



Intel® IXP400 Digital Signal Processing (DSP) Software

Specification Update

March 2005

Intel® IXP400 DSP Software may contain design defects or errors known as software issues that may cause the product to deviate from published specifications. Currently known issues are documented in this specification update.

Document Number: 273810, Revision: 005



INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH INTEL® PRODUCTS. NO LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED BY THIS DOCUMENT. EXCEPT AS PROVIDED IN INTEL'S TERMS AND CONDITIONS OF SALE FOR SUCH PRODUCTS OR THE APPLICABLE SOFTWARE LICENSE, INTEL ASSUMES NO LIABILITY WHATSOEVER, AND INTEL DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY, RELATING TO SALE AND/OR USE OF INTEL PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

Intel products are not intended for use in medical, life-saving, life-sustaining applications.

Intel may make changes to these materials, or to the Intel products described therein, any time without notice. Intel makes no commitment to update these materials. This document is provided "as is" without any express or implied warranty of any kind and Intel makes no representation or warranties regarding the accuracy or utility of the information contained herein.

Designers must not rely on the absence or characteristics of any features or instructions marked "reserved" or "undefined." Intel reserves these for future definition and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to them.

The Intel® IXP400 DSP Software may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request.

MPEG is an international standard for video compression/decompression promoted by ISO. Implementations of MPEG CODECs, or MPEG enabled platforms may require licenses from various entities, including Intel Corporation.

This document and the software described in it are furnished under license and may only be used or copied in accordance with the terms of the license. The information in this document is furnished for informational use only, is subject to change without notice, and should not be construed as a commitment by Intel Corporation. Intel Corporation assumes no responsibility or liability for any errors or inaccuracies that may appear in this document or any software that may be provided in association with this document. Except as permitted by such license, no part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by any means without the express written consent of Intel Corporation.

Contact your local Intel sales office or your distributor to obtain the latest specifications and before placing your product order.

Copies of documents which have an ordering number and are referenced in this document, or other Intel literature may be obtained by calling 1-800-548-4725 or by visiting Intel's website at <http://www.intel.com>.

Independent companies manufacture the third-party products that are mentioned in this document. Intel is not responsible for the quality of third-party products and makes no representation or warranty regarding such products. The third-party supplier remains solely responsible for the design, manufacture, sale, and functionality of its products.

BunnyPeople, Celeron, Chips, Dialogic, EtherExpress, ETOX, FlashFile, i386, i486, i960, iCOMP, InstantIP, Intel, Intel Centrino, Intel Centrino logo, Intel logo, Intel386, Intel486, Intel740, IntelDX2, IntelDX4, IntelSX2, Intel Inside, Intel Inside logo, Intel NetBurst, Intel NetMerge, Intel NetStructure, Intel SingleDriver, Intel SpeedStep, Intel StrataFlash, Intel Xeon, Intel XScale, IPLink, Itanium, MCS, MMX, MMX logo, Optimizer logo, OverDrive, Paragon, PDCharm, Pentium, Pentium II Xeon, Pentium III Xeon, Performance at Your Command, Sound Mark, The Computer Inside, The Journey Inside, VTune, and Xircom are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

*Other names and brands may be claimed as the property of others.

Copyright © Intel Corporation 2005. All Rights Reserved.



Contents

Preface	5
Affected and Related Documents.....	5
Summary Table of Issues.....	6
Software Issues	7
Software Versions.....	7
Documentation Issues	7
Software Issues.....	8
Documentation Issues.....	12

Revision History

Date	Revision	Description
March 2005	005	Updated for Intel® IXP400 DSP Software Version 2.6.2 and added software issue 00055746 .
January 2005	004	Added software issues 00049234 , 00049594 , 00049635 , 00051671 , 00051694 , 00052738 , and documentation issue 00051048 .
September 2003	003	Updated for Intel® IXP400 DSP Software Version 2.3 and changed to “software specification update” format. Added Software Issues 30049 and 30072.
March 2003	002	Updated for DSP software 1.1: Revising text and figures and adding Software Issues 2 and 3. Replaced Section 3.
January 2003	001	Initial release of this document for DSP software 1.0. Included Software Issue 1.

This page intentionally left blank.

Preface

This software specification update describes resolved and open software issues for the Intel® IXP400 DSP Software and is an update to the specifications listed in the following, “[Affected and Related Documents](#)” table. This document also includes document changes that will be subsequently posted to the documents listed in “[Documentation Issues](#)” on page 7.

This document supersedes the earlier version of this software specification update and may contain information that was not previously published. Intel will use commercially reasonable efforts to include all documented defects, however, Intel makes no representations or warranties concerning the completeness of this software specification update.

This document is intended for hardware system manufacturers and software developers of applications, operating systems, or tools.

Affected and Related Documents

Title	Document Number
Intel® IXP400 Digital Signal Processing (DSP) Software Programmer's Guide	252725
Intel® IXP400 Digital Signal Processing (DSP) Software API Reference Manual	273811

Summary Table of Issues

The tables in this section summarize the resolved and open known software issues of the Intel® IXP400 DSP Software and any changes being made to that product's documentation. The details for these issues are presented in [“Software Issues” on page 8](#) and [“Documentation Issues” on page 12](#).

A change bar, like that shown in the left margin, identifies material that has been added or modified since the previous version of this document.

Organization of Summary Tables

The summary tables are divided into two sections: software issues and documentation issues.

In the upcoming “Software Issues” section, a table lists all known software issues for the different releases of the software.

In the “Documentation Issues” section, a table lists all known documentation issues to be addressed in the next release of each cited document.

Summary-Table Codes

The summary tables' fields provide the following information.

Table Field	Description
Software Versions	<i>In the “Software Issues” section, the software release(s) that are affected by that table row's software issue.</i> <ul style="list-style-type: none">• Blank = Issue resolved in this version of the software• “X” = Issue applies to this version of the software
ID #	The identification number of the known software or documentation issue.
Title	The title of the known software or documentation issue.
Page	The page — in this document — that gives details about the indicated software or documentation issue.
Affected Document	<i>In the “Documentation Issues” section, the document(s) and version number(s) of the document(s) affected by the documentation issue. The next version of each cited document will resolve the cited issue.</i>

Software Issues

In the following tables, the applicability of each table row's software issue is indicated in the **Software Version** column:

- Blank = Issue either does not apply to this version of the software or has been resolved in this version.
- "X" = Issue applies to this version of the software

Software Versions

Software Version (X = Issue Open)							ID #	Title	Page
1.0	1.1	2.0	2.3	2.4	2.5	2.6.2			
						X	00055746	Codelet Software Does not set the IP Address Properly	10
					X		00051671	Software Demo Application Does not Compile Properly	10
					X	X	00051694	Software G.729 Demo Codelet Produces a Linux* Kernel Error	10
				X	X		00052738	Software Incorrectly Handles G.723 Protocol	10
		X	X	X			00049635	Software Cannot Insert Post Marker Bits	10
		X					00049594	Software Does Not Support Tone Generation in Mixed Mode	9
		X					00049234	Software Does Not Generate Accurate Tones at 400 Hz, 800 Hz and 1000 Hz	9
	X						30272	Software Does Not Handle Non-DTMF RFC2833 Packets Properly	9
	X						30049	Software Does Not Support Single Channel of HSS Usage	9
							29517 (3)	Assembly Version of FIR Filter Causes Some Degradation of EC Performance	9
	X						29334 (2)	G.711 PLC Algorithm Incorrectly Disabled with CNG Algorithm	8
X							(1)	Enabling of 'Long Long' Math Functions Requires a Modification	8

Documentation Issues

Affected Documents	ID #	Title	Page
Intel® IXP400 Digital Signal Processing (DSP) Software Version 2.5 Programmer's Guide and Intel® IXP400 Digital Signal Processing (DSP) Software Version 2.5 API Reference Manual	00051048	T.38 Fax Protocol is not Supported Prior to Intel® IXP400 DSP Software Version 2.6.2	12

Software Issues

This section gives the details of the software issues summarized in the “Summary Table of Issues” section’s “Software Issues” on page 7.

To determine which of this section’s issues are applicable for a specific software release, refer to “Software Issues” section’s “Software Versions” table.

Change bars, like that shown in the left margin, identify material that has been added or modified since the previous version of this document.

Note: The identification numbers for software and documentation issues formerly were assigned sequentially, for each release of this document. Issues now are assigned a permanent, database-generated identification number.

To assist in the transition from the old numbering system, any previously published issues are identified by their permanent, database ID number, followed — in parentheses — by the issue’s previous number. (For example: *Reference #4 (SCR 0886)*, from an earlier release of this document, would be identified as *Reference #0886 (4)*).

Enabling of ‘Long Long’ Math Functions Requires a Modification

Reference #: (1)

Product: Intel® IXP400 DSP Software

Version(s): 1.0

Description: For DSP software release 1.0 software to execute with Intel® IXP400 Software Release 1.0, a modification is required to the VxWorks® Board Support Package (BSP) to pull in all required symbols. This modification enables “long long” math functions.

Implication: A build of DSP software release 1.1 indicates that several DSP software release 1.0 symbols are missing.

Resolution: Add the following line to the file `target/config/ixdp425/config.h` and rebuild the `VxWorks.st` image.

```
#define INCLUDE_64BIT_LIBGCC
```

G.711 PLC Algorithm Incorrectly Disabled with CNG Algorithm

Reference #: 29334 (2)

Product: Intel® IXP400 DSP Software

Version(s): 1.1

Description: For DSP software release 1.1 software, the G.711 Packet Loss Concealment (PLC) Algorithm is incorrectly disabled when the Comfort Noise Generation (CNG) algorithm is disabled. This may degrade voice quality.

Implication: If CNG is disabled while running G.711, voice quality may be significantly degraded for multi-frames at 30 ms. For single frames at 10 ms, any voice-quality degradation is not noticeable.

Resolution: None.

Assembly Version of FIR Filter Causes Some Degradation of EC Performance

Reference #: 29517 (3)
Product: Intel® IXP400 DSP Software
Version(s): 1.1
Description: In optimizing echo-cancellation (EC) performance, the fixed FIR filter was converted to IPP assembly code. This has caused some degradation of EC performance. The echo seems to be non-linearly distorted.
Implication: The echo-cancellation functionality is degraded. The effect, however, is not noticeable to the average human ear.
Resolution: None.

Software Does Not Support Single Channel of HSS Usage

Reference #: 30049
Product: Intel® IXP400 DSP Software
Version(s): 1.1
Description: DSP software release 1.1 does not support configurable number of channels.
Implication: Single-channel initialization gives errors.
Resolution: Initialize two channels even though only one channel is needed.

Software Does Not Handle Non-DTMF RFC2833 Packets Properly

Reference #: 30272
Product: Intel® IXP400 DSP Software
Version(s): 1.1
Description: DSP software release 1.1 cannot properly handle non-DTMF RFC2833 packets.
Implication: None.
Resolution: None.

Software Does Not Generate Accurate Tones at 400 Hz, 800 Hz and 1000 Hz

Reference #: 00049234
Product: Intel® IXP400 DSP Software
Version(s): 2.0
Description: DSP software release 2.0 does not generate user-defined tones accurately. Intel® IXP400 DSP Software pre-defined tones will behave as expected.
Implication: User-defined tones generated by Intel® IXP400 DSP Software may not be recognized properly nor create desired effects.
Resolution: Upgrade to Intel® IXP400 DSP Software version 2.5 or above.

Software Does Not Support Tone Generation in Mixed Mode

Reference #: 00049594
Product: Intel® IXP400 DSP Software

Version(s): 2.0

Description: DSP software release 2.0 does not generate tones in mixed mode.

Implication: When using DSP software during a voice over IP call, voice and tones cannot be heard simultaneously.

Resolution: Upgrade to Intel® IXP400 DSP Software version 2.5 or above.

Software Cannot Insert Post Marker Bits

Reference #: 00049635

Product: Intel® IXP400 DSP Software

Version(s): 2.0

Description: Intel® IXP400 DSP Software does not provide the capability to add post marker bits.

Implication: V.23 modems may expect post marker bits, but these cannot be generated.

Resolution: If post marker bits are required, upgrade to Intel® IXP400 DSP Software version 2.5 or above.

Software Incorrectly Handles G.723 Protocol

Reference #: 00052738

Product: Intel® IXP400 DSP Software

Version(s): 2.4 and 2.5 with VxWorks

Description: A potential errata has been discovered in the code base with the G.723 protocol when using AGC/ALC is enabled under VxWorks.

Implication: Voice quality may be degraded, or in a worst-case scenario, a system crash may occur.

Resolution: Upgrade to Intel® IXP400 DSP Software version 2.6.2.

Software G.729 Demo Codelet Produces a Linux* Kernel Error

Reference #: 00051694

Product: Intel® IXP400 DSP Software

Version(s): 2.5 on MonteVista* Linux*

Description: When using this demo codelet, the voice path is established and the voice call is functional; however, a “division by zero in kernel” error is reported.

Implication: The G.729 codec should not be used.

Resolution: Use of the G.729a/b codec, which is fully compatible and interoperable with G.729, is not affected and should be used instead of G.729.

Software Demo Application Does not Compile Properly

Reference #: 00051671

Product: Intel® IXP400 DSP Software

Version(s): 2.5 on MonteVista Linux

Description: The user-mode application used to run the IXP400 software demo will not compile on Linux. The Makefile in the directory ../ixp425_xscale_sw/src/codelets/dspEng/dspApp uses wrong variables (MYCSR_BASE and MYDSP_BASE).

Implication: In order to run the demo application, the makefile must be modified.

Resolution: The variables MYCSR_BASE and MYDSP_BASE in the makefile in the directory ../ixp425_xscale_sw/src/codelets/dspEng/dspApp should both be replaced by the variable IX_XSCALE_SW.

Codelet Software Does not set the IP Address Properly

Reference #: 00055746

Product: Intel® IXP400 DSP Software

Version(s): 2.6.2

Description: The API provided in codelet to set the IP address is not setting IP address correctly for IXP400 software.

Implication: The codelet may not behave as expected.

Resolution: At line number 551 of IxDspCodeletEthIF.c add, the following line:

```
ixDspCodeletIpAddresses[ethPort] = inet_addr(srcIpAddress);
```

Documentation Issues

This section gives the details of all documentation changes summarized in “[Documentation Issues](#)” on page 7.

T.38 Fax Protocol is not Supported Prior to Intel® IXP400 DSP Software Version 2.6.2

Reference #: 00051048

Issue: The T.38 Fax component was not implemented in Intel® IXP400 DSP Software Version 2.5.

Section 4.9 of *Intel® IXP400 Digital Signal Processing (DSP) Software Version 2.5 Programmer's Guide* and Section 3.8 of *Intel® IXP400 Digital Signal Processing (DSP) Software Version 2.5 Programmer's Guide* refer to the ability to use T.38 protocol with Intel® IXP400 DSP Software. This is not possible. T.38 Fax support was not included in the v2.5 release

Affected Docs: *Intel® IXP400 Digital Signal Processing (DSP) Software Version 2.5 Programmer's Guide* and *Intel® IXP400 Digital Signal Processing (DSP) Software Version 2.5 API Reference Manual*