

LICENSE FOR LAND RADIO STATION

CLASS 2 - Limited Commercial.

DEPARTMENT OF COMMERCE
BUREAU OF NAVIGATION
RADIO SERVICE

Pursuant to the act to regulate radio communication, approved August 13, 1912,
University of Wisconsin - Department of Physics,

~~a citizen of the State of~~ _____, ~~a company~~ incorporated under the laws of the State of Wisconsin, having applied therefor, is hereby granted by the Secretary of Commerce for a period of six months on and subject to the restrictions and conditions hereinafter stated and revocable for cause by him, this License to use or operate the apparatus for radio communication (identified in the schedule hereinafter) for the purpose of transmitting to and receiving from ship stations and other land stations public correspondence, Government and service correspondence, and distress signals and messages, at rates of compensation not in excess of those fixed by the international agreement to which the Government of the United States has adhered, which have been submitted to and approved by the Secretary of Commerce, as included in the schedule hereinafter, or for the purpose of conducting experiments for the development of the science of radio communication or the apparatus pertaining thereto, to carry on special tests, using any amount of power or any wave lengths, at such hours and under such conditions as will insure the least interference with the sending or receipt of commercial or Government radiograms, of distress signals and radiograms, or with the work of other stations, the purpose of the station being designated by the classification at the head of this License.

2. Public correspondence or limited commercial correspondence authorized by this License shall be limited to certain stations, ships or lines of ships named hereinafter, which designation is authorized in view of the nature of the service and is independent of the radio system employed.

3. The use or operation of apparatus for radio communication pursuant to this License shall be subject also to the articles and regulations established by the International Radiotelegraphic Convention, ratified by the Senate of the United States and caused to be made public by the President, and shall be subject also to such regulations as may be established from time to time by authority of subsequent acts and treaties of the United States, in so far as they apply to the class of station indicated by this License.

4. The authority conferred by this License is subject to the provisions of the act of February 4, 1887, entitled "An Act to regulate commerce," as amended by the act of June 18, 1910, so far as the Licensee may be within the operation of said act, and except as provided in the act of August 13, 1912, or in the International Radiotelegraphic Convention and regulations made part thereof, the station shall transmit all messages offered by those who tender lawful rates on equal terms without discrimination, whether as regards rates, order of transmission, or otherwise.

5. The Licensee shall render to the Secretary of Commerce such accounts as the Secretary of Commerce shall direct in respect of all charges due or payable under the International Radiotelegraphic Convention in respect of messages exchanged between the station hereby licensed and other stations and shall pay to the Secretary of Commerce, at such times and in such manner as the Secretary of Commerce shall direct, all sums which shall be due from the Licensee under such accounts.

6. The apparatus shall at all times while in use and operation be in charge or under the supervision of a person or persons licensed for that purpose by the Secretary of Commerce, and the operator of the apparatus shall not willfully or maliciously interfere with any other radio communication.

7. The station shall give absolute priority to signals and radiograms relating to ships in distress; shall cease all sending on hearing a distress signal; and, except when engaged in answering or aiding the ship in distress, shall refrain from sending until all signals and radiograms relating thereto are completed.

8. The station shall use the minimum amount of energy necessary to carry out any communication desired, except in case of signals or radiograms relating to vessels in distress.

9. The station shall not use a transmitter during the first 15 minutes of each hour, local standard time, except for distress signals, whenever the Secretary of Commerce by notice in writing shall require it to observe a division of time, pursuant to the Twelfth Regulation of the act of August 13, 1912.

10. The President of the United States in time of war or public peril or disaster is authorized by law to close the station and cause the removal therefrom of all radio apparatus or may authorize the use or control of the station or apparatus by any department of the Government upon just compensation to the owners.

11. The Secretary of Commerce and Collectors of Customs or other officers of the Government authorized by him may at all reasonable times enter upon the station for the purpose of inspecting and may inspect any apparatus for radio communication of such station and the operation and operators of such apparatus.

12. The apparatus shall not be altered or modified in respect of any of the particulars mentioned in the following schedule, except with the approval of the Secretary of Commerce.

SCHEDULE OF STATION AND APPARATUS

Name of owner, University of Wisconsin, Dept. of Physics,
 Location: State, Wisconsin.; County, Dane
 City or town, Madison; Street, North Charter; No. _____

Geographical location: Latitude, N. 43° 5' _____"; Longitude, W. 89° 33' _____"

This station is licensed for communication only with the following land stations, ships, or lines of ships:

Various college stations - Univ. of Minnesota, Purdue, Michigan, Illinois, Missouri, Texas, Iowa, Texas M. & A. college, Union College (NY), Billings (Mont) Polytechnic Institute and others from time to time, on the wave length of 410 meters.

One commercial second class operator, or higher, is required.

Specific hours during which the station ^{must} be open to service (local standard time): none.

Power: Transformer input, 4 KW.

Normal day range in nautical miles, 500

Time and method, if any, of sending time signals and hydrographic and meteorological radiograms:

Call letters, WHA

_____; Coast charges: per word _____, minimum per radiogram _____
 _____; Coast charges: per word _____, minimum per radiogram _____
 _____; Coast charges: per word _____, minimum per radiogram _____

Radiotelegraphic system employed, **Composite, assembled, Spark, continuous wave, & radiopl**

Characteristics of transmitting system:

Type of spark gap, Rotary non-synchronous

Approximate spark frequency, 480

Wave length range of receiving system: From 100 meters to 20,000 meters.

Antenna: Number of masts 2, Height, _____

Type of aerial, T type cage

Wires: Number, 4; Size and kind, 7/22 phosphor bronze

Essential dimensions: Maximum height above water, 90 feet; Length of horizontal part, 100 feet; Length of vertical part, 100 feet; Total length measured from apparatus, 110 feet; Length of ground connection, 10 feet; Fundamental wave length 300 meters.

WAVE LENGTHS

The normal sending and receiving wave length shall be 600 meters.

If the station be classified as a coast station it shall be prepared to transmit or relay distress calls

or messages using the distress wave length as provided by the International Radiotelegraphic Convention in force.

In view of special conditions the station is authorized to use for communication exclusively with stations licensed by the United States the following additional wave lengths under 600 or over 1,600 meters:

Meters, 300; Meters, 360; Meters, 410; Meters, 485

The energy, if radiated by the transmitter in two or more wave lengths as indicated by a sensitive wave meter, shall not in any one of the lesser waves exceed 10 per cent of that in the greatest; and the logarithmic decrement per complete oscillation in the wave trains shall not exceed two-tenths, except when sending signals or messages relating to vessels in distress.

SENDING WAVE LENGTH	ANTENNA CURRENT (AMPERES)	LOGARITHMIC DECREMENT	READING OF WAVE METER INDICATING INSTRUMENT*	
			PRINCIPAL WAVE	WAVE NEXT IN ENERGY
300 meters	Not ascertained.	300 and 600 meters to be used as required in Regulations 42 and 44.		
600 meters	" "			
360 meters	" "	360 meters for broadcasting music & like matter only.		
410 meters	" "	410 meters for intercommunication between college stations.		
485 meters	" "	485 meters for broadcasting market and weather reports.		
meters	This license is issued for the specific purposes shown, on the wave lengths indicated and no other services are permitted.			

* Type of indicating instrument, _____

The station insures rapid exchange with land wire stations at

(Company) _____ (Location telegraph office) _____
 (Company) _____ (Location telegraph office) _____

in the following manner: _____

~~Satisfactory proof has been furnished that the station was actually operating August 13, 1919.~~
 This License will expire on the 12th day of June, 1922., 19



C. H. Huston.
 Assistant Secretary of Commerce.

D. B. Carson,
 Commissioner of Navigation.

Washington, D. C., January 13, 1922., 19

INSPECTIONS

DATE	INSPECTOR	REMARKS

APPLICANT'S DESCRIPTION OF APPARATUS

DEPARTMENT OF COMMERCE
BUREAU OF NAVIGATION
RADIO SERVICE

WHA

276

Limited Commercial

The following form of description of apparatus will be filled out in duplicate and forwarded to the radio inspector by each applicant for a license for apparatus for radio communication of any class (ship or land), except amateur stations (general or restricted) for which Form 762 is provided. The inspector, if necessary, will then arrange for an inspection of the station, or, when feasible, the inspector may accompany the applicant and make the inspection during the filling of this form.

Where the form calls for a statement of details of apparatus with which the station is not equipped, the applicant will please draw a line through the space provided for the appropriate answer.

The information is desired primarily as the basis of the description of the apparatus to be inserted in the license, but many of the details are desired to facilitate the classification and particularly the inspection of stations, and will not, of course, be incorporated in the license. This form when filled will not be open to public inspection.

NOTICE.—This Form Must be Submitted in Duplicate to the Proper Radio Inspector.

GENERAL SPECIFICATIONS OF STATION.

Name of applicant: University of Wisconsin (Dept. of Physics)

Address: Department of Physics, University of Wisconsin, Madison, Wis.

A citizen of the State of Wisconsin

Name and address of owner of radio apparatus: Department of Physics, University of Wisconsin, Madison, Wis.

IF SHIP STATION—Name of ship: _____ Owner of ship: _____

Type of vessel: _____ Official number: _____ International signal code letters: _____

Home port (where permanent document issues): _____ Average speed of vessel (nautical miles): _____

Number of persons in crew: _____ Number of passengers vessel is licensed to carry: _____

Is vessel subject to the Act of June 24, 1910, as amended by the Act of July 23, 1912? _____

IF LAND STATION—Coast or inland? Coast Location—State: Wisconsin

County: Dane City or Town: Madison Street: North Charter No.: _____

Exact Latitude, North: 43 ° 5 ' _____ " Longitude, West: 89 ° 23 ' _____ "

Class of license desired (see regulations): Limited Commercial Nature of service: Broadcasting Weather,

Specific hours open to public service: None. / Markets, and special concerts. Not exceeding two con-
certs each week. Also official communication with various college station

If limited station—Corresponds only with (state names of land stations, names of ships or lines of ships): Universities of Minnesota, Purdue, Michigan, Illinois, Missouri, Texas, Iowa, Texas M.&A. college, Union College (NY), Billings (Mont) Polytechnic Inst., and others to be added from time to time.

Transformer input (normal conditions): 4 K. W.

Approximate day-transmitting range (nautical miles) with average ship: _____; with similar land station: 400

PRIMARY SOURCE OF POWER SUPPLY.

Engine—Type and horsepower: _____

Electric power—Source and available K. W.: City current; unlimited Is power continuously available? Yes

SHIP OR COAST CHARGES.

(State class of service, such as North and South American or Transoceanic.)

_____ per word: _____; minimum per radiogram: _____

_____ per word: _____; minimum per radiogram: _____

_____ per word: _____; minimum per radiogram: _____

Relay charges _____

Make and type of radio system to be used: Composite, assembled. Spark, Continuous Wave, & Radio Phone.

Type of spark gap (plain, rotary synchronous, quenched, etc.): Non-synchronous rotary.

Approximate spark frequency (pitch of note) per second: 480

Type and make of receiving apparatus (conductive or inductive coupling, etc.): Assembled regenerative, inductive coupling.

Type of detector: Vacuum tube.

Wave length range of receiving system: From 180 meters to 20,000 meters.

ANTENNA.

Type of antenna (T, 7, umbrella, fan, etc.): T type cage

Masts—Number: 2 Steel or wood? Wood Other supports: _____

Essential dimensions—Maximum height above ground or water: 90 ft. Length of horizontal part: 100 ft.

Length of vertical part (including lead-in): 100 ft. Total length measured from apparatus: 110 ft.

Length of ground connection: 10 ft. Fundamental wave length: 300 meters.

Other essential dimensions: _____

Number of wires: 4 Size and kind of wire used: 7 #22 Phosphor Bronze Spacing between wires: 4 ft

Insulators—Material: Electroose composition Sizes: 18 inch

Location: On roof of building

Ground connection—Type: Water piping, steel frame of building, and buried wires under antenna

Lightning protective switch—Type: Plug and socket type Location: Insulated support, outside building

How operated: Manually, from outside building.

Remarks: _____

1 Person, company, or corporation controlling and operating station and responsible, under the law, for operation and radio accounts.
2 Show address of office to which should be sent communications concerning radio accounts and operation of station.

AUXILIARY APPARATUS (IF SHIP STATION).

Type and make: _____ Wave length: _____ meters.
 Source of power: _____ Normal day range (nautical miles) with ships: _____
 Plain aerial or coupled circuits? _____ Condenser in aerial circuit? _____

NORMAL WAVE LENGTH AND OTHER WAVE LENGTHS APPLIED FOR.
 (UNDERScore NORMAL.)

SENDING WAVE LENGTH.	ANTENNA CURRENT.	LOGARITHMIC DECREMENT.
300 meters	5 amp.	0.2
600 meters	10 amp.	0.15
485 meters	13 amp.	0.15
485 meters	8 amp.	Radio Phone
410 meters	10 amp.	0.15
360 meters	8 amp.	Radio Phone

*for broadcast
 weather & news
 reports only*
*for broadcast
 of news & later
 weather only*

If public service coast station, the station insures rapid exchange with land wire stations as follows:
 Company: _____ Place: _____ By direct wire or telephone? _____
 Company: _____ Place: _____ By direct wire or telephone? _____
 Number of operators required—First grade: _____ Second grade: One Others: _____

POWER SUPPLY TO TRANSMITTER.

(a) Motor generator: _____ Motor. _____ Generator. _____
 Voltage—A. C. or D. C. and cycles: _____ Volts (rated) and cycles: _____
 H. P. (rated): _____ Speed: _____ K. W. (rated): _____
 Location: _____ K. V. A. (rated): _____
 Remarks: _____

(b) Power-measuring instruments:
 Type, make, range, etc. Not permanently connected; any type and range available.
 Motor starter—Direct or distant control? _____ Are motor field rheostat and generator field rheostat provided? _____

(c) Storage battery:
 Make: _____ Type: _____
 Capacity (ampere hours): _____ Number of cells: _____ Location: _____

(d) Internal-combustion engine:
 Make: _____ Type: _____
 K. W. of generator (rated): _____ Location: _____

RADIO APPARATUS.

(a) Transmitter:
 Is proper means provided for reducing the range of the station as required by the London Convention? Yes
 Condenser in aerial circuit for 300 meters, _____ meters.
 Coupling—Inductive or conductive? Inductive Type of primary condenser: Metal plates, Oil dielect.

(b) Receiver:
 Is secondary circuit tuned or untuned? Tuned Are complete duplicate receivers installed? No.
 Are tuning positions for 300 meters and 600 meters plainly marked on apparatus? Yes
 Method used for disconnecting receiver when transmitting (hand switch or automatic "break"): Hand Switch.

Signature of applicant: University of Wisconsin
 By: Carl M. Terry
Assoc. Prof. of Physics

INSTRUCTIONS TO RADIO INSPECTORS.

Send out this form in triplicate—one for the applicant's files if he desires it. When received back, fill in the following; preserve one copy for your records and forward the original to the Commissioner of Navigation with report and recommendation.

Received by (inspector): L.R. Schmitt, at Chicago, Ill. Date: Dec. 23, 1921.
 Date of inspection of station: Not inspected. Inspected by: _____
 Name of port or inspection district in which inspection was made: _____

REPORT AND RECOMMENDATION.

Forwarded and recommended that license be issued. 410 meter wave desired for intercommu-
nication between universities shown. As present Experimental license does not cover
traffic handling. If 410 meter wave desired cannot be issued it is recommended that
375 meter wave be incorporated in this license.

Respectfully,
L.R. Schmitt
 Radio Inspector.

The license, when approved by the Secretary of Commerce, will be forwarded to the inspector for delivery to the applicant. The inspector will then fill in from the license the following on his file copy:

Class of license: _____ Serial No.: _____ Date of delivery to applicant: _____