



# MTBF PREDICTION REPORT

PA Department

**DFI**



# MTBF PREDICTION REPORT

**Model: M8M051-ECC-21DLI**

**Revision: A00**

<b>Completed Date</b>	<b>2021/08/06</b>
<b>Designed By</b>	<b>Gordon Kao</b>
<b>Reviewed By</b>	<b>Johnson Chan</b>
<b>Approval By</b>	<b>Jerry Fang</b>

## Table of Contentv

1. Purpose .....	3
2. Prediction Models .....	3
3. Definition .....	3
4. MTBF Report .....	4

### **1. Purpose:**

This MTBF prediction report presents the product reliability by the Relex reliability analysis tools, which is developed by Relex Software Corporation. When performing a reliability prediction analysis, there are several calculated values that provide measures of reliability. These values include failure rate, MTBF, reliability and availability. This report should provide the reliable and worth result for MTBF and failure rate reference.

### **2. Prediction Models:**

For motherboard product, this report is based on Telcordia (formerly Bellcore). The Telcordia reliability prediction model war originally developed by AT&T Bell Labs. Bell Labs modified the equations from MIL-HDBK-217 to better represent what their equipment was experiencing in the field.

### **3. Definition:**

- Failure Rate: Failure rate is defined as the rate of occurrence of failure. It is basically the anticipated number of times that an item fails in a specified period of time.
- MTBF: MTBF stands for Mean Time between Failures. MTBF is the inverse of the failure rate for constant failure rate systems. MTBF can be described as the number of hours to pass before for a component, assembly, or system.
- Description: A description of the item on the Relex file.
- Environment: It is based on those outlined in the Telcordia (Bellcore) standards.
- Temperature: Present the operation temperature (in degrees Celsius) to meet the requirement.

**4. MTBF Result and Relex Software Report:**

Temperature (Celsius)	MTBF (hours)
25	1,311,832
45	637,427
60	374,475
70	265,173
80	189,510

**File Name:** M8M051-ECC-21DLI.rfp

**System:** 770-M8M0511-300G

**Ref Des:**

**Calculation Model:** Telcordia Issue 4

**MTBF (hrs):** 1311832

**Failure Rate:** 762.29

**Temperature:** 25

**Environment:** GB, GC - Ground Benign, Controlled



Assembly Name	Part Number	Quantity	Failure Rate (Fit)	MTBF (Hrs)
M8M051-ECC-21DLI	770-M8M0511-300G	1	762.29	1,311,832
M8M051-ECC-21DLI	774-M8M0511-300G	1	762.29	1,311,832

**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 1311832  
**Failure Rate:** 762.2928  
**Temperature:** 25  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
113-500004-300G	IC TTL,Single Inverter Gate,SN74LVC1G04DCK/SC70-5(TI)RoHS	1.9772	1	2.9741
113-500007-210S	IC TTL,Single Buffer/Driver With Open-Drain Output,SN74LVC1G07DCKR/SC70-5(TI)	1.9772	7	16.4254
121-000075-230G	Digital Temperature Sensor,LM75BTP/HWSON-8 (NXP)RoHS	1.9772	1	2.9741
121-000104-420G	IC 4-BIT BIDIRECTIONAL VOLTAGE-LEVEL TRANSLATOR,NTS0104GU12/XQFN12(NXP) RoHS	1.9772	2	5.3538
121-000213-210G	IC RS232 Transceivers AZRS213SS.RDG/SSOP-28 (AMAZING)RoHS	1.9772	1	2.9741
121-002069-200G	IC Power-Distribution Switches,1.5A,TPS2069DDBVT/SOT23-5(TI)RoHS	1.9772	4	9.8732
121-003078-201G	IC RS485 Transceiver,AZRS3078/SOP-8(AMAZING) RoHS	1.9772	1	2.9741
121-003552-200G	IC Power Distribution Switches,APL3552AQBI-TRG/TDFN-6(2x2)(ANPEC)RoHS	1.9772	6	14.2597
121-006561-400G	IC CAN Transceiver,ATA6561-GBQW-N/VDFN-8(3x3) (MICROCHIP)RoHS	1.9772	1	2.9741
121-022976-200G	IC Switch,5.7-V,6-A,14-mΩ On-Resistance Dual-Channel Load,TPS22976DPU/WSO-14(TI)RoHS	1.9772	2	5.3538
121-035390-200G	Real Time Clock,S-35390A-T8T1G/TSSOP8(SEIKO) RoHS	1.9474	1	3.7871
121-081439-401G	IC Single 3.3V or 5V RS232/RS422/RS485 Multiprotocol Transceiver,F81439AN/TQFN-40(5x5) (FINTEK)RoHS	1.9772	1	2.9741
121-380801-200G	IC Reset,TPS3808G01DBV/SOT23-6(TI)RoHS	1.9772	2	5.3538
122-105000-200G	AUDIO CODEC SGTL5000XNAA3/R2,QFN32 (FREESCALE)RoHS	1.9772	1	2.9741
131-56G016-400G	LPDDR4-3733 SDRAM 16Gb(512M*32),K4F6E3S4HM-MGCJ/FBGA-200(SAMSUNG)RoHS	4.4178	1	6.8575
141-025180-400G	External CAN FD CONTROLLER, MCP2518FDT-E/QBB /VDFN-14 (MICROCHIP)RoHS	1.9772	1	2.9741
141-042100-400G	IC Power Management Integrated Circuit (PMIC),MC34PF4210A1ES/QFN-56(8x8)(NXP)RoHS	1.9772	1	2.9741
141-058070-410G	IC USB 3.0 Hub CTRL 7 PORTS,USB5807CT-I/KD/VQFN-100(MICROCHIP)RoHS	1.9772	1	2.9741
141-562150-400G	IC Synchronous Step-down Converter,TPS56C215RNN/VQFN-18(TI)RoHS	1.9772	2	5.3538
141-620850-200G	IC Synchronous Buck Converter,2.5-6,3A,TLV62085RLT/VSON-7(TI)RoHS	1.9772	1	2.9741
141-620950-400G	IC Converter,4-A High Efficiency Step Down with DCS-Control,TLV62095RGT/QFN-16(TI)RoHS	1.9772	2	5.3538
147-065850-400G	Dual Channel DSI to Dual-Link LVDS Bridge,-40~85°C,SN65DSI85ZXHR/BGA-64(TI)RoHS	1.9772	1	2.9741
147-080350-200G	IC CHIP,Integrated 10/100/1000 Mbps Ethernet Transceiver,-40~85°C,AR8035-AL1B-R/QFN-40(5x5) (QUALCOMM)RoHS	1.9772	1	2.9741
148-100416-400G	eMMC 5.1,16G,-25°C~+85°C,SMD,FBGA-153,SDINBDG4-16G-I1(SANDISK)RoHS	4.4178	1	6.8575

**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 1311832  
**Failure Rate:** 762.2928  
**Temperature:** 25  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
171-204005-230G	DIODE SCHOTTKY,40V,200mA,BAS40-05TH/SOT523-3(SMARTENGRAND)RoHS	0.2189	1	0.4229
171-205200-220G	DIODE SCHOTTKY,30V,200mA,RB520S-30H/SOD-523(SMARTENGRAND)RoHS	0.2189	16	4.3039
171-360120-500G	DIODE TVS,12V,600W,Bidirectional,SMBJ12CA/DO-214AA(LITTELFUSE)RoHS	0.2189	1	0.4229
171-361045-200G	DIODE TVS Array,5V,30W,AZ1045-04F.R7G/DFN2510P10E(AMAZING)RoHS	0.2189	14	3.8153
171-361624-200G	DIODE TVS 24V,L16ESD24VA2/SOD523(LITEON)RoHS	0.2189	2	0.7270
171-365125-200G	DIODE TVS,5V,AZ5125-01H.R7G/SOD-523(AMAZING)RoHS	0.2189	8	2.3221
171-451715-200G	DIODE Zener,15V,Vz=14.34V~14.98V,UDZVTE-1715B/SOD-323FL(ROHM)RoHS	0.2189	1	0.4229
171-451756-200G	DIODE Zener,5.6V,Vz=5.49V~5.73V,UDZVTE-175.6B/SOD-323F(ROHM)RoHS	0.2189	1	0.4229
172-223904-206S	TRANSISTOR NPN,MMBT3904LT1G/SOT23(ON)	1.1741	1	2.0814
172-223906-207S	TRANSISTOR PNP,PMBS3906/SOT23(NXP)	1.1741	1	2.0814
172-301380-220G	MOSFET Dual N-Ch,VDS:50V,ID:350mA,VGS:±20V,@10V,RDS:1.6Ω,BSS138KDT/SOT563-6(SMARTENGRAND)RoHS	7.2970	28	221.8591
172-305050-200G	MOSFET P-Ch,VDS:-20V,ID:-4A,VGS:±8V,@-4.5V,RDS:40mΩ,PM505BA/SOT23-3(NIKO-SEM)RoHS	7.2970	1	10.7463
172-321200-200G	MOSFET Dual N&P-Ch,VDS:20V/-20V,ID:800mA/-400mA,VGS:±12V,@±4.5V,RDS:300mΩ/600mΩ,PDE V2120AY/SOT563-6(POTENS)RoHS	7.2970	1	10.7463
172-331030-200G	MOSFET P-Ch,VDS:-30V,ID:-7.7A,VGS:±25V,@-10V,RDS:20mΩ,FKBB3103/PRPAK-8(3x3)(FETEK)RoHS	7.2970	3	27.7940
174-210012-900G	LED,WHITE+RED,SMD(1.6x1.5mm)(4PAD),LTW-C195DCKR-5A(LITEON)RoHS	0.0677	2	0.2279
174-210030-201G	LED,BLUE,SMD(0402)(1*0.6mm),SMLP13BC8TT86(ROHM)RoHS	0.0677	1	0.1329
174-310042-900G	LED,RED/GREEN,SMD1.6*1.5mm,19-223/R6G6C-A11/2T(EVERLIGHT)RoHS	0.0677	1	0.1329
213-150101-200C	MLCC 1pF/50V,NPO,B(0.1pF),SMD,0402,(None JP)RoHS	0.0911	1	0.1028
213-150470-200C	MLCC 4.7pF/50V,NPO,C(0.25pF),SMD,0402,(None JP)RoHS	0.0911	2	0.1987
213-150605-200C	MLCC 6pF/50V,NPO,C(0.25pF),SMD,0402,(None JP)RoHS	0.0911	1	0.1028
213-151805-200C	MLCC 18pF/50V,NPO,J(5%),SMD,0402,(None JP)RoHS	0.0911	6	0.5752
213-152005-200C	MLCC 20pF/50V,NPO,J(5%),SMD,0402,(None JP)RoHS	0.0911	2	0.1987
213-152205-110C	MLCC 22pF/25V,NPO,J(5%),SMD 0201(None JP)RoHS	0.0911	3	0.2935

File Name: M8M051-ECC-21DLI.rfp

Assembly: 774-M8M0511-300G

Ref Des:

Calculation Model: Telcordia Issue 4



MTBF (hrs): 1311832

Failure Rate: 762.2928

Temperature: 25

Environment: GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
213-152205-200C	MLCC 22pF/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.0911	4	0.3877
213-152215-200C	MLCC 221P/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.0911	2	0.1987
213-251038-250C	MLCC 103P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.0911	6	0.5752
213-251039-130C	MLCC 103P/10V,X7R,K(10%),SMD,0201,(None JP) RoHS	0.0911	14	1.3190
213-251049-130C	MLCC 104P/10V,X5R,K(10%),SMD,0201,(None JP) RoHS	0.0911	173	15.9128
213-251049-200J	MLCC 104P/16V,X7R,K(10%),SMD,0402,(JP)RoHS	0.0911	24	2.2434
213-251049-270J	MLCC 104P/25V,X5R,K(10%),SMD,0402,(JP)RoHS	0.0911	3	0.2935
213-251059-109G	MLCC 105P/6.3V,X5R,K(10%),SMD,0201,CC0201KRX5R5BB105(YAGEO) RoHS	0.0911	92	8.4926
213-251059-230J	MLCC 105P/16V,X5R,K(10%),SMD,0402,(JP)RoHS	0.0911	6	0.5752
213-251068-200J	MLCC 106P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.0911	39	3.6256
213-251068-300J	MLCC 106P/6.3V,X5R,M(20%),SMD,0603,(JP)RoHS	0.0911	3	0.2935
213-251069-540J	MLCC 106P/16V,X5R,K(10%),SMD,0805,(JP)RoHS	0.0911	8	0.7618
213-252229-200C	MLCC 222P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.0911	2	0.1987
213-252249-140C	MLCC 224P/6.3V,X5R,K(10%),SMD,0201,(None JP) RoHS	0.0911	15	1.4116
213-252259-200J	MLCC 225P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.0911	10	0.9479
213-252268-310J	MLCC 226P/6.3V,X5R,M(20%),SMD,0603,(JP)RoHS	0.0911	43	3.9936
213-253319-100C	MLCC 331P/50V,X7R,K(10%),SMD,0201,(None JP) RoHS	0.0911	20	1.8741
213-254715-200C	MLCC 471P/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.0911	7	0.6685
213-254729-120J	MLCC 472P/16V,X7R,K(10%),SMD,0201,(JP)RoHS	0.0911	12	1.1336
213-254739-210C	MLCC 473P/16V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.0911	4	0.3877
213-254758-210J	MLCC 475P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.0911	22	2.0588
217-301078-325G	POLYMER(TAN) CAP 100uF/6.3V,40mΩ,1.8A,SMD,B3528,105°C/2000H,M(20%),T520B107M006ATE040(KEMET)RoHS	0.7181	2	1.7589
217-302278-326G	POLYMER(TAN)CAP 220uF/6.3V,45mΩ,1700mA,105°C/2000H,M(20%),B3528(1.9),T520B227M006ATE045(KEMET) RoHS	0.7181	6	4.8544
223-010220-830G	CHOKE 1uH,M(20%),DCR:41mΩ (Typ.),Irms:3.4A,Isat:4.4A,SMD (2.5*2*1mm),MCS25GC-1R0MHC(PDC)RoHS	0.0831	5	0.4591
223-015222-610G	CHOKE 1.5uH,M(20%),RDC≤15mΩ,Irms=9A,Isat=16A,SMD, (7.3*6.6*3.0),MCS0630-1R5MN2(PDC)RoHS	0.0831	1	0.1030
223-047120-830G	CHOKE 0.47uH,M(20%),DCR:23mΩ (Typ.),Irms:5.2A,Isat:6.6A,SMD (2.5*2.0*1.0mm),MCS25GC-R47MHC(PDC)RoHS	0.0831	1	0.1030



**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 1311832  
**Failure Rate:** 762.2928  
**Temperature:** 25  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
223-047121-700G	CHOKE 0.47uH,M (20%),RDC $\leq$ 14m $\Omega$ ,Irms=7A,Isat=9.5A,SMT (4.7*4.3),MCS0420-R47MN2(PDC)RoHS	0.0831	2	0.1942
223-047122-610G	CHOKE 0.47uH,M(20%),RDC $\leq$ 4.2m $\Omega$ (max),Irms:17.5A(typ),Isat:26A(typ),SMD (7.3*6.6*3mm),MCS0630-R47MN2(PDC)RoHS	0.0831	1	0.1030
223-047220-800G	CHOKE 4.7uH,M (20%),Irms:1.6A,Isat:2.2A,RDC:200m $\Omega$ ,SMD (2.5*2*1mm),MCS25GC-4R7MHC(PDC)RoHS	0.0831	1	0.1030
223-410040-501S	COMMON CHOKE 90 $\Omega$ ,M (20%),Idc $\leq$ 330mA,RDC $\leq$ 350m $\Omega$ ,SMD (2.05*1.25*1.4mm),After D/C 1936 is the bottom convex,CMM21T-900M-N(CHILISIN)	0.0831	5	0.4591
223-523000-410G	CM FILTER Cd=0.25pF,Rs=3 $\Omega$ ,SMD (1.57*1.17*0.57),PCMF2USB3S/WLCSP10(NXP) RoHS	0.0831	10	0.8928
231-107168-200G	REGULATOR 0.8A,GS7168TD-R/TDFN8(GSTEK)HF	1.9474	2	6.5047
241-220006-302G	X'TAL 20MHz,12pf, $\pm$ 30ppm,ESR:60 $\Omega$ (Max),TOPR=- 20°C~+105°C,SMD3225(4PAD),7V20080002(TXC) RoHS	1.4698	1	2.4229
241-225006-3B0G	X'TAL 25MHz,12pf, $\pm$ 10ppm,ESR:30 $\Omega$ (Max),TOPR=- 40°C~+100°C,SMD3225(4PAD),TSX- 3225,X1E000021099000(EPSON)RoHS	1.4698	4	7.7600
241-227006-360G	X'TAL 27MHz,18pF, $\pm$ 30ppm,ESR:50 $\Omega$ (Max),TOPR=- 40°C~+105°C,SMD3225(4PAD),7M27000056(TXC) RoHS	1.4698	1	2.4229
241-432773-390G	X'TAL 32.768KHz,7pf, $\pm$ 20ppm,ESR:70K $\Omega$ (Max),TOPR=-40°C~+125°C,SMD3215(2PAD),FC- 13A(EPSON)RoHS	1.4698	1	2.4229
242-232773-250G	OSC 32.768KHz,15pF,50ppm,3.3V,TOPR=-40°C ~+125°C,SMD2520(4PAD),SO25-000032-FXA-BAP- DIA(YOKE)RoHS	1.1257	1	1.8325
242-527006-200G	OSC(HCSL) 27MHz,50ppm,2.5~3.3V,TOPR=-40°C ~+105°C,SMD2520(6PAD),SO25CH-027000-F1X- 3EAN-DIA(YOKE)RoHS	1.1257	1	1.8325
251-160808-124S	BEAD CORE 160808 120 $\Omega$ ,2.5A,25%,SMT0603,PBY160808T-121Y-N (CHILISIN)	0.4535	2	1.5088
251-915221-210G	FERRITE BEAD 220 $\Omega$ ,700mA,BLM15EG221SN1D/0402(MURATA) RoHS	0.4535	15	8.4188
253-100110-500G	POLYSWITCH,PTC,1.1A/6V,SMD0805,0805L110ULY R(LITTELFUSE)RoHS	0.4000	2	1.1579
253-100266-403S	POLYSWITCH 2.6A/13.2V,SMD1812,miniSMDC260F/13.2 (LITTELFUSE)RoHS	0.4000	1	0.6546
263-180005-100C	RES 0 $\Omega$ ,J(5%),SMD,0201,(None JP)RoHS	0.0605	67	4.2102
263-180005-200C	RES 0 $\Omega$ ,J(5%),SMD,0402,(None JP)RoHS	0.0605	50	3.1606
263-180005-300C	RES 0 $\Omega$ ,J(5%),SMD,0603,(None JP)RoHS	0.0605	1	0.0805
263-180005-600C	RES 0 $\Omega$ ,J(5%),SMD,1206,(None JP)RoHS	0.0605	1	0.0805

File Name: M8M051-ECC-21DLI.rfp

Assembly: 774-M8M0511-300G

Ref Des:

Calculation Model: Telcordia Issue 4



MTBF (hrs): 1311832

Failure Rate: 762.2928

Temperature: 25

Environment: GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
263-180100-210C	RES 10Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	6	0.4110
263-180220-110C	RES 22Ω,F(1%),SMD,0201,(None JP)RoHS	0.0605	13	0.8560
263-180220-210C	RES 22Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	3	0.2157
263-180560-210C	RES 56Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	2	0.1490
263-181000-210C	RES 100Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	3	0.2157
263-181001-110C	RES 1KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0605	14	0.9191
263-181001-210C	RES 1KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	14	0.9191
263-181002-110C	RES 10KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0605	119	7.4075
263-181002-210C	RES 10KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	18	1.1707
263-181003-110C	RES 100KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0605	15	0.9821
263-181003-210C	RES 100KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	8	0.5386
263-181004-110C	RES 1MΩ,F(1%),SMD,0201,(None JP)RoHS	0.0605	6	0.4110
263-181004-210C	RES 1MΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	2	0.1490
263-181022-210C	RES 10.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	2	0.1490
263-181202-210C	RES 12KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	3	0.2157
263-181272-210C	RES 12.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-181500-210C	RES 150Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	11	0.7295
263-181501-210C	RES 1.5KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	10	0.6660
263-181502-210C	RES 15KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	5	0.3464
263-181503-210C	RES 150KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-181602-210C	RES 16KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-181623-210C	RES 162KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-181782-210C	RES 17.8KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-181802-210C	RES 18KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-181803-210C	RES 180KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	2	0.1490
263-181872-210C	RES 18.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-182000-110C	RES 200Ω,F(1%),SMD,0201,(None JP)RoHS	0.0605	3	0.2157
263-182001-210C	RES 2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-182002-110C	RES 20KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0605	5	0.3464
263-182002-210C	RES 20KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	2	0.1490
263-182003-110C	RES 200KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0605	3	0.2157
263-182202-110C	RES 22KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0605	3	0.2157
263-182371-210C	RES 2.37KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	2	0.1490
263-182400-110C	RES 240Ω,F(1%),SMD,0201,(None JP)RoHS	0.0605	3	0.2157
263-183013-210C	RES 301KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	2	0.1490
263-183300-210C	RES 330Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	2	0.1490
263-183301-110C	RES 3.3KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0605	2	0.1490
263-183302-110C	RES 33KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0605	1	0.0805
263-183303-210C	RES 330KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-183652-210C	RES 36.5KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-184022-210C	RES 40.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-184122-210C	RES 41.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-184532-210C	RES 45.3KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-184700-210C	RES 470Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	2	0.1490
263-184701-110C	RES 4.7KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0605	5	0.3464
263-184701-210C	RES 4.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	12	0.7928

**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 1311832  
**Failure Rate:** 762.2928  
**Temperature:** 25  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
263-184702-110C	RES 47KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0605	9	0.6024
263-184990-110C	RES 499Ω,F(1%),SMD,0201,(None JP)RoHS	0.0605	1	0.0805
263-184992-110C	RES 49.9KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0605	1	0.0805
263-184999-110C	RES 49.9Ω,F(1%),SMD,0201,(None JP)RoHS	0.0605	2	0.1490
263-185102-210C	RES 51KΩ,F(1%),SMD,0402(None JP)RoHS	0.0605	2	0.1490
263-186040-110C	RES 604Ω,F(1%),SMD,0201,(None JP)RoHS	0.0605	8	0.5386
263-187502-210C	RES 75KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-188062-210C	RES 80.6KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
314-M8M051-109G	PCB M8M051 R.A(12L 97x230x1.6mm, 2 panelization)OSP(CIRCUITECH)RoHS	2.4655	1	4.6984
342-101901-230G	HDMI CONN, 19P, F, G/F, BLACK, 90D, SMT, 369FA19-0N058T-R(ASTRON)RoHS	2.0862	1	3.6121
342-360020-100G	With flanges. Terminal Block,2Poles,M,90D,300V,16A,DIP,5.0mm,Green,ME 050-50002(DECA)RoHS	2.0862	1	3.6121
342-360020-110G	Screw CONN.Pluggable terminal block,With flanges,2Poles,R/A,Green,DIP 5.00mm,MC101-50002(DECA)RoHS	2.0862	1	3.6121
342-361021-100G	POWER CONN/2PORT/HEADER,M,90D,3.81mm,GREEN,BRAS S,NY66,12A300VAC,DIP,ME030-38102T(DECA)RoHS	2.0862	1	3.6121
343-500501-200G	USB CONN Micro 5P*1,3u",R/A,SMT,POSTx2,UN15111-N12A41-7H (FOXCONN)HF	2.0862	1	3.6121
343-501402-200G	Giga LAN CONN RJ45,SMT,GF,W/Transformer,W/LED,MRJG-11S88RS (MATRIX),RoHS	2.0862	1	3.6121
343-501821-130G	USB 3.0 CONN*2, 18P, A Type, BLUE, F, G/F, 90D, DIP, U2130D-UADH-0201R(HDSY)RoHS	2.0862	1	3.6121
344-002003-610G	Mini JUMPER RED 2.0mm,200-72-PBGR0B(PINREX) RoHS	2.0862	2	6.3217
346-120310-201G	PIN PLUG 2*3, 1.27mm, H=5mm, 180D, SMD, SHY-JCL180806P(V-STAR)RoHS	14.6036	2	44.2517
346-120320-800S	PIN PLUG 2*3,2.0mm,M,H=6.7mm,180D,SMT,W/CAP,222-97-03GBE1(R)(PINREX)	14.6036	3	62.1595
346-120511-201G	PIN PLUG 2*5, 1.27mm, H=5mm, 180D, SMD, SHY-JCL180810P(V-STAR)RoHS	14.6036	1	25.2847
346-120610-200G	PIN PLUG, 2*6P/1.27mm, M, 180D, BLACK, G/F, SMT, 232-97-06GBE1(PINREX)RoHS	14.6036	2	44.2517
346-510223-102G	WAFER 1*2,2.0mm,M,H=6.1mm,180D,DIP,WHITE,721-81-02TW00(PINREX)RoHS	14.6036	1	25.2847
346-510414-200G	BOX HEADER 1*4P,F,90D, 1.25mm,SMT,501MW1*04MTR-2R(YIMTEX)RoHS	14.6036	1	25.2847
346-510441-200G	BOX HEADER 1*4/1.0mm,R/A,SMD,1W1003WOR0-04(TOKUTSU)RoHS	14.6036	1	25.2847
346-510810-210G	BOX HEADER, 1*8P/1.25mm, F, 90D, NATURAL, SMT, A1250WR-S-08P(JOINT TECH)RoHS	14.6036	1	25.2847

**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 1311832  
**Failure Rate:** 762.2928  
**Temperature:** 25  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
346-522040-200G	BOX HEADER 2*20,1.00mm,V/T,SMD,W100V40TP2 (V-STAR)RoHS	14.6036	1	25.2847
348-370750-240G	NGFF CONN 67P/0.5mm,H=8.5mm,B key,90D,BLACK,SMD,APCI0161-P002H(LOTES)HF	2.0862	1	3.6121
348-370750-280G	NGFF CONN 67P/0.5mm,H=8.5mm,E key,90D,BLACK,SMT,2E0BC21-S85BE-7H(FOXCONN) HF	2.0862	1	3.6121
348-850062-210G	NANO SIM CARD CONN, 6P, F, G/F, BLACK, 90D, SMT, NNSV0614W01B-R1K5-H(AUK)RoHS	1.1379	1	1.8544
348-850081-200G	SD CARD CONN,8pin,1.1mm,30u",F,H=2.42mm,90D,SMT,BLACK,WQ21823-DES1-7F(FOXCONN)RoHS	2.0862	1	3.6121
622-010150-000G	BATTERY CR2032W(MURATA) 3V 210mAh,-40~125°C,W/CABLE(L=150mm&TAPE),BIN-CR2032W-J-CT-SL-PV-01(RE-ENERGY)RoHS Belong to UN3090	25.0000	1	34.9638
143-701301-400G	CPU i.MX 8M Dual 1.3GHz,C/1M,MIMX8MD6CVAHZAB/FBGA-621(NXP) RoHS	8.6680	1	16.8568
151-090441-200G	LOW POWER PCIE GEN 1-4 CLOCK GENERATOR,9FGV0441AKILFT/VFQFPN-32(IDT) RoHS	14.0000	1	14.0000

**File Name:** M8M051-ECC-21DLI.rfp

**System:** 770-M8M0511-300G

**Ref Des:**

**Calculation Model:** Telcordia Issue 4

**MTBF (hrs):** 637427

**Failure Rate:** 1,568.81

**Temperature:** 45

**Environment:** GB, GC - Ground Benign, Controlled



Assembly Name	Part Number	Quantity	Failure Rate (Fit)	MTBF (Hrs)
M8M051-ECC-21DLI	770-M8M0511-300G	1	1568.81	637,427
M8M051-ECC-21DLI	774-M8M0511-300G	1	1568.81	637,427

**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 637427  
**Failure Rate:** 1,568.8069  
**Temperature:** 45  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
113-500004-300G	IC TTL,Single Inverter Gate,SN74LVC1G04DCK/SC70-5(TI)RoHS	4.6582	1	7.0069
113-500007-210S	IC TTL,Single Buffer/Driver With Open-Drain Output,SN74LVC1G07DCKR/SC70-5(TI)	4.6582	7	38.6970
121-000075-230G	Digital Temperature Sensor,LM75BTP/HWSON-8(NXP)RoHS	4.6582	1	7.0069
121-000104-420G	IC 4-BIT BIDIRECTIONAL VOLTAGE-LEVEL TRANSLATOR,NTS0104GU12/XQFN12(NXP) RoHS	4.6582	2	12.6132
121-000213-210G	IC RS232 Transceivers AZRS213SS.RDG/SSOP-28 (AMAZING)RoHS	4.6582	1	7.0069
121-002069-200G	IC Power-Distribution Switches,1.5A,TPS2069DDBVT/SOT23-5(TI)RoHS	4.6582	4	23.2605
121-003078-201G	IC RS485 Transceiver,AZRS3078/SOP-8(AMAZING) RoHS	4.6582	1	7.0069
121-003552-200G	IC Power Distribution Switches,APL3552AQBI-TRG/TDFN-6(2x2)(ANPEC)RoHS	4.6582	6	33.5948
121-006561-400G	IC CAN Transceiver,ATA6561-GBQW-N/VDFN-8(3x3) (MICROCHIP)RoHS	4.6582	1	7.0069
121-022976-200G	IC Switch,5.7-V,6-A,14-mΩ On-Resistance Dual-Channel Load,TPS22976DPU/WSO-14(TI)RoHS	4.6582	2	12.6132
121-035390-200G	Real Time Clock,S-35390A-T8T1G/TSSOP8(SEIKO) RoHS	7.6721	1	14.9200
121-081439-401G	IC Single 3.3V or 5V RS232/RS422/RS485 Multiprotocol Transceiver,F81439AN/TQFN-40(5x5) (FINTEK)RoHS	4.6582	1	7.0069
121-380801-200G	IC Reset,TPS3808G01DBV/SOT23-6(TI)RoHS	4.6582	2	12.6132
122-105000-200G	AUDIO CODEC SGTL5000XNAA3/R2,QFN32 (FREESCALE)RoHS	4.6582	1	7.0069
131-56G016-400G	LPDDR4-3733 SDRAM 16Gb(512M*32),K4F6E3S4HM-MGCJ/FBGA-200(SAMSUNG)RoHS	10.4080	1	16.1558
141-025180-400G	External CAN FD CONTROLLER, MCP2518FDT-E/QBB /VDFN-14 (MICROCHIP)RoHS	4.6582	1	7.0069
141-042100-400G	IC Power Management Integrated Circuit (PMIC),MC34PF4210A1ES/QFN-56(8x8)(NXP)RoHS	4.6582	1	7.0069
141-058070-410G	IC USB 3.0 Hub CTRL 7 PORTS,USB5807CT-I/KD/VQFN-100(MICROCHIP)RoHS	4.6582	1	7.0069
141-562150-400G	IC Synchronous Step-down Converter,TPS56C215RNN/VQFN-18(TI)RoHS	4.6582	2	12.6132
141-620850-200G	IC Synchronous Buck Converter,2.5-6,3A,TLV62085RLT/VSON-7(TI)RoHS	4.6582	1	7.0069
141-620950-400G	IC Converter,4-A High Efficiency Step Down with DCS-Control,TLV62095RGT/QFN-16(TI)RoHS	4.6582	2	12.6132
147-065850-400G	Dual Channel DSI to Dual-Link LVDS Bridge,-40~85°C,SN65DSI85ZXHR/BGA-64(TI)RoHS	4.6582	1	7.0069
147-080350-200G	IC CHIP,Integrated 10/100/1000 Mbps Ethernet Transceiver,-40~85°C,AR8035-AL1B-R/QFN-40(5x5) (QUALCOMM)RoHS	4.6582	1	7.0069
148-100416-400G	eMMC 5.1,16G,-25°C~+85°C,SMD,FBGA-153,SDINBDG4-16G-I1(SANDISK)RoHS	10.4080	1	16.1558



**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 637427  
**Failure Rate:** 1,568.8069  
**Temperature:** 45  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
171-204005-230G	DIODE SCHOTTKY,40V,200mA,BAS40-05TH/SOT523-3(SMARTENGRAND)RoHS	0.3751	1	0.7247
171-205200-220G	DIODE SCHOTTKY,30V,200mA,RB520S-30H/SOD-523(SMARTENGRAND)RoHS	0.3751	16	7.3755
171-360120-500G	DIODE TVS,12V,600W,Bidirectional,SMBJ12CA/DO-214AA(LITTELFUSE)RoHS	0.3751	1	0.7247
171-361045-200G	DIODE TVS Array,5V,30W,AZ1045-04F.R7G/DFN2510P10E(AMAZING)RoHS	0.3751	14	6.5382
171-361624-200G	DIODE TVS 24V,L16ESD24VA2/SOD523(LITEON)RoHS	0.3751	2	1.2458
171-365125-200G	DIODE TVS,5V,AZ5125-01H.R7G/SOD-523(AMAZING)RoHS	0.3751	8	3.9793
171-451715-200G	DIODE Zener,15V,Vz=14.34V~14.98V,UDZVTE-1715B/SOD-323FL(ROHM)RoHS	0.3751	1	0.7247
171-451756-200G	DIODE Zener,5.6V,Vz=5.49V~5.73V,UDZVTE-175.6B/SOD-323F(ROHM)RoHS	0.3751	1	0.7247
172-223904-206S	TRANSISTOR NPN,MMBT3904LT1G/SOT23(ON)	2.0121	1	3.5668
172-223906-207S	TRANSISTOR PNP,PMBS3906/SOT23(NXP)	2.0121	1	3.5668
172-301380-220G	MOSFET Dual N-Ch,VDS:50V,ID:350mA,VGS:±20V,@10V,RDS:1.6Ω,BSS138KDTH/SOT563-6(SMARTENGRAND)RoHS	12.5047	28	380.1959
172-305050-200G	MOSFET P-Ch,VDS:-20V,ID:-4A,VGS:±8V,@-4.5V,RDS:40mΩ,PM505BA/SOT23-3(NIKO-SEM)RoHS	12.5047	1	18.4158
172-321200-200G	MOSFET Dual N&P-Ch,VDS:20V/-20V,ID:800mA/-400mA,VGS:±12V,@±4.5V,RDS:300mΩ/600mΩ,PDE V2120AY/SOT563-6(POTENS)RoHS	12.5047	1	18.4158
172-331030-200G	MOSFET P-Ch,VDS:-30V,ID:-7.7A,VGS:±25V,@-10V,RDS:20mΩ,FKBB3103/PRPAK-8(3x3)(FETEK)RoHS	12.5047	3	47.6300
174-210012-900G	LED,WHITE+RED,SMD(1.6x1.5mm)(4PAD),LTW-C195DCKR-5A(LITEON)RoHS	0.3759	2	1.2650
174-210030-201G	LED,BLUE,SMD(0402)(1*0.6mm),SMLP13BC8TT86(ROHM)RoHS	0.3759	1	0.7374
174-310042-900G	LED,RED/GREEN,SMD1.6*1.5mm,19-223/R6G6C-A11/2T(EVERLIGHT)RoHS	0.3759	1	0.7374
213-150101-200C	MLCC 1pF/50V,NPO,B(0.1pF),SMD,0402,(None JP)RoHS	0.1030	1	0.1162
213-150470-200C	MLCC 4.7pF/50V,NPO,C(0.25pF),SMD,0402,(None JP)RoHS	0.1030	2	0.2246
213-150605-200C	MLCC 6pF/50V,NPO,C(0.25pF),SMD,0402,(None JP)RoHS	0.1030	1	0.1162
213-151805-200C	MLCC 18pF/50V,NPO,J(5%),SMD,0402,(None JP)RoHS	0.1030	6	0.6501
213-152005-200C	MLCC 20pF/50V,NPO,J(5%),SMD,0402,(None JP)RoHS	0.1030	2	0.2246
213-152205-110C	MLCC 22pF/25V,NPO,J(5%),SMD 0201(None JP)RoHS	0.1030	3	0.3317

File Name: M8M051-ECC-21DLI.rfp

Assembly: 774-M8M0511-300G

Ref Des:

Calculation Model: Telcordia Issue 4



MTBF (hrs): 637427

Failure Rate: 1,568.8069

Temperature: 45

Environment: GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
213-152205-200C	MLCC 22pF/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1030	4	0.4382
213-152215-200C	MLCC 221P/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1030	2	0.2246
213-251038-250C	MLCC 103P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1030	6	0.6501
213-251039-130C	MLCC 103P/10V,X7R,K(10%),SMD,0201,(None JP) RoHS	0.1030	14	1.4908
213-251049-130C	MLCC 104P/10V,X5R,K(10%),SMD,0201,(None JP) RoHS	0.1030	173	17.9851
213-251049-200J	MLCC 104P/16V,X7R,K(10%),SMD,0402,(JP)RoHS	0.1030	24	2.5356
213-251049-270J	MLCC 104P/25V,X5R,K(10%),SMD,0402,(JP)RoHS	0.1030	3	0.3317
213-251059-109G	MLCC 105P/6.3V,X5R,K(10%),SMD,0201,CC0201KRX5R5BB105(YAGEO) RoHS	0.1030	92	9.5986
213-251059-230J	MLCC 105P/16V,X5R,K(10%),SMD,0402,(JP)RoHS	0.1030	6	0.6501
213-251068-200J	MLCC 106P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.1030	39	4.0977
213-251068-300J	MLCC 106P/6.3V,X5R,M(20%),SMD,0603,(JP)RoHS	0.1030	3	0.3317
213-251069-540J	MLCC 106P/16V,X5R,K(10%),SMD,0805,(JP)RoHS	0.1030	8	0.8610
213-252229-200C	MLCC 222P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1030	2	0.2246
213-252249-140C	MLCC 224P/6.3V,X5R,K(10%),SMD,0201,(None JP) RoHS	0.1030	15	1.5955
213-252259-200J	MLCC 225P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.1030	10	1.0713
213-252268-310J	MLCC 226P/6.3V,X5R,M(20%),SMD,0603,(JP)RoHS	0.1030	43	4.5137
213-253319-100C	MLCC 331P/50V,X7R,K(10%),SMD,0201,(None JP) RoHS	0.1030	20	2.1181
213-254715-200C	MLCC 471P/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1030	7	0.7556
213-254729-120J	MLCC 472P/16V,X7R,K(10%),SMD,0201,(JP)RoHS	0.1030	12	1.2812
213-254739-210C	MLCC 473P/16V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1030	4	0.4382
213-254758-210J	MLCC 475P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.1030	22	2.3269
217-301078-325G	POLYMER(TAN) CAP 100uF/6.3V,40mΩ,1.8A,SMD,B3528,105°C/2000H,M(20%),T520B107M006ATE040(KEMET)RoHS	1.0368	2	2.5395
217-302278-326G	POLYMER(TAN)CAP 220uF/6.3V,45mΩ,1700mA,105°C/2000H,M(20%),B3528(1.9),T520B227M006ATE045(KEMET) RoHS	1.0368	6	7.0086
223-010220-830G	CHOKE 1uH,M(20%),DCR:41mΩ (Typ.),Irms:3.4A,Isat:4.4A,SMD (2.5*2*1mm),MCS25GC-1R0MHC(PDC)RoHS	0.1200	5	0.6628
223-015222-610G	CHOKE 1.5uH,M(20%),RDC≤15mΩ,Irms=9A,Isat=16A,SMD, (7.3*6.6*3.0),MCS0630-1R5MN2(PDC)RoHS	0.1200	1	0.1487
223-047120-830G	CHOKE 0.47uH,M(20%),DCR:23mΩ (Typ.),Irms:5.2A,Isat:6.6A,SMD (2.5*2.0*1.0mm),MCS25GC-R47MHC(PDC)RoHS	0.1200	1	0.1487



**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 637427  
**Failure Rate:** 1,568.8069  
**Temperature:** 45  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
223-047121-700G	CHOKE 0.47uH,M (20%),RDC $\leq$ 14m $\Omega$ ,Irms=7A,Isat=9.5A,SMT (4.7*4.3),MCS0420-R47MN2(PDC)RoHS	0.1200	2	0.2804
223-047122-610G	CHOKE 0.47uH,M(20%),RDC $\leq$ 4.2m $\Omega$ (max),Irms:17.5A(typ),Isat:26A(typ),SMD (7.3*6.6*3mm),MCS0630-R47MN2(PDC)RoHS	0.1200	1	0.1487
223-047220-800G	CHOKE 4.7uH,M (20%),Irms:1.6A,Isat:2.2A,RDC:200m $\Omega$ ,SMD (2.5*2*1mm),MCS25GC-4R7MHC(PDC)RoHS	0.1200	1	0.1487
223-410040-501S	COMMON CHOKE 90 $\Omega$ ,M (20%),Idc $\leq$ 330mA,RDC $\leq$ 350m $\Omega$ ,SMD (2.05*1.25*1.4mm),After D/C 1936 is the bottom convex,CMM21T-900M-N(CHILISIN)	0.1200	5	0.6628
223-523000-410G	CM FILTER Cd=0.25pF,Rs=3 $\Omega$ ,SMD (1.57*1.17*0.57),PCMF2USB3S/WLCSP10(NXP) RoHS	0.1200	10	1.2889
231-107168-200G	REGULATOR 0.8A,GS7168TD-R/TDFN8(GSTEK)HF	7.6721	2	25.6262
241-220006-302G	X'TAL 20MHz,12pf, $\pm$ 30ppm,ESR:60 $\Omega$ (Max),TOPR=- 20°C~+105°C,SMD3225(4PAD),7V20080002(TXC) RoHS	3.9138	1	6.4515
241-225006-3B0G	X'TAL 25MHz,12pf, $\pm$ 10ppm,ESR:30 $\Omega$ (Max),TOPR=- 40°C~+100°C,SMD3225(4PAD),TSX- 3225,X1E000021099000(EPSON)RoHS	3.9138	4	20.6628
241-227006-360G	X'TAL 27MHz,18pF, $\pm$ 30ppm,ESR:50 $\Omega$ (Max),TOPR=- 40°C~+105°C,SMD3225(4PAD),7M27000056(TXC) RoHS	3.9138	1	6.4515
241-432773-390G	X'TAL 32.768KHz,7pf, $\pm$ 20ppm,ESR:70K $\Omega$ (Max),TOPR=-40°C~+125°C,SMD3215(2PAD),FC- 13A(EPSON)RoHS	3.9138	1	6.4515
242-232773-250G	OSC 32.768KHz,15pF,50ppm,3.3V,TOPR=-40°C ~+125°C,SMD2520(4PAD),SO25-000032-FXA-BAP- DIA(YOKE)RoHS	4.4349	1	7.2196
242-527006-200G	OSC(HCSL) 27MHz,50ppm,2.5~3.3V,TOPR=-40°C ~+105°C,SMD2520(6PAD),SO25CH-027000-F1X- 3EAN-DIA(YOKE)RoHS	4.4349	1	7.2196
251-160808-124S	BEAD CORE 160808 120 $\Omega$ ,2.5A,25%,SMT0603,PBY160808T-121Y-N (CHILISIN)	0.6548	2	2.1784
251-915221-210G	FERRITE BEAD 220 $\Omega$ ,700mA,BLM15EG221SN1D/0402(MURATA) RoHS	0.6548	15	12.1548
253-100110-500G	POLYSWITCH,PTC,1.1A/6V,SMD0805,0805L110ULY R(LITTELFUSE)RoHS	0.4000	2	1.1579
253-100266-403S	POLYSWITCH 2.6A/13.2V,SMD1812,miniSMDC260F/13.2 (LITTELFUSE)RoHS	0.4000	1	0.6546
263-180005-100C	RES 0 $\Omega$ ,J(5%),SMD,0201,(None JP)RoHS	0.0873	67	6.0786
263-180005-200C	RES 0 $\Omega$ ,J(5%),SMD,0402,(None JP)RoHS	0.0873	50	4.5632
263-180005-300C	RES 0 $\Omega$ ,J(5%),SMD,0603,(None JP)RoHS	0.0873	1	0.1162
263-180005-600C	RES 0 $\Omega$ ,J(5%),SMD,1206,(None JP)RoHS	0.0873	1	0.1162

File Name: M8M051-ECC-21DLI.rfp

Assembly: 774-M8M0511-300G

Ref Des:

Calculation Model: Telcordia Issue 4



MTBF (hrs): 637427

Failure Rate: 1,568.8069

Temperature: 45

Environment: GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
263-180100-210C	RES 10Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	6	0.5934
263-180220-110C	RES 22Ω,F(1%),SMD,0201,(None JP)RoHS	0.0873	13	1.2359
263-180220-210C	RES 22Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	3	0.3114
263-180560-210C	RES 56Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	2	0.2152
263-181000-210C	RES 100Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	3	0.3114
263-181001-110C	RES 1KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0873	14	1.3270
263-181001-210C	RES 1KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	14	1.3270
263-181002-110C	RES 10KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0873	119	10.6948
263-181002-210C	RES 10KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	18	1.6902
263-181003-110C	RES 100KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0873	15	1.4180
263-181003-210C	RES 100KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	8	0.7776
263-181004-110C	RES 1MΩ,F(1%),SMD,0201,(None JP)RoHS	0.0873	6	0.5934
263-181004-210C	RES 1MΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	2	0.2152
263-181022-210C	RES 10.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	2	0.2152
263-181202-210C	RES 12KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	3	0.3114
263-181272-210C	RES 12.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-181500-210C	RES 150Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	11	1.0532
263-181501-210C	RES 1.5KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	10	0.9615
263-181502-210C	RES 15KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	5	0.5001
263-181503-210C	RES 150KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-181602-210C	RES 16KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-181623-210C	RES 162KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-181782-210C	RES 17.8KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-181802-210C	RES 18KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-181803-210C	RES 180KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	2	0.2152
263-181872-210C	RES 18.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-182000-110C	RES 200Ω,F(1%),SMD,0201,(None JP)RoHS	0.0873	3	0.3114
263-182001-210C	RES 2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-182002-110C	RES 20KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0873	5	0.5001
263-182002-210C	RES 20KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	2	0.2152
263-182003-110C	RES 200KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0873	3	0.3114
263-182202-110C	RES 22KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0873	3	0.3114
263-182371-210C	RES 2.37KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	2	0.2152
263-182400-110C	RES 240Ω,F(1%),SMD,0201,(None JP)RoHS	0.0873	3	0.3114
263-183013-210C	RES 301KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	2	0.2152
263-183300-210C	RES 330Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	2	0.2152
263-183301-110C	RES 3.3KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0873	2	0.2152
263-183302-110C	RES 33KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0873	1	0.1162
263-183303-210C	RES 330KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-183652-210C	RES 36.5KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-184022-210C	RES 40.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-184122-210C	RES 41.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-184532-210C	RES 45.3KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-184700-210C	RES 470Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	2	0.2152
263-184701-110C	RES 4.7KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0873	5	0.5001
263-184701-210C	RES 4.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	12	1.1446

**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 637427  
**Failure Rate:** 1,568.8069  
**Temperature:** 45  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
263-184702-110C	RES 47KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0873	9	0.8697
263-184990-110C	RES 499Ω,F(1%),SMD,0201,(None JP)RoHS	0.0873	1	0.1162
263-184992-110C	RES 49.9KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0873	1	0.1162
263-184999-110C	RES 49.9Ω,F(1%),SMD,0201,(None JP)RoHS	0.0873	2	0.2152
263-185102-210C	RES 51KΩ,F(1%),SMD,0402(None JP)RoHS	0.0873	2	0.2152
263-186040-110C	RES 604Ω,F(1%),SMD,0201,(None JP)RoHS	0.0873	8	0.7776
263-187502-210C	RES 75KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-188062-210C	RES 80.6KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
314-M8M051-109G	PCB M8M051 R.A(12L 97x230x1.6mm, 2 panelization)OSP(CIRCUITECH)RoHS	6.5651	1	12.5107
342-101901-230G	HDMI CONN, 19P, F, G/F, BLACK, 90D, SMT, 369FA19-0N058T-R(ASTRON)RoHS	5.5551	1	9.6181
342-360020-100G	With flanges. Terminal Block,2Poles,M,90D,300V,16A,DIP,5.0mm,Green,ME 050-50002(DECA)RoHS	5.5551	1	9.6181
342-360020-110G	Screw CONN.Pluggable terminal block,With flanges,2Poles,R/A,Green,DIP 5.00mm,MC101-50002(DECA)RoHS	5.5551	1	9.6181
342-361021-100G	POWER CONN/2PORT/HEADER,M,90D,3.81mm,GREEN,BRAS S,NY66,12A300VAC,DIP,ME030-38102T(DECA)RoHS	5.5551	1	9.6181
343-500501-200G	USB CONN Micro 5P*1,3u",R/A,SMT,POSTx2,UN15111-N12A41-7H (FOXCONN)HF	5.5551	1	9.6181
343-501402-200G	Giga LAN CONN RJ45,SMT,GF,W/Transformer,W/LED,MRJG-11S88RS (MATRIX),RoHS	5.5551	1	9.6181
343-501821-130G	USB 3.0 CONN*2, 18P, A Type, BLUE, F, G/F, 90D, DIP, U2130D-UADH-0201R(HDSY)RoHS	5.5551	1	9.6181
344-002003-610G	Mini JUMPER RED 2.0mm,200-72-PBGR0B(PINREX) RoHS	5.5551	2	16.8329
346-120310-201G	PIN PLUG 2*3, 1.27mm, H=5mm, 180D, SMD, SHY-JCL180806P(V-STAR)RoHS	38.8854	2	117.8306
346-120320-800S	PIN PLUG 2*3,2.0mm,M,H=6.7mm,180D,SMT,W/CAP,222-97-03GBE1(R)(PINREX)	38.8854	3	165.5142
346-120511-201G	PIN PLUG 2*5, 1.27mm, H=5mm, 180D, SMD, SHY-JCL180810P(V-STAR)RoHS	38.8854	1	67.3264
346-120610-200G	PIN PLUG, 2*6P/1.27mm, M, 180D, BLACK, G/F, SMT, 232-97-06GBE1(PINREX)RoHS	38.8854	2	117.8306
346-510223-102G	WAFER 1*2,2.0mm,M,H=6.1mm,180D,DIP,WHITE,721-81-02TW00(PINREX)RoHS	38.8854	1	67.3264
346-510414-200G	BOX HEADER 1*4P,F,90D, 1.25mm,SMT,501MW1*04MTR-2R(YIMTEX)RoHS	38.8854	1	67.3264
346-510441-200G	BOX HEADER 1*4/1.0mm,R/A,SMD,1W1003WOR0-04(TOKUTSU)RoHS	38.8854	1	67.3264
346-510810-210G	BOX HEADER, 1*8P/1.25mm, F, 90D, NATURAL, SMT, A1250WR-S-08P(JOINT TECH)RoHS	38.8854	1	67.3264

**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 637427  
**Failure Rate:** 1,568.8069  
**Temperature:** 45  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
346-522040-200G	BOX HEADER 2*20,1.00mm,V/T,SMD,W100V40TP2 (V-STAR)RoHS	38.8854	1	67.3264
348-370750-240G	NGFF CONN 67P/0.5mm,H=8.5mm,B key,90D,BLACK,SMD,APCI0161-P002H(LOTES)HF	5.5551	1	9.6181
348-370750-280G	NGFF CONN 67P/0.5mm,H=8.5mm,E key,90D,BLACK,SMT,2E0BC21-S85BE-7H(FOXCONN) HF	5.5551	1	9.6181
348-850062-210G	NANO SIM CARD CONN, 6P, F, G/F, BLACK, 90D, SMT, NNSV0614W01B-R1K5-H(AUK)RoHS	3.0300	1	4.9378
348-850081-200G	SD CARD CONN,8pin,1.1mm,30u",F,H=2.42mm,90D,SMT,BLACK,WQ21823-DES1-7F(FOXCONN)RoHS	5.5551	1	9.6181
622-010150-000G	BATTERY CR2032W(MURATA) 3V 210mAh,-40~125°C,W/CABLE(L=150mm&TAPE),BIN-CR2032W-J-CT-SL-PV-01(RE-ENERGY)RoHS Belong to UN3090	25.0000	1	34.9638
143-701301-400G	CPU i.MX 8M Dual 1.3GHz,C/1M,MIMX8MD6CVAHZAB/FBGA-621(NXP) RoHS	20.4212	1	39.7135
151-090441-200G	LOW POWER PCIE GEN 1-4 CLOCK GENERATOR,9FGV0441AKILFT/VFQFPN-32(IDT) RoHS	14.0000	1	14.0000

**File Name:** M8M051-ECC-21DLI.rfp

**System:** 770-M8M0511-300G

**Ref Des:**

**Calculation Model:** Telcordia Issue 4

**MTBF (hrs):** 374475

**Failure Rate:** 2,670.40

**Temperature:** 60

**Environment:** GB, GC - Ground Benign, Controlled



Assembly Name	Part Number	Quantity	Failure Rate (Fit)	MTBF (Hrs)
M8M051-ECC-21DLI	770-M8M0511-300G	1	2670.40	374,475
M8M051-ECC-21DLI	774-M8M0511-300G	1	2670.40	374,475

**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 374475  
**Failure Rate:** 2,670.4049  
**Temperature:** 60  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
113-500004-300G	IC TTL,Single Inverter Gate,SN74LVC1G04DCK/SC70-5(TI)RoHS	8.2795	1	12.4540
113-500007-210S	IC TTL,Single Buffer/Driver With Open-Drain Output,SN74LVC1G07DCKR/SC70-5(TI)	8.2795	7	68.7799
121-000075-230G	Digital Temperature Sensor,LM75BTP/HWSON-8(NXP)RoHS	8.2795	1	12.4540
121-000104-420G	IC 4-BIT BIDIRECTIONAL VOLTAGE-LEVEL TRANSLATOR,NTS0104GU12/XQFN12(NXP) RoHS	8.2795	2	22.4187
121-000213-210G	IC RS232 Transceivers AZRS213SS.RDG/SSOP-28 (AMAZING)RoHS	8.2795	1	12.4540
121-002069-200G	IC Power-Distribution Switches,1.5A,TPS2069DDBVT/SOT23-5(TI)RoHS	8.2795	4	41.3430
121-003078-201G	IC RS485 Transceiver,AZRS3078/SOP-8(AMAZING) RoHS	8.2795	1	12.4540
121-003552-200G	IC Power Distribution Switches,APL3552AQBI-TRG/TDFN-6(2x2)(ANPEC)RoHS	8.2795	6	59.7113
121-006561-400G	IC CAN Transceiver,ATA6561-GBQW-N/VDFN-8(3x3) (MICROCHIP)RoHS	8.2795	1	12.4540
121-022976-200G	IC Switch,5.7-V,6-A,14-mΩ On-Resistance Dual-Channel Load,TPS22976DPU/WSO-14(TI)RoHS	8.2795	2	22.4187
121-035390-200G	Real Time Clock,S-35390A-T8T1G/TSSOP8(SEIKO) RoHS	19.2561	1	37.4477
121-081439-401G	IC Single 3.3V or 5V RS232/RS422/RS485 Multiprotocol Transceiver,F81439AN/TQFN-40(5x5) (FINTEK)RoHS	8.2795	1	12.4540
121-380801-200G	IC Reset,TPS3808G01DBV/SOT23-6(TI)RoHS	8.2795	2	22.4187
122-105000-200G	AUDIO CODEC SGT5000XNAA3/R2,QFN32 (FREESCALE)RoHS	8.2795	1	12.4540
131-56G016-400G	LPDDR4-3733 SDRAM 16Gb(512M*32),K4F6E3S4HM-MGCJ/FBGA-200(SAMSUNG)RoHS	18.4992	1	28.7152
141-025180-400G	External CAN FD CONTROLLER, MCP2518FDT-E/QBB /VDFN-14 (MICROCHIP)RoHS	8.2795	1	12.4540
141-042100-400G	IC Power Management Integrated Circuit (PMIC),MC34PF4210A1ES/QFN-56(8x8)(NXP)RoHS	8.2795	1	12.4540
141-058070-410G	IC USB 3.0 Hub CTRL 7 PORTS,USB5807CT-I/KD/VQFN-100(MICROCHIP)RoHS	8.2795	1	12.4540
141-562150-400G	IC Synchronous Step-down Converter,TPS56C215RNN/VQFN-18(TI)RoHS	8.2795	2	22.4187
141-620850-200G	IC Synchronous Buck Converter,2.5-6,3A,TLV62085RLT/VSON-7(TI)RoHS	8.2795	1	12.4540
141-620950-400G	IC Converter,4-A High Efficiency Step Down with DCS-Control,TLV62095RGT/QFN-16(TI)RoHS	8.2795	2	22.4187
147-065850-400G	Dual Channel DSI to Dual-Link LVDS Bridge,-40~85°C,SN65DSI85ZXHR/BGA-64(TI)RoHS	8.2795	1	12.4540
147-080350-200G	IC CHIP,Integrated 10/100/1000 Mbps Ethernet Transceiver,-40~85°C,AR8035-AL1B-R/QFN-40(5x5) (QUALCOMM)RoHS	8.2795	1	12.4540
148-100416-400G	eMMC 5.1,16G,-25°C~+85°C,SMD,FBGA-153,SDINBDG4-16G-I1(SANDISK)RoHS	18.4992	1	28.7152



File Name: M8M051-ECC-21DLI.rfp

Assembly: 774-M8M0511-300G

Ref Des:

Calculation Model: Telcordia Issue 4



MTBF (hrs): 374475

Failure Rate: 2,670.4049

Temperature: 60

Environment: GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
171-204005-230G	DIODE SCHOTTKY,40V,200mA,BAS40-05TH/SOT523-3(SMARTENGRAND)RoHS	0.5385	1	1.0403
171-205200-220G	DIODE SCHOTTKY,30V,200mA,RB520S-30H/SOD-523(SMARTENGRAND)RoHS	0.5385	16	10.5876
171-360120-500G	DIODE TVS,12V,600W,Bidirectional,SMBJ12CA/DO-214AA(LITTELFUSE)RoHS	0.5385	1	1.0403
171-361045-200G	DIODE TVS Array,5V,30W,AZ1045-04F.R7G/DFN2510P10E(AMAZING)RoHS	0.5385	14	9.3857
171-361624-200G	DIODE TVS 24V,L16ESD24VA2/SOD523(LITEON)RoHS	0.5385	2	1.7884
171-365125-200G	DIODE TVS,5V,AZ5125-01H.R7G/SOD-523(AMAZING)RoHS	0.5385	8	5.7123
171-451715-200G	DIODE Zener,15V,Vz=14.34V~14.98V,UDZVTE-1715B/SOD-323FL(ROHM)RoHS	0.5385	1	1.0403
171-451756-200G	DIODE Zener,5.6V,Vz=5.49V~5.73V,UDZVTE-175.6B/SOD-323F(ROHM)RoHS	0.5385	1	1.0403
172-223904-206S	TRANSISTOR NPN,MMBT3904LT1G/SOT23(ON)	2.8884	1	5.1202
172-223906-207S	TRANSISTOR PNP,PMBS3906/SOT23(NXP)	2.8884	1	5.1202
172-301380-220G	MOSFET Dual N-Ch,VDS:50V,ID:350mA,VGS:±20V,@10V,RDS:1.6Ω,BSS138KDT/SOT563-6(SMARTENGRAND)RoHS	17.9506	28	545.7763
172-305050-200G	MOSFET P-Ch,VDS:-20V,ID:-4A,VGS:±8V,@-4.5V,RDS:40mΩ,PM505BA/SOT23-3(NIKO-SEM)RoHS	17.9506	1	26.4362
172-321200-200G	MOSFET Dual N&P-Ch,VDS:20V/-20V,ID:800mA/-400mA,VGS:±12V,@±4.5V,RDS:300mΩ/600mΩ,PDE V2120AY/SOT563-6(POTENS)RoHS	17.9506	1	26.4362
172-331030-200G	MOSFET P-Ch,VDS:-30V,ID:-7.7A,VGS:±25V,@-10V,RDS:20mΩ,FKBB3103/PRPAK-8(3x3)(FETEK)RoHS	17.9506	3	68.3735
174-210012-900G	LED,WHITE+RED,SMD(1.6x1.5mm)(4PAD),LTW-C195DCKR-5A(LITEON)RoHS	1.1876	2	3.9963
174-210030-201G	LED,BLUE,SMD(0402)(1*0.6mm),SMLP13BC8TT86(ROHM)RoHS	1.1876	1	2.3295
174-310042-900G	LED,RED/GREEN,SMD1.6*1.5mm,19-223/R6G6C-A11/2T(EVERLIGHT)RoHS	1.1876	1	2.3295
213-150101-200C	MLCC 1pF/50V,NPO,B(0.1pF),SMD,0402,(None JP)RoHS	0.1118	1	0.1261
213-150470-200C	MLCC 4.7pF/50V,NPO,C(0.25pF),SMD,0402,(None JP)RoHS	0.1118	2	0.2438
213-150605-200C	MLCC 6pF/50V,NPO,C(0.25pF),SMD,0402,(None JP)RoHS	0.1118	1	0.1261
213-151805-200C	MLCC 18pF/50V,NPO,J(5%),SMD,0402,(None JP)RoHS	0.1118	6	0.7057
213-152005-200C	MLCC 20pF/50V,NPO,J(5%),SMD,0402,(None JP)RoHS	0.1118	2	0.2438
213-152205-110C	MLCC 22pF/25V,NPO,J(5%),SMD 0201(None JP)RoHS	0.1118	3	0.3601

File Name: M8M051-ECC-21DLI.rfp

Assembly: 774-M8M0511-300G

Ref Des:

Calculation Model: Telcordia Issue 4



MTBF (hrs): 374475

Failure Rate: 2,670.4049

Temperature: 60

Environment: GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
213-152205-200C	MLCC 22pF/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1118	4	0.4757
213-152215-200C	MLCC 221P/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1118	2	0.2438
213-251038-250C	MLCC 103P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1118	6	0.7057
213-251039-130C	MLCC 103P/10V,X7R,K(10%),SMD,0201,(None JP) RoHS	0.1118	14	1.6184
213-251049-130C	MLCC 104P/10V,X5R,K(10%),SMD,0201,(None JP) RoHS	0.1118	173	19.5252
213-251049-200J	MLCC 104P/16V,X7R,K(10%),SMD,0402,(JP)RoHS	0.1118	24	2.7527
213-251049-270J	MLCC 104P/25V,X5R,K(10%),SMD,0402,(JP)RoHS	0.1118	3	0.3601
213-251059-109G	MLCC 105P/6.3V,X5R,K(10%),SMD,0201,CC0201KRX5R5BB105(YAGEO) RoHS	0.1118	92	10.4205
213-251059-230J	MLCC 105P/16V,X5R,K(10%),SMD,0402,(JP)RoHS	0.1118	6	0.7057
213-251068-200J	MLCC 106P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.1118	39	4.4486
213-251068-300J	MLCC 106P/6.3V,X5R,M(20%),SMD,0603,(JP)RoHS	0.1118	3	0.3601
213-251069-540J	MLCC 106P/16V,X5R,K(10%),SMD,0805,(JP)RoHS	0.1118	8	0.9347
213-252229-200C	MLCC 222P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1118	2	0.2438
213-252249-140C	MLCC 224P/6.3V,X5R,K(10%),SMD,0201,(None JP) RoHS	0.1118	15	1.7321
213-252259-200J	MLCC 225P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.1118	10	1.1630
213-252268-310J	MLCC 226P/6.3V,X5R,M(20%),SMD,0603,(JP)RoHS	0.1118	43	4.9002
213-253319-100C	MLCC 331P/50V,X7R,K(10%),SMD,0201,(None JP) RoHS	0.1118	20	2.2995
213-254715-200C	MLCC 471P/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1118	7	0.8203
213-254729-120J	MLCC 472P/16V,X7R,K(10%),SMD,0201,(JP)RoHS	0.1118	12	1.3909
213-254739-210C	MLCC 473P/16V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1118	4	0.4757
213-254758-210J	MLCC 475P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.1118	22	2.5262
217-301078-325G	POLYMER(TAN) CAP 100uF/6.3V,40mΩ,1.8A,SMD,B3528,105°C/2000H,M(20%),T520B107M006ATE040(KEMET)RoHS	1.3266	2	3.2494
217-302278-326G	POLYMER(TAN)CAP 220uF/6.3V,45mΩ,1700mA,105°C/2000H,M(20%),B3528(1.9),T520B227M006ATE045(KEMET) RoHS	1.3266	6	8.9678
223-010220-830G	CHOKE 1uH,M(20%),DCR:41mΩ (Typ.),Irms:3.4A,Isat:4.4A,SMD (2.5*2*1mm),MCS25GC-1R0MHC(PDC)RoHS	0.1536	5	0.8481
223-015222-610G	CHOKE 1.5uH,M(20%),RDC≤15mΩ,Irms=9A,Isat=16A,SMD, (7.3*6.6*3.0),MCS0630-1R5MN2(PDC)RoHS	0.1536	1	0.1903
223-047120-830G	CHOKE 0.47uH,M(20%),DCR:23mΩ (Typ.),Irms:5.2A,Isat:6.6A,SMD (2.5*2.0*1.0mm),MCS25GC-R47MHC(PDC)RoHS	0.1536	1	0.1903



**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 374475  
**Failure Rate:** 2,670.4049  
**Temperature:** 60  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
223-047121-700G	CHOKE 0.47uH,M (20%),RDC≤14mΩ,Irms=7A,Isat=9.5A,SMT (4.7*4.3),MCS0420-R47MN2(PDC)RoHS	0.1536	2	0.3588
223-047122-610G	CHOKE 0.47uH,M(20%),RDC≤4.2mΩ (max),Irms:17.5A(typ),Isat:26A(typ),SMD (7.3*6.6*3mm),MCS0630-R47MN2(PDC)RoHS	0.1536	1	0.1903
223-047220-800G	CHOKE 4.7uH,M (20%),Irms:1.6A,Isat:2.2A,RDC:200mΩ,SMD (2.5*2*1mm),MCS25GC-4R7MHC(PDC)RoHS	0.1536	1	0.1903
223-410040-501S	COMMON CHOKE 90Ω,M (20%),Idc≤330mA,RDC≤350mΩ,SMD (2.05*1.25*1.4mm),After D/C 1936 is the bottom convex,CMM21T-900M-N(CHILISIN)	0.1536	5	0.8481
223-523000-410G	CM FILTER Cd=0.25pF,Rs=3Ω,SMD (1.57*1.17*0.57),PCMF2USB3S/WLCSP10(NXP) RoHS	0.1536	10	1.6492
231-107168-200G	REGULATOR 0.8A,GS7168TD-R/TDFN8(GSTEK)HF	19.2561	2	64.3188
241-220006-302G	X'TAL 20MHz,12pf,±30ppm,ESR:60Ω(Max),TOPR=- 20°C~+105°C,SMD3225(4PAD),7V20080002(TXC) RoHS	7.5521	1	12.4488
241-225006-3B0G	X'TAL 25MHz,12pf,±10ppm,ESR:30Ω(Max),TOPR=- 40°C~+100°C,SMD3225(4PAD),TSX- 3225,X1E000021099000(EPSON)RoHS	7.5521	4	39.8710
241-227006-360G	X'TAL 27MHz,18pF,±30ppm,ESR:50Ω(Max),TOPR=- 40°C~+105°C,SMD3225(4PAD),7M27000056(TXC) RoHS	7.5521	1	12.4488
241-432773-390G	X'TAL 32.768KHz,7pf,±20ppm,ESR:70KΩ (Max),TOPR=-40°C~+125°C,SMD3215(2PAD),FC- 13A(EPSON)RoHS	7.5521	1	12.4488
242-232773-250G	OSC 32.768KHz,15pF,50ppm,3.3V,TOPR=-40°C ~+125°C,SMD2520(4PAD),SO25-000032-FXA-BAP- DIA(YOKE)RoHS	11.1310	1	18.1204
242-527006-200G	OSC(HCSL) 27MHz,50ppm,2.5~3.3V,TOPR=-40°C ~+105°C,SMD2520(6PAD),SO25CH-027000-F1X- 3EAN-DIA(YOKE)RoHS	11.1310	1	18.1204
251-160808-124S	BEAD CORE 160808 120Ω,2.5A,25%,SMT0603,PBY160808T-121Y-N (CHILISIN)	0.8378	2	2.7874
251-915221-210G	FERRITE BEAD 220Ω,700mA,BLM15EG221SN1D/0402(MURATA) RoHS	0.8378	15	15.5524
253-100110-500G	POLYSWITCH,PTC,1.1A/6V,SMD0805,0805L110ULY R(LITTELFUSE)RoHS	0.4000	2	1.1579
253-100266-403S	POLYSWITCH 2.6A/13.2V,SMD1812,miniSMDC260F/13.2 (LITTELFUSE)RoHS	0.4000	1	0.6546
263-180005-100C	RES 0Ω,J(5%),SMD,0201,(None JP)RoHS	0.1117	67	7.7777
263-180005-200C	RES 0Ω,J(5%),SMD,0402,(None JP)RoHS	0.1117	50	5.8387
263-180005-300C	RES 0Ω,J(5%),SMD,0603,(None JP)RoHS	0.1117	1	0.1487
263-180005-600C	RES 0Ω,J(5%),SMD,1206,(None JP)RoHS	0.1117	1	0.1487

File Name: M8M051-ECC-21DLI.rfp

Assembly: 774-M8M0511-300G

Ref Des:

Calculation Model: Telcordia Issue 4



MTBF (hrs): 374475

Failure Rate: 2,670.4049

Temperature: 60

Environment: GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
263-180100-210C	RES 10Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	6	0.7593
263-180220-110C	RES 22Ω,F(1%),SMD,0201,(None JP)RoHS	0.1117	13	1.5813
263-180220-210C	RES 22Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	3	0.3984
263-180560-210C	RES 56Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	2	0.2753
263-181000-210C	RES 100Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	3	0.3984
263-181001-110C	RES 1KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1117	14	1.6979
263-181001-210C	RES 1KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	14	1.6979
263-181002-110C	RES 10KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1117	119	13.6843
263-181002-210C	RES 10KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	18	2.1627
263-181003-110C	RES 100KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1117	15	1.8143
263-181003-210C	RES 100KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	8	0.9949
263-181004-110C	RES 1MΩ,F(1%),SMD,0201,(None JP)RoHS	0.1117	6	0.7593
263-181004-210C	RES 1MΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	2	0.2753
263-181022-210C	RES 10.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	2	0.2753
263-181202-210C	RES 12KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	3	0.3984
263-181272-210C	RES 12.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-181500-210C	RES 150Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	11	1.3476
263-181501-210C	RES 1.5KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	10	1.2303
263-181502-210C	RES 15KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	5	0.6399
263-181503-210C	RES 150KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-181602-210C	RES 16KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-181623-210C	RES 162KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-181782-210C	RES 17.8KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-181802-210C	RES 18KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-181803-210C	RES 180KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	2	0.2753
263-181872-210C	RES 18.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-182000-110C	RES 200Ω,F(1%),SMD,0201,(None JP)RoHS	0.1117	3	0.3984
263-182001-210C	RES 2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-182002-110C	RES 20KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1117	5	0.6399
263-182002-210C	RES 20KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	2	0.2753
263-182003-110C	RES 200KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1117	3	0.3984
263-182202-110C	RES 22KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1117	3	0.3984
263-182371-210C	RES 2.37KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	2	0.2753
263-182400-110C	RES 240Ω,F(1%),SMD,0201,(None JP)RoHS	0.1117	3	0.3984
263-183013-210C	RES 301KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	2	0.2753
263-183300-210C	RES 330Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	2	0.2753
263-183301-110C	RES 3.3KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1117	2	0.2753
263-183302-110C	RES 33KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1117	1	0.1487
263-183303-210C	RES 330KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-183652-210C	RES 36.5KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-184022-210C	RES 40.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-184122-210C	RES 41.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-184532-210C	RES 45.3KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-184700-210C	RES 470Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	2	0.2753
263-184701-110C	RES 4.7KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1117	5	0.6399
263-184701-210C	RES 4.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	12	1.4645

**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 374475  
**Failure Rate:** 2,670.4049  
**Temperature:** 60  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
263-184702-110C	RES 47KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1117	9	1.1128
263-184990-110C	RES 499Ω,F(1%),SMD,0201,(None JP)RoHS	0.1117	1	0.1487
263-184992-110C	RES 49.9KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1117	1	0.1487
263-184999-110C	RES 49.9Ω,F(1%),SMD,0201,(None JP)RoHS	0.1117	2	0.2753
263-185102-210C	RES 51KΩ,F(1%),SMD,0402(None JP)RoHS	0.1117	2	0.2753
263-186040-110C	RES 604Ω,F(1%),SMD,0201,(None JP)RoHS	0.1117	8	0.9949
263-187502-210C	RES 75KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-188062-210C	RES 80.6KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
314-M8M051-109G	PCB M8M051 R.A(12L 97x230x1.6mm, 2 panelization)OSP(CIRCUITECH)RoHS	12.6680	1	24.1406
342-101901-230G	HDMI CONN, 19P, F, G/F, BLACK, 90D, SMT, 369FA19-0N058T-R(ASTRON)RoHS	10.7191	1	18.5590
342-360020-100G	With flanges. Terminal Block,2Poles,M,90D,300V,16A,DIP,5.0mm,Green,ME 050-50002(DECA)RoHS	10.7191	1	18.5590
342-360020-110G	Screw CONN.Pluggable terminal block,With flanges,2Poles,R/A,Green,DIP 5.00mm,MC101-50002(DECA)RoHS	10.7191	1	18.5590
342-361021-100G	POWER CONN/2PORT/HEADER,M,90D,3.81mm,GREEN,BRAS S,NY66,12A300VAC,DIP,ME030-38102T(DECA)RoHS	10.7191	1	18.5590
343-500501-200G	USB CONN Micro 5P*1,3u",R/A,SMT,POSTx2,UN15111-N12A41-7H (FOXCONN)HF	10.7191	1	18.5590
343-501402-200G	Giga LAN CONN RJ45,SMT,GF,W/Transformer,W/LED,MRJG-11S88RS (MATRIX),RoHS	10.7191	1	18.5590
343-501821-130G	USB 3.0 CONN*2, 18P, A Type, BLUE, F, G/F, 90D, DIP, U2130D-UADH-0201R(HDSY)RoHS	10.7191	1	18.5590
344-002003-610G	Mini JUMPER RED 2.0mm,200-72-PBGR0B(PINREX) RoHS	10.7191	2	32.4809
346-120310-201G	PIN PLUG 2*3, 1.27mm, H=5mm, 180D, SMD, SHY-JCL180806P(V-STAR)RoHS	75.0334	2	227.3661
346-120320-800S	PIN PLUG 2*3,2.0mm,M,H=6.7mm,180D,SMT,W/CAP,222-97-03GBE1(R)(PINREX)	75.0334	3	319.3764
346-120511-201G	PIN PLUG 2*5, 1.27mm, H=5mm, 180D, SMD, SHY-JCL180810P(V-STAR)RoHS	75.0334	1	129.9132
346-120610-200G	PIN PLUG, 2*6P/1.27mm, M, 180D, BLACK, G/F, SMT, 232-97-06GBE1(PINREX)RoHS	75.0334	2	227.3661
346-510223-102G	WAFER 1*2,2.0mm,M,H=6.1mm,180D,DIP,WHITE,721-81-02TW00(PINREX)RoHS	75.0334	1	129.9132
346-510414-200G	BOX HEADER 1*4P,F,90D, 1.25mm,SMT,501MW1*04MTR-2R(YIMTEX)RoHS	75.0334	1	129.9132
346-510441-200G	BOX HEADER 1*4/1.0mm,R/A,SMD,1W1003WOR0-04(TOKUTSU)RoHS	75.0334	1	129.9132
346-510810-210G	BOX HEADER, 1*8P/1.25mm, F, 90D, NATURAL, SMT, A1250WR-S-08P(JOINT TECH)RoHS	75.0334	1	129.9132

**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 374475  
**Failure Rate:** 2,670.4049  
**Temperature:** 60  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
346-522040-200G	BOX HEADER 2*20,1.00mm,V/T,SMD,W100V40TP2 (V-STAR)RoHS	75.0334	1	129.9132
348-370750-240G	NGFF CONN 67P/0.5mm,H=8.5mm,B key,90D,BLACK,SMD,APCI0161-P002H(LOTES)HF	10.7191	1	18.5590
348-370750-280G	NGFF CONN 67P/0.5mm,H=8.5mm,E key,90D,BLACK,SMT,2E0BC21-S85BE-7H(FOXCONN) HF	10.7191	1	18.5590
348-850062-210G	NANO SIM CARD CONN, 6P, F, G/F, BLACK, 90D, SMT, NNSV0614W01B-R1K5-H(AUK)RoHS	5.8468	1	9.5280
348-850081-200G	SD CARD CONN,8pin,1.1mm,30u",F,H=2.42mm,90D,SMT,BLACK,WQ21823-DES1-7F(FOXCONN)RoHS	10.7191	1	18.5590
622-010150-000G	BATTERY CR2032W(MURATA) 3V 210mAh,-40~125°C,W/CABLE(L=150mm&TAPE),BIN-CR2032W-J-CT-SL-PV-01(RE-ENERGY)RoHS Belong to UN3090	25.0000	1	34.9638
143-701301-400G	CPU i.MX 8M Dual 1.3GHz,C/1M,MIMX8MD6CVAHZAB/FBGA-621(NXP) RoHS	36.2965	1	70.5866
151-090441-200G	LOW POWER PCIE GEN 1-4 CLOCK GENERATOR,9FGV0441AKILFT/VFQFPN-32(IDT) RoHS	14.0000	1	14.0000

**File Name:** M8M051-ECC-21DLI.rfp

**System:** 770-M8M0511-300G

**Ref Des:**

**Calculation Model:** Telcordia Issue 4

**MTBF (hrs):** 265173

**Failure Rate:** 3,771.12

**Temperature:** 70

**Environment:** GB, GC - Ground Benign, Controlled



Assembly Name	Part Number	Quantity	Failure Rate (Fit)	MTBF (Hrs)
M8M051-ECC-21DLI	770-M8M0511-300G	1	3771.12	265,173
M8M051-ECC-21DLI	774-M8M0511-300G	1	3771.12	265,173

**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 265173  
**Failure Rate:** 3,771.1180  
**Temperature:** 70  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
113-500004-300G	IC TTL,Single Inverter Gate,SN74LVC1G04DCK/SC70-5(TI)RoHS	11.8139	1	17.7702
113-500007-210S	IC TTL,Single Buffer/Driver With Open-Drain Output,SN74LVC1G07DCKR/SC70-5(TI)	11.8139	7	98.1402
121-000075-230G	Digital Temperature Sensor,LM75BTP/HWSON-8(NXP)RoHS	11.8139	1	17.7702
121-000104-420G	IC 4-BIT BIDIRECTIONAL VOLTAGE-LEVEL TRANSLATOR,NTS0104GU12/XQFN12(NXP) RoHS	11.8139	2	31.9886
121-000213-210G	IC RS232 Transceivers AZRS213SS.RDG/SSOP-28 (AMAZING)RoHS	11.8139	1	17.7702
121-002069-200G	IC Power-Distribution Switches,1.5A,TPS2069DDBVT/SOT23-5(TI)RoHS	11.8139	4	58.9913
121-003078-201G	IC RS485 Transceiver,AZRS3078/SOP-8(AMAZING) RoHS	11.8139	1	17.7702
121-003552-200G	IC Power Distribution Switches,APL3552AQBI-TRG/TDFN-6(2x2)(ANPEC)RoHS	11.8139	6	85.2005
121-006561-400G	IC CAN Transceiver,ATA6561-GBQW-N/VDFN-8(3x3) (MICROCHIP)RoHS	11.8139	1	17.7702
121-022976-200G	IC Switch,5.7-V,6-A,14-mΩ On-Resistance Dual-Channel Load,TPS22976DPU/WSO-14(TI)RoHS	11.8139	2	31.9886
121-035390-200G	Real Time Clock,S-35390A-T8T1G/TSSOP8(SEIKO) RoHS	34.0082	1	66.1366
121-081439-401G	IC Single 3.3V or 5V RS232/RS422/RS485 Multiprotocol Transceiver,F81439AN/TQFN-40(5x5) (FINTEK)RoHS	11.8139	1	17.7702
121-380801-200G	IC Reset,TPS3808G01DBV/SOT23-6(TI)RoHS	11.8139	2	31.9886
122-105000-200G	AUDIO CODEC SGT5000XNAA3/R2,QFN32 (FREESCALE)RoHS	11.8139	1	17.7702
131-56G016-400G	LPDDR4-3733 SDRAM 16Gb(512M*32),K4F6E3S4HM-MGCJ/FBGA-200(SAMSUNG)RoHS	26.3960	1	40.9730
141-025180-400G	External CAN FD CONTROLLER, MCP2518FDT-E/QBB /VDFN-14 (MICROCHIP)RoHS	11.8139	1	17.7702
141-042100-400G	IC Power Management Integrated Circuit (PMIC),MC34PF4210A1ES/QFN-56(8x8)(NXP)RoHS	11.8139	1	17.7702
141-058070-410G	IC USB 3.0 Hub CTRL 7 PORTS,USB5807CT-I/KD/VQFN-100(MICROCHIP)RoHS	11.8139	1	17.7702
141-562150-400G	IC Synchronous Step-down Converter,TPS56C215RNN/VQFN-18(TI)RoHS	11.8139	2	31.9886
141-620850-200G	IC Synchronous Buck Converter,2.5-6,3A,TLV62085RLT/VSON-7(TI)RoHS	11.8139	1	17.7702
141-620950-400G	IC Converter,4-A High Efficiency Step Down with DCS-Control,TLV62095RGT/QFN-16(TI)RoHS	11.8139	2	31.9886
147-065850-400G	Dual Channel DSI to Dual-Link LVDS Bridge,-40~85°C,SN65DSI85ZXHR/BGA-64(TI)RoHS	11.8139	1	17.7702
147-080350-200G	IC CHIP,Integrated 10/100/1000 Mbps Ethernet Transceiver,-40~85°C,AR8035-AL1B-R/QFN-40(5x5) (QUALCOMM)RoHS	11.8139	1	17.7702
148-100416-400G	eMMC 5.1,16G,-25°C~+85°C,SMD,FBGA-153,SDINBDG4-16G-I1(SANDISK)RoHS	26.3960	1	40.9730



**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 265173  
**Failure Rate:** 3,771.1180  
**Temperature:** 70  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
171-204005-230G	DIODE SCHOTTKY,40V,200mA,BAS40-05TH/SOT523-3(SMARTENGRAND)RoHS	0.6734	1	1.3007
171-205200-220G	DIODE SCHOTTKY,30V,200mA,RB520S-30H/SOD-523(SMARTENGRAND)RoHS	0.6734	16	13.2386
171-360120-500G	DIODE TVS,12V,600W,Bidirectional,SMBJ12CA/DO-214AA(LITTELFUSE)RoHS	0.6734	1	1.3007
171-361045-200G	DIODE TVS Array,5V,30W,AZ1045-04F.R7G/DFN2510P10E(AMAZING)RoHS	0.6734	14	11.7357
171-361624-200G	DIODE TVS 24V,L16ESD24VA2/SOD523(LITEON)RoHS	0.6734	2	2.2362
171-365125-200G	DIODE TVS,5V,AZ5125-01H.R7G/SOD-523(AMAZING)RoHS	0.6734	8	7.1425
171-451715-200G	DIODE Zener,15V,Vz=14.34V~14.98V,UDZVTE-1715B/SOD-323FL(ROHM)RoHS	0.6734	1	1.3007
171-451756-200G	DIODE Zener,5.6V,Vz=5.49V~5.73V,UDZVTE-175.6B/SOD-323F(ROHM)RoHS	0.6734	1	1.3007
172-223904-206S	TRANSISTOR NPN,MMBT3904LT1G/SOT23(ON)	3.6116	1	6.4022
172-223906-207S	TRANSISTOR PNP,PMBS3906/SOT23(NXP)	3.6116	1	6.4022
172-301380-220G	MOSFET Dual N-Ch,VDS:50V,ID:350mA,VGS:±20V,@10V,RDS:1.6Ω,BSS138KDTH/SOT563-6(SMARTENGRAND)RoHS	22.4451	28	682.4283
172-305050-200G	MOSFET P-Ch,VDS:-20V,ID:-4A,VGS:±8V,@-4.5V,RDS:40mΩ,PM505BA/SOT23-3(NIKO-SEM)RoHS	22.4451	1	33.0553
172-321200-200G	MOSFET Dual N&P-Ch,VDS:20V/-20V,ID:800mA/-400mA,VGS:±12V,@±4.5V,RDS:300mΩ/600mΩ,PDE V2120AY/SOT563-6(POTENS)RoHS	22.4451	1	33.0553
172-331030-200G	MOSFET P-Ch,VDS:-30V,ID:-7.7A,VGS:±25V,@-10V,RDS:20mΩ,FKBB3103/PRPAK-8(3x3)(FETEK)RoHS	22.4451	3	85.4929
174-210012-900G	LED,WHITE+RED,SMD(1.6x1.5mm)(4PAD),LTW-C195DCKR-5A(LITEON)RoHS	2.4179	2	8.1363
174-210030-201G	LED,BLUE,SMD(0402)(1*0.6mm),SMLP13BC8TT86(ROHM)RoHS	2.4179	1	4.7428
174-310042-900G	LED,RED/GREEN,SMD1.6*1.5mm,19-223/R6G6C-A11/2T(EVERLIGHT)RoHS	2.4179	1	4.7428
213-150101-200C	MLCC 1pF/50V,NPO,B(0.1pF),SMD,0402,(None JP)RoHS	0.1176	1	0.1327
213-150470-200C	MLCC 4.7pF/50V,NPO,C(0.25pF),SMD,0402,(None JP)RoHS	0.1176	2	0.2565
213-150605-200C	MLCC 6pF/50V,NPO,C(0.25pF),SMD,0402,(None JP)RoHS	0.1176	1	0.1327
213-151805-200C	MLCC 18pF/50V,NPO,J(5%),SMD,0402,(None JP)RoHS	0.1176	6	0.7425
213-152005-200C	MLCC 20pF/50V,NPO,J(5%),SMD,0402,(None JP)RoHS	0.1176	2	0.2565
213-152205-110C	MLCC 22pF/25V,NPO,J(5%),SMD 0201(None JP)RoHS	0.1176	3	0.3789

File Name: M8M051-ECC-21DLI.rfp

Assembly: 774-M8M0511-300G

Ref Des:

Calculation Model: Telcordia Issue 4



MTBF (hrs): 265173

Failure Rate: 3,771.1180

Temperature: 70

Environment: GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
213-152205-200C	MLCC 22pF/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1176	4	0.5005
213-152215-200C	MLCC 221P/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1176	2	0.2565
213-251038-250C	MLCC 103P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1176	6	0.7425
213-251039-130C	MLCC 103P/10V,X7R,K(10%),SMD,0201,(None JP) RoHS	0.1176	14	1.7027
213-251049-130C	MLCC 104P/10V,X5R,K(10%),SMD,0201,(None JP) RoHS	0.1176	173	20.5424
213-251049-200J	MLCC 104P/16V,X7R,K(10%),SMD,0402,(JP)RoHS	0.1176	24	2.8961
213-251049-270J	MLCC 104P/25V,X5R,K(10%),SMD,0402,(JP)RoHS	0.1176	3	0.3789
213-251059-109G	MLCC 105P/6.3V,X5R,K(10%),SMD,0201,CC0201KRX5R5BB105(YAGEO) RoHS	0.1176	92	10.9634
213-251059-230J	MLCC 105P/16V,X5R,K(10%),SMD,0402,(JP)RoHS	0.1176	6	0.7425
213-251068-200J	MLCC 106P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.1176	39	4.6804
213-251068-300J	MLCC 106P/6.3V,X5R,M(20%),SMD,0603,(JP)RoHS	0.1176	3	0.3789
213-251069-540J	MLCC 106P/16V,X5R,K(10%),SMD,0805,(JP)RoHS	0.1176	8	0.9834
213-252229-200C	MLCC 222P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1176	2	0.2565
213-252249-140C	MLCC 224P/6.3V,X5R,K(10%),SMD,0201,(None JP) RoHS	0.1176	15	1.8223
213-252259-200J	MLCC 225P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.1176	10	1.2236
213-252268-310J	MLCC 226P/6.3V,X5R,M(20%),SMD,0603,(JP)RoHS	0.1176	43	5.1555
213-253319-100C	MLCC 331P/50V,X7R,K(10%),SMD,0201,(None JP) RoHS	0.1176	20	2.4193
213-254715-200C	MLCC 471P/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1176	7	0.8630
213-254729-120J	MLCC 472P/16V,X7R,K(10%),SMD,0201,(JP)RoHS	0.1176	12	1.4634
213-254739-210C	MLCC 473P/16V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1176	4	0.5005
213-254758-210J	MLCC 475P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.1176	22	2.6578
217-301078-325G	POLYMER(TAN) CAP 100uF/6.3V,40mΩ,1.8A,SMD,B3528,105°C/2000H,M(20%),T520B107M006ATE040(KEMET)RoHS	1.5449	2	3.7841
217-302278-326G	POLYMER(TAN)CAP 220uF/6.3V,45mΩ,1700mA,105°C/2000H,M(20%),B3528(1.9),T520B227M006ATE045(KEMET) RoHS	1.5449	6	10.4436
223-010220-830G	CHOKE 1uH,M(20%),DCR:41mΩ (Typ.),Irms:3.4A,Isat:4.4A,SMD (2.5*2*1mm),MCS25GC-1R0MHC(PDC)RoHS	0.1789	5	0.9876
223-015222-610G	CHOKE 1.5uH,M(20%),RDC≤15mΩ,Irms=9A,Isat=16A,SMD, (7.3*6.6*3.0),MCS0630-1R5MN2(PDC)RoHS	0.1789	1	0.2216
223-047120-830G	CHOKE 0.47uH,M(20%),DCR:23mΩ (Typ.),Irms:5.2A,Isat:6.6A,SMD (2.5*2.0*1.0mm),MCS25GC-R47MHC(PDC)RoHS	0.1789	1	0.2216



**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 265173  
**Failure Rate:** 3,771.1180  
**Temperature:** 70  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
223-047121-700G	CHOKE 0.47uH,M (20%),RDC $\leq$ 14m $\Omega$ ,Irms=7A,Isat=9.5A,SMT (4.7*4.3),MCS0420-R47MN2(PDC)RoHS	0.1789	2	0.4178
223-047122-610G	CHOKE 0.47uH,M(20%),RDC $\leq$ 4.2m $\Omega$ (max),Irms:17.5A(typ),Isat:26A(typ),SMD (7.3*6.6*3mm),MCS0630-R47MN2(PDC)RoHS	0.1789	1	0.2216
223-047220-800G	CHOKE 4.7uH,M (20%),Irms:1.6A,Isat:2.2A,RDC:200m $\Omega$ ,SMD (2.5*2*1mm),MCS25GC-4R7MHC(PDC)RoHS	0.1789	1	0.2216
223-410040-501S	COMMON CHOKE 90 $\Omega$ ,M (20%),Idc $\leq$ 330mA,RDC $\leq$ 350m $\Omega$ ,SMD (2.05*1.25*1.4mm),After D/C 1936 is the bottom convex,CMM21T-900M-N(CHILISIN)	0.1789	5	0.9876
223-523000-410G	CM FILTER Cd=0.25pF,Rs=3 $\Omega$ ,SMD (1.57*1.17*0.57),PCMF2USB3S/WLCSP10(NXP) RoHS	0.1789	10	1.9207
231-107168-200G	REGULATOR 0.8A,GS7168TD-R/TDFN8(GSTEK)HF	34.0082	2	113.5939
241-220006-302G	X'TAL 20MHz,12pf, $\pm$ 30ppm,ESR:60 $\Omega$ (Max),TOPR=- 20°C~+105°C,SMD3225(4PAD),7V20080002(TXC) RoHS	11.3372	1	18.6882
241-225006-3B0G	X'TAL 25MHz,12pf, $\pm$ 10ppm,ESR:30 $\Omega$ (Max),TOPR=- 40°C~+100°C,SMD3225(4PAD),TSX- 3225,X1E000021099000(EPSON)RoHS	11.3372	4	59.8546
241-227006-360G	X'TAL 27MHz,18pF, $\pm$ 30ppm,ESR:50 $\Omega$ (Max),TOPR=- 40°C~+105°C,SMD3225(4PAD),7M27000056(TXC) RoHS	11.3372	1	18.6882
241-432773-390G	X'TAL 32.768KHz,7pf, $\pm$ 20ppm,ESR:70K $\Omega$ (Max),TOPR=-40°C~+125°C,SMD3215(2PAD),FC- 13A(EPSON)RoHS	11.3372	1	18.6882
242-232773-250G	OSC 32.768KHz,15pF,50ppm,3.3V,TOPR=-40°C ~+125°C,SMD2520(4PAD),SO25-000032-FXA-BAP- DIA(YOKE)RoHS	19.6586	1	32.0026
242-527006-200G	OSC(HCSL) 27MHz,50ppm,2.5~3.3V,TOPR=-40°C ~+105°C,SMD2520(6PAD),SO25CH-027000-F1X- 3EAN-DIA(YOKE)RoHS	19.6586	1	32.0026
251-160808-124S	BEAD CORE 160808 120 $\Omega$ ,2.5A,25%,SMT0603,PBY160808T-121Y-N (CHILISIN)	0.9757	2	3.2461
251-915221-210G	FERRITE BEAD 220 $\Omega$ ,700mA,BLM15EG221SN1D/0402(MURATA) RoHS	0.9757	15	18.1119
253-100110-500G	POLYSWITCH,PTC,1.1A/6V,SMD0805,0805L110ULY R(LITTELFUSE)RoHS	0.4000	2	1.1579
253-100266-403S	POLYSWITCH 2.6A/13.2V,SMD1812,miniSMDC260F/13.2 (LITTELFUSE)RoHS	0.4000	1	0.6546
263-180005-100C	RES 0 $\Omega$ ,J(5%),SMD,0201,(None JP)RoHS	0.1301	67	9.0577
263-180005-200C	RES 0 $\Omega$ ,J(5%),SMD,0402,(None JP)RoHS	0.1301	50	6.7996
263-180005-300C	RES 0 $\Omega$ ,J(5%),SMD,0603,(None JP)RoHS	0.1301	1	0.1731
263-180005-600C	RES 0 $\Omega$ ,J(5%),SMD,1206,(None JP)RoHS	0.1301	1	0.1731

File Name: M8M051-ECC-21DLI.rfp

Assembly: 774-M8M0511-300G

Ref Des:

Calculation Model: Telcordia Issue 4



MTBF (hrs): 265173

Failure Rate: 3,771.1180

Temperature: 70

Environment: GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
263-180100-210C	RES 10Ω,F(1%),SMD,0402,(None JP)RoHS	0.1301	6	0.8843
263-180220-110C	RES 22Ω,F(1%),SMD,0201,(None JP)RoHS	0.1301	13	1.8416
263-180220-210C	RES 22Ω,F(1%),SMD,0402,(None JP)RoHS	0.1301	3	0.4640
263-180560-210C	RES 56Ω,F(1%),SMD,0402,(None JP)RoHS	0.1301	2	0.3206
263-181000-210C	RES 100Ω,F(1%),SMD,0402,(None JP)RoHS	0.1301	3	0.4640
263-181001-110C	RES 1KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1301	14	1.9773
263-181001-210C	RES 1KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	14	1.9773
263-181002-110C	RES 10KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1301	119	15.9363
263-181002-210C	RES 10KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	18	2.5186
263-181003-110C	RES 100KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1301	15	2.1129
263-181003-210C	RES 100KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	8	1.1587
263-181004-110C	RES 1MΩ,F(1%),SMD,0201,(None JP)RoHS	0.1301	6	0.8843
263-181004-210C	RES 1MΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	2	0.3206
263-181022-210C	RES 10.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	2	0.3206
263-181202-210C	RES 12KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	3	0.4640
263-181272-210C	RES 12.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	1	0.1731
263-181500-210C	RES 150Ω,F(1%),SMD,0402,(None JP)RoHS	0.1301	11	1.5693
263-181501-210C	RES 1.5KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	10	1.4328
263-181502-210C	RES 15KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	5	0.7453
263-181503-210C	RES 150KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	1	0.1731
263-181602-210C	RES 16KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	1	0.1731
263-181623-210C	RES 162KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	1	0.1731
263-181782-210C	RES 17.8KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	1	0.1731
263-181802-210C	RES 18KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	1	0.1731
263-181803-210C	RES 180KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	2	0.3206
263-181872-210C	RES 18.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	1	0.1731
263-182000-110C	RES 200Ω,F(1%),SMD,0201,(None JP)RoHS	0.1301	3	0.4640
263-182001-210C	RES 2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	1	0.1731
263-182002-110C	RES 20KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1301	5	0.7453
263-182002-210C	RES 20KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	2	0.3206
263-182003-110C	RES 200KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1301	3	0.4640
263-182202-110C	RES 22KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1301	3	0.4640
263-182371-210C	RES 2.37KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	2	0.3206
263-182400-110C	RES 240Ω,F(1%),SMD,0201,(None JP)RoHS	0.1301	3	0.4640
263-183013-210C	RES 301KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	2	0.3206
263-183300-210C	RES 330Ω,F(1%),SMD,0402,(None JP)RoHS	0.1301	2	0.3206
263-183301-110C	RES 3.3KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1301	2	0.3206
263-183302-110C	RES 33KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1301	1	0.1731
263-183303-210C	RES 330KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	1	0.1731
263-183652-210C	RES 36.5KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	1	0.1731
263-184022-210C	RES 40.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	1	0.1731
263-184122-210C	RES 41.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	1	0.1731
263-184532-210C	RES 45.3KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	1	0.1731
263-184700-210C	RES 470Ω,F(1%),SMD,0402,(None JP)RoHS	0.1301	2	0.3206
263-184701-110C	RES 4.7KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1301	5	0.7453
263-184701-210C	RES 4.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	12	1.7056

**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 265173  
**Failure Rate:** 3,771.1180  
**Temperature:** 70  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
263-184702-110C	RES 47KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1301	9	1.2959
263-184990-110C	RES 499Ω,F(1%),SMD,0201,(None JP)RoHS	0.1301	1	0.1731
263-184992-110C	RES 49.9KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1301	1	0.1731
263-184999-110C	RES 49.9Ω,F(1%),SMD,0201,(None JP)RoHS	0.1301	2	0.3206
263-185102-210C	RES 51KΩ,F(1%),SMD,0402(None JP)RoHS	0.1301	2	0.3206
263-186040-110C	RES 604Ω,F(1%),SMD,0201,(None JP)RoHS	0.1301	8	1.1587
263-187502-210C	RES 75KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	1	0.1731
263-188062-210C	RES 80.6KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1301	1	0.1731
314-M8M051-109G	PCB M8M051 R.A(12L 97x230x1.6mm, 2 panelization)OSP(CIRCUITECH)RoHS	19.0173	1	36.2400
342-101901-230G	HDMI CONN, 19P, F, G/F, BLACK, 90D, SMT, 369FA19-0N058T-R(ASTRON)RoHS	16.0915	1	27.8610
342-360020-100G	With flanges. Terminal Block,2Poles,M,90D,300V,16A,DIP,5.0mm,Green,ME 050-50002(DECA)RoHS	16.0915	1	27.8610
342-360020-110G	Screw CONN.Pluggable terminal block,With flanges,2Poles,R/A,Green,DIP 5.00mm,MC101-50002(DECA)RoHS	16.0915	1	27.8610
342-361021-100G	POWER CONN/2PORT/HEADER,M,90D,3.81mm,GREEN,BRAS S,NY66,12A300VAC,DIP,ME030-38102T(DECA)RoHS	16.0915	1	27.8610
343-500501-200G	USB CONN Micro 5P*1,3u",R/A,SMT,POSTx2,UN15111-N12A41-7H (FOXCONN)HF	16.0915	1	27.8610
343-501402-200G	Giga LAN CONN RJ45,SMT,GF,W/Transformer,W/LED,MRJG-11S88RS (MATRIX),RoHS	16.0915	1	27.8610
343-501821-130G	USB 3.0 CONN*2, 18P, A Type, BLUE, F, G/F, 90D, DIP, U2130D-UADH-0201R(HDSY)RoHS	16.0915	1	27.8610
344-002003-610G	Mini JUMPER RED 2.0mm,200-72-PBGR0B(PINREX) RoHS	16.0915	2	48.7605
346-120310-201G	PIN PLUG 2*3, 1.27mm, H=5mm, 180D, SMD, SHY-JCL180806P(V-STAR)RoHS	112.6407	2	341.3237
346-120320-800S	PIN PLUG 2*3,2.0mm,M,H=6.7mm,180D,SMT,W/CAP,222-97-03GBE1(R)(PINREX)	112.6407	3	479.4502
346-120511-201G	PIN PLUG 2*5, 1.27mm, H=5mm, 180D, SMD, SHY-JCL180810P(V-STAR)RoHS	112.6407	1	195.0267
346-120610-200G	PIN PLUG, 2*6P/1.27mm, M, 180D, BLACK, G/F, SMT, 232-97-06GBE1(PINREX)RoHS	112.6407	2	341.3237
346-510223-102G	WAFER 1*2,2.0mm,M,H=6.1mm,180D,DIP,WHITE,721-81-02TW00(PINREX)RoHS	112.6407	1	195.0267
346-510414-200G	BOX HEADER 1*4P,F,90D, 1.25mm,SMT,501MW1*04MTR-2R(YIMTEX)RoHS	112.6407	1	195.0267
346-510441-200G	BOX HEADER 1*4/1.0mm,R/A,SMD,1W1003WOR0-04(TOKUTSU)RoHS	112.6407	1	195.0267
346-510810-210G	BOX HEADER, 1*8P/1.25mm, F, 90D, NATURAL, SMT, A1250WR-S-08P(JOINT TECH)RoHS	112.6407	1	195.0267

File Name: M8M051-ECC-21DLI.rfp

Assembly: 774-M8M0511-300G

Ref Des:

Calculation Model: Telcordia Issue 4



MTBF (hrs): 265173

Failure Rate: 3,771.1180

Temperature: 70

Environment: GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
346-522040-200G	BOX HEADER 2*20,1.00mm,V/T,SMD,W100V40TP2 (V-STAR)RoHS	112.6407	1	195.0267
348-370750-240G	NGFF CONN 67P/0.5mm,H=8.5mm,B key,90D,BLACK,SMD,APCI0161-P002H(LOTES)HF	16.0915	1	27.8610
348-370750-280G	NGFF CONN 67P/0.5mm,H=8.5mm,E key,90D,BLACK,SMT,2E0BC21-S85BE-7H(FOXCONN) HF	16.0915	1	27.8610
348-850062-210G	NANO SIM CARD CONN, 6P, F, G/F, BLACK, 90D, SMT, NNSV0614W01B-R1K5-H(AUK)RoHS	8.7772	1	14.3034
348-850081-200G	SD CARD CONN,8pin,1.1mm,30u",F,H=2.42mm,90D,SMT,BLACK,WQ21823-DES1-7F(FOXCONN)RoHS	16.0915	1	27.8610
622-010150-000G	BATTERY CR2032W(MURATA) 3V 210mAh,-40~125°C,W/CABLE(L=150mm&TAPE),BIN-CR2032W-J-CT-SL-PV-01(RE-ENERGY)RoHS Belong to UN3090	25.0000	1	34.9638
143-701301-400G	CPU i.MX 8M Dual 1.3GHz,C/1M,MIMX8MD6CVAHZAB/FBGA-621(NXP) RoHS	51.7905	1	100.7182
151-090441-200G	LOW POWER PCIE GEN 1-4 CLOCK GENERATOR,9FGV0441AKILFT/VFQFPN-32(IDT) RoHS	14.0000	1	14.0000

**File Name:** M8M051-ECC-21DLI.rfp

**System:** 770-M8M0511-300G

**Ref Des:**

**Calculation Model:** Telcordia Issue 4

**MTBF (hrs):** 189510

**Failure Rate:** 5,276.77

**Temperature:** 80

**Environment:** GB, GC - Ground Benign, Controlled



Assembly Name	Part Number	Quantity	Failure Rate (Fit)	MTBF (Hrs)
M8M051-ECC-21DLI	770-M8M0511-300G	1	5276.77	189,510
M8M051-ECC-21DLI	774-M8M0511-300G	1	5276.77	189,510

File Name: M8M051-ECC-21DLI.rfp

Assembly: 774-M8M0511-300G

Ref Des:

Calculation Model: Telcordia Issue 4



MTBF (hrs): 189510

Failure Rate: 5,276.7693

Temperature: 80

Environment: GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
113-500004-300G	IC TTL,Single Inverter Gate,SN74LVC1G04DCK/SC70-5(TI)RoHS	16.5208	1	24.8503
113-500007-210S	IC TTL,Single Buffer/Driver With Open-Drain Output,SN74LVC1G07DCKR/SC70-5(TI)	16.5208	7	137.2416
121-000075-230G	Digital Temperature Sensor,LM75BTP/HWSON-8(NXP)RoHS	16.5208	1	24.8503
121-000104-420G	IC 4-BIT BIDIRECTIONAL VOLTAGE-LEVEL TRANSLATOR,NTS0104GU12/XQFN12(NXP) RoHS	16.5208	2	44.7337
121-000213-210G	IC RS232 Transceivers AZRS213SS.RDG/SSOP-28 (AMAZING)RoHS	16.5208	1	24.8503
121-002069-200G	IC Power-Distribution Switches,1.5A,TPS2069DDBVT/SOT23-5(TI)RoHS	16.5208	4	82.4948
121-003078-201G	IC RS485 Transceiver,AZRS3078/SOP-8(AMAZING) RoHS	16.5208	1	24.8503
121-003552-200G	IC Power Distribution Switches,APL3552AQBI-TRG/TDFN-6(2x2)(ANPEC)RoHS	16.5208	6	119.1463
121-006561-400G	IC CAN Transceiver,ATA6561-GBQW-N/VDFN-8(3x3) (MICROCHIP)RoHS	16.5208	1	24.8503
121-022976-200G	IC Switch,5.7-V,6-A,14-mΩ On-Resistance Dual-Channel Load,TPS22976DPU/WSOP-14(TI)RoHS	16.5208	2	44.7337
121-035390-200G	Real Time Clock,S-35390A-T8T1G/TSSOP8(SEIKO) RoHS	58.1575	1	113.1002
121-081439-401G	IC Single 3.3V or 5V RS232/RS422/RS485 Multiprotocol Transceiver,F81439AN/TQFN-40(5x5) (FINTEK)RoHS	16.5208	1	24.8503
121-380801-200G	IC Reset,TPS3808G01DBV/SOT23-6(TI)RoHS	16.5208	2	44.7337
122-105000-200G	AUDIO CODEC SGTL5000XNAA3/R2,QFN32 (FREESCALE)RoHS	16.5208	1	24.8503
131-56G016-400G	LPDDR4-3733 SDRAM 16Gb(512M*32),K4F6E3S4HM-MGCJ/FBGA-200(SAMSUNG)RoHS	36.9128	1	57.2976
141-025180-400G	External CAN FD CONTROLLER, MCP2518FDT-E/QBB /VDFN-14 (MICROCHIP)RoHS	16.5208	1	24.8503
141-042100-400G	IC Power Management Integrated Circuit (PMIC),MC34PF4210A1ES/QFN-56(8x8)(NXP)RoHS	16.5208	1	24.8503
141-058070-410G	IC USB 3.0 Hub CTRL 7 PORTS,USB5807CT-I/KD/VQFN-100(MICROCHIP)RoHS	16.5208	1	24.8503
141-562150-400G	IC Synchronous Step-down Converter,TPS56C215RNN/VQFN-18(TI)RoHS	16.5208	2	44.7337
141-620850-200G	IC Synchronous Buck Converter,2.5-6,3A,TLV62085RLT/VSON-7(TI)RoHS	16.5208	1	24.8503
141-620950-400G	IC Converter,4-A High Efficiency Step Down with DCS-Control,TLV62095RGT/QFN-16(TI)RoHS	16.5208	2	44.7337
147-065850-400G	Dual Channel DSI to Dual-Link LVDS Bridge,-40~85°C,SN65DSI85ZXHR/BGA-64(TI)RoHS	16.5208	1	24.8503
147-080350-200G	IC CHIP,Integrated 10/100/1000 Mbps Ethernet Transceiver,-40~85°C,AR8035-AL1B-R/QFN-40(5x5) (QUALCOMM)RoHS	16.5208	1	24.8503
148-100416-400G	eMMC 5.1,16G,-25°C~+85°C,SMD,FBGA-153,SDINBDG4-16G-I1(SANDISK)RoHS	36.9128	1	57.2976



**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 189510  
**Failure Rate:** 5,276.7693  
**Temperature:** 80  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
171-204005-230G	DIODE SCHOTTKY,40V,200mA,BAS40-05TH/SOT523-3(SMARTENGRAND)RoHS	0.8314	1	1.6060
171-205200-220G	DIODE SCHOTTKY,30V,200mA,RB520S-30H/SOD-523(SMARTENGRAND)RoHS	0.8314	16	16.3450
171-360120-500G	DIODE TVS,12V,600W,Bidirectional,SMBJ12CA/DO-214AA(LITTELFUSE)RoHS	0.8314	1	1.6060
171-361045-200G	DIODE TVS Array,5V,30W,AZ1045-04F.R7G/DFN2510P10E(AMAZING)RoHS	0.8314	14	14.4895
171-361624-200G	DIODE TVS 24V,L16ESD24VA2/SOD523(LITEON)RoHS	0.8314	2	2.7610
171-365125-200G	DIODE TVS,5V,AZ5125-01H.R7G/SOD-523(AMAZING)RoHS	0.8314	8	8.8185
171-451715-200G	DIODE Zener,15V,Vz=14.34V~14.98V,UDZVTE-1715B/SOD-323FL(ROHM)RoHS	0.8314	1	1.6060
171-451756-200G	DIODE Zener,5.6V,Vz=5.49V~5.73V,UDZVTE-175.6B/SOD-323F(ROHM)RoHS	0.8314	1	1.6060
172-223904-206S	TRANSISTOR NPN,MMBT3904LT1G/SOT23(ON)	4.4591	1	7.9045
172-223906-207S	TRANSISTOR PNP,PMBS3906/SOT23(NXP)	4.4591	1	7.9045
172-301380-220G	MOSFET Dual N-Ch,VDS:50V,ID:350mA,VGS:±20V,@10V,RDS:1.6Ω,BSS138KDTH/SOT563-6(SMARTENGRAND)RoHS	27.7119	28	842.5608
172-305050-200G	MOSFET P-Ch,VDS:-20V,ID:-4A,VGS:±8V,@-4.5V,RDS:40mΩ,PM505BA/SOT23-3(NIKO-SEM)RoHS	27.7119	1	40.8117
172-321200-200G	MOSFET Dual N&P-Ch,VDS:20V/-20V,ID:800mA/-400mA,VGS:±12V,@±4.5V,RDS:300mΩ/600mΩ,PDE V2120AY/SOT563-6(POTENS)RoHS	27.7119	1	40.8117
172-331030-200G	MOSFET P-Ch,VDS:-30V,ID:-7.7A,VGS:±25V,@-10V,RDS:20mΩ,FKBB3103/PRPAK-8(3x3)(FETEK)RoHS	27.7119	3	105.5539
174-210012-900G	LED,WHITE+RED,SMD(1.6x1.5mm)(4PAD),LTW-C195DCKR-5A(LITEON)RoHS	4.7285	2	15.9113
174-210030-201G	LED,BLUE,SMD(0402)(1*0.6mm),SMLP13BC8TT86(ROHM)RoHS	4.7285	1	9.2749
174-310042-900G	LED,RED/GREEN,SMD1.6*1.5mm,19-223/R6G6C-A11/2T(EVERLIGHT)RoHS	4.7285	1	9.2749
213-150101-200C	MLCC 1pF/50V,NPO,B(0.1pF),SMD,0402,(None JP)RoHS	0.1234	1	0.1392
213-150470-200C	MLCC 4.7pF/50V,NPO,C(0.25pF),SMD,0402,(None JP)RoHS	0.1234	2	0.2691
213-150605-200C	MLCC 6pF/50V,NPO,C(0.25pF),SMD,0402,(None JP)RoHS	0.1234	1	0.1392
213-151805-200C	MLCC 18pF/50V,NPO,J(5%),SMD,0402,(None JP)RoHS	0.1234	6	0.7789
213-152005-200C	MLCC 20pF/50V,NPO,J(5%),SMD,0402,(None JP)RoHS	0.1234	2	0.2691
213-152205-110C	MLCC 22pF/25V,NPO,J(5%),SMD 0201(None JP)RoHS	0.1234	3	0.3975

File Name: M8M051-ECC-21DLI.rfp

Assembly: 774-M8M0511-300G

Ref Des:

Calculation Model: Telcordia Issue 4



MTBF (hrs): 189510

Failure Rate: 5,276.7693

Temperature: 80

Environment: GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
213-152205-200C	MLCC 22pF/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1234	4	0.5251
213-152215-200C	MLCC 221P/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1234	2	0.2691
213-251038-250C	MLCC 103P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1234	6	0.7789
213-251039-130C	MLCC 103P/10V,X7R,K(10%),SMD,0201,(None JP) RoHS	0.1234	14	1.7863
213-251049-130C	MLCC 104P/10V,X5R,K(10%),SMD,0201,(None JP) RoHS	0.1234	173	21.5504
213-251049-200J	MLCC 104P/16V,X7R,K(10%),SMD,0402,(JP)RoHS	0.1234	24	3.0383
213-251049-270J	MLCC 104P/25V,X5R,K(10%),SMD,0402,(JP)RoHS	0.1234	3	0.3975
213-251059-109G	MLCC 105P/6.3V,X5R,K(10%),SMD,0201,CC0201KRX5R5BB105(YAGEO) RoHS	0.1234	92	11.5014
213-251059-230J	MLCC 105P/16V,X5R,K(10%),SMD,0402,(JP)RoHS	0.1234	6	0.7789
213-251068-200J	MLCC 106P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.1234	39	4.9100
213-251068-300J	MLCC 106P/6.3V,X5R,M(20%),SMD,0603,(JP)RoHS	0.1234	3	0.3975
213-251069-540J	MLCC 106P/16V,X5R,K(10%),SMD,0805,(JP)RoHS	0.1234	8	1.0317
213-252229-200C	MLCC 222P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1234	2	0.2691
213-252249-140C	MLCC 224P/6.3V,X5R,K(10%),SMD,0201,(None JP) RoHS	0.1234	15	1.9117
213-252259-200J	MLCC 225P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.1234	10	1.2837
213-252268-310J	MLCC 226P/6.3V,X5R,M(20%),SMD,0603,(JP)RoHS	0.1234	43	5.4084
213-253319-100C	MLCC 331P/50V,X7R,K(10%),SMD,0201,(None JP) RoHS	0.1234	20	2.5380
213-254715-200C	MLCC 471P/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1234	7	0.9054
213-254729-120J	MLCC 472P/16V,X7R,K(10%),SMD,0201,(JP)RoHS	0.1234	12	1.5352
213-254739-210C	MLCC 473P/16V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1234	4	0.5251
213-254758-210J	MLCC 475P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.1234	22	2.7882
217-301078-325G	POLYMER(TAN) CAP 100uF/6.3V,40mΩ,1.8A,SMD,B3528,105°C/2000H,M(20%),T520B107M006ATE040(KEMET)RoHS	1.7837	2	4.3690
217-302278-326G	POLYMER(TAN)CAP 220uF/6.3V,45mΩ,1700mA,105°C/2000H,M(20%),B3528(1.9),T520B227M006ATE045(KEMET) RoHS	1.7837	6	12.0577
223-010220-830G	CHOKE 1uH,M(20%),DCR:41mΩ (Typ.),Irms:3.4A,Isat:4.4A,SMD (2.5*2*1mm),MCS25GC-1R0MHC(PDC)RoHS	0.2065	5	1.1403
223-015222-610G	CHOKE 1.5uH,M(20%),RDC≤15mΩ,Irms=9A,Isat=16A,SMD, (7.3*6.6*3.0),MCS0630-1R5MN2(PDC)RoHS	0.2065	1	0.2559
223-047120-830G	CHOKE 0.47uH,M(20%),DCR:23mΩ (Typ.),Irms:5.2A,Isat:6.6A,SMD (2.5*2.0*1.0mm),MCS25GC-R47MHC(PDC)RoHS	0.2065	1	0.2559



**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 189510  
**Failure Rate:** 5,276.7693  
**Temperature:** 80  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
223-047121-700G	CHOKE 0.47uH,M (20%),RDC $\leq$ 14m $\Omega$ ,Irms=7A,Isat=9.5A,SMT (4.7*4.3),MCS0420-R47MN2(PDC)RoHS	0.2065	2	0.4824
223-047122-610G	CHOKE 0.47uH,M(20%),RDC $\leq$ 4.2m $\Omega$ (max),Irms:17.5A(typ),Isat:26A(typ),SMD (7.3*6.6*3mm),MCS0630-R47MN2(PDC)RoHS	0.2065	1	0.2559
223-047220-800G	CHOKE 4.7uH,M (20%),Irms:1.6A,Isat:2.2A,RDC:200m $\Omega$ ,SMD (2.5*2*1mm),MCS25GC-4R7MHC(PDC)RoHS	0.2065	1	0.2559
223-410040-501S	COMMON CHOKE 90 $\Omega$ ,M (20%),Idc $\leq$ 330mA,RDC $\leq$ 350m $\Omega$ ,SMD (2.05*1.25*1.4mm),After D/C 1936 is the bottom convex,CMM21T-900M-N(CHILISIN)	0.2065	5	1.1403
223-523000-410G	CM FILTER Cd=0.25pF,Rs=3 $\Omega$ ,SMD (1.57*1.17*0.57),PCMF2USB3S/WLCSP10(NXP) RoHS	0.2065	10	2.2175
231-107168-200G	REGULATOR 0.8A,GS7168TD-R/TDFN8(GSTEK)HF	58.1575	2	194.2570
241-220006-302G	X'TAL 20MHz,12pf, $\pm$ 30ppm,ESR:60 $\Omega$ (Max),TOPR=- 20°C~+105°C,SMD3225(4PAD),7V20080002(TXC) RoHS	16.6322	1	27.4164
241-225006-3B0G	X'TAL 25MHz,12pf, $\pm$ 10ppm,ESR:30 $\Omega$ (Max),TOPR=- 40°C~+100°C,SMD3225(4PAD),TSX- 3225,X1E000021099000(EPSON)RoHS	16.6322	4	87.8095
241-227006-360G	X'TAL 27MHz,18pF, $\pm$ 30ppm,ESR:50 $\Omega$ (Max),TOPR=- 40°C~+105°C,SMD3225(4PAD),7M27000056(TXC) RoHS	16.6322	1	27.4164
241-432773-390G	X'TAL 32.768KHz,7pf, $\pm$ 20ppm,ESR:70K $\Omega$ (Max),TOPR=-40°C~+125°C,SMD3215(2PAD),FC- 13A(EPSON)RoHS	16.6322	1	27.4164
242-232773-250G	OSC 32.768KHz,15pF,50ppm,3.3V,TOPR=-40°C ~+125°C,SMD2520(4PAD),SO25-000032-FXA-BAP- DIA(YOKE)RoHS	33.6182	1	54.7277
242-527006-200G	OSC(HCSL) 27MHz,50ppm,2.5~3.3V,TOPR=-40°C ~+105°C,SMD2520(6PAD),SO25CH-027000-F1X- 3EAN-DIA(YOKE)RoHS	33.6182	1	54.7277
251-160808-124S	BEAD CORE 160808 120 $\Omega$ ,2.5A,25%,SMT0603,PBY160808T-121Y-N (CHILISIN)	1.1265	2	3.7478
251-915221-210G	FERRITE BEAD 220 $\Omega$ ,700mA,BLM15EG221SN1D/0402(MURATA) RoHS	1.1265	15	20.9113
253-100110-500G	POLYSWITCH,PTC,1.1A/6V,SMD0805,0805L110ULY R(LITTELFUSE)RoHS	0.4000	2	1.1579
253-100266-403S	POLYSWITCH 2.6A/13.2V,SMD1812,miniSMDC260F/13.2 (LITTELFUSE)RoHS	0.4000	1	0.6546
263-180005-100C	RES 0 $\Omega$ ,J(5%),SMD,0201,(None JP)RoHS	0.1502	67	10.4577
263-180005-200C	RES 0 $\Omega$ ,J(5%),SMD,0402,(None JP)RoHS	0.1502	50	7.8506
263-180005-300C	RES 0 $\Omega$ ,J(5%),SMD,0603,(None JP)RoHS	0.1502	1	0.1999
263-180005-600C	RES 0 $\Omega$ ,J(5%),SMD,1206,(None JP)RoHS	0.1502	1	0.1999

File Name: M8M051-ECC-21DLI.rfp

Assembly: 774-M8M0511-300G

Ref Des:

Calculation Model: Telcordia Issue 4



MTBF (hrs): 189510

Failure Rate: 5,276.7693

Temperature: 80

Environment: GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
263-180100-210C	RES 10Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	6	1.0209
263-180220-110C	RES 22Ω,F(1%),SMD,0201,(None JP)RoHS	0.1502	13	2.1262
263-180220-210C	RES 22Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	3	0.5357
263-180560-210C	RES 56Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	2	0.3702
263-181000-210C	RES 100Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	3	0.5357
263-181001-110C	RES 1KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1502	14	2.2829
263-181001-210C	RES 1KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	14	2.2829
263-181002-110C	RES 10KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1502	119	18.3994
263-181002-210C	RES 10KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	18	2.9079
263-181003-110C	RES 100KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1502	15	2.4395
263-181003-210C	RES 100KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	8	1.3378
263-181004-110C	RES 1MΩ,F(1%),SMD,0201,(None JP)RoHS	0.1502	6	1.0209
263-181004-210C	RES 1MΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	2	0.3702
263-181022-210C	RES 10.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	2	0.3702
263-181202-210C	RES 12KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	3	0.5357
263-181272-210C	RES 12.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-181500-210C	RES 150Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	11	1.8119
263-181501-210C	RES 1.5KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	10	1.6542
263-181502-210C	RES 15KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	5	0.8604
263-181503-210C	RES 150KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-181602-210C	RES 16KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-181623-210C	RES 162KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-181782-210C	RES 17.8KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-181802-210C	RES 18KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-181803-210C	RES 180KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	2	0.3702
263-181872-210C	RES 18.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-182000-110C	RES 200Ω,F(1%),SMD,0201,(None JP)RoHS	0.1502	3	0.5357
263-182001-210C	RES 2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-182002-110C	RES 20KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1502	5	0.8604
263-182002-210C	RES 20KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	2	0.3702
263-182003-110C	RES 200KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1502	3	0.5357
263-182202-110C	RES 22KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1502	3	0.5357
263-182371-210C	RES 2.37KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	2	0.3702
263-182400-110C	RES 240Ω,F(1%),SMD,0201,(None JP)RoHS	0.1502	3	0.5357
263-183013-210C	RES 301KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	2	0.3702
263-183300-210C	RES 330Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	2	0.3702
263-183301-110C	RES 3.3KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1502	2	0.3702
263-183302-110C	RES 33KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1502	1	0.1999
263-183303-210C	RES 330KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-183652-210C	RES 36.5KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-184022-210C	RES 40.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-184122-210C	RES 41.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-184532-210C	RES 45.3KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-184700-210C	RES 470Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	2	0.3702
263-184701-110C	RES 4.7KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1502	5	0.8604
263-184701-210C	RES 4.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	12	1.9692

**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 189510  
**Failure Rate:** 5,276.7693  
**Temperature:** 80  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
263-184702-110C	RES 47KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1502	9	1.4962
263-184990-110C	RES 499Ω,F(1%),SMD,0201,(None JP)RoHS	0.1502	1	0.1999
263-184992-110C	RES 49.9KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1502	1	0.1999
263-184999-110C	RES 49.9Ω,F(1%),SMD,0201,(None JP)RoHS	0.1502	2	0.3702
263-185102-210C	RES 51KΩ,F(1%),SMD,0402(None JP)RoHS	0.1502	2	0.3702
263-186040-110C	RES 604Ω,F(1%),SMD,0201,(None JP)RoHS	0.1502	8	1.3378
263-187502-210C	RES 75KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-188062-210C	RES 80.6KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
314-M8M051-109G	PCB M8M051 R.A(12L 97x230x1.6mm, 2 panelization)OSP(CIRCUITECH)RoHS	27.8992	1	53.1658
342-101901-230G	HDMI CONN, 19P, F, G/F, BLACK, 90D, SMT, 369FA19-0N058T-R(ASTRON)RoHS	23.6070	1	40.8733
342-360020-100G	With flanges. Terminal Block,2Poles,M,90D,300V,16A,DIP,5.0mm,Green,ME 050-50002(DECA)RoHS	23.6070	1	40.8733
342-360020-110G	Screw CONN.Pluggable terminal block,With flanges,2Poles,R/A,Green,DIP 5.00mm,MC101-50002(DECA)RoHS	23.6070	1	40.8733
342-361021-100G	POWER CONN/2PORT/HEADER,M,90D,3.81mm,GREEN,BRAS S,NY66,12A300VAC,DIP,ME030-38102T(DECA)RoHS	23.6070	1	40.8733
343-500501-200G	USB CONN Micro 5P*1,3u",R/A,SMT,POSTx2,UN15111-N12A41-7H (FOXCONN)HF	23.6070	1	40.8733
343-501402-200G	Giga LAN CONN RJ45,SMT,GF,W/Transformer,W/LED,MRJG-11S88RS (MATRIX),RoHS	23.6070	1	40.8733
343-501821-130G	USB 3.0 CONN*2, 18P, A Type, BLUE, F, G/F, 90D, DIP, U2130D-UADH-0201R(HDSY)RoHS	23.6070	1	40.8733
344-002003-610G	Mini JUMPER RED 2.0mm,200-72-PBGR0B(PINREX) RoHS	23.6070	2	71.5340
346-120310-201G	PIN PLUG 2*3, 1.27mm, H=5mm, 180D, SMD, SHY-JCL180806P(V-STAR)RoHS	165.2491	2	500.7379
346-120320-800S	PIN PLUG 2*3,2.0mm,M,H=6.7mm,180D,SMT,W/CAP,222-97-03GBE1(R)(PINREX)	165.2491	3	703.3760
346-120511-201G	PIN PLUG 2*5, 1.27mm, H=5mm, 180D, SMD, SHY-JCL180810P(V-STAR)RoHS	165.2491	1	286.1133
346-120610-200G	PIN PLUG, 2*6P/1.27mm, M, 180D, BLACK, G/F, SMT, 232-97-06GBE1(PINREX)RoHS	165.2491	2	500.7379
346-510223-102G	WAFER 1*2,2.0mm,M,H=6.1mm,180D,DIP,WHITE,721-81-02TW00(PINREX)RoHS	165.2491	1	286.1133
346-510414-200G	BOX HEADER 1*4P,F,90D, 1.25mm,SMT,501MW1*04MTR-2R(YIMTEX)RoHS	165.2491	1	286.1133
346-510441-200G	BOX HEADER 1*4/1.0mm,R/A,SMD,1W1003WOR0-04(TOKUTSU)RoHS	165.2491	1	286.1133
346-510810-210G	BOX HEADER, 1*8P/1.25mm, F, 90D, NATURAL, SMT, A1250WR-S-08P(JOINT TECH)RoHS	165.2491	1	286.1133

**File Name:** M8M051-ECC-21DLI.rfp  
**Assembly:** 774-M8M0511-300G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 189510  
**Failure Rate:** 5,276.7693  
**Temperature:** 80  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
346-522040-200G	BOX HEADER 2*20,1.00mm,V/T,SMD,W100V40TP2 (V-STAR)RoHS	165.2491	1	286.1133
348-370750-240G	NGFF CONN 67P/0.5mm,H=8.5mm,B key,90D,BLACK,SMD,APCI0161-P002H(LOTES)HF	23.6070	1	40.8733
348-370750-280G	NGFF CONN 67P/0.5mm,H=8.5mm,E key,90D,BLACK,SMT,2E0BC21-S85BE-7H(FOXCONN) HF	23.6070	1	40.8733
348-850062-210G	NANO SIM CARD CONN, 6P, F, G/F, BLACK, 90D, SMT, NNSV0614W01B-R1K5-H(AUK)RoHS	12.8766	1	20.9838
348-850081-200G	SD CARD CONN,8pin,1.1mm,30u",F,H=2.42mm,90D,SMT,BLACK,WQ21823-DES1-7F(FOXCONN)RoHS	23.6070	1	40.8733
622-010150-000G	BATTERY CR2032W(MURATA) 3V 210mAh,-40~125°C,W/CABLE(L=150mm&TAPE),BIN-CR2032W-J-CT-SL-PV-01(RE-ENERGY)RoHS Belong to UN3090	25.0000	1	34.9638
143-701301-400G	CPU i.MX 8M Dual 1.3GHz,C/1M,MIMX8MD6CVAHZAB/FBGA-621(NXP) RoHS	72.4250	1	140.8466
151-090441-200G	LOW POWER PCIE GEN 1-4 CLOCK GENERATOR,9FGV0441AKILFT/VFQFPN-32(IDT) RoHS	14.0000	1	14.0000