Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Minutes of Meeting of Coexistence Task Group at Session #16, Austin**
Date Submitted	**2001-11-15**
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Re:	Coexistence task group activities in session # 16
Abstract	N/A
Purpose	To provide a record of the meeting
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Draft Minutes of meeting of Coexistence Task Group

12-16 November 2001, Austin, Texas.

- Chaired by Phil Whitehead, Radiant Networks Plc
- Minutes prepared by Phil Whitehead Plc

Monday 12th November 2001

1. The meeting was called to order at 15.45.

2. The agenda was updated to include references to the full set of input papers and contributions. The revised agenda was unanimously accepted.

3. A tentative schedule was agreed for the week, to take account of the limited availability of one key contributor.

Tuesday 13th November 2001

4. Meeting called to order at 08.30

5. PW reported on the status of the TG2a work. This was the second formal meeting of the group. A set of draft system parameters to be used in coexistence simulations and calculations was prepared at meeting #15. It was agreed to review these during meeting #16, to take account of the latest input papers. Simulation work for the various point to point scenarios has been nearly completed . The group should soon be in a position to draft an amendment to the recommended practice to cover this topic. Less progress had been made on the sub-11GHz coexistence work. David Chauncey's expected input for this meeting was not available. An important objective for the meeting was to agree a propagation model for the purpose of coexistence calculations and simulations (this may differ from the propagation model used in actual system design).

6. The draft minutes from session #15 were unanimously accepted with no revisions or comments.

7. Jack Garrison presented a set of papers on aspects of propagation in the 2-11 GHz frequency range. The paper on Rician fading is relevant to systems operating in lower frequencies, especially where there are reflections from the urban canopy. At higher frequencies (10 GHz or higher) and with typical earth roughness factors, this fading mechanism is not serious. The paper on atmospheric multipath showed that longer paths would be seriously affected by this fading mechanism. JG agreed to combine all the papers into a single document, to be posted as a formal contribution. Although the results may have significant impact on TG3 system design, it was concluded that for TG2 purposes, a simpler propagation model could be derived.

8. Following the various papers from JG, it was decided to review and update the paper summarizing system parameters for 2-11 GHz systems (to be used as a basis for coexistence calculations). This was duly completed and the paper will be re-issued as revision [document ref. IEEE C802.16.2a-01/12]
9. JG agreed that the propagation assumptions for 3.5 GHz and 10.5 GHz were sufficiently complete for simulation work to be started. More work would be needed on the 2.5 GHz propagation assumptions.

10. Jamie Cornelius presented the results of a large study into 2.5 GHz propagation, based on real systems. Most of these systems use base stations that are high above average surrounding terrain. The path loss beyond the immediate line of sight region increases more rapidly than earlier theoretical models suggest. JC agreed to derive a best fit formula to model the path loss of a typical 2.5 GHz system (including long paths). This is likely to be a two part model, in which the short paths are line of sight and the longer paths have a high rate of attenuation, modeled by a "best fit " line or curve.

11. A discussion was held on interim meetings. Due to budget and travel constraints, participants continued to urge to avoid 802.16 interim meetings if possible. Further discussion on this was deferred until later in the week.

The meeting was adjourned at 16.30

Wednesday 14th November 2001

Meeting reconvened at 08.30

12. The work of the previous day was briefly reviewed.

13. JG submitted a revised document containing all the propagation studies presented on 13th. It was unanimously agreed that this should be made into a formal contribution and brought to the attention of TG3 participants. PW presented a draft summary of the results of the propagation discussions. It was unanimously agreed that this should be presented to TG3 at an early opportunity. [insert document ref]

14. PW presented a revised paper on co-channel interference from a multi – link PP system. It shows the results of a large number of simulation runs for the case where a collection of point to point links interferes with a nearby (co-channel) PMP system. The parameters for the systems were taken from the document produced and agreed during the last meeting, including a revision to the simulator to take account of the agreed IEEE "composite" antenna RPE. It concludes that, for typical urban building and terrain parameters a spacing of 20 - 24km is needed between the PMP base station and the nearest part of the area covered by point to point links. The conclusions were accepted and it was unanimously agreed to include the work in the first draft of the new Recommended Practice.

15. PW presented a further paper on interference between multi link PP systems and PMP systems, this time covering the adjacent channel, same area case. Interference scenarios for BS and SS stations are covered. Both directions of interference are analyzed. The paper concludes that the dominant case is interference from a PMP system into the PP system and that a two channel guard band is needed for interference free operation without significant co-ordination between operators. A smaller guard band could be accepted at the penalty of significantly increased co-ordination. The conclusions were accepted and it was unanimously agreed to include the work in the first draft of the new Recommended Practice. Gene Robinson suggested that a star configuration for the PP links when collocated with PMP BS could be beneficial to coexistence

of these systems. It was agreed that it would be beneficial to describe this and other mitigation techniques in the new Recommended Practice.

16. The following immediate actions were agreed
    a. PW to prepare draft minutes for review during the meeting
    b. PW to prepare a draft presentation to TG3 on propagation issue
    c. PW to draft closing report for review during the meeting
    d. JG paper on propagation to be uploaded as a formal contribution
    e. JC analysis of 2.5 GHz path losses to be uploaded as a formal contribution

17. The following actions for the next meeting were agreed
    a. JG will produce simulations for the 10.5 GHz band, covering the co-channel and adjacent channel scenarios (as complete a set of scenarios as possible)
    b. Bob Whiting will co-ordinate a task to obtain representative antenna RPEs for the 10.5 GHz band and provide the information to JG.
    c. Bob Whiting will co-ordinate a second task (lower priority) to obtain representative antenna RPEs for the 3.5 GHz band and circulate to the members of the task group.
    d. PW will produce a first draft of one part of the amendment to the Recommended Practice, covering the point to point - PMP interference cases.
    e. JC will complete an analysis of 2.5 GHz propagation and propose a path loss equation.
    f. JC will review available information on system architectures for 2.5 GHz systems and circulate to members of the task group.

Meeting adjourned 14.00

Thursday 15th November 2001

Meeting called to order at 08.30

18. The timeline was reviewed. It was unanimously agreed that no changes should be made until TG2a has a clearer view of when all the simulation tasks can be completed.

19. Preparation for next meeting: The actions agreed on 14th were confirmed.

20. A review was made of the closing report. After a number of small modifications, the report was unanimously accepted.

21. A review was made of the draft minutes. The minutes were corrected and clarified and then provisionally accepted (to be posted as draft minutes, for final approval at the next meeting.)

22. A short presentation was made to TG3 on the propagation issues. TG3 members were invited to read TG2 papers on system parameters for coexistence calculations and propagation analysis for 2-11 GHz systems. Early feedback was requested from TG3 to allow TG2 work to proceed in harmony with TG3 needs.

23. Any Other Business. JC noted that FCC will allow mobile and nomadic operation in the MMDS band. Members to consider whether or not this has any impact on TG2 work.

Meeting adjourned at 11.15

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