

PICO-BT01

Reliability Prediction Report (MTBF)

Summary	Failure Rate: 11570.059998 ppm MTBF: 86.430 Hours
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Issue date	Approval	Test Engineer
2015/02/13	KJ Wang	Danny Chen

Reliability Prediction (MTBF)

I . Model Name: PICO-BT01

II . Prediction Date: Feb .13, 2015

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:

PICO-BT01 (9697BT0107-D):

- Failure Rate: 11570.059998 ppm
- MTBF: 86.430 Hours

**AAEON Reliability Prediction
Summary**

File Name: PICO-BT01.rfp
Duty Cycle: 100
Calculation Model: Telcordia Issue 2
Method: Method I Case 3

Failure Rate: 11570.059998
MTBF (hrs): 86,430
Temperature: 30
Environment: GF, GU - Ground Fixed, Uncontrolled

Assembly Name	Part Number	Ref Des	Quantity	Failure Rate	MTBF
PICO-BT01	9697BT0107-D		1	11570.059998	86,430

File Name: PICO-BT01.rfp
Assembly: 9697BT0107-D
Ref Des:
Description:

Failure Rate: 11570.059998
MTBF (hrs): 86,430
Temperature: 30
Environment: GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1050501224	Resistor	R110		2.547039	1	282340674.079668
1050501234	Resistor	R356		2.547039	1	282340674.079668
1050501634	Resistor	R495		2.547039	1	282340674.079668
1050502004	Resistor	R493,R83		2.547039	2	154078778.388085
1050502724	Resistor	R557		2.547039	1	282340674.079668
1050504724	Resistor	R1,R198,R2, R200, R201,R203		2.547039	6	56573956.677649
1050505124	Resistor	R324,R388		2.547039	2	154078778.388085
1050508224	Resistor	R555,R556		2.547039	2	154078778.388085
1050510034	Resistor	R326,R334,R 337, R421,R6,R8		2.547039	6	56573956.677649
1050510214	Resistor	R525		2.547039	1	282340674.079668
1050516204	Resistor	R5		2.547039	1	282340674.079668
1050516964	Resistor	R491,R84		2.547039	2	154078778.388085
1050520034	Resistor	R116,R120		2.547039	2	154078778.388085
1050523264	Resistor	R3		2.547039	1	282340674.079668
1050527424	Resistor	R499,R500		2.547039	2	154078778.388085
1050529464	Resistor	R4		2.547039	1	282340674.079668
1050530124	Resistor	R501		2.547039	1	282340674.079668
1050533004	Resistor	R479		2.547039	1	282340674.079668
1050535704	Resistor	R22		2.547039	1	282340674.079668
1050540204	Resistor	R18,R32,R34		2.547039	3	107020754.986850
1050540214	Resistor	R60		2.547039	1	282340674.079668
1050545364	Resistor	R107,R97		2.547039	2	154078778.388085
1050547564	Resistor	R61		2.547039	1	282340674.079668
1050561934	Resistor	R510		2.547039	1	282340674.079668
1050573264	Resistor	R488,R489,R 490		2.547039	3	107020754.986850
1050703334	Resistor	R341		2.547039	1	282340674.079668
1050756004	Resistor	R311,R313,R 315, R317,R318,R 320, R464,R466		2.547039	8	43225424.698300
1059700001	Resistor	R253		2.547039	1	282340674.079668
1059700101	Resistor	R452		2.547039	1	282340674.079668
105A500103	Resistor	R507		2.547039	1	282340674.079668
105A500139	Resistor	R100,R459,R 475, R477,R497,R 99		2.547039	6	56573956.677649
105A500173	Resistor	R173		2.547039	1	282340674.079668
105A501003	Resistor	R235		2.547039	1	282340674.079668
105A501013	Resistor	R761		2.547039	1	282340674.079668
105A501039	Resistor	R376,R386,R 518, R520		2.547039	4	82309758.689546

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Assembly: 9697BT0107-D
Ref Des:
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105A501139	Resistor	R492		2.547039	1	282340674.079668
105A502039	Resistor	R385,R387		2.547039	2	154078778.388085
105A502403	Resistor	R763,R764		2.547039	2	154078778.388085
105A503309	Resistor	R423		2.547039	1	282340674.079668
105A505109	Resistor	R75,R76,R77 ,R78, R79		2.547039	5	67008142.102588
105A506834	Resistor	R505		2.547039	1	282340674.079668
105A507509	Resistor	R207,R208,R 209		2.547039	3	107020754.986850
105A507533	Resistor	R509		2.547039	1	282340674.079668
105A510003	Resistor	R741,R742,R 743, R744		2.547039	4	82309758.689546
105A510009	Resistor	R415,R465,R 467, R476,R481,R 539		2.547039	6	56573956.677649
105A510033	Resistor	R522		2.547039	1	282340674.079668
105A510223	Resistor	R511		2.547039	1	282340674.079668
105A515009	Resistor	R14,R15,R16 ,R204, R205,R206		2.547039	6	56573956.677649
105A518003	Resistor	R762		2.547039	1	282340674.079668
105A533269	Resistor	R62		2.547039	1	282340674.079668
105A546413	Resistor	R523		2.547039	1	282340674.079668
105A549919	Resistor	R284		2.547039	1	282340674.079668
105A549969	Resistor	R114,R47,R4 8,R49, R50,R86		2.547039	6	56573956.677649
105A561909	Resistor	R462,R474		2.547039	2	154078778.388085
105A700003	Resistor	R460,R468,R 469, R483,R496,R 516, R517,R519,R 524, R527,R528		2.547039	11	32049696.385471

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105A700009	Resistor	R113,R125,R136, R137,R138,R139, R167,R211,R276, R295,R303,R327, R368,R374,R377, R381,R412,R414, R426,R480,R482, R494,R503,R514, R540,R543,R750, R842,R85,R92,R96		2.547039	31	11861900.957214
105A700139	Resistor	R336,R396,R397, R400,R420,R422, R427,R506,R87		2.547039	9	38754445.632391

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105A701039	Resistor	R130,R131,R132, R133,R134,R187, R188,R189,R190, R192,R193,R194, R195,R196,R197, R214,R215,R227, R236,R239,R242, R249,R262,R264, R265,R270,R271, R272,R273,R274, R275,R277,R278, R279,R280,R281, R282,R283,R297, R298,R299,R301, R302,R310,R325, R328,R329,R33,R		2.547039	106	3573082.374688
105A701059	Resistor	R230,R314,R358,R57		2.547039	4	82309758.689546
105A701069	Resistor	R82		2.547039	1	282340674.079668
105A702039	Resistor	R66,R88,R89		2.547039	3	107020754.986850
105A702229	Resistor	R104,R105,R106, R117,R119,R12,R121, R122,R13,R17,R19, R20,R21,R212,R213, R237,R238,R64		2.547039	18	20032117.836120
105A703309	Resistor	R111,R112,R300, R389,R390,R391, R392,R395,R411, R413		2.547039	10	35079934.879747

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105A703329	Resistor	R285,R286,R287, R704,R774		2.547039	5	67008142.102588
105A704729	Resistor	R267,R312,R319, R321,R322,R408, R409,R418,R450, R485,R487		2.547039	11	32049696.385471
105A705139	Resistor	R366,R367,R508		2.547039	3	107020754.986850
105A708229	Resistor	R94,R98		2.547039	2	154078778.388085
105A710039	Resistor	R229,R231,R232, R243,R251,R342, R351,R353,R354, R355,R361,R364, R461,R463,R498, R502,R504,R513, R531,R532,R533, R535,R536,R537, R538,R91		2.547039	26	14061076.827148
105A720009	Resistor	R80		2.547039	1	282340674.079668
105A733009	Resistor	R292,R294,R375, R416,R417,R424, R425,R544		2.547039	8	43225424.698300
105A747039	Resistor	R419		2.547039	1	282340674.079668
105B500172	Resistor	R671		2.547039	1	282340674.079668
106BA01033	Resistor	RT1		7.724580	1	66247589.526685
1121501680	Capacitor	C438,C439,C444		1.128806	3	257514172.353070

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1121501691	Capacitor	C1,C101,C109,C110,C113,C114,C115,C116,C118,C119,C128,C129,C130,C131,C132,C133,C134,C135,C137,C138,C14,C145,C146,C147,C148,C149,C150,C151,C152,C155,C167,C168,C169,C17,C172,C173,C174,C175,C176,C177,C178,C182,C183,C188,C190,C192,C193,C194,C195		1.128806	155	5602964.973237
1122501780	Capacitor	C442		1.128806	1	704977644.692287
1124410191	Capacitor	C179,C322,C323		1.128806	3	257514172.353070
1124418090	Capacitor	C12,C13,C263,C264		1.128806	4	196873384.410843
1124427091	Capacitor	C10,C11,C157,C159,C161,C221,C222		1.128806	7	115633865.771428
1124533280	Capacitor	C329,C331		1.128806	2	375289731.076049
1129622690	Capacitor	C117,C136,C24,C25,C26,C27,C341,C35,C36		1.128806	9	90863428.080946

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1129701791	Capacitor	C191,C233,C249, C250,C251,C252, C253,C254,C255, C291,C292,C293, C294,C336,C458, C463,C67,C95		1.128806	18	46478509.590073
1129710091	Capacitor	C156,C158,C160, C318,C342		1.128806	5	159367490.199266
1129710391	Capacitor	C186,C433		1.128806	2	375289731.076049
1129747090	Capacitor	C600		1.128806	1	704977644.692287
1189610192	Capacitor	TC10		4.744484	1	159663026.715137
1189615154	Capacitor	TC2,TC3,TC4,TC5		4.744484	4	45505862.704531
1189622154	Capacitor	TC6,TC7,TC8,TC9		4.744484	4	45505862.704531
1189633151	Capacitor	TC1		4.744484	1	159663026.715137
1189922181	Capacitor	TC11		4.744484	1	159663026.715137
11C1501080	Capacitor	C105,C80,C91		1.128806	3	257514172.353070
11C1539840	Capacitor	C220		1.128806	1	704977644.692287
11C4401880	Capacitor	C445		1.128806	1	704977644.692287
11C4522290	Capacitor	C435		1.128806	1	704977644.692287
11C4547190	Capacitor	C223,C224,C225		1.128806	3	257514172.353070
11E1510050	Capacitor	C427,C428,C429, C437,C440,C441		1.128806	6	133979725.056342
11E1522440	Capacitor	C454		1.128806	1	704977644.692287
11E1547650	Capacitor	C436		1.128806	1	704977644.692287
11E2501690	Capacitor	C430		1.128806	1	704977644.692287
11E3510010	Capacitor	C198,C335,C338, C461		1.128806	4	196873384.410843
11E4433090	Capacitor	C162,C163,C164, C165,C421		1.128806	5	159367490.199266

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11E9501091	Capacitor	C100,C102,C104, C106,C107,C108, C141,C142,C143, C144,C15,C154,C16, C171,C18,C210,C228, C230,C231,C245, C266,C272,C275, C280,C289,C300, C308,C309,C310,C32, C343,C362,C37,C38, C39,C425,C434,C55, C56,C57,C58,C59, C60,C61,C62,C63, C68,C69,C70,C71, C72,C75,C76		1.128806	69	12464035.316736
11E9510050	Capacitor	C153,C170,C273, C278,C432		1.128806	5	159367490.199266
11E9522790	Capacitor	C166		1.128806	1	704977644.692287
11E9547680	Capacitor	C286,C287		1.128806	2	375289731.076049
11E9547681	Capacitor	C443		1.128806	1	704977644.692287
11E9547790	Capacitor	C205,C74		1.128806	2	375289731.076049
11E9610080	Capacitor	C189,C200,C204, C258,C262,C424		1.128806	6	133979725.056342
11E9622050	Capacitor	C187,C446,C447, C448,C450		1.128806	5	159367490.199266
11E9622052	Capacitor	C368,C399,C405		1.128806	3	257514172.353070
11E9622080	Capacitor	C45,C453,C457,C46, C47,C64,C65,C66, C97		1.128806	9	90863428.080946
11E9647690	Capacitor	C40,C41		1.128806	2	375289731.076049

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11EA610040	Capacitor	C120,C121,C122, C123,C139,C140, C211,C217,C219, C242,C246,C315,C34, C398,C400,C401, C404,C406,C407, C408,C413,C415, C417,C418,C42,C43, C44,C464,C96		1.128806	29	29193260.380640
11EA647010	Capacitor	C353,C355,C359, C360,C364,C377, C379,C386,C388, C390,C391,C396, C397		1.128806	13	63728475.410842
11EB610050	Capacitor	C299,C302,C303, C306,C307,C347, C348,C349,C351, C352,C354,C356, C370,C374,C376, C378,C382,C389, C412,C414		1.128806	20	41950408.034165
121110156U	Inductor	L9		4.944252	1	154760964.143460
1211103373	Inductor	L2,L5		4.944252	2	83201062.149749
1211106867	Inductor	L3		4.944252	1	154760964.143460
1211110078	Inductor	L4,L7		4.944252	2	83201062.149749
1211110079	Inductor	L8	60.1	12.791842	1	59817589.499700
121113307B	Inductor	L1,L6		4.944252	2	83201062.149749
1212306030	Inductor	FB1,FB10,FB11,FB12, FB15,FB17,FB19		4.944252	7	25970990.056682
1212308054	Inductor	FB13,FB14		4.944252	2	83201062.149749

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12123D0001	Inductor	FB2,FB21,FB23,FB3,FB4,FB5,FB6,FB7,FB8		4.944252	9	20443842.451049
1214109000	Inductor	CH12,CH14,CH6		4.944252	3	57363284.375370
1214309009	Inductor	CH8,CH9		4.944252	2	83201062.149749
12310025A2	Miscellaneous	Y1,Y3		19.200000	2	8854051.752197
1231324056	Miscellaneous	Y5		19.200000	1	23844262.770939
1231332726	Miscellaneous	Y2		19.200000	1	23844262.770939
12330024A1	Miscellaneous	Y4		19.200000	1	23844262.770939
1301005443	Semiconductor	D17		7.793411	1	92807310.010983
1301005444	Semiconductor	D1,D10,D2		7.793411	3	35106858.962001
1301013040	Semiconductor	D4		7.793411	1	92807310.010983
1301400541	Semiconductor	D8		7.793411	1	92807310.010983
1301400642	Semiconductor	D20		7.793411	1	92807310.010983
1304001340	Optical Device	D19		79.003355	1	6497172.749112
1304101340	Optical Device	D18,D22		79.003355	2	3783722.582110
1304300140	Optical Device	D9		79.003355	1	6497172.749112
1305080040	Semiconductor	D15,D16,D5,U72,U73		7.793411	5	21965031.404253
1310390413	Semiconductor	Q15,Q23,Q24		22.463360	3	12043329.789539
1311390610	Semiconductor	Q21,Q22		22.463360	2	17315095.066101
1315036640	Semiconductor	Q25	59.4	89.344137	1	7955744.524782
1315036640	Semiconductor	Q27	56.7	84.743816	1	8387622.412920
1315230211	Semiconductor	Q16		22.463360	1	31642600.748419
1315230511	Semiconductor	Q11		22.463360	1	31642600.748419
1315443512	Semiconductor	Q31,Q40		22.463360	2	17315095.066101
1315482410	Semiconductor	Q30		22.463360	1	31642600.748419
1315700216	Semiconductor	Q14,Q17,Q19,Q20,Q32,Q33,Q6,Q7,Q8		22.463360	9	4366472.106532
1315720010	Semiconductor	Q26,Q28		22.463360	2	17315095.066101
1315762010	Semiconductor	Q29	52.8	78.402743	1	9065998.204334
1315971500	Semiconductor	U24,U27		22.463360	2	17315095.066101
1315EM6K10	Semiconductor	Q1,Q10,Q12,Q13,Q18,Q2,Q3,Q36,Q37,Q38,Q39,Q4,Q41,Q42,Q43,Q5,Q64,Q66,Q67		22.463360	19	2149533.403027
1430304210	Integrated Circuit	U41		43.803003	1	11739202.588727
1430532190	Integrated Circuit	U40		43.803003	1	11739202.588727
1430959600	Integrated Circuit	U38	62.9	1746.652851	1	294398.700381

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143ALC8920	Integrated Circuit	U43	57.6	1345.471584	1	382179.999582
1440002130	Integrated Circuit	U29		43.803003	1	11739202.588727
1440211AT0	Integrated Circuit	U17		43.803003	1	11739202.588727
1440E38450	Integrated Circuit	U1	47.8	134.769213	1	3815502.935982
149TB01040	Integrated Circuit	U33,U5,U7		43.803003	3	4923240.069161
14S2200900	Integrated Circuit	U8	49.3	880.117801	1	584253.981416
14S2204200	Integrated Circuit	U22		43.803003	1	11739202.588727
14S3104500	Integrated Circuit	U11,U12,U13 ,U25, U26		43.803003	5	3214211.402100
14S3524700	Integrated Circuit	U15		43.803003	1	11739202.588727
14S3902500	Integrated Circuit	U39		43.803003	1	11739202.588727
14S3E00100	Integrated Circuit	U19		43.803003	1	11739202.588727
14S4180100	Integrated Circuit	U20		43.803003	1	11739202.588727
14S4251402	Integrated Circuit	U23		43.803003	1	11739202.588727
14S4631500	Integrated Circuit	U35		43.803003	1	11739202.588727
14S4751100	Integrated Circuit	U37		43.803003	1	11739202.588727
14S4814380	Integrated Circuit	U30		43.803003	1	11739202.588727
14S5912300	Integrated Circuit	U36		26.018600	1	25551442.237972
14S5A00821	Integrated Circuit	U2,U21,U42		26.018600	3	9949526.289768
14S5A30601	Integrated Circuit	U3,U4		26.018600	2	14194252.866846
14S6206403	Integrated Circuit	U34		11.063278	1	58231413.220643
14S9346000	Integrated Circuit	U14		43.803003	1	11739202.588727
1540710280	Resistor	RP1		9.971436	1	51606907.671214
16515A2991	Connection	CN2		16.184835	1	35685591.360212
165251420B	Connection	CN7		16.184835	1	35685591.360212
1652602105	Connection	CN20		16.184835	1	35685591.360212
165300310G	Connection	JP3		16.184835	1	35685591.360212
165300320L	Connection	CN8,JP1,JP4		16.184835	3	14515880.849373
165300520Y	Connection	CN19		16.184835	1	35685591.360212
1653300102	Connection	JP1(2-4),JP4 (2-4)		16.184835	2	20390152.380746
1653300107	Connection	JP3(2-3),JP4 (3-5)		16.184835	2	20390152.380746
1653300108	Connection	JP1(1-3)		16.184835	1	35685591.360212
1654008020	Connection	CN22		16.184835	1	35685591.360212
1654226303	Connection	CN24,CN9		16.184835	2	20390152.380746
1654415305	Connection	CN3		16.184835	1	35685591.360212
1654801330	Connection	CN10		16.184835	1	35685591.360212
1654907009	Connection	CN15		16.184835	1	35685591.360212
1655302025	Connection	CN14		16.184835	1	35685591.360212
1655305130	Connection	CN5		16.184835	1	35685591.360212
1655802020	Connection	CN1,CN21		16.184835	2	20390152.380746
1655805121	Connection	CN11		16.184835	1	35685591.360212
1655820100	Connection	CN23,CN25		16.184835	2	20390152.380746
1655912032	Connection	CN18		16.184835	1	35685591.360212
175011901M	Miscellaneous	CN1A		306.000000	1	1681683.006787
1752000501	Miscellaneous	FS3		2.400000	1	254626042.602335

**Reliability Prediction
Summary**

File Name: PICO-BT01.rfp
Assembly: 9697BT0107-D
Ref Des:
Description:

Failure Rate: 11570.059998
MTBF (hrs): 86,430
Temperature: 30
Environment: GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1752011002	Miscellaneous	FS1		2.400000	1	254626042.602335