

CQFTx User Manual

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CQFTx is a guided FT8/FT4 application for portable and fixed-station operation. It decodes received signals, organizes actionable stations, prepares correctly timed messages, controls a supported radio, and records completed contacts. It supports two operating roles - **Hunter** and **Activator** - and three logging activities - **Normal**, **POTA**, and **SOTA**.

This manual describes the current Android interface. In the app, "tap" means a normal single tap unless another gesture is stated.

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1. Safety and requirements

Required equipment

- An Android phone or tablet that supports USB host mode
- A supported radio: QRP Labs QMX or QDX, Icom IC-705, IC-7300, or IC-7300MK2
- A USB CAT/control connection to the radio
- A receive-audio path from the radio to Android
- A transmit-audio path from Android to the radio
- Correct cables or a powered USB hub for the station
- GPS/GNSS hardware and location permission when available; CQFTx uses the GPS fix as its preferred UTC time and location source

Before transmitting

Verify all of the following:

- The callsign and grid shown in CQFTx are correct.
- The selected band and digital mode match the radio.
- RX audio is producing a usable waterfall.
- TX audio is routed to the radio, not the Android speaker.
- CAT control can key and unkey the radio reliably.
- The radio is in its data mode with normal speech processing disabled.

- The transmit level produces ALC and power readings appropriate for the radio.

CQFTx blocks transmission when it knows that a required path is missing or unsafe, but it cannot detect every wiring, level, antenna, or radio-configuration problem. Monitor the radio during the first transmissions after any station change.

Screen and sound behavior

CQFTx keeps the screen awake while the application is open. It does not use UI sound effects or QSO audio cues, so interface feedback cannot mix with received or transmitted digital audio.

2. First-time setup

Station Setup

Open the **hamburger menu** and tap **Station Setup**.

Enter or review:

- **Station callsign** - your on-air callsign
- **Operating area** - the station's ISO country and first-level subdivision, such as US-CO or CA-BC; CQFTx uses this with the grid when judging directed CQ geography and activity identity
- **AP decode handling** - how CQFTx treats expectation-assisted decodes
- **DT warning** - the timing-error threshold at which a decode is called out
- **Hunter TX limit** - total transmissions allowed at one unanswered Hunter exchange stage (default 7)
- **Activator TX limit** - total transmissions allowed at one unanswered Activator exchange stage (default 3; the initial transmission counts)
- **Pause Hunter TX while the target is working another station** - enabled by default. When a selected CQ station starts an exchange with someone else, CQFTx keeps your QSO state but stops transmitting until that station sends a CQ, QRZ, RR73, or 73, or sends a message directly to you. Clear this option if you want CQFTx to continue calling through the other exchange. If the target fades, CQFTx automatically releases the pause after three expected target-transmit windows without further busy traffic. It then uses the exchange's remaining retries and ends the current attempt if no response arrives. A fresh decode makes the station immediately eligible again.
- **Continue receiving in background** - opt-in Android foreground receive mode. CQFTx shows a persistent notification and keeps USB audio reception alive when you press Home. Automatic and active transmission are stopped when the app leaves the screen; tap the notification to return or tap **Stop** to disable it.

CQFTx requests GPS time and location automatically when it opens. Until a fresh fix arrives, the clock and map controls are red. A valid fix supplies both the application UTC clock and the station grid, and changes the corresponding controls to green. CQFTx requests another one-shot fix after returning from a sleep or background interval of at least two minutes and every 30 minutes while operating. The controls are amber while that refresh is underway or the prior GPS clock is being extrapolated. Tap the clock to inspect UTC status or **Retry GPS Lock**.

CQFTx also validates every completed receive window before using silence to make an automatic decision. A compact warning appears only when the USB route cannot be confirmed, audio frames are missing, the input is digitally silent, or it is clipping. The waterfall and decode list remain available, but that window cannot advance a silence timeout.

The monotonic clock continues through Android deep sleep, so UTC does not stop while GPS is reacquired. A refreshed correction is applied only at an idle FTx slot boundary and never during an active or reserved transmission. Corrections of 500 ms or more invalidate and rearm future TX timing. Tap the map control to configure the grid and select a 4- or 6-character Maidenhead identifier.

The GPS search keeps manual location and time controls disabled. If the device has no GPS hardware, location permission is denied, the provider is disabled, or no fix arrives within 45 seconds, the clock and grid dialogs enable their manual fallbacks. Enter UTC as YYYY-MM-DD HH:mm:ss through the clock control and enter the selected 4- or 6-character grid through the map control. GPS remains preferred and will replace the manual fallback after a later successful retry.

AP decode choices are:

- **Off** - do not use expectation-assisted results
- **Show only** - display them but do not make them actionable
- **Allow after confirmation** - permit manual use after confirmation
- **Use automatically** - allow them to participate in normal selection

Expectation-assisted decodes use orange row highlighting so they are distinguishable from ordinary decodes without adding text to the message.

Radio Setup

Tap the **radio icon** on the main status line. COFTx opens **Radio Setup** directly.

Select and verify:

- USB CAT device
- RX audio input
- TX audio output
- **SWR protection**, if supported by the radio

On a ready QMX, **SWR Sweep (Test)** runs a supervised reduced-power sweep over the complete selected band. The range is fixed to the app's band edges and cannot be edited or extended out of band. CQFTx samples up to 51 points, stops if the configured SWR protection limit is reached, and always attempts to restore the original dial frequency and receive configuration. This QMX-only tool is unavailable on QDX; connect an antenna or suitable load and remain with the radio throughout the test. While the sweep runs, CQFTx plots a live curve with frequency in MHz on the X axis and SWR on the Y axis. A dashed line marks the configured protection limit, and the lowest valid point is highlighted. The exact band/mode target is always the first measurement; the remaining points alternate below and above it. The completed curve remains visible above the detailed measurement list, including partial results after a stop or failure. Tap **Re-test** to run the same protected sweep again. Up to three earlier curves remain as faint overlays while the newest curve is drawn at full strength, making antenna adjustments directly comparable without weakening the SWR cutoff.

CQFTx fixes the transmit PCM peak at 100%. It is not an operator-adjustable setting. Radio output power remains controlled by the radio and station setup, not by reducing the digital audio waveform inside CQFTx.

The same window shows one compact readiness summary. Healthy implementation details stay out of the way; setup blockers, decode-timing warnings, and audio-level warnings remain visible. CQFTx refreshes the available CAT and audio paths automatically when Radio Setup opens.

Android may ask for permission to use the USB device. Grant that permission when prompted. Android Developer Options are not required for normal USB radio access.

For the IC-705, IC-7300, and IC-7300MK2, connect the radio's USB data port and select its USB audio endpoints. CQFTx uses CI-V on virtual COM port A, explicitly selects USB-D with USB as the DATA MOD source, and leaves DTR/RTS keying disabled. The original IC-7300 uses CI-V address 94h. The IC-7300MK2 driver first probes its default CI-V address, B6h, then 94h for radios placed in IC-7300 compatibility mode. CQFTx uses the responding address for the complete radio session.

The main screen radio icon reflects readiness. If transmission is blocked, open Radio Setup and resolve the highlighted path or safety condition before continuing.

3. Screen overview

The main screen is arranged in this order:

[illegible]

In portrait orientation the operating panels stack vertically. On a wide landscape display, Hunter places its workflow to the left of the wider decode pane. Activator places Current QSO/activity at the upper left, the waiting-caller queue directly below it, and the wider chronological decode pane on the right. The controls and operating logic are the same in both orientations.

The interface is deliberately task-oriented:

- **Current workflow** shows what the app is doing and what should happen next.
- In Hunter, **Live Decodes** combines CQs and replies addressed to your station.
- In Activator, the left-side panel below Current QSO/activity shows the next and waiting callers.
- **Live Decodes** or **Pileup Traffic** shows received traffic that can be acted upon.

- The small progress strip shows the current synchronized receive or transmit window.

4. Waterfall and timing

Reading the waterfall

The waterfall displays received digital activity across the radio audio passband, approximately 200-3000 Hz. It renders the passband at 2.5 Hz per horizontal bitmap column so narrow FT8 and FT4 traces remain distinct on high-resolution screens. New audio enters at the live edge and becomes a visible trace. Stronger signals generally appear brighter.

An empty waterfall usually means one of the following:

- the wrong RX audio input is selected;
- Android has not granted audio permission;
- the radio is not sending audio to the selected device;
- the receiver level is too low; or
- no signals are present in the selected band and mode.

Selecting a transmit offset

Tap a clear point in the waterfall to select that TX audio offset. CQFTx displays the selected offset on the status line. If a QSO is already in progress, CQFTx keeps the station's receive target unchanged and prepares the current message again at the newly selected TX offset when it is safe to do so.

The offset cannot be changed while the transmitter owns the audio path or when another safety lock prevents retuning.

The waterfall footer also contains the TX-offset lock. **Locked** is the default and keeps transmissions on the selected clear offset when you tap a CQ or another decoded station. The receive target still follows that station independently. Tap **Locked** to switch to **Follow** only when you intentionally want transmissions to follow the selected station's audio offset. Tap **Follow** to lock the current TX offset again. The setting persists across app restarts.

Find Clear Audio Spot

The small **Find clear audio spot** control at the upper-right of the waterfall opens the **Clear Audio Slot** dialog.

CQFTx needs three complete receive windows before it can rank openings. The dialog presents up to three candidate offsets using recent waterfall occupancy and decoded traffic. Tap a recommendation to use it.

The tool never silently retunes the station. It is unavailable while transmitting or during an active QSO, because changing frequency then could disrupt the exchange.

RX/TX window progress

The thin strip immediately below the waterfall shows progress through the current synchronized window. FT8 uses 15-second windows; FT4 uses 7.5-second windows.

CQFTx does not begin a message so late that only a partial transmission would be sent. If a send request misses the safe start of its assigned window, the message remains armed for the next matching window. This can look like a skipped window, but it protects the exchange from a truncated transmission.

Accurate time is essential. The operating workspace warns while GPS has not locked. If decoding is sparse, DT warnings are frequent, or stations repeatedly fail to answer, use the clock control to verify GPS synchronization. Use the manual UTC fallback only after CQFTx makes it available because GPS could not lock.

5. Shared controls and dialogs

The compact status area below the waterfall contains the controls used in both Hunter and Activator roles. It is one row on wider screens and wraps into two or three short rows in portrait so every control remains readable and reachable.

Control	What it shows	What happens when tapped
Radio icon	Radio readiness	Opens Radio Setup directly. Select CAT and audio paths and inspect safety or health problems.
Band	Current amateur band	Opens the band selector. Choosing a band updates the operating band and requests the appropriate dial frequency when the connected radio supports it.

Control	What it shows	What happens when tapped
Mode	FT8 or FT4	Opens the digital-mode selector. Choosing a mode changes timing, decoding, message handling, and the mode-appropriate dial frequency.
Frequency / offset	Dial frequency and audio offset	Tap the display to open the frequency modal. Enter MHz such as 14.074, or a full value in Hz. Tap the waterfall to change the audio offset.
Activity icon	Normal, POTA, or SOTA	Opens the activity window to select Normal or start, view, or end a POTA/SOTA activation.
Clock + UTC	Current application UTC; green for a current GPS fix, amber during refresh/extrapolation, and red for manual/system fallback	Opens UTC status and manual setup. Retry GPS Lock is located here. Manual UTC entry is enabled only when GPS is unavailable.
Map + grid	Current Maidenhead grid; green when GPS supplied, amber while GPS is refreshing, and red when manually supplied	Opens Grid Square setup. Choose 4- or 6-character precision and enter a manual grid when GPS is unavailable.
Spots icon + count	Recent PSK Reporter spots	Opens the spot view. If the station callsign is missing, CQFTx opens Station Setup first.
Tree + count	POTA spots	Opens current POTA spots filtered for the selected band and mode.
Mountain + count	SOTA spots	Opens current SOTA spots filtered for the selected band and mode.
QSO log icon + count	QSOs in the current activity log	Opens the current log. During an activation it shows that activation; otherwise it shows the ongoing Normal log.
Hamburger menu	Additional setup and recovery	Opens Station Setup , exports diagnostics, or resets operating state. Debug builds may also show Operation Simulator .

Spots view

The general Spots view can show PSK Reporter reports for the station using a consistent map and an age choice such as 1, 5, 15, 30, or 60 minutes. Live reporting requires Internet access. The **Send decodes to PSK Reporter** checkbox sits in the bottom action row beside **Done**. It controls optional reception reporting and is off by default.

POTA and SOTA spot lists are filtered to the selected band and mode. Spot data helps prioritize likely contacts but is not required to decode or complete a QSO.

Activity symbols in decodes

- A **tree** identifies POTA activity.
- A **mountain** identifies SOTA activity.
- An activity symbol with a **sun** means the decoded station also matches a current online spot.

A station calling CQ POTA or CQ SOTA can receive the appropriate local activity icon even without Internet access.

Decode filters

The main decode pane shows **All** retained decodes by default in both Hunter and Activator modes. No separate All Decodes button or dialog is required.

Use **CQs**, **Current QSO**, **Replies to Me**, or **Relevant Traffic** when a quieter operational view is useful. CQs shows only CQ messages. Current QSO shows received and transmitted traffic for the selected station. Replies to Me shows messages addressed to the operator. Relevant Traffic restores the role-specific operational view: actionable CQs and replies in Hunter, or the active and queued pileup traffic in Activator. Filtering changes only the presentation; every decode continues to update station state and diagnostics.

6. Reading the operating workspace

Hunter and Activator selector

The two large role buttons select how CQFTx organizes traffic:

- **Hunter** - find and call stations that are transmitting CQ.

- **Activator** - call CQ, manage replies, and work a sequence of callers.

The selected role is marked clearly. Changing roles suspends an active exchange in the station state table. A later reply can restore that exchange with its original Hunter or Activator semantics.

Current workflow panel

The current workflow panel is the main operating guide. It gives priority to:

- the current station;
- the current QSO stage;
- the next message;
- the expected received message;
- the next eligible TX window; and
- the action the operator can take now.

During an active exchange, the card uses one shared vocabulary in both roles: TX: contains the exact message that will be sent, while RX: contains what CQFTx is waiting to receive. The primary button contains only the action and timing, such as **Send · in 4s, Starting automatically, Transmitting**, or **Listening**; it does not repeat the protocol message shown in the card. Activator replies and promoted queue stations start automatically when the radio is ready, unless **End QSO** has latched the explicit operator-action hold. Use the primary button as the default next action when one is required, unless you intentionally want to skip or end the exchange.

Live Decodes

Live Decodes presents recent messages with useful state rather than raw decoder output alone. Every row has dedicated **dB**, **DT**, **Message**, and **Location** columns. Row color replaces the former State badge column, leaving more width for the complete message and location. Column text is vertically centered within each decode row. Location is keyed from the decoded grid square and shows only U.S. state or states for a U.S. grid, and the country name for a non-U.S. station. It does not repeat the grid already present in the message. The Message column contains the complete decoded protocol message, including its callsigns; CQFTx does not prepend a second callsign. Landscape layouts also show **H_z** and **Age**. DT is the decoded signal's time offset in seconds; values at or beyond the Station Setup threshold are emphasized and carry !. DT remains diagnostic and does not silently adjust the application clock.

Hunter and Activator workflow cards use the same dB | DT | H_z | Exchange metric order for the recommended, waiting, or current station. The original decoded message remains intact instead of being split into brittle token columns.

Five compact filters appear with the decode stream in both operating modes: **All**, **CQs**, **Current QSO**, **Replies to Me**, and **Relevant Traffic**. **All** is selected by default and is the complete retained decode stream; **CQs** is the only filter that limits the view strictly to CQ messages. Hunter and Activator remember their filter selections independently during the operating session, so changing roles cannot carry a restrictive Activator view into Hunter or vice versa. On narrow panes the filters move to their own horizontally scrollable touch strip so the decode counts and full filter names remain readable. The selected filter is highlighted.

The decode list is one continuous, newest-first chronological table. It does not promote CQs or current-QSO traffic above newer decodes and does not insert **New CQs**, **Relevant Traffic**, **Current QSO**, or **Replies to Me** section headings. Use the filters when you want a focused view; Hunter target priority remains available separately in the workflow recommendation.

Decode colors follow familiar WSJT-X conventions: green is an unworked CQ, red/salmon is addressed to the operator, yellow is a local transmission, gray is worked or a duplicate for the applicable activity, orange is an expectation-assisted decode, and ordinary traffic remains neutral. Color precedence is orange review, addressed to me, TX, worked/duplicate, CQ, then neutral. A worked or activity-duplicate CQ is therefore gray rather than green. No state label or review prefix is inserted into the decoded protocol message.

Tap an actionable CQ or reply to select the station. An active QSO must be completed or ended before another station can replace it.

CQ rows may include **PSK direct** when that exact station recently reported your signal through PSK Reporter, or **PSK nearby** when a same-band report was received near the station's grid. No label means there is no recent evidence; it does not predict failure. These are propagation hints, never guarantees or authorization to transmit.

Guided controls

During a QSO the workspace may offer:

- **Send** - arms the displayed message for the next valid TX window.
- **QSO Options** - opens secondary QSO actions. **Skip Step** is available there with a confirmation so it is harder to trigger accidentally.
- **End QSO** - abandons the active exchange without recording a completed contact. In Hunter mode it also immediately cancels an armed or active transmission, returns the radio to receive, and ends the workflow.

CQFTx observes received messages and advances the workflow when they match the expected exchange. The operator remains responsible for confirming that the selected station and messages are appropriate.

A locally transmitted message appears in Live Decodes when the first waveform frames are written to the USB audio output. Hunter QSO messages, Activator reply messages, and Activator CQ messages all use this same boundary. Merely arming the window or keying CAT/PTT early does not display a sent message, and an aborted transmission is not retained as a completed local TX row.

7. Hunter operation

Hunter role is optimized for finding a station, completing one contact, and moving to the next useful CQ.

Start hunting

- Select the required **Band** and **FT8/FT4 mode**.
- Tap **Hunter**.
- Confirm that the workflow panel says it is listening.
- Leave **All** selected to watch the complete decode stream, or choose **CQs**, **Current QSO**, **Replies to Me**, or **Relevant Traffic** for a narrower view.
- Watch Live Decodes for a desired CQ.

Hunter does not maintain a separate CQ queue or supporting-station column. The workflow panel recommends the next useful target while the decode pane shows all retained traffic in newest-first decode order by default. Replies and CQs are not promoted within that chronological stream.

If another station calls you directly while Hunter is listening, that caller moves ahead of ordinary CQ candidates. Select the call normally. A grid/call from that station prepares your signal report, rather than sending your grid as though you were answering its CQ. A direct signal report or R-report resumes at the corresponding later exchange step.

Geographically directed calls such as CQ EU, CQ USA, or CQ C0 are moved below eligible calls when CQFTx can prove that your station is outside the requested area. Enter an **Operating area** such as US-C0 in Station Setup. If the area is unknown or a CQ selector is ambiguous, CQFTx leaves the station at normal priority. For CQ DX, CQFTx uses 1,000 statute miles as a local ranking heuristic when both stations supplied grids; amateur radio does not define a universal DX mileage. Long-press the decode and choose **Call despite priority** to override this ordering.

If you select an out-of-area directed CQ, CQFTx displays the decoded CQ and the reason it does not include your area. Choose **Respond Anyway** to initialize the Hunter exchange, or **Cancel** to keep listening. No QSO state or transmission is prepared while that confirmation is waiting.

Call a station

There are two normal ways to begin:

- Tap the desired CQ in Live Decodes; or
- tap the workflow panel's recommended **Call** action.

CQFTx selects the station, prepares the first message, and assigns the next complete transmit window of the correct parity. Check the callsign, audio offset, and prepared message before sending.

For an active station, CQFTx maintains its own robust DT and audio-frequency track from independently validated decodes. Targeted recovery follows this track instead of using the passband-wide timing average. AP-only observations do not move it.

Complete the contact

Follow the workflow panel through the exchange:

- Send your call and grid or report as prompted.
- Listen for the selected station's response.
- Send the requested report or acknowledgment.
- When the station sends **RR73**, CQFTx logs the QSO immediately. In Normal activity it still sends a courtesy **73**, but the contact is already safely logged. During POTA or SOTA, CQFTx releases the completed exchange without using another transmit window.
- After the final message is transmitted successfully, CQFTx records the QSO and returns to listening or offers another eligible station.

If the other station repeats a message, CQFTx keeps the exchange at the stage needed to answer it. Do not start a second QSO merely because another CQ appears; end the first QSO explicitly if it cannot be completed.

When the selected station begins working someone else, Hunter pauses automatic TX while retaining the current exchange. A CQ, QRZ, terminal message, or direct reply releases the pause immediately. Three silent windows in which the target would normally transmit also release it, preventing a faded station from leaving the workflow paused indefinitely. Early and final decode passes over the same radio window count only once.

The current workflow card states what CQFTx is doing, why it is waiting, the next message or expected reply, the transmit-window countdown, and the remaining retry allowance. During a busy-target pause it also shows `silent n/3`, so the automatic release is visible before it occurs.

When an unanswered Hunter exchange reaches its TX limit, CQFTx ends that attempt and preserves the exchange state. A fresh qualifying decode from the station makes it immediately eligible again and can restore the saved exchange instead of forcing the operator to start over.

Hunting POTA or SOTA stations

Use the **POTA/SOTA** filter and the activity symbols to focus on portable stations. The tree or mountain identifies the type, and the added sun indicates a matching online spot. Tap the POTA or SOTA count on the status line when you want to inspect the online spot list first. The count color shows data freshness without adding status text: green is live, yellow is cached for less than five minutes, red is cached for five minutes or longer, and gray means the feed has not yet supplied data.

Hunter ranks verified activity spots by what can still qualify. For POTA, the same station at a different park, or on a different band or mode, remains an eligible activity target; the exact callsign-and-park combination already worked in the matching UTC-day context is moved below every eligible CQ. Where the POTA feed supplies a jurisdiction, such as US-CO, the park and jurisdiction are both part of that identity, so the same park reference in another jurisdiction becomes eligible again. A multi-park spot remains eligible while any listed park is still unworked, and portable spot callsigns are associated with the decoded base callsign. For SOTA, a summit already worked that UTC day is moved down even when a different activator appears there, while a different summit remains eligible. If an activity CQ has no verified park or summit reference, CQFTx falls back to whether its callsign was worked that UTC day. Replies addressed to you always remain prominent.

The decode row identifies a qualifying verified target as **POTA target eligible** or **SOTA summit eligible**. An exact activity duplicate shows **DUPE** and the worked park or summit reason so the ordering is visible instead of hidden.

Long-press a Hunter CQ row to see why it is ranked there, including verified spot identity, source, age, and any operator override. The same menu can call a low-priority station anyway, snooze it for 5 or 15 minutes, hide that exact park/summit until the next UTC day, or restore the last skipped callsign. These controls affect only the recommendation queue; they never rewrite the log or change POTA/SOTA duplicate identity.

Normal Hunter contacts are written to the ongoing Normal log unless you have deliberately started a POTA or SOTA activity of your own.

8. Activator operation

Activator role is optimized for calling CQ, collecting replies, and working a pileup without losing track of the current caller.

Waiting callers use stable scored ordering. Confirmed decodes remain ahead of AP hypotheses; POTA/SOTA callers and exchanges closer to completion receive an initial advantage; waiting time gradually prevents starvation; and small SNR differences break otherwise similar ties. Compact reasons such as **Next · POTA**, **Closeout**, **Wait 3m**, **Standby**, and **Reply** explain the order. A manually selected Next station remains absolute.

Prepare to call CQ

- Select the required **Band** and **FT8/FT4 mode**.
- Select the correct activity: **Normal**, **POTA**, or **SOTA**.
- Tap **Activator**.
- Select the CQ slot in the workflow panel. Use **Activator Options** to review the CQ message and maximum-call setting.
- Tap **Start CQ**.

The default CQ text follows the activity:

- Normal: CQ {CALL} {GRID}
- POTA: CQ POTA {CALL} {GRID}
- SOTA: CQ SOTA {CALL} {GRID}

CQFTx transmits only in the selected slot parity and listens in the opposite windows. **Max Calls** counts completed CQ transmissions, not elapsed time or attempted late starts.

Work incoming callers

Directed replies are shown in the Activator support area:

- **NEXT STATION** appears only when you explicitly select a caller for the next handoff.
- **WAITING** retains other callers while the current QSO is in flight.
- **PILEUP TRAFFIC** summarizes current CQ and reply activity.

When there is no Next or Waiting caller, CQFTx removes the empty queue panel and gives that space to Pileup Traffic. Tap a waiting caller to answer it when no QSO is active. During an active QSO, use the visible **Next** button on a waiting caller to select the Fox handoff; no hidden drag gesture is required.

CQFTx prioritizes replies by QSO stage - R-report messages first, then signal reports, then grid replies - while preserving a stable order among callers at the same stage. A strong valid response immediately after CQ can be promoted automatically.

A caller may answer with a signal report instead of a grid to shorten the exchange. CQFTx answers with R-xx and waits for RR73. Because that ordering does not provide an outgoing RR73 slot for a compound Fox message, the selected Next station begins afterward with a normal NEXTCALL MYCALL REPORT message.

Waiting callers receive a deliberately long freshness allowance. CQFTx does not move one to **Standby** until it has been silent for at least 15 minutes and at least 40 of its own expected transmit opportunities. A Standby caller remains visible and can still be selected manually, but automatic selection waits for a fresh decode. FT8 callers therefore receive about 20 minutes before Standby; FT4 callers receive at least 15 minutes. The existing 30-minute hard stale limit still removes callers that remain completely unheard.

Tap a caller when you want to select that station explicitly. Then follow the workflow panel through reports and closeout. Other callers remain waiting rather than replacing the current station.

With the default **Locked** setting, answering a caller while calling CQ keeps transmitting on the audio offset used for CQ. CQFTx does not move TX to the caller's audio frequency, but it still tracks that frequency internally for targeted decoding. If the operator explicitly selects **Follow**, TX follows the target in either workflow. The waterfall displays the active TX offset and lock state.

The selected caller's responses remain in chronological decode order, including the response that made the caller ready to answer. Successfully transmitted replies from CQFTx appear as **TX** rows using the station callsign configured in Station Setup. Use **Current QSO** for a focused two-way conversation without reordering the complete stream.

Keep contacts rolling

The Activator work plan contains exactly three manual future positions below Current QSO: **Next QSO**, **Queued 2**, and **Queued 3**. Tap a waiting caller to choose a position, or long-press and drag it. Inserting above an occupied position shifts the existing choices downward and ejects the bottom choice; an Undo control briefly restores the prior order.

At the end of a QSO, the completed station is logged and a manually selected Next QSO is handed off automatically. The remaining choices shift upward. When all manually selected stations have been worked, CQFTx stops and requires the operator to tap **Start CQ** again.

CQFTx does not force endless automatic CQ calls after a contact. This pause gives you control over pileup order and changing band conditions.

Selecting a caller for Current or Next is the operator's instruction to work that station; Activator mode does not require a separate **Arm transmit** step. When the radio is ready, CQFTx prepares the appropriate message and uses the next valid transmit window automatically. If Android temporarily moves CQFTx out of the foreground, transmission pauses safely and the eligible Activator QSO resumes when CQFTx returns to the foreground.

If Current reaches the Activator TX limit, the current attempt ends, its incomplete transaction remains resumable in the station state table, and the first ready manual choice is promoted automatically. A fresh reply is immediately eligible and may be resumed or placed back into the work plan; an unambiguous late terminal message that completes the stored exchange is logged automatically.

If Next is heard working another station, CQFTx temporarily marks it Blocked and moves the first ready manual choice ahead of it. Busy clears on RR73, 73, a new CQ, a message back to the operator, or after 90 seconds. Permanently ineligible choices are removed with an operator notification. Next QSO becomes immutable once the Fox transmit window is committed; lower positions may still be edited without changing the locked message.

If a worked station repeats an **R-report** in a later receive window, it probably did not receive your RR73. An operator-tagged **Next** station retains priority and is worked through the Fox handoff first. If no Next station is tagged when the active QSO finishes, CQFTx automatically sends the missed RR73 before selecting an untagged waiting caller. Continuing to tag a Next station therefore keeps the

Fox chain moving; the closeout retry waits until that chain pauses. A stale copy of traffic received before completion cannot requeue the station, and a closeout remains categorically below every unworked caller in the displayed priority order. The retry does not create a duplicate log entry.

An isolated RRR, RR73, or 73 from a station with no observed report exchange is not allowed to start or log an Activator QSO. Final messages still work normally when CQFTx has observed an earlier grid, report, R-report, or transmission for that station.

Tap **Stop CQ** to cancel CQ immediately. If a frame is already transmitting, CQFTx stops its audio, unkeys the radio through the protected CAT cleanup path, returns to receive, and does not count the interrupted frame as a completed CQ call.

Tap **End QSO** to abort the active exchange immediately. CQFTx cancels any reserved or active transmission, holds further Activator TX, and requires an explicit operator action such as **Resume TX** or **Start CQ** before transmission is enabled again.

Before waveform audio produces measurable RF, CQFTx shows SWR as unavailable in gray; the radio's low-power startup reading is retained only in diagnostics. Two stable forward-power samples qualify the meter, and two consecutive qualified SWR readings above the limit are required to stop transmission. If audio starts but forward power never appears, CQFTx reports a USB audio/RF-path fault instead of a high-SWR fault. On an IC-7300 or IC-7300MK2, a missing RF response at an audio offset near the edge of the DATA passband is identified as a likely radio filter rejection rather than a general audio failure. Keep TX tones within approximately **400-2700 Hz**, widen the DATA filter, or retune so the selected offset falls inside the radio's passband.

If SWR protection or the TX meter watchdog stops a frame, CQFTx cancels audio before commanding RX and leaves the QSO message unsent. The blocking warning identifies whether the operator should inspect the antenna/load or the USB audio/CAT path. Acknowledge it to re-enable the normal manual **Send** or **Start CQ** action; CQFTx does not automatically retransmit after a protection event.

A radio disconnect also cancels active or reserved transmission and places Activator TX on a safety hold. Reconnect the radio and explicitly resume operation after confirming that the CAT and audio paths are correct. These safety holds, plus an explicit **End QSO**, are exceptions to normal automatic Activator progression.

9. Guided QSO workflow

Although the exact messages depend on what is received, a typical exchange follows this progression:

Stage	Typical outgoing message	CQFTx waits for
Call	callsigns plus grid or report	a reply addressed to you
Report	callsigns plus signal report	an R-report, RRR, or RR73
Acknowledge	R - xx or RRR	RR73 or 73
Close	RR73 or 73	completion or a repeated closeout request

Repeated messages

Repeated reports are normal in weak-signal operation. CQFTx uses them to infer what the other station did not receive and keeps or restores the necessary step. In particular, a repeated R-xx after an apparent Activator completion triggers a closeout retry.

Late starts and missed windows

If a message is armed after the safe start point, CQFTx moves it to the next matching TX window. Do not tap Send repeatedly; check the workflow panel and the progress strip for the newly assigned window.

QSO completion and logging

A completed QSO stores both its UTC start and end. QSO_DATE and TIME_ON always describe when the contact started; QSO_DATE_OFF and TIME_OFF describe when it finished. A contact crossing midnight therefore remains on its starting UTC day for POTA qualification while preserving the actual ending day. Signal reports, band, frequency, mode, callsign, and activity context are retained with the contact.

10. Normal, POTA, and SOTA activities

The activity setting controls the operating context and log destination. It is separate from the Hunter/Activator role.

Normal activity

Normal is the default activity. Its log is continuous: new contacts append to the same Normal log across application closes, device restarts, and later operating sessions until you deliberately clear it.

In Normal activity, an already logged station is labeled **Worked** rather than DUPE.

Normal is selected whenever you are not running a formal activation. Use the QSO-log icon to view the continuous Normal log.

Working a station that is calling CQ POTA or CQ SOTA does not change your own activity. If CQFTx is in Normal activity, the QSO remains in the Normal log and its Activity column reads **Normal**. When available, the other station's park or summit reference is still retained in the ADIF record for award credit.

Start a POTA activation

- Finish any active QSO and stop transmitting.
- Tap the **activity icon** on the status line.
- Tap **Start POTA**.
- Enter the park reference, for example US-1234. For a valid overlapping multi-park activation, enter every reference separated by commas.
- When Internet access is available, wait for CQFTx to show the matching park name in green.
- Leave **Automatically self-spot while on air** selected if CQFTx should manage the POTA spot, or clear it for manual spotting.
- Confirm the activation.

An online reference that is not found or is no longer valid is shown in red and cannot be started. Correct the reference and confirm that the expected park name appears. If the phone is offline or the lookup service is temporarily unavailable, CQFTx clearly marks the reference as unverified and still permits the activation; verify the identifier manually before continuing.

CQFTx creates a new, separate activation log, switches to Activator role, clears transient operating traffic, and prepares the POTA CQ template. The activation remains active if the application closes and reopens.

Automatic POTA spotting is deliberately tied to actual radio operation. Starting the activity only arms the feature; it does not create a spot. After the first successful transmission in Activator role, CQFTx posts your station callsign, park, dial frequency, and digital mode. It refreshes the spot at 25 minutes, updates it immediately if the dial frequency or FT8/FT4 mode changes, and retries temporary network or service failures once per minute. The Activity window shows whether spotting is off, armed, waiting for Internet, posting, retrying, or active. Switching temporarily to Hunter role does not create or update an activation spot. The Activity window also provides **Spot Now** after the first transmission. Failed or offline QRT messages remain queued across restarts and are retried when Internet service returns. CQFTx confirms a successful live spot when it appears in the downloaded POTA feed.

During the activation:

- completed contacts go only to that activation log;
- duplicates use POTA's call, mode, UTC date, band, local reference, and remote reference identity, so another valid band or mode is not blocked;
- the QSO-log icon opens the current contacts; and
- the activity selector and window show qualification progress, duplicates, and time remaining to UTC rollover.

Multi-park contacts are stored once in CQFTx. Export creates a separate ADIF file for each local park and expands multi-reference park-to-park contacts into the required reference combinations.

Start a SOTA activation

The SOTA process is the same:

- Finish any active QSO and stop transmitting.
- Tap the **activity icon**.
- Tap **Start SOTA**.
- Enter the summit reference, for example W0C/FR-019.
- When Internet access is available, wait for CQFTx to show the matching summit name in green.
- Confirm the activation.

As with POTA, a reference that is not found or is inactive is blocked when the online check succeeds. Offline or temporarily unavailable lookups are identified as unverified and may be started after the operator checks the summit reference manually. Successful lookups are cached, so a previously verified reference name can still be shown when the device is offline.

CQFTx creates a separate SOTA log, switches to Activator role, and prepares the SOTA CQ template. Mountain symbols identify SOTA traffic and spots. SOTA spot viewing uses the current SOTA database service. CQFTx includes the complete first-on-air, 25-minute

refresh, frequency/mode-change, retry, manual Spot Now, and QRT state machine, but production writes remain disabled until CQFTx has an approved SOTA API client identity. The Activity window opens SOTAwatch for manual posting in the meantime; CQFTx never borrows another application's credentials or silently sends an unapproved write.

End an activation

Open the activity window and tap **End Activation**. Ending is blocked while a QSO or transmission is active. The confirmation shows POTA 10-QSO or SOTA 4-different-station qualification and warns before ending an unqualified activation. For an automatically spotted POTA activation that reached the air, CQFTx queues a **QRT** spot and retains it for retry if the network is unavailable. CQFTx preserves and backs up the activation log, returns the activity to Normal, restores the Normal operating context, and prompts you to export the completed activation as an ADIF log. Choose **Export ADIF** to open the Android share sheet or **Not Now** to leave the log available for later export from the log manager. An activation with no logged QSOs ends without creating an empty ADIF file.

If the activation has contacts marked **Log Pending**, the end confirmation changes to **Commit & End**. CQFTx durably commits those contacts before ending. If any write fails, the activation remains active and export is blocked so the generated ADIF cannot silently omit a pending contact.

Starting the same park or summit on a later occasion creates a distinct activation session. Logs are not combined merely because the reference is the same.

Activity and role are independent

Starting a POTA or SOTA activity defaults to Activator because that is the common use case, but the activity and role remain separate concepts. You may select Hunter while an activity is active if that is genuinely how you are operating; contacts still go to the active POTA or SOTA log until the activation is ended.

Changing between Hunter and Activator suspends an incomplete QSO in the station ledger. If that station replies later, select its directed decode normally. CQFTx restores the original exchange role and message phase, applies the late reply, and prepares the correct next message. For example, a late R-08 from an Activator exchange prepares RR73 even when the screen is currently in Hunter.

Station State Table

Open the hamburger menu and choose **Station State Table** to inspect everything CQFTx currently knows about heard stations. Each FT8/FT4 station entry includes its last receive and transmit messages, grid, country, possible U.S. state or states, PSK Reporter evidence, POTA/SOTA CQ and live-spot context, suspended or completed exchanges, and the chronological message transaction. A grid may list multiple states because a four-character Maidenhead square can cross state boundaries.

The decode list shows the complete protocol message once, without a separate Call column or an added sender/addressee prefix. PSK Reporter reachability is abbreviated to PSK direct or PSK nearby. Fixed columns retain their readable width in dense rows; the Message column receives all remaining horizontal space, while Location expands on tablets and landscape layouts without repeating the grid.

11. Logs, exports, backups, and deletion

View the current log

Tap the **QSO log icon and count** on the status line.

The viewer shows the active POTA/SOTA activation log when an activation is running; otherwise it shows the Normal log. Each row includes:

- UTC date (YYYY-MM-DD) in its own single-line column
- UTC time (HH:mm:ss) in its own single-line column
- callsign
- band and frequency
- mode
- sent and received reports
- activity context

The Activity cell describes your own log context. A tree icon marks a contacted POTA activator and a mountain icon marks a contacted SOTA activator. These icons do not move a Normal QSO into an activation log; they identify the other station's activity. CQFTx retains the marker after restart even when the station was identified only by a CQ POTA or CQ SOTA message and no online reference was available.

The bottom of the viewer contains two compact controls: **Manage** and **Done**.

Tap a QSO row to correct its callsign, UTC start/end, frequency, FT8/FT4 mode, grid, reports, or remote POTA/SOTA reference. CQFTx backs up the log before an edit and updates both the master and activation copies.

Delete one QSO

Swipe a row **from right to left**, then confirm deletion. CQFTx creates an automatic backup and immediately offers **Undo**, which restores both the master and activity copies.

Manage Logs

Tap **Manage** in the log viewer. The secondary dialog contains the actions that alter or export stored logs:

- **Export Normal ADIF** or **Export This Activation ADIF**
- **Export All ADIF**
- **POTA/SOTA Logs** - export all activity logs together or export an individual activation
- **Import Latest Backup**
- **Clear Normal Log**

Before sharing, CQFTx validates callsigns, UTC ordering, frequency/band, station identity, activity references, duplicates, ADIF field lengths, and record count. Errors block export; warnings require explicit confirmation. Exports then open the Android share sheet. Choose Files, email, cloud storage, or another installed destination.

Export filenames

All timestamps in export filenames are UTC.

- Normal: YYYY-MM-DD_hh-mm-ss.adif
- POTA: YYYY-MM-DD_US-1234_hh-mm-ss.adif
- SOTA: YYYY-MM-DD_W0C-FR-019_hh-mm-ss.adif

For filesystem safety, a slash in a SOTA reference becomes a hyphen. An activity export uses the UTC time of its earliest QSO in the filename; a Normal export uses the UTC export time. **Export All ADIF** creates separate files for Normal and for each activation, then shares them together.

ADIF 3.1.7 records include QSO_DATE, TIME_ON, QSO_DATE_OFF, and TIME_OFF, plus the available band, frequency, mode, reports, and activity reference. POTA records include both the established SIG fields and MY_POTA_REF/POTA_REF.

Backup and import

CQFTx automatically backs up logs periodically, after contacts are logged, and before destructive operations. **Import Latest Backup** merges contacts that are missing from the current store rather than intentionally duplicating matching records.

Export important logs before changing devices or reinstalling the application; internal automatic backups remain on the current device.

Clear the Normal log

Clear Normal Log affects only the ongoing Normal log. It does not delete separate POTA or SOTA activation logs. The action is unavailable during an active QSO or while a contact is waiting to be committed.

After confirmation, the Normal log count on the main screen resets to zero. Use this only when you deliberately want a new ongoing Normal history.

12. Maintenance and troubleshooting

The maintenance actions are available directly from the hamburger menu; there is no intermediate Maintenance window.

Export Diagnostics

Export Diagnostics builds a diagnostic package and opens the Android share sheet. It is intended for reporting decoder, radio, audio-path, or workflow problems. Select a share destination to save or send the file.

Mark Problem

Tap **Mark Problem** immediately after an intermittent failure. CQFTx preserves the preceding 60 seconds of radio, audio-route, timing, TX, and workflow telemetry and continues that incident file for 30 seconds. The five newest marked incidents are included the next time diagnostics are exported.

Reset Operating State

Reset Operating State clears the current QSO workflow, CQ/reply queues, prepared transmission, and retained decodes. It preserves completed logs. Use it when the operating workflow is stuck or contains state from an interrupted session.

Do not reset while a valid QSO is in flight unless abandoning that exchange is acceptable.

Common problems

No waterfall or no decodes

- Tap the radio icon.
- Confirm the intended RX audio input.
- Close and reopen Radio Setup to refresh the available paths, then reselect the intended input if needed.
- Verify the radio is producing USB or interface audio.
- Confirm the selected band and mode.
- Check the Android clock.

Decode works but TX is blocked

Open Radio Setup and inspect CAT, TX audio, safety, and clock health. Confirm Android USB permission and cable routing. Reconnecting a USB device may require selecting it again.

Send appears to skip a window

Look at the progress strip and the workflow panel. The send request probably arrived after the safe start of the slot and was re-armed for the next matching window.

GPS has not locked

- Grant CQFTx precise location permission.
- Enable Location/GPS in Android settings and move where the device has a clear sky view.
- Tap the red clock control and select **Retry GPS Lock**.
- If the attempt times out after 45 seconds, set UTC through the clock dialog and the grid through the map dialog.

The manual controls are intentionally hidden while GPS can still provide the preferred time and location.

Spots are empty but decoding works

POTA, SOTA, and PSK Reporter lists require Internet access and are filtered by band and mode. Local waterfall decoding does not require spot service access.

Export appears to do nothing

Exports open Android's share sheet. If it is behind another window, return to CQFTx and try again, then select an actual destination such as Files. For POTA/SOTA logs, open the QSO viewer, tap Manage, then POTA/SOTA Logs.

QSO count and displayed log differ

Confirm which activity is active. The count and the QSO icon use the current activity's log: the current activation when one is active, otherwise Normal. Older activation logs are available under Manage → POTA/SOTA Logs.

13. Field checklists

Hunter quick start

- Connect radio, CAT, RX audio, and TX audio.
- Open Radio Setup and verify all paths.

- Select band and FT8/FT4.
- Select Normal activity unless you need a separate activation log.
- Select Hunter.
- Tap a desired CQ in Live Decodes.
- Follow the workflow panel through the exchange.
- Verify the QSO count increments after closeout.

POTA/SOTA Activator quick start

- Verify callsign, GPS-lock status, grid, radio paths, UTC clock, antenna, and power.
- Select band and FT8/FT4.
- Tap the activity icon and start POTA or SOTA with the exact reference.
- Confirm Activator role and the CQ template.
- Use Find Clear Audio Spot after at least three receive windows.
- Select a clear recommendation.
- Tap Start CQ.
- Work the selected caller while watching Waiting for the next stations.
- End the activation explicitly when finished.
- Open the QSO log, tap Manage, back up, and export the activation ADIF.

Before leaving the site

- Confirm the activation QSO count.
- Inspect the activation log for incorrect callsigns or times.
- Back up the logs.
- Export the activation ADIF to a second location.
- End the activation.
- Confirm the activity has returned to Normal.