

New SDR

THE NEW PARADIGM IN SDR

ANAN-G2 ULTRA

HF & 6M 100 W



By: SWR Editorial Team

ANAN-G2 Ultra HF & 6M 100 W – Technology That Revolutionizes!

The ANAN-G2 Ultra redefines the SDR experience with power and precision.

The ANAN-G2 Ultra is not just a transceiver: it is a standalone SDR station that redefines what we expect from modern amateur radio.

Photos by: apache-labs.com

In the ongoing evolution of software-defined radio (SDR), Apache Labs has taken a significant step forward with the launch of its next-generation model: the ANAN-G2 Ultra HF & 6M 100W Ultra High Performance SDR. With major improvements in processing, front panel, interface, features, and overall performance, this radio promises to redefine the operating experience for discerning amateur radio operators. In this article, we will provide a technical overview, highlight its strengths, advantages over previous generations, potential challenges, and suggest ideal use scenarios for this platform.

Apache Labs is already well-known for its ANAN line of SDR transceivers (such as the ANAN-7000, ANAN-8000, etc.). The leap to the G2 (second generation) represents a significant evolution, particularly because it incorporates functions that previously depended almost entirely on a connected PC. On its official page, Apache Labs describes this G2 Ultra version as the most advanced G2, with improvements in display, front-panel controls, and overall usability.

It is currently offered on a pre-order basis, meaning users place advance orders with an estimated lead time of about two weeks at certain stages. This suggests that, at the time of writing, mass distribution or full availability may still be in progress.

Highlighted features of the ANAN-G2 Ultra

Here are the key aspects of the transceiver, with some technical explanations:

Architecture and processing

- The G2 Ultra integrates a large FPGA with 930 GMAC/s processing capability, along with an onboard 4-core SoC (Quad Core). This allows it to handle complex real-time algorithms such as PureSignal, diversity reception, and advanced noise mitigation (NR2).
- Compared to previous models like the ANAN-7000 or 8000, the leap in processing capacity is significant (for example, the ANAN-7000/8000 peaked at ~240 GMAC/s).
- This provides room for advanced future features, such as high-performance remote operation, without relying heavily on the connected PC hardware.



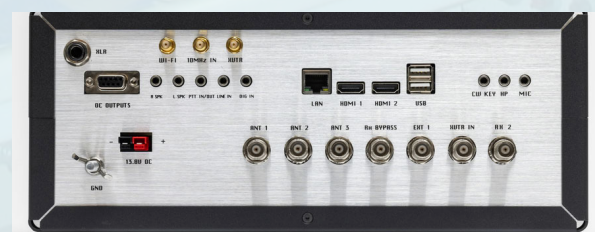
Autonomous operation and compatibility

- One of the major advantages of the G2 Ultra is its ability to operate in stand-alone mode, without the need for constant connection to a computer.
- At the same time, it remains fully compatible with Thetis software for users who prefer operating from a PC or laptop.
- Regarding remote operation, the hardware is designed to support future remote functionalities, although some features may depend on subsequent firmware/software developments.

Front panel, display, and controls

The Ultra model features an 8-inch higher-resolution display, improving visibility of the graphical user interface (GUI).

- The front panel has been redesigned with more physical controls (buttons, knobs, LED indicators) to offer more direct operation without relying solely on a PC.
- The front chassis is CNC-machined aluminum, enhancing shielding and isolation.
- These controls are expected to integrate more deeply with Thetis, even while running on a PC or laptop.



Frequency range, receive and transmit performance

- The receiver covers 9 kHz to 60 MHz, including the full HF spectrum and the 6-meter band (50 MHz).
- It uses a Direct Sampling DDC/DUC architecture.
- It delivers 100 W PEP in modes such as SSB, CW, FM, and digital; in AM it operates from 1 to 30 W (up to 100 W in CW).
- The design emphasizes high linearity: for example, typical IMD3 around -68 dB relative to PEP on 20 m.
- Typical harmonics are better than -43 dBc on HF and -60 dBc on 6M.
- Carrier and opposite sideband suppression exceed -80 dBc.
- The receive block includes two synchronous 16-bit ADCs, each with independent filter banks.
- Reciprocal Mixing Dynamic Range (RMDR) is specified at 116 dB with a 2 kHz offset.
- Image rejection reaches 90 dB.

Inputs/outputs and connectivity

Multiple connections: BNC ports (antenna, bypass, loop, RX2), audio inputs/outputs, microphone with preamplifier (balanced XLR inputs), dual 4K HDMI outputs for external displays,

ethernet port, USB ports, 10 MHz reference input, PTT, and others.

- Dimensions: Approximately 314 mm (W) $\times$ 138 mm (H) $\times$ 368 mm (D) (excluding protrusions).
- Estimated weight: 7.5 kg.
- Power requirements: 13.8 V DC @ 25 A (transmit) / $\sim$ 2.5 A (receive).

Conclusion

The ANAN-G2 Ultra HF & 6M 100W represents an ambitious effort by Apache Labs to bring high-performance SDR to a new generation. With clear improvements in processing, design, usability, and growth potential, it has the capability to become a benchmark for advanced stations. Its success will depend not only on its hardware but also on the evolution of firmware, software support, and the user ecosystem that adopts it.

For SWR magazine, this equipment stands out as one of the most exciting recent releases in the high-end SDR segment.

