

# UP-CHCR1

## Reliability Prediction Report (MTBF)

Summary	Failure Rate: 3050.289617 MTBF: 327,838 Hours
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Issue date	QE Manager	Test Engineer
2018-01-30	KJ Wang	Louie Lee

# Reliability Prediction (MTBF)

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**I . Model Name:** UP-CHCR1

**II . Prediction Date:** January. 30th, 2018

**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:**

UP-CHCR1 (M/B: 9697UPCO07-D):

- Failure Rate: 3050.289617

- MTBF: 327,838 Hours

**File Name:** UP-CHCR1.rfp  
**Duty Cycle:** 100  
**Calculation Model:** Telcordia Issue 2  
**Method:** Method I Case 3

**Failure Rate:** 3050.289617  
**MTBF (hrs):** 327,838  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Assembly Name	Part Number	Ref Des	Quantity	Failure Rate	MTBF
UP-CHCR1	9697UPCO07-D		1	3050.289617	327,838

**File Name:** UP-CHCR1.rfp  
**Assembly:** 9697UPCO07-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 3050.289617  
**MTBF (hrs):** 327,838  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1050297624	Resistor	R1705		2.547039	1	282340674.079668
1050501054	Resistor	R463		2.547039	1	282340674.079668
1050501514	Resistor	R4,R5		2.547039	2	154078778.388085
1050504724	Resistor	R1704,R1731 ,R1735, R202,R207,R 211, R216		2.547039	7	48991237.965885
1050505134	Resistor	R1715		2.547039	1	282340674.079668
1050510004	Resistor	R11,R1661,R 31,R458		2.547039	4	82309758.689546
1050510014	Resistor	R1742,R190, R45		2.547039	3	107020754.986850
1050510024	Resistor	R1591,R1592 ,R1702, R1706,R1713 ,R1733, R1771,R1773 ,R498, R500		2.547039	10	35079934.879747
1050510034	Resistor	R1708,R1716		2.547039	2	154078778.388085
1050511503	Resistor	R18		2.547039	1	282340674.079668
1050512734	Resistor	R1707		2.547039	1	282340674.079668
1050513034	Resistor	R456		2.547039	1	282340674.079668
1050518034	Resistor	R1736		2.547039	1	282340674.079668
1050518204	Resistor	R1		2.547039	1	282340674.079668
1050520034	Resistor	R1596,R171, R50		2.547039	3	107020754.986850
1050524004	Resistor	R1529,R1530 ,R1686, R1687,R1688 ,R1689, R198,R199		2.547039	8	43225424.698300
1050524924	Resistor	R466,R469		2.547039	2	154078778.388085
1050524934	Resistor	R1703		2.547039	1	282340674.079668
1050528734	Resistor	R455		2.547039	1	282340674.079668
1050539214	Resistor	R480		2.547039	1	282340674.079668
1050540204	Resistor	R10,R13,R8, R9		2.547039	4	82309758.689546
1050545364	Resistor	R19		2.547039	1	282340674.079668
1050549964	Resistor	R26		2.547039	1	282340674.079668
1050580664	Resistor	R12		2.547039	1	282340674.079668
1050591034	Resistor	R457		2.547039	1	282340674.079668

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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1050700004	Resistor	R1612,R1613 ,R1614, R1694,R1710 ,R1711, R1712,R1714 ,R1743, R1744,R1747 ,R1748, R1749,R1750 ,R1757, R1758,R1766 ,R1767, R1768,R1769 ,R1770, R1776,R1777 ,R1778, R1779,R1780 ,R241, R41,R439,R4 41,R462, R?		2.547039	32	11502702.879433
1059700001	Resistor	R1413,R1414 ,R1666, R1726		2.547039	4	82309758.689546
105A502039	Resistor	R138,R21,R2 7,R28, R29,R46,R46 0,R60		2.547039	8	43225424.698300
105A505109	Resistor	R187,R188,R 189, R192,R193		2.547039	5	67008142.102588
105A510033	Resistor	R459		2.547039	1	282340674.079668
105A524919	Resistor	R25		2.547039	1	282340674.079668
105A530109	Resistor	R262		2.547039	1	282340674.079668
105A549933	Resistor	R501		2.547039	1	282340674.079668
105A700003	Resistor	R1728,R1753 ,R1756, R38,R40,R47 0,R471		2.547039	7	48991237.965885
105A700139	Resistor	R1732		2.547039	1	282340674.079668
105A700239	Resistor	R269		2.547039	1	282340674.079668
105A701069	Resistor	R49		2.547039	1	282340674.079668
105A702229	Resistor	R1488,R1629 ,R1630, R1631,R1632 ,R393, R394		2.547039	7	48991237.965885
105A703039	Resistor	R1761,R1762 ,R1763, R1764,R1765		2.547039	5	67008142.102588
105A703329	Resistor	R280,R281,R 282		2.547039	3	107020754.986850
105A704763	Resistor	R454		2.547039	1	282340674.079668

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105A710039	Resistor	R1729,R1730 ,R1734		2.547039	3	107020754.986850
105A733009	Resistor	R499		2.547039	1	282340674.079668
105A768009	Resistor	R381,R382,R 383, R384,R385,R 387, R389,R390		2.547039	8	43225424.698300
105B700009	Resistor	R1531,R1532 ,R1533, R1534,R1535 ,R1536, R1537,R1538 ,R1539, R1540,R1541 ,R1542, R1543,R1544 ,R1545, R1546,R1547 ,R1548, R1549,R1550 ,R1551, R1552,R1553 ,R1555, R1556,R1557 ,R1558, R1559,R1573 ,R1574, R1679,R1690 ,R1691, R1737,R1738 ,R1739, R264,R386,R 468, R472,R473,R		2.547039	47	7918121.839508
105B701039	Resistor	R1415,R1416 ,R1560, R1594,R1595 ,R1597, R1598,R1698 ,R1699, R177,R179,R 181, R182,R184,R 185, R204,R395,R 91		2.547039	18	20032117.836120
105B702225	Resistor	R1662		2.547039	1	282340674.079668
105B710039	Resistor	R1562,R1593 ,R1701, R30,R396		2.547039	5	67008142.102588
106B504734	Resistor	RT1,RT2		7.724580	2	38596617.434771

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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1121501690	Capacitor	C126,C127,C171, C176,C185,C196, C197,C200,C204, C206,C274,C355, C392,C395,C398, C400,C401,C402, C403,C404,C411, C412,C415		1.128806	23	36609385.175833
1121622780	Capacitor	C207		1.128806	1	704977644.692287
1129710090	Capacitor	C417,C42,C43		1.128806	3	257514172.353070
1129710391	Capacitor	C356		1.128806	1	704977644.692287
11A2422190	Capacitor	C201		1.128806	1	704977644.692287
11A4418040	Capacitor	C40,C41		1.128806	2	375289731.076049
11E1501040	Capacitor	C128,C203,C209, C210,C256,C370, C413		1.128806	7	115633865.771428
11E2522632	Capacitor	C189		1.128806	1	704977644.692287
11E2610032	Capacitor	C175,C184,C211, C215,C216		1.128806	5	159367490.199266



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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
11E9510490	Capacitor	C106,C107,C161, C162,C163,C164, C165,C166,C167, C168,C2,C257,C258, C259,C260,C3,C315, C316,C321,C322, C325,C326,C327, C328,C329,C330, C331,C332,C333, C334,C341,C342, C357,C358,C359, C405,C46,C50,C59, C60,C65,C66,C67, C81,C82,C83,C90,C95		1.128806	48	17813540.224875
11E9547680	Capacitor	C218,C221,C223, C224,C227,C229, C234,C235,C236, C242,C418,C419		1.128806	12	68856937.301178
11E9622080	Capacitor	C12,C13,C212,C213, C214,C217,C219, C220,C222,C225, C226,C228,C4,C5		1.128806	14	59316298.011235

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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
11E9647690	Capacitor	C15,C230,C231,C232,C233,C237,C238,C240,C241,C243,C244,C245,C246,C247,C248,C310,C351,C420,C54		1.128806	19	44097696.883526
11EA501050	Capacitor	C10,C11,C14,C16,C17,C18,C19,C20,C21,C22,C23,C24,C25,C26,C27,C28,C29,C30,C31,C311,C312,C313,C314,C317,C318,C319,C32,C320,C33,C34,C37,C38,C39,C55,C56,C57,C58,C6,C61,C62,C63,C64,C68,C7,C8,C9		1.128806	46	18574133.926778
11EA610040	Capacitor	C205,C35,C352,C353,C354,C36,C391,C393,C394,C396,C397,C399,C89		1.128806	13	63728475.410842
11EB522011	Capacitor	C125,C194,C195,C198,C199,C273,C275,C387,C414		1.128806	9	90863428.080946
11EB522640	Capacitor	C202,C208,C239		1.128806	3	257514172.353070
121110156U	Inductor	L1		4.944252	1	154760964.143460
1211104776	Inductor	L3,L4		4.944252	2	83201062.149749
1211110078	Inductor	L2		4.944252	1	154760964.143460

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1211115073	Inductor	L5,L6,L7,L8		4.944252	4	43912872.424775
1211133071	Inductor	L9		4.944252	1	154760964.143460
12123A000B	Inductor	FB11		4.944252	1	154760964.143460
12123C0001	Inductor	FB12,FB13,F B14		4.944252	3	57363284.375370
1214109000	Inductor	CH1,CH12,C H13,CH14, CH15,CH6,C H7		4.944252	7	25970990.056682
1214109004	Inductor	CH2,CH3		4.944252	2	83201062.149749
12310192A0	Miscellaneous	Y1		19.200000	1	23844262.770939
1231332726	Miscellaneous	Y2		19.200000	1	23844262.770939
1233324055	Miscellaneous	Y6,Y7		19.200000	2	8854051.752197
1301005450	Semiconductor	D1		7.793411	1	92807310.010983
1301053040	Semiconductor	D8		7.793411	1	92807310.010983
1302005641	Semiconductor	D18		7.793411	1	92807310.010983
1305040241	Semiconductor	D10,D3,D6,D 7		7.793411	4	26989084.126235
1305050040	Semiconductor	D11,D12		7.793411	2	50578095.223398
1310390410	Semiconductor	Q18		22.463360	1	31642600.748419
1311009210	Semiconductor	Q20		22.463360	1	31642600.748419
1315013810	Semiconductor	Q14		22.463360	1	31642600.748419
1315044910	Semiconductor	Q21		22.463360	1	31642600.748419
1315230111	Semiconductor	Q17		22.463360	1	31642600.748419
1315700216	Semiconductor	Q16		22.463360	1	31642600.748419
1315EM6K10	Semiconductor	Q5,Q6		22.463360	2	17315095.066101
1430053250	Integrated Circuit	U110,U111,U 112		43.803003	3	4923240.069161
1430087620	Integrated Circuit	U48		43.803003	1	11739202.588727
1430097420	Integrated Circuit	U32		43.803003	1	11739202.588727
1430455200	Integrated Circuit	U52		43.803003	1	11739202.588727
14309039A0	Integrated Circuit	U49		43.803003	1	11739202.588727
1445Z83500	Integrated Circuit	U1		21.706765	1	23689035.791249
144AP62140	Integrated Circuit	U113		43.803003	1	11739202.588727
1462025640	Integrated Circuit	U18		11.063278	1	58231413.220643
1468164601	Integrated Circuit	U11,U12,U97 ,U98		11.063278	4	17763990.409389
146900000D	Integrated Circuit	U19		11.063278	1	58231413.220643
149TS01040	Integrated Circuit	U4,U8		43.803003	2	6834791.244197
14S3104500	Integrated Circuit	U25,U27,U30 ,U36, U37		43.803003	5	3214211.402100
14S5A30601	Integrated Circuit	U101,U13		26.018600	2	14194252.866846
1541110181	Resistor	RP1,RP2,RP3 ,RP4, RP5,RP6,RP7		9.971436	7	10584778.288368
1601000990	Connection	SW1		16.184835	1	35685591.360212
1652503109	Connection	CN30		16.184835	1	35685591.360212

**Reliability Prediction  
Summary**

**File Name:** UP-CHCR1.rfp  
**Assembly:** 9697UPCO07-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 3050.289617  
**MTBF (hrs):** 327,838  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1653002101	Connection	CN14		16.184835	1	35685591.360212
1653006205	Connection	CN38		16.184835	1	35685591.360212
1654010006	Connection	CN40		16.184835	1	35685591.360212
1654401932	Connection	CN11		16.184835	1	35685591.360212
1654800938	Connection	CN35		16.184835	1	35685591.360212
1654902130	Connection	CN32		16.184835	1	35685591.360212
1654903130	Connection	CN34		16.184835	1	35685591.360212
1654903600	Connection	ANT1		16.184835	1	35685591.360212
1654904130	Connection	CN31		16.184835	1	35685591.360212
1655802020	Connection	CN39		16.184835	1	35685591.360212
1655810131	Connection	CN7		16.184835	1	35685591.360212
1655902034	Connection	CN1,CN33		16.184835	2	20390152.380746
175011301K	Miscellaneous	CN1		306.000000	1	1681683.006787
1752011002	Miscellaneous	F1		2.400000	1	254626042.602335
1752300001	Miscellaneous	F2		2.400000	1	254626042.602335