Executive Summary of SmartAVC™ Automatic Volume Control

Value  Starmark’s SmartAVC™ automatic volume control technology could add tremendous perceived value with minimal delta cost to mobile-phone and mobile-device product lines, leading directly to an expanded customer base for makers of phone handsets and other audio devices.

Problem Addressed  SmartAVC™ tackles a universal problem with all portable audio devices: All too often, mobile devices are used in noisy backgrounds – in crowded spaces, cars, and outdoors. In these noisy environments, users can’t consistently hear and understand clearly.

Solution  U. S. patents have just been issued to Starmark on what is by far the world’s most advanced automatic volume control. Starmark’s SmartAVC™ automatically adjusts loudness of mobile devices to make them better heard and understood above background noise in cars, public places, and outdoors. By analyzing the noise background 40 times per second in both the frequency domain and the time domain, and smoothly adjusting the volume to compensate only for noise that interferes with intelligibility of speech, SmartAVC™ overcomes the loss of clarity and other problems that make conventional automatic volume controls either ineffective or annoying and unpleasant to use.

Benefits  The benefits of SmartAVC™, all of which could lead to an expanded customer base, are:

- Increased customer satisfaction
- Easier hearing
- Improved intelligibility
- Enhanced user experience

Competitive Advantage  SmartAVC™ will transform the mobile communications market space by preserving intelligibility of speech and making phone calls possible even in challenging noise environments. Early licensees will enjoy an immediate competitive advantage through increased customer satisfaction and an enhanced user experience. Their mobile-device and car-audio customers will consistently be able to hear and understand clearly and easily in noisy environments.

Objectives  Our goal in five years is to have SmartAVC™ licensed on most of the more than billion mobile phones sold every year, at a cost to consumers of pennies per phone. Our ultimate objective is to have SmartAVC™ implemented as a standard ‘default-on’ feature in all mobile phones, mobile audio devices, and on all other audio platforms used where it could get noisy.

Market  Since Starmark is a systems R&D company, our plan is to achieve these objectives by strategic partnerships and joint ventures and by licensing SmartAVC™ technology to qualified developers and manufacturers of:

- Mobile-phone and smartphone handsets
- Multimedia handsets
- Personal media players
- Tablets
- Wireless headsets/earpieces
- Car radios and audio systems
- All other audio platforms that operate in changing background noise
- Chips for all of the applications above
- And to service providers and carrier partners for the applications above
- And to developers of platform-specific software for the applications above.

Ease of Implementation  SmartAVC™ can be implemented on mobile phones and any
other audio devices equipped with a speaker and microphone, as hardware at the chipset level or on a DSP, at negligible cost. No change to handset hardware is needed. Implemented in hardware, the SmartAVC™ processing demand in MHz is negligible. (Implemented in software in Java on an Android phone, the algorithms run well within the 25-ms processing cycle.)

**Licensing and Demos**  As of May 2011, the status of SmartAVC™ technology is:

- SmartAVC™ licenses are available now!
- International patents are pending.
- The patents cover SmartAVC™ algorithms and implementation in mobile phones and other audio devices.
- An Android software application, downloadable free from the Google Android Market, demonstrates how SmartAVC™ smoothly and gracefully compensates for the user’s own noise to preserve intelligibility of speech.
- An interactive A-B breadboard demonstrates the advantages of SmartAVC™ over conventional automatic volume controls. Demonstrations are available on request.

**Further Info**  Details on SmartAVC™, including contact information, are available at our website:  
http://www.StarmarkTechnologies.com

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**SmartAVC™ licenses are available now!**