

Comparing Off Air Freq Standards

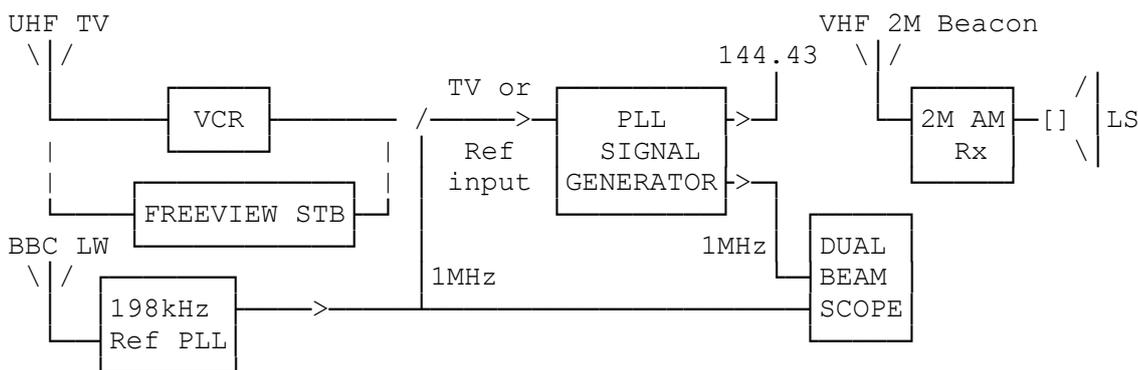
By G8MNY

(Updated Jan 15)

(8 Bit ASCII graphics use code page 437 or 850, Terminal Font)

I used to have 3 standards to compare. BBC 198kHz LW, Analogue UHF TV syncs & Amateur beacon GB3VHF based on GPS time.

I can use BBC 198kHz LW PLL ref Rx or used to have UHF Main Tx Analogue TV syncs (64uS pulses) from a VCR to lock up my PLL osc, & it can output a carrier on top of the GB3VHF VHF beacon frequency 144.430MHz & the slow beats can be heard in a seperate Rx (noise goes up & down on AM mode), I can also lock the scope to 1MHz ref derived from the TV or LW to see which is creeping ahead.

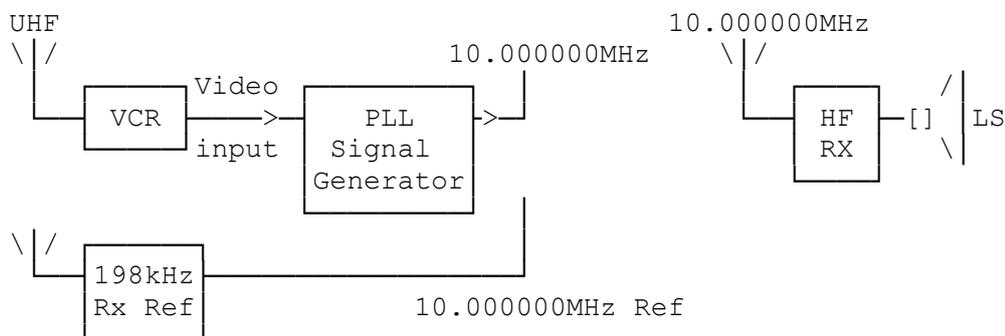


With this set up is quite rewarding to hear on the 2m Rx both the 198kHz & BBC TV input to the PLL signal generator give an almost zero beat (much less than 1Hz) on 144.430000MHz, despite the RF paths involved.

Using the Freeview STB (Digital TV) as a source was hopeless as expected, more than +3Hz in 1MHz out, as its TV timebase is just an internal crystal & nothing to do with Rx data rates/clocks at all. But out of the 5 analogue TV channels BBC & CH4 were the closest to LW & GB3VHF. Ch 5 was the next (London Tx has a direct non digital sat feed!) & ITV was well out as bad as the freeview box!

USING HF BEACONS

Doing the same sort of thing, but with the 10MHz beacon, it is far less accurate.



The 10MHz beacon HF path is quit indirect & multipath, so not only do fad outs reduce the signal, but other paths can invert the phase..

Strong                      w e a k                      Inverted

Local Ref

This is easily shown up with an AF beat into a reference locked scope, the AF not only can be seen shifting to & throw in phase e.g. ±5Hz (can't do that in graphics!) as the hop path length changes, but also sudden phase inversions when another path becomes stronger.

See other TECH buls "Off Air Lock for Ref Osc.", "198kHz Off Air Standard" "Calibrating Frequency", "Crystal Drift Compensation" & "Simple Crystal Oven"

Why don't U send an interesting bul?

73 de John, G8MNY @ GB7CIP