# Amplifier Comparison Event

## Review by David Das

The Arizona Audio Video Club hosted an Amplifier Comparison Event on Saturday, April 26, 2025 that turned out to be educational in more ways than one.

Club President John Harvell, Club Secretary David Snyder, Club Treasurer Paul Johnson, Joe Roberts, and Ravi Velnati came in early around 9am to set up the speakers, amps and music streaming gear in the Parish Hall of the Faith Lutheran Church.

This expansive rectangular space measures 60’ x 26’ with a ceiling height of 9.5’.

## The Speakers

John suggested placing the FINAL Model 5 Hybrids wide apart based on his experience with his own MartinLogan CLX electrostatic towers. He positioned them 6’ away from the side walls and 7’ away from the front wall leaving 13’ of separation between the speakers.

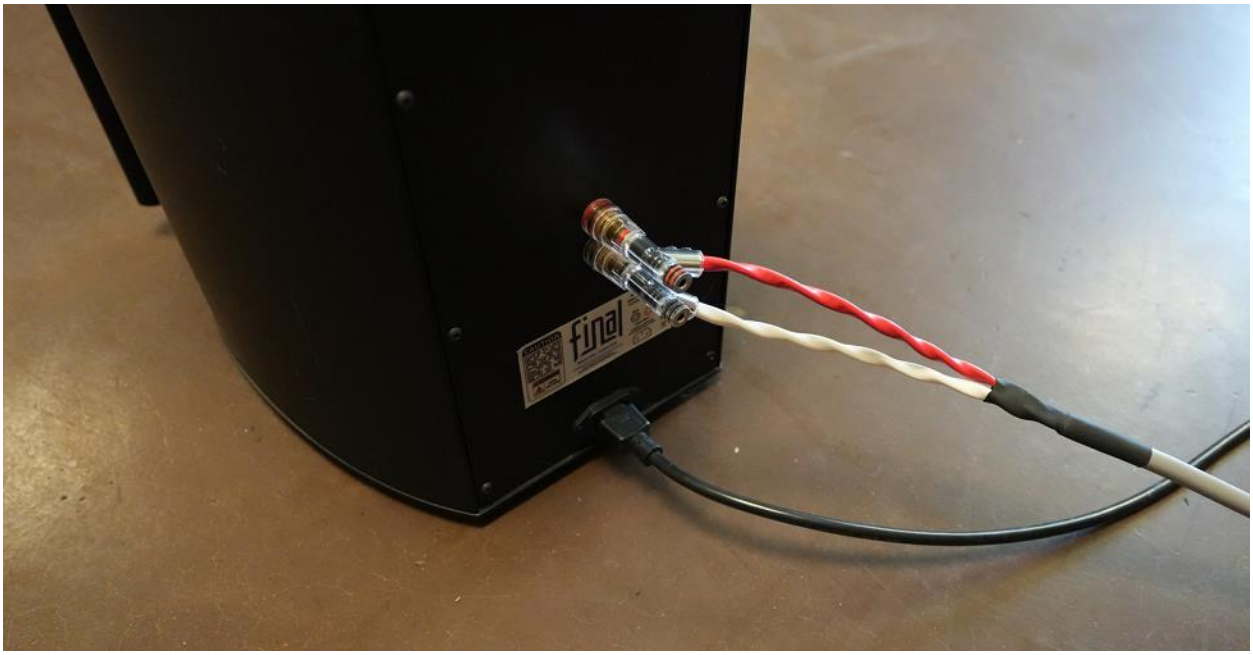
This wider spacing turned out to be a critical factor in opening up the sound stage. The M5s sounded better than what I had heard at Ravi’s home and Greg’s Audio Shrine. Ravi was happy.

Electrostatic speakers need a lot of breathing room to shine. They radiate sound from both the front and rear in a dipolar pattern. They need the space to energize the room.

While they are enjoyable to listen to anywhere in the room, they sound magical when seated exactly on axis. The speakers disappear leaving you with a wall of sound with convincing imaging and depth of sound stage.

This is the M5 Hybrid Model with a passive 10” subwoofer. The panel hands off to the 10” woofer at 100Hz which in turn plays down flat to 40Hz.

Paul hand made a pair of extra-long Canare 4S11 Star Quad speaker cables for this event and terminated them with locking banana plugs he purchased from Ali Express.



## The Amp Contenders

The following 3 power amplifiers were compared driving the FINAL Model M5 Hybrids.

Coda Continuum No. 8. Class A/B High Current Amp specially designed to drive Electrostats.


Benchmark AHB2. Class A/B Bridged in Mono Mode. Ultra-low noise.

Topping B200 Class A/B monoblocks.

## The Streaming Setup

David Snyder was the brains behind setting up the streaming components that worked flawlessly.

All the tracks were streamed from Qobuz via ROON.

These were the components used in this portable streaming solution listed in the sequence they were connected:

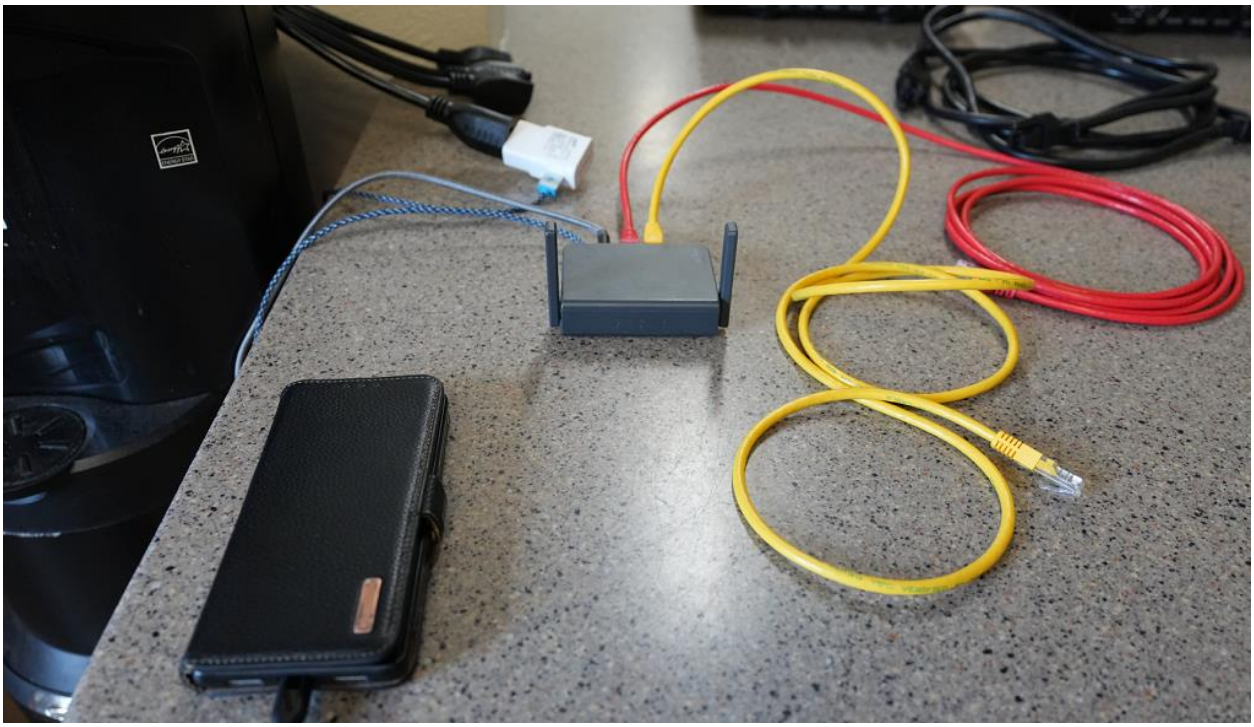
- David's smartphone on T-Mobile (decent coverage at the Church, around 2 bars out of 5)
- USB C to USB 3.0 Cable: Anker PowerLine+
- Travel Router: GL-AR750S-Ext
- 2 x CAT6 Ethernet Cable: Cable Matters 10Gbps Snagless
- Roon Server: GMKtec Mini PC NucBox G5 N97 (running Roon OS)
- Roon Network Bridge: Libre Computer Board AML-S905X-CC (Le Potato) 2GB 64-bit Mini Computer
- Roon Remote: Google Pixel Tablet running the Roon Remote app
- USB Audio Cable: AudioQuest 0.75 m Cinnamon USB-C > A
- DAC: S.M.S.L. D-6s
- XLR Cables: Straight Wire Virtuoso R2 Interconnect (pair)
- Analog Preamp: Topping Pre90/Ext90

While it's a lot of parts, the setup is pretty simple. After connecting his phone via a USB C to A cable to the travel router, he switched off Wi-Fi on the phone and enabled USB tethering. He then used the web UI on the travel router to enable tethering. At that point, anything connected to the travel router via Wi-Fi or wired Ethernet had access to the Internet via the USB connection to David's phone.

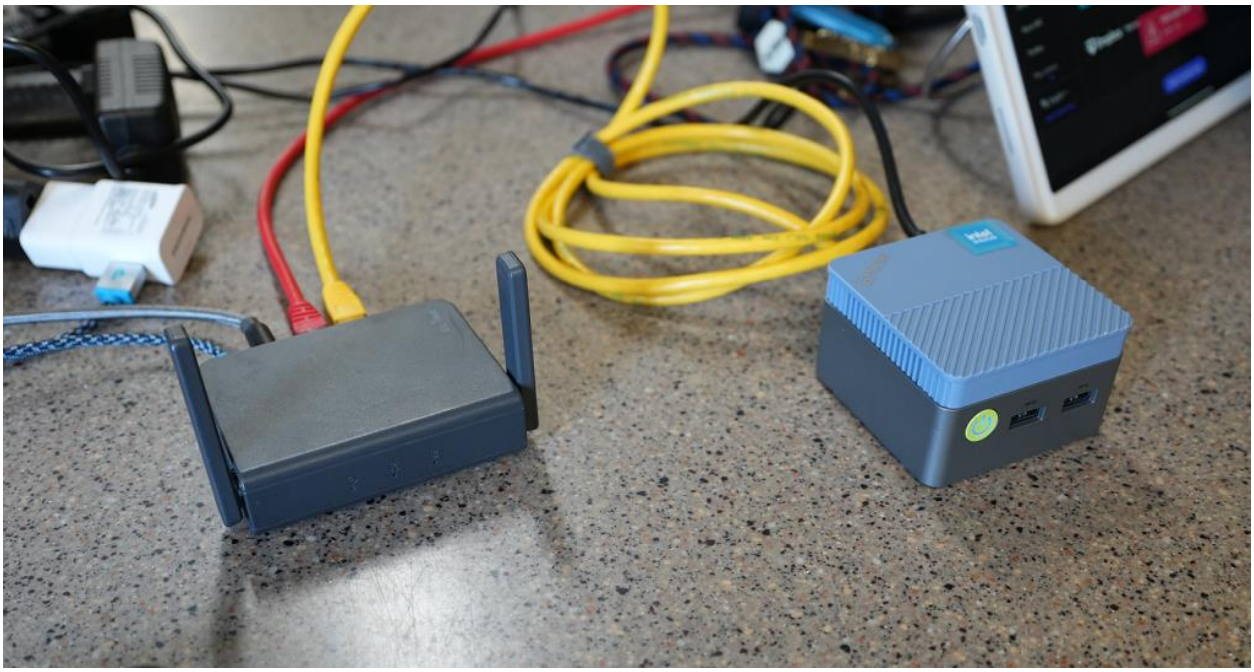
I was fascinated to observe how quickly David assembled his mobile streaming setup. This is an elegant and reliable solution that can be deployed to any of our club events. This was educational for me. This alone made it worthwhile to attend this event.

David later mentioned that this 4-hour streaming session consumed 5.4GB of his mobile data plan.

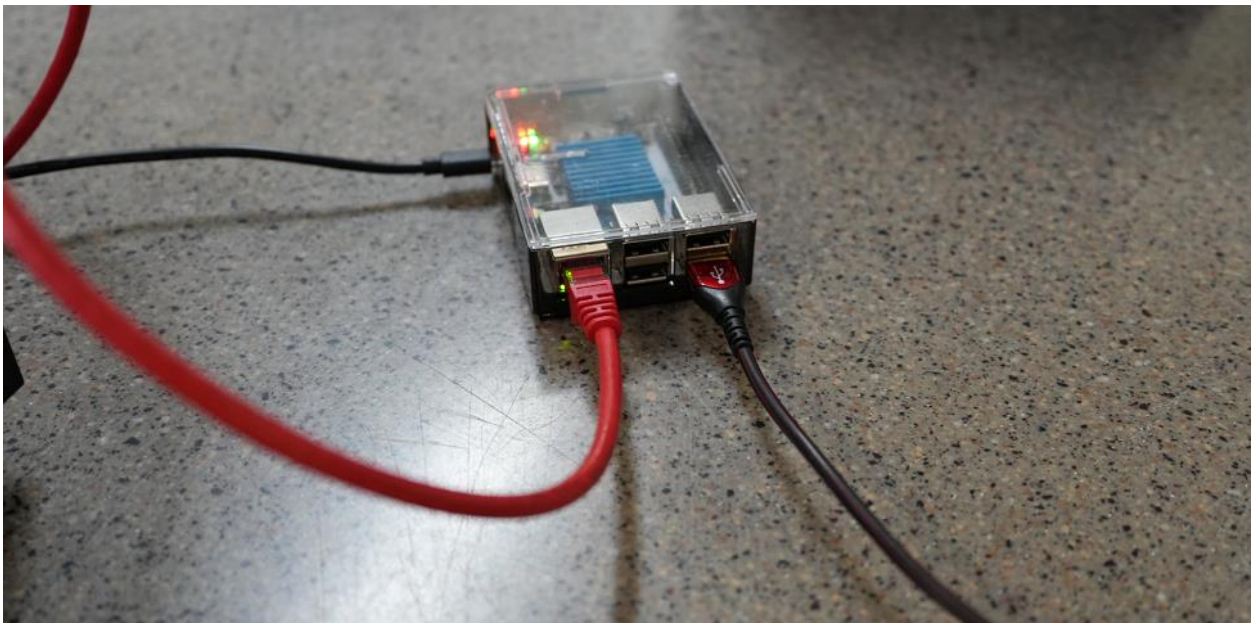
This is David's Smartphone, USB C to USB 3.0 cable and Travel Router connected to a pair of red and yellow CAT6 Ethernet cables.



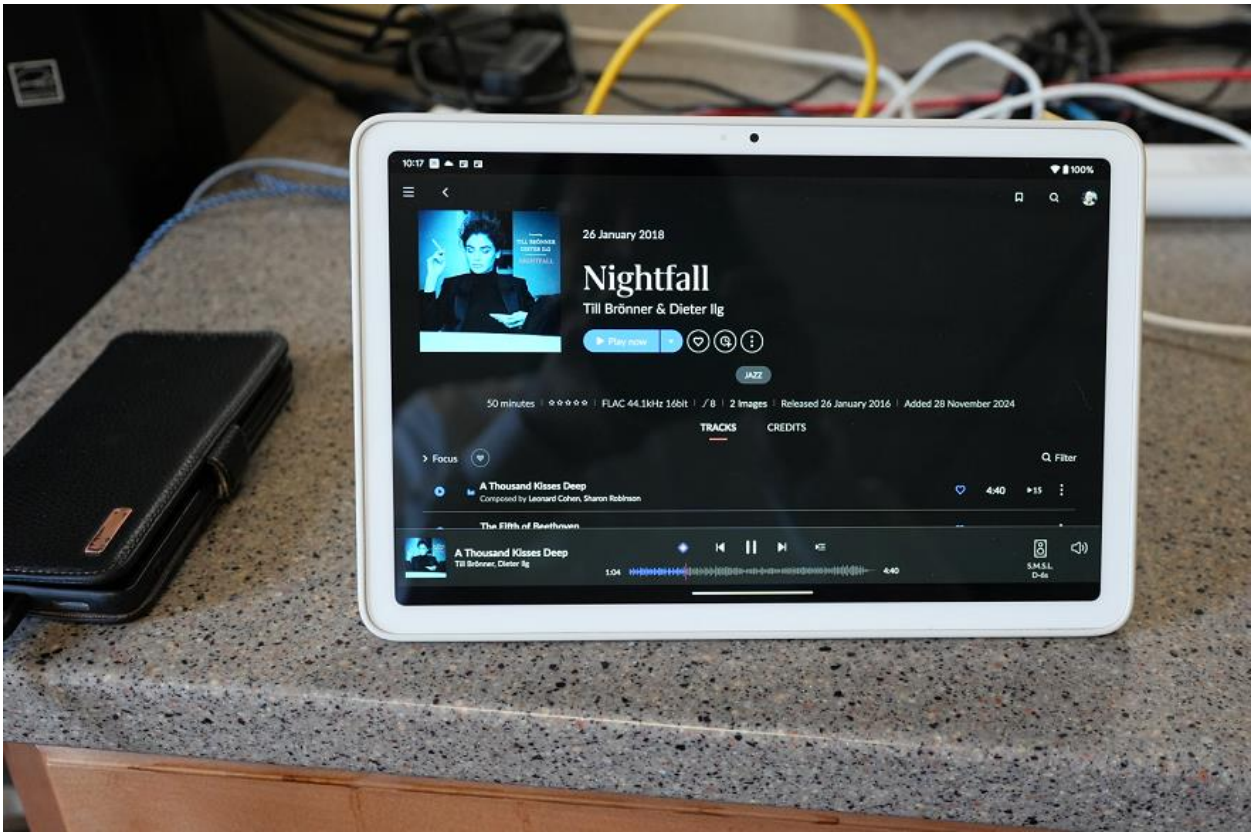
To the right of the Travel Router you see the Roon Server running on the GMKtek Mini PC.
It is connected to the Travel Router via the yellow Ethernet cable.



This is the Roon Network Bridge connected to the Travel Router via the red Ethernet cable. The USB Output cable feeds the DAC.



This is the Roon Remote running on the Google Pixel Tablet.

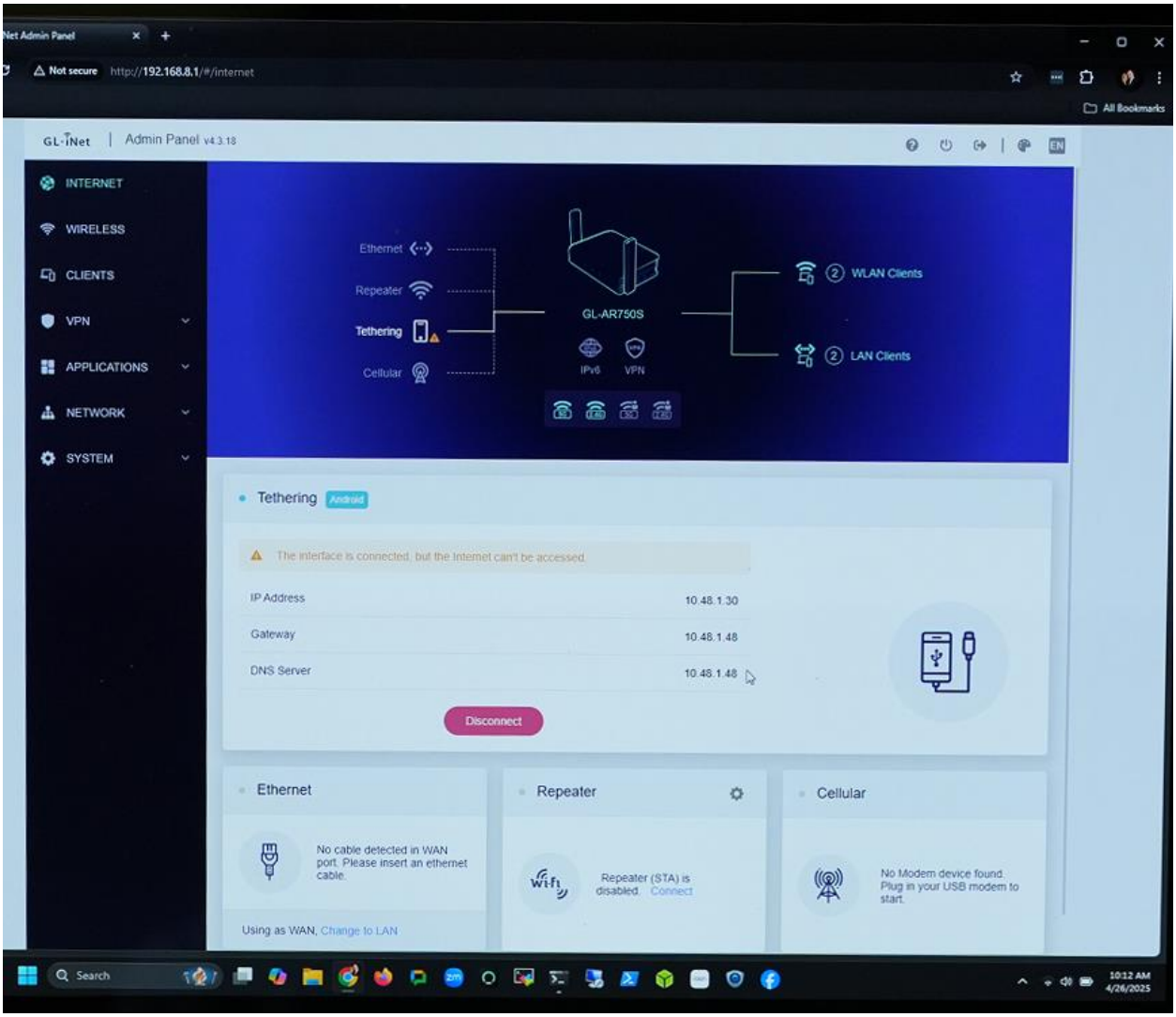


This is the S.M.S.L D-6s DAC sitting on top of the Topping Pre90 Preamplifier and Topping Ext90 Input Extender.


The cost of the D-6s DAC and the analog Pre90 Preamp/Ext90 Input Extender is $840. This combo outperforms everything else at this price point.

Next steps were to power up the Roon Server, Bridge, and Remote devices.

Moments later, they all showed up as clients in the travel router's Web UI.



## Level Matching the Amplifiers

None of the three power amplifiers in this comparison have level trims, so the dB of gain for each is fixed. Of course, they are all slightly different; but it's crucial for levels to be matched precisely when comparing components. Even a slightly louder component will tend to have an advantage.

David brought along his expensive iSEMcon EMX-7150 calibration microphone.


He connected this calibration microphone to his Topping E2x2 OTG USB Audio Interface.



To match levels, David exported a measurement sweep with timing reference from Room EQ Wizard to a WAV file. He then played that file in Roon (just the left channel) while recording it via REW, repeating the process for each amplifier. The three traces had exactly the same shape, differing only in levels. By zooming in, he was able to accurately measure the dB difference in levels among the three.

The gains of the Benchmark and CODA amps were 0.7 dB and 8.14 dB higher than the Topping, respectively.

Here you see the CODA in blue, Benchmark in green and Topping in orange.

To account for these gain differences, David created three DSP presets in Roon with "Headroom management" values as follows:

- AAA_Alpha (for the Topping): -1.00 dB
- AAA_Beta (for the Benchmark): -1.70 dB
- AAA_Charlie (for the CODA): -9.14 dB

Roon's DSP (Muse) uses 64-bit math for all DSP calculations with dithering, so these adjustments are completely transparent to the source.

Each time David and Paul switched amplifiers, they selected the Roon DSP preset that corresponded to the amplifier placed into rotation to ensure that levels were consistent throughout the event.

I thought this was a brilliant way to accurately level match all 3 amps.

## Amplifier Setup and Sequence

John prepared an Amplifier Comparison Questionnaire for every attendee.

**Amplifier Comparison Questionnaire**

**Instructions:** First, relax and enjoy yourself while listening to the various music selections. Second, please rate the following aspects of the sound for each amplifier on a scale of 1 to 5 (1 = Very Poor / Lacking, 3 = Neutral / Average, 5 = Excellent / Prominent). Feel free to add brief comments to elaborate on your rating. Note: There is no right or wrong answer.

| Characteristic | Amplifier A (1-5) | Amplifier B (1-5) | Amplifier C (1-5) | Description |
|---|---|---|---|---|
| *Bass:* | | | | Depth/Extension: How low and full do low frequencies sound?)<br>Definition/Control: Is the bass tight and well-defined or loose?<br>Inpact/Punch: How much dynamic force do you feel? |
| *Midrange:* | | | | Clarity/Detail: Can you discern individual instruments?<br>Presence/Body: Do vocals and instruments sound full, present, natural, realistic? |
| *Treble:* | | | | Extension/Air: How high and open do high frequencies sound?<br>Detail/Resolution: Can you hear subtle high-frequency information?<br>Brightness/ Harshness: Is the treble bright and revealing or harsh? |
| *Soundstage:* | | | | Width of Sonic Image<br>Depth: front-to-back layering music presentation<br>Imaging/ Placement: How precisely are instruments located? |

Which amplifier did you prefer overall? _____

To make this comparison a truly blind test, the speaker cables and interconnects were passed through the kitchen window leading up to the power amps sitting on the kitchen counter. The kitchen window was closed to hide which amp was connected.

We started off playing music informally while we waited for folks to arrive and started the actual program at around 12:45.

Sequences were as follows:

- The 1:00 hour: CODA, Benchmark, Topping
- The 2:00 hour: Topping, Benchmark, CODA
- The 3:00 hour: Topping, CODA, Benchmark

The attendees were not told of the sequence which was generated at random.

After the first sequence, the attendees were fairly evenly split in their preferences between the Topping and Benchmark. Folks described the Benchmark as having stronger bass output while the Topping sounded more relaxed. The CODA did not fare well in the first hour. Perhaps it was still warming up, because favorability improved as the day went on.

In the second hour, the Benchmark seemed to win the ears and hearts of most attendees with the CODA as a fairly close second. I don't recall anyone expressing a preference for the Topping during that sequence, although its relaxed character seemed to carry through.

In the final hour, I recall the CODA being the preferred amplifier by a slim margin. We had a smaller set of attendees at that time, so audience composition may have swayed the numbers a bit, but I agree that it sounded quite good.

## Music Played

These were the tracks used during the Amp Comparison sessions:

- Solhaug – Karl Seglem
- Hey Now – London Grammar
- Moon Light On Spring River – Zhao Cong
- Duende – Bozzio Levin Stevens
- Tin Pan Alley (aka Roughest Place In Town) – Stevie Ray Vaughan
- You and Your Friend – Dire Straits
- Man In the Long Black Coat – Bob Dylan
- Need Her So Bad – Aynsley Lister
- It Doesn't Matter – Alison Krauss & Union Station
- Keith Don't Go – Nils Lofgren
- Thanks To You – Boz Scaggs
- Feeling of Jazz – Wynton Marsalis
- Besame Mucho – Marcin Wyrostek & COLORIAGE
- I'm Confessin' (That I Love You) – Dean Martin
- The Curse – Agnes Obel

- **Hernando's Hideaway** – Enoch Light
- **The Time Tunnel** – Boris Blank
- **Goodbye Yellow Brick Road (Live)** – Sara Bareilles
- **I Walk the Line** – Rodney Crowell
- **Use Me** – Vanessa Fernandez
- **Lost Highway** – Darrell Scott
- **Glad** – The Wood Brothers
- **Bungee Jump** – Captain Hook & Astrix
- **Vogue** – Madonna
- **Ain't No Sunshine** – Eva Cassidy

## Curated Playlists

These were the curated playlists submitted by Ravi, John and Paul.

They are available on Qobuz:

- AAA_Amp_Comparison_Ravi
- AAA_Amp_Comparison_John
- AAA_Amp_Comparison_Paul

## Closing Thoughts

I was amazed at the sound of the FINAL M5 Hybrids speakers placed 13' apart inside the large Parish Hall. They threw a wall-to-wall sound stage and filled up the entire 60' x 26' space.

I could see why these $5,000/pair speakers are the best-selling model in FINAL's product lineup in Europe. If you have the space for it, they are a steal of a deal at this price point.

What surprised me most was the performance of the Topping B200 mono blocks. At $1,200 for the pair, it costs a fraction of the Coda No. 8 ($6,800) or the Benchmark AHB2 mono blocks

($6,998/pair). I could see the reasons for the rave reviews. Without David introducing us to these I would have never imagined one could buy such an affordable amp that could sound so good. Joe Roberts remarked that David is the go to guy for getting products that offer exceptional performance at budget pricing.

The Benchmark sounded analog like with more warmth and bass.

The CODA had the best dynamics. It is built to handle the low impedances of electrostatic speakers that typically drop to 0.7ohms at 20kHz. The brilliance of the treble gets lost on lessor amps that fail to deliver the current at such low impedances. The CODA can effortlessly supply the high current when necessary. It is best to pair a FINAL Electrostatic speaker with a CODA No. 8 power amp. Ravi being a Coda dealer can get you this amp at dealer cost well below MSRP.

Thanks to David for bringing his mobile streaming setup and showing us how to use the power of Roon Filters to level match the amplifiers. This turned out to be an educational event for me.

David has been invited to do a talk for the Audiophile Foundation in June about *High Performance Streaming for Audio Club Events.*

https://audiophilefoundation.org/

He will explain why adding Roon to the mix is beneficial. Roon enables separation of *Processing* and *Delivery.*

Processing includes establishing and maintaining an encrypted connection to the streaming provider, downloading FLAC streams, uncompressing the FLAC to raw PCM samples, applying volume leveling (optional but recommended) and any other desired digital signal processing. Combined, these processes can be somewhat CPU intensive. Although folks debate the level of impact, for the ultimate sound quality, you want the device doing this processing work to be isolated from the power supply and delicate audio circuits in the DAC.

Delivery involves receiving a digital audio stream over the local network and copying the samples, unmodified, to the DAC. No processing. No FLAC stream decompression. No volume adjustments. Because delivery is dirt-simple, the device involved can be incredibly low noise and low power. The delivery device used could be a streaming DAC, like the WiiM Ultra, or a standard external DAC paired with a tiny network bridge.

Many thanks to Paul for making the speaker cables specifically for this event. He can provide you with the details. Paul also provided the XLR cables that brought the signal to the amplifiers, power cables, PDUs, and the Benchmark amps. He also coordinated everything with the church, which is critical for a long event like this.

Thanks also to John and Ravi for bringing the heavy stuff: the CODA amplifier and Model 5 loudspeakers.

We also had an Oppo UDP-205 Ultra HD Blu-Ray Disc player and Sony 7000ES receiver on-hand as backups.


Best regards,

David Das