

# Standards Working Group IEEE 802.15

Wireless Personal Area Networks (WPAN™)

Homepage at <http://ieee802.org/15>



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E-M [giffordi@ieee.org](mailto:giffordi@ieee.org)

October 26, 2001

Mr. David Ringle, Sr. Administrator, IEEE-SA Governance  
IEEE-SA Standards Department  
445 Hoes Lane  
Piscataway, NJ 08854 USA

Subject: Application for approval of P802.15.1  
Re: P802.15.1/D1.0.1

Enclosed is an application for approval of P802.15.1 ("LAN/MAN Specific Requirements -- Part 15.1: Wireless Medium Access Control (MAC) and Physical Layer (PHY) specifications for Wireless Personal Area Networks (WPANs)").

Attached to this letter, please find the following:

- Page 2-3: IEEE-SA Standards Board Form for Submittal of Proposed Standards
- Page 4-6: Report of initial ballot (26 affirmative, 3 negative, 1 abstention)
- Page 7-9: Report of recirculation ballot (26 affirmative, 3 negative, 2 abstention)
- Page 10-30: Unresolved negative comments and rebuttal report (19 of 95 unresolved)
- Page 31-34: PAR
- Page 35: PAR approval letter
- Page 36-37: PAR corrigendum: Approve: PAR number change for 802.15 to 802.15.1
- Page 38-50: Coordination comments & responses report (all issues were addressed)
- Page 51-54: Coordination comments (originals)
- Page 55-65: Bluetooth SIG - IEEE Copyright License Agreement to publish the Derivative Work
- Page 66: Bluetooth SIG Letter of Authorization
- Page 67: Signature Page

The draft itself (P802.15.1/D1.0.1-2001) is a separate file.

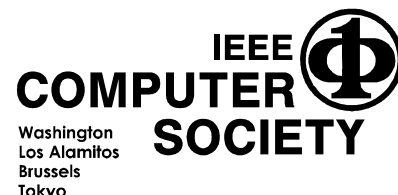
Please feel free to contact me with any questions or concerns.

Regards

**Ian C. Gifford**

Ian C. Gifford  
Vice Chair, IEEE 802.15 Working Group for Wireless Personal Area Networks

cc: Chatschik Bisdikian, Jim Carlo, Bob Heile, Angela Ortiz, Tom Siep, Susan Tatiner, File



#### IEEE COMPUTER SOCIETY OFFICES

##### Headquarters Office

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##### Publications Office

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13, Avenue de l'Aquilon  
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FAX: +32-2-770-8505

##### Asian/Pacific Office

Watanabe Bldg.  
1-4-2 Minami-Aoyama  
Minato-ku,  
Tokyo 107-0062, JAPAN  
Phone: +81-3-3408-3118  
FAX: +81-3-3408-3553

**IEEE-SA STANDARDS BOARD  
FORM FOR SUBMITTAL OF PROPOSED STANDARDS**

**1. PROJECT NUMBER:** **P802.15.1**

**2. DATE:** **26Oct01**

**3. TITLE:** **Draft Standard for Information technology—  
Telecommunications and information exchange between systems—  
Local and metropolitan area networks—  
Specific requirements—  
Part 15.1: Wireless Medium Access Control (MAC) and Physical  
Layer (PHY) specifications for Wireless Personal Area Networks  
(WPANs™)**

**4. SPONSOR** (Full name of society/  
committee): **IEEE Computer Society/IEEE 802 LAN/MAN Standards  
Committee**

**5. BALLOTING COMMITTEE:** **IEEE 802 LAN/MAN Standards Committee**

(Include written delegation of balloting authority.)

**6. NAME OF WORKING GROUP:** **IEEE 802.15 Working Group for Wireless Personal Area Networks  
(WPANs™)**

**7. NAME AND ADDRESS OF SUBMITTER** **Mr. Ian Gifford, Vice Chair, IEEE 802.15 Working Group for  
WPANs and Chair, IEEE 802.15.1 Task Group for WPANs  
Consultant  
23 Kelshill Road  
Chelmsford, MA 01863, USA**

Telephone: **+1 978 815 8182**

Fax: **+1 978 251 1437**

E-Mail: **giffordi@ieee.org**

**8. DESCRIPTION OF DOCUMENT** (Check one from each column.)

- |   |   |  |
|---|---|--|
| <input checked="" type="checkbox"/> New | <input checked="" type="checkbox"/> Standard  | <input checked="" type="checkbox"/> Full Use (5-year life cycle) |
| <input type="checkbox"/> Revision       | <input type="checkbox"/> Recommended Practice   | <input type="checkbox"/> Trial Use (2-year life cycle)           |
| <input type="checkbox"/> Reaffirmation  | <input type="checkbox"/> Guide  |  |
| <input type="checkbox"/> Withdrawal     | <input type="checkbox"/> Amendment/Corrigenda to an existing<br>standard (Indicate number and year) _____ |  |

**8A. REAFFIRMATION ONLY:** In the opinion of the balloting group, this standard continues to be useful in its current form and contains no significant obsolete or erroneous information.  
 Yes  No

**9. BALLOT INFORMATION**

List the interest categories of **eligible** balloters only. Refer to the IEEE-SA Standards Board Operations Manual and the Working Guide for Submittal of Proposed Standards for the rules of balloting committee classification.

<b>User</b> <u>10</u>	<b>Producer</b> <u>11</u>	<b>Gen'l Interest</b> <u>12</u>	<b>Gov/Aca/Con</b> <u>0</u>
Interest Category No.	Interest Category No.	Interest Category No.	Interest Category No.

**SUMMARY OF ELIGIBLE BALLOTS**

	<u>INITIAL BALLOT</u>		<u>RECIRCULATION BALLOT</u> (if applicable)	
	Draft <b><u>D0.9.2</u></b>	Date Closed: <b><u>25Aug01</u></b>	Draft <b><u>D1.0.1</u></b>	Date Closed: <b><u>11Oct01</u></b>
	<u>Number</u>	<u>Percentage</u>	<u>Number</u>	<u>Percentage</u>
Ballots Mailed	<b><u>33</u></b>	<u>100%</u>	<b><u>33</u></b>	<u>100%</u>
Ballots Returned	<b><u>30</u></b>	<b><u>90%</u></b>	<b><u>31</u></b>	<b><u>93%</u></b>
Affirmatives	<b><u>26</u></b>	<b><u>89%</u></b>	<b><u>26</u></b>	<b><u>89%</u></b>
Negatives	<b><u>3</u></b>	<u>N/A</u>	<b><u>3</u></b>	<u>N/A</u>
Abstentions	<b><u>1</u></b>	<b><u>3%</u></b>	<b><u>2</u></b>	<b><u>6%</u></b>

Reasons for abstentions: Lack of time = **1** Lack of expertise = **1** Other = \_\_\_\_\_

## 10. RESOLUTION OF COMMENTS AND NEGATIVE VOTES

All balloting group members, observers, and coordinating groups have been advised of substantive changes made with respect to the balloted draft standard (in response to comments, in resolving negative votes, or for other reasons) and have received copies of all unresolved negative votes with reasons from the negative voter and the rebuttal, and have been advised that they have an opportunity to change their votes.

- A. Have unresolved negative votes been circulated?  Yes  No  No unresolved votes  
*Include unresolved negative comments and rebuttal.*
- B. Have substantive document changes been circulated?  Yes  No  No substantive changes

## 11. COORDINATION ACTIVITY (Not required for reaffirmation)

Using the abbreviations listed below, indicate the response received from each committee/organization required for coordination and include a copy of the response. Include documentation authorizing coordination by common membership, if applicable.

R = Received	R/C = Received with comment	NR = Not received	
Committee/Organization	Response	Committee/Organization	Response
SCC10 (IEEE Dictionary)	R/C		
SCC14 (Quantities, Units, & Letter Symbols)	R/C		
IEEE Standards Editorial Staff	R/C		

Indicate below any unresolved problems from coordination activities.

## 12. PATENT/COPYRIGHT and REGISTRATION ISSUES

- A. Is there any patented material in the proposed standard?  Yes  No  Originally indicated on the PAR, but not included in the final document  
 If yes, include letter(s) of assurance from the patent holder.
- B. Is there any copyrighted material in the proposed standard?  Yes  No  
 If yes, include copyright release(s).
- C. Is the registration of objects and/or numbers a provision of the proposed standard? If yes, include a proposal for review by the IEEE-SA Registration Authority Committee (RAC).  Yes  No  Already approved by RAC  
802.15.1 uses IEEE MAC addresses. Bluetooth SIG, Inc. has coordinated with RAC and addresses are currently being issued to SIG members for that purpose. Since we do not have MIBs, we will not be registering any names.

## 13. INTERNATIONAL STANDARDS ACTIVITIES (Not required for reaffirmation)

Is this document intended to be the basis of or included in an international standard?  Yes (Explain.)  No

**IEEE Project 802.15.1 shall drive this through JTC1/SC6 as a Fast Track, after 802.15 is approved.**

## 14. UNIT OF MEASUREMENT (check one)

- International System of Units (SI) - Metric  Inch/Pound  Both  Not measurement sensitive  
 Other \_\_\_\_\_

## 15. Source Materials Submitted to IEEE Standards Department

- A. Have electronic versions of the source documents (text and figures) been provided?  Yes  No Format: **FrameMaker v6 via CD-ROM (386MB)**
- B. Will a diskette or other online material be required to accompany the published standard?  Yes  No <http://ieee802.org/15/Bluetooth/>

## 16. Submission check list (X = included in submittal package N/A = Not applicable)

X	Submission Package Item	List URL if online
X	This submittal form	
X	Ballot summary form(s) (1 per ballot cycle)	<a href="http://ieee802.org/15/pub/SB1/SB1.html">http://ieee802.org/15/pub/SB1/SB1.html</a> <a href="http://ieee802.org/15/pub/SB2/SB2.html">http://ieee802.org/15/pub/SB2/SB2.html</a>
X	Copies of unresolved negatives & rebuttals	<a href="http://ieee802.org/15/pub/SB1/SB1-unresolved-comments.txt">http://ieee802.org/15/pub/SB1/SB1-unresolved-comments.txt</a> <a href="http://ieee802.org/15/pub/SB2/Freedman-Y1.txt">http://ieee802.org/15/pub/SB2/Freedman-Y1.txt</a>
X	PAR and PAR approval Letter	<a href="http://grouper.ieee.org/board/nescom/802-15.pdf">http://grouper.ieee.org/board/nescom/802-15.pdf</a>
X	Coordination comments & responses	<a href="http://ieee802.org/15/pub/SB2/SB2.html">http://ieee802.org/15/pub/SB2/SB2.html</a>
X	.pdf of final balloted draft # <b>Draft Std IEEE P802.15.1/D1.0.1, in Adobe PDF (8022KB) (WG Password Required)</b>	<a href="http://ieee802.org/15/pub/SB2/SB2.html">http://ieee802.org/15/pub/SB2/SB2.html</a> or via <a href="http://ieee802.org/15/private/Draft/99001D10P802-15-1_Draft_Standard.pdf">http://ieee802.org/15/private/Draft/99001D10P802-15-1_Draft_Standard.pdf</a>
X	Permissions & copyright releases	
N/A	Delegation of balloting authority	

## Ballot Summary

P802.15.1/D0.9.2

Closing date: 2001-08-25

### 1. This ballot has met the 75% returned ballot requirement.

33 eligible people in this ballot group.

26 affirmative votes  
 3 negative votes  
 1 abstention votes

=====

30 votes received = 90% returned  
 3% abstention

### 2. The 75% affirmation requirement is being met.

26 affirmative votes  
 3 negative votes

=====

29 votes = 89% affirmative

## Ballot Details

### Coordination Responses Only

IEEE/Coord Number	Name	Role	Phone / E-mail	Coordination Ballot Received	Coordination Comment(s) Received
00601054	<a href="#">Bruce Barrow</a>	SCC14	301-493-4374 b.barrow@ieee.org	yes	yes
00001000	<a href="#">Yvette Ho Sang</a>	SCC10	732-562-3814 y.hosang@ieee.org	-	yes
00001001	<a href="#">Yvette Ho Sang</a>	Editorial	732-562-3814 y.hosang@ieee.org	-	yes

### Balloters

Number	Name	Phone / E-mail	Vote	T	E	Graphics	Status Notes	Interest Category
01762111	<a href="#">Toru Aihara</a>	+81-46-273-4905 aihara@computer.org	Approve, no comments (Y)	-	-	-		User
05587654	<a href="#">John R Barr</a>	847-576-8706 john.barr@motorola.com	Approve, no comments (Y)	-	-	-		Producer
01801406	<a href="#">Chatschik Bisdikian</a>	914-784-7439 bisdik@us.ibm.com	Approve, no comments (Y)	-	-	-		General Interest
40340304	<a href="#">Jan Boer</a>	+31-30-609483 janboer@agere.com	-	-	-	-		Producer
05572953	<a href="#">James T Carlo</a>	214-693-1776 j.carlo@ieee.org	Approve, no comments (Y)	-	-	-		Producer
07183387	<a href="#">Bruce J Curri van</a>	949-450-8700 curri van@broadcom.com	Approve, no comments (Y)	-	-	-		Producer
40065638	<a href="#">Mary A</a>	972-575-2330	Approve, no	-	-	-		User

	<a href="#">DuVal</a>	m-duval@ti.com	comments (Y)					
41311588	<a href="#">Vern A Dubendorf</a>	781-203-1367 tdubendorf@ieee.org	Approve, no comments (Y)	-	-	-		Producer
07968993	<a href="#">Kurt B Fischer</a>	925-462-9105 kurt.fischer@hyperinterop.com	Approve, no comments (Y)	-	-	-		Producer
06810238	<a href="#">Michael A Fischer</a>	210-614-4096x107 mfischer@choicemicro.com	Disapprove, comments (N)	26	19	-		Producer
08518995	<a href="#">Avraham Freedman</a>	+972-3-6959552 avif@hexagonltd.com	Disapprove, comments (N)	3	11	-		General Interest
40166079	<a href="#">Ian C Gifford</a>	978-251-3451 giffordi@ieee.org	Approve, no comments (Y)	-	-	-		General Interest
40306847	<a href="#">Simon Harrison</a>	+44-1753-661-421 simon.harrison@red-m.com	-	-	-	-		General Interest
01550144	<a href="#">Vic Hayes</a>	+31-30-60-97-528 vichayes@agere.com	Abstain for lack of time (A1)	-	-	-		General Interest
01670801	<a href="#">Robert F Heile</a>	508-222-1393 bheile@ieee.org	Approve, no comments (Y)	-	-	-		General Interest
40138267	<a href="#">James Ivers</a>	412-621-7300x14 james@pangonetworks.com	Approve, no comments (Y)	-	-	-		User
40357068	<a href="#">Stuart J Kerry</a>	408-348-3171 stuart@ok-brit.com	Approve, no comments (Y)	-	-	-		Producer
05995253	<a href="#">Brian G Kiernan</a>	610-878-5637 brian.kiernan@interdigital.com	Approve, no comments (Y)	-	-	-		General Interest
40323353	<a href="#">Patrick W Kinney</a>	pat.kinney@ieee.org	Approve, no comments (Y)	-	-	-		User
05845615	<a href="#">Gregory Luri</a>	630-377-4475 gluri@ci.st-charles.il.us	Approve, no comments (Y)	-	-	-		User
08122103	<a href="#">Roger B Marks</a>	(303) 497-3037 r.b.marks@ieee.org	Approve, comments (Y1)	-	2	-		General Interest
08940611	<a href="#">Peter Martini</a>	+49-228-73-4334 martini@cs.uni-bonn.de	Approve, comments (Y1)	-	1	-		User
40300055	<a href="#">Michael D McInnis</a>	425-865-2840 michael.d.mcinnin@boeing.com	Approve, comments (Y1)	-	22	-		User
40245992	<a href="#">Marco Naeve</a>	414-449-7270 marconaeve@eaton.com	Approve, no comments (Y)	-	-	-		User
01674571	<a href="#">Erwin Noble</a>	281-719-1955 enobl@telxon.com	-	-	-	-		User
08944704	<a href="#">Robert O'Hara</a>	408-986-9596 bob@informed-technology.com	Disapprove, comments (N)	1	-	-		User
07022429	<a href="#">Roger Pandanda</a>	619-839-3942 rogerp@ieee.org	Approve, no comments (Y)	-	-	-		General Interest
08097867	<a href="#">Jon W Rosdahl</a>	801-984-5866 jrosdahl@ieee.org	Approve, no comments (Y)	-	-	-		General Interest
40239981	<a href="#">Thomas M Siep</a>	469-766-8680 tom.siep@ieee.org	Approve, no comments (Y)	-	-	-		Producer
40224483	<a href="#">Carl R. Stevenson</a>	610-712-8514 carlstevenson@agere.com	Approve, no comments (Y)	-	-	-		Producer

03239332	<a href="#">John Viaplana</a>	+34670221398 jviaplana@acm.org	Approve, no comments (Y)	-	-	-		General Interest
03851722	<a href="#">Fujio Watanabe</a>	408-451-4726 fwatanabe@ieee.org	Approve, no comments (Y)	-	-	-		Producer
07284292	<a href="#">Don Wright</a>	859-825-4808 don@lexmark.com	Approve, no comments (Y)	-	-	-		General Interest

**Summary of Eligible Voters by Interest Category**

Interest Category	Affirmative(s)	Negative(s)	Abstention(s)	Not Returned	Total
User	8	1	0	1	10
Producer	9	1	0	1	11
General Interest	9	1	1	1	12
Government/Academic/Consultant	0	0	0	0	0
<b>Voting Tally</b>	<b>26</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>33</b>

<b>Abstention details:</b>	1 for lack of time (A1)	0 for lack of expertise (A2)	0 for other reasons (A3)
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## Ballot Summary

P802.15.1/D1.0.1 Recirculation

Closing date: 2001-10-11

This is a recirculation ballot. The report collates the results from the following groups: 0000130 0000169.

### 1. This ballot has met the 75% returned ballot requirement.

33 eligible people in this ballot group.

26 affirmative votes

3 negative votes

2 abstention votes

=====

31 votes received = 93% returned  
6% abstention

### 2. The 75% affirmation requirement is being met.

26 affirmative votes

3 negative votes

=====

29 votes = 89% affirmative

## Ballot Details

### Coordination Responses Only

IEEE/Coord Number	Name	Role	Phone / E-mail	Coordination Ballot Received	Coordination Comment(s) Received
00601054	<a href="#">Bruce Barrow</a>	SCC14	301-493-4374 b.barrow@ieee.org	yes	yes
00001000	<a href="#">Yvette Ho Sang</a>	SCC10	732-562-3814 y.hosang@ieee.org	-	yes
00001001	<a href="#">Yvette Ho Sang</a>	Editorial	732-562-3814 y.hosang@ieee.org	-	yes

### Balloters

Number	Name	Phone / E-mail	Vote	T	E	Graphics	Status Notes	Interest Category
01762111	<a href="#">Toru Aihara</a>	+81-46-273-4905 aihara@computer.org	Approve, no comments (Y)*	-	-	-		User
05587654	<a href="#">John R Barr</a>	847-576-8706 john.barr@motorola.com	Approve, no comments (Y)	-	-	-		Producer
01801406	<a href="#">Chatschik Bisdikian</a>	914-784-7439 bisdik@us.ibm.com	Approve, no comments (Y)*	-	-	-		General Interest
40340304	<a href="#">Jan Boer</a>	+31-30-609483 janboer@agere.com	-	-	-	-		Producer
05572953	<a href="#">James T Carlo</a>	214-693-1776 j.carlo@ieee.org	Approve, no comments (Y)	-	-	-		Producer
07183387	<a href="#">Bruce J Curri van</a>	949-450-8700 curri van@broadcom.com	Approve, no comments (Y)	-	-	-		Producer

40065638	<a href="#">Mary A DuVal</a>	972-575-2330 m-duval@ti.com	Approve, no comments (Y)*	-	-	-		User
41311588	<a href="#">Vern A Dubendorf</a>	781-203-1367 tdubendorf@ieee.org	Approve, no comments (Y)*	-	-	-		Producer
07968993	<a href="#">Kurt B Fischer</a>	925-462-9105 kurt.fischer@hyperinterop.com	Approve, no comments (Y)	-	-	-		Producer
06810238	<a href="#">Michael A Fischer</a>	210-614-4096x107 mfischer@choicemicro.com	Disapprove, comments (N)	26	19	-		Producer
08518995	<a href="#">Avraham Freedman</a>	+972-3-6959552 avif@hexagonltd.com	Disapprove, comments (N)	3	11	-		General Interest
40166079	<a href="#">Ian C Gifford</a>	978-251-3451 giffordi@ieee.org	Approve, no comments (Y)*	-	-	-		General Interest
40306847	<a href="#">Simon Harrison</a>	+44-1753-661-421 simon.harrison@red-m.com	Approve, no comments (Y)*	-	-	-		General Interest
01550144	<a href="#">Vic Hayes</a>	+31-30-60-97-528 vichayes@agere.com	Abstain for lack of time (A1)	-	-	-		General Interest
01670801	<a href="#">Robert F Heile</a>	508-222-1393 bheile@ieee.org	Approve, no comments (Y)	-	-	-		General Interest
40138267	<a href="#">James Ivers</a>	412-621-7300x14 james@pangonetworks.com	Approve, no comments (Y)*	-	-	-		User
40357068	<a href="#">Stuart J Kerry</a>	408-348-3171 stuart@ok-brit.com	Approve, no comments (Y)*	-	-	-		Producer
05995253	<a href="#">Brian G Kiernan</a>	610-878-5637 brian.kiernan@interdigital.com	Abstain for lack of expertise (A2)*	-	-	-		General Interest
40323353	<a href="#">Patrick W Kinney</a>	pat.kinney@ieee.org	Approve, no comments (Y)	-	-	-		User
05845615	<a href="#">Gregory Luri</a>	630-377-4475 gluri@ci.st-charles.il.us	Approve, no comments (Y)*	-	-	-		User
08122103	<a href="#">Roger B Marks</a>	(303) 497-3037 r.b.marks@ieee.org	Approve, comments (Y1)	-	2	-		General Interest
08940611	<a href="#">Peter Martini</a>	+49-228-73-4334 martini@cs.uni-bonn.de	Approve, comments (Y1)	-	1	-		User
40300055	<a href="#">Michael D McInnis</a>	425-865-2840 michael.d.mcinnis@boeing.com	Approve, no comments (Y)*	-	22	-		User
40245992	<a href="#">Marco Naeve</a>	414-449-7270 marconaeve@eaton.com	Approve, no comments (Y)*	-	-	-		User
01674571	<a href="#">Erwin Noble</a>	281-719-1955 enobl@telxon.com	-	-	-	-		User
08944704	<a href="#">Robert O'Hara</a>	408-986-9596 bob@informed-technology.com	Disapprove, comments (N)	1	-	-		User
07022429	<a href="#">Roger Pandanda</a>	619-839-3942 rogerp@ieee.org	Approve, no comments (Y)*	-	-	-		General Interest
08097867	<a href="#">Jon W Rosdahl</a>	801-984-5866 jrosdahl@ieee.org	Approve, no comments (Y)	-	-	-		General Interest
40239981	<a href="#">Thomas M Siep</a>	469-766-8680 tom.siep@ieee.org	Approve, no comments (Y)*	-	-	-		Producer



40224483	<a href="#">Carl R. Stevenson</a>	610-712-8514 carlstevenson@agere.com	Approve, no comments (Y)	-	-	-		Producer
03239332	<a href="#">John Viaplana</a>	+34670221398 jviaplana@acm.org	Approve, no comments (Y)	-	-	-		General Interest
03851722	<a href="#">Fujio Watanabe</a>	408-451-4726 fwatanabe@ieee.org	Approve, no comments (Y)*	-	-	-		Producer
07284292	<a href="#">Don Wright</a>	859-825-4808 don@lexmark.com	Approve, no comments (Y)	-	-	-		General Interest
<b>Comment Totals *</b>				30	55	0		
<p>(*) You have at least these many comments: each unstructured binary file (i.e., Word) is counted as a single G file, which may consist of one or hundreds of individual T and E comments.</p> <p>* This ballot cast this ballot in the current circulation of this recirc ballot.</p>								

**Summary of Eligible Voters by Interest Category**

Interest Category	Affirmative(s)	Negative(s)	Abstention(s)	Not Returned	Total
User	8	1	0	1	10
Producer	9	1	0	1	11
General Interest	9	1	2	0	12
Government/Academic/Consultant	0	0	0	0	0
<b>Voting Tally</b>	<b>26</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>33</b>

<b>Abstention details:</b>	1 for lack of time (A1)	1 for lack of expertise (A2)	0 for other reasons (A3)
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## Unresolved negative comments and rebuttal report

After the IEEE 802 LMSC July 2001 plenary the IEEE P802.15 WG for WPANs worked with the IEEE-SA Balloting Center to conduct two (2) Sponsor Ballots during the late summer and early fall of 2001. The P802.15.1/D0.9.2 initial 30-day ballot opened 27Jul01 and closed 25Aug01. Six (6) Balloters provided a total of 95 new comments; three (3) of which were DISAPPROVING Balloters. Additionally, this initial ballot met the 75% returned ballot requirement and the 75% affirmation requirement was met too. By virtue of meeting these requirements and the numbers in Table 1 below, the ballot is considered to have passed.

A Ballot Review Committee (BRC) was formed and led by the Project Chair. There were sixty-five (65) Editorial comments received and of these sixty-two (62) were accepted and three (3) were rejected. There were thirty (30) Technical comments received and of these eleven (11) were accepted and nineteen (19) were unresolved.

All balloting group members, observers, and coordinating groups have been advised of substantive changes made with respect to P802.15.1/D0.9.2 the balloted draft standard (in response to comments, in resolving negative votes, or for other reasons) and have received copies of all unresolved negative votes with reasons from the negative voter and the rebuttal, and have been advised that they have an opportunity to change their votes. The edits were applied and draft standard P802.15.1/D1.0.1 was produced; with both change bar and clean versions.

The P802.15.1/D1.0.1 10-day recirculation ballot opened 2Oct01 and closed 11Oct01. No new DISAPPROVING Balloters were introduced and the only comments received were from coordinators submitting approving votes and/or that the "IEEE P802.15.1/D1.0.1 meets all aspects of IEEE editorial coordination."

**Table 1 Project 802.15.1 Sponsor Ballot(s) Summary**

INITIAL SPONSOR BALLOT P802.15.1/D0.9.2 <a href="http://iee802.org/15/pub/SB1/SB1.html">http://iee802.org/15/pub/SB1/SB1.html</a>	RECIRCULATION SPONSOR BALLOT P802.15.1/D1.0.1 <a href="http://iee802.org/15/pub/SB2/SB2.html">http://iee802.org/15/pub/SB2/SB2.html</a>
Closing date: 2001-08-25	Closing date: 2001-10-11
The report is the result from the group: 0000130.	This is a recirculation ballot. The report collates the results from the following groups: 0000130 and 0000169.
1. This ballot has met the 75% returned ballot requirement. <ul style="list-style-type: none"> <li>• 33 eligible people in this ballot group.</li> <li>• <del>27</del><sup>6</sup> affirmative votes</li> <li>• <del>23</del><sup>3</sup> negative votes</li> <li>• 1 abstention votes</li> <li>• 30 votes received                 <ul style="list-style-type: none"> <li>○ 90% returned</li> <li>○ 3% abstention</li> </ul> </li> </ul>	1. This ballot has met the 75% returned ballot requirement. <ul style="list-style-type: none"> <li>• 33 eligible people in this ballot group.</li> <li>• <del>27</del><sup>6</sup> affirmative votes</li> <li>• <del>23</del><sup>3</sup> negative votes</li> <li>• 2 abstention votes</li> <li>• 31 votes received                 <ul style="list-style-type: none"> <li>○ 93% returned</li> <li>○ 6% abstention</li> </ul> </li> </ul>
2. The 75% affirmation requirement is being met. <ul style="list-style-type: none"> <li>• <del>27</del><sup>6</sup> affirmative votes</li> <li>• <del>23</del><sup>3</sup> negative votes</li> <li>• 29 votes                 <ul style="list-style-type: none"> <li>○ <del>89</del><sup>93</sup>% affirmative (<del>.9310</del>)</li> </ul> </li> </ul>	2. The 75% affirmation requirement is being met. <ul style="list-style-type: none"> <li>• <del>27</del><sup>6</sup> affirmative votes</li> <li>• <del>23</del><sup>3</sup> negative votes</li> <li>• 29 votes                 <ul style="list-style-type: none"> <li>○ <del>89</del><sup>93</sup>% affirmative (<del>.9310</del>)</li> </ul> </li> </ul>

By virtue of this result, the comment resolutions have been approved, and ballot is still considered to have passed.

The BRC continues to communicate to the three (3) DISAPPROVING Balloters and we are happy to report that one (1) DISAPPROVING Balloter has reviewed the resolutions and changed his initial and recirculation vote from DISAPPROVING to YES WITH COMMENTS (see Comment #7) on 12Oct01. The change bars above and below reflect this 3 to 2 change to the sponsor ballots or a 93% affirmation.

Unresolved negative comments and rebuttal report legend:

COMMENT TYPE: T/technical E/editorial, COMMENT STATUS: D/dispatched A/accepted R/rejected, SORT ORDER: Comment #, Clause, Page, Line, RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn

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Ian Gifford, Vice Chair, IEEE 802.15 Working Group for WPANs  
giffordi@ieee.org

The 19 unresolved "T"echnical comments follow:

**COMMENT #: 1**

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CO/ORG: Informed Technology, Inc.  
PAGE: 0  
LINE: 0  
CLAUSE: 0

TYPE OF COMMENT: T

COMMENT: "This proposed standard operates in the same band as an existing IEEE approved standard, 802.11 and its approved supplement 802.11b. It has been demonstrated that the operation of this proposed standard interferes with devices complying with the 802.11 standard operating in the same band."

SUGGESTED REMEDY: "A means of mitigating or, preferably, eliminating the interference with the 802.11 standard is required and must be incorporated into this proposed standard in order for it to be acceptable. It is not acceptable to approve this proposed standard based on potential work being done in other task groups that, obviously, will not be incorporated in devices built to comply with this proposed standard."

RESPONSE: "REJECT.

In terms of the suggested remedy: ""A means of mitigating or, preferably, eliminating the interference with the 802.11 standard is required and must be incorporated into this proposed standard in order for it to be acceptable."" we reject this requirement because we believe the IEEE should, wherever possible, rely on market forces to ensure economically efficient use of spectrum. Also, we consider a standard that uses a designated spectrum shall not constitute ownership of that spectrum. The Ballot Review Committee (BRC) suggests that the IEEE and the P802 Sponsor Executive Committee carefully review the resolution of this issue as it may arise again; that one working group member is attempting to block another working group from having their Project's deliverable approval based on a similar fallacy of logic - argumentum ad baculum (Appeal to Force). For example given that the 802.11 Working Group has received approval for standards in the 2.4 and 5 GHz bands will this type of 802.11 requirement reoccur at Sponsor Ballot for 802.15.3 at 2.4GHz, 802.15.3 at 5 GHz, 802.15.4 at 2.4 GHz, and/or 802.16b at 5 GHz?

The IEEE should not be put into the position of deciding which technology and/or standard is the best to promote. The IEEE approval policies, therefore, should both permit and promote the operation of competitive market forces. In large part, the IEEE can serve these principles simply by not interfering where it concludes that the judgment of the marketplace is sufficiently reliable.

Also, and more importantly an approved standard that uses a designated spectrum shall not constitute ownership of that spectrum. Specifically, the BRC believes based on an approved IEEE Std. 802.15.1-2001 that the marketplace will continue to demand Wi-Fi(tm) (802.11b) and Bluetooth(tm) (802.15.1) products. The IEEE should approve the IEEE Std. 802.15.1-2001."

COMMENT STATUS: R  
RESPONSE STATUS: U

**COMMENT #: 2**

IEEE #: 06810238  
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 FAX: +1-210-614-8192  
 CO/ORG: Intersil Corp.  
 PAGE: 1  
 LINE: 29-30  
 CLAUSE: 1.1

TYPE OF COMMENT: T

COMMENT: "In clause 1.1 it states: ""The proposed WPAN standard will be developed to ensure coexistence with all 802.11 networks."" however this subject is not addressed in any normative clause of this draft. In fact, the word ""coexistence"" does not even appear anywhere else within the 1159 pages of D0.0.2. The characteristics of the 2.4GHz radio and physical layer protocol specified in subsequent clauses shows no clear manner by which such coexistence is even possible in overlapping space with any of the 802.11 PHYs that operate in the 2.4GHz band (FH, DS, 802.11B, and the pending P802.11G). 802.15.1 is the first instance in the past 10 years, and probably the first instance ever in the history of 802 that an 802 draft has gone to sponsor ballot with a proposal to transmit conflicting and mutually incompatible signals onto the SAME INSTANCE of the physical medium as is already in use by another 802 MAC/PHY. There is not even a plausible argument that 802.11 and 802.15 networks will rarely be operated in overlapping space, since there are devices, such as notebook and subnotebook computers, which are explicitly stated as needing to attach to both WLANs and WPANs, concurrently if not simulatneously."

SUGGESTED REMEDY: "The proper technical solution is to modify the Bluetooth protocol to support an ""etiquette"" for sharing access to the 2.4GHz ISM band -- preferably listen-before-talk, although an approach based on a maximum duration for any transmission and a maximum transmit duty cycle are likely to be easier to implement than LTB."

RESPONSE: "REJECT.

In terms of the suggested remedy: "The proper technical solution is to modify the Bluetooth protocol to support an "etiquette" for sharing access to the 2.4GHz ISM band..." we reject this solution because we believe the IEEE should, wherever possible, rely on market forces to ensure economically efficient use of spectrum. Also, we consider a standard that uses a designated spectrum shall not constitute ownership of that spectrum.

Specifically, the Ballot Review Committee believes based on an approved IEEE Std. 802.15.1-2001 that the marketplace will continue to demand Wi-Fi(tm) (802.11b) and Bluetooth(tm) (802.15.1) products. The IEEE should approve the IEEE Std. 802.15.1-2001. Additionally, that the market will continue to review the myriad of emerging coexistence approaches for collocated Wi-Fi & Bluetooth e.g.:

\* 802.15.2 collaborative and non-collaborative coexistence mechanisms

\* Simple device collocation with no coexistence mechanisms

\* Restricted or adaptive band hopping for Bluetooth devices

\* Switching between the two protocols

\* System-level approaches covering the entire wireless sub-system and many of the above techniques

Note: Some of these mechanisms will provide "...sharing access to the 2.4GHz ISM band..." but note that they are outside of the scope and charter of 802. (see SB1 #1 response for more information)

Finally, the word coexistence, does appear again in the GAP, so if the commentor has not closely reviewed the text, how can we trust his comment. Based on the definition of coexist as defined in the PAR and Five criteria, coexistence does not imply cooperation (exchange of information to reduce or avoid the other) between or among WPANs and WLANs. Therefore there is no requirement to add or change the current procedures to include a cooperating mechanism to detect other WPANs or WLANs before creating a WPAN (i.e. piconet). It is not clear what criteria would be used to determine whether a channel, frequency, or both would be busy/free. When such criteria are defined for the IEEE 802.11, all parts), then one might be able to consider such a requirement from another standard. The IEEE 802.5 is not a listen before talk mechanism, in fact in some ways the token ring is much like the master/slave relationship defined in IEEE 802.15.1.

The bottom line is the Ballot Review Committee is aware of the mutual interference between IEEE 802.11 and IEEE 802.15.1 and as was correctly pointed out by the commenter the 802.15 Working Group has formed a Task Group, IEEE 802.15.2, to address the issue of coexistence of IEEE WLAN and WPAN systems. The work of that task group will publish recommended practices to allow systems to reduce levels of mutual interference between the IEEE WLAN and WPAN systems. Based on the preceding response we REJECT the comment but we look forward to reviewing the 802.15.2 draft. More info:

<http://ieee802.org/15/pub/TG2.html>

COMMENT STATUS: R

RESPONSE STATUS: U

**COMMENT #: 7**

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CO/ORG: Hexagon System Engineering  
PAGE: 28  
LINE: 17  
CLAUSE: 7.2

TYPE OF COMMENT: T

COMMENT: "The declaration that one Bluetooth product ""will not work"" with another is unacceptable for a product like Bluetooth and the global market it targets. This is the reason I am not approving the standard."

SUGGESTED REMEDY: "1. Make arrangements to handle the band switch  
2. Work in Spain, France, Japan etc. to change the regulation to allow 79 frequencies sequence in its hopping. I will change my vote to ""approve"" if I am assured that future versions of the standard will take care of this problem."

AviF 12Oct01 "The correspondence you attached provided me with a much better understanding of what is going on. I am changing my vote than, as per your request to "Yes, with comments". Not that I agree with every word they said, but at least I understand the difficulty."

RESPONSE: "REJECT.

The disputed statement: ""...products implementing the reduced frequency band will not work with the products that implement the full band..."" refers to product implementations rather to a feature of the standard. These implementations are subject to government regulations beyond the control of the standard (if I recall well, the 802.11a (5 GHz) is illegal in Europe!)"

COMMENT STATUS: R

RESPONSE STATUS: U

EDITOR NOTE: ICG Comment #7 and #8 are duplicates we CHOSE Comment #7 - they were basically the same.

**COMMENT #: 9**

IEEE #: 06810238  
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CO/ORG: Intersil Corp.  
PAGE: 29  
LINE: 34-48  
CLAUSE: 7.3

TYPE OF COMMENT: T

COMMENT: "Power class 1 specifies a maximum transmit power of 100mW, which is far in excess of what is reasonably required to provide RF coverage for a 10-meter personal operating space (see 6.1.2.1). Indeed, according to 6.1.2.1 the principal difference in radio characteristics which justifies the distinction between WLAN and WPAN is that WLAN radios are optimized to provide coverage on the order of 100 meters at the expense of power consumption, and therefore typically use 100mW of transmit power!"

SUGGESTED REMEDY: "Power class 1 should be eliminated, or reduced to a maximum level which is sensible for coverage of a 10-meter personal operating space (such as 4mW or 10mW). This has the ancillary benefit of simplifying the 802.11 coexistence scenarios by reducing the range at which a Bluetooth piconet can interfere with an 802.11 BSS."

RESPONSE: "REJECT.

In terms of the suggested remedy: "Power class 1 should be eliminated, or reduced to a maximum level..." we reject this solution because we believe the IEEE should, wherever possible, rely on market forces to ensure economically efficient use of spectrum. Also, we consider a standard that uses a designated spectrum shall not constitute ownership of that spectrum. Specifically, the Ballot Review Committee believes based on an approved IEEE Std. 802.15.1-2001 that the marketplace will continue to demand Wi-Fi(tm) (802.11b) and Bluetooth(tm) (802.15.1) products. The IEEE should approve the IEEE Std. 802.15.1-2001. Additionally, that the market will continue to review the myriad of emerging coexistence approaches for collocated Wi-Fi & Bluetooth e.g.:

- \* 802.15.2 collaborative and non-collaborative coexistence mechanisms
  - \* Simple device collocation with no coexistence mechanisms
  - \* Restricted or adaptive band hopping for Bluetooth devices
  - \* Switching between the two protocols
  - \* System-level approaches covering the entire wireless sub-system and many of the above techniques
- Note: Some of these mechanisms are "...simplifying the 802.11 coexistence scenarios..." but note that they are outside of the scope and charter of 802. (see SB1 comment #1 response for more information)

COMMENT STATUS: R  
RESPONSE STATUS: U

**COMMENT #: 10**

IEEE #: 06810238  
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CO/ORG: Intersil Corp.  
PAGE: 30  
LINE: 13  
CLAUSE: 7.3

TYPE OF COMMENT: T

COMMENT: "This ought to be a requirement, not a recommendation."

SUGGESTED REMEDY: "Change ""should"" to ""shall"" since as a non-mandatory recommendation the 802.11 coexistence scenarios become even more intractable."

RESPONSE: "REJECT."

Inquiries and pages comprise of occasional, short-energy bursts (ID packets). As such even if they are used by Class 1 radios any interference that may cause (if they do) will be occasional and short lasted. Furthermore, due to power constraints, class 1 radios are primarily targeting ""stationary"" kiosk/type installations permanently attached to a power supply. For such systems, inquiries will typically occur from the lower-powered radios (class 2 or 3) in personal devices in search of the kiosk-based applications. Therefore, the recommended practice of using low power for inquiries is sufficient. There is no need to make it a requirement."

COMMENT STATUS: R  
RESPONSE STATUS: U



**COMMENT #: 11**

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PAGE: 55  
LINE: 52  
CLAUSE: 8.4.5.2

TYPE OF COMMENT: T

COMMENT: "Given the stated reason for not using payload flow bit ""stop"" in AUX1 packets (lack of payload CRC in that packet format), a stronger enforcement of this non-use is appropriate."

SUGGESTED REMEDY: "It would be far safer to specify that the flow bit=""stop"" is ignored in received AUX1 packets instead of suggesting that this bit ""should not be used.""

RESPONSE: "REJECT.

The 802.15.1 (draft) standard says that ""...AUX1 packets should not be used with payload flow bit of ""stop""...""  
On the other hand the comment suggest that the payload flow control bit shall be ignored when received in AUX1 packets. What the standard says and what the comments suggest are totally different. The standard recommends not using AUX1 when payload flow control equals 0, the comment proposes ignoring payload flow control when AUX1 packets are sent."

COMMENT STATUS: R  
RESPONSE STATUS: U

**COMMENT #: 12**

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PAGE: 61  
LINE: 22-23  
CLAUSE: 8.5.3.2

TYPE OF COMMENT: T

COMMENT: "The final sentence above figure 28 states that ""The described flushing procedure is considered optional, although strongly recommended."" It is unclear how much of the specified behavior is part of this optional procedure. Also, how can one determine if a given Bluetooth device has implemented this option? -- there are no PICS entries which refer to clause 8.5.3.2 nor to ""flushing procedure."""

SUGGESTED REMEDY: "Provide a clear definition of which functions are part of the optional procedure. If there is a way to determine that this option has been implemented, add mention of such at least here and probably in the PICS as well. If there is no operational need for the communication partner ever to need to know whether this option is implemented, please add an explanation of why this is so."

RESPONSE: "REJECT.

The recommended flushing procedure refers to the whole paragraph to which the disputed statement resides (page 61, lines 17-23). Furthermore, this is an internal implementation feature not a standards requirement. A communicating partner does not need to know (it does not effect interoperability, it simply is a suggestive practice to baseband implementors). As such, there is no need to specify, say in PICS, on whether this feature has been implemented or not."

COMMENT STATUS: R  
RESPONSE STATUS: U

**COMMENT #: 13**

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CO/ORG: Intersil Corp.  
PAGE: 63  
LINE: 26-29  
CLAUSE: 8.5.4

TYPE OF COMMENT: T

COMMENT: "Because the HEC and CRC are used to perform both error detection and part of the address matching, it is possible that a data error during packet transfer could cause a packet with UAP mismatch to appear as an error-free packet addressed to this device."

SUGGESTED REMEDY: "Please add to the specification the necessary analysis, including equation(s), to quantify, for a given bit error rate on the wireless medium, the probability that a device with an LAP equal to the LAP of the intended recipient will accept an erroneous transmission intended for a different UAP as an error-free packet to itself. For this analysis it is acceptable to assume a uniform likelihood of bit errors occurring at any bit position within the packet (although this will probably not be true in practice)."

RESPONSE: "REJECT.

The actual calculation is not required as part of a standard. That is left for the user, but the user must understand that this calculation is not solely based on the LAP, HEC and CRC. Therefore this is not an issue. In order to get a packet to this level (i.e. baseband), a packet must have passed at least two other error checking mechanisms and a frequency hopping sequence, plus the Master/Slave procedures. One is the access code that uses the LAP ((24-bit Bluetooth) (MAC)) and the second is the 1/3 FEC. In the data transfer phase a frequency hopping sequence is used, thus if the intended (or unintended) device is not using the same hopping sequence, then the likelihood of a packet being received by an unintended device is based on the chance that the device happened to have used the same hopping frequency for this time slot. This is the case of two piconets. However, since the piconets are not synchronized, even if the frequency hop matches for both piconets the time slots would not be aligned, so the packet would not be received by the unintended device. Also the procedures defining the Master/Slave relationship for transmission also provides error checking of received packets, since a slave is not to transmit a packet unless it receives an indication from the master that the slave is allowed to transmit. The Master can then match the received address to the indicated address."

COMMENT STATUS: R

RESPONSE STATUS: U

**COMMENT #: 14**

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PAGE: 63  
LINE: 26-29  
CLAUSE: 8.5.4

TYPE OF COMMENT: T

COMMENT: Using the HEC and CRC to perform part of the address matching function means that some of the HEC and/or CRC errors detected in received packets will be due to UAP mismatch instead of errors occurring during transfer over the wireless medium.

SUGGESTED REMEDY: "Please add a statement that makes it clear that in 802.15.1, unlike other 802 MAC/PHY protocols, HEC and/or CRC errors can and will occur on packets that are received without errors, and therefore HEC and/or CRC error counts in 802.15.1 must not be used in assessment of communication link reliability."

RESPONSE: "REJECT.

If this statement is needed based on the previous comment [SB1 #13], then this statement is not relevant, since the previous comment was not deemed to be correct and therefore does not support this inclusion."

COMMENT STATUS: R  
RESPONSE STATUS: U

**COMMENT #: 15**

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PAGE: 117  
LINE: 46-54  
CLAUSE: 8.13.1

TYPE OF COMMENT: T

COMMENT: "How is the possibility of an address collision detected? (What I am calling an address collision is the case where two or more stations have MAC addresses with the same LAP and UAP, so these addresses differ only within the NAP portion.) The LAP is assigned by the manufacturer of the Bluetooth device, and equal LAP values can be expected to exist within each OUI. The UAP includes only 8 of the 22 significant bits of the OUI, so each (LAP,UAP) pair can represent any of up to 16384 devices, each of which has a unique IEEE 48-bit MAC addresses. At a time when other communication standards (at ISO, IETF, etc.) are moving toward addresses with 64 to 80 bits, I have serious concerns about the advisability of standardizing a nominally universal, self-configuring protocol that uses a 32-bit subset of the 48-bit MAC address. It is also arguable that a 32-bit address space is insufficient for WPAN, since some market surveys have predicted sales volumes for Bluetooth-class wireless devices that would consume over 25% of this address space by the middle of this decade. On the other hand, due to the small number of devices in any given piconet or scatternet, this 32-bit operational address space should be adequate, provided it is accompanied by a normative mechanism for detecting and resolving address collisions. Note that the lack of required MAC layer management facilities in 802.15.1 (stated in 6.1.2.2) in conjunction with the requirement that piconets be established without pre-deployment (stated in 6.1.2.3) will make it essentially impossible for a WPAN user who is experiencing operational problems to determine whether an address collision is the cause."

SUGGESTED REMEDY: "Add a mechanism for detecting and resolving address collisions, or include a reference to the existing mechanism which provides this detection and resolution."

RESPONSE: "REJECT.

The remedy suggested is what the baseband procedures describe. This is a complicated mechanism, and cannot be summarized into a single statement. The reference is the entire baseband clause."

COMMENT STATUS: R  
RESPONSE STATUS: U

**COMMENT #: 21**

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PAGE: 445  
LINE: 30  
CLAUSE: 12.3.2

TYPE OF COMMENT: T

COMMENT: "The relationship of HCI primitives to L2CAP primitives is unclear in the context of this clause. Both the L2CAP and HCI SAPs are shown at the top of the MAC, but clearly they are not two paths that provide equivalent functionality. Based on information in some of the cited external (Bluetooth SIG) documents it appears that the HCI SAP should be considered from an 802 point of view to be a MAC Management SAP rather than a MAC Data SAP."

SUGGESTED REMEDY: "I recommend changing the HCI SAP so it is described as an MLME SAP for the 802.15 MAC that provides primitives which map to{an identified subset of?} the Bluetooth HCI functions. This approach also has the advantage of fitting well with the stated reasons for removing implementation-specific specification subclauses from clause 11 -- in effect replacing a set of implementation-oriented specifications with an abstract management interface that provides equivalent, but implementation-neutral functionality."

RESPONSE: "REJECT.

The HCI is not only management but data as well. Since Bluetooth does not provide a single system/architecture view, no solution will be correct."

COMMENT STATUS: R  
RESPONSE STATUS: U

**COMMENT #: 22**

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PAGE: 482  
LINE: 23-30  
CLAUSE: B.1.2.2.1

TYPE OF COMMENT: T

COMMENT: "I disagree strongly with the statement ""These {Bluetooth clock, buffers, flow control, ARQ, SEQN} are important, but not so from a behavior point of view in the overall understanding of things. ... Our plan is to implement these last, if then. {emphasis mine} As a minimum, if this statement is true there needs to be a much clearer explanation of what behavior this SDL model is attempting to define and to promote the understanding of. After all, the primary place within the scope of 802.15.1 where there is an exposed interface BETWEEN devices (which is where the interoperability created by this standard must exist) is the wireless medium -- and a substantial part of the behavior that can be observed on the wireless medium involves packet exchanges that use one or more of flow control, ARQ (retry), and SEQN (duplicate filtering), and all such exchanges occur under control of the Bluetooth clock. It appears to me that the behavior of these items is of critical importance in ""the overall understanding of things."""

SUGGESTED REMEDY: "I recommend that the mention of of unimportance, and the "... if then" be deleted, and that the listed items be included in the complete version SDL model. I agree that it is appropriate to add these items to the model near the end of its development, as doing so will reduce the effort required for testing of higher-level functions within the SDL model."

RESPONSE: "REJECT.  
These three items are not standardizable things, especially the buffers. The SDL language has a built in channel and buffering system (First in First Out). Since real buffers require manipulation (i.e. not FIFO), the built-in features of SDL cannot be used. Therefore a buffering and channel scheme must be created using other features of the SDLs. However, since the standard can not require an implementation scheme on buffer management, then neither can the SDLs. The Bluetooth Clock is not standardized either. The SDL language does not provide a clock. So again a clock behavior would need to be constructed using other features of the SDL. Finally the ARQ is use to confirm delivery or to retransmitt a lost packet, that is needed to be stored in a buffer/channel not a built-in SDL feature. See 8.8 on Transmit and Receive procedures. Significant amounts of work would be needed to implement these ""real"" features in SDL, while the behavior gain would be minimal. An SDL model does not necessarily implement every aspect of a system. Therefore it is important to note what is not modeled."

COMMENT STATUS: R  
RESPONSE STATUS: U

**COMMENT #: 23**

IEEE #: 06810238  
NAME: Fischer, Michael  
E-MAIL: mfischer@choicemicro.com  
PHONE: +1-210-614-4096  
FAX: +1-210-614-8192  
CO/ORG: Intersil Corp.  
PAGE: 482  
LINE: 37-38  
CLAUSE: B.1.2.2.2

TYPE OF COMMENT: T

COMMENT: ""Similar to but not exactly the IEEE's protocol stack model"" is a curious statement to find in an IEEE 802 draft. Given that Annex B is identified in clause 5.2 as ""a value add by IEEE"" rather than as an item closely derived from a preexisting Bluetooth document, there is no obvious reason why this annex should not use the IEEE's protocol stack model. Of even greater importance is the fact that a description of the MAC SAP is absent in both the current SDL model and list of changes known to be needed to complete this model."

SUGGESTED REMEDY: "This omission should be rectified, by including a specification of the mechanism for interoperable transfer of LAN traffic (802-style MSDUs) over Bluetooth piconets as a new section in the completed SDL description. This is a topic that the Bluetooth specifications do not address in sufficient detail, and is clearly a topic about which an IEEE P802.15.1 standard derived from Bluetooth v1.1 can actually add significant value to those specifications already published by the Bluetooth SIG. Indeed, the existence of a normative mechanism for MSDU transfer between peer MAC entities using the 802.15 MAC/PHY is implicit in the position that the 802.15 MAC/PHY box appears in the overview diagram on page ii."

RESPONSE: "REJECT.

Since the SDLs are informative, a normative mechanism for MSDU can not be accomplished unless the Annex is normative "

COMMENT STATUS: R  
RESPONSE STATUS: U



**COMMENT #: 24**

IEEE #: 06810238  
NAME: Fischer, Michael  
E-MAIL: mfischer@choicemicro.com  
PHONE: +1-210-614-4096  
FAX: +1-210-614-8192  
CO/ORG: Intersil Corp  
PAGE: 482  
LINE: 46-47  
CLAUSE:

TYPE OF COMMENT: T

COMMENT: "The intent implied in the statement ""The SDL model is a work in progress and Project 802.15.1 anticipates the day when we can provide this as a normative annex -- until such time this SDL model is for informative use only"" is absurd. Attempting to change a 580-page portion of this document (e.g. 50%, which will probably have grown to well over 60% by the time the SDL model is complete) from informative to normative AFTER approval of a version in which the prose is the sole normative content is tantamount to redefining the whole protocol. The complexity of both the formal model and the Bluetooth protocols themselves is far too great for the voters in that subsequent sponsor ballot to determine equivalence between the prose and the SDL within a 30 day ballot period."

SUGGESTED REMEDY: "The P802.15.1 task group needs to decide whether the SDL model is to be normative or informative, then to stick with that decision. EITHER change Annex B to a normative annex in the next revision of this draft which is sent out for ballot (my preference), OR decide to leave Annex B as an informative annex and state this in the next revision of Annex B. Note that changing Annex B to a normative annex does not mean that 100% of the Bluetooth protocol functionality needs to be described therein. Instead of the present ""... until such time ..."" statement, I recommend that the group select an appropriate subset of Bluetooth for which the SDL model is useful, include a (reasonably) complete description of that subset into Annex B of the next draft sent for ballot, and replace the ""work in progress ..."" disclaimer with a statement of what is and is not described in the SDL model. Another suggestion: Given the size and complexity of the SDL model, on future ballots please make a set of the Tau files available to those voters who want to explore the model in Tau or to [sic]"

RESPONSE: "REJECT.

It is not the intent to change the status of annex B from Informative to Normative during the balloting this version of the draft standard. The Annex B (SDLs) is marked as informative and will stay that way for this version of the draft standard. It is hoped that future revisions of this standard will change Annex B to normative."

COMMENT STATUS: R  
RESPONSE STATUS: U

**COMMENT #: 25**

IEEE #: 06810238  
NAME: Fischer, Michael  
E-MAIL: mfischer@choicemicro.com  
PHONE: +1-210-614-4096  
FAX: +1-210-614-8192  
CO/ORG: Intersil Corp  
PAGE: 437 and 440  
LINE: "15-29 on p.437, 34-35 on p.440"  
CLAUSE: 12.1 and 12.2.1

TYPE OF COMMENT: T

COMMENT: "Since L2CAP supports connections, it is unclear why LLC type 2 connection oriented service service is not supported along with LLC type 1 connectionless service."

SUGGESTED REMEDY: "Either allow LLC type 2 or provide an explanation. It may be acceptable, even appropriate, to omit support for LLC type 2, but as a minimum there should be mention of why connection oriented service is omitted when the L2CAP protocol is clearly capable of providing such a service. Also, if LLC type 2 is not going to be supported, remove the inconsistency between 12.1, which states that only LLC type 1 is supported, and 12.2.1, which mentions LSDUs generated internally by LLC as part of type 2 service."

RESPONSE: "REJECT.  
There is nothing prohibiting LLC type 2 from L2CAP."

COMMENT STATUS: R  
RESPONSE STATUS: U

**COMMENT #: 26**

IEEE #: 06810238  
NAME: Fischer, Michael  
E-MAIL: mfischer@choicemicro.com  
PHONE: +1-210-614-4096  
FAX: +1-210-614-8192  
CO/ORG: Intersil Corp  
PAGE: 440-441  
LINE: 49-54 and 1-47  
CLAUSE: 12.2.2

TYPE OF COMMENT: T

COMMENT: "This clause appears to have been copied from 8802-2, clause 2.3.2.2, which defines MA-UNITDATA.indication from the LLC side of the MAC SAP. Much of this text is inappropriate when defining the MAC side of the MAC SAP (for example, line 22 on page 441)."

SUGGESTED REMEDY: Please modify this clause to be a definition of the MA-UNITDATA.indication primitive and associated parameter values that will actually be generated by 802.15.1 MAC entities.

RESPONSE: "REJECT.

The BRC understands the comment but based on our understanding of the Bluetooth Specification we decline the suggested remedy. We are open to further discussion but based on the signed agreement (see note below) we refer the commenter to the two (2) Bluetooth document references to Clause 2:

\* 2.4.5. Bluetooth Personal Area Networking Profile Bluetooth Special Interest Group, "Bluetooth Personal Area Networking Profile Revision 0.95a", June 26, 2001. [PAN-Profile.pdf]

\* 2.4.6 Bluetooth Network Encapsulation Protocol (BNEP) Specification Bluetooth Special Interest Group, "Bluetooth Network Encapsulation Protocol (BNEP) Specification Revision 0.95a", June 12, 2001. [BNEP.pdf]

Note: Bluetooth documents are available from the IEEE website: <http://ieee802.org/15/Bluetooth/>

Note: License Agreement - The signed Bluetooth SIG - IEEE Copyright License Agreement to publish the Derivative Work states: ""Make such limited changes to the licensed portion of the Bluetooth Specification as the Licensee determines are required for the Derivative Work."" The Ballot Review Committee (BRC) considers the suggested remedy a misapplication of the license agreement and would therefore constitute an infringement and nullify the contract."

COMMENT STATUS: R

RESPONSE STATUS: U

**COMMENT #: 27**

IEEE #: 06810238  
NAME: Fischer, Michael  
E-MAIL: mfischer@choicemicro.com  
PHONE: +1-210-614-4096  
FAX: +1-210-614-8192  
CO/ORG: Intersil Corp  
PAGE: 441-442  
LINE: 49-54 and 1-38  
CLAUSE: 12.2.3

TYPE OF COMMENT: T

COMMENT: "This clause appears to have been copied from 8802-2, clause 2.3.2.3, which defines MA-UNITDATA-STATUS.indication from the LLC side of the MAC SAP. Much of this text is inappropriate when defining the MAC side of the MAC SAP (a glaring example is the discussion of an ""excessive collisions"" status value on line 19 of page 442)."

SUGGESTED REMEDY: Please modify this clause to be a definition of the MA-UNITDATA-STATUS.indication primitive and associated parameter values that will actually be generated by 802.15.1 MAC entities.

RESPONSE: "REJECT.  
See comment resolution SB1 #26."

COMMENT STATUS: R  
RESPONSE STATUS: U

**COMMENT #: 28**

IEEE #: 06810238  
NAME: Fischer, Michael  
E-MAIL: mfischer@choicemicro.com  
PHONE: +1-210-614-4096  
FAX: +1-210-614-8192  
CO/ORG: Intersil Corp  
PAGE: 443-447  
LINE: 1-54  
CLAUSE: 12.3.2

TYPE OF COMMENT: T

COMMENT: "This is a critically important section that appears to be seriously incomplete. A useful nomenclature is defined, along with references to appropriate items in the foregoing clauses. There is also useful information in the attempt to identify what portions of the Bluetooth functional decomposition correspond to the 802 PHY layer and 802 MAC sublayer. However, there is no information about what L2CA primitives are generated, in what order, to perform the MA-UNITDATA.request function; what L2CA\_Indications cause an MA-UNITDATA.indication; nor what transmission status information is conveyed in the MA-UNITDATA-STATUS.indication and which (if any) L2CA\_Confirm messages supply this status information. Without a definition of the mapping between the MAC SAP primitives and L2CA primitives, there is insufficient information to understand the ""relationship of Bluetooth entities to IEEE 802 constructs.""

SUGGESTED REMEDY: "Please define which L2CA primitives are generated, in what order, to perform the MA-UNITDATA.request function; which L2CA\_Indications cause an MA-UNITDATA.indication; and which transmission status information is conveyed in the MA-UNITDATA-STATUS.indication and which (if any) L2CA\_Confirm messages supply this status information. State whether these definitions are strict (normative) or exemplary (informative), with consideration for whether interoperation of peer MAC entities will be reliable if these definitions are exemplary."

RESPONSE: "REJECT.  
See comment resolution SB1 #26."

COMMENT STATUS: R  
RESPONSE STATUS: U

**COMMENT #: 29**

IEEE #: 06810238  
NAME: Fischer, Michael  
E-MAIL: mfischer@choicemicro.com  
PHONE: +1-210-614-4096  
FAX: +1-210-614-8192  
CO/ORG: Intersil Corp  
PAGE: 61-62  
LINE: 27-47 and 14-15  
CLAUSE: 8.5.3.3

TYPE OF COMMENT: T

COMMENT: "This sentence states that ""Flushing will not necessarily result in a change in the SEQN bit value ..."" but based on figure 28 it appears that flushing NEVER results in a change to the SEQN bit value, since there is only one ""invert SEQN"" symbol and all possible flush paths go around that symbol."

SUGGESTED REMEDY: "Either clarify this mention of ""not necessarily"" by identifying when SEQN does change in conjunction with flush, or correct figure 28 and the associated text in the previous section. The wording in the previous section can be interpreted to indicate there are really multiple places where a ""flush"" decision can occur, but only one such place appears in figure 28."

RESPONSE: "REJECT.  
Figure 28 does NOT show an algorithm for deciding when a flush occurs as comment 29 and the suggested remedy imply. Figure 28 shows when the SEQN is or is not inverted. For example, if a transmission is ACKed once, then the SEQN number is always inverted (independently if FLUSH has occurred in the mean time or not). If a transmission has not been ACKed once then the SEQN is not inverted (independently if flush has occurred or not). Thus, there are cases that SEQN may be inverted even if flush has occurred, or SEQN may not be inverted even if flush has occurred. FLUSHing here means the emptying of the transmit buffer for a reason other than a successful transmission (for example, because a packet has stayed in the transmit buffer for too long). Clause 8.5.3.3 states this in the last sentence of the first paragraph ""...Aborting the retransmit scheme is accomplished by flushing the old data...""

COMMENT STATUS: R  
RESPONSE STATUS: U

Note: This Unresolved negative comments and rebuttal report is an excerpt from the posted IEEE 802.15 document -01/420r10 contribution. More info:  
<http://ieee802.org/15/pub/SB2/SB2.html>

-EOF-

# IEEE-SA Standards Board Project Authorization Request (PAR) Form (1999-Rev 1)

Note: For use with help hyperlinks offline, download guide.html and parsgn99.html into the same directory.

**1. Sponsor Date  
of Request**  
[1999 Feb 04/Mar12]

**2. Assigned Project  
Number**  
[P802.15]

**3. PAR Approval  
Date**  
3/18/99

{Copyright release must be submitted with [appropriate signatures](#) by postal mail or FAX (1-732-562-1571)}

[X] PAR Signature Page received {IEEE Staff to check box}

## 4. Project Title, Recorder and Working Group/Sponsor for this Project

Document type and title: {Place an X in only one option below}

- [X] **Standard for**{document stressing the verb "shall" }
- [...] **Recommended Practice for**{document stressing the verb "should" }
- [...] **Guide for** {document in which good practices are suggested }

**Title:** [STANDARD FOR Telecommunications and Information Exchange Between Systems - LAN/MAN Specific Requirements - Part 15: Wireless Medium Access Control (MAC) and Physical Layer (PHY) specifications for Wireless Personal Area Networks (WPAN)]

Name of Working Group:		[P802.15]	
Name of Official Reporter (usually the W.G. Chair) who must be IEEE/Affiliate AND Standards Association (SA) members.		[Bob Heile]	
Title in WG:	[P802.15 Chair]	IEEE/Affiliate Member #	[01670801]
Company:	[GTE]	Telephone:	[+1 617 873 4835]
Address:	[10 Moulton Street]	FAX:	[+1 508 222 0515]
City/State/Zip:	[Cambridge, MA 02138 USA]	Email:	[bheile@bbn.com]

Name of Working Group Chair (if different):		[...]	
		IEEE/Affiliate Member #	[...]
Company:	[...]	Telephone:	[...]
Address:	[...]	FAX:	[...]
City/State/Zip:	[...]	Email:	[...]

<b>Name of Sponsoring Society and Committee:</b>		[Computer Society/LMSC]	
Name of Committee Sponsor Chair:		[Jim Carlo]	
		IEEE/Affiliate Member #	[05572953]
Company:	[Texas Instruments]	Telephone:	[+1-214-480-2524]
Address:	[9208 Heatherdale Drive]	FAX:	[+1-214-480-2611]
City/State/Zip:	[Dallas TX 76243-6332]	Email:	[jcarlo@ti.com]

**5. Describe This Project; Answer each of four questions below:**

- a. [Update an existing PAR](#) [NO ]

If YES, indicate PAR Number/Approval Date [P####-YEAR]

If YES, attach a cover letter indicating changes/rationale for changes.

If YES, is this project in ballot now? [yes/no]

- b. [Choose](#) one from the following:

New Standard

Revision of existing Standard {number and year} [...]

Amendment (Supplement) to an existing standard {number and year} [...]

Corrigenda to an existing standard {number and year} [...]

- c. [Choose](#) one from the following:

Full Use (5-year life cycle)

Trial Use (2-year life cycle)

- d. [Choose](#) one from the following:

Individual Sponsor Balloting

Entity Sponsor Balloting

- e. Fill in [Target Completion Date](#) to IEEE RevCom : [Nov/2000]

**6. [Scope](#) of Proposed Project:**

[To define PHY and MAC specifications for wireless connectivity with fixed, portable and moving devices within or entering a Personal Operating Space (POS). A goal of the WPAN Group will be to achieve a level of interoperability which could allow the transfer of data between a WPAN device and an 802.11 device.

A Personal Operating Space (POS) is the space about a person or object that typically extends up to 10 meters in all directions and envelops the person whether stationary or in motion. The proposed WPAN Standard will be developed to ensure coexistence with all 802.11 Networks.

]

**7. [Purpose](#) of Proposed Project:**

[

To provide a standard for low complexity, low power consumption wireless connectivity to support interoperability among devices within or entering the Personal Operating Space (POS). This includes devices (see 12c) that are carried, worn, or located near the body. The proposed project will address Quality of Service to support a variety of traffic classes.



Examples of devices, which can be networked, include Computers, Personal Digital Assistants (PDAs)/Handheld Personal Computers (HPCs), printers, microphones, speakers, headsets, bar code readers, sensors, displays, pagers, and cellular & Personal Communications Service (PCS) phones.

] ]

## 8. Intellectual Property {Answer each of the questions below}

- a. Are you aware of any [patents](#) relevant to this project?

Call for Patents will be made and patent letters submitted to RevCom per the IEEE process.

[Yes] { Yes, with detailed explanation below / No }

[...] {Explanation}

- b. Are you aware of any [copyrights](#) relevant to this project?

[No] { Yes, with detailed explanation below / No }

[...] {Explanation}

- c. Are you aware of any [trademarks](#) relevant to this project?

[No] { Yes, with detailed explanation below / No }

[...] {Explanation}

- d. Are you aware of any [registration](#) of objects or numbers relevant to this project?

[No] { Yes, with detailed explanation below / No }

[...] {Explanation}

## 9. Are you aware of any other standards or projects with a [similar scope](#)?

[Yes] { Yes, with detailed explanation below / No }

[Infrared Data Association (IrDA), Home Radio Frequency Working Group (HRFWG), Bluetooth Special Interest Group (SIG), Wireless Application Protocol (WAP) Forum.

These groups are not standards organizations but Industry Consortia which have similar charters and the Working Group intends to establish liaisons with these groups as appropriate. As Industry Consortia formal coordination in Item 12 may be inappropriate. The WAP coordination will be monitored for appropriateness, as this industry forum may not be developing specifications in this area.

] {Explanation}

## 10. [International Harmonization](#)

Is this standard planned for adoption by another international organization?

[Yes] { Yes/No/?? if you don't know at this time }

If Yes: Which International Organization [ISO/IEC JTC1/SC6]

If Yes: Include coordination in question 13 below

If No: Explanation [.. ]

## 11. Is this project intended to focus on [health, safety or environmental issues](#)?

[No] { Yes/No/?? if you don't know at this time }

If Yes: Explanation [...]

## 12. Proposed Coordination/Recommended Method of Coordination

### a. [Mandatory Coordination](#)

SCC 10 (IEEE Dictionary)	By <b>DR</b> {Circulation of <b>DR</b> afts}
IEEE Staff Editorial Review by	By <b>DR</b>
SCC 14 (Quantities, Units and Letter symbols)	By <b>DR</b>

### b. [Coordination](#) requested by Sponsor:

[US TAG to JTC1/SC6 WG1/WG3]	by [DR]	{circulation of <b>DR</b> afts}
[.....]	by [...]	{circulation of <b>DR</b> afts/ <b>LI</b> aison memb/ <b>CO</b> mmon memb}
[.....]	by [...]	{circulation of <b>DR</b> afts/ <b>LI</b> aison memb/ <b>CO</b> mmon memb}
[.....]	by [...]	{circulation of <b>DR</b> afts/ <b>LI</b> aison memb/ <b>CO</b> mmon memb}

### c. [Coordination Requested by Others:](#)

[...] {added by staff}



**IEEE**

*Networking the World™*

23 March 1999

James Carlo  
Texas Instruments  
9208 Heatherdale Drive  
Dallas, TX 75243-6332

Re: P802.15 Standard for Telecommunications and Information Exchange Between  
Systems – LAN/MAN – Specific Requirements - Part 15: Wireless Medium  
Access Control (MAC) and physical- layer (PHY) specifications for  
Wireless Personal Area Networks (WPAN)  
P802.16 Standard for Telecommunications and Information Exchange Between  
Systems – LAN/MAN Specific Requirements – Air Interface for Fixed  
Broadband Wireless Access Systems

Dear Mr. Carlo:

I am pleased to inform you that on 18 March 1999 the IEEE-SA Standards Board approved the above referenced projects. A copy is enclosed for your files.

We are also enclosing the IEEE Standards Kit Phase 2 (After PAR Approval). This kit includes items which you may find useful in the development of your proposed standard and submitting your final draft for approval. Written responses from all committees/organizations listed on the PAR as proposed coordination must be included with the final draft when it is submitted.

If coordination is effected by common membership, i.e., a person on the standard's developing committee who is also a member of the committee/organization specified on the PAR for coordination, there must be a document included with the final draft from that coordinating body which states that person is authorized to represent it. We strongly recommend that a copy of your draft be sent to this office for review prior to the final voting by the working group to allow for a quick review by the editorial staff before sponsor balloting.

If you should have any further questions, please contact me at 732-562-3808 or by email at [r.kershner@ieee.org](mailto:r.kershner@ieee.org).

Sincerely,

Rona Kershner

Manager, Standards Board Support  
NesCom Secretary

cc: R. Heile, R. Marks

---

The Institute of Electrical and Electronics Engineers, Inc.

445 Hoes Lane • P.O. Box 1331 • Piscataway NJ 08855-1331, USA • Phone 732.981.0060 • Fax 732.562.1571 • [www.ieee.org](http://www.ieee.org)

[\[Date Prev\]](#)[\[Date Next\]](#)[\[Thread Prev\]](#)[\[Thread Next\]](#)[\[Date Index\]](#)[\[Thread Index\]](#)

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# Approve: PAR number change for 802.15 to 802.15.1

---

⚡ *To:* "IEEE802" <[stds-802-sec@ieee.org](mailto:stds-802-sec@ieee.org)>  
⚡ *Subject:* Approve: PAR number change for 802.15 to 802.15.1  
⚡ *From:* "Jim Carlo" <[jcarlo@ti.com](mailto:jcarlo@ti.com)>  
⚡ *Date:* Tue, 16 May 2000 16:30:54 -0500  
⚡ *Importance:* Normal  
⚡ *Sender:* [owner-stds-802-sec@ieee.org](mailto:owner-stds-802-sec@ieee.org)

---

Results: Approve - 7, Do Not Approve -0, Abstain -1, Did Not Vote - 3  
Howard Frazier - Abstain  
Bob Grow -  
Paul Nikolich - Approve  
Buzz Rigsbee - Approve  
Vic Hayes - Approve  
Tony Jeffree - Approve  
Geoff Thompson - Approve  
Bob Love -  
Stuart Kerry -  
Bob Heile - Approve  
Roger Marks - Approve  
Jim Carlo - Chair

+++++  
SEC OFFICIAL EMAIL BALLOT 802.0/8May2000  
Issue Date: 6April2000 Closing Date: 15May2000  
Moved By: Bob Heile  
Seconded By: Jim Carlo  
Move: Authorize PAR Number Change for 802.15 to 802.15.1

+++++  
802.15 - 1Mbit/sec WPANs - Proposed to be numbered 802.15.1  
802.15.2 - Recommended Practice for Coexistence in Unlicensed Bands  
802.15.3 - 20+ Mbit/sec High Rate WPAN for Multimedia and Digital Imaging

This was an action already taken by 802.16 with their original PAR, with the endorsement of the SEC, last Novmber. 802.15 wishes to do the same and is seeking a similar endorsement.

Bob Heile  
GTE Technology Organization  
Chair IEEE 802.15  
40 Sylvan Road, Waltham, MA 02451

Phone: 781-466-2057  
Fax: 781-466-2575  
Pager: 800-759-8888 PIN 1109355  
+++++

- 
- ⌘ [Prev by Date: \*\*Re: Kill the Friday Plenary Rule Change\*\*](#)
  - ⌘ [Next by Date: \*\*Rules change comments from Floyd Ross\*\*](#)
  - ⌘ [Prev by thread: \*\*FW: RFC 2814 on SBM \(Subnet Bandwidth Manager\)\*\*](#)
  - ⌘ [Next by thread: \*\*Rules change comments from Floyd Ross\*\*](#)
  - ⌘ Index(es):
    - ⌘ [Date](#)
    - ⌘ [Thread](#)

## Coordination comments & responses report

After the IEEE 802 LMSC July 2001 plenary the IEEE P802.15 WG for WPANs worked with the IEEE-SA Balloting Center to conduct two (2) Sponsor Ballots during the late summer and early fall of 2001. The P802.15.1/D0.9.2 initial 30-day ballot opened 27Jul01 and closed 25Aug01. Six (6) Balloters provided a total of 95 new comments; three (3) of which were DISAPPROVING Balloters.

A Ballot Review Committee (BRC) was formed and led by the Project Chair. There were eleven (11) coordination comments received during the initial ballot and all were accepted, resolved, and added to the P802.15.1/D1.0.1 draft standard. The only comments received during the recirculation were from coordinators submitting approving votes and/or that the "IEEE P802.15.1/D1.0.1 meets all aspects of IEEE editorial coordination.

Committee/Organization	Initial	Recirculation
SCC10 (IEEE Dictionary)	1	0
SCC14 (Quantities, Units, & Letter Symbols)	2	0
IEEE Standards Editorial Staff	8	1
TOTAL	11	1

The Project would like to acknowledge Ms. Jennifer McClain Longman, IEEE Standards Project Editor. Ms Longman reviewed the P802.15.1 draft standard during the Working Group ballot phase, prior to and during the Sponsor ballot phase – this extra effort has provided the Project a "leg up" on getting the draft completed in a timely manner.

Coordination comments & responses report legend:

COMMENT TYPE: T/technical E/editorial, COMMENT STATUS: D/dispatched A/accepted R/rejected, SORT ORDER: Comment #, Clause, Page, Line, RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn

--

Ian Gifford, Vice Chair, IEEE 802.15 Working Group for WPANs  
giffordi@ieee.org

The initial eleven (11) accepted coordinator comments and one (1) recirculation comment follow:

**COMMENT #: 86**

IEEE #: 601054  
NAME: Barrow, Bruce  
E-MAIL: b.barrow@ieee.org  
PHONE: +1 301 493 4374  
FAX: +1 301 493 6363  
CO/ORG: IEEE SCC 14  
PAGE: 0  
LINE: 0  
CLAUSE: 0

TYPE OF COMMENT: C

COMMENT: "The symbol for kilobit per second is kb/s, not kbps. The symbol for megabit per second is Mb/s, not Mbps."

SUGGESTED REMEDY: "Please make the change globally."

RESPONSE: "ACCEPT.  
The BRC agrees and the edit will be applied to D1.0.1."

COMMENT STATUS: A  
RESPONSE STATUS: C  
EDITOR NOTE: Done.

**COMMENT #: 87**

IEEE #:

NAME: Longman, Jennifer

E-MAIL: j.longman@ieee.org

PHONE: +1 732 562 6355

FAX: +1 732 562 1571

CO/ORG: IEEE Standards Activities

PAGE: 0

LINE: 0

CLAUSE: 0

TYPE OF COMMENT: C

COMMENT: "For consistency in all IEEE 802 Standards, the name of document should read as follows:"

SUGGESTED REMEDY: "Draft Standard for Information technology---  
Telecommunications and information exchange between systems---  
Local and metropolitan area networks---  
Specific requirements---  
Part 15.1: Wireless Medium Access Control (MAC) and Physical Layer (PHY) specifications for Wireless Personal Area Networks (WPANs™)

RESPONSE: "ACCEPT.  
The BRC agrees and the edit will be applied to D1.0.1."

COMMENT STATUS: A

RESPONSE STATUS: C

EDITOR NOTE: Done.



**COMMENT #: 88**

IEEE #:

NAME: Longman, Jennifer

E-MAIL: j.longman@ieee.org

PHONE: +1 732 562 6355

FAX: +1 732 562 1571

CO/ORG: IEEE Standards Activities

PAGE: 0

LINE: 0

CLAUSE: 0

TYPE OF COMMENT: C

COMMENT: "Review all instances of text, figures, tables, etc., taken directly from the Bluetooth Specification."

SUGGESTED REMEDY: " All must be clearly identified as coming from the Bluetooth Spec."

RESPONSE: "ACCEPT IN PRINCIPLE.

The Editors created subclause ""5.2 The origin of the document and layout"" to address this legal issue; as referenced in IEEE-BSIG License Agreement addendum or the Front Matter page i in the copyright notice. Clauses 7-11, Annexes A (PICS) and C-G are directly sourced from the Bluetooth Specifications."

COMMENT STATUS: A

RESPONSE STATUS: C

EDITOR NOTE: Done.

**COMMENT #: 89**

IEEE #:

NAME: Longman, Jennifer

E-MAIL: j.longman@ieee.org

PHONE: +1 732 562 6355

FAX: +1 732 562 1571

CO/ORG: IEEE Standards Activities

PAGE: 0

LINE: 0

CLAUSE: 0

TYPE OF COMMENT: C

COMMENT: "Wireless personal area networks is not trademarked."

SUGGESTED REMEDY: "Please remove trademark symbol after the text. Only "WPAN" is trademarked."

RESPONSE: "ACCEPT.

The BRC agrees and the edit will be applied to D1.0.1."

COMMENT STATUS: A

RESPONSE STATUS: C

EDITOR NOTE: Done.

**COMMENT #: 90**

IEEE #:

NAME: Longman, Jennifer

E-MAIL: j.longman@ieee.org

PHONE: +1 732 562 6355

FAX: +1 732 562 1571

CO/ORG: IEEE Standards Activities

PAGE: 0

LINE: 0

CLAUSE: 0

TYPE OF COMMENT: C

COMMENT: "Review the use of shall/should/may/can/will/must throughout the document to be sure they are used in accordance with IEEE's style."

SUGGESTED REMEDY:

RESPONSE: "ACCEPT.

After the Jul01 IEEE 802 Plenary the BRC identified in IEEE Std. 802.15.1/D0.9.1 189 usages of the word "shall/should/may/can/will/must" that should be edited to comply to the IEEE Style Manual:

Volume 1

Part A (Clause 7) = 12

Part B (Clause 8) = 29

Part C (Clause 9) = 32

Part D (Clause 10) = 55

Part H:1 (Clause 11) = 57

Appendix IX (Annex G) = 2

Volume 2

Part K:1 (Annex C) = 2

these edits were submitted to the IEEE 802.15 WG as well as the BSIG and 188 were accepted:

BSIG c/o CB>"All but one of the changes identified by 802.15.1 should be approved. Only the first of the two changes in the GAP section should not be approved."

The BRC applied the 188 edits as well as two (2) to Annex A. In total 190 edits were applied to create IEEE P802.15.1/D0.9.2. There are still occurrences of "shall/should/may/can/will/must" but the problematic ones have been eliminated.

COMMENT STATUS: A

RESPONSE STATUS: C

EDITOR NOTE: Done.

**COMMENT #: 91**

IEEE #:  
NAME: Longman, Jennifer  
E-MAIL: j.longman@ieee.org  
PHONE: +1 732 562 6355  
FAX: +1 732 562 1571  
CO/ORG: IEEE Standards Activities  
PAGE: 0  
LINE: 0  
CLAUSE: 0

TYPE OF COMMENT: C

COMMENT: "Remove all color from the figures and text."

SUGGESTED REMEDY:

RESPONSE: "ACCEPT.  
The BRC agrees and the edit will be applied to D1.0.1."

COMMENT STATUS: A  
RESPONSE STATUS: C  
EDITOR NOTE: Done.

**COMMENT #: 92**

IEEE #:

NAME: Longman, Jennifer

E-MAIL: j.longman@ieee.org

PHONE: +1 732 562 6355

FAX: +1 732 562 1571

CO/ORG: IEEE Standards Activities

PAGE: 0

LINE: 0

CLAUSE: 0

TYPE OF COMMENT: C

COMMENT: "The Working Group will need to provide clean reproducible-quality figures in electronic format (preferably TIFF or EPS format.) If figures were derived or obtained from sources other than the Working Group itself, please obtain and supply permission from the appropriate sources."

SUGGESTED REMEDY:

RESPONSE: "ACCEPT.

The BRC agrees and the edit will be applied to D1.0.1."

COMMENT STATUS: A

RESPONSE STATUS: C

EDITOR NOTE: Done.

**COMMENT #: 93**

IEEE #:  
NAME: Longman, Jennifer  
E-MAIL: j.longman@ieee.org  
PHONE: +1 732 562 6355  
FAX: +1 732 562 1571  
CO/ORG: IEEE SCC 10  
PAGE: 0  
LINE: 0  
CLAUSE: 0

TYPE OF COMMENT: C

COMMENT: "IEEE P802.15.1/D0.9.2 meets all conditions of SCC 10 coordination."

SUGGESTED REMEDY:

RESPONSE: "ACCEPT."

COMMENT STATUS: A  
RESPONSE STATUS: C  
EDITOR NOTE: Done.

**COMMENT #: 94**

IEEE #: 601054  
NAME: Barrow, Bruce  
E-MAIL: b.barrow@ieee.org  
PHONE: +1 301 493 4374  
FAX: +1 301 493 6363  
CO/ORG: IEEE SCC 14  
PAGE: 199  
LINE: 39  
CLAUSE: 10.1

TYPE OF COMMENT: C

COMMENT: "The kilobyte appears in at least two places (10.1 & 10.8), and there is some ambiguity as to what is meant."

SUGGESTED REMEDY: "In the Definitions section, include the following:

kilobyte (kB): 1000 bytes

If this is not the intended definition to be used in this standard, please contact me."

RESPONSE: "ACCEPT.

The BRC agrees and the edit will be applied to D1.0.1. We did not fully appreciate the commenter's point ""and there is some ambiguity as to what is meant."" but we did add the definition to Clause 3."

COMMENT STATUS: A  
RESPONSE STATUS: C  
EDITOR NOTE: Done.

**COMMENT #: 95**

IEEE #:

NAME: Longman, Jennifer

E-MAIL: j.longman@ieee.org

PHONE: +1 732 562 6355

FAX: +1 732 562 1571

CO/ORG: IEEE Standards Activities

PAGE: 27 &amp; 202

LINE: 39 &amp; 43

CLAUSE: 7.1 &amp; 10.1.3

TYPE OF COMMENT: C

COMMENT: "Please rename the subclauses 7.1 and 10.1.3 to something other than "Scope." This heading is reserved for the Overview section in Clause 1."

SUGGESTED REMEDY:

RESPONSE: "ACCEPT.

In subclause 7.1 we changed ""Scope"" to ""Regulatory requirements"".

In subclause 10.1.3 we changed ""Scope"" to ""Features not supported""."

COMMENT STATUS: A

RESPONSE STATUS: C

EDITOR NOTE: Done.



**COMMENT #: 96**

IEEE #:

NAME: Longman, Jennifer

E-MAIL: j.longman@ieee.org

PHONE: +1 732 562 6355

FAX: +1 732 562 1571

CO/ORG: IEEE Standards Activities

PAGE: i

LINE: 1

CLAUSE: 0

TYPE OF COMMENT: C

COMMENT: "Please remove ""(Portions derived from Bluetooth v1.1 February 22, 2001)"" from the first page in the front matter." This information should be placed prominently elsewhere in the front matter, but not on the cover page."

SUGGESTED REMEDY:

RESPONSE: "ACCEPT.

The BRC agrees and the edit will be applied to D1.0.1."

COMMENT STATUS: A

RESPONSE STATUS: C

EDITOR NOTE: Done.

**RECIRCULATION COMMENT #: 1**

IEEE #:

NAME: Longman, Jennifer

E-MAIL: j.longman@ieee.org

PHONE: +1 732 562 6355

FAX: +1 732 562 1571

CO/ORG: IEEE Standards Activities

PAGE: 0

LINE: 0

CLAUSE: 0

TYPE OF COMMENT: C

COMMENT: "IEEE P802.15.1/D1.0.1 meets all aspects of IEEE editorial coordination."

SUGGESTED REMEDY:

RESPONSE: "ACCEPT."

COMMENT STATUS: A

RESPONSE STATUS: C

EDITOR NOTE: Done.

Note: This Coordination comments & responses report is an excerpt from the posted IEEE 802.15 document - 01/420r10 contribution. More info:

<http://ieee802.org/15/pub/SB2/SB2.html>

-EOF-

From: <sa-ballot@ieee.org>  
To: <b.barrow@ieee.org>  
Cc: <giffordi@world.std.com>; <bheile@ieee.org>; <bt-gm@bluetooth.org>  
Subject: Courtesy copy of comment for P802.15.1/D0.9.2  
Date: Wednesday, August 01, 2001 1:56 PM

(Message sent via IEEE Standards webmail)

-----  
Here is a courtesy copy of a comment for P802.15.1/D0.9.2  
just submitted:

# Ballot/Comment Data for 0000130 (P802.15.1/D0.9.2)  
# Submitted Wed Aug 1 13:56:38 EDT 2001  
# Type: comment  
# Record Number: 00601054

ballot\_code = 0000130  
form\_type = comment  
ieee\_number = 00601054  
name = Bruce Barrow  
email = b.barrow@ieee.org  
phone = 301-493-4374  
fax = 301-493-6363  
org = IEEE SCC14  
page = general  
line =  
subclause =  
comment\_type = Coordination  
comment = Mandatory

1. The kilobyte appears in at least two places, and there is some ambiguity as to what is meant. In the Definitions section, include the following:

kilobyte (kB): 1000 bytes

If this is not the intended definition to be used in this standard, please contact me.

2. The symbol for kilobit per second is kb/s, not kbps. The symbol for megabit per second is Mb/s, not Mbps. Please make the change globally.  
suggested\_remedy =  
See above.

-----  
(End of IEEE Standards webmail message)

MEMO

TO: Balloting Center  
FROM: Jennifer Longman  
DATE: 17 August 2001  
RE: Editorial Coordination of IEEE P802.15.1/ D0.9.2

Upon review of IEEE P802.15.1/D0.9.2, I have the following comments:

1. For consistency in all IEEE 802 Standards, the name of document should read as follows:

Draft Standard for Information technology---Telecommunications and information exchange between systems---Local and metropolitan area networks---Specific requirements

Part 15.1: Wireless Medium Access Control (MAC) and Physical Layer (PHY) specifications for Wireless Personal Area Networks (WPANs<sup>TM</sup>)

2. Please remove "(Portions derived from Bluetooth v1.1 February 22, 2001)" from the first page in the front matter. This information should be placed prominently elsewhere in the front matter, but not on the cover page.
3. Review all instances of text, figures, tables, etc., taken directly from the Bluetooth Specification. All must be clearly identified as coming from the Bluetooth Spec.
4. "Wireless personal area networks" is not trademarked. Please remove trademark symbol after the text. Only "WPAN" is trademarked.
5. Review the use of shall/should/may/can/will/must throughout the document to be sure they are used in accordance with IEEE's style.
6. Remove all color from the figures and text.
7. The Working Group will need to provide clean reproducible-quality figures in electronic format (preferably TIFF or EPS format.) If figures were derived or obtained from sources other than the Working Group itself, please obtain and supply permission from the appropriate sources.
8. Please rename the subclauses 7.1 and 10.1.3 to something other than "Scope." This heading is reserved for the Overview section in Clause 1.

Please note that items 3, 5, 6, and 7 **will require a recirculation** and must be resolved before the draft is submitted to RevCom. If you have any questions or concerns, do not hesitate to contact me.

MEMO

TO: Balloting Center

FROM: Jennifer Longman

DATE: 20 August 2001

RE: SCC 10 Coordination of IEEE P802.15.1/D0.9.2

IEEE P802.15.1/D0.9.2 meets all conditions of SCC 10 coordination.

MEMO

TO: Balloting Center

FROM: Jennifer Longman

DATE: 11 October 2001

RE: Editorial Coordination of IEEE P802.15.1/D1.0.1

IEEE P802.15.1/D1.0.1 meets all aspects of IEEE editorial coordination.

If you have any questions or concerns, do not hesitate to contact me.



Intel Corporation  
2200 Mission College Blvd.  
Santa Clara, CA 95052-8119  
408-765-8080

Page 1 of 5  
Confidential  
Urgent

# MHPG Strategic Planning

Date: September 9, 1999

<b>To:</b>	<b>Phone #:</b>	<b>Fax #:</b>
<u>Ian Gifford</u>	<u></u>	<u>978-442-5442</u>
<u></u>	<u></u>	<u></u>
<u></u>	<u></u>	<u></u>
<u></u>	<u></u>	<u></u>

<b>From:</b>	<b>Phone #:</b>	<b>Fax #:</b>
<u>Jim Kardach</u>	<u>408-765-4469</u>	<u>408-653-4914</u>

**Subject:**  
**Bluetooth SIG - IEEE License Agreement to Publish Derivative Work**

**Message:**

Attached you will find a copy of the Bluetooth SIG - IEEE License Agreement to Publish Derivative Work.

**If you have problems receiving this fax, please contact my admin, Laura Mariani, at 408-653-7908.**

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Final 1/27 May, 1999

BSIG/IEEE Copyright Contract

IEEE\_COP Final

Final 1/27 May, 1999**BLUETOOTH SPECIAL INTEREST GROUP (BSIG) - INSTITUTE OF ELECTRICAL  
AND ELECTRONICS ENGINEERS, INC. (IEEE)****LICENSE AGREEMENT TO PUBLISH DERIVATIVE WORK**

THIS LICENSE AGREEMENT (hereinafter "Agreement" is entered into as of this day of July 17, 1999, between the Bluetooth Special Interest Group (BSIG), with a place of business at 2200 Mission College Blvd., Santa Clara, CA 95052, United States of America ("Licensor"); and the Institute of Electrical and Electronics Engineers, Inc. (IEEE), with its principal place of business at Three Park Avenue, 17<sup>th</sup> Floor, New York, NY, United States of America ("Licensee"), based on the following understandings of the parties:

Licensor owns the copyright to the publication entitled "Bluetooth Specification V.1.0 Foundation Core," and "Bluetooth Specification V.1.0 Foundation Profiles" (hereinafter referred to as the "Bluetooth Specification").

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- D. Submit the Derivative Work to ANSI for approval as an American National Standard; and
- E. Submit the Derivative Work, through authorized parties, to Technical Committees of ISO/IEC JTC1 or ITU, as needed for purposes of international standardization, and to allow the development of an international version of the Derivative Work.

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- C. Subject to review and approval by Licensee, Licensor shall have the rights to copy, publish, use, and distribute IEEE-originated material from the Derivative Work, as part of future revisions of the Bluetooth Specification.

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- C. Nothing in this Agreement, or the License granted hereby, shall permit Licensee to use the licensed portion of the Bluetooth Specification for any purpose other than the creation and distribution of Derivative Work. Should Licensee seek to use the licensed portion of the Bluetooth Specification for any other purpose, a separate license agreement will be required.

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- A. The License shall commence on the date of this Agreement and, unless sooner terminated pursuant to any provision hereof, shall continue for sixty (60) months or for the life of the Standard in the event that the Derivative Work should be revised or reaffirmed for subsequent five (5) year terms.
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A. With respect to all copies of the licensed portion of the Bluetooth Specification and all publications of the Derivative Work or any portion thereof, Licensee shall include and affix copyright notices ~~in the form set forth in Exhibit A, attached hereto, and incorporated herein by this reference,~~ so as to provide sufficient notice of Licensor's ownership of the Work and to protect Licensor's interests therein. 

B. Licensee shall also include copyright notices in the form required by the laws of any state, nation, or other jurisdiction in which the Derivative Work is to be published or distributed.

9. Infringement.

A. Licensee shall promptly notify Licensor of any infringement of the Bluetooth-copyrighted material in the Derivative Work, shall cooperate fully with Licensor to prevent and stop such infringement, and shall join with Licensor as a party to any legal case or action brought by Licensor for such purpose.

B. Licensee shall promptly notify Licensor of any third party claim that the use of the Work or the Derivative Work by the Licensee conflicts with, infringes upon, or violates any rights of such third party, whenever Licensee becomes aware of such claims. Licensee shall cooperate fully with Licensor with respect to such claims.

10. Liability.

The parties agree to indemnify and hold each other harmless from and against any charges, suits, damages, costs, penalties, claims liabilities or losses of any kind or nature whatsoever, which may be sustained or suffered by or secured against either party in connection with the misapplication of the Work. "Misapplication" as used herein shall mean any actual or alleged unauthorized or improper use of the standard.

Final 1/27 May, 1999

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11. Previous License(s).

This Agreement supersedes and nullifies any license agreement or other arrangement previously or currently existing between the parties.

12. Governing Law.

This Agreement shall be governed by and construed in accordance with the laws of the State of New York of the United States of America. All legal proceedings relating to the subject matter of this Agreement shall be maintained in courts sitting within the State of New York, and Licensee consents and agrees that jurisdiction and venue for such proceedings shall lie exclusively with such courts.

IN WITNESS THEREOF, the parties hereto, on behalf of themselves, represent below that they have read and understand the terms of the Agreement, and that they are duly authorized to enter into this Agreement by, and on behalf of, their respective organization and corporation.

BLUETOOTH SPECIAL  
INTEREST GROUPINSTITUTE OF ELECTRICAL AND  
ELECTRONICS ENGINEERS, INC.By: James KoehlerBy: Judith GoemaManaging Director,  
IEEE Standards ActivitiesDate: July 17, 1999Date: 11 Aug 1999



**IEEE**

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To: Zan Gifford Date: 15 Aug 00  
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Time: 3:00  am  pm Fax Number: 978 251-1437

Number of Pages: 6 From: Michelle Turner  
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IEEE Corporate Office  
 3 Park Avenue, 17<sup>th</sup> floor  
 New York, NY 10016-5997  
 Telephone: 212-419-7900  
 Facsimile: 212-752-4929

IEEE-USA  
 1828 L Street, NW, Suite 1202  
 Washington, DC 20036-5104  
 Telephone: 202-785-0017  
 Facsimile: 202-785-0835

## ADDENDUM

This is an addendum dated as of 11 May 2000 to License Agreement to Publish Derivative Work between Promoters of the Bluetooth Special Interest Group (BSIG) and the Institute of Electrical and Electronics Engineers, Inc. (IEEE), dated as of 17 July 1999 (the "License Agreement").

### A. Promoters

The BSIG now has nine Promoter companies: 3Com Corporation, Ericsson Mobile Communications AB, IBM Corporation, Intel Corporation, Lucent Technologies Inc., Microsoft Corporation, Motorola Inc., Nokia Mobile Phones Ltd., and Toshiba Corporation.

The License Agreement, as amended by this Addendum, continues in full force and effect, with each of the Promoters signing below considered the "Licensor" for all such purposes. Promoters who join after this Addendum is signed will become parties to the License Agreement as a condition of joining the BSIG.

### B. Copyright statements

The Promoters and the IEEE agree as follows:

- 1) The following Draft Copyright Statement shall appear on the title page of the draft Derivative Work:

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This is an unapproved draft of a proposed IEEE Standard, subject to change.

This work is copyright © 2000 Institute of Electrical and Electronics Engineers. It is based on Bluetooth Version 1.0 Specification Foundation Core, Bluetooth Version 1.0 Specification Foundation Profiles, and Bluetooth Version 1.0 Specification Foundation Test Specifications, copyright © 1999, 2000 3Com Corporation, Ericsson, IBM Corporation, Intel Corporation, Lucent Technologies, Microsoft Corporation, Motorola Inc., Nokia, and Toshiba Corporation. Portions of this draft consist of unaltered or minimally altered text of the Bluetooth Specification. Other portions consist of new material and substantively altered material. The diagram found in 5.2, "the Origin of the Document and Layout," provides a guide to the changes that have been made.

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- 2) And the following notice shall appear on every page of the draft\*:

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\*Suggested placement: bottom of page.

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INTEREST GROUP PROMOTERS:

3Com Corporation,  
Ericsson Mobile Communications AB,  
IBM Corporation,  
Intel Corporation,  
Nokia Mobile Phones Ltd.,  
Toshiba Corporation

By: James Kardach  
James Kardach  
Date: 7/5/00

INSTITUTE OF ELECTRICAL  
AND ELECTRONICS  
ENGINEERS, INC

By: \_\_\_\_\_  
Judith Gorman  
Date: \_\_\_\_\_

Lucent Technologies Inc.

By: \_\_\_\_\_  
Title:  
Date:

Microsoft Corporation

By: \_\_\_\_\_  
Title:  
Date:

Motorola Inc.

By: \_\_\_\_\_  
Title:  
Date:

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3Com Corporation,  
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Nokia Mobile Phones Ltd.,  
Toshiba Corporation

By: James Kardach  
James Kardach  
Date: 7/5/00

INSTITUTE OF ELECTRICAL  
AND ELECTRONICS  
ENGINEERS, INC

By: Judith Gorman  
Judith Gorman  
Date: 9 Aug 2000

Lucent Technologies Inc.

By: [Signature]  
Title: STRATEGIC MARKETING MGR  
Date: 27/JULY/00

Microsoft Corporation

By: \_\_\_\_\_  
Title:  
Date:

Motorola Inc.

By: \_\_\_\_\_  
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Date:

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3Com Corporation,  
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IBM Corporation,  
Intel Corporation,  
Nokia Mobile Phones Ltd.,  
Toshiba Corporation

By: \_\_\_\_\_  
James Kardach  
Date: \_\_\_\_\_

Lucent Technologies Inc.

By: \_\_\_\_\_  
Title:  
Date:

Microsoft Corporation

By: Benjamin Waldman  
Title: Vice President  
Date: 12 June 2000

Motorola Inc.

By: \_\_\_\_\_  
Title:  
Date:

INSTITUTE OF ELECTRICAL  
AND ELECTRONICS  
ENGINEERS, INC

By: \_\_\_\_\_  
Judith Gorman  
Date: \_\_\_\_\_



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INTEREST GROUP PROMOTERS:

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Ericsson Mobile Communications AB,  
IBM Corporation,  
Intel Corporation,  
Nokia Mobile Phones Ltd.,  
Toshiba Corporation

By: \_\_\_\_\_  
James Kardach  
Date: \_\_\_\_\_

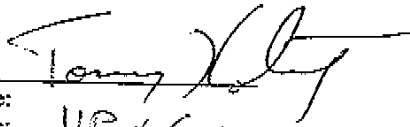
Lucent Technologies Inc.

By: \_\_\_\_\_  
Title:  
Date:

Microsoft Corporation

By: \_\_\_\_\_  
Title:  
Date:

Motorola Inc.

By:   
Title:  
Date: VP + GM  
6/15/2000

INSTITUTE OF ELECTRICAL  
AND ELECTRONICS  
ENGINEERS, INC

By: \_\_\_\_\_  
Judith Gorman  
Date: \_\_\_\_\_



Tom Siep, General Manager  
Bluetooth SIG, Inc.  
M/S 365, Pleasant Valley Dr., #100  
Garland, TX 75040, USA

October 23, 2001

Mr. David Ringle  
Senior Administrator, IEEE-SA Governance  
IEEE-SA Standards Department  
445 Hoes Lane  
Piscataway, NJ 08854

VIA FAX 732-562-1571  
One Page

Dear Mr. Ringle,

The Bluetooth SIG, Inc. is very appreciative of all the efforts the IEEE has put into the formulation of the IEEE 802.15.1 Standard. We are impressed with the caliber and diligence of the staff and volunteers of all those in IEEE 802 and IEEE-SA who have helped to bring forward this Standard.

This letter is in response to your request for a Letter of Assurance as specified in the IEEE Bylaws (<http://standards.ieee.org/guides/bylaws/sect6-7.html#6>, paragraph b).

Bluetooth SIG, Inc. (the SIG) Corporate Bylaws preclude us from collecting the specific Patent information from its Members. The SIG itself owns no Patents.

It should be noted that there may be Bluetooth Promoters, Associates, or Adopters who own Necessary Claims on the Bluetooth Specification. These Necessary Claims are granted by license to any and all of the over 2,500 companies who are currently Members of Bluetooth SIG, Inc. Information about membership in the SIG is readily available from the SIG membership site at <http://www.bluetooth.org/sig-membership/>. Basic membership in the SIG is available on a reasonable and non-discriminatory basis at no charge.

Please let me know if you have any questions.

Sincerely,

A handwritten signature in cursive script that reads 'Tom Siep'.


Tom Siep  
General Manager

TMS/abs

cc: Bob Heile (Fax# 508-222-0515)  
Susan Tatiner (Fax# 732-562-1571)  
Ian Gifford (Fax# 978-251-1437)

**PROJECT NUMBER: P802.15.1**

**DATE: 25Oct01**

<i>This draft standard has been developed in accordance with the policies and procedures of the Sponsor and I am authorized by those policies and procedures to make this submittal.</i>	
	Vice Chair, IEEE 802.15 and Chair, 802.15.1
Signature of Submitter	Title (role in Sponsor)

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**FOR STANDARDS DEPARTMENT USE ONLY**

_____ Signature of IEEE Officer	IEEE-SA Standards Board Chair Title	_____ Date
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**Return to:**

IEEE Standards Department  
 RevCom Secretary  
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