# HDC4300 system Flicker and Banding issues
# (This is excluding flicker under HFR operation)

- Most important is to use 1x speed(1080i or 720p) with the camera, if we use higher frame then it will be difficult to cancel or reduce the banding with ECS

## a)Lighting

-Lighting devices normally do not have G/L( Gen lock) capability

If there is G/L capability, then apply G/L to the whole system including camera

-If the lighting devices refresh rate is high enough then camera will not see any flickers (see below)

Note-1 : Camera ECS function needs to be used to compensate display banding issues, so adjustment of lighting refresh rate to high value is required

Note-2: Recommendable lighting frequency: 500-600Hz--- of course higher the better( 3kHz or higher).

Note-3: With Bill board award show, adjustment of lighting refresh rate to 1200Hz due to camera signal format ( 720p 2x HFR) was required.

Before we change software on the HDCU4300 to V1.3UXT, we can get only 720p 2x---This can be changed to 720p 1x speed by replacing the software of HDCU4300 showing In the following page

## b)LED panels

-G/L is required: Every display wall /panels/ monitors needs to have G/L capability in order to cancel/decrease bandings

-LED display: It is normally GL capable

-Modular type  LED wall: it is required that all LED-modules be synchronized

-LED's Refresh rate adjustment is also required –Refresh rate should be adjusted at higher than 1800Hz.

(ex:  3300Hz or higher----Refresh rate of display performs well if it is an integer multiple of 59.94Hz)

- We use ECS control to compensate for these bandings.

-Note-1:

Most of display monitors use high refresh rate due to the requirement of panel performance improvement

Lower frequency does not give enough data  which result in negative performance of the displays

(less color reproduction and etc)

-Note-2: When bandings is still visible even after the adjustment of refresh rate to its best, another method is to move banding to outside of picture frame by adjusting G/L timings----See following  System Block-1 and System Block -2.

-Note-3: With Plasma display may not be able to cancel bandings completely

a) The camera conditions

-HDC4300 software: Use latest software (higher than 1.41)

-HDCU-4300: At this moment we only have Special software :

>These are latest software for each :

-BPU4000 ---Latest

-BPU4500----Latest

-HDC4300----V1.41

-HDCU4300 –Special (V1.3UXT ---attached)

>V1.3 UXT is tentative software, official one is coming later

>This software is to give 720p normal speed out from HDCU4300

>Use 720p out for SLOT-2 as main signals, 4k NBC out signals are not as good as SLOT-2 output.

-MSU1500----Latest

-RCP1500-----Latest

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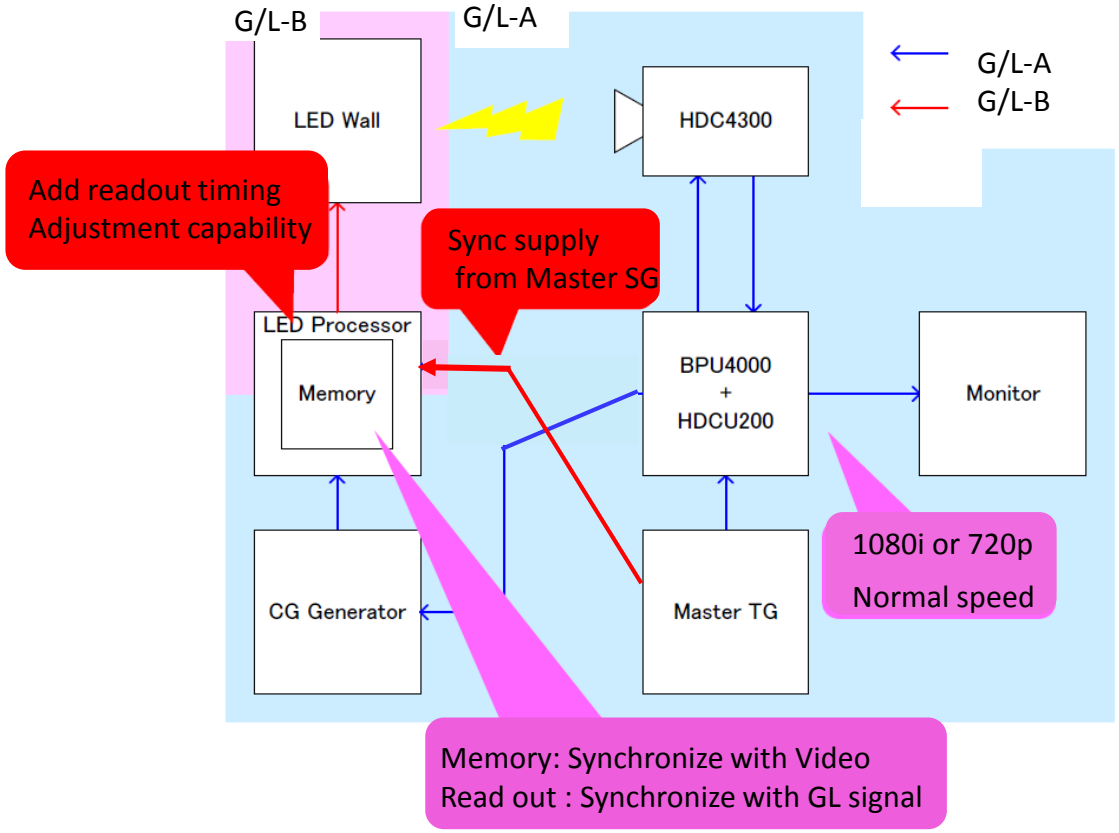
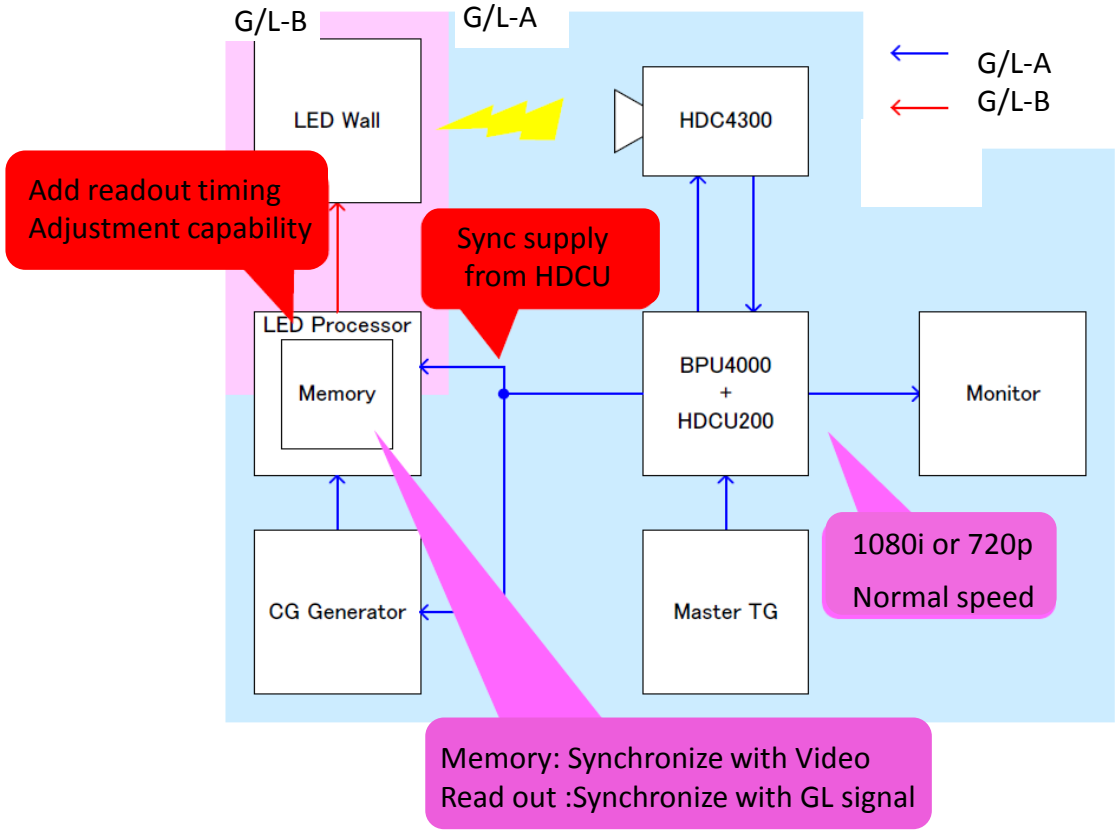
# System Block -1




LED processor needs delay adjustment
to move out banding to outside picture.
If the banding is acceptable level then it is not required

# System Block -2

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