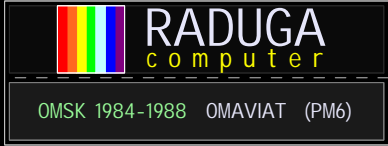
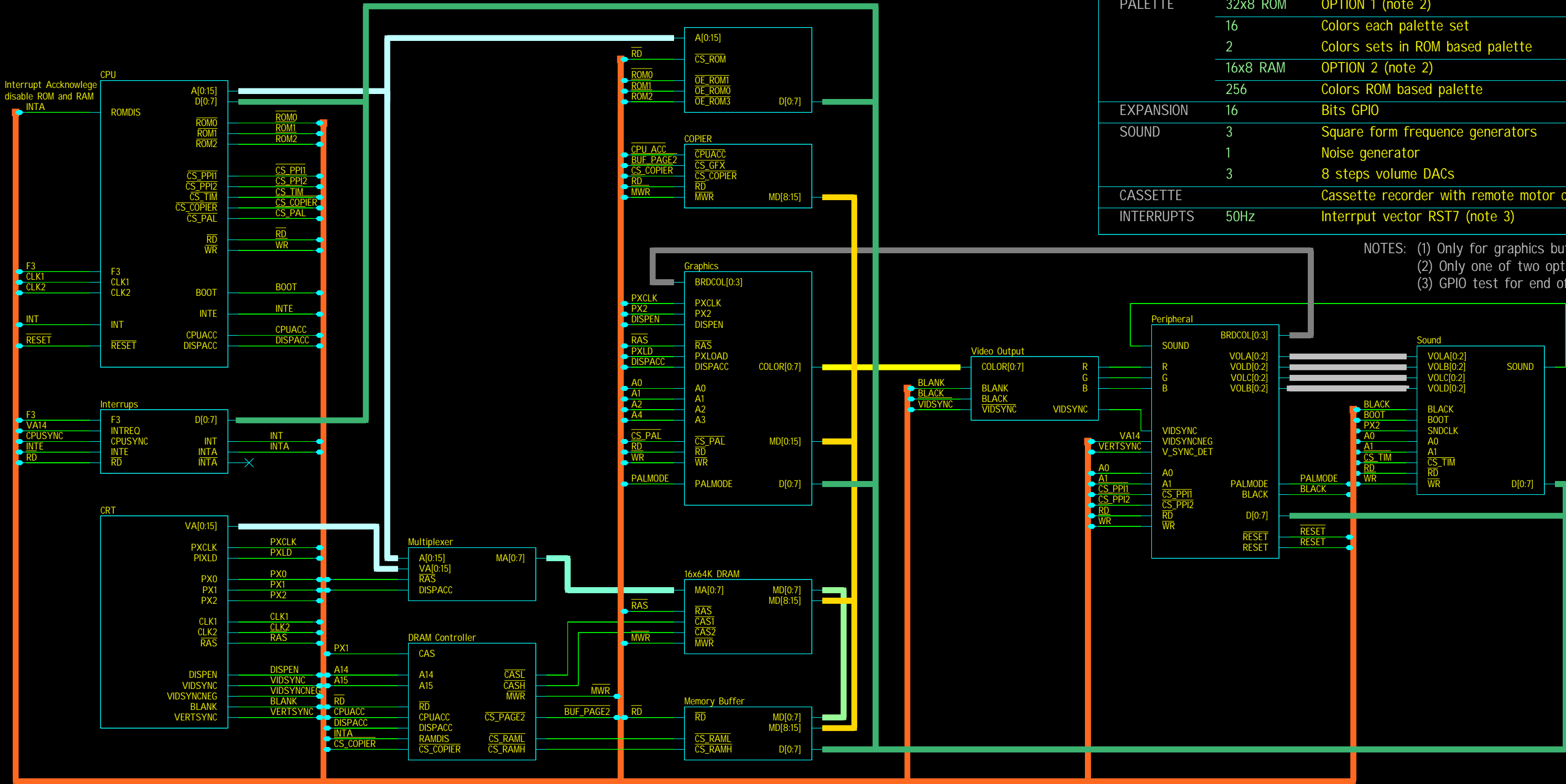
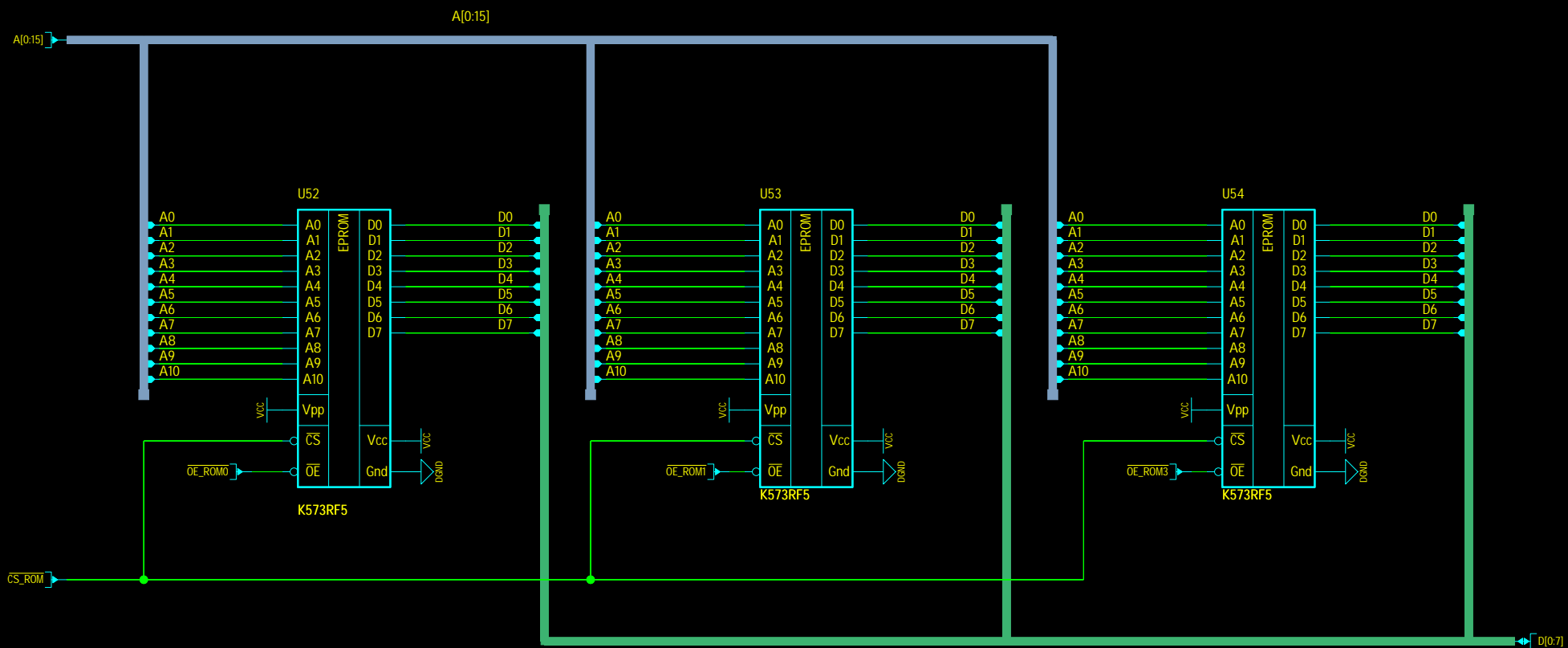


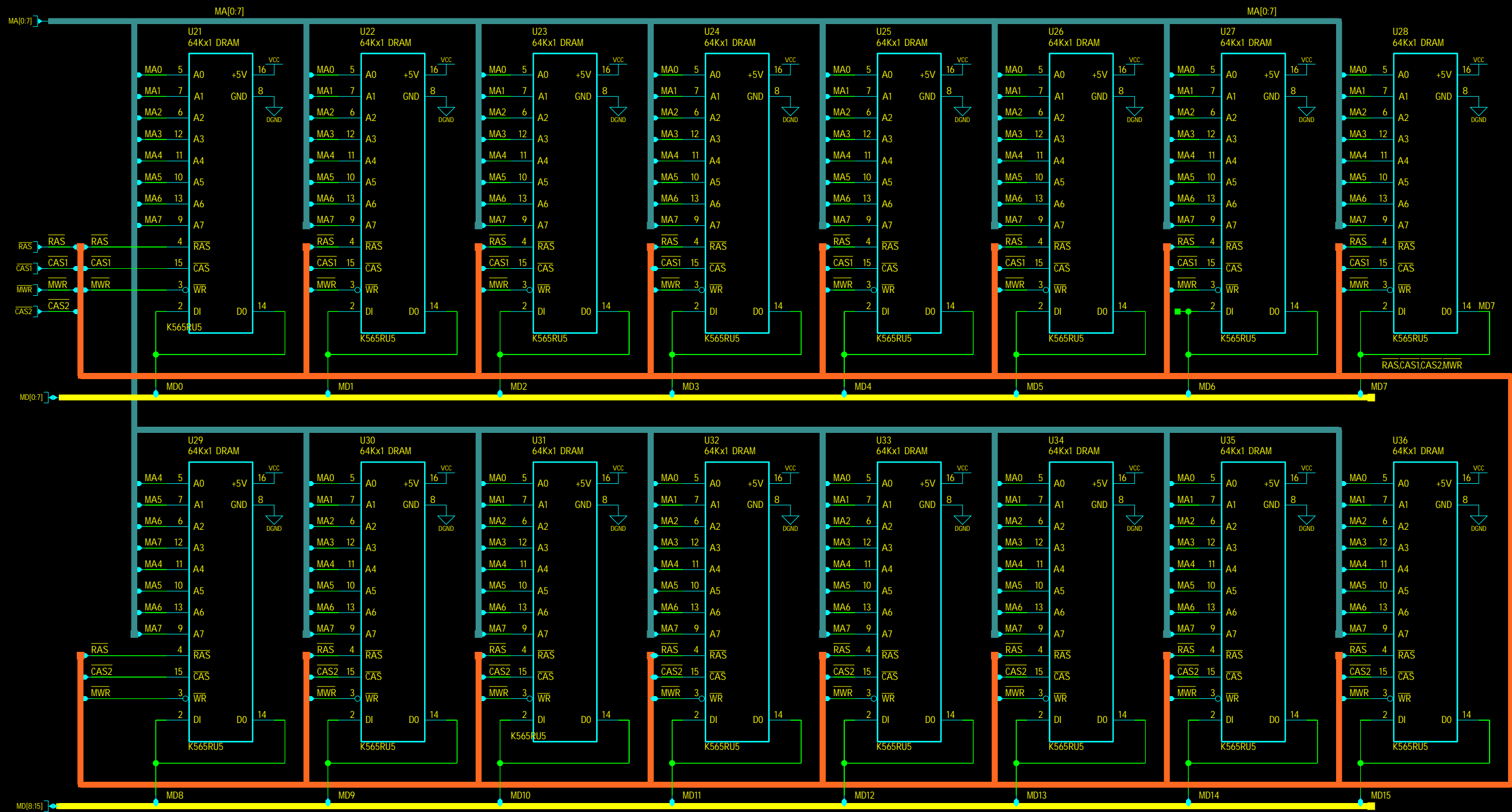
| SPECIFICATIONS |             |   |
|----------------|-------------|---|
| BASED ON       |             | SPECIALIST                                  |
| CPU            |             | K580IK80                                    |
| ROM            | 6KB         | 3 x K573RF5                                 |
| RAM            | 64KB        | 16 x K565RU5 (manufacturer de-rated)        |
| ADRESSABLE     | 48KB / 16KB | Directly/Indirectly                         |
| ACCELERATOR    | COPIER      | 16 bits per single copy operation (note 1)  |
| GRAPHICS       | 384x256     | Pixels                                      |
|                | 2 of 16     | Colors per each 8 pixels                    |
|                | 32KB / 24KB | Graphics memory / Frame buffer              |
|                |             |   |
| PALETTE        | 32x8 ROM    | OPTION 1 (note 2)                           |
|                | 16          | Colors each palette set                     |
|                | 2           | Colors sets in ROM based palette            |
|                | 16x8 RAM    | OPTION 2 (note 2)                           |
|                | 256         | Colors ROM based palette                    |
| EXPANSION      | 16          | Bits GPIO                                   |
| SOUND          | 3           | Square form frequence generators            |
|                | 1           | Noise generator                             |
|                | 3           | 8 steps volume DACs                         |
| CASSETTE       |             | Cassette recorder with remote motor control |
| INTERRUPTS     | 50Hz        | Interrput vector RST7 (note 3)              |

NOTES: (1) Only for graphics buffer  
(2) Only one of two options used  
(3) GPIO test for end of frame



|              |
|--------------|
| POWER        |
| TIME DIAGRAM |





**RADUGA**  
computer

OMSK 1984-1988 OMAVIAT (PM6)

221B Baker Street  
RETRO COMPUTERS

**RADUGA Computer**

SIZE  
**A3**

DWG NO  
**Alfa2**

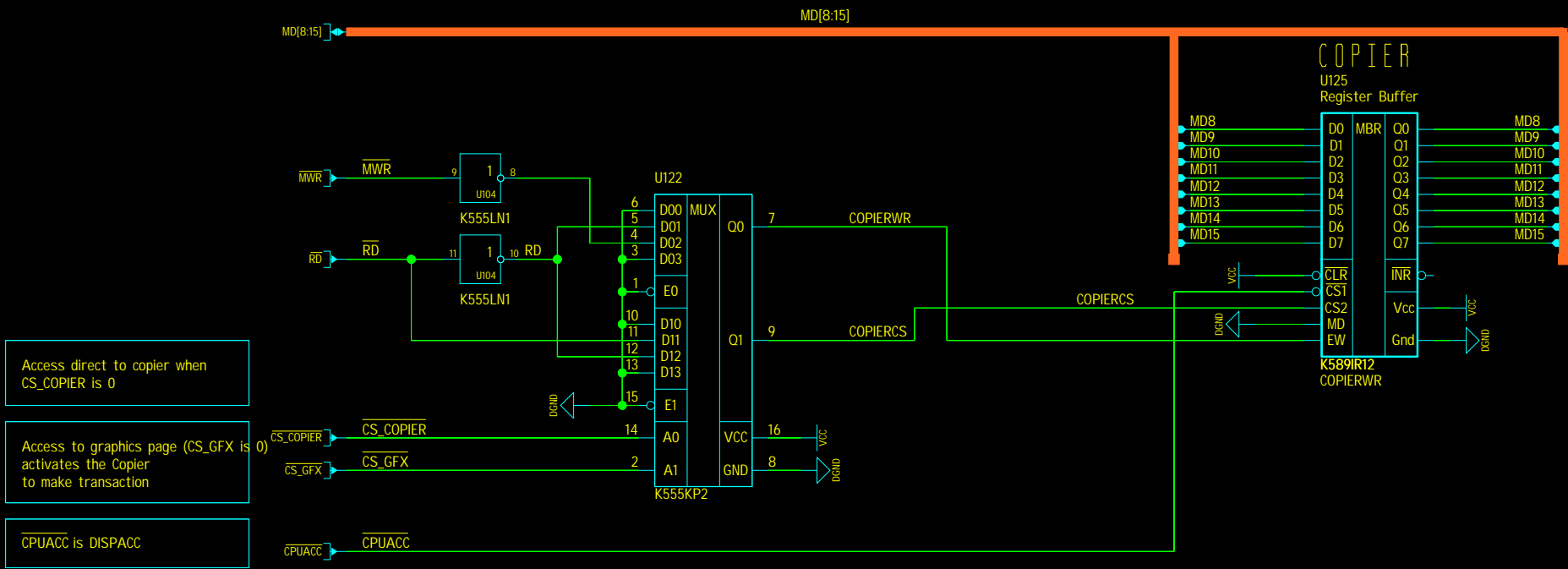
Memory **1**


REV  
**a2**

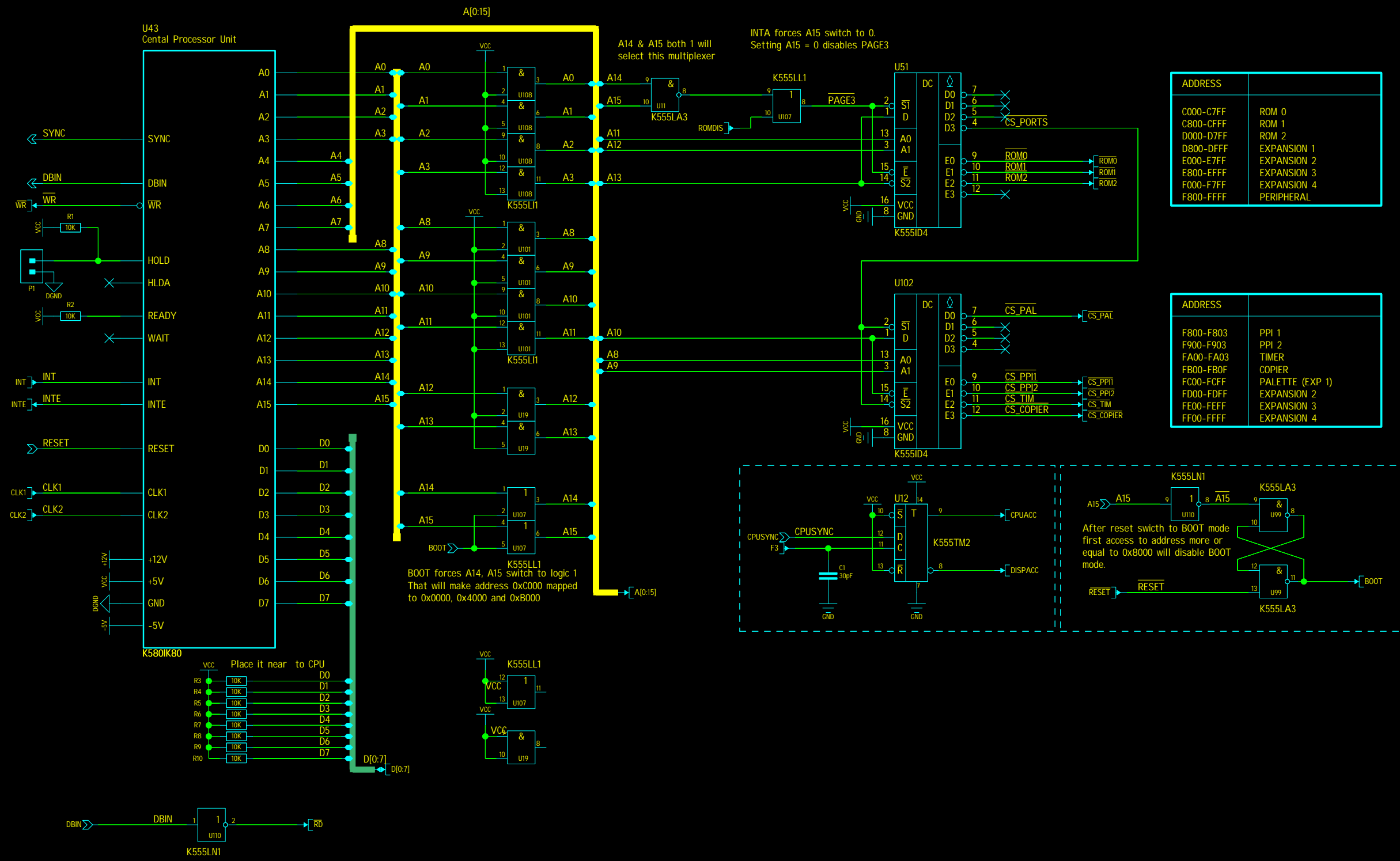
DRAWN BY  
**Sherlock**

SHEET  
**3** of **13**

18/04/2019:11:22



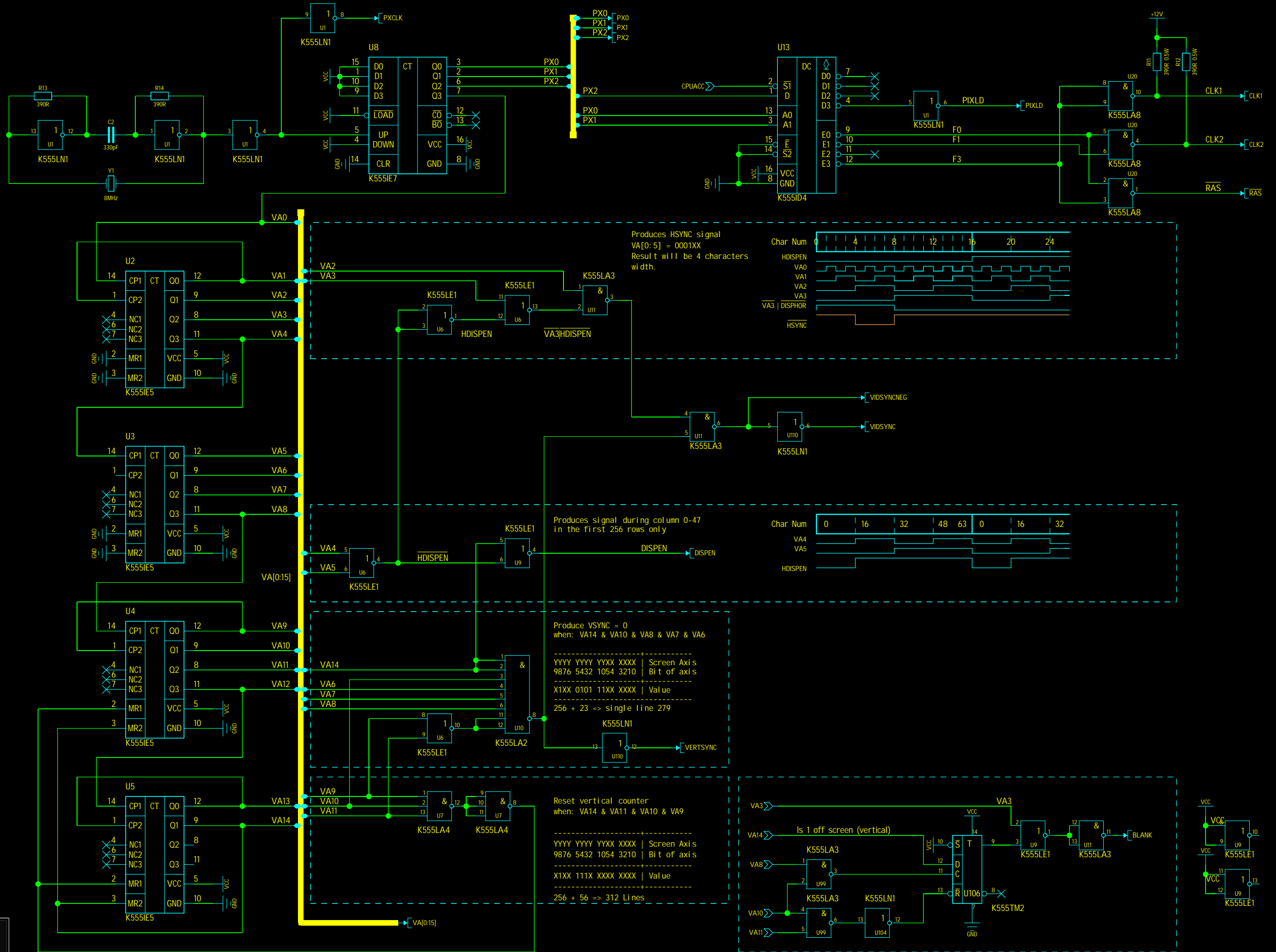
| BUF_PAGE2<br>8000-BFFF   |          |   |                  |         | COPIER's Operation |
|--|----------|---|------------------|---------|--------------------|
| CPUACC   | CSCOPIER |   | RD               | MWR     |                    |
| 1  | X        | X | X                | X       | Nothing            |
| X  | 0        | 0 | X                | X       | Nothing            |
| X  | 1        | 1 | X                | X       | Nothing            |
| 0  | 0        | 1 | Access to PAGE2  |         |                    |
| <br>Selected In 1 |          |   | 0                | X Read  | Store              |
|  |          |   | 1                | X Write | Read               |
| 0  | 1        | 0 | Access to COPIER |         |                    |
| <br>Selected In 2 |          |   | 0                | 1 Read  | Read               |
|  |          |   | 1                | 0 Write | Store              |

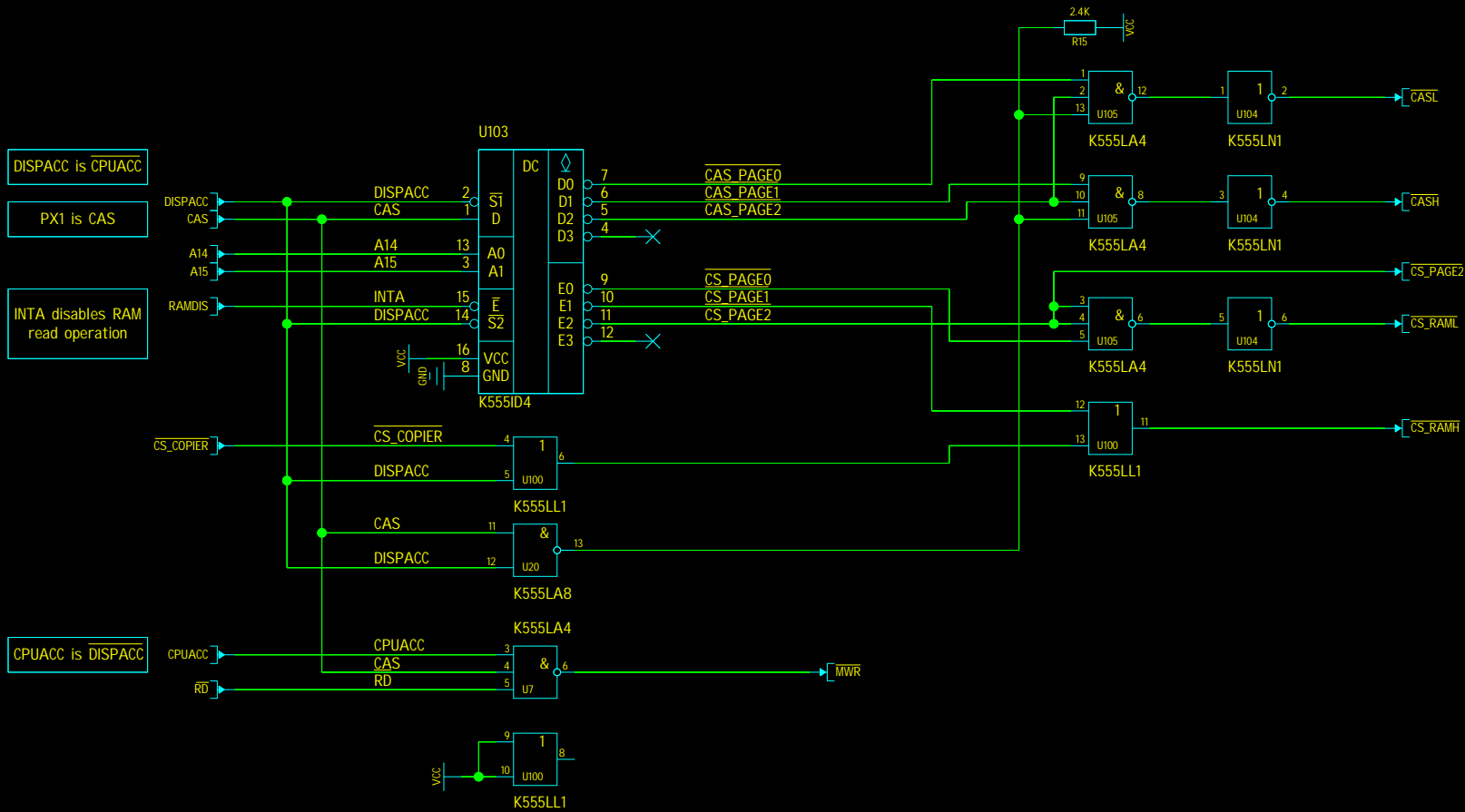


| ADDRESS   |             |
|-----------|-------------|
| C000-C7FF | ROM 0       |
| C800-CFFF | ROM 1       |
| D000-D7FF | ROM 2       |
| D800-DFFF | EXPANSION 1 |
| E000-E7FF | EXPANSION 2 |
| E800-EFFF | EXPANSION 3 |
| F000-F7FF | EXPANSION 4 |
| F800-FFFF | PERIPHERAL  |

| ADDRESS   |                 |
|-----------|-----------------|
| F800-F803 | PPI 1           |
| F900-F903 | PPI 2           |
| FA00-FA03 | TIMER           |
| FB00-FB0F | COPIER          |
| FC00-FCFF | PALETTE (EXP 1) |
| FD00-FDFF | EXPANSION 2     |
| FE00-FEFF | EXPANSION 3     |
| FF00-FFFF | EXPANSION 4     |

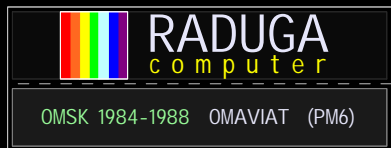
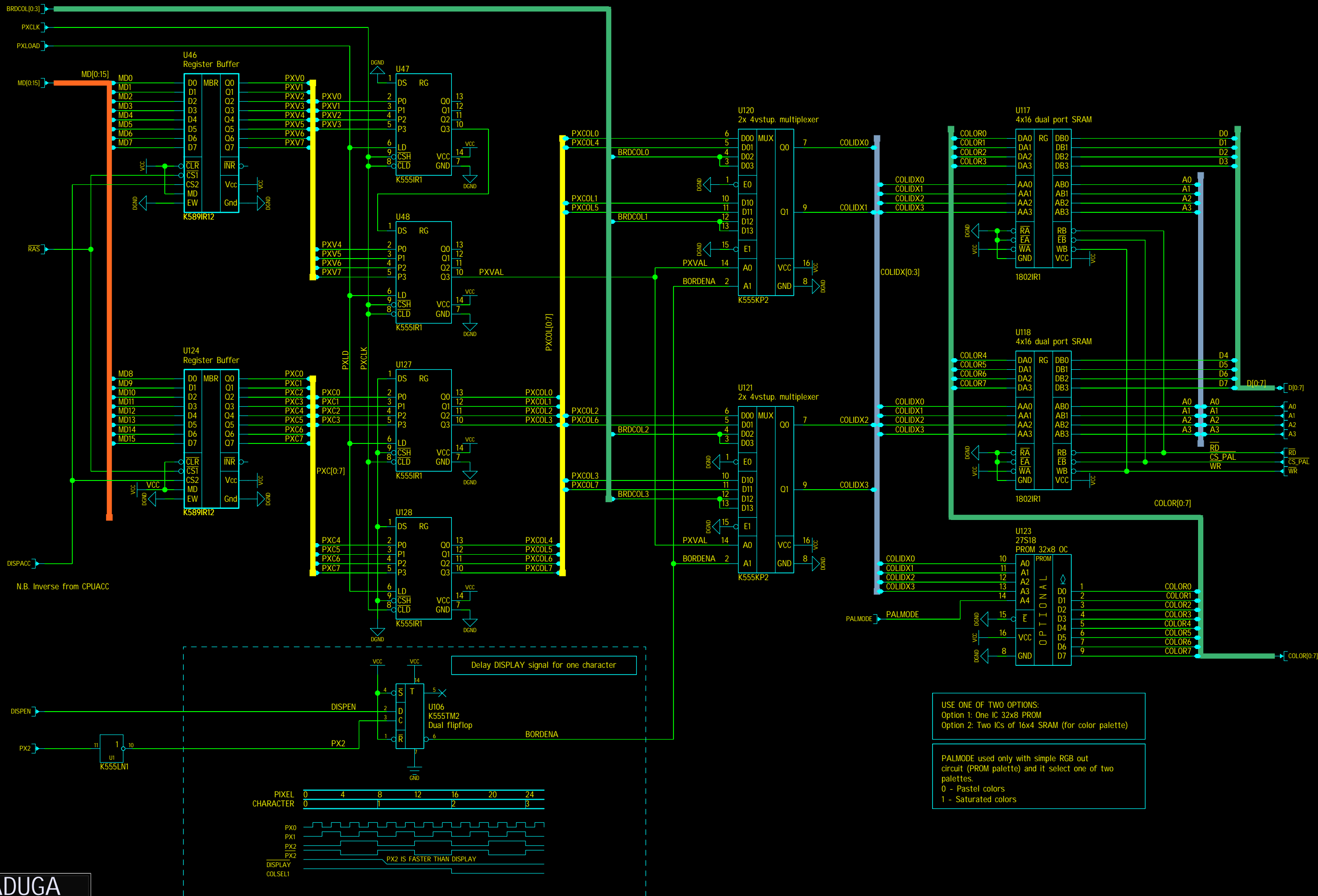






| PAGE | ADDERSS   | CAS1 | CAS2 |
|------|-----------|------|------|
| 3    | C000-FFFF | NO   | NO   |
| 2    | 8000-BFFF | YES  | YES  |
| 1    | 4000-7FFF | NO   | YES  |
| 0    | 0000-3FFF | YES  | NO   |

| PAGE   | ADDERSS   | MEMBUF1 | MEMBUF2 |
|--------|-----------|---------|---------|
| 3      | C000-FFFF | NO      | NO      |
| 2      | 8000-BFFF | YES     | YES     |
| 1      | 4000-7FFF | NO      | YES     |
| 0      | 0000-3FFF | YES     | NO      |
| COPIER | FB00-FB0F | NO      | YES     |



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Graphics 1

REV  
a2

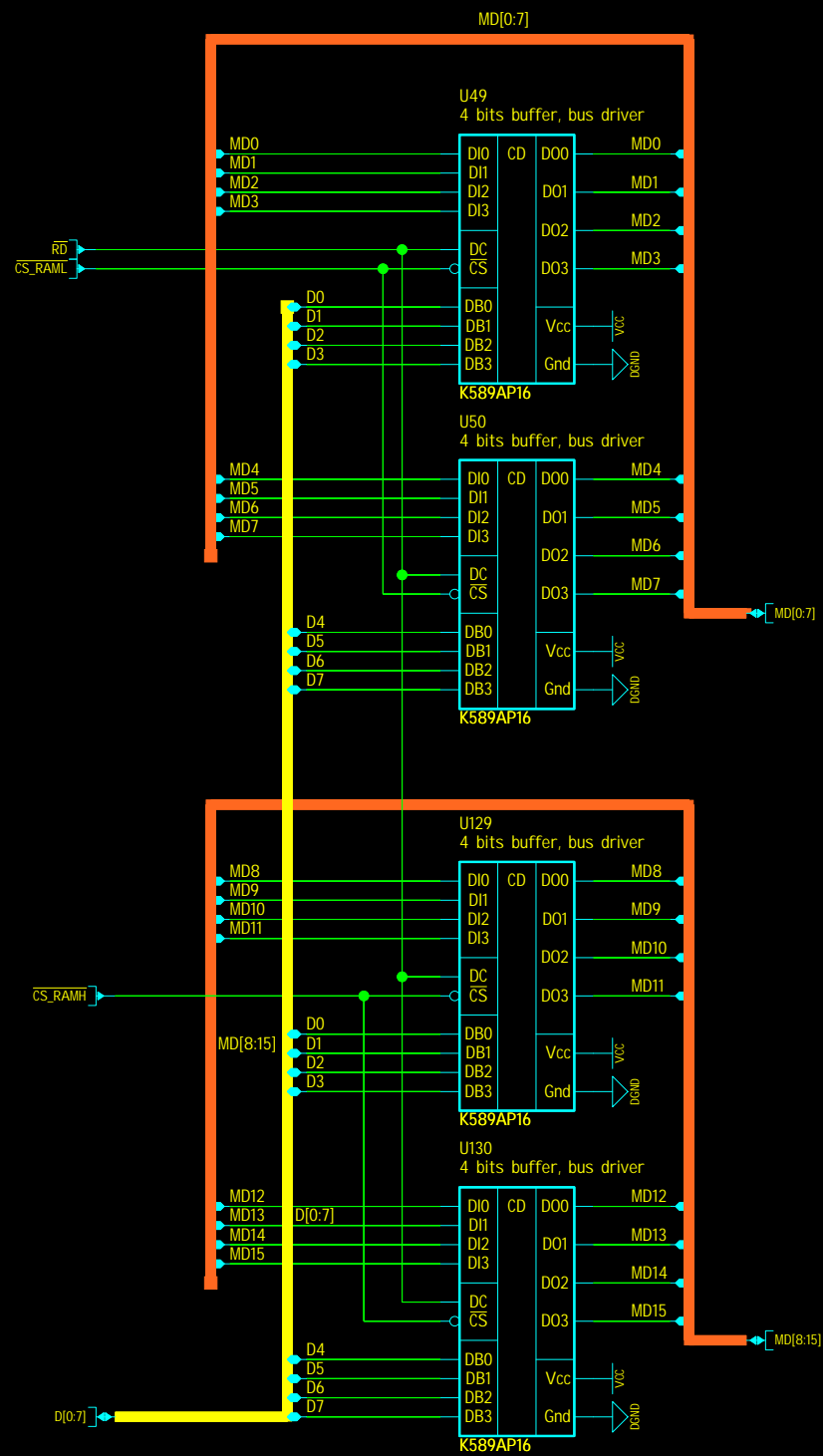
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Sherlock

SHEET  
8 of 1

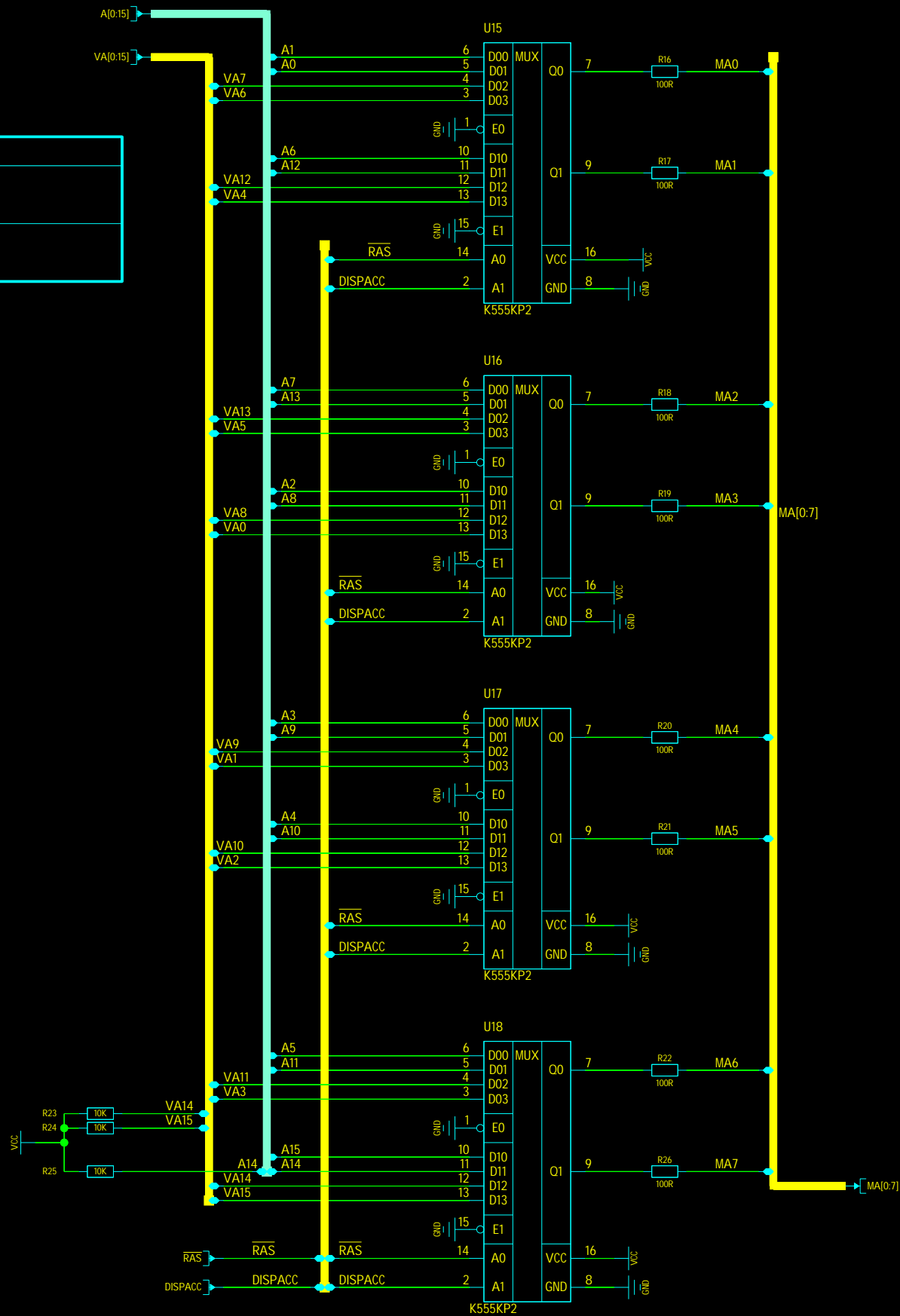
18/04/2019:11:22







| SIGNAL           | VALUE  | FUNCTION                  |
|------------------|--------|---------------------------|
| $\overline{RAS}$ | 0<br>1 | COLUMNS<br>ROWS (REFRESH) |
| DISPACC          | 0<br>1 | CPU<br>CRT                |



### Dynamic Memory Map

RADUGA used manufacturer de-rated half sized memory. That is why with 16 ICs there were only 64KB memory.

| RAM L<br>(PIXELS) |      | RAM H<br>(COLORS) |
|-------------------|------|-------------------|
|                   | FFFF |                   |
| PAGE 1            | C000 | PAGE 1            |
|                   | 8000 | PAGE 0            |
| PAGE 0            | 4000 |                   |
|                   | 0000 |                   |



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Multiplexer 1

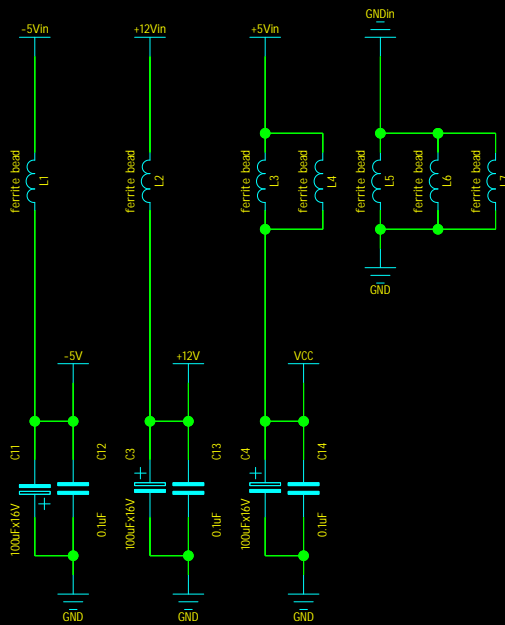
REV  
**a2**

DRAWN BY  
**Sherlock**

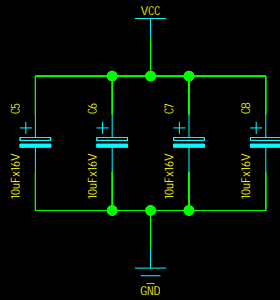
SHEET of  
**11 14**

18/04/2019:11:22

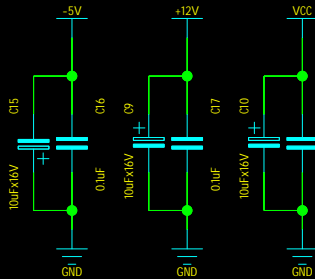
NEAR TO CONNECTOR



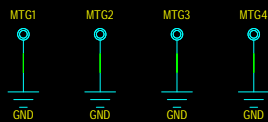
DISTRIBUTE ON THE WHOLE BOARD  
(THANTALIUM)



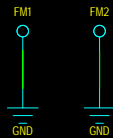
CPU  
(THANTALIUM)



MOUNTING HOLES



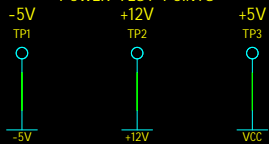
FIDUCIA MARKS



OSCILLOSCOPE



POWER TEST POINTS



RADUGA  
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RETRO COMPUTERS

TITLE

RADUGA Computer

SIZE

A3

DWG NO

Alfa2

Power 1

REV

a2

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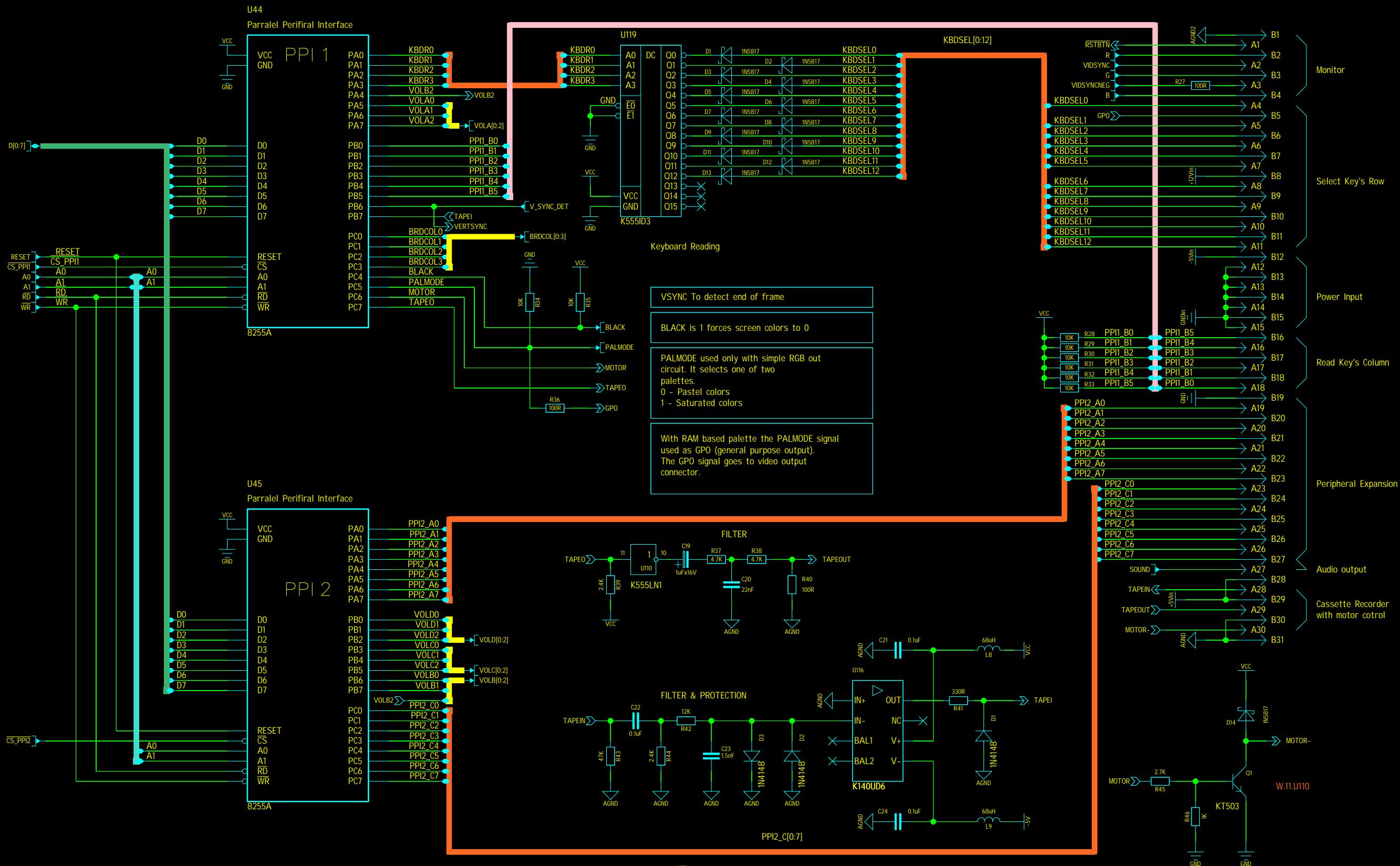
SHEET

12

of

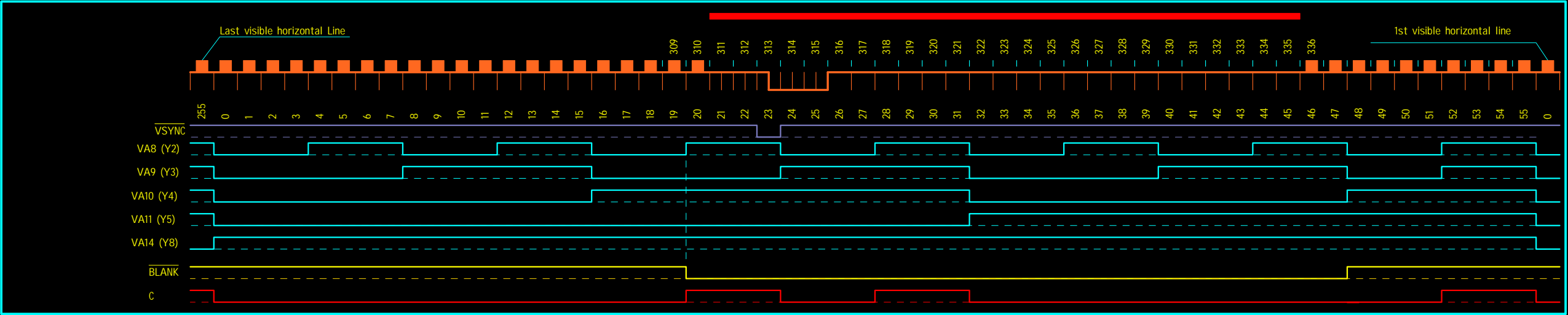
1

18/04/2019:11:22

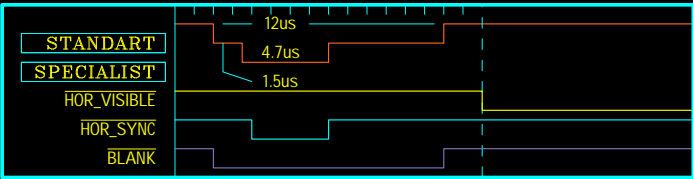




Required vertical timing



Required horizontal timing (only for composed video)

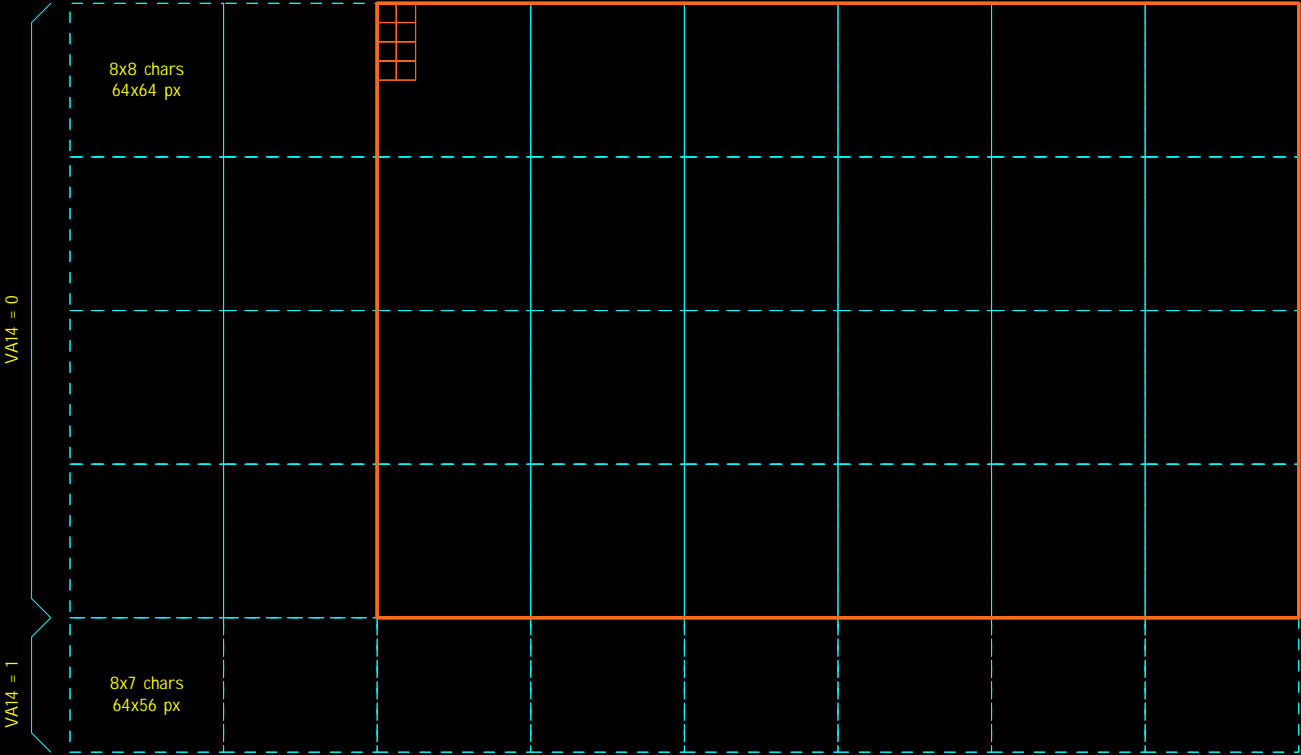
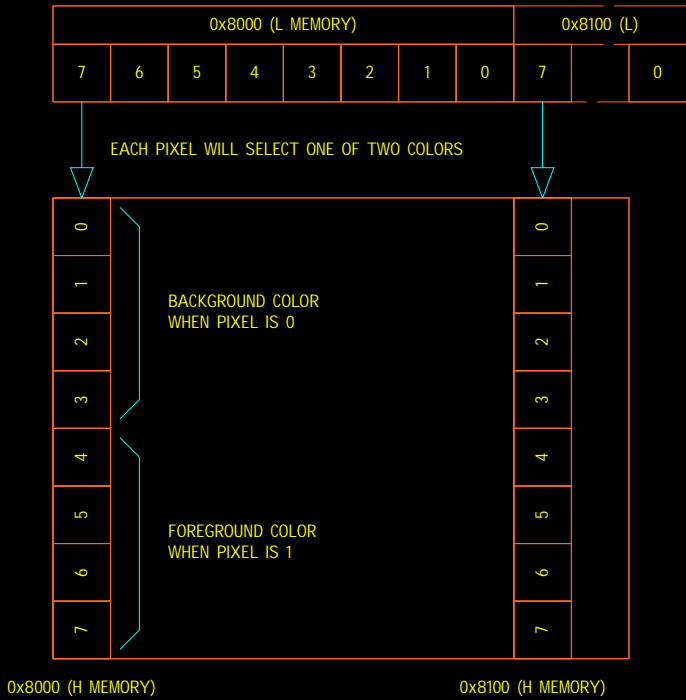


VISIBLE AREA  
48x32 CHARACTERS  
384x256 PIXELS

TOP-LEFT

GRAPHICS DATA IN MEMORY

|        |        |
|--------|--------|
| 0x8000 | 0x8100 |
| 0x8001 | 0x8101 |
| 0x8002 |        |
| 0x8003 |        |
| 0x8004 |        |
| 0x8005 |        |
| 0x8006 |        |
| 0x8007 |        |
| 0x8008 |        |
| .....  |        |

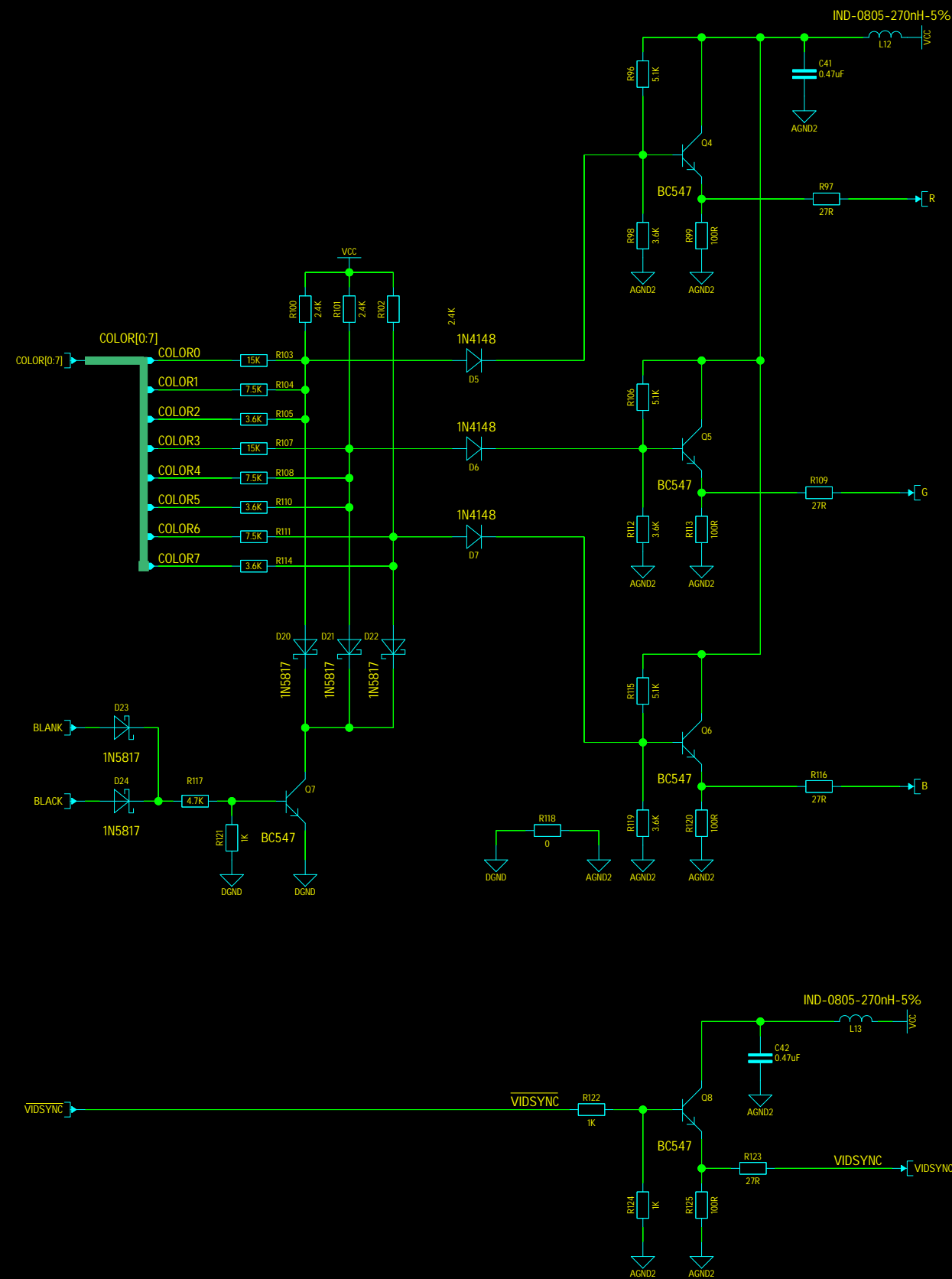




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BLANK forces black picture during SYNC

BLACK forces black picture after boot or by programming PPI1 port

