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The Kanga Whisper Mite

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Daimon G4USI looks at a handy new device from Kanga Products.

Although it is only a few months since I reviewed a WSPR beacon from China in this column (April 2026), I have since been sent a kit to review from **Paul M0BMM** of Kanga Products. Those of you familiar with construction will have heard of Kanga, I am sure, but if you have not, then you should check them out for a range of high quality, reasonably priced radio project kits, with detailed instructions, at:

www.kanga-products.co.uk

Specifications

So why review another WSPR kit? Well, because this one has an interesting twist that its competitors do not – it combines two different types of beacons – a WSPR beacon and a CW Beacon, the latter of which can either be used as a QRSS (Slow speed CW) Beacon, or a conventional (normal CW speed) beacon - all in one tiny unit. Users can choose to either use WSPR, CW, or to automatically

alternate between the two beacon types. As far as I know, it is unique in this respect and therefore worthy of review.

Let's delve a little deeper. The kit is offered in three versions, a low band kit for 60 and 40m, a mid-band kit for 30 and 20m and a high band kit for 15, 12 and 10m. You can order as a kit for £44.49 or order a pre-built version for £54.49. Delivery is currently £5.25.

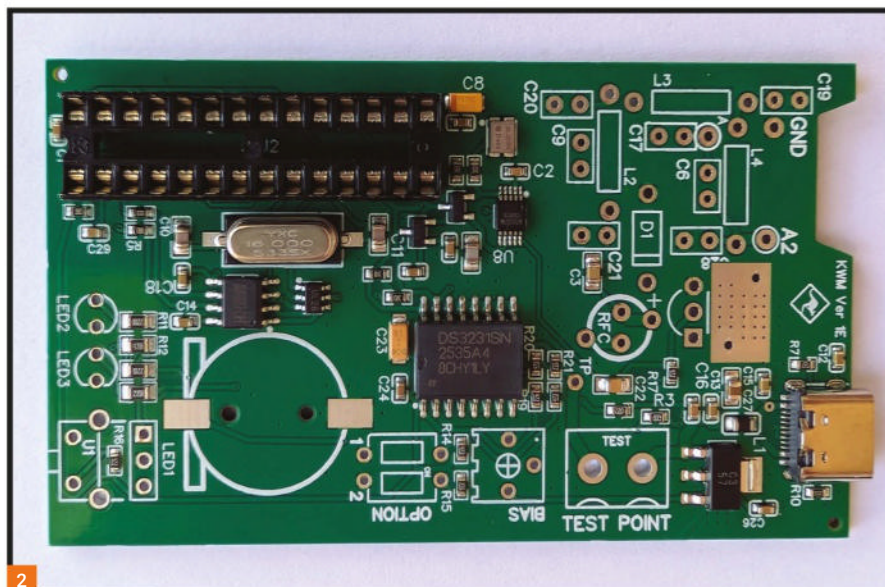
There are two main ways this kit varies from other WSPR beacons I am aware of. The first is in the facility to operate as a CW beacon as well, and the second is that the device does NOT use GPS for its time and location synchronisation. On the face of it, this lack of GPS connection may seem disappointing – what can be automated by GPS is no longer and must be configured by the user. However, Kanga uses a highly accurate real-time clock (RTC) such that, once time is synchronised (more later), it can keep accurate time for a

number of weeks, if not months.

There are pros and cons to this approach. On the positive side, it reduces complexity and helps keep costs down – not using an external GPS antenna, with a metre or two of connecting cable, means only one box too. If you are using the device periodically and from the same location, this is not much of an issue.

On the negative side, not using GPS means that periodically, every few weeks, you need to re-synchronise the RTC with actual time – not too much of a drama, but if you wanted to use the device out and about, on holiday, or mobile in some way, such as POTA or SOTA, it could be a bit of a pain. You would need to know your Locator square in advance, and configure it using a computer at home or via a laptop, before taking it with you or moving location.

Fig. 1: Kit as supplied.



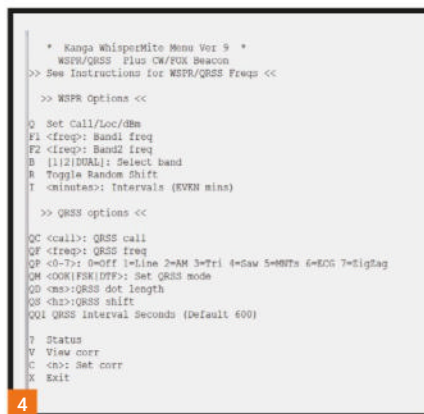
In essence then, whether this is the right device for you, not having GPS, depends on your use-case in terms of location, and the attractiveness or otherwise of the QRSS beacon facility.

Construction

I built the 30/20m version from the kit. As with all Kanga's products, it arrived very well packaged and with components helpfully separated into different sections of a plastic bag, **Fig. 1**. If you have not built anything electronic before, this is a very easy kit to build. Almost all components are pre-installed, **Fig. 2**, and I counted only 12 parts that I had to solder myself. With a little care, it is suitable for a beginner. I took my time and it took me a little over an hour to finish off. The most fiddly part is the bending of the LED legs to ensure they sit correctly in the front panel after soldering.

Once the board is populated, you slide it into the case and make the connections to the antenna socket. At this point, construction is complete and it is a matter of configuring the firmware. You can see from **Fig. 3** that the unit is really very compact. The front panel contains three indicator LED's and a 'Synch' (synchronisation / menu) button. On the rear panel you install a BNC antenna connector and there is space for the pre-installed USB C connector to be accessed and a small area for you to write on the frequency bands you chose at time of ordering.

As with all of Kanga's products, very comprehensive sets of instructions are available online. In this case, there are two sets of instructions, one for the build, and one for the configuration. There are also three software links. One is for a CH340 USB Com Port Driver (required), one for the CoolTerm Windows Terminal Emulator (required) and one



for software to calibrate the Si5351 frequency synthesiser chip (optional).

Configuration

So, having built the kit the next step is to configure the device using a computer. The instructions say to install the CH340 driver BEFORE connecting the device to your PC. I already had the driver installed, but spent quite some time trying to figure out why my computer would not recognise the device and assign a COM port. It took a good few minutes to realise that it was because I was trying to connect via my USB hub. Connecting directly to the PC USB worked fine first time. Whether this is an issue for you will depend on the nature of your own equipment.

Having been assigned a COM port number, and having made a mental note of it, I then launched CoolTerm, which I have used before.

Before you do this, it is worth reading and re-reading the configuration guide a few times – the CoolTerm connection with the unit times out at about 60 seconds and it can be very frustrating if you are just part way through. The guide shows how to configure each parameter

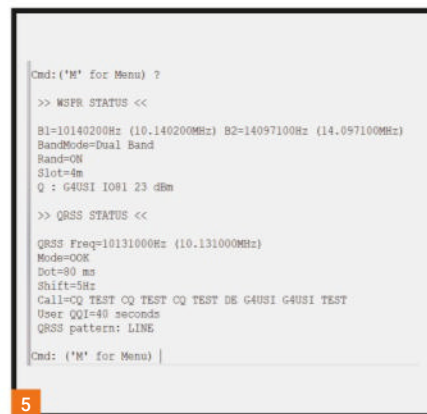


Fig. 2: The pre-populated board.

Fig. 3: Additional components added and housed.

Fig. 4: Control screen.

Fig. 5: Control screen, changes confirmed.

– I recommend making a decision about those parameter settings and noting them down in the guide BEFORE connecting, to make life easier. You can then just rattle through the programming steps.

Once you connect to the device, via CoolTerm, you are invited to press the button on the front panel of the beacon, whereupon a list of the settings is presented, as per the manual. It can be a little overwhelming at first glance, and being text-based, looks a little busy, **Fig. 4**. But if you follow my suggestion about noting the settings you wish to make BEFORE connection, life is simplified. You merely type in the two-letter code for the setting you wish to change, followed by the information required and press return, moving onto the next setting you wish to change. At the end, you can ask the system to report back the amended settings for checking by entering "?" and return. This resulted in **Fig. 5**.

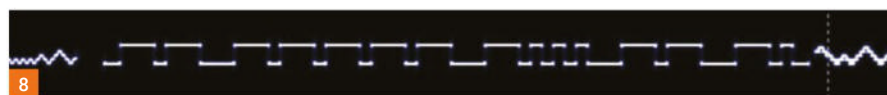
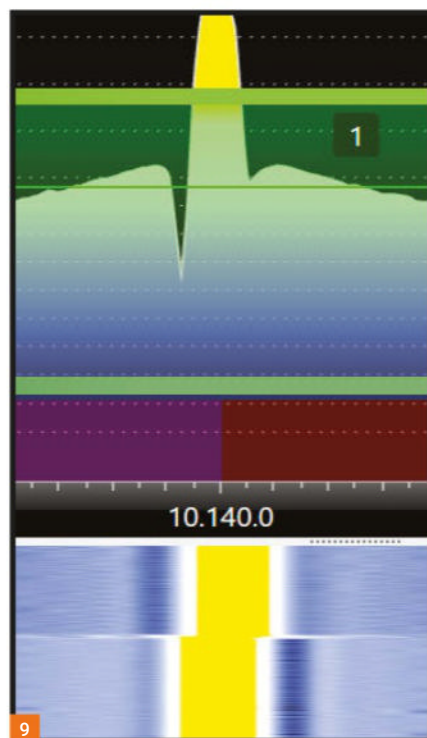


Fig. 9: Screen grab of my first ORSS transmission.

In that hour, I had been reported as spotted 471 times – 293 times on 30m and 178 times on 20m, **Fig. 6**. It was interesting to compare that to a permanent WSPR beacon I have running here, just to demonstrate the importance of a good antenna. My other beacon uses just a random wire antenna about 6 feet off the ground around the guttering of my cow shed. It is not resonant and there is no impedance matching. The same power output on the same bands, at the same

Another interesting point arises here. Out of the 471 spots, 462 of them reported 0Hz drift in my signal over the transmission window. The other nine reports were of drift of only -1 or +1 Hz. This demonstrates, as Kanga's instructions state, that they using a highly accurate and stable frequency chip which requires no further user calibration.

When I tried to change modes to QRSS from



Once done, I listened on my SDR and this screenshot, **Fig. 9**, shows the frequency of the two tones changing over between a break and a character. I then sat back and waited for the next slot (these are ten minutes apart for QRSS) and a transmission. It should be noted here that while you can program WSPR to transmit on one band or the other, or to alternate bands, with QRSS mode, you must choose a single band, and I chose the 30m band. There are quite a few configuration settings for this mode, which are explained in the instructions. I elected to transmit a zig-zag pattern before and after my callsign, within the ten-minute window, so that when I looked for my signal it would stand out easier.

At the website below you can see an online image of a number of “screen grabbing” stations using QRSS decoding software around the world. You need to remember to refresh this page just after your own ten-minute transmission ends, so you see the latest feeds. A number of active grabbers are shown by callsign and band. I looked specifically at the 30m ones, looking for the pattern of my callsign on the screenshot, and was pleased to spot my callsign twice – once by GM4SLV in the Shetlands, **Fig. 10**, and once by LA5GOA in Norway. A decent first result for a beginner and 200 milliwatts. I left it running overnight and in the morning I saw I had also been spotted by SA6BSS.

<https://swharden.com/qrss/plus>

There is no automated reporting system like WSPR – you cannot enter your callsign into a database and see who has spotted you. Rather you must look at the visual images created by the ten-minute screenshots taken by grabber software by individual stations and visually scan the image to see if you can spot your own callsign – and that is where a visual pattern sent before and after your callsign is a great aid to quickly spot yourself. But checking for spots is a time-consuming process – for example, to see if I have been spotted by GM4SLV, I must look at this page for 30m spots, and then visually inspect the image for each ten-minute slot they have recorded, to see if my callsign is “visible”. In some cases, with SA6BSS for example, I could see the pattern sent before and after my callsign, but was not able to decode my callsign itself. On some ten-minute slot images this was the case, but on others both the spot and the callsign were clearly visible, obviously affected by propagation.

CW beacon (normal)

After I had tried out WSPR and QRSS I was hoping to use the WhisperMite as a “normal” CW beacon, at about 15wpm on 30m – something I had been meaning to do ever since the UK licence conditions changed to allow for this. I thought I could use the device for this, but in the firmware I was originally sent, it only retransmitted CW every ten minutes, in line with QRSS protocols.

I dropped Paul at Kanga an email asking if this was something he had considered. The next morning I had a reply saying he had been working on that very issue. He had amended firmware to allow a traditional CW beacon, as well as a “Fox Hunt” mode. He graciously agreed to send me a new ATMega 328 IC, which is the brains of the unit, so I could give it a go.

When the chip arrived, it worked, but not in the format I had programmed it to. Another email to Paul, another revised firmware chip and the function now works brilliantly!



Fig. 10: G4USI received by GM4SLV (Shetland Is).

Fig. 11: Spots in standard CW beacon mode – not bad for 200mW!

I set the device to send a number of CQ TEST calls, one or both of these terms being necessary in order to get reports from automated CW Skimmers on the Reverse Beacon Network, and left it running on 30m overnight for a twelve-hour period, 8pm to 8am. The results are shown in **Fig. 11**. There are many fewer spots, particularly around Europe, than I had hoped for, but it was great to get across to the USA. I should not be too surprised of course, because although CW is itself a great weak signal mode, both WSPR and QRSS will achieve much greater DX than CW for the same power, due to their unique characteristics. That said, it is still a good propagation tool in its own right. I think I will build a very small PA to get the power up to one watt and use it as a permanent CW beacon on 30m, now that licence conditions allow for that. Periodically, in good conditions, I can receive Swedish, Italian and Swiss beacons on 30m at one watt, so that seems a sweet spot for such use.

The interval time between transmissions is configurable via the menu, as is any carrier in that interval.

Conclusion

Kanga Products have produced a great and versatile beacon here which is good value for money and runs off a 5V USB supply such as a phone charger or USB Power Bank. To have three distinct modes available from the one unit is unique to the best of my knowledge.

Is this for you, or should you get a GPS linked unit? Well, the answer to that very much depends on your use case. If you want to be able to use WSPR, QRSS and ‘normal’ CW beacon functions from one unit – then this unit will meet your needs.

Also, if you are likely to use a beacon like this sporadically and from the same location, e.g. at home to check propagation or the effectiveness

of different antennas, then this remains a good choice – you only need to program your location once, and re-sync time occasionally. Equally, moving around with the device for SOTA or POTA as a normal CW beacon does not need time or location data, so this unit would be fine. For QRSS from different locations, that would also be fine as you can simply re-synchronise time on the unit using the time on your phone and the Sync button on the front of the unit when on site.

There are only two real-use cases where this device may not be for you and a GPS disciplined device may be better. The first is if you wish to frequently take such a beacon in WSPR mode to different locations, for example, POTA, SOTA, on holiday, etc. without having to program the locator square in advance, then a GPS linked unit would be a better choice. You merely power it up and let the device take care of the time and location.

The other use-case is for a permanent beacon at home, where you just wish to fit and forget. For example, my own WSPR beacon is fitted 100m from the house in my stable block, where it runs off an old car battery which is charged by solar. I fitted it about four years ago, and it runs 24/7 without attention, the timing being kept accurate by the GPS antenna magnetically mounted to the steel stable roof.

So, your use-case will decide if this beacon is right for you. What I can say though is that it is very well designed and made, is a decent price, easy to build and fun to use. Paul at Kanga is also very responsive to queries and requests for help, something you may not get from Chinese imports!

Until next time. **PW**