

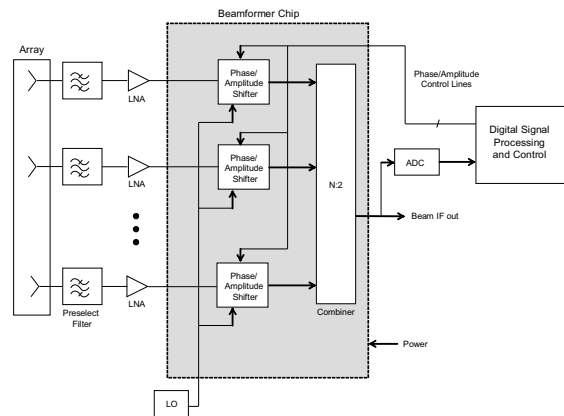
Ad-A-Beam™ for WiMax Anticipated Technical Specification Brief

The Ad-A-Beam (Adaptive Analog Beamforming) family of beamformer chips delivers low cost, high performance Wi-Max beamforming with on-chip continuous phase and amplitude scaling (full vector modulation) for total beam pattern control. With existing solutions, designers must choose between phase-only analog beamforming with limited flexibility and powerful but costly digital beamforming. Ad-A-Beam enables a hybrid approach which combines the advantages of analog and digital architectures. Analog signal paths deliver broadband performance. Amplitude control allows an external, single-channel DSP/controller to interrogate the signal space and perform closed-loop, adaptive source tracking without having to sample each array branch simultaneously. Ad-A-Beam delivers total beam control at the lowest possible cost.

Highlights:

- 2-6 GHz (custom frequency bands)
- 4 and 8 branch designs
- Transmit and receive
- Works with all WiMax modes (one chip per subband)
- Continuous phase and amplitude control (full vector modulation)
- Integrated downconversion
- Off-chip filters allow user-selectable operation frequencies and subband separation (filters are integratable for custom designs)
- Both discrete and integrated LNA and PA possible
- Low power design
- Multiple chips can be used in parallel for large arrays or for tracking many concurrent sources

WiMax Receiver Configuration



Anticipated Specifications:

Number of branches	4 or 8	
Frequency range	2-6 GHz	Operation frequency is user-designable. Center frequency and bandwidth are set by off-chip preselect filter and IF filter.
Maximum bandwidth	> 100 MHz	Determined by maximum tolerable beam squint at band edges and array size.
Gain	15 dB	Gain for one branch at maximum amplitude control.
LO frequency		Depends on center frequency and desired IF
LO power level	8 dBm	
Power supply voltage	+12 V	

Number of Pins
1 RF input per branch
2 control lines per branch
1 LO input
1 IF output
1 Power supply
1 Ground
Total for 4 branch chip: 16
Total for 8 branch chip: 28

Design:

The Ad-A-Beam architecture is suitable for customer driven, specialized beamformer chip applications as well as general purpose solutions. Six to nine month lead required for custom designs.