

# PER-V09V

## Reliability Prediction Report (MTBF)

|         |  |
|---------|--|
| Summary | Failure Rate: 2531.390557 ppm<br>MTBF: 395,040 Hours |
|---------|--|

|            |          |               |
|------------|----------|---------------|
| Issue date | Approval | Test Engineer |
| 2014/09/29 | Tom Lin  | Louie Lee     |

# Reliability Prediction (MTBF)

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**I . Model Name:** PER-V09V

**II . Prediction Date:** September. 29th, 2014

**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:**

PER-V09V (9697V09V01-D):

- Failure Rate: 2531.390557 ppm

- MTBF: 395,040 Hours

**AAEON Reliability Prediction  
Summary**

**File Name:** PER-V09V.rfp  
**Duty Cycle:** 100  
**Calculation Model:** Telcordia Issue 2  
**Method:** Method I Case 3

**Failure Rate:** 2531.390557  
**MTBF (hrs):** 395,040  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Assembly Name | Part Number  | Ref Des | Quantity | Failure Rate | MTBF    |
|---------------|--------------|---------|----------|--------------|---------|
| PER-V09V      | 9697V09V01-D |         | 1        | 2531.390557  | 395,040 |

**File Name:** PER-V09V.rfp  
**Assembly:** 9697V09V01-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 2531.390557  
**MTBF (hrs):** 395,040  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category  | Ref Des   | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|-----------|---|----------|-------------------|----------|------------------|
| 1050503914  | Resistor  | R41   |          | 2.547039          | 1        | 282340674.079668 |
| 1050504724  | Resistor  | R15,R16,R28<br>,R34,R4, R5  |          | 2.547039          | 6        | 56573956.677649  |
| 1050510034  | Resistor  | R22,R68   |          | 2.547039          | 2        | 154078778.388085 |
| 1050510524  | Resistor  | R14   |          | 2.547039          | 1        | 282340674.079668 |
| 1050521524  | Resistor  | R65   |          | 2.547039          | 1        | 282340674.079668 |
| 1050552314  | Resistor  | R64   |          | 2.547039          | 1        | 282340674.079668 |
| 1050562004  | Resistor  | R59   |          | 2.547039          | 1        | 282340674.079668 |
| 1050705154  | Resistor  | R60   |          | 2.547039          | 1        | 282340674.079668 |
| 1059703931  | Resistor  | R12,R3,R38,<br>R42,R43,<br>R46,R49,R50<br>,R53,<br>R55,R56,R58<br>,R61,R7, R9 |          | 2.547039          | 15       | 23852782.943395  |
| 105A500239  | Resistor  | R70   |          | 2.547039          | 1        | 282340674.079668 |
| 105A501039  | Resistor  | R66,R67,R73   |          | 2.547039          | 3        | 107020754.986850 |
| 105A503039  | Resistor  | R17,R63   |          | 2.547039          | 2        | 154078778.388085 |
| 105A507509  | Resistor  | R35,R36,R37   |          | 2.547039          | 3        | 107020754.986850 |
| 105A519109  | Resistor  | R48   |          | 2.547039          | 1        | 282340674.079668 |
| 105A530123  | Resistor  | R21   |          | 2.547039          | 1        | 282340674.079668 |
| 105A700003  | Resistor  | R18,R19,R26<br>,R27   |          | 2.547039          | 4        | 82309758.689546  |
| 105A700009  | Resistor  | R13,R23,R24<br>,R25,<br>R69,R71   |          | 2.547039          | 6        | 56573956.677649  |
| 105A702209  | Resistor  | R29,R30,R31<br>,R32   |          | 2.547039          | 4        | 82309758.689546  |
| 105A702229  | Resistor  | R1,R6   |          | 2.547039          | 2        | 154078778.388085 |
| 1121501690  | Capacitor | C1,C2,C26,C<br>5,C75,<br>C77,C9   |          | 1.128806          | 7        | 115633865.771428 |
| 1124410190  | Capacitor | C8  |          | 1.128806          | 1        | 704977644.692287 |
| 1124418090  | Capacitor | C69,C72   |          | 1.128806          | 2        | 375289731.076049 |
| 1124433090  | Capacitor | C21,C22,C41<br>,C42   |          | 1.128806          | 4        | 196873384.410843 |
| 1124533191  | Capacitor | C85   |          | 1.128806          | 1        | 704977644.692287 |
| 1129610080  | Capacitor | C16   |          | 1.128806          | 1        | 704977644.692287 |
| 1129710090  | Capacitor | C23,C24,C25<br>,C27,<br>C28,C29   |          | 1.128806          | 6        | 133979725.056342 |
| 1189610153  | Capacitor | C12,C13   |          | 1.128806          | 2        | 375289731.076049 |
| 1189615154  | Capacitor | C83   |          | 1.128806          | 1        | 704977644.692287 |
| 11C4501790  | Capacitor | C20,C3  |          | 1.128806          | 2        | 375289731.076049 |
| 11C4510380  | Capacitor | C65   |          | 1.128806          | 1        | 704977644.692287 |
| 11C9510490  | Capacitor | C84   |          | 1.128806          | 1        | 704977644.692287 |

**File Name:** PER-V09V.rfp  
**Assembly:** 9697V09V01-D  
**Ref Des:**  
**Description:**

**Failure Rate:** 2531.390557  
**MTBF (hrs):** 395,040  
**Temperature:** 30  
**Environment:** GF, GU - Ground Fixed, Uncontrolled

| Part Number | Category           | Ref Des  | Tem.Rise | Unit Failure Rate | Quantity | MTBF,Unit        |
|-------------|--------------------|--|----------|-------------------|----------|------------------|
| 11E2501690  | Capacitor          | C30,C31,C32<br>,C33,<br>C34,C35,C36<br>,C39,C4,<br>C40,C43,C44<br>,C45,<br>C46,C47,C48<br>,C49,<br>C50,C53,C54<br>,C55,<br>C56,C57,C58<br>,C59,C6,<br>C60,C61,C62<br>,C63,<br>C67,C68,C70<br>,C71,<br>C73,C74,C76<br>,C81, C82 |          | 1.128806          | 39       | 21841170.168719  |
| 11E4433090  | Capacitor          | C78,C79  |          | 1.128806          | 2        | 375289731.076049 |
| 11E9501091  | Capacitor          | C14,C15  |          | 1.128806          | 2        | 375289731.076049 |
| 11E9610080  | Capacitor          | C10,C11,C37<br>,C38,<br>C51,C52,C64<br>,C66,C7, C80  |          | 1.128806          | 10       | 82101057.548118  |
| 11E9622052  | Capacitor          | C17  |          | 1.128806          | 1        | 704977644.692287 |
| 1211102765  | Inductor           | L10,L11,L12,<br>L13,<br>L14,L15,L2,L<br>3,L4,<br>L5,L6,L7,L8,L<br>9  |          | 4.944252          | 14       | 13381951.576219  |
| 121113307K  | Inductor           | L1   |          | 4.944252          | 1        | 154760964.143460 |
| 12123D0001  | Inductor           | FB1,FB2,FB3  |          | 4.944252          | 3        | 57363284.375370  |
| 123131435J  | Miscellaneous      | Y1   |          | 19.200000         | 1        | 23844262.770939  |
| 1300003440  | Semiconductor      | D3   | 31.1     | 17.070502         | 1        | 42370486.449847  |
| 1301400541  | Semiconductor      | D1   |          | 7.793411          | 1        | 92807310.010983  |
| 1301400642  | Semiconductor      | D2   |          | 7.793411          | 1        | 92807310.010983  |
| 1430012830  | Integrated Circuit | U5   | 35.9     | 424.508420        | 1        | 1211312.438012   |
| 1430012830  | Integrated Circuit | U6   | 32.7     | 353.612858        | 1        | 1454167.510820   |
| 1430022530  | Integrated Circuit | U4   | 33       | 359.775925        | 1        | 1429257.196231   |
| 1440SM7500  | Integrated Circuit | U3   | 29.2     | 70.492396         | 1        | 7294578.733008   |
| 14S3020901  | Integrated Circuit | U1   | 25.3     | 228.605561        | 1        | 2249343.048747   |
| 14S6305120  | Integrated Circuit | U2   | 27.8     | 34.116612         | 1        | 18883184.809155  |
| 1655813020  | Connection         | VGA1   |          | 16.184835         | 1        | 35685591.360212  |
| 1752015003  | Miscellaneous      | FS1  |          | 2.400000          | 1        | 254626042.602335 |