

QRF

Elementum™ Edge AI Wi-Fi FEM Portfolio

QWX27115

5.15–6.425 GHz Wi-Fi 6 / 7 / 8 Front-End Module with optimized TXL and TXM modes

Derived from the industry's first CMOS RF-SOI front-end. Tuned for devices that see, hear and stream all day on a small battery.

The QWX27115 brings QuantalRF's linear CMOS RF-SOI power amplifier architecture to the operating points Edge AI devices actually use: **MCS7–MCS9 streaming on 80 MHz channels**, from a single **3.3 V supply**, across 5.15–6.425 GHz. High-power mode is left out of the tune, so every milliwatt goes to two DPD-optimized modes — a **low-power mode (TXL)** for the lowest DC power while streaming, and a **mid-power mode (TXM)** that stays linear to 18 dBm — with **160 and 320 MHz uploads in the same mode**.

18 dBm	541 mW	26 dB	3:1 VSWR
at −35 dB EVM on every channel, 80 & 160 MHz MCS9 with DPD	DC power at 17 dBm from 3.3 V (164 mA, TXM, 80 MHz)	TXL gain, ~5 dB above competing FEMs (~21 dB)	linearity held as antennas detune against head or hand

Two Modes, Tuned for How Edge AI Transmits

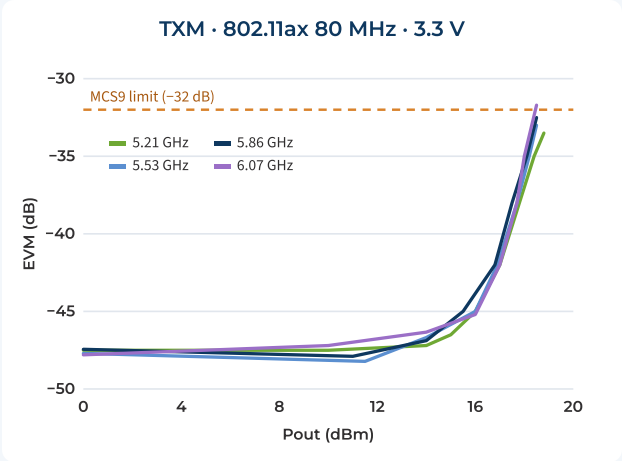
Low-power mode (TXL) covers output up to 14 dBm with 26 dB of gain and EVM of −35 dB or better, saving **56 to 102 mW** versus mid-power mode. The high gain means the SoC supplies only a third of the drive power. If the link weakens, step to a 20 MHz channel in one move — no mode change. **Mid-power mode (TXM)** carries 14 to 18 dBm in a single mode and bias, so DPD calibration can cover the full range. Between packets the front-end turns off and draws zero current.

Built for Devices with No Room for a Heatsink

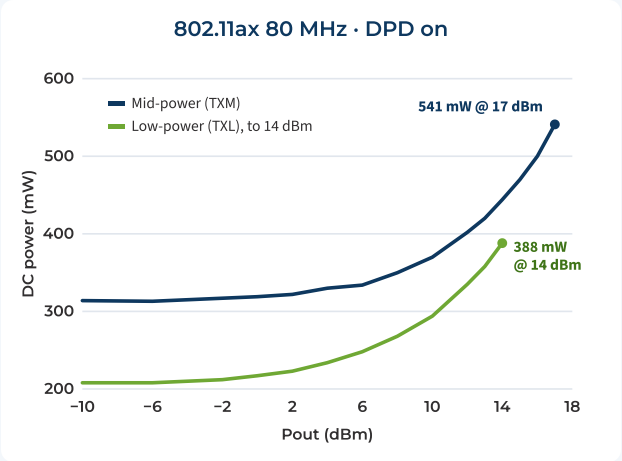
- AI glasses
- XR headsets
- AI cameras & doorbells
- Drones & body cams
- Home robots & hubs

- **Streaming headroom:** 17 dBm at −42 dB EVM on every channel — 10 dB cleaner than the MCS9 limit, leaving room for the SoC and fewer battery-draining re-sends.
- **Faster uploads, less energy:** DC power stays ~541 mW at 17 dBm from 20 to 160 MHz, so wider channels cut energy per GB in half at 160 MHz and to a quarter at 320 MHz.
- **Mask margin before DPD:** TXM clears the 80 MHz MCS7 spectral mask by 5 dB at 18 dBm without DPD; 3 dB margin holds to 18.9 dBm.
- **Wearable-ready:** single 3.3 V rail and monolithic die under 2 mm², with linearity maintained under real antenna mismatch.

EVM with DPD vs Output Power



DC Power from 3.3 V vs Output Power



Key Features & Specifications

Standards & band	Wi-Fi 6, 7 and 8 compatible; 5150–6425 MHz
Operating modes	Mid-power (TXM) and low-power (TXL), both biased for DPD at 3.3 V
Linear output power	18 dBm at −35 dB EVM, 80 & 160 MHz MCS9 (TXM, DPD); 17 dBm at −42 dB EVM
Wideband performance	160 MHz within 0.3 dB of 80 MHz at every EVM level; linear to 18 dBm at 320 MHz
Spectral mask (no DPD)	3 dB margin to 18.9 dBm TXM / 14.6 dBm TXL (80 MHz MCS7); 21.0 / 17.1 dBm (20 MHz 802.11a)
DC power at 3.3 V	TXM: 541 mW (164 mA) at 17 dBm · TXL: 217 mW at 0 dBm, 388 mW at 14 dBm
TXL gain & linearity	26 dB gain; EVM −35 dB or better up to 14 dBm
Load robustness	Linearity held to 3:1 VSWR
Supply	Single 3.3 V rail; zero current between packets
Integration	PA, LNA, switch and coupler on a monolithic CMOS RF-SOI die
Package	2 × 2 mm, 16-pin LGA; also available as < 2 mm² flip-chip die

RECOMMENDED MODE PLAN

Up to 14 dBm
Low-power mode (TXL): 26 dB gain, lowest DC power while streaming

14 to 18 dBm
Mid-power mode (TXM): one mode and bias for 80, 160 and 320 MHz

Between packets
Front-end off, zero current

Availability

QWX27115 evaluation kits are available now. Supplied as 2 × 2 mm LGA, monolithic die or wafers. Contact QuantalRF for datasheets, evaluation kits and platform enablement support.