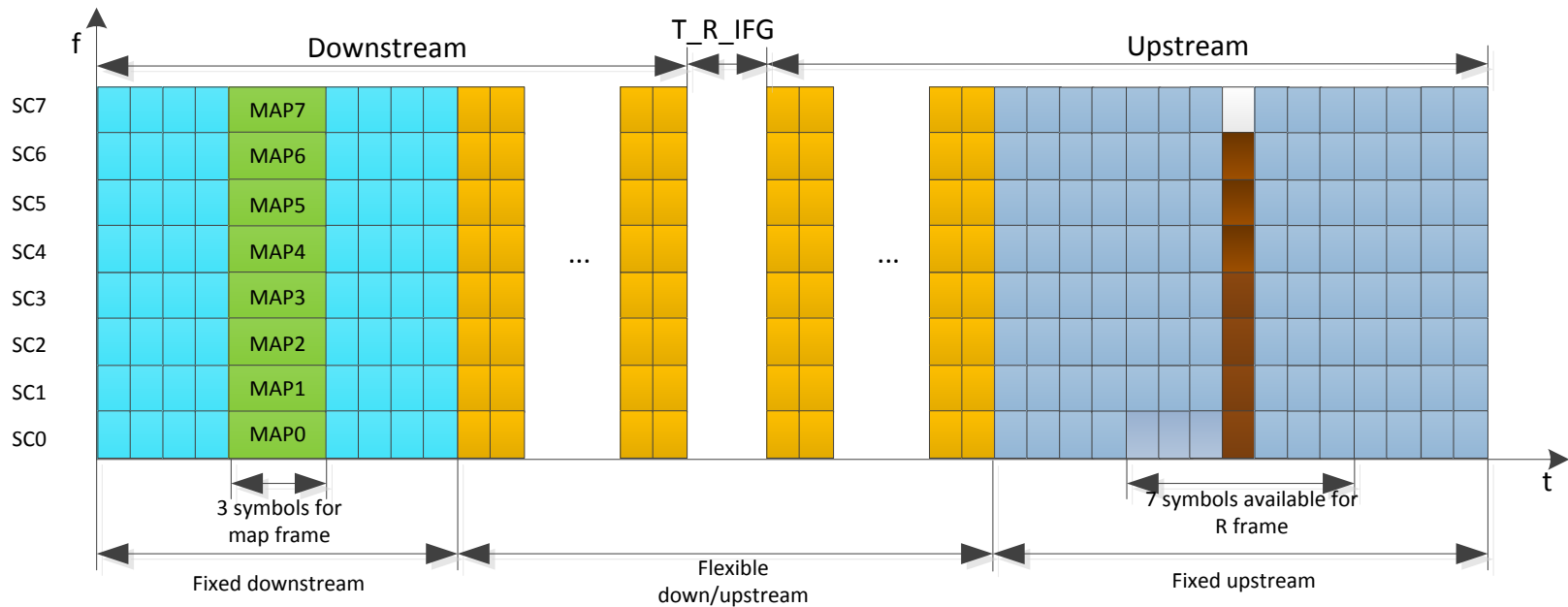


MAP Frame and R frame

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OVERVIEW

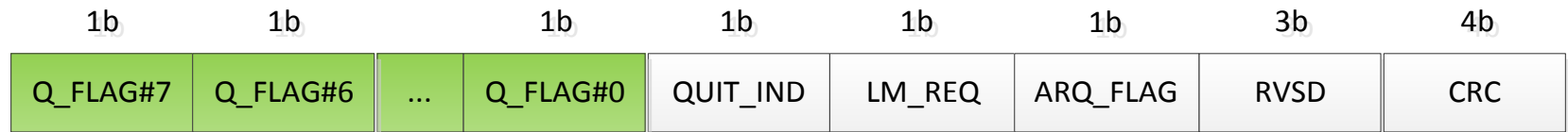


Overview

- MAP Frame and R Frame are used to make channel allocation.
- MAP Frame
 - carrying the result of channel allocation .
 - In each SC, HB will send a MAP frame in every MAP cycle.
 - The length of MAP frame is fixed and it will take 3 OFDM symbols to transmit, carried by Cd of PHY.
- R Frame
 - carrying information about uplink data frame queues of HMs .
 - Each HM will send a R frame in every MAP cycle.
 - The Length of R Frame is fixed and all HMs can simultaneously transmit the R frame in one OFDM symbol, carried by Ru of PHY.

R Frame Structure

R frame



- The length of R Frame is 18bit
- One queue (totally 8 queues) has a bit in R Frame to indicate the information.
- Each queue's one bit can be used as a signal or as a simple report of queue information.
- HM can use EIF (Extended Information Frame) which is transmitted in the first data frame in a map cycle to report queue information in detail.

Map Frame Structure



- The length of MAP Frame is 744 bit
- The FIRST_D_ID , FIRST_U_ID and SSC_MAP field indicate the result of channel allocation

MAP Frame Structure

- **FIRST_D_ID and FIRST_U_ID**
 - Indicate the first HM_ID of downstream/upstream district
- **SSC_MAP**
 - **SSC_MAP**: indicate the allocation of all SSCs in the next MAP cycle, including each SSC's function and the HM who uses the SSC.
 - 2-bit coding are used to construct SSC_MAP.

Value	Function
00	An idle SSC.
01	Used for transmitting data frame.
10	Used for MAP/R/R_IFG.
11	HM_ID separation code.

SSC_MAP 2-bit Code

- **functional code**(i.e. 0b00,01,10,11) in SSC_MAP corresponds to the function of an SSC in sequence in the MAP cycle.
 - 0b00, stand for an idle SSC。
 - 0b01, stand for an SSC used for transmitting data frame, which HM use this SSC depend on the number of the separation code before the SSC.
 - 0b10, stand for an SSC used for MAP Frame, R frame or R_IFG(interval). The position of the code will decide which meaning to choose.
- **separation code**(i.e. 0b11) in SSC_MAP used to indicate the SSC belonging to which HM.

SSC_MAP 2-bit Code

- Set a 0b01 is between the N^{th} and the $N+1^{\text{th}}$ 0b11, the FIRST_D_ID is X and the FIRST_U_ID is Y.
 - If $N < 73$, the SSC which is indicated by the 0b01 is used by HM $[(N+X-1) \bmod 72]$ to transmit downstream data frame. (HM_ID 65-72 is used for multicast)
 - If $N \geq 73$, the SSC which is indicated by the 0b01 is used by HM $[(N+Y-73) \bmod 64]$ to transmit upstream data frame.

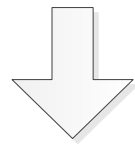
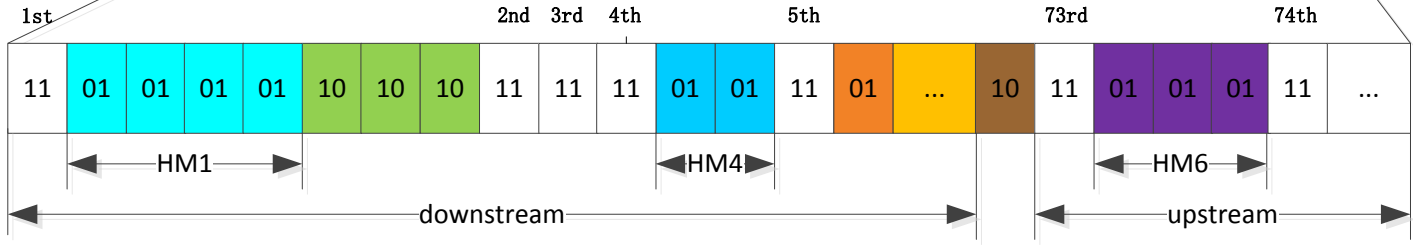
Mapping between SSC_MAP and MAP cycle



FIRST_D_ID=1
FIRST_U_ID=6

Downstream:HM1: 4 SSC
HM2: 0 SSC
HM3: 0 SSC
HM4: 2 SSC

Downstream:HM6: 3 OFDM symbols



● Thank you!