

# AI-03812 Mobile DAW Redesign

Owner	© Rigel Arcayan
Tags	Ham Radio
Created time	May 11, 2026 8:22 AM

Help me design and build a mobile DAW with the following resources I already own.

**2 Macbook pro 2013**

**Cakewalk License free from Zed12FX purchase**

**Kopul BLT-96**

**Behringer FBQ-Ultragraph Pro EQ**

**Zed12FX (USB interface is dead)**

**UMC404HD (as USB interface to replace Zed12FX)2 TS115 a**

**1 Polk 15" Powered sub (RCA only)**

**Explain the redesign first and then create a wiring/connection diagram in details especially where in Zed12FX connections are made.**

You already have the core pieces for a very capable **portable/mobile DAW + live rehearsal + recording rig**.

The key redesign principle is:

Separate the system into:

1. Recording / DAW path
2. Live sound reinforcement path
3. Playback / monitoring path

Right now the weak point is the dead USB section of the Allen & Heath ZED-12FX mixer.

Instead of replacing the mixer, you repurpose it as:

- analog front-end,
- monitor mixer,

- EQ routing hub,
- live mixer,

while the Behringer UMC404HD becomes the dedicated audio interface.

---

## 1. SYSTEM GOALS

Your redesign should achieve:

1. Mobile DAW recording
  2. Live rehearsal capability
  3. Bluetooth music playback
  4. Analog tactile mixing
  5. Expandable recording setup
  6. Better gain structure
  7. Cleaner speaker/sub integration
  8. Redundancy (2 MacBooks)
  9. Lower noise floor
  10. Easier troubleshooting
- 

## 2. THE BEST ARCHITECTURE

### CORE CONCEPT

#### OLD DESIGN (problematic)

MacBook → dead USB on ZED12FX → speakers

This made the mixer both:

- mixer
- interface

- monitor controller

When the USB failed, everything collapsed.

---

## **NEW DESIGN (modular)**

### **AUDIO FLOW**

#### **INPUT STAGE**

Microphones / instruments / Bluetooth

↓

#### **ANALOG MIXER STAGE**

ZED12FX handles:

- gain
- EQ
- aux sends
- live mixing

↓

#### **AUDIO INTERFACE STAGE**

UMC404HD captures audio into MacBook

↓

#### **DAW STAGE**

Cakewalk / DAW records and processes

↓

#### **OUTPUT STAGE**

UMC404HD outputs back into ZED12FX

↓

## SYSTEM EQ

FBQ Ultragraph



## SPEAKERS + SUB

---

# 3. WHY THIS IS A GOOD DESIGN

## A. ZED12FX STILL HAS HUGE VALUE

Even with dead USB:

- excellent preamps
- musical EQ
- aux routing
- analog workflow
- live usability

You keep all that.

---

## B. UMC404HD IS BETTER AS INTERFACE

The Behringer UMC404HD gives:

- modern USB interface
- ASIO support
- lower latency
- direct monitoring
- 4 inputs / 4 outputs
- stable drivers

This becomes the DAW brain.

---

## C. ANALOG + DIGITAL HYBRID

This setup gives:

- analog hands-on control
- digital recording flexibility
- live capability
- redundancy

Very similar philosophy used in:

- rehearsal studios
  - podcast rigs
  - churches
  - small venues
  - mobile recording rigs
- 

## 4. PHYSICAL SYSTEM LAYOUT

Recommended physical placement:

```
[MacBook]
  ↓
[UMC404HD]
  ↓
[ZED12FX]
  ↓
[FBQ EQ]
  ↓
[TS115A Speakers]
  ↓
[Polk Powered Sub]
```

---

## 5. DETAILED SIGNAL DESIGN

# STAGE 1 — INPUT SOURCES

## MICROPHONES

Connect to:

- ZED channels 1-6 XLR inputs

Example:

- Vocal mic
  - Acoustic guitar DI
  - Keyboard
  - Podcast mic
- 

## BLUETOOTH PLAYBACK

Your Kopul BLT-96 is extremely useful here.

### **Connect:**

Phone

↓ Bluetooth

Kopul BLT-96

↓ XLR or 1/4"

ZED stereo channel

Recommended:

- Use ST1 or ST2 stereo channel

This becomes:

- music playback
- backing tracks
- reference music
- intermission audio

---

## STAGE 2 — ZED12FX TO UMC404HD

This is the MOST IMPORTANT redesign area.

---

### OPTION A — SIMPLE STEREO RECORDING (RECOMMENDED)

#### USE:

ZED12FX MAIN OUT

#### Connections

**ZED MAIN OUT L/R**

(use balanced TRS or XLR)

↓

**UMC404HD INPUT 1 and INPUT 2**

---

#### RESULT

Your DAW records:

- full stereo live mix

Simple and reliable.

Best for:

- rehearsal capture
  - podcasts
  - live recording
  - songwriting
-

# EXACT ZED CONNECTIONS

On rear/top panel:

## USE THESE:

### ZED MAIN MIX OUTPUTS

- LEFT XLR OUT
- RIGHT XLR OUT

OR

- LEFT TRS OUT
- RIGHT TRS OUT

↓

to

### UMC404HD INPUTS 1-2

Set UMC inputs to:

- LINE mode
- not INST

---

## GAIN STRUCTURE

IMPORTANT:

### On ZED:

Keep master around:

0 dB / Unity

### On UMC:

Adjust gain so peaks hit:

-12 dB to -6 dB

Avoid clipping.

---

## STAGE 3 — DAW PLAYBACK RETURN

Now you need audio FROM the computer BACK to the mixer.

This is what many people forget.

---

## CONNECTION

### UMC404HD OUTPUTS 1–2

↓

### ZED STEREO RETURN

OR

### ST3 stereo input

Recommended:

Use ST3.

---

## WHY?

Now:

- DAW playback
- YouTube
- plugins

- backing tracks
- mastered audio

all return into the mixer.

You control monitoring with physical faders.

---

## EXACT CONNECTION

### UMC OUTPUT 1

→ ZED ST3 LEFT

### UMC OUTPUT 2

→ ZED ST3 RIGHT

Use:

- balanced TRS cables
- 

## STAGE 4 — MAIN MONITOR PATH

Now your ZED becomes the central monitor controller.

---

### ZED → FBQ EQ

#### USE:

ZED MAIN OUT

↓

FBQ INPUT L/R

---

## WHY THE EQ GOES HERE

The Behringer FBQ Ultragraph Pro should affect:

- speakers
- room tuning
- feedback control

NOT recording.

This is important.

EQ AFTER mixer.

NOT before interface.

---

## **STAGE 5 — FBQ → SPEAKERS**

### **FBQ OUTPUT L**

→ Left TS115A

### **FBQ OUTPUT R**

→ Right TS115A

Use:

- balanced XLR

The Alto Professional TS115A already has internal amplification.

---

## **6. SUBWOOFER INTEGRATION (IMPORTANT)**

Your Polk powered sub only accepts RCA.

That means it is consumer-level input.

---

## **BEST SUB CONNECTION METHOD**

## OPTION A — USE TS115A THRU OUTPUTS

If your TS115A has:

- MIX OUT
- or
- THRU

then:

```
FBQ → TS115A  
TS115A THRU → Polk Sub
```

BUT:

this may be full-range.

---

## BETTER OPTION

Use:

### ZED RECORD OUT (RCA)

↓

Polk sub RCA input

---

## WHY THIS WORKS

The Polk sub has:

- internal crossover

It extracts bass frequencies itself.

This is actually elegant for home/mobile setups.

---

## EXACT SUB CONNECTION

## ZED RECORD OUT RCA L/R



## Polk Sub RCA IN

---

# IMPORTANT NOTE

The Polk sub level must be adjusted carefully because:

- record output is fixed level

So use:

- sub gain knob
- sub crossover knob

Recommended crossover:

80–100 Hz

---

# 7. COMPLETE SIGNAL FLOW DIAGRAM

MICROPHONES / INSTRUMENTS



ZED12FX



MAIN OUT L/R



UMC404HD IN 1-2



MacBook

(Cakewalk/DAW)



UMC404HD OUT 1-2

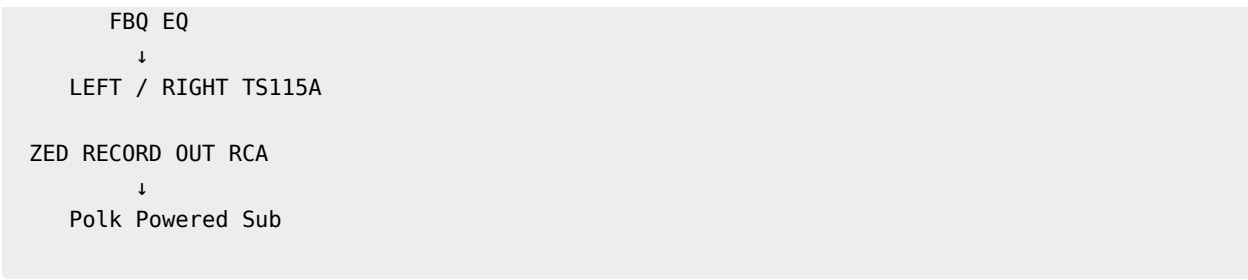


ZED ST3 INPUT



ZED MAIN MIX





## 8. WHY THIS IS A STRONG MOBILE SYSTEM

This design gives you:

### LIVE MODE

Without computer:

- full PA system works

### RECORDING MODE

With computer:

- DAW integration
- stereo capture
- playback routing

### FAILURE RESISTANCE

If laptop crashes:

- mixer still works

If interface fails:

- mixer still works

If EQ fails:

- bypass possible

This modularity matters.

---

## 9. SECOND MACBOOK USE CASES

Your second MacBook Pro 2013 can become:

### OPTION 1 — Backup DAW

Redundancy.

---

### OPTION 2 — Dedicated Playback Machine

Run:

- backing tracks
- Spotify
- YouTube
- reference music

through BLT-96.

---

### OPTION 3 — Dedicated Plugin Rack

Run:

- virtual instruments
  - synths
  - guitar processing
- 

## 10. IMPORTANT CABLES YOU NEED

### RECOMMENDED

2x XLR or TRS

ZED → UMC

## **2x TRS**

UMC → ZED

## **2x XLR**

FBQ → TS115A

## **RCA stereo cable**

ZED → Polk

## **Balanced cables whenever possible**

This reduces:

- hum
  - interference
  - ground noise
- 

# **11. FUTURE UPGRADES (OPTIONAL)**

Later, the best upgrades would be:

1. Studio monitors
  2. Dedicated crossover
  3. Modern DAW software
  4. Acoustic treatment
  5. Rack case
  6. Power conditioner
  7. SSD upgrades for MacBooks
-

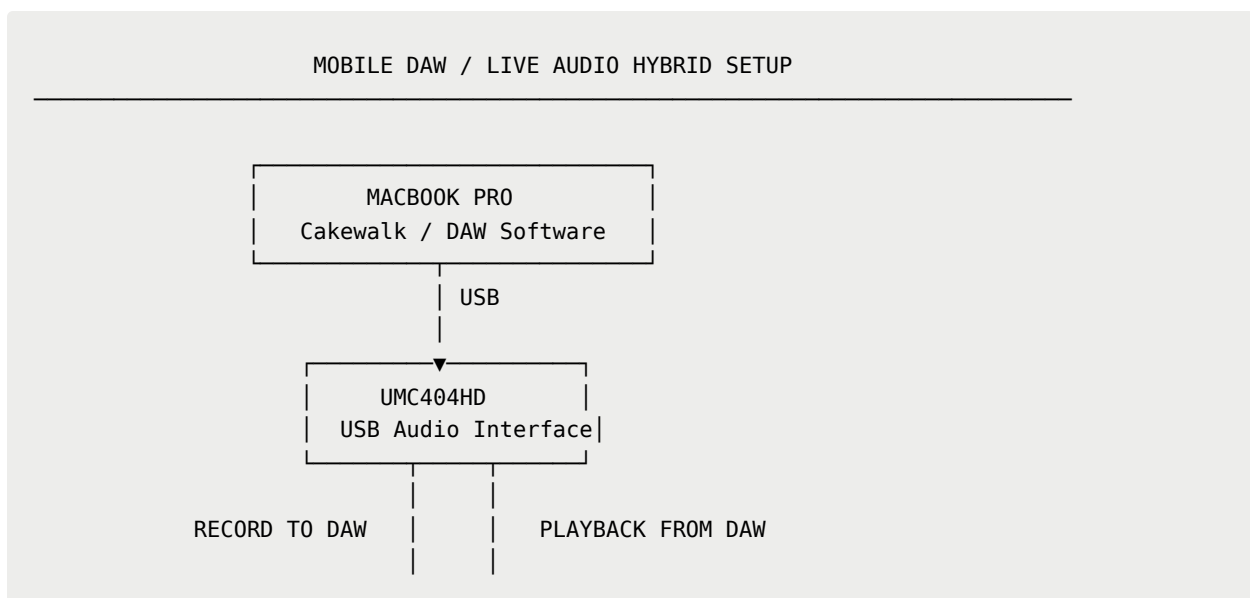
# 12. FINAL RECOMMENDED OPERATING PHILOSOPHY

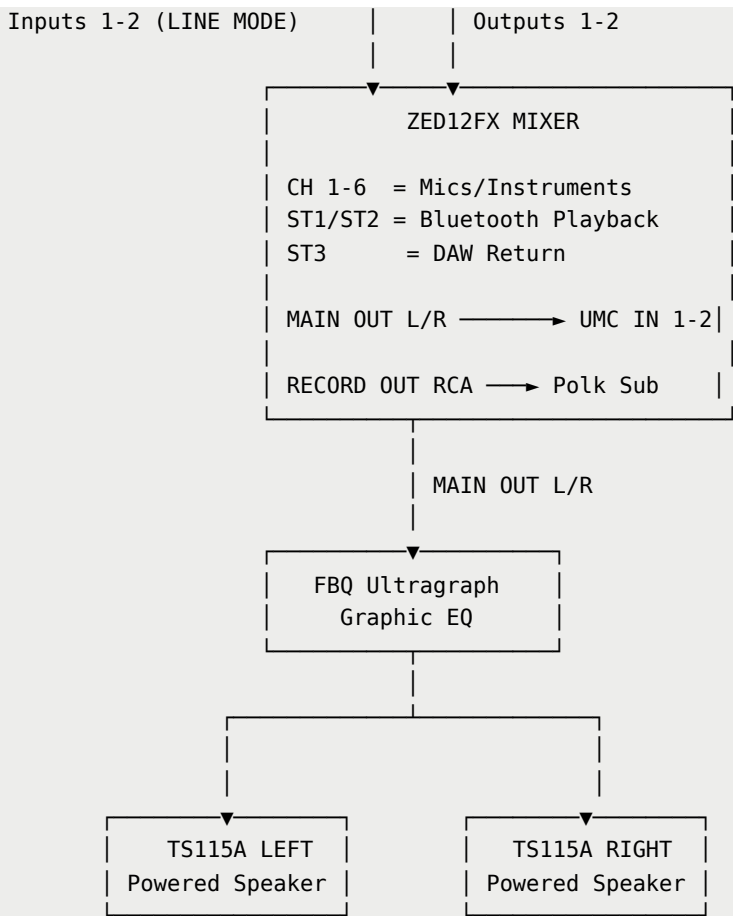
Think of the system like this:

Component	Purpose
ZED12FX	Analog command center
UMC404HD	Digital bridge
MacBook	Recording/editing brain
FBQ EQ	Room/speaker correction
TS115A	Main PA
Polk Sub	Low frequency extension
BLT-96	Wireless playback input

The redesign succeeds because each device now has:

- ONE primary responsibility
- cleaner signal flow
- less overlap
- easier troubleshooting
- more flexibility

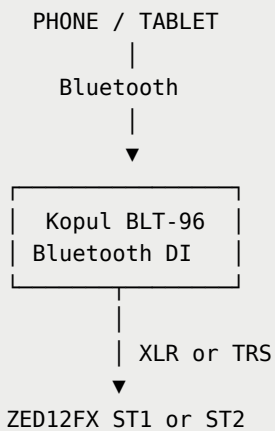





---

BLUETOOTH PLAYBACK PATH

---




---

DETAILED ZED12FX CONNECTIONS

---

## INPUT SIDE

---

### CH 1-6 XLR INPUTS

→ microphones

### CH 1-6 LINE INPUTS

→ instruments / keyboards

### ST1 or ST2

→ Kopul BLT-96 Bluetooth receiver

## OUTPUT SIDE

---

### MAIN OUT L

→ UMC404HD INPUT 1

### MAIN OUT R

→ UMC404HD INPUT 2

## DAW RETURN

---

### UMC404HD OUTPUT 1

→ ZED ST3 LEFT

### UMC404HD OUTPUT 2

→ ZED ST3 RIGHT

## MAIN SPEAKER CHAIN

---

### ZED MAIN OUT L/R

→ FBQ EQ INPUT L/R

### FBQ OUTPUT L

→ TS115A LEFT

### FBQ OUTPUT R

→ TS115A RIGHT

## SUBWOOFER

---

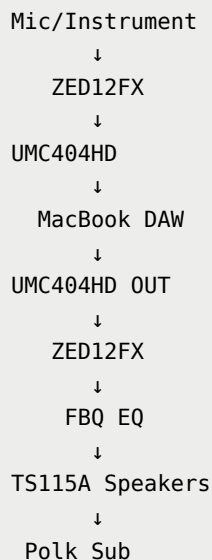
### ZED RECORD OUT RCA

→ Polk Powered Sub RCA INPUT

---

## SIGNAL FLOW SUMMARY

---



## Gemini

To redesign your setup, the strategy is to pivot the **Allen & Heath ZED-12FX** from its role as a primary USB interface (since that port is dead) to a high-quality **analog summing mixer**. The **Behringer UMC404HD** will serve as your digital gateway, and the **FBQ EQ** will act as your final room-tuning stage before the signal hits the speakers.

Here is the redesign strategy and the detailed wiring plan.

## The Redesign Strategy

1. **Interface Swap:** The UMC404HD handles all Analog-to-Digital (recording) and Digital-to-Analog (playback) duties.
2. **Analog Processing:** By routing the UMC404HD outputs into the ZED-12FX channel strips, you can use the Allen & Heath preamps and EQ for "analog warmth" before sending the signal to the monitors.
3. **Low-End Management:** Since your Polk sub is RCA-only and your TS115As are XLR/TRS, we will use the **Kopul BLT-96** (XLR to 3.5mm) and a 3.5mm-to-RCA adapter to feed the sub from a dedicated "Aux" or "Mono" send on the ZED. This allows you to control the sub level independently of the mains.

# Detailed Wiring Diagram

## 1. Computer & Interface

- **MacBook Pro:** Connect via USB to the **UMC404HD**.
- **UMC404HD Outputs:** Use two TRS-to-XLR (or TRS-to-TRS) cables from **Main Out L/R** of the UMC404HD into **Channels 9/10** (Stereo Channel) on the **ZED-12FX**. This brings your DAW audio into the mixer.

## 2. The Main Signal Path (ZED-12FX to EQ)

- **ZED-12FX Main Mix Out (L/R):** Connect these XLR outputs to the **Inputs** of the **Behringer FBQ-Ultragraph Pro EQ**.
- **FBQ-Ultragraph Outputs (L/R):** Connect the XLR outputs of the EQ directly to the **Inputs** of your two **Alto TS115A** active speakers.

## 3. Integrating the Subwoofer (The "Mono" Feed)

Since the Polk sub is RCA-only, we need an unbalanced mono feed:

- **ZED-12FX "Mono Out" (or Aux 1):** Use the **Kopul BLT-96** cable.
  - Plug the XLR end into the **Mono Out** (or Aux 1) of the ZED-12FX.
  - Connect the 3.5mm end to a **3.5mm female to RCA Male Y-adapter**.
  - Plug the RCAs into the **Polk 15" Subwoofer**.
- *Note:* Using "Mono Out" allows you to use the dedicated fader on the ZED to dial in exactly how much bass you want relative to the TS115As.

## 4. Input Recording Path

- Connect your microphones or instruments directly to **Inputs 1-4** on the **UMC404HD**.
- *Pro Tip:* If you want to use the ZED's EQ *while recording*, connect your mic to ZED Channel 1, then take the **Channel 1 Insert** (using a TRS-to-TS "sniff" cable) into an input on the UMC404HD.

---

## Signal Flow Summary Table

From	To	Cable Type
MacBook Pro	UMC404HD	USB
UMC404HD Out 1/2	ZED-12FX Ch 9/10	TRS to XLR/TRS
ZED-12FX Main L/R	FBQ EQ Inputs	XLR
FBQ EQ Outputs	TS115A Speakers	XLR
ZED-12FX Mono Out	Polk Subwoofer	XLR (Kopul) → RCA

## Setup Notes for Cakewalk

- **Driver:** Ensure you are using the **ASIO** driver for the UMC404HD within Cakewalk for the lowest latency.
- **Gain Staging:** Keep the ZED-12FX Master Fader at "0" (Unity) and use the Behringer EQ to "tame" the room, rather than boosting frequencies excessively, which could introduce noise.
- **Sub Crossover:** Since the Polk is a home theater style sub, set its physical "Low Pass" knob to roughly **80Hz** to let the TS115As handle the mids and highs effectively.

Copilot

Here's the redesigned mobile-DAW system you can build with the gear you already own. I'll walk you through **(1) the redesign, (2) the signal-flow logic, and (3) a detailed wiring/connection diagram**, including exactly where to plug into the **Zed-12FX** even though its USB interface is dead.

I'll also embed **Guided Links** so you can jump deeper into any part of the setup.

## 1. Redesign Overview — What Your New Mobile DAW Rig Looks Like

**Core idea:**

Use the **UMC404HD** as your main USB interface → feed its outputs into the **Zed-12FX** for analog mixing, EQ shaping, and routing → then out to your **FBQ Ultragraph, TS115a speakers, and Polk sub**.

Your **MacBook Pros** run your DAW (Cakewalk via Bootcamp or another DAW on macOS).

The **Zed-12FX** becomes an **analog summing mixer + monitor controller**, not an interface.

---

## Why This Redesign Works

- The **UMC404HD** gives you clean multichannel USB audio.
  - The **Zed-12FX** gives you:
    - better preamps than the Behringer
    - analog EQ per channel
    - aux sends for monitor mixes
    - faders for hands-on control
  - The **FBQ Ultragraph** becomes your **system EQ** for room correction.
  - The **TS115a** powered speakers become your mains.
  - The **Polk RCA-only sub** is fed from the Zed's **ALT OUT** or **MONITOR OUT** using a TRS-to-RCA adapter.
- 

## 2. Signal Flow (High-Level)

**MacBook** → **UMC404HD** → **Zed-12FX** → **FBQ Ultragraph** → **TS115a** → **Polk Sub**

This gives you:

- digital recording at the interface
- analog mixing at the Zed
- system EQ at the FBQ
- full-range monitoring with sub support

If you want to explore any part of this chain, tap:

interface\_routing, analog\_summing, monitor\_chain\_design

---

## 3. Detailed Wiring / Connection Diagram

Below is the **complete wiring plan**, including **exact Zed-12FX jack locations**.

---

### A. Computer → UMC404HD

- **MacBook Pro USB → UMC404HD USB-B port**
  - DAW output channels:
    - Output 1-2 = Main mix
    - Output 3-4 = Optional cue mix
- 

### B. UMC404HD → Zed-12FX (Line Inputs)

Use **balanced TRS cables** from the UMC outputs.

#### UMC404HD Outputs → Zed-12FX Channels

- **UMC OUT 1 → Zed Channel 1 LINE input**
- **UMC OUT 2 → Zed Channel 2 LINE input**
- (Optional) **UMC OUT 3 → Zed Channel 3 LINE input** **UMC OUT 4 → Zed Channel 4 LINE input**

On the Zed, use the **LINE** jack (top of each strip), not the XLR.

If you want to explore this part:

line-level routing, gain\_staging

---

### C. Zed-12FX → FBQ Ultragraph Pro EQ

You want the EQ to shape the **entire system**, so place it **after the Zed main mix**.

#### Zed MAIN L/R OUT → FBQ Ultragraph L/R INPUT

- Use **XLR-to-XLR** or **TRS-to-TRS** depending on your cables.
-

## D. FBQ Ultragraph → TS115a Powered Speakers

FBQ L/R OUTPUT → TS115a Inputs

- Use **balanced XLR** or **TRS** into each TS115a.
- 

## E. Subwoofer Integration (Polk RCA-only)

Your Polk sub is consumer-level RCA, so you need a **balanced TRS** → **RCA** adapter.

**Option 1 (Recommended): Zed ALT OUT → Sub**

- **ALT OUT L/R (¼" TRS) → RCA L/R into Polk Sub**
- Then set the sub's crossover around **80–100 Hz**.

**Option 2: Zed MONITOR OUT → Sub**

- Same cabling as above.

If you want to explore sub integration:

subwoofer crossover setup, studio\_sub\_alignment

---

## F. Optional: Zed Aux Sends → Headphone Amps or Monitors

- **AUX 1** → in-ear monitor mix
- **AUX 2** → external FX or second monitor feed

Explore aux routing:

aux\_sends, monitor\_mixes

---



## G. Recording Back Into the DAW (If Needed)

Since the Zed's USB is dead, you can still record the analog mix:

**Zed MAIN INSERTS (half-click) → UMC404HD Inputs 1-2**

or

**Zed RECORD OUT (RCA) → UMC404HD Inputs 1-2**

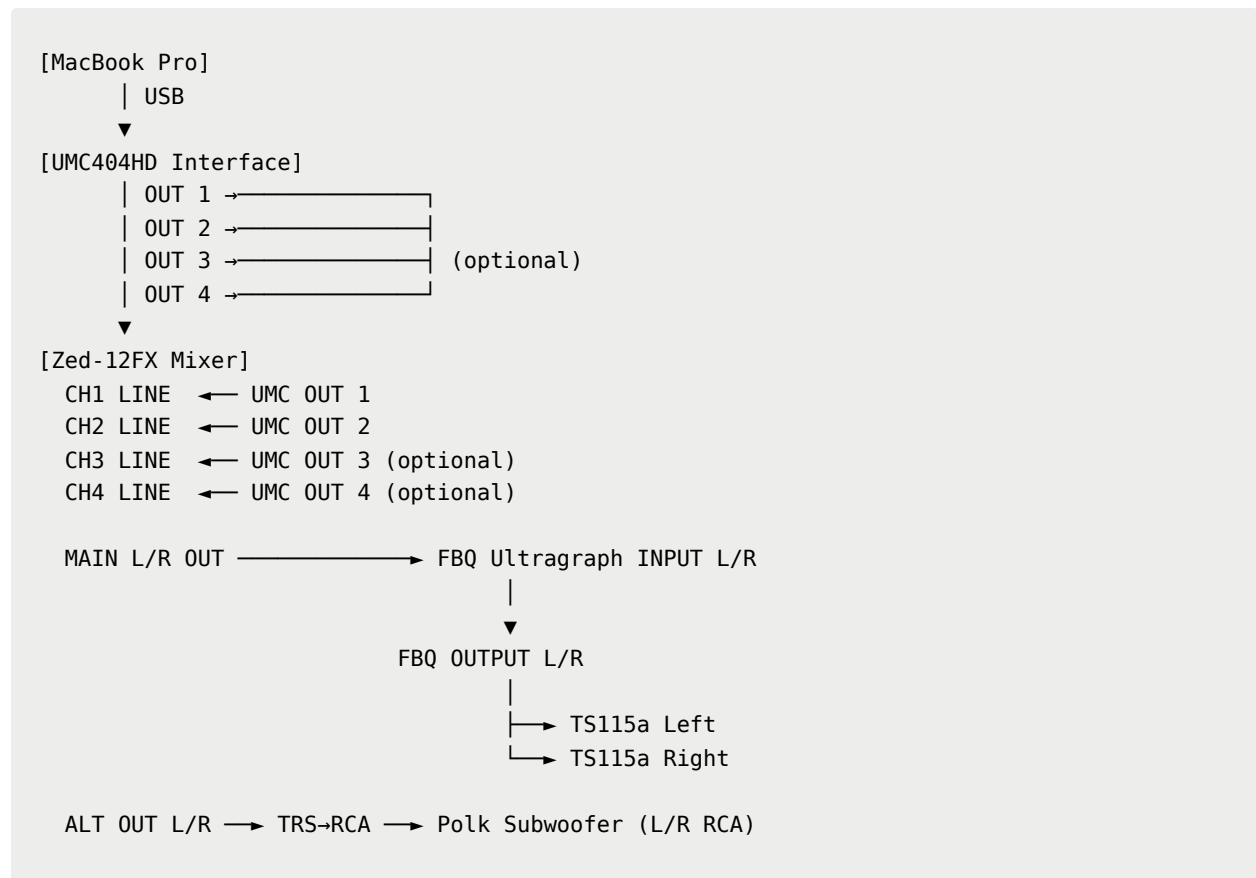
This gives you a stereo print of your analog mix.

Explore this:

[analog\\_to\\_digital\\_capture](#)



## 4. Full Wiring Diagram (Text-Based)



# 🎤 5. Want me to draw this as a labeled block diagram or create a printable setup sheet?

Choose one:

block\_diagram

printable\_setup\_sheet

