Project	**IEEE 802.20 Working Group on Mobile Broadband Wireless Access** **<http://grouper.ieee.org/groups/802/20>**
Title	**Minutes of 802.20 Session #4 in Singapore, September 15-18, 2003**
Date Submitted	**2003-11-04**
Source(s)	Joanne Wilson ArrayComm
Re:	802.20 Session #4
Abstract	Minutes of the Session
Purpose	Minutes of the session
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IEEE802.20 Session #4 DRAFT MEETING MINUTES
Joanne Wilson – Recording Secretary

Monday, September 15, 2003 8:00AM - 10:10AM (Attendance Optional)

Joint Opening of Singapore Sessions 802.11/15/18/19/20

Monday, September 15, 2003 1:00PM - 5:30PM

Opening of Session

- Monday, September 15, 2003 PM meeting called to order at 1:10 pm
- Meeting informed that Mr. Gary Robinson (WG Interim Chair) is not able to attend this session. The session is to be chaired by J. Upton and M. Klerer (802.20 Interim Vice Chairs)
- 802.20 informed of the IEEE-SA Standards Board IPR Policies, the IEEE 802 By Laws, and Inappropriate topics for IEEE 802 Meetings
- Review provided of the method for electronic registration in meetings of 802.20 and meeting logistics
- A list of attendees can be found in Appendix A.

Review and Approval of Agenda

- Agenda reviewed by M. Klerer.
- Announced that J. Wilson will act as interim secretary until the elections in March 2004.
- New participants welcomed.
- M. Klerer requested any changes to the agenda. None were proposed. The agenda was accepted by consensus.

Requirements Contributions and Discussion

"FER: Do We Need It?" - C802.20-03/83

- Presentation given by Joseph Cleveland (Samsung).
- Notes that a FER requirement had already been developed for IEEE 802 wireless LANs and MANs.
- Joseph proposes that the Reference Architecture needs to be defined first.

DISCUSSION

- Asked about how this requirement fits with specific applications.
- J. Cleveland proposed that the requirement should be adopted first and that the justification for the specific BER be developed thereafter.
- Asked if this requirement is actually met by the other 802.x wireless systems. This is not known.

Repeater issues for MBWA - C802.20-03/75

- Presented by Taewon Ban (KTF)DISCUSSION
- Asked if there was any feedback about other systems with similar problems and how was it overcome. KTF has experience with CDMA systems, but does not have experience with TDD systems.
- How was delay removed in current system? Can't remove from CDMA system. CDMA standard did not consider repeaters and they can't deploy repeaters in CDMA systems. There were many problems in deploying repeaters in the system. This is the reason

why it is being proposed that support for repeaters be included in 802.20 systems.

- KTF would like for the additional delay from the use of repeaters to be incorporated into the requirements for the 802.20 systems. 802.20 members asked to consider if we want to incorporate this requirement? Is it a legitimate requirement? Folks are not being asked to answer at this time, but to consider this requirement and its potential cost/impact on the design. One participant believes it is premature to consider this requirement in advance of understanding the 802.20 Air Interface technologies.

Comment on 802.20 Requirements Document Rev 7 - C802.20-03/76

- Presented by Dohyung Choi (KTF).
- Proposal to added broadcasting/multi-casting capabilities (section 3.1) because these capabilities will be supported by 3GPP and 3GPP2. Thus, 802.20 needs to provide this in order to compete with those systems. This capability can be optional for the service provider.
- Supports M.Klerer proposal to add higher bandwidth requirements (10 or 20 MHz) in a separate section or addendum to the Requirements Document (section 4.1.4)
- Proposal to include additional delay spread for support of repeaters (section 4.2.3).

DISCUSSION

- We will discuss Bandwidth requirements later in the agenda
- Multi-cast/Broadcast requirement: It may be appropriate to re-cast the requirement as "native support" for multi-cast, which would mean that the same airlink resource would be received by multiple terminals, as opposed to using multiple airlinks, one for each terminal.
- Also noted that the requested requirement is for "support for multi-cast" and not "optimization for multi-cast" capability.

Requirement for Synchronization - C802.20-03/84

- Presented by Hao Hu (Huawei)
- Proposes to make uplink and downlink synchronization mandatory for 802.20 systems and to make Base Station synchronization optional. Notes that this is a requirement supported on 3GPP and 3GPP2 systems and believes that this is necessary for 802.20 systems if they are to work well.

DISCUSSION

- Asked about the specific assumptions about the underlying air interface technologies.
- One comment that we should be developing functional requirements on the standard and not specific requirements on the technologies that will be relevant to some proposals and not on others. It was noted that there could be different views about whether a requirement should be categorized as a functional or implementation dependent requirement.

NEW ITEM ADDED TO AGENDA

Identification of Requirements Issues for Tomorrows Meeting:

- Reference Architecture
- Channel Bandwidth
- Spectral Efficiency
- FER
- QoS
- Multicast
- Repeater Delay
- Synchronization
- OAM

Recess for Monday, September 15, 2003 PM meeting

M. Klerer requested permission to recess the meeting.

- One delegate requested an overview for new participants of the standards process and how we get from here to the development of a standard.
- A review was given of contribution C802.20-03/37 on "Iterative Design for Rapid Standards Development". The objective is to take a first cut at the requirements in order to allow proposals for the air interfaces to be developed and presented to the group.
- It was requested that there be an explanation of the 802.20 project development timeline and the milestones therein. The timeline is also presented in that presentation and was reviewed in response to this question.
- Noted that people should review the "Proposed Operating Rules" that will be on the agenda for the November 802.20 meeting that will be considered for adoption at that meeting.
- A question was asked about what happens if the Requirements Document is not resolved soon. It was noted that the current schedule is already off by at least 6 months. It would be impossible to discuss AI proposals until the requirements have been resolved.

M. Klerer request permission to recess the meeting. No objections.

The Monday, September 15, 2003 PM meeting was recessed at 3:12 p.m.

Tuesday, September 16, 2003 8:00AM - 5:00PM

Tuesday, September 16, 2003 AM meeting called to order at 8:12 a.m.

Requirements Contributions and Discussion

Review of the results of the Requirements CG – C802.20-03/81

- Discussion lead by Mark Klerer.
- Review of list of requirements topics for today's meeting– document 802.20-03/16
- **Reference Architecture** – review of M. most recent proposal from (09/05/2003) email message relating to Requirements Document, section 3.1.1. Discussion of the statement that the "MAC layer design may be optimized for the specific characteristics of the air interface". The outstanding issue from this discussion is whether or not there is a need and/or whether it is desirable to have multiple PHYs for a single MAC or to have

multiple MAC/PHY combinations. This subject is not to be resolved in the context of this text in section 3.1.1, but will be further considered in the discussion of 802.20 requirements. There was also a question as to how the 802.20 specification is included in the proposed Figure 2 and whether it will be necessary for the overall 802 System Architecture document to be updated to reflect that 802.20 (and some other 802 standards) may not utilize 802.2 LLC and 802.1 Bridging.

- **Channel Bandwidth** – Review of Associated Issues. There is a review of the most recent proposals that were reflected in the email string from J. Upton, J. Wilson, D. Trinkwon and J. Cleveland. There is a question about the availability of specific bands, which should be added to the list of associated issues. Some delegates described the on-going MMDS/ITFS Notice of Proposed Rulemaking (NPRM) and the amount of spectrum available in that band. Additionally, regarding the larger (i.e. beyond 10 MHz) bandwidths, the only additional benefit identified for the larger bandwidths is reduced operator Capex. The meeting discussed whether this should be called "channel bandwidth" or "allocation bandwidth" or something else. The title and definition was assigned to a small group (J. Cleveland, S. Crowley, A. Wieczorek and J. Wilson) to develop a proposal over the coffee break. The group proposed the use and definition of the term "block assignment" which was accepted by the
- **FER** – Review of Associated Issues. The proposal from J. Cleveland in document C802.20-03/83 was compared with the most recent prior email proposal to the Requirements CG that was submitted by Mike Youssefmir. The issues to be considered include whether there should be a specific FER target, the need to resolve the 802.20 reference architecture before establishing an FER requirement, and whether this is already incorporated in evaluation criteria because they are considering "goodput", taking into consideration impact of specific FER levels on each traffic type. A small group including T. Chauvin, B. Johnson and A. Tee was assigned to develop an FER proposal over the lunch hour.
- **Sustained Spectral Efficiency** – Review of the associated issues. The group needs to resolve how this is measured, e.g. it could be based on the backhaul traffic carried out of a cell, and how spectral efficiency is measured and compared for omni- and sectorized-cells. This topic is important and is in need of further work. It is believed that people will be more comfortable with the requirement after there is an agreement on the definition of sustained spectral efficiency.
- **Multicasting/Broadcasting Requirement** – Review of associated issues. The debate focused on whether the requirement should be kept at a high level or whether it should specify that the service be provided over a "single air link". The group decided to support the functional requirement and not to specify at what level the service would be offered. The final proposed text was, *"The air interface <u>shall</u> support multicast and broadcast services."*
- **Repeater Support** – Review of associated issues. The group agreed to support the requirement that, *"The system <u>should</u> support the use of repeaters."* It was noted that this is currently proposed under the section on delay spread. Since a specific delay spread target for repeaters was not provided, it was agreed to make this a separate requirement from that on delay spread.

The Tuesday, September 15, 2003 AM meeting recessed at 11:53 a.m.

The Tuesday, September 15, 2003 PM meeting was called to order at 1:41 p.m.

- **FER** – The ad hoc group developing an FER proposal needs more time and will be given such at over the next coffee break.

- **Synchronization** – The proposal presented in C802.20-03/84 was considered and accepted without debate. The editor should include the following new requirement in Rev. 8: *"The air interface shall support downlink and uplink synchronization. Synchronization between Base Stations is optional."*
- **QoS** – The comment from John Fan (posted 7/23/03), deleting *"for example using Subnet using subnet Bandwidth Manager"* was accepted. The proposal for section 4.4.1 from Bill Young, Arif Ansari, Samir Kapoor, Vince Park and Mike Youssefmir was reviewed and accepted. The proposal to delete sections 4.4.1.1 through 4.4.1.16 was also accepted.
- **FER (revisited)** – The ad hoc group considering the FER requirement presented a proposal that attempts to maximize throughput for the IP network. The proposal addressed both "Best Effort" and "Expedited Services" throughput spectral efficiency. The proposal was discussed and the members of the WG were asked to continue to consider this topic, which would be discussed again at the Thursday, September 18th AM session.
- **Driving to Procedural Closure** – M. Klerer proposed that this (Round 1) of iterative requirements development be proposed for closure in November. The Requirements CG should work toward consensus on the open issues between now and the November 802 Plenary session and attempt to complete this round at that time.
- **OAM** – Reviewed section 4.5.4 of the Requirements (Rev. 7) Document. It was stated that there had been a posting on this section that had not been included in Rev. 7. The WG considered the proposal and agreed to include a statement of the high level requirement for OAM support in section 4.5.4. The group also added an editor's note soliciting comments and support for parameter values that should included in the document. Parameters not receiving specific support will be deleted from the document.
- **Requirements (Rev. 8)** – The next update of the Requirements Document will include all of the decisions made at this meeting, Again it was stated that the WG should have a goal of closing this (Round 1) of the Requirements Document a the November 802 Plenary session. The output of this meeting, which will be used as input to the development of Requirements (Rev.8) are shown in 802.20-03/15.

The Tuesday, September 16 2003 PM meeting was recessed at 4:43 pm.

Wednesday, September 17, 2003 8:00AM - 5:00PM

The Wednesday, September 17, 2003 AM session called to order at 8:15 a.m.

Channel Modeling Contributions and Discussion

Summary of Delay Profiles (Jin Weon Chang) - C802.20-03/77

- Review of presentation. Recommends to the Requirements CG and the Channel Modeling CG to have multi-delay profiles and that one profile include taps having delay longer than 10 microseconds.

Status of 802.20 Channel Models (Qiang Guo) – C802.20-03/89

- The discussion focused on the maximum delay spread requirement. The presentation states that delays larger than 10 microseconds occur, but are statistically insignificant. However, delay spreads of greater than 10 microseconds will have a large impact on performance. The question that the channel model group needs to address what channel models should be included for performance evaluation. The WG needs to decide if it wants to have a requirement that systems support a delay spread of at least 5 microseconds and have the evaluation of the various proposals also include channel models with delay spreads of greater than 10 microseconds. The WG also needs to

consider what will be the relative importance of the larger delay spreads on the overall evaluation of the various proposals.

Review of "Channel Models for IEEE 802.20 MBWA Systems (Rev. 2) (Qiang Guo) - C802.20-03/79

- Review of the contribution. The WG was asked to consider whether 802.20 should have a new channel model for the vehicular environment or should we use the ITU Vehicular B model? It was noted that the channel models group has resolved to maintain a single approach for all systems, whether they are MIMO, MISO, SIMO or SISO systems. It still needs to be determined which vehicular model to use, what will be the maximum delay spread in the channel model used for evaluating proposals, and how to handle delay spreads above 10 microseconds.

Traffic Modeling Contributions & Discussion

Traffic Models for IEEE 802.20 MBWA System Simulations

- Presented by Eshwar Pittampalli on behalf of N. Shankaranarayanan
- The latest revision of the "Traffic Models for IEEE 802.20 MBWA System Simulations (Ver.1) is shown in C802.20-03/80
- Review of presentation on 802.20 Traffic Models Discussion C802.20-03/86. Participants are requested to submit questions on the status of the traffic model CG via email to Mr. Shankaranarayanan
- The editor of the Traffic Models document is requesting more input to the group. Two additional conference calls are scheduled.

Evaluation Criteria Contributions & Discussion

Evaluation Criteria

- Presented by Eshwar Pittampalli on behalf of Farooq Khan.
- The latest revision of the "802.20 Evaluation Criteria (Ver.5)" is shown in - C802.20-03/78 .
- Review of the "Status of the Evaluation Criteria", shown in C802.20-03/87. There was a question about whether there would be an evaluation of the various proposals during handoff. Clarification was given that the simulations would not model the mobiles moving, but would model mobility as fading rate. The Evaluation Criteria CG is seeking proposals on which handoff procedures should be modeled and how.
- Participants are requested to submit further questions on the status of the Evaluation CG via email to Mr. Khan.
- The editor of the Evaluation Criteria document is requesting more input to the group. Additional conference calls are scheduled.

Recess of the Wednesday, September 17, 2003 meeting

- The scheduled presentations for today's sessions are completed, so this afternoon's meeting is canceled. The number of meetings for this session will be reduced, so participants need not attempt to sign in for the PM sessions later today and may attend the meetings of other groups.
- One participant raised a question about the timing of the CG conference calls that are all very inconvenient for Asian participants. The meeting decided to maintain the current schedule for the next call of each of the CGs and to move the second and subsequently alternating calls for each group to 6 pm Eastern Time (US).
- Delegates were reminded about this evening's social, which will be a trip to a nocturnal

zoo.

The meeting was recessed at 11:00 a.m., with the next meeting to be held on Thursday, September 18, 2003 (AM).

Wednesday, September 17, 2003 5:30PM - 9:30PM - Social Event

Thursday, September 18, 2003, 2003 8:00AM - 5:00PM

Thursday, September 18, 2003 AM meeting called to order at 8:16 AM.

Coexistence CG Readout and Contributions

Coexistence CG - Chair's Report to the Singapore, C802.20-03/82 .

- Presented by Joanne Wilson. No questions.

Comments on Coexistence Chair's Report, C802.20-03/90

- Dan Gal presented which disagreed with the statement in the C802.20-03/82 presentation, that the CG did NOT agree that 802.16.2 was a good model to follow. He presents the view that coexistence "requirements" should be made mandatory and that a "Recommended Practice" is not sufficiently binding on manufacturers.

Coexistence Outline for 802.20 Projects, C802.20-03/91.

- Jim Tomcik presented the contribution. It presents a view of how coexistence should be addressed in the process of 802.20 standards development. Discussion focused on better understanding the nature of the proposal, which systems would be included in the coexistence studies, which bands and scenarios would be considered, what types of documents would need to be produced, what development could be done before versus after the selection of the technology, the feasibility of proposal and the kind of documentation would need to be produced. A list of issues was developed for the Coexistence CG to address in its recommendation and is presented in 802.20-03/17. Mr. Arefi will be requested to send a request to the Coexistence CG reflector list to encourage more participation in the work of the CG.

Other Business

An Alternative Approach for Enhancing Security of WMANs using Physical Layer Encryption, C802.20-03/74

- Presented by Arpan Pal. Asked about whether this approach has been used in other wireless system standards. It was stated that this scheme has not been incorporated into any other system standards. Observations were also made as to how this scheme compares to the experience of some 802.11 task groups who are adding new approaches to handling security threats. Issues for the group to consider include the level of security that needs to be provided, what threats we are trying to protect against, and complexity.

Handoff procedure for MBWA system, C802.20-03/85

- Presented by Hao Hu.

New Business

- Participants made aware of the "Reply Comments of IEEE 802.18 to the FCC's NPRM on the use of the 5 GHz band for Unlicensed Devices". It was noted that 802.20 is not involved in this because our mandate does not address systems in the 5GHz range. Additionally, 802.20 doesn't have a quorum at this meeting and could not adopt any views for formal feedback to 802.18. Participants were informed that they could make their individual comments back to 802.18 and were informed as to how they can get access to the document. It was noted that the 802.18 comments were being held as confidential and is not available on the public 802 website.

Planning for next meeting

- It was noted that the next meeting will attempt to conclude the work on 802.20 requirements and that the Coexistence CG would be presenting its recommendation at that meeting. Additionally, the group was encouraged (again) to look at the 802.20 Operating Rules that would be up for adoption at that meeting.

FER (revisited again)

- Joseph Cleveland presented the proposal developed by the ad hoc group that had been established for the FER (section 4.1.)of the Requirements CG. It was noted the Requirements document also included a section on "Packet Error Rate," and it was clarified that this was an error in the document and there should only be one section that addresses FER. The editor of the document will be provided with specific instructions on how to update the Requirements document appropriately. A concerned was raised about whether the proposal supports VoIP that operates in a mode without acknowledgement and ARQ. The FER proposal was modified to accommodate higher error rates for modes without ARQ. No consensus was reached on a new proposal for the FER section. An ad hoc group on FER will meet again this afternoon and will develop a proposal to the Requirements CG.

Close of Meeting

- The WG was asked about whether they would support moving the date the March 2004 Plenary. A poll was taken of the participants and 14 of the 35 people voting objected to moving the meeting. The result of this vote will be provided to Buzz Rigsbee.
- The Thursday, September 18 PM meeting was cancelled.

The September 2003 Interim session of 802.20 was adjourned at 12:40 pm.

Appendix A: Attendance Roster

Last Name	First Name	Employer	Declared Affiliation	Participation Credit
Ahn	Jae-Young	ETRI	ETRI	YES
Aoki	Tsuguhide	Toshiba	Toshiba	`NO
Ban	Taewon	KTF	KTF	YES
Bernstein	Jeffrey	TMG		YES
Canchi	Radhakrishna			NO
Chang	Jin Weon	Samsung	Samsung	YES
Chauvin	Todd	ArrayComm	ArrayComm	YES
Cheng	Hong			NO
Chindapol	Aik	Siemens	Siemens	YES
Cho	Jiyoung			NO
Choi	Dohyung	KTF	KTF	YES
Choo Eng	Yap			YES
Cleveland	Joseph	Samsung	Samsung	YES
Crowley	Steven	DoCoMo USA Labs	DoCoMo USA Labs	YES
Epstein	Mark	Qualcomm	Qualcomm	YES
Gal	Dan	Lucent	Lucent	YES
Guo	Qiang	Motorola	Motorola	YES
Hasty	Van	Mesh Networks	Mesh Networks	YES
Hu	Hao	Huawei	Huawei	YES
Humbert	John	Sprint	Sorint	YES
Imamura	Daichi	Panasonic	Panasonic	NO
Jeong	Moo Ryong			NO
Johnson	Brian	Nortel	Nortel	YES
Kakura	Yoshikazu	NEC	NEC	YES
Kimura	Shigeru	Kyocera	Kyocera	YES
Klerer	Mark	Flarion Technologies	Flarion Technologies	YES
Lai	Fook Ngian	IDA	IDA	NO
Laihonen	Kari	TeliaSonera	TeliaSonera	YES
Lee	Heesoo	ETRI	ETRI	YES
Lee	Kyoung Seok	ETRI	ETRI	YES
Lee	Jae Hyok	Samsung	Samsung	YES
Lee	Byung-Gil	ETRI	ETRI	NO
Lim	Jaewoo	RRL Korea	RRL Korea	NO
Loh	Lee Ying	Panasonic Singapore	Panasonic Singapore	YES
Migaldi	Scott	Motorola	Motorola	YES
Mollenauer	James	Technical Strategy	Motorola	YES
Murakami	Kazuhiro	Kyocera	Kyocera	YES
Murray	Boyd			NO
Nakamura	Michiharu	Fujitsu	Fujitsu	NO
Ngo	Chiu Y	Samsung	Samsung	YES
Nguyen	Paul Tuan	DISA	DISA	YES
Nishio	Akihiko	Panasonic	Panasonic	YES
O'Conner	Jim	IP Wireless	IP Wireless	YES
Pal	Arpan	TCS	TCS	YES

Last Name	First Name	Employer	Declared Affiliation	Participation Credit
Pittampalli	Eshwar	Lucent	Lucent Share Holders	YES
Qu	Bingyu	Huawei	Huawei	YES
Sinha	Pranesh	TI	TI	YES
Su manasena	Abhaya			YES
Sutivong	Arak	Qualcomm	Qualcomm	YES
Tee	Lai-King Anna	Samsung	Samsung	YES
Toh	Bee Eng	IDA	IDA	YES
Tomcik	James	Qualcomm	Qualcomm	NO
Upton	Jerry	Consultant		YES
Watanabe	Fujio	DoCoMo USA Labs	DoCoMo USA Labs	YES
Wieczorek	Alfred	Motorola	Motorola	YES
Wilson	Joanne	ArrayComm	ArrayComm	YES
Wong	Jin Kue	Nortel	Nortel	NO
Wu	Gang	DoCoMo USA	DoCoMo USA	YES
Yee	James	Marvell	Marvell	YES
Yuza	Masaaki	NEC	NEC	YES
Zhou	Jenny	France Telecom	France Telecom	NO