

Appendix G

Request for waiver of bandwidth efficiency requirements based on necessary low data rate.

Part 90.203(j)(3) and 90.203(j)(5) indicate that any transmitter designed to operate in the 150-174MHz range must meet a spectrum efficiency standard of one voice channel per 12.5kHz (or 6.25kHz) of bandwidth. We request a waiver of this requirement for the MK9A transmitter based on the following:

- Since the MK9A transmitter is primarily used for aural radiolocation, pulse rates faster than ~3pulses/sec do not improve system performance. This slow pulse rate, if termed a 'data rate', would require a very narrow bandwidth – and thus a very wide pulse width in order to meet the spectral efficiency requirement. A 15-60msec pulse width is typically sufficient for aural reception, and represents a lower total radiated power, despite its wider relative bandwidth. This transmitter does not require the full 12.5kHz (or 11.25kHz) bandwidth for optimum system performance. We submit that the 1kHz authorized bandwidth requirement for wildlife and oceanographic transmitters specified in 90.248(d) is more appropriate to this application.
- In order to minimize power and size requirements, the MK9A transmitter circuit makes only minimal provision for RF pulse shaping. As a result, the essential bandwidth for this transmitter is approximately 1kHz (@16msec pulse width) and decreases as pulse width increases.

Thus, we request an exemption to the spectral efficiency requirement of 1 voice channel per 12.5kHz (or 6.25kHz) of channel bandwidth. Instead, we request to certify under the 1kHz authorized bandwidth requirement of 90.248(d) while complying with standard emission masks 'D' and 'E', corresponding to MURS 12.5 and 6.25kHz channel bandwidths, respectively.