

# N210

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The USRP Network Series offers high-bandwidth, high-dynamic range processing capability. The Gigabit Ethernet interface of the USRP Network Series allows high-speed streaming capability up to 50 MS/s in both directions (8-bit samples). These features, combined with plug-and-play MIMO capability make the USRP Network an ideal candidate for software defined radio systems with demanding performance requirements.

- 50 MHz of RF bandwidth with 8 bit samples
- 25 MHz of RF bandwidth with 16 bit samples
- Gigabit Ethernet connectivity
- MIMO capable - requires two or more USRP N200 devices as motherboard has one daughterboard slot (1 RX + 1 TX connectors)
- Onboard FPGA processing
- FPGA: Xilinx® Spartan® 3A-DSP XC3SD1800A
- ADCs: 14-bits 100 MS/s
- DACs: 16-bits 400 MS/s
- Ability to lock to external 5 or 10 MHz clock reference
- TCXO Frequency Reference (~2.5ppm)
- Optional internal GPS locked reference oscillator
- FPGA code can be changed with Xilinx® ISE® WebPACK? tools
- Frequency range: DC - 6 GHz with suitable daughterboard



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- SBX-40
- UBX-40
- WBX-40
- CBX-40
- LFRX / LFTX

- BasicRX / BasicTX
- DBSRX2 (EOL)
- RFX Series (EOL)
- TVRX2 (EOL)

- SSB/LO Suppression -35/50 dBc
- Phase Noise 1.8 GHz 10kHz -80 dBc/Hz
- Phase Noise 1.8 GHz 100kHz -100 dBc/Hz
- Phase Noise 1.8 GHz 1MHz -137 dBc/Hz
- Power Output 15 dBm
- IIP3 (@ typ NF) 0 dBm
- Typical Noise Figure 5 dB

- Ettus Research recommends to always use the latest stable version of UHD

- Current Hardware Revision: 4
- Minimum version of UHD required: 3.8.0

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22 x 16 x 5 cm

1.2 kg

- [File:cu usrp-n2x0 motherboard.pdf](#)
- [File:cu ettus-usrp-n2x0.pdf](#)

- [Motherboard](#)

- [Enclosure](#)

- N200/N210: 25 °C

- 10% to 90% non-condensing

## N200/N210 Schematics

Part Number	Description	Schematic ID (Page)
AD9777	Dual Channel, 16-Bit DAC	U3 (1)
ADS62P4X	Dual Channel, 14-Bit ADC	U2 (1)
XC3SD3400AFG676	FPGA	U1 (2,8,9,10,11,12)
AD9510	Clock Distribution IC	U9 (4)
ET1011C2	Gigabit Ethernet Transceiver	U12 (6)
CY7C1354C	Pipelined SRAM	U19 (7)
MAX232	Drivers/Receiver	U25 (10)

- Utilization statistics are subject to change between UHD releases. This information is current as of UHD 3.9.4 and was taken directly from Xilinx Vivado 2014.4.

Device utilization summary:

Selected Device : 3sd1800afg676-5

Number of Slices:	18356	out of	16640	110% (*)
Number of Slice Flip Flops:	20466	out of	33280	61%
Number of 4 input LUTs:	32968	out of	33280	99%
Number used as logic:	28511			
Number used as Shift registers:	3945			
Number used as RAMs:	512			
Number of IOs:	338			
Number of bonded IOBs:	331	out of	519	63%
IOB Flip Flops:	342			
Number of BRAMs:	41	out of	84	48%
Number of GCLKs:	6	out of	24	25%
Number of DCMs:	1	out of	8	12%
Number of DSP48s:	31	out of	84	36%

Device utilization summary:  
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Selected Device : 3sd3400afg676-5

Number of Slices:	18349	out of	23872	76%
Number of Slice Flip Flops:	20475	out of	47744	42%
Number of 4 input LUTs:	32986	out of	47744	69%
Number used as logic:	28529			
Number used as Shift registers:	3945			
Number used as RAMs:	512			
Number of IOs:	338			
Number of bonded IOBs:	331	out of	469	70%
IOB Flip Flops:	342			
Number of BRAMs:	41	out of	126	32%
Number of GCLKs:	6	out of	24	25%
Number of DCMs:	1	out of	8	12%
Number of DSP48s:	31	out of	126	24%

- Gigabit Ethernet

As of December 1st, 2010 all Ettus Research products are RoHS compliant unless otherwise noted. More information can be found at <http://ettus.com/legal/rohs-information>

## Management Methods for Controlling Pollution Caused by Electronic Information Products Regulation

### Chinese Customers

National Instruments is in compliance with the Chinese policy on the Restriction of Hazardous Substances (RoHS) used in Electronic Information Products. For more information about the National Instruments China RoHS compliance, visit [ni.com/environment/rohs\\_china](http://ni.com/environment/rohs_china).

Found on the [NI Product Certifications lookup tool](#) here.

For a detailed guide to recovering the N200/N210, please see the [N200/N210 Device Recovery](#) application note.

[FPGA Resources](#)

[UHD Stable Binaries](#)

[UHD Source Code on Github](#)