
Web Remote — Mobile Page Changelog (web/remote_mobile.html)

Covers only the phone/tablet remote-control page (browse to <http://<pi-hostname>:8765/mobile>). The page carries its own on-screen version label (`#mobileVersion`), bumped by hand to match the heading below on every correction — this changelog is the record of what each bump actually changed. Unless noted otherwise, every entry is **web remote only**: re-sync `PiDisplay/` and hard-refresh the phone's browser — no Pi restart or Teensy reflash needed.

V1.0.55 (2026-10-04) — CW page: Vol/AGC removed

- Vol:/AGC: removed from the CW settings page; page values show “-” with early V1.0.33 builds.

V1.0.54 (2026-10-04) — CW settings page

- The Settings box switches to the T41's CW settings page while Decode is on (smaller text to fit; version label hidden meanwhile). Needs firmware V1.0.33.

V1.0.53 (2026-10-04) — Decoded CW strip

- In CW receive with Decode on, the decoded text shows in a strip along the bottom of the waterfall (newest on the right), with WPM. Needs firmware V1.0.33.

V1.0.52 (2026-10-04) — Brighter 3D waterfall

- Same 3D changes as the Pi: brighter back rows, brighter bottom blues, thin blue base on every row.

V1.0.51 (2026-10-04) — Waterfall uses the T41's own colours

- 2D waterfall coloured from the spectrum message's new `wf` field (firmware V1.0.32) so its noise blue matches the T41; falls back to the trace bins without it.

V1.0.50 (2026-10-04) — Waterfall blue much brighter

- `brightenBlue()` strengthened to match the Pi; 3D waterfall bottom colours brightened again.

V1.0.49 (2026-10-04) — Brighter waterfall blue

- Waterfall blues brightened (same change as the Pi, `brightenBlue()`); 3D waterfall's bottom colours too. Calibration overlay background is solid black.

V1.0.48 (2026-10-04) — Calibration screens (needs firmware V1.0.30)

- Menu > Calibration > S meter level, Frequency, Transmit IQ and Power enabled. Transmit IQ / Frequency / Power open a full-screen overlay copied from the T41 screen, two buttons per row on a phone. S meter level uses the normal parameter box.

V1.0.47 (2026-10-03) — PI Spectrum Fill starts Off

- The spectrum fill starts Off until Display > PI Spectrum > PI Spectrum Fill > On is picked (matches the Pi screen).

V1.0.46 (2026-10-03) — Phone fits again; Vol: to settings

- Vol: moved from the data line to the settings grid.
- After the Vol button, Up/Down arrows change the volume too.
- **Phone: Filter slider usable again.** The Audio/Mic/CW buttons had made the page taller than the screen.
 - Toolbar is now a 6-column grid (3 rows instead of 5), with slightly smaller labels.
 - The data line fits on one row.
 - The spectrum area shrinks properly: its canvas is absolutely positioned, so its pixel size no longer holds the row open. Its minimum height is 84px.
 - The settings box is 100px with 12px text, and dropdowns in the right-hand columns open leftward.
 - In testing at 390x664 (about the smallest iPhone Safari viewport), all four sliders are fully on screen.

V1.0.45 (2026-10-03) — Audio / Mic / CW dropdowns; Vol button

- **New Audio, Mic and CW toolbar dropdowns** (Pi, web, phone), next to Display. They are the T41's own **Audio Options**, **Microphone** and **CW Options** menus, copied item for item and in the same order (e.g. Audio: AGC Off/Long/Slow/Medium/Fast, Adjust Equalizers, Toggle Autotune, the four Noise Reduction choices; Mic: Mic gain, USB drive, USB RX level; CW: WPM ... CW Manual Mode). Picks send the same menu selection as before (and jump straight there with firmware V1.0.28+). Those three categories are no longer listed under Menu.
- **Vol is now a plain button.** One click sets the radio's Volume knob back to audio volume (from AGC/Mic/STn if needed) and points the mouse wheel and Left/Right arrows at it. Mic gain, sidetone and AGC are reached through the new Mic / CW / Audio dropdowns.
- Pi toolbar: rows are now split by width (the top row runs further right, where there's room), and "Course Inc"/"Fine Inc" are shortened to "Course"/"Fine" like the web, so the second row stays clear of the SWR readout. Phone: dropdowns in the right-hand toolbar columns open toward the left so they stay on screen.
- Pi: `_OWN_DROPDOWN_CATEGORIES` / `_OWN_DROPDOWN_LABELS`, `_make_plain_button()`. Web: `buildMenu(..., {only})` for each, `buildVolButton()`.

V1.0.44 (2026-10-03) — Arrow keys reach Filter; Freq Font layout fix

- **Arrow keys now turn the Filter (and Volume) knob on the web remotes.** After you picked Lo Cut / Hi Cut from the Filter dropdown, the dropdown kept keyboard focus, so the arrows changed its own selection (flipping between Lo and Hi) instead of reaching the radio. Toolbar dropdowns now give focus back after a pick, and the arrow handler no longer skips a closed toolbar dropdown.
- **Phone: Freq Font styles no longer push the page down.** The styled readout canvas was 6px taller than the normal frequency text, which shoved the bottom (Filter) jog slider partly off screen. It now matches the text's measured height, so nothing below it moves.

V1.0.43 (2026-10-03) — Trackpad fix + arrow keys

- **Trackpad fix (web remotes):** filter Lo/Hi Cut (and every other wheel use) jumped around with a trackpad, because each of the trackpad's many tiny scroll events, including sideways ones, sent a full encoder step. Now:
 - vertical movement is added up and sent as one step per 40px of travel (a mouse-wheel notch is still exactly one step);
 - sideways swipes are ignored;
 - a change of direction restarts the count;
 - steps are at least 35 ms apart. The new code is `wheelStep()`.
- **Arrow keys on every version (Pi, web, phone with a keyboard):**
 - **Left/Right** turn whichever knob the wheel is set to (Filter Lo/Hi Cut or Volume, picked from those dropdowns), one step per press. With nothing picked they tune.
 - **Up/Down** always tune (Shift = fine tune).
 - In a Menu parameter box every arrow turns the Filter knob; on the equalizer screen Left/Right pick the band and Up/Down change its level.
 - Pi: `new display.bind_arrow_keys()` / `radio_ui._on_arrow_key()`. These are ignored while typing in the Network page's password box.

V1.0.42 (2026-10-03) — Nixie tubes redrawn

- **Freq Font > Nixie redrawn** to look like real Nixie tubes, from the user's reference picture:
 - a tall glass tube with dark end caps and a warm halo;
 - a red-amber honeycomb mesh inside;
 - thin wire digits glowing yellow-orange, drawn as smooth strokes (wide and dim through thin and bright) rather than a font;
 - a full tube of its own for the decimal point, with a glowing dot at the bottom.
- Same shapes on the Pi (`freq_fonts.py`, Tk canvas) and the web (`drawNixieTube()`, canvas glow and gradients).

V1.0.41 (2026-10-03) — DSP: on data line, Freq Font

- "DSP:" added to the data line between AGC: and Scale; "DSP Gain:" removed from the settings pane.
- Display > **Freq Font** (Original / Nixie / VFD / Dot Matrix), drawn on `#freqCanvas` by `drawFreqStyled()`, following the shared `pi_freq_font` state.
- The data line wraps to two rows on the phone so Noise: is no longer cut off.

V1.0.40 (2026-10-02) — Menu highlights

- Menu/Display items mark the current / last-selected choice (green check) in groups of two or more. Firmware items follow the T41's current menu item (STATUS) and clicks; the Pi-only flyouts follow `pi_spectrum_fill` / `pi_waterfall_3d` / `pi_waterfall_speed` / `new pi_brightness`.
- The new Network page is on the Pi screen only (see `CHANGELOG_pidisplay.md`).

V1.0.39 (2026-10-02) — Display gets its own dropdown

- **Display has its own toolbar dropdown**, between Menu and Vol, and is no longer a category under Menu. Its items are the same grouped list (Spectrum floor, scale, smoothing, decay, trace smoothing, Spectrum shadow, Spectrum fill, Brightness, PI Spectrum), now one level shallower. Picks still send Display's real primary index, so nothing changes on the Teensy.
- Pi: `_OWN_DROPDOWN_CATEGORIES = ("Display",)`, plus a toolbar entry "Display" after "Menu". Web: `_OWN_DROPDOWN_CATEGORIES`, and `buildMenu(container, {label, id, only})` builds both dropdowns. The `#menuWrap/#menuBtn/#menuPanel` styles became classes, so the two share styling, and opening one closes the other.
- Everything in the Display dropdown opens inline (accordion) so it fits the phone.

V1.0.38 (2026-10-02) — Display menu regrouped; 3D peaks blended

- **Menu > Display regrouped** into sub-menus. The T41's own menu numbers are unchanged; this only changes how the menu is shown:
 - Spectrum floor > Auto spectrum floor / Manual spectrum floor / Spectrum floor
 - Spectrum scale, Spectrum smoothing, Spectrum decay, Spectrum trace smoothing
 - Spectrum shadow > On / Off
 - Spectrum fill > On / Off
 - Brightness > 25-100%
 - PI Spectrum > PI Spectrum Fill (On/Off) / PI Waterfall (2D/3D) / PI Waterfall Speed Defined once as `_MENU_LAYOUT` (display.py) / `_MENU_LAYOUT` (web); every number in it is the item's real `DisplayOptions[]` index. Greyed-out items still work as before.
- **3D waterfall peaks blended**: the Pi now uses 12 colour bands (was 6), sampled from the same colour ramp as the web gradient. Each new row is 1-2-1 smoothed across neighbouring columns (valleys between nearby peaks fill in; peaks keep their height) and mixed 35% with the previous row (`_WF3D_TIME_BLEND`), so ridges look continuous. Row outlines are now dark navy instead of bright blue. The Pi takes about 20 ms per frame in testing.
- Menu levels below the first open inline (accordion) on the phone, so 4 levels fit.

V1.0.37 (2026-10-02) — Waterfall speed setting

- New **Menu > Display > "PI Waterfall Speed"** flyout: **Fast** (one waterfall row per spectrum frame, about 15 rows/s, as before), **Medium** (1 per 2 frames), **Slow** (1 per 4) and **Very slow** (1 per 8). It applies to both the 2D and 3D waterfalls. The frames in between are peak-held into the row, so a short signal is never skipped, and the spectrum trace above stays real-time.
- Shared state across the Pi and every web tab, like PI Waterfall / PI Spectrum Fill. It starts at Fast. Pi: `set_waterfall_speed()`, `_set_pi_waterfall_speed()`, web command `pi_waterfall_speed_set {divisor}`, broadcast `pi_waterfall_speed`.

V1.0.36 (2026-10-02) — 3D waterfall option

- Menu > Display > **"PI Waterfall"** flyout (2D / 3D), sending `pi_waterfall_3d_set`; follows `pi_waterfall_3d` broadcasts.
- New `drawWaterfall3D()` / `wf3dNormalize()`: 24 rows x 256 columns, one gradient fill per row, painted back to front, with a centre marker. Rows are collected every frame, so switching to 3D shows history straight away.

V1.0.35 (2026-10-01) — Equalizer: Exit button, Edit RX / Edit TX buttons

- "Editing: (switch)" toggle replaced by **Edit RX / Edit TX** buttons. They send `eq_select_side` (the same command a bar click uses), and the side being edited is lit green and reads "Editing ...".
- New **Exit** button (button 14, firmware V1.0.27+): undoes this visit's changes and returns Home without saving. "Save & Exit" unchanged.

V1.0.34 (2026-10-01) — Audio Equalizer screen added; "TI:" renamed "CT:"

- Full-screen **Audio Equalizer** overlay (Audio Options → Adjust Equalizers), driven by firmware V1.0.26 telemetry (PiLink 0x09): Receive and Transmit panes, 14 bars each with frequency labels, selected-cell readout and increment.
- Controls: Editing RX/TX (button 15), Cell ◀▶ (Volume encoder), Level – + (Filter encoder), Incr 1/10 (button 16), Save & Exit (Home). Click/tap a bar to select it directly, including on the other side.
- While the overlay is up: mouse wheel and Up/Down/PgUp/PgDn change level, Left/Right move the cell.
- Readout label **"TI:" renamed "CT:"**.

V1.0.33 (2026-10-01) — I2C BIT test screen added; several menu items greyed out

Same change as `remote.html`, same date - see that page's changelog for the full story. **Requires Teensy firmware V1.0.25** for the new screen to show live data. New `#bitOverlay/#bitPanel` mirrors the Teensy's own I2C BIT test screen, fed by a new `onBitResults()` handler; "Home" button sends `sendButton(17)`. A new `MENU_DISABLED_ITEMS` set greys out Calibration > S meter level/Frequency/Transmit IQ/Power, Diagnostics > Restore receive EQ/Buffer print, and EEPROM > Print Data to Serial.

V1.0.32 (2026-10-01) — Receive IQ calibration: "Stop"/"Exit" buttons + instructions

Same change as `remote.html`, same date - see that page's changelog for the full story. New "Stop" (`#rxIqCalStop`, orange outline) and

“Exit” buttons added to `#rxiqCalControls`, sending `sendButton(13)` / `sendButton(14)` (repurposed `DECODER_TOGGLE/DFE`) - the same ids the Pi’s own screen sends. New `#rxiqCalInstructions` block below the table. No reflash needed if already on V1.0.24.

V1.0.31 (2026-09-30) — Receive IQ calibration screen added

Same change as `remote.html`, same date - see that page’s changelog for the full story, and `CHANGELOG_pidisplay.md` for the cross-file writeup. New full-screen `#rxiqCalOverlay` (band/amp/phase/increment/delta readout, 13-row all-bands table, `Amp±/Phase±/Increment/Auto/Band±/Save&Exit` controls), sized for phone width; same `onRxiqCal()` handler and generic `sendButton()/sendEncoder()` command shapes as `remote.html`. No live spectrum mini-plot (left out for this first pass). **Requires reflashing the Teensy to V1.0.23** - see `CHANGELOG_firmware.md`.

V1.0.30 (2026-09-30) — SWR/PWR readout added, “(USB)” demod suffix bug fixed

Same change as `remote.html`, same date - see that page’s changelog for the full story. User report: “Both remotes web and phone are missing the demod reading like the PI screen 20M / DATA (USB) and also the SWR 1.0 PWR 0.0 label/readings.” New `#swrText` element in `statusBlock` (shrunk to 12px to fit this page’s row-layout `statusBlock` on a narrow phone screen, vs. `remote.html`’s stacked column); `MODULATION_NAMES`’s 0: null fixed to 0: “USB”. No reflash needed.

V1.0.29 (2026-09-30) — Independent “PI Spectrum Fill” toggle (supersedes V1.0.28)

Follow-up to V1.0.28 directly below: the user tried mirroring the T41’s own setting, then asked to tune the two independently (“Need to be able to tune it on/off separately. T41 On/Off and PI/Remotes On/Off”). New Menu > Display > “PI Spectrum Fill” > On/Off 3rd-level flyout (same pattern as “Brightness”), sending `{cmd: "pi_spectrum_fill_set", enabled}`. New `state.piSpectrumFillEnabled` (default true) updated by a new `onPiSpectrumFill(enabled)` handler for a new `"pi_spectrum_fill"` message type (cached server-side so a newly-opened tab is synced right after `login_ok`). `drawSpectrumStatic()`’s fill gate switched from `state.settings.spectrum_fill_trace_enabled` to `state.piSpectrumFillEnabled` - this page’s fill is now fully decoupled from the T41’s own “Spectrum fill on/off” setting, which continues to affect only the T41’s own screen. Same change as `remote.html`, same date. **No reflash needed** - see `CHANGELOG_pidisplay.md` for the full cross-file writeup.

V1.0.28 (2026-09-30) — Mirrors T41’s “Spectrum fill on/off” setting (superseded by V1.0.29)

`drawSpectrumStatic()` now reads `state.settings.spectrum_fill_trace_enabled` (defaults to true) and skips `drawTraceFill()` when it’s false, so this page’s spectrum trace goes outline-only to match whatever the T41 itself is set to - added at the user’s request, purely cosmetic. Same change as `remote.html`, same date; see `CHANGELOG_pidisplay.md` for the full cross-file writeup (new `PiLink` field, **requires reflashing the Teensy to V1.0.22**).

V1.0.27 (2026-09-30) — “Spectrum fill on/off” added to the Display menu

`T41_MENU`’s “Display” category gained “Spectrum fill on”/“Spectrum fill off”, matching firmware V1.0.21’s new `DisplayOptions[]` entries - without this, the menu option existed on the T41’s own screen but was simply missing here (a separately-maintained, hand-copied menu list - see `display.py`’s `_T41_MENU` comment). No reflash needed for this one on its own, but the menu option only works once V1.0.21 is flashed.

V1.0.26 (2026-09-30) — Choppy-audio bug found and fixed (mis-clocked playback rate)

Same fix as `remote.html` (see that page’s changelog for the full story). V1.0.25’s jitter-buffer increase (`AUDIO_LEAD_S` 0.15s → 0.4s) made choppiness “even worst” per the user’s report - backwards for a pure jitter problem, which pointed at a drift bug instead: `onAudioPcm()`’s `createBuffer()` call was labeling each chunk with `audioCtx.sampleRate` rather than the PCM’s true, fixed capture rate (`AUDIO_SAMPLE_RATE`, 44.1kHz) - phones are especially prone to the browser silently handing back a context rate other than the requested 44.1kHz (Android’s shared audio mixer is commonly locked to 48kHz), so this page likely hit the bug even more reliably than the desktop one. Fixed by labeling the buffer with `AUDIO_SAMPLE_RATE` instead - `AudioBufferSourceNode` resamples automatically to the context’s real rate on playback. `AUDIO_LEAD_S` reverted back to 0.15s.

V1.0.24 (2026-09-30) — Spectrum pane shrunk, New Line 2 strip moved above it

At the user’s request: “reduce the spectrum’s pane height, there is a lot of wasted space as the signals never reach that high. Then move the readouts that are currently in the spectrum display to above the top line for the spectrum display.” Same change as `remote.html` (see that page’s changelog for the fuller writeup) - `specGeometry()`’s `traceH` share cut from 40% to 25%, and the `Vol:/AGC:/Scale:/Floor:/Zoom:/TI:/FT:/Noise:` strip moved out of the spectrum canvas into a new `#newLine2Row` DOM row above `#mainRow`, updated via `updateNewLine2()` instead of the old canvas-drawn `drawNewLine2()`. This page’s `#newLine2Row` keeps its own 11px font (matching the prior spectrum-readout font reduction below) rather than `remote.html`’s 14px.

V1.0.23 (2026-09-30) — New Line 2 strip font reduced

`drawNewLine2()`’s font dropped from 14px to 10px, at the user’s request (“reduce the font size for the readout in the spectrum display” - this page specifically). Column fractions unchanged (still shared with `remote.html`’s content-weighted layout, `CHANGELOG_pidisplay.md` has the Pi’s own screen’s separate switch to even spacing, which does NOT apply to this page).

V1.0.22 (2026-09-30) — “Brightness” combined into a flyout, “Scale:” centered

Two follow-up changes, same day: - The 4 flat “Brightness NN%” entries (V1.0.21 below) became a single “Brightness” entry with its own nested percentage flyout, at the user’s request — same change as `remote.html`’s same-date entry, see that file’s changelog and `CHANGELOG_pidisplay.md` for the full writeup. - Scale: moved right and centered between AGC: and Floor:, still with full room for “Scale: XX.XdB”. New fractions: `0.00/0.09/0.23/0.44/0.58/0.68/0.78/0.89`.

V1.0.21 (2026-09-30) — “Brightness” added to the Display menu, “Scale:”/“Floor:” overlap fixed

Two changes bundled into one version bump: - `T41_MENU`’s “Display” category gained 4 new entries — “Brightness 25%”, “50%”, “75%”, “100%” — same change as `remote.html`’s same-date entry, see that file’s changelog and `CHANGELOG_pidisplay.md` for the full writeup. Pi-only backlight control, no Teensy involved. - Scale:’s widest value (“12.5dB”) was overwriting part of Floor:’s label — same fix as `remote.html`’s same-date entry, see that file’s changelog for the full writeup. Column fractions: `0.00/0.10/0.18/0.35/0.49/0.60/0.73/0.86`.

V1.0.20 (2026-09-30) — “Floor:” reading added to the New Line 2 strip

New column in `drawNewLine2()`, right after `Scale:`, showing the current Menu > Display > “Spectrum floor” setting — same change as `remote.html`’s same-date entry, see that file’s changelog for the full writeup. **Not web-remote-only** - needs the same-date `PiLink.h/PiLink.cpp` firmware change (`CHANGELOG_firmware.md` V1.0.18) reflashed before `s.spectrum_floor/s.spectrum_floor_auto` are real data. Row fractions recomputed for 8 columns: `0.00/0.12/0.25/0.37/0.50/0.62/0.75/0.87`.

V1.0.19 (2026-09-30) — “RX DSP Gain” added to the RF Options menu

`T41_MENU`’s “RF Options” entry gained a 5th item, “RX DSP Gain”, matching the newly-un-hidden firmware menu entry (see `CHANGELOG_firmware.md` V1.0.17) — same change as `remote.html`’s same-date entry, see that file’s changelog for the full writeup. **Needs a Teensy reflash** before the entry does anything on the real radio. On-page version label bumped straight to V1.0.19 (V1.0.18 below was never re-labeled on-page at the time; this entry catches the label up rather than manufacturing a retroactive “V1.0.18 was live” claim).

V1.0.18 (2026-09-30) — “Scale:” reading added to the New Line 2 strip

New column in `drawNewLine2()`, right after `AGC:`, showing the current Menu > Display > “Spectrum scale” as a compact string (“5dB”, “12.5dB”, etc.) - same change as `remote.html`’s same-date entry, see that file’s changelog for the full writeup. **Not web-remote-only** - needs the same-date `PiLink.h/PiLink.cpp` firmware change reflashed before `s.spectrum_scale` is real data. Row fractions recomputed for 7 columns: `0.00/0.14/0.26/0.42/0.54/0.70/0.86`.

V1.0.17 (2026-09-27) — Audio Filter ruler labels missing their leading/trailing character

User report: “can’t see ‘0K’ only ‘K’ and only ‘6’ not ‘6K’”. Root cause: `drawAudioSpectrumStatic()`’s ruler always drew each tick label `textAlign: "center"` — the leftmost tick sits at `x=0` and the rightmost can land at/near the canvas’s own right edge, so centering there draws half the label’s width off-canvas, which the canvas silently clips (the “0” in “0k” at the left edge, the “k” in e.g. “6k” at the right edge). Now switches to “left” alignment within 8px of the left edge and “right” within 8px of the right edge, “center” everywhere in between, so the full 2-character label always lands on-canvas regardless of where a tick falls. Same fix applied to `remote.html`. - Version label bumped to V1.0.17.

V1.0.16 (2026-09-27) — Audio Filter ruler labels too small/clipped, Power label

- **Audio Filter pane’s 1kHz-tick ruler labels were too small and getting clipped at the bottom.** This pane’s `#lowerRow` is shortened to 110px tall on this page (vs `remote.html`’s 170px), so the shared 30/150 bottom-margin fraction only leaves ~22px here for the ruler’s ticks + labels — the old 8px font with a tick to +8px and a label baseline at +16px left almost no clearance before the canvas’s own bottom edge. Font raised 8px → 10px, tick shortened to +4px, label baseline pulled up to +12px — fits comfortably in the same ~22px with room to spare.
- **“Power: 20 W” changed to “Power: 20W”** (no space before the unit), at the user’s request to “move the W over”. Also applied to `remote.html` and the Pi’s own Settings pane (`display.py`) for consistency.
- Version label bumped to V1.0.16.

V1.0.15 (2026-09-27) — S-meter’s dBm readout was clipped on the right edge

User report: “when the reading is -125.4 dBm, the m is not cut off” (i.e. it was being cut off) — the bar’s dBm text (`drawSmeter()`) is drawn starting at `x1 + 10` with `textAlign "left"` and no room reserved beyond that; a reading like “-125.4 dBm” (~75-80px wide at 14px Helvetica)

ran past the canvas's own right edge, which silently clips anything drawn past it, chopping off the trailing "m". - `marginRight` (the gap reserved to the right of the bar, everything else — the bar itself, its tick marks, the "+20dB" label — is measured from `x1 = w - marginRight`) raised from 70 to 100, moving the whole S-meter 30px further left and leaving ~90px of clear space after `x1 + 10` — enough for the longest reading this bar shows (S1...+20dB is -127 to -17 dBm). - Version label bumped to V1.0.15.

V1.0.14 (2026-09-27) — spectrum trace fill matched to the waterfall's own colors

Matches the same fix made on the Pi's own screen (`display.py`), at the user's follow-up request ("Yes match for the remote.html and remote_mobile.html"). The trace's fill-under-the-curve used to fade from green to yellow at a fixed 1/3 of the pane height and to red at 1/2 — close to, but not exactly, where the waterfall's own `WATERFALL_GRADIENT_HEX` table shows those same colors at the same amplitude. - `SPECTRUM_COLOR_BREAK1/SPECTRUM_COLOR_BREAK2` changed from 1/3 and 1/2 to 32/116 and 38/116 — the exact fractions where the waterfall's own gradient table stops being pure green and reaches pure yellow. - New `SPECTRUM_COLOR_BREAK3` (64/116, where the table reaches pure red) added as an extra gradient color stop, clamping to solid red there instead of only reaching full red at the top of the pane. - Also applied to `web/remote.html`. - Version label bumped to V1.0.14.

V1.0.13 (2026-09-26) — waterfall disappeared after the ruler fix

The V1.0.12 ruler fix traded one bug for another: "the freq numbers are now visible but the waterfall display is gone." Root cause — `specGeometry()`'s `traceH` was set to `h - gap - labelH`, i.e. 100% of whatever was left over after the ruler's fixed-pixel band, leaving nothing for the waterfall (`wfY0` landed within a hair of `h`, so the waterfall's own height collapsed to ~0 and it visually vanished). - The leftover space now splits between the trace and the waterfall (`traceH` = ~40% of what's left after `gap/labelH`, waterfall gets the rest) instead of handing all of it to the trace. - Also applied to `web/remote.html` (see that page's own changelog).

V1.0.12 (2026-09-26) — frequency-scale ruler fixed for real this time

REC was confirmed fixed (V1.0.11), but the ruler-into-waterfall problem persisted even after `#mainRow` got a real `min-height`: 140px — that wasn't actually the bug. The real cause was in `specGeometry()`: the ruler's band height (`gap/labelH`) was computed as a proportional *fraction* of the canvas height (`h * (5/345)`, `h * (20/345)`), but `drawFreqScale()`'s own tick-mark/label pixel offsets (7px, 10px) are fixed constants that never scaled with it. At the original reference height (`h=345`) there happened to be enough room; at any smaller height — normal on a phone, not an edge case — the proportional band shrank below what those fixed offsets need, so the labels spilled past the ruler into the waterfall, no matter how big `#mainRow` itself was. - `gap/labelH` are now fixed pixel values (5px/20px) regardless of canvas height. Only `traceH` (pure graphics, no legibility requirement) still flexed to fill whatever was left — which is what caused V1.0.13's bug. - Also applied to `web/remote.html`.

V1.0.11 (2026-09-26) — REC still cut off + a new bug from that fix

REC was "a bit lower" after V1.0.10 but still cut off, and a new problem showed up: the frequency numbers at the bottom of the spectrum pane started running into the waterfall display. The two were connected — `#mainRow`'s `min-height`: 0 let it shrink all the way down whenever `#topRow` took more space for REC, and `specGeometry()`'s frequency-scale ruler band was a fixed *fraction* of `#mainRow`'s own height, so once that pane got small enough the ruler's labels no longer had room and spilled into the waterfall below. - `#mainRow` gets a real `min-height`: 140px so the ruler always has proper room. If every pane together is ever taller than the visible viewport, the page just scrolls (enabled since V1.0.3) instead of squeezing this pane broken again. - With that safety net in place, `#topRow`'s flat top padding was pushed further: 16px to 32px (plus the safe-area inset on top, for phones that have one).

V1.0.10 (2026-09-26) — REC still cut off; flat padding instead of relying on env()

`env(safe-area-inset-top)` alone (V1.0.9's fix) wasn't enough — it resolves to 0px on a phone with no actual notch/camera-cutout, which apparently doesn't describe this user's phone, so the flat padding stayed at its original 6px and the clipping was unchanged. - `#topRow`'s padding-top baseline is now 16px (real, guaranteed clearance on any device), with the safe-area inset still added on top of that for phones that do have one.

V1.0.9 (2026-09-26) — top safe-area inset + REC in green

- **"REC" top cut off, "connected" faded at its top**: a side effect of `viewport-fit=cover` (added in V1.0.5) — it lets the page draw under the phone's own status bar/notch on every edge, not just the bottom. `#topRow`'s padding-top now adds `env(safe-area-inset-top, 0px)` on top of its existing 6px.
- **REC in green**: `txrxText`'s color when receiving was plain white; now `#00cc44`. XMT stays red, unchanged. Also applied to `web/remote.html` — a plain color preference, not phone-specific.

V1.0.8 (2026-09-26) — toolbar layout broke on the actual phone

The toolbar buttons went "very small, no visible labels, and pushed into upper right hand corner of the display" right after the previous fix wrapped every toolbar dropdown in its own `<div>` for centering. The two-row/`display: contents` structure (`#toolbarRow1/#toolbarRow2` flattened into a grid) worked fine with only 5 of 13 buttons div-wrapped, but broke once all of them were — `display: contents` plus dynamically created nested grid items is a known-flaky combination across mobile browsers. - Dropped the two-row/`display: contents`

structure entirely — `#toolbar` is now a single flat grid container holding all 13 buttons directly.

V1.0.7 (2026-09-26) — remaining toolbar dropdown labels + S-meter clipping

- **Band/Mode/Demod/Filter labels:** same defect as Course/Fine/Zoom/ Noise/Decode below — these four now also show a fixed “Band”/“Mode”/ “Demod”/“Filter” label, centered.
- **Vol and Home centered too:** these two keep showing their current selection rather than a fixed label, so `makeDropdown()` / `setSelectSilently()` were generalized — every toolbar dropdown now uses the same invisible-select-over-a-centered-label-span technique, with a new `updateDropdownLabel()` keeping the span’s text in sync with the real selection for Vol/Home.
- **S-meter tick-label/“S”/“+20dB” text tops cut off:** their baseline sat too close to the top of the canvas for an 11px font’s ascenders. `y0` moved from 16 to 22.
- Also applied to `web/remote.html` — none of this was phone-specific.

V1.0.6 (2026-09-26) — dropdown labels overwritten by current value

The Course Inc/Fine Inc/Zoom/Noise/Decode toolbar buttons were displaying their *current* selected value (“1kHz”, “10 Hz”, “4x”, “Off”, “Off”) instead of a fixed label — a plain `<select>` always shows its selected option’s own text, overwriting these five buttons’ intended static labels (“Course”, “Fine”, “Zoom”, “Noise”, “Decode”). - New `.fixedLabelWrap/.fixedLabelText/.fixedLabelSelect` CSS: the real `<select>` stays fully functional but is stretched invisible over a plain, centered label span that never changes text. - `makeDropdown()` takes a new optional `fixedLabel` parameter; only `course_inc/fine_inc/zoom/noise/decode` pass one — Vol/Band/Mode/Demod/BW/ Home were unchanged at this point (fixed in V1.0.7 above). - Also applied to `web/remote.html`.

V1.0.5 (2026-09-26) — dropped firmware version, added a bottom spacer

The Filter jog slider was still reported unusable after V1.0.4. - Dropped the Teensy firmware’s own version readout (`#settingsVersion`) from this page entirely — it kept colliding with this page’s own `#mobileVersion` label in the narrow phone-width Settings pane. Only `#mobileVersion` remains here; the Teensy’s own version string is still shown on `remote.html`. - New `#bottomSpacer` pane — a plain empty div below the jog sliders, a flat 16px plus `env(safe-area-inset-bottom)`, so a slider sitting flush against the very bottom edge doesn’t have its touches eaten by the phone’s own system UI. `viewport-fit=cover` was added to the viewport meta tag alongside it so the `env()` value resolves to something real.

V1.0.4 (2026-09-26) — version-label collision + slider touch fix

- **Version-label collision:** `#settingsVersion` (Teensy firmware version) and `#mobileVersion` (this page’s own label) were both pinned to the same bottom line, colliding on a phone-width box. Fixed by stacking them onto their own lines.
- **Filter slider still not usable after the V1.0.3 scroll fix:** making the page scrollable had a side effect — a touch drag starting near a jog slider could be interpreted as a page-scroll gesture. `.jogSlider` now has `touch-action: none`.

V1.0.3 (2026-09-26) — fixed the real cause of the bottom cutoff

The Filter jog slider was still landing “too close to the bottom, can’t use.” The actual cause was never the pane heights — it was `100vh`. On a phone, `100vh` counts space hidden behind the browser’s own address/tab bar as part of the page, so `#app` was laid out taller than what’s actually visible, and with `overflow: hidden`, the last row (the jog sliders) was unreachable. - `#app`’s height: `100vh` becomes `min-height: 100dvh` (with a plain `100vh` fallback for older browsers). - `html, body`’s `overflow: hidden` becomes `overflow-x: hidden; overflow-y: auto`, so the page scrolls instead of clipping if content is ever still taller than the viewport.

V1.0.2 (2026-09-26) — split into its own file

The `@media (pointer: coarse)` approach used for every mobile-only change up through this point also matched the user’s own laptop, reflowing the normal desktop remote-control screen by mistake. Media-query device detection is a heuristic that isn’t reliable phone-vs-laptop signal on all hardware, so rather than chasing a better heuristic, the phone experience became its own file: - **`web/remote_mobile.html` created** — everything that used to be gated behind `@media (pointer: coarse)` in `remote.html` now applies unconditionally here instead: the jog sliders (`#mobileJogPanel`), the hidden Wheel indicator, the reordered `#statusBlock`, the unified 4-column toolbar grid, and the shortened `#lowerRow`. - `web_relay.py` gained a new route: a GET to `/mobile` (or `/mobile.html/remote_mobile.html`) serves this file. - The S-meter responsive-canvas fix (`resizeSmeterCanvas()`, from V1.0.1 below) is the one piece kept in both files, since it’s a universal correctness fix, not a phone-only layout choice. - To use this page: browse to `http://<pi-hostname>:8765/mobile`.

V1.0.1 (2026-09-26) — first pass at reclaiming phone screen space

(This work still lived inside `web/remote.html` at the time, gated behind `@media (pointer: coarse)` — it moved into this file’s own history at the V1.0.2 split above.) - **Toolbar grid unified:** the two separate row divs each had their own independent 4-column grid, wasting cells. Unified into one real grid — 13 buttons form exactly 3 full rows of 4 plus one row of 1. - **Audio Filter + Settings panes shortened:** `#lowerRow`’s height drops from the desktop’s 170px to 110px on phones. - **S-meter bar fixed to actually fit the screen:** `#smeterCanvas` never had a resize handler, so its `width="900"` HTML attribute rendered literally, overflowing any viewport narrower than 900px. New `resizeSmeterCanvas()` sizes it to its container’s actual rendered width. (Not phone-specific — applies on desktop too, though the bug was

only ever visible on a narrow screen.)

Before V1.0.1 — origins (still inside `web/remote.html` at the time)

The very first pass at making the web remote usable on a phone, before it had a version label of its own: - Touch jog sliders added for Tune/Fine Tune/Volume/Filter — four `<input type="range">` sliders, shown only on coarse-pointer devices, read as a relative drag distance from center (not an absolute reading), since PiLink only supports relative tick-up/tick-down. - The “Wheel: ...” indicator dropped on phones (a concept the jog sliders don’t use). - `#statusBlock` (REC/connection state) moved to the top of `#topRow`’s wrap order, its two lines shown side by side instead of stacked. - The toolbar’s 12 buttons went from flex-wrap to a fixed 4-column grid.