

# EMB-A70M

## Reliability Prediction Report (MTBF)

|         |  |
|---------|--|
| Summary | Failure Rate: 11299.285067 ppm<br>MTBF: 88.501 Hours |
|---------|--|

Issue date

Approval

Test Engineer

2013/09/17

Tom Lin

Danny Chen

# Reliability Prediction (MTBF)

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**I . Model Name:** EMB-A70M

**II . Prediction Date:** Sep. 17, 2013

**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:**

EMB-A70M (9697A70M06-D):

- Failure Rate: 11299.285067ppm
- MTBF: 88.501 hurs

**AAEON Reliability Prediction  
Summary**

**File Name:** EMB-A70M.rfp  
**Duty Cycle:** 100  
**Calculation Model:** Telcordia Issue 2  
**Method:** Method I Case 3

**Failure Rate:** 11299.285067  
**MTBF (hrs):** 88,501  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Assembly Name | Part Number  | Ref Des | Quantity | Failure Rate | MTBF   |
|---------------|--------------|---------|----------|--------------|--------|
| EMB-A70M      | 9697A70M06-D |         | 1        | 11299.285067 | 88,501 |

**File Name:** EMB-A70M.rfp  
**Assembly:** 9697A70M06-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 11299.285067  
**MTBF (hrs):** 88,501  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number                    | Category | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|--------------------------------|----------|---|----------|-------------------|----------|------------------|
| 1050500104.0000<br>00000000000 | Resistor | R174,R262,R<br>344,<br>R496,R497,R<br>554, R651 |          | 2.547039          | 7        | 48991237.965885  |
| 1050501004.0000<br>00000000000 | Resistor | R502,R505,R<br>507                              |          | 2.547039          | 3        | 107020754.986850 |
| 1050501054.0000<br>00000000000 | Resistor | R188  |          | 2.547039          | 1        | 282340674.079668 |
| 1050501224.0000<br>00000000000 | Resistor | R11,R15,R46<br>7                                |          | 2.547039          | 3        | 107020754.986850 |
| 1050502204.0000<br>00000000000 | Resistor | R515  |          | 2.547039          | 1        | 282340674.079668 |
| 1050503924.0000<br>00000000000 | Resistor | R211  |          | 2.547039          | 1        | 282340674.079668 |
| 1050505134.0000<br>00000000000 | Resistor | R527  |          | 2.547039          | 1        | 282340674.079668 |
| 1050506224.0000<br>00000000000 | Resistor | R1,R69  |          | 2.547039          | 2        | 154078778.388085 |
| 1050510034.0000<br>00000000000 | Resistor | R164,R299,R<br>370                              |          | 2.547039          | 3        | 107020754.986850 |
| 1050511034.0000<br>00000000000 | Resistor | R369  |          | 2.547039          | 1        | 282340674.079668 |
| 1050511524.0000<br>00000000000 | Resistor | R367  |          | 2.547039          | 1        | 282340674.079668 |
| 1050511824.0000<br>00000000000 | Resistor | R196  |          | 2.547039          | 1        | 282340674.079668 |
| 1050512734.0000<br>00000000000 | Resistor | R263  |          | 2.547039          | 1        | 282340674.079668 |
| 1050514324.0000<br>00000000000 | Resistor | R169  |          | 2.547039          | 1        | 282340674.079668 |
| 1050515034.0000<br>00000000000 | Resistor | R307  |          | 2.547039          | 1        | 282340674.079668 |
| 1050516034.0000<br>00000000000 | Resistor | R172  |          | 2.547039          | 1        | 282340674.079668 |
| 1050516234.0000<br>00000000000 | Resistor | R165  |          | 2.547039          | 1        | 282340674.079668 |
| 1050519114.0000<br>00000000000 | Resistor | R511  |          | 2.547039          | 1        | 282340674.079668 |
| 1050519604.0000<br>00000000000 | Resistor | R95,R96   |          | 2.547039          | 2        | 154078778.388085 |
| 1050520034.0000<br>00000000000 | Resistor | R168,R365                                       |          | 2.547039          | 2        | 154078778.388085 |
| 1050521024.0000<br>00000000000 | Resistor | R510  |          | 2.547039          | 1        | 282340674.079668 |
| 1050521524.0000<br>00000000000 | Resistor | R463  |          | 2.547039          | 1        | 282340674.079668 |
| 1050524004.0000<br>00000000000 | Resistor | R181  |          | 2.547039          | 1        | 282340674.079668 |

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**MTBF (hrs):** 88,501  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number                    | Category | Ref Des  | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|--------------------------------|----------|--|----------|-------------------|----------|------------------|
| 1050531624.0000<br>00000000000 | Resistor | R545   |          | 2.547039          | 1        | 282340674.079668 |
| 1050532414.0000<br>00000000000 | Resistor | R516   |          | 2.547039          | 1        | 282340674.079668 |
| 1050533214.0000<br>00000000000 | Resistor | R543   |          | 2.547039          | 1        | 282340674.079668 |
| 1050539004.0000<br>00000000000 | Resistor | R18  |          | 2.547039          | 1        | 282340674.079668 |
| 1050539264.0000<br>00000000000 | Resistor | R103,R104  |          | 2.547039          | 2        | 154078778.388085 |
| 1050540224.0000<br>00000000000 | Resistor | R517,R520,R<br>541   |          | 2.547039          | 3        | 107020754.986850 |
| 1050551004.0000<br>00000000000 | Resistor | R357,R358,R<br>359,<br>R360,R361,R<br>362,<br>R363,R364,R<br>484,<br>R485,R591,R<br>596,<br>R601,R605,R<br>618,<br>R623,R625,R<br>627,<br>R654,R655,R<br>656,<br>R657,R658,R<br>659,<br>R660,R661,R<br>663,<br>R664,R665,R<br>666,<br>R667,R668,R<br>669, R670 |          | 2.547039          | 34       | 10846303.620910  |
| 1050559004.0000<br>00000000000 | Resistor | R628   |          | 2.547039          | 1        | 282340674.079668 |
| 1050568004.0000<br>00000000000 | Resistor | R637   |          | 2.547039          | 1        | 282340674.079668 |
| 1050582004.0000<br>00000000000 | Resistor | R542   |          | 2.547039          | 1        | 282340674.079668 |
| 1050588704.0000<br>00000000000 | Resistor | R513,R548  |          | 2.547039          | 2        | 154078778.388085 |
| 1050702734.0000<br>00000000000 | Resistor | R25  |          | 2.547039          | 1        | 282340674.079668 |
| 1059700001.0000<br>00000000000 | Resistor | R183,R256,R<br>257,<br>R301,R316,R<br>555,<br>R562,R679,R<br>680,<br>R681,R682   |          | 2.547039          | 11       | 32049696.385471  |

**File Name:** EMB-A70M.rfp  
**Assembly:** 9697A70M06-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 11299.285067  
**MTBF (hrs):** 88,501  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|----------|---|----------|-------------------|----------|------------------|
|             | Resistor | R171,R173,R176,<br>R195,R197,R198,<br>R212,R224,R368,<br>R532,R538  |          | 2.547039          | 11       | 32049696.385471  |
|             | Resistor | R206,R624   |          | 2.547039          | 2        | 154078778.388085 |
|             | Resistor | R179,R207,R208,<br>R209,R461,R462,<br>R465,R514   |          | 2.547039          | 8        | 43225424.698300  |
|             | Resistor | R273  |          | 2.547039          | 1        | 282340674.079668 |
|             | Resistor | R163,R170,R284,<br>R292,R366  |          | 2.547039          | 5        | 67008142.102588  |
|             | Resistor | R295  |          | 2.547039          | 1        | 282340674.079668 |
|             | Resistor | R232  |          | 2.547039          | 1        | 282340674.079668 |
|             | Resistor | R503,R504,R506,<br>R508,R540  |          | 2.547039          | 5        | 67008142.102588  |
|             | Resistor | R139  |          | 2.547039          | 1        | 282340674.079668 |
|             | Resistor | R404,R405   |          | 2.547039          | 2        | 154078778.388085 |
|             | Resistor | R93   |          | 2.547039          | 1        | 282340674.079668 |
|             | Resistor | R180  |          | 2.547039          | 1        | 282340674.079668 |
|             | Resistor | R225  |          | 2.547039          | 1        | 282340674.079668 |
|             | Resistor | R638  |          | 2.547039          | 1        | 282340674.079668 |
|             | Resistor | FB1,FB2,FB59,R162,<br>R175,R182,R291,<br>R400,R512,R518,<br>R519,R567,R571,<br>R573,R587,R609,<br>R613,R662 |          | 2.547039          | 18       | 20032117.836120  |

**Reliability Prediction  
Summary**

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**Ref Des:**  
**Description:**

**Failure Rate:** 11299.285067  
**MTBF (hrs):** 88,501  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit      |
|-------------|----------|---|----------|-------------------|----------|----------------|
|             | Resistor | R101,R106,R109,<br>R132,R142,R143,<br>R144,R145,R146,<br>R147,R148,R156,<br>R157,R158,R159,<br>R160,R161,R166,<br>R167,R177,R186,<br>R210,R213,R215,<br>R216,R217,R219,<br>R221,R223,R228,<br>R231,R268,R281,<br>R300,R340,R341,<br>R372,R375,R376, |          | 2.547039          | 105      | 3606506.632575 |
|             | Resistor | R105,R107,R110,<br>R112,R113,R125,<br>R126,R30,R327,<br>R34,R343,R348,<br>R374,R38,R380,R388,<br>R389,R428,R447,R448,<br>R451,R453,R457,<br>R458,R469,R479,<br>R480,R481,R488,<br>R494,R495,R498,<br>R499,R500,R599,<br>R81,R85,R86,R97,<br>R98     |          | 2.547039          | 41       | 9043562.562696 |



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**Ref Des:**  
**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        |
|-------------|----------|--|----------|-------------------|----------|------------------|
|             | Resistor | R337,R338,R345,<br>R346,R350,R351,<br>R354,R355  |          | 2.547039          | 8        | 43225424.698300  |
|             | Resistor | R218,R474  |          | 2.547039          | 2        | 154078778.388085 |
|             | Resistor | R10,R100,R130,R150,<br>R178,R184,R20,R202,<br>R204,R220,R251,<br>R254,R255,R260,<br>R286,R29,R297,R31,<br>R313,R314,R318,<br>R320,R321,R326,<br>R330,R336,R342,<br>R385,R39,R392,R395,<br>R396,R397,R441,<br>R442,R443,R444,<br>R460,R464,R466,<br>R470,R471,R476, |          | 2.547039          | 73       | 5151015.450923   |
|             | Resistor | R127,R151,R187,R2,<br>R32,R33,R373,R379,<br>R386,R61   |          | 2.547039          | 10       | 35079934.879747  |
|             | Resistor | R684,R685,R89  |          | 2.547039          | 3        | 107020754.986850 |
|             | Resistor | R199,R200,R201,<br>R402,R406   |          | 2.547039          | 5        | 67008142.102588  |

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**Description:**

**Failure Rate:** 11299.285067  
**MTBF (hrs):** 88,501  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category | Ref Des  | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|----------|--|----------|-------------------|----------|------------------|
|             | Resistor | R230,R233,R27,R274,R310,R311,R317,R323,R324,R328,R329,R334,R335,R420,R423,R438,R439,R440,R445,R564,R612,R619,R7, R74 |          | 2.547039          | 24       | 15190138.820515  |
|             | Resistor | R417,R418  |          | 2.547039          | 2        | 154078778.388085 |
|             | Resistor | R477   |          | 2.547039          | 1        | 282340674.079668 |
|             | Resistor | R269,R279,R282,R287,R289,R293,R319,R322,R325, R331   |          | 2.547039          | 10       | 35079934.879747  |
|             | Resistor | R3,R62   |          | 2.547039          | 2        | 154078778.388085 |
|             | Resistor | R118,R12,R124,R226,R239,R250,R261,R264,R285,R298,R35,R36,R393,R416,R459,R55,R597,R70                                 |          | 2.547039          | 18       | 20032117.836120  |
|             | Resistor | R19,R436,R5,R58, R686  |          | 2.547039          | 5        | 67008142.102588  |
|             | Resistor | R472,R473  |          | 2.547039          | 2        | 154078778.388085 |
|             | Resistor | R475   |          | 2.547039          | 1        | 282340674.079668 |
|             | Resistor | R421,R422,R425, R426   |          | 2.547039          | 4        | 82309758.689546  |
|             | Resistor | R37,R433,R697  |          | 2.547039          | 3        | 107020754.986850 |
|             | Resistor | R114,R115,R116,R117,R119,R120,R121,R122,R123,R128,R28,R437,R592,R79  |          | 2.547039          | 14       | 25477245.255648  |

**Reliability Prediction  
Summary**

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**Ref Des:**  
**Description:**

**Failure Rate:** 11299.285067  
**MTBF (hrs):** 88,501  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number                    | Category  | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|--------------------------------|-----------|---|----------|-------------------|----------|------------------|
|                                | Resistor  | R333,R339,R347, R349  |          | 2.547039          | 4        | 82309758.689546  |
|                                | Resistor  | R13,R14,R407,R411, R429   |          | 2.547039          | 5        | 67008142.102588  |
|                                | Resistor  | R214  |          | 2.547039          | 1        | 282340674.079668 |
|                                | Resistor  | R482,R483,R487  |          | 2.547039          | 3        | 107020754.986850 |
|                                | Resistor  | R431,R432   |          | 2.547039          | 2        | 154078778.388085 |
|                                | Resistor  | R16,R17   |          | 2.547039          | 2        | 154078778.388085 |
|                                | Resistor  | R26   |          | 2.547039          | 1        | 282340674.079668 |
|                                | Resistor  | RT1,RT2,RT3,RT4, RT5,RT6,RT7  |          | 7.724580          | 7        | 13620277.701355  |
| 1112633190.0000<br>00000000000 | Capacitor | C257  |          | 1.128806          | 1        | 704977644.692287 |
| 1121415090.0000<br>00000000000 | Capacitor | C350,C531   |          | 1.128806          | 2        | 375289731.076049 |
| 1121501690.0000<br>00000000000 | Capacitor | C134,C142   |          | 1.128806          | 2        | 375289731.076049 |
| 1121501691.0000<br>00000000000 | Capacitor | C106,C107,C108, C110,C113,C114, C115,C122,C123, C124,C127,C13, C130, C131,C15,C150, C159, C165,C167,C170, C171,C173,C177, C180,C191,C194, C207,C210,C212, C215,C218,C22, C221, C226,C227,C228, C229,C23,C232, C234, C24,C25,C251,C2 |          | 1.128806          | 211      | 4127529.601992   |
| 1121610060.0000<br>00000000000 | Capacitor | C198  |          | 1.128806          | 1        | 704977644.692287 |
| 1121701790.0000<br>00000000000 | Capacitor | C146  |          | 1.128806          | 1        | 704977644.692287 |

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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        |
|--------------------------------|-----------|--|----------|-------------------|----------|------------------|
| 1122522890.0000<br>00000000000 | Capacitor | C187,C188,C<br>199,C84   |          | 1.128806          | 4        | 196873384.410843 |
| 1122722780.0000<br>00000000000 | Capacitor | C128,C511,C<br>512   |          | 1.128806          | 3        | 257514172.353070 |
| 1124368690.0000<br>00000000000 | Capacitor | C722,C723,C<br>724,<br>C725,C726,C<br>727,<br>C728,C729  |          | 1.128806          | 8        | 101746760.035398 |
| 1124412090.0000<br>00000000000 | Capacitor | C53,C62  |          | 1.128806          | 2        | 375289731.076049 |
| 1124418190.0000<br>00000000000 | Capacitor | C339,C341,C<br>343,<br>C344,C345,C<br>346,<br>C347,C348,C<br>357,<br>C358,C359,C<br>360,<br>C361,C363,C<br>369,<br>C392,C424,C<br>427,<br>C433,C450,C<br>454,<br>C463,C464,C<br>473,<br>C474,C48,C4<br>83,C49,<br>C50,C51,C51<br>5,C516,<br>C517 |          | 1.128806          | 33       | 25726061.200507  |
| 1124427090.0000<br>00000000000 | Capacitor | C303,C306,C<br>320, C322   |          | 1.128806          | 4        | 196873384.410843 |
| 1124433190.0000<br>00000000000 | Capacitor | C342   |          | 1.128806          | 1        | 704977644.692287 |
| 1124522290.0000<br>00000000000 | Capacitor | C546,C665  |          | 1.128806          | 2        | 375289731.076049 |
| 1124533190.0000<br>00000000000 | Capacitor | C197,C219  |          | 1.128806          | 2        | 375289731.076049 |
| 1124533282.0000<br>00000000000 | Capacitor | C2,C26   |          | 1.128806          | 2        | 375289731.076049 |
| 1124547190.0000<br>00000000000 | Capacitor | C513,C536  |          | 1.128806          | 2        | 375289731.076049 |
| 1129522650.0000<br>00000000000 | Capacitor | C139   |          | 1.128806          | 1        | 704977644.692287 |
| 1129610051.0000<br>00000000000 | Capacitor | C542,C545,C<br>548,<br>C550,C552   |          | 1.128806          | 5        | 159367490.199266 |
| 1129701791.0000<br>00000000000 | Capacitor | C168,C178  |          | 1.128806          | 2        | 375289731.076049 |

**File Name:** EMB-A70M.rfp  
**Assembly:** 9697A70M06-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 11299.285067  
**MTBF (hrs):** 88,501  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number                    | Category  | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|--------------------------------|-----------|---|----------|-------------------|----------|------------------|
| 1129710390.0000<br>00000000000 | Capacitor | C503,C505,C<br>506,<br>C507,C514,C<br>520,<br>C535,C539,C<br>540  |          | 1.128806          | 9        | 90863428.080946  |
| 1129710391.0000<br>00000000000 | Capacitor | C5  |          | 1.128806          | 1        | 704977644.692287 |
| 1129715090.0000<br>00000000000 | Capacitor | C714,C715,C<br>716,<br>C717,C718,C<br>719,<br>C720,C721,C<br>730,<br>C731,C732,C<br>733,<br>C734,C735,C<br>736,<br>C737,C738,C<br>739,<br>C740,C741,C<br>742,<br>C743,C744,C<br>745 |          | 1.128806          | 24       | 35120617.936543  |
| 1129722091.0000<br>00000000000 | Capacitor | C144,C147,C<br>151,<br>C152,C508,C<br>533, C703   |          | 1.128806          | 7        | 115633865.771428 |
| 1169656131.0000<br>00000000000 | Capacitor | C205,C233   |          | 1.128806          | 2        | 375289731.076049 |
| 1169682192.0000<br>00000000000 | Capacitor | TC1   |          | 1.128806          | 1        | 704977644.692287 |
| 1181647112.0000<br>00000000000 | Capacitor | C301  |          | 4.744484          | 1        | 159663026.715137 |
| 1189610151.0000<br>00000000000 | Capacitor | C314  |          | 4.744484          | 1        | 159663026.715137 |
| 1189615154.0000<br>00000000000 | Capacitor | C109,C537,C<br>541, C746  |          | 4.744484          | 4        | 45505862.704531  |
| 1189622154.0000<br>00000000000 | Capacitor | TC2   |          | 4.744484          | 1        | 159663026.715137 |
| 1189633151.0000<br>00000000000 | Capacitor | C412,C413,C<br>416,<br>C417,C422,C<br>423,<br>C521,C523,C<br>524, C538  |          | 4.744484          | 10       | 19193879.126421  |
| 1189633184.0000<br>00000000000 | Capacitor | C112,C494   |          | 4.744484          | 2        | 86049450.747498  |
| 1189933180.0000<br>00000000000 | Capacitor | TC3   |          | 4.744484          | 1        | 159663026.715137 |

**File Name:** EMB-A70M.rfp  
**Assembly:** 9697A70M06-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 11299.285067  
**MTBF (hrs):** 88,501  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category  | Ref Des  | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|-----------|--|----------|-------------------|----------|------------------|
|             | Capacitor | C367,C368,C370, C371   |          | 1.128806          | 4        | 196873384.410843 |
|             | Capacitor | C333,C334,C335, C336   |          | 1.128806          | 4        | 196873384.410843 |
|             | Capacitor | C181,C223  |          | 1.128806          | 2        | 375289731.076049 |
|             | Capacitor | C182,C235,C236, C237,C238,C239, C240,C241,C242, C243,C244,C245, C246,C247,C248, C249,C250,C271, C282,C324,C326, C408,C428,C429, C430,C431,C432, C504,C52 |          | 1.128806          | 29       | 29193260.380640  |
|             | Capacitor | C400,C405,C406, C407,C409  |          | 1.128806          | 5        | 159367490.199266 |
|             | Capacitor | C208,C213  |          | 1.128806          | 2        | 375289731.076049 |
|             | Capacitor | C136,C140,C175, C272,C399,C475, C478,C479,C482   |          | 1.128806          | 9        | 90863428.080946  |
|             | Capacitor | C101   |          | 1.128806          | 1        | 704977644.692287 |
|             | Capacitor | C116,C143,C154, C291,C316,C401, C543,C544,C547, C549,C750,C751, C752,C753  |          | 1.128806          | 14       | 59316298.011235  |
|             | Capacitor | C155,C156,C157, C386,C393,C394   |          | 1.128806          | 6        | 133979725.056342 |

**Reliability Prediction  
Summary**

**File Name:** EMB-A70M.rfp  
**Assembly:** 9697A70M06-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 11299.285067  
**MTBF (hrs):** 88,501  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category  | Ref Des  | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|-----------|--|----------|-------------------|----------|------------------|
|             | Capacitor | C102,C132,C137,<br>C160,C201,C259,<br>C269,C300,C420,<br>C421,C487,C488,<br>C491,C492,C551,<br>C553,C676,C677  |          | 1.128806          | 18       | 46478509.590073  |
|             | Capacitor | C355,C356,C387,<br>C395,C9   |          | 1.128806          | 5        | 159367490.199266 |
|             | Capacitor | C264,C281,C331,<br>C332,C340,C362  |          | 1.128806          | 6        | 133979725.056342 |
|             | Capacitor | C129,C183,C203,<br>C211,C252,C253,<br>C476,C481,C678   |          | 1.128806          | 9        | 90863428.080946  |
|             | Capacitor | C149,C522  |          | 1.128806          | 2        | 375289731.076049 |
|             | Capacitor | C111,C135,C14,<br>C145,C153,C158,C17,<br>C18,C19,C20,C21,<br>C315,C327,C337,C381,<br>C382,C383,C384,<br>C389,C398,C510,<br>C527,C572,C573,<br>C576,C577,C583,<br>C591,C593,C597,<br>C603,C616,C629,<br>C630,C639,C640,<br>C641,C642,C645,<br>C652,C688,C694, |          | 1.128806          | 45       | 18979439.555593  |

**Reliability Prediction  
Summary**

**File Name:** EMB-A70M.rfp  
**Assembly:** 9697A70M06-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 11299.285067  
**MTBF (hrs):** 88,501  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category  | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|-----------|---|----------|-------------------|----------|------------------|
|             | Capacitor | C141,C206,C402,<br>C434,C441,C442,<br>C451,C453,C455,<br>C456,C46,C465,C466,<br>C47,C477,C484,C485,<br>C486,C518,C519,C67,<br>C68,C70,C73,C74 |          | 1.128806          | 25       | 33748887.792763  |
|             | Capacitor | C125,C378,C380,<br>C448,C525,C559,<br>C561,C562,C563,<br>C564,C585,C587,<br>C600,C613,C617,<br>C633,C662,C664,C69                             |          | 1.128806          | 19       | 44097696.883526  |
|             | Capacitor | C329,C330   |          | 1.128806          | 2        | 375289731.076049 |
|             | Capacitor | C100,C103,C411,C44,<br>C45,C631,C76,C80,<br>C83,C87,C94,C96   |          | 1.128806          | 12       | 68856937.301178  |



**File Name:** EMB-A70M.rfp  
**Assembly:** 9697A70M06-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 11299.285067  
**MTBF (hrs):** 88,501  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category  | Ref Des  | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|-----------|--|----------|-------------------|----------|------------------|
|             | Capacitor | C104,C105,C12,C126,C138,C148,C16,C163,C179,C184,C258,C268,C307,C310,C312,C33,C375,C385,C41,C42,C437,C440,C449,C452,C462,C471,C480,C489,C556,C568,C570,C571,C589,C599,C63,C632,C64,C682,C692,C704,C706,C707,C86,C90,C93,C95,C99 |          | 1.128806          | 47       | 18185851.719462  |
|             | Capacitor | C32  |          | 1.128806          | 1        | 704977644.692287 |
|             | Capacitor | C117,C118,C119,C120,C216,C220,C254,C255,C443,C444,C445,C446,C447,C457,C458,C459,C460,C461,C467,C468,C469,C470,C472,C496,C497,C498,C499,C500,C501,C592,C646,C647,C659,C82,C91,C92   |          | 1.128806          | 36       | 23624151.295955  |
|             | Capacitor | C222   |          | 1.128806          | 1        | 704977644.692287 |
|             | Capacitor | C133   |          | 1.128806          | 1        | 704977644.692287 |
|             | Inductor  | L2   |          | 4.944252          | 1        | 154760964.143460 |

**File Name:** EMB-A70M.rfp  
**Assembly:** 9697A70M06-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 11299.285067  
**MTBF (hrs):** 88,501  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number                    | Category      | Ref Des  | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|--------------------------------|---------------|--|----------|-------------------|----------|------------------|
| 1211103373.0000<br>00000000000 | Inductor      | L1   |          | 4.944252          | 1        | 154760964.143460 |
|                                | Inductor      | L11,L12  |          | 4.944252          | 2        | 83201062.149749  |
| 1211105675.0000<br>00000000000 | Inductor      | L6,L7  |          | 4.944252          | 2        | 83201062.149749  |
|                                | Inductor      | L10  | 45.2     | 10.420046         | 1        | 73433185.292984  |
| 1211133074.0000<br>00000000000 | Inductor      | L5   |          | 4.944252          | 1        | 154760964.143460 |
| 1211133076.0000<br>00000000000 | Inductor      | L4   | 41.3     | 9.846566          | 1        | 77710050.635989  |
| 1211147070.0000<br>00000000000 | Inductor      | L3   | 42.1     | 9.962610          | 1        | 76804886.156295  |
| 1212306036.0000<br>00000000000 | Inductor      | FB33,FB34,F<br>B35,<br>FB36,FB37,F<br>B40,<br>FB43,FB44,F<br>B45,<br>FB53,FB54 |          | 4.944252          | 11       | 16872203.304846  |
|                                | Inductor      | FB27,FB28,F<br>B29, FB30   |          | 4.944252          | 4        | 43912872.424775  |
| 1212308054.0000<br>00000000000 | Inductor      | FB5,FB6  |          | 4.944252          | 2        | 83201062.149749  |
|                                | Inductor      | FB48,FB49  |          | 4.944252          | 2        | 83201062.149749  |
|                                | Inductor      | FB31,FB32  |          | 4.944252          | 2        | 83201062.149749  |
|                                | Inductor      | FB21,FB22,F<br>B23,<br>FB24,FB38   |          | 4.944252          | 5        | 35631881.582999  |
|                                | Inductor      | FB39,FB41,F<br>B46   |          | 4.944252          | 3        | 57363284.375370  |
|                                | Inductor      | FB20,FB25,F<br>B26,<br>FB56,FB57,F<br>B58                                      |          | 4.944252          | 6        | 30055900.223009  |
| 1214309000.0000<br>00000000000 | Inductor      | CH12,CH13,C<br>H17,<br>CH18,CH19   |          | 4.944252          | 5        | 35631881.582999  |
| 1301005440.0000<br>00000000000 | Semiconductor | D1,D10   |          | 7.793411          | 2        | 50578095.223398  |
| 1301053040.0000<br>00000000000 | Semiconductor | D5,D6  |          | 7.793411          | 2        | 50578095.223398  |
| 1301400642.0000<br>00000000000 | Semiconductor | D9   |          | 7.793411          | 1        | 92807310.010983  |
| 1305040241.0000<br>00000000000 | Semiconductor | U24,U25,U26<br>,U27,<br>U35,U36,U37<br>,U38                                    |          | 7.793411          | 8        | 14161142.003130  |

**Reliability Prediction  
Summary**

**File Name:** EMB-A70M.rfp  
**Assembly:** 9697A70M06-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 11299.285067  
**MTBF (hrs):** 88,501  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number                    | Category      | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit       |
|--------------------------------|---------------|---|----------|-------------------|----------|-----------------|
| 1305100541.0000<br>00000000000 | Semiconductor | U28,U29,U30<br>,U31,<br>U32,U33,U34<br>,U39,<br>U42,U43,U44<br>,U45,<br>U81,U82   |          | 7.793411          | 14       | 8341729.680557  |
| 1310390413.0000<br>00000000000 | Semiconductor | Q3,Q52,Q54,<br>Q56,Q6,<br>Q61,Q64,Q7<br>1,Q8  |          | 22.463360         | 9        | 4366472.106532  |
| 1311390612.0000<br>00000000000 | Semiconductor | Q7,Q9   |          | 22.463360         | 2        | 17315095.066101 |
| 1314010410.0000<br>00000000000 | Semiconductor | U46   | 45.4     | 67.322984         | 2        | 5777450.565746  |
| 1314010410.0000<br>00000000000 | Semiconductor | U77   |          | 22.463360         | 2        | 17315095.066101 |
| 1315230410.0000<br>00000000000 | Semiconductor | Q15,Q48,Q4<br>9   |          | 22.463360         | 3        | 12043329.789539 |
| 1315360410.0000<br>00000000000 | Semiconductor | Q28,Q67,Q6<br>8   |          | 22.463360         | 3        | 12043329.789539 |
| 1315413410.0000<br>00000000000 | Semiconductor | Q38   |          | 22.463360         | 1        | 31642600.748419 |
| 1315443512.0000<br>00000000000 | Semiconductor | Q32   |          | 22.463360         | 1        | 31642600.748419 |
| 1315700216.0000<br>00000000000 | Semiconductor | Q1,Q10,Q11,<br>Q12,Q13,<br>Q14,Q16,Q1<br>7,Q18,<br>Q19,Q2,Q20,<br>Q21,Q22,<br>Q23,Q24,Q2<br>5,Q26,<br>Q27,Q30,Q3<br>1,Q33,<br>Q34,Q35,Q3<br>7,Q39,Q4,<br>Q40,Q41,Q4<br>2,Q43,<br>Q44,Q45,Q4<br>6,Q47,Q5,<br>Q50,Q53,Q5<br>5,Q57,<br>Q58,Q59,Q6<br>0,Q62,<br>Q63,Q65,Q6<br>6 |          | 22.463360         | 47       | 895901.347243   |
| 1315762010.0000<br>00000000000 | Semiconductor | Q51,Q70   |          | 22.463360         | 2        | 17315095.066101 |
| 1315831310.0000<br>00000000000 | Semiconductor | Q36   |          | 22.463360         | 3        | 12043329.789539 |

**File Name:** EMB-A70M.rfp  
**Assembly:** 9697A70M06-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 11299.285067  
**MTBF (hrs):** 88,501  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number                    | Category                       | Ref Des   | Tem.Rise    | Unit Failure Rate | Quantity  | MTBF,Unit       |                 |
|--------------------------------|--------------------------------|---|-------------|-------------------|-----------|-----------------|-----------------|
| 1315831310.0000<br>00000000000 | Semiconductor                  | Q69   |             | 22.463360         | 3         | 12043329.789539 |                 |
| 1315831310.0000<br>00000000000 | Semiconductor                  | Q72   | 43.9        | 65.223911         | 3         | 4147767.988327  |                 |
| 1440002130.0000<br>00000000000 | Integrated Circuit             | U61   | 48.1        | 826.359525        | 1         | 622262.240429   |                 |
|                                | Integrated Circuit             | U70,U76   |             | 43.803003         | 2         | 6834791.244197  |                 |
|                                | Integrated Circuit             | U22   | 53.4        | 1088.103679       | 1         | 472576.592813   |                 |
|                                | Integrated Circuit             | U48   |             | 43.803003         | 1         | 11739202.588727 |                 |
|                                | Integrated Circuit             | U54,U55,U56<br>,U57,<br>U62,U63,U64<br>,U65,<br>U66,U67,U68<br>,U69 |             | 43.803003         | 12        | 1499359.883490  |                 |
|                                | Integrated Circuit             | U51   |             | 43.803003         | 1         | 11739202.588727 |                 |
|                                | Integrated Circuit             | U41   |             | 43.803003         | 1         | 11739202.588727 |                 |
|                                | Integrated Circuit             | U40,U58   |             | 43.803003         | 2         | 6834791.244197  |                 |
|                                | Integrated Circuit             | U78   |             | 43.803003         | 1         | 11739202.588727 |                 |
|                                | Integrated Circuit             | U71,U72   |             | 43.803003         | 2         | 6834791.244197  |                 |
|                                | Integrated Circuit             | U74   |             | 43.803003         | 1         | 11739202.588727 |                 |
|                                | Integrated Circuit             | U59,U60   |             | 43.803003         | 2         | 6834791.244197  |                 |
|                                | Integrated Circuit             | U75   |             | 43.803003         | 1         | 11739202.588727 |                 |
|                                | Integrated Circuit             | U47   | 43.5        | 646.379546        | 1         | 795526.919403   |                 |
|                                | Integrated Circuit             | U15   |             | 26.018600         | 1         | 25551442.237972 |                 |
|                                | Integrated Circuit             | U14   |             | 26.018600         | 1         | 25551442.237972 |                 |
|                                | Integrated Circuit             | U13   |             | 26.018600         | 1         | 25551442.237972 |                 |
|                                | Integrated Circuit             | U73   |             | 26.018600         | 1         | 25551442.237972 |                 |
|                                | Integrated Circuit             |   |             |                   | 11.063278 | 1               | 58231413.220643 |
|                                | Integrated Circuit             |   | U79,U80     |                   | 11.063278 | 2               | 32567094.099626 |
|                                | 1540710280.0000<br>00000000000 | Resistor  | RP6,RP7,RP8 |                   | 9.971436  | 3               | 21639329.074793 |
|                                | 1540710382.0000<br>00000000000 | Resistor  | RP3,RP4,RP5 |                   | 9.971436  | 3               | 21639329.074793 |
| 1540722281.0000<br>00000000000 | Resistor                       | RP2   |             | 9.971436          | 1         | 51606907.671214 |                 |
| 1540733085.0000<br>00000000000 | Resistor                       | RP1   |             | 9.971436          | 1         | 51606907.671214 |                 |
|                                | Connection                     | DIMM2   |             | 16.184835         | 1         | 35685591.360212 |                 |
|                                | Connection                     | DIMM1   |             | 16.184835         | 1         | 35685591.360212 |                 |
|                                | Connection                     | CN35  |             | 16.184835         | 1         | 35685591.360212 |                 |
|                                | Connection                     | CN36  |             | 16.184835         | 1         | 35685591.360212 |                 |
|                                | Connection                     | CN33,CN34   |             | 16.184835         | 2         | 20390152.380746 |                 |
| 1653003101.0000<br>00000000000 | Connection                     | CN22,CN8  |             | 16.184835         | 2         | 20390152.380746 |                 |
| 1653003201.0000<br>00000000000 | Connection                     | CN9   |             | 16.184835         | 1         | 35685591.360212 |                 |
|                                | Connection                     | CN12  |             | 16.184835         | 1         | 35685591.360212 |                 |

**Reliability Prediction  
Summary**

**File Name:** EMB-A70M.rfp  
**Assembly:** 9697A70M06-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 11299.285067  
**MTBF (hrs):** 88,501  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number                 | Category      | Ref Des                                 | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-----------------------------|---------------|---|----------|-------------------|----------|------------------|
|                             | Connection    | CN25                                    |          | 16.184835         | 1        | 35685591.360212  |
|                             | Connection    | CN4,CN5                                 |          | 16.184835         | 2        | 20390152.380746  |
|                             | Connection    | CN10,CN11,CN20,CN21                     |          | 16.184835         | 4        | 11344857.509064  |
| 1653212100.0000000000000000 | Connection    | CN19                                    |          | 16.184835         | 1        | 35685591.360212  |
| 1653212100.0000000000       | Connection    | CN42                                    |          | 16.184835         | 1        | 35685591.360212  |
| 1653300102.0000000000000000 | Connection    | CN22(1-2),CN8(1-2),CN9(3-4)             |          | 16.184835         | 3        | 14515880.849373  |
| 1654226307.0000000000000000 | Connection    | CN38,CN41                               |          | 16.184835         | 2        | 20390152.380746  |
| 1654232203.0000000000000000 | Connection    | CN23                                    |          | 16.184835         | 1        | 35685591.360212  |
| 1654804100.0000000000000000 | Connection    | CN32                                    |          | 16.184835         | 1        | 35685591.360212  |
| 1654903900.0000000000000000 | Connection    | CN39                                    |          | 16.184835         | 1        | 35685591.360212  |
| 1654907003.0000000000000000 | Connection    | CN16,CN17                               |          | 16.184835         | 2        | 20390152.380746  |
| 1654919305.0000000000000000 | Connection    | CN28,CN29,CN30,CN31                     |          | 16.184835         | 4        | 11344857.509064  |
| 1655004011.0000000000000000 | Connection    | CN18                                    |          | 16.184835         | 1        | 35685591.360212  |
| 1655004014.0000000000000000 | Connection    | CN14,CN2                                |          | 16.184835         | 2        | 20390152.380746  |
| 1655404020.0000000000000000 | Connection    | CN27                                    |          | 16.184835         | 1        | 35685591.360212  |
| 1750113010.0000000000000000 | Miscellaneous | BT1                                     |          | 306.000000        | 1        | 1681683.006787   |
| 1750220326.0000000000000000 | Miscellaneous | BT1                                     |          | 306.000000        | 1        | 1681683.006787   |
| 1752000501.0000000000000000 | Miscellaneous | FS8                                     |          | 2.400000          | 1        | 254626042.602335 |
| 1752310000.0000000000000000 | Miscellaneous | FS1,FS10,FS11,FS12,FS2,FS3,FS6,FS7, FS9 |          | 2.400000          | 9        | 38339967.366034  |
| 1752320000.0000000000000000 | Miscellaneous | FS4,FS5                                 |          | 2.400000          | 2        | 143944727.196625 |
|                             | Miscellaneous | BZ1                                     |          | 0.000000          | 1        | 0.000000         |