

NANOCOM-BT

Reliability Prediction Report (MTBF)

Summary	Failure Rate: 1078.847693 ppm MTBF: 92,691 Hours
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Issue date	Approval	Test Engineer
2014/12/02	Tom Lin	Danny Chen

Reliability Prediction (MTBF)

I . Model Name: NANOCOM-BT

II . Prediction Date: DEC .2, 2014

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

IV . Predicted by: Danny

V . Equipment: Windchill Quality Solutions 10.1

VI. Simulation Environment:

- Temperature: 30 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 Failure rate multiplier is 1000000000.
- MTBF : MTBF is always specified in hours.

VIII. Prediction Result:

COM-BT (9697NUBT0C-D)

- Failure Rate: 1078.847693 ppm

- MTBF: 92.691 Hours

**AAEON Reliability Prediction
Summary**

File Name: NANOCOM-BT.rfp
Duty Cycle: 100
Calculation Model: Telcordia Issue 2
Method: Method I Case 3

Failure Rate: 1078.847693
MTBF (hrs): 92,691
Temperature: 30
Environment: GF, GU - Ground Fixed, Uncontrolled

Assembly Name	Part Number	Ref Des	Quantity	Failure Rate	MTBF
NANOCOM-BT	9697NUBT0C-D		1	1078.847693	92,691

File Name: NANOCOM-BT.rfp
Assembly: 9697NUBTC-D
Ref Des:
Description:

Failure Rate: 1078.847693
MTBF (hrs): 92,691
Temperature: 30
Environment: GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1050500334	Resistor	R352,R390,R391		0.254704	3	107020754.986850
1050501054	Resistor	R34,R493		0.254704	2	154078778.388085
1050501064	Resistor	R143		0.254704	1	282340674.079668
1050501234	Resistor	R492		0.254704	1	282340674.079668
1050501634	Resistor	R193,R361,R711		0.254704	3	107020754.986850
1050501834	Resistor	R19		0.254704	1	282340674.079668
1050502004	Resistor	R160,R708		0.254704	2	154078778.388085
1050502224	Resistor	R265,R266,R346, R387		0.254704	4	82309758.689546
1050502724	Resistor	R719		0.254704	1	282340674.079668
1050503604	Resistor	R908		0.254704	1	282340674.079668
1050504724	Resistor	R291,R293,R295, R296,R297,R70,R71		0.254704	7	48991237.965885
1050504764	Resistor	R148		0.254704	1	282340674.079668
1050507530	Resistor	R127		0.254704	1	282340674.079668
1050508224	Resistor	R710,R714		0.254704	2	154078778.388085
1050510034	Resistor	R17,R536,R55,R904, R906,R907		0.254704	6	56573956.677649
1050516204	Resistor	R69		0.254704	1	282340674.079668
1050516964	Resistor	R161,R707		0.254704	2	154078778.388085
1050520004	Resistor	R158		0.254704	1	282340674.079668
1050520034	Resistor	R175		0.254704	1	282340674.079668
1050524004	Resistor	R254,R255,R260, R261		0.254704	4	82309758.689546
1050529464	Resistor	R68		0.254704	1	282340674.079668
1050530004	Resistor	R675,R687		0.254704	2	154078778.388085
1050530164	Resistor	R258,R259		0.254704	2	154078778.388085
1050540214	Resistor	R147		0.254704	1	282340674.079668
1050545304	Resistor	R713		0.254704	1	282340674.079668
1050545364	Resistor	R155,R168		0.254704	2	154078778.388085
1050547004	Resistor	R695		0.254704	1	282340674.079668
1050549904	Resistor	R54		0.254704	1	282340674.079668
1050549934	Resistor	R16		0.254704	1	282340674.079668
1050560424	Resistor	R725		0.254704	1	282340674.079668
1050562004	Resistor	R674,R683		0.254704	2	154078778.388085
1050568124	Resistor	R505		0.254704	1	282340674.079668
1050573264	Resistor	R703,R704,R705		0.254704	3	107020754.986850
1050756004	Resistor	R679		0.254704	1	282340674.079668
1059700001	Resistor	R905		0.254704	1	282340674.079668
1059700101	Resistor	R672		0.254704	1	282340674.079668

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105A500139	Capacitor	R141,R142,R289, R392,R712		0.112881	5	159367490.199266
105A501039	Capacitor	R268,R271,R273, R276,R278,R285, R377,R378,R527, R529,R530,R531, R532,R533,R546		0.112881	15	55479656.844874
105A501139	Capacitor	R706		0.112881	1	704977644.692287
105A502039	Capacitor	R171,R180		0.112881	2	375289731.076049
105A503309	Capacitor	R33,R35,R36, R39		0.112881	4	196873384.410843
105A505109	Capacitor	R144,R152,R154, R156		0.112881	4	196873384.410843
105A510009	Capacitor	R348,R363,R388, R676,R689,R692, R696,R720		0.112881	8	101746760.035398
105A512413	Capacitor	R146		0.112881	1	704977644.692287
105A515009	Capacitor	R100,R101,R99		0.474448	3	59399119.141203
105A515034	Capacitor	R37		0.474448	1	159663026.715137
105A520003	Capacitor	R746		0.474448	1	159663026.715137
105A523263	Inductor	R67		0.494425	1	154760964.143460
105A533269	Inductor	R96		0.494425	1	154760964.143460
105A535703	Inductor	R98		0.494425	1	154760964.143460
105A540203	Inductor	R83,R84,R90		0.494425	3	57363284.375370
105A547563	Miscellaneous	R139		1.920000	1	23844262.770939
105A549919	Miscellaneous	R470		1.920000	1	23844262.770939
105A549969	Semiconductor	R169,R170,R93, R94, R95		0.779341	5	21965031.404253
105A551123	Semiconductor	R196		0.779341	1	92807310.010983
105A700003	Semiconductor	R284,R718		0.779341	2	50578095.223398

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105A700009	Semiconductor	R102,R103,R104, R105,R109,R116, R133,R134,R138, R153,R163,R165, R182,R190,R207,R22, R27,R28,R282,R286, R288,R29,R300, R32,R351,R357,R362, R373,R375,R376, R382,R386,R402, R406,R411,R412, R418,R42,R43,R437, R44,R45,R46,R465, R47,R479,R48,R481, R482,R49,		0.779341	79	1559413.507606
105A70000A	Semiconductor	R234,R238,R342, R422,R423,R459, R471,R495		0.779341	8	14161142.003130
105A700139	Semiconductor	R41,R433,R434,R496, R497		0.779341	5	21965031.404253

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105A701039	Semiconductor	R108,R110,R178, R213,R215,R218, R287,R306,R333, R335,R336,R337, R340,R341,R343, R344,R358,R365, R366,R367,R368, R383,R394,R395, R397,R398,R400, R421,R426,R430, R451,R452,R453, R454,R455,R456, R457,R466,R467, R468,R469,R478, R480,R484,R508, R510,R514,R515,		2.246336	58	729932.370097
105A701059	Semiconductor	R123,R137,R353, R393,R539		2.246336	5	7551839.591592
105A702209	Semiconductor	R162,R164,R166, R167,R179,R208		2.246336	6	6378891.324740

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105A702229	Semiconductor	R113,R114,R115, R117,R118,R129, R130,R173,R174, R176,R177,R183, R185,R188,R189, R192,R242,R309, R319,R320,R321, R322,R323,R324, R325,R326,R328, R329,R330,R331, R435,R436,R438, R439,R440,R444, R445,R462,R463, R464,R472,R474, R521,R523,R540, R542,R62,R653,R		2.246336	49	860294.156984
105A703309	Semiconductor	R354,R355,R356, R359,R380,R381, R424,R425,R660, R716,R717		2.246336	11	3618924.681337
105A704729	Semiconductor	R13,R20,R26,R31, R38,R40		2.246336	6	6378891.324740
105A704739	Integrated Circuit	R194,R195		4.380300	2	6834791.244197
105A708229	Integrated Circuit	R131,R135,R149, R150,R420,R485, R486,R487,R489,R65, R66		4.380300	11	1620070.856968
105A710039	Integrated Circuit	R159		4.380300	1	11739202.588727
105A720009	Connection	R535,R537		1.618483	2	20390152.380746

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105A733009	Integrated Circuit	R414		4.380300	1	11739202.588727
105A747009	Resistor	R119		0.997144	1	51606907.671214
105B700009	Resistor	RT1,RT2		0.997144	2	30043399.401299
105B710039	Resistor	RT7		0.997144	1	51606907.671214
106B501034	Connection	C143,C146,C182,C183,C184,C185,C186,C187,C188,C189,C19,C20,C205,C206,C207,C208,C209,C21,C210,C211,C212,C213,C215,C216,C219,C220,C224,C225,C226,C227,C229,C23,C230,C234,C238,C24,C241,C243,C244,C245,C246,C247,C248,C249,C25,C250,C251,C252,C26,C27		1.618483	92	625969.650569
106BA01033	Resistor	C307,C308,C37,C38,C42,C43		0.254704	6	56573956.677649
1121501690	Resistor	C284,C288		0.254704	2	154078778.388085
1124418090	Resistor	C123,C134		0.254704	2	154078778.388085
1124427091	Resistor	C2		0.254704	1	282340674.079668
1129522790	Resistor	C180,C181,C199,C204,C55,C56,C61,C62,C83,C84,C85,C93,C94		0.254704	13	27342571.921361

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1129610080	Resistor	C10,C11,C12,C13,C138,C14,C15,C16,C214,C66,C8,C9		0.254704	12	29507083.749401
1129622690	Resistor	C567		0.254704	1	282340674.079668
1129701790	Resistor	C266		0.254704	1	282340674.079668
1129747090	Resistor	C114		0.254704	1	282340674.079668
1129747090	Resistor	C117		0.254704	1	282340674.079668
1189610192	Resistor	C433		0.254704	1	282340674.079668
1189610192	Resistor	C466		0.254704	1	282340674.079668
1189610192	Resistor	C435,C448		0.254704	2	154078778.388085
1189615154	Resistor	C242		0.254704	1	282340674.079668
1189622154	Resistor	C115		0.254704	1	282340674.079668
11A2410240	Resistor	C283		0.254704	1	282340674.079668
11A4422190	Resistor	C1,C103,C104,C6		0.254704	4	82309758.689546
11C1539840	Resistor	C331		0.254704	1	282340674.079668
11C2610030	Resistor	C106,C125,C133		0.254704	3	107020754.986850
11C9522060	Resistor	C116,C217,C221		0.254704	3	107020754.986850
11E2501690	Resistor	C420,C421,C422,C423,C425,C426,C427,C442,C443,C454,C455,C472,C473,C498,C500		0.254704	15	23852782.943395
11E2522060	Resistor	C147		0.254704	1	282340674.079668
11E2610030	Resistor	C129		0.254704	1	282340674.079668

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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
11E4433690	Resistor	C105,C107,C108, C109,C111,C112, C113,C118,C119, C120,C121,C122, C126,C127,C128, C130,C131,C132, C135,C136,C137, C139,C140,C141, C142,C144,C145, C279,C319,C320,C48, C51,C54,C60,C64, C65,C67,C76,C77, C78,C86,C87,C88,C95		0.254704	44	8443240.413160
11E9501080	Resistor	C312,C314,C332,C44, C45,C46,C505		0.254704	7	48991237.965885

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11E9501090	Resistor	C148,C149,C150, C151,C152,C153, C154,C155,C156, C157,C158,C159, C160,C161,C162, C163,C164,C165, C166,C167,C168, C169,C170,C171, C172,C173,C174, C175,C176,C177, C178,C179,C190, C191,C192,C193, C194,C195,C196, C197,C200,C201, C222,C261,C262, C263,C264,C267,		0.254704	62	6043178.840887
11E9501091	Resistor	C203		0.254704	1	282340674.079668
11E9510490	Resistor	C240,C265,C275, C299,C303		0.254704	5	67008142.102588
11E9547680	Resistor	C452,C488,C494		0.254704	3	107020754.986850
11E9610080	Resistor	C100,C101,C228,C68, C69,C70,C82,C89, C90,C96,C97,C98		0.254704	12	29507083.749401
11E9622052	Resistor	C198,C254,C91,C92		0.254704	4	82309758.689546

File Name: NANOCOM-BT.rfp
Assembly: 9697NUBTOC-D
Ref Des:
Description:

Failure Rate: 1078.847693
MTBF (hrs): 92,691
Temperature: 30
Environment: GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
11E9622080	Resistor	C539,C540,C541, C542,C543,C544, C545,C546,C547, C548,C549,C550		0.254704	12	29507083.749401
11E9647690	Resistor	C202		0.254704	1	282340674.079668
11EA501050	Resistor	C124,C280,C287, C291,C450,C482, C483,C486,C489, C491,C492,C495, C497,C501,C502, C555,C556,C558, C559,C560,C561, C563,C564,C565, C566,C71,C72,C79, C80,C81		0.254704	30	12244464.256771
11EA510390	Resistor	C417,C418,C430, C432,C440,C451, C460,C462,C463, C464,C468,C477, C479		0.254704	13	27342571.921361
11EA610040	Resistor	L9		0.254704	1	282340674.079668
11EA610040	Resistor	L10		0.254704	1	282340674.079668
11EA647010	Resistor	L12		0.254704	1	282340674.079668
121110106M	Resistor	L13	42.8	0.518491	1	138697260.769115
121110106M	Resistor	L14		0.254704	1	282340674.079668
1211103376	Resistor	L11	41	0.505016	1	142397853.371736
1211103376	Resistor	L8	42.5	0.516230	1	139304625.071236
1211106867	Resistor	FB1,FB2,FB3		0.254704	3	107020754.986850
1211110078	Resistor	Y1,Y5		0.772458	2	38596617.434771
121113307B	Resistor	Y6		0.772458	1	66247589.526685
1212306030	Capacitor	Y2		0.112881	1	704977644.692287
12310025A3	Capacitor	D1,D11,D22, D24,D8		0.112881	5	159367490.199266
1231324055	Capacitor	D20,D7		0.112881	2	375289731.076049
1231332726	Capacitor	D18,D23		0.112881	2	375289731.076049

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1301005444	Capacitor	D10		0.112881	1	704977644.692287
1301005450	Capacitor	LED3		0.112881	1	704977644.692287
1301400642	Capacitor	LED2		0.112881	1	704977644.692287
1301793040	Capacitor	Q30		0.112881	1	704977644.692287
1304001340	Capacitor	Q23	74.9	0.164969	1	482384679.052968
1304001340	Capacitor	Q25		0.112881	1	704977644.692287
1304300140	Capacitor	Q10		0.112881	1	704977644.692287
1315013320	Capacitor	Q55		0.112881	1	704977644.692287
1315036640	Capacitor	Q11		0.112881	1	704977644.692287
1315036640	Capacitor	Q31		0.112881	1	704977644.692287
1315443512	Capacitor	Q24	73.9	0.164298	1	484353190.045768
1315443512	Capacitor	Q26		0.112881	1	704977644.692287
1315492510	Capacitor	Q28,Q40,Q44,Q45,Q46,Q47,Q5,Q51,Q52,Q53,Q54,Q56,Q59,Q60,Q61,Q62,Q63,Q8		0.112881	18	46478509.590073
1315492510	Capacitor	Q64		0.112881	1	704977644.692287
1315700216	Capacitor	U7		0.112881	1	704977644.692287
1315720010	Capacitor	U1	72.8	0.163560	1	486540011.068245
1315EM6K10	Capacitor	U3	64.9	0.158227	1	502936044.899689
1430087650	Capacitor	U62		0.112881	1	704977644.692287
1430091100	Capacitor	U66		0.112881	1	704977644.692287
1430091100	Capacitor	U63		0.112881	1	704977644.692287
1430091100	Capacitor	U64	41.9	0.142436	1	558694561.726251
1430091100	Capacitor	U65	43.9	0.143824	1	553303604.167456
1430959601	Capacitor	U61		0.112881	1	704977644.692287
14401016A1	Capacitor	U23,U25		0.112881	2	375289731.076049
1440210IT0	Capacitor	U26,U30		0.112881	2	375289731.076049
1440E38450	Inductor	U29		0.494425	1	154760964.143460
146324C020	Inductor	U42		0.494425	1	154760964.143460
1468014680	Miscellaneous	U39		1.920000	1	23844262.770939
1490001080	Semiconductor	U47		2.246336	1	31642600.748419
1490001080	Semiconductor	U48		2.246336	1	31642600.748419
149TB01040	Integrated Circuit	U20		4.380300	1	11739202.588727
149TS01040	Integrated Circuit	U8		4.380300	1	11739202.588727
14E0085280	Integrated Circuit	U32		2.170676	1	23689035.791249
14S3010700	Integrated Circuit	U5		4.380300	1	11739202.588727
14S3010700	Integrated Circuit	U6		4.380300	1	11739202.588727
14S4251402	Integrated Circuit	U18		4.380300	1	11739202.588727
14S5A00821	Integrated Circuit	RP1,RP2		4.380300	2	6834791.244197

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Environment: GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
14S5A12506	Integrated Circuit	RP11,RP12,R P13, RP16,RP17,R P18, RP20,RP21,R P22, RP23,RP24,R P25, RP26,RP27,R P28, RP29,RP30,R P31, RP32,RP33,R P34,RP7, RP8,RP9		4.380300	24	800136.708537
14S5A30601	Integrated Circuit	RP10,RP14,R P15, RP19,RP5,RP 6		4.380300	6	2750969.191556
14S6206403	Integrated Circuit	SW1 (1~2OFF)		4.380300	1	11739202.588727
14S6216060	Integrated Circuit	U21		2.601860	1	25551442.237972
14S6308002	Integrated Circuit	CN1		2.601860	1	25551442.237972
14S9330600	Integrated Circuit	U36		2.601860	1	25551442.237972
14S9346000	Integrated Circuit	U37		1.106328	1	58231413.220643
1540700081	Integrated Circuit	R447,R448,R 449, R450		1.106328	4	17763990.409389
1540715081	Integrated Circuit	PCB		1.106328	1	58231413.220643
1540736081	Integrated Circuit	R499,R500		4.380300	2	6834791.244197
1600000403	Integrated Circuit	L15	46.1	74.324373	1	691848.860650
16540M0000	Connection	U60	48.8	13.543121	1	4264640.168168