IF Shift

The variable bandwidth tuning (VBT) and notch circuits, when combined with the IF shift, provide higher adjacent channel selectivity, very useful under crowded conditions. The IF shift circuit is capable of shifting the IF passband toward higher (+) or lower (—) frequencies with the tuned receiver frequency totally unchanged. Hence, an unwanted signal, if present in the IF passband, may be attenuated significantly by shifting the passband in either direction.

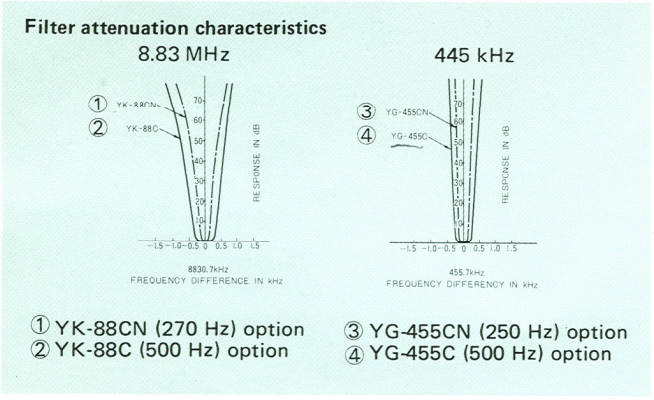
Making use of its high or low cut off passband response in SSB, the desired signal may be adjusted to the desired tone pitch. In CW, likewise, its pitch may be varied by means of a combination of the IF shift and RIT.

Various IF Filter Options

The dual-conversion receiver (8.83 MHz and 455 kHz IF stages) in the TS-830S allow a combination of IF filters to be installed, in accordance with the user's requirements. Various combinations are shown in the chart below.

By incorporating a low-frequency (455 kHz) IF, the attenuation characteristics of the entire IF section are extremely good. Furthermore, 455 kHz filters are very sharp, and either the YG-455C (500 Hz) or YG-455CN (250 Hz) filter may be installed.

Filter attenuation characteristics



① YK-88CN (270 Hz) option
② YK-88C (500 Hz) option
③ YG-455CN (250 Hz) option
④ YG-455C (500 Hz) option

Combination of IF filter

MODE SWITCH			8.83 MHz	455 kHz	Overall Pass-bandwidth	VBT
SSB			2.7 kHz	2.7 kHz	2.4 kHz	500 Hz ~ 2.4 kHz
CW	WIDE		2.7 kHz	2.7 kHz	2.4 kHz	500 Hz ~ 2.4 kHz
CW	NARROW	a	(YK-88C 500 Hz)	2.7 kHz	(500 Hz)	*
CW	NARROW	b	(YK-88CN 270 Hz)	2.7 kHz	(270 Hz)	*
CW	NARROW	c	2.7 kHz	(YG-455C 500 Hz)	(500 Hz)	*
CW	NARROW	d	2.7 kHz	(YG-455CN 250 Hz)	(250 Hz)	*
CW	NARROW	e	(YK-88C 500 Hz)	(YG-455C 500 Hz)	(500 Hz)	150 Hz ~ 500 Hz

Notes: 1. ( ) = optional filter installation.
2. * Although VBT circuit operates, optimum VBT characteristics cannot be expected due to the characteristic differences of 8.83 MHz and 455 kHz filters.
3. The optional 455 kHz filter YG-455C (500 Hz) and YG-455CN (250 Hz) have sharper selectivity, because of low-frequency characteristics.

Built-in Digital Display

A large, six-digit, fluorescent tube display is built into the TS-830S, backed up by an analog subdial. The digital display indicates the actual receive and transmit frequencies on all modes and all bands. This is achieved through a common division of the 10 MHz oscillator frequency for the PLL circuit, calibration circuit, and frequency counter. A Display Hold (DH) switch retains the display frequency while the VFO frequency is varied.

6146B Final with RF NFB

The TS-830S runs 220W PEP (SSB)/180W DC (CW) input and uses two 6146B's in the final amplifier. RF negative feedback provides optimum IMD characteristics for high-quality transmission.

More Flexibility with Optional Digital VFO

The optional VFO-230 digital VFO operates in 20 Hz steps and includes five memories. The digital VFO, memory, and transceiver-VFO frequencies are interchangeable, for optimum operating flexibility in contests, DX chasing, split-frequency operation, and other applications. The VFO-230 covers about 100 kHz above and below each 500 kHz band. It includes a built-in digital display. (The TS-830S also operates with the TS-130 Series external VFOs.)

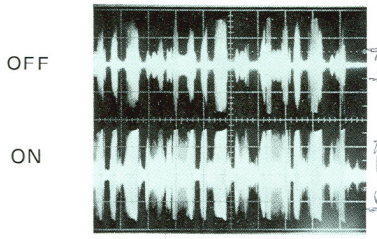
Innovative PLL System

The TS-830S utilizes a new PLL circuit which does not require a crystal element for each band. As shown in the diagram, the VCO frequency is obtained in the PLL circuit by synthesizing the VFO and CAR frequencies, the 10 MHz reference frequency supplied by the counter, and the divided frequency of 500 kHz.

Band changing is accomplished by changing the preset division ratio of the programmable divider in the PLL. This eliminates the need for a heterodyne crystal element for each operating band, resulting in simplification of circuitry, and a marked improvement in overall stability. Also, the VFO operates at the same frequency on each band. The PLL system improves the spurious characteristics during transmission and reception and makes IF shift operation and mono-dial indication available on any mode.

RF Speech Processor

The efficient RF speech processor in the TS-830S, incorporating the 455 kHz IF stages, provides added audio punch and increases average SSB output power, while suppressing sideband splatter. Compression level can be controlled from the front panel and monitored on the meter.



Adjustable Noise-Blanker Level

The built-in noise blanker eliminates pulse-type (such as ignition) noise. A front-panel control adjusts the threshold level of the noise amplifier, to enhance the noise-blanker's effectiveness under various noise and signal levels.

Adjustable Audio Tone

A front-panel tone control adjusts receiver audio frequency response for best readability under various conditions. An additional change in narrow audio frequency response is made automatically when switching to CW mode.

RF Attenuator

The carefully designed receiver-section front end includes a 20 dB RF attenuator for optimum rejection of intermodulation distortion.

RIT/XIT

Receiver incremental tuning (RIT) shifts only the receiver frequency, to tune in stations slightly off frequency. Transmitter incremental tuning (XIT) shifts only the transmitter frequency, when a DX station may be listening "off frequency".

SSB Monitor Circuit

A built-in monitor circuit monitors the IF section while transmitting, to determine audio quality and effect of RF speech processor.