Common PHY & Messages for Neighbor Discovery Using CTS

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Purpose:

Consolidate the neighbor discovery procedure in ad-hoc fashion

Common PHY & Messages for Neighbor Discovery Using CTS

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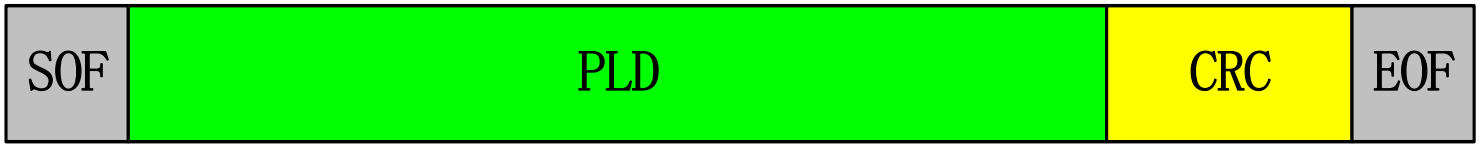
Abbreviation

- **CTS — Coexistence Time Slot**
- **IBS — Initializing Base Station**
- **OBS — Operating Base Station**
- **IPBC — IP Broadcast**

Proposed IP address broadcast

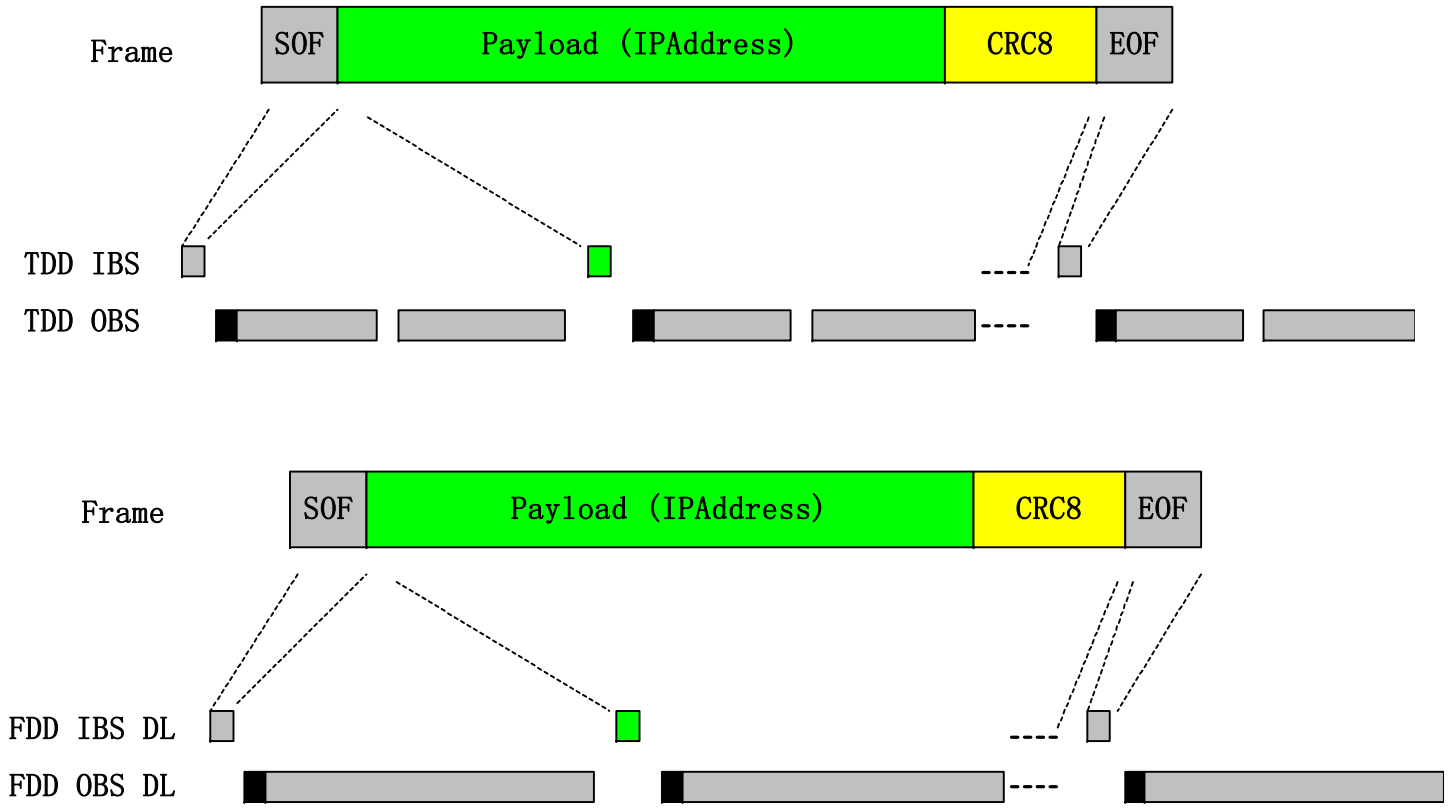
- Use CTS to broadcast the IP address signaling，every slots send 1 or more bit using energy pulse. Energy pulse is bins of frequency domain or time domain .
- The signaling Frame should be send in the Frame with less overhead. Such as the simple serial packet formed by SOF/PLD/ CRC/EOF.

IPBC Frame Structure



SOF — Start Of Frame
PLD — Payload (e.g. 32bit IP Address in IPv4)
CRC — Cyclic Redundancy Check
EOF — End Of Frame

CTS slots location TDD/FDD



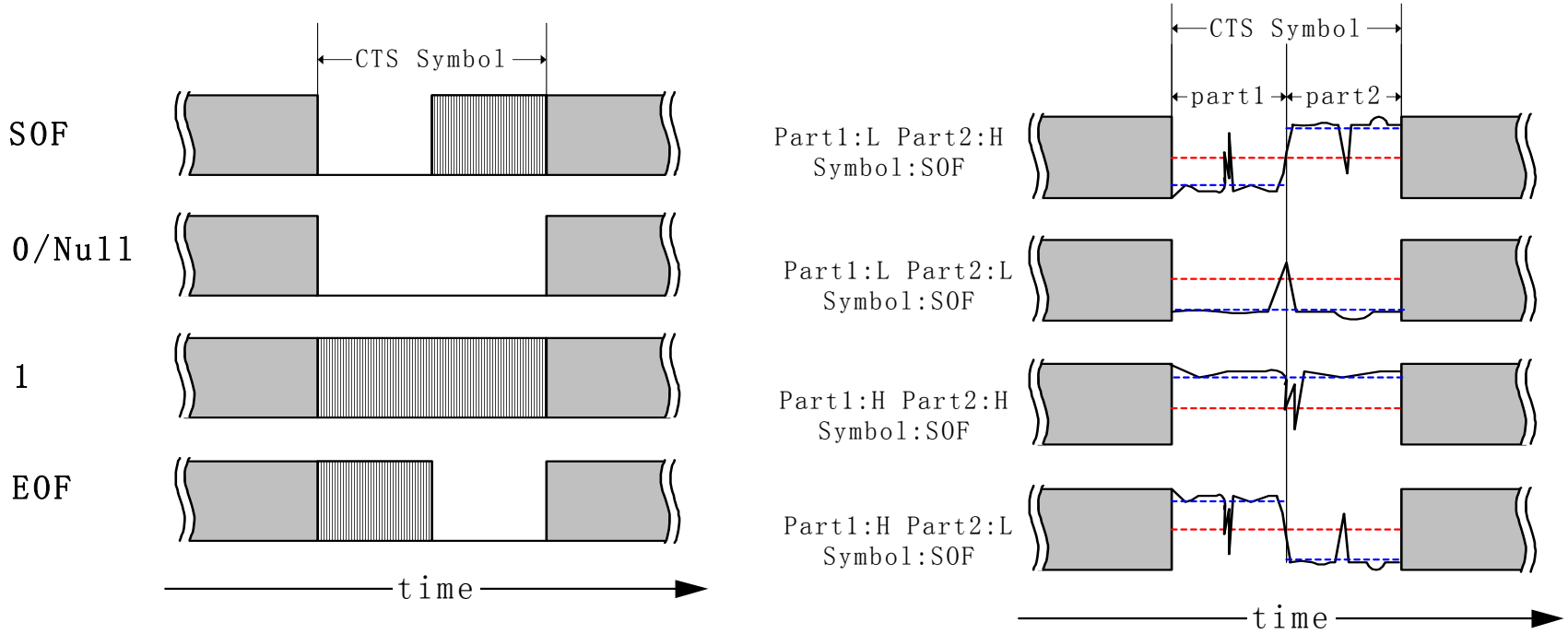
CTS slots location TDD/FDD

CTS need to locate before the DL preamble (FDD) or around TTG/RTG(TTD) since:

1)Easy for definition and to be found:
To unify the location in TDD and FDD, FDD need to put into the DL structure and better before the preamble to got a easy finding location. Same in TDD, it's better to use the location around RTG (or TTG), for FDD, use the end of Frame will be good for keep the starting point of frame and easy found.

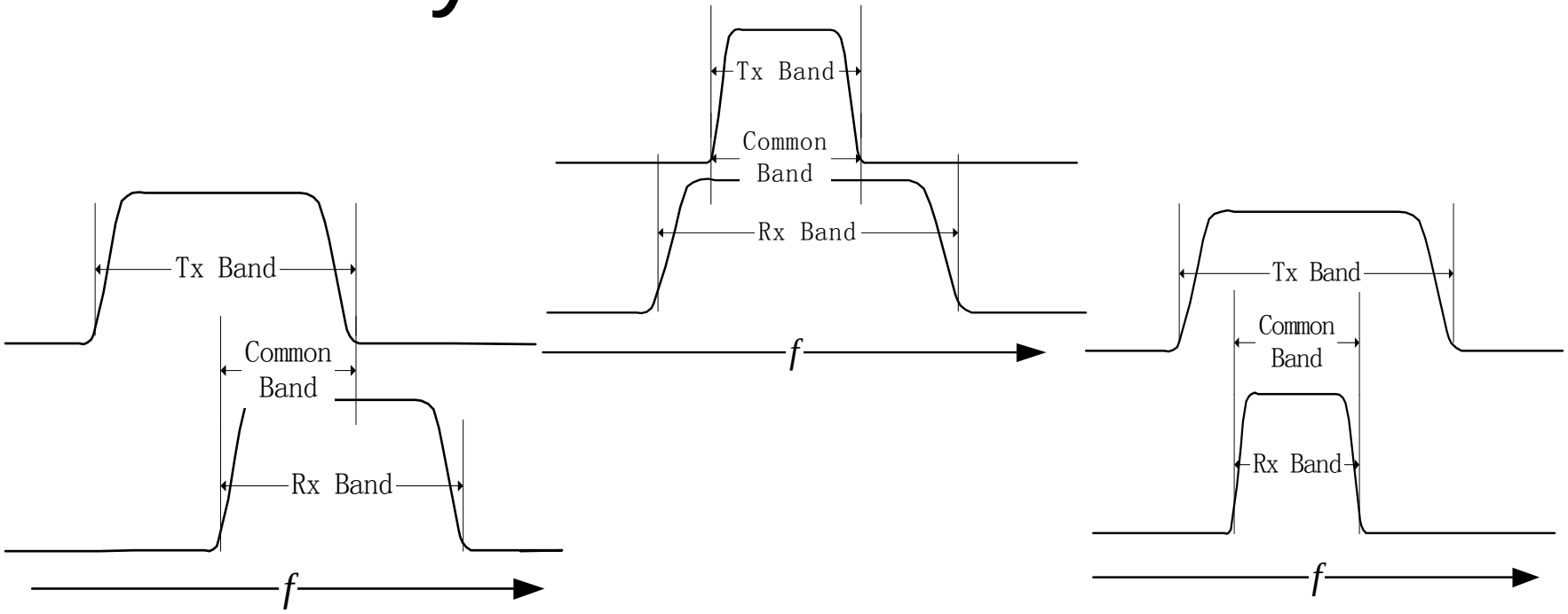
2)Keep the PDU's continuity:
Not to break the BS downlink PDU, prevent overhead of Preamble.

IPBC Symbol definition



- *Transmitter: Use original PHY to emit High or Low Power*
- *Receiver: Detect the RSSI in whole band and make the verdict during particular time*
  - *— Easy compatible for all possible PHY, No change on RF/BB Mod/Demod needed*
  - *— Low signal quality requirement and larger broadcast range (Need Simulate)*
  - *— Transmitting Device may detect on the vital interference in CTS when in 0/Null status*

IPBC Symbol for different band

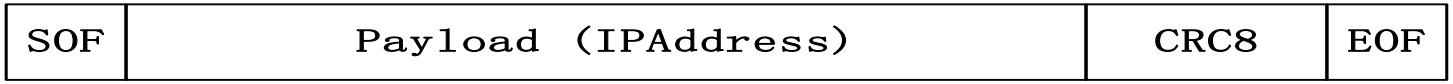


- Easy dealing with communication between heterogeneity systems
  - **Interference is cause mainly by common part of the band, so does the IPBC**
  - *No need using the same/cognate modulation method (SCa OFDM OFDMA…)*
  - *No need using the same/geminate bandwidth(5M/10M/2.5M/3.5M…)*
  - *No need using the same/neat channel boundary*
  - ***Need common part of the band between Tx BS & Rx SS (the same condition for interference)***

Proposal

- Adapt the frame format of IPBC
- Adapt the CTS symbol definition using energy pulse
- Specify the CTS location as proposed

Frame Format

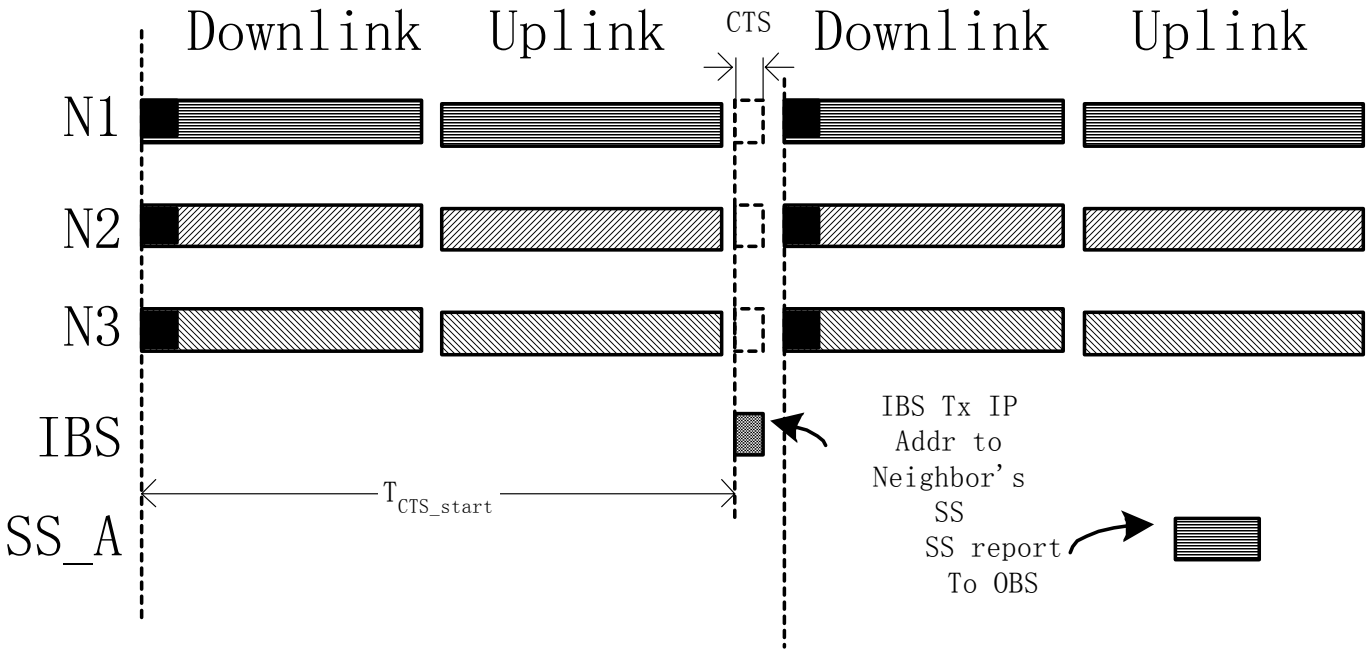


Syntax	***Size***	***notes***
IP address broadcast frame(){		*Every CTS is consist of n symbol, (n>=1)*
<SOF>Start of frame	*1 symbol*	
PLD:IP address of initializing base station	*32 bits*	*1 bits = 1 symbol*
CRC: Cyclic Redundancy Check	*8 bits*	*Polynomial "X8+X2+X+1"*
<EOF>Start of frame	*1 symbol*	
}		

Symbol Format

format		***signification***
Part1	***Part2***	
L	*H*	*<SOF>*
H	*L*	*<EOF>*
L	*L*	*0*
H	*H*	*1*

Slots Location



Discussion