# VCAT Open Beta (4) Release Notes

Open Beta3 Release notes

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VCAT does not collect, store, or transmit personal data or usage analytics. No telemetry, no tracking, no crash analytics, and no advertising identifiers are gathered by VCAT.

The only network requests VCAT performs are:

- Fetching updated Terms text from a public URL (e.g., your Gist) to notify you of changes.
- Importing VCAT Test Vector sets consisting solely of *video assets and playlists* from sources you choose/configure. These requests fetch media files and playlist metadata only; they do not include user-identifying information.

VCAT does not send any data to RoncaTech servers. Network calls go directly to the sources you configure or the public Terms host. If a source requires authentication, any credentials are used only to access that source and are not transmitted to RoncaTech.

*Third-party platforms* (e.g., Google Play, device OEM services, or your configured content hosts) may process data independently under their own terms. VCAT does not receive that data.

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## About VCAT

VCAT (Video Codec Acid Test) is an open-source Android benchmarking suite designed to measure and compare real-world video decode performance across a wide range of devices and codecs. It drives ExoPlayer

via ADB, collects detailed telemetry, and outputs results in CSV (with dashboard support coming in a later beta).

**Key features:**

- **Multi-codec support:** Hardware and software decoding for H.264, HEVC, VP9, AV1, VVC, (and any decoder available on the device).
- **Regular polling telemetry:** Samples system metrics at 30-second intervals (gradually rolling off to 5-minute intervals for long runs). Tracked metrics include battery level, total CPU usage, CPU frequency, system & app memory usage, and frame-drop counts.
- **Structured test vectors:** XSPF playlists and JSON manifests can be imported either from an online catalog or from local storage.
- **Resume & repeatability:** Crash-resilient “resume test” behavior and deterministic output make VCAT suitable for automation and CI workflows.

# Installation

1. VCAT requires Android 11 or higher.
2. There are three ways to setup VCAT.
    a. Preferred: You can pull the source from github and build in Android Studio.
    b. You can download this apk, and use adb-install to install on the device. ADB setup is beyond the scope of these release notes. Suggest to use ChatGPT for instructions on setting up ADB on your platform.
    c. You can download this apk directly onto your Android device and open it. You will be walked through a set of security questions, and finally Android will want to scan the app to ensure it is not malicious.

# Using VCAT

VCAT’s interface is organized into four tabs along the bottom. Tap each to access its features:

1. **Main**
    - **View** all playlists.
    - **Add/Delete/Edit** playlists
    - **Start Tests:** Select a playlist and tap **Play** to launch a test run.
2. **Logs**

- **Test Summary:** Browse a concise list of recent test runs, showing duration, overall pass/fail status, and key metrics.
- **Detail Access:** For deeper analysis, use ADB (`adb pull /sdcard/vcat/test_results`) to retrieve the raw CSV logs.

3. **Conditions**
   - **Display Brightness:** Set the screen brightness level for the test.
   - **Decoder Selection:** Choose between hardware and software decoders (or let VCAT auto-select).
   - **Decoder Threads:** Set decoder threads 0-8 (for 0, system determines threads).
   - **Exit Criteria:** Define custom end-of-test triggers. Options are
     i. Run-Once
     ii. Run to Battery level
     iii. Run for Timespan
4. **Test Vectors**
   - **Import/Export:** Pull in fully resolved XSPF playlists and JSON manifests from an online catalog or local storage.
   - **Manage Sets:** Review which vector sets are available, then tap **Download** or **Export** to move them on or off the device.
   - All manifest and video asset references include a sha256 checksum. Playlist download will abort if any referenced asset fails the checksum validation.

# Running VCAT for the First Time

1. **Launch the App**
   a. Open VCAT from your app drawer.
   b. On first launch, you'll be prompted to accept the VCAT terms. You must accept the license to run the app. Note that the terms and license are identical to the terms above. Then, you will be asked to grant **System Settings** and **File System** permissions. These are needed to run VCAT. Tap **Allow** on both dialogs.
2. **Import Demo Test Vectors (Online)**
   a. Tap the **Test Vectors** tab at the bottom.

b. You should see a list of available catalogs, and the playlists for each populated from the online catalog. The provided test vectors are for AV1, VP9, and VVC.

c. Select the playlists you want to download.  Note that the total size of the initial test vector set is ~3GB.

d. Tap the **Download** button at the bottom of the page

e. Confirm that each playlist and its associated media clips download successfully.

3. **Import Demo Test Vectors (Offline Zip)**
   a. If online download fails, first download any of these zip files to your device (AV1, AV1-Vertical, VP9, VP9-Vertical, VVC).

   b. Unzip the archive.

   c. In the **Test Vectors** tab, tap **File Browse**, navigate to the unzipped folder with the file the file'*_catalog.json', and tap **Select**.

   d. Follow the instructions starting from 2-a above.

4. **Verify Playlists in Main Tab**

   a. Switch to the **Main** tab.

   b. You should now see every imported playlist listed.

5. **Run a Test**

   a. Tap any playlist in the list.

   b. Select **Play**.

   c. Video playback will begin automatically, and telemetry collection will start.

6. **End the Test**
   While playback is running, tap the screen to reveal the overlay, then tap **Cancel** to stop the test and return to the Main screen.

7. **View Test Results Summary**

   a. Tap the **Logs** tab at the bottom to see a concise summary of your recent test runs (duration, average metrics, pass/fail status).

8. **Retrieve Detailed Logs**

   a. With ADB installed on computer, and USB debugging enabled on device, connect your device to your computer via USB

   b. Run adb pull to copy all .csv log files from the device's test_results folder to your current directory for in-depth analysis.

```
adb pull /sdcard/vcat/test_results ./
```

## Generating Test Vector Sets

New in Beta4 is the vcat-test-vectors project. This is a Python tool that builds sharable VCAT test vector sets from a folder structure that includes media files. To import your test vectors copy the entire folder structure to the device and use the test vector tab to browse to the folder.

## Beta3->Beta4 Fixed Issues and New Features

- Make test vector import cleaner and easier to work with #35
- Add VVDEC SW VVC Decoder to VCAT #12
- Release vcat-test-vectors tool for easily generating test vector sets. #36

## Known Issues

See the GitHub Issues for vcat-d.

# FAQ

1. Where is the source code? Here.
2. What about VCAT-Web? VCAT-Web is a powerful tool to make using VCAT easier. VCAT Web release is still pending. ETA TBD.
3. What's next for VCAT?

| Issue | Description |
|---|---|
| 12 | Add bundled VP9, HEVC, & H264 SW Decoder to VCAT |
| 18 | Implement 'Export Test Vectors" feature |
| 20 | Add Scrolling Simulation Behavior |
| 23 | Add VCAT-Neg mode which will execute the video playback using VLC to prevent manufacturers from gaming VCAT. |
| 24 | Remove External Storage, and Modify System Settings permissions |
| 37 | Migrate to Media3 |

## Feedback

Use the discord channel for VCAT conversations