



**AAEON Technology INC.**  
ISO-9001/ISO-14001 Certified  
Industrial Automation PCs

# **PCM-4335**

## **Reliability Prediction Report**

### **(MTBF)**

**Release Date: Nov. 05, 1999**

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**Issue Stamp**

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**QA Manager**

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**QE Manager**

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**Test Engineer**



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# PCM-4335

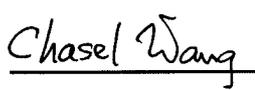
## Reliability Prediction Report (MTBF)

Release Date: Nov. 05, 1999

\_\_\_\_\_  
Issue Stamp

  
\_\_\_\_\_  
QA Manager

  
\_\_\_\_\_  
QE Manager

  
\_\_\_\_\_  
Test Engineer

# Reliability Prediction (MTBF)

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**I . Model Name: PCM-4335**

**II . Description: Compact 486 PC/104 CPU Module with LCD & SSD**

**III. Prediction Date: Nov. 05, 1999**

**IV. Prediction Site: AAEON QE Dept.**

**V. Predicted by : Chasel Wang**

**VI. Equipment: Relx Ver.7.0 Visual Reliability Software**

**VII. Simulation Environment:**

- **Temperature: 25 degrees C**
- **Standard: Telcordia (Bellcore) Standard**

**VIII. Prediction Result:**

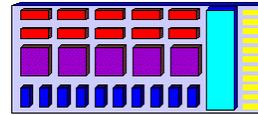
- **Failure Rate: 7.408854 ppm**
- **MTBF: 134,974. hours**

**IX. 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 multiplier is 1,000,000.**
- **MTBF**            **MTBF is always specified in hours.**

**AAEON Reliability Prediction Report**

**Part Number** 9697433501  
**Reference Des**  
**Date** 11. 9, 1999  
**Environment** GF, GU - Ground Fixed, Uncontrolled  
**Temperature** 25.00

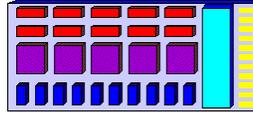


**Description** Top-level assembly  
**File Name** 4335.rpj  
**Time** 11:20 AM  
**Failure Rate** 7.408854  
**MTBF** 134,974

Assembly Name	Part Number	Model	Method	Environment	Duty Cycle	Qty	Failure Rate	MTBF
PCM-4335	9697433501	Bellcore	Method I Case 3	GF, GU - Ground Fixed,	100.00	1.00	7.408854	134,974

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**Temperature** 25.00

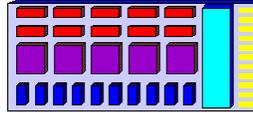


**Description** Top-level assembly  
**File Name** 4335.rpj  
**Time** 11:20 AM  
**Failure Rate** 7.408854  
**MTBF** 134,974

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
101A700009	Resistor	R31,R63,R70,R74	Bellcore Issue 6	Level I		0.002268	4.00	.1224	0.009071	440974090.03
101A701009	Resistor	R23	Bellcore Issue 6	Level I		0.002268	1.00	.0306	0.002268	440974090.03
101A702209	Resistor	R2,R4,R5,R18,R19,R26,R36,R38,- R44,R50,R51,R52,R65,R66,R72	Bellcore Issue 6	Level I		0.002268	15.00	.4591	0.034016	440974090.03
101A703309	Resistor	R58	Bellcore Issue 6	Level I		0.002268	1.00	.0306	0.002268	440974090.03
101A703329	Resistor	R98	Bellcore Issue 6	Level I		0.001368	1.00	.0185	0.001368	731199338.89
101A704729	Resistor	R8,R9,R12,R13,R14,R27,R28,R29- ,R32,R33,R34,R45,R47,R56,R67,R- 77,R87,R88,R92,R96,R97,R100	Bellcore Issue 6	Level I		0.001312	22.00	.3896	0.028862	762258791.72
101A705629	Resistor	R82,R7	Bellcore Issue 6	Level I		0.001285	2.00	.0347	0.002570	778279814.67
101A708209	Resistor	R57,R48	Bellcore Issue 6	Level I		0.002268	2.00	.0612	0.004535	440974090.03
101A708229	Resistor	R20,R6	Bellcore Issue 6	Level I		0.001260	2.00	.0340	0.002520	793605208.02
101A710019	Resistor	R1,R25,R37,R46,R60,R79,R83,R49	Bellcore Issue 6	Level I		0.001984	8.00	.2142	0.015868	504156185.05
101A710029	Resistor	R21,R69,R94	Bellcore Issue 6	Level I		0.001234	3.00	.0500	0.003702	810285067.01
101A715009	Resistor	R39,R40,R41	Bellcore Issue 6	Level I		0.002268	3.00	.0918	0.006803	440974090.03
101A733009	Resistor	R78,R84,R85,R86,R62,R91	Bellcore Issue 6	Level I		0.002268	6.00	.1836	0.013606	440974090.03
1059710059	Resistor	R75	Bellcore Issue 6	Level I		0.013606	1.00	.1836	0.013606	73495681.67
105A511503	Resistor	R24	Bellcore Issue 6	Level I		0.002268	1.00	.0306	0.002268	440974090.03
105A518703	Resistor	R22	Bellcore Issue 6	Level I		0.002268	1.00	.0306	0.002268	440974090.03
105A553603	Resistor	R53	Bellcore Issue 6	Level I		0.002268	1.00	.0306	0.002268	440974090.03
105A556003	Resistor	R76	Bellcore Issue 6	Level I		0.002268	1.00	.0306	0.002268	440974090.03
105A747033	Resistor	R99	Bellcore Issue 6	Level I		0.002268	1.00	.0306	0.002268	440974090.03
1121701050	Capacitor	C8,C9,C10,C11,C13,C14,C15,C16- ,C36,C38,C100	Bellcore Issue 6	Level I		0.002539	11.00	.3770	0.027929	393852661.82
1121722780	Capacitor	C27,C50,C51,C59,C69,C72	Bellcore Issue 6	Level I		0.002539	6.00	.2056	0.015234	393852661.82
1122701680	Capacitor	C1,C3,C6,C7,C12,C17,C18,C19,C- 20,C23,C24,C25,C26,C29,C30,C34- ,C35,C37,C39,C41,C42,C43,C44,C- 46,C47,C49,C52,C53,C55,C56,C57- ,C58,C60,C62,C63,C64,C66,C67,C- 68,C70,C71,C75,C76,C77,C78,C79- ,C80,C81,C82,C83,C84,C85,C91,C- 93,C96,C97	Bellcore Issue 6	Level I		0.001598	56.00	1.2075	0.089463	625953979.55
1124501780	Capacitor	C54	Bellcore Issue 6	Level I		0.001060	1.00	.0143	0.001060	943198589.05
1124510080	Capacitor	C99	Bellcore Issue 6	Level I		0.001060	1.00	.0143	0.001060	943198589.05

### AAEON Reliability Prediction Report

**Part Number** 9697433501  
**Reference Des**  
**Date** 11. 9, 1999  
**Environment** GF, GU - Ground Fixed, Uncontrolled  
**Temperature** 25.00

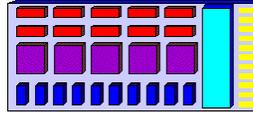


**Description** Top-level assembly  
**File Name** 4335.rpj  
**Time** 11:20 AM  
**Failure Rate** 7.408854  
**MTBF** 134,974

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
1124520080	Capacitor	C89,C88	Bellcore Issue 6	Level I		0.001060	2.00	.0286	0.002120	943198589.05
1124522180	Capacitor	C5,C31,C40,C45	Bellcore Issue 6	Level I		0.001060	4.00	.0572	0.004241	943198589.05
1124547080	Capacitor	C73,C74,C86,C87,C2,C4,C28,C32-C33	Bellcore Issue 6	Level I		0.001060	9.00	.1288	0.009542	943198589.05
1141610050	Capacitor	TC1,TC3,C94	Bellcore Issue 6	Level I		0.002357	3.00	.0954	0.007071	424256814.77
1149610180	Capacitor	C95	Bellcore Issue 6	Level I		0.004535	1.00	.0612	0.004535	220487045.01
1149622050	Capacitor	C48,C61	Bellcore Issue 6	Level I		0.004535	2.00	.1224	0.009071	220487045.01
1149633190	Capacitor	C21,TC2	Bellcore Issue 6	Level I		0.004933	2.00	.1332	0.009866	202722669.92
1212306030	Inductor	L1,L2,L3,L4,L5,L6,L7,L8,L10,L12,L13,L14,L15,L16,L17,L18,L19,FB1,L-11	Bellcore Issue 6	Level I		0.002268	19.00	.5816	0.043086	440974090.03
1231327680	Miscellaneous	X1	Bellcore Issue 6	Level I		0.150000	1.00	2.0246	0.150000	6666666.67
1233314351	Miscellaneous	Y1	Bellcore Issue 6	Level I		0.360000	1.00	4.8591	0.360000	2777777.78
1300414800	Semiconductor	D2,D5	Bellcore Issue 6	Level I		0.023881	2.00	.6447	0.047762	41874327.58
1304000040	Semiconductor	D3	Bellcore Issue 6	Level I		0.004877	1.00	.0658	0.004877	205063180.81
1304100440	Semiconductor	D4	Bellcore Issue 6	Level I		0.004877	1.00	.0658	0.004877	205063180.81
1305099140	Semiconductor	U2,U13,U14	Bellcore Issue 6	Level I		0.011940	3.00	.4835	0.035821	83748655.15
1310390410	Semiconductor	Q1	Bellcore Issue 6	Level I		0.005092	1.00	.0687	0.005092	196396984.17
1314288000	Semiconductor	U8	Bellcore Issue 6	Level I	15.00	0.036000	1.00	.4859	0.036000	27777777.78
1440474004	Integrated Circuit	U23	Bellcore Issue 6	Level I	9.00	0.097228	1.00	1.3123	0.097228	10285053.39
1440474153	Integrated Circuit	U21,U24,U25	Bellcore Issue 6	Level I	9.00	0.099185	3.00	4.0162	0.297555	10082168.03
14D1605200	Semiconductor	U5	Bellcore Issue 6	Level I	8.00	0.049790	1.00	.6720	0.049790	20084337.60
14S3128420	Integrated Circuit	U3	Bellcore Issue 6	Level I	10.00	0.074952	1.00	1.0117	0.074952	13341832.37
14S4006600	Integrated Circuit	U6	Bellcore Issue 6	Level I	15.00	0.090981	1.00	1.2280	0.090981	10991353.05
14S4021300	Semiconductor	U16,U18	Bellcore Issue 6	Level I	9.00	0.127903	2.00	3.4527	0.255806	7818413.72
14S4048500	Integrated Circuit	U26,U20	Bellcore Issue 6	Level I	9.00	0.075163	2.00	2.0290	0.150325	13304490.20
14S4397701	Integrated Circuit	U11	Bellcore Issue 6	Level I	14.00	0.086245	1.00	1.1641	0.086245	11594908.63
14S4900000	Integrated Circuit	U7	Bellcore Issue 6	Level I	13.00	0.081727	1.00	1.1031	0.081727	12235812.22
14S5500000	Integrated Circuit	U9	Bellcore Issue 6	Level I	13.00	0.114774	1.00	1.5491	0.114774	8712810.69
14S5501400	Integrated Circuit	U10	Bellcore Issue 6	Level I	16.00	0.130570	1.00	1.7623	0.130570	7658749.59
14S5513800	Integrated Circuit	U22	Bellcore Issue 6	Level I	9.00	0.099185	1.00	1.3387	0.099185	10082168.03
14S5A24500	Integrated Circuit	U15	Bellcore Issue 6	Level I	8.00	0.098388	1.00	1.3280	0.098388	10163843.19

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**Part Number** 9697433501  
**Reference Des**  
**Date** 11. 9, 1999  
**Environment** GF, GU - Ground Fixed, Uncontrolled  
**Temperature** 25.00



**Description** Top-level assembly  
**File Name** 4335.rpj  
**Time** 11:20 AM  
**Failure Rate** 7.408854  
**MTBF** 134,974

Part Number	Category	Location	Calculation Model	Quality	Tem. Rise	Failure Rate, Unit	Quantity	Failure Rate, %	Failure Rate	MTBF, Unit
14S5A24520	Integrated Circuit	U17,U19	Bellcore Issue 6	Level I	15.00	0.088717	2.00	2.3949	0.177434	11271796.23
14S8416800	Integrated Circuit	U4	Bellcore Issue 6	Level I	13.00	0.086930	1.00	1.1733	0.086930	11503478.64
14S9055500	Integrated Circuit	U27	Bellcore Issue 6	Level I	11.00	0.091663	1.00	1.2372	0.091663	10909565.54
1540710308	Resistor	PR14	Bellcore Issue 6	Level I		0.006246	1.00	.0843	0.006246	160102772.00
1540722008	Resistor	PR1,PR3-PR5,PR7,PR8,RN9,PR9,-PR10-PR13	Bellcore Issue 6	Level I		0.006246	12.00	1.0117	0.074952	160102772.00
1540727210	Resistor	RN4,RN3	Bellcore Issue 6	Level I		0.006246	2.00	.1686	0.012492	160102772.00
1540747208	Resistor	PR2,PR6,PR15	Bellcore Issue 6	Level I		0.006246	3.00	.2529	0.018738	160102772.00
1540747210	Resistor	RN1,RN2,RN5-RN8,RN10,RN11	Bellcore Issue 6	Level I		0.006246	8.00	.6744	0.049968	160102772.00
1651003222	Connection	U1	Bellcore Issue 6	Level I		0.018207	1.00	.2457	0.018207	54923766.92
1651203291	Connection	U12	Bellcore Issue 6	Level I		0.018207	1.00	.2457	0.018207	54923766.92
1651572990	Connection	DIMM1	Bellcore Issue 6	Level I		0.081932	1.00	1.1059	0.081932	12205281.54
1653002101	Connection	JP4,JP6	Bellcore Issue 6	Level I		0.001138	2.00	.0307	0.002276	878780270.71
1653002110	Connection	SP1	Bellcore Issue 6	Level I		0.001138	1.00	.0154	0.001138	878780270.71
1653003101	Connection	JP3,JP5,JP7,J1	Bellcore Issue 6	Level I		0.001707	4.00	.0922	0.006828	585853513.81
1653003201	Connection	JP2,JP1	Bellcore Issue 6	Level I		0.003414	2.00	.0922	0.006828	292926756.90
1653003210	Connection	CN9	Bellcore Issue 6	Level I		0.003414	1.00	.0461	0.003414	292926756.90
1653007203	Connection	CN8	Bellcore Issue 6	Level I		0.007966	1.00	.1075	0.007966	125540038.67
1653025201	Connection	CN5	Bellcore Issue 6	Level I		0.014793	1.00	.1997	0.014793	67598482.36
1653025201	Connection	CN7	Bellcore Issue 6	Level I		0.028449	1.00	.3840	0.028449	35151210.83
1653120221	Connection	CON2	Bellcore Issue 6	Level I		0.022759	1.00	.3072	0.022759	43939013.54
1653132225	Connection	CON1	Bellcore Issue 6	Level I		0.036414	1.00	.4915	0.036414	27461883.46
1653205210	Connection	CN3	Bellcore Issue 6	Level I		0.005690	1.00	.0768	0.005690	175756054.14
1653208210	Connection	CN6	Bellcore Issue 6	Level I		0.009104	1.00	.1229	0.009104	109847533.84
1653217210	Connection	CN2	Bellcore Issue 6	Level I		0.019345	1.00	.2611	0.019345	51692957.10
1653222200	Connection	CN4	Bellcore Issue 6	Level I		0.025035	1.00	.3379	0.025035	39944557.76
1655002020	Connection	CN1	Bellcore Issue 6	Level I		0.001138	1.00	.0154	0.001138	878780270.71
1655004110	Connection	CN10	Bellcore Issue 6	Level I		0.002276	1.00	.0307	0.002276	439390135.35
1750119012	Miscellaneous	BT1	Bellcore Issue 6	Level I		0.900000	1.00	12.1476	0.900000	1111111.11
1752000800	Miscellaneous	FS1	Bellcore Issue 6	Level I		0.030000	1.00	.4049	0.030000	33333333.33
1759200800	Miscellaneous		Bellcore Issue 6	Level I		3.000000	1.00	40.4921	3.000000	333333.33