IEEE 802.16j Session #44

Performance Evaluation Ad-Hoc

- Rapportour: 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

Contribution #	Topics	Contribution #	Topics
C802.16j-06_044r1	Multi-path channel model	C802.16j-06_066r1	Path-loss Assignment
C802.16j-06_045r1	Path-loss & Shadowing	C802.16j-06_067r1	MIMO Channel Model
C802.16j-06_052r1	Channel model & Metrics	C802.16j-06_068r1	TP for Path-loss Model
C802.16j-06_058	Multi-path Channel Model	C802.16j-06_069r1	TP for Shadowing
C802.16j-06_059r1	Correlated Shadowing	C802.16j-06_070	Coverage Metric
C802.16j-06_060	Shadowing Model	C802.16j-06_071	Fairness Metric
C802.16j-06_062r1	LOS BS-RS/RS-RS	C802.16j-06_074	Traffic Model
C802.16j-06_063	NLOS BS-RS	C802.16j-06_081r1	Usage Model & Channel Model
C802.16j-06_064	LOS RS-MS	C802.16j-06_082r1	More than 2-hops Performance
C802.16j-06_065r1	NLOS RS-MS	C802.16j-06_083r1	Reply Comment

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 particualr the channel model the 2nd 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)

Path-loss Models Structure (2)

Summary of MMR Path-Loss Models (Table-1)

Category	Links	Description		Reference	Note
Type A	BS–MS	Hilly terrain with moderate-to-heavy tree densities		Section 2.1.1	IEEE 802.16 Type A model
Type B		Intermediate path-loss condition			IEEE 802.16 Type B model
Type C		Flat terrain with light tree densities			IEEE 802.16 Type C model
Type D	BS–RS RS–RS	Both node-antennas (BS/RS) above rooftop	LOS	Section 2.1.2	Modified IEEE 802.16 model
			NLOS	Section 2.1.3	Modified IEEE 802.16 model
Type E	BS–RS RS–RS RS–MS	Only one node-antenna (BS/RS) above rooftop	NLOS	Section 2.1.4	Modified IEEE 802.16 model
Type F	RS–RS RS–MS	Both node-antennas (BS/RS) below rooftop	LOS	Section 2.1.5	Advanced LOS
			NLOS	Section 2.1.6	Berg/WiNNER
Type G	RS–RS RS–MS	Indoor Office	NLOS	Section 2.1.7	ITU model

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**

Path-loss Models Details (2)

- **Recommendations:**
  - **Adopt baseline 16d channel model**

    IEEE 802.16.3c-01/29r4, "Channel Models for Fixed Wireless Applications" July 21, 2001
    http://www.wirelessman.org/tg3/contrib/802163c-01_29r4.pdf
  - **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/WiNNER 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

Link Budget

- 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

The Ad-Hoc Output

TG approve the resolution recommend by ad-hoc

Contribution #	Comment#		Contribution #	Comment#	
C802.16j-06_040	009-018	reject	C802.16j-06_065r1	022	Accept/m
C802.16j-06_040	019-021	Accept/m	C802.16j-06_066r1	005	Accept/m
C802.16j-06_044r1		reject	C802.16j-06_067r1	008	reject
C802.16j-06_045r1		Accept/m	C802.16j-06_068r1		Accept/m
C802.16j-06_052r1		Accept/m	C802.16j-06_069r1	023	Accept/m
C802.16j-06_058		reject	C802.16j-06_070	011	Accept/m
C802.16j-06_059r1	007	Accept/m	C802.16j-06_071	012	Accept/m
C802.16j-06_060		reject	C802.16j-06_074	013	Accept/m
C802.16j-06_062r1	002	Accept/m	C802.16j-06_081r1		reject
C802.16j-06_063	003	Accept/m	C802.16j-06_082r1		reject
C802.16j-06_064	004	Accept/m	C802.16j-06_083r1		Accept/m

Adopt contribution IEEE802.16-j_040r1