



NEW PRODUCT INFORMATION

HF/VHF/UHF TRANSCEIVER

IC-9100



Icom proudly announces the debut of the all-round transceiver, IC-9100, which fully covers the HF, 50MHz, 144MHz, 430/440MHz and 1200MHz ham bands. Not only SSB, CW, AM and FM modes, but the IC-9100 offers you a variety of operating modes and styles such as dual band simultaneous reception, satellite mode operation and RTTY decode on the display. By installing the optional UT-121, the IC-9100 provides D-STAR (Digital Smart Technology for Amateur Radio) DV (Digital voice) mode operation above the 28MHz band. The D-STAR DV mode allows you simplex, repeater, the Internet linking between repeaters, operation with low speed data messaging, GPS position reporting and other data communications capability. The combination of IF DSP and the double conversion system provides superior specifications comparable to our high grade HF/50MHz transceivers. When used with the optional FL-430 or FL-431 1st IF filters, narrow mode signals are protected from adjacent inband signals. The 3kHz first IF filter is especially effective in the CW and SSB modes.*

** Optional UX-9100 1200MHz band unit is required.*

MAJOR SELLING POINTS

- Fully covers HF, 50MHz, 144MHz, 430/440MHz, 1200MHz* ham bands
- Satellite mode operation
- D-STAR DV mode (with optional UT-121)
- Simultaneous receive on two different bands
(HF/50MHz + VHF/UHF, VHF+UHF, 430/440MHz + 1200MHz*)
- Optional 3kHz and 6kHz first IF filters for the HF/50MHz band
- Built-in band scope
- Built-in automatic antenna tuner for HF/50MHz band

** Optional UX-9100 1200MHz band unit is required.*

FEATURES – Multiple-band, Multiple-mode

HF to 1200MHz multi-band in one transceiver

The IC-9100 fully covers the HF/50, 144, 430/440 amateur bands in multiple modes. By installing the optional UX-9100 1200MHz band unit, you can be operational on the 1200MHz band immediately.



UX-9100, 1200MHz band unit

Independent dual receivers

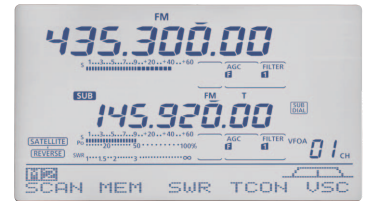
The IC-9100 has two independent receivers in one radio and receives two different bands simultaneously (See the right table for available main and sub band combinations). In addition, the main and sub-band audio can be controlled with independent volume and squelch knobs, and received audio can be heard separately when external speakers are connected.

Sub band \ Main band	HF/50MHz band	144MHz band	430/440MHz band	1200MHz band
HF/50MHz band	–	–	✓	✓*1
144MHz band	✓	–	✓	✓*1
430/440MHz band	✓	✓	–	✓*1
1200MHz band	✓*1	✓*1	✓*1	–

*1 With optional UX-9100.

Satellite mode operation

The satellite mode synchronizes the uplink (transmitting) and downlink (receiving) frequencies, and tracks the frequencies in the same tuning step. This function matches both normal and reverse mode satellites. Compensation of the Doppler effect can be performed easily. 20 alphanumeric satellite memory channels store frequencies, mode and tone settings for quick set-up.



Satellite mode display

Optional D-STAR DV mode (Digital Smart Technology for Amateur Radio)

The optional UT-121 provides D-STAR DV mode digital voice and low speed data communication. Linking of D-STAR repeaters over the Internet allows you to communicate virtually anywhere. In addition to 144MHz, 430/440MHz and 1200MHz band, the D-STAR DV mode can be used in 28MHz and 50MHz band simplex mode.

- D-STAR DR mode operation makes it easy to access D-STAR repeaters
- GPS position reporting functions (External GPS receiver can be connected via data 1 connector. Also, position data can be entered manually.)
- One-touch reply function
- Digital call sign squelch
- Received call sign record
- Automatic received message display



UT-121, D-STAR UNIT



Received GPS data indication example

RTTY demodulator and decoder

The built-in RTTY demodulator and decoder allow you to instantly read an RTTY message on the display. No external units or PC required. The built-in tuning indicator visually helps in critical tuning.

Ample CW functions

All of the following CW capabilities are included in the IC-9100:

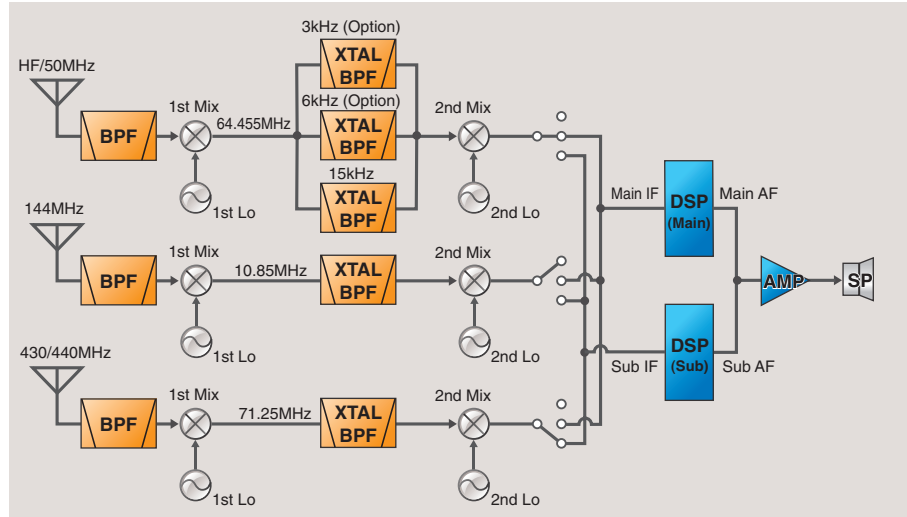
- 4 channels of keyer with 70 characters of transmit memory per channel
- Multi-function electronic keyer with adjustable keying speed from 6-48 wpm, dot-dash ratio from 1:1:2.8 to 1:1:4.5 and paddle polarity
- Bug keyer and full break-in function

FEATURES – Basic technologies that support the IC-9100

Double conversion superheterodyne

Much like the technology in Icom's high-end HF transceivers, Icom has used a double conversion superheterodyne system* and an image rejection mixer in the IC-9100. The IC-9100 has dedicated receiver circuits from the antenna connector to the 2nd image rejection mixer for each band, and this improves inband IMD characteristics by simplifying the electronic circuitry.

* A triple conversion system is used for the 1200MHz band.

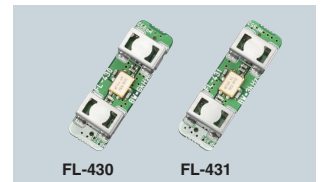


+30dBm class third-order intercept point

Using receiver design techniques introduced in Icom's highest grade HF transceivers, the IC-9100 has an IP3 of +30dBm (typ.) in the HF bands. In the VHF/UHF bands, the IC-9100 also provides improved IP3 performance over the previous models.

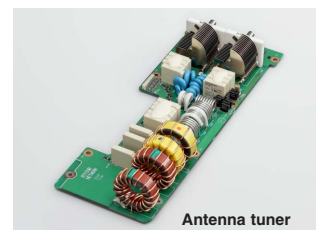
Three first IF filters (3/6/15kHz) for HF/50MHz band

The IC-9100 comes with a built-in 15kHz 1st IF filter and can accept up to two optional filters (3kHz FL-431 and 6kHz FL-430). By changing the first IF filter width according to the operating mode, the desired signal is protected from adjacent inband signals at the later stages. The 3kHz first IF filter is especially effective in the CW and SSB modes.



Built-in Antenna Tuner for HF/50MHz band

The internal antenna tuner automatically tunes for low SWR in the HF and 50MHz bands. Once you transmit on a frequency, the tuner can instantly retune the frequency using its built-in memory.



Antenna connectors

Two antenna connectors for HF and 50MHz bands, with an automatic antenna selector, and one each for 144MHz, 430/440MHz and 1200MHz* are included in the IC-9100.

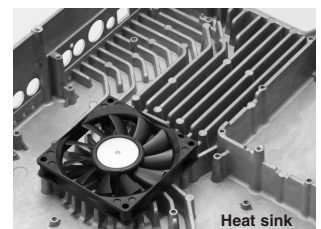
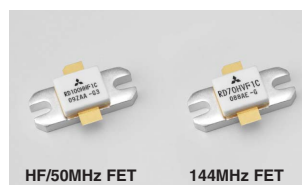
* With optional UX-9100.

High frequency stability

A high stability TCXO crystal oscillator provides ± 0.5 ppm of high frequency stability over a wide temperature range (0°C to +50°C). This allows for a long steady operating time in the RTTY or SSTV modes.

HF/50MHz, 144MHz 100W, 430/440MHz 75W

The IC-9100 uses high efficiency power amplifiers, and large heat sink, providing stable output power, even during long periods of operation.



FEATURES – DSP features and functions

32-bit floating point DSP & 24-bit AD/DA converters

The heart of the IC-9100 is the proven combination of the 32-bit floating point DSP and 24-bit AD/DA converters. This powerful combination supports many digital processing features such as modulation/demodulation, IF filter, twin PBT, AGC, noise blanker, noise reduction, manual and auto notch filters, speech compressor, RTTY demodulator/decoder functions.



<DSP unit for the main band>
ADSP-21369
Internal clock speed: 333MHz
32-bit floating point DSP
Max. performance: 2000MFLOPS



<DSP unit for the sub band>
ADSP-21375
Internal clock speed: 266MHz
32-bit floating point DSP
Max. performance: 1600MFLOPS

AGC loop management

Digital IF filters, manual notch filter and other digital functions are incorporated in the AGC loop management controlled by the DSP unit. The AGC effectively works for the desired signal and rejects blocking by strong adjacent signals out of the filter passband. The AGC time constant pre-sets (slow, medium and fast) give the flexibility and speed needed for working pile-ups.

Digital IF filter

The IC-9100 DSP allows you to “build your own” digital IF filter. You can quickly choose bandwidth, shape factor, and center frequency, so that you can work that rare DX station. Three filter memories allow you to change filter settings instantly, a great help during contesting or other tough conditions.

Digital twin PBT and IF shift

After “building your own” digital IF filter, you can use the digital twin Passband Tuning (PBT) to shift and narrow the IF passband until the interference is gone and you can clearly hear that weak signal.

Noise reduction

The 16-step variable noise reduction can significantly enhance the receiver's signal-to-noise ratio, giving you a clean, clear audio signal that may make the difference between making the contact or not.

Noise Blanker

The digital noise blanker reduces interference from pulse-type noise such as engine ignition. The noise blanker provides significant reduction of pulse-type noise. The noise blanker allows you to change the threshold level as well as blank duration parameter and attenuation level.

Manual notch filter and auto notch filter

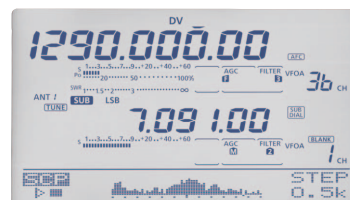
The manual notch filter controlled by the DSP has extremely sharp characteristics and provides more than 70dB of attenuation. The notch filter width is selectable from 2 types, allowing you to select the suitable filter width for the operating mode and band. It eliminates persistent beat tones without affecting the AGC loop function. In addition, the automatic notch filter tracks and eliminates two or more interfering signals, such as beat signals and carriers or tones from digital signals.

FEATURES – Sophisticated operation with expansion capabilities

Large, Multi-function LCD

The large multi-function LCD displays frequency, 9-character channel name, multi functional meter (includes S-meter, RF output, SWR and ALC level) for both the main and sub bands vertically. The dot-matrix portion of the LCD shows the following items:

- Channel name • Function key assignment • Band Scope • RTTY decoder screen • Memory keyer contents • Graphical SWR scale • D-STAR call sign, message, DR list • GPS position information.



Band scope example

Up to 424 memory channels*

Each band (HF/50MHz, 144MHz, 430/440MHz and 1200MHz*) has a total of 99 memory channels for storing frequencies, mode and other information. The IC-9100 has 6 scan edge channels for programmed memory, and a call channel for each band.

* With optional UX-9100.

FEATURES – Sophisticated operation with expansion capabilities

USB connector for PC control

The IC-9100 has a standard type B USB connector and can be connected to a PC. Modulation input, audio output, RTTY demodulator output and CI-V command can be controlled via the USB cable. Also, the conventional CI-V remote control jack is built in to the IC-9100.

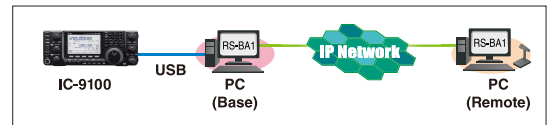


Optional CS-9100 programming software

When used with the optional CS-9100 programming software, memory channels, band edges, repeater list for DR mode, D-STAR callsign and GPS memory channels can be easily edited with a PC. A USB cable is required for PC connection.

Optional RS-BA1 IP remote control software

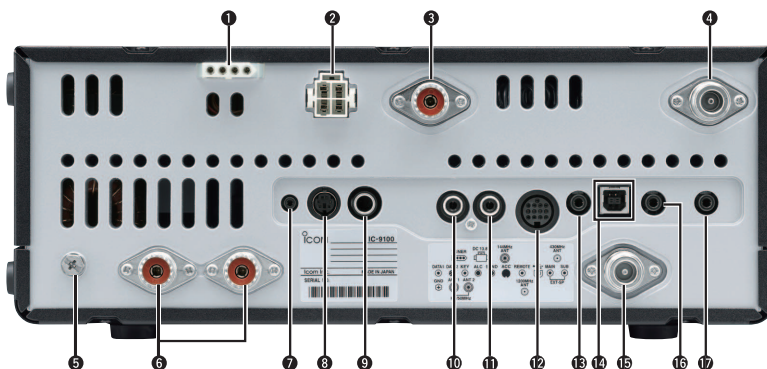
The optional RS-BA1 allows you to use the IC-9100 from another room using your home network, or even from a remote location over the Internet. The RS-BA1 has low voice latency.



Other outstanding features

- Built-in voice synthesizer announces operating frequency, mode and S-meter level
- User programmable band edge beep (Can be disabled)
- VSC (Voice Squelch Control) function
- AFC function (FM/DV mode)
- RF speech compressor
- Microphone equalizer and adjustable transmit bandwidth
- Two preamplifier types for HF/50MHz bands: Preamp 1: Increases low level signal improving intermodulation characteristics, Preamp 2: High gain preamplifier
- 20dB built-in attenuator
- CTCSS and DTCS tone encoder and decoder
- Triple band stacking register
- Quick split function and frequency lock function
- RIT and Δ Tx variable up to ± 9.999 kHz
- Audio equalizer function
- SSB/CW synchronous tuning automatically shifts the carrier point when switching between CW and LSB/USB modes
- 1Hz pitch tuning and display
- Program scan, memory scan, select memory scan, mode select scan and Δ f scan
- Automatic tuning steps
- 9600bps data socket
- AH-4 control circuit
- Automatic repeater function* and one-touch repeater function (* USA and KOR versions only)

REAR PANEL



- 1 Tuner Socket
- 2 DC Power Socket
- 3 144MHz Antenna Connector
- 4 430/440MHz Antenna Connector
- 5 Ground Terminal
- 6 HF/50MHz Antenna Connectors
- 7 Data1 Jack
- 8 Data2 Jack
- 9 Key Jack
- 10 ALC Input Jack
- 11 Send Control Jack
- 12 ACC Socket
- 13 CI-V Remote Control Jack
- 14 USB Connector
- 15 1200MHz Antenna Connector (With optional UX-9100)
- 16 External Speaker Jack (Main)
- 17 External Speaker Jack (Sub-band)

SPECIFICATIONS

Specifications described below are target values. They may be subject to change.

■ GENERAL

• Frequency range*1	:	
USA version (#02)		
Rx	0.030–60.000MHz*2	136.000–174.000MHz*2
	420.000–480.000MHz*2	1240.000–1320.000MHz*2*3
Tx	1.800– 1.999MHz	3.500– 3.999MHz
	5.255– 5.405MHz*2	7.000– 7.300MHz
	10.100–10.150MHz	14.000–14.350MHz
	18.068–18.168MHz	21.000–21.450MHz
	24.890–24.990MHz	28.000–29.700MHz
	50.000–54.000MHz	144.000–148.000MHz
	430.000–450.000MHz	1240.000–1300.000MHz*3
Euro version (#03), EUR-1 version (#04)		
Rx	0.030–60.000MHz*2	144.000–146.000MHz
	430.000–440.000MHz	1240.000–1300.000MHz*3
Tx	1.810– 1.999MHz	3.500– 3.800MHz
	7.000– 7.100MHz (EUR version)	
	7.000– 7.200MHz (EUR-1 version)	
	10.100–10.150MHz	14.000–14.350MHz
	18.068–18.168MHz	21.000–21.450MHz
	24.890–24.990MHz	28.000–29.700MHz
	50.000–52.000MHz	144.000–146.000MHz
	430.000–440.000MHz	1240.000–1300.000MHz*3

*1 Frequency coverage depends on version.

*2 Some frequency bands are not guaranteed. *3 With optional UX-9100.

• Mode	:	USB, LSB, CW, RTTY (FSK), FM, AM*4, DV (with UT-121)
*4 Transmit HF/50MHz only. Cannot receive on 1200MHz band.		
• No. of memory channels	:	396 Ch*5 (99 Ch for each HF/50, 144, 430/440, 1200MHz band) 4 Call Ch*5 (1 Ch for each band) 24 Scan edges*5 (6 Ch for each band) 20 satellite memories and 26 GPS memories

*5 With optional UX-9100.

• Power supply requirement	:	13.8V DC \pm 15 %
• Operating temp. range	:	0°C to +50°C; +32°F to +122°F
• Frequency stability	:	Less than \pm 0.5ppm (0°C to +50°C)
• Current drain (at 13.8V DC)	:	
Transmit	Max. power	24A
		9.0A (1200MHz with UX-9100)
Receive	Max. audio	4.5A
		5.5A (1200MHz with UX-9100)
• Antenna connector	:	
HF/50MHz		SO-239 (50 Ω) \times 2
144MHz		SO-239 (50 Ω)
430/440MHz		Type-N (50 Ω)
1200MHz (With UX-9100)		Type-N (50 Ω)
• Dimensions (W \times H \times D)	:	315 \times 116 \times 343 mm (projections not included)
• Weight (approx.)	:	11kg; 24.3lb
UX-9100		950g; 2.1lb

■ TRANSMITTER

• Modulation system	:	
SSB		Digital PSN modulation
AM		Digital Low power modulation
FM		Digital Phase modulation
DV (With UT-121)		GMSK Digital Phase modulation
• Output power	:	
SSB, CW, RTTY, FM, DV		
HF/50MHz, 144MHz		2–100W
430/440MHz		2–75W
1200MHz (With UX-9100)		1–10W
AM HF/50MHz		2–30W

• Spurious emissions (Unwanted emission) :		
1.8–29.995MHz		Less than –50dB
50, 144MHz		Less than –63dB
430/440MHz		Less than –61.8dB
1200MHz (With UX-9100)		Less than –53dB
• Carrier suppression	:	More than 40dB
• Unwanted sideband	:	More than 55dB
1200MHz (With UX-9100)		More than 40dB
• Microphone connector	:	8-pin connector (600 Ω)

■ RECEIVER

• Intermediate frequencies	:	
HF/50MHz		64.455MHz, 36kHz
144MHz		10.850MHz, 36kHz
430/440MHz		71.250MHz, 36kHz
1200MHz (With UX-9100)		243.950MHz, 10.950MHz, 36kHz
• Sensitivity	:	
SSB, CW (10dB S/N)		
1.8–29.995MHz		0.16 μ V*6
50MHz		0.13 μ V*7
144, 430/440MHz		0.11 μ V
1200MHz (With UX-9100)		0.11 μ V
AM (10dB S/N)		
0.5–1.799MHz		12.6 μ V*6
1.8–29.995MHz		2.0 μ V*6
50MHz		1.6 μ V*7
144, 430/440MHz		1.4 μ V
FM (12dB SINAD)		
28–29.7MHz		0.50 μ V*6
50MHz		0.32 μ V*7
144, 430/440MHz		0.18 μ V
1200MHz (With UX-9100)		0.18 μ V
DV (1% BER)		
28–29.7MHz		1.0 μ V*6
50MHz		0.63 μ V*7
144, 430/440MHz		0.35 μ V
1200MHz (With UX-9100)		0.35 μ V
*6 Preamp 1 ON *7 Preamp 2 ON		
• Selectivity	:	
SSB		More than 2.4kHz/–6dB
(BW: 2.4kHz, sharp)		Less than 3.4kHz/–40dB
CW		More than 500Hz/–6dB
(BW: 500Hz, sharp)		Less than 700Hz/–40dB
RTTY (BW: 350Hz sharp)		More than 500Hz/–6dB
		Less than 800Hz/–40dB
AM (BW: 6kHz)		More than 6.0kHz/–6dB
		Less than 10.0kHz/–40dB
FM (BW: 15kHz)		More than 12.0kHz/–6dB
		Less than 22.0kHz/–40dB
DV (12.5kHz channel spacing)		More than –50dB
1200MHz (With UX-9100)		
SSB, CW		More than 2.3kHz/–6dB
FM		More than 15.0kHz/–6dB

• Spurious and image rejection ratio :		
HF/50MHz		More than 70dB*8
144, 430/440MHz		More than 60dB
1200MHz (With UX-9100)		More than 50dB
*8 Except IF through points on 50MHz band.		
• Audio output power	:	More than 2.0W at 10% distortion (at 13.8V DC)
• EXT SP connector	:	2-conductor 3.5 (d) mm (1/4") /8 Ω

OPTIONS

■ HAND MICROPHONE

HM-36 : Same as supplied with the radio.

■ DESKTOP MICROPHONE

SM-30 : Compact, lightweight electret microphone with low cut function. *(New)*

SM-50 : Dynamic microphone. Includes [UP]/[DOWN] switches and low cut function.

■ EXTERNAL SPEAKERS

SP-21 : 132×111×287 mm (W×H×D, projections not included) Max. input 5W, 8Ω impedance

SP-23 : 145×111×282.5 mm (W×H×D, projections not included) Max. input 5W, 8Ω impedance

■ DC POWER SUPPLY

PS-126 : Output: 13.8V DC, 25A max. 94×111×287 mm (W×H×D, projections not included)

■ HF+50 MHz AUTOMATIC ANTENNA TUNER

AH-4 : Covers 3.5–50 MHz with a 7 m (23 ft) or longer wire antenna.

■ ANTENNA ELEMENT

AH-2b : 2.5m mobile antenna element for use with AH-4. 7–30 MHz can be tuned.

■ 1200MHz BAND UNIT

UX-9100 : Allows you additional 1200MHz band operation. *(New)*

■ D-STAR UNIT

UT-121 : Allows you additional D-STAR DV mode operation.

■ 1st IF FILTERS

FL-430 : 6kHz 1st IF filter for HF/50MHz band. *(New)*

FL-431 : 3kHz 1st IF filter for HF/50MHz band. *(New)*

■ CI-V LEVEL CONVERTER

CT-17 : For remote transceiver control from a PC equipped with an RS-232C port.

■ HF+50 MHz 1 kW HF LINEAR AMPLIFIER

IC-PW1/EURO : Covers all HF and 50 MHz bands, provides 1 kW output. Automatic antenna tuner and compact detachable controller are standard. 2 exciter inputs are available.

■ CABLE ADAPTERS

OPC-599 : Converts 13-pin ACC connector to 7-pin + 8-pin ACC connector for connection with IC-PW1/EURO.

■ WEATHERPROOF PREAMPLIFIERS

AG-25 : 144MHz band mast-mounting preamplifier.

AG-35 : 430/440MHz band mast-mounting preamplifier.

■ CLONING SOFTWARE

CS-9100 : Cloning software for IC-9100. Allows memory channels and other settings from a PC. A USB cable is required for connection with a PC. *(New)*

■ DATA COMMUNICATION CABLE

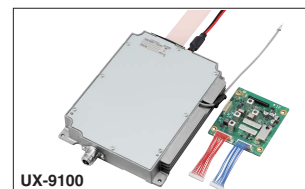
OPC-1529R : Data communication cable for D-STAR DV mode or GPS receiver connection. (Data 1 Jack (IC-9100) to RS-232C)

■ IP REMOTE CONTROL SOFTWARE

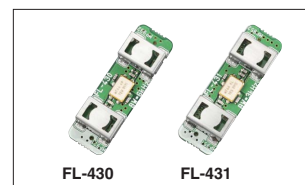
RS-BA1 : For IP remote transceiver control from a PC. *(New)*



SM-30

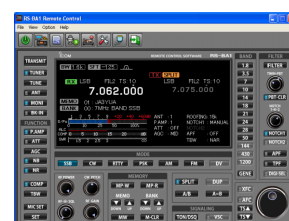


UX-9100



FL-430

FL-431



RS-BA1 screen example

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