Project	**IEEE 802.16 Broadband Wireless Access Working Group**		
Title	**Minutes – Coexistence Task Group – Session #4**		
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Source	Reza Arefi WFI 1840 Michael Faraday Dr. Suite 200 Reston, VA 20190	Voice: Fax: E-mail:	(703) 375-7703 (703) 904-7455 reza.arefi@wfinet.com
Re:	Minutes of Coexistence Task Group meetings, Hawaii meeting, November 9 through 11, 1999.		
Abstract	This document covers the activities and decisions made during the TG's meeting.		
Purpose	To be posted on the 802.16 web site.		
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Minutes of Meeting – Coexistence Task Group – Meeting #4

Reza Arefi
Wireless Facilities, Inc. (WFI)

1 Tuesday, November 9, 1999

8:15
Opening remarks by Leland.
Going over the schedule for this meeting.
Highlights:
Coexistence will publish its own minutes from now on.
Going over the previous assignment of tasks. Howard Sandler and Erol Yurkturan are absent..
Going over the current outline for Practices document. The format of the document now follows the format of other 802 practice documents.
Section 2 of the document is System Overview and Leland asked if someone could write up this section. Philip will do it. Erol will change it into a formal document as the contributions come in.
Keith: in-block and out-of-block in one document, selectivity and stability one document.
New general contributions from Philip and Keith are being added to the schedule. Leland suggested if Keith can present in the place assigned to Erol (2 documents, 25 and 29).
A general contribution from B. Lewis (no. 802.16lb-99/04), titled 'BWA guidelines" set for Wednesday.
Philip Whitehead's set for the slot on interference scenarios (no. 31).

Everyone agreed to the schedule.

8:50
Paper on EIRP Spectral density submitted by Howard, presented by Leland.
Philip: there is no mention of repeater stations, which will have narrow beam and/or wide beam antennas.
Keith: same with point-to-point links used for in-band intercell links.
Suggestion: treat them as STS in regard with power spectral density. Leland added sections for repeaters and PP links used for in-band intercell links.
Straw vote on Howard's numbers: passed unanimous. Remi suggested that later on we revisit the numbers and look at the whole picture. Everybody agreed.
Reza suggested adding frequency range that the numbers apply to. It was agreed. Also, Reza suggested that the frequency ranges be moved to an earlier part of the document so that we can refer to it throughout the document. It was agreed.

9:30
Power Control by Howard, presented by Leland.
Reza suggested that we shouldn't dismiss downstream power control and should wait for PHY decisions.
Jack suggested to have two subsections, one for upstream and one for downstream power control, to make room for future contributions. Leland made the change in the document.
Philip suggested that the numbers are a function of frequency and frequency range should be specified, or the numbers be specified as a function of frequency.
The group felt that other contributing factors such as other atmospheric conditions and diffraction should also be looked at.
It was agreed that more work needs to be done on the subject and a table be made that shows the relationship with frequency. Leland added the necessary text to the document.

10:00 to 10:20 break.

10:30
FDD for broadband multi-point LMDS networks, presented by Keith

Comments overall on the fact that both TDD and FDD will be supported and we should focus on the coexistence of the two.

10:55
Cell Planning with FDD, presented by Keith
Well received by the group.

11:30
In-block mask, out-of-block mask, paper from Rebecca, presented by Keith
Industry Canada's numbers were presented. Everybody agreed that graphs should be added for better presentation of spectral mask data.

12:00 lunch break.

Afternoon Session

1:30
Frequency Stability, presented by Keith
Philip pointed out that instead of having hard limits on temperature, it's better to specify "over the designed operating range of the equipment". Everyone agreed.
Leland argued that 10% at 38 GHz is substantial for a 2 MHz channel (drift of 380 KHz) and suggested 1 ppm.
Keith and Philip mentioned that this would increase the cost of CPE. The +/-10 ppm is debatable. Added: highly recommended to synchronize the CPE transmit signal to the downstream signal.
[Tentatively +/-10ppm is the number that group agrees on.]
Keith will submit a r3evised version of his contribution.

1:45
Receiver Selectivity, presented by Keith
ETSI levels are proposed for adoption.
Jack suggested that 64QAM also be included (due to the fact that this TG covers a wide frequency range).
Also Philip suggested that other modulations, access techniques be mentioned as well.
Leland suggested making the adjacent channel requirement tighter, from 0 dB to 2 or 3 dB.
Arguments on the reasonableness of the numbers (issues: what if the channel BWs are not the same, or what if they have different modulations?). Consensus was that further study is needed.
Tests for ensuring compliance was recommended by Leland to be put in an appendix. Everybody agreed.
Comments should go to email reflector, contributions to Leland and Keith.

2:30
Linearity, presented by Reza
Sensitivity Degradation, presented by Reza
It was suggested that (Keith) the two topics be tied together and only the raise in the noise floor be mentioned.
Everybody agreed to specifying one single parameter; namely threshold degradation to evaluate the effects of interference on receiver performance. Reza will do it. Further contributions are needed.

3:30
Antenna, presented by Reza and Joel
BTS antenna: Issues raised:

- Specifying minimum required gain might cause problems in certain situations.
- Specifying numbers for the survival conditions of the antenna does not apply to the TG's work.

STS antenna: Issues raised:

- The main beam part of the RPE is too tight and unachievable. Reza will take another look at it.
- Specifying numbers for the survival conditions of the antenna does not apply to the TG's work.
- Specifying tilting mechanism might not be necessary.
- The RPEs for azimuth and elevation are symmetric. This does not imply that the pattern must be symmetric.

The group agreed that additional study is needed on this subject.

5:45
Meeting adjourns.

2 Wednesday, November 10, 1999

8:15
Roger presented a slide on conditions of adding a new study group. The reason was suggested as possibility of proposals on including frequencies below 10 GHz.

8:25
Leland went over the schedule for today.

8:30
STS antenna requirement, Reza
(Continued discussion)
Three pattern envelops, 2 from ETSI and one from Andrew, was presented by Jack and discussed. Jack commented that antenna is not be forced to solve all coexistence issues.
It was generally agreed that the approach taken by Reza in defining two gain categories and defining the envelop in the main beam based on the half-power beamwidth of the antenna was appropriate. Reza will work on the width of the main beam envelop.
Also, Reza suggested that the subsections dealing with Polarization and VSWR be included in the general requirements section of the antenna requirements document (At present, the above mentioned subsections repeat in BTS and STS sections). It was agreed.

9:10
Leland explained the inclusion of MMDS frequencies and Roger's comments of this morning with the group. The PAR was reviewed again. Overall there was not any major objection to the inclusion of frequencies below 10 GHz.

9:15
Failsafe mechanism, Leland
(discussion, no presentation)
How do we determine there is a problem and then cut off the power?
David Woodhead from Endgate commented that the approach should be cost effective. There should be ways of finding the transmitters that are not operating properly and shut them down.
It was suggested (Jori, Nokia) to set frequency stability, etc. of the STS based on hub and leave it to the hub to determine if the STS is working properly.
It was also said that there should be coordination between this TG and PHY and MAC regarding this topic and other topics as well. Jack suggested that on the cover sheet of the contributions, it needs to be stated if it applies to PHY or MAC and Coexistence and the same time. The concern is that some of the PHY contributions do not take into account coexistence issues and coexistence contributions also should be aware of the impacts on PHY and MAC. Leland mentioned that we would have a joint session with PHY in the next meeting.
Other issues relevant to failsafe relevant to other TGs such as power control and authentication was also brought up by Jack van der Star.
Further contributions and comments are required on this subject.

9:50
Break

10:15
Power-Law parameters of rain specific attenuation, presented by Wei Zhang
It was suggested in the paper that more drop size distributions be considered depending on the geographical area.
The group requested that the presenter provides specific recommendations. General concern was that the

engineering process needs to have a comparison of the method presented in the paper with ITU model, Crane model, and some measured data, to be able to make decisions on what method to use.

11:15
Coexistence scenarios for PMP and MPMP networks, presented by Philip Whitehead
David brought up concerns regarding potential interference problems between MPMP and PMP systems.

11:45
Formulation of diffraction… by Zhang
The contribution was well received. Further study on the effects on interference scenarios and coexistence is required.

12:00
Lunch Break.

Afternoon Session

1:40
IF interference, Jack van der Star
Leland mentioned that this topic should include baseband as well as IF.
Also it was mentioned by David that ground loop issues should also be included among possible causes of this type of interference.
Reza suggested looking at the range of possible IF frequencies to find a relatively quieter zone.
David suggested looking at ETSI's EMI/EMC recommendation.
Leland suggested identifying the types of ingress interference and characterizing the link parameters and specifying power spectral density profile that needs to be complied with.
Jack will work further on this and will post it on the web before the next meeting. Further contributions and comments were solicited.

2:30
Coordination process, Keith
Everybody agreed on the coordination process presented by Keith.
There was a recommendation to expand the process to include other regions of the world.
Also, it was recommended that the flowchart presented by Rebecca Chan in the last meeting be included.

3:00
Break.

3:25
Bandplans, presented by Leland
Leland presented the LMDS bandplans proposed so far and introduced a plan that accommodated to the majority of the proposed band plans.
Leland proposed that channel spacing be set to multiples of 1.25 MHz. The issue is that 1.25 is not enough to deliver T1 with QPSK.
Leland suggests that for FDD, the middle band boundary should be fixed so that no downlink be allowed to operate in the uplink frequencies and vice versa. Group felt like additional review is required on this subject.
Everybody agreed that we need to see more contributions on this issue. We need a joint working session with PHY regarding this.
It was requested and agreed upon to post the bandplans, including Keith's, on the web site.
Group also wants to see bandplans for frequencies other than US LMDS.

4:40
MWS (multimedia wireless systems), presented by Barry Lewis
Presentation was well received. The group will consider the work being done in Europe in the final coexistence document. More detailed information will be provided by Barry. Also, it was mentioned that liaison is needed with ETSI TM4.

5:30

Meeting adjourned.

3 Thursday, November 11, 1999

8:15
The raw minutes of the past two days were discussed and approved with no objection.

9:45
Leland discussed the changes and additions to the Practices document so far.
The document will receive a revision number and will be posted on the web.
It was also agreed upon that the supporting material be put in appendices.
Everybody agreed to the overall structure of the document.

New assignments:
EIRP mask for repeaters -> Philip
EIRP mask for inband intercell links -> Keith
Downstream power control -> Leland
Rain effects related to downstream power control ->Leland, Wei
Minimum TX/RX separation -> Leland

Leland will submit a new call for contributions.

10:15
Break.

10:50
Leland went over the timeline schedule of the coexistence TG.
We will have a formal call for comments with a deadline of Friday before Christmas.
There was no objection to the timeline.
On the joint meeting with PHY: everybody thinks that it's needed.
Leland will put together a document summarizing all the issues that need to be coordinated with PHY in the joint meeting.
Next meeting will be in Dallas and starts on Monday noon.

11:20
Meeting adjourned.