

Renesas Technology Releases “Mobile Videophone Middleware Package” SH-Mobile Application Processor Software

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Built-in echo canceller function facilitating achievement of high-quality videophone functions for mobile phones

Renesas Technology Corp. today announced the development of “Mobile Videophone Middleware Package” software conforming to the 3G-324M third-generation (3G) mobile phone audiovisual communications standard, and incorporating an echo canceller function, for mobile phone systems using an SH-Mobile application processor. Mobile Videophone Middleware Package will be available in May 2005 in Japan.

This new software is for use with the SH-MobileV2 (type name: SH7310) and SH-Mobile3 (type name: SH73180) incorporating an MPEG-4 full hardware accelerator, and offers the following features.

(1) Provision of a mobile phone videophone application development solution

3G-324M is an audiovisual communications standard used in devices such as 3G mobile phone videophones, and the Mobile Videophone Middleware Package provides all the 3G-324M specification functions in a software package. This new software provides a solution enabling quick and easy development of 3G-324M compliant videophone functions in a mobile phone system using the SH-Mobile.

(2) Lower system costs achievable thanks to inclusion of echo canceller and noise suppression functions

As well as 3G-324M compliant functions the Mobile Videophone Middleware Package also offers the standard mobile phone videophone functions of echo cancellation and noise suppression. Software implementation of these functions eliminates the need for external dedicated echo canceller and noise suppression chips, enabling lower mobile phone system costs to be achieved.

(3) Algorithm optimization for implementation of videophone functions at lower CPU operating frequency

Algorithm optimization enables the capabilities of the MPEG-4 full hardware accelerator and DSP (digital signal processor) incorporated in the SH-Mobile to be used to the full. This enables moving image compression/decompression processing of 15fps(frame per second) and voice compression/decompression processing to be implemented at a low CPU operating frequency of around 90MHz, reducing system power consumption and helping to extend battery life.

Mobile phone systems are offering more and more advanced multimedia capabilities, including games and moving image display, and there will be a continuing demand for increasingly powerful and sophisticated multimedia functions in the future. One application that is expanding is the incorporation of videophone functions in 3G mobile phone systems. However, the implementation of videophone functions requires multiplexing and protocol processing and so forth in addition to moving image compression/decompression and voice compression/decompression processing, necessitating a great amount of development work.

Renesas Technology released the SH-Mobile processor specifically for application processing use in order to simplify multimedia application development for mobile phone systems, and also offers application

development solutions through the provision of various kinds of multimedia oriented middleware.

Renesas Technology has now developed the Mobile Videophone Middleware Package, including features such as 3G-324M compliance and an echo canceller function, as a package of single-function middleware items providing a videophone function development solution for 3G mobile phone systems.

3G-324M is an audiovisual communications standard for 3G mobile phones, used in such products as NTT Docomo's FOMA videophones.

This new Mobile Videophone Middleware Package complies with the entire 3G-324M specification, and provides the following functions.

- (1) MPEG-4 and H.263 standard compliant moving image compression/decompression and voice compression/decompression functions
- (2) AMR standard compliant voice compression/decompression functions
- (3) H.223 standard compliant multiplexing function
- (4) H.245 standard compliant videophone protocol functions

Videophone applications are implemented through a combination of the above functions, and the use of the Mobile Videophone Middleware Package enables 3G-324M compliant videophone application development to be carried out easily and in a short time-frame.

In addition to 3G-324M compliant functions, this new middleware package also includes the following essential functions incorporated as standard in mobile videophones.

- (1) An acoustic echo canceller function

(2) An acoustic noise suppression function

The acoustic echo canceller function suppresses howling and acoustic echoes, and makes possible handsfree calls and so forth. The acoustic noise suppression function reduces noise, and is particularly useful in noisy environments such as outside locations. These functions enable high-quality videophone voice calls to be achieved. Software implementation of these functions has made it possible to eliminate the previously used external dedicated chips for performing echo canceling and noise suppression, enabling fewer parts to be used and mobile phone system costs to be reduced.

This new middleware also maximizes the capabilities of installed hardware through the use of algorithm optimization, enabling videophone functions to be implemented at a low CPU operating frequency of around 90 MHz, and so helping to reduce terminal power consumption.

As mobile phone multimedia applications become more sophisticated, Renesas Technology will continue to provide development solutions that meet users' needs through the development of products such as IP network compatible SH-Mobile videophone middleware.

Notes:

1. 3G-324M: An audiovisual communications standard for devices such as 3G mobile videophones drawn up by the 3rd Generation Partnership Project (3GPP), an international organization for establishing 3G mobile phone standards

SuperH is a trademark of Renesas Technology Corp.

2. SH-Mobile (SuperH™ Mobile Application Processor) : An original Renesas Technology processor for mobile phone systems that is

connected to a baseband LSI and performs dedicated processing of voice, moving image, and similar multimedia applications

3. MPEG-4 (Moving Picture Experts Group phase 4): A moving image coding standard drawn up by the Moving Picture Experts Group.

MPEG-4 is a high-compression moving image compression/decompression algorithm standard designed to enable videophones to be used on low-bit-rate circuits such as mobile phone channels.

4. FOMA is a registered trademark of NTT Docomo Inc.

5. H.263 is a moving image coding method recommended by the ITU (International Telecommunication Union). H.263 is a compression method designed to enable videophones to be used on low-bit-rate circuits such as those in analog telephone networks.

6. AMR (Adaptive Multi Rate CODEC): A 3G mobile phone standard voice compression/decompression algorithm standard recommended by the 3GPP

7. H.223 is a standard recommended by the ITU specifying a method of multiplexing image data, voice data, and communication data in videophones.

8. H.245 is a standard recommended by the ITU specifying message exchange between videophones that is used to exchange moving image and voice capability information and multiplexing tables in videophone calls, and to decide whether the far-end or local terminal is the master.

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