



IC-R9500

Professional Communications Receiver



BPF UNIT
ANT UNIT

Professional communications receiver

with 0.005 to 3335MHz coverage and high performance spectrum scope

RF-A UNIT



The IC-R9500 is a high-end professional communications receiver for wideband monitoring, signal detection, spectrum analysis, recording received signals, and more.

Main features

- 0.005–3335MHz wideband coverage
- +40dBm 3rd order intercept point and 109dB dynamic range* (*At 14.1MHz)
- Multi-function high performance spectrum scope
- ± 0.05 ppm high frequency stability
- ± 3 dB* accuracy of dB μ /dB μ (emf)/dBm meter (*10 to 70dB μ signal between 100kHz to 3335MHz at 25°C)
- SSB/CW/AM mode auto tuning function
- Optional P25 digital mode reception
- Professional grade operation, functionality and build



Dual DSP units provide superb receiver

BASIC PERFORMANCE

Wideband coverage

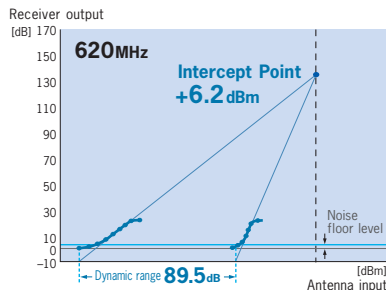
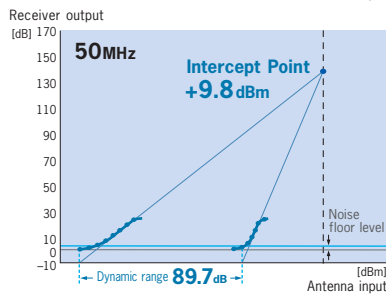
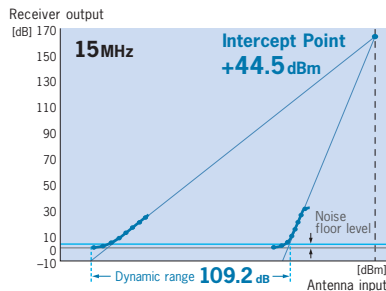
The IC-R9500 covers 0.005–3335MHz in SSB, AM, FM (WFM), CW, FSK and P25* modes. It is suitable for a wide variety of radio monitoring and listening activities.

* Optional UT-122 digital unit is required.

Superb receiver performance

The IC-R9500 achieves amazing performance by using a D-MOS FET array in the 1st mixer (below 30MHz) and an excellent IMD roofing filter.

The IC-R9500 has +40dBm IP3 and 109dB dynamic range at 14.1MHz. IP3 performance is +9.8dBm at 50MHz and +6.2dBm at 620MHz (+5dBm (typical) from 30MHz to 3335MHz).



Five roofing filters

The IC-R9500 has 5 independent roofing filters (240, 50, 15, 6 and 3kHz) for improved selectivity. In very crowded RF spectrum conditions, it is extremely important to protect against strong in-band signals. The 3kHz roofing filter provides a 130dB (approx.)* blocking dynamic range.

* At 15MHz reception, with 5kHz separation signals.



Five roofing filters

Dual DSP

The IC-R9500 incorporates two independent, 32-bit floating point DSP units, a dedicated DSP unit for receiver functions and another for the spectrum scope. By using the power of two independent DSP units, the radio can respond to operator changes in an instant.



Dual DSP units

±0.05ppm high frequency stability

The IC-R9500 uses an OCXO (Oven Control Crystal Oscillator) unit which provides ±0.05ppm frequency stability from 0°C to 50°C. The 10MHz reference frequency can either be supplied to or input from external equipment.



OCXO unit

Digital IF filter

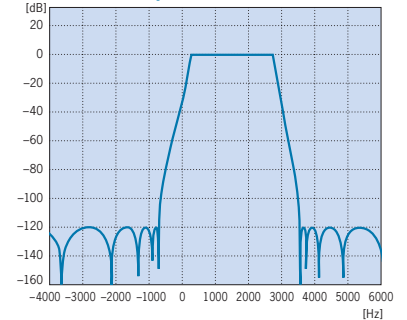
The digital IF filter* allows the operator to adjust the filter shape (sharp or soft), filter bandwidth, and center frequency characteristics. The digital twin PBT narrows and shifts the IF passband to efficiently eliminate undesired signals.

* For FM, WFM and P25 mode, the passband width is fixed.

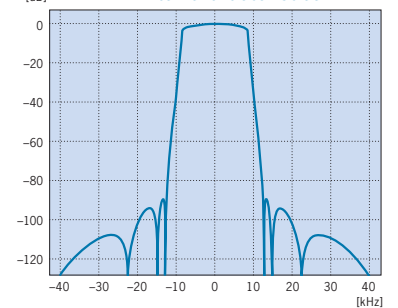


Digital twin PBT setting example

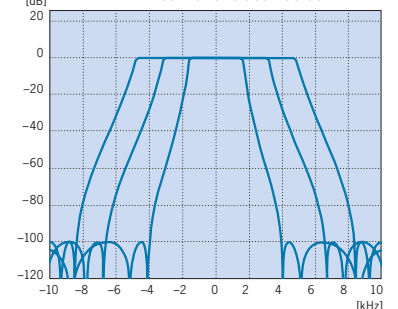
SSB sharp filter characteristics



FM filter characteristics



AM filter characteristics



performance and spectrum analysis

SPECTRUM SCOPE

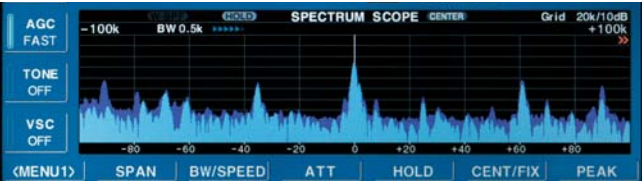
Multi function spectrum scope

Using a dedicated DSP unit improves the dynamic range of the spectrum scope. The IC-R9500 has four different spectrum modes such as normal/wide and center/fixed width. The normal spectrum scope covers a range from $\pm 2.5\text{kHz}$ to $\pm 5\text{MHz}$, while the wide band spectrum scope* observes up to $\pm 500\text{MHz}$ ($\pm 10\text{MHz}$, $\pm 25\text{MHz}$, $\pm 50\text{MHz}$, $\pm 100\text{MHz}$ $\pm 250\text{MHz}$ and $\pm 500\text{MHz}$ selectable). When using the

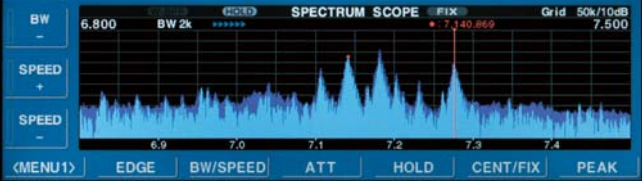
normal spectrum scope, the digital scope's filter width can vary from 200Hz to 20kHz with a variable sweep speed. The spectrum scope can also be set to use specific scope edges or to center the span on the receiving frequency. The peak search function automatically moves the display marker to the strongest signal on the scope screen. In addition to these features, the scope has 3 levels of attenuation (10dB, 20dB, 30dB).

* While using the wide band scope function, AF output is muted.

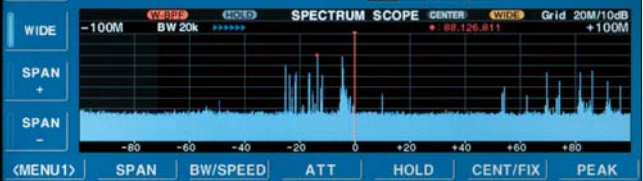
- Fixed mode ... the scope screen does not shift when you change the receiving frequency.
- Center mode ... the scope screen shifts as the receiving frequency moves. The receiving frequency is always centered on the scope screen.
- Wide band scope receives up to $\pm 500\text{MHz}$.
- Sweep speed/span/filter width setting
- Peak search function
- Peak hold function
- Attenuator
- Mini scope function



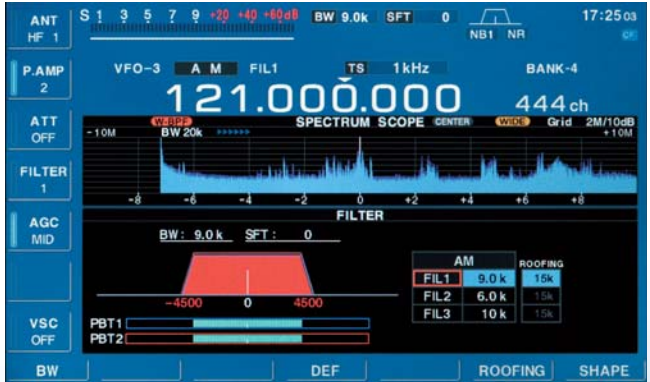
Center mode setting example



Fix mode setting example



Wide band scope example ($\pm 100\text{MHz}$)



Mini scope function example



Monitor and connection cab

ations allowing efficient radio monitoring

Multi-scan functions

Numerous scanning functions to search for desired stations are available to make operation easier. The IC-R9500 scans 40 channels per second in memory scan mode.

- Memory scan
- Program scan
- Fine program scan
- ΔF scan/ ΔF fine scan
- Priority scan
- Selected mode memory scan
- Selected memory scan
- Auto memory write scan
- Tone scan

Voice synthesizer

The built-in synthesizer announces the receiving frequency, mode and signal strength in English.

USB connector

The IC-R9500 has a USB connector for connecting external USB memory or other USB devices. Received audio and the receiver configuration files can be imported and exported to a PC. Firmware upgrades are also possible via USB memory.

Various receive assist functions*1

- SSB/CW/AM mode auto tuning function
- AFC function compensates for frequency shifts (FM/WFM mode only)
- Preamp and attenuator
- 1/4 tuning step function and dial click function
- CW-R (reverse) mode
- APF (Audio Peak Filter)
- AGC (Automatic Gain Control)
- VSC (Voice Squelch Control)
- Input overload protection (HF bands only)

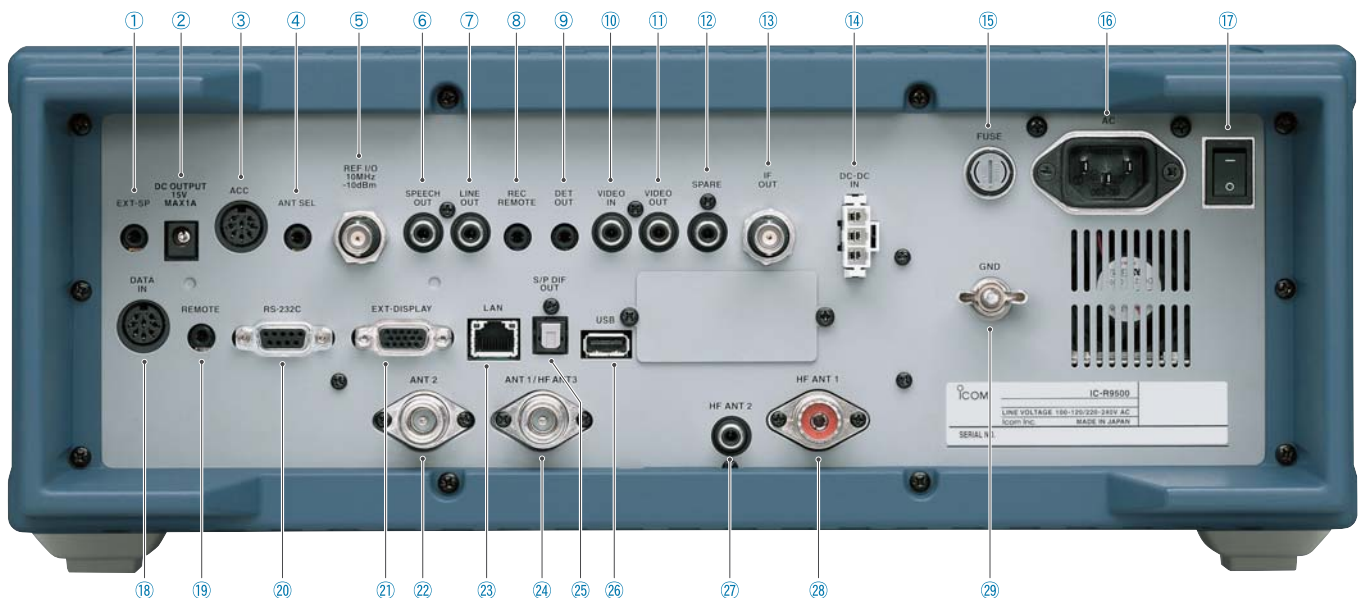
- Optional P25 digital mode reception
- Optional CI-V interface and RS-232C for PC remote control
- Analog TV tuner (NTSC/PAL/SECAM)*2

*1 Some functions are not available depending on operating mode or band.

*2 Except USA version

Additional outstanding features

- 4 antenna connectors: an SO-239 type, a phono (RCA) connector and two type-N connectors
- S/P DIF output jack
- Video input/output
- Clock function with daily timer and sleep timer
- CTCSS and DTCS tone squelch
- Simplified frequency calibration using WWV or WWVH
- Dial lock function
- Panel lock function
- Adjustable tuning step
- Dimmer function
- Monitor function



- ① External Speaker Jack
- ② External DC Output Jack (15.0V)
- ③ ACC Socket
- ④ Antenna Selector Jack
- ⑤ Reference Frequency In/Out Terminal
- ⑥ Speech Output Jack
- ⑦ Line Output Jack
- ⑧ Recorder Remote Jack

- ⑨ Detector Output Jack
- ⑩ Video Input Jack
- ⑪ Video Output Jack
- ⑫ Spare Jack
- ⑬ IF Output Jack
- ⑭ DC-DC Power Socket
- ⑮ Fuse Holder
- ⑯ AC Power Socket

- ⑰ Main Power Switch
- ⑱ Data Input Socket
- ⑲ CI-V Remote Control Jack
- ⑳ RS-232C Connector
- ㉑ External Display Connector
- ㉒ Antenna Connector 2
- ㉓ Ethernet Connector

- ㉔ Antenna Connector 1/
HF Antenna Connector 3
- ㉕ S/P DIF Output Terminal
- ㉖ USB Connector
- ㉗ HF Antenna Connector 2
- ㉘ HF Antenna Connector 1
- ㉙ Ground Terminal

SPECIFICATIONS

GENERAL

Frequency coverage (Unit: MHz)	0.005–3335.000000* * Cellular bands are blocked in the U.S.A. version.
France version	0.005 – 29.999999 50.200 – 51.200000 87.500 – 108.000000 144.000 – 146.000000 430.000 – 440.000000 1240.000 – 1300.000000
Mode	USB, LSB, CW, FSK, AM, FM, WFM, P25* * Optional UT-122 required.
Number of memory channels	1220 (1000 regular, 100 auto memory write channels, 100 memory scan skip and 20 scan edges)
Antenna connectors	SO-239 (50Ω for HF), Phono [RCA] (500Ω for HF), Type-N × 2 (50Ω one each for 30–1149.999999MHz, 1150–3335MHz)
Temperature range	0°C to +50°C; +32°F to +122°F
Frequency stability	Less than ±0.05ppm (at 25°C) after warm up (5 minutes)
Temperature fluctuation	Less than ±0.05ppm (0°C to +50°C)
Frequency resolution	1Hz
Power supply requirement	100V/120V/230V/240V AC
Power consumption (Representative value)	Stand-by Less than 100VA Max. audio Less than 100VA
Dimensions (W×H×D) (projections not included)	424 × 149 × 340 mm; 16 ¹¹ / ₁₆ × 5 ⁷ / ₁₆ × 13 ¹³ / ₁₆ in
Weight	20kg; 44.1lb (approx.)

Supplied accessories

- AC power cable
- Carrying handles
- Spare fuses
- ACC plugs
- RCA plugs
- DC power plug
- Speaker plugs

RECEIVER

Intermediate frequencies	HF 58.7MHz (1st)/10.7MHz (2nd)/48kHz (3rd) VHF/UHF 278.7MHz or 778.7MHz (1st)/ 58.7MHz (2nd)/10.7MHz (3rd)/48kHz (4th)																																								
Sensitivity	<table border="1"> <thead> <tr> <th></th> <th>SSB, CW, FSK</th> <th>AM</th> <th>FM</th> <th>FM50k</th> <th>WFM</th> </tr> </thead> <tbody> <tr> <td>0.100 – 1.799MHz*¹</td> <td>0.5μV</td> <td>6.3μV</td> <td>–</td> <td>–</td> <td>–</td> </tr> <tr> <td>1.800 – 29.999MHz*¹</td> <td>0.2μV</td> <td>2.5μV</td> <td>0.5μV*³</td> <td>0.71μV*³</td> <td>–</td> </tr> <tr> <td>30.0–2499.999MHz*²</td> <td>0.32μV</td> <td>3.5μV</td> <td>0.5μV</td> <td>0.71μV</td> <td>1.4μV</td> </tr> <tr> <td>2500–2999.999MHz*²</td> <td>0.32μV</td> <td>3.5μV</td> <td>0.5μV</td> <td>0.71μV</td> <td>1.4μV</td> </tr> <tr> <td>3000–3335.000MHz*²</td> <td>1.0μV</td> <td>11μV</td> <td>1.6μV</td> <td>2.2μV</td> <td>4.5μV</td> </tr> </tbody> </table> <p>*¹ Preamp1 ON *² Preamp ON *³ 28–29.999MHz SSB, FSK BW=2.4kHz, CW BW=0.5kHz, AM BW=6.0kHz at 10dB S/N, FM BW=15kHz, FM50k BW=50kHz, WFM BW=180kHz at 12dB SINAD</p>						SSB, CW, FSK	AM	FM	FM50k	WFM	0.100 – 1.799MHz* ¹	0.5μV	6.3μV	–	–	–	1.800 – 29.999MHz* ¹	0.2μV	2.5μV	0.5μV* ³	0.71μV* ³	–	30.0–2499.999MHz* ²	0.32μV	3.5μV	0.5μV	0.71μV	1.4μV	2500–2999.999MHz* ²	0.32μV	3.5μV	0.5μV	0.71μV	1.4μV	3000–3335.000MHz* ²	1.0μV	11μV	1.6μV	2.2μV	4.5μV
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AF output power	More than 2.6W with an 8Ω load																																								

All stated specifications are subject to change without notice or obligation.

OPTIONS

CT-17

CI-V LEVEL CONVERTER

For remote receiver control using a PC with an RS-232C.



UT-122

P25 DIGITAL UNIT

Provides APCO P25 digital mode reception.



SP-20

EXTERNAL SPEAKER

4 audio filters; headphone jack; can connect to 2 receivers. Input impedance: 8Ω Max. Input power: 5W



• All screen images are simulated.

• The LCD display may have cosmetic imperfections that appear as small or dark spots. This is not a malfunction or defect, but a normal characteristic of LCD displays.

• If re-exporting this product, it is your responsibility to check you are in compliance with the export regulations of your country or the country you are exporting to. Export regulations can be highly restrictive in relation to some of the technology implemented in this product. Your failure to comply with export regulations may subject you to fines or penalties. Please consult with the relevant Government Department in your country.

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