



Standard Panels Working Group Quarterly Newsletter

March 2004 Volume 1, Issue 3

Third SPWG Newsletter

This is the third quarterly newsletter related to the activities of the Standard Panels Working Group (SPWG). The newsletter is being released to help assure industry-wide awareness about the continuing efforts to standardize the displays used in notebook PCs. Mark Fihn and Paul Salisbury, two of the original people most directly involved in the creation of the SPWG, are writing this newsletter in an effort to help assure an open communication about future standardization efforts and to sustain the successes the SPWG has enjoyed to date. *Any opinions expressed in this newsletter are entirely those of the authors, and any errors or omissions are unintentional.* Our goal is to provide a clear and open communication about the benefits and problems associated with the SPWG and to identify and help implement additions and improvements to the SPWG effort. Guest articles, opinions, or rebuttals are welcome from any source. There are no subscription fees associated with this newsletter; likewise no advertisements will be accepted.

Table of Contents

Page 2	SPWG v3.0 Released
Page 3	SPWG Revitalization Milestone Schedule Status
Page 3	Why Standards?
Page 4	The VeritaVis "Display Standard"
Page 5	Penetration of SPWG Panels
Page 6	Integrated Inverters
Page 7	www.spwg.org
Page 7	Phoenix EDID Designer Tool
Page 7	30-pin Connector Intellectual Property Concerns
Page 8	Connectors
Page 10	Specsmanship
Page 11	Display Standards Verification
Page 12	What's Next for the SPWG
Page 12	Growth of the SPWG
Page 13	New SPWG Endorsees

- All American Semiconductor, Inc.
- Endicott Research Group, Inc.
- Fairchild Semiconductor
- Forhouse Corporation
- Himax Technologies, Inc.
- ITO Corporation
- Jui Fang Electronics Co., Ltd.
- Microsemi Corporation
- Radiant Imaging, Inc.
- Rapid Conn, Inc.
- Sin Sheng Terminal & Machine

SPWG v3.0 Released

At the Intel Developer Forum (IDF) on February 18, the SPWG and the Extended Battery Life Working Group (EBL-WG) jointly announced the release of the SPWG v3.0 specification. The press release stated:

Industry Working Groups Update Mobile PC Display Specification

New Specification to Improve Panel Interchangeability, Enable Lower Display Power Consumption

Intel Developer Forum, San Francisco, February 18, 2004 - The Standard Panels Working Group (SPWG), today announced the release of the SPWG 3.0 specification, designed to help improve the notebook PC display availability and time to market by shortening development cycles and minimizing product obsolescence. This specification development work was done in collaboration with the members of Mobile PC Extended Battery Life Working Group (EBL-WG). The new specification is available for downloading at www.spwg.org.

The SPWG, formed in October 1999, brings together the industry's mobile PC and LCD manufacturers to create mechanical and electrical standards for mobile PC displays. The group brings together mobile PC makers, TFT-LCD suppliers, connectivity solution suppliers (such as cabling and connectors), display components suppliers, display industry market research/analysis companies and others. Almost 60 percent of the displays used in the industry now comply with the current SPWG 2.0 specification. The specification has helped reduce the overabundance of custom display module designs that previously forced notebook OEMs to customize their packaging, interface design and tooling for new panel supplier and display modules. The SPWG 3.0 specification further improves panel interchangeability by adding support for additional sizes and resolutions including support for wide aspect panels, providing recommendations for integrated inverter location and connector pin out, and for the front of screen parameter definition and measurement methodology.

"After the SPWG 2.0 specification was developed in September 2001, no ongoing updates occurred for an extended period of time. EBL WG members realized the need to update the specification to keep up with the pace of changing mobile PC display industry. With the support of the EBL WG, the SPWG 3.0 specification adds recommendations for integrated inverter and power measurement methodology. This is a step in the right direction, which will lead to matched 1:1 panel/inverter combination resulting in the most power efficient operation of the notebook display. The SPWG 3.0 specification's adoption of the power measurement guidelines developed by the mobile PC EBL WG will also help ensure consistent measurement across the industry," said Kamal Shah, display strategy and mobility enabling manager, Mobile Platforms Group, Intel, and the chairman of the Mobile PC EBL WG.

"Support for additional panel sizes and resolutions in the SPWG 3.0 specification expands the scope of the SPWG 2.0 and helps streamline product roadmaps at mobile PC manufacturing companies," said Rieko Kataoka, manager of Application Product Development, Portable Systems, IBM Japan Ltd. "The SPWG 3.0 specification further enhances panel interchangeability while allowing product differentiation and technology innovation. The SPWG 3.0 specification defines common mechanical and electrical interfaces that enable PC makers and suppliers to focus on providing differentiated solutions to their respective customers for other aspects of the panels."

The Mobile PC Extended Battery Life Work Group (EBL WG) is a worldwide, industry-wide group of companies working together to extend the battery life of mobile PCs. For more information about the EBL WG, visit www.eblwg.org. More information about the SPWG can be found at www.spwg.org.

SPWG Revitalization Milestone Schedule Status

At the kickoff meeting of the SPWG rejuvenation effort in Tokyo on August 28, 2003, a proposed milestone schedule was presented to the 40-some companies that attended the meeting. Somewhat remarkably, the proposed schedule has been completed very close to the initial proposal. Highlighted in blue is the initially proposed schedule.

<u>Activity</u>	<u>Est. Complete</u>	<u>Current Status</u>
Decision to Rejuvenate SPWG	Jun 15	Complete, Jun 15
SPWG Update Kickoff Meeting in Japan	Aug 28	Complete, Aug 28
SPWG Update Effort Presentation	Sep 1	Complete, Aug 28
1 st Quarterly Newsletter Published	Sep 17	Complete, Sep 26
Receive Input on Spec and Test Processes	Sep 17	Complete, Oct 1
Define SPWG Update Spec Format	Oct 31	Complete, Nov 20
Define LCD Testing Setup and Procedures	Oct 31	Complete, Nov 20
Draft SPWG Update Spec	Nov 7	Complete, Dec 16
Review Spec Update with SPWG Members	Nov 21	Complete, Dec 17
Update Spec based on SPWG Feedback	Nov 30	Complete, Dec 29
2 nd Quarterly SPWG Newsletter	Dec 19	Complete, Jan 14
Review Revised SPWG spec with Members	Jan 12	Complete, Jan 14
Final Draft of SPWG Spec	Jan 26	Complete, Feb 3
Final Approval by SPWG Members	Feb 13	Complete, Feb 10
SPWG Updated Spec Press Release	Feb 16	Complete, Feb 18
3 rd Quarterly SPWG Newsletter	Mar 15	
4 th Quarterly SPWG Newsletter	Jun 15	
Ongoing Website/Inquiry Maintenance	Continuous	

Milestone scheduled proposed in August, 2003

Why Standards?

“If there were no standards, we would soon notice. Standards make an enormous contribution to most aspects of our lives - although very often, that contribution is invisible. It is when there is an absence of standards that their importance is brought home. For example, as purchasers or users of products, we soon notice when they turn out to be of poor quality, do not fit, are incompatible with equipment we already have, are unreliable or dangerous. When products meet our expectations, we tend to take this for granted. We are usually unaware of the role played by standards in raising levels of quality, safety, reliability, efficiency and interchangeability - as well as in providing such benefits at an economical cost”.

-- Introduction to the International Standards Organization's Mission Statement

Indeed, standards make a positive difference, not just to engineers and manufacturers for whom they solve basic problems in production and distribution, but ultimately, to people in general in their roles as consumers and end users. Standards contribute to making the development, manufacturing and supply of products and services more efficient, safer and cleaner. They make trade between countries easier and fairer. They provide governments with a technical base for health, safety and environmental legislation. They aid in transferring technology to developing countries. In many cases, standards also serve to safeguard users as well as to make their lives simpler. When things go well - for example, when systems, machinery and devices work well and safely - then often it is because they conform to standards.

With regard to the displays industry specifically, there is a pronounced jumble of standards, very few of which are directed specifically at notebook PCs. The jumble creates confusion, unwarranted specsmanship and inefficiencies in production throughout the supply chain. Accordingly, standardization should be a part of any strategy related to the displays used in notebook PCs.

The VeritaVis “*Display Standard*”

VeritaVis announced plans to introduce a monthly newsletter, to be called the *Display Standard*, which will broadly cover the various ongoing standardization and verification efforts related to displays. So many organizations have developed display-related standards over the years that it has become increasingly confusing to keep track of all the standards developments. Likewise, as new applications develop, existing standards are frequently found wanting. The VeritaVis Display Standard will cover all news related to both the existing coverage about display-related standards, as well as the areas where standards do not adequately cover the market.

The *Display Standard* will cover many organizations, both national and international in focus, including (but certainly not limited to):

- American National Standards Institute (ANSI)
- Consumer Electronics Association (CEA)
- International Commission on Illumination (CIE)
- Canadian Standards Association (CSA)
- Digital Display Working Group (DDWG)
- Digital Imaging Communication in Medicine (DICOM)
- Energy Star
- Federal Communications Commission (FCC)
- High Definition Multimedia Interface (HDMI)
- International Electro-technical Commission (IEC)
- Institute of Electrical and Electronics Engineers (IEEE)
- International Organization for Standardization (ISO)
- Japan Electronics & Information Technology Industries Assn (JEITA)
- National Electrical Standards Association (NEMA)
- Panel Standardization Working Group (PSWG)
- Semiconductor Equipment & Materials International (SEMI)
- International Society for Optical Engineering (SPIE)
- Standard Panels Working Group (SPWG)
- The Swedish Confederation of Professional Employees (TCO)
- TÜV Rheinland Group
- Underwriter’s Laboratories (UL)
- Video Electronics Standards Association (VESA)

The first issue of the *Display Standard* is expected to be published in May 2004. Other publication details, (advertising policies, subscription fees, distribution format, etc.) are still under investigation.

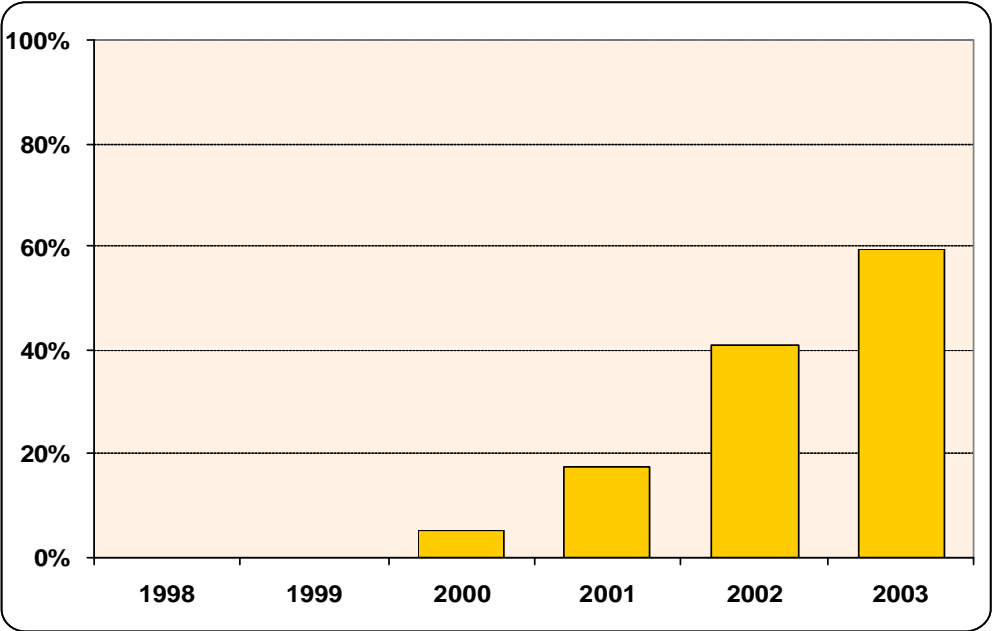
After this issue of the SPWG Quarterly Newsletter, we will issue one more newsletter, probably in about June 2004. After that, we expect SPWG related news will be covered within the VeritaVis *Display Standard*. We will provide you with more information about the VeritaVis *Display Standard* in the coming weeks.

VeritaVis is the name of Mark Fihn’s consulting company, which is focused on the flat panel display industry. The name “VeritaVis” is derived from the Latin words “Veritas et Visus”, or “Truth and Vision”.

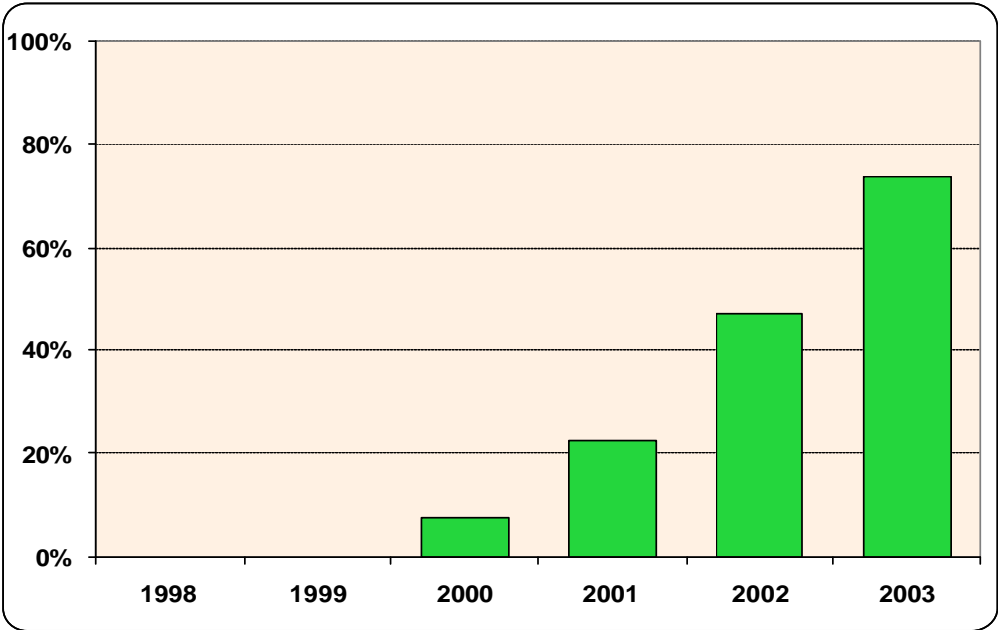
Penetration of SPWG Panels

With the initial SPWG specification launched in October 1999, in less than four years essentially all major notebook PC companies adopted the SPWG standards. As depicted in the figures below, almost 60% of all notebook PCs shipped with SPWG-compliant panels in 2003. The next figure further shows an even deeper market penetration, considering only the 13.3", 14.1", and 15.0" segments of the notebook PC market covered by the SPWG v2.0 specification, penetrating almost 80% of the notebook PC market.

1998 – 2003, SPWG Penetration into Total Notebook PC Market



1998 – 2003, SPWG Penetration into Available Notebook PC Market



Integrated Inverters

This article is reprinted from the January 2004 issue of this newsletter in order to help clarify some of the questions about “integrated inverters” in the SPWG standard. We believe that the move toward integrated inverters is not only beneficial to participants in the notebook PC industry, but that by defining mechanical standards related to this fast-growing trend, that the SPWG v3.0 specification can help to avoid considerable confusion in the future.

+++++

We’ve noticed four distinct areas for confusion related to the inclusion of an option for integrated inverters in the v3.0 SPWG specifications.

1. **Meaning of “integrated”.** Our use of the term “integrated” has caused some confusion, and perhaps a better term would be “matched”. Although we expect that eventually the inverter will actually be manufactured as integral part of the LCD module itself, our reference to “integrated” is to suggest that the LCD manufacturer take responsibility for assembling the inverter with the LCD module in a way that best assures optimal performance. We believe that display performance is best managed by the display manufacturer and not by the notebook PC assembly house.
2. **“Integrated” vs. “Standardized” Inverters.** Quite a bit of confusion related to inverters has been created by pressures from one major notebook PC brand. This one company has been pressing LCD makers to make “standardized” inverters. Unfortunately, standardized inverters are only an effective solution if there are common lamps. Since each LCD maker employs different backlighting solutions in their module assembly, it becomes very difficult to have multiple LCD makers supporting such a standardized inverter solution. Moreover, it is very unlikely that standardized inverters can be effectively employed as an industry-wide standard, since each notebook PC manufacturer has developed their own power management strategies. And since inverter performance varies considerably depending on the inverter manufacturer, and since inverter performance is in a constant state of improvement, a standardized inverter solution is likely to limit improvements in inverter technology. In fact, the approach taken by this one notebook PC brand is almost certain to create an entirely customized solution for this one company – hardly something that should be considered a “standardization” effort. Accordingly, we are not in favor of standardized inverters. It appears that the efforts of this one company are dying anyway, due to very strong opposition from all LCD manufacturers.
3. **Question of “favoritism”.** We have been advised that our suggested integrated inverter solution may “favor” some companies. While it’s almost certain that any design we choose would be simpler for some companies to implement than other companies, our suggestion is based on interviews with many companies and in no way is meant to provide an advantage or disadvantage to any company. If indeed, the proposed SPWG v3.0 design gives any company a particular advantage, we are hopeful that reviewers will help us to identify a more balanced approach. Our basic position is that integrated inverters as a part of the SPWG specifications provides advantages to the entire notebook PC community. Moreover, it should be remembered that the usage of integrated inverters is optional under the proposed specification. The specification only defines a means by which inverters can be integrated into the LCD module in a standardized way.
4. **“There’s no reason for integrated inverters”.** In the past couple of months, several people have suggested that there is no good reason to integrate inverters into the LCD module. After questioning, we identified that all of these critics come from a background related to LCD monitors. Although we believe there are also advantages to matching the LCD and the inverter with regard to LCD monitors, the primary advantages are best realized by notebook PCs. LCD monitors are not concerned about battery life, so a matched LCD/inverter solution is of little

importance. Moreover, the service advantages associated with the interchangeability of LCD modules are much more important for notebook PCs than for LCD monitors.

Although there is some confusion related to integrated inverters, we believe that it is critically important to bring inverters to the SPWG standard, as discussed below.

www.spwg.org

The www.spwg.org has now seen hits from more than 8000 separate IP addresses since its launch in late August. The goal of the site is to keep an updated flow of information about the activities of the SPWG. Not only is the SPWG v3.0 specification available for download on the site, but also a great deal of supporting information and historical background data is included. A complete list of endorsing companies is also identified on the site.

On the website, you can find several new items in the news/press section. The joint presentation about the SPWG made by Kamal Shah of Intel and Rieko Kataoka of IBM at the IDF is loaded to the site. Also there's a summary presentation about the Status of the SPWG, which has a long section about the advantages of Integrated Inverters, among other things. Additionally, there are several articles newly uploaded that consider some of the historical aspects of the SPWG and display standards generally.

Phoenix EDID Designer Tool

Raylar Design's Phoenix EDID Tool is a helpful way to create an EDID 128-byte structure that conforms to specifications for EDID version 1 revision 3 while also allowing viewing of current EDID registry entries. Raylar Design is one of the companies that has endorsed the SPWG, and during the preparation of the SPWG v3.0 specification, there were some differences in the results of Raylar's Phoenix Designer and results from other calculations. Raylar's engineers studied these discrepancies and discovered some problems associated with extended decimal points. Accordingly, Raylar improved their Phoenix Designer so that the Pixel Clock in their Detailed Timing now accepts floating-point frequency to 2 decimal places. The tool conforms to SPWG definitions, and can be found at www.raylar.com/phoenix.htm and is accessible through the www.spwg.org website as well.

30-pin Connector Intellectual Property Concerns

Although numerous companies have claimed to offer connectors that are compatible to JAE's 30-pin interface connector specified by the SPWG, it should be noted that JAE claims intellectual property surrounding this FTX connector series. Although the SPWG clearly disclaims any rights to the possible intellectual property of any company, we do believe that the concerned parties should address any possible issues related to intellectual.

JAE representatives have identified to the SPWG that "JAE will license, in a fair manner, to any company that requests". JAE notes that to date that they have reached a licensing agreement only with FCI. In addition to possible legal issues, JAE suggests that unlicensed products may suffer from mating problems in the field. According to JAE officials, "there is significant potential for mating problems in actual application with companies that do not have licensed IP."







We encourage all parties to work with JAE to assure that any intellectual property matters are handled appropriately and to help assure better performance by helping to assure proper mating.









SPWG Connectors

This section shows a reference list of the connectors that are claimed to be compliant to the SPWG specifications. We will work to keep this listing updated at the www.spwg.org website for your continual reference purposes.

We want to emphasize that this listing is not an assurance of quality, fitness for purpose, nor should it be considered as permission or transfer of any company's intellectual property rights. We think that all LCD manufacturers and notebook PC manufacturers must independently verify their use of appropriate SPWG-compliant connectors.

	20-pin Interface Connector (HRS DF19L-20P-1H or equivalent)			20-pin Interface Mating Connector (Mates to HRS DF19L-20P-1H or equivalent)				
	Receptacle	Receptacle (1.0mmH)	Receptacle, bottom	Plug discrete wire	Plug flex cable	Plug micro coax		
DDK								
FCI								
Hirose	DF19L-20P-1H	DF19K-20P-1H	DF19KR-20P-1H	DF19G-20S-1C	DF19G-20S-1F	DF19G-20S-1SD		
Honda								
I-PEX		20268-020E-01				20230-020B		
JAE								
Jui Fang								
JST	SM200-L08G5-108			LDSH R-20K-S-X				
KEL								
LQ Cable		GT100-20P-LS-SMT	GT100-20P-LS-SMT-R					
Rapid Conn								
Starconn								
Sin Sheng								
Sunridge								
UJU	IP100-C200-C15							
	2-pin Backlight Cable Connector (JST BHSR-02VS-1 or equivalent)		2-pin Backlight Cable Mating Connector (Mates to JST BHSR-02VS-1 or equivalent)		20-pin Inverter Connector (Honda LVC-D20SFYG or equivalent)		20-pin Inverter Mating Connector (Mates to Honda LVC-D20SFYG or equivalent)	
	SMT Pin Header		Pin Receptacle		Coax Plug		Coax Receptacle	
DDK								
FCI								
Hirose								
Honda					LVC-D20WTFYG		LVC-D20LPM5G	
I-PEX								
JAE								
Jui Fang	338809							
JST	BHSR-02VS-1		SM02B-BHSS-1					
KEL								
LQ Cable								
Rapid Conn								
Starconn								
Sin Sheng	P2408P2		MS2400P2					
Sunridge	FPD-PB-25-2P							
UJU	HP350-L02N-W35		BP350-L02B-C35					

30-pin Interface Connector (JAE FI-Xx30Sx-HF-xx or equivalent)								
	Receptacle	Receptacle, bottom	Receptacle, bottom, reverse	Receptacle, locking	Receptacle, bottom, locking	Receptacle, bottom, reverse, locking		
								
DDK								
FCI								
Hirose	MD76K-30S-1H	MD76LR-30S-1H			MD76KB W-30S-1H	MD76LBRW-30S-1H		
Honda								
I-PEX								
JAE	FI-X30-SHF	FI-X30-S-HF10	FI-X30-SR-HF11	FI-X30-SL-HF	FI-X30-SL-HF10	FI-X30-SRL-HF11		
Jui Fang								
JST	SMD08-LD-YGS-10	SMD08-LD-YGS-10C	SM308-LD-YGS-R100	SM308-LD-YGLS-10	SM308-LD-YGLS-10C	SM308-LD-YGLS-R100		
KEL								
LG Cable	GT101-30S-R15	GT101-30S-HF10	GT101-30S-HR11	GT102-30S-HQ2	GT103-30S-HF15	GT103-30S-HR15		
Rapid Conn								
Starconn	093C30 093G30	090B30			093F30			
Sin Sheng					MSBQ2407P30			
Sunridge	FPD-P0K-30-01	FPD-P0K-30-02	FPD-P0K-30-03					
UJU	IP100-C30B-C15 IS100-C30B-C15	IP100-C300-C15 IS100-C300-C15	IP100-C30R-C15	IP100-L30B-C15	IP100-L300-C15	IP100-L30R-C15		

30-pin Interface Mating Connector (Mates to JAE FI-Xx30Sx-HF-xx or equivalent)								
	Crimp	Crimp w lock	Crimp w lock, pull-tab	Micro coax	Micro coax w lock	Micro Coax w lock, pull-tab	FPC	FPC, reverse
								
DDK								
FCI								
Hirose								
Honda								
I-PEX				20337-030T	20338-030T	20341-030T		
JAE	FI-X30H	FI-X30HL	FI-X30HL-T	FI-X30C*	FI-X30C*L	FI-X30C*L-T	FI-X30M	FI-X30MR
Jui Fang								
JST	LDYHP-30GV-Z	LDYHP-30GV-Z-S						
KEL								
LG Cable	GT101-30P-C5							
Rapid Conn								
Starconn								
Sin Sheng	P2407P30	PK2407P30						
Sunridge								
UJU	HP100-C30M-R15 HS100-C30R-R15	HP100-L30M-R20						

- Listing in this cross-reference list does not imply any rights to another company's intellectual property. Note that JAE has claimed intellectual property rights related to their FI-X connector. The SPWG does not provide any guidance about such intellectual property rights claims. A JAE spokesman has stated that "JAE will license, in a fair manner, to any company that requests". Companies highlighted in green are licensed by JAE.
- This list does not assure fitness for purpose, and is for reference purposes only.
- This list may not be complete, listing only connector manufacturers that have endorsed the SPWG.

Specsmanship

“Specsmanship” is the term for publishing product or process specifications in such a way as to favorably compare your product against the products from your competitors. This is fine – if, the comparisons are based on common assumptions. But specsmanship is frequently the result of inadequate, inappropriate, or conflicting “standards” by which companies can claim favorable product performance.

ISO/IEC Directives, Part 3, about the drafting and presentation of standards states:

“The objective of a data sheet is to define clear and unambiguous provisions in order to facilitate international trade and communication. To achieve this objective, it shall be as complete as necessary; consistent, clear, and concise; and comprehensible to qualified persons who have not participated in its preparation”.

A good data sheet allows the purchaser to specify and buy the exact product required. One company's data sheet should convey information based on the same criteria as the next company's data sheet.

The displays industry is filled with examples of specsmanship where companies fail to properly communicate meaningful information. At too many companies, the role of an engineering data sheet has shifted away from providing meaningful information -- to simply describing what can be claimed legally. The result is that product performance specifications convey very little helpful information to help interested parties make comparisons from one product to the next. While the information is likely to be accurate, because it is based on different assumptions, or on unrealistic test conditions, there is little way for most readers of display-related spec sheets to make judgments about one product vs. the next. Even skilled displays engineers cannot make meaningful comparisons based on the data currently published in most data sheets.

Interestingly, specsmanship in the displays industry is not caused by a lack of standards, but rather is the result of too many standards! There are numerous “standards” related to display metrology. Problem is that these standards are general across the entire display industry, and players can “pick and choose” amongst various “standard” measurement processes. The result is frequently a hodge-podge of measurement processes and mismatched results.

Different applications require different things from displays. (A display for a notebook PC is fundamentally different in terms of technology, performance requirements, and metrology, than an LCD monitor or PDP or what have you). Accordingly, measurement standards need to be more specifically suited to the application in order to help avoid misleading specsmanship.

The specsmanship situation in the displays industry has resulted in problems, as evidenced by recent litigation between NEC-Mitsubishi and Viewsonic:

“So important are these figures to a company's bottom line that when NEC-Mitsubishi engineers began to suspect other manufacturers were inflating specs, they tested the competition. NEC-Mitsubishi subsequently filed a lawsuit alleging that rival ViewSonic had damaged it by misstating contrast ratios for certain ViewSonic monitors”.

- Tom Mainelli, “LCD Specs: Useless?” June 2003, PC World

One result of this sort of headline is that manufacturers over-react by then significantly under-specifying product performance to assure they avoid costly lawsuits and the associated negative publicity. But under-specifying doesn't provide particularly meaningful information either...

The notebook PC industry, (indeed, the entire displays industry), fundamentally lacks a means by which companies can provide meaningfully comparable specifications in their data sheets, creating constant issues of questionable specsmanship.

Display Standards Verification

Once a standard is published, there is frequently a need for verification and assessment about compliance to the standard. In the standards associated with the displays used in notebook PCs, there are very few standards organizations that go beyond the level of voluntary compliance. Particularly in the area of front-of-screen performance, there are huge holes in the industry enabling specsmanship to rather misleading levels. There are a couple of possible solutions:

SPWG Verification and Assessment Centers. In the areas of luminance, contrast ratio, brightness uniformity, color gamut, color gamma, viewing angle, response time, residual image, power measurement, and cosmetic evaluation, the SPWG v3.0 specification identifies common ways for the notebook PC industry to compare performance. Recognizing that a lack of consistent compliance to standards is an obvious hole related to display-related standards, the SPWG recently proposed to create verification and assessment centers for the purpose of encouraging best practices and consistency with regard to the SPWG v3.0 standards.

Should these Verification and Assessment Centers actually be created, the SPWG can then provide a double service. On the one hand, the SPWG offers standards giving internationally agreed requirements for the displays used in notebook PCs. On the other hand, when it is necessary to assess and to show whether or not requirements are being met, the SPWG can help guide the activities of the Verification and Assessment Centers.

The SPWG suggests that the proposed Verification and Assessment Centers will provide benefits for component and LCD manufacturers, notebook PC companies, consumers, as well as for the enhancement of the notebook PC market in general.

- For conscientious component and LCD manufacturers, having their products assessed and verified as conforming to SPWG v3.0 Specifications would allow them to distinguish themselves from less reputable suppliers.
- For notebook PC companies, the proposed Verification and Assessment Centers would help assure panel interchangeability. Additionally, panel performance could be more easily compared from one manufacturer to the next, simplifying in-house test and qualification processes.
- Consumers would benefit from verification and assessment because it can provide them with a better basis for desirable performance characteristics.
- The notebook PC market generally benefits by enabling engineers to more fully focus on improving display performance, with unambiguous measurement criteria.

DisplaySearch/Westar Procurement Evaluation Service. Although not specifically linked to any display standards, DisplaySearch and Westar Display Technologies created a program in 2003 that is available to companies that want to rapidly get test results and streamline the selection of panels for new or existing products. Westar provides highly accurate electro-optical test services, data, and custom reports to support panel selection and the procurement engineering process. DisplaySearch handles sales and contracts, along with test product delivery. The DisplaySearch/Westar Procurement Evaluation Service aids OEMs in obtaining objective measurement data for AMLCD panels in order to make informed buying decisions.

The DisplaySearch/Westar Procurement Evaluation Service aids OEMs and suppliers by providing common test definitions, methodologies, and data reporting. This commonality improves specification management practices by providing an objective, third party test environment while eliminating the confusion often associated with test specifications. A complete array of electro-optical tests is available. You may choose from a menu of available tests, or choose one of our value-priced test suites.

What's Next for the SPWG?

With the release of the SPWG v3.0 standard, many wonder what will happen next for the SPWG. Several activities are likely as the v3.0 standard moves forward. Expected future activities:

SPWG Verification and Assessment Centers. Establishment and review of the proposed Verification and Assessment Centers are critical to helping assure meaningful implementation of the SPWG standards, particularly related to display measurement and performance. The SPWG is also likely to report regularly about the results coming from such proposed Verification and Assessment Centers.

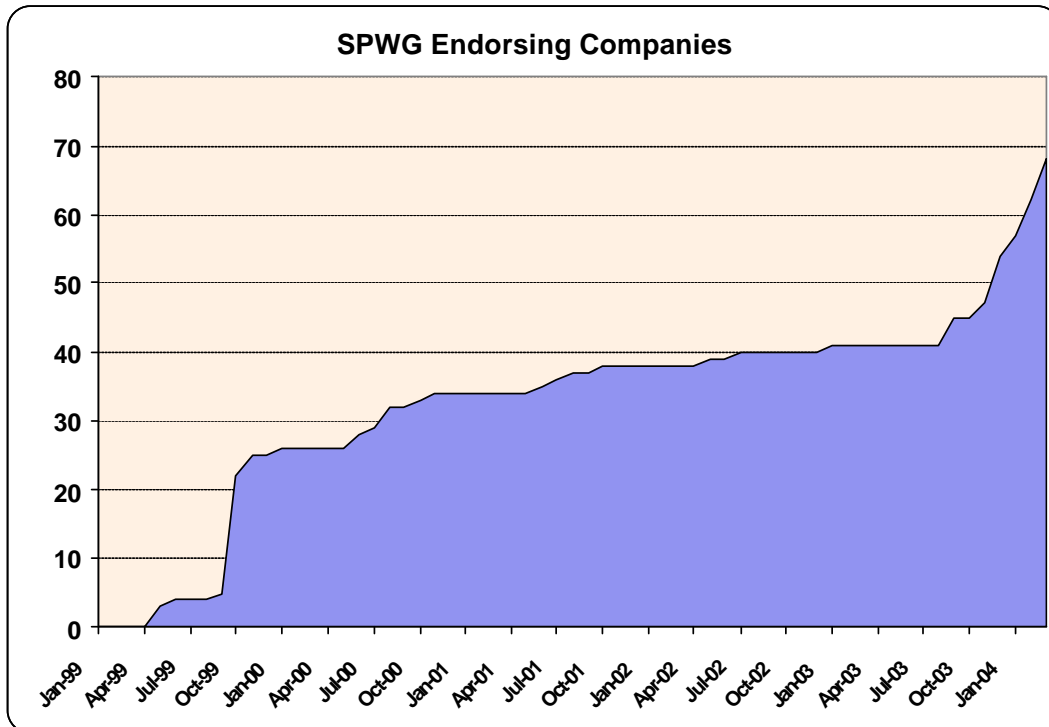
Test/Measurement Tools. The current v3.0 specification calls out specific test and measurement equipment from companies such as Topcon, Fluke, and Photo Research. Ideally, the standard will identify the measurement and calibration requirements, rather than the equipment of specific companies.

Cross-reference Listings. The www.spwg.org website currently identifies connector companies that claim to offer connectors that comply with the SPWG specifications. Future cross-reference lists will include all of the

Sustaining activities. A broad range of questions and fine-tuning related to the SPWG v3.0 specification and ongoing notebook PC display standardization news is expected to require a fair amount of activity related to the near future of SPWG-related activities.

Growth of the SPWG

The SPWG was formed in mid-1999. At the time that the SPWG v1.0 was announced in October 1999, there were 22 endorsing companies to the SPWG. By the time SPWB v2.0 was announced in September 2001, 37 companies were supporting the standardization effort. When the revitalization effort was launched in August 2003, 41 companies supported the standardization effort. At the time of this writing, considerable interest in the v3.0 standard has helped the SPWG grow dramatically, to 68 supporting companies.



New SPWG Endorsees

Endorsement of the SPWG efforts is a simple show of support for the standardization efforts related to the displays used in notebook PCs. There are no fees or membership requirements associated with such endorsement. There are also no obligations associated with endorsing the SPWG, although it is expected that endorsing companies will be sincere in their efforts to help further the industry-wide efforts to improve LCD supply chain efficiencies and the price/performance benefits that result from standardization. Note that endorsement of the SPWG is not an indication that any company's products are fit for purpose. Endorsing companies get the opportunity to actively participate in the standardization process. Providing timely inputs and reviewing draft documents, when requested, is critical to the successful implementation of the SPWG standards efforts. Any company that newly wishes to endorse the SPWG is encouraged to do so by contacting Mark Fihn or Paul Salisbury.

All American Semiconductor, Inc. is a U.S. distributor of a full range of semiconductors including memory devices, micro-controllers, transistors and many application specific semiconductors, as well as passive components such as capacitors, resistors and inductors. They also offer extensive solutions for flat panel display products. All American is the first distributor to join the SPWG, broadening the supply chain to yet another level. They sell primarily to a diverse range of industries, including manufacturers of communications products, computer networking equipment, computers and computer-related products, industrial equipment, transportation, navigation, entertainment, instrumentation and medical equipment. According to Rob Dautel, one of All American's FAE's, "All American is pleased to be the first distributor to join the SPWG. Standardizing the mechanical and electrical specs of TFT panels will drive innovation, technology, and display performance. As the SPWG standard evolves into the embedded market, we look forward to providing continued top notch TFTs, related components, support and solutions for our customers".

Endicott Research Group, Inc. (ERG, Inc.) claims to offer the industry's widest range of DC-AC inverters for powering backlit flat panel displays. They support all major manufacturers of CCFL- and EL- backlit LCDs, and offer a broad array of standard and custom solutions. ERG is focused on providing complete display power solutions. ERG has been matching DC-AC inverters to backlit LCDs since 1979 for customers around the world. They design and manufacture their own magnetic components, to better assure a proper design between the power supply and the display.

Fairchild Semiconductor is the leading global supplier of high performance semiconductor products in the power, interface, analog, mixed signal, logic, optoelectronic, and configurable products markets. Fairchild is focused on managing, converting, minimizing and distributing power. According to Staff Engineer, John Whalen, "Fairchild Semiconductor, the world's leading manufacturer of multi-market semiconductor products, applaud the efforts of the Standard Panel Working Group to better enable participants in the notebook PC industry to provide improved consumer and industrial products".

Forhouse Corporation is one of Taiwan's leading manufacturers of the backlight assemblies used in notebook PCs. Forhouse can supply the whole range of backlights, from small size LED backlights for mobile phones to large size backlights for TV panels, but its biggest market is for notebook PCs and LCD monitors.

Himax Technologies, Inc. was established in 2001 in Taiwan for the purpose of conducting R&D, design, manufacturing, and sales of integrated circuits for flat-panel displays, Himax is a Taiwanese IC design house with LCD manufacturing capability. Featuring IC circuit design, opto-electronic liquid crystal expertise and leading IC design and LCD optics technologies, Himax researches and develops driver ICs, timing controllers and TV tuners for flat-panel displays of various sizes.

ITO Corporation is one of the largest suppliers of heat seal connectors (HSCs), Anisotropic Conductive Film (ACF) and HSC/ACF processing equipment for TAB, COG, COF, COB, and other interconnect applications. Peter Opdahl, CEO/President of ITO America explained that “Lack of standardization benefits only a few of the very top manufacturers at the expense of almost everyone else, and even those that benefit from it are seeing those benefits disappear as the manufacturing technology becomes more standardized itself. Differentiation ought to be focused on bringing value to the end user”.

Jui Fang Electronics Co., Ltd. is a leading Taiwanese manufacturer of cable assemblies and connectors, particularly those related to the displays used in notebook PCs LCD monitors, and PDPs. According to Mr. K. W. Chen, JFE’s General Manager, “Jui Fang fully supports the SPWG’s efforts to integrate display standards for notebook and PC Industry. This great effort will create efficiencies that do not exist today and will benefit to the industry”.

Microsemi Corporation is a semiconductor manufacturer specializing in system-engineered integrated circuits and discrete devices that manage and regulate power, protect against transient voltage spikes, and transmit, receive and amplify electronic signals. Microsemi serves companies in five broad markets: mobile connectivity, notebooks/monitors, medical, defense/aerospace and automotive. The company has established itself in a leadership position for managing power that lights color displays in automotive GPS systems, notebook computers, computer monitors and LCD TVs. According to Paul Pickle, Marketing Vice President, “As a leading CCFL technology developer, Microsemi endorses SPWG’s efforts for developing an LCD standard. Standards allow more resources to be spent on those innovations that directly benefit the consumer.”

Radiant Imaging, Inc. provides advanced light and color measurement products and optical / illumination engineering tools and services. Radiant Imaging is the world leader in applying CCD technology to test and measurement solutions for the display and illumination industries. Dave Jenkins, Vice President of Sales and Marketing advised that, “Radiant Imaging, Inc. welcomes the SPWG’s effort to aid in the standardization of mobile FPD modules. Standardization of optical performance and screen cosmetic defects is a necessary component to reduce supply-chain costs due to performance quality issues for components as well as entire LCD systems”.

Rapid Conn is a Singapore–based connector and cable assembly manufacturer, with additional operations in California and Malaysia. In its endorsement, Rapid Conn CEO, Turker Hidirlar, explained, “Rapid Conn supports the Standard Panels Working Group initiative as the manufacturing and diffusion of standardized products is more efficient”.

Sin Sheng Terminal & Machine (SST) is a Taiwan connector manufacturer focused on providing solutions for the growing flat panel display market. SST’s general manager, Wang Shun-Shiou stated, “We at STM, a professional connector manufacturer, are pleased to endorse the SPWG which provides a benefit to the end-user of the displays used in Notebook PCs”.