



DIGITAL AIRFAST: ALL IN ONE FR1 MID-POWER RADIO MODULE

“Samples-to-Air solution with breakthrough Size, Weight and Power”

The Digital Airfast reference design is an innovative All-In-One Antenna module at the Sub-6GHz band, encompassing the Digital Front-End processing all the way to signal emission on the air. It is enabled by NXP’s top cooled [A5M36TG140-TC](#) PA and Software Defined Radio [LA12xx](#), Metanoia’s 5G Sub-6GHz RF IC [MT3812](#) and Argo’s pioneering 2D printed antenna [AS04xx](#).

COMBINED HARDWARE AND SOFTWARE

This is a reference hardware + firmware platform for outdoor MIMO applications, combining NXP baseband & RF, Metanoia zero-IF transceiver and Argo Semiconductors 2D printed antenna. The first design targets n78 extending to future derivatives in a common PCB footprint.

Software includes Low-Phy, Up/Down conversion, Crest Factor Reduction (CFR), Digital Pre-Distortion (DPD), zero-IF transceiver, GaN Power Amplifier (PA) and PCB patch antenna design.

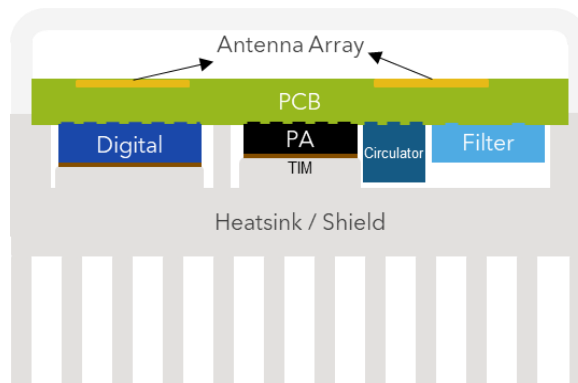
SIZE, WEIGHT AND POWER OPTIMIZED

The solution is designed as an integrated PCB from SerDes digital interface to RF antenna. A PCB printed antenna reduces Complexity and Size, Weight and Power of the solution. Scaling to higher antenna counts (8R8T, 16R16T, ...) is supported to allow scalability towards massive MIMO.

SPECIFICATIONS AND BENEFITS

- Targeting n78 (initially) deployments, 4T4R, 40dBm/antenna feed
- Use-case optimized: Initial target CBRS (3.55-3.7GHz), roadmap to other targets with common form factor
- Aggressive Size, Weight and Power (SWaP)
- Aggressive DC power, <75W target
- PCB level integration – no external cavity filters, integrated printed antenna

SYSTEM ARCHITECTURE



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All-in-one FR1 5G Power Radio Module

