IEEE 802.16
Working Group on Broadband Wireless Access

[Approved] Meeting #0 Minutes

Regal Harvest House, Boulder, Colorado, U.S.A

10 to 12 May 1999

1. Monday, 10 May 1999

1.1 Opening Remarks

Roger Marks, chair of 802.16, opened the meeting at 13:00. (Jim Mollenauer initially served as acting secretary in the absence of Scott Marin, who was delayed in transit.)

Roger declared the meeting as Meeting #0, a Task Group Meeting, and not a formal meeting of 802.16 since the attendees at the first official meeting automatically become voting members. The first official 802.16 meeting will be at the 802 Plenary planned for July 99 in Montreal. Votes taken at the Boulder meeting will be confirmed at the July meeting.

Goals of Boulder meeting:
> Draft of coexistence PAR: must be distributed to Executive Committee by June 4.
> System requirements document
> Establish rules and procedures.

The agenda and official 802 information for the Boulder meeting is contained in Appendix A

1.2 Introductions and Attendance

Each person in the room introduced themselves by name and company. There were about 50 people in the room.

(13:50 Scott Marin, arrived and took over as secretary.)

The attendance book was circulated. To prepare the group for official meetings in which an attendance percentage of greater than 75% of the scheduled sessions is required for voting rights, the attendance book will be circulated for initialing during each session (morning, afternoon, and evening (if scheduled)).

The attendance list and attendance percentage is contained in Appendix B.

1.3 Chairman's report

Roger Marks presented a report of activities including announcement of the RAWCON '99 conference, Aug 1-4, 1999. Roger has been actively promoting 802.16 via numerous panels, conferences, press releases, and papers.

Roger has been making presentations on 802.16, many as MTT Distinguished Lecturer, for the IEEE Microwave Theory and Techniques Society. These have included the European Institute Roundtable, which had very high-level participation. Marks spoke in favour of a more cooperative international standards development environment than has been the case with third-generation cellular. The process of resolving existing national standards in wireless has been very difficult, while IEEE 802 has done much better since it is international from the beginning.

After reviewing voting rights and other procedural matters, Roger presented a status report on 802.16. The PAR for the group was approved by the 802 Executive Committee with minor revisions on Thursday night (11 Mar, 1999). Including 802.11 for wireless LANs and the new 802.15 for wireless personal area networks, there are now three groups in 802 doing wireless standards.

For formal internationalization of its standards, IEEE 802 is moving toward a direct relationship with the International Standards Organization (ISO) as a Category A liaison, rather than submitting through the US national

body. Submissions from the US body (ANSI) may appear to be only national standards but in fact Project 802 is highly transnational in its makeup. There is also a strong possibility that the 802.16 standards will be contributed to the Radio Sector of the International Telecommunications Union (ITU-R) rather than ISO JTC1.

Tutorials scheduled for the forthcoming July meeting were reviewed.

RAWCON '99 will be held in Denver on August 1-4, again chaired by Roger. There will be a session on Broadband Access Systems and a panel on standardization.

802.16 E-mail Reflector

The e-mail reflector at stds-802-16@ieee.orgs is active. Subscription instructions are on the 802.16 web page (http://grouper.ieee.org/groups/802/16). For submission of systems requirements, start the subject line with word "SYSREQ". Contributions to the group should not go out to the reflector; after the document has been accepted, numbered, and posted, the relevant Task Group coordinator (or other cognizant person) should send only a pointer to the contribution rather than attaching the document to the e-mail. When replying to reflector e-mail, the default is to reply to only the sender of the message. The default reply does not go out automatically to the whole list.

802.16 Web Page

The 802.16 web site has been set-up: http://grouper.ieee.org/groups/802/16. A document submission template has been set up that contains detailed submission instructions. Download the template and use it for your submissions. Roger is in charge of document numbers; submit contributions to him or the relevant person for committees. A password-protected area will be available to keep such items as copyrighted drafts when they are generated in the future.

N-WEST Web Page

The web page used by N-WEST and the 802.bwa study group is also still active at http://nwest.nist.gov.

1.4 Liaison Reports

ETSI BRAN

Roger Marks reported that Paul Khanna, liaison from 802bwa to ETSI BRAN, did not attend the most recent ETSI meeting but reports that ETSI BRAN has decided to not study coexistence and has transferred the coexistence effort to another ETSI group [TM-4].

ITU-R JRG 8A-9B and Work Party 9

Scott Marin gave a brief summary of the recent international meeting in Geneva (12-14 May 99). The group recently removed the word "preliminary" from document ITU-R 9B/134 titled of a Draft New Recommendation ITU-R F.BWA "Radio Transmission Systems for Fixed Broadband Wireless Access (BWA) based on Cable Modem Standards (Annex B of ITU-T Rec. J.112)

National Spectrum Manager's Association (www.nsma.org)

Larrie Sutliff, chair of this group, has expressed interest in a relationship with 802.16 and has requested an 802.16 representative at the NSMA meeting on 5/19/99. Erol Yurtkuran volunteered and was appointed.

1.5 Reports of Task Groups

Coexistence Task Group and Contributions

Leland Langston presented a summary and noted that a Call for Contributions had been published on the web.

Contributed Documents:

   802.16cc-99/01 Proposed PAR for Coexistence (Howard Sandler)

   802.16cc-99/02 A Framework for Evaluating Interference to BWA Systems (Howard Sandler)

The following two presentations were requested at the meeting:

Coexistence Aspects of TDD Based WBA Systems (Jay Klein)

Standard Radio System Plan (Doug Sward)

Systems Requirements Task Group

14:20, Gene Robinson reported on activities.
In Austin, a draft outline, reference diagram, and functional summary was discussed. A Call for Contributions has been issued. Brian Petry is the editor of systems requirements document. Since the Austin meeting, an informal group met in Dallas for a couple of hours to brainstorm the subject matter for the system requirements document. The output from the informal meeting is provided as document 80216sc-99/6 for consideration when formulating the system requirements document.

1.6 Future Meetings Discussion

6-8 July, Queen Elizabeth Montreal, in conjunction with a full 802 meeting, 5-9 July, The meeting will establish voting rights for 802.16. Also 802 CD-ROM will be distributed to 802.16 attendees

8-12 Nov, Hyatt Regency, Kauai, Koloa, HI

Tentative meeting: 5-6 Aug 1999, Denver, Interim in conjunction with RAWCON'99 (1-4 Aug.)

1.7 6.a Group Organizational Issues

Task groups, stimulating contributions, submission rules, document distribution, privacy, Flash ROM.

1.8 Document Distribution at Meeting

As a method of document distribution, the web page (http://grouper.ieee.org/groups/802/16) including all associated documents was placed on a Flash Memory card and distributed around the room. Electronic distribution is the preferred method over hardcopies so everyone should bring a laptop to meetings. Hardcopies will normally not be provided.

1.9 System Requirements Contributions

Brain Petry summarized documents received:

802.16sc-99/1 System Requirements Outline (Michael Stewart)

802.16sc-99/2 802.6 Functional Requirements

802.16sc-99/3 Reference Diagram (Margarete Ralston)

802.16sc-99/4 System Requirements Diagram Notes (Margarete Ralston)

802.16sc-99/5 Functional Requirements for Broadband Wireless Access Networks(James Mollenauer)

802.16sc-99/6 System Requirements Outline with some Subject Content (Leland Langston, Scott Marin, William Myers, Asif Rahman, Gene Robinson)

802.16sc-99/7 Functional Requirements for the 802.16 Standard (Jim Mollenauer)

1.10 Agenda for Boulder Meeting

(See Appendix A for details)

(1) Coexistence PAR, top priority
(2) System Requirements Document
(3) Rules and procedures

–Break–

1.11 Draft Coexistence PAR

15:25, Leland Langston chaired discussion on Coexistence PAR.

Discussion on Title:
Everyone agreed with replacing the term "Standard" with "Recommended Practice".

In Title: Replace "Minimal" with "Mutually Acceptable level of " …
Title accepted without objection.

Discussion on target completion date: The date of Jan 31 2001 is too late, try for working draft by Mar 2000.

Scope: too detailed. Some discussion.

Without objection, Howard Sandler's contribution (80216cc-99/01) was accepted as a baseline from which to edit.

Ten people requested printed documents. Leland will provide.

1.12 Coexistence in TDD Systems

16:15, Jay Klein, Presentation: Coexistence Aspects of TDD Based WBA Systems. Jay will submit as a contribution.

16:50, Presentation of Howard Sandler's paper (80216cc-99/02) by Arun Arunachalam, The document was well received by the group.

17:15, recess

2. Tuesday, 11 May, 1999

2.1 Draft Coexistence PAR (continued)

8:15 Call to Order by Roger Marks
8:20 Leland chaired discussion of Coexistence PAR

Discussion, scope: (1) Explicitly identify FCC/TDD or not; (2) is self-interference in or out of scope?; (3) coexistance near license boundary without large dead-zones

10:15 break, 10:35 reconvened

Roger Marks restated that a PAR is not a description of scope of the Working Group. It's narrower than that. It's a description of specific standard to be published.

Leland chairing discussion of coexistence scope

Motion 1, Roger Marks, 2nd Imed Frigui, to accept statement "This practice will provide for coexistence using frequency and spatial separation."

40/0/2[1] motion passes

10:40

Motion 2, Jim Mollenauer, 2nd Gene Robinson , to delete the phrase "whether they comply with the recommended equipment parameters or not"

39/0/1 motion passes

11:00

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[1] Votes for/against/abstain

Motion 3, Doug Gray, 2nd Don Arnstein , to delete the phrase "(including different systems deployed by a single license-holders in sub-bands of the licensees authorized bandwidth)".

13/16/9 motion fails

11:30
In the scope paragraph, replace the phrase "operator self-interference created by frequency re-use within a single BWA system" with the phrase, "coexistence issues due to intra-system frequency re-use within a operator's licensed band."
Strawpole, 34/0/6.

12:00 recess for lunch
13:45 reconvened by Leland Langston
Discussed purpose, other standards, submission to other organization.

15:10 recess, 15:40 return.
Reconvened by Leland Langston
Agreed to title, and other paragraphs.
Circulated floppy and flash ROM with current version of coexistence PAR.

2.2 Sward Presentation

16:25 Doug Sward, Presentation of SRSP 325.35 Technical Requirements of LMCS in the 27.35-28.35 GHz. The presentation was well received.

17:00 recess

3. Wednesday, 12 May, 1999

08:00 call to order by Roger Marks
Roger stated that the plan is to submit coexistence PAR for 802 approval at the Montreal meeting.

3.1 Coexistence PAR (continued)

Chair Leland Langston. Leland displayed and read a cleaned up version of the PAR

Motion 4, Don Arnstein, 2nd Ron Kebler, to change date to REVCOM from 31 Mar 2000 to 30 Jun 2000.

20/2/8 motion passes.

Discussion on other standards or projects with a similar scope? The group decided to simply list other groups and leave out the details.

Motion 5, Gene Robinson, 2nd Jim Mollenauer, motion to accept Coexistence PAR and Five Criteria as captured on Leland's PC (Appendix C).

39/0/0 motion passes.

3.2 Coexistence Presentation

Doug Gray, (Lucent), Worldwide Spectrum Allocations for BWA.
Doug will submit as a contribution.

3.3 Systems Requirements

Brian Petry, Chair, discussion on scope of systems documents. Much discussion on use of term "air interface" as opposed to the more general term interoperability standard. Note: the term "air interface" was unanimously voted into the scope and title at Austin while the term "interoperable" also remains in the scope statement.

11:05 agreed to an agenda for topics
11:15 discussion of target services

12:00 recess for lunch, 13:30 re-convened by Brian.

Discussion on reference diagram from Margarete (802.16sc-99/3). Most attendees suggested that the inter-working functions (IWF) also need to be on the subscriber side of the network.

Arun Arunachalam agreed to update the diagrams by June 7.

13:50 Brian presented a summary of requirements from Document ITU-R 9B/134 (The ITU-R document mentioned in 8A-9B liaison.)

14:10, John Liebetreu, Modem Performance Metrics
John will submit summary as a paper.

14:20 Brian, Capacity and Performance
Discussion of lower bound, lower bound of upper bound.

14:45 Brian, Quality of Service, QoS , discussion

14:47 Brian, Services exported by MAC layer to upper layer

14:55 Brian, Summary
Request for contributions

Brian will post discussion notes on the Web Page.

3.4 Miscellaneous Issues

15:00 Roger Marks, chair

PCIA has offered to host and 802.16 meeting in conjunction with PCS'99 Sept 21-24, '99, in New Orleans.

Break, 15:25 call to order by Roger

Topics: draft agenda: plenary sessions, Coordinators for Systems Requirements, MAC, Phy, and coexistence sub-groups

Contribution for Montreal meeting due 2 weeks prior to meeting (COB, 21 June, 99).

Ron Kemper and Jay Klein appointed as interim Phy Coordinators.

Chet Shirali and Jim Mollenauer appointed as interim MAC Coordinators

3.5 Group Organizational Issues

Discussions about open versus closed information (contributions, PAR, draft standards)

16: 20

Motion #6, Gene Robinson, 2nd Brian Petry, to retain an open policy on all of our work (until some event forces otherwise).

27/3/3 motion passes

Motion #7, Brian Petry, 2nd Ron Kemper, "to provide a means for some contributors to submit contributions under password protection"

16:30 Scott Marin departed. Leland Langston became Acting Secretary.

8/5/16 motion passes.

Motion #8, Brian Kiernan, 2nd _____, to permit the chairman to make editorial changes to the draft coexistence PAR prior to submitting PAR to Executive Committee.

Unanimously passes.

3.6 Adjourn meeting

Motion #9, , _____, 2nd _____, to adjourn the meeting

Unanimously passes

Respectfully,

Scott Marin

Secretary, 802.16

4. Appendix A, Agenda and Chairman's Remarks

4.1 Outline

(Note: Chair's outline numbers are different than paragraph numbers of these minutes)
1 Session Opening
1.1   Call to Order
1.2   Presentation of Agenda
1.3   Roll call
1.4   Logistics
2 Rules
2.1   Attendance list
2.2   Registration
2.3   Voting rights
2.4   Individual and Anti-Trust
2.5   IEEE Patent Policy
2.6   Other Rules Announcements
3 Approval of minutes
3.1   Austin meeting Mar. 9-11 1999
3.2   Matters arising from the minutes
4 Reports
4.1   Chair's Status Report
         Liaison Reports
         Coexistence Task Group
4.4   System Requirements Task Group
5 Future Meetings
6 Group Organizational Issues
7 Review of contributions
         Coexistence
         System Requirements
         Organization
         New Contributions?
8 Meeting Goals, in priority order:
         Coexistence PAR
         System Requirements Document
         Rules and Procedures

4.2 Details along with 802 Legal Disclaimers and Announcements

1 Session Opening
1.1   Call to Order
1.2   Presentation of Agenda
1.3   Roll call
         Secretary: Scott Marin
         Stand up and state your name and work location
         You may mention the name of your company
1.4 Logistics
         Meeting in Millennium Room
         Century Room available
         Meet 1-5 pm Mon; 8 am- 5pm Tue,Wed
         Continental Breakfast, 7:00 am
         only for registered attendees
         Coffee: 10 AM
         Lunch: on your own
         Coffee/snack: 3:00 PM
         Dinner: on your own

Group dinner on Tuesday? Monday?

2.1 Attendance List

Attendance has to be recorded for voting membership registration

participation means present in at least 75% of all meetings in a session

2.2 Registration

Conference fee ($50) has to be paid through the hotel's front desk

 Covers only meeting expense

(food and A/V)

Fee subsidized by IEEE Microwave Theory and Techniques Society (MTT)

Failure to pay causes

damage to future voting rights

2.3a Membership Rights

Voting

Motions and Seconding

Debating____

Chair may permit observers to debate

receive a notice of the meeting

receive a copy of the minutes

etc.

2.3b Voting Rights: Earning

Voting rights accrue to participants of the FIRST Working Group Meeting

For 802.16, FIRST Working Group Meeting is Meeting #1 (Montreal, July 6-8)

WG Voting rights earned by participation in WG meetings during 2 of last 4 plenary meetings

Attain voting rights at third meeting

2.3c Voting Rights: Maintaining

Voting rights can be maintained by participation in 2 plenary meetings within 4 consecutive

plenary meetings

Voting rights may be lost:

after failing to pay the conference fee

No payment => no credit

No voting rights until AFTER zero balance

2.4 Individual & Anti-Trust

In IEEE standards meetings, membership is by individual

you do not represent a company or organization

2.5a IEEE Patent Policy

The patent policy is set forth in <u>clause 5</u> of the IEEE Standards Board Bylaws

IEEE standards may include the known use of patent(s), including patent applications, if there is

technical justification in the opinion of the standards-developing committee and provided the

IEEE receives assurance from the patent holder that it will license applicants under reasonable

terms and conditions for the purpose of implementing the standard. This assurance shall be

provided without coercion and prior to approval of the standard (or reaffirmation when a patent

becomes known after initial approval of the standard).

2.5b IEEE Patent Policy

This assurance shall be a letter that is in the form of either

a) A general disclaimer to the effect that the patentee will not enforce any of its present or future

patent(s) whose use would be required to implement the proposed IEEE standard against any

person or entity using the patent(s) to comply with the standard or

b) A statement that a license will be made available to all applicants without compensation or

under reasonable rates, with reasonable terms and conditions that are demonstrably free of any

unfair discrimination

2.5c IEEE Patent Policy

Clause 6.3 of the IEEE Standards Operations Manual

Through the Working Group, the sponsor chair *shall request that known patent holders submit a*

statement either that the patent does not apply to the standard or that licenses will be made

available without compensation or under reasonable rates, terms, and conditions. This assurance

shall be obtained without coercion and submitted to the IEEE at the earliest practical time prior to the approval of an IEEE standard. The IEEE encourages early disclosure to the working group of patent information that might be relevant to the standard.

2.6 Other announcements
> none

3 Approval of minutes
3.1 Austin meeting Mar 9-11 1999
3.2 Matters arising from the minutes
4 Reports
4.1 Chair's Status Report
> Roger Marks, 802.16 Chair

4 Reports
4.2 Liaison Reports
> ETSI BRAN
> Paul Khanna
> ITU-R JRG 8A-9B (Wireless Access Systems)
> José Costa
> Meeting July 12-16, Ottawa
> {National Spectrum Manager's Association}
> {Larrie Sutliff}

4.3 Coexistence Task Group
> Leland Langston, Task Group Coordinator

4.4 System Requirements Task Group
> Gene Robinson, Task Group Coordinator

5 Future Meetings
> 802 Plenary Meetings
> July 5-9:
> Queen Elizabeth, Montreal, Quebec
> Voting Rights PLUS Free 802 CD
> November 8-12
> Hyatt Regency, Kauai, Koloa, HI
> Interim Task Group Meetings
> August 5-6: Denver, CO (tentative)
> 1999 IEEE Radio and Wireless Conference (RAWCON'99): August 1-4

6a Group Organizational Issues
> Task Groups
> How to stimulate contributions
> Call for Contributions
> Submission rules
> Mandatory use of templates
> Deadlines to be on agenda
> document distribution
> web/email privacy: who has access
> Flash ROM

6b Group Organizational Issues
> Leadership positions: selections at Meeting #1
>> Chair
>> Vice Chair/Parliamentarian
>> Secretary
>> Liaisons
>> ETSI BRAN
>> ITU
>> Other?
>> Task Group Coordinators
>> Technical Editor, Coexistence Standard

        Technical Editor, Interoperability Standard

7 Review of Contributions
        Contributions are essential
        802 is "contribution driven"
        Task Groups called for contributions
        We received important contributions that will drive agenda at this meeting

7a Review of Contributions Coexistence Task Group
        Leland Langston, Task Group Leader

7b Review of Contributions System Requirements Task Group
        Brian Petry, Editor

8 Agenda for the week
        Coexistence PAR, Deadline: June 4 to 802 SEC
        System Requirements Document, goal: draft by July 5
        Rules and Procedures
        Vote during Meeting #1 (July 6-8)

Appendix B, <u>Attendance List</u>

First Name	Middle Name	Last Name	Company	Attendance % of 5 sessions
Ian		Akyildiz	Georgia Institute Of Technology	100
Donald		Arnstein	Hughes Network Systems	100
V.		Arunachalam	Nortel Networks	100
Harry	V.	Bims	Gigabit Wireless, Inc.	100
Chris	S.	Brown	TRW	60
Steve		Brozovich	Filtronic Solid State	100
Remi		Chayer	Harris Corporation	80
Greg		Copeland	IDT Inc.	100
Keith		Doucet	Newbridge Networks Corporation	100
Steven		Farrell	Stanford Wireless Broadband Inc.	80
Jeff		Foerster	Stanford Wireless Broadband Inc.	100
Imed		Frigui	Nortel Networks	100
Vijaya		Gallagher	Gigabit Wireless Inc.	100
G.	Jack	Garrison	DRJ & Associates	80
Douglas	A.	Gray	Lucent Technologies	100
Bjorn		Hjelm	University of Colorado at Boulder	60
David	W.	Jarrett	Lucent Technologies	100
Vladan		Jevremovic	U S WEST Advanced Technologies	100
Young-Mi		Jin	Korea Telecom	100
Ronald		Kemper, Sr.	PSW Technologies	80
Brian	G.	Kiernan	InterDigital Communications Corp.	100
Eung-Bae		Kim	ETRI (Electronics Telecomm. Research Institute)	100
Allan		Klein	SR Telecom	100
Jay		Klein	Ensemble Communications	100
Hiroshi		Kobayashi	Toshiba Corp.	100
Ignatius		Lam	Nortel Networks	40
J. Leland		Langston	Raytheon Systems Company	100
Peter		LaRocca	Broadcom Corp.	100
Phil		Lau	Toshiba America Information Systems, Inc.	100
Allan		Lee	SpaceBridge Networks Corp.	80
Christopher	A.	Leising	Telcordia Technologies	100
John		Liebetreu	SiCOM, Inc.	100
Willie		Lu	Infineon Technologies Corp.	100
Mohan		Maghera	Infineon Technologies Corp.	100
J.	Scott	Marin	Bosch Telecom, Inc.	100
Roger	B.	Marks	NIST	100
Robert		Matheson	Institute for Telecommunications Sciences	100
Sanjay		Moghe	ADC Telecommunications	40
James	F.	Mollenauer	Technical Strategy Associates	100
William	K.	Myers	Bosch Telecom, Inc.	100
Robert	H.	Nii	Wytec Incorporated	100
Louis		Olsen	Teligent, Inc.	60
David		Palmer	Philips Broadband Wireless	80
Arogyaswami		Paulraj	Gigabit Wireless Inc.	20
Brian		Petry	3Com Corp.	100
Gene		Robinson	E. A. Robinson Consulting, Inc./	100

First Name	Middle Name	Last Name	Company	Attendance % of 5 sessions
			Angel Technologies	
Gary		Schulz	Motorola	100
Menashe		Shahar	Phasecom, Ltd.	100
Steve		Shattil	IDRIS Communications	100
Chet		Shirali	Phasecom Inc.	100
Karl		Stambaugh	Motorola Inc.	100
Douglas		Sward	Industry Canada	100
Jerry		Webster	Alcatel USA	60
Jung		Yee	Newbridge Networks Corporation	100
Erol		Yurtkuran	Integrity Communications	100

Appendix C, Draft Coexistence PAR and Five Criteria

PROJECT	IEEE P802.16 Broadband Wireless Access Study Group
NOTICE	This document contains the wording for the coexistence PAR as agreed on by members of the IEEE 802.16 working group at the conclusion of our meeting on 12 May 1999. It is presented for acceptance as wording of the document to be submitted to the IEEE executive committee for approval at the 802 meeting in July, 1999.

Project Authorization Request (PAR) for Coexistence

1. Sponsor Date of Request: **July, 1999**
2. Assigned Project Number: **TBD**
3. PAR Approval Date: **TBD**

Project Title and Working Group/Sponsor for this Project:

Document Type: **Recommended Practice For**

Title:
Recommended Practice for Telecommunications and Information Exchange Between Systems - LAN/MAN Specific Requirements – Coexistence of Broadband Wireless Access Systems.

Name of Working Group (WG):
IEEE 802.16 Working Group on Broadband Wireless Access

Name of Official Reporter: **Dr. Roger B. Marks**
Title in WG: **Chair**
IEEE/SA Affiliate Member #:   **TBD**
Company: **NIST**
Address: **325 Brodway, MC 813.00**
City/State/Zip: **Boulder, CO 80303**
Telephone: **303-497-3037**
FAX: **303-497-7828**
EMAIL: **r.b.marks@ieee.org**

Name of WG Chair (if different than Reporter):   **[ ]**
IEEE/Affiliate Memb #   **[ ]{Required}**
Company: **[ ]**
Address: **[ ]**
City/State/Zip: **[ ]**
Telephone: **[ ]**
FAX: **[ ]**
EMAIL: **[ ]**

Name of Sponsoring Society and Committee:
[Computer Society, LAN/MAN Standards Committee;
Microwave Theory and Techniques Society]

Name of Sponsoring Committee Chair: **[Jim Carlo, LAN/MAN Standards Committee]**
Company: **[Texas Instruments]**
Address: **[9208 Heatherdale Drive]**
City/State/Zip: **[Dallas, TX 75243-6332]**
Telephone: **[]**

FAX: []
EMAIL: [jcarlo@ti.com]

5. Describe this Project by answering each of four questions below:
5a. Update an existing PAR? {Yes/No}   [No]
       If YES: Indicate PAR number/approval date   [ ]
       If YES: Is this project in ballot now?   [ ]
5b. Choose one from the following:
       b1 -[x] New Standard
       b2 -[ ] Revision of existing standard {number and year}[ ]
       b3 -[ ] Supplement to existing standard {number and year}[ ]
5c. Choose one from the following:
       c1 -[x] Full Use (5-year life cycle)
       c2 -[ ] Trial Use (2-year cycle)
5d. Fill in Target Completion Date to IEEE RevCom [30 June 2000]

6. Scope of Proposed Project
This project covers development of a Recommended Practice for the design and coordinated deployment of BWA systems to minimize interference so as to maximize system performance and/or service quality. This practice will provide for coexistence using frequency and spatial separation and will cover three areas. First, it will recommend limits of in-band and out-of-band emissions from BWA transmitters through parameters including radiated power, spectral masks and antenna patterns. Second, it will recommend receiver tolerance parameters, including noise floor degradation and blocking performance, for interference received from other BWA systems as well as from other terrestrial and satellite systems. Third, it will provide coordination parameters, including band plans, separation distances and power flux density limits, to enable successful deployment of BWA systems with tolerable interference. The scope includes interference between systems deployed across geographic boundaries in the same frequency band, and systems deployed in the same geographic area in different frequency bands (including different systems deployed by a single license-holder in sub-bands of the licensees authorized bandwidth). The scope does not cover coexistence issues due to intra-system frequency re-use within the operator's licensed band, and does not consider the impact of interference created by BWA systems on non-BWA terrestrial and satellite systems.

7. Purpose of Proposed Project
The purpose of this recommended practice is to provide coexistence guidelines to license holders, service providers, deployment groups and system integrators. The equipment parameters contained within this practice will benefit equipment and component vendors and industry associations by providing design targets. The benefits of this practice will include:
- **Coexistence of different systems with higher assurance that system performance objectives will be met.**
- **Minimal need for case-by-case interference studies and coordination between operators to resolve interference issues.**
- **Preservation of a favorable electromagnetic environment for deployment and operation of BWA systems, including future systems compliant to the 802.16 interoperability standard.**
- **Optimize coverage and spectrum utilization.**
- **Cost-effective system deployment.**

Intellectual Property {Answer each of the questions below}
8a. Are you aware of any patents relevant to this project? {Yes/No}   [Yes]
{If yes, provide detailed explanation below}

{Some companies within the group have indicated that they may have IP interest.}
8b. Are you aware of any copyrights relevant to this project? {Yes/No}   [No]
{If yes, provide detailed explanation below}
{Explanation}
8c. Are you aware of any trademarks relevant to this project? {Yes/No}   [No]
{If yes, provide detailed explanation below}
{Explanation}

Are you aware of other standards or projects with a similar scope?
Administrations are developing general coordination criteria and procedures to allow BWA operators to deploy systems. Detailed coexistence guidance, such as described in this PAR, is in its early stages of development in other regional and international standards bodies. Studies addressing certain aspects of the coexistence issues are being developed by or have been completed by organizations such as:

ITU-R JRG 8A/9B, ITU-R 9B
ETSI-TM4
CITEL PCC-III
ARIB
NSMA
RABC

We will coordinate with these groups as appropriate.

International Harmonization
Is this standard planned for adoption by another international organization? {Yes/No}
          [Yes]
If Yes: Which International Organization?   [ITU-R]
If Yes: Include coordination in question 13 below.
If No: Explanation   [ ]

11. Is this project intended to focus on health, safety or environmental issues? {Yes/No}
                              [No]
If Yes: Explanation?   [ ]

12. Proposed Coordination/Recommended Method of Coordination
12a. Mandatory Coordination   [SCC 10 (IEEE Dictionary) by DR]
IEEE Staff Editorial Review by DR   [SCC 14 (Quantities, Units and Letter symbols) by DR]
12b. Coordination requested by Sponsor and Method: {Choose DR or LI or CO for each coordination request}
[ITU-R, including Joint Working Group 8A/9B (Wireless Access Systems)]
by [LI] {circulation of Drafts/Liaison member/Common member}
[ETSI TM4] by [LI] {circulation of Drafts/Liaison Member Common member}
[{Others TBD}] by [DR] {circulation of Drafts/Liaison Member/ Common member}

12c. Coordination Requested by Others: [ ] {Added by staff}

Proposed Responses to 802's Five Criteria for Coexistence PAR

Broad Market Potential
The PAR approved for the 802.16 interoperability standard justified the market potential for BWA systems. It should be noted, however, that successful deployment of BWA systems compliant to the future 802.16 interoperability standard will depend, in part, on a defined electromagnetic interference environment. As such, the guidelines developed in this project, which can be applied to existing systems in advance of the interoperability standard, will benefit the future success of systems compliant to that standard in the market.

Compatibility with IEEE802 Architecture
This recommended practice will cover both existing BWA systems and systems compliant to a future 802.16 interoperability standard. As these latter systems will be compliant to the IEEE802 architecture, this practice is applicable to 802.
There will be nothing in this practice which contradicts or forces any deviation from IEEE802 architecture in compliant systems.

Distinct Identity
The 802.16 interoperability standard will cover interoperability of hub and subscriber stations. This practice covers coexistence of BWA systems that may or may not be capable of interoperation. As such, the subject is distinct from the interoperability project.

Technical Feasibility
The 802.16 interoperability PAR addressed technical feasibility of BWA systems. A recommended coexistence practice is also technically feasible. There are precedents in cross-border coordination procedures, e.g. Radio Advisory Board of Canada has drafted a report regarding LMDS/LMCS cross border sharing. Another precedent is the FCC part 15 spectral "etiquette" for unlicensed systems in the band 1910-1930 MHz.

Economic Feasibility
The 802.16 interoperability PAR addressed economic feasibility of BWA systems. This recommended coexistence practice will enhance economic feasibility by reducing the need for case-by-case interference analysis that would otherwise add to the deployment cost of BWA systems. As well, identification of equipment performance parameters will help focus component suppliers on design criteria, which promotes lower deployment cost.

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