

30m QRSS junkbox tx: Reports 1

Written by Hans Summers

Tuesday, 16 June 2009 06:20 -

Here's the first copy of the Junkbox beacon! The story is as follows. On 28-Feb-06 David [VK6DI](#) mentioned to me that he'd observed a carrier over the last few days which seemed to drift slowly, from 10,140,070 down to as low as 10,140,040. It was a steady carrier not a square wave. I wondered if it might be me

(the drift makes sense, due to temperature variations in my attic). There could be something wrong with the astable multivibrator which generates the square wave FSK pattern, or the coupling of it to the varicap which causes the oscillator shift (actually a 5mm red LED).

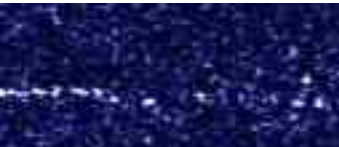
I arrived home from work at 17:50 on 28-Feb-06 and shortly afterwards went to the attic to check the beacon. I saw that one of the leads of the 6K8 integrator resistor which causes the edges of the square wave to be slanted rather than sharp, was shorting out the base to the collector of the nearby astable transistor. Therefore there would be no oscillation. I bent the wire slightly to remove the short. In the image to the right here, the light blue capacitor at far right is the integrator capacitor. The arrow shows the location of the short. Just to above and to the right of the arrow head you can see the 6K8 integrator resistor. It's lead is too long and was shorting against the base of the transistor. It must have happened during installation in my attic.

Very soon after, an email from David [VK6DI](#) who had actually observed the transition from steady carrier to a split frequency, FSK with about 3Hz shift. That change was at about 18:00 UTC, which agrees precisely with the time I was in my attic bending that wire! This positively identified the signal as mine. Not long after, I received very nice screenshots from Larry [WB3ANQ](#) in Maryland, USA showing the shape of the square wave clearly. The two tones were at 10,140,060 and 10,140,063, confirming the 3Hz shift reported by David. A report from Chris [DL6JAN](#) the following morning (1st March) shows clearly the slowed edges of the squarewave. Notice that they are not a linear line, but an exponential decay exactly as you would expect from a simple RC integrator such as this.

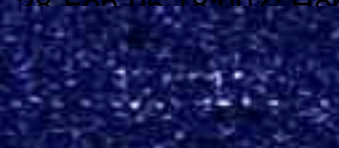
Below are the first reports screenshots:

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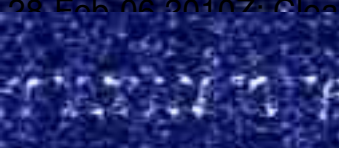
[VK6DI](#) saw a very successful change of David carrier to a split frequency.



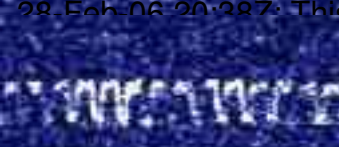
[VK6DI](#) showing David split level more clearly.



[VK6DI](#) sure from David



[WB6ANG](#) This is the first image showing my signal as received by Larry



[WB6ANG](#) Best images from Larry



[VK6DI](#) Now there is another QRSS signal right underneath me.



[DL6JAN](#) This is the clearest reception I've ever had, this is before my integrator is even



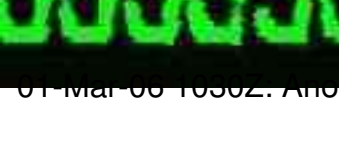
[ZL40I](#) At the same time, a nice Mike reports Mike QRG is now 10,140,090



[ON5SI](#) possible report, this one is for the signal now at 10,140,080. Note that ON



[DL6JAN](#) when reports from a perfect distance to me for 30m QRSS.



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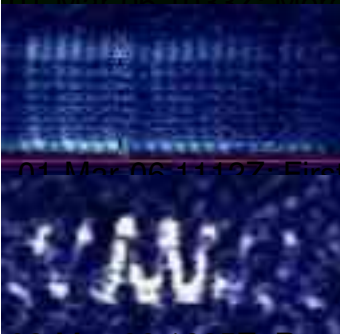
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[D16JUN](#)

Chris - I'm including this one because the full size screen shows what else is



[LA5VNA](#)

in Norway. Note the gradual drift downwards as the day

02-Mar-06 1225Z: Report

[ON4LPE](#)

Erik Platteeuw in JO11OE (Brugge), using antenna W3DZZ.