Report of the Second IEEE 802.16 IMT-Advanced Evaluation Group Coordination Meeting

1.   Introduction

The second IEEE 802.16 IMT-Advanced Evaluation Group Coordination Meeting was held on 17 May 2010, in Beijing, China, hosted by the IEEE 802.16 Working Group on Broadband Wireless Access (802.16 WG) and chaired by Mr. Roger Marks, Chair of IEEE 802.16 Working Group. This meeting had been announced as a followup to the first IEEE 802.16 IMT-Advanced Evaluation Group Coordination Meeting, which was held on 13 January 2010 in San Diego, California, USA. Fifty experts and representatives from the proponents, the Independent Evaluation Groups (IEGs), the 802.16 WG membership, and other interested organizations participated in the meeting. Mr. Nader Zein acted as recording secretary of the meeting. The agenda is contained in Annex 1 and the list of participants in Annex 2. Annex 3 contains the list of documents that were considered during the meeting. Annex 4 provides a record of questions and answers.

2.   Welcoming remarks

In opening the meeting, the chair introduced the agenda and pointed out the web page set up by the 802.16 WG for the meeting:

http://ieee802.org/16/imt-adv/mtg2.html

It was pointed out that representatives from the three proponents (IEEE, Japan Administration, and TTA) were present at the meeting. It was also pointed out that representatives of the following IEGs were present:

- ARIB Evaluation Group
- ATIS WTSC
- Canadian Evaluation Group (CEG)
- Chinese Evaluation Group (ChEG)
- ETSI
- Russian Evaluation Group (REG)
- TCOE India
- TR-45
- TTA PG707
- WiMAX Forum Evaluation Group (WFEG)
- WCAI
- WINNER+

Other registered delegates were from

- 3GPP
- ITU-R WP 5D

Mr. Roger Marks, Chair of 802.16 WG, welcomed the delegates and explained the meeting objectives as included in the meeting invitation (IEEE L802.16-10/0037r1). It was noted that the objective of the meeting, like that of the 1st meeting, is to aid the Independent Evaluation Groups

(IEGs) in their evaluations of the IEEE Technology (IMT-ADV/4) toward submissions of their final evaluation reports for the 8th meeting of ITU-R WP 5D. The meeting would provide an opportunity for IEGs to exchange views among each other and with members of the IEEE 802.16 Working Group. The meeting reviewed the agenda (IEEE L802.16-10/0036) that had been presented along with the invitation in March 2010.

## 3.	Participants' Presentations

IEGs participating in the meeting presented updates on the status of evaluation activities, with some presenting preliminary conclusions to their evaluation, pending update of some information.

The following IEGs presented:

- ETSI
- ATIS WTSC
- Canadian Evaluation Group (CEG)
- WCAI
- Chinese Evaluation Group (ChEG)
- WINNER+
- TCOE India
- TTA PG707
- TR-45
- WiMAX Forum Evaluation Group (WFEG)

In general, the findings presented were consistent with the self-evaluation in IMT-ADV/4, as previously corrected by IEEE in a message to the appropriate Correspondence Group regarding the peak spectral efficiency calculation.

## 4.	Presentation on IEEE proposal

Following the presentations from the IEG, the meeting proceeded with a presentation on behalf of the IEEE 802.16 WG. The presentation was entitled "Updated Status of IEEE P802.16m Draft Standard".

Discussions following this presentation are recorded in Annex 4 in Q&A format for future reference.

## 5.	Working session and Q&A

Following discussion, when it become clear that there were no further questions to be addressed, it was decided that the participants active in the discussion would work with the secretary following the adjournment of the meeting to assist in accurately recording the Q&A. The detailed record is included in Annex 4.

Evaluation groups are encouraged to use the material in Annex 4 for evaluation report preparations and to use the resources indicated in Annex 3 to seek further clarifications as needed.

## 6.	Closing remarks

The Chair indicated that the report would be completed on 17 May and will be included as part of an input contribution to be submitted to the June meeting of ITU-R WP 5D. It will also be submitted to the appropriate ITU-R IMT-Advanced Evaluation Correspondence Group.

Mr. Marks acknowledged the participation of Mr. Zein and thanked the participants for their contributions towards a successful meeting. The meeting was adjourned at 4:30 pm, with participants invited to join the secretary for the completion of Annex 4.

Annex 1
Agenda for the meeting

Agenda for 2nd IEEE 802.16 IMT-Advanced Evaluation Group Coordination Meeting

17 May 2010 – Beijing, China

http://ieee802.org/16/imt-adv/mtg2.html

Agenda

1. 07:30 – 11:00   *Registration*
2. 09:30 – 11:00   IEEE 802 Wireless Interim Opening Ceremony
3. 11:00 – 11:15   Welcoming remarks
4. 11:15 – 12:30   Presentations from IEGs
5. 12:30 – 13:30   *Lunch*
6. 13:30 – 14:00   Presentations from IEGs
7. 14:00 – 15:00   Update on IEEE P802.16m, followed by Q&A
8. 15:00 – 15:30   Working session and Q&A on evaluations
9. 15:30 – 16:00   *Break*
10. 16:00 – 18:30   Working session and Q&A on evaluations
11. 16:30 – 19:00   Closing remarks

Meeting Information

For meeting details, including documents, see:

http://ieee802.org/16/imt-adv/mtg2.html

Annex 2

Attendance List

	Family Name	Given Name	Independent Evaluation Groups / Proponents / Attendees
1	Takehiro	Nakamura	3GPP
2	Issam	Toufik	3GPP
3	Tetsushi	Abe	3GPP
4	Stefan	Kaiser	3GPP
5	Satoshi	Nagata	3GPP
6	Yoshio	Honda	ARIB Evaluation Group
7	Eiji	Kito	ARIB Evaluation Group
8	Yasuhiko	Wachi	ARIB Evaluation Group
9	Farrokh	Khatibi	ATIS WTSC
10	Shiguang	Guo	Canadian Evaluation Group (CEG)
11	Raouia	Nasri	Canadian Evaluation Group (CEG)
12	Venkatesh	Sampath	Canadian Evaluation Group (CEG)
13	Ying	Du	Chinese Evaluation Group (ChEG)
14	Guangyi	Liu	Chinese Evaluation Group (ChEG)
15	Fei	Qin	Chinese Evaluation Group (ChEG)
16	Hu	Wang	Chinese Evaluation Group (ChEG)
17	Xuelin	Zhang	Chinese Evaluation Group (ChEG)
18	Zhao	Nan	Chinese Evaluation Group (ChEG)
19	Zhang	Yong	Chinese Evaluation Group (ChEG)
20	Esa	Barck	ETSI
21	John	Meredith	ETSI
22	Sassan	Ahmadi	IEEE
23	Wookbong	Lee	IEEE
24	Roger	Marks	IEEE
25	Jeongho	Park	IEEE
26	Nader	Zein	IEEE
27	Blust	Stephen	ITU-R WP 5D

28	Yuichi	Kihata	Japan Administration
29	Takashi	Shono	Japan Administration
30	Alexey	Khoryaev	Russia Evaluation Group (REG)
31	Alexander	Maltsev	Russian Evaluation Group (REG)
32	Vinosh	Babu James	TCOE India
33	Suryasarman	Padmanabhan	TCOE India
34	Jane	Brownley	TR-45
35	Byoung-Moon	Chin	TTA
36	Jaeweon	Cho	TTA
37	Kim	Elly	TTA
38	Wee	Kyu Jin	TTA
39	Hyoungjin	Choi	TTA PG707
40	Oh	Seong-Jun	TTA PG707
41	Park	Michael	TTA PG 707
42	Reza	Arefi	WCAI
43	I-Kang	Fu	WiMAX Forum Evaluation Group (WFEG)
44	Johann	Meierhofer	WINNER+
45	Horst	Mennenga	WINNER+
46	Werner	Mohr	WINNER+
47	Per	Skillermark	WINNER+
48	Philip	Kelley	Attendee
49	Watanabe	Fujio	Attendee
50	Nikolich	Paul	Attendee

Annex 3

List of documents

The following documents considered by the meeting are available at the meeting web page
<http://ieee802.org/16/imt-adv/mtg2.html> :

1. **IEEE L802.16-10/0036**
   Agenda for 2nd IEEE 802.16 IMT-Advanced Evaluation Group Coordination Meeting
2. **IEEE L802.16-10/0037r1**
   Invitation to 2nd IEEE 802.16 IMT-Advanced Evaluation Group Coordination Meeting
3. **IEEE L802.16-10/0056r1**
   Report of the Second IEEE 802.16 IMT-Advanced Evaluation Group Coordination Meeting
4. **IEEE L802.16-10/0047**
   Update on IEEE WirelessMAN-Advanced
5. **IEEE L802.16-10/0059**
   Presentation of the ETSI Evaluation Group for IMT-Advanced
6. **IEEE L802.16-10/0060**
   Alliance for Telecommunications Industry Solutions' (ATIS') Wireless Technologies and
   Systems Committee (WTSC) Evaluation Group
7. **IEEE L802.16-10/0061**
   Canadian Evaluation Group
8. **IEEE L802.16-10/0062**
   WCAI Evaluation Group for IMT-Advanced
9. **IEEE L802.16-10/0063**
   Chinese Evaluation Group Work
10. **IEEE L802.16-10/0064**
    WINNER+ IMT-Advanced Evaluation Group
11. **IEEE L802.16-10/0065**
    IMT-A Evaluation by TCOE India
12. **IEEE L802.16-10/0066**
    TR-45 Ad-hoc Group on International Mobile Telecommunications TR-45.AHIMT
13. **IEEE L802.16-10/0067**
    IEEE 802.16m Evaluation by TTA PG 707
14. **IEEE L802.16-10/0068**
    WiMAX Forum Evaluation Group (WFEG) for IMT-Advanced: Evaluation Progress
    Update

Annex 4

Questions and answers

	Question	Answer
1	In slide 24 of the CEG presentation, what does "Most" mean?	"Most" refers to the evaluation parts completed so far excluding the parts that are still ongoing. The remaining parts will be reported at the meeting in Vietnam in June
2	In slide 7 of the CEG presentation, question on the CSI report assumption at the ABS, i.e. what are the feedback?	CSI reports are based on 1- wide band or sub-band PMI at every 5ms in every frame 2- Long term covariance matrix every 20 ms 3- sounding (for sounding based pre-coding)
3	With reference to slide 9 of CEG presentation, how does the overhead scale with the number of scheduled users?	There are two types of overhead, one is static (does not scale with number of users), and dynamic which scale with number of users.
4	With reference to slide 9 of CEG presentation, you are showing 4Tx antenna for only uncorrelated case, did you simulate the correlated antenna case?	We simulated both, but the figures in the slides shows only the uncorrelated antenna case as an example.
5	In relation to the ChEG presentation, what is the meaning of the Open Area Rural Model since the model is not complete?	ChEG made their performance evaluation by making assumption for the TBD items (antenna tilt angles for BS and MS) based on optimal value (i.e. best value selected from the cases tested).
6	In relation to ChEG presentation, you mentioned Process is still progressing. What do you mean final report will include this result, next week or at the June meeting?	For most of the work ChEG completed the evaluation. ChEG is expecting more results next week.
7	In the TTA presentation, slides 6 & 7, why the performance of TDD is better than FDD?	Because in TDD mode the DL:UL ratio is 5 to 3 and in FDD the ratio is 1. Therefore for the DL, the amount of control channel overhead in the FDD case is more significant than in TDD.
8	Similar to above, but is the overhead fixed?	Yes, fixed but capturing the average value which is calculated from the dynamic overhead calculation as per IEEE proponent submission.
9	In relation to TTA presentation, what are the simulation assumptions?	The simulation assumptions are same as presented in ITU-R document for full buffer simulation with no change.

10	Follow up question from 9 above, how about the feedback?	CQI delay and channel estimation errors and PMI are taken into account, i.e. non ideal feedback information.
11	In WFEG slide 5, In the InH case, why there is large difference in the value selected by the WFEG and other groups?	It was clarified that the one selected (in red) is the average value for all the other sources.
12	Follow up on question 11 above, why big difference between source 1 and source 5?	This case is for UL which is challenging to fully calibrate because 1- Detail scheduling algorithm is different between different sources, i.e. although the scheduling schemes used is common but each source uses proprietary detail scheduling algorithm.
13	Follow up from the above question 12, shouldn't the calibration be independent from the test environment?	Since different configuration and parameters are used for operation in each test environment, therefore the calibration shall be done separately for each and as such the calibration data will differ for each environment.
14	On UL MU-MIMO, what is the maximum number of streams from the BS point of View?	The number of streams is 2.
15	Follow up from above, what is the maximum number of streams per user?	The number of streams per user is 1.
16	With reference to the IEEE update presentation (slide 27), is there a limitation on the size of SMS?	Yes, there is limitation since the MAC control message that carries the SMS during the idle mode has a limited field size.
17	With reference to the IEEE update presentation, is DCR only working in one cell or across different cells?	It works across different cells in the network where the mobile station has initially registered.
18	Could you elaborate on the performance of OL MU-MIMO compared to CL MU-MIMO?	The use of different MIMO mode depends on usage model and some MIMO modes are more suitable for certain user models. For example OL schemes are more suitable for large cell and high mobility environment. It was further clarified that the CL scheme can be applied to large cell with stationary users such as the TCOE India Open Area Rural Model.
19	For SM in MU-MIMO 2 streams, how does the system differentiate between these two streams?	The CQI measurements is conducted on each stream separately and reported together with the stream index.
20	Does the 802.16m draft support localized and distributed allocation on the same sub-frame?	It was clarified based on the tutorial material that the draft can support sub-band CRU (SLRU), mini-band CRU (NLRU) and distributed Resource units (DLRU, based on tone paired permutation) on the same sub-frame.