CHAPTER 5

RESULTS

In the results to be followed, channels and signals are represented with various colors which are listed below.

Name	Colour
Reference signal	Red
Physical Broadcast Channel(PBCH)	Pink
PSS signal	Yellow
SSS signal	Green
Reserved signal	Black
Physical Downlink Control Channel(PDCCH)	Cyan
Physical Hybrid ARQ Indicator Channel(PHICH)	Blue
Physical Control Format Indicator Channel(PCFICH)	Magenta
Physical Downlink Shared Channel(PDSCH)	White

The screenshots of resource grid observed for various combinations of parameters which are selected on the user interface are shown below.

1.User interface

Fig 5.1 The created user interface with drop down menus of various parameters

2. Resource grid for various combination of parameters

Case a:

Channel Bandwidth-1.4MHz

CyclicPrefix-Normal

PHICH Duration-Normal

Mimo Configuration -1X1 MIMO

Control Format Indicator-1

No.of TX Antenna Ports-1

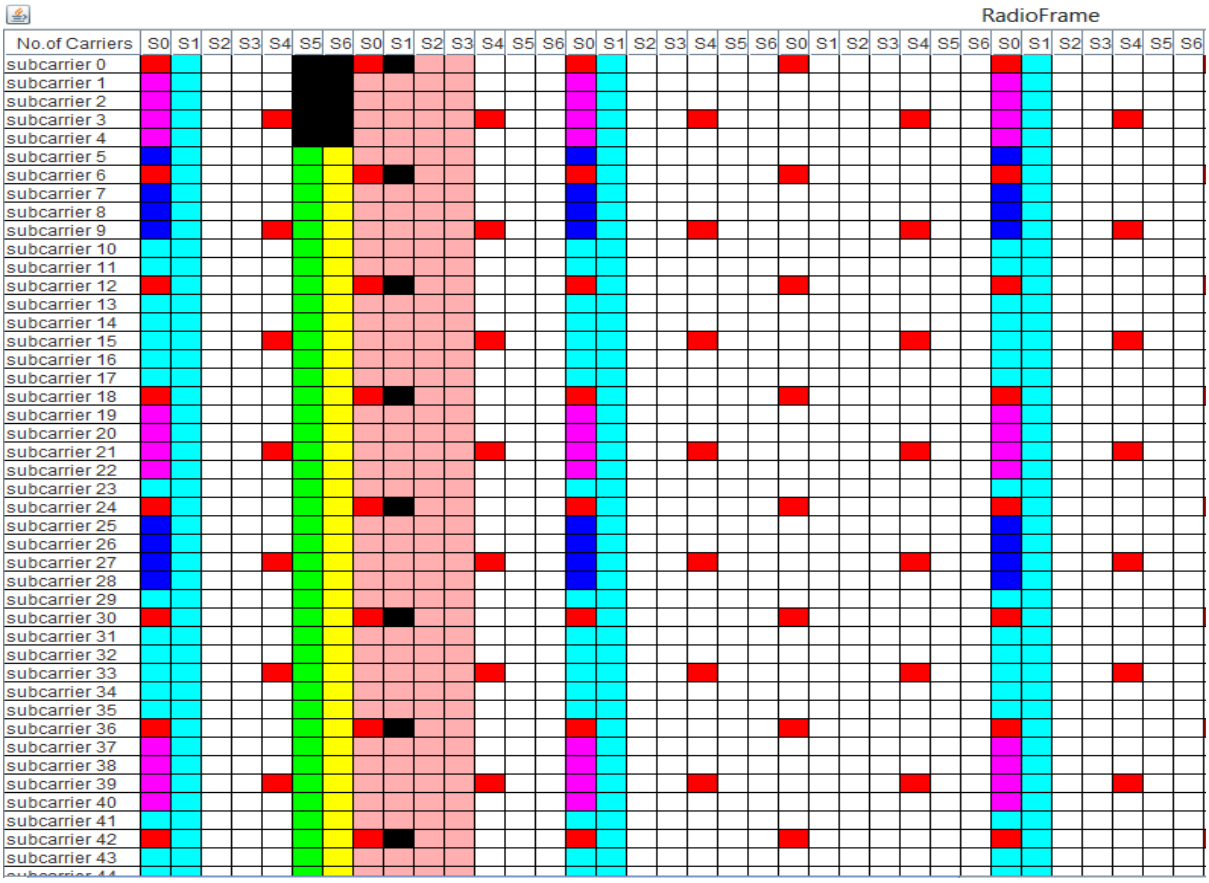


Fig 5.2 Resource grid for case a.

In the preceding figure, the signals and channels are represented with distinct colours and for the parameters chosen it is to be noted that symbols per slot here is 14 for normal cyclic prefix and the number of symbols occupied by PDCCH channels is one more than the selected CFI which is exclusive for the Channel Bandwidth 1.4 MHz .

Case b:

Channel Bandwidth-1.4MHz

CyclicPrefix-Extended

PHICH Duration-Normal

Mimo Configuration-1x1 MIMO

Control Format Indicator-1

TX Antenna Port Number-0

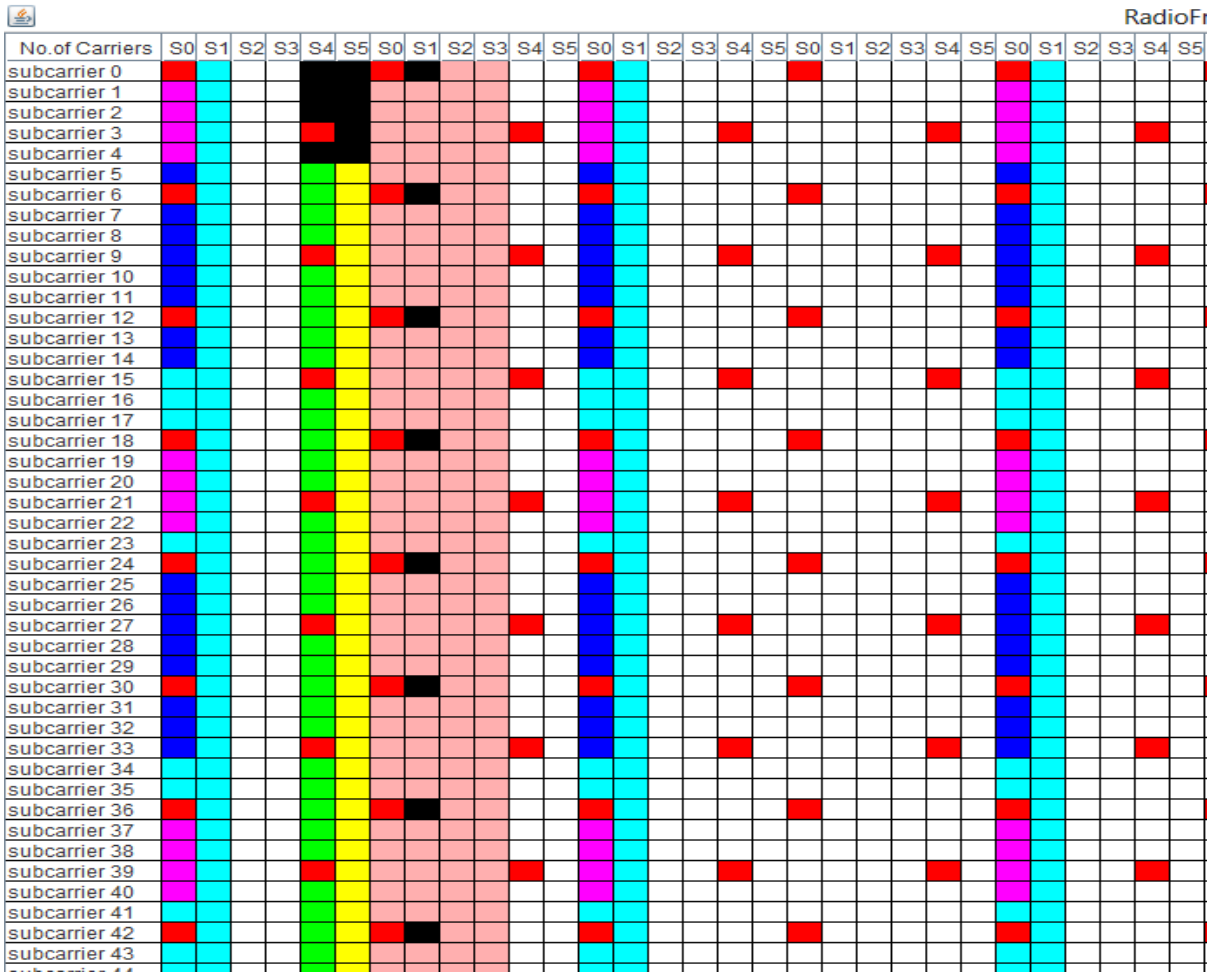


Fig 5.3 Resource grid for case b

In the preceding figure, the signals and channels are represented with distinct colours and for the parameters chosen it is to be noted that symbols per slot here is 12 for extended cyclic prefix .

Case c :

Channel Bandwidth-1.4MHz

CyclicPrefix-Normal

PHICH Duration-Extend

Mimo Configuration-1x1 MIMO

Control Format Indicator-2

TX Antenna Port number-0

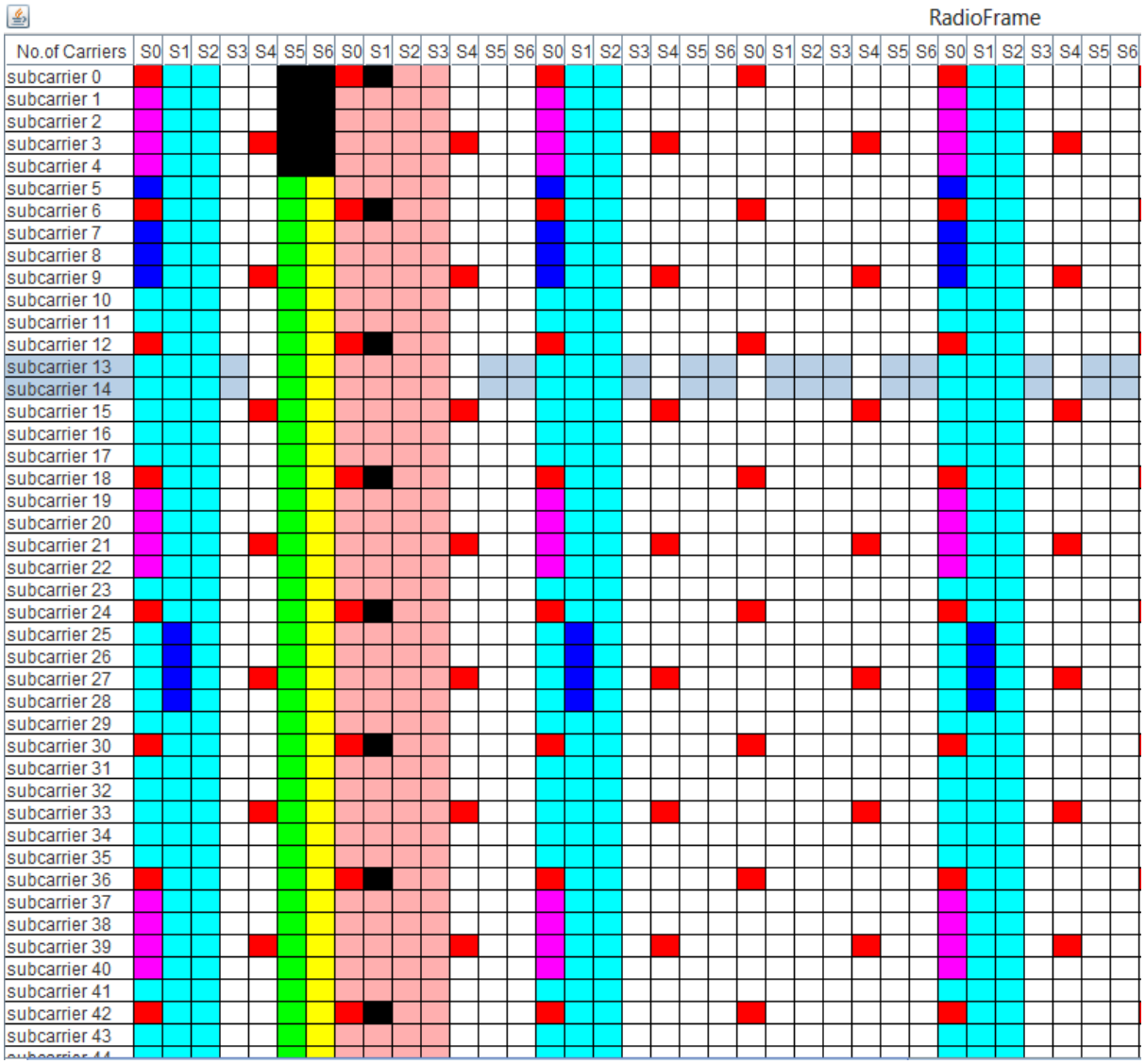


Fig 5.4 Resource grid for case c

In the preceding figure, the signals and channels are represented with distinct colours and for the parameters chosen it is to be noted that for EXTENDED PHICH duration PHICH channels occupy 1,2 & 3 symbols in line with the CFI

Case d :

Channel Bandwidth-3 MHz

CyclicPrefix-Normal

PHICH Duration-Extend

Mimo Configuration-2x2 MIMO

Control Format Indicator-3

TX Antenna Port number-1

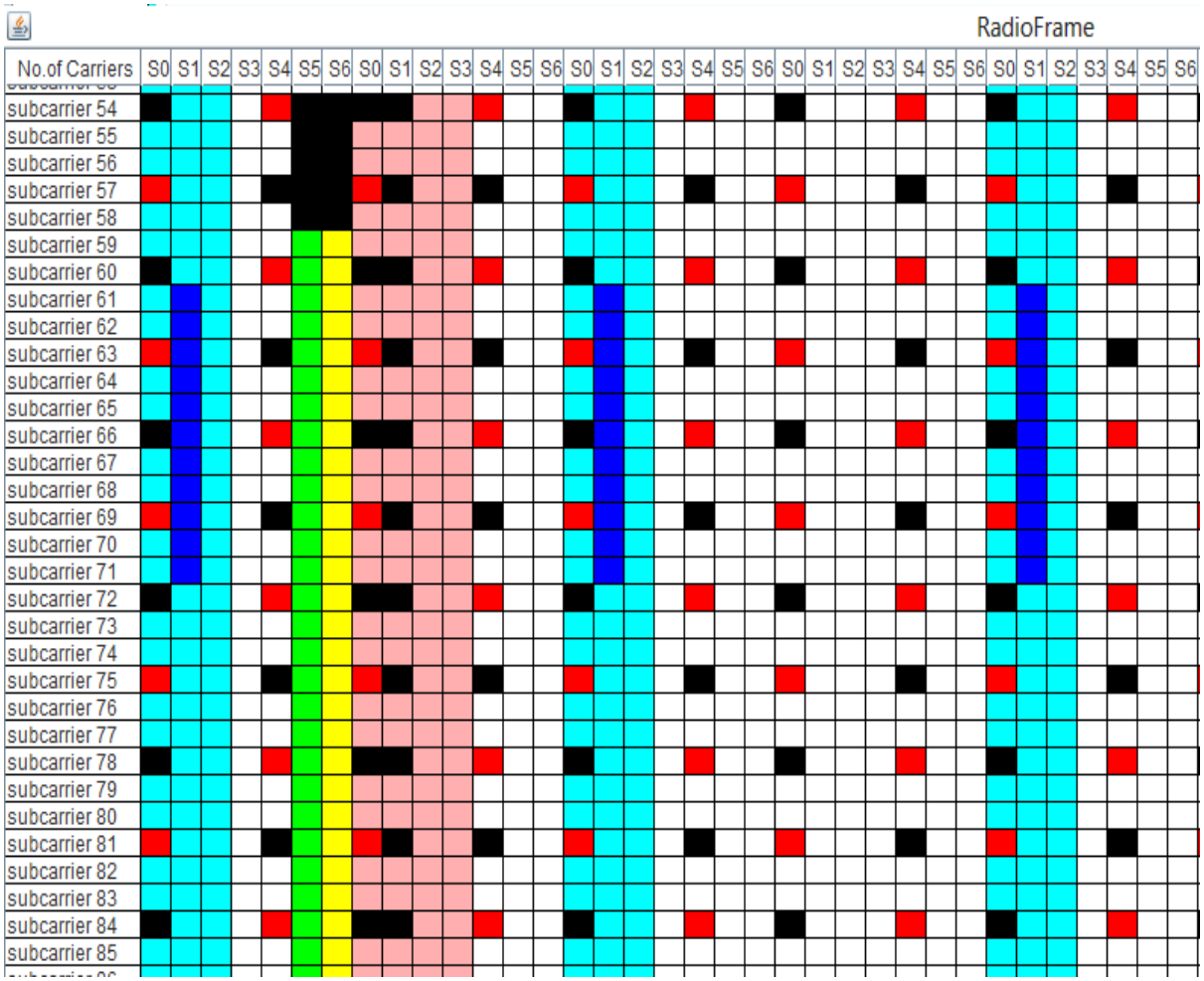


Fig 5.5 Resource grid for case d

In the preceding figure, the signals and channels are represented with distinct colours and for the parameters chosen it is to be noted that for EXTENDED PHICH duration PHICH channels occupy 1,2 & 3 symbols in line with the CFI.

Case e:

Channel Bandwidth-3MHz

CyclicPrefix-Extended

PHICH Duration-Normal

Mimo Configuration-2x2 MIMO

Control Format Indicator-3

TX Antenna Port Number-0

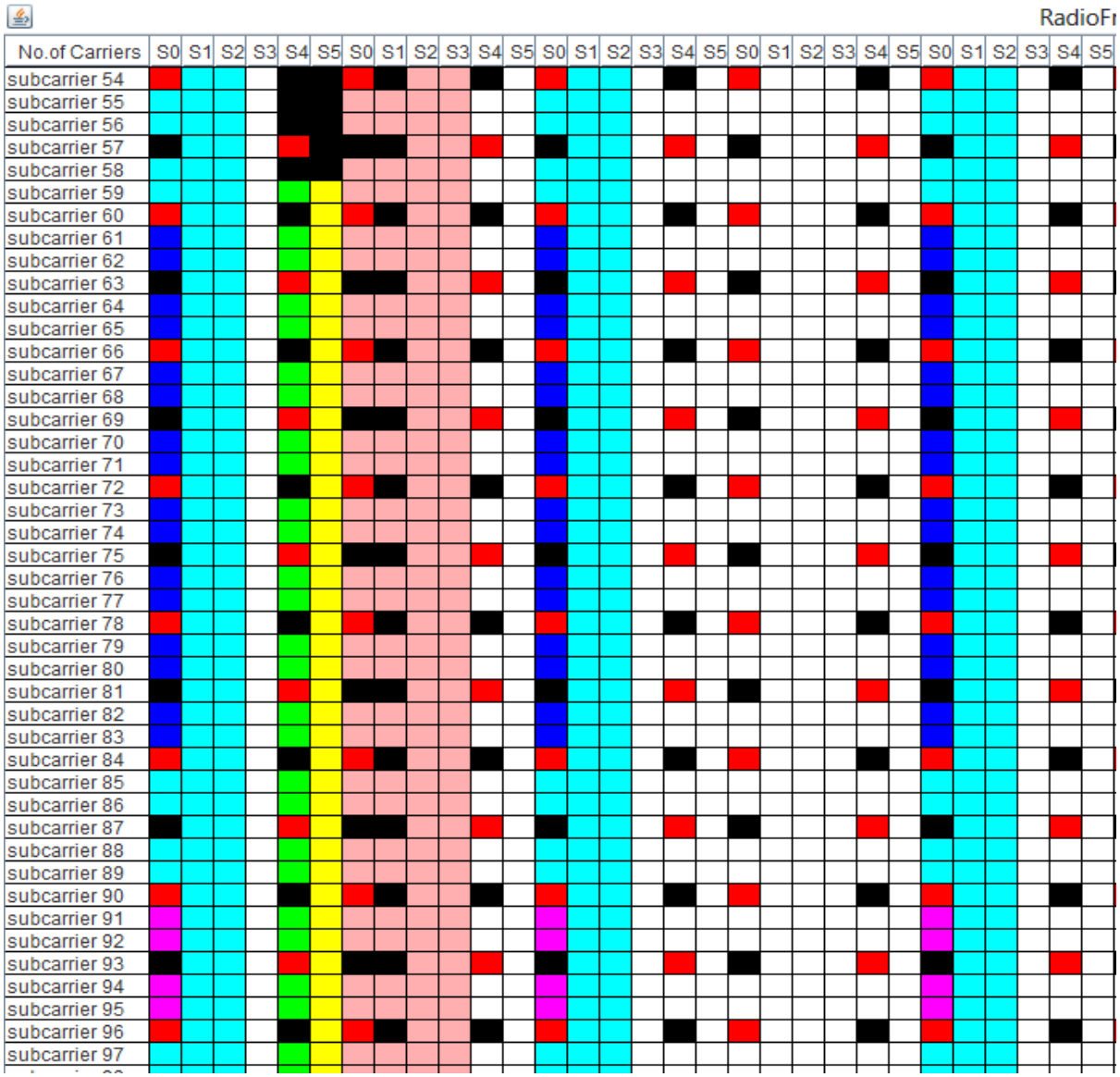


Fig 5.6 Resource grid for case e

In the preceding figure, the signals and channels are represented with distinct colours and for the parameters chosen it is to be noted that PHICH channels occupy only 1st symbol if the PHICH duration is normal and position of reference and reserved signals is dependent on transmission antenna port number for 2*2 MIMO, as the port number changes an inverse opposite placement is observed.

Case f :

Channel Bandwidth- 1.4 MHz

CyclicPrefix- Extended

PHICH Duration- Normal

Mimo Configuration-2x2 MIMO

Control Format Indicator- 3

TX Antenna Port Number-0

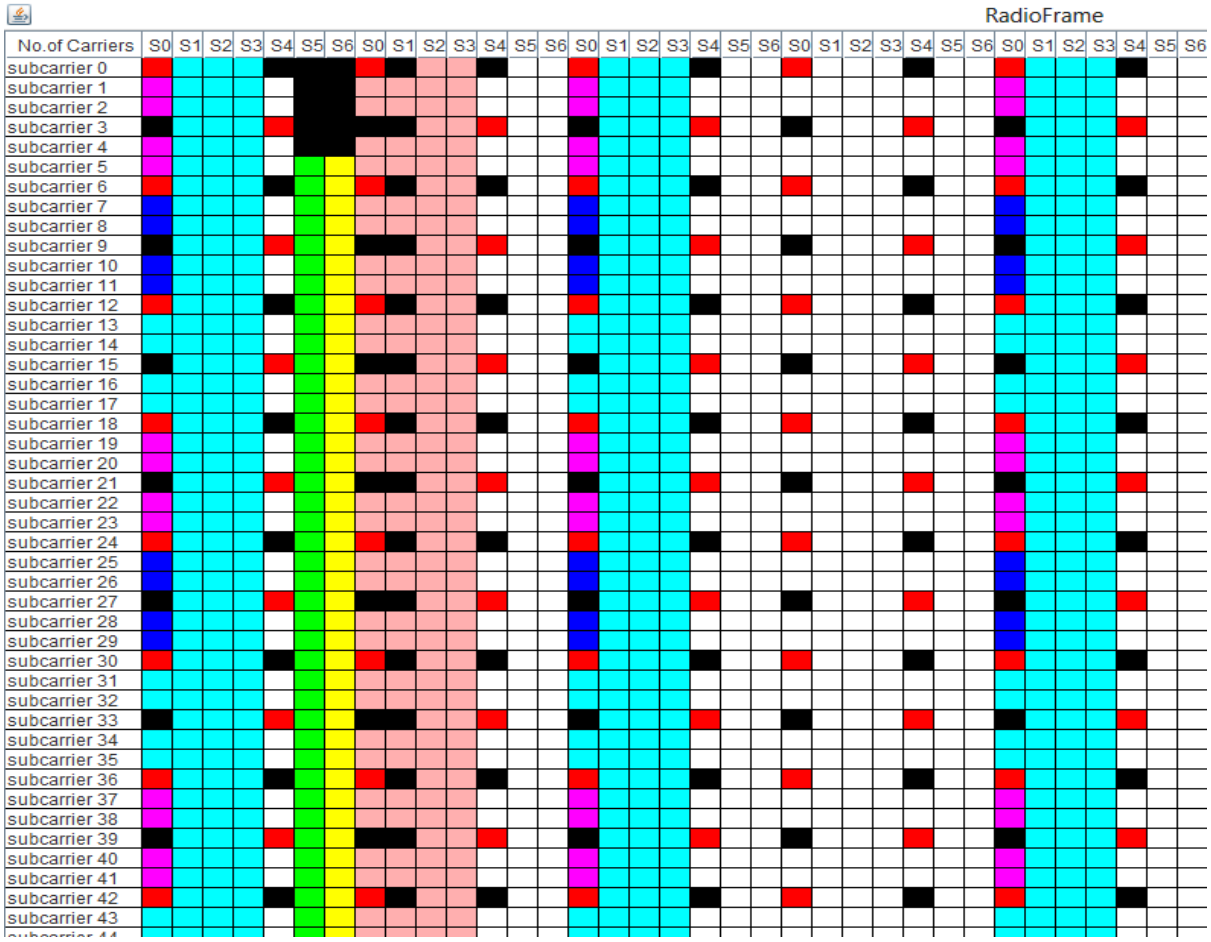


Fig 5.7 Resource grid case f

In the preceding figure, the signals and channels are represented with distinct colours and for the parameters chosen it is to be noted that of all the cases these set of input parameters will result in the least number of PDSCH channels which is 52% of the total resource elements.

Case g :

Channel Bandwidth- 20 MHz

CyclicPrefix-Normal

PHICH Duration- Normal

Mimo Configuration-1x1 MIMO

Control Format Indicator- 1

TX Antenna Port Number-0

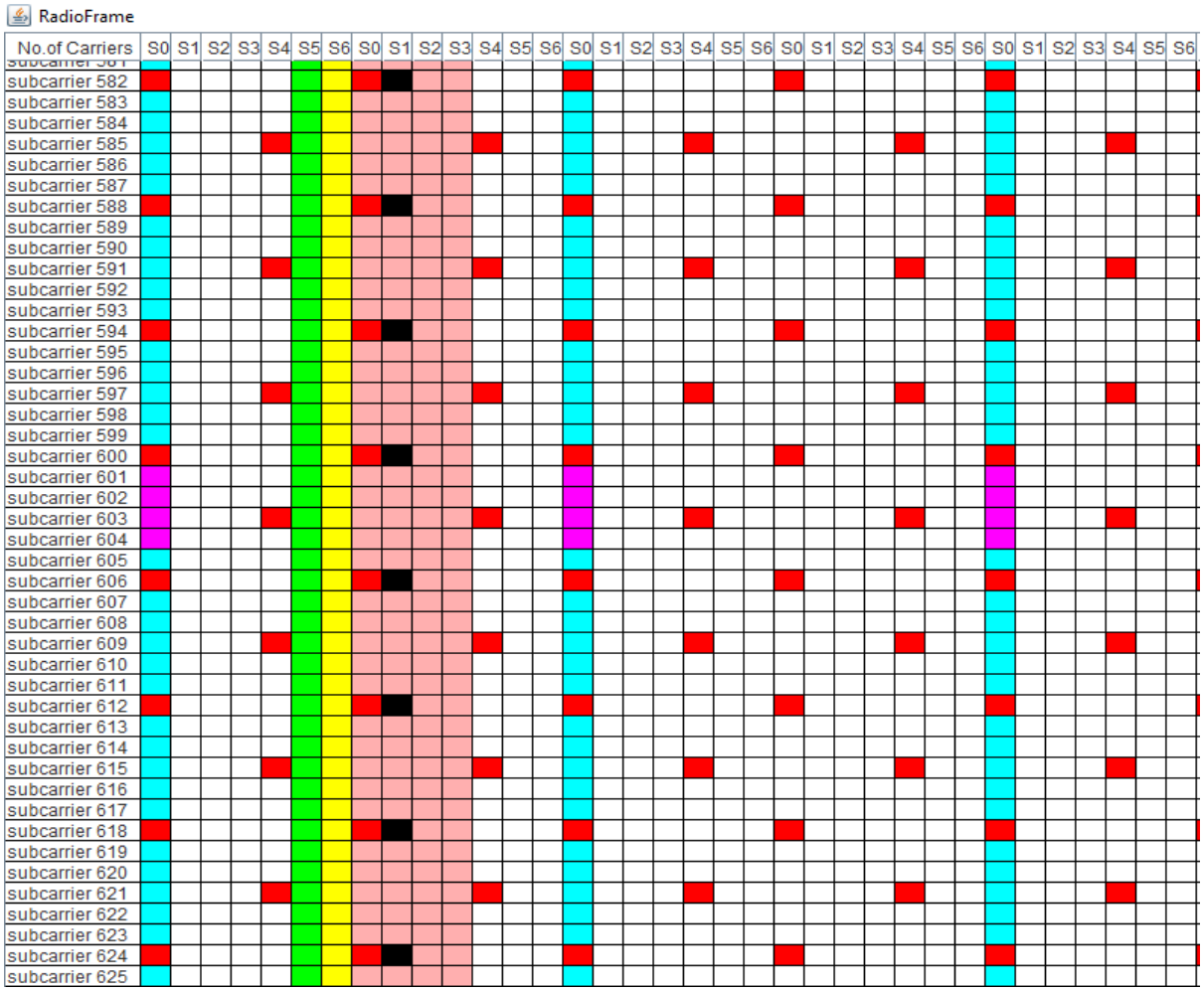
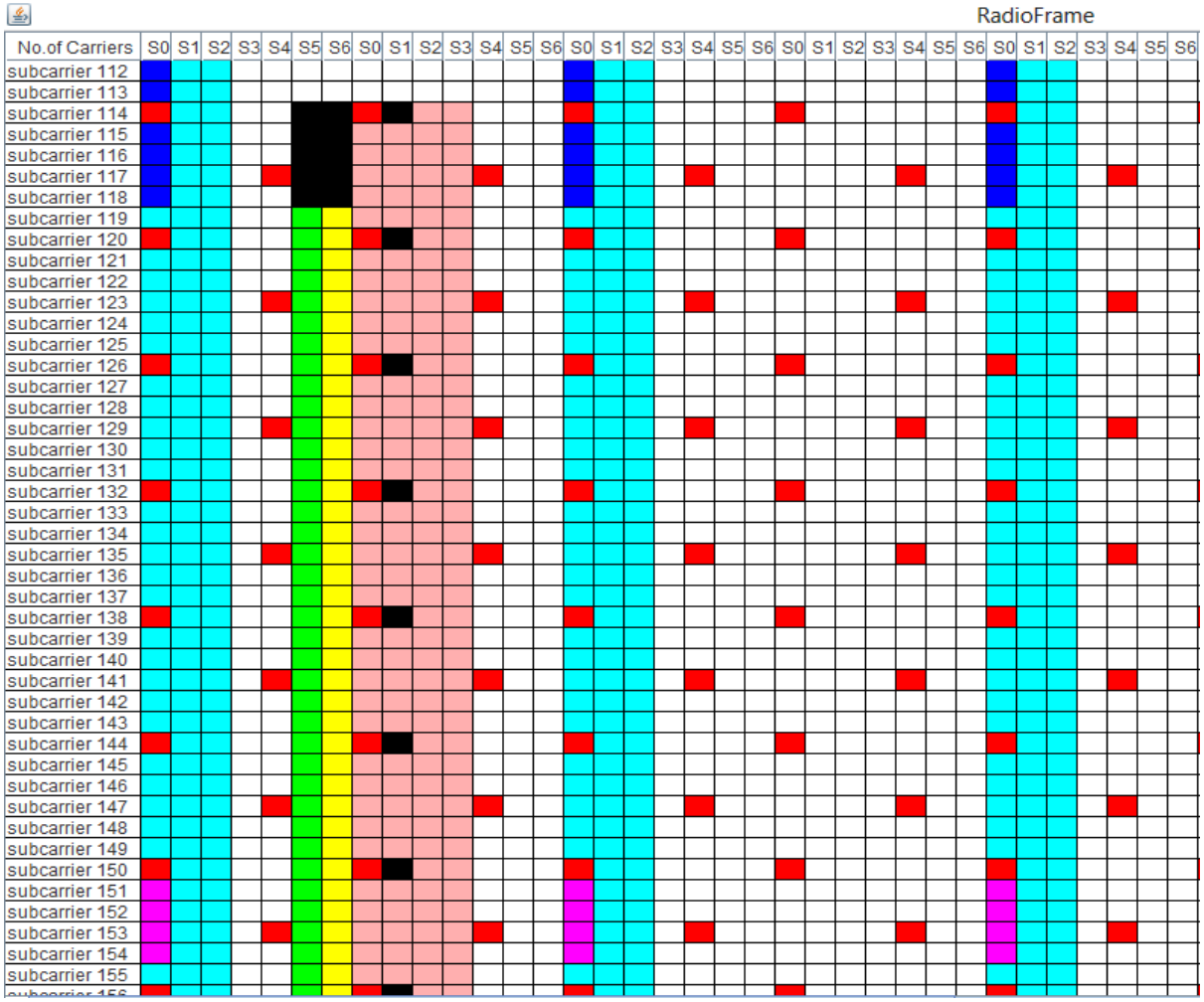


Fig 5.8 Resource grid case g

In the preceding figure, the signals and channels are represented with distinct colours and for the parameters chosen it is to be noted that of all the cases these set of input parameters will result in the maximum number of PDSCH channels which is 88.9% of the total resource elements.

Case h :

Channel Bandwidth-5MHz **CyclicPrefix**-Normal



PHICH Duration-Normal **Mimo Configuration**-1x1 MIMO

Control Format Indicator-3 **TX Antenna Port Number**-0

Fig 5.9 Resource grid for case h

In the preceding figure, the signals and channels are represented with distinct colours and for the parameters chosen it is to be noted that for here channel bandwidth 5 MHz PBCH channels and SSS & PSS signals occupy the mid 72 subcarriers of the respective symbols which is the same for any channel bandwidth.