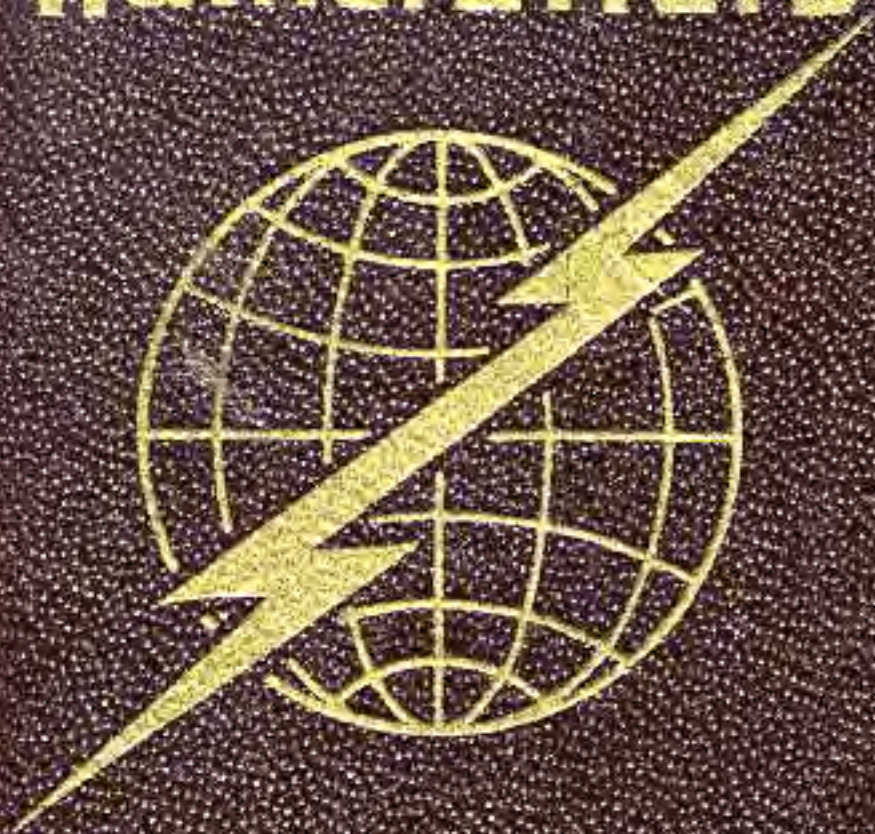




hallicrafters



**GUIDE TO SHORT
WAVE LISTENING**

GUIDE TO SHORT WAVE LISTENING



*Dedicated to those who seek
to be better informed and
gain more enjoyment out of
life through the miracle of
short wave radio.*

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Exciting Adventures Out of Thin Air—and You Are There!

From the grim wilderness of a remote village in the central Congo, the voice of a missionary cries out, "Please hurry . . . we need help . . . there's no time . . .!".

A hair's breadth away another voice—almost monotonous in its calm, business-like, professional manner, booms in—"Charlie base, this is Air Force Zed Two Nine Baker . . . target bearing Zero - Three - Zero angels fifty-two . . . Roger, I have him in sight . . ."

From a bomber over the Aleutians to the darkest reaches of Africa . . . from outer space to the police squadcar in your own home town . . . voices like these, the voices of modern pio-

neers of adventure, are yours to command with a twist of the dial, in your own living room!



This is the amazing world of Short Wave Listening—an exciting world, a serious world, a world of infinite variety.

Only by short wave radio can you become a witness to history *as it occurs*.

And only through short wave can you hear, *in a single day*, a Wagnerian opera from Heidelberg . . . a news broadcast from

behind the iron curtain . . . and an airport control tower bringing in a crippled plane!



Every moment of every day and night, Short Wave brings into your home an absorbing new interest — a fascinating way to keep up with international affairs, to be informed and *stay informed*.

This book was prepared to give you a quick and thorough

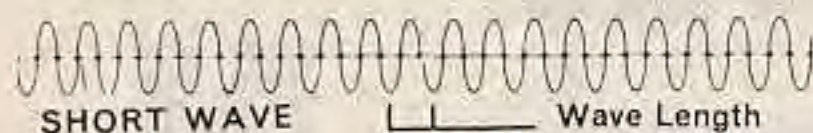
“guided tour” of Short Wave, and to help you enjoy more fully this wonderfully informative pastime.

Good listening!

What is Short Wave?

Understanding the mechanics of short wave radio will aid you to receive the most enjoyment and the greatest thrills for the hours you spend at the dials.

You may often have heard the term “wave length” applied to the radio signals transmitted by a broadcasting station. The signals travel, of course, in “waves”; the wave length being the distance between the “crests” of the waves.



The total number of complete waves (or cycles) that a station can send out per second is referred to as "frequency". The broadcasting frequency, therefore, is determined by the wave length on which a particular station is transmitting. The shorter the wave length, the higher the frequency.

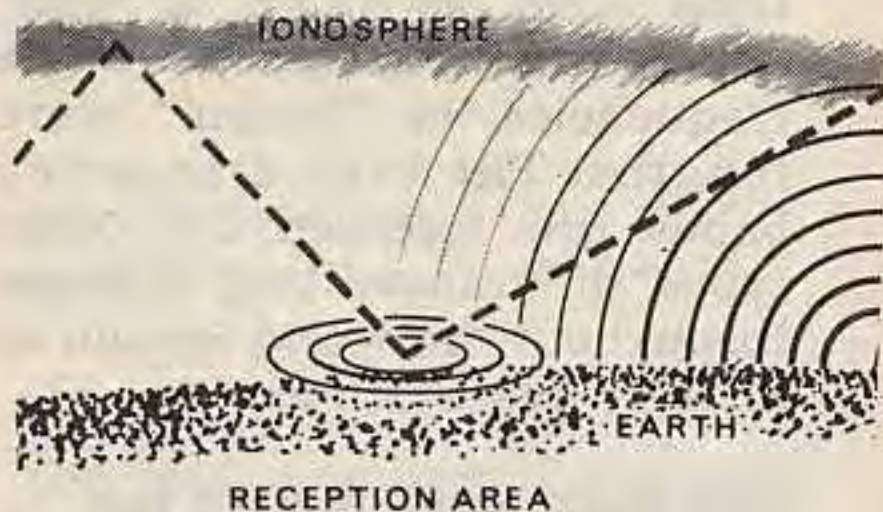
Every radio station in the world is licensed to broadcast on certain assigned frequencies or bands of frequencies.

The standard broadcasting stations such as those in your home town are assigned to lower frequencies, or "longer" wave lengths. The high frequency bands are reserved for other types of transmitting stations throughout the world known as Short Wave Stations.

WHY SHORT WAVE IS USED FOR LONG-DISTANCE TRANSMISSION

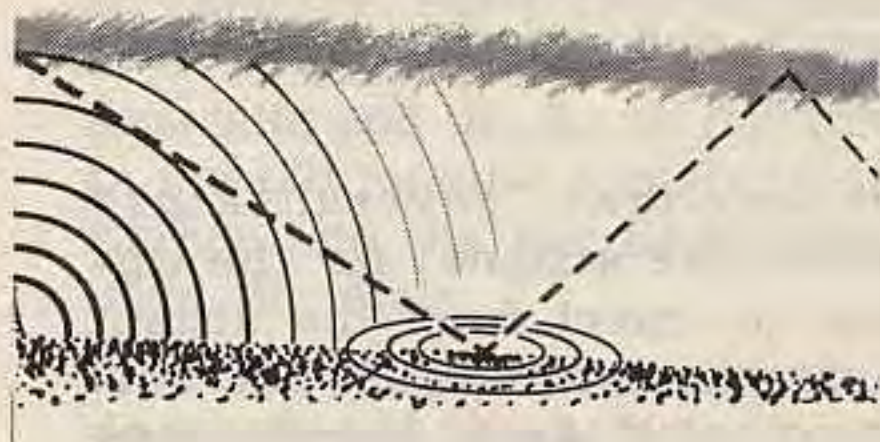
The chief characteristic of short waves is their amazing ability to span enormous distances.

The drawings on the next page illustrate the manner in which all radio signals travel in "waves" as they leave the transmitter antenna. Some of the signal "hugs" the ground, while the rest travels upward and outward away from the earth.



You are able to hear short wave radio signals over great distances because they are refracted back to earth from layers of rarified gases high in the ionosphere. Short wave signals enter the ionosphere and bounce from the layer's electrical particles. The physical action is similar to skipping a stone on smooth

Short waves mostly refracted



water. If the stone is of the correct size and shape and is thrown with enough power at the right angle, it will "skip" over the water's surface.

The short wave signal finds the ionosphere just as particular. Similarly, the short wave signal must be of the right size (frequency).

It must strike or enter the ionosphere at precisely the correct angle, and it must have sufficient power.

It may take "several skips" (just like a stone) for the signal to travel from the distant transmitter to your receiver. And with each consecutive bounce the signal becomes weaker, until it is too weak to continue its process of refracting from the ionosphere back to earth (where it is heard), back off the earth into the ionosphere, and then again back to earth.

At different periods of the year, short wave reception improves "above the normal value" between your receiving site and

various areas of the world. As an example, the spring months bring the strongest signals from Australia and the South Pacific. In the fall months, signals from Europe and the Far East dominate the dials.

And, as daylight changes into darkness each day between your receiving location and the transmitting station, so does the nature of your reception. Day to day variations are also present.

What May Be Heard on the Short Wave Bands?

AMATEUR RADIO. Amateur, or ham radio, stations are operated by private citizens in more than 250 countries around the globe.

Amateurs talk to other amateur operators for personal pleasure or experimentation. No business or commercial transactions are permitted over stations operating in this service. Hams are allowed to operate on any frequency within assigned "bands".

SHIP TO SHORE, MOBILE RADIO-TELEPHONE. Essentially a telephone without wires. Operated by telephone companies and businesses who lease transmitters and receivers to individuals.

AERONAUTICAL-AIRPLANES-AIRPORTS. Weather information, flight conditions, re-routing of planes in time of bad weather. General communications be-

tween planes and stations on the ground.

POLICE-PUBLIC SERVICES. Two-way radio between a main transmitter and mobile units. Used by local government agencies to dispatch fire trucks, police cars, and other vehicles.

MILITARY. Air Force, Army, Navy, Marine and Coast Guard, communications may be heard between ground stations and planes or vehicles 24 hours a day.

MARINE. In addition to military, naval forces, commercial vessels, fishing fleets and pleasure craft regularly communicate routine and emergency messages on short wave.

CITIZENS BAND. Low cost, two-way radio now available to private citizens on the 11-meter band. More than 300,000 U.S. citizens are expected to be operating transmitters before the close of 1961. No operator's license is required.

VHF-BUSINESS TWO WAY RADIO. Ten's of thousands of businesses, industrial plants, city and county government cars have two way short wave radio transmitters to keep them in touch with the home base.

INTERNATIONAL MORSE CODE. Long before man found a way to use the spoken word for radio communications, he had worked out codes for exchanging information.

The most popular code in use today is the International Morse Code, which breaks down the spoken word into letters, and tags each letter with a certain sequence of dots and dashes all its own.

The listener can learn to understand the "dots" and the "dashes" as letters, and then put the letters down on paper which will in turn form words and sentences.

The use of code has several distinct advantages to the long distance communications user, not the least of which is its ability to cover greater distances than "voice communications".

International Morse Code

letter	phonetic sound	dot-dash sequence
A	di-dah	• —
B	dah-di-di-dit	— • • •
C	dah-di-dah-dit	— • — •
D	dah-di-dit	— • •
E	dit	•
F	di-di-dah-dit	• • — •
G	dah-dah-dit	— — •
H	di-di-di-dit	• • • •
I	di-dit	• •
J	di-dah-dah-dah	• — — —
K	dah-di-dah	— • —
L	di-dah-di-dit	• — • •
M	dah-dah	— —
N	dah-dit	— •
O	dah-dah-dah	— — —
P	di-dah-dah-dit	• — — •

Q	dah-dah-di-dah	— — • —
R	di-dah-dit	• — •
S	di-di-dit	• • •
T	dah	—
U	di-di-dah	• • —
V	di-di-di-dah	• • • —
W	di-dah-dah	• — —
X	dah-di-di-dah	— • • —
Y	dah-di-dah-dah	— • — —
Z	dah-dah-di-dit	— — • •

Numbers

1	di-dah-dah-dah-dah	• — — — —
2	di-di-dah-dah-dah	• • — — —
3	di-di-di-dah-dah	• • • — —
4	di-di-di-di-dah	• • • • —
5	di-di-di-di-dit	• • • • •
6	dah-di-di-di-dit	— • • • •
7	dah-dah-di-di-dit	— — • • •
8	dah-dah-dah-di-dit	— — — • •
9	dah-dah-dah-dah-dit	— — — — •
0	dah-dah-dah-dah-dah	— — — — —

INTERNATIONAL SHORT WAVE BROADCASTING. Of all of the services you'll meet on short wave, International Broadcasting offers the most varied entertainment. Many governments operate powerful short wave transmitters (i.e. The U. S. Government "Voice of America") to keep the world informed of activities within their countries. Many countries also license "commercial" short wave stations, and in fact many regions of the world conduct much of their daily broadcasting on short wave, instead of the Standard Broadcast band.

Foreign Languages

Short wave radio provides a ready and handy means of furthering your study of a foreign

language. The majority of International Short Wave Broadcasting, in fact, is *non-English*. Most countries beam "language lessons" from their stations at least several times per week.

Many short wave listeners have, through the years, learned to understand a number of languages through their listening.

Thousands of Americans of foreign extraction depend on short wave to keep in "daily touch" with their homeland.

Establishing a Listening Post

A listening post can be anywhere. "The Shack" as it is known among dedicated short wave listeners (SWL's) can be in the garage, a corner of the den, in the basement or even by

a bed. The shack is the SWL's working area. It is as luxurious or as simple as the listener chooses to make it.

Generally a "shack" comprises these basic ingredients: a short wave receiver; a clock; a log book; and reference material.



Your own private listening post

THE RECEIVER. The most important item of all is, of course, the short wave receiver itself. Many special receivers are manufactured for reception of only one type of broadcasting—two-way business radio, for example. For the Short Wave Listener, however, a *general coverage receiver* is the most useful type.

Unlike the familiar home radio, a general coverage receiver is a communications instrument of professional quality, appearance and performance. Even the least expensive ones offer reception on three or more separate short wave bands (segments of the short wave broadcasting spectrum) plus AM, or Standard Broadcast.

An extremely important feature found on all good general coverage receivers is called "Bandspread". This is a separate control which may be described as ultra-fine tuning; it allows you to pick out and isolate stations impossible to separate with a conventional tuning control.

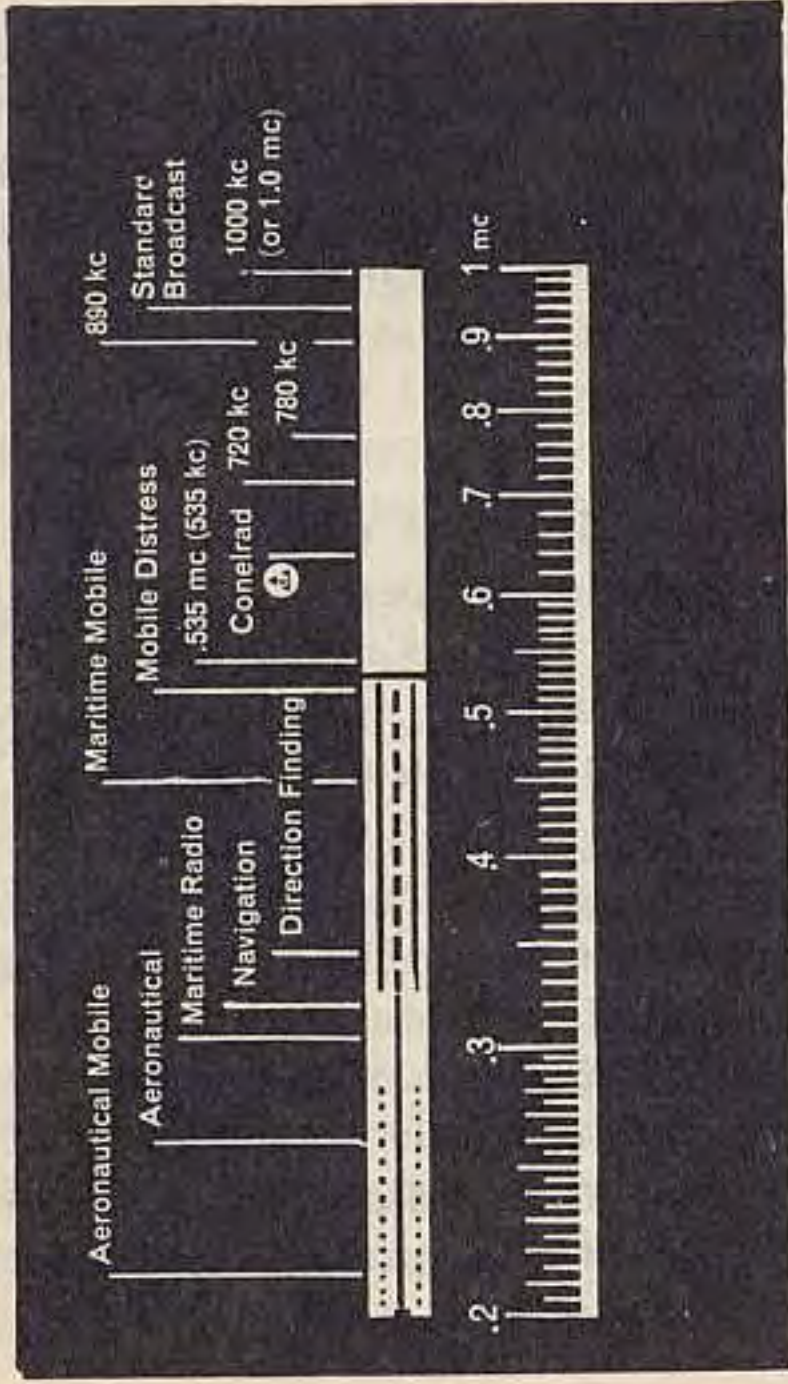
Despite their excellent sensitivity and professional quality, good general coverage receivers can be purchased for less than \$60. On the other hand, some SWL's pay as much as \$400.

The more expensive receivers contain more tubes; thus they will amplify weaker signals and make them more audible. They also have other equipment such

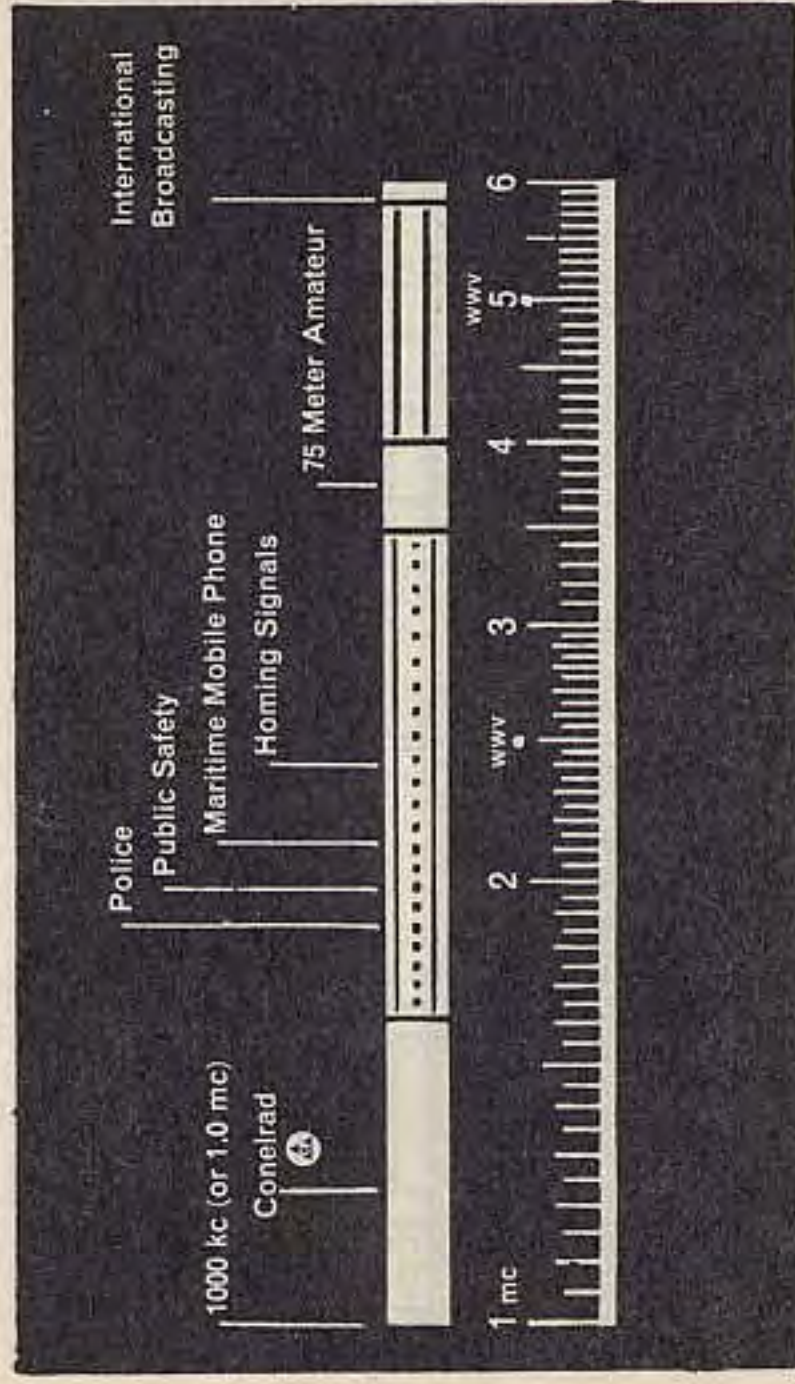
as voltage regulation (which helps the receiver stay on frequency); "S" meters (which measure for the listener the strength of a signal); and noise limiters for the elimination of interference.

These devices make the receiver more expensive—but they also increase its range and flexibility, adding considerably to its usefulness and enjoyment.

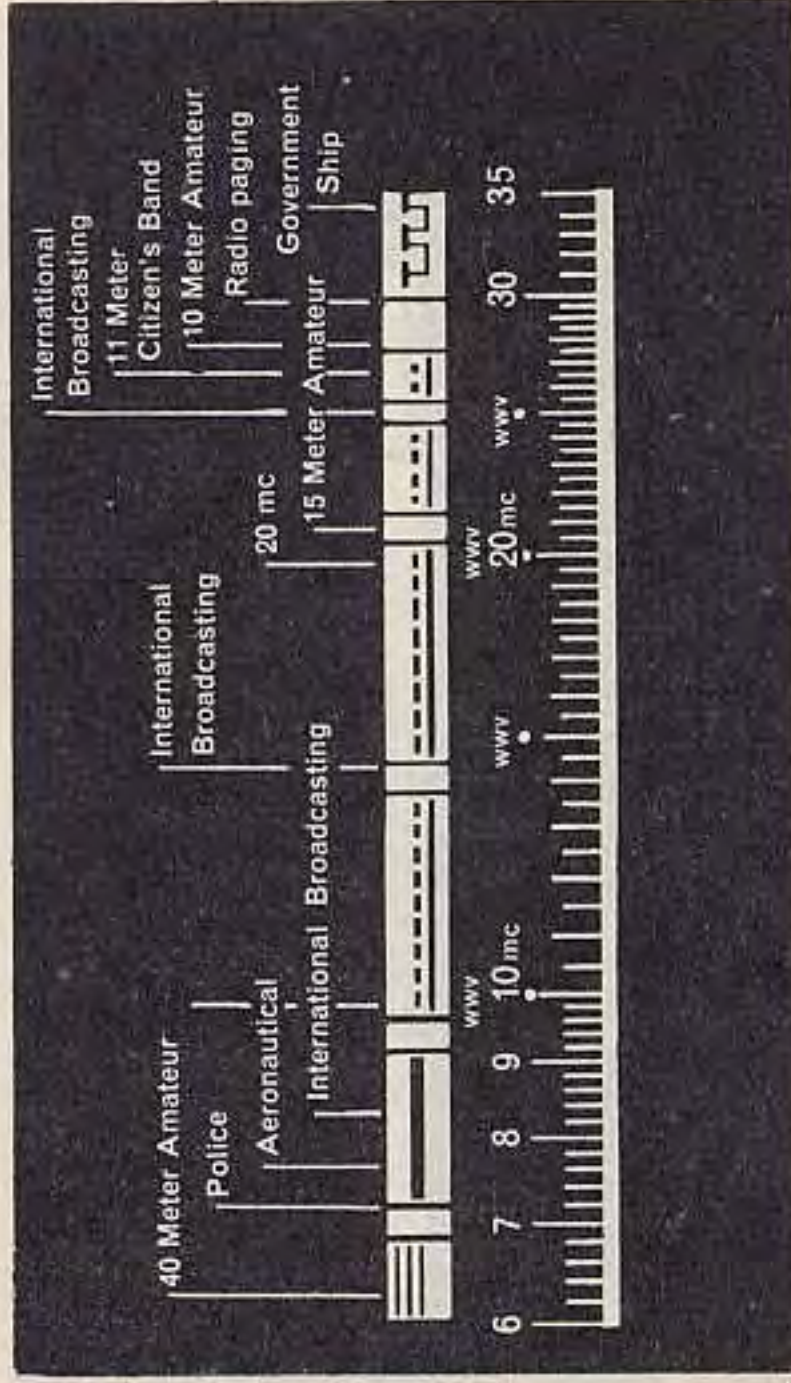
The bands on the dial of your receiver actually are greatly enlarged segments of the useful Short Wave spectrum shown on the next four pages. Type of broadcast is shown opposite approximate frequency where it may be heard.



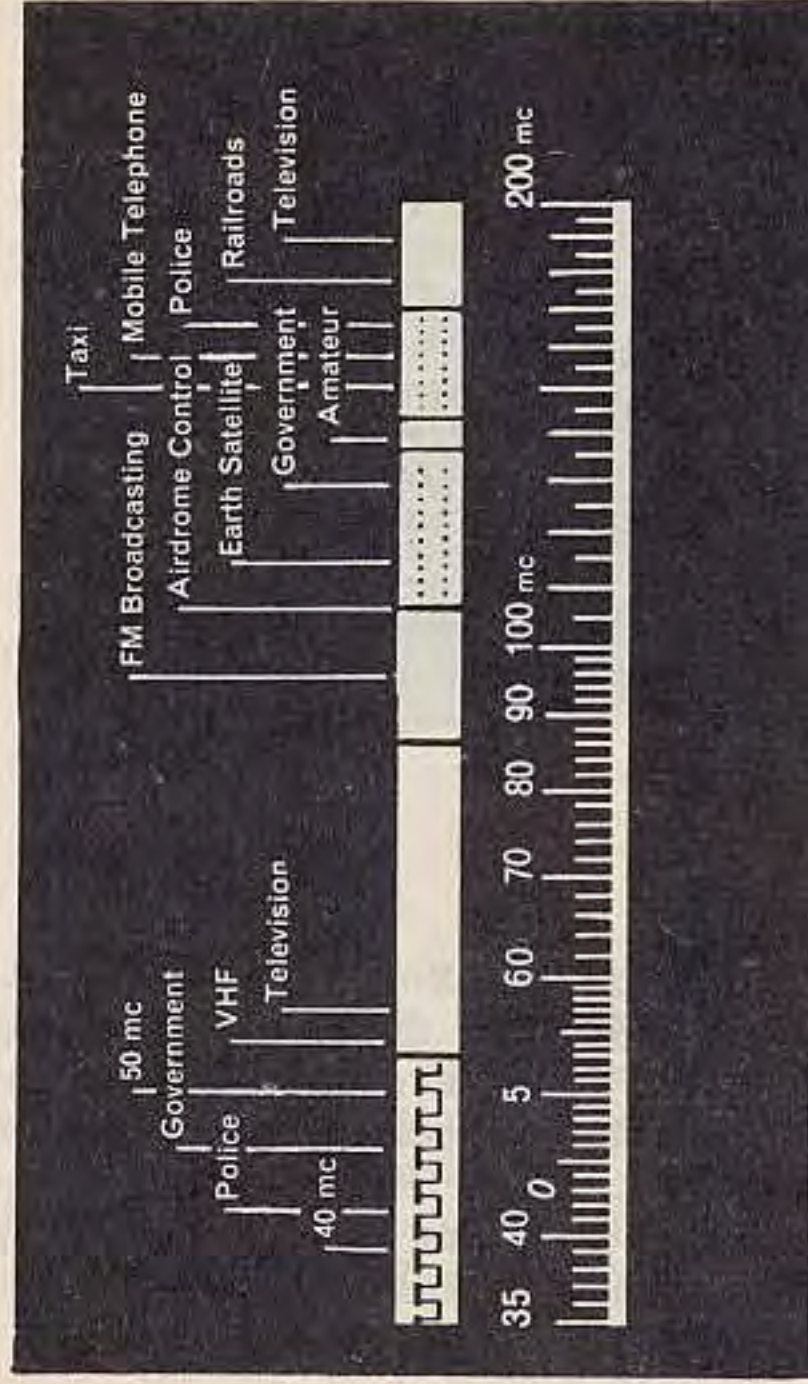
26



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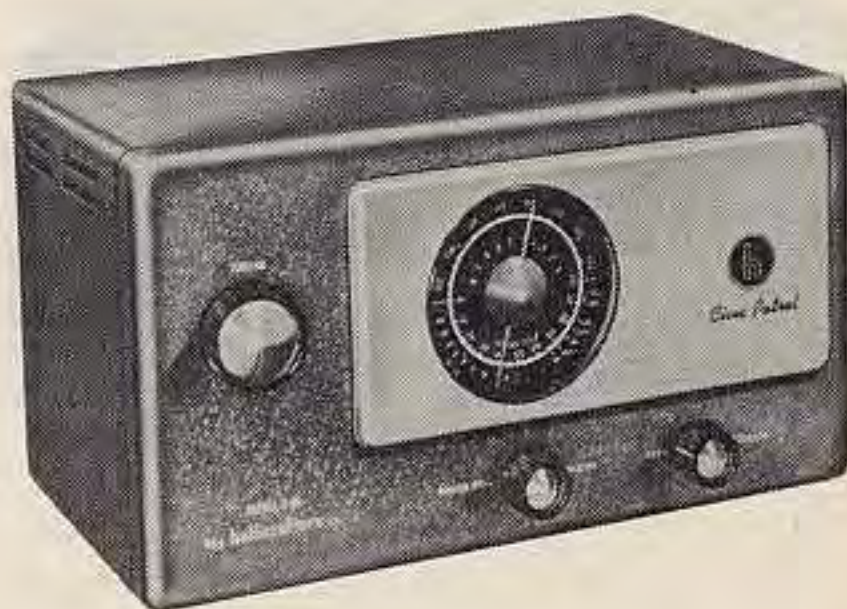
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Hallicrafters S-120 Receiver offers AM plus three short wave bands. It has a built-in whip antenna, precision bandspread feature, BFO (Beat Frequency Oscillator) for code listening and built-in speaker. Costs under \$70.



Special purpose FM receivers, Hallicrafters S-94 covers 30-50 mc. segment—S-95 covers 152-173 mc. segment—taxi, mobile telephone, fire and police frequencies. Used primarily in monitoring. Price is about \$70.



High-performance Hallicrafters model SX-110 receiver costs about \$170, is loaded with worthwhile features for the experienced listener. Bandspread dial is calibrated for amateur bands, and citizens band. AM plus short wave from 1550 kc. to 34 mc. Brings in police, aviation, military, government, marine, foreign stations.



Best general coverage receiver made is Hallicrafters SX-62A. Priced just under \$400, it covers a greater frequency range than any other receiver on the market—Standard Broadcast, three short wave bands from 1.62 to 32 mc., plus FM or AM from 27 to 109 mc. Excellent audio quality; used in many commercial installations.

The Antenna

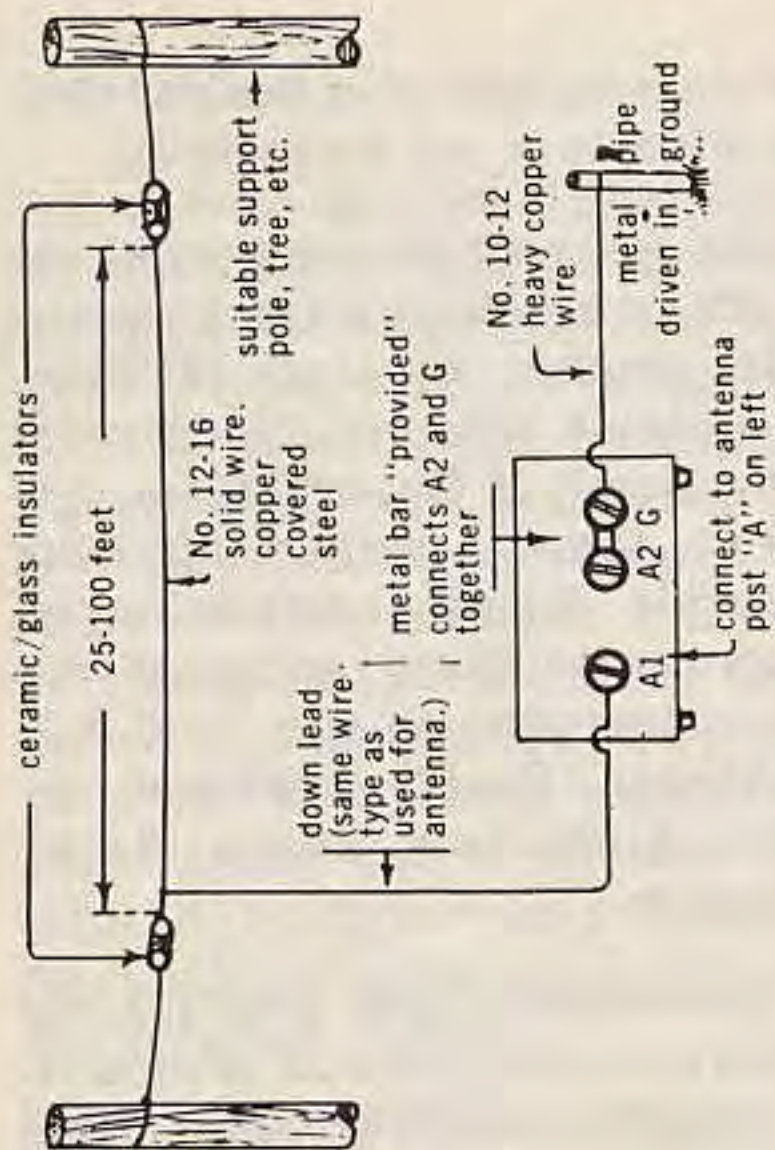
All short wave receivers need an antenna. The type needed depends on where you are located; what kind of interference is present (steel buildings, overhead power lines, etc.); and how much you want to hear. A better antenna will receive signals that are weak and far away. Chances are you'll do very well with a simple piece of wire strung out a window or with the built-in "whip" antenna furnished with receivers like Hallicrafters S-120.

More elaborate antennas generally are built either to operate on one frequency, or to per-

form with effective results over a *wide band* of frequencies.

Because most listeners want results on all short wave frequencies covered by their receiver, a suitable antenna for "general coverage" is illustrated on the next page. Listeners desiring specific design information on more specialized antennas are recommended to the "A.R.R.L. Antenna Book" published by the American Radio Relay League.

This antenna will produce the best reception when it is mounted high and clear away from power lines, trees and surrounding objects.



The Clock—All international broadcasting stations operate on Greenwich Mean Time—the time at Greenwich Observatory in England. This is commonly abbreviated GMT. Handiest way to be sure of the proper time is to set your clock at GMT, and keep your "logbook" notations in that time.

GMT	0000 (2400)	0600	1200	1800
EST	7 p.m.	1 a.m.	7 a.m.	1 p.m.
CST	6 p.m.	12 p.m.	6 a.m.	12 noon
MST	5 p.m.	11 p.m.	5 a.m.	11 a.m.
PST	4 p.m.	10 p.m.	4 a.m.	10 a.m.

The Log Book—A written record (log) of the stations you hear, the time the station is heard

and its frequency. Many listeners also note the type of program material heard. Your log book allows you to return to the same dial setting, at the same time of the day, at some future date, to hear the station again.

Also, you may wish to write to the station, reporting your reception. Many short wave stations will "verify" your reception with a colorful "QSL card".

Reference Material

AMERICAN RADIO RELAY LEAGUE, 38 La Salle Rd., West Hartford, Conn. Official organization of radio amateurs in the U.S. Free literature. Special publications on how to become a radio amateur.

WORLD RADIO HANDBOOK, available through Gilfer Associates, Dept. D, Box 239, Grand Central Station, N.Y.C. Yearly handbook of all short wave stations, printed in Denmark.

DXING HORIZONS, P.O. Box 3150, Modesto, Cal. Monthly magazine for short wave listeners. Feature articles on current conditions, new equipment, late reports on stations and schedules. (Sample copy, 25¢ in coin.)

POPULAR ELECTRONICS, 1 Park Avenue, N.Y. 16, N.Y. Monthly magazine available on newsstands. General news and features for the electronics hobbyist; excellent regular column on short wave listening plus occasional SWL feature stories.

Where to purchase receivers and equipment

General coverage communications receivers, antennas, headsets, and hundreds of other

items useful to the short wave listener are sold primarily through specialized stores dealing in electronic supplies. They usually are listed in the Yellow Pages under "*Radio Parts Suppliers*". Their personnel are highly trained technicians and can help you select the best receiver and accessories for your needs.

You may also find the higher quality brands in some appliance, photo and hardware outlets, as well as the better department stores.

How to listen

A quick check of the station log that follows this section will reveal these facts:

(1) Most stations operating from *non-English speaking nations* transmit in the English language only about one hour per day.

(2) When these English language broadcasts are scheduled for North American listeners, the stations carefully select their operating hours and frequencies to assure the stateside listener the best possible reception.

(3) The more powerful short wave stations schedule separate broadcasts for east coast and west coast listeners. They take advantage of the optimum hours of transmission to each section of the U.S.A.

(4) Many stations schedule newscasts during their North American transmissions, which often reveal that country's *first official position* on a current international topic. Thus short wave listeners often are the first, and best informed.

Megacycles and Kilocycles

The world of short wave utilizes two separate methods of measurement.

Stations measure their operating frequencies in megacycles, and in meters. The end result is the same (i.e. same spot on the dial) but the means of establishing that result are entirely different.

All modern communication receivers are calibrated in megacycles. None the less it is sometimes helpful to know what meter band corresponds to (for example) 11.866 megacycles. This is particularly true when tuning the International Short Wave Broadcasting stations who often announce only in meters. Megacycles may be converted to meters through the use of this simple formula:

$$\frac{300}{\text{Megacycles}} = \text{Meters}$$

For example:

$$\frac{300}{11.866} = 25.28$$

or

$$11.866 \text{ mc.} = 25.28 \text{ meters}$$

Another handy chart, below, shows that each megacycle is made up of 1000 kilocycles (kc) and that each kilocycle is made up of 1,000 cycles. If a station announces it is operating on 11.866 megacycles, or 11,866 kilocycles, it is one and the same frequency.

<i>cycles</i>	<i>kilocycles</i>	<i>megacycles</i>
1	.001	.0000001
1,000	1	.001
1,000,000	1,000	1

You need not be looking for a particular station to find short wave listening tremendously interesting. Simply "tune through" the bands for a great variety of intriguing broadcasts.

If you do wish to hear a particular station, we suggest this procedure:

Tuning procedures

(1) Spot the station you want to hear from the correct time

period in the Station Log that follows.

(2) Set your "bandsread tuning knob" at "100" (or "0", depending on the receiver you own) on your logging scale (0-100). Now your main tuning dial will read accurately and you will be able to find the frequency you want by reading from the main tuning indicator.

The bandsread tuning should be used as a "fine tuning control". Rotate it very slowly. You will soon learn it will greatly aid you in tuning in weak stations when the spectrum is crowded with many strong stations.

(3) Note from the Station Log the general type of programming you are looking for (i.e. news, commentary, folk music, etc.). Listen carefully for this *type* of program, as you slowly tune the main tuning knob first one direction, and then the other.

When the station is located, use the bandsread tuning knob for precise tuning.

(4) If you do not hear the station on the first try, do not give up hope. Chances are "conditions are poor" and you will hear it on another day. Interference and general listening conditions **DO CHANGE FAST**. A re-check will sometimes reveal the station is "loud and clear".

(5) There will be periods when the scheduled station cannot be heard. The station may have changed frequency or operating schedule slightly.

(6) Once you have found the station, note in your log book the frequency, the hour, and type of program.

INTERNATIONAL STATION LOG

Instructions for use— International Station Log

Short wave listeners will find the following pages of great use in spotting and identifying international short wave broadcasting stations operating from locations around the globe. The "Log" is broken down into four six hour periods based upon the use of GMT (See explanation of GMT on page 36).

Stations listed in the log can be heard by listeners throughout the North American Continent during the transmission periods listed. All broadcasts are in the English language unless otherwise indicated.

Abbreviations used in column five in the log indicate the type of broadcast you are likely to hear.

- NE—News in the English language
- ET—Commentary in English
- ST—Commentary in Spanish
- ME—Music, English
- MS—Music, Spanish
- MN—Music, native to the country of location
- ND—Indicates station does not broadcast daily

In addition to the transmissions listed in the log, you will hear many English language broadcasts from such countries as Canada, Great Britain, and the United States. Because of the great volume of such broadcasts, and as they are easily heard without consulting a prepared guide, we have listed only a few such stations.

0000-0600 GMT

Country of Origin	City of Origin	Call Letters
Argentina	Buenos Aires	LRA
British Honduras	Belize	
Canada	Halifax	CHNX
	Montreal	CBC
Ceylon	Colombo	
China	Peking	
Congo	Leopoldville	
Cuba	Havana	
Czechoslovakia	Prague	
Denmark	Copenhagen	OZF
Dominican Republic	Ciudad Trujillo	Radio Caribe
England	London	BBC
India	New Delhi	VUD
Italy	Rome	RAI
Japan	Tokyo	JOAB
New Zealand	Wellington	ZL4
Nigeria	Enugu	
	Ibadan	
	Lagos	

Frequency in Megacycles	Type Cast	Operating Hours GMT
9.690	ND	0200-0400
3.300	ME	0130-0200
6.130	NE	0200
9.585	NE	0200-0300
15.265	NE	0130-0300
9.480		0200-0300
11.755	ET	0000-0230
11.762	ST	0100-0200
7.340	ET	0300-0400
9.550		
9.520	ET	0100-0200
6.210	MS	0000-0600
9.485		
6.100	NE	0300-0400
11.710	NE	0230
9.575	NE	0000-0100
15.135	NE	0300
15.280	ME	0400-0500
7.285	NE	0530
6.185	NE	0600
4.990		0500

0000-0600 GMT			Frequency in	Type	Operating
Country of Origin	City of Origin	Call Letters	Megacycles	Cast	Hours GMT
North Korea	Pyongyang		6.250	ET	0030-0100
Poland •	Warsaw		15.275	ET	0300-0400
Rhodesia	Lusaka	FBC	9.570	ET	0515-0610
Rumania	Bucharest		5.980	NE	0300
			9.510	ET	0130-0230
South Korea	Seoul	HLK5	9.640	NE	0530
Sweden	Stockholm	Radio Sweden	11.705	NE	0315
			9.725	ME	0100-0200
Switzerland	Berne		6.165	ET	0200-0500
			9.535		
Taiwan	Taipei	BED3	15.235		0130-0200
Tanganyika	Dar-es-salaam	TBC	5.050	ET	0330-0500
Union of S. Africa	Paradys		4.810	NE	0500
U.S.S.R.	Moscow	Radio Moscow	11.690	NE	0200
Vatican	Vatican City	HVJ	11.740	ST	0030-0045
Windward Islands	ST. George's	WIBS	11.955	ME	0000-0100

0600-1200 GMT

Country of Origin	City of Origin	Call Letters	Frequency in Megacycles	Type Cast	Operating Hours GMT
Australia	Melbourne		11.710	ME	0800-0900
Egypt	Cairo		7.050	NE	0630-0700
			11.745		
Ghana	Accra		3.365	NE	0700
Indonesia	Djakarta		11.792	NE	1115
Italy	Rome	RAI	9.575	NE	0900-0930
Liberia	Monrovia	ELBC	3.255	NE	0700
New Zealand	Wellington	ZL2	9.540		0630
Nigeria	Ibadad		6.049	ET	0500-0730
Singapore		BBC-FES FBS	11.955	NE	0910
			5.010	NE	1100
Taiwan	Chiayi	BED29	6.095	ME	1005-1050
Thailand	Bangkok	HSK9	11.910	NE	1030
U.S.S.R.	Moscow	Radio Moscow	9.540	NE	0700
			9.735		
			11.850		

1200-1800 GMT

Country of Origin	City of Origin	Call Letters	Frequency in Megacycles	Type Cast	Operating Hours GMT
Australia	Melbourne	VLA	11.710 11.810	ET, ME	1215-1315 1515-1615
British Honduras	Belize		3.300	ME	1200-1300
Finland	Helsinki	OIX4	15.190	ME	1600-1630
France	Paris		15.350		1730-1745
East Germany	Berlin		11.765	NE	1600-1630
Japan	Tokyo	FEN	6.160	NE	1300
Mexico	Mexico City	XEHH	11.880	MS	1300-1800
North Borneo	Jesselton		4.970	NE	1230
North Korea	Pyongyang		6.250	NE	1230
Okinawa	Naha	VOA	7.230	NE	1400, 1500, 1600
Pakistan	Karachi		7.275	NE	1445-1500
Philippines	Manila	FEBC	11.672		
Portugal	Lisbon	EN	11.920	NE	1430
South Korea	Seoul	HLK5	17.895	ET, MN	1715-1800
Sweden	Stockholm	Radio Sweden	9.640	NE	1430
			15.240	ME	1445
Windward Islands	St. George's	WIBS	15.395	ME	1700-1800
Yugoslavia	Belgrade		11.715 15.240	ET	1530-1600

1800-2400 GMT

Country of Origin	City of Origin	Call Letters	Frequency in Megacycles	Type Cast	Operating Hours GMT
Argentina	Buenos Aires		11.730	ME	2300-2400
Australia	Melbourne	VLA	15.315	NE	2000
Belgium	Brussels	ORU	6.000	ET, MN	2000-2100
			6.140		
			11.840	NE	2030
Bulgaria	Sofia		9.700	NE	2300-2400
Canada	Montreal	CBC	11.760	ME, NE	2300-2400
			15.190		
China	Peking		9.775	ET, MN	1800-1830
			12.060		
Egypt	Cairo		11.915	NE	2200
Ethiopia	Addis Ababa		11.915	NE	1815-1830
West Germany	Cologne	DMQ15	15.405	NE	1800
Ghana	Accra		11.797	NE	1800-1900
Haiti	Cap Hatien	4VWI	21.520	ET, MN	2300-2400
Holland	Hilversum		11.730	ME	2115
Hungary	Budapest		7.220		2200-2230
Iran	Teheran		7.032	NE	2045

1800-2400 GMT

Country of Origin	City of Origin	Call Letters
Israel	Tel Aviv	
Katanga	Elisabethville	
Liberia	Monrovia	ELWA
Monaco		Trans
		World Radio
Morocco	Rabat	
Mozambique	Lourenco Marques	CR7DE
United States	New York City	WRUL
Windward Islands	St. George's	WIBS

Frequency in Megacycles	Type Cast	Operating Hours GMT
11.918	NE	2015
11.866	NE, ME	1900-2200
15.085	NE	1920
6.115	ME	1900-2000
11.735	NE	1830
9.617	ME	0400-0430
15.380	Short-wave	1945, 2315
17.750	News Show	third Saturday
17.845		each month
15.395	ET, ME	2145

Glossary of Familiar Short Wave Terms

A.F. Gain Control—Same as volume control.

AM—Amplitude Modulation—the transmitting frequency amplitude is varied at an audio rate.

ANL—Automatic noise limiter—reduces impulse noises. (Ignition, static crashes, etc.)

ANT—Antenna.

AVC—Automatic volume control—controls radio frequency gain automatically—i.e. reduces gain on strong signals.

BFO—Beat Frequency Oscillator provides beating signal so that c.w. (code) signals can be heard.

CQ—A general call used by radio amateurs to establish contact. Caller will answer anyone answering. Can also be used specifically (CQDX) when calling only DX stations or (CQ Chicago) when calling stations only in Chicago.

CW—Continuous wave—unmodulated signal wherein intelligence is transmitted by interrupting signal to produce dots and dashes. (code)

DX—Distant stations.

FM—Frequency Modulation—the transmitting frequency is varied at an audio rate.

QRM—Interference from other signals.

QRN—Interference-static.

QRX—Stand by.

QSL—Usually a card which verifies contact or acknowledges specific transmission.

QSO—A contact between two stations.

QSY—Shift operating frequency.

R.F. Gain Control—Radio frequency gain control: Controls the sensitivity of the radio frequency amplifier stage.

RST—Readability, strength, tone.

SWL—Short wave listener.

Official Radio "Ten" Signals (Police, fire, citizens band etc.)

- 10-1 Receiving poorly
- 10-2 Receiving well
- 10-3 Granted
- 10-4 Received
- 10-5 Relay
- 10-6 Standby
- 10-7 Out of service
- 10-8 In service
- 10-9 Repeat, conditions bad
- 10-10 Out of service—subject to call
- 10-11 Remain in service
- 10-13 Advise weather and road conditions
- 10-14 Correct time
- 10-18 Anything for us?
- 10-19 Nothing for you
- 10-20 What is your location?
- 10-91 Too weak; talk louder
- 10-92 Too loud
- 10-93 Frequency check
- 10-94 Give a test

SWL Record

PERSONAL

Name _____

Address _____

City _____ State _____

RECEIVER:

Name _____

Serial No. _____

Model No. _____

Date Purchased _____

Purchased From _____

ACCESSORIES

_____ # _____

_____ # _____

_____ # _____

_____ # _____

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in communications
are born at...*

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