PiaTune

Professional Piano Tuning Application for iPhone*

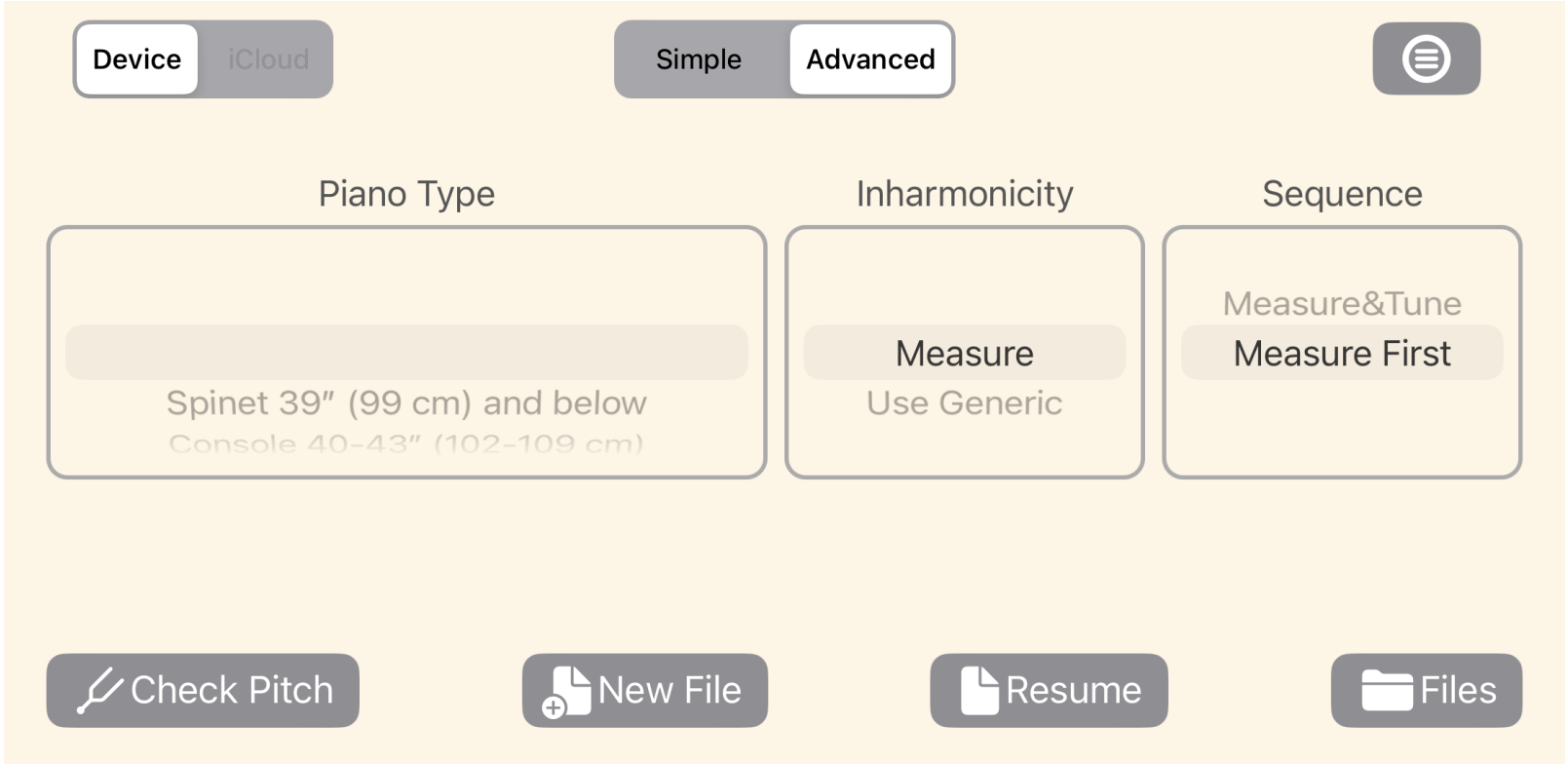
*Will work on iPad in 2x mode. iPhone and iPad are registered trademarks of Apple Inc.

Introduction

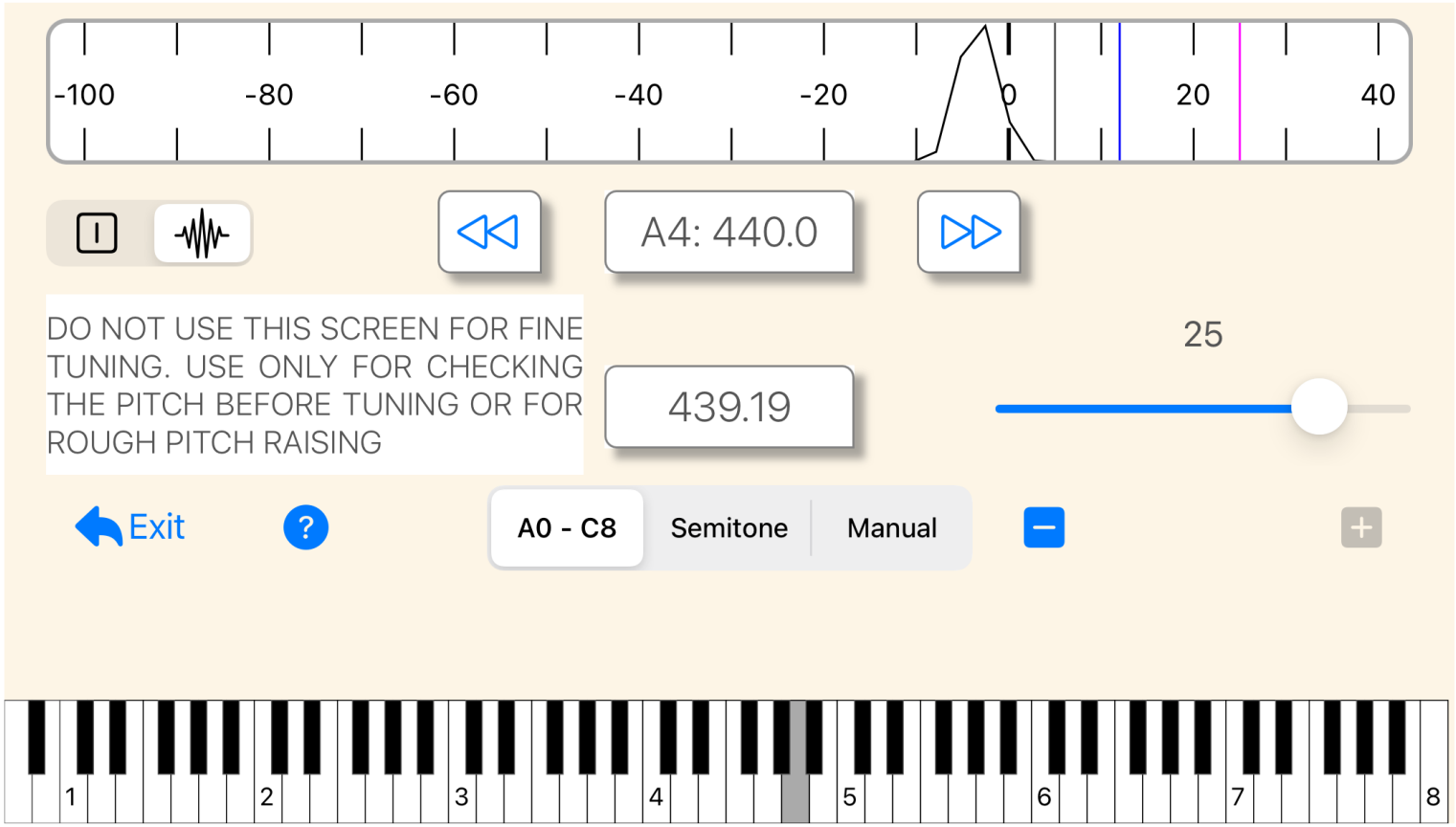
PiaTune is a piano tuning application for professional tuners and tuning enthusiasts.

PiaTune is free to install and is **fully functional** up to 500 note changes, after which measuring is disabled. Upgrade to Paid version **through In App Purchase** to use the app without any limitations. PiaTune can be launched by tapping a tuning file too.

Application starts with create/open/resume file dialog or with the Tuner screen if a file is tapped to launch the app and load the file. Only files in PiaTune folders on device or iCloud Drive are loaded.

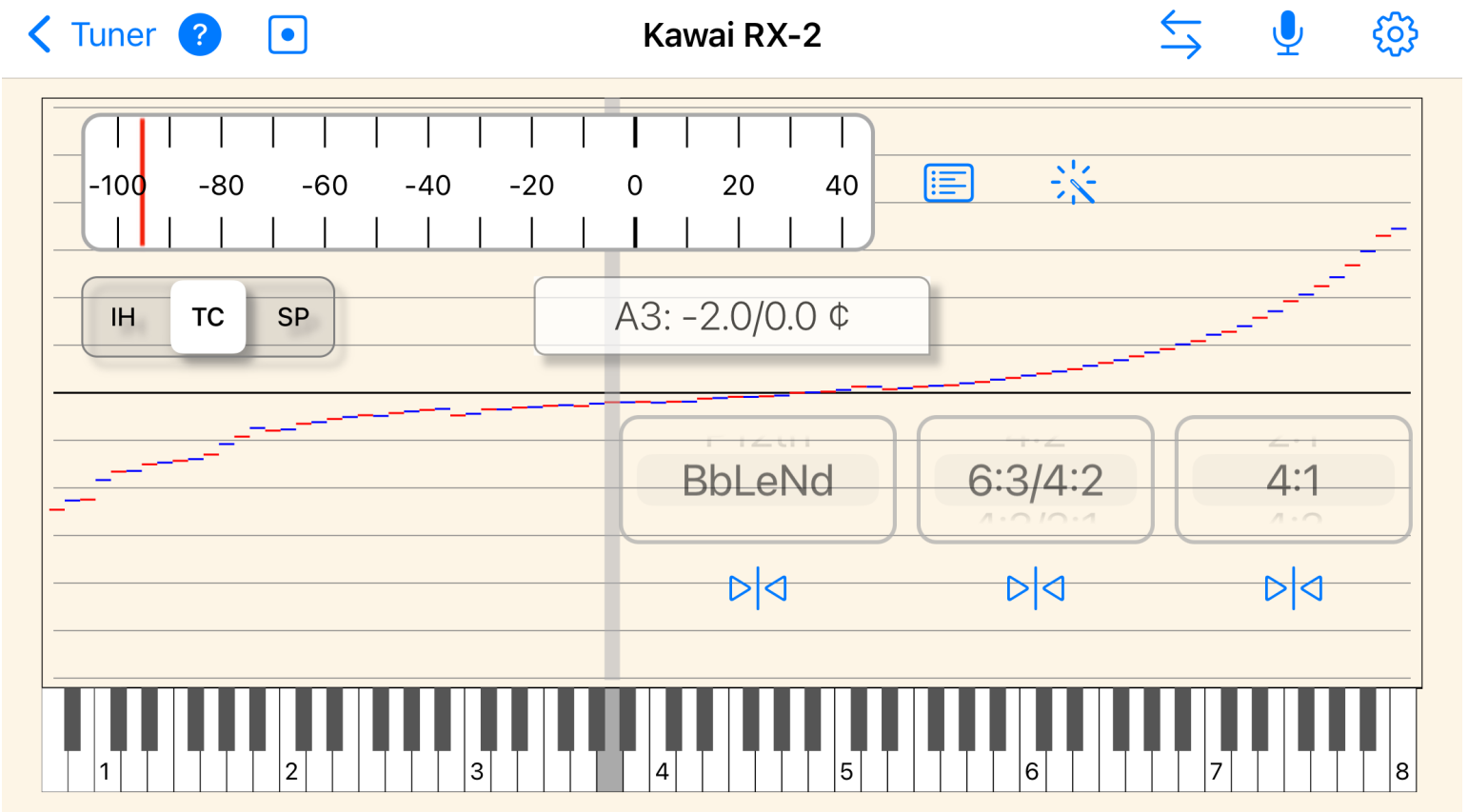


Check Pitch before tuning. You can add up to three markers on the check pitch scale which can be used for rough pitch raise. Select spectrum graph to rough tune open unisons.



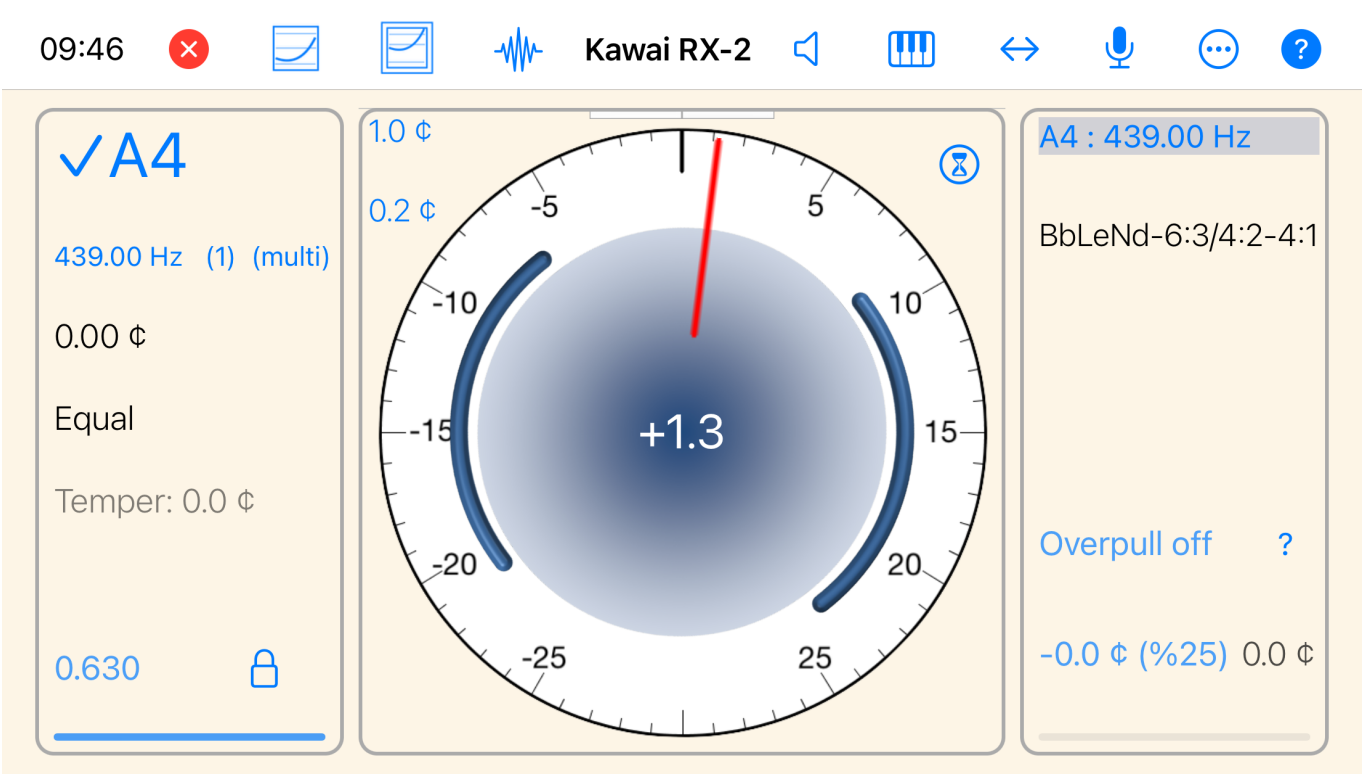
If within 40 cents use the simple start screen to create a new tuning file, and continue with inharmonicity measurement. After completing inharmonicity measurement, switch to Tuning Curve (TC) screen and tap the “Magic Wand” icon to automatically set tuning curve. If over pull is needed, go to Starting Pitch (SP) screen complete measurements and transfer to main screen. Then go to Tuner screen and start tuning.

If the piano is flat more than 40 cents, go to Advanced > Use Generic Values, measure starting pitch, transfer starting pitch to main screen and do a first pass over pull. After the first pass clear all generic inharmonicity values and measure inharmonicity again. Switch to Tuning Curve (TC) screen and tap the “Magic Wand” icon to automatically set tuning curve. Then go to Tuner screen and start tuning.

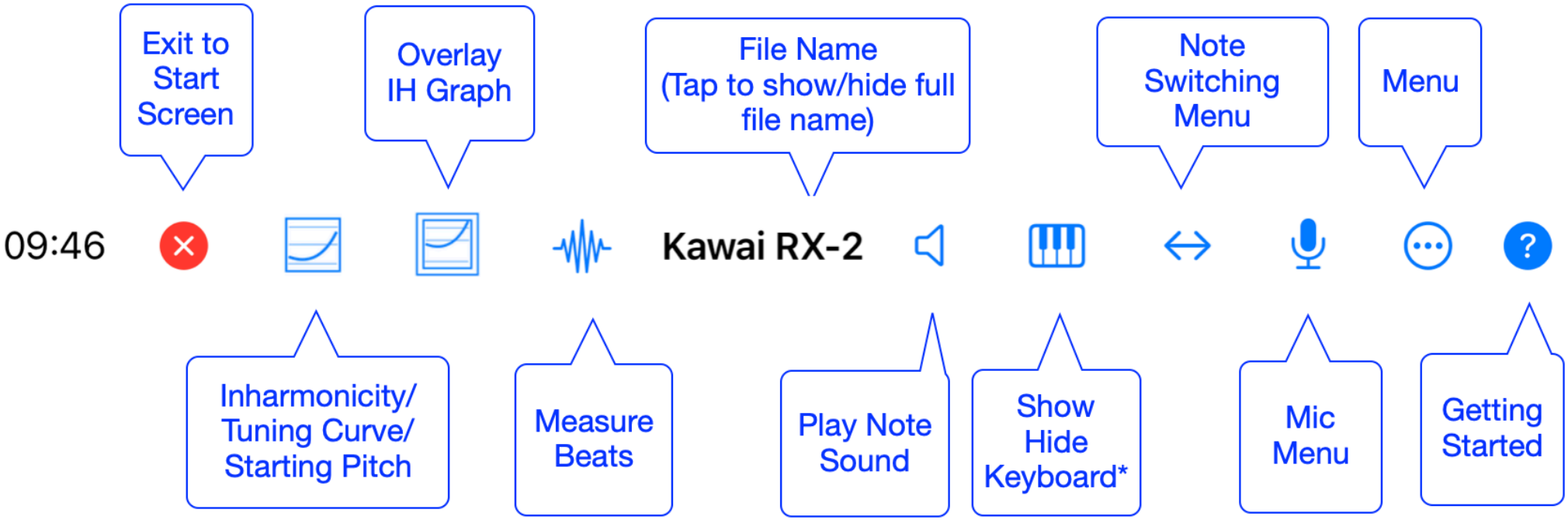


Main Screen

Main screen consists of top bar, left, center and right screen sections.
Top bar holds **Delete/Exit, Check Note, Inharmonicity/ Tuning/Starting Pitch Curve, Overlay Inharmonicity Graph, Measure Beats, Keyboard, Note Switch Mode, Microphone, Menu, ?** items, and tuning file name.
Left section shows various information about the current note.
Center section displays how close is the current note to the target.
Right section holds information on various settings and over pull.

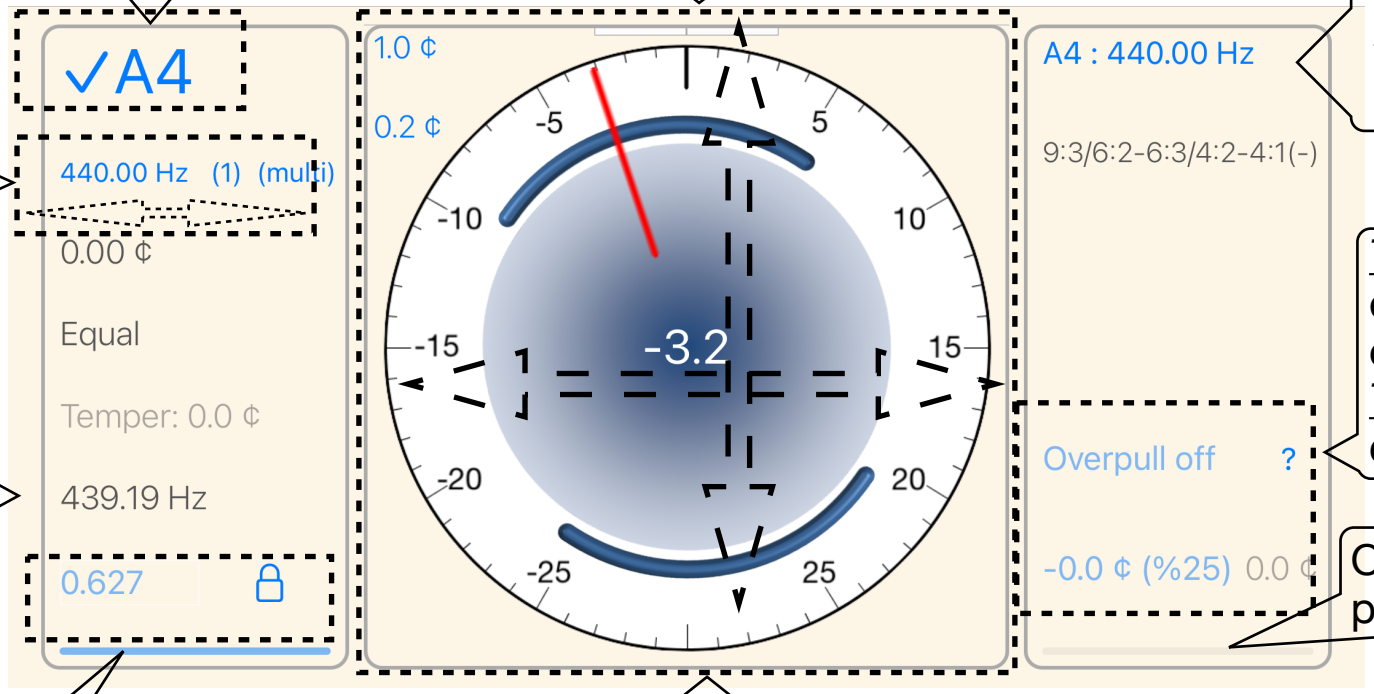


Main Screen Top Bar



*Keyboard is inactive in Temperament Mode

Navigation on the Main Screen



Current Note

TWO finger swipe: Change display type.
TWO finger tap: Display Indicator Response

*Tap:*Tuning Settings

Swipe R/L: Change Partial. Double tap: Set to default.

Tap on text to enable/disable overpull
Tap on value to clear value*

Inharmonicity *Tap* to clear.

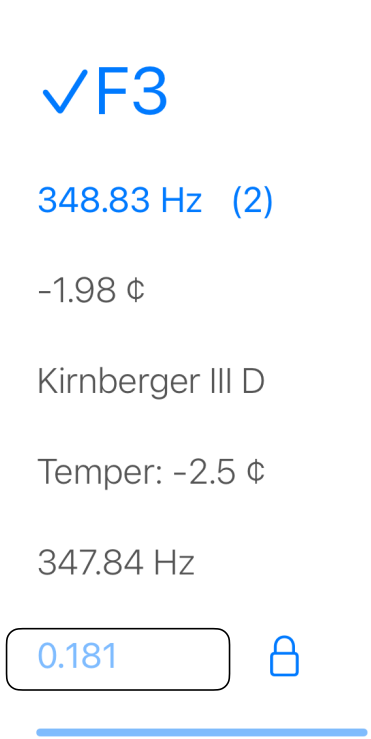
Over pull progress bar.

Inharmonicity progress bar. Must be full to switch notes in Temp. Mode

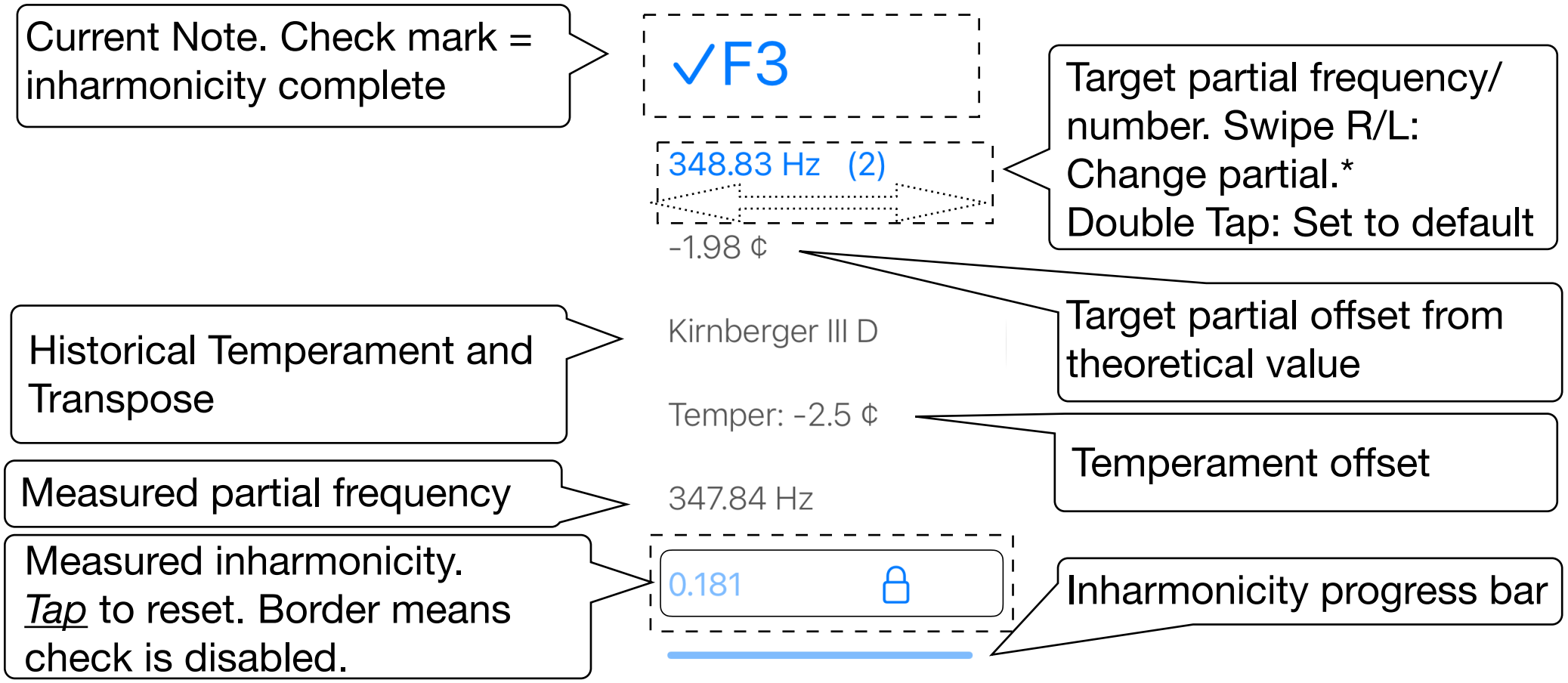
Swipe Right/Left: Next/previous note in Temp. Mode (aka Temperament Mode, active if F3-A4 inharmonicity is incomplete) semitone high/low note in Manual/Auto. *Swipe Up/Down*: Octave high/down in Manual/Auto. *In Auto play the note* to switch to next note. *Check mark* must appear before note name to be able to switch notes.

* Long press to clear all values.

Main screen left section



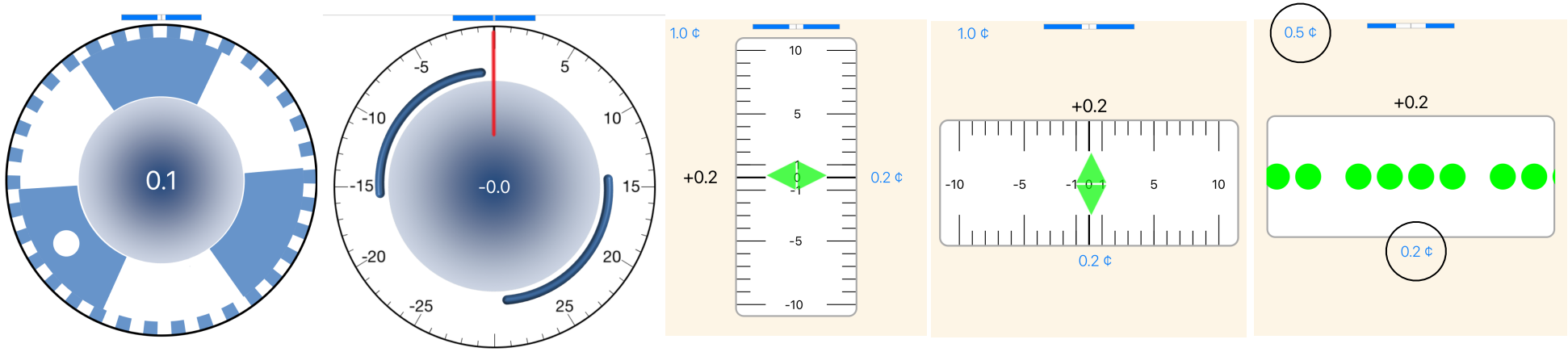
When in measure & tune Temp. Mode note names have one of (fine) or (rough) suffixes. (fine) means that this is the final measurement and the note can be fine tuned. (rough) means only the inharmonicity is being measured and the note will be revisited. It can be rough tuned or not tuned at all if it is not too off. In measure then tune Temp. Mode (measure) suffix appears meaning that notes will not be tuned but measured only. A check mark appears when measurement is complete. It is not possible to switch to the next note in the temperament sequence before the measurement is complete.
Target frequency and the current partial is shown in the second row.
Third row shows the offset in cents required to achieve the target value.
Fourth row displays the temperament and transpose. Fifth row displays the cents value that the note will be shifted if an unequal temperament is selected.
Sixth row shows the measured frequency of the current note depending on which partial is being measured.
Seventh row displays the measured inharmonicity value and inharmonicity lock button. **Measurements must be taken always on single strings, the other string(s) of the unison being muted.** If an erroneous measurement is made due to noise or other reason, tapping on the value will clear the value and the note can be measured again. **It is important that neighboring notes do not have values that differ too much from each other.** The last octave is not measured. **Value with border** means the inherent advanced inharmonicity check is disabled by user. If A0-C7 is complete inharmonicity is locked.
The bottom row displays the inharmonicity measurement progress bar. When the bar is full, measurement is complete and a check mark appears on the note name. Notes without a check are not saved in the tuning file. All notes (but last octave) must have a check mark. **Note that inharmonicity is measured if the note is within +/-50 cents**.



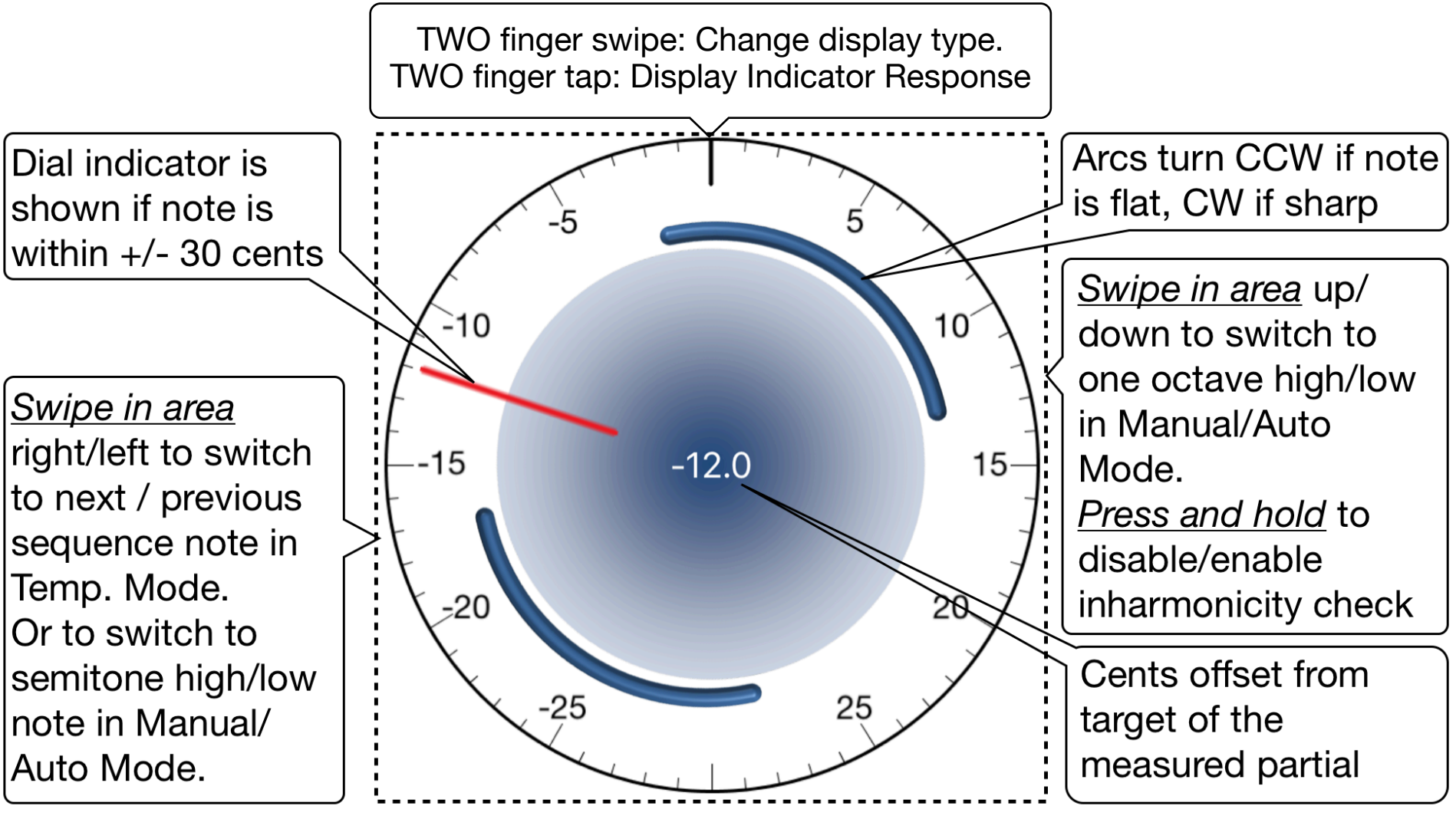
* If set to a different partial by the user, background color changes. Does not apply for auto partial below E2 option.

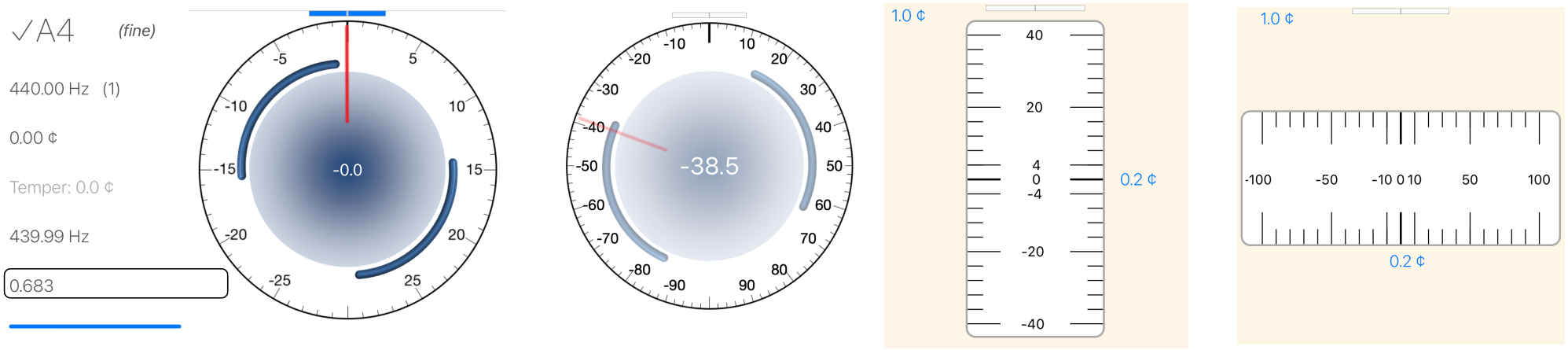
Main screen center section

When a note is played and if the level of the sound is high enough to trigger the measurement sequence, one of the display types is displayed depending on the display type selected in Settings>Display. If not tap on microphone twice to turn off and on the microphone.

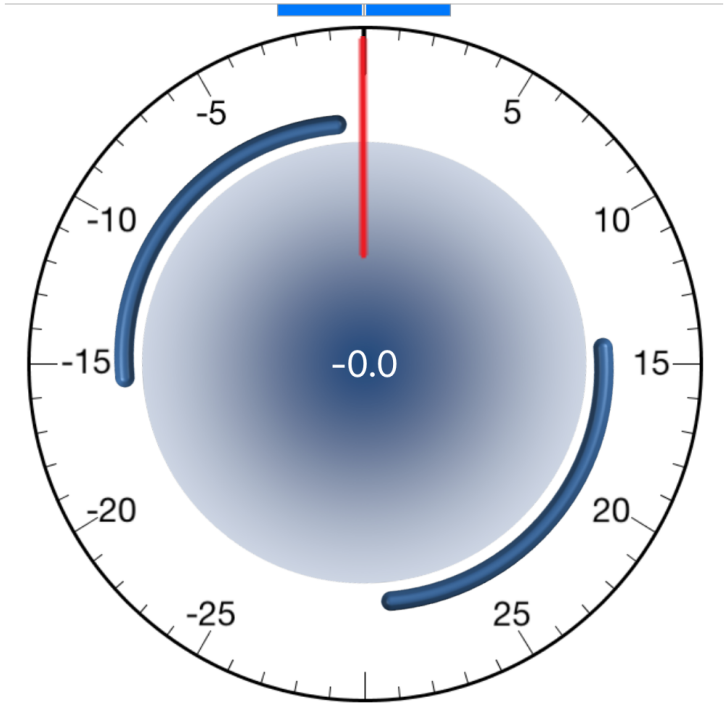


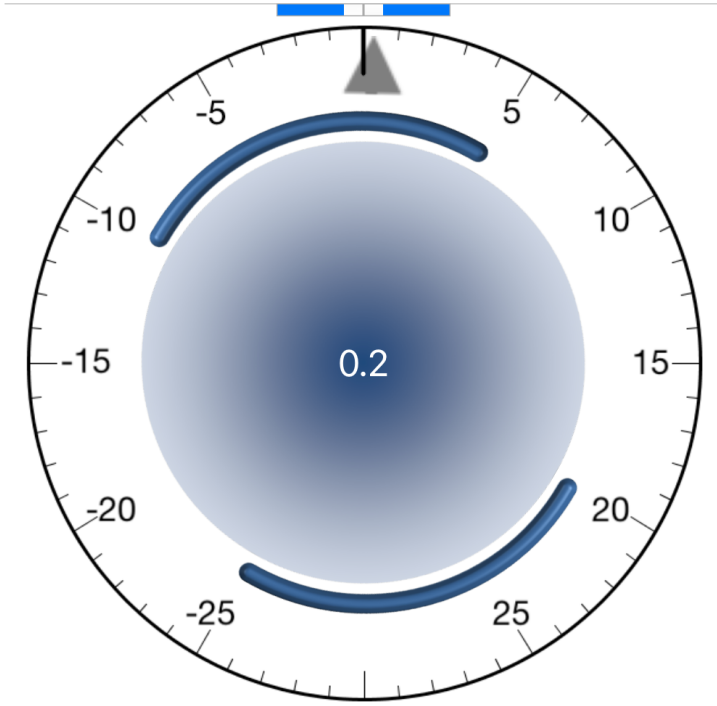
The value in the center of the display indicates the current note's plus or minus cent difference from the target value. If the note is flat the value is minus and the spinner/arcs turn left. With a positive value the note is sharp and the spinner/arcs turn right. When the value is within dial range a red dial indicator is displayed showing the measured value in indicator mode.
The goal is to stop the spinner/arcs, make the indicator as close to zero value as possible and make closeness indicator bars meet at the center. It is recommended that the tuning of a single string of a unison is done according to the indicator and the remaining strings of the unison tuned aurally.
Tap on closeness range and tolerance texts (encircled) to change the value instantaneously.


TWO finger swipe: Change display type.
TWO finger tap: Display Indicator Response
Dial indicator is shown if note is within +/- 30 cents
Arcs turn CCW if note is flat, CW if sharp
Swipe in area up/ down to switch to one octave high/low in Manual/Auto Mode.
Press and hold to disable/enable inharmonicity check
Swipe in area right/left to switch to next / previous sequence note in Temp. Mode.
Or to switch to semitone high/low note in Manual/ Auto Mode.
Cents offset from target of the measured partial
-5
5
-10
10
-15
15
-20
20
-25
25
-12.0



Double tap on center view to switch between linear, logarithmic and wide linear circular scales and 10-40-100 cent vertical/horizontal scales. Logarithmic scale can be used for fine tuning. Wide linear scale might be used during over pull. If you have difficulty measuring the inharmonicity of a note, *Press and hold* on indicator area to disable/enable the inherent advanced inharmonicity check, which will ease measuring inharmonicity for notes that are difficult to measure. A *border* around means checking is disabled. Checking resumes on note switch.

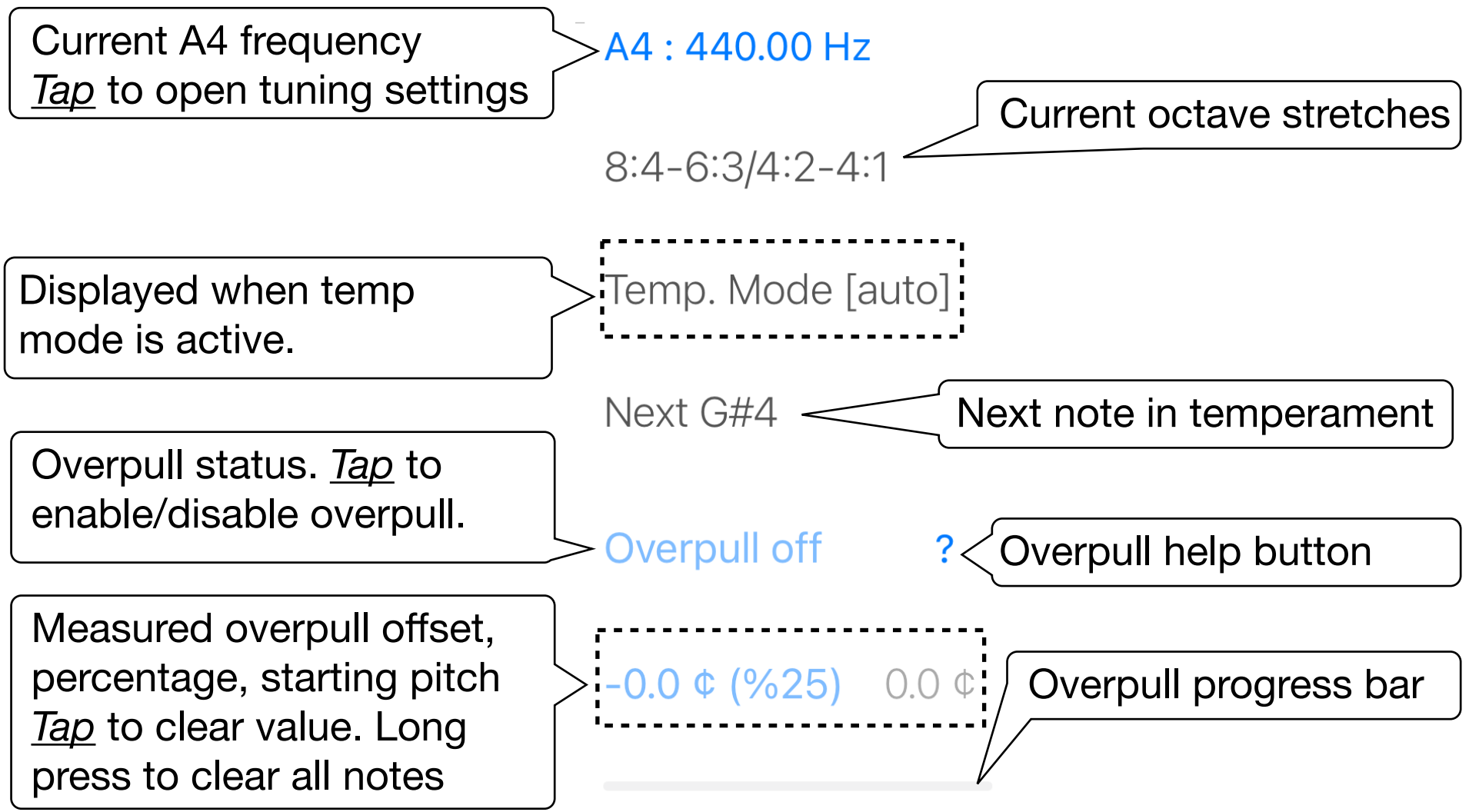




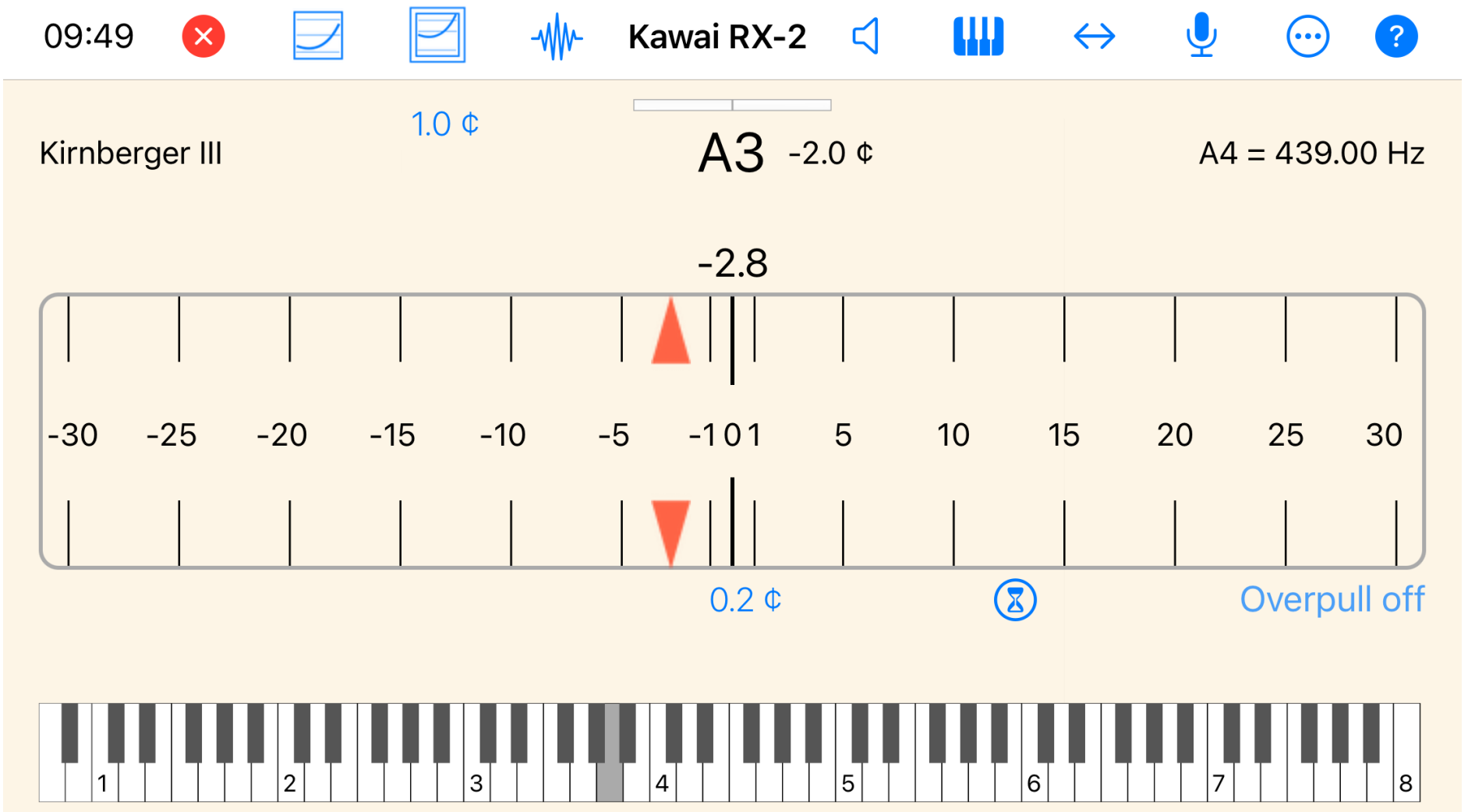
The indicator style can be set to a needle or a triangle through Settings > Display > Indicator Style.
Default setting is needle.
The setting is system wide and is persistent.

Main screen right section

The frequency of the A4 is set from the settings screen and is displayed on the first row **(you can tap on A4 frequency to open tuning settings)**. The frequency can be set from 392 Hz to 467 Hz.
Second row displays the set stretch values for the bass, middle and treble sections set from the settings screen.
Third row displays if in Temp. Mode. Manual Mode. A new tuning starts with the Temp. Mode [auto].
When in Temp. Mode the next note in the sequence is shown in the fourth row.
Over pull can be activated by tapping on Overpull text. The status and help button is shown in the fifth row. Activating Over pull switches to Manual Mode. Auto Semitone can be set during over pull. When over pull is active, the over pull value of the sounding note is calculated according to the difference between the target and measured values and is shown in the sixth row. The value is determined according to the over pull percentages set in the settings screen (shown in parenthesis) and whether the note is in the bass, tenor or treble section. Tapping on the value will clear the value and a new measurement can be done.
The seventh row displays the over pull measurement progress.


Current A4 frequency
Tap to open tuning settings
A4 : 440.00 Hz
Current octave stretches
8:4-6:3/4:2-4:1
Displayed when temp mode is active.
Temp. Mode [auto]
Next G#4
Next note in temperament
Overpull status. Tap to enable/disable overpull.
Overpull off
?
Overpull help button
Measured overpull offset, percentage, starting pitch
Tap to clear value. Long press to clear all notes
-0.0 ¢ (%25)
0.0 ¢
Overpull progress bar

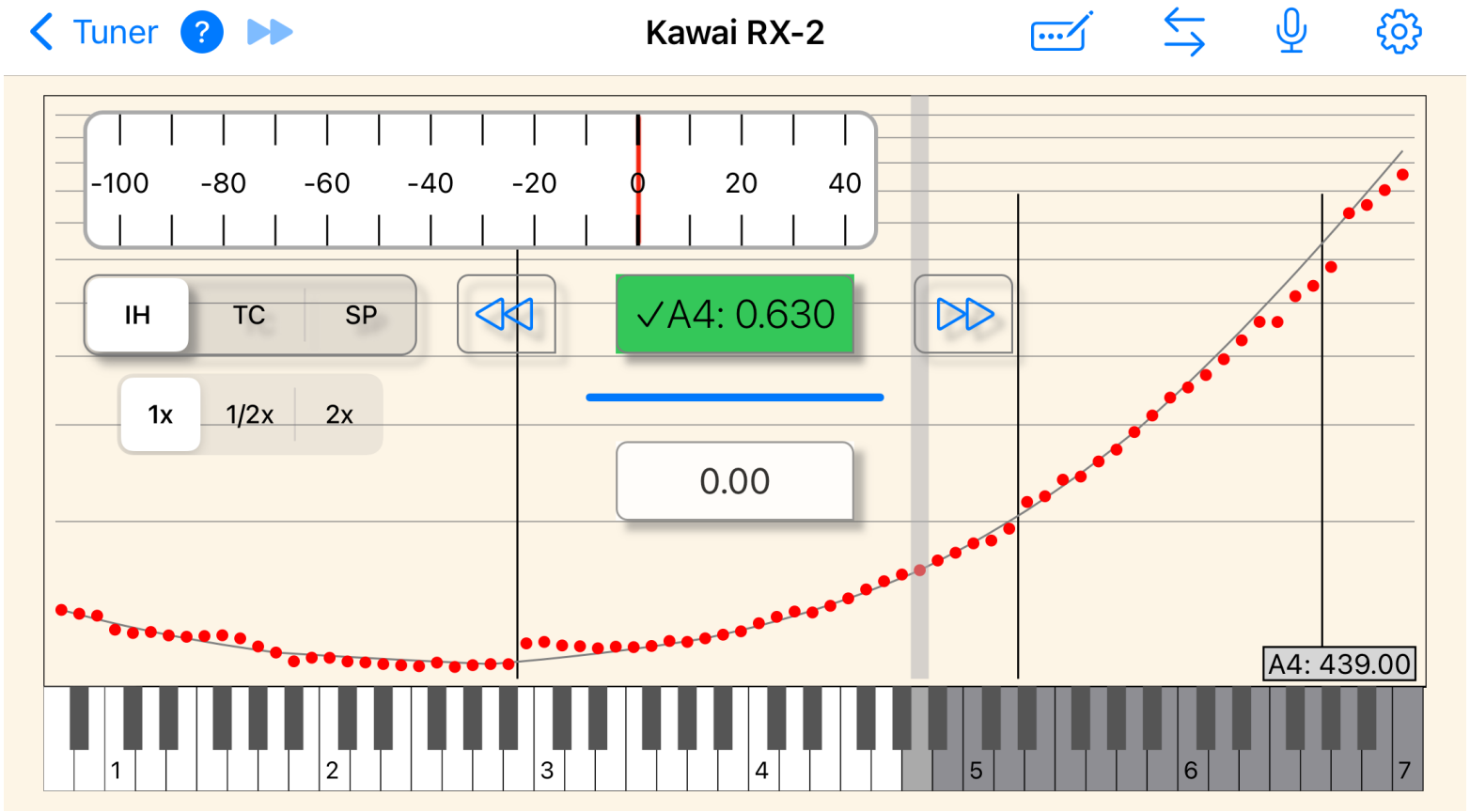
If you set display type to “Minimal”, left and right sections are hidden for a simpler and plain look of the Tuner screen. Minimal display type can be selected if inharmonicity measurements are complete. Over pull can be activated if starting pitch values are transferred from the SP (starting pitch) screen. Double tap to change scale.



IH / TC / SP Screen

Inharmonicity (IH)

Use this screen to measure inharmonicity (IH) from A0 to C7 or check and remeasure. **Note must be within 50 cents.** Starting pitch (Hz) is measured along with the inharmonicity. Or it can be measured independently. **Tap on frequency box to clear and remeasure. Long press to clear all SP values.**



Use horizontal scale to pull up closer to pitch. **Swipe up/down to adjust A4 frequency.**

To construct an idealized template curve, measure A0-A1-A2-A3-A4-A5-A6. Template curve is used to calculate approximate targets when measuring with horizontal scale. This might be used for a first pass rough tuning while measuring inharmonicity. You can also measure samples and fill in the notes between. Samples must be 12 notes apart maximum. **Drag note selector (gray bar or red line), swipe right/left horizontal scale (semitone), use buttons (single tap semitone, double tap octave), use keyboard or play the note (in auto modes) to switch note.** Black lines show breaks (bass break (if there are tenor wound notes), last wounded note, first and second strut). **Tap on value to clear and remeasure. Long press to clear all inharmonicity, frequency, current and transferred starting pitch data.** A value that departs too much from the trend might need to be checked. Value can be edited manually too. If not in temperament mode and the neighbors of the selected note is not zero, tapping back will take you to that note on main screen. You can view the rough pitch of the note also. **If piano is flat more than 50 cents set manual note switching. Swipe right/left to change semitone. Note that, incomplete IH dots are shown in different color.**

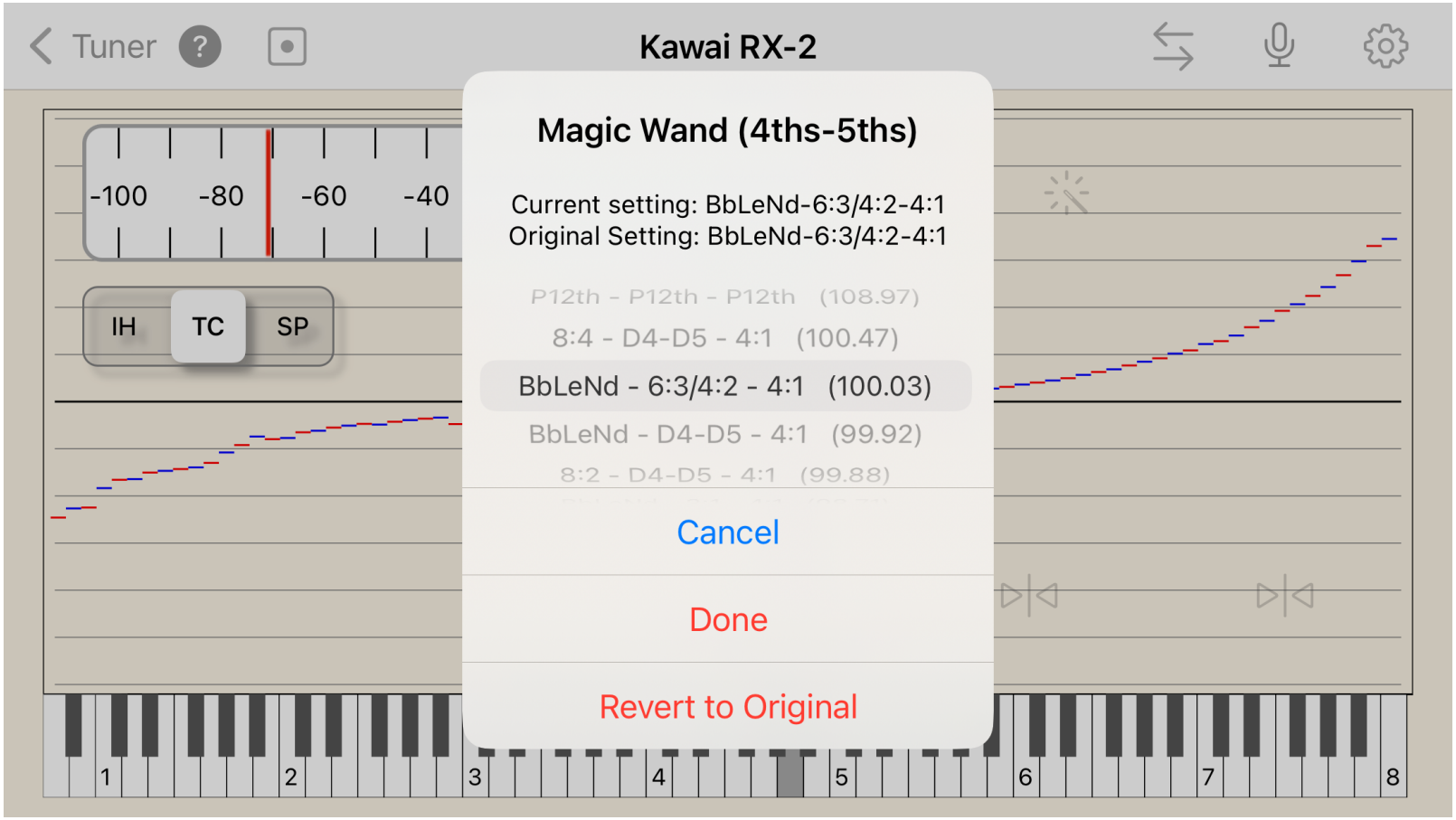
In Advanced Inharmonicity mode: (ON/OFF Settings > Tuning or tap forward button)

- **Note switches automatically to next note. Note switching menu is disabled.**
- **Measurements need to be repeated if the inharmonicity box blinks.**
- **Fill values is not available.**

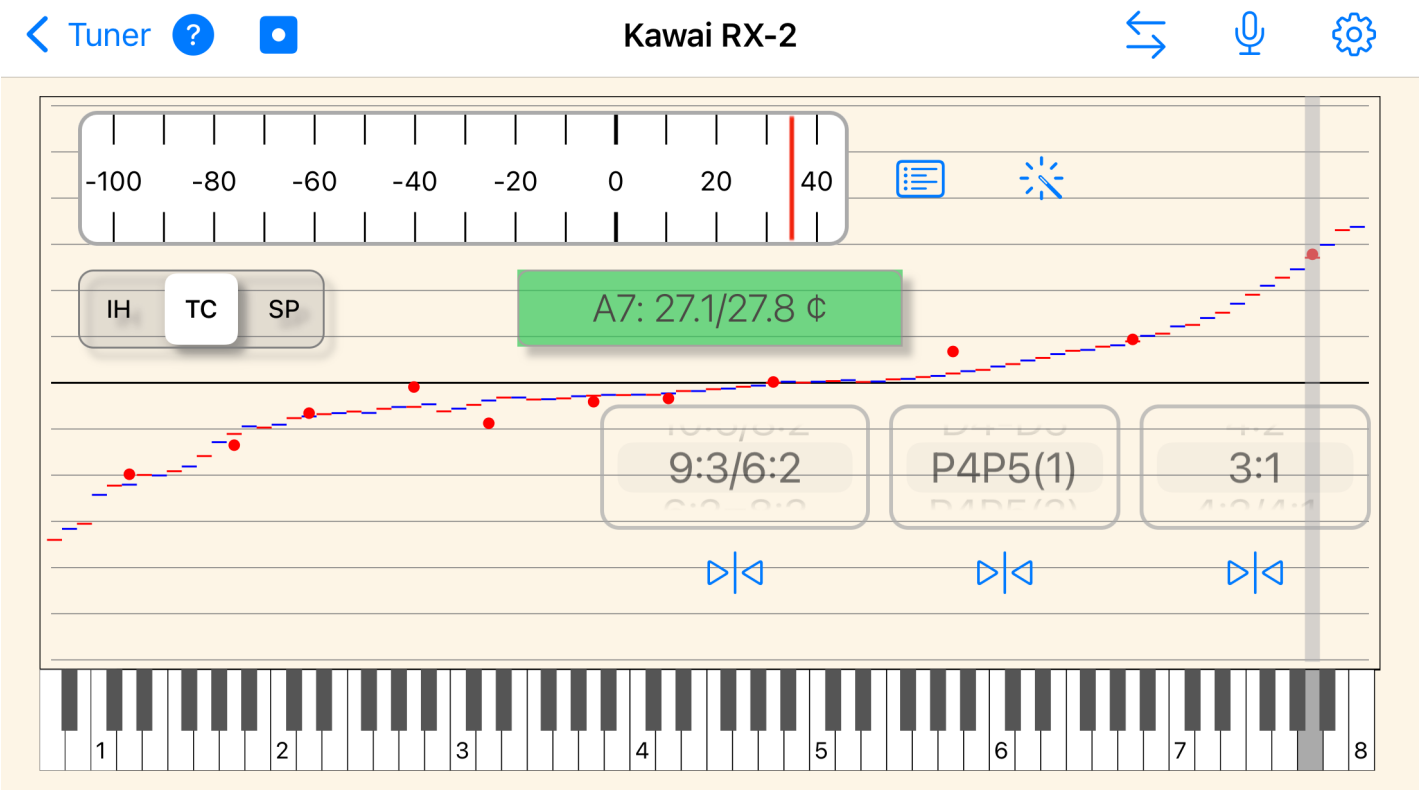
Long press next note button to toggle Inharmonicity Treble Filter ON/OFF. It might help solving issues when measuring treble notes A4 and above. Keyboard is shaded when active.
Long press horizontal scale to toggle over pull marker scale on and off.

Tuning Curve (TC)

When inharmonicity of notes A0 to C7 is completed, Tuning Curve (TC) option becomes available. Tap the “Magic Wand” icon, select one of “Default” or “4ths-5ths” (prioritizes fourths and fifths) schemes and set the Bass/Mid/Treble stretches. A pop-up presents options. Numbers in parenthesis show absolute total scores. Note that in some cases scores might be over 100. This is because of bonus points when all individual interval scores are high. You can always revert to original setting that was active before Magic Wand feature is first used.

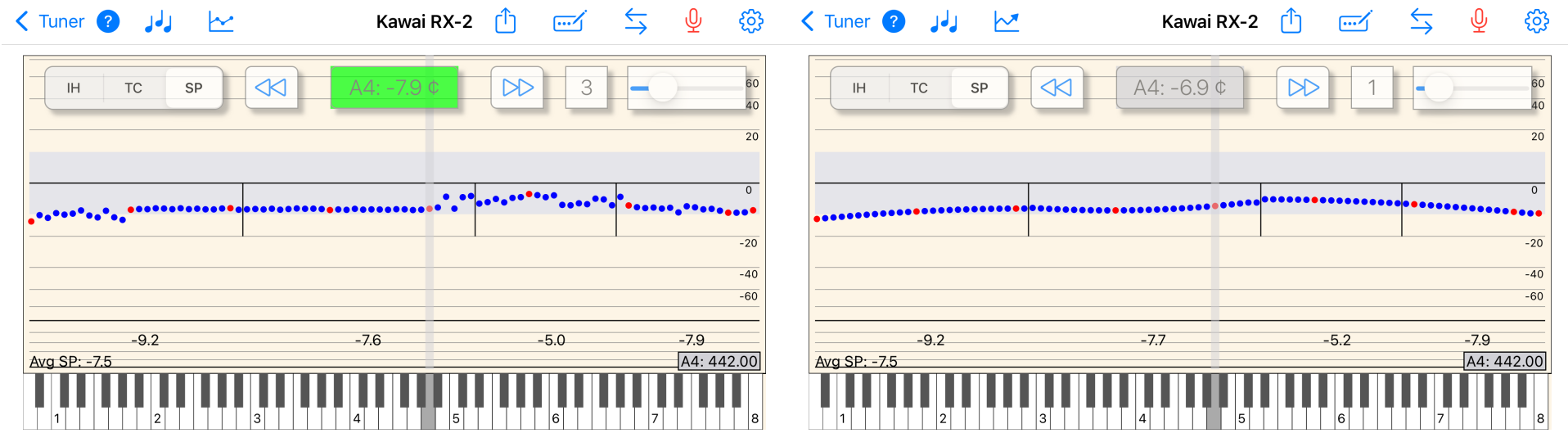


Or measure pre-tuned sample notes and fit the closest tuning curve. A4 must be within 0.5 cents. D1, A1, D2, A2, D3 (bass), A3 (mid), A5, A6, A7 (treble) must be measured. To start measuring tap the dot button. After measurement, tap on auto set buttons to set the stretch for bass, mid and treble for closest match. Tap note value box to clear or long press to clear all values. Tuning targets that fall outside the boundaries of the screen are not shown, but you can view the values by dragging note selector (red line or gray bar) or using the touch keyboard. **Swipe right/left to change semitone. Tap show beats button to display the table for temperament area fifth and M3rd beat rates for all options, sorted by the score(based on quality of fifths and progressiveness of M3rds). A3 column shows the tuning curve cents for A3. Select temperament to update values.**



Starting Pitch (SP)

When inharmonicity values are complete from A0 to C7 Starting Pitch (SP) screen is available. This screen shows in cents the starting pitches measured in the inharmonicity screen according to the tuning curve set in the TC screen and set A4 frequency. The vertical short lines show the position of bass break (if there are tenor wound notes), last wound note, notes below first and second treble strut (if applicable) set in Over Pull settings. SP values can be measured/edited and smoothened. For A0

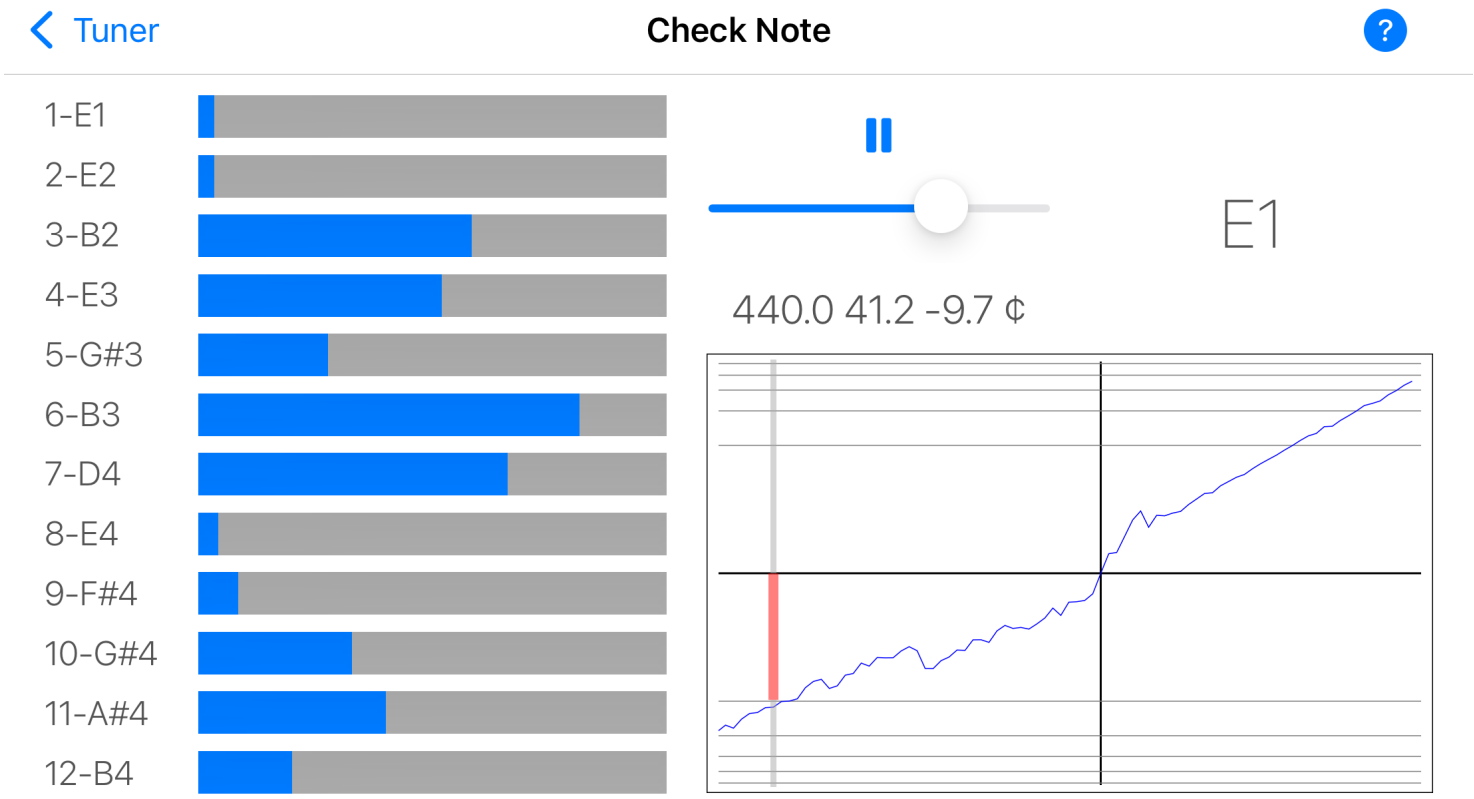


and C8 “Change As Measured” is available to make possible auto filling extra notes for smaller keyboards. **Tap on value to clear. Long press to clear all. You can sample all A, C, F notes**. Note switching is automatic/manual and follows sampling sequence. Buttons change color in ACF Sample mode. Sampling ends when all values are complete. **Tap control to exit anytime.** Select Measured/ Smooth/Trend (available if all values are complete) to show measured values, smooth values within

+/- set value of section average or construct trend lines. Tap on fill button to fill empty values by random values within boundaries of neighboring notes. Boundary notes must be maximum an octave apart or less. **Tap on action button (on top bar right) to transfer values to main tuning screen to be used as over pull starting pitches.** Average starting pitch is displayed if all notes are complete. To display section averages set over pull setting Show Section Averages to ON. Note that overall average is calculated by using 2 strings for wounded notes and 3 strings for plain strings.
If all SP values are measured, they are saved to tuning file when the file is saved. **Note that, incomplete or edited/filled SP dots are shown in different color.** If a file contains saved SP values, show SP values icon (eye) is available. Toggle to show/hide values from last saved session.
Swipe up/down to adjust A4 frequency. Keyboard is inactive during sampling. Swipe right/left to change semitone. Smooth option can be hidden in over pull settings.

Check Note

Check note screen dynamically displays the relative strengths of partials (number of partials shown depend on note number) of the selected note. It also displays roughly how far the note is with respect to a sample tuning curve. The partials display freezes when the Play/Pause button is pressed. Pressing the button again will resume the partials display. Swiping on the note name to left, right, down, up will change the note a semitone low, high and an octave low, high. In auto mode switching to any note from A0 to C7 is possible. The graph reference can be changed within +20/-50 cents (427 Hz to 445 Hz) using the slider.



The information might be used for voicing or checking the piano prior to tuning.

Menu

Settings screen is used to set various tuning parameters.

Files screen is to used for file save, open, delete etc.

Custom Offsets lets you use offsets.

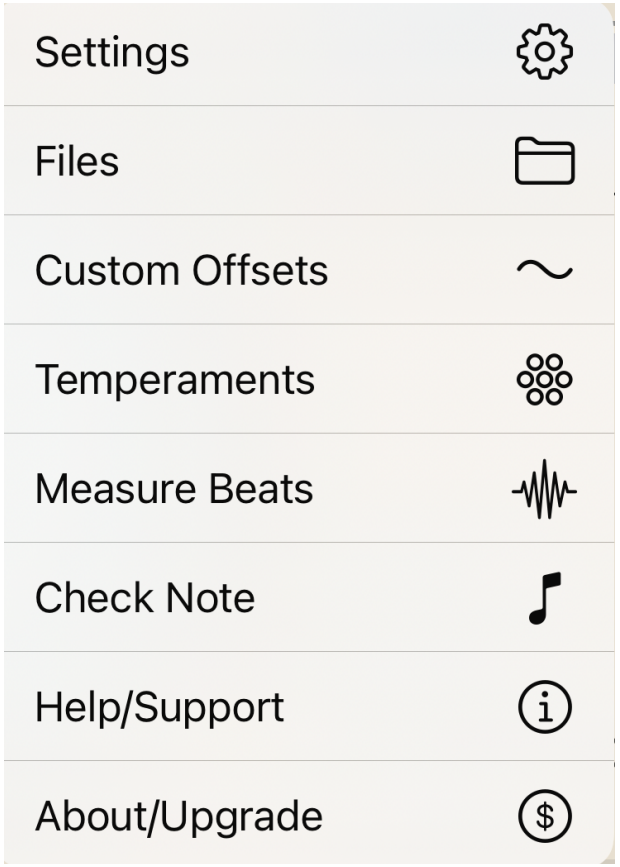
Temperaments screen is used to create a new unequal temperament or edit an existing temperament.

Measure Beats is used to measure temperament related beats.

Check Note screen dynamically displays the relative strengths of partials

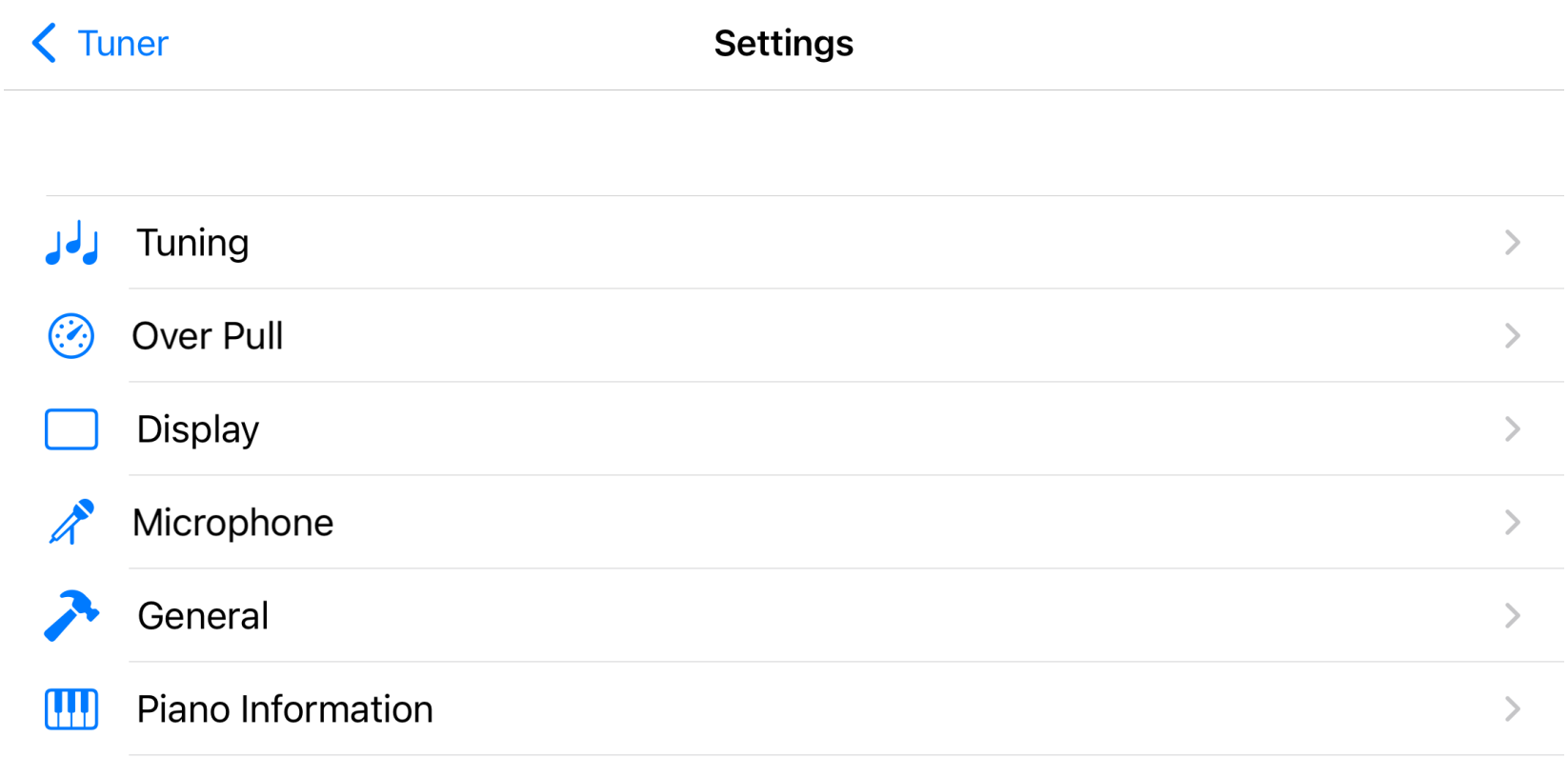
Help/Support screen provides user's manual and support information.

Version, copyright information and I**n App Purchase option** is displayed at the About/Upgrade page.



Settings Screen

Settings screen contains 6 sections. Tuning **(can also be reached by tapping on A4 Frequency on Main Screen, opens on new file)**, Over Pull, Display, Microphone, General and Piano Information. Click **Done** in detail screens to save settings. To exit without saving click left side item at the top bar. Setting screens can be viewed with Basic or Full content.



Tuning

A4 Frequency (Hz)
With this setting the frequency of A4 can be between 392 Hz and 467 Hz with 0.01 Hz increments.

Offset from 440 Hz (cents)
You can also set A4 frequency as cents offset from 440 Hz. A4 Frequency is updated accordingly.

Bass/Mid/Treble
This setting is used to select the stretch sizes for the bass, midrange and treble sections of the piano.

Bass	Mid	Treble
Spn-4:2	4:2/2:1	2:1
Spn	4:2	3:1
6:3	3:1	4:1
8:2/6:3	6:3/4:2	4:2/4:1
8:2	2:1	4:2
8:4	P4P5*	4:1(-)
10:5	4:2(+)	4:1(+)
12:6	D4-D5*	3:1=4:1
Smooth*	P4P5(1)*	TbLeNd*
8:4(+)	P4P5(2)*	
8:4/8:2	P4P5(3)*	
10:5/8:2	P4P5(4)*	
9:3/6:2	P4P5(0)*	
6:2=8:2	P4P5(-)*	
P12th*	P12th*	P12th*
BbLeNd*		

*Should not be used with 24 step sequential tuning

The Bass/Mid Treble options are as above (order might be different in settings screen). It is recommended to use the “Magic Wand” feature in TC screen to auto set these stretches. For manually setting each option you might follow the below guidelines.

Bass:
Spn setting is for spinet or similar pianos where all bass octaves are tuned to 6:3. Spn-4:2 gives more weight to 4:2 octaves in the bass.
Other options can be selected for the desired stretch and piano size. 12:6 setting will have the widest stretch whereas 6:3, 8:2/6:3, 8:4/8:2, 10:5/8:2 or Smooth might be suitable for most medium sized grands and uprights. Smooth follows a quasi aural pattern to calculate tuning targets. 9:3/6:2 setting prioritizes 12th intervals. 6:2=8:2 setting matches the beat rates of the 12th and the double octave.
BbLeNd option is similar to the P12th bass option, but can be selected individually with existing midrange stretch options.

Mid:
4:2 setting will set the octave size to 4:2 whereas 6:3/4:2 setting will employ a compromise between a 4:2 and 6:3 octave and 4:2/2:1 setting between a 4:2 and 2:1 octave. 4:2(+) will set a slightly wide 4:2 octave.

To prioritize12th intervals, you might prefer 3:1 setting for midrange along with 4:1 setting in the treble and 9:3/6:2, 10:5/8:2, 8:2 or 8:2/6:3 setting for bass.

P4P5 stretch option series and D4-D5 option prioritizes 4th and 5th intervals over rapid beating intervals.
D4-D5 might be selected for pianos where last wounded note is A3 or higher.

P4P5, P4P5(1), P4P5(2), P4P5(3), P4P5(4) and D4-D5 set wider 4:2 octaves. Whereas, P4P5(0) and P4P5(-) sets 4:2 and 4:2/2:1 octaves respectively.
P12th option is based on the pure P12th tuning style by Kent Swafford (RPT). Note that bass, mid and treble options are tied for this option and cannot be selected separately.

Treble:
If 2:1 single octaves are preferred for the last octave 2:1 option can be selected. Otherwise 4:1 or 3:1 option might be suitable for most pianos. For more stretch 4:2/4:1 or for even more 4:2 setting can be selected. 3:1=4:1 setting matches the beat rates of the12th and the double octave.
TbLeNd option is similar to the P12th treble option, but can be selected individually with existing midrange stretch options.

Temperament
The default setting is Equal temperament. **1/4 Meantone, Kirnberger III, Valotti, Werckmeister III, Young 1,** several other unequal temperaments are available. Additional temperaments can be added to the list via the **Temperament Screen.**

Transpose
If an unequal temperament is selected, the key that the temperament will be transposed can be selected from here. The default is C. All unequal temperaments are adjusted such that A4 is at 0.0 cents.

Calibration (cents)
Entering the cents difference between a trusted sound source for 440 Hz and the displayed value will calibrate the sound system. Default is 0.0. -2.0 to 2.0 cents can be selected with 0.1 cents steps.

Use Custom Offsets
When set, custom offsets can be set and used (See Custom Offsets).

Advanced Inharmonicity
Set to ON for a more precise measurement system of the inharmonicity of each string. This often results in slightly different tuning curves and magic wand suggestions, as well as the possibility of a more stable display when multi partial indicator response is used.

Inharmonicity Treble Filter
Set to ON to activate treble filter for notes A4 and above when measuring inharmonicity in IH screen. It might help solving issues with outlier notes. It is not active on Tuner screen.

Over Pull

Last Wound Note / (%)
Set the last wound note. This is used to determine the bass break using the number of wound notes on tenor/long bridge. Set the percentage for wound notes on the bass bridge. Default value is 14%.

Tenor Wound Notes / (%)
Set the number of wound notes on tenor/long bridge. Default value is 0 (no wound notes on tenor/long bridge). Set the percentage for tenor wound notes. Default value is 19%.

First Treble Strut / (%)
Set note below first treble strut and the guiding midrange percentage for notes between Last Wound Note and First Treble Strut. Default value is 25%.

Second Treble Strut
Set this to ON if the piano has a second treble strut. It will enable entering second strut information.

Second Treble Strut / (%) / Treble Percentage
Set the guiding treble percentage for notes after first treble strut. Or If Second Treble Strut is ON, set note below second treble strut. Default treble percentage value is 35%.
Skip mid-tenor strut on larger grands in overpull settings and use the upper 2 struts.

Wound Strings Limit (cent)
Set the maximum over pull cents allowed for wound strings.

Plain Strings Limit (cent)
Set the maximum over pull cents allowed for plain strings.

Show Section Averages
Set to ON, to show average starting pitch for each section in SP screen. Default is OFF.

Starting Pitch Zone +/- cents
Adjust to show a shaded zone around zero in SP screen. Default value is 0 (no zone).

Over Pull Closeness Range (cents)
Set the closeness range. Default is 1.0 cents. Effective when over pull is ON.

Tolerance (cents)
You can select the tolerance in cents when the indicator and horizontal phase dots change color, if Change Indicator/Dots Color is set to ON. Default is 0.2 cents. Effective when over pull is ON.

Over Pull Indicator Response
Set the window size in seconds for averaging the last measurements. Legacy option is for compatibility with older versions. Sustain focuses on the sustain after the attack. Multi Partial takes into account multiple partials. This is the recommended mode when Advanced Inharmonicity is used. Tap the hour glass to toggle slow/fast response in Multi Partial mode. Effective when over pull is ON

Check Starting Pitch
Set this value to ON to check the measured starting pitch -in main screen only- if it is within 10 cents with the neighboring notes.

Hide Smooth Option
Set to ON, to hide smooth menu item, value and adjustment slider in SP screen. Default is OFF.

Box Around Dial
Set to ON, to display a shaded box around dial when over pull is on. Default is OFF.

Round Displayed SP
Set to ON, to display starting pitch values rounded to whole number. Default is OFF.

Compress SP Scale
Set to ON, to compress the starting pitch scale. Default is OFF.

Display

Over Pull Marker
If set to ON, over pull value is shown by a marker on the indicator type displays (Indicator, Vertical, Horizontal, Minimal). The note should be tuned to the marker for over pull. When OFF, over pull amount is included and the note should be tuned to zero. This setting does not affect phase displays (Spinner, Horizontal Phase) where over pull is always included. Default is OFF.

Display Type
You can select between Spinner, Indicator, Vertical, Horizontal, Horizontal Phase or Minimal displays. Minimal display type requires inharmonicity measurements to be complete. Indicator/dots change color if the value is within selected tolerance cents. Default is Indicator.

Tolerance (cents)
You can select the tolerance in cents when the indicator and horizontal phase dots change color, if Change Indicator/Dots Color is set to ON. Default is 0.2 cents. Effective when over pull is OFF.

Indicator Style
With this setting you can set the style of the indicator to a needle or a triangle. Default is needle.

Indicator Response
Set the window size in seconds for averaging the last measurements. Legacy option is for compatibility with older versions. Sustain focuses on the sustain after the attack. Multi Partial takes into account multiple partials. This is the recommended mode when Advanced Inharmonicity is used. Tap the hour glass to toggle slow/fast response in Multi Partial mode. Effective when over pull is OFF.

Smooth Spinner
When set On, this setting will make spinner/dots movements smoother. Default is OFF.

Spinner/Arcs/Dots Speed
The rotation speed of spinner/arcs and moving speed of horizontal phase dots can be adjusted using this setting.

Closeness Indicator
If set to ON, shows if the note is within the set +/-closeness range to the target frequency. Default is ON.

Closeness Range (cents)
Set the closeness range. Default is 1.0 cents. Effective when over pull is OFF.

Closeness Color
Set the closeness color.

Show Swipe Direction
Displays swipe direction arrows on center screen (if not in Temp. Mode). Default is OFF.

Overlap Keyboard
Set to ON to overlap the keyboard over indicator/spinner without changing size. Default is OFF.

IH/TC/SP Note Selector
Select the note selector style. Default is Gray Bar.

+/- 1 Cent Indicator
Set to ON to display the dial indicator only when the cents value is within +/- 1 cents. Initial value is OFF.

Dim Display (cents)
The display is dimmed when the note if off by the cents set.

Cent Format
Use this setting to adjust the decimal point precision for cents display.

Clear Display On Decay and Clear Display Time
After the inharmonicity measurement and -if over pull is on- over pull measurement of the note is complete, if set to ON, this setting is effective and enables you to tune to the attack tone. Default is OFF. You can set the time the display is cleared after initial tone using Clear Display Time setting.

Show Display
Setting this option to ON prevents display blanking. Default is OFF.

Auto Partial (below E2)
If active this setting forces the strongest partial to take effect for notes below E2. Default value is OFF.

KeyBoard Highlight Color
Set the keyboard highlight color for the current note.

Large Font Target/Measured Frequency
Set to ON to display target and measured frequencies in large font. Default is OFF.

Large Font A4 Frequency
Set to ON to display A4 frequency in large font. Default is OFF.

Bold/Black IH/TC/SP Note Name
Set to ON to change IH/TC/SP note name field font. Default is OFF.

Show Closeness/Vertical Tolerance Labels
Set to ON to show closeness range and tolerance labels. Default is ON.

Change Indicator/Dots Color
Set to ON to change indicator or horizontal phase dots color when measurement is within set display tolerance. Default is ON.

Microphone

⚠️ **Do not change input source when the app is open. To change the input source, first terminate the app, change the input source then restart the app.**

Different devices might have different microphone sensitivities. Also it might be necessary to make some adjustments according to the ambient noise.

Auto Level
If set to on the ambient noise level is measured and measurement start and end levels are determined automatically. To reset auto levels manually tap mic icon off and on. In this mode measuring is

stopped after onset in 3 (C8) to 7 (A0) seconds depending on note number independent of set levels to handle noisy rooms (HVAC etc.). Default in ON. You can disable Auto Level and adjust start and end levels manually.

Start Level
This is the sound level at which the measurement of a note will be triggered. Default value is 50. It can be set from 30 to 70. Increase this value if ambient noise is high and measurements take place even though a note has not been played. Lower this value if the played note sound is weak and a measurement is not triggered. This might be the case especially in the high treble area.

End Level
This is the sound level below which the measurement is stopped. Default value is 18 and it can be set between 8 and 28. Note that maximum end level is below minimum start level. If the sound decay is too quick then lowering this value might be beneficial. If only the attack sound is preferred for the measurements increasing this value might be appropriate.

Noisy Environment (Mic Menu):
Setting this option to ON might help in noisy environments. This setting is only active during the session
and defaults to OFF. ON changes mic icon color.
By default microphone is in listening state. Playing a note triggers measurement. You can disable/enable microphone by tapping on the mic symbol. When Auto Level is set to ON, a brief message appears to acknowledge that noise level is being measured, when main screen appears. Levels can also be set by disabling and enabling the microphone at any time. Long press mic icon to open microphone settings (only available on main screen).

Select Built-in Microphone
Select the built-in microphone.

General

Note Names
Select between A0 - C8 or La0 - Do8 note naming. Default is A0 - C8.

Show Time on Tuner
Select to show/hide time on tuner screen. Default is Show.

Time Format
Select 24 hr or 12 hr time format. Default is 24 hr.

Settings Menu Display
Set to Basic or Full view. Activated on next viewing of the settings screen.

Appearance
Select screen color.

Piano Information

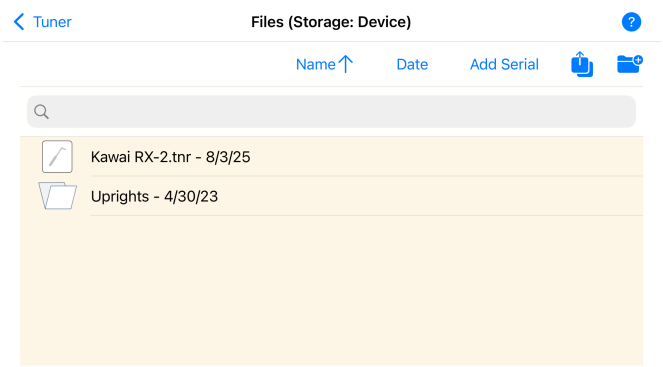
Use this Settings section to enter **manufacturer, model, type, serial, owner, location, last tuning date and notes.** These fields do not have any affect on tuning but is for information only. The entered information can be viewed through File Screen.

Files Screen

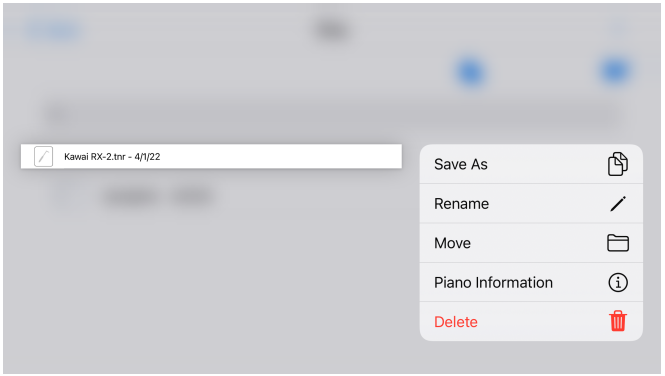
iCloud: Note that the Piatune folder in iCloud Drive is initially empty and tuning files need to be copied manually from your device's Piatune folder to the Piatune folder on the iCloud Drive for once.

When iCloud Drive is enabled and PiaTune is turned on in the iCloud settings, there becomes two locations to store the newly created tuning files: either on the device or on the iCloud Drive.

The user can opt to use one or the other by setting PiaTune on or off in iCloud settings BEFORE launching PiaTune. The newly created tuning files are stored in the opted storage location only. Similarly, if the user adds a new temperament, only the temperaments file in the active storage location is updated.



Tap file name to load a saved file. **Double tapping** on a folder opens folder contents. **New Folder** creates a new folder. **Folder Up** switches to the parent folder. **Add Serial** adds serial numbers to filenames (except current file). Use **Name/Date** for sorting. Default sorting is by ascending names. **Long tap** on files/folders to open context menu. **Delete** will delete files and folders. **The contents of a folder is deleted along with the folder itself.** Current file (and the containing folder) cannot be deleted. Tap **Rename** to rename file/folder. Note that current file or folder containing the current file cannot be renamed. Renaming to existing file name is not allowed. To move

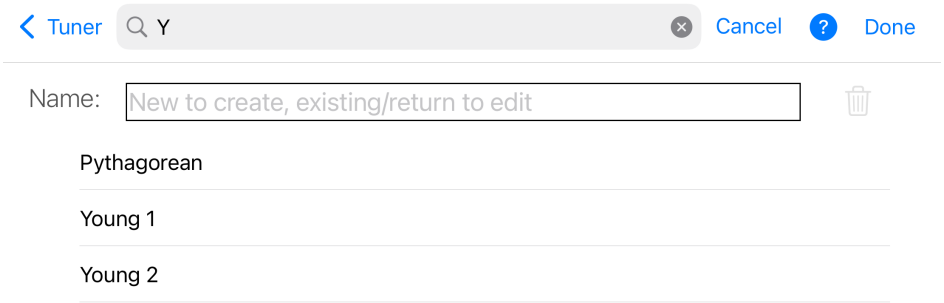


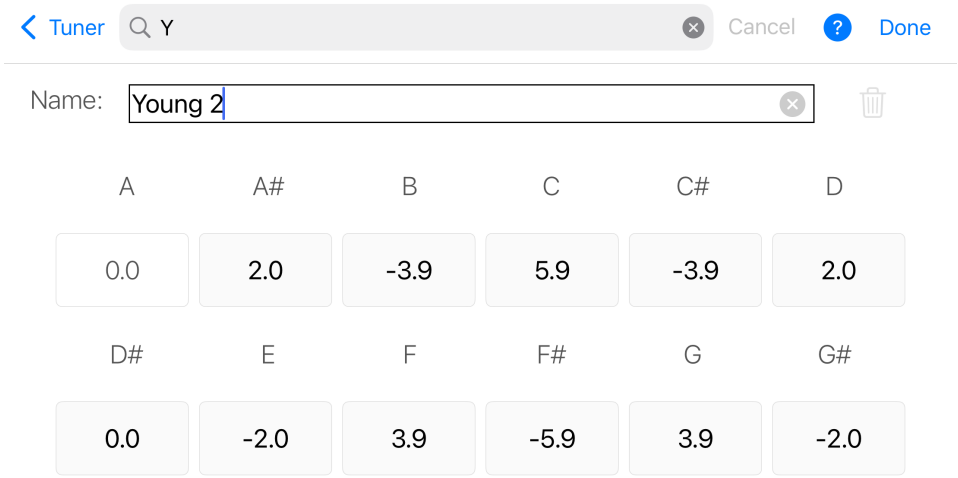
a file select file and tap on **Move**, select and open folder that the file will be moved and tap Move on tab bar to move the file to that folder. Current file cannot be moved. Moving a file to a folder that contains a file with the same name is not allowed. Tap **Save As** to save a file with new name.

Tap **Piano Information** to display various piano information about the selected tuning file entered previously through Settings screen.

Use **Search bar** to filter folders/files by name. Files/folders are sorted by name in ascending order. The date the file was last saved is also displayed next to the file name. Note that this date need not be the same as the informative last tuning date entered through Settings > Piano Information section.

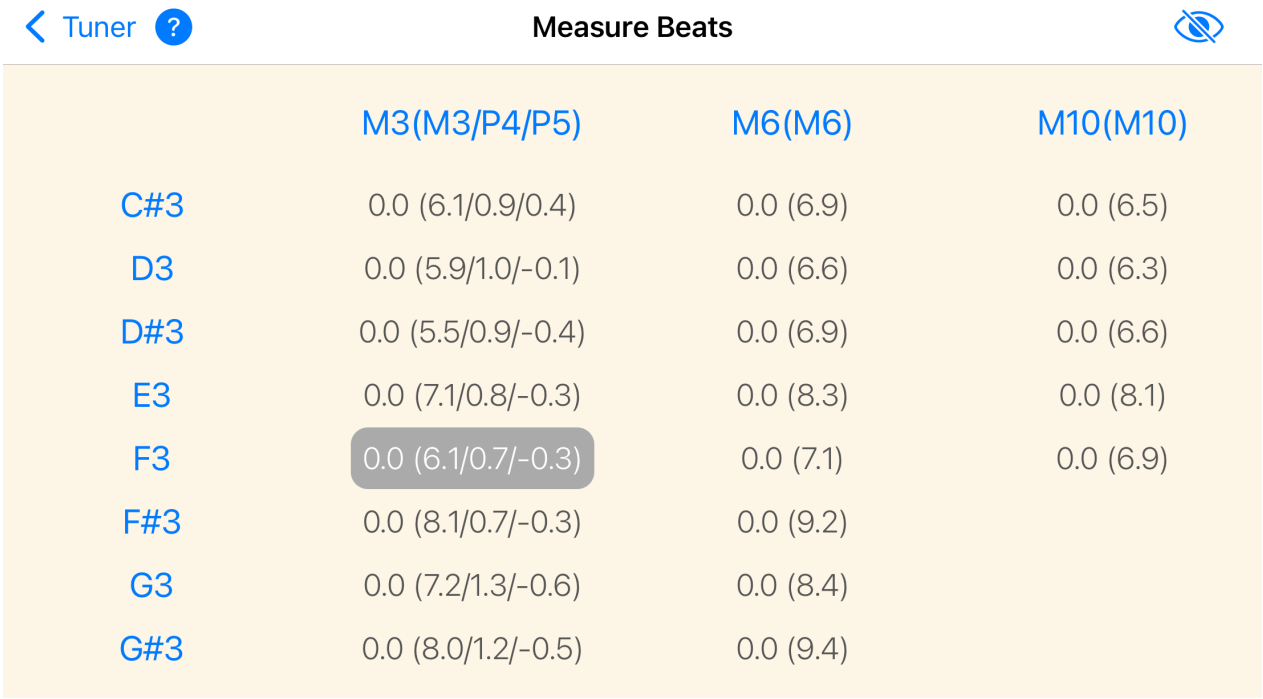
Temperament Screen





Temperament screen is used to create a new temperament or edit an existing one. **Tap return to clear the keyboard and see the bottom half of the display.** You can use the search bar to find an existing temperament and display its offsets. You can then edit the offsets or change the name and hit return to activate editing of the offset fields for a new temperament. Alternatively, entering the name of an existing temperament directly and hitting return key will bring the values of that temperament. After editing/entering the values clicking Done will add the temperament to temperaments list at the settings screen. To activate the new temperament select it from the settings screen.
Note that, user created temperaments can be edited and deleted, but, built-in temperaments are read-only and cannot be edited or deleted.

Measure Beats Screen



Actual beat rates of major thirds, sixths and tenths intervals can be measured in this screen. Select the note name and interval name. The related value is highlighted. Leave single strings of the interval notes open and play the interval and wait until the dark background turns to light gray indicating the measurement is finished. You might tap on the screen at any time to pause/resume measuring. This can be used to play other intervals such as fourths or fifths without disturbing the already measured values. Intervals range from G#2 to F4. Using test notes the beats rates of fourths, fifths and 4:2 octaves within the temperament can be calculated. If inharmonicity values for all notes between G#2 and A4 have been completed, you can tap on Show/Hide to show/hide beat rates calculated by PiaTune besides the measured value (in parenthesis). Fourths and fifths are shown next to M3rd beat.

Tuning Procedure

New Tuning

Select piano size. PiaTune sets a default stretch for the selected size as follows:

Piano Type	Default Stretch
Spinet	6:3 - 6:3/4:2 - 4:1
Console	8:2/6:3 - 6:3/4:2 - 4:1
Studio	8:2 - 6:3/4:2 - 4:1
Upright	8:4/8:2 - 6:3/4:2 - 4:1
Small Grand	8:2 - 6:3/4:2 - 4:1
Baby Grand	8:2 - 6:3/4:2 - 4:1
Medium Grand	8:4/8:2 - 6:3/4:2 - 4:1
Large Grand	8:4 - 6:3/4:2 - 3:1=4:1
Semi Concert Grand	10:5/8:2 - 6:3/4:2 - 4:1
Concert Grand	10:5 - 6:3/4:2 - 4:1

You can change stretch to your liking through settings. Or auto set by using “Magic Wand” icon on tuning curve (TC) screen.

Coarse Tuning or Pitch Raise
Use one of the generic inharmonicity values or a file from a similar piano, so that "out of the box" you could do some tuning without making any measurements. Use Over Pull for pitch raise.

Fine Tuning
If in advanced mode select one of measure inharmonicity options. In simple mode continue and measure inharmonicity. Set A4 frequency if different from 440 Hz.

a - Measure First (recommended)
Pre-measure inharmonicity of all 76 notes (takes about 5 minutes) or measure samples and auto fill empty values. If over pull is needed you can transfer starting pitch values measured to main screen.
To construct an idealized template curve, measure A0-A1-A2-A3-A4-A5-A6. Template curve is used to calculate approximate targets when measuring with horizontal scale. This might be used for a first pass rough tuning while measuring inharmonicity. When measurement is complete, open Tuning curve (TC) screen and set Bass/Mid/Treble stretches while observing Tuning Curve. You can use the “Magic Wand” icon for auto set. Go back to main screen and tune in any order.

b - Measure&Tune
See Appendix.

Saved Tuning
To tune a previously tuned piano go to **Menu>Files** select file and click **Open.** The A4 Frequency, Temperament (if not user created), Bass/Mid/Treble stretches (or Custom Offsets), Overpull parameters and Microphone Settings are automatically loaded. Make any changes required before beginning to tune. Saved tunings with complete inharmonicity data can be carried out in any order since all the targets are calculated already.

Tuning Extra Bass Notes

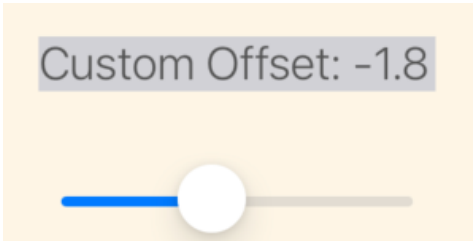
Some pianos might have extra bass notes below A0.

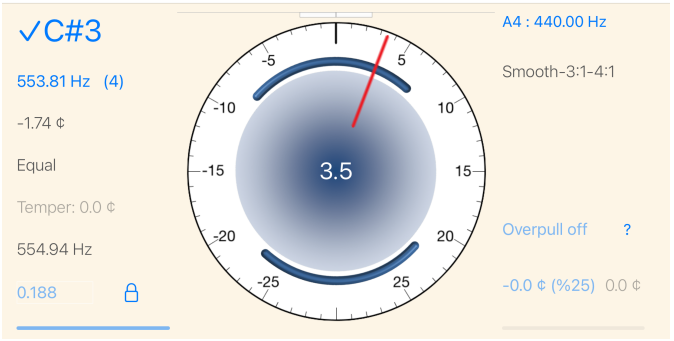
After completing tuning the piano down to A0, follow the below procedure to tune the extra bass notes using the Tuner screen:

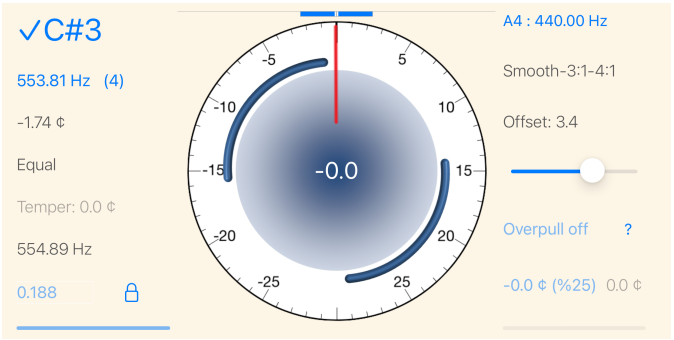
1. Set note switching to manual
2. Set note to B1, set note partial to 6, and play B0. Note the cents shown on the indicator/spinner.
3. Repeat step 2 for A#1 and A1 noting the cents shown when A#0 and A0 is played.
4. These indicate the average stretch of the 12:6 octave set by PiaTune for this bass region.
5. Now set note to G#1 and partial to 6 and play the first extra note G#0.
6. Tune G#0 so that the indicator shows close to your noted cents at the above steps.
7. Continue similarly up to the lowest extra note.

Custom Offsets

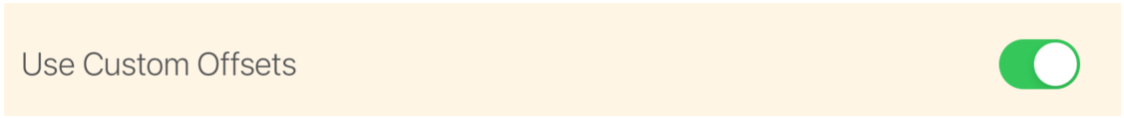
Custom Offsets can be used to record a tuned piano, or to slightly modify the frequency of some notes to match better with aural checks and for any other reason to apply an offset to the calculated target frequency.





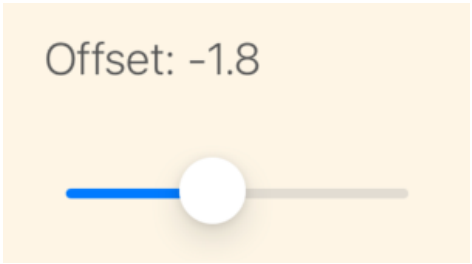


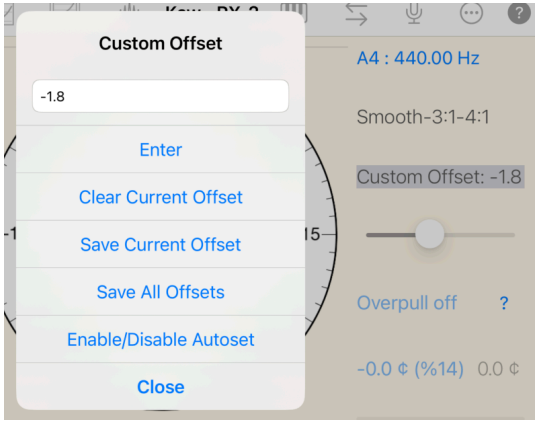
⚠️ Custom Offsets can only be used if inharmonicity measurements A0 to C7 are complete.



To activate setting and using custom offsets, Menu > Settings > Tuning > Use Custom Offsets (tap Full if item is not visible in Basic view. If saved file has custom offsets, select Enable on file opening.

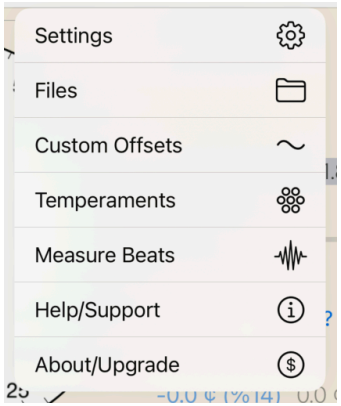
You can play the tuned note and adjust the offset slider simultaneously to set the the indicator/spinner /dots to show zero cents. Tap on left/right portion of the slider to increment value by -/+ 0.1 cents.

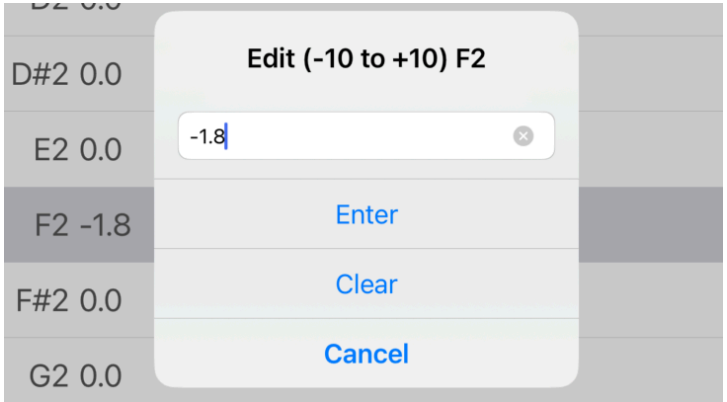




Tap on the offset text to manually enter a value, clear the offset or save the offset(s) as a custom offset in the tuning file and enable/disable auto set. In Auto set you might need to play the note a few times to settle the display to zero cents.
When the offset is saved the background color and text changes.

Saved custom offsets can be viewed, edited or all offsets can be reset through the Menu > Custom Offsets screen.
Saved offsets appear shaded on the list. Offsets not saved are shown as zero, but they are still effective for the current session.



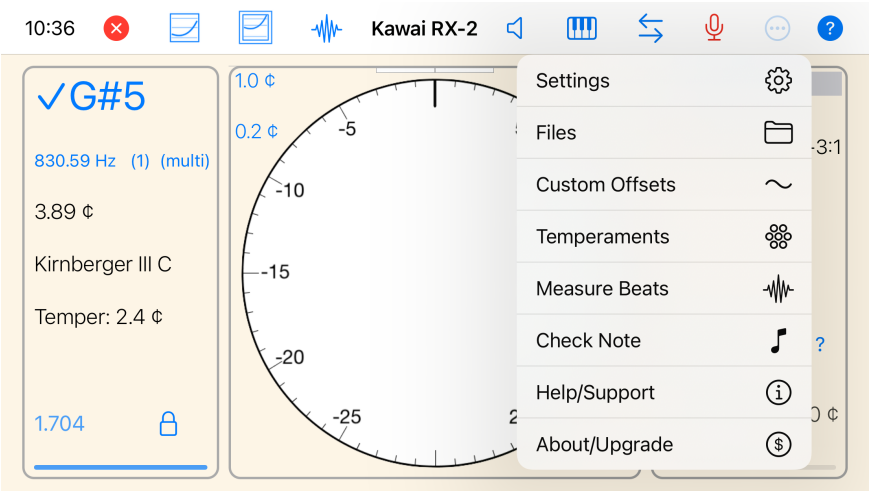


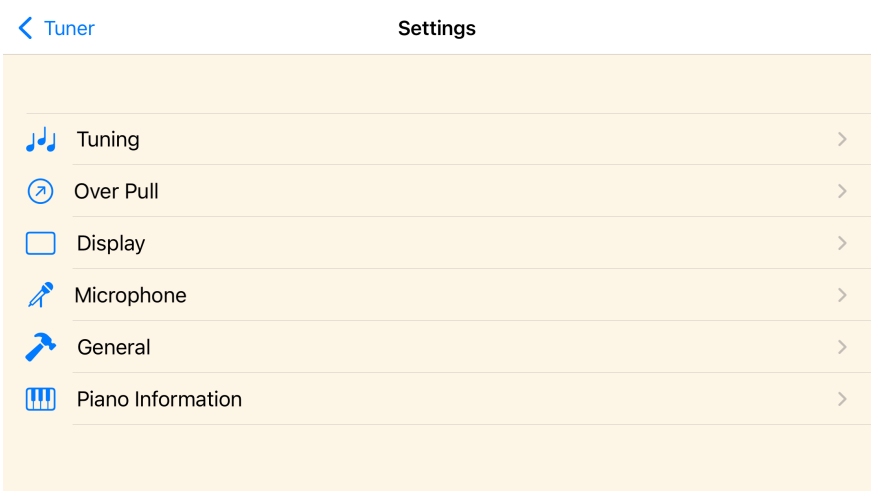
Over Pull

PiaTune measures inharmonicity within +/- 50 cents. For pianos flat more than 50 cents, load a tuning file from a similar piano or use generic values and measure starting pitch only without tuning. You can measure and transfer starting pitches to main screen in SP screen or measure on Tuner screen.
Over pull is activated **by tapping on Overpull off text in Main Screen.** Activating over pull switches to Auto Semitone Mode. Over pull is not available in Temp. Mode. A reminder is displayed to set over pull parameters on first use.

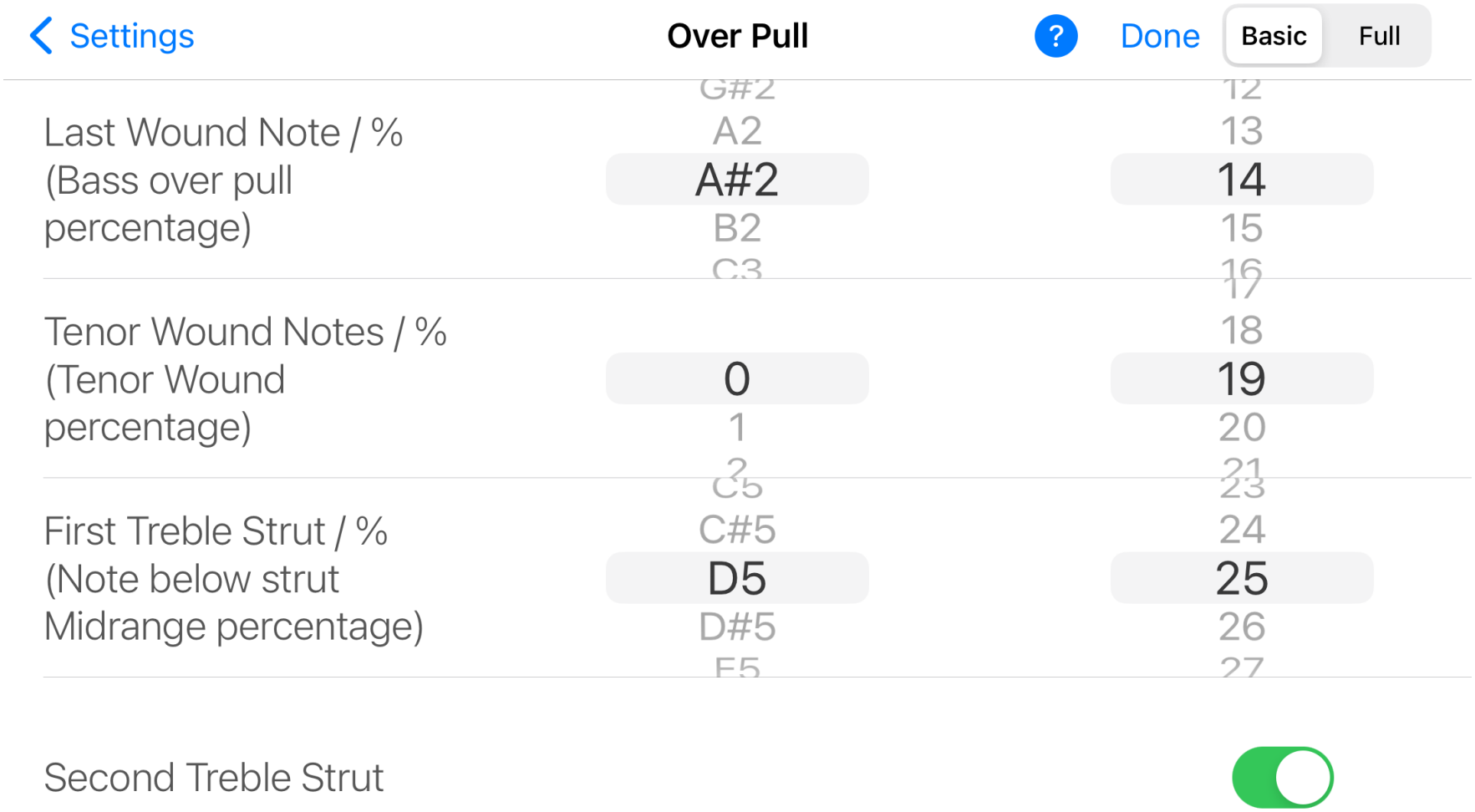
Example: Pitch raising from 440 Hz to 443 Hz

Menu > Settings > Over Pull





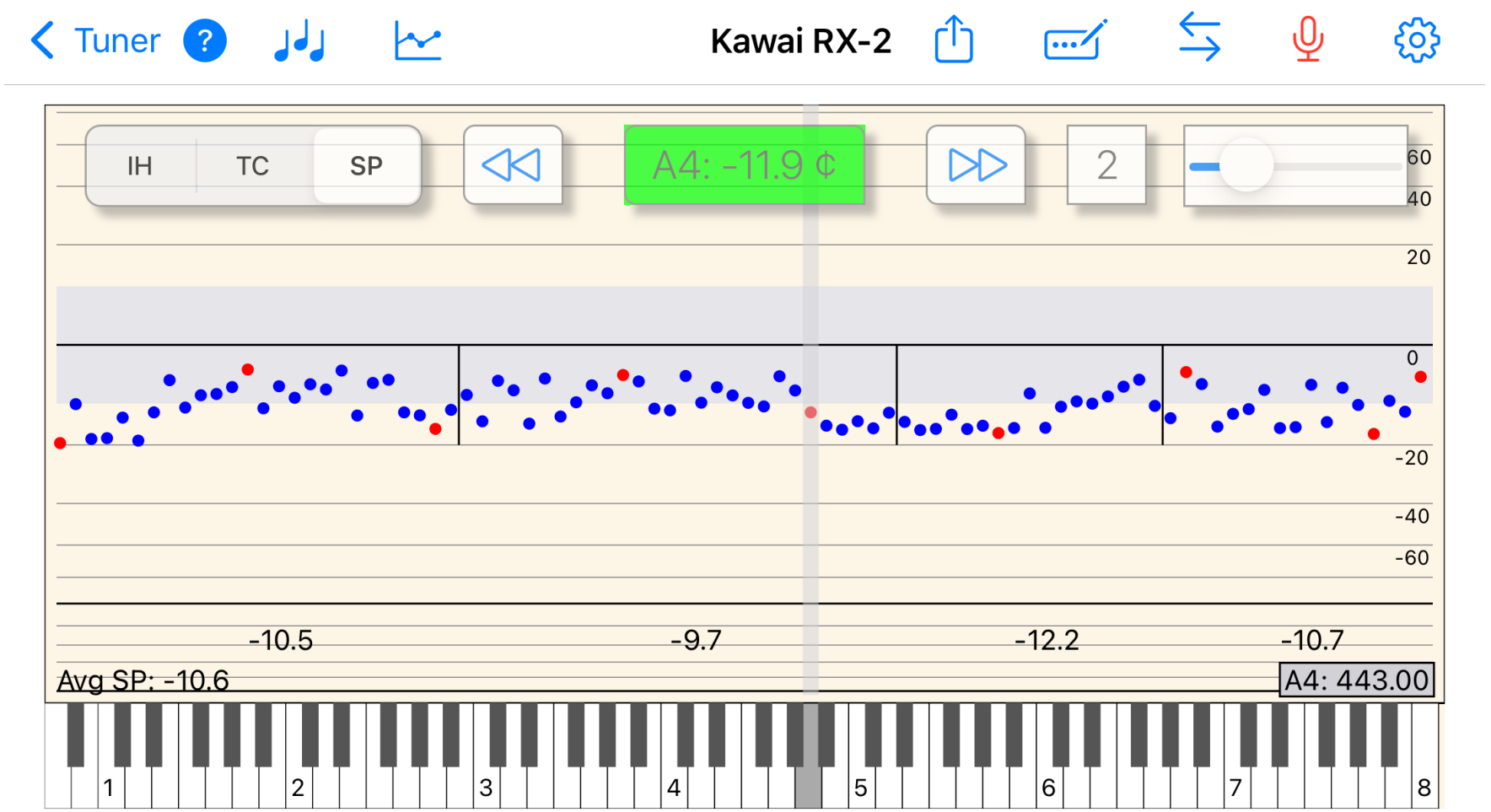
Adjust over pull parameters.



⚠️ Skip mid-tenor strut on larger grands in overpull settings and use the upper 2 struts.

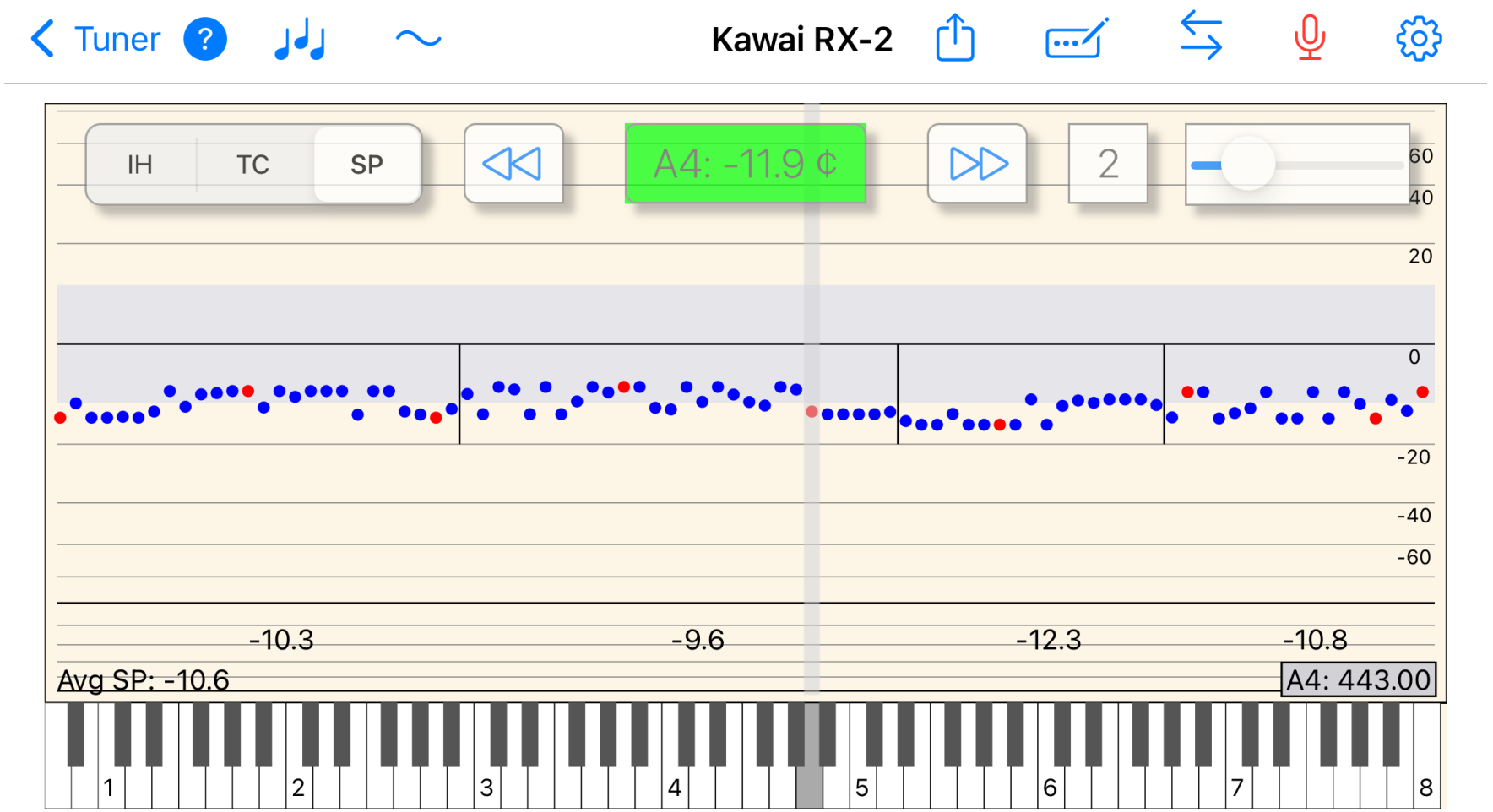
Go to Starting Pitch (SP) screen and measure (or sample and fill) starting pitch of all notes.

Below: Individual measured (or sampled/filled) starting pitch values

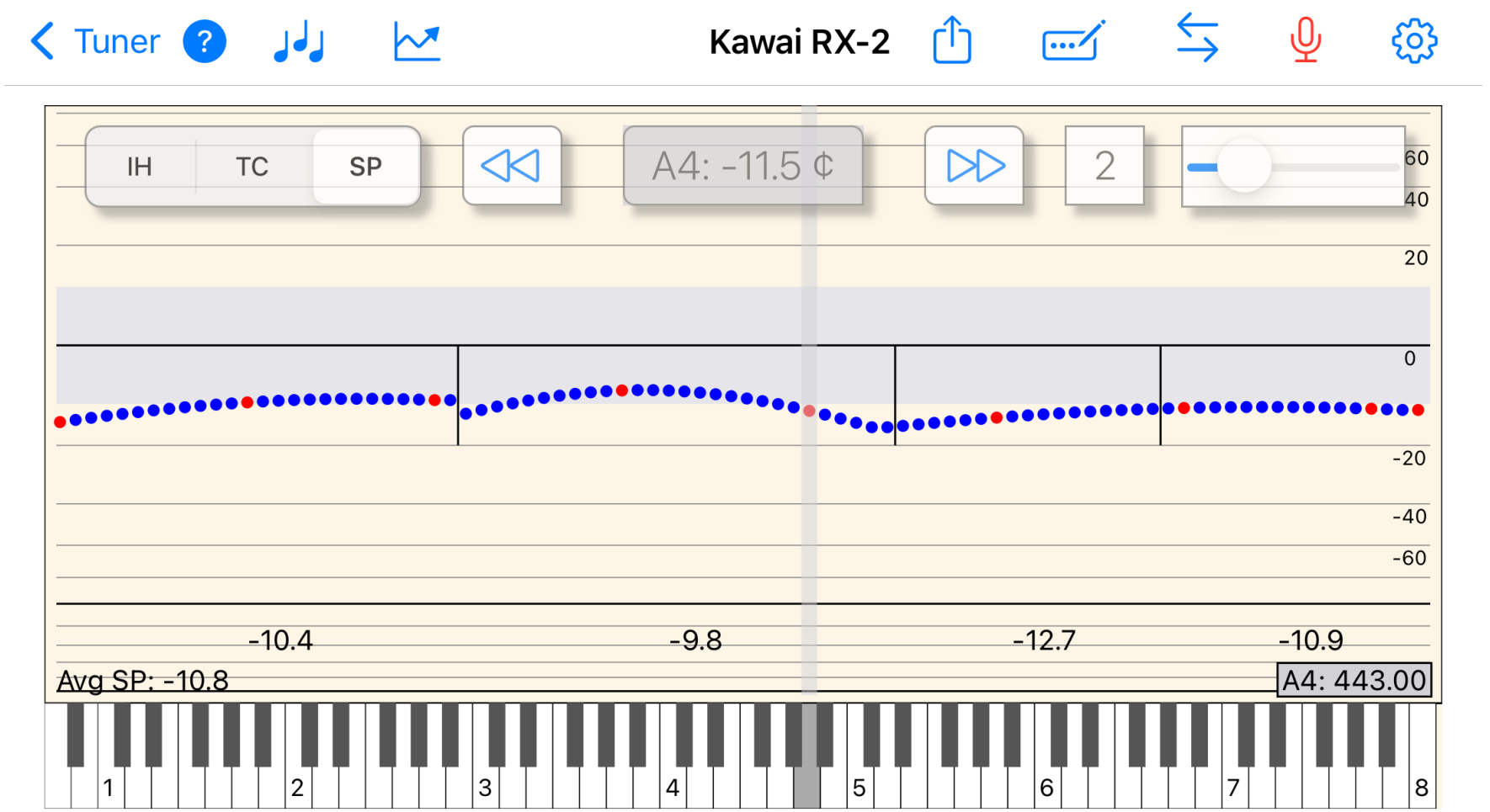


💡To correct outliers and end up closer to a fine tuning, it is recommended to apply Smooth or Trend on values. A reminder is displayed to set over pull parameters on first use.

Below: After +/- 2 cents Smooth is applied to the values



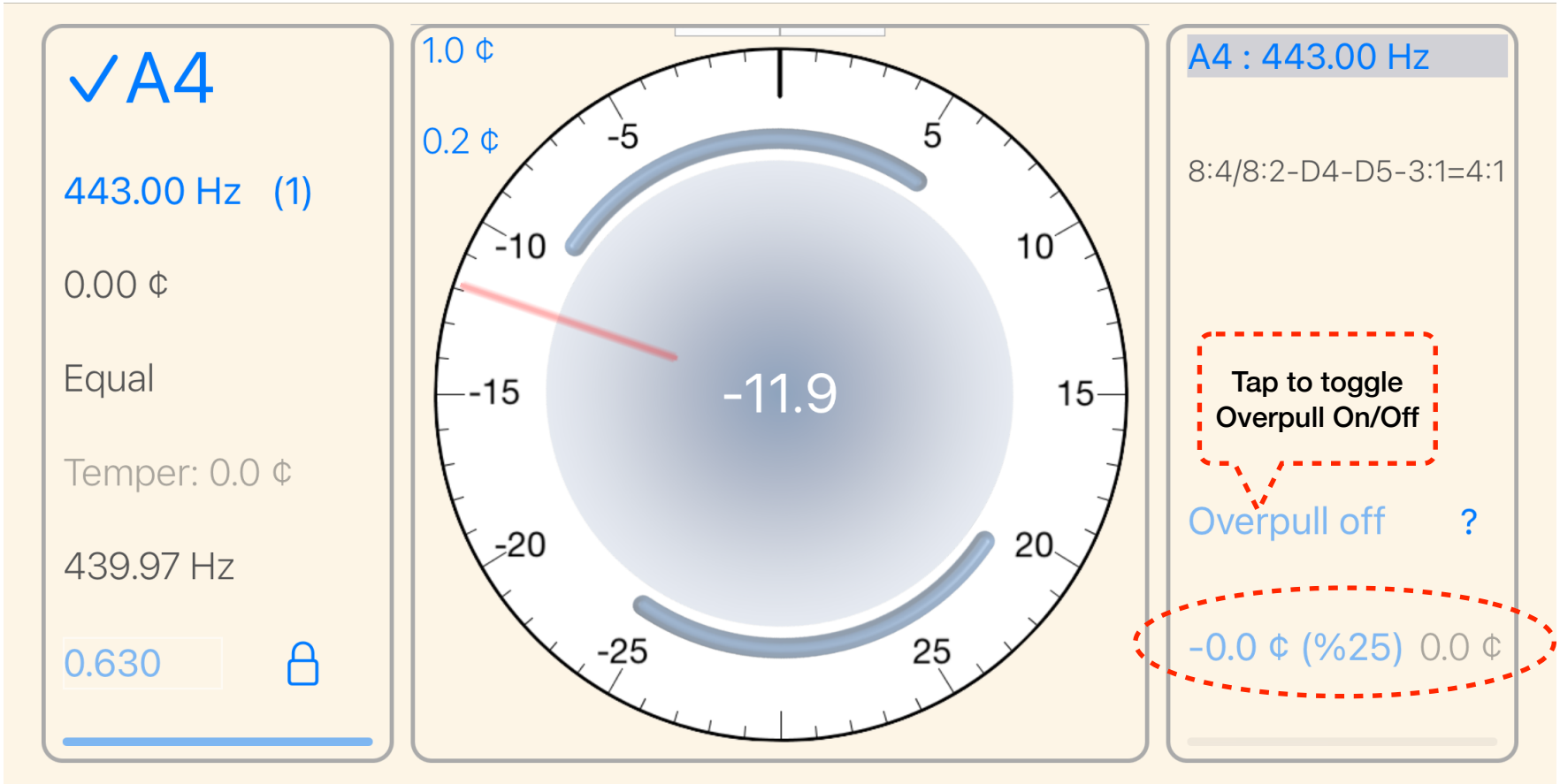
Below: After Trend is applied to the values



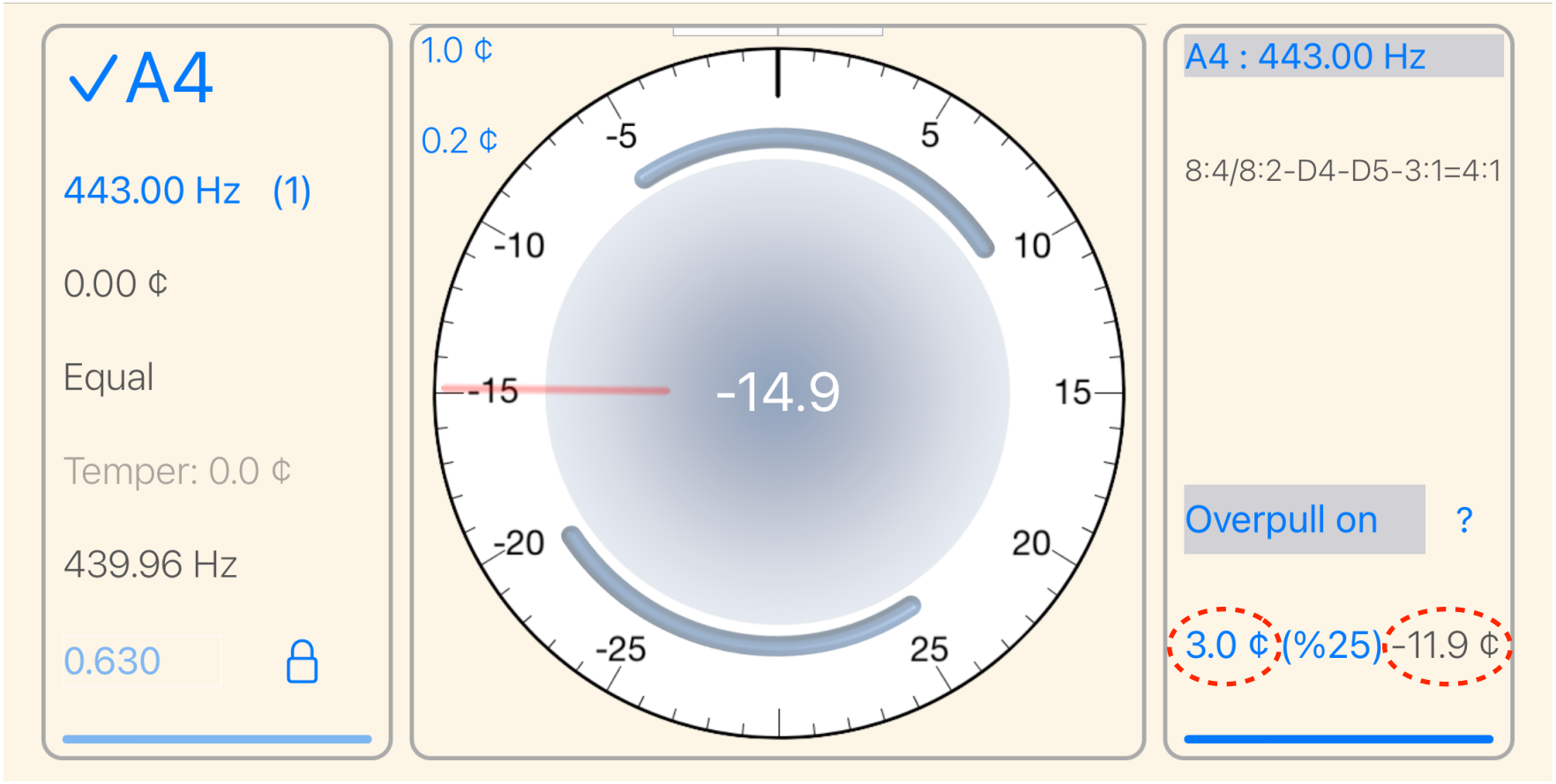
When done, transfer starting pitch values to Tuner screen. A reminder is displayed to set over pull parameters on first use.

⚠️ Do not change any tuning parameters after transfer.

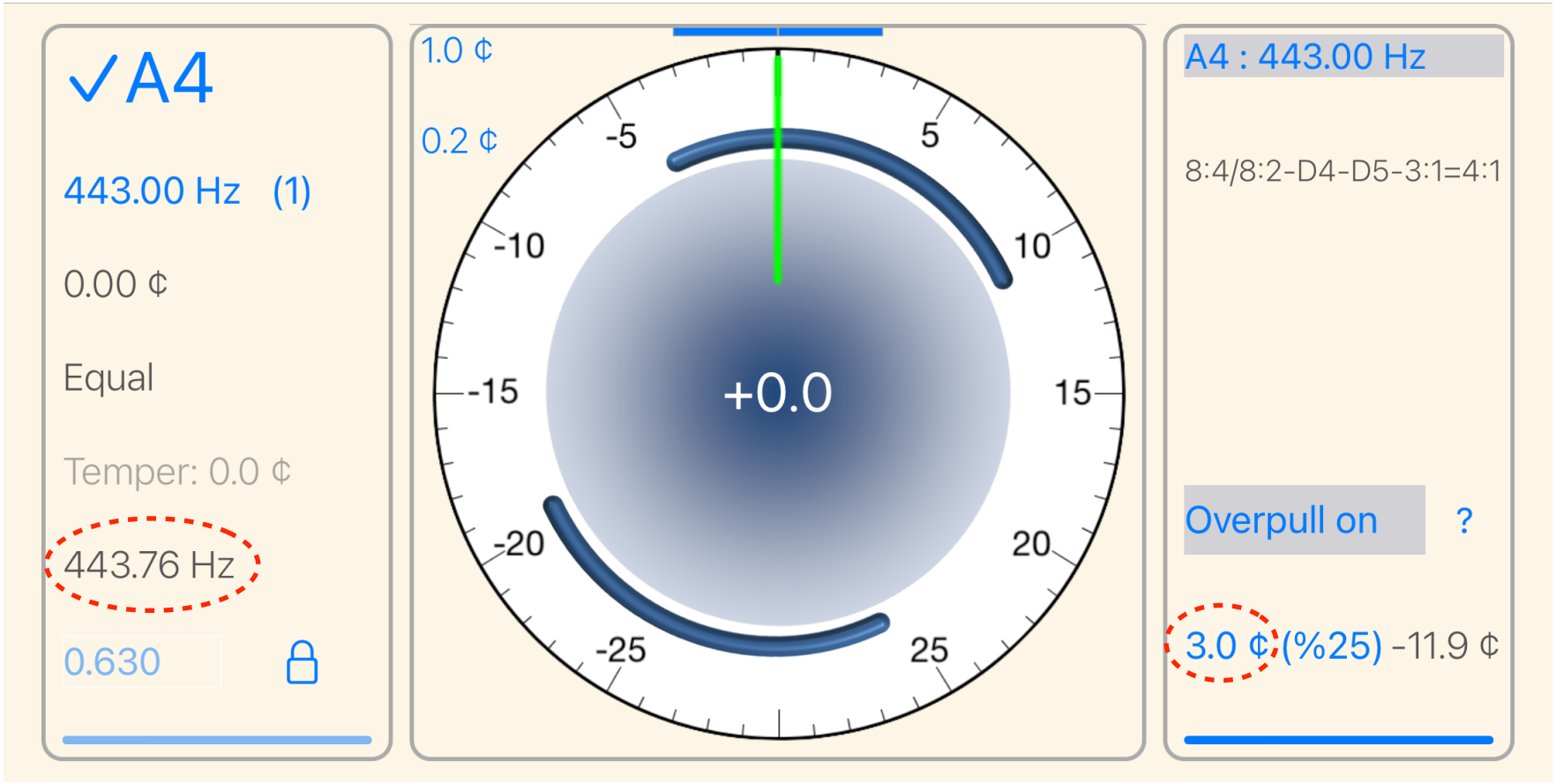
On Tuner screen, observe the display when Overpull is OFF. Display shows the starting pitch.
Over pull amount is 11.9x0.25 ~= 3 ¢



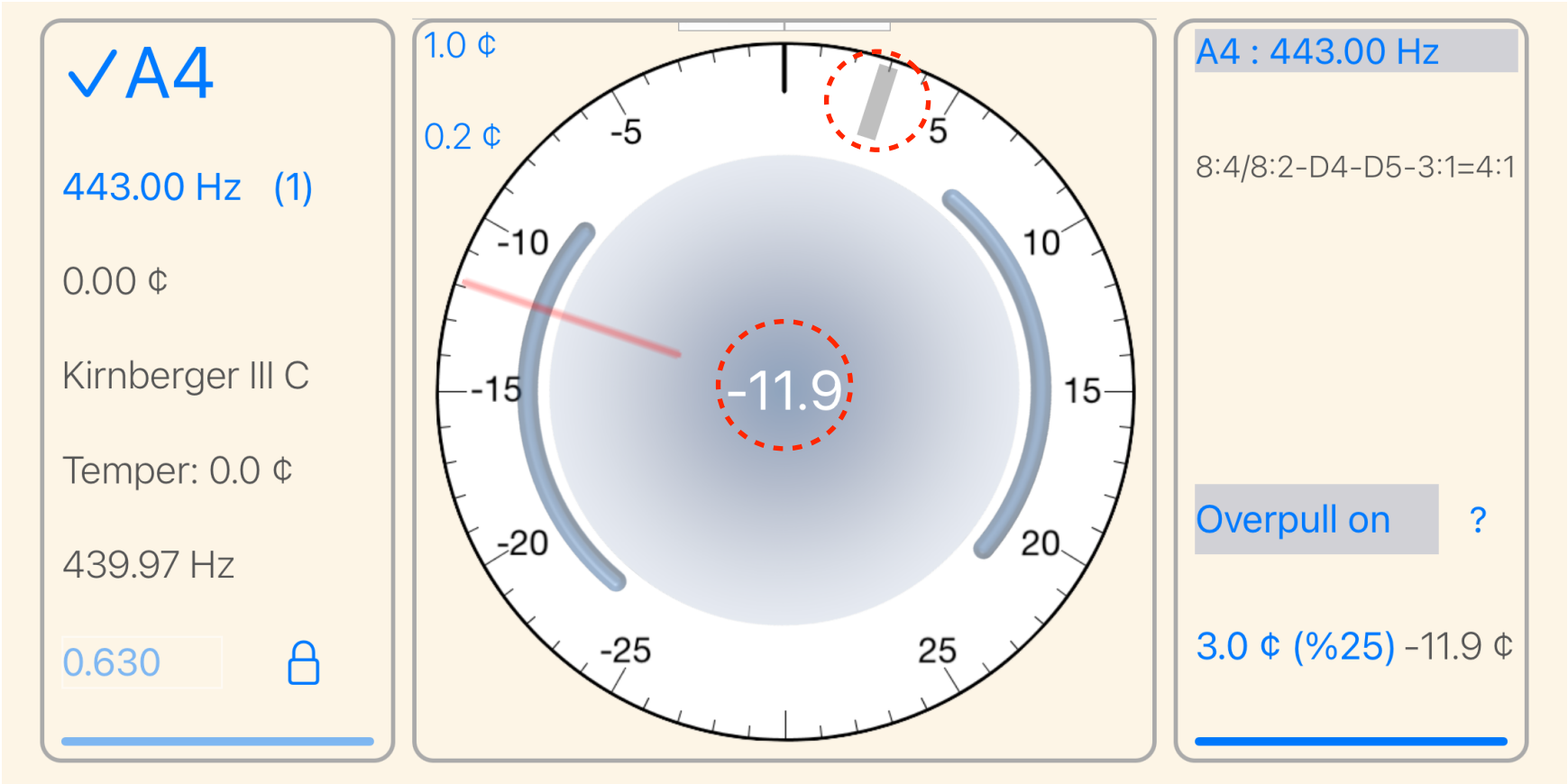
Observe the display when Over pull is ON, AND Over Pull Marker is set to OFF. Display shows that the note will be pulled by about 14.9 ¢ including the over pull amount.



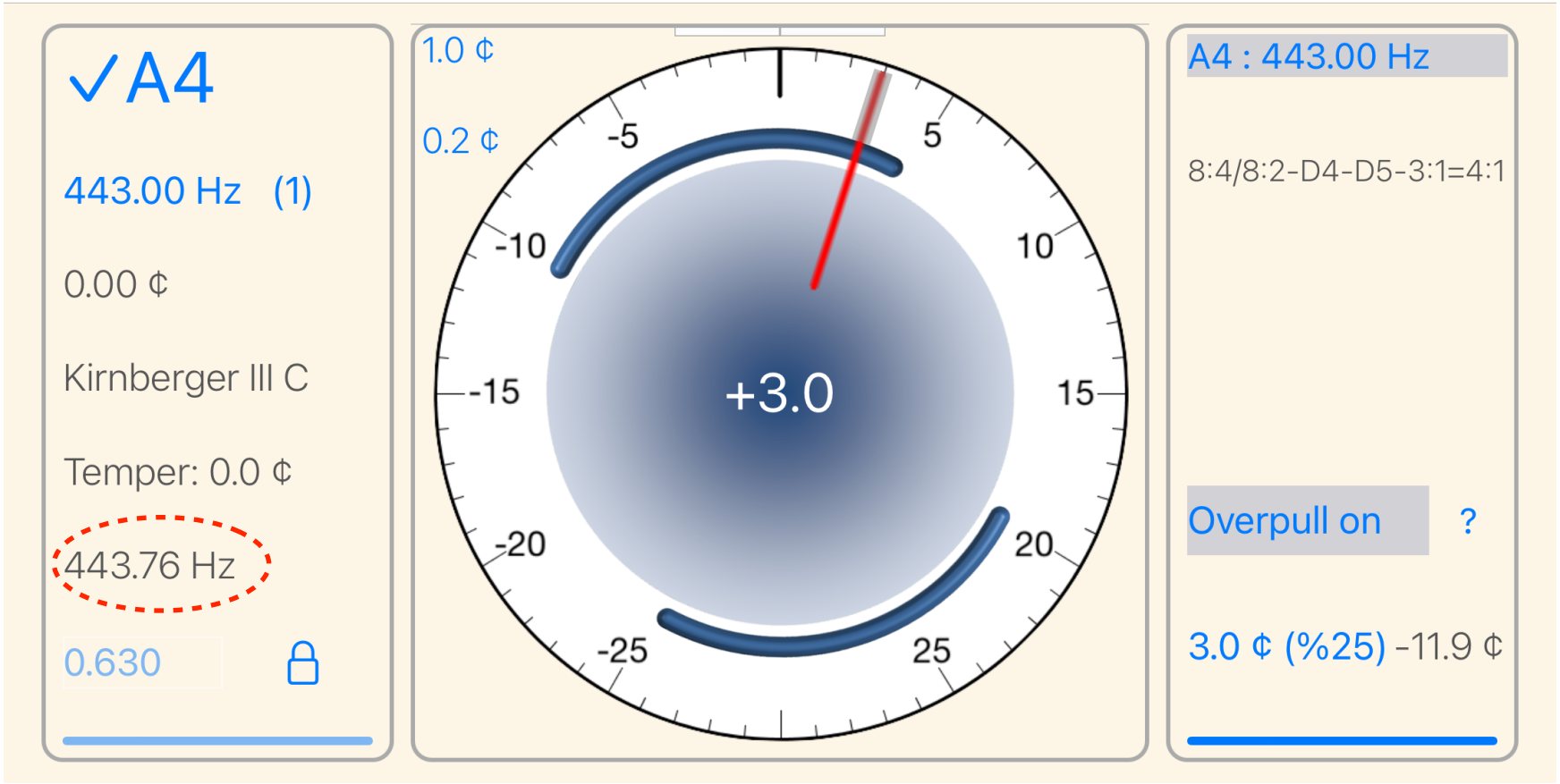
Tune as usual bringing the indicator close to zero. Note that measured frequency reflects the applied over pull amount.



If Over Pull Marker is ON, the transferred over pull value is shown with a marker on the scale. Over pull value is NOT added to the measurement.



For over pull tuning tune the note to the marker. For normal tuning tune the note to zero.



If starting pitch values are not transferred from SP screen (not recommended), in over pull mode **it is important that the note must be briefly measured before being tuned**. **Pay close attention that over pull measurement is not affected by extraneous noise.**
Play the note and observe that the over pull progress bar is full and the over pull offset is not being updated any more. If you think that the over pull offset is measured properly, you can tune the note to the indicator as usual. Otherwise tap on the value to reset and measure the over pull value again. Long press on value to clear values for all notes. Overpull texts turn to gray if neighboring starting pitches differ more than 10 cents and Check Starting Pitch is set to ON.

The value of over pull offset is determined by multiplying the over pull percentage calculated for the note and the difference between target frequency and measured frequency (starting pitch). Then this value is added (or subtracted) to the value shown at the indicator to apply an over pull to that note.

Over pull percentage for each note is calculated using a custom template and the information entered in the Over Pull settings page.

Contact

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Appendix - Measure&Tune

The **temperament is set first** like in aural tuning and then the **bass and treble sections are expanded** from this temperament. Bass/Mid/Treble stretches should be set in advance. Display Overlay Inharmonicity Graph to check and remeasure outlier inharmonicity values.

PiaTune does not store target frequencies but continually calculates them as the tuning progresses. Just like an aural tuner does, every note is calculated with respect to the previous note(s) measured. Before beginning a new tuning a few parameters have to be set and fixed. Because changing them in the middle of a tuning will cause all the notes to be recalculated and the notes tuned up to that point would have to be tuned again.

There are 3 parameters that must be set before beginning to tune. **A4 Frequency**, **Bass/Mid/Treble** stretches and the **Temperament** (and transpose if the temperament is unequal). These parameters are in the **Tuning** section of the **Settings Screen**.

The piano can be checked by using the Check Note screen agains standard pitch to decide whether a single pass is sufficient or whether a **pitch raise** is needed. If pitch raise is to be applied then **Overpull** parameters should be set and **Overpull** should be activated from the main screen.

Setting the Temperament:
PiaTune uses an F3 - A4 temperament. The temperament is set by forming contiguous M3rds similar to an aural tuning. Then the notes in between are calculated numerically for an even progression of major thirds and fourths.

Only **single strings** of a unison must be measured and tuned. The completion of a measurement is indicated by a check mark (✓) on the note name. **Pay attention that there isn't any misreadings due to extraneous noise and the inharmonicity coefficient is zero before the measurement**. Tap on the value to clear the measurement and remeasure if necessary. The notes are tuned along with the inharmonicity measurements. In Temp. Mode., there is no need to wait until the measurement is complete.

If you have opted for measure then tune in create/open dialog, measure all notes form A4 down to F3 in chromatic order first.
After measurements are completed you can fine tune all notes from F3 to A4.

If measure and tune option is selected in create/open dialog, you will tune by following the 24 step sequence set by PiaTune.
Since 17 notes are to be tuned, that means 7 notes are visited twice. These are F3, F4, F#3, G3, G#3, A#3 and B3 and they have (rough) suffix on the first visit.
On the second visit the suffix changes to (fine) to indicate that this is the final fine tuning for that note.

The temperament sequence is tuned as follows:

- Play A4, while playing the note several times and observing the inharmonicity value simultaneously fine tune until the arcs stop and the red dial indicator is as close to zero as possible.

- Swipe right (or if Auto Note is ON, play the next sequence note) to go to the next sequence note, A3. Notice that the next sequence note to be tuned is shown on the right side as "Next A3". Similarly play A3 and tune as described above.

- Swipe right and proceed to F3. Notice that F3 has the (rough) suffix instead of (fine). This means that this note will be visited again. Therefore you can play the note without tuning to complete the measurement. If the note is far off it is better to roughly tune the note at this time to get a better inharmonicity measurement.

- Swipe right to go to F4. Measure (and rough tune) F4 as described above for F3.

- Swipe right and proceed to C#4. C#4 has (fine) suffix. Therefore fine tune C#4.

- Swipe right to proceed to F4 again. Fine tune F4.

- Swipe right and proceed to F3 again. Fine tune F3.

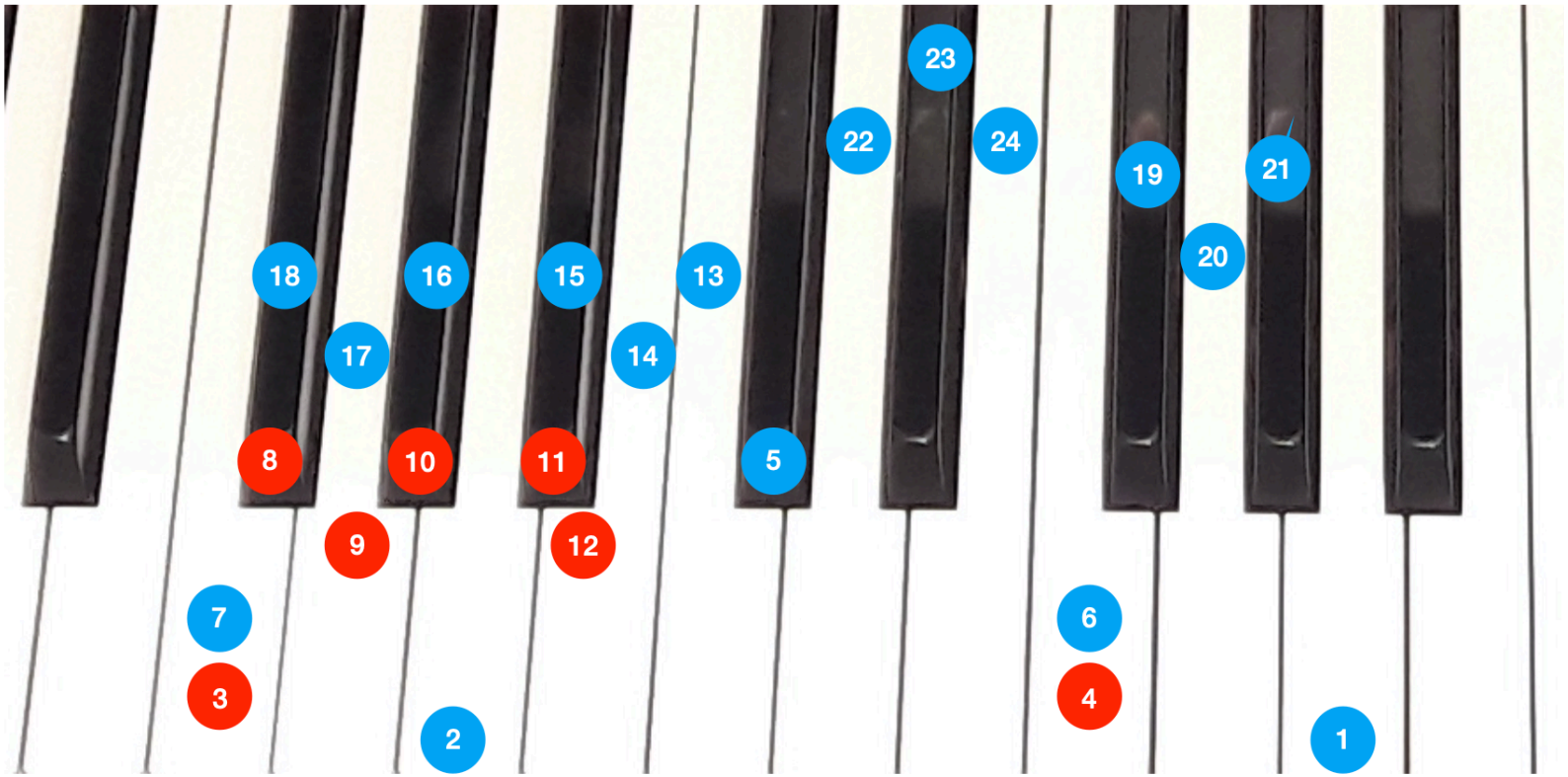
- Proceed to F#3 by swiping right. Measure (and rough tune) notes from F#3 to B3. note that A3 is skipped since it has already been tuned.

- Right swipe and Fine tune C4. Continue the sequence by right swipes and fine tune notes form B3 to F#3.

- Continue with right swipes to fine tune F#4, G4, G#4, D4, D#4 and E4. E4 is the last note in the temperament sequence.

Summary of Temperament Sequence:

1. A4 (fine)
2. A3 (fine)
3. F3 (rough)
4. F4 (rough)
5. C#4 (fine)
6. F4 (fine)
7. F3 (fine)
8. F#3 (rough)
9. G3 (rough)
10. G#3 (rough)
11. A#3 (rough)
12. B3 (rough)
13. C4 (fine)
14. B3 (fine)
15. A#3 (fine)
16. G#3 (fine)
17. G3 (fine)
18. F#3 (fine)
19. F#4 (fine)
20. G4 (fine)
21. G#4 (fine)
22. D4 (fine)
23. D#4 (fine)
24. E4 (fine)



Expanding the temperament:

Tapping on note name toggles between E3 and A#4.

It is recommended to **tune single strings to the target frequency and tune the other strings of the unison aurally**.
In Manual Mode swipe right to go a semitone high or left to go a semitone low. Swiping up or down will change to one octave high or low respectively. Alternatively you can activate auto note switching by tapping on Manual Mode text. In Auto Semitone mode the note switches to the played note automatically, provided it is within the neighboring semitones of the current note.
For new tunings the notes should be tuned **chromatically** from E3 to A0, or from A#4 to C8. **It is important not to proceed to the next note until the measurement is complete. Otherwise that note's inharmonicity value will not be saved in the tuning file.** Notice that after C7 inharmonicity is not measured. Though it is recommended to measure all values up to C7, a**fter measuring C6 you can measure C7 to fill unmeasured values between C6 and C7 automatically.**
Since the targets are calculated with respect to previously tuned notes, a warning message might appear if the note is not calculated yet. In such a situation the note switches to the required note automatically. When you reach A0 or C8, remember that tapping note name toggles a quick jump to E3/A#4.