

DESCRIPTION AND OPERATION

A world of adventure lies at your fingertips as you tune the NC-190 receiver. The chimes of Big Ben, the call of a Bell Bird in New Zealand. The news in English from foreign nations, the cryptic messages of police, aircraft, and ships at sea, the gossip and friendly talk of amateur radio operators around the world can all be heard in the comfort of your armchair. This world of short wave listening is available to you through proper use of the National NC-190.

Unlike regular broadcast stations that you hear any time of the day, short wave transmissions are subject to variation from day to day, time of day, season of the year and even such things as sunspot activity. These variations cause changes in the nature of the upper atmosphere of the earth, which acts like a giant mirror reflecting short wave radio signals. When conditions are right the radio signal may travel entirely around the world bouncing back and forth from the upper part of the atmosphere to the ground and back again. If the receiving antenna happens to be at one of the points of reflection then the signal may be heard as though it were located just next door.

Most of these variations follow definite patterns and as a result the short wave broadcasters schedule their times and frequencies of transmissions to take best advantage of transmitting conditions. Likewise the listener can take advantage of this information to achieve greatest satisfaction in pursuit of the hobby of short wave listening. In other words it is important to know where to look and when to listen.

A radio wave (like a wave in the ocean) goes through a repeated up and down motion. If this electrical signal varies up and down 100 times each second we say that its frequency is 100 cycles per sec. In the short wave spectrum tuned by the NC-190 this frequency may actually be measured as many millions of cycles, and it is therefore easier to divide the frequency by one million and call the result "megacycles". The dial of the NC-190 receiver is calibrated in "megacycles", an expression of the frequency of the radio signal to which we are tuned. Thus when a station is listed as transmitting on a frequency of 8.61 megacycles (8,610,000 cycles) it may be tuned by setting the NC-190 dials to this same frequency. A chart showing approximate frequency limits for various types of transmission covered by the NC-190 tuning range is given below. Many of these transmissions are in

code or teletype, others are in voice, making up the myriad tones and voices of short wave radio.

Many shortwave listeners find that their main interest is tuning the many foreign broadcast stations. It is always helpful to keep a log of the station heard and the date and time, as well as the frequency of reception. Most of these foreign broadcast stations welcome reports from listeners and mail out interesting and colorful cards confirming the fact that the station was heard and providing information about the country and the station. The collection of these cards is in itself an interesting hobby. Generally speaking, the foreign shortwave broadcast stations are found in groups or bands of frequency. The NC-190 bandspread dial is calibrated for six of these foreign broadcast bands as well as for five amateur bands. The shortwave broadcast listener will find the following chart useful as a guide to listening locations and times for best broadcast reception.

band	frequency	Morning	Afternoon	Evening
49 meters	5.9-6.3 mc.	good	poor	good
31 meters	8.6-10.0 mc.	poor	fair	good
25 meters	11.7-12.0 mc.	poor	fair	good
19 meters	14.6-15.4 mc.	fair	good	poor
16 meters	16.4-18.0 mc.	good	fair	poor
13 meters	21.5-22.0 mc.	good	fair	poor

These few words hardly scratch the surface of the hobby of short wave listening. For best results from the NC-190 receiver the following pages on operation of the receiver should be carefully studied. In addition the following publications should prove useful in furthering enjoyment of the hobby.

Official Log—National Association of Armchair Adventurers—National Radio Company, Melrose, Mass.

The Radio Amateur's Handbook and other publications American Radio Relay League, West Hartford, Conn.

How To Listen To The World

World Radio TV Handbook

Gilfer Associates, Box 239, New York 17, N. Y.

World Radio Handbook — World Radio Publications, 47 Mounthaven Dr., Livingston, N. J.

White's Radio Log — C. DeWitt White Co., P. O. Box 142, Bronxville, N. Y.

In addition many periodicals and the Government printing office publish information on a regular basis.

ALL FREQUENCIES IN MEGACYCLES

Amateur	International Broadcast	Frequency Standard (WWV)	Citizens Band	Marine	Aeronautical	Police	Public Safety (Forestry Conservator's, State Guard, Special Emergency, Highway Patrol)	Industrial
1.8 - 2.0	2.3 - 2.5	2.5 MC	26.9 - 27.3 MC	2.0 - 2.8	2.6 - 3.5	1.6 - 1.8	2.2 - 2.3	1.6 - 1.8
3.5 - 4.0	3.2 - 3.4	3.0 MC		4.0 - 4.5	4.5 - 6.0	2.3 - 2.5	2.7 - 2.8	2.2 - 2.5
7.0 - 7.3	3.9 - 4.0	10.0 MC		6.2 - 6.6	6.5 - 7.0	2.8 - 2.9	3.2 - 3.3	4.6 - 4.7
14 - 14.4	4.7 - 5.1	15.0 MC	Common Carrier (Telephone, Telegraph, Press)	8.2 - 8.9	8.8 - 9.0	5.1 - 5.2	27.2 - 27.3	25.0 - 25.3
21 - 21.5	5.9 - 6.2	20.0 MC	4.4 - 5.4	12.3 - 13.2	10.0 - 11.5	7.4 - 8.0		27.2 - 27.5
28 - 29.7	7.1 - 7.3	25.0 MC	6.7 - 8.0	16.4 - 17.4	13.2 - 14.0		Broadcast Auxiliary (Remote Pick-up)	29.7 - 30.0
	9.5 - 9.8		9.0 - 9.5	22.0 - 22.8	15.8 - 18.0		1.6 - 1.7	
	11.7 - 12.0		9.7 - 11.7				25.8 - 26.5	
	15.1 - 15.5		13.3 - 21					
	17.7 - 17.9		22.6 - 24.6					
	21.4 - 21.8		29.8 - 30.0					
	25.6 - 26.1							