The Science of Turntablism

Presented by
Jamie Simmonds, Steve Macatee & Steve Turnidge
and
The Pacific Northwest Section of the AES

Wednesday, February 8, 2017

Outline

- **Steve Turnidge - Introduction**
- **Jamie demos Turntablism**
- **Turntablism History**
- **DJing Evolution: Crates, Content…**
- **Gear Evolution: Turntables, cartridges, mixers, files, computers, OSes, USB Drivers**

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- ***Control Signal*** **- The audio signal pressed into the vinyl. Hint - it is not the music.**

Turntable Origins

Turntable Hi-Fi

Turntable DJ of Yore

The Dream Console of 1975

The perfect choice for mobile DJs

Turntablism

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- **Can't manipulate live audio**
- **Physical manipulation - tough to edit songs on-the-fly**
- **Equipment quality variation in venues = trouble**

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  - **PC, Mixer, Turntables, outboard & software FX, Loops, Multitrack…**
  - **Manipulate recorded video**

Computer file solutions

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    - **Stanton product first, then evolved with software help from Native Instruments (NI) into:**
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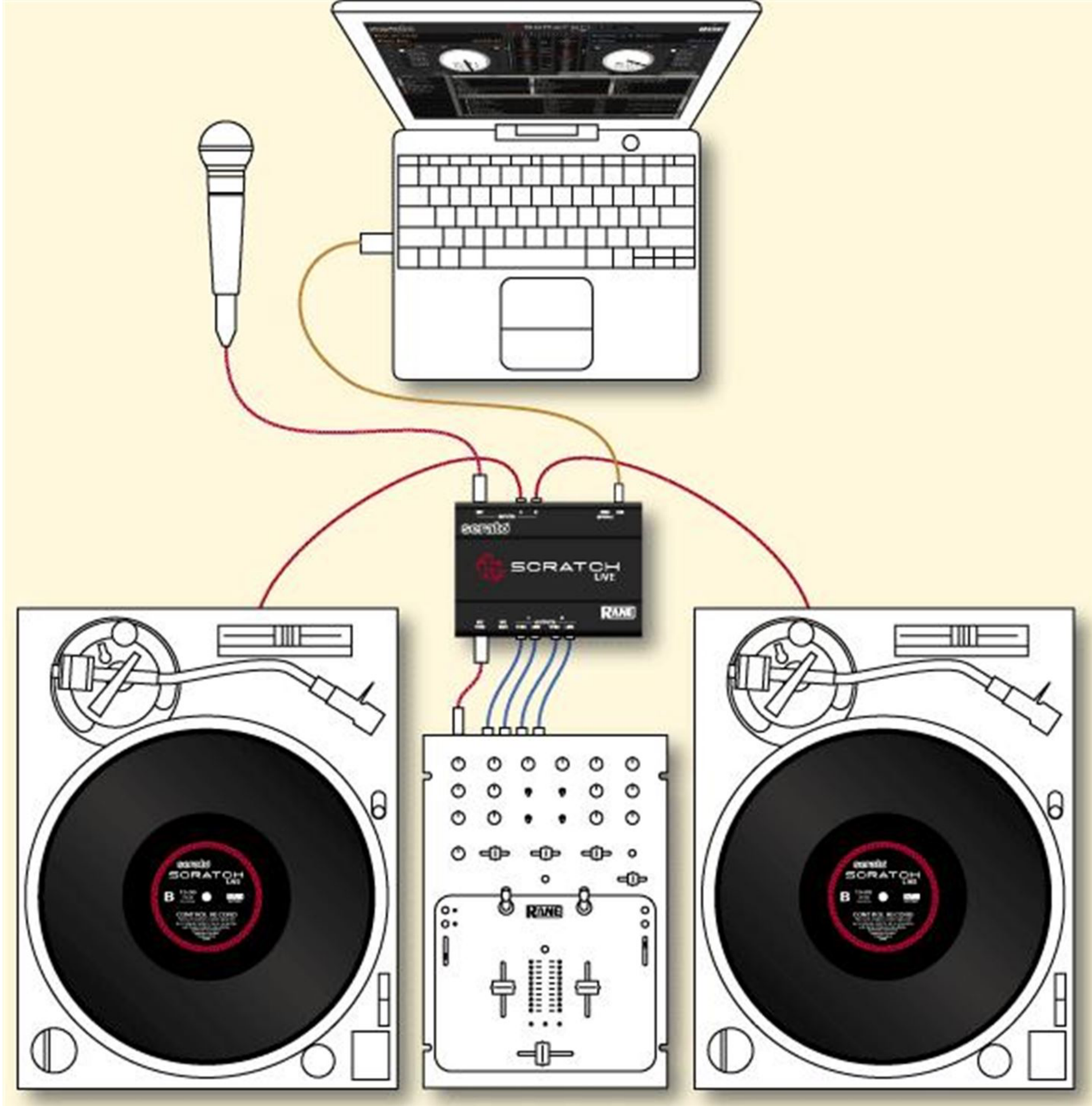
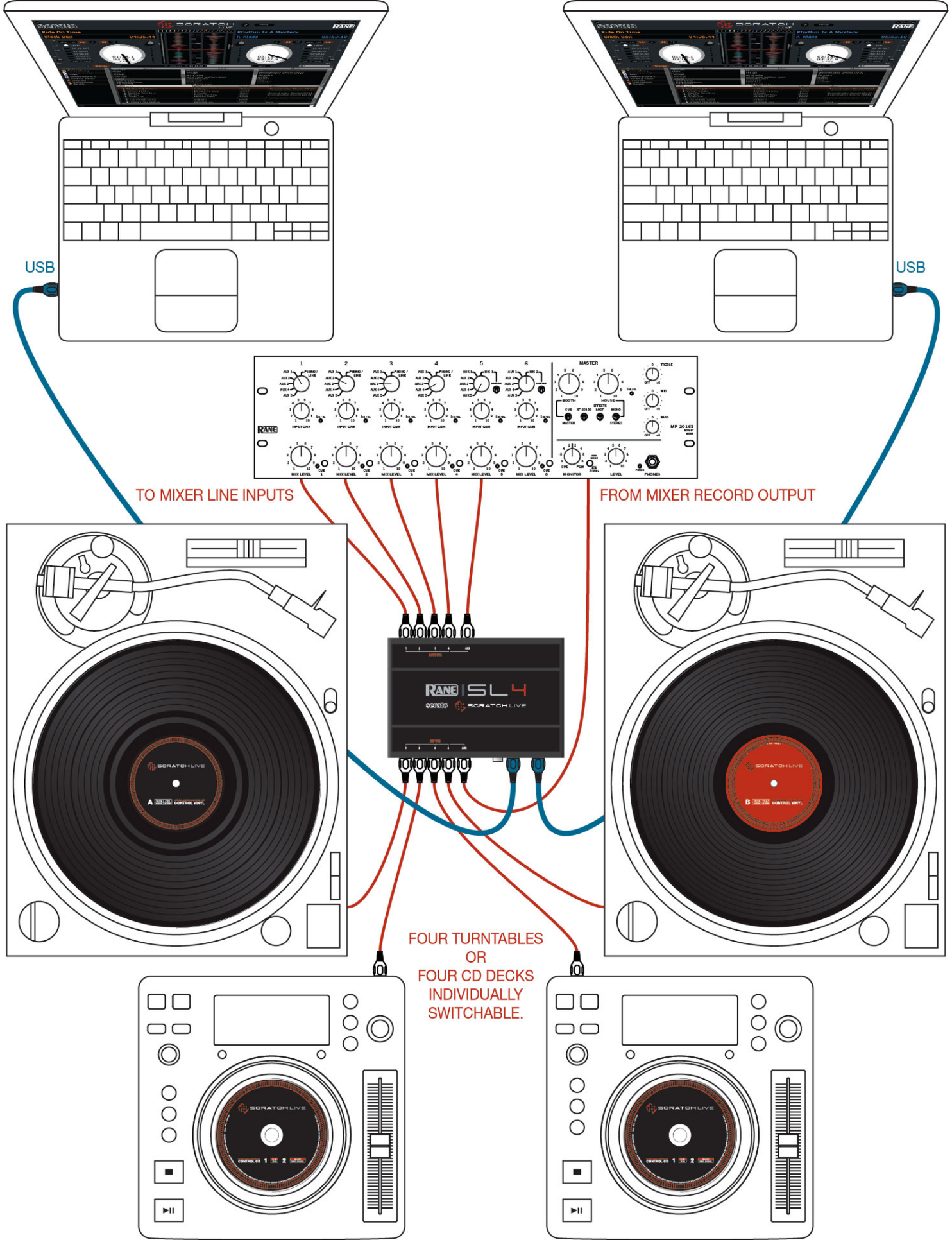
- **Others:**
  - **Serato Scratch Live >> Serato DJ**
  - **More: Virtual DJ & Mixxx & Deckadance…**

Basic Setup #1

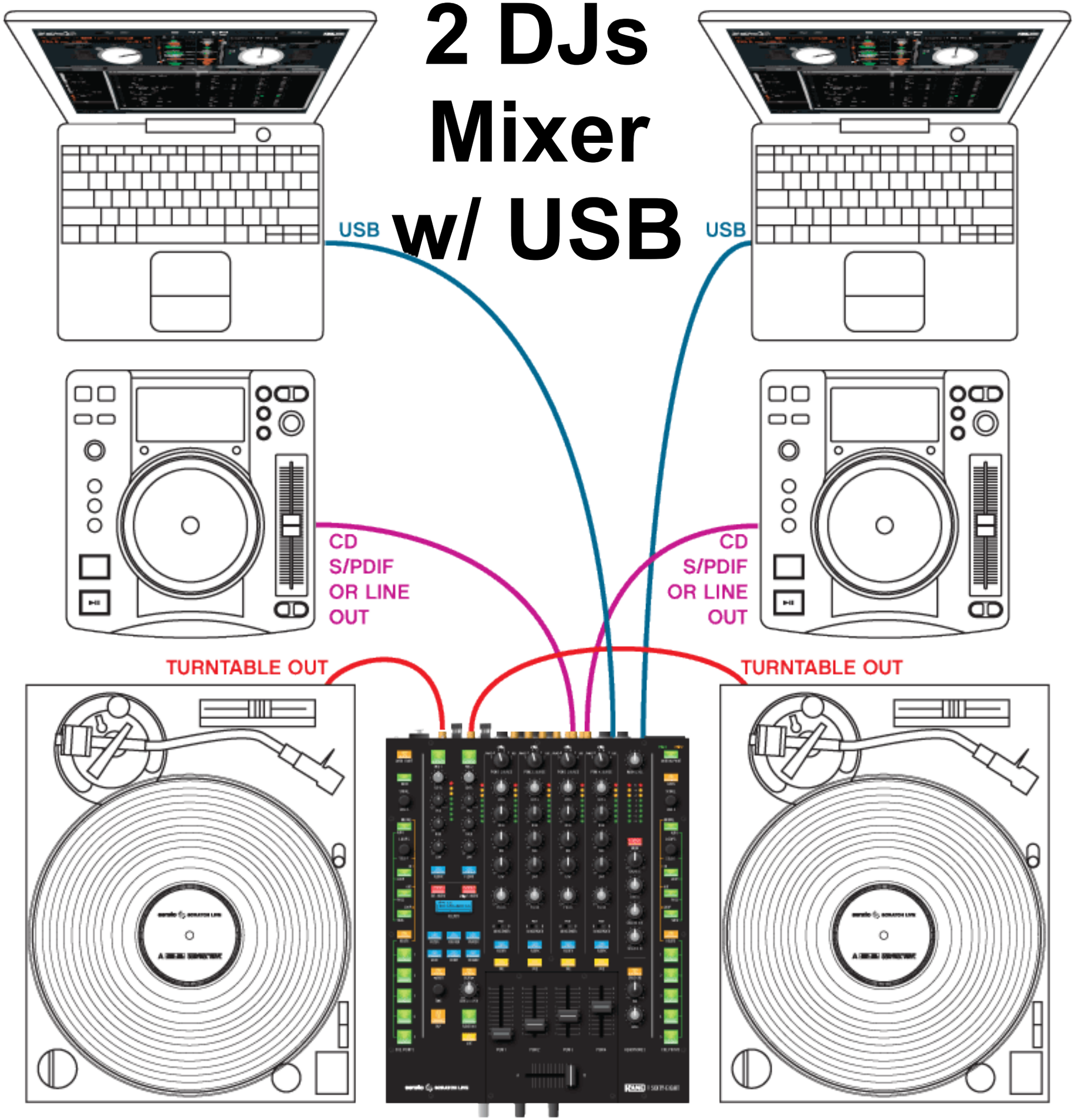
Round Trip Latency from 7 to 10 milliseconds



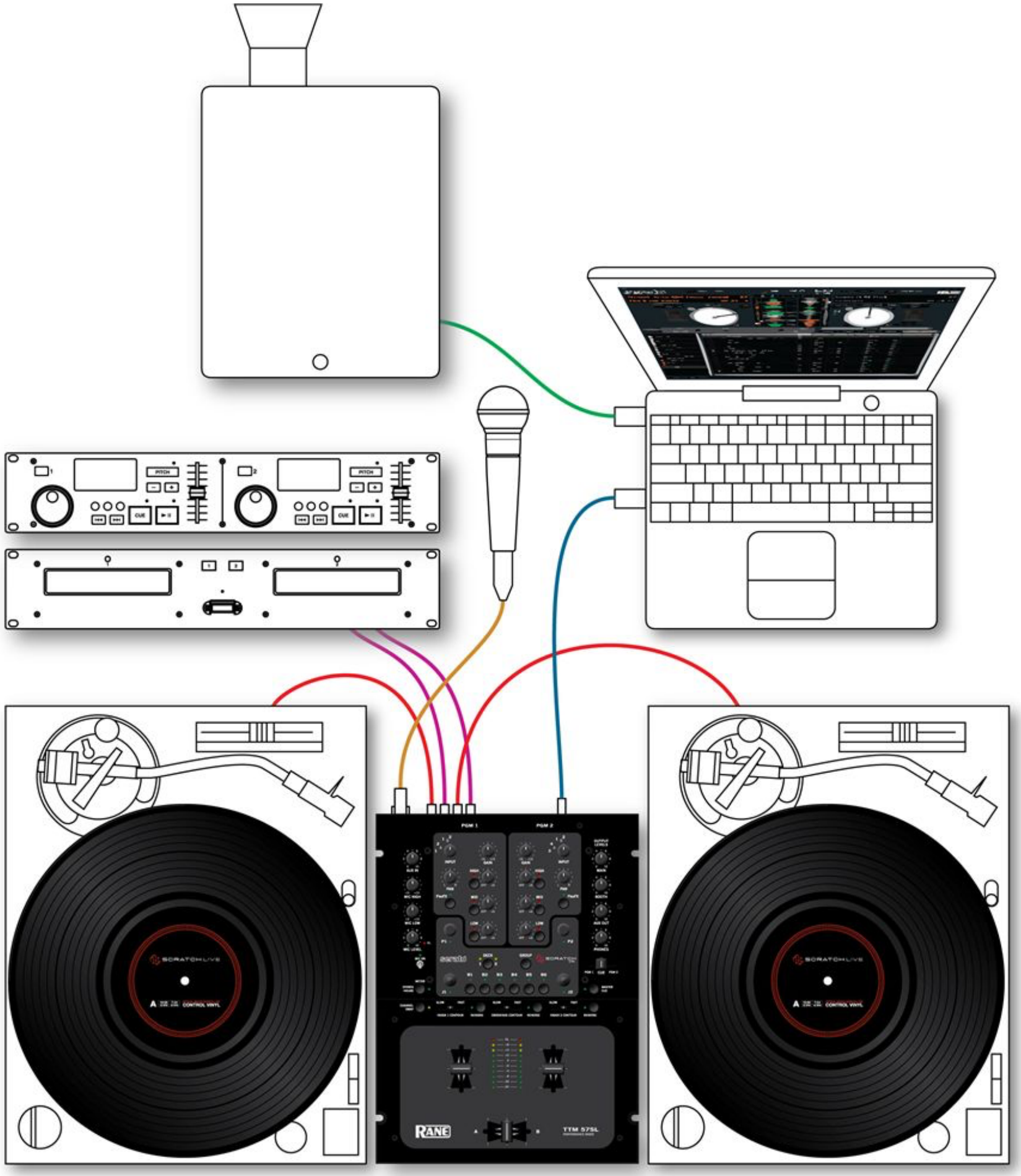
Setup #2 2 DJs


USB
USB
TO MIXER LINE INPUTS
FROM MIXER RECORD OUTPUT
FOUR TURNTABLES
OR
FOUR CD DECKS
INDIVIDUALLY
SWITCHABLE.

2 DJs Mixer w/ USB



Add Video Support

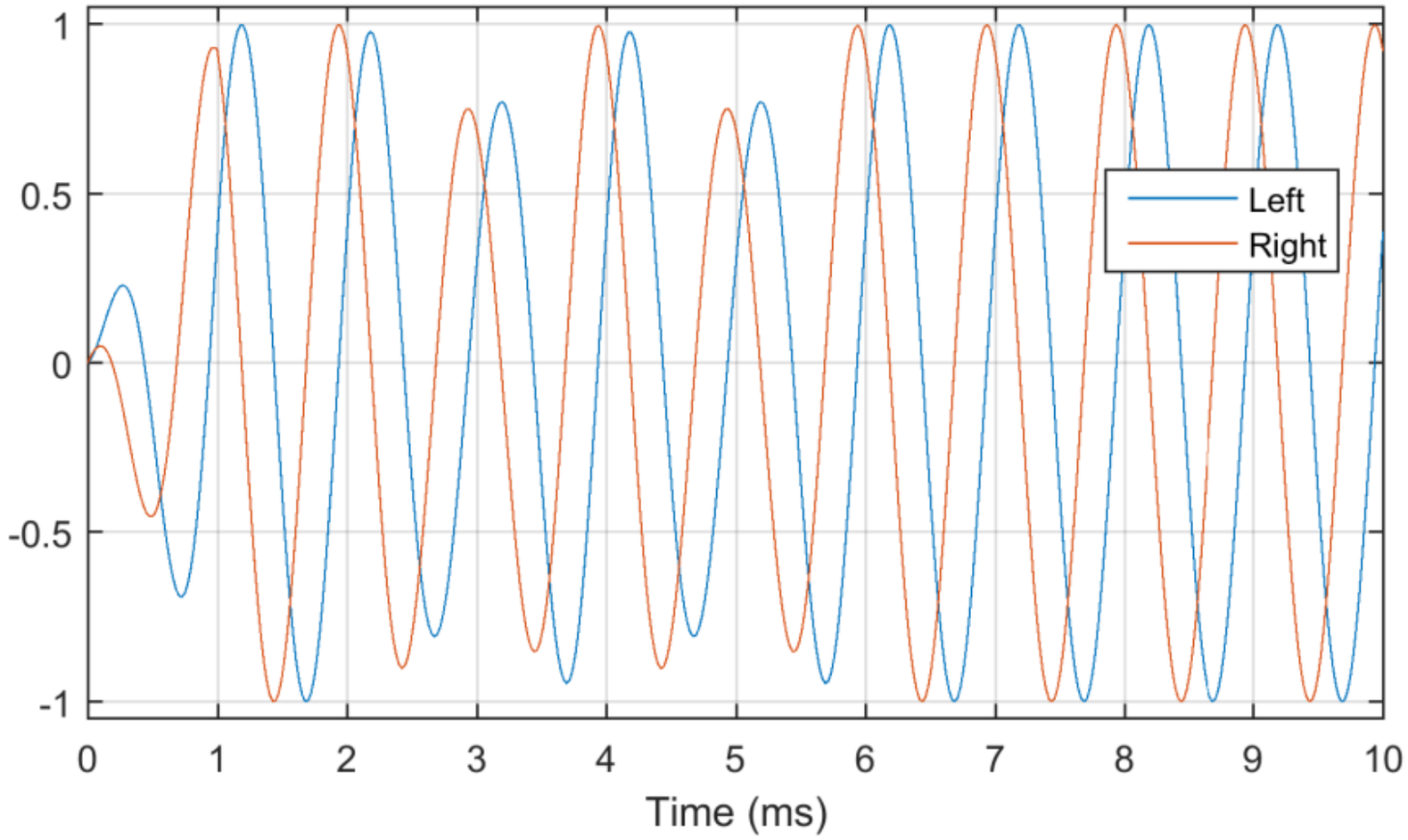


Control Vinyl

- **Time Code Method**

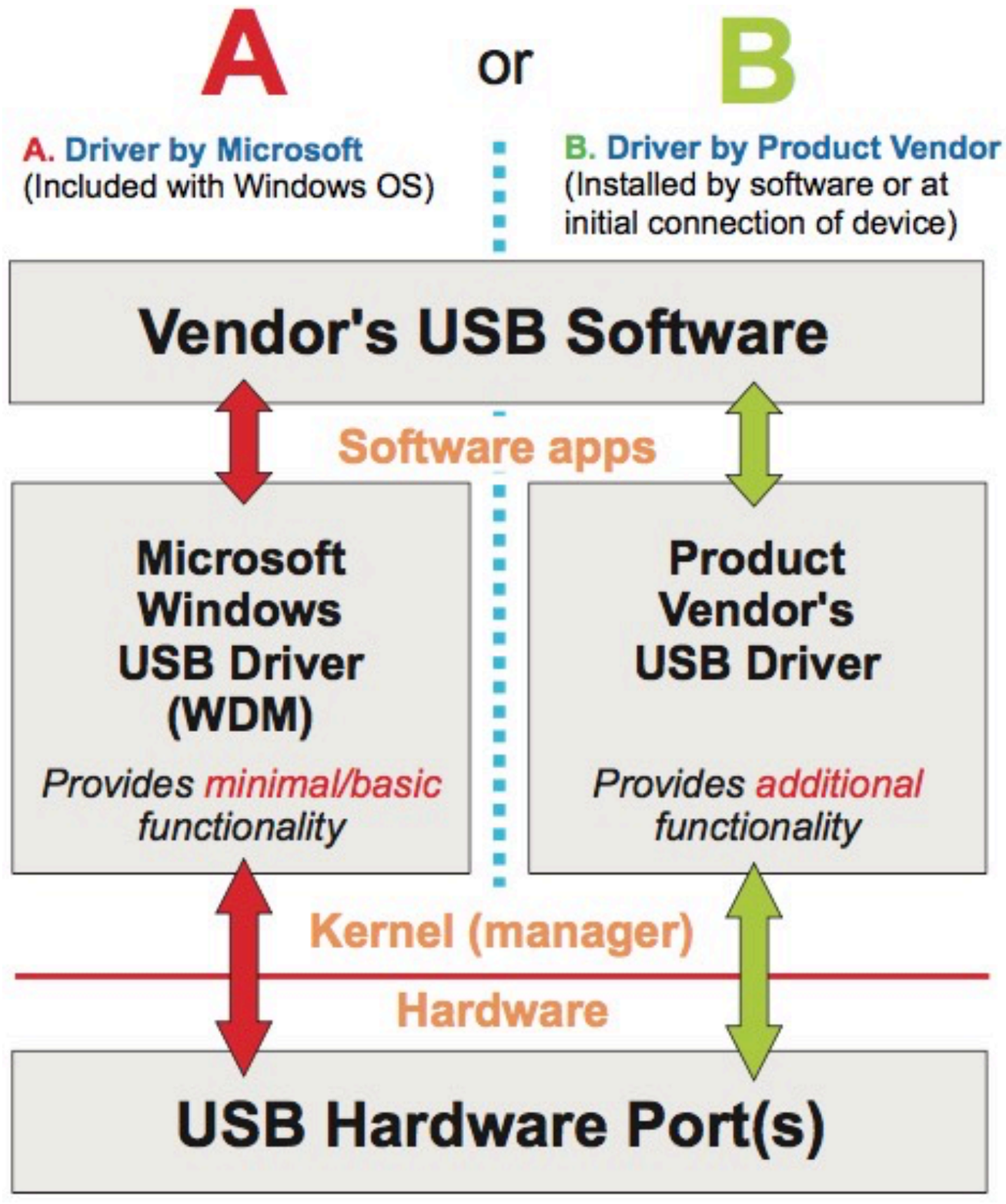
- **Noise Map Method**

Serato Control Signal
stereo



Windows USB Drivers

Mac computers use Core Audio drivers



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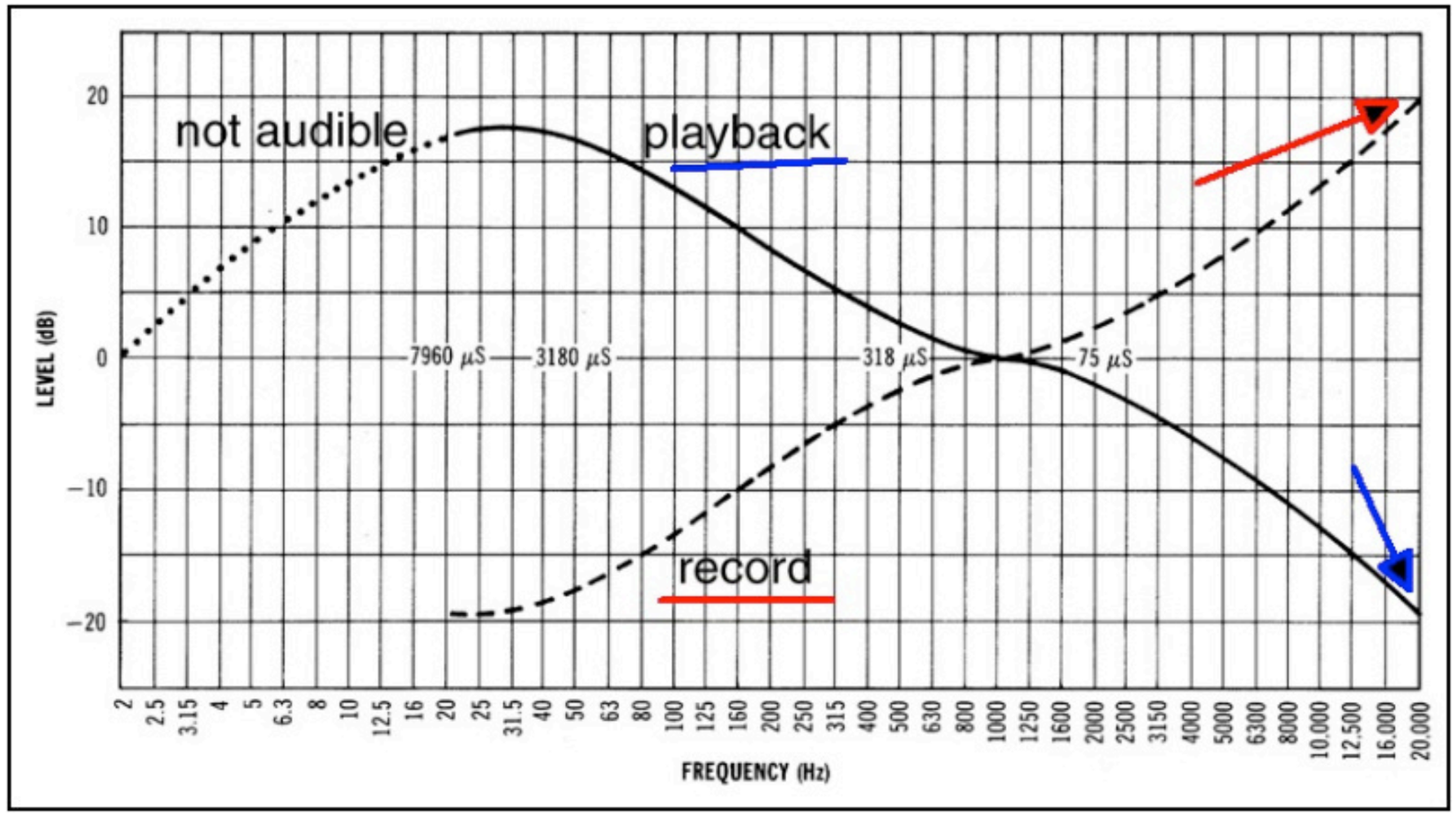
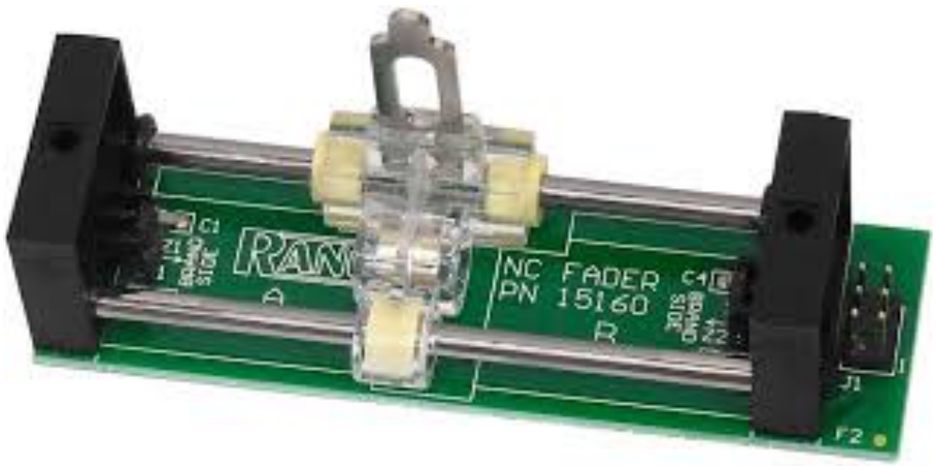
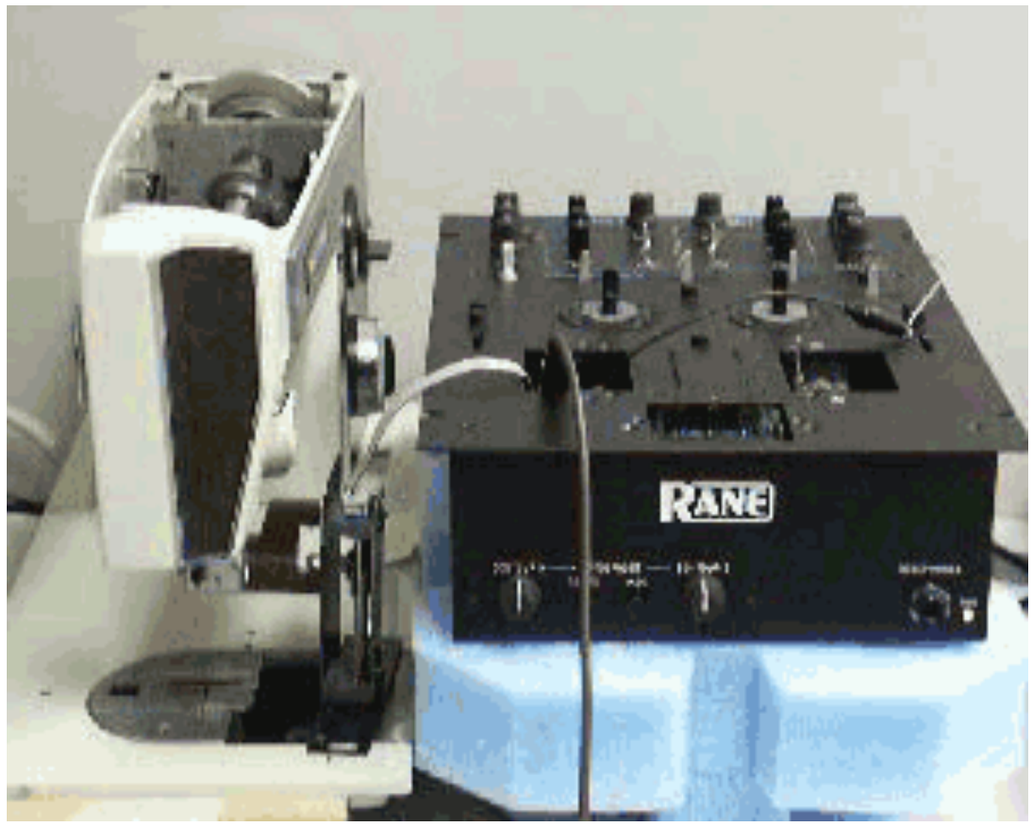


Crossfaders

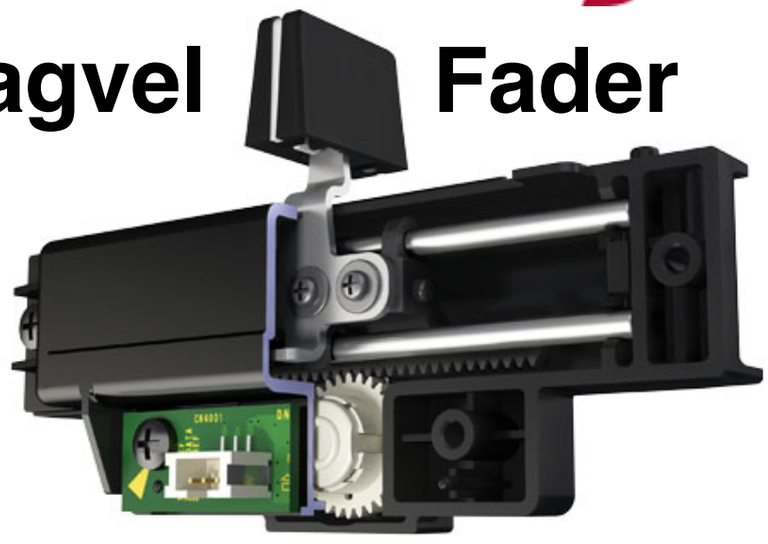
RANE





Pioneer DJ

Magvel Fader



behringer

X1 Optical Fader

Crossfaders

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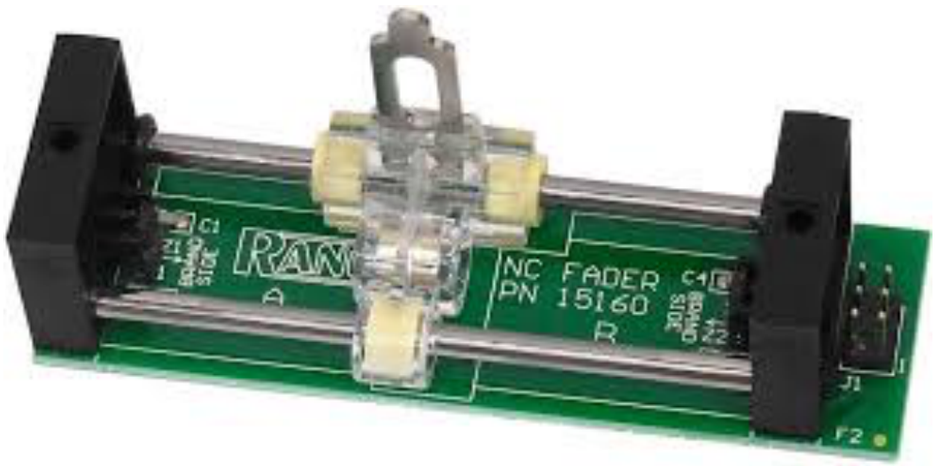

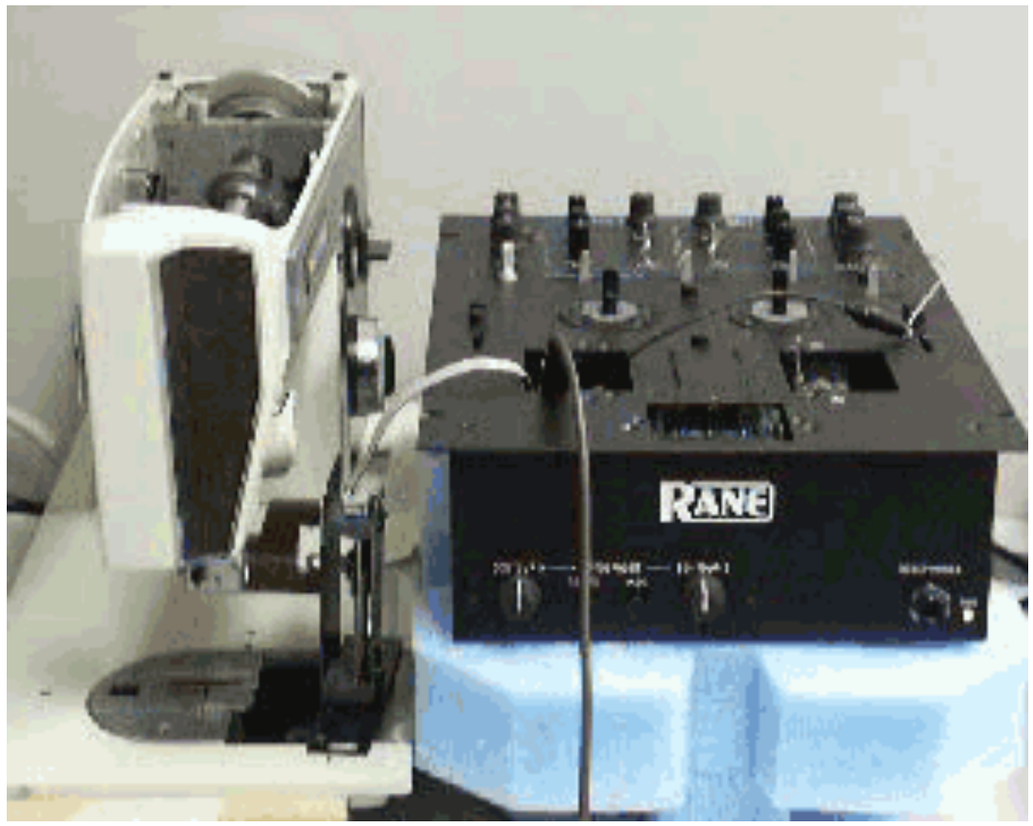

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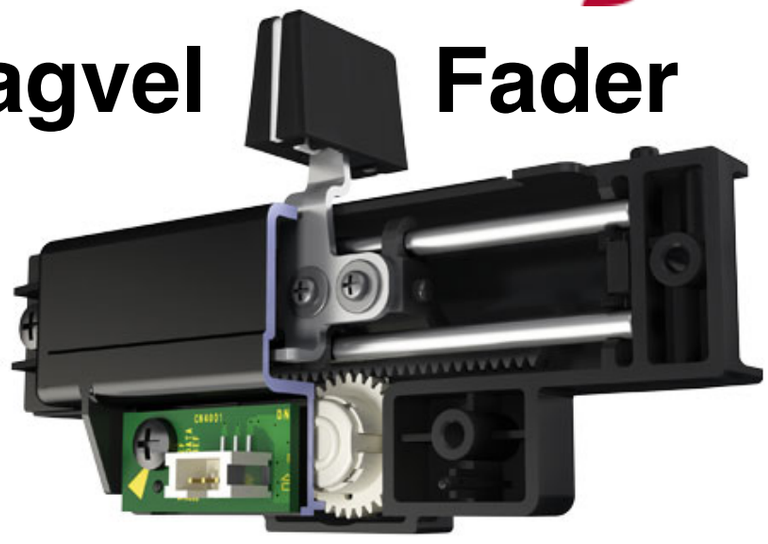

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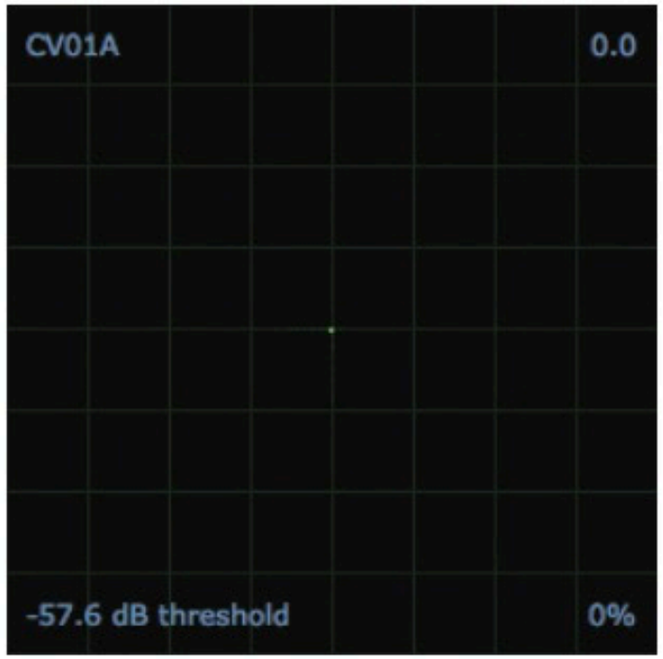
- Hardware Issues:
  - Tone arms, cabling, rumble, noise…
- Vinyl Issues
  - Absolute vs Relative Mode
  - Scope view finds: Burn/Wear. Dust.

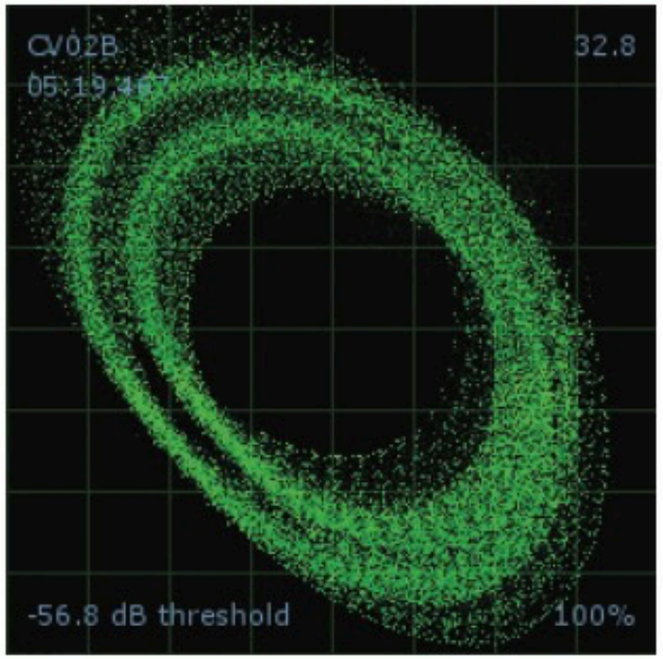
Scope Reading and Fixes

Most of the problems that occur with Scratch Live can be attributed to it not getting a good reading of the control signal from your records or CDs. These examples show what the scopes on the setup screen can look like to help solve possible problems. Some problems cause similar looking scopes, e.g., if your scopes look like the Dusty Needle one, the cause could be a damaged needle.

GOOD SIGNAL - Clean signal with 100% tracking.

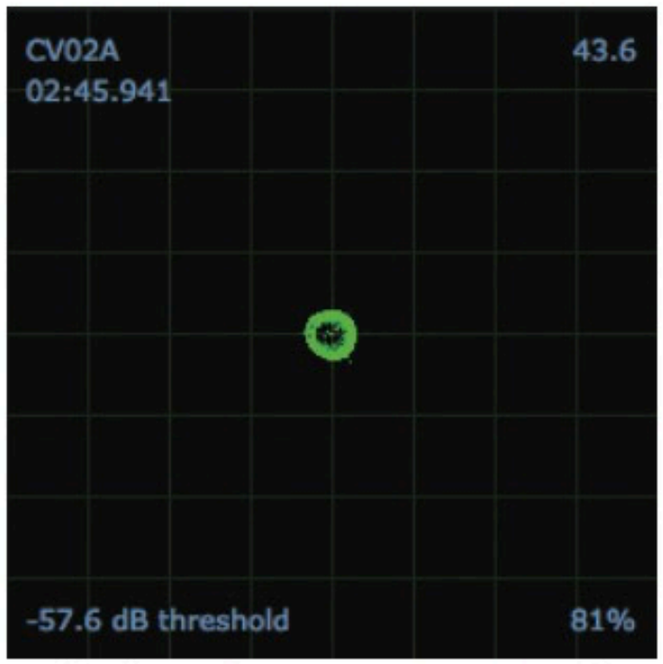


NO SIGNAL - Scratch Live is not receiving any control signal - check your connections.

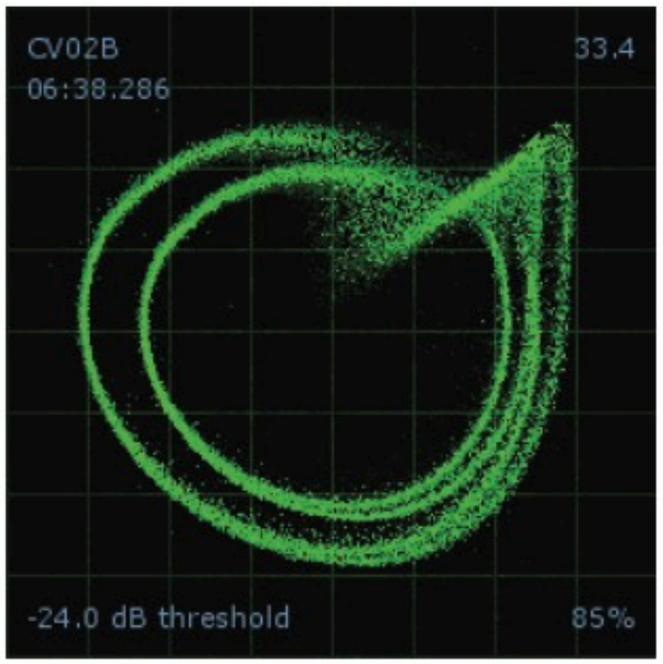


BAD TURNTABLE VIBRATION - Bass is reaching the stylus. Try to isolate the turntable from the speakers.

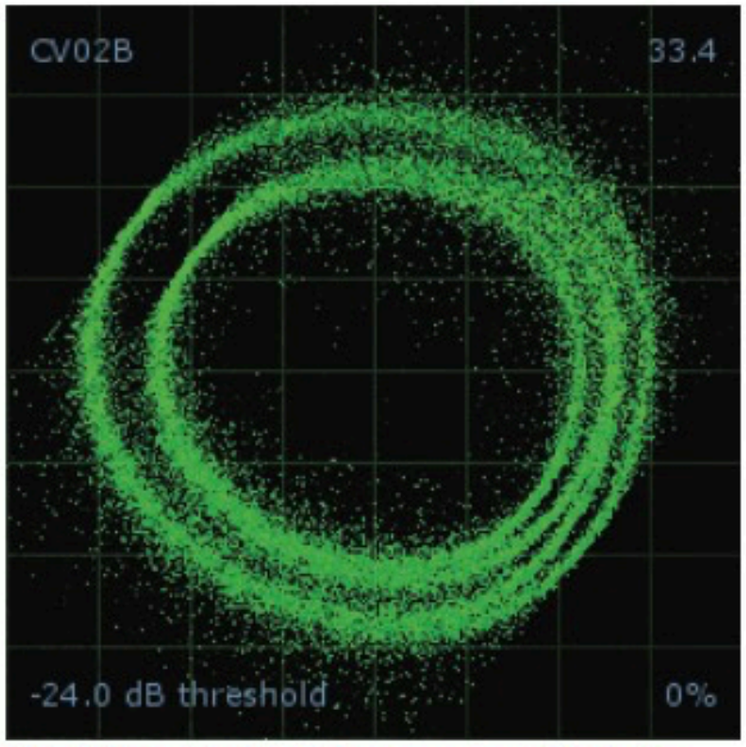
CD PLAYER INTO PHONO INPUT - The SL3 is set to receive a phono level input. Switch to the correct setting on the SL3.



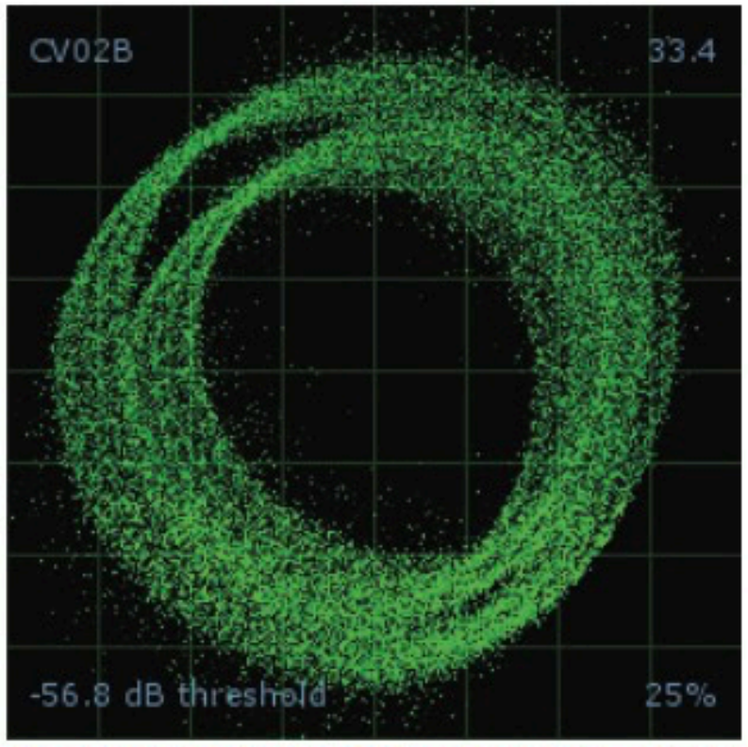
PHONO INTO LINE INPUT - The SL3 is set to receive line level input. Switch to the correct setting on the SL3.



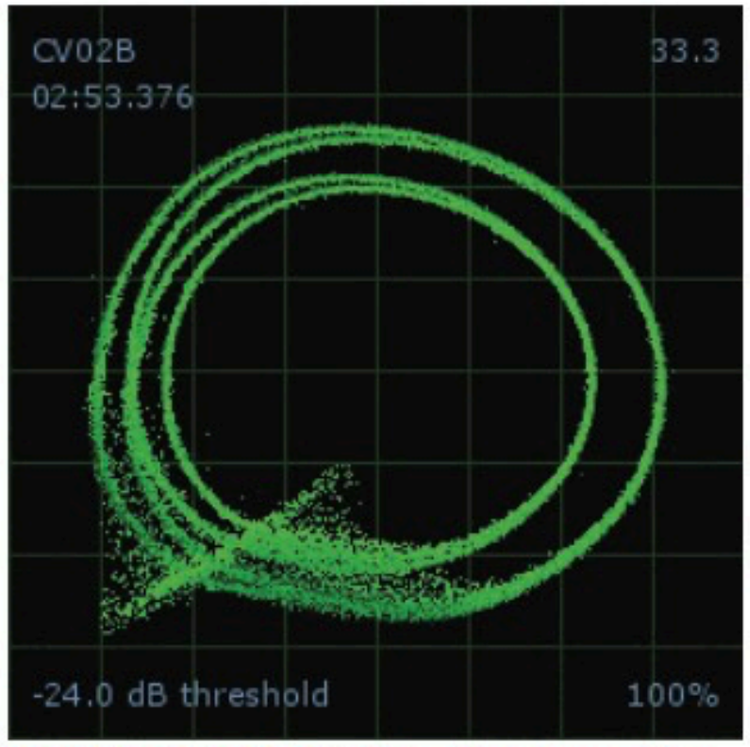
DUSTY NEEDLE - Dust is preventing the stylus from tracking the groove correctly. Clean your needle and the control vinyl.



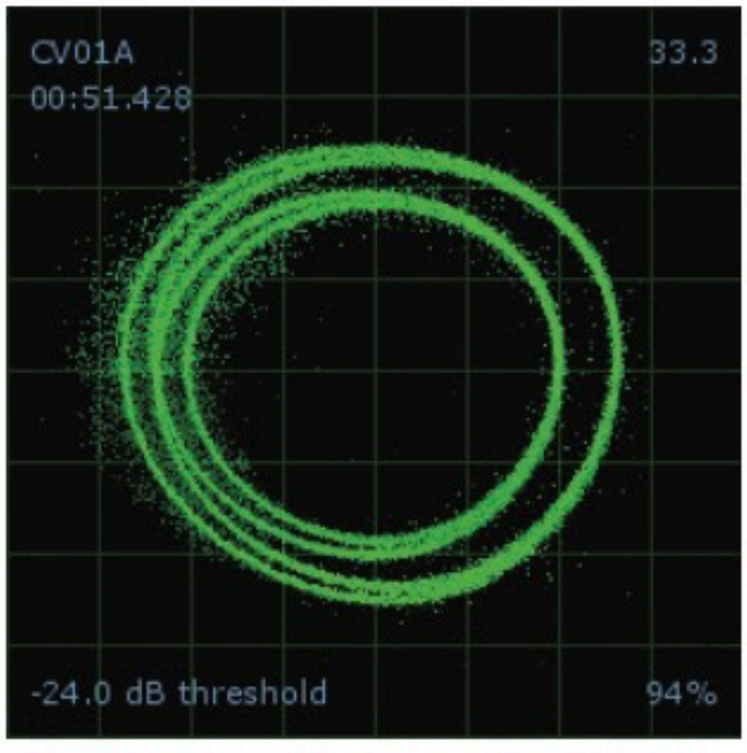
UNEARTHED - Very susceptible to interference. Attach the turntable's ground wire to the SL3 or mixer.



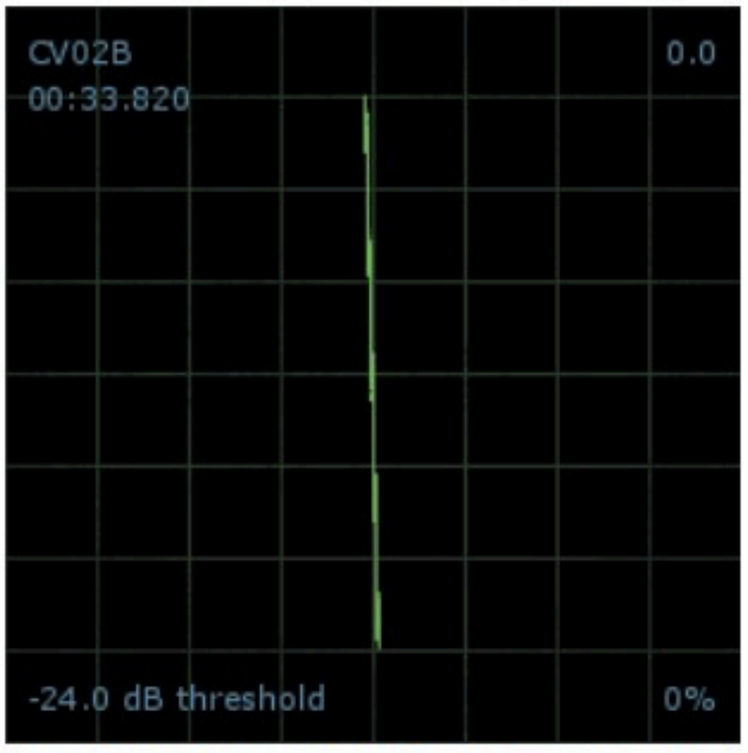
USING PIGGYBACK CABLES - Picking up lots of noise, barely tracking. Connect your turntables directly to the SL3.



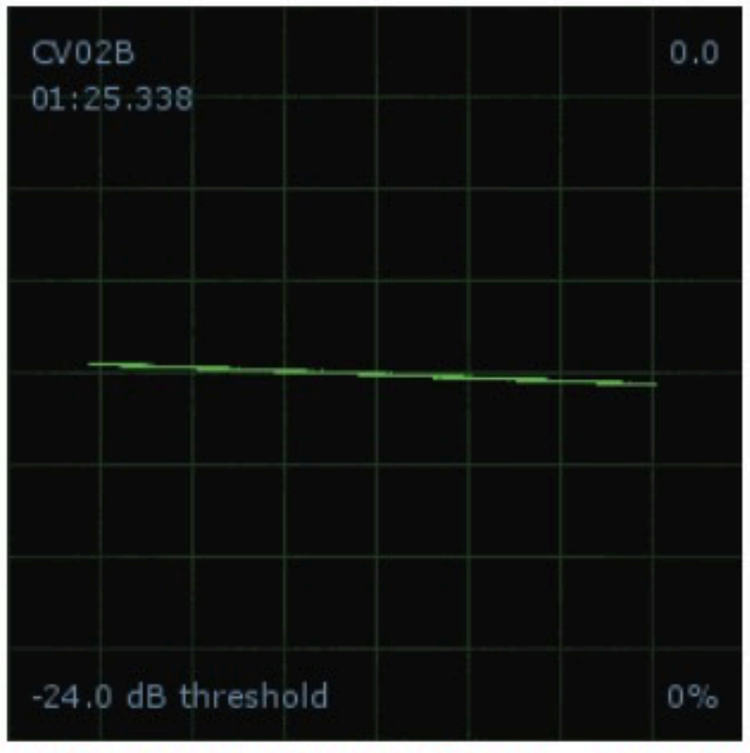
DAMAGED NEEDLE - Try re-seating, cleaning or replacing your stylus.



RECORD BURN - This section of the control vinyl has been worn. Swap sides or use the track start offset.



LEFT CHANNEL MISSING - The signal from the needle is not reaching the SL3. Check the cable and cartridge wiring.



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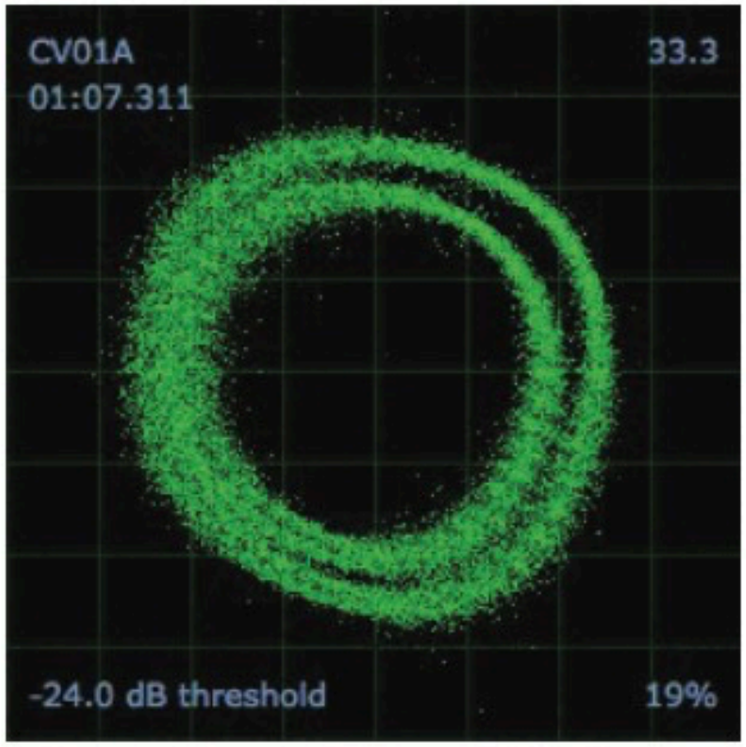
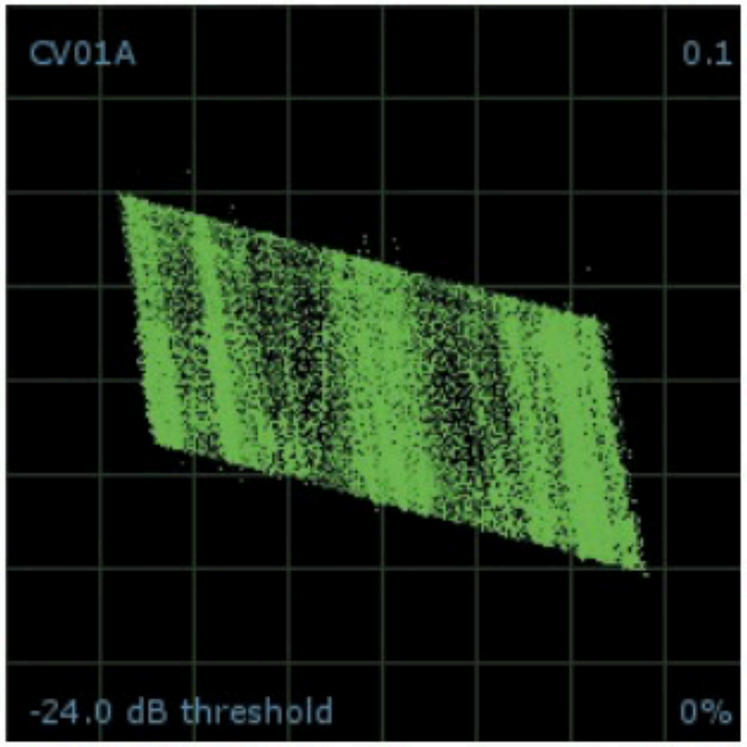
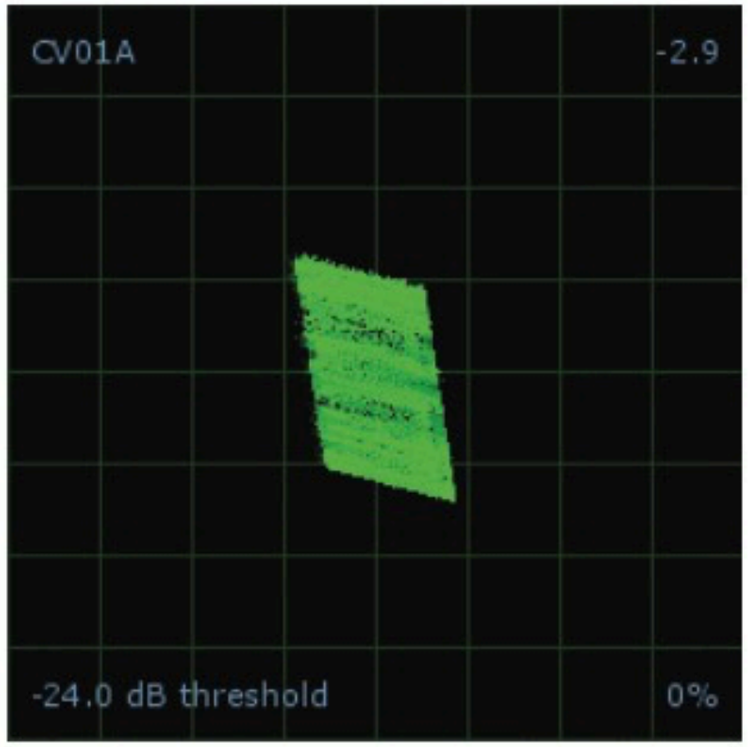


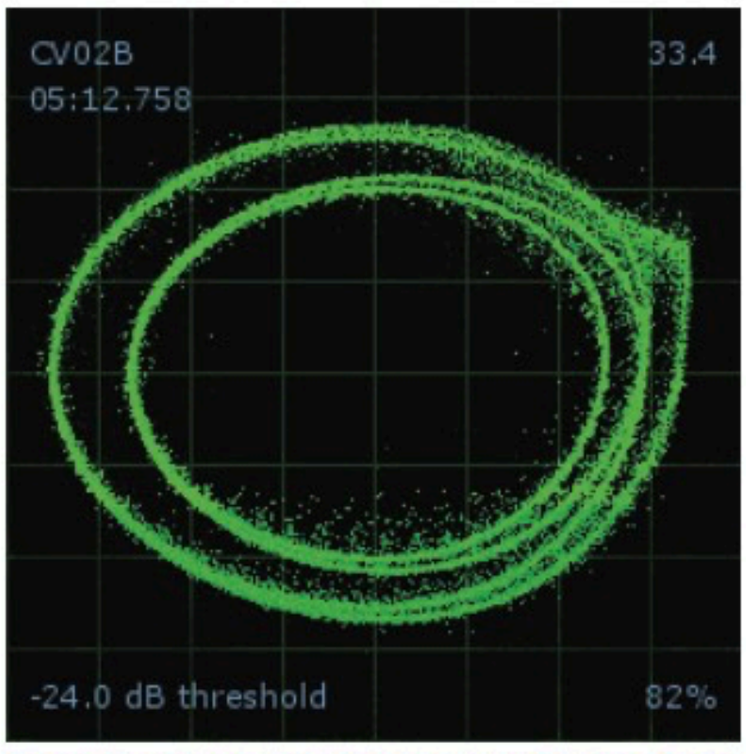
BAD RECORD BURN - Your record is badly worn and Scratch Live is unable to track. Swap sides or get new vinyl ASAP.



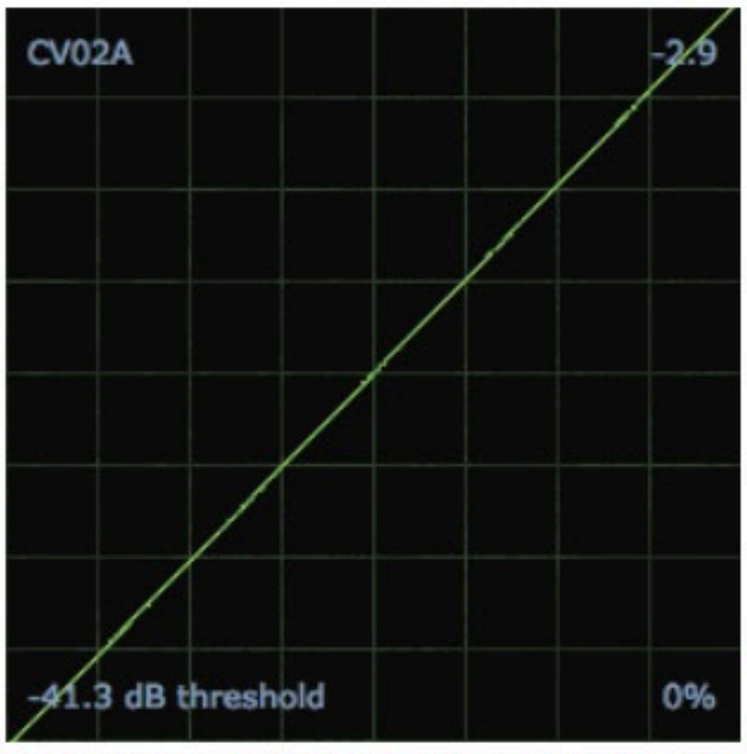
LEFT CHANNEL IS NOISE - Left signal has been lost with a noisy loose connection.



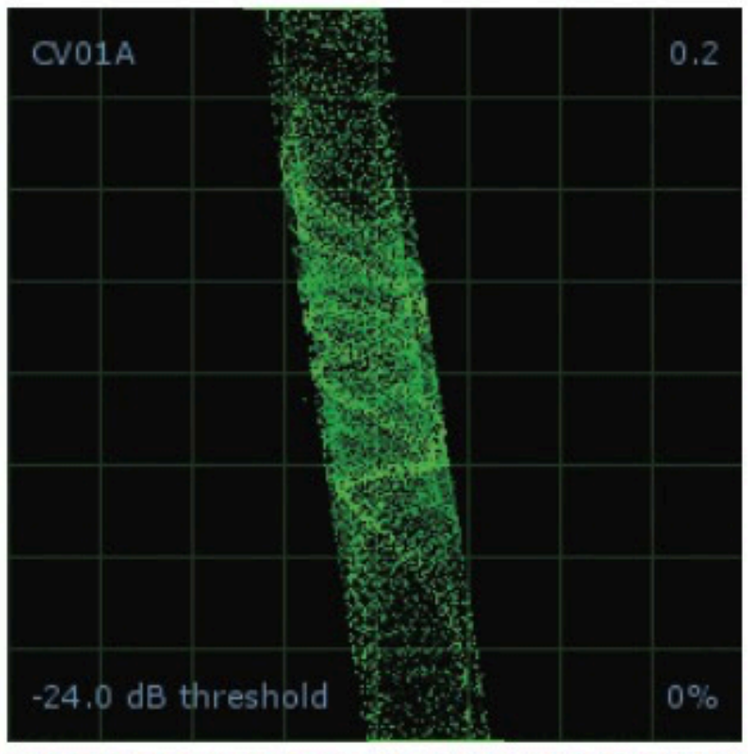
RIGHT CHANNEL IS NOISE - Right signal has been lost with a noisy loose connection.



TONEARM IS SLIGHTLY TOO LIGHT - Susceptible to dust and vibration. Adjust the tonearm.



SIGNALS ARE SUMMING TO MONO - Left and right signals have been combined into one somewhere in your signal chain.



RIGHT CHANNEL IS INTERFERENCE Right signal is lost with a noisy loose connection and left channel crosstalk.

THANK YOU