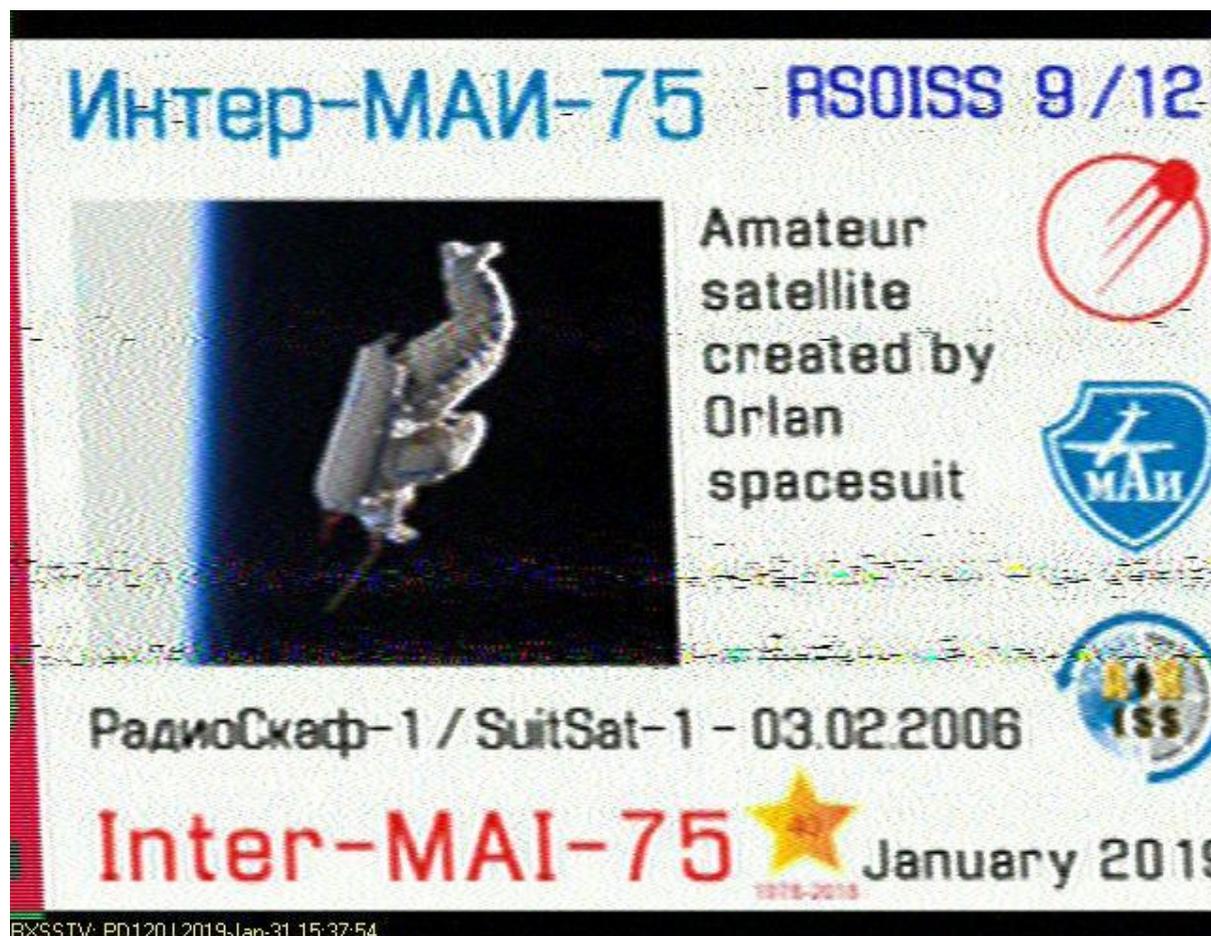


ISS RX-SSTV



Above SSTV image I received January 2019 from ISS 145.800 MHz FM Mode PD120 using RX-SSTV free software with simple folded dipole in the loft space. It celebrates SuitSat-1. When a space suit expires it's sell by date it is now traditional to deploy it as a novel OSCAR satellite orbiting radio beacon e.g. SuitSat-1 was the first using 145.990 MHz FM. Source: tinyurl.com/suitsat-1 So, here is my account of how I did it:

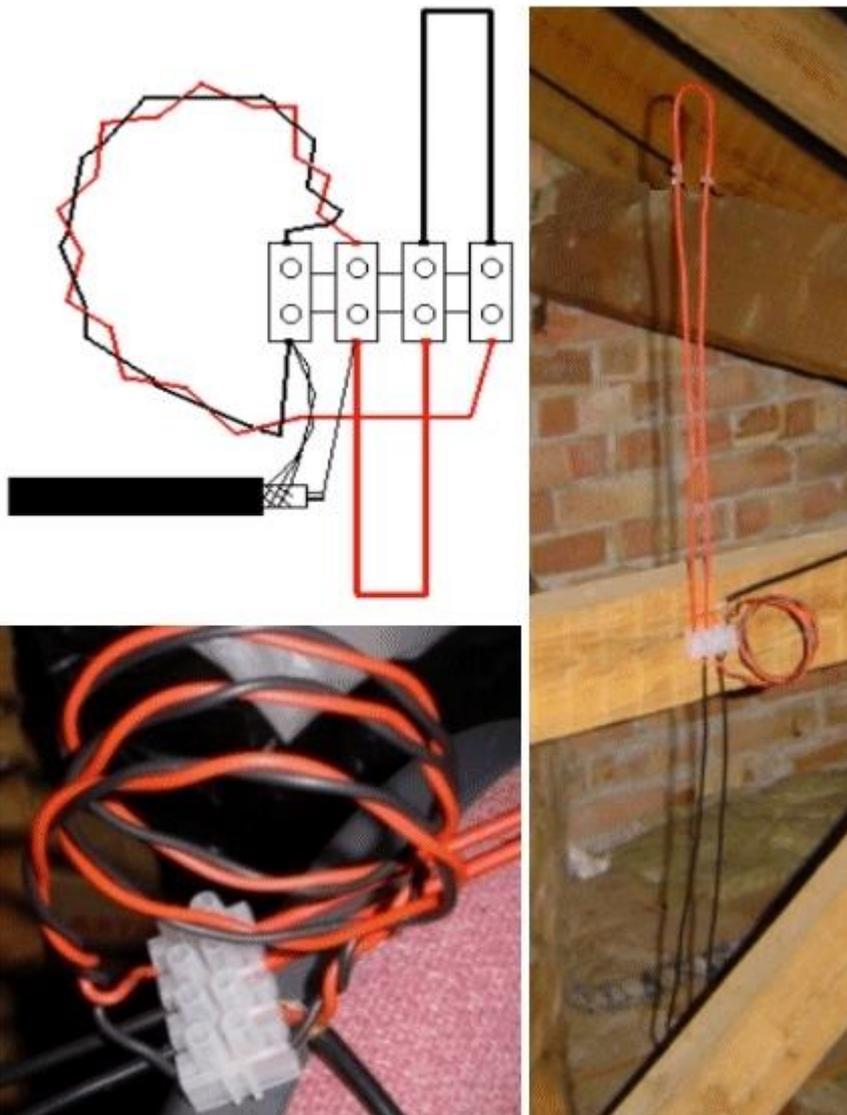
1.) **The aerial:**

2m Folded Dipole - a loft-mounted vertical folded dipole for the 144-146MHz band. **Theory:** Vertical antenna most appropriate for 2m. A fat dipole (therefore wide band) will have a lower feed impedance at resonance than a thin dipole so 50Ω feeder cable e.g. RG58C/U may be used. It's an economy, lossy cable (best to keep the length less than 10 metres) for low power use and has a stranded centre conductor so less likely to break if the cable is

bent. The conductors are tinned so easy to solder.

Making it: The dipole is made from $2.5\text{mm}^2 \times 90\text{cm}$ long power cable: strip off the outer insulation then use the two insulated cables to make the two elements of the dipole. Use a twisted pair of 1mm^2 lighting cable cores 63cm long to make the balun. There is no direct connection from the coax screen to the dipole. The return current gets back across the capacitance of the balun. This is all assembled using a chocolate block connector. Coil up the balun to save space. The match to 50Ω cable is good.

I did write about this aerial in RadCom but people are still asking about it so here it is below with Dave Kimber's pictures.

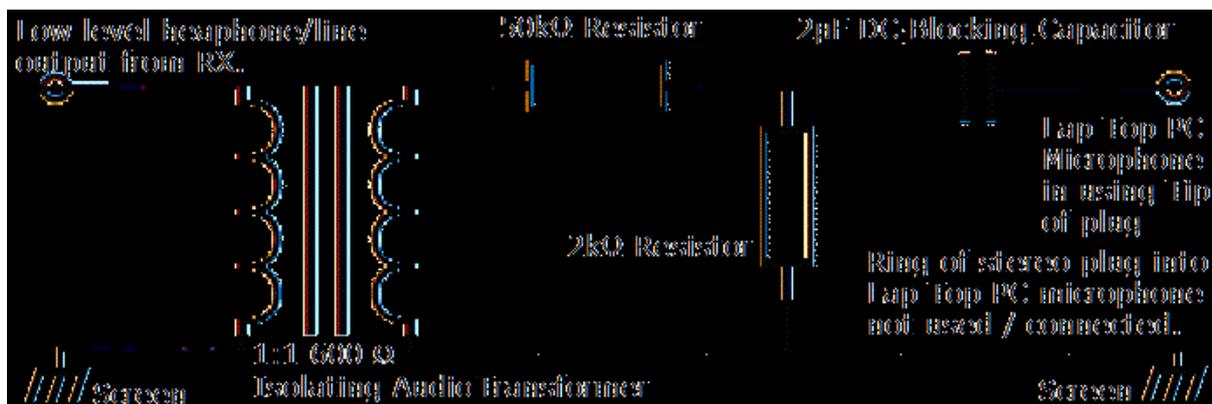


Source: Dave Kimber G8HQP <http://myweb.tiscali.co.uk/g8hqp/>

Above link may fail so here is an alternative: <https://web.archive.org/web/20180723035235/http://myweb.tiscali.co.uk/g8hqp/radio/projects/2mVertical.html>

2) **Radio receiver and interface to PC.**

Tune to 145.800 MHz FM. I use a 1:1 600 Ohm audio isolating transformer -20dB interface from Line Out or Headphone socket of receiver then a resistor pad as required e.g. as shown below on diagram then 2uF DC Blocking Capacitor for connection to Lap Top or PC. Source: eBay about £10. Thank you to Norman G8ATO of Verulam ARC for technical advice.



3.) **Free SatPC32** satellite tracking software

from www.dk1tb.de It requires a Keplerian data file to predict the satellite passes so I

visit: <http://amsat.org/amsat/ftp/keps/current/nasa.all> then I right click on the web page then save it into the relevant SatPC32 folder or you may update directly from the Internet. My PC is not online. Or use www.heavens-above.com useful to determine when to listen.

4.) **Download free RX-SSTV software.**

RX-SSTV de Guy, ON6MU free SWL orientated slow scan TV software (link below) that automatically selects PD120 mode for ISS but you can select manually if needed. When you hear the signal it sounds like a continuous high pitched chug a chug of an

old steam traction engine. At the end of an image there is a pause in transmission where you must anticipate (continuous retuning likely needed so don't just wait in one place or you'll miss out) where the signal has moved to before the next image. (Doppler effect requires continual RIT as the bird passes overhead.) Thank you to Norman G8ATO of Verulam ARC for technical advice. tinyurl.com/rurxsstv

The Doppler effect may cause satellite FM downlink frequency \pm 2.5kHz. SatPC32 will give you guidance on the current downlink frequency. This is an ideal exciting SWL project. The aerial can be made from DIY store components, the softwares are free and you could use a basic FM handie (employ a flexible pigtail lead to protect aerial connection) with possibly incremental tuning frequencies stored in the memory. My radio did not have a Line Out so I used the headphone socket with interface as described above. In order to hear the signal I fed the PC audio out to the input of an old radio cassette recorder that would also give me the option to tape the signal for future experimentation.

During the 'space race' the Americans developed, at significant cost, a pen that could work in zero gravity. The Russians responded by using a pencil...

5.) **When to monitor ISS 145-800MHz FM.** Seemingly the Russian sector of the ISS send sessions of SSTV 'postcards' in batches of twelve. Visit links below for ISS SSTV schedule of transmission updates. You'll likely get ten days notice of Russian / NASA sector images:

<https://ariss-sstv.blogspot.com>

ARISS - Amateur Radio on the International Space Station www.ariss.org

So that's how it went for me. Your comments welcome via my e-mail below.

73 Bob G4PVB

p.s. The onboard RX-SSTV Help Manual is a most thorough guide on how to RX HF shortwave radio SSTV.

12th April 2019

END OF FILE