

Uninhibited Radio Frequency Communication

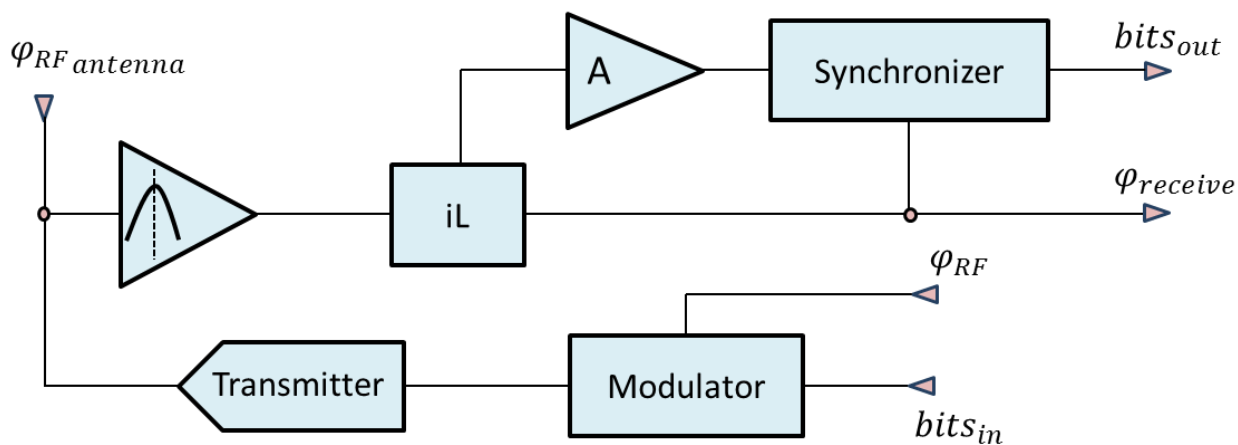
Gain ICs

IW_3G

An instantaneous wireless (iW) transceiver, designed with an instantaneous loop (iL), achieves breakthrough advances in wireless communication.

While providing higher throughput, salient advances are roughly a millions times higher reliability, a tenth the spectral profile, and orders of magnitude increase in range with faster throughput.

- Output from 300 MHz to 3 GHz
- Bitrate half of carrier frequency
- Orders of magnitude increase in range and reliability
- $1/10^{\text{th}}$ spectral footprint

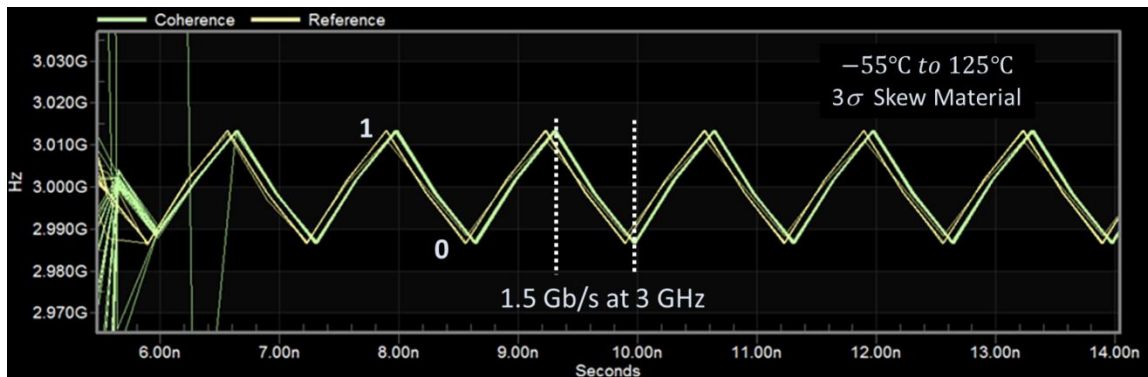


Interface

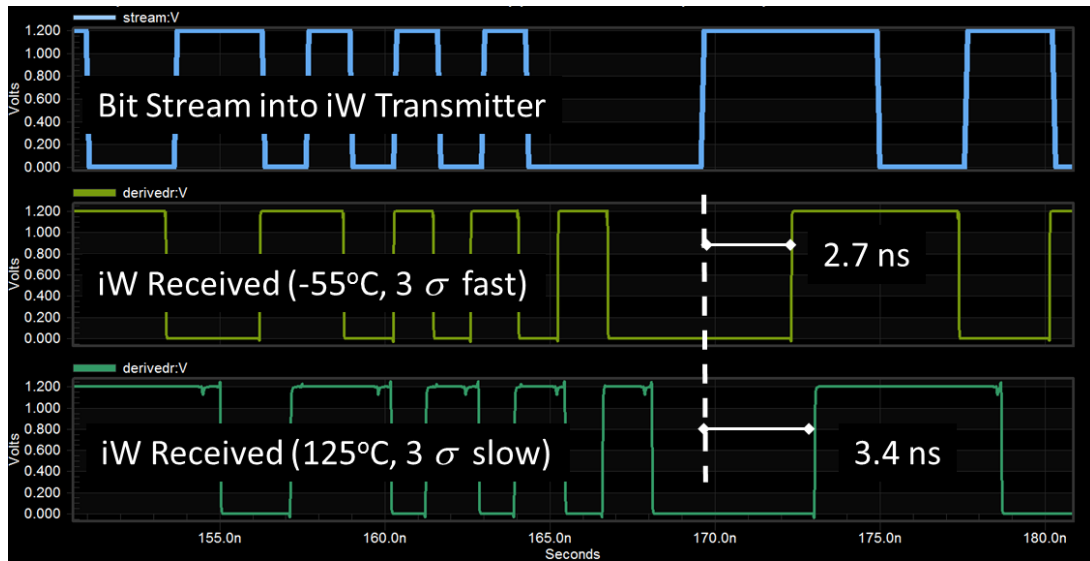
Interface	Direction	Description
ϕ_{RF}	in	Clock at carrier frequency
$\phi_{RF\ antenna}$	in	Received signal at antenna
$\phi_{receive}$	out	Tracking clock
$bits_{in}$	in	Input bit stream
$bits_{out}$	out	Output bit stream

Performance Specifications

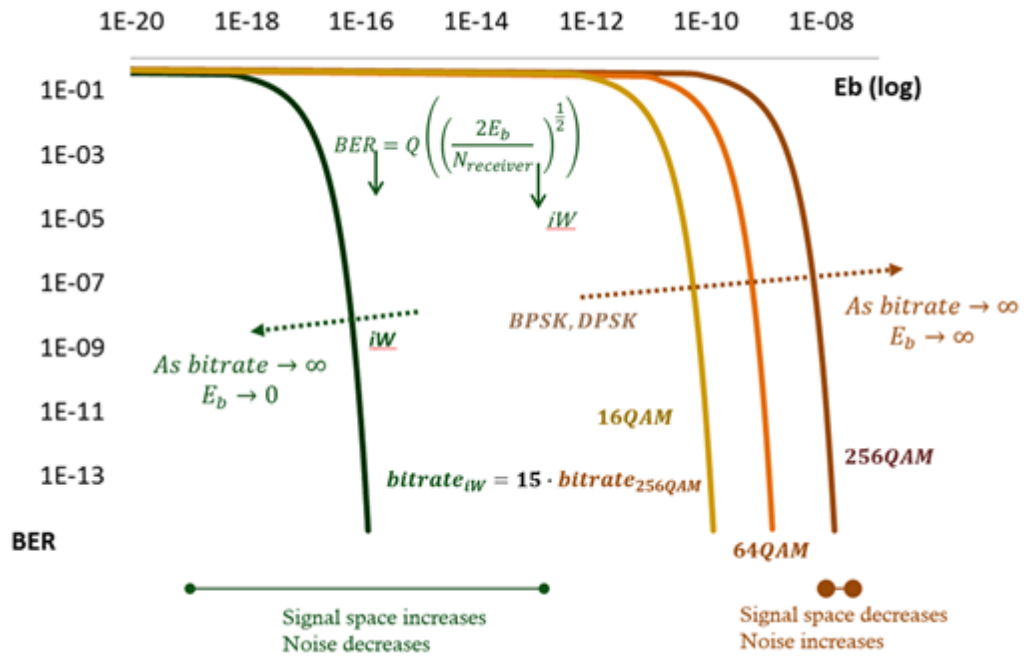
Parameter	Specification (Worst case or range across -55 °C to 125 °C and 3 σ material skew)
Frequency (GHz)	0.3 to 3
Bitrate ¹ (Gbps)	Frequency/2 (1.5 Gbps at 3 GHz reference)
Latency ² (ns)	3.4
BER ³ (E_b at 1×10^{-16})	10^{-12}
Sensitivity ⁴ (dBm)	-130
At $10^{-13} E_b$ spectral density ⁵ (dBm/Hz)	-52 (versus typical -12 quadrature)
Link Spectral Efficiency ⁶ ((b/s)/Hz)	28,200



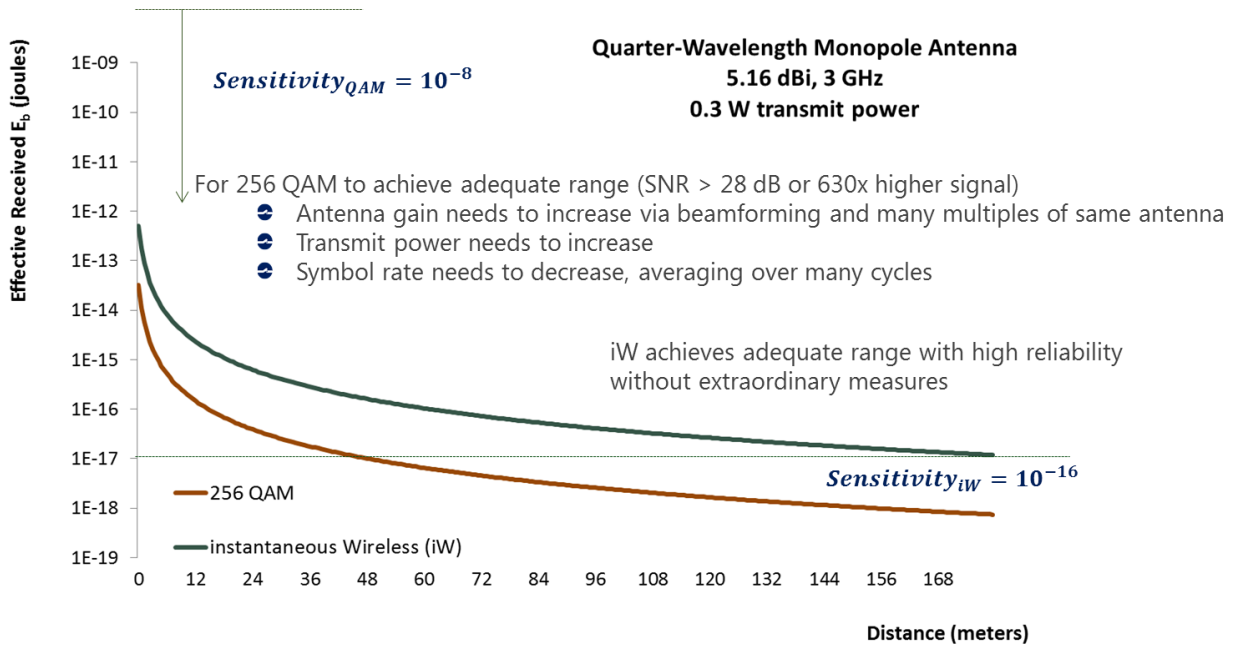
¹ Demodulated signal at same rate as modulated input, half of carrier frequency.



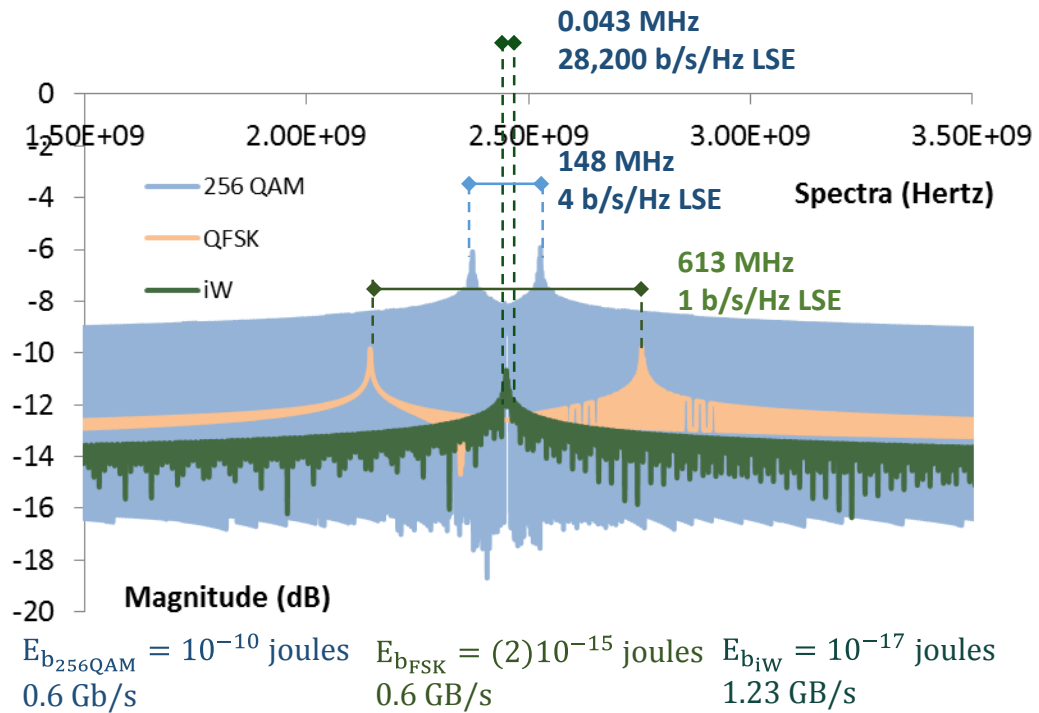
² Entire iW physical link, from bit stream into transmitter to output of adjacent receiver.



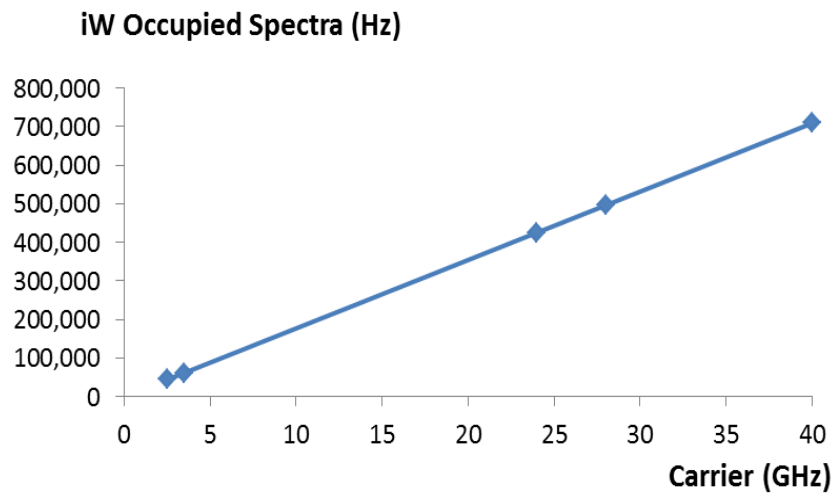
³ BER relative to comparable radio frequency (RF) architectures.



⁴ Sensitivity relative to comparable RF architectures.



⁵ Spectra at worst case bit pattern, fastest switching, iW relative to other architectures.



⁶ Link spectral efficiency (LSE) constant across frequency, at 28,200 (b/s)/Hz.