

# UP-WHL01

## Reliability Prediction Report (MTBF)

Summary	Failure Rate: 2856.745724 MTBF: 350,049 Hours
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Issue date	QE Supervisor	Test Engineer
2019/09/04	Louie Lee	Jack Huang

# Reliability Prediction (MTBF)

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**I . Model Name:** UP-WHL01

**II . Prediction Date:** Sep. 4th, 2019

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

**IV . Predicted by:** Jack Huang

**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:**

UP-WHL01 (9697UPWH09-D):

- Failure Rate:2856.745724

- MTBF: 350,049 Hours

**AAEON Reliability Prediction  
Summary**

**File Name:** UP-WHL01.rfp  
**Duty Cycle:** 100  
**Calculation Model:** Telcordia Issue 2  
**Method:** Method I Case 3

**Failure Rate:** 2856.745724  
**MTBF (hrs):** 350,049  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Assembly Name	Part Number	Ref Des	Quantity	Failure Rate	MTBF
UP-WHL01	9697UPWH09-D		1	2856.745724	350,049

**File Name:** UP-WHL01.rfp  
**Assembly:** 9697UPWH09-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 2856.745724  
**MTBF (hrs):** 350,049  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1050200134	Resistor	R831		0.849013	1	847022022.239005
1050500334	Resistor	R771		0.849013	1	847022022.239005
1050501004	Resistor	R782,R815,R818, R819,R845,R853, R861		0.849013	7	146973713.897655
1050501054	Resistor	R1042,R393, R394		0.849013	3	321062264.960549
1050501234	Resistor	R807		0.849013	1	847022022.239005
1050502204	Resistor	R1123,R1124, R1125, R1126,R1127, R1128, R1129,R1130, R1131, R1132		0.849013	10	105239804.639242
1050502224	Resistor	R454		0.849013	1	847022022.239005
1050502234	Resistor	R1094,R458, R459		0.849013	3	321062264.960549
1050502734	Resistor	R649,R991		0.849013	2	462236335.164256
1050503604	Resistor	R217,R218,R266, R267		0.849013	4	246929276.068637
1050503634	Resistor	R987		0.849013	1	847022022.239005
1050504324	Resistor	R825		0.849013	1	847022022.239005
1050504724	Resistor	R128,R151,R152, R154,R559,R577, R637		0.849013	7	146973713.897655
1050505124	Resistor	R465,R528		0.849013	2	462236335.164256
1050505604	Resistor	R1048		0.849013	1	847022022.239005
1050505633	Resistor	R693		0.849013	1	847022022.239005
1050507524	Resistor	R769,R783		0.849013	2	462236335.164256
1050507530	Resistor	R1095,R1144, R1145, R1146		0.849013	4	246929276.068637
1050508224	Resistor	R35,R951,R952		0.849013	3	321062264.960549
1050510004	Resistor	R1015,R1050, R13		0.849013	3	321062264.960549
1050510014	Resistor	R104,R1054, R12, R371,R455,R636, R878,R942,R955		0.849013	9	116263336.897173

**File Name:** UP-WHL01.rfp  
**Assembly:** 9697UPWH09-D  
**Ref Des:**  
**Description:**

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**MTBF (hrs):** 350,049  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1050510024	Resistor	R462,R744,R748, R841,R849,R859, R891,R893,R900		0.849013	9	116263336.897173
1050510034	Resistor	R1011,R1012, ,R1045, R1046,R1091, ,R1092, R112,R1141, R1143, R149,R391,R398, R399,R449,R450,R50, R535,R593,R651, R665,R684,R686, R687,R698,R701, R709,R713,R715, R716,R752,R765, R866,R875,R886, R887,R908,R911, R912		0.849013	38	29209701.474905
1050510534	Resistor	R884		0.849013	1	847022022.239005
1050511034	Resistor	R663		0.849013	1	847022022.239005
1050511304	Resistor	R52		0.849013	1	847022022.239005
1050512104	Resistor	R15,R995		0.849013	2	462236335.164256
1050514044	Resistor	R768		0.849013	1	847022022.239005
1050516014	Resistor	R385		0.849013	1	847022022.239005
1050520004	Resistor	R45		0.849013	1	847022022.239005
1050520014	Resistor	R799,R805,R839, R847,R855		0.849013	5	201024426.307764
1050520034	Resistor	R1006,R1063, ,R1064, R1065,R1066, ,R1142, R905		0.849013	7	146973713.897655
1050522004	Resistor	R1049		0.849013	1	847022022.239005
1050522034	Resistor	R808,R809		0.849013	2	462236335.164256
1050523224	Resistor	R798		0.849013	1	847022022.239005

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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1050524004	Resistor	R167,R168,R175, R176,R183,R184, R191,R192,R226, R227,R228,R230, R235,R236,R237, R238		0.849013	16	67275419.428938
1050524904	Resistor	R1,R231,R241		0.849013	3	321062264.960549
1050524909	Resistor	R755		0.849013	1	847022022.239005
1050524924	Resistor	R803,R826,R892		0.849013	3	321062264.960549
1050526134	Resistor	R890		0.849013	1	847022022.239005
1050530164	Resistor	R965		0.849013	1	847022022.239005
1050533034	Resistor	R953		0.849013	1	847022022.239005
1050533064	Resistor	R219,R220,R268, R269,R71,R72,R73, R74,R76,R78		0.849013	10	105239804.639242
1050533234	Resistor	R881		0.849013	1	847022022.239005
1050536514	Resistor	R646		0.849013	1	847022022.239005
1050545364	Resistor	R774		0.849013	1	847022022.239005
1050549904	Resistor	R943,R983,R984		0.849013	3	321062264.960549
1050549924	Resistor	R41,R42		0.849013	2	462236335.164256
1050549964	Resistor	R1020,R1096,R1097, R1098,R1099,R1100, R1101,R125,R16,R17, R221,R270,R797		0.849013	13	82027715.764084
1050554934	Resistor	R810		0.849013	1	847022022.239005
1050557614	Resistor	R823,R830		0.849013	2	462236335.164256
1050560464	Resistor	R67,R956		0.849013	2	462236335.164256
1050561934	Resistor	R695,R707		0.849013	2	462236335.164256
1050580664	Resistor	R14		0.849013	1	847022022.239005
1050586614	Resistor	R544		0.849013	1	847022022.239005
1050700002	Resistor	R874		0.849013	1	847022022.239005

**Reliability Prediction  
Summary**

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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1050700004	Resistor	C933,C934,C937, C938,R1000, R1009, R1010,R1014 ,R1016, R1017,R1018 ,R1019, R1051,R1053 ,R1057, R1068,R1070 ,R1071, R1102,R1103 ,R1104, R1105,R1112 ,R1113, R1116,R1117 ,R1149, R1153,R1157 ,R1168, R1169,R1171 ,R1172, R1174,R120, R159, R160,R163,R164, R166,R169,R170, R		0.849013	143	7984944.864190



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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1050701034	Resistor	R10,R1043,R1044, R1047,R1056, ,R106, R11,R1148,R291, R292,R293,R323, R324,R325,R330, R332,R334,R335, R336,R337,R338, R339,R340,R347, R348,R349,R350, R512,R513,R514, R516,R520,R523, R524,R525,R527, R531,R537,R549, R550,R554,R567, R568,R572,R61,R641, R645,R65		0.849013	73	15453046.352770
1050703334	Resistor	R781		0.849013	1	847022022.239005
1050704304	Resistor	R1021		0.849013	1	847022022.239005
1050710014	Resistor	R122,R123,R689,R77		0.849013	4	246929276.068637
1050747014	Resistor	R327,R361,R529, R533,R534,R536, R642,R648,R676		0.849013	9	116263336.897173
1050756004	Resistor	R538,R539,R540, R542		0.849013	4	246929276.068637
1059520001	Resistor	R677		0.849013	1	847022022.239005
1059549961	Resistor	R777,R802		0.849013	2	462236335.164256
1059700001	Resistor	R113,R114,R115, R116,R117,R119, R121,R316,R320, R392		0.849013	10	105239804.639242
1059710001	Resistor	R678		0.849013	1	847022022.239005

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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
105A500103	Resistor	R691		0.849013	1	847022022.239005
105A500133	Resistor	R800,R804,R816, R834,R835		0.849013	5	201024426.307764
105A501053	Resistor	R654,R812		0.849013	2	462236335.164256
105A501529	Resistor	R382,R776,R786		0.849013	3	321062264.960549
105A501533	Resistor	R708		0.849013	1	847022022.239005
105A501539	Resistor	R806,R836,R837		0.849013	3	321062264.960549
105A501829	Resistor	R224,R229,R234, R240		0.849013	4	246929276.068637
105A502039	Resistor	R137,R390,R461, R464,R635,R821, R876		0.849013	7	146973713.897655
105A502123	Resistor	R791,R794		0.849013	2	462236335.164256
105A502263	Resistor	R820,R842,R850, R856,R894		0.849013	5	201024426.307764
105A502763	Resistor	R225,R239		0.849013	2	462236335.164256
105A504763	Resistor	R838,R846,R854		0.849013	3	321062264.960549
105A505109	Resistor	R840,R848,R858		0.849013	3	321062264.960549
105A506833	Resistor	R706		0.849013	1	847022022.239005
105A506834	Resistor	R704		0.849013	1	847022022.239005
105A507509	Resistor	R456,R457		0.849013	2	462236335.164256
105A507533	Resistor	R304,R51,R692,R877		0.849013	4	246929276.068637
105A510003	Resistor	R767,R772,R778, R784,R789,R793, R796		0.849013	7	146973713.897655
105A510033	Resistor	R811,R813,R814		0.849013	3	321062264.960549
105A510223	Resistor	R694		0.849013	1	847022022.239005
105A510533	Resistor	R655		0.849013	1	847022022.239005
105A513033	Resistor	R827,R828		0.849013	2	462236335.164256
105A514009	Resistor	R964,R966		0.849013	2	462236335.164256
105A519123	Resistor	R785		0.849013	1	847022022.239005
105A524923	Resistor	R822		0.849013	1	847022022.239005
105A524963	Resistor	R996		0.849013	1	847022022.239005
105A529429	Resistor	R688		0.849013	1	847022022.239005
105A530113	Resistor	R372		0.849013	1	847022022.239005
105A547003	Resistor	R679		0.849013	1	847022022.239005
105A547509	Resistor	R80		0.849013	1	847022022.239005
105A547529	Resistor	R779		0.849013	1	847022022.239005

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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
105A549919	Resistor	R1156,R351		0.849013	2	462236335.164256
105A551113	Resistor	R829		0.849013	1	847022022.239005
105A552323	Resistor	R657		0.849013	1	847022022.239005
105A554923	Resistor	R824		0.849013	1	847022022.239005
105A560469	Resistor	R105		0.849013	1	847022022.239005
105A700003	Resistor	R1055,R378, R395, R518,R532,R 638, R653,R685,R 700, R712,R872,R 879, R888,R889,R 898		0.849013	15	71558348.830184
105A700203	Resistor	R862,R863		0.849013	2	462236335.164256
105A701059	Resistor	R521		0.849013	1	847022022.239005
105A701069	Resistor	R66		0.849013	1	847022022.239005
105A702039	Resistor	R75,R79		0.849013	2	462236335.164256
105A702229	Resistor	R1003,R407, R408		0.849013	3	321062264.960549
105A702239	Resistor	R753		0.849013	1	847022022.239005
105A703309	Resistor	R39,R40,R47 0,R471, R472,R473,R 474, R522		0.849013	8	129676274.094900
105A703329	Resistor	R341,R342,R 343, R344,R345,R 352, R353		0.849013	7	146973713.897655
105A706809	Resistor	R1151,R1152		0.849013	2	462236335.164256
105A710009	Resistor	R667,R670,R 988		0.849013	3	321062264.960549
105A710033	Resistor	R656		0.849013	1	847022022.239005
105A715003	Resistor	R354,R355,R 356, R373,R374,R 375		0.849013	6	169721870.032947
105A747009	Resistor	R1093,R165, R719, R727,R732,R 736, R739		0.849013	7	146973713.897655
105A756039	Resistor	R899		0.849013	1	847022022.239005
105B501039	Resistor	R1072,R1073 ,R1074, R1075,R1076 ,R1077		0.849013	6	169721870.032947

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**Assembly:** 9697UPWH09-D  
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**Description:**

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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
105B502035	Resistor	R1081,R1083 ,R1084, R1085,R1086 ,R1087, R1088,R1089 ,R1090		0.849013	9	116263336.897173
105B700009	Resistor	R1002,R102, R103, R1036,R1037 ,R1038, R1039,R1079 ,R1120, R124,R20,R2 1,R22, R23,R24,R27 7,R305, R307,R425,R 592, R597,R718,R 731, R733,R947,R 973		0.849013	26	42183230.481444
105B701009	Resistor	R581,R582,R 583, R584,R585,R 586, R587,R588,R 589, R590		0.849013	10	105239804.639242
105B701039	Resistor	R1040,R1041 ,R1058, R1154,R1155 ,R1166, R278,R443,R 444, R445,R446,R 447, R448,R508,R 509, R510,R55,R5 6,R57, R58,R594,R5 95,R596, R940,R958,R 963		0.849013	26	42183230.481444
105B702009	Resistor	R27		0.849013	1	847022022.239005
105B702205	Resistor	R25,R26,R30 0,R301, R502,R503,R 504, R505,R967		0.849013	9	116263336.897173

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105B702225	Resistor	R1059,R1060 ,R1061, R1062,R18,R 19,R2, R3,R4,R5,R9 15,R916, R917,R918,R 919, R920,R921,R 922, R923,R924		0.849013	20	54314137.534189
105B703309	Resistor	R285,R286,R 287, R288,R302,R 303		0.849013	6	169721870.032947
105B704725	Resistor	R1158,R1159 ,R1160, R1161,R1167		0.849013	5	201024426.307764
105B705109	Resistor	R1029,R1035		0.849013	2	462236335.164256
105B710009	Resistor	R59		0.849013	1	847022022.239005
105B710039	Resistor	R396,R402,R 442, R968,R970,R 976, R977,R978,R 979, R993		0.849013	10	105239804.639242
105B715009	Resistor	R62		0.849013	1	847022022.239005
105B720009	Resistor	R63		0.849013	1	847022022.239005
105B733019	Resistor	R506,R507		0.849013	2	462236335.164256
106B510034	Resistor	RT1,RT2,RT3 ,RT4, RT5		0.849013	5	201024426.307764
1121415090	Capacitor	C784		0.376269	1	2114932934.07686 2

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1121501690	Capacitor	C14,C15,C16 ,C17, C19,C2,C20, C21,C22, C23,C3,C4,C 444, C445,C446,C 449, C450,C451,C 455, C456,C475,C 476, C479,C480,C 481, C482,C487,C 490, C491,C496,C 498, C499,C5,C50 1,C502, C505,C509,C 510, C511,C512,C 513, C517,C521,C 597, C600,C602,C 609, C617,C618,C 627, C628,C6		0.376269	106	24478258.194620
1121610180	Capacitor	C583,C584,C 585		0.376269	3	772542517.059210
1122522890	Capacitor	C418,C419		0.376269	2	1125869193.22814 8
1123510060	Capacitor	C706		0.376269	1	2114932934.07686 2
1124368690	Capacitor	C8,C9		0.376269	2	1125869193.22814 8
1124410190	Capacitor	C801		0.376269	1	2114932934.07686 2
1124410191	Capacitor	C886		0.376269	1	2114932934.07686 2
1124427090	Capacitor	C485,C486		0.376269	2	1125869193.22814 8
1124433090	Capacitor	C942		0.376269	1	2114932934.07686 2
1124468090	Capacitor	C776,C878		0.376269	2	1125869193.22814 8

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1124522290	Capacitor	C680,C683,C739, C751,C789,C792, C796		0.376269	7	346901597.314283
1124539180	Capacitor	C798,C800		0.376269	2	1125869193.228148
1124547190	Capacitor	C787,C791,C793, C799,C892		0.376269	5	478102470.597799
1129522650	Capacitor	C845		0.376269	1	2114932934.076862
1129610051	Capacitor	C748		0.376269	1	2114932934.076862
1129610080	Capacitor	C854,C857,C858		0.376269	3	772542517.059210
1129701790	Capacitor	C453,C454,C488, C489,C503,C504, C625,C753,C779, C855,C914,C931, C932,C935,C936		0.376269	15	166438970.534623
1129710090	Capacitor	C598,C686,C723, C724,C725,C726, C727,C728		0.376269	8	305240280.106194
1129710390	Capacitor	C734,C746,C782, C819,C827,C835		0.376269	6	401939175.169025
1129715090	Capacitor	C507,C508,C785		0.376269	3	772542517.059210
1129722091	Capacitor	C493,C497		0.376269	2	1125869193.228148
1129747090	Capacitor	C790,C794,C862, C882		0.376269	4	590620153.232529
1189610151	Capacitor	C581,C582		1.581495	2	258148352.242493
1189615154	Capacitor	C903,TC4,TC5		1.581495	3	178197357.423608
1189633151	Capacitor	TC3		1.581495	1	478989080.145412
1189922181	Capacitor	TC2		1.581495	1	478989080.145412
118A6221B0	Capacitor	TC1		1.581495	1	478989080.145412

**File Name:** UP-WHL01.rfp  
**Assembly:** 9697UPWH09-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 2856.745724  
**MTBF (hrs):** 350,049  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
118C6331B0	Capacitor	C815,C816,C817, C818,C833,C834, C841,C915,C916		1.581495	9	63671861.951288
11A4410280	Capacitor	C786,C788		0.376269	2	1125869193.228148
11C1410440	Capacitor	C709		0.376269	1	2114932934.076862
11C1501030	Capacitor	C807		0.376269	1	2114932934.076862
11C1539841	Capacitor	C484		0.376269	1	2114932934.076862
11C1547890	Capacitor	C231,C232,C278, C279,C324,C325, C370,C371,C874		0.376269	9	272590284.242838
11C2410730	Capacitor	C729,C730,C848, C866		0.376269	4	590620153.232529
11C2522480	Capacitor	C840		0.376269	1	2114932934.076862
11C4501050	Capacitor	C705		0.376269	1	2114932934.076862
11C4501640	Capacitor	C719,C741,C745, C809,C821,C828, C836,C867		0.376269	8	305240280.106194
11C4501730	Capacitor	C805		0.376269	1	2114932934.076862
11C4501790	Capacitor	C710		0.376269	1	2114932934.076862
11C4510280	Capacitor	C780,C781		0.376269	2	1125869193.228148
11C4510480	Capacitor	C711,C814,C825, C832		0.376269	4	590620153.232529
11C4522240	Capacitor	C875		0.376269	1	2114932934.076862
11C4547240	Capacitor	C846		0.376269	1	2114932934.076862
11C4547280	Capacitor	C783		0.376269	1	2114932934.076862
11C5501530	Capacitor	C689,C692,C707		0.376269	3	772542517.059210
11C5522690	Capacitor	C690,C691		0.376269	2	1125869193.228148



**File Name:** UP-WHL01.rfp  
**Assembly:** 9697UPWH09-D  
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**Description:**

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**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
11C5547420	Capacitor	C696		0.376269	1	2114932934.07686 2
11C5547660	Capacitor	C694,C695,C 697		0.376269	3	772542517.059210
11CB510350	Capacitor	C416,C420,C 470, C471,C472,C 474		0.376269	6	401939175.169025
11E1501040	Capacitor	C10,C11,C12 ,C428, C443,C492,C 576, C586,C587,C 592, C593,C594,C 595, C603,C610,C 750, C913		0.376269	17	147399909.221434
11E1510050	Capacitor	C13,C18,C73 7		0.376269	3	772542517.059210
11E1547631	Capacitor	C893,C894,C 897, C898,C899,C 900		0.376269	6	401939175.169025
11E1547650	Capacitor	C579,C580		0.376269	2	1125869193.22814 8
11E2501080	Capacitor	C738,C813,C 820, C824,C826,C 831, C837,C877,C 879		0.376269	9	272590284.242838
11E2501690	Capacitor	C636,C637,C 638, C639,C640,C 642, C643,C644,C 645, C646,C684,C 688		0.376269	12	206570811.903534
11E2510010	Capacitor	C742,C743,C 744		0.376269	3	772542517.059210
11E2510060	Capacitor	C731,C732,C 733, C929,C930		0.376269	5	478102470.597799
11E2522090	Capacitor	C699,C700,C 701, C702,C703,C 926, C927,C928		0.376269	8	305240280.106194

**File Name:** UP-WHL01.rfp  
**Assembly:** 9697UPWH09-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 2856.745724  
**MTBF (hrs):** 350,049  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
11E2610032	Capacitor	C811,C812,C822, C823,C829,C830, C838,C839		0.376269	8	305240280.106194
11E2647650	Capacitor	C740,C752		0.376269	2	1125869193.228148
11E4401809	Capacitor	C6,C7		0.376269	2	1125869193.228148
11E4947690	Capacitor	C698		0.376269	1	2114932934.076862
11E9510490	Capacitor	C228,C447,C448, C514,C515,C516, C518,C519,C520, C522,C523,C524, C525,C566,C567, C568,C569,C570, C571,C572,C573, C574,C575,C604, C605,C606,C607, C611,C612,C613, C614,C624,C649, C650,C652,C653, C708,C917,C943, C944,C945,C946, C947,C948,C949, C950,C951,C952,		0.376269	65	39658052.014876
11E9522490	Capacitor	C856		0.376269	1	2114932934.076862
11E9622050	Capacitor	C713,C714,C715, C716,C717,C718, C754,C757,C759, C762		0.376269	10	246303172.644355

**Reliability Prediction  
Summary**

**File Name:** UP-WHL01.rfp  
**Assembly:** 9697UPWH09-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 2856.745724  
**MTBF (hrs):** 350,049  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
11E9622052	Capacitor	C473,C601,C608,C764,C922		0.376269	5	478102470.597799
11E9622080	Capacitor	C495,C842,C843		0.376269	3	772542517.059210
11E9647680	Capacitor	C230		0.376269	1	2114932934.076862
11EA501050	Capacitor	C100,C101,C102,C103,C104,C105,C146,C147,C148,C149,C150,C151,C152,C153,C154,C155,C156,C157,C158,C159,C160,C161,C162,C163,C164,C165,C166,C167,C184,C185,C187,C188,C210,C211,C212,C213,C215,C217,C220,C221,C222,C227,C234,C235,C236,C237,C242,C243,		0.376269	142	18331586.991409

**File Name:** UP-WHL01.rfp  
**Assembly:** 9697UPWH09-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 2856.745724  
**MTBF (hrs):** 350,049  
**Temperature:** 30  
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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
11EA610040	Capacitor	C134,C135,C136, C137,C138,C139, C140,C141,C142, C143,C144,C145, C168,C169,C170, C171,C172,C173, C178,C179,C180, C181,C182,C183, C189,C190,C191, C192,C193,C194, C195,C201,C202, C203,C204,C205, C206,C207,C208, C209,C266,C268, C270,C272,C274, C276,C312,C314,		0.376269	98	26451400.251418
11EA622040	Capacitor	C106,C107,C108, C109,C110,C111, C112,C113,C114, C115,C116,C117, C118,C119,C120, C121,C122,C123, C127,C128,C129, C130,C131,C132, C133,C200,C218, C427		0.376269	28	90636482.926706

**File Name:** UP-WHL01.rfp  
**Assembly:** 9697UPWH09-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 2856.745724  
**MTBF (hrs):** 350,049  
**Temperature:** 30  
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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
11EA647030	Capacitor	C124,C125,C126, C174,C175,C186,C24, C25,C26,C27,C28, C29,C30,C31,C32, C33,C34,C35,C36, C37,C38,C39,C40,C41		0.376269	24	105361853.809630
11EB501040	Capacitor	C506,C635,C641, C847,C859		0.376269	5	478102470.597799
11EB510450	Capacitor	C422,C423,C424, C425,C426,C429, C430,C918,C919, C920,C921		0.376269	11	224677749.839387
11EB522011	Capacitor	C923		0.376269	1	2114932934.076862
11EB522640	Capacitor	C647,C712		0.376269	2	1125869193.228148
11EB610041	Capacitor	C778,C954,C960, C965,C970,C974		0.376269	6	401939175.169025
11EB610050	Capacitor	C494,C500,C588, C589,C590,C591, C599,C720,C721, C722,C887,C889, C904,C906		0.376269	14	177948894.033705
11EB622030	Capacitor	C615,C616,C860, C863,C864,C880, C883,C884		0.376269	8	305240280.106194
121110106Z	Inductor	L13		1.648084	1	464282892.430380
121110156P	Inductor	L11		1.648084	1	464282892.430380
121110156Z	Inductor	L5		1.648084	1	464282892.430380
1211101574	Inductor	L7,L8,L9		1.648084	3	172089853.126111
1211103376	Inductor	L10		1.648084	1	464282892.430380
121110476V	Inductor	L1		1.648084	1	464282892.430380
121110687E	Inductor	L3		1.648084	1	464282892.430380

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**Assembly:** 9697UPWH09-D  
**Ref Des:**  
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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1211110078	Inductor	L12,L14		1.648084	2	249603186.449247
1211122076	Inductor	L2		1.648084	1	464282892.430380
121113307L	Inductor	L6		1.648084	1	464282892.430380
121230603S	Inductor	FB2,FB4,FB8		1.648084	3	172089853.126111
121230603Z	Inductor	FB10,FB11,F B9		1.648084	3	172089853.126111
12123A000D	Inductor	FB28,FB3		1.648084	2	249603186.449247
12123A000E	Inductor	FB19,FB20,F B21, FB22,FB23,F B24		1.648084	6	90167700.669027
12123C000A	Inductor	FB1		1.648084	1	464282892.430380
12123C000E	Inductor	FB12,FB13,F B15, FB16		1.648084	4	131738617.274324
12123D0008	Inductor	FB17,FB18		1.648084	2	249603186.449247
1214109000	Inductor	CH10,CH3,C H4,CH5, CH6,CH7,CH 8,CH9		1.648084	8	68622147.294690
1214109004	Inductor	CH1,CH2		1.648084	2	249603186.449247
121410900A	Inductor	CH13,CH14,C H15, CH16,CH19,C H20, CH21,CH22		1.648084	8	68622147.294690
12310008A2	Miscellaneous	Y5		6.400000	1	71532788.312819
12310024A0	Miscellaneous	Y1		6.400000	1	71532788.312819
12310025A2	Miscellaneous	Y3		6.400000	1	71532788.312819
12310025A5	Miscellaneous	Y4		6.400000	1	71532788.312819
12310027A2	Miscellaneous	Y7		6.400000	1	71532788.312819
1231332726	Miscellaneous	Y2		6.400000	1	71532788.312819
12330024A6	Miscellaneous	Y6		6.400000	1	71532788.312819
1301005450	Semiconductor	D1		2.597804	1	278421930.032950
1301053040	Semiconductor	D10		2.597804	1	278421930.032950
1301400642	Semiconductor	D17		2.597804	1	278421930.032950
1301793040	Semiconductor	D16,D2,D21, D23,D3, D5,D6,D7		2.597804	8	42483426.009389
1304000043	Optical Device	LED1		26.334452	1	19491518.247337
1304101440	Optical Device	LED2		26.334452	1	19491518.247337
1304200043	Optical Device	LED3		26.334452	1	19491518.247337
1305040241	Semiconductor	D13,D14,D15 ,D19		2.597804	4	80967252.378705
1305050040	Semiconductor	D18		2.597804	1	278421930.032950
1305080040	Semiconductor	P_U1,P_U2,P _U3		2.597804	3	105320576.886002
13100EMX10	Semiconductor	Q2		7.487787	1	94927802.245258
1310390413	Semiconductor	Q14		7.487787	1	94927802.245258

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**Ref Des:**  
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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1311390612	Semiconductor	Q16,Q17		7.487787	2	51945285.198303
1315036640	Semiconductor	Q21		7.487787	1	94927802.245258
131520P030	Semiconductor	Q22		7.487787	1	94927802.245258
1315230111	Semiconductor	Q18,Q40		7.487787	2	51945285.198303
1315642DT0	Semiconductor	U87,U88		7.487787	2	51945285.198303
1315700216	Semiconductor	Q11,Q13,Q24,Q26, Q37		7.487787	5	22655518.774775
1315D4C500	Semiconductor	Q20		7.487787	1	94927802.245258
1315EM6K70	Semiconductor	Q1,Q10,Q12,Q15,Q19,Q23,Q25,Q36,Q4,Q41,Q45,Q46,Q47,Q48,Q49,Q50,Q7,Q8,Q9		7.487787	19	6448600.209080
1315PKCK20	Semiconductor	Q31,Q32		7.487787	2	51945285.198303
142ADC0810	Integrated Circuit	U94		14.601001	1	35217607.766180
1430082480	Integrated Circuit	U91		14.601001	1	35217607.766180
1430088590	Integrated Circuit	U90,U92		14.601001	2	20504373.732590
1430090590	Integrated Circuit	U101		14.601001	1	35217607.766180
1430097420	Integrated Circuit	U40,U44		14.601001	2	20504373.732590
1430455200	Integrated Circuit	U100,U65,U67,U69,U71,U72		14.601001	6	8252907.574668
1430513620	Integrated Circuit	U62		14.601001	1	35217607.766180
1430532190	Integrated Circuit	U63,U64		14.601001	2	20504373.732590
1430812450	Integrated Circuit	U82		14.601001	1	35217607.766180
1430812530	Integrated Circuit	U86		14.601001	1	35217607.766180
1433020450	Integrated Circuit	U83,U84,U85		14.601001	3	14769720.207483
143ALC8920	Integrated Circuit	U39		14.601001	1	35217607.766180
143LT86450	Integrated Circuit	U60		14.601001	1	35217607.766180
1440210AT0	Integrated Circuit	U21		14.601001	1	35217607.766180
1440219LM0	Integrated Circuit	U25		14.601001	1	35217607.766180
14408665U0	Integrated Circuit	U1		7.235588	1	71067107.373746
1440PS1750	Integrated Circuit	U103		14.601001	1	35217607.766180
14432F1033	Integrated Circuit	U26		14.601001	1	35217607.766180
1462002562	Integrated Circuit	U102		3.687759	1	174694239.661928
1468H5ANA0	Integrated Circuit	U10,U11,U12,U13,U14,U15,U16,U9		3.687759	8	28457696.333763
146900000K	Integrated Circuit	U55		3.687759	1	174694239.661928
14825M1603	Integrated Circuit	U93		14.601001	1	35217607.766180
149TS01040	Integrated Circuit	U7,U97		14.601001	2	20504373.732590
14S1035803	Integrated Circuit	U59		14.601001	1	35217607.766180

**File Name:** UP-WHL01.rfp  
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**Ref Des:**  
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**MTBF (hrs):** 350,049  
**Temperature:** 30  
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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
14S3104500	Integrated Circuit	U22,U24,U28 ,U29, U31,U32,U33 ,U41, U42,U43,U45 ,U46, U47,U48		14.601001	14	3918307.316971
14S3111703	Integrated Circuit	Q39		14.601001	1	35217607.766180
14S3121600	Integrated Circuit	U89		14.601001	1	35217607.766180
14S4180100	Integrated Circuit	U52		14.601001	1	35217607.766180
14S4814380	Integrated Circuit	U53,U54		14.601001	2	20504373.732590
14S4910400	Integrated Circuit	U4		14.601001	1	35217607.766180
14S5A00821	Integrated Circuit	U5,U6,U61,U 70,U73, U74,U75,U76 ,U77, U78,U79,U81		8.672867	12	8413627.032810
14S5A01400	Integrated Circuit	U80		8.672867	1	76654326.713917
14S5A30601	Integrated Circuit	U96,U98,U99		8.672867	3	29848578.869305
14S6220060	Integrated Circuit	U104		14.601001	1	35217607.766180
1540100040	Resistor	RN1		3.323812	1	154820723.013643
1540736081	Resistor	RP1,RP10,RP 11,RP12, RP2,RP3,RP4 ,RP5, RP6,RP7,RP8 ,RP9		3.323812	12	19766139.303136
1601615600	Connection	SW2		5.394945	1	107056774.080635
165250320K	Connection	CN20		5.394945	1	107056774.080635
1652708203	Connection	CN24		5.394945	1	107056774.080635
1652814207	Connection	CN7,CN8		5.394945	2	61170457.142237
165300210C	Connection	CN27		5.394945	1	107056774.080635
1653006205	Connection	CN18		5.394945	1	107056774.080635
165302020L	Connection	CN22		5.394945	1	107056774.080635
1653215200	Connection	CN26		5.394945	1	107056774.080635
1654010006	Connection	CN11		5.394945	1	107056774.080635
1654207533	Connection	CN3		5.394945	1	107056774.080635
165420753B	Connection	CN4		5.394945	1	107056774.080635
1654226303	Connection	CN2		5.394945	1	107056774.080635
1654403931	Connection	CN10		5.394945	1	107056774.080635
1654801832	Connection	CN14,CN15		5.394945	2	61170457.142237
1654900800	Connection	SIM1		5.394945	1	107056774.080635
1654904130	Connection	CN13		5.394945	1	107056774.080635
1654907009	Connection	CN5		5.394945	1	107056774.080635
165500401A	Connection	CN19		5.394945	1	107056774.080635
1655302025	Connection	CN6		5.394945	1	107056774.080635
1655810131	Connection	CN16		5.394945	1	107056774.080635
1655840030	Connection	CN25		5.394945	1	107056774.080635



**Reliability Prediction  
Summary**

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**Assembly:** 9697UPWH09-D  
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**MTBF (hrs):** 350,049  
**Temperature:** 30  
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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1655901000	Connection	COM1,COM2		5.394945	2	61170457.142237
1655902034	Connection	CN1		5.394945	1	107056774.080635
175011301K	Miscellaneous	CN1-1		102.000000	1	5045049.020362
1752011002	Miscellaneous	F1,F2		0.800000	2	431834181.589876
1752300001	Miscellaneous	F3		0.800000	1	763878127.807005