

COM-KB

Reliability Prediction Report (MTBF)

Summary	Failure Rate: 5056.054396 ppm MTBF: 197,783 Hours
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Issue date	Approval	Test Engineer
2014/02/24	Tom Lin	Leo Liu

Reliability Prediction (MTBF)

I . Model Name: COM-KB

II . Prediction Date: February. 24, 2014

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

IV . Predicted by: Leo Liu

V . Equipment: Windchill Quality Solutions 10.1

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

VIII. Prediction Result:

COM-KB (9697KB0003-D):

- Failure Rate: 5056.054396 ppm

- MTBF: 197,783 Hours

**AAEON Reliability Prediction
Summary**

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

Failure Rate: 5056.054396
MTBF (hrs): 197,783
Temperature: 30
Environment: GF, GU - Ground Fixed, Uncontrolled

Assembly Name	Part Number	Ref Des	Quantity	Failure Rate	MTBF
COM-KB	System		1	5056.054396	197,783

File Name: COM-KB.rfp
Assembly: System
Ref Des:
Description:

Failure Rate: 5056.054396
MTBF (hrs): 197,783
Temperature: 30
Environment: GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1050500334	Resistor	R293		2.547039	1	282340674.079668
1050501004	Resistor	R466,R469,R470, R473		2.547039	4	82309758.689546
1050501054	Resistor	R274,R275,R292, R296		2.547039	4	82309758.689546
1050504734	Resistor	R476		2.547039	1	282340674.079668
1050505124	Resistor	R175		2.547039	1	282340674.079668
1050507530	Resistor	R389,R407,R410		2.547039	3	107020754.986850
1050510002	Resistor	R364		2.547039	1	282340674.079668
1050510524	Resistor	R404,R405		2.547039	2	154078778.388085
1050510534	Resistor	R408		2.547039	1	282340674.079668
1050524314	Resistor	R458		2.547039	1	282340674.079668
1050530034	Resistor	R384		2.547039	1	282340674.079668
1050533214	Resistor	R436		2.547039	1	282340674.079668
1050539264	Resistor	R3		2.547039	1	282340674.079668
1050540224	Resistor	R440,R461		2.547039	2	154078778.388085
1050547034	Resistor	R391		2.547039	1	282340674.079668
1050549904	Resistor	R21,R456		2.547039	2	154078778.388085
1050551004	Resistor	R34,R35		2.547039	2	154078778.388085
1050560424	Resistor	R383		2.547039	1	282340674.079668
1050561934	Resistor	R388		2.547039	1	282340674.079668
1050568004	Resistor	R438		2.547039	1	282340674.079668
1050588704	Resistor	R433,R455		2.547039	2	154078778.388085
1050700304	Resistor	R401		2.547039	1	282340674.079668
1050756004	Resistor	R131		2.547039	1	282340674.079668
1051747002	Resistor	R493		2.547039	1	282340674.079668
1059710001	Resistor	R358		2.547039	1	282340674.079668
105A500139	Resistor	R129,R130,R136, R137,R166,R167, R168,R169,R2,R295, R4,R5		2.547039	12	29507083.749401
105A500239	Resistor	R281,R9		2.547039	2	154078778.388085
105A501039	Resistor	R242,R265,R266, R392,R423		2.547039	5	67008142.102588
105A501139	Resistor	R128		2.547039	1	282340674.079668
105A501539	Resistor	R477		2.547039	1	282340674.079668
105A502839	Resistor	R441,R462,R492		2.547039	3	107020754.986850
105A505109	Resistor	R117,R443,R463, R467,R468,R471, R472		2.547039	7	48991237.965885

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105A510009	Resistor	R267,R268,R280, R282,R283		2.547039	5	67008142.102588
105A515009	Resistor	R16,R17,R18, ,R6		2.547039	4	82309758.689546
105A516913	Resistor	R1		2.547039	1	282340674.079668
105A518229	Resistor	R426		2.547039	1	282340674.079668
105A519123	Resistor	R409		2.547039	1	282340674.079668
105A524919	Resistor	R189		2.547039	1	282340674.079668
105A529429	Resistor	R425		2.547039	1	282340674.079668
105A700003	Resistor	R176		2.547039	1	282340674.079668
105A700009	Resistor	R132,R133,R138, R139,R170,R174, R177,R179,R187, R190,R197,R198, R199,R200,R201, R203,R204,R206, R207,R26,R284,R29, R291,R306,R308, R309,R312,R313, R316,R32,R320,R324, R333,R334,R341, R348,R352,R36,R378, R379,R38,R381,R		2.547039	65	5770418.053828
105A700109	Resistor	R385,R439,R460		2.547039	3	107020754.986850

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105A700139	Resistor	R118,R12,R125,R13,R165,R178,R180,R181,R183,R184,R185,R19,R254,R31,R314,R319,R321,R33,R346,R403,R44,R45,R46,R48,R49,R50,R7, R8		2.547039	28	13089488.559853
105A700239	Resistor	R161,R164		2.547039	2	154078778.388085
105A701009	Resistor	R418,R56,R58,R59,R60,R62,R64,R65, R66		2.547039	9	38754445.632391
105A701039	Resistor	R109,R110,R113,R114,R115,R116,R127,R134,R145,R146,R147,R148,R149,R151,R152,R153,R155,R157,R158,R160,R172,R173,R186,R196,R210,R230,R240,R241,R245,R246,R251,R252,R253,R269,R270,R271,R272,R273,R277,		2.547039	80	4709205.918606
105A701059	Resistor	R141,R218,R219,R225,R234,R235,R238,R412,R427,R484,R485		2.547039	11	32049696.385471

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105A701539	Resistor	R182,R208,R209, R211,R212		2.547039	5	67008142.102588
105A702209	Resistor	R142,R143,R444		2.547039	3	107020754.986850
105A702229	Resistor	R120,R216,R226, R227,R228,R229, R288,R290,R336, R338,R69,R71,R79, R81,R82,R83		2.547039	16	22425139.809646
105A702269	Resistor	R349,R445,R487		2.547039	3	107020754.986850
105A703309	Resistor	R100,R101,R103, R105,R327,R451, R452,R54,R55,R92, R93,R94,R95,R96, R97,R98,R99		2.547039	17	21160422.299251
105A704729	Resistor	R119,R144,R24,R25, R318,R337,R340		2.547039	7	48991237.965885
105A704739	Resistor	R330,R332,R339, R415		2.547039	4	82309758.689546
105A705139	Resistor	R437		2.547039	1	282340674.079668
105A706809	Resistor	R453		2.547039	1	282340674.079668
105A706829	Resistor	R249,R250,R255, R256,R257		2.547039	5	67008142.102588
105A708229	Resistor	R475		2.547039	1	282340674.079668
105A710009	Resistor	R356,R357,R360, R362,R363,R369, R431		2.547039	7	48991237.965885

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105A710039	Resistor	R154,R202,R205, R214,R215,R217, R220,R221,R222, R231,R232,R233, R239,R315,R361, R371,R380,R386, R394,R395,R414, R421,R428,R429, R482,R483,R489		2.547039	27	13557741.157915
105A720053	Resistor	R111		2.547039	1	282340674.079668
105A730009	Resistor	R10,R11		2.547039	2	154078778.388085
105A733009	Resistor	R344,R345		2.547039	2	154078778.388085
106B501034	Resistor	RT1,RT2,RT3, RT4, RT5,RT6		2.547039	6	56573956.677649
1121501690	Capacitor	C1,C10,C11,C12, C127,C128,C129,C13, C131,C14,C141,C149, C15,C150,C152,C153, C154,C155,C156, C157,C158,C159,C16, C160,C161,C163, C164,C165,C167, C168,C169,C17,C170, C171,C172,C173, C175,C176,C177, C178,C179,C180, C181,C182,C183,		1.128806	167	5204104.501807
1122522890	Capacitor	C342,C347		1.128806	2	375289731.076049
1122568290	Capacitor	C411		1.128806	1	704977644.692287

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1124418190	Capacitor	C101,C108,C116, C126,C49,C63,C74, C75,C76,C77,C86, C91		1.128806	12	68856937.301178
1124427090	Capacitor	C208,C209		1.128806	2	375289731.076049
1124522290	Capacitor	C313,C367,C380, C389,C401		1.128806	5	159367490.199266
1124547290	Capacitor	C408,C409,C410		1.128806	3	257514172.353070
1129610080	Capacitor	C117,C118,C148, C151,C162,C185, C222,C245,C251, C310,C323,C324, C326,C330,C335, C348,C349,C35,C350, C355,C36,C360,C362, C37,C378,C396,C50, C51,C52,C53,C64, C65,C78,C92,C93, C94		1.128806	36	23624151.295955
1129622690	Capacitor	C258,C318,C319, C321		1.128806	4	196873384.410843
1129701790	Capacitor	C275,C276,C277, C278,C279,C280, C281,C282,C358, C382,C402		1.128806	11	74892583.279796
1129710090	Capacitor	C29,C30		1.128806	2	375289731.076049
1129710390	Capacitor	C130,C132,C18,C221, C263,C368,C371, C373,C375,C390, C392,C399,C404, C405		1.128806	14	59316298.011235
1129715090	Capacitor	C24,C25		1.128806	2	375289731.076049

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1129722091	Capacitor	C241,C243,C369,C400,C406		1.128806	5	159367490.199266
1189615154	Capacitor	C290,C294		1.128806	2	375289731.076049
1189622152	Capacitor	C333		1.128806	1	704977644.692287
1189633151	Capacitor	C331,C356		1.128806	2	375289731.076049
1189647187	Capacitor	C374,C376,C377,C394,C395		1.128806	5	159367490.199266
1189922181	Capacitor	C308		1.128806	1	704977644.692287
11A4447190	Capacitor	C218,C28,C372,C393		1.128806	4	196873384.410843
11C1522430	Capacitor	C370,C391		1.128806	2	375289731.076049
11C1547890	Capacitor	C343		1.128806	1	704977644.692287
11C4515190	Capacitor	C21,C22		1.128806	2	375289731.076049
11C4522191	Capacitor	C144,C145,C146,C147		1.128806	4	196873384.410843
11E2501690	Capacitor	C217,C225,C27,C306,C366,C388		1.128806	6	133979725.056342
11E2510060	Capacitor	C224,C26,C304,C305,C314,C364,C365,C386,C387		1.128806	9	90863428.080946
11E9501090	Capacitor	C100,C103,C104,C105,C106,C107,C110,C111,C112,C113,C114,C115,C119,C120,C121,C122,C123,C124,C125,C133,C134,C135,C136,C137,C138,C139,C140,C166,C174,C191,C216,C23,C257,C293,C300,C337,C352,C38,C381,C384,C385,		1.128806	75	11480604.167884

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11E9501091	Capacitor	C312		1.128806	1	704977644.692287
11E9522490	Capacitor	C102,C361		1.128806	2	375289731.076049
11E9622080	Capacitor	C316,C340,C344		1.128806	3	257514172.353070
11E9647680	Capacitor	C109,C142,C143,C203,C205,C336,C87		1.128806	7	115633865.771428
121110226V	Inductor	L3,L5		4.944252	2	83201062.149749
1211103675	Inductor	L7	0.2	4.963017	2	82886469.422090
1211103675	Inductor	L6	14.9	6.471462	2	63566311.503923
121110476Q	Inductor	L1		4.944252	1	154760964.143460
121112207A	Inductor	L8		4.944252	1	154760964.143460
1211147070	Inductor	L2	16.7	6.674014	1	114650221.633786
1211147071	Inductor	L4	11	6.046108	1	126556985.003817
1212306030	Inductor	FB10,FB11,FB12,FB13,FB14,FB15,FB7,FB8,FB9		4.944252	9	20443842.451049
121230805A	Inductor	FB1		4.944252	1	154760964.143460
12123C0003	Inductor	FB2,FB5,FB6		4.944252	3	57363284.375370
12123C000C	Inductor	FB3,FB4		4.944252	2	83201062.149749
123132505D	Miscellaneous	Y3		19.200000	1	23844262.770939
1231327053	Miscellaneous	Y4		19.200000	1	23844262.770939
1231332722	Miscellaneous	Y1		19.200000	1	23844262.770939
1231480040	Miscellaneous	Y2		19.200000	1	23844262.770939
1301002240	Semiconductor	D23,D24		7.793411	2	50578095.223398
1301005440	Semiconductor	D10,D12,D20,D29,D30,D31,D32,D33,D34,D35,D9		7.793411	11	10495888.688121
1301005442	Semiconductor	D26,D27,D28		7.793411	3	35106858.962001
1301005444	Semiconductor	D1,D5,D6,D7,D8		7.793411	5	21965031.404253
1304001340	Optical Device	D22		79.003355	1	6497172.749112
1304101340	Optical Device	D21		79.003355	1	6497172.749112
1310390410	Semiconductor	Q13,Q24,Q25		22.463360	3	12043329.789539
1314880011	Semiconductor	U21		22.463360	1	31642600.748419
1314880510	Semiconductor	U31		22.463360	1	31642600.748419
1315030110	Semiconductor	Q55,Q58		22.463360	2	17315095.066101
1315230511	Semiconductor	Q12,Q15,Q2,Q36		22.463360	4	9270607.712006
1315422410	Semiconductor	Q35,Q51		22.463360	2	17315095.066101
1315490110	Semiconductor	Q61,Q62,Q63		22.463360	3	12043329.789539

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1315700211	Semiconductor	Q10,Q11,Q16,Q17,Q18,Q19,Q20,Q21,Q22,Q23,Q26,Q27,Q28,Q29,Q3,Q30,Q31,Q32,Q33,Q34,Q37,Q38,Q39,Q40,Q41,Q42,Q43,Q44,Q45,Q47,Q48,Q5,Q53,Q56,Q57,Q6,Q60,Q7,Q8, Q9		22.463360	40	1047920.986800
1315720010	Semiconductor	Q50,Q59		22.463360	2	17315095.066101
1315762010	Semiconductor	Q49		22.463360	1	31642600.748419
1315806510	Semiconductor	Q52,Q54		22.463360	2	17315095.066101
1423DV2210	Integrated Circuit	U8,U9		43.803003	2	6834791.244197
1426GP2120	Integrated Circuit	U14,U17		43.803003	2	6834791.244197
1437323KA0	Integrated Circuit	U30		43.803003	1	11739202.588727
143NCP6980	Integrated Circuit	U7		43.803003	1	11739202.588727
1447511B00	Integrated Circuit	U18		43.803003	1	11739202.588727
144KABN001	Integrated Circuit	U1	9.1	32.083570	1	16027278.840412
1462246408	Integrated Circuit	U19		43.803003	1	11739202.588727
1462CMKBA0	Integrated Circuit	U5A		43.803003	1	11739202.588727
146324C020	Integrated Circuit	U28		43.803003	1	11739202.588727
14696435E0	Integrated Circuit			11.063278	1	58231413.220643
1490001080	Integrated Circuit	U2		43.803003	1	11739202.588727
14E2CMKBA0	Integrated Circuit	U23A		11.063278	1	58231413.220643
14S1035803	Integrated Circuit	U35		43.803003	1	11739202.588727
14S2321900	Integrated Circuit	U29		43.803003	1	11739202.588727
14S3112400	Integrated Circuit	U32		43.803003	1	11739202.588727
14S3121600	Integrated Circuit	U33		43.803003	1	11739202.588727
14S3524701	Integrated Circuit	U16		43.803003	1	11739202.588727
14S3832100	Integrated Circuit	U34		43.803003	1	11739202.588727
14S4650601	Integrated Circuit	U25		43.803003	1	11739202.588727
14S4811103	Integrated Circuit	U11		43.803003	1	11739202.588727
14S4851800	Integrated Circuit	U20		43.803003	1	11739202.588727
14S5920400	Integrated Circuit	U13		43.803003	1	11739202.588727
14S5A00821	Integrated Circuit	U15		43.803003	1	11739202.588727
14S5A12506	Integrated Circuit	U24		43.803003	1	11739202.588727
14S6216060	Integrated Circuit			11.063278	1	58231413.220643
14S6324640	Integrated Circuit			43.803003	1	11739202.588727
14S6366B00	Integrated Circuit	U12		43.803003	1	11739202.588727
14S9894400	Integrated Circuit	U10		43.803003	1	11739202.588727

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1600030803	Semiconductor	SW1,SW2		22.463360	2	17315095.066101
16515A2991	Connection	DIMM1		16.184835	1	35685591.360212
1653503110	Connection	CN2		16.184835	1	35685591.360212
16540M0001	Connection	CN10,CN9		16.184835	2	20390152.380746
1655305130	Connection	CN6		16.184835	1	35685591.360212
1655802130	Connection	CN4		16.184835	1	35685591.360212
1655807130	Connection	CN3,CN8		16.184835	2	20390152.380746
1655812130	Connection	CN7		16.184835	1	35685591.360212
1655830100	Connection	CN5		16.184835	1	35685591.360212
1752002400	Miscellaneous	FS2		2.400000	1	254626042.602335
1752002500	Miscellaneous	FS1		2.400000	1	254626042.602335