

# BOXER-6639

## Reliability Prediction Report (MTBF)

Summary	Failure Rate: 10674.010965 MTBF: 93,685 Hours
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Issue date	QE Manager	Test Engineer
2016-10-17	KJ Wang	Louie Lee

# Reliability Prediction (MTBF)

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**I . Model Name:** BOXER-6639

**II . Prediction Date:** October. 17th, 2016

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

**IV . Predicted by:** Louie Lee

**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:**

BOXER-6639 (M/B: 9697SKLS01-D):

- Failure Rate: 10674.010965
- MTBF: 93,685 Hours

**AAEON Reliability Prediction  
Summary**

**File Name:** BOXER-6639.rfp  
**Duty Cycle:** 100  
**Calculation Model:** Telcordia Issue 2  
**Method:** Method I Case 3

**Failure Rate:** 10674.010965  
**MTBF (hrs):** 93,685  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Assembly Name	Part Number	Ref Des	Quantity	Failure Rate	MTBF
BOXER-6639	9697SKLS01-D		1	10674.010965	93,685

**File Name:** BOXER-6639.rfp  
**Assembly:** 9697SKLS01-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 10674.010965  
**MTBF (hrs):** 93,685  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1050500104	Resistor	R691,R716,R749, R778		2.547039	4	82309758.689546
1050501004	Resistor	R650,R651,R653, R654		2.547039	4	82309758.689546
1050501054	Resistor	R192,R570,R646, R647,R829,R883		2.547039	6	56573956.677649
1050502004	Resistor	R371,R374,R957		2.547039	3	107020754.986850
1050502224	Resistor	R245,R270,R271, R272,R292,R294, R300,R306,R313, R314,R315,R733, R853,R854,R885		2.547039	15	23852782.943395
1050502234	Resistor	R940		2.547039	1	282340674.079668
1050502724	Resistor	R969		2.547039	1	282340674.079668
1050503324	Resistor	R105,R13		2.547039	2	154078778.388085
1050504724	Resistor	R164,R175,R357, R454,R462,R549, R556,R775,R784, R787,R795,R810		2.547039	12	29507083.749401
1050504734	Resistor	R195,R451		2.547039	2	154078778.388085
1050504764	Resistor	R16		2.547039	1	282340674.079668
1050505124	Resistor	R768		2.547039	1	282340674.079668
1050505134	Resistor	R201,R561,R861, R967		2.547039	4	82309758.689546
1050505164	Resistor	R336,R939		2.547039	2	154078778.388085
1050507524	Resistor	R117		2.547039	1	282340674.079668

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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1050510034	Resistor	R103,R104,R114, R115,R116,R118, R119,R120,R225, R244,R254,R311, R320,R55,R56,R582, R588,R600,R61,R62, R63,R645,R649,R65, R652,R655,R71,R72, R73,R77,R779,R785, R79,R85,R884,R905, R91,R93,R96,R97, R98		2.547039	41	9043562.562696
1050512004	Resistor	R100,R110,R111, R112,R67,R70,R74, R80,R81,R82,R95, R99		2.547039	12	29507083.749401
1050512724	Resistor	R473		2.547039	1	282340674.079668
1050517424	Resistor	R52		2.547039	1	282340674.079668
1050520034	Resistor	R50,R53		2.547039	2	154078778.388085
1050522124	Resistor	R48		2.547039	1	282340674.079668
1050524004	Resistor	R193,R208		2.547039	2	154078778.388085
1050524324	Resistor	R19		2.547039	1	282340674.079668
1050524904	Resistor	R231,R280,R298, R299		2.547039	4	82309758.689546
1050524909	Resistor	R181,R229		2.547039	2	154078778.388085
1050524924	Resistor	R480		2.547039	1	282340674.079668
1050525524	Resistor	R12		2.547039	1	282340674.079668
1050526124	Resistor	R37		2.547039	1	282340674.079668
1050528714	Resistor	R955		2.547039	1	282340674.079668
1050530164	Resistor	R919,R923,R930		2.547039	3	107020754.986850
1050530914	Resistor	R856		2.547039	1	282340674.079668
1050533034	Resistor	R66,R962		2.547039	2	154078778.388085
1050540214	Resistor	R45,R47		2.547039	2	154078778.388085
1050542214	Resistor	R106,R659,R69,R87		2.547039	4	82309758.689546
1050545364	Resistor	R17		2.547039	1	282340674.079668
1050547004	Resistor	R207		2.547039	1	282340674.079668

**File Name:** BOXER-6639.rfp  
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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1050547034	Resistor	R57		2.547039	1	282340674.079668
1050549904	Resistor	R326		2.547039	1	282340674.079668
1050556269	Resistor	R139		2.547039	1	282340674.079668
1050560414	Resistor	R541,R954		2.547039	2	154078778.388085
1050561934	Resistor	R750		2.547039	1	282340674.079668
1050573214	Resistor	R318		2.547039	1	282340674.079668
1050700002	Resistor	R1,R1065,R1066, R1067,R1068, ,R1069, R536		2.547039	7	48991237.965885
1050701504	Resistor	R243,R843,R872		2.547039	3	107020754.986850
1050756004	Resistor	R713,R715,R721, R941		2.547039	4	82309758.689546
1053500282	Resistor	R494,R769,R920, R935		2.547039	4	82309758.689546
1053501289	Resistor	R658,R689		2.547039	2	154078778.388085
1053502099	Resistor	R717		2.547039	1	282340674.079668
1054500289	Resistor	R123		2.547039	1	282340674.079668
1054700289	Resistor	R171		2.547039	1	282340674.079668
1059501001	Resistor	R1054		2.547039	1	282340674.079668
1059700001	Resistor	R122,R142,R150, R165,R421,R425, R437,R442,R447, R497,R553,R690, R714,R751,R801, R956		2.547039	16	22425139.809646
1059702261	Resistor	R141		2.547039	1	282340674.079668
105A500103	Resistor	R720		2.547039	1	282340674.079668
105A500113	Resistor	R687,R711,R747, R780		2.547039	4	82309758.689546
105A500133	Resistor	R382		2.547039	1	282340674.079668

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105A500139	Resistor	R15,R217,R219,R236,R273,R286,R30,R31,R332,R362,R568,R583,R586,R59,R619,R620,R634,R635,R639,R641,R796,R797,R851,R898, R945		2.547039	25	14603612.751152
105A500239	Resistor	R75,R814		2.547039	2	154078778.388085
105A501003	Resistor	R543		2.547039	1	282340674.079668
105A501033	Resistor	R113,R331,R343,R349,R356		2.547039	5	67008142.102588
105A501039	Resistor	R1056,R124,R127,R14,R194,R200,R205,R223,R256,R265,R266,R282,R283,R284,R323,R341,R412,R413,R415,R418,R532,R563,R643,R736,R771,R772,R777,R783,R788,R789,R803,R809,R839,R840,R841,R846,R847,R855,R859,R862,R864,R867,R868,R870,R871,R876,R877,R88,R		2.547039	54	6915869.790048
105A501053	Resistor	R971		2.547039	1	282340674.079668
105A501139	Resistor	R860		2.547039	1	282340674.079668



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105A501333	Resistor	R83		2.547039	1	282340674.079668
105A501529	Resistor	R576,R609,R623		2.547039	3	107020754.986850
105A501539	Resistor	R296		2.547039	1	282340674.079668
105A501829	Resistor	R24,R25		2.547039	2	154078778.388085
105A502033	Resistor	R1024,R1027,R333, R347		2.547039	4	82309758.689546
105A502039	Resistor	R564,R565,R794, R817,R904		2.547039	5	67008142.102588
105A503039	Resistor	R78		2.547039	1	282340674.079668
105A503309	Resistor	R237,R238,R239, R247,R481		2.547039	5	67008142.102588
105A504703	Resistor	R637,R640		2.547039	2	154078778.388085
105A505109	Resistor	R324,R328,R337, R350,R901,R909, R911,R913		2.547039	8	43225424.698300
105A506829	Resistor	R2,R4		2.547039	2	154078778.388085
105A506834	Resistor	R734		2.547039	1	282340674.079668
105A507509	Resistor	R138,R20,R21,R595, R596,R599,R9		2.547039	7	48991237.965885
105A507533	Resistor	R152		2.547039	1	282340674.079668
105A508233	Resistor	R29		2.547039	1	282340674.079668
105A510009	Resistor	R137,R140,R156, R162,R166,R597, R607,R618,R622, R636,R977		2.547039	11	32049696.385471
105A510033	Resistor	R663		2.547039	1	282340674.079668
105A510223	Resistor	R153,R235		2.547039	2	154078778.388085
105A510733	Resistor	R108		2.547039	1	282340674.079668
105A511303	Resistor	R335		2.547039	1	282340674.079668
105A512103	Resistor	R824		2.547039	1	282340674.079668
105A512133	Resistor	R129		2.547039	1	282340674.079668
105A513003	Resistor	R575		2.547039	1	282340674.079668
105A520033	Resistor	R739		2.547039	1	282340674.079668
105A522003	Resistor	R133		2.547039	1	282340674.079668
105A522123	Resistor	R648		2.547039	1	282340674.079668
105A524963	Resistor	R822		2.547039	1	282340674.079668
105A534819	Resistor	R571		2.547039	1	282340674.079668
105A534823	Resistor	R199		2.547039	1	282340674.079668
105A539223	Resistor	R1023		2.547039	1	282340674.079668

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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
105A543223	Resistor	R92		2.547039	1	282340674.079668
105A544229	Resistor	R577		2.547039	1	282340674.079668
105A549919	Resistor	R525,R526,R528		2.547039	3	107020754.986850
105A549963	Resistor	R277,R32		2.547039	2	154078778.388085
105A553629	Resistor	R90		2.547039	1	282340674.079668
105A562034	Resistor	R319		2.547039	1	282340674.079668
105A563419	Resistor	R252		2.547039	1	282340674.079668
105A571539	Resistor	R51		2.547039	1	282340674.079668
105A575009	Resistor	R948		2.547039	1	282340674.079668
105A700003	Resistor	FB8,FB9,R1013, R1053,R1055,R109, R132,R177,R180, R202,R249,R279, R288,R303,R308, R321,R322,R375, R384,R386,R388, R389,R390,R391, R392,R393,R453, R465,R472,R474, R475,R483,R484, R486,R557,R696, R697,R700,R758, R765,R800,R812, R815,R819,R821, R831,R857,R890		2.547039	48	7757394.358017

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105A700009	Resistor	R10,R1047,R1048, R1049,R1050, R1058, R1062,R1063, R11, R134,R157,R158, R161,R184,R185, R187,R206,R209, R222,R255,R257, R259,R260,R262, R263,R269,R27, R276, R281,R290,R291, R301,R302,R33, R339, R344,R346,R348, R353,R358,R363, R367,R372,R373, R377,R378,R379, R39		2.547039	139	2737047.621476
105A70000A	Resistor	R242,R310,R406, R439		2.547039	4	82309758.689546
105A700103	Resistor	R891		2.547039	1	282340674.079668
105A700139	Resistor	R1001,R427,R432, R591,R743,R933		2.547039	6	56573956.677649
105A700203	Resistor	R224,R258		2.547039	2	154078778.388085
105A701009	Resistor	R35		2.547039	1	282340674.079668
105A701033	Resistor	R394,R806,R807, R925		2.547039	4	82309758.689546

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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
105A701039	Resistor	R1007,R1008 ,R1009, R1011,R1012 ,R1014, R1015,R1016 ,R1017, R1018,R1019 ,R1020, R1022,R1035 ,R1036, R1037,R1038 ,R1039, R1040,R1041 ,R1042, R1043,R1044 ,R1045, R1046,R173, R182, R186,R230,R 3,R345, R354,R376,R 383, R397,R398,R 42,R463, R464,R466,R 477, R478,R479,R 485,		2.547039	83	4542343.752032
105A701059	Resistor	R160,R573		2.547039	2	154078778.388085
105A701069	Resistor	R887		2.547039	1	282340674.079668
105A702229	Resistor	R523,R533,R 552, R554,R617,R 626, R627,R632,R 718, R719,R727		2.547039	11	32049696.385471
105A702263	Resistor	R128,R146,R 151, R172,R688,R 712, R746,R781		2.547039	8	43225424.698300
105A702269	Resistor	R125		2.547039	1	282340674.079668
105A702433	Resistor	R58,R960		2.547039	2	154078778.388085
105A703003	Resistor	R351		2.547039	1	282340674.079668
105A703309	Resistor	R22,R23,R84 8,R863		2.547039	4	82309758.689546

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105A703329	Resistor	R1006,R407, R423, R426,R429,R 430, R431,R435,R 436, R452,R984,R 987, R992,R993,R 999		2.547039	15	23852782.943395
105A704303	Resistor	R167		2.547039	1	282340674.079668
105A704729	Resistor	R163,R369,R 514, R515,R516,R 605, R633,R703,R 729, R735,R737,R 741, R744,R748,R 753, R756,R760,R 766, R770,R773		2.547039	20	18104712.511396
105A705139	Resistor	R1051,R1052 ,R121, R54,R64,R68 5,R76, R84		2.547039	8	43225424.698300
105A708229	Resistor	R264,R267,R 849, R852,R865,R 882, R949		2.547039	7	48991237.965885
105A710009	Resistor	R101,R102,R 143, R144,R145,R 188, R702		2.547039	7	48991237.965885
105A710039	Resistor	R361,R46,R5 37,R539, R551,R566,R 724, R730,R742,R 757, R944,R951		2.547039	12	29507083.749401
105A715003	Resistor	R1025,R1026 ,R1028, R1029,R1030 ,R1031, R1032,R1033 ,R1034, R580,R581		2.547039	11	32049696.385471
105A733009	Resistor	R574,R578		2.547039	2	154078778.388085

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105A747009	Resistor	R1021,R149, R189, R359,R774,R 997		2.547039	6	56573956.677649
105A747033	Resistor	R662		2.547039	1	282340674.079668
106B510034	Resistor	RT1,RT2,RT3 ,RT5		7.724580	4	21923287.146155
106B701031	Resistor	RT4,RT6		7.724580	2	38596617.434771
1121501680	Capacitor	C611		1.128806	1	704977644.692287
1121501690	Capacitor	C11,C12,C14 0,C141, C154,C155,C 156, C163,C165,C 166, C194,C210,C 232, C241,C246,C 320, C332,C336,C 361, C362,C363,C 368, C405,C445,C 451,C51, C526,C550,C 553, C558,C57,C5 9,C597, C603,C64,C6 5,C667, C668,C67,C6 99,C700, C701,C702,C 703, C704,C711,C 712, C713,C714,C 715		1.128806	79	10907152.962731

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1121501691	Capacitor	C101,C102,C103, C104,C105,C106, C107,C109,C111, C114,C153,C157, C195,C200,C206, C216,C217,C235, C237,C262,C271, C290,C291,C294, C302,C303,C304, C308,C310,C318, C321,C345,C346, C347,C348,C349, C350,C351,C352, C354,C36,C38,C382, C384,C385,C386, C395,C397,C393		1.128806	141	6153418.665371
1121610180	Capacitor	C568,C569,C570, C577		1.128806	4	196873384.410843
1122522890	Capacitor	C243,C277		1.128806	2	375289731.076049
1124410191	Capacitor	C34,C35,C37,C39, C423,C428,C429, C430,C450,C453, C454,C455		1.128806	12	68856937.301178
1124418090	Capacitor	C10,C679,C691,C9		1.128806	4	196873384.410843
1124422080	Capacitor	C355,C356,C357, C358		1.128806	4	196873384.410843
1124427091	Capacitor	C379,C380,C381, C391,C392,C393		1.128806	6	133979725.056342
1124427190	Capacitor	C53,C54		1.128806	2	375289731.076049
1124433090	Capacitor	C260		1.128806	1	704977644.692287

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**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1124433190	Capacitor	C94		1.128806	1	704977644.692287
1124510280	Capacitor	C639		1.128806	1	704977644.692287
1124522680	Capacitor	C123,C91		1.128806	2	375289731.076049
1124533190	Capacitor	C482		1.128806	1	704977644.692287
1124547190	Capacitor	C13,C5		1.128806	2	375289731.076049
1129610080	Capacitor	C30,C31,C45 9,C461, C466,C49,C5 0		1.128806	7	115633865.771428
1129701690	Capacitor	C18,C22,C40 ,C499, C632,C633,C 637, C655,C656,C 675,C82		1.128806	11	74892583.279796
1129701790	Capacitor	C414,C415,C 416, C417,C418,C 419, C420,C421,C 747, C748,C749,C 750		1.128806	12	68856937.301178
1129701791	Capacitor	C24,C372,C8 8,C93		1.128806	4	196873384.410843
1129710090	Capacitor	C6,C7,C8		1.128806	3	257514172.353070
1129710091	Capacitor	C367		1.128806	1	704977644.692287
1129710390	Capacitor	C167		1.128806	1	704977644.692287
1129710391	Capacitor	C439,C543		1.128806	2	375289731.076049
1129722091	Capacitor	C2,C3,C674, C69,C70, C76		1.128806	6	133979725.056342
1129747090	Capacitor	C41,C48		1.128806	2	375289731.076049
1129747091	Capacitor	C651		1.128806	1	704977644.692287
1181633190	Capacitor	C117,C134		4.744484	2	86049450.747498
1184633090	Capacitor	C814,C815		4.744484	2	86049450.747498
1189615151	Capacitor	TC1,TC2		4.744484	2	86049450.747498
1189615154	Capacitor	C340,C341,C 444, C556,C572,C 638, C777,C778,C 781, C782,C788,C 789, C790		4.744484	13	14928509.131803
1189633151	Capacitor	C226,C594		4.744484	2	86049450.747498
1189656196	Capacitor	C146,C162,C 806		4.744484	3	59399119.141203



**File Name:** BOXER-6639.rfp  
**Assembly:** 9697SKLS01-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 10674.010965  
**MTBF (hrs):** 93,685  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
118C639191	Capacitor	C113,C115,C116, C130,C138,C147, C178,C196,C223, C256		4.744484	10	19193879.126421
118C656190	Capacitor	C644,C660		4.744484	2	86049450.747498
11A4405040	Capacitor	C630,C631		1.128806	2	375289731.076049
11A4410240	Capacitor	C58,C68		1.128806	2	375289731.076049
11A4422190	Capacitor	C309		1.128806	1	704977644.692287
11C1539840	Capacitor	C732,C733,C734		1.128806	3	257514172.353070
11C2510480	Capacitor	C122,C242,C247, C278		1.128806	4	196873384.410843
11C2522780	Capacitor	C306		1.128806	1	704977644.692287
11C4501050	Capacitor	C62,C90		1.128806	2	375289731.076049
11C4501650	Capacitor	C524,C610,C619,C63		1.128806	4	196873384.410843
11C4501790	Capacitor	C19,C657		1.128806	2	375289731.076049
11C4510240	Capacitor	C485		1.128806	1	704977644.692287
11C4510480	Capacitor	C647		1.128806	1	704977644.692287
11C4522290	Capacitor	C118,C230,C437,C45, C504,C52,C532,C536, C541,C554,C627		1.128806	11	74892583.279796
11C4533380	Capacitor	C267		1.128806	1	704977644.692287
11C4547140	Capacitor	C25,C26,C44,C471, C56		1.128806	5	159367490.199266
11C4556690	Capacitor	C14,C658		1.128806	2	375289731.076049
11C4568240	Capacitor	C534,C539		1.128806	2	375289731.076049
11C5501650	Capacitor	C4,C61,C66,C83		1.128806	4	196873384.410843
11E1501040	Capacitor	C545,C654		1.128806	2	375289731.076049
11E1501080	Capacitor	C316,C317,C775		1.128806	3	257514172.353070
11E1510050	Capacitor	C112,C268,C269, C599,C609,C663		1.128806	6	133979725.056342
11E1622060	Capacitor	C447,C588		1.128806	2	375289731.076049
11E2501080	Capacitor	C129,C142,C180, C259,C580,C604, C618,C780,C92		1.128806	9	90863428.080946

**File Name:** BOXER-6639.rfp  
**Assembly:** 9697SKLS01-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 10674.010965  
**MTBF (hrs):** 93,685  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
11E2501690	Capacitor	C125,C127,C191,C27,C28,C32,C324,C353,C42,C425,C46,C460,C462,C464,C467,C47,C470,C478,C479,C502,C503,C531,C540,C542,C557,C664,C71,C72,C807,C87		1.128806	30	28241202.507613
11E2510010	Capacitor	C119,C120,C121,C135,C136,C137,C150,C151,C152,C207,C208,C209,C388,C493,C494,C495,C496		1.128806	17	49133303.073811
11E2522090	Capacitor	C500,C501,C527,C528,C529		1.128806	5	159367490.199266
11E2522631	Capacitor	C73		1.128806	1	704977644.692287
11E2610032	Capacitor	C1,C15,C343,C359,C364,C371,C390,C449,C595,C596,C645,C670,C673,C693,C698,C735,C736,C752,C766,C769,C770,C771,C772,C792,C793,C794,C795,C796,C797,C809,C811		1.128806	31	27349602.091781
11E2622021	Capacitor	C530,C648,C649		1.128806	3	257514172.353070

**File Name:** BOXER-6639.rfp  
**Assembly:** 9697SKLS01-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 10674.010965  
**MTBF (hrs):** 93,685  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
11E3510011	Capacitor	C60		1.128806	1	704977644.692287
11E4433090	Capacitor	C369		1.128806	1	704977644.692287
11E4510021	Capacitor	C17,C251,C253,C472,C473,C474,C475,C583,C584,C585,C600,C642		1.128806	12	68856937.301178
11E4510440	Capacitor	C623		1.128806	1	704977644.692287
11E4547610	Capacitor	C549		1.128806	1	704977644.692287
11E9522680	Capacitor	C406,C407		1.128806	2	375289731.076049
11E9547680	Capacitor	C16		1.128806	1	704977644.692287
11E9547790	Capacitor	C374		1.128806	1	704977644.692287
11E9610080	Capacitor	C375,C376,C377,C592,C751,C753,C754,C755,C756,C757,C758,C759,C760		1.128806	13	63728475.410842
11E9622050	Capacitor	C325,C360,C571,C741		1.128806	4	196873384.410843
11E9622052	Capacitor	C197,C463,C661		1.128806	3	257514172.353070

**File Name:** BOXER-6639.rfp  
**Assembly:** 9697SKLS01-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 10674.010965  
**MTBF (hrs):** 93,685  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
11E9622080	Capacitor	C124,C128,C131, C133,C143,C145, C148,C168,C169, C170,C171,C172, C173,C174,C175, C176,C177,C179, C183,C184,C185, C186,C187,C188, C189,C190,C193, C199,C201,C202, C203,C213,C214, C215,C219,C220, C221,C227,C234, C238,C239,C245, C250,C254,C265, C266,C311,C312,		1.128806	85	10147209.588673
11EA610030	Capacitor	C272,C273,C387, C548		1.128806	4	196873384.410843

**File Name:** BOXER-6639.rfp  
**Assembly:** 9697SKLS01-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 10674.010965  
**MTBF (hrs):** 93,685  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
11EA610040	Capacitor	C139,C192,C211, C218,C222,C224, C225,C231,C236, C240,C248,C249, C257,C261,C263, C264,C274,C283, C284,C285,C288, C292,C295,C296, C298,C322,C533, C538,C551,C567, C578,C586,C641, C646,C659,C669, C671,C682,C686		1.128806	39	21841170.168719
11EA622640	Capacitor	C244,C279		1.128806	2	375289731.076049
11EA647010	Capacitor	C149,C182,C205, C280,C281,C286, C287,C613		1.128806	8	101746760.035398
11EB501040	Capacitor	C457		1.128806	1	704977644.692287

**File Name:** BOXER-6639.rfp  
**Assembly:** 9697SKLS01-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 10674.010965  
**MTBF (hrs):** 93,685  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
11EB510640	Capacitor	C100,C108,C110, C132,C144,C164, C212,C228,C255, C258,C270,C275, C276,C282,C289, C297,C299,C300, C301,C305,C314, C319,C323,C327, C328,C329,C330, C337,C338,C366, C373,C378,C383, C389,C396,C400, C401,C410,C411, C431,C432,C435, C448,C505,C511, C544,C552,C606,		1.128806	69	12464035.316736
11EB522640	Capacitor	C126		1.128806	1	704977644.692287
11EB610050	Capacitor	C158,C159,C160, C161,C181,C342, C344,C403,C441, C442,C443,C456, C680,C690		1.128806	14	59316298.011235
121110106Z	Inductor	L13		4.944252	1	154760964.143460
121110156P	Inductor	L1		4.944252	1	154760964.143460
121110156Z	Inductor	L7		4.944252	1	154760964.143460
1211101573	Inductor	L3,L4,L5,L8		4.944252	4	43912872.424775
121110226X	Inductor	L10,L12,L6,L9		4.944252	4	43912872.424775
1211106874	Inductor	L11		4.944252	1	154760964.143460
121113307R	Inductor	L2		4.944252	1	154760964.143460

**File Name:** BOXER-6639.rfp  
**Assembly:** 9697SKLS01-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 10674.010965  
**MTBF (hrs):** 93,685  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1212306030	Inductor	FB10,FB11,F B12, FB13,FB14,F B19, FB29,FB30		4.944252	8	22874049.098230
121230603S	Inductor	FB2,FB21,FB 22,FB23, FB24,FB4,FB 5,FB6, FB7		4.944252	9	20443842.451049
1212308054	Inductor	FB1,FB20,FB 27,FB28, FB3,FB31,FB 32,FB33, FB34,FB35,F B36, FB37		4.944252	12	15520616.516984
12123A000B	Inductor	FB25,FB26		4.944252	2	83201062.149749
12123D0001	Inductor	FB15,FB16,F B17, FB18		4.944252	4	43912872.424775
1214309008	Inductor	CH1,CH10,C H11,CH12, CH13,CH14,C H15, CH16,CH17,C H18, CH19,CH2,C H20,CH21, CH22,CH23,C H24, CH25,CH26,C H27, CH28,CH29,C H3,CH30, CH31,CH32,C H33, CH34,CH4,C H5,CH6, CH7,CH8,CH 9		4.944252	34	5659689.323884
12310024A2	Miscellaneous	Y7		19.200000	1	23844262.770939
12310027A0	Miscellaneous	Y1		19.200000	1	23844262.770939
123132505D	Miscellaneous	Y2,Y3,Y4		19.200000	3	5742504.738137
1231327610	Miscellaneous	Y6		19.200000	1	23844262.770939
1233348051	Miscellaneous	Y5		19.200000	1	23844262.770939
1300414841	Semiconductor	D3		7.793411	1	92807310.010983
1301003440	Semiconductor	D23,D31,D34		7.793411	3	35106858.962001
1301005440	Semiconductor	D13,D5,D56, D6		7.793411	4	26989084.126235
1301005442	Semiconductor	D10,D27,D9		7.793411	3	35106858.962001
1301005447	Semiconductor	D35		7.793411	1	92807310.010983
1301400541	Semiconductor	D1		7.793411	1	92807310.010983
1301400640	Semiconductor	D4		7.793411	1	92807310.010983

**File Name:** BOXER-6639.rfp  
**Assembly:** 9697SKLS01-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 10674.010965  
**MTBF (hrs):** 93,685  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1301400642	Semiconductor	D28		7.793411	1	92807310.010983
1301793040	Semiconductor	D11,D25,D26 ,D36,D7, D8		7.793411	6	18540453.699406
1302005641	Semiconductor	D30		7.793411	1	92807310.010983
1304001121	Optical Device	LED3		79.003355	1	6497172.749112
1304001340	Optical Device	LED1		79.003355	1	6497172.749112
1304300140	Optical Device	LED2		79.003355	1	6497172.749112
1305080040	Semiconductor	D17,D18,D19 ,D20, D21,D22,D41 ,D42, D43,D44,D45 ,D46, D47,D48,D49 ,D50, D52,D53,D54 ,D55, D60,D61,D62 ,D63, U51,U52,U53 ,U54		7.793411	28	4283597.273646
13050J58A0	Semiconductor	D2		7.793411	1	92807310.010983
1305100541	Semiconductor	D29,U1,U2,U 3,U4,U5, U6,U7		7.793411	8	14161142.003130
1310390410	Semiconductor	Q14,Q38,Q5 2,Q56		22.463360	4	9270607.712006
1314111713	Semiconductor	U73		22.463360	1	31642600.748419
1314881910	Semiconductor	Q22		22.463360	1	31642600.748419
13150123N0	Semiconductor	Q27,Q28,Q3 0		22.463360	3	12043329.789539
1315049820	Semiconductor	Q33,Q34,Q3 6,Q43, Q44,Q50,Q5 1,Q58, Q59		22.463360	9	4366472.106532
1315060300	Semiconductor	Q32,Q37,Q4 6,Q54, Q55,Q66,Q6 9,Q76, Q78		22.463360	9	4366472.106532
1315200312	Semiconductor	Q67,Q68		22.463360	2	17315095.066101
1315230211	Semiconductor	Q12,Q13		22.463360	2	17315095.066101
1315700216	Semiconductor	Q1,Q11,Q15, Q17,Q18, Q19,Q2,Q20, Q21,Q3, Q31,Q4,Q49, Q5,Q62, Q64,Q65,Q7 5,Q77,Q8		22.463360	20	2046335.090970



**File Name:** BOXER-6639.rfp  
**Assembly:** 9697SKLS01-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 10674.010965  
**MTBF (hrs):** 93,685  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1315EM6K10	Semiconductor	Q10,Q40,Q41,Q42,Q6,Q7,Q9		22.463360	7	5525968.936223
1315S4C500	Semiconductor	Q35,Q45,Q53,Q63		22.463360	4	9270607.712006
1315S4C550	Semiconductor	Q39		22.463360	1	31642600.748419
1430006850	Integrated Circuit	U77		43.803003	1	11739202.588727
1430080650	Integrated Circuit	U15,U79		43.803003	2	6834791.244197
1430082021	Integrated Circuit	U30,U50,U75		43.803003	3	4923240.069161
1430097420	Integrated Circuit	U14,U57,U81,U82,U90,U91,U92,U93,U94,U95,U96,U97		43.803003	12	1499359.883490
1430455200	Integrated Circuit	U29,U40,U67,U86,U89		43.803003	5	3214211.402100
1430532190	Integrated Circuit	U64		43.803003	1	11739202.588727
1430811460	Integrated Circuit	U23,U25,U26,U27		43.803003	4	3879156.910661
1430812430	Integrated Circuit	U17		43.803003	1	11739202.588727
143ALC2690	Integrated Circuit	U47		43.803003	1	11739202.588727
1440210IT0	Integrated Circuit	U43,U44,U45		43.803003	3	4923240.069161
14407517A0	Integrated Circuit	U16		43.803003	1	11739202.588727
14482Q1700	Integrated Circuit	U78		43.803003	1	11739202.588727
144F751130	Integrated Circuit	U42		43.803003	1	11739202.588727
14590AUP10	Integrated Circuit	U39		43.803003	1	11739202.588727
1469128350	Integrated Circuit	SPI1		11.063278	1	58231413.220643
14S3104500	Integrated Circuit	D14,D15,D16,D37,D38,D39,D40,D51,U10,U11,U12,U13,U8,U9		43.803003	14	1306102.438990
14S3378900	Integrated Circuit	U24		43.803003	1	11739202.588727
14S3524700	Integrated Circuit	U48		43.803003	1	11739202.588727
14S3528000	Integrated Circuit	U18		43.803003	1	11739202.588727
14S3820700	Integrated Circuit	U37		43.803003	1	11739202.588727
14S3902500	Integrated Circuit	U46		43.803003	1	11739202.588727
14S4186600	Integrated Circuit	U65		43.803003	1	11739202.588727
14S4814380	Integrated Circuit	U19,U20,U21,U60,U61,U62		43.803003	6	2750969.191556
14S4911216	Integrated Circuit	U69		43.803003	1	11739202.588727
14S5974741	Integrated Circuit	U41		26.018600	1	25551442.237972
14S5A00702	Integrated Circuit	U66		26.018600	1	25551442.237972

**File Name:** BOXER-6639.rfp  
**Assembly:** 9697SKLS01-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 10674.010965  
**MTBF (hrs):** 93,685  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
14S5A00821	Integrated Circuit	U28,U31,U32 ,U33, U35,U36,U38 ,U68, U70,U72,U74 ,U76		26.018600	12	2804542.344270
14S9341101	Integrated Circuit	U58,U59		43.803003	2	6834791.244197
14S9811500	Integrated Circuit	U22		43.803003	1	11739202.588727
1540510380	Resistor	RP1,RP2,RP3 ,RP4, RP5,RP6,RP7 ,RP8		9.971436	8	9424088.116087
1540722281	Resistor	RP9		9.971436	1	51606907.671214
1540733085	Resistor	RP10		9.971436	1	51606907.671214
1540782282	Resistor	RP11,RP12		9.971436	2	30043399.401299
1601123600	Connection	SW2		16.184835	1	35685591.360212
1601PB6130	Connection	SW1		16.184835	1	35685591.360212
1651508010	Connection	SIM1		16.184835	1	35685591.360212
1651526000	Connection	DIMM1		16.184835	1	35685591.360212
1651526001	Connection	DIMM2		16.184835	1	35685591.360212
1651611510	Connection	U71		16.184835	1	35685591.360212
1652003101	Connection	CN2		16.184835	1	35685591.360212
1652522209	Connection	CN14		16.184835	1	35685591.360212
1652532207	Connection	CN15,CN16		16.184835	2	20390152.380746
1652602107	Connection	CN20		16.184835	1	35685591.360212
1652709202	Connection	CN18		16.184835	1	35685591.360212
1653003101	Connection	CN5,JP19,JP 24		16.184835	3	14515880.849373
1653003201	Connection	JP17,JP18,JP 4,JP5, JP6,JP7		16.184835	6	7958792.615968
165300420Q	Connection	CN7		16.184835	1	35685591.360212
165321020D	Connection	USB1		16.184835	1	35685591.360212
1653300107	Connection	JP24(1-2)		16.184835	1	35685591.360212
165330010E	Connection	JP19(1-2)		16.184835	1	35685591.360212
165390003B	Connection	CN21_1		16.184835	1	35685591.360212
1653924110	Connection	CN21		16.184835	1	35685591.360212
1654040003	Connection	CN11		16.184835	1	35685591.360212
1654226303	Connection	PCIE1,PCIE2		16.184835	2	20390152.380746
1654401935	Connection	CN3,CN4		16.184835	2	20390152.380746
1654418103	Connection	COM1,COM2, COM3		16.184835	3	14515880.849373
1654515308	Connection	CN1		16.184835	1	35685591.360212
165490700G	Connection	SATA1,SATA 2		16.184835	2	20390152.380746
1655004011	Connection	PWR1,PWR2		16.184835	2	20390152.380746
1655302020	Connection	PWRSWCN1		16.184835	1	35685591.360212
1655802133	Connection	BAT1		16.184835	1	35685591.360212

**Reliability Prediction  
Summary**

**File Name:** BOXER-6639.rfp  
**Assembly:** 9697SKLS01-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 10674.010965  
**MTBF (hrs):** 93,685  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1655906033	Connection	CN22,CN23		16.184835	2	20390152.380746
1655912032	Connection	LPC1		16.184835	1	35685591.360212
175011301H	Miscellaneous	BAT1-CR		306.000000	1	1681683.006787
1752001603	Miscellaneous	FS5		2.400000	1	254626042.602335
1752001900	Miscellaneous	FS2,FS3,FS4		2.400000	3	101854599.204190
1752011002	Miscellaneous	FS1		2.400000	1	254626042.602335