

# NanoCOM-TC

## Reliability Prediction Report (MTBF)

Summary	Failure Rate: 7.618875ppm MTBF: 131,253 hours
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Issue date	Approval	Test Engineer
2011/12/09	Jansin Lee	Jessica Chou

# Reliability Prediction (MTBF)

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**I . Model Name:** NanoCOM-TC (9697NUTC03-D)

**II . Prediction Date:** Dec. 9<sup>th</sup>, 2011

**III . Prediction Site:** AAEON Q.E. Dept.

**IV . Predicted by:** Jessica Chou

**V . Equipment:** Relex Ver.7.3 Visual Reliability Software

## VI. Simulation Environment:

- Temperature: 25 degrees C
- Standard: Telcordia (Bellcore) Standard

## VII. Term and Definition:

- Unit : An assembly of device.
- Duty Cycle : Used to specify the percentage of time that the element is in an on state, and it is equal to the percentage of total time the item is in the active environment.
- Quantity : The quantity of the selected item.
- Failure Rate : Used to specify that the failure rate is to be calculated based the selected Calculation models. The multiplier is 1,000,000.
- MTBF : MTBF is always specified in hours.

**VIII. Prediction Result:**

NanoCOM-TC (9697NUTC03-D):

- Failure Rate: 7.618875ppm
- MTBF: 131,253 hours

### AAEON Reliability Prediction Report

**Part Number** 9697NUTC03-D  
**Reference Des**  
**Date** 12. 9, 2011  
**Environment** GF, GU - Ground Fixed, Uncontrolled  
**Temp. (°C)** 25.00

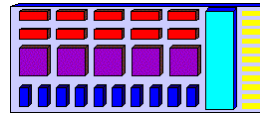


**Description** Top-level assembly  
**File Name** NanoCOM-TC.pdf.RPJ  
**Time** 16:10  
**Failure Rate** 7.618875  
**MTBF** 131,253

Assembly Name	Part Number	Model	Method	Environment	Duty Cycle	Qty	Failure Rate	MTBF
NanoCOM-TC	9697NUTC03-D	Telcordia Issue 1	Method I Case 3	GF, GU - Ground Fixed, Uncontrolled	100.00	1.00	7.62	131252.98

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**Temp. (°C)** 25.00



**Description** Top-level assembly  
**File Name** NanoCOM-TC.pdf.RPJ  
**Time** 16:10  
**Failure Rate** 7.618875  
**MTBF** 131,253

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Quantity	Failure Rate, Unit	Failure Rate, %	MTBF, Unit
1050518264	Resistor	R14,R5	Telcordia Issue 1	Level I		2.00	0.002268	.0595	440974090.03
1050520004	Resistor	R386,R388	Telcordia Issue 1	Level I		2.00	0.002268	.0595	440974090.03
1050535764	Resistor	R13,R6	Telcordia Issue 1	Level I		2.00	0.002268	.0595	440974090.03
1050536514	Resistor	R318	Telcordia Issue 1	Level I		1.00	0.002268	.0298	440974090.03
1050551004	Resistor	R117,R97	Telcordia Issue 1	Level I		2.00	0.002268	.0595	440974090.03
1050560464	Resistor	R35	Telcordia Issue 1	Level I		1.00	0.002268	.0298	440974090.03
1051501582	Resistor	R316	Telcordia Issue 1	Level I		1.00	0.002268	.0298	440974090.03
1052500171	Resistor	FB14	Telcordia Issue 1	Level I		1.00	0.002268	.0298	440974090.03
105270000A	Resistor	R375	Telcordia Issue 1	Level I		1.00	0.002268	.0298	440974090.03
1053500489	Resistor	R303,R305	Telcordia Issue 1	Level I		2.00	0.002268	.0595	440974090.03
1054500889	Resistor	R302	Telcordia Issue 1	Level I		1.00	0.002268	.0298	440974090.03
1059700001	Resistor	L6,L7,R426,R96	Telcordia Issue 1	Level I		4.00	0.002268	.1191	440974090.03
105A500103	Resistor	FB15	Telcordia Issue 1	Level I		1.00	0.002268	.0298	440974090.03
105A500139	Resistor	R102,R103,R105, R106,R108,R110, R112,R114,R115, R116,R119,R120, R262,R360,R361, R363,R366,R385,R87, R88,R89,R98,R99	Telcordia Issue 1	Level I		23.00	0.002268	.6846	440974090.03
105A500239	Resistor	R104,R109,R111, R118,R362	Telcordia Issue 1	Level I		5.00	0.002268	.1488	440974090.03
105A501039	Resistor	R131,R292,R414, R415	Telcordia Issue 1	Level I		4.00	0.002268	.1191	440974090.03
105A501223	Resistor	R317	Telcordia Issue 1	Level I		1.00	0.002268	.0298	440974090.03
105A503309	Resistor	R28,R29,R30,R31, R32,R495	Telcordia Issue 1	Level I		6.00	0.002268	.1786	440974090.03
105A503333	Resistor	R315	Telcordia Issue 1	Level I		1.00	0.002268	.0298	440974090.03
105A505109	Resistor	R173	Telcordia Issue 1	Level I		1.00	0.002268	.0298	440974090.03
105A510009	Resistor	R121,R122,R123, R125,R128	Telcordia Issue 1	Level I		5.00	0.002268	.1488	440974090.03
105A518229	Resistor	R314	Telcordia Issue 1	Level I		1.00	0.002268	.0298	440974090.03
105A519103	Resistor	R129,R137	Telcordia Issue 1	Level I		2.00	0.002268	.0595	440974090.03
105A524313	Resistor	R9	Telcordia Issue 1	Level I		1.00	0.002268	.0298	440974090.03
105A524903	Resistor	R70	Telcordia Issue 1	Level I		1.00	0.002268	.0298	440974090.03
105A524919	Resistor	R287	Telcordia Issue 1	Level I		1.00	0.002268	.0298	440974090.03
105A529423	Resistor	R313	Telcordia Issue 1	Level I		1.00	0.002268	.0298	440974090.03
105A549969	Resistor	R12,R24,R47,R49, R50,R51,R52,R54, R66	Telcordia Issue 1	Level I		9.00	0.002268	.2679	440974090.03
105A554969	Resistor	R2,R8	Telcordia Issue 1	Level I		2.00	0.002268	.0595	440974090.03
105A575009	Resistor	R25	Telcordia Issue 1	Level I		1.00	0.002268	.0298	440974090.03



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**Reference Des**  
**Date** 12. 9, 2011  
**Environment** GF, GU - Ground Fixed, Uncontrolled  
**Temp. (°C)** 25.00



**Description** Top-level assembly  
**File Name** NanoCOM-TC.pdf.RPJ  
**Time** 16:10  
**Failure Rate** 7.618875  
**MTBF** 131,253

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Quantity	Failure Rate, Unit	Failure Rate, %	MTBF, Unit
105A704729	Resistor	R255,R256,R265, R281,R282,R284, R290,R293,R294, R368,R471,R486, R487,R489,R492, R493	Telcordia Issue 1	Level I		16.00	0.002268	.4762	440974090.03
105A704733	Resistor	R350	Telcordia Issue 1	Level I		1.00	0.002268	.0298	440974090.03
105A705609	Resistor	R132,R133,R134, R135,R136,R138, R139,R140,R141, R142,R143,R144, R145,R147,R149, R152,R153,R155, R157,R158,R39,R40, R41,R44,R476,R65, R91,R92,R93	Telcordia Issue 1	Level I		29.00	0.002268	.8632	440974090.03
105A706829	Resistor	R223,R224	Telcordia Issue 1	Level I		2.00	0.002268	.0595	440974090.03
105A707533	Resistor	R311	Telcordia Issue 1	Level I		1.00	0.002268	.0298	440974090.03
105A708209	Resistor	R229	Telcordia Issue 1	Level I		1.00	0.002268	.0298	440974090.03
105A708229	Resistor	R253,R254,R266, R267	Telcordia Issue 1	Level I		4.00	0.002268	.1191	440974090.03
105A710039	Resistor	R169,R174,R176, R475	Telcordia Issue 1	Level I		4.00	0.002268	.1191	440974090.03
105A712009	Resistor	R177,R178,R179	Telcordia Issue 1	Level I		3.00	0.002268	.0893	440974090.03
105A733003	Resistor	R356,R357	Telcordia Issue 1	Level I		2.00	0.002268	.0595	440974090.03
1121501690	Capacitor	C442,C444	Telcordia Issue 1	Level I		2.00	0.004535	.1191	220487045.01
1121501691	Capacitor	C1,C10,C100,C101, C102,C107,C108, C109,C11,C110,C111, C112,C113,C114, C115,C116,C117, C118,C12,C123,C124, C125,C126,C127, C128,C129,C13,C130, C131,C132,C133, C134,C135,C136, C138,C14,C140,C142, C147,C15,C156,C157, C16,C175,C178,C	Telcordia Issue 1	Level I		133.00	0.004535	7.9173	220487045.01
1124418090	Capacitor	C17,C18,C308,C310	Telcordia Issue 1	Level I		4.00	0.004535	.2381	220487045.01
1124522280	Capacitor	C22	Telcordia Issue 1	Level I		1.00	0.004535	.0595	220487045.01
1124533190	Capacitor	C366	Telcordia Issue 1	Level I		1.00	0.004535	.0595	220487045.01
1129610080	Capacitor	C280,C407,C408	Telcordia Issue 1	Level I		3.00	0.004535	.1786	220487045.01

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1129622690	Capacitor	C103,C104,C105, C106,C119,C120, C121,C122,C216, C222,C226,C240, C243,C245,C252, C254,C258,C441	Telcordia Issue 1	Level I		18.00	0.004535	1.0715	220487045.01
1129701791	Capacitor	C153,C154,C155, C158,C159,C160, C161,C162,C163, C164,C165,C183, C184,C204,C206, C371,C401,C410	Telcordia Issue 1	Level I		18.00	0.004535	1.0715	220487045.01
1129710091	Capacitor	C149,C150	Telcordia Issue 1	Level I		2.00	0.004535	.1191	220487045.01
1129710390	Capacitor	C368,C370	Telcordia Issue 1	Level I		2.00	0.004535	.1191	220487045.01
1129710391	Capacitor	C144,C145	Telcordia Issue 1	Level I		2.00	0.004535	.1191	220487045.01
1129747090	Capacitor	C47,C84	Telcordia Issue 1	Level I		2.00	0.004535	.1191	220487045.01
1149547050	Capacitor	C326,C327	Telcordia Issue 1	Level I		2.00	0.004535	.1191	220487045.01
1189610151	Capacitor	TC7,TC9	Telcordia Issue 1	Level I		2.00	0.004535	.1191	220487045.01
1189615151	Capacitor	TC1,TC12,TC2	Telcordia Issue 1	Level I		3.00	0.004535	.1786	220487045.01
1189622151	Capacitor	TC14,TC15,TC3,TC6	Telcordia Issue 1	Level I		4.00	0.042673	2.2404	23434140.55
11C1501080	Capacitor	C338	Telcordia Issue 1	Level I		1.00	0.004535	.0595	220487045.01
11C2510480	Capacitor	C264,C364,C365, C367,C414,C415	Telcordia Issue 1	Level I		6.00	0.004535	.3572	220487045.01
11C4522190	Capacitor	C217,C227,C256	Telcordia Issue 1	Level I		3.00	0.004535	.1786	220487045.01
11C4568190	Capacitor	C238,C255	Telcordia Issue 1	Level I		2.00	0.004535	.1191	220487045.01
11C4582190	Capacitor	C229	Telcordia Issue 1	Level I		1.00	0.004535	.0595	220487045.01
11E2501080	Capacitor	C369,C406	Telcordia Issue 1	Level I		2.00	0.004535	.1191	220487045.01
11E2510060	Capacitor	C362,C363,C411, C416	Telcordia Issue 1	Level I		4.00	0.004535	.2381	220487045.01
11E2647650	Capacitor	C412,C413	Telcordia Issue 1	Level I		2.00	0.004535	.1191	220487045.01



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11E9501091	Capacitor	C137,C139,C141, C146,C148,C151, C152,C20,C21,C23, C24,C27,C29,C30, C31,C33,C335,C336, C34,C347,C348,C349, C35,C358,C37,C374, C378,C39,C40,C409, C41,C42,C421,C422, C428,C429,C43,C430, C44,C443,C45,C46, C48,C49,C50,C51, C52,C53,C54,C56	Telcordia Issue 1	Level I		81.00	0.004535	4.8218	220487045.01
11E9510051	Capacitor	C143,C173,C174, C176,C177,C188, C191,C194,C195, C196,C198,C203, C205,C210,C211, C219,C220,C223, C225,C228,C242,C28, C328,C337,C339, C340,C341,C343, C344,C345,C346, C351,C353,C354, C355,C356,C357, C359,C360,C361,	Telcordia Issue 1	Level I		45.00	0.004535	2.6788	220487045.01
11E9622050	Capacitor	C212,C239,C304, C312,C314,C322, C324,C330,C331, C332,C333,C437, C438,C439,C440,C58, C82	Telcordia Issue 1	Level I		17.00	0.004535	1.0120	220487045.01
121110100Y	Inductor	L14	Telcordia Issue 1	Level I		1.00	0.002268	.0298	440974090.03
121110106B	Inductor	L2	Telcordia Issue 1	Level I		1.00	0.086173	1.1310	11604581.32
121110106E	Inductor	L10,L11,L12	Telcordia Issue 1	Level I		3.00	0.002268	.0893	440974090.03
121110156A	Inductor	L13	Telcordia Issue 1	Level I		1.00	0.086173	1.1310	11604581.32
1211101863	Inductor	L1	Telcordia Issue 1	Level I		1.00	0.086173	1.1310	11604581.32
121110476G	Inductor	L9	Telcordia Issue 1	Level I		1.00	0.086173	1.1310	11604581.32
121110476Q	Inductor	L8	Telcordia Issue 1	Level I		1.00	0.086173	1.1310	11604581.32
1212306030	Resistor	FB10,FB12,FB13,FB9	Telcordia Issue 1	Level I		4.00	0.011379	.5974	87878027.07
1212306035	Inductor	FB1,FB2,FB3,FB4, FB5,FB6,FB7,FB8	Telcordia Issue 1	Level I		8.00	0.002268	.2381	440974090.03

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Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Quantity	Failure Rate, Unit	Failure Rate, %	MTBF, Unit
123132505D	Miscellaneous	Y2,Y4	Telcordia Issue 1	Level I		2.00	0.150000	3.9376	6666666.67
1231332722	Miscellaneous	Y1	Telcordia Issue 1	Level I		1.00	0.150000	1.9688	6666666.67
1233310040	Miscellaneous	Y5	Telcordia Issue 1	Level I		1.00	0.360000	4.7251	2777777.78
1301003440	Semiconductor	D6,D7	Telcordia Issue 1	Level I		2.00	0.023881	.6269	41874327.58
1301005440	Semiconductor	D13	Telcordia Issue 1	Level I		1.00	0.023881	.3134	41874327.58
1304001340	Semiconductor	D12	Telcordia Issue 1	Level I		1.00	0.004877	.0640	205063180.81
1304101340	Semiconductor	D11	Telcordia Issue 1	Level I		1.00	0.004877	.0640	205063180.81
1314880010	Integrated Circuit	Q17	Telcordia Issue 1	Level I		1.00	0.059366	.7792	16844654.92
1315446310	Semiconductor	U37	Telcordia Issue 1	Level I		1.00	0.079603	1.0448	12562298.27
1315482110	Semiconductor	Q6	Telcordia Issue 1	Level I		1.00	0.079603	1.0448	12562298.27
1315482410	Semiconductor	Q7	Telcordia Issue 1	Level I		1.00	0.079603	1.0448	12562298.27
1315495710	Integrated Circuit	Q9	Telcordia Issue 1	Level I		1.00	0.059366	.7792	16844654.92
1315668012	Semiconductor	U24	Telcordia Issue 1	Level I		1.00	0.023881	.3134	41874327.58
1315700216	Semiconductor	Q1,Q11,Q13,Q18,Q2, Q3,Q4,Q5,Q8	Telcordia Issue 1	Level I		9.00	0.079603	9.4033	12562298.27
1315889611	Semiconductor	U29	Telcordia Issue 1	Level I		1.00	0.079603	1.0448	12562298.27
14S3025200	Integrated Circuit	U43	Telcordia Issue 1	Level I		1.00	0.059366	.7792	16844654.92
14S3511800	Integrated Circuit	U30	Telcordia Issue 1	Level I		1.00	0.059366	.7792	16844654.92
14S3621601	Integrated Circuit	U39	Telcordia Issue 1	Level I		1.00	0.059366	.7792	16844654.92
14S4160070	Integrated Circuit	U1	Telcordia Issue 1	Level I	33.80	1.00	0.155967	2.0471	6411602.33
14S4733500	Integrated Circuit	U12	Telcordia Issue 1	Level I		1.00	0.026183	.3437	38193355.79
14S4751100	Integrated Circuit	U16	Telcordia Issue 1	Level I		1.00	0.026183	.3437	38193355.79
14S4821101	Integrated Circuit	U22	Telcordia Issue 1	Level I	29.30	1.00	0.125628	1.6489	7959996.56
14S4959100	Integrated Circuit	U27	Telcordia Issue 1	Level I	33.10	1.00	0.150865	1.9801	6628461.55
14S4959500	Integrated Circuit	U57	Telcordia Issue 1	Level I		1.00	0.026183	.3437	38193355.79
14S4TOPC00	Integrated Circuit	U13	Telcordia Issue 1	Level I	34.30	1.00	0.159704	2.0962	6261597.75
14S6308002	Integrated Circuit	U41	Telcordia Issue 1	Level I		1.00	0.035882	.4710	27868824.73
14S634022E	Integrated Circuit	U19	Telcordia Issue 1	Level I		1.00	0.026372	.3461	37918485.54
14S82C6410	Integrated Circuit	U40	Telcordia Issue 1	Level I		1.00	0.026183	.3437	38193355.79
14S9781800	Integrated Circuit	U3	Telcordia Issue 1	Level I		1.00	0.059366	.7792	16844654.92
1540700081	Resistor	RP5,RP8	Telcordia Issue 1	Level I		2.00	0.000000	.0000	.00
1540710382	Resistor	RP1,RP2,RP3	Telcordia Issue 1	Level I		3.00	0.006246	.2459	160102772.00
1540782282	Resistor	RN1,RN2	Telcordia Issue 1	Level I		2.00	0.012492	.3279	80051386.00
1600030203	Connection	SW1	Telcordia Issue 1	Level I		1.00	0.001138	.0149	878780270.71
16540M0001	Connection	CN4	Telcordia Issue 1	Level I		1.00	0.125173	1.6429	7988911.55
1301005444	Semiconductor	D1	Telcordia Issue 1	Level I		1.00	0.023881	.3134	41874327.58
165300320D	Connection	JP1	Telcordia Issue 1	Level I		1.00	0.001138	.0149	878780270.71

