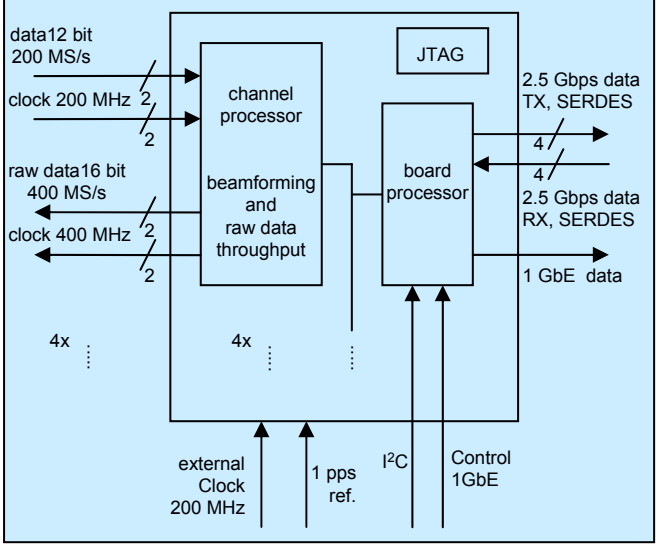
REMOTE SIGNAL PROCESSING BOARD

200 Msamples/second, 8 channels

Functionality

- Digital beamforming of eight 12 bit channels at a data rate of 200 Msamples/s
- Total processing bandwidth for each channel: 100 MHz
- Possibility to stack multiple boards, yielding a phased array of up to 96 input channels
- Flexible online (firmware) processing possibilities
- Eight 2.5 Gbps SERDES connections for transfer of beamformed data
- Processing is done in 200 kHz subbands
- Single and dual polarization options

Block Diagram



Remote Signal Processing Board (RSP)

Application areas

- Phased array beamforming applications in radio astronomy, radar, GPR, and acoustics
- Online beamforming, direction finding, anti-jamming
- Source detection

Board specifications

Input:
- Number of 12 bit physical data input channels: 8
- Number of clock inputs: 8
- Connectors: ERNI ERmetZD
- Differential inputs, LVDS, 100 ohm
- Datarate and clockrate: 200 Msamples/second

Raw data output
- Number of 16 bit physical data output channels: 8
- Number of clock outputs: 8
- Connectors: ERNI ERmetZD
- Differential outputs, LVDS, 100 ohm
- Datarate and clockrate: 400 Msamples/second

Digital processing
- Digital filtering yielding 200 kHz subbands
- Digital beamforming in ring structure
- Different RSP boards can be stacked in order to increase number of phased array elements
- Beam I/O channels: 2.5 Gbps SERDES, four for transmit and four for receive
- Data output: 1000BASE-T Ethernet
- Embedded processing: Xilinx Virtex 4 (5x)

Board control:
- Board contol via 1000BASE-T Ethernet
- External clock: 200 MHz, 15 dBm, 3.3 V, 50 Ω
- External clock connector: SMA
- Multiple boards timing reference: 1 pps
- Linux driver available

Environmental
- Power supply: DC 48 V
- Power consumption: 80 W
- Dimensions: 280 x 366 mm

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