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The Designer Series
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Accuracy Matters in Music Reproduction

Finely crafted music recordings have been produced in every era for at least one hundred years. We believe all serious recordings should be honored with the most accurate reproduction and playback possible.

We can fully experience a finely crafted recording when sound reproduction is free of intrusions and omissions and when it captures the recording's full performance dynamic and soundscape in a complete, unaltered effortless manner. Such accuracy is essential to fully exploit even modern convenience programs as well as those from more serious settings. Either way, reproduction must have pinpoint resolution, three dimensional staging, truthful unaltered timbre and absolute transparency. It must produce a listening experience unhindered by harsh stressed intrusions and losses from audio circuits. Then the virtues like these from an accurate music system gives our minds a better ability to immerse ourselves in the program, the artists and the engineers creating it. Also, when the audio playback has proper focus, delineation and is free of noise aura, we can reach in, recognize virtues as well as become aware of subtle limitations that are in the recording. When knowing their character and having good perceived recognition of them from experience, our minds can neglect or brush aside artifacts to more fully explore the recording much like we do with phonograph records. Accuracy sharpens and widens our experience. So accuracy matters.

A Fundamental Goal for Serious Music Reproduction: Accuracy to the Source.

Defining real accuracy is well beyond simple numbers that often specify today's audio components and transducers. Serious audio system design requires a very broad, deep knowledge of how things are made and work and certainly a background passion for very good sound and focused listening. Activities to improve accuracy or maintain it include recognition of sonic issues, identifying technical limitations of behaviors causing them, creating test-acquisition methods to find them, making corrections and then getting feedback from other experienced listeners.

Right now, our audio industry is faced with evaluation methods and data acquisition from steady-state tone and noise measurements that have been broadly accepted for a long time. Unfortunately, they are not targeted to and from music, our hearing, learned perception and the technical complexities of modern equipment. They use continuous tones that do not jump like music and slow measurement acquisitions that won't resolve like we hear and perceive. Then, the inevitable omissions or technical loopholes from such tests pass into equipment specifications and imply that accuracy is specified for instrumentation and test tones and not for music. In practice, the distortion loopholes become different sounds for different audio products and the tests that could reveal these omissions and distortions are often very difficult to describe and interpret.

One example of why numbers implying accuracy do not show serious limitations for sound quality would be to explore a highly regarded tiny surface mount IC op-amp used in professional microphones. The low cost IC device has impressive specifications, including low power consumption and stability in any hookup so that lesser talent or commitment is required to design the audio product using this part. Inside this IC the

microscope shows an almost invisible silicon chip with many active devices and transistors sized to fit. We use a targeted symmetrical pulse test with fast gated acquisition which reveals audible after event responses or thermal tails distortions resulting from the rapid heating and cooling of the gain devices and the slow operation. Additional audible problems result from the agitated crossover correction due to low power use. These limitations add up to a dulling, grainy sound that is quite audible and ubiquitous in today's professional microphones and increases with cable loading, yet the measured specifications are quite impressive. Traditional noise-distortion tests would show a small change of noise in the presence of signal that most engineers would interpret as insignificant. One could accept these artifacts, favor marketing driven balances or make resolution cover-ups to smooth and filter the signal. We believe none of these accepted practices are viable alternatives when superior accuracy matters.

Spectral chooses a much better inherently accurate alternative to assure a completely truthful listening experience. We use only discrete component class A circuits where all active devices operate at significant power, all the time, at very high-speed. Our fully symmetrical circuits have extreme stability and continuity of amplification free of any tiny gaps or errors. Superior accuracy starts built in not propped up by additional circuits and parts to remove gaps in amplification and the consequences from aggressive feedback corrections to fill the holes. Conventional IC based and discrete audio amplifiers have these serious problems yet evade detection from traditional tests and measure well. Spectral high-speed class A amplification was conceived and evolved over decades from proto circuits critically auditioned in live recording sessions, with live bypass listening tests. These rigorous listening tests are to ensure accuracy to the microphone feed, our objective reference, not personal sonic preferences.

Accuracy is a Whole Discipline and Endeavor at Spectral

The constant refinement process of Spectral circuits under the intense scrutiny of the live music reference has resulted in amplifier topologies which have

superior truthfulness and accuracy to almost any other. Our amplification circuits are carefully matched to their application, they have continuous robust gain activity, floating battery-like power and precisely terminated signal path as well as other detailing that assures built in accuracy. Our high-speed, fast-settling discrete topology eliminates energy storage artifacts. Spectral's active circuitry works accurately within its technical confinement and the resulting stealth isolation to and from other gain activities minimizes interactions and assures built in accuracy for absolute transparency and the ability to operate that way without variation in various top high-end systems. Accuracy is a whole discipline and endeavor at Spectral. We have made a commitment to deliver the musical truth that has been captured in fine recordings. The obligation to preserve the integrity of the work of the artist and the creators of the recording is an important trust. This is why we believe accuracy truly does matter.