

EXA Zero-Span sweep delays when externally triggered

(pg 1 of 2)

EXA RBW (Hz)	EXA RBW related Delay (clock cycles)	EXA RBW related Delay (seconds)	EXA trigger system delay (seconds)	EXA Total zero span Trigger Delay (seconds)	EXA RBW (Hz)	EXA RBW related Delay (clock cycles)	EXA RBW related Delay (seconds)	EXA trigger system delay (seconds)	EXA Total zero span Trigger Delay (seconds)
1.0	74448896	2.481629867	1.89E-06	2.481631753	100	768060	0.025602	1.89E-06	0.025603886
1.1	69858304	2.328610133	1.89E-06	2.32861202	110	699788	0.023326267	1.89E-06	0.023328153
1.2	64044032	2.134801067	1.89E-06	2.134802953	120	639064	0.021302133	1.89E-06	0.02130402
1.3	59117568	1.9705856	1.89E-06	1.970587486	130	591872	0.019729067	1.89E-06	0.019730953
1.5	51231744	1.7077248	1.89E-06	1.707726686	150	512040	0.017068	1.89E-06	0.017069886
1.6	48028672	1.600955733	1.89E-06	1.60095762	160	479808	0.0159936	1.89E-06	0.015995486
1.8	42701824	1.423394133	1.89E-06	1.42339602	180	426700	0.014223333	1.89E-06	0.01422522
2.0	38419456	1.280648533	1.89E-06	1.28065042	200	384744	0.0128248	1.89E-06	0.012826686
2.2	34937856	1.1645952	1.89E-06	1.164597086	220	349860	0.011662	1.89E-06	0.011663886
2.4	32030720	1.067690667	1.89E-06	1.067692553	240	320416	0.010680533	1.89E-06	0.01068242
2.7	28462080	0.948736	1.89E-06	0.948737886	270	284376	0.0094792	1.89E-06	0.009481086
3.0	25624576	0.854152533	1.89E-06	0.85415442	300	256020	0.008534	1.89E-06	0.008535886
3.3	23291904	0.7763968	1.89E-06	0.776398686	330	233240	0.007774667	1.89E-06	0.007776553
3.6	21359616	0.7119872	1.89E-06	0.711989086	360	213044	0.007101467	1.89E-06	0.007103353
3.9	19705856	0.656861867	1.89E-06	0.656863753	390	196656	0.0065552	1.89E-06	0.006557086
4.3	17878016	0.595933867	1.89E-06	0.595935753	430	178772	0.005959067	1.89E-06	0.005960953
4.7	16363520	0.545450667	1.89E-06	0.545452553	470	163200	0.00544	1.89E-06	0.005441886
5.1	15075328	0.502510933	1.89E-06	0.50251282	510	150552	0.0050184	1.89E-06	0.005020286
5.6	13734912	0.4578304	1.89E-06	0.457832286	560	137088	0.0045696	1.89E-06	0.004571486
6.2	12394496	0.413149867	1.89E-06	0.413151753	620	124032	0.0041344	1.89E-06	0.004136286
6.8	11315200	0.377173333	1.89E-06	0.37717522	680	112812	0.0037604	1.89E-06	0.003762286
7.5	10253312	0.341777067	1.89E-06	0.341778953	750	102408	0.0034136	1.89E-06	0.003415486
8.2	9382912	0.312763733	1.89E-06	0.31276562	820	93840	0.003128	1.89E-06	0.003129886
9.1	8427240	0.280908	1.89E-06	0.280909886	910	84320	0.002810667	1.89E-06	0.002812553
10	7694336	0.256477867	1.89E-06	0.256479753	1000	76840	0.002561333	1.89E-06	0.00256322
11	6998016	0.2332672	1.89E-06	0.233269086	1100	69700	0.002323333	1.89E-06	0.00232522
12	6406144	0.213538133	1.89E-06	0.21354002	1200	63920	0.002130667	1.89E-06	0.002132553
13	5918720	0.197290667	1.89E-06	0.197292553	1300	59024	0.001967467	1.89E-06	0.001969353
15	5115300	0.17051	1.89E-06	0.170511886	1500	51204	0.0017068	1.89E-06	0.001708686
16	4804608	0.1601536	1.89E-06	0.160155486	1600	47940	0.001598	1.89E-06	0.001599886
18	4265640	0.142188	1.89E-06	0.142189886	1800	42636	0.0014212	1.89E-06	0.001423086
20	3847168	0.128238933	1.89E-06	0.12824082	2000	38352	0.0012784	1.89E-06	0.001280286
22	3499008	0.1166336	1.89E-06	0.116635486	2200	34884	0.0011628	1.89E-06	0.001164686
24	3203072	0.106769067	1.89E-06	0.106770953	2400	31960	0.001065333	1.89E-06	0.00106722
27	2843760	0.094792	1.89E-06	0.094793886	2700	28424	0.000947467	1.89E-06	0.000949353
30	2556256	0.085208533	1.89E-06	0.08521042	3000	25568	0.000852267	1.89E-06	0.000854153
33	2332672	0.077755733	1.89E-06	0.07775762	3300	23256	0.0007752	1.89E-06	0.000777086
36	2132820	0.071094	1.89E-06	0.071095886	3600	21352	0.000711733	1.89E-06	0.00071362
39	1969008	0.0656336	1.89E-06	0.065635486	3900	19720	0.000657333	1.89E-06	0.00065922
43	1786020	0.059534	1.89E-06	0.059535886	4300	17816	0.000593867	1.89E-06	0.000595753
47	1636352	0.054545067	1.89E-06	0.054546953	4700	16320	0.000544	1.89E-06	0.000545886
51	1508580	0.050286	1.89E-06	0.050287886	5100	15096	0.0005032	1.89E-06	0.000505086
56	1369860	0.045662	1.89E-06	0.045663886	5600	13736	0.000457867	1.89E-06	0.000459753
62	1238688	0.0412896	1.89E-06	0.041291486	6200	12376	0.000412533	1.89E-06	0.00041442
68	1131520	0.037717333	1.89E-06	0.03771922	6800	11288	0.000376267	1.89E-06	0.000378153
75	1023060	0.034102	1.89E-06	0.034103886	7500	10268	0.000342267	1.89E-06	0.000344153
82	936360	0.031212	1.89E-06	0.031213886	8200	9384	0.0003128	1.89E-06	0.000314686
91	842996	0.028099867	1.89E-06	0.028101753	9100	8432	0.000281067	1.89E-06	0.000282953

When externally triggering a zero-span sweep in EXA, There are three kinds of delay to consider:

The first is RBW-dependent delay, as is present in all filters; in EXA. This delay is approximately 1.28/RBW.

The second delay also RBW-related, it is a pure latency in the RBW filters. This delay is also approximately 1.28/RBW.

The third delay includes the trigger system propagation delays and alias filter delays. In EXA, it includes the delay of the decimation stage from 90 to 30 MSA/s clock domains. This delay is 1886.45 ns for an average EXA.

This table lists the combined two RBW related delays ("EXA RBW related Delay") in terms of both clock cycles (30 MSA/s clock) and seconds, the trigger system propagation delays ("EXA trigger system delay"), and the total EXA zero-span externally triggered sweep delay ("EXA Total zero-span Trigger Delay") for all the EXA RBW settings from 1 Hz to 8 MHz.

EXA Zero-Span sweep delays when externally triggered (pg 2 of 2)

EXA RBW (Hz)	EXA RBW related Delay (clock cycles)	EXA RBW related Delay (seconds)	EXA trigger system delay (seconds)	EXA Total zero span Trigger Delay (seconds)	EXA RBW (Hz)	EXA RBW related Delay (clock cycles)	EXA RBW related Delay (seconds)	EXA trigger system delay (seconds)	EXA Total zero span Trigger Delay (seconds)
10000	7684	0.000256133	1.89E-06	0.00025802	1000000	106	3.53333E-06	1.89E-06	5.41978E-06
11000	7004	0.000233467	1.89E-06	0.000235353	1100000	69	2.3E-06	1.89E-06	4.18645E-06
12000	6392	0.000213067	1.89E-06	0.000214953	1200000	66	2.2E-06	1.89E-06	4.08645E-06
13000	5916	0.0001972	1.89E-06	0.000199086	1300000	62	2.06667E-06	1.89E-06	3.95312E-06
15000	5100	0.00017	1.89E-06	0.000171886	1500000	59	1.96667E-06	1.89E-06	3.85312E-06
16000	4828	0.000160933	1.89E-06	0.00016282	1600000	57	1.9E-06	1.89E-06	3.78645E-06
18000	4284	0.0001428	1.89E-06	0.000144686	1800000	55	1.83333E-06	1.89E-06	3.71978E-06
20000	3808	0.000126933	1.89E-06	0.00012882	2000000	53	1.76667E-06	1.89E-06	3.65312E-06
22000	3468	0.0001156	1.89E-06	0.000117486	2200000	51	1.7E-06	1.89E-06	3.58645E-06
24000	3196	0.000106533	1.89E-06	0.00010842	2400000	50	1.66667E-06	1.89E-06	3.55312E-06
27000	2856	9.52E-05	1.89E-06	9.70864E-05	2700000	48	1.6E-06	1.89E-06	3.48645E-06
30000	2584	8.61333E-05	1.89E-06	8.80198E-05	3000000	46	1.53333E-06	1.89E-06	3.41978E-06
33000	2312	7.70667E-05	1.89E-06	7.89531E-05	4000000	43	1.43333E-06	1.89E-06	3.31978E-06
36000	2139	7.13E-05	1.89E-06	7.31864E-05	5000000	53	1.76667E-06	1.89E-06	3.65312E-06
39000	1972	6.57333E-05	1.89E-06	6.76198E-05	6000000	52	1.73333E-06	1.89E-06	3.61978E-06
43000	1768	5.89333E-05	1.89E-06	6.08198E-05	8000000	44	1.46667E-06	1.89E-06	3.35312E-06
47000	1632	5.44E-05	1.89E-06	5.62864E-05					
51000	1496	4.98667E-05	1.89E-06	5.17531E-05					
56000	1360	4.53333E-05	1.89E-06	4.72198E-05					
62000	1242	4.14E-05	1.89E-06	4.32864E-05					
68000	1139	3.79667E-05	1.89E-06	3.98531E-05					
75000	1020	3.4E-05	1.89E-06	3.58864E-05					
82000	952	3.17333E-05	1.89E-06	3.36198E-05					
91000	828	2.76E-05	1.89E-06	2.94864E-05					
100000	759	2.53E-05	1.89E-06	2.71864E-05					
110000	690	2.3E-05	1.89E-06	2.48864E-05					
120000	630	2.1E-05	1.89E-06	2.28864E-05					
130000	603	2.01E-05	1.89E-06	2.19864E-05					
150000	528	1.76E-05	1.89E-06	1.94864E-05					
160000	483	1.61E-05	1.89E-06	1.79864E-05					
180000	420	1.4E-05	1.89E-06	1.58864E-05					
200000	396	1.32E-05	1.89E-06	1.50864E-05					
220000	345	1.15E-05	1.89E-06	1.33864E-05					
240000	330	1.1E-05	1.89E-06	1.28864E-05					
270000	280	9.33333E-06	1.89E-06	1.12198E-05					
300000	264	8.8E-06	1.89E-06	1.06864E-05					
330000	252	8.4E-06	1.89E-06	1.02864E-05					
360000	210	7E-06	1.89E-06	8.88645E-06					
390000	201	6.7E-06	1.89E-06	8.58645E-06					
430000	189	6.3E-06	1.89E-06	8.18645E-06					
470000	183	6.1E-06	1.89E-06	7.98645E-06					
510000	177	5.9E-06	1.89E-06	7.78645E-06					
560000	136	4.53333E-06	1.89E-06	6.41978E-06					
620000	130	4.33333E-06	1.89E-06	6.21978E-06					
680000	124	4.13333E-06	1.89E-06	6.01978E-06					
750000	120	4E-06	1.89E-06	5.88645E-06					
820000	114	3.8E-06	1.89E-06	5.68645E-06					
910000	110	3.66667E-06	1.89E-06	5.55312E-06					