

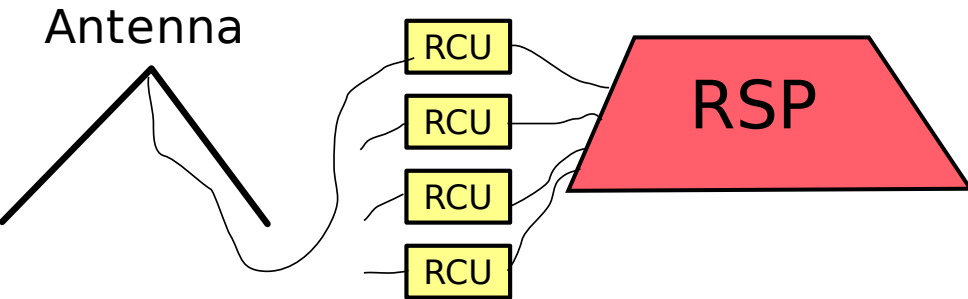
# LOFAR Station data

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LOFAR data processing school, Feb 2009

- 1 Overview
- 2 Antennae
- 3 Receiver units: nyquist zones
- 4 RSP boards
- 5 Demos / movies



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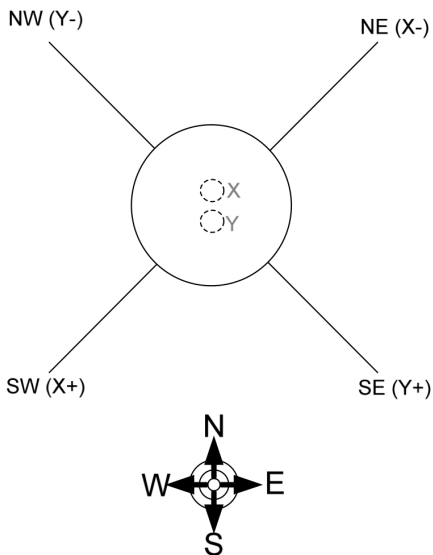
# Low band antennae



# High band tiles

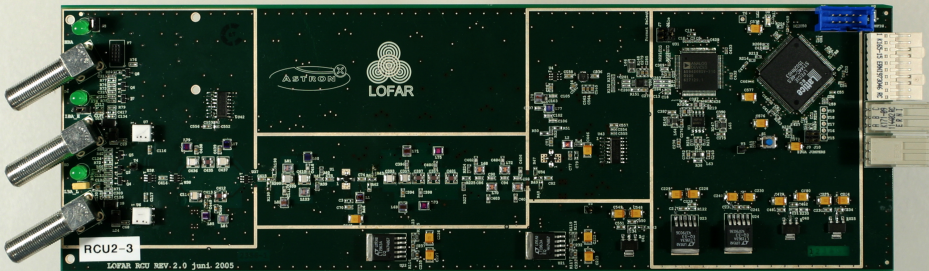


## LBA orientation



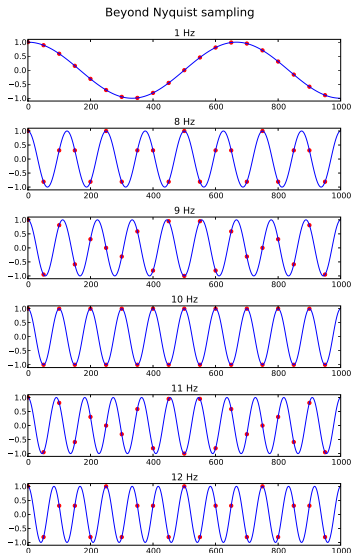
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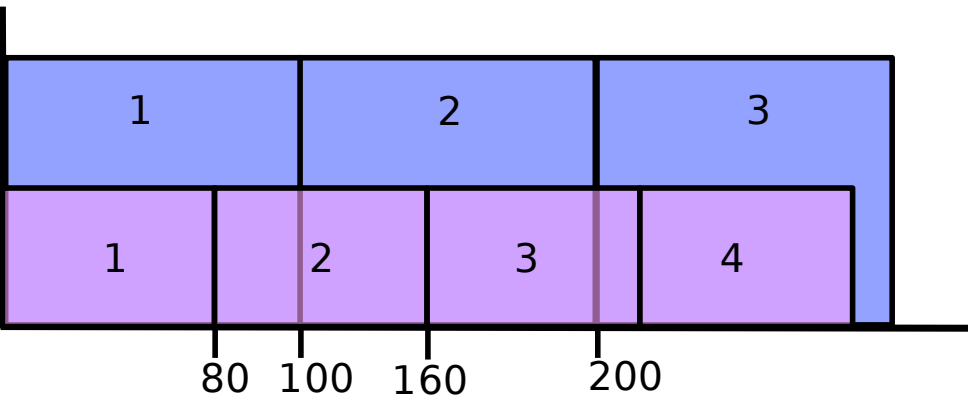


# A/D conversion and aliasing

- 12 bits A/D converter
- 200 MHz clock
- 160 MHz clock
- When sampling beyond Nyquist frequency: aliasing



# Nyquist zones



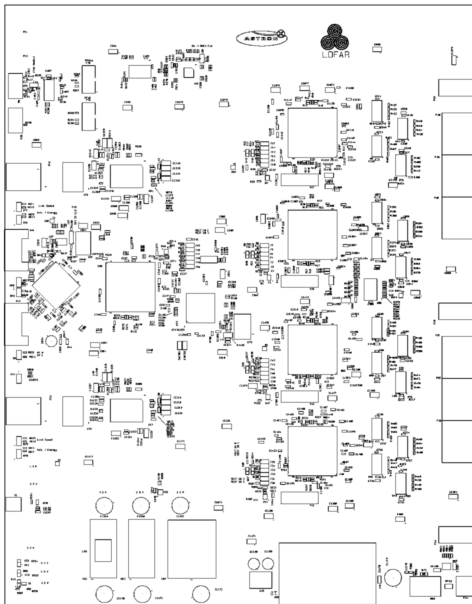
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# Remote Station Processing boards



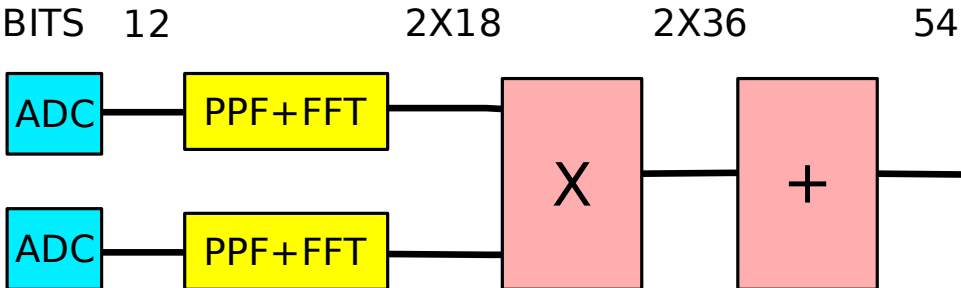
ASTRON

# RSP board functionality



- 8 inputs (4 antennae) per RSP board
- Waveform generators
- Filterbank implemented as polyphase filter + 1024 pt FFT
- 512 subbands (195/156 kHz wide at 200/160 MHz clock)
- 80 dB channel separation!
- Station correlator: all products for one subband
- Dynamic spectrum: autocorrelations ( all antennae, all subbands)
- Beamforming

# Station correlator



32 Bit custom float



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Live demo

# Movie-time!

LBA movie 24 hours