

# DBBC2 V107 DDC firmware

Uwe Bach

MPIfR

04.10.2018, TOG, Granada

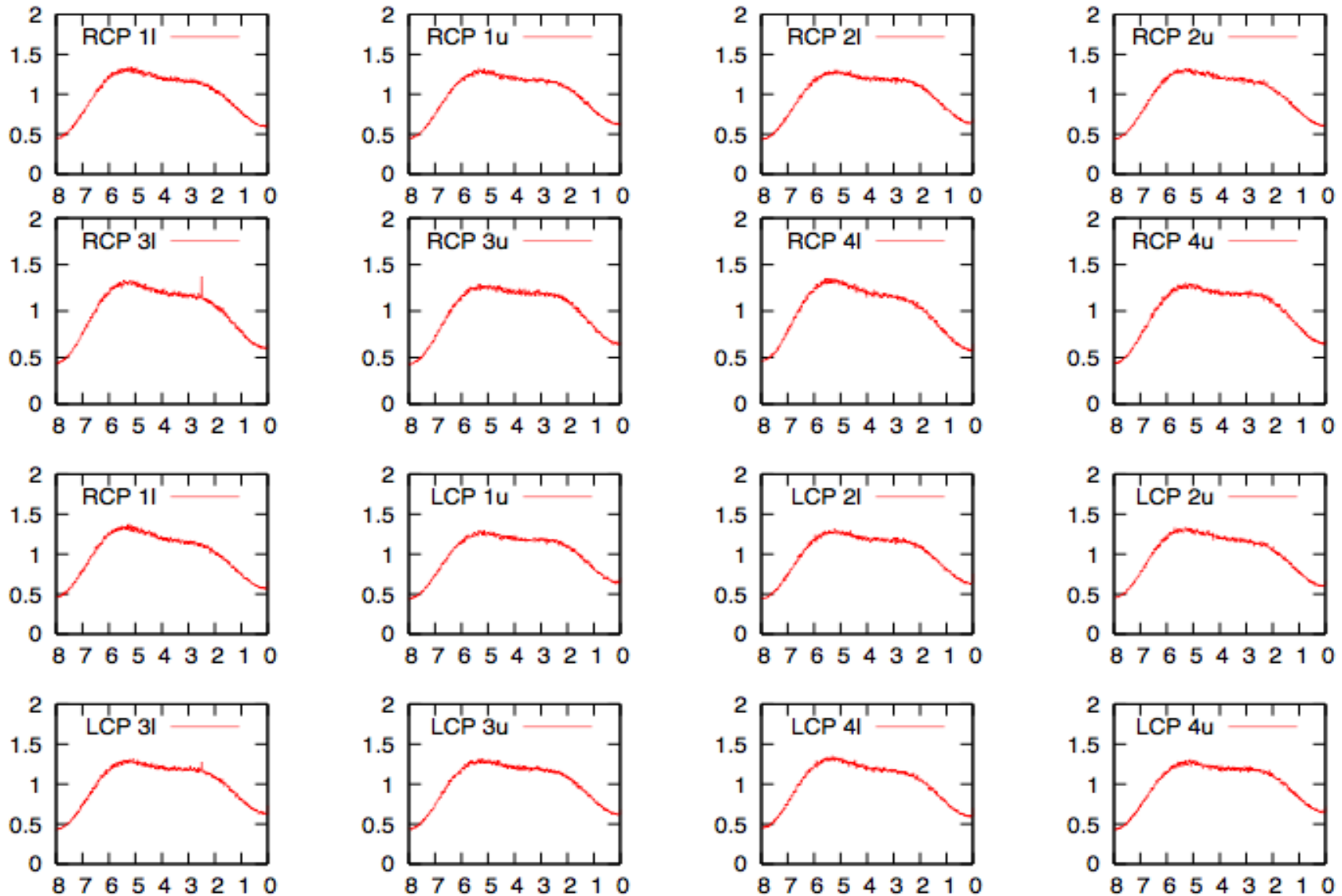
# Test settings

- Noise source providing 0-1000 MHz noise, single pol.
- DDC V107 using vsi\_clk=64 MHz.
- DBBC2 with 8 BBCs USB and LSB at 32.0, 16.0, and 8.0 MHz with different tunings.
- Fila10G synced to 64 MHz clock outputting VDIF\_8000-2048-16-2, -1024-16-2, -512-16-2.
- Flexbuff recorder and analysis using m5bstate, m5spec and zerocorr.

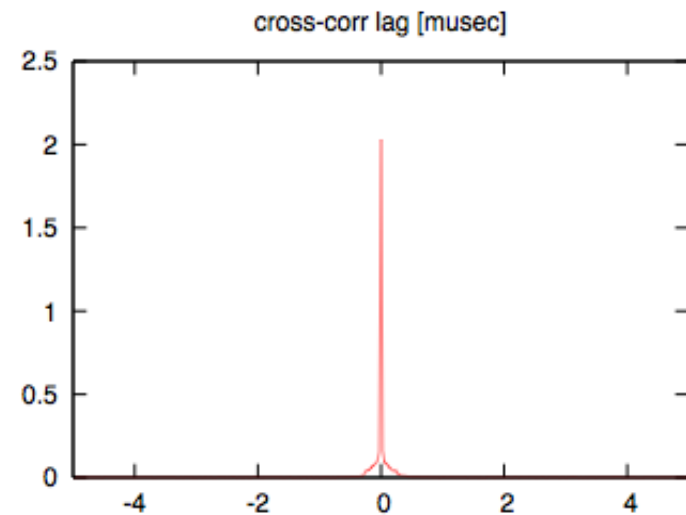
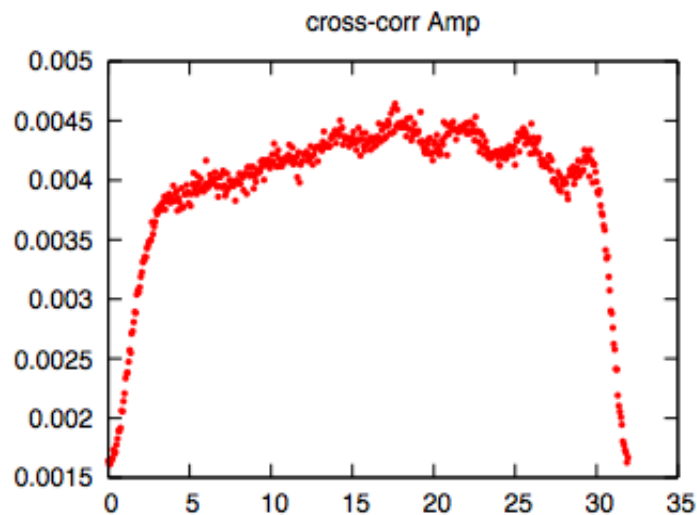
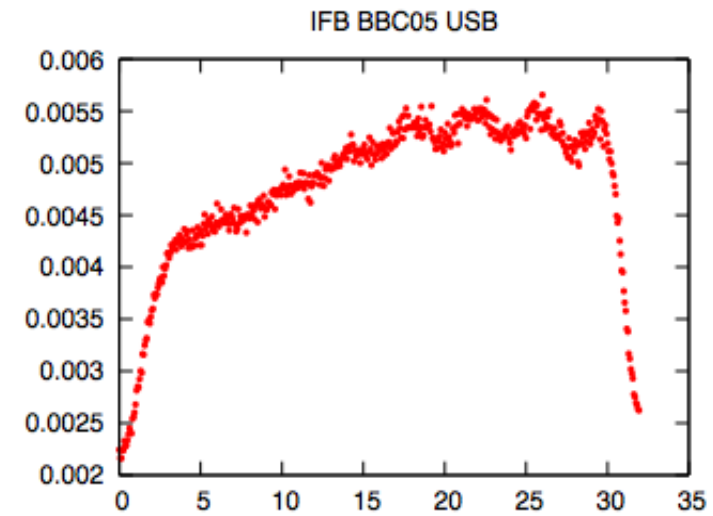
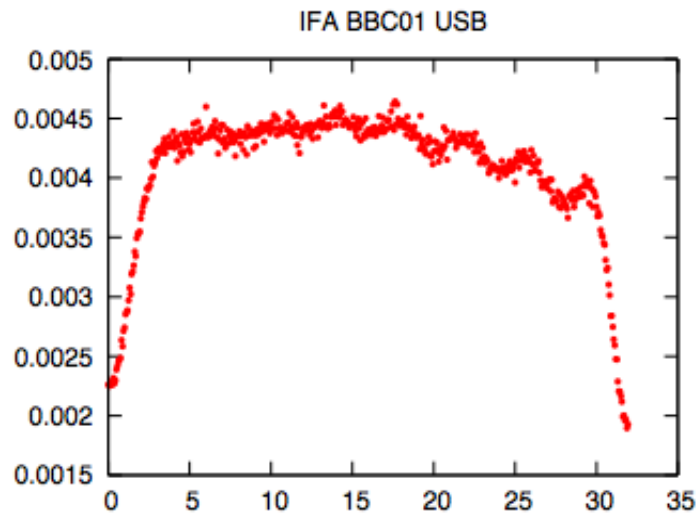




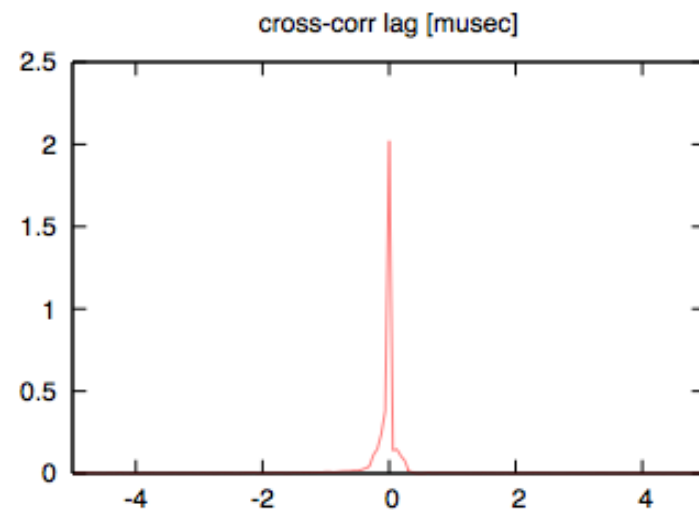
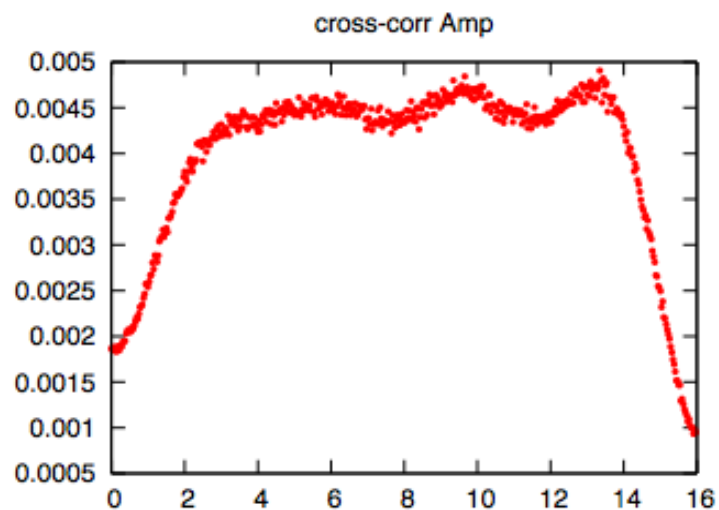
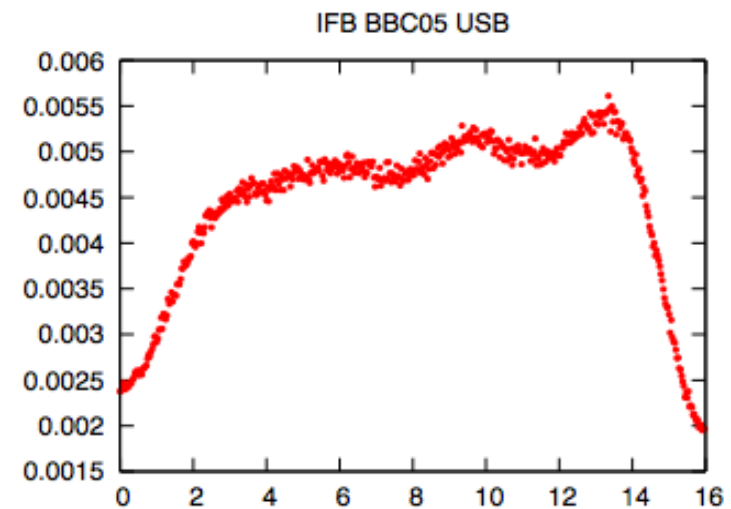
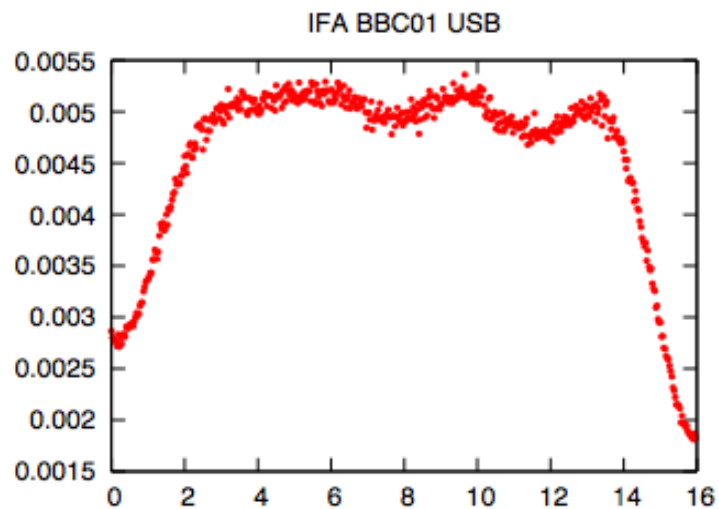
# Auto-correlation of 8 MHz BBCs



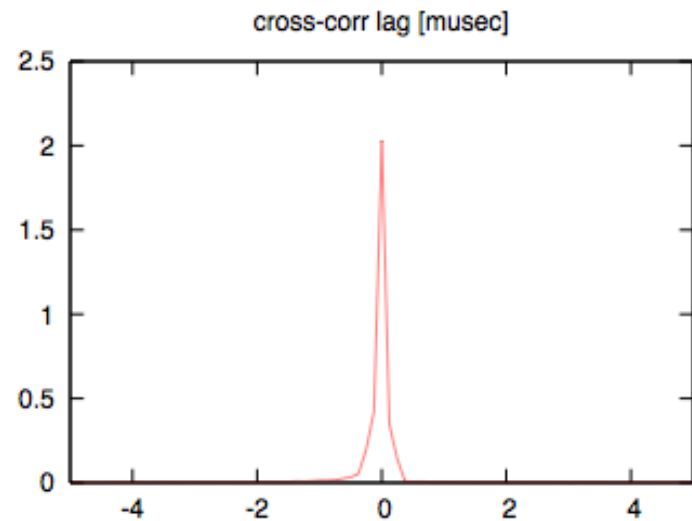
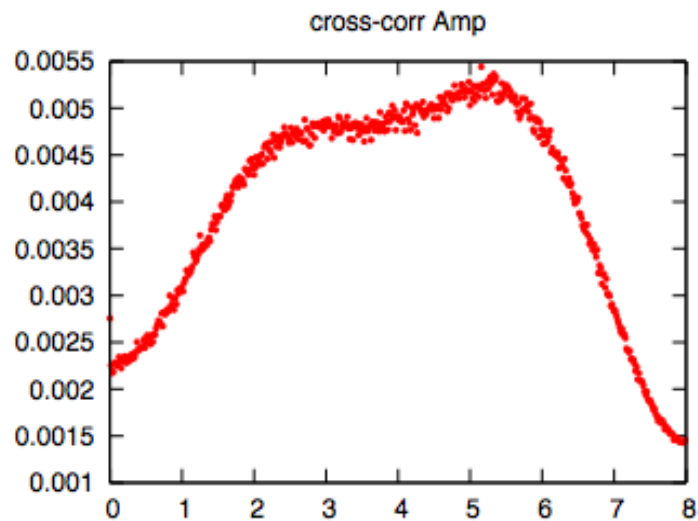
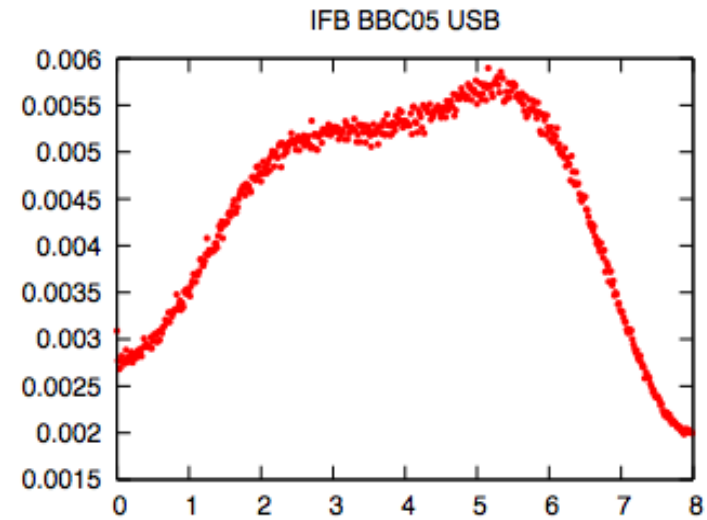
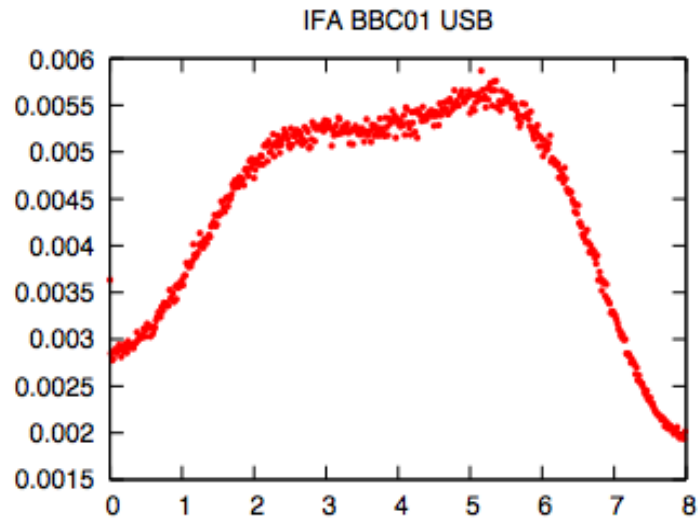
# Cross-correlation BBC01-05 32 MHz



# Cross-correlation BBC01-05 16 MHz



# Cross-correlation BBC01-05 8 MHz





# Bit-statistics of 32 MHz BBCs

format = VDIF\_8000-2048-16-2 = 3

	Ch	--	-	+	++	--	-	+	++	gfact
0	191040	309831	308293	190836	19.1	31.0	30.8	19.1	0.96	
1	174976	324716	324236	176072	17.5	32.5	32.4	17.6	1.02	
2	175583	325004	324664	174749	17.6	32.5	32.5	17.5	1.03	
3	175747	326291	324930	173032	17.6	32.6	32.5	17.3	1.03	
4	156048	344005	342977	156970	15.6	34.4	34.3	15.7	1.11	
5	161829	338098	338195	161878	16.2	33.8	33.8	16.2	1.08	
6	167082	333617	332828	166473	16.7	33.4	33.3	16.6	1.06	
7	182072	320233	318646	179049	18.2	32.0	31.9	17.9	1.00	
8	156102	340856	343840	159202	15.6	34.1	34.4	15.9	1.10	
9	157633	340294	342623	159450	15.8	34.0	34.3	15.9	1.10	
10	162634	334788	336731	165847	16.3	33.5	33.7	16.6	1.07	
11	164829	331441	334731	168999	16.5	33.1	33.5	16.9	1.06	
12	192325	305771	307383	194521	19.2	30.6	30.7	19.5	0.95	
13	187204	310733	311903	190160	18.7	31.1	31.2	19.0	0.97	
14	173193	323960	326063	176784	17.3	32.4	32.6	17.7	1.03	
15	171549	324593	327008	176850	17.2	32.5	32.7	17.7	1.03	

# Bit-statistics of 16 MHz BBCs

format = VDIF\_8000-1024-16-2 = 3

	h	--	-	+	++	--	-	+	++	gfact	
0	175853	325420	324585	174142	17.6	32.5	32.5	17.4	1.03		
1	185240	315552	315687	183521	18.5	31.6	31.6	18.4	0.99		
2	176143	325256	324901	173700	17.6	32.5	32.5	17.4	1.03		
3	175190	325265	325817	173728	17.5	32.5	32.6	17.4	1.03		
4	182031	320024	318156	179789	18.2	32.0	31.8	18.0	1.00		
5	176214	326130	324212	173444	17.6	32.6	32.4	17.3	1.03		
6	176840	325180	323986	173994	17.7	32.5	32.4	17.4	1.03		
7	175537	326035	324978	173450	17.6	32.6	32.5	17.3	1.03		
8	172390	325219	326079	176312	17.2	32.5	32.6	17.6	1.03		
9	181931	315153	317545	185371	18.2	31.5	31.8	18.5	0.99		
10	172522	324239	326594	176645	17.3	32.4	32.7	17.7	1.03		
11	165019	332730	333496	168755	16.5	33.3	33.3	16.9	1.06		
12	179259	317400	319510	183831	17.9	31.7	32.0	18.4	1.00		
13	171791	324644	326494	177071	17.2	32.5	32.6	17.7	1.03		
14	171887	324251	326791	177071	17.2	32.4	32.7	17.7	1.03		
15	172331	323870	327403	176396	17.2	32.4	32.7	17.6	1.03		

# Bit-statistics of 8 MHz BBCs

format = VDIF\_8000-512-16-2 = 3

	Ch	--	-	+	++	--	-	+	++	gfact	
0	176665	326753	323942	172640	17.7	32.7	32.4	17.3	1.03		
1	176682	325789	324409	173120	17.7	32.6	32.4	17.3	1.03		
2	177606	326457	323369	172568	17.8	32.6	32.3	17.3	1.03		
3	178213	325079	323535	173173	17.8	32.5	32.4	17.3	1.02		
4	177512	327600	324163	170725	17.8	32.8	32.4	17.1	1.03		
5	178645	326542	323497	171316	17.9	32.7	32.3	17.1	1.03		
6	178933	326001	322577	172489	17.9	32.6	32.3	17.2	1.02		
7	179292	325934	323254	171520	17.9	32.6	32.3	17.2	1.03		
8	171443	323318	327195	178044	17.1	32.3	32.7	17.8	1.03		
9	172422	322942	326768	177868	17.2	32.3	32.7	17.8	1.03		
10	171716	323149	327186	177949	17.2	32.3	32.7	17.8	1.03		
11	171654	323093	326812	178441	17.2	32.3	32.7	17.8	1.03		
12	170083	323300	327804	178813	17.0	32.3	32.8	17.9	1.03		
13	169908	322632	328139	179321	17.0	32.3	32.8	17.9	1.03		
14	170946	321967	327409	179678	17.1	32.2	32.7	18.0	1.03		
15	170734	322353	327129	179784	17.1	32.2	32.7	18.0	1.03		