# RADIO ASTRONOMY - SETI

# 144-MHz Wide Band IF - Detector - Integrator

**Progress is being made on the backend wideband IF for my radiotelescope. I purchased the ABPM RF Meter from Downeast Microwave (designed by Paul Wade, W1GHZ) in part to prototype a wideband RF detector using the AD8307 power detector IC. This "chip" made by Analog Devices is good up to 500-MHz so will work nice at the first IF of my microwave converters.**

**The 1420/144 radioastronomy convertor coupled with the RAS LNA provide about 60-dB of gain ahead of the 144-MHz wideband IF (which I am calling the WBIF).**

**The WBIF consists of a VHF Filter followed by at least two IF amps (MAR-6 mmic) stages each with 18-dB gain at 144-MHz to provide drive to the AD8307 over a range of -60 to 0 dBm. It will tolerate up to +10 dBm. I purchased the mmic amplifiers as kits from DEMI: Here is the schematic and pcb layout and a photo:**



**When the 28.4 dBi gain of the 2.4 meter dish and is added and approx. 6 dB of line loss subtracted, the total system gain for the 1420 MHz radiotelescope will be about 118 dB. A minimum detectable threshold of about -178 dBm is expected.**

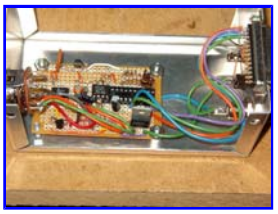
**The WBIF tested well at 144-MHz over this power range. Bench measurements were made using a calibrated signal generator to establish a power conversion chart. Sun noise and Moon noise tests will be done soon.**

**A prototype pcb has been built for the AD8307 with selectable RC circuitry and a MAX186 12-bit A/D for input to the printer port of my computer which will enable plotting of antenna noise measurements and observing celestial radio sources.**

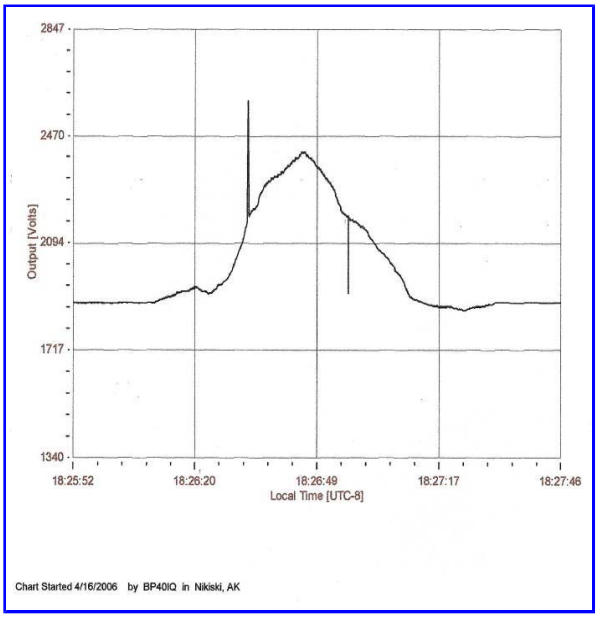
**Below is a block diagram for the Wideband IF for Radio Astronomy. Here is a link to the schematic diagram.**



**Photos of the prototype pc board and the complete WBIF Receiver, and sample chart using SkyPipe:**







**This project is the subject of a paper for presentation to the 2006 SARA/SETI-League Conference. Here is a link to the Power Point presentation (683 Kb) given at the conference. For the full article I recommend you obtain a copy of the Proceeding from SARA.**

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