

ACD-521R

Reliability Prediction Report (MTBF)

Summary	Failure Rate: 5433.445967 ppm MTBF: .184,045 Hours
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Issue date	Approval	Test Engineer
2014/04/01	Tom Lin	Louie Lee

Reliability Prediction (MTBF)

I . Model Name: ACD-521R

II . Prediction Date: April 1, 2014

III . Prediction Site: AAEON Q.E. Dept.

IV . Predicted by: Louie Lee

V . Equipment: Windchill Quality Solutions 10.1

VI. Simulation Environment:

- Temperature: 30 degrees C
- Standard: Telcordia (Bellcore) Standard

VII. Term and Definition:

- Unit : An assembly of device.
- Duty Cycle : Used to specify the percentage of time that the element is in an on state, and it is equal to the percentage of total time the item is in the active environment.
- Quantity : The quantity of the selected item.
- Failure Rate : Used to specify that the failure rate is to be calculated based the selected Calculation models. The multiplier is 1,000,000000.
- MTBF : MTBF is always specified in hours.

VIII. Prediction Result:

ACD-521R (not include LCD, Touch screen, Touch control Board):

- Failure Rate: 5433.445967ppm

- MTBF: 184,045 Hours

- (TF)CONVERTER.LED Driving board.SAMPO.YIDCAA0016DG4-B

MTBF: 50000 hours

- TFT LCD.21.5".1920*1080.AUO.M215HTN01

LED Life Time (Typical)= 30,000 hours.

- (TF)PowerAdapter.100/240V.12V.5A.60W.DC.W/ Lock.FSP.FSP060-DBAE1

MTBF: >100,000 hours

Below components were can't get MTBF value by the suppliers:

- .(TF)P-CAP TOUCH CONTROL BOARD.21.5".MASTOUCH.MT9C21513EU02

- .(TF)P-CAP TOUCH MODULE.21.5".MASTOUCH PANEL.MT9D215C55116.W/O LOGO

- .(TF)AD Board.ACD-518R.Firmware LG185XW010.RGBTECH.S2555L-021

**AAEON Reliability Prediction
Summary**

File Name: ACD-521R.rfp
Duty Cycle: 100
Calculation Model: Telcordia Issue 2
Method: Method I Case 3

Failure Rate: 5433.445967
MTBF (hrs): 184,045
Temperature: 30
Environment: GF, GU - Ground Fixed, Uncontrolled

Assembly Name	Part Number	Ref Des	Quantity	Failure Rate	MTBF
ACD-521R	TF-ACD-521RHTT-A2-1010		1	5433.445967	184,045
(TF)ASS'Y.Extender HDMI./RGB Client/Rx Board.PER-T212.Rev.B.1.0_0_0	9697T2120A-D		1	4681.306295	213,616
(TF)ASS'Y.2 PORT USB BOARD.PER-194.Rev.A0.2_0_0	9697T19401-D		1	68.890067	14,515,881
(TF)SMD ASS'Y.TOUCH KEY OSD BOARD.PER-T180.Rev.B1.0_0_0	9697T18008-S		1	873.688112	1,144,573

File Name: ACD-521R.rfp
Assembly: 9697T2120A-D
Ref Des:
Description:

Failure Rate: 4681.306295
MTBF (hrs): 213,616
Temperature: 30
Environment: GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1050502204	Resistor	SR12,SR18,S R19, SR41		2.547039	4	82309758.689546
1050503604	Resistor	SR100,SR103 ,SR106, SR114,SR72, SR73, SR77,SR79,S R95, SR96		2.547039	10	35079934.879747
1050508224	Resistor	SR71		2.547039	1	282340674.079668
1050509124	Resistor	SR113		2.547039	1	282340674.079668
1050510034	Resistor	SR101,SR102 ,SR112, SR30,SR34,S R36, SR68,SR84,S R85, SR86,SR94		2.547039	11	32049696.385471
1050516924	Resistor	SR154,SR323		2.547039	2	154078778.388085
1050524314	Resistor	SR7,SR8		2.547039	2	154078778.388085
1050524909	Resistor	SR11,SR16		2.547039	2	154078778.388085
1050524934	Resistor	SR156		2.547039	1	282340674.079668
1050530034	Resistor	SR32,SR4,SR 5		2.547039	3	107020754.986850
1059501261	Resistor	SR133,SR160		2.547039	2	154078778.388085
105A500139	Resistor	SR27,SR293, SR295, SR33,SR81,S R82		2.547039	6	56573956.677649
105A501033	Resistor	SR125,SR130 ,SR132		2.547039	3	107020754.986850

File Name: ACD-521R.rfp
Assembly: 9697T2120A-D
Ref Des:
Description:

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MTBF (hrs): 213,616
Temperature: 30
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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
105A501039	Resistor	SR1,SR107,S R108, SR109,SR110 ,SR120, SR134,SR135 ,SR142, SR143,SR144 ,SR150, SR151,SR153 ,SR155, SR158,SR2,S R22, SR25,SR26,S R28,SR3, SR332,SR333 ,SR37, SR38,SR39,S R40, SR42,SR44,S R49,SR6, SR60,SR61,S R63, SR65,SR66,S R67, SR69,SR74,S R87, SR88,SR89,S R90, SR91		2.547039	45	8260575.675294
105A501529	Resistor	SR92		2.547039	1	282340674.079668
105A501539	Resistor	SR104,SR105 ,SR117, SR324,SR70, SR75, SR76,SR80,S R93, SR97,SR98		2.547039	11	32049696.385471
105A505629	Resistor	SR15		2.547039	1	282340674.079668
105A506834	Resistor	SR159		2.547039	1	282340674.079668
105A510009	Resistor	SR111,SR78, SR99		2.547039	3	107020754.986850
105A515034	Resistor	SR157		2.547039	1	282340674.079668
105A519113	Resistor	SR126		2.547039	1	282340674.079668
105A524919	Resistor	SR307		2.547039	1	282340674.079668
105A549919	Resistor	SR51		2.547039	1	282340674.079668
105A549969	Resistor	SR127,SR128 ,SR129, SR136,SR137 ,SR138, SR139,SR140		2.547039	8	43225424.698300
105A569803	Resistor	SR141		2.547039	1	282340674.079668

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Assembly: 9697T2120A-D
Ref Des:
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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
105A700009	Resistor	SR116,SR119 ,SR122, SR124,SR297 ,SR298, SR329		2.547039	7	48991237.965885
105A702229	Resistor	SR10		2.547039	1	282340674.079668
105A702239	Resistor	SR325		2.547039	1	282340674.079668
105A703309	Resistor	SR330,SR331		2.547039	2	154078778.388085
105A703329	Resistor	SR13,SR17,S R21, SR24,SR276, SR29, SR83		2.547039	7	48991237.965885
105A704729	Resistor	SR20,SR277, SR278, SR283,SR284 ,SR294, SR296,SR299 ,SR300, SR301,SR304 ,SR305, SR306,SR308 ,SR309, SR335,SR336 ,SR62, SR64		2.547039	19	19019185.781770
105A704739	Resistor	SR152,SR45, SR47, SR48,SR50		2.547039	5	67008142.102588
105A705123	Resistor	SR131		2.547039	1	282340674.079668
105A707509	Resistor	SR312,SR313 ,SR314, SR315,SR319 ,SR320, SR321,SR322 ,SR326, SR327,SR328		2.547039	11	32049696.385471
105A710053	Resistor	SR190,SR316		2.547039	2	154078778.388085
105A747009	Resistor	SR310,SR311 ,SR317, SR318		2.547039	4	82309758.689546
105A768009	Resistor	SR115,SR118 ,SR121, SR123,SR14, SR31		2.547039	6	56573956.677649
1111647191	Capacitor	SC249,SC250 ,SC85, SC86		4.744484	4	45505862.704531
1112647110	Capacitor	SC107		4.744484	1	159663026.715137

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Assembly: 9697T2120A-D
Ref Des:
Description:

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MTBF (hrs): 213,616
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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1121501691	Capacitor	SC10,SC100, SC101, SC102,SC105 ,SC111, SC12,SC13,S C131, SC132,SC133 ,SC134, SC135,SC139 ,SC14, SC149,SC15, SC150, SC151,SC152 ,SC16, SC168,SC169 ,SC170, SC171,SC172 ,SC173, SC174,SC176 ,SC177, SC178,SC179 ,SC18, SC180,SC181 ,SC182, SC183,SC184 ,SC185, SC186,SC187 ,SC1		1.128806	130	6668395.526194
1121701790	Capacitor	SC29		1.128806	1	704977644.692287
1122701680	Capacitor	SC192,SC193 ,SC197, SC89		1.128806	4	196873384.410843
1124410190	Capacitor	SC17,SC19,S C220, SC229,SC283 ,SC284, SC285,SC286 ,SC288, SC289,SC290 ,SC291, SC298		1.128806	13	63728475.410842
1124522880	Capacitor	SC92		1.128806	1	704977644.692287
1129710090	Capacitor	SC81,SC82		1.128806	2	375289731.076049
1129722091	Capacitor	SC252,SC253 ,SC47, SC48,SC66,S C67		1.128806	6	133979725.056342

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Assembly: 9697T2120A-D
Ref Des:
Description:

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MTBF (hrs): 213,616
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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
11A4422190	Capacitor	SC126,SC127 ,SC136, SC140,SC143 ,SC145, SC146,SC161 ,SC164, SC166,SC188 ,SC189, SC191,SC194 ,SC198, SC200,SC202 ,SC203, SC205,SC23, SC26, SC303,SC45		1.128806	23	36609385.175833
11A4907090	Capacitor	SC304,SC305 ,SC306, SC307,SC308 ,SC309		1.128806	6	133979725.056342
11B4747660	Capacitor	SC190		1.128806	1	704977644.692287
11C4501380	Capacitor	SC196		1.128806	1	704977644.692287
11C9510260	Capacitor	SC287,SC292 ,SC311, SC312,SC313		1.128806	5	159367490.199266
11E1510050	Capacitor	SC1,SC11,SC 116, SC117,SC118 ,SC119, SC120,SC121 ,SC122, SC123,SC124 ,SC125, SC128,SC129 ,SC130, SC144,SC153 ,SC154, SC155,SC156 ,SC157, SC162,SC175 ,SC2, SC20,SC209, SC21, SC210,SC212 ,SC235, SC241,SC254 ,SC268, SC293,SC295 ,SC296, SC297,SC3,S C300, SC301,SC302 ,SC310		1.128806	57	15044000.029504
11E1522680	Capacitor	SC103		1.128806	1	704977644.692287

File Name: ACD-521R.rfp
Assembly: 9697T2120A-D
Ref Des:
Description:

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MTBF (hrs): 213,616
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Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
11E9501090	Capacitor	SC147,SC158 ,SC159, SC25,SC251, SC28, SC281,SC69		1.128806	8	101746760.035398
11E9547490	Capacitor	SC137,SC138 ,SC141, SC142,SC148 ,SC160, SC163,SC165 ,SC167, SC83		1.128806	10	82101057.548118
11E9547680	Capacitor	SC244,SC65, SC73, SC96		1.128806	4	196873384.410843
1211100166	Inductor	SL35,SL36,S L37		4.944252	3	57363284.375370
121110226M	Inductor	SL11		4.944252	1	154760964.143460
121110476S	Inductor	SL1,SL2,SL3 4,SL5		4.944252	4	43912872.424775
12123C0017	Inductor	SL19,SL20,S L21, SL22,SL26,S L27, SL28,SL29,S L3,SL30, SL31,SL32,S L33,SL4, SL6,SL7,SL9		4.944252	17	11096095.548648
12123C0018	Inductor	SL10,SL12,S L13, SL14,SL15,S L17, SL18,SL23		4.944252	8	22874049.098230
1231125050	Miscellaneous	SY1,SY4		19.200000	2	8854051.752197
1231130050	Miscellaneous	SY3		19.200000	1	23844262.770939
1233324054	Miscellaneous	SOSC1		19.200000	1	23844262.770939
1233324550	Miscellaneous	SOSC2		19.200000	1	23844262.770939
1301010340	Semiconductor	SD24		7.793411	1	92807310.010983
1301053040	Semiconductor	SD27,SD35		7.793411	2	50578095.223398
1302005642	Semiconductor	SD13		7.793411	1	92807310.010983
1304001340	Optical Device	SD10,SD6		79.003355	2	3783722.582110
1304101340	Optical Device	SD3,SD7,SD 9		79.003355	3	2725958.067754
1304200040	Optical Device	SD1		79.003355	1	6497172.749112
1304400051	Optical Device	D1		79.003355	1	6497172.749112

File Name: ACD-521R.rfp
Assembly: 9697T2120A-D
Ref Des:
Description:

Failure Rate: 4681.306295
MTBF (hrs): 213,616
Temperature: 30
Environment: GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1305080040	Semiconductor	SD11,SD12,S D14, SD15,SD16,S D17, SD20,SD21,S D22, SD23,SD28,S D29, SD30,SD31,S D32, SD33,SD34,S D5,SD8		7.793411	19	6225751.500036
1310390411	Semiconductor	SQ2,SQ3		22.463360	2	17315095.066101
1310X61910	Semiconductor	SQ4		22.463360	1	31642600.748419
1314917910	Semiconductor	SU4		22.463360	1	31642600.748419
1315700216	Semiconductor	SQ1,SQ10,S Q5,SQ6, SQ7,SQ8,SQ 9		22.463360	7	5525968.936223
144IT66130	Integrated Circuit	SU14		43.803003	1	11739202.588727
14S2315700	Integrated Circuit	SU20,SU22,S U23		43.803003	3	4923240.069161
14S3124000	Integrated Circuit	SU18,SU19		43.803003	2	6834791.244197
14S3269500	Integrated Circuit	SU16		43.803003	1	11739202.588727
14S3500700	Integrated Circuit	SU26	15.7	125.955117	1	4082504.479693
14S3500700	Integrated Circuit	SU27		43.803003	1	11739202.588727
14S3562400	Integrated Circuit	SU21		43.803003	1	11739202.588727
14S3781000	Integrated Circuit	SU1,SU28,SU 5		43.803003	3	4923240.069161
14S3781000	Integrated Circuit	SU2		43.803003	1	11739202.588727
14S388E100	Integrated Circuit	SU6	39	505.066361	1	1018108.447989
14S4010101	Integrated Circuit	SU11		43.803003	1	11739202.588727
14S4150005	Integrated Circuit	SU8	31.2	75.841819	1	6780063.200185
14S4320201	Integrated Circuit	SU15		43.803003	1	11739202.588727
14S4836500	Integrated Circuit	SU25		43.803003	1	11739202.588727
14S5812500	Integrated Circuit	SU29		26.018600	1	25551442.237972
14S6151202	Integrated Circuit	SU7	26.3	32.261473	1	19969028.883908
14S6151202	Integrated Circuit	SU9		11.063278	1	58231413.220643
14S6212844	Integrated Circuit	SU3		11.063278	1	58231413.220643
14S6343202	Integrated Circuit	SU24		11.063278	1	58231413.220643

File Name: ACD-521R.rfp
Assembly: 9697T2120A-D
Ref Des:
Description:

Failure Rate: 4681.306295
MTBF (hrs): 213,616
Temperature: 30
Environment: GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1540722080	Resistor	SRP1,SRP10, SRP11, SRP12,SRP13 ,SRP14, SRP15,SRP16 ,SRP17, SRP2,SRP3,S RP4, SRP5,SRP6,S RP7, SRP8,SRP9		9.971436	17	4816781.526628
1600020800	Connection	SSW5		16.184835	1	35685591.360212
1601000202	Connection	SSW1,SSW2, SSW4		16.184835	3	14515880.849373
1652503209	Connection	SCON16		16.184835	1	35685591.360212
1652505204	Connection	SCON17		16.184835	1	35685591.360212
165251220G	Connection	SCON18,SCO N19		16.184835	2	20390152.380746
1653002101	Connection	SJ13,SJ2		16.184835	2	20390152.380746
1653004101	Connection	SCON4,SCON 6		16.184835	2	20390152.380746
1653005101	Connection	SJ1		16.184835	1	35685591.360212
1653300102	Connection	SJ13(1-2)		16.184835	1	35685591.360212
1654804305	Connection	SCON11		16.184835	1	35685591.360212
1655004020	Connection	SCON3		16.184835	1	35685591.360212
1655304020	Connection	SCON14		16.184835	1	35685591.360212
1655310023	Connection	SCON20		16.184835	1	35685591.360212
1655905032	Connection	SCON1,SCON 2,SCON7		16.184835	3	14515880.849373
1655915030	Connection	SCON9		16.184835	1	35685591.360212
1752005001	Miscellaneous	SF5,SF6		2.400000	2	143944727.196625
1752340000	Miscellaneous	SF1,SF2,SF3, SF4		2.400000	4	79281882.025954

**Reliability Prediction
Summary**

File Name: ACD-521R.rfp
Assembly: 9697T19401-D
Ref Des:
Description:

Failure Rate: 68.890067
MTBF (hrs): 14,515,881
Temperature: 30
Environment: GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
1653005201	Connection	CN1		16.184835	1	35685591.360212
1654804305	Connection	CN2,CN3		16.184835	2	20390152.380746

File Name: ACD-521R.rfp
Assembly: 9697T18008-S
Ref Des:
Description:

Failure Rate: 873.688112
MTBF (hrs): 1,144,573
Temperature: 30
Environment: GF, GU - Ground Fixed, Uncontrolled

Part Number	Category	Ref Des	Tem.Rise	Unit Failure Rate	Quantity	MTBF,Unit
105A700003	Resistor	R1,R10,R13, R14,R17, R19,R21,R3, R5,R6, R9		2.547039	11	32049696.385471
105A722003	Resistor	R22,R23,R24 ,R25		2.547039	4	82309758.689546
105A747003	Resistor	R26		2.547039	1	282340674.079668
1122701680	Capacitor	C10,C6,C7,C 8,C9		1.128806	5	159367490.199266
1124415080	Capacitor	C1		1.128806	1	704977644.692287
1124420080	Capacitor	C2,C3,C4,C5		1.128806	4	196873384.410843
1129610080	Capacitor	C11,C12		1.128806	2	375289731.076049
1304300042	Optical Device	D5		79.003355	1	6497172.749112
1304600040	Optical Device	D1,D2,D3,D4		79.003355	4	2148119.082046
14S9223B00	Integrated Circuit	U1,U2,U3,U4 ,U5		43.803003	5	3214211.402100
1655910123	Connection	CN1		16.184835	1	35685591.360212