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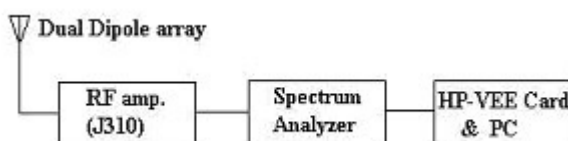
Receiver for Jupiter

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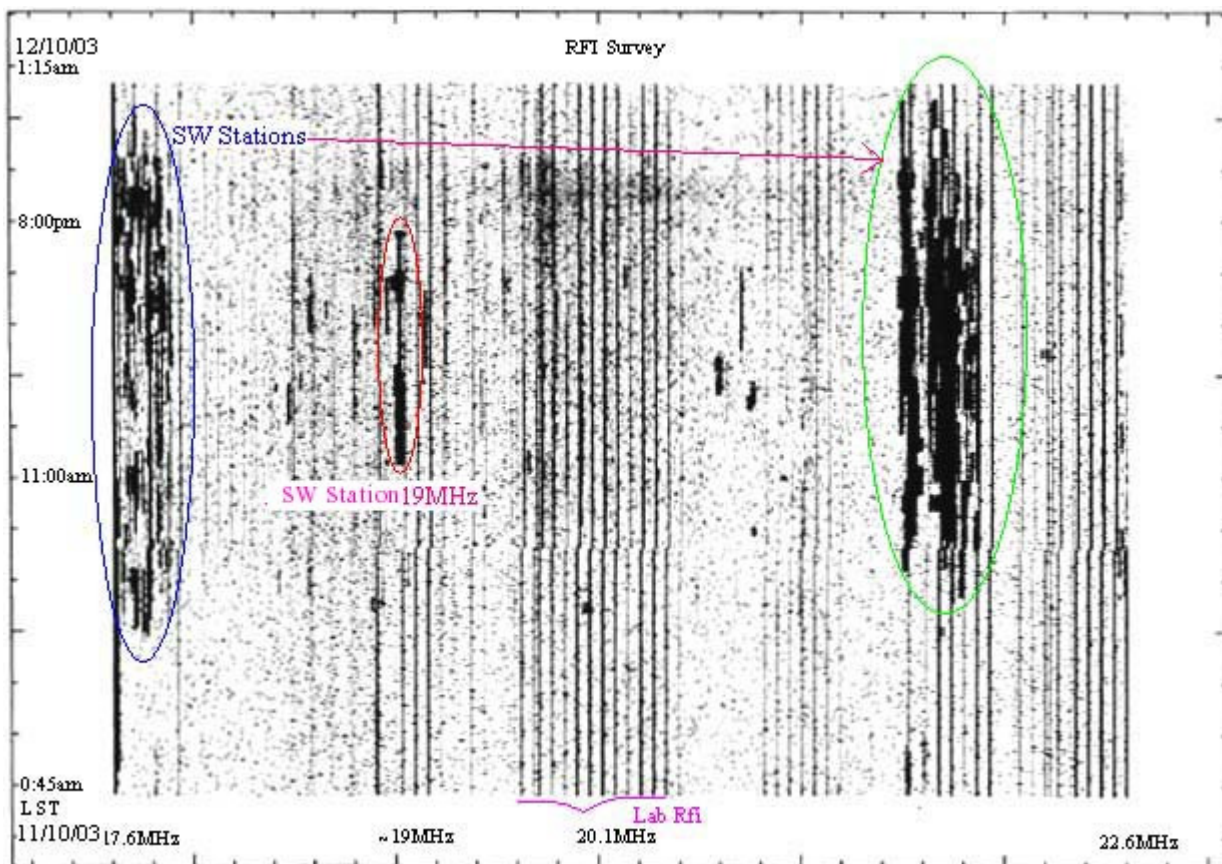
RFI Survey at 20MHz

To understand what we have received from the antenna, we must be aware of the possible interferences. As antenna is having broad beam, it receives the signal over broad region of sky. So the signal will consist of various noises like Galactic Background radiation, industrial noise, various noises generated because of electrical appliances etc. Lightning discharges produce a lot of electrical noise, which is picked up by low frequency antennas either from direct propagation or by reflection in the ionosphere. The RFI survey gives us the clear picture of the various types of noises, which we may receive during the observations. The antenna is pointed toward the sky when source is not present (in this case Jupiter) and the signals received by the antenna are studied.

To achieve this the antenna o/p is given to spectrum analyzer after amplifying it to sufficient level by RF amplifier. The spectrum is dumped on the PC and further processed. The following fig shows the RFI measurement setup used.



The data generated by this setup is analyzed by plotting the Gray-scale plot of the data. Following fig shows the gray scale plot of the data generated on 11/10/2003. The x-axis in fig shows the frequency, y-axis gives time, while power variation is shown using white and black colors. Black color represents the max power, while white represents the min power.



This RFI survey shows the various SW broadcasts, their frequency of operation as well as start, stop timings. The gray-scale plot also shows the various type of noise generated which are always present for 24 hrs. The lines which are present in the vicinity of the 20.1MHz are because of some local noise. This noise is not strong enough (typically - 100dBm) can be rejected with the jove receiver.

The SW broadcasts at 19MHz and around 21.5 MHz has high strength of typically - 40dBm. Since the received strength of the adjacent SW broadcasts is high, they may cause the interference. To avoid this, **a narrow band pass filter is necessary**. This will attenuate the out of band strong SW broadcasts to a sufficient level.

Specifications of the RFI survey conducted on 11/10/03:-

Center Frequency	20.1MHz
Span	5MHz
Resolution Bandwidth	3KHz
Video Bandwidth	3KHz
Sweep Time	1.67sec
Video Averaging	2
Start Time	00:44 LST
Number of Dumps	2882
Delay between two dumps	30sec
Gain in front of Spectrum Analyzer	10dB