



# MTBF PREDICTION REPORT

PA Department

**DFI**



# MTBF PREDICTION REPORT

**Model: M8M051-BCC-21DLC**

**Revision: A00**

<b>Completed Date</b>	<b>2021/08/05</b>
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### **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

**File Name:** M8M051-BCC-21DLC.rfp  
**System:** 770-M8M0511-100G  
**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-BCC-21DLC	770-M8M0511-100G	1	762.29	1,311,832
M8M051-BCC-21DLC	774-M8M0511-100G	1	762.29	1,311,832

**File Name:** M8M051-BCC-21DLC.rfp  
**Assembly:** 774-M8M0511-100G  
**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
141-058070-420G	IC USB 3.0 Hub CTRL 7 PORTS,USB5807CT/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

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**Assembly:** 774-M8M0511-100G  
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**MTBF (hrs):** 1311832  
**Failure Rate:** 762.2928  
**Temperature:** 25  
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Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
148-100416-400G	eMMC 5.1,16G,-25°C~+85°C,SMD,FBGA-153,SDINBDG4-16G-I1(SANDISK)RoHS	4.4178	1	6.8575
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,PDEV2120AY/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

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Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
213-152205-110C	MLCC 22pF/25V,NPO,J(5%),SMD 0201(None JP) RoHS	0.0911	3	0.2935
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



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**Failure Rate:** 762.2928  
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Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
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
223-047121-700G	CHOKE 0.47uH,M (20%),RDC≤14mΩ,Irms=7A,Isat=9.5A,SMT (4.7*4.3),MCS0420-R47MN2(PDC)RoHS	0.0831	2	0.1942
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	0.0831	1	0.1030
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	0.0831	1	0.1030
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)	0.0831	5	0.4591
223-523000-410G	CM FILTER Cd=0.25pF,Rs=3Ω,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,±30ppm,ESR:60Ω(Max),TOPR=-20°C~+105°C,SMD3225(4PAD),7V20080002(TXC) RoHS	1.4698	1	2.4229
241-225006-3B0G	X'TAL 25MHz,12pf,±10ppm,ESR:30Ω(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,±30ppm,ESR:50Ω(Max),TOPR=-40°C~+105°C,SMD3225(4PAD),7M27000056(TXC) RoHS	1.4698	1	2.4229
241-432773-390G	X'TAL 32.768KHz,7pf,±20ppm,ESR:70KΩ (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
242-527006-300G	OSC(HCSL) 27MHz,2.25V~3.6V,25ppm,TOPR=-40°C~+85°C,SMD3225(6PAD),DSC1104CI2-027.0000T (MICROCHIP)RoHS	1.1257	1	1.8325
251-160808-124S	BEAD CORE 160808 120Ω,2.5A,25%,SMT0603,PBY160808T-121Y-N (CHILISIN)	0.4535	2	1.5088
251-915221-210G	FERRITE BEAD 220Ω,700mA,BLM15EG221SN1D/0402(MURATA) RoHS	0.4535	15	8.4188
253-100110-500G	POLY SWITCH,PTC,1.1A/6V,SMD0805,0805L110ULY R(LITTELFUSE)RoHS	0.4000	2	1.1579
253-100266-403S	POLY SWITCH 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	0.0605	67	4.2102

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Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
263-180005-200C	RES 0Ω,J(5%),SMD,0402,(None JP)RoHS	0.0605	50	3.1606
263-180005-300C	RES 0Ω,J(5%),SMD,0603,(None JP)RoHS	0.0605	1	0.0805
263-180005-600C	RES 0Ω,J(5%),SMD,1206,(None JP)RoHS	0.0605	1	0.0805
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

**File Name:** M8M051-BCC-21DLC.rfp  
**Assembly:** 774-M8M0511-100G  
**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
263-184700-210C	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
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

**File Name:** M8M051-BCC-21DLC.rfp  
**Assembly:** 774-M8M0511-100G  
**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
346-510441-200G	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
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
143-701501-400G	CPU i.MX 8M Dual 1.5GHz C/1M,MIMX8MD6DVAJZAB/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-BCC-21DLC.rfp

**System:** 770-M8M0511-100G

**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-BCC-21DLC	770-M8M0511-100G	1	1568.81	637,427
M8M051-BCC-21DLC	774-M8M0511-100G	1	1568.81	637,427

**File Name:** M8M051-BCC-21DLC.rfp  
**Assembly:** 774-M8M0511-100G  
**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
141-058070-420G	IC USB 3.0 Hub CTRL 7 PORTS,USB5807CT/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



**File Name:** M8M051-BCC-21DLC.rfp  
**Assembly:** 774-M8M0511-100G  
**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
148-100416-400G	eMMC 5.1,16G,-25°C~+85°C,SMD,FBGA-153,SDINBDG4-16G-I1(SANDISK)RoHS	10.4080	1	16.1558
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,PDEV2120AY/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

**File Name:** M8M051-BCC-21DLC.rfp  
**Assembly:** 774-M8M0511-100G  
**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
213-152205-110C	MLCC 22pF/25V,NPO,J(5%),SMD 0201(None JP) RoHS	0.1030	3	0.3317
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



**File Name:** M8M051-BCC-21DLC.rfp  
**Assembly:** 774-M8M0511-100G  
**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
223-047120-830G	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
223-047121-700G	CHOKE 0.47uH,M (20%),RDC≤14mΩ,Irms=7A,Isat=9.5A,SMT (4.7*4.3),MCS0420-R47MN2(PDC)RoHS	0.1200	2	0.2804
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	0.1200	1	0.1487
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	0.1200	1	0.1487
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)	0.1200	5	0.6628
223-523000-410G	CM FILTER Cd=0.25pF,Rs=3Ω,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,±30ppm,ESR:60Ω(Max),TOPR=-20°C~+105°C,SMD3225(4PAD),7V20080002(TXC) RoHS	3.9138	1	6.4515
241-225006-3B0G	X'TAL 25MHz,12pf,±10ppm,ESR:30Ω(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,±30ppm,ESR:50Ω(Max),TOPR=-40°C~+105°C,SMD3225(4PAD),7M27000056(TXC) RoHS	3.9138	1	6.4515
241-432773-390G	X'TAL 32.768KHz,7pf,±20ppm,ESR:70KΩ (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
242-527006-300G	OSC(HCSL) 27MHz,2.25V~3.6V,25ppm,TOPR=-40°C~+85°C,SMD3225(6PAD),DSC1104CI2-027.0000T (MICROCHIP)RoHS	4.4349	1	7.2196
251-160808-124S	BEAD CORE 160808 120Ω,2.5A,25%,SMT0603,PBY160808T-121Y-N (CHILISIN)	0.6548	2	2.1784
251-915221-210G	FERRITE BEAD 220Ω,700mA,BLM15EG221SN1D/0402(MURATA) RoHS	0.6548	15	12.1548
253-100110-500G	POLY SWITCH,PTC,1.1A/6V,SMD0805,0805L110ULY R(LITTELFUSE)RoHS	0.4000	2	1.1579
253-100266-403S	POLY SWITCH 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	0.0873	67	6.0786

**File Name:** M8M051-BCC-21DLC.rfp  
**Assembly:** 774-M8M0511-100G  
**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
263-180005-200C	RES 0Ω,J(5%),SMD,0402,(None JP)RoHS	0.0873	50	4.5632
263-180005-300C	RES 0Ω,J(5%),SMD,0603,(None JP)RoHS	0.0873	1	0.1162
263-180005-600C	RES 0Ω,J(5%),SMD,1206,(None JP)RoHS	0.0873	1	0.1162
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

**File Name:** M8M051-BCC-21DLC.rfp  
**Assembly:** 774-M8M0511-100G  
**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
263-184700-210C	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
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

**File Name:** M8M051-BCC-21DLC.rfp  
**Assembly:** 774-M8M0511-100G  
**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
346-510441-200G	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
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
143-701501-400G	CPU i.MX 8M Dual 1.5GHz C/1M,MIMX8MD6DVAJZAB/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-BCC-21DLC.rfp  
**System:** 770-M8M0511-100G  
**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-BCC-21DLC	770-M8M0511-100G	1	2670.40	374,475
M8M051-BCC-21DLC	774-M8M0511-100G	1	2670.40	374,475

**File Name:** M8M051-BCC-21DLC.rfp  
**Assembly:** 774-M8M0511-100G  
**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 SGTL5000XNAA3/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
141-058070-420G	IC USB 3.0 Hub CTRL 7 PORTS,USB5807CT/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



**File Name:** M8M051-BCC-21DLC.rfp  
**Assembly:** 774-M8M0511-100G  
**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
148-100416-400G	eMMC 5.1,16G,-25°C~+85°C,SMD,FBGA-153,SDINBDG4-16G-I1(SANDISK)RoHS	18.4992	1	28.7152
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,BSS138KDTH/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

**File Name:** M8M051-BCC-21DLC.rfp  
**Assembly:** 774-M8M0511-100G  
**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
213-152205-110C	MLCC 22pF/25V,NPO,J(5%),SMD 0201(None JP) RoHS	0.1118	3	0.3601
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



**File Name:** M8M051-BCC-21DLC.rfp  
**Assembly:** 774-M8M0511-100G  
**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
223-047120-830G	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
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
242-527006-300G	OSC(HCSL) 27MHz,2.25V~3.6V,25ppm,TOPR=-40°C~+85°C,SMD3225(6PAD),DSC1104CI2-027.0000T (MICROCHIP)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	POLY SWITCH,PTC,1.1A/6V,SMD0805,0805L110ULY R(LITTELFUSE)RoHS	0.4000	2	1.1579
253-100266-403S	POLY SWITCH 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

**File Name:** M8M051-BCC-21DLC.rfp  
**Assembly:** 774-M8M0511-100G  
**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
263-180005-200C	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
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

**File Name:** M8M051-BCC-21DLC.rfp  
**Assembly:** 774-M8M0511-100G  
**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
263-184700-210C	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
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

**File Name:** M8M051-BCC-21DLC.rfp  
**Assembly:** 774-M8M0511-100G  
**Ref Des:**  
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**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
346-510441-200G	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
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
143-701501-400G	CPU i.MX 8M Dual 1.5GHz C/1M,MIMX8MD6DVAJZAB/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