Uplink Preamble Discussion

Initial draft KB5MU, KA9Q, W5NYV

The uplink channel is currently assumed to be 10MHz wide, consisting of one hundred 100kHz channels. We want a constant envelope signal. We want reliable signal acquisition at the satellite. We want to reduce adjacent channel interference. We do not want to spend more power than necessary.

We believe uplink transmissions should begin with a preamble. The purpose of the preamble is for the satellite to identify a Phase 4 signal from the earth and synchronize with it. We believe the preamble should contain the absolute minimum amount of information required to allow demodulation. The central question from the satellite is “How do I decode what follows?” This question must be answered by the preamble.

Since a user terminal can hear itself on the downlink, it will not have to resynchronize as long as its own signal is being received. If it loses its own signal, then the preamble is resent.

If a station becomes unsynchronized and is not monitoring (or can no longer monitor) the downlink, then it will not resynchronize before it stops transmitting. It is therefore potentially a jammer. An uplink-only station may occur during an emergency or during certain types of automatic or unattended transmissions. Therefore this scenario needs more thought and review in order to avoid unintended consequences.

Below are the components of the preamble in time order.