OBX

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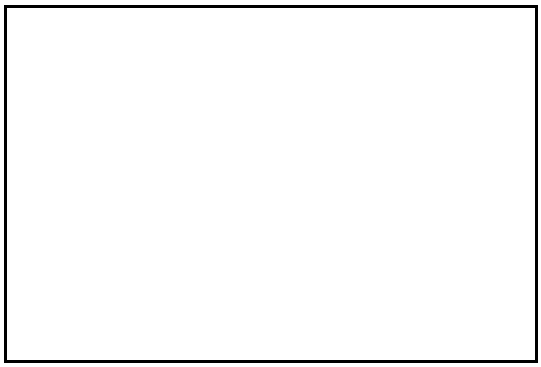
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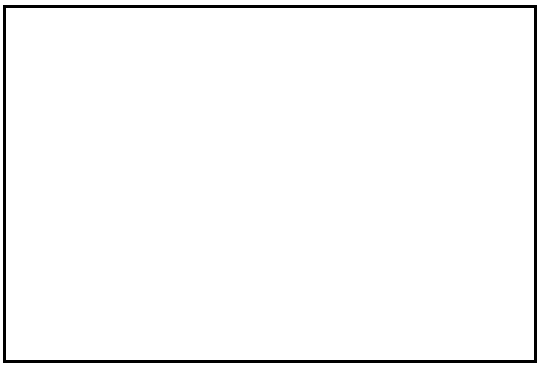
The OBX 160 daughterboard is a full-duplex wideband transceiver that covers frequencies from 10 MHz to 8.4 GHz with up to 160 MHz* of instantaneous bandwidth. Coherent and phase-aligned operation across multiple OBX daughterboards enables users to explore MIMO and direction finding applications. The OBX 160 daughterboard works interchangeably with other USRP daughterboards and is compatible with the USRP X300 Series devices.

The OBX is capable of phase coherent operation, and therefore is suitable for MIMO and Phased Array applications.

For getting started information and installation instructions please visit OBX Getting Started Guides

- Frequency Range: 10 MHz - 8.4 GHz
- RF shielding
- Full duplex operation with independent TX and RX frequencies
- Synthesizer synchronization for applications requiring coherent or phase-aligned operation





- 2 quadrature frontends (1 transmit, 1 receive)
  - Defaults to direct conversion
  - Can be used in low IF mode through lo_offset with uhd::tune_request_t
- Independent receive and transmit LO's and synthesizers
  - Allows for full-duplex operation on different transmit and receive frequencies
  - Can be set to use Integer-N tuning for better spur performance with uhd::tune_request_t

Transmit: **TX**/**RX**

Receive: **TX**/**RX** or **RX2**

- **Frontend 0:** Complex baseband signal for selected antenna
- **Note:** The user may set the receive antenna to be TX/RX or RX2. However, when using a OBX board in full-duplex mode, the receive antenna will always be set to RX2, regardless of the settings.

- Transmit Gains: **PGA0**, Range: 0-31.5dB
- Receive Gains: **PGA0**, Range: 0-31.5dB

- OBX-160: 160 MHz, RX & TX

- Note: The OBX 160 transmitter path has 160 MHz of bandwidth throughout the full frequency range of the device; the receiver path has 84 MHz of bandwidth for center frequencies from 10 MHz to 500 MHz.

- **lo_locked:** boolean for LO lock state

- **LOCK**: Synthesizer Lock Detect
- **TX/RX TXD**: Transmitting on TX/RX antenna port
- **TX/RX RXD**: Receiving on TX/RX antenna port
- **RX2 RXD**: Receiving on RX2 antenna port

Please refer to the OBX specifications document OBX-160 Specifications / Datasheet

- Ettus Research recommends to always use the latest stable version of UHD
- Current Hardware Revision: 1
- Minimum version of UHD required for OBX: 4.9.0

- 0-40 °C

- 10% to 90% non-condensing

The OBX daughterboard is capable of phase-synchronous operation, and is recommended for phase-coherent applications. The UBX daughterboards are also recommended for phase-coherent applications.

If you are operating the OBX at frequencies below 1 GHz and need phase synchronization, then it is necessary to select a 20 MHz daughterboard clock rate, instead of using the default 50 MHz rate. Note that this is only required for phase synchronization below 1 GHz. The OBX can still operate below 1 GHz without setting this lower daughterboard clock rate, but it will operate without any phase synchronization capability.

If you're using a UHD program, then you can specify the lower daughterboard clock rate on the command line of the program, with `--args="dboard_clock_rate=20e6"`.

If you're using the UHD API from a C++ program, then you can include `"dboard_clock_rate=20e6"` in the device arguments parameter when first invoking `multi_usrp::make()`.

If you're using GNU Radio, then you can add `"dboard_clock_rate=20e6"` to the `"Device Arguments"` field of the properties for the UHD Sink and UHD Source blocks.

For detailed design files such as schematics and certain other more in-depth USRP documentation submit a request via the Support Request Manager.

Media:cu_ettus_OBX_cca.stp

Media:cu_ettus_OBX_cca_2d.pdf

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OBX-160 Letter of Volatility

The OBX-160 transmitter path has 160 MHz of bandwidth throughout the full frequency range of the device; the receiver path has 84 MHz of bandwidth for center frequencies from 10 MHz to 500 MHz.

FPGA Resources

UHD Stable Binaries

UHD Source Code on Github