A Recommendation on PMP Mode Compatible Frame Structure

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Source:
Fang-Ching Ren, Chang-Lung Hsiao,
Yu-Ching Hsu, and Wern-Ho Sheen,
CCL/ITRI
Bldg. 11, 195 Sec. 4, Chung Hsing Rd. Chutung,
HsinChu, Taiwan 310, R.O.C.

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None.

Purpose:
This is a response to IEEE 802.16mmr-05/001(call for contributions: IEEE 802.16’s Study Group on Mobile Multi-hop Relay) to present a compatible frame structure.

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Purpose

- The recommendation TDD frame structure is compatible to the access without relaying.
- Relay service is operated on same frequency.

- From BS viewpoint, an RS performs the same as an SS. The transmission/reception time burst is controlled by BS.

- From MS viewpoint, an RS only performs coverage extension and no extra overhead for MS.
Proposed Frame Structure

TDD Frame Structure

DL sub-frame  UL sub-frame

P  FCH  BR/BM  RM  C  MR  RB/MB

DL-MAP  UL-MAP  P  MAP  Data

- P: preamble
- FCH: frame control header
- BR: base station to relay station
- BM: base station to mobile station
- RM: relay station to mobile station
- C: contention area
- MR: mobile station to relay station
- RB: relay station to base station
- SB: mobile station to base station
Example of DL Relaying

- BS (Base Station)
- RS (Relay Station)
- MS1
- MS2

DL sub-frame:
- DL MAP
- RS (CID a)
- MS1 (CID 1)
- MS2 (CID 2)

CID a, CID 1, CID 2

RSE relay service element

CID a, RSE, MS1 PDU, MS2 PDU

Relay Station PDU
Example of UL Relaying

- **BS** (Base Station)
- **RS** (Relay Station)
- **MS1**
- **MS2**
- **CID** (Call Identification)
- **DL MAP** (Downlink Mapping)
- **UL MAP** (Uplink Mapping)
- **UL sub-frame**
- **DL sub-frame**
- **CID 3**
- **CID 4**
- **CID b**
- **RSE** (Relay Service Element)
- **MS1 PDU**
- **MS2 PDU**
- **Relay Station PDU**

**RELAYING PROTOCOL**

- **CID 3**
- **CID 4**
- **CID b**

**NETWORK ARCHITECTURE**

- **PDU** (Protocol Data Unit)

**RELAYING MECHANISM**

- **RSE relay service element**
Relay Service Element (RSE)

- RSE consists of
  - downlink relaying service CIDs through the specified RS
  - Uplink relaying service CIDs through the specified RS