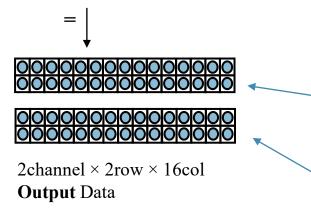


1 input channel × 2 output channel  $\times$  1row  $\times$  1col Weight



(a) A simple example. Two output channels are calculated by instruction 3 and 7.

DDR On-Chip Cache							
0x0000	Input	0x4000	Input				
		:::					
0x1000	Weight	0x5000	Weight				
:::		:::					
0x2000	Output	0x6000	Output				
:::		:::					

(b) Address map of DDR and Cache

		Туре	Address1	Address2	Address3	Workload	Virtual	SaveID
	1	LOAD_D	0x0000	0x4000	•	0x20	2'b00	1
	2	LOAD_W	0x1000	0x5000		0x1	2'b00	1
	3	CALC_F	0x4000	0x6000	0x5000	0x20	2'b00	1
Ī	4	SAVE	0x2000	0x6000	-	0x20	2'b01	1
	5	LOAD_D	0x0000	0x4000	-	0x20	2'b10	1
	6	LOAD_W	0x1001	0x5000		0x1	2'b00	1
	7	CALC_F	0x4000	0x6020	0x5000	0x20	2'b00	1
	8	SAVE	0x2000	0x6000	•	0x40	2'b00	1

(c) Input instruction sequence

			Туре	Address1	Address2	Address3	Workload
CalcBlob:		1	LOAD_D	0x0000	0x4000	-	0x20
Output 1	$\dashv$	2	LOAD_W	0x1000	0x5000	-	0x1
Output 1		3	CALC_F	0x4000	0x6000	0x5000	0x20
CalcBlob:		4	LOAD_W	0x1001	0x5000	-	0x1
Output 2	)	5	CALC_F	0x4000	0x6020	0x5000	0x20
Output 2		6	SAVE	0x2000	0x6000	-	0x40
(1) Executed accuse as when a interment							

(d) Executed sequence when no interrupt. Virtual Instructions are deleted.

	Type	Address1	Address2	Address3	Workload				
1	LOAD_W	0x1000	0x5000	-	0x1				
2	LOAD_D	0x0000	0x4000	-	0x20				
3	CALC_F	0x4000	0x6000	0x5000	0x20				
4	SAVE	0x2000	0x6000	-	0x20				
	HIGH-PRIORITY CNN								
5	LOAD_D	0x0000	0x4000	-	0x20				
6	LOAD_W	0x1001	0x5000	-	0x1				
7	CALC_F	0x4000	0x6020	0x5000	0x20				
8	SAVE	0x2020	0x6020	-	0x20				
	2 3 4 5 6 7	1 LOAD_W 2 LOAD_D 3 CALC_F 4 SAVE 5 LOAD_D 6 LOAD_W 7 CALC_F	1 LOAD_W 0x1000 2 LOAD_D 0x0000 3 CALC_F 0x4000 4 SAVE 0x2000 HIGH 5 LOAD_D 0x0000 6 LOAD_W 0x1001 7 CALC_F 0x4000	1 LOAD_W 0x1000 0x5000 2 LOAD_D 0x0000 0x4000 3 CALC_F 0x4000 0x6000 4 SAVE 0x2000 0x6000 HIGH-PRIORIT 5 LOAD_D 0x0000 0x4000 6 LOAD_W 0x1001 0x5000 7 CALC_F 0x4000 0x6020	1 LOAD_W 0x1000 0x5000 - 2 LOAD_D 0x0000 0x4000 - 3 CALC_F 0x4000 0x6000 0x5000 4 SAVE 0x2000 0x6000 - HIGH-PRIORITY CNN 5 LOAD_D 0x0000 0x4000 - 6 LOAD_W 0x1001 0x5000 - 7 CALC_F 0x4000 0x6020 0x5000				

(e) Executed sequence when interrupt occurs. Virtual Instructions (Blue) are executed. Normal SAVE (Red) is modified.