
SPC5676/SPC5642/SPC5644/SPC5645 Cu Wire Qualification (PCN 16152)

1. Objective

This report describes the Taiwan Semiconductor Manufacturing Company Fab 14 (TSMC14) fab site and Freescale Austin Technology Manufacturing Center (ATMC) fab sites for SPC5676/SPC5642/SPC5644/SPC5645 324/416/516PBGA devices electrical distribution data on 20um PdCu wire versus baseline on 23um Au wire.

Current Wire:

23um Au wire

Proposed New Wire:

20um PdCu wire

2. General Information

Product Family: SPC5676/SPC5642/SPC5644/SPC5645

Fab site: ATMC/TSMC14

Mask set: N23A/N60C/M14X/N29D

Package(s): 324/416/516PBGA

Assembly Site: Freescale Kuala Lumpur, Kuala Lumpur, Malaysia

3. Method

Two data sets taken from selected key product, 30 units in each set at T0 analysis:

1. 30 units from 20um PdCu wire diameter qual lot from ATMC/TSMC14 fab site
2. 30 units from 23um Au wire diameter control lot from ATMC/TSMC14 fab site

Both qualification and control lots are tested to standard production final test flow. Electrical distribution data generated from the selected key parametric tests with Freescale standard criteria CPK > 1.67 and shift ≤ 15%, justification will be provided if otherwise.

4. Data and Summary:

4.1. Electrical Distribution Table:

Selected Evaluation Vehicle: SPC5674F (516PBGA) M17W (ATMC)

The ED data from Selected Evaluation Vehicle will be representing the parts stated in section 2 General Information

Parameter Name, as in Datasheet	Units	Lower Spec Limit (NA if no spec)	Upper Spec Limit (NA if no spec)	Au Wire			Cu Wire			Shift within +/-1 sigma or less than 15% to spec	Shift within +/-1 sigma or less than 15% to spec	Comment / Justification
				Temp -40		C	Temp -40		C			
				Avg	Std	Cpk	Avg	Std	Cpk			
IINACT_D_hi_vdkeh_pads etpu_a30	uA	-2.5	2.5	0.0011	0.0075	111.33	0.0000	0.0076	110.01	0.04%	0.04%	PASS
IINACT_D_hi_vdkeh_pads etpu_a28	uA	-2.5	2.5	0.0006	0.0071	117.50	0.0027	0.0073	114.07	0.08%	0.08%	PASS
IINACT_D_hi_vdkeh_pads etpu_a26	uA	-2.5	2.5	0.0009	0.0074	112.78	0.0042	0.0080	103.39	0.13%	0.13%	PASS
IINACT_D_hi_vdkeh_pads etpu_a24	uA	-2.5	2.5	0.0006	0.0071	116.89	0.0009	0.0073	114.11	0.01%	0.01%	PASS
IINACT_D_hi_vdkeh_pads etpu_a22	uA	-2.5	2.5	-0.0002	0.0073	114.22	0.0025	0.0075	111.47	0.11%	0.11%	PASS
IINACT_D_lo_vdkeh_pads etpu_a30	uA	-2.5	2.5	0.0006	0.0077	108.17	0.0002	0.0074	112.14	0.02%	0.02%	PASS
IINACT_D_lo_vdkeh_pads etpu_a28	uA	-2.5	2.5	-0.0002	0.0073	113.59	0.0018	0.0073	114.47	0.08%	0.08%	PASS
IINACT_D_lo_vdkeh_pads etpu_a26	uA	-2.5	2.5	0.0001	0.0076	108.98	0.0027	0.0081	103.41	0.10%	0.10%	PASS
IINACT_D_lo_vdkeh_pads etpu_a24	uA	-2.5	2.5	-0.0002	0.0070	119.55	0.0001	0.0071	117.25	0.01%	0.01%	PASS
IINACT_D_lo_vdkeh_pads etpu_a22	uA	-2.5	2.5	-0.0008	0.0070	119.04	0.0010	0.0067	124.90	0.07%	0.07%	PASS
IINACT_D_hi_vdde_pads d_bdp	uA	-2.5	2.5	0.0000	0.0073	114.19	0.0001	0.0078	106.41	0.01%	0.01%	PASS
IINACT_D_hi_vdde_pads d_we2	uA	-2.5	2.5	0.0015	0.0072	115.00	-0.0020	0.0074	113.08	0.14%	0.14%	PASS
IINACT_D_hi_vdde_pads d_we0	uA	-2.5	2.5	0.0003	0.0072	115.01	0.0002	0.0074	112.69	0.00%	0.00%	PASS
IINACT_D_lo_vdde_pads d_add10	uA	-2.5	2.5	0.0019	0.0070	118.80	0.0032	0.0072	114.91	0.05%	0.05%	PASS
IINACT_D_lo_vdde_pads d_add12	uA	-2.5	2.5	-0.0031	0.0077	107.55	0.0009	0.0080	103.50	0.16%	0.16%	PASS
IINACT_D_lo_vdde_pads d_bdp	uA	-2.5	2.5	-0.0010	0.0073	114.03	-0.0006	0.0075	111.54	0.02%	0.02%	PASS
IINACT_D_lo_vdde_pads d_we2	uA	-2.5	2.5	0.0006	0.0070	118.21	-0.0026	0.0071	117.85	0.13%	0.13%	PASS
IINACT_D_lo_vdde_pads d_we0	uA	-2.5	2.5	-0.0002	0.0071	117.69	-0.0003	0.0073	113.41	0.00%	0.00%	PASS
IINACT_D_lo_vdde_pads d_add10	uA	-2.5	2.5	0.0011	0.0074	112.72	0.0029	0.0071	117.56	0.07%	0.07%	PASS
IINACT_D_lo_vdde_pads d_add12	uA	-2.5	2.5	-0.0032	0.0078	106.20	-0.0002	0.0073	114.70	0.12%	0.12%	PASS
IINACT_A_lo_vdda_pads an_b22	nA	-150	150	-0.1664	7.0174	7.12	-1.1672	7.7356	6.41	0.67%	0.67%	PASS
IINACT_A_lo_vdda_pads an_b20	nA	-150	150	-0.0624	7.6408	6.54	-1.4572	7.4090	6.68	0.93%	0.93%	PASS
IINACT_A_lo_vdda_pads an_b18	nA	-150	150	-0.9225	7.2385	6.87	-2.1895	8.0587	6.11	0.85%	0.84%	PASS
IINACT_A_lo_vdda_pads an_b16	nA	-150	150	-0.9972	7.1060	6.99	-1.7913	7.3559	6.72	1.87%	1.85%	PASS
IINACT_A_lo_vdda_pads an_b14	nA	-150	150	0.6963	7.3121	6.81	-0.9752	8.0156	6.20	1.11%	1.12%	PASS
IINACT_A_hi_vdda_pads an_b22	nA	-150	150	-0.5477	7.4429	6.69	-0.8632	8.0540	6.17	0.21%	0.21%	PASS
IINACT_A_hi_vdda_pads an_b20	nA	-150	150	0.6735	7.8189	6.37	-0.2915	7.7422	6.45	0.64%	0.65%	PASS
IINACT_A_hi_vdda_pads an_b18	nA	-150	150	-0.9142	7.7885	6.38	-2.4786	8.3655	5.88	1.05%	1.04%	PASS
IINACT_A_hi_vdda_pads an_b16	nA	-150	150	-1.8269	6.8510	7.21	1.4213	7.5538	6.56	2.19%	2.14%	PASS
IINACT_A_hi_vdda_pads an_b14	nA	-150	150	0.2714	7.9796	6.25	-0.6150	8.0309	6.20	0.59%	0.59%	PASS
IACT_S_pullups_vdkeh_default mtc0	uA	-200	-35	-107.7739	1.1440	21.21	-107.2350	1.1432	21.06	0.58%	0.74%	PASS
IACT_S_pullups_vdkeh_default mtc1	uA	-200	-35	-108.3697	1.0425	23.46	-107.5892	1.0277	23.54	0.85%	1.06%	PASS
IACT_S_pullups_vdkeh_default mtc2	uA	-200	-35	-107.5120	0.9790	24.69	-106.6475	1.0123	23.59	0.93%	1.19%	PASS
IACT_S_pullups_vdkeh_default mtc3	uA	-200	-35	-107.6094	1.1197	21.62	-107.2010	1.0415	23.11	0.44%	0.56%	PASS
IACT_S_pullups_vdkeh_default mtc4	uA	-200	-35	-107.9224	1.2295	19.77	-107.6948	1.2345	19.63	0.25%	0.31%	PASS
IACT_F_pullups_vdde d_add10	uA	-158	-42	-140.9100	1.3601	4.19	-138.9013	1.5332	4.15	11.75%	2.03%	PASS
IACT_F_pullups_vdde d_add11	uA	-158	-42	-141.2140	1.4365	3.90	-139.2120	1.6633	3.77	11.93%	2.02%	PASS
IACT_F_pullups_vdde d_add12	uA	-158	-42	-142.4493	1.4240	3.64	-140.9936	1.7731	3.20	9.36%	1.45%	PASS
IACT_F_pullups_vdde d_add13	uA	-158	-42	-142.6910	1.4431	3.54	-140.6321	1.6260	3.56	13.45%	2.04%	PASS
IACT_F_pullups_vdde d_add14	uA	-158	-42	-142.5977	1.4319	3.59	-140.1307	1.6448	3.62	16.02%	2.45%	Justify, reading close to center of the limit

Parameter Name, as in Datasheet	Units	Lower Spec Limit (NA if no spec)	Upper Spec Limit (NA if no spec)	Au Wire			Cu Wire			Shift within +/-1 sigma or less than 15% to spec	Shift within +/-1 sigma or less than 15% to spec	Comment / Justification
				Temp	-40	C	Temp	-40	C			
				Avg	Std	Cpk	Avg	Std	Cpk			
IAC T_S_pullups_vd deh_bootc fg0	uA	-200	-35	-108.3928	1.0677	22.91	-107.4062	0.9977	24.19	1.08%	1.34%	PASS
IAC T_S_pullups_vd deh_bootc fg1	uA	-200	-35	-108.0982	1.0214	23.86	-106.9343	1.0632	22.55	1.27%	1.59%	PASS
IAC T_S_pullups_vd deh_cnrx_a	uA	-200	-35	-107.3753	1.0693	22.56	-107.0174	1.1306	21.23	0.39%	0.49%	PASS
IAC T_S_pullups_vd deh_cnrx_b	uA	-200	-35	-107.7267	1.0384	23.34	-107.1369	1.0801	22.26	0.64%	0.81%	PASS
IAC T_S_pullups_vd deh_cnrx_c	uA	-200	-35	-107.9510	1.0479	23.21	-107.9168	1.1442	21.24	0.04%	0.05%	PASS
IAC T_F_pull downs_vd de_d_add10	uA	42	158	116.1045	1.6152	8.65	112.3062	1.1588	13.14	5.13%	9.07%	PASS
IAC T_F_pull downs_vd de_d_add11	uA	42	158	116.6396	1.6353	8.43	113.2348	1.1801	12.64	4.56%	8.23%	PASS
IAC T_F_pull downs_vd de_d_add12	uA	42	158	116.0999	1.5273	9.14	112.0946	1.2586	12.16	5.41%	9.56%	PASS
IAC T_F_pull downs_vd de_d_add13	uA	42	158	115.7474	1.5624	9.01	112.1336	1.1469	13.33	4.90%	8.55%	PASS
IAC T_F_pull downs_vd de_d_add14	uA	42	158	115.2002	1.5495	9.21	111.9764	1.1286	13.59	4.40%	7.53%	PASS
VOD_High	mV	150	400	304.1384	10.4820	3.05	290.3847	8.9571	4.08	8.92%	14.35%	PASS
VOS_High	V	1.06	1.39	1.2370	0.0319	1.60	1.2378	0.0266	1.91	0.45%	0.52%	PASS
VOD_Low	mV	150	400	303.9370	10.5994	3.02	290.4373	9.0061	4.06	8.77%	14.05%	PASS
VOS_Low	V	1.06	1.39	1.2386	0.0320	1.58	1.2385	0.0266	1.90	0.02%	0.03%	PASS
I REG	mA	NA	22	14.2140	0.8055	3.22	12.6867	0.2990	10.38	NA	19.62%	Justify, reading away from limit
ID D	mA	NA	850	347.9827	5.2205	32.05	345.0407	4.3428	38.76	NA	0.59%	PASS
TUE16_AdcA0TUE_P	LSB	-8	8	3.1569	0.8981	1.80	2.9937	0.7913	2.11	1.46%	3.37%	PASS
TUE16_AdcA0TUE_N	LSB	-8	8	-3.6514	0.8514	1.70	-4.0052	0.7462	1.78	8.14%	3.04%	PASS
TUE16_AdcB0TUE_P	LSB	-8	8	3.6143	1.1996	1.22	3.1652	0.9082	1.77	3.87%	10.24%	PASS
TUE16_AdcB0TUE_N	LSB	-8	8	-3.3418	1.2375	1.25	-3.8388	0.9429	1.47	10.67%	4.38%	Similar CPK performance

Parameter Name, as in Datasheet	Units	Lower Spec Limit (NA if no spec)	Upper Spec Limit (NA if no spec)	Au Wire			Cu Wire			Shift within +/-1 sigma or less than 15% to spec	Shift within +/-1 sigma or less than 15% to spec	Comment
				Temp 145 C			Temp 145 C					
				Avg	Std	Cpk	Avg	Std	Cpk			
IINACT_D_hi_vdkeh_pads etpu_a30	uA	-2.5	2.5	0.0739	0.0104	77.88	0.0219	0.0084	97.79	2.02%	2.14%	PASS
IINACT_D_hi_vdkeh_pads etpu_a28	uA	-2.5	2.5	0.0727	0.0114	70.75	0.0211	0.0082	100.51	2.01%	2.13%	PASS
IINACT_D_hi_vdkeh_pads etpu_a26	uA	-2.5	2.5	0.0760	0.0100	80.80	0.0256	0.0092	90.05	1.96%	2.08%	PASS
IINACT_D_hi_vdkeh_pads etpu_a24	uA	-2.5	2.5	0.0774	0.0096	84.30	0.0261	0.0082	100.42	1.99%	2.11%	PASS
IINACT_D_hi_vdkeh_pads etpu_a22	uA	-2.5	2.5	0.0768	0.0109	74.08	0.0237	0.0082	101.27	2.06%	2.19%	PASS
IINACT_D_lo_vdkeh_pads etpu_a30	uA	-2.5	2.5	-0.0184	0.0078	106.52	-0.0096	0.0082	101.00	0.35%	0.35%	PASS
IINACT_D_lo_vdkeh_pads etpu_a28	uA	-2.5	2.5	-0.0226	0.0075	110.55	-0.0104	0.0076	109.60	0.49%	0.48%	PASS
IINACT_D_lo_vdkeh_pads etpu_a26	uA	-2.5	2.5	-0.0198	0.0086	95.90	-0.0071	0.0084	98.96	0.51%	0.51%	PASS
IINACT_D_lo_vdkeh_pads etpu_a24	uA	-2.5	2.5	-0.0197	0.0076	108.55	-0.0068	0.0079	104.74	0.52%	0.51%	PASS
IINACT_D_lo_vdkeh_pads etpu_a22	uA	-2.5	2.5	-0.0173	0.0078	105.45	-0.0080	0.0078	105.86	0.37%	0.37%	PASS
IINACT_D_hi_vdde_pads d_bdip	uA	-2.5	2.5	0.4916	0.0576	11.63	0.2580	0.0248	30.16	7.81%	11.63%	PASS
IINACT_D_hi_vdde_pads d_we2	uA	-2.5	2.5	0.4836	0.0527	12.76	0.2565	0.0231	32.39	7.61%	11.26%	PASS
IINACT_D_hi_vdde_pads d_we0	uA	-2.5	2.5	0.4850	0.0532	12.62	0.2578	0.0246	30.44	7.61%	11.28%	PASS
IINACT_D_hi_vdde_pads d_add10	uA	-2.5	2.5	0.4873	0.0550	12.19	0.2586	0.0242	30.82	7.66%	11.36%	PASS
IINACT_D_lo_vdde_pads d_add12	uA	-2.5	2.5	0.4865	0.0568	11.81	0.2567	0.0244	30.60	7.69%	11.41%	PASS
IINACT_D_lo_vdde_pads d_bdip	uA	-2.5	2.5	-0.3238	0.0247	29.35	-0.1193	0.0109	72.92	9.40%	7.24%	PASS
IINACT_D_lo_vdde_pads d_we2	uA	-2.5	2.5	-0.3252	0.0270	26.85	-0.1179	0.0106	74.69	9.53%	7.34%	PASS
IINACT_D_lo_vdde_pads d_we0	uA	-2.5	2.5	-0.3241	0.0267	27.12	-0.1183	0.0109	72.83	9.45%	7.28%	PASS
IINACT_D_lo_vdde_pads d_add10	uA	-2.5	2.5	-0.3251	0.0269	26.93	-0.1134	0.0110	72.52	9.73%	7.49%	PASS
IINACT_D_lo_vdde_pads d_add12	uA	-2.5	2.5	-0.3234	0.0299	24.28	-0.1171	0.0112	71.17	9.48%	7.31%	PASS
IINACT_A_lo_vdda_pads an_b22	nA	-150	150	-8.3370	3.9857	11.85	-7.2723	8.1502	5.84	0.75%	0.67%	PASS
IINACT_A_lo_vdda_pads an_b20	nA	-150	150	-8.0980	3.3768	14.01	-1.2392	7.5339	6.58	4.83%	4.34%	PASS
IINACT_A_lo_vdda_pads an_b18	nA	-150	150	-8.5208	3.7563	12.55	-3.3337	8.0937	6.04	3.67%	3.27%	PASS
IINACT_A_lo_vdda_pads an_b16	nA	-150	150	-10.7662	4.6222	10.04	-2.8344	6.8969	7.11	5.70%	4.93%	PASS
IINACT_A_lo_vdda_pads an_b14	nA	-150	150	-9.8182	4.8067	9.72	-1.0707	7.4107	6.70	6.24%	5.47%	PASS
IINACT_A_hi_vdda_pads an_b22	nA	-150	150	3.2063	0.9259	52.85	-2.6879	8.5580	5.74	3.85%	4.02%	PASS
IINACT_A_hi_vdda_pads an_b20	nA	-150	150	3.2899	0.9958	49.11	2.3093	7.4002	6.65	0.64%	0.67%	PASS
IINACT_A_hi_vdda_pads an_b18	nA	-150	150	3.0820	1.0600	46.20	-1.2002	7.4362	6.67	2.80%	2.91%	PASS
IINACT_A_hi_vdda_pads an_b16	nA	-150	150	2.4772	2.0809	23.63	1.1251	7.1443	6.95	0.89%	0.92%	PASS
IINACT_A_hi_vdda_pads an_b14	nA	-150	150	3.2272	1.0629	46.03	2.8417	7.7751	6.31	0.25%	0.26%	PASS
IACT_S_pullups_vdkeh_default mtc0	uA	-200	35	-71.5444	0.8870	40.04	-73.4378	0.8338	43.35	1.47%	1.78%	PASS
IACT_S_pullups_vdkeh_default mtc1	uA	-200	35	-71.2060	0.6081	58.22	-72.8559	0.6124	58.71	1.28%	1.55%	PASS
IACT_S_pullups_vdkeh_default mtc2	uA	-200	35	-70.9645	0.6629	53.28	-72.9061	0.5817	61.83	1.50%	1.83%	PASS
IACT_S_pullups_vdkeh_default mtc3	uA	-200	35	-70.9070	0.6458	54.66	-72.8833	0.6049	59.44	1.53%	1.87%	PASS
IACT_S_pullups_vdkeh_default mtc4	uA	-200	35	-70.9585	0.9037	39.08	-72.9257	0.7636	47.11	1.52%	1.86%	PASS
IACT_S_pulldowns_vdkeh_default mtc0	uA	35	200	81.1964	0.9540	16.14	81.4048	0.7752	19.95	0.45%	0.18%	PASS
IACT_S_pulldowns_vdkeh_default mtc1	uA	35	200	81.1044	0.7608	20.20	81.4864	0.5585	27.74	0.83%	0.32%	PASS
IACT_S_pulldowns_vdkeh_default mtc2	uA	35	200	81.0829	0.7248	21.19	81.1409	0.5877	26.17	0.13%	0.05%	PASS
IACT_S_pulldowns_vdkeh_default mtc3	uA	35	200	81.0796	0.8699	17.66	81.2083	0.5664	27.19	0.28%	0.11%	PASS
IACT_S_pulldowns_vdkeh_default mtc4	uA	35	200	80.9631	0.9829	15.59	81.1592	0.7769	19.81	0.43%	0.16%	PASS

Parameter Name, as in Datasheet	Units	Lower Spec Limit (NA if no spec)	Upper Spec Limit (NA if no spec)	Au Wire			Cu Wire			Shift within +/-1 sigma or less than 15% to spec	Shift within +/-1 sigma or less than 15% to spec	Comment
				Temp		Temp	Temp		Temp			
				145	C	145	C	145	C			
Avg	Std	Cpk	Avg	Std	Cpk	Avg	Std	Cpk				
IACF_pullups_vdde_d_add10	uA	-158	-42	-97.0195	0.9085	20.19	-97.4729	0.9675	19.11	0.74%	0.82%	PASS
IACF_pullups_vdde_d_add11	uA	-158	-42	-97.0621	0.7861	23.35	-97.8679	0.9838	18.93	1.32%	1.46%	PASS
IACF_pullups_vdde_d_add12	uA	-158	-42	-97.1314	0.8635	21.28	-97.8315	1.0182	18.28	1.15%	1.27%	PASS
IACF_pullups_vdde_d_add13	uA	-158	-42	-97.4304	0.8527	21.67	-97.7405	0.9852	18.86	0.51%	0.56%	PASS
IACF_pullups_vdde_d_add14	uA	-158	-42	-97.2634	0.8575	21.48	-97.9013	0.9932	18.76	1.05%	1.15%	PASS
IACS_pullups_vddeh_bootcfg0	uA	-200	35	-71.2325	0.5283	67.03	-73.3402	0.5889	61.32	1.64%	1.98%	PASS
IACS_pullups_vddeh_bootcfg1	uA	-200	35	-71.4019	0.5744	61.74	-73.1543	0.6039	59.70	1.36%	1.65%	PASS
IACS_pullups_vddeh_cnr_x_a	uA	-200	35	-70.6449	0.6998	50.32	-72.8734	0.5827	61.71	1.72%	2.11%	PASS
IACS_pullups_vddeh_cnr_x_b	uA	-200	35	-70.7572	0.6213	56.74	-72.6640	0.5853	61.31	1.48%	1.80%	PASS
IACS_pullups_vddeh_cnr_x_c	uA	-200	35	-70.8374	0.6977	50.57	-72.7366	0.5787	62.05	1.47%	1.79%	PASS
IACF_pulldowns_vdde_d_add10	uA	42	158	72.7515	0.8415	12.18	73.4888	0.6814	15.40	2.40%	0.86%	PASS
IACF_pulldowns_vdde_d_add11	uA	42	158	73.0004	0.9208	11.22	73.6506	0.6706	15.73	2.10%	0.76%	PASS
IACF_pulldowns_vdde_d_add12	uA	42	158	72.8194	0.9053	11.35	73.4337	0.6438	16.28	1.99%	0.72%	PASS
IACF_pulldowns_vdde_d_add13	uA	42	158	72.6170	0.8382	12.18	73.4151	0.6593	15.88	2.61%	0.93%	PASS
IACF_pulldowns_vdde_d_add14	uA	42	158	72.5731	0.8722	11.68	73.3361	0.6434	16.23	2.50%	0.89%	PASS
IACS_pulldowns_vddeh_bootcfg0	uA	35	200	80.9088	0.8286	18.47	80.8986	0.5624	27.20	0.02%	0.01%	PASS
IACS_pulldowns_vddeh_bootcfg1	uA	35	200	80.7940	0.6892	22.15	81.0459	0.5449	28.17	0.55%	0.21%	PASS
IACS_pulldowns_vddeh_cnr_x_a	uA	35	200	81.0287	0.8357	18.36	80.9833	0.5630	27.22	0.10%	0.04%	PASS
IACS_pulldowns_vddeh_cnr_x_b	uA	35	200	81.0245	0.7975	19.24	81.2377	0.5682	27.12	0.46%	0.18%	PASS
IACS_pulldowns_vddeh_cnr_x_c	uA	35	200	81.0454	0.7502	20.46	81.4294	0.5723	27.04	0.83%	0.32%	PASS
VOD_High	mV	150	400	313.3594	7.5115	3.84	304.2385	7.8532	4.06	5.58%	10.53%	PASS
VOS_High	V	1.06	1.39	1.2373	0.0208	2.45	1.2441	0.0235	2.07	3.83%	4.44%	PASS
VOD_Low	mV	150	400	313.1183	7.5118	3.86	303.8028	7.8840	4.07	5.71%	10.72%	PASS
VOS_Low	V	1.06	1.39	1.2399	0.0210	2.39	1.2470	0.0235	2.02	3.94%	4.73%	PASS
IREG	mA	NA	22	15.3858	0.3822	5.77	14.1008	0.2696	9.77	NA	19.43%	Justify, reading away from limit
IDD	mA	NA	850	580.4216	20.7101	4.34	519.8254	18.7283	5.88	NA	22.48%	Justify, reading away from limit
TUE16_AdcA0TUE_P	LSB	-8	8	3.9328	0.5573	2.43	3.8180	0.5262	2.65	0.96%	2.82%	PASS
TUE16_AdcA0TUE_N	LSB	-8	8	-3.0359	0.6987	2.37	-3.7549	0.5310	2.66	14.49%	6.52%	PASS
t16kpperase	ms	NA	1000	289.1103	25.9380	9.14	268.1065	22.5162	10.84	NA	2.95%	PASS
t64kpperase	ms	NA	1800	855.6523	72.1049	4.37	717.2707	64.2675	5.62	NA	14.65%	PASS
t128kpperase	ms	NA	2600	1737.8882	149.0877	1.93	1402.7859	129.2223	3.09	NA	38.87%	Justify, reading away from limit
t256kpperase_VLS et12_VLS	ms	NA	5200	3604.9297	269.4179	1.97	3009.3546	222.6070	3.28	NA	37.34%	Justify, reading away from limit
t256kpperase_VLS et24_VLS	ms	NA	5200	3784.0229	259.1616	1.82	3112.3345	215.9919	3.22	NA	47.44%	Justify, reading away from limit

Selected Evaluation Vehicle: SPC5676R (516PBGA) N23A (TSMC14)

The ED data from Selected Evaluation Vehicle will be representing the parts stated in section 2 General Information

Parameter Name, as in Datasheet	Units	Lower Spec Limit (NA if no spec)	Upper Spec Limit (NA if no spec)	Au Wire			Cu Wire			Shift within +/-1 sigma or less than 15% to spec	Shift within +/-1 sigma or less than 15% to spec	Comment
				-40		C	-40		C			
				Avg	Std	Cpk	Avg	Std	Cpk			
IINACT_D_hi_vdkeh_pads mtc25	uA	-2.5	2.5	-0.0002	0.0078	106.24	-0.0011	0.0089	93.15	0.03%	0.03%	PASS
IINACT_D_lo_vdkeh_pads etpu_a30	uA	-2.5	2.5	-0.0054	0.0072	114.88	-0.0051	0.0069	121.21	0.01%	0.01%	PASS
IINACT_D_lo_vdkeh_pads etpu_a28	uA	-2.5	2.5	0.0002	0.0100	83.30	0.0020	0.0076	110.24	0.07%	0.07%	PASS
IINACT_D_lo_vdkeh_pads etpu_a26	uA	-2.5	2.5	0.0014	0.0080	103.56	0.0027	0.0112	74.27	0.05%	0.05%	PASS
IINACT_D_lo_vdkeh_pads etpu_a24	uA	-2.5	2.5	0.0003	0.0073	114.16	0.0015	0.0068	122.02	0.05%	0.05%	PASS
IINACT_D_lo_vdkeh_pads etpu_a22	uA	-2.5	2.5	0.0012	0.0087	95.39	-0.0002	0.0093	89.64	0.06%	0.06%	PASS
IINACT_D_hi_vdde_pads d_bdip	uA	-2.5	2.5	-0.1179	0.0673	11.80	-0.1157	0.0713	11.15	0.09%	0.08%	PASS
IINACT_D_hi_vdde_pads d_we2	uA	-2.5	2.5	-0.1198	0.0593	13.37	0.0000	0.0802	10.39	5.03%	4.57%	PASS
IINACT_D_hi_vdde_pads d_we0	uA	-2.5	2.5	-0.1257	0.0693	11.42	-0.1314	0.0726	10.88	0.24%	0.22%	PASS
IINACT_D_hi_vdde_pads d_add10	uA	-2.5	2.5	-0.0963	0.0689	11.63	-0.1506	0.0758	10.33	2.26%	2.09%	PASS
IINACT_D_hi_vdde_pads d_add12	uA	-2.5	2.5	-0.1254	0.0636	12.45	-0.1242	0.0812	9.75	0.05%	0.05%	PASS
IINACT_D_lo_vdde_pads d_bdip	uA	-2.5	2.5	0.0003	0.0072	115.86	0.0000	0.0066	126.50	0.01%	0.01%	PASS
IINACT_D_lo_vdde_pads d_we2	uA	-2.5	2.5	-0.0007	0.0086	96.76	-0.0096	0.0083	99.77	0.35%	0.35%	PASS
IINACT_D_lo_vdde_pads d_we0	uA	-2.5	2.5	-0.0018	0.0094	88.68	0.0016	0.0056	148.03	0.14%	0.14%	PASS
IINACT_D_lo_vdde_pads d_add10	uA	-2.5	2.5	0.0024	0.0082	101.80	0.0015	0.0083	99.75	0.03%	0.03%	PASS
IINACT_D_lo_vdde_pads d_add12	uA	-2.5	2.5	0.0009	0.0082	101.90	0.0044	0.0075	110.32	0.14%	0.14%	PASS
IINACT_A_lo_vdda_pads an_b22	nA	-150	150	-0.1273	6.3758	7.84	-2.4643	8.7722	5.61	1.56%	1.56%	PASS
IINACT_A_lo_vdda_pads an_b20	nA	-150	150	1.4451	7.4989	6.60	-2.6940	7.3589	6.67	2.73%	2.79%	PASS
IINACT_A_lo_vdda_pads an_b18	nA	-150	150	0.0000	7.3545	6.80	0.2370	9.3199	5.36	0.16%	0.16%	PASS
IINACT_A_lo_vdda_pads an_b16	nA	-150	150	1.5891	9.0842	5.45	-0.8016	6.3895	7.78	1.58%	1.61%	PASS
IINACT_A_lo_vdda_pads an_b14	nA	-150	150	2.4134	10.6758	4.61	1.3736	6.6499	7.45	0.68%	0.70%	PASS
IINACT_A_hi_vdda_pads an_b22	nA	-150	150	-3.4572	8.2608	5.91	0.2564	8.6210	5.79	2.53%	2.42%	PASS
IINACT_A_hi_vdda_pads an_b20	nA	-150	150	2.6672	8.6418	5.68	3.3610	8.4997	5.75	0.45%	0.47%	PASS
IINACT_A_hi_vdda_pads an_b18	nA	-150	150	4.8377	8.3214	5.81	-2.1551	9.6927	5.08	4.52%	4.82%	PASS
IINACT_A_hi_vdda_pads an_b16	nA	-150	150	-1.4114	7.8288	6.33	-3.2133	7.2635	6.74	1.21%	1.19%	PASS
IINACT_A_hi_vdda_pads an_b14	nA	-150	150	2.4215	7.7365	6.36	4.4404	6.3539	7.64	1.32%	1.37%	PASS
IACT_S_pullups_vdkeh bootcfg1	uA	-200	-35	-82.8670	0.9608	16.61	-83.1000	0.8745	18.34	0.20%	0.49%	PASS
IACT_S_pullups_vdkeh cnrx_a	uA	-200	-35	-83.5920	0.8636	18.76	-83.3760	0.8715	18.50	0.19%	0.44%	PASS
IACT_S_pullups_vdkeh cnrx_b	uA	-200	-35	-84.1130	1.0380	15.77	-83.6640	0.8974	18.08	0.39%	0.91%	PASS
IACT_S_pullups_vdkeh cnrx_c	uA	-200	-35	-83.7290	1.1662	13.93	-83.6520	0.7854	20.65	0.07%	0.16%	PASS
IACT_F_pulldowns_vdde d_add10	uA	42	158	88.6260	1.4973	10.38	88.3456	1.2376	12.48	0.60%	0.40%	PASS
IACT_F_pulldowns_vdde d_add11	uA	42	158	89.1340	1.5506	10.13	88.8912	1.4066	11.11	0.52%	0.35%	PASS
IACT_F_pulldowns_vdde d_add12	uA	42	158	89.4124	1.5424	10.25	89.3939	1.3660	11.56	0.04%	0.03%	PASS

Parameter Name, as in Datasheet	Units	Lower Spec Limit (NA if no spec)	Upper Spec Limit (NA if no spec)	Au Wire			Cu Wire			Shift within +/-1 sigma or less than 15% to spec	Shift within +/-1 sigma or less than 15% to spec	Comment
				Temp	-40	C	Temp	-40	C			
				Avg	Std	Cpk	Avg	Std	Cpk			
IACT_F_pulldowns_vdde_d_add13	uA	42	158	89.2239	1.5279	10.30	89.1852	1.5042	10.46	0.08%	0.06%	PASS
IACT_F_pulldowns_vdde_d_add14	uA	42	158	89.2517	1.5374	10.25	89.3032	1.3887	11.35	0.11%	0.07%	PASS
IACT_S_pulldowns_vddeh_bootcfg0	uA	35	200	114.0040	1.0626	24.78	114.0798	2.1277	12.39	0.10%	0.09%	PASS
IACT_S_pulldowns_vddeh_bootcfg1	uA	35	200	113.2048	1.1232	23.21	113.5818	1.9753	13.26	0.48%	0.43%	PASS
IACT_S_pulldowns_vddeh_cnr_x_a	uA	35	200	114.0497	1.1026	23.90	114.4739	1.7606	15.05	0.54%	0.49%	PASS
IACT_S_pulldowns_vddeh_cnr_x_b	uA	35	200	113.8656	1.3400	19.62	114.0821	1.6620	15.86	0.27%	0.25%	PASS
IACT_S_pulldowns_vddeh_cnr_x_c	uA	35	200	113.4874	1.0611	24.66	113.7877	1.5785	16.64	0.38%	0.35%	PASS
IINACT_D_pulldis_vdde_d_add10	uA	-2.5	2.5	0.0004	0.0051	162.12	0.0006	0.0074	112.21	0.01%	0.01%	PASS
IINACT_D_pulldis_vdde_d_add11	uA	-2.5	2.5	-0.0001	0.0065	128.81	-0.0021	0.0072	115.21	0.08%	0.08%	PASS
IINACT_D_pulldis_vdde_d_add12	uA	-2.5	2.5	-0.0002	0.0078	106.19	0.0026	0.0072	115.78	0.11%	0.11%	PASS
IINACT_D_pulldis_vdde_d_add13	uA	-2.5	2.5	0.0013	0.0060	139.87	0.0008	0.0092	90.57	0.02%	0.02%	PASS
IINACT_D_pulldis_vdde_d_add14	uA	-2.5	2.5	-0.0038	0.0088	94.53	-0.0018	0.0074	113.22	0.08%	0.08%	PASS
IINACT_D_pulldis_vddeh_bootcfg0	uA	-2.5	2.5	0.0000	0.0007	1268.96	0.0000	0.0008	1041.60	0.00%	0.00%	PASS
IINACT_D_pulldis_vddeh_bootcfg1	uA	-2.5	2.5	-0.0004	0.0009	969.36	-0.0005	0.0009	936.84	0.00%	0.00%	PASS
IINACT_D_pulldis_vddeh_cnr_x_a	uA	-2.5	2.5	-0.0002	0.0009	962.58	-0.0001	0.0008	1020.90	0.01%	0.01%	PASS
IINACT_D_pulldis_vddeh_cnr_x_b	uA	-2.5	2.5	-0.0003	0.0009	968.82	-0.0003	0.0008	1031.23	0.00%	0.00%	PASS
IINACT_D_pulldis_vddeh_cnr_x_c	uA	-2.5	2.5	-0.0003	0.0010	843.87	-0.0006	0.0010	868.43	0.01%	0.01%	PASS
VOD_Vdiff lvds+ HI	mV	150	600	285.3458	5.4838	8.23	304.0515	1.9174	26.78	13.82%	5.94%	PASS
VOS_Vcomm lvds+ HI	V	1.03	1.40	1.2114	0.0168	3.60	1.2164	0.0206	2.97	2.72%	2.62%	PASS
VOD_Vdiff lvds+ LO	mV	150	600	284.8654	5.7837	7.77	303.1079	1.5048	33.92	13.53%	5.79%	PASS
VOS_Vcomm lvds+ LO	V	1.03	1.40	1.2139	0.0176	3.48	1.2177	0.0198	3.07	2.09%	2.06%	PASS
IDDSTBY	mA	NA	0.1	0.0000	0.0000	10870.28	0.0000	0.0033	10.14	NA	0.00%	PASS
IDD_vdd_LV	A	NA	1	0.4232	0.0026	73.72	0.5188	0.0029	54.67	NA	16.58%	JUSTIFY. Reading within limit with good CPK value
IDD_vdd	A	NA	1	0.5209	0.0034	46.91	0.4214	0.0026	74.12	NA	20.76%	JUSTIFY. Reading away from the limit
TUE16_LV_AdcA0TUE_P_MAC	LSB	-16	16	2.3617	0.4891	9.29	2.1700	0.5665	8.14	1.04%	1.41%	PASS
TUE16_LV_AdcA0TUE_N_MAC	LSB	-16	16	-3.7700	0.4070	10.02	-3.9783	0.5962	6.72	1.70%	1.05%	PASS
TUE16_HV_AdcA0TUE_P_MAC	LSB	-16	16	2.2033	0.3489	13.18	2.0750	0.5386	8.62	0.70%	0.93%	PASS
TUE16_HV_AdcA0TUE_N_MAC	LSB	-16	16	-3.4850	0.4257	9.80	-3.5583	0.5366	7.73	0.59%	0.38%	PASS
VBG	V	0.6014	0.6386	0.6200	0.0012	5.09	0.6200	0.0011	5.61	0.01%	0.01%	PASS
VDD33OUT	V	3.1	3.6	3.3472	0.0191	4.32	3.3485	0.0139	5.97	0.54%	0.53%	PASS
t16kpperase	s	NA	1	0.1505	0.0195	14.55	0.1444	0.0140	20.38	NA	0.72%	PASS
t64kpperase_et8_VHS	s	NA	1.8	0.3272	0.0289	17.00	0.3102	0.0181	27.50	NA	1.15%	PASS
t64kpperase_et10_VHS	s	NA	1.8	0.5333	0.0452	9.35	0.5077	0.0453	9.51	NA	2.02%	PASS
t128kpperase	s	NA	2.6	0.9598	0.0892	6.13	0.8933	0.0756	7.53	NA	4.05%	PASS
t256kpperase	s	NA	5.2	0.9745	0.0887	15.87	0.9489	0.0752	18.84	NA	0.60%	PASS

Parameter Name, as in Datasheet	Units	Lower Spec Limit (NA if no spec)	Upper Spec Limit (NA if no spec)	Au Wire			Cu Wire			Shift within +/-1 sigma or less than 15% to spec	Shift within +/-1 sigma or less than 15% to spec	Comment
				Temp	145	C	Temp	145	C			
				Avg	Std	Cpk	Avg	Std	Cpk			
IINACT_D_hi_vdkeh_pads mtc25	uA	-2.5	2.5	0.0448	0.0089	91.86	0.0496	0.0111	73.87	0.19%	0.19%	PASS
IINACT_D_lo_vdkeh_pads etpu_a30	uA	-2.5	2.5	-0.0105	0.0044	189.23	0.0506	0.0120	67.95	2.46%	2.44%	PASS
IINACT_D_lo_vdkeh_pads etpu_a28	uA	-2.5	2.5	-0.0100	0.0079	105.46	-0.0098	0.0065	128.65	0.01%	0.01%	PASS
IINACT_D_lo_vdkeh_pads etpu_a26	uA	-2.5	2.5	-0.0078	0.0068	121.33	-0.0087	0.0077	107.69	0.04%	0.04%	PASS
IINACT_D_lo_vdkeh_pads etpu_a24	uA	-2.5	2.5	-0.0051	0.0075	111.10	-0.0072	0.0070	118.84	0.08%	0.08%	PASS
IINACT_D_lo_vdkeh_pads etpu_a22	uA	-2.5	2.5	-0.0099	0.0077	108.29	-0.0047	0.0066	126.69	0.21%	0.21%	PASS
IINACT_D_hi_vdde_pads d_bdip	uA	-2.5	2.5	0.0440	0.0759	10.78	-0.0060	0.0074	111.94	1.97%	2.04%	PASS
IINACT_D_hi_vdde_pads d_we2	uA	-2.5	2.5	0.0251	0.0533	15.48	0.0722	0.0644	12.57	1.87%	1.90%	PASS
IINACT_D_hi_vdde_pads d_we0	uA	-2.5	2.5	0.0300	0.0729	11.30	0.0408	0.0623	13.16	0.42%	0.43%	PASS
IINACT_D_hi_vdde_pads d_add10	uA	-2.5	2.5	0.0572	0.0540	15.07	0.0578	0.0745	10.93	0.02%	0.03%	PASS
IINACT_D_hi_vdde_pads d_add12	uA	-2.5	2.5	0.0447	0.0574	14.27	0.0839	0.0909	8.86	1.54%	1.60%	PASS
IINACT_D_lo_vdde_pads d_bdip	uA	-2.5	2.5	-0.1891	0.0210	36.77	0.0662	0.0650	12.49	11.05%	9.50%	PASS
IINACT_D_lo_vdde_pads d_we2	uA	-2.5	2.5	-0.1881	0.0204	37.83	-0.2255	0.0265	28.63	1.62%	1.39%	PASS
IINACT_D_lo_vdde_pads d_we0	uA	-2.5	2.5	-0.1902	0.0180	42.84	-0.2272	0.0297	25.47	1.61%	1.38%	PASS
IINACT_D_lo_vdde_pads d_add10	uA	-2.5	2.5	-0.1911	0.0187	41.22	-0.2245	0.0290	26.14	1.44%	1.24%	PASS
IINACT_D_lo_vdde_pads d_add12	uA	-2.5	2.5	-0.1902	0.0192	40.09	-0.2302	0.0283	26.71	1.74%	1.49%	PASS
IINACT_A_lo_vdda_pads an_b22	nA	-150	150	-2.3365	6.1985	7.94	-4.5184	5.9391	8.17	1.48%	1.43%	PASS
IINACT_A_lo_vdda_pads an_b20	nA	-150	150	0.4317	7.4985	6.65	-2.7053	8.0098	6.13	2.09%	2.10%	PASS
IINACT_A_lo_vdda_pads an_b18	nA	-150	150	-3.3042	7.5905	6.44	-0.5157	8.2159	6.06	1.90%	1.82%	PASS
IINACT_A_lo_vdda_pads an_b16	nA	-150	150	-2.6905	7.7033	6.37	-6.7475	8.0131	5.96	2.75%	2.66%	PASS
IINACT_A_lo_vdda_pads an_b14	nA	-150	150	0.3785	7.1622	6.96	-2.0142	8.6174	5.72	1.59%	1.60%	PASS
IINACT_A_hi_vdda_pads an_b22	nA	-150	150	0.3067	8.3060	6.01	-1.1137	4.9325	10.06	0.95%	0.95%	PASS
IINACT_A_hi_vdda_pads an_b20	nA	-150	150	2.2142	7.3330	6.72	1.9523	8.8804	5.56	0.17%	0.18%	PASS
IINACT_A_hi_vdda_pads an_b18	nA	-150	150	-2.4196	10.1230	4.86	3.0135	9.4122	5.21	3.68%	3.56%	PASS
IINACT_A_hi_vdda_pads an_b16	nA	-150	150	-0.1257	6.2261	8.02	-1.3662	7.0607	7.02	0.83%	0.83%	PASS
IINACT_A_hi_vdda_pads an_b14	nA	-150	150	1.7942	9.3453	5.29	2.9435	8.9465	5.48	0.76%	0.78%	PASS
IACT_S_pullups_vdkeh bootcfg1	uA	-200	-35	-57.8540	0.4929	15.46	-57.5230	0.6054	12.40	0.23%	1.45%	PASS
IACT_S_pullups_vdkeh cnrx_a	uA	-200	-35	-57.4730	0.6264	11.96	-57.2170	0.5656	13.09	0.18%	1.14%	PASS
IACT_S_pullups_vdkeh cnrx_b	uA	-200	-35	-57.4730	0.5572	13.44	-57.2190	0.5224	14.18	0.18%	1.13%	PASS
IACT_S_pullups_vdkeh cnrx_c	uA	-200	-35	-57.5780	0.6163	12.21	-57.2710	0.5787	12.83	0.22%	1.36%	PASS
IACT_F_pulldowns_vdde d_add10	uA	42	158	61.2225	0.8428	7.60	60.9777	0.9302	6.80	1.27%	0.25%	PASS
IACT_F_pulldowns_vdde d_add11	uA	42	158	61.2870	0.8824	7.29	61.1341	1.0657	5.98	0.79%	0.16%	PASS
IACT_F_pulldowns_vdde d_add12	uA	42	158	61.3251	0.7738	8.32	61.1469	0.9565	6.67	0.92%	0.18%	PASS
IACT_F_pulldowns_vdde d_add13	uA	42	158	61.3090	0.8860	7.26	60.9827	0.9318	6.79	1.69%	0.34%	PASS
IACT_F_pulldowns_vdde d_add14	uA	42	158	61.2915	0.8317	7.73	61.0451	1.1066	5.74	1.28%	0.25%	PASS
IACT_S_pulldowns_vdkeh bootcfg0	uA	35	200	74.0274	0.7487	17.38	73.7852	0.9817	13.17	0.62%	0.19%	PASS
IACT_S_pulldowns_vdkeh bootcfg1	uA	35	200	73.8553	0.7949	16.29	73.4513	0.9475	13.53	1.04%	0.32%	PASS

Parameter Name, as in Datasheet	Units	Lower Spec Limit (NA if no spec)	Upper Spec Limit (NA if no spec)	Au Wire			Cu Wire			Shift within +/-1 sigma or less than 15% to spec	Shift within +/-1 sigma or less than 15% to spec	Comment
				Temp	145	C	Temp	145	C			
				Avg	Std	Cpk	Avg	Std	Cpk			
IACT_S_pulldowns_vddeb cnrx_a	uA	35	200	73.6655	0.6436	20.03	73.2473	0.7282	17.51	1.08%	0.33%	PASS
IACT_S_pulldowns_vddeb cnrx_b	uA	35	200	73.7227	0.6999	18.44	73.5926	0.8762	14.68	0.34%	0.10%	PASS
IACT_S_pulldowns_vddeb cnrx_c	uA	35	200	73.5685	0.8161	15.75	73.3075	0.9997	12.77	0.68%	0.21%	PASS
IINACT_D_pulldis_vdde d_add10	uA	-2.5	2.5	-0.0664	0.0125	64.93	-0.0812	0.0131	61.56	0.61%	0.57%	PASS
IINACT_D_pulldis_vdde d_add11	uA	-2.5	2.5	-0.0675	0.0123	66.12	-0.0828	0.0130	61.94	0.63%	0.59%	PASS
IINACT_D_pulldis_vdde d_add12	uA	-2.5	2.5	-0.0658	0.0121	67.07	-0.0801	0.0123	65.34	0.58%	0.55%	PASS
IINACT_D_pulldis_vdde d_add13	uA	-2.5	2.5	-0.0661	0.0155	52.27	-0.0829	0.0154	52.45	0.69%	0.66%	PASS
IINACT_D_pulldis_vdde d_add14	uA	-2.5	2.5	-0.0675	0.0138	58.87	-0.0808	0.0158	50.94	0.55%	0.52%	PASS
IINACT_D_pulldis_vddeh bootcfg0	uA	-2.5	2.5	0.0199	0.0030	276.43	0.0250	0.0045	183.00	0.20%	0.21%	PASS
IINACT_D_pulldis_vddeh bootcfg1	uA	-2.5	2.5	0.0198	0.0031	266.63	0.0240	0.0039	214.12	0.17%	0.17%	PASS
IINACT_D_pulldis_vddeh cnrx_a	uA	-2.5	2.5	0.0197	0.0025	327.24	0.0238	0.0043	190.76	0.16%	0.17%	PASS
IINACT_D_pulldis_vddeh cnrx_b	uA	-2.5	2.5	0.0194	0.0031	263.44	0.0234	0.0038	216.18	0.16%	0.16%	PASS
IINACT_D_pulldis_vddeh cnrx_c	uA	-2.5	2.5	0.0000	0.0026	319.79	0.0241	0.0040	205.84	0.96%	0.96%	PASS
VOD_Vdiff lvds+ HI	mV	150	600	299.5592	5.7074	8.73	306.1968	5.0391	10.33	4.44%	2.21%	PASS
VOS_Vcomm lvds+ HI	V	1.03	1.40	1.2360	0.0214	2.56	1.2364	0.0207	2.64	0.17%	0.22%	PASS
VOD_Vdiff lvds+ LO	mV	150	600	299.7789	5.6811	8.79	306.0853	5.0487	10.31	4.21%	2.10%	PASS
VOS_Vcomm lvds+ LO	V	1.03	1.40	1.2388	0.0216	2.48	1.2393	0.0207	2.58	0.24%	0.31%	PASS
IDD_vdd_LV	A	NA	1	0.5331	0.0200	7.78	0.5619	0.0331	4.41	NA	6.17%	PASS
IDD_vdd	A	NA	1	0.6673	0.0266	4.17	0.6960	0.0430	2.36	NA	8.64%	PASS
TUE16_LV_AdcA0TUE_P_MAC	LSB	-16	16	3.3517	0.7230	5.83	2.9700	0.4926	8.82	1.97%	3.02%	PASS
TUE16_LV_AdcA0TUE_N_MAC	LSB	-16	16	-3.7683	0.7358	5.54	-3.6650	0.4694	8.76	0.84%	0.52%	PASS
TUE16_HV_AdcA0TUE_P_MAC	LSB	-16	16	3.3783	0.5768	7.29	2.8083	0.5295	8.30	2.94%	4.52%	PASS
TUE16_HV_AdcA0TUE_N_MAC	LSB	-16	16	-3.5867	0.6369	6.50	-3.4350	0.4592	9.12	1.22%	0.77%	PASS
VBG	V	0.6014	0.6386	0.6232	0.0028	1.81	0.6273	0.0014	2.64	18.62%	26.35%	JUSTIFY. Insignificant difference, < 0.5mV
VDD33OUT	V	3.1	3.6	3.3612	0.0180	4.42	3.3567	0.0213	3.82	1.74%	1.91%	PASS
t16kpperase	s	NA	1	0.1589	0.0108	25.94	0.1530	0.0157	17.98	NA	0.70%	PASS
t64kpperase_et8_VHS	s	NA	1.8	0.3272	0.0272	18.05	0.3241	0.0342	14.40	NA	0.22%	PASS
t64kpperase_et10_VHS	s	NA	1.8	0.5757	0.0527	7.74	0.5778	0.0735	5.54	NA	0.17%	PASS
t128kpperase	s	NA	2.6	1.0841	0.1094	4.62	1.0825	0.1333	3.80	NA	0.11%	PASS
t256kpperase	s	NA	5.2	1.1406	0.0952	14.22	1.1127	0.0896	15.21	NA	0.69%	PASS

Parameter Name, as in Datasheet	Units	Lower Spec Limit (NA if no spec)	Upper Spec Limit (NA if no spec)	Au Wire			Cu Wire			Shift within +/-1 sigma or less than 15% to spec	Shift within +/-1 sigma or less than 15% to spec	Comment
				Temp 25		C	Temp 25		C			
				Avg	Std	Cpk	Avg	Std	Cpk			
IINACT_D_hi_vdkeh_pads mtc25	uA	-2.5	2.5	0.0002	0.0080	104.07	0.0025	0.0094	88.64	0.09%	0.09%	PASS
IINACT_D_lo_vdkeh_pads etpu_a30	uA	-2.5	2.5	-0.0027	0.0073	114.34	-0.0033	0.0051	162.27	0.02%	0.02%	PASS
IINACT_D_lo_vdkeh_pads etpu_a28	uA	-2.5	2.5	-0.0051	0.0064	129.73	-0.0018	0.0077	107.88	0.13%	0.13%	PASS
IINACT_D_lo_vdkeh_pads etpu_a26	uA	-2.5	2.5	-0.0003	0.0047	177.34	-0.0025	0.0055	152.47	0.09%	0.09%	PASS
IINACT_D_lo_vdkeh_pads etpu_a24	uA	-2.5	2.5	0.0002	0.0075	111.27	0.0006	0.0064	129.21	0.02%	0.02%	PASS
IINACT_D_lo_vdkeh_pads etpu_a22	uA	-2.5	2.5	-0.0016	0.0061	136.44	-0.0009	0.0060	138.72	0.03%	0.03%	PASS
IINACT_D_hi_vdde_pads d_bdip	uA	-2.5	2.5	0.0086	0.0669	12.42	0.0275	0.0626	13.17	0.75%	0.76%	PASS
IINACT_D_hi_vdde_pads d_we2	uA	-2.5	2.5	-0.0294	0.0603	13.66	-0.0360	0.0573	14.33	0.26%	0.26%	PASS
IINACT_D_hi_vdde_pads d_we0	uA	-2.5	2.5	-0.0151	0.0595	13.93	-0.0195	0.0558	14.81	0.17%	0.17%	PASS
IINACT_D_hi_vdde_pads d_add10	uA	-2.5	2.5	0.0037	0.0649	12.82	0.0025	0.0523	15.90	0.05%	0.05%	PASS
IINACT_D_hi_vdde_pads d_add12	uA	-2.5	2.5	-0.0002	0.0554	15.03	0.0011	0.0707	11.79	0.05%	0.05%	PASS
IINACT_D_lo_vdde_pads d_bdip	uA	-2.5	2.5	-0.0015	0.0067	123.88	-0.0016	0.0070	119.25	0.01%	0.01%	PASS
IINACT_D_lo_vdde_pads d_we2	uA	-2.5	2.5	0.0009	0.0084	99.49	0.0017	0.0069	121.37	0.03%	0.03%	PASS
IINACT_D_lo_vdde_pads d_we0	uA	-2.5	2.5	0.0012	0.0071	117.17	-0.0002	0.0075	110.56	0.06%	0.06%	PASS
IINACT_D_lo_vdde_pads d_add10	uA	-2.5	2.5	0.0001	0.0077	108.57	0.0013	0.0073	114.09	0.05%	0.05%	PASS
IINACT_D_lo_vdde_pads d_add12	uA	-2.5	2.5	0.0007	0.0089	93.85	-0.0004	0.0076	110.18	0.04%	0.04%	PASS
IINACT_A_lo_vdda_pads an_b22	nA	-150	150	-0.1365	7.0333	7.10	-0.4644	6.6897	7.45	0.22%	0.22%	PASS
IINACT_A_lo_vdda_pads an_b20	nA	-150	150	-0.8459	8.3914	5.92	-0.1327	8.2154	6.08	0.48%	0.47%	PASS
IINACT_A_lo_vdda_pads an_b18	nA	-150	150	0.4940	7.0320	7.09	-2.0468	8.1133	6.08	1.69%	1.70%	PASS
IINACT_A_lo_vdda_pads an_b16	nA	-150	150	-1.0135	8.6195	5.76	-0.7061	7.7130	6.45	0.21%	0.20%	PASS
IINACT_A_lo_vdda_pads an_b14	nA	-150	150	-0.6613	8.7280	5.70	3.5064	7.5812	6.44	2.79%	2.77%	PASS
IINACT_A_hi_vdda_pads an_b22	nA	-150	150	-1.6068	5.0424	9.81	1.3924	5.3527	9.25	2.02%	1.98%	PASS
IINACT_A_hi_vdda_pads an_b20	nA	-150	150	-0.1323	7.2063	6.93	-3.6213	7.1025	6.87	2.33%	2.32%	PASS
IINACT_A_hi_vdda_pads an_b18	nA	-150	150	-1.8700	7.1439	6.91	-0.8017	8.2254	6.05	0.72%	0.70%	PASS
IINACT_A_hi_vdda_pads an_b16	nA	-150	150	1.1193	6.8973	7.20	-1.2663	7.3351	6.76	1.58%	1.60%	PASS
IINACT_A_hi_vdda_pads an_b14	nA	-150	150	0.9922	8.0636	6.16	0.7106	7.3998	6.72	0.19%	0.19%	PASS
IACT_S_pullups_vdkeh bootcfg1	uA	-200	-35	-72.5920	0.5439	23.04	-72.4320	0.7560	16.50	0.13%	0.43%	PASS
IACT_S_pullups_vdkeh cnrx_a	uA	-200	-35	-72.8860	0.7010	18.02	-72.7970	0.7066	17.83	0.07%	0.23%	PASS
IACT_S_pullups_vdkeh cnrx_b	uA	-200	-35	-73.1430	0.6530	19.47	-73.0010	0.7021	18.04	0.11%	0.37%	PASS
IACT_S_pullups_vdkeh cnrx_c	uA	-200	-35	-72.6010	0.6221	20.15	-72.5710	0.7125	17.58	0.02%	0.08%	PASS
IACT_F_pulldowns_vdde d_add10	uA	42	158	77.6311	0.9075	13.09	77.8852	1.1003	10.87	0.71%	0.32%	PASS
IACT_F_pulldowns_vdde d_add11	uA	42	158	78.1933	1.0757	11.22	78.3001	1.1184	10.82	0.30%	0.13%	PASS
IACT_F_pulldowns_vdde d_add12	uA	42	158	78.3772	1.0897	11.13	78.2983	1.2340	9.80	0.22%	0.10%	PASS
IACT_F_pulldowns_vdde d_add13	uA	42	158	78.0451	1.1461	10.48	78.2710	1.3668	8.85	0.63%	0.28%	PASS
IACT_F_pulldowns_vdde d_add14	uA	42	158	78.0430	1.0772	11.15	78.4221	1.2209	9.94	1.05%	0.47%	PASS
IACT_S_pulldowns_vdkeh bootcfg0	uA	35	200	97.6427	0.6515	32.05	97.6732	1.0520	19.86	0.05%	0.03%	PASS
IACT_S_pulldowns_vdkeh bootcfg1	uA	35	200	97.1951	0.9000	23.03	97.1009	1.1646	17.77	0.15%	0.09%	PASS

Parameter Name, as in Datasheet	Units	Lower Spec Limit (NA if no spec)	Upper Spec Limit (NA if no spec)	Au Wire			Cu Wire			Shift within +/-1 sigma or less than 15% to spec	Shift within +/-1 sigma or less than 15% to spec	Comment
				Temp 25		C	Temp 25		C			
				Avg	Std	Cpk	Avg	Std	Cpk			
IACT_S_pulldowns_vddeb cnrx_a	uA	35	200	97.8740	0.6437	32.56	97.9961	1.1404	18.41	0.19%	0.12%	PASS
IACT_S_pulldowns_vddeb cnrx_b	uA	35	200	97.9461	0.6911	30.36	97.8877	1.1721	17.88	0.09%	0.06%	PASS
IACT_S_pulldowns_vddeb cnrx_c	uA	35	200	97.6827	0.6787	30.78	97.7106	1.0006	20.89	0.04%	0.03%	PASS
IINACT_D_pulldis_vdde_d_add10	uA	-2.5	2.5	0.0011	0.0073	114.12	0.0008	0.0065	127.71	0.01%	0.01%	PASS
IINACT_D_pulldis_vdde_d_add11	uA	-2.5	2.5	0.0010	0.0076	110.32	0.0012	0.0073	114.13	0.01%	0.01%	PASS
IINACT_D_pulldis_vdde_d_add12	uA	-2.5	2.5	0.0008	0.0076	109.45	0.0014	0.0085	97.62	0.03%	0.03%	PASS
IINACT_D_pulldis_vdde_d_add13	uA	-2.5	2.5	-0.0004	0.0073	114.23	-0.0008	0.0072	116.51	0.02%	0.02%	PASS
IINACT_D_pulldis_vdde_d_add14	uA	-2.5	2.5	-0.0027	0.0077	108.28	-0.0004	0.0082	101.20	0.09%	0.09%	PASS
IINACT_D_pulldis_vdde bootcfg0	uA	-2.5	2.5	0.0003	0.0007	1180.68	0.0002	0.0008	993.48	0.00%	0.00%	PASS
IINACT_D_pulldis_vdde bootcfg1	uA	-2.5	2.5	0.0000	0.0006	1392.43	0.0002	0.0008	1085.15	0.00%	0.00%	PASS
IINACT_D_pulldis_vddeb cnrx_a	uA	-2.5	2.5	-0.0005	0.0006	1496.01	0.0000	0.0007	1277.96	0.02%	0.02%	PASS
IINACT_D_pulldis_vddeb cnrx_b	uA	-2.5	2.5	-0.0001	0.0009	975.87	0.0000	0.0009	949.74	0.00%	0.00%	PASS
IINACT_D_pulldis_vddeb cnrx_c	uA	-2.5	2.5	-0.0001	0.0007	1124.51	0.0002	0.0006	1285.02	0.01%	0.01%	PASS
VOD_Vdiff lvds+ HI	mV	150	600	289.8929	5.8959	7.91	297.7840	5.3443	9.22	5.64%	2.54%	PASS
VOS_Vcomm lvds+ HI	V	1.03	1.40	1.2217	0.0202	2.94	1.2258	0.0212	2.74	2.09%	2.25%	PASS
VOD_Vdiff lvds+ LO	mV	150	600	290.0695	5.9521	7.84	297.8661	5.2901	9.32	5.57%	2.52%	PASS
VOS_Vcomm lvds+ LO	V	1.03	1.40	1.2234	0.0208	2.84	1.2292	0.0213	2.67	3.02%	3.31%	PASS
IDDSTBY	mA	NA	0.1	-0.0020	0.0039	8.72	-0.0012	0.0035	9.67	NA	0.81%	PASS
IDD_vdd_LV	A	NA	1	0.4319	0.0030	64.15	0.4259	0.0065	29.62	NA	1.06%	PASS
IDD_vdd	A	NA	1	0.5361	0.0033	46.50	0.5277	0.0087	18.01	NA	1.80%	PASS
TUE16_LV_AdcA0TUE_P_MAC	LSB	-16	16	3.1417	0.8464	5.06	3.1250	0.7635	5.62	0.09%	0.13%	PASS
TUE16_LV_AdcA0TUE_N_MAC	LSB	-16	16	-3.7933	0.6529	6.23	-3.7450	0.4598	8.88	0.40%	0.24%	PASS
TUE16_HV_AdcA0TUE_P_MAC	LSB	-16	16	2.6133	0.6892	6.47	2.6383	0.5895	7.56	0.13%	0.19%	PASS
TUE16_HV_AdcA0TUE_N_MAC	LSB	-16	16	-3.5317	0.5723	7.26	-3.5417	0.4363	9.52	0.08%	0.05%	PASS
VBG	V	0.6014	0.6386	0.6215	0.0018	3.09	0.6217	0.0022	2.61	1.03%	1.21%	PASS
VDD33OUT	V	3.1	3.6	3.3566	0.0171	4.74	3.3553	0.0154	5.31	0.53%	0.55%	PASS
t16kpperase	s	NA	1	0.1502	0.0175	16.18	0.1466	0.0155	18.36	NA	0.42%	PASS
t64kpperase_et8_VHS	s	NA	1.8	0.3279	0.0274	17.89	0.3191	0.0271	18.22	NA	0.60%	PASS
t64kpperase_et10_VHS	s	NA	1.8	0.5399	0.0444	9.47	0.5242	0.0443	9.59	NA	1.24%	PASS
t128kpperase	s	NA	2.6	1.0289	0.0881	5.94	0.9568	0.0838	6.54	NA	4.59%	PASS
t256kpperase	s	NA	5.2	1.0423	0.0742	18.68	1.0093	0.0825	16.92	NA	0.79%	PASS

“Shift analysis” refers to analysis of shift of the distribution mean towards the nearest specification limit:

$$\% \text{ Shift (USL)} = \frac{\{\text{Mean(new)} - \text{Mean(old)}\}}{\{\text{Upper Spec Limit} - \text{Mean(old)}\}}$$

$$\% \text{ Shift (LSL)} = \frac{\{\text{Mean(new)} - \text{Mean(old)}\}}{\{\text{Mean(old)} - \text{Lower Spec Limit}\}}$$

4.2. Summary:

From the above data, it was verified that the requirements and acceptance criteria was achieved. Justifications were provided for shift of > 15%.

5. Document History:

Rev	Date	Originator
0	15 th May 2014	Mohd Adzhar Nuha Fadhillah

Appendix A: Justifications for any Shifts > 15%

Justification as provided in the table.