

# GENE-APL7

## Reliability Prediction Report (MTBF)

|         |  |
|---------|--|
| Summary | Failure Rate: 7932.836016<br>MTBF: 126,058 Hours |
|---------|--|

|            |            |               |
|------------|------------|---------------|
| Issue date | QE Manager | Test Engineer |
| 2018-03-01 | KJ Wang    | Louie Lee     |

# Reliability Prediction (MTBF)

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**I . Model Name:** GENE-APL7

**II . Prediction Date:** March. 1st, 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:**

GENE-APL7 (M/B: 9697APL706-D):

- Failure Rate: 7932.836016
- MTBF: 126,058 Hours

**File Name:** GENE-APL7.rfp  
**Duty Cycle:** 100  
**Calculation Model:** Telcordia Issue 2  
**Method:** Method I Case 3

**Failure Rate:** 7932.836016  
**MTBF (hrs):** 126,058  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Assembly Name | Part Number  | Ref Des | Quantity | Failure Rate | MTBF    |
|---------------|--------------|---------|----------|--------------|---------|
| GENE-APL7     | 9697APL706-D |         | 1        | 7932.836016  | 126,058 |

**File Name:** GENE-APL7.rfp  
**Assembly:** 9697APL706-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 7932.836016  
**MTBF (hrs):** 126,058  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|----------|---|----------|-------------------|----------|------------------|
| 1050501234  | Resistor | R626  |          | 2.547039          | 1        | 282340674.079668 |
| 1050502004  | Resistor | R434,R435,R449,R45,R48,R65,R67,R85,R86,R87  |          | 2.547039          | 10       | 35079934.879747  |
| 1050502734  | Resistor | R673  |          | 2.547039          | 1        | 282340674.079668 |
| 1050505124  | Resistor | R380,R610   |          | 2.547039          | 2        | 154078778.388085 |
| 1050505134  | Resistor | R13,R143,R144,R158,R166,R171,R177,R32,R459,R460,R476,R477,R521,R526,R546,R552,R621,R624,R632,R640,R641,R648,R655,R665,R706,R713 |          | 2.547039          | 26       | 14061076.827148  |
| 1050508224  | Resistor | R209  |          | 2.547039          | 1        | 282340674.079668 |
| 1050510504  | Resistor | R535  |          | 2.547039          | 1        | 282340674.079668 |
| 1050511304  | Resistor | R573  |          | 2.547039          | 1        | 282340674.079668 |
| 1050512104  | Resistor | R231  |          | 2.547039          | 1        | 282340674.079668 |
| 1050513034  | Resistor | R9  |          | 2.547039          | 1        | 282340674.079668 |
| 1050514034  | Resistor | R394,R407,R414,R50  |          | 2.547039          | 4        | 82309758.689546  |
| 1050520004  | Resistor | R464,R493,R529  |          | 2.547039          | 3        | 107020754.986850 |
| 1050520034  | Resistor | R221  |          | 2.547039          | 1        | 282340674.079668 |
| 1050524909  | Resistor | R438  |          | 2.547039          | 1        | 282340674.079668 |
| 1050533034  | Resistor | R499  |          | 2.547039          | 1        | 282340674.079668 |
| 1050536514  | Resistor | R112,R118,R191,R203,R250  |          | 2.547039          | 5        | 67008142.102588  |
| 1050539224  | Resistor | R733  |          | 2.547039          | 1        | 282340674.079668 |
| 1050540204  | Resistor | R280,R571,R580  |          | 2.547039          | 3        | 107020754.986850 |
| 1050542214  | Resistor | R408  |          | 2.547039          | 1        | 282340674.079668 |
| 1050551004  | Resistor | R439  |          | 2.547039          | 1        | 282340674.079668 |
| 1050561934  | Resistor | R405  |          | 2.547039          | 1        | 282340674.079668 |
| 1050588724  | Resistor | R508  |          | 2.547039          | 1        | 282340674.079668 |
| 1050700002  | Resistor | R277  |          | 2.547039          | 1        | 282340674.079668 |
| 1053500282  | Resistor | R390  |          | 2.547039          | 1        | 282340674.079668 |
| 1059520001  | Resistor | R668  |          | 2.547039          | 1        | 282340674.079668 |

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| Part Number | Category | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|----------|---|----------|-------------------|----------|------------------|
| 1059710001  | Resistor | R263  |          | 2.547039          | 1        | 282340674.079668 |
| 105A500103  | Resistor | R28   |          | 2.547039          | 1        | 282340674.079668 |
| 105A500239  | Resistor | R287  |          | 2.547039          | 1        | 282340674.079668 |
| 105A501003  | Resistor | R114,R458   |          | 2.547039          | 2        | 154078778.388085 |
| 105A501039  | Resistor | R249,R251,R255,<br>R258,R327,R382,<br>R412,R601,R606,<br>R609,R630,R637 |          | 2.547039          | 12       | 29507083.749401  |
| 105A501829  | Resistor | R372,R373   |          | 2.547039          | 2        | 154078778.388085 |
| 105A502039  | Resistor | R1,R2,R381,R59  |          | 2.547039          | 4        | 82309758.689546  |
| 105A502263  | Resistor | R242  |          | 2.547039          | 1        | 282340674.079668 |
| 105A505109  | Resistor | R206,R227,R228, R233  |          | 2.547039          | 4        | 82309758.689546  |
| 105A507509  | Resistor | R688,R689,R690  |          | 2.547039          | 3        | 107020754.986850 |
| 105A510009  | Resistor | R148,R232,R235,<br>R236,R532,R538, R711                                 |          | 2.547039          | 7        | 48991237.965885  |
| 105A515009  | Resistor | R545,R550,R575  |          | 2.547039          | 3        | 107020754.986850 |
| 105A515033  | Resistor | R395  |          | 2.547039          | 1        | 282340674.079668 |
| 105A516903  | Resistor | R544  |          | 2.547039          | 1        | 282340674.079668 |
| 105A518229  | Resistor | R497  |          | 2.547039          | 1        | 282340674.079668 |
| 105A520023  | Resistor | R399  |          | 2.547039          | 1        | 282340674.079668 |
| 105A524919  | Resistor | R322,R323   |          | 2.547039          | 2        | 154078778.388085 |
| 105A524963  | Resistor | R224  |          | 2.547039          | 1        | 282340674.079668 |
| 105A528703  | Resistor | R241  |          | 2.547039          | 1        | 282340674.079668 |
| 105A532429  | Resistor | R385  |          | 2.547039          | 1        | 282340674.079668 |
| 105A534823  | Resistor | R402  |          | 2.547039          | 1        | 282340674.079668 |
| 105A547003  | Resistor | R253,R279   |          | 2.547039          | 2        | 154078778.388085 |
| 105A560469  | Resistor | R551  |          | 2.547039          | 1        | 282340674.079668 |
| 105A584563  | Resistor | R554  |          | 2.547039          | 1        | 282340674.079668 |

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| Part Number | Category | Ref Des  | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit       |
|-------------|----------|--|----------|-------------------|----------|-----------------|
| 105A700003  | Resistor | R12,R147,R173,R176,R18,R215,R239,R256,R31,R313,R316,R33,R386,R403,R422,R47,R503,R536,R548,R549,R553,R556,R558,R559,R568,R57,R572,R576  |          | 2.547039          | 28       | 13089488.559853 |
| 105A700009  | Resistor | FB11,FB12,FB23,FB29,FB30,R103,R108,R121,R128,R129,R132,R135,R136,R137,R141,R149,R153,R156,R157,R159,R167,R168,R169,R178,R186,R190,R194,R196,R202,R204,R207,R208,R222,R223,R23,R230,R234,R243,R244,R246,R247,R264,R27,R270,R271,R275,R276,R281,R2 |          | 2.547039          | 151      | 2522703.620244  |

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|-------------|----------|--|----------|-------------------|----------|------------------|
| 105A700139  | Resistor | R311,R312,R314,<br>R315,R374,R598,<br>R602,R638,R645,<br>R654,R666,R697,R82  |          | 2.547039          | 13       | 27342571.921361  |
| 105A701039  | Resistor | R101,R102,R111,<br>R125,R133,R138,<br>R139,R140,R142,<br>R145,R146,R155,<br>R161,R162,R164,<br>R165,R170,R175,<br>R179,R180,R188,<br>R198,R199,R211,<br>R240,R254,R257,<br>R262,R269,R288,<br>R297,R298,R306,<br>R307,R309,R310,<br>R320,R321,R324,<br>R325,R350,R367,<br>R427,R431,R453,<br>R456,R463,R466, |          | 2.547039          | 85       | 4437551.553296   |
| 105A701059  | Resistor | R317,R406,R416,<br>R528,R56,R565,R671,<br>R678   |          | 2.547039          | 8        | 43225424.698300  |
| 105A701069  | Resistor | R89  |          | 2.547039          | 1        | 282340674.079668 |
| 105A701539  | Resistor | R597,R603  |          | 2.547039          | 2        | 154078778.388085 |
| 105A702039  | Resistor | R283,R286  |          | 2.547039          | 2        | 154078778.388085 |



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| Part Number | Category | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|----------|---|----------|-------------------|----------|------------------|
| 105A702229  | Resistor | R10,R104,R105,R106,R107,R122,R123,R16,R181,R182,R428,R429,R444,R445,R455,R511,R522,R527,R723,R75,R777,R783,R80                  |          | 2.547039          | 23       | 15826261.230290  |
| 105A703309  | Resistor | R109,R17,R185,R25,R30,R368,R369,R42,R46,R564,R613,R614,R615,R693,R696   |          | 2.547039          | 15       | 23852782.943395  |
| 105A704729  | Resistor | R150,R225,R229,R248,R272,R273,R284,R290,R291,R292,R293,R294,R295,R441,R442,R478,R494,R540,R547,R611,R612,R629,R667,R672,R71,R72 |          | 2.547039          | 26       | 14061076.827148  |
| 105A706809  | Resistor | R237  |          | 2.547039          | 1        | 282340674.079668 |
| 105A706829  | Resistor | R686,R687   |          | 2.547039          | 2        | 154078778.388085 |

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| Part Number | Category | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|----------|---|----------|-------------------|----------|------------------|
| 105A710039  | Resistor | R11,R117,R119,R130,R15,R172,R200,R212,R214,R217,R22,R24,R259,R285,R300,R301,R302,R305,R328,R36,R370,R371,R384,R409,R411,R415,R418,R420,R421,R424,R43,R432,R433,R443,R462,R49,R5,R515,R52,R54,R6,R61,R618,R619,R622,R623,R628,R635,R644,R652,R681, |          | 2.547039          | 61       | 6139957.583645   |
| 105A733009  | Resistor | R20,R344,R345,R347,R348,R562,R662,R663,R708   |          | 2.547039          | 9        | 38754445.632391  |
| 105A747009  | Resistor | R296,R308,R703  |          | 2.547039          | 3        | 107020754.986850 |
| 105B700139  | Resistor | R448  |          | 2.547039          | 1        | 282340674.079668 |
| 105B701039  | Resistor | R447,R468,R485,R486,R487,R489,R492,R506,R97   |          | 2.547039          | 9        | 38754445.632391  |
| 105B704725  | Resistor | R472,R473,R474,R475,R488,R490   |          | 2.547039          | 6        | 56573956.677649  |

**Reliability Prediction  
Summary**

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

**Failure Rate:** 7932.836016  
**MTBF (hrs):** 126,058  
**Temperature:** 30  
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| Part Number | Category  | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit      |
|-------------|-----------|---|----------|-------------------|----------|----------------|
| 1121501690  | Capacitor | C103,C105,C109,<br>C112,C123,C125,<br>C131,C132,C135,<br>C138,C14,C140,C141,<br>C142,C144,C145,<br>C150,C151,C158,<br>C159,C163,C165,<br>C167,C168,C169,<br>C170,C171,C174,<br>C182,C183,C184,<br>C185,C190,C191,<br>C193,C194,C20,C225,<br>C233,C234,C235,<br>C236,C246,C248,<br>C249,C250,C251, C252,C2 |          | 1.128806          | 212      | 4108224.190304 |

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| Part Number | Category  | Ref Des  | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|-----------|--|----------|-------------------|----------|------------------|
| 1121501691  | Capacitor | C106,C166,C17,C186,C187,C189,C197,C198,C200,C201,C204,C205,C211,C212,C213,C214,C215,C216,C217,C219,C220,C221,C222,C223,C224,C226,C227,C228,C229,C231,C237,C238,C239,C240,C263,C264,C265,C266,C267,C268,C269,C270,C271,C272,C273,C274,C275,C276,C |          | 1.128806          | 68       | 12644624.424143  |
| 1122522890  | Capacitor | C313,C339,C353,C50   |          | 1.128806          | 4        | 196873384.410843 |
| 1124410191  | Capacitor | C13,C25,C308,C314,C322,C34   |          | 1.128806          | 6        | 133979725.056342 |
| 1124418090  | Capacitor | C139,C152,C208,C218,C77,C78  |          | 1.128806          | 6        | 133979725.056342 |
| 1124420090  | Capacitor | C247,C277  |          | 1.128806          | 2        | 375289731.076049 |
| 1124427090  | Capacitor | C587,C588,C592,C593  |          | 1.128806          | 4        | 196873384.410843 |
| 1124433090  | Capacitor | C291,C292  |          | 1.128806          | 2        | 375289731.076049 |
| 1124547190  | Capacitor | C49,C55,C59,C65  |          | 1.128806          | 4        | 196873384.410843 |
| 1124547290  | Capacitor | C160,C51   |          | 1.128806          | 2        | 375289731.076049 |
| 1129522790  | Capacitor | C279,C281,C293   |          | 1.128806          | 3        | 257514172.353070 |

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| Part Number | Category  | Ref Des  | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|-----------|--|----------|-------------------|----------|------------------|
| 1129701790  | Capacitor | C101,C143,C177,<br>C178,C179,C180,C27,<br>C337,C351,C41,C628,<br>C629,C630,C631,C68              |          | 1.128806          | 15       | 55479656.844874  |
| 1129710090  | Capacitor | C188,C42,C621,C622,<br>C623,C625,C626, C627  |          | 1.128806          | 8        | 101746760.035398 |
| 1129710391  | Capacitor | C24,C327,C343,C433,<br>C529,C62  |          | 1.128806          | 6        | 133979725.056342 |
| 1181610196  | Capacitor | TC1  |          | 4.744484          | 1        | 159663026.715137 |
| 1189615154  | Capacitor | TC10,TC11,T<br>C12,<br>TC13,TC14,T<br>C5,TC7   |          | 4.744484          | 7        | 26949727.707925  |
| 118A6221B0  | Capacitor | TC4,TC6,TC8  |          | 4.744484          | 3        | 59399119.141203  |
| 118C6331B0  | Capacitor | TC2,TC3,TC9  |          | 4.744484          | 3        | 59399119.141203  |
| 11C1501030  | Capacitor | C342   |          | 1.128806          | 1        | 704977644.692287 |
| 11C4501650  | Capacitor | C21  |          | 1.128806          | 1        | 704977644.692287 |
| 11C4510240  | Capacitor | C397   |          | 1.128806          | 1        | 704977644.692287 |
| 11C4510480  | Capacitor | C102,C113,C312,<br>C321,C497   |          | 1.128806          | 5        | 159367490.199266 |
| 11C4522290  | Capacitor | C162,C164,C336,C46   |          | 1.128806          | 4        | 196873384.410843 |
| 11C4547190  | Capacitor | C285,C286,C288,<br>C289,C579,C580  |          | 1.128806          | 6        | 133979725.056342 |
| 11E1510050  | Capacitor | C11,C12,C15,C195,<br>C196,C203,C207,<br>C280,C306,C310,<br>C317,C323,C565,<br>C589,C590,C640,C71 |          | 1.128806          | 17       | 49133303.073811  |
| 11E2501080  | Capacitor | C426   |          | 1.128806          | 1        | 704977644.692287 |
| 11E2510010  | Capacitor | C10,C148,C154,C156,<br>C22,C299,C307,C309,<br>C311,C344,C9                                       |          | 1.128806          | 11       | 74892583.279796  |

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**Description:**

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**MTBF (hrs):** 126,058  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category  | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|-----------|---|----------|-------------------|----------|------------------|
| 11E2647650  | Capacitor | C316  |          | 1.128806          | 1        | 704977644.692287 |
| 11E4510440  | Capacitor | C161,C18,C295,C40   |          | 1.128806          | 4        | 196873384.410843 |
| 11E9547630  | Capacitor | C202,C206,C436,C571,C572  |          | 1.128806          | 5        | 159367490.199266 |
| 11E9547790  | Capacitor | C320,C375   |          | 1.128806          | 2        | 375289731.076049 |
| 11E9610080  | Capacitor | C176  |          | 1.128806          | 1        | 704977644.692287 |
| 11E9610190  | Capacitor | C377,C380,C91,C92   |          | 1.128806          | 4        | 196873384.410843 |
| 11E9622052  | Capacitor | C107,C157,C298,C300,C368,C67  |          | 1.128806          | 6        | 133979725.056342 |
| 11E9622080  | Capacitor | C111,C114,C115,C116,C117,C147,C373,C374,C379,C381,C384,C413,C414,C416,C420,C424,C427,C430,C437,C438,C439,C440,C444,C451,C455,C456,C463,C470,C471,C472,C475,C488,C498,C499,C500,C507,C508,C509,C512,C514,C518,C541,C546,C547,C66,C74,C75,C76 |          | 1.128806          | 48       | 17813540.224875  |
| 11E9647690  | Capacitor | C122,C411,C412  |          | 1.128806          | 3        | 257514172.353070 |

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| Part Number | Category  | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|-----------|---|----------|-------------------|----------|------------------|
| 11EA610030  | Capacitor | C108,C118,C119,<br>C127,C128,C136,<br>C137,C146,C173,<br>C243,C244,C301,<br>C340,C536,C82,C87,<br>C88,C90   |          | 1.128806          | 18       | 46478509.590073  |
| 11EA610040  | Capacitor | C255,C262,C562,<br>C578,C586,C614,<br>C616,C617,C619,C69, C72   |          | 1.128806          | 11       | 74892583.279796  |
| 11EA647010  | Capacitor | C448,C465,C510  |          | 1.128806          | 3        | 257514172.353070 |
| 11EB501040  | Capacitor | C153,C175,C181,C19,<br>C230,C241,C242,<br>C245,C254,C29,C3,<br>C348,C35,C363,C364,<br>C366,C387,C396,C4,<br>C401,C404,C405,<br>C406,C407,C410,<br>C415,C421,C422,<br>C428,C43,C431,C434,<br>C435,C442,C445,<br>C447,C45,C452,C458,<br>C459,C461,C466,<br>C469,C473,C476,<br>C477,C480,C481,<br>C482,C483, |          | 1.128806          | 75       | 11480604.167884  |

File Name: GENE-APL7.rfp  
 Assembly: 9697APL706-D  
 Ref Des:  
 Description:

Failure Rate: 7932.836016  
 MTBF (hrs): 126,058  
 Temperature: 30  
 Environment: GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category       | Ref Des  | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|----------------|--|----------|-------------------|----------|------------------|
| 11EB510640  | Capacitor      | C1,C199,C2,C209,C210,C232,C284,C287,C294,C398,C595,C633,C635 |          | 1.128806          | 13       | 63728475.410842  |
| 11EB522640  | Capacitor      | C104,C134,C149,C79   |          | 1.128806          | 4        | 196873384.410843 |
| 11EB610040  | Capacitor      | C100,C124,C130,C133,C365,C369,C99                            |          | 1.128806          | 7        | 115633865.771428 |
| 11EB610050  | Capacitor      | C64  |          | 1.128806          | 1        | 704977644.692287 |
| 121110226X  | Inductor       | L1   |          | 4.944252          | 1        | 154760964.143460 |
| 1211102272  | Inductor       | L5   |          | 4.944252          | 1        | 154760964.143460 |
| 121110476Q  | Inductor       | L10,L9   |          | 4.944252          | 2        | 83201062.149749  |
| 121110477A  | Inductor       | L3,L4  |          | 4.944252          | 2        | 83201062.149749  |
| 121110477B  | Inductor       | L6,L7,L8   |          | 4.944252          | 3        | 57363284.375370  |
| 121111007L  | Inductor       | L2   |          | 4.944252          | 1        | 154760964.143460 |
| 1211202700  | Inductor       | L11,L12,L13  |          | 4.944252          | 3        | 57363284.375370  |
| 1212306030  | Inductor       | FB10,FB16,FB18,FB21,FB31,FB6,FB7,FB8,FB9                     |          | 4.944252          | 9        | 20443842.451049  |
| 1212308054  | Inductor       | FB24,FB25,FB26,FB27,FB28                                     |          | 4.944252          | 5        | 35631881.582999  |
| 12123A000B  | Inductor       | FB13,FB22  |          | 4.944252          | 2        | 83201062.149749  |
| 12123C0032  | Inductor       | FB32   |          | 4.944252          | 1        | 154760964.143460 |
| 12123D0001  | Inductor       | FB1,FB14,FB15,FB17,FB19,FB2,FB20,FB3,FB4,FB5                 |          | 4.944252          | 10       | 18485101.557872  |
| 12310024A0  | Miscellaneous  | Y5   |          | 19.200000         | 1        | 23844262.770939  |
| 12310025A3  | Miscellaneous  | Y7,Y8  |          | 19.200000         | 2        | 8854051.752197   |
| 12310027A3  | Miscellaneous  | Y6   |          | 19.200000         | 1        | 23844262.770939  |
| 12310192A0  | Miscellaneous  | Y4   |          | 19.200000         | 1        | 23844262.770939  |
| 1231332726  | Miscellaneous  | Y1   |          | 19.200000         | 1        | 23844262.770939  |
| 12330024A1  | Miscellaneous  | Y2,Y3  |          | 19.200000         | 2        | 8854051.752197   |
| 1301005442  | Semiconductor  | D16  |          | 7.793411          | 1        | 92807310.010983  |
| 1301013040  | Semiconductor  | D17  |          | 7.793411          | 1        | 92807310.010983  |
| 1301793040  | Semiconductor  | D13,D14,D15,D4,D5, D8  |          | 7.793411          | 6        | 18540453.699406  |
| 1304000043  | Optical Device | LED1   |          | 79.003355         | 1        | 6497172.749112   |
| 1304300140  | Optical Device | LED2   |          | 79.003355         | 1        | 6497172.749112   |



File Name: GENE-APL7.rfp  
 Assembly: 9697APL706-D  
 Ref Des:  
 Description:

Failure Rate: 7932.836016  
 MTBF (hrs): 126,058  
 Temperature: 30  
 Environment: GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category           | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit       |
|-------------|--------------------|---|----------|-------------------|----------|-----------------|
| 1304500240  | Optical Device     | LED3  |          | 79.003355         | 1        | 6497172.749112  |
| 130505ESD0  | Semiconductor      | D6,D7,U25,U26,U27,U30,U31,U32,U33,U59,U60,U61,U62   |          | 7.793411          | 13       | 8953033.829657  |
| 1305080040  | Semiconductor      | D1,D10,D11,D12,D2, D3   |          | 7.793411          | 6        | 18540453.699406 |
| 1305Z40120  | Semiconductor      | D26   |          | 7.793411          | 1        | 92807310.010983 |
| 1310390413  | Semiconductor      | Q29,Q56   |          | 22.463360         | 2        | 17315095.066101 |
| 1311390612  | Semiconductor      | Q22,Q48   |          | 22.463360         | 2        | 17315095.066101 |
| 1315036600  | Semiconductor      | Q20,Q6  |          | 22.463360         | 2        | 17315095.066101 |
| 1315044910  | Semiconductor      | Q4  |          | 22.463360         | 1        | 31642600.748419 |
| 1315070020  | Semiconductor      | Q11,Q54   |          | 22.463360         | 2        | 17315095.066101 |
| 1315076780  | Semiconductor      | Q10,Q9  |          | 22.463360         | 2        | 17315095.066101 |
| 1315230114  | Semiconductor      | Q28,Q30,Q36   |          | 22.463360         | 3        | 12043329.789539 |
| 1315443512  | Semiconductor      | Q8  |          | 22.463360         | 1        | 31642600.748419 |
| 1315700216  | Semiconductor      | Q61   |          | 22.463360         | 1        | 31642600.748419 |
| 1315720010  | Semiconductor      | Q41   |          | 22.463360         | 1        | 31642600.748419 |
| 1315762010  | Semiconductor      | Q17,Q3  |          | 22.463360         | 2        | 17315095.066101 |
| 1315EM6K10  | Semiconductor      | Q1,Q13,Q14,Q15,Q16,Q18,Q19,Q21,Q23,Q24,Q25,Q26,Q27,Q39,Q42,Q43,Q44,Q45,Q46,Q47,Q49,Q5,Q50,Q51,Q52,Q53,Q55,Q57,Q59,Q60,Q62,Q63 |          | 22.463360         | 32       | 1300932.597594  |
| 1410023060  | Integrated Circuit | U36   |          | 43.803003         | 1        | 11739202.588727 |
| 1430053250  | Integrated Circuit | U54   |          | 43.803003         | 1        | 11739202.588727 |
| 1430082021  | Integrated Circuit | U35   |          | 43.803003         | 1        | 11739202.588727 |
| 1430097420  | Integrated Circuit | U51,U52,U53,U57, U58  |          | 43.803003         | 5        | 3214211.402100  |
| 1430532190  | Integrated Circuit | U34   |          | 43.803003         | 1        | 11739202.588727 |
| 143117ADJ0  | Integrated Circuit | U15   |          | 43.803003         | 1        | 11739202.588727 |
| 1436509421  | Integrated Circuit | U46   |          | 43.803003         | 1        | 11739202.588727 |
| 143ALC8920  | Integrated Circuit | U4  |          | 43.803003         | 1        | 11739202.588727 |

**File Name:** GENE-APL7.rfp  
**Assembly:** 9697APL706-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 7932.836016  
**MTBF (hrs):** 126,058  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category           | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit       |
|-------------|--------------------|---|----------|-------------------|----------|-----------------|
| 1440002130  | Integrated Circuit | U17,U18,U22<br>,U39,<br>U40,U43,U44<br>,U45,<br>U47,U48,U49 |          | 43.803003         | 11       | 1620070.856968  |
| 14407517A1  | Integrated Circuit | U28   |          | 43.803003         | 1        | 11739202.588727 |
| 1440819661  | Integrated Circuit | U13,U14   |          | 43.803003         | 2        | 6834791.244197  |
| 1440N33500  | Integrated Circuit | U1  |          | 21.706765         | 1        | 23689035.791249 |
| 1462001282  | Integrated Circuit | U63   |          | 11.063278         | 1        | 58231413.220643 |
| 149F759140  | Integrated Circuit | U66,U67   |          | 43.803003         | 2        | 6834791.244197  |
| 149TB01040  | Integrated Circuit | U50   |          | 43.803003         | 1        | 11739202.588727 |
| 14S1035803  | Integrated Circuit | U16   |          | 43.803003         | 1        | 11739202.588727 |
| 14S2200900  | Integrated Circuit | U29   |          | 43.803003         | 1        | 11739202.588727 |
| 14S3524700  | Integrated Circuit | U9  |          | 43.803003         | 1        | 11739202.588727 |
| 14S3524701  | Integrated Circuit | U38   |          | 43.803003         | 1        | 11739202.588727 |
| 14S4251700  | Integrated Circuit | U20   |          | 43.803003         | 1        | 11739202.588727 |
| 14S4811103  | Integrated Circuit | U55,U56   |          | 43.803003         | 2        | 6834791.244197  |
| 14S4814380  | Integrated Circuit | U21   |          | 43.803003         | 1        | 11739202.588727 |
| 14S5A00821  | Integrated Circuit | U10,U11,U3  |          | 26.018600         | 3        | 9949526.289768  |
| 14S5A01402  | Integrated Circuit | U23,U24   |          | 26.018600         | 2        | 14194252.866846 |
| 14S9346001  | Integrated Circuit | U6,U7   |          | 43.803003         | 2        | 6834791.244197  |
| 16515A2990  | Connection         | DIMM1   |          | 16.184835         | 1        | 35685591.360212 |
| 1652602105  | Connection         | CN6   |          | 16.184835         | 1        | 35685591.360212 |
| 1652814205  | Connection         | CN39,CN40   |          | 16.184835         | 2        | 20390152.380746 |
| 165300310G  | Connection         | JP1,JP3,JP4,J<br>P8   |          | 16.184835         | 4        | 11344857.509064 |
| 165300320D  | Connection         | JP10,JP11,JP<br>7,JP9                                       |          | 16.184835         | 4        | 11344857.509064 |
| 165300320K  | Connection         | JP2,JP5   |          | 16.184835         | 2        | 20390152.380746 |
| 165300520X  | Connection         | JP6   |          | 16.184835         | 1        | 35685591.360212 |
| 165320520V  | Connection         | CN24  |          | 16.184835         | 1        | 35685591.360212 |
| 1653300107  | Connection         | JP2(3-5),JP2<br>(4-6), JP5(3-<br>5),JP5(4-6)                |          | 16.184835         | 4        | 11344857.509064 |
| 165330010E  | Connection         | JP3(1-2),JP4<br>(1-2), JP8(2-<br>3)                         |          | 16.184835         | 3        | 14515880.849373 |
| 165330010G  | Connection         | JP1(1-2)  |          | 16.184835         | 1        | 35685591.360212 |
| 1653300120  | Connection         | JP10(3-4),<br>JP11(3-<br>4),JP7(3-4),<br>JP9(3-4)           |          | 16.184835         | 4        | 11344857.509064 |
| 1653530130  | Connection         | CN43  |          | 16.184835         | 1        | 35685591.360212 |
| 1654003004  | Connection         | CN4,CN5   |          | 16.184835         | 2        | 20390152.380746 |
| 1654226303  | Connection         | CN44,CN45   |          | 16.184835         | 2        | 20390152.380746 |
| 1654415308  | Connection         | CN42  |          | 16.184835         | 1        | 35685591.360212 |
| 1654418106  | Connection         | CN41  |          | 16.184835         | 1        | 35685591.360212 |
| 1654801835  | Connection         | CN38  |          | 16.184835         | 1        | 35685591.360212 |

**File Name:** GENE-APL7.rfp  
**Assembly:** 9697APL706-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 7932.836016  
**MTBF (hrs):** 126,058  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category      | Ref Des  | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|---------------|--|----------|-------------------|----------|------------------|
| 1654900630  | Connection    | CN18   |          | 16.184835         | 1        | 35685591.360212  |
| 1654907009  | Connection    | CN37   |          | 16.184835         | 1        | 35685591.360212  |
| 1655003016  | Connection    | CN22   |          | 16.184835         | 1        | 35685591.360212  |
| 1655302025  | Connection    | CN27   |          | 16.184835         | 1        | 35685591.360212  |
| 1655305025  | Connection    | CN2,CN8  |          | 16.184835         | 2        | 20390152.380746  |
| 1655807030  | Connection    | CN23   |          | 16.184835         | 1        | 35685591.360212  |
| 1655813031  | Connection    | CN46   |          | 16.184835         | 1        | 35685591.360212  |
| 1655902034  | Connection    | CN11,CN28,C<br>N9  |          | 16.184835         | 3        | 14515880.849373  |
| 1655905038  | Connection    | CN29,CN30,C<br>N31,<br>CN32,CN33,C<br>N34,<br>CN35,CN36                |          | 16.184835         | 8        | 6160226.269180   |
| 1655907131  | Connection    | CN10   |          | 16.184835         | 1        | 35685591.360212  |
| 1655909034  | Connection    | CN12,CN13,C<br>N14,<br>CN15,CN16,C<br>N19,<br>CN20,CN21,C<br>N25, CN26 |          | 16.184835         | 10       | 5037852.012953   |
| 1655910032  | Connection    | CN7  |          | 16.184835         | 1        | 35685591.360212  |
| 1655912032  | Connection    | CN17   |          | 16.184835         | 1        | 35685591.360212  |
| 175011301C  | Miscellaneous | CN28   |          | 306.000000        | 1        | 1681683.006787   |
| 1752000501  | Miscellaneous | FS1,FS7,FS8,<br>FS9  |          | 2.400000          | 4        | 79281882.025954  |
| 1752001603  | Miscellaneous | FS5,FS6  |          | 2.400000          | 2        | 143944727.196625 |
| 1752002500  | Miscellaneous | FS2,FS3,FS4  |          | 2.400000          | 3        | 101854599.204190 |