Contest Log Analyzer - User Guide

Version 0.22.0-Beta

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1. Introduction: What is the Contest Log Analyzer?

The Contest Log Analyzer is a powerful command-line tool designed for amateur radio contesters who want to perform deep, data-driven analysis of their operating performance. It goes beyond the simple score summary provided by most logging software, allowing you to:

- Process raw Cabrillo log files into a clean, standardized format.

- Automatically classify every QSO as "Run," "Search & Pounce," or "Unknown" to analyze your operating strategy.

- Generate detailed reports and charts that compare your log against one or more others.

- Analyze performance on a band-by-band basis to identify strengths and weaknesses.

- Calculate contest-specific QSO points for supported contests.

The ultimate goal of this program is to help you understand your contest operation in minute detail, identify missed opportunities, and improve your strategy for the next event.

2. What You Need to Get Started

Before running the analyzer, you will need a few files:

- Your Cabrillo Log File(s): These are the standard log files generated by your contest logging software (e.g., k3lr.log, kc1xx.log). You can analyze a single log or compare multiple logs at once.

- A Country File (cty.dat): The program requires the standard cty.dat country file to determine the country, continent, and zone for each callsign.

- An Environment Variable: You must tell the program where to find your country file by setting an environment variable named CTY_DAT_PATH. This variable should point directly to your cty.dat file.

3. How to Run the Analyzer

The program is run from your command prompt using main_cli.py. The basic command structure is:

python main_cli.py --report <ReportID> <LogFile1> [<LogFile2>...] [options]

Key Components:

- --report <ReportID>: This is the most important part. It tells the program which analysis to run. You can use a specific ReportID (like rate_sheet) or use all to generate every available report.

- <LogFile1>: You must provide the path to at least one Cabrillo log file. You can list as many as you want to compare them.

Optional Flags:

- --include-dupes: By default, all reports exclude duplicate QSOs from their calculations. Use this flag to force them to be included.

- --mult-name <name>: For reports that analyze multipliers (like the "Missed Multipliers" report), you must use this flag to specify which multiplier you want to analyze (e.g., --mult-name Countries or --mult-name Zones).

- --metric <qsos|points>: For the "Cumulative Difference Plot," this flag lets you choose whether to plot the difference in QSO counts or Point totals.

Examples:

- Generate all reports for two logs:

python main_cli.py --report all k3lr.log kc1xx.log

- Generate just the Rate Sheet for a single log:

python main_cli.py --report rate_sheet k3lr.log

- Generate the Missed Countries report for two logs:

python main_cli.py --report missed_multipliers --mult-name Countries k3lr.log kc1xx.log

4. What the Program Creates

When you run the analyzer, it creates two main types of output:

- Processed CSV Files: For each Cabrillo log you provide, the program creates a new, detailed CSV file (e.g., k3lr_processed.csv). This file is a "super log" that contains all

the original QSO data plus all the new information the program has generated, including:

- o Run/S&P/Unknown classification for each QSO.

- o DXCC Country, Continent, and CQ/ITU Zone information.

- o Contest-specific QSO points.

- o Contest-specific multiplier information.

- Report Output Directory: The program creates a structured directory named reports_output to store all the generated reports. The structure is organized by year and contest name, with subdirectories for each type of report:

- o reports_output/YYYY/ContestName/text/ (for text-based reports)

- o reports_output/YYYY/ContestName/plots/ (for line graphs)

- o reports_output/YYYY/ContestName/charts/ (for bar charts)

5. Description of Available Reports

Text Reports

- Score Summary (score_report): A comprehensive score breakdown for each log, showing QSOs, multipliers, points, and average points per QSO on a per-band and total basis.

- QSO Summary (summary): A high-level overview for each log, showing the total number of QSOs and the breakdown of contacts by operating style (Run, S&P, Unknown).

- Rate Sheet (rate_sheet): A detailed, hour-by-hour breakdown of QSO rates for a single log, showing the number of contacts made on each band.

- Comparative Rate Sheet (rate_sheet_comparison): A side-by-side, hour-by-hour comparison of the QSO rates for two or more logs.

- QSO Comparison Summary (qso_comparison): A detailed pairwise comparison of two logs, showing the breakdown of Total, Run, S&P, Unique, and Common QSOs on a per-band and overall basis.

- Continent Summary (continent_summary): Shows the total number of QSOs worked on each band, grouped by continent.

- Continent Breakdown (continent_breakdown): A more detailed version of the continent summary. For each band, it shows the number of QSOs per continent, further broken down by Run, S&P, and Unknown status.

- Missed Multipliers (missed_multipliers): A powerful comparative report that shows which multipliers were worked by one station but not the other on a band-by-band basis. Requires the --mult-name flag.

- Multiplier Summary (multiplier_summary): Provides a detailed breakdown for a specific multiplier type (e.g., Countries). For each multiplier, it lists which station worked it on which band and how many times. Requires the --mult-name flag.

- Multipliers by Hour (multipliers_by_hour): Shows the number of *new* multipliers worked on each band during each hour of the contest. Requires the --mult-name flag.

Plots and Charts

- QSO Rate Plots (qso_rate_plots): A set of line graphs showing the cumulative QSO total over the course of the contest, with an inset summary table. It generates one plot for all bands combined and separate plots for each individual band.

- Point Rate Plots (point_rate_plots): Similar to the QSO Rate Plot, but it shows the cumulative point total over time.

- QSO Breakdown Chart (qso_breakdown_chart): A comparative bar chart that visually breaks down the unique QSOs for two stations on each band by their Run, S&P, and Unknown status, with a central bar showing the number of common callsigns.

- Cumulative Difference Plots (cumulative_difference_plots): A three-part plot that shows the running difference in QSOs or Points between two logs. The main plot shows the overall difference, while two sub-plots show the difference in Run and S&P contacts.