TANGAI LTD.

# Tangai Hear System User Manual

**macOS (Apple Silicon)**

From one recording to a clear direction for improvement

Applies to: Tangai Hear System desktop client v1.0.0 for macOS (Apple Silicon)

Analysis modes: Wide, Wide+ AI Diagnosis

Document version: October 2026

Website: tangai-bt.com | Support: Contact Us page

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## 1. What Tangai Hear does

Tangai Hear System compares a test recording of your product with a reference recording and finds the sounds that **are not part of the reference signal**. For each one it tells you **when it happens, at what frequency and how strong it is**. In Wide+ mode, an AI also writes the **likely cause and likely problem area** from the measurement data, so you can hand the issue to the team that owns it.

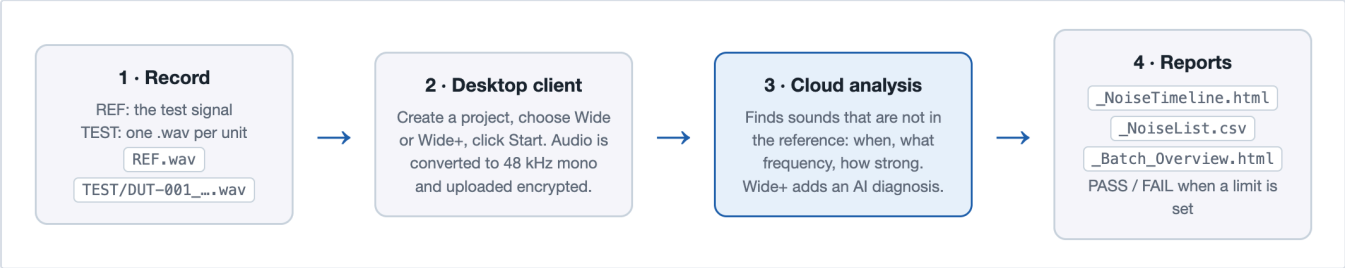



Figure 1-1 How Tangai Hear System works

| Use | How it helps |
|---|---|
| R&D | Start a failure investigation from a time stamp, a frequency and a likely cause. Measure before and after a design change to confirm the improvement. |
| Quality / incoming inspection | Judge PASS / FAIL against your own limit, turning “it sounds odd” into numbers you can sign off. Re-record the same unit to check consistency. |
| Supplier discussions | Both sides work from the same report and the same criteria instead of comparing what each person heard. |

> Results are inferences from the recorded data. Causes in the report are always phrased as “suspected” or “possible”; final confirmation requires re-measurement or teardown by your engineers.

# 2. Installation and first launch

## 2.1 System requirements

| Item | Requirement |
|---|---|
| Computer | Mac with Apple Silicon (M-series chip) |
| Operating system | macOS 26 or later |
| Disk space | At least 1 GB free (the application uses about 550 MB), plus space for your recordings and reports |
| Network | Internet connection while analyzing (recordings are uploaded over an encrypted connection for cloud analysis) |
| Account | A Tangai account (sign up at tangai-bt.com) with credits in it |

## 2.2 Download

On the tangai-bt.com home page, go to `Download Client` and click `Download for macOS`. The file is `Tangai_Hear_System.dmg`.

## 2.3 Install

1. Double-click `Tangai_Hear_System.dmg` to open it.
2. Drag **Tangai_Hear_System** into the **Applications** folder.

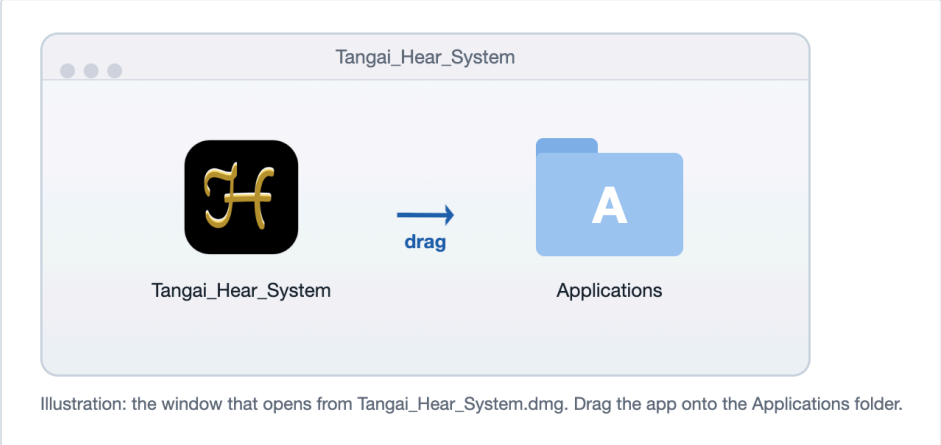



Figure 2-1 Drag the app into Applications

3. Eject the disk image (drag it to the Trash or click the eject icon in Finder).
4. Open **Applications** and double-click **Tangai_Hear_System**. The application is signed with the Tangai LTD. Developer ID and notarized by Apple. macOS may ask *"Tangai_Hear_System is an app downloaded from the Internet. Are you sure you want to open it?"* — click `Open`. This is asked only the first time.

> If macOS says the app **“can’t be opened”** or **“is damaged”**, the download was probably incomplete. Delete the .dmg, download it again from tangai-bt.com, and repeat the steps. Do not install copies obtained from other sources.

### 2.4 First launch: license agreement

The first time you start the program, the End User License Agreement (EULA) is shown. Check `I have read and agree to the Tangai LTD. End User License Agreement (EULA) and Privacy Policy.` and click `Accept and Continue`. `Decline and Quit` closes the program. If the agreement is updated in a later version, you will be asked to accept it again.

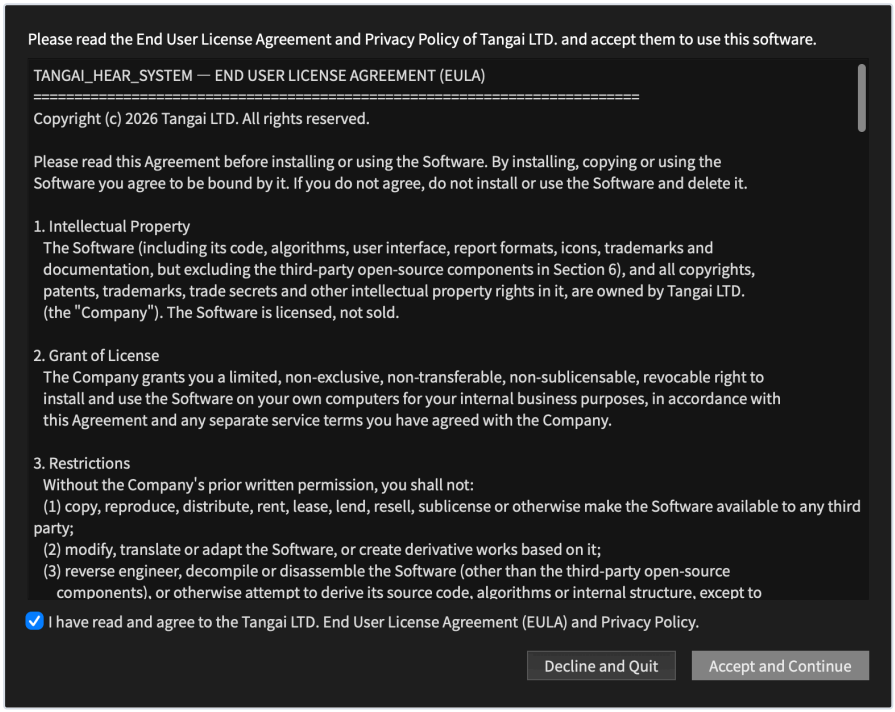



Figure 2-2 License agreement on first launch

> The interface language on first launch is English (you can switch to Chinese in Settings, see 3.2). The agreement, third-party license notices and the installed version number are always available from the `Legal & Licenses` menu in the macOS menu bar at the top of the screen. The window title also shows the version, e.g. **Tangai_Hear_System v1.0.0**.

### 2.5 Uninstall

Quit the program and drag **Tangai_Hear_System** from **Applications** to the Trash. Your projects (in `~/Tangai_Workspace`), reports and recordings are not removed. Settings are stored in `~/Library/Application Support/Tangai_Hear`; delete that folder if you also want to remove saved settings and the saved password.

## 3. Account, credits and settings

### 3.1 Sign up and buy credits

1. On tangai-bt.com, click `Sign up` and create an account.

2. After logging in, buy credits on the `Pricing` page (1,000 credits = 1 USD, **minimum purchase 3 USD**). Payment is handled by Paddle.

### 3.2 Sign in and settings in the desktop client

The desktop client has no separate login screen. Enter your account e-mail and password in `Settings`.

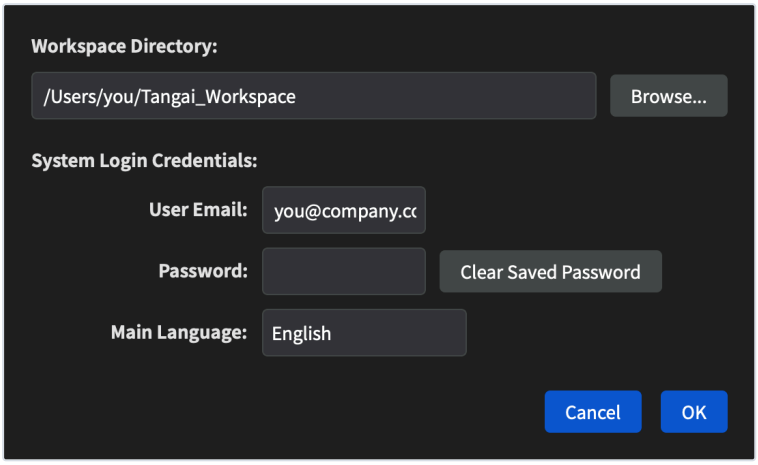



Figure 3-1 Settings (Global Settings)

| Field | Description |
|---|---|
| Workspace Directory | The folder that holds your project list. Default: `~/Tangai_Workspace`. Click `Browse...` to move it to a new location. Keep the path under 200 characters. |
| User Email / Password | Your tangai-bt.com e-mail and password. The password is stored encrypted on this computer so you don't have to re-enter it; click `Clear Saved Password` to delete it. |
| Main Language | Interface language: English or 中文 (Chinese). |

> The client does not show your credit balance. If you run out of credits, the affected recording shows *"Insufficient account credit balance — please top up and try again"* with a link to the website. Check your balance in your account on tangai-bt.com.

## 4. Preparing recordings

Each analysis needs two kinds of recording:

| Recording | Content | Format |
|---|---|---|
| **REF (reference)** | The test signal played to the product; the baseline for comparison. One per project. | .wav, 1–32 seconds |
| **TEST** | What you recorded while playing the REF to the device under test (DUT). Put them in one folder; many can be analyzed in one run. | .wav, 1–35 seconds. Only the top level of the folder is read, not sub-folders. |

Recordings that are not 48 kHz mono are converted automatically on your computer; no preparation is needed.

### 4.1 Recording tips

- Record every unit with **the same fixture, the same position and the same volume**. Different placement or surroundings give different results.
- Use a **test box with sound-absorbing lining** and a fixed position. Reducing reflections matters more than precise distance.
- Avoid **playback clipping** (amplifier or source too loud) and **recording saturation** (input gain too high). When the report detects either, it shows a warning at the top; results in the affected period are not reliable.
- To check repeatability, record the same unit with **the same file name and only a different date/time**, e.g. `DUT-001_20261021_1015.wav` and `DUT-001_20261021_1016.wav`. The batch overview treats them as the same unit.

### 4.2 Making a REF file (optional)

`🎵 Make REF Audio` on the main window offers two methods:

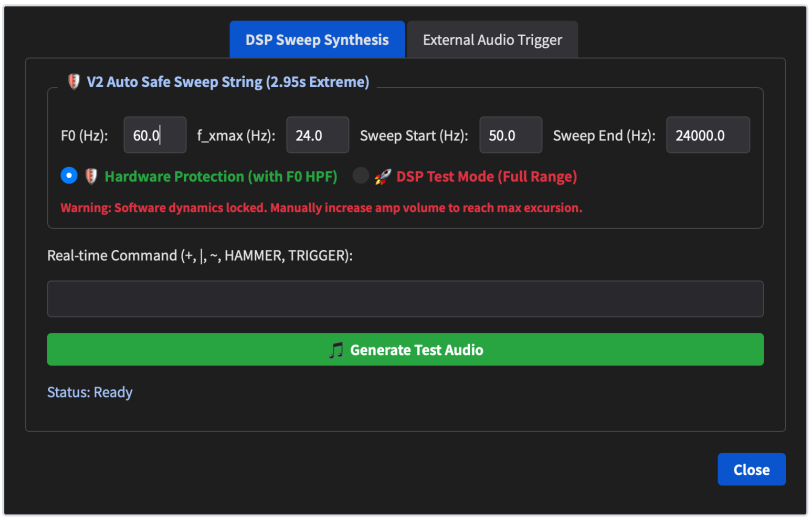



Figure 4-1 Make REF Audio

| Tab | Use |
|---|---|
| DSP Sweep Synthesis | Set F0, f_xmax, Sweep Start and Sweep End, then click `🎵 Generate Test Audio` to create a 48 kHz test signal. **Hardware Protection (with F0 HPF)** is selected by default. |
| External Audio Trigger | Converts an existing wav / flac / mp3 / aiff file to 48 kHz mono and adds a 1 kHz trigger tone at the start. Click `🎵 Prepend Trigger & Export (48kHz 32-bit)`; the file is saved as `REF_<original name>`. |

## 5. Creating a project

Click `+ New Project` on the main window, or `✏️ Edit` on a project card, to open Project Settings.

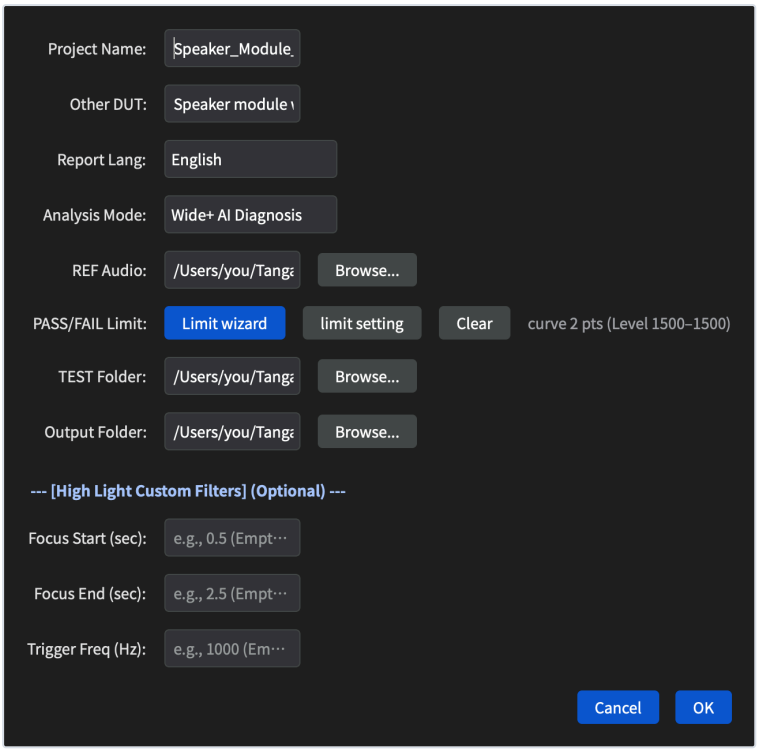



Figure 5-1 Project Settings

| Field | Description |
|---|---|
| Project Name (required) | Also used for the output folder and the batch overview file name. |
| Other DUT | A description of the device under test. If empty, a speaker module with enclosure is assumed. |
| Report Lang | English or 中文. Defaults to the interface language. The Wide+ AI diagnosis is written in this language. |
| Analysis Mode | **Wide** or **Wide+ AI Diagnosis**. The list is provided by the cloud service. See chapter 11 for the difference and prices. |
| REF Audio (required) | Click `Browse...` and choose a .wav file. |
| PASS/FAIL Limit | `Limit wizard`, `limit setting` and `Clear`. The current setting is summarized on the right. Without a limit, reports are not judged PASS / FAIL. See chapter 10. |
| TEST Folder (required) | The folder containing the TEST recordings. |
| Output Folder | Where reports are written. If empty, reports go into the TEST folder. |
| High Light Custom Filters (optional) | Reserved fields; not used by Wide / Wide+. Leave empty. |

If Project Name, REF Audio or TEST Folder is missing, the message “Project Name, REF Audio, and TEST Folder are required!” is shown.

## 6. Running an analysis

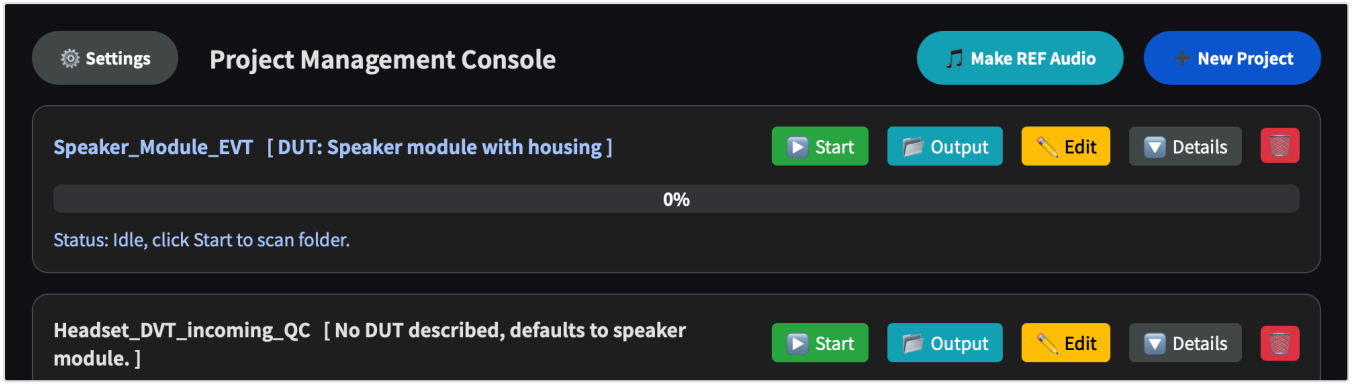



Figure 6-1 Main window (Project Management Console) with project cards

| Button | Function |
|---|---|
| ▶ Start | Scans all .wav files in the TEST folder and starts the analysis. Shows “Processing...” while running and “▶ Restart” when done. |
| 📂 Output | Opens the report folder in Finder. |
| ✏️ Edit | Edit the project settings. |
| ▼ Details | Shows the progress and status of each recording (▲ Collapse hides it again). |
| 🔁 Retry Failed | Appears only when some recordings did not finish; re-runs only those. |
| 🗑 | Deletes the project after you confirm ( No is the default). Only the entry in the project list is removed; reports and recordings are not deleted. |

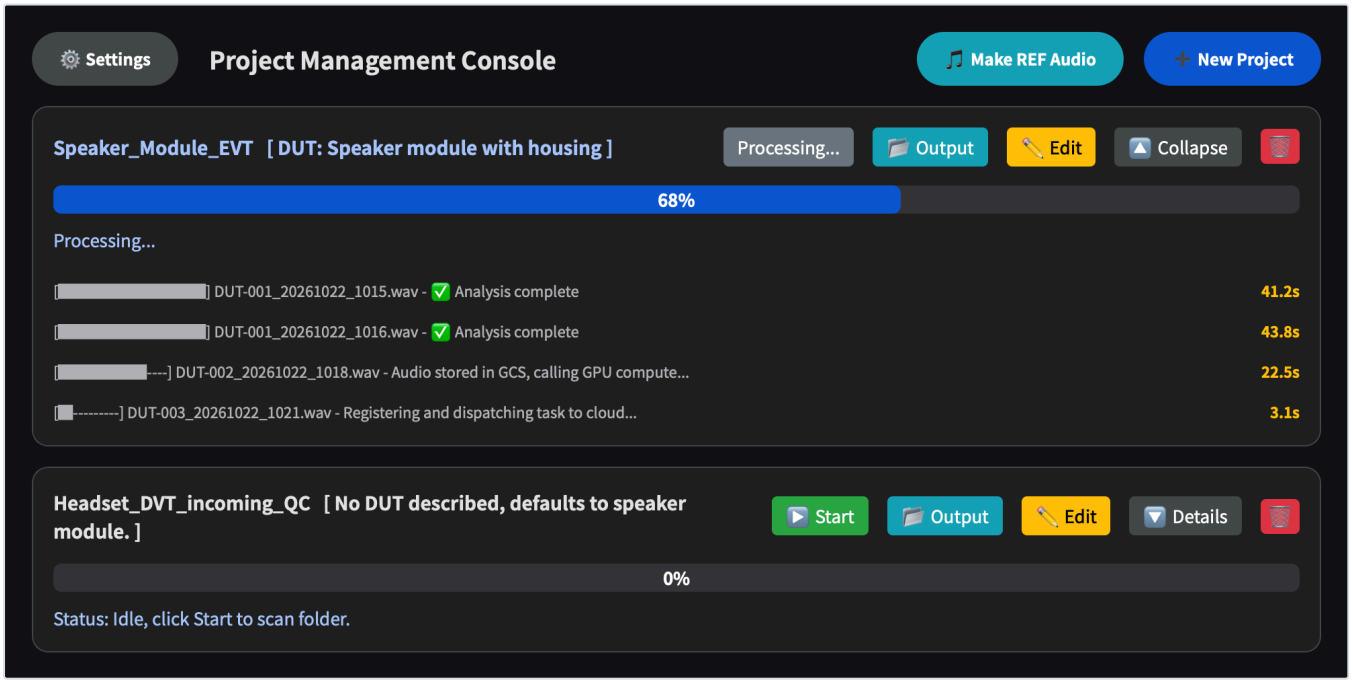



Figure 6-2 While running: overall progress, and per-recording status after clicking ▼ Details

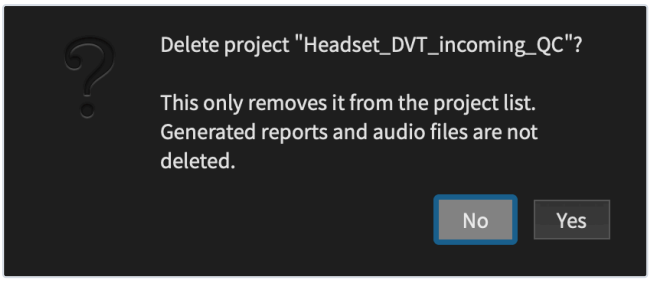



Figure 6-3 Delete confirmation (No is the default)

- Up to 3 recordings are analyzed at the same time. The progress bar is the average over all recordings.
- An analysis cannot be cancelled once started, so check the settings before clicking Start.
- When everything is done, "🎉 All audio files analyzed successfully!" is shown. If some recordings fail, the card shows how many completed and how many did not; click 🔁 Retry Failed.
- A recording with no progress for about 9 minutes is treated as timed out.
- When an analysis fails, the client asks whether you want to send that recording and the REF to Tangai LTD to help improve the system. **The default is "No"**; it is your choice each time.

## 7. Output files

Each run creates a sub-folder `<Project name>_MMDDHHmmSS` in the output folder, containing (`<file>` = the TEST recording's file name):

| File | Content |
|---|---|
| `<file>_NoiseTimeline.html` | Single-recording report; open it in a web browser (chapter 8). In Wide+ mode the AI diagnosis is at the top. |
| `<file>_NoiseList.csv` | Full noise list for Excel. Columns: No., Start (s), End (s), Noise frequency (Hz), Below main tone (dB), Above ambient floor (dB), Possibly audible, Trigger frequencies at that time (Hz). |
| `<Project name>_Noise_Batch_Overview.html` | Batch overview of all recordings in the run (chapter 9). No AI diagnosis. |

> The reports also store, in encrypted form, the data needed to judge them again. When you change the limit later you can re-judge existing reports directly, without re-running the analysis and without using credits (see 10.3).

## 8. Reading the single-recording report

From top to bottom: AI Diagnosis (Wide+ only), Overview, Judgement overview, NLC · Noise Level Curve, Anomaly features, Timeline, By segment and Full noise list. The PASS / FAIL tag next to the title appears only when the project has a limit.

## 8.1 AI Diagnosis (Wide+)

**AI Diagnosis (Wide+)**

**Conclusion:** The device under test exhibits significant low–order distortion and impact sounds that exceed reference values, particularly around 741–742 Hz. Additionally, there are numerous audible noise components throughout the recording, including strong harmonics during the initial 1000 Hz tone and spurious tones during multi–tone segments. These issues suggest potential mechanical defects, such as loose components or non–linear motor behavior. Further investigation is highly recommended to isolate the root causes.

| # | Time (s) | Frequency (Hz) | Type | Severity | Evidence | Possible cause | How to confirm |
|---|---|---|---|---|---|---|---|
| 1 | 1.77–1.82 | 741 | Low–order distortion | High | Overall LOD is –11.42 dB, which is worse than the reference of –15.0 dB. The worst segment occurred at 1.77–1.82s with a 741 Hz trigger. | Suspected non–linear suspension behavior or motor asymmetry at this frequency. | Re–measure at a 3–6 dB lower playback level to see if distortion drops significantly. |
| 2 | 1.83–2.01 | 742 | Impact sound | High | Overall TIF is 5.65, exceeding the reference of 3.0. The worst segment occurred at 1.83–2.01s with a 742 Hz trigger. | Suspected loose component, wire beating, or mechanical rubbing during this frequency segment. | Inspect the DUT physically for loose parts and re–record after repositioning. |
| 3 | 0.0–0.34 | 2000, 3000, 4000, 5001, 6001 | Noise component | Medium | Multiple audible noise peaks (up to 17.7 dB above ambient) at exact multiples of the 1000 Hz trigger. | Suspected harmonic distortion or resonance triggered by the 1000 Hz tone. | Play a continuous 1000 Hz tone and measure the harmonic profile. |
| 4 | 2.13–2.33 | 1288, 1989, 2063 | Noise component | Medium | Audible noise peaks up to 14.2 dB above ambient floor during the multi–tone segment. | Suspected intermodulation distortion or structural resonance. | Re–record with a swept sine wave covering this frequency range to isolate the resonance. |
| 5 | 1.51–1.83 | 1361, 1446, 1982, 2106, 2151, 2231 | Noise component | Medium | Audible noise peaks up to 13.6 dB above ambient floor. | Suspected rattling or buzzing of the speaker membrane or enclosure. | Re–measure after ensuring the DUT is firmly clamped. |

**Limitations:** Results are based on a single recording and depend heavily on microphone placement, environmental noise, and recording equipment.

Written by AI from the measurement data in this report. Causes are hypotheses and need re–measurement or teardown to confirm. This section does not include the limit verdict.

Figure 8-1 AI Diagnosis section

- **Conclusion:** a 3–5 sentence summary; every sentence cites numbers from the report.
- **Problem table:** up to 8 items in order of importance, with time, frequency, type, severity, evidence, possible cause and how to confirm.
- Written by AI from this report's measurements; causes are hypotheses. **This section does not include the limit verdict** — use the PASS / FAIL tag next to the title.
- If the AI diagnosis cannot be produced, the report says so and the price difference to Wide is refunded automatically. The rest of the report is delivered as normal.

## 8.2 Overview and Judgement overview

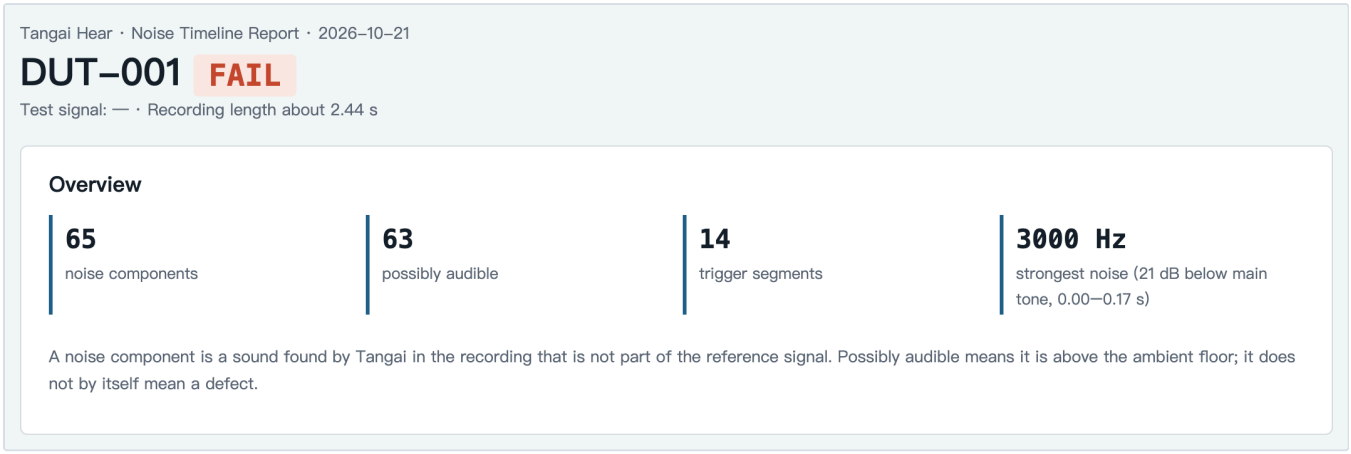



Figure 8-2 Overview: noise components, possibly audible, trigger segments, strongest noise

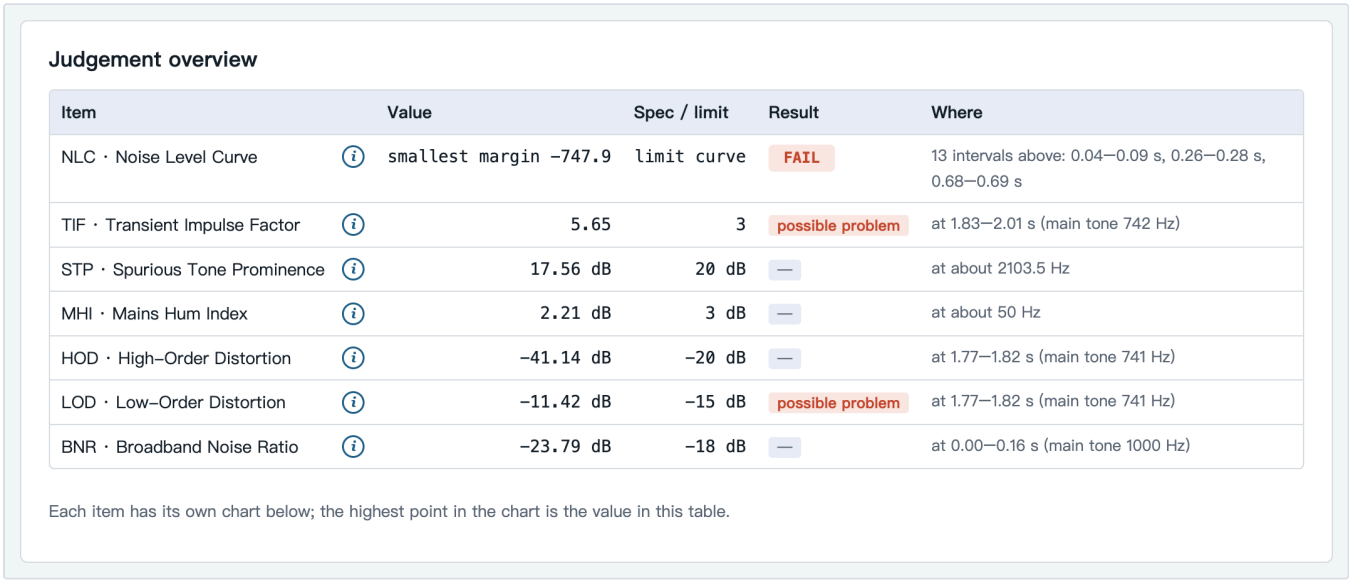



Figure 8-3 Judgement overview: value, spec or limit, result and location of each item

A **noise component** is a sound found in the recording that is not part of the reference signal. **Possibly audible** means it is above the ambient floor; it does not by itself mean a defect. Every item in the Judgement overview has its own chart further down; hover over ⓘ for an explanation. Without a limit, this table is titled *Possible problems overview*.

## 8.3 NLC · Noise Level Curve

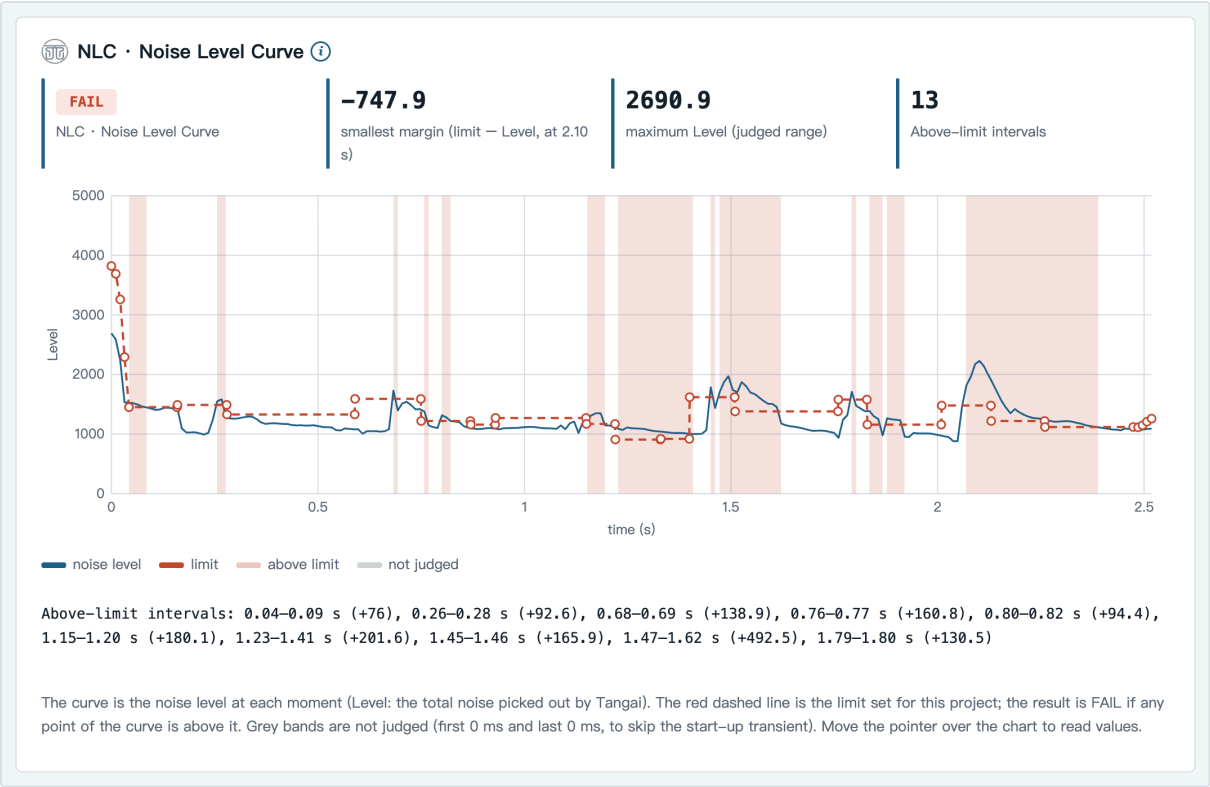



Figure 8-4 Noise Level Curve

The blue curve is the noise level at each moment (Level); the red dashed line is the project's limit. Periods where the curve is above the limit are shaded red; any point above it means FAIL. Grey bands are not judged. Where the curve suddenly rises, check the **Timeline** below to see which frequency causes it.

## 8.4 Anomaly features

### Anomaly features

Tangai compares this DUT's recording with the reference signal and measures six anomaly features. No limit set: reference values are general physical references; values above them are listed as possible problems, not as a judgement.

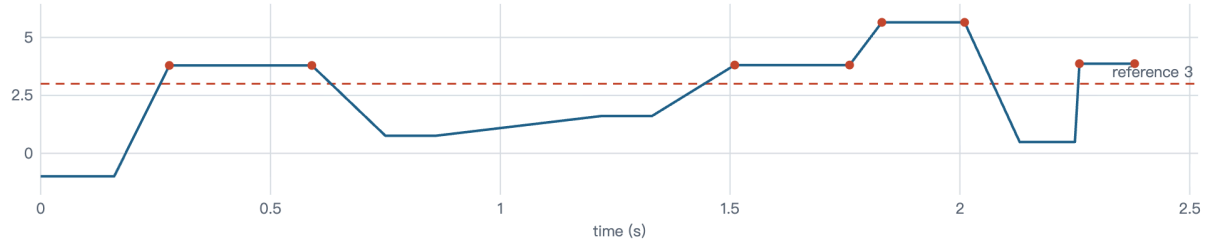
**Possible problems**

- **TIF · Transient Impulse Factor** 5.65 (Reference 3): sudden clicks or pops (rub, loose particles) — at 1.83–2.01 s (main tone 742 Hz)
- **LOD · Low-Order Distortion** −11.42 dB (Reference −15 dB): distorted, broken sound (overdrive) — at 1.77–1.82 s (main tone 741 Hz)

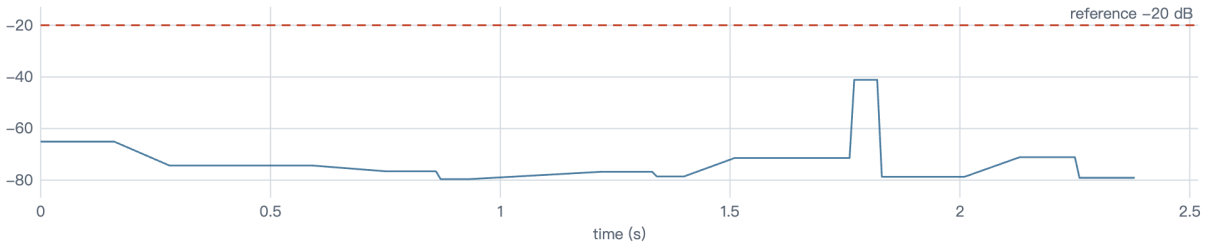
| Item | Measured | Reference | Status | |
|---|---|---|---|---|
| TIF · Transient Impulse Factor | 5.65 | 3 | possible problem | at 1.83–2.01 s (main tone 742 Hz) |
| STP · Spurious Tone Prominence | 17.56 dB | 20 dB | — | at about 2103.5 Hz |
| MHI · Mains Hum Index | 2.21 dB | 3 dB | — | at about 50 Hz |
| HOD · High-Order Distortion | −41.14 dB | −20 dB | — | at 1.77–1.82 s (main tone 741 Hz) |
| LOD · Low-Order Distortion | −11.42 dB | −15 dB | possible problem | at 1.77–1.82 s (main tone 741 Hz) |
| BNR · Broadband Noise Ratio | −23.79 dB | −18 dB | — | at 0.00–0.16 s (main tone 1000 Hz) |

Time-axis line charts: each flat step is the value of one test-tone segment; the dashed line is the reference, and points above it are marked red. STP chart: prominence at each frequency; the highest peak is the STP value. MHI chart: the horizontal axis lists the components of mains hum; the line is the mains frequency used for the judgement, and the short horizontal line is the judged value.

**TIF · Transient Impulse Factor**




**HOD · High-Order Distortion**




**LOD · Low-Order Distortion**

Figure 8-5 Anomaly features: values of the six features and their time-axis charts (top part shown)

| Feature | What it sounds like |
|---|---|
| TIF · Transient Impulse Factor | Short impacts such as clicks, pops or rubbing |
| STP · Spurious Tone Prominence | One fixed frequency standing out, e.g. a part resonating or humming |
| MHI · Mains Hum Index | Hum related to the mains frequency (50 / 60 Hz) |
| HOD · High-Order Distortion | High-order distortion; sounds harsh or gritty |

| | |
|---|---|
| LOD · Low-Order Distortion | Low-order distortion; sound breaks up or becomes rough |
| BNR · Broadband Noise Ratio | Broadband hiss |

Without a residual specification, the dashed line is a general reference value and items above it are marked *possible problem* — this is not a verdict. When a specification is set, an item above it means FAIL.

### 8.5 Timeline

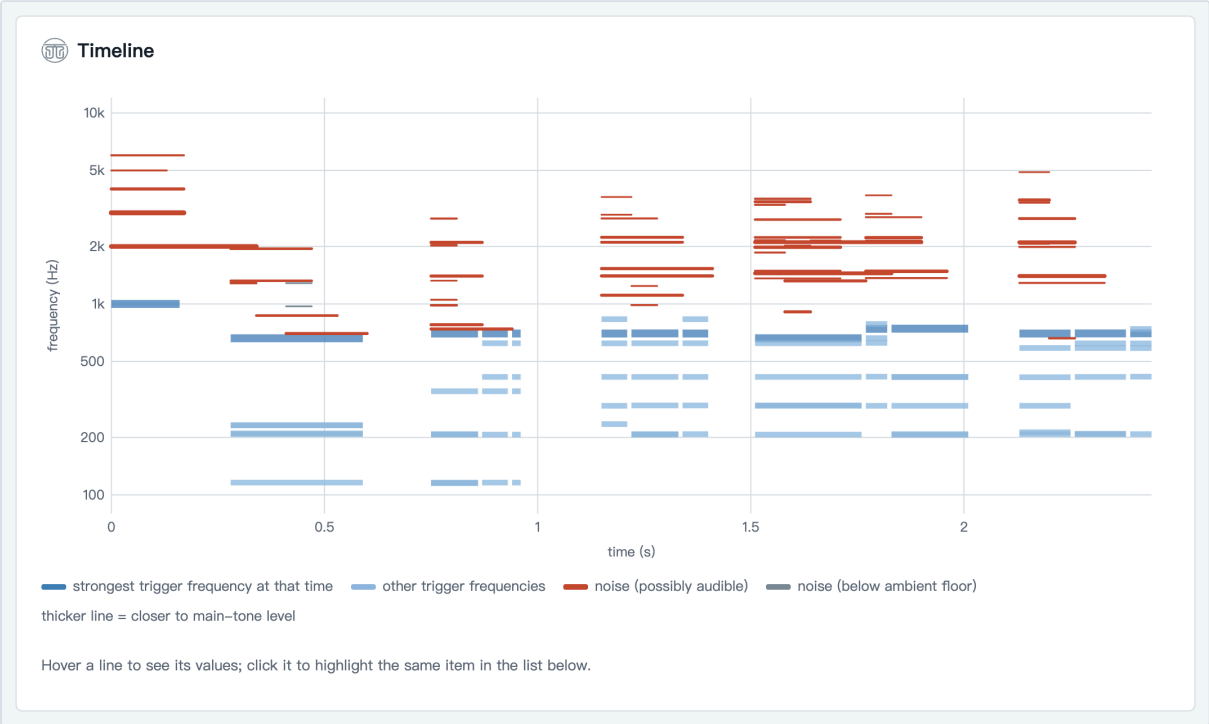



Figure 8-6 Timeline: time on the horizontal axis, frequency on the vertical axis

Blue lines are the trigger frequencies being played; red lines are noises that are possibly audible and grey lines are noises below the ambient floor. Thicker lines are closer to the main-tone level. Hover over a line to read its values; click it to highlight the same item in the list below.

### 8.6 By segment and Full noise list

**By segment** lists the noises in each trigger segment (frequency · dB below the main tone). **Full noise list** lists every noise; click `Download CSV` to save it.

### By segment: which noises occur during each trigger segment

| Time (s) | Trigger frequencies | Noises | Noises (frequency · below main tone) |
|---|---|---|---|
| 0.00–0.16 | **1000 Hz** | 5 | 3000 Hz · −21 dB · 2000 Hz · −23.1 dB · 4000 Hz · −33.9 dB · 6001 Hz · −41 dB · 5001 Hz · −42.4 dB |
| 0.28–0.59 | **661 Hz** + 116, 208, 210, 231 Hz | 8 | 2000 Hz · −23.1 dB · 700 Hz · −34.7 dB · 1945 Hz · −37.6 dB · 869 Hz · −38 dB · 1322 Hz · −38.2 dB · 1284 Hz · −40.1 dB · 972 Hz · −44.2 dB · 1284 Hz · −44.3 dB |
| 0.75–0.86 | **700 Hz** + 115, 116, 207, 208 Hz | 10 | 739 Hz · −33.5 dB · 1400 Hz · −33.5 dB · 2100 Hz · −33.9 dB · 778 Hz · −34.5 dB · 984 Hz · −38.4 dB · 2800 Hz · −40.5 dB · 2023 Hz · −41.5 dB · 1051 Hz · −42.6 dB · 1323 Hz · −43.8 dB · 2063 Hz · −44.8 dB |
| 0.87–0.93 | **701 Hz** + 116, 207, 349, 415 Hz | 1 | 739 Hz · −33.5 dB |
| 0.94–0.96 | **700 Hz** + 116, 207, 349, 415 Hz | 0 | none found |
| 1.15–1.21 | **700 Hz** + 235, 293, 415, 622 Hz | 8 | 1401 Hz · −32.5 dB · 1532 Hz · −34 dB · 1111 Hz · −34.7 dB · 2233 Hz · −35.3 dB · 2102 Hz · −35.7 dB · 2803 Hz · −41.4 dB · 2932 Hz · −43.2 dB · 3633 Hz · −44.7 dB |
| 1.22–1.33 | **701 Hz** + 207, 208, 294, 415 Hz | 8 | 1401 Hz · −32.5 dB · 1532 Hz · −34 dB · 1111 Hz · −34.7 dB · 2233 Hz · −35.3 dB · 2102 Hz · −35.7 dB · 2803 Hz · −41.4 dB · 986 Hz · −41.6 dB · 1241 Hz · −43 dB |
| 1.34–1.40 | **700 Hz** + 208, 294 | 2 | 1401 Hz · −32.5 dB · 1532 Hz · −34 dB |

Figure 8-7 By segment (top part)

### Full noise list

Download CSV

| # | Time (s) | Frequency (Hz) | Below main tone (dB) | Audibility | Trigger frequencies at that time (Hz) |
|---|---|---|---|---|---|
| 1 | 0.00–0.34 | 2000 | 23.1 | possibly audible | 1000 |
| 2 | 0.00–0.17 | 3000 | 21 | possibly audible | 1000 |
| 3 | 0.00–0.17 | 4000 | 33.9 | possibly audible | 1000 |
| 4 | 0.00–0.13 | 5001 | 42.4 | possibly audible | 1000 |
| 5 | 0.00–0.17 | 6001 | 41 | possibly audible | 1000 |
| 6 | 0.28–0.34 | 1284 | 40.1 | possibly audible | 661 / 416 / 623 / 348 |
| 7 | 0.28–0.47 | 1322 | 38.2 | possibly audible | 661 / 416 / 623 / 348 |
| 8 | 0.28–0.47 | 1945 | 37.6 | possibly audible | 661 / 416 / 623 / 348 |
| 9 | 0.34–0.53 | 869 | 38 | possibly audible | 661 / 415 / 349 / 623 |

Figure 8-8 Full noise list with the Download CSV button (top part)

## 9. Reading the batch overview

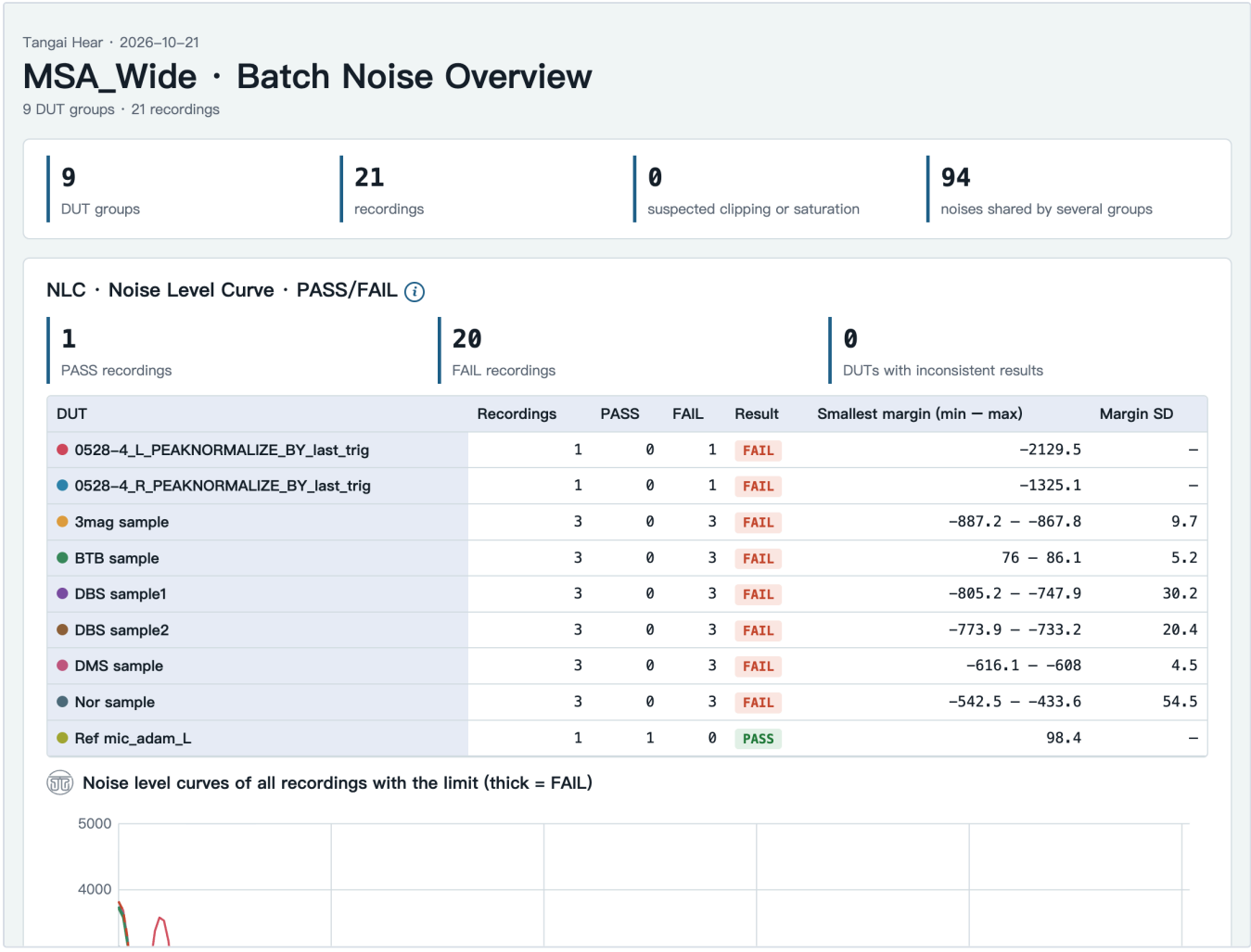



Figure 9-1 Batch Noise Overview (top part)

- The top shows the number of DUT groups, recordings, recordings with suspected clipping or saturation, and noises shared by several groups.
- With a limit, it lists PASS / FAIL counts and **repeatability**: whether repeat recordings of the same unit (same file name after removing date and time) get the same result.
- The curves of all recordings are overlaid on one chart, so you can see which unit and which period is worse.
- The batch overview is for comparison and statistics and **has no AI diagnosis**; see each recording's own report for that.

## 10. PASS / FAIL limits

Without a limit, reports only show measurements and possible problems and are **not judged PASS / FAIL**. There are two ways to set a limit: draw it yourself (**limit setting**) or build it automatically from good units (**Limit wizard**).

### 10.1 limit setting




Figure 10-1 Limit Setting window (default: Level 1500 for the whole duration, no head or tail excluded)

- **Default:** a flat Level 1500 from 0 s to the end of the REF, with nothing excluded at the start or end. `Reset to 1500` restores it.
- **Editing:** click an empty spot on the chart to add a point; drag a point to move it (hold Shift to move only horizontally or vertically). Right-click a point, or select it and press Delete, to delete it (at least 2 points remain). You can also type Time (s) and Level in the table on the right, or use `Add point` / `Delete point`.
- **Redraw:** click points one after another; right-click or press Esc to finish.
- **Skip head / tail (ms):** these periods are not judged. If the trigger tone at the start of the recording raises the curve, set a head length to skip here.
- **Show previous curves:** overlays earlier results in light colours for reference. **Show saved limit** shows the limit currently saved in the project as a dashed line.
- **Import CSV / Export CSV:** two columns `Time(s),Level`, at least 2 points.
- Select the REF first; the limit's time axis follows the REF length.

### 10.2 Limit wizard

The wizard builds a limit from good units you have already analyzed, in five steps: ① Good units → ② Curve limit → ③ Residual spec (specifications for the six anomaly features) → ④ Verify → ⑤ Finish.

1. Choose the results folder(s) of good units. At least 3 are needed (30 or more recommended; with fewer than 30 the limit may be unstable).
2. Choose **Strict (k=2)**, **Standard (k=3, recommended)** or **Loose (k=4)**. The screen estimates how often good units would be wrongly failed.
3. For the residual specification, click `Apply suggestions` or `Restore defaults`.
4. Optionally click `Load bad-unit folder…` to confirm that known bad units are caught.
5. Click `Save to project`.

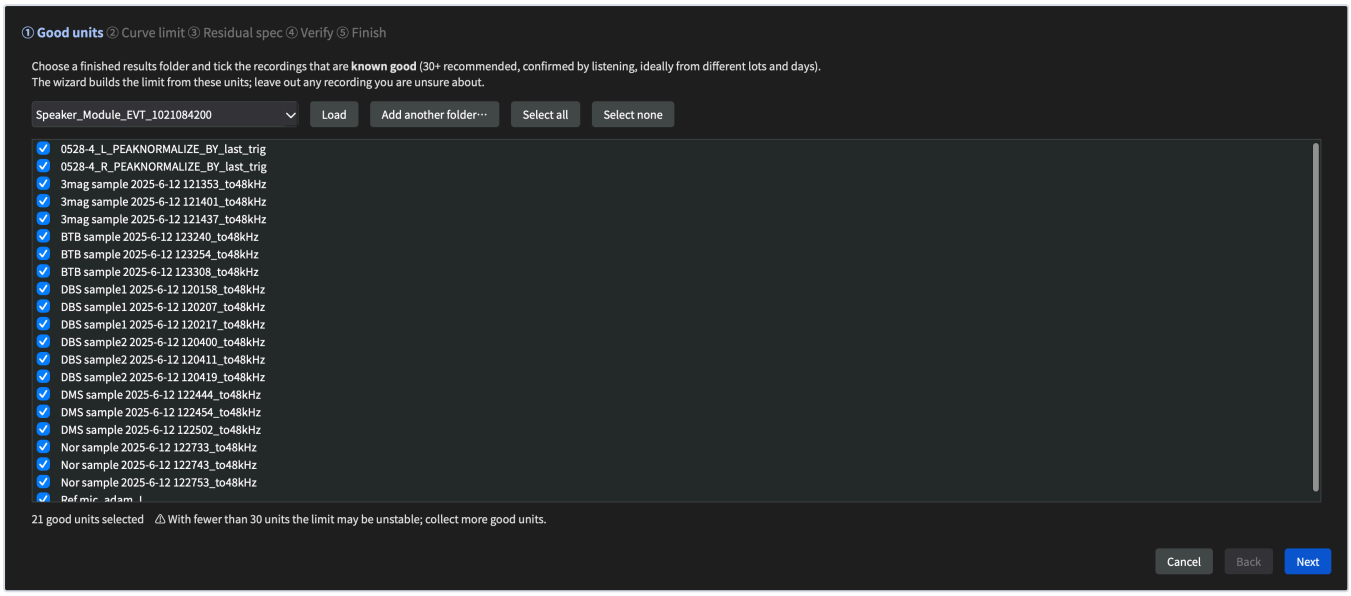



Figure 10-2 Limit wizard, step ①: tick the known-good recordings

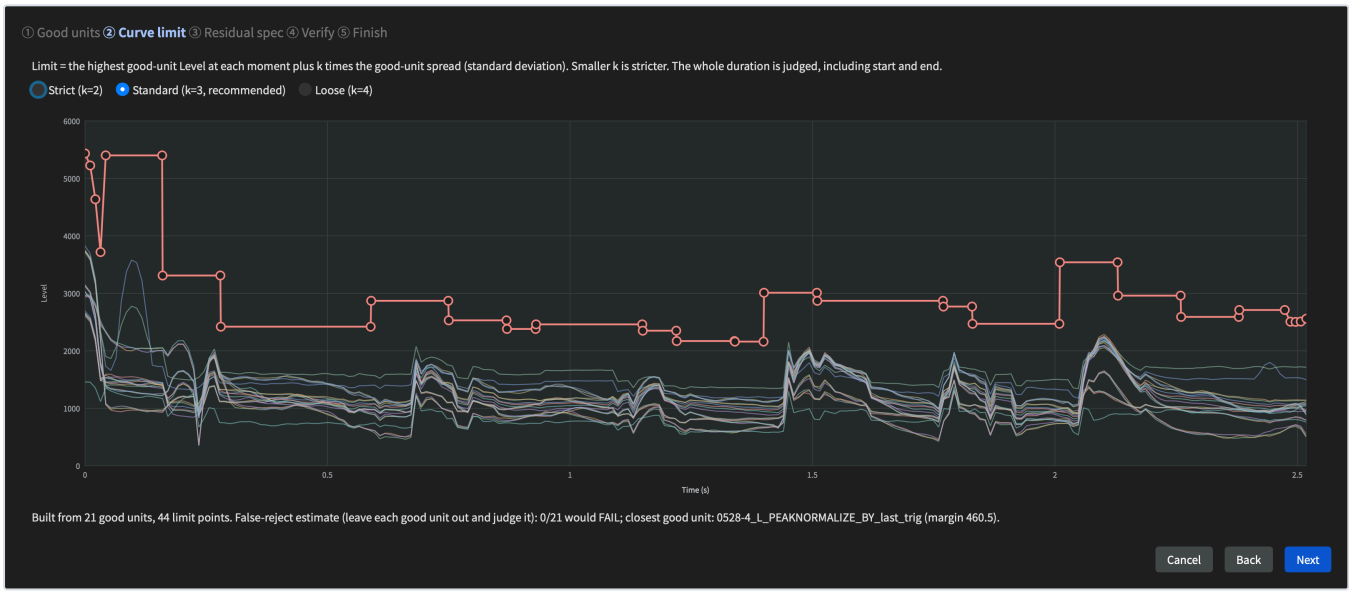



Figure 10-3 Limit wizard, step ②: the curve limit built from the good units, with the false-reject estimate

### 10.3 Re-judging with a new limit

In limit setting, click `Re-judge latest results with this limit`. All single-recording reports and the batch overview from the latest run are regenerated with the new limit — **no re-analysis and no credits used**. When you are happy with the result, click `Save` to store the limit in the project.

## 11. Analysis modes and pricing

| Mode | Includes | First 3 s | Each extra second | Max REF length |
|---|---|---|---|---|
| **Wide** | Noise timeline, Noise Level Curve, six anomaly features, limit judgement, CSV, batch overview | 190 credits | +5 credits | 32 s |

| | | | | |
|---|---|---|---|---|
| **Wide+ AI Diagnosis** | Everything in Wide, plus an AI-written diagnosis (likely cause and likely problem area) | 430 credits | +62 credits up to 19 s; **from 20 s: 193 × seconds + 730** | 31 s |

- **Charges are based on the REF length**; part of a second counts as a full second. Each TEST recording analyzed is charged once.
- **Excluding the start or end from the limit judgement does not reduce the charge.**
- 1,000 credits = 1 USD, minimum purchase 3 USD, no subscription. Examples: 5-second REF — Wide 200, Wide+ 554 credits; 20-second REF — Wide 275, Wide+ 4,590 credits; 30-second REF — Wide 325, Wide+ 6,520 credits.
- In Wide+, if the REF is longer than 31 seconds the recording is not analyzed and no credits are used.
- If the Wide+ AI diagnosis cannot be produced, the price difference to Wide is refunded automatically. Failures caused by a system fault are refunded automatically.
- Re-judging existing reports after changing the limit does not use credits.

Prices and the availability of each mode are as published on tangai-bt.com.

## 12. Messages and troubleshooting

| Message or situation | Cause and what to do |
|---|---|
| A message asking you to enter your credentials in ⚙ Settings | E-mail and password have not been entered. Open ⚙ Settings and fill them in. |
| ❌ Login failed | Wrong e-mail or password, or no network connection. |
| Insufficient account credit balance — please top up and try again | Buy credits on the Pricing page of tangai-bt.com. |
| ❌ Invalid REF length (…s), must be 1~32s | Make a REF between 1 and 32 seconds long. |
| ❌ Invalid TEST length (…s), must be 1~35s | Re-record between 1 and 35 seconds. |
| Recording length exceeds the limit for this analysis mode | The Wide+ REF limit is 31 seconds. Shorten the REF or use Wide. |
| No .wav files found in the folder | Make sure the .wav files are in the top level of the TEST folder (sub-folders are not read). |
| Local-to-cloud network failure | Check the network connection, then click 🔁 Retry Failed. |
| Cloud task timed out or appears to have crashed | Click 🔁 Retry Failed. If it keeps happening, contact us via the Contact Us page. |
| “Suspected clipping” at the top of the report | Playback is too loud. Lower the amplifier or source volume and measure again. |

| | |
|---|---|
| “Recording saturation” at the top of the report | Recording gain is too high. Lower the input gain and record again. |
| A good unit FAILs at 0 s | The trigger tone at the start raises the curve. Set **Skip head (ms)** in limit setting, or adjust the limit. |
| Repeat recordings of one unit get different results | The result is close to the limit, or placement / surroundings differ. Fix the fixture and position, and check whether the limit is too close to good units. |
| Path Too Long | The selected folder path is too long. Choose a folder with a shorter path (under 200 characters). |
| macOS says the app can’t be opened or is damaged | The download is incomplete or corrupted. Download the .dmg again from tangai-bt.com. |
| “You can’t use this version of the application with this version of macOS” | This version requires macOS 26 or later on an Apple Silicon Mac. Update macOS in System Settings → General → Software Update. |

## 13. Data security and support

- Recordings are uploaded over an encrypted connection to temporary cloud storage and used only for that analysis. They are **never used to train any public AI model**.
- Whether to send a failed recording to help improve the system is your decision each time; the default is “No”.
- Your password is stored encrypted on your computer and can only be decrypted on that computer.
- Support: Contact Us page on tangai-bt.com | Website: tangai-bt.com

This manual describes the October 2026 release (v1.0.0). The interface and features may change in later versions. Causes and AI diagnoses in reports are inferences from measurement data and do not constitute a guarantee of product quality.