



8220WB

48-kHz Wideband 1-kW System

The Sunair 8220WB 1-kW System operates continuously (100% duty) and consists of the Sunair RT-8500WB Software-Defined Wideband Next Generation HF SSB/ISB Transceiver, the F-9810 Post-selector, and the LPA-8220 1-kW Power Amplifier, all mounted on a pre-wired custom cabinet for ease of installation and maintenance.

The RT-8500WB transceiver uses software-defined digital signal processing (DSP) technology, which supports the latest developments in high-speed waveform processing. This technology enhances the functionality of the CPU as well as the Synthesizer, Digital Audio, and Digital IF stages. It operates in USB, LSB, ISB, AMe, FMn, CW, and 48-kHz WBHF. The audio interface supports analog or VoIP connections, while the CPU allows for remote control and programming via Ethernet or serial port.

The RT-8500WB transceiver incorporates a next generation 48-kHz Wideband capable HF Modem and ALE controller. This provides a purpose-built standalone hardware platform for strategic and maritime WBHF Beyond Line-of-Sight (BLOS) and Line-of-Sight (LOS) radio communications. The Wideband Automatic Link Establishment (WALE) or Fourth Generation (4G ALE) controller compliant with MIL-STD-188-141D Appendix G is used in setting up and managing WBHF links. The WALE controller provides fast and robust link setups by dynamically adapting the bandwidth and frequency offset of wideband channels to avoid interference and optimize throughput. The WALE link setup controller also provides inter-operation with second generation ALE (2G ALE) and third generation ALE (3G ALE/FLSU). WALE supports (as 3G ALE) both synchronous and asynchronous modes.

Advanced built-in-test (BITE) capability reports the status of the Sunair 8220WB 1-kW System down to the Lowest Replaceable Unit (LRU) level providing English messages on the display of the radio, and then to a remote site when configured. Individual LRU fault indication and the system's intuitive modular design allows for ease of maintenance and upgrade throughout the equipment life cycle at minimal expense. These high-performing niche products are in daily service as integral components of critical strategic communications solutions for leading defense, peacekeeping, and aviation agencies around the world.



- **High efficiency solid state design**
- **Full power into load with VSWR up to 2:1**
- **Comprehensive BITE to LRU**

Product specifications

GENERAL

General performance:	Complies with the performance requirements in MIL-STD-188-141C/D, MIL-STD-203-1A and STANAGs 4203, 5031, 5511, and 5522
Frequency range:	Tx: 1.5 MHz – 30 MHz; Rx: 10 kHz – 30 MHz
Frequency accuracy and stability:	Frequency accuracy is better than ± 3 Hz. The stability of any selected carrier frequency is within ± 1 parts in 10^{-7} after a warm up period of 30 minutes. It does not vary more than ± 1 part in 10^{-8} after a warm up period of 2 hours. The stability is greater than or equal to ± 5 parts in 10^{-8} for each 30-day period.
Duty cycle:	Continuous (100 %); designed for unattended continuous operation
Tuning steps:	1 Hz, 10 Hz, 100 Hz, 1 kHz, 10 kHz, 100 kHz, or 1 MHz
Transmit activation and frequency settling time	7 ms maximum for 90% output power
Modes of operation:	AME (R3E); NB-FM (F3E); USB/LSB (J3E, J2D); ISB (B7D, B8D, B9W); CW (A2A); FSK (F1B) Data modes such as STANAGs 4285, 4529, 4259, 4481, 4539, 4415, and 4203, FSK Wide Shift, FSK Narrow Shift, Link 11 / 22, MIL-STD-188-110 A/B/C with optional internal or external modems, and MIL-STD-188-141D Appendix G (48-kHz WBHF)
Keying:	Local or remote
Programmable channels:	250 channels on non-volatile memory; storing channel frequency (simplex and half duplex), modulation mode, output power level, and peripherals.
Remote control:	Through RCU-9310WB or Argus MCC
Post-selector operation:	Automatic with F-9810 bypass between 1.5 MHz and 1.6 MHz
Tuning control:	Initiated by RT-8500WB and digitally controlled; no further operator intervention required
Input voltage:	115 / 230 Vac ± 15 %; 50 / 60 Hz; single phase
Energy consumption:	≤ 4.6 kVA
Metering:	Touch display on RT-8500WB; analog metering on LPA-8220 unit; via remote control
BITE:	Power up, surveillance, and operator-initiated; fault isolation to the module level; reporting and resetting through RT-8500WB, and remote control
MTBF:	11,100 hours
MTTR:	60 minutes with spares at hand
Module dimensions:	RT-8500WB: H: 5.96 in / 15.1 cm; W: 17.83 in / 45.3 cm; L: 17.66 in / 44.9 cm LPA-8220: H: 12.26 in / 31.15 cm; W: 17.88 in / 45.4 cm; L: 19.0 in / 48.3 cm F-9810: H: 1.75 in / 4.4 cm; W: 19.0 in / 48.3 cm; L: 19.0 in / 48.3 cm
Module weight:	RT-8500WB: 49 lbs / 22.3 kg LPA-8220: 71 lbs / 32 kg F-9810: 12 lbs / 5.5 kg
Construction:	Modular plug-in assemblies, field serviceable
Origin:	Designed and manufactured in the U.S.A.

ACCESSORIES & PERIPHERALS

Spares kits:	Running spares, field modules, final tested sub-units
Tools:	Card Extractor, board extenders
Antenna coupler	CU-8270

RECEIVER

Selectivity	<ul style="list-style-type: none"> SSB / ISB: 300 – 3300 Hz @ 6 dB CW: 500 Hz @ 3 dB, centered at 1 kHz AME: ± 3000 Hz @ 6 dB NB FM: ± 5000 Hz @ 6 dB
Sensitivity	<ul style="list-style-type: none"> SSB / ISB: 0.5 μV for 10 dB (S+N)/N CW: 0.3 μV for 10 dB (S+N)/N AME: 3.0 μV for 10 dB (S+N)/N NB FM: 1.0 μV for 10 dB (S+N)/N
Audio output	<ul style="list-style-type: none"> 5 W into internal speaker, <1 % THD 600 Ω, balanced @ -20 dBm to +10 dBm Headset: low impedance
Audio response	± 2 dB from 300 Hz to 3300 Hz
Image & IF rejection	90 dB minimum
Spurious rejection	80 dB minimum
IMD (IP3)	> 20 dBm
Intermodulation suppression	Not less than 32 dB
AGC attack time	10 ms nominal
AGC release time	<ul style="list-style-type: none"> Fast: 23 ms nominal Medium: 200 \pm 100 ms nominal Slow: 3 \pm 1 second nominal
AGC range	100 dB
AGC control	No more than 6 dB change for signal inputs from -100 dBm to 0 dBm; 4 dB for signal inputs from -90 dBm to 0 dBm
BFO	± 1.99 kHz (1 Hz, 10 Hz, or 100 Hz tuning steps)
Scan	Manual or automatic
Squelch	Syllabic
Antenna input protection	100 V Peak to Peak (53 dBm), self-resetting

TRANSMITTER

Key Control On Time	RF reaches full power (± 1 dB) in less than 10 ms.
Key Control Off Time	RF diminishes to more than 50 dB within 5 ms.
RF Power Adjustment	Output power adjusted from 0 % to 100 % in 1-dBm steps
Connectors	RF Out: N-Type; RF In: BNC
Emissions	3rd Order IMD: > 36 dB below PEP Complies with: MIL-STD-188-141C 5.2.7.1, 3-kHz channel response MIL-STD-188-141C 5.2.7.2, wideband channel response MIL-STD-188-141C 5.3.2.1, broadband noise levels MIL-STD-188-141C 5.3.2.1 - 5.3.2.3, spurious emissions
Control	RS232/422/485; Ethernet
Load Absence Detector	An external contact closure informs the LPA-8220 that the load (antenna or dummy load) is disconnected. The LPA-8220 does not transmit (Key On) when LAD is active.

ENVIRONMENTAL

Temperature:	<ul style="list-style-type: none"> Operating: -20 °C to 45 °C (-4 °F to 113 °F) Reduced duty cycle: 45 °C to 55 °C (113 °F to 131 °F) Storage: -40 °C to 85 °C (-40 °F to 185 °F)
Humidity:	95% @ +55 °C, non-condensing
Altitude:	Operating: up to 10,000 feet; Storage: up to 40,000 feet
Cooling:	Fan cooled (radio and amplifier)
Air Source and Volume:	Clean filtered air
Exhaust Air:	Through top or rear of cabinet; external exhaust recommended

3131 SW 42nd Street
Fort Lauderdale, FL 33322
Tel: 954-623-3131/400-5100
Fax: 954-583-7337



www.sunairelectronics.com

Specifications subject to change without notice or obligation. Rev. 5 (April 14, 2025)

US export control laws may apply to some options