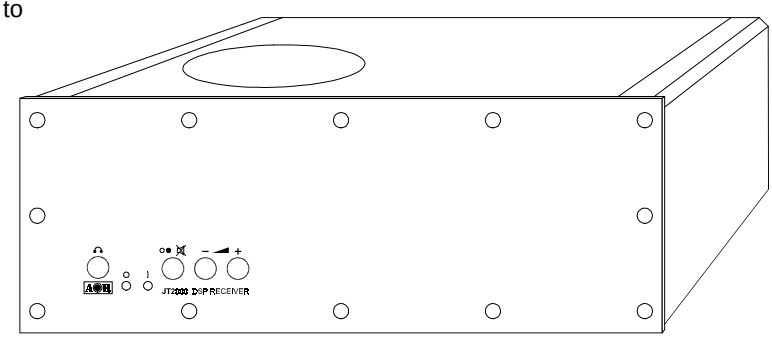
JT2000 DSP RADIO RECEIVER - *kiloHertz to GigaHertz …*

THE FUTURE OF WIDE BAND RECEPTION AND SPECTRAL ANALYSIS

The JT2000 receiver from AOR provides a fresh look at wide range receivers. Using the latest **DSP** technology (Digital-Signal-Processing) in the i.f. stage (not just audio DSP), the receiver allows very fast **FFT** analysis (Fast-Fourier-Transform) of the radio spectrum enabling active radio channels to be detected and monitored very quickly.

Fundamentally, FFT uses spectral analysis in the time domain to evaluate which frequencies are active, sections of the radio spectrum are 'grabbed' within a few tens of milliseconds and a list of active frequencies prioritised automatically.
If compared in conventional terms to a scanning receiver, JT2000 is capable of scanning several thousand channels per second! Put in to practice, this means that it is possible to monitor a frequency on the VHF airband while simultaneously checking the whole band (every frequency) for new transmissions several times per second, clearly no activity will be missed with the most elusive, infrequent and brief transmissions captured. Spectral analysis can continue during monitoring.



Sensitivity, selectivity and dynamic range will challenge the very best wide band receivers. A conventional RF stage uses double or triple conversion (depending on the receive frequency) to provide good image rejection over a wide reception range from a **few kHz to over 2.5 GHz**. A wide bandwidth is maintained throughout both the RF and IF stages and coupled with a fast, high resolution analogue-to-digital converter provides the RF signal analysis facilities. **Digital filtering with 22-bit accuracy** provides reception bandwidths from a few Hz up to 250 kHz enabling the DSP to demodulate a wide range of signals. Standard reception modes include SSB, AM, synchronous AM, FM and wideband (broadcast) FM, all with selectable IF bandwidths. New features like 'dynamic squelch' (with manual override) add to the capabilities and ease of use.

The standard JT2000 is presented in a rugged cabinet ('black box') with internal design to high standards employing six-layer PCBs and custom parts, control is via a host computer. Connection to a host computer is via a standard **RS232 serial connection** and for higher transfer speeds, via **USB (Universal Serial Bus)**, transfer speed is largely dependant upon the host computer, the faster the computer, the greater the data - and better the analysis results. JT2000 provides an extra serial port which allows direct connection to, and **control of an additional, separate monitoring receiver for hand-off applications**. The receiver's design is intended to allow for future functions to be added. All internal control software and DSP routines are stored in flash memory which can be re-programmed from the host computer. New signal analysis methods and different signal demodulation can be implemented with a simple software download. If new circuitry is required to handle special signals then there is a spare module slot within the receiver; both analogue IF signals and a high-speed serial interface to the DSP are available to support it. **A front panel controller is planned with display and keypad which will provide stand-alone reception and operation in addition to computer control.**

Windows based control software is supplied with the receiver and includes a database processor and function applets to control receiver settings. The heart of the control software is a database system that contains scanning and searching channel information. **Unlike other fixed databases, JT2000 can quickly and dynamically build brand new 'real-time' databases (from a blank start).** The database content is a mixture of signal information from the user (frequency and identification) and reception information from the receiver (signal strengths and durations). From this data the software can produce signal logs and band occupancy information and the receiver can be controlled to monitor channels based on criteria of priority, signal strength or signal duration as decided by the user.

Additionally the receiver can automatically produce database entries of active channels during a period of observation of sections of the radio spectrum. All database content is in a transportable format so that further data analysis can be carried out with standard **Microsoft Office applications**. Similarly databases of spectrum allocation can be imported from other formats through these programs.

JT2000 is displayed here at Dayton for the first time in 'proto-concept' format (part way between concept, prototype and pre-production). The new model is the result of another successful joint development between AOR and internationally acclaimed UK designer John Thorpe (design engineer of the award winning AR7030). JT2000 is designed and built in the UK, production is expected to roll-out toward the end of this year.

- Completely new innovative design
- i.f. based DSP and FFT technology
- Wide band frequency coverage kHz - 2.5GHz
- All mode receive, good dynamic range, selectivity and sensitivity
- Hand-off radio support
- Very fast search & scan speeds compared to conventional receivers, thousands of channels per second
- Dynamic database, Windows software provided
- Flexible design with the future of radio in mind
- Many innovative features from an experienced manufacturer - AOR

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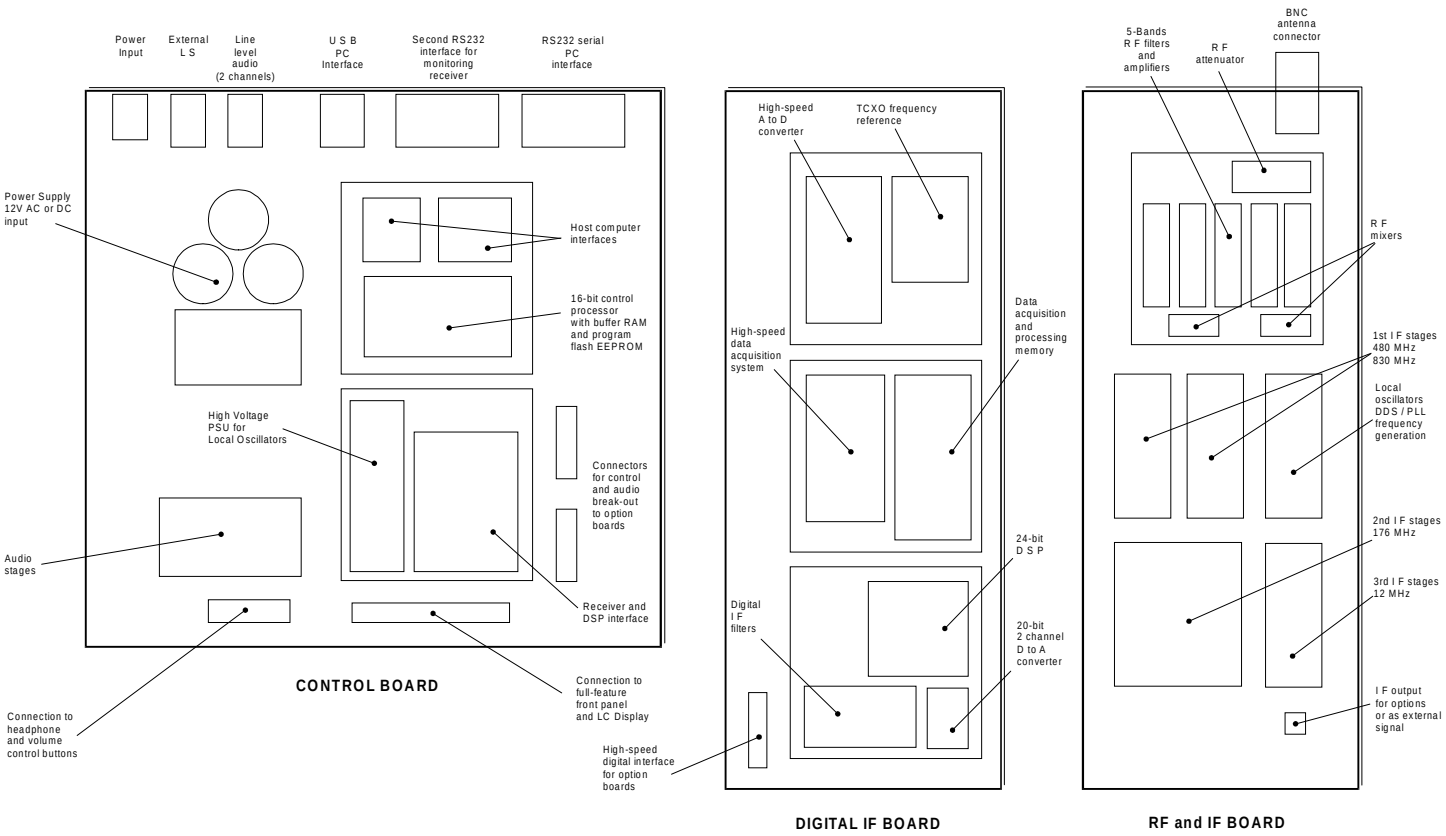
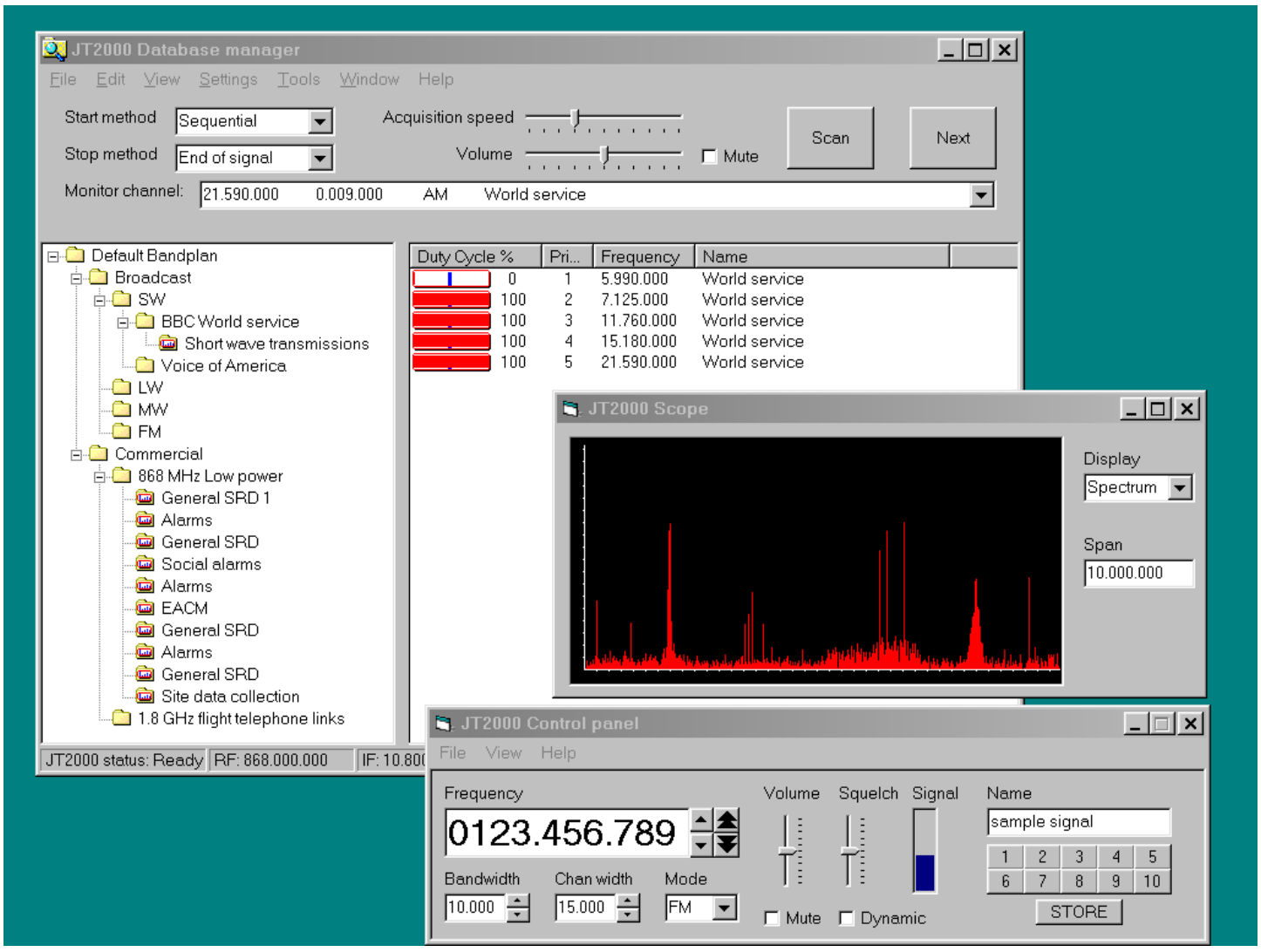
Note: JT2000 has not been approved by the Federal Communications Commission. This device is not and may not be offered for sale or leased until the approval of the F.C.C. has been obtained.

AOR JT2000 DSP RECEIVER





This JT2000 software screen shot is intended for illustration purposes only, the final product may vary from that shown here.