

# COM-APLC6

## Reliability Prediction Report

### (MTBF)

Summary	Failure Rate: 4461.214742 MTBF: 224,154 Hours
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Issue date	QE Manager	Test Engineer
2018-05-30	KJ Wang	Danny Chen

# Reliability Prediction (MTBF)

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**I . Model Name:** COM-APLC6

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

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

**IV . Predicted by:** Danny Chen

**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:**

COM-APLC6 (M/B: 9697APL007-D):

- Failure Rate: 4461.214742
- MTBF: 224,154 Hours

**AAEON Reliability Prediction  
Summary**

**File Name:** COM-APLC6.rfp  
**Duty Cycle:** 100  
**Calculation Model:** Telcordia Issue 2  
**Method:** Method I Case 3

**Failure Rate:** 4461.214742  
**MTBF (hrs):** 224,154  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Assembly Name	Part Number	Ref Des	Quantity	Failure Rate	MTBF
COM-APLC6	9697APL007-D		1	4461.214742	224,154

**File Name:** COM-APLC6.rfp  
**Assembly:** 9697APL007-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 4461.214742  
**MTBF (hrs):** 224,154  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1050297624	Resistor	R1585		2.547039	1	282340674.079668
1050500334	Resistor	R319,R339,R364		2.547039	3	107020754.986850
1050501234	Resistor	R516		2.547039	1	282340674.079668
1050501634	Resistor	R361		2.547039	1	282340674.079668
1050502004	Resistor	R1126,R49,R50,R52,R54,R55,R56,R58		2.547039	8	43225424.698300
1050502224	Resistor	R1627,R194,R195,R314,R334		2.547039	5	67008142.102588
1050504724	Resistor	R1583,R400,R403,R404,R406,R407,R413,R417,R418		2.547039	9	38754445.632391
1050504734	Resistor	R497		2.547039	1	282340674.079668
1050505124	Resistor	R243		2.547039	1	282340674.079668
1050505134	Resistor	R1594,R568,R569,R572		2.547039	4	82309758.689546
1050507530	Resistor	R493		2.547039	1	282340674.079668
1050510034	Resistor	R1590,R1593,R217,R218,R237,R463,R468,R476,R501,R505		2.547039	10	35079934.879747
1050510504	Resistor	R1,R2		2.547039	2	154078778.388085
1050511304	Resistor	R31		2.547039	1	282340674.079668
1050511824	Resistor	R512		2.547039	1	282340674.079668
1050512734	Resistor	R1591		2.547039	1	282340674.079668
1050520004	Resistor	R103,R145,R37		2.547039	3	107020754.986850
1050520034	Resistor	R115,R1596,R83		2.547039	3	107020754.986850
1050522004	Resistor	R148		2.547039	1	282340674.079668
1050524934	Resistor	R1584		2.547039	1	282340674.079668
1050525524	Resistor	R503		2.547039	1	282340674.079668
1050533034	Resistor	R494		2.547039	1	282340674.079668
1050536514	Resistor	R1631,R174,R177,R178,R180,R185,R188,R189,R191		2.547039	9	38754445.632391
1050540204	Resistor	R11,R12,R13		2.547039	3	107020754.986850
1050541224	Resistor	R567		2.547039	1	282340674.079668

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1050547004	Resistor	R373		2.547039	1	282340674.079668
1050549964	Resistor	R291,R292,R294, R295,R296,R297, R298		2.547039	7	48991237.965885
1050708234	Resistor	R495		2.547039	1	282340674.079668
105A500103	Resistor	R502		2.547039	1	282340674.079668
105A500139	Resistor	R340		2.547039	1	282340674.079668
105A501039	Resistor	R196,R200,R202, R206,R207,R214, R223,R246,R312, R313,R374		2.547039	11	32049696.385471
105A501139	Resistor	R570		2.547039	1	282340674.079668
105A501829	Resistor	R230,R231		2.547039	2	154078778.388085
105A503309	Resistor	R421,R423,R424, R425		2.547039	4	82309758.689546
105A503363	Resistor	R500		2.547039	1	282340674.079668
105A510009	Resistor	R316,R335,R362, R513,R517,R522		2.547039	6	56573956.677649
105A515009	Resistor	R232,R233,R235,R7, R8,R9		2.547039	6	56573956.677649
105A516903	Resistor	R147		2.547039	1	282340674.079668
105A520003	Resistor	R475		2.547039	1	282340674.079668
105A528723	Resistor	R535		2.547039	1	282340674.079668
105A538323	Resistor	R571		2.547039	1	282340674.079668
105A549919	Resistor	R289		2.547039	1	282340674.079668
105A560469	Resistor	R23		2.547039	1	282340674.079668
105A584563	Resistor	R146		2.547039	1	282340674.079668
105A700003	Resistor	R1606,R1628, R213, R229,R279,R379, R381,R383,R506, R511,R514,R518, R519,R523,R527, R531,R541,R542, R546,R553,R557, R566		2.547039	22	16518584.576317

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105A700009	Resistor	R1125,R1127, R1128, R1131,R1132, R1139, R1143,R157, R1576, R1578,R1580, R1600, R1601,R1602, R1603, R1604,R1605, R1622, R1636,R1638, R164, R1640,R165, R166, R182,R1891, R1907, R1914,R1915, R193, R212,R215,R 216, R219,R222,R 257, R325,R330,R 331, R338,R342,R 344, R346,R3		2.547039	103	3675275.994176
105A70000A	Resistor	R162,R163,R 167, R168,R169,R 170, R290		2.547039	7	48991237.965885
105A700139	Resistor	R105,R120,R 123, R124,R151,R 426,R74, R75,R76,R79 ,R80		2.547039	11	32049696.385471

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105A701039	Resistor	R104,R110,R111, R112,R113,R1142, R117,R122,R126, R128,R153,R154, R1589,R1592,R1609, R1612,R1619,R1620, R1632,R1633,R172, R173,R176,R184, R187,R1892,R228, R236,R249,R251, R269,R305,R306, R311,R32,R326,R328, R341,R343,R345, R347,R349,R35,R350, R351,R352,R38		2.547039	61	6139957.583645
105A701059	Resistor	R227,R238,R245, R252,R320,R337, R461,R472		2.547039	8	43225424.698300
105A701069	Resistor	R118		2.547039	1	282340674.079668
105A702039	Resistor	R127,R150,R152		2.547039	3	107020754.986850



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105A702229	Resistor	R1129,R1130 ,R1140, R1141,R253, R256, R258,R259,R 260, R281,R282,R 283,R29, R3,R30,R303 ,R304, R333,R360,R 4,R450, R451,R452,R 5,R6, R66,R67,R77 7,R783, R84,R85		2.547039	31	11861900.957214
105A702269	Resistor	R520,R539		2.547039	2	154078778.388085
105A702433	Resistor	R496		2.547039	1	282340674.079668
105A703309	Resistor	R100,R101,R 102, R386,R97,R9 8,R99		2.547039	7	48991237.965885
105A704729	Resistor	R106,R14,R1 5,R1629, R1630,R18,R 19,R20, R21,R22,R24 ,R318, R321,R324,R 36,R384, R385,R68		2.547039	18	20032117.836120
105A704739	Resistor	R420,R422,R 429, R430,R431		2.547039	5	67008142.102588
105A706809	Resistor	R144		2.547039	1	282340674.079668
105A706829	Resistor	R247,R248		2.547039	2	154078778.388085
105A708229	Resistor	R1608,R26,R 27,R482, R489		2.547039	5	67008142.102588
105A710039	Resistor	R1144,R139, R160, R224,R226,R 234, R241,R242,R 380, R456,R460,R 478, R492,R550		2.547039	14	25477245.255648
105A733009	Resistor	R465,R466		2.547039	2	154078778.388085
105A747009	Resistor	R467,R474		2.547039	2	154078778.388085

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105B700009	Resistor	R1912,R427		2.547039	2	154078778.388085
105B701039	Resistor	R107,R108,R109, R1595,R1597, ,R1598, R1607,R1625, ,R1898, R1899,R1901, ,R1903, R1906,R1924, ,R1925, R1926,R1927, ,R271, R273,R274,R275, R276,R277,R278, R285,R286,R287, R288,R39,R390, R40, R41,R45,R47, ,R96		2.547039	35	10545622.718268
105B710039	Resistor	R1894,R1895, ,R1896, R1897,R57,R73		2.547039	6	56573956.677649
106B501034	Resistor	RT1,RT2		2.547039	2	154078778.388085

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1121501691	Capacitor	C1,C117,C118,C120,C121,C123,C124,C133,C134,C135,C136,C137,C138,C139,C140,C147,C148,C15,C150,C151,C153,C154,C16,C163,C164,C165,C166,C167,C168,C169,C17,C170,C179,C18,C180,C183,C184,C186,C187,C188,C189,C190,C191,C192,C194,C197,C198,C2,C201,C202		1.128806	118	7338727.814962
1124418090	Capacitor	C20,C22		1.128806	2	375289731.076049
1124420090	Capacitor	C208,C209		1.128806	2	375289731.076049
1124427091	Capacitor	C235,C240		1.128806	2	375289731.076049
1124522280	Capacitor	C333		1.128806	1	704977644.692287
1124522680	Capacitor	C324		1.128806	1	704977644.692287
1124547290	Capacitor	C358,C385		1.128806	2	375289731.076049
1129622690	Capacitor	C178,C182		1.128806	2	375289731.076049
1129701790	Capacitor	C193,C277		1.128806	2	375289731.076049
1129710090	Capacitor	C19,C21		1.128806	2	375289731.076049
1129710091	Capacitor	C492		1.128806	1	704977644.692287
1129710390	Capacitor	C258		1.128806	1	704977644.692287
1129722091	Capacitor	C316		1.128806	1	704977644.692287
1189633151	Capacitor	C350,C351,T C1,TC2		1.128806	4	196873384.410843
11A4433030	Capacitor	C407		1.128806	1	704977644.692287
11C1510390	Capacitor	C278,C279,C280,C281,C282,C283,C284,C285		1.128806	8	101746760.035398
11C1539840	Capacitor	C234		1.128806	1	704977644.692287

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11C2510480	Capacitor	C349,C357,C384		1.128806	3	257514172.353070
11C4501790	Capacitor	C320		1.128806	1	704977644.692287
11C4510240	Capacitor	C387		1.128806	1	704977644.692287
11C4510480	Capacitor	C332		1.128806	1	704977644.692287
11C4515230	Capacitor	C412		1.128806	1	704977644.692287
11C4533380	Capacitor	C410		1.128806	1	704977644.692287
11C4556690	Capacitor	C321		1.128806	1	704977644.692287
11C9510490	Capacitor	C348,C354,C362,C365,C370,C379		1.128806	6	133979725.056342
11C9522060	Capacitor	C305,C495		1.128806	2	375289731.076049
11E1501040	Capacitor	C393		1.128806	1	704977644.692287
11E1522680	Capacitor	C119,C122,C149,C152		1.128806	4	196873384.410843
11E1622020	Capacitor	C406		1.128806	1	704977644.692287
11E2501040	Capacitor	C335		1.128806	1	704977644.692287
11E2501690	Capacitor	C326,C409,C415,C417		1.128806	4	196873384.410843
11E2522060	Capacitor	C325,C327,C328,C414		1.128806	4	196873384.410843
11E2622011	Capacitor	C341,C342,C343,C344,C345,C376,C377,C378,C408		1.128806	9	90863428.080946
11E9501090	Capacitor	C229,C251,C255		1.128806	3	257514172.353070
11E9510490	Capacitor	C510,C511,C512,C513,C516,C517		1.128806	6	133979725.056342
11E9547630	Capacitor	C177,C233,C239,C245,C334,C395,C396,C397,C399,C400,C401		1.128806	11	74892583.279796

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11E9610080	Capacitor	C125,C126,C127, C128,C129,C130, C131,C132,C141, C142,C155,C156, C157,C158,C159, C160,C161,C162, C171,C172,C195, C196,C200,C204, C205,C210,C214, C222,C223,C256		1.128806	30	28241202.507613
11E9622050	Capacitor	C303		1.128806	1	704977644.692287
11E9622052	Capacitor	C314,C329,C330, C331,C416		1.128806	5	159367490.199266
11E9622080	Capacitor	C100,C103,C108, C113,C116,C129,C30, C31,C317,C318,C32, C339,C352,C353, C359,C360,C361, C366,C367,C371, C372,C373,C380, C386,C388,C389,C54, C55,C56,C57,C58, C59,C64,C65,C66, C67,C68,C69,C77, C83,C87,C88,C89, C90,C91,C92,C93, C96,C97		1.128806	49	17456231.890224
11E9647690	Capacitor	C181		1.128806	1	704977644.692287
11EA510390	Capacitor	C185		1.128806	1	704977644.692287

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11EA510450	Capacitor	C10,C11,C12,C13,C14,C3,C4,C418,C419,C420,C422,C425,C428,C439,C440,C5,C514,C515,C518,C519,C520,C523,C524,C525,C526,C527,C6,C7,C8,C9		1.128806	30	28241202.507613
11EA610040	Capacitor	C230,C238,C244		1.128806	3	257514172.353070
11EA610120	Capacitor	C346,C347,C381,C382		1.128806	4	196873384.410843
11EA647010	Capacitor	C70,C71,C72		1.128806	3	257514172.353070
11EB501040	Capacitor	C101,C102,C105,C106,C107,C109,C110,C111,C112,C114,C115,C143,C144,C145,C146,C173,C174,C175,C176,C24,C25,C26,C306,C33,C34,C35,C36,C37,C38,C39,C390,C398,C40,C402,C41,C42,C438,C47,C48,C49,C50,C51,C52,C53,C60,C61,C62,C63,C73,C74,C75,C76,C80,C81,C403,C404		1.128806	62	13849042.265233
11EB522640	Capacitor	C403,C404		1.128806	2	375289731.076049

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11EB610040	Capacitor	C336,C337,C338, C363,C368,C374, C421,C423,C424, C426,C427,C429		1.128806	12	68856937.301178
121110156P	Inductor	L2		4.944252	1	154760964.143460
1211102272	Inductor	L4		4.944252	1	154760964.143460
1211104777	Inductor	L5,L6,L7		4.944252	3	57363284.375370
1211104779	Inductor	L3,L8		4.944252	2	83201062.149749
121112207G	Inductor	L1		4.944252	1	154760964.143460
1211147078	Inductor	L9		4.944252	1	154760964.143460
1212306030	Inductor	FB1,FB2		4.944252	2	83201062.149749
12123A000B	Inductor	FB10,FB8,FB9		4.944252	3	57363284.375370
12123C0001	Inductor	FB27,FB28		4.944252	2	83201062.149749
12123C0031	Inductor	FB3,FB4,FB5,FB6,FB7		4.944252	5	35631881.582999
12310025A5	Miscellaneous	Y4		19.200000	1	23844262.770939
12310027A3	Miscellaneous	Y3		19.200000	1	23844262.770939
12310192A0	Miscellaneous	Y1		19.200000	1	23844262.770939
1231332726	Miscellaneous	Y2		19.200000	1	23844262.770939
1301005444	Semiconductor	D1,D11,D2,D9		7.793411	4	26989084.126235
1301005450	Semiconductor	D10,D14,D16,D5,D6,D8		7.793411	6	18540453.699406
1301020400	Semiconductor	D13		7.793411	1	92807310.010983
1301400642	Semiconductor	D7		7.793411	1	92807310.010983
1301793040	Semiconductor	D17		7.793411	1	92807310.010983
1304001340	Optical Device	LED2		79.003355	1	6497172.749112
1304300140	Optical Device	LED1		79.003355	1	6497172.749112
1315000530	Semiconductor	Q45		22.463360	1	31642600.748419
1315036600	Semiconductor	Q23		22.463360	1	31642600.748419
1315044910	Semiconductor	Q21		22.463360	1	31642600.748419
1315492510	Semiconductor	Q19		22.463360	1	31642600.748419
1315700216	Semiconductor	Q9		22.463360	1	31642600.748419
1315720010	Semiconductor	Q24		22.463360	1	31642600.748419
1315762010	Semiconductor	Q25		22.463360	1	31642600.748419
1315EM6K10	Semiconductor	Q1,Q12,Q13,Q14,Q15, Q16,Q18,Q20,Q22, Q26,Q3,Q4,Q44,Q5, Q61,Q8		22.463360	16	2533798.883137
1426GP2120	Integrated Circuit	U8		43.803003	1	11739202.588727

**File Name:** COM-APLC6.rfp  
**Assembly:** 9697APL007-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 4461.214742  
**MTBF (hrs):** 224,154  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1430006790	Integrated Circuit	U30		43.803003	1	11739202.588727
1430034250	Integrated Circuit	U32		43.803003	1	11739202.588727
1430053250	Integrated Circuit	U10,U33,U34,U35		43.803003	4	3879156.910661
1430080650	Integrated Circuit	U29		43.803003	1	11739202.588727
1430455200	Integrated Circuit	U26,U27		43.803003	2	6834791.244197
1436509421	Integrated Circuit	U31		43.803003	1	11739202.588727
1440211AT0	Integrated Circuit	U13		43.803003	1	11739202.588727
14407517A0	Integrated Circuit	U9		43.803003	1	11739202.588727
1440E39500	Integrated Circuit	U1		21.706765	1	23689035.791249
145S312500	Integrated Circuit	U104,U106		43.803003	2	6834791.244197
1462001282	Integrated Circuit	U22		11.063278	1	58231413.220643
14909655T0	Integrated Circuit	U28		43.803003	1	11739202.588727
149F759140	Integrated Circuit	U100,U103		43.803003	2	6834791.244197
149TB01040	Integrated Circuit	U18		43.803003	1	11739202.588727
149TS01040	Integrated Circuit	U2		43.803003	1	11739202.588727
14E0085281	Integrated Circuit	U16		43.803003	1	11739202.588727
14S1035803	Integrated Circuit	U102,U50		43.803003	2	6834791.244197
14S4010800	Integrated Circuit	U4		43.803003	1	11739202.588727
14S5A00821	Integrated Circuit	U5,U6		26.018600	2	14194252.866846
14S5A30601	Integrated Circuit	U101,U105,U3,U84		26.018600	4	7696979.559193
14S6216060	Integrated Circuit	U17		11.063278	1	58231413.220643
14S9346001	Integrated Circuit	U7		43.803003	1	11739202.588727
1540700081	Integrated Circuit	RP2,RP4		43.803003	2	6834791.244197
16540M0001	Connection	CN5,CN6		16.184835	2	20390152.380746
1654901035	Connection	MSD1		16.184835	1	35685591.360212
1654902130	Connection	CN32		16.184835	1	35685591.360212
1654903130	Connection	CN33		16.184835	1	35685591.360212
1654904130	Connection	CN31		16.184835	1	35685591.360212
1655902034	Connection	CN1		16.184835	1	35685591.360212
1655903122	Connection	CN11		16.184835	1	35685591.360212
1655907130	Connection	CN4		16.184835	1	35685591.360212