

Minutes
Control Protocols Working Group
Thursday, 1 November 2001
Rosen Centre Hotel
Orlando, FL

Chairmen: Steve Carlson; High Speed Design, Inc.; principal; producer
Steve Terry; Electronic Theatre Controls; alternate; producer

Recording secretary: Karl G. Ruling, ESTA

Members attending: John Sellers; AIM Northwest; principal; general interest
Arnold Tang; Arnold Tang Productions; principal; user
Tobin Neis; Barbizon Companies; principal; user
Bill Ellis; Candela Controls, Inc.; observer; user
Doug Fleenor; Doug Fleenor Design, Inc.; principal; producer
Ed Jones; Edwin Jones Co., Inc.; principal; producer
Daniel W. Antonuk; Electronic Theatre Controls, Inc.; principal; producer (joined at this meeting)
Tracy Underhill; Electronics Diversified Inc.; principal; producer
Philip Nye; Engineering Arts; principal; general interest
Jon R. Farley; Entertainment Technology; representing Genlyte Thomas Group LLC; principal; producer (new parent company, joined at this meeting)
Robert Goddard; Goddard Design Co.; principal; producer
Peter Willis; Howard Eaton Lighting Ltd.; principal; producer
Edward Paget; Jones & Phillips Associates, Inc.; principal; general interest
Rick Leinen; NSI Corporation; representing Leviton Manufacturing Co., Inc.; principal; producer
Tim Bachman; Leviton/Colortran; representing Leviton Manufacturing Co., Inc.; alternate; producer
Ole Pedersen; Martin Professional A/S; principal; producer
Dave Higgins; Pathway Connectivity Inc.; principal; producer
Tim Cox; PLASA; principal; general interest
Robert Barbagallo; Proximo Inc.; principal; user
Douglas Franz; QVC Network; observer; user
Scott M. Blair; Scott M. Blair; individual; general interest (joined at this meeting)
George Kindler; SPL Integrated Solutions; representing Signal Perfection Ltd.; principal; user
David George; Spectrum Manufacturing Inc.; principal; producer
Richard Lawrence; Strand Lighting Ltd.; principal; producer
Michael Lay; Strand Lighting; representing Strand Lighting Ltd.; alternate; producer
Jerry Gorrell; Theatre Safety Programs; observer; general interest
Brian Dowd; TMB Associates; principal; user
Mitch Hefter; Entertainment Technology (Genlyte Thomas Group); representing USITT; principal; user (reaffirmed membership because of new employer at this meeting)
Charles Reese; Vari-Lite, Inc.; principal; producer
Alfred Langguth; Vari-Lite, Inc.; alternate; producer

Visitors: Ken Miller; Leviton Lighting Control Division
Jean-Francois Canuel; Christie Lites Ltd.

1 Opening remarks

Steve Terry called the meeting to order at 09:02 and welcomed all.

2 Attendance and membership

2.1 Introductions of those present and taking attendance

Steve Terry asked those present to sign the multicolored attendance sheet.

Terry asked the attendees to introduce themselves. Steve Terry started, and then co-chair Steve Carlson on his left continued.

Karl Ruling noted that regrets for not being able to attend had been offered by Wayne Howell, Peter Brooks, Steve Unwin, Paul Mardon, and Trevor Forrest.

2.2 Determination of quorum

Terry asked for a show of hands by voting members to determine if a quorum was present. Terry announced that a quorum was present and the meeting could proceed.

2.3 Recognition of alternate voting members

Terry reminded people of the one-vote rule. There was a discussion of who would be voting for whom, and the identification of alternates who would be voting in place of an entity's principal.

2.4 Requirements for membership

Terry stated that working group is open to all who are affected by the work of the group. ESTA membership is not a requirement. He reminded people of the attendance requirements. Voting members will lose their voting status if they consistently fail to attend meetings or fail to vote on letter ballots.

2.5 Processing of new membership requests

Terry read the applications from:

Mitch Hefter, Genlyte Thomas Group (new employer), applying as principal for USITT, user
Jon Farley, Genlyte Thomas Group, principal, producer
Dan W. Antonuk, ETC International, principal, producer
Scott M. Blair, self, individual, general interest

Ted Paget moved that the applications be accepted. The motion was seconded. The motion was approved unanimously by a show of hands.

The full list of CPWG voters (present and absent) during the period of this meeting was thus:

Name	Company	Representing	Voting status	Int. cat.
John Sellers	AIM Northwest	AIM Northwest	P	G
Tony de Rijk	Amazing Controls! Inc.	Amazing Controls! Inc.	P	P
Arnold Tang	Arnold Tang Productions	Arnold Tang Productions	P	U
Wayne David Howell	Artistic Licence (UK) Ltd.	Artistic Licence (UK) Ltd.	P	P
Tobin Neis	Barbizon Companies	Barbizon Companies	P	U
Doug Fleenor	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	P	P
Milton Davis	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	P
Ed Jones	Edwin Jones Co., Inc.	Edwin Jones Co., Inc.	P	P
Ed Prasser	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	A	P
Steve Terry	Electronic Theatre Controls	Electronic Theatre Controls, Inc.	A	P
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	P	P
Scott Rempel	Electronics Diversified Inc.	Electronics Diversified Inc.	A	P
Tracy Underhill	Electronics Diversified Inc.	Electronics Diversified Inc.	P	P
Philip Nye	Engineering Arts	Engineering Arts	P	G
Jon R. Farley	Entertainment Technology	Genlyte Thomas Group LLC	P	P
Robert Goddard	Goddard Design Co.	Goddard Design Co.	P	P
Dexter McNeil	Goddard Design Co.	Goddard Design Co.	A	P
Steve Carlson	High Speed Design, Inc.	High Speed Design, Inc.	P	P

Name	Company	Representing	Voting status	Int. cat.
Peter Willis	Howard Eaton Lighting Ltd.	Howard Eaton Lighting Ltd.	P	P
John Huntington	IATSE Local 1	I.A.T.S.E. Local 1	A	U
Edwin S. Kramer	IATSE, Local 1	I.A.T.S.E. Local 1	P	U
Roger Lattin	IATSE Local 728	I.A.T.S.E. Local 728	P	U
Peter Brooks	Zero 88 Ltd.	i Light Group PLC	A	P
Richard Thornton Brown	Zero 88 Ltd.	i Light Group PLC	P	P
Edward Paget	Jones & Phillips Associates, Inc.	Jones & Phillips Associates, Inc.	P	G
Rick Leinen	NSI Corporation	Leviton Manufacturing Co., Inc.	P	P
Ken Vannice	NSI Corporation	Leviton Manufacturing Co., Inc.	A	P
Tim Bachman	Leviton/Colortran	Leviton Manufacturing Co., Inc.	A	P
Ole Pedersen	Martin Professional A/S	Martin Professional A/S	P	P
Martin Hjort	Martin Professional A/S	Martin Professional A/S	A	P
Dave Higgins	Pathway Connectivity Inc.	Pathway Connectivity Inc.	P	P
Gary Douglas	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	P
Tony Douglas-Beveridge	PLASA Standards Office	PLASA	A	G
Tim Cox	PLASA	PLASA	P	G
Robert Barbagallo	Proximo Inc.	Proximo Inc.	P	U
Paul F. Mardon	Pulsar Ltd.	Pulsar Ltd.	P	P
Steve Unwin	Pulsar Ltd.	Pulsar Ltd.	A	P
Scott M. Blair	Scott M. Blair	Scott M. Blair	I	G
George Kindler	SPL Integrated Solutions	Signal Perfection Ltd.	P	U
David George	Spectrum Manufacturing Inc.	Spectrum Manufacturing Inc.	P	P
Richard Lawrence	Strand Lighting Ltd.	Strand Lighting Ltd.	P	P
Michael Lay	Strand Lighting	Strand Lighting Ltd.	A	P
Brian Dowd	TMB Associates	TMB Associates	P	U
Mitch Hefter	Entertainment Technology	USITT	P	U
Charles Reese	Vari-Lite, Inc.	Vari-Lite, Inc.	P	P
Alfred Langguth	Vari-Lite, Inc.	Vari-Lite, Inc.	A	P
Eckart Steffens	SOUNDLIGHT	VPLT	P	G
			32 votes	18 P 8 U 6 G

3 Approval of the minutes from the previous meeting (CP/2001-1009r1)

Mitch Hefter moved that the minutes recorded in CP/2001-1009r1 be approved as written. The motion was seconded. The motion was approved unanimously by a show of hands.

4 Reading of the call for patents

Steve Carlson read the following aloud to the group:

"ESTA intends to publish no standard that contains protected intellectual property, unless that property can be licensed by anyone for a reasonable fee. ESTA uses a process of open patent disclosure to implement this intent. ESTA does not conduct patent searches and does not warrant that its standards contain no protected intellectual property.

"In keeping with the open disclosure policy, I ask if anyone present wishes to notify the working group of the existence of a patent or copyright that might protect material in a standard being developed by the working group. You need not be the holder of the patent or copyright in order to notify the working group of its existence."

No issues were identified at this meeting.

5 The reading of the anti-trust statement

Steve Carlson read the following aloud to the group:

"The ESTA Board of Directors, the Technical Standards Committee, and the leadership of this working group will reject or nullify any actions that unlawfully restrain trade. Anyone who feels that such an action is being or has been taken is requested to bring that matter to the attention of the chair immediately. Anyone who feels that actions in restraint of trade have been taken and not properly annulled is requested to notify the TSC chair or ESTA president immediately.

"ESTA legal counsel has informed us that violations of the anti-trust laws can have serious consequences. Individuals engaged in certain unlawful conduct can be found criminally liable. An individual convicted of a criminal violation of the Sherman Act may be fined as much as \$100,000 and imprisoned for up to three years. An easy to read pamphlet describing restraint of trade issues is available from the Technical Standards Manager."

No issues were identified at this meeting.

6 Approval of agenda

Ted Paget moved that the draft agenda be approved.

The motion was seconded. The motion was approved unanimously by a show of hands.

7 Old business

7.1 E1.11

7.1.1 Public review comment resolution issues discussion

Mitch Hefter reported that some public review comments (detailed in CP/2001-1005) have not been able to be resolved in the task group and were being brought to the working group for resolution.

7.1.1.1 Comments 129, 130: max run length

Mitch Hefter reported that these comments suggest that a maximum data line run length should be specified and that rules on minimum spacings (cable lengths) between receivers should be specified.

Philip Nye suggested that the maximum run length should be covered in a recommended practice,

Peter Willis noted that the issue is really a function of the signal quality along the data line.

Philip Nye moved that the standard specify no maximum run length, that it state that maximum run length has been deliberately omitted and refer the reader to a recommended practice, and that the recommended practice task group address the issue of maximum run length in that document. The motion was seconded. By show of hands, one voted against the motion, all the rest in favor, with no abstentions. The motion carried.

There was a discussion of the minimum length between devices. The number of three feet was mooted as a minimum. There was a discussion of where this would best be stated.

Hefter moved that a discussion of minimum receiver to receiver cable length be placed in a recommended practice with the possibility of a reference to the recommended practice being stated in the standard. The motion was seconded. By show of hands, there were 18 in favor, three opposed, and four abstentions. The motion carried.

7.1.1.2 Comments 152 & 153: RJ45 Pinout.

Mitch Hefter reported that this issue had been resolved by the working group at the March 2000 meeting in Denver, but had been challenged in the public review by two BSR E1.11 task group members. There was a discussion of this question.

Philip Nye moved that the working group reaffirm the decision regarding RJ45 connector pin-outs made at the March 2000 meeting. The motion was seconded. There was a lengthy discussion.

Hefter moved the previous question. The motion carried with a show of hands of more than 2/3rds the present voting body.

The motion to reaffirm the decision regarding RJ45 connector pin-outs made at the March 2000 meeting was accepted by a show of hands with 19 voting in favor, two against, and four abstentions.

7.1.1.3 Comments 154 -169, 177 (not all inclusive): Cable Schemes.

Mitch Hefter reported that there is a desire by some to allow C1 in the wall for new installations, as well as to restore the Cat 5 versions dropped that had been in previous versions of BSR E1.11.

There was also a request to allow the functionality of pin 1, 2, and 3 only wiring to five-pin XLR's in situations where C2 cables are installed. This was discussed.

Ted Paget moved that this issue be resolved by not allowing the use of single-pair connectors or cable for permanently installed wiring. The motion was seconded. By show of hands there were 13 in favor, four opposed, and three abstentions. The motion carried. Some voters originally present had left the room, reducing the voting body. From this point on, several members walked in and out of the room, but a quorum was always present.

7.1.1.4 Comments 262 - 282: EF configurations.

Mitch Hefter reported that there is a desire by some to increase the EF configurations to at least four, while others look for reducing the them to two.

The current EF configurations are:

EF1	→ ←
EF2	→ ← →
EF3	← → ← →

Some want to make only two EF types:

EF1	→ ←
EF2	← → ← →

Some want four types:

EF1	→ ←
EF2	→ ← →
EF3	← → ← →
EF4	← → no functionality

Peter Willis moved that the scheme with four types, which is the existing scheme with the addition of a type EF4 with bi-directional communications on the primary data pair and no functionality on the secondary data pair, be accepted. The motion was seconded. By a show of hands, 17 were in favor, three were against, and three abstained. The motion passed.

7.1.2 Recommended practice document for E1.11

Peter Willis reported that there have been no further developments since the July meeting that require or warrant presentation to the working group.

7.1.3 Accessory power with E1.11

Doug Fleenor had no report as no work had been done on the project since the last meeting. He promised he'd have a report at the next meeting.

7.2 E1.20 Remote Device Management with DMX512

Scott Blair reported that the first face to face meeting of the task group will be on Tuesday after the LDI trade show. He said that there have been some productive email exchanges.

7.3 E1.17 Task Group report

Steve Carlson reported that the task group is working on scaling problems and optimizing the protocol. They also are dealing with issues of which UDP port to use and flow control. There has been a lot of discussion on the work being done in the industry on IPB6. The protocol will have to be able to use IPB4 and IPB6. They would like to be able to use the services of IPB6, but can't count on that being implemented in all cases.

Carlson said that they had identified a problem with control authority. How does a controlling device have access to the properties of other devices? How is this authority transferred? The task group has examined this and has found a way to trim the task of assigning control authority.

In summary, Carlson said that the task group is in a testing and stream-lining phase. It is putting the protocol on a diet.

Doug Fleenor asked when E1.17 will be done. Steve Carlson said he didn't know, but that publication won't be in 2002. He reiterated that progress is being made and predicted that something will be demonstrable to the working group by next summer.

7.4 IEEE Report and power on Ethernet tutorial

Steve Carlson reported that IEC/ISO 11801 passed the revision in which Cat 5 cable is eliminated and Cat 6 and Cat 7 are introduced. Carlson recommended that we not refer to Cat 5 cable in future documents.

Carlson reported that 10 gig Ethernet is being installed in the field, and that the standard for it is going to the IEEE's equivalent of first public review.

Carlson reported that the First Mile project has two tracks: copper and fiber. Has heard of theoretical data rates of 125Mbits a second for copper. The protocol must be able to handle harsh environments since it has to handle telephone wire on poles.

Carlson reported that a 10 Mbit/sec long-haul, industrial protocol is being developed. It will carry data many kilometers.

Carlson reported that the IEEE has updated their patent policy and tried to clarify what is an essential patent.

Regarding power on Ethernet, P802.3af/D1.2 has been shown to the group. D2.2 should be the final version since it will be the working group draft. Power will be handled in clause 33. People will start making products when D2.2 is issued, which will be the working group draft.

The scheme can deliver about 13 watts to a connected device (12.95 W specifically.) It will work on 10, 100, and 1000 base-T. It provides phantom power over the signal pairs or over the idle pairs. It has a method to discover if devices needing power are on the network. Power supply devices will not supply power unless there are devices that need it. The data-link characteristics are unchanged by having power on the data link. The power unit would be in a hub, switcher, or mid-span insertion unit.

Power on the data cable allows for flexible UPS strategies. The power is supplied through the central hub, so you can implement whatever strategy you want there in the equipment room and not at some remote device.

When power is sent on the data pairs, it is sent on 3-6 to 1-2 and power comes back on 3-6 to 1-2. Transformer coupling at each end keeps power out of the data. The power need sensing is done with a simple resistor on the loads that need power. If it's not there, no power. Transformer coupling deals with ground loop situations. Since transformer couplers are used for anti-ground loop protection, the power source and power receiver need DC to DC converters to provide the isolation there.

Power can be sent on the unused pairs. It will go out on 4-5 to 4-5, and back on 7-8 to 7-8. These are unused in 10 and 100base-T systems but they are used in 1000base-T system, so this method can't be used to provide power on such systems. The power-requiring signature stratagem is used here too.

Receivers will have to be able to take power via either way. Senders of power can use one method or the other. This system works because of the base-T star topology. It won't work with a daisy-chain topology.

Carlson said this will be the first world-wide standard for power distribution. He showed a picture of the Ethernet-powered shaver (a Panasonic shaver with Norelco-style triple-head). The 13 watts available is enough to run it. The voltage is nominally 48V.

8 New business

None

9 Other business

None

10 Schedule for future meetings

It was announced that the next meeting is scheduled for February 14 in New Orleans at the Hyatt Regency New Orleans at the Louisiana Superdome.

11 Adjournment

Ted Paget moved that the meeting adjourn. The motion was seconded. The motion was approved unanimously on a voice vote. The meeting was adjourned at 12:37.

Working Group Membership and Contact Information at the End of the Meeting

Name	Company	Representing	Voting status	Int. cat.
John Sellers	AIM Northwest	AIM Northwest	P	G
Tony de Rijk	Amazing Controls! Inc.	Amazing Controls! Inc.	P	P
Arnold Tang	Arnold Tang Productions	Arnold Tang Productions	P	U
Wayne David Howell	Artistic Licence (UK) Ltd.	Artistic Licence (UK) Ltd.	P	P
Steve Friedlander	Auerbach & Associates, Inc.	Auerbach & Associates, Inc.	O	U
Sierk Janszen	Avenger Showcontrol	Avenger Showcontrol	O	P
J. B. Toby	Avolites Ltd.	Avolites Ltd.	O	P
Shahid Anwar	Avolites Ltd.	Avolites Ltd.	O	P
Richard Salzedo	Avolites Ltd.	Avolites Ltd.	O	P
Barbara Wohlsen	Barbara Wohlsen	Barbara Wohlsen	O	U
Tobin Neis	Barbizon Companies	Barbizon Companies	P	U
Bernardo Benito Rico	Ben-Ri Electronica S.A.	Ben-Ri Electronica S.A.	O	P
Lee J. Bloch	Bloch Design Group Inc.	Bloch Design Group Inc.	O	G
Soo-Myong Chung	Bloch Design Group Inc.	Bloch Design Group Inc.	O	G
Bradley Klinkrad	Bradley Klinkrad	Bradley Klinkrad	O	G
Ted Fregon	Bytecraft Pty. Ltd.	Bytecraft Pty. Ltd.	O	P
Bill Ellis	Candela Controls, Inc.	Candela Controls, Inc.	O	U
Marty Lazarus	Chicago Spotlight, Inc.	Chicago Spotlight, Inc.	O	G
Jason Friedman	Creative Realities, Inc.	Creative Realities, Inc.	O	G
David Bertenshaw	David Bertenshaw	David Bertenshaw	O	P
Doug Fleenor	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	P	P
Milton Davis	Doug Fleenor Design, Inc.	Doug Fleenor Design, Inc.	A	P
Gary Dove	Dove Systems	Dove Systems	O	P
Jussi Kallioinen	Eastway Sound & Lighting	Eastway Sound & Lighting	O	U
Ed Jones	Edwin Jones Co., Inc.	Edwin Jones Co., Inc.	P	P
Bill Fehrmann	Electrol Engineering, Inc.	Electrol Engineering, Inc.	O	P
Ed Prasser	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	A	P
Adam Bennette	Electronic Theatre Controls Ltd.	Electronic Theatre Controls, Inc.	O	P
Steve Terry	Electronic Theatre Controls	Electronic Theatre Controls, Inc.	A	P
Daniel W. Antonuk	Electronic Theatre Controls, Inc.	Electronic Theatre Controls, Inc.	P	P
Paul Bennett	Electronics Diversified Inc.	Electronics Diversified Inc.	O	P
Scott Rempel	Electronics Diversified Inc.	Electronics Diversified Inc.	A	P
Tracy Underhill	Electronics Diversified Inc.	Electronics Diversified Inc.	P	P
Philip Nye	Engineering Arts	Engineering Arts	P	G
Paul K. Ericson	Ericson Lighting Design	Ericson Lighting Design	O	U
Jon R. Farley	Entertainment Technology	Genlyte Thomas Group LLC	P	P
Robert Goddard	Goddard Design Co.	Goddard Design Co.	P	P
Dexter McNeil	Goddard Design Co.	Goddard Design Co.	A	P
Alan P. Symonds	Harvard College	Harvard University	O	U

Name	Company	Representing	Voting status	Int. cat.
Trevor Forrest	Helvar Lighting Control	Helvar Lighting Control	O	P
Bill Hewlett	Hewlett Electronics	Hewlett Electronics	O	P
Steve Carlson	High Speed Design, Inc.	High Speed Design, Inc.	P	P
Peter Willis	Howard Eaton Lighting Ltd.	Howard Eaton Lighting Ltd.	P	P
John Huntington	IATSE Local 1	I.A.T.S.E. Local 1	A	U
Edwin S. Kramer	IATSE, Local 1	I.A.T.S.E. Local 1	P	U
Roger Lattin	IATSE Local 728	I.A.T.S.E. Local 728	P	U
Peter Brooks	Zero 88 Ltd.	i Light Group PLC	A	P
Richard Thornton Brown	Zero 88 Ltd.	i Light Group PLC	P	P
Geoffrey O. Thompson	Nortel Networks, Inc.	IEEE 802.3/Nortel Networks	O	G
Rob Johnston	Interactive Technologies, Inc.	Interactive Technologies, Inc.	O	P
Larry Schoeneman	Interesting Products, Inc.	Interesting Products, Inc.	O	G
David Timmins	Jands Electronics	Jands Electronics	O	P
Edward Paget	Jones & Phillips Associates, Inc.	Jones & Phillips Associates, Inc.	P	G
John Mehlretter	Lehigh Electric Products Co.	Lehigh Electric Products Co.	O	P
Mark T. Kraft	Lehigh Electric Products Co.	Lehigh Electric Products Co.	O	P
Rick Leinen	NSI Corporation	Leviton Manufacturing Co., Inc.	P	P
Ken Vannice	NSI Corporation	Leviton Manufacturing Co., Inc.	A	P
Tim Bachman	Leviton/Colortran	Leviton Manufacturing Co., Inc.	A	P
Andrew Sherar	Lightmoves PLC	Lightmoves PLC	O	P
Gary Pritchard	LSC Lighting Systems PTY Ltd	LSC Lighting Systems PTY Ltd	O	P
J. P. Steiner	Lutron Electronics	Lutron Electronics	O	P
Jim Holladay	Luxence	Luxence	O	G
Tracy Schwenk	Martin Professional Inc.	Martin Professional A/S	O	P
Ole Pedersen	Martin Professional A/S	Martin Professional A/S	P	P
Martin Hjort	Martin Professional A/S	Martin Professional A/S	A	P
Hiroshi Kita	Marumo Electric Co., Ltd.	Marumo Electric Co., Ltd.	O	P
David A. Boller	Organic Machines LLC	Organic Machines LLC	O	P
William Benner	Pangolin Laser Systems	Pangolin Laser Systems	O	P
Dave Higgins	Pathway Connectivity Inc.	Pathway Connectivity Inc.	P	P
Gary Douglas	Pathway Connectivity Inc.	Pathway Connectivity Inc.	A	P
Tony Douglas-Beveridge	PLASA Standards Office	PLASA	A	G
Tim Cox	PLASA	PLASA	P	G
Mac Perkins	PNTA	PNTA Inc.	O	G
Robert Barbagallo	Proximo Inc.	Proximo Inc.	P	U
Paul F. Mardon	Pulsar Ltd.	Pulsar Ltd.	P	P
Steve Unwin	Pulsar Ltd.	Pulsar Ltd.	A	P
Stephen J. Tyrrell	Quantum Logic	Quantum Logic	O	P

Name	Company	Representing	Voting status	Int. cat.
Douglas Franz	QVC Network	QVC Network	O	U
Charlie Richmond	Richmond Sound Design Ltd.	Richmond Sound Design Ltd.	O	P
Kenneth Mockler	Sceno Plus	Sceno Plus	O	U
Scott M. Blair	Scott M. Blair	Scott M. Blair	I	G
Mick Martin	Showcad Control Systems	Showcad Control Systems	O	P
Andre Broucke	ADB - TTV Technologies	Siemens	O	P
George Kindler	SPL Integrated Solutions	Signal Perfection Ltd.	P	U
David George	Spectrum Manufacturing Inc.	Spectrum Manufacturing Inc.	P	P
Ujall Kar	Standard Robotics & Lighting	Standard Robotics & Lighting	O	G
John Mitchell	Sterling Technical Services	Sterling Technical Services	O	U
Richard Lawrence	Strand Lighting Ltd.	Strand Lighting Ltd.	P	P
Michael Lay	Strand Lighting	Strand Lighting Ltd.	A	P
Tad Trylski	Tad Trylski	Tad Trylski	O	U
Jerry Gorrell	Theatre Safety Programs	Theatre Safety Programs	O	G
Colin Waters	TMB Associates	TMB Associates	O	U
Brian Dowd	TMB Associates	TMB Associates	P	U
Hans Leiter	Transtechnik GmbH	Transtechnik GmbH	O	P
Anders Ekvall	AVAB Scandinavia	Transtechnik GmbH	O	P
Mitch Hefter	Entertainment Technology	USITT	P	U
Charles Reese	Vari-Lite, Inc.	Vari-Lite, Inc.	P	P
Alfred Langguth	Vari-Lite, Inc.	Vari-Lite, Inc.	A	P
Eckart Steffens	SOUNDLIGHT	VPLT	P	G
Ken Wagner	Walt Disney Imagineering	Walt Disney	O	U
Eric Cornwell	West Side Systems	West Side Systems	O	U
John Sondericker III	Wybron, Inc.	Wybron, Inc.	O	P

Voting Status

- P Principal voting representative for a company or organization
- A Alternate voting representative for a company or organization
- I Individual representing no organization other than himself or herself
- O Observer, non-voting

Interest Categories

- P Producer (manufacturer) of control devices or products
- U User of control devices or products
- G General interest in control devices or products