

A Soundbar Built to Deliver High Audio Quality and Performance



Yamaha MusicCast BAR 400

Case Study Highlights

- **Background:** Yamaha, one of the most iconic consumer audio brands, is determined to always exceed their customers' expectations of sound quality and performance in Yamaha soundbar products.
- **Solution:** By using Qualcomm® MAPX System-on-Chip (SoC) and Qualcomm® DDFA™ Amplifier Technology, Yamaha was able to add powerful audio processing and balance efficiency and audio quality in their soundbars. With DDFA both the Total Harmonic Distortion (THD) and Signal-to-Noise Ratio (SNR) are greatly improved.
- **Results:** With Yamaha's commitment to the highest level of excellence in sound quality they successfully launched the MusicCast BAR 400. The soundbar supports 4K Ultra HD TV, streams music via Wi-Fi, and is designed and engineered for powerful, immersive home cinema experiences.

Introduction:

Delivering high quality, high performance products

Yamaha is one of the most iconic consumer audio brands, with a reputation for delivering high quality, high performance products. It's all part of the company's philosophy, which is grounded in its passion for music.

Yamaha sees the level of sound quality in the entire soundbar industry improving. Today's music listeners have higher expectations when it comes to sound quality and Yamaha keeps this in mind when making their products.

When creating a soundbar, there are many considerations: a beautiful, sleek design — one that fits consumers' lifestyles — and, of course, the best sound quality achievable. Yamaha strives to always have something that's exciting and impressive enough to attract customers. That means creating a movie theater-like experience with life-like audio.

Yamaha is proud of the fact that their customers expect sound quality to be high and they are determined to go beyond that and always exceed these expectations in order to gain reputation among listeners. In 2018 Yamaha added to its staple of excellence, launching the Yamaha MusicCast BAR 400. The soundbar needed to support powerful, immersive home cinema experiences, 4K Ultra HD TV and streaming music via Wi-Fi.

Solution: MAPX SoC and DDFA amplifier

Driving better sound quality is one of the most important product engineering considerations for Yamaha. In order to set its audio performance apart from the competition, Yamaha chose our audio technology including the MAPX processor and DDFA (Direct Digital Feedback Amplifier) to make the MusicCast BAR 400 a reality. Its excellent static characteristics and performance are key to this new soundbar design. Together MAPX and DDFA are designed to support amplifier performance and sound quality along with advanced high performance processing.

DDFA, our breakthrough digital audio amplifier technology, is driven by innovation and over a decade of R&D to help create superior consumer audio experiences in digital speakers and soundbars of virtually all types. Setting a new benchmark in audio quality, DDFA is designed to help innovate and deliver the ultimate in amplification technology to more consumer audio devices than ever before.

Clarity and breadth of sound, as well as vivid exciting sound quality, make the MusicCast BAR 400 special. By using DDFA, Yamaha could balance efficiency and audio quality and could greatly improve both Total Harmonic Distortion (THD) and Signal-to-Noise Ratio (SNR).



DDFA is the result of over a decade of research and development. Our aim is to help our customers to bring high-end amplification — and overall superior quality — to more consumer audio devices.

Better sound, more cutting-edge features

In order to customize the soundbar and offer a unique end-user experience, Yamaha used our sophisticated Software Development Kit (SDK) with the MAPX processor, designed to allow control in the details for good sound replication, along with configuring the DDFA technology for the amplifier.

Yamaha sees the trend for more SoC-level integration and will continue to enhance their technical skill sets for these types of integrated solutions, in order to deliver better sound and more cutting-edge features in their next-generation audio products.

Making use of technical support from Qualcomm Technologies International along with an easy-to-use reference design, Yamaha found integration of DDFA easy and were able to generate quality sound. “We don’t think we’ve made full use of DDFA’s capabilities just yet, and we see massive potential there,” said Yamaha. “Going forward, we think we’ll be able to create even better quality sound products by fully utilizing its capabilities.”

Efficiency and rich audio quality: perfectly balanced

DDFA is designed to deliver high-fidelity audio and design flexibility. Our DDFA technology—based on a unique closed-loop digital architecture—is engineered to combine the power advantages of class D amplifiers with the high performance of traditional linear amplifiers. The result? Near-perfectly balanced efficiency and audio quality designed to deliver a superior listening experience.

Results: MusicCast BAR 400

The Yamaha MusicCast BAR 400 with Wireless Subwoofer supports your 4K Ultra HD TV, streams your music via Wi-Fi and lets you create a wireless home theater with MusicCast rear surround speakers.

- DTS Virtual:X virtual 3D surround sound and included wireless subwoofer bring powerful, lifelike sound to your entertainment.
- Create a 5.1-channel wireless home theater by adding MusicCast 20 or MusicCast 50 wireless surround speakers.
- Create a multi-room audio setup by syncing with other MusicCast speakers.
- Simple setup for TV with HDMI, optical or aux.
- Stream your favorites with a variety of connection choices – Wi-Fi, Bluetooth, AirPlay 2 or Spotify Connect.
- Voice control with Alexa and Google Assistant devices or Siri via AirPlay 2.

About Yamaha

- **Company Name:** Yamaha Corporation
- **Description:** Audio equipment business segment: manufacture and sales of audio products, professional audio equipment, information and telecommunication equipment, and other products.
- **Headquarters:** Hamamatsu, Japan



For More Information

- Visit www.usa.yamaha.com for more information on Yamaha and the MusicCast BAR 400.
- Visit www.qualcomm.com/solutions/voice-and-music/features/ddfa-amplifier-technology for more information on Qualcomm DDFA technology.
- Visit <https://www.qualcomm.com/products/mapx-processor> for more information on the Qualcomm MAPX processor.
- Read entire Blog post: <https://www.qualcomm.com/news/onq/2018/12/12/yamaha-uses-qualcomm-ddfa-and-mapx-audio-tech-immersive-home-cinema-experiences>

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