IEEE 802.16j Session #44
Performance Evaluation Ad-Hoc

• Rapporteur: Wen Tong
  – Session - 1
    • Time: 11:00 am-2:15pm, July 19, 2006
    • Venue: Manchester-B
  – Session - 2
    • Time: 2:30 pm-6:00pm, July 19, 2006
    • Venue: Corridor
TG Status for the Evaluation Methodology

Tuesday 18 July, 2006
19:00pm – 11:30pm Evaluation Methodology
(Treated comments/contributions)

No. 040 w/Com. No. 009, 010, 014-021
044, 045, 052, 058
059 w/CN-007
060
062 w/CN-002
063 w/CN-003
064 w/CN-004
065 w/CN-022
066 w/CN-005
067 w/CN-008
068
069 w/CN-023
070 w/CN-011
071 w/CN-012
074 w/CN-013
080, 082, 083

Nnn in orange: number of comments/contributions submitted
Nnn in Green: comment number as listed in 06-007r2 commentary database
List of Contributions

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<td>C802.16j-06_066r1</td>
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<td>Reply Comment</td>
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Tap Delayed Line Channel Model

• **044r1 → Multi-path Channel Model**
  – Informative
  – Comparative study
  – no specific proposal

• **058 → Multi-path Channel Model**
  – Informative
  – Large number of new channel models
  – no comparison results

• **067r1 → MIMO Channel**
  – Informative

• **Recommendation:**
  – No text proposal from the group, 16d SUI channel model for fixed/nomadic RS as baseline
  – In particular the channel model the 2\textsuperscript{nd} hop or more is FFS)
  – Simplified channel model for MIMO simulation is FFS
Path-loss Model Structure (1)

- **045r1 → Path-loss Model**
  - Proposal of path-loss model table
- **052r1 → Path-loss Model**
  - Proposal of path-loss model table
- **068r1 → Path-loss text proposal**

**Recommendation:**
- Adopt summary table structure for MMR path-loss models in 045r1, 052r1 and 068r1
- ad-hoc group construct this table input to 040r1
- **Table-1**
  - Type
    - Description Propagation environment
      - LOS, NLOS..
      - ART, BRT...
      - BS-RS, RS-MS, RS-RS
    - Path-loss model definition (reference to sub-section)
### Summary of MMR Path-Loss Models (Table-1)

<table>
<thead>
<tr>
<th>Category</th>
<th>Links</th>
<th>Description</th>
<th>Reference</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type A</td>
<td>BS–MS</td>
<td>Hilly terrain with moderate-to-heavy tree densities</td>
<td>Section 2.1.1</td>
<td>IEEE 802.16 Type A model</td>
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<tr>
<td>Type B</td>
<td>BS–RS</td>
<td>Intermediate path-loss condition</td>
<td>Section 2.1.2</td>
<td>Modified IEEE 802.16 model</td>
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<td>Type C</td>
<td>BS–RS</td>
<td>Flat terrain with light tree densities</td>
<td>Section 2.1.3</td>
<td>Modified IEEE 802.16 model</td>
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<tr>
<td></td>
<td>RS–RS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type D</td>
<td>BS–RS</td>
<td>Both node-antennas (BS/RS) above rooftop</td>
<td>LOS</td>
<td>Modified IEEE 802.16 model</td>
</tr>
<tr>
<td></td>
<td>RS–RS</td>
<td></td>
<td>NLOS</td>
<td></td>
</tr>
<tr>
<td>Type E</td>
<td>BS–RS</td>
<td>Only one node-antenna (BS/RS) above rooftop</td>
<td>NLOS</td>
<td>Modified IEEE 802.16 model</td>
</tr>
<tr>
<td></td>
<td>RS–RS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>RS–MS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type F</td>
<td>RS–RS</td>
<td>Both node-antennas (BS/RS) below rooftop</td>
<td>LOS</td>
<td>Advanced LOS</td>
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<tr>
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<td>RS–MS</td>
<td></td>
<td>NLOS</td>
<td>Berg/WiNDERER</td>
</tr>
<tr>
<td>Type G</td>
<td>RS–RS</td>
<td>Indoor Office</td>
<td>NLOS</td>
<td>ITU model</td>
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<tr>
<td></td>
<td>RS–MS</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Path-loss Models Structure (3)

- **080r1** → Usage Model vs. Channel Model
  - Usage probability assignment
- **066r1** → Path-loss Model Assignment
  - Probabilistic assignment
- **052r1** → Path-loss Model
  - Proposal of path-loss model table

**Recommendation:**
- Discussion concept for MMR path-loss models vs. usage models in 081r1, 066r1 and 052r1
  - **Table-2**
    - The linkage with usage model
    - Coverage, range-extension
    - FRS, MRS
    - Urban, suburban, in-building...
  - No sufficient time to discuss and construct this table during ad-hoc, recommend the following editor’s note
- Add Editor's note to 40r1
Path-loss Models Details (1)

- **045r1 → Path-loss model**
  - Complete set of path-loss model listed and compared for MMR
- **052r1 → Path-loss model**
  - Set of path-loss model listed for MMR
- **062r1 → LOS BS-RS/RS-RS**
  - Modified 2-slop 16d model is proposed
- **063 → NLOS BS-RS**
  - Modified 16d model is default
- **064 → LOS RS-MS**
  - Advanced LOS model is proposed
- **065r1 → NLOS RS→MS**
  - Berg model is proposed
- **083r1 → reply comment**
  - Error correction to 045r1
Recommendations:

- Adopt baseline 16d channel model

- Adopt the LOS BS-RS, RS-RS ART model in 62r1
- Adopt the NLOS BS-RS, RS-RS model in 63
- Adopt the advanced LOS model for LOS RS-MS/RS-RS BRT in 64
- Adopt the Berg/WiINNER NLOS RS-MS/RS-RS BRT in 65r1/45r1
- Adopt the ITU indoor model in 45r1 and 83r1
Correlated Shadowing Models

- **045r1 → Auto-correlation Shadowing**
  - The simplified auto-correlation for shadowing is proposed
- **059r1 → Correlated Shadowing**
  - The advanced correlated shadowing model is proposed
- **060 → Advanced Shadowing modeling**
  - Advanced correlation shadowing modeling
- **069r1 → Shadowing text proposal**
  - Detailed correlated shadowing proposals
- **065r1 → Shadowing**
  - Standard deviation correction

**Recommendations:**
- Adopt harmonized shadowing lognormal std. Value from 45r1/65r1
- Adopt proposed simplified auto-shadowing model in 045r1
- Adopt correlated shadowing as advanced modeling 059r1/069r1
• **David Chen’s comment**
  – Only input so far

• **Recommendations:**
  – Adopt David Chen comment with values are informative
  – Move the Link budget section to the Annex
Traffic Model

• 074 → text proposal
  – Adopt the recommendations of 040

• Recommendations:
  – Full buffer is mandatory
    • Advanced traffic models are optional
Performance Metrics

• **071r1 → Coverage metric**
  – Gamini harmonized with Roger’s comments

• **Recommendations:**
  – Adopt harmonized text

• **070r1 → Fairness metric**
  – Gamini harmonized with David’s comments

• **Recommendations:**
  – Adopt harmonized text
TG approve the resolution recommend by ad-hoc

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Adopt contribution IEEE802.16-j_040r1