

Overview

Eridan has reinvented wireless radios with an all-digital switching architecture in Gallium Nitride.

Our Direct Polar circuit architecture separately amplifies amplitude and phase thus allowing for highly power-efficient recombination in a final mixer stage.

Using Gallium Nitride (GaN) for the RF front-end enables power efficiency and precision across a wide frequency range (600-4200MHz).

MIRACLE delivers picosecond digital timing precision and rapid frequency hopping capability for any waveform including phased array radar. Power efficiency and EVM performance are simultaneously maintained.

The MIRACLE radio is waveform and modulation agnostic and can be used in any radio system to improve power efficiency, SWAP-C, frequency agility and signal quality.

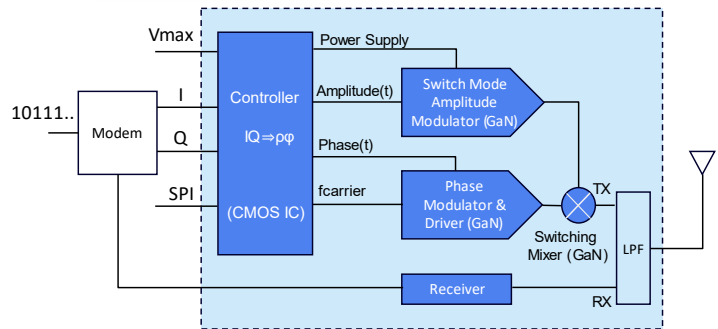
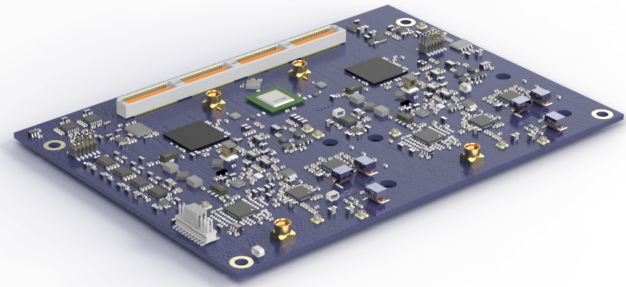


Figure 1: MIRACLE Architecture

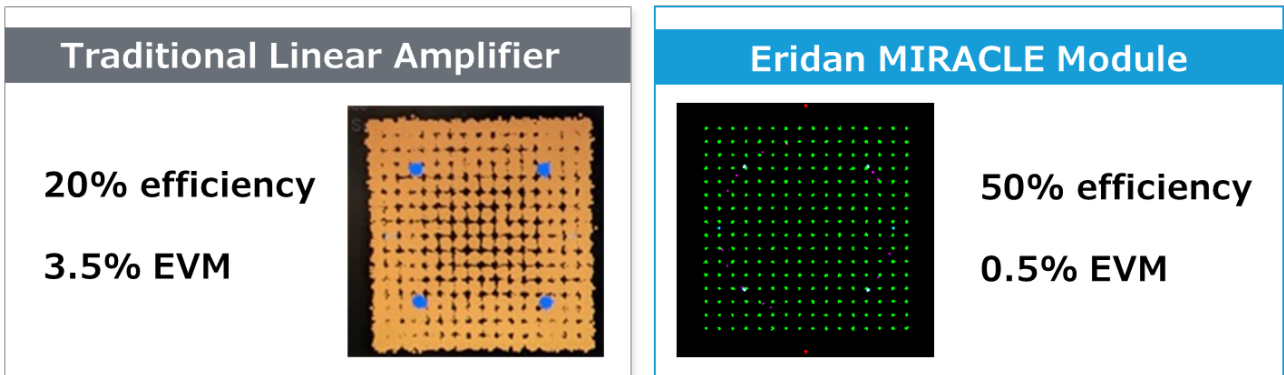


Figure 2: MIRACLE TX Performance vs Traditional

Eridan’s Direct Polar architecture supports waveform customizability for signal generation. The phase and amplitude signals have different bandwidths available and custom waveforms can take advantage of this flexibility.

The current MIRACLE Module is 2TX/2RX MIMO with a software-defined architecture that easily scales to higher order MIMO. Each module can be individually locked to a reference clock while being digitally phase adjustable thus enabling beam-steering without the need for phase-shifters or splitters.

Specifications

Parameter	Min	Typ	Max	Units
Tuning Range (ABW)	600		4200	MHz
Instantaneous Bandwidth (IBW) per TX		40*		MHz
Output Power (per TX)		30		dBm
Power Efficiency	35	50	60	%
Error Vector Magnitude (EVM)		0.5**		%
Modulation Support	256QAM, GMSK, 5G-1024QAM, 16,384QAM			
Adjacent Channel Leakage (ACLR)	45			dBc
Power Consumption		20		W
Dimensions (H)		30 1.2		mm in
Dimensions (L)		136 5.3		mm in
Dimensions (W)		99 3.9		mm in

* 5G-NR; ** 5G-NR at TX output

Ordering Information

Part Number	Description	SKU Variant	Availability
EM00IQ-1	MIRACLE® Radio Module	600MHz - 2800MHz	Q3 2024
EM00IQ-2	MIRACLE® Radio Module	3200MHz - 4200MHz	Q3 2024