

The IC-7610 achieves even better RMDR characteristics and dual watch.

Translated from [Icom Japan IC-7610 Page](#). Compiled by Scott Wright KOMD. 14 Sept. 2017.

RF direct sampling to the next stage.

Excellent RMDR: 110 dB realized.

Dual watch function that can receive simultaneously in different bands and different modes.

The DIGI-SEL unit that eliminates powerful unnecessary radio waves is mounted on the main and sub of the receiving section.

Equipped with high-speed real-time spectrum scope and waterfall display function.

By adopting 7 inch full color touch panel, outstanding operability and visibility are realized.

Further evolved RF direct sampling method

RF direct sampling system converts RF signal directly to digital signal and performs signal processing by FPGA (Field Programmable Gate Array). As a result, there is no nonlinear distortion like that occurred in the mixer during the processing of analog signals. In addition, we carefully select the devices based on RF direct sampling which was first adopted by the IC - 7300 to optimize the program.

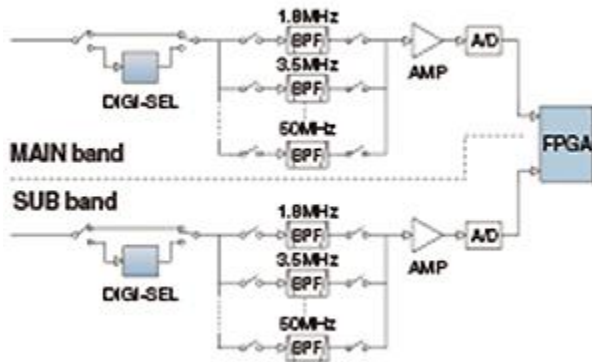
RMDR realizes amazement 110 dB * (representative value)

RMDR (Reciprocal Mixing Dynamic Range) is an index showing how much reception sensitivity deteriorates due to blocking from a strong signal in proximity. By adopting the RF direct sampling method, the IC-7610 achieves astonishment RMDR 110 dB. This is close to RMDR 116 dB of the highest peak model IC - 7851. When you operate in contests or crowded bands, you can make the target signal emerge even from the environment of super close proximity reception.

Custom order master clock oscillator

In order to achieve excellent RMDR, a clock with high purity is essential. The master clock of the IC-7610 uses a custom order VCXO (Voltage Controlled X'tal Oscillator) pursuing particularly excellent phase noise characteristics. In addition, circuit design is carried out inheriting the know-how cultivated in the design of the flagship machine IC-7851, and devices with low noise characteristics are also carefully selected for power supply circuits that generate clocks.

Independent receiver. True dual watch with different band / mode



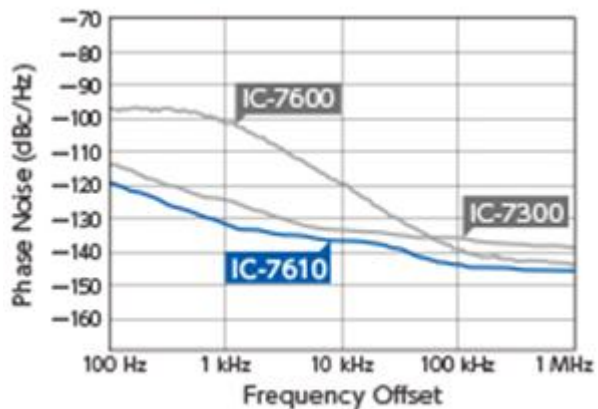
Reception block diagram

Independent BPF unit

The receiver has two separate identical receiving circuits with MAIN / SUB. Since one receiver does not affect the other receiver, simultaneous reception of two waves in different bands / modes is achieved completely with the same performance. Of course, the spectrum scope also operates dual, so you can instantaneously grasp both the MAIN / SUB band constantly changing band conditions.

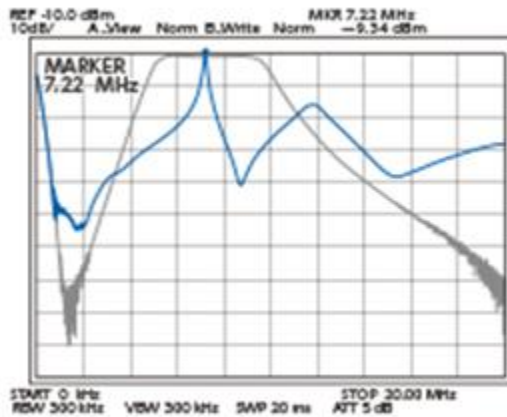
Excellent transmission phase noise characteristics

In the conventional heterodyne system, noise and distortion occur when mixing the LO and the carrier with the mixer to generate the transmission wave, but this unit generates the transmission wave directly from the DAC (Digital Analog Converter) by the DUC (Digital Up Conversion) system. Since it outputs and generates a transmission wave, it realizes excellent transmission phase noise characteristics as shown on the right, and it is possible to launch a transmission wave with extremely high purity.



DIGI-SEL on MAIN / SUB

The DIGI-SEL circuit is carried in the reception part of MAIN / SUB. DIGI - SEL is a high - frequency filter with sharp peak characteristics within the passband. By combining a band pass filter with a large amount of out-of-band attenuation and DIGI-SEL, in addition to preventing overflow of the ADC, the third order distortion component is eliminated. Especially great effect on the filtering of powerful transmitted radio waves from middle wave and short wave broadcasting stations adjoining above and below the ham band.



Built-in auto antenna tuner that supports smooth multiband operation

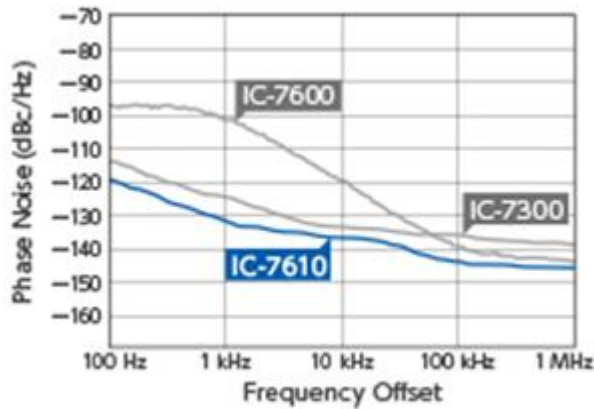
Built-in antenna tuner in the main body. Once tuning is taken, the next time you call up the matching information automatically by simply selecting that frequency, band change and multi band operation are also smooth. Moreover, even when there is no antenna which can be synchronized such as emergency, emergency communication tuner mode * which enables transmission is carried.

※ There are restrictions on transmission output etc.

New design, equipped with a speaker housing dedicated to IC-7610

Adopted a custom-made sealed speaker housing to faithfully reproduce the received signal with excellent pureness. It achieves a sharp sound quality from bass to treble. Also, instead of mounting the speaker directly to the chassis, it is mounted via an insulator (vibration proof material), and the resonance sound of the chassis is eliminated. It can be operated comfortably even for a long time rugby or contest.

Large LCD supporting touch operation pursuing ideal visibility and operability



LCD panel comparison

The IC-7610 is equipped with a 7-inch (800 × 480 pixel) wide type color liquid crystal display that supports touch operation. On the display, the information necessary for operation such as operation frequency of each function including MAIN / SUB operation frequency, each function setting / operation situation, spectrum spectrum, S meter, RTTY / PSK 31 · 63 decode message is concentratedly displayed.

Dual spectrum scope enabling advanced operation

Dual spectrum scope enabling advanced operation

※ When receiving single carrier, display dot number of 60 dB bandwidth

With cooperative processing of FPGA and CPU software, we realized overwhelming sweep speed and resolution, and a wide dynamic range of 100 dB. In addition, since you can monitor two different bands at the same time, you will be able to grasp the condition and exert a tremendous power at the contest. Dual scopes can be displayed side by side or side by side depending on the situation and needs. In addition, since waterfall display allows you to check the amplitude of the frequency spectrum in time series, weak signals that are difficult to distinguish with spectroscopy alone can be seen, so increase the possibility of communication without missing weak DX station signals I will.

Equipped with audio scope function



Example of audio scope display

FFT scope of transmission / reception sound, oscilloscope display is possible. You can visually check the modulation characteristics of the transmission wave of the remote station, the microphone compressor effect of your station, and the filter width and notch characteristics by spectrum display of the received sound. In addition, the oscilloscope can also see the keying waveform of CW. In addition, MAIN / SUB can be instantly switched when receiving.

Intuitive operation realizes smooth operation



RC-28

Combined with touch operation, equipped with multi dial that makes it easy to set various settings. When you press the dial, a menu will appear next to the dial. Touch the menu to select the item, and turn the dial to adjust the level. Access to various functions such as RF power, microphone gain, DIGI - SEL, notch etc can be performed much more quickly.

Remote encoder assisting comfortable operation RC-28

You can operate the tuning of the SUB band of the IC - 7610 conveniently by hand by USB connection of optional RC - 28. By switching the MAIN / SUB setting according to the main unit assignment to the F - 1, F - 2 button, it can operate as both MAIN / SUB main dial. As well as dual watch, it is possible to respond quickly to DX Pediton stations in split operation.

Extensible external output terminal

Output to the external display is possible with a digital method (DVI - D terminal) that does not degrade the signal. By using the external display you can operate on a larger screen. In addition, since the meter voltage output terminal is provided on the rear panel, it is also possible to connect an external analog meter.

Extensible external output terminal (cont.)

In addition, since the meter voltage output terminal is provided on the other side, it does not degrade the signal. rear panel, it is also possible to connect an external analog meter.

SD card slot convenient for voice recording / setting change

SD card slot is equipped as an interface for data storage. Recording of communication contents including transmitted sound, log of RTTY / PSK decoding, captured images of display etc can be saved on the SD card. Also, voice for voice transmission and message memories for CW / RTTY / PSK 31/63 can be saved. Furthermore, since the settings of the radio can be saved, each operator can operate it with your favorite setting just by replacing the SD card even if the operator replaces. Also, you can upgrade firmware and save settings with USB memory.

Equipped with I/Q output

Equipped with I/Q output terminal for digital output of IF signal. It is possible to utilize such as controlling / analyzing the output signal with PC *.

* It is scheduled to be installed at a later date in the firmware. Separate software etc. are required.

Improve freedom of operation; Remote operation

You can remotely operate the IC - 7610 with a PC that has installed RS - BA 1 (sold separately). You can also connect to LAN / Internet, operate from a living away from the shack, and operate a style like IC-7610 installed on a high-profile shack with high visibility from your home. In addition, since the server function is installed in the IC - 7610, it can be set and connected simply. It also supports the display of spectrum scope and waterfall (single band).

※ Procedures under the Radio Law are necessary.

Other function groups

Antenna system

BNC type RX IN/OUT terminal that can connect receive-only antenna & external BPF

CW type

CW keying waveform shaping by FPGA

Multifunction Electronic Keyer

300 to 900 Hz CW Receive Pitch Continuously Variable Function

Auto repeat function

Serial contest number automatic count up function

Contest number omission encoding function

Double key jack

Full Break In

CW autotuning

APF function that can adjust Position, Width and AF Level

Reception system

30 kHz to 60 MHz General coverage reception function
(Partial frequency band outside the amateur band is out of reception performance guarantee)
Preamplifier 1 emphasizing intermodulation characteristics and preamplifier 2 emphasizing amplification gain
Attenuator (variable from 3 dB to 45 dB in 3 dB steps)
IP + function
Tracking function
Twin peak audio filter for RTTY
RTTY / PSK demodulator & decoder
AGC time constant (FM is fixed) that can set Fast / Mid / Slow in each mode

Transmission system

TX monitor
All mode power control
VOX
Emergency communication setting frequency (4630 kHz) compatible
Equipped with BNC type transverter connector
Equipped with 121 kinds of microphone equalizer
Transmission bandwidth setting function
50 waves tone encoder standard equipment

Operating system

5 ch or 10 ch memo pad
Quick split function
Quick dual watch function
Control RF GAIN & Squelch with one knob
RIT and Δ TX that can be varied up to ± 9.999 kHz
Two clock display (JST and UTC etc.) and a timer function are installed
1 Hz pitch tuning and 1 Hz indication
Dial lock function · Panel lock function
4 stages of main dial torque variable
Two external speaker jacks
Screen saver function
Multifunction meter
(S meter, power, ALC, COMP, SWR, ID, VD, TEMP) simultaneously
Automatic TS function to automatically adjust the tuning speed
AH-4 control circuit

Main accessories

DC power cable

Hand microphone <HM-219> others



- ① [DC13.8V] (直流電源) コネクター
- ② [TUNER] コネクター
- ③ [REMOTE] ジャック
- ④ [METER] ジャック
- ⑤ [GND] 端子
- ⑥ [EXT KEYPAD] ジャック
- ⑦ [KEY] (電鍵) ジャック
- ⑧ [ACC 1] (アクセサリ 1) ソケット
[ACC 2] (アクセサリ 2) ソケット
- ⑨ [ANT 1] (アンテナ 1) コネクター
[ANT 2] (アンテナ 2) コネクター
- ⑩ [ALC] ジャック

- ⑪ [SEND] ジャック
- ⑫ [EXT-SP A] ジャック
[EXT-SP B] ジャック
- ⑬ [USB 1] ポート
- ⑭ [USB 2] (I/Q OUT) ポート
- ⑮ [EXT-DISPLAY] コネクター
- ⑯ [LAN] ポート
- ⑰ [X-VERTER] コネクター
- ⑱ [REF IN] コネクター
[RX-ANT OUT] コネクター