IEEE 802.16 TGm Minutes (DRAFT)
Session #47, London, UK

H. Ruck (Acting Secretary):

The IEEE 802.16m Task Group (TGm) held its first session during the IEEE 802.16 Session #47 in London during January 2007. The session was chaired by Brian Kiernan, with Herbert Ruck acting as secretary. All sessions were held in the Blenheim room of the Hilton London Metropole Hotel.

1) Tuesday, January 16, 2007, Morning.

The Chair called the meeting to order at 08:11 hours local time. After a brief introduction, the Chair explained that in anticipation of the ITU-R solicitation of proposals for IMT-Advanced systems ("Systems beyond IMT-2000") early in 2008, the 802.16 Working Group had initiated the 16m project with the intent to take the OFDMA portion of 802.16e-2005 and develop it into a system that would meet the ITU IMT-Advanced cellular layer requirements. In addition TGm might propose its own system requirements for IMT-Advanced to be considered within the IEEE process as an input into the ITU-R WP8F May 2007 meeting.

It was explained that the currently known cellular layer requirements for IMT-Advanced included high mobility, data rates of 100 Mbps for mobile applications and 1 Gbps for fixed applications, cellular, macro and micro cell coverage, with currently no restrictions on the RF bandwidth (which is expected to be 20 MHz or higher). A brief discussion ensued related to the spectrum for IMT-Advanced.

The chair announced that there was to be an organizational meeting of 802.18 on Tuesday evening to discuss if IEEE 802 as a whole should get involved with developing a requirements contribution to IMT-Advanced. The TGm Chair and 802.16 WG Vice Chair will be in attendance.

The P802.16m Five Criteria that were approved at the last meeting and by the IEEE 802 EC (document 802.16-06/055r3) was presented. The chair drew attention to the need for detailed simulations (with appropriate software tools) to be able to prove to the rest of the world that 802.16m would meet the IMT-Advanced criteria and pointed out the length of time spent by 3GPP and 3GPP2 during the earlier IMT-2000 process to develop similar simulation frameworks. The chair also pointed out the need for several companies to do the simulations independently and arrive at similar results. Therefore, agreement on simulation methods and parameters BEFORE doing the simulations was crucial to the process.

Eight contributions had been uploaded before the start of the meeting and were subsequently presented.

1. Contribution C802.16m-07/001r1. Because none of the authors were in the room the chair presented the contribution. Later Mat Sherman arrived (at 09:30 h) and the Chair allowed him to present this contribution again. The contribution was met with interest and there was general agreement that mesh or multihop networks will likely play a role.

There was a break from 9:40 to 9:55. After the break, the presentation of contributions continued.

2. Contribution C802.16m-07/002 was presented by Andy Molisch as a basis for discussion. The contribution is an overview of channel models and the main proposal is to use the "double directional" channel model and properly address the wider channel bandwidths. The contribution was noted, but it was pointed out that the ITU was also developing channel models and that TGm would likely use those for evaluation purposes, in order to be consistent with other IMT-Advanced proposers.

3. Contribution C802.16m-07/003 was presented by Michael Webb on improved air interface techniques such as advanced frequency diversity, coding schemes, multiantenna techniques, reduction in MAP overheads, shorter frames for higher mobility and joint channel estimation. The chair commented that the expectation in IMT-Advanced is to have 8-10 bits per Hz.

4. Contribution C802.16m-07/004r1 was presented by Philip Orlik. He talked about ranges, bit rates and QoS (taken from ITU-R) that will determine the channel models and the importance of "cell edge bit rate". He mentioned the need to improve the user experience in the interference zone at the cell edge.

5. Contribution C802.16m-07/007 was presented by Ronny Kim and focused on "what to do beyond 802.16e on handover."

6. Contribution C802.16m-07/005 was presented by Avi Freedman, the topic being seamless handover between IEEE 802 interfaces and other standards as well as higher layer management to allow coexistence of devices.

7. Contribution C802.16m-07/006 was presented by the chair because none of the authors were present. A general discussion on channel models ensued and it was agreed to investigate what 8F is doing, assess the 8F model for adequacy for 16m and to propose a revised model if needed.

8. Contribution C802.16m-07/008 was presented by Sassan Ahmadi. This contribution by multiple authors asks for asks for compatibility of 16m with "802.16e reference systems". There was considerable debate on the meaning of backward compatibility in this context and how a strict definition of backward compatibility may preclude P802.16m from meeting IMT-Advanced Requirements. There was no obvious consensus reached on this potential requirement.

The meeting was recessed for lunch at 11:26.

2) Tuesday, January 16, 2007, Afternoon.

The meeting restarted at 12:37 hours and the discussion of contribution -07/008 continued turning to the question if compatibility implies the use of multi-mode terminals or not. There were arguments made on both sides of this question. The notions of "interoperability" and "coexistence" were explored.

The chair emphasized the need to develop text for the requirements document and formed a drafting group with a representative from each contribution. The group consisted of Mat Sherman, Michael Webb, Phillip Orlik, Avi Freedman, Ronny Kim, with Marc Cudak as lead. The group was tasked to prepare a draft document compiling all presented requirements for discussion on Thursday. Where possible, harmonization of requirements was encouraged and solicited.

Jose Puthenkulam next presented a proposal for a P802.16m workplan (C802.16m-07/009). A lengthy discussion of the Project workplan and time line ensued, edits were made to the document and overall consensus reached on the timeline. The Chair then uploaded the revised workplan document as TGm document 802.16m-07/001.

There was a break from 15.25 to 15:40. After the break the following agreement was reached and requested to be entered into the meeting minutes: "The task group generated an initial work plan for IMT-Advanced (802.16m-07/001) and we recognize that it is a guideline and subject to review and change from meeting to meeting based upon needs."

It was agreed to review the output of the drafting group and any updates from the concurrent ITU-R meeting in Cameroon on Thursday morning. The meeting recessed at 17:13 hours.

3) Thursday, January 18, 2007, Morning.

The meeting was called to order at 8:08 hours. The chair gave a brief update on the 802.18 meeting and showed the slides (802.16m-07/003) prepared by Jose Puthenkulam and himself for an 802.18 presentation. This was followed by a brief discussion on the role of the other IEEE 802 groups. Marc Cudak then presented the document prepared by the Requirements drafting group (C802.16m-07/010d0) "Draft IEEE 802.16m Requirements". The format and content was discussed until the break at 9:30 h.

Discussion resumed at 10:03 hours and the final agreement for a **Call for Comments on the 802.16m System Requirements** was the following:

"A Call for Comments is to be issued (no later than one week from now) with a deadline for submitting the comments by February 23, 2007 (a maximum 30 days from now). Comments will be accepted only in MS-Word format in order to ease editing and compilation. Comments should be written by individual document section and uploaded to the TGm server. The Requirements drafting group will create a new draft Requirements document and post it to the 802.16 server NLT one week before the next meeting for members to review (NLT March 5, 2007)." It was stated that the goal was to have an approved draft by the end of the March 2007 meeting, suitable for formulating into a contribution to ITU-R WP8F, if deemed appropriate by the WG.

It was also agreed to have a **Call for Comments on Evaluation Methodology and Criteria**. The TGm Chair drafted the two Calls and subsequently presented them at the WG Closing Plenary.

As there was no other business, the meeting adjourned at 10:56 hours.