HE/HE Mapping Notes

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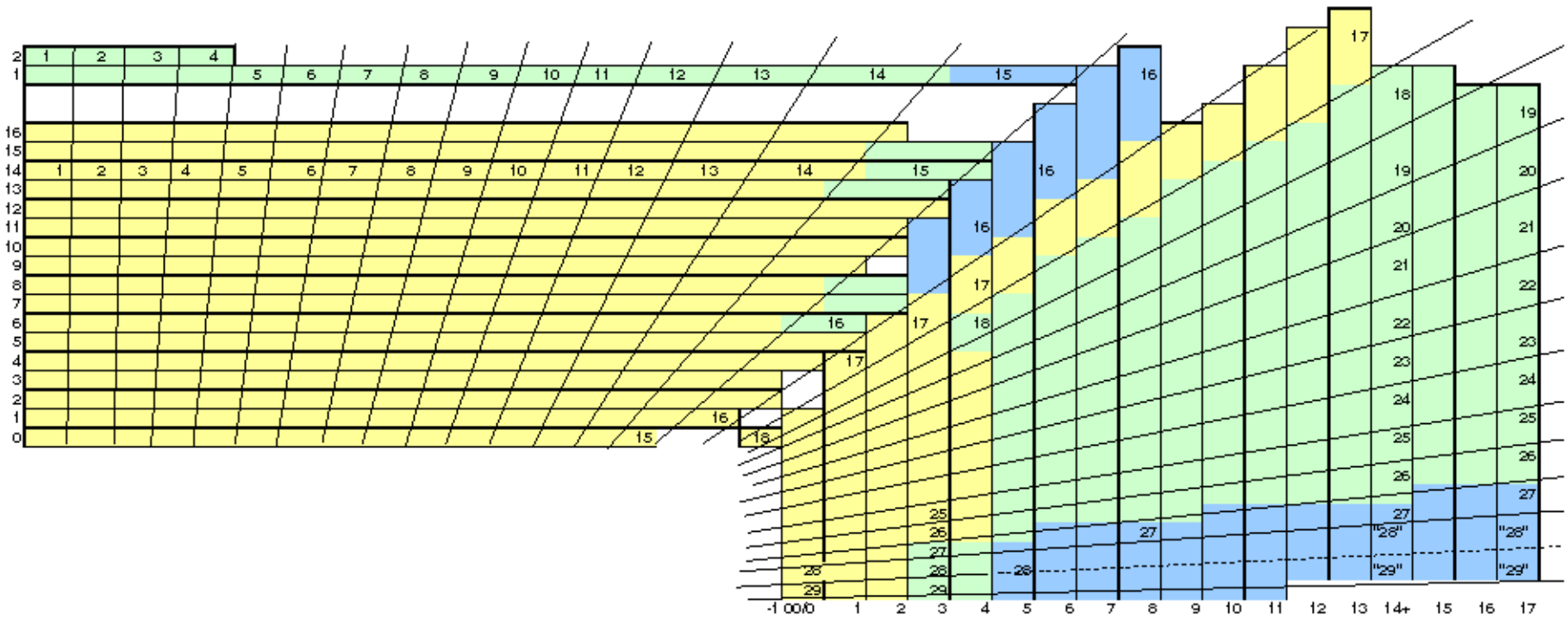
HB/HE/HO Towers (Randy's xls)



Note: we have 27f,27m,27r
28f,28m,28r
29f,29m

28r is the big tower covering 28+29

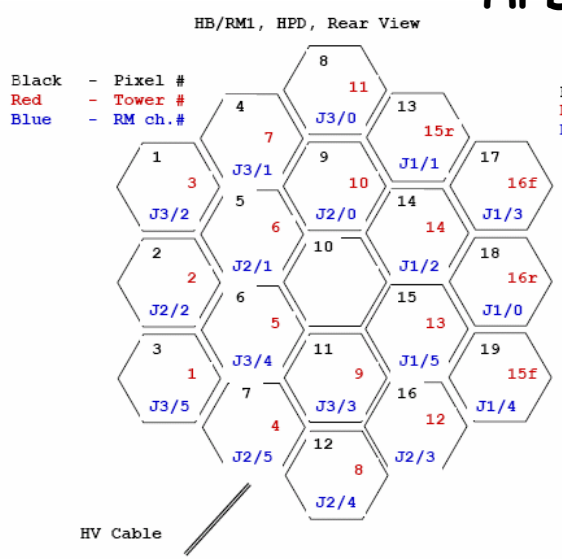
HB Signals (Sergey's cookie doc)

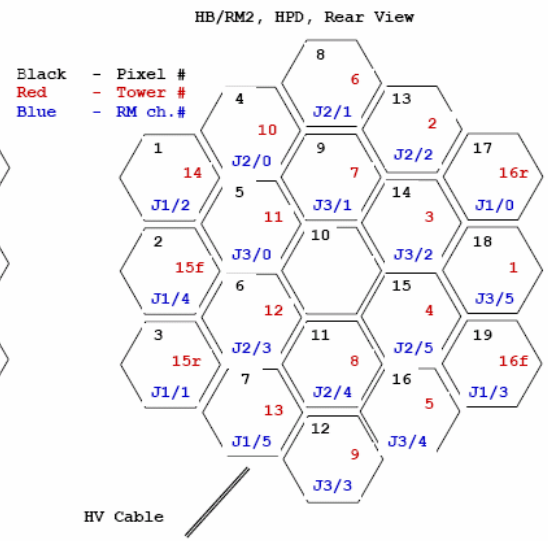
RM

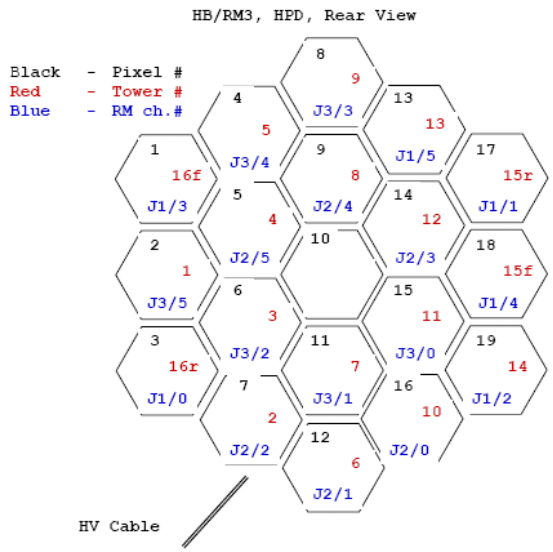
Digital Fiber #	HB Towers
1	16r, 15r, 14
2	15f, 13, 16f
3	10, 6, 2
4	8, 4, 12
5	11, 7, 3
6	5, 1, 9

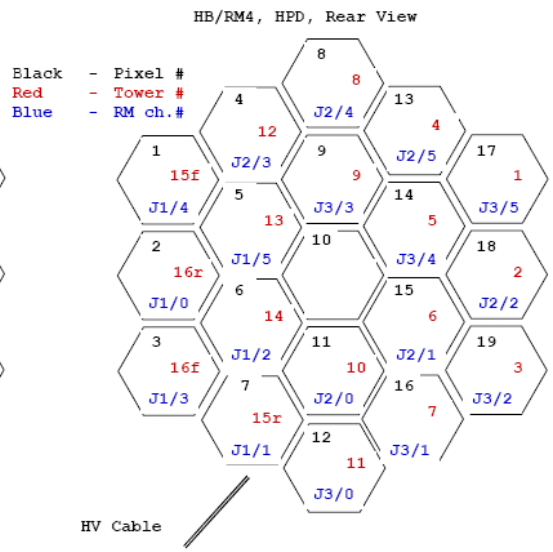
f – front section; r – rear section

HPDs









HE Signals (Sergey's cookie doc)

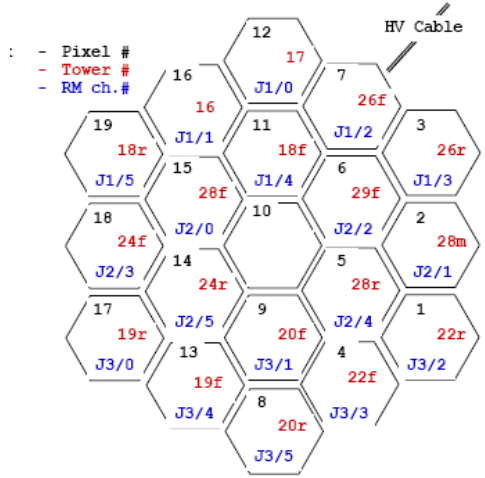
RMs

Digital Fiber #	Towers	
	HE RM1, 4	HE RM2, 3
1	17, 16, 26f	17, 16, 25f
2	18f, 18r, 26r	18f, 18r, 25r
3	28f, 28m, 29f	27f, 27m, 29m
4	28r, 24r, 24f	27r, 23r, 23f
5	19r, 20f, 22r	19r, 20f, 21r
6	19f, 20r, 22f	19f, 20r, 21f

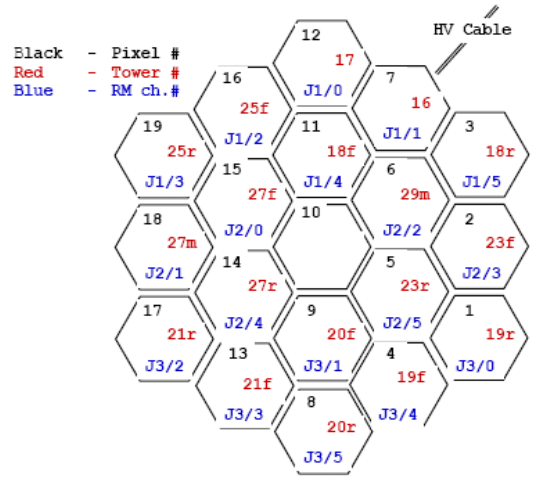
f – front section; r – rear section

HPD

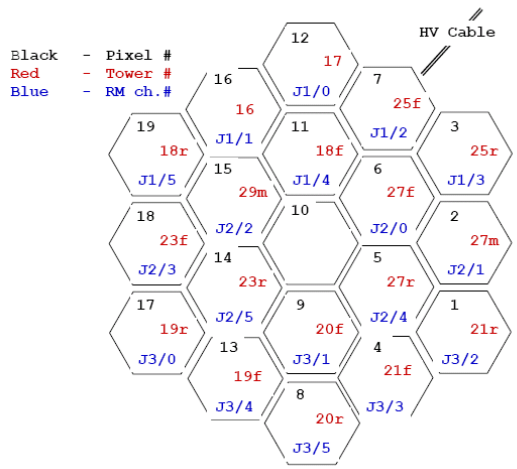
HE/RM1, HPD, Rear View



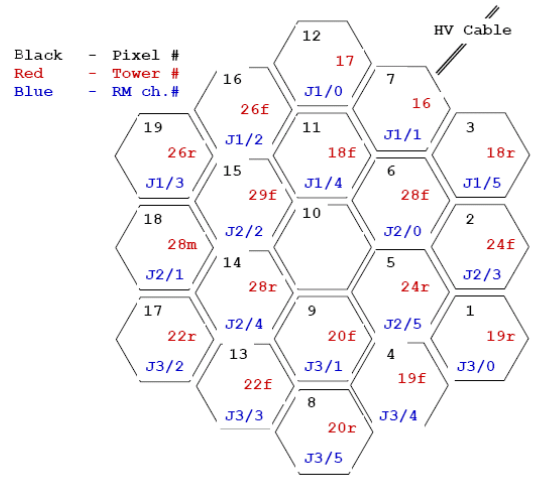
HE/RM2, HPD, Rear View



HE/RM3, HPD, Rear View



HE/RM4, HPD, Rear View



3 HTR (144 ch., 2 RBX) cover 20° of HB&HE (+ or -)

HTR 1 HB only	HTR 2 HB+HE mix	HTR 3 HE only
10,6,2 8,4,12 11,7,3 5,1,9 ×4 phi	16r,15r,14 15f,13,16f 17,16,26f 18f,18r,26r 16r,15r,14 15f,13,16f 17,16,25f 18f,18r,25r ×2 phi	19r,20f,22r 19f,20r,22f 28r,24r,24f 28f,28m,29f 19r,20f,21r 19f,20r,21f 27r,27m,29m 27r,23r,23f ×2 phi

We have 2 x 18 = 36 groups of these (= 108 HTR), 9 crates of 12 HTR.

HTR 1 Detail

		fiber: signals	SLB
FPGA 1	ϕ1	1: 5,1,9 2: 10,6,2	1 , 2, 1, 2, 1, 2, 1, 2
	ϕ2	3: 5,1,9 4: 10,6,2	5 , 6, 5, 6, 5, 6, 5, 6
	ϕ3	5: 5,1,9 6: 10,6,2	9 , 10, 9, 10, 9, 10, 9, 10
	ϕ4	7: 5,1,9 8: 10,6,2	
FPGA 2	ϕ1	1: 8,4,12 2: 11,7,3	3 , 4, 3, 4, 3, 4, 3, 4
	ϕ2	3: 8,4,12 4: 11,7,3	7 , 8, 7, 8, 7, 8, 7, 8
	ϕ3	5: 8,4,12 6: 11,7,3	11 , 12, 11, 12, 11, 12, 11, 12
	ϕ4	7: 8,4,12 8: 11,7,3	

HTR 2 Detail

		fiber: signals	HTR Sums
FPGA 1	ϕ1	1: 16r,15r,14	15f+15r
		2: 15f,13,16f	16f+16r+16
	ϕ2	3: 16r,15r,14	(26f+26r)/2
		4: 15f,13,16f	18f+18r
	ϕ1	5: 17,16,26f	15f+15r
		6: 18f,18r,26r	16f+16r+16
	ϕ2,ϕ3	7: 17,16,26f	(26f+26r)/2
		8: 18f,18r,26f	18f+18r
FPGA 2	ϕ3	1: 16r,15r,14	15f+15r
		2: 15f,13,16f	16f+16r+16
	ϕ4	3: 16r,15r,14	(25f+25r)/2
		4: 15f,13,16f	18f+18r
	ϕ1,ϕ3	5: 17,16,25f	15f+15r
		6: 18f,18r,25r	16f+16r+16
	ϕ3,ϕ4	7: 17,16,25f	(25f+25r)/2
		8: 18f,18r,25f	18f+18r

SLB*

13 , 14, 13, 14, 13, 14, 13, 14
15, 16, 15, 16, 15, 16, 15, 16
17 , 18, 17, 18, 17, 18, 17, 18
25 , 26, 25 , 26, 25, 26, 25, 26

*Note: signals on each SLB from both FPGAs

HTR 3 Detail

		fiber: signals
FPGA 1	$\phi1$	1: 19r,20f,22r
		2: 19f,20r,22f
	$\phi2,\phi1$	3: 19r,20f,21r
		4: 19f,20r,21f
	$\phi3$	5: 19r,20f,22r
		6: 19f,20r,22f
	$\phi4,\phi3$	7: 19r,20f,21r
		8: 19f,20r,21f
FPGA 2	$\phi1$	1: 28f,28m,29f
		2: 28r,24r,24f
	$\phi3$	3: 28f,28m,29f
		4: 28r,24r,24f
	$\phi1$	5: 27f,27m,29m
		6: 27r,23r,23f
	$\phi3$	7: 27f,27m,29m
		8: 27r,23r,23f

HTR Sums

19f+19r
19f+19r
19f+19r
19f+19r
20f+20r
20f+20r
20f+20r
20f+20r
(21f+21r)/2
(21f+21r)/2
(22f+22r)/2
(22f+22r)/2

(23f+23r)/2
(23f+23r)/2
(24f+24r)/2
(24f+24r)/2
(27f+27m)/2
(27f+27m)/2
(28f+28m+28r+29f+29m)/2
(28f+28m+28r+29f+29m)/2

SLB*

19 , 20, 19, 20, 19, 20, 19, 20

21, 22, 21, 22, 21, 22, 21, 22

*Note: signals in towers 21-28 are divided by 2 and sent twice

23 , 24, 23, 24, 23, 24, 23, 24

27 , 28, 27, 28, 27, 28, 27, 28

Mapping for One RM

				QIE								HTR	
det	wedge	phi	tower	fib.	ch	RM	pixel	card	QIE	crate	HTR	fib	FPGA
HB-	1	71	16r	1	0	1	18	1	0	1	2	1	1
HB-	1	71	15r	1	1	1	13	1	1	1	2	1	1
HB-	1	71	14	1	2	1	14	1	2	1	2	1	1
HB-	1	71	15f	2	0	1	19	1	3	1	2	2	1
HB-	1	71	13	2	1	1	15	1	4	1	2	2	1
HB-	1	71	16f	2	2	1	17	1	5	1	2	2	1
HB-	1	71	10	3	0	1	9	2	0	1	1	2	1
HB-	1	71	6	3	1	1	5	2	1	1	1	2	1
HB-	1	71	2	3	2	1	2	2	2	1	1	2	1
HB-	1	71	8	4	0	1	12	2	3	1	1	1	2
HB-	1	71	4	4	1	1	7	2	4	1	1	1	2
HB-	1	71	12	4	2	1	16	2	5	1	1	1	2
HB-	1	71	11	5	0	1	8	3	0	1	1	2	2
HB-	1	71	7	5	1	1	4	3	1	1	1	2	2
HB-	1	71	3	5	2	1	1	3	2	1	1	2	2
HB-	1	71	5	6	0	1	6	3	3	1	1	1	1
HB-	1	71	1	6	1	1	3	3	4	1	1	1	1
HB-	1	71	9	6	2	1	11	3	5	1	1	1	1

HB/HE Crates

Crate 1 -10º to 30º	Crate 2 30º to 70º	Crate 3 70º to 110º
Crate 4 110º to 150º	Crate 5 150º to 190º	Crate 6 190º to 230º
Crate 7 230º to 270º	Crate 8 270º to 310º	Crate 9 310º to 350º

Each crate is a 40º slice of HE- / HB- / HB+ / HE+.