



# MTBF PREDICTION REPORT

PA Department

**DFI**



# MTBF PREDICTION REPORT

**Model: WL053-ECA-8665UE**

**Revision: 0A1**

<b>Completed Date</b>	<b>2021/12/08</b>
<b>Designed By</b>	<b>Cindy chen</b>
<b>Approval By</b>	<b>Jerry Fang</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	569,616
45	410,391
60	301,279
80	187,893

**File Name:** WL053-ECA-8665UE.rfp  
**System:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 569616  
**Failure Rate:** 1,755.57  
**Temperature:** 25  
**Environment:** GB, GC - Ground Benign, Controlled

Assembly Name	Part Number	Quantity	Failure Rate (Fit)	MTBF (Hrs)
WL053-ECA-8665UE	774-WL0531-400G	1	1755.57	569,616

**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 569616  
**Failure Rate:** 1,755.5698  
**Temperature:** 25  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
112-900032-300G	IC TTL,Two-Input OR Gate,NC7SZ32P5X/SC70-5 (ON)RoHS	1.9772	6	14.2597
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	1	2.9741
113-500008-210G	IC TTL,Single 2-Input Positive-AND Gate,SN74LVC1G08DCKR/SC70-5(TI)RoHS	1.9772	15	33.3651
113-833306-400G	IC TTL,Dual FET Bus Switch,SN74CB3Q3306ADCUR/VSSOP8(US8-DCU) (TI)RoHS	1.9772	2	5.3538
113-906408-400G	IC LOW-VOLTAGE 8-BIT I2C AND SMBus I/O EXPANDER,UQFN16, TCA6408ARSVR(TI)RoHS	1.9772	1	2.9741
121-000104-420G	IC 4-BIT BIDIRECTIONAL VOLTAGE-LEVEL TRANSLATOR,NTS0104GU12/XQFN12(NXP) RoHS	1.9772	1	2.9741
121-002069-200G	IC Power-Distribution Switches,1.5A,TPS2069DDBVT/SOT23-5(TI)RoHS	1.9772	1	2.9741
121-003941-200G	IC 4 Times Linear Fan Driver,NCT3941S/SOP-8 (NUVOTON)RoHS	1.9772	1	2.9741
121-007111-400G	IC Power Switch RSET with Flag,JW7111DFNB#TRPBF/DFN-6(2x2)(JOULWATT) 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	3	7.6379
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
121-302045-400G	IC Integrated Driver and MOSFET,NCP302045MNTWG/PQFN-33(5*5)(ON) RoHS	1.9772	4	9.8732
135-301004-201G	EEPROM 8K(1024*8)M24C08-WMN6TP/SO-8(ST) RoHS	4.4178	1	6.8575
135-301282-220G	SPI SERIAL FLASH 128Mbit,W25Q128JVSQ/SOIC-8 (WINBOND)RoHS	4.4178	1	6.8575
136-112180-200G	8-bit Flash Microcontroller PIC12F1822-I/SN/SOIC-8 (MICROCHIP)RoHS	4.4178	1	6.8575
141-290800-400G	IC Controller,4V-60V Input Current Mode Synchronous Step-Down,MP2908AGL-Z/(MPS)RoHS	1.9772	2	5.3538
141-812450-400G	IC PWM CTRL, NCP81245MNTXG/QFN-52(ON)RoHS	1.9772	1	2.9741
147-002190-400G	IC CHIP,Giga LAN PHY,WGI219LM SLKJ3/QFN48 (6x6mm) (INTEL)RoHS	1.9772	1	2.9741
147-055250-200G	IC CHIP Super I/O, NCT5525D/LQFP-64(NUVOTON) RoHS	1.9772	1	2.9741
171-200014-200G	DIODE SCHOTTKY BARRIER RECTIFIER,40V,1A,SS14S-TH-WS/SOD-123S (WILLAS)RoHS	0.2189	3	1.0099
171-200046-201G	DIODE SCHOTTKY BARRIER RECTIFIER,100V,150mA,BAT46W/SOD-123(SECOS) RoHS	0.2189	2	0.7270

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**Failure Rate:** 1,755.5698  
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Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
171-204005-210G	DIODE SCHOTTKY BARRIER 40V,200mA,BAS40-05-7-F/SOT23-3(DIODES)RoHS	0.2189	5	1.5482
171-205200-220G	DIODE SCHOTTKY,30V,200mA,RB520S-30H/SOD-523(SMARTENGRAND)RoHS	0.2189	1	0.4229
171-214148-503S	DIODE Switching,SMD,1N4148W-TG-WS/SOD-123(WILLAS)	0.2189	2	0.7270
171-360360-500G	DIODE TVS,36V,600W,SMBJ36CA/DO-214AA(LITTELFUSE)RoHS	0.2189	1	0.4229
171-404010-200S	DIODE 4-CHANNEL ESD PROTECTION,TPD4S010DQAR/SON-DQA10(TI)	0.2189	4	1.2823
171-451715-200G	DIODE Zener,15V,Vz=14.34V~14.98V,UDZVTE-1715B/SOD-323FL(ROHM)RoHS	0.2189	2	0.7270
171-451756-200G	DIODE Zener,5.6V,Vz=5.49V~5.73V,UDZVTE-175.6B/SOD-323F(ROHM)RoHS	0.2189	1	0.4229
171-452390-200S	DIODE Zener,39V,BZT52C39S/SOD-323(DIODES)	0.2189	1	0.4229
171-841023-200G	DIODE TVS Array,3.3V,AZ1023-04F.R7G/DFN2510P10E(AMAZING)RoHS	0.2189	2	0.7270
172-207002-241G	MOSFET N-Ch,VDS:60V,ID:300mA,VGS:±20V,@10V,RDS:3Ω,2N7002K/SOT23-3(PANJIT)RoHS	7.2970	2	19.4351
172-223904-400G	TRANSISTOR Dual NPN,MBT3904DW1T1G/SOT-363(ON)RoHS	1.1741	4	6.4928
172-223906-207S	TRANSISTOR PNP,PMBS3906/SOT23(NXP)	1.1741	1	2.0814
172-239040-210G	TRANSISTOR DUAL NPN,Ic ≤ 200mA,Vcbo:60V,Vceo:40V,MMBT3904DTH/SOT563-6(SMARTENGRAND)RoHS	1.1741	3	5.0829
172-300612-200G	MOSFET Dual N-Ch,VDS:30V,VGS:±20V,ID:100mA,@4V,RDS:8Ω,EM6K1GT2R/SOT-563(ROHM)RoHS	7.2970	1	10.7463
172-301380-220G	MOSFET Dual N-Ch,VDS:50V,ID:350mA,VGS:±20V,@10V,RDS:1.6Ω,BSS138KDTH/SOT563-6(SMARTENGRAND)RoHS	7.2970	28	221.8591
172-302003-210G	MOSFET N-Ch,VDS:30V,ID:7A,VGS:±20V,@10V,RDS:20mΩ,EMB20N03VA/EDFN-8(2x2)(EXCELLIANCE)RoHS	7.2970	2	19.4351
172-323052-200G	MOSFET P-Ch,VDS:-30V,ID:-4.9A,VGS:±12V,@-10V,RDS ≤ 52mΩ,CEH2305/TSOP-6(CET)RoHS	7.2970	1	10.7463
172-326110-200G	MOSFET P-Ch,VDS:-20V,ID:-4.9A,VGS:±12V,@-4.5V,RDS:45mΩ,FKN2611/SOT23-3(FETEK)RoHS	7.2970	1	10.7463
172-369010-200G	MOSFET P-Ch,VDS:-60V,ID:-72A,VGS:±20V,@-10V,RDS:8.6mΩ,PDC6901X/PPAK-8(5X6)(POTENS)RoHS	7.2970	2	19.4351
172-372460-200G	MOSFET N-Ch,VDS:60V,ID:24A,VGS:±20V,@10V,RDS(ON):13.2mΩ(Max),AON7246E/DFN-8 (3x3)EP(AOS)RoHS	7.2970	8	67.9278
213-151015-200C	MLCC 101P/50V,NPO,J(5%),SMD,0402,(None JP)RoHS	0.0911	3	0.2935

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Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
213-151505-200C	MLCC 15pF/50V,NPO,J(5%),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	4	0.3877
213-152215-200C	MLCC 221P/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.0911	6	0.5752
213-152705-200C	MLCC 27pF/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.0911	2	0.1987
213-153319-200C	MLCC 331P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.0911	9	0.8549
213-154705-200C	MLCC 47pF/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.0911	2	0.1987
213-156815-200C	MLCC 681P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.0911	2	0.1987
213-251028-200C	MLCC 102P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.0911	7	0.6685
213-251028-300C	MLCC 102P/50V,X7R,K(10%),SMD,0603,(None JP) RoHS	0.0911	4	0.3877
213-251029-110C	MLCC 102P/25V,X7R,K(10%)SMD,0201(None JP) RoHS	0.0911	6	0.5752
213-251038-250C	MLCC 103P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.0911	5	0.4816
213-251039-130C	MLCC 103P/10V,X7R,K(10%),SMD,0201,(None JP) RoHS	0.0911	1	0.1028
213-251048-230J	MLCC 104P/50V,X7R,K(10%),SMD,0402,(JP)RoHS	0.0911	5	0.4816
213-251049-130J	MLCC 104P/10V,X5R,K(10%),SMD,0201,(JP)RoHS	0.0911	60	5.5561
213-251049-200J	MLCC 104P/16V,X7R,K(10%),SMD,0402,(JP)RoHS	0.0911	59	5.4642
213-251049-270J	MLCC 104P/25V,X5R,K(10%),SMD,0402,(JP)RoHS	0.0911	6	0.5752
213-251049-380C	MLCC 104P/100V,X7R,K(10%),SMD,0603,(None JP) RoHS	0.0911	1	0.1028
213-251059-109G	MLCC 105P/6.3V,X5R,K(10%),SMD,0201,CC0201KRX5R5BB105(YAGEO) RoHS	0.0911	54	5.0048
213-251059-200C	MLCC 105P/6.3V,X5R,K(10%),SMD,0402,(None JP) RoHS	0.0911	1	0.1028
213-251059-220J	MLCC 105P/10V,X5R,K(10%),SMD,0402,(JP)RoHS	0.0911	8	0.7618
213-251059-230J	MLCC 105P/16V,X5R,K(10%),SMD,0402,(JP)RoHS	0.0911	32	2.9810
213-251059-270C	MLCC 105P/6.3V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.0911	1	0.1028
213-251059-330J	MLCC 105P/25V,X5R,K(10%),SMD,0603,(JP)RoHS	0.0911	6	0.5752
213-251068-200J	MLCC 106P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.0911	67	6.1988
213-251068-300J	MLCC 106P/6.3V,X5R,M(20%),SMD,0603,(JP)RoHS	0.0911	24	2.2434
213-251069-320J	MLCC 106P/10V,X5R,K(10%),SMD,0603,(JP)RoHS	0.0911	1	0.1028
213-251069-500C	MLCC 106P/6.3V,X5R,K(10%),SMD,0805,(None JP) RoHS	0.0911	1	0.1028
213-251069-540J	MLCC 106P/16V,X5R,K(10%),SMD,0805,(JP)RoHS	0.0911	5	0.4816
213-251069-680J	MLCC 106P/50V,X5R,K(10%),SMD,1206,(JP)RoHS	0.0911	15	1.4116



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**Failure Rate:** 1,755.5698  
**Temperature:** 25  
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Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
213-251228-200C	MLCC 122P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.0911	1	0.1028
213-251528-200C	MLCC 152P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.0911	6	0.5752
213-251839-300C	MLCC 183P/50V,X7R,K(10%),SMD,0603,(None JP) RoHS	0.0911	2	0.1987
213-252229-200C	MLCC 222P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.0911	4	0.3877
213-252239-220J	MLCC 223P/50V,X7R,K(10%),SMD,0402,(JP)RoHS	0.0911	1	0.1028
213-252249-140C	MLCC 224P/6.3V,X5R,K(10%),SMD,0201,(None JP) RoHS	0.0911	12	1.1336
213-252249-210C	MLCC 224P/10V,X5R,K(10%),SMD,0402,(None JP) RoHS	0.0911	1	0.1028
213-252249-330C	MLCC 224P/25V,X7R,K(10%),SMD,0603,(None JP) RoHS	0.0911	4	0.3877
213-252249-360J	MLCC 224P/50V,X7R,K(10%),SMD,0603,(JP)RoHS	0.0911	2	0.1987
213-252259-200J	MLCC 225P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.0911	1	0.1028
213-252259-330C	MLCC 225P/16V,X5R,K(10%)SMD,0603,(None JP) RoHS	0.0911	1	0.1028
213-252268-310J	MLCC 226P/6.3V,X5R,M(20%),SMD,0603,(JP)RoHS	0.0911	46	4.2695
213-252268-330J	MLCC 226P/10V,X5R,M(20%),SMD,0603,(JP)RoHS	0.0911	11	1.0407
213-252268-500C	MLCC 226P/25V,X5R,M(20%),SMD,0805,(None JP) RoHS	0.0911	17	1.5967
213-252269-510J	MLCC 226P/6.3V,X5R,M(20%),SMD,0805,(JP)RoHS	0.0911	5	0.4816
213-253349-220C	MLCC 334P/25V,X5R,K(10%),SMD,0402,(None JP) RoHS	0.0911	1	0.1028
213-254715-200C	MLCC 471P/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.0911	8	0.7618
213-254718-210C	MLCC 471P/25V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.0911	5	0.4816
213-254739-210C	MLCC 473P/16V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.0911	3	0.2935
213-254758-210J	MLCC 475P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.0911	1	0.1028
213-254759-300C	MLCC 475P/6.3V,X5R,K(10%),SMD,0603,(None JP) RoHS	0.0911	2	0.1987
213-254759-320C	MLCC 475P/10V,X5R,K(10%),SMD,0603,(None JP) RoHS	0.0911	8	0.7618
213-254759-540J	MLCC 475P/16V,X7R,K(10%),SMD,0805,(JP)RoHS	0.0911	2	0.1987
213-254768-306G	MLCC 476P/6.3V,X5R,M(20%),SMD,0603,GRM188R60J476M(MURATA)RoHS	0.0911	2	0.1987
213-254768-500J	MLCC 476P/6.3V,X5R,M(20%),SMD,0805,(JP)RoHS	0.0911	9	0.8549
213-255629-200C	MLCC 562P/50V,X7R,K(10%),SMD,0402,(None JP)) RoHS	0.0911	1	0.1028
217-104778-700G	POLYMER(ALM) CAP 470uF/2V,4.5mΩ,4000mA,SMD,V7343,105°C/2000H ,M(20%),bottom of round shape,EEFSX0D471E4 (PANASONIC)RoHS	0.7181	3	2.5481

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217-302278-326G	POLYMER(TAN)CAP 220uF/6.3V,45mΩ,1700mA,105°C/2000H,M (20%),B3528(1.9),T520B227M006ATE045(KEMET) RoHS	0.7181	4	3.3261
217-303378-720G	POLYMER(TAN) CAP 330uF/2.5V,9mΩ,3900mA,SMD,D7343- D2E,105°C/2000H,M(20%),2R5TPE330M9(SANYO) RoHS	0.7181	1	0.9480
217-304778-726G	POLYMER(TAN) CAP,470uF/6.3V,25mΩ,3000mA,SMD,D7343- 31,105°C/2000H,M(20%),T520D477M006ATE025 (KEMET)RoHS	0.7181	1	0.9480
217-333378-700G	POLYMER(TAN) CAP 330uF/6.3V,25mΩ,2700mA,SMD,V7343- 20,105°C/2000H,M(20%),T520V337M006ATE025 (KEMET)RoHS	0.7181	1	0.9480
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	1	0.1030
223-010322-510G	CHOKE 10uH,M (20%),RDC ≤ 68mΩ,Idc=4A,Isat=5.5A,SMD, (6.95x6.6x2.8),PCMB063T-100MS(CYNTEC)RoHS	0.0831	1	0.1030
223-015122-600G	CHOKE 0.15uH,M (20%),RDC ≤ 0.66mΩ,Idc ≤ 36A,Isat=45A,SMD, (7.6*6.6*3.8),PCME064T-R15MS0R667(CYNTEC) RoHS	0.0831	3	0.2835
223-022223-100G	CHOKE 2.2uH,M(20%),RDC=6.7mΩ (Typ.),Irms=12A,Isat=18A,SMD, (11.15x10x4),MCS1040-2R2MN1(PDC)RoHS	0.0831	2	0.1942
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
223-068121-900G	CHOKE 0.68uH,M (20%),RDC ≤ 9.2mΩ,Idc=10A,Isat=15A,SMD (4.85x4.7x2.8),CMMB053T-R68MS(CYNTEC)RoHS	0.0831	1	0.1030
223-322220-300G	INDUCTOR 2.2uH,M (20%),Itemp:500mA,RDC:250mΩ,SMD(0603) (1.6*0.8mm),MLZ1608A2R2WT000(TDK)RoHS	0.0831	2	0.1942
223-490040-540G	COMMON CHOKE 90Ω,25%,Irated ≤ 500mA,RDC ≤ 300mΩ,USB3.1 Gen2,10GHz,SMD(0805) (2*1.2*1.5mm),GCMF2012PM-900T(GOTREND) RoHS	0.0831	6	0.5464

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Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
223-490090-500S	COMMON CHOKE 90Ω,60-100Ω,300mA (Max),RDC≤300mΩ,HDMI/USB3.0 6GHz,SMD0805 (2*1.2*1.2mm),GLECM2012B-900QT(GOTREND)	0.0831	4	0.3713
223-523000-410G	CM FILTER Cd=0.25pF,Rs=3Ω,SMD (1.57*1.17*0.57),PCMF2USB3S/WLCSP10(NXP) RoHS	0.0831	4	0.3713
231-051396-400G	Synchronous Buck Converter,Vin:4.5~24V,Vout:0.6~7V,8A,TPS51396A RJER/VQFN-20(3x3)(TI)RoHS	1.9772	1	2.9741
231-051397-400G	Synchronous Buck Converter,Vin:4.5~24V,Vout:0.6~5.5V,10A,TPS5139 7ARJER/VQFN-20(3x3)(TI)RoHS	1.9772	1	2.9741
231-107208-200G	REGULATOR 2A,SY7208LABC/SOT23-6(SILERGY) RoHS	1.9474	1	3.7871
231-108310-400G	Synchronous Step Down Regulator,10A,Vo:1.2V,SY8310RAC/QFN-20(3x3) (SILERGY)RoHS	1.9474	1	3.7871
231-108843-400G	Synchronous Step Down Regulator,3A,Vo:1.8V,SY8843QWC/QFN-7(1.5x1.5) (SILERGY)RoHS	1.9474	1	3.7871
231-171330-200G	REGULATOR GS7133TD-R,3A,TDFN10(GSTEK)RoHS	1.9474	1	3.7871
241-224006-310G	X'TAL 24MHz,16pF,±30ppm,ESR:50Ω(Max),TOPR=-40°C~+105°C,SMD3225(4PAD),7M24000082(TXC) RoHS	1.4698	1	2.4229
241-225006-350G	X'TAL 25MHz,18pF,±30ppm,ESR:50Ω(Max),TOPR=-40°C~+105°C,SMD3225(4PAD),7M25000175(TXC) RoHS	1.4698	1	2.4229
241-432773-300G	X'TAL 32.768kHz,12.5pf,±20ppm,ESR≤70KΩ,TOPR=-40°C~+125°C,SMD3215(2PAD),FC-13A,X1A000091000100(EPSON)RoHS	1.4698	1	2.4229
251-160808-083S	BEAD CORE 160808 80Ω,300mA,25%,SMT0603,SBK160808T-800Y-N (CHILISIN)	0.4535	2	1.5088
251-653001-000G	FERRITE BEAD 53Ω±25%,45A,RDC≤0.6mΩ,SMD (4.7x3.1mm),BPH403025W4-530T(TAI-TECH)RoHS	0.4535	1	0.8779
253-100110-500G	POLYSWITCH,PTC,1.1A/6V,SMD0805,0805L110ULY R(LITTELFUSE)RoHS	0.4000	1	0.6546
253-100115-604S	POLYSWITCH,PTC,1.1A/8V,SMD1206,1206L110THY R(LITTELFUSE)RoHS	0.4000	2	1.1579
261-361515-200C	RES ARRAY 150Ω 8P4R J(5%),0402*4,(None JP) RoHS	0.0605	2	0.1490
263-120037-81CG	PMS RES 2W,3mΩ,F(1%),SMD,2512,FMF25FPJR003-LH(PDC)RoHS	0.0605	1	0.0805
263-120047-81HG	PMS RES 2W,4mΩ,F (1%),SMD,2512,RM2512FBR004GM(LIZ)RoHS	0.0605	1	0.0805
263-180005-100C	RES 0Ω,J(5%),SMD,0201,(None JP)RoHS	0.0605	117	7.2848
263-180005-200C	RES 0Ω,J(5%),SMD,0402,(None JP)RoHS	0.0605	22	1.4213
263-180005-300C	RES 0Ω,J(5%),SMD,0603,(None JP)RoHS	0.0605	10	0.6660

**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 569616  
**Failure Rate:** 1,755.5698  
**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	9	0.6024
263-180100-310C	RES 10Ω,F(1%),SMD,0603,(None JP)RoHS	0.0605	4	0.2814
263-180100-510C	RES 10Ω,F(1%),SMD,0805,(None JP)RoHS	0.0605	2	0.1490
263-180330-110C	RES 33Ω,F(1%),SMD,0201,(None JP)RoHS	0.0605	5	0.3464
263-180430-210C	RES 43Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-180510-110C	RES 51Ω,F(1%),SMD,0201,(None JP)RoHS	0.0605	5	0.3464
263-180519-210C	RES 5.1Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-180560-210C	RES 56Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-180750-110C	RES 75Ω,F(1%),SMD,0201,(None JP)RoHS	0.0605	1	0.0805
263-181000-110C	RES 100Ω,F(1%),SMD,0201,(None JP)RoHS	0.0605	12	0.7928
263-181000-210C	RES 100Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	6	0.4110
263-181001-110C	RES 1KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0605	30	1.9203
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	88	5.5033
263-181002-210C	RES 10KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	13	0.8560
263-181003-110C	RES 100KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0605	26	1.6711
263-181003-210C	RES 100KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	17	1.1079
263-181004-110C	RES 1MΩ,F(1%),SMD,0201,(None JP)RoHS	0.0605	2	0.1490
263-181004-210C	RES 1MΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	3	0.2157
263-181005-210C	RES 10MΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-181072-210C	RES 10.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-181101-210C	RES 1.1KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-181103-210C	RES 110KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-181130-210C	RES 113Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-181182-210C	RES 11.8KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-181201-210C	RES 1.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	3	0.2157
263-181202-210C	RES 12KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	4	0.2814
263-181210-210C	RES 121Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-181213-210C	RES 121KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-181302-210C	RES 13KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-181402-210C	RES 14KΩ,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	2	0.1490
263-181502-210C	RES 15KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	2	0.1490
263-181505-100C	RES 15Ω,J(5%),SMD,0201,(None JP)RoHS	0.0605	4	0.2814
263-181602-210C	RES 16KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	2	0.1490
263-181603-210C	RES 160KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-181653-210C	RES 165KΩ,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
263-181872-210C	RES 18.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-181962-210C	RES 19.6KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-182000-210C	RES 200Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	3	0.2157
263-182001-210C	RES 2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	7	0.4746
263-182002-110C	RES 20KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0605	4	0.2814
263-182002-210C	RES 20KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	3	0.2157
263-182003-110C	RES 200KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0605	1	0.0805
263-182003-210C	RES 200KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805



**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 569616  
**Failure Rate:** 1,755.5698  
**Temperature:** 25  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
263-182200-210C	RES 220Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-182201-110C	RES 2.2KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0605	9	0.6024
263-182208-210C	RES 2.2Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-182208-310C	RES 2.2Ω,F(1%),SMD,0603,(None JP)RoHS	0.0605	8	0.5386
263-182208-510C	RES 2.2Ω,F(1%),SMD,0805,(None JP)RoHS	0.0605	4	0.2814
263-182400-110C	RES 240Ω,F(1%),SMD,0201,(None JP)RoHS	0.0605	3	0.2157
263-182401-210C	RES 2.4KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-182492-210C	RES 24.9KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-182499-210C	RES 24.9Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	2	0.1490
263-182702-218G	RES 27KΩ,F(1%),SMD,0402,RTT022702FTH(RALEC) RoHS Taiwan	0.0605	1	0.0805
263-182742-210C	RES 27.4KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	2	0.1490
263-183000-210C	RES 300Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-183000-310C	RES 300Ω,F(1%),SMD,0603,(None JP)RoHS	0.0605	1	0.0805
263-183002-210C	RES 30KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-183003-210C	RES 300KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	2	0.1490
263-183011-210C	RES 3.01KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-183162-210C	RES 31.6KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-183300-210C	RES 330Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	2	0.1490
263-183301-210C	RES 3.3KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	2	0.1490
263-183303-210C	RES 330KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-183402-210C	RES 34KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-183742-210C	RES 37.4KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-183922-110C	RES 39.2KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0605	1	0.0805
263-184321-210C	RES 4.32KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	3	0.2157
263-184539-210C	RES 45.3Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-184700-110C	RES 470Ω,F(1%),SMD,0201,(None JP)RoHS	0.0605	9	0.6024
263-184701-110C	RES 4.7KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0605	25	1.6087
263-184701-210C	RES 4.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-184702-110C	RES 47KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0605	9	0.6024
263-184871-210C	RES 4.87KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	3	0.2157
263-184990-110C	RES 499Ω,F(1%),SMD,0201,(None JP)RoHS	0.0605	1	0.0805
263-184992-210C	RES 49.9KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	3	0.2157
263-184999-110C	RES 49.9Ω,F(1%),SMD,0201,(None JP)RoHS	0.0605	4	0.2814
263-184999-210C	RES 49.9Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	9	0.6024
263-185102-210C	RES 51KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	4	0.2814
263-185602-210C	RES 56KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	2	0.1490
263-185622-210C	RES 56.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-186041-210C	RES 6.04KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-186049-210C	RES 60.4Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	2	0.1490
263-186192-210C	RES 61.9KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-187501-210C	RES 7.5KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	2	0.1490
263-187502-210C	RES 75KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-188069-210C	RES 80.6Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-188201-210C	RES 8.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-188871-210C	RES 8.87KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805
263-189100-210C	RES 910Ω,F(1%),SMD,0402,(None JP)RoHS	0.0605	1	0.0805

**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 569616  
**Failure Rate:** 1,755.5698  
**Temperature:** 25  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
263-189762-210C	RES 97.6KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0605	2	0.1490
273-010400-300G	THERM RES 100KΩ,0603(B:25/85=3950,3%)RoHS	0.9957	5	7.0942
273-100402-301S	THERM RES 10KΩ,J(5%),SMD,0603, (B25/85=3435,3%),TSM1A103J34D3RZ(TKS)	0.9957	2	3.3397
314-WL0531-109G	PCB WL053 R.A(12L 100x72x1.6mm, 2 Panelization) OSP(CIRCUITECH)RoHS	2.4655	1	4.6984
342-122101-100G	DISPLAYPORT/HDMI CONN,21P,MALE,R/A,DIP,GF,845-002-217CRL (REGO)RoHS	2.0862	1	3.6121
342-310022-110G	Screw CONN. Terminal Block,Green,2Pos,300V,16A,PIT:5.0mm,MB612- 50002(DECA) RoHS	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
343-501820-110G	USB 3.1 GEN2 CONN*2, 18P, A Type, Green, F, G/F, 90D, DIP, U2131D-UADH-0401R(HDSY)RoHS	2.0862	1	3.6121
346-120310-201G	PIN PLUG 2*3, 1.27mm, H=5mm, 180D, SMD, SHY- JCL180806P(V-STAR)RoHS	14.6036	2	44.2517
346-120511-201G	PIN PLUG 2*5, 1.27mm, H=5mm, 180D, SMD, SHY- JCL180810P(V-STAR)RoHS	14.6036	3	62.1595
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
347-103100-200S	WAFER 1*3,1.25mm,M,H=3.45mm,90D,SMT,WHITE,0110- 3221030(E-CALL)RoHS	2.0862	1	3.6121
348-220800-200S	SOCKET SPI 8Pin,GF,H=5.65mm,180D,SMT,ACA-SPI -004-K01(LOTES)	1.1379	1	1.8544
348-370750-230G	NGFF CONN 67P/0.5mm,E Key,R/A,SMD,AS0BC21- S40BE-7H,(FOXCONN)HF	1.1379	1	1.8544
348-370750-240G	NGFF CONN 67P/0.5mm,H=8.5mm,B key,90D,BLACK,SMD,APCI0161-P002H(LOTES)HF	2.0862	2	6.3217
348-652600-200G	DDR4 SO DIMM 1*260P,10u",H=8.0mm 1.2V,RVS,90D,SMD,ASAA826-E8RB0-7H(FOXCONN) HF	1.1379	1	1.8544
622-010140-000G	BATTERY CR2032(MURATA) 3V 220mAh,-30°C ~+70°C,W/CABLE(L=150mm&TAPE),BIN-CR2032-I- CT-SL-PV-01(RE-ENERGY)RoHS Belong to UN3090	25.0000	1	34.9638
686-110322-100G	PIN PLUG 1*3,2.0mm,M,H=5.9mm,180D,DIP,W/BLACK JUMPER,22S-96-03GB01(PINREX)RoHS	2.0862	1	3.6121
292-301000-500S	BUZZER 3V,100mA,12Ω,4Khz,85db,SMD (5*4.2mm),SMT-G5030A(KEPO)	600.0000	1	600.0000
143-101705-401G	CPU Intel Core i7-8665UE 1.7GHz C/8M,V0,CL8068404148003 SRFDS/FCBGA-1528 (INTEL)RoHS	422.0000	1	422.0000

**File Name:** WL053-ECA-8665UE.rfp  
**System:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 410391  
**Failure Rate:** 2,436.70  
**Temperature:** 45  
**Environment:** GB, GC - Ground Benign, Controlled

Assembly Name	Part Number	Quantity	Failure Rate (Fit)	MTBF (Hrs)
WL053-ECA-8665UE	774-WL0531-400G	1	2436.70	410,391

**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 410391  
**Failure Rate:** 2,436.6990  
**Temperature:** 45  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
112-900032-300G	IC TTL,Two-Input OR Gate,NC7SZ32P5X/SC70-5 (ON)RoHS	4.6582	6	33.5948
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	1	7.0069
113-500008-210G	IC TTL,Single 2-Input Positive-AND Gate,SN74LVC1G08DCKR/SC70-5(TI)RoHS	4.6582	15	78.6058
113-833306-400G	IC TTL,Dual FET Bus Switch,SN74CB3Q3306ADCUR/VSSOP8(US8-DCU) (TI)RoHS	4.6582	2	12.6132
113-906408-400G	IC LOW-VOLTAGE 8-BIT I2C AND SMBus I/O EXPANDER,UQFN16, TCA6408ARSVR(TI)RoHS	4.6582	1	7.0069
121-000104-420G	IC 4-BIT BIDIRECTIONAL VOLTAGE-LEVEL TRANSLATOR,NTS0104GU12/XQFN12(NXP) RoHS	4.6582	1	7.0069
121-002069-200G	IC Power-Distribution Switches,1.5A,TPS2069DDBVT/SOT23-5(TI)RoHS	4.6582	1	7.0069
121-003941-200G	IC 4 Times Linear Fan Driver,NCT3941S/SOP-8 (NUVOTON)RoHS	4.6582	1	7.0069
121-007111-400G	IC Power Switch RSET with Flag,JW7111DFNB#TRPBF/DFN-6(2x2)(JOULWATT) 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	3	17.9944
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
121-302045-400G	IC Integrated Driver and MOSFET,NCP302045MNTWG/PQFN-33(5*5)(ON) RoHS	4.6582	4	23.2605
135-301004-201G	EEPROM 8K(1024*8)M24C08-WMN6TP/SO-8(ST) RoHS	10.4080	1	16.1558
135-301282-220G	SPI SERIAL FLASH 128Mbit,W25Q128JVSQ/SOIC-8 (WINBOND)RoHS	10.4080	1	16.1558
136-112180-200G	8-bit Flash Microcontroller PIC12F1822-I/SN/SOIC-8 (MICROCHIP)RoHS	10.4080	1	16.1558
141-290800-400G	IC Controller,4V-60V Input Current Mode Synchronous Step-Down,MP2908AGL-Z/(MPS)RoHS	4.6582	2	12.6132
141-812450-400G	IC PWM CTRL, NCP81245MNTXG/QFN-52(ON)RoHS	4.6582	1	7.0069
147-002190-400G	IC CHIP,Giga LAN PHY,WGI219LM SLKJ3/QFN48 (6x6mm) (INTEL)RoHS	4.6582	1	7.0069
147-055250-200G	IC CHIP Super I/O, NCT5525D/LQFP-64(NUVOTON) RoHS	4.6582	1	7.0069
171-200014-200G	DIODE SCHOTTKY BARRIER RECTIFIER,40V,1A,SS14S-TH-WS/SOD-123S (WILLAS)RoHS	0.3751	3	1.7307
171-200046-201G	DIODE SCHOTTKY BARRIER RECTIFIER,100V,150mA,BAT46W/SOD-123(SECOS) RoHS	0.3751	2	1.2458



**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 410391  
**Failure Rate:** 2,436.6990  
**Temperature:** 45  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
171-204005-210G	DIODE SCHOTTKY BARRIER 40V,200mA,BAS40-05-7-F/SOT23-3(DIODES)RoHS	0.3751	5	2.6531
171-205200-220G	DIODE SCHOTTKY,30V,200mA,RB520S-30H/SOD-523(SMARTENGRAND)RoHS	0.3751	1	0.7247
171-214148-503S	DIODE Switching,SMD,1N4148W-TG-WS/SOD-123(WILLAS)	0.3751	2	1.2458
171-360360-500G	DIODE TVS,36V,600W,SMBJ36CA/DO-214AA(LITTELFUSE)RoHS	0.3751	1	0.7247
171-404010-200S	DIODE 4-CHANNEL ESD PROTECTION,TPD4S010DQAR/SON-DQA10(TI)	0.3751	4	2.1975
171-451715-200G	DIODE Zener,15V,Vz=14.34V~14.98V,UDZVTE-1715B/SOD-323FL(ROHM)RoHS	0.3751	2	1.2458
171-451756-200G	DIODE Zener,5.6V,Vz=5.49V~5.73V,UDZVTE-175.6B/SOD-323F(ROHM)RoHS	0.3751	1	0.7247
171-452390-200S	DIODE Zener,39V,BZT52C39S/SOD-323(DIODES)	0.3751	1	0.7247
171-841023-200G	DIODE TVS Array,3.3V,AZ1023-04F.R7G/DFN2510P10E(AMAZING)RoHS	0.3751	2	1.2458
172-207002-241G	MOSFET N-Ch,VDS:60V,ID:300mA,VGS:±20V,@10V,RDS:3Ω,2N7002K/SOT23-3(PANJIT)RoHS	12.5047	2	33.3055
172-223904-400G	TRANSISTOR Dual NPN,MBT3904DW1T1G/SOT-363(ON)RoHS	2.0121	4	11.1266
172-223906-207S	TRANSISTOR PNP,PMBS3906/SOT23(NXP)	2.0121	1	3.5668
172-239040-210G	TRANSISTOR DUAL NPN,Ic ≤ 200mA,Vcbo:60V,Vceo:40V,MMBT3904DTH/SOT563-6(SMARTENGRAND)RoHS	2.0121	3	8.7105
172-300612-200G	MOSFET Dual N-Ch,VDS:30V,VGS:±20V,ID:100mA,@4V,RDS:8Ω,EM6K1GT2R/SOT-563(ROHM)RoHS	12.5047	1	18.4158
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
172-302003-210G	MOSFET N-Ch,VDS:30V,ID:7A,VGS:±20V,@10V,RDS:20mΩ,EMB20N03VA/EDFN-8(2x2)(EXCELLIANCE)RoHS	12.5047	2	33.3055
172-323052-200G	MOSFET P-Ch,VDS:-30V,ID:-4.9A,VGS:±12V,@-10V,RDS ≤ 52mΩ,CEH2305/TSOP-6(CET)RoHS	12.5047	1	18.4158
172-326110-200G	MOSFET P-Ch,VDS:-20V,ID:-4.9A,VGS:±12V,@-4.5V,RDS:45mΩ,FKN2611/SOT23-3(FETEK)RoHS	12.5047	1	18.4158
172-369010-200G	MOSFET P-Ch,VDS:-60V,ID:-72A,VGS:±20V,@-10V,RDS:8.6mΩ,PDC6901X/PPAK-8(5X6)(POTENS)RoHS	12.5047	2	33.3055
172-372460-200G	MOSFET N-Ch,VDS:60V,ID:24A,VGS:±20V,@10V,RDS(ON):13.2mΩ(Max),AON7246E/DFN-8 (3x3)EP(AOS)RoHS	12.5047	8	116.4067
213-151015-200C	MLCC 101P/50V,NPO,J(5%),SMD,0402,(None JP)RoHS	0.1030	3	0.3317

**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 410391  
**Failure Rate:** 2,436.6990  
**Temperature:** 45  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
213-151505-200C	MLCC 15pF/50V,NPO,J(5%),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	4	0.4382
213-152215-200C	MLCC 221P/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1030	6	0.6501
213-152705-200C	MLCC 27pF/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1030	2	0.2246
213-153319-200C	MLCC 331P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1030	9	0.9662
213-154705-200C	MLCC 47pF/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1030	2	0.2246
213-156815-200C	MLCC 681P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1030	2	0.2246
213-251028-200C	MLCC 102P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1030	7	0.7556
213-251028-300C	MLCC 102P/50V,X7R,K(10%),SMD,0603,(None JP) RoHS	0.1030	4	0.4382
213-251029-110C	MLCC 102P/25V,X7R,K(10%)SMD,0201(None JP) RoHS	0.1030	6	0.6501
213-251038-250C	MLCC 103P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1030	5	0.5443
213-251039-130C	MLCC 103P/10V,X7R,K(10%),SMD,0201,(None JP) RoHS	0.1030	1	0.1162
213-251048-230J	MLCC 104P/50V,X7R,K(10%),SMD,0402,(JP)RoHS	0.1030	5	0.5443
213-251049-130J	MLCC 104P/10V,X5R,K(10%),SMD,0201,(JP)RoHS	0.1030	60	6.2796
213-251049-200J	MLCC 104P/16V,X7R,K(10%),SMD,0402,(JP)RoHS	0.1030	59	6.1758
213-251049-270J	MLCC 104P/25V,X5R,K(10%),SMD,0402,(JP)RoHS	0.1030	6	0.6501
213-251049-380C	MLCC 104P/100V,X7R,K(10%),SMD,0603,(None JP) RoHS	0.1030	1	0.1162
213-251059-109G	MLCC 105P/6.3V,X5R,K(10%),SMD,0201,CC0201KRX5R5BB105(YAGEO) RoHS	0.1030	54	5.6566
213-251059-200C	MLCC 105P/6.3V,X5R,K(10%),SMD,0402,(None JP) RoHS	0.1030	1	0.1162
213-251059-220J	MLCC 105P/10V,X5R,K(10%),SMD,0402,(JP)RoHS	0.1030	8	0.8610
213-251059-230J	MLCC 105P/16V,X5R,K(10%),SMD,0402,(JP)RoHS	0.1030	32	3.3693
213-251059-270C	MLCC 105P/6.3V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1030	1	0.1162
213-251059-330J	MLCC 105P/25V,X5R,K(10%),SMD,0603,(JP)RoHS	0.1030	6	0.6501
213-251068-200J	MLCC 106P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.1030	67	7.0061
213-251068-300J	MLCC 106P/6.3V,X5R,M(20%),SMD,0603,(JP)RoHS	0.1030	24	2.5356
213-251069-320J	MLCC 106P/10V,X5R,K(10%),SMD,0603,(JP)RoHS	0.1030	1	0.1162
213-251069-500C	MLCC 106P/6.3V,X5R,K(10%),SMD,0805,(None JP) RoHS	0.1030	1	0.1162
213-251069-540J	MLCC 106P/16V,X5R,K(10%),SMD,0805,(JP)RoHS	0.1030	5	0.5443
213-251069-680J	MLCC 106P/50V,X5R,K(10%),SMD,1206,(JP)RoHS	0.1030	15	1.5955

**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 410391  
**Failure Rate:** 2,436.6990  
**Temperature:** 45  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
213-251228-200C	MLCC 122P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1030	1	0.1162
213-251528-200C	MLCC 152P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1030	6	0.6501
213-251839-300C	MLCC 183P/50V,X7R,K(10%),SMD,0603,(None JP) RoHS	0.1030	2	0.2246
213-252229-200C	MLCC 222P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1030	4	0.4382
213-252239-220J	MLCC 223P/50V,X7R,K(10%),SMD,0402,(JP)RoHS	0.1030	1	0.1162
213-252249-140C	MLCC 224P/6.3V,X5R,K(10%),SMD,0201,(None JP) RoHS	0.1030	12	1.2812
213-252249-210C	MLCC 224P/10V,X5R,K(10%),SMD,0402,(None JP) RoHS	0.1030	1	0.1162
213-252249-330C	MLCC 224P/25V,X7R,K(10%),SMD,0603,(None JP) RoHS	0.1030	4	0.4382
213-252249-360J	MLCC 224P/50V,X7R,K(10%),SMD,0603,(JP)RoHS	0.1030	2	0.2246
213-252259-200J	MLCC 225P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.1030	1	0.1162
213-252259-330C	MLCC 225P/16V,X5R,K(10%)SMD,0603,(None JP) RoHS	0.1030	1	0.1162
213-252268-310J	MLCC 226P/6.3V,X5R,M(20%),SMD,0603,(JP)RoHS	0.1030	46	4.8255
213-252268-330J	MLCC 226P/10V,X5R,M(20%),SMD,0603,(JP)RoHS	0.1030	11	1.1763
213-252268-500C	MLCC 226P/25V,X5R,M(20%),SMD,0805,(None JP) RoHS	0.1030	17	1.8047
213-252269-510J	MLCC 226P/6.3V,X5R,M(20%),SMD,0805,(JP)RoHS	0.1030	5	0.5443
213-253349-220C	MLCC 334P/25V,X5R,K(10%),SMD,0402,(None JP) RoHS	0.1030	1	0.1162
213-254715-200C	MLCC 471P/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1030	8	0.8610
213-254718-210C	MLCC 471P/25V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1030	5	0.5443
213-254739-210C	MLCC 473P/16V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1030	3	0.3317
213-254758-210J	MLCC 475P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.1030	1	0.1162
213-254759-300C	MLCC 475P/6.3V,X5R,K(10%),SMD,0603,(None JP) RoHS	0.1030	2	0.2246
213-254759-320C	MLCC 475P/10V,X5R,K(10%),SMD,0603,(None JP) RoHS	0.1030	8	0.8610
213-254759-540J	MLCC 475P/16V,X7R,K(10%),SMD,0805,(JP)RoHS	0.1030	2	0.2246
213-254768-306G	MLCC 476P/6.3V,X5R,M(20%),SMD,0603,GRM188R60J476M(MURATA)RoHS	0.1030	2	0.2246
213-254768-500J	MLCC 476P/6.3V,X5R,M(20%),SMD,0805,(JP)RoHS	0.1030	9	0.9662
213-255629-200C	MLCC 562P/50V,X7R,K(10%),SMD,0402,(None JP)) RoHS	0.1030	1	0.1162
217-104778-700G	POLYMER(ALM) CAP 470uF/2V,4.5mΩ,4000mA,SMD,V7343,105°C/2000H,M(20%),bottom of round shape,EEFSX0D471E4 (PANASONIC)RoHS	1.0368	3	3.6789

**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 410391  
**Failure Rate:** 2,436.6990  
**Temperature:** 45  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
217-302278-326G	POLYMER(TAN)CAP 220uF/6.3V,45mΩ,1700mA,105°C/2000H,M (20%),B3528(1.9),T520B227M006ATE045(KEMET) RoHS	1.0368	4	4.8021
217-303378-720G	POLYMER(TAN) CAP 330uF/2.5V,9mΩ,3900mA,SMD,D7343- D2E,105°C/2000H,M(20%),2R5TPE330M9(SANYO) RoHS	1.0368	1	1.3687
217-304778-726G	POLYMER(TAN) CAP,470uF/6.3V,25mΩ,3000mA,SMD,D7343- 31,105°C/2000H,M(20%),T520D477M006ATE025 (KEMET)RoHS	1.0368	1	1.3687
217-333378-700G	POLYMER(TAN) CAP 330uF/6.3V,25mΩ,2700mA,SMD,V7343- 20,105°C/2000H,M(20%),T520V337M006ATE025 (KEMET)RoHS	1.0368	1	1.3687
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	1	0.1487
223-010322-510G	CHOKE 10uH,M (20%),RDC ≤ 68mΩ,Idc=4A,Isat=5.5A,SMD, (6.95x6.6x2.8),PCMB063T-100MS(CYNTEC)RoHS	0.1200	1	0.1487
223-015122-600G	CHOKE 0.15uH,M (20%),RDC ≤ 0.66mΩ,Idc ≤ 36A,Isat=45A,SMD, (7.6*6.6*3.8),PCME064T-R15MS0R667(CYNTEC) RoHS	0.1200	3	0.4094
223-022223-100G	CHOKE 2.2uH,M(20%),RDC=6.7mΩ (Typ.),Irms=12A,Isat=18A,SMD, (11.15x10x4),MCS1040-2R2MN1(PDC)RoHS	0.1200	2	0.2804
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
223-068121-900G	CHOKE 0.68uH,M (20%),RDC ≤ 9.2mΩ,Idc=10A,Isat=15A,SMD (4.85x4.7x2.8),CMMB053T-R68MS(CYNTEC)RoHS	0.1200	1	0.1487
223-322220-300G	INDUCTOR 2.2uH,M (20%),Itemp:500mA,RDC:250mΩ,SMD(0603) (1.6*0.8mm),MLZ1608A2R2WT000(TDK)RoHS	0.1200	2	0.2804
223-490040-540G	COMMON CHOKE 90Ω,25%,Irated ≤ 500mA,RDC ≤ 300mΩ,USB3.1 Gen2,10GHz,SMD(0805) (2*1.2*1.5mm),GCMF2012PM-900T(GOTREND) RoHS	0.1200	6	0.7888

**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
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**MTBF (hrs):** 410391  
**Failure Rate:** 2,436.6990  
**Temperature:** 45  
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Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
223-490090-500S	COMMON CHOKE 90Ω,60-100Ω,300mA (Max),RDC≤300mΩ,HDMI/USB3.0 6GHz,SMD0805 (2*1.2*1.2mm),GLECM2012B-900QT(GOTREND)	0.1200	4	0.5361
223-523000-410G	CM FILTER Cd=0.25pF,Rs=3Ω,SMD (1.57*1.17*0.57),PCMF2USB3S/WLCSP10(NXP) RoHS	0.1200	4	0.5361
231-051396-400G	Synchronous Buck Converter,Vin:4.5~24V,Vout:0.6~7V,8A,TPS51396A RJER/VQFN-20(3x3)(TI)RoHS	4.6582	1	7.0069
231-051397-400G	Synchronous Buck Converter,Vin:4.5~24V,Vout:0.6~5.5V,10A,TPS5139 7ARJER/VQFN-20(3x3)(TI)RoHS	4.6582	1	7.0069
231-107208-200G	REGULATOR 2A,SY7208LABC/SOT23-6(SILERGY) RoHS	7.6721	1	14.9200
231-108310-400G	Synchronous Step Down Regulator,10A,Vo:1.2V,SY8310RAC/QFN-20(3x3) (SILERGY)RoHS	7.6721	1	14.9200
231-108843-400G	Synchronous Step Down Regulator,3A,Vo:1.8V,SY8843QWC/QFN-7(1.5x1.5) (SILERGY)RoHS	7.6721	1	14.9200
231-171330-200G	REGULATOR GS7133TD-R,3A,TDFN10(GSTEK)RoHS	7.6721	1	14.9200
241-224006-310G	X'TAL 24MHz,16pF,±30ppm,ESR:50Ω(Max),TOPR=-40°C~+105°C,SMD3225(4PAD),7M24000082(TXC) RoHS	3.9138	1	6.4515
241-225006-350G	X'TAL 25MHz,18pF,±30ppm,ESR:50Ω(Max),TOPR=-40°C~+105°C,SMD3225(4PAD),7M25000175(TXC) RoHS	3.9138	1	6.4515
241-432773-300G	X'TAL 32.768kHz,12.5pf,±20ppm,ESR≤70KΩ,TOPR=-40°C~+125°C,SMD3215(2PAD),FC-13A,X1A000091000100(EPSON)RoHS	3.9138	1	6.4515
251-160808-083S	BEAD CORE 160808 80Ω,300mA,25%,SMT0603,SBK160808T-800Y-N (CHILISIN)	0.6548	2	2.1784
251-653001-000G	FERRITE BEAD 53Ω±25%,45A,RDC≤0.6mΩ,SMD (4.7x3.1mm),BPH403025W4-530T(TAI-TECH)RoHS	0.6548	1	1.2675
253-100110-500G	POLYSWITCH,PTC,1.1A/6V,SMD0805,0805L110ULY R(LITTELFUSE)RoHS	0.4000	1	0.6546
253-100115-604S	POLYSWITCH,PTC,1.1A/8V,SMD1206,1206L110THY R(LITTELFUSE)RoHS	0.4000	2	1.1579
261-361515-200C	RES ARRAY 150Ω 8P4R J(5%),0402*4,(None JP) RoHS	0.0873	2	0.2152
263-120037-81CG	PMS RES 2W,3mΩ,F(1%),SMD,2512,FMF25FPJR003-LH(PDC)RoHS	0.0873	1	0.1162
263-120047-81HG	PMS RES 2W,4mΩ,F (1%),SMD,2512,RM2512FBR004GM(LIZ)RoHS	0.0873	1	0.1162
263-180005-100C	RES 0Ω,J(5%),SMD,0201,(None JP)RoHS	0.0873	117	10.5176
263-180005-200C	RES 0Ω,J(5%),SMD,0402,(None JP)RoHS	0.0873	22	2.0520
263-180005-300C	RES 0Ω,J(5%),SMD,0603,(None JP)RoHS	0.0873	10	0.9615



**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 410391  
**Failure Rate:** 2,436.6990  
**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	9	0.8697
263-180100-310C	RES 10Ω,F(1%),SMD,0603,(None JP)RoHS	0.0873	4	0.4062
263-180100-510C	RES 10Ω,F(1%),SMD,0805,(None JP)RoHS	0.0873	2	0.2152
263-180330-110C	RES 33Ω,F(1%),SMD,0201,(None JP)RoHS	0.0873	5	0.5001
263-180430-210C	RES 43Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-180510-110C	RES 51Ω,F(1%),SMD,0201,(None JP)RoHS	0.0873	5	0.5001
263-180519-210C	RES 5.1Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-180560-210C	RES 56Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-180750-110C	RES 75Ω,F(1%),SMD,0201,(None JP)RoHS	0.0873	1	0.1162
263-181000-110C	RES 100Ω,F(1%),SMD,0201,(None JP)RoHS	0.0873	12	1.1446
263-181000-210C	RES 100Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	6	0.5934
263-181001-110C	RES 1KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0873	30	2.7724
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	88	7.9455
263-181002-210C	RES 10KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	13	1.2359
263-181003-110C	RES 100KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0873	26	2.4126
263-181003-210C	RES 100KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	17	1.5996
263-181004-110C	RES 1MΩ,F(1%),SMD,0201,(None JP)RoHS	0.0873	2	0.2152
263-181004-210C	RES 1MΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	3	0.3114
263-181005-210C	RES 10MΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-181072-210C	RES 10.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-181101-210C	RES 1.1KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-181103-210C	RES 110KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-181130-210C	RES 113Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-181182-210C	RES 11.8KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-181201-210C	RES 1.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	3	0.3114
263-181202-210C	RES 12KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	4	0.4062
263-181210-210C	RES 121Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-181213-210C	RES 121KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-181302-210C	RES 13KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-181402-210C	RES 14KΩ,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	2	0.2152
263-181502-210C	RES 15KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	2	0.2152
263-181505-100C	RES 15Ω,J(5%),SMD,0201,(None JP)RoHS	0.0873	4	0.4062
263-181602-210C	RES 16KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	2	0.2152
263-181603-210C	RES 160KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-181653-210C	RES 165KΩ,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
263-181872-210C	RES 18.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-181962-210C	RES 19.6KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-182000-210C	RES 200Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	3	0.3114
263-182001-210C	RES 2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	7	0.6852
263-182002-110C	RES 20KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0873	4	0.4062
263-182002-210C	RES 20KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	3	0.3114
263-182003-110C	RES 200KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0873	1	0.1162
263-182003-210C	RES 200KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162

**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 410391  
**Failure Rate:** 2,436.6990  
**Temperature:** 45  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
263-182200-210C	RES 220Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-182201-110C	RES 2.2KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0873	9	0.8697
263-182208-210C	RES 2.2Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-182208-310C	RES 2.2Ω,F(1%),SMD,0603,(None JP)RoHS	0.0873	8	0.7776
263-182208-510C	RES 2.2Ω,F(1%),SMD,0805,(None JP)RoHS	0.0873	4	0.4062
263-182400-110C	RES 240Ω,F(1%),SMD,0201,(None JP)RoHS	0.0873	3	0.3114
263-182401-210C	RES 2.4KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-182492-210C	RES 24.9KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-182499-210C	RES 24.9Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	2	0.2152
263-182702-218G	RES 27KΩ,F(1%),SMD,0402,RTT022702FTH(RALEC) RoHS Taiwan	0.0873	1	0.1162
263-182742-210C	RES 27.4KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	2	0.2152
263-183000-210C	RES 300Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-183000-310C	RES 300Ω,F(1%),SMD,0603,(None JP)RoHS	0.0873	1	0.1162
263-183002-210C	RES 30KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-183003-210C	RES 300KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	2	0.2152
263-183011-210C	RES 3.01KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-183162-210C	RES 31.6KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-183300-210C	RES 330Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	2	0.2152
263-183301-210C	RES 3.3KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	2	0.2152
263-183303-210C	RES 330KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-183402-210C	RES 34KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-183742-210C	RES 37.4KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-183922-110C	RES 39.2KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0873	1	0.1162
263-184321-210C	RES 4.32KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	3	0.3114
263-184539-210C	RES 45.3Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-184700-110C	RES 470Ω,F(1%),SMD,0201,(None JP)RoHS	0.0873	9	0.8697
263-184701-110C	RES 4.7KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0873	25	2.3226
263-184701-210C	RES 4.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-184702-110C	RES 47KΩ,F(1%),SMD,0201,(None JP)RoHS	0.0873	9	0.8697
263-184871-210C	RES 4.87KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	3	0.3114
263-184990-110C	RES 499Ω,F(1%),SMD,0201,(None JP)RoHS	0.0873	1	0.1162
263-184992-210C	RES 49.9KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	3	0.3114
263-184999-110C	RES 49.9Ω,F(1%),SMD,0201,(None JP)RoHS	0.0873	4	0.4062
263-184999-210C	RES 49.9Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	9	0.8697
263-185102-210C	RES 51KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	4	0.4062
263-185602-210C	RES 56KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	2	0.2152
263-185622-210C	RES 56.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-186041-210C	RES 6.04KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-186049-210C	RES 60.4Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	2	0.2152
263-186192-210C	RES 61.9KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-187501-210C	RES 7.5KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	2	0.2152
263-187502-210C	RES 75KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-188069-210C	RES 80.6Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-188201-210C	RES 8.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-188871-210C	RES 8.87KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162
263-189100-210C	RES 910Ω,F(1%),SMD,0402,(None JP)RoHS	0.0873	1	0.1162

**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 410391  
**Failure Rate:** 2,436.6990  
**Temperature:** 45  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
263-189762-210C	RES 97.6KΩ,F(1%),SMD,0402,(None JP)RoHS	0.0873	2	0.2152
273-010400-300G	THERM RES 100KΩ,0603(B:25/85=3950,3%)RoHS	2.6513	5	18.8899
273-100402-301S	THERM RES 10KΩ,J(5%),SMD,0603, (B25/85=3435,3%),TSM1A103J34D3RZ(TKS)	2.6513	2	8.8927
314-WL0531-109G	PCB WL053 R.A(12L 100x72x1.6mm, 2 Panelization) OSP(CIRCUITECH)RoHS	6.5651	1	12.5107
342-122101-100G	DISPLAYPORT/HDMI CONN,21P,MALE,R/A,DIP,GF,845-002-217CRL (REGO)RoHS	5.5551	1	9.6181
342-310022-110G	Screw CONN. Terminal Block,Green,2Pos,300V,16A,PIT:5.0mm,MB612- 50002(DECA) RoHS	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
343-501820-110G	USB 3.1 GEN2 CONN*2, 18P, A Type, Green, F, G/F, 90D, DIP, U2131D-UADH-0401R(HDSY)RoHS	5.5551	1	9.6181
346-120310-201G	PIN PLUG 2*3, 1.27mm, H=5mm, 180D, SMD, SHY- JCL180806P(V-STAR)RoHS	38.8854	2	117.8306
346-120511-201G	PIN PLUG 2*5, 1.27mm, H=5mm, 180D, SMD, SHY- JCL180810P(V-STAR)RoHS	38.8854	3	165.5142
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
347-103100-200S	WAFER 1*3,1.25mm,M,H=3.45mm,90D,SMT,WHITE,0110- 3221030(E-CALL)RoHS	5.5551	1	9.6181
348-220800-200S	SOCKET SPI 8Pin,GF,H=5.65mm,180D,SMT,ACA-SPI -004-K01(LOTES)	3.0300	1	4.9378
348-370750-230G	NGFF CONN 67P/0.5mm,E Key,R/A,SMD,AS0BC21- S40BE-7H,(FOXCONN)HF	3.0300	1	4.9378
348-370750-240G	NGFF CONN 67P/0.5mm,H=8.5mm,B key,90D,BLACK,SMD,APCI0161-P002H(LOTES)HF	5.5551	2	16.8329
348-652600-200G	DDR4 SO DIMM 1*260P,10u",H=8.0mm 1.2V,RVS,90D,SMD,ASAA826-E8RB0-7H(FOXCONN) HF	3.0300	1	4.9378
622-010140-000G	BATTERY CR2032(MURATA) 3V 220mAh,-30°C ~+70°C,W/CABLE(L=150mm&TAPE),BIN-CR2032-I- CT-SL-PV-01(RE-ENERGY)RoHS Belong to UN3090	25.0000	1	34.9638
686-110322-100G	PIN PLUG 1*3,2.0mm,M,H=5.9mm,180D,DIP,W/BLACK JUMPER,22S-96-03GB01(PINREX)RoHS	5.5551	1	9.6181
292-301000-500S	BUZZER 3V,100mA,12Ω,4Khz,85db,SMD (5*4.2mm),SMT-G5030A(KEPO)	600.0000	1	600.0000
143-101705-401G	CPU Intel Core i7-8665UE 1.7GHz C/8M,V0,CL8068404148003 SRFDS/FCBGA-1528 (INTEL)RoHS	422.0000	1	422.0000



**File Name:** WL053-ECA-8665UE.rfp  
**System:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 301279  
**Failure Rate:** 3,319.18  
**Temperature:** 60  
**Environment:** GB, GC - Ground Benign, Controlled

Assembly Name	Part Number	Quantity	Failure Rate (Fit)	MTBF (Hrs)
WL053-ECA-8665UE	774-WL0531-400G	1	3319.18	301,279

**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 301279  
**Failure Rate:** 3,319.1787  
**Temperature:** 60  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
112-900032-300G	IC TTL,Two-Input OR Gate,NC7SZ32P5X/SC70-5 (ON)RoHS	8.2795	6	59.7113
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	1	12.4540
113-500008-210G	IC TTL,Single 2-Input Positive-AND Gate,SN74LVC1G08DCKR/SC70-5(TI)RoHS	8.2795	15	139.7136
113-833306-400G	IC TTL,Dual FET Bus Switch,SN74CB3Q3306ADCUR/VSSOP8(US8-DCU) (TI)RoHS	8.2795	2	22.4187
113-906408-400G	IC LOW-VOLTAGE 8-BIT I2C AND SMBus I/O EXPANDER,UQFN16, TCA6408ARSVR(TI)RoHS	8.2795	1	12.4540
121-000104-420G	IC 4-BIT BIDIRECTIONAL VOLTAGE-LEVEL TRANSLATOR,NTS0104GU12/XQFN12(NXP) RoHS	8.2795	1	12.4540
121-002069-200G	IC Power-Distribution Switches,1.5A,TPS2069DDBVT/SOT23-5(TI)RoHS	8.2795	1	12.4540
121-003941-200G	IC 4 Times Linear Fan Driver,NCT3941S/SOP-8 (NUVOTON)RoHS	8.2795	1	12.4540
121-007111-400G	IC Power Switch RSET with Flag,JW7111DFNB#TRPBF/DFN-6(2x2)(JOULWATT) 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	3	31.9831
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
121-302045-400G	IC Integrated Driver and MOSFET,NCP302045MNTWG/PQFN-33(5*5)(ON) RoHS	8.2795	4	41.3430
135-301004-201G	EEPROM 8K(1024*8)M24C08-WMN6TP/SO-8(ST) RoHS	18.4992	1	28.7152
135-301282-220G	SPI SERIAL FLASH 128Mbit,W25Q128JVSQ/SOIC-8 (WINBOND)RoHS	18.4992	1	28.7152
136-112180-200G	8-bit Flash Microcontroller PIC12F1822-I/SN/SOIC-8 (MICROCHIP)RoHS	18.4992	1	28.7152
141-290800-400G	IC Controller,4V-60V Input Current Mode Synchronous Step-Down,MP2908AGL-Z/(MPS)RoHS	8.2795	2	22.4187
141-812450-400G	IC PWM CTRL, NCP81245MNTXG/QFN-52(ON)RoHS	8.2795	1	12.4540
147-002190-400G	IC CHIP,Giga LAN PHY,WGI219LM SLKJ3/QFN48 (6x6mm) (INTEL)RoHS	8.2795	1	12.4540
147-055250-200G	IC CHIP Super I/O, NCT5525D/LQFP-64(NUVOTON) RoHS	8.2795	1	12.4540
171-200014-200G	DIODE SCHOTTKY BARRIER RECTIFIER,40V,1A,SS14S-TH-WS/SOD-123S (WILLAS)RoHS	0.5385	3	2.4844
171-200046-201G	DIODE SCHOTTKY BARRIER RECTIFIER,100V,150mA,BAT46W/SOD-123(SECOS) RoHS	0.5385	2	1.7884

**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 301279  
**Failure Rate:** 3,319.1787  
**Temperature:** 60  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
171-204005-210G	DIODE SCHOTTKY BARRIER 40V,200mA,BAS40-05-7-F/SOT23-3(DIODES)RoHS	0.5385	5	3.8085
171-205200-220G	DIODE SCHOTTKY,30V,200mA,RB520S-30H/SOD-523(SMARTENGRAND)RoHS	0.5385	1	1.0403
171-214148-503S	DIODE Switching,SMD,1N4148W-TG-WS/SOD-123(WILLAS)	0.5385	2	1.7884
171-360360-500G	DIODE TVS,36V,600W,SMBJ36CA/DO-214AA(LITTELFUSE)RoHS	0.5385	1	1.0403
171-404010-200S	DIODE 4-CHANNEL ESD PROTECTION,TPD4S010DQAR/SON-DQA10(TI)	0.5385	4	3.1546
171-451715-200G	DIODE Zener,15V,Vz=14.34V~14.98V,UDZVTE-1715B/SOD-323FL(ROHM)RoHS	0.5385	2	1.7884
171-451756-200G	DIODE Zener,5.6V,Vz=5.49V~5.73V,UDZVTE-175.6B/SOD-323F(ROHM)RoHS	0.5385	1	1.0403
171-452390-200S	DIODE Zener,39V,BZT52C39S/SOD-323(DIODES)	0.5385	1	1.0403
171-841023-200G	DIODE TVS Array,3.3V,AZ1023-04F.R7G/DFN2510P10E(AMAZING)RoHS	0.5385	2	1.7884
172-207002-241G	MOSFET N-Ch,VDS:60V,ID:300mA,VGS:±20V,@10V,RDS:3Ω,2N7002K/SOT23-3(PANJIT)RoHS	17.9506	2	47.8105
172-223904-400G	TRANSISTOR Dual NPN,MBT3904DW1T1G/SOT-363(ON)RoHS	2.8884	4	15.9723
172-223906-207S	TRANSISTOR PNP,PMBS3906/SOT23(NXP)	2.8884	1	5.1202
172-239040-210G	TRANSISTOR DUAL NPN,Ic≤200mA,Vcbo:60V,Vceo:40V,MMBT3904DTH/SOT563-6(SMARTENGRAND)RoHS	2.8884	3	12.5041
172-300612-200G	MOSFET Dual N-Ch,VDS:30V,VGS:±20V,ID:100mA,@4V,RDS:8Ω,EM6K1GT2R/SOT-563(ROHM)RoHS	17.9506	1	26.4362
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
172-302003-210G	MOSFET N-Ch,VDS:30V,ID:7A,VGS:±20V,@10V,RDS:20mΩ,EMB20N03VA/EDFN-8(2x2)(EXCELLIANCE)RoHS	17.9506	2	47.8105
172-323052-200G	MOSFET P-Ch,VDS:-30V,ID:-4.9A,VGS:±12V,@-10V,RDS≤52mΩ,CEH2305/TSOP-6(CET)RoHS	17.9506	1	26.4362
172-326110-200G	MOSFET P-Ch,VDS:-20V,ID:-4.9A,VGS:±12V,@-4.5V,RDS:45mΩ,FKN2611/SOT23-3(FETEK)RoHS	17.9506	1	26.4362
172-369010-200G	MOSFET P-Ch,VDS:-60V,ID:-72A,VGS:±20V,@-10V,RDS:8.6mΩ,PDC6901X/PPAK-8(5X6)(POTENS)RoHS	17.9506	2	47.8105
172-372460-200G	MOSFET N-Ch,VDS:60V,ID:24A,VGS:±20V,@10V,RDS(ON):13.2mΩ(Max),AON7246E/DFN-8(3x3)EP(AOS)RoHS	17.9506	8	167.1033
213-151015-200C	MLCC 101P/50V,NPO,J(5%),SMD,0402,(None JP)RoHS	0.1118	3	0.3601

**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 301279  
**Failure Rate:** 3,319.1787  
**Temperature:** 60  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
213-151505-200C	MLCC 15pF/50V,NPO,J(5%),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	4	0.4757
213-152215-200C	MLCC 221P/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1118	6	0.7057
213-152705-200C	MLCC 27pF/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1118	2	0.2438
213-153319-200C	MLCC 331P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1118	9	1.0489
213-154705-200C	MLCC 47pF/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1118	2	0.2438
213-156815-200C	MLCC 681P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1118	2	0.2438
213-251028-200C	MLCC 102P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1118	7	0.8203
213-251028-300C	MLCC 102P/50V,X7R,K(10%),SMD,0603,(None JP) RoHS	0.1118	4	0.4757
213-251029-110C	MLCC 102P/25V,X7R,K(10%)SMD,0201(None JP) RoHS	0.1118	6	0.7057
213-251038-250C	MLCC 103P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1118	5	0.5909
213-251039-130C	MLCC 103P/10V,X7R,K(10%),SMD,0201,(None JP) RoHS	0.1118	1	0.1261
213-251048-230J	MLCC 104P/50V,X7R,K(10%),SMD,0402,(JP)RoHS	0.1118	5	0.5909
213-251049-130J	MLCC 104P/10V,X5R,K(10%),SMD,0201,(JP)RoHS	0.1118	60	6.8174
213-251049-200J	MLCC 104P/16V,X7R,K(10%),SMD,0402,(JP)RoHS	0.1118	59	6.7047
213-251049-270J	MLCC 104P/25V,X5R,K(10%),SMD,0402,(JP)RoHS	0.1118	6	0.7057
213-251049-380C	MLCC 104P/100V,X7R,K(10%),SMD,0603,(None JP) RoHS	0.1118	1	0.1261
213-251059-109G	MLCC 105P/6.3V,X5R,K(10%),SMD,0201,CC0201KRX5R5BB105(YAGEO) RoHS	0.1118	54	6.1410
213-251059-200C	MLCC 105P/6.3V,X5R,K(10%),SMD,0402,(None JP) RoHS	0.1118	1	0.1261
213-251059-220J	MLCC 105P/10V,X5R,K(10%),SMD,0402,(JP)RoHS	0.1118	8	0.9347
213-251059-230J	MLCC 105P/16V,X5R,K(10%),SMD,0402,(JP)RoHS	0.1118	32	3.6578
213-251059-270C	MLCC 105P/6.3V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1118	1	0.1261
213-251059-330J	MLCC 105P/25V,X5R,K(10%),SMD,0603,(JP)RoHS	0.1118	6	0.7057
213-251068-200J	MLCC 106P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.1118	67	7.6061
213-251068-300J	MLCC 106P/6.3V,X5R,M(20%),SMD,0603,(JP)RoHS	0.1118	24	2.7527
213-251069-320J	MLCC 106P/10V,X5R,K(10%),SMD,0603,(JP)RoHS	0.1118	1	0.1261
213-251069-500C	MLCC 106P/6.3V,X5R,K(10%),SMD,0805,(None JP) RoHS	0.1118	1	0.1261
213-251069-540J	MLCC 106P/16V,X5R,K(10%),SMD,0805,(JP)RoHS	0.1118	5	0.5909
213-251069-680J	MLCC 106P/50V,X5R,K(10%),SMD,1206,(JP)RoHS	0.1118	15	1.7321

**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 301279  
**Failure Rate:** 3,319.1787  
**Temperature:** 60  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
213-251228-200C	MLCC 122P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1118	1	0.1261
213-251528-200C	MLCC 152P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1118	6	0.7057
213-251839-300C	MLCC 183P/50V,X7R,K(10%),SMD,0603,(None JP) RoHS	0.1118	2	0.2438
213-252229-200C	MLCC 222P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1118	4	0.4757
213-252239-220J	MLCC 223P/50V,X7R,K(10%),SMD,0402,(JP)RoHS	0.1118	1	0.1261
213-252249-140C	MLCC 224P/6.3V,X5R,K(10%),SMD,0201,(None JP) RoHS	0.1118	12	1.3909
213-252249-210C	MLCC 224P/10V,X5R,K(10%),SMD,0402,(None JP) RoHS	0.1118	1	0.1261
213-252249-330C	MLCC 224P/25V,X7R,K(10%),SMD,0603,(None JP) RoHS	0.1118	4	0.4757
213-252249-360J	MLCC 224P/50V,X7R,K(10%),SMD,0603,(JP)RoHS	0.1118	2	0.2438
213-252259-200J	MLCC 225P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.1118	1	0.1261
213-252259-330C	MLCC 225P/16V,X5R,K(10%)SMD,0603,(None JP) RoHS	0.1118	1	0.1261
213-252268-310J	MLCC 226P/6.3V,X5R,M(20%),SMD,0603,(JP)RoHS	0.1118	46	5.2387
213-252268-330J	MLCC 226P/10V,X5R,M(20%),SMD,0603,(JP)RoHS	0.1118	11	1.2770
213-252268-500C	MLCC 226P/25V,X5R,M(20%),SMD,0805,(None JP) RoHS	0.1118	17	1.9592
213-252269-510J	MLCC 226P/6.3V,X5R,M(20%),SMD,0805,(JP)RoHS	0.1118	5	0.5909
213-253349-220C	MLCC 334P/25V,X5R,K(10%),SMD,0402,(None JP) RoHS	0.1118	1	0.1261
213-254715-200C	MLCC 471P/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1118	8	0.9347
213-254718-210C	MLCC 471P/25V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1118	5	0.5909
213-254739-210C	MLCC 473P/16V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1118	3	0.3601
213-254758-210J	MLCC 475P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.1118	1	0.1261
213-254759-300C	MLCC 475P/6.3V,X5R,K(10%),SMD,0603,(None JP) RoHS	0.1118	2	0.2438
213-254759-320C	MLCC 475P/10V,X5R,K(10%),SMD,0603,(None JP) RoHS	0.1118	8	0.9347
213-254759-540J	MLCC 475P/16V,X7R,K(10%),SMD,0805,(JP)RoHS	0.1118	2	0.2438
213-254768-306G	MLCC 476P/6.3V,X5R,M(20%),SMD,0603,GRM188R60J476M(MURATA)RoHS	0.1118	2	0.2438
213-254768-500J	MLCC 476P/6.3V,X5R,M(20%),SMD,0805,(JP)RoHS	0.1118	9	1.0489
213-255629-200C	MLCC 562P/50V,X7R,K(10%),SMD,0402,(None JP)) RoHS	0.1118	1	0.1261
217-104778-700G	POLYMER(ALM) CAP 470uF/2V,4.5mΩ,4000mA,SMD,V7343,105°C/2000H ,M(20%),bottom of round shape,EEFSX0D471E4 (PANASONIC)RoHS	1.3266	3	4.7073

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**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 301279  
**Failure Rate:** 3,319.1787  
**Temperature:** 60  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
217-302278-326G	POLYMER(TAN)CAP 220uF/6.3V,45mΩ,1700mA,105°C/2000H,M (20%),B3528(1.9),T520B227M006ATE045(KEMET) RoHS	1.3266	4	6.1444
217-303378-720G	POLYMER(TAN) CAP 330uF/2.5V,9mΩ,3900mA,SMD,D7343- D2E,105°C/2000H,M(20%),2R5TPE330M9(SANYO) RoHS	1.3266	1	1.7512
217-304778-726G	POLYMER(TAN) CAP,470uF/6.3V,25mΩ,3000mA,SMD,D7343- 31,105°C/2000H,M(20%),T520D477M006ATE025 (KEMET)RoHS	1.3266	1	1.7512
217-333378-700G	POLYMER(TAN) CAP 330uF/6.3V,25mΩ,2700mA,SMD,V7343- 20,105°C/2000H,M(20%),T520V337M006ATE025 (KEMET)RoHS	1.3266	1	1.7512
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	1	0.1903
223-010322-510G	CHOKE 10uH,M (20%),RDC ≤ 68mΩ,Idc=4A,Isat=5.5A,SMD, (6.95x6.6x2.8),PCMB063T-100MS(CYNTEC)RoHS	0.1536	1	0.1903
223-015122-600G	CHOKE 0.15uH,M (20%),RDC ≤ 0.66mΩ,Idc ≤ 36A,Isat=45A,SMD, (7.6*6.6*3.8),PCME064T-R15MS0R667(CYNTEC) RoHS	0.1536	3	0.5238
223-022223-100G	CHOKE 2.2uH,M(20%),RDC=6.7mΩ (Typ.),Irms=12A,Isat=18A,SMD, (11.15x10x4),MCS1040-2R2MN1(PDC)RoHS	0.1536	2	0.3588
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
223-068121-900G	CHOKE 0.68uH,M (20%),RDC ≤ 9.2mΩ,Idc=10A,Isat=15A,SMD (4.85x4.7x2.8),CMMB053T-R68MS(CYNTEC)RoHS	0.1536	1	0.1903
223-322220-300G	INDUCTOR 2.2uH,M (20%),Itemp:500mA,RDC:250mΩ,SMD(0603) (1.6*0.8mm),MLZ1608A2R2WT000(TDK)RoHS	0.1536	2	0.3588
223-490040-540G	COMMON CHOKE 90Ω,25%,Irated ≤ 500mA,RDC ≤ 300mΩ,USB3.1 Gen2,10GHz,SMD(0805) (2*1.2*1.5mm),GCMF2012PM-900T(GOTREND) RoHS	0.1536	6	1.0093



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**Assembly:** 774-WL0531-400G  
**Ref Des:**  
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**MTBF (hrs):** 301279  
**Failure Rate:** 3,319.1787  
**Temperature:** 60  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
223-490090-500S	COMMON CHOKE 90Ω,60-100Ω,300mA (Max),RDC≤300mΩ,HDMI/USB3.0 6GHz,SMD0805 (2*1.2*1.2mm),GLECM2012B-900QT(GOTREND)	0.1536	4	0.6860
223-523000-410G	CM FILTER Cd=0.25pF,Rs=3Ω,SMD (1.57*1.17*0.57),PCMF2USB3S/WLCSP10(NXP) RoHS	0.1536	4	0.6860
231-051396-400G	Synchronous Buck Converter,Vin:4.5~24V,Vout:0.6~7V,8A,TPS51396A RJER/VQFN-20(3x3)(TI)RoHS	8.2795	1	12.4540
231-051397-400G	Synchronous Buck Converter,Vin:4.5~24V,Vout:0.6~5.5V,10A,TPS5139 7ARJER/VQFN-20(3x3)(TI)RoHS	8.2795	1	12.4540
231-107208-200G	REGULATOR 2A,SY7208LABC/SOT23-6(SILERGY) RoHS	19.2561	1	37.4477
231-108310-400G	Synchronous Step Down Regulator,10A,Vo:1.2V,SY8310RAC/QFN-20(3x3) (SILERGY)RoHS	19.2561	1	37.4477
231-108843-400G	Synchronous Step Down Regulator,3A,Vo:1.8V,SY8843QWC/QFN-7(1.5x1.5) (SILERGY)RoHS	19.2561	1	37.4477
231-171330-200G	REGULATOR GS7133TD-R,3A,TDFN10(GSTEK)RoHS	19.2561	1	37.4477
241-224006-310G	X'TAL 24MHz,16pF,±30ppm,ESR:50Ω(Max),TOPR=-40°C~+105°C,SMD3225(4PAD),7M24000082(TXC) RoHS	7.5521	1	12.4488
241-225006-350G	X'TAL 25MHz,18pF,±30ppm,ESR:50Ω(Max),TOPR=-40°C~+105°C,SMD3225(4PAD),7M25000175(TXC) RoHS	7.5521	1	12.4488
241-432773-300G	X'TAL 32.768kHz,12.5pf,±20ppm,ESR≤70KΩ,TOPR=-40°C~+125°C,SMD3215(2PAD),FC-13A,X1A000091000100(EPSON)RoHS	7.5521	1	12.4488
251-160808-083S	BEAD CORE 160808 80Ω,300mA,25%,SMT0603,SBK160808T-800Y-N (CHILISIN)	0.8378	2	2.7874
251-653001-000G	FERRITE BEAD 53Ω±25%,45A,RDC≤0.6mΩ,SMD (4.7x3.1mm),BPH403025W4-530T(TAI-TECH)RoHS	0.8378	1	1.6218
253-100110-500G	POLYSWITCH,PTC,1.1A/6V,SMD0805,0805L110ULY R(LITTELFUSE)RoHS	0.4000	1	0.6546
253-100115-604S	POLYSWITCH,PTC,1.1A/8V,SMD1206,1206L110THY R(LITTELFUSE)RoHS	0.4000	2	1.1579
261-361515-200C	RES ARRAY 150Ω 8P4R J(5%),0402*4,(None JP) RoHS	0.1117	2	0.2753
263-120037-81CG	PMS RES 2W,3mΩ,F(1%),SMD,2512,FMF25FPJR003-LH(PDC)RoHS	0.1117	1	0.1487
263-120047-81HG	PMS RES 2W,4mΩ,F (1%),SMD,2512,RM2512FBR004GM(LIZ)RoHS	0.1117	1	0.1487
263-180005-100C	RES 0Ω,J(5%),SMD,0201,(None JP)RoHS	0.1117	117	13.4576
263-180005-200C	RES 0Ω,J(5%),SMD,0402,(None JP)RoHS	0.1117	22	2.6256
263-180005-300C	RES 0Ω,J(5%),SMD,0603,(None JP)RoHS	0.1117	10	1.2303

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**Assembly:** 774-WL0531-400G  
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**MTBF (hrs):** 301279  
**Failure Rate:** 3,319.1787  
**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	9	1.1128
263-180100-310C	RES 10Ω,F(1%),SMD,0603,(None JP)RoHS	0.1117	4	0.5198
263-180100-510C	RES 10Ω,F(1%),SMD,0805,(None JP)RoHS	0.1117	2	0.2753
263-180330-110C	RES 33Ω,F(1%),SMD,0201,(None JP)RoHS	0.1117	5	0.6399
263-180430-210C	RES 43Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-180510-110C	RES 51Ω,F(1%),SMD,0201,(None JP)RoHS	0.1117	5	0.6399
263-180519-210C	RES 5.1Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-180560-210C	RES 56Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-180750-110C	RES 75Ω,F(1%),SMD,0201,(None JP)RoHS	0.1117	1	0.1487
263-181000-110C	RES 100Ω,F(1%),SMD,0201,(None JP)RoHS	0.1117	12	1.4645
263-181000-210C	RES 100Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	6	0.7593
263-181001-110C	RES 1KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1117	30	3.5474
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	88	10.1665
263-181002-210C	RES 10KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	13	1.5813
263-181003-110C	RES 100KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1117	26	3.0870
263-181003-210C	RES 100KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	17	2.0467
263-181004-110C	RES 1MΩ,F(1%),SMD,0201,(None JP)RoHS	0.1117	2	0.2753
263-181004-210C	RES 1MΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	3	0.3984
263-181005-210C	RES 10MΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-181072-210C	RES 10.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-181101-210C	RES 1.1KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-181103-210C	RES 110KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-181130-210C	RES 113Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-181182-210C	RES 11.8KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-181201-210C	RES 1.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	3	0.3984
263-181202-210C	RES 12KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	4	0.5198
263-181210-210C	RES 121Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-181213-210C	RES 121KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-181302-210C	RES 13KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-181402-210C	RES 14KΩ,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	2	0.2753
263-181502-210C	RES 15KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	2	0.2753
263-181505-100C	RES 15Ω,J(5%),SMD,0201,(None JP)RoHS	0.1117	4	0.5198
263-181602-210C	RES 16KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	2	0.2753
263-181603-210C	RES 160KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-181653-210C	RES 165KΩ,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
263-181872-210C	RES 18.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-181962-210C	RES 19.6KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-182000-210C	RES 200Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	3	0.3984
263-182001-210C	RES 2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	7	0.8767
263-182002-110C	RES 20KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1117	4	0.5198
263-182002-210C	RES 20KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	3	0.3984
263-182003-110C	RES 200KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1117	1	0.1487
263-182003-210C	RES 200KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487



**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 301279  
**Failure Rate:** 3,319.1787  
**Temperature:** 60  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
263-182200-210C	RES 220Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-182201-110C	RES 2.2KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1117	9	1.1128
263-182208-210C	RES 2.2Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-182208-310C	RES 2.2Ω,F(1%),SMD,0603,(None JP)RoHS	0.1117	8	0.9949
263-182208-510C	RES 2.2Ω,F(1%),SMD,0805,(None JP)RoHS	0.1117	4	0.5198
263-182400-110C	RES 240Ω,F(1%),SMD,0201,(None JP)RoHS	0.1117	3	0.3984
263-182401-210C	RES 2.4KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-182492-210C	RES 24.9KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-182499-210C	RES 24.9Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	2	0.2753
263-182702-218G	RES 27KΩ,F(1%),SMD,0402,RTT022702FTH(RALEC) RoHS Taiwan	0.1117	1	0.1487
263-182742-210C	RES 27.4KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	2	0.2753
263-183000-210C	RES 300Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-183000-310C	RES 300Ω,F(1%),SMD,0603,(None JP)RoHS	0.1117	1	0.1487
263-183002-210C	RES 30KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-183003-210C	RES 300KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	2	0.2753
263-183011-210C	RES 3.01KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-183162-210C	RES 31.6KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-183300-210C	RES 330Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	2	0.2753
263-183301-210C	RES 3.3KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	2	0.2753
263-183303-210C	RES 330KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-183402-210C	RES 34KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-183742-210C	RES 37.4KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-183922-110C	RES 39.2KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1117	1	0.1487
263-184321-210C	RES 4.32KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	3	0.3984
263-184539-210C	RES 45.3Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-184700-110C	RES 470Ω,F(1%),SMD,0201,(None JP)RoHS	0.1117	9	1.1128
263-184701-110C	RES 4.7KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1117	25	2.9718
263-184701-210C	RES 4.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-184702-110C	RES 47KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1117	9	1.1128
263-184871-210C	RES 4.87KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	3	0.3984
263-184990-110C	RES 499Ω,F(1%),SMD,0201,(None JP)RoHS	0.1117	1	0.1487
263-184992-210C	RES 49.9KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	3	0.3984
263-184999-110C	RES 49.9Ω,F(1%),SMD,0201,(None JP)RoHS	0.1117	4	0.5198
263-184999-210C	RES 49.9Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	9	1.1128
263-185102-210C	RES 51KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	4	0.5198
263-185602-210C	RES 56KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	2	0.2753
263-185622-210C	RES 56.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-186041-210C	RES 6.04KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-186049-210C	RES 60.4Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	2	0.2753
263-186192-210C	RES 61.9KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-187501-210C	RES 7.5KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	2	0.2753
263-187502-210C	RES 75KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-188069-210C	RES 80.6Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-188201-210C	RES 8.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-188871-210C	RES 8.87KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487
263-189100-210C	RES 910Ω,F(1%),SMD,0402,(None JP)RoHS	0.1117	1	0.1487

**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 301279  
**Failure Rate:** 3,319.1787  
**Temperature:** 60  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
263-189762-210C	RES 97.6KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1117	2	0.2753
273-010400-300G	THERM RES 100KΩ,0603(B:25/85=3950,3%)RoHS	5.1159	5	36.4499
273-100402-301S	THERM RES 10KΩ,J(5%),SMD,0603, (B25/85=3435,3%),TSM1A103J34D3RZ(TKS)	5.1159	2	17.1593
314-WL0531-109G	PCB WL053 R.A(12L 100x72x1.6mm, 2 Panelization) OSP(CIRCUITECH)RoHS	12.6680	1	24.1406
342-122101-100G	DISPLAYPORT/HDMI CONN,21P,MALE,R/A,DIP,GF,845-002-217CRL (REGO)RoHS	10.7191	1	18.5590
342-310022-110G	Screw CONN. Terminal Block,Green,2Pos,300V,16A,PIT:5.0mm,MB612- 50002(DECA) RoHS	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
343-501820-110G	USB 3.1 GEN2 CONN*2, 18P, A Type, Green, F, G/F, 90D, DIP, U2131D-UADH-0401R(HDSY)RoHS	10.7191	1	18.5590
346-120310-201G	PIN PLUG 2*3, 1.27mm, H=5mm, 180D, SMD, SHY- JCL180806P(V-STAR)RoHS	75.0334	2	227.3661
346-120511-201G	PIN PLUG 2*5, 1.27mm, H=5mm, 180D, SMD, SHY- JCL180810P(V-STAR)RoHS	75.0334	3	319.3764
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
347-103100-200S	WAFER 1*3,1.25mm,M,H=3.45mm,90D,SMT,WHITE,0110- 3221030(E-CALL)RoHS	10.7191	1	18.5590
348-220800-200S	SOCKET SPI 8Pin,GF,H=5.65mm,180D,SMT,ACA-SPI -004-K01(LOTES)	5.8468	1	9.5280
348-370750-230G	NGFF CONN 67P/0.5mm,E Key,R/A,SMD,AS0BC21- S40BE-7H,(FOXCONN)HF	5.8468	1	9.5280
348-370750-240G	NGFF CONN 67P/0.5mm,H=8.5mm,B key,90D,BLACK,SMD,APCI0161-P002H(LOTES)HF	10.7191	2	32.4809
348-652600-200G	DDR4 SO DIMM 1*260P,10u",H=8.0mm 1.2V,RVS,90D,SMD,ASAA826-E8RB0-7H(FOXCONN) HF	5.8468	1	9.5280
622-010140-000G	BATTERY CR2032(MURATA) 3V 220mAh,-30°C ~+70°C,W/CABLE(L=150mm&TAPE),BIN-CR2032-I- CT-SL-PV-01(RE-ENERGY)RoHS Belong to UN3090	25.0000	1	34.9638
686-110322-100G	PIN PLUG 1*3,2.0mm,M,H=5.9mm,180D,DIP,W/BLACK JUMPER,22S-96-03GB01(PINREX)RoHS	10.7191	1	18.5590
292-301000-500S	BUZZER 3V,100mA,12Ω,4Khz,85db,SMD (5*4.2mm),SMT-G5030A(KEPO)	600.0000	1	600.0000
143-101705-401G	CPU Intel Core i7-8665UE 1.7GHz C/8M,V0,CL8068404148003 SRFDS/FCBGA-1528 (INTEL)RoHS	422.0000	1	422.0000

**File Name:** WL053-ECA-8665UE.rfp  
**System:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 187893  
**Failure Rate:** 5,322.17  
**Temperature:** 80  
**Environment:** GB, GC - Ground Benign, Controlled

Assembly Name	Part Number	Quantity	Failure Rate (Fit)	MTBF (Hrs)
WL053-ECA-8665UE	774-WL0531-400G	1	5322.17	187,893

**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 187893  
**Failure Rate:** 5,322.1682  
**Temperature:** 80  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
112-900032-300G	IC TTL,Two-Input OR Gate,NC7SZ32P5X/SC70-5 (ON)RoHS	16.5208	6	119.1463
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	1	24.8503
113-500008-210G	IC TTL,Single 2-Input Positive-AND Gate,SN74LVC1G08DCKR/SC70-5(TI)RoHS	16.5208	15	278.7808
113-833306-400G	IC TTL,Dual FET Bus Switch,SN74CB3Q3306ADCUR/VSSOP8(US8-DCU) (TI)RoHS	16.5208	2	44.7337
113-906408-400G	IC LOW-VOLTAGE 8-BIT I2C AND SMBus I/O EXPANDER,UQFN16, TCA6408ARSVR(TI)RoHS	16.5208	1	24.8503
121-000104-420G	IC 4-BIT BIDIRECTIONAL VOLTAGE-LEVEL TRANSLATOR,NTS0104GU12/XQFN12(NXP) RoHS	16.5208	1	24.8503
121-002069-200G	IC Power-Distribution Switches,1.5A,TPS2069DDBVT/SOT23-5(TI)RoHS	16.5208	1	24.8503
121-003941-200G	IC 4 Times Linear Fan Driver,NCT3941S/SOP-8 (NUVOTON)RoHS	16.5208	1	24.8503
121-007111-400G	IC Power Switch RSET with Flag,JW7111DFNB#TRPBF/DFN-6(2x2)(JOULWATT) RoHS	16.5208	1	24.8503
121-022976-200G	IC Switch,5.7-V,6-A,14-mΩ On-Resistance Dual-Channel Load,TPS22976DPU/WSO-14(TI)RoHS	16.5208	3	63.8182
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
121-302045-400G	IC Integrated Driver and MOSFET,NCP302045MNTWG/PQFN-33(5*5)(ON) RoHS	16.5208	4	82.4948
135-301004-201G	EEPROM 8K(1024*8)M24C08-WMN6TP/SO-8(ST) RoHS	36.9128	1	57.2976
135-301282-220G	SPI SERIAL FLASH 128Mbit,W25Q128JVSQ/SOIC-8 (WINBOND)RoHS	36.9128	1	57.2976
136-112180-200G	8-bit Flash Microcontroller PIC12F1822-I/SN/SOIC-8 (MICROCHIP)RoHS	36.9128	1	57.2976
141-290800-400G	IC Controller,4V-60V Input Current Mode Synchronous Step-Down,MP2908AGL-Z/(MPS)RoHS	16.5208	2	44.7337
141-812450-400G	IC PWM CTRL, NCP81245MNTXG/QFN-52(ON)RoHS	16.5208	1	24.8503
147-002190-400G	IC CHIP,Giga LAN PHY,WGI219LM SLKJ3/QFN48 (6x6mm) (INTEL)RoHS	16.5208	1	24.8503
147-055250-200G	IC CHIP Super I/O, NCT5525D/LQFP-64(NUVOTON) RoHS	16.5208	1	24.8503
171-200014-200G	DIODE SCHOTTKY BARRIER RECTIFIER,40V,1A,SS14S-TH-WS/SOD-123S (WILLAS)RoHS	0.8314	3	3.8354
171-200046-201G	DIODE SCHOTTKY BARRIER RECTIFIER,100V,150mA,BAT46W/SOD-123(SECOS) RoHS	0.8314	2	2.7610

**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 187893  
**Failure Rate:** 5,322.1682  
**Temperature:** 80  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
171-204005-210G	DIODE SCHOTTKY BARRIER 40V,200mA,BAS40-05-7-F/SOT23-3(DIODES)RoHS	0.8314	5	5.8795
171-205200-220G	DIODE SCHOTTKY,30V,200mA,RB520S-30H/SOD-523(SMARTENGRAND)RoHS	0.8314	1	1.6060
171-214148-503S	DIODE Switching,SMD,1N4148W-TG-WS/SOD-123(WILLAS)	0.8314	2	2.7610
171-360360-500G	DIODE TVS,36V,600W,SMBJ36CA/DO-214AA(LITTELFUSE)RoHS	0.8314	1	1.6060
171-404010-200S	DIODE 4-CHANNEL ESD PROTECTION,TPD4S010DQAR/SON-DQA10(TI)	0.8314	4	4.8700
171-451715-200G	DIODE Zener,15V,Vz=14.34V~14.98V,UDZVTE-1715B/SOD-323FL(ROHM)RoHS	0.8314	2	2.7610
171-451756-200G	DIODE Zener,5.6V,Vz=5.49V~5.73V,UDZVTE-175.6B/SOD-323F(ROHM)RoHS	0.8314	1	1.6060
171-452390-200S	DIODE Zener,39V,BZT52C39S/SOD-323(DIODES)	0.8314	1	1.6060
171-841023-200G	DIODE TVS Array,3.3V,AZ1023-04F.R7G/DFN2510P10E(AMAZING)RoHS	0.8314	2	2.7610
172-207002-241G	MOSFET N-Ch,VDS:60V,ID:300mA,VGS:±20V,@10V,RDS:3Ω,2N7002K/SOT23-3(PANJIT)RoHS	27.7119	2	73.8091
172-223904-400G	TRANSISTOR Dual NPN,MBT3904DW1T1G/SOT-363(ON)RoHS	4.4591	4	24.6578
172-223906-207S	TRANSISTOR PNP,PMBS3906/SOT23(NXP)	4.4591	1	7.9045
172-239040-210G	TRANSISTOR DUAL NPN,Ic≤200mA,Vcbo:60V,Vceo:40V,MMBT3904DTH/SOT563-6(SMARTENGRAND)RoHS	4.4591	3	19.3036
172-300612-200G	MOSFET Dual N-Ch,VDS:30V,VGS:±20V,ID:100mA,@4V,RDS:8Ω,EM6K1GT2R/SOT-563(ROHM)RoHS	27.7119	1	40.8117
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
172-302003-210G	MOSFET N-Ch,VDS:30V,ID:7A,VGS:±20V,@10V,RDS:20mΩ,EMB20N03VA/EDFN-8(2x2)(EXCELLIANCE)RoHS	27.7119	2	73.8091
172-323052-200G	MOSFET P-Ch,VDS:-30V,ID:-4.9A,VGS:±12V,@-10V,RDS≤52mΩ,CEH2305/TSOP-6(CET)RoHS	27.7119	1	40.8117
172-326110-200G	MOSFET P-Ch,VDS:-20V,ID:-4.9A,VGS:±12V,@-4.5V,RDS:45mΩ,FKN2611/SOT23-3(FETEK)RoHS	27.7119	1	40.8117
172-369010-200G	MOSFET P-Ch,VDS:-60V,ID:-72A,VGS:±20V,@-10V,RDS:8.6mΩ,PDC6901X/PPAK-8(5X6)(POTENS)RoHS	27.7119	2	73.8091
172-372460-200G	MOSFET N-Ch,VDS:60V,ID:24A,VGS:±20V,@10V,RDS(ON):13.2mΩ(Max),AON7246E/DFN-8(3x3)EP(AOS)RoHS	27.7119	8	257.9715
213-151015-200C	MLCC 101P/50V,NPO,J(5%),SMD,0402,(None JP)RoHS	0.1234	3	0.3975

**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 187893  
**Failure Rate:** 5,322.1682  
**Temperature:** 80  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
213-151505-200C	MLCC 15pF/50V,NPO,J(5%),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	4	0.5251
213-152215-200C	MLCC 221P/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1234	6	0.7789
213-152705-200C	MLCC 27pF/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1234	2	0.2691
213-153319-200C	MLCC 331P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1234	9	1.1577
213-154705-200C	MLCC 47pF/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1234	2	0.2691
213-156815-200C	MLCC 681P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1234	2	0.2691
213-251028-200C	MLCC 102P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1234	7	0.9054
213-251028-300C	MLCC 102P/50V,X7R,K(10%),SMD,0603,(None JP) RoHS	0.1234	4	0.5251
213-251029-110C	MLCC 102P/25V,X7R,K(10%)SMD,0201(None JP) RoHS	0.1234	6	0.7789
213-251038-250C	MLCC 103P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1234	5	0.6522
213-251039-130C	MLCC 103P/10V,X7R,K(10%),SMD,0201,(None JP) RoHS	0.1234	1	0.1392
213-251048-230J	MLCC 104P/50V,X7R,K(10%),SMD,0402,(JP)RoHS	0.1234	5	0.6522
213-251049-130J	MLCC 104P/10V,X5R,K(10%),SMD,0201,(JP)RoHS	0.1234	60	7.5245
213-251049-200J	MLCC 104P/16V,X7R,K(10%),SMD,0402,(JP)RoHS	0.1234	59	7.4001
213-251049-270J	MLCC 104P/25V,X5R,K(10%),SMD,0402,(JP)RoHS	0.1234	6	0.7789
213-251049-380C	MLCC 104P/100V,X7R,K(10%),SMD,0603,(None JP) RoHS	0.1234	1	0.1392
213-251059-109G	MLCC 105P/6.3V,X5R,K(10%),SMD,0201,CC0201KRX5R5BB105(YAGEO) RoHS	0.1234	54	6.7780
213-251059-200C	MLCC 105P/6.3V,X5R,K(10%),SMD,0402,(None JP) RoHS	0.1234	1	0.1392
213-251059-220J	MLCC 105P/10V,X5R,K(10%),SMD,0402,(JP)RoHS	0.1234	8	1.0317
213-251059-230J	MLCC 105P/16V,X5R,K(10%),SMD,0402,(JP)RoHS	0.1234	32	4.0372
213-251059-270C	MLCC 105P/6.3V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1234	1	0.1392
213-251059-330J	MLCC 105P/25V,X5R,K(10%),SMD,0603,(JP)RoHS	0.1234	6	0.7789
213-251068-200J	MLCC 106P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.1234	67	8.3950
213-251068-300J	MLCC 106P/6.3V,X5R,M(20%),SMD,0603,(JP)RoHS	0.1234	24	3.0383
213-251069-320J	MLCC 106P/10V,X5R,K(10%),SMD,0603,(JP)RoHS	0.1234	1	0.1392
213-251069-500C	MLCC 106P/6.3V,X5R,K(10%),SMD,0805,(None JP) RoHS	0.1234	1	0.1392
213-251069-540J	MLCC 106P/16V,X5R,K(10%),SMD,0805,(JP)RoHS	0.1234	5	0.6522
213-251069-680J	MLCC 106P/50V,X5R,K(10%),SMD,1206,(JP)RoHS	0.1234	15	1.9117



**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 187893  
**Failure Rate:** 5,322.1682  
**Temperature:** 80  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
213-251228-200C	MLCC 122P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1234	1	0.1392
213-251528-200C	MLCC 152P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1234	6	0.7789
213-251839-300C	MLCC 183P/50V,X7R,K(10%),SMD,0603,(None JP) RoHS	0.1234	2	0.2691
213-252229-200C	MLCC 222P/50V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1234	4	0.5251
213-252239-220J	MLCC 223P/50V,X7R,K(10%),SMD,0402,(JP)RoHS	0.1234	1	0.1392
213-252249-140C	MLCC 224P/6.3V,X5R,K(10%),SMD,0201,(None JP) RoHS	0.1234	12	1.5352
213-252249-210C	MLCC 224P/10V,X5R,K(10%),SMD,0402,(None JP) RoHS	0.1234	1	0.1392
213-252249-330C	MLCC 224P/25V,X7R,K(10%),SMD,0603,(None JP) RoHS	0.1234	4	0.5251
213-252249-360J	MLCC 224P/50V,X7R,K(10%),SMD,0603,(JP)RoHS	0.1234	2	0.2691
213-252259-200J	MLCC 225P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.1234	1	0.1392
213-252259-330C	MLCC 225P/16V,X5R,K(10%)SMD,0603,(None JP) RoHS	0.1234	1	0.1392
213-252268-310J	MLCC 226P/6.3V,X5R,M(20%),SMD,0603,(JP)RoHS	0.1234	46	5.7821
213-252268-330J	MLCC 226P/10V,X5R,M(20%),SMD,0603,(JP)RoHS	0.1234	11	1.4095
213-252268-500C	MLCC 226P/25V,X5R,M(20%),SMD,0805,(None JP) RoHS	0.1234	17	2.1624
213-252269-510J	MLCC 226P/6.3V,X5R,M(20%),SMD,0805,(JP)RoHS	0.1234	5	0.6522
213-253349-220C	MLCC 334P/25V,X5R,K(10%),SMD,0402,(None JP) RoHS	0.1234	1	0.1392
213-254715-200C	MLCC 471P/50V,NPO,J(5%),SMD,0402,(None JP) RoHS	0.1234	8	1.0317
213-254718-210C	MLCC 471P/25V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1234	5	0.6522
213-254739-210C	MLCC 473P/16V,X7R,K(10%),SMD,0402,(None JP) RoHS	0.1234	3	0.3975
213-254758-210J	MLCC 475P/6.3V,X5R,M(20%),SMD,0402,(JP)RoHS	0.1234	1	0.1392
213-254759-300C	MLCC 475P/6.3V,X5R,K(10%),SMD,0603,(None JP) RoHS	0.1234	2	0.2691
213-254759-320C	MLCC 475P/10V,X5R,K(10%),SMD,0603,(None JP) RoHS	0.1234	8	1.0317
213-254759-540J	MLCC 475P/16V,X7R,K(10%),SMD,0805,(JP)RoHS	0.1234	2	0.2691
213-254768-306G	MLCC 476P/6.3V,X5R,M(20%),SMD,0603,GRM188R60J476M(MURATA)RoHS	0.1234	2	0.2691
213-254768-500J	MLCC 476P/6.3V,X5R,M(20%),SMD,0805,(JP)RoHS	0.1234	9	1.1577
213-255629-200C	MLCC 562P/50V,X7R,K(10%),SMD,0402,(None JP)) RoHS	0.1234	1	0.1392
217-104778-700G	POLYMER(ALM) CAP 470uF/2V,4.5mΩ,4000mA,SMD,V7343,105°C/2000H,M(20%),bottom of round shape,EEFSX0D471E4 (PANASONIC)RoHS	1.7837	3	6.3292

**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 187893  
**Failure Rate:** 5,322.1682  
**Temperature:** 80  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
217-302278-326G	POLYMER(TAN)CAP 220uF/6.3V,45mΩ,1700mA,105°C/2000H,M (20%),B3528(1.9),T520B227M006ATE045(KEMET) RoHS	1.7837	4	8.2616
217-303378-720G	POLYMER(TAN) CAP 330uF/2.5V,9mΩ,3900mA,SMD,D7343- D2E,105°C/2000H,M(20%),2R5TPE330M9(SANYO) RoHS	1.7837	1	2.3546
217-304778-726G	POLYMER(TAN) CAP,470uF/6.3V,25mΩ,3000mA,SMD,D7343- 31,105°C/2000H,M(20%),T520D477M006ATE025 (KEMET)RoHS	1.7837	1	2.3546
217-333378-700G	POLYMER(TAN) CAP 330uF/6.3V,25mΩ,2700mA,SMD,V7343- 20,105°C/2000H,M(20%),T520V337M006ATE025 (KEMET)RoHS	1.7837	1	2.3546
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	1	0.2559
223-010322-510G	CHOKE 10uH,M (20%),RDC ≤ 68mΩ,Idc=4A,Isat=5.5A,SMD, (6.95x6.6x2.8),PCMB063T-100MS(CYNTEC)RoHS	0.2065	1	0.2559
223-015122-600G	CHOKE 0.15uH,M (20%),RDC ≤ 0.66mΩ,Idc ≤ 36A,Isat=45A,SMD, (7.6*6.6*3.8),PCME064T-R15MS0R667(CYNTEC) RoHS	0.2065	3	0.7043
223-022223-100G	CHOKE 2.2uH,M(20%),RDC=6.7mΩ (Typ.),Irms=12A,Isat=18A,SMD, (11.15x10x4),MCS1040-2R2MN1(PDC)RoHS	0.2065	2	0.4824
223-047121-700G	CHOKE 0.47uH,M (20%),RDC ≤ 14mΩ,Irms=7A,Isat=9.5A,SMT (4.7*4.3),MCS0420-R47MN2(PDC)RoHS	0.2065	2	0.4824
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	0.2065	1	0.2559
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	0.2065	1	0.2559
223-068121-900G	CHOKE 0.68uH,M (20%),RDC ≤ 9.2mΩ,Idc=10A,Isat=15A,SMD (4.85x4.7x2.8),CMMB053T-R68MS(CYNTEC)RoHS	0.2065	1	0.2559
223-322220-300G	INDUCTOR 2.2uH,M (20%),Itemp:500mA,RDC:250mΩ,SMD(0603) (1.6*0.8mm),MLZ1608A2R2WT000(TDK)RoHS	0.2065	2	0.4824
223-490040-540G	COMMON CHOKE 90Ω,25%,Irated ≤ 500mA,RDC ≤ 300mΩ,USB3.1 Gen2,10GHz,SMD(0805) (2*1.2*1.5mm),GCMF2012PM-900T(GOTREND) RoHS	0.2065	6	1.3571



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**MTBF (hrs):** 187893  
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Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
223-490090-500S	COMMON CHOKE 90Ω,60-100Ω,300mA (Max),RDC≤300mΩ,HDMI/USB3.0 6GHz,SMD0805 (2*1.2*1.2mm),GLECM2012B-900QT(GOTREND)	0.2065	4	0.9224
223-523000-410G	CM FILTER Cd=0.25pF,Rs=3Ω,SMD (1.57*1.17*0.57),PCMF2USB3S/WLCSP10(NXP) RoHS	0.2065	4	0.9224
231-051396-400G	Synchronous Buck Converter,Vin:4.5~24V,Vout:0.6~7V,8A,TPS51396A RJER/VQFN-20(3x3)(TI)RoHS	16.5208	1	24.8503
231-051397-400G	Synchronous Buck Converter,Vin:4.5~24V,Vout:0.6~5.5V,10A,TPS5139 7ARJER/VQFN-20(3x3)(TI)RoHS	16.5208	1	24.8503
231-107208-200G	REGULATOR 2A,SY7208LABC/SOT23-6(SILERGY) RoHS	58.1575	1	113.1002
231-108310-400G	Synchronous Step Down Regulator,10A,Vo:1.2V,SY8310RAC/QFN-20(3x3) (SILERGY)RoHS	58.1575	1	113.1002
231-108843-400G	Synchronous Step Down Regulator,3A,Vo:1.8V,SY8843QWC/QFN-7(1.5x1.5) (SILERGY)RoHS	58.1575	1	113.1002
231-171330-200G	REGULATOR GS7133TD-R,3A,TDFN10(GSTEK)RoHS	58.1575	1	113.1002
241-224006-310G	X'TAL 24MHz,16pF,±30ppm,ESR:50Ω(Max),TOPR=-40°C~+105°C,SMD3225(4PAD),7M24000082(TXC) RoHS	16.6322	1	27.4164
241-225006-350G	X'TAL 25MHz,18pF,±30ppm,ESR:50Ω(Max),TOPR=-40°C~+105°C,SMD3225(4PAD),7M25000175(TXC) RoHS	16.6322	1	27.4164
241-432773-300G	X'TAL 32.768kHz,12.5pf,±20ppm,ESR≤70KΩ,TOPR=-40°C~+125°C,SMD3215(2PAD),FC-13A,X1A000091000100(EPSON)RoHS	16.6322	1	27.4164
251-160808-083S	BEAD CORE 160808 80Ω,300mA,25%,SMT0603,SBK160808T-800Y-N (CHILISIN)	1.1265	2	3.7478
251-653001-000G	FERRITE BEAD 53Ω±25%,45A,RDC≤0.6mΩ,SMD (4.7x3.1mm),BPH403025W4-530T(TAI-TECH)RoHS	1.1265	1	2.1806
253-100110-500G	POLYSWITCH,PTC,1.1A/6V,SMD0805,0805L110ULY R(LITTELFUSE)RoHS	0.4000	1	0.6546
253-100115-604S	POLYSWITCH,PTC,1.1A/8V,SMD1206,1206L110THY R(LITTELFUSE)RoHS	0.4000	2	1.1579
261-361515-200C	RES ARRAY 150Ω 8P4R J(5%),0402*4,(None JP) RoHS	0.1502	2	0.3702
263-120037-81CG	PMS RES 2W,3mΩ,F(1%),SMD,2512,FMF25FPJR003-LH(PDC)RoHS	0.1502	1	0.1999
263-120047-81HG	PMS RES 2W,4mΩ,F (1%),SMD,2512,RM2512FBR004GM(LIZ)RoHS	0.1502	1	0.1999
263-180005-100C	RES 0Ω,J(5%),SMD,0201,(None JP)RoHS	0.1502	117	18.0946
263-180005-200C	RES 0Ω,J(5%),SMD,0402,(None JP)RoHS	0.1502	22	3.5302
263-180005-300C	RES 0Ω,J(5%),SMD,0603,(None JP)RoHS	0.1502	10	1.6542

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**Failure Rate:** 5,322.1682  
**Temperature:** 80  
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Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
263-180100-210C	RES 10Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	9	1.4962
263-180100-310C	RES 10Ω,F(1%),SMD,0603,(None JP)RoHS	0.1502	4	0.6989
263-180100-510C	RES 10Ω,F(1%),SMD,0805,(None JP)RoHS	0.1502	2	0.3702
263-180330-110C	RES 33Ω,F(1%),SMD,0201,(None JP)RoHS	0.1502	5	0.8604
263-180430-210C	RES 43Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-180510-110C	RES 51Ω,F(1%),SMD,0201,(None JP)RoHS	0.1502	5	0.8604
263-180519-210C	RES 5.1Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-180560-210C	RES 56Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-180750-110C	RES 75Ω,F(1%),SMD,0201,(None JP)RoHS	0.1502	1	0.1999
263-181000-110C	RES 100Ω,F(1%),SMD,0201,(None JP)RoHS	0.1502	12	1.9692
263-181000-210C	RES 100Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	6	1.0209
263-181001-110C	RES 1KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1502	30	4.7697
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	88	13.6695
263-181002-210C	RES 10KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	13	2.1262
263-181003-110C	RES 100KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1502	26	4.1507
263-181003-210C	RES 100KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	17	2.7519
263-181004-110C	RES 1MΩ,F(1%),SMD,0201,(None JP)RoHS	0.1502	2	0.3702
263-181004-210C	RES 1MΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	3	0.5357
263-181005-210C	RES 10MΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-181072-210C	RES 10.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-181101-210C	RES 1.1KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-181103-210C	RES 110KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-181130-210C	RES 113Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-181182-210C	RES 11.8KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-181201-210C	RES 1.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	3	0.5357
263-181202-210C	RES 12KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	4	0.6989
263-181210-210C	RES 121Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-181213-210C	RES 121KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-181302-210C	RES 13KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-181402-210C	RES 14KΩ,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	2	0.3702
263-181502-210C	RES 15KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	2	0.3702
263-181505-100C	RES 15Ω,J(5%),SMD,0201,(None JP)RoHS	0.1502	4	0.6989
263-181602-210C	RES 16KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	2	0.3702
263-181603-210C	RES 160KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-181653-210C	RES 165KΩ,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
263-181872-210C	RES 18.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-181962-210C	RES 19.6KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-182000-210C	RES 200Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	3	0.5357
263-182001-210C	RES 2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	7	1.1788
263-182002-110C	RES 20KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1502	4	0.6989
263-182002-210C	RES 20KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	3	0.5357
263-182003-110C	RES 200KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1502	1	0.1999
263-182003-210C	RES 200KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999

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**Failure Rate:** 5,322.1682  
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Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
263-182200-210C	RES 220Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-182201-110C	RES 2.2KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1502	9	1.4962
263-182208-210C	RES 2.2Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-182208-310C	RES 2.2Ω,F(1%),SMD,0603,(None JP)RoHS	0.1502	8	1.3378
263-182208-510C	RES 2.2Ω,F(1%),SMD,0805,(None JP)RoHS	0.1502	4	0.6989
263-182400-110C	RES 240Ω,F(1%),SMD,0201,(None JP)RoHS	0.1502	3	0.5357
263-182401-210C	RES 2.4KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-182492-210C	RES 24.9KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-182499-210C	RES 24.9Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	2	0.3702
263-182702-218G	RES 27KΩ,F(1%),SMD,0402,RTT022702FTH(RALEC) RoHS Taiwan	0.1502	1	0.1999
263-182742-210C	RES 27.4KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	2	0.3702
263-183000-210C	RES 300Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-183000-310C	RES 300Ω,F(1%),SMD,0603,(None JP)RoHS	0.1502	1	0.1999
263-183002-210C	RES 30KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-183003-210C	RES 300KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	2	0.3702
263-183011-210C	RES 3.01KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-183162-210C	RES 31.6KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-183300-210C	RES 330Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	2	0.3702
263-183301-210C	RES 3.3KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	2	0.3702
263-183303-210C	RES 330KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-183402-210C	RES 34KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-183742-210C	RES 37.4KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-183922-110C	RES 39.2KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1502	1	0.1999
263-184321-210C	RES 4.32KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	3	0.5357
263-184539-210C	RES 45.3Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-184700-110C	RES 470Ω,F(1%),SMD,0201,(None JP)RoHS	0.1502	9	1.4962
263-184701-110C	RES 4.7KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1502	25	3.9958
263-184701-210C	RES 4.7KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-184702-110C	RES 47KΩ,F(1%),SMD,0201,(None JP)RoHS	0.1502	9	1.4962
263-184871-210C	RES 4.87KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	3	0.5357
263-184990-110C	RES 499Ω,F(1%),SMD,0201,(None JP)RoHS	0.1502	1	0.1999
263-184992-210C	RES 49.9KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	3	0.5357
263-184999-110C	RES 49.9Ω,F(1%),SMD,0201,(None JP)RoHS	0.1502	4	0.6989
263-184999-210C	RES 49.9Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	9	1.4962
263-185102-210C	RES 51KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	4	0.6989
263-185602-210C	RES 56KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	2	0.3702
263-185622-210C	RES 56.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-186041-210C	RES 6.04KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-186049-210C	RES 60.4Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	2	0.3702
263-186192-210C	RES 61.9KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-187501-210C	RES 7.5KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	2	0.3702
263-187502-210C	RES 75KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-188069-210C	RES 80.6Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-188201-210C	RES 8.2KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-188871-210C	RES 8.87KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999
263-189100-210C	RES 910Ω,F(1%),SMD,0402,(None JP)RoHS	0.1502	1	0.1999

**File Name:** WL053-ECA-8665UE.rfp  
**Assembly:** 774-WL0531-400G  
**Ref Des:**  
**Calculation Model:** Telcordia Issue 4



**MTBF (hrs):** 187893  
**Failure Rate:** 5,322.1682  
**Temperature:** 80  
**Environment:** GB, GC - Ground Benign, Controlled

Part Number	Description	Unit Failure Rate	Quantity	Total Failure Rate
263-189762-210C	RES 97.6KΩ,F(1%),SMD,0402,(None JP)RoHS	0.1502	2	0.3702
273-010400-300G	THERM RES 100KΩ,0603(B:25/85=3950,3%)RoHS	11.2670	5	80.2752
273-100402-301S	THERM RES 10KΩ,J(5%),SMD,0603, (B25/85=3435,3%),TSM1A103J34D3RZ(TKS)	11.2670	2	37.7906
314-WL0531-109G	PCB WL053 R.A(12L 100x72x1.6mm, 2 Panelization) OSP(CIRCUITECH)RoHS	27.8992	1	53.1658
342-122101-100G	DISPLAYPORT/HDMI CONN,21P,MALE,R/A,DIP,GF,845-002-217CRL (REGO)RoHS	23.6070	1	40.8733
342-310022-110G	Screw CONN. Terminal Block,Green,2Pos,300V,16A,PIT:5.0mm,MB612- 50002(DECA) RoHS	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
343-501820-110G	USB 3.1 GEN2 CONN*2, 18P, A Type, Green, F, G/F, 90D, DIP, U2131D-UADH-0401R(HDSY)RoHS	23.6070	1	40.8733
346-120310-201G	PIN PLUG 2*3, 1.27mm, H=5mm, 180D, SMD, SHY- JCL180806P(V-STAR)RoHS	165.2491	2	500.7379
346-120511-201G	PIN PLUG 2*5, 1.27mm, H=5mm, 180D, SMD, SHY- JCL180810P(V-STAR)RoHS	165.2491	3	703.3760
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
347-103100-200S	WAFER 1*3,1.25mm,M,H=3.45mm,90D,SMT,WHITE,0110- 3221030(E-CALL)RoHS	23.6070	1	40.8733
348-220800-200S	SOCKET SPI 8Pin,GF,H=5.65mm,180D,SMT,ACA-SPI -004-K01(LOTES)	12.8766	1	20.9838
348-370750-230G	NGFF CONN 67P/0.5mm,E Key,R/A,SMD,AS0BC21- S40BE-7H,(FOXCONN)HF	12.8766	1	20.9838
348-370750-240G	NGFF CONN 67P/0.5mm,H=8.5mm,B key,90D,BLACK,SMD,APCI0161-P002H(LOTES)HF	23.6070	2	71.5340
348-652600-200G	DDR4 SO DIMM 1*260P,10u",H=8.0mm 1.2V,RVS,90D,SMD,ASAA826-E8RB0-7H(FOXCONN) HF	12.8766	1	20.9838
622-010140-000G	BATTERY CR2032(MURATA) 3V 220mAh,-30°C ~+70°C,W/CABLE(L=150mm&TAPE),BIN-CR2032-I- CT-SL-PV-01(RE-ENERGY)RoHS Belong to UN3090	25.0000	1	34.9638
686-110322-100G	PIN PLUG 1*3,2.0mm,M,H=5.9mm,180D,DIP,W/BLACK JUMPER,22S-96-03GB01(PINREX)RoHS	23.6070	1	40.8733
292-301000-500S	BUZZER 3V,100mA,12Ω,4Khz,85db,SMD (5*4.2mm),SMT-G5030A(KEPO)	600.0000	1	600.0000
143-101705-401G	CPU Intel Core i7-8665UE 1.7GHz C/8M,V0,CL8068404148003 SRFDS/FCBGA-1528 (INTEL)RoHS	422.0000	1	422.0000