

A Multipurpose C/HRPT and HRI Decoder

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Introduction

The NOAA and Meteosat weather satellites broadcast weather pictures in APT format. These are, however, not the original images, but are formats derived from higher resolution data which can also be received by amateurs. These formats are called HRPT (High Resolution Picture Transmission) in the case of the NOAA satellites, CHRPT (Colour High Resolution Picture Transmission) from China's Fehg Yun 1C, and HRI (High-Resolution Image Dissemination) for Meteosat-like satellites. HRPT is unencrypted, but unfortunately, most HRI pictures are. Still, there are enough unencrypted transmissions each day to make it interesting for amateurs.

Both satellite types transmit their high-resolution data in digital form, which means that special equipment is needed - bigger antennas, receivers with a wider bandwidth and digital decoders. For polar orbiting satellites like the NOAA's, things are even more complicated because the antenna has to point in the direction of the satellite. So equipment is needed to continuously calculate the position of the satellite and turn the antenna into the right direction. Because HRPT is transmitted in the 1600/1700 MHz band, a dish antenna is needed for best results. In spite of these difficulties, the last five years have seen more and more amateurs building functioning HRPT systems where nearly all parts are home made.

In this article I will describe an easy-to-build decoder which can be used for C/HRPT (and derived formats) and unencrypted HRI.

Decoder Characteristics

- * Use of programmable logic - just 1 piece of hardware is needed for HRPT, CHRPT and HRI decoders and generators
- * No plug-in card is needed since the decoder and PC communicate with each other via the parallel port
- * Contains a large data buffer - in this way multi-tasking stays possible (within limits, of course). In other words, in a Windows environment the PC is not "dead" for other applications during recording.
- * Free software is available for DOS (works fine under Windows 95/98) and Linux (source code for Linux is available)