Run/S&P/Unknown Classification Algorithm

Version 0.22.0-Beta

Date: 2025-07-29

The purpose of this algorithm is to analyze a contest log and infer the operator's activity for each contact, classifying it as one of three types: Run, Search & Pounce (S&P), or Unknown.

The analysis is performed independently for each operating "stream"—a unique combination of a band and mode (e.g., 20M CW is one stream, 40M SSB is another). The algorithm uses a two-pass approach.

Pass 1: Initial Classification (Run vs. S&P)

The first pass uses a "sticky run" state machine to make an initial classification.

1. Identifying a Run: A "run" is defined as a period of high-rate activity on a single frequency. The algorithm identifies the start of a run when it detects a minimum number of QSOs (typically 3) occurring on the same frequency within a short time window (e.g., 10 minutes).
2. The "Sticky" State: Once a run is identified, the algorithm enters a "run state." It assumes the operator is still running and will continue to classify all subsequent QSOs on that frequency as Run.
3. Breaking a Run: The run state is maintained until one of two conditions is met:
    - Time-Out: A significant amount of time (e.g., 2 minutes) passes without a QSO on the run frequency.
    - Frequency Change: The operator makes several consecutive QSOs on other frequencies, indicating they have moved to search for new contacts.
4. S&P Classification: Any QSO that is not part of an identified run is initially classified as S&P.

Pass 2: Reclassification of Low-Rate QSOs

The second pass refines the results by identifying periods of very low activity where the operator's intent is ambiguous.

1. Reviewing S&P QSOs: The algorithm re-examines only the QSOs that were classified as S&P in the first pass.

2. Checking the Rate: For each S&P QSO, it looks at the number of other contacts made in a time window both before and after it (e.g., 15 minutes).
3. Reclassifying to Unknown: If the QSO rate in the surrounding period is below a certain threshold, the activity is considered too low to be definitively classified. In this case, the QSO's status is changed from S&P to Unknown.

The final output is a log where every contact is annotated with its inferred operating style: Run, S&P, or Unknown.