

# GENE-A55E

## Reliability Prediction Report (MTBF)

|         |  |
|---------|--|
| Summary | Failure Rate: 6769.545206 ppm<br>MTBF: 147,720 Hours |
|---------|--|

|            |          |               |
|------------|----------|---------------|
| Issue date | Approval | Test Engineer |
| 2014/08/28 | Tom Lin  | Jack Huang    |

# Reliability Prediction (MTBF)

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**I . Model Name:** GENE-A55E

**II . Prediction Date:** Aug. 28, 2014

**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:**

GENE-A55E(9697A55E01-D):

- Failure Rate: 6769.545206 ppm

- MTBF: 147.720 Hours

**AAEON Reliability Prediction  
Summary**

**File Name:** GENE-A55E.rfp  
**Duty Cycle:** 100  
**Calculation Model:** Telcordia Issue 2  
**Method:** Method I Case 3

**Failure Rate:** 6769.545206  
**MTBF (hrs):** 147,720  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Assembly Name                               | Part Number  | Ref Des | Quantity | Failure Rate | MTBF    |
|---|--------------|---------|----------|--------------|---------|
| GENE-A55E                                   | 9697A55E01-D |         | 1        | 6769.545206  | 147,720 |
| (TF)SMD ASS'Y.GENE-A55E.Rev.A1.0_0_0.w/T16R |              |         | 1        | 6769.545206  | 147,720 |

File Name: GENE-A55E.rfp  
Assembly:  
Ref Des:  
Description:

Failure Rate: 6769.545206  
MTBF (hrs): 147,720  
Temperature: 30  
Environment: GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category | Ref Des  | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|----------|--|----------|-------------------|----------|------------------|
| 1050501234  | Resistor | R429   |          | 2.547039          | 1        | 282340674.079668 |
| 1050501634  | Resistor | R266   |          | 2.547039          | 1        | 282340674.079668 |
| 1050501834  | Resistor | R392   |          | 2.547039          | 1        | 282340674.079668 |
| 1050502204  | Resistor | R151,R213,R483,<br>R484,R58,R59,R60,<br>R61,R63,R64,R65,<br>R66,R67,R68        |          | 2.547039          | 14       | 25477245.255648  |
| 1050503934  | Resistor | R366   |          | 2.547039          | 1        | 282340674.079668 |
| 1050505124  | Resistor | R32  |          | 2.547039          | 1        | 282340674.079668 |
| 1050507530  | Resistor | R203,R206  |          | 2.547039          | 2        | 154078778.388085 |
| 1050508224  | Resistor | R105   |          | 2.547039          | 1        | 282340674.079668 |
| 1050510034  | Resistor | R20,R25,R254,R329,<br>R34,R364,R370,R372,<br>R374,R381,R508,<br>R509,R8,R81,R9 |          | 2.547039          | 15       | 23852782.943395  |
| 1050511824  | Resistor | R166   |          | 2.547039          | 1        | 282340674.079668 |
| 1050512714  | Resistor | R198   |          | 2.547039          | 1        | 282340674.079668 |
| 1050520004  | Resistor | R24  |          | 2.547039          | 1        | 282340674.079668 |
| 1050524934  | Resistor | R23  |          | 2.547039          | 1        | 282340674.079668 |
| 1050530004  | Resistor | R148,R175,R184   |          | 2.547039          | 3        | 107020754.986850 |
| 1050533004  | Resistor | R115,R326,R332,<br>R334,R335   |          | 2.547039          | 5        | 67008142.102588  |
| 1050539214  | Resistor | R442,R464  |          | 2.547039          | 2        | 154078778.388085 |
| 1050539264  | Resistor | R147   |          | 2.547039          | 1        | 282340674.079668 |
| 1050547004  | Resistor | R344,R345,R346, R347   |          | 2.547039          | 4        | 82309758.689546  |
| 1050549904  | Resistor | R80  |          | 2.547039          | 1        | 282340674.079668 |
| 1050551004  | Resistor | R1,R141,R142   |          | 2.547039          | 3        | 107020754.986850 |
| 1050559004  | Resistor | R204   |          | 2.547039          | 1        | 282340674.079668 |
| 1050700002  | Resistor | R466   |          | 2.547039          | 1        | 282340674.079668 |
| 1051747002  | Resistor | R573   |          | 2.547039          | 1        | 282340674.079668 |
| 1059537421  | Resistor | R159   |          | 2.547039          | 1        | 282340674.079668 |
| 1059700001  | Resistor | R289   |          | 2.547039          | 1        | 282340674.079668 |
| 105A500139  | Resistor | R11,R154,R156,R183,<br>R197,R2,R41,R455  |          | 2.547039          | 8        | 43225424.698300  |
| 105A500239  | Resistor | R199,R205,R353   |          | 2.547039          | 3        | 107020754.986850 |

File Name: GENE-A55E.rfp  
 Assembly:  
 Ref Des:  
 Description:

Failure Rate: 6769.545206  
 MTBF (hrs): 147,720  
 Temperature: 30  
 Environment: GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|----------|---|----------|-------------------|----------|------------------|
| 105A501039  | Resistor | R12,R19,R28<br>,R349,<br>R350,R42               |          | 2.547039          | 6        | 56573956.677649  |
| 105A501233  | Resistor | R457,R72  |          | 2.547039          | 2        | 154078778.388085 |
| 105A501533  | Resistor | R425,R454,R<br>475,<br>R501,R73                 |          | 2.547039          | 5        | 67008142.102588  |
| 105A501539  | Resistor | R275,R305,R<br>380                              |          | 2.547039          | 3        | 107020754.986850 |
| 105A502039  | Resistor | R10,R26,R27<br>0,R360,<br>R361                  |          | 2.547039          | 5        | 67008142.102588  |
| 105A502839  | Resistor | R572  |          | 2.547039          | 1        | 282340674.079668 |
| 105A503033  | Resistor | R37   |          | 2.547039          | 1        | 282340674.079668 |
| 105A503933  | Resistor | R472  |          | 2.547039          | 1        | 282340674.079668 |
| 105A505109  | Resistor | R309,R451,R<br>453                              |          | 2.547039          | 3        | 107020754.986850 |
| 105A505629  | Resistor | R29   |          | 2.547039          | 1        | 282340674.079668 |
| 105A506829  | Resistor | R489,R490,R<br>491,<br>R494,R496                |          | 2.547039          | 5        | 67008142.102588  |
| 105A510009  | Resistor | R107,R110,R<br>193,<br>R196,R330,R<br>407, R422 |          | 2.547039          | 7        | 48991237.965885  |
| 105A511833  | Resistor | R4  |          | 2.547039          | 1        | 282340674.079668 |
| 105A515009  | Resistor | R128,R546,R<br>547,<br>R548,R77,R7<br>8,R79     |          | 2.547039          | 7        | 48991237.965885  |
| 105A516223  | Resistor | R126  |          | 2.547039          | 1        | 282340674.079668 |
| 105A516923  | Resistor | R506  |          | 2.547039          | 1        | 282340674.079668 |
| 105A524919  | Resistor | R240,R249                                       |          | 2.547039          | 2        | 154078778.388085 |
| 105A525513  | Resistor | R456  |          | 2.547039          | 1        | 282340674.079668 |
| 105A527423  | Resistor | R182  |          | 2.547039          | 1        | 282340674.079668 |
| 105A528723  | Resistor | R235  |          | 2.547039          | 1        | 282340674.079668 |
| 105A533269  | Resistor | R187,R189                                       |          | 2.547039          | 2        | 154078778.388085 |
| 105A534823  | Resistor | R236  |          | 2.547039          | 1        | 282340674.079668 |
| 105A547513  | Resistor | R427  |          | 2.547039          | 1        | 282340674.079668 |
| 105A549923  | Resistor | R127,R140,R<br>146                              |          | 2.547039          | 3        | 107020754.986850 |
| 105A552323  | Resistor | R379  |          | 2.547039          | 1        | 282340674.079668 |
| 105A556213  | Resistor | R435,R465                                       |          | 2.547039          | 2        | 154078778.388085 |
| 105A590903  | Resistor | R449,R458                                       |          | 2.547039          | 2        | 154078778.388085 |

**Reliability Prediction  
Summary**

**File Name:** GENE-A55E.rfp  
**Assembly:**  
**Ref Des:**  
**Description:**

**Failure Rate:** 6769.545206  
**MTBF (hrs):** 147,720  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit       |
|-------------|----------|---|----------|-------------------|----------|-----------------|
| 105A700003  | Resistor | R202,R255,R258,<br>R271,R272,R314,<br>R337,R338,R343,R38,<br>R424,R450,R452,<br>R476,R543   |          | 2.547039          | 15       | 23852782.943395 |
| 105A700009  | Resistor | R108,R109,R121,<br>R133,R137,R16,R165,<br>R168,R176,R185,<br>R194,R195,R207,<br>R208,R209,R210,<br>R211,R212,R214,<br>R215,R219,R227,<br>R246,R247,R261,R27,<br>R287,R316,R319,<br>R354,R356,R418,<br>R421,R432,R433,<br>R441,R445,R448,<br>R459,R461,R463,<br>R469,R473,R478,R48,<br>R480,R487,R488, R49 |          | 2.547039          | 62       | 6043178.840887  |

**Reliability Prediction  
Summary**

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**Description:**

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**MTBF (hrs):** 147,720  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category | Ref Des  | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|----------|--|----------|-------------------|----------|------------------|
| 105A700139  | Resistor | R106,R116,R117,<br>R129,R13,R132,R134,<br>R149,R153,R157,<br>R158,R161,R163,<br>R164,R167,R169,<br>R170,R172,R174,<br>R192,R21,R229,R239,<br>R250,R263,R264,<br>R274,R276,R297,<br>R298,R30,R300,R302,<br>R303,R358,R362,<br>R383,R394,R400,<br>R411,R412,R419,<br>R420,R43,R437,R438,<br>R474,R511,R574 |          | 2.547039          | 49       | 7603103.900483   |
| 105A701009  | Resistor | R566   |          | 2.547039          | 1        | 282340674.079668 |



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| Part Number | Category | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|----------|---|----------|-------------------|----------|------------------|
| 105A701039  | Resistor | R111,R112,R113,<br>R118,R119,R130,<br>R131,R138,R139,<br>R143,R144,R15,<br>R150,R152,R162,R179,<br>R18,R180,R190,R200,<br>R201,R220,R224,<br>R242,R243,R244,<br>R248,R252,R253,<br>R256,R257,R262,<br>R269,R286,R290,<br>R293,R294,R296,<br>R299,R301,R304,<br>R31,R315,R321,R323,<br>R324,R36,R365,R367, |          | 2.547039          | 87       | 4337508.502880   |
| 105A701059  | Resistor | R145,R233,R333,<br>R363,R415,R44  |          | 2.547039          | 6        | 56573956.677649  |
| 105A701069  | Resistor | R74   |          | 2.547039          | 1        | 282340674.079668 |
| 105A701539  | Resistor | R570  |          | 2.547039          | 1        | 282340674.079668 |
| 105A702209  | Resistor | R120  |          | 2.547039          | 1        | 282340674.079668 |
| 105A702229  | Resistor | R171,R173,R221,<br>R222,R351,R396,<br>R471,R549,R556,<br>R577,R70,R71   |          | 2.547039          | 12       | 29507083.749401  |
| 105A702269  | Resistor | R155,R160,R436,<br>R470   |          | 2.547039          | 4        | 82309758.689546  |

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Failure Rate: 6769.545206  
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| Part Number | Category | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|----------|---|----------|-------------------|----------|------------------|
| 105A703309  | Resistor | R136,R33,R375,R378,R40,R423,R492,R498,R504,R510,R52,R82   |          | 2.547039          | 12       | 29507083.749401  |
| 105A703363  | Resistor | R267  |          | 2.547039          | 1        | 282340674.079668 |
| 105A703909  | Resistor | R553,R557   |          | 2.547039          | 2        | 154078778.388085 |
| 105A704729  | Resistor | R114,R216,R218,R225,R260,R325,R342,R35,R352,R355,R357,R359,R368,R369,R371,R376,R382,R384,R391,R393,R399,R401,R409,R410,R426,R430,R447,R53,R554,R555,R569,R6 |          | 2.547039          | 32       | 11502702.879433  |
| 105A704739  | Resistor | R395,R397   |          | 2.547039          | 2        | 154078778.388085 |
| 105A705133  | Resistor | R122,R443   |          | 2.547039          | 2        | 154078778.388085 |
| 105A705139  | Resistor | R17,R22,R278,R279,R280,R281,R282,R283,R284,R285,R444,R446   |          | 2.547039          | 12       | 29507083.749401  |
| 105A705629  | Resistor | R428  |          | 2.547039          | 1        | 282340674.079668 |
| 105A706809  | Resistor | R123,R125   |          | 2.547039          | 2        | 154078778.388085 |
| 105A710039  | Resistor | R226,R398,R434,R477,R507,R529,R532,R535,R538,R539,R540,R541,R542,R544,R545  |          | 2.547039          | 15       | 23852782.943395  |
| 105A722009  | Resistor | R312,R317,R318,R320   |          | 2.547039          | 4        | 82309758.689546  |

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 Description:

Failure Rate: 6769.545206  
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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        |
|-------------|-----------|--|----------|-------------------|----------|------------------|
| 105A733009  | Resistor  | R331,R86,R91,R95   |          | 2.547039          | 4        | 82309758.689546  |
| 106B501032  | Resistor  | RT1,RT2,RT3,RT4  |          | 2.547039          | 4        | 82309758.689546  |
| 1121501690  | Capacitor | C502   |          | 1.128806          | 1        | 704977644.692287 |
| 1121501691  | Capacitor | C1,C102,C104,C106,C107,C108,C109,C11,C110,C111,C112,C113,C114,C115,C116,C117,C12,C120,C121,C122,C123,C124,C125,C126,C127,C129,C136,C141,C142,C143,C144,C145,C15,C150,C151,C152,C153,C155,C156,C157,C158,C159,C160,C161,C162,C163,C164,C166,C167, |          | 1.128806          | 215      | 4051378.751640   |
| 1124410191  | Capacitor | C242,C252,C255,C261,C263,C264  |          | 1.128806          | 6        | 133979725.056342 |
| 1124418090  | Capacitor | C179,C188,C42,C43  |          | 1.128806          | 4        | 196873384.410843 |
| 1124418190  | Capacitor | C286,C287,C289,C291,C299,C309,C322,C349,C367,C368,C387,C391,C4,C429,C430,C431  |          | 1.128806          | 16       | 52112480.802928  |

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 MTBF (hrs): 147,720  
 Temperature: 30  
 Environment: GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category  | Ref Des  | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|-----------|--|----------|-------------------|----------|------------------|
| 1124427091  | Capacitor | C137,C138,C146,<br>C147,C148,C149,<br>C496,C497,C498,<br>C499,C73,C79  |          | 1.128806          | 12       | 68856937.301178  |
| 1129522790  | Capacitor | C467,C468,C477,C71   |          | 1.128806          | 4        | 196873384.410843 |
| 1129622690  | Capacitor | C101,C325,C392, C393,C9  |          | 1.128806          | 5        | 159367490.199266 |
| 1129710091  | Capacitor | C458,C492,C494, C495   |          | 1.128806          | 4        | 196873384.410843 |
| 1129710391  | Capacitor | C217,C27,C422,C56,<br>C83,C97  |          | 1.128806          | 6        | 133979725.056342 |
| 1129722091  | Capacitor | C271,C272  |          | 1.128806          | 2        | 375289731.076049 |
| 1129747091  | Capacitor | C181,C203,C92  |          | 1.128806          | 3        | 257514172.353070 |
| 1174522180  | Capacitor | CP3  |          | 1.128806          | 1        | 704977644.692287 |
| 1189610153  | Capacitor | C285,C382,C427,<br>C439,C51  |          | 4.744484          | 5        | 36944177.000623  |
| 1189615154  | Capacitor | C24,C253,C41,TC1,<br>TC2,TC3   |          | 4.744484          | 6        | 31179134.677521  |
| 1189633151  | Capacitor | C103,C17,C171,C178,<br>C64,C66   |          | 4.744484          | 6        | 31179134.677521  |
| 1189922181  | Capacitor | C257   |          | 4.744484          | 1        | 159663026.715137 |
| 11A4447190  | Capacitor | C518   |          | 1.128806          | 1        | 704977644.692287 |
| 11C1547890  | Capacitor | C302,C401  |          | 1.128806          | 2        | 375289731.076049 |
| 11C2501790  | Capacitor | C139,C140,C204,<br>C210,C226,C228,<br>C240,C315,C32,C326,<br>C336,C346,C58,C59,<br>C65,C70,C72,C75,<br>C76,C77,C82,C96 |          | 1.128806          | 22       | 38230892.707156  |
| 11C2510480  | Capacitor | C296,C308,C374,<br>C413,C78  |          | 1.128806          | 5        | 159367490.199266 |
| 11C2522480  | Capacitor | C318,C365  |          | 1.128806          | 2        | 375289731.076049 |
| 11C4401880  | Capacitor | C88  |          | 1.128806          | 1        | 704977644.692287 |

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 Ref Des:  
 Description:

Failure Rate: 6769.545206  
 MTBF (hrs): 147,720  
 Temperature: 30  
 Environment: GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category  | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|-----------|---|----------|-------------------|----------|------------------|
| 11C4515190  | Capacitor | C40,C54   |          | 1.128806          | 2        | 375289731.076049 |
| 11C4522290  | Capacitor | C513,C84,C87  |          | 1.128806          | 3        | 257514172.353070 |
| 11C4547190  | Capacitor | C199,C201,C206,<br>C208,C209,C211,<br>C237,C245,C501,C80, C95               |          | 1.128806          | 11       | 74892583.279796  |
| 11C4547290  | Capacitor | C131,C132   |          | 1.128806          | 2        | 375289731.076049 |
| 11C9501050  | Capacitor | C14,C22   |          | 1.128806          | 2        | 375289731.076049 |
| 11C9510050  | Capacitor | C202,C218,C229,<br>C234,C238,C461, C474                                     |          | 1.128806          | 7        | 115633865.771428 |
| 11C9522060  | Capacitor | C503,C504   |          | 1.128806          | 2        | 375289731.076049 |
| 11E1510050  | Capacitor | C128,C130,C134,<br>C135,C258,C259,<br>C304,C317,C338,<br>C353,C46,C470,C512 |          | 1.128806          | 13       | 63728475.410842  |
| 11E2501690  | Capacitor | C515,C517   |          | 1.128806          | 2        | 375289731.076049 |
| 11E2510060  | Capacitor | C516  |          | 1.128806          | 1        | 704977644.692287 |
| 11E4433090  | Capacitor | C284,C358,C408,<br>C447,C49   |          | 1.128806          | 5        | 159367490.199266 |
| 11E9501090  | Capacitor | C514  |          | 1.128806          | 1        | 704977644.692287 |

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 Ref Des:  
 Description:

Failure Rate: 6769.545206  
 MTBF (hrs): 147,720  
 Temperature: 30  
 Environment: GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category  | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|-----------|---|----------|-------------------|----------|------------------|
| 11E9501091  | Capacitor | C10,C13,C16<br>,C18,<br>C182,C19,C1<br>98,C200,<br>C207,C21,C2<br>67,C273,<br>C276,C280,C<br>29,C293,<br>C3,C310,C31<br>3,C323,<br>C327,C328,C<br>329,<br>C334,C337,C<br>339,<br>C340,C341,C<br>342,<br>C350,C355,C<br>361,<br>C362,C369,C<br>370,<br>C372,C373,C<br>376,<br>C377,C378,C<br>380,<br>C389,C390,C<br>403,<br>C405,C406,C<br>407,<br>C414,C418,C<br>434, |          | 1.128806          | 56       | 15308283.020186  |
| 11E9510050  | Capacitor | C225,C235,C<br>239,<br>C278,C279,C<br>383,<br>C432,C469,C<br>472  |          | 1.128806          | 9        | 90863428.080946  |
| 11E9522790  | Capacitor | C31   |          | 1.128806          | 1        | 704977644.692287 |
| 11E9547630  | Capacitor | C185  |          | 1.128806          | 1        | 704977644.692287 |

File Name: GENE-A55E.rfp  
 Assembly:  
 Ref Des:  
 Description:

Failure Rate: 6769.545206  
 MTBF (hrs): 147,720  
 Temperature: 30  
 Environment: GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category  | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|-----------|---|----------|-------------------|----------|------------------|
| 11E9610080  | Capacitor | C105,C172,C174,<br>C193,C194,C214,<br>C216,C232,C25,C265,<br>C295,C321,C330,<br>C335,C354,C36,C397,<br>C420,C421,C423,<br>C424,C433,C441,<br>C442,C450,C457,C52,<br>C57,C63,C81,C85,<br>C86,C91,C94 |          | 1.128806          | 34       | 24984844.161172  |
| 11E9622050  | Capacitor | C169,C184,C386,<br>C411,C416,C426   |          | 1.128806          | 6        | 133979725.056342 |
| 11E9647680  | Capacitor | C154,C168   |          | 1.128806          | 2        | 375289731.076049 |
| 11E9722090  | Capacitor | C311,C412,C484,<br>C485,C486  |          | 1.128806          | 5        | 159367490.199266 |
| 121110226T  | Inductor  | L5,L6   |          | 4.944252          | 2        | 83201062.149749  |
| 1211110079  | Inductor  | L3,L4   |          | 4.944252          | 2        | 83201062.149749  |
| 1211115077  | Inductor  | L1,L2,L7,L8   |          | 4.944252          | 4        | 43912872.424775  |
| 1212306030  | Inductor  | FB10,FB11,FB13,<br>FB14,FB15,FB27,<br>FB28,FB29,FB33,FB9  |          | 4.944252          | 10       | 18485101.557872  |
| 1212306035  | Inductor  | FB1,FB16,FB17,FB2,<br>FB3,FB30,FB31,FB32,<br>FB4,FB5,FB6,FB7  |          | 4.944252          | 12       | 15520616.516984  |
| 1212306036  | Inductor  | FB18,FB19,FB20,<br>FB21,FB22,FB26,FB8   |          | 4.944252          | 7        | 25970990.056682  |
| 12123C0010  | Inductor  | FB23,FB24,FB25  |          | 4.944252          | 3        | 57363284.375370  |
| 1214309008  | Inductor  | CH1,CH2,CH3,CH4   |          | 4.944252          | 4        | 43912872.424775  |

File Name: GENE-A55E.rfp  
Assembly:  
Ref Des:  
Description:

Failure Rate: 6769.545206  
MTBF (hrs): 147,720  
Temperature: 30  
Environment: GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category           | Ref Des  | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit       |
|-------------|--------------------|--|----------|-------------------|----------|-----------------|
| 12310025A3  | Miscellaneous      | Y2,Y3,Y4,Y5,<br>Y7   |          | 19.200000         | 5        | 3616053.141544  |
| 12310027A2  | Miscellaneous      | Y6   |          | 19.200000         | 1        | 23844262.770939 |
| 1231332726  | Miscellaneous      | Y1   |          | 19.200000         | 1        | 23844262.770939 |
| 1301005442  | Semiconductor      | D12,D5,D9  |          | 7.793411          | 3        | 35106858.962001 |
| 1301005444  | Semiconductor      | D1,D11,D13,<br>D15,D2  |          | 7.793411          | 5        | 21965031.404253 |
| 1301013041  | Semiconductor      | D14,D4   |          | 7.793411          | 2        | 50578095.223398 |
| 1301075140  | Semiconductor      | D6,D7,D8   |          | 7.793411          | 3        | 35106858.962001 |
| 1304001340  | Optical Device     | LED2   |          | 79.003355         | 1        | 6497172.749112  |
| 1304101340  | Optical Device     | LED3   |          | 79.003355         | 1        | 6497172.749112  |
| 1304300140  | Optical Device     | LED1   |          | 79.003355         | 1        | 6497172.749112  |
| 1305040241  | Semiconductor      | U36,U38,U39,<br>U41  |          | 7.793411          | 4        | 26989084.126235 |
| 1310390410  | Semiconductor      | Q42,Q43  |          | 22.463360         | 2        | 17315095.066101 |
| 1310390413  | Semiconductor      | Q26,Q27,Q3<br>8  |          | 22.463360         | 3        | 12043329.789539 |
| 1315036640  | Semiconductor      | Q10,Q11  |          | 22.463360         | 2        | 17315095.066101 |
| 1315081180  | Semiconductor      | Q1,Q29,Q4,Q<br>9   |          | 22.463360         | 4        | 9270607.712006  |
| 1315200312  | Semiconductor      | Q12,Q13,Q1<br>4,Q15,Q7,<br>Q8  |          | 22.463360         | 6        | 6378891.324740  |
| 1315230511  | Semiconductor      | Q22,Q44  |          | 22.463360         | 2        | 17315095.066101 |
| 1315700216  | Semiconductor      | Q16,Q17,Q1<br>8,Q19,<br>Q21,Q23,Q2<br>4,Q25,<br>Q28,Q3,Q30,<br>Q31,Q32,<br>Q33,Q34,Q3<br>5,Q36,<br>Q45,Q5,Q6 |          | 22.463360         | 20       | 2046335.090970  |
| 1315762010  | Semiconductor      | Q2   |          | 22.463360         | 1        | 31642600.748419 |
| 1315971500  | Semiconductor      | U49,U50  |          | 22.463360         | 2        | 17315095.066101 |
| 143ALC8920  | Integrated Circuit | U3   |          | 43.803003         | 1        | 11739202.588727 |
| 1440002130  | Integrated Circuit | U42,U47  |          | 43.803003         | 2        | 6834791.244197  |
| 1447511B00  | Integrated Circuit | U25  |          | 43.803003         | 1        | 11739202.588727 |
| 1462246408  | Integrated Circuit | U37  |          | 11.063278         | 1        | 58231413.220643 |
| 14S1035803  | Integrated Circuit | U51  |          | 43.803003         | 1        | 11739202.588727 |
| 14S2200900  | Integrated Circuit | U48  |          | 43.803003         | 1        | 11739202.588727 |
| 14S3104500  | Integrated Circuit | U28,U29  |          | 43.803003         | 2        | 6834791.244197  |
| 14S3111701  | Integrated Circuit | U7   |          | 43.803003         | 1        | 11739202.588727 |
| 14S3112400  | Integrated Circuit | U20  |          | 43.803003         | 1        | 11739202.588727 |
| 14S3121600  | Integrated Circuit | U5   |          | 43.803003         | 1        | 11739202.588727 |
| 14S3128422  | Integrated Circuit | U27  |          | 43.803003         | 1        | 11739202.588727 |
| 14S3524701  | Integrated Circuit | U43  |          | 43.803003         | 1        | 11739202.588727 |
| 14S3838000  | Integrated Circuit | U15  |          | 43.803003         | 1        | 11739202.588727 |



File Name: GENE-A55E.rfp  
 Assembly:  
 Ref Des:  
 Description:

Failure Rate: 6769.545206  
 MTBF (hrs): 147,720  
 Temperature: 30  
 Environment: GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category           | Ref Des  | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit       |
|-------------|--------------------|--|----------|-------------------|----------|-----------------|
| 14S3902500  | Integrated Circuit | U10,U33,U34<br>,U35, U40   |          | 43.803003         | 5        | 3214211.402100  |
| 14S3E00100  | Integrated Circuit | U1,U2  |          | 43.803003         | 2        | 6834791.244197  |
| 14S4033002  | Integrated Circuit | U12  |          | 43.803003         | 1        | 11739202.588727 |
| 14S4186600  | Integrated Circuit | U6   |          | 43.803003         | 1        | 11739202.588727 |
| 14S4811103  | Integrated Circuit | U22,U23  |          | 43.803003         | 2        | 6834791.244197  |
| 14S4814380  | Integrated Circuit | U45,U46  |          | 43.803003         | 2        | 6834791.244197  |
| 14S4888801  | Integrated Circuit | U16  |          | 43.803003         | 1        | 11739202.588727 |
| 14S4A55E00  | Integrated Circuit | U13  |          | 43.803003         | 1        | 11739202.588727 |
| 14S4T16R00  | Integrated Circuit | U14  |          | 21.706765         | 1        | 23689035.791249 |
| 14S5920400  | Integrated Circuit | U21,U26  |          | 26.018600         | 2        | 14194252.866846 |
| 14S5A00702  | Integrated Circuit | U8   |          | 26.018600         | 1        | 25551442.237972 |
| 14S5A00821  | Integrated Circuit | U11,U32  |          | 26.018600         | 2        | 14194252.866846 |
| 14S6203205  | Integrated Circuit | U4   |          | 11.063278         | 1        | 58231413.220643 |
| 14S6324640  | Integrated Circuit |  |          | 43.803003         | 1        | 11739202.588727 |
| 14S6366B00  | Integrated Circuit | U19,U24  |          | 43.803003         | 2        | 6834791.244197  |
| 1540710280  | Resistor           | RP15,RP16  |          | 9.971436          | 2        | 30043399.401299 |
| 1540710382  | Resistor           | RP1,RP10,RP<br>11,RP13,<br>RP14,RP2,RP<br>3,RP4,<br>RP5,RP6,RP7<br>,RP8, RP9 |          | 9.971436          | 13       | 6133850.826447  |
| 1540733085  | Resistor           | RP17   |          | 9.971436          | 1        | 51606907.671214 |
| 1540782282  | Resistor           | RP12   |          | 9.971436          | 1        | 51606907.671214 |
| 16515A2990  | Connection         | DIMM1  |          | 16.184835         | 1        | 35685591.360212 |
| 165251420B  | Connection         | CN28,CN29  |          | 16.184835         | 2        | 20390152.380746 |
| 165300310G  | Connection         | CN10,CN11,C<br>N24,<br>CN25,CN26   |          | 16.184835         | 5        | 9343344.843761  |
| 165300320L  | Connection         | CN16,CN17  |          | 16.184835         | 2        | 20390152.380746 |
| 1653005201  | Connection         | CN13,CN27  |          | 16.184835         | 2        | 20390152.380746 |
| 1653120225  | Connection         | CN15   |          | 16.184835         | 1        | 35685591.360212 |
| 1653132220  | Connection         | CN14   |          | 16.184835         | 1        | 35685591.360212 |
| 165320520W  | Connection         | CN18,CN19,C<br>N20,CN5,<br>CN6   |          | 16.184835         | 5        | 9343344.843761  |
| 165320720G  | Connection         | CN3  |          | 16.184835         | 1        | 35685591.360212 |
| 165321320R  | Connection         | CN4  |          | 16.184835         | 1        | 35685591.360212 |
| 1653300102  | Connection         | CN10(1-2),<br>CN25(1-2)  |          | 16.184835         | 2        | 20390152.380746 |
| 1653300107  | Connection         | CN16(3-4),<br>CN17(3-4),<br>CN24(1-2),<br>CN26(1-2)                          |          | 16.184835         | 4        | 11344857.509064 |
| 1653300108  | Connection         | CN11(1-2)  |          | 16.184835         | 1        | 35685591.360212 |
| 1653900039  | Connection         | CN35   |          | 16.184835         | 1        | 35685591.360212 |
| 165392521J  | Connection         | CN35   |          | 16.184835         | 1        | 35685591.360212 |

**File Name:** GENE-A55E.rfp  
**Assembly:**  
**Ref Des:**  
**Description:**

**Failure Rate:** 6769.545206  
**MTBF (hrs):** 147,720  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category      | Ref Des     | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|---------------|-------------|----------|-------------------|----------|------------------|
| 1654030006  | Connection    | CN21        |          | 16.184835         | 1        | 35685591.360212  |
| 1654226303  | Connection    | CN36        |          | 16.184835         | 1        | 35685591.360212  |
| 1654409103  | Connection    | CN31        |          | 16.184835         | 1        | 35685591.360212  |
| 1654515308  | Connection    | CN32        |          | 16.184835         | 1        | 35685591.360212  |
| 1654606306  | Connection    | CN30        |          | 16.184835         | 1        | 35685591.360212  |
| 1654903901  | Connection    | CN37        |          | 16.184835         | 1        | 35685591.360212  |
| 1654907009  | Connection    | CN2         |          | 16.184835         | 1        | 35685591.360212  |
| 1655003010  | Connection    | CN23        |          | 16.184835         | 1        | 35685591.360212  |
| 1655302025  | Connection    | CN1         |          | 16.184835         | 1        | 35685591.360212  |
| 1655305025  | Connection    | CN22        |          | 16.184835         | 1        | 35685591.360212  |
| 1655306026  | Connection    | CN9         |          | 16.184835         | 1        | 35685591.360212  |
| 1655902034  | Connection    | CN12        |          | 16.184835         | 1        | 35685591.360212  |
| 1655907131  | Connection    | CN34        |          | 16.184835         | 1        | 35685591.360212  |
| 1655912032  | Connection    | CN33        |          | 16.184835         | 1        | 35685591.360212  |
| 1656304022  | Connection    | CN7         |          | 16.184835         | 1        | 35685591.360212  |
| 175011901M  | Miscellaneous | CN12        |          | 306.000000        | 1        | 1681683.006787   |
| 1752000501  | Miscellaneous | FS2,FS3     |          | 2.400000          | 2        | 143944727.196625 |
| 1752001603  | Miscellaneous | FS1,FS4,FS5 |          | 2.400000          | 3        | 101854599.204190 |
| 175910000B  | Connection    | BZ1         |          | 16.184835         | 1        | 35685591.360212  |