# Jane's Military Communications 2009-2010

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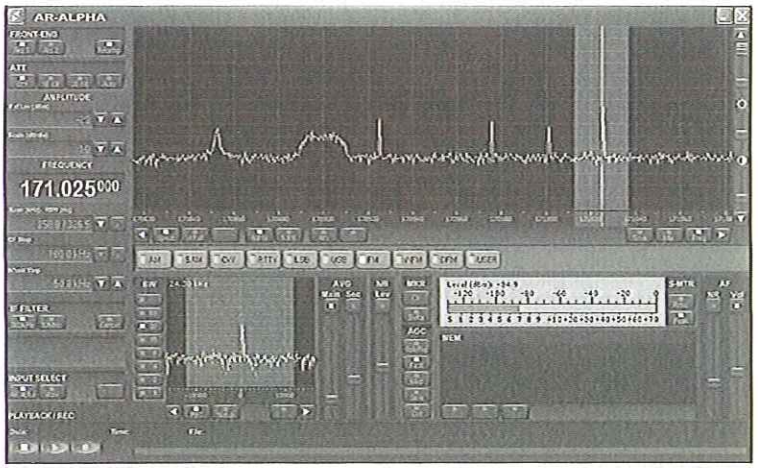
Intelligence and Insight You Can Trust

# A PERFECT SPECTRUM MONITORING AND I/Q DATA RECODING SOLUTION


Photo shows the AR-ALPH 10kHz-3.3GHz Communications Receiver

An AOR receiver provides a cost effective way to meet your signal intelligence or electronics warfare monitoring requirements. An IF bandwidth of AOR receivers enables high speed I/Q RECORDG directly or indirectly through AR-I/Q streaming converter to hard-disk drive of any Dual-Core class PCs operating under Windows XP or Vista




Screenshot of AR-IQ control software

- Up to 2MHz of instantaneous bandwidth can be recorded for later playback and evaluation.
- Any Dual-Core class PCs operating under Windows XP or Vista can be platform of AR- IQ control software.
- Perform unattended data logging for hours, days or weeks (depending on the storage capacity) for later analysis.
- Spectrum display, Multi-color Waterfall, Averaging functions to support signal evaluation and analysis.
- High recovered audio quality. No deterioration on recorded data
- Extremely ease of operation. No training required

## COMPATIBLE AOR Products

**AR-ALPHA**
**AR-ONE ***
**SR2200 ***
**AR8600MK2 ***

Models with an asterisk (*) requires AR-IQ digital streaming converter.
Please consult us for discontinued models.

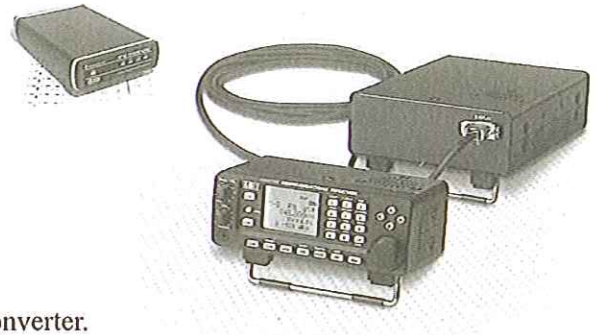
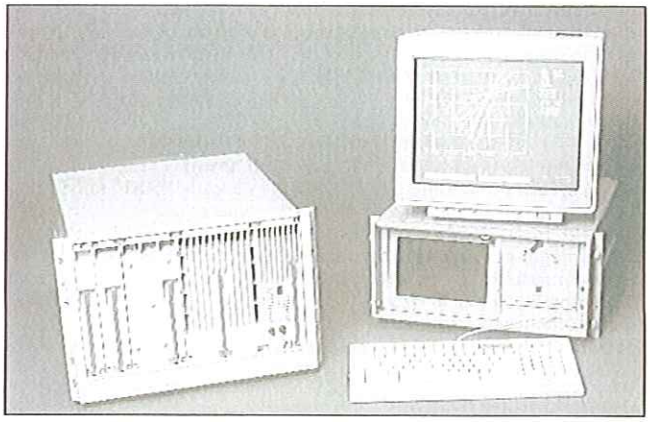


Photo shows AR-ONE receiver (front) and AR-IQ digital streaming converter (back)

AOR®

**www.aorja.com** **Tokyo, Japan**
**www.aorusa.com** **Torrance, California**
**www.aoruk.com** **Derbyshire, UK**
**Email: mail@aorja.com**



*Smart Guard DF and fixing subsystem* 0510577

are obtained through an interferometric measurement. In addition to DOA, frequency value and signal strength are measured for each specific channel.

An interface with a navigation system provides the actual position of the platform in such a way that for each specific emission a set of data is stored. This contains DOA, frequency value, signal strength and platform position.

The fixing of a specific communication emission is performed by a dedicated computer and associated software algorithms by using the DOA and platform position data of a specific channel. At least two significant DOA measurements are required for a fixing computation.

In the Smart Guard configuration, two operators are required, one to control the basic ESM system and one dedicated to fixing operations. A ground-based retrieval and analysis system is available as an option.

Integration of the Smart Guard COMINT system with the ELT/888 ELINT system to achieve fusion of ELINT and COMINT data makes it possible to monitor the full electromagnetic environment and to identify and locate all enemy weapon systems.

Later generation systems (internally dubbed the EW WAKE family) are based on a wideband digital interceptor and direction finding receivers, an improved DOA algorithm based on vector correlative interferometry, and a user friendly HMI, and consider newer military communications as well as typical communication signals for homeland security applications.

**Status**
In service in 1993.

**Contractor**
Elettronica SpA, Rome.

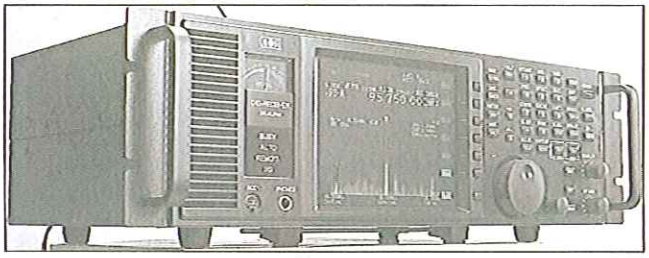
# Japan

## AR-ALPHA software-defined multimode communications receiver

**Description**
The AR-ALPHA is a software-defined multimode, triple conversion superheterodyne communications receiver designed for users such as the military, government and intelligence agencies, coast guards, border patrol and border guards, search and rescue organisations and law enforcement agencies.

The receiver features a 6.4-inch colour screen and has a 1 GHz spectrum 1 MHz I/Q output to a PC. Other features include: 60 ch/s scanning; PAL/NTSC/SECAM reception; refresh rate of 10 times/s (for 10 MHz span at 500 Hz RBW); 2,000 memory channels (40 banks); 40 search channels; 2,000 pass frequencies; 100 select scan channels; and 1 priority channel.

**Specifications**
**Frequency range:** 10 kHz to 3.5 GHz (based on ZERO-IF and a DDS local generator)
**Reception modes:** AM, WAM, NAM, SAM, SAL, SAH, NFM, SFM, WFM, FMST, USB, LSB, CW, ISB, SBD and RZ-SSB



*AR-ALPHA receiver* (AOR) 1367171

**IF frequency**
first: 755 MHz/265 MHz
second: 10.7 MHz
**Sensitivity:** –120 dBm (CW, 200, 500 Hz); –110 dBm (AM, 6, 15, 30 kHz); –120 dBm (LSB, 3, 6, 15 Hz); –120 dBm (USB, 3, 6, 15 kHz); –120 dBm (2-ISB, 6, 15, 30 kHz); –120 dBm (FM, 6, 15, 30 kHz)
**Power requirement:** 13.8 V DC, 2A
**Operating temperature:** –10 to + 55°C
**Dimensions:** 290 x 145 x 420 mm
**Weight:** approx 7.7 kg

**Status**
Being developed in 2008.

**Contractor**
AOR Ltd, Tokyo.

## SR2000A high speed digital frequency monitor

**Description**
Designed for professional users, the SR2000A is a digital frequency monitor with a built-in high grade front end. The digitally processed IF signals of the RF unit are combined with FFT technology enabling spectrum analysis and high speed signal detection in real time. The receiver module is a triple conversion unit claimed to deliver high levels of stability over a wide temperature range, and covering 25 MHz to 3 GHz for AM/NFM/WFM//SFM/video modes of reception. In one unit, the SR2000A integrates a large colour display with a professional grade receiver, combining high grade RF technology with digital processing.

The FFT search function enables high speed signal monitoring sweeping up to 10 MHz in 0.2 seconds. Use of the built-in 5-inch TFT colour display allows monitoring of the images of received signals. Up to 40 MHz of bandwidth can be displayed in real time through Digital Signal Processing. The waterfall display function tracks signals over time and uses colours to define their strength. It is also possible to display NTSC and PAL, and FM video such as output from ISM-band wireless surveillance cameras.

The step resolution mode applies known frequency steps to specific bands (such as VHF Air).

The Band Activity 'scope' mode can be used to monitor a known channelised band. When the operating frequency range is already known (such as in amateur radio bands), the SR2000A can be used as a band scope.

Other features of the equipment include: display of up to 40 MHz of spectrum bandwidth; APCO25 decoder (optional); 1,000 memories (100 channels x 10 banks); average or peak value readings; PC control through RS-232C; and serial port or USB interfacing.

The SR2000A can use X-COMMANDER radio surveillance software. X-COMMANDER is a program available as an option, which allows the scanning of a wide frequency range at FFT speed, and a comparison of 'hits' to the user's own CSV-based database. The results can be graphically displayed, printed or stored into a CSV file.

**Specifications**
**GENERAL**
**Frequency range:** 25–3,000 MHz
**Receive modes:** AM/NFM/WFM/SFM/TV/APCO25 (optional)
**Receiver configuration:** triple conversion super heterodyne
**IF frequency:** 1st 254.3/744.3 MHz; 2nd 10.7 MHz; 3rd 455 kHz
**Sensitivity:** 25–225 MHz, NFM 0.35 µV (12 dB SINAD), AM 0.6µV (10 dB S/N), WFM 2.0 µV (12 dB SINAD); 225 MHz–1.7 GHz, NFM 0.35 µV (12 dB SINAD), AM 0.8 µV (10dB S/N), WFM 2.0 µV (12 dB SINAD); 1.7–2.7 GHz, 0.6 µV (12 dB SINAD); 2.7–3 GHz, NFM 1.5 µV (12 dB SINAD)
**IP3:** 25–225 MHz +1.0 dBm; 225 MHz–1.7 GHz +1.0 dBm; 1.7–2.7 GHz +1.0 dBm; 2.7–3 GHz +1.0dBm
**S/N:** 25–225 MHz 40 dB; 225 MHz–1.7 GHz 35 dB; 1.7–2.7 GHz 32dB; 2.7–3 GHz 30 dB
**Frequency stability:** ±1 PPM (0-50°C)
**Memory channels:** 1,000
**Search banks:** 40
**Pass channel memory:** 2,000
**Priority channel:** 1

*SR2000A monitors* (AOR) 1367172