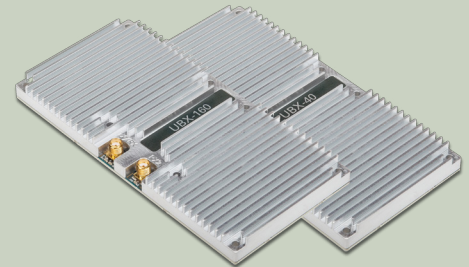


# UBX Daughterboard

## Product Overview

The UBX daughterboard is a full-duplex wideband transceiver that covers frequencies from 10 MHz to 6 GHz with up to 160 MHz<sup>1</sup> of instantaneous bandwidth. Coherent and phase-aligned<sup>2</sup> operation across multiple UBX daughterboards enables users to explore MIMO and direction finding applications. The UBX daughterboard works interchangeably with other USRP daughterboards and is supported by the USRP Hardware Driver™ (UHD) software API for seamless integration into existing applications.

The flexible transceiver architecture features multiple reconfigurable RF signal paths to optimize performance across a wide frequency range. A down conversion stage in the transmitter path, and an up conversion stage in the receiver path, extends the tuning range of the main direct conversion stage to cover signals with a center frequency from 10 MHz to 500 MHz. The wide RF coverage of the UBX daughterboard is ideal for applications spanning all the most common bands of interest such as HF, VHF, cellular, radar, and Wi-Fi.



## Features

### Wide RF Coverage

- 10 MHz to 6 GHz

### Wide bandwidth

- UBX 160: up to 160 MHz<sup>1</sup>
- UBX 40: 40 MHz

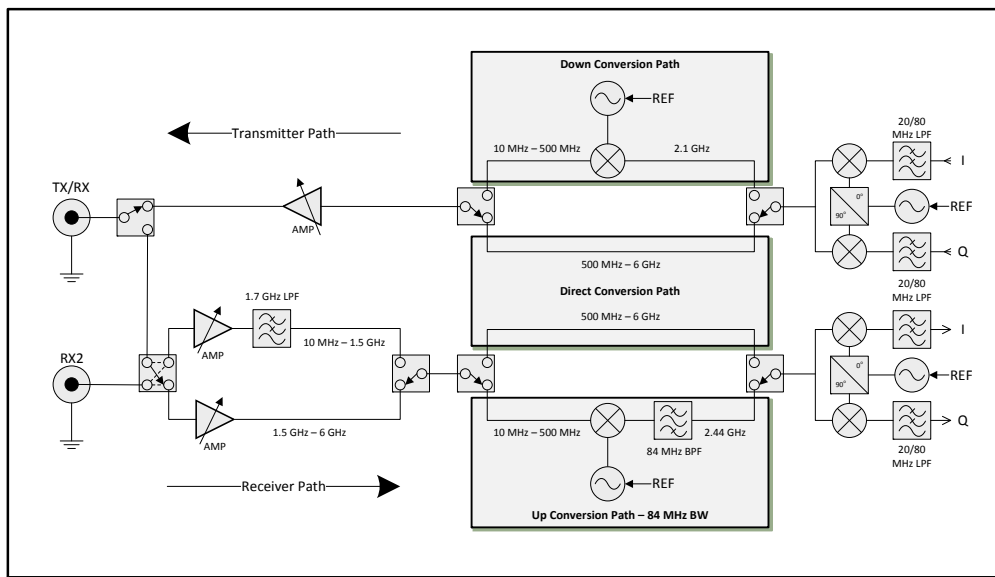
### USRP Compatibility

- UBX 160: X Series and N Series
- UBX 40: N Series

### Full-Duplex Operation

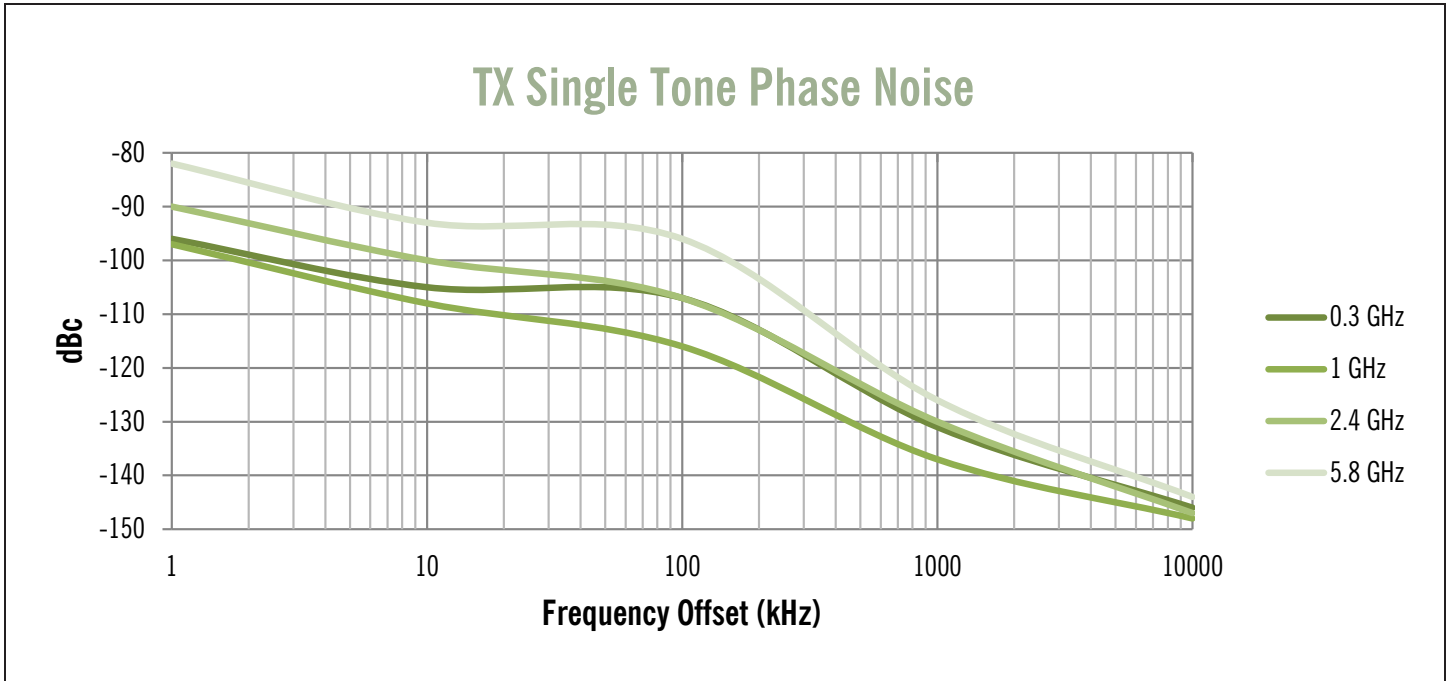
### RF Shielding

### Coherent and phase-aligned<sup>2</sup> operation



<sup>1</sup> The UBX 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.  
<sup>2</sup> UBX phase-aligned operation is only supported on USRP X Series devices.

# UBX Daughterboard



Receiver		
RX Noise Figure	10 - 20 MHz	3 - 4 dB
	20 - 500 MHz	2 - 3 dB
	0.5 - 1.5 GHz	2 - 4 dB
	1.5 - 4 GHz	4 - 5 dB
	4 - 6 GHz	5 - 7 dB
RX IIP3 (Max)*	10** - 35 MHz	4 - 10 dBm
	35 - 500 MHz	10 - 12 dBm
	0.5 - 1.5 GHz	8 - 13 dBm
	1.5 - 6 GHz	8 - 9 dBm
RX IQ Imbalance	10 MHz - 6 GHz	< -30 dBc

\* Noise Figure < 10 dB

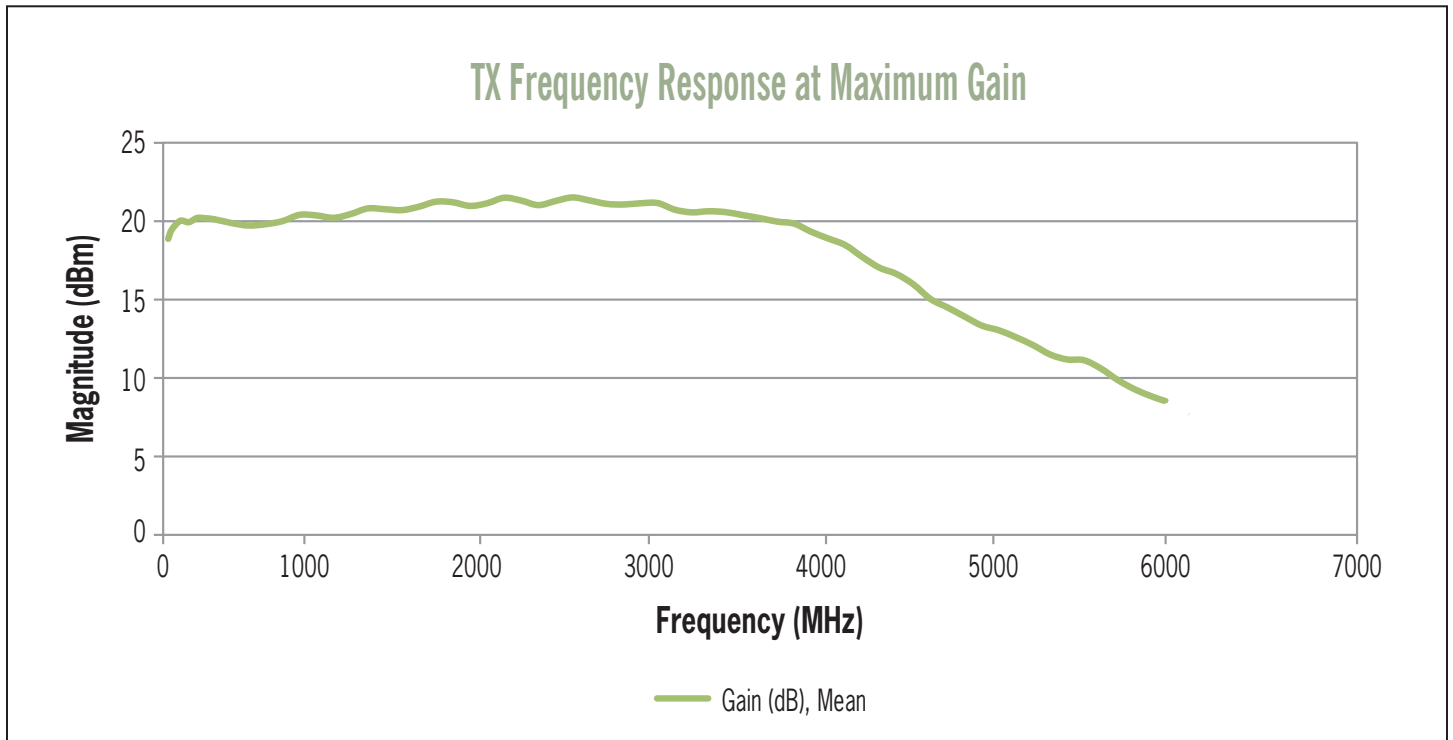
\*\* High Gain at 10 MHz

Transmitter		
TX Power*	< 3.5 GHz	> 18 dBm
	3.5 - 4.25 GHz	> 14 dBm
	4.25 - 4.75 GHz	> 11 dBm
	4.75 - 5.25 GHz	> 9 dBm
	5.25 - 6 GHz	> 5.5 dBm
	TX OIP3	10 - 500 MHz
	0.5 - 3 GHz	> 36 dBm
	3 - 5 GHz	> 30 dBm
	5 - 6 GHz	> 26 dBm
TX IQ Imbalance	10 MHz - 6 GHz	< -30 dBc

\* Achievable Transmit Power at maximum gain setting



# UBX Daughterboard



## About Ettus Research

Ettus Research™, a National Instruments company, is the world's leading supplier of software defined radio platforms, including the USRP™ (Universal Software Radio Peripheral) family of products. The USRP platform supports multiple development environments on an expansive portfolio of high performance RF hardware, and enables algorithm design, exploration, prototyping, and deployment of next generation wireless technologies across a wide variety of applications spanning DC to 6 GHz such as cognitive radio, spectrum monitoring and analysis, remote sensing, advanced wireless prototyping, mobile radio, public safety, broadcast TV, satellite communication, and navigation.

