

[Potential kit in development]

This is a GPS receiver module including patch antenna, with factory pre-soldered RF module, and the rest of the components are all through-hole, to be built as a kit. A plastic case may also be made available.

The RF module uses the MediaTek chipset and it is essentially comparable to the QRP Labs supplied [SKM61 GPS](#) module. The board size is relatively large, this is to provide additional patch antenna gain. Most GPS receiver modules with built-in patch antenna are a compromise between small physical size and sensitivity. If we drop the size constraint, it appears that the antenna sensitivity is optimum with a large patch antenna (25 x 25 x 4mm size is the largest available) and a large 7 x 7 cm PCB ground plane. I added a further 3cm to the width of the board, for the other circuits. So the size of this board is 10 x 7cm.

The board also includes supply filtering, 3.3V voltage regulator, and level converters to provide 5V outputs. The connectors are 0.1-inch pitch so they are easy to solder to. The 4-way connector pads section can be connected DIRECTLY to the [Ultimate 3/3S QRSS/WSPR TX kit](#), with no pullups or decoupling capacitors. There are three 3mm LEDs on board, that give a visual indication of what is happening. They are:

Red: Power (always on)

Yellow: Serial data (flashes when the serial data burst is active)

Green: 1pps (flashes on for 0.1s once per second, when the 1pps signal is present)

Advantages of this module, compared to the [SKM61](#), are:

- 1) higher sensitivity of built-in patch antenna, due to large ground plane
- 2) Provides facility for SMA connector and components for external active antenna if you prefer
- 3) Has onboard power / data / 1pps LEDs for an immediate visual indication of what is going on
- 4) Proper level conversion for use with 5V systems, not just pull-up resistors like on the [SKM61](#)
- 5) Larger connection pads with 0.1-inch pitch, suitable for easy wire soldering or pin headers

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- 6) all components already on-board, no need for anything other than wire, for [U3](#) connection
- 7) Probably a bit cheaper, maybe \$20 compared to \$22.50 for the [SKM61](#)
- 8) A kit - fun to build!

Disadvantages of this module, compared to the [SKM61](#) , are:

- 1) Larger physical size
- 2) A kit - maybe people are lazy to build yet another kit and prefer a ready-made module?

Photos of the built GPS receiver module

The first picture is the **UNDERSIDE** of the module. This has the pre-soldered RF module, and all the other components. I soldered the LED's on the reverse so that they can be visible when the module is the "right" way up.

The second picture is the **TOPSIDE** of the module. The patch antenna is soldered on here. But it is **NOT** shown in the photo, I really can't remember why I took this photograph without the antenna. The patch antenna is 25 x 25 x 4mm, similar to the [SKM61](#) antenna.

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