

Saginaw County Amateur Radio Band Plan

Updated March 2003

Section 1 Purpose

Members of the Saginaw Valley Amateur Radio Association Incorporated, hereby establish a plan for the use of certain frequencies within the county. The purpose of this plan is to: (1) create documentation of existing spectrum usage by amateur radio operators within the county; and (2) to provide a reference for use in emergency management or other government planning activities.

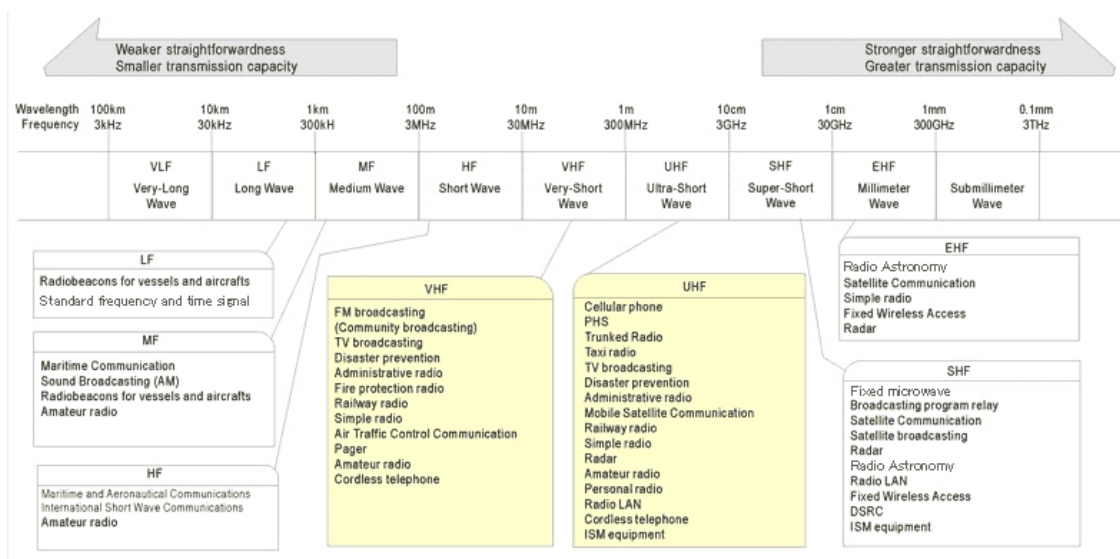
Section 2 Purview

The purview of this band plan is radio frequency spectrum allocated to amateur radio operations by the Federal Communications Commission or its successor agency. These frequencies may range from a few hundred thousand cycles per second to several billion cycles per second.

Section 3 Definitions

Radio frequencies are measured in terms of how many changes of electrical polarity occur per second. A change of one cycle per second is referred to in standard international nomenclature as one "Hertz." A change of one thousand cycles per second equals one "KiloHertz (KHz); a change of one million cycles per second equals one "MegaHertz" (MHz), and so forth. Well known examples are the American AM radio stations broadcasting within assigned frequencies from 535 KHz to 1705 KHz or American FM broadcast stations assigned frequencies between 88 MHz and 108 MHz. Locally, one may hear of WSAM at 1400 on the dial (1400 KHz) or WHNN at 96.1 (MHz)

Within the entire radio frequency spectrum, there lie several independent clusters or groups of continuous frequencies that have been allocated for use in amateur radio operations. An identifier or name is associated with those frequencies groups. The name relates to either the physical length of a radio wave in that band, or the number of times a voltage or current alternates at the specific radio frequency being referred to. Groups of contiguous frequencies are often referred to as radio frequency "bands." For example the frequency range 535 to 1705 KHz is known as the "AM Broadcast Band." The frequency range 88 MHz to 107 MHz is the "FM band."



Most amateur radio bands are identified by their relative positions on the scale of known radio frequencies. For example, amateur radio frequencies lying between 3 and 30 MHz lie within the "HF"

or “high frequency” band. Frequencies between 30 and 300 MHz lie within the “VHF” or Very High Frequency band. Frequencies between 300 MHz and 3 GigaHertz lie within the “UHF” or Ultra High Frequency band. Common names for groups of amateur radio frequencies that refer to a electromagnetic wave’s length (wavelength) are the 160 meter band (1.8 to 2 MHz), 80 and 75 meter bands (3.5 - 4 MHz), 40 meter band (7 to 7.3 MHz) and the 2 meter band (144 to 148 MHz). Other names, such as the 220 MHz band and the 440 MHz band, that derive their identities from the frequency are also commonly used.

Important communication factors are associated with each band. Radio signals within the VHF and UHF bands follow paths that are usually straight lines and are useful over “line of sight” distances. That is the “path” or distance they are reliably useful for in communicating is generally a relatively short distance. On the other hand, there are the HF bands (3 to 30 MHz); also called short wave bands. Radio signals in this part of the electromagnetic spectrum are often refracted (turned over a distance) as they travel through parts of the earth’s atmosphere. The refraction process will return a radio signal to the earth. A typical HF signal that has been refracted will cover a signal path of from several hundred miles to as much as 2500 miles. These are the bands used for medium to long distance communication. The HF bands also have signal components that travel short distances too.

Some terms used in this document and not defined in other parts include:

- “AM” or amplitude modulated signals (these are usually voice transmissions of the type heard on American broadcast stations)
- “cw” which is a continuous wave radio transmission commonly referred to as morse code transmissions
- “SSB” which is a “single sideband” transmission (a method of transmission used for audio communication that compresses energy into a smaller frequency range than AM. This yields more “talk power.” SSB transmissions can be deciphered when AM signals cannot, but to the untrained ear there is distortion that makes the voice sound like “Donald Duck” is speaking;
- FM or frequency modulation creates a radio signal that is impervious to static and other disruptive electromagnetic noise
- “Calling frequency” is a frequency used to establish an initial contact. It is more efficient to monitor one frequency in a band rather than several. Following the initial contact, participating stations move to a mutually agreeable frequency where they continue communicating. This permits other new contacts to be establish on the “Calling frequency.”

Section 4 Authority and Special Operating Rules

The right to use a specific frequency or segment of the radio frequency spectrum is authorized by the US government through its agencies, primarily the FCC. In some cases, this authority devolves from the FCC to frequency coordinating organizations. In the case of amateur radio operations, frequency coordinators are volunteers who accept petitions to erect VHF and UHF signal relaying devices commonly called “repeaters”. The general rule applying to amateur radio operation is that no frequency may be used exclusively by an individual amateur radio operator or a group of amateur radio operators. All frequencies are to be shared.

However, “repeater” operations are a special exception to this rule. Repeaters use fixed transmit and receive frequencies and an automated device. A “repeater” accepts an input signal (often from a weak station such as a “walkie talkie”). The repeater then retransmits the received signal using higher transmitting power and a well positioned antenna. The technique enables mobile and portable stations to be heard over much greater distances than normal. Repeaters usually operate continuously 24 hours per day, 365 days per year. The FCC requires that “repeater” frequencies be coordinated within

specific geographic areas by a frequency coordinating organization. The de facto enforcement rule is that “coordinated repeaters” have exclusive use of certain frequencies. This band plan recognizes only coordinated repeater operation.

Section 5 Categories Covered

This plan covers the general use of (HF), (VHF) band and (UHF) bands.

Section 6 HF Usage and Coordination with State Plans

In the HF spectrum all amateur modes of operation and all allocated frequencies are to be shared without exclusive use by an individual or group. In times of emergency, Michigan RACES and ARES band plans are to be followed. Specific allocations from state plans incorporated by reference in this plan are the state Amateur Radio Public Service Corps (ARPSC) calling and emergency communication frequencies. For radiotelephone operation they are 3.932 MHz and 7.232 MHz. 3.663 MHz has been reserved for morse code operation. It is the intent of this Saginaw County plan to automatically incorporate all calling and emergency frequencies that are now, or that at some future date become part of Michigan’s ARES and RACES operating plans. It is also the intent of this plan to incorporate any state ARES and RACES recommendations for digital or other modes of operation employed now or in the future.

Section 7 Saginaw County VHF and UHF Usage

Within the VHF spectrum, there are several frequencies assigned for “repeater” operation. While a “pairing” of frequencies has been established for six meter operation (51.36 MHz and 51.86 MHz) there is no active repeater at the date of this writing. 147.24 and 147.84 MHz have been used since the 1970s as the primary frequencies for the Saginaw Valley Amateur Radio Association’s coordinated repeater. 145.33 and 146.73 MHz are paired and coordinated frequencies used by a private party who maintains a repeater available to the public. The national six meter calling frequency of 52.525 MHz is recognized and reserved for simplex operation and calling purposes in Saginaw.

The frequency 146.52 MHz continues in use as part of the national calling frequency on two meters. 146.58 MHz has been used as the incident command simplex frequency for emergency management purposes. 146.55 has been used as the simplex frequency assignment for non-incident command communications in emergency management scenarios.

Paired frequencies assigned for “repeater” operation on 224.28 and 224.68 MHz have been “coordinated” for use by the Saginaw Valley Amateur Radio Association.

Within the UHF spectrum, several frequencies have been reserved for repeater use and others are designated for both general amateur radio use and emergency response activities. Privately owned repeaters using the paired, “coordinated” frequencies of 442.075 and 442.575 MHz and 444.675 and 445.175 MHz are available. A private party repeater “coordinated” and used to link with other repeaters in the state has the frequency pairing of 442.450 and 442.950 MHz.

Digital communications in the form of APRS and Packet radio transmissions have been used for some time on 444.395 MHz.

UHF communications used to link remote receivers to the SVARA 147.24 MHz repeater have been in operation since the late 1990s on 433.200 MHz, 433.400 MHz and 433.600 MHz.

BAND PLAN FOR SAGINAW COUNTY AMATEUR RADIO EMERGENCY COMMUNICATION

Overview by Spectrum and Mode

MODE SSB FM-VOICE CW PACKET PACTOR SS-TV FS-TV SPECTRUM

HF	Y	N	Y	Y	Y	Y	N
VHF	Y	Y	A	Y	N	Y	N
UHF	N	Y	A	Y	N	Y	Y

Frequency Assignments

Frequency	Emission	Traffic	Obligation
3.624 MHz	Pactor/Packet	I/O of county	County Plan
3.663 MHz	A-1	I/O of county	State ARES/RACES Plan
3.848 MHz	A-5/F-5	I/O of county	County Plan
3.921 MHz	A-3	NTS Inter-op	NTS routing
3.932 MHz	A-3	NTS Inter-op	State ARES/RACES Plan
3.935 MHz	A-3	NTS Inter-op	County Plan
3.952 MHz	A-3	NTS Inter-op	County Plan
3.953 MHz	A-3	NTS Inter-op	NTS routing
7.068 MHz	A-1	I/O of county	State ARES/RACES Plan
7.124 MHz	Pactor/Packet	I/O of county	County Plan
7.174 MHz	A-5/F-5	I/O of county	County Plan
7.232 MHz	A-3	NTS Inter-op	State ARES/RACES Plan
14.063 MHz	A-1	I/O of county	County Plan
14.232 MHz	A-3	I/O of county	County Plan
52.525 MHz	FM-VOICE	Inter-op	County Plan/National Calling Frequency
144.24 MHz	A-3	District/County	County Plan
145.09 MHz	Packet	District/County	County Plan
145.524 MHz	A-5/F-5	District/County	County Plan
145.76 MHz	Packet	I/O of county	SEC/RO recommendation
146.52 MHz	FM-VOICE	Inter-op	County Plan/National Calling Freq
146.55 MHz	FM-VOICE	Served Agencies	County Plan
146.58 MHz	FM-VOICE	Incident Cmd	County Plan
147.24/.84 MHz	FM-VOICE	General Communication	County Plan
222.24 MHz	FM-VOICE	Served Agencies	County Plan
224.28/68 MHz	FM-VOICE	General Communication	County Plan
439.25 MHz	A-5/F-5	ATV	County Plan
442.075/.575 MHz	FM-VOICE	General Communication	County Plan
442.450/.950 MHz	FM-VOICE	I/O of county	County Plan
433.200/.4/.6 MHz	F-3	Link Service	County Plan
434.000 MHz	A-5/F-5	Served Agencies	County Plan
444.395 MHz	Packet/Pactor	Served Agencies	County Plan
444.675/445.175MHz	FM-VOICE	General Communication	County Plan

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