

# Integrated 5G mmWave infrastructure and SATCOM FEMs using 22FDX RF

Exceptional performance/power benefits for RF SoCs



**1st & only**

22FDX RF is the industry's only solution enabling a single-chip 5G mmWave RF SoC.



22FDX RF offers approximately **2x** more output power and **20%** total power savings.<sup>†</sup>



**1st**

Industry's only Foundry with in-house RF mmWave test capabilities.



The build-out of 5G mmWave cellular infrastructure and satellite communications (SATCOMs) is critical to making high-bandwidth, low-latency user experiences—such as buffer-free 8K video streaming and autonomous driving, from anywhere—a reality.

22FDX® RF from GlobalFoundries (GF®) delivers an outstanding power/performance ratio for cellular infrastructure and SATCOM FEMs and beamformers while enabling you to integrate data converters, low noise amplifiers (LNAs), power amplifiers (PAs), SERDES and switches with the transceiver (TRX) into a single chip. This combination of benefits results in system-level cost efficiencies and industry-leading RF performance—all at ultra-low power levels that help you minimize heat dissipation for improved reliability.

## 22FDX RF at a glance

Platform	Key features
22FDX	<ul style="list-style-type: none"> <li>• 22 nm FD-SOI with RF</li> <li>• Best-in-class <math>f_{max}</math> (&gt; 350 GHz) mmWave PA, with device stacking</li> <li>• Back gate control for low-power logic (0.4 V) operation and reduced thermal load</li> <li>• Low-power mmWave LNA</li> <li>• Low-power digital performance and rich IP portfolio</li> </ul>


**Integrate critical elements:**

22FDX RF offers up to a 10% area scaling advantage<sup>‡</sup> paired with high-density logic and is the industry’s only solution that enables a fully integrated 5G mmWave RF SoC, so you can use the saved space for other features and meet phased array lattice-spacing requirements.


**Maximize performance and coverage:**

22FDX RF combines high  $P_{sat}$  (up to 20 dBm) with 30% better receiver noise-figure and 50% better switch insertion-loss performance to help you boost signal strength and extend signal reach up to 6% for better coverage over wider areas.<sup>⋄</sup>


**Stay cool:**

22FDX RF incorporates low-power logic (0.4 V) with back-gate control to minimize power consumption, so you can optimize designs to prevent overheating while improving reliability and extending hardware life.


**Comprehensive IP portfolio:**

A rich intellectual property (IP) portfolio from GF and GF business partners enables you to seamlessly incorporate silicon-proven elements to optimize and differentiate your 22FDX RF design while accelerating time to market.


**Get results faster:**

Get your products to market faster with GF post-fab turnkey services featuring in-house mmWave test capabilities that enable you to tap into unrivaled RF expertise built on two decades of experience.

**LEARN MORE**

GF knows RF. Learn how our extensive cellular infrastructure and SATCOM solutions portfolio can help you extend your 5G leadership at [globalfoundries.com/contact-us](https://globalfoundries.com/contact-us)

**Contact Us**

**GF 5G cellular infrastructure & SATCOM solutions**

Solution	Application	Benefits
45RFSOI	5G mmWave	Superior performance with high $P_{sat}$ (up to 23 dBm) for cellular infrastructure & SATCOM FEMs and beamformers
22FDX RF	5G mmWave	Superior performance with highest level of integration & high $P_{sat}$ (up to 20 dBm) for cellular infrastructure and SATCOM FEMs and beamformers
8SW RF SOI	5G sub-6 GHz	Outstanding performance for 5G sub-6 GHz cellular infrastructure

<sup>‡</sup> Compared to 22 nm bulk CMOS process.

<sup>⋄</sup> Assumes 28 GHz band, TX and RX antenna gain of 20 dB, line of sight communication.