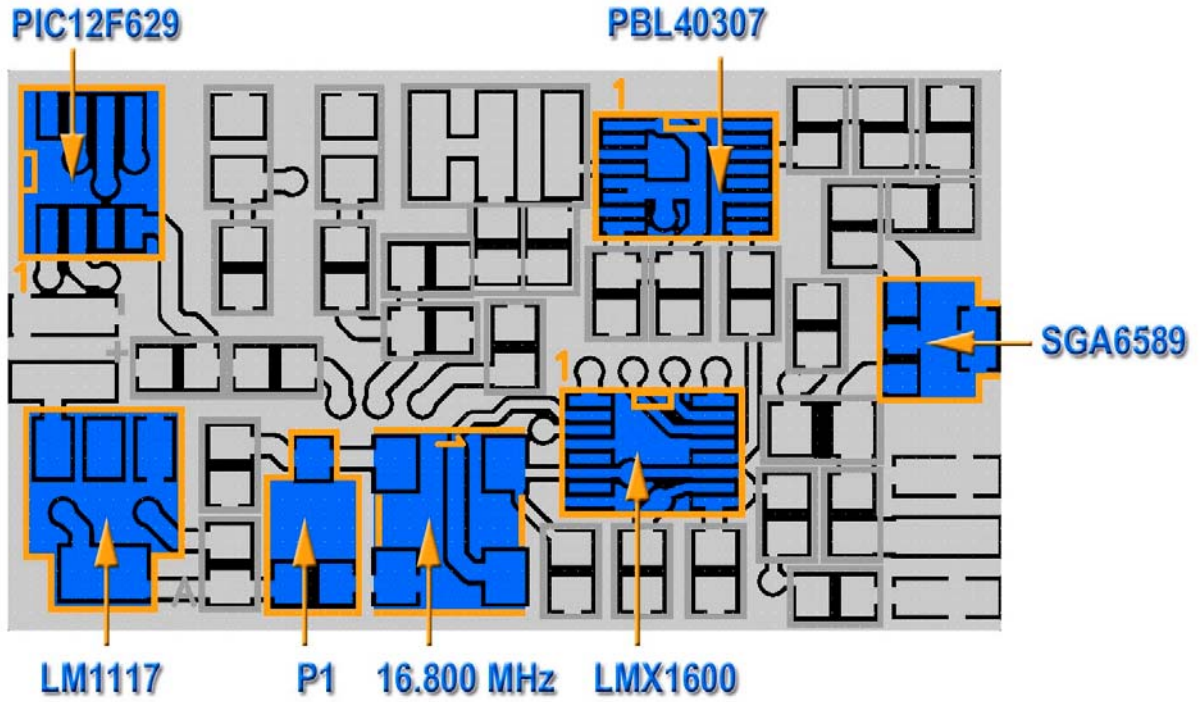
### Soldering

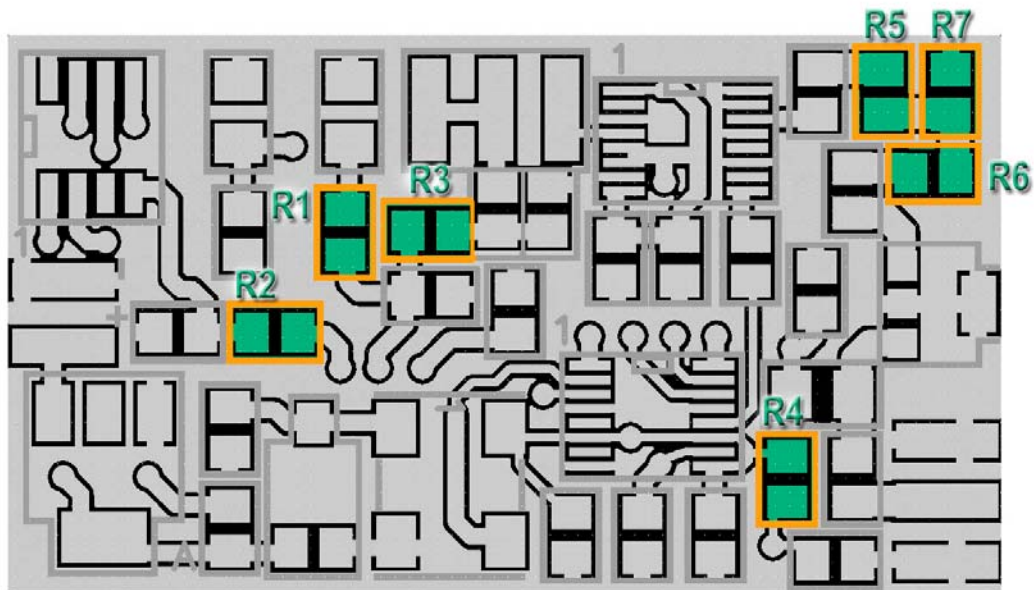
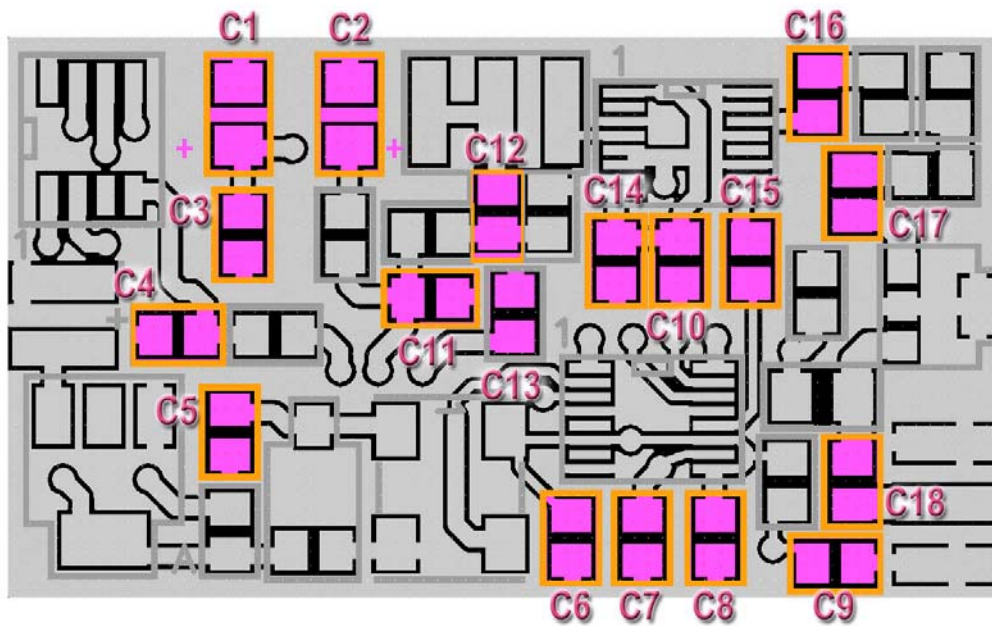
- Place IC1 = PIC12F629 CPU
- Place IC3 = PBL40307 RF VCO
- Place IC2 = LMX1600 PLL
- Place IC4 = SGA6589 MMIC
- Place X1 = 16.800 MHz Crystal Module
- Place V1 = LM1117 Voltage Regulator
- Place P1 = Pot 20k (*Make sure you mount it so it can be adjusted through the hole in the PCB*)

### Make sure that you mount all the circuits in correct orientation!

- Place D1 = SMV1251 (*make sure you mount it in correct direction.*)
- Place D2 = LED (*D2 is a blue LED diode. This diode must be placed in correct direction. It has a green marking indicating cathode side and at the bottom you also find a marking.*)
- Place L1 = Inductor 5 nH
- Place L2 = Inductor 15 nH
  
- Place C1, C2 = 3.3 uF (Orange line = positive)
- Place C3, C4, C5, C6, C7, C8, C9, C10, C11 = 100 nF
- Place C12 = 1.5 pF
- Place C13 = 27 pF
- Place C14, C15, C16, C17, C18 = 47 pF
  
- Place R1, R2 = 1.0k Ohm
- Place R3 = 100k Ohm
- Place R4 = 15 Ohm
- Place R5, R6 = 10 OhmF
- Place R7 = 100 Ohm

### Please check your soldering for no bridges or errors !





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## Component list

### General parts

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1 pcs Factory made red PCB

### MISC

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1 pcs PP3 Connector for 9V battery

1 pcs Antenna 46 mm

1 pcs Soldering lead

1 pcs Wick

1 pcs Instruction manual

### RESISTORS

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10 = R5, R6

15 = R4

100 = R7

1k = R1, R2

20k = Pot P1

100k = R3

### CAPACITORS

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1.5pF = C12

27pF = C1

47pF = C14, C15, C16, C17, C17

100nF = C3, C4, C5, C6, C7,

C8, C9, C10, C11

3.3uF = C1, C2 (*Orange line = positive*)

### INDUCTOR

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5nH = L1

15nH = L2

### EMI Filter

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F1, F2, F3, F4, F5 = Ferrite Bead

### VOLTAGE REGULATOR

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V1 = LM1117

### CRYSTALS

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X1 = 16.800 MHz

### SEMICONDUCTORS

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IC1 = PIC12F629 (pre-programmed)

IC2 = LMX1600

IC3 = PBL40307

IC4 = SGA6589

D1 = SMV1251

D2 = LED smd (blue)

### SOLDERING TOOLS

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Soldering lead (Extra thin)

Impregnated cleaning wick



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## Trouble Shooting section

If you get a problem with your unit, you might find this section helpful.

### **I get no blink from the diode D2!**

Make sure you have placed the PIC in correct way.

Make sure you have + 5V to pin 1 of the PIC12F629.

Check that the LED diode is placed in correct direction.

Check with oscilloscope the you get pulse from pin 2 PIC12F629.

I often use a small speaker or piezo element and listen to the signal.

You should hear clicking sound or beeping tone once per second.

### **I get double blink the LED diode D2 all the time!**

This indicates that there is a problem for the PLL to lock the frequency.

There can be many different errors causing this.

Make sure you have + 5V over capacitor C1.

Make sure you have placed the IC2 and IC3 in correct direction.

Make sure you have 16.8MHz oscillation on pin 3 of the crystal and also at pin 2 of the PIC12F629.

The reason can be bad soldering of the L1, C12, Varicap D1.

Make sure you have placed the varicap D1 in correct direction. (see schematic)

You can disconnect the MMIC section by removing R4. The unit will work but with less power.

It can be bad antenna soldering, or wrong length of antenna.

It can also be that the antenna is touching something that creates reflections of power.

Make sure the PLL get data, clock and CE signal.

Check with oscilloscope the you get pulse from pin 5, 6, and 7 of PIC12F629.

I often use a small speaker or piezo element and listen to the signal.

You should hear clicking sound or beeping tone once per second.

### **I get 0V or +5V over capacitor C2 !**

Your PLL system is probably not locking.

Make sure you have placed IC2 correct and that you have proper soldering.

Measure that you have reference frequency on pin 2 IC2.

Check all other parts involving the PLL filter.

If you have a frequency counter, you can connect it to VCO output or the MMIC output and apply a DC voltage to pin 10 of the LMX1600.

The VCO should then change frequency when the voltage changes.

### **I get 0V or +5V over capacitor C2 !**

This means that you have no current running through the MMIC.

Make sure you have soldered L2 correct. If you have +5V on one side of L2 and 0V on the other the soldering is bad

**If you still have problems, you can always mail me and we will work it out.**

## Final word

I hope you have had a fun time assembly this KIT.

The project may be a small one, but still it is a very powerful unit.

Thanks for your time...

**Please use this project with high moral and responsibility!**